



Configuring VLANs

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Named VLANs

A named VLAN creates a connection to a specific external LAN. The VLAN isolates traffic to that external LAN, including broadcast traffic.

The name that you assign to a VLAN ID adds a layer of abstraction that allows you to globally update all servers associated with service profiles that use the named VLAN. You do not need to reconfigure the servers individually to maintain communication with the external LAN.

You can create more than one named VLAN with the same VLAN ID. For example, if servers that host business services for HR and Finance need to access the same external LAN, you can create VLANs named HR and Finance with the same VLAN ID. Then, if the network is reconfigured and Finance is assigned to a different LAN, you only have to change the VLAN ID for the named VLAN for Finance.

In a cluster configuration, you can configure a named VLAN to be accessible only to one fabric interconnect or to both fabric interconnects.

Guidelines for VLAN IDs



Important

You cannot create VLANs with IDs from 3968 to 4047. This range of VLAN IDs is reserved.

VLANs in the LAN cloud and FCoE VLANs in the SAN cloud must have different IDs. Using the same ID for a VLAN and an FCoE VLAN in a VSAN results in a critical fault and traffic disruption for all vNICs and uplink ports using that VLAN. Ethernet traffic is dropped on any VLAN which has an ID that overlaps with an FCoE VLAN ID.

VLAN 4048 is user configurable. However, Cisco UCS Manager uses VLAN 4048 for the following default values. If you want to assign 4048 to a VLAN, you must reconfigure these values:

- After an upgrade to Cisco UCS, Release 2.0—The FCoE storage port native VLAN uses VLAN 4048 by default. If the default FCoE VSAN was set to use VLAN 1 before the upgrade, you must change it to a VLAN ID that is not used or reserved. For example, consider changing the default to 4049 if that VLAN ID is not in use.
- After a fresh install of Cisco UCS, Release 2.0—The FCoE VLAN for the default VSAN uses VLAN 4048 by default. The FCoE storage port native VLAN uses VLAN 4049.

The VLAN name is case sensitive.

Private VLANs

A private VLAN (PVLAN) partitions the Ethernet broadcast domain of a VLAN into subdomains and allows you to isolate some ports. Each subdomain in a PVLAN includes a primary VLAN and one or more secondary VLANs. All secondary VLANs in a PVLAN must share the same primary VLAN. The secondary VLAN ID differentiates one subdomain from another.

Isolated VLANs

All secondary VLANs in a Cisco UCS domain must be isolated VLANs. Cisco UCS does not support community VLANs.



Note

You cannot configure an isolated VLAN to be used together with a regular VLAN.

Ports on Isolated VLANs

Communications on an isolated VLAN can only use the associated port in the primary VLAN. These ports are isolated ports and are not configurable in Cisco UCS Manager. If the primary VLAN includes multiple secondary VLANs, those isolated VLANs cannot communicate directly with each other.

An isolated port is a host port that belongs to an isolated secondary VLAN. This port has complete isolation from other ports within the same private VLAN domain. PVLANS block all traffic to isolated ports except traffic from promiscuous ports. Traffic received from an isolated port is forwarded only to promiscuous ports. You can have more than one isolated port in a specified isolated VLAN. Each port is completely isolated from all other ports in the isolated VLAN.

Guidelines for Uplink Ports

When you create PVLANS, be aware of the following guidelines:

- The uplink Ethernet port channel cannot be in promiscuous mode.
- Each primary VLAN can have only one isolated VLAN.
- VIFs on VNTAG adapters can have only one isolated VLAN.

Guidelines for VLAN IDs



Important

You cannot create VLANs with IDs from 3968 to 4047. This range of VLAN IDs is reserved.

VLANs in the LAN cloud and FCoE VLANs in the SAN cloud must have different IDs. Using the same ID for a VLAN and an FCoE VLAN in a VSAN results in a critical fault and traffic disruption for all vNICs and uplink ports using that VLAN. Ethernet traffic is dropped on any VLAN which has an ID that overlaps with an FCoE VLAN ID.

