

SIP-Based Trunk Managed Voice Services Solution Design and Implementation Guide

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Introduction

Cisco Unified Communications delivers fully integrated communications systems by enabling data and voice to be transmitted over a single network infrastructure using standards-based Internet Protocol (IP). Leveraging the framework provided by Cisco IP hardware and software products,

Cisco Unified Communications delivers unparalleled performance and capabilities to address current and emerging communications needs in service provider, enterprise, and commercial business environments.

This guide discusses a solution network design to enable enterprise Session Initiation Protocol (SIP) trunk deployment with Cisco Unified Communications Manager (Cisco Unified CM) and Cisco Unified Survivable Remote Site Telephony (Cisco Unified SRST), one of the several SIP trunk solutions that Cisco is developing. The model of enterprise SIP trunk development with Cisco Unified CM and Cisco Unified SRST is especially geared for large enterprises with many branch offices. In this distributed model, the service provider (SP) furnishes the SIP trunk services for the enterprise to connect the enterprise headquarter with its enterprise branch offices. At the enterprise headquarter, Cisco Unified SRST deployed for voice services. The Cisco Integrated Services Router (Cisco ISR) running the Cisco Unified SRST deployed for voice unified at the edge of the network. Cisco UBE plays an important role in serving multiple functions when connecting to other networks.

This design guide discusses the components deployed in the network, and provides sample router configurations for the Cisco UBE functions tested for the features included in this document.

Use this information to deploy enterprise SIP trunks with Cisco Unified CM and Cisco Unified SRST using service provider networks.

Network Topology

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The components of the enterprise SIP trunk deployment with Cisco Unified CM and Cisco Unified SRST network topology is show in Figure 1. The service provider components are listed for completeness only and are not included in this guide.

Enterprise Headquarter

- Enterprise 1 HQ Cisco UBE Example Configuration, page 29
- Enterprise 1 HQ Cisco Unified CM Example Configuration, page 32
- Enterprise 1 HQ Cisco ASA Firewall Example Configuration, page 120
- Enterprise 1 HQ Cisco Unity and Cisco Unity Express Example Configuration, page 119
- Enterprise 1 HQ and Cisco VG224 Analog Phone Gateway Example Configuration, page 119

Enterprise Branch

- Branch 1 Cisco UBE, TDM Gateway, and Cisco Unified SRST Example Configuration, page 121
- Branch 1 Cisco Unity Express 3.2 and Cisco Unified CM Example Configuration, page 125

Service Provider

- PSTN hop-off gateway
- SIP Call Agent
- Multiprotocol Label Switching (MPLS) core network



Figure 1 Enterprise SIP Trunk Deployments Cisco Unified CM and Cisco Unified SRST with Cisco UBE

Prerequisites

Prerequisites are grouped into the following sections:

- Components Used, page 4
- Cisco IOS Software Releases, page 6
- Conventions, page 6

Components Used

The information in this guide is based on the software and hardware versions listed in the following sections. The configuration shown in this guide was created through the use of the devices in a specific lab environment. This section includes prerequisites for the following components:

- Cisco Unified Communications Manager, page 5
- Cisco Unified Border Element, page 5
- SCCP Analog Voice Gateway, page 5
- Voice Mail at the Enterprise Headquarter Site, page 5
- Cisco Adaptive Security Appliance Firewall Appliance, page 5
- Cisco Survivable Remote Site Telephony, page 5

Cisco Unified Communications Manager

The Cisco Unified CM at the enterprise headquarter site provides call control to voice services at the headquarter site and the branch offices. The Cisco Unified CM was tested using version 6.1.x.

Cisco Unified Border Element

A Cisco 3800 series platform was tested with Cisco IOS Release 12.4.(20)T1 and Cisco UBE version 1.2. The Cisco 2800 series Integrated Services Router (Cisco ISR) can also be used as a Cisco UBE.

SCCP Analog Voice Gateway

A Cisco VG224 analog voice gateway was used at the enterprise headquarter site to provide connectivity to analog phones and fax machines. The Cisco VG224 analog voice gateway was tested with Cisco IOS Release 12.4(20)T1.

Voice Mail at the Enterprise Headquarter Site

Voice mail at the enterprise headquarter site is provided by the Cisco Unity voice mail server, tested with version 3.2.

Cisco Adaptive Security Appliance Firewall Appliance

A Cisco ASA firewall appliance was placed at the ingress from the service provider servicing the enterprise headquarter site. It was tested with Cisco ASA 8.0(4).

Note

The Cisco UBE at the enterprise headquarter site can also be used to provide Cisco IOS firewall functions. If the Cisco UBE is used to provide Cisco IOS zone-based firewall functions, the Cisco ASA firewall appliance is not needed.

Cisco Survivable Remote Site Telephony

A Cisco Unified SRST router was placed at the enterprise branch site. In addition to the Cisco Unified SRST functions, this router provides Cisco UBE, Cisco IOS firewall, conferencing transcoding, MTP, voice mail using Cisco Unity Express, TDM, and gateway functions. A Cisco 3800 series platform was tested with Cisco IOS Release 12.420T1. Cisco Unity Express was tested with version 3.2. The Cisco 2800 series Integrated Services Router (Cisco ISR) can also be used as an Cisco Unified SRST router.

Cisco IOS Software Releases

The test results described in this guide for the Cisco Unified Border Element were conducted using Cisco IOS Release 12.4(20)T1. We recommend Cisco IOS Release 12.4(20)T1 or later releases for the deployment of the features described in this guide.

Conventions

Refer to Cisco Technical Tips Conventions for information on document conventions.

Solution Description

The enterprise SIP trunk deployment with the Cisco Unified CM and Cisco Unified SRST solution topology allows the enterprise headquarter site to provide voice services from Cisco Unified CM to remote enterprise branch offices using SIP trunks from service providers. The enterprise branch offices are equipped with Cisco Unified SRST routers.

When Cisco Unified CM fails, but the WAN connection remains active and SRST takes over, the remote phones are able to make WAN calls through SIP to the call agaent. If a WAN connectivity failure occurs, the enterprise branch offices can continue to maintain basic IP phone and PSTN services.

The focus of services using this solution are:

- Voice services with call control provided by Cisco Unified CM at the enterprise headquarter site
- Voice services with Cisco Unified SRST at the enterprise branch offices

The following topics describe the solution:

- Feature Summary, page 6
- IP Connectivity, page 15
- Quality of Service, page 16
- Voice Mail, page 18
- Dial Plan, page 18
- Security, page 18
- Failover and Redundancy, page 19
- Fax and Modem, page 19
- Billing and Management, page 19
- Best Practices for SIP Trunk implementation Using Cisco UBE, page 19
- Caveats, page 21

Feature Summary

The features listed in this section were tested as part of the solution configuration.

Enterprise Headquarter Site Features

• Cisco Unified Communications Manager call control

- Cisco Unified Border Element
- Cisco ASA Firewall or Cisco IOS Zone-Based Firewall
- Cisco Unity Voice Mail Server
- Analog Phone and Fax Services

Enterprise Branch Offices Features

- Survivable Remote Site Telephony
- Cisco Unified Border Element
- Cisco IOS Firewall
- Cisco Unity Express Voice Mail
- Analog Phone and Fax Services
- PSTN Backup

Service Provider Features

- Multiprotocol Label Switching (MPLS) in the service provider backbone network
- PSTN Hop-Off Services (using service provider shared PSTN gateway)
- Optional Voice Mail Server

Basic Phone Features Served in the Topology

- Basic and Supplementary Calls
- DTMF Relay RFC 2833
- Fax and Modem Passthrough
- Supplementary services: Hold, Transfer, Forward, Conferencing, Transcoding, Music-on-Hold, Delayed Offer, Early Offer
- Calls to service provider PSTN gateway, inbound and outbound
- Voice mail services (Cisco Unity at the enterprise headquarter site and Cisco Unity Express at the enterprise branch offices)

SIP Trunking Design Considerations

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SIP trunking design considerations described in the following sections should be assessed when deploying SIP trunks.

- DTMF Transport, page 8
- SIP Delayed Offer and Early Offer, page 8
- Early Media Cut Through, page 9
- SIP Trunk Transport Protocols, page 9
- Monitoring SIP Trunk State, page 9

DTMF Transport

There are several ways of transporting DTMF information between SIP endpoints. In general, these methods can be classified as Out of Band (OOB) and In Band (IB) signaling. In Band DTMF transport methods send either raw or signaled DTMF tones within the RTP stream and need to be processed by the endpoints that generate or receive them.

OOB signaling methods transport DTMF tones outside of the RTP steam, either directly to and from the endpoints or using a Call Agent, such as the Communications Manager, which interprets and forwards these tones as required.

OOB SIP DTMF signaling methods include:

- Unsolicited SIP Notify
- INFO method
- Key Press Markup Language (KPML)

KPML (RFC 4730) is the preferred OOB signaling method used by Cisco. KPML is supported on Advanced Cisco 79X1 Series IP Phones, Cisco Unified CM, and Cisco IOS Gateways (Cisco IOS Release 12.4 and later).

Unsolicited Notify is a proprietary DTMF transport method used only on Cisco IOS Gateways (Cisco IOS Release 12.2 and later).

IB DTMF transport methods send DTMF tones as either raw tones in the RTP media stream or as signaled tones in the RTP payload, using RFC 2833.

With SIP product vendors, RFC 2833 has become the predominant method of sending and receiving DTMF tones and is supported by the majority of Cisco voice products.

Because IB signaling methods send DTMF tones in the RTP media stream, the SIP endpoints in a session must either support the transport method used (for example, RFC 2833) or provide a method of intercepting this in band signaling and converting it. That is, if two endpoints are using a B2BUA as the call control agent (such as the Communications Manager) and they negotiate different DTMF transport methods, then the call control agent determines how these DTMF transport differences are handled. With Communications Manager, a DTMF transport mismatch (for example, In Band to Out of Band DTMF) is resolved by inserting a transcoder

SIP Delayed Offer and Early Offer

RFC 3261 defines two ways that Session Description Protocol (SDP) messages can be sent in the offer and answer, commonly known as Delayed Offer and Early Offer, which are mandatory requirements in the specification. In the simplest terms, an initial SIP Invite sent with SDP in the message body defines an Early Offer; whereas, an initial SIP Invite sent without SDP in the message body defines a Delayed Offer. In an Early Offer, the session initiator sends its capabilities in the SDP contained in the initial invite (for example, codecs supported). In a Delayed Offer, the session initiator does not send its capabilities in the initial invite and waits for the called device to send its capabilities first.

Cisco UBE uses the SIP *Offer/Answer* model for establishing SIP sessions, as defined in RFC 3264. In this context, an *Offer* is contained in the SDP fields sent in the body of a SIP message.

Note

Service providers sometimes mandate an Early Offer call from the enterprise. In such cases Cisco UBE (Cisco IOS Release 12.4(20)T and later) can be configured to convert the Delayed Offer to the Early Offer.

Early Media Cut Through

The terms Early Offer and Early Media are often confused.

- Early Offer is the call setup where the initial Invite has the SDP Offer.
- Early Media is the preconnect media cut-through.

In certain circumstances, a SIP session can require that a media path be set up prior to completing a connection. To this end, the SIP protocol allows the establishment of Early Media after the initial Offer has been received by an endpoint. The reasons for using Early Media vary.

- The called device might establish an Early Media RTP path to reduce the effects of audio cut-through delay (clipping) for calls experiencing long signaling delays, or to provide a network-based voice message to the caller.
- The calling device might establish an Early Media RTP path to access a DTMF or voice driven IVR system (for example, airlines).

Both Early Offer and Delayed Offer calls support Early Media. Early Offer calls can typically stream Early Media after exchanging two messages (Invite with SDP and Trying). Delayed Offer calls can typically stream Early Media after exchanging four messages (Invite without SDP, 100 Trying, Session Progress with SDP and PRACK).

If Cisco UBE is configured to do DO->EO conversion, ensure that PRACK is enabled on CUCM, for call flows involving early media cut-through (18x w/SDP) to work seamless.

SIP Trunk Transport Protocols

SIP Trunks can use either TCP or UDP as a message transport protocol. As a reliable, connection orientated protocol that maintains the connection state per SIP dialogue, TCP is preferred. However, TCP has a higher segment overhead, uses more bandwidth than UDP, and has a higher packet overhead. These TCP overhead features increase call setup times when compared with UDP, which is connectionless and relies on the SIP stack to maintain its state and reliability.

If your network is prone to packet loss, use TCP. If the networks do not experience packet loss, use UDP.

Monitoring SIP Trunk State

SIP servers can monitor individual SIP dialogues either by using the dialogue's TCP connection or within the SIP stack itself (for example, for UDP based transport). In a Cisco Unified CM environment, use this per-call trunk state tracking feature in conjunction with Cisco Unified CM Route Groups and Route Lists to route calls over multiple SIP trunks. Trunk state is monitored and state changes are detected on a per-call basis. Successive trunk connections are attempted when the first trunk and subsequently selected trunks are down.

To overcome the limitations of per-call, per trunk state detection, the following methods can be used to monitor the state and detect the state changes of each end of a SIP trunk:

• OPTIONS Method—The SIP OPTIONS method allows a UA to query another UA or a proxy server as to determine its capabilities. This query allows a client to discover information about the supported methods, content types, extensions, codecs, and so on, without actually placing a call.

Cisco UBE sends an Out of Dialogue OPTIONS message to the device at the far-end of the SIP trunk to determine its state. The OPTIONS method is used as an application-level ping. The returned ping response is generally not as important as the fact that the trunk has confirmed that it is *alive*. Cisco Unified CM SIP trunks support the receipt of OPTIONS messages but do not send OPTIONS messages as keepalives. Cisco Unified CM version 5.x SIP trunks respond to OPTIONS messages with a "405—Method Not Acceptable" response. In Cisco Unified CM version 6.0.1, SIP trunks respond to an OPTIONS message with a "200—OK" response.

• INVITEs as keepalives—INVITEs that are sent to unused numbers on the SIP trunk is an alternative to the OPTIONS method as an application-level ping. Similar to the OPTIONS method, the response returned is generally not as important as the fact that the trunk has confirmed that it is *alive*. Cisco Unified CM responds to, but does not send SIP INVITEs as keepalives.

SIP Trunk Redundancy and Load Balancing

Redundancy can be achieved by combining the call admission control (CAC) features of IOS. In general, CAC can be applied based on IP address reachability, Total Memory, Total Calls, Total CPU, IP circuit max-calls, and max-connections. The following show several methods used to achieve redundancy based on:

- Dial-peer preferences and Dial-peer Hunting
- DNS SRV
- GK load balancing for H.323 Networks
- Route List & Route Group option from CCM

Dial-peer preferences and Dial-peer Hunting

Use the following CLI example to achieve redundancy based on dial-peer preferences and dial-peer hunting:

```
dial-peer voice 3670000 voip
 description "first hunting for 3670000 to ent2-hq-ipip"
 destination-pattern 240367....
 session protocol sipv2
 session target ipv4:10.10.11.36
 codec g711ulaw
!
dial-peer voice 36700 voip
 description "second hunting for 3670000 to ent2-hq-ipip"
 destination-pattern 240367....
 preference 1
 session protocol sipv2
 session target ipv4:10.10.11.37
 codec g711ulaw
'
```

DNS SRV

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Use the setup example shown in Figure 2 into achieve redundancy based on DNS SRV.

Figure 2



Redundancy and Cooling in CID networks

SIP Network Redundancy and Scaling Based on DNS SRV

GK load balancing for H.323 Networks

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Use the setup example shown in Figure 3 to achieve redundancy based on GK load balancing for H.323 networks.

Figure 3 Redundancy and Scaling Based on GK Load Balancing for H.323 Networks

Redundancy and Scaling in H.323 Networks



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Route List & Route Group option from CCM

To achieve redundancy based on route list and route group using Cisco Unified CM, complete the following steps:

1. Configure one Route Group to each IPIPgw (see Figure 4).

Figure 4 Configuring Route Groups

Route Group	Configurat	ion	Add new F Back to Find/List Ro Depender	toute Groups	2
Route Group Members	Route Group: load	balance-ipipgw60-rg			
15.3.30.60	Status: Ready				
	Update Delete				
	Route Group Inform	mation			
	Route Group Name*	loadbalance			
	Distribution Algorithm	m* Top Down	•		
	Route Group Memb	per Information			
	Find Devices to Ad	ld to Route Group			
	Device Name contai	ns		Find	
	Available Devices (select device, then select port below)	15.3.30.70 pinamojito-ipipgw1-15.5.15.80			
	Port(s)	All Add to Route Group			
	Current Route Gro	up Members			
		Reverse Order of Select	ted Devices		
	Selected Devices* (ordered by highest priority)	15.3.30.60 (All Ports)		¢	
		•	<u>۸</u>		
	Removed Devices (to be removed from Route Group when you click Update)				273873

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273874

2. Configure one Route List to club all Route Groups (see Figure 5).

Figure	ə 5	Configurin	g A Route	List for Rou	te Groups	
Fine	Add a New Route Group					
2	2 m	atching record(s) fo	or Route Gr	oup Name b	egins with ""	
F	Find I and s	Route Groups where Rout how 20 💌 items per pa To list al	e Group Name Ige Litems, click Find	begins with 💌	my search text.	Find
Mate	chin	g record(s) 1 to 2 d	of 2			
		Route Group Name		e		
	1	loadbalance-ipipgw60-rg				
	6	loadbalance-ipipgw70-rg				
De	lete S	Selected	First	: Previous Next	Last	Page 1 of 1

3. Configure Route List under Route Pattern Gateway or Route List (see Figure 6_.

Figure 6 Add a new Route List Back to Find/List Route Lists **Route List Configuration** Dependency Records Route List Details Route List: loadbalance-ipipgw-rl loadbalance-ipipgw60-rg Status: Ready Ioadbalance-ipipgw70-rg Copy Update Delete Reset **Route List Information** Route List Name* loadbalance-ipipgw-rl loadbalancebetween60-70 Description Cisco CallManager PUB • Group* WARNING! The selected Cisco CallManager Group has only one Cisco CallManager configured. For the control process to have redundancy protection, please select a Cisco CallManager Group with more than one Cisco CallManager. Enable this Route List (change effective on Update; no reset required) **Route List Member Information** Add Route Group Selected Groups* (ordered by highest loadbalance-ipipgw60-rg[non-QSIG] loadbalance-ipipgw70-rg[non-QSIG] priority) V **V** Removed Groups (to be removed from Route List when you click Update) * indicates required item 273875

Configuring A Route List Under Route Pattern Gateway or Route List

4. Configure Max-Con under IPIPgw dial-peers towards Meeting Place, or Set the Global Call Treatment for total-calls.

Figure 7 Configu	uring Max-Con
Route Pattern Configuration	<u>Add a New Route Pattern</u> <u>Back to Find/List Route Patterns</u>
Route Pattern: 6XXX Status: Ready Note: Any update to this Route Patte Copy Update Delete	rn automatically resets the associated gateway or Route List
Pattern Definition	
Route Pattern*	6>>>>
Partition	< None >
Description	via 15.5.15.60
Numbering Plan*	North American Numbering Plan
Route Filter	< None >
MLPP Precedence	Default
Gateway or Route List*	Ioadbalance-ipipgw-rl
Route Option	Route this pattern
	C Block this pattern - Not Selected -
Call Classification*	OffNet Allow Device Override
Provide Outside Dial Tone	Allow Overlap Sending Urgent Priority
Require Forced Authorizat	ion Code
Authorization Level	0
Require Client Matter Code	9
Calling Party Transformation	s
Use Calling Party's Externa	I Phone Number Mask
Calling Party Transform Mask	
Prefix Digits (Outgoing Calls)	
Calling Line ID Presentation	Default
Calling Name Presentation	Default
Connected Party Transforma	tions

IP Connectivity

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The SIP trunks are typically provided by service providers (SPs). SP voice services are offered using a SIP trunk that uses the same physical IP interface also used to deliver data services. The options for the physical connection of SIP trunks from the SPs are shown in Table 1.

The sample configuration in the "Configurations" section on page 21 shows a Gigabit Ethernet interface.

Some service providers that offer both data and voice services over a single IP interface also offer MPLS services. With MPLS services, voice packets must be sent with an MPLS label so that the service provider can terminate the traffic, and data marked with a different label can be tunneled through the backbone network. Marking voice traffic with an MPLS label requires the Virtual Routing and Forwarding (VRF)-Aware voice feature available on the Cisco ISRs in Cisco IOS Release 12.4(20)T.

Physical Connection	Data Link
Fast Ethernet, Gigabit Ethernet	Metro Ethernet
Broadband Interface (HWIC-CABLE, WIC1-ADSL, WIC1-SHDSL)	Cable modem, digital subscriber line (DSL), asymmetric digital subscriber line (ADSL)
T1/E1 (WIC-1DSU-T1, VWIC-2MFT-T1, VWIC-2MFT-E1)	Point-to-Point Protocol (PPP), Frame Relay, ATM

Table 1 Cisco CPE Router Network Connectivity Options

Quality of Service

Quality of Service (QoS) is a fundamental requirement for any IP interface that carries voice traffic. Several specific QoS considerations and their configurations are discussed in this section:

- Congestion Management, page 16
- Packet Marking, page 17
- Call Admission Control, page 17
- Delay, page 17
- Echo, page 18

Congestion Management

When you use a single connection for both voice and data, you must carefully consider congestion management and bandwidth allocation to prevent data flows from affecting voice quality.

VoIP signaling and media traffic can be identified and classified as priority traffic using the QoS tools available within Cisco IOS software. Use Low Latency Queuing (LLQ) for media traffic streams. During congestion, LLQ queues restrict throughput to the configured bandwidth and packets exceeding this bandwidth are dropped. Therefore, signaling traffic should use class-based weighted fair queuing (CBWFQ), because signaling traffic bursts during call setup and teardown. The configurations for LLQ and CBWFQ are shown in the "Configurations" section on page 21. See *Quality of Service for Voice Over IP* for more information.

You can estimate the bandwidth to allocate to voice traffic by considering:

- Codec used by the calls
- Maximum number of simultaneous calls over the SIP trunk
- Payload size of the packets (that is, the sampling size of the codec)

The service provider can limit the maximum number of calls allowed across the SIP trunk based on the CAC techniques discussed in the "Billing and Management" section on page 19. This maximum number of calls allowed can be part of the service level agreement (SLA) between the service provider and the end customer.

When a Layer 2 connection technology, like Frame Relay or ATM, is used, additional traffic shaping and traffic management mechanisms must be deployed to ensure QoS on the egress interface. See *Configuring Frame Relay* for more information.

Packet Marking

You must set appropriate differentiated services code point (DSCP) values on the media and signaling packets leaving the SIP trunk from the customer premises to receive the desired service level in the service provider's network. By default, Cisco IOS software on the CPE router marks voice media packets, sourced on the router, with DSCP EF (101110) for expedited forwarding and signaling packets, sourced on the router, with DSCP AF31 (011010) for assured forwarding.

QoS policies may use either DSCP or IP precedence to classify voice packets. IP precedence interprets the low order three bits of the 6-bit DSCP value. In this way DSCP EF maps to CS5, while DSCP AD31 maps to CS3, which are appropriate IP precedence settings for voice media and signaling traffic.

Call Admission Control

Different types of Call Admission Control (CAC) are used in this solution. CAC can be based on bandwidth, maximum connections, CPU load, or memory available. CAC can be enabled at Cisco Unified CM or Cisco UBE.

Bandwidth-based CAC monitors the amount of bandwidth available in the network and controls routing of calls accordingly. This provides guaranteed control of bandwidth usage for voice calls. On Cisco Unified CM, bandwidth-based CAC is available and tested.

The number of simultaneous outbound calls can also be limited by the **max-conn** command on the VoIP dial peer used to route calls from the Cisco UBE router to the service provider network. This is the mechanism tested in the configuration example given in this guide.

The Cisco UBE can control the number of calls by setting the CPU load or memory available. This is configurable on the Cisco UBE by setting the threshold such that CAC is triggered when the threshold is reached.

The service provider can also control the total number of inbound and outbound calls from the SIP feature server, which is probably the best place for CAC policies to be implemented.

Note

We recommend also implementing a limit such as that set by the **max-conn** command on the Cisco UBE side to protect against poor voice quality on the IP access link into the customer site if the number of calls exceeds the available bandwidth.

Delay

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The telephone industry standard ITU-T G.114 recommends the maximum desired one-way delay for a voice packet be no more than 150 milliseconds (ms). With a round-trip delay of 300 ms or more, users can experience annoying talk-over. In addition to congestion management with proper queuing techniques, you can use link fragmentation and interleaving (LFI) on slower access links to ensure that the end-to-end delay budget for voice packets is met. LFI is usually necessary on links of less than 768K access speeds.

Variable delay in packet rate results in jitter. The jitter buffer in Cisco voice gateways runs in an adaptive mode and can remove the jitter from the packet flow for moderate end-to-end jitter in the network. See *Understanding Jitter in Packet Voice Networks (Cisco IOS Platforms)* for more information on jitter. Delay can also cause echo.

Echo

Echo is caused by a time-division multiplexing (TDM) connection, or acoustic echo resulting from IP connections and endpoints. An improperly insulated phone, headset, or speakerphone could be the cause of echo experienced across a SIP trunk call. The analog phone user can also hear echo because of a very hot, or very high volume, signal on the TDM interface. *Echo Analysis for Voice over IP* explains how to adjust the settings for the voice port to eliminate echo caused by a hot signal and contains details on troubleshooting the source of echo. Delayed echo could be from the PSTN connectivity in the service provider's network. Cancel this echo on the PSTN gateway.

Voice Mail

Voice mail is provided by the Cisco Unity server at the enterprise headquarter site. At the enterprise branch offices, voice mail is provided by Cisco Unity Express embedded in the Cisco Unified SRST router.

The service provider can offer voice mail services using a hosted server. In this configuration, the service provider SIP server is responsible for functions such as call forward busy, call forward no answer, and Message Waiting Indicator (MWI).

Dial Plan

In this solution topology, the voice services are provided by the service provider using a call agent. The dial plan is also controlled by the service provider. The configuration shows the call routing configuration for VoIP dial peers needed on the Cisco UBE.

Security

The following security features are included in the solution network design:

- Authentication, page 18
- Encryption of Media and Signaling, page 18
- Firewall, page 19

Authentication

SIP registration and call method authentication can be provided using Digest Authentication. This method uses a single username and password for the entire SIP trunk, as shown in the "Configurations" section on page 21. The password is encrypted using Message Digest 5 (MD5).

Encryption of Media and Signaling

VPN technology can be used to encrypt the media and signaling streams between the Cisco UBE router and the core network. Cisco UBE also supports Transport Layer Security (TLS) and Secure RTP (SRTP) internally between phones and the router.

Firewall

At the enterprise headquarter site, either the Cisco ASA firewall appliance or Cisco IOS Zone-based firewall can be used to defend against outside attacks from the IP interface entering the headquarter. At the enterprise branch offices, the Cisco IOS Zone-based firewall features in the Cisco Unified SRST router are used. The firewall serves as a checkpoint for the customer LAN traffic exiting from the router to the service provider network.

Access control lists (ACLs) are required to filter out unwanted traffic on physical links to the Internet. These ACLs are used primarily to stop unauthorized access, Denial of Service (DoS) attacks, or distributed DoS (DDoS) attacks that originate from the service provider or a network connected to the service provider, and also to prevent intrusions and data theft.

In this test configuration, the Cisco ASA firewall appliance was used at the enterprise headquarter site and Cisco IOS firewall features were used at the enterprise branch offices.

Failover and Redundancy

If a complete SIP trunk failure or IP interface failure occurs, backup PSTN lines connected directly to Cisco Unified SRST can be used for PSTN access. In the Cisco Unified SRST router configuration shown in the "Configurations" section on page 21, backup PSTN access was tested for alternate call routing when SIP trunk access was down.

Fax and Modem

Fax pass-through and modem pass-through calls were tested between the enterprise headquarter site and branch offices and to the PSTN hop-off gateway. Fax and modem calls were tested with the G.711 codec.

