APPENDIX A

Working with Groups and Views

This appendix includes advanced information on working with Groups and Views within Cisco VXC Manager.

It includes:

Understanding Group Types and Views

Tip For information on managing Group Types, see Managing Group Types, page 7-62. For information on managing Views, see Managing Views, page 7-63.

Groups can be defined as a Group Type (predefined or custom), a Group Instance (within a Group Type), or any combination of these items. Cisco VXC Manager allows you to use predefined Group Types (OS, Platform, Image/Firmware Image Number, Subnet, Location, TimeZone, VendorID, Custom1, Custom2, and Custom3) or create any number of custom Group Types and Group Instances to facilitate the organization of your devices into functional hierarchies. You can then use these groups to create custom Views of your devices.

Views offer a way to visually organize your devices functionally so that you can better manage them. Because Cisco VXC Manager provides predefined Group Types and allows you to create custom Group Types and Group Instances, you can easily organize your devices in ways that best suit your organizational needs. By combining predefined Group Types, custom Group Types, and Group Instances you can achieve high levels of granularity in your Views (for information on creating Views, see Managing Views, page 7-63).

In a simple View, you would have a single Group Type and any number of Group Instances to accommodate your devices. For example, assume that your company devices are spread among two buildings. You might want a View that organizes your devices by the building where the devices reside physically. In this example View:

- Every View is identified by a View name. In our example, the view name could be By Building.

- A single-level View uses one Group Type to organize the devices. In our example, the Group Type is Building.
- The Group Instances within the Group Type define specific instances of that Group Type. In our example, Cisco I Building and Cisco II Building could be the two Group Instances of the general Group Type Building.

Multi-level Views use more than a single hierarchical level. Each additional level is nested within the larger level. Just as you can create your own custom Group Type for a single-level View, you can continue creating custom Group Types for nested hierarchical levels. For example, assume that, in addition to organizing your devices by building, your company also wants to distinguish the devices in each building by the department in which each device operates. Such a View would assume a slightly more granular hierarchy than our simple View example. In this multi-level View case:

- The View name should match the hierarchy of your view for easy identification. In our example, the View could be named By Building => Departments.
- Each Group Type corresponds to a view level in the View. In our example, Building is the Group Type for the View Level-1, and Departments is the Group Type for View Level-2.
- The View Level-2 Groups are Group Instances of the Group Type for that level. In our example, groups such as Engineering, Sales, and Marketing are all Group Instances of the general Group Type Departments.

Understanding the Show Empty Custom Group Folders Option

Cisco VXC Manager Views consist of hierarchies of folder groups, whether the folders are for a Group Type (predefined and/or custom), a Group Instance (within a Group Type), or any combination of these items. Show Empty Custom Group Folders is a Device Manager preference option that lets you choose whether or not to include empty custom group folders in your Views (see Device Manager Preferences, page 7-73).

When you create Views, it is generally recommended that you enable Show Empty Custom Group Folders. Every new folder for a custom group that you create starts out empty. If Show Empty Custom Group Folders is disabled, you will not be able to see newly created folders (or existing folders that have no devices in them) in your Views. For this reason, if the option is disabled while you are creating custom groups, Cisco VXC Manager prompts you whether or not to enable Show Empty Custom Group Folders so you can see the folders that you are creating. After you have assigned devices among your custom groups, there may be some group folders to which you did not assign any devices. You can choose to disable the Show Empty Custom Group Folders option to remove the empty folders from the View so that the hierarchy reveals only folders with assigned devices.

Use the following guidelines when enabling or disabling the Show Empty Custom Group Folders option:

- Using Predefined Group Types—The Show Empty Custom Group Folders option has no effect on the Cisco VXC Manager predefined Group Types. Empty predefined group folders never display in the Administrator Console, regardless of whether or not the Show Empty Custom Group Folders option is enabled. This prevents you from seeing folders for predefined Group Types that do not match the characteristics of any devices in your network. For example, if the Operating Systems of all of your devices is WTOS, you would not want to show the empty folders for the ThreadX operating system when there are no such devices in your network. Note that you cannot move devices across the Cisco VXC Manager predefined Group Types (for example, you cannot move a device from a WTOS OS group to a ThreadX OS group).
- Using Custom Group Types and Custom Instances—The Show Empty Custom Group Folders option should be enabled if you want to move devices from one custom group within the View to another custom group, particularly when some of your folders are still empty.