VLAN 4048 is user configurable. However, Cisco UCS Manager uses VLAN 4048 for the following default values. If you want to assign 4048 to a VLAN, you must reconfigure these values:

- After an upgrade to Cisco UCS, Release 2.0—The FCoE storage port native VLAN uses VLAN 4048 by default. If the default FCoE VSAN was set to use VLAN 1 before the upgrade, you must change it to a VLAN ID that is not used or reserved. For example, consider changing the default to 4049 if that VLAN ID is not in use.
- After a fresh install of Cisco UCS, Release 2.0—The FCoE VLAN for the default VSAN uses VLAN 4048 by default. The FCoE storage port native VLAN uses VLAN 4049.

The VLAN name is case sensitive.

VLAN Port Limitations

Cisco UCS Manager limits the number of VLAN port instances that can be configured under border and server domains on a fabric interconnect to 6000.

Types of Ports Included in the VLAN Port Count

The following types of ports are counted in the VLAN port calculation:

- Border uplink Ethernet ports
- Border uplink Ether-channel member ports
- FCoE ports in a SAN cloud
- Ethernet ports in a NAS cloud
- Static and dynamic vNICs created through service profiles
- VM vNICs created as part of a port profile in a hypervisor in hypervisor domain

Based on the number of VLANs configured for these ports, Cisco UCS Manager keeps track of the cumulative count of VLAN port instances and enforces the VLAN port limit during validation. Cisco UCS Manager reserves some pre-defined VLAN port resources for control traffic. These include management VLANs configured under HIF and NIF ports.

VLAN Port Limit Enforcement

Cisco UCS Manager validates VLAN port availability during the following operations.

- Configuring and unconfiguring border ports and border port channels
- Adding or removing VLANs from a cloud
- Configuring or unconfiguring SAN or NAS ports
- Associating or disassociating service profiles that contain configuration changes
- Configuring or unconfiguring VLANs under vNICs or vHBAs
- Upon receiving creation or deleting notifications from a VMWare vNIC, from an ESX hypervisor



Note This is outside the control of Cisco UCS Manager

- Fabric interconnect reboot
- Cisco UCS Manager upgrade or downgrade

Cisco UCS Manager strictly enforces the VLAN port limit on service profile operations. If Cisco UCS Manager detects that you have exceeded the VLAN port limit service profile configuration will fail during deployment.

Exceeding the VLAN port count in a border domain is less disruptive. When the VLAN port count is exceeded in a border domain Cisco UCS Manager changes the allocation status to Exceeded. In order to change the status back to Available, you should complete one of the following actions:

- Unconfigure one or more border ports
- Remove VLANs from the LAN cloud
- Unconfigure one or more vNICs or vHBAs

Configuring Named VLANs

Creating a Named VLAN Accessible to Both Fabric Interconnects (Uplink Ethernet Mode)



Important

You cannot create VLANs with IDs from 3968 to 4047. This range of VLAN IDs is reserved.

VLANs in the LAN cloud and FCoE VLANs in the SAN cloud must have different IDs. Using the same ID for a VLAN and an FCoE VLAN in a VSAN results in a critical fault and traffic disruption for all vNICs and uplink ports using that VLAN. Ethernet traffic is dropped on any VLAN which has an ID that overlaps with an FCoE VLAN ID.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope eth-uplink	Enters Ethernet uplink mode.
Step 2	UCS-A /eth-uplink # create vlan <i>vlan-name vlan-id</i>	Creates a named VLAN, specifies the VLAN name and VLAN ID, and enters Ethernet uplink VLAN mode. The VLAN name is case sensitive.
Step 3	UCS-A /eth-uplink/fabric/vlan # set sharing {isolated none primary}	Sets the sharing for the specified VLAN. This can be one of the following: <ul style="list-style-type: none"> • isolated —This is a secondary VLAN associated with a primary VLAN. This VLAN is private. • none —This VLAN does not have any secondary or private VLANs. • primary —This VLAN can have one or more secondary VLANs.
Step 4	UCS-A /eth-uplink/vlan # commit-buffer	Commits the transaction to the system configuration.