Billing and Management

Typically the service provider is able to do billing without using any information from the managed Cisco UBE router.

Each call through the Cisco UBE router is considered to have two call legs. The start and stop records are generated for each call leg and can be polled through Simple Network Management Protocol (SNMP) using the DIAL-CONTROL-MIB. For more information, see the following documents:

- CDR Logging with Syslog Servers and Cisco IOS Gateways
- Equivalent MIB Objects for VoIP show Commands
- RADIUS VSA Voice Implementation Guide

Best Practices for SIP Trunk implementation Using Cisco UBE

By using the following Cisco UBE configuration methods, you can achieve a more effective SIP trunk topology implementation.

- Configure explicit incoming and outgoing dial-peers for Cisco UBE to apply the appropriate treatment to calls (for example, translations, codec, DTMF-type, SIP Normalization, and so on).
- Configure VoIP dial-peers with appropriate descriptions. For example:

- description *** dial-peer to Service Provider ***
- description *** dial-peer to Publisher Cisco Unified CM ***
- description *** dial-peer to Subscriber Cisco Unified CM ***
- Always use a keepalive mechanism, such as Out of Dialog OPTIONS-ping, over the SIP trunk to detect upstream entity failure before routing calls to the service provider.
- Configure the Cisco UBE for media inactivity based on RTP, or RTCP, or both to accelerate the detection of *hung* calls.
- Because it is the most widely deployed and most interoperable DTMF mechanism for SIP trunks, use RFC 2833 to configure DTMF.
- If Cisco UBE is configured to do Delayed Offer to Early Offer conversions, ensure that PRACK is enabled on Cisco Unified CM, for call flows involving early media cut through (18x w/SDP) to work seamlessly.
- Fine tune the failover timers, especially when using clustered/DNS-SRV addressing.

To ensure minimum Post Dial Delay during failover situations, fine tune the **sip-ua retry** *xxx* **parameters**, where *xxx* is the request name and response code. We recommend the value for INVITEs as *retry invite 2*.

• Do not configure Cisco HSRP on the router that runs Cisco UBE functionality.

The Layer 3 and Layer 7 embedded SIP addresses can be unpredictable when Cisco HSRP is enabled. Refer to the caveats section for exact Bug-ID's.

• Use SIP profiles to insert or remove elements in the SIP headers.

SIP Profiles is a very powerful SIP message normalization and protocol repair tool that can quickly fix or create a workaround to minor interoperability issues when two SIP implementations communicate with each other. This feature is available in Cisco IOS 12.4(15)XZ and Cisco IOS 12.4(20)T and later.

- If SIP trunk capacity requires a stack of Cisco UBEs to scale capacity, consider using the Cisco Unified SIP Proxy and Cisco UBE scaling architecture at the HQ location.
- Pay close attention to DTMF interoperability and call flows.

Adjust the payload types for DTMF as needed when the default Cisco values are in conflict (for example, PT 96 is used for RFC 2833, which is by default reserved for cisco fax-relay).

- Adjust SIP incoming and outgoing ports as required to accommodate send and listen devices on non-standard SIP ports.
- Always test call flows with supplementary services as they present the most likely interoperability issues.
- Configure ACLs on Cisco UBE to allow traffic only from valid call agents and endpoints to avoid toll-fraud.

You can configure CLI commands such as allow term.

- Configure fax traffic on TDM PSTN access if at all possible
- Mark all the outbound voice traffic with the appropriate DSCP values so that it gets the right priority in the service provider network. All other traffic should be appropriately marked.
- Provision backup FXO trunks on the Cisco CPE router to provide emergency PSTN access if the SIP trunk is down.

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• The service provider should ensure appropriate call routing for emergency (911) calls using the shared hop-off PSTN gateway.

Caveats

In general, the following global caveats exist with this solution:

- The same static codec must be used on all voice calls. It can be any codec type, but the same codec must be maintained.
- The G.711ua codec must be used for the fax/modem calls in the network.
- Headquarter site or remote branch local calls must be configured with G.711 codecs.
- Voice calls over the WAN must be configured with G.729 codecs.
- Video was not tested as part of this solution.
- H.323 calls were not tested as part of this solution.
- Use of Cisco HSRP is not recommended in this solution as it can cause unexpected results with SIP signaling.

Configurations

The "Appendix: Enterprise 1 and Branch 1 SIP-Based Trunk Managed Voice Services Solution Example Configurations" section on page 24 provides configuration examples, screen figures, and other helpful information you need to configure the features on the Cisco UBE router at the edge of the service provider network described in this guide.

Note

Use the Command Lookup Tool (registered customers only) or the Cisco IOS master commands list at http://www.cisco.com/en/US/docs/ios/mcl/allreleasemcl/all_book.html for more information on the commands used in this guide.

Configuration Verification

Use the following show commands to display and verify your Cisco UBE configuration:

- show dial-peer voice summary
- show sip-ua register status

The firewall configuration can be verified with the following commands:

- show ip inspect sessions
- show ip inspect statistics

Troubleshooting



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See Important Information on Debug Commands before you use debug commands.

Use the following **debug** commands to troubleshoot your configuration:

• debug ccsip messages

This command shows all SIP Service Provider Interface (SPI) message tracing. It traces the SIP messages exchanged between the SIP UA client (UAC) and the access server.

• debug ccsip all

This command enables all SIP-related debugging including:

- debug voip app

This command displays all application debug messages, including Application Framework (AFW) and DSAPP debugs.

debug voip ccapi inout

This command traces the execution path through the call control API, which serves as the interface between the call session application and the underlying network-specific software. You can use the output from this command to understand how calls are being handled by the voice gateway.

- debug ephone mtp

This command enables Media Termination Point (MTP) debugging.

- debug sccp events

This command displays debugging information for SCCP events and its related applications transcoding and conferencing.

Related Information

The following information is referenced in this guide:

- Cisco Unified Communications Manager Express 4.1 Multi-party Conferencing Enhancements
- CDR Logging with Syslog Servers and Cisco IOS Gateways
- Cisco 2800 Series Integrated Services Routers
- Cisco 3800 Series Integrated Services Routers
- Cisco Cable High-Speed WAN Interface Cards
- Cisco High Density Analog and Digital Extension Module for Voice and Fax
- Cisco IAD243X Business Class Integrated Access Device
- Cisco Systems Support
- *"Configuring Conferencing"* chapter of the Cisco Unified Communications Manager Express System Administrator Guide
- Configuring Frame Relay and Frame Relay Traffic Shaping
- Configuring SIP Support for Hookflash
- Echo Analysis for Voice over IP
- Enterprise QoS Solution Reference Network Design Guide
- Equivalent MIB Objects for VoIP show Commands
- IP Communications Voice/Fax Network Module
- Quality of Service for Voice Over IP

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- RADIUS VSA Voice Implementation Guide
- Service Provider Quality-of-Service Overview
- Understanding Jitter in Packet Voice Networks (Cisco IOS Platforms)

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS Version 2.0.

Appendix: Enterprise 1 and Branch 1 SIP-Based Trunk Managed Voice Services Solution Example Configurations

This appendix contains configuration examples to configure a SIP-based managed voice services solution using the Cisco Unified Border Element, Cisco Unified Communications Manager, Cisco Unity, and Cisco Unity Express, depending on your configuration requirements.

- Overview of Test Configurations, page 24
- High-Level Operation, page 25
- Test Topology, page 28
- Example Configuration Details, page 29
- Enterprise 1 HQ Cisco UBE Example Configuration, page 29
- Enterprise 1 HQ Cisco Unified CM Example Configuration, page 32
- Enterprise 1 HQ Cisco Unity and Cisco Unity Express Example Configuration, page 119
- Enterprise 1 HQ and Cisco VG224 Analog Phone Gateway Example Configuration, page 119
- Enterprise 1 HQ Cisco ASA Firewall Example Configuration, page 120
- Branch 1 Cisco UBE, TDM Gateway, and Cisco Unified SRST Example Configuration, page 121

Branch 1 Cisco Unity Express 3.2 and Cisco Unified CM Example Configuration, page 125

Overview of Test Configurations

The following main components are used in the Voice Enterprise 1 configuration.

Enterprise 1 HQ Components

The main components of the Enterprise 1 Headquarters (HQ) include:

- Cisco Unified CM (version 6.1)
- SCCP IP Phones
- VG224 (version 12.4(20)T1) analog lines for Fax/Modem support
- Cisco UBE (Cisco IOS Release 12.4(20)T1)

Enterprise 1 and Branch 1 Components

The main components of the Enterprise 1 and Branch 1 include:

- Cisco UBE/Cisco Unified SRST/Analog lines for Fax/Modem
- SCCP IP Phones

Caveats

The following caveats apply to the SIP-based Trunk Voice Enterprise 1solution:

Global Caveats

In general, the following global caveats exist with this solution:

- The same static codec must be used on al voice calls. It can be any codec type, but the same codec must be maintained.
- The G.711ua codec must be used for the fax/modem calls in the network.
- Headquarter site or remote branch local calls must be configured with G.711 codecs.
- Voice calls over the WAN must be configured with G.729 codecs.
- Video was not tested as part of this solution.
- H.323 calls were not tested as part of this solution.
- Use of Cisco HSRP is not recommended in this solution as it can cause unexpected results with SIP signaling.

Cisco Unified CM 6.1.0.9901-372 Caveats

- 1. Cisco Unified CM version 6.1 does not support Early Offer g729r8; Delayed Offer is configured on Cisco Unified CM, and Early Offer is enforced on Cisco UBEs.
- 2. Cisco Unified CM does not support the midcall audio codec change (CSCsr03120).
- **3.** Enhance SIP Trunk display to minimize confusion (CSCsv80045).

High-Level Operation

Anyone trying to configure the Voice Enterprise 1 topology should be very familiar with networking in general and the specific configurations of the following Cisco applications:

- Cisco Unified CM
- Cisco ASA 8.0(4) Firewall
- Cisco Unity
- Cisco Unity Express

CAll Flow Within Enterprise 1

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All endpoints (Cisco Unified CM, HQ/Branch Cisco UBEs, IP phones, and so on) in the Voice Enterprise 1 network are configured to be routable. Calls within the enterprise use SCCP/MGCP for call control.

During normal operation, call flow from HQ to Branch 1 are as follows:

IP/VG224 FXS Phone (over SCCP) > Cisco Unified CM (over SCCP/MGCP) > IP/Branch Cisco UBE FXS Phone

During normal operation, Branch l call flows to HQ is in the reverse direction.

HQ Call Flow to Enterprise Offsite Remote Endpoint

During normal operation, call flow from HQ to outside of the enterprise is as follows:

IP/VG224 FXS phone (over SCCP) > Cisco Unified CM (over SIP) > HQ Cisco UBE (over SIP) > Service Provider SIP Proxy Server

During normal operation, external call flow to the enterprise HQ is in the reverse direction.

Branch 1 Call Flow to Enterprise Offsite Remote Endpoint

Call flow from Branch 1 to outside of the enterprise would be as follows:

IP/Branch Cisco UBE FXS phone (over SCCP/MGCP) > Cisco Unified CM (over SIP) > Branch Cisco UBE (over SIP) > Service Provider SIP Proxy Server

For normal operation, external call flow to the enterprise Branch 1 is in the reverse direction.

Note

Between Cisco Unified CM and Branch Cisco UBE, signaling and voice RTP packets must pass through the enterprise HQ Cisco UBE, and it is not shown in the call flow because it is transparent.

Cisco Unified CM is used to control the number of uplink calls (CAC—bandwidth) for both the enterprise HQ and branch.

For purposes of security, the Cisco ASA can be placed at the front end of the HQ Cisco UBE.

High-Level Configuration Summaries

The following topics summarize the scope of a current enterprise solution.

Protocols

The following is a list of protocols used between components:

- SCCP: Cisco Unified CM and all IP Phones
- SCCP: Cisco Unified CM and Cisco VG224
- MGCP: Cisco Unified CM and Cisco UBE/Cisco Unified SRST TDM
- SIP-SIP: Cisco Unified CM HQ/Branch Cisco UBE and WAN (External to Enterprise)

Codecs

The following is a list of codecs used between components:

- g711ulaw: HQ/Branch IP Phone to IP Phone local calls
- G729r8: HQ/Branch IP Phone to remote endpoint across WAN
- Pass-through g711ulaw: HQ/Branch Fax/Modem to Fax/Modem local calls
- Pass-through g711ulaw:HQ/Branch Fax/Modem to remote endpoint Fax/Modem across WAN



Cisco Unified CM (version 6.1) does not support Early Offer g729r8. HQ/Branch Cisco UBEs are therefore configured to overcome this lack of support by using the Early Offer g729r8 for voice calls across the WAN to remote SIP endpoints. Remote voice calls terminating at the enterprise are forced to use g729r8. Cisco UBEs are also configured to force the pass-through of g711ulaw for Fax/Modem calls in both directions.

DSP Farms

Separate DSP farms are installed and configured on the enterprise HQ and Branch Cisco UBEs. Although only conference resources are used for these solutions, MTP and Transcoder resources are also configured and are registered to Cisco Unified CM for example purposes only.

Supplementary Services

The following is a list of supplementary services.

- CALL FORWARD
- CALL TRANSFER—Attended and Blind
- CALL HOLD, MUSIC on HOLD
- HARDWARE CONFERENCING

Call Admission Control

The call admission control (CAC) restrictions that are imposed by Cisco Unified CM for the whole enterprise are as follows:

- BANDWIDTH—With Static Location. Cisco Unified CM restricts max voice and fax/modem calls to configured bandwidth threshold for both enterprise HQ and the Branch uplinks under "Location/Audio calls information."
- 2. NUMBER of CALLS—The Branch Cisco UBE must be configured to activate when in Cisco Unified SRST mode only, which means that the max-calls/bandwidth threshold should be larger than the setting for Cisco Unified CM. Cisco Unified CM would be the triggering mechanism under normal circumstances.
- **3.** CPU%—Cisco UBE at the enterprise HQ and the Branch restrict the maximum voice and fax/modem calls to configured CPU% threshold.
- **4.** MEMORY—Cisco UBE at the enterprise HQ and the Branch restrict the maximum voice and fax/modem calls to the configured available memory threshold.

Test Topology

Figure 8 shows the setup test topology used in example configurations described in the following sections.

Figure 8 Test Topology



Example Configuration Details

The IP addresses used with SIP in the network are as follows:

- HQ Cisco UBE: 10.10.11.151
- Cisco Unified CM: 10.40.97.2
- Service Provider SIP Proxy Server: 10.3.33.22
- Br1 Cisco UBE: 10.80.80.82

The selection of the static codec for either a voice or fax call is implemented by tightly integrating the configurations of Cisco Unified CM and site Cisco UBE. For the DO-to-EO to originate from the originator's local Cisco UBE and for the correct codec to be used with the Service Provider SIP proxy server, the following configuration example has been set up:

- When the enterprise HQ IP Phone initiates the long-distance call pattern 91xxxxxxxxx, through Route Pattern/Location/Partition/Trunk configurations on Cisco Unified CM, SIP INVITE with destination 61xxxxxxxx is forwarded to the HQ Cisco UBE. A new SIP leg with the destination number 1xxxxxxxx and codec g729r8 is offered to the service provider's SIP proxy server by the HQ Cisco UBE after translation and forced EO manipulation.
- 2. When the enterprise HQ FXS phone initiates the long-distance call pattern 91xxxxxxxx, through Route Pattern/Location/Partition/Trunk configurations on Cisco Unified CM, SIP INVITE with destination 71xxxxxxxx is forwarded to the HQ Cisco UBE. A new SIP leg with the destination number 1xxxxxxxxx and codec g711u is offered to the service provider's SIP proxy server by the HQ Cisco UBE after translation and forced EO manipulation.
- **3.** When the Branch 1 IP Phone initiates the long-distance call pattern 91xxxxxxxxx, through Route Pattern/Location/Partition/Trunk configurations on Cisco Unified CM, SIP INVITE with destination 61xxxxxxxx is forwarded to the Branch 1 Cisco UBE. A new SIP leg with the destination number 1xxxxxxxx and codec g729r8 is offered to the service provider's SIP proxy server by the Branch 1 Cisco UBE after translation and forced EO manipulation.
- 4. When Branch 1 FXS phone initiates the long-distance call pattern 91xxxxxxxx, through Route Pattern/Location/Partition/Trunk configurations on Cisco Unified CM, SIP INVITE with destination 71xxxxxxxx is forwarded to the Branch 1 Cisco UBE. A new SIP leg with the destination number 1xxxxxxxx and codec g711u is offered to the service provider's SIP proxy server by the Branch 1 Cisco UBE after translation and forced EO manipulation.

Calls terminating at the enterprise are also tightly controlled as to whether they are IP phone (g729r8) or FXS phone (g711u), where the latter is mainly used for fax/modem purposes. Received calls that do not match these criteria are rejected.

The dial-plan for the enterprise HQ and the Branch sites can be any global numbering plan. In the following example, the same area code was used for the enterprise HQ 1 and the Branch 1.

Enterprise 1 HQ Cisco UBE Example Configuration

The following is a command-line interface (CLI) configuration example for the enterprise 1 HQ Cisco Unified Border Element for the test topology described in Figure 8.

```
Ent1_HQ_CUBE1#
!
voice-card 0
  dspfarm
  dsp services dspfarm
!
```

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```
voice service voip
 address-hiding
 allow-connections sip to sip
 fax protocol pass-through g711ulaw
modem passthrough nse codec g711ulaw
 sip
 bind control source-interface Loopback0
 bind media source-interface Loopback0
 min-se 2000
 header-passing error-passthru
  options-ping 1200
  listen-port non-secure 5090
 midcall-signaling passthru
!
voice translation-rule 1
rule 1 /^61/ /1/
rule 2 /^71/ /1/
voice translation-profile OUTGOING-SIP-TRK-DIGIT-STRIP
translate called 1
I.
Т
interface Loopback0
ip address 10.10.11.151 255.255.255.255
I.
interface GigabitEthernet0/0
ip address 10.40.97.1 255.255.255.0
duplex full
speed 100
media-type rj45
no keepalive
!
interface GigabitEthernet0/1
ip address 10.40.99.2 255.255.255.0
duplex full
speed 100
media-type rj45
no keepalive
1
ip rtcp report interval 9000
1
sccp local GigabitEthernet0/0
sccp ccm 10.40.97.2 identifier 5 priority 1 version 6.0
sccp
1
sccp ccm group 10
associate ccm 5 priority 1
associate profile 10 register MTP111222333
associate profile 12 register CON111222333
associate profile 11 register XCODE111222333
1
dspfarm profile 11 transcode
codec g711ulaw
codec g729r8
maximum sessions 10
associate application SCCP
!
dspfarm profile 12 conference
description conference bridge
codec g711ulaw
codec g729r8
maximum sessions 10
associate application SCCP
!
```

```
dspfarm profile 10 mtp
 codec g711ulaw
maximum sessions software 5
associate application SCCP
1
dial-peer voice 2000 voip
description *** Voice: LAN to WAN - Incoming Dial-Peer ***
huntstop
 codec g729r8
 session protocol sipv2
 incoming called-number 6T
dtmf-relay rtp-nte digit-drop
no vad
1
dial-peer voice 2001 voip
description *** Voice: LAN to WAN - Outgoing Dial-Peer ***
 translation-profile outgoing OUTGOING-SIP-TRK-DIGIT-STRIP
huntstop
destination-pattern 6T
 codec g729r8
voice-class sip early-offer forced
max-redirects 5
session protocol sipv2
session target ipv4:10.3.33.22
dtmf-relay rtp-nte digit-drop
no vad
1
dial-peer voice 2100 voip
 description *** Voice: WAN to LAN - Incoming Dial-Peer ***
huntstop
codec g729r8
session protocol sipv2
incoming called-number 415T
dtmf-relay rtp-nte digit-drop
no vad
1
dial-peer voice 2101 voip
 description *** Voice: WAN to LAN - Outgoing Dial-Peer ***
huntstop
destination-pattern 415T
codec g729r8
max-redirects 5
session protocol sipv2
 session target ipv4:10.40.97.2
 dtmf-relay rtp-nte digit-drop
no vad
1
dial-peer voice 3000 voip
description *** Fax: LAN to WAN - Incoming Dial-Peer ***
huntstop
session protocol sipv2
 incoming called-number 7T
dtmf-relay rtp-nte digit-drop
codec g711ulaw
no vad
dial-peer voice 3001 voip
 description *** Fax: LAN to WAN - Outgoing Dial-Peer ***
 translation-profile outgoing OUTGOING-SIP-TRK-DIGIT-STRIP
huntstop
 destination-pattern 7T
voice-class sip early-offer forced
max-redirects 5
 session protocol sipv2
```

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```
Enterprise 1 HQ Cisco Unified CM Example Configuration
```

```
session target ipv4:10.3.33.22
dtmf-relay rtp-nte digit-drop
codec g711ulaw
no vad
dial-peer voice 3100 voip
description *** Fax: WAN to LAN - Incoming Dial-Peer ***
huntstop
session protocol sipv2
 incoming called-number 415555105[0,1]
dtmf-relay rtp-nte digit-drop
codec g711ulaw
no vad
dial-peer voice 3101 voip
description *** Fax: WAN to LAN - Outgoing Dial-Peer ***
huntstop
destination-pattern 415555105[0,1]
max-redirects 5
 session protocol sipv2
session target ipv4:10.40.97.2
dtmf-relay rtp-nte digit-drop
codec g711ulaw
no vad
1
gateway
media-inactivity-criteria all
timer receive-rtcp 5
timer receive-rtp 180
1
sip-ua
keepalive target ipv4:10.3.33.22
authentication username yyyy password 7 xxxxxxxxx
no remote-party-id
retry invite 2
retry bye 2
retry cancel 2
 timers keepalive active 600
reason-header override
g729-annexb override
I.
Ent1_HQ_CUBE1#
```

Enterprise 1 HQ Cisco Unified CM Example Configuration

The following example shows the required field and parameter entries for example configuration of the Cisco Unified CM for the topology shown in Figure 8. Parameters are entered using the Cisco Unified CM GUI. The example parameters windows entries are shown in following sections:

- Configuring the Cisco Unified CM System Parameters, page 33
- Configuring the Cisco Unified CM Call Routing Parameters, page 63
- Configuring the Cisco Unified CM Media Resources Parameters, page 78
- Configuring the Cisco Unified CM Voice Mail Parameters, page 95
- Configuring the Cisco Unified CM Device Parameters, page 102

Configuring the Cisco Unified CM System Parameters

Use the Cisco Unified Communications Manager Administration window to configure system parameters. The system parameter example configurations are shown in the following sections:

- System: Server Parameters, page 33
- System: Region Parameters, page 34
- System: Device Pool Parameters, page 47
- System: Location Parameters, page 56

System: Server Parameters

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To configure the system server parameters for the Cisco Unified CM, click on **System > Server** menu in the Cisco Unified CM Administration window.

Figure 9 System Server Enterprise 1 HQ Cisco Unified CM Administration Window

cisco	Cisco U For Cisco Ur	nified CM Ad	ministr a	ation			Navigation <mark>Cisco</mark>	Unified CM . admin	Administrat	ion 💌 🤇
System 👻	Call Routing 👻	Media Resources 👻	Voice Mail 👻	Device 👻	Application \bullet	User Management 👻	Bulk Administration 👻	Help 👻		
Server Co	onfiguration						Related Link	s: Back To	Find/List	•
🔜 Save	🗙 Delete 🗖	🔓 Add New								
- Status - Upda - Server II Database Host Nam MAC Addm Descriptio	te successful nformation Replication e/IP Address* ess in	Publisher 10.40.97.2 Ent1-HQ-CUCM								
Save	Delete Ad	dd New								
(i) *- inc	dicates require	d item.								

System: Region Parameters

To configure the system region parameters for the Cisco Unified CM, click **System > Region** menu in the Cisco Unified CM Administration window.

Figure 10 System Region Cisco Unified CM Administration Window

cisco	Cisco For Cisco	Unified CM Administration Navigation Cisco	Unified CM Administration 💌 🤇
System 👻	Call Routin	ig 👻 Media Resources 👻 Voice Mail 👻 Device 👻 Application 👻 User Management 👻 Bulk Administration 👻	Help -
Find and	List Regio	ins	
🕂 Add N	lew 🏢 Se	elect All 🔛 Clear All 💥 Delete Selected	
- Status - i 12 re	ecords found	d	
Regions	(1 - 12)	of 12)	Rows per Page 50 💌
Find Regio	ons where I	Name begins with 💌 🛛 Find Clear Filter 🖓 📼	
Г		Name 着	
Г		Default	
Γ		Region Br1 Phones Analog	
Γ		Region Br1_DSPfarm	
Γ		Region Br1 DSPfarm Conference	
Γ		Region Br1 DSPfarm Transcoder	
Γ		Region Br1 Phones IP	
Γ		Region HQ_DSPfarm	
Γ		Region HQ DSPfarm Conference	
Γ		Region HQ DSPfarm Transcoder	
Г		Region HQ Phones Analog	
Γ		Region HQ Phones IP	
Г		Region Wan	(
Add Ne	ew Sele	ct All Clear All Delete Selected	

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CISCO For Cisco Unified Communications Solu	tions		admin About Log	
iystem 👻 Call Routing 👻 Media Resources 👻 Voice t	Mail 👻 Device 👻 Application 👻	User Management 👻 🛛 Bulk Administratio	on ▾ Help ▾	
egion Configuration		Related	Links: Back To Find/List	
🔒 Save 🗙 Delete				
Region Information Name* Default				
Region Relationships				
Region	Audio Codec	Video Call Bandwidth	Link Loss Type	
Default	G.711	384	Use System Default	
Region_HQ_Phones_IP	G.729	384	Use System Default	
Region_Wan	G.729	384	Use System Default	
NOTE: Regions(s) not displayed	Use System Default	Use System Default	Use System Default	
Modify Relationship to other Regions				
Regions	Audio Codec	¥ideo Call Bandwidth	Link Loss Type	
Default	Keep Current Setting	Keep Current Setting	Keep Current Setting 💌	
Region Br1 Phones Analog		🔿 Use System Default		
Region_Br1_DSPfarm_Conference Region_Br1_DSPfarm_Transcoder		O None O khns		
Caus Delete Decet Add New		· · ·		

Figure 11 System Region Default Cisco Unified CM Administration Window

(i) *- indicates required item.

(i)

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**The Audio Codec selection determines bandwidth only. The G.711 and G.722 codecs both result in a maximum bandwidth of 64 Kbps between regions and can be used interchangeably.

