Configure Resource Reservation Protocol

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RSVP Call Admission Control Overview

Resource Reservation Protocol (RSVP) is a resource-reservation, transport-level protocol for reserving resources in IP networks. You can use RSVP as an alternative to enhanced-locations call admission control (CAC). RSVP reserves resources for specific sessions. A session is a flow that has a particular destination address, destination port, and a protocol identifier (TCP or UDP).

RSVP Call Admission Control Prerequisites

You must use IPv4 addressing. RSVP does not support IPv6 addressing.

RSVP Configuration Task Flow

Procedure

	Command or Action	Purpose
Step 1	Configure Clusterwide Default RSVP Policy, on page 2	Configure the RSVP policy for all nodes in the cluster.
Step 2	Configure Location-pair RSVP Policy, on page 3	Optional. You can configure the RSVP policy for a specific location pair if you want the location pair to use a different policy than the rest of the cluster.
Step 3	Configure RSVP Retry, on page 4	Configure the frequency and number of RSVP retries.

	Command or Action	Purpose
Step 4	Configure Midcall RSVP Error Handling, on page 4	Configure how the system responds when RSVP fails during a call.
Step 5	Configure MLPP-to-RSVP Priority Mapping, on page 5	Optional. If you use multilevel precedence and preemption (MLPP), map the caller MLPP precedence level to an RSVP priority.
Step 6	Configure RSVP agents.	Perform this IOS procedure on your gateway device. See the documentation for device for information about how to configure an RSVP agent.
Step 7	Configure the Application ID, on page 6	When you configure the RSVP application ID, the system adds an identifier to both the voice and video traffic so that the Cisco RSVP Agent can set a separate bandwidth limit on either type of traffic, based on the identifier it receives.
Step 8	Configure DSCP Marking, on page 6	Configure DSCP marking so that if the RSVP reservation fails, the system can instruct the RSVP agent or endpoint devices to change media Differentiated Services Control Point (DSCP) marking to best effort. Otherwise, an excess of EF-marked media packets can degrade quality of service (QoS) even for flows that have a reservation.

Configure Clusterwide Default RSVP Policy

Configure the RSVP policy for all nodes in the cluster.

Procedure

Step 1 In Cisco Unified Communications Manager Administration, choose **System** > **Service Parameters**.

Step 2 In the **Service Parameter Configuration** window, choose a server and choose the Cisco CallManager service.

Step 3 In the **Clusterwide Parameters (System - RSVP)** section, configure the Default Interlocation RSVP Policy service parameter.

You can set this service parameter to the following values:

- No Reservation-No RSVP reservations get made between any two locations.
- Optional (Video Desired)-A call can proceed as a best-effort, audio-only call if failure to obtain reservations for both audio and video streams occurs. RSVP agent continues to attempt RSVP reservation for audio and informs Cisco Unified Communications Manager if reservation succeeds.
- Mandatory-Cisco Unified Communications Manager does not ring the terminating device until RSVP reservation succeeds for the audio stream and, if the call is a video call, for the video stream as well.

- Mandatory (Video Desired)-A video call can proceed as an audio-only call if a reservation for the audio stream succeeds but a reservation for the video stream does not succeed.

What to do next

Choose one of the following options:

- If you want a location pair to use a different policy than the rest of the cluster, Configure Location-pair RSVP Policy, on page 3.
- If you are using the same RSVP policy for all nodes in the cluster, Configure RSVP Retry, on page 4.

Configure Location-pair RSVP Policy

You can configure the RSVP policy for a specific location pair if you want the location pair to use a different policy than the rest of the cluster. When you use this procedure, the RSVP policy that you configure for the location pair overrides the policy that you configured for the cluster.

Procedure

Step 1 In Cisco Unified Communications Manager Administration, choose the **System** > **Location**.

Step 2 Find one location of the location pair and select this location.

Step 3 To modify the RSVP policy between the selected location and another location, select the other location in the location pair.

Step 4 In the **RSVP Setting** drop-down list, choose an RSVP policy for this location pair.

You can set this field to the following values:

- **Use System Default**–The RSVP policy for the location pair matches the cluster-wide RSVP policy.
- **No Reservation**–No RSVP reservations get made between any two locations.
- **Video Desired (Optional)** –A call can proceed as a best-effort, audio-only call if failure to obtain reservations for both audio and video streams occurs. The RSVP agent continues to attempt RSVP reservation for audio and informs Cisco Unified Communications Manager if reservation succeeds. The system does not ring the terminating device until RSVP reservation succeeds for the audio stream and, if the call is a video call, for the video stream as well.
- **Video Desired**–A video call can proceed as an audio-only call if a reservation for the audio stream succeeds but the reservation for the video stream does not succeed.

What to do next

Configure RSVP Retry, on page 4

Configure RSVP Retry

Use this procedure to configure the frequency and number of RSVP retries.

Before you begin

- Configure Clusterwide Default RSVP Policy, on page 2
- Optional. Configure Location-pair RSVP Policy, on page 3

Procedure

Step 1 In Cisco Unified Communications Manager Administration, choose **System** > **Service Parameters** .

Step 2 In the Service Parameter Configuration window, choose a server and choose the Cisco CallManager service.

Step 3 In the Clusterwide Parameters (System - RSVP) section, configure the specified service parameters.

