Configuring Interoperability with External Services

Last Updated: July 5, 2007
First published: June 18, 2007

This chapter describes features in Cisco Unified Communications Manager Express
(Cisco Unified CME) that provide support for interoperability between Cisco Unified CME and external
feature services, such as Cisco Customer Response Solutions (CRS) with Cisco Unified Contact Center
Express (Unified CCX).

Finding Feature Information in This Module

Your Cisco Unified CME version may not support all of the features documented in this module. For a
list of the versions in which each feature is supported, see the "Feature Information for Interoperability
Feature" section on page 987.

Contents

Information About Interoperability with External Services

To configure interoperability, you should understand the following concepts:

Interoperability with Unified CCX

Cisco Unified CME 4.2 and Cisco IOS Release 12.4(11)XW2 and later versions supports interoperability between Cisco Unified CME and Cisco Customer Response Solutions (CRS) 5.0 and later versions with Cisco Unified Call Center Express (Unified CCX), including enhanced call processing, device and call monitoring, unattended call transfers to multiple call center agents and basic extension mobility, and IP IVR applications.

The Unified CCX application uses the CRS platform to provide a multimedia (voice, data, and web). Cisco IP IVR functionality is available with Unified CCX and includes prompt-and-collect and call treatment.

The following functions are provided in Cisco Unified CME 4.2 and later versions:

- Support of Unified CCX Cisco Agent Desktop for use with Cisco Unified CME
- Configuration query and update between Unified CCX and Cisco Unified CME.
- SIP-based simple and supplementary call control services including:
    - Call routing between Cisco Unified CME and Unified CCX using SIP-based route point
    - First-party call control for SIP-based simple and supplementary calls
    - Call monitoring and device monitoring based on SIP presence and dialog event package
- Unified CCX session management of Cisco Unified CME
- Unified CCX device and call monitoring of agent lines and call activities in Cisco Unified CME

Provisioning and configuration information in Unified CCX is automatically provided to Cisco United CME. If the configuration from Unified CCX is deleted or must be modified, you can configure the same information in Cisco Unified CME by using Cisco IOS commands.

For first party call control, a route point for Cisco CRS is a peer device to Cisco Unified CME through a SIP trunk. An incoming call to Cisco Unified CME that is targeted to a call center phone is routed to Unified CCX through the route point. The call is placed in a queue and redirected to the most suitable agent by Unified CCX.

Supplementary services such as call hold, blind transfer, and semi-attended transfer are initiated by Unified CCX. Existing SIP-based simple and supplementary service call flow applies except for blind transfers. For blind transfers with Unified CCX as the transferrer, Unified CCX will stay in the active state until the transfer target answers. It drops out only after the transferred call is successfully answered. If the transfer target does not answer when ringing times out, the call is pulled back by Unified CCX and rerouted to another agent. This mechanism also applies when the transfer target is configured with call-forward all or forward no-answer. The forward configuration is ignored during blind transfer.

When a call moves between Unified CCX and Cisco Unified CME because of redirect, transfer, and conference, the SIP Call-ID continues to change. For call control purposes, Cisco Unified CME issues a unique Global Call ID (Gcid) for every outbound call leg. A Gcid remains the same for all legs of the same call in the system, and is valid for redirect, transfer, and conference events, including 3-party conferencing when a call center phone acts as a conference host.

Table 63 contains a list of tasks required to enable operability between Cisco Unified CME and Unified CCX, presented in the order in which the tasks are to be completed. This section contains information about performing tasks in the first 2 steps in this table and procedures for completing step 3.

For configuration information, see the "How to Configure Interoperability with External Services" section on page 967.

Table 63   *Tasks to Configure Interoperability between Cisco CRS and Cisco Unified CME*

Step	Task	Name of Document
1	Verify that Cisco Unified Communications Manager Express (Cisco Unified CME) 4.2 or a later version is installed on the router.	—
2	Configure the Cisco Unified CME router. **Tip** Note the AXL user ID, password, and router's IP address.	Prerequisites, page 968
3	Configure Cisco Unified CME to enable interoperability with Unified CCX.	How to Configure Interoperability with External Services, page 967
4	Install Cisco Unified Contact Center Express (Unified CCX) for Cisco Unified CME.	*Cisco CRS Installation Guide* at http://www.cisco.com/en/US/products/sw/custcosw/ps1846/prod_installation_guides_list.html.
5	Perform the initial setup of Cisco CRS for Cisco Unified CME. **Tip** When setup launches, you are asked for the AXL user ID and password that you created in Cisco Unified CME. You also need to enter the router IP address.	
6	Configure CME Telephony Subsystem to enable interoperability with Unified CCX.	*Cisco CRS Administration Guide* at http://www.cisco.com/en/US/products/sw/custcosw/ps1846/prod_maintenance_guides_list.html.
7	Create users and assign the agent capability in Cisco CRS.	

