

Interoperability with Cisco Unified CCX

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 (Cisco Unified CCX).

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Information About Interoperability with Cisco Unified CCX

Unified CME 4.2 to Unified CME 8.5 Release versions support interoperability between Cisco Unified CME and Cisco Customer Response Solutions (CRS) with Cisco Unified Call Center Express (Cisco 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.

Note For Unified CME 8.6 and later releases, CRS with Unified CCX is not supported.

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

The following functions are provided in Unified CME Release 4.2 to 8.5 for interoperability with Unified CCX:

- Support of Cisco Unified CCX Cisco Agent Desktop for use with Cisco Unified CME
- Configuration query and update between Cisco Unified CCX and Cisco Unified CME
- SIP-based simple and supplementary call control services including:
  - Call routing between Cisco Unified CME and Cisco 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

- Cisco Unified CCX session management of Cisco Unified CME
- Cisco Unified CCX device and call monitoring of agent lines and call activities in Cisco Unified CME

Provisioning and configuration information in Cisco Unified CCX is automatically provided to Cisco United CME. If the configuration from Cisco 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 Cisco Unified CCX through the route point. The call is placed in a queue and redirected to the most suitable agent by Cisco Unified CCX.

Supplementary services such as call hold, blind transfer, and semi-attended transfer are initiated by Cisco Unified CCX. Existing SIP-based simple and supplementary service call flow applies except for blind transfers. For blind transfers with Cisco Unified CCX as the transferrer, Cisco 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 Cisco 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 Cisco 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.

Before Cisco IOS Release 12.4(11)XW6, if the call monitoring module in Cisco Unified CME 4.2 detected a call associated with a non default session application, such as B-ACD or a TCL script, the module was globally disabled. After the module was disabled, Cisco Unified CCX administration had to manually re-enable the call monitoring module after the session completes.

In Cisco IOS Release 12.4(11)XW6 and later releases, the call monitoring module in Cisco Unified CME does not monitor a call associated with a non default session application, such as B-ACD or a TCL script, including all calls merged into this call by way of consult transfer and conference. The module is not disabled and continues to monitor other calls.

Table 1: Tasks to Configure Interoperability between Cisco CRS and Cisco Unified CME, on page 2 contains a list of tasks required to enable operability between Cisco Unified CME and Cisco 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 Configure Interoperability with Cisco Unified CCX, on page 3.

Table 1: Tasks to Configure Interoperability between Cisco CRS and Cisco Unified CME

Step	Task	Name of Document
1	Verify that the appropriate Cisco Unified Communications Manager Express (Cisco Unified CME) version is installed on the router. For compatibility information, see Cisco Unified Contact Center Express (Cisco Unified CCX) Software and Hardware Compatibility Guide.	—

Step	Task	Name of Document
2	Configure the Cisco Unified CME router. **Tip** Note the XML user ID and password in Cisco Unified CME and router's IP address.	See "Prerequisites' section in Enable Interoperability with Cisco Unified CCX, on page 3.
3	Configure Cisco Unified CME to enable interoperability with Cisco Unified CCX.	Configure Interoperability with Cisco Unified CCX, on page 3
4	Install Cisco Unified Contact Center Express (Cisco Unified CCX) for Cisco Unified CME.	See *Cisco Unified Contact Center Express Administration Guide* at Configuration Guides.
5	Perform the initial setup of Cisco CRS for Cisco Unified CME. **Tip** When setup launches, you are asked for the XML user ID and password, known as AXL user in Cisco CRS, that you created in Cisco Unified CME. You also must enter the router IP address.	
6	Configure Cisco Unified CME telephony subsystem to enable interoperability with Cisco Unified CCX.	*"Provisioning Unified CCX for Unified CME"* chapter in the appropriate *Cisco CRS Administration Guide* or *Cisco Unified Contact Center Express Administration Guide* at Configuration Guides.
7	Create users and assign the agent capability in Cisco CRS.	

Configure Interoperability with Cisco Unified CCX

Enable Interoperability with Cisco Unified CCX

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

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

Restriction

- Maximum number of *active* Cisco Unified CCX agents supported: 50.
- Multi-Party Ad Hoc and Meet-Me Conferencing are not supported.
- The following incoming calls are supported for deployment of the interoperability feature: SIP trunk calls from another Cisco Unified CME and all calls from a PSTN trunk. Other trunks, such H.323, are supported as usual in Cisco Unified CME, however, not for customer calls to Cisco Unified CCX.

Before you begin

- Cisco Unified CME version and Cisco IOS release that is compatible with your Cisco Unified CCX version. For compatibility information, see Cisco Unified Contact Center Express (Cisco Unified CCX) Software and Hardware Compatibility Guide.
- XML API must be configured to create an AXL username for Cisco Unified CCX access. For configuration information, see Configure the XML API.



Note During the initial setup of Cisco CRS for Cisco Unified CME, you need the AXL username and password that was configured using the **xml user** command in telephony-service configuration mode. You also need the router IP address that was configured using the **ip source-address** command in telephony-service configuration mode.

- Agent phones to be connected in Cisco Unified CME must be configured in Cisco Unified CME. When configuring a Cisco 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 Configure Hardware Conferencing.
- The Cisco Unified CME router must be configured to accept incoming presence requests. For configuration information, see Configure Presence Service.
- To support Desktop Monitoring and Recording, the **service phone SpanToPCPort 1** command must be configured in telephony-service configuration mode. For configuration information, see Modify Vendor Parameters for All SCCP Phones.

