Managing Groups

These topics describe the concepts and processes involved in configuring groups:

Understanding Operations Manager Groups

A group consists of objects, where objects refer to devices, applications, and groups. Each group has a set of properties (such as a name, description, permission, and so on), but what defines a group are its associated rules. Rules determine the membership of a group, which may change whenever the rule is evaluated.

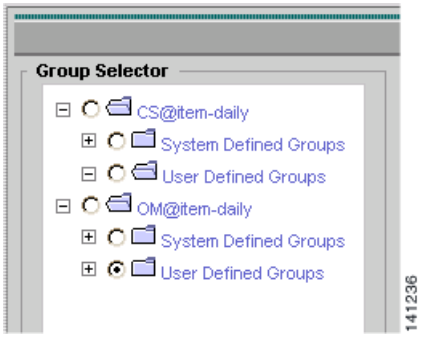
IP Communications Operations Manager manages groups in a hierarchical fashion that supports subgrouping. Each child group is a subgroup of a parent group, and its group membership will be a subset of its immediate parent group. For an object to belong to a group, it must satisfy the immediate group rules and the parent group rules.

What you see in the Operations Manager group selector depends on the function you are using. Normally when you view the Operations Manager group selector, some groups are displayed under Operations Manager and other groups under Common Services, as shown in Figure 16-1 on page 16-2.

- Common Services groups are created by Common Services when devices are added to the DCR. These are device groups. The group to which a device belongs is determined by Common Services group rules. Common Services groups include objects such as routers, switches, and hubs. All Common Services groups are shared with Operations Manager—in other words, they are shown in the Operations Manager user interface. Groups are only shown when they have members.
- Operations Manager groups are created by Operations Manager. The group to which a device belongs is determined by Operations Manager group rules.

Figure 16-1 shows the object selector, with some groups under Common Services and others under Operations Manager.

Figure 16-1 Group Selector Showing Common Services and Operations Manager Groups

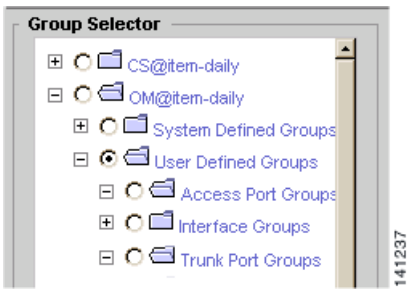


Group	Description
CS@item-daily	Groups that are controlled by Common Services.
OM@item-daily	Groups that are controlled by Operations Manager.

As shown in Figure 16-2, the following *types of groups* are supported in Operations Manager:

- System Defined groups—The default grouping of devices in CiscoWorks Common Services. System-defined groups cannot be deleted or edited. For a description of each system-defined group, see the "Working with System-Defined Groups" section on page 16-3.
- User Defined groups—Groups that you edit or create to reflect the way you manage the network. You can edit or create user-defined groups Operations Manager and determine whether they can be viewed by other CiscoWorks users. User-defined groups include the following:
  - Access Port Groups—Predefined groups that you can edit for your own purposes. For a detailed description, see Working with User-Defined Groups, page 16-8.
  - Interface Groups—Predefined groups that you can edit for your own purposes. For a detailed description, see Working with User-Defined Groups, page 16-8.
  - Trunk Port Groups—Predefined groups that you can edit for your own purposes. For a detailed description, see Working with User-Defined Groups, page 16-8.
  - Groups you create (to use with views in the Monitoring Dashboard displays, or with notification groups in Notification Services). These are the only groups you can *create*. These appear in the Group Selector under User Defined Groups so you can view the group membership (device groups are created when the devices are added to the Operations Manager inventory).

Figure 16-2 Group Selector Showing Operations Manager Groups



Groups and ACS

The CiscoWorks Access Control Server (ACS) provides device-based filtering for many of the Operations Manager user interfaces that use Group Administration. For more information on ACS, see Device-Based Filtering, page 19-22.

Working with System-Defined Groups

The group selector displays some groups under Operations Manager and other groups under Common Services. The Common Services groups are created by Common Services and are visible when devices are added to the DCR. See Common Services System-Defined Groups, page 16-7 for more information.

The Operations Manager groups are created by Operations Manager. These groups include Access Port Groups, Trunk Port Groups, and Interface Groups. See Table 16-1 for a list of the Operations Manager system-defined groups.

You can control the polling and thresholds settings for these groups using **Administration > Polling and Thresholds**. See Configuring Polling and Thresholds, page 17-1.

Operations Manager System-Defined Groups

The Operations Manager system-defined groups are visible to all CiscoWorks users, and are the default groups that are administered by Operations Manager.

Table 16-1 describes the system-defined groups that come preconfigured in Operations Manager.

Table 16-1 Operations Manager System-Defined Groups

Group Name	Definition	Examples
78XX Media Servers	Any Cisco-supported hardware platform that runs Cisco voice applications.	Cisco Media Convergence Servers that are running: • Cisco CallManager • Cisco Emergency Responder • Cisco Customer Response Application • Cisco Unity • Cisco Personal Assistant • [and so on]
Access Port Groups • 1 GB Ethernet • 10MB-100MB Ethernet • ATM • Others	A switch port that is connected to a host.	Any switch

Table 16-1 Operations Manager System-Defined Groups (continued)

Group Name	Definition	Examples
Cisco CallManager or Cluster When a single Cisco CallManager or a cluster is added to Operations Manager, Group Management automatically creates a group under the Cisco CallManager or Cluster folder. The new group name will be preceded by VE; for example, VE-TEST1-CCM. Under the new folder, the following subfolders appear:	Cisco CallManager or cluster. Subgroups of the Cisco CallManager or Cluster group contain all of the devices associated with the corresponding instance of the Cisco CallManager or cluster.	—
• 78XX Media Servers	All media servers running Cisco CallManager in the cluster.	MCS 78XX box
• Digital Voice Gateways	Any DT-24+ or DE-30+ devices that belong to a Cisco CallManager or a cluster.	• DT-24+ • DE-30+
• Gatekeepers	Gatekeepers to which a Cisco CallManager or cluster is registered.	• Cisco 2600 • Cisco 3640 • Cisco 3660 • Cisco 7200 • [and so on]
• Voice Gateways	Voice gateways whose port (interface) acts as a gateway to a Cisco CallManager or a cluster.	• VG-200 • Catalyst 6000 (with a T1, E1, or FXS card)
• Voice Mail Gateways	Any voice mail gateway that belongs to a Cisco CallManager or a cluster.	• DPA-7610 • DPA-7639
Cisco IP Telephony Applications Under the All Cisco IP Telephony Applications folder, the following subgroups appear:	Cisco IP Telephony applications running on a device.	—
• Cisco Call Managers	Any Cisco CallManager applications running on a media server.	Cisco CallManager
• Cisco Call Managers Express	Any Cisco CallManager Express applications running on a router.	Cisco CallManager Express
• Conference Server	Media servers running Cisco Conference Connection.	Cisco Conference Connection
• Customer Response Applications	Any Cisco Customer Response Application (CRA) running on a media server.	Cisco CRA
• Emergency Responders	Any Cisco Emergency Responder running on a media server.	Cisco Emergency Responder
• IP Contact Center	Any Cisco IP Contact Center (IPCC) running on a media server	Cisco IPCC