- **Using Views with Folders of Predefined Group Types Only**—As mentioned earlier, the Show Empty Custom Group Folders option has no effect on folders for predefined Group Types. Folders for predefined Group types will not show on a View unless there are devices that meet the characteristics of the predefined Group Types. For example, if all of the devices in your network are either WTOS and you have a single-level View with the predefined Group Type of OS, the View would contain only groups for WTOS, but not groups for the ThreadX operating system. In a View that contains predefined Group Types, Cisco VXC Manager prevents you from moving devices across predefined Group Types. It would be illogical to move a device that has the ThreadX OS to a folder of devices that have the WTOS OS.
- **Using Views with Folders of Custom Groups Types and Group Instances Only**—If you have a View that uses only custom Group Types and Group Instances, and the Show Empty Custom Group Folders option is enabled, your View will show all of the group folders, regardless of whether or not the devices have been assigned to every folder. For example, in a single-level View there is only one custom Group Type, in this case Building. The Group Instances for this custom Group Type include the Cisco I Building and Cisco II Building. Because the Show Empty Custom Group Folders option is enabled, the View shows the folder for the Cisco I Building even though there are no devices in it (in a View such as this, you can move devices from the Cisco II Building to the Cisco I Building by dragging and dropping (see Moving Devices Across Custom Groups, page A-4). However, if the Show Empty Custom Group Folders option is disabled, the View would show only the Cisco II Building (containing devices).
- **Using Views with Folders of Predefined Group Types and Custom Group Types**—When you have a View with both predefined Group Types and custom Group Types, the standard rules for each Group Type still apply. However, because a folder for a predefined Group Type can be a parent to children folders of custom Group Types, some special circumstances can arise. For example, even with Show Empty Custom Group Folders enabled, folders for custom Group Types that are children of a predefined Group Type will not be shown as long as all of the custom Group Type folders are empty. However, if a one of these children folders has a device assigned, all of the other sibling folders under the same parent folder will be shown.

Assigning Devices to Groups

Cisco VXC Manager uses the following three methods to assign devices to groups (in the first two methods, Cisco VXC Manager performs the device assignment without your direct intervention):

- **By System values of each device**—When discovering a device, Cisco VXC Manager examines the system values of the device (Platform, Vendor ID, OS, and so on). It then automatically groups the devices into the corresponding predefined Group Types that are built-into Cisco VXC Manager (OS, Platform, Image/Firmware Image Number, Subnet, Location, and Contact).
- **By Custom Group Type and Group Instance within a Group Type associated with a subnet**—When you define a subnet, Cisco VXC Manager allows you to specify whether the devices in the subnet should be automatically assigned to a custom Group Type and Group Instance within that Group Type. For example, a custom Group Type named Department can serve to denote the various departments within an organization (Marketing, Sales, Engineering, and so on). In this example, each individual department is a Group Instance within the larger Group Type. To assign devices by subnet, you must create the Groups you want (Group Types and Group Instances) prior to assigning the subnet (see Managing Views, page 7-63).
- **By Manual assignment**—After you have created a View and assigned devices to specific Group Types and Group Instances within those Group Types, you can manually drag-and-drop (assign) a device from one custom group within the View to another custom group. For example, if a View

groups devices by department within buildings, you can easily drag-and-drop a device from the Engineering department in one building to the Marketing department in the same building or in another building (see Moving Devices Across Custom Groups, page A-4).

Moving Devices Across Custom Groups

After creating a View and then assigning the devices to specific custom Group Types and/or Group Instances, you can manually move devices from one custom group within the View to another custom group (for example, in cases where certain devices must be relocated to a new department or assigned to a different function).

