

# Configure Fax Pass-Through with the Cisco VG248

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## Introduction

The Cisco VG248 is an analog gateway for the connection of analog phones, fax machines, modems, and analog voice mail systems to a Cisco CallManager based Telephony system. Fax pass-through is the simplest technique you can use to send fax over IP networks. In fax pass-through mode, gateways do not distinguish a fax call from a voice call. Fax communication between the two fax machines is carried in its entirety in-band over a voice call. Fax upspeed is similar to pass-through in the sense that the fax call is carried in-band over the voice call. This document describes the configuration and information you can use in order to troubleshoot fax pass-through with VG248 that runs software release 1.2(1) or later.

This document only covers fax pass-through. By default, Cisco fax relay is enabled on the VG248. Follow these steps in order to disable fax relay. This forces the VG248 to use fax pass-through. Fax pass-through only supports G.711 codec when used with the Cisco VG248.

## Prerequisites

### Requirements

There are no specific requirements for this document.

### Components Used

The information in this document is based on the software and hardware versions:

- Cisco VG248 that runs software release 1.2(1) or later.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure

that you understand the potential impact of any command.

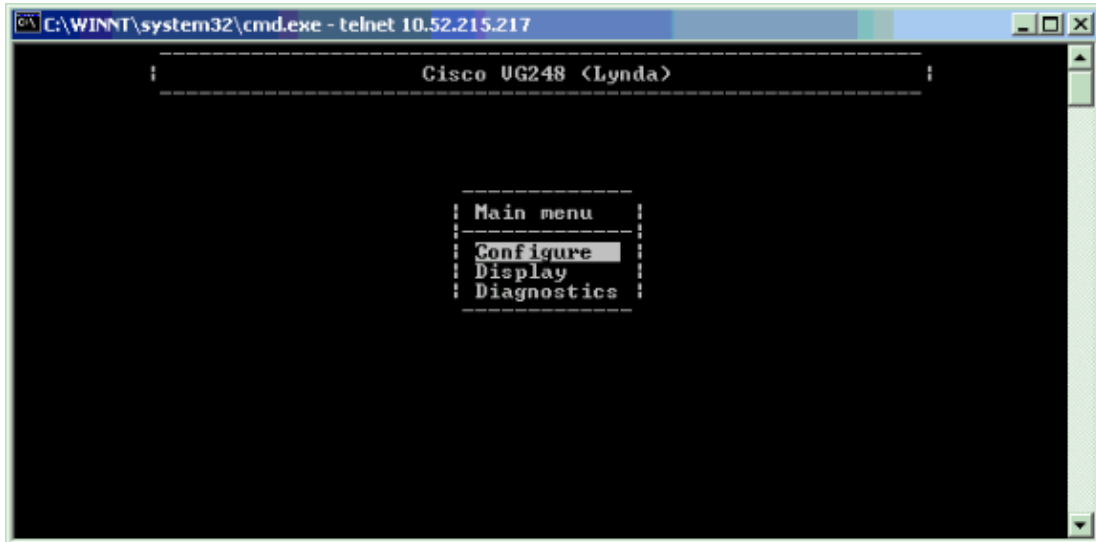
## Conventions

Refer to the Cisco Technical Tips Conventions for more information on document conventions.

## Configure the VG248

Complete these steps in order to configure the VG248.

