Cisco Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G Administration Guide for Cisco Unified Communications Manager 9.0 (SCCP and SIP)

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Overview

Cisco Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G Administration Guide for Cisco Unified Communications Manager (SCCP and SIP) provides the information you need to understand, install, configure, manage, and troubleshoot the Cisco Unified IP Phone on a Voice-over-IP (VoIP) network.

Because of the complexity of a Unified Communications network, this guide does not provide complete and detailed information for procedures that you need to perform in Cisco Unified Communications Manager (formerly Cisco Unified CallManager) or on other network devices.

Related Topics

Related Documentation, on page xvi

Audience

Network engineers, system administrators, and telecom engineers should review this guide to learn the steps that are required to set up Cisco Unified IP Phones. The tasks described in this document involve configuring network settings that are not intended for phone users. The tasks in this manual require a familiarity with Cisco Unified Communications Manager.

Organization

This manual is organized as follows:

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Cisco Unified IP Phone, on page 1	Provides a conceptual overview and description of the Cisco Unified IP Phone.
Cisco Unified IP Phones and Telephony Networks, on page 31	Describes how the Cisco Unified IP Phone interacts with other key IP telephony components, and provides an overview of the tasks that are required prior to installation.
Cisco Unified IP Phones Installation, on page 45	Describes how to properly and safely install and configure the Cisco Unified IP Phone on your network.
Cisco Unified IP Phone Settings, on page 61	Describes how to configure network settings, verify status, and make global changes to the Cisco Unified IP Phone.
Features, Templates, Services, and Users, on page 129	Provides an overview of procedures to configure telephony features, configure directories, configure phone button and softkey templates, set up services, and add users to Cisco Unified Communications Manager.
Cisco Unified IP Phone Customization, on page 175	Explains how to customize phone ring sounds, background images, and the phone idle display at your site.
Model Information, Status, and Statistics, on page 185	Explains how to view model information, status messages, network statistics, and firmware information from the Cisco Unified IP Phone.
Remote Monitoring, on page 209	Describes the information that you can obtain from the phone web page, and how to use this information to monitor the operation of a phone remotely and to assist with troubleshooting.
Troubleshooting and Maintenance, on page 229	Provides tips for troubleshooting the Cisco Unified IP Phone.
Internal Support Web Site, on page 253	Provides suggestions for setup of a website that provides users with important information about their Cisco Unified IP Phones.
Feature Support by Protocol for Cisco Unified IP Phones, on page 259	Provides information about feature support for the Cisco Unified IP Phone that uses the SCCP or SIP protocol.
International User Support, on page 267	Provides information about phone setup in non-English environments.
Technical Specifications, on page 269	Provides technical specifications of the Cisco Unified IP Phone.
Basic Phone Administration Steps, on page 273	Provides procedures for basic administration tasks, such as adding a user and phone to Cisco Unified Communications Manager and then associating the user to the phone.

Related Documentation

Use the following sections to obtain related information.

Cisco Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G Administration Guide for Cisco Unified Communications Manager 9.0 (SCCP and SIP)

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Cisco Unified IP Phone 7900 Series Documentation

See the publications that are specific to your language, phone model, and Cisco Unified Communications Manager release. Navigate from the following documentation URL:

https://www.cisco.com/c/en/us/support/collaboration-endpoints/unified-ip-phone-7900-series/tsd-products-support-general-information.html

Cisco Unified Communications Manager Documentation

See the *Cisco Unified Communications Manager Documentation Guide* and other publications that are specific to your Cisco Unified Communications Manager release. Navigate from the following documentation URL:

https://www.cisco.com/c/en/us/support/unified-communications/unified-communications-manager-callmanager/tsd-products-support-series-home.html

Cisco Business Edition 5000 Documentation

See the *Cisco Business Edition 5000 Documentation Guide* and other publications that are specific to your Cisco Business Edition 5000 release. Navigate from the following URL:

https://www.cisco.com/c/en/us/support/unified-communications/business-edition-5000/tsd-products-support-series-home.html

Documentation, Support, and Security Guidelines

For information on obtaining documentation, obtaining support, providing documentation feedback, reviewing security guidelines, and also recommended aliases and general Cisco documents, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

http://www.cisco.com/c/en/us/td/docs/general/whatsnew/whatsnew.html

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS Version 2.0.

Cisco Product Security Overview

This product contains cryptographic features and is subject to United States and local country laws governing import, export, transfer, and use. Delivery of Cisco cryptographic products does not imply third-party authority to import, export, distribute, or use encryption. Importers, exporters, distributors, and users are responsible for compliance with U.S. and local country laws. By using this product you agree to comply with applicable laws and regulations. If you are unable to comply with U.S. and local laws, return this product immediately.

Further information regarding U.S. export regulations may be found at http://www.bis.doc.gov/index.php/regulations/export-administration-regulations-ear.

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Guide Conventions

This document uses the following conventions:

Convention	Description
boldface font	Commands and keywords are in **boldface**.
italic font	Arguments for which you supply values are in *italics*.
[ ]	Elements in square brackets are optional.
{ x | y | z }	Alternative keywords are grouped in braces and separated by vertical bars.
[x | y | z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
screen font	Terminal sessions and information the system displays are in screen font.
input font	Information you must enter is in **input** font.
italic screen font	Arguments for which you supply values are in *italic screen* font.
^	The symbol ^ represents the key labeled Control - for example, the key combination ^D in a screen display means hold down the Control key while you press the D key.
< >	Nonprinting characters such as passwords are in angle brackets.

Note Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the publication.

Caution Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.

Warnings use the following convention:

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Attention   IMPORTANT SAFETY INSTRUCTIONS

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device. Statement 1071

SAVE THESE INSTRUCTIONS

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C H A P T E R 1

Cisco Unified IP Phone

Phone Overview

The Cisco Unified IP Phone 7975G, 7971G-GE (gigabit Ethernet version), 7970G, 7965G, and 7945G is a full-featured telephone that provides voice communication over an Internet Protocol (IP) network. These IP phones function much like digital business phones and allow you to place and receive phone calls and to access features such as mute, hold, transfer, speed dial, call forward, and more. In addition, because Cisco Unified IP Phones connect to your data network, they offer enhanced IP telephony features, such as access to network information and services and customizable features and services. The phones also support security features that include file authentication, device authentication, signaling encryption, and media encryption.

The Cisco Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G provides a color screen (touchscreen for the 7975G, 7971G-GE, and the 7970G), support for line or speed dial numbers, context-sensitive online help for buttons and features, and a variety of other sophisticated functions.

A Cisco Unified IP Phone, like other network devices, must be configured and managed. These phones encode G.711a, G.711mu, G.722, G.729a, G.729ab, iLBC, and decode G.711a, G.711mu, G.722, G.729, G729a, G.729b, G.729ab, and iLBC. These phones also support uncompressed wideband (16 bits, 16 kHz) audio.

> ⚠️ **Caution**   Use of a cell, mobile, or GSM phone or two-way radio in close proximity to a Cisco Unified IP Phone might cause interference. For more information, see the manufacturer documentation of the interfering device.

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Cisco Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G Components

The following sections describe the phone components.

Cisco Unified IP Phone 7975G Buttons and Hardware

The following figure identifies the important parts of the phone. See Buttons and Hardware Identification, on page 4 for the description of the numbered items.

Cisco Unified IP Phone 7970G and 7971G-GE Buttons and Hardware

The following figure identifies the important parts of the phone. See Buttons and Hardware Identification, on page 4 for the description of the numbered items.

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Cisco Unified IP Phone 7965G Buttons and Hardware

The following figure identifies the important parts of the phone. See Buttons and Hardware Identification, on page 4 for the description of the numbered items.

Cisco Unified IP Phone 7945G Buttons and Hardware

The following figure identifies the important parts of the phone. See Buttons and Hardware Identification, on page 4 for the description of the numbered items.

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Buttons and Hardware Identification

The following table describes the buttons and hardware on the phones.

Table 1: Phone Buttons and Hardware

	Item	Description
1	Programmable buttons ⬤	Depending on configuration, programmable buttons provide access to: • Phone lines (line buttons) and intercom lines • Speed-dial numbers (speed-dial buttons), including the Busy Lamp Field (BLF) speed-dial feature • Web-based services (for example, a Personal Address Book button) • Call features (for example, a Privacy, Hold, or Transfer button) Buttons illuminate to indicate status: • 🟢 Green, steady: Active call or two-way intercom call • 🟢 Green, flashing: Held call • 🟠 Amber, steady: Privacy in use, one-way intercom call, Do Not Disturb (DND) active, or logged into Hunt Group • 🟠 Amber, flashing: Incoming call or reverting call • 🔴 Red, steady: Remote line in use (shared line, BLF status or active Mobile Connect call)
2	Footstand button	Enables you to adjust the angle of the phone base.

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	Item	Description
3	Display button	**Cisco Unified IP Phones 7970G, 7971G-GE, and 7975G** • Awakens the phone screen from sleep mode or disables the touchscreen feature for cleaning. • No color: Ready for input • Green flashing: Disabled • Green steady: Sleep mode **Cisco Unified IP Phones 7945G and 7965G** • Awakens the phone screen from sleep mode. • No color: Ready for input • Green steady: Sleep mode
4	Messages button	Autodials your voice message service (varies by service).
5	Directories button	Opens/closes the Directories menu. Use the button to access call logs and directories.
6	Help button	Activates the Help menu.
7	Settings button	Opens/closes the Settings menu. Use the button to change phone screen and ring settings.
8	Services button	Opens/closes the Services menu.
9	Volume button	Controls the handset, headset, and speakerphone volume (off-hook) and the ringer volume (on-hook).
10	Speaker button	Selects the speakerphone as the default audio path and initiates a new call, picks up an incoming call, or ends a call. During a call, the button is lit green. The speakerphone audio path does not change until you select a new default audiopath (for example, by picking up the handset). If external speakers are connected, the Speakerphone button uses these speakers as the default audio path.
11	Mute button	Toggles the microphone on or off. When the microphone is muted, the button is lit.

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	Item	Description
12	Headset button	Selects the headset as the default audio path and initiates a new call, picks up an incoming call, or ends a call. During a call, the button is lit green.
		A headset icon in the phone screen header line indicates that the headset is the default audio path. This audio path does not change until you select a new default audio path (for example, by picking up the handset).
13	4-way navigation pad and Select button (center)	**Cisco Unified IP Phone 7945G, 7965G, and 7975G**
		• Enables you to scroll through menus and highlight items. Use the Select button to select an item that is highlighted on the screen.
		• Navigation button: Scroll up and down to see menus and highlight items and right and left across multicolumn displays.
		• Select button: Scroll to highlight a line by using the Navigation button and then press to open a menu, play a ringer item, or access other features, as described on the screen.
14	Navigation button	**Cisco Unified IP Phone 7970G and 7971G-GE**
		• Enables you to scroll through menus and highlight items. When the phone is on-hook, displays phone numbers from your Placed Calls log.
15	Keypad	Enables you to dial phone numbers, enter letters, and choose menu items.
16	Softkey buttons	Each button activates a softkey option that displays on your phone screen.
17	Handset light strip	Indicates an incoming call or new voice message.
18	Phone screen	Shows phone features.

Network Protocols

Cisco Unified IP Phones support several industry-standard and Cisco network protocols that are required for voice communication. The following table provides an overview of the network protocols that the Cisco Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G supports.

Table 2: Supported Network Protocols on the Cisco Unified IP Phone

Network protocol	Purpose	Usage notes
Bootstrap Protocol (BootP)	BootP enables a network device such as the Cisco Unified IP Phone to discover certain startup information, such as its IP address.	If you are using BootP to assign IP addresses to the Cisco Unified IP Phone, the BOOTP Server option shows "Yes" in the network configuration settings on the phone.

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Network protocol	Purpose	Usage notes
Cisco Discovery Protocol (CDP)	CDP is a device-discovery protocol that runs on all Cisco-manufactured equipment. By using CDP, a device can advertise its existence to other devices and receive information about other devices in the network.	The Cisco Unified IP Phone uses CDP to communicate information such as auxiliary VLAN ID, per port power management details, and Quality of Service (QoS) configuration information with the Cisco Catalyst switch.
Cisco Peer-to-Peer Distribution Protocol (CPPDP)	CPPDP is a Cisco proprietary protocol that forms a-peer-to-peer hierarchy of devices. CPPDP also copies firmware or other files from peer devices to neighboring devices.	The Peer Firmware Sharing feature uses CPPDP.
Dynamic Host Configuration Protocol (DHCP)	DHCP dynamically allocates and assigns an IP address to network devices. DHCP enables you to connect an IP phone into the network and have the phone become operational without the need to assign an IP address manually or to configure additional network parameters.	DHCP is enabled by default. If disabled, you must manually configure the IP address, subnet mask, gateway, and a TFTP server on each phone locally. Cisco recommends that you use DHCP custom option 150. With this method, you configure the TFTP server IP address as the option value. For additional supported DHCP configurations, see the "Dynamic Host Configuration Protocol" and "Cisco TFTP" chapters in the *Cisco Unified Communications Manager System Guide*.
Hypertext Transfer Protocol (HTTP)	HTTP is the standard way of transferring information and moving documents across the Internet and the web.	Cisco Unified IP Phones use HTTP for XML services and for troubleshooting purposes. The phones use HTTP to download configuration files and firmware loads. If the HTTP download fails, the phone uses TFTP to transfer the files. Cisco Unified IP Phones do not support the use of IPv6 addresses in the URL. You cannot use a literal IPv6 address in the URL or a hostname that maps to an IPv6 address.

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Network protocol	Purpose	Usage notes
Hypertext Transfer Protocol Secure (HTTPS)	Hypertext Transfer Protocol Secure (HTTPS) is a combination of the Hypertext Transfer Protocol with the SSL/TLS protocol to provide encryption and secure identification of servers.	Web applications with both HTTP and HTTPS support have two URLs configured. For a Cisco Unified IP Phone that supports HTTPS, choose the HTTPS URL from the two URLs.
IEEE 802.1X	The IEEE 802.1X standard defines a client-server-based access control and authentication protocol that restricts unauthorized clients from connecting to a LAN through publicly accessible ports. Until the client authenticates, 802.1X access control allows only Extensible Authentication Protocol over LAN (EAPOL) traffic through the port to which the client connects. After authentication is successful, normal traffic can pass through the port.	The Cisco Unified IP Phone implements the IEEE 802.1X standard by supporting the following authentication methods: EAP-FAST, EAP-TLS, and EAP-MD5. When 802.1X authentication is enabled on the phone, you should disable the PC port and voice VLAN. See 802.1X Authentication, on page 21 for additional information.
Internet Protocol (IP)	IP is a messaging protocol that addresses and sends packets across the network.	To communicate by using IP, network devices must have an assigned IP address, subnet, and gateway. IP addresses, subnets, and gateways identifications are automatically assigned if you use the Cisco Unified IP Phone with Dynamic Host Configuration Protocol (DHCP). If you do not use DHCP, you must manually assign these properties to each phone locally. The Cisco Unified IP Phone supports concurrent IPv4 and IPv6 addresses. Configure the IP addressing mode (IPv4 only, IPv6 only, or both IPv4 and IPv6) in Cisco Unified Communications Manager Administration. For more information, see the "Internet Protocol Version 6 (IPv6)" chapter in the *Cisco Unified Communications Manager Features and Services Guide*.

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Network protocol	Purpose	Usage notes
Link Layer Discovery Protocol (LLDP)	LLDP is a standardized network discovery protocol (similar to CDP) that some Cisco and third-party devices support.	The Cisco Unified IP Phone supports LLDP on the PC port.
Link Layer Discovery Protocol-Media Endpoint Devices (LLDP-MED)	LLDP-MED is an extension of the LLDP standard developed for voice products.	The Cisco Unified IP Phone supports LLDP-MED on the SW port to communicate information such as: • Voice VLAN configuration • Device discovery • Power management • Inventory management For more information about LLDP-MED support, see the LLDP-MED and Cisco Discovery Protocol white paper: http://www.cisco.com/en/US/tech/tk652/tk701/technologies_white_paper0900aecd804cd46d.shtml
Real-Time Control Protocol (RTCP)	RTCP works with Real-Time Transport Protocol (RTP) to provide QoS data (such as jitter, latency, and round trip delay) on RTP streams.	RTCP is disabled by default, but you can enable it on a per-phone basis in Cisco Unified Communications Manager Administration. For more information, see Network Configuration Menu, on page 107.
Real-Time Transport Protocol (RTP)	RTP is a standard protocol for transport of real-time data, such as interactive voice and video, over data networks.	Cisco Unified IP Phones use the RTP protocol to send and receive real-time voice traffic from other phones and gateways.