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

Procedure

	Command or Action	Purpose
Step 1	**enable**	Enables privileged EXEC mode.

	Command or Action	Purpose
	Example: `Router> enable`	• 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 Cisco 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 Cisco 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.
Step 10	**sip** **Example:** `Router(config-voi-serv)# 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.

	Command or Action	Purpose
		• **max** *sec*—(Optional) Maximum time for a registration to expire, in seconds. Range: 600 to 86400. Default: 3600. Recommended value: 600. **Note** Ensure that the registration expiration timeout is set to a value smaller than the TCP connection aging timeout to avoid disconnection from the TCP. • **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.

Identify Agent Directory Numbers in Cisco Unified CME for Session Manager on SCCP Phones

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

Restriction

- 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 Cisco 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 Cisco 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.
- Cisco Unified CCX does not support a call event that includes a different directory number; all call events must include the primary directory number. Call transfers between phones with single-line directory numbers will cause call monitoring to fail.

Before you begin

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

- Directory numbers associated with Cisco Unified CCX agent phones must be configured in Cisco Unified CME.
  - Cisco Unified CME 4.2: 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. Note that if the second line of the dual-line directory number is busy, a transfer event between phones in the solution will fail to complete.
  - Cisco Unified CME 4.3/7.0 and later versions: We recommend that directory numbers for agent phones be configured as octal lines to help to ensure that a free line with the same directory number is available for a transfer event.
  - For configuration information, see Configure Phones to Make Basic Call.

SUMMARY STEPS

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

DETAILED STEPS

Procedure

	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	**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

	Command or Action	Purpose
		more phones. The ephone-dn configuration has priority over the ephone-dn template configuration.
Step 5	**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 Cisco 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.
Step 6	**end** **Example:** `Router(config-ephone-dn)# end`	Exits configuration mode and enters privileged EXEC mode.

Verify Registrations and Subscriptions in Cisco Unified CME

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

Procedure

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 Cisco 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-create a Session Manager in Cisco Unified CME

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

To re-create a session manager in Cisco Unified CME for Cisco 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

Procedure

	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 Cisco Unified CCX application on a Cisco CRS system. • Range: 1 to 8. • A single Cisco Unified CME can support multiple session managers.

	Command or Action	Purpose
Step 4	**register id** *name* **Example:** `Router(config-register-fs)# CRS1`	(Optional) Required only if the configuration from Cisco Unified CCX is deleted or must be modified. • *name*—String for identifying Cisco 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 Cisco Unified CCX is deleted or must be modified. • Keepalive duration for registration, in seconds, after which the registration expires unless Cisco Unified CCX reregisters before the registration expiry. • Range: 60 to 3600. Default: 300. **Note** Default in Cisco Unified CCX is 120.
Step 6	**end** **Example:** `Router(config-register-fs)# end`	Exits configuration mode and enters privileged EXEC mode.

Reconfigure a Cisco CRS Route Point as a SIP Endpoint

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

Restriction

- 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.

Before you begin

- 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 Configure Phones to Make Basic Call.
- Directory numbers associated with Cisco CRS route points must be enabled to be watched. For configuration information, see Configure Presence Service.
- The **mode cme** command must be enabled in Cisco Unified CME.

SUMMARY STEPS

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

DETAILED STEPS

Procedure

	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	**session-server** *session-server-tag* [**,...***session-server-tag*] **Example:** `Router(config-register-dn)# session-server 1`	Specifies which session managers are to monitor the directory number being configured. • *session-server-tag*—Unique ID session manager, configured in Cisco Unified CCX and automatically provided to Cisco Unified CME. Range: 1 to 8. **Tip**

	Command or Action	Purpose
		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.
Step 6	**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 7	**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 8	**exit** **Example:** `Router(config-register-dn)# exit`	Exits configuration mode to the next highest mode in the configuration mode hierarchy.
Step 9	**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 Cisco Unified CCX can contain up to 10 individual SIP endpoints. Subsequent pools are created for additional SIP endpoints.
Step 10	**number** *tag* **dn** *dn-tag* **Example:** `Router(config-register-pool)# number 1 dn 1`	Associates a directory number with the route point being configured.
Step 11	**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 12	**codec** *codec-type* **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 Cisco Unified CCX.

	Command or Action	Purpose
Step 13	**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 14	**end** **Example:** `Router(config-register-pool)# end`	Exits configuration mode and enters privileged EXEC mode.

Configuration Examples for Interoperability with Cisco Unified CCX

The following output from the **show running-configuration** command shows the configuration on a Cisco Unified CME router that will interoperate with Cisco 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&-immediate-start
!
controller T1 0/3/1
 framing esf
 clock source internal
 linecode b8zs
 ds0-group 0 timeslots 1-4 type e&-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  <====AXL username and password for Cisco CRS
 max-ephones 240
 max-dn 720
 ip source-address 192.0.2.254 port 2000  <====IP address of router
 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
!
!
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 Generate Configuration Files for Phones.

Feature Information for Interoperability with Cisco Unified CCX

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

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

Table 2: Feature Information for Interoperability Feature

Feature Name	Cisco Unified CME Version	Modification
Interoperability with Cisco Unified CCX	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 (Cisco Unified CCX), including Cisco Unified IP IVR, enhanced call processing, device and call monitoring, unattended call transfers to multiple call center agents, and basic extension mobility.