Table 16-1 Operations Manager System-Defined Groups (continued)

Group Name	Definition	Examples
Cisco IP Telephony Applications (continued)		
• Personal Assistants	Any Cisco Personal Assistant (PA) running on a media server.	Cisco PA
• Unity	Any Cisco Unity application running on a media server.	Cisco Unity
• Unity Express	Any Cisco Unity Express application running on a media server.	Cisco Unity Express
Voice Gateways	Any Cisco switch or router that is voice enabled (contains a voice card or voice port and its function is to aid IP Telephony operations).	Switch or router with BRI, E and M, FXS, FXO, T1 or E1 ports. Routers with gatekeeper functions. For example: • Cisco 1700 • Cisco 2600 • Cisco 3600 • Cisco 5300 • Cisco 5400 • Cisco 5800 • Cisco 7200 • Cisco 7500 • Cisco VG-200 • Cisco VG-248 • Catalyst 6000 • Catalyst 4000 • Catalyst 3500 • Catalyst 2900 • [and so on]
H323 Gateways	Switch modules or routers that have voice ports and are configured as H323 gateways.	• Catalyst 4000 with Access Gateway Module • Cisco 1700 • Cisco 2600 • Cisco 2800 • Cisco 3600 • Cisco 3700 • Cisco 3800 • [and so on]

Table 16-1 Operations Manager System-Defined Groups (continued)

Group Name	Definition	Examples
MGCP Gateways	Switch modules or routers that have voice ports and are configured as MGCP gateways.	• Catalyst 6000 with T1/E1/FXS ports • Cisco 1700 • Cisco 2600 • Cisco 2800 • Cisco 3600 • Cisco 3700 • Cisco 3800 • [and so on]
Voice Mail Gateways	Any device that connects IP Telephony voice mail systems with legacy voice mail systems.	• DPA-7610 • DPA-7639
Digital Voice Gateways	Any DT-24+ or DE-30+ devices.	• DT-24+ • DE-30+
Switches with Phones Connected	Cisco switches that have Cisco IP Phones connected to them (through ports on the switch).	• Catalyst 6000 • Catalyst 3500 XL • Catalyst 4000 • Catalyst 2900 • Catalyst 2950 XL
Gatekeepers	Gatekeepers that provide address translation, bandwidth control and access control to H323 devices including H323 gateways and Cisco CallManager Inter Cluster Trunks.	• Cisco 2600 • Cisco 3640 • Cisco 3660 • Cisco 7200 • [and so on]
IP SLA Devices	Cisco devices that are running Cisco IOS IP SLA (IP SLA).	IP SLA-capable devices

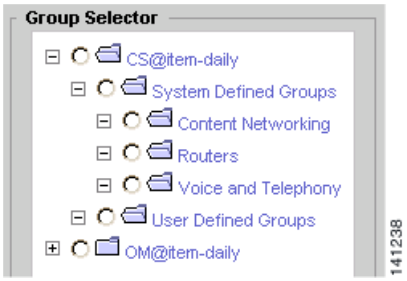
Table 16-1 Operations Manager System-Defined Groups (continued)

Group Name	Definition	Examples
Interface Groups: • 1 GB Ethernet • 10MB-100MB Ethernet • ATM • Backup • Dial-On-Demand • FDDI • ISDN B channel • ISDN D channel • ISDN physical interface • Others • Serial • Token ring	Devices that represent a logical (typically Layer 2) connection to the network.	Any host, hub, router, or switch
SRST Devices	Devices that are configured for Survivable Remote Site Telephony (SRST).	SRST-enabled routers
Phones with tests configured	Cisco IP Phones that are configured for testing.	• 7910 • 7935 • 7960 • 12SP • 30VIP
Trunk Port Groups • 1 GB Ethernet • 10MB-100MB Ethernet • ATM • Others	A switch port that is connected to a switch, hub, or bridge.	Any switch, hub, or bridge

Common Services System-Defined Groups

The Common Services system-defined groups, as shown in Figure 16-3, are visible to all CiscoWorks users, and are the default groups administered by Common Services. Not all system-defined groups are shown in Figure 16-3 because groups only appear in the group selector when they have device members (in other words, devices in the DCR that belong to that group).

Figure 16-3 Group Selector Showing Common Services System-Defined Groups



The following are the Common Services system-defined groups:

- Broadband Cable
- Content Networking
- DSL and LRE
- Interfaces and Modules
- Network Management
- Optical
- Routers
- Security and VPN
- Storage Networking
- Switches and Hubs
- Universal Gateways and Access Servers
- Unknown
- Voice and Telephony
- Wireless

For more information about Common Services system-defined groups, refer to the Common Services online help.

Working with User-Defined Groups

Because you cannot change the rules for system-defined groups, Operations Manager provides user-defined groups that can contain the devices, ports, or interfaces in which you are interested. Port and interface containment is only seen and used by Polling and Thresholds (see Configuring Polling and Thresholds, page 17-1), but device groups will contain members when devices are added to the Operations Manager inventory. Once you edit or create a group, you can determine whether other CiscoWorks users can view the group.

User-defined groups are the basis for the views that appear in the Monitoring Dashboards (Service Level View, Alerts and Events, Phone Activities, and Service Quality Alerts). For every user-defined group you create, a corresponding view is automatically created. For creating user-defined groups, see Creating and Editing Groups, page 16-10.