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Network protocol	Purpose	Usage notes
Session Initiation Protocol (SIP)	SIP is the Internet Engineering Task Force (IETF) standard for multimedia conferencing over IP. SIP is an ASCII-based application-layer control protocol (defined in RFC 3261) that can establish, maintain, and terminate calls between two or more endpoints.	Like other VoIP protocols, SIP addresses the functions of signaling and session management within a packet telephony network. Signaling allows call information to be carried across network boundaries. Session management provides the ability to control the attributes of an end-to-end call. You can configure the Cisco Unified IP Phone to use either SIP or Skinny Client Control Protocol (SCCP). Cisco Unified IP Phones do not support the SIP protocol when the phones operate in IPv6 address mode.
Skinny Client Control Protocol (SCCP)	SCCP includes a messaging set that allows communications between call control servers and endpoint clients such as IP Phones. SCCP is proprietary to Cisco Systems.	Cisco Unified IP Phones use SCCP for call control. You can configure the Cisco Unified IP Phone to use either SCCP or Session Initiation Protocol (SIP).
Session Description Protocol (SDP)	SDP is the portion of the SIP protocol that determines which parameters are available during a connection between two endpoints. Conferences are established by using only the SDP capabilities that all endpoints in the conference support.	SDP capabilities, such as codec types, DTMF detection, and comfort noise, are normally configured on a global basis by Cisco Unified Communications Manager or Media Gateway in operation. Some SIP endpoints may allow configuration of these parameters on the endpoint itself.
Transmission Control Protocol (TCP)	TCP is a connection-oriented transport protocol.	Cisco Unified IP Phones use TCP to connect to Cisco Unified Communications Manager and to access XML services.
Transport Layer Security (TLS)	TLS is a standard protocol for securing and authenticating communications.	When security is implemented, Cisco Unified IP Phones use the TLS protocol for secure registration with Cisco Unified Communications Manager. For more information, see the *Cisco Unified Communications Manager Security Guide*.

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Network protocol	Purpose	Usage notes
Trivial File Transfer Protocol (TFTP)	TFTP allows you to transfer files over the network. On the Cisco Unified IP Phone, TFTP enables you to obtain a configuration file that is specific to the phone type.	TFTP requires a TFTP server in your network, which can be automatically identified from the DHCP server. If you want a phone to use a TFTP server other than the one that the DHCP server specifies, you must manually assign TFTP server from the Network Configuration menu on the phone. For more information, see the "Cisco TFTP" chapter in the *Cisco Unified Communications Manager System Guide*.
User Datagram Protocol (UDP)	UDP is a connectionless messaging protocol for delivery of data packets.	Cisco Unified IP Phones transmit and receive RTP streams, which utilize UDP.

IPv6 Support on Cisco Unified IP Phones

The Cisco Unified IP Phones use the Internet Protocol to provide voice communication over the network. Because Internet Protocol version 4 (IPv4) uses a 32-bit address, it cannot meet the increased demands for unique IP addresses for all devices that connect to the internet. Therefore, Internet Protocol version 6 (IPv6) is an updated version of the current Internet Protocol. IPv6 uses a 128-bit address and provides end-to-end security capabilities, enhanced Quality of Service (QoS), and increased number of available IP addresses.

The Cisco Unified IP Phone supports IPv4-only addressing mode, IPv6-only addressing mode, as well as an IPv4/IPv6 dual stack addressing mode. In IPv4, you can enter each octet of the IP address on the phone in dotted decimal notation; for example, 192.240.22.5. In IPv6, you can enter each octet of the IP address in hexadecimal notation with each octet separated by a colon; for example, 2005:db8:0:1:ef8:9876:ba72:dc9a. The phone truncates and removes leading zeros when it displays the IPv6 address.

Cisco Unified IP Phones support both IPv4 and IPv6 addresses transparently, so users can handle all calls on the phone to which they are accustomed. Cisco Unified IP Phones with the Skinny Call Control Protocol (SCCP) support IPv6. Cisco Unified IP Phones with SIP do not support IPv6.

Cisco Unified IP Phones do not support URLs with IPv6 addresses in the URL. This affects all IP Phone Service URLs, such as services, directories, messages, help, and any restricted web services that require the phone to use the HTTP protocol to validate credentials with the Authentication URL. If you configure Cisco Unified IP Phone services for Cisco Unified IP Phones, you must configure the phone and the servers that support the phone service with IPv4 addresses.

If you configure IPv6 Only as the IP Addressing Mode for phones that are running SIP, the Cisco TFTP service overrides the IP Addressing Mode configuration and uses IPv4 Only in the configuration file.

For more information on IPv6 deployment in your Cisco Unified Communications network, see the "Internet Protocol Version 6 (IPv6)" chapter in the *Cisco Unified Communications Manager Features and Services Guide* and *Deploying IPv6 in Unified Communications Networks with Cisco Unified Communications Manager*, located at http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/srnd/ipv6/ipv6srnd.html.

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Cisco Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G Supported Features

The Cisco Unified IP Phone functions much like a digital business phone and allows you to place and receive telephone calls. In addition to traditional telephony features, the Cisco Unified IP Phone includes features that enable you to administer and monitor the phone as a network device.

This section includes the following topics:

Feature Overview

Cisco Unified IP Phones provide traditional telephony functionality, such as call forwarding and transferring, redialing, speed dialing, conference calling, and voice messaging system access. Cisco Unified IP Phones also provide a variety of other features.

As with other network devices, you must configure Cisco Unified IP Phones to prepare them to access Cisco Unified Communications Manager and the rest of the IP network. By using DHCP, you have fewer settings to configure on a phone, but if your network requires it, you can manually configure an IP address, TFTP server, subnet information, and other values.

The Cisco Unified IP Phone interacts with other services and devices on your IP network to provide enhanced functionality. For example, you can integrate the Cisco Unified IP Phones with the corporate Lightweight Directory Access Protocol 3 (LDAP3) standard directory to enable users to search for coworker contact information directly from their IP phones. You can also use XML to enable users to access information such as weather, stocks, quote of the day, and other web-based information.

Finally, because the Cisco Unified IP Phone is a network device, you can obtain detailed status information from it directly. This information can assist you with troubleshooting any problems that users encounter when they use their IP phones.

Related Topics

Telephony Feature Administration

You can modify certain settings for the Cisco Unified IP Phone from the Cisco Unified Communications Manager Administration application. Use this graphical user interface to set up phone registration criteria and calling search spaces, to configure corporate directories and services, and to modify phone button templates, among other tasks. See the *Cisco Unified Communications Manager Administration Guide* for additional information.

For more information about the Cisco Unified Communications Manager Administration application, refer to Cisco Unified Communications Manager documentation, including the *Cisco Unified Communications*

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Manager System Guide. You can also use the context-sensitive help that is available within the application for guidance.

You can access the Cisco Unified Communications Manager documentation suite at this location:

http://www.cisco.com/en/US/products/sw/voicesw/ps556/tsd_products_support_series_home.html

You can access the complete Cisco Business Edition 5000 documentation suite at this location:

http://www.cisco.com/en/US/products/ps7273/tsd_products_support_series_home.html

Related Topics

Telephony Features Available for Cisco Unified IP Phone, on page 129

Cisco Unified IP Phone Network Parameters

You can configure parameters such as DHCP, TFTP, and IP settings on the phone itself. You can also obtain statistics about a current call or firmware versions on the phone.

Related Topics

Cisco Unified IP Phone Settings, on page 61
Model Information, Status, and Statistics, on page 185

Information for End Users

If you are a system administrator, you are likely the primary source of information for Cisco Unified IP Phone users in your network or company. To ensure that you distribute the most current feature and procedural information, familiarize yourself with Cisco Unified IP Phone documentation. Make sure to visit the Cisco Unified IP Phone web site:

http://www.cisco.com/en/US/products/hw/phones/ps379/tsd_products_support_series_home.html

From this site, you can access various user guides.

In addition to providing users with documentation, it is important to inform them about available Cisco Unified IP Phone features, including features that are specific to your company or network, and about how to access and customize those features, if appropriate.

Related Topics

Internal Support Web Site, on page 253

Cisco Unified IP Phone Security Features

Implementation of security in the Cisco Unified Communications Manager system prevents identity theft of the phone and Cisco Unified Communications Manager server, prevents data tampering, and prevents call signaling and media stream tampering.

To alleviate these threats, the Cisco Unified IP telephony network establishes and maintains authenticated and encrypted communication streams between a phone and the server, digitally signs files before they are transferred to a phone, and encrypts media streams and call signaling between Cisco Unified IP phones.

The Cisco Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G uses the Phone Security Profile, which defines whether the device is nonsecure, authenticated, or encrypted. For information on application of the security profile to the phone, see the *Cisco Unified Communications Manager Security Guide*.

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If you configure security-related settings in Cisco Unified Communications Manager Administration, the phone configuration file will contain sensitive information. To ensure the privacy of a configuration file, you must configure it for encryption. For detailed information, see the "Configuring Encrypted Phone Configuration Files" chapter in the *Cisco Unified Communications Manager Security Guide*.

The following table shows where you can find additional information about security in this and other documents.

Table 3: Cisco Unified IP Phone and Cisco Unified Communications Manager Security Topics

Topic	Reference
Detailed explanation of security; includes setup, configuration, and troubleshooting information for Cisco Unified Communications Manager and Cisco Unified IP Phones	See the *Troubleshooting Guide for Cisco Unified Communications Manager*.
Security features that the Cisco Unified IP Phone supports	See Supported Security Features, on page 15.
Security feature restrictions	See Security Restrictions, on page 23.
Viewing a security profile name	See Security Profiles, on page 18.
Identification of phone calls for which security is implemented	See Authenticated, Encrypted, and Protected Phone Calls, on page 18.
TLS connection	See Network Protocols, on page 6. See Phone Configuration Files, on page 36.
Security and the phone startup process	See Phone Startup Process, on page 38.
Security and phone configuration files	See Phone Configuration Files, on page 36.
Changes to the TFTP Server 1 or TFTP Server 2 option on the phone when security is implemented	See Network Configuration Menu, on page 66.
Security icons in the Unified CM 1 through Unified CM 5 options in the Device Configuration Menu on the phone	See Unified CM Configuration Menu, on page 87.
Security Configuration menu items that you access from the Device Configuration menu on the phone	See Security Configuration Menu, on page 105.
Security Configuration menu items that you access from the Settings menu on the phone	See Security Configuration Menu, on page 115.
Unlock of the CTL (Certificate Trust List) and ITL (Identity Trust List) files	See Unlock CTL and ITL Files, on page 118.
Disabling access to web pages for a phone	See Unlock CTL and ITL Files, on page 118.
Deletion of the CTL file from the phone	See Control Web Page Access, on page 211.
Phone reset or restoration	See Cisco Unified IP Phone Reset or Restore, on page 248.

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Topic	Reference
Extension Mobility HTTPS Support	See Network Protocols, on page 6.
802.1X Authentication for Cisco Unified IP Phones	See these sections: • 802.1X Authentication, on page 21 • 802.1X Authentication and Status Menus, on page 122 • Cisco Unified IP Phone Security Problems, on page 236

Supported Security Features

The following table provides an overview of the security features that the Cisco Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G supports. For more information about these features and about Cisco Unified Communications Manager and Cisco Unified IP Phone security, see the *Cisco Unified Communications Manager Security Guide*.

For information about current security settings on a phone, look at the Security Configuration menus on the phone (choose **Settings** > **Security Configuration** and choose **Settings** > **Device Configuration** > **Security Configuration**).

Note Most security features are available only if a CTL is installed on the phone. For more information about the CTL, see the "Configuring the Cisco CTL Client" chapter in the *Cisco Unified Communications Manager Security Guide*.

Table 4: Overview of security features

Feature	Description
Image authentication	Signed binary files (with the extension .sbn) prevent tampering with the firmware image before it loads on a phone. Tampering with the image causes a phone to fail the authentication process and reject the new image.
Customer-site certificate installation	Each Cisco Unified IP Phone requires a unique certificate for device authentication. Phones include a manufacturing installed certificate (MIC), but for additional security, you can specify in Cisco Unified Communications Manager Administration that a certificate be installed by using the CAPF (Certificate Authority Proxy Function). Alternatively, you can install a Locally Significant Certificate (LSC) from the Security Configuration menu on the phone.

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Feature	Description
Device authentication	Occurs between the Cisco Unified Communications Manager server and the phone when each entity accepts the certificate of the other entity. Determines whether a secure connection between the phone and a Cisco Unified Communications Manager should occur, and, if necessary, creates a secure signaling path between the entities that use TLS protocol. Cisco Unified Communications Manager does not register phones unless it can authenticate them.
File authentication	Validates digitally signed files that the phone downloads. The phone validates the signature to make sure that file tampering did not occur after file creation. Files that fail authentication are not written to Flash memory on the phone. The phone rejects such files without further processing.
Signaling authentication	Uses the TLS protocol to validate that no tampering has occurred to signaling packets during transmission.
Manufacturing installed certificate	Each Cisco Unified IP Phone contains a unique manufacturing installed certificate (MIC), which is used for device authentication. The MIC is a permanent unique proof of identity for the phone, and allows Cisco Unified Communications Manager to authenticate the phone.
Secure SRST reference	After you configure an SRST reference for security and then reset the dependent devices in Cisco Unified Communications Manager Administration, the TFTP server adds the SRST certificate to the phone cnf.xml file and sends the file to the phone. A secure phone then uses a TLS connection to interact with the SRST-enabled router.
Media encryption	Uses Secure Real-time Transport Protocol (SRTP) to ensure that the media streams between supported devices prove secure and that only the intended device receives and reads the data. Includes creation of a media primary key pair for the devices, delivery of the keys to the devices, and securing the key delivery while the keys are in transport.
Signaling encryption	Ensures that all SCCP and SIP signaling messages that are sent between the device and the Cisco Unified Communications Manager server are encrypted.

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Feature	Description
CAPF (Certificate Authority Proxy Function)	Implements parts of the certificate generation procedure that are too processing-intensive for the phone, and interacts with the phone for key generation and certificate installation. The CAPF can be configured to request certificates from customer-specified certificate authorities on behalf of the phone, or it can be configured to generate certificates locally.
Security profiles	Defines whether the phone is nonsecure, authenticated, encrypted, or protected.
Encrypted configuration files	Ensures the privacy of phone configuration files.
Optional disabling of the web server functionality for a phone	Prevents access to a phone web page, which displays a variety of operational statistics for the phone.
Phone hardening	Additional security options, which you control from Cisco Unified Communications Manager Administration: • Disabling PC port • Disabling Gratuitous ARP (GARP) • Disabling PC Voice VLAN access • Disabling access to the Setting menus, or providing restricted access that allows access to the User Preferences menu and saving volume changes only • Disabling access to web pages for a phone **Note** View current settings for the PC Port Disabled, GARP Enabled, and Voice VLAN enabled options by looking at the phone Security Configuration menu.
802.1X Authentication	The Cisco Unified IP Phone can use 802.1X authentication to request and gain access to the network.

Related Topics

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Security Profiles

Cisco Unified IP Phones that support Cisco Unified Communications Manager release 7.0 or later use a security profile, which defines whether the phone is nonsecure, authenticated, or encrypted. For information about security profile configuration and profile application to the phone, see the *Cisco Unified Communications Manager Security Guide*.

To view the security mode that is set for the phone, view the Security Mode setting in the Security Configuration menu.

Related Topics

Authenticated, Encrypted, and Protected Phone Calls

When security is implemented for a phone, you can identify authenticated or encrypted phone calls by icons on the phone screen. You can also determine whether the connected phone is secure and protected if a security tone plays at the beginning of the call.