The following example creates a named VLAN for both fabric interconnects, names the VLAN accounting, assigns the VLAN ID 2112, sets the sharing to none, and commits the transaction:

```
UCS-A# scope eth-uplink
UCS-A /eth-uplink # create vlan accounting 2112
UCS-A /eth-uplink/vlan* # set sharing none
UCS-A /eth-uplink/vlan* # commit-buffer
UCS-A /eth-uplink/vlan #
```

Creating a Named VLAN Accessible to Both Fabric Interconnects (Ethernet Storage Mode)



Important

You cannot create VLANs with IDs from 3968 to 4047. This range of VLAN IDs is reserved.

VLANs in the LAN cloud and FCoE VLANs in the SAN cloud must have different IDs. Using the same ID for a VLAN and an FCoE VLAN in a VSAN results in a critical fault and traffic disruption for all vNICs and uplink ports using that VLAN. Ethernet traffic is dropped on any VLAN which has an ID that overlaps with an FCoE VLAN ID.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope eth-storage	Enters Ethernet storage mode.
Step 2	UCS-A /eth-storage # create vlan <i>vlan-name vlan-id</i>	Creates a named VLAN, specifies the VLAN name and VLAN ID, and enters Ethernet storage VLAN mode. The VLAN name is case sensitive.
Step 3	UCS-A /eth-storage/vlan # create member-port {a b} <i>slot-id port-id</i>	Creates a member port for the specified VLAN on the specified fabric.
Step 4	UCS-A /eth-storage/vlan/member-port # commit-buffer	Commits the transaction to the system configuration.

The following example creates a named VLAN for both fabric interconnects, names the VLAN accounting, assigns the VLAN ID 2112, creates a member port on slot 2, port 20, and commits the transaction:

```
UCS-A# scope eth-storage
UCS-A /eth-storage # create vlan accounting 2112
UCS-A /eth-storage/vlan* # create member-port a 2 20
UCS-A /eth-storage/vlan/member-port* # commit-buffer
UCS-A /eth-storage/vlan/member-port #
```

Creating a Named VLAN Accessible to One Fabric Interconnect (Uplink Ethernet Mode)



Important

You cannot create VLANs with IDs from 3968 to 4047. This range of VLAN IDs is reserved.

VLANs in the LAN cloud and FCoE VLANs in the SAN cloud must have different IDs. Using the same ID for a VLAN and an FCoE VLAN in a VSAN results in a critical fault and traffic disruption for all vNICs and uplink ports using that VLAN. Ethernet traffic is dropped on any VLAN which has an ID that overlaps with an FCoE VLAN ID.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope eth-uplink	Enters Ethernet uplink mode.
Step 2	UCS-A /eth-uplink # scope fabric {a b}	Enters Ethernet uplink fabric interconnect mode for the specified fabric interconnect (A or B).
Step 3	UCS-A /eth-uplink/fabric # create vlan vlan-name vlan-id	Creates a named VLAN, specifies the VLAN name and VLAN ID, and enters Ethernet uplink fabric interconnect VLAN mode. The VLAN name is case sensitive.
Step 4	UCS-A /eth-uplink/fabric/vlan # set sharing {isolated none primary}	Sets the sharing for the specified VLAN. This can be one of the following: <ul style="list-style-type: none"> • isolated —This is a secondary VLAN associated with a primary VLAN. This VLAN is private. • none —This VLAN does not have any secondary or private VLANs. • primary —This VLAN can have one or more secondary VLANs.
Step 5	UCS-A /eth-uplink/fabric/vlan # commit-buffer	Commits the transaction to the system configuration.

