



# Troubleshooting and Maintenance

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## Troubleshooting and Maintenance Overview

This chapter provides information that can assist you in troubleshooting problems with your Cisco Unified IP Phone or with your IP telephony network. It also explains how to clean and maintain your phone.

If you need additional assistance to resolve an issue, see the [Documentation, Support, and Security Guidelines](#).

## Troubleshooting

Use the following sections to troubleshoot problems with the phones.

### Startup Problems

After installing a Cisco Unified IP Phone into your network and adding it to Cisco Unified Communications Manager, the phone should start up as described in the [Phone Startup Verification](#).

If the phone does not start up properly, see the following sections for troubleshooting information.

### Cisco Unified IP Phone Does Not Go Through Normal Startup Process

#### Problem

When you connect a Cisco Unified IP Phone into the network port, the phone should go through the normal startup process as described in [Phone Startup Verification](#).

#### Cause

If the phone does not go through the startup process, the cause may include faulty cables, bad connections, network outages, and lack of power. Or, the phone may be faulty.

### Solution

To determine whether the phone is faulty, follow these suggestions to systematically eliminate other potential problems:

- Verify that the network port is functional:
  - Exchange the Ethernet cables with cables that you know are functional.
  - Connect a operational phone to this network port to verify that the port is active.
  - Replace an operational phone with the nonoperational phone.
  - Connect the nonoperational phone directly to the port on the switch, eliminating the patch panel connection in the office.
- Verify that the phone is receiving power:
  - If you are using external power, verify that the electrical outlet has power.
  - If you are using in-line power, plug the phone into an electrical outlet using the external power supply.
  - If you are using the external power supply, switch the power supply with a unit that you know works.
- If the phone still does not start up properly, perform a factory reset of the phone. For instructions, see the [Perform Factory Reset, on page 14](#).

If after attempting these solutions, the phone still does not function, contact a Cisco technical support representative for additional assistance.

## Cisco Unified IP Phone Does Not Register with Cisco Unified Communications Manager

Use this section if the phone proceeds past the first stage of the startup process (all LED buttons on) but the phone is not starting up properly. The phone cannot successfully start up unless it is connected to the Ethernet network and it has registered with a Cisco Unified Communications Manager server.

In addition, problems with security may prevent the phone from starting up properly. For more information, see [General Troubleshooting Information, on page 11](#).

### Phone Displays Error Messages

#### Problem

Status messages display errors during startup.

#### Solution

As the phone cycles through the startup process, you can access status messages that might provide you with information about the cause of a problem. For instructions about accessing status messages and suggested actions to resolve the errors, see the [Device Logs Area](#).

## Phone Cannot Connect to TFTP Server or to Cisco Unified Communications Manager

### Problem

If the network is down between the phone and either the TFTP server or Cisco Unified Communications Manager, the phone cannot start up properly.

### Solution

Ensure that the network is currently running.

## TFTP Server Settings

### Problem

The TFTP server settings may not be correct.

### Solution

Check the TFTP settings. See [Check TFTP Settings, on page 9](#).

## IP Addressing and Routing

### Problem

The IP addressing and routing fields may not be correctly configured.

### Solution

You should verify the IP addressing and routing settings on the phone. If you are using DHCP, the DHCP server should provide these values. If you have assigned a static IP address to the phone, you must enter these values manually.

On the Cisco Unified IP Phone, press the \*, #, and 0 buttons simultaneously, enter the password, and then follow the voice prompts to review the IP Address, Subnet Mask, Default Router.