Enterprise 1 HQ Cisco Unified CM Example Configuration

Figure 12 System Region-Region Branch 1 Phones Analog Cisco Unified CM Administration Window

diala cisco	Cisco Unified CM Adm For Cisco Unified Communications S	i nistra olutions	tion		Navigation C	Cisco Unified CM Administration 💌 🤇 admin About Logou
System 👻	Call Routing 👻 Media Resources 👻 Vo	ce Mail 👻	Device 👻 Application 👻	User Mai	nagement 👻 🛛 Bulk Administratio	n 🕶 Help 🕶
Region Co	onfiguration				Related	Links: Back To Find/List 💽 🤇
🔚 Save	🗙 Delete					
— Region In Name* <mark>R</mark> i	nformation egion Br1 Phones Analog					
—Region R	elationships Region		Audio Codec		Video Call Bandwidth	Link Loss Type
	Region Br1 Phones IP		G.711		384	Use System Default
	Region_HQ_Phones_Analog		G.711		384	Use System Default
	Region_HQ_Phones_IP		G.711		384	Use System Default
	Region_Wan		G.711		384	Use System Default
	Region Br1 Phones Analog		G.711		384	Use System Default
NOTE: Re	egions(s) not displayed	Use Sy	rstem Default	Use S	System Default	Use System Default
—Modify R	elationship to other Regions					
	Regions		Audio Codec		Video Call Bandwidth	Link Loss Type
Default Region I Region_ Region_ Region_	Br1 Phones Analog Br1_DSPfarm Br1_DSPfarm_Conference Br1_DSPfarm_Transcoder	-	Keep Current Setting	•	© Keep Current Setting ○ Use System Default ○ None ○kbps	Keep Current Setting 💌
- Save	Delete Reset Add New	dwidth or	w The 6 711 and 6 729	odose l	both rocult in a maximum bar	dwidth of 64 Khoc botwoon
U regio	ins and can be used interchangeably.	nawnaun Of	ny, me 6./11 anu 6./221	LOUEUS I	oon result in a maximum Daf	awaan of o4 Kops betweell

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Figure 13 System Region-Region Branch 1 DSP Farm Cisco Unified CM Administration Window

abab	Cisco Unified CM Admin	istrati	on		Navigation Ci	isco Unified CM Administration 💌
cisco	For Cisco Unified Communications Sol	utions				admin About Logi
System 👻	Call Routing 👻 Media Resources 👻 Voice	Mail 👻 De	evice 👻 Application 👻 U	Jser Mar	agement 👻 Bulk Administration	n ▼ Help ▼
Region C	onfiguration				Related L	.inks: Back To Find/List 💽
🔚 Save	🗙 Delete					
— Region I Name* R	nformation egion_Br1_DSPfarm					
—Region F	Relationships					
	Region		Audio Codec		Video Call Bandwidth	Link Loss Type
	Region_Br1_DSPfarm		G.729		384	Use System Default
	Region_Br1_Phones_IP		G.711	384		Use System Default
	Region_HQ_Phones_IP		G.729	384		Use System Default
	Region_Wan		G.729		384	Use System Default
NOTE: R	egions(s) not displayed	Use Syst	em Default	Use S	ystem Default	Use System Default
—Modify R	elationship to other Regions					
	Regions		Audio Codec		Video Call Bandwidth	Link Loss Type
Default Region Region Region Region	Br1 Phones Analog Br1_DSPfarm Br1_DSPfarm_Conference Br1_DSPfarm_Transcoder	ſ	Keep Current Setting 🛓	•	 ○ Keep Current Setting ○ Use System Default ○ None ○kbps 	Keep Current Setting 💌
- <u>Save</u>	Delete Reset Add New					

**The Audio Codec selection determines bandwidth only. The G.711 and G.722 codecs both result in a maximum bandwidth of 64 Kbps between regions and can be used interchangeably.

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Enterprise 1 HQ Cisco Unified CM Example Configuration

Figure 14 System Region-Region Branch 1 DSP Farm Conference Cisco Unified CM Administration Window

ababa	Cisco Unified CM Admin	istration	Navigation 🤇	Cisco Unified CM Administration 💌	
cisco	For Cisco Unified Communications Solu	tions		admin About Logo	
System 👻	Call Routing 👻 Media Resources 👻 Voice I	Mail 👻 Device 👻 Application 👻	User Management 👻 🛛 Bulk Administratio	n ▼ Help ▼	
Region C	Region Configuration Related Links: Back To Find/List 🔽 🤇				
🔒 Save	🗙 Delete Paset 🕂 Add New				
— Region I Name* R	nformation egion_Br1_DSPfarm_Conference				
—Region R	Relationships				
	Region	Audio Codec	Video Call Bandwidth	Link Loss Type	
	Region_Br1_Phones_IP	G.711	384	Use System Default	
	Region_HQ_Phones_IP	G.729	384	Use System Default	
	Region_Wan	G.729	384	Use System Default	
NOTE: R	egions(s) not displayed	Use System Default	Use System Default	Use System Default	
—Modify R	Relationship to other Regions				
	Regions	Audio Codec	Video Call Bandwidth	Link Loss Type	
Default Region Region_ Region_ Region_	Br1 Phones Analog Br1_DSPfarm Br1_DSPfarm_Conference Br1_DSPfarm_Transcoder	Keep Current Setting	Keep Current Setting Ouse System Default None Kbps	Keep Current Setting 💌	
- <u>Save</u> (i) *- in (i) **Th	Delete Reset Add New	vidth only. The G.711 and G.722	codecs both result in a maximum bar	ndwidth of 64 Kbps between	

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Figure 15 System Region-Region Branch 1 DSP Farm Transcoder Cisco Unified CM Administration Window

					Nautantian Cia	on Unified CM Administration
ahaha	Cisco Unified CM Adr	ninistrat	tion		Navigation Cis	
cisco	For Cisco Unified Communications	Solutions				admin About Logou
System 👻	Call Routing 👻 Media Resources 👻	Voice Mail 👻 🛛 E	Device 👻 Application 👻 Us	er Management 👻	Bulk Administration	▼ Help ▼
Region Co	onfiguration				Related Li	nks: Back To Find/List 🖵 🖸
🔚 Save	🗙 Delete	/				
-Region I	nformation					
Name* R	egion_Br1_DSPfarm_Transcoder					
—Region R	Relationships					
	Region		Audio Codec	Video Ca	ll Bandwidth	Link Loss Type
	Region_Br1_DSPfarm_Transcoder		G.711	:	384	Use System Default
	Region_Br1_Phones_IP		G.711	384		Use System Default
	Region_Wan		G.729		384	Use System Default
NOTE: Re	egions(s) not displayed	Use S	ystem Default	Use System De	fault	Use System Default
— Modify R	elationshin to other Regions					
,, .	Regions		Audio Codec	Video	Call Bandwidth	Link Loss Type
Default Region I Region_ Region_ Region_	Br1 Phones Analog Br1_DSPfarm Br1_DSPfarm_Conference Br1_DSPfarm_Transcoder	▲ ▼	Keep Current Setting 💌	⊙ Keep C Use S C None C [Current Setting ystem Default kbps	Keep Current Setting 💌
—	Delete Reset Add New —					

**The Audio Codec selection determines bandwidth only. The G.711 and G.722 codecs both result in a maximum bandwidth of 64 Kbps between regions and can be used interchangeably.

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Enterprise 1 HQ Cisco Unified CM Example Configuration

Figure 16 System Region-Region Branch 1 Phones IP Cisco Unified CM Administration Window

cisco	Cisco Unified CM Administration For Cisco Unified Communications Solutions		Navigation Cisco U	Inified CM A admin	dministrati I About	on 💌 🕻
System 👻	Call Routing Media Resources Voice Mail Device Application User Management	ent 👻 B	Bulk Administration 👻 🛛	Help 🔻		
Region Co	onfiguration		Related Links:	: Back To	Find/List	•
📄 Save	🗙 Delete Page Add New					
— Region II Name* Re	nformation egion_Br1_Phones_IP					

Region Relationships			
Region	Audio Codec	Video Call Bandwidth	Link Loss Type
Region_Br1_DSPfarm	G.711	384	Use System Default
Region_Br1_DSPfarm_Conference	G.711	384	Use System Default
Region_Br1_DSPfarm_Transcoder	G.711	384	Use System Default
Region_Br1_Phones_IP	G.711	384	Use System Default
Region_HQ_DSPfarm	G.729	384	Use System Default
Region_HQ_DSPfarm_Conference	G.729	384	Use System Default
Region_HQ_Phones_IP	G.729	384	Use System Default
Region_Wan	G.729	384	Use System Default
Region Br1 Phones Analog	G.711	384	Use System Default
NOTE: Regions(s) not displayed	Use System Default	Use System Default	Use System Default

—Modify Relationship to other Regions

requiry nerodenismip to earer neglenis			
Regions	Audio Codec	Video Call Bandwidth	Link Loss Type
Default Region Br1 Phones Analog Region_Br1_DSPfarm Region_Br1_DSPfarm_Conference Region_Br1_DSPfarm_Transcoder	Keep Current Setting 💌	© Keep Current Setting O Use System Default O None Ckbps	Keep Current Setting 💌

Save Delete Reset Add New



(i) *- indicates required item.

**The Audio Codec selection determines bandwidth only. The G.711 and G.722 codecs both result in a maximum bandwidth of 64 Kbps between regions and can be used interchangeably.

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Figure 17 System Region-Region HQ DSP Farm Cisco Unified CM Administration Window

ababa Cisco Unified CM Admi	nistration	Navigation C	isco Unified CM Administration 💌 🤇
CISCO For Cisco Unified Communications So	olutions		admin About Logou
System - Call Routing - Media Resources - Void	ce Mail 👻 Device 👻 Application 👻	User Management 👻 Bulk Administratio	n ▼ Help ▼
Region Configuration		Related	Links: Back To Find/List 💽 G
🔚 Save 🗙 Delete 省 Reset 🕂 Add New			
-Region Information Name* Region_HQ_DSPfarm			
—Region Relationships			
Region	Audio Codec	Video Call Bandwidth	Link Loss Type
Region_Br1_Phones_IP	G.729	384	Use System Default
Region_HQ_DSPfarm	G.729	384	Use System Default
Region_HQ_Phones_IP	G.711	384	Use System Default
Region_Wan	G.729	384	Use System Default
NOTE: Regions(s) not displayed	Use System Default	Use System Default	Use System Default
—Modify Relationship to other Regions ————			
Regions	Audio Codec	Video Call Bandwidth	Link Loss Type
Default Region Br1 Phones Analog Region_Br1_DSPfarm Region_Br1_DSPfarm_Conference Region_Br1_DSPfarm_Transcoder	Keep Current Setting	 Keep Current Setting Use System Default None Mone 	Keep Current Setting 💌
Save Delete Reset Add New			

**The Audio Codec selection determines bandwidth only. The G.711 and G.722 codecs both result in a maximum bandwidth of 64 Kbps between regions and can be used interchangeably.

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Enterprise 1 HQ Cisco Unified CM Example Configuration

Figure 18 System Region-Region HQ DSP Farm Conference Cisco Unified CM Administration Window

Cisco Unified CM Administration			Navigation <mark>C</mark>	isco Unified CM Administration 💌 🕻
System 👻	Call Routing - Media Resources - Voice I	Mail 👻 Device 👻 Application 👻	User Management 👻 Bulk Administratio	n ▼ Help ▼
Region C	onfiguration		Related	Links: Back To Find/List 💽 🤇
📄 Save	🗙 Delete Paset 🕂 Add New 👘			
— Region I Name* R	nformation egion_HQ_DSPfarm_Conference			
—Region R	Relationships			
	Region	Audio Codec	Video Call Bandwidth	Link Loss Type
	Region_Br1_Phones_IP	G.729	384	Use System Default
	Region_HQ_Phones_IP	G.711	384	Use System Default
	Region_Wan	G.729	384	Use System Default
NOTE: R	egions(s) not displayed	Use System Default	Use System Default	Use System Default
—Modify R	Relationship to other Regions			
	Regions	Audio Codec	Video Call Bandwidth	Link Loss Type
Default Region Region_ Region_ Region_	Br1 Phones Analog Br1_DSPfarm Br1_DSPfarm_Conference Br1_DSPfarm_Transcoder	Keep Current Setting	Keep Current Setting Ouse System Default None kbps	Keep Current Setting 💌
- Save i *- in i **Th regio	Delete Reset Add New dicates required item. The Audio Codec selection determines bandyons and can be used interchangeably.	vidth only. The G.711 and G.722	codecs both result in a maximum ban	dwidth of 64 Kbps between

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System Region-Region HQ DSP Farm Transcoder Cisco Unified CM Administration Window Figure 19

ahaha cisco	Cisco Unified CM A For Cisco Unified Communicati	dministra ons Solutions	ation	Navig	ation Cisco Unific	ed CM Administration 💌 🕻
System 👻	Call Routing 👻 Media Resources 🖲	🔹 Voice Mail 👻	Device - Application - Us	er Management 👻 🛛 Bulk Adm	inistration 👻 Help) 🔻
Region Co	onfiguration			R	elated Links: <mark>B</mark>	ack To Find/List 🗾 🤆
🔚 Save	🗙 Delete Peset 🕂 Add	New				
-Region I Name* R	nformation egion_HQ_DSPfarm_Transcoder Relationshins					
i i i gioni i	Region		Audio Codec	Video Call Bandwidt	th	Link Loss Type
	Region_HQ_DSPfarm_Transcoder		G.711	384	U	Ise System Default
	Region_HQ_Phones_IP		G.711	384	U	Ise System Default
	Region_Wan		G.729	384	U	lse System Default
NOTE: R	egions(s) not displayed	Use	System Default	Use System Default	Use Sy	rstem Default
—Modify R	elationship to other Regions —					
-	Regions		Audio Codec	Video Call Bandy	width	Link Loss Type
Default Region Region_ Region_ Region_	Br1 Phones Analog _Br1_DSPfarm _Br1_DSPfarm_Conference _Br1_DSPfarm_Transcoder	•	Keep Current Setting 💌	Keep Current Se Use System Defa None Kbps	tting Keep ault	Current Setting 💌
- Save	Delete Reset Add New					

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**The Audio Codec selection determines bandwidth only. The G.711 and G.722 codecs both result in a maximum bandwidth of 64 Kbps between regions and can be used interchangeably.

Figure 20 System Region-Region HQ Phones Analog Cisco Unified CM Administration Window

cisco	Cisco Unified CM Admin	istration	Navigatior	Cisco Unified CM Administration 💌 🤇
Svetam 👻	Call Routing - Madia Resources - Voice	Mail - Device - Application -	Liser Management 👻 Bulk Administr	ation - Heln -
Jystein +	Can Routing + Media Resources + Voice	Mail • Device • Application •		
Region C	onfiguration		Relati	ed Links: Back To Find/List 💽 🤆
🔚 Save	🗙 Delete			
-Region I	nformation			
Name* R	egion_HQ_Phones_Analog			
— Pegion R	elationshins			
Region N	Region	Audio Codec	Video Call Bandwidth	Link Loss Type
	Region HQ Phones IP	G.711	384	Use System Default
	Region_Wan	G.711	384	Use System Default
	Region Br1 Phones Analog	G.711	384	Use System Default
NOTE: R	egions(s) not displayed	Use System Default	Use System Default	Use System Default
—Modify R	elationship to other Regions			
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Regions	Audio Codec	Video Call Bandwidth	Link Loss Type
Default	•	Keep Current Setting	 Keep Current Setting 	Keep Current Setting 💌
Region	Br1 Phones Analog		O Use System Default	
Region	_Br1_DSPfarm_Conference		C None	
Region_	_Br1_DSPfarm_Transcoder 🗾		C kbps	
Save	Delete Reset Add New			
(i) *- in	dicates required item.			62
i **Th regio	e Audio Codec selection determines band ons and can be used interchangeably.	width only. The G.711 and G.722	codecs both result in a maximum b	bandwidth of 64 Kbps between

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Figure 21 System Region-Region HQ Phones IP Cisco Unified CM Administration Window

ahaha cisco	Cisco Unified CM Administration For Cisco Unified Communications Solutions	Navigation Cisco Unified CM Administration 💌 C
System 👻	Call Routing 👻 Media Resources 👻 Voice Mail 👻 Device 👻	Application ▼ User Management ▼ Bulk Administration ▼ Help ▼
Region Co	onfiguration	Related Links: Back To Find/List 💽 🤄
릚 Save	🗙 Delete	
-Region I	nformation	

Name*	Region_HQ_Phones_IP
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Region	Audio Codec	Video Call Bandwidth	Link Loss Type
Default	G.729	384	Use System Default
Region_Br1_DSPfarm	G.729	384	Use System Default
Region_Br1_DSPfarm_Conference	G.729	384	Use System Default
Region_Br1_Phones_IP	G.729	384	Use System Default
Region_HQ_DSPfarm	G.711	384	Use System Default
Region_HQ_DSPfarm_Conference	G.711	384	Use System Default
Region_HQ_DSPfarm_Transcoder	G.711	384	Use System Default
Region_HQ_Phones_Analog	G.711	384	Use System Default
Region_HQ_Phones_IP	G.711	384	Use System Default
Region_Wan	G.729	384	Use System Default
Region Br1 Phones Analog	G.711	384	Use System Default
NOTE: Regions(s) not displayed	Use System Default	Use System Default	Use System Default

-Modify Relationship to other Regions				
Regions		Audio Codec	Video Call Bandwidth	Link Loss Type
Default Region Br1 Phones Analog Region_Br1_DSPfarm Region_Br1_DSPfarm_Conference Region_Br1_DSPfarm_Transcoder	▲ ▼	Keep Current Setting 💌		Keep Current Setting 💌

– Save Delete Reset Add New

(i) *- indicates required item.

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**The Audio Codec selection determines bandwidth only. The G.711 and G.722 codecs both result in a maximum bandwidth of 64 Kbps between regions and can be used interchangeably.

Enterprise 1 HQ Cisco Unified CM Example Configuration

Figure 22 System Region-Region WAN Cisco Unified CM Administration Window

cisco	Cisco Unified CM Administration For Cisco Unified Communications Solutions	Navigation Cisco Unified CM Administration 💌 C admin About Logou
System 👻	Call Routing 👻 Media Resources 👻 Voice Mail 👻 Device 👻 Application 👻 User Management 👻	Bulk Administration 👻 Help 👻
Region Co	Infiguration	Related Links: Back To Find/List 💽 🤇
📄 Save	🗙 Delete Paset 🕂 Add New	
— Region Ir Name* Re	nformation agion_Wan	

Keglon Kelddonsinps			
Region	Audio Codec	Video Call Bandwidth	Link Loss Type
Default	G.729	384	Use System Default
Region_Br1_DSPfarm	G.729	384	Use System Default
Region_Br1_DSPfarm_Conference	G.729	384	Use System Default
Region_Br1_DSPfarm_Transcoder	G.729	384	Use System Default
Region_Br1_Phones_IP	G.729	384	Use System Default
Region_HQ_DSPfarm	G.729	384	Use System Default
Region_HQ_DSPfarm_Conference	G.729	384	Use System Default
Region_HQ_DSPfarm_Transcoder	G.729	384	Use System Default
Region_HQ_Phones_Analog	G.711	384	Use System Default
Region_HQ_Phones_IP	G.729	384	Use System Default
Region_Wan	G.729	384	Use System Default
Region Br1 Phones Analog	G.711	384	Use System Default
NOTE: Regions(s) not displayed	Use System Default	Use System Default	Use System Default

—Modify Relationship to other Regions ——

-Region Relationships

Regions	Audio Codec	Video Call Bandwidth	Link Loss Type
Default Region Br1 Phones Analog Region_Br1_DSPfarm Region_Br1_DSPfarm_Conference Region_Br1_DSPfarm_Transcoder	Keep Current Setting 💌		Keep Current Setting 💌

- Save Delete Reset Add New

(i) *- indicates required item.

**The Audio Codec selection determines bandwidth only. The G.711 and G.722 codecs both result in a maximum bandwidth of 64 Kbps between regions and can be used interchangeably.

System: Device Pool Parameters

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To configure the system device pool parameters for the Cisco Unified CM, click **System > Device Pool** menu in the Cisco Unified CM Administration window.

Figure 23 System Device Pool Cisco Unified CM Administration Window

ciso	Cisco Unified CM Ad For Cisco Unified Communication	ministration s Solutions	Navigation J	Cisco Unified CM Administration 💌 admin About Loc] (gou
System		Voice Mail 👻 Device 👻 Applicat	ion 👻 User Management 👻 Bulk Administrati	on 🕶 Help 🕶	
Find a	nd List Device Pools				
Ac	ld New 🗰 Select All 🗰 Clear All 🐳	Delete Selected			
-					
– Statu () 8	s records found				
Devi	ce Pool <i>(1 - 8 of 8)</i>			Rows per Page 50	•
Find D	evice Pool where Device Pool Name	▼ be	gins with 💌 🛛 🔤 Find	Clear Filter 🕹 😑	
	Name 🕇	Cisco Unified CM Gro	up Region	Date/Time Group Co	ору
	Default	Default	Default	CMLocal 🖸	
	DevicePool Br1 Analog Phones	<u>Default</u>	Region Br1 Phones Analog	CMLocal 🗅 🖪	
	DevicePool Br1 DSPfarm	<u>Default</u>	Region Br1 DSPfarm	CMLocal 🗅	
	DevicePool Br1 IP Phones	<u>Default</u>	Region Br1 Phones IP	CMLocal 🖪	
	DevicePool HQ Analog Phones	<u>Default</u>	Region HQ Phones Analog	CMLocal 🖪	
	DevicePool HQ DSPfarm	<u>Default</u>	Region HQ DSPfarm	CMLocal 🗈	
	DevicePool HQ IP Phones	<u>Default</u>	Region HQ Phones IP	CMLocal 🖪	
	DevicePool WAN	Default	Region Wan	CMLocal 🗅	
Add	New Select All Clear All D	elete Selected			_

								-
	Enterprise	1 HQ	Cisco	Unified	СМ	Example	Configu	ration

Figure 24 System Device Pool Default Cisco Unified CM Administration Window

cisco	Cisco	Unified Co	I CM Ad	Iministra	ation				Navigation C	isco Ur	iified CM A	dministrat	tion 🔽 🤇
System 👻	Call Routing	 Media I 	Resources 🔻	Voice Mail 👻	Device 🔻	Application 👻	User Managen	nent 🔻	Bulk Administration	า ⊸ H	admin elp 👻	About	Logou
Device Po	ool Configu	ration					-		Related I	Links:	Back To	Find/List	•
📄 Save	X Delete	Сору	Preset	🕂 Add New									
-Status-													
(i) Statu	us: Ready												
— Device P Device Po	Pool Informa pol: Default	tion (3 membe	ers**)										
—Device P	ool Settings	;											
Device Po	ol Name*			Default									
Cisco Unif	fied Commun	ications Ma	anager Grou	p* Default			•	[
Calling Se	earch Space f	or Auto-re	gistration	< None >			•	[
Reverted	Call Focus Pr	riority		Default			•	[
—Roaming	I Sensitive S	ettings —											
Date/Time	e Group*		CMLocal			•							
Region*			Default			•							
Media Res	source Group) List	< None >			•							
Location			< None >			•							
Network I	Locale		< None >			•							
SRST Refe	erence*		Disable			•							
Connectio	on Monitor Du	uration***											
Single But	tton Barge*		Default			•							
Join Acros	ss Lines*		Default			•							
Physical L	ocation		< None >			•							
Device Mo	obility Group		< None >			•							
-Device M	1obility Rela	ted Inform	ation****-										
Device Mo	obility Calling	Search Sp	ace < None	>			•						
AAR Callin	ng Search Sp	ace	< None	>			•						
AAR Group	p		< None	>			•						
- Save	Delete	Copy Re	set Add	New									
(i) *- in:	dicates requi	ired item.											
(i) **Nu Depe	umber of dev endency Reco	rices that h ords.	ave to be re	set when this	device po	ol is updated. ⁻	To see a detail	led list	of these devices a	and oth	ier depeni	dencies, cl	ick on
(i) *** ₁₀	eave blank to	o use defa	ult.										
(i) ****	*These three	paramete	rs will overw	rite device lev	el settings	s when device i	is roaming and	l in the	same device mob	ility gro	oup.		

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System Device Pool-DevicePool Branch 1 Analog Phones Cisco Unified CM Administration Window Figure 25 Navigation Cisco Unified CM Administration 💌 🖸 **Cisco Unified CM Administration** ahaha cisco For Cisco Unified Communications Solutions admin Logo Call Routing 👻 Media Resources 👻 Voice Mail 👻 Device 👻 Application 👻 User Management 👻 System -Bulk Administration 👻 Help -**Device Pool Configuration** Related Links: Back To Find/List • 🔚 Save 🗶 Delete 🕞 Copy 嗋 Reset 🕂 Add New -Status (i) Status: Ready -Device Pool Information Device Pool: DevicePool_Br1_Analog_Phones (2 members**) -Device Pool Settings Device Pool Name* DevicePool Br1 Analog Phones Cisco Unified Communications Manager Group* Default • Calling Search Space for Auto-registration • < None > Reverted Call Focus Priority -Default -Roaming Sensitive Settings Date/Time Group* CMLocal • Region* Region Br1 Phones Analog • Media Resource Group List Br1 HW MRGL -Location Hub_Br1 • Network Locale • None > SRST Reference* -SRST_Ent1_Br1 Connection Monitor Duration** Single Button Barge* Default • Join Across Lines* -Default **Physical Location** < None > • Device Mobility Group • < None > -Device Mobility Related Information**** Device Mobility Calling Search Space -AAR Calling Search Space < None > • AAR Group • |< None > – Save Delete Copy Reset Add New (i) *- indicates required item. **Number of devices that have to be reset when this device pool is updated. To see a detailed list of these devices and other dependencies, click on **i**) Dependency Records. ***leave blank to use default. (i) **These three parameters will overwrite device level settings when device is roaming and in the same device mobility group.

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	Enterprise	1 HQ	Cisco	Unified	СМ	Example	Configu	ration

Figure 26 System Device Pool-DevicePool Branch 1 DSP Farm Cisco Unified CM Administration Window

بالبيان	Cisco Unifier	i CM Adm	ninistra	ation				Navigation Cisc	o Unified CM .	Administrati	on 💌 🤇
cisco	For Cisco Unified Co	mmunications	Solutions						admin	I Ahout	Logoi
System 👻	Call Routing 👻 Media F	Resources 👻 V	oice Mail 👻	Device 🔻	Application 👻	User Mana	gement 👻	Bulk Administration 👻	Help 🔻	Hoodic	Logod
Device Po	ool Configuration							Related Lin	ks: Back To	Find/List	•
릚 Save	🗙 Delete 📄 Copy	省 Reset 🚽	Add New								
— Statuc —											
i Statu	ıs: Ready										
— Device P Device Po	Pool Information ool: DevicePool_Br1_D	SPfarm (3 men	nbers**)								
— Device P Device Po	Pool Settings		DouisoBool		farm						
Cisco Unif	fied Communications Ma	anager Group*	DevicePuult		ann		-				
Calling Se	arch Space for Auto-re	gistration	< None >				-				
Reverted	Call Focus Priority	-	Default				-				
-Roaming	Sensitive Settings—										
Date/Time	e Group*	CMLocal			•						
Region*		Region_Br1_D	SPfarm		•						
Media Res	source Group List	Br1 HW MRGL			•						
Location		Hub_Br1			•						
Network l	Locale	< None >			•						
SRST Refe	erence*	Disable			•						
Connectio	on Monitor Duration***										
Single But	tton Barge*	Default			•						
Join Acros	s Lines*	Default			•						
Physical L	ocation	< None >			•						
Device Mo	bility Group	< None >			•						
— Device M Device Mo AAR Callin AAR Group	1obility Related Inform bility Calling Search Sp ng Search Space p	ace < None > < None > < None > < None >				•					
- Save	Delete Copy Re	set Add Ne	w								
(i) *- in	dicates required item.										
(i) **NL	umber of devices that h	ave to be reset	when this	device poo	ol is updated. 1	Fo see a de	tailed list	of these devices and	other deper	idencies, clia	:k on
Depe	endency Records. eave blank to use defai	ult.									
(i) ****	*These three paramete	rs will overwrite	e device lev	el settinas	when device i	s roamino	and in the	e same device mobilit [,]	/ aroup.		

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Figure 27 System Device Pool-DevicePool Branch 1 IP Phones Cisco Unified CM Administration Window Navigation Cisco Unified CM Administration 💌 🖸 **Cisco Unified CM Administration** ahaha cisco For Cisco Unified Communications Solutions admin Call Routing 👻 Media Resources 👻 Voice Mail 👻 Device 👻 Application 👻 User Management 👻 System -Bulk Administration 👻 Help -**Device Pool Configuration** Related Links: Back To Find/List • 🔚 Save 🗶 Delete 🕞 Copy 嗋 Reset 🕂 Add New -Status (i) Status: Ready -Device Pool Information Device Pool: DevicePool_Br1_IP_Phones (5 members**) -Device Pool Settings Device Pool Name* DevicePool_Br1_IP_Phones Cisco Unified Communications Manager Group* Default • Calling Search Space for Auto-registration • < None > Reverted Call Focus Priority -Default -Roaming Sensitive Settings Date/Time Group* CMLocal • Region* Region_Br1_Phones_IP • Media Resource Group List Br1 HW MRGL -Location Hub_Br1 -Network Locale • None > SRST Reference* SRST_Ent1_Br1 -Connection Monitor Duration** Single Button Barge* Default • Join Across Lines* -Default **Physical Location** < None > • Device Mobility Group • < None > -Device Mobility Related Information**** Device Mobility Calling Search Space -AAR Calling Search Space < None > • AAR Group < None > • – Save Delete Copy Reset Add New (i) *- indicates required item. **Number of devices that have to be reset when this device pool is updated. To see a detailed list of these devices and other dependencies, click on **i**) Dependency Records. 273769 (\mathbf{i}) ***leave blank to use default. **These three parameters will overwrite device level settings when device is roaming and in the same device mobility group.