The following example creates a named VLAN for fabric interconnect A, names the VLAN finance, assigns the VLAN ID 3955, sets the sharing to none, and commits the transaction:

```
UCS-A# scope eth-uplink
UCS-A /eth-uplink # scope fabric a
UCS-A /eth-uplink/fabric # create vlan finance 3955
UCS-A /eth-uplink/fabric/vlan* # set sharing none
UCS-A /eth-uplink/fabric/vlan* # commit-buffer
UCS-A /eth-uplink/fabric/vlan #
```

Creating a Named VLAN Accessible to One Fabric Interconnect (Ethernet Storage Mode)



Important

You cannot create VLANs with IDs from 3968 to 4047. This range of VLAN IDs is reserved.

VLANs in the LAN cloud and FCoE VLANs in the SAN cloud must have different IDs. Using the same ID for a VLAN and an FCoE VLAN in a VSAN results in a critical fault and traffic disruption for all vNICs and uplink ports using that VLAN. Ethernet traffic is dropped on any VLAN which has an ID that overlaps with an FCoE VLAN ID.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope eth-storage	Enters Ethernet storage mode.
Step 2	UCS-A /eth-storage # scope fabric {a b}	Enters Ethernet storage fabric interconnect mode for the specified fabric interconnect.
Step 3	UCS-A /eth-storage/fabric # create vlan <i>vlan-name vlan-id</i>	Creates a named VLAN, specifies the VLAN name and VLAN ID, and enters Ethernet storage fabric interconnect VLAN mode. The VLAN name is case sensitive.
Step 4	UCS-A /eth-storage/vlan # create member-port {a b} <i>slot-id port-id</i>	Creates a member port for the specified VLAN on the specified fabric.
Step 5	UCS-A /eth-storage/fabric/vlan/member-port # commit-buffer	Commits the transaction to the system configuration.

The following example creates a named VLAN for fabric interconnect A, names the VLAN finance, assigns the VLAN ID 3955, creates a member port on slot 2, port 20, and commits the transaction:

```
UCS-A# scope eth-storage
UCS-A /eth-storage # scope fabric a
UCS-A /eth-storage/fabric # create vlan finance 3955
UCS-A /eth-storage/fabric/vlan* # create member-port a 2 20
UCS-A /eth-storage/fabric/vlan/member-port* # commit-buffer
UCS-A /eth-storage/fabric/vlan/member-port #
```

Deleting a Named VLAN

If Cisco UCS Manager includes a named VLAN with the same VLAN ID as the one you delete, the VLAN is not removed from the fabric interconnect configuration until all named VLANs with that ID are deleted.

If you are deleting a private primary VLAN, make sure to reassign the secondary VLANs to another working primary VLAN.

Before You Begin

Before you delete a VLAN from a fabric interconnect, ensure that the VLAN has been removed from all vNICs and vNIC templates.



Note

If you delete a VLAN that is assigned to a vNIC or vNIC template, the vNIC could allow that VLAN to flap.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope eth-uplink	Enters Ethernet uplink mode.
Step 2	UCS-A /eth-uplink # scope fabric {a b}	(Optional) Enters Ethernet uplink fabric mode. Use this command when you want to delete a named VLAN only from the specified fabric (a or b).
Step 3	UCS-A /eth-uplink # delete vlan <i>vlan-name</i>	Deletes the specified named VLAN.
Step 4	UCS-A /eth-uplink # commit-buffer	Commits the transaction to the system configuration.

The following example deletes a named VLAN accessible to both fabric interconnects and commits the transaction:

```
UCS-A# scope eth-uplink
UCS-A /eth-uplink # delete vlan accounting
UCS-A /eth-uplink* # commit-buffer
UCS-A /eth-uplink #
```

The following example deletes a named VLAN accessible to one fabric interconnect and commits the transaction:

```
UCS-A# scope eth-uplink
UCS-A /eth-uplink # scope fabric a
UCS-A /eth-uplink/fabric # delete vlan finance
UCS-A /eth-uplink/fabric* # commit-buffer
UCS-A /eth-uplink/fabric #
```

Configuring Private VLANs

Creating a Primary VLAN for a Private VLAN (Accessible to Both Fabric Interconnects)



Important

You cannot create VLANs with IDs from 3968 to 4047. This range of VLAN IDs is reserved.

