Grouping Devices and Ports

After you add devices to Cisco Prime Infrastructure, you can organize the devices into logical groupings to simplify management, monitoring, and configuration. When you group devices, you can perform operations on the entire group instead of selecting individual devices.

Grouping Devices by Device Type

You can group similar devices together to simplify management and configuration tasks. Depending on your needs, device groups can be based on location, device type, device role, and so on.

A device group that you create can be one of two types:

- Static—Create and name a new device group to which you can add devices using the Add to Group button from **Operate > Device Work Center > Create Group**.
- Dynamic—Create and name a new device group and specify the rules to which devices must comply before they are added to this device group. You do not add devices to dynamic groups. Prime Infrastructure adds devices that match the specified rules to the dynamic group.

To create a device group:

Step 1 Choose **Operate > Device Work Center**.

Step 2 In the Device Group menu on the left, click  , then choose **Create Group**.

Step 3 Enter the name, description, and parent group if applicable.

Step 4 Select one of the following for the new device group:

- Static—You add devices to the group based on your needs.
- Dynamic—You specify the rules to which devices must comply before they are added to this device group. You do not add devices to dynamic groups. Prime Infrastructure adds devices that match the specified rules to the dynamic group

Step 5 Click **Save**.

The device group that you created appears under the User Defined folder.

Step 6 If you created a static group, select the devices to add to the group by choosing **Groups & Sites > Add To Group**, then choose the device group from the Select Group list and click **Save**.

Note You do not add devices to dynamic groups. Prime Infrastructure adds devices that match the specified rules to the dynamic group.

Creating Groups of Ports

Creating a port group helps you simplify monitoring and configuration tasks. For example, you might want to create a port group that contains all WAN ports so that you can more easily monitor these key ports. By default, port groups are based on interface type.

A port group that you create can be one of two types:

- Static—Create and name a new port group to which you can add interfaces using the Add to Group button from **Design > Management Tools > Port Grouping**.
- Dynamic—Create and name a new port group and specify the rules to which ports or interfaces must comply before they can be added to this port group.

Note While there is no limit on the number of rules that you can specify for a dynamic group, as the number of rules increases, the group update performance could become slower.

To create a port group:

Step 1 Choose **Design > Management Tools > Port Grouping**.

Step 2 In the Port Groups menu on the left, click  , then choose **Create Group**.

Step 3 Enter the name, description, and parent group if applicable.

Step 4 Select whether the group is static or dynamic:

- Static—You add ports to the group based on your needs.
- Dynamic—You specify the rules to which ports must comply before they are added to this port group. You do not add ports to dynamic groups. Prime Infrastructure adds ports that match the specified rules to the dynamic group.

Step 5 Click the ports you want to add to the port group, click **Add to Group**, then choose the port group from the Select Group list and click **Save**.

Note You do not add ports to dynamic groups. Prime Infrastructure adds ports that match the specified rules to the dynamic group.

Creating Customized Port Groups

You can create a customized, user-defined port group that contains devices or interfaces on which you want to apply configuration changes in one operation.

Step 1 Choose **Design > Management Tools > Port Grouping**.

Step 2 From the Port Groups frame on the left, click  , then select **Create Group**.

Leave the default Parent Group field as **User Defined**.

Step 3 Enter a group name and description, then select whether the group is static or dynamic:

- Static—You add ports to the group based on your needs.
- Dynamic—You specify the rules to which ports must comply before they are added to this port group. You do not add ports to dynamic groups. Prime Infrastructure adds ports that match the specified rules to the dynamic group.

The port group you created appears under the User Defined folder.

Step 4 If you created a static port group, add the ports to the group by clicking **Add to Group**, selecting the port group from the Select Group list and clicking **Save**.

Note You do not add ports to dynamic groups. Prime Infrastructure adds ports that match the specified rules to the dynamic group.

Deleting a Port Group

Caution If you are deleting a static port group, make sure that it does not contain any subgroups or members. If you are deleting a dynamic port group, make sure that it does not contain any subgroups; however, the dynamic group can be associated with members.

To delete a port group:

Step 1 Choose **Design > Management Tools > Port Grouping**.

Step 2 Hover your mouse on the name of the name of the port group that you want to delete, then click **Delete Group**.