How to Configure Interoperability with External Services

This section contains the following procedures:

- Configuring Cisco Unified CME to Enable Interoperability with Unified CCX, page 968 (required)
- Identifying Agent Directory Numbers in Cisco Unified CME for Session Manager, page 970 (required)
- Verifying Registrations and Subscriptions in Cisco Unified CME, page 972 (optional)
- Re-creating a Session Manager in Cisco Unified CME, page 972 (optional)
- Reconfiguring a Cisco CRS Route Point as a SIP Endpoint in Cisco Unified CME, page 974 (optional)

Configuring Cisco Unified CME to Enable Interoperability with Unified CCX

To configure Cisco Unified CME to enable interoperability between Cisco Unified CME and Unified CCX, perform the following steps.

> **Note** A single Cisco Unified CME can support multiple session managers.

Prerequisites

- Cisco Unified CME 4.2 or a later version
- Cisco IOS Release 12.4(11)XW2 or a later version
- XML API must be configured to create a username for Unified CCX access. For configuration information, see "Configuring the XML API" on page 1005. Make note of the user ID, password, and router's IP address for using during the initial setup of Cisco CRS for Cisco Unified CME.
- Phones to be connected in Cisco Unified CME must be configured. When configuring a Unified CCX agent phone, use the **keep-conference endcall** command to enable conference initiators to exit from conference calls and end the conference for the remaining parties. For configuration information, see "Configuring Conferencing" on page 665.
- The Cisco Unified CME router must be configured to accept incoming presence requests. For configuration information, see "Configuring Presence Service" on page 843.

Restrictions

- Interoperability between Cisco Unified CME and Unified CCX is restricted to one Unified CCX per Cisco Unified CME.
- Maximum number of *active* Unified CCX agents supported: 50.
- Support for Multi-Party Ad Hoc and Meet-Me Conferencing features is not provided.
- Only incoming calls from PSTN trunk are supported for deployment of the interoperability feature. Other trunks, such as SIP and H.323, are supported as usual in Cisco Unified CME, however, not for customer calls to Unified CCX.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **voice call send-alert**
4. **voice service voip**
5. **callmonitor**
6. **gcid**
7. **allow-connections sip-to-sip**
8. **no supplementary-service sip moved-temporary**
9. **no supplementary-service sip refer**
10. **sip**

11. **registrar server** [**expires** [**max** *sec*] [**min** *sec*]

12. **end**

DETAILED STEPS

	Command or Action	Purpose

Step 1	`enable`
	
	Example:
	`Router> enable`
		Enables privileged EXEC mode.
		
		• Enter your password if prompted.

Step 2	`configure terminal`
	
	Example:
	`Router# configure terminal`
		Enters global configuration mode.

Step 3	`voice call send-alert`
	
	Example:
	`Router(config)# voice call send-alert`
		Enables the terminating gateway to send an alert message instead of a progress message after it receives a call setup message.

Step 4	`voice service voip`
	
	Example:
	`Router(config)# voice service voip`
		Enters voice-service configuration mode and specifies voice-over-IP encapsulation.

Step 5	`callmonitor`
	
	Example:
	`Router(config-voi-serv)# callmonitor`
		Enables call monitoring messaging functionality.
		
		• Used by Unified CCX for processing and reporting.

Step 6	`gcid`
	
	Example:
	`Router(config-voi-serv)# gcid`
		Enables Global Call-ID (Gcid) for call control purposes.
		
		• Used by Unified CCX for tracking call.

Step 7	`allow-connections sip-to-sip`
	
	Example:
	`Router(config-voi-serv)# allow-connections sip-to-sip`
		Allows connections between specific types of endpoints in a VoIP network.