VLANs in the LAN cloud and FCoE VLANs in the SAN cloud must have different IDs. Using the same ID for a VLAN and an FCoE VLAN in a VSAN results in a critical fault and traffic disruption for all vNICs and uplink ports using that VLAN. Ethernet traffic is dropped on any VLAN which has an ID that overlaps with an FCoE VLAN ID.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope eth-uplink	Enters Ethernet uplink mode.
Step 2	UCS-A /eth-uplink # create vlan <i>vlan-name vlan-id</i>	Creates a named VLAN, specifies the VLAN name and VLAN ID, and enters Ethernet uplink VLAN mode. The VLAN name is case sensitive.
Step 3	UCS-A /eth-uplink/vlan # set sharing primary	Sets the VLAN as the primary VLAN.
Step 4	UCS-A /eth-uplink/vlan # commit-buffer	Commits the transaction to the system configuration.

The following example creates a named VLAN for both fabric interconnects, names the VLAN accounting, assigns the VLAN ID 2112, makes this VLAN the primary VLAN, and commits the transaction:

```
UCS-A# scope eth-uplink
UCS-A /eth-uplink # create vlan accounting 2112
UCS-A /eth-uplink/vlan* # set sharing primary
UCS-A /eth-uplink/vlan* # commit-buffer
UCS-A /eth-uplink/vlan #
```

Creating a Primary VLAN for a Private VLAN (Accessible to One Fabric Interconnect)



Important

You cannot create VLANs with IDs from 3968 to 4047. This range of VLAN IDs is reserved.

VLANs in the LAN cloud and FCoE VLANs in the SAN cloud must have different IDs. Using the same ID for a VLAN and an FCoE VLAN in a VSAN results in a critical fault and traffic disruption for all vNICs and uplink ports using that VLAN. Ethernet traffic is dropped on any VLAN which has an ID that overlaps with an FCoE VLAN ID.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope eth-uplink	Enters Ethernet uplink mode.
Step 2	UCS-A /eth-uplink # scope fabric {a b}	Enters Ethernet uplink fabric interconnect mode for the specified fabric interconnect.
Step 3	UCS-A /eth-uplink/fabric # create vlan <i>vlan-name vlan-id</i>	Creates a named VLAN, specifies the VLAN name and VLAN ID, and enters Ethernet uplink fabric interconnect VLAN mode. The VLAN name is case sensitive.
Step 4	UCS-A /eth-uplink/fabric/vlan # set sharing primary	Sets the VLAN as the primary VLAN.
Step 5	UCS-A /eth-uplink/fabric/vlan # commit-buffer	Commits the transaction to the system configuration.

The following example creates a named VLAN for fabric interconnect A, names the VLAN finance, assigns the VLAN ID 3955, makes this VLAN the primary VLAN, and commits the transaction:

```
UCS-A# scope eth-uplink
UCS-A /eth-uplink # scope fabric a
UCS-A /eth-uplink/fabric # create vlan finance 3955
UCS-A /eth-uplink/fabric/vlan* # set sharing primary
UCS-A /eth-uplink/fabric/vlan* # commit-buffer
UCS-A /eth-uplink/fabric/vlan #
```

Creating a Secondary VLAN for a Private VLAN (Accessible to Both Fabric Interconnects)



Important

You cannot create VLANs with IDs from 3968 to 4047. This range of VLAN IDs is reserved.

VLANs in the LAN cloud and FCoE VLANs in the SAN cloud must have different IDs. Using the same ID for a VLAN and an FCoE VLAN in a VSAN results in a critical fault and traffic disruption for all vNICs and uplink ports using that VLAN. Ethernet traffic is dropped on any VLAN which has an ID that overlaps with an FCoE VLAN ID.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope eth-uplink	Enters Ethernet uplink mode.
Step 2	UCS-A /eth-uplink # create vlan <i>vlan-name vlan-id</i>	Creates a named VLAN, specifies the VLAN name and VLAN ID, and enters Ethernet uplink VLAN mode. The VLAN name is case sensitive.
Step 3	UCS-A /eth-uplink/vlan # set sharing isolated	Sets the VLAN as the secondary VLAN.
Step 4	UCS-A /eth-uplink/vlan # set pubnwnname <i>primary-vlan-name</i>	Specifies the primary VLAN to be associated with this secondary VLAN.
Step 5	UCS-A /eth-uplink/vlan # commit-buffer	Commits the transaction to the system configuration.

