



# Configuring Video Support for SCCP-Based Endpoints

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This chapter describes the video support for SCCP-based endpoints in Cisco Unified Communications Manager Express (Cisco Unified CME).

## 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 Video Support for SCCP-Based Endpoints, page 1098](#).

## Contents

- [Prerequisites for Video Support for SCCP-Based Endpoints, page 1085](#)
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- [Feature Information for Video Support for SCCP-Based Endpoints, page 1098](#)

## Prerequisites for Video Support for SCCP-Based Endpoints

- H.323 or SIP network for voice calls is operational.
- Cisco Unified CME 4.0 or a later version.
- Cisco Unified IP phones are registered in Cisco Unified CME.
- Connection between the Cisco Unified Video Advantage 1.02 or a later version and the Cisco Unified IP phone is up. From a PC with Cisco Unified Video Advantage version 1.02 or later installed, ensure that the line between the Cisco Unified Video Advantage and the Cisco Unified IP phone is green. For more information, see the [Cisco Unified Video Advantage User Guide](#).
- Correct video firmware is installed on the Cisco Unified IP phone.
  - For Cisco Unified IP Phone 7940G and 7960G, 6.0(4) or a later version

- Cisco Unified IP Phone 7970G, 7.0(3) or a later version
- Cisco Unified IP Phone 7941G and 7961G, 7.0(3) or a later version

**Note**


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Other video-enabled endpoints registered with Cisco Unified Communications Manager can place video calls to Cisco Unified IP phones only if the phones are registered with Cisco Unified CME if the appropriate video firmware is installed on the Cisco Unified IP phone.

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## Restrictions for Video Support for SCCP-Based Endpoints

- This feature supports only the following video codecs:
  - H.261—Cisco Unified CME 4.0 and later versions
  - H.263—Cisco Unified CME 4.0 and later versions
  - H.264—Cisco Unified CME 7.1 and later versions
- This feature supports only the following video formats:
  - 4CIF—Resolution 704x576
  - 16CIF—Resolution 1408x1152
  - Common Intermediate Format (CIF)—Resolution 352x288
  - One-Quarter Common Intermediate Format (QCIF)—Resolution 176x144
  - Sub QIF (SQCIF)—Resolution 128x96
- The call start fast feature is not supported with an H.323 video connection. You must configure call start slow for H.323 video. For configuration information, see the [“SCCP: Enabling Support for Video Streams Across H.323 Networks” section on page 1091](#).
- Video capabilities are configured per phone, not per line.
- All call feature controls (for example, mute and hold) apply to both audio and video calls, if applicable.
- This feature does not support the following:
  - Dynamic addition of video capability—The video capability must be present *before* the call setup starts to allow the video connection.
  - T-120 data connection between two SCCP endpoints
  - Video security
  - Far-end camera control (FECC) for SCCP endpoints
  - Video codec renegotiation—The negotiated video codec must match or the call falls back to audio-only. The negotiated codec for the existing call can be used for a new call.
  - Video codec transcoding
  - SIP endpoints— When a video-capable SCCP endpoint connects to a SIP endpoint, the call falls back to audio-only.
  - Video conferencing—The call falls back to audio-only.
  - Features, such as conferencing, that mix the audio streams in Cisco Unified CME—In those cases, the call falls back to audio-only.

