



Troubleshooting and Maintenance

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Call, Device, and Network Information

You can view call, device, and network information through the Applications menu, or remotely through each conference phone web page. You can use this information to monitor the operation of a conference phone to assist with troubleshooting.

Related Topics

- [Model Information, Status, and Statistics](#)
- [Remote Monitoring](#)

Troubleshooting

Use the following sections to troubleshoot problems with the conference phone.

Startup Problems

After installing a conference phone into your network and adding it to Cisco Unified Communications Manager, the conference phone should start up as described in [IP Phone Startup Verification](#). If the conference phone does not start up properly, see the following sections for troubleshooting information.

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

Problem

When you connect a conference phone into the network port, the conference phone should go through its normal startup process, and the LCD screen should display information.

Cause

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

Solution

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

- Verify that the network port is functional:
 - Exchange the Ethernet cables with cables that you know are functional.
 - Disconnect a functioning conference phone from another port and connect it to this network port to verify the port is active.
 - Connect the conference phone that will not start up to a different network port that is known to be good.
 - Connect the conference phone that will not start up directly to the port on the switch, eliminating the patch panel connection in the office.
- Verify that the conference phone is receiving power:
 - If you are using external power, verify that the electrical outlet is functional.
 - If you are using in-line power, use the external power supply instead.
 - If you are using the external power supply, switch with a unit that you know to be functional.
- If the conference phone still does not start up properly, perform a factory reset of the conference phone.

If after attempting these solutions, the LCD screen on the conference phone does not display any characters after at least five minutes, contact a Cisco technical support representative for additional assistance.

Related Topics

[IP Phone Startup Verification](#)

[Cisco Unified IP Conference Phone Reset or Restore](#), on page 14

[Conference Phone Power](#)

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

To start up properly, the conference phone must be connected to the Ethernet network and registered with a Cisco Unified Communications Manager. If the conference phone does not start up properly, review the following sections.

TFTP Server Settings**Problem**

The TFTP server settings may not be correct.

Solution

Check the TFTP settings. See [Check TFTP Settings, on page 11](#).

IP Addressing and Routing

Problem

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

Solution

You should verify the Internet Protocol (IP) addressing and routing settings on the conference phone. If you are using DHCP, the DHCP server should provide these values. If you have assigned a static IP address to the conference phone, you must enter these values manually. See [Check DHCP Settings, on page 13](#)

DNS Settings

Problem

The DNS settings may be incorrect.

Solution

If you are using DNS to see the TFTP server or to Cisco Unified Communications Manager, you must ensure that you have specified a Domain Name System (DNS) server. See [Verify DNS Settings, on page 13](#)

Cisco Unified Communications Manager and TFTP Servers Are Not Running

If the Cisco Unified Communications Manager or TFTP services are not running, conference phones may not be able to start up properly. However, in such a situation, it is likely that you are experiencing a system-wide failure and that other conference phones and devices are unable to start up properly.

If the Cisco Unified Communications Manager service is not running, all devices on the network that rely on it to make conference phone calls will be affected. If the TFTP service is not running, many devices will not be able to start up successfully. For more information, see [Start Service, on page 12](#).

Configuration File Corruption

Problem

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

Solution

Create a new configuration file. See [Create New Phone Configuration File, on page 13](#).

Cisco Unified Communications Manager Phone Registration

Problem

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

Solution

A conference phone can register with a Cisco Unified Communications Manager server only if the conference phone has been added to the server or if autoregistration is enabled. Review the information and procedures in the [Cisco Unified Communications Manager Administration Conference Station Addition](#) section to ensure that the conference phone has been added to Cisco Unified Communications Manager.

To verify that the conference phone is in the Cisco Unified Communications Manager database, choose **Device > Phone** from Cisco Unified Communications Manager Administration and search for the conference phone based on its MAC Address. For information about determining a MAC address, see the [Conference Phone MAC Address Determination](#) section.

If the conference phone is already in the Cisco Unified Communications Manager database, its configuration file may be damaged. See the [Configuration File Corruption, on page 3](#) section for assistance.

Cisco Unified IP Conference 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 conference phone is connected 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 Conference 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 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. The following sections can help you identify the cause of a conference phone resetting in your network.

Physical Connection Problems

Problem

The physical connection to the LAN may be broken.