By default, no devices belong to the predefined user-defined groups. To see membership details for the groups that are created in the Access Port, Interface, and Trunk port folders, you must go to the polling and thresholds pages. (See Configuring Polling and Thresholds, page 17-1.)

Table 16-2 describes the predefined user-defined groups.

Table 16-2 Operations Manager User Defined Groups

Group Name	Use this group to monitor...	Settings you can configure for this group:
Access Port Groups	Access ports	Thresholds
Interface Groups	Interfaces	Thresholds
Trunk Ports Groups	Trunk ports	Thresholds

Using Group Administration and Configuration

The Group Administration and Configuration page is where all group management activities take place. To open the Group Administration and Configuration page, select **Devices > Device Groups**.

These topics explain how to use the Group Administration and Configuration page:

- Creating and Editing Groups, page 16-10
- Viewing Group Details, page 16-26
- Viewing Membership Details, page 16-28
- Refreshing Membership, page 16-28
- Deleting Groups, page 16-29

Figure 16-4 shows an example of the Group Administration and Configuration page.

Figure 16-4 Group Administration and Configuration Page

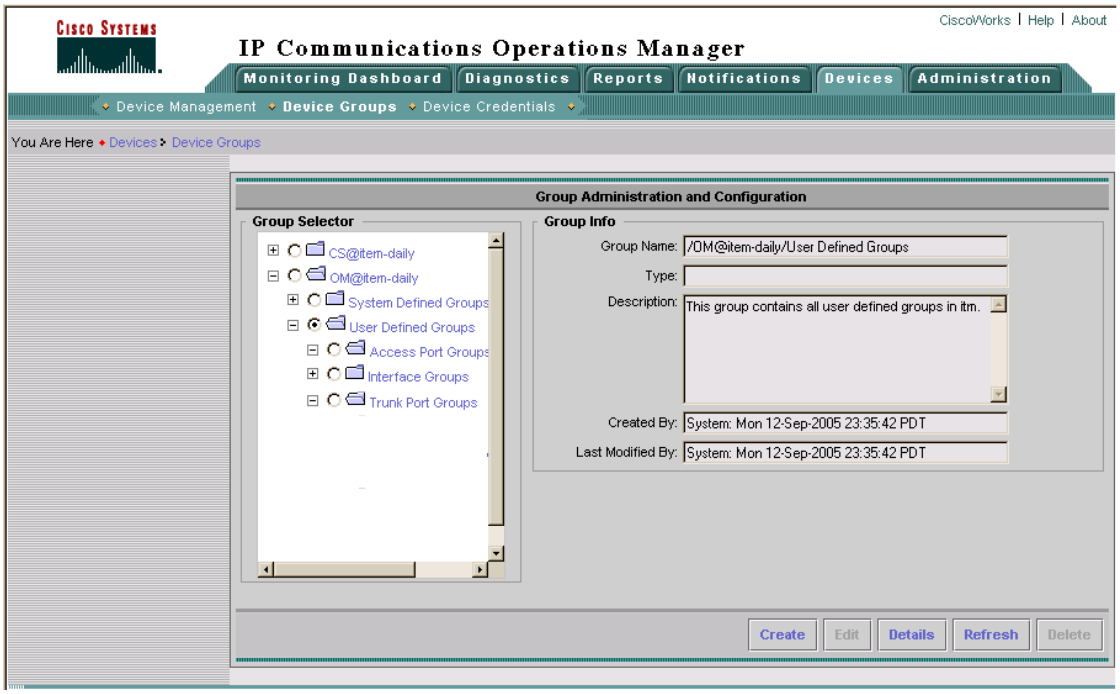


Table 16-3 describes the fields in the Group Administration and Configuration page.

Table 16-3 Fields on Group Administration and Configuration Page

Field/Button	Description
Group Selector	A hierarchical display of all available groups.
Group Info	When you select an item from the Group Selector, the Group Info pane displays the following information: • Group Name—The name of the group you selected. • Type—The type of objects in the selected group. • Description—A text description of the group. • Created By—The person who created the group. • Last Modified By—The last person to edit the group settings.
Create	Starts the Group Creation Wizard for creating a group, as described in the "Creating a Group" section on page 16-11.
Edit	Starts the Group Edit Wizard for editing an existing group, as described in the "Editing Group Properties" section on page 16-17.
Details	Opens the Properties: Details page, as described in the "Viewing Group Details" section on page 16-26.
Refresh	Refreshes a group's membership, as described in the "Refreshing Membership" section on page 16-28.
Delete	Deletes a group, as described in the "Deleting Groups" section on page 16-29.

Creating and Editing Groups

The processes for creating and editing groups are similar.

Keep these points in mind:

- You can only *edit* the predefined user-defined group folders (Access Port Groups, Interface Groups, and Trunk Port Groups), which means you cannot remove these folders from the device selector. Once you create a user-defined group under any of these folders, you can edit or delete the group you created. (See Creating an Access Port, Interface, or Trunk Port Group, page 16-14 and Editing an Access Port, Interface, or Trunk Port Group, page 16-19.)
- You can *create or edit* all other user-defined groups (to use with, for example, views in the Monitoring Dashboard displays, or with notification groups in Notification Services). For example, you could create a group called test, which would appear directly under Operations Manager User Defined Groups in the Operations Manager group selector. (See Creating a Group, page 16-11 and Editing Group Properties, page 16-17.)

Operations Manager uses the Group Creation Wizard to guide you through the steps required to create or edit a group. The wizards steps will vary depending on what you are creating. For example, the steps for creating a template (see Creating a Group—Using a Template, page 16-16 and Editing Group Properties—For a Group that Uses a Template, page 16-20) are different from the steps for creating a user-defined group. Further, if you are creating an Access Port, Interface, or Trunk Port group, the wizard steps are different.

For creating a user-defined group, the wizard consist of four steps:

1. Setting properties (for details, see Creating a Group, page 16-11 and Editing Group Properties, page 16-17).
2. Creating rules (for details, see Understanding Rules, page 16-21).
3. Editing group membership (for details, see Finalizing Group Membership, page 16-25).
4. Viewing the summary (for details, see Viewing the Group Summary, page 16-25).

Note Operations Manager provides you with templates to make it easier for you to create user-defined groups. The four templates that are provided are based on the following:

- Location
- Name
- Subnet
- Service

For instructions on creating groups using the templates, see Creating a Group—Using a Template, page 16-16.