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Figure 28 System Device Pool-DevicePool HQ Analog Phones Cisco Unified CM Administration Window

diala cisco	Cisco Unified	d CM Adr		ation				Navigation Cisc	o Unified CM /	Administrati	on 🔻 (
System 👻	Call Routing - Media	Resources 👻 🕚	/oice Mail 👻	Device 🔻	Application 👻	User Manageme	ent 🔻 E) Julk Administration 🔻	admin Help 🔻	About	Logou
Device Pa	ool Configuration					-		Related Lin	ks: Back To	Find/List	- C
Save	X Delete 🕅 Copy	Reset 🗆	🔒 Add New	_	_	_	_				
			-								
- Status - i Statu	is: Ready										
— Device P Device Po	ool Information ol: DevicePool_HQ_A	nalog_Phones	(3 member	s**)							
—Device P	ool Settings										
Device Po	ol Name*		DevicePool	L_HQ_Analo	og_Phones						
Cisco Unifi	ied Communications Ma	anager Group*	Default			•					
Calling Se	arch Space for Auto-re	gistration	< None >			•					
Reverted	Call Focus Priority		Default			•					
—Roaming	Sensitive Settings—										
Date/Time	e Group*	CMLocal			•						
Region*		Region_HQ_F	hones_Ana	log	•						
Media Res	source Group List	HQ HW MRGL			•						
Location		Hub_HQ			•						
Network L	_ocale	< None >			•						
SRST Refe	erence*	SRST_Ent1_B	r1		•						
Connectio	n Monitor Duration***										
Single But	ton Barge*	Default			•						
Join Acros	s Lines*	, Default			•						
Physical L	ocation	<pre> < None ></pre>			•						
Device Mo	bility Group	< None >			•						
— Device M	Iohility Related Inform	ation****-									
Device Mo	bility Calling Search Sp	ace < None >				•					
AAR Callin	ig Search Space	< None >				•					
AAR Group	o	< None >				•					
Save	Delete Copy Re	set Add N	ew								
(i) *- ind	dicates required item.										
(i) **Nu Depe	umber of devices that h endency Records.	ave to be rese	t when this	device poo	ol is updated. ⁻	To see a detaileo	d list of	these devices and	l other depen	dencies, clio	:k on
(i) ***le	eave blank to use defa	ult.									20
i ****	'These three paramete	rs will overwrit	e device lev	el settings	when device i	is roaming and ir	n the sa	ame device mobilit	/ group.		2737

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System Device Pool-DevicePool HQ DSP Farm Cisco Unified CM Administration Window Figure 29 Navigation Cisco Unified CM Administration 💌 🤇 **Cisco Unified CM Administration** ahaha cisco For Cisco Unified Communications Solutions admin Call Routing 👻 Media Resources 👻 Voice Mail 👻 Device 👻 Application 👻 User Management 👻 System -Bulk Administration 👻 Help 🔻 **Device Pool Configuration** Related Links: Back To Find/List • 🔚 Save 🗶 Delete 🕞 Copy 嗋 Reset 🕂 Add New -Status (i) Status: Ready -Device Pool Information Device Pool: DevicePool_HQ_DSPfarm (3 members**) -Device Pool Settings Device Pool Name* DevicePool HQ DSPfarm Cisco Unified Communications Manager Group* Default • Calling Search Space for Auto-registration • < None > Reverted Call Focus Priority -Default -Roaming Sensitive Settings Date/Time Group* CMLocal • Region* Region_HQ_DSPfarm • Media Resource Group List HQ HW MRGL -Location Hub_HQ ¥ Network Locale • None > SRST Reference* -Disable Connection Monitor Duration** Single Button Barge* Default • Join Across Lines* -Default **Physical Location** < None > • Device Mobility Group • < None > -Device Mobility Related Information**** Device Mobility Calling Search Space -AAR Calling Search Space < None > • AAR Group -< None > - Save Delete Copy Reset Add New (i) *- indicates required item. **Number of devices that have to be reset when this device pool is updated. To see a detailed list of these devices and other dependencies, click on **i**) Dependency Records. (\mathbf{i}) ***leave blank to use default. 273771 **These three parameters will overwrite device level settings when device is roaming and in the same device mobility group.

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Figure 30 System Device Pool-DevicePool HQ IP Phones Cisco Unified CM Administration Window

ahaha cisco	Cisco Unified	d CM Ad	ministra s Solutions	ation				Navigation Ci	sco Ur	nified CM A	administrat	ion 💌 🕻
System 👻	Call Routing 👻 Media I	Resources 🔻	Voice Mail 👻	Device 👻	Application 👻	User Manager	ment 👻	Bulk Administration	ı ▼ ⊦	ielp 👻	About	Logot
Device Po	ool Configuration							Related L	inks:	Back To	Find/List	• •
📄 Save	🗙 Delete 📄 Copy	Preset	🕂 Add New									
— Status — (i) Statu	is: Ready											
- Device P Device Por	ool Information ol: DevicePool_HQ_I	P_Phones (12	? members**)								
— Device P Device Po Cisco Unifi Calling Se	rool Settings ol Name* ied Communications Ma earch Space for Auto-re	anager Group gistration	DevicePoo * Default < None >	L_HQ_IP_P	hones	•						
Roaming	Sensitive Settings		Default			<u> </u>						
Date/IIme Rogion*	e Group*	CMLocal			<u> </u>							
Madia Rea	ource Group List	Region_HQ_	Phones_IP									
Location			L									
Network I	ocale											
SRST Refe	erence*	CROTENT	Dr1									
Connectio	n Monitor Duration***		511									
Single But	ton Barge*	Default										
Join Acros	s Lines*	Default										
Physical L	ocation	< None >										
Device Mo	bility Group	< None >			•							
—Device M	1obility Related Inform	nation****—				_						
Device Mo	obility Calling Search Sp	lace < None :	>			<u> </u>						
AAR Callin	ig Search Space	< None :	>			<u> </u>						
AAR Group	0	< None :	>			•						
- Save	Delete Copy Re	eset Add N	Jew									
(i) *- ind	dicates required item.											
(i) **Nu Depe	umber of devices that h endency Records.	ave to be res	et when this	device poo	ol is updated. 1	ro see a detai	led list (of these devices a	nd otł	ner depend	dencies, cli	ck on
(i) ***le	eave blank to use defa	ult.										
(i) ****	These three paramete	rs will overwri	ite device lev	el settings	when device i	s roaming and	l in the	same device mobi	lity gr	oup.		

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Navigation Cisco Unified CM Administration 💌 🖸 **Cisco Unified CM Administration** ahaha cisco For Cisco Unified Communications Solutions admin Logo Call Routing 👻 Media Resources 👻 Voice Mail 👻 Device 👻 Application 👻 User Management 👻 System 👻 Bulk Administration 👻 Help 🔻 **Device Pool Configuration** Related Links: Back To Find/List • 🔚 Save 🗶 Delete 🕞 Copy 嗋 Reset 🕂 Add New -Status (i) Status: Ready -Device Pool Information Device Pool: DevicePool_WAN (2 members**) -Device Pool Settings Device Pool Name* DevicePool WAN Cisco Unified Communications Manager Group* Default • Calling Search Space for Auto-registration • < None > Reverted Call Focus Priority -Default -Roaming Sensitive Settings Date/Time Group* CMLocal • Region* Region Wan • Media Resource Group List HQ HW MRGL -Location Hub_HQ ¥ Network Locale • None > SRST Reference* SRST_Ent1_Br1 -Connection Monitor Duration** Single Button Barge* Default • Join Across Lines* -Default **Physical Location** < None > • Device Mobility Group • < None > -Device Mobility Related Information**** Device Mobility Calling Search Space -AAR Calling Search Space < None > • AAR Group -< None > - Save Delete Copy Reset Add New (i) *- indicates required item. **Number of devices that have to be reset when this device pool is updated. To see a detailed list of these devices and other dependencies, click on **i**) Dependency Records. 273773 (\mathbf{i}) ***leave blank to use default. **These three parameters will overwrite device level settings when device is roaming and in the same device mobility group.

Figure 31 System DevicePool-DevicePool WAN Cisco Unified CM Administration Window

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Enterprise 1 HQ Cisco Unified CM Example Configuration

System: Location Parameters

To configure the system location parameters for the Cisco Unified CM, click **System > Location** menu in the Cisco Unified CM Administration window.

Figure 32 System Location Cisco Unified CM Administration Window

ahahi	Cisco Uni	ified CM Ad	ministra	tion				Navigation Cisco	Unified CM A	dministrat	ion 💌 🤇
cisco	For Cisco Unifi	ed Communication	s Solutions						admin	About	Logou
System 👻	Call Routing 👻 🕴	Media Resources 👻	Voice Mail 👻	Device 👻	Application	- User Mana	igement 👻	Bulk Administration 👻	Help 🔻		
Find and	List Locations										
Add N	ew 🔲 Select All	Clear All	Delete Selecte	d							
—Status —											
(i) 5 rec	ords found										
Location	is (1 - 5 of 5)								Rows	per Page	50 💌
Find Locat	tions where Loca	ition 💌 be	egins with 💌			Find Cle	ear Filter	÷ –			
	L	_ocation [▲]		Audi	o Bandwidth			Video Bandwidth		0	Сору
	<u>Hub Br1</u>		85				NONE			ß	
	<u>Hub HQ</u>		110				NONE			ß	
	<u>Hub None</u>		UNLIMIT	ED			UNLIMI	ſED		ß	
	<u>Trunk Br1</u>		85				NONE			ß	
	<u>Trunk HQ</u>		110				NONE			6	
Add Ne	w Select All	Clear All D	elete Selected	1							

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cisco	Cisco Unified CM Administration For Cisco Unified Communications Solutions		Navigation Cisco Unified CM Adn	ninistration 💌 🤇 About 📔 Logou					
System 👻	Call Routing Media Resources Voice Mail Device Application	on 👻 User Management 👻	Bulk Administration 👻 Help 👻						
Location	Configuration		Related Links: <mark>Back To Fi</mark> r	nd/List 🔽 🤆					
🔚 Save	🗙 Delete 📋 Copy 🕂 Add New 👌 Resync Bandwidth								
— Status — (i) Statu	s: Ready								
— Location Name* Hu	Information ub_Br1								
-Audio Ca Audio Ban If the aud -Video Ca Video Ban	Audio Calls Information Audio Bandwidth* O Unlimited © 85 kbps If the audio quality is poor or choppy, lower the bandwidth setting. For ISDN, use multiples of 56 kbps or 64 kbps. Video Calls Information								
—Location	PSVD Sattings								
Location	Location		RSVP Setting						
NOTE: Lo	ocation(s) not displayed	Use System Default							
-Modify S	etting(s) to Other Locations								
,, .	Location		RSVP Setting						
Hub_Br1 Hub_HQ Hub_No Trunk Br Trunk H0	ne 11 2	Use System Default	*						
Save	Delete Conv Add New Resync Bandwidth								
(i) *- inc	dicates required item.			273775					

Figure 33 System Location Hub Branch 1 Cisco Unified CM Administration Window

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	Enterprise 1	I HQ Cisco	Unified CN	/I Example	Configuration
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Figure 34 System Location Hub HQ Cisco Unified CM Administration Window

Cisco Unified CM Ad For Cisco Unified Communication	ministration s Solutions		Navigation Cisco Unified CM	Administration 🔽 🕻
System 👻 Call Routing 👻 Media Resources 👻	Voice Mail 👻 Device 👻 Applicat	ion 👻 User Management 👻	Bulk Administration 👻 Help 👻	
Location Configuration			Related Links: Back To	o Find/List 👤 🤆
🔚 Save 🗙 Delete 🗋 Copy 🕂 Add New	/ 贅 Resync Bandwidth			
- Status i Status: Ready				
-Location Information Name* Hub_HQ				
-Audio Calls Information Audio Bandwidth* C Unlimited ⓒ 110 If the audio quality is poor or choppy, lower th	kbps e bandwidth setting. For ISDN,	use multiples of 56 kbps or	r 64 kbps.	
— Video Calls Information Video Bandwidth* ⓒ None ○ Unlimited ○ [kbps			
-Location RSVP Settings				
Location			RSVP Setting	
NOTE: Location(s) not displayed		Use System Default		
—Modify Setting(s) to Other Locations———				
Location			RSVP Setting	
Hub_Br1 Hub_HQ Hub_None Trunk Br1 Trunk HQ		Use System Default	×	
- Save Delete Copy Add New	Resync Bandwidth			
(i) *- indicates required item.				2737

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cisco	Cisco Unified CM Administration For Cisco Unified Communications Solutions		Navigation Cisco Unified CM Administration 💌 🕻 admin About Logou
System 👻	Call Routing • Media Resources • Voice Mail • Device • Applic	ation 👻 User Management 👻	Bulk Administration 👻 Help 👻
Location	Configuration		Related Links: Back To Find/List 💽 C
📄 Save	🗋 Copy 🕂 Add New 👌 Resync Bandwidth		
-Status- i Statu	is: Ready		
—Location Name*	Information		
-Audio Ca Audio Bar If the aud -Video Ca Video Bar	Ills Information Idwidth [*] O Unlimited O kbps Iio quality is poor or choppy, lower the bandwidth setting. For ISDN Ills Information Idwidth [*] O None O Unlimited O kbps	I, use multiples of 56 kbps or	- 64 kbps.
—Location	RSVP Settings		
	Location		RSVP Setting
NOTE: Lo	ocation(s) not displayed	Use System Default	
—Modify S	etting(s) to Other Locations		
	Location		RSVP Setting
Hub_Br: Hub_HQ Hub_No Trunk Bi Trunk H	1 2 ne r1 Q	Use System Default	×
- Save	Copy Add New Resync Bandwidth		
(i) *- inc	dicates required item.		273777

Figure 35 System Location Hub None Cisco Unified CM Administration Window

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	Enterprise 1	I HQ Cisco	Unified CN	/I Example	Configuration
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Figure 36 System Location-Location Trunk Branch 1 Cisco Unified CM Administration Window

ahaha C cisco _F i	Cisco Unified CM Administration or Cisco Unified Communications Solutions		Navigation Cisco Unified CM Administration	gou
System 👻 Ca	ill Routing 👻 Media Resources 👻 Voice Mail 👻 Device 👻 Applicati	on 👻 User Management 👻	Bulk Administration 👻 Help 👻	
Location Cor	nfiguration		Related Links: Back To Find/List 💌] 🤆
🔚 Save 🔰	🕻 Delete			
— Status i Status: F	Ready			
— Location Inf Name* Trunk	ormation			
— Audio Calls : Audio Bandw If the audio c	Information ^{idth*} O Unlimited © 85kbps quality is poor or choppy, lower the bandwidth setting. For ISDN, i	use multiples of 56 kbps o	r 64 kbps.	
— Video Calls : Video Bandw	Information idth* © None O Unlimited Okbps			
-Location RS	VP Settings			
	Location		RSVP Setting	
NOTE: Locat	ion(s) not displayed	Use System Default		
—Modify Setti	ng(s) to Other Locations			
	Location	_	RSVP Setting	
Hub_Br1 Hub_HQ Hub_None Trunk Br1 Trunk HQ		Use System Default		
- Save De	elete Copy Add New Resync Bandwidth			78
i *- indica	tes required item.			2737

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cisco	Cisco Unified CM Administration Navigation Cisco Unified CM Administration 🔽 C For Cisco Unified Communications Solutions admin About Logou
System 👻	Call Routing 👻 Media Resources 👻 Voice Mail 👻 Device 👻 Application 👻 User Management 👻 Bulk Administration 👻 Help 👻
Location	Configuration Related Links: Back To Find/List 💽
Save	🗙 Delete 📋 Copy 🕂 Add New Resync Bandwidth
-Status- i Statu	us: Ready
— Location Name* T	a Information
- Audio Ca Audio Bar If the aud - Video Ca Video Bar	alls Information ndwidth* O Unlimited © 110 kbps dio quality is poor or choppy, lower the bandwidth setting. For ISDN, use multiples of 56 kbps or 64 kbps. alls Information ndwidth* © None O Unlimited O kbps
-Location	n RSVP Settings
NOTE: L	ocation(s) not displayed Use System Default
—Modify S	Setting(s) to Other Locations
	Location RSVP Setting
Hub_Br Hub_H(Hub_No Trunk B Trunk H	Pl Use System Default Use System Default U
- Save	Delete Copy Add New Resync Bandwidth
(i) *- in	ndicates required item.

Figure 37 System Location-Location Trunk HQ Cisco Unified CM Administration Window

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System: SRST Parameters

To configure the system SRST parameters for the Cisco Unified CM, click **System > SRST** menu in the Cisco Unified CM Administration window.

Figure 38 System SRST-SRST Enterprise 1 Branch 1 Cisco Unified CM Administration Window

cisco	Cisco Unified CM Administration	Navigation Cisco Unified CM Administration 💌 🕻
System 👻	Call Routing ▼ Media Resources ▼ Voice Mail ▼ Device ▼ Application	
SRST Refe	erence Configuration	Related Links: Back To Find/List 💽 🤇
🔜 Save	🗙 Delete [ြ Copy 省 Reset 🕂 Add New	
— Status — (i) Statu	s: Ready	
- SRST Ref	ference Status rence: SRST_Ent1_Br1 (used by 13 devices)	
— SRST Ref	ference Information	
Name*	SRST_Ent1_Br1	
Port*	2000	
IP Addres	s* 10.40.103.1	
SIP Netwo	ork/IP Address	
SIP Port*	5060	
SRST Cert	ificate Provider Port* 2445	
🗆 Is SRS	T Secure?	
- Save	Delete Copy Reset Add New	C C C C C C C C C C C C C C C C C C C
🕛 *- ind	dicates required item.	2737

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Configuring the Cisco Unified CM Call Routing Parameters

Use the Cisco Unified Communications Manager Administration window to configure call routing parameters. Call routing parameter example configurations are shown in the following sections:

- Call Routing: Route/Hunt Parameters, page 63
- Call Routing: Class of Control Parameters, page 68

Call Routing: Route/Hunt Parameters

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To configure call routing route/hunt parameters for the Cisco Unified CM, click **Call Routing** > **Route/Hunt** menu in the Cisco Unified CM Administration window.

Figure 39 Call Routing RouteHunt Route Pattern Cisco Unified CM Administration Window

ababa Cisco Unified CM Administration							Naviga	tion Cisco	Unified CM A	Administrat	ion 🔽 🤇
ciso	• For Cisco Uni	fied Communication	ns Solutions						admin	About	Logou
System	▼ Call Routing ▼	Media Resources 👻	Voice Mail 👻	Device 🔻	Application \bullet	User Management 👻	Bulk Admir	nistration 👻	Help 🔻		
Find a	nd List Route Pat	terns									
r Ac	ld New 🔛 Select A	All 🔛 Clear All	Delete Selec	ted							
– Statu (i) 4	s										
Rout	e Patterns <i>(1 - 4</i>	of 4)							Rows	per Page	50 💌
Find R	oute Patterns wher	e Pattern	▼ begins	with 💌		Find Clear	Filter 🕂				
	Pattern 🕈		Description			Partition		Route Filte	er Associa	ated Device	Cop
	<u>9.1XXXXXXXXXX</u>	RP Ent1-HQ IP Ph	ione LongDist	tance	Partit	tion-HQ Phones IP			10.10.1	1.151	ß
	9.1XXXXXXXXX	RP Ent1-HQ Analo	og Phone Lon	gDistance	<u>Partit</u>	tion-HQ_Phones_Ana	alog		10.10.1	1.151	ß
	<u>9.1XXXXXXXXX</u>	RP Ent1-Br1 Anal	og Phone Lor	ngDistance	<u>Partit</u>	tion-Br1 Phones An	aloq		<u>10.80.8</u>	0.82	ß
	<u>9.1XXXXXXXXXX</u>	RP Ent1-Br1 IP Pł	none LongDis	tance	<u>Partit</u>	tion-Br1 Phones IP			10.80.8	0.82	ß
Add	New Select All	Clear All D	elete Selecte	ed							

Figure 40 Call Routing RouteHunt Route Pattern RP Ent 1 HQ IP Phone LongDistance Cisco Unified CM Admin Window

սիսիս С	isco Unifie	d CM Ad	Iministra	ation			Navigation	isco Unified CM	Administration 💌 🕻
cisco Fo	or Cisco Unified Co	mmunicatio	ns Solutions					admin	About Logou
System 👻 Cal	l Routing 👻 Media	Resources 🔻	Voice Mail 👻	Device 🔻	Application	 User Managemei 	nt 👻 Bulk Administratio	n ▼ Help ▼	
Route Patter	n Configuration						Relat	ed Links: Bac	k To Find/List 💌 🤤
🔚 Save 🗙	Delete 🗋 Copy	Add Ne	9W						
- Status i Status: R	eady								
—Pattern Defi	nition								
Route Pattern	9.1XXXXX	(XXXX			_				
Route Partitio	n Partition-F	IQ_Phones_	IP		•				
Description	RP Ent1-H	Q IP Phone I	.ongDistance		_				
Numbering Pla	an Not Sele	ected			v				
Route Filter	< None >				v				
MLPP Precede	nce* Default				•				
Gateway/Rout	te List* 10.10.11.	151			 (Edit) 				
Route Option	Route 1	this pattern							
cell classifier	O Block ti	his pattern	No Error						
Call Classificat		fNet			_				
L Allow Devic	ce Override 🗹 Pro	vide Outside	Dial Tone III.	Allow Overl	lap Sending	Urgent Priority			
L Require Fo	rced Authorization	Code							
Addionzacion									
L Require Cli	ent Matter Code								
—Calling Party	Transformations								
🗹 Use Calling	; Party\'s External	Phone Numb	er Mask						
Calling Party 1	Fransform Mask 🗌								
Prefix Digits (C	Dutgoing Calls)								
Calling Line ID) Presentation* D	efault			•				
Calling Name	Presentation* D	efault			•				
	artu Transformati								
Connected Lin	ne ID Presentation	* Default			-	-			
Connected Na	ime Presentation*	Default				-			
-Called Party	Transformations -								
Discard Digits	Pr	eDot				•			
Called Party T	ransform Mask								
Prefix Digits ((Outgoing Calls) 6								
—ISDN Netwo	rk-Specific Facilit	ies Informa	tion Element-						
Network Servi	ice Protocol 🛛 No	t Selected -	-		•				
Carrier Identif	ication Code								
Network Servi	ice		Service F	Parameter M	Name		Service Parameter Va	alue	
Not Selecte	ed		< Not Ex	kist >					
- Save De	lete Copy A	dd New 🛛 –							2
i *- indicat	es required item.								7670

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Figure 41	1 Call R	outing RouteH	unt Route Patter	n RP Ent1	HQ Analog Ph	one LongDistanc	e Administrat	ion Window
cisco	Cisco Unif	ied CM Adn	inistration			Navigation Cis	co Unified CM Adm	ninistration 💌 🕻
Svetom =	Coll Routing - Ma	d Communications	Solutions	Application -	Licer Management	- Bulk Administration	admin	About Logou
oystern •	Call Noding + Me		olice Mail + Device +	Application +	oser management	BuikAdministration	· Help ·	
Route Pati	tern Configuratio	on				Relate	d Links: Back To) Find/List 💌 🤆
🔚 Save	🗙 Delete 🗋 C	Copy 🕂 Add New						
— Status — (i) Status	s: Ready							
—Pattern D	efinition —							
Route Patt	tern* 9.1XXX	<pre></pre>						
Route Part	tition Partitio	on-HQ_Phones_An	alog	•				
Description	n RP Ent	1-HQ Analog Phone	LongDistance					
Numbering	Plan Not	Selected		~				
Route Filte	er < Non-	e >		*				
MLPP Prec	edence* Defaul	lt		•				
Gateway/F	Route List* 10.10.	.11.151		▼ (<u>Edit</u>)				
Route Opti	ion 💿 Rou	ute this pattern						
	C Bloc	ck this pattern No	Error	-				
Call Classif	fication*	OffNet		-				
🗆 Allow D	evice Override 🗹	Provide Outside Dia	al Tone 🗖 Allow Overl	ap Sending 🛛	Urgent Priority			
🗆 Require	e Forced Authorizat	tion Code						
Authorizat	tion Level*	0						
🗆 Require	e Client Matter Cod	le						
— Calling D	autu Tuan chaumati							
Use Ca	illing Party\'s Extern	nal Phone Number	Mask					
Calling Par	rty Transform Mask	:						
Prefix Digit	ts (Outgoing Calls)	, 						
Calling Lin	e ID Presentation*	* Default						
Calling Nar	me Presentation*	Default						
- Connecte	d Party Transform	nations		_	1			
Connected	d Name Presentatio	n* Default			1			
					1			
-Called Pa	n <mark>rty Transformatio</mark>	ins						
Called Dad	yits ty Transform Mask	PreDot			•			
Calleu Pari	ty fransform Mask							
Prefix Digit	ts (Outgoing Calls)	7						
—ISDN Net	twork-Specific Fa	cilities Information	Element					
Network S	ervice Protocol 🛛	- Not Selected		•				
Carrier Ide	entification Code 🗌							
Network S	ervice		Service Parameter N	Vame		Service Parameter Valu	ae	
Not Sel	ected		< Not Exist >					
Save	Delete Copy	Add New						
								102
(i) *- ind	licates required ite	im.						273

Figure 42 Call Routing RouteHunt Route Pattern RP Ent1 Br1 Analog Phone LongDistance Administration Window

ahaha Cis	sco Unified CM Administration	Navigation Cisco Unified CM Administration 💌 🕻
CISCO For (Cisco Unified Communications Solutions	admin About Logou
System 👻 Call R	couting ▼ Media Resources ▼ Voice Mail ▼ Device ▼ Application ▼ User Manag	gement 👻 Bulk Administration 👻 Help 👻
Route Pattern (Configuration	Related Links: Back To Find/List 💌 🤇
🔚 Save 🗙 C	Delete 🗋 Copy 🕂 Add New	
- Status Status: Rea	idv	
U		
-Pattern Definit		
Route Partition	9.1XXXXXXXXXX	
Description	Partition-Br1_Phones_Analog	
Numbering Dian	RP EntI-Bri Analog Phone LongDistance	
Numbering Plan	Not Selected	
MURD Proceedence		
Gateway/Pouto	List* Les co. co. co. (Edit)	
Bouto Option		
Route Option	Route this pattern	
	Block this pattern No Error	
-		
Allow Device	Override 🗹 Provide Outside Dial Tone 🗌 Allow Overlap Sending 🔲 Urgent Pric	prity
Require Force	ed Authorization Code	
Authorization Le	over" 0	
🗆 Require Clien	nt Matter Code	
Calling Dautu T	······	
Use Calling P	railsi ormations - Partyl's External Dhone Number Mask	
Calling Party Tra	ansy (s Excernal mone namber mask	
Prefix Digits (Out		
Calling Line ID P		
Calling Name Pro		
Calling Name Fre	Default	
-Connected Parl	ty Transformations	
Connected Line	ID Presentation* Default	
Connected Name	e Presentation* Default	
-Called Party Tr	ransformations	
Discard Digits	PreDot 💌	
Called Party Trai	nsform Mask	
Prefix Digits (Out	tgoing Calls) 7	
- ISDN Notwork	-Specific Facilities Information Floment	
Network Service	Protocol Not Selected	
Carrier Identifica	ation Code	
Network Service	Service Darameter Name	Service Parameter Value
Not Selected		
- Save Delet	Copy Add New	
	s required item.	