Solution

Verify that the Ethernet connection to which the phone is connected is up. For example, check if the particular port or switch to which the phone is connected is down and that the switch is not rebooting. Also make sure that there are no cable breaks.

Intermittent Network Outages

Problem

The conference phone resets because the 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 network administrator for information on known problems in the voice network.

DHCP Setting Errors

Problem

The DHCP settings may be incorrect.

Solution

Follow this process to help determine if the phone has been properly configured to use DHCP:

1. Verify that you have properly configured the conference phone to use DHCP. See the [Network Setup Menu](#) section for more information.
2. Verify that the DHCP server has been set up properly.
3. Verify the DHCP lease duration. Cisco recommends that you set it to 8 days.

conference phones send messages with request type 151 to renew their DHCP address leases. If the DHCP server expects messages with request type 150, the lease will be denied, forcing the conference phone to restart and request a new IP address from the DHCP server.

Static IP Address Setting Errors

Problem

The status IP address assigned to the conference phone may be incorrect.

Solution

If the conference phone has been assigned a static IP address, verify that you have entered the correct settings. See the [Network Setup Menu](#) section more information.

Voice VLAN Setup Errors

Problem

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

Solution

Isolating the conference phones on a separate auxiliary VLAN increases the quality of the voice traffic. See the [Cisco Unified IP Communications Product Interactions](#) section for details.

DNS or Other Connectivity Errors

Problem

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

Solution

If the conference phone continues to reset, follow the procedure in [Determine DNS or Connectivity Issues](#), on page 12.

Power Connection Problems

Problem

The conference station does not appear to be powered up.

Solution

In most cases, a conference phone will restart if it powers up using external power but loses that connection and switches to Power over Ethernet (PoE). Similarly, a conference phone may restart if it powers up using PoE and then gets connected to an external power supply.

Audio and Display Problems

The following sections describe how to resolve audio and display problems.

Display Is Wavy

Problem

The display appears to have rolling lines of a wavy pattern.

Cause

The conference phone might be interacting with certain types of older fluorescent lights in the building.

Solution

Move the conference phone away from the lights or replace the lights to resolve the problem.

Choppy Speech or Sound

Problem

A user complains of choppy speech or a metallic sound coming from or going to the far end.

Cause

There may be jitter in the network or too many dropped packets.

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. For more information about displaying statistics, see [Call Statistics Screen](#).

Choppy Speech or Sound When Using Wireless Microphones

Problem

A user complains of choppy speech or metallic sound coming from the wireless microphones.

Cause

Too many dropped packets.

Solution

Check the RF environment

Echo on Far End

Problem

The far end hears echo.

Cause

You may be experiencing one of the following:

- The conference phone is not on a flat and stable surface.
- The wired or wireless microphones are too close to the sound base.
- The wired or wireless microphones are not on a flat and stable surface.
- In Linked Mode, the primary and secondary sound base units are too close together.

Solution

Check the placement of the bases and microphones.

Audio Level Too Low

Problem

A user complains that the audio level is too low.

Cause

You may be experiencing one of the following:

- The user is not facing the conference phone when speaking.
- The user is too far from the conference phone when speaking.
- The wireless microphones are being moved.

Solution

Consider using external microphones, or increasing the room coverage by using Linked Mode.

Audio Quality Poor

Problem

User complains about poor audio quality.

Cause

You are using a narrow band rather than a wide band codec.

Solution

Verify on the CUCM that the default codec is G.722 (wide band).

No Audio Between Units

Problem

There is no audio to or from the secondary unit in Linked Mode.

Cause

The daisy cable is not connected properly.

Solution

- Verify that the daisy cable is properly seated and that it is routed inside the cable grooves.
- Verify that the external microphone icon is present on the display if one is connected.

No Audio from External Wireless Microphones

Problem

There is no audio to or from the external wireless microphones.

Cause

The wireless microphones are not paired or are not linked with the device.

Solution

- Verify that the wireless microphone is paired and that the wireless microphone icon is present on the display.
- Verify that the LED on the wireless external microphone is flashing green.
- Verify that the wireless microphone is charged.

Conference Call Reception Problems

To ensure optimum performance with the conference phone and the external microphones, see [Performance Guidelines](#).