The following example creates a named VLAN for both fabric interconnects, names the VLAN accounting, assigns the VLAN ID 2112, makes this VLAN the secondary VLAN, associates the secondary VLAN with the primary VLAN, and commits the transaction:

```
UCS-A# scope eth-uplink
UCS-A /eth-uplink # create vlan accounting 2112
UCS-A /eth-uplink/vlan* # set sharing isolated
UCS-A /eth-uplink/vlan* # set pubnwnname pvlan1000
UCS-A /eth-uplink/vlan* # commit-buffer
UCS-A /eth-uplink/vlan #
```

Creating a Secondary VLAN for a Private VLAN (Accessible to One Fabric Interconnect)



Important

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VLANs in the LAN cloud and FCoE VLANs in the SAN cloud must have different IDs. Using the same ID for a VLAN and an FCoE VLAN in a VSAN results in a critical fault and traffic disruption for all vNICs and uplink ports using that VLAN. Ethernet traffic is dropped on any VLAN which has an ID that overlaps with an FCoE VLAN ID.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope eth-uplink	Enters Ethernet uplink mode.
Step 2	UCS-A /eth-uplink # scope fabric {a b}	Enters Ethernet uplink fabric interconnect mode for the specified fabric interconnect (A or B).
Step 3	UCS-A /eth-uplink/fabric # create vlan <i>vlan-name vlan-id</i>	Creates a named VLAN, specifies the VLAN name and VLAN ID, and enters Ethernet uplink fabric interconnect VLAN mode. The VLAN name is case sensitive.
Step 4	UCS-A /eth-uplink/vlan # set sharing isolated	Sets the VLAN as the secondary VLAN.
Step 5	UCS-A /eth-uplink/vlan # set pubnwnname <i>primary-vlan-name</i>	Specifies the primary VLAN to be associated with this secondary VLAN.
Step 6	UCS-A /eth-uplink/fabric/vlan/member-port # commit-buffer	Commits the transaction to the system configuration.

The following example creates a named VLAN for fabric interconnect A, names the VLAN finance, assigns the VLAN ID 3955, makes this VLAN the secondary VLAN, associates the secondary VLAN with the primary VLAN, and commits the transaction:

```
UCS-A# scope eth-uplink
UCS-A /eth-uplink # scope fabric a
UCS-A /eth-uplink/fabric # create vlan finance 3955
UCS-A /eth-uplink/fabric/vlan* # set sharing isolated
UCS-A /eth-uplink/fabric/vlan* # set pubnwnname pvlan1000
UCS-A /eth-uplink/fabric/vlan* # commit-buffer
UCS-A /eth-uplink/fabric/vlan #
```

Viewing the VLAN Port Count

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope fabric-interconnect {a b}	Enters fabric interconnect mode for the specified fabric interconnect.
Step 2	UCS-A /fabric-interconnect # show vlan-port-count	Displays the VLAN port count.

The following example displays the VLAN port count for fabric interconnect A:

```
UCS-A# scope fabric-interconnect a
UCS-A /fabric-interconnect # show vlan-port-count

VLAN-Port Count:
VLAN-Port Limit      Access VLAN-Port Count      Border VLAN-Port Count      Alloc Status
-----
6000                  3                            0                            Available
```

VLAN Port Count Optimization

VLAN port count optimization enables mapping the state of multiple VLANs into a single internal state. When you enable the VLAN port count optimization, Cisco UCS Manager logically groups VLANs based on the port VLAN membership. This grouping increases the port VLAN count limit. VLAN port count optimization also compresses the VLAN state and reduces the CPU load on the fabric interconnect. This reduction in the CPU load enables you to deploy more VLANs over more vNICs. Optimizing VLAN port count does not change any of the existing VLAN configuration on the vNICs.