You can set these service parameters to the following values:

- RSVP Retry Timer-Specify the RSVP retry timer value in seconds. If you set this parameter to 0, you disable RSVP retry on the system.
- Mandatory RSVP Midcall Retry Counter-Specify the midcall RSVP retry counter when the RSVP policy specifies Mandatory and midcall error handling option is set to "call fails following retry counter exceeds." The default value specifies 1 time. If you set the service parameter to -1, retry continues indefinitely until either the reservation succeeds or the call gets torn down.

What to do next

Configure Midcall RSVP Error Handling, on page 4

Configure Midcall RSVP Error Handling

Use this procedure to configure midcall RSVP error handling.

Before you begin

Configure RSVP Retry, on page 4

Procedure

Step 1 In Cisco Unified Communications Manager Administration, choose **System** > **Service Parameters**.

Step 2 In the Service Parameter Configuration window, choose a server and choose the Cisco CallManager service.

Step 3 In the Clusterwide Parameters (System - RSVP) section, configure the specified service parameter.

You can set the Mandatory RSVP mid call error handle option service parameter to the following values:

- Call becomes best effort-If RSVP fails during a call, the call becomes a best-effort call. If retry is enabled, RSVP retry attempts begin simultaneously.
- Call fails following retry counter exceeded-If RSVP fails during a call, the call fails after N retries of RSVP, where the Mandatory RSVP Mid-call Retry Counter service parameter specifies N.

What to do next

Configure RSVP agents on your gateway device. See the documentation for device for information about how to configure an RSVP agent. After you have configure RSVP agents on your gateway, return to Cisco Unified Communications Manager Administration and choose one of the following options:

- Optional. Configure MLPP-to-RSVP Priority Mapping, on page 5 if you are using multilevel precedence and preemption in your network.
- Configure the Application ID, on page 6

Configure MLPP-to-RSVP Priority Mapping

Optional. Use the following clusterwide (System - RSVP) service parameters to configure the mapping from a caller MLPP precedence level to RSVP priority:

- MLPP EXECUTIVE OVERRIDE To RSVP Priority Mapping
- MLPP FLASH OVERRIDE To RSVP Priority Mapping
- MLPP FLASH To RSVP Priority Mapping
- MLPP IMMEDIATE To RSVP Priority Mapping
- MLPP PL PRIORITY To RSVP Priority Mapping
- MLPP PL ROUTINE To RSVP Priority Mapping

To locate and configure these service parameters, follow these steps:

Procedure

Step 1 In Cisco Unified Communications Manager Administration, choose **System** > **Service Parameters**.

Step 2 In the Service Parameter Configuration window, choose a server and choose the Cisco CallManager service.

Step 3 In the Clusterwide Parameters (System - RSVP) section, configure the specified service parameters.

These service parameters function as follows:

- Cisco Unified Communications Manager maps the caller precedence level to RSVP priority when initiating an RSVP reservation based on the following configuration: the higher the service parameter value, the higher the priority.
- The IOS router preempts the call based on RSVP priority.
- The RSVP agent must notify Cisco Unified Communications Manager about the reason for an RSVP reservation failure, including the cause for preemption.

- Cisco Unified Communications Manager uses the existing MLPP mechanism to notify the preempted calling and called parties about the preemption.

What to do next

Configure RSVP agents on your gateway device. See the documentation for device for information about how to configure an RSVP agent. After you have configure RSVP agents on your gateway, return to Cisco Unified Communications Manager Administration and Configure the Application ID, on page 6.

Configure the Application ID

When you configure the RSVP application ID, the system adds an identifier to both the voice and video traffic so that the Cisco RSVP Agent can set a separate bandwidth limit on either type of traffic, based on the identifier it receives.

Before you begin this procedure, configure RSVP agents on your gateway device. See the documentation for device for information about how to configure an RSVP agent.

Before you begin

To deploy the RSVP application ID in the network, you must use a minimum version of Cisco IOS Release 12.4(6)T or higher on the Cisco RSVP Agent router.

Procedure

Step 1 In Cisco Unified Communications Manager Administration, choose **System** > **Service Parameters**.

Step 2 In the **Service Parameter Configuration** window, choose a server and choose the Cisco CallManager service.

Step 3 In the **Clusterwide Parameters (System - RSVP)** section, configure the RSVP Audio Application ID service parameter.

(Default = AudioStream)

Step 4 In the **Clusterwide Parameters (System - RSVP)** section, configure the RSVP Video Application ID

(Default = VideoStream)

What to do next

Configure DSCP Marking, on page 6

Configure DSCP Marking

If the RSVP reservation fails, the system instructs the RSVP agent or endpoint devices (in case a failure to allocate an RSVP agent occurs) to change media Differentiated Services Control Point (DSCP) marking to best effort. Otherwise, an excess of EF-marked media packets can degrade quality of service (QoS) even for flows that have a reservation.

Before you begin

Configure the Application ID, on page 6

Procedure

Step 1 In Cisco Unified Communications Manager Administration, choose **System** > **Service Parameters**.

Step 2 In the **Service Parameter Configuration** window, choose a server and choose the Cisco CallManager service.

Step 3 In the **Clusterwide Parameters (System - QoS)** section, configure the **DSCP for Audio Calls When RSVP Fails** service parameter.

Step 4 In the **Clusterwide Parameters (System - QoS)** section, configure the **DSCP for Video Calls When RSVP Fails** service parameter.