Grouping Devices by Site

You can group devices by site, or location, to help you manage your network by associating network elements with your organization's physical locations or physical segmentation. They allow you to segment the physical structure of your network, and to monitor and troubleshoot your network based on site information.

Sites have a hierarchy. At the top are campuses, which can contain buildings and outdoor areas. You may create as many campuses as your organization needs. Buildings within a campus can contain floors. You can specify the number of floors in a building and the size and height of any floor, and you can associate images (including photographs and drawings) of these areas with your specifications. For information about the format, version, size, and resolution of the images that you import into Prime Infrastructure, see the "Recommended Parameters for Images" section on page 4-5. You can make the site structure as simple or as complex as you need.

As your organization grows and changes, you need to change your site structure. The areas where you set up and change sites include:

- **Design > Site Map Design**—Create a new site or update an existing site.
- **Operate > Device Work Center**—If a site has been previously created, you can add devices to the site by clicking **Add to Site** from the Device Work Center.

Creating Sites

You can create sites by:

- Automatically creating a site tree map based on the hostname—See "Using Automatic Hierarchy to Create Maps" in the *Cisco Prime Infrastructure Classic View Configuration Guide for Wireless Devices*.
- Importing existing map data—See Importing Site Map Data.
- Using a site map.

Step 1 Choose **Design > Management Tools > Site Map Design**.

Step 2 Choose **Select a command > New Campus/Site** or **New Building**, then click **Go**.

Step 3 Complete the required fields, then click **OK**. See Importing Site Map Data, page 4-4 for information about importing site map information.

Importing Site Map Data

You can import site map information into Prime Infrastructure.Table 4-1 lists the supported format types.

Step 1 Choose **Design > Management Tools > Site Map Design** or **Operate > Maps**.

Step 2 From the Go menu, choose **Import Maps**, then click **Go**.

Step 3 Select the import file format and click **Next**.

Step 4 Click **Browse** to browse for the file, then click **Import**.

Table 4-1 Import Site Map Formats

Format	Description
XML	A TAR GZIP or ZIP file containing definitions of all Prime Infrastructure map data, including images and calibration data.
AP/Wifi TDOA Received/Chokepoint Placement files	A CSV file exportable from Cisco WCS 7.0.
WLSE Map and AP Location Data	An encrypted XML file exportable by Cisco Wireless LAN Solution Engine (WLSE).

Related Topic

Recommended Parameters for Images

Recommended Parameters for Images

Images can be in a variety of formats and there are many parameters embedded as metadata in an image. These parameters impact the appearance of the image. The following recommended parameters ensure that images appear clearly:

- Image resolution—For higher zoom, use an image that has at least one dimension (X or Y) exceeding 4096. For example, (4096 x 2160), (3072 x 8192), or (15360 x 25600). Higher the image resolution, more will be the zoom levels. Lower image resolution can provide only 3 zoom levels. There are no restrictions on the supported image resolution. For example, 100 Mega Pixel and 1 Giga Pixel. Image resolutions that are higher than 1 Giga Pixel are also accepted depending on the memory availability.

  Note Files with lower resolution that are used by existing maps can provide 3 or 4 zoom levels depending on the dimensions.

- File formats—The supported file formats are PNG, GIF or JPG.
- RGB settings—Images must have the color space set to RGB. These images must be in eight bit depth or higher. Otherwise, they will appear black on the floor.
- Gamma settings—The black and white images with gamma settings set to maximum and after tile cutting, will appear black on the floor. Such issues cannot be auto-corrected because the images will loose resolution and boundaries. These images must be opened in an image editor and the RGB color space must be added. You may also need to adjust the white balance depending on the image histogram and convert the image to eight bit or higher.
- CAD file format must be AutoCAD version 2010 or earlier. Before you save a CAD file, ensure the following:
  - Zoom images to maximum.
  - Remove unwanted layers from the CAD files, that is, layers that add unnecessary artifacts to CAD files and layers that do not provide significant information about the image on the CAD files.

Associating Endpoints with a Site

Endpoint-Site association rules allow you to associate all of the devices on particular subnet to a site, or location, and (optionally) to specify the VLAN location and monitoring data source for the devices on that subnet. This allows you to associate the logical structure of your network with your organizational sites, enabling troubleshooting using Prime Infrastructure's multi-segment analysis features.

Note You can specify multiple rules for the same subnet, allowing you to (for example) specify multiple monitoring data sources or VLANs.