In an authenticated call, all devices that participate in the establishment of the call are trusted devices that Cisco Unified Communications Manager authenticates. When a call in progress is authenticated, the call progress icon to the right of the call duration timer in the phone screen changes to this icon: .

In an encrypted call, all devices that participate in the establishment of the call are trusted devices that Cisco Unified Communications Manager authenticates. In addition, call signaling and media streams are encrypted. An encrypted call offers a high level of security and provides integrity and privacy to the call. When a call in progress is encrypted, the call progress icon to the right of the call duration timer in the phone screen changes to this icon: .

Note If the call routes through non-IP call legs, for example, PSTN (public switched telephone network), the call may be nonsecure even though it is encrypted within the IP network and has a lock icon associated with it.

In a protected call, a security tone plays at the beginning of a call to indicate that the other connected phone is also receiving and transmitting encrypted audio and video (if video is involved). If your call connects to a non-protected phone, the security tone does not play.

Note Protected calling is supported for connections between two phones only. Some features, such as conference calling, shared lines, Extension Mobility, and Join Across Lines are not available when protected calling is configured. Protected calls are not authenticated.

Related Topics

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Secure Conference Call Identification

You can initiate a secure conference call and monitor the security level of participants. Establishment of a secure conference call follows this process:

1. A user initiates the conference from a secure phone (encrypted or authenticated security mode).

2. Cisco Unified Communications Manager assigns a secure conference bridge to the call.

3. As participants are added, Cisco Unified Communications Manager verifies the security mode of each phone (encrypted or authenticated) and maintains the secure level for the conference.

4. The phone displays the security level of the conference call. A secure conference displays 🔒 (encrypted) or 🔒 (authenticated) icon to the right of "Conference" on the phone screen. If 🔒 icon displays, the conference is not secure.

✎

Note   Certain interactions, restrictions, and limitations affect the security level of the conference call. These interactions depend on the security mode of the participant phones and the availability of secure conference bridges. See Call Security Interactions and Restrictions, on page 19 for information about these interactions.

Protected Call Identification

A protected call is established when a user phone and the phone on the other end are configured for protected calling. The other phone can be in the same Cisco IP network, or on a network outside the IP network. Protected calls can only be made between two phones. Conference calls and other multiple-line calls are not supported.

Establishment of a protected call follows this process:

1. A user initiates the call from a protected phone (protected security mode).

2. The phone displays the 🔒 icon (encrypted) on the phone screen. This icon indicates that the phone is configured for secure (encrypted) calls, but this does not mean that the other connected phone is also protected.

3. A security tone plays if the call connects to another protected phone; the tone indicates that both ends of the conversation are encrypted and protected. If the call is connected to a nonprotected phone, the secure tone does not play.

✎

Note   Protected calling is supported for conversations between two phones. Some features, such as conference, shared lines, Cisco Extension Mobility, and Join Across Lines are not available when protected calling is configured.

Call Security Interactions and Restrictions

Cisco Unified Communications Manager checks the phone security status when conferences are established and changes the security indication for the conference or blocks the completion of the call to maintain integrity and also security in the system. The following table provides information about changes to call security levels when the Barge feature is used.

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Table 5: Call Security Interactions When using Barge

Initiator phone security level	Call security level	Results of action
Nonsecure	Encrypted call	Call barged and identified as nonsecure call
Secure (encrypted)	Authenticated call	Call barged and identified as authenticated call
Secure (authenticated)	Encrypted call	Call barged and identified as authenticated call
Nonsecure	Authenticated call	Call barged and identified as nonsecure call

The following table provides information about changes to conference security levels, which depend on the initiator phone security level, the security levels of participants, and the availability of secure conference bridges.

Table 6: Security Restrictions with Conference Calls

Initiator phone security level	Feature used	Security level of participants	Results of action
Nonsecure	Conference	Encrypted or authenticated	Nonsecure conference bridge Nonsecure conference
Secure (encrypted or authenticated)	Conference	At least one member is nonsecure.	Secure conference bridge Nonsecure conference
Secure (encrypted)	Conference	All participants are encrypted	Secure conference bridge Secure encrypted level conference
Secure (authenticated)	Conference	All participants are encrypted or authenticated.	Secure conference bridge Secure authenticated level conference
Nonsecure	Conference	Encrypted or authenticated	Only secure conference bridge is available and used Nonsecure conference
Secure (encrypted or authenticated)	Conference	Encrypted or authenticated	Only nonsecure conference bridge is available and used Nonsecure conference

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Initiator phone security level	Feature used	Security level of participants	Results of action
Secure (encrypted or authenticated)	Conference	Secure or encrypted	Conference remains secure When one participant tries to Hold the call with Music on Hold (MOH), the MOH does not play.
Secure (encrypted)	Join	Encrypted or authenticated	Secure conference bridge Conference remains secure (encrypted or authenticated)
Nonsecure	cBarge	All participants are encrypted	Secure conference bridge Conference changes to nonsecure
Nonsecure	Meet-Me	Minimum security level is encrypted	Initiator receives message `Does not meet Security Level,` call rejected.
Secure (encrypted)	Meet-Me	Minimum security level is authenticated	Secure conference bridge Conference accepts encrypted and authenticated calls
Secure (encrypted)	Meet-Me	Minimum security level is nonsecure	Only secure conference bridge available and used Conference accepts all calls

802.1X Authentication

These sections provide information about 802.1X support on the Cisco Unified IP Phones:

Overview

Cisco Unified IP Phones and Cisco Catalyst switches traditionally use Cisco Discovery Protocol (CDP) to identify each other and determine parameters such as VLAN allocation and inline power requirements. CDP does not identify locally attached workstations. Cisco Unified IP Phones provide an EAPOL pass-through mechanism. This mechanism allows a workstation attached to the Cisco Unified IP Phone to pass EAPOL messages to the 802.1X authenticator at the LAN switch. The pass-through mechanism ensures that the IP phone does not act as the LAN switch to authenticate a data endpoint before accessing the network.

Cisco Unified IP Phones also provide a proxy EAPOL Logoff mechanism. In the event that the locally attached PC disconnects from the IP phone, the LAN switch does not see the physical link fail, because the link between

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the LAN switch and the IP phone is maintained. To avoid compromising network integrity, the IP phone sends an EAPOL-Logoff message to the switch on behalf of the downstream PC, which triggers the LAN switch to clear the authentication entry for the downstream PC.

Cisco Unified IP Phones also contain an 802.1X supplicant. This supplicant allows network administrators to control the connectivity of IP phones to the LAN switch ports. The current release of the phone 802.1X supplicant uses the EAP-FAST, EAP-TLS, and EAP-MD5 options for network authentication.

Required Network Components

Support for 802.1X authentication on Cisco Unified IP Phones requires several components, including:

- Cisco Unified IP Phone: The phone acts as the 802.1X *supplicant*, which initiates the request to access the network.

- Cisco Secure Access Control Server (ACS) (or other third-party authentication server): The authentication server and the phone must both be configured with a shared secret that authenticates the phone.

- Cisco Catalyst Switch (or other third-party switch): The switch must support 802.1X, so it can act as the *authenticator* and pass the messages between the phone and the authentication server. After the exchange completes, the switch grants or denies the phone access to the network.

Best-Practice Requirements and Recommendations

- Enable 802.1X Authentication: If you want to use the 802.1X standard to authenticate Cisco Unified IP Phones, make sure that you have properly configured the other components before you enable the standard on the phone.

  MAC Authentication Bypass (MAB) is required as a fallback to 802.1x authentication for the LSC certificate update process. Enable MAB on the phone port. For more information, see https://www.cisco.com/c/en/us/products/collateral/ios-nx-os-software/identity-based-networking-services/config_guide_c17-663759.html.

- Configure PC Port: The 802.1X standard does not take into account the use of VLANs and thus recommends that only a single device be authenticated to a specific switch port. However, some switches (such as Cisco Catalyst switches) support multidomain authentication. The switch configuration determines whether you can connect a PC to the phone PC port.

  - Enabled: If you use a switch that supports multidomain authentication, you can enable the PC port and connect a PC to it. In this case, Cisco Unified IP Phones support proxy EAPOL-Logoff to monitor the authentication exchanges between the switch and the attached PC. For more information about IEEE 802.1X support on the Cisco Catalyst switches, see the Cisco Catalyst switch configuration guides at:

    http://www.cisco.com/en/US/products/hw/switches/ps708/tsd_products_support_series_home.html

  - Disabled: If the switch does not support multiple 802.1X-compliant devices on the same port, you should disable the PC Port when 802.1X authentication is enabled. If you do not disable this port and subsequently attempt to attach a PC to it, the switch will deny network access to the phone and the PC.

- Configure Voice VLAN: Because the 802.1X standard does not account for VLANs, you should configure this setting according to the switch support.

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- Enabled: If you use a switch that supports multidomain authentication, you can continue to use the voice VLAN.

- Disabled: If the switch does not support multidomain authentication, disable the Voice VLAN and consider assigning the port to the native VLAN.

- Enter MD5 Shared Secret: If you disable 802.1X authentication or perform a factory reset on the phone, the previously configured MD5 shared secret is deleted.

Related Topics

Security Restrictions

A user cannot barge into an encrypted call if the phone that is used to barge is not configured for encryption. When barge fails in this case, a reorder (fast busy) tone plays on the phone of the barge initiator.

If the initiator phone is configured for encryption, the barge initiator can barge into an authenticated or nonsecure call from the encrypted phone. After the barge occurs, Cisco Unified Communications Manager classifies the call as nonsecure.

If the initiator phone is configured for encryption, the barge initiator can barge into an encrypted call, and the phone indicates that the call is encrypted.

A user can barge into an authenticated call, even if the phone that is used to barge is nonsecure. The authentication icon continues to appear on the authenticated devices in the call, even if the initiator phone does not support security.

Phone Power Consumption

The Cisco Unified IP Phone 7900 Series supports Cisco EnergyWise. EnergyWise is also known as Power Save Plus. When your network contains an EnergyWise controller, you can configure these phones to sleep (power down) and wake (power up) on a schedule to reduce your power consumption. The phone should be powered by the Power Over Ethernet (PoE) port of the switch instead of the power adapter.

You set up each phone to enable or disable the EnergyWise settings. You can also configure EnergyWise parameters on the enterprise and common phone configuration. If EnergyWise is enabled, you configure a sleep and wake time, as well as other parameters. These parameters are sent to the phone as part of the phone configuration XML file.

The switch administrator can wake the phone up before the scheduled time. For more information on powering up the phones from the switch, see the switch documentation.

Cisco Unified IP Phone Deployment

Upon deployment of a new IP telephony system, system administrators and network administrators must complete several initial configuration tasks to prepare the network for IP telephony service. For information and a checklist for setup and configuration of a Cisco Unified IP telephony network, see the "System Configuration Overview" chapter in the *Cisco Unified Communications Manager System Guide*.

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After you have set up the IP telephony system and configured system-wide features in Cisco Unified Communications Manager, you can add IP phones to the system.

The following topics provide an overview of procedures for adding Cisco Unified IP Phones to your network:

Cisco Unified IP Phone Setup in Cisco Unified Communications Manager

To add phones to the Cisco Unified Communications Manager database, you can use:

- Autoregistration
- Cisco Unified Communications Manager Administration
- Bulk Administration Tool (BAT)
- BAT and the Tool for Auto-Registered Phones Support (TAPS)

For general information about phone configuration in Cisco Unified Communications Manager, see the "Cisco Unified IP Phones" chapter in the *Cisco Unified Communications Manager System Guide*.

Related Topics

Cisco Unified Communications Manager Phone Addition Methods, on page 39

Set Up Cisco Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G in Cisco Unified Communications Manager Administration

The following steps provide an overview and checklist of configuration tasks for the Cisco Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G in Cisco Unified Communications Manager Administration. The steps present a suggested order to guide you through the phone configuration process. Some tasks are optional, depending on your system and user needs. For detailed procedures and information, see the sources in the steps.

Procedure

Step 1 Gather the following information about the phone:

a) Phone Model
b) MAC address
c) Physical location of the phone
d) Name or user ID of phone user
e) Device pool
f) Partition, calling search space, and location information
g) Number of lines and associated directory numbers (DNs) to assign to the phone
h) Cisco Unified Communications Manager user to associate with the phone
i) Phone usage information that affects phone button template, softkey template, phone features, IP Phone services, or phone applications

Provides list of configuration requirements for phone setup.

Identifies preliminary configuration that you need to perform before you configure individual phones, such as phone button templates or softkey templates.

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Cisco Unified IP Phone

Set Up Cisco Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G in Cisco Unified Communications Manager Administration

See the *Cisco Unified Communications Manager System Guide*, "Cisco Unified IP Phones" chapter, and Telephony Features Available for Cisco Unified IP Phone, on page 129.

Step 2   Customize phone button templates (if required).

Changes the number of line buttons, speed-dial buttons, Service URL buttons, or adds a Privacy button to meet user needs.

You must specify a service URL with an IPv4 address.

See *Cisco Unified Communications Manager Administration Guide*, "Phone Button Template Configuration" chapter, and Phone Button Templates, on page 161.

Step 3   Add and configure the phone by completing the required fields in the Phone Configuration window. Required fields are indicated by an asterisk (*) next to the field name; for example, MAC address and device pool.

Adds the device with its default settings to the Cisco Unified Communications Manager database.

See the *Cisco Unified Communications Manager Administration Guide*, "Cisco Unified IP Phone Configuration" chapter. For information about Product Specific Configuration fields, refer to "?" button Help in the Phone Configuration window.

Step 4   Add and configure directory numbers (lines) on the phone by completing the required fields in the Directory Number Configuration window. Required fields are indicated by an asterisk (*) next to the field name; for example, directory number and presence group.

Adds primary and secondary directory numbers and features associated with directory numbers to the phone.

See the *Cisco Unified Communications Manager Administration Guide*, "Directory Number Configuration" chapter, and Telephony Features Available for Cisco Unified IP Phone, on page 129.

Step 5   Customize softkey templates.

Adds, deletes, or changes order of softkey features that display on the user phone to meet feature usage needs.

See the *Cisco Unified Communications Manager Administration Guide*, "Softkey Template Configuration" chapter, and Softkey Templates, on page 164.

Step 6   Configure speed-dial buttons and assign speed-dial numbers (optional). Adds speed-dial buttons and numbers.

Note   Users can change speed-dial settings on their phones by using the Cisco Unified Communications Manager User Options web pages.

See the *Cisco Unified Communications Manager Administration Guide*, "Cisco Unified IP Phone Configuration" chapter.

Step 7   Configure Cisco Unified IP Phone services and assign services (optional). Provides IP Phone services.

Note   Users can add or change services on their phones by using the Cisco Unified Communications Manager User Options web pages.

Note   You must specify a service URL with an IPv4 address.

See the *Cisco Unified Communications Manager Administration Guide* "Cisco Unified IP Phone Services Configuration" chapter, and Services Setup, on page 164.

Step 8   Assign services to phone buttons (optional). Provides single-button access to an IP phone service or URL.

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See the *Cisco Unified Communications Manager Administration Guide*, "Cisco Unified IP Phone Configuration" chapter.

Step 9   Add user information by configuring required fields. Required fields are indicated by an asterisk (*); for example, User ID and last name.

> **Note**   Assign a password (for User Options web pages) and PIN (for Extension Mobility and Personal Directory).

Adds user information to the global directory for Cisco Unified Communications Manager.

See *Cisco Unified Communications Manager Administration Guide*, "End User Configuration" chapter and Cisco Unified Communications Manager User Addition, on page 165.

> **Note**   If your company uses a Lightweight Directory Access Protocol (LDAP) directory to store information on users, you can install and configure Cisco Unified Communications to use your existing LDAP directory, see Corporate Directory Setup, on page 160.

Step 10   Associate a user to a user group. Assigns users a common list of roles and permissions that apply to all users in a user group. Administrators can manage user groups, roles, and permissions to control the level of access (and, therefore, the level of security) for system users.

See the *Cisco Unified Communications Manager Administration Guide*:

- "End User Configuration" chapter

- "User Group Configuration" chapter

Step 11   Associate a user with a phone. Provides users with control over their phone so that they can forward calls or add speed-dial numbers or services.

> **Note**   Some phones, such as those in conference rooms, do not have an associated user.