- If you have assigned a static IP address to the phone, you must manually enter settings for these options. See the [Cisco Unified IP Phone Network Settings Setup](#) for instructions.
- If you are using DHCP, check the IP addresses distributed by your DHCP server. Refer to the *Understanding and Troubleshooting DHCP in Catalyst Switch or Enterprise Networks* document, available at this URL:

[http://www.cisco.com/en/US/tech/tk648/tk361/technologies\\_tech\\_note09186a00800f0804.shtml](http://www.cisco.com/en/US/tech/tk648/tk361/technologies_tech_note09186a00800f0804.shtml)

## Cisco CallManager and TFTP Services Are Not Running

### Problem

If the Cisco CallManager or TFTP services are not running, phones may not be able to start up properly. In such a situation, it is likely that you are experiencing a systemwide failure, and other phones and devices are unable to start up properly.

**Solution**

If the Cisco CallManager service is not running, all devices on the network that rely on it to make phone calls are affected. If the TFTP service is not running, many devices cannot start up successfully. For more information, see [Start Service, on page 11](#).

**Configuration File Corruption****Problem**

If you continue to have problems with a particular phone that other suggestions in this chapter do not resolve, the configuration file may be corrupted.

**Solution**

Create a new phone configuration file. See [Create New Configuration File, on page 9](#).

**Cisco Unified Communications Manager Phone Registration****Problem**

The phone is not registered with the Cisco Unified Communications Manager.

**Solution**

A Cisco Unified IP Phone can register with a Cisco Unified Communications Manager server only if the phone has been added to the server or (if autoregistration is enabled) there is a sufficient number of unit licenses. Review the information and procedures in [Cisco Unified Communications Manager Phone Addition Methods](#) to ensure that the phone has been added to the Cisco Unified Communications Manager database.

To verify that the phone is in the Cisco Unified Communications Manager database, choose **Device > Phone > Find** from Cisco Unified Communications Manager Administration to search for the phone based on the MAC Address. For information about determining a MAC address, see the [Cisco Unified IP Phones and Different Protocols](#).

If the phone is already in the Cisco Unified Communications Manager database, the phone configuration file may be damaged. For assistance, see [Create New Configuration File, on page 9](#).

For more information about licensing, see the “Licences for phones” section of the *Cisco Unified Communications Manager System Guide*.

**Cisco Unified IP Phone Cannot Obtain IP Address****Problem**

If a phone cannot obtain an IP address when it starts up, the phone may not be on the same network or VLAN as the DHCP server, or the switch port to which the phone connects may be disabled.

**Solution**

Ensure that the network or VLAN to which the phone connects has access to the DHCP server, and ensure that the switch port is enabled.

## Cisco Unified IP Phone Displays Flashing Red Light

### Problem

The phone fails to boot, and the message indicator flashes a red light.

### Cause

When a Cisco Unified IP Phone boots, it performs an internal Power On Self Test (POST). POST checks for existing encryption functionality. If POST detects that encryption functionality is missing, the phone fails to boot, and the phone displays a flashing red light.

### Solution

To correct the problem, perform the following steps:

1. Reset the phone manually.
2. If the phone does not start up properly, power up the phone with the handset off-hook. When the phone is powered up in this way, it attempts to launch a backup software image.
3. If the phone still does not start up properly, perform a factory reset of the phone. For instructions, see [Perform Factory Reset, on page 14](#).

## Cisco Unified IP Phone Resets Unexpectedly

If users report that their phones are resetting during calls or while idle on their desk, you should investigate the cause. If the network connection and Cisco Unified Communications Manager connection are stable, a Cisco Unified IP Phone should not reset on its own.

Typically, a phone resets if it has problems connecting to the Ethernet network or to Cisco Unified Communications Manager.

## Physical Connection Problems

### Problem

The physical connection to the LAN may be broken.

### Solution

Verify that the Ethernet connection to which the Cisco Unified IP Phone connects is up. For example, check whether the particular port or switch to which the phone connects is down and that the switch is not rebooting. Also ensure that no cable breaks exist.

## Intermittent Network Outages

### Problem

Your network may be experiencing intermittent outages.

**Solution**

Intermittent network outages affect data and voice traffic differently. Your network might be experiencing intermittent outages without detection. If so, data traffic can resend lost packets and verify that packets are received and transmitted. However, voice traffic cannot recapture lost packets. Rather than retransmitting a lost network connection, the phone resets and attempts to reconnect to the network. Contact the system administrator for information on known problems in the voice network.