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Figure 43	3 Call Routing RouteHunt Route Pattern RP Ent1 Br1 IP Ph	one LongDistance Administration Window
cisco	Cisco Unified CM Administration	Navigation Cisco Unified CM Administration 💌 🕻
System 💌	Call Routing Media Resources Voice Mail Device Application User Manac	admin About Logou rement ▼ Bulk Administration ▼ Heln ▼
Route Pat	tern configuration	Related Links: Back To Find/List 💌 🦻
📄 Save	🗙 Delete [Copy 🕂 Add New	
— Status —		
i Status	s: Ready	
—Pattern D	Definition	
Route Patt	tern* 9.1XXXXXXXXX	
Route Part	tition Partition-Br1_Phones_IP 💌	
Descriptior	n RP Ent1-Br1 IP Phone LongDistance	
Numbering	g Plan Not Selected	
Route Filte	er < None >	
MLPP Prec	edence* Default	
Gateway/R	Route List* 10.80.80.82 💽 (Edit)	
Route Opt	ion 💿 Route this pattern	
	O Block this pattern No Error	
Call Classif	ification* OffNet	
🗆 Allow D	Device Override 🗹 Provide Outside Dial Tone 🗖 Allow Overlap Sending 🗖 Urgent Pric	prity
🗆 Require	e Forced Authorization Code	
Authorizat	ion Level*	
🗆 Require	e Client Matter Code	
i Koquire		
—Calling Pa	arty Transformations	
🗆 Use Ca	illing Party\'s External Phone Number Mask	
Calling Par	rty Transform Mask 415555XXXX	
Prefix Digit	ts (Outgoing Calls)	
Calling Lin	e ID Presentation*	
Calling Nar	me Presentation* Default	
—Connecte	d Party Transformations	
Connected	Line ID Presentation* Default	
Connected	d Name Presentation* Default	
—Called Pa	arty Transformations	
Discard Dig	gits PreDot 🗾	
Called Pari	ty Transform Mask	
Prefix Digit	ts (Outgoing Calls) 6	
—ISDN Net	twork-Specific Facilities Information Element	
Network S	Service Protocol 🛛 Not Selected	
Carrier Ide	entification Code	
Network S	Service Service Parameter Name	Service Parameter Value
Not Sel	ected <a> <a> <a> <a> <a> <a> <a> <a> <a> <a>	
Save	Delete Copy Add New	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
(i) * := ·	liastac required item	370
• - ind	arcates required item.	27

Call Routing: Class of Control Parameters

To configure the call routing class of control parameters for the Cisco Unified CM, click on **Call Routing > Class of Control** menu in the Cisco Unified CM Administration window.

Figure 44 Call Routing Class of Control Partition Cisco Unified CM Administration Window

ahaha	Cisco Unified CM Administration	Navigation Cisco Unified CM Administration 💌
cisco	For Cisco Unified Communications Solutions	admin About Logo
System 👻	Call Routing 👻 Media Resources 👻 Voice Mail 👻 Device 👻 Application 👻 User Management 👻 Bull	ulk Administration 👻 Help 👻
Find and	List Partitions	
🕂 Add N	ew 🔛 Select All 🔛 Clear All 💥 Delete Selected	
— Status —		
(i) 4 rec	ords found	
Partition	(1 - 4 of 4)	Rows per Page 50 💌
Find Parti	ion where Name 💌 begins with 💌 🛛 🖓 📼	
	Partition Name 📥	Description
	Partition-Br1 Phones Analog	Analog Phones
	Partition-Br1 Phones IP	IP Phones
	Partition-HQ_Phones_Analog	Analog Phones
	Partition-HQ_Phones_IP	IP Phones
Add Ne	w Select All Clear All Delete Selected	

cisco	Cisco Unified CM Administration For Cisco Unified Communications Solutions	n		Navigation Cisco Unified CM Administration 💌 🛾	0
System 👻	Call Routing 👻 Media Resources 👻 Voice Mail 👻 Devic	e 👻 Application 👻	User Management 👻	Bulk Administration 👻 Help 👻	
Partition	Configuration			Related Links: Back To Find/List]
🔜 Save	🗙 Delete Paset 🕂 Add New				
— Status — (i) Statu	ıs: Ready				-
—Partition	Information				-
Name*	Partition-Br1_Phones_Analog]			
Descriptio	on Analog Phones]			
Time Sche	edule < None >				
Time Zoni	e 💿 Originating Device				
	C Specific Time Zone Greenwich Standard Time		T		
- Save	Delete Reset Add New				-
(i) *- in	dicates required item.				
					273709

Figure 45 Call Routing Class of Control Partition-Partition Br1 Phones Analog Administration Window

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Enterprise 1 HQ Cisco Unified CM Example Configuration

Figure 46 Call Routing Class of Control Partition-Partition Br1 Phones IP Cisco Unified CM Administration Window

cisco	Cisco Unified CM Administration For Cisco Unified Communications Solutions			Navigation Cisco Unified CM Administration 💌	
System 👻	Call Routing 👻 Media Resources 👻 Voice Mail 👻 Device	 Application + 	User Management 👻	Bulk Administration 👻 Help 👻	
Partition	Configuration			Related Links: Back To Find/List	G
🔚 Save	🗙 Delete Paset 🕂 Add New				
- Status - i Statu	is: Ready				_
- Partition Name* Descriptio Time Sche Time Zone	Information Partition-Br1_Phones_IP on IP Phones edule < None > edule < None > e Originating Device C Specific Time Zone Greenwich Standard Time		Y		_
— <u>Save</u>] (i) *- in	Delete Reset Add New dicates required item.				73710

1

Figure 47	Call Routing Class of Control Partition-Partition HQ Phones Anal	log Administration Window
cisco	Cisco Unified CM Administration For Cisco Unified Communications Solutions	Navigation Cisco Unified CM Administration 💌 C admin About Logou
System 👻 🤇	all Routing 👻 Media Resources 👻 Voice Mail 👻 Device 👻 Application 👻 User Management 👻	Bulk Administration 👻 Help 👻
Partition C	onfiguration	Related Links: Back To Find/List 💽 G
🔚 Save	🗶 Delete 🏻 🖕 Reset 🖧 Add New	
- Status - Partition I Name* Description Time Sched Time Zone - Save I () *- indi	Ready	

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Enterprise 1 HQ Cisco Unified CM Example Configuration

Figure 48 Call Routing Class of Control Partition-Partition HQ Phones IP Cisco Unified CM Administration Window

cisco	Cisco Unified CM Administration For Cisco Unified Communications Solutions	Navigation Cisco Unified CM Administration 💌 🕻
System 👻	Call Routing ▼ Media Resources ▼ Voice Mail ▼ Device ▼ Application ▼ User Manager	ment Bulk Administration Help
Partition	Configuration	Related Links: Back To Find/List 👤 G
🔜 Save	🗙 Delete 🍟 Reset 🖧 Add New	
— Status — (i) Statu	is: Ready	
- Partition Name* Descriptio Time Sche Time Zone	Information Partition-HQ_Phones_IP IP Phones edule < None > edule < None > Image: Comparison of the standard Time Image: Delete	
(i) *- ind	dicates required item.	273712

1
Navigation Cisco Unified CM Administration 💌 🖸 **Cisco Unified CM Administration** ahaha cisco For Cisco Unified Communications Solutions admin About Call Routing 👻 Media Resources 👻 Voice Mail 👻 Device 👻 Application 👻 User Management 👻 Bulk Administration 👻 Help 💌 System 👻 Find and List Calling Search Spaces 🕂 Add New 🗰 Select All 📅 Clear All 🙀 Delete Selected -Status (i) 5 records found Rows per Page 50 💌 Calling Search Space (1 - 5 of 5) Find Calling Search Space where CSS Name 💌 begins with 💌 Find Clear Filter ÷ ____ Description Сору CSS Name * CSS-Br1_Phones_Analog ß CSS-Br1 Phones Analog CSS-Br1_Phones_IP ß CSS-Br1 Phones IP CSS-HQ Phones Analog CSS-HQ_Phones_Analog ß ß CSS-HQ_Phones_IP CSS-HQ Phones IP Select All Clear All Delete Selected Add New

Figure 49 Call Routing Class of Control CSS Cisco Unified CM Administration Window

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Figure 50 Call Routing Class of Control CSS-CSS Branch 1 Phones Analog Cisco Unified CM Administration Window

cisco	Cisco For Cisco	Unified (d CM	Administ ations Solution	ration ^s			Navigation Cisco	o Unified CM admin	Administrati About	on 💌 🕻
System 👻	Call Routing	🔹 Media	a Resource:	s 👻 Voice Mail	- Device -	Application 👻	User Management 👻	Bulk Administration 👻	Help 🔻		
Calling Se	earch Spac	e Config	uration					Related Lin	ks: Back To) Find/List	•
Rave	X Delete	Cor	y 🛟 Ad	d New							
— Status — i Statu	ıs: Ready										
—Calling S	earch Spac	e Inform	ntion —								
Name"	CSS-Br1_	Phones_/	halog								
Descriptio	n CSS-Br1_	Phones_/	Analog								
—Route Pa Available I	artitions for Partitions**	this Calli	ng Search	Space							
Selected F	Partitions	Partitior Partitior Partitior Partitior	n-Br1_Phon n-Br1_Phon n-HQ_Phor n-HQ_Phor	nes_Analog nes_IP nes_Analog nes_IP			*				
- Save	Delete	Сору	Add New]							
(i) *- ind	dicates requ	ired item.									4
(i) **Se	elected Parti	tions are	ordered by	/ highest priorit	У						2737

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Figure 51 Call Routing Class of Control CSS-CSS Branch 1 Phones IP Cisco Unified CM Administration Window

cisco	Cisco Unified CM Administration For Cisco Unified Communications Solutions	Navigation Cisco Unified CM Administration 💽 🤇 admin About Logou
System 👻	Call Routing Media Resources Voice Mail Device Application	User Management ▼ Bulk Administration ▼ Help ▼
Calling Se	earch Space Configuration	Related Links: Back To Find/List 💽 C
📄 Save	🗙 Delete [Copy 🕂 Add New	
— Status — i Statu:	s: Ready	
—Calling S	earch Space Information	
Name"	CSS-Br1_Phones_IP	
Descriptio	n CSS-Br1_Phones_IP	
Route Pa Available F Selected F	rtitions for this Calling Search Space Partitions** Partitions Partition-Br1_Phones_IP Partition-Br1_Phones_Analog Partition-HQ_Phones_IP PartitiPARTIN PartitioN_PARTIN PartitIPARTIN PartitIPARTIN PartitI	×
- Save	Delete Copy Add New	Ω
(i) **se	lected Partitions are ordered by highest priority	27371

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Figure 52 Call Routing Class of Control CSS-CSS HQ Phones Analog Cisco Unified CM Administration Window

cisco	Cisco	Unified CM Ad	ministra	ation				Navigation Cisc	o Unified CM .	Administration 💌 🖸
System 👻	Call Routing	✓ Media Resources ✓	Voice Mail 👻	Device 🔻	Application 👻	User Manag	ement 👻	Bulk Administration 👻	Help 👻	About Logot
Calling Se	earch Spac	e Configuration						Related Lin	ks: Back To	Find/List 💽 🤆
🔚 Save	X Delete	Copy 🕂 Add Ne	W							
— Status — i Statu	ıs: Ready									
— Calling S Name* Descriptio	earch Space Css-HQ_F on Css-HQ_F	e Information Phones_Analog Phones_Analog								
— Route Pa Available I	artitions for t Partitions**	this Calling Search Spa	ace ———							
Selected F	Partitions	Partition-HQ_Phones_ Partition-Br1_Phones_ Partition-Br1_Phones_ Partition-HQ_Phones_	▲ Analog Analog IP IP			×				
- Save	Delete	Copy Add New								
(i) *- ind (i) **Se	dicates requi elected Partit	ired item. ions are ordered by hig	hest priority							273716

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Figure 53 Call Routing Class of Control CSS-CSS HQ Phones IP Cisco Unified CM Administration Window

diala cisco	Cisco For Cisco	Unified Unified Col	CM AC	dministr Ins Solutions	ation			Navigation Cisc	OUnified CM	Administrati	on 💌 🕻 Logou
System 👻	Call Routing	👻 Media F	Resources 👻	Voice Mail 🔻	Device 👻	Application 👻	User Management 👻	Bulk Administration 👻	Help 🔻		
Calling Se	earch Spac	e Configu	ation					Related Lin	ks: Back To	Find/List	•
📄 Save	X Delete	Copy	🕂 Add Ne	BW							
— Status — (i) Status	ıs: Ready										
—Calling S	earch Spac	e Informati	on ———								
Name*	CSS-HQ_	Phones_IP									
Descriptio	on CSS-HQ_	Phones_IP									
— Route Pa Available F Selected F	Partitions for Partitions** Partitions	Partition-F Partition-F Partition-E Partition-F Partition-F	I Search Sp AQ_Phones Jr1_Phones JQ_Phones JQ_Phones	IP _Analog _IP _Analog _Analog			*				
- Save	Delete	Copy Ac	dd New 🛛 –								
(i) *- ind (i) **Se	dicates requ elected Parti	iired item. tions are or	dered by hi	ghest priority							73717
0											N

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Configuring the Cisco Unified CM Media Resources Parameters

Use the Cisco Unified Communications Manager Administration window to configure the media resources parameters. The media resources parameter example configurations are shown in the following sections:

- Media Resources: Annunciator Parameters, page 78
- Media Resources: Conference Bridge Parameters, page 79
- Media Resources: Media Termination Point Parameters, page 82
- Media Resources: Music on Hold Server Parameters, page 85
- Media Resources: Transcoder Parameters, page 86
- Media Resources: Media Resource Group Parameters, page 89
- Media Resources: Media Resource Group List Parameters, page 92

Media Resources: Annunciator Parameters

To configure the media resources annunciator parameters for the Cisco Unified CM, click **Media Resources** > **Annunciator** menu in the Cisco Unified CM Administration window.

Figure 54 Media Resources Annunciator ANN 2 Cisco Unified CM Administration Window

cisco	Cisco Ul For Cisco Un	nified CM Ad	ministra	ation			Navigation Cisco Unified CM Adm	inistration 💌 🕻
System 👻	Call Routing 👻	Media Resources 👻	Voice Mail 👻	Device 🔻	Application 👻	User Management 👻	Bulk Administration 👻 Help 👻	Logic Cogot
Annuncia	tor Configura	tion					Related Links: Back To Fin	d/List 🖵 🤅
🔚 Save	🎦 Reset							
— Status — i Statu — Device Ir	s: Ready							
Registratio	on Registered	with Cisco Unified C	ommunication	s Manager	40.40.97.2			
Server*	s 10.40.97.2)		-				
Name*	ANN_2	•						
Descriptio	n ANN_2_Ent	t1-HQ-CUCM						
Device Po	ol* DevicePoo	I_HQ_IP_Phones		-				
Location*	Hub_HQ			•				
– <u>Save</u>	Reset dicates require	d item.						

Media Resources: Conference Bridge Parameters

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To configure the media resources conference bridge parameters for the Cisco Unified CM, click **Media Resources > Conference Bridge** menu in the Cisco Unified CM Administration window.

Figure 55 Media Resources Conference Bridges Cisco Unified CM Administration Window

սիսիս	Cisco Unified CM	Administratio	n		Navigation Cisco	Unified CM Ad	ministratio	n 🔽 🤇
cisco	For Cisco Unified Communica	tions Solutions				admin	About	Logou
System 👻	Call Routing 👻 Media Resources	▼ Voice Mail ▼ Devic	e 👻 Application 👻	User Management 👻	Bulk Administration 👻	Help 👻		
Find and	l List Conference Bridges							
Add N	New 🔛 Select All 🔛 Clear All	💥 Delete Selected 🧣	Reset Selected					
— Status –								
3 rei	cords found							
Confere	ence Bridges (1 - 3 of 3)					Rows p	er Page 5	0 🔽
Find Cont	ference Bridges where Name	💌 begins with 💌		Find Clear Fil	ter 🕂 😑			
	Conference Bridge Name 🕇	Description	Device Po	ol	Status	IP	Address	Copy
CF	FB_2	CFB_2-Ent1-HQ	<u>Default</u>	Regis	stered with 10.40.97.2	2 10.40	0.97.2	ß
	ON001AA29DF631	CFB-Ent1-Br1	DevicePool Br1 DS	<u>Pfarm</u> Regis	stered with 10.40.97.2	2 10.40	0.103.1	ß
	ON111222333	CFB-Ent1-HQ	DevicePool HQ DS	<u>Pfarm</u> Regis	stered with 10.40.97.2	2 10.40	0.97.1	ß
Add N	ew Select All Clear All	Delete Selected	Reset Selected					

Figure 56 Media Resources Conference Bridges CFB Enterprise 1 Branch 1 Cisco Unified CM Administration Window

alada Cisco	Unified CM Administration	Navigation Cisco Unified CM Administration 💌 🕻
For Cisco) Unified Communications Solutions	admin About Logou
System 👻 🛛 Call Routin	g 👻 Media Resources 👻 Voice Mail 👻 Device 👻 Application 👻 User Management 👻	Bulk Administration 👻 Help 👻
Conference Bridge	Configuration Related Links: Back To Find,	/List
🔚 Save 🗶 Delete	🗈 🗋 Copy 🎦 Reset 👍 Add New	
— Status ————		
🚺 Status: Ready		
- Conference Bridge Conference Bridge : Registration IP Address	Information CON001AA29DF631 (CFB-Ent1-Br1) Registered with Cisco Unified Communications Manager 10.40.97.2 10.40.103.1	
- IOS Conference Bri Conference Bridge Ty Conference Bridge N	idge Info /pe* Cisco IOS Enhanced Conference Bridge	
Description	CCRD_Ept1_Br1	
Device Pool*	DevicePool_Br1_DSPfarm	
Common Device Con	figuration < None >	
Location*	Hub_Br1	
Device Security Mode	* Non Secure Conference Bridge	
- Save Delete	Copy Reset Add New	39
(i) *- indicates req	uired item.	2737

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Figure 57 Media Resources Conference Bridges CFB Enterprise 1 HQ Cisco Unified CM Administration Window

ababa	Cisco Unifi	ed CM Admin	istration			Navigation Cisco) Unified CM A	Administration	
cisco	For Cisco Unified	Communications Solu	itions				admin	About	Logou
System 👻	Call Routing 👻 Med	ia Resources 👻 Voice I	Mail 👻 Device 🖣	- Application 👻	User Management 👻	Bulk Administration 👻	Help 👻		
Conferen	ce Bridge Configu	ration		Related L	inks: Back To Find/	List			- C
📄 Save	🗙 Delete 🗋 Co	py 🎦 Reset 🕂 A	dd New						
— Status — i Statu	ıs: Ready								
— Conferen Conferen Registrati IP Addres	nce Bridge Informat ce Bridge : CON1112 ion Registere is 10.40.97.	ion 22333 (CFB-Ent1-HQ) d with Cisco Unified Co 1	ommunications I	Manager 10.40.	97.2				
IOS Conf Conference Description Device Po Common I Location* Device Se	ference Bridge Info ce Bridge Type* ce Bridge Name* on ool* Device Configuration curity Mode*	Cisco IOS Enhanced C CON111222333 CFB-Ent1-HQ DevicePool_HQ_DSP < None > Hub_HQ Non Secure Conferer	Conference Bride farm nce Bridge						
– Save j	Delete Copy	Reset Add New							273737

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Media Resources: Media Termination Point Parameters

To configure the media resources media termination point parameters for the Cisco Unified CM, click **Media Resources > Media Termination Point** menu in the Cisco Unified CM Administration window.

Figure 58 Media Resources Media Termination Point Cisco Unified CM Administration Window

abola Cisco Unified CM Administration								Navigation Cisc	o Unified CM A	dministra	tion 💌 🤇
cisco	For Cisco Uni	ified Communicatio	ns Solutions						admin	About	Logou
System 🖣	Call Routing 👻	Media Resources 👻	Voice Mail 🔻	Device 👻	Application \bullet	User Ma	anagement 👻	Bulk Administration 🔻	Help 🔻		
Find an	d List Media Ter	mination Points									
🕂 Add	New 🔛 Select A	All 🔛 Clear All	🗧 Delete Selec	ted 🎦 R	eset Selected						
— Status											
i) 3 n	ecords found										
Media	Termination Poir	nt <i>(1 - 3 of 3)</i>							Rows	per Page	50 💌
Find Me	dia Termination Po	oint where Name	💌 begin	s with 💌			Find Cle	ar Filter 🛛 🕂 😑			
	Nam	ne≜ D	escription		Device Pool			Status	IP Address	;	Сору
	MTP001AA2	9DF631 MTP-E	nt1-Br1	DevicePo	ol Br1 DSPfar	m	Registered	with 10.40.97.2	10.40.103.1	L 🗅	
	MTP111222	<u>333</u> MTP-E	nt1-HQ	DevicePo	iol HQ DSPfar	m	Registered	with 10.40.97.2	10.40.97.1	ß	
	MTP 2	MTP_2	2-Ent1-HQ	<u>Default</u>			Registered	with 10.40.97.2	10.40.97.2	Not	Allowed
Add I	lew Select All	Clear All)elete Selecte	d R	eset Selected						

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Figure 59 Media Resources Media Termination Point MTP Enterprise 1 Branch 1 Administration Window

cisco	Cisco Unified CM Administration For Cisco Unified Communications Solutions	Navigation Cisco Unified CM Administration 💌 🤇								
System 👻	Call Routing Media Resources Voice Mail Device Application User Management	Bulk Administration + Help +								
Media Ter	rmination Point Configuration	Related Links: Back To Find/List 💽 G								
🔚 Save	🗙 Delete 📔 Copy 🎦 Reset 🕂 Add New									
— Status — () Statu	is: Ready									
- Media Te Registrati IP Addres Media Ter Media Ter Descriptic Device Po	Media Termination Point Information Registration Registered with Cisco Unified Communications Manager 10.40.97.2 IP Address 10.40.103.1 Media Termination Point Type* Cisco IOS Enhanced Software Media Termination Point Media Termination Point Name* MTP001AA29DF631 Description MTP-Ent1-Br1 Device Pool* DevicePool_Br1_DSPfarm									
- Save	Delete Copy Reset Add New dicates required item.									

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Figure 60 Media Resources Media Termination Point MTP Enterprise 1 HQ Cisco Unified CM Administration Window

diala cisco	Cisco Unifie For Cisco Unified C	d CM Administr	ation			Navigation Cisco	Unified CM a	Administrati	on 🔽 🤇
System 👻	Call Routing 👻 Media	Resources 👻 Voice Mail 👻	Device 🔻	Application 👻	User Management 👻	Bulk Administration $ ullet $	Help 🔻		
Media Tei	rmination Point Cor	ifiguration				Related Link	s: Back To	Find/List	•
🔚 Save	🗙 Delete [🗋 Cop	/ 🎦 Reset 🕂 Add Nev	٧						
— Status — () Statu	is: Ready								
—Media Te	ermination Point Info	mation							
Registrati	on	Registered with Cisco Uni	fied Commu	nications Man	ager 10.40.97.2				
IP Addres	is mination Doint Type*	Cisco IOS Ephapood Soft	vara Madia '	Tormination D	aint				
Media Ter	mination Point Name*		vare meula		Diric				
		MIP111222333							
Descriptio	n	MTP-Ent1-HQ							
Device Po	iol*	DevicePool_HQ_DSPfarm		•					
- Save	Delete Copy R	eset Add New							

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Media Resources: Music on Hold Server Parameters

To configure the media resources music on hold server parameters for the Cisco Unified CM, click **Media Resources > Music On Hold Server** menu in the Cisco Unified CM Administration window.

Figure 61 Media Resources Music on Hold Server MOH Enterprise 1 HQ Cisco Unified CM Administration Window

Cisco Unified Cisco Unified C	d CM Administration	Navigation Cisco Unified CM Administration 💌 🖸 admin About Logou
System 👻 Call Routing 👻 Media	Resources 👻 Voice Mail 👻 Device 👻 Application 👻 User Management 👻	Bulk Administration 👻 Help 👻
Music On Hold (MOH) Serve	· Configuration	Related Links: Back To Find/List 💽 G
🔚 Save 🏾 🎦 Reset		
Status Status: Ready		
—Device Information ———		
Registration	Registered with Cisco Unified Communications Manager 10.40.97.2	
Host Server*	10.40.97.2	
Music On Hold Server Name*	MOH-Ent1	
Description	MOH Ent1-HO	
Device Pool*	Default	
Location*	Hub_HQ	
Maximum Half Duplex Streams*	250	
Maximum Multicast Connections	* 30	
Fixed Audio Source Device		
Run Flag*	Yes	
—Multicast Audio Source Inforr	nation —	
🗆 Enable Multicast Audio Sour	es on this MOH Server	
Base Multicast IP Address*	.0.0.0	
Base Multicast Port Number* 🛛	(Even numbers only)	
Increment Multicast on*	Port Number C IP Address	
Coloria d Multico d Aurilla Com		
Selected Multicast Audio Sour There are no Music On Hold Aud Audio Sources.	'ces' Jio Sources selected for Multicasting. Click Configure Audio Sources in th	e top right corner of the page to select Multicast



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(i) *- indicates required item.

Media Resources: Transcoder Parameters

To configure the media resources transcoder parameters for the Cisco Unified CM, click **Media Resources > Transcoder** menu in the Cisco Unified CM Administration window.

Figure 62 Media Resources Transcoder Cisco Unified CM Administration Window

cisco	Unified CM Administration	n 💌 🤇 Logou								
System 👻	Call Routing 👻 Media Resour	ces 👻 Voice Mail 👻 De	wice 👻 Application 👻 User Mana	gement 👻 Bulk Administration 👻	Help 👻					
Find and	Find and List Transcoders									
Add N	Vew 🔲 Select All 🔛 Clear	All 🙀 Delete Selected	Reset Selected							
-Status - i) 2 rec Transco	-Status 2 records found Transcoder (1 - 2 of 2) Rows per Page 50 V									
Find Tran	scoder where Name	begins with 💌	Find Clear F	Filter 🕂 🗢						
	Name 🕇	Description	Device Pool	Status	IP Address	Copy				
МТ	XCD001AA29DF631	XCODE-Ent1-Br1	DevicePool Br1 DSPfarm	Registered with 10.40.97.2	10.40.103.1	ß				
	XCODE111222333	XCODE-Ent1-HQ	DevicePool HQ_DSPfarm	Registered with 10.40.97.2	10.40.97.1	ß				
Add Ne	ew Select All Clear All	Delete Selected	Reset Selected							

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Figure 63 Media Resources Transcoder XC	CODE Enterprise 1 Branch 1 Cisco Unified CM Administration Window	/
Cisco Unified CM Administrations	ON Navigation Cisco Unified CM Administration	J C
System ▼ Call Routing ▼ Media Resources ▼ Voice Mail ▼ De	vice 👻 Application 👻 User Management 👻 Bulk Administration 👻 Help 👻	
Transcoder Configuration	Related Links: Back To Find/List	- 0
🔚 Save 🗙 Delete 🗈 Copy 省 Reset 🕂 Add New		
Transcoder Information Transcoder: XCD001AA29DF631 (XCODE-Ent1-Br1) Registration Registered with Cisco Unified Communications N IP Address 10.40.103.1 IOS Transcoder Info Transcoder Tupo* Cisco IOS Ephagoed Mode Tupo*	Manager 10.40.97.2	
Description XCODE-Ent1-Br1		
Device Name* XCD001AA29DF631		
Device Pool* DevicePool_Br1_DSPfarm	View Details	
Common Device Configuration < None >	View Details	
Special Load Information	Leave blank to use default	
- Save Delete Copy Reset Add New		

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Enterprise 1 HQ Cisco Unified CM E	xample Configurati	on

Figure 64 Media Resources Transcoder XCODE Enterprise 1 HQ Cisco Unified CM Administration Window

abola Cisco Unified CM Administration	Navigation _Cisco Unified CM Administration 💌 🕻
CISCO For Cisco Unified Communications Solutions	admin About Logou
System ▼ Call Routing ▼ Media Resources ▼ Voice Mail ▼ Device ▼ Application	✓ User Management ✓ Bulk Administration ✓ Help ✓
Transcoder Configuration	Related Links: Back To Find/List 💽 G
🔚 Save 🗶 Delete 🗋 Copy 嗋 Reset 🕂 Add New	
Transcoder Information Transcoder: XCODE111222333 (XCODE-Ent1-HQ) Registration Registered with Cisco Unified Communications Manager 10.40.97 IP Address 10.40.97.1	2
— IOS Transcoder Info	
Transcoder Type* Cisco IOS Enhanced Media Termination Point	-
VCODE-Ent1-HQ	
Device Name* XCODE111222333]
Device Pool* DevicePool_HQ_DSPfarm 💌	View Details
Common Device Configuration < None >	View Details
Special Load Information	Leave blank to use default
- Save Delete Copy Reset Add New	

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Media Resources: Media Resource Group Parameters

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To configure the media resources media resource group parameters for the Cisco Unified CM, click **Media Resources > Media Resource Group** menu in the Cisco Unified CM Administration window.