General Troubleshooting Information

This section provides troubleshooting information for some common issues that might occur on the conference phone.

The following table provides general troubleshooting information for the conference phone.

Table 1: Cisco Unified IP Conference Phone Troubleshooting

Summary	Explanation
Changing the conference phone configuration	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.
Codec mismatch between the conference phone and another device	The RxType and the TxType statistics show the codec that is being used for a conversation between this conference phone and the other device. The values of these statistics should match. If they do not, verify that the other device can handle the codec conversation or that a transcoder is in place to handle the service. See Call Statistics Screen for information about displaying these statistics.
Dual-Tone Multi-Frequency (DTMF) delay	When you are on a call that requires keypad input, if you press the keys too quickly, some of them might not be recognized.
conference phone does not ring	Check that the ringer setting is not “Ringer Off.” Check the volume level.

Summary	Explanation
Loopback condition	<p>A loopback condition can occur when the following conditions are met:</p> <ul style="list-style-type: none"> • The conference phone receives power from an external power supply • The conference phone is powered down (the power supply is disconnected) <p>In this case, the switch port on the conference 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, re-enable the port from the switch.</p>
Moving a network connection from the conference phone to a workstation	<p>If you are powering your conference phone through the network connection, you must be careful if you decide to unplug the conference phone network connection and plug the cable into a desktop computer.</p> <p>Caution The computer's 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 conference phone before plugging it into a computer. This delay gives the switch enough time to recognize that there is no longer a conference phone on the line and to stop providing power to the cable.</p>
No dial tone	Check that all connections are secure and in place. Make sure all connections are correct.
No LCD screen display	Check to make sure that the conference phone has power. Make sure that the power supply unit is plugged in.
One-way audio	When at least one person in a call does not receive audio, IP connectivity between conference phones is not established. Check the configurations in routers and switches to ensure that IP connectivity is properly configured.

Summary	Explanation
<p>Poor voice quality when calling digital cell conference phones using the G.729 codec (protocol)</p> <p>Caution Using a cell, mobile, or GSM conference phone, or two-way radio in close proximity to a Cisco Unified IP Conference Phone 8831 might cause interference. For more information, see the manufacturer's documentation of the interfering device.</p>	<p>In Cisco Unified Communications Manager, you can configure the network to use the G.729 protocol (the default is G.711). When using G.729, calls between a Cisco Unified IP Conference Phone and a digital cellular conference phone will have poor voice quality. Use G.729 only when absolutely necessary.</p> <p>For more information, see the Cisco Unified Communications Manager application online help.</p>
<p>Prolonged broadcast storms cause conference phones to reset, or be unable to make or answer a call</p>	<p>A prolonged Layer 2 broadcast storm (lasting several minutes) on the voice VLAN may cause conference phones to reset, lose an active call, or be unable to initiate or answer a call. conference phones may not come up until a broadcast storm ends.</p>
<p>Sound sample mismatch between the conference 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 conference phone and the other device. The values of these statistics should match.</p> <p>See Call Statistics Screen for information about displaying these statistics.</p>

Troubleshooting Procedures

These procedures can be used to identify and correct problems.

Check TFTP Settings

Procedure

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- Step 1** You can determine the IP address of the TFTP server used by the conference phone by choosing **Apps > Admin Settings > Network Setup > IPv4 Configuration > TFTP Server 1** .
 - Step 2** If you have assigned a static IP address to the conference phone, you must manually enter a setting for the TFTP Server 1 option.
 - Step 3** If you are using Dynamic Host Configuration Protocol (DHCP), the conference phone obtains the address for the Trivial File Transfer Protocol (TFTP) server from the DHCP server. A valid TFTP server must be set in DHCP option 150 or option 66 on the DHCP server.
 - Step 4** You can also enable the conference phone to use an alternate TFTP server. Such a setting is particularly useful if the conference phone was recently moved from one location to another.
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Related Topics

[Network Setup Menu](#)

Start Service

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 that displays in the upper, right corner of the window, and then click **Go**.
- Step 2** Choose **Tools > Control Center - Network Services**.
- Step 3** Choose the primary Cisco Unified Communications Manager server from the Server drop-down list.
The page displays the service names for the server that you chose, the status of the services, and a service control panel to stop or start a service.
- Step 4** If a service has stopped, click its radio button, and then click **Start**.
-