## DHCP Settings Errors

**Problem**

The DHCP settings may be incorrect.

**Solution**

Verify that you have properly configured the phone to use DHCP. For more information see, [Cisco Unified IP Phone Network Settings Setup](#). Verify that the DHCP server is set up properly. Verify the DHCP lease duration. Cisco recommends that you set the lease duration to 8 days.

## Static IP Address Settings Errors

**Problem**

The static IP address assigned to the phone may be incorrect.

**Solution**

If the phone has been assigned a static IP address, verify that you have entered the correct settings. For more information, see [Cisco Unified IP Phone Network Settings Setup](#).

## Voice VLAN Setup Errors

**Problem**

If the Cisco Unified IP Phone appears to reset during heavy network usage (for example, following extensive web surfing on a computer connected to the same switch as the phone), it is likely that you do not have a voice VLAN configured.

**Solution**

Isolating the phones on a separate auxiliary VLAN increases the quality of the voice traffic. For more information, see [Cisco Unified IP Phone 6911 and VLAN Interaction](#).

## Phones Have Not Been Intentionally Reset

**Problem**

If you are not the only administrator with access to Cisco Unified Communications Manager, you should verify that no one else has intentionally reset the phones.

**Solution**

You can check if a Cisco Unified IP Phone received a command from Cisco Unified Communications Manager to reset by pressing **Applications** on the phone and choosing **Administrator Settings > Status > Network Statistics**.

- If the Restart Cause field displays `Reset-Reset`, the phone received a Reset/Reset from Cisco Unified Communications Manager Administration.
- If the Restart Cause field displays `Reset-Restart`, the phone reset because it received a Reset/Restart from Cisco Unified Communications Manager Administration.

## DNS or Other Connectivity Errors

**Problem**

The phone reset continues and you suspect DNS or other connectivity issues.

**Solution**

If the phone continues to reset, eliminate DNS or other connectivity errors with [Determine DNS or Connectivity Issues, on page 10](#).

## Power Connection Problems

**Problem**

The phone does not appear to be powered up.

**Solution**

In most cases, a phone restarts if it powers up by using external power but loses that connection and switches to PoE. Similarly, a phone may restart if it powers up by using PoE and then connects to an external power supply.

## Audio Problems

The following sections describe how to resolve audio problems.

### Poor Audio Quality with Calls That Route Outside Cisco Unified Communications Manager

**Problem**

Poor quality occurs with tandem audio encoding. Tandem encoding can occur when calls are made between an IP Phone and a digital cellular phone, when a conference bridge is used, or in situations where IP-to-IP calls are partially routed across the PSTN.

**Cause**

In these cases, use of voice codecs such as G.729 and iLBC may result in poor voice quality.

**Solution**

Use the G.729 and iLBC codecs only when absolutely necessary.

## Choppy Speech

**Problem**

A user complains of choppy speech on a call.

**Cause**

There may be a mismatch in the jitter configuration.

**Solution**

Check the AvgJtr and the MaxJtr statistics. A large variance between these statistics might indicate a problem with jitter on the network or periodic high rates of network activity.

## No Speech Path

**Problem**

One or more people on a call do not hear any audio.

**Solution**

When at least one person in a call does not receive audio, IP connectivity between phones is not established. Check the configuration of routers and switches to ensure that IP connectivity is properly configured.

## General Telephone Call Problems

The following sections help troubleshoot general telephone call problems.

### Phone Call Cannot Be Established

**Problem**

A user complains about not being able to make a call.

**Cause**

The phone does not have a DHCP IP address, is unable to register to Cisco Unified Communications Manager. Phones with an LCD display show the message `Configuring IP or Registering`. Phones without an LCD display play the reorder tone (instead of dial tone) in the handset when the user attempts to make a call.

