Call Queuing

Set Up Call Queuing

This procedure lists the tasks used to configure the Call Queuing feature. For more information on the Call Queuing feature, see the Introducing Call Queuing section.

Procedure

Step 1   Configure customized announcements

For more information, see topics related to announcement configuration in the *Cisco Unified Communications Manager Administration Guide*.

Step 2   Add custom announcements. This includes:

   • Uploading wav file announcements
   • Viewing and/or changing customized announcements

For more information, see topics related to announcement configuration in the *Cisco Unified Communications Manager Administration Guide*.

Step 3   Configure the Music On Hold (MoH) source

For more information, see Music On Hold in the *Cisco Unified Communications Manager Features and Services Guide*.

Step 4   Configure queuing capability for a Hunt Pilot number

For more information, see Hunt Pilot configuration in the *Cisco Unified Communications Manager Administration Guide*.

Step 5   Configure Line Group setting page for Automatically Logout Hunt Member on No Answer.

For more information, see Line group settings in the *Cisco Unified Communications Manager Administration Guide*.

Call Queuing Considerations

Unified CM provides call queuing natively to users so that callers can be held in a queue until hunt members are available to answer them. Callers in a queue receive an initial greeting announcement followed by music on hold or tone on hold. If the caller remains in queue for a period of time, a secondary announcement is played at a configured interval until the call can be answered—or until the maximum wait timer expires.

Call Queuing Operation

Cisco Unified Communications Manager Administration Considerations

The Call Queuing feature provides an enhanced capability to handle incoming calls to a hunt pilot number. When an incoming call reaches the hunt pilot, the following capabilities are provided:

- A caller may be connected to an initial customizable greeting announcement before proceeding
- If one or more line members are logged into the hunt pilot and are in an idle state, and if no calls are queued, then the call is extended to the line member that has been idle for the longest period of time
- If no line members answer a call, then that caller will not be placed in queue. The call is routed to a new destination, or disconnected, based on the setting under "When no hunt members answer, are logged in, or registered"
- Calls will be placed in queue only if all members are busy.
- If a line member does not answer a queue-enabled call, that line member is logged off the hunt group only if the setting "Automatically Logout Hunt Member on No Answer" is selected on the line group page
- While the caller is in the queue they may hear Music On Hold and a repeating (customizable) periodic announcement
- Once a line member becomes idle, the caller with the longest wait time across multiple hunt groups is extended to the idle line member. If the idle line member does not answer the call, the caller is returned to their previous position in the queue
- If a queued call exceeds its maximum wait time, it can be routed to another pattern or it can be disconnected, depending upon how the hunt pilot configuration is configured
- If the maximum number of callers allowed in queue has been reached, any subsequent caller can be routed to another pattern or disconnected, depending upon how the hunt pilot configuration is configured
- Line members can display the queue status of their queue-enabled hunt pilots (in other words, the hunt pilots with which they are associated). The queue status display provides the following types of information:
  - Hunt pilot pattern
  - Number of queued callers on each hunt pilot
  - Longest waiting time

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Note   You can configure a maximum of 25 hunt pilots per hunt list in Call Queuing. If you exceed this limit, the queue status will not be displayed.

For shared-line deployments, the availability of all devices with that shared-line are combined to provide a final status. If a shared-line device for one or members appears as on-hook, but all others are indicating off-hook, the final status for that line member remains off-hook.

Call queuing works in conjunction with existing hunt pilots, but there are no changes in the behavior of the hunting mechanism for either queuing or non-queuing hunt pilots. There are, however; specific features associated with hunt pilots that have call queuing enabled:

1. Queuing-enabled hunt pilot calls can only be received by line members one call at a time. Two queuing-enabled hunt pilot calls cannot be offered to a line member (no matter what the busy trigger is set to). This does not limit a line member to only receive calls directly to their DN or from non-queuing hunt pilots.
2. Line members who do not answer hunt pilot routed calls are automatically logged out. A line member is automatically logged out of a device if the line member receives a queuing-enabled hunt pilot call and does not answer the call until an RNA reversion time-out occurs. In the case of a shared-line deployment, all devices configured with the same shared-line are logged out. This behavior can be configured from the Line group page setting "Automatically Logout Hunt Member on No Answer" - line members are logged out only if this has been set.

