



Enhanced ITU-T G.168 Echo Cancellation for the Cisco AS5300



Note

For updated information about extended echo cancellation on all supported platforms, refer to the [Configuring Echo Cancellation](#) section of the [Voice Port Configuration](#) document.

This document describes the third-party extended ITU-T G.168 echo canceller (EC) used in Cisco gateways with Cisco IOS Release 12.2(13)T and 12.3(3). The extended EC uses the Cisco voice digital signal processor (DSP) code base (DSPWare).

The G.168 extended EC provides an alternative to the Cisco-proprietary G.165 EC with improved performance for trunking gateway applications. The G.168 extended EC increases the configurable tail length from a maximum of 32 ms to a maximum of 64 ms. The ITU-T G.165 Cisco-proprietary 32-ms EC is still supported. See [Table 1 on page 4](#) for a comparison of the two EC options.



Note

This version of the feature is supported on Cisco AS5300 universal access servers only. The Cisco-proprietary EC with unlimited codec selection is the default.

The benefits of this feature include the following:

- Improved platform functionality by updating the echo cancellation module through a firmware upgrade. A firmware upgrade can be made by upgrading Cisco VCWare. For upgrade information, refer to the [Combined Version Release Notes and Compatibility Matrix for Cisco VCWare on Cisco AS5300 Universal Access Servers/Voice Gateways](#).



Note

A Cisco IOS software upgrade is also required in order to run the extended EC. Refer to the [Cisco AS5300 Universal Access Servers Release Notes](#) for information about software upgrades.

- Ability to enable and disable nonlinear processor (NLP).
- Echo return loss (ERL) configuration enhancements.
- Expanded EC capacity with the option to disable the feature.

For more information about the extended G.168 EC on other Cisco platforms, refer to the *Enhanced ITU-T G.168 Echo Cancellation* feature on Cisco.com.

Feature History for Enhanced ITU-T G.168 Echo Cancellation for the Cisco AS5300

Release	Modification
12.2(13)T	This feature was introduced.
12.2(15)ZJ	The session target test echo-cancel command was removed as an EC test command option.
12.3(3)	The extended EC was configured with no codec restriction.

Finding Support Information for Platforms and Cisco IOS Software Images

Use Cisco Feature Navigator to find information about platform support and Cisco IOS software image support. Access Cisco Feature Navigator at <http://www.cisco.com/go/fn>. You must have an account on Cisco.com. If you do not have an account or have forgotten your username or password, click **Cancel** at the login dialog box and follow the instructions that appear.

Contents

- [Restrictions for the Extended G.168 EC, page 2](#)
- [Information about the Extended G.168 EC, page 2](#)
- [How to Configure the Extended G.168 EC on the Cisco AS5300, page 5](#)
- [Configuration Examples for Enhanced G.168 Echo Cancellation on the Cisco AS5300, page 10](#)
- [Additional References, page 14](#)
- [Command Reference, page 17](#)
- [Glossary, page 20](#)

Restrictions for the Extended G.168 EC

- The extended G.168 EC can be used only in one of the following ways on the Cisco AS5300:
 - With a restricted set of codecs with C542 or C549 DSP firmware. Two channels of voice are supported per DSP, and full call handling capacity is supported.
 - With no restrictions on codecs with C549 DSP firmware. One channel of voice is supported per DSP, and call handling capacity is reduced by half.
- Not all Cisco platforms that use C542 and C549 DSPs support the extended EC. All other platforms continue to use the Cisco-proprietary 32-ms EC by default.

Information about the Extended G.168 EC

The extended EC offers the following improvements over the Cisco default EC:

- Complies with the ITU-T G.168 (2000) standard in addition to maintaining support for the old ITU-T G.165 standard.
- Increases the configurable tail length from a maximum of 32 ms to a maximum of 64 ms.

- Supports the following features:
 - DSPM-C549 with no codec restriction.



Note Call handling capacity per DSP is reduced by half on the C549 digital signal processor module (DSPM).

- DSPM-C542 with no restriction on codecs and no change in call handling capacity per DSP.



Note Cisco default versions of the EC continue to be supported on C542 and C549 DSPM images.

