



Configuring a Device Cluster (Logical Device)

- [Configuring a Device Cluster \(Logical Device\)](#), page 1

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About Device Clusters (Logical Devices)

A device cluster (also known as a logical device) is one or more concrete devices that act as a single device. A device cluster has logical interfaces, which describe the interface information for the device cluster. During service graph rendering, function node connectors are associated with logical interfaces. The Application Policy Infrastructure Controller (APIC) allocates the network resources (VLAN or Virtual Extensible Local Area Network [VXLAN]) for a function node connector during service graph instantiation and rendering and programs the network resources onto the logical interfaces.

The service graph uses a specific device cluster that is based on a device cluster selection policy (called a *logical device context*) that an administrator defines.

An administrator can set up a maximum of two concrete device clusters in the active-standby mode.

About Concrete Devices

A concrete device has concrete interfaces. When a concrete device is added to a logical device cluster, concrete interfaces are mapped to the logical interfaces. During service graph instantiation, VLANs and VXLANs are programmed on concrete interfaces that are based on their association with logical interfaces.

Configuring a Device Cluster

You can configure a device cluster.

Before You Begin

- Configure a tenant. See .

- Step 1** On the menu bar, click the **TENANTS** tab. The **Tenant** window appears.
- Step 2** In the **Navigation** pane, expand the **Tenant** branch, expand the **L4-L7 Services** branch, and click **Device Clusters**. The **Device Clusters** window appears.
- Step 3** Choose **Actions > Create Device Cluster**. The **CREATE DEVICE CLUSTER** dialog box appears, showing the **CLUSTER** page.
- Step 4** Complete the following fields:

Name	Description
Name field	The name of the device cluster.
Device Package field	The device package that you uploaded.
Context Aware radio buttons	You can allocate a device to a tenant. Single means that the device cluster cannot be shared across multiple tenants of a given type that are hosted on the provider network, and you must give the device cluster to a specific tenant for a given user. Multiple means that the device cluster can be shared across multiple tenants of a given type that you are hosting on this provider network. For example, there could be two hosting companies that share the same device. The tenancy assignment is implicitly based on the endpoint group (EPG) to which the package is bound. If you created a cluster, you must specify the management EPG, which determines the network through which the device would be managed.
Function Type radio buttons	A GoThrough device is a transparent device. A packet goes through without being addressed to the device, and endpoints are not aware of that device. A GoTo device has a specific destination, depending on the package. In this example, the device package indicates that it only supports GoTo functions, so the radio buttons are grayed out and GoTo is automatically selected. If the device package supports both function types, you can select one of the radio buttons to indicate the type of function and how you will configure it. GoTo is the default value.
Device Type radio buttons	Specifies whether the device cluster has PHYSICAL appliances or VIRTUAL appliances.
Physical Domain drop-down list	Choose the domain to use when allocating network resources for the graphs that will use this device cluster. You only specify the physical domain for a physical device type. You can select an existing physical domain or configure a new one. To configure a new physical domain, see .
VMM Domain drop-down list	Choose the Virtual Machine Manager (VMM) domain, which is also known as a vCenter domain. You only specify the VMM domain for a virtual device type. You can select an existing VMM domain or configure a new one. To configure a new VMM domain, see .

Name	Description
EPG drop-down list	Choose the management EPG to indicate which management network leads to the device that you are trying to manage. You do not need to choose a management EPG if the device is managed in-band. To configure a new management EPG, see Configuring a Management Endpoint Group . You do not need to choose a management EPG if the management happens out of band from an external network.
Virtual IP Address field	The virtual IP address of the management interface for the concrete device in the device cluster.
Port field	The port number of the management interface for the concrete device in the device cluster.
Username field	The username for logging into the device cluster.
Password field	The password for logging into the device cluster.
Confirm Password field	The confirmation of the password for logging into the device cluster.

Step 5 In the **Logical Interfaces** section, click + to add a logical interface. When a device cluster is used by a graph, the graph's connectors are mapped to a logical interface.

Step 6 Complete the following fields:

Name	Description
Name field	The name of the logical interface.
Type field and drop-down list	The type of logical interface. You must choose or enter the type that is specified in the device package.

Step 7 Click **Next**. The **DEVICES** page appears.

Step 8 Add concrete devices and concrete interfaces. See [Configuring a Concrete Device, on page 4](#).

Step 9 After adding concrete interfaces, click **Next**. The **PARAMETERS** page appears.

Step 10 (Optional) Add configuration parameters. The configuration parameters are for the concrete device, and are used during the one-time configuration at initialization time.

Step 11 Click **OK**. The **CREATE CONCRETE DEVICE** dialog box closes, taking you back to the **DEVICES** page of the **CREATE DEVICE CLUSTER** dialog box.

