



Installing and Configuring VXLAN Gateway

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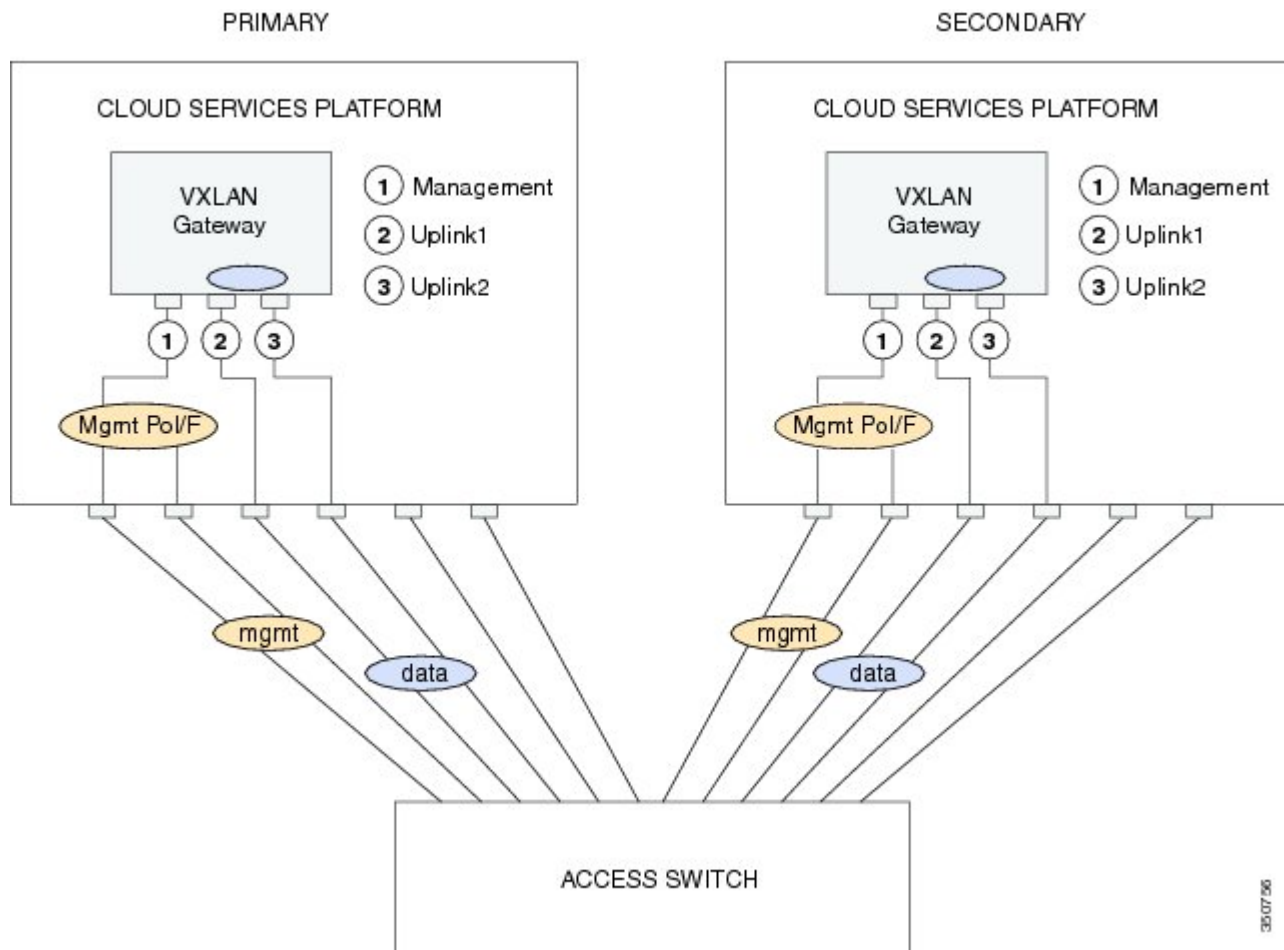
Information About the VXLAN Gateway Deployment

The VXLAN gateway has the following deployment requirements:

- To configure the VXLAN gateway, you must install the Advanced Edition license on the Cisco Nexus 1000V switch.
- You can deploy the VXLAN gateway as a VM or on the Cisco Nexus Cloud Services Platform Release 4.2(1)SP1(6.1) or later releases.
- You must connect the Cloud Services Platform appliance to a switch that supports the Link Aggregation Control Protocol (LACP) based or statically configured port channels and VLAN-based trunk interfaces.
- vCPU and Memory requirements:
 - Three vCPUs for each Virtual Service Blade (VSB)
 - Two vCPUs for each Virtual Machine (VM)
 - 2-GB RAM
 - 3-GB disk space

This figure shows the VXLAN gateway deployment.

Figure 1: VXLAN Gateway Deployment



Guidelines and Limitations

VXLAN gateways have the following configuration guidelines and limitations:

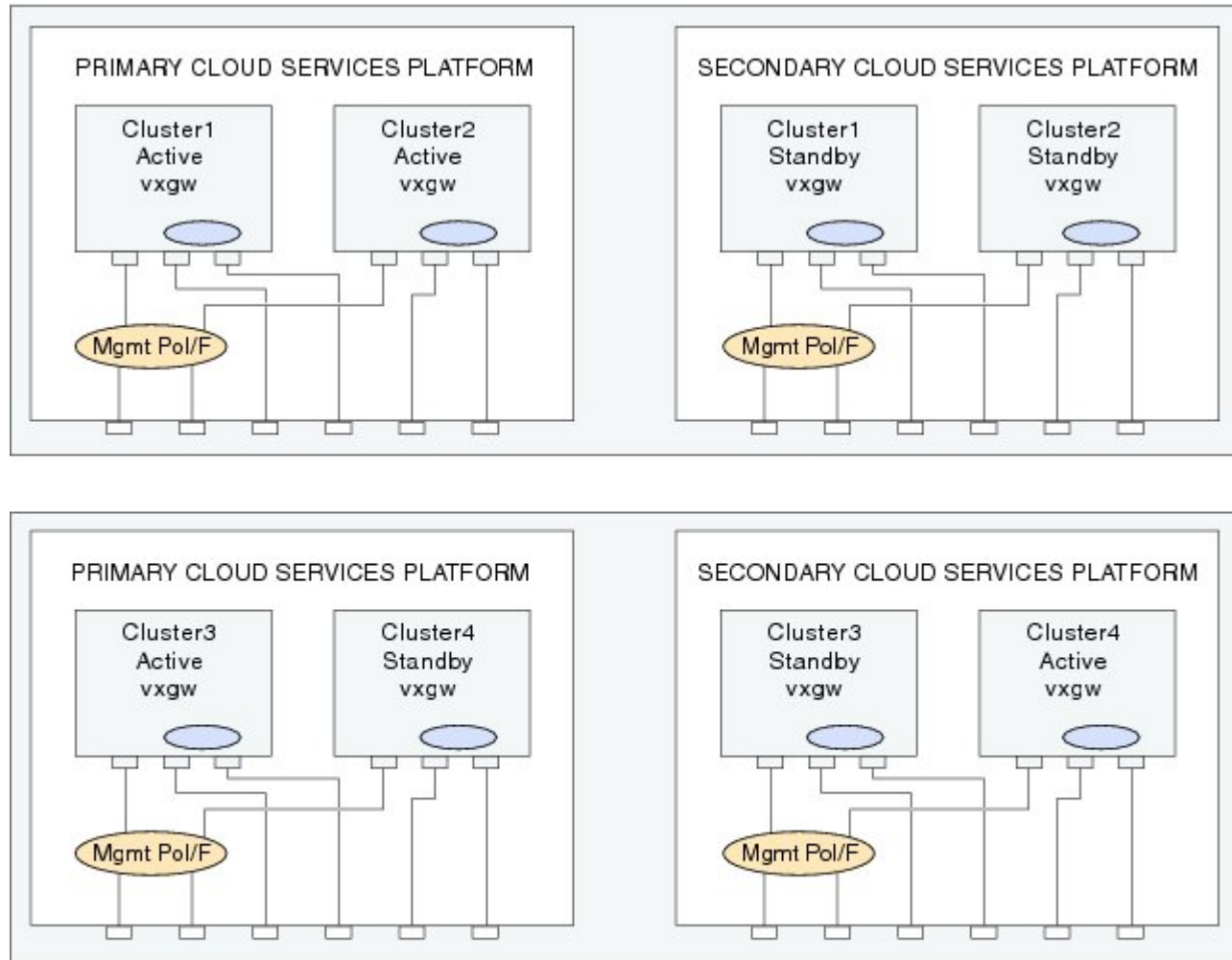
- You must configure the VSM to use the Layer 3 control. We strongly recommend that the VSM Layer 3 control is through mgmt 0. For more information about Layer 3 control, see the *Cisco Nexus 1000V Installation and Upgrade Guide* and *Cisco Nexus 1000V System Management Configuration Guide*.
- You must configure the uplink for the gateway module as a LACP or a static port channel. The VXLAN gateway does not function if gateways are configured in the MAC-pinning mode.
- A single VSM can manage a maximum of eight VXLAN gateway high availability (HA) clusters.
- You must configure the HA mode of the VXLAN gateway as standalone or primary/secondary so that when you bring up the VXLAN gateway, the HA state is either active or standby and the VXLAN-to-VLAN mappings are either active or pending. If you do not configure an HA role for the

VXLAN gateway, when you bring up the VXLAN gateway, the HA state is unknown and VXLAN-to-VLAN traffic is not processed.