Cisco IOS software supports the following improvements for the extended EC:

- Configuration and reporting of extended echo path capacity.
- Configuration and reporting of worst-case ERL.
- Embedded test support informing the DSP when a call needs special echo cancellation procedures to run ITU-T tests.
- Test mode support for freezing, thawing, and clearing the EC H-register manually.
- Reporting of statistics for location of the largest reflector.
- Reporting of the internal state of the EC.
- Ability to use the extended EC with or without restrictions on available codecs on the Cisco AS5300 C542 and C549 DSPM high-complexity platform.
- Requires configuration of a designated EC for use on the Cisco AS5300 C542 and C549 DSPM high-complexity platform.

Table 1 contains EC comparison information.

Table 1 Echo Cancellation Comparison

	G.165 EC	G.168 EC
Tail Coverage	Up to 32 ms	Up to 64 ms
Minimum ERL	Greater than or equal to 6 decibels (dB)	Configurable to greater than or equal to 0 dB, 3 dB, or 6 dB
Echo Suppression	Up to 10 seconds	Not required because of faster convergence
Minimum Cisco IOS Software Release	12.2(11)T, 12.2(8)T5, 12.2(12), and later	12.2(13)T, 12.2(8)YN, 12.2(15)T, 12.3(3)

Extended G.168 EC Compatibility Matrix

Table 2 contains specific high-complexity and medium-complexity support listed by platform. For hardware support documentation, refer to links provided in the “[Related Documents](#)” section on page 15.

Table 2 Extended Echo Cancellation Algorithm Coverage on the Cisco AS5300

Platform	Module	High Complexity		Medium Complexity		Comments
		Analog	Digital	Analog	Digital	
Cisco AS5300	C542 (restricted codecs) C549 (restricted and unrestricted codecs)	—	12.2(13)T (restricted) 12.3(3) (unrestricted)	—	No	1-channel per DSP on C549 with extended EC, any codec (unrestricted).

How to Configure the Extended G.168 EC on the Cisco AS5300

This section contains tasks for configuring the Enhanced ITU-T G.168 Echo Cancellation feature on the Cisco AS5300. Each procedure is identified as either required or optional.

- [Configuring Extended Echo Cancellation Parameters, page 5](#) (required)
- [Verifying Digital Voice Port Configurations, page 10](#) (optional)

Configuring Extended Echo Cancellation Parameters

In Cisco voice implementations, ECs are enabled using the **echo cancel enable** command, and echo tails are configured using the **echo cancel coverage** command. To configure the extended G.168 EC on the Cisco AS5300, you must also configure codec settings. See the “Prerequisites” section before configuring codecs using the **voice echo-canceller extended** command.

Prerequisites

To use the extended EC with restricted codecs on the Cisco AS5300, you must perform the following tasks before configuring your router using the **voice echo-canceller extended codec** command:

1. Create a backup configuration of your router.
2. Determine which codecs are required when enabling the enhanced echo canceller. For this information, see the codec restriction options in the **voice echo-canceller extended** command reference.
 - a. Specify a single small codec (g711 or g726) and a single large codec (g723, g728, gsmfr, gsmefr, g729, or fax-relay). (Any call setup involving other codecs is rejected.)
 - b. If fax-relay is not selected as the large codec, the VoIP dial peer requires that you use the **fax rate disabled** command in dial-peer configuration mode to reset the dial peer for voice calls.
3. Review your existing configuration and look for all dial peers that select codecs or fax-relay specification that are different from the codecs that you decide upon. Once you have chosen the codecs to be supported by the extended echo canceller, either remove all dial peers with different codecs not supported by your new configuration or modify the dial-peer codec selection by selecting a voice codec or fax-relay that is supported by the new configuration.
4. Ensure that modem relay is not configured in any of the dial-peer configurations. If modem relay is configured, it should be disabled using the **no modem relay nse codec [g711ulaw | g711alaw] redundancy** command.

To use the extended EC with unrestricted codecs on the Cisco AS5300, you must perform the following tasks before configuring your router using the **voice echo-canceller extended** command:

1. Create a backup configuration of your router.
2. Ensure that modem relay is not configured in any of the dial-peer configurations. If modem relay is configured, it should be disabled using the **no modem relay nse codec [g711ulaw | g711alaw] redundancy** command.