See the *Cisco Unified Communications Manager Administration Guide*, "End User Configuration" chapter.

Cisco Unified IP Phone Installation

After you add the phones to the Cisco Unified Communications Manager database, you can complete the phone installation. You can install the phones at the desired locations, or you can give the phone users the information they need to perform the installation. The Cisco Unified IP Phone Installation Guide, which is available at http://www.cisco.com/en/US/products/hw/phones/ps379/prod_installation_guides_list.html, provides directions for connecting the phone foot stand, handset, cables, and other accessories.

> **Note**   Upgrade the phone to the current firmware image before installation. For information about phone upgrades, see the Readme file for your phone model located at:
>
> http://www.cisco.com/cgi-bin/tablebuild.pl/ip-7900ser

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After the phone connects to the network, the phone startup process begins, and the phone registers with Cisco Unified Communications Manager. To complete phone installation, configure the network settings on the phone depending on whether you enable or disable DHCP service.

If you used autoregistration, update the specific configuration information for the phone: associate the phone with a user, change the button table, or assign a directory number.

Install Cisco Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G

The following steps provide an overview and checklist of installation tasks for the Cisco Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G. The steps present a suggested order to guide you through the phone installation. Some tasks are optional, depending on your system and user needs. For detailed procedures and information, see the sources in the steps.

Procedure

Step 1 Choose the power source for the phone:
  a) Power over Ethernet (PoE)
  b) External power supply

  Determines how the phone receives power.

  See Cisco Unified IP Phone Power, on page 33.

Step 2 Assemble the phone, adjust phone placement, and connect the network cable.

  Locates and installs the phone in the network.

  See Install Cisco Unified IP Phone, on page 50 and Footstand Adjustment, on page 54.

Step 3 (Optional) Add a Cisco Unified IP Phone Expansion Module.

  Adds the device with its default settings to the Cisco Unified Communications Manager database. Extends functionality of a Cisco Unified IP Phone by adding 14 (Cisco Unified IP Phone Expansion Module 7914) or 24 (Cisco Unified IP Phone Expansion Modules 7915 or 7916) line appearances or speed-dial numbers.

  Note Cisco Unified IP Phones 7971G-GE and 7970G do not support Cisco Unified IP Phone Expansion Modules 7915 and 7916.

  Note The Cisco Unified IP Phone 7945G does not support any expansion modules.

  Note A maximum of 56 keys for a Cisco Unified IP Phone 7975G and up to 54 keys for a Cisco Unified IP Phone 7965G can be configured.

  See Cisco Unified IP Phone Expansion Module, on page 52.

Step 4 Monitor the phone startup process. Verifies that phone is configured properly.

  See Phone Startup Process, on page 57.

Step 5 When you configure the network settings on the phone, for an IPv4 network you can set up an IP address for the phone either by using DHCP or by manually entering an IP address.

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With DHCP: To enable DHCP and allow the DHCP server to automatically assign an IP address to the Cisco Unified IP Phone and direct the phone to a TFTP server, choose **Settings** > **Network Configuration** > **IPv4 Configuration** and configure the following:

- To enable DHCP, set DHCP Enabled to **Yes**. DHCP is enabled by default.
- To use an alternate TFTP server, set Alternate TFTP Server to **Yes**, and enter the IP address for the TFTP Server.

> **Note** Consult the network administrator if you need to assign an alternative TFTP server instead of using the TFTP server that DHCP assigns.

- Without DHCP: You must configure the IP address, subnet mask, TFTP server, and default router locally on the phone. To do so, choose **Settings** > **Network Configuration** > **IPv4 Configuration**.

To disable DHCP and manually set an IP address:

a) Set DHCP Enabled to **No**.
b) Enter the static IP address for phone.
c) Enter the subnet mask.
d) Enter the default router IP addresses.
e) Set Alternate TFTP Server to **Yes**, and enter the IP address for TFTP Server 1.

You must also enter the domain name where the phone resides by choosing **Settings** > **Network Configuration**.

The Cisco Unified IP Phone supports concurrent IPv4 and IPv6 addresses. You can configure Cisco Unified Communications Manager to support IPv4 addresses only, IPv6 addresses only, or both IPv4 and IPv6 addresses.

See and .

Step 6 If you configure the network settings on the phone for an IPv6 network, you can set up an IP address for the phone either by using DHCPv6 or by manually entering an IP address.

With DHCPv6: To enable DHCPv6 and allow the DHCPv6 server to automatically assign an IP address to the Cisco Unified IP Phone and direct the phone to a TFTP server:

- Choose **Settings** > **Network Configuration** > **IPv6 Configuration**.

- Set DHCPv6 Enabled to **Yes**. DHCPv6 is enabled by default.
- To use an alternate TFTP server, set IPv6 Alternate TFTP Server to **Yes** and enter the IP address for IPv6 TFTP Server 1.

> **Note** Consult the network administrator if you need to assign an alternative TFTP server instead of using the TFTP server that DHCP assigns.

- Without DHCP: You must configure the IP address, subnet mask, TFTP server, and default router locally on the phone, choose **Settings** > **Network Configuration** > **IPv6 Configuration**.

To disable DHCP and manually set an IP address:

a) Set DHCPv6 Enabled to **No**.
b) Enter the static IP address for phone.
c) Enter the IPv6 prefix length.
d) Set IPv6 Alternate TFTP Server to **Yes**, and enter the IP address for IPv6 TFTP Server 1.

You must also enter the domain name where the phone resides by choosing **Settings** > **Network Configuration**.

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Note The Cisco Unified IP Phone supports concurrent IPv4 and IPv6 addresses. You can configure Cisco Unified Communications Manager to support IPv4 addresses only, IPv6 addresses only, or both IPv4 and IPv6 addresses.

See Network Settings, on page 58 and Network Configuration Menu, on page 66.

Step 7 Set up security on the phone. Provides protection against data tampering threats and identity theft of phones.

See Cisco Unified IP Phone Security, on page 59.

Step 8 Make calls with the Cisco Unified IP Phone. Verifies that the phone and features work correctly.

See your phone user guide.

Step 9 Provide information to end users about how to use their phones and how to configure their phone options.

Ensures that users have adequate information to use their Cisco Unified IP Phones.

See Internal Support Web Site, on page 253.

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CHAPTER **2**

Cisco Unified IP Phones and Telephony Networks

Phone and Telephony Network Overview

Cisco Unified IP Phones enable you to communicate by using voice over a data network. To provide this capability, the IP phones depend upon and interact with several other key Cisco Unified IP Telephony and network components, including Cisco Unified Communications Manager, DNS and DHCP servers, TFTP servers, media resources, Cisco PoE, and others.

This chapter focuses on the interactions between the Cisco Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G and Cisco Unified Communications Manager, DNS and DHCP servers, TFTP servers, and switches. It also describes options for powering phones.

For related information about voice and IP communications, see this URL:

http://www.cisco.com/en/US/products/sw/voicesw/index.html

This chapter provides an overview of the interaction between the Cisco Unified IP Phone and other key components of the Voice over IP (VoIP) network.

Cisco Unified IP Communications Product Interactions

To function in the IP telephony network, the Cisco Unified IP Phone must be connected to a networking device, such as a Cisco Catalyst switch. You must also register the Cisco Unified IP Phone with a Cisco Unified Communications Manager system before the phone can send and receive calls.

This section includes these topics:

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Cisco Unified IP Phone and Cisco Unified Communications Manager Interactions

Cisco Unified Communications Manager is an open and industry-standard call processing system. Cisco Unified Communications Manager software sets up and tears down calls between phones, thus integrating traditional PBX functionality with the corporate IP network. Cisco Unified Communications Manager manages the components of the IP telephony system—the phones, the access gateways, and the resources necessary for features such as call conferencing and route planning. Cisco Unified Communications Manager also provides:

- Firmware for phones

- Authentication and encryption (if configured for the telephony system)

- Configuration, CTL, and Identity Trust List (ITL) files via the TFTP service

- Phone registration

- Call preservation, so that a media session continues if signaling is lost between the primary Communications Manager and a phone

For information about configuring Cisco Unified Communications Manager to work with the IP devices described in this chapter, see the *Cisco Unified Communications Manager Administration Guide*, the *Cisco Unified Communications Manager System Guide*, and the *Cisco Unified Communications Manager Security Guide*.

Note If the Cisco Unified IP Phone model that you want to configure does not appear in the Phone Type drop-down list in Cisco Unified Communications Manager Administration, go to the following URL and install the latest support patch for your version of Cisco Unified Communications Manager:

http://www.cisco.com/kobayashi/sw-center/sw-voice.shtml

Related Topics

Cisco Unified IP Phone and VLAN Interaction

The Cisco Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G have an internal Ethernet switch, which enables forwarding of packets to the phone and to the access port and the network port on the back of the phone.

If a computer is connected to the access port, the computer and the phone share the same physical link to the switch and share the same port on the switch. This shared physical link has the following implications for the VLAN configuration on the network:

- The current VLANs might be configured on an IP subnet basis. However, an additional IP address might not be available to assign the phone to the same subnet as other devices connect to the same port.

- Data traffic present on the data/native VLAN may reduce the quality of VoIP traffic.

- Network security may indicate a need to isolate the VLAN voice traffic from the VLAN data traffic.

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Resolve these issues by isolating the voice traffic onto a separate VLAN. The switch port to which the phone connects would be configured to have separate VLANs for carrying:

- Voice traffic to and from the IP phone (auxiliary VLAN, on the Cisco Catalyst 6000 series, for example)

- Data traffic to and from the PC that connects to the switch through the access port of the IP phone (native VLAN)

Isolation of the phones on a separate, auxiliary VLAN improves the quality of the voice traffic and allows a large number of phones to be added to an existing network where not enough IP addresses exist for each phone.

For more information, see the documentation included with a Cisco switch. You can also access related documentation at this URL:

http://cisco.com/en/US/products/hw/switches/index.html

Related Topics

Cisco Unified IP Phone Power

Cisco Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G can be powered with external power or with Power over Ethernet (PoE). A separate power supply provides external power. A switch through the Ethernet cable that is attached to a phone provides PoE.

⚠

Caution　When you install a phone powered with external power, connect the power supply to the phone and to a power outlet before you connect the Ethernet cable to the phone. When you remove a phone that is powered with external power, disconnect the Ethernet cable from the phone before you disconnect the power supply.

The following sections provide more information about phone power:

Power Guidelines

The following table provides guidelines that apply to external power and to PoE power for Cisco Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G.

Table 7: Guidelines for Powering the Cisco Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G

Power type	Guidelines
External power: Provided through the CP-PWR-CUBE-3 external power supply	The Cisco Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G use the CP-PWR-CUBE-3 power supply.

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Power type	Guidelines
External power: Provided through the Cisco Unified IP Phone Power Injector	The Cisco Unified IP Phone Power Injector may be used with any Cisco Unified IP Phone. Functioning as a midspan device, the injector delivers inline power to the attached phone. The Cisco Unified IP Phone Power Injector connects between a switch port and the IP phone, and supports a maximum cable length of 100m between the unpowered switch and the IP phone.
PoE power: Provided by a switch through the Ethernet cable attached to the phone	The Cisco Unified IP Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G supports IEEE 802.3af Class 3 power on signal pairs and spare pairs. The Cisco Unified IP Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G does not support Cisco inline PoE. To ensure uninterruptible operation of the phone, make sure that the switch has a backup power supply. Make sure that the CatOS or IOS version that runs on your switch supports your intended phone deployment. See the documentation for your switch for operating system version information.

Phone Power Consumption and Display Brightness

The power consumed by a phone depends on its power configuration. The following table provides a power configuration overview with the maximum power consumed by a phone for each configuration option and the correlating phone screen brightness level.

Note   Power consumption values shown in the table include power losses in the cable that connects the phone to the switch.

Table 8: Power Consumption and Display Brightness for Power Configurations

Phone model	Power configuration	Max. power consumed from a switch	Phone screen brightness
Cisco Unified IP Phone 7975G, 7965G, 7945G	IEEE 802.3af Class 3 power from a Cisco switch, with bidirectional power negotiation enabled	12 W	Full
	External power	—	Full

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Phone model	Power configuration	Max. power consumed from a switch	Phone screen brightness
Cisco Unified IP Phone 7971G-GE	IEEE 802.3af Class 3 power from a Cisco switch (with or without bidirectional power negotiation enabled) or from a third-party switch	15.4 W	Near full
	External power	—	Full
Cisco Unified IP Phone 7970G	Cisco prestandard PoE from a switch that supports a maximum of 7 W power per port, with bidirectional power negotiation enabled	6.3 W	Approx. 1/2
	Cisco prestandard PoE from a Cisco Switch that supports 7 W or 15.4 W power per port, without bidirectional power negotiation	6.3 W	Approx. 1/2
	IEEE 802.3af Class 3 power from a Cisco switch, without bidirectional power negotiation	6.3 W	Approx. 1/2
	IEEE 802.3af Class 3 power from a third-party switch	6.3 W	Approx. 1/2
	IEEE 802.3af Class 3 power from a Cisco switch, with bidirectional power negotiation enabled	10.25 W	Full (see note)
	Cisco prestandard PoE from a Cisco Switch that supports 15.4 W power per port, with bidirectional power negotiation enabled	10.25 W	Full
	External power	—	Full

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Note Starts at approximately 1/2 brightness, then changes to full brightness when the phone negotiates additional power.

When a phone is powered with a method that does not support full brightness for the phone screen, the phone Brightness control (**Settings** > **User Preferences** > **Brightness**) does not allow you to set the brightness to the maximum value.

Power Outage

Your access to emergency service through the phone requires the phone to receive power. If an interruption in the power supply occurs, Service and Emergency Calling Service dialing do not function until power is restored. In the case of a power failure or disruption, you may need to reset or reconfigure equipment before you can use the Service or Emergency Calling Service dialing.

Additional Information About Power

The documents in the following table provide more information on the following topics:

- Cisco switches that work with the Cisco Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G

- Cisco IOS releases that support bidirectional power negotiation

- Other power requirements and restrictions

Document Topics	URL
Cisco Unified IP Phone Power Injector	http://www.cisco.com/en/US/products/hw/phones/ps379/prod_installation_guides_list.html
PoE Solutions	http://www.cisco.com/en/US/netsol/ns340/ns394/ns147/ns412/index.html
Cisco Catalyst Switches	http://www.cisco.com/en/US/products/hw/switches/ps708/tsd_products_support_series_home.html
Integrated Service Routers	http://www.cisco.com/en/US/products/hw/routers/index.html
Cisco IOS Software	http://www.cisco.com/en/US/products/sw/iosswrel/products_ios_cisco_ios_software_category_home.html

Phone Configuration Files

Phone configuration files are stored on the TFTP server and define Cisco Unified Communications Manager connection parameters. In general, whenever you make a change in Cisco Unified Communications Manager that requires the phone to reset, a change is made automatically to the phone configuration file.

Configuration files also contain information about the image load that the phone should be running. If this image load differs from the one currently that is loaded on a phone currently, the phone contacts the TFTP server to request the required load files. These load files are digitally signed to ensure the authenticity of the file source.

In addition, if the device security mode in the configuration file is set to Authenticated and the CTL file on the phone has a valid certificate for Cisco Unified Communications Manager, the phone establishes a TLS

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connection to Cisco Unified Communications Manager. Otherwise, the phone establishes a TCP connection. For SIP phones, a TLS connection requires that the transport protocol in the phone configuration file be set to TLS, which corresponds to the transport type in the SIP Security Profile in Cisco Unified Communications Manager Administration.

Note If the device security mode in the configuration file is set to Authenticated or Encrypted but the phone has not received a CTL or ITL file, the phone tries four times to obtain the file so it can register securely.

Note Cisco Extension Mobility Cross Cluster is an exception, in that the phone permits a TLS connection to Cisco Unified Communications Manager for secure signaling even without the CTL file.

If you configure security-related settings in Cisco Unified Communications Manager Administration, the phone configuration file contains sensitive information. To ensure the privacy of a configuration file, you must configure it for encryption. For more information, see the *Cisco Unified Communications Manager Security Guide*, "Configuring Encrypted Phone Configuration Files" chapter.

A phone requests a configuration file whenever it resets and registers with Cisco Unified Communications Manager.