**Solution**

1. Verify the following:
  - a. The Ethernet cable is attached.
  - b. The Cisco CallManager service is running on the Cisco Unified Communications Manager server.

- c. Both phones are registered to the same Cisco Unified Communications Manager.
2. Audio server debug and capture logs are enabled for both phones. If needed, enable Java debug.

## Phone Does Not Recognize DTMF Digits or Digits Are Delayed

### Problem

The user complains that numbers are missed or delayed when the keypad is used.

### Cause

Pressing the keys too quickly can result in missed or delayed digits.

### Solution

Keys should not be pressed rapidly.

## Troubleshooting Procedures

These procedures can be used to identify and correct problems.

### Check TFTP Settings

#### Procedure

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- Step 1** Determine the IP address of the TFTP server used by the phone by pressing the \*, #, and 0 buttons simultaneously, entering the password, and then following the voice prompts to review the network setting.
  - Step 2** If you have assigned a static IP address to the phone, check the setting for the TFTP Server 1 option. See the [Cisco Unified IP Phone Network Settings Setup](#).
  - Step 3** If you are using DHCP, the phone obtains the address for the TFTP server from the DHCP server. Check the IP address configured in Option 150 or Option 66.
  - Step 4** Enable the phone to use an alternate TFTP server. Such a setting is particularly useful if the phone was recently moved from one location to another. See the [Cisco Unified IP Phone Network Settings Setup](#) for instructions.
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### Create New Configuration File

If you continue to have problems with a particular phone that other suggestions in this chapter do not resolve, the configuration file may be corrupted.

**Note**

- When you remove a phone from the Cisco Unified Communications Manager database, the Cisco Unified Communications Manager deletes the configuration file from the TFTP server. The assigned directory numbers for the phone remain in the Cisco Unified Communications Manager database. They are called *unassigned DNs* and can be assigned to other devices. If unassigned DNs are not used by other devices, delete them from the Cisco Unified Communications Manager database. You can use the Route Plan Report to view and delete unassigned reference numbers. Refer to For more information, see *Cisco Unified Communications Manager Administration Guide*.
- Changing the buttons on a phone button template, or assigning a different phone button template to a phone, may result in directory numbers that are no longer accessible from the phone. The directory numbers are still assigned to the phone in the Cisco Unified Communications Manager database, but there is no button on the phone for the line, meaning that no calls to the number can be answered. These directory numbers should be removed from the phone and deleted if necessary.

To create a new configuration file, follow these steps:

**Procedure**

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- Step 1** From Cisco Unified Communications Manager, choose **Device > Phone > Find** to locate the phone experiencing problems.
  - Step 2** Choose **Delete** to remove the phone from the Cisco Unified Communications Manager database.
  - Step 3** Add the phone back to the Cisco Unified Communications Manager database. See the [Cisco Unified Communications Manager Phone Addition Methods](#) for details.
  - Step 4** Power cycle the phone.
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## Determine DNS or Connectivity Issues

If the phone continues to reset, follow these steps to eliminate DNS or other connectivity errors:

**Procedure**

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- Step 1** Use the Reset Settings menu to reset phone settings to their default values. For more information, see [Cisco Unified IP Phone Reset or Restore, on page 13](#).
  - Step 2** Modify DHCP and IP settings:
    - a) Disable DHCP. For instructions, see [Cisco Unified IP Phone Network Settings Setup](#).
    - b) Assign static IP values to the phone. For instructions, see [Cisco Unified IP Phone Network Settings Setup](#). Use the same default router setting used for other functioning Cisco Unified IP Phones.
    - c) Assign a TFTP server. For instructions, see [Cisco Unified IP Phone Network Settings Setup](#). Use the same TFTP server used for other functioning Cisco Unified IP Phones.
  - Step 3** On the Cisco Unified Communications Manager server, verify that the local host files have the correct Cisco Unified Communications Manager server name mapped to the correct IP address.
  - Step 4** From Cisco Unified Communications Manager, choose **System > Server** and verify that the server is referred to by the IP address and not by the DNS name.

