CHAPTER 5

# Setting Thresholds

The following topics are included:



## Understanding Thresholds and Threshold Groups

Prime USM uses thresholds to determine when a MOS value—reported from a sensor or included in CDRs from a Unified Communications Manager cluster—has fallen to an unacceptable level. When MOS falls below a threshold, Prime USM sends a QoVMOSViolation trap to up to four trap receivers.

Prime USM supplies global thresholds and provides default values for them. Prime USM can use global thresholds to compare against MOS values reported from sensors or clusters. Since the MOS threshold values might vary depending upon the codec being used in a call, global thresholds include separate values for commonly used codecs such as these:

- AAC
- G711Alaw 56k
- G711Alaw 64k
- G711Ulaw 56k
- G711Ulaw 64k
- G722 48k
- G722 56k
- G722 64k
- G722.1 24k
- G722.1 32k
- G723.1
- G726 16K
- G726 24K

- G726 32K
- G728
- G729
- G729AnnexA
- G729AnnexAwAnnexB
- G729AnnexB
- GSM
- GSM Enhanced Full Rate
- GSM Full Rate
- GSM Half Rate
- iSAC

**Note** The iSAC codec applies to CVTQ data only.

- NonStandard

**Note** For more information about codecs, see Understanding Codecs: Complexity, Hardware Support, MOS, and Negotiation at this URL: http://www.cisco.com/en/US/tech/tk1077/technologies_tech_note09186a00800b6710.shtml

You can update the global threshold default values to reflect MOS values below the average MOS seen in your system. By monitoring Prime USM reports, you can determine average MOS values and then adjust global thresholds accordingly. You can also easily restore global thresholds to the default values that Prime USM supplies.

If you would like to use different threshold values for particular sensors, clusters, or groups of endpoints reported on by either sensors or clusters, you can override global thresholds by adding these threshold groups:

- CVTQ Groups—A CVTQ group includes one or more clusters, two sets of endpoints, and one or more threshold values for commonly used codecs.
- Sensor Groups—A sensor group includes one or more sensors, two sets of endpoints, and one or more threshold values for commonly used codecs.

You can create up to 10 CVTQ groups and up to 10 sensor groups. CVTQ groups are prioritized from highest (one) to lowest (ten), as are sensor groups. In cases where an endpoint is included in more than one CVTQ group or more than one sensor group, Prime USM compares MOS for the endpoint against the highest priority group that it belongs to.

For more information, see the following topics:

- Configuring Global Thresholds, page 5-3
- Configuring CVTQ Threshold Groups, page 5-4
- Configuring Sensor Threshold Groups, page 5-9

# Configuring Global Thresholds

Prime USM compares MOS reported from sensors and clusters against global thresholds when no CVTQ group or sensor group setting is applicable. You cannot delete or clear global thresholds. You can update them and you can restore them to default values. You can override global thresholds by creating user-defined threshold groups; for more information, see Configuring CVTQ Threshold Groups, page 5-4 and Configuring Sensor Threshold Groups, page 5-9.

**Note** Grading is based on the global threshold settings only.

Use this procedure to update global thresholds.

**Step 1** Select **Administration > Thresholds > Global**. The Global Thresholds page appears, displaying the information in the following table.

| Fields and buttons | Description/Action |
|---|---|
| Codec | Codec name. Dimmed because you cannot edit it. |
| **MOS Poor** | |
| • Suggested | Suggested default MOS value for the codec when it is considered to have poor quality. |
| • Current | Enter a value from 0.0 to 5.0 for the poor MOS. |
| **MOS Acceptable** | |
| • Suggested | Suggested default MOS value for the codec when it is considered to have acceptable quality. |
| • Current | Enter a value from 0.0 to 5.0 for the acceptable MOS. |
| Revert to Suggested Defaults button | Click to set the current value of each codec to the suggested default value. |
| Apply | Click to apply changes to current values. |

**Step 2** Enter a new current value for any codec in the table and click **Apply**.

# Restoring Global Thresholds to Default Values

Use this procedure to restore global threshold values to the suggested default values that are displayed on the Global Thresholds page.