A phone accesses a default configuration file named XmlDefault.cnf.xml only when the phone has not received a valid Trust List file that contains a certificate assigned to Cisco Unified Communications Manager and TFTP.

If autoregistration is not enabled and you did not add the phone to the Cisco Unified Communications Manager database, the phone system rejects the phone registration request with Cisco Unified Communications Manager. The phone displays the `Configuring IP` message continuously until you either enable autoregistration or add the phone to the Cisco Unified Communications Manager database.

If the phone has registered previously, the phone accesses the configuration file named SEPmac_address.cnf.xml, where mac_address is the MAC address of the phone.

For SIP phones, the TFTP server generates these SIP configuration files:

- SIP IP Phone

    - For unsigned and unencrypted files: SEP<mac>.cnf.xml

    - For signed files: SEP<mac>.cnf.xml.sgn

    - For signed and encrypted files: SEP<mac>.cnf.xml.enc.sgn

- Dial Plan: <dialplan>.xml

- Softkey Template: <softkey_template>.xml

The filenames derive from the MAC Address and Description fields in the Phone Configuration window of Cisco Unified Communications Manager. The MAC address uniquely identifies the phone. For more information, see the *Cisco Unified Communications Manager Administration Guide*.

For more information about the phone interaction with the TFTP server, see the *Cisco Unified Communications Manager System Guide*, "Cisco TFTP" chapter.

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Phone Startup Process

When the Cisco Unified IP Phone connects to the VoIP network, the phone goes through a standard startup process that the following steps describe. Depending on your specific network configuration, not all of these process steps may occur on your Cisco Unified IP Phone.

Procedure

Step 1 Obtain power from the switch.

If a phone is not using external power, the switch provides in-line power through the Ethernet cable that is attached to the phone.

See Cisco Unified IP Phone Power, on page 33 and Startup Problems, on page 229.

Step 2 Load the StoredPhone Image.

The Cisco Unified IP Phone has nonvolatile flash memory in which it stores firmware images and user-defined preferences. At startup, the phone runs a bootstrap loader that loads a phone image stored in flash memory. The phone uses this image to initialize its software and hardware.

See Startup Problems, on page 229.

Step 3 Configure VLAN.

If the Cisco Unified IP Phone is connected to a Cisco switch, the switch next informs the phone of the voice VLAN defined on the switch port. The phone needs to know its VLAN membership before it can proceed with the Dynamic Host Configuration Protocol (DHCP) request for an IP address.

See Network Configuration Menu, on page 66 and Startup Problems, on page 229.

Step 4 Obtain an IP Address.

If the Cisco Unified IP Phone uses DHCP to obtain an IP address, the phone queries the DHCP server to obtain one. If you do not use DHCP in your network, you must assign static IP addresses to each phone locally.

See Network Configuration Menu, on page 66 and Startup Problems, on page 229.

Step 5 Access a TFTP Server.

In addition to assigning an IP address, the DHCP server directs the Cisco Unified IP Phone to a TFTP server. If the phone has a statically defined IP address, you must configure the TFTP server locally on the phone. The phone then contacts the TFTP server directly.

Note You can also assign an alternative TFTP server to use instead of the one that DHCP assigns.

See Network Configuration Menu, on page 66 and Startup Problems, on page 229.

Step 6 Request the CTL file.

The TFTP server stores the CTL file. This file contains the certificates that are necessary to establish a secure connection between the phone and Cisco Unified Communications Manager.

See the *Cisco Unified Communications Manager Security Guide*, "Configuring the Cisco CTL Client" chapter.

Step 7 Request the ITL file.

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The phone requests the ITL file after it requests the CTL file. The ITL file contains the certificates of the entities that the phone can trust. The certificates are used to authenticate a secure connection with the servers or to authenticate a digital signature that the servers sign.

See the *Cisco Unified Communications Manager Security Guide*, "Security by Default" chapter.

Step 8 Request the Configuration File.

The TFTP server has configuration files, which define parameters for connecting to Cisco Unified Communications Manager and other information for the phone.

See Phone Configuration Files, on page 36 and Startup Problems, on page 229.

Step 9 Contact Cisco Unified Communications Manager.

The configuration file defines how the Cisco Unified IP Phone communicates with Cisco Unified Communications Manager and provides a phone with the load ID. After the phone obtains the file from the TFTP server, the phone attempts to make a connection to the highest priority Cisco Unified Communications Manager on the list. If the security profile of the phone is configured for secure signaling (encrypted or authenticated), and Cisco Unified Communications Manager is set to secure mode, the phone makes a TLS connection. Otherwise, it makes a nonsecure TCP connection.

If the phone was manually added to the database, Cisco Unified Communications Manager identifies the phone. If the phone was not manually added to the database and autoregistration is enabled in Cisco Unified Communications Manager, the phone attempts to autoregister in the Cisco Unified Communications Manager database.

Note Autoregistration is disabled when you configure the CTL client. In this case, the phone must be manually added to the Cisco Unified Communications Manager database.

See Phone Configuration Files, on page 36 and Startup Problems, on page 229.

Cisco Unified Communications Manager Phone Addition Methods

Before you install the Cisco Unified IP Phone, you must choose a method for adding phones to the Cisco Unified Communications Manager database.

The following table provides an overview of the methods for adding phones to the Cisco Unified Communications Manager database.

Table 9: Cisco Unified Communications Manager Phone Addition Methods

Method	Requires MAC address?	Notes
Autoregistration	No	Results in automatic assignment of directory numbers. Not available when security or encryption is enabled.

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Method	Requires MAC address?	Notes
Autoregistration with TAPS	No	Requires autoregistration and the Bulk Administration Tool (BAT); updates the Cisco Unified Communications Manager database with the MAC address and DNs for the device when user calls TAPS from the phone.
Use Cisco Unified Communications Manager Administration	Yes	Requires phones to be added individually.
Use BAT	Yes	Can add groups of same model of phone. Can schedule when phones are added to the Cisco Unified Communications Manager database.

Autoregistration Phone Addition

If you enable autoregistration before you begin installing phones, you can:

- Add phones without first gathering MAC addresses from the phones.

- Automatically add a Cisco Unified IP Phone to the Cisco Unified CM database when you physically connect the phone to your IP telephony network. During autoregistration, Cisco Unified Communications Manager assigns the next available sequential directory number to the phone.

- Quickly enter phones into the Cisco Unified Communications Manager database and modify any settings, such as the directory numbers, from Cisco Unified Communications Manager.

- Move autoregistered phones to new locations and assign them to different device pools without affecting their directory numbers.

Note Cisco recommends that you use autoregistration to add fewer than 100 phones to your network. To add more than 100 phones to your network, use the Bulk Administration Tool (BAT).

Autoregistration is disabled by default. In some cases, you might not want to use autoregistration; for example, if you want to assign a specific directory number to the phone. For information about enabling autoregistration, see "Enable autoregistration" section in the *Cisco Unified Communications Manager Administration Guide*.

Note When you configure the cluster for mixed mode through the Cisco CTL client, autoregistration is automatically disabled. When you configure the cluster for nonsecure mode through the Cisco CTL client, autoregistration is automatically enabled.

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Autoregistration and TAPS Phone Addition

You can add phones with autoregistration and TAPS, the Tool for Auto-Registered Phones Support, without first gathering MAC addresses from phones.

TAPS works with the Bulk Administration Tool (BAT) to update a batch of phones that were already added to the Cisco Unified Communications Manager database with dummy MAC addresses. Use TAPS to update MAC addresses and download predefined configurations for phones.

Note Cisco recommends that you use autoregistration and TAPS to add less than 100 phones to your network. To add more than 100 phones to your network, use the Bulk Administration Tool (BAT).

To implement TAPS, dial a TAPS directory number and follow the voice prompts. When the process completes, the phone has downloaded the directory number and other settings, and the phone is updated in Cisco Unified Communications Manager Administration with the correct MAC address.

Autoregistration must be enabled in Cisco Unified Communications Manager Administration (**System** > **Cisco Unified CM**) for TAPS to function.

Note When you configure the cluster for mixed mode through the Cisco CTL client, autoregistration is automatically disabled. When you configure the cluster for nonsecure mode through the Cisco CTL client, autoregistration is automatically enabled.

For more information, see "Bulk Administration" chapter in the *Cisco Unified Communications Manager Administration Guide* and the "Tool for Auto-Registered Phones Support" chapter in the *Cisco Unified Communications Manager Bulk Administration Guide*.

Cisco Unified Communications Manager Administration Phone Addition

You can add phones individually to the Cisco Unified Communications Manager database by using Cisco Unified Communications Manager Administration. To do so, you first need to obtain the MAC address for each phone.

After you have collected MAC addresses, in Cisco Unified Communications Manager Administration, choose **Device** > **Phone** and click **Add New** to begin.

For complete instructions and conceptual information about Cisco Unified Communications Manager, see the *Cisco Unified Communications Manager Administration Guide* and the *Cisco Unified Communications Manager System Guide*.

Related Topics

Add Phones with BAT

Cisco Unified Communications Bulk Administration Tool (BAT), which is a menu option in Cisco Unified Communications Manager Administration, enables you to perform batch operations, which includes registration of multiple phones.

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To add phones by using BAT only (not in conjunction with TAPS), you first need to obtain the appropriate MAC address for each phone.

To add a phone to Cisco Unified Communications Manager, follow these steps:

Procedure

Step 1 From Cisco Unified Communications Manager, choose **Bulk Administration** > **Phones** > **Phone Template**.

Step 2 Click **Add New**.

Step 3 Choose a Phone Type and click **Next**.

Step 4 Enter the details of phone specific parameters, such as Device Pool, Phone Button Template, and Device Security Profile.

Step 5 Click **Save**.

Step 6 From Cisco Unified Communications Manager, choose **Device** > **Phone** > **Add New** to add a phone by using an already created BAT phone template.

For detailed instructions about using BAT, see the *Cisco Unified Communications Manager Bulk Administration Guide*. For more information on creation of BAT Phone Templates, see the *Cisco Unified Communications Manager Bulk Administration Guide*, "Phone Template" chapter.

Related Topics

Cisco Unified IP Phones and Different Protocols

The Cisco Unified IP Phones can operate with Skinny Client Control Protocol (SCCP) or Session Initiation Protocol (SIP). You can convert a phone from using one protocol to using the other protocol.

Convert New Phone from SCCP to SIP

A new, unused phone is set for SCCP by default. To convert this phone to SIP, perform these steps:

Procedure

Step 1 Take one of these actions:

a) To autoregister the phone, set the Auto Registration Phone Protocol parameter in Cisco Unified Communications Manager Administration to SIP.

b) To provision the phone by using the Bulk Administration Tool (BAT), choose the appropriate phone model and choose SIP from the BAT.

c) To provision the phone manually, make the appropriate changes for SIP on the Phone configuration window in Cisco Unified Communications Manager Administration.

For more information about Cisco Unified Communications Manager Administration, see the *Cisco Unified Communications Manager Administration Guide*. For more information about BAT, see the *Cisco Unified Communications Manager Bulk Administration Guide*.

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Step 2   If you are not using DHCP in your network, configure the network parameters for the phone.

Step 3   Save the configuration updates and perform the following:

    a) Click **Apply Config**.

    b) When the Apply Configuration Information window displays, click **OK**.

    c) Power cycle the phone.

Related Topics

Network Settings, on page 58

In-Use Phone Protocol to Protocol Conversion

For information on how to convert an in-use phone from one protocol to the other, see the *Cisco Unified Communications Manager Administration Guide*, "Cisco Unified IP Phone Configuration" chapter, "Migrate existing phone settings to another phone" section.

Deploy Phone in SCCP and SIP Environment

To deploy Cisco Unified IP Phones in an environment that includes SCCP and SIP and in which the Cisco Unified Communications Manager autoregistration parameter specifies SCCP, perform these general steps:

Procedure

Step 1   Set the Cisco Unified Communications Manager auto_registration_protocol parameter to SCCP.

Step 2   From Cisco Unified Communications Manager, choose **System** > **Enterprise Parameters**.

Step 3   Install the phones.

Step 4   Change the Auto Registration Protocol enterprise parameter to SIP.

Step 5   Autoregister the SIP phones.

Cisco Unified IP Phone MAC Address Determination

Several of the procedures in this manual require you to determine the MAC address of a Cisco Unified IP Phone. You can determine the MAC address for a phone in any of these ways:

- From the phone, choose **Settings** > **Network Configuration** and view the MAC Address field.

- Look at the MAC label on the back of the phone.

- Display the web page for the phone and click the **Device Information** hyperlink.

Related Topics

Access Web Page for Phone, on page 210

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Cisco Unified IP Phones Installation

Phone Installation Overview

This chapter helps you install the Cisco Unified IP Phones on an IP telephony network.

Note Before you install a Cisco Unified IP Phone, you must decide how to configure the phone in your network. Then you can install the phone and verify the functionality. For more information, see Cisco Unified IP Phones and Telephony Networks, on page 31.

Before You Begin

Before you install the Cisco Unified IP Phone, review the requirements in these sections:

Network Requirements

For the Cisco Unified IP Phone to successfully operate as a Cisco Unified IP Phone endpoint in your network, your network must meet these requirements:

- Working VoIP network:
    - VoIP configured on your Cisco routers and gateways

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> • Cisco Unified Communications Manager 4.x and later installed in your network and configured to handle call processing
>
> • IP network that supports DHCP or manual assignment of IP address, gateway, and subnet mask

Note The Cisco Unified IP Phone displays the date and time from Cisco Unified Communications Manager. The time displayed on the phone can differ from the Cisco Unified Communications Manager time by up to 10 seconds. The Cisco Unified Communications Manager server does not display the local time if it is located in a different time zone than the phones.

Cisco Unified Communications Manager Setup

The Cisco Unified IP Phone requires Cisco Unified Communications Manager to handle call processing. See the *Cisco Unified Communications Manager Administration Guide* or the context-sensitive help in the Cisco Unified Communications Manager application to ensure that Cisco Unified Communications Manager is set up properly to manage the phone and to properly route and process calls.

If you plan to use autoregistration, verify that it is enabled and properly configured in Cisco Unified Communications Manager before you connect any Cisco Unified IP Phone to the network. For information about enabling and configuring autoregistration, see the *Cisco Unified Communications Manager Administration Guide*.

You must use Cisco Unified Communications Manager to configure and assign telephony features to the Cisco Unified IP Phones.

In Cisco Unified Communications Manager, you can add users to the database and associate them with specific phones. In this way, users gain access to web pages that allow them to configure items such as call forward, speed dial, and voice message system options.

Related Topics

Cisco Unified Communications Manager User Addition, on page 165
Cisco Unified Communications Manager Phone Addition Methods, on page 39
Telephony Features Available for Cisco Unified IP Phone, on page 129

Cisco Unified IP Phone Components

The Cisco Unified IP Phones include these components on the phone or as accessories for the phone:

Network and Access Ports

The back of the Cisco Unified IP Phones includes these ports:

> • Network port: Labeled 10/100 SW on Cisco Unified IP Phones 7970G, 7965G, and 7945G, and 10/100/1000 SW on the Cisco Unified IP Phones 7975G and 7971G-GE.
>
> • Access port: Labeled 10/100 PC on Cisco Unified IP Phones 7970G, 7965G, and 7945G, and 10/100/1000 SW on the Cisco Unified IP Phones 7975G and 7971G-GE.

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Each port supports 10/100 or 10/100/1000 Mbps half- or full-duplex connections to external devices.

- For the Cisco Unified IP Phones 7975G, 7971G-GE, and 7970G, you can use either Category 3 or 5 cabling for 10 Mbps connections, but you must use Category 5 for 100 and 1000 Mbps connections (the Cisco Unified IP Phone 7970G does not support 1000 Mbps).

- For the Cisco Unified IP Phones 7965G and 7945G, you can use either Category 3, 5, 5e, or 6 cabling for 10 Mbps connections, but you must use Category 5, 5e, or 6 for 100 Mbps connections.

Use the SW network port to connect the phone to the network. You must use a straight-through cable on this port. The phone can also obtain inline power from a switch over this connection. See Cisco Unified IP Phone Power, on page 33 for details.

Use the PC access port to connect a network device, such as a computer, to the phone. You must use a straight-through cable on this port.

