



Cisco Integrated 3G-324M Gateway

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The Cisco Integrated 3G-324M Gateway allows multimedia communications (H.324M) between 3G (third generation) mobile handsets and Session Initiation Protocol (SIP) endpoints.

Finding Feature Information in This Module

Your Cisco IOS software release may not support all of the features documented in this module. To reach links to specific feature documentation in this module and to see a list of the releases in which each feature is supported, use the [“Feature Information for Cisco Integrated 3G-324M Gateway”](#) section on page 22.

Finding Support Information for Platforms and Cisco IOS and Catalyst OS Software Images

Use Cisco Feature Navigator to find information about platform support and Cisco IOS and Catalyst OS software image support. To access Cisco Feature Navigator, go to <http://www.cisco.com/go/cfn>. An account on Cisco.com is not required.

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Prerequisites for Cisco Integrated 3G-324M Gateway

Before you configure Cisco Integrated 3G-324M Gateway, you must do the following:

- Ensure that you have a Cisco IOS image that supports this feature. Access Cisco Feature Navigator at <http://www.cisco.com/go/cfn>.
- Perform basic ISDN voice configuration. For more information, see *Configuring ISDN PRI Voice-Interface Support*.
- Ensure that the ISDN layer is up. Use the **show isdn status** command to display the current status of each ISDN layer.
- Set T1/E1 clocking. Use the **network-clock-select** command to name a source to provide timing for the network clock and to specify the selection priority for this clock source.
- Ensure you have a PVDM2 card.

Supported Routers, Hardware Modules, and Codecs

- This feature supports the following routers:
 - Cisco AS5350XM
 - Cisco AS5400XM
- This feature supports the following hardware modules:
 - AS53-DFC-2CT1/E1
 - AS53-DFC-4CT1/E1
 - AS53-DFC-8CT1/E1
 - AS54-DFC-2CT1/E1
 - AS54-DFC-4CT1/E1
 - AS54-DFC-8CT1/E1
- This feature supports the following video codecs:
 - ITU-T Recommendation H.263/H.263+
 - MPEG-4

Supported Topologies

See the “[How to Configure Cisco Integrated 3G-324M Gateway](#)” section on page 3.

Information About Cisco Integrated 3G-324M Gateway

Targeting video contact centers, mobile-to-fixed 3G calls, and video conferencing, this feature provides 3G-324M based video functionality to Cisco AS5xxx Universal Gateways. Enterprise customers can interconnect directly with mobile providers for enhanced services without regard to their communications location or medium.

3G-324M is protocol for video telephony in 3GPP mobile networks. 3G-324M is based on the ITU-T H.324 specification for multimedia conferencing over circuit switched networks.

3G-324M is a proven solution for multimedia based services that packet-based wireless networks cannot deliver because of overhead, BER sensitivity, and routing delays. 3G-324M operating over a circuit switched channel between two communication peers guarantees the fixed-delay quality of service for multimedia communications.

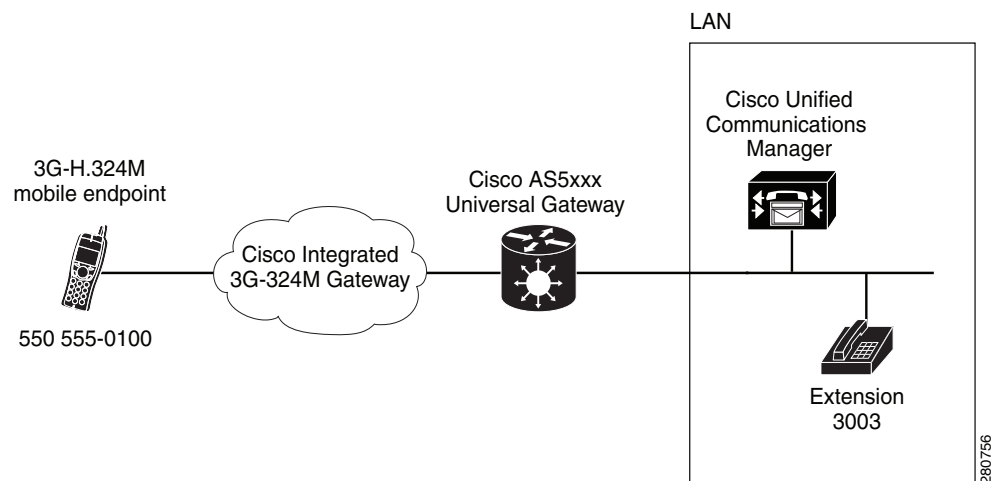
How to Configure Cisco Integrated 3G-324M Gateway