Creating a Group

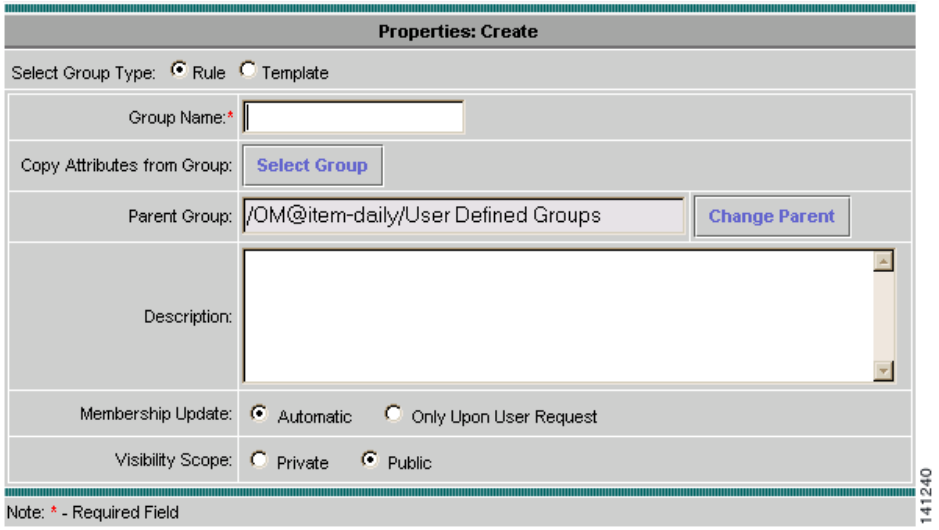
Step 1 Select **Devices > Device Groups**. The Group Administration and Configuration page appears.

Step 2 In the Group Selector, select the parent group under which you want the new group to reside.

Note You must select the User Defined Groups folder or any subfolder. You can only add user-defined groups under the User Defined Groups folder.

Step 3 Click **Create**. The Properties: Create page appears. Figure 16-5 shows an example of the Properties: Create Page.

Figure 16-5 Properties: Create Page



Step 4 In the Select Group Type field, select the Rule radio button.

Step 5 Enter a group name for the new group.

Step 6 If you do not want to copy the attributes of an existing group to your new group, proceed to Step 7. If you want to copy the attributes of an existing group to the new group, do the following:

Note All attributes except the group name are copied to the new group.

a. Click **Select Group**. The Replicate Attributes page appears.

b. Select the group from which you want to copy the attributes.

c. Click **OK**.

Step 7 If you want to change the parent group (the location where the group will reside in the Group Selector), do the following:

a. Click **Change Parent**. The Select Parent page appears.

b. Select the parent group.

c. Click **OK**.

Step 8 (Optional) Enter a description.

Step 9 Choose how you want the group membership updated (this choice is not displayed for port and interface groups):

- If you want the membership for this group updated automatically, select Automatic.
- If you want the membership for this group updated only when the Refresh button is clicked, select Only Upon User Request.

Step 10 Select a Visibility Scope:

- Private—Available to created user only
- Public—Available to all CiscoWorks users

Step 11 Click **Next**. The Rules: Create page appears. (For more information on creating rules, see Understanding Rules, page 16-21.)

Do one of the following:

- To create rules to apply to the group, go to Step 12.
- If you only want to add devices, click **Next** and select the devices on the Membership: Create page. Then go to Step 13.

Note If you need to return to any of the previous pages in the wizard, click **Back**.

Step 12 Create all rules that you want to apply to the group:

a. From the first list, select a logical operator.

Note The list of logical operators is enabled after at least one rule expression is entered.

b. Select an object type.

c. Select a variable.

d. Select an operator.

e. In the Value field, enter a value.

f. Click **Add Rule Expression**. The rule expression appears in the Rule Text box.

Note You can manually add or change any of the text in the Rule Text box. If you enter a single backslash (\), an error is displayed. To enter a single backslash in the Rule Text box, you must type two backslashes (\\) in place of the single backslash. You should always check the syntax after changing a rule expression.

g. If you have added complex rules (containing both AND and OR conditions), you must manually enter parentheses, as in the following example:

```
(:AccessPort.Mode equals "" OR
:AccessPort.Mode contains "BACKUP" OR
:AccessPort.Mode contains "NORMAL") AND
(:AccessPort.DuplexMode contains "HALFDUPLEX" OR
:AccessPort.DuplexMode contains "FULLDUPLEX")
```

h. To verify that the rule syntax is correct, click **Check Syntax**. A dialog box appears, stating that the syntax is valid. Click **OK**.

i. If you want to view the rules for the parent group, select **View Parent Rules**.

Note All rules assigned to a parent group also apply to any of its subgroups.

j. Click **Next**. The Membership: Create page appears.

Step 13 You can add or remove specific objects from the group membership (not supported for port and interface groups).

Note The group's rule captures the list of objects that are added to or deleted from the group. The rule will contain an Includelist and/or Excludelist section to reflect this.

Although it is acceptable for a rule to have more than one Includelist or Excludelist, the recommended practice is to consolidate them, forming one Includelist and one Excludelist. Check for duplicates across both lists and ensure that no device is both included and excluded.

Note Some IPSLA devices do not automatically appear in the Objects Matching Membership column, even though they belong to the created group. You will have to manually move these devices from the Objects from Parent Group column to the Objects Matching Membership column in the Membership: Create page.

To add an object:

a. In the Objects from Parent Group column, select the device to add.

b. Click **Add**.

To delete an object:

a. In the Objects Matching Membership column, select the device to remove.

b. Click **Remove**.

Step 14 Click **Next**. The group's information appears on the Summary: Create page.

Step 15 Click **Finish**.

Creating an Access Port, Interface, or Trunk Port Group

Step 1 Select **Devices > Device Groups**. The Group Administration and Configuration page appears.

Step 2 In the Group Selector, select the parent group under which you want the new group to reside.

Note You must select one of the following folders: Access Port Groups, Interface Groups, or Trunk Port Groups.

Step 3 Click **Create**. The Properties: Create page appears.

Step 4 Enter a group name for the new group.

Step 5 If you do not want to copy the attributes of an existing group to your new group, proceed to Step 7. If you want to copy the attributes of an existing group to the new group, do the following:

Note All attributes except the group name are copied to the new group.

a. Click **Select Group**. The Replicate Attributes page appears.

b. Select the group from which you want to copy the attributes.

c. Click **OK**.