Cisco VXC Manager allows certain device moves and prevents others. For example, it does not allow you to move a device from a group of WTOS devices to a group of ThreadX devices. Be aware of the following rules of device movement:

- You can move devices only across custom groups.
- You cannot move devices between the Cisco VXC Manager predefined Group Types. For example, you cannot move a device from a WTOS OS group to a ThreadX OS group.
- You can move a device from its source to a destination at a higher level in a different branch. However, the device will move down the target branch to the group that matches the device characteristics from the originating group. If there is not a matching group for its device characteristics, the device spawns another set of groups to match the device characteristics from the originating group.

Tip Ensure that the Device Manager preference Show Empty Custom Group Folders is enabled, so your View can display newly created/empty folders (see Understanding the Show Empty Custom Group Folders Option, page A-2).

To move devices across custom groups within a View:

Procedure

Step 1 Switch to the View in which you wish to move devices across groups.

Step 2 Click the folder for the group that has the device or devices that you want to move to open the details pane displaying the devices in that group folder.

Step 3 Drag and drop the desired devices from the details pane to the desired target folder.

Creating Views: A Working Example

The process of creating Views can be divided into three stages. When creating your Views, use the guidelines discussed in the following sections.

Stage I: Determine Logical Groups and a Hierarchy for your View

Step 1 Analyze your organizational structure along functional lines and determine how you can logically group your devices to better manage them. Then conceive the necessary categories (Group Types) that you can use to organize your devices. Cisco VXC Manager allows you to use these Group Types to build hierarchies of device groups (Views) with any level of granularity you want. When your devices are grouped into hierarchies of Views, you can then easily manage and control them.

Step 2 Determine ways of organizing the Group Types you conceived into functional hierarchies of devices (Views) for your organization. Just as Cisco VXC Manager allows you to have unlimited Group Types, it also allows you to have any number of Views. You can create as many Views as is necessary to organize your devices. For example, if your Group Types include Building and Department, you could have one View that groups devices by building within each department. Conversely you could use the same Group Types and create a View that groups devices by department within each building.

Step 3 Use the Configuration Manager of the Administrator Console to create the necessary Group Types to accommodate the organizational hierarchy you developed in the previous steps. To create a Group Type, use the Group Type node under Configuration Manager (see Managing Group Types, page 7-62).

Stage II: Create a View and Choose Its View Levels

Step 4 A View name can be any text you want. However, it makes sense to assign names that correspond to the levels in your View so that you can easily identify your Views. By using arrows (=>) between each level, you can clearly establish the hierarchy of your View with the View name. After deciding on your naming conventions, you can create a View Name by using the Views node under Configuration Manager (see Managing Views, page 7-63).

Step 5 Every View requires you to choose at least one view level. The number of view levels dictates the granularity of your device hierarchy. View levels equate to Group Types that you might have created earlier, in Stage I. Because our example includes Group Types for Building and Departments and our example View uses a two-level hierarchy of Building => Departments, you would choose the Group Type Building as the first view level and Departments as the second view level. This hierarchical arrangement would allow you to group your devices by building and then within each building (by the department to which the devices belong).

Stage III: Create Group Instances and Prepare to Assign Devices to Groups

Step 6 After creating a Group Type (in Stage I) and assigning it to a level view (in Stage II), you can create Group Instances for each Group Type. In our example, we created the Cisco I Building and Cisco II Building as Group Instances for the Group Type Building. Similarly, we created the groups Engineering, Sales, and Marketing as groups of the Group Type Departments. To create a Group Instance, use the Device Manager node at each view level.

Once you have created a View, you are ready to assign devices to groups. For example, you can drag-and-drop devices from the Unassigned folder into the appropriate folder for your View (the Unassigned folder serves as a container to hold devices until they are assigned to a Group Type or Group Instance). For information on assigning devices to groups, see Assigning Devices to Groups, page A-3.