**Step 1** Select **Administration > Thresholds > Global**. The Global Thresholds page appears.

**Step 2** Click **Revert to Suggested Defaults**.

# Configuring CVTQ Threshold Groups

A CVTQ group includes one or more Unified Communications Manager clusters, two sets of endpoints, and threshold values for one or more commonly used codecs. You can define up to 10 CVTQ threshold groups; Prime USM prioritizes the CVTQ threshold groups from 1 (highest priority) to 10 (lowest priority), initially reflecting the order in which you create the groups. (You can reprioritize them.) If an endpoint belongs to more than one CVTQ threshold group, Prime USM uses the thresholds for the highest priority CVTQ threshold group.

To manage threshold groups, select **Administration > Thresholds > CVTQ Groups**. The CVTQ Threshold Groups page appears, displaying up to 10 user-defined CVTQ threshold groups with information described in the following table.

| Fields and Buttons | Description/Action |
|---|---|
| Check box column | Select a CVTQ threshold group if you want to delete it. |
| Name column | A unique user-defined name for the CVTQ threshold group. |
| Priority column | A number from 1 to 10, indicating highest to lowest priority. To change priority, enter a different one- or two-digit number for each group in this column for two or more CVTQ threshold groups and click the **Update Priority** button. |
| Add button | Click to add a CVTQ threshold group (up to a maximum of 10 CVTQ threshold groups). See Adding a CVTQ Threshold Group, page 5-4. |
| Edit column | Click the Edit link in this column to update this group. Editing a CVTQ Threshold Group, page 5-6. |
| Delete button | Select one or more check boxes and click the Delete button to delete a CVTQ threshold group. |
| Update Priority button | Click after entering unique numbers in the Priority column. The page will display again with the CVTQ threshold groups in priority order. |

## Adding a CVTQ Threshold Group

When you add a CVTQ threshold group, it is assigned the lowest priority among existing CVTQ threshold groups. To adjust its priority, see Updating CVTQ Threshold Group Priority, page 5-8.

**Note** You can add up to 10 CVTQ threshold groups.

**Step 1** Select **Administration > Thresholds > CVTQ Groups**. The CVTQ Threshold Groups page appears.

**Step 2** Click **Add**. The Add CVTQ Threshold Group page appears.

**Step 3** Enter data described in the following table.

| GUI Element | Description/Action |
|---|---|
| Group Name field | Enter a name. The name must be unique among all CVTQ groups. |
| Select Customers | To select customers:<br>1. Click  . The Select Customers dialog box appears, displaying the managed customers.<br>2. Select check boxes.<br>3. Click **OK**.<br>**Note** This appears only if Service Monitor is installed in the MSP Network Deployment mode. |
| Select Clusters list | The following appears in the list box: All current and future clusters.<br>**Note** In Enterprise Network Deployment mode, if you do not select any clusters, the threshold values in this group apply to clusters that are currently managed and will be applied to clusters that are managed in the future.<br>To select clusters:<br>1. Click  . The Select Clusters dialog box appears, displaying cluster IDs that Prime USM has obtained from CMRs and CDRs.<br>2. Select check boxes.<br>3. Click **OK**.<br>**Note** In MSP Network Deployment mode, the clusters that listed here depends on the customers you have selected in the Select Customers field. Even if you deselect all the listed clusters, the threshold values are applied to the clusters that belong to the customers you have selected. |
| Select Devices list | The following appears in the list box: All current and future devices.<br>**Note** If you do not select any device types, the threshold values in this group apply to device types that are currently managed and will be applied to device types that are managed in the future.<br>To select device types:<br>1. Click  . The Select Device Types dialog box appears, displaying available device types.<br>2. Select check boxes.<br>3. Click **OK**. |
| Override Thresholds list | Update thresholds:<br>1. Click  . The MOS Threshold Settings dialog box appears.<br>2. For at least one codec, enter a MOS threshold value.<br>3. Click **OK**. |