This feature is implemented through SIP-based interconnects and TDM cross connected trunk lines from the primary voice interface. [Figure 1](#) shows the typical topology to deploy 3G-324M and is required for this feature.

This section describes how to configure the Cisco Integrated 3G-324M Gateway to support the topology shown, and includes the following tasks:

- [Configuring the Ethernet Interface for SIP Packets, page 4](#)
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- [Configuring the Incoming POTS Dial-peer for Calls from a 3G-H324M Mobile Endpoint to a SIP Video Extension, page 8](#)
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Figure 1 Cisco Integrated 3G-324M Gateway Topology



Configuring the Ethernet Interface for SIP Packets

Perform the following steps to configure the Ethernet Interface for SIP packets.

In this task you configure SIP and the Ethernet interface.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **sip**
4. **bind [control | media] source interface *interface-id***
5. **bind [control | media] source interface *interface-id* (end SIP configuration)**
6. **exit**
7. **interface *ethernet slot/port***
8. **ip address *ip-address mask***
9. **duplex *auto***
10. **speed *auto***
11. **negotiation *auto***
12. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	configure terminal Example: Router# configure terminal	Enters global configuration mode.
Step 3	sip Example: Router(config-voi-srv)# sip	Enters SIP configuration mode.
Step 4	bind control source-interface interface-id Example: Router(conf-serv-sip)# bind control source-interface GigabitEthernet0/1	Binds the source address for signaling to the IP address of a specific interface.

	Command or Action	Purpose
Step 5	<pre>bind media source-interface interface-id</pre> <p>Example: <pre>Router(conf-serv-sip)# bind media source-interface GigabitEthernet0/1</pre></p>	Binds the source address for media to the IP address of a specific interface.
Step 6	<pre>exit</pre> <p>Example: <pre>Router(conf-serv-sip)# exit</pre></p>	Exits SIP configuration mode.
Step 7	<pre>interface gigabitethernet slot/port</pre> <p>Example: <pre>Router(config)# interface GigabitEthernet0/1</pre></p>	Enters interface configuration mode by specifying the Gigabit Ethernet interface that you want to configure.
Step 8	<pre>ip address ip-address mask</pre> <p>Example: <pre>Router(config)# ip address 209.165.200.225 255.255.255.224</pre></p>	Sets a primary or secondary IP address for an interface.
Step 9	<pre>duplex auto</pre> <p>Example: <pre>Router(config-if)# duplex auto</pre></p>	Configures duplex operation on an interface.
Step 10	<pre>speed auto</pre> <p>Example: <pre>Router(config-if)# speed auto</pre></p>	Configures the speed for a Fast Ethernet interface.
Step 11	<pre>negotiation auto</pre> <p>Example: <pre>Router(config-if)# negotiation auto</pre></p>	Configures the speed, duplex, and flow control on the Gigabit Ethernet port.
Step 12	<pre>end</pre> <p>Example: <pre>Router(config-if)# end</pre></p>	Returns to privileged EXEC mode.

Configuring the E1 Controller and ISDN Interfaces

Perform the following steps to configure the Ethernet Interface for SIP packets. In this task you configure the controller interface and the ISDN interface.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **controller e1 slot/port**
4. **framing T1/E1 controller**
5. **pri-group timeslots range**
6. **exit**
7. **interface serial slot/port:channel-group**
8. **no ip address**
9. **encapsulation encapsulation-type**
10. **isdn switch-type switch-type**
11. **no cdp enable**
12. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	configure terminal Example: Router# configure terminal	Enters global configuration mode.
Step 3	controller e1 slot/port Example: Router(config)# controller E1 3/0	Configures an E1 controller and enters controller configuration mode.
Step 4	framing crc4adm Example: Router(config)# framing NO-CRC4	Selects the frame type for the E1 data line.