While the calling party is in queue, the caller receives a MoH treatment depending upon the network MoH settings for that hunt pilot. There is option available to play the initial announcement first and then offer a call to a hunt pilot. If the call is not answered by any of the line members, the caller is placed on hold (in queue) with an announcement provided periodically in addition to MoH. The second option involves offering the call to a hunt pilot DN first, and then place caller on hold (in queue) if the call is not answered. Again, an announcement is provided periodically in addition to MoH. When a line member becomes available to answer the next caller in the queue, the call that has been in the queue the longest is offered to line member. If the line member does not answer the call, the caller is placed back in the queue at the same position.

Alternate Number Configuration

Call Queuing configuration provides for the routing of calls to an alternate number. These alternate numbers may be:

- A hunt pilot DN with queuing either enabled or disabled
- A voice mail DN
- A line DN
- A shared DN

There are three main scenarios where alternate numbers are used:

1. When queue is full
2. When maximum wait time is met
3. When no hunt members are logged in or registered

When queue is full

Call Queuing allows up to 100 callers to be queued per hunt pilot (the maximum number of callers allowed in queue on a hunt pilot page). Once this limit for new callers been reached on a particular hunt pilot, subsequent calls can be routed to an alternate number. This alternate number can be configured through the Hunt Pilot configuration page (through the "Destination When Queue is Full" settings).

When maximum wait time is met

Each caller can be queued for up to 3600 seconds per hunt pilot (the maximum wait time in queue). Once this limit is reached, that caller is routed to an alternate number. This alternate number can be configured through the Hunt Pilot configuration page (through the "Maximum wait time in queue" settings).

When no hunt members are logged in or registered

In a scenario where none of the members of the hunt pilot are available or registered at the time of the call, hunt pilot configuration provides an alternate number field (through the "When no hunt members are logged in or registered" settings) where calls can be routed. For Call Queuing, a hunt pilot member is considered available if that member has both deactivated do not disturb (DND) and logged into the hunt group. In all other cases, the line member is considered unavailable or logged off.

Music on Hold

MoH capabilities have been enhanced to play an optional initial greeting announcement when a caller is first put on hold and also to play a periodic repeating announcement when a caller is hearing the normal MoH audio. These announcements can use one of the Cisco-provided audio files or a custom file that is uploaded into the system.

Video on Hold (VoH) can be provided instead of MoH by including a VoH server in the Media Resource Group and Media Resource Group List configuration for the Held party. Only the default video configured for the VoH server is played if the VoH server is selected.

Real-time Monitoring

A number of new serviceability counters have been added to a folder called "Cisco Hunt Pilots" to monitor queuing. These counters, based on the Hunt Pilot DN, include:

- HuntPilot/QCallsAbandoned - the number of calls (since the last system reboot) which were queued, but disconnected, prior to being answered by a hunt member or redirected normally
- HuntPilot/CallsInQueue - the number of calls currently in queue
- HuntPilot/QCallsRingNoAnswer - the number of calls (since the last system reboot) which were not answered after being routed to a line group member
- HuntPilot/QLongestCallWaiting - the time, in seconds, of the call that currently has the longest wait time in queue
- HuntPilot/MaxQDepthExceeded - the number of occurrences (since the last system reboot) when a call was routed to an alternate destination after the maximum number of callers allowed in queue was reached
- HuntPilot/MaxQWaitTimerExceeded - the number of occurrences (since the last system reboot) when a call was routed to an alternate destination after the maximum wait time in queue was reached
- HuntPilot/LineGroupMembersAvailable - the number of idle (on-hook) line group members (DNs) currently eligible to receive calls from the queuing-enabled hunt pilot

Announcement Monitoring

The new performance counter for Media Streaming Annunciator can be reached from the Real Time Monitoring Tool via **Performance > expand server name > Cisco Media Streaming App > ANNPlayFailed**.

For more information, see the Cisco Unified Real Time Monitoring Tool Administration Guide.

Call Queuing System Requirements

Call Queuing requires the following software components:

- Cisco Unified Communications Manager 9.0 or later

- Cisco IP Voice Media Streaming (IPVMS) Application, which should be activated on at least one node in the cluster

- Cisco CallManager service that is running on at least one server in the cluster

- Cisco RIS Data Collector service that is running on the same server as the Cisco CallManager service

- Cisco Unified Communications Manager Locale Installer, that is, if you want to use non-English phone locales or country-specific tones

Call Queuing Interactions and Restrictions

SIP Rel1XX Options

If a call is routed to a queuing-enabled Hunt Pilot through SIP ICT, the SIP ICT uses the SIP Profile which has SIP Rel1XX Options set to "Send PRACK if 1XX contains SDP". As a result, the initial announcement is played to every call before the call is extended to the line member.