- You must configure the underlying Cloud Services Platform with an uplink type that is flexible (type 5). VXLAN gateways use two physical interfaces. You must set the interfaces in the passthrough mode. In addition, you must set at least one physical or a port channel interface must be set up to carry management traffic.
- Ensure that you do not configure a private VLAN (PVLAN) on the VLANs used for VXLAN-VLAN mappings.
- Ensure that the VXGW VTEP VLAN is not also used as a VXLAN segment.
- The VXLAN gateway virtual services blade (VSB) has two uplink data interfaces configured in a port channel group. The VXLAN gateway VM has only one uplink data interface; therefore, it does not require a port channel.
- The VXLAN gateway VSB uses three vCPUs: one vCPU for management traffic and the other two vCPUs for the data interfaces. The VXLAN gateway VM uses two vCPUs; one vCPU for management traffic and one vCPU for the data interface.

The following figure shows four Cloud Services Platform devices where each Cloud Services Platform device hosts two VXLAN gateway modules. Four HA clusters of gateway modules are set up with each cluster that consists of an active/standby pair of modules.

Figure 2: VXLAN Gateway HA Pairs



Maximum 4 clusters of VXLAN gateways per VSM
Maximum 2 Gateway Modules per Cloud Services Platform

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Enabling VXLAN Gateway

You must enable the VXLAN gateway before you can configure it.

Before You Begin

Ensure that you are in the correct VDC (or use the `switchto vdc` command).

DETAILED STEPS

| | Command or Action | Purpose |
|--------|---|---|
| Step 1 | switch# configure terminal | Enters global configuration mode. |
| Step 2 | switch(config)# feature vxlan-gateway | Enables the VXLAN gateway. Use the no feature vxlan-gateway command to disable the VXLAN gateway and remove all associated configuration. |
| Step 3 | switch(config)# show feature | (Optional) (Optional) Displays enabled and disabled features. |
| Step 4 | switch(config)# copy running-config startup-config | (Optional) Saves the change persistently through reboots and restarts by copying the running configuration to the startup configuration. |

Configuring Port Profiles on the VSM

You must create port profiles on the VSM before you can install and configure the VXLAN gateway.

Creating Port Profiles for VXLAN gateway as VSB

Configuring a Port Profile for the Uplink on the VXLAN Gateway

Before installing the VXLAN gateway, you must create two port profiles on the switch (VSM), one for the uplinks on the gateway and one for the VXLAN Tunnel Endpoint (VTEP) interface.

Before You Begin

- Ensure that VSM is configured in the Advanced mode by entering the **svs switch edition advanced** configuration command to enable Advanced mode.
- Ensure that LACP is configured by entering the **feature lacp** configuration command on the VSM.
- Offload the LACP operation by entering the **lacp offload** configuration command on the VSM.
- Ensure that VXLAN is enabled on the VSM by entering the **feature segmentation** configuration command to enable VXLANs on the VSM.
- Ensure that VXLAN gateway is enabled on the VSM by entering the **feature vxlan-gateway** configuration command.

DETAILED STEPS

| | Command or Action | Purpose |
|---------|--|--|
| Step 1 | vsm# configure terminal | Enters global configuration mode. |
| Step 2 | vsm# encapsulation profile segment <i>name</i> | Creates an encapsulation profile to contain the VLAN-to-VXLAN mappings. |
| Step 3 | vsm(config-vxlan-encap-prof)# dot1q <i>VLAN-ID</i> bridge-domain <i>bd-name</i> | Maps a VLAN to a VXLAN. The VXLAN is specified through the bridge-domain name. Note The bridge-domain name and VLAN-ID that you provide are not created during the port-profile configuration. The bridge-domain name and the VLAN ID that you provide should be in an active state or the mapping is held in an inactive state until you create the bridge-domain name and VLAN ID. Note Repeat this step to specify additional mappings. |
| Step 4 | vsm(config)# port profile type ethernet <i>name</i> | Creates a port profile of type ethernet for the VXLAN gateway uplink. Note You must provide a port-profile name when prompted while executing the setup script to configure the VXLAN gateway. |
| Step 5 | vsm(config-port-prof)# switchport mode trunk | Designates that the interfaces are to be used as trunking ports. A trunk port transmits untagged packets for the native VLAN and transmits encapsulated, tagged packets for all other VLANs. |
| Step 6 | vsm(config-port-prof)# switchport trunk allowed vlan <i>vlan list</i> | Specifies the list of VLANs allowed on the gateway's uplink. This list should consist of all the mapped VLANs and the VLAN for the VTEP virtual interface. |
| Step 7 | vsm(config-port-prof)# mtu <i>mtu size in</i> <i>bytes</i> | Designates the MTU size. For VXLAN traffic to be functional, you must set the MTU size as 1550. If you do not set the MTU size, the default of 1500 is used. The size must be an even number between 1500 and 9000. The MTU configured on an interface takes precedence over the MTU configured on a port profile. |
| Step 8 | vsm(config-port-prof)# service instance <i>place holder</i> | (Optional) Defines a place holder for mappings. The range is from 1 to 4096. Note You do not need to execute the service instance and the encapsulation command at this stage to bring up the gateway. These commands are optional and you can add the mappings later once the port profiles are configured. |
| Step 9 | vsm(config-port-prof-svc)# encapsulation profile <i>name</i> | Specifies the encapsulation profile for the port profile. |
| Step 10 | vsm(config-port-prof-srv)# exit | (Optional) Exits from the service instance mode. |
| Step 11 | vsm(config-port-prof)# no shutdown | Administratively enables all ports in the profile. |

| | Command or Action | Purpose |
|----------------|---|---|
| Step 12 | vsm(config-port-prof)# state enabled | Enables the port profile and applies its configuration to the assigned ports. |
| Step 13 | vsm(config-port-prof)# vmware port-group | Distributes the port profile. Recommends that this port profile should not be inherited on non VXLAN gateway ports. |

This example shows how to configure and display the gateway mappings:

```
vsm# configure terminal
vsm(config)# port-profile type ethernet gw-uplink
vsm(config)# switchport mode trunk
vsm(config)# switchport trunk allowed vlan 1545
vsm(config)# mtu 1550
vsm(config-port-prof)# service instance 1
vsm(config-port-prof-srv)# encapsulation profile segment gw-segment
vsm(config-port-prof-srv)# exit
vsm(config-port-prof)# no shutdown
vsm(config-port-prof)# state enabled
vsm(config-port-prof)# vmware port-group
```

Configuring a Port Profile for the VTEP on the VXLAN Gateway

You can create a port profile that can be applied to the VTEP virtual interface on the VXLAN gateway.