Step 8	`no supplementary-service sip moved-temporary`
	
	Example:
	`Router(config-voi-serv)# no supplementary-service sip moved-temporary`
		Prevents the router from sending a redirect response to the destination for call forwarding.

Step 9	`no supplementary-service sip refer`
	
	Example:
	`Router(config-voi-serv)# no supplementary-service sip refer`
		Prevents the router from forwarding a REFER message to the destination for call transfers.

	Command or Action	Purpose

Step 10	`sip`
	
	Example:
	`Router(config-voi-srv)# sip`
		Enters SIP configuration mode.

Step 11	`registrar server [expires [max sec][min sec]]`
	
	Example:
	`Router(config-voi-sip)# registrar server expires max 600 min 60`
		Enables SIP registrar functionality in Cisco Unified CME.
		
		• **expires**—(Optional) Sets the active time for an incoming registration.
		
		• **max** *sec*—(Optional) Maximum time for a registration to expire, in seconds. Range: 600 to 86400. Default: 3600. Recommended value: 600.
		
		• **min** *sec*—(Optional) Minimum time for a registration to expire, in seconds. Range: 60 to 3600. Default: 60.

Step 12	`end`
	
	Example:
	`Router(config-voi-serv)# end`
		Exits configuration mode and enters privileged EXEC mode.

Identifying Agent Directory Numbers in Cisco Unified CME for Session Manager

To specify which directory numbers, associated with phone lines on Unified CCX agent phones, can be managed by a session manager, perform the following steps.

Prerequisites

• Up to eight session managers must be configured in Cisco Unified CME.

• Directory numbers associated with Unified CCX agent phones must be configured. Directory numbers for agent phones must be configured as dual lines to allow an agent to make two call connections at the same time using one phone line button. For configuration information, see "Configuring Phones to Make Basic Calls" on page 165.

Restrictions

• Only SCCP phones can be configured as agent phones in Cisco Unified CME. The Cisco VG224 Analog Phone Gateway and analog and SIP phones are supported as usual in Cisco Unified CME, however, not as Unified CCX agent phones.

• Cisco Unified IP Phone 7931 cannot be configured as an agent phone in Cisco Unified CME. Cisco Unified IP Phone 7931s are supported as usual in Cisco Unified CME, however, not as Unified CCX agent phones.

• Shared-line appearance is not supported on agent phones. A directory number cannot be associated with more than one physical agent phone at one time.

• Overlaid lines are not supported on agent phones. More than one directory number cannot be associated with a single line button on an agent phone.

- Monitored mode for a line button is not supported on agent phones. An agent phone cannot be monitored by another phone.

- For call forward and call pickup, the directory number of an agent cannot forward to a Cisco CRS route point.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **ephone-dn** *dn-tag*
4. **allow watch**
5. **session-server** {*session-tag*[**,**...*session-tag*]}
6. **end**

DETAILED STEPS

	Command or Action	Purpose

Step 1	`enable`
	
	Example:
	`Router> enable`
		Enables privileged EXEC mode.
		
		• Enter your password if prompted.

Step 2	`configure terminal`
	
	Example:
	`Router# configure terminal`
		Enters global configuration mode.

Step 3	`ephone-dn` *dn-tag* **Example:** `Router(config)# ephone-dn 24`	Enters ephone-dn configuration mode. • *dn-tag*—Unique ID of an already configured directory number. The tag number corresponds to a tag number created when this directory number was initially configured.

Step 4	`session-server`
	session-server-tag[**,**...*session-server-tag*]
	
	Example:
	`Router(config-ephone-dn)# session-server 1,2,3,4,6`
		Specifies which session managers are to monitor the directory number being configured.
		
		• *session-server-tag*—Unique ID session manager, configured in Unified CCX and automatically provided to Cisco Unified CME. Range: 1 to 8.
		
		Tip If you do not know the value for *session-server-tag*, we recommend using 1.
		
		• Can configure up to eight session-server-tags; individual tags must be separated by commas (**,**).
		
		• Each directory number can be managed by up to eight session managers. Each session manager can monitor more than one directory number.

	Command or Action	Purpose

Step 5	`allow watch`
	
	Example:
	`Router(config-ephone-dn)# allow watch`
		Allows the phone line associated with this directory number to be monitored by a watcher in a presence service.
		
		• This command can also be configured in ephone-dn template configuration mode and applied to one or more phones. The ephone-dn configuration has priority over the ephone-dn template configuration.