VLAN port count optimization is disabled by default. You can enable or disable the option based on your requirement.



Important

- Enabling VLAN port count optimization increases the number of available VLAN ports for use. If the port VLAN count exceeds the maximum number of VLANs in a non optimized state, you cannot disable the VLAN port count optimization.
- VLAN port count optimization is not supported in Cisco UCS 6100 Series fabric interconnect.

Enabling Port VLAN Count Optimization

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope eth-uplink	Enters Ethernet uplink mode.
Step 2	UCS-A /eth-uplink# set vlan-port-count-optimization enable	Enables the vlan for port VLAN count optimization.
Step 3	UCS-A /eth-uplink* # commit-buffer	Commits the transaction to the system configuration.

The following example shows how to enable VLAN port count optimization:

```
UCS-A# scope eth-uplink
UCS-A /eth-uplink # set vlan-port-count-optimization enable
UCS-A /eth-uplink* # commit-buffer
UCS-A /eth-uplink#
```

Disabling Port VLAN Count Optimization

If you have more Port VLAN count than that is allowed in the non port VLAN port count optimization state, you cannot disable the optimization.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope eth-uplink	Enters Ethernet uplink mode.
Step 2	UCS-A /eth-uplink# set vlan-port-count-optimization disable	Disables the port VLAN count optimization.
Step 3	UCS-A /eth-uplink # commit-buffer	Commits the transaction to the system configuration.

The following example shows how to disable VLAN port count optimization:

```
UCS-A# scope eth-uplink
UCS-A /eth-uplink # set vlan-port-count-optimization disable
UCS-A /eth-uplink* # commit-buffer
UCS-A /eth-uplink#
```

Viewing the Port VLAN Count Optimization Groups

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope eth-uplink	Enters Ethernet uplink mode.
Step 2	UCS-A /eth-uplink# show vlan-port-count-optimization group	Displays the vlan for port VLAN count optimization groups.

The following example shows port VLAN count optimization group in fabric a and b:

```
UCS-A# scope eth-uplink
UCS-A /eth-uplink # show vlan-port-count-optimization group
VLAN Port Count Optimization Group:
  Fabric ID  Group ID  VLAN ID
  -----
  A          5         6
  A          5         7
  A          5         8
  B         10        100
  B         10        101
```

VLAN Groups

VLAN groups allow you to group VLANs on Ethernet uplink ports, by function or by VLANs that belong to a specific network. You can define VLAN membership and apply the membership to multiple Ethernet uplink ports on the fabric interconnect.

After you assign a VLAN to a VLAN group, any changes made to the VLAN group will be applied to all Ethernet uplink ports that are configured with the VLAN group. The VLAN group also enables you to identify VLAN overlaps between disjoint VLANs.

You can configure uplink ports under a VLAN group. When you configure the uplink port for a VLAN group, that uplink port will only support all the VLANs in that group.

You can create VLAN groups from the LAN Cloud or from the LAN Uplinks Manager.

Creating a VLAN Group

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope eth-uplink.	Enters Ethernet uplink mode. The VLAN Group name is case sensitive.
Step 2	UCS-A# /eth-uplink/ #create vlan-groupName .	Create a VLAN group with the specified name.

	Command or Action	Purpose
		This name can be between 1 and 32 alphanumeric characters. You cannot use spaces or any special characters other than - (hyphen), _ (underscore), : (colon), and . (period), and you cannot change this name after the object has been saved.
Step 3	UCS-A# /eth-uplink/ vlan-group# create member-vlanID .	Adds the specified VLANs to the created VLAN group.
Step 4	UCS-A# /eth-uplink/vlan-group # create member-port [member-port-channel] .	Assigns the uplink Ethernet ports to the VLAN group.
Step 5	UCS-A#/vlan-group* # commit-buffer .	Commits the transaction to the system configuration.