Step 6 If you want to change the parent group (the location where the group will reside in the Group Selector), do the following:

a. Click **Change Parent**. The Select Parent page appears.

b. Select the parent group.

c. Click **OK**.

Step 7 (Optional) Enter a description.

Step 8 Select a Visibility Scope:

- Private—Available to created user only
- Public—Available to all CiscoWorks users

Step 9 Click **Next**. The Rules: Create page appears. (For more information on creating rules, see Understanding Rules, page 16-21.)

Note If you need to return to any of the previous pages in the wizard, click **Back**.

Step 10 Create all rules that you want to apply to the group:

a. From the first list, select a logical operator.

Note The list of logical operators is enabled after at least one rule expression is entered.

b. Select an object type.

c. Select a variable.

d. Select an operator.

e. In the Value field, enter a value.

f. Click **Add Rule Expression**. The rule expression appears in the Rule Text box.

Note You can manually add or change any of the text in the Rule Text box. If you enter a single backslash (\), an error is displayed. To enter a single backslash in the Rule Text box, you must type two backslashes (\\) in place of the single backslash. You should always check the syntax after changing a rule expression.

g. If you have added complex rules (containing both AND and OR conditions), you must manually enter parentheses, as in the following example:

```
(:AccessPort.Mode equals "" OR
:AccessPort.Mode contains "BACKUP" OR
:AccessPort.Mode contains "NORMAL") AND
(:AccessPort.DuplexMode contains "HALFDUPLEX" OR
:AccessPort.DuplexMode contains "FULLDUPLEX")
```

h. To verify that the rule syntax is correct, click **Check Syntax**. A dialog box appears, stating that the syntax is valid. Click **OK**.

i. If you want to view the rules for the parent group, select **View Parent Rules**.

Note All rules assigned to a parent group also apply to any of its subgroups.

j. Click **Next**. The group's information appears on the Summary: Create page.

Step 11 Click **Finish**.

Creating a Group—Using a Template

Step 1 Select **Devices > Device Groups**. The Group Administration and Configuration page appears.

Step 2 In the Group Selector, select the parent group under which you want the new group to reside.

Note You must select the User Defined Groups folder or any subfolder. You can only add user-defined groups under the User Defined Groups folder.

Step 3 Click **Create**. The Properties: Create page appears.

Step 4 In the Select Group Type field, select the Template radio button.

Step 5 Enter a group name for the new group.

Step 6 If you want to change the parent group (the location where the group will reside in the Group Selector), do the following:

a. Click **Change Parent**. The Select Parent page appears.

b. Select the parent group.

c. Click **OK**.

Step 7 (Optional) Enter a description.

Step 8 Choose how you want the group membership updated (this choice is not displayed for port and interface groups):

- If you want the membership for this group updated automatically, select Automatic.
- If you want the membership for this group updated only when the Refresh button is clicked, select Only Upon User Request.

Step 9 Select a Visibility Scope:

- Private—Available to created user only
- Public—Available to all CiscoWorks users

Step 10 Click **Next**. The Templates: Create page appears.

Step 11 In the Template Name field, select the template you want to base your group selection on.

Step 12 (Optional) Enter a description.

Step 13 In the List of Values field, enter the values that you want to use for filtering. For example, if you choose the name-based template, you can enter a list of device names.

Step 14 Click **Next**. The Membership: Create page appears. You can view the members of the group, but you cannot make any changes.

Step 15 Click **Next**. The group's information appears on the Summary: Create page.

Step 16 Click **Finish**.

Editing Group Properties

Step 1 Select **Devices > Device Groups**. The Group Administration and Configuration page appears.

Step 2 In the Group Selector, select the group you want to edit.

Step 3 Click **Edit**. The Properties: Edit page appears.

Step 4 You can edit the following in the Properties: Edit page:

- Group Name
- Description
- Membership update type (not supported for port and interface groups)
- Visibility Scope

Note The parent group is displayed, but it cannot be edited.

Step 5 Click **Next**. The Rules: Edit page appears. For more information on creating rules, see Understanding Rules, page 16-21.

Note If you need to return to any of the previous pages in the wizard, click **Back**.

Step 6 You can add new rules or delete existing rules in the Rules: Edit page.

To add a new rule:

a. From the first list, select a logical operator.

Note The list of logical operators is enabled after at least one rule expression is entered.

b. From the Object Type list, select an object type.

c. From the Variable list, select a variable.

d. From the Operator list, select an operator.

e. In the Value field, enter a value.

f. Click **Add Rule Expression**. The rule expression appears in the Rule Text box.

Note You can manually add or change any of the text in the Rule Text box. If you enter a single backslash (\), an error is displayed. To enter a single backslash in the Rule Text box, you must type two backslashes (\\) in place of the single backslash. You should always check the syntax after changing a rule expression.

g. If you have added complex rules (containing both AND and OR conditions), you must manually enter parentheses, as in the following example:

```
(:AccessPort.Mode equals "" OR
:AccessPort.Mode contains "BACKUP" OR
:AccessPort.Mode contains "NORMAL") AND
(:AccessPort.DuplexMode contains "HALFDUPLEX" OR
:AccessPort.DuplexMode contains "FULLDUPLEX")
```

h. To verify that the syntax of the rule is correct, click **Check Syntax**. A dialog box appears, stating that the syntax is valid. Click **OK**.

i. If you want to view the rules for the parent group, select **View Parent Rules**.

Note All rules assigned to a parent group also apply to any of its subgroups.

j. Click **Next**. The Membership: Edit page appears.

To delete a rule:

a. In the Rule Text box, select the entire rule text and press the **Delete** key.

After deleting the rule, you must click the page so that the page can refresh, removing the list of logical operators.

b. Click **Next**. The Membership: Edit page appears.

Step 7 You can add or remove specific objects from the group membership (not supported for port and interface groups).

Note The group's rule captures the list of objects that are added to or deleted from the group. The rule will contain an Includelist and/or Excludelist section to reflect this.

Although it is acceptable for a rule to have more than one Includelist or Excludelist, the recommended practice is to consolidate them, forming one Includelist and one Excludelist. Check for duplicates across both lists and ensure that no device is both included and excluded.