To configure parameters related to the extended EC, use the following commands beginning in user EXEC mode.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **no dial-peer voice tag {mmoip | pots | vofr | voip}**
4. **dial-peer voice tag {mmoip | pots | vofr | voip}**
5. **codec codec**
6. **exit**
7. **voice echo-canceller extended [codec [small [codec] | [large [codec]]]]**
or
voice echo-canceller extended
8. **voice-port controller-number:D**
9. **echo-cancel enable**
10. **echo cancel coverage {8 | 16 | 24 | 32 | 48 | 64}**
11. **non-linear**
12. **echo-cancel erl worst-case {0 | 3 | 6}**
13. **exit**

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.

	Command or Action	Purpose
Step 3	<pre>no dial-peer voice tag {mmoip pots vofr voip}</pre> <p>Example: Router(config)# no dial-peer voice 1 voip</p>	<p>(Optional) Removes VoIP dial peers, one dial peer at a time.</p> <ul style="list-style-type: none"> When configuring the extended EC in global configuration mode, you must remove or modify all existing dial peers before the voice echo-canceller extended command is accepted.
Step 4	<pre>dial-peer voice tag {mmoip pots vofr voip}</pre> <p>Example: Router(config)# dial-peer voice 1 voip</p>	<p>Enters dial-peer configuration mode so that you can modify a codec type.</p>
Step 5	<pre>codec codec {g711alaw g711ulaw g723ar53 g723ar63 g723r53 g723r63 g726r16 g726r24 g726r32 g726r53 g726r63 g728 g729abr8 g729ar8 g729abr8 g729r8 gsmefr gsmfr} [bytes payload-size]</pre> <p>Example: Router(config-dialpeer)# codec g711alaw</p>	<p>Specifies the desired voice codec rate of speech and allows a dial-peer codec selection to be modified.</p> <p>The arguments and keywords are as follows:</p> <ul style="list-style-type: none"> bytes—(Optional) Specifies the number of bytes in the voice payload of each frame. <i>payload-size</i>—(Optional) Number of bytes in the voice payload of each frame. transparent—(Optional) Enables codec capabilities to be passed transparently between endpoints in a Cisco Multiservice IP-to-IP Gateway. See the codec (dial-peer) command for more information.
Step 6	<pre>exit</pre> <p>Example: Router(config-dialpeer)# exit</p>	<p>Exits dial-peer configuration mode and returns to global configuration mode.</p>

Command or Action	Purpose
<p>Step 7 <code>voice echo-canceller extended [codec [small [codec] [large [codec]]]]</code></p> <p>or</p> <p><code>voice echo-canceller extended</code></p> <p>Example: Router(config)# voice echo-canceller extended codec large fax-relay</p> <p>Example: Router(config)# voice echo-canceller extended</p>	<p>Enables the extended echo canceller with no restriction on codecs or enables the extended EC with restricted codecs.</p> <ul style="list-style-type: none"> The following codec choices are valid: <ul style="list-style-type: none"> Small footprint codec, either G.711 or G.726, which can be used when the extended EC is enabled. Large footprint codec, which can be G.729, G.726, G.728, G.723, fax-relay, gsmfr, or gsmefr. <p>Note The <code>voice echo-canceller extended</code> command enables the extended EC without codec restrictions on a Cisco AS5300 with C549 DSP firmware. One channel of voice is supported per DSP. Any codec is supported.</p> <p>Note The <code>voice echo-canceller extended codec</code> command restricts codecs on the Cisco AS5300 with C542 and C549 DSP firmware. Two channels of voice are supported per DSP. Only specific codecs are supported.</p> <p>Note You must receive the Router(config)# prompt to continue with the configuration.</p>
<p>Step 8 <code>voice-port controller-number:D</code></p> <p>Example: Router(config)# voice-port 0:D</p>	<p>Enters voice-port configuration mode on the Cisco AS5300.</p>
<p>Step 9 <code>echo-cancel enable</code></p> <p>Example: Router(config-voiceport)# echo-cancel enable</p>	<p>Enables echo cancellation. Use the no form of this command to disable the EC.</p> <ul style="list-style-type: none"> The Cisco G.165 EC is enabled by default with echo suppression off. <p>Note The echo suppressor can only be used on T1 DSPs when the default Cisco G.165 EC is used. The echo suppressor cannot be used with the extended EC or on NextPort (Cisco AS5350 and Cisco AS5400) platforms. The <code>echo suppressor</code> command used with the default Cisco EC is still visible when the extended EC is selected, but it does not do anything.</p> <p>Note For this command to work, the <code>echo cancel coverage</code> command must also be configured.</p>