The following example shows how to create a VLAN group:

```
UCS-A# scope eth-uplink
UCS-A /eth-uplink # create vlan-group eng
UCS-A /eth-uplink/vlan-group* # create member-vlan 3
UCS-A /eth-uplink/vlan-group* # commit-buffer
UCS-A /vlan-group #
```

Deleting a VLAN Group

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope eth-uplink .	Enters Ethernet uplink mode.
Step 2	UCS-A# /eth-uplink/ # delete vlan-groupName .	Deletes the specified VLAN group.
Step 3	UCS-A#/eth-uplink* # commit-buffer .	Commits the transaction to the system configuration.

The following example shows how to delete a VLAN group:

```
UCS-A# scope eth-uplink
UCS-A /eth-uplink # delete vlan-group eng
UCS-A /eth-uplink* # commit-buffer
UCS-A /eth-uplink #
```

Viewing VLAN Groups

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org	Enters Cisco UCS Manager organization.
Step 2	UCS-A /org # show vlan-group	Displays the available groups in the organization.

The following example shows the available VLAN groups in the root org:

```
UCS-A# scope org
UCS-A# /org/# show vlan-group
VLAN Group:
  Name
  ----
  eng
  hr
  finance
```

VLAN Permissions

VLAN permissions restricts access to VLANs based on specified organizations. Based on the service profile organizations the VLANs belong to, VLAN permissions also restrict the set of VLANs you can assign to service profile vNICs. VLAN permissions is an optional feature and is disabled by default. You can enable or disable the feature based on your requirements. If you disable the feature, all the VLANs are globally accessible to all organizations.



Note

If you enable the org permission in **LAN > LAN Cloud > Global Policies > Org Permissions**, when you create a VLAN, you will see **Permitted Orgs for VLAN(s)** option in the **Create VLANs** dialog box. If you do not enable the **Org Permissions**, you will not see the **Permitted Orgs for VLAN(s)** option.

If you enable org permission, when creating a VLAN you will specify the organizations for the VLAN. When you specify the organizations, the VLAN will be available to that specific organization and all the sub organizations beneath the structure. Users from other organizations cannot have access to this VLAN. You can also modify the VLAN permission at any point, based on any changes in your VLAN access requirements.



Caution

When you assign VLAN org permission to an organization at the root level, all sub organization can access the VLANs. After assigning org permission at root level, if you change the permission for a VLAN that belongs to a sub organization, that VLAN becomes unavailable to the root level organization.

Creating VLAN Permissions

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org.	Enters the Cisco UCS Manager VLAN organization.
Step 2	UCS-A# /org/ # create vlan-permit <i>VLAN permission name.</i>	Creates the specified VLAN permission and assigns VLAN access permission to the organization.
Step 3	UCS-A#/org* # commit-buffer.	Commits the transaction to the system configuration.

The following example shows how to create a VLAN permission for an organization:

```
UCS-A# scope org
UCS-A /org # create vlan-permit dev
UCS-A /org* # commit-buffer
UCS-A /org #
```

Deleting a VLAN Permission

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org.	Enters the Cisco UCS Manager VLAN organization.
Step 2	UCS-A# /org/ # delete vlan-permit <i>VLAN permission name.</i>	Deletes the access permission to the VLAN.
Step 3	UCS-A#/org* # commit-buffer.	Commits the transaction to the system configuration.

The following example shows how to delete a VLAN permission from an organization:

```
UCS-A# scope org
UCS-A /org # delete vlan-permit dev
UCS-A /org* # commit-buffer
UCS-A /org #
```

Viewing VLAN Permissions

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org	Enters Cisco UCS Manager organization.
Step 2	UCS-A /org # show vlan-permit	Displays the available permissions in the organization.

The following example shows the VLAN groups that have permission to access this VLAN:

```
UCS-A# scope org
UCS-A# /org/# show vlan-permit
VLAN Group:
  Name
  ----
  eng
  hr
  finance
```