DETAILED STEPS

| | Command or Action | Purpose |
|---------------|---|---|
| Step 1 | vsm# configure terminal | Enters global configuration mode. |
| Step 2 | vsm(config) # port-profile type vethernet <i>port-profile name</i> | Configures a port profile for the VTEP on the VXLAN gateway. Note You must provide a port profile name when prompted while executing the setup script to configure the VXLAN gateway. |
| Step 3 | vsm(config-port-prof) # switchport mode access | Designates that the interfaces are to be used as a trunking ports. A trunk port transmits untagged packets VLAN and transmits encapsulated, tagged packets for all other VLANs. |
| Step 4 | vsm(config-port-prof) # switchport access vlan <i>vlan-id-access</i> | Assigns an access VLAN ID to this port profile. The VLAN ID provided must be added to the allowed VLAN set of the uplink port profile. This VLAN should not be mapped to any VXLAN. Note If you do not specify a VLAN ID, VLAN 1 is used automatically. |
| Step 5 | vsm(config-port-prof) # capability vxlan | Configures the capability VXLAN feature on the specified virtual Ethernet port and enables encapsulation and decapsulation of VXLAN packets. |

| | Command or Action | Purpose |
|---------------|--|---|
| Step 6 | vsm(config-port-prof) # transport ip address <i>ip-address netmask network mask</i> [<i>gateway ip-address</i>] | Configures the IP address, netmask, and gateway for the VTEP. Note If you have VTEPs that are in different subnets, you must specify the gateway IP address. If a gateway is not provided, the VXLAN gateway uses ARP to reach the remote VTEP. |
| Step 7 | vsm(config-port-prof)# no shutdown | Administratively enables all ports in the profile. |
| Step 8 | vsm(config-port-prof)# state enabled | Enables the port profile and applies its configuration to the assigned ports. |
| Step 9 | vsm(config-port-prof)# vmware port-group | Distributes the port profile. Recommends that this port profile should not be inherited on non VXLAN gateway ports. |

This example displays how to configure a VTEP on the VXLAN gateway:

```
vsm# configure terminal
vsm(config)# port-profile type vethernet gw-vtep
vsm(config-port-prof)# switchport mode access
vsm(config-port-prof)# switchport access vlan 760
vsm(config-port-prof)# capability vxlan
vsm(config-port-prof)# transport ip address 192.0.2.1 netmask 255.255.255.0 gateway 192.0.2.254
vsm(config-port-prof)# no shutdown
vsm(config-port-prof)# state enabled
vsm(config-port-prof)# vmware port-group
```

Creating Port Profiles for VXLAN Gateway as VM in VMWare vCenter

Configuring a Port Profile for the Uplink on the VXLAN Gateway

Before installing the VXLAN gateway, you must create two port profiles on the switch (VSM), one for the uplinks on the gateway and one for the VXLAN Tunnel Endpoint (VTEP) interface.

Before You Begin

- Ensure that VSM is configured in the Advanced mode by entering the **svs switch edition advanced** configuration command to enable Advanced mode.
- Ensure that LACP is configured by entering the **feature lacp** configuration command on the VSM.
- Offload the LACP operation by entering the **lacp offload** configuration command on the VSM.
- Ensure that VXLAN is enabled on the VSM by entering the **feature segmentation** configuration command to enable VXLANs on the VSM.
- Ensure that VXLAN gateway is enabled on the VSM by entering the **feature vxlan-gateway** configuration command.

DETAILED STEPS

| | Command or Action | Purpose |
|---------|--|--|
| Step 1 | vsm# configure terminal | Enters global configuration mode. |
| Step 2 | vsm# encapsulation profile segment <i>name</i> | Creates an encapsulation profile to contain the VLAN-to-VXLAN mappings. |
| Step 3 | vsm(config-vxlan-encap-prof)# dot1q <i>VLAN-ID bridge-domain bd-name</i> | Maps a VLAN to a VXLAN. The VXLAN is specified through the bridge-domain name. Note The bridge-domain name and VLAN-ID that you provide are not created during the port-profile configuration. The bridge-domain name and the VLAN ID that you provide should be in an active state or the mapping is held in an inactive state until you create the bridge-domain name and VLAN ID. Note Repeat this step to specify additional mappings. |
| Step 4 | vsm(config)# port profile type ethernet <i>name</i> | Creates a port profile of type ethernet for the VXLAN gateway uplink. Note You must provide a port-profile name when prompted while executing the setup script to configure the VXLAN gateway. |
| Step 5 | vsm(config-port-prof)# switchport mode trunk | Designates that the interfaces are to be used as trunking ports. A trunk port transmits untagged packets for the native VLAN and transmits encapsulated, tagged packets for all other VLANs. |
| Step 6 | vsm(config-port-prof)# switchport trunk allowed vlan <i>vlan list</i> | Specifies the list of VLANs allowed on the gateway's uplink. This list should consist of all the mapped VLANs and the VLAN for the VTEP virtual interface. |
| Step 7 | vsm(config-port-prof)# mtu <i>mtu size in bytes</i> | Designates the MTU size. For VXLAN traffic to be functional, you must set the MTU size as 1550. If you do not set the MTU size, the default of 1500 is used. The size must be an even number between 1500 and 9000. The MTU configured on an interface takes precedence over the MTU configured on a port profile. |
| Step 8 | vsm(config-port-prof)# service instance <i>place holder</i> | (Optional) Defines a place holder for mappings. The range is from 1 to 4096. Note You do not need to execute the service instance and the encapsulation command at this stage to bring up the gateway. These commands are optional and you can add the mappings later once the port profiles are configured. |
| Step 9 | vsm(config-port-prof-svc)# encapsulation profile <i>name</i> | Specifies the encapsulation profile for the port profile. |
| Step 10 | vsm(config-port-prof-srv)# exit | (Optional) Exits from the service instance mode. |
| Step 11 | vsm(config-port-prof)# no shutdown | Administratively enables all ports in the profile. |

| | Command or Action | Purpose |
|----------------|--|---|
| Step 12 | vsm(config-port-prof)# state enabled | Enables the port profile and applies its configuration to the assigned ports. |
| Step 13 | vsm(config-port-prof)# vmware port-group | Distributes the port profile. Recommends that this port profile should not be inherited on non VXLAN gateway ports. |

This example shows how to configure and display the gateway mappings:

```
vsm# configure terminal
vsm(config)# port-profile type ethernet gw-uplink
vsm(config)# switchport mode trunk
vsm(config)# switchport trunk allowed vlan 1545
vsm(config)# mtu 1550
vsm(config-port-prof)# service instance 1
vsm(config-port-prof-srv)# encapsulation profile segment gw-segment
vsm(config-port-prof-srv)# exit
vsm(config-port-prof)# no shutdown
vsm(config-port-prof)# state enabled
vsm(config-port-prof)# vmware port-group
```

Configuring a Port Profile for the VTEP on the VXLAN Gateway

You can create a port profile that can be applied to the VTEP virtual interface on the VXLAN gateway.

DETAILED STEPS

| | Command or Action | Purpose |
|---------------|---|---|
| Step 1 | vsm# configure terminal | Enters global configuration mode. |
| Step 2 | vsm(config)# port-profile type vethernet <i>port-profile name</i> | Configures a port profile for the VTEP on the VXLAN gateway. Note You must provide a port profile name when prompted while executing the setup script to configure the VXLAN gateway. |
| Step 3 | vsm(config-port-prof) # switchport mode access | Designates that the interfaces are to be used as a trunking ports. A trunk port transmits untagged packets VLAN and transmits encapsulated, tagged packets for all other VLANs. |
| Step 4 | vsm(config-port-prof) # switchport access vlan <i>vlan-id-access</i> | Assigns an access VLAN ID to this port profile. The VLAN ID provided must be added to the allowed VLAN set of the uplink port profile. This VLAN should not be mapped to any VXLAN. Note If you do not specify a VLAN ID, VLAN 1 is used automatically. |
| Step 5 | vsm(config-port-prof) # capability vxlan | Configures the capability VXLAN feature on the specified virtual Ethernet port and enables encapsulation and decapsulation of VXLAN packets. |

| | Command or Action | Purpose |
|---------------|--|---|
| Step 6 | vsm(config-port-prof) # transport ip address <i>ip-address netmask network mask</i> [gateway <i>ip-address</i>] | Configures the IP address, netmask, and gateway for the VTEP. Note If you have VTEPs that are in different subnets, you must specify the gateway IP address. If a gateway is not provided, the VXLAN gateway uses ARP to reach the remote VTEP. |
| Step 7 | vsm(config-port-prof)# no shutdown | Administratively enables all ports in the profile. |
| Step 8 | vsm(config-port-prof)# state enabled | Enables the port profile and applies its configuration to the assigned ports. |
| Step 9 | vsm(config-port-prof)# vmware port-group | Distributes the port profile. Recommends that this port profile should not be inherited on non VXLAN gateway ports. |

This example displays how to configure a VTEP on the VXLAN gateway:

```
vsm# configure terminal
vsm(config)# port-profile type vethernet gw-vtep
vsm(config-port-prof)# switchport mode access
vsm(config-port-prof)# switchport access vlan 760
vsm(config-port-prof)# capability vxlan
vsm(config-port-prof)# transport ip address 192.0.2.1 netmask 255.255.255.0 gateway
192.0.2.254
vsm(config-port-prof)# no shutdown
vsm(config-port-prof)# state enabled
vsm(config-port-prof)# vmware port-group
```

Configuring a vEthernet Trunk Port Profile for VXLAN Gateway Uplink Port

You can create a vEthernet trunk port profile for VXLAN gateway on vCenter. It is used by vCenter to send data to the VXLAN gateway.