Figure 65 Media Resources-Media Resource Group Cisco Unified CM Administration Window

cisco	Cisco Unified CM Administratio For Cisco Unified Communications Solutions	n	Navigation Cisco U	nified CM Administration 💌 C					
System 👻	Call Routing 👻 Media Resources 👻 Voice Mail 👻 Devi	ce 👻 Application 👻 User Management 👻	Bulk Administration 👻 🖡	Help 🔻					
Find and	List Media Resource Groups								
🕂 Add N	lew 🔛 Select All 🔛 Clear All 🙀 Delete Selected								
- Status - i 2 rec Media R Find Medi	Status 1) 2 records found Media Resource Group (1 - 2 of 2) Find Media Resource Group where Name begins with Find Clear Filter Description								
	Name 🔺	Description	Multicast	Сору					
	Br1 HW MRG	Ent 1 Br1	false	6					
	HQ HW MRG	Ent 1 HQ	false	ß					
Add Ne	w Select All Clear All Delete Selected								

Figure 66 Media Resources-Media Resource Group Enterprise 1 Branch 1 Cisco Unified CM Administration Window

cisco	Cisco Unified CM Administration Navigation Cisco Unifie For Cisco Unified Communications Solutions a	d CM Administration 💌 🕻 dmin About Logou
System 👻	Call Routing 👻 Media Resources 👻 Voice Mail 👻 Device 👻 Application 👻 User Management 👻 Bulk Administration 👻 Help	•
Media Res	ource Group Configuration Related Links: Ba	ck To Find/List 💽 🤇
🔚 Save	🗙 Delete 🗋 Copy 🌯 Reset 🕂 Add New	
— Status — i Statu:	: Ready	
— Media Re Media Res	source Group Status ource Group: Br1_HW_MRG (used by 11 devices)	
—Media Re	source Group Information	
Name	Br1_HW_MRG	
Descriptio	Ent 1 Br1	
- Dauisas f	ny this Croup	
Available M	Iedia Resources** ANN_2 CFB_2 CON111222333 MTP_111222333 MTP_2 ▼	
Selected N	edia Resources* CON001AA29DF631 (CFB) MOH-Ent1 (MOH) MTP001AA29DF631 (MTP) XCD001AA29DF631 (XCODE)	
🗆 Use Mu	lticast for MOH Audio (If at least one multicast MOH resource is available)	
- Save	Delete Copy Reset Add New	
(i) *- inc	icates required item.	746
(i) **Ind	ludes Annunciators (ANN), Conference Bridges (CFB), Media Termination Points (MTP), Music On Hold Servers (MOH) and T	ranscoders (XCODE)

1

cisco	Cisco Unif	ied CM Ad	ministra	tion			Navigation Cisco	Unified CM Administration
System 👻	Call Routing 👻 Me	dia Resources 🔻	Voice Mail 👻	Device 🔻	Application 👻	User Management 👻	Bulk Administration 👻	Help -
Media Re	source Group Co	nfiguration					Related Lini	<s: back="" find="" list<="" td="" to=""></s:>
ave 🔚	X Delete 🗋 C	Copy 🎦 Reset	🕂 Add New					
— Status — i Statu	us: Ready							
— Media Re Media Res	esource Group Stat source Group: HQ_H	tus HW_MRG (used b	y 19 devices)					
— Media Re Name*	esource Group Info HQ_HW_MRG	ormation ———						
Descriptio	on Ent 1 HQ							
-Devices	for this Group							
Available	Media Resources**	ANN_2 CFB_2 CON001AA29D MTP001AA29DF MTP_2	F631 631			• •		
Selected I	Media Resources*	CON11122233 MOH-Ent1 (MO MTP111222333 XCODE111222	3 (CFB) H) 3 (MTP) 333 (XCODE)			*		
🗆 Use Mi	ulticast for MOH Aud	dio (If at least on	e multicast M	OH resour	ce is available)			
- Save	Delete Copy	Reset Add	New					
(i) *- in	dicates required ite	m.						
(i) **In	cludes Annunciator:	s (ANN), Confere	nce Bridges ((CFB), Media	a Termination A	Points (MTP), Music O	n Hold Servers (MOH)	and Transcoders (XCODE)

Figure 67 Media Resources-Media Resource Group Enterprise 1 HQ Cisco Unified CM Administration Window

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Media Resources: Media Resource Group List Parameters

To configure the media resources media resource group list parameters for the Cisco Unified CM, click **Media Resources > Media Resource Group List** menu in the Cisco Unified CM Administration window.

Figure 68 Media Resources-Media Resource Group List Cisco Unified CM Administration Window

cisco	Cisco U For Cisco Un	nified CM Ac	ministrati ns Solutions	ion			Navigatior	Cisco	Unified CM	Administra About	tion 💌 🤇
System 👻	Call Routing 👻	Media Resources 🔻	Voice Mail 👻 De	evice 🔻 A	Application 👻	User Management	 Bulk Administra 	ation 👻	Help 👻		
Find and	List Media Re	source Group List	s								
🕂 Add N	Add New 🏢 Select All 🔛 Clear All 💥 Delete Selected										
- Status - i 2 rec	ords found										
Media R	esource Group	List (1 - 2 of 2)							Row:	s per Page	50 🔽
Find Medi	a Resource Gro	up List where Name	begins with 💌			Find Clear Filt	er 🕂 😑				
				1	Name 🕈					Сору	
		Br1 HW MRG	L					ß			
		HQ HW MRG	=					ß			
Add Ne	ew Select Al	l Clear All I	Delete Selected								

1

Figure 6	9 Media Resources-Media Resource Group List Branch 1 HW MRGL	Cisco Unified CM Administration Window
alulu cisco	Cisco Unified CM Administration	Navigation Cisco Unified CM Administration 💌 🕻
	For Cisco Unified Communications Solutions	admin About Logou
System 👻	Call Routing ▼ Media Resources ▼ Voice Mail ▼ Device ▼ Application ▼ User Management ▼	Bulk Administration 👻 Help 👻
Media Re:	source Group List Configuration	Related Links: Back To Find/List 💽 🤇
🔚 Save	🗙 Delete 📋 Copy 🎦 Reset 🕂 Add New	
—Status —		
(i) Statu	s: Ready	
— Media Re Media Res — Media Res	source Group List Status cource Group List: Br1 HW MRGL (used by 11 devices)	
Name* B	1 HW MRGL	
— Media Re	source Groups for this List	
Available		
Selected I	Media Resource Groups Br1_HW_MRG	
- Save	Delete Copy Reset Add New	0
(i) *- ini	dicates required item.	73737

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Figure 70 Media Resources-Media Resource Group List HQ HW MRGL Cisco Unified CM Administration Window

ahaha	Cisco Unified CM Administration	Navigation Cisco Unified CM Administration 💌 🕻
cisco	For Cisco Unified Communications Solutions	admin About Logou
System \star	Call Routing 👻 Media Resources 👻 Voice Mail 👻 Device 👻 Application 👻 User Management	t 👻 Bulk Administration 👻 Help 👻
Media Re	source Group List Configuration	Related Links: Back To Find/List 💽 🤆
🔚 Save	🗙 Delete 📋 Copy 🎦 Reset 🕂 Add New	
-Status - i Statu	ıs: Ready	
— Media R Media Re	esource Group List Status source Group List: HQ HW MRGL (used by 19 devices)	
—Media R Name* ⊩	esource Group List Information Q HW MRGL	
—Media R Available	esource Groups for this List Media Resource Groups Br1_HW_MRG	
Selected	Media Resource Groups HQ_HW_MRG	×
- Save	Delete Copy Reset Add New	20
(i) *- ir	dicates required item.	2737

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Configuring the Cisco Unified CM Voice Mail Parameters

Use the Cisco Unified Communications Manager Administration window to configure the voice mail parameters. The voice mail parameter example configurations are shown in the following sections:

- Voice Mail: Cisco Voice Mail Port Parameters, page 95
- Voice Mail: Message Waiting Parameters, page 97
- Voice Mail: Voice Mail Pilot Parameters, page 100
- Voice Mail: Voice Mail Profile Parameters, page 101

Voice Mail: Cisco Voice Mail Port Parameters

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To configure the voice mail Cisco voice mail port parameters for the Cisco Unified CM, click **Voice Mail** > **Cisco Voice Mail Port** menu in the Cisco Unified CM Administration window.

Figure 71 Voice Mail Cisco Voice Mail Port Cisco Unified CM Administration Window

cis	CISCO Unified CM Administration Navigation Cisco Unified CM Administration Cisco Unified CM Administration Cisco Unified Communications Solutions admin About Logo										
Syster	System 👻 Call Routing 👻 Media Resources 👻 Voice Mail 👻 Device 👻 Application 👻 User Management 👻 Bulk Administration 👻 Help 👻										
Find											
<u>م</u> لك ا	👍 Add New 🖽 Select All 🔠 Clear All 🛶 Delete Selected 🤄 Reset Selected										
-Stat	-Status										
1	5 records fou	nd									
Voi											
YUN		(1 - 5 07 57					1		rs per Page _{[30}		
Find	Voice Mail Poi	rt where Devic	e Name 🔄 begins wit	h 📕		Find	Clear Filter 🛛 🕂				
				Device	citem of enter sea	aruntex	L				
	Device Name [▲]	Description	Device Pool	Security Mode	Calling Search Space	Ext.	Partition	Status	IP Address	Сору	
	<u>CiscoUM1-</u> <u>VI1</u>	Voicemail for Enterprise1	DevicePool HQ IP Phones	Non Secure Voice Mail Port	<u>CSS-</u> HQ Phones IP	<u>1090</u>	<u>Partition-</u> HQ Phones IP	Registered with 10.40.97.2	10 40.97.253	ß	
	<u>CiscoUM1-</u> <u>VI2</u>	Voicemail for Enterprise1	DevicePool HQ IP Phones	Non Secure Voice Mail Port	<u>CSS-</u> HQ Phones IP	<u>1091</u>	<u>Partition-</u> HQ Phones IP	Registered with 10.40.97.2	10.40.97.253	6	
	<u>CiscoUM1-</u> <u>VI3</u>	Voicemail for Enterprise1	DevicePool HQ IP Phones	Non Secure Voice Mail Port	<u>CSS-</u> HQ Phones IP	<u>1092</u>	<u>Partition-</u> HQ Phones IP	Registered with 10.40.97.2	10.40.97.253	6	
	<u>CiscoUM1-</u> VI4	Voicemail for Enterprise1	DevicePool HQ IP Phones	Non Secure Voice Mail Port	<u>CSS-</u> HQ Phones IP	<u>1093</u>	<u>Partition-</u> HQ Phones IP	Registered with 10.40.97.2	10.40.97.253	ß	
	<u>CiscoUM1-</u> <u>VI5</u>	Voicemail for Enterprise1	DevicePool HQ IP Phones	Non Secure Voice Mail Port	<u>CSS-</u> HQ Phones IP	<u>1094</u>	<u>Partition-</u> HQ Phones IP	Registered with 10.40.97.2	10.40.97.253	6	
Ac	ld New S	elect All Cle	ar All Delete Selected	Reset	Selected						

	Enterprise 1	I HQ Cisco	Unified CN	/I Example	Configuration
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Figure 72 Voice Mail-Voice Mail Port CiscoUM1 VI1 Cisco Unified CM Administration Window

cisco	Cisco Unified	ed CM Communic	Administr ations Solutions	ation				Na	vigation Ci	sco Unifi	ied CM . admin	Administra About	tion 🔽 🕻
System 👻	Call Routing 👻 Medi	ia Resource:	s 👻 Voice Mail 👻	Device 🔻	Application 👻	User M	anagement 👻	Bulk A	dministration		p 🕶		
Voice Mai	il Port Configuratic	on							Related L	inks: 🖪	Back To) Find/List	▼ 6
📄 Save	🗙 Delete ြ Co	ıpy 🎦 Re	eset 🛟 Add New	/									
— Status — (i) Statu	is: Ready												
— Device I Registrati IP Addres Port Name	nformation on s e*	Registered 10.40.97.2 CiscoUM1	d with Cisco Unifie 253 -VI1	ed Commur	nications Mana	ger 10.4	0.97.2						
Descriptio	n	Voicemail	for Enterprise1										
Device Po	ol*	DevicePor	ol_HQ_IP_Phones	5	•								
Common I	Device Configuration	< None >			•								
Calling Se	arch Space	CSS-HQ_F	Phones_IP		•								
AAR Callin	ig Search Space	< None >			•								
Location*		Hub_HQ			•								
Device Se	curity Mode*	Non Secu	re Voice Mail Port		▼								
-Directory	y Number Informatio	on,											
Directory	Number*	ļ	1090										
Partition		ļ	Partition-HQ_Pho	ones_IP		_							
Calling Se	earch Space	ļ	CSS-HQ_Phones	_IP		•							
AAR Group	р 	ļ	< None >			-							
Internal C	Caller ID Display	·	VoiceMail										
Internal C	Caller ID Display (ASC	:II format) 🗗	VoiceMail										
External N	Number Mask	ſ	415555XXXX										
- Save	Delete Copy	Reset /	Add New										273782

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Voice Mail: Message Waiting Parameters

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To configure the voice mail message waiting parameters for the Cisco Unified CM, click **Voice Mail** > **Message Waiting** menu in the Cisco Unified CM Administration window.

Figure 73 Voice Mail Message Waiting Cisco Unified CM Administration Window

alada	Cisco Ur	nified CM Ad	ministration			Navigation Cisco	Unified CM Adr	ministration	
	For Cisco Uni	ified Communication	is Solutions				admin	About I	Logou
System 👻	Call Routing 🔻	Media Resources 👻	Voice Mail 👻 Device	✓ Application ✓ Us	er Management 👻	Bulk Administration 👻	Help 🔻		
Find and	List Message	Waiting Numbers							
Add N	lew 🔛 Select /	All 🔛 Clear All	Delete Selected						
— Status — (i) 2 rec	ords found								
Messag	e Waiting Numb	ers (1 - 2 of 2)					Rows p	er Page 50	•
Find Mess Num	sage Waiting w bers	here Directory Num	ber 💽 begins wi	th 💌	and wher Indicator	e Message Waiting is Both 💌	Find Clear	Filter 🕂	
	Director	y Number 🕈	Description	Pa	artition	Calling) Search Space	(Сору
	1080		MWI-On	Partition-HQ Phon	ies IP	<u>CSS-HQ_Pho</u>	nes IP	6	
	1081		MWI-Off	Partition-HQ Phon	ies IP	<u>CSS-HQ_Pho</u>	nes IP	ß	
Add Ne	w Select All	Clear All D	elete Selected						

								-
	Enterprise	1 HQ	Cisco	Unified	СМ	Example	Configu	ration

Figure 74 Voice Mail Message Waiting MWI ON Cisco Unified CM Administration Window

սիսիս	Cisco Uni	fied CM Adm	ninistra	tion			Navigation Cisco	Unified CM A	\dministrati	on 🔽 🤇
cisco	For Cisco Unifie	ed Communications	Solutions					admin	About	Logou
System 👻	Call Routing 👻 M	ledia Resources 👻 🗸 V	oice Mail 👻	Device 👻	Application \bullet	User Management 👻	Bulk Administration $ ullet $	Help 👻		
Message	Waiting Configu	ıration					Related I	Links: Back	To Find/Li	st 🔻 🤆
🔚 Save	🗙 Delete 🗋	Copy 🕂 Add New								
— Status — (i) Statu	ıs: Ready									
—Message	Waiting Informa	tion								
Message	Waiting Number*	1080								
Partition		Partition-HQ_Phon	es_IP		•					
Descriptio	on	MWI-On								
Message	Waiting Indicator*	'⊙on Coff								
Calling Se	arch Space	CSS-HQ_Phones_I	P		•					
- Save	Delete Copy	Add New								

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Figure 75 Voice Mail Message Waiting MWI Off Cisco Unified CM Administration Window

ahaha	Cisco Uni	fied CM Adr	ninistra	ation			Navigation Cisco	Unified CM 4	\dministrati	on 💌 🤇
cisco	For Cisco Unific	ed Communications	Solutions					admin	About	Logou
System 👻	Call Routing 👻 🛛 🕅	ledia Resources 👻 🕚	voice Mail 👻	Device 👻	Application \bullet	User Management 👻	Bulk Administration 👻	Help 🔻		
Message	Waiting Configu	ıration					Related	Links: Back	To Find/Li	ist 🔻 🤇
🔚 Save	🗙 Delete 🗋	Copy 🕂 Add New								
— Status — (i) Statu	s: Ready									
—Message	Waiting Informa	tion								
Message	Waiting Number*	1081								
Partition		Partition-HQ_Pho	nes_IP		•					
Descriptio	n	MWI-Off								
Message ^v	Waiting Indicator'	[*] ⊂ On ☉ Off								
Calling Se	arch Space	CSS-HQ_Phones_	IP		•					
- Save	Delete Copy	Add New								

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Voice Mail: Voice Mail Pilot Parameters

To configure the voice mail voice mail pilot parameters for the Cisco Unified CM, click **Voice Mail** > **Voice Mail Pilot** menu in the Cisco Unified CM Administration window.

Figure 76 Voice Mail-Voice Mail Pilot 1099 Cisco Unified CM Administration Window

cisco	Cisco U For Cisco Ur	nified CM Ad	ministra ns Solutions	ation			Navigation Cisco	Unified CM	Administrati	on 💌 🤇
System 👻	Call Routing 👻	Media Resources 👻	Voice Mail 👻	Device 👻	Application \bullet	User Management 👻	Bulk Administration 👻	Help 👻		
Voice Mai	il Pilot Config	uration					Related Link	s: Back To) Find/List	- 6
📄 Save	🗙 Delete 🗆	Add New								
- Status - i Statu	is: Ready	-11-2								
Voice Mail	Pilot Inform Pilot Number	1099								
Calling Se	arch Space	CSS-HQ_Phones_IP			•					
Descriptio	n [Voicemail Pilot								
🗹 Make t	his the default	: Voice Mail Pilot for th	ne system							
– <u>Save</u>	Delete Ad	dd New ditem.								

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Voice Mail: Voice Mail Profile Parameters

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To configure the voice mail voice mail profile parameters for the Cisco Unified CM, click **Voice Mail** > **Voice Mail Profile** menu in the Cisco Unified CM Administration window.

Figure 77 Voice Mail-Voice Mail Profile VM Profile Enterprise 1 HQ Cisco Unified CM Administration Window

ahaha	Cisco U	nified CM Ad	ministra	ation				Navigation Cise	o Unified CM	1 Administrat	ion 🔽 🤇
cisco	For Cisco Un	ified Communication	ns Solutions						admin	About	Logou
System 👻	Call Routing 👻	Media Resources 👻	Voice Mail 👻	Device 👻	Application •	 User Management 	•	Bulk Administration	• Help •		
Voice Mai	il Profile Conf	iguration						Related Lir	nks: Back T	o Find/List	•
📄 Save	X Delete	🗋 Copy 🎦 Reset	🕂 Add New								
— Status — (i) Statu	ıs: Ready										
- Voice Mai Voice Mail Voice Mail Descriptio Voice Mail Voice Mail ⊠ Make t	il Profile Infor Profile Profile Name* n Pilot** Box Mask this the default	mation VM-Profile-Ent1-HQ VM-Profile-Ent1-HQ Default voice messa 1099/CSS-HQ_Phon Voice Mail Profile for	(used by 15 c ging profile les_IP the System	levices)	V						
- <u>Save</u>	Delete Cop dicates required	oy Reset Add			ar and ithic a	avecage dias Calling			e Veice Mail I		
Callir	ng Search Spac	iliociis comprised of tr ie >).	te voice Mall	Phot Nullio	er anu icys c	onesponding calling	, 580	загот зрасе мате (-	< voice mail i	Pilot Number	2/<

Configuring the Cisco Unified CM Device Parameters

Use the Cisco Unified Communications Manager Administration window to configure the device parameters. The device parameter example configurations are shown in the following sections:

- Device: Gateway Parameters, page 102
- Device: Phone Parameters, page 109
- Device: Trunk Parameters, page 114

Device: Gateway Parameters

To configure the device gateway parameters for the Cisco Unified CM, click **Device > Gateway** menu in the Cisco Unified CM Administration window.

Figure 78	Device Gateway	Cisco II	Inified CM	Administration	Window
rigule 70	Device Galeway	CISCO 0	inneu civi	Aunninstration	vviilaovv

ciso	Cisco Unified CM Administration									co Unified (CM Administra	ition 💌 🤇
Quatam	- Coll Douting - Mar			Douise - A	nalisation -	Lloor Monor	vomont -	Dulle i desi	niatratia	adm	in About	Logou
System	 Call Routing • Met 	lia Resources 👻 🤊	voice Mail 🔻	Device 👻 A	pplication 👻	Osermanag	gement 👻	Buik Admi	nistratio	on ▼ Heip	•	
Find a	nd List Gateway											
🕂 Ad	ld New 🔛 Select All	Clear All 🙀	Delete Selec	ted 🎦 Resi	et Selected							
— Statu	s											
i 2	records found											
Gate	ways (1 - 2 of 2)									R	ows per Page	e 50 💌
Find G	ateways where Name	•	begins wit	:h 💌		Hide 💌	endpoint	ts Find	Clear	Filter		
				Select	item or ente	r search te	xt 💌					
	Device Name 🌥	Description	Device Pool	Calling Search Space	Extension	Partition	Route Group	Priority	Port	Device Type	Status	IP Addres
	Ent1 Br1.Ent1.com	<u>n</u> Ent1_Br1								Cisco 3845	<u>See</u> Endpoints	
	SKIGW0C863972F	5 Ent1-HQ- VG224								VG224	<u>See</u> Endpoints	

alada cisco	Cisco Unified	ed CM Ad	ministra ns Solutions	tion			Navigation Cisco	Unified CM A	dministration 💌 🕻 About 📔 Logou
System 👻	Call Routing 👻 Medi	ia Resources 👻	Voice Mail 👻	Device 👻	Application 👻	User Management 👻	Bulk Administration 👻	Help 👻	
Gateway	Configuration						Related L	inks: Back	To Find/List 🖵 🤇
🔚 Save	🗙 Delete	set 🕂 Add Ne	9W						
— Status — (i) Statu	ıs: Ready								
— Gateway	/ Details								
Product			Cisco 3845						
Gateway			Ent1_Br1.Er	it1.com					
Protocol			MGCP						
Domain N	ame*		Ent1_Br1.Er	nt1.com					
Descriptio	n		Ent1_Br1						
Cisco Unif	fied Communications	Manager Group	* Default			•			
— Configur Module in Module in Module in Module in Module in	ed Slots, VICs and E Slot 0 < None > Slot 2 < None > Slot 3 < None > Slot 3 < None > Slot 4 NM-HDV2-2P0 Subunit 0 VIC Subunit 1 < N	ORT-T1 C2-2FXS	Ber	gin Port 0 gin Port 0	4/0/ 0 🚟	4/0/ 1 👼			
-Product	Specific Configuration	on Layout ——							
ol 1 1					7				
Global ISE	UN Switch Type	4ESS			_				
Switchba	ck Timing*	Graceful			•				
Switchba	ck uptime-delay (min)	10							
Switchba	ck schedule (hh:mm)	12:00							
Type Of D	TMF Relay*	Current GW C	onfig		•				
- Save	Delete Reset	Add New -							612572

Figure 79 Device Gateway Enterprise 1 Branch 1 Enterprise 1.com Cisco Unified CM Administration Window

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Figure 80 Device Gateway Enterprise 1 Branch 1 Enterprise 1.com pots 1110 Cisco Unified CM Administration Window

diala cisco	Cisco U For Cisco Un	nified CM Ad	ministra	ation			Navigation Cisco	Unified CM admin	Administra	tion 💌 🤇
System 👻	Call Routing 👻	Media Resources 👻	Voice Mail 👻	Device 👻	Application \bullet	User Management 👻	Bulk Administration 👻	Help 🔻		
Gateway	Configuration	n				F	Related Links: Back	< to MGCP	Configurat	ion 💌 🤆
🔚 Save	X Delete	👆 Reset 👍 Add N	ew							
— Status —										

D	Status:	Readv
- /		

Directory Number Information	Device Information					
•77* Line [1] - 1110 in Partition-	Product	Cisco MGCP FXS Port				
Bri Dhones Analog	Gateway	Ent1_Br1.Ent1.com				
	Device Protocol	Analog Access				
	Registration	Registered with Cisco Unified Communications Manager 10.40.97.2				
	IP Address	10.40.103.1				
	End-Point Name *	AALN/S4/SU0/0@Ent1_Br1.Ent1.com				
	Description	Ent1_Br1_FXS				
	Device Pool*	DevicePool_Br1_Analog_Phones				
	Common Device Configuration	< None >				
	Media Resource Group List	Br1 HW MRGL				
	Calling Search Space	CSS-Br1_Phones_Analog				
	AAR Calling Search Space	< None >				
	Location*	Hub_Br1				
	AAR Group	< None >				
	Network Locale	< None >				
	Transmit UTF-8 for Calling Party Name					
	Multilevel Precedence and Preemption (MLPP) Information					
	MLPP Domain < None >					
	MLPP Indication Not available on this device					
	MLPP Preemption Not availab	le on this device				
	Port Information (POTS)					
	Port Direction*	Bothways 💌				
	Prefix DN					
	Num Digits*	4				
	Expected Digits*	0				
	SMDI Port Number(0-4096)*	0				
	🗆 Unattended Port					
- Save Delete Reset Add New						

i *- indicates required item.

🗊 **- Device reset is not required for changes to Packet Capture Mode and Packet Capture Duration.