Step 6	`end`
	
	Example:
	`Router(config-ephone-dn)# end`
		Exits configuration mode and enters privileged EXEC mode.

Verifying Registrations and Subscriptions in Cisco Unified CME

Before using the system, verify registrations and subscriptions for Unified CCX endpoints.

Step 1 Use the **show sip status registrar** command to verify whether session manager and Cisco CRS route points are registered.

Step 2 Use the **show presence subscription summary** command to verify whether Cisco CRS route points and Unified CCX agent directory numbers are subscribed.

The following is sample output from the **show presence subscription summary** command. The first two rows show the status for two route points. The next two are for logged in agent phones.

```
Router# show presence subscription summary

Presence Active Subscription Records Summary: 15 subscription
Watcher                  Presentity               SubID  Expires SibID  Status
======================== ======================== ====== ======= ====== ======
CRScontrol@10.4.171.81   8101@10.4.171.34         4      3600    0      idle
CRScontrol@10.4.171.81   8201@10.4.171.34         8      3600    0      idle
CRScontrol@10.4.171.81   4016@10.4.171.34         10     3600    0      idle
CRScontrol@10.4.171.81   4020@10.4.171.34         12     3599    0      idle
```

Re-creating a Session Manager in Cisco Unified CME

Note Provisioning and configuration information in Unified CCX is automatically provided to Cisco United CME. The following task is required only if the configuration from Unified CCX is deleted or must be modified.

To re-create a session manager in Cisco Unified CME for Unified CCX, perform the following steps.

SUMMARY STEPS

1. **enable**

2. **configure terminal**

3. **voice register session-server** *session-server-tag*

4. **register-id** *name*

5. **keepalive** *seconds*

6. **end**

DETAILED STEPS

	Command or Action	Purpose

Step 1	`enable`
	
	Example:
	`Router> enable`
		Enables privileged EXEC mode.
		
		• Enter your password if prompted.

Step 2	`configure terminal`
	
	Example:
	`Router# configure terminal`
		Enters global configuration mode.

Step 3	**voice register session-server** *session-server-tag* **Example:** `Router(config)# voice register session-server 1`	Enters voice register session-server configuration mode to enable and configure a session manager for an external feature server, such as the Unified CCX application on a Cisco CRS system. • Range: 1 to 8. • A single Cisco Unified CME can support multiple session managers.
Step 4	**register id** *name* **Example:** `Router(config-register-fs)# CRS1`	(Optional) Required only if the configuration from Unified CCX is deleted or must be modified. • *name*—String for identifying Unified CCX. Can contain 1 to 30 alphanumeric characters.
Step 5	**keepalive** *seconds* **Example:** `Router(config-register-fs)# keepalive 300`	(Optional) Required only if the configuration from Unified CCX is deleted or must be modified. • Keepalive duration for registration, in seconds, after which the registration expires unless Unified CCX reregisters before the registration expiry. • Range: 60 to 3600. Default: 300. **Note** Default in Unified CCX is 120.
Step 6	**end** **Example:** `Router(config-register-fs)# end`	Exits configuration mode and enters privileged EXEC mode.

Reconfiguring a Cisco CRS Route Point as a SIP Endpoint in Cisco Unified CME

> **Note** Provisioning and configuration information in Unified CCX is automatically provided to Cisco United CME. The following task is required only if the configuration from Unified CCX is deleted or must be modified.

To reconfigure a Cisco CRS route point as a SIP endpoint in Cisco Unified CME, perform the following steps.

Prerequisites

- Directory numbers associated with Cisco CRS route points must be configured in Cisco Unified CME. For configuration information for directory numbers associated with SIP endpoints, see "Configuring Phones to Make Basic Calls" on page 165.

- Directory numbers associated with Cisco CRS route points must be enabled to be watched. For configuration information, see "Configuring Presence Service" on page 843.

- The **mode cme** command must be enabled in Cisco Unified CME.

Restrictions

- Each Cisco CRS route point can be managed by only one session manager.