| GUI Element | Description/Action |
|---|---|
| Endpoint 1 | Specify a source—or destination—endpoint by selecting one of these radio buttons and entering the appropriate data:<br>• DN—Directory number. Enter an exact directory number or enter numbers and uppercase X, a wildcard that matches a single digit, to specify multiple directory numbers. For example, 5078 matches 5078 only and 5XXX matches 5000-5999.<br>• IP—IP address. Enter one of these:<br>– An exact IP address (enter a number in each of the four octets).<br>– In each octet, enter either numbers or an asterisk (*), a wildcard, to match multiple IP addresses. |
| Endpoint 2 | Specify a source—or destination—endpoint by selecting one of these radio buttons and entering the appropriate data:<br>• DN—Directory number. Enter an exact directory number or enter numbers and uppercase X, a wildcard that matches a single digit, to specify multiple directory numbers. For example, 5078 matches 5078 only and 5XXX matches 5000-5999.<br>• IP—IP address. Enter one of these:<br>– An exact IP address (a number in each of the four octets).<br>– In each octet, enter either numbers or an asterisk (*), a wildcard, to match multiple IP addresses.<br>**Note** The relationship between Endpoint 1 and Endpoint 2 can be:<br>• One-to-one.<br>• One-to-many.<br>• Many-to-one.<br>• Many-to-many. |

**Step 4** Click **OK**. The CVTQ Threshold Group page appears, displaying the newest CVTQ threshold group last in the list (in the lowest priority position).

# Editing a CVTQ Threshold Group

**Note** To change CVTQ threshold group priority, see Updating CVTQ Threshold Group Priority, page 5-8.

**Step 1** Select **Administration > Thresholds > CVTQ Groups**. The CVTQ Threshold Groups page appears.

**Step 2** Select a group and click **Edit**. The Edit CVTQ Threshold Group page appears.

**Step 3** Enter data described in the following table.

| GUI Element | Description/Action |
|---|---|
| Group Name field | You can change the name if you want to. The name must be unique among all CVTQ groups. |
| Select Customers | To select customers:<br>1. Click  . The Select Customers dialog box appears, displaying the managed customers.<br>2. Select check boxes.<br>3. Click **OK**.<br>**Note** This appears only if Service Monitor is installed in the MSP Network Deployment mode. |
| Select Clusters list | If no clusters are selected, the following appears in the list box: All current and future clusters.<br>**Note** If a cluster is already included in a CVTQ group when credentials for a cluster are deleted, the cluster remains in the group.<br>To select clusters:<br>1. Click  . The Select Clusters dialog box appears, displaying cluster IDs that Prime USM has obtained from CMRs and CDRs.<br>2. Select check boxes.<br>3. Click **OK**.<br>**Note** If no clusters are selected, the threshold values in this group apply to clusters that are currently managed and will be applied to clusters that are managed in the future. |
| Select Devices list | If no device types are selected, the following appears in the list box: All current and future devices.<br>To select device types:<br>1. Click  . The Select Device Types dialog box appears, displaying available device types.<br>2. Select check boxes.<br>3. Click **OK**. |
| Override Thresholds list | Update thresholds:<br>1. Click  . The MOS Threshold Settings dialog box appears.<br>2. For at least one codec, enter a MOS threshold value.<br>3. Click **OK**. |

| GUI Element | Description/Action |
|---|---|
| Endpoint 1 | Specify a source—or destination—endpoint by selecting one of these radio buttons and entering the appropriate data:<br>• DN—Directory number. Enter an exact directory number or enter numbers and uppercase X, a wildcard that matches a single digit, to specify multiple directory numbers. For example, 5078 matches 5078 only and 5XXX matches 5000-5999.<br>• IP—IP address. Enter one of these:<br>– An exact IP address (a number in each of the four octets).<br>– In each octet, enter either numbers or an asterisk (*), a wildcard, to match multiple IP addresses. |
| Endpoint 2 | Specify a source—or destination—endpoint by selecting one of these radio buttons and entering the appropriate data:<br>• DN—Directory number. Enter an exact directory number or enter numbers and uppercase X, a wildcard that matches a single digit, to specify multiple directory numbers. For example, 5078 matches 5078 only and 5XXX matches 5000-5999.<br>• IP—IP address. Enter one of these:<br>– An exact IP address (enter a number in each of the four octets).<br>– In each octet, enter either numbers or an asterisk (*), a wildcard, to match multiple IP addresses.<br>**Note** The relationship between Endpoint 1 and Endpoint 2 can be:<br>• One-to-one<br>• One-to-many<br>• Many-to-one<br>• Many-to-many |

