CHAPTER 38

Understanding Cisco CallManager Trunk Types

In a distributed call-processing environment, Cisco CallManager communicates with other Cisco CallManager clusters, the public switched telephone network (PSTN), and other non-IP telecommunications devices, such as private branch exchanges (PBXs) by using trunk signaling protocols and voice gateways.

This section covers the following topics:

Cisco CallManager Trunk Configuration

Trunk configuration in Cisco CallManager Administration depends on the network design and call control protocols that are used in the IP WAN. All protocols require that either a signaling interface (trunk) or a gateway must be created to accept and originate calls. For some IP protocols, such as MGCP, you configure trunk signaling on the gateway. You specify the type of signaling interface when you configure the gateway in Cisco CallManager. For example, to configure QSIG connections to Cisco CallManager, you must add an MGCP voice

gateway that supports QSIG protocol to the network. You then configure the T1 PRI or E1 PRI trunk interface to use the QSIG protocol type. For more information about configuring gateways, see the "Understanding Cisco CallManager Voice Gateways" chapter.

Related Topics

- Trunks and Gatekeepers in Cisco CallManager, page 38-2
- Trunk Types in Cisco CallManager Administration, page 38-3

Trunks and Gatekeepers in Cisco CallManager

In addition to using gateways to route calls, you can configure trunks in Cisco CallManager Administration to function in either of the following ways:

- Gatekeeper-Controlled Trunks, page 38-2
- Non-Gatekeeper-Controlled Trunks, page 38-3

Gatekeeper-Controlled Trunks

Gatekeepers that are used in a distributed call-processing environment provide call routing and call admission control for Cisco CallManager clusters. Intercluster trunks that are gatekeeper-controlled can communicate with all remote clusters. Similarly, an H.225 trunk can communicate with any H.323 gatekeeper-controlled endpoints including Cisco CallManager clusters. Route patterns or route groups can route the calls to and from the gatekeeper. In a distributed call-processing environment, the gatekeeper uses the E.164 address (phone number) and determines the appropriate IP address for the destination of each call, and the local Cisco CallManager uses that IP address to complete the call.

For large distributed networks where many Cisco CallManager clusters exist, you can avoid configuring individual intercluster trunks between each cluster by using gatekeepers.

When you configure gatekeeper-controlled trunks, Cisco CallManager creates a virtual trunk device. The gatekeeper changes the IP address of this device dynamically to reflect the IP address of the remote device. Specify these trunks in the route patterns or route groups that route calls to and from the gatekeeper.

Refer to the *Cisco IP Telephony Solution Reference Network Design* guide for more detailed information about gatekeeper configuration, dial plan considerations when using a gatekeeper, and gatekeeper interaction with Cisco CallManager.

Non-Gatekeeper-Controlled Trunks

With no gatekeepers in the distributed call-processing environment, you must configure a separate intercluster trunk for each remote device pool in a remote cluster that the local Cisco CallManager can call over the IP WAN. You also configure the necessary route patterns and route groups to route calls to and from the various intercluster trunks. The intercluster trunks statically specify the IP addresses of the remote devices.

Related Topics

- Trunk Types in Cisco CallManager Administration, page 38-3
- Trunk Configuration Checklist, page 38-6

Trunk Types in Cisco CallManager Administration

Your choices for configuring trunks in Cisco CallManager depends on whether the IP WAN uses gatekeepers to handle call routing. Also, the types of call control protocols that are used in the call-processing environment determine trunk configuration options.

You can configure these types of trunk devices in Cisco CallManager Administration:

- H.225 Trunk (Gatekeeper Controlled), page 38-4
- Intercluster Trunk (Gatekeeper Controlled), page 38-4
- Intercluster Trunk (Non-Gatekeeper Controlled), page 38-4
- SIP Trunk, page 38-5

H.225 Trunk (Gatekeeper Controlled)

In a H.323 network that uses gatekeepers, use an H.225 trunk with gatekeeper control to configure a connection to a gatekeeper for access to other Cisco CallManager clusters and to H.323 devices. An H.225 trunk can communicate with any H.323 gatekeeper-controlled endpoint. When you configure an H.323 gateway with gatekeeper control in Cisco CallManager Administration, use an H.225 trunk. To choose this method, use **Device** > **Trunk** and choose **H.225 Trunk (Gatekeeper Controlled)**.

You also configure route patterns and route groups to route calls to and from the gatekeeper. For more information about gatekeeper, see the "Gatekeepers and Trunks" section on page 8-8.

Intercluster Trunk (Gatekeeper Controlled)

In a distributed call-processing network with gatekeepers, use an intercluster trunk with gatekeeper control to configure connections between clusters of Cisco CallManager systems. Gatekeepers provide call admission control and address resolution for intercluster calls. A single intercluster trunk can communicate with all remote clusters. To choose this method, use **Device** > **Trunk** and choose **Inter-Cluster Trunk (Gatekeeper Controlled)** in Cisco CallManager Administration.

You also configure route patterns and route groups to route the calls to and from the gatekeeper. In this configuration, the gatekeeper dynamically determines the appropriate IP address for the destination of each call, and the local Cisco CallManager uses that IP address to complete the call

For more information about gatekeepers, see the "Gatekeepers and Trunks" section on page 8-8.