DETAILED STEPS

| | Command or Action | Purpose |
|---------------|---|--|
| Step 1 | vsm# configure terminal | Enters global configuration mode. |
| Step 2 | vsm(config)# port-profile type vethernet <i>port-profile name</i> | Configures a port profile for the VXLAN gateway on the VSM. |
| Step 3 | vsm(config-port-prof)# switchport mode trunk | Designates that the interfaces are to be used as trunking ports. A trunk port transmits untagged packets for the native VXLAN and transmits encapsulated, tagged packets for all other VXLANs. |
| Step 4 | vsm(config-port-prof)# switchport trunk allowed vlan <i>vlan-id-access</i> | Assigns an access VLAN ID to this port profile. The VLAN ID provided must be added to the allowed VLAN set of the uplink port profile. This VLAN should not be mapped to any VXLAN. If you do not specify a VLAN ID, VLAN 1 is used automatically. |
| Step 5 | vsm(config-port-prof)# no shutdown | Administratively enables all ports in the profile. |

| | Command or Action | Purpose |
|---------------|---|---|
| Step 6 | vsm(config-port-prof)# state enabled | Enables the port profile and applies its configuration to the assigned ports. |
| Step 7 | vsm(config-port-prof)# vmware port-group | Designates the port profile as a VMware port group. |

This example shows how to configure a vEthernet trunk port profile:

```
vsm# configure terminal
vsm(config)# port-profile type vethernet gw-trunk1
vsm(config-port-prof)# switchport mode trunk
vsm(config-port-prof)# switchport trunk allowed vlan 105-109
vsm(config-port-prof)# no shutdown
vsm(config-port-prof)# state enabled
vsm(config-port-prof)# vmware port-group
vsm(config-port-prof)# end
```

Configuring a vEthernet Access Port Profile for VXLAN Gateway Management Port

You can create a vEthernet management access port profile for the VXLAN gateway on vCenter. It is used for vCenter to allow management data to the VXLAN gateway.

DETAILED STEPS

| | Command or Action | Purpose |
|---------------|---|---|
| Step 1 | vsm# configure terminal | Enters global configuration mode. |
| Step 2 | vsm(config-port-prof)# port-profile type vethernet <i>port-profile name</i> | Configures a port profile for the VXLAN gateway on the VSM. |
| Step 3 | vsm(config-port-prof)# switchport mode access | Designates that the interfaces are to be used as a access ports. |
| Step 4 | vsm(config-port-prof)# switchport access vlan <i>vlan-id</i> | Assigns an access VLAN ID to this port profile. |
| Step 5 | vsm(config-port-prof)# no shutdown | Administratively enables all ports in the profile. |
| Step 6 | vsm(config-port-prof)# system vlan <i>vlan-id</i> | Assigns an access VLAN ID to this port profile. |
| Step 7 | vsm(config-port-prof)# state enabled | Enables the port profile and applies its configuration to the assigned ports. |
| Step 8 | vsm(config-port-prof)# vmware port-group | Designates the port profile as a VMware port group. |

This example shows how to configure a vEthernet access port profile:

```
vsm# configure terminal
vsm(config)# port-profile type vethernet gwmgmt
vsm(config-port-prof)# switchport mode access
vsm(config-port-prof)# switchport access vlan 233
vsm(config-port-prof)# no shutdown
```

```
vsm(config-port-prof) # system vlan 233
vsm(config-port-prof) # state enabled
vsm(config-port-prof) # vmware port-group
vsm(config-port-prof) # end
```

Installing VXLAN Gateway

Installing the VXLAN Gateway on a Virtual Service Blade

Creating and Deploying a VXLAN Gateway

You can create and deploy a VXLAN gateway as a VSB on all Cisco Nexus Cloud Services Platforms.

Before You Begin

You must be logged in to the Cisco Nexus Cloud Services Platform on which you want to install the VXLAN gateway.

DETAILED STEPS

| | Command or Action | Purpose |
|---------------|--|--|
| Step 1 | CSP# copy scp:// server where the VXGW image is located source path iso image of vxlan gw bootflash:repository > | Copies the VXLAN gateway image to the bootflash/repository on the CCPA Manager. |
| Step 2 | CSP# configure terminal | Enters global configuration mode. |
| Step 3 | CSP(config) # virtual-service-blade name of the VXLAN GW VSB | Creates a VXLAN gateway VSB. |
| Step 4 | CSP(config-vs-b-config) # virtual-service-blade-type new iso image of the vxlan gw | Deploys the downloaded VXLAN gateway. The image is always populated from the bootflash or repository and there is no need to specify the path. |
| Step 5 | CSP(config-vs-b-config) # interface gw-uplink1 uplink Physical-Interface Cloud Services Platform | Assigns a physical interface on the Cloud Services Platform to the gateway uplink. GigabitEthernet3 through GigabitEthernet6 are available in the flexible mode physical interfaces. You must configure the port channels using LACP on the upstream switches. |
| Step 6 | CSP(config-vs-b-config) # interface gw-uplink1 mode passthrough | Configures the gateway uplink as passthrough. The corresponding Gigabit Ethernet interface cannot be shared with other VSBs on the Cloud Services Platform. |
| Step 7 | CSP(config-vs-b-config) # interface gw-uplink2 uplink Physical-Interface Cloud Services Platform | Assigns a physical interface on the Cloud Services Platform to the gateway uplink. GigabitEthernet3 through GigabitEthernet6 are available in the flexible mode physical interfaces. You must configure the port channels using LACP on the upstream switches. |

| | Command or Action | Purpose |
|----------------|--|--|
| Step 8 | CSP(config-vs-b-config) # interface gw-uplink2 mode passthrough | Configures the gateway uplink as passthrough. The corresponding Gigabit Ethernet interface cannot be shared with other VSBs on the Cloud Services Platform. |
| Step 9 | CSP(config-vs-b-config) # interface management vlan <i>vlan id</i> | Allows the specified VLAN ID on the management uplink. The VLAN range is from 1 to 4096. |
| Step 10 | CSP(config-vs-b-config) # interface management uplink <i>interface</i> | Specifies the interface as either a physical interface of the Cloud Services Platform or a port channel interface previously created on the Cloud Services Platform. |
| Step 11 | Use one of the following commands to deploy a gateway: <ul style="list-style-type: none"> • CSP(config-vs-b-config) # enable • CSP(config-vs-b-config) # enable primary • CSP(config-vs-b-config) # enable secondary | Use the enable command to install two VSBs, one on the primary Cloud Services Platform and another on the secondary cloud services platform. Use the enable primary command to deploy the gateway in standalone mode on the primary Cloud Services Platform. Use the enable secondary command to deploy the gateway in standalone mode on the secondary Cloud Services Platform. Initiates a setup script to configure the VXLAN gateway, IP address, subnet mask, gateway, hostname, and password for the VXLAN gateway VSB. You are also required to specify the details of the VSM's domain ID, IP address, and primary and secondary MAC addresses on the control interface. |

This example shows how to bring up a gateway as a VSB on a VSA pair:

```
CSP# configure terminal
CSP(config) # virtual-service-blade VXLAN-GW
CSP(config-vs-b-config) # virtual-service-blade-type new vxgw.4.2.1.SV2.2.0.264.iso
CSP(config-vs-b-config) # interface gw-uplink1 uplink GigabitEthernet3
CSP(config-vs-b-config) # interface gw-uplink2 uplink GigabitEthernet4
CSP(config-vs-b-config) # interface gw-uplink1 mode passthrough
CSP(config-vs-b-config) # interface gw-uplink2 mode passthrough
CSP(config-vs-b-config) # interface management uplink GigabitEthernet1
CSP(config-vs-b-config) # interface management vlan 751
CSP(config-vs-b-config) # enable
```

