

Interworking Between RSVP Capable and RSVP Incapable Networks

The Interworking Between RSVP Capable and RSVP Incapable Networks feature provides precondition-based Resource Reservation Protocol (RSVP) support for basic audio call and supplementary services on Cisco Unified Border Element (UBE). This feature improves the interoperability between RSVP and non-RSVP networks. RSVP functionality added to Cisco UBE helps you to reserve the required bandwidth before making a call.

This feature extends RSVP support to delayed-offer to delayed-offer and delayed-offer to early-offer calls, along with the early-offer to early-offer calls.

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Feature Information for Interworking Between RSVP Capable and RSVP Incapable Networks

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to https://cfnng.cisco.com/. An account on Cisco.com is not required.

Table 1: Feature Information for Interworking Between RSVP Capable and RSVP Incapable Network

Feature Name	Releases	Feature Information
Interworking Between RSVP Capable and RSVP Incapable Networks	Baseline Functionality	The Interworking between RSVP Capable and RSVP Incapable Networks feature provides precondition-based RSVP support for basic audio call and supplementary services on the Cisco UBE. The following commands were introduced or modified: **acc-qos**, **ip qos defending-priority**, **ip qos dscp**, **ip qos policy-locator**, **ip qos preemption-priority**, **req-qos**, **voice-class sip rsvp-fail-policy**

Prerequisites for Interworking Between RSVP Capable and RSVP Incapable Networks

- RSVP policies allow you to configure separate bandwidth pools with varying limits so that any one application, such as video, can consume all the RSVP bandwidth on a specified interface at the expense of other applications, such as voice, which would be dropped.
- To limit bandwidth per application, you must configure a bandwidth limit before configuring Support for the Interworking Between RSVP Capable and RSVP Incapable Networks feature. See Configure RSVP on an Interface.

Restrictions for Interworking Between RSVP Capable and RSVP Incapable Networks

The Support for Interworking Between RSVP Capable and RSVP Incapable Networks feature has the following restrictions:

- Segmented RSVP is not supported.
- Interoperability between Cisco UBE and Cisco Unified Communications Manager is not available.
- RSVP-enabled video calls are not supported.

How to Configure Interworking Between RSVP Capable and RSVP Incapable Networks

Configure RSVP on an Interface

You must allocate some bandwidth for the interface before enabling RSVP. Perform this task to configure RSVP on an interface.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface** *type slot / port*
4. **ip rsvp bandwidth** [*reservable-bw* [*max-reservable-bw*] [**sub-pool** *reservable-bw*]]
5. **end**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**interface** *type slot / port* **Example:** `Device(config)# interface FastEthernet 0/1`	Configures an interface type and enters interface configuration mode.
Step 4	**ip rsvp bandwidth** [*reservable-bw* [*max-reservable-bw*] [**sub-pool** *reservable-bw*]] **Example:** `Device(config-if)# ip rsvp bandwidth 10000 100000`	Enables RSVP for IP on an interface.

	Command or Action	Purpose
Step 5	**end** **Example:** `Device(config-if)# end`	(Optional) Exits interface configuration mode and returns to privileged EXEC mode.

Configuring Optional RSVP on the Dial Peer

Perform this task to configure optional RSVP at the dial peer level. This configuration allows you to have uninterrupted call even if there is a failure in bandwidth reservation.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **dial-peer voice** *tag* **voip**
4. **no acc-qos** {**controlled-load** | **guaranteed-delay**} [**audio** | **video**]
5. **req-qos** {**controlled-load** | **guaranteed-delay**} [**audio** | **video**] [**bandwidth** [**default** *bandwidth-value*] [**max** *bandwidth-value*]]
6. **end**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**dial-peer voice** *tag* **voip** **Example:** `Device(config)# dial-peer 77 voip`	Enters dial peer voice configuration mode.
Step 4	**no acc-qos** {**controlled-load**	**guaranteed-delay**} [**audio**	**video**] **Example:**	Removes any value configured for the **acc-qos** command. • Keywords are as follows: • **controlled-load**--Indicates that RSVP guarantees a single level of preferential service, presumed

	Command or Action	Purpose
	`Device(config-dial-peer)# no acc-qos controlled-load`	to correlate to a delay boundary. The controlled load service uses admission (or capacity) control to ensure that preferential service is received even when the bandwidth is overloaded. • **guaranteed-delay**--Indicates that RSVP reserves bandwidth and guarantees a minimum bit rate and preferential queueing if the bandwidth reserved is not exceeded.
Step 5	**req-qos** {**controlled-load** | **guaranteed-delay**} [**audio** | **video**] [**bandwidth** [**default** *bandwidth-value*] [**max** *bandwidth-value*]] **Example:** `Device(config-dial-peer)# req-qos controlled-load`	Configures the desired quality of service (QoS) to be used. • Calls continue even if there is a failure in bandwidth reservation. **Note** Configure the **req-qos** commandusing th either **controlled-load** or **guaranteed-d** in the previous step, then use the **req-qo**
Step 6	**end** **Example:** `Device(config-dial-peer)# end`	(Optional) Exits dial peer voice configuration mode and returns to privileged EXEC mode.