	Command or Action	Purpose
Step 10	<p><code>echo cancel coverage {8 16 24 32 48 64}</code></p> <p>Example: Router(config-voiceport)# echo cancel coverage 64</p>	<p>Adjusts the size of the echo canceller (echo path capacity coverage). This command enables cancellation of voice that is sent out the interface and received back on the same interface within the configured amount of time.</p> <p>Note This command is valid only when the echo canceller feature has been enabled.</p>
Step 11	<p><code>non-linear</code></p> <p>Example: Router(config-voiceport)# non-linear</p>	<p>Selects nonlinear processing (residual echo suppression) in the EC, which either shuts off any signal or mixes in comfort noise if no near-end speech is detected.</p> <p>Note Echo cancelling must be enabled for this feature to work. See Step 4 above.</p> <ul style="list-style-type: none"> Nonlinear processing is enabled when the extended G.168 echo canceller is enabled. Use the no form of this command to disable the NLP. The Cisco G.165 EC is enabled by default with the echo suppressor turned off. The echo suppressor can be turned on only when the default Cisco G.165 EC is used. See the echo suppressor command. <p>Note If this command is used with the Cisco default G.165 EC, it is still visible when the extended EC is selected but does not do anything.</p>
Step 12	<p><code>echo-cancel erl worst-case {0 3 6}</code></p> <p>Example: Router (config-voiceport)# echo-cancel erl worst-case 6</p>	<p>Determines worst-case echo return loss (ERL), in decibels (dB).</p> <ul style="list-style-type: none"> Worst-case erl is the minimum expected attenuation in the voice path. For example, if you have a worst-case erl of 6 (erl worst-case 6), when you speak into the phone you can expect at least 6db of attenuation on the signal by the time it gets back to the original source (echo). In general you do not need to change this value from 6, which is the default. <p>Worst-case erl does not directly modify the inbound or outbound signals. This is purely a configuration parameter for the EC to help it distinguish between echo and a new signal.</p> <ul style="list-style-type: none"> This command is enabled by default with the G.168 extended EC.
Step 13	<p><code>exit</code></p> <p>Example: Router(config-voiceport)# exit</p>	<p>Exits voice-port configuration mode and completes the configuration.</p>

Verifying Digital Voice Port Configurations

After configuring the voice ports on your router, perform the following steps to verify proper operation:

-
- Step 1** Pick up the handset of an attached telephony device and check for dial tone.
- Step 2** If you have dial tone, check for dual-tone multifrequency (DTMF) detection. If dial tone stops when you dial a digit, the voice port most likely is configured properly.
- Step 3** To identify port numbers of voice interfaces installed in your router, use the **show voice port summary** command.
- Step 4** To verify voice port parameter settings, enter the **show voice port** command.
- Step 5** To display the active call information for voice calls or fax transmissions in progress, use the **show call active voice** command.
- Step 6** To test mode settings to allow manual manipulation of the echo canceller b-register for G.168-like tests, use the **test call id** command in privileged EXEC mode.
-

Configuration Examples for Enhanced G.168 Echo Cancellation on the Cisco AS5300

This section provides the following configuration examples:

- [Enabling and Adjusting the Extended Echo Cancellor: Example, page 10](#)
- [Enabling and Adjusting the Cisco Default Echo Cancellor: Example, page 10](#)
- [Extended Codec Parameters: Example, page 11](#)
- [Obtaining Available Codec Lists: Example, page 11](#)
- [Worst-Case Echo Return Loss: Example, page 11](#)
- [Testing the Call: Example, page 12](#)
- [Checking the Active Calls: Example, page 12](#)

Enabling and Adjusting the Extended Echo Cancellor: Example

The following example enables the extended EC feature and adjusts the size of the EC to 64 ms on Cisco AS5300 universal access servers:

```
Router(config)# voice-port 0:D
Router(config-voiceport)# echo-cancel enable
Router(config-voiceport)# echo-cancel coverage 64
```

Enabling and Adjusting the Cisco Default Echo Cancellor: Example

The following example enables the default G.165 EC and adjusts the size of the EC to 16 ms on Cisco AS5300 universal access servers:

```
Router(config)# voice-port 0:D
```

```
Router(config-voiceport)# echo-cancel enable
Router(config-voiceport)# echo-cancel coverage 16
```