Intercluster Trunk (Non-Gatekeeper Controlled)

In a distributed network that has no gatekeeper control, you must configure a separate intercluster trunk for each device pool in a remote cluster that the local Cisco CallManager can call over the IP WAN. The intercluster trunks statically specify the IP addresses or host names of the remote devices.To choose this method, use **Device** > **Trunk** and choose I**nter-Cluster Trunk (Non-Gatekeeper Controlled)** in Cisco CallManager Administration.

Note You must specify the IP addresses of all remote Cisco CallManager nodes that belong to the device pool of the remote non-gatekeeper-controlled intercluster trunk.

You also configure the necessary route patterns and route groups to route calls to and from the intercluster trunks.

SIP Trunk

In a call-processing environment that uses Session Initiation Protocol (SIP), use SIP trunks to configure a signaling interface with Cisco CallManager for SIP calls. SIP trunks (or signaling interfaces) connect Cisco CallManager clusters with a SIP proxy server. A SIP signaling interface uses port-based routing, and Cisco CallManager accepts calls from any gateway as long as the SIP messages arrive on the port that is configured as a SIP signaling interface. The SIP signaling interface uses requests and responses to establish, maintain, and terminate calls (or sessions) between two or more endpoints.

To choose this method, use **Device** > **Trunk** and choose **SIP Trunk** in Cisco CallManager Administration.

You must also configure route groups and route patterns that use the SIP trunks to route the SIP calls.

For more information about SIP and configuring SIP trunks, see the "SIP and Cisco CallManager" section on page 37-2.

Related Topics

- Trunk Configuration Checklist, page 38-6
- Dependency Records for Trunks and Associated Route Groups, page 38-5

Dependency Records for Trunks and Associated Route Groups

To find route groups that use a specific trunk, click the Dependency Records link that is provided on the Cisco CallManager Administration Trunk Configuration window. The Dependency Records Summary window displays information about route groups that are using the trunk. To find out more information about the route

group, click the route group, and the Dependency Records Details window displays. If the dependency records are not enabled for the system, the dependency records summary window displays a message.

For more information about Dependency Records, refer to Accessing Dependency Records, in the *Cisco CallManager Administration Guide*.

Related Topics

- Trunk Configuration Checklist, page 38-6
- Trunk Types in Cisco CallManager Administration, page 38-3

Trunk Configuration Checklist

Table 38-1 provides an overview of the steps that are required to configure trunk interfaces in Cisco CallManager, along with references to related procedures and topics.

Table 38-1 Trunk Configuration Checklist

Configuration Steps		Procedures and Related Topics
Step 1	Gather the endpoint information, such as IP addresses or host names, that you need to configure the trunk interface.	*Cisco IP Telephony Solution Reference Network Design*
Step 2	For gatekeeper-controlled trunks, configure the gatekeeper. For SIP trunks, perform proxy configuration.	Gatekeeper and Trunk Configuration Checklist, page 8-13 SIP Signaling/Trunk Interface Configuration Checklist, page 37-16
Step 3	Add the appropriate trunks in Cisco CallManager Administration. • H.225 trunks (gatekeeper controlled) • Intercluster trunks (gatekeeper controlled) • Intercluster trunks (non-gatekeeper controlled) • SIP trunks	Adding a Trunk, *Cisco CallManager Administration Guide* Trunk Configuration Settings, *Cisco CallManager Administration Guide* SIP Signaling/Trunk Interface Configuration Checklist, page 37-16

Table 38-1 Trunk Configuration Checklist (continued)

Configuration Steps		Procedures and Related Topics
Step 4	Configure the gatekeeper-controlled intercluster trunks or H.225 trunks to specify gatekeeper information. Configure the non-gatekeeper-controlled trunks with the IP address or host name for the remote Cisco CallManager server.	Trunk Configuration Settings, *Cisco CallManager Administration Guide*
Step 5	Configure a route pattern or route group to route calls to each gatekeeper-controlled trunk. Configure a route pattern or route group to route calls to each non-gatekeeper-controlled trunk.	Route Pattern/Hunt Pilot Configuration,*Cisco CallManager Administration Guide* Route Group Configuration, *Cisco CallManager Administration Guide* SIP Signaling/Trunk Interface Configuration Checklist, page 37-16
Step 6	Reset the trunk interface to apply the configuration settings	Resetting a Trunk, *Cisco CallManager Administration Guide*

Related Topics

- Cisco CallManager Trunk Configuration, page 38-1
- Trunks and Gatekeepers in Cisco CallManager, page 38-2
- Trunk Types in Cisco CallManager Administration, page 38-3
- Dependency Records for Trunks and Associated Route Groups, page 38-5

Where to Find More Information

Related Topics

- Gatekeepers and Trunks, page 8-8
- Cisco Voice Gateways, page 35-1
- Gateways, Dial Plans, and Route Groups, page 35-17
- Understanding Session Initiation Protocol (SIP), page 37-1
- Trunk Configuration, *Cisco CallManager Administration Guide*
- Gatekeeper Configuration, *Cisco CallManager Administration Guide*

Additional Cisco Documentation

- *Cisco IP Telephony Solution Reference Network Design*
- *Cisco ICS 7750 System Description*
- *Configuring Cisco IP Telephony Voice Gateways*