- Each session manager can manage more than one Cisco CRS route point.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **voice register dn** dn-tag
4. **number** *number*
5. **allow watch**
6. **refer target dial-peer**
7. **exit**
8. **voice register pool** *pool-tag*
9. **number** *tag* **dn** *dn-tag*
10. **session-server** *session-tag*
11. **codec** *codec-type* [*bytes*]
12. **dtmf-relay rtp-relay sip-notify**
13. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** Router> enable	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** Router# configure terminal	Enters global configuration mode.
Step 3	**voice register dn** *dn-tag* **Example:** Router(config-register-global)# voice register dn 1	Enters voice register dn configuration mode to define a directory number for a SIP phone, intercom line, voice port, or a message-waiting indicator (MWI).
Step 4	**number** *number* **Example:** Router(config-register-dn)# number 2777	Defines a valid number for a directory number.
Step 5	**allow watch** **Example:** Router(config-register-dn)# allow watch	Allows the phone line associated with this directory number to be monitored by a watcher in a presence service.
Step 6	**refer target dial-peer** **Example:** Router(config-register-dn)# refer target dial-peer	Enables watcher to handle SIP REFER message from this directory number. • **target dial-peer**—Refer To portion of message is based on address from dial peer for this directory number.
Step 7	**exit** **Example:** Router(config-register-dn)# exit	Exits configuration mode to the next highest mode in the configuration mode hierarchy.
Step 8	**voice register pool** *pool-tag* **Example:** Router(config)# voice register pool 3	Enters voice register pool configuration mode to set device-specific parameters for a Cisco CRS route point. • A voice register pool in Unified CCX can contain up to 10 individual SIP endpoints. Subsequent pools are created for additional SIP endpoints.
Step 9	**number** *tag* **dn** *dn-tag* **Example:** Router(config-register-pool)# number 1 dn 1	Associates a directory number with the route point being configured.

	Command or Action	Purpose
Step 10	**session-server** *session-server-tag* **Example:** Router(config-register-pool)# session-server 1	Identifies session manager to be used to control the route point being configured. • *session-server-tag*—Unique number assigned to a session manager. Range: 1 to 8. The tag number corresponds to a tag number created by using the **voice register session-server** command.
Step 11	**codec g711ulaw** **Example:** Router(config-register-pool)# codec g711ulaw	Specifies the codec for the dial peer dynamically created for the route point being configured. • *codec-type*—g711ulaw is required for Unified CCX.
Step 12	**dtmf-relay sip-notify** **Example:** Router(config-register-pool)# dtmf-relay sip-notify	Specifies DTMF Relay method to be used by the route point being configured.
Step 13	**end** **Example:** Router(config-register-pool)# end	Exits configuration mode and enters privileged EXEC mode.