Determine DNS or Connectivity Issues

Use these steps to eliminate DNS or other connectivity errors:

Procedure

- Step 1** Navigate to **Apps > Admin Settings > Network Setup > IPv4 Configuration > DHCP** and choose the Reset All option to reset conference phone settings to their default values.
- Step 2** Modify DHCP and IP settings:
- Disable DHCP.
 - Assign static IP values to the conference phone. Use the same default router setting used for other functioning conference phones.
 - Assign TFTP server. Use the same TFTP server used for other functioning conference 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 Administration, choose **System > Server** to locate the server, and then click the server name. Verify that the server is referred to by its IP address and not by its DNS name.
- Step 5** From Cisco Unified Communications Manager Administration, choose **Device > Phone** to locate the conference phone, and then click the conference phone name. Verify that you have assigned the correct MAC address to this conference phone.
- Step 6** Power cycle the conference phone.
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Related Topics

[Cisco Unified IP Conference Phone Reset or Restore](#), on page 14

[Network Setup Menu](#)

[Conference Phone MAC Address Determination](#)

Create New Phone Configuration File



Note When you remove a conference phone from the Cisco Unified Communications Manager database, its configuration file is deleted from the Cisco Unified Communications Manager TFTP server. The conference phone directory number remains in the Cisco Unified Communications Manager. It becomes an “unassigned DN” and can be used by another device. If unassigned DNs are not used by other devices, delete them from Cisco Unified Communications Manager. You can use the Route Plan Report to view and delete unassigned reference numbers. For more information, see *Cisco Unified Communications Manager Administration Guide*.

To create a new configuration file, follow these steps:

Procedure

-
- Step 1** In Cisco Unified Communications Manager Administration, choose **Device > Phone**. Enter search criteria to locate the conference phone experiencing problems, and then click the device name.
 - Step 2** In the Phone Configuration window, click **Delete** to remove the conference phone from Cisco Unified Communications Manager.
 - Step 3** Add the conference phone to Cisco Unified Communications Manager.
 - Step 4** Power cycle the conference phone.
-

Related Topics

[Cisco Unified Communications Manager IP Phone Addition Methods](#)

Verify DNS Settings

To verify DNS settings, follow these steps:

Procedure

-
- Step 1** Select **Apps > Admin Settings > Network Setup > IPv4 Configuration > DNS Server 1**.
 - Step 2** Verify that there is a CNAME entry in the DNS server for the TFTP server and one for Cisco Unified Communications Manager.
 - Step 3** Ensure that DNS is configured to do reverse look-ups.
-

Check DHCP Settings



Note DHCP can be enabled and disabled manually.

Procedure

- Step 1** On the conference station, select **Apps > Admin Settings > Network Setup > IPv4 Configuration**, and look at the following options:
- DHCP: If you have assigned a static IP address to the conference phone, you do not need to enter a value for the DHCP Server option. However, if you are using a DHCP server, this option must have a value. If it does not, check your IP routing and VLAN configuration. See *Troubleshooting Switch Port Problems*, available at this URL: http://www.cisco.com/en/US/customer/products/hw/switches/ps708/prod_tech_notes_list.html
 - IP Address, Subnet Mask, Default Router: If you have assigned a static IP address to the conference phone, you must manually enter settings for these options.
- Step 2** If you are using DHCP, check the IP addresses distributed by your DHCP server. See *Understanding and Troubleshooting DHCP in Catalyst Switch or Enterprise Networks*, available at this URL: <http://www.cisco.com/c/en/us/support/docs/ip/dynamic-address-allocation-resolution/27470-100.html>
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Related Topics

[Network Setup Menu](#)

Additional Troubleshooting Information

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

- Conference Phone Troubleshooting Resources: http://www.cisco.com/en/US/products/hw/phones/ps379/tsd_products_support_series_home.html
- Cisco Products and Services (Technical Support and Documentation): http://www.cisco.com/en/US/products/sw/voicesw/tsd_products_support_category_home.html

Maintenance

The following sections describe phone maintenance.

Cisco Unified IP Conference Phone Reset or Restore

The following sections describe the methods for resetting or restoring the conference phone.