- Step 5** From Cisco Unified Communications Manager, choose **Device > Phone > Find** and verify that you have assigned the correct MAC address to this Cisco Unified IP Phone. For information about determining a MAC address, see the [Cisco Unified IP Phones and Different Protocols](#).
- Step 6** Power cycle the phone.

## Start Service



**Note** A service must be activated before it can be started or stopped. To activate a service, choose **Tools > Service Activation**.

To start a service, follow these steps:

### Procedure

- Step 1** From Cisco Unified Communications Manager Administration, choose **Cisco Unified Serviceability** from the Navigation drop-down list and click **Go**.
- Step 2** Choose **Tools > Control Center - Feature Services**.
- Step 3** Choose the primary Cisco Unified Communications Manager server from the Server drop-down list.  
The window displays the service names for the server that you chose, the status of the services, and a service control panel to start or stop a service.
- Step 4** If a service has stopped, click the corresponding radio button and then click **Start**.  
The Service Status symbol changes from a square to an arrow.

## General Troubleshooting Information

The following table provides general troubleshooting information for the Cisco Unified IP Phone.

**Table 1: Cisco Unified IP Phone Troubleshooting**

Summary	Explanation
Connecting a Cisco Unified IP Phone to another Cisco Unified IP Phone through the PC port.	Cisco does not support connecting an IP Phone to another IP Phone through the PC port. Each IP Phone should directly connect to a switch port. If phones are connected together in a line (by using the PC port), the phones will not work.
Prolonged broadcast storms cause IP phones to reset, or be unable to make or answer a call.	A prolonged Layer 2 broadcast storm (lasting several minutes) on the voice VLAN may cause IP phones to reset, lose an active call, or be unable to initiate or answer a call. Phones may not regain connectivity until a broadcast storm ends.

Summary	Explanation
<p>Moving a network connection from the phone to a workstation.</p>	<p>If you power your phone through the network connection, you must be careful if you decide to unplug the network connection of the phone and plug the cable into a desktop computer.</p> <p><b>Caution</b> The computer network card cannot receive power through the network connection; if power comes through the connection, the network card can be destroyed. To protect a network card, wait 10 seconds or longer after unplugging the cable from the phone before plugging it into a computer. This delay gives the switch enough time to recognize that there is no longer a phone on the line and to stop providing power to the cable.</p>
<p>Changing the telephone configuration.</p>	<p>By default, the network configuration options are locked to prevent users from making changes that could impact their network connectivity. You must unlock the network configuration options before you can configure them. See the <a href="#">Access Phone Configuration Settings</a> for details.</p>
<p>Phone resetting.</p>	<p>The phone resets when it loses contact with the Cisco Unified Communications Manager software. This lost connection can be due to any network connectivity disruption, including cable breaks, switch outages, and switch reboots.</p>
<p>Codec mismatch between the phone and another device.</p>	<p>The RxType and the TxType statistics show the codec that is being used for a conversation between this Cisco Unified IP phone and the other device. The values of these statistics should match. If they do not match, verify that the other device can handle the codec conversation or that a transcoder is in place to handle the service.</p>
<p>Sound sample mismatch between the phone and another device.</p>	<p>The RxSize and the TxSize statistics show the size of the voice packets that are being used in a conversation between this Cisco Unified IP phone and the other device. The values of these statistics should match.</p>

Summary	Explanation
<p>Loopback condition.</p>	<p>A loopback condition can occur when the following conditions are met:</p> <ul style="list-style-type: none"> <li>• The SW Port Configuration option in the Network Configuration menu on the phone is set to <b>10 Half</b> (10-BaseT / half duplex)</li> <li>• The phone receives power from an external power supply</li> <li>• The phone is powered down (the power supply is disconnected)</li> </ul> <p>In this case, the switch port on the phone can become disabled and the following message will appear in the switch console log:</p> <pre>HALF_DUX_COLLISION_EXCEED_THRESHOLD</pre> <p>To resolve this problem, reenable the port from the switch.</p>

## Additional Troubleshooting Information

If you have additional questions about troubleshooting the Cisco Unified IP Phones, several Cisco.com web sites can provide you with more tips. Choose from the sites available for your access level.