To associate endpoints with a site:

Step 1 Choose **Design > Management Tools > Endpoint-Site Association**.

Step 2 Click **Add Row** to add an Endpoint-Site association rule.

Step 3 Complete the fields as required. See Table 4-2 for field descriptions.

Step 4 Click **Save**.

Table 4-2 Endpoint-Site Association Fields

Field	Description
Site	Select an existing campus to associate with this subnet.
Subnet	Enter the routing prefix (and optional Data Source and VLAN) of the subnetwork to be associated with this site. The entry must be in Classless Inter-Domain Routing notation.
Data Source	Select the edge router or NAM monitoring traffic to and from the devices in the specified subnetwork.
VLAN	Enter the VLAN ID of the subnetwork.

Creating Customized Groups

You create your own logical grouping of devices to help you more efficiently update and manage your devices. For example, you can create a device group that includes devices that have a particular module. If you later want to configure a feature related specifically to that module, you use the device group that you created to push the configuration change to all of the devices contained in the group.

By default, Prime Infrastructure creates rule-based device groups and assigns devices to the appropriate Device Type folder. You cannot edit these device groups. You can view the rules for a device group by hovering your mouse cursor on the device group folder.

You can create a new group that can be one of two types:

- Static—Add devices to a static group using the **Add to Group** button from **Operate > Device Work Center**.
- Dynamic—Specify the rules to which devices must comply to be added to this device group. See Creating Dynamic Device Groups, page 4-7 for more information.

When you create a device group, you are distinguishing that group of devices from others in your network. For example, if you have devices that reside in different time zones, you can create device groups based on geographic regions so that the devices in one group can have a different time zone setting from the devices in another group.

In smaller deployments where all devices can be configured with the same settings, you may only need to create one general device group. This setup allows you to configure settings for the group, and then apply those settings consistently across all your devices.

Device groups not only save you time when configuring multiple devices, but they also ensure that configuration settings are applied consistently across your network.

Note You cannot control which users have access to which device groups. All users can see all device groups. For role-based access control (RBAC), you need to create sites and virtual domains.

Creating device groups is a two-part process:

1. Create a new device group. See Creating Dynamic Device Groups, page 4-7.
2. Assign devices to the device group. See Assigning Devices to a Static Group, page 4-8.

Device Accessibility in Parent-Child Device Groups

When you create a child group under a parent device group, the devices accessible to the child group depend on the device group that you create:

- If the parent and child group are both dynamic device groups, the child group can access the devices available in the parent group only.
- If the parent group is a static device group and the child group is a dynamic group, the child group is not limited to the devices available in the parent group.

In dynamic device groups only, the child group "inherits" its devices from the parent device group.

Creating Dynamic Device Groups

Before you create a dynamic device group, make sure that you understand the unique properties that you want the group to contain. For example, you may want to set up two device groups that have different authentication settings or different time zone settings.

Note While there is no limit to the number of rules that you can specify for a dynamic group, as the number of rules increases, the group update performance could become slower.

To create a dynamic device group:

Step 1 Choose **Operate > Device Work Center**.

Step 2 In the Groups menu on the left, click  , then click **Create Group**.

Step 3 Enter the group name and group description, and select a parent group, if applicable.

Step 4 Select **Dynamic Group** so that you can specify the rules to which all devices must comply to be added to the group. (If you select Static Group, you must assign the devices to the group. Static groups are not rule-based.)

Step 5 Specify the rules that you want to apply to the devices in the group.

Note You can create a rule using the UDF labels defined in **Administration > System Settings > User Defined Field**.

Step 6 Click **Save** to add the device group with the settings you specified.

The device group that you created appears under the user-defined groups.

Assigning Devices to a Static Group

If you created a Static Group, you must assign the devices to the group. Static groups are not rule-based

Step 1 Choose **Operate > Device Work Center**.

Step 2 Select the device that you want to assign to a group, then click **Add To Group**.

Step 3 Select a group, then click **Save**.

Hiding Empty Groups

A device or port group might be empty if:

- You created a static group and have not added devices to the group.
- You created a dynamic group in which no devices matched the rules you specified for the dynamic group.

By default, Prime Infrastructure displays empty groups. If you do not want to display empty groups, choose **Administration > System Settings > Grouping**, then deselect **Display empty groups**.