Extended Codec Parameters: Example

The following example enables the extended G.168 EC without codec restrictions on a Cisco AS5300 with C549 DSP firmware:

```
Router# configure terminal
Router(config)# voice echo-canceller extended
Router(config)# exit
```

The following example enables the extended G.168 EC with restricted codecs on the Cisco AS5300 with C542 and C549 DSP firmware:

```
Router# configure terminal
Router(config)# voice echo-canceller extended codec small g711 large fax-relay
Router(config)# exit
```

The following error message is returned when a restricted codec is not allowed:

```
"Cannot configure now, dial-peer 88000010 is configured with codec=g728, fax rate=disable,
modem=passthrough system.If necessary set this command to 'no', re-configure dial-peer
codec, fax rate and/or modem. Then re-enter this command."
```

In this example, the dial-peer tag 88000010 is misconfigured with an incorrect codec type. Additionally, g728 was not selected for the large codec type using the **voice echo-canceller extended** command.

Obtaining Available Codec Lists: Example

The following example specifies the desired voice codec rate of speech and allows a dial-peer codec selection to be modified:

```
Router(config-dialpeer)# codec g711alaw
```

Alternatively, you can use the **codec** command help menu to display only the available codecs once the **voice echo-canceller extended codec** command selects the small and large codecs and restricts all others:

```
Router(config-dialpeer)# codec ?

g711alaw G.711 A Law 64000 bps
g711ulaw G.711 u Law 64000 bps
g723ar53 G.723.1 ANNEX-A 5300 bps
g723ar63 G.723.1 ANNEX-A 6300 bps
g723r53 G.723.1 5300 bps
g723r63 G.723.1 6300 bps
```

Worst-Case Echo Return Loss: Example

The following example checks worst-case echo return loss configuration:

```
Router# show running-config

voice-port 0:D
echo-cancel erl worst-case 3
playout-delay mode fixed
no comfort-noise
```

!

Testing the Call: Example

The following is sample output from the **test call** command in privileged EXEC mode using 02 as the call ID. The call ID number, which follows the Tele 0:D field, is (2) or 0x02. Use the **show call active voice brief** command to obtain the call ID number.

```
Router# test call 02 echo-canceller h-register ?

clear    Clear call echo canceller h register
freeze  Freeze call echo canceller h register
thaw     Thaw call echo canceller h register
```

The **erl worst-case [0 | 3 | 6]** syntax reflects the new tunable argument available with the extended echo canceller only. The following example uses a worst-case erl value of 3 dB:

```
Router# test call id 99 echo-canceller erl test extended echo canceller worst-case erl 3
```

Checking the Active Calls: Example

The following is sample output from the **show call active voice** command. Important fields are highlighted in bold. (Refer to the **show call active voice** command for descriptions of the field names and values in the output.)

```
Router# show call active voice

Total call-legs:2

SetupTime=7587246 ms
Index=1
PeerAddress=
PeerSubAddress=
PeerId=0
PeerIfIndex=0
LogicalIfIndex=0
ConnectTime=7587506
CallDuration=00:00:11
CallState=4
CallOrigin=2
ChargedUnits=0
InfoType=2
TransmitPackets=101
TransmitBytes=1991
ReceivePackets=550
ReceiveBytes=11000
VOIP:
ConnectionId[0x7F8D82A4 0x928E11D5 0x8094FCFB 0x1C38F0FA]
IncomingConnectionId[0x7F8D82A4 0x928E11D5 0x8094FCFB 0x1C38F0FA]
RemoteIPAddress=172.29.248.111
RemoteUDPPort=17394
RoundTripDelay=4 ms
SelectedQoS=best-effort
tx_DtmfRelay=inband-voice
FastConnect=TRUE

AnnexE=FALSE

Separate H245 Connection=FALSE
```

```
H245 Tunneling=FALSE

SessionProtocol=cisco
SessionTarget=
OnTimeRvPlayout=10300
GapFillWithSilence=0 ms
GapFillWithPrediction=0 ms
GapFillWithInterpolation=0 ms
GapFillWithRedundancy=0 ms
HiWaterPlayoutDelay=70 ms
LoWaterPlayoutDelay=69 ms
ReceiveDelay=69 ms
LostPackets=0
EarlyPackets=0
LatePackets=0
VAD = enabled
CoderTypeRate=g729r8
CodecBytes=20
SignalingType=ext-signal
CallerName=
CallerIDBlocked=False
  GENERIC:
SetupTime=7587246 ms
Index=2
PeerAddress=133001
PeerSubAddress=
PeerId=133001
PeerIfIndex=8
LogicalIfIndex=7
ConnectTime=7587505
CallDuration=00:00:56
CallState=4
CallOrigin=1
ChargedUnits=0
InfoType=2
TransmitPackets=2801
TransmitBytes=56020
ReceivePackets=162
ReceiveBytes=3192
  TELE:
ConnectionId=[0x7F8D82A4 0x928E11D5 0x8094FCFB 0x1C38F0FA]
IncomingConnectionId=[0x7F8D82A4 0x928E11D5 0x8094FCFB 0x1C38F0FA]
TxDuration=56030 ms
VoiceTxDuration=3210 ms
FaxTxDuration=0 ms
CoderTypeRate=g729r8
NoiseLevel=-44
ACOMLevel=-13
OutSignalLevel=-45
InSignalLevel=-45
InfoActivity=2
ERLLevel=7
EchoCancellerMaxReflector=64
SessionTarget=
ImgPages=0
CallerName=
CallerIDBlocked=False
```