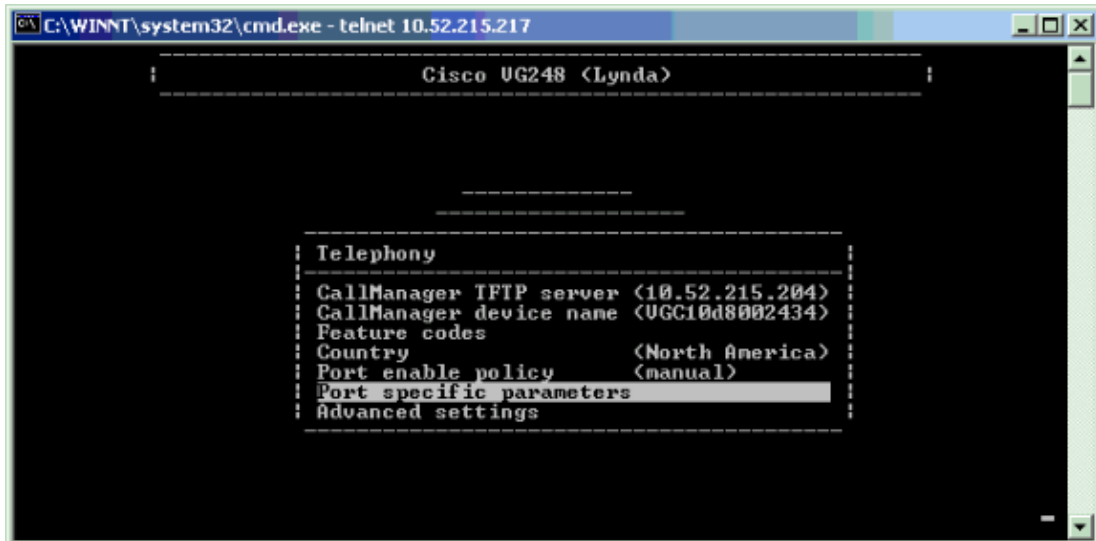
1. From the main menu, choose **Configure** and select **Telephony**.



```
C:\WINNT\system32\cmd.exe - telnet 10.52.215.217
-----
Cisco VG248 <Lynda>
-----

Main menu
-----
Configure
Display
Diagnostics
-----
```

2. Choose **Port specific parameters**.



```
C:\WINNT\system32\cmd.exe - telnet 10.52.215.217
-----
Cisco VG248 <Lynda>
-----

-----
-----
Telephony
-----
CallManager TFTP server <10.52.215.204>
CallManager device name <UGC10d8002434>
Feature codes
Country <North America>
Port enable policy <manual>
Port specific parameters
Advanced settings
-----
```

```

C:\WINNT\system32\cmd.exe - telnet 10.52.215.217

Cisco UG248 (Lynda)

Port selection
-----
 1 Enabled 2007      17 Disabled      33 Disabled
 2 Enabled 2008      18 Disabled      34 Disabled
 3 Disabled          19 Disabled      35 Disabled
 4 Disabled          20 Disabled      36 Disabled
 5 Disabled          21 Disabled      37 Disabled
 6 Disabled          22 Disabled      38 Disabled
 7 Disabled          23 Disabled      39 Disabled
 8 Disabled          24 Disabled      40 Disabled
 9 Disabled          25 Disabled      41 Disabled
10 Disabled          26 Disabled      42 Disabled
11 Enabled 3511      27 Disabled      43 Disabled
12 Disabled          28 Disabled      44 Disabled
13 Disabled          29 Disabled      45 Disabled
14 Disabled          30 Disabled      46 Disabled
15 Disabled          31 Disabled      47 Disabled
16 Disabled          32 Disabled      48 Disabled

'*' - port in use      press 'R' to enter range