Configure Mandatory RSVP on the Dial Peer

Perform this task to configure Mandatory RSVP on the dial peer. This configuration ensures that the call does not connect if sufficient bandwidth is not allocated.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **dial-peer voice** *tag* **voip**
4. **acc-qos** {**best-effort** | **controlled-load** | **guaranteed-delay**} [**audio** | **video**]
5. **req-qos** {**best-effort** [**audio** | **video**] | {**controlled-load** | **guaranteed-delay**} [**audio** | **video**] [**bandwidth** [**default** *bandwidth-value*] [**max** *bandwidth-value*]]}
6. **end**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**dial-peer voice** *tag* **voip** **Example:** `Device(config)# dial-peer 77 voip`	Enters dial peer voice configuration mode.
Step 4	**acc-qos** {**best-effort** | **controlled-load** | **guaranteed-delay**} [**audio** | **video**] **Example:** `Device(config-dial-peer)# acc-qos best-effort`	Configures mandatory RSVP on the dial-peer. Keywords are as follows: • **best-effort**–Indicates that Resource Reservation Protocol (RSVP) makes no bandwidth reservation. This is the default. • **controlled-load**–Indicates that RSVP guarantees a single level of preferential service, presumed to correlate to a delay boundary. The controlled load service uses admission (or capacity) control to ensure that preferential service is received even when the bandwidth is overloaded. • **guaranteed-delay**–Indicates that RSVP reserves bandwidth and guarantees a minimum bit rate and preferential queuing if the bandwidth reserved is not exceeded.
Step 5	**req-qos** {**best-effort** [**audio** | **video**] | {**controlled-load** | **guaranteed-delay**} [**audio** | **video**] [**bandwidth** [**default** *bandwidth-value*] [**max** *bandwidth-value*]]} **Example:** `Device(config-dial-peer)# req-qos controlled-load`	Configures mandatory RSVP on the dial-peer. • Calls continue even if there is a drop in the bandwidth reservation.
Step 6	**end** **Example:**	(Optional) Exits dial peer voice configuration mode and returns to privileged EXEC mode.

	Command or Action	Purpose
	`Device(config-dial-peer)# end`	

Configure Midcall RSVP Failure Policies

Perform this task to enable call handling policies for a midcall RSVP failure.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **dial-peer voice** *tag* **voip**
4. **voice-class sip rsvp-fail-policy** {**video** | **voice**} **post-alert** {**optional keep-alive** | **mandatory** {**keep-alive** | **disconnect retry** *retry-attempts*}} **interval** *seconds*
5. **end**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**dial-peer voice** *tag* **voip** **Example:** `Device(config)# dial-peer voice 66 voip`	Enters dial peer voice configuration mode.
Step 4	**voice-class sip rsvp-fail-policy** {**video** | **voice**} **post-alert** {**optional keep-alive** | **mandatory** {**keep-alive** | **disconnect retry** *retry-attempts*}} **interval** *seconds* **Example:** `Device(config-dial-peer)# voice-class sip rsvp-fail-policy voice post-alert mandatory keep-alive interval 50`	Enables call handling policies for a midcall RSVP failure. Keywords are as follows: • **optional keep-alive**–The keepalive messages are sent when RSVP fails only if RSVP negotiation is optional. • **mandatory keep-alive**–The keepalive messages are sent when RSVP fails only if RSVP negotiation is mandatory. •

	Command or Action	Purpose
		Note Keepalive messages are sent at 30-second in of the RSVP negotiation setting (mandatory
Step 5	**end** **Example:** `Device(config-dial-peer)# end`	(Optional) Exits dial peer voice configuration mode and returns to privileged EXEC mode.

Configure DSCP Values

Perform this task to configure different Differentiated Services Code Point (DSCP) values based on RSVP status.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **dial-peer voice** *tag* **voip**
4. **ip qos dscp** {*dscp-value* | *set-af* | *set-cs* | **default** | **ef**} {**signaling** | **media** [**rsvp-pass** | **rsvp-fail**] | **video**[**rsvp-none**| **rsvp-pass** | **rsvp-fail**]}
5. **end**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**dial-peer voice** *tag* **voip** **Example:** `Device(config)# dial-peer voice 66 voip`	Enters dial peer voice configuration mode.

	Command or Action	Purpose
Step 4	**ip qos dscp** {*dscp-value* | *set-af* | *set-cs* | **default** | **ef**} {**signaling** | **media** [**rsvp-pass** | **rsvp-fail**] | **video**[**rsvp-none**| **rsvp-pass** | **rsvp-fail**]} **Example:** `Device(config-dial-peer)# ip qos dscp af11 media rsvp-pass`	Configures DSCP values based on RSVP status. Keywords are as follows: • **media rsvp-pass**–Specifies that the DSCP value applies to media packets with successful RSVP reservations. • **media rsvp-fail**–Specifies that the DSCP value applies to packets (media or video) with failed RSVP reservations. • The default DSCP value for all media (voice and fax) packets is **ef**. **Note** You must configure the DSCP values for
Step 5	**end** **Example:** `Device(config-dial-peer)# end`	(Optional) Exits dial peer voice configuration mode and returns to privileged EXEC mode.