Additional References

For additional information related to the Enhanced ITU-T G.168 Echo Cancellation feature, see the following sections:

- [Related Documents, page 15](#)
- [Standards, page 15](#)
- [MIBs, page 16](#)
- [Standards, page 15](#)
- [Technical Assistance, page 16](#)

Related Documents

Related Topic	Document Title
Hardware and software documentation for the Catalyst 4000 and Catalyst 2980G switches	Catalyst 4000 Family Switches
Cisco 1700 series routers	Cisco 1700 series routers documentation index
Cisco 2600 series routers	Cisco 2600 series routers documentation index
Cisco 2600 series hardware	Cisco 2600 series multiservice platforms
Cisco 3600 series routers	Cisco 3600 series routers documentation index
Cisco 3600 series hardware	Cisco 3600 series multiservice platforms
Cisco 3700 series routers	Cisco 3700 series routers documentation index
Cisco AS5300 access servers	Cisco AS5300 documentation index
Cisco MC3810	Multiservice Access Concentrators documentation index
Cisco VG200	Cisco Voice Gateway 200 (VG200) release notes index
Cisco 7200 series routers	Cisco 7200 Series
Cisco 7500 series routers	Cisco 7500 Series Routers
How to configure your Cisco router or access server to support voice, video, and fax applications	Cisco IOS Voice Configuration Library, Release 12.3
How to use Cisco IOS commands to support voice, video, and fax applications	Cisco IOS Voice, Video, and Fax Command Reference, Release 12.3
How to configure voice ports	Configuring Voice Ports, Release 12.2
Cisco VCWare firmware configuration	Combined Version Release Notes and Compatibility Matrix for Cisco VCWare on Cisco AS5300 Universal Access Servers/Voice Gateways
Cisco IOS software configuration	Configuration guides and command references, Cisco IOS Release 12.2T
Cisco IOS Release 12.2	Release notes index, Cisco IOS Release 12.3
Echo analysis	Echo Analysis for Voice over IP
How to configure the extended EC	Enhanced ITU-T G.168 Echo Cancellation
Technical information organized by hardware products	Hardware Support
Configuration of VoIP on Cisco 2600 and Cisco 3600 series routers	Voice over IP for the Cisco 2600 and Cisco 3600 series routers documentation index

Standards

Standards	Title
ITU-T G.164	Echo Suppressors
ITU-T G.165	Echo Cancellers
ITU-T G.168 (04/2000)	Digital Network Echo Cancellers

MIBs

MIBs	MIBs Link
<ul style="list-style-type: none"> CISCO-VOICE-IF-MIB CISCO-VOICE-DIAL-CONTROL-MIB 	<p>To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL:</p> <p>http://www.cisco.com/go/mibs</p>

RFCs

RFCs	Title
No new or modified RFCs are supported by this feature, and support for existing RFCs has not been modified by this feature.	—

Technical Assistance

Description	Link
<p>Technical Assistance Center (TAC) home page, containing 30,000 pages of searchable technical content, including links to products, technologies, solutions, technical tips, and tools. Registered Cisco.com users can log in from this page to access even more content.</p>	<p>http://www.cisco.com/public/support/tac/home.shtml</p>

Command Reference

This section documents modified commands. All other commands used with this feature are documented in the Cisco IOS Release 12.3 command reference publications.