- Video supplementary services between Cisco Unified CME and Cisco Unified Communications Manager.
- If the Cisco Unified Communications Manager is configured for Media Termination Point (MTP) transcoding, a video call between Cisco Unified CME and Cisco Unified Communications Manager is not supported.
- Video telephony is not supported with Cisco Unified CME MTP and codec g729/dspfarm-assist configuration under ephone.
- If an SCCP endpoint calls an SCCP endpoint on the local Cisco Unified CME and one of the endpoints transferred across an H323 network, a video-consult transfer between the Cisco Unified CME systems is not supported.
- When a video-capable endpoint connects to an audio-only endpoint, the call falls back to audio-only. During audio-only calls, video messages are skipped.
- For Cisco Unified CME, the video capabilities in the vendor configuration firmware is a global configuration. This means that, although video can be enabled per ephone, the video icon shows on all Cisco Unified IP phones supported by Cisco Unified CME.
- Because of the extra CPU consumption on RTP-stream mixing, the number of video calls supported on Cisco Unified CME crossing an H.323 network is less than the maximum number of ephones supported.
- Cisco Unified CME cannot differentiate audio-only streams and audio-in-video streams. You must configure the DSCP values of audio and video streams in the H.323 dial-peers.
- If RSVP is enabled on the Cisco Unified CME, a video call is not supported.
- A separate VoIP dial peer, configured for fast-connect procedures, is required to complete a video call from a remote H.323 network to a Cisco Unity Express system.

## Information About Video Support for SCCP-Based Endpoints

To configure video support for SCCP endpoints, you should understand the following concepts:

- [Video Support Overview, page 1088](#)
- [SIP Trunk Video Support for SCCP Endpoints, page 1088](#)
- [Matching Endpoint Capabilities, page 1089](#)
- [Retrieving Video Codec Information, page 1089](#)
- [Call Fallback to Audio-Only, page 1089](#)
- [Call Setup for Video Endpoints, page 1089](#)
- [Flow of the RTP Video Stream, page 1090](#)

## Video Support Overview

Video support allows you to pass a video stream, with a voice call, between two video-capable SCCP endpoints and between SCCP and H.323 endpoints. Through the Cisco Unified CME router, the video-capable endpoints can communicate with each other locally, to a remote H.323 endpoint through a gateway, or through an H.323 network.

Video capabilities are disabled by default, and enabling video capabilities on Cisco Unified CME does not automatically enable video on all ephones. You must first enable video globally for all video-capable SCCP phones associated with a Cisco Unified CME router and then enable video for each phone individually. Video parameters, like maximum bit rate, are set at a system-level.

For information about the global configuration for video capabilities, see the [“SCCP: Enabling System-Level Video Capabilities” section on page 1092](#). For information about configuring an individual phone for video capabilities, see the [“SCCP: Enabling Video Capabilities on a Phone” section on page 1093](#).



**Note**

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After video is enabled globally, all video-capable ephones display the video icon.

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## SIP Trunk Video Support for SCCP Endpoints

Cisco Unified CME 7.1 adds the following support for video calls:

- Support for video calls between SCCP endpoints across different Cisco Unified CME routers connected through a SIP trunk. All previously supported SCCP video endpoints and video codecs are supported.
- H.264 video support. H.264 provides high quality images at low bit rates, and is widely used in commercial video conferencing systems. The H.264 codec supports the following video calls:
  - SCCP to SCCP
  - SCCP to SIP
  - SCCP to H.323
  - Dynamic payload negotiation for H.264 (both SCCP to SIP and SCCP to H323)
- SCCP to SIP video supplementary services for all supported video codecs including H.264 codec. The supported services include call forward, blind transfer, and consultative transfer. End to end negotiation is supported between the endpoints.

### Restrictions

- Asymmetric dynamic payload for SCCP to SIP video calls is not supported.
- The **no supplementary-service sip moved-temporarily** and **no supplementary-service sip refer** commands are not supported for video calls through a SIP trunk.

No new configuration is required to support these enhancements. For configuration information, see [“How to Configure Video for SCCP-Based Endpoints” section on page 1091](#).

## Matching Endpoint Capabilities

During phone registration, information about endpoint capabilities is stored in the Cisco Unified CME. These capabilities are used to match with other endpoints during call setup. Endpoints can update at any time; however, the router recognizes endpoint-capability changes only during call setup. If a video feature is added to a phone, the information about it is updated in the router's internal data structure, but that information does not become effective until the next call. If a video feature is removed, the router continues to see the video capability until the call is terminated but no video stream is exchanged between the two endpoints.