Figure 81 Device Gateway Enterprise 1 Branch 1 Enterprise 1.com pots 1110 Line Administration Window

rstem + Call Routing	Menta Pe	munication	Voice Mail Device	Application - Lisar Man	admin	About Lo		
system • Can Housing • media Resources • Yoke mail • Device • /			voice mail · Device ·	Application • User Management • Bulk Administration • Help •				
ectory Number C	configuratio	n 		Related Links: C	onfigure Device (AALN/S4/SU0/D@Ent1_Br	1.Ent1.com) <u>*</u>		
Save 🗶 Delete	Reset	Add Ner	N					
itatus								
J Status: Ready								
Directory Number 1	nformation -			-				
Route Partition	Partition-Br1	_Phones_Ar	palog					
Description	1110							
Alerting Name	Ent1_Br1_11	10						
ASCII Alerting Name	Ent1_Br1_11	10						
associated Devices	AALN/S4/SUO)/O@Ent1_B	1.Ent1.com	Edit Device				
				Edit Line Appea	rance			
		~~						
Dissociate Devices				1				
]							
Directory Number S	settings							
Calling Search Space	1	< None >	anar Analan	Choose -	<none> to use system default)</none>			
Presence Group*	5	Standard Pr	esence group					
User Hold MOH Audio	Source	1-SampleAu	dioSource	•				
etwork Hold MOH A	udio Source	1-SampleAu	dioSource					
AAR Settings								
	Voice M	tail	AAR	Destination Mask	AAR Group			
AAR D	or				< None >	<u>*</u>		
M Retain this destin forwarding history	hation in the o	sall						
Call Forward and C	all Pickup Se	ttings —						
		Voice Mail		estination	Calling Search Space	te		
Calling Search Space	Activation P	olicy			Use System Default	*		
Forward All	anesh franco f	L or			<pre>< None ></pre>	-		
Secondary Calling S	earch Space f	or Forward	SI		< None >			
Forward Busy Intern	nal .	L or			<pre>< None ></pre>			
Forward No Answer	Internal	L or	-		<pre>< None ></pre>			
Forward No Answer	External	L or			< None >			
Forward No Coverage	ne Internal	L or			< None >	-		
Forward No Coverag	ne External	L or			< None >			
Forward on CTI Faile	ure	Ear						
Forward Unregistere	ed Internal	For	-		< None >			
Forward Unregistere	ed External	□ or			< None >			
No Answer Ring Dura	tion (seconds	.)						
Call Pickup Group		< None >						
MLPP Alternate Par	ty Settings-							
Target (Destination)	() second							
MLPP Calling Search !	space	< N	one >					
MLPP No Answer Ring	Duration (se	(conds)						
Line Settings for All	Devices —							
Hold Reversion Ring ((seconds)	puration	featuri	2	Se	tting the Hold Reversion Ring Duration to ze	ro will disable ti		
fold Reversion Notific seconds)	ation Interva	1		Se	tting the Hold Reversion Notification Interval	to zero will		
		disable	the feature					
Line 1 on Device A/	LN/S4/SUO	/O@Ent1_B	r1.Ent1.com	Rivelan and for a line	and a later deal for disclosing the back			
Caller ID)	instead of a d	firectory nur	nber for internal calls. D	f you specify a number, t	the person receiving a call may not see the p	proper identity		
ASCII Display	or the caller.							
(Internal Caller ID)								
External Phone	415371XXXX							
Multiple Call/Call W Note: The range to se	lect the Max	gs on Devic Number of c	e AALN/S4/SUD/O@E alls is: 1-2	nt1_Br1.Ent1.com				
Maximum Number of	Calls*		2					
Susy Trigger*			1		(Less than or equal to Max. C	alls)		
Forwarded Call Info	ormation Disp	play on Dev	ice AALN/S4/SU0/06	Ent1 Br1.Ent1.com				
Caller Name								
Caller Number								
Redirected Numbe	r							
Poialed Number	ith Line —							
Users Associated w	the second s	the second se						
Users Associated w	ssociate End	Users						
Users Associated w	Reset	d New						
Users Associated w	Reset Ad	Id New						

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	Enterprise	1 HQ	Cisco	Unified	CM	Example	Configuration
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Figure 82 Device Gateway Enterprise 1 HQ VG224 Cisco Unified CM Administration Window

cisco	Cisco Unified CM Adr For Cisco Unified Communications	ninistration Solutions			Navig	ation Cisco I	Unified CM . admin	Administratio	n 💌 🖸
System 👻	Call Routing 👻 Media Resources 👻	Voice Mail 👻 Device 👻 A	pplication 👻	User Managemer	nt 👻 🛛 Bulk Ad	ministration 👻	Help 👻		
Gateway	Configuration					Related Li	inks: Bacl	k To Find/Lis	t 🗾 G
🔜 Save	🗙 Delete Paset 🕂 Add New	V							
— Status — (i) Statu	ıs: Ready								
—Gateway	/ Details								
Product		VG224							
Gateway		SKIGW0C863972F5							
Protocol Mae Addre	acc (Last 10 Characters)*								
Mac Auure	ess (Last ID Characters)	0C863972F5							
Descriptio	n	Ent1-HQ-VG224							
Cisco Unif	fied Communications Manager Group*	Default		•					
- Configure	ed Slots, VICs and Endpoints								
Module III		a	-						
		2/0/ 0 🚟	2/0/ 1 🗰	2/0/ 2 🖵	2/0/ 3 🛡	2/0/ 4 🛡	2/0/ 5 🛡	J	
2/0/ 6	🎬 2/0/ 7 🗳	2/0/ 8 🗳 🛛 2/0/ 9 🗳	2/0/10 🗳	2/0/11 🗳					
2/0/12	😴 2/0/13 😴	2/0/14 🔮 2/0/15 🔮	2/0/16 🗳	2/0/17 🗳					
2/0/18	2/0/19 🗳	2/0/20 🗳 2/0/21 🗳	2/0/22 🗳	2/0/23 🗳					
- Save	Delete Reset Add New								
(i) *- ind	dicates required item.								27372

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Figure 83 Device Gateway Enterprise 1 HQ VG224 ANA 1050 Cisco Unified CM Administration Window

abole Cisco Unified CM Administr	ation		Navigation Cisco U	Inified CM Admir	istration
CISCO For Cisco Unified Communications Solutions				admin Al	oout l
stem ▼ Call Routing ▼ Media Resources ▼ Voice Mail ▼	Device - Application -	🔹 User Management 👻	Bulk Administration 👻	Help 🔻	
one Configuration		Related	Links: Back to Gat	eway	
] Save 🗙 Delete 📋 Copy 💁 Reset 🕂 Add New	,				
Status: Ready					
-					
Issociation Information	Phone Type Ar	alog Phone			
Moury Button Items	Device Protocol: SC	CP			
The Line [1] - 1000 In Particuli-HQ Phones Analog					
Unassigned Associated Items	Device Information	Registered with Cisco	Unified Communicati	one Managor 1(1 40 07 2
	IP Address	10.40.97.254	onned communicad	ons Manager 10	7.40.57.2
	MAC Address*	0C863972F5400			
	Description	415555XXXX			
	Device Pool*	DevicePool_HQ_Ana	log_Phones	View D	<u>etails</u>
	Common Device Configuration	< None >		View D	<u>atails</u>
	Phone Button Template*	Standard Analog		•	
	Common Phone	Standard Common F	hone Profile	•	
	Calling Search Space	CSS-HQ Phones An	aloq	•	
	Media Resource			-	
	Group List				
	Location*	Hub_HQ		•	
	User Locale	< None >		-	
	Network Locale	< None >		•	
	Device Mobility Mode*	Default		View C	<u>urrent</u>
	Owner Licer ID	Device Mobility Settin	<u>qs</u>		
		< None >		•	
	M Is Active				
	I Ignore Presentati	on Indicators (interna	calls only)		
	Allow Control of D	evice from CTI			
	Logged Into Hunt	Group			
	Remote Device				
	Protocol Specific In	formation			_
	Presence Group*	Standard	Presence group		-
	Device Security Profile	e* Analog P	hone - Standard SCCI	P Non-Secure P	
		earch Space < None :	,		•
	🗖 Unattended Port				
	MLPP Information-				
	MLPP Domain	< None >		•	
	MLPP Indication*	Default		•	
	MLPP Preemption*)efault		•	
Rave Delete Copy Boset Add New					
Jave Delete Copy Reset Add New					
/ *- indicates required item.					

(i) **- Device reset is not required for changes to Packet Capture Mode and Packet Capture Duration.

(i) ***Note: Security Profile Contains Addition CAPF Settings.

Γ

Figure 84 Device-Gateway Enterprise 1 HQ VG224 ANA 1050 Line Cisco Unified CM Administration Window

Save Cele Status Status: Ready Directory Number irrectory Number* icoute Partition	te 🎦 Reset 🖓 Add New				
Status Status: Ready Directory Number irectory Number* ioute Partition	2				
Directory Number Directory Number*					
Directory Number* Route Partition	Information				
Route Partition	1050				
Description	Partition-HQ_Phones_Ana	log 💌			
Alerting Name	1050				
ASCII Alerting Name	, ,				
R Allow Control of	Device from CTI				
Associated Devices	AN0C863972F5400		Edit Davisa		
			Edit Line Appear	ance	
Dissociate Devices	V n				
Directory Number	Settings				
Voice Mail Profile	< None >		Choose <	None> to use system default)	
Carling Search Spac	CSS-HQ_Phor	es_Analog	-		
User Hold MOH Aud	io Source 1-SampleAuto	oSource			
Network Hold MOH	Audio Source 1-SampleAudi	oSource	•		
AAR Settings					
AAR [Voice Mail	AAR Dest	ination Mask	AAR Group	
Retain this des	ination in the call	·			
forwarding history	2				
Call Ferward and	Call Pickup Settings	Deal	ination	Calling Search Space	
Calling Search Spa	ce Activation Policy	Desi	Inetion	Use System Default	
Forward All	[] or	· · · · · ·		< None >	
Secondary Calling	Search Space for Forward Al			< None >	
Forward Busy Inte	mal 🗖 or	-		< None >	×
Forward Busy Exte	rmal 🗆 or			< None >	*
Forward No Answe	r Internal 🗌 or			< None >	
Forward No Answe	er External 🗌 or			< None >	*
Forward No Cover	age Internal 🔲 or			< None >	×
Forward No Cover	age External 🗌 or			< None >	
Forward on CTI Fa	ilure 🗆 or			< None >	
Forward Unregiste	red Internal 🗌 or			< None >	*
Forward Unregiste	red External 🗖 or			< None >	*
Call Pickup Group	(seconds)				
			_		
Target (Destination) Settings				
MLPP Calling Search	Space < No	ne >	*		
MLPP No Answer Rin	ng Duration (seconds)				
Line Settings for A	II Devices				
Hold Reversion Ring (seconds)	Duration the feat	JT 9	Sett	ing the Hold Reversion Ring Duration to zen	o will disable
Hold Reversion Noti (seconds)	fication Interval		Sett	ing the Hold Reversion Notification Interval	to zero will
	disable t	he feature			
Line 1 on Device A Display (Internal	N0C863972F5400		Display taxt for a line	annaaranna is intended for displaying text :	such as a
Caller ID)	name instead of a directo	ry number for internal cal	Is. If you specify a nur	mber, the person receiving a call may not se	e the proper
ASCII Display					
(Internal Caller ID)					
External Phone Number Mask	415555XXXX				
Monitoring Calling	< None >				
Multiple - Hite -	malata santa a s				
Note:The range to s	select the Max Number of ca	Is is: 1-2			
Maximum Number o	r cals*	1			
		μ		(Less than or equal to Max. C	ans)
Forwarded Call In	formation Display on Devic	e ANOC863972F5400-			
M Calley Since					
Caller Name	per				
Caller Number					
Caller Number Caller Number Redirected Numb Dialed Number					
Caller Number	with Line				
Caller Number	with Line Associate End Users				
R Camer Name R Caller Number R Redirected Numb R Dialed Number Users Associated	with Line Associate End Users				
Caller Number Caller Number Redirected Numl Dialed Number Users Associated Save Delete	Associate End Users Reset Add New				
Came Name	with Line Associate End Users				

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Device: Phone Parameters

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To configure the device phone parameters for the Cisco Unified CM, click **Device > Phone** menu in the Cisco Unified CM Administration window.

Figure 85 Device Phone 4155551000 Cisco Unified CM Administration Window

e Configuration	dd New	Related Links:	Back To Find/Lot					
an 🗙 cana 🗍 cata 🖉 perte 👌 y								
Status: Feady								
Modify Button Items	Product Type: Cito Device Protocalt SCC	a 7971 P						
Line 121 - Add a new DV	-Device Information -	Parista - 1 - 1	and the first frames	1040.07.7				
High Add a new SD High Add a new SD	IP Address MAC Address	10.40.97.75	usco united Communications Manager	NA0.97.2				
Ver Add a new 10	Description	4155551000						
Readed a new 50 Readed a new 50	Common Device Configuration	<pre>chone ></pre>	P_Phones 💌 View	Details Details				
Rg Add a new 50	Phone Button Template*	Standard 7971 1	co#					
Wg Add a new SQ	Common Phone Profile	Standard User	on Phone Profile					
0 Add a new Suff.	Calling Search Space AAR Calling Search	<none></none>	2					
2 Add a new BLF Dreshed Call Park	Madia Resource Group List	HQ HW MRGL						
3 Caliback 4 Cali Park	User Hold MOH Audio Source Network Hold MOH	1-SampleAudioS						
5 Call Pickup 6 Conference List	Audio Source Location*	Hue,HQ	2					
7 Contenence 8 Do Not Disturts 9 Red Call	User Locale	< None >						
0 Forward All	Network Locale Built In Bridge*	< None > Default	2					
2 Hold 3 Hard Group Loopud	Privacy* Device Mobility Mode*	Default.	2					
Interior [1] - Add a new Interior	Owner User ID	Cence Mobility Se < None >	ntous 💌					
5 Makious Call Identification 6 Meet Me Conference	Phone Personalization Phone Load Name	Default	3					
7 Mobility 8 New Call	Single Button Barge	Default						
9 Other Pickup 0 Quality Reporting Tool	III Is Active Join Across Lines	Default						
2 Pamove Last Participant	Retry Video Call as.	Audio n Indicators (intern	al calls only)					
3 mananer 4 Video Mode	R Alow Control of De	vice from CTI						
6 None	E Remote Device							
	Protocol Specific Infe Packet Capture Mode*	Itane						
	Packet Capture Durate	on [0	of Parameter and a	5				
	Device Security Profile*	Cieco 7	9 Presence group 271 - Standard SCCP Non-Secure Profi	ā				
	C Unattended Port	even tiplace (< twone	>	2				
	E Require DINF Recep E RFC2033 Disabled	ption						
	Certification Authorit	y Prove Function ((APF) Information					
	Certificate Operation* Authentication Mode*	Certificates Apartmentry Press Teacters (CAPY) Internation Certificate Operation Authentication Mode Instal Draw						
	Authentication String	Authentication String						
	Key Size (Mts)* 1004							
	Certificate Operation 5	ter [2000 [11] Ratus None	[12][11] (WYYMM 60044)					
	Note: Security Profile C	contains Addition G	er setings.					
	Module 1	Module 1 C None >						
	Module 2	< None >						
	Hoose 2 coap name [
	External Data Location	ons Information (L	eave blank to use default)					
	Messages							
	Services	0						
	Proxy Server							
	Ide Ide Finer (seconds)							
	Extension Information							
	Enable Extension M	C Enable Extension Mobility Log Out Profile — Use Current Device Settings						
	Log in Time < None Log out Time < None	Log in Time < None > Log out Time < None >						
	18,39 Information							
	MLPP Donain (< None > * MLPP Indication* (Default							
	MLPP Preemption* (De	MLPP Preemption* Default						
	De Net Disturb							
	DND Option* DND Incoming Call Aler	Finger Off	2					
	-Secure Shell Informa	tion						
	Secure Shell User Secure Shell Password							
	-Product Specific /	figuration Learns						
	E hurden and			?				
	C Disable Speakerpho	one and Headoet						
	Forwarding Delay* PC Port *		Disabled Enabled					
	Settings Access* Gratuitous ARP*		tinabled Disabled					
	PC Voice VLAN Access* Video Canadalitias*		Enabled					
	Auto Line Select*		Disabled	-				
	Web Access* Days Display Not Active		Enabled Standar					
	Display On Time		Tuesday D2-30	1				
	Display On Duration		10.30	_				
	Display Ide Timeout Span to PC Port*		01:00 Disabled					
	Logging Display* Load Server		PC Controlled					
	Recording Tone*		Disabled					
	Recording Tone Local V Recording Tone Remot	a Volume*	1:00 50					
	Recording Tone Duratio	on ning Cal*	Prevalent	-				
	RTCP*		Disabled	-				
	"more" Soft Key Timer Auto Call Select*		5 Enabled					
	Log Server Advertise 6 700 Code		Franklant	-				
	Wideband Headset U	Control*	Exabled Exabled	2				
	Wideband Handbet UE Wideband Headbet*	Control*	Enabled Enabled					
	Wideband Handset*		Use Phone Default					
	Cisco Discovery Protoo	of (CDP): Switch	Enabled	-				
	Cisco Discovery Protoci Link Layer Discovery Pro	ol (CDP): PC Port* rotocol - Media	Enabled Enabled					
	Endport Doolover (LLT	P-MEDI Switch						
	Port* Link Layer Discourse In	PRI 192.L0 locoter	Erabled					
	Port* Link Layer Discovery Pr Port* LLDP Asset 30	rotocol (JLD#3) PC	Enabled	-				
	Port* Link Layer Discovery In Port* LLDP Asset 30 LLDP Power Priority*	rotocol QLDP3 PC	Enabled Unincen	2				

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Figure 86 Device Phone 1000 Cisco Unified CM Administration Window

cisco For Cisco Un	fied Communications Solutions	on	admin About Logo
stern • Call Routing •	Media Resources • Voice Mail • Dev	ice • Application • User Manager	ment • Duk Administration • Help •
rectory Number Conl	iguration	Rela	ted Links: Configure Device (SEP00187371C3FA)
Save 🗶 Delete 🍸	Reset Car Add New		
Status: Ready			
Sirectory Number Infor	matien		
birectory Number* 100	0		
escription 100	tton HQ_Phones_IP 0	<u> </u>	
Verting Name			
SCII Alerting Name	(T)		
Allow Control of Device Issociated Devices SEF	e from CTI 00187371C3FA		
		Edit Device Edit Line Appearan	CP
	~		
Dissociate Devices			
Directory Number Setti	nęs		
Calling Search Space	CSS-HQ_Phones_IP	Choose <no< td=""><td>ne> to use system default)</td></no<>	ne> to use system default)
resence Group*	Standard Presence group		
/ser Hold MOH Audio So. Wtwork Hold MOH Audio	Source 1-SampleAudioSource		
uto Answer*	Auto Answer Off		
AAR Settings			
M8 E.w.	Yoice Mail	AAR Destination Mask	AAR Group
Retain this destination	in in the call		Franks 21
forwarding history			
Cell Forward and Call P	ickup Settings Voice Nail	Destination	Calling Sparsh Source
Calling Search Space Ad	tivation Policy	o contraction of the second se	Use System Default
Forward All	l or		< None >
Secondary Calling Searc	h Space for Forward All		<none></none>
Forward Busy External	P or I		CSS-HQ_Phones_IP
Forward No Answer Inte	emal Por		CSS-HQ_Phones_IP
Forward No Answer Ext	amal P or		CSS-HQ_Phones_IP
Forward No Coverage In	temal P or		< None >
Forward No Coverage E	stemal Por		< None >
Forward Unregistered In	ternal Por		CSS.HD Phones IP
Forward Unregistered E	stemal P or		CSS-HQ_Phones_IP
Vo Answer Ring Duration	(seconds) 5		
call Procup Group	< None >	1	
MLPP Alternate Party S	ettings		
4LPP Calling Search Spat	e < None >		
4LPP No Answer Ring Du	ration (seconds)		
Line Settings for All De	rices		
Hold Reversion Ring Dura (seconds)	tion the feature	Setting	the Hold Reversion Ring Duration to zero will disable
fold Reversion Notificatio seconds)	in Interval disable the feature	Setting	the Hold Reversion Notification Interval to zero will
Display (Internal Caller	18737103FA	Display text for a lin	ne appearance is intended for displaying text such as a
10)	name instead of a directory number proper identity of the caller.	for internal calls. If you specify a n	sumber, the person receiving a call may not see the
ASCII Display (Internal Caller ID)			
Line Text Label			
ASCII Line Text Label			
Number Mask	P425551XXXX		
visual Message Waiting Indicator Policy*	Use System Policy	2	
Audible Message	Off		
Policy*	Inte Routen Bala 7	-	
Idle)*	Jose System Deniut		
rung Setting (Phone Active)	Juse System Default	Applies to this line	when any line on the phone has a call in progress.
Call Pickup Group Audio Alert Setting	Use System Default	2	
Call Pickup Group	Use System Default		
Audio Alert Setting (Phone Active)	· · · · · · · · · · · · · · · · · · ·		
Recording Option*	Call Recording Disabled		
Monitoring Calling	< None >		
Search Space			
Hultiple Call/Call Walti iote:The range to select	ng Settings on Device SEP0018737) the Max Number of calls is: 1-200	IC3FA	
faximum Number of Calls	• 4		
usy Trigger*	2		(Less than or equal to Max. Calls)
Forwarded Call Informa	tion Display on Device SEP0010733	/103/A	
Caller Name			
P Redirected Number			
R Dialed Number			
Users Associated with I	line		
Assoc	iate End Users		
Save Delate Das	et Add New		
I - indicates required	I item.		
Changes to Line	or Directory Number settings require	restart.	

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Enterprise 1 HQ Cisco Unified CM Example Configuration

Figure 87 Device Phone 4155551170 Cisco Unified CM Administration Window

Configuration	Referred Links: Rack to English						
an and a contract of the second of the secon							
ciation Information	Phone Tape						
Modify Button Items	Product Type: City Device Protocal: SCO	a 7961 9					
Line [2] - Add a new Dis	-Device Information -	Registered with C	son Unified Communications Man	ater 10.40.97.2			
High Add a new SD High Add a new SD	IP Address INAC Address	33.40.103.70 Occupiente 76					
Vgs Add a new SD	Cescription	4155551170					
	Common Device	< None >	p_mores	one petals one petals			
Ng Add a new 10	Phone Button Template	Standard 7961 S	ccp 📃				
Add a new BUT SD	Softles Template Common Phone Profile	Standard User	n Phone Profile				
Add a new BUT Directed Call Park	Calling Search Space AAR Calling Search	CSS-Br1_Phones					
Call Park	Space Media Resource Group	Brit HW MRGL	2				
Call Polyp Conference List	User Hold MOH Audio Source	1-SampleAudioS					
Conterence De Not Disturts	Network Hold MOH Audio Source Location*	1/SampleAudioS					
End Call Forward All	AMI Group	<none></none>	2				
Hold	Network Locale	< None >	2				
Intercom [1] - Add a new Intercom	Built In Bridge* Prinacy*	Default					
Malicious Call Identification Meet Me Conference	Cevce Mobility Mode*	Default Device Mobility Se	204	Arm Current			
Mobility New Call	Owner User 3D Phone Personalization	<none></none>	-				
Other Pickup Quality Reporting Tool	Phone Load Name	[mate at	2				
Redial Remove Last Participant	E is Active	Default	2				
Transfer V/deo Mode	Join Across Lines IF Retry Video Call as	Default	2				
Privacy None	Coprore Presentatio	n Indicators Onterna	r calls only)				
	F Logged Into Hunt (iroup					
	C Remote Device						
	Protocol Specific Inf Packet Capture Mode*	None					
	Packet Capture Durati Presence Group*	on lo Standar	f Presence prout				
	Cevca Security Profile	Cisco h	61 - Standard SCCP Aon-Secure I	* inore			
	C Unattended Port	non special c tapea	,	-			
	E Require DTHE Rece E REC2033 Disabled	ption					
	-Certification Authorit	p Provy Function ((APF) Information				
	Certificate Operation* Authentication Mode*	No Pending	Operation.				
	Authentication String						
	Constant Store						
	Operation Completes By 2008 12 27 12 0707:MML00:He0 Certificate Operation Status: None						
	Note: Security Profile Contains Addition CAPF Settings.						
	Expansion Module Information Module 1 (None >						
	Noble 1 Loof Name Noble 2 Chone >						
	Midule 2 Load Name						
	External Data Locato Information	External Data Locations Information (Leave blank to use default)					
	Overtary						
	Services						
	Authentication Server Proxis Server						
	1de Ma Tatar (raisoch)						
	C Enable Extension M	lobiity					
	Log Out Profile - Use Log in Time < None	Current Device Set	nga 👱				
	Log out time < None						
	MLPP Information	ND10 >					
	MUPPIndication* [Or MUPPIndication* [Or	RJP Indexton* Orbuit B RJP Preemption* Orbuit B					
	- De Nat Distarb						
	ChO Option*	Const Cellars Const Cellars Const Cellars Kinger Off (#)					
	CND Incoming Call Ne	t chone >	2				
	Secure Shell Informa	ition					
	Secure theil Password	i					
	Product Specific Con	Reportion Levout-		-			
	E Disable Speakerph	ine .		?			
	E Disable Speakerphy Forwarding Delay*	ine and ineaduet.	Detailed				
	PC Port.*		Inabled	1			
	Gratuitous APP*		Dnabled	-			
	PC Voice VLAN Access* Video Capabilities*		Enabled Disabled				
	Auto Line Select*		Disabled Tradied				
	Soun to PC Port*		Disabled	-			
	Logging Display* Load Server		PC Controlled	2			
	Recording Tone* Recording Tone Local	dune*	Dinabled 100	2			
	Recording Tone Remot	s Volume*	50				
	Recording Tone Durab	91	Disabled				
	"more" Soft Key Timer		5				
	Log Server		to-abled	1			
	Advertise 0.722 Codex Wideband Headset LD	Control*	Disabled Enabled	-			
	Wideband Handbet UE	Control*	Enabled	2			
	Wideband Headoet* Wideband Handoet*		Use Phone Default	2			
	Peer Firmware Sharing Oscie Discovery Protect	el (cor): Switch	Disabled Enabled	-			
	Port* Cisco Discovery Protoc	ol (CDP): PC Port*	Enabled				
	Lini Layer Discovery P Endpoint Discover (ULS Port®	rational - Media of-MED3: Switch	Enabled	-			
	Link Layer Discovery P Port*	rutocol (LLDP): PC	Enabled				
	SAMP PROPERTY IN						
	LLOP Power Priorits*		Urknown	-			

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Figure 88 Device Phone 1170 Cisco Unified CM Administration Window

rectory Number Cont	Media Resources • Voice 1	Mail • Device • Application •	Oser Management	I • Bulk Administration • Help •	
	figuration		Related	Links: Configure Device (SEP0019EBA8	8E7B) 💌
Save 🗙 Delete 🦞	Reset 🛟 Add New				
Status: Ready					
Directory Number 1117	ninetion				
Route Partition Par	tition-Br1_Phones_IP				
Verting Name	10				
ASCII Alerting Name					
Allow Control of Device	e from CTI				
associated Devices SEE	P0019E8A88E78	Edit Dev	ice		
		Edit L	ine Appearance		
	**				
Instantion Devices					
Directory Number Setti Voice Mail Profile	< None >		(Choose «None»	to use system default)	
Calling Search Space	CSS-Br1_Phones_	Ib 🖌			
Presence Group*	Standard Presence	e group			
Network Hold MOH Audio	Source 1-SampleAudioSou	arce			
luto Answer*	Auto Answer with	Speakerphone			
AAR Settings					
	Voice Mail	AAR Destination Ma	sk	AAR Group	-
Retain this destination	no in the call			< None >	
forwarding history					
Cell Forward and Cell P	Pickup Settings				
Calling Search Space Ar	Voice Mail	Destination		Calling Search Space	
Forward All	E or E			< None >	
Secondary Calling Searc	th Space for Forward All			< None >	
Forward Busy Internal	E or E			< None >	
Forward Busy External	C or			< None >	
Forward No Answer Inte	ernal Cor			< None >	
Forward No Answer Ext	emai Cor			< None >	
Forward No Coverage I	nternal C or			< None >	
Forward no Coverage E	sternal Dor			< None >	-
Forward Unregistered In	nternal E or			< None >	
Forward Unregistered E	sternal Cor			< None >	
No Answer Ring Duration	(seconds)				
Call Pickup Group	< None >		*		
MI PD Alternate Party S	settings-				
the state state state states a					
Target (Destination)					
Farget (Destination) #LPP Calling Search Spai #LPP No Answer Ring Du	ce < None >				
Farget (Destination) MLPP Calling Search Spar MLPP No Answer Ring Du	ce < None > ration (seconds)				
Farget (Destination) MLPP Calling Search Spai MLPP No Answer Ring Du Line Settings for All De Hold Reversion Ring Dura	ce < None > ration (seconds) vices		Catting the	a Mold Reversion Sino Duration to zero wil	disable
Farget (Destination) MLPP Calling Search Spa MLPP No Answer Ring Du Line Settings for All De fold Reversion Ring Dura (seconds)	ce <hr/> <hr< td=""><td></td><td>Setting the</td><td>e Hold Reversion Ring Duration to zero wil</td><td>disable</td></hr<>		Setting the	e Hold Reversion Ring Duration to zero wil	disable
Farget (Destination) ALPP Calling Search Spar ALPP No Answer Ring Du Line Settings for All De fold Reversion Ring Dura Seconds) fold Reversion Notificatio seconds)	ce <a>	sature	Setting the	e Hold Reversion Ring Duration to zero will e Hold Reversion Notification Interval to ze	disable ro will
Farget (Destination) MLPP Calling Search Spa MLPP No Answer Ring Du Line Settings for All De told Reversion Ring Dura (seconds) cold Reversion Notificatio (seconds)	ce (< None > rration (seconds) vices uices the feature disable the fe 0.19E0AB0E78	bature	Setting the	e Hold Reversion Ring Duration to zero will e Hold Reversion Notification Interval to ze	disable ro will
Farget (Destination) MLPP Calling Search Spaa MLPP No Answer Ring Du Line Settings for All Oe (Hold Reversion Ring Dura (seconds) 40(d Reversion Notificati (seconds) Line 1 on Device SLPOD Display (Internal Caller 10)	ce CNDRESS	aðure Displ	Setting the Setting the	e Hold Reversion Ring Duration to zero wil e Hold Reversion Notification Interval to ze opearance is intended for displaying text	disable ro will such as a
Farget (Destination) MLPP Calling Search Spaa MLPP No Answer Ring Du Line Settings for All De Line Settings for All De (seconds) 40id Reversion Notificatic seconds) Line 1 on Device SLPDD Display (Internal Caller 10)	ce rabon (seconds) vices tion n Interval disable the fi o19E0AB0677B name instead of a direct proper-identify of the call	Pature Displ ery number for internal calls. If y er.	Setting the Setting the ay text for a line a rou specify a numb	Hold Reversion Ring Duration to zero will Hold Reversion Notification Interval to zero experience is intended for displaying text per, the person receiving a call may not se	disable ro will such as a e the
Farget (Destination) MLPP Calling Search Spa MLPP No Answer Ring Du Line Settlags for All De- told Reversion Ring Dura seconds) Vold Reversion Notificatio seconds) Line 1 on Device SLPOO Display (Internal Caller ID) ASCII Display (Internal Caller ID)	ce CNNRE> ration (seconds) bion the feature on Interval disable the fi olociable 78 name instead of a direct; proper identity of the call	Dirpl ory number for internal calls. If y erc	Setting the Setting the Setting the ay text for a line a rou specify a numb	Hold Reversion Ring Duration to zero will Hold Reversion Notification Interval to ze opearance is intended for displaying text ber, the person receiving a sail may not se	disable ro will such as a e the
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Device: Trunk Parameters

To configure the device trunk parameters for the Cisco Unified CM, click **Device** > **Trunk** menu in the Cisco Unified CM Administration window.