	Command or Action	Purpose
Step 5	<pre>pri-group timeslots range</pre> <p>Example: Router(config-controller)# pri-group timeslots 1-30</p>	Specifies an ISDN PRI group on a channelized E1 controller.
Step 6	<pre>exit</pre> <p>Example: Router(config-controller)# exit</p>	Exits controller configuration mode.
Step 7	<pre>interface serial slot/port:channel-group</pre> <p>Example: Router(config)# interface Serial3/0:15</p>	Configures an interface type and enters interface configuration mode
Step 8	<pre>ip address</pre> <p>Example: Router(config-if)# no ip address</p>	Removes an IP address or disables IP processing.
Step 9	<pre>encapsulation encapsulation-type</pre> <p>Example: router(config-if)# encapsulation hdlc</p>	Sets the encapsulation method for the interface.
Step 10	<pre>isdn switch-type switch-type</pre> <p>Example: Router(config)# isdn switch-type primary-net5</p>	Configures a central office switch on the ISDN interface.
Step 11	<pre>no cdp enable</pre> <p>Example: Router(config-if)# no cdp enable</p>	<p>Enables Cisco Discovery Protocol on an interface.</p> <p>To disable on an interface, use the no form of this command.</p>
Step 12	<pre>end</pre> <p>Example: Router(config-if)# end</p>	Returns to privileged EXEC mode.

Configuring the Incoming POTS Dial-peer for Calls from a 3G-H324M Mobile Endpoint to a SIP Video Extension

Perform the following task to configure the incoming POTS dial-peer for calls from a 3G-H324M mobile endpoint to a SIP video extension.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **dial-peer voice tag pots**
4. **information-type video**
5. **incoming called-number** *[+]string*[T]
6. **direct-inward-dial**
7. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none">• Enter your password if prompted.
Step 2	configure terminal Example: Router# configure terminal	Enters global configuration mode.
Step 3	dial-peer voice tag pots Example: Router(config)# dial-peer voice 551 pots	Defines a particular dial peer, specifies the method of voice encapsulation, and enters dial peer configuration mode.
Step 4	information-type video Example: Router(config-dial-peer)# information-type video	Selects the POTS dial peer to be a video dial peer. Without this setting, the dial peer acts as a plain voice dial peer.
Step 5	incoming called-number <i>[+]string</i> [T] Example: Router(config-dial-peer)# incoming called-number 5505550100	Specifies a digit string that can be matched by an incoming call to associate the call with a dial peer.

	Command or Action	Purpose
Step 6	<pre>direct-inward-dial</pre> <p>Example: Router(config-dial-peer)# direct-inward-dial </p>	Enables the direct inward dialing (DID) call treatment for an incoming called number.
Step 7	<pre>end</pre> <p>Example: Router(config)# end </p>	Returns to privileged EXEC mode.

Configuring the Outgoing VoIP (SIP) Dial peer for Calls from a 3G-H324M Mobile Endpoint to a SIP Video Extension

Perform the following tasks to configure the outgoing VoIP dial peer for calls from a 3G-H324M mobile endpoint to a SIP video extension.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **dial-peer voice *tag* voip**
4. **destination-pattern *[+]*string[T]**
5. **session protocol *sipv2***
6. **session target *ipv4:destination-address***
7. **codec *codec***
8. **no vad**
9. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	<pre>enable</pre> <p>Example: Router> enable </p>	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	<pre>configure terminal</pre> <p>Example: Router# configure terminal </p>	Enters global configuration mode.