```

3. Choose Fax relay <disabled>.

```

C:\WINNT\system32\cmd.exe - telnet 10.52.215.217

Cisco UG248 (Lynda)

Port selection | Port 1 parameters
-----|-----
 1 Enabled 20 | Status (enabled)
 2 Enabled 20 | Call control mode (basic)
 3 Disabled   | Caller ID (disabled)
 4 Disabled   | MWI method (none)
 5 Disabled   | UMWI variant (<<country default>>)
 6 Disabled   | Call supervision method (none)
 7 Disabled   | Input gain (0)
 8 Disabled   | Output gain (0)
 9 Disabled   | Dialing digit detection (default: use DSP)
10 Disabled   | Fax relay (disabled)
11 Enabled 35 | Fax relay ECM (enabled)
12 Disabled   | Fax relay NSF (preserve value)
13 Disabled   | Passthrough mode (default: automatic)
14 Disabled
15 Disabled   | 31 Disabled      47 Disabled
16 Disabled   | 32 Disabled      48 Disabled

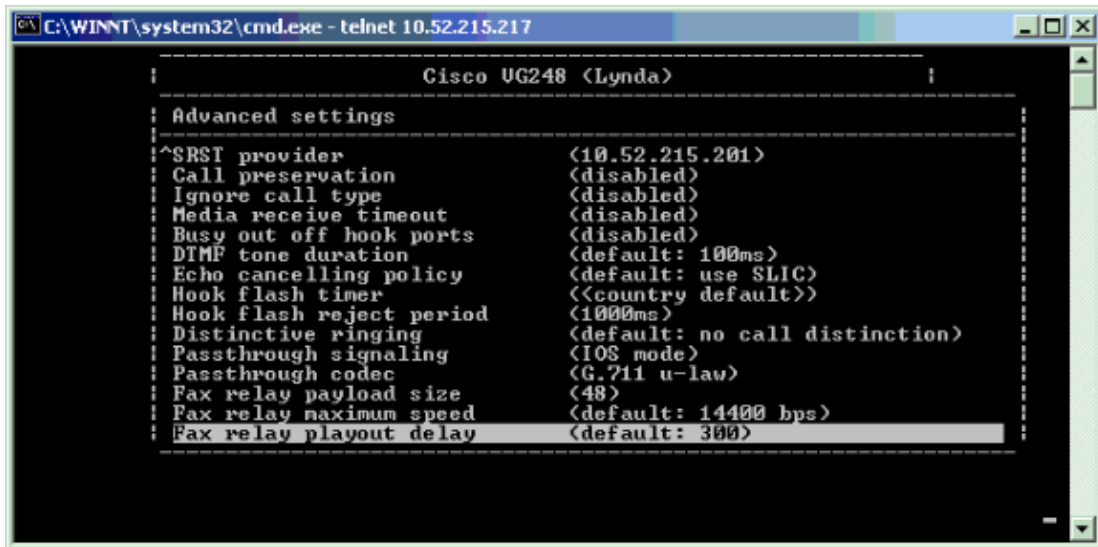
'*' - port in use      press 'R' to enter range

```

**Notes:**

- ◆ Cisco recommends that you disable caller ID and that the MWI method is set to **none** on the VG248 ports that have a fax machine connected.
- ◆ Use Basic Mode since it is the best mode for fax machines or modems.
- ◆ VG248 does not have any disconnect supervision, which indicates to an analog device that the remote caller has hung up, enabled by default. In order to choose a call supervision method, complete these steps:
  - a. Choose **Configure > Telephony > Port specific parameters > Call supervision method**
  - b. Choose **drop loop current** or **reverse polarity** as the call supervision method.
 For additional information about how to use these call supervision methods, refer to the *Choosing a Call Supervision Method*. You also need to complete these steps:
  - a. On the Cisco CallManager Configuration page for this particular VG248 port, scroll to the bottom of the page.
  - b. Enable **disconnect supervision**.
  - c. Click **Update**.
  - d. Reset the port.

4. Select <IOS mode> for Passthrough signaling.



## H.323 Gateway Configuration

Configure these commands in the dial-peer configuration:

```
dial-peer voice <tag> voip
fax-relay ecm disable

!--- With the configuration, the Error Correction Mode is disabled.

fax rate disable

!--- When you disable fax rate, you enable fax-passthrough.

modem passthrough nse codec <codec>

!--- Specify your codec.

no vad

!--- Turn off VAD.
```

## MGCP Gateway Configuration

Configure these commands on the MGCP gateway:

```
MGCP(config)#configure terminal
MGCP(config)#mgcp fax t.38 inhibit
MGCP(config)#no ccm-manager fax protocol
MGCP(config)#mgcp modem passthrough voip mode nse
```

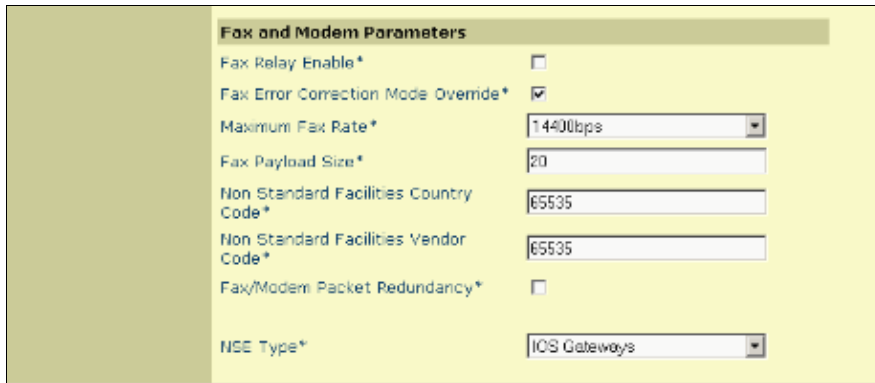
## 6608 Configuration

Verify that 6608 uses either fax pass-through or fax relay:

1. From the Cisco CallManager main menu, select **Device**.
2. Select **Gateway**.
3. Select **6608**.

#### 4. Uncheck **Fax Relay Enable\*** and **Fax Error Correction Mode Override\***.

**Note:** When Cisco voice gateways are configured for fax pass-through mode, disable Voice Activity Detection (VAD) on all VoIP dial-peers associated with the fax calls.