**Note**

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The endpoint-capability match is executed each time a new call is set up or an existing call is resumed.

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## Retrieving Video Codec Information

Voice gateways use dial-peer configurations to retrieve codec information for audio codecs. Video codec selection is done by the endpoints and is not controlled by the H.323 service-provider interface (SPI) through dial-peer or other configuration. The video-codec information is retrieved from the SCCP endpoint using a capabilities request during call setup.

## Call Fallback to Audio-Only

When a video-capable endpoint connects to an audio-only endpoint, the call falls back to an audio-only connection. Also, for certain features, such as conferencing, where video support is not available, the call falls back to audio-only.

Cisco Unified CME routers use a call-type flag to indicate whether the call is video-capable or audio-only. The call-type flag is set to video when the video capability is matched or set to audio-only when connecting to an audio-only TDM or an audio-only SIP endpoint.

**Note**

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During an audio-only connection, all video-related media messages are skipped.

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## Call Setup for Video Endpoints

The process for handling SCCP video endpoints is the same as that for handling SCCP audio endpoints. The video call must be part of the audio call. If the audio call setup fails, the video call fails.

During the call setup for video, media setup handling determines if a video-media-path is required. If so, the corresponding video-media-path setup actions are taken.

- For an SCCP endpoint, video-media-path setup includes sending messages to the endpoints to open a multimedia path and start the multimedia transmission.
- For an H.323 endpoint, video-media-path setup includes an exchange between the endpoints to open a logical channel for the video stream.

A call-type flag is set during call setup on the basis of the endpoint-capability match. After call setup, the call-type flag is used to determine whether an additional video media path is required. Call signaling is managed by the Cisco Unified CME router, and the media stream is directly connected between the two video-enabled SCCP endpoints on the same router. Video-related commands and flow-control messages are forwarded to the other endpoint. Routers do not interpret these messages.

## Call Setup Between Two Local SCCP Endpoints

For interoperation between two local SCCP endpoints on the same router, video call setup uses all existing audio-call-setup handling, except during media setup. During media setup, a message is sent to establish the video-media-path. If the endpoint responds, the video-media-path is established and a start-multimedia-transmission function is called.

## Call Setup Between SCCP and H.323 Endpoints

Call setup between SCCP and H.323 endpoints is the same as it is between SCCP endpoints except that if video capability is selected, the event is posted to the H.323 call leg to send out a video open logical channel (OLC) and the gateway generates an OLC for the video channel. Because the router needs to both terminate and originate the media stream, video must be enabled on the router before call setup begins.

## Call Setup Between Two SCCP Endpoints Across an H.323 Network

If call setup between SCCP endpoints occurs across an H.323 network, the setup is a combination of the processes listed in the previous two sections. The router controls the video media setup between the two endpoints, and the event is posted to the H.323 call leg so that the gateway can generate an OLC.

Because the endpoint capability negotiation and match occur after the H.323 connect message, video streams over H.323 network require slow-start on call setup procedures for Cisco Unified CME. An H.323 network can connect to a remote Cisco Unified CME router, Cisco Unified Communications Manager, remote IP to IP gateway, or a video-capable H.323 endpoint. For configuration information, see the [“SCCP: Enabling System-Level Video Capabilities”](#) section on page 1092.

## Flow of the RTP Video Stream

For video streams between two local SCCP endpoints, the Real-Time Transport Protocol (RTP) stream is in flow-around mode. For video streams between SCCP and H.323 endpoints or two SCCP endpoints on different Cisco Unified CME routers, the RTP stream is in flow-through mode.

- Media flow-around mode enables RTP packets to stream directly between the endpoints of a VoIP call without the involvement of the gateway. By default, the gateway receives the incoming media, terminates the call, and then reoriginates it on the outbound call leg. In flow-around mode, only signaling data is passed to the gateway, improving scalability and performance.
- With flow-through mode, the video media path is the same as for an audio call. Media packets flow through the gateway, thus hiding the networks from each other.