Settings Reset

A factory reset provides a way to recover if the conference phone experiences an error. The **Reset Settings** menu on the device has three options:

- All
- Network

- Security

You can reset a conference phone at any time after the conference phone has started up.

To reset the device, press **Apps > Admin Settings > Reset Settings**, then select one of the following settings to reset back to factory defaults:

- All
- Network
- Security

Quality Report Tool

The Quality Report Tool (QRT) is a voice quality and general problem-reporting tool for the conference phone. The QRT feature is installed as part of Cisco Unified Communications Manager.

You can configure users' conference phones with QRT. When you do so, users can report problems with conference phone calls by pressing the QRT softkey. This softkey is available only when the conference phone is in the Connected, Connected Conference, Connected Transfer, or OnHook states.

When a user presses the QRT softkey, a list of problem categories appears. The user selects the appropriate problem category and this feedback is logged in an XML file. Actual information logged depends on the user selection and whether the destination device is a conference phone.

For more information about using QRT, see the *Cisco Unified Communications Manager Features and Services Guide*.

Voice Quality Monitoring

To measure the voice quality of calls that are sent and received within the network, conference phones use these statistical metrics that are based on concealment events. The DSP plays concealment frames to mask frame loss in the voice packet stream.

- Concealment Ratio metrics: Show the ratio of concealment frames over total speech frames. An interval conceal ratio is calculated every 3 seconds.
- Concealed Second metrics: Show 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.
- MOS-LQK metrics: Use a numeric score to estimate the relative voice listening quality. The conference phone calculates the mean opinion score (MOS) for listening quality (LQK) based audible concealment events due to frame loss in the preceding 8 seconds, and includes perceptual weighting factors such as codec type and frame size.

MOS LQK scores are produced by a Cisco proprietary algorithm that is an implementation of P.VTQ, an ITU provisional standard.



Note Concealment ratio and concealment seconds are primary measurements based on frame loss while MOS LQK scores project a “human-weighted” version of the same information on a scale from 5 (excellent) to 1 (bad) for measuring listening quality.

Listening quality scores (MOS LQK) relate to the clarity or sound of the received voice signal. Conversational quality scores (MOS CQ such as G.107) include impairment factors, such as delay, that degrade the natural flow of conversation.

For information about configuring voice quality metrics for conference phones, see the *Cisco Unified Communications Manager System Guide*, “Cisco Unified IP Phones” chapter, “Phone Features” section.

You can access voice quality metrics from the conference phone by using the Call Statistics screen or remotely by using Streaming Statistics.

To use 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 important to distinguish significant changes from random changes in metrics. Significant changes are scores that change about 0.2 MOS or greater and persist in calls that last longer than 30 seconds. Conceal Ratio changes should indicate greater than 3 percent frame loss.

MOS LQK scores can vary based on the codec that the conference phone uses. The following codecs provide these maximum MOS LQK scores under normal conditions with zero frame loss:

- G.711 codec gives 4.5 score
- G.719A/ AB gives 3.7 score

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

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

Table 2: Changes to Voice Quality Metrics

Metric Change	Condition
MOS LQK scores decrease significantly	<p>Network impairment from packet loss or high jitter:</p> <ul style="list-style-type: none"> • Average MOS LQK decreases could indicate widespread and uniform impairment. • Individual MOS LQK decreases indicate bursty impairment. <p>Cross-check with Conceal Ratio and Conceal Seconds for evidence of packet loss and jitter.</p>
MOS LQK scores decrease significantly	<ul style="list-style-type: none"> • Check to see if the conference phone is using a different codec than expected (RxType and TxType). • Check to see if the MOS LQK version changed after a firmware upgrade.

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"> • Noise or distortion in the audio channel such as echo or audio levels. • Tandem calls that undergo multiple encode/decode such as calls to a cellular network or calling card network. <p>Check packet transmit (TxCnt) and packet receive (RxCnt) counters to verify that voice packets are flowing.</p>



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

Related Topics

- [Call Statistics Screen](#)
- [Remote Monitoring](#)

Cisco Unified IP Phone Cleaning

To clean your conference phone, use a soft, dry cloth to wipe the conference phone and the LCD screen. Do not apply liquids or powders directly on the conference phone. As with all non-weather-proof electronics, liquids and powders can damage the components and cause failures.