# Updating CVTQ Threshold Group Priority

If the directory number or IP address for an endpoint is included in more than one CVTQ group, Prime USM applies the thresholds for the highest priority CVTQ threshold group.

**Step 1** Select **Administration > Thresholds > CVTQ Groups**. The CVTQ Threshold Group page appears, displaying up to 10 user-defined CVTQ threshold groups.

**Step 2** Enter any unique numbers—up to two digits—in the Priority column.

**Step 3** Click **Update Priority**. Prime USM reorders the CVTQ threshold groups and displays them in priority order.

## Deleting a CVTQ Threshold Group

**Step 1** Select **Administration > Thresholds > CVTQ Groups**. The CVTQ Threshold Group page appears, displaying up to 10 user-defined CVTQ threshold groups.

**Step 2** Select the check boxes for the CVTQ threshold groups that you want to delete.

**Step 3** Click **Delete**. A confirmation dialog box is displayed.

**Step 4** Click **Yes**. Prime USM displays any remaining CVTQ threshold groups in priority order.

# Configuring Sensor Threshold Groups

A sensor group includes one or more sensors, two sets of endpoints, and threshold values for one or more commonly used codecs. You can define up to 10 sensor threshold groups; Prime USM prioritizes the sensor threshold groups from 1 (highest priority) to 10 (lowest priority), initially reflecting the order in which you create the groups. (You can reprioritize them.) If an endpoint belongs to more than one sensor threshold group, Prime USM uses the thresholds for the highest priority sensor threshold group.

To manage sensor groups, select **Administration > Thresholds > Sensor Groups**. The Sensor Threshold Group page appears, displaying up to 10 user-defined sensor groups with information described in the following table.

| GUI Element | Description/Action |
|---|---|
| Check box column | Select a sensor group to update its priority or to delete it. |
| Name column | A unique user-defined name for the sensor group. The name must be unique among all sensor groups. |
| Priority column | A number from 1 to 10, indicating highest to lowest priority. To change priority, enter a different one- or two-digit number for each group in this column for two or more sensor groups and click the **Update Priority** button. |
| Add button | Click to add a sensor threshold group (up to a maximum of 10 CVTQ threshold groups). See Adding a Sensor Group, page 5-10. |
| Edit column | Click the Edit link in this column to update this group. See Editing a Sensor Group, page 5-11. |
| Delete button | Select one or more check boxes and click the Delete button to delete a CVTQ threshold group. |
| Update Priority button | Click after entering unique numbers in the Priority column. The page will display again with the sensor threshold groups in priority order. |

# Adding a Sensor Group

When you add a sensor group, it is assigned the lowest priority among existing sensor groups. To adjust its priority, see Updating Sensor Group Priority, page 5-13.