Handset

The handset is designed especially for use with a Cisco Unified IP Phone. The handset includes a light strip to indicate incoming calls and voice messages.

To connect a handset to the Cisco Unified IP Phones 7975G, 7965G, or 7945G, plug the cable into the handset and into the Handset port on the back of the phone.

To connect a handset to the Cisco Unified IP Phones 7971G-GE or 7970G, remove the hookswitch clip from the cradle area, as shown in the following figure. Then plug the cable into the handset and into the Handset port on the back of the phone.

Figure 1: Removing the hookswitch clip
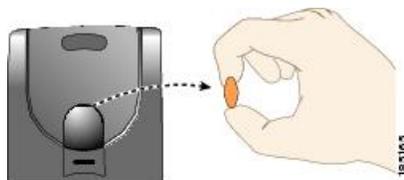
Speakerphone

By default, the speakerphone is enabled on the Cisco Unified IP Phone.

Disable Speakerphone

To disable the speakerphone using Cisco Unified CM Administration, perform the following procedure:

Procedure

Step 1 Choose **Device** > **Phone** and locate the phone you want to modify.

Step 2 In the Phone Configuration window, check **Disable Speakerphone**.

Step 3 Click **Apply**.

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Headset

Although Cisco performs internal tests of third-party headsets for use with the Cisco Unified IP Phones, Cisco does not certify or support products from headset or handset vendors.

We recommend the use of good quality external devices, for example, headsets that are screened against unwanted radio frequency (RF) and audio frequency (AF) signals. Depending on the quality of headsets and their proximity to other devices, such as mobile phones and two-way radios, some audio noise or echo may still occur. An audible hum or buzz may be heard by either the remote party of by both the remote party and the Cisco Unified IP Phone user. A range of outside sources can cause humming or buzzing sounds; for example, electric lights, electric motors, or large PC monitors. For more information, see External Device Use, on page 49.

Note In some cases, use of a local power cube or power injector may reduce or eliminate hum.

These environmental and hardware inconsistencies in the locations where Cisco Unified IP Phones are deployed mean that no single headset solution is optimal for all environments.

We recommend that customers test headsets in their intended environment to determine performance prior to purchase and large-scale deployment.

Note The Cisco Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G supports wideband headsets.

Audio Quality

Beyond physical, mechanical, and technical performance, the audio portion of a headset must sound good to the user and the party on the far end. Sound quality is subjective and Cisco cannot guarantee the performance of any headsets or handsets. However, a variety headsets from leading headset manufacturers have been reported to perform well with Cisco Unified IP Phones.

For additional information, see the Headsets for Cisco Unified IP Phones and Desktop Clients page on Cisco.com.

Note The Cisco Unified IP Phone 7971G-GE and 7970G do not support wireless headsets.

Headset Connection

To connect a headset to the Cisco Unified IP Phone, plug it into the Headset port on the back of the phone. Press the **Headset** button on the phone to place and answer calls by using the headset.

You can use the headset with all Cisco Unified IP Phone features, including the Volume and Mute buttons. Use these buttons to adjust the ear piece volume and to mute the speech path from the headset microphone.

The wireless headset remote hookswitch control feature allows you to use a wireless headset with the Cisco Unified IP Phone. See the wireless headset documentation for information about connecting the headset and using the features.

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Disable Headset

You can disable the headset by using Cisco Unified Communications Manager Administration.

To disable the headset, perform the following steps:

Procedure

Step 1 Choose **Device** > **Phone** and locate the phone you want to modify.

Step 2 In the Phone Configuration window, check the Disable Speakerphone and Headset check box.

Step 3 Click **Apply**.

Wireless Headset

Note The Cisco Unified IP Phones 7971G-GE and 7970G do not support wireless headsets.

By default, the Wireless Headset Hookswitch Control option is disabled. You can enable the option in the Cisco Unified Communications Manager Administration application.

See the wireless headset documentation for information about connecting the headset and using the features.

Enable Headset Hookswitch Control

Procedure

Step 1 Choose **Device** > **Phone** and locate the phone you want to modify.

Step 2 In the Phone Configuration window, select **Enable** for Headset Hookswitch Control.

External Device Use

Cisco recommends the use of good quality external devices, such as speakers, microphones, and headsets that are shielded (screened) against unwanted radio frequency (RF) and audio frequency (AF) signals.

Depending on the quality of these devices and their proximity to other devices, such as mobile phones or two-way radios, some audio noise may still occur. In these cases, Cisco recommends that you take one or more of the following actions:

- Move the external device away from the source of the RF or AF signals.

- Route the external device cables away from the source of the RF or AF signals.

- Use shielded cables for the external device, or use cables with a better shield and connector.

- Shorten the length of the external device cable.

- Apply ferrites or other such devices on the cables for the external device.

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Cisco cannot guarantee the performance of the system because Cisco has no control over the quality of external devices, cables, and connectors. The system performs adequately when suitable devices are attached with good quality cables and connectors.

⚠️

Caution   In European Union countries, use only external headsets that are fully compliant with the EMC Directive [89/336/EC].

Install Cisco Unified IP Phone

You must connect the Cisco Unified IP Phone to the network and to a power source before use. For the description of how to connect the cables to the phone, see Cisco Unified IP Phone Cable Installation, on page 51.

✎

Note   Before you install a phone, even if it is new, upgrade the phone to the current firmware image.

Before you use external devices, read External Device Use, on page 49 for safety and performance information.

Before you begin

Remove the hookswitch clip, if necessary (see Handset, on page 47), from the cradle area.

Procedure

Step 1   Connect the handset to the Handset port.

Step 2   Connect a headset to the Headset port.

You can add a headset later if you do not connect one now.

See Headset, on page 48 for supported headsets.

Step 3   Connect a wireless headset. You can add a wireless headset later if you do not want to connect one now.

Note   The Cisco Unified IP Phones 7971G-GE and 7970G do not support wireless headsets.

See the wireless headset documentation for information.

Step 4   Connect the power supply to the Cisco DC Adapter port.

See Cisco Unified IP Phone Power, on page 33.

Step 5   Connect a straight-through Ethernet cable from the switch to the 10/100/1000 SW port on the Cisco Unified IP Phones 7975G and 7971G-GE, or to the 10/100 SW port on the Cisco Unified IP Phones 7970G, 7965G and 7945G.

Each Cisco Unified IP Phone ships with one Ethernet cable in the box.

You can use either Category 3/5/5e/6 cabling for 10 Mbps connections, but you must use Category 5/5e/6 for 100 Mbps connections and Category 5e/6 for 1000 Mbps connections.

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See Network and Access Ports, on page 46 for guidelines.

Step 6   Connect a straight-through Ethernet cable from another network device, such as a desktop computer, to the 10/100/1000 PC port on the Cisco Unified IP Phones 7975G and 7971G-GE, or to the 10/100 SW port on the Cisco Unified IP Phones 7970G, 7965G and 7945G.

You can connect another network device later if you do not connect one now.

You can use either Category 3/5/5e/6 cabling for 10 Mbps connections, but you must use Category 5/5e/6 for 100 Mbps connections and Category 5e/6 for 1000 Mbps connections.

See Network and Access Ports, on page 46 for guidelines.

Cisco Unified IP Phone Cable Installation

See the following figure and table to connect your phone.
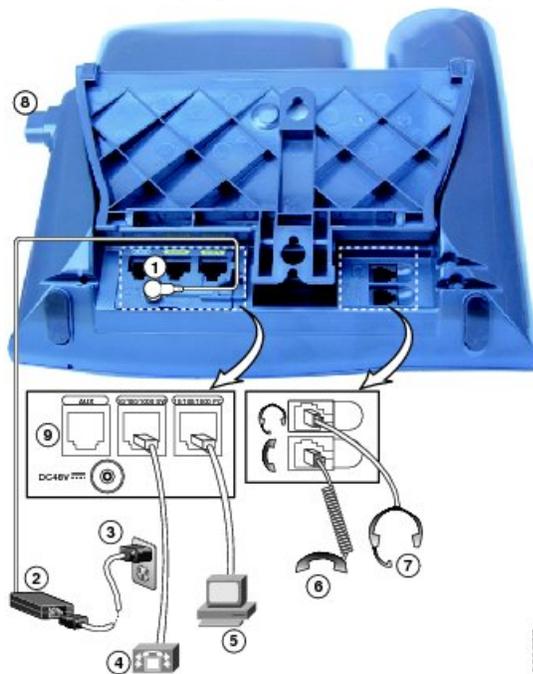
1	DC adaptor port	2	AC-to-DC power supply
3	AC power cord	4	Network port
5	Access port	6	Handset port
7	Headset port	8	Footstand button
9	Auxiliary port		

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Cisco Unified IP Phone Expansion Module

The Cisco Unified IP Phone Expansion Module can be attached to Cisco Unified IP Phone to extend the number of line appearances or speed dial buttons. You can customize the button templates for the Cisco Unified IP Phone Expansion Module to determine the number of line appearances and speed-dial buttons. See the phone button template section for the applicable phone model for details.

Note The Cisco Unified IP Phones 7971G-GE and 7970G support only the Cisco Unified IP Phone Expansion Module 7914.

Note The Cisco Unified IP Phone 7945G does not support the Cisco Unified IP Phone Expansion Modules.

You can attach one or more Cisco Unified IP Phone Expansion Modules to the Cisco Unified IP Phone 7975G and 7965G by using one of the following methods:

- When you initially add the phone to Cisco Unified Communications Manager, select

  - **7914 14-Button Line Expansion Module** for the Cisco Unified IP Phone Expansion 7914

  - **7915 12-Button Line Expansion Module** or **7915 24-Button Line Expansion Module** for the Cisco Unified IP Phone Expansion Module 7915

  - **7916 12-Button Line Expansion Module** or **7916 24-Button Line Expansion Module** for the Cisco Unified IP Phone Expansion Module 7916 in the Module 1 or Module 2 fields, and choose the appropriate expansion module firmware. See Step 6, on page 53 in the following procedure.

- Attach the expansion module after the phone is configured in Cisco Unified Communications Manager.

You can attach a Cisco Unified IP Phone Expansion Module 7914 to the Cisco Unified IP Phone 7971G-GE and 7970G by using one of the following methods:

- When you initially add the phone to Cisco Unified Communications Manager, choose **7914 14-Button Line Expansion Module** in the Module 1 or Module 2 fields and then choose the appropriate expansion module firmware. See Step 6, on page 53 in the following procedure.

- Attach the expansion module after the phone is configured in Cisco Unified Communications Manager.

Set up Cisco Unified IP Phone Expansion Module

To configure the Cisco Unified IP Phone Expansion Module on the Cisco Unified IP Phone, follow these steps:

Procedure

Step 1 Log in to Cisco Unified Communications Manager Administration.

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Cisco Unified Communications Manager Administration displays.

Step 2   From the menu, choose **Device** > **Phone**.

The Find and List Phone window displays. You can search for one or more phones that you want to configure for the Cisco Unified IP Phone Expansion Module.

Step 3   Select and enter your search criteria and click **Find**.

The Find and List Phone window redisplays and shows a list of the phones that match your search criteria.

Step 4   Click the IP phone that you want to configure for the Cisco Unified IP Phone Expansion Module.

The Phone Configuration window displays.

Step 5   Scroll to the Expansion Module Information area.

Step 6   To add support for one expansion module on Cisco Unified IP Phones 7975G and 7965G, in the Module 1 field, choose one of the following:

- **7914 14-Button Line Expansion Module** for the Cisco Unified IP Phone Expansion Module 7914

- **7915 12-Button Line Expansion Module** or **7915 24-Button Line Expansion Module** for the Cisco Unified IP Phone Expansion Module 7915

- **7916 12-Button Line Expansion Module** or **7916 24-Button Line Expansion Module** for the Cisco Unified IP Phone Expansion Module 7916

To add support for one expansion module on Cisco Unified IP Phones 7971G-GE and 7970G, in the Module 1 field, select **7914 14-Button Line Expansion Module**.

Step 7   To add support for a second expansion module on Cisco Unified IP Phones 7975G and 7965G, in the Module 2 field, choose one of the following:

- **7914 14-Button Line Expansion Module** for the Cisco Unified IP Phone Expansion Modules 7914

- **7915 12-Button Line Expansion Module** or **7915 24-Button Line Expansion Module** for the Cisco Unified IP Phone Expansion Module 7915

- **7916 12-Button Line Expansion Module** or **7916 24-Button Line Expansion Module** for the Cisco Unified IP Phone Expansion Module 7916

To add support for a second expansion module on Cisco Unified IP Phones 7971G-GE and 7970G, in the Module 2 field, choose **7914 14-Button Line Expansion Module**.

Note   In the Firmware Load Information section, two fields specify the firmware load for Modules 1 and 2. You can leave these fields blank to use the default firmware load.

Step 8   Click **Save**.

A message asks you to click the **Apply Config** button for the changes to take effect.

Step 9   Click **OK**.

Step 10   Click **Apply Config**.

The Apply Configuration Information dialog appears.

Step 11   Click **OK**.

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Note   Refer users to their User Options web pages so they can configure buttons and program buttons to access phone services on the Cisco Unified IP Phone Expansion Module. For more details, see Phone Features User Subscription and Setup, on page 255.

Feature Key Capacity Increase for Cisco Unified IP Phones

The Cisco Unified IP Phone Expansion Modules 7915 and 7916 attach to your Cisco Unified IP Phone 7965G or 7975G and add up to 48 extra line appearances or programmable buttons to your phone. The line capability increase includes Directory Numbers (DN), line information menu, line ring menu, and line help ID. You can configure all 48 additional keys on the Cisco Unified IP Phone Expansion Modules 7915 and 7916.

Use the Phone Button Template Configuration to configure the buttons.

Cisco Unified Communications Manager includes several default phone button templates. When you add phones, you can assign one of these templates to the phones or create a new template.

Related Topics
Softkey Templates, on page 164

Set up Additional Buttons

To configure the 48 additional buttons, follow these steps:

Procedure

Step 1   From Cisco Unified Communications Manager Administration, choose **Device** > **Device Settings** > **Phone Button Template**.

Step 2   Click the **Add New** button.

Step 3   From the drop-down list, choose a template and click **Copy**.

Step 4   Rename the new template.

Step 5   Update the template to 56 Directory Numbers for Cisco Unified IP Phone 7975G, or 54 Directory Numbers for Cisco Unified IP Phone 7965G.

See the *Cisco Unified Communications Manager Administration Guide* and the *Cisco Unified Communications Manager System Guide* for more information about template creation and modification.

Note   You can also attach two Cisco Unified IP Phone Expansion Modules 7915 units or two Cisco Unified IP Phone Expansion Modules 7916 units to provide 48 additional lines or speed dial and feature buttons.

Footstand Adjustment

The Cisco Unified IP Phone includes an adjustable footstand. When you place the phone on a desktop surface, you can adjust the tilt height to several different angles in 7.5 degree increments from flat to 60 degrees. You

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can also mount these phones to the wall by using the footstand or by using the optional locking wall mount kit.

To adjust the footstand, push in the footstand adjustment button and adjust the tilt.

Phone Cable Lock

You can secure the Cisco Unified IP Phones to a desktop with a laptop cable lock. The lock connects to the security slot on the back of the phone, and the cable can be secured to a desktop.

The security slot can accommodate a lock that is up to 20 mm wide. Compatible laptop cable locks include the Kensington laptop cable lock and laptop cable locks from other manufacturers that can fit into the security slot on the back of the phone.

Cisco Unified IP Phones 7945G, 7965G, and 7975G Cable Lock

For an illustration on how to connect a cable lock to the Cisco Unified IP Phones 7945G, 7965G, and 7947G, see the following figure.

Figure 2: Connect a Cable Lock
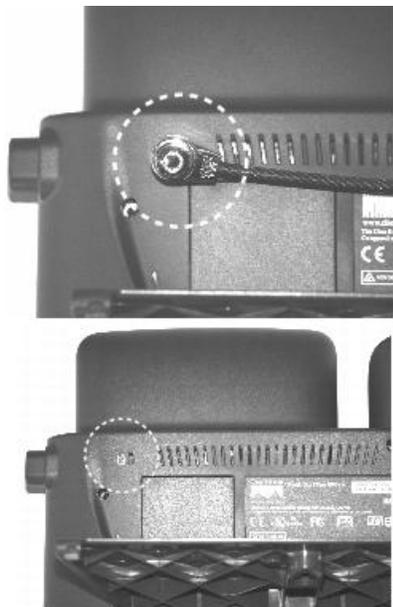
Cisco Unified IP Phones 7970G and 7971G-GE Cable Lock

For an illustration on how to connect a cable lock to the Cisco Unified IP Phones 7970G and 7971G-GE, see the following figure.