Obsolete and Replaced Commands

[Table 3](#) lists those commands that have been replaced since Cisco IOS Release 12.2(13)T:

Table 3 *Replaced Echo Cancellation Commands*

Command in Cisco IOS Release 12.2(13)T	Replacement Command in Cisco IOS Release 12.3(3)
session target test echo-canceller	Obsolete for the Enhanced ITU-T G.168 Echo Cancellation feature on all platforms in Cisco IOS Release 12.2(15)ZJ and 12.3(3) mainline.

Command Reference

This section documents modified, obsolete, and replaced commands. All other commands used with this feature are documented in the Cisco IOS Release 12.3 command reference publications.

Modified Commands

- [voice echo-canceller extended](#)

Obsolete and Replaced Commands

[Table 4](#) lists those commands that have been replaced since Cisco IOS Release 12.2(13)T:

Table 4 *Replaced Echo Cancellation Commands*

Command in Cisco IOS Release 12.2(13)T	Replacement Command in Cisco IOS Release 12.3(3)
session target test echo-canceller	Obsolete for the Enhanced ITU-T G.168 Echo Cancellation feature on all platforms in Cisco IOS Release 12.2(15)ZJ and 12.3(3) mainline.

voice echo-canceller extended

To enable the extended echo canceller (EC) on the Cisco AS5300, use the **voice echo-canceller extended** command in global configuration mode. To disable the extended EC, use the no form of this command.

voice echo-canceller extended [**codec** [**small** [*codec*] | [**large** [*codec*]]]]

no voice echo-canceller extended

Syntax Description

codec	(Optional) Defines the codec, either small or large.
small <i>codec</i>	(Optional) Small footprint codec, which can be used when the extended EC is enabled. Valid values for the <i>codec</i> argument follow: <ul style="list-style-type: none"> • g711 • g726
large <i>codec</i>	(Optional) Large footprint codec. Valid values for the <i>codec</i> argument follow: <ul style="list-style-type: none"> • g723 • g726 • g728 • g729 • fax-relay • gsmfr • gsmefr

Defaults

Disabled

Command Modes

Global configuration

Command History

Release	Modification
12.2(13)T	This command was introduced.
12.3(3)	This command was modified to allow unrestricted codecs. The codec keyword was added as optional.

Usage Guidelines

This command is available only on the Cisco AS5300 with C542 and C549 digital signal processor module (DSPM) high-complexity firmware.

The **voice echo-canceller extended codec** command restricts codecs on the Cisco AS5300 with C542 and C549 DSP firmware with two channels of voice per DSP. Only specific codecs can be used with the extended EC.

The **voice echo-canceller extended** command enables the extended EC on a Cisco AS5300 without codec restrictions with C549 DSP firmware with one channel of voice per DSP. Any codec is supported.

If fax-relay is not selected as the large codec, the VoIP dial peer requires that you use the **fax rate disabled** command in dial-peer configuration mode.

Once you have chosen the codecs to be supported by the extended echo canceller, either remove all dial peers with different codecs not supported by your new configuration or modify the dial-peer codec selection by selecting a voice codec or fax-relay.

When codecs are restricted, only one selection is allowed.

The command action routine does not accept the command if there are active calls. If the EC is already in effect and a codec choice is being changed, the action routine scans the dial peers. Any dial peers found that do not conform to the new global command settings are changed, and the user is informed of the changes.

Similarly, modem relay is incompatible with the extended EC and must be disabled globally for all dial peers.

You must have a VoIP dial peer configured with an extended EC-compatible codec to ensure voice quality on the connection. Refer to the [echo cancel coverage](#) command reference.

Examples

The following example shows how the **voice echo-canceller extended** command is used to configure the extended EC with no restriction on codecs:

```
Router# configure terminal
Router(config)# voice echo-canceller extended
Router(config)# exit
```

Related Commands

Command	Description
echo cancel coverage	Enables the cancellation of voice that is sent out the interface and is received on the same interface.