	Command or Action	Purpose
Step 3	<pre>dial-peer voice tag voip</pre> <p>Example: <pre>Router(config)# dial-peer voice 550111 voip</pre></p>	Defines a particular dial peer, specifies the method of voice encapsulation, and enters dial-peer configuration mode.
Step 4	<pre>destination-pattern [+]string[T]</pre> <p>Example: <pre>Router(conf-dial-peer)# destination-pattern 5505550100</pre></p>	Specifies either the prefix or the full E.164 telephone number to be used for a dial peer.
Step 5	<pre>session protocol sipv2</pre> <p>Example: <pre>Router(conf-dial-peer)# session protocol sipv2</pre></p>	Specifies a session protocol for calls between local and remote routers using the packet network.
Step 6	<pre>session target ipv4:destination-address</pre> <p>Example: <pre>Router(conf-dial-peer)# session target ipv4:209.165.200.225</pre></p>	Designates a network-specific address to receive calls from a VoIP dial peer.
Step 7	<pre>codec codec</pre> <p>Example: <pre>Router(conf-dial-peer)# codec g711ulaw</pre></p>	Specifies the voice coder rate of speech for a dial peer.
Step 8	<pre>vad</pre> <p>Example: <pre>Router(conf-dial-peer)# no vad</pre></p>	Enables voice activity detection (VAD) for calls using a specific dial peer. To disable VAD, use the no form of this command.
Step 9	<pre>end</pre> <p>Example: <pre>Router(conf-dial-peer)# end</pre></p>	Returns to privileged EXEC mode.

Configuring the Outgoing POTS Dial Peer for Calls from a SIP Video Extension to a 3G-H324M Mobile Endpoint

Perform the following tasks to configure the outgoing POTS dial-peer for calls from a SIP video extension to a 3G-H324M mobile endpoint.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **dial-peer voice tag pots**
4. **destination-pattern [+]string[T]**

5. **information-type** *video*
6. **port** *controller-number:D*
7. **forward-digits** *all*
8. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	<pre>enable</pre> <p>Example: Router> enable </p>	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	<pre>configure terminal</pre> <p>Example: Router# configure terminal </p>	Enters global configuration mode.
Step 3	<pre>dial-peer voice tag pots</pre> <p>Example: Router(config-dial-peer)# dial-peer voice 550111 pots </p>	Defines a particular dial peer, specifies the method of voice encapsulation, and enters dial-peer configuration mode.
Step 4	<pre>destination-pattern [+]string[T]</pre> <p>Example: router(config-dial-peer)# destination-pattern 5505550100 </p>	Specifies either the prefix or the full E.164 telephone number to be used for a dial peer.
Step 5	<pre>information-type video</pre> <p>Example: Router(config-dial-peer)# information-type video </p>	Selects the POTS dial-peer to be a video dial-peer. Without this setting, the dial-peer acts as a plain voice dial-peer.
Step 6	<pre>port controller-number:D</pre> <p>Example: Router(config-dial-peer)# port 3/0:D </p>	Associates a dial peer with a specific voice port.
Step 7	<pre>forward-digits all</pre> <p>Example: Router(config-dial-peer)# forward-digits all </p>	Specifies which digits to forward, if any.
Step 8	<pre>end</pre> <p>Example: Router(config-dial-peer)# end </p>	Returns to privileged EXEC mode.

Configuring Midcall Video Escalation/De-escalation Capability for an H.324 SIP Call

In the basic Cisco Unified Customer Voice Portal (Cisco Unified CVP) architecture, typically a call is answered by a voiceXML (VXML) audio-only server. This call can be transferred to a video enabled agent sometime during the call. At this time video needs to be added to the call. Also, to support supplementary services, the call may be moved between audio only and video enabled agents. The ability to not only add video midcall is needed, but also the ability to remove video.

The current 3G handsets may not support media re-negotiation, which would prevent true video escalation and de-escalation toward the H.324 endpoint.

The basic call setup for Cisco Unified CVP involves the call-setup with the audio Interactive Voice Response (IVR) server first, a ringback server, and finally Cisco Unified Communications Manager for the audio and video agent. Because media may not be renegotiated on an H.324 endpoint, the initial call with the H.324 endpoint is established using audio and video capabilities. The video capabilities are configured through the **codec profile** command. During multiple transfers, the video capabilities between the various endpoints must match with what is configured in the codec profile.