Configuring the VXLAN Gateway Using the Setup Script

After you enter **enable** while installing a VXLAN gateway as a VSB, the setup script to configure the VXLAN gateway is executed. The setup script configures the following parameters on the VXLAN gateway:

- IP address, network mask, and default gateway for both the primary and secondary VXLAN gateway Management interface
- VSM details—Domain ID and the IP address of the VSM control interface

- Port profiles used for the VXLAN gateway uplink and VTEP

-
- Step 1** On the command prompt, enter the VSB image and press Enter.
 Enter VSB image:x.x.x.x.x.x.iso: [vxgw.5.2.1.SK1.2.1.iso]
- Step 2** Enter the VSM domain ID. The range is from 1 to 1023.
 Enter domain [1-1023]:405
Note You can get the domain ID by entering the **show svcs domain** command on the VSM.
- Step 3** Enter the management IP version.
 Management IP version [V4]:v4
- Step 4** Configure the management IP address to interface mgmt 0 on the VXLAN gateway that is deployed on the primary Cloud Services Platform.
 Enter management IP address of service module on primary: 192.168.1.104
Note If you are deploying the gateway in the standalone mode on the secondary Cloud Services Platform, enter the IP address, network mask, and the default gateway address for the primary as 0.0.0.0.
- Step 5** Enter the management subnet mask.
 Enter management subnet mask of service module on primary: 255.255.255.0
- Step 6** Enter the management default gateway.
 Enter default gateway IP address of service module on primary: 192.168.1.1
- Step 7** Configure the management IP address to interface mgmt 0 on the VXLAN gateway deployed on the secondary Cloud Services Platform.
 Enter management IP address of service module on secondary: 192.168.1.105
Note If you are deploying the gateway in the standalone mode on the primary Cloud Services Platform, enter the IP address, network mask, and the default gateway address for the secondary as 0.0.0.0.
Note In a HA deployment, we recommend that the IP address that you provide is in the same subnet as the one provided in Step 5.
- Step 8** Enter the management subnet mask.
 Enter management subnet mask of service module on secondary: 255.255.255.0
- Step 9** Enter the management interface default gateway.
 Enter default gateway IP address of service module on secondary: 192.168.1.1
- Step 10** Enter the VXLAN gateway hostname.
 Enter HostName: VXLAN-GW-DOCS
- Step 11** Enter the login credentials.
 Enter the password for admin:Sfish123
- Step 12** Enter the IP address of the VSM.
 VSM L3 Ctrl IPv4 address:192.168.1.210
- Step 13** Enter the uplink trunk port profile configured on the VSM.
 Enter VSM uplink port-profile name: gw-uplink
Note Enter the dedicated uplink trunk port profile for the VXLAN gateway pair created on the VSM.
- Step 14** Enter the VTEP profile name.
 Enter VTEP port-profile name: gw-vtep
Note Enter the same VTEP port profile name created on the VSM.
-

This example shows how to bring up the VXLAN gateway:

```
CSP(config-vsbs-config)# enable
Enter vsb image: [vxgw.5.2.1.SV3.1.1.iso]
Enter the VSM domain id[1-4095]: 405
Enter Management IP version [V4]: [V4]
Enter Management IP address of service module on primary: 192.168.1.104
Enter Management subnet mask of service module on primary: 255.255.255.0
Enter default gateway IP address of service module on primary: 192.168.1.1
Enter management IP address of service module on secondary: 192.168.1.105
Enter management subnet mask of service module on secondary: 255.255.255.0
Enter default gateway IP address of service module on secondary: 192.168.1.1
Enter HostName: VXLAN-GW-DOCS
Enter the password for 'admin': password
VSM L3 Ctrl IPv4 address : 192.168.1.210
Enter VSM uplink port-profile name: gw-uplink
Enter VTEP port-profile name: gw-vtep
Note: VSB installation is in progress, please use show virtual-service-blade commands to
check the installation status.
CSP(config-vsbs-config)#
```

Modifying the Initial Setup Script Parameters

After executing the setup script for the first time, if you need to modify any of the setup parameters, use the following commands on the VSM:



Note If an HA pair is installed, ensure that you apply the same changes individually on both gateway modules.



Note Ensure the port profile that you update is first saved on the VSM.

DETAILED STEPS

| | Command or Action | Purpose |
|---------------|---|--|
| Step 1 | vsm(config)# service module update port-profile type ethernet name <i>VXLAN Gateway Uplink port-profile name</i> | Modifies the VXLAN gateway uplink port profile from the VSM. |
| Step 2 | vsm(config)# service module update port-profile type vethernet name <i>VXLAN Gateway VTEP port-profile name</i> | Modifies the VXLAN gateway VTEP port profile from the VSM. |

Installing the VXLAN Gateway as a VM

Installing and Configuring VXLAN Gateway Using .iso Image

Installing the VXLAN Gateway as a VM Using the .iso Image

Before You Begin

- Ensure that the port profiles and bridge domains are configured on the VSM.
- Ensure that the VSM is connected to vCenter and that all the configurations are pushed from VSM to vCenter.
- Ensure that the image is available on the VMware host where the VXLAN is created.

-
- Step 1** Log in to VMware vSphere client using your login credentials.
- Step 2** In the left pane, right-click on the host and choose **New Virtual machine**. **Create New Virtual Machine** window opens.
- Step 3** Under the **Configuration** pane, click the **Custom** radio button.
- Step 4** Click **Next**.
Note Click **Next** after each step unless instructed otherwise.
- Step 5** In the **Name** field, enter a name for the VXLAN gateway VM.
- Step 6** Under the **Storage** pane, choose the data store where the .iso image is copied.
- Step 7** Under the **Virtual Machine Version** pane, click the **Virtual Machine Version: 8** radio button.
- Step 8** In the **Guest Operating System** list, click the **Linux** radio button. From the **Version** drop-down list, choose **Ubuntu Linux (32 bit)**.
- Step 9** Under **CPU** pane, from the **Number of virtual sockets** drop-down list, choose **2**. From the **Number of cores per virtual** drop-down list, choose **1**.
- Step 10** Under the **Memory** pane, choose the memory size from the **Memory Size** drop-down list. The minimum memory size required is 4 GB.
- Step 11** Under the **Network** pane, from the **How many NICs do you want to** drop-down list, choose **2**. Do not click **Next**.
- Step 12** For the first **NIC** field, from the **Network** drop-down list, choose a vEthernet trunk port that is already created on the VSM and from the **Adapter** drop-down list, choose **VMXNET3**. Do not click **Next**.
See [Configuring a vEthernet Access Port Profile for VXLAN Gateway Management Port](#), on page 12 and [Configuring a vEthernet Trunk Port Profile for VXLAN Gateway Uplink Port](#), on page 11 to configure port profiles.
- Step 13** For the second **NIC** field, from the **Network** drop-down list, choose a vEthernet access port that is already created on the VSM and from the **Adapter** drop-down list, choose **VMXNET3**.
See [Configuring a vEthernet Access Port Profile for VXLAN Gateway Management Port](#), on page 12 and [Configuring a vEthernet Trunk Port Profile for VXLAN Gateway Uplink Port](#), on page 11 to configure port profiles.
- Step 14** Under the **SCSI Controller** pane, click the **LSI Logic Parallel** radio button.
- Step 15** Under the **Select a Disk** pane, click the **Create a new virtual disk** radio button.
- Step 16** Under the **Capacity** field, choose the disk size from the **disk** drop-down list. For the **Disk Provisioning** and **Location** fields, keep the default values.

The minimum disk size required is 16 GB.

- Step 17** Under the **Advanced Options** pane, keep the default values.
- Step 18** Under the **Ready to Complete** pane, check the **Edit the virtual machine settings before** check box.
- Step 19** Click **Continue**.
VM name - Virtual Machine Properties window appears.
- Step 20** In the **Hardware** tab, click the **New CD/DVD (adding)** property.
- Step 21** In the right pane, under **Device Type** pane, click the **Destination ISO File** radio button. Click **Browse** and choose the .iso image stored on the host.
- Step 22** In the right pane, under the **Device Status** pane, check the **Connect at power on** check box.
- Step 23** Click **Finish**.
- Step 24** In the right pane of the **vSphere Client** window, right-click the new VM and choose **Power > Power On**.
- Step 25** In the left pane of the **vSphere Client** window, click the new VM.
- Step 26** In the right pane of **vSphere Client** window, click the **Console** tab.
- Step 27** Press **Enter**.
 Depending on the VM, the boot might take some time. Wait for Enter the password for "admin" prompt.
- Step 28** Proceed to [Configuring the VXLAN Gateway as a VM, on page 18](#).
-

Configuring the VXLAN Gateway as a VM

Before You Begin

- Install and power on the VM and verify that it has booted up and you see the Confirm the password for "admin" prompt. See [Installing the VXLAN Gateway as a VM Using the .iso Image, on page 17](#) to install the VXLAN as a VM.