Note Some IPSLA devices do not automatically appear in the Objects Matching Membership column, even though they belong to the created group. You will have to manually move these devices from the Objects from Parent Group column to the Objects Matching Membership column in the Membership: Create page.

To add an object:

a. In the Available Objects from Parent Group column, select the device to add.

b. Click **Add**.

To remove an object:

a. In the Objects Matching Membership Criteria column, select the device to remove.

b. Click **Remove**.

Step 8 Click **Next**. The group's information appears on the Summary: Edit page.

Step 9 Click **Finish**.

Editing an Access Port, Interface, or Trunk Port Group

Step 1 Select **Devices > Device Groups**. The Group Administration and Configuration page appears.

Step 2 In the Group Selector, select the access port group, interface group, or trunk port group that you want to edit.

Step 3 Click **Edit**. The Properties: Edit page appears.

Step 4 You can edit the following in the Properties: Edit page:

- Description
- Visibility scope

Step 5 Click **Next**. The Rules: Edit page appears. (For more information on creating rules, see Understanding Rules, page 16-21.)

Note If you need to return to any of the previous pages in the wizard, click **Back**.

Step 6 You can add new rules or delete existing rules in the Rules: Edit page.

To add a new rule:

a. From the first list, select a logical operator.

Note The list of logical operators is enabled after at least one rule expression is entered.

b. From the Object Type list, select an object type.

c. From the Variable list, select a variable.

d. From the Operator list, select an operator.

e. In the Value field, enter a value.

f. Click **Add Rule Expression**. The rule expression appears in the Rule Text box.

Note You can manually add or change any of the text in the Rule Text box. If you enter a single backslash (\), an error is displayed. To enter a single backslash in the Rule Text box, you must type two backslashes (\\) in place of the single backslash. You should always check the syntax after changing a rule expression.

g. If you have added complex rules (containing both AND and OR conditions), you must manually enter parentheses, as in the following example:

```
(:AccessPort.Mode equals "" OR
:AccessPort.Mode contains "BACKUP" OR
:AccessPort.Mode contains "NORMAL") AND
(:AccessPort.DuplexMode contains "HALFDUPLEX" OR
:AccessPort.DuplexMode contains "FULLDUPLEX")
```

h. To verify that the syntax of the rule is correct, click **Check Syntax**. A dialog box appears, stating that the syntax is valid. Click **OK**.

i. If you want to view the rules for the parent group, select **View Parent Rules**.

Note All rules assigned to a parent group also apply to any of its subgroups.

j. Click **Next**. The Membership: Edit page appears.

To delete a rule:

a. In the Rule Text box, select the entire rule text and press the **Delete** key.

After deleting the rule, you must click the page so that the page can refresh, removing the list of logical operators.

b. Click **Next**. The group's information appears on the Summary: Edit page.

Step 7 Click **Finish**.

Editing Group Properties—For a Group that Uses a Template

Step 1 Select **Devices > Device Groups**. The Group Administration and Configuration page appears.

Step 2 In the Group Selector, select the group you want to edit.

Step 3 Click **Edit**. The Properties: Edit page appears.

Step 4 You can edit the following in the Properties: Edit page:

- Group Name
- Description
- Membership update type (not supported for port and interface groups)
- Visibility Scope

Note The parent group is displayed, but it cannot be edited.

Step 5 Click **Next**. The Templates page appears.

Step 6 You can change the following in the Templates page:

- Template
- Description
- List of Values

Step 7 Click **Next**. The Membership: Edit page appears. You can view the members of the group, but you cannot make any changes.

Step 8 Click **Next**. The group's information appears on the Summary: Edit page.

Step 9 Click **Finish**.

Understanding Rules

Every group is defined by a set of rules. A rule set contains a Boolean combination of individual rule expressions.

Rules are created to filter in the objects that you want to belong to the group, and to filter out those that you do not want in the group. When determining which objects belong to a group, Group Management compares object information to the rule. If an object's information satisfies all of the rule's requirements, it is placed in the group.

One or more rule expressions can be applied to form a rule.

Each rule expression contains the following:

<object type>.<variable> <operator> <value>

For example:

```
:Gatekeeper.Cisco_CallManager_or_Cluster.Name equals "ccm test1"
```

Rules are defined through the Group Creation Wizard on the Rules: Create page.

You can define the following:

- OR, AND, EXCLUDE—Logical operators. This field appears after a rule expression is added in the Rule Text box.
  - OR—Include devices that fulfill the requirements of either rule.
  - AND—Include only devices that fulfill the requirements of both rules.

    Note When using the AND operator, the rule expressions cannot contain different types of devices. For example, you cannot use the AND operator with the following rule expressions:

    ```
    :Gatekeeper
    :MediaServer
    ```

    In this example, you would have to use the OR operator.

  - EXCLUDE—Do not include these devices.
- Object Type—The type of object that is used to form a group. The object can be all devices, a group, or a type of device.

  In the Object Type field you will see the following choices:
  - AccessPort
  - Device
  - CUE
  - DigitalVoiceGateway
  - Gatekeeper
  - IPCC
  - MediaServer
  - PhoneAccessSwitch
  - VoiceGateway

  - VoiceMailGateway
  - Group
  - Interfaces
  - PRPhone
  - SRSTDevice
  - TrunkPort
- Variable—An attribute of the selected object type to be used for the rule. The list of possible variables changes based on the object type that is selected.
- Operator—The operator to be used in the rule. The list of possible operators changes based on the object type and the variable selected.

Note When using the *equals* operator the rule is case-sensitive.

- Value—The value of the rule expression. The possible values depend upon the object type, variable, and operator selected. Depending on the operator selected, the value may be free-form text or a list of values.

Some devices (Object Types) cannot be grouped using certain attributes (Variables), because the attributes for these devices do not exist. Table 16-4 lists the devices and the attributes.

Table 16-4 Devices and Attributes They Cannot Use for Grouping

Device (Object Type)	Attributes (Variables)
DigitalVoiceGateway	• IP.Address • IP.Name • IP.Netmask • Location • Type • SystemObjectID
Any device with these attributes	• VoiceInterface.Type • VoicePort.Type

Note After you have defined the rule, you should verify the syntax. You can do this on the Rules: Create page.

Figure 16-6 shows an example of the Rules: Create page.