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■ **55**

Figure 3: Connect a Cable Lock

Mount Phone on Wall

You can mount the Cisco Unified IP Phone on the wall by using the footstand as a mounting bracket, or you can use special brackets available in a Cisco Unified IP Phone wall mount kit. Wall mount kits must be ordered separately from the phone.

If you attach the Cisco Unified IP Phone to a wall with the standard footstand and not the wall mount kit, you need to supply the following tools and parts:

- Screwdriver
- Screws to secure the Cisco Unified IP Phone to the wall

See the following figure for a graphical overview of the phone parts.

Figure 4: Parts Used to Wall Mount the Cisco Unified IP Phone
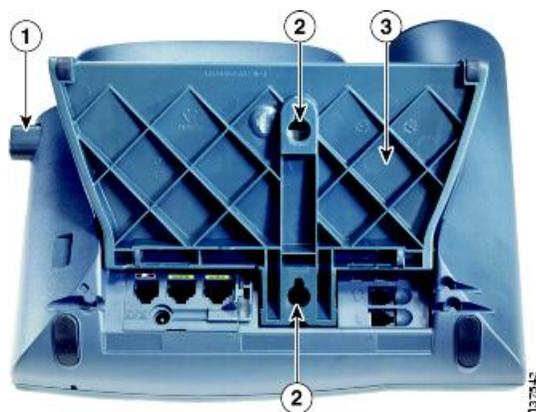
1	Footstand adjustment button: Raises and lowers adjustment plate

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2	Wall mounting screw holes
3	Adjustment plate: Raises and lowers phone vertically

Before you begin

To ensure that the handset attaches securely to a wall-mounted phone, remove the handset wall hook from the handset rest, rotate the hook 180 degrees, and reinsert the hook. Turning the hook exposes a lip on which the handset catches when the phone is vertical. For an illustrated procedure, see Installing the Wall Mount Kit for the Cisco Unified IP Phone at:

http://www.cisco.com/en/US/products/hw/phones/ps379/prod_installation_guides_list.html

⚠
Caution Use care not to damage wires or pipes located inside the wall when securing screws to wall studs.

Procedure

Step 1 Push in the footstand adjustment button.

Step 2 Adjust the footstand, so it is flat against the back of the phone.

Step 3 Insert two screws into a wall stud, matching them to the two screw holes on the back of the footstand.

The keyholes fit standard phone jack mounts.

Step 4 Hang the phone on the wall.

Phone Startup Process

After the Cisco Unified IP Phone has power connected to it, the phone begins its startup process by cycling through these steps.

1. These buttons flash on and off in sequence:

   • Headset (Only if the handset is off-hook when the phone powers up. In this case, hang up the handset within 3 seconds or the phone launches its secondary load instead of its primary load.)
   • Mute
   • Speaker

2. Some or all of the line keys flash orange.

⚠
Caution If the line keys flash red in sequence after flashing yellow, do not power down the phone until the sequence of red flashes completes. This sequence can take several minutes to complete.

3. Some or all of the line keys flash green.

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Normally, this sequence takes just a few seconds. However, if the phone flash memory is erased or the phone load is corrupted, the sequence of green flashes will continue while the phone begins a software update procedure. If the phone performs this procedure, the following buttons light to indicate progress:

- Headset: Phone is waiting for the network and completing CDP and DHCP configuration. A DHCP server must be available in your network.
- Mute: Phone is downloading images from the TFTP server.
- Speaker: Phone is writing images to its flash memory.

4. The phone screen displays the Cisco Systems, Inc., logo screen.

5. These messages display as the phone starts:

- Verifying load (if the phone load does not match the load on the TFTP server). If this message displays, the phone start up again and repeats step 1 through step 4 above.
- Configuring IP
- Updating the Trust List
- Updating Locale
- Configuring Unified CM List
- Registering

6. The main phone screen displays:

- Current date and time
- Primary directory number
- Additional directory numbers and speed dial numbers, if configured
- Softkeys

If the phone successfully passes through these stages, it has started up properly. If the phone does not start up properly, see .

Network Settings

If you are not using DHCP in your network, you must configure these network settings on the Cisco Unified IP Phone after you install the phone on the network:

- IP address

- IP subnet information (subnet mask for IPv4 and subnet prefix length for IPv6)

- Default gateway IP address

- TFTP server IP address

You may also configure these optional settings as necessary:

- Domain name

- DNS server IP address

Related Topics

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Cisco Unified IP Phone Security

The security features protect against several threats, including threats to the identity of the phone and to data. These features establish and maintain authenticated communication streams between the phone and the Cisco Unified Communications Manager server, and digitally sign files before they are delivered.

For more information about the security features, see *Cisco Unified Communications Manager Security Guide*.

Related Topics

Cisco Unified IP Phone Security Features, on page 13

Supported TLS and Ciphers

TLS v1.0

Cipher Suite: TLS_RSA_WITH_AES_256_CBC_SHA (0x0035)

Cipher Suite: TLS_RSA_WITH_AES_128_CBC_SHA (0x002f)

Cipher Suite: TLS_RSA_WITH_3DES_EDE_CBC_SHA (0x000a)

Install Locally Significant Certificate

You can initiate the installation of a Locally Significant Certificate (LSC) from the Security Configuration menu on the phone. This menu also lets you update or remove an LSC.

If you use a Third Party CA to sign LSCs, note that the Cisco Unified IP Phone 7900 Series only support SHA-1 as the algorithm to sign certificates. The phones do not support SHA-2 (SHA256). For more information on the use of a Third Party CA to sign LSCs, see *CUCM Third-Party CA-Signed LSCs Generation and Import Configuration Example* in https://www.cisco.com/c/en/us/support/docs/unified-communications/unified-communications-manager-callmanager/118779-configure-cucm-00.html.

Depending on how you have configured the CAPF, this procedure installs an LSC, updates an existing LSC, or removes an existing LSC.

Before you begin

Make sure that the appropriate Cisco Unified Communications Manager and the Certificate Authority Proxy Function (CAPF) security configurations are complete:

- The CTL file or ITL file should have a CAPF certificate.
- On Cisco Unified Communications Operating System Administration, verify that the CAPF certificate has been installed.
- The CAPF is running and configured.

For more information, see *Cisco Unified Communications Manager Security Guide*.

Procedure

| Step 1 | Obtain the CAPF authentication code that was set when the CAPF was configured. |
| Step 2 | From the phone, press the **Settings** > **Security Configuration**. |

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Note   You can control access to the Settings Menu by using the Settings Access field in the Cisco Unified Communications Manager Administration Phone Configuration window. For more information, see *Cisco Unified Communications Manager Administration Guide*.

Step 3   Press ****#** to unlock settings on the Security Configuration menu. See Unlock and Lock Options, on page 62 for information about using locking and unlocking options.

Note   If a Settings Menu password has been set up, SIP phones present an Enter password prompt after you enter **#.

Step 4   Scroll to LSC and press **Update**.

The phone prompts for an authentication string.

Step 5   Enter the authentication code and press **Submit**.

The phone begins to install, update, or remove the LSC, depending on how the CAPF was configured. During the procedure, a series of messages displays in the LSC option field in the Security Configuration menu so you can monitor progress. When the procedure completes successfully, the phone displays Installed or Not Installed.

The LSC install, update, or removal process can take a long time to complete. To stop the process at any time, press the **Stop** softkey from the Security Configuration menu. (Settings must be unlocked before you can press this softkey.)

When the phone successfully completes the installation procedure, it displays Success. If the phone displays Failure, the authorization string may be incorrect or the phone may not be enabled for upgrade. Investigate the error messages that the CAPF generates and take appropriate actions.

To verify that an LSC is installed on the phone, choose **Settings** > **Model Information** and ensure that the LSC setting shows Installed.

Related Topics

Cisco Unified IP Phone Security Features, on page 13

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Cisco Unified IP Phone Settings

Phone Settings Overview

The Cisco Unified IP Phone includes many configurable network and device settings that you may need to modify before the phone is functional for your users. You can access these settings, and change many of them, through menus on the phone.

Cisco Unified IP Phone Menus

The Cisco Unified IP Phone includes the following configuration menus:

• Network Configuration menu: Provides options for viewing and modifying various network settings.

• Device Configuration menu: Provides access to submenus from which you can view various settings that are not network related.

• Security Configuration menu: Provides options for displaying and modifying security settings.

Before you can change option settings on the Network Configuration menu, you must unlock options for edit. See Unlock and Lock Options, on page 62 for instructions.

For information about the keys you can use to edit or change option settings, see Value Input Guidelines, on page 63.

To control whether a phone user has access to phone settings, use the Settings Access field in the Cisco Unified Communications Manager Administration Phone Configuration window.

Related Topics

Display Settings Menu, on page 62
Unlock and Lock Options, on page 62

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Display Settings Menu

To display a configuration menu, perform the following steps.

✎

Note To control whether a phone has access to the Settings menu or to options on this menu, use the Settings Access field in the Cisco Unified Communications Manager Administration Phone Configuration window. The Settings Access field accepts these values:

- Enabled: Allows access to the Settings menu.
- Disabled: Prevents access to the Settings menu.
- Restricted: Allows access to the User Preferences menu and allows volume changes to be saved. Prevents access to other options on the Settings menu.

If you cannot access an option on the Settings menu, check the Settings Access field.

Procedure

Step 1 Press the **Settings** button to access the Settings menu.

Step 2 Perform one of these actions to display the desired menu:

a) Use the **Navigation** button to select the desired menu and then press **Select**.

b) Use the keypad on the phone to enter the number that corresponds to the menu.

Step 3 To display a submenu, repeat Step 2.

Step 4 To exit a menu, press **Exit**.

Related Topics

Unlock and Lock Options

Configuration options that can be changed from a phone are locked by default to prevent users from making changes that could affect the operation of a phone. You must unlock these options before you can change them.

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When options are inaccessible for modification, a locked padlock icon 🔒 appears on the configuration menus.

When options are unlocked and accessible for modification, an unlocked padlock 🔓icon appears on these menus.

To unlock or lock options, press **#. This action either locks or unlocks the options, depending on the previous state.

Note   If a Settings Menu password has been provisioned, SIP phones present an "Enter password" prompt after you enter **#.

Make sure to lock options after you have made your changes.

Caution   Do not press **# to unlock options and then immediately press **# again to lock options. The phone will interpret this sequence as **#**, which will reset the phone. To lock options after you unlock them, wait at least 10 seconds before you press **# again.

Related Topics

Value Input Guidelines

When you edit the value of an option setting, follow these guidelines:

• Use the keys on the keypad to enter numbers and letters.

• To enter letters by using the keypad, use a corresponding number key. Press the key one or more times to display a particular letter. For example, press the **2** key once for "a," twice quickly for "b," and three times quickly for "c." After you pause, the cursor automatically advances to allow you to enter the next letter.

• To enter a period (for example, in an IP address under IPv4 Configuration), press the **.** (period) softkey or press ***** on the keypad.

• To enter a colon (for example, in an IP address under IPv6 Configuration), press the **:** (colon) softkey or press ***** on the keypad.

• Press the << softkey if you make a mistake. This softkey deletes the character to the left of the cursor.

• Press the **Cancel** softkey before you press the **Save** softkey to discard any changes that you have made.

Note   The Cisco Unified IP Phone provides several methods you can use to reset or restore option settings, if necessary. For more information, see Cisco Unified IP Phone Reset or Restore, on page 248.

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Related Topics

Phone Setup Options

The settings that you can change on a phone fall into several categories, as shown in the following table. For a detailed explanation of each setting and instructions for changing them, see Network Configuration Menu, on page 66.

Note Several options on various configuration menus are for display only, or you can configure these options from Cisco Unified Communications Manager. This chapter also describes these options.

Table 10: Settings Configurable from the Phone

Category	Description	Network Configuration menu option
General Network Settings		
VLAN settings	Admin. VLAN ID allows you to change the administrative VLAN used by the phone. PC VLAN allows the phone to interoperate with third-party switches that do not support a voice VLAN.	Admin. VLAN ID PC VLAN
Port settings	Allow you to set the speed and duplex of the network and access ports.	SW Port Configuration
		PC Port Configuration
IPv4 Network Settings		
DHCP settings	Dynamic Host Configuration Protocol (DHCP) automatically assigns IP address to devices when you connect them to the network. Cisco Unified IP Phones enable DHCP by default.	DHCP
		DHCP Address Released

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Category	Description	Network Configuration menu option
IP settings	If you do not use DHCP in your network, you can make IP settings manually.	Domain Name
		IP Address
		Subnet Mask
		Default Router 1-5
		DNS Server 1-5
TFTP settings for TFTP IPv4 servers	If you do not use DHCP to direct the phone to a TFTP server, you must manually assign a TFTP server. You can also assign an alternative TFTP server to use instead of the one assigned by DHCP.	TFTP Server 1
		Alternate TFTP
		TFTP Server 2
IPv6 Network Settings		
DHCP settings	Dynamic Host Configuration Protocol (DHCP) automatically assigns IP address to phone when you connect them to the network. Cisco Unified IP Phones enable DHCP by default.	DHCPv6
		DHCPv6 Address Released
IP settings	If you do not use DHCP in your network, you can make IP settings manually.	Domain Name
		IPv6 Address
		IPv6 Prefix Length
		IPv6 DNS Server 1-2
TFTP settings for TFTP IPv6 servers (SCCP phones only)	If you do not use DHCP to direct the phone to a TFTP server, you must manually assign a TFTP server. You can also assign an alternative TFTP server to use instead of the one that DHCP assigns.	IPv6 TFTP Server 1
		IPv6 Alternate TFTP
		IPv6 TFTP Server 2

Related Topics

Display Settings Menu, on page 62
Unlock and Lock Options, on page 62
Value Input Guidelines, on page 63
Network Configuration Menu, on page 66
Device Configuration Menu, on page 87

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Network Configuration Menu

The Network Configuration menu provides options for viewing and modifying various network settings. The following tables describe these options and, where applicable, explains how to change them.

For information about how to access the Network Configuration menu, see Display Settings Menu, on page 62.

Note　The phone also has a Network Configuration menu that you access directly from the Settings menu. For information about the options on that menu, see Network Configuration Menu, on page 107.

Before you can change an option on this menu, you must unlock options as described in Unlock and Lock Options, on page 62. The **Edit**, **Yes**, or **No** softkeys for modifying network configuration options appear only if options are unlocked.

For information about the keys you can use to edit options, see Value Input Guidelines, on page 63.