-
- Step 1** Set an admin password on the command and press **Enter**. Make a note of this password.
 Enter the password for "admin": *<password>*
- Caution** The password is not visible as you enter. Ensure that you do not make any typing errors.
- The password should contain the following:
- At least one upper case letter
 - At least one lower case letter
 - At least one number
- Step 2** Reenter the same password at the Confirm the password for "admin" prompt and press **Enter**.
 Confirm the password for "admin" *<password>*
- Step 3** Enter the domain ID and press **Enter**.
 Enter the domain id *<1-1023> <domain id>*
- Step 4** Enter **yes** and press **Enter**.

- Continue with out-of-band (mgmt0) management configuration? (yes/no): yes
- Step 5** Enter the management IP address and press **Enter**.
Mgmt0 IPv4 address: <IPv4 address>
- Step 6** Enter the management netmask and press **Enter**.
Mgmt0 IPv4 netmask: <IPv4 address>
- Step 7** Enter **y** and press **Enter**.
Configure the default gateway? (yes/no) (y): y
- Step 8** Enter the default gateway and press **Enter**.
IPv4 address of the default gateway: <IPv4 address>
- Step 9** Enter the IP address of the VSM and press **Enter**.
VSM L3 Ctrl IPv4 address <IPv4 address>
- Step 10** Enter the uplink trunk port profile configured on the VSM and press **Enter**.
VSM uplink port-profile name <port name>
Note Enter the dedicated uplink trunk port profile for the VXLAN Gateway pair created on the VSM.
- Step 11** Enter the VXLAN gateway encapsulation port profile configured on the VSM and press **Enter**.
Encapsulation port-profile name *port profile name*
Note Enter the dedicated vEthernet encapsulation port profile for the VXLAN Gateway pair created on the VSM.
- Step 12** Enter **n** and press **Enter**.
Would you like to edit the configuration? (yes/no): n
- Step 13** Enter **y** and press **Enter**.
Use this configuration and save it? (yes/no): y
The VM saves the configuration and reboots.
-

Installing and Configuring the VXLAN Gateway Using OVA

Before You Begin

- Ensure that the port profiles and bridge domains are configured on the VSM.
- Ensure that the VSM is connected to vCenter and that all the configurations are pushed from VSM to vCenter.
- Ensure that the OVA image is also available on the local disk where vCenter is running.

-
- Step 1** Log in to VMware vSphere Client using your login credentials.
- Step 2** From the **File** menu, choose **Deploy OVF Template**.

The **Deploy OVF Template** window opens.

- Step 3** Click **Browse** and choose the OVF file stored on the host.
- Step 4** Click **Next**.
- Step 5** Click **Accept** and then **Next**.
- Step 6** Under the **Name** field, enter a name for the VXLAN gateway VM.
- Step 7** Under the **Inventory Location** pane, choose the datacenter and click **Next**.
- Step 8** From the **Configuration** drop-down list, choose **Nexus 1000 vxlan Gateway Installation** and click **Next**.
- Step 9** Under the **Host / Cluster** pane, choose the host and click **Next**.
- Step 10** Under the **Disk Format** pane, choose the default options and click **Next**.
- Step 11** Under the **Map the networks use in this OVF template to networks in your inventory** pane, from the **Destination Networks** drop-down list, choose the port profiles. See [Configuring a vEthernet Access Port Profile for VXLAN Gateway Management Port](#), on page 12 and [Configuring a vEthernet Trunk Port Profile for VXLAN Gateway Uplink Port](#), on page 11 for port profiles.
- Step 12** Click **Next**.
- Step 13** In the **Enter password** field, enter an admin password.
Caution The password is not visible as you type. Ensure that you do not make any typing errors.
 The password should contain the following:
- At least one uppercase letter
 - At least one lowercase letter
 - At least one number
- Step 14** In the **Confirm password** field, reenter the same password.
- Step 15** In the **Domain Id** field, enter the domain ID.
- Step 16** In the **Mgmt 0 IPV4 Address** field, enter the management IP address.
- Step 17** In the **Mgmt 0 IPV4 Subet Mask** field, enter the management subnet mask.
- Step 18** In the **IPV4 default gateway** field, enter the default gateway.
- Step 19** In the **VSM L3 ctrl IPV4 address** field, enter the IP address of the VSM.
- Step 20** In the **VXGW uplink port-profile name** field, enter the uplink trunk port profile configured on the VSM.
Note Enter the dedicated uplink trunk port profile for the VXLAN gateway pair created on the VSM.
- Step 21** In the **VXGW encapsulation port-profile name** field, enter the access port profile configured on the VSM.
Note Enter the dedicated encapsulation port profile for the VXLAN gateway pair created on the VSM.
- Step 22** Click **Next**.
- Step 23** Check the **Power on after deployment** check box and click **Finish**.
 VM is created and listed in the datacenter.
-

Configuring High Availability

VXLAN Gateway and High Availability

The operation of high availability (HA) involves the following terminology:

- **Cluster**—A cluster is a pair of gateway modules that operate together as a single HA module. Each cluster is distinguished by a unique cluster ID. A gateway module that is deployed in a standalone mode of operation is assigned a dummy cluster ID of 0.
- **HA role**—The gateway modules that make up an HA cluster are assigned separate roles. One is designated as primary and the other as secondary. This role decides which of the two modules goes to the active state first and which stays in the standby state. These states persist until the active module fails. If the active gateway module fails, the standby gateway module detects the failure and moves to the active state. This way, one of the two modules is always providing active service.
- **HA state**— At any given time, only one gateway module from a given cluster is actively performing the gateway function. The other module stays in the standby state pending the failure of the active module. A gateway module can be in the active or standby state. In addition, there is a transient initial state called the Init state. In this state, a gateway is either waiting to be assigned a role or negotiating its state with its peer.

After a gateway module is installed and brought up, the VSM assigns a role to the gateway module and can result in one of the following transitions:

- Unconfigured-Init to Standalone-Active
- Unconfigured-Init to Primary-Active
- Unconfigured-Init to Secondary-Standby
- Standalone-Active to Primary-Active
- Standalone-Active to Secondary-Active

For all other combinations, we recommend that you first fall back to the Unconfigured-Init mode by using the **no service VXLAN Gateway module** command and then proceed to the desired role or states.

**Note**

You must preassign module numbers in the VSM. When a VXLAN gateway is attached to the VSM on that module, it inherits the role and state that are assigned by the VSM.

You must configure the HA mode of the VXLAN gateway as standalone or primary/secondary so that when you bring up the VXLAN gateway, the HA state is either active or standby and the VXLAN-to-VLAN mappings are either active or pending. If you do not configure an HA role for the VXLAN gateway, when you bring up the VXLAN gateway, the HA state is unknown, and VXLAN-to-VLAN traffic is not processed.

Configuring the VXLAN Gateway HA Mode as Standalone

You can create a service module in a standalone mode. Perform these steps on the VSM.

Before You Begin

You must preassign roles to module numbers in the VSM. When a VXLAN gateway is attached to the VSM on that module, it inherits the role and state that are assigned by the VSM.

DETAILED STEPS

| | Command or Action | Purpose |
|---------------|---|--|
| Step 1 | vsm(config)# service mod role standalone | Configures the service module as standalone active. |
| Step 2 | vsm(config)# show module service | Displays the service module number, cluster ID, role, HA mode, and status. |

This example shows how to display the cluster ID mapping and the details about active, standby, and standalone service modules:

```
vsm(config)# show module service
Mod  Cluster-id  Role           HA Mode      Status
---  -
36   0           Standalone    Standalone   Active
```

Configuring the VXLAN Gateway as an HA Pair

You can create a service module as a HA pair. Perform these steps on the VSM.

Before You Begin

You must create a second instance of the VXLAN gateway VM.