Figure 16-6 Rules: Create Page

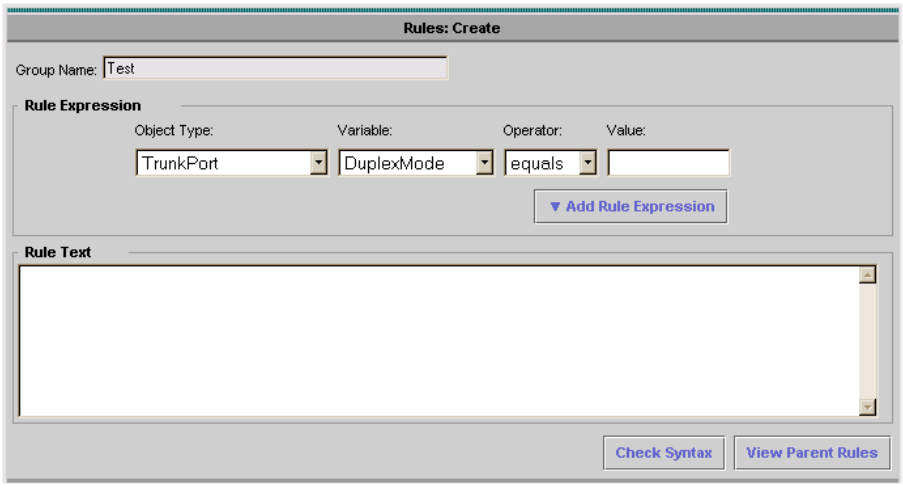


Table 16-5 describes the fields on the Rules: Create page of the Group Creation Wizard.

Table 16-5 Fields on the Rules: Create Page

Field/Button	Description
OR, AND, EXCLUDE	Logical operators. • OR—Include devices that fulfill the requirements of either rule. • AND—Include only devices that fulfill the requirements of both rules. • EXCLUDE—Do not include these devices. This field is present only after a rule expression is added in the Rule Text box.
Object Type	The type of object that is used to form the group.
Variable	The attribute of the selected object type to be used for the rule.
Operator	The operator to be used in the rule.
Value	The value of the rule expression.
Add Rule Expression	Used to add the rule expression to the group rules.
Rule Text	Displays the rule.
Check Syntax	Verifies that the rule syntax is correct.
View Parent Rules	Used to view the parent group rules. **Note** All parent group rules apply to the subgroups.

Understanding What to Enter in the Value Field

Most of the values that can be entered in the Value field of the Rules: Create page are self-evident, but some of the objects in the Variables field have special meanings or restrictions on how to enter the related attribute in the Value field.

Table 16-6 describes the objects that appear in the Variable field of the Rules: Create page that might need further explanation.

Table 16-6 Explanations of Special Variables

Variable	Explanation
Cisco_CallManager_Or_Cluster.Name	The name of the cluster to which the device belongs. You can find the cluster names by opening the Group Configuration page and selecting the Cisco_CallManager_Or_Cluster group. A list of cluster group names appears. Use these names in the Value field of the Rules: Create page.
Type	In the Value field of the Rules: Create page, use the following corresponding values for the device: • MediaServer—MediaServer • VoiceMailGateway—VoiceMailGateway • PhoneAccessSwitch—SWITCH or ROUTER • VoiceGateway—SWITCH, ROUTER, or VG248 • Gatekeeper—ROUTER, SWITCH • Router—ROUTER • Switch—SWITCH **Note** When using the *equals* operator in the rule, enter the values exactly as indicated.
ClassName	In the Value field of the Rules: Create page, use the following corresponding values for the device: • VoiceGateway—VoiceGateway • MediaServer—MediaServer • VoiceMailGateway—VoiceMailGateway

Examples of Rules

Example 1

You want to create a group that contains all of the media servers in the vegas cluster. Form the following rule:

```
:MediaServer.Cisco_CallManager_or_Cluster.Name contains "VEGAS"
```

- Object Type—MediaServer
- Variable—Cisco_CallManager_or_Cluster.Name
- Operator—contains
- Value—“VEGAS”

Example 2

You want to create a group that contains all of the voice gateways that have 172 as part of their IP address.

```
:VoiceGateway.IP.Address contains "172"
```

- Object Type—VoiceGateway
- Variable—IP.Address
- Operator—contains
- Value—“172”

Example 3

You want to create a group that contains all of the phone access switches in the San Jose location.

```
:PhoneAccessSwitch.Location equals "San Jose"
```

- Object Type—PhoneAccessSwitch
- Variable—Location
- Operator—equals
- Value—“San Jose”

Note To help you to better understand group rules, you may want to look at the rules used for system-defined groups. These rules appear in the Properties: Details page. For a description of the Properties: Details page, see Viewing Group Details, page 16-26.

Finalizing Group Membership

After the group rules have been defined, they are evaluated, and you can view the group’s members. In addition, the group membership can be modified by adding or removing specific objects. The group rule will be automatically modified to reflect the objects that were added or removed from the group. You add or remove specific objects from a group’s membership in the Membership: Create page of the Create Group Wizard.

Note If you used a template to create your group, you can only view membership details. You cannot add or remove objects from a group’s membership in the Membership: Create page.

Viewing the Group Summary

The final step in the Create Group Wizard is a summary page that displays the new group’s definition. Figure 16-7 shows an example of the Summary: Create page.

Figure 16-7 Summary: Create Page

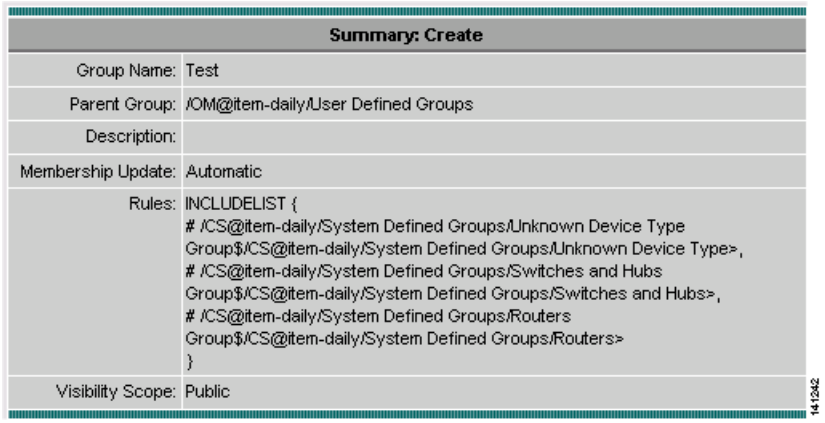


Table 16-7 describes the fields on the Summary: Create page of the Group Creation Wizard.