Configure an Application ID

Perform this task to configure a specific application ID for RSVP establishment.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **dial-peer voice** *tag* **voip**
4. **ip qos policy-locator** {**video** | **voice**} [**app** *app-string*] [**guid** *guid-string*] [**sapp** *subapp-string*] [**ver** *version-string*]
5. **end**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. • Enter your password if prompted.

	Command or Action	Purpose
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**dial-peer voice** *tag* **voip** **Example:** `Device(config)# dial-peer voice 66 voip`	Enters dial peer voice configuration mode.
Step 4	**ip qos policy-locator** {**video** | **voice**} [**app** *app-string*] [**guid** *guid-string*] [**sapp** *subapp-string*] [**ver** *version-string*] **Example:** `Device(config-dial-peer)# ip qos policy-locator voice`	Configures a QoS policy locator (application ID) used to deploy RSVP policies for specifying bandwidth reservations on Cisco IOS Session Initiation Protocol (SIP) devices.
Step 5	**end** **Example:** `Device(config-dial-peer)# end`	(Optional) Exits dial peer voice configuration mode and returns to privileged EXEC mode.

Configure Priority

Perform this task to configure priorities for call preemption.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **dial-peer voice** *tag* **voip**
4. **ip qos defending-priority** *defending-pri-value*
5. **ip qos preemption-priority** *preemption-pri-value*
6. **end**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. • Enter your password if prompted.

	Command or Action	Purpose
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**dial-peer voice** *tag* **voip** **Example:** `Device(config)# dial-peer voice 66 voip`	Enters dial peer voice configuration mode.
Step 4	**ip qos defending-priority** *defending-pri-value* **Example:** `Device(config-dial-peer)# ip qos defending-priority 66`	Configures the RSVP defending priority value for determining QoS.
Step 5	**ip qos preemption-priority** *preemption-pri-value* **Example:** `Device(config-dial-peer)# ip qos preemption-priority 75`	Configures the RSVP preemption priority value for determining QoS.
Step 6	**end** **Example:** `Device(config-dial-peer)# end`	(Optional) Exits dial peer configuration mode and returns to privileged EXEC mode.

Troubleshooting for Interworking Between RSVP Capable and RSVP Incapable Networks Feature

Use the following commands to debug any errors that you may encounter when you configure the Support for Interworking Between RSVP Capable and RSVP Incapable Networks feature.

- **debug call rsvp-sync events**
- **debug call rsvp-sync func-trace**
- **debug ccsip all**
- **debug ccsip messages**
- **debug ip rsvp messages**
- **debug sccp all**

Verify Interworking Between RSVP Capable and RSVP Incapable Networks

This task explains how to display information to verify the configuration for the Support for Interworking Between RSVP Capable and RSVP Incapable Networks feature. These commands need not be entered in any specific order.

SUMMARY STEPS

1. **enable**
2. **show sip-ua calls**
3. **show ip rsvp installed**
4. **show ip rsvp reservation**
5. **show ip rsvp interface detail** [*interface-type number*]
6. **show sccp connections details**
7. **show sccp connections rsvp**
8. **show sccp connections internal**
9. **show sccp** [**all** | **connections** | **statistics**]

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**show sip-ua calls** **Example:** `Device# show sip-ua calls`	(Optional) Displays active user agent client (UAC) and user agent server (UAS) information on SIP calls.
Step 3	**show ip rsvp installed** **Example:** `Device# show ip rsvp installed`	(Optional) Displays RSVP-related installed filters and corresponding bandwidth information.
Step 4	**show ip rsvp reservation** **Example:** `Device# show ip rsvp reservation`	(Optional) Displays RSVP-related receiver information currently in the database.

	Command or Action	Purpose
Step 5	**show ip rsvp interface detail** [*interface-type number*] **Example:** `Device# show ip rsvp interface detail GigabitEthernet 0/0`	(Optional) Displays the interface configuration for hello.
Step 6	**show sccp connections details** **Example:** `Device# show sccp connections details`	(Optional) Displays SCCP connection details, such as call-leg details.
Step 7	**show sccp connections rsvp** **Example:** `Device# show sccp connections rsvp`	(Optional) Displays information about active SCCP connections that are using RSVP.
Step 8	**show sccp connections internal** **Example:** `Device# show sccp connections internal`	(Optional) Displays the internal SCCP details, such as time-stamp values.
Step 9	**show sccp** [**all** | **connections** | **statistics**] **Example:** `Device# show sccp statistics`	(Optional) Displays SCCP information, such as administrative and operational status.