- Cisco Unified IP Phone Troubleshooting Resources:

[http://www.cisco.com/en/US/products/hw/phones/ps379/tsd\\_products\\_support\\_troubleshoot\\_and\\_alerts.html](http://www.cisco.com/en/US/products/hw/phones/ps379/tsd_products_support_troubleshoot_and_alerts.html)

- Cisco Products and Services (Technical Support and Documentation):

[http://www.cisco.com/en/US/products/ps10326/tsd\\_products\\_support\\_series\\_home.html](http://www.cisco.com/en/US/products/ps10326/tsd_products_support_series_home.html)

## Maintenance

The following sections describe voice and phone maintenance.

### Cisco Unified IP Phone Reset or Restore

The following sections detail two general methods for resetting or restoring the Cisco Unified IP Phone.

#### Perform Basic Reset

Performing a basic reset of a Cisco Unified IP Phone provides a methods to recover if the phone experiences an error and provides a methods to reset or restore various configuration and security settings.

The following table describes the methods to perform a basic reset. You can reset a phone with any of these operations after the phone has started up. Choose the operation that is appropriate for your situation.

**Table 2: Basic Reset Methods**

Operation	Performing	Explanation
Restart phone	Unplug the power cable and plug it back in.	Resets any user and network configuration changes that you have made, but that the phone has not written to flash memory, to previously saved settings, then restarts the phone.
Reset Settings	Reset the phone to the factory settings.	Resets user and network configuration settings to their default values, and restarts the phone.

## Perform Factory Reset

When you perform a factory reset of the Cisco Unified IP Phone, the following information is erased or reset to the default value:

- User configuration settings: Reset to default values
- Network configuration settings: Reset to default values
- Call histories: Erased
- Locale information: Reset to default values
- Phone application: Erased (phone recovers by using the image in the inactive partition of flash memory to boot up).

Before you perform a factory reset, ensure that the following conditions are met:

- The phone must be on a DHCP-enabled network.
- A valid TFTP server must be set in DHCP option 150 or option 66 on the DHCP server.

To perform a factory reset of a phone, you can use the IVR to reset the network settings to factory default or you can perform the following steps:

### Procedure

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- Step 1** Unplug the power cable from the phone and then plug it back in.  
The phone begins its power-up cycle.
- Step 2** While the phone is powering up, press and hold # button until the Line LED turns green.
- Step 3** Release the # button and press **123456789\*0#**.  
The line button LED turns red. The phone reboots when it is finished.
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## Voice Quality Monitoring

To measure the voice quality of calls that are sent and received within the network, Cisco Unified IP Phones use statistical metrics that are based on concealment events. The Digital Signal Processor (DSP) plays concealment frames to mask frame loss in the voice packet stream.

- **Concealment Ratio metrics:** Shows the ratio of concealment frames over total speech frames. An interval conceal ratio is calculated every 3 seconds.
- **Concealed Second metrics:** Shows the number of seconds in which the DSP plays concealment frames due to lost frames. A severely “concealed second” is a second in which the DSP plays more than five percent concealment frames.
- **Mean Opinion Score (MOS) for Listening Quality (LQK) Voice Metrics:** Uses a numeric score to estimate the relative voice-listening quality. The Cisco Unified IP Phones calculate the MOS LQK based on audible-concealment events due to a frame loss in the preceding 8 seconds and includes weighting factors such as codec type and frame size.