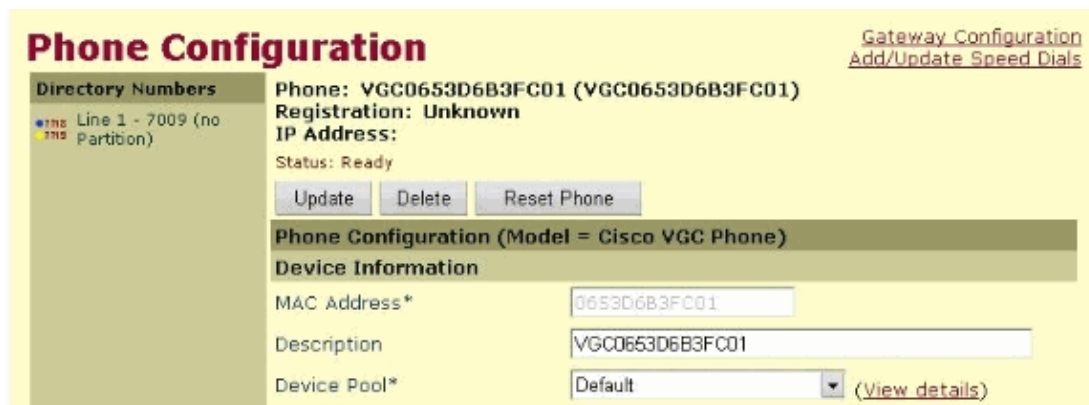


The screenshot shows the 'Fax and Modem Parameters' configuration page. The settings are as follows:

Parameter	Value
Fax Relay Enable*	<input type="checkbox"/>
Fax Error Correction Mode Override*	<input checked="" type="checkbox"/>
Maximum Fax Rate*	14400bps
Fax Payload Size*	20
Non Standard Facilities Country Code*	65535
Non Standard Facilities Vendor Code*	65535
Fax/Modem Packet Redundancy*	<input type="checkbox"/>
NSE Type*	IOS Gateways

## Cisco CallManager Configuration for 6608

**Note:** When you configure Cisco voice gateways for fax pass-through mode, disable Voice Activity Detection (VAD) on all VoIP dial-peers associated with the fax calls.



The screenshot shows the 'Phone Configuration' page for a Cisco VGC Phone. The configuration details are as follows:

Field	Value
Phone	VGC0653D6B3FC01 (VGC0653D6B3FC01)
Registration	Unknown
IP Address	
Status	Ready
MAC Address*	0653D6B3FC01
Description	VGC0653D6B3FC01
Device Pool*	Default

**Note:** Prior to load 47 on 6608 and release 1.2(1) on the VG248, fax and modem pass-through were not supported due to NSE incompatibility. There is only support for voice and Cisco fax relay.

## Verify

There is currently no verification procedure available for this configuration.

## Troubleshoot

This section provides information you can use to troubleshoot your configuration.

Put an analog phone on the VG248 and confirm that you do not have any echo related issue since echo can be bad for both fax and modem negotiation. If there is echo, change the output gain and input gain values.

```

Cisco UG248 <ics7750ccm>
-----
Port selection | Port 1 parameters
-----
1 Enabled 20: Status (enabled)
2 Enabled 20: Call control mode (basic)
3 Enabled 20: Caller ID (disabled)
4 Enabled 20: MWI method (none)
5 Disabled : Call supervision method (drop loop current)
6 Disabled : Input gain (0)
7 Disabled : Output gain (0)
8 Disabled : Dialing digit detection (default: use DSP)
9 Disabled : Fax relay (disabled)
10 Disabled : Fax relay ECM (enabled)
11 Disabled : Fax relay NSF (preserve value)
12 Disabled : Passthrough mode (default: automatic)
-----
13 Disabled
14 Disabled 30 Disabled 46 Disabled
15 Disabled 31 Disabled 47 Disabled
16 Disabled 32 Disabled 48 Disabled
-----
'*' - port in use press 'R' to enter range

```

**Note:** The value you choose is a delta value and does not reflect the actual gain value. For example, if the base value is  $-3\text{dB}$ , you can choose  $+1\text{dB}$  as the delta value. Therefore, the actual gain value for that port is  $-2\text{dB}$  overall.