Perform the following tasks to configure midcall video escalation and de-escalation capability for an H.324 SIP call.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **codec profile tag profile**
4. **fntp fntp:[payload type] [name1]=[val1]; [name2]=[val2]...**
5. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	configure terminal Example: Router# configure terminal	Enters global configuration mode.
Step 3	codec profile tag profile Example: Router(config-dial-peer)# codec profile 1000 h263+	Defines video capabilities needed for video endpoints.

	Command or Action	Purpose
Step 4	<pre>fmtp fmtp:[payload type] [name1]=[val1]; [name2]=[val2]</pre> <p>Example:</p> <pre>router(config-codec-profile)# fmtp "fmtp:96 QCIF=2;CIF=4;MAXBR=500;D=1;F=1;I=1;J=1;K=1;N=1; P=1;T=1,CUSTOM=X,Y,MPI"</pre>	Sets a format-specific string for a codec.
Step 5	<pre>dial-peer voice [dial-peer tag] voip video codec h263 h263+ profile [tag]</pre> <p>Example:</p> <pre>Router(config-dial-peer)#Dial-peer voice 1111 voip Video codec h263+ profile 1000</pre>	Matches a codec profile to a VoIP dial-peer.
Step 6	<pre>end</pre> <p>Example:</p> <pre>Router(config-dial-peer)# end</pre>	Returns to privileged EXEC mode.

Additional References

The following sections provide references related to integrating 3G-324M gateways for SIP endpoints.

Cisco Related Documents

Related Topic	Document Title
Information on integrating data and voice	<i>Integrating Data and Voice Services for ISDN PRI Interfaces on Multiservice Access Routers</i>
ISDN configuration information	<i>Cisco IOS ISDN Voice Configuration Guide</i>
ISDN voice interface information	<i>Configuring ISDN PRI Voice-Interface Support</i>
Video command reference information	<i>Cisco IOS Voice Video, and Fax Command Reference</i>
Video telephony	<i>Understanding Video Telephony</i>
Voice command reference information	<i>Cisco IOS Voice Command Reference</i>
Voice configuration information	<i>Cisco IOS Voice Configuration Library</i>

Standards

Standard	Title
IEC 14496-2	Information Technology -- Coding of audio-visual object - Part 2: Visual
ITU-T H.324	Terminal for low bit-rate multimedia communication.
ITU-T H.223	Multiplexing protocol for low bit rate multimedia communication.
ITU-T H.245	Control protocol for multimedia communication.
ITU-T H.263	Video coding for low bit rate communication.

MIB

MIB	MIBs Link
CISCO-VOICE-COMMON-DIAL-CONTROL-MIB	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs
CISCO-VOICE-DIAL-CONTROL-MIB	
CISCO-H324-DIAL-CONTROL-MIB	

RFC

RFC	Title
RFC 3261	RFC 3261 - SIP: Session Initiation Protocol
RFC 3264	RFC 3264 - An Offer/Answer Model with Session Description Protocol (SDP)

RFC	Title
RFC 3016	RFC 3016 - RTP Payload Format for MPEG-4 Audio/Visual Streams
RFC 4629	RFC 4629 - Payload Format for ITU-T Rec. H.263 Video

ISO

ISO	Title
IEC 14496-2	Information Technology -- Coding of audio-visual object - Part 2: Visual

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>	http://www.cisco.com/techsupport

Command Reference

The following commands are introduced in the feature documented in this module. For information about all Cisco IOS commands, use the Command Lookup Tool at <http://tools.cisco.com/Support/CLILookup> or the *Cisco IOS Master Command List, All Releases*, at http://www.cisco.com/en/US/docs/ios/mcl/allreleasemcl/all_book.html.