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	10.80.80.82	Ent1-Br1- CUBE1	<u>CSS-</u> Br1 Phones IP	DevicePool WAN	<u>9.1xxxxxxxxxx</u>	<u>Partition-</u> <u>Br1 Phones Analog</u>			SIP Trunk	<u>Non</u> <u>Secure</u> <u>SIP</u> <u>Trunk</u> <u>Profile</u>
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Figure 90 Device Trunk Enterprise 1 HQ CUBE1 Phones Analog Cisco Unified CM Administration Window

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Figure 91 Device Trunk Enterprise 1 HQ CUBE1 Phones IP Cisco Unified CM Administration Window

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Connected Name Presentatio	n* Default				-		
Calling Search Space	CSS-HO	_Phones_IP		1	-		
AAR Calling Search Space	< None	>		1	•		
Prefix DN							
Redirecting Diversion Head	der Delivery -	- Inbound					
Outbound Calls							
Calling Party Selection*	Last Redire	ct Number (Ext	ernal)	•			
Calling Line ID Presentation*	Default			•			
Caller ID DN	Default			<u> </u>			
Caller Name							
Redirecting Diversion Hear	dor Dolivory	Outbound					
C Redirecting Diversion Head	Jer Delivery	outbound					
IP Information							
Stination Address*	1	10.10.11.151					
Destination Address is an 5 estination Port*	JRV F	5090					
	ec* F	711ulaw			T.		
TP Preferred Originating Code	5	Standard Prese	nce group				
TP Preferred Originating Code esence Group*		Non Secure SIP	Trunk Prof	ile	•		
TP Preferred Originating Code esence Group* P Trunk Security Profile*	ſ				×		
TP Preferred Originating Cod('esence Group* IP Trunk Security Profile* erouting Calling Search Space	• [< None >					
TP Preferred Originating Codi esence Group* P Trunk Security Profile* erouting Calling Search Space ut-Of-Dialog Refer Calling Sea	e rch Space	< None > < None >			•		
TP Preferred Originating Codi resence Group* IP Trunk Security Profile* arouting Calling Search Space ut-Of-Dialog Refer Calling Sea JBSCRIBC Calling Search Space	e i arch Space i ce i	< None > < None > < None >			×		
TP Preferred Originating Codi resence Group* (P Trunk Security Profile* arouting Calling Search Space ut-Of-Dialog Refer Calling Sea JBSCRIBE Calling Search Spai P Profile*	e arch Space .	< None > < None > < None > Standard SIP Pr	ofile		×		
TP Preferred Originating Codi resence Group* IP Trunk Security Profile* erouting Calling Search Space ut-Of-Dialog Refer Calling Sea JBSCRIBE Calling Search Spai IP Profile* IMF Signaling Method*	e	< None > < None > < None > Standard SIP Pr No Preference	ofile		• • •		
TP Preferred Originating Codi resence Group* IP Trunk Security Profile* rrouting Calling Search Space ut-Of-Dialog Refer Calling Sea J8SCRIBE Calling Search Space P Profile* IMF Signaling Method*	e [arch Space] ice] [Add New	< None > < None > < None > Standard SIP Pr No Preference	ofile		× ×		
TP Preferred Originating Codi esence Group* P Trunk Security Profile* irouting Calling Search Space ut-Of-Dialog Refer Calling Sea BSCRIBE Calling Search Spa P Profile* IMF Signaling Method* Save Delete Reset - indicates required item	e [arch Space [ice [Add New	< None > < None > < None > Standard SIP Pr No Preference	ofile		× ×		

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Figure 92 Device Trunk Enterprise 1 Branch 1 CUBE1 Phones Analog Cisco Unified CM Administration Window

stem Classical Control Contro	SU CM A	dministra	tion			Navigation Cisco Ur	nified CM A	dministrati	ion 🗾
stem ◆ Call Routing ◆ Medi	Communicatio	ons Solutions	Denter	Annelise			admin	About	Logi
	a Resources 👻	Voice Mail 👻	Device 👻	Application 👻	User Management 👻	Bulk Administration +	нер 🕶		
unk Configuration						Related Links:	Back To	Find/List	-
🚽 Save 🗙 Delete 🍟 Res	set 🛟 Add N	lew							
status									
Status: Ready									
Device Information									
roduct:	SIP Trunk								
evice Name*	10.80.80.82								
escription	Ent1-Br1-CUF	3E1							
evice Pool*	DevicePool_V	NAN		•					
ommon Device Configuration	< None >			•					
all Classification*	Use System (Default		¥					
edia Resource Group List	Br1 HW MRG	L		•					
ocation*	Trunk Br1			•					
AR Group	< None >			•					
acket Capture Mode*	None			•					
acket Capture Duration	0								
Media Termination Point Reg	quired								
Retry Video Call as Audio									
Transmit UTF-8 for Calling P	arty Name								
Unattended Port									
fultilevel Precedence and Pr LPP Domain < None >	reemption (M	LPP) Informat	tion						
all Routing Information									
Inbound Calls									
Significant Digits*	4								
Connected Line ID Presentation	on* Default								
Connected Name Presentation	n* Default			•					
Calling Search Space	CSS-Br1	_Phones_IP		•					
AAR Calling Search Space	< None :	>			9				
Redirecting Diversion Head	ter Delivery - I	Inbound							
Outbound Calls									
Calling Party Selection*	Originator			•					
Calling Line ID Presentation*	Default			•					
Calling Name Presentation*	Default			•					
Caller ID DN									
Caller Name									
caller Mallie	der Delivery - (Outbound							
Redirecting Diversion Head									
Redirecting Diversion Head									
Redirecting Diversion Head IP Information estination Address*	10).80.80.82							
Redirecting Diversion Heac IP Information estination Address* Destination Address is an S	RV).80.80.82							
Redirecting Diversion Heac IP Information estination Address* Destination Address is an Si estination Port*	RV SO).80.80.82							
Redirecting Diversion Heac IP Information estination Address* Destination Address is an S estination Port* TP Preferred Originating Code	RV 80* 73	0.80.80.82 060 11ulaw			Y				
Redirecting Diversion Heac IP Information estination Address* Destination Address is an Si estination Port* TP Preferred Originating Code resence Group*	RV 50 ec* 7: 51	0.80.80.82 060 11ulaw :andard Presen	ce group		×				
Caller Hallie Redirecting Diversion Head IP Information estination Address* Destination Address is an S estination Port* TP Preferred Originating Code resence Group* IP Trunk Security Profile*	RV 80 ec* 72 St No	0.80.80.82 060 11ulaw tandard Presen on Secure SIP 1	ce group Trunk Profil	e	×				
Caller Mallie Redirecting Diversion Head IP Information estination Address* Destination Address is an S estination Port* TP Preferred Originating Code resence Group* IP Trunk Security Profile* arouting Calling Search Space to of Bicher Dafa Origination Space	II RV ec* 7: St No 3	0.80.80.82)60 11ulaw tandard Presen on Secure SIP T None >	ce group Trunk Profil	e	×××				
Caller Name Redirecting Diversion Head IP Information estination Address* Destination Address is an S estination Port* TP Preferred Originating Code resence Group* IP Trunk Security Profile* erouting Calling Search Space ut-Of-Dialog Refer Calling Sea	اللہ (10 RV) ec* [7]: المر ع اللہ (2 arch Space (2)	0.80.80.82 160 11ulaw candard Presen on Secure SIP T None > None >	ce group Trunk Profil	e	××××				
Caller Name Caller Name Redirecting Diversion Head SIP Information estination Address* Destination Address is an Si estination Port* TP Preferred Originating Code resence Group* IP Trunk Security Profile* erouting Calling Search Space ut-Of-Dialog Refer Calling Sea UBSCRIBE Calling Search Spa	II IRV SC ec* IST IN IN	0.80.80.82 0.60 11ulaw tandard Presen on Secure SIP T None > None > None >	ce group Trunk Profil	e	× × ×				
Caller Name Caller Name Redirecting Diversion Head SIP Information estination Address* Destination Address is an Si estination Port* TP Preferred Originating Code resence Group* IP Trunk Security Profile* erouting Calling Search Space ut-Of-Dialog Refer Calling Search Space UBSCRIBE Calling Search Space IP Profile* TP Foignaling Method*	III RV ec* 77 St st st srch Space < ce < St	0.80.80.82 160 11ulaw tandard Presen on Secure SIP 1 None > None > None > andard SIP Pro- andard SIP Pro-	ice group Frunk Profil	e					
Caller Name Caller Name Redirecting Diversion Heac SIP Information estination Address is an S estination Port* TP Preferred Originating Code resence Group* IP Trunk Security Profile* erouting Calling Search Space ut-Of-Dialog Refer Calling Search DBSCRIBE Calling Search Space UBSCRIBE Calling Search Space TMF Signaling Method*	11 RV ec* [7: 14 14 15 14 14 14 14 14 14 14 14 14 14	0.80.80.82 0.60 11ulaw tandard Presen on Secure SIP T None > None > None > None > andard SIP Pro p Preference	ce group Frunk Profil	e	Y Y Y Y Y				
Redirecting Diversion Head Redirecting Diversion Head SIP Information Setination Address Destination Address Destination Address TP Preferred Originating Code resence Group* IP Trunk Security Profile* erouting Calling Search Space ut-Of-Dialog Refer Calling Sea UBSCRIBE Calling Search Space UBSCRIBE Calling Search Space TP Forfile* TMF Signaling Method* Save Delete Reset	II RV ec* 77 state state arch Space < ce < St Nu St St Nu Add New	0.80.80.82 0.60 11ulaw tandard Presen on Secure SIP T None > None > None > tandard SIP Pro- tandard SIP Pro- S	ce group frunk Profil ofile	e	× × × ×				
Caller Mallie Redirecting Diversion Head Caller Mallie SIP Information SIP Information SIP Information Address Destination Address Destination Address TP Preferred Originating Code resence Group* IP Trunk Security Profile* routing Calling Search Space ut-Of-Dialog Refer Calling Sea UBSCRIBE Calling Search Space UBSCRIBE Calling Search Space IP Profile* TMF Signaling Method* Save Delete Reset	II RV ec* 77 state state arch Space < ce < St Nu Add New	0.80.80.82 0.60 11.ulaw tandard Presen on Secure SIP T None > None > None > tandard SIP Pro- tandard SIP Pro- p Preference	ce group frunk Profil	e	Y Y Y Y				
Caller Name Redirecting Diversion Head SIP Information Estination Address Destination Address is an Si estination Port* TP Preferred Originating Code resence Group* IP Trunk Security Profile* erouting Calling Search Space ut-Of-Dialog Refer Calling Search UBSCRIBE Calling Search Space UBSCRIBE CALL Space	III RV sRV ec* 77 St Nu P e < srch Space < ce < St Nu Nu Add New	0.80.80.82 060 11ulaw tandard Presen on Secure SIP T None > None > None > tandard SIP Pro o Preference	ce group frunk Profil	e	X X X X X				

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Figure 93 Device Trunk Enterprise 1 Branch 1 CUBE1 Phones IP Cisco Unified CM Administration Window

diada Cisco Unific	ed CM /	Administr	ation			Navigation Cisco	Unified CM Admir	iistration 💌
For Cisco Unified	Communica	tions Solutions	Device	Application -	Line Mercenet	Dully tylepinishelien	admin Al	bout Log
tem • Call Robbing • Med	la Resources	 Voice Mail + 	Device +	Application 👻	Oser Management •	Buik Administration	• Help •	
nk Configuration						Related Link:	s: Back To Find	/List 👱
) Save 🗙 Delete 🎦 Re	eset 🛟 Ado	i New						
atus —								
Status: Ready								
evice Information								
oduct:	SIP Trunk							
vice Protocol: vice Name*	SIP	2						
scription	Ent1-Br1-C	JBF1						
vice Pool*	DevicePool	WAN						
mmon Device Configuration	< None >			•				
II Classification*	Use Syster	n Default						
adia Resource Group List	Br1 HW MR	GL		•				
cation*	Trunk Br1			•				
R Group	< None >			•				
cket Capture Mode*	None			<u> </u>				
Media Territoria Duration	10							
Redia Termination Point Re	quired							
Transmit LITE-8 for Calling F	Party Name							
Unattended Port	-arcy Name							
fultilevel Precedence and P	reemption (MLPP) Inform	ation					
LPP Domain < None >			•					
all Routing Information —								
Inbound Calls								
Significant Digits*	4			1				
Connected Line ID Presentat	ion* Defaul	:			•			
Connected Name Presentatio	on* Defaul	:		1	-			
Calling Search Space	CSS-Br	1_Phones_IP						
AK Calling Search Space	< None	>			<u> </u>			
Redirecting Diversion Heat	der Delivery	- Inbound						
Outbound Calls								
Calling Party Selection*	Originator			•				
alling Line ID Presentation*	Default			•				
aller ID DN	Default			×				
aller Name								
Redirecting Diversion Line	der Deliver:	- Outbourd						
- Redirecting Diversion Hear	uer Delivery	- Jucouna						
IP Information								
estination Address*	ſ	10.80.80.82						
Destination Address is an S	SRV							
estination Port*	ſ	5060						
TP Preferred Originating Cod	lec* [711ulaw			Y			
esence Group*	[Standard Prese	nce group		×			
P Trunk Security Profile*	[Non Secure SIP	Trunk Prof	file	V			
routing Calling Search Space	e [< None >			•			
uc-or-blaiog keter Calling Se	arcn space	< None >						
P Profile*	ice	< None >	unfile					
F Fishe IMF Signaling Method*	l	standard SIP P	ofile		- -			
	J	NO Preierence			-			
Save Delete Reset	Add New	l ————						
		-						
*- indicates required item	n.							
, indicates required item								

1

Enterprise 1 HQ Cisco Unity and Cisco Unity Express Example Configuration

To integrate the Cisco Unity version 5.0 with Cisco Unified CM configuration, see the Cisco Unified Communications Manager SCCP Integration Guide for Cisco Unity Release 5.0.

Enterprise 1 HQ and Cisco VG224 Analog Phone Gateway Example Configuration

The following is a command-line interface (CLI) configuration example for the enterprise 1 HQ the Cisco VG224 Analog Phone Gateway for the test topology described in Figure 8.

```
Ent1_HQ_VG224#
1
stcapp ccm-group 1
stcapp
1
voice service voip
fax protocol pass-through g711ulaw
modem passthrough nse codec g711ulaw
1
interface FastEthernet0/0
ip address 10.40.97.254 255.255.0.0
 load-interval 30
duplex full
speed 100
Т
interface FastEthernet0/1
no ip address
shutdown
duplex auto
speed auto
1
ip forward-protocol nd
ip route 0.0.0.0 0.0.0.0 FastEthernet0/0
voice-port 2/0
timeouts ringing infinity
caller-id enable
T.
voice-port 2/1
timeouts ringing infinity
 caller-id enable
sccp local FastEthernet0/0
sccp ccm 10.40.97.2 identifier 10
sccp
1
sccp ccm group 1
associate ccm 10 priority 1
1
dial-peer voice 1 pots
service stcapp
port 2/0
T.
dial-peer voice 2 pots
service stcapp
```

I

port 2/1
!
Ent1_HQ_VG224#

Enterprise 1 HQ Cisco ASA Firewall Example Configuration

The following is a command-line interface (CLI) configuration example for the enterprise 1 HQ the Cisco ASA 8.0(4) 5500 Series Adaptive Security Appliances firewall for the test topology described in Figure 8.

```
Ent1-HQ-ASA#
interface Vlan65
nameif inside
security-level 100
ip address 10.40.99.1 255.255.255.0
1
interface Vlan70
nameif outside
security-level 0
ip address 10.40.98.2 255.255.255.0
Т
interface Ethernet0/0
description *** To WAN ***
switchport access vlan 70
!
interface Ethernet0/1
description *** To LAN ***
switchport access vlan 65
ftp mode passive
access-list 100 extended permit icmp any any
access-list 100 extended permit icmp any any echo
access-list 100 extended permit icmp any any echo-reply
access-list 100 extended permit tcp any host 40.40.97.2 eq 2000
access-list 100 extended permit udp any host 40.40.97.2 eq sip
access-list 100 extended permit tcp any host 40.40.97.2 range h323 h323
access-list 100 extended permit tcp any host 10.10.11.151 eq 5090
access-list 100 extended permit udp any host 10.10.11.151 eq 5090
access-list 100 extended permit tcp any host 40.40.97.2 eq 2428
access-list 100 extended permit udp any host 40.40.97.2 eq 2427
pager lines 24
logging enable
logging buffered debugging
logging asdm informational
mtu inside 1500
mtu outside 1500
icmp unreachable rate-limit 1 burst-size 1
asdm image disk0:/asdm-524.bin
no asdm history enable
arp timeout 14400
access-group 100 in interface outside
timeout xlate 3:00:00
timeout conn 1:00:00 half-closed 0:10:00 udp 0:02:00 icmp 0:00:02
timeout sunrpc 0:10:00 h323 0:05:00 h225 1:00:00 mgcp 0:05:00 mgcp-pat 0:05:00
timeout sip 0:30:00 sip_media 0:02:00 sip-invite 0:03:00 sip-disconnect 0:02:00
timeout sip-provisional-media 0:02:00 uauth 0:05:00 absolute
http server enable
no snmp-server location
no snmp-server contact
```

```
Branch 1 Cisco UBE, TDM Gateway, and Cisco Unified SRST Example Configuration
```

```
snmp-server enable traps snmp authentication linkup linkdown coldstart
telnet timeout 5
ssh timeout 5
console timeout 0
class-map sipoutin
match port udp eq 5090
class-map inspection_default
match default-inspection-traffic
!
policy-map type inspect dns preset_dns_map
parameters
 message-length maximum 512
policy-map global_policy
 class inspection_default
 inspect dns preset_dns_map
 inspect ftp
  inspect rsh
  inspect rtsp
  inspect esmtp
  inspect sqlnet
 inspect skinny
 inspect sunrpc
 inspect xdmcp
 inspect sip
 inspect netbios
 inspect tftp
policy-map outsidein
 class sipoutin
 inspect sip
 class inspection_default
 inspect skinny
1
service-policy global_policy interface inside
service-policy outsidein interface outside
prompt hostname context
: end
Ent1-HQ-ASA#
```

Branch 1 Cisco UBE, TDM Gateway, and Cisco Unified SRST Example Configuration

The following is a command-line interface (CLI) configuration example for the branch 1 Cisco Unified Border Element, TDM Switching in the Cisco AS5000 Gateway, and Cisco Unified SRST for the test topology described in Figure 8.

```
Ent1_Br1#
```

I

```
!
voice-card 4
dspfarm
dsp services dspfarm
!
voice service voip
address-hiding
allow-connections sip to sip
no supplementary-service sip moved-temporarily
no supplementary-service media-renegotiate
```

```
fax protocol pass-through g711ulaw
modem passthrough nse codec g711ulaw
 sip
 min-se 90
 header-passing error-passthru
 midcall-signaling passthru
Т
voice translation-rule 1
rule 1 /^61/ /1/
rule 2 /^71/ /1/
!
voice translation-profile OUTGOING-SIP-TRK-DIGIT-STRIP
translate called 1
!
interface Loopback0
ip address 10.10.11.154 255.255.255.255
1
interface GigabitEthernet0/0
no ip address
 shut
duplex auto
speed auto
media-type rj45
!
interface GigabitEthernet0/1
description *** To Local LAN ***
no ip address
 ip virtual-reassembly
 load-interval 30
 duplex auto
speed auto
media-type rj45
!
interface GigabitEthernet0/1.1
encapsulation dot1Q 103
 ip address 10.40.103.1 255.255.255.0
ip helper-address 10.40.97.2
ip virtual-reassembly
1
interface Serial4/0:0
description *** To WAN ***
 ip address 10.80.80.82 255.255.255.252
 ip virtual-reassembly
 encapsulation frame-relay
 load-interval 30
 cdp enable
 frame-relay map ip 10.80.80.81 202
 frame-relay interface-dlci 202
no frame-relay inverse-arp NOVELL 202
no frame-relay inverse-arp APPLETALK 202
no frame-relay inverse-arp DECNET 202
 frame-relay lmi-type ansi
 frame-relay local-dlci 202
I.
interface Serial4/0:23
no ip address
 encapsulation hdlc
 isdn switch-type primary-net5
 isdn incoming-voice voice
no cdp enable
!
call treatment on
call threshold global cpu-avg low 68 high 75
call threshold global total-mem low 75 high 85
```

```
call threshold global total-calls low 1 high 12
Т
voice-port 2/1/0
1
voice-port 2/1/1
1
voice-port 4/0/0
1
voice-port 4/0/1
!
voice-port 4/0:23
1
ccm-manager mgcp
1
mgcp
mgcp call-agent 10.40.97.2 2427 service-type mgcp version 0.1
mgcp dtmf-relay voip codec all mode out-of-band
mgcp sdp simple
mgcp fax t38 inhibit
mgcp bind control source-interface GigabitEthernet0/1.1
mgcp bind media source-interface GigabitEthernet0/1.1
1
mgcp profile default
1
sccp local GigabitEthernet0/1.1
sccp ccm 10.40.97.2 identifier 1 priority 1 version 6.0
sccp ip precedence 3
sccp
I.
sccp ccm group 1
bind interface GigabitEthernet0/1.1
associate ccm 1 priority 1
associate profile 3 register XCD001AA29DF631
associate profile 2 register CON001AA29DF631
 associate profile 1 register MTP001AA29DF631
 keepalive retries 1
 keepalive timeout 10
 switchover method immediate
switchback method immediate
I.
dspfarm profile 3 transcode
description transcode bridge
codec g711ulaw
codec g729r8
maximum sessions 5
 associate application SCCP
!
dspfarm profile 2 conference
 description conference bridge
codec g711ulaw
codec g729r8
maximum sessions 4
associate application SCCP
!
dspfarm profile 1 mtp
codec g729r8
maximum sessions software 5
associate application SCCP
1
1
dial-peer voice 2000 voip
 description *** Voice: LAN to WAN - Incoming Dial-Peer ***
huntstop
```

I

```
codec g729r8
 session protocol sipv2
incoming called-number 6T
dtmf-relay rtp-nte digit-drop
no vad
1
dial-peer voice 2001 voip
description *** Voice: LAN to WAN - Outgoing Dial-Peer ***
 translation-profile outgoing OUTGOING-SIP-TRK-DIGIT-STRIP
huntstop
destination-pattern 6T
codec g729r8
voice-class sip early-offer forced
max-redirects 5
session protocol sipv2
session target ipv4:10.3.33.22
dtmf-relay rtp-nte digit-drop
no vad
!
dial-peer voice 2100 voip
description *** Voice: WAN to LAN - Incoming Dial-Peer ***
huntstop
codec g729r8
session protocol sipv2
 incoming called-number 415T
dtmf-relay rtp-nte digit-drop
no vad
1
dial-peer voice 2101 voip
description *** Voice: WAN to LAN - Outgoing Dial-Peer ***
huntstop
destination-pattern 415T
codec g729r8
max-redirects 5
session protocol sipv2
session target ipv4:10.40.97.2
dtmf-relay rtp-nte digit-drop
no vad
dial-peer voice 3000 voip
description *** Fax: LAN to WAN - Incoming Dial-Peer ***
huntstop
session protocol sipv2
incoming called-number 7T
dtmf-relay rtp-nte digit-drop
codec g711ulaw
no vad
1
dial-peer voice 3001 voip
description *** Fax: LAN to WAN - Outgoing Dial-Peer ***
translation-profile outgoing OUTGOING-SIP-TRK-DIGIT-STRIP
huntstop
destination-pattern 7T
voice-class sip early-offer forced
max-redirects 5
 session protocol sipv2
 session target ipv4:10.3.33.22
 dtmf-relay rtp-nte digit-drop
codec g711ulaw
no vad
!
dial-peer voice 3100 voip
 description *** Fax: WAN to LAN - Incoming Dial-Peer ***
huntstop
```

```
session protocol sipv2
 incoming called-number 415555111[0,1]
 dtmf-relay rtp-nte digit-drop
codec g711ulaw
no vad
1
dial-peer voice 3101 voip
 description *** Fax: WAN to LAN - Outgoing Dial-Peer ***
huntstop
destination-pattern 415555111[0,1]
max-redirects 5
session protocol sipv2
session target ipv4:10.40.97.2
dtmf-relay rtp-nte digit-drop
 codec g711ulaw
no vad
1
dial-peer voice 1 pots
service mgcpapp
port 4/0/0
I.
dial-peer voice 2 pots
service mgcpapp
port 4/0/1
Т
dial-peer hunt 3
sip-ua
authentication username yyyyy password 7 xxxxxxxxx
no remote-party-id
retry invite 2
retry response 5
retry bye 2
retry cancel 2
retry register 10
retry options 1
g729-annexb override
call-manager-fallback
video
max-conferences 10 gain -6
 transfer-system full-consult
log table max-size 1000
ip source-address 10.40.103.1 port 2000
max-ephones 50
max-dn 50
system message primary Ent1_Br1
dialplan-pattern 1 415555.... extension-length 4
 transfer-pattern .T
1
Ent1_Br1#
```

Branch 1 Cisco Unity Express 3.2 and Cisco Unified CM Example Configuration

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To integrate the Branch 1 Cisco Unity Express with Cisco Unified CM configuration, see the *CallManager for Cisco Unity Express Configuration Example*.

Cisco Validated Design

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