**Note** You can add up to 10 sensor groups.

**Step 1** Select **Administration > Thresholds > Sensor Groups**. The Sensor Threshold Group page appears.

**Step 2** Click **Add**. The Add Sensor Threshold Group page appears.

**Step 3** Enter data described in the following table.

| GUI Element | Description/Action |
|---|---|
| Group Name field | Enter a name. The name must be unique among all sensor groups. |
| Select Sensors list | The following appears in the list box: All current and future sensors.<br>**Note** If you do not select any sensors, the threshold values in this group apply to sensors that are currently managed and will be applied to sensors that are managed in the future.<br>To select sensors:<br>1. Click . The Select Sensors dialog box appears.<br>2. Select check boxes.<br>3. Click **OK**. |
| Select Devices list | The following appears in the list box: All current and future devices.<br>**Note** If you do not select any device types, the threshold values in this group apply to device types that are currently managed and will be applied to device types that are managed in the future.<br>To select device types:<br>1. Click . The Select Device Types dialog box appears, displaying available device types.<br>2. Select check boxes.<br>3. Click **OK**. |
| Override Thresholds list | Update thresholds:<br>1. Click . The MOS Threshold Settings dialog box appears.<br>2. For at least one codec, enter a MOS threshold value.<br>3. Click **OK**. |
| Endpoint 1 | Enter the IP address of a voice gateway or a Cisco Unified IP Phone. To include multiple IP addresses, enter a partial IP address and use an asterisk (*) to indicate any number. Default: *.*.*.*. |
| Endpoint 2 | Enter the IP address of a voice gateway or a Cisco Unified IP Phone. To include multiple IP addresses, enter a partial IP address and use an asterisk (*) to indicate any number. Default: *.*.*.*. |

**Step 4** Click **OK**. The Sensor Threshold Group page appears, displaying the new sensor group threshold group last in the list (in the lowest priority position).

# Editing a Sensor Group

**Note** To change sensor group priority, see Updating Sensor Group Priority, page 5-13.

**Step 1** Select **Administration > Thresholds > Sensor Groups**. The Sensor Threshold Group page appears.

**Step 2** Select a group and click the **Edit** link for a sensor group. The Edit Sensor Threshold Group page appears.

**Step 3** Enter data described in the following table.

| GUI Element | Description/Action |
|---|---|
| Group Name field | You can change the name if you want to. The name must be unique among all sensor groups. |
| Select Sensors list | If no sensors are selected, the following appears in the list box: All current and future sensors.<br>To select sensors:<br>1. Click  . The Select Sensors dialog box appears.<br>2. Select check boxes.<br>3. Click **OK**.<br>**Note** If no sensors are selected, the threshold values in this group apply to sensors that are currently managed and will be applied to sensors that are managed in the future. |
| Select Devices list | If no device types are selected, the following appears in the list box: All current and future devices.<br>**Note** If you do not select any device types, the threshold values in this group apply to device types that are currently managed and will be applied to device types that are managed in the future.<br>To select device types:<br>1. Click  . The Select Device Types dialog box appears, displaying available device types.<br>2. Select check boxes.<br>3. Click **OK**. |
| Override Thresholds list | Update thresholds:<br>1. Click  . The MOS Threshold Settings dialog box appears.<br>2. For at least one codec, enter a MOS threshold value.<br>3. Click **OK**. |
| Endpoint 1 | Enter the IP address for a voice gateway or a Cisco Unified IP Phone. To include multiple IP addresses, enter a partial IP address and use an asterisk (*) to indicate any number. Enter *.*.*.* to include all IP addresses. |
| Endpoint 2 | Enter the IP address for a voice gateway or a Cisco Unified IP Phone. To include multiple IP addresses, enter a partial IP address and use an asterisk (*) to indicate any number. Enter *.*.*.* to include all IP addresses. |

# Updating Sensor Group Priority

If a sensor is included in more than one sensor group, Prime USM applies the thresholds for the highest priority sensor threshold group.

**Step 1** Select **Administration > Thresholds > Sensor Groups**. The Sensor Threshold Group page appears, displaying up to 10 user-defined sensor groups.

**Step 2** Enter any unique numbers—up to two digits—in the Priority column.

**Step 3** Click **Update Priority**. Prime USM reorders the sensor groups and displays them in priority order.

# Deleting a Sensor Group

**Step 1** Select **Administration > Thresholds > Sensor Groups**. The Sensor Threshold Group page appears, displaying up to 10 user-defined sensor groups.

**Step 2** Select the check boxes for the sensor groups that you want to delete.

**Step 3** Click **Delete**. A confirmation dialog box is displayed.

**Step 4** Click **Yes**. Prime USM displays any remaining sensor groups in priority order.