Step 12 Click **Finish** to create the device. The **CREATE DEVICE CLUSTER** dialog box closes, taking you back to the **Tenant** page.

Step 13 On the submenu bar, click the **common** tab and refresh the page to see the device. If the device is down or has been incorrectly configured, it will not appear. In an incorrect configuration, the APIC might not have been able to validate the device's presence, the device is present but is not the right kind, or the device is running a version that cannot be verified through the device package. In such cases, device verification fails, and you should be able to see the fault indicating the reason for device registration failure.

Configuring a Concrete Device

You can configure a concrete device.

Before You Begin

- Configure a tenant. See .
- Configure a device cluster on the tenant. See [Configuring a Device Cluster, on page 1](#).

Step 1 On the **DEVICES** page of the **CREATE DEVICE CLUSTER** dialog box, click + in the **Create L4-L7 Devices** section to add a concrete device to the device cluster. The **CREATE CONCRETE DEVICE** dialog box appears.

Step 2 Complete the following fields:

Name	Description
Name field	The name of the concrete device.
VM Name field	For virtual device types only. The name of the virtual machine on which the device is hosted.
vCenter Name field	For virtual device types only. The name of the VMM domain on which the device is hosted.
IP Address field	The management interface host address for the concrete device in the device cluster.
Port field	The management interface port number for the concrete device in the device cluster.
Username field	The username for logging into the device cluster.
Password field	The password for logging into the device cluster.
Confirm Password field	The confirmation of the password for logging into the device cluster.

Step 3 Click + to add a concrete interface, which is the interface on the concrete device, and complete the following fields:

Name	Description
Name field	The name field identifies an interface on the concrete device. For example, 1/0, 1.1, or Gig 0/0. Note Certain device packages require '/' in their interface name to be replaced with '_'; that is interface 0/1 on the device should be represented as 0_1 on the APIC. Refer to the device package documentation to see whether the device can support '/' in its naming property or if the '/' should be replaced with '_'.
Path field	For physical devices. Specifies how the concrete interface attaches to the fabric. For example, the leaf node/slot/port to which the concrete interface is attached.

Name	Description
vNIC field	The network adapter name that was assigned on the vCenter for identifying the corresponding interface of a concrete device. Usually a vNIC is labeled Network adapter x on the vCenter where x = 1, 2, 3 ... Note You can check the interface MAC on the device and then identify the corresponding vNIC on the vCenter by matching the MAC field.
Logical Interface field	The type of logical interface to which the concrete interface is mapped.

The information that you enter specifies how the concrete interfaces are connected to the fabric and how the concrete interfaces are mapped to the logical interfaces.

- Step 4** Click **Update** after entering the information for a concrete interface to add the interface to the concrete device.
- Step 5** Click **Next**. The **PARAMETERS** page appears.
- Step 6** (Optional) Add configuration parameters. The configuration parameters are for the concrete device and are used during the one-time configuration at initialization time.
- Step 7** Click **OK**. The **CREATE CONCRETE DEVICE** dialog box closes, taking you back to the **DEVICES** page of the **CREATE DEVICE CLUSTER** dialog box, and the concrete device is configured.

Configuring a Device Cluster for a Virtual Service Device

You can configure a device cluster for a virtual service device.

Before You Begin

- Configure a tenant. See .

- Step 1** In the **Navigation** pane of the **Tenant common** window, expand the **Tenant common** branch, expand the **L4-L7 Services** branch, and click **Device Clusters**. The **Device Clusters** window appears.
Note A device cluster can also be created under the **User Tenant** space.
- Step 2** Choose **Actions > Create Device Cluster**. The **CREATE DEVICE CLUSTER** dialog box appears.
- Step 3** For the **Device Type**, choose **VIRTUAL**.
- Step 4** For the **VMM Domain**, you must associate your Virtual Machine Manager (VMM) domain to the virtual logical device cluster. This VMM domain must have the information on how to connect to your vCenter, such as the IP address, port, and administrator's credentials. Also, you must specify a VLAN pool, which is used to allocate VLANs for the service graph.
- Step 5** Complete the remainder of the required device cluster information. For more information about the device cluster information, see [Configuring a Device Cluster, on page 1](#). Continue with that procedure until you must add concrete devices.
- Step 6** When you add the concrete devices, for each concrete device, you must provide the vCenter name, the virtual machine name, the vNIC name, and the MAC address for each interface. For more information about adding concrete devices,

see [Configuring a Concrete Device, on page 4](#). The Application Policy Infrastructure Controller (APIC) creates the appropriate port groups for the service appliance and places the interfaces into the correct port groups. You do not need to place the NICs.

Step 7

Continue with the procedure for configuring a device cluster. See [Configuring a Device Cluster, on page 1](#).