For more information, see SIP Profile Configuration, *Cisco Unified Communications Manager Administration Guide*.

Hunt Pilots and Hunt Groups

- The log off notification functionality for hunt groups changes when Call Queuing is enabled for a hunt pilot. The Hunt Group Logoff Notification does not play when a user logs out of a hunt group, or is logged off because they missed their turn in the queue, if Call Queuing is enabled for a hunt pilot.

- If the hunt list has multiple line groups then these line groups need to have the same setting for **Automatically Logout Hunt Member on No Answer**

- All Hunt options need to be set to Try Next Member, then Try Next Group in the hunt list.

- To avoid call looping, configure the secondary routing so that the call is not redirected back to same hunt pilot.

H323 Gateway and Trunk

If a call is routed to a queuing-enabled Hunt Pilot through the H323 gateway, the Service Parameter "Send H225 User Info Message" needs to be changed to "Use ANN for Ring Back" so that caller can hear ring back tone when the call is de-queued or routed to the alternate number.

Note   In cases where queuing is used with H225 ICT, both clusters must be version 9.0 or above.

For more information, see H323 Gateway Configuration, Cisco Unified Communications Manager Administration Guide.

H323 Limitation

H323 Fast Start does not support Call Queuing.

Queue Status PLK

Queue status PLK is only supported with the following LCD display phones for both SCCP and SIP protocols:

- 6921
- 6941
- 6945
- 6961
- 7911 G
- 7931 G
- 7942 G
- 7945 G
- 7962 G
- 7965 G
- 7975 G
- 8961
- 8945
- 8941
- 9951
- 9971

HLOG PLK

You must configure phones that support hunt group logging in or out through HLOG softkey or PLK. If a phone does not support HLOG softkey or PLK, line members cannot log in from their phone.

Note   HLOG is not compatible with EMCC, hence Call Queuing should not be deployed with EMCC.

For more information, see Log Out of Hunt Groups, Cisco Unified CM System Guide.

Mobility

Cisco Unified Communications Manager does not support Unified Mobility with Call Queuing.

Periodic Announcements

Note   Initial announcements are always simulcast to each new caller. Periodic announcements are multicast to queued callers at the specified time interval. Callers who join the queue after the periodic announcement has begun to play may only hear a portion of the announcement

Performance and Scalability

- A single Unified CM Cluster supports a maximum of 15,000 hunt list devices.

- A single Unified CM Subscriber supports a maximum of 100 hunt pilots with call queuing enabled per node.

- Hunt list devices may be a combination of 1500 hunt lists with ten IP phones in each hunt list, 750 hunt lists with twenty IP phones in each hunt list, or similar combinations

  Note When using the broadcast algorithm for call coverage, the number of hunt list devices is limited by the number of busy hour call attempts (BHCA). Note that a BHCA of 10 on a hunt pilot pointing to a hunt list or hunt group containing 10 phones and using the broadcast algorithm is equivalent to 10 phones with a BHCA of 10.

- The maximum number of simultaneous callers in queue for each hunt pilot that you can configure ranges from 1-100 (default 32).

- The maximum wait time in queue for each hunt pilot that you can configure ranges from 0-3600 seconds (default 900).

- An increase in the number of hunt lists can require you to increase the dial plan initialization timer that is specified in the Unified CM service parameters. Cisco recommends you to set the dial plan initialization timer to 600 seconds if you have 1500 hunt lists configured.

- Cisco recommends having no more than 35 directory numbers for a single line group when using broadcast algorithms with call queuing. Additionally, the number of broadcast line groups depends on the busy hour call completions (BHCC). If there are multiple broadcast line groups in a Unified CM system, the number of maximum directory numbers in a line group must be less than 35. The number of busy hour call attempts (BHCA) for all the broadcast line groups should not exceed 35 calls set up per second.

Troubleshoot Call Queuing

Use the Cisco Unified Serviceability Trace Configuration and Real Time Monitoring Tool to help troubleshoot call queuing problems. See the Cisco Unified Serviceability Administration Guide and the Cisco Unified Real Time Monitoring Tool Administration Guide.