



# Managing Layer 2 Networking

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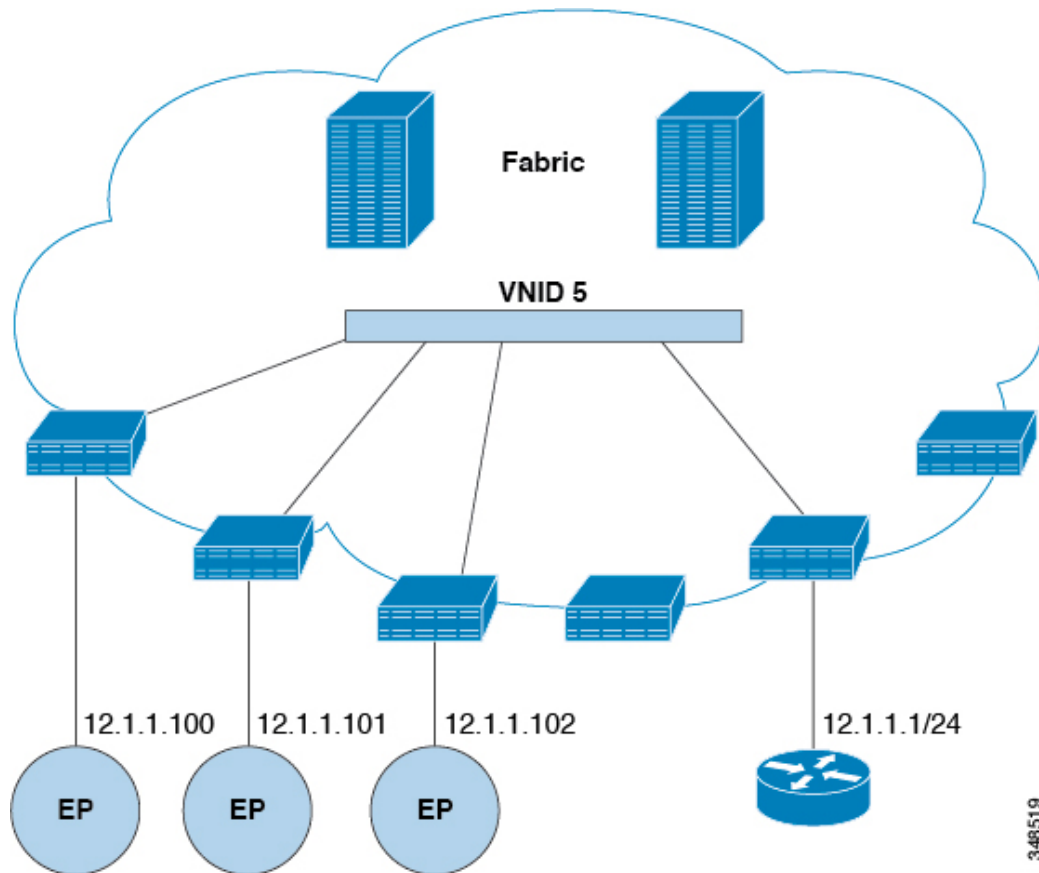
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## Tenant External Bridged Networks

### Bridged Interface to an External Router

As shown in the figure below, when the leaf switch interface is configured as a bridged interface, the default gateway for the tenant VNID is the external router.

Figure 1: Bridged External Router



The ACI fabric is unaware of the presence of the external router and the APIC statically assigns the leaf switch interface to its EPG.

## VRF and Bridge Domains

You can create and specify a VRF and a bridge domain for the tenant. The defined bridge domain element subnets reference a corresponding Layer 3 context.

For details about enabling IPv6 Neighbor Discovery see *IPv6 and Neighbor Discovery in Cisco APIC Layer 3 Networking Guide*.

## Creating a Tenant, VRF, and Bridge Domain Using the REST API

### Procedure

**Step 1** Create a tenant.

#### Example:

```
POST https://apic-ip-address/api/mo/uni.xml
<fvTenant name="ExampleCorp"/>
```

When the POST succeeds, you see the object that you created in the output.

## Step 2 Create a VRF and bridge domain.

**Note** The Gateway Address can be an IPv4 or an IPv6 address. For more about details IPv6 gateway address, see the related KB article, *KB: Creating a Tenant, VRF, and Bridge Domain with IPv6 Neighbor Discovery*.

### Example:

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

```
<fvTenant name="ExampleCorp">
  <fvCtx name="pvn1"/>
  <fvBD name="bd1">
    <fvRsCtx tnFvCtxName="pvn1"/>
    <fvSubnet ip="10.10.100.1/24"/>
  </fvBD>
</fvTenant>
```

**Note** If you have a public subnet when you configure the routed outside, you must associate the bridge domain with the outside configuration.

# Ports

## Statically Deploying an EPG on a Specific Port

This topic provides a typical example of how to statically deploy an EPG on a specific port when using Cisco APIC.

## Deploying an EPG on a Specific Port with APIC Using the REST API

### Before you begin

The tenant where you deploy the EPG is created.

### Procedure

Deploy an EPG on a specific port.

### Example:

```
<fvTenant name="<tenant_name>" dn="uni/tn-test1" >
  <fvCtx name="<network_name>" pcEnfPref="enforced" knwMcastAct="permit"/>
  <fvBD name="<bridge_domain_name>" unkMcastAct="flood" >
    <fvRsCtx tnFvCtxName="<network_name>"/>
  </fvBD>
  <fvAp name="<application_profile>" >
    <fvAEPg name="<epg_name>" >
      <fvRsPathAtt tDn="topology/pod-1/paths-1017/pathep-[eth1/13]" mode="regular"
instrImedcy="immediate" encap="vlan-20"/>
    </fvAEPg>
  </fvAp>
</fvTenant>
```

```

    </fvAEPg>
  </fvAp>
</fvTenant>

```

## Creating Domains, Attach Entity Profiles, and VLANs to Deploy an EPG on a Specific Port

This topic provides a typical example of how to create physical domains, Attach Entity Profiles (AEP), and VLANs that are mandatory to deploy an EPG on a specific port.