## Gather a VG248 Trace

Complete these steps in order to gather a VG248 trace.

1. Telnet into the VG248.
2. Go to Diagnostics menu and select **Event Log**.

```

Cisco UG248 <ics7750ccm>
-----
Main menu
-----
Configure
Display
Diagnostics
-----

```

```

Cisco UG248 <ics7750ccm>
-----
Diagnostics
-----
Event log
Show configuration
Show environment
Restore to factory configuration
CPU utilization
Ping network host
Validate SMDI configuration
-----

```

3. In the Set Logging levels menu, set both POTS and SCCP to **Errors + Warnings + Info + Trace**. Also, set the logging levels for DSP to **Errors + Warnings + Info + Trace**.

**Note:** You can ignore warnings about performance impairment if there are not many calls.

```

Cisco UG248 (ics7750ccn)
-----
Event log
-----
Set logging levels
Set logged ports (< >)
Show key presses in log (no)
Syslog (use specified server)
Syslog server (<none>)
Syslog facility (<kernel>)
View new
View recent
View all
Clear event log
Clear status line
-----
! Validate SMDI configuration !

```

```

Cisco UG248 (ics7750ccn)
-----
E: Logging levels
-----
S: OS (Errors + warnings + info)
S: DHCP (Errors + warnings + info)
S: Ethernet (Errors + warnings + info)
S: FTP (Errors + warnings + info)
S: DNS (Errors + warnings + info)
S: TFTP (Errors + warnings + info)
U: EnvMon (Errors + warnings + info)
U: SNMP (Errors + warnings + info)
U: SLIC (Errors + warnings + info)
C: DSP (Errors + warnings + info)
C: FaxRelay (Errors + warnings + info)
-- POTS (Errors + warnings + info)
U: UM (Errors + warnings + info + trace)
S: SCCP (Errors + warnings + info + trace)
S: HTTP (Errors + warnings + info)

```

4. In the Set logged ports menu, select a port on which to test.
5. Select **View new** from the Diagnostics menu.
6. From the chosen port, make a call to the internal fax. The events display in the VG248 Telnet session.
7. Copy and paste the events.

## Sample Debug

Certain **show** commands are supported by the Output Interpreter Tool ( registered customers only) , which allows you to view an analysis of **show** command output.

**Note:** Refer to Important Information on Debug Commands before you issue **debug** commands.

```

Successful fax call with passthrough mode
10783 14:31:54 2517 T SLIC 10 off-hook event; time=3963956927
10784 14:31:54 1 T SLIC 10 Reporting off-hook
10785 14:31:54 1 I POTS 10 Off hook
10786 14:31:54 2 I DSP 10 Setting up G.711 mu law voice channel
10787 14:31:54 1 T SLIC 10 echo canceller enabled
10788 14:31:54 0 T SLIC 10 modem detection disabled
10789 14:31:54 12 T POTS 10 Setting codec to G.711 mu law
10790 14:31:54 1 T DSP 10 tx:0044
10791 14:31:54 0 T DSP 10 tx:004C,0001,003C,0004,00C8,012C
10792 14:31:54 1 T DSP 10 tx:005C,0002,3E76,822F,0000,0000,0080
,0000,000D,0064,4AF6,0000
10793 14:31:54 1 T DSP 10 tx:0049,0001,00A0,0000,0100,0000,0421,0003,0000
10794 14:31:54 0 T DSP 10 tx:005B,000A,0000
10795 14:31:54 0 T DSP 10 tx:0042,0005
10796 14:31:54 26 T POTS 10 Setting codec to G.711 mu law
10797 14:31:54 0 I POTS 10 Call 1 connected
10798 14:31:54 0 T POTS 10 Setting codec to G.711 mu law
10799 14:31:56 2449 T DSP 10 Tx:98 Rx:99,Seq:0,Hdr:0,Late:0,Early:0
10800 14:31:57 181 T DSP 10 Modem answer tone detected