Use the **show voip rtp connection** command to display information about RTP named-event packets, such as caller-ID number, IP address, and port for both the local and remote endpoints, as show in the following sample output.

```
Router# show voip rtp connections

VoIP RTP active connections :
No. CallId  dstCallId  LocalRTP  RmtRTP  LocalIP      RemoteIP
1   102      103       18714   18158  10.1.1.1    192.168.1.1
2   105      104       17252   19088  10.1.1.1    192.168.1.1
Found 2 active RTP connections
=====
```

## How to Configure Video for SCCP-Based Endpoints

This section contains the following tasks:

- [SCCP: Enabling Support for Video Streams Across H.323 Networks, page 1091](#) (required)
- [SCCP: Enabling System-Level Video Capabilities, page 1092](#) (required)
- [SCCP: Enabling Video Capabilities on a Phone, page 1093](#) (required)
- [Verifying Video Support for SCCP-Based Endpoints, page 1095](#) (optional)
- [Troubleshooting Video Support for SCCP-Based Endpoints, page 1095](#) (optional)

## SCCP: Enabling Support for Video Streams Across H.323 Networks

To enable slow connect procedures in Cisco Unified CME for H.323 networks and H.323 video endpoints, perform the following steps.

### Prerequisites

- For video supplementary services across an H.323 network, H.450 (H.450.2, H.450.3, or H.450.1) standard protocol is required.

### Restrictions

- The only H.323 video endpoints are supported by Cisco Unified CME are: Tandberg version E3.0 and E4.1, and Polycom Release version 7.5.2.

### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **voice service voip**
4. **h323**
5. **call start slow**
6. **end**

## DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>enable</b>  <b>Example:</b> Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"><li>Enter your password if prompted.</li></ul>
Step 2	<b>configure terminal</b>  <b>Example:</b> Router# configure terminal	Enters global configuration mode.
Step 3	<b>voice service voip</b>  <b>Example:</b> Router(config)# voice service voip	Enters voice-service configuration mode.
Step 4	<b>h323</b>  <b>Example:</b> Router(config-voi-serv)# h323	Enters H.323 voice-service configuration mode.
Step 5	<b>call start slow</b>  <b>Example:</b> Router(config-serv-h323)# call start slow	Forces an H.323 gateway to use slow-connect procedures for all VoIP calls.
Step 6	<b>end</b>  <b>Example:</b> Router(config-serv-h323)# end	Exits configuration mode and enters privileged EXEC mode.

## SCCP: Enabling System-Level Video Capabilities

To enable video capabilities and set video parameters for all video-capable phones associated with a Cisco Unified CME router, perform the following steps.

## SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **telephony-service**
4. **service phone videoCapability {0 | 1}**
5. **video**
6. **maximum bit-rate** *value*
7. **end**

## DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>enable</b>  <b>Example:</b> Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>Enter your password if prompted.</li> </ul>
Step 2	<b>configure terminal</b>  <b>Example:</b> Router# configure terminal	Enters global configuration mode.
Step 3	<b>telephony-service</b>  <b>Example:</b> Router(config)# telephony-service	Enters telephony-service configuration mode.
Step 4	<b>service phone videoCapability {0   1}</b>  <b>Example:</b> Router(config-telephony)# service phone videoCapability 1	Enables or disables video capability parameter for all applicable IP phones associated with Cisco Unified CME router. <ul style="list-style-type: none"> <li>The parameter name is word and case-sensitive.</li> <li><b>0</b>—Disable (default).</li> <li><b>1</b>—Enable.</li> </ul>
Step 5	<b>video</b>  <b>Example:</b> Router(config-telephony)# video	(Optional) Enters video configuration mode. <ul style="list-style-type: none"> <li>Required only if you want to modify the maximum value of the video bandwidth for all video-capable phones.</li> </ul>
Step 6	<b>maximum bit-rate value</b>  <b>Example:</b> Router(conf-tele-video)# maximum bit-rate 256	(Optional) Sets the maximum IP phone video bandwidth, in kb/s. <ul style="list-style-type: none"> <li><i>value</i>—Range: 0 to 10000000. Default: 10000000.</li> </ul>
Step 7	<b>end</b>  <b>Example:</b> Router(conf-tele-video)# end	Exits to privileged EXEC mode.