Configuration Examples for Interoperability with Unified CCX

The following output from the **show running-configuration** command shows the configuration on a Cisco Unified CME router that will interoperate with Unified CCX.

```
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname sb-sj3-3845-uut1
!
boot-start-marker
boot-end-marker
!
card type t1 0 2
card type t1 0 3
logging buffered 1000000
no logging console
enable password password
!
no aaa new-model
network-clock-participate wic 2
network-clock-participate wic 3
ip cef
!
!
no ip dhcp use vrf connected
!
!
ip dhcp excluded-address 192.0.2.250 192.0.2.254
!
```

```
ip dhcp pool ephones
   network 192.0.2.0 255.255.255.0
   option 150 ip 192.0.2.254
   default-router 192.0.2.254
!
!
no ip domain lookup
!
isdn switch-type primary-5ess
voice-card 0
 no dspfarm
!
!
!
!
voice service voip
 gcid
 callmonitor
 allow-connections h323 to h323
 allow-connections h323 to sip
 allow-connections sip to h323
 allow-connections sip to sip
 no supplementary-service sip moved-temporarily
 no supplementary-service sip refer
 sip
  registrar server expires max 120 min 60
!
!
voice class codec 1
 codec preference 1 g711ulaw
 codec preference 2 g729r8
!
!
!
!
!
!
!
!
!
!
voice register global
 mode cme
 source-address 192.0.2.254 port 5060
 max-dn 720
 max-pool 240
 authenticate presence
 authenticate register
 dialplan-pattern 1 511.... extension-length 4
 voicemail 9001
 create profile sync 0000347600391314
!
voice register session-server  1
 keepalive 300
 register-id SB-SJ3-UCCX1_1164774025000
!
voice register dn  1
 session-server 1
 number 8999
 allow watch
 refer target dial-peer
!
voice register dn  2
 session-server 1
```

```
 number 8001
 allow watch
 refer target dial-peer
!
voice register dn  3
 session-server 1
 number 8101
 allow watch
 refer target dial-peer
!
voice register dn  11
 number 2011
 name ep-sip-1-11
 mwi
!
voice register dn  12
 number 2012
 name ep-sip-1-12
 mwi
!
voice register dn  16
 number 5016
 name rp-sip-1-16
 label SIP 511-5016
 mwi
!
voice register dn  17
 number 5017
 name rp-sip-1-17
 label SIP 511-5017
 mwi
!
voice register dn  18
 number 5018
 name rp-sip-1-18
 label SIP 511-5018
 mwi
!
voice register pool  1
 session-server 1
 number 1 dn 1
 number 2 dn 2
 number 3 dn 3
 dtmf-relay sip-notify
 codec g711ulaw
!
voice register pool  11
 id mac 1111.0711.2011
 type 7970
 number 1 dn 11
 dtmf-relay rtp-nte
 voice-class codec 1
 username 5112011 password 5112011
!
voice register pool  12
 id mac 1111.0711.2012
 type 7960
 number 1 dn 12
 dtmf-relay rtp-nte
 voice-class codec 1
 username 5112012 password 5112012
!
voice register pool  16
 id mac 0017.0EBC.1500
```

```
   type 7961GE
   number 1 dn 16
   dtmf-relay rtp-nte
   voice-class codec 1
   username rp-sip-1-16 password pool16
 !
 voice register pool  17
   id mac 0016.C7C5.0660
   type 7971
   number 1 dn 17
   dtmf-relay rtp-nte
   voice-class codec 1
   username rp-sip-1-17 password pool17
 !
 voice register pool  18
   id mac 0015.629E.825D
   type 7971
   number 1 dn 18
   dtmf-relay rtp-nte
   voice-class codec 1
   username rp-sip-1-18 password pool18
 !
 !
 !
 !
 !
 !
 !
 controller T1 0/2/0
   framing esf
   clock source internal
   linecode b8zs
   pri-group timeslots 1-4,24
 !
 controller T1 0/2/1
   framing esf
   clock source internal
   linecode b8zs
   pri-group timeslots 1-4,24
 !
 controller T1 0/3/0
   framing esf
   clock source internal
   linecode b8zs
   ds0-group 0 timeslots 1-4 type e&m-immediate-start
 !
 controller T1 0/3/1
   framing esf
   clock source internal
   linecode b8zs
   ds0-group 0 timeslots 1-4 type e&m-immediate-start
 vlan internal allocation policy ascending
 !
 !
 !
 !
 interface GigabitEthernet0/0
   ip address 209.165.201.1 255.255.255.224
   duplex auto
   speed auto
   media-type rj45
 !
 interface GigabitEthernet0/1