MOS LQK scores are produced by a Cisco-proprietary algorithm, the Cisco Voice Transmission Quality (CVTQ) index. Depending on the MOS LQK version number, these scores may comply with the International Telecommunications Union (ITU) standard P.564. This standard defines evaluation methods and performance accuracy targets that predict listening quality scores based on observation of actual network impairment.



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**Note** Concealment ratio and concealment seconds are primary measurements based on frame loss. A Conceal Ratio of zero indicates that the IP network is delivering frames and packets on time with no loss.

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You can access voice quality metrics remotely by using Streaming Statistics (see [Remote Monitoring](#)).

## Voice Quality Metrics

When using the metrics for monitoring voice quality, note the typical scores under normal conditions of zero packet loss and use the metrics as a baseline for comparison.

It is also important to distinguish significant changes from random changes in metrics. Significant changes are scores that change about 0.2 MOS or more and persist in calls that last longer than 30 seconds. Conceal ratio changes indicate a frame loss greater than 3 percent.

The MOS LQK scores can vary based on the codec that the Cisco Unified IP Phone uses. The following codecs provide these corresponding maximum MOS LQK scores under normal conditions with zero frame loss for Cisco Unified Phones 6901 and 6911:

- G.711: 4.5 MOS LQK
- G.722: 4.5 MOS LQK
- G.728/iLBC: 3.9 MOS LQK
- G729A/AB: 3.7 MOS LQK

Cisco Voice Transmission Quality (CVTQ) does not support wideband (7 kHz) speech codecs, because ITU has not defined the extension of the technique to wideband. Therefore, MOS LQK scores that correspond to

G.711 performance are reported for G.722 calls to allow basic quality monitoring, rather than not reporting an MOS score.

- Reporting G.711-scale MOS scores for wideband calls through the use of CVTQ allows basic-quality classifications to be indicated as good/normal or bad/abnormal. Calls with high scores (approximately 4.5) indicate high quality or a low packet loss, and lower scores (approximately 3.5) indicate low quality or a high packet loss.
- Unlike MOS, the conceal ratio and concealed seconds metrics remain valid and useful for both wideband and narrowband calls.

A conceal ratio of zero indicates that the IP network is delivering frames and packets on time with no loss.

## Voice Quality Troubleshooting Tips

When you observe significant and persistent changes to metrics, use the following table for general troubleshooting information.

**Table 3: Changes to Voice Quality Metrics**

Metric change	Condition
Conceal Ratio and Conceal Seconds increase significantly	Network impairment from packet loss or high jitter.
Conceal Ratio is near or at zero, but the voice quality is poor.	<ul style="list-style-type: none"> <li>• Noise or distortion in the audio channel such as echo or audio levels.</li> <li>• Tandem calls that undergo multiple encode/decode such as calls to a cellular network or calling card network.</li> <li>• Acoustic problems coming from a speakerphone, handsfree cellular phone or wireless headset.</li> </ul> <p>Check packet transmit (TxCnt) and packet receive (RxCnt) counters to verify that voice packets are flowing.</p>
MOS LQK scores decrease significantly	<p>Network impairment from packet loss or high jitter levels:</p> <ul style="list-style-type: none"> <li>• Average MOS LQK decreases may indicate widespread and uniform impairment.</li> <li>• Individual MOS LQK decreases may indicate bursty impairment.</li> </ul> <p>Cross-check the conceal ratio and conceal seconds for evidence of packet loss and jitter.</p>
MOS LQK scores increase significantly	<ul style="list-style-type: none"> <li>• Check to see if the phone is using a different codec than expected (RxType and TxType).</li> <li>• Check to see if the MOS LQK version changed after a firmware upgrade.</li> </ul>



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**Note** Voice quality metrics do not account for noise or distortion, only frame loss.

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## Cisco Unified IP Phone Cleaning

To clean your Cisco Unified IP Phone, use only a dry soft cloth to gently wipe the phone. Do not apply liquids or powders directly on the phone. As with all non-weatherproof electronics, liquids and powders can damage the components and cause failures.