## SCCP: Enabling Video Capabilities on a Phone

To enable video for video-capable phones associated with a Cisco Unified CME router, perform the following steps for each phone.

### Prerequisites

- Video capabilities are enabled at a system level. See the [“SCCP: Enabling System-Level Video Capabilities”](#) section on page 1092.

- Use the **show ephone registered** command to identify individual video-capable SCCP phones, by ephone-tag, that are registered in Cisco Unified CME. The following example shows that ephone 1 has video capabilities and ephone 2 is an audio-only phone.

```
Router# show ephone registered
```

```
ephone-1 Mac:0011.5C40.75E8 TCP socket:[1] activeLine:0 REGISTERED in SCCP ver 6 +
Video and Server in ver 5
mediaActive:0 offhook:0 ringing:0 reset:0 reset_sent:0 paging 0 debug:0 caps:7
IP:10.1.1.6 51833 7970 keepalive 35 max_line 8
button 1: dn 1 number 8003 CH1 IDLE CH2 IDLE
```

```
ephone-2 Mac:0006.D74B.113D TCP socket:[2] activeLine:0 REGISTERED in SCCP ver 6 and
Server in ver 5
mediaActive:0 offhook:0 ringing:0 reset:0 reset_sent:0 paging 0 debug:0 caps:7
IP:10.1.1.4 51123 Telecaster 7960 keepalive 36 max_line 6
button 1: dn 2 number 8004 CH1 IDLE CH2 IDLE
button 2: dn 4 number 8008 CH1 IDLE CH2 IDLE
=====
```

## SUMMARY STEPS

- enable
- configure terminal
- ephone *phone-tag*
- video
- end

## DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>enable</b>  <b>Example:</b> Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"><li>Enter your password if prompted.</li></ul>
Step 2	<b>configure terminal</b>  <b>Example:</b> Router# configure terminal	Enters global configuration mode.
Step 3	<b>ephone <i>phone-tag</i></b>  <b>Example:</b> Router(config)# ephone 6	Enters ephone configuration mode. <ul style="list-style-type: none"><li><i>phone-tag</i>—Unique sequence number that identifies an ephone during configuration tasks.</li></ul>
Step 4	<b>video</b>  <b>Example:</b> Router(config-ephone)# video	Enables video capabilities on the specified ephone.
Step 5	<b>end</b>  <b>Example:</b> Router(config-ephone)# end	Exits configuration mode and enters privileged EXEC mode.

## Verifying Video Support for SCCP-Based Endpoints

Use the **show running-config** command to verify the video settings in the configuration.

See the telephony-service portion of the output for commands that configure video support on the Cisco Unified CME.

See the ephone portion of the output for commands that configure video support for a specific ephone.

The following example shows the telephony-service portion of the output:

```
telephony-service
  video
    maximum bit-rate 256
  load 7960-7940 P00306000404
  max-ephones 24
  max-dn 24
  ip source-address 10.0.180.130 port 2000
  service phone videoCapability 1
  timeouts interdigit 4
  timeouts ringing 100
  create cnf-files version-stamp Jan 01 2002 00:00:00
  keepalive 60
  max-conferences 4 gain -6
  call-park system redirect
  call-forward pattern .T
  web admin system name cisco password cisco
  web customize load xml.jeff
  dn-webedit
  time-webedit
  transfer-system full-consult
  transfer-pattern .T
```