Glossary

AGM—Access Gateway Module. The Catalyst 4000 AGM extends the converged network to the branch office in an integrated LAN/WAN/VOICE platform.

CCS—common channel signaling.

CLR—cell loss ratio.

DLCI—data-link connection identifier.

DSP—digital signal processor.

DTMF—dual-tone multifrequency. Tones generated when a button is pressed on a telephone; primarily used in the United States and Canada.

E&M—recEive and transMit (or ear and mouth).

EC, ECAN—echo canceller. A device placed in the four-wire portion of the circuit used for reducing near-end echo present on the send path by subtracting an estimation of that echo from the near-end echo. Note that an EC can also be used in an all-digital network.

echo path capacity—The maximum echo path delay for which an echo canceller is designed to operate.

echo path delay—The delay between the “receive out port Rout” and the “send in port Sin” ports of the echo canceller.

ERL—echo return loss. The attenuation of the signal between the “receive out port Rout” and the “send in port Sin” ports of the echo canceller.

ERLE—echo return loss enhancements. The amount of echo attenuation provided by the echo canceller.

LMS, NLMS—ITU-T G.168 (2000) least mean square, normalized least mean square. Methods used to estimate the echo path model.

LR—Loudness Rating.

MMoIP—Multimedia Mail over IP. Dial peer specific to Store and Forward Fax. The MMoIP dial peer is the vehicle that you use to assign particular line characteristics (such as a destination telephone number) to the connection between the Cisco router or the access server and the SMTP mail server during on-ramp faxing.

NLP—nonlinear processor. A component of the echo canceller that provides additional ERLE.

NM-HDA—High Density Analog Voice Network Module.

PVC—permanent virtual circuit or, in ATM terminology, permanent virtual connection. Virtual circuit that is permanently established. PVCs save bandwidth associated with circuit establishment and are torn down in situations in which certain virtual circuits must exist all the time.

RLR—Receive Loudness Rating.

RSVP—Resource Reservation Protocol. Protocol that supports the reservation of resources across an IP network. Applications that are running on IP end systems can use RSVP to indicate to other nodes the nature (bandwidth, jitter, maximum burst, and so on) of the packet streams that they want to receive. RSVP depends on IPv6. Also known as Resource Reservation Setup Protocol.

RTOS—real time operating system.

SLR—Segmentation Local Reference.

TELR—Talker Echo Loudness Rating.

UDP—User Datagram Protocol. Connectionless transport layer protocol in the TCP/IP protocol stack. UDP is a simple protocol that exchanges datagrams without acknowledgments or guaranteed delivery, requiring that error processing and retransmission be handled by other protocols. UDP is defined in RFC 768.

VIC—voice interface card. Connects the system either to the PSTN or to a PBX. Compare with WIC.

WIC—WAN interface card. Connects the system to the WAN link service provider.

**Note**

Refer to the [Internetworking Terms and Acronyms](#) for terms not included in this glossary.

CCIP, CCSP, the Cisco Arrow logo, the Cisco *Powered* Network mark, Cisco Unity, Follow Me Browsing, FormShare, and StackWise are trademarks of Cisco Systems, Inc.; Changing the Way We Work, Live, Play, and Learn, and iQuick Study are service marks of Cisco Systems, Inc.; and Aironet, ASIST, BPX, Catalyst, CCDA, CCDP, CCIE, CCNA, CCNP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, the Cisco IOS logo, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Empowering the Internet Generation, Enterprise/Solver, EtherChannel, EtherSwitch, Fast Step, GigaStack, Internet Quotient, IOS, IP/TV, iQ Expertise, the iQ logo, iQ Net Readiness Scorecard, LightStream, MGX, MICA, the Networkers logo, Networking Academy, Network Registrar, *Packet*, PIX, Post-Routing, Pre-Routing, RateMUX, Registrar, ScriptShare, SlideCast, SMARTnet, StrataView Plus, Stratm, SwitchProbe, TeleRouter, The Fastest Way to Increase Your Internet Quotient, TransPath, and VCO are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the U.S. and certain other countries.

All other trademarks mentioned in this document or Web site are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0304R)

Copyright © 2003 Cisco Systems, Inc. All rights reserved.