Debug Commands

- `debug voip h324`
- `debug voice h324`

debug voip h324

To debug video call control information, use the **debug voip h324** command in privileged EXEC mode. To disable debugging output, use the **no** form of this command.

debug voip h324 [**all** | **function** | **inout** | **default** | **individual** *number*] | **message** | **error** [**software** | **informational**] | **call** [**informational**]]]

Syntax Description

all	(Optional) Enables all H.324 debugging except raw and raw decode.
default	(Optional) Activates function, inout, error call, and software debugging.
error	(Optional) Enables H.324 call error and software error debugging.
error [call]	(Optional) Enables H.324 major call processing error debugs related to the H.324 subsystem.
error [call [informational]]	(Optional) Enables H.324 major and informational call processing error debugs related to the H.324 subsystem.
error [software]	(Optional) Enables H.324 major software error debugs related to the H.324 subsystem.
error [software [informational]]	(Optional) Enables H.324 major and informational software error debugs related to the H.324 subsystem.
function	(Optional) Enables procedure tracing.
individual	(Optional) Activates individual H.324 debugging.
inout	(Optional) Enables subsystem inout debugging.
message	(Optional) Enables H.245 message display to/from H.324. Only displays message types, for message detail, use debug h245 asn1 .
number	Index number. Number of debug category. See

Command Modes

Privileged EXEC

Command History

Release	Modification
12.4(20)T	This command was introduced.

Usage Guidelines

This command enables debugging for H.324 message events (video call control information).



Note

This command is the same as the **debug voice h324** command.



Caution

We recommend that you log the output from the **debug voip h324 all** command to a buffer, rather than sending the output to the console; otherwise, the size of the output could severely impact the performance of the gateway.

Use the **debug voip h324 individual** *index-number* command, where *index number* is a debug category, to activate a single debug.

This is helpful when trying to see a specific problem, without having a large number of debug output being generated. For example, the user could select the command **debug voip h324 individual 4** to see calls where no video caps arrived from the IP side of the call (SIP to H.324 direction). Multiple debug output can be activated using this command, one at a time. These are not additional debug output to the ones enabled by the command **debug voip h324 all**, just another way to selectively see specific information, without generating large amounts of debug output.

Table 1 *Index Numbers and Descriptions for the debug voip h324 Command*

Index Number	Description
1	Shows incoming H.245 message type
2	Shows MSD master/slave determination upon receiving MSD from peer
3	Warns that no audio caps were found from IP leg (not necessarily an error).
4	Warns that no video caps were found from IP leg (not necessarily an error).
5	Shows MSD master/slave determination when sending MSDack.
6	Displays media type being sent (audio/video), when sending MES message.
7	Displays H.223 parameters when sending TCS.
8	Displays OLC information, when sending audio OLC.
9	Displays OLC information, when sending video OLC.
10	Displays OLCack information, when sending OLCack.
11	Displays OLCrej information, when sending OLCrej.
12	Displays digit begin sent, when sending USER INPUT message.
13-15	Displays internal status bits of h245 messages sent/received in the h324 subsystem. No user data is provided.
16	Displays master/slave determination when MSDack is received.
17	Displays media type when MESack is received.
18	Displays media type when MESrej is received.
19	Displays OLC information, when receiving audio OLC.
20	Displays OLC information, when receiving video OLC.
21	Displays media type when OLCack is received.
22	Displays media type when OLCrej is received.
23	Displays message type, when an H.245 miscellaneous message is received (for example FastVideoUpdate).
24	Displays digit being received, when receiving USER INPUT message.
25	Displays message type, when an H.245 miscellaneous message is sent (for example FastVideoUpdate).
26	Displays outgoing message command type. No user data is provided with this debug.
27	Displays the initial H.223 mux level received from the peer, reported by the DSP.
28	Displays information about either OLCack or OLCrej being sent in response to an OLC request.
29	Displays the audio codec being opened with the IP leg.
30	Displays the video codec being opened with the IP leg. Should always be the same as the video codec with the H.324 leg.