The following example shows the ephone portion of the output:

```
ephone 6
  video
  mac-address 000F.F7DE.CAA5
  type 7960
  button 1:6
```

## Troubleshooting Video Support for SCCP-Based Endpoints

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- Step 1** For SCCP endpoint troubleshooting, use the following **debug** commands:
- **debug cch323 video**—Enables video debugging trace on the H.323 service-provider interface (SPI).
  - **debug ephone detail**—Debugs all Cisco Unified IP phones that are registered to the router, and displays error and state levels.
  - **debug h225 asn1**—Displays Abstract Syntax Notation One (ASN.1) contents of H.225 messages that have been sent or received.
  - **debug h245 asn1**—Displays ASN.1 contents of H.245 messages that have been sent or received.
  - **debug voip ccapi inout**—Displays the execution path through the call-control application programming interface (CCAPI).
- Step 2** For ephone troubleshooting, use the following **debug** commands:
- **debug ephone message**—Enables message tracing between Cisco Unified IP phones.
  - **debug ephone register**—Sets registration debugging for Cisco Unified IP phones.

- **debug ephone video**—Sets ephone video traces, which provide information about different video states for the call, including video capabilities selection, start, and stop.

**Step 3** For basic video-to-video call checking, use the following **show** commands:

- **show call active video**—Displays call information for SCCP video calls in progress.
- **show ephone offhook**—Displays information and packet counts for ephones that are off hook.
- **show ephone registered**—Displays the status of registered ephones.
- **show voip rtp connections**—Displays information about RTP named-event packets, such as caller ID number, IP address, and port for both the local and remote endpoints.

## Where to Go Next

After enabling video for video-capable phones in Cisco Unified CME, you must generate a new configuration file. See [“Generating Configuration Files for Phones” on page 261](#).

## Additional References

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

## Related Documents

Related Topic	Document Title
Cisco Unified CME configuration	<ul style="list-style-type: none"> <li>• <a href="#">Cisco Unified CME Command Reference</a></li> <li>• <a href="#">Cisco Unified CME Documentation Roadmap</a></li> </ul>
Cisco IOS commands	<ul style="list-style-type: none"> <li>• <a href="#">Cisco IOS Voice Command Reference</a></li> <li>• <a href="#">Cisco IOS Software Releases 12.4T Command References</a></li> </ul>
Cisco IOS configuration	<ul style="list-style-type: none"> <li>• <a href="#">Cisco IOS Voice Configuration Library</a></li> <li>• <a href="#">Cisco IOS Software Releases 12.4T Configuration Guides</a></li> </ul>
Phone documentation for Cisco Unified CME	<ul style="list-style-type: none"> <li>• <a href="#">User Documentation for Cisco Unified IP Phones</a></li> </ul>

## Technical Assistance

Description	Link
<p>The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies.</p> <p>To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds.</p> <p>Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.</p>	<p><a href="http://www.cisco.com/techsupport">http://www.cisco.com/techsupport</a></p>

# Feature Information for Video Support for SCCP-Based Endpoints

Table 50 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 CME and Cisco IOS Software Version Compatibility Matrix* at [http://www.cisco.com/en/US/docs/voice\\_ip\\_comm/cucme/requirements/guide/33matrix.htm](http://www.cisco.com/en/US/docs/voice_ip_comm/cucme/requirements/guide/33matrix.htm).

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**

The following table 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 50** Feature Information for Video Support for SCCP-Based Endpoints

Feature Name	Cisco Unified CME Version	Feature Information
SIP Trunk Video Support for SCCP Endpoints	7.1	<ul style="list-style-type: none"> <li>Support was added for video calls between SCCP endpoints across different Cisco Unified CME routers connected through a SIP trunk.</li> <li>H.264 codec support was added.</li> </ul>
Video Support for SCCP-Based Endpoints	4.0	Video support for SCCP-based endpoints was introduced.