DETAILED STEPS

| | Command or Action | Purpose |
|---------------|--|---|
| Step 1 | vsm(config)# service modNo1 role primary ha-cluster clusterNo | Configures the service module in HA and adds a primary service module to a cluster. |
| Step 2 | vsm(config)# service modNo2 role secondary ha-cluster clusterNo | Configures another service module as secondary in the same cluster. |
| Step 3 | vsm(config)# show module service-module | Displays the service module number, cluster ID, role, HA mode, and status. |

This example shows how to display the cluster ID mapping and the details about active, standby, and standalone service modules:

```
vsm(config)# show module service
Mod  Cluster-id  Role           HA Mode      Status
---  -
9    1           Primary        HA           Active
```

10 1 Secondary HA Standby

To switch over between the active and standby VXLAN gateway, enter the following command on the VSM:

```
vsm# service ha-cluster 1 switchover
```

Verifying the VXLAN Gateway Configuration

To display the VXLAN gateway installation and configuration information, use one of the following commands on the VSM:

| Command | Purpose |
|--|--|
| show running-config port-profile gw-uplink | Displays the configuration of the port profile assigned to the VXLAN gateway uplinks. |
| show running-config port-profile gw-vtep | Displays the configuration of the port profile assigned to the VXLAN VTEP. |
| show module | Displays the VXLAN gateway service modules. |
| show module service | Verifies the role of the VXLAN gateway module and displays the cluster ID mapping and the details about active, standby, and standalone service modules. |
| show vxlan gateway interface | Displays if the VTEPs are configured properly. |
| show interface vethernet 6 | Displays if both the VTEP Virtual Ethernet interfaces are in the up state. |
| show port-channel summary | Displays if the port channels are up for gateway service modules. |
| show bridge-domain mappings | Displays VXLAN gateway mappings. |
| show switch edition | Displays if the VSM is in Advanced mode. |
| show feature | Displays if the VXLAN gateway is enabled on the VSM. |
| show virtual-service-blade summary Note You must enter this command from the Cloud Services Platform. | Displays the status of the VXLAN gateway VSB as it transitions from the VSB DEPLOY IN PROGRESS to VSB POWERED ON. |
| show virtual-service-blade Note You must enter this command from the Cloud Services Platform. | Displays the VXLAN gateway configuration. |

| Command | Purpose |
|-----------------------------------|--|
| show encapsulation profile | Displays the VLAN-to-VXLAN mappings for all encapsulation profiles or for the specified encapsulation profile. |

This example shows how to display the status of the VXLAN gateway VSB:

```
CSP# show virtual-service-blade summary
```

```
-----
Name HA-Role HA-Status Status Location
-----
```

```
VXLAN-GW PRIMARY ACTIVE VSB POWERED ON PRIMARY
VXLAN-GW SECONDARY ACTIVE VSB POWERED ON SECONDARY
```

This example shows how to display the VXLAN gateway configuration:

```
CSP# show virtual-service-blade
virtual-service-blade VXLAN-GW
```

```
Description:
Slot id: 1
Host Name: VXLAN-GW-DOCS
Management IP: 192.168.1.104
VSB Type Name : vx-gw-1.5
Configured vCPU: 3
Operational vCPU: 3
Configured Ramsize: 2048
Operational Ramsize: 2048
Disksize: 3
Heartbeat: 154764
Legends: P - Passthrough
-----
```

| Interface | Type | MAC | VLAN | State | | Uplink-Int | |
|----------------|------------|----------------|------|-------|-----|------------|--------|
| | | | | Pri | Sec | Oper | Adm |
| VsbEthernet1/1 | gw-uplink1 | 0002.3d71.a303 | | up | up | Gi3(P) | Gi3(P) |
| VsbEthernet1/2 | management | 0002.3d71.a302 | 751 | up | up | Gi1 | Gi1 |
| VsbEthernet1/3 | gw-uplink2 | 0002.3d71.a304 | | up | up | Gi4(P) | Gi4(P) |
| internal | NA | NA | NA | up | up | | |

```
HA Role: Primary
HA Status: ACTIVE
Status: VSB POWERED ON
Location: PRIMARY
SW version:
HA Role: Secondary
HA Status: ACTIVE
Status: VSB POWERED ON
Location: SECONDARY
SW version:
VSB Info:
Domain ID : 405
```

This example shows how to display the port-profile configuration assigned to the VXLAN gateway uplinks:

```
vsm# show running-config port-profile gw-uplink
```

```
port-profile type ethernet gw-uplink
switchport mode trunk
switchport trunk allowed vlan 1,81,751-760
mtu 1550
channel-group auto mode active
no shutdown
state enabled
```

This example shows how to display the port-profile configuration assigned to the VXLAN VTEP:

```
vsm# show running-config port-profile gw-vtep
```

```
port-profile type vethernet gw-vtep
```



```

switchport mode access
switchport access vlan 760
capability vxlan
transport ip address 182.168.1.253 255.255.255.0 gateway 182.168.1.1
no shutdown
state enabled

```

This example shows how to display the VXLAN gateway service modules as soon as they are online:

```

vsm# show module
Mod  Ports  Module-Type                Model                Status
-----
1    0      Virtual Supervisor Module  Nexus1000V          active *
3    1022   Virtual Ethernet Module    NA                  offline

Mod  Sw                Hw
-----
1    5.2(1)SV3(1.1)   0.0
3    5.2(1)SV3(1.1)   VMware ESXi 5.1.0 BETAbuild-802205 (3.1)

Mod  Server-IP        Server-UUID                Server-Name
-----
1    172.23.232.17    NA                          NA
3    172.23.232.158  3a8fdc56-86d2-9044-969f-e2aea57d0ebf  NA

```

* this terminal session

This example shows how to display the cluster ID mapping and the details about active, standby, and standalone service modules:

```

vsm# show module service
Mod  Cluster-id  Role          HA Mode  Status
-----
9    1           Primary      HA       Active
10   1           Secondary    HA       Standby

```

This example shows how to display the module for virtual Ethernet interface binding:

```

vsm(config-if)# show vxlan gateway interface
-----
Port  IPAddress  Netmask  Gateway Mod Status Role
-----
Veth6 192.0.2.253 255.255.255.0 192.168.1.1 9 up Active
Veth22 192.0.2.253 255.255.255.0 192.168.1.1 10 up Standby

```

This example shows how to display whether both the VTEP virtual Ethernet interfaces are in the up state:

```

vsm# show interface vethernet 6
Vethernet6 is up
Port description is VXLANGW VTEP, Network Adapter 1
Hardware: Virtual, address: 0002.3d71.a303 (bia 0002.3d71.a303)
Owner is VM "VXLANGW VTEP", adapter is Network Adapter 1
Active on module 9
Port-Profile is gw-vtep
Port mode is access
5 minute input rate 8 bits/second, 0 packets/second
5 minute output rate 0 bits/second, 0 packets/second
Rx
 6 Input Packets 6 Unicast Packets
 0 Multicast Packets 588 Broadcast Packets
468 Bytes
Tx
34321 Output Packets 34321 Unicast Packets
33609 Multicast Packets 24 Broadcast Packets 33633 Flood Packets
2193700 Bytes
 0 Input Packet Drops 0 Output Packet Drops

vsm# show interface vethernet 22
Vethernet22 is up
Port description is VXLANGW VTEP, Network Adapter 1
Hardware: Virtual, address: 0002.3d71.a383 (bia 0002.3d71.a383)
Owner is VM "VXLANGW VTEP", adapter is Network Adapter 1

```

```

Active on module 10
Port-Profile is gw-vtep
Port mode is access
5 minute input rate 8 bits/second, 0 packets/second
5 minute output rate 0 bits/second, 0 packets/second
Rx
 6 Input Packets 6 Unicast Packets
 0 Multicast Packets 25 Broadcast Packets
468 Bytes
Tx
33742 Output Packets 33742 Unicast Packets
33609 Multicast Packets 133 Broadcast Packets 33742 Flood Packets
2158956 Bytes
0 Input Packet Drops 0 Output Packet Drops