Table 1 *Index Numbers and Descriptions for the debug voip h324 Command (continued)*

Index Number	Description
31	Displays when Cisco IOS is sending the DSP either the H.223 multiplex table, or AL information. No user data is provided.
32	Indicates the digit being sent to the IP leg, through the RFC 2833 procedure.
33-34	Displays the parameters being sent to the DSP to configure either audio or video.
35	Displays information about the H.223 multiplex table being sent to the DSP.
36	Displays information about the H.223 AL configuration being sent to the DSP.
37-38	Indicates message arriving from IP leg. No user data is provided.
39	Displays information when receiving VENDOR ID message. This may show the type of equipment being connected to on the H.324 leg, if the peer adds the information to the message.
40	Displays the new H.223 multiplex level being configured.
41	Displays the new H.223 maximum PDU size being configured.
42	Indicates when the internal video capability memory has been released. No user data is provided.
43	Indicates when an empty capability set (ECS) has arrived from the IP leg of the call.
44	Indicates when a new capability set has arrived from the IP leg after an ECS has arrived.
45	Displays the dynamic payload number from the IP leg (H.324 to IP direction).

debug voice h324

To debug video call control information, use the **debug voice h324** command in privileged EXEC mode. To disable debugging output, use the **no** form of this command.

debug voice h324 [**all** | **function** | **inout** | **default** | **individual** *number*] | **message** | **error** [**software** | **informational**] | **call** [**informational**]]

Syntax Description

all	(Optional) Enables all H.324 debugging except raw and raw decode.
default	(Optional) Activates function, inout, error call, and software debugging.
error	(Optional) Enables H.324 call error and software error debugging.
error [call]	(Optional) Enables H.324 major call processing error debugs related to the H.324 subsystem.
error [call informational]]	(Optional) Enables H.324 major and informational call processing error debugs related to the H.324 subsystem.
error [software]	(Optional) Enables H.324 major software error debugs related to the H.324 subsystem.
error [software informational]]	(Optional) Enables H.324 major and informational software error debugs related to the H.324 subsystem.
function	(Optional) Enables procedure tracing.
individual	(Optional) Activates individual H.324 debugging.
inout	(Optional) Enables subsystem inout debugging.
message	(Optional) Enables H.245 message display to/from H.324. Only displays message types, for message detail, use debug h245 asn1 .
number	Index number. Number of debug category. See Table 2 .

Command Modes

Privileged EXEC

Command History

Release	Modification
12.4(20)T	This command was introduced.

Usage Guidelines

This command enables debugging for H.324 message events (video call control information).



Note

This command is the same as the **debug voip h324** command.



Caution

We recommend that you log the output from the **debug voice h324 all** command to a buffer, rather than sending the output to the console; otherwise, the size of the output could severely impact the performance of the gateway.

Use the **debug voice h324 individual** *index-number* command, where *index number* is a debug category, to activate a single debug.

This is helpful when trying to see a specific problem, without having a large number of debug output being generated. For example, the user could select the command **debug voice h324 individual 4** to see calls where no video caps arrived from the IP side of the call (SIP to H.324 direction). Multiple debug output can be activated using this command, one at a time. These are not additional debug output to the ones enabled by the command **debug voice h324 all**, just another way to selectively see specific information, without generating large amounts of debug output.