   ip address 192.0.2.254 255.255.255.0
```

```
 duplex auto
 speed auto
 media-type rj45
!
interface Serial0/2/0:23
 no ip address
 encapsulation hdlc
 isdn switch-type primary-5ess
 isdn protocol-emulate network
 isdn incoming-voice voice
 no cdp enable
!
interface Serial0/2/1:23
 no ip address
 encapsulation hdlc
 isdn switch-type primary-5ess
 isdn protocol-emulate network
 isdn incoming-voice voice
 no cdp enable
!
interface Service-Engine1/0
 ip unnumbered GigabitEthernet0/0
 service-module ip address 209.165.202.129 255.255.255.224
 service-module ip default-gateway 209.165.201.1
!
ip route 192.0.0.30 255.0.0.0 192.0.0.55
ip route 209.165.202.129 255.255.255.224 Service-Engine1/0
ip route 192.0.2.56 255.255.255.0 209.165.202.2
ip route 192.0.3.74 255.255.255.0 209.165.202.3
ip route 209.165.202.158 255.255.255.224 192.0.0.55
!
!
ip http server
ip http authentication local
ip http path flash:
!
!
ixi transport http
 response size 64
 no shutdown
 request outstanding 1
!
ixi application cme
 no shutdown
!
!
!
control-plane
!
!
!
voice-port 0/0/0
!
voice-port 0/0/1
!
voice-port 0/2/0:23
!
voice-port 0/3/0:0
!
voice-port 0/1/0
!
voice-port 0/1/1
!
voice-port 0/2/1:23
```

```
!
voice-port 0/3/1:0
!
!
!
!
!
dial-peer voice 9000 voip
 description ==> This is for internal calls to CUE
 destination-pattern 9...
 voice-class codec 1
 session protocol sipv2
 session target ipv4:209.165.202.129
 dtmf-relay rtp-nte sip-notify
!
dial-peer voice 9001 voip
 description ==> This is for external calls to CUE
 destination-pattern 5119...
 voice-class codec 1
 session protocol sipv2
 session target ipv4:209.165.202.129
 dtmf-relay rtp-nte sip-notify
!
dial-peer voice 521 voip
 destination-pattern 521....
 voice-class codec 1
 max-redirects 5
 session protocol sipv2
 session target ipv4:209.165.201.2
 dtmf-relay rtp-nte sip-notify
!
dial-peer voice 531 voip
 destination-pattern 531....
 voice-class codec 1
 max-redirects 5
 session protocol sipv2
 session target ipv4:209.165.201.3
 dtmf-relay rtp-nte sip-notify
!
!
presence
 presence call-list
 watcher all
 allow subscribe
!
sip-ua
 mwi-server ipv4:209.165.202.128 expires 3600 port 5060 transport udp
 presence enable
!
!
telephony-service
 no auto-reg-ephone
 xml user axluser password axlpass 15
 max-ephones 240
 max-dn 720
 ip source-address 192.0.2.254 port 2000
 system message sb-sj3-3845-uut1
 url services http://192.0.2.252:6293/ipphone/jsp/sciphonexml/IPAgentInitial.jsp
 url authentication http:192.0.2.252:6293/ipphone/jsp/sciphonexml/IPAgentAuthenticate.jsp
 cnf-file perphone
 dialplan-pattern 1 511.... extension-length 4
 voicemail 9001
 max-conferences 8 gain -6
 call-forward pattern .T
```

```
      moh flash:music-on-hold.wav
      multicast moh 239.10.10.1 port 2000
      transfer-system full-consult
      transfer-pattern .T
      create cnf-files version-stamp 7960 Jun 18 2007 07:44:25
     !
     !
     ephone-dn  1  dual-line
      session-server 1
      number 1001
      name ag-1-1
      allow watch
      mwi sip
     !
     !
     ephone-dn  2  dual-line
      session-server 1
      number 1002
      name ag-1-2
      allow watch
      mwi sip
     !
     !
     ephone-dn  3  dual-line
      session-server 1
      number 1003
      name ag-1-3
      allow watch
      mwi sip
     !
     !
     ephone-dn  4  dual-line
      session-server 1
      number 1004
      name ag-1-4
      allow watch
      mwi sip
     !
     !
     ephone-dn  5
      session-server 1
      number 1005
      name ag-1-5
      allow watch
      mwi sip
     !
     !
     ephone-dn  11  dual-line
      number 3011
      name ep-sccp-1-11
      mwi sip
     !
     !
     ephone-dn  12
      number 3012
      name ep-sccp-1-12
      mwi sip
     !
     !
     ephone-dn  16  dual-line
      number 4016
      label SCCP 511-4016
      name rp-sccp-1-16
      mwi sip
```

