Networking Domains

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Networking Domains

A fabric administrator creates domain policies that configure ports, protocols, VLAN pools, and encapsulation. These policies can be used exclusively by a single tenant, or shared. Once a fabric administrator configures domains in the ACI fabric, tenant administrators can associate tenant endpoint groups (EPGs) to domains.

The following networking domain profiles can be configured:

- VMM domain profiles (`vmmDomP`) are required for virtual machine hypervisor integration.
- Physical domain profiles (`physDomP`) are typically used for bare metal server attachment and management access.
- Bridged outside network domain profiles (`l2extDomP`) are typically used to connect a bridged external network trunk switch to a leaf switch in the ACI fabric.
- Routed outside network domain profiles (`l3extDomP`) are used to connect a router to a leaf switch in the ACI fabric.
- Fibre Channel domain profiles (`fcDomP`) are used to connect Fibre Channel VLANs and VSANs.

A domain is configured to be associated with a VLAN pool. EPGs are then configured to use the VLANs associated with a domain.

Note EPG port and VLAN configurations must match those specified in the domain infrastructure configuration with which the EPG associates. If not, the APIC will raise a fault. When such a fault occurs, verify that the domain infrastructure configuration matches the EPG port and VLAN configurations.

Related Documents

For more information about Layer 3 Networking, see *Cisco APIC Layer 3 Networking Configuration Guide*.

For information about configuring VMM Domains, see *Cisco ACI Virtual Machine Networking* in *Cisco ACI Virtualization Guide.*

Bridge Domains

About Bridge Domains

A bridge domain (BD) represents a Layer 2 forwarding construct within the fabric. One or more endpoint groups (EPGs) can be associated with one bridge domain or subnet. A bridge domain can have one or more subnets that are associated with it. One or more bridge domains together form a tenant network. When you insert a service function between two EPGs, those EPGs must be in separate BDs. To use a service function between two EPGs, those EPGs must be isolated; this follows legacy service insertion based on Layer 2 and Layer 3 lookups.

VMM Domains

Virtual Machine Manager Domain Main Components

ACI fabric virtual machine manager (VMM) domains enable an administrator to configure connectivity policies for virtual machine controllers. The essential components of an ACI VMM domain policy include the following:

- **Virtual Machine Manager Domain Profile**—Groups VM controllers with similar networking policy requirements. For example, VM controllers can share VLAN pools and application endpoint groups (EPGs). The APIC communicates with the controller to publish network configurations such as port groups that are then applied to the virtual workloads. The VMM domain profile includes the following essential components:
  - **Credential**—Associates a valid VM controller user credential with an APIC VMM domain.
  - **Controller**—Specifes how to connect to a VM controller that is part of a policy enforcement domain. For example, the controller specifies the connection to a VMware vCenter that is part a VMM domain.

Note A single VMM domain can contain multiple instances of VM controllers, but they must be from the same vendor (for example, from VMware or from Microsoft.

- **EPG Association**—Endpoint groups regulate connectivity and visibility among the endpoints within the scope of the VMM domain policy. VMM domain EPGs behave as follows:
  - The APIC pushes these EPGs as port groups into the VM controller.

- An EPG can span multiple VMM domains, and a VMM domain can contain multiple EPGs.

- **Attachable Entity Profile Association**—Associates a VMM domain with the physical network infrastructure. An attachable entity profile (AEP) is a network interface template that enables deploying VM controller policies on a large set of leaf switch ports. An AEP specifies which switches and ports are available, and how they are configured.
- **VLAN Pool Association**—A VLAN pool specifies the VLAN IDs or ranges used for VLAN encapsulation that the VMM domain consumes.

Virtual Machine Manager Domains

An APIC VMM domain profile is a policy that defines a VMM domain. The VMM domain policy is created in APIC and pushed into the leaf switches.

VMM domains provide the following:

- A common layer in the ACI fabric that enables scalable fault-tolerant support for multiple VM controller platforms.
- VMM support for multiple tenants within the ACI fabric.

VMM domains contain VM controllers such as VMware vCenter or Microsoft SCVMM Manager and the credential(s) required for the ACI API to interact with the VM controller. A VMM domain enables VM mobility within the domain but not across domains. A single VMM domain can contain multiple instances of VM controllers but they must be the same kind. For example, a VMM domain can contain many VMware vCenters managing multiple controllers each running multiple VMs but it may not also contain SCVMM Managers. A VMM domain inventories controller elements (such as pNICs, vNICs, VM names, and so forth) and pushes policies into the controller(s), creating port groups, and other necessary elements. The ACI VMM domain listens for controller events such as VM mobility and responds accordingly.

Configuring Physical Domains

Configuring a Physical Domain

Physical domains control the scope of where a given VLAN namespace is used. The VLAN namespace that is associated with the physical domain is for non-virtualized servers, although it can also be used for static mapping of port-groups from virtualized servers. You can configure a physical domain for physical device types.

Before you begin

- Configure a tenant.

Procedure

Step 1 On the menu bar, click **Fabric**.

Step 2 On the submenu bar, click **External Access Policies**.

Step 3 In the **Navigation** pane, expand **Physical and External Domains** and click **Physical Domains**.

Step 4 From the **Actions** drop-down list, choose **Create Physical Domain**. The **Create Physical Domain** dialog box appears.

Step 5 Complete the following fields:

Name	Description
Name	The name of the physical domain profile.
Associate Attachable Entity Profiles	Choose the attachable entity profiles to be associated to this domain.
VLAN Pool	The VLAN pool used by the physical domain. The VLAN pool specifies the range or pool for VLANs that is allocated by the APIC for the service graph templates that are using this physical domain. Click **Dynamic** or **Static** allocation.

Step 6 (Optional) Add a AAA security domain and click the **Select** check box.

Step 7 Click **Submit**.

Configuring a Physical Domain Using the REST API

A physical domain acts as the link between the VLAN pool and the Access Entity Profile (AEP). The domain also ties the fabric configuration to the tenant configuration, as the tenant administrator is the one who associates domains to EPGs, while the domains are created under the fabric tab. When configuring in this order, only the profile name and the VLAN pool are configured.

Procedure

Configure a physical domain by sending a post with XML such as the following example:

Example:

```
<physDomP dn="uni/phys-bsprint-PHY" lcOwn="local" modTs="2015-02-23T16:13:21.906-08:00"
   monPolDn="uni/fabric/monfab-default" name="bsprint-PHY" ownerKey="" ownerTag="" status=""
 uid="8131">
      <infraRsVlanNs childAction="" forceResolve="no" lcOwn="local"
modTs="2015-02-23T16:13:22.065-08:00"
         monPolDn="uni/fabric/monfab-default" rType="mo" rn="rsvlanNs" state="formed"
stateQual="none"
         status="" tCl="fvnsVlanInstP" tDn="uni/infra/vlanns-[bsprint-vlan-pool]-static"
tType="mo" uid="8131"/>
     <infraRsVlanNsDef forceResolve="no" lcOwn="local" modTs="2015-02-23T16:13:22.065-08:00"
 rType="mo"
         rn="rsvlanNsDef" state="formed" stateQual="none" status="" tCl="fvnsAInstP"
         tDn="uni/infra/vlanns-[bsprint-vlan-pool]-static" tType="mo"/>
      <infraRtDomP lcOwn="local" modTs="2015-02-23T16:13:52.945-08:00"
rn="rtdomP-[uni/infra/attentp-bsprint-AEP]"
```

```
        status="" tCl="infraAttEntityP" tDn="uni/infra/attentp-bsprint-AEP"/>
</physDomP>
```