```

This example shows how to display whether the port channels are up for VXLAN gateway service modules:

```

vsm# show port-channel summary
Flags:  D - Down          P - Up in port-channel (members)
        I - Individual   H - Hot-standby (LACP only)
        s - Suspended    r - Module-removed
        S - Switched     R - Routed
        U - Up (port-channel)
-----
Group  Port-      Type   Protocol  Member Ports
Channel
-----
1     Po1(SU)   Eth    NONE      Eth3/3(P)  Eth3/4(P)  Eth3/5(P)
                Eth3/6(P)
2     Po2(SU)   Eth    NONE      Eth4/3(P)  Eth4/4(P)  Eth4/5(P)
                Eth4/6(P)
3     Po3(SU)   Eth    NONE      Eth5/3(P)  Eth5/4(P)  Eth5/5(P)
                Eth5/6(P)
4     Po4(SU)   Eth    NONE      Eth6/3(P)  Eth6/4(P)  Eth6/5(P)
                Eth6/6(P)
5     Po5(SU)   Eth    NONE      Eth7/3(P)  Eth7/4(P)  Eth7/5(P)
                Eth7/6(P)
6     Po6(SU)   Eth    NONE      Eth8/4(P)
7     Po7(SU)   Eth    LACP      Eth9/1(P)  Eth9/3(P)
8     Po8(SU)   Eth    LACP      Eth10/1(P) Eth10/3(P)

```

This example shows how to display VXLAN gateway mappings:

```

vsm# show bridge-domain mappings
-----
Interface      Module  Serv Inst  Vlan  BD-Name
-----
port-channel17  9       753      753   bd-753
port-channel18  10      753      753   bd-753

```

This example shows how to display the IP address for module binding:

```

vsm(config-if)# show module service mgmt-int
-----
Mod Interface-Name IP-address  Speed  MTU
-----
4 Mgmt0 10.10.10.2          0      0
5 Mgmt0 10.10.10.3          0      0
Remember the management IP address user installs gateway with
(in this example 10.10.10.2, which occupies module slot 4)

```

This example shows how to display whether the VSM is in Advanced mode:

```

vsm# show switch edition
Switch Edition: Advanced

Advanced Features
Feature Name      Feature State
-----
vxlan-gateway    enabled

```

```
Licenses Available: 1020
Licenses In Use: 4
License Expiry Date: 13 Jun 2013
```

This example shows how to display whether the VXLAN gateway is enabled on the VSM:

```
vsm# show feature
Feature Name      Instance  State
-----
cts               1        enabled
dhcp-snooping    1        enabled
http-server      1        enabled
lacp             1        enabled
netflow          1        disabled
network-segmentation 1        enabled
port-profile-roles 1        disabled
private-vlan     1        disabled
segmentation     1        enabled
sshServer        1        enabled
tacacs           1        disabled
telnetServer     1        disabled
vtracker         1        enabled
vxlan-gateway    1        enabled
```

Perform one of the following tasks on the VXLAN gateway. If your VSM is on Layer 3 through management and your gateway is also on the same management subnet, use the **attach module service module number** command to access the gateway CLI. If your VSM is on Layer 3 through control, you can access the gateway CLI from any machine on that control subnet. This example shows the VSM which is on Layer 3 control.

| Command | Purpose |
|-------------------------------|--|
| show redundancy config | Displays the high availability status. |

This example shows how to display the HA status:

```
gw# show redundancy config

HA Manager Node Information:

Cluster Node Count: 2

Local Node:
state           : Active
HA mode         : High Availability
uuid            : 56fa6753-4dc5-4a7d-ad07-cc817114f838
cluster_id     : 1
node_priority   : 2
node_type       : VXLAN Gateway
ipaddr [mgmt]  : 192.168.1.104

Peer Node 1:
state           : Standby
uuid            : 4cbd05df-b3e5-468a-9497-89aa3fae8153
node_type       : VXLAN Gateway
ipaddr [mgmt]  : 192.168.1.105
```

This example shows how to display the VLAN-to-VXLAN mappings for all encapsulation profiles:

```
gw# show encapsulation profile

-----
Vlan Bridge-domain
-----
2100 segment5050
2055 segment5031
```

```
2056 segment5032
2057 segment5033
2058 segment5034
```

Managing the VXLAN-to-VLAN Mappings on the VXLAN Gateway

The VLAN-to-VXLAN mappings that are configured on a gateway module can be managed by editing the port profile applied on the gateway uplink modules. To add or remove a mapping, perform these steps on the VSM.

DETAILED STEPS

| | Command or Action | Purpose |
|---------------|--|--|
| Step 1 | <code>vsm# configure terminal</code> | Enters global configuration mode. |
| Step 2 | <code>vsm(config)# encapsulation profile segment name</code> | Creates an encapsulation profile to contain the VLAN-to-VXLAN mappings. |
| Step 3 | <code>vsm(config-vxlan-encap-prof)# dot1q VLAN-ID bridge-domain bd-name</code> | Maps a VLAN to a VXLAN. The VXLAN is specified through the bridge-domain name. Note The bridge-domain name and VLAN ID that you provide are not created during the port-profile configuration. The bridge-domain name and the VLAN ID that you provide should be in an active state or the mapping is held in an inactive state until you create the bridge-domain name and VLAN ID. Note Repeat this step to specify additional mappings. Note To remove a mapping, use the no form of this command. |
| Step 4 | <code>vsm(config-vxlan-encap-prof)# exit</code> | Exits the current configuration mode. |
| Step 5 | <code>vsm(config)# port-profile port-profile-name</code> | Specifies the name of the port profile applied to the VXLAN Gateway uplink interface. |
| Step 6 | <code>vsm(config-port-prof)# service instance place holder</code> | Defines a place holder for mappings. The range is from 1 to 4096. Note Port profiles that contain the service instance keyword cannot be used for a non-VXLAN gateway module. |
| Step 7 | <code>vsm(config-port-prof-srv)# encapsulation profile name</code> | Assigns the specified encapsulation profile to the port profile. |
| Step 8 | <code>vsm(config-port-prof-srv)# copy running-config startup-config</code> | Saves the change persistently through reboots and restarts by copying the running configuration to the startup configuration. |

This example shows how to configure VXLAN-to-VLAN mappings on the VXLAN gateway:

```
vsm# configure terminal
```

```

vsm(config)# encapsulation profile segment mgmt_mappings
vsm(config-vxlan-encap-prof)# dot1q 1555 bridge-domain vxlan6000
vsm(config-vxlan-encap-prof)# dot1q 1557 bridge-domain vxlan6002
vsm(config-vxlan-encap-prof)# dot1q 1558 bridge-domain vxlan6003
vsm(config-vxlan-encap-prof)# dot1q 1559 bridge-domain vxlan6004
vsm(config-vxlan-encap-prof)# exit
vsm(config)# port-profile Uplink-All-VXGW
vsm(config-port-prof)# service instance 2
vsm(config-port-prof)# encapsulation profile mgmt_mappings
vsm(config-prot-prof-srv)# copy running-config startup-config
vsm(config)# show run port-profile Uplink-All-VXGW
port-profile type ethernet Uplink-All-VXGW
  switchport mode trunk
  switchport trunk allowed vlan 1545-1575,1577-1605
  mtu 1550
  service instance 2
    encapsulation dot1q 1555 bridge-domain vxlan6000
    encapsulation dot1q 1557 bridge-domain vxlan6002
    encapsulation dot1q 1558 bridge-domain vxlan6003
    encapsulation dot1q 1559 bridge-domain vxlan6004
  no shutdown
  state enabled
vsm(config)# show port-profile usage
port-profile Uplink-All-VXGW
  port-channel1
  port-channel5
  Ethernet7/1
  Ethernet7/3
vsm(config)# show run interface ethernet 7/1 expand-port-profile
interface Ethernet7/1
  switchport mode trunk
  switchport trunk allowed vlan 1545-1575,1577-1605
  mtu 1550
  channel-group auto mode active
  service instance 2
    no shutdown
    encapsulation dot1q 1557 bridge-domain vxlan6002
    encapsulation dot1q 1555 bridge-domain vxlan6000
    encapsulation dot1q 1558 bridge-domain vxlan6003
  no shutdown

```

Feature History for VXLAN Gateways

| Feature Name | Releases | Feature Information |
|------------------------------------|-----------------|---|
| VXLAN Gateway | 4.2(1)SV2(2.1) | Introduced the Virtual Extensible Local Area Network (VXLAN) gateway feature. |
| BGP Control Plane | 5.2(1)SV3(1.1) | Introduced the Border Gateway Protocol (BGP) Control Plane feature. |
| VXLAN Gateway as a Virtual Machine | 5.2(1)SV3(1.1) | Introduced the VXLAN gateway as a Virtual Machine feature. |
| VXLAN Gateway | 5.2(1)SV3(1.15) | Starting with Release 5.2(1)SV3(1.15), Cisco Nexus 1000V for VMware vSphere does not support the VXLAN Gateway feature. |