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```
!
!
ephone-dn  17  dual-line
 number 4017
 label SCCP 511-4017
 name rp-sccp-1-17
 mwi sip
!
!
ephone-dn  18  dual-line
 number 4018
 label SCCP 511-4018
 name rp-sccp-1-18
 mwi sip
!
!
ephone-dn  19  dual-line
 number 4019
 label SCCP 511-4019
 name rp-sccp-1-19
 mwi sip
!
!
ephone-dn  20  dual-line
 number 4020
 label SCCP 511-4020
 name rp-sccp-1-20
 mwi sip
!
!
ephone-dn  21  dual-line
 number 4021
 label SCCP 511-4021
 name rp-sccp-1-21
 mwi sip
!
!
ephone-dn  22  dual-line
 number 4022
 label SCCP 511-4022
 name rp-sccp-1-22
 mwi sip
!
!
ephone  1
 mac-address 1111.0711.1001
 type 7970
 keep-conference endcall
 button  1:1
!
!
!
ephone  2
 mac-address 1111.0711.1002
 type 7970
 keep-conference endcall
 button  1:2
!
!
!
ephone  3
 mac-address 1111.0711.1003
 type 7970
 keep-conference endcall
```

```
 button  1:3
!
!
!
ephone  4
 mac-address 1111.0711.1004
 type 7970
 keep-conference endcall
 button  1:4
!
!
!
ephone  5
 mac-address 1111.0711.1005
 type 7970
 keep-conference endcall
 button  1:5
!
!
!
ephone  11
 mac-address 1111.0711.3011
 type 7970
 keep-conference endcall
 button  1:11
!
!
!
ephone  12
 mac-address 1111.0711.3012
 type 7960
 keep-conference endcall
 button  1:12
!
!
!
ephone  16
 mac-address 0012.D916.5AD6
 type 7960
 keep-conference endcall
 button  1:16
!
!
!
ephone  17
 mac-address 0013.1AA6.7A9E
 type 7960
 keep-conference endcall
 button  1:17
!
!
!
ephone  18
 mac-address 0012.80F3.B013
 type 7960
 keep-conference endcall
 button  1:18
!
!
!
ephone  19
 mac-address 0013.1A1F.6282
 type 7970
 keep-conference endcall
```

```
 button  1:19
!
!
!
ephone  20
 mac-address 0013.195A.00D0
 type 7970
 keep-conference endcall
 button  1:20
!
!
!
ephone  21
 mac-address 0017.0EBC.147C
 type 7961GE
 keep-conference endcall
 button  1:21
!
!
!
ephone  22
 mac-address 0016.C7C5.0578
 type 7971
 keep-conference endcall
 button  1:22
!
!
!
line con 0
 exec-timeout 0 0
 stopbits 1
line aux 0
 stopbits 1
line 66
 no activation-character
 no exec
 transport preferred none
 transport input all
 transport output pad telnet rlogin lapb-ta mop udptn v120
line vty 0 4
 password lab
 login
!
scheduler allocate 20000 1000
!
end
```

Where to Go Next

If you are done modifying parameters for phones in Cisco Unified CME, generate a new configuration file and restart the phones. See .

Additional References

The following sections provide references related to Cisco Unified CME features.

Related Documents

Related Topic	Document Title
Cisco Unified CME configuration	• *Cisco Unified CME Command Reference* • *Cisco Unified CME documentation roadmap*
Cisco Unified Contact Center Express (Unified CCX)	• *Cisco Unified Contact Center Express documentation road map*
Cisco Customer Response Solutions (CRS)	• *Cisco CRS Installation Guide* • *Cisco CRS Administration Guide*
Cisco IOS commands	• *Cisco IOS Voice Command Reference* • *Cisco IOS Software Releases 12.4T Command References*
Cisco IOS configuration	• *Cisco IOS Voice Configuration Library* • *Cisco IOS Software Releases 12.4T Configuration Guides*
Phone documentation for Cisco Unified CME	• Quick Reference Cards • User Guides

Technical Assistance

Description	Link
The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies. Access to most tools on the Cisco Support website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a user ID or password, you can register on Cisco.com.	http://www.cisco.com/techsupport

Feature Information for Interoperability with External Services

Table 64 lists the features in this module and enhancements to the features by version.

To determine the correct Cisco IOS release to support a specific Cisco Unified CME version, see the *Cisco Unified Communications Manager Express and Cisco IOS Software Version Compatibility Matrix* at http://www.cisco.com/en/US/products/sw/voicesw/ps4625/products_documentation_roadmap09186a0080189132.html.

Use Cisco Feature Navigator to find information about platform support and software image support. Cisco Feature Navigator enables you to determine which Cisco IOS software images support a specific software release, feature set, or platform. To access Cisco Feature Navigator, go to http://www.cisco.com/go/cfn. An account on Cisco.com is not required.

Note Table 64 lists the Cisco Unified CME version that introduced support for a given feature. Unless noted otherwise, subsequent versions of Cisco Unified CME software also support that feature.

Table 64   Feature Information for Interoperability Feature

Feature Name	Cisco Unified CME Version	Modification
Interoperability with External Services	4.2	Enables interoperability between Cisco Unified CME and Cisco Customer Response Solutions (CRS) 5.0 and later versions with Cisco Unified Contact Center Express (Unified CCX), including Cisco Unified IP IVR, enhanced call processing, device and call monitoring, and unattended call transfers to multiple call center agents and basic extension mobility.