All endpoint groups (EPGs) require a domain. Interface policy groups must also be associated with Attach Entity Profile (AEP), and the AEP must be associated with a domain, if the AEP and EPG have to be in same domain. Based on the association of EPGs to domains and of interface policy groups to domains, the ports and VLANs that the EPG uses are validated. The following domain types associate with EPGs:

- Application EPGs
- Layer 3 external outside network instance EPGs
- Layer 2 external outside network instance EPGs
- Management EPGs for out-of-band and in-band access

The APIC checks if an EPG is associated with one or more of these types of domains. If the EPG is not associated, the system accepts the configuration but raises a fault. The deployed configuration may not function properly if the domain association is not valid. For example, if the VLAN encapsulation is not valid for use with the EPG, the deployed configuration may not function properly.



**Note** EPG association with the AEP without static binding does not work in a scenario when you configure the EPG as **Trunk** under the AEP with one end point under the same EPG supporting Tagging and the other end point in the same EPG does not support VLAN tagging. While associating AEP under the EPG, you can configure it as Trunk, Access (Tagged) or Access (Untagged).

## Creating AEP, Domains, and VLANs to Deploy an EPG on a Specific Port Using the REST API

### Before you begin

- The tenant where you deploy the EPG is already created.
- An EPG is statically deployed on a specific port.

### Procedure

**Step 1** Create the interface profile, switch profile and the Attach Entity Profile (AEP).

**Example:**

```

<infraInfra>
  <infraNodeP name="<switch_profile_name>" dn="uni/infra/nprof-<switch_profile_name>"
  >
    <infraLeafS name="SwitchSeletor" descr="" type="range">
      <infraNodeBlk name="nodeBlk1" descr="" to_"1019" from_"1019"/>
    </infraLeafS>
    <infraRsAccPortP tDn="uni/infra/accportprof-<interface_profile_name>"/>
  </infraNodeP>

  <infraAccPortP name="<interface_profile_name>"
dn="uni/infra/accportprof-<interface_profile_name>" >
    <infraHPortS name="portSelector" type="range">
      <infraRsAccBaseGrp tDn="uni/infra/funcprof/accportgrp-<port_group_name>"
fexId="101"/>
    <infraPortBlk name="block2" toPort="13" toCard="1" fromPort="11"
fromCard="1"/>
    </infraHPortS>
  </infraAccPortP>

  <infraAccPortGrp name="<port_group_name>"
dn="uni/infra/funcprof/accportgrp-<port_group_name>" >
    <infraRsAttEntP tDn="uni/infra/attentp-<attach_entity_profile_name>"/>
    <infraRsHIfPol tnFabricHIfPolName="lGHifPol"/>
  </infraAccPortGrp>

  <infraAttEntityP name="<attach_entity_profile_name>"
dn="uni/infra/attentp-<attach_entity_profile_name>" >
    <infraRsDomP tDn="uni/phys-<physical_domain_name>"/>
  </infraAttEntityP>

</infraInfra>

```

**Step 2** Create a domain.**Example:**

```

<physDomP name="<physical_domain_name>" dn="uni/phys-<physical_domain_name>">
  <infraRsVlanNs tDn="uni/infra/vlanns-[<vlan_pool_name>]-static"/>
</physDomP>

```

**Step 3** Create a VLAN range.**Example:**

```

<fvnsVlanInstP name="<vlan_pool_name>" dn="uni/infra/vlanns-[<vlan_pool_name>]-static"
allocMode="static">
  <fvnsEncapBlk name="" descr="" to="vlan-25" from="vlan-10"/>
</fvnsVlanInstP>

```

**Step 4** Associate the EPG with the domain.**Example:**

```

<fvTenant name="<tenant_name>" dn="uni/tn-" >
  <fvAEPg prio="unspecified" name="<epg_name>" matchT="AtleastOne"
dn="uni/tn-test1/ap-AP1/epg-<epg_name>" descr="">
    <fvRsDomAtt tDn="uni/phys-<physical_domain_name>" instrImedcy="immediate"
resImedcy="immediate"/>
  </fvAEPg>
</fvTenant>

```

## Creating a Port Channel Policy Using the REST API

The following example REST request creates a Port Channel policy:

```
<lacpLagPol childAction="" ctrl="fast-sel-hot-stdby,graceful-conv,susp-individual"
  descr="" dn="uni/infra/lacplagp-LACP-Active" lcOwn="local" maxLinks="16" minLinks="1"
  modTs="2015-02-24T11:58:36.547-08:00" mode="active" name="LACP-Active" ownerKey=""
  ownerTag="" status="" uid="8131">
  <lacpRtLacpPol childAction="" lcOwn="local" modTs="2015-02-24T14:59:11.154-08:00"
    rn="rtinfraLacpPol-[uni/infra/funcprof/accbundle-ACI-VPC-IPG]" status=""
    tCl="infraAccBndlGrp" tDn="uni/infra/funcprof/accbundle-ACI-VPC-IPG"/>
</lacpLagPol>
```




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### Note

- To enable symmetric hashing, add `ctrl="symmetric-hash"` to the REST request.
  - Symmetric hashing is not supported on the following switches:
    - Cisco Nexus 93128TX
    - Cisco Nexus 9372PX
    - Cisco Nexus 9372PX-E
    - Cisco Nexus 9372TX
    - Cisco Nexus 9372TX-E
    - Cisco Nexus 9396PX
    - Cisco Nexus 9396TX
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