```

```

10801 14:31:57 0 I DSP 10 Entering passthrough mode
10802 14:31:57 1 T SLIC 10 echo canceller enabled
10803 14:31:57 0 T SLIC 10 modem detection enabled
10804 14:31:57 11 T DSP 10 rx:00C1,0005,0001,0000
10805 14:31:57 1 T DSP 10 tx:0044
10806 14:31:57 1 T DSP 10 tx:004C,0004,003C,0004,0096,012C
10807 14:31:57 0 T DSP 10 tx:0049,0001,00A0,0000,0100,0000,0461,0003,0000
10808 14:31:57 1 T DSP 10 tx:005B,000A,0000
10809 14:31:57 0 T DSP 10 tx:0042,0015
10810 14:31:57 0 T DSP 10 tx:0067,C000,0000
10811 14:31:57 9 T POTS 10 Modem in use
10812 14:31:57 86 T DSP 10 rx:00D0
10813 14:31:57 169 T DSP 10 Modem answer tone detected
10814 14:31:57 0 T DSP 10 rx:00C1,0005,0001,0000
10815 14:31:57 380 T DSP 10 Phase reversed modem answer tone detected
10816 14:31:57 0 I DSP 10 Disabling echo canceller
10817 14:31:57 0 T SLIC 10 echo canceller disabled
10818 14:31:57 1 T SLIC 10 modem detection enabled
10819 14:31:57 0 T DSP 10 rx:00C1,0005,0001,0001
10820 14:31:57 1 T DSP 10 tx:0067,C100,0000
10821 14:31:57 18 T DSP 10 rx:00C1,0005,0000,0000
10822 14:31:57 30 T DSP 10 rx:00D0
10823 14:31:58 191 T DSP 10 Modem answer tone detected
10824 14:31:58 0 T DSP 10 rx:00C1,0005,0001,0000
10825 14:31:58 219 T DSP 10 Phase reversed modem answer tone detected
10826 14:31:58 0 T DSP 10 rx:00C1,0005,0001,0001
10827 14:31:58 439 T DSP 10 Phase reversed modem answer tone detected
10828 14:31:58 0 T DSP 10 rx:00C1,0005,0001,0001
10829 14:31:58 20 T DSP 10 rx:00C1,0005,0000,0000
10830 14:31:58 240 T DSP 10 Modem answer tone detected
10831 14:31:58 1 T DSP 10 rx:00C1,0005,0001,0000
10832 14:31:59 199 T DSP 10 Phase reversed modem answer tone detected
10833 14:31:59 0 T DSP 10 rx:00C1,0005,0001,0001
10834 14:31:59 20 T DSP 10 rx:00C1,0005,0000,0000
10835 14:31:59 220 T DSP 10 Modem answer tone detected
10836 14:31:59 0 T DSP 10 rx:00C1,0005,0001,0000
10837 14:31:59 219 T DSP 10 rx:00C1,0005,0000,0000
10838 14:31:59 220 T DSP 10 Modem answer tone detected
10839 14:31:59 0 T DSP 10 rx:00C1,0005,0001,0000
10840 14:31:59 1 T DSP 10 tx:0067,C000,0000
10841 14:31:59 40 T DSP 10 rx:00D0
10842 14:31:59 80 T DSP 10 rx:00C1,0005,0000,0000
10843 14:32:00 359 T DSP 10 V.21 fax tones detected
10844 14:32:00 0 I DSP 10 Enabling echo canceller
10845 14:32:00 0 T SLIC 10 echo canceller enabled

```

*!--- The debugs after this are truncated after succesful call setup.*

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Voice & Video: Voice over IP
Voice & Video: IP Telephony
Voice & Video: IP Phone Services for End Users

Voice & Video: Unified Communications
Voice & Video: IP Phone Services for Developers
Voice & Video: General

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## Related Information

- **Voice Technology Support**
  - **Voice and Unified Communications Product Support**
  - **Recommended Reading: Troubleshooting Cisco IP Telephony**
  - **Technical Support & Documentation – Cisco Systems**
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