Table 16-7 Fields on the Group Summary Page

Heading/Button	Description
Group Name	Name of the group you are creating.
Parent Group	The parent group of the group you are creating.
Description	A text description of the group.
Membership Update	How group membership is updated. Membership updates can be automatic (updated every time the group is accessed) or can be upon user request only (updated only when you click the Refresh button).
Rules	The rules used to filter group membership.
Visibility Scope	Setting that determines whether all CiscoWorks users or only the created user can view the group.

Viewing Group Details

A group's information is displayed on the Properties: Details page.

Step 1 Select **Devices > Device Groups**. The Group Administration and Configuration page appears.

Step 2 In the Group Selector, select the group for which you want to view details.

Step 3 Click **Details**. The Properties: Details page appears (see Figure 16-8).

Figure 16-8 Properties: Details Page

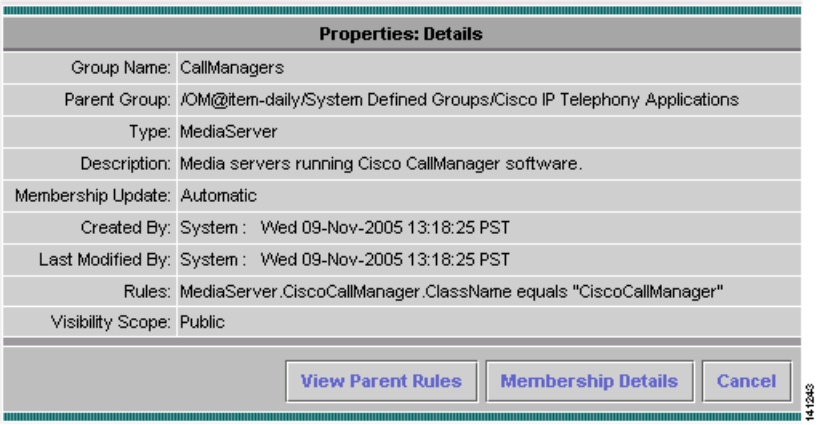


Table 16-8 describes the fields on the Properties: Details page.

Table 16-8 Fields on the Properties: Details Page

Heading/Button	Description
Group Name	Name of the group you are viewing.
Parent Group	The parent group of the group you are viewing.
Type	The type of the objects that belong to the group.
Description	A text description of the group.
Membership Update	How group membership is updated. Membership updates can be automatic (updated every time the group is accessed) or can be upon user request only (updated only when you click the Refresh button).
Created By	The person who created the group.
Last Modified By	The last person to edit the group.
Rules	The rules used to filter group membership.
Visibility Scope	Setting that determines whether all CiscoWorks users or only the created user can view the group.
View Parent Rules	Used to view the parent group rules. **Note** All parent group rules apply to the subgroups.
Membership Details	Used to view membership details. See Viewing Membership Details, page 16-28.
Cancel	Closes the page and takes you back to the Group Administration and Configuration page.

Viewing Membership Details

You can view a list of the objects that belong to a group by accessing the Membership: Details page.

Step 1 **Select Devices > Device Groups**. The Group Administration and Configuration page appears.

Step 2 In the Group Selector, select the group for which you want to view details.

Step 3 Click Details. The Properties: Details page appears.

Step 4 Click **Membership Details**. The Membership: Details page appears.

Figure 16-9 shows an example of the Membership: Details page.

Figure 16-9 Membership: Details Page

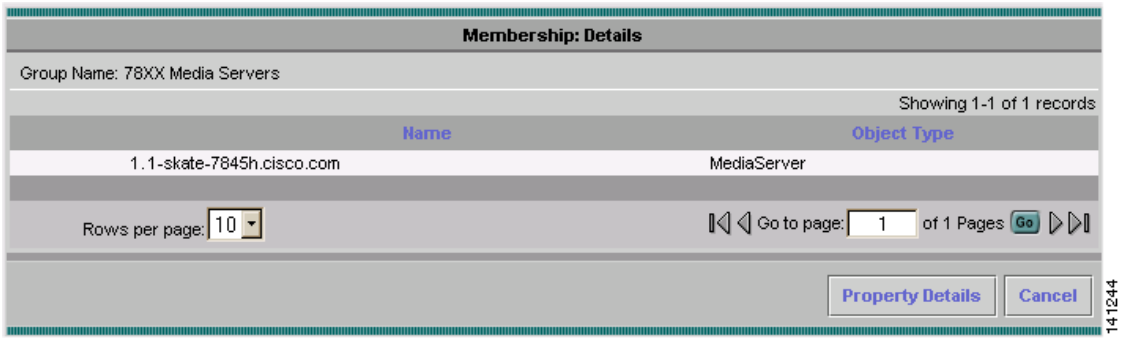


Table 16-9 describes the fields on the Membership: Details page.

Table 16-9 Fields on the Membership: Details Page

Heading/Button	Description
Name	Name of the device for which you want to view membership details.
Object Type	The type of object for which you want to view details.
Property Details	Takes you back to the Properties: Details page.
Cancel	Closes the page and takes you back to the Group Administration and Configuration page.

Refreshing Membership

Refreshing a group's membership forces the group to recompute its membership by reevaluating its rules and obtaining membership information from the data collectors. Port and interface group membership listings are not supported, because these groups are only used for polling and threshold purposes.

Step 1 Select **Devices > Device Groups**. The Group Administration and Configuration page appears.

Step 2 In the Group Selector, select the group you want to refresh.

Step 3 Click **Refresh**.

Step 4 In the confirmation dialog box, click **Yes**. In the next dialog box, click **OK**.

Deleting Groups

You can only delete user-defined groups. This includes any Access Port, Interface, or Trunk Port groups that you created. You cannot delete the Access Port Groups, Interface Groups, or Trunk Port Groups folders.

Step 1 Select **Devices > Device Groups**. The Group Administration and Configuration page appears.

Step 2 In the Group Selector, select the group you want to delete.

Step 3 Click **Delete**.

Step 4 In the confirmation dialog box, click **Yes**. In the next dialog box, click **OK**.

Note Edit, Refresh, and Delete cause internal processes to start. For this reason, Operations Manager could experience a period of high CPU utilization after these processes are triggered.