Table 2 *Index Numbers and Descriptions for the debug voice h324 Command*

Index Number	Description
1	Shows incoming H.245 message type
2	Shows MSD master/slave determination upon receiving MSD from peer
3	Warns that no audio caps were found from IP leg (not necessarily an error).
4	Warns that no video caps were found from IP leg (not necessarily an error).
5	Shows MSD master/slave determination when sending MSDack.
6	Displays media type being sent (audio/video), when sending MES message.
7	Displays H.223 parameters when sending TCS.
8	Displays OLC information, when sending audio OLC.
9	Displays OLC information, when sending video OLC.
10	Displays OLCack information, when sending OLCack.
11	Displays OLCrej information, when sending OLCrej.
12	Displays digit begin sent, when sending USER INPUT message.
13-15	Displays internal status bits of h245 messages sent/received in the h324 subsystem. No user data is provided.
16	Displays master/slave determination when MSDack is received.
17	Displays media type when MESack is received.
18	Displays media type when MESrej is received.
19	Displays OLC information, when receiving audio OLC.
20	Displays OLC information, when receiving video OLC.
21	Displays media type when OLCack is received.
22	Displays media type when OLCrej is received.
23	Displays message type, when an H.245 miscellaneous message is received (for example FastVideoUpdate).
24	Displays digit begin received, when receiving USER INPUT message.
25	Displays message type, when an H.245 miscellaneous message is sent (for example FastVideoUpdate).
26	Displays outgoing message command type. No user data provided with this debug.
27	Displays the initial H.223 mux level received from the peer, reported by the DSP.
28	Displays information about either OLCack or OLCrej being sent in response to an OLC request.
29	Displays the audio codec being opened with the IP leg.
30	Displays the video codec being opened with the IP leg. Should always be the same as the video codec with the H.324 leg.

Table 2 *Index Numbers and Descriptions for the debug voice h324 Command (continued)*

Index Number	Description
31	Displays when IOS is sending the DSP either the H.223 mux table, or AL information. No user data is provided.
32	Indicates the digit being sent to the IP leg, through the RFC 2833 procedure.
33-34	Displays the parameters being sent to the DSP to configure either audio or video.
35	Displays information about the H.223 multiplex table being sent to the DSP.
36	Displays information about the H.223 AL configuration being sent to the DSP.
37-38	Indicates message arriving from IP leg. No user data is provided.
39	Displays information when receiving VENDOR ID message. This may show the type of equipment being connected to on the H.324 leg, if the peer adds the information to the message.
40	Displays the new H.223 multiplex level being configured.
41	Displays the new H.223 maximum PDU size being configured.
42	Indicates when the internal video capability memory has been released. No user data is provided.
43	Indicates when an empty capability set (ECS) has arrived from the IP leg of the call.
44	Indicates when a new capability set has arrived from the IP leg after an ECS has arrived.
45	Displays the dynamic payload number from the IP leg (H.324 to IP direction).

Feature Information for Cisco Integrated 3G-324M Gateway

Table 3 lists the release history for this feature.

Not all commands may be available in your Cisco IOS software release. For release information about a specific command, see the command reference documentation.

Use Cisco Feature Navigator to find information about platform support and software image support. Cisco Feature Navigator enables you to determine which Cisco IOS, Catalyst OS, and Cisco IOS XE 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 3 lists only the Cisco IOS software release that introduced support for a given feature in a given Cisco IOS software release train. Unless noted otherwise, subsequent releases of that Cisco IOS software release train also support that feature.

Table 3 Feature Information for Cisco Integrated 3G-324M Gateway

Feature Name	Releases	Feature Information
Cisco Integrated 3G-324M Gateway	12.4(20)T	<p>The Cisco Integrated 3G-324M Gateway allows multimedia communications (H.324M) between 3G (third generation) mobile handsets and Session Initiation protocol (SIP) endpoints.</p> <p>The following sections provide information about this feature:</p> <ul style="list-style-type: none"> “Information About Cisco Integrated 3G-324M Gateway” section on page 2 “How to Configure Cisco Integrated 3G-324M Gateway” section on page 3 <p>The following commands were introduced: debug voice h221, debug voip h221.</p> <p>This product utilizes the command line interface (CLI) for configuration purposes. The CLI is inherently 508 conformant because it is text based and relies on keyboard for navigation. IOS "The IOS Command Line Interface" (CLI) is fully compatible with all text-to-speech PC screen readers and therefore meets the U.S. GSA interpretation of Section 508 that a back office product be fully accessible to a low-vision or blind remote network administrator. Therefore, there's no administrative accessibility change to consider. IOS has a separate VPAT for the "remote administrator" requirements.</p>
	12.4(22)T	<p>Added Midcall Video Escalation/De-escalation Capability for an H.324 SIP Call.</p> <p>The following commands were introduced: codec profile, clock rate, fntp</p>

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