Table 11: Network Configuration Menu Options

Option	Description	To Change
IPv4 Configuration	Internet Protocol v4 address menu. In the IPv4 Configuration menu, you can do the following: • Enable or disable the phone to use the IPv4 address that is assigned by the DHCPv4 server. • Manually set the IPv4 Address, Subnet Mask, Default Routers, DNSv4 Server, and Alternate TFTP servers for IPv4. For more information on the IPv4 address fields, refer to the specific field within this table.	Set IPv4 Configuration Fields, on page 78

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Option	Description	To Change
IPv6 Configuration	Internet Protocol v6 address menu. In the IPv6 Configuration menu, you can do the following: • Enable or disable the phone to use the IPv6 address that is assigned by the DHCPv6 server, or to use the IPv6 address that the phone acquires through Stateless Address Autoconfiguration (SLAAC). • Manually set the IPv6 Address, Subnet Prefix Length, Default Routers, DNSv6 Server, and IPv6 TFTP servers. For more information on the IPv6 address fields, see DHCPv6 and Autoconfiguration, on page 86. For more information on SLAAC, see *Deploying IPv6 in Unified Communications Networks with Cisco Unified Communications Manager* at the following location: http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/srnd/ipv6/ipv6.html	Set IPv6 Configuration Fields, on page 79
MAC Address	Unique Media Access Control (MAC) address of the phone.	Display only. Cannot configure.
Host Name	Unique host name that the DHCP server assigned to the phone.	Display only. Cannot configure.
Domain Name	Name of the Domain Name System (DNS) domain in which the phone resides. **Note** If the phone receives different domain names from the DHCPv4 and DHCPv6 servers, the domain name from the DHCPv6 will take precedence.	Set Domain Name Field, on page 79

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Option	Description	To Change
Operational VLAN ID	Auxiliary Virtual Local Area Network (VLAN) configured on a Cisco Catalyst switch in which the phone is a member. If the phone has not received an auxiliary VLAN, this option indicates the Administrative VLAN. If neither the auxiliary VLAN nor the Administrative VLAN are configured, this option is blank.	The phone obtains its Operational VLAN ID from Cisco Discovery Protocol (CDP) from the switch to which the phone is attached. To assign a VLAN ID manually, use the Admin VLAN ID option.
Admin. VLAN ID	Auxiliary VLAN in which the phone is a member. Used only if the phone does not receive an auxiliary VLAN from the switch; otherwise it is ignored.	Set Admin VLAN ID Field, on page 79
SW Port Configuration	Speed and duplex of the network port. Valid values: • Auto Negotiate • 10 Half—10-BaseT/half duplex • 10 Full—10-BaseT/full duplex • 100 Half—100-BaseT/half duplex • 100 Full—100-BaseT/full duplex • 1000 Full—1000-BaseT/full duplex If the phone is connected to a switch, configure the port on the switch to the same speed/duplex as the phone, or configure both to autonegotiate. If you change the setting of this option, you must change the PC Port Configuration option to the same setting.	Set SW Port Configuration Field, on page 80

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Option	Description	To Change
PC Port Configuration	Speed and duplex of the access port. Valid values: • Autonegotiate • 10 Half—10-BaseT/half duplex • 10 Full—10-BaseT/full duplex • 100 Half—100-BaseT/half duplex • 100 Full—100-BaseT/full duplex • 1000 Full—1000-BaseT/full duplex If the phone is connected to a switch, configure the port on the switch to the same speed/duplex as the phone, or configure both to auto-negotiate. If you change the setting of this option, you must change the SW Port Configuration option to the same setting.	Set PC Port Configuration Field, on page 80
PC VLAN	Allows the phone to interoperate with third-party switches that do not support a voice VLAN. The Admin VLAN ID option must be set before you can change this option.	Set PC VLAN Field, on page 80
VPN	Shows the VPN (virtual private network) Client state: • Connected • Not Connected (Supported only for the Cisco Unified IP Phone 7945G, 7965G, and 7975G.)	Display only. Cannot configure.

The following table describes the IPv4 Configuration menu options.

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Table 12: IPv4 Configuration menu options

Option	Description	To change
DHCP	Indicates whether the phone has DHCP enabled or disabled. When DHCP is enabled, the DHCP server assigns the phone an IPv4 address. When DHCP is disabled, the administrator must manually assign an IPv4 address to the phone.	Set DHCP Field, on page 81
IP Address	Internet Protocol version 4 (IPv4) address of the phone. If you assign an IPv4 address with this option, you must also assign a subnet mask and default router. See Subnet Mask and Default Router 1 options in this table.	Set IP Address Field, on page 81
Subnet Mask	Subnet mask used by the phone.	Set Subnet Mask Field, on page 81
Default Router 1 Default Router 2 Default Router 3 Default Router 4 Default Router 5	Default router used by the phone (Default Router 1) and optional backup routers (Default Router 2–5).	Set Default Router Fields, on page 81
DNS Server 1 DNS Server 2 DNS Server 3 DNS Server 4 DNS Server 5	Primary Domain Name System (DNS) server (DNS Server 1) and optional backup DNS servers (DNS Server 2–5) that the phone uses.	Set DNS Server Fields, on page 82
DHCP Address Released	Releases the IPv4 IP address that DHCP assigns.	Set DHCP Field, on page 81
DHCP Server	IP address of the Dynamic Host Configuration Protocol (DHCP) server from which the phone obtains its IPv4 address.	Display only. Cannot configure.
Alternate TFTP	Indicates whether the phone uses an alternative TFTP server.	Set Alternate TFTP Field, on page 82

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Option	Description	To change
TFTP Server 1		Set TFTP Server 1 Field, on page 83

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Option	Description	To change
	Primary Trivial File Transfer Protocol (TFTP) server that the phone uses. If you are not using DHCP in your network and you want to change this server, you must use the TFTP Server 1 option.	
	If you set the Alternate TFTP option to Yes, you must enter a nonzero value for the TFTP Server 1 option.	
	If neither the primary TFTP server nor the backup TFTP server is listed in the CTL or ITL file on the phone, you must unlock the file before you can save changes to the TFTP Server 1 option. In this case, the phone deletes the file when you save changes to the TFTP Server 1 option. A new CTL or ITL file will be downloaded from the new TFTP Server 1 address.	
	When the phone looks for its TFTP server, it gives precedence to manually assigned TFTP servers, regardless of the protocol. If your configuration includes both IPv6 and IPv4 TFTP servers, the phone prioritizes the order that it looks for its TFTP server by giving priority to manually assigned IPv6 TFTP servers and IPv4 TFTP servers. The phone looks for its TFTP server in the following order: 1. Any manually assigned IPv6 TFTP servers 2. Any manually assigned IPv4 TFTP servers 3. DHCPv6 assigned TFTP servers 4. DHCP assigned TFTP servers **Note** For information about the CTL and ITL files, see the *Cisco Unified Communications Manager Security*	

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Option	Description	To change
	Guide. For information about unlocking the CTL or ITL files, see Unlock CTL and ITL Files, on page 118.	

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Option	Description	To change
TFTP Server 2	Optional backup TFTP server that the phone uses if the primary TFTP server is unavailable. If neither the primary TFTP server nor the backup TFTP server is listed in the CTL or ITL file on the phone, you must unlock either of the files before you can save changes to the TFTP Server 2 option. In this case, the phone deletes either of the files when you save changes to the TFTP Server 2 option. A new CTL or ITL file will be downloaded from the new TFTP Server 2 address. When the phone looks for its TFTP server, it gives precedence to manually assigned TFTP servers, regardless of the protocol. If your configuration includes both IPv6 and IPv4 TFTP servers, the phone prioritizes the order that it looks for its TFTP server by giving priority to manually assigned IPv6 TFTP servers and IPv4 TFTP servers. The phone looks for its TFTP server in the following order: 1. Manually assigned IPv6 TFTP servers 2. Manually assigned IPv4 TFTP servers 3. DHCPv6 assigned TFTP servers 4. DHCP assigned TFTP servers **Note** For information about the CTL or ITL file, see the *Cisco Unified Communications Manager Security Guide*. For information about unlocking the CTL and ITL files, see Unlock CTL and ITL Files, on page 118.	Set TFTP Server 2 Field, on page 83

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Option	Description	To change
BOOTP Server	Indicates whether the phone obtains its configuration from a Bootstrap Protocol (BootP) server instead of from a DHCP server.	Display only. Cannot configure.

The following table describes the IPv6 Configuration menu options.

Table 13: IPv6 Configuration menu options

Option	Description	To change
DHCPv6	Indicates whether the phone has DHCP enabled or disabled. When DHCPv6 is enabled, the DHCPv6 server assigns the phone an IPv6 address. When DHCP v6 is disabled, the administrator must manually assign an IPv6 address to the phone. The DHCPv6 setting along with the Auto IP Configuration setting determine how the IP phone obtains its network settings. For more information on how these two settings affect the network settings on the phone, see DHCPv6 and Autoconfiguration, on page 86.	Set DHCPv6 Field, on page 83
IPv6 Address	Internet Protocol version 6 (IPv6) address of the phone. The IPv6 address is a 128 bit address. If you assign an IP address with this option, you must also assign the IPv6 prefix length and default router. See IPv6 Prefix Length in this table.	Set IPv6 Address Field, on page 84
IPv6 Prefix Length	Subnet prefix length that is used by the phone. The subnet prefix length is a decimal value from 1 to 128, that specifies the portion of the IPv6 address that comprises the subnet.	Set IPv6 Prefix Length Field, on page 84

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Option	Description	To change
IPv6 Default Router 1	Default router used by the phone (Default Router 1). **Note** The phone obtains information on the default router from IPv6 Router Advertisements.	Set IPv6 Default Router 1 Field, on page 84
IPv6 DNS Server 1 IPv6 DNS Server 2	Primary Domain Name System (DNS) server (DNS Server 1) and optional backup DNS servers (DNS Server 2) used by the phone. If your configuration includes both DNSv6 and DNSv4 servers, the phone will look for its DNS server in the following order: 1. IPv6 DNS Server 1 2. IPv6 DNS Server 2 3. DNS Server 1-5 for IPv4 (respectively)	Set IPv6 DNS Server 1 and IPv6 DNS Server 2 Fields, on page 84
DHCPv6 Address Released	Releases the IPv6 address that the phone has acquired from the DHCPv6 server or by stateless address auto configuration. **Note** This field is only editable when the DHCPv6 option is enabled.	Set DHCPv6 Address Released Field, on page 85
IPv6 Alternate TFTP	Indicates whether the phone is using the IPv6 Alternate TFTP server.	Set IPv6 Alternate TFTP Field, on page 85

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Option	Description	To change
IPv6 TFTP Server 1 (SCCP phones only)	Primary IPv6 Trivial File Transfer Protocol (TFTP) server used by the phone. If you are not using DHCPv6 in your network and you want to change this server, you must use the IPv6 TFTP Server 1 option. If you set the IPv6 Alternate TFTP option to Yes or you disable DHCPv6, you must enter a non-zero value for the IPv6 TFTP Server 1 option. If you make changes to the Alternate TFTP or IPv6 TFTP servers, you must first unlock the CTL or ITL file on the phone. When the phone looks for its TFTP server, it gives precedence to manually assigned TFTP servers, regardless of the protocol. If your configuration includes both IPv6 and IPv4 TFTP servers, the phone prioritizes the order that it looks for its TFTP server by giving priority to manually assigned IPv6 TFTP servers and IPv4 TFTP servers. The phone looks for its TFTP server in the following order: 1. Manually assigned IPv6 TFTP servers 2. Manually assigned IPv4 TFTP servers 3. DHCPv6 assigned TFTP servers 4. DHCP assigned TFTP servers For information about the CTL or ITL file, see the *Cisco Unified Communications Manager Security Guide*. For information about unlocking CTL files, see Unlock CTL and ITL Files, on page 118.	Set IPv6 TFTP Server 1 Field, on page 85

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Option	Description	To change
IPv6 TFTP Server 2 (SCCP phones only)	Optional backup IPv6 TFTP server that the phone uses if the primary IPv6 TFTP server is unavailable. If you make changes to the Alternate TFTP or IPv6 TFTP servers, you must first unlock the CTL or ITL file on the phone. When the phone looks for its TFTP server, it gives precedence to manually assigned TFTP servers, regardless of the protocol. If your configuration includes both IPv6 and IPv4 TFTP servers, the phone prioritizes the order that it looks for its TFTP server by giving priority to manually assigned IPv6 TFTP servers and IPv4 TFTP servers. The phone looks for the TFTP server in the following order: 1. Manually assigned IPv6 TFTP servers 2. Manually assigned IPv4 TFTP servers 3. DHCPv6 assigned TFTP servers 4. DHCP assigned TFTP servers For information about the CTL or ITL file, see the *Cisco Unified Communications Manager Security Guide*. For information about unlocking CTL or ITL files, see to Unlock CTL and ITL Files, on page 118.	Set IPv6 TFTP Server 2 Field, on page 86

Set IPv4 Configuration Fields

Procedure

Step 1   Unlock network configuration options.

Step 2   Scroll to IPv4 Configuration and press the **Select** softkey.

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Set IPv6 Configuration Fields

Procedure

Step 1   Unlock network configuration options.

Step 2   Scroll to IPv6 Configuration and press the **Select** softkey.

Set Domain Name Field

Procedure

Step 1   Unlock network configuration options.

Step 2   To disable DHCP, perform one of the following actions:

- If the IP Addressing mode is configured for IPv4 only, set the DHCP option to **No**.

- If the IP Addressing mode is configured for IPv6 only, set the DHCPv6 option to **No**.

- If the IP Addressing mode is configured for both IPv4 and IPv6, set both DHCP option and DHCPv6 to **No**.

Step 3   Scroll to the Domain Name option.

Step 4   Press **Edit**.

Step 5   Enter a new domain name.

Step 6   Press **Validate**.

Step 7   Press **Save**.

Set Admin VLAN ID Field

Procedure

Step 1   Unlock network configuration options.

Step 2   Scroll to the Admin. VLAN ID option.

Step 3   Press **Edit**.

Step 4   Enter a new Admin VLAN setting.

Step 5   Press **Validate**.

Step 6   Press **Save**.

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Set SW Port Configuration Field

Procedure

Step 1   Unlock network configuration options.

Step 2   Scroll to the SW Port Configuration option and then press **Edit**.

Step 3   Scroll to the setting that you want and then press **Select**.

Step 4   Press **Save**.

Set PC Port Configuration Field

To configure the setting on multiple phones simultaneously, enable Remote Port Configuration in Enterprise Phone Configuration (**System > Enterprise Phone Configuration**).

Note   If the ports are configured for Remote Port Configuration in Cisco Unified Communications Manager, the data cannot be changed on the phone.

Procedure

Step 1   Unlock network configuration options.

Step 2   Scroll to the PC Port Configuration option and then press **Edit**.

Step 3   Scroll to the setting that you want and then press **Select**.

Step 4   Press **Save**.

Set PC VLAN Field

Procedure

Step 1   Unlock network configuration options.

Step 2   Make sure the Admin VLAN ID option is set.

Step 3   Scroll to the **PC VLAN** option.

Step 4   Press **Edit**.

Step 5   Enter a new PC VLAN setting.

Step 6   Press **Validate**.

Step 7   Press **Save**

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Set DHCP Field

Procedure

Step 1   Unlock network configuration options.

Step 2   Scroll to the DHCP option and press **No** to disable DHCP, or press **Yes** to enable DHCP.

Step 3   Press **Save**.

Set IP Address Field

Procedure

Step 1   Unlock network configuration options.

Step 2   Set the DHCP option to **No**.

Step 3   Scroll to the IP Address option, press **Edit** and enter a new IP Address.

Step 4   Press **Validate** and **Save**.

Set Subnet Mask Field

Procedure

Step 1   Unlock network configuration options.

Step 2   Set the DHCP option to **No**.

Step 3   Scroll to the Subnet Mask option, press **Edit**, and then enter a new subnet mask.

Step 4   Press **Validate** and then press **Save**.

Set Default Router Fields

Procedure

Step 1   Unlock network configuration options.

Step 2   Set the DHCP option to **No**.

Step 3   Scroll to the appropriate Default Router option, press **Edit**, and then enter a new router IP address.

Step 4   Press **Validate**.

Step 5   Repeat Steps 3 and 4 as needed to assign backup routers.

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Step 6   Press **Save**.

Set DNS Server Fields

Procedure

Step 1   Unlock network configuration options.

Step 2   Set the DHCP option to **No**.

Step 3   Scroll to the appropriate DNS Server option, press **Edit**, and then enter a new DNS server IP address.

Step 4   Press **Validate**.

Step 5   Repeat Steps 3 and 4 as needed to assign backup DNS servers.

Step 6   Press **Save**.

Set DHCP Address Released Field

Procedure

Step 1   Unlock network configuration options.

Step 2   Scroll to the DHCP Address Released option and press **Yes** to release the IP address assigned by DHCP, or press **No** if you do not want to release this IP address.

Step 3   Press **Save**.

Set Alternate TFTP Field

Procedure

Step 1   Unlock network configuration options.

Step 2   Scroll to the Alternate TFTP option and press **Yes** if the phone should use an alternative TFTP server.

Step 3   Press **Save**.

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Set TFTP Server 1 Field

Procedure

Step 1   Unlock the CTL or ITL file if necessary (for example, if you are changing the administrative domain of the phone). If both the CTL and ITL files exist, unlock either of the files.

Step 2   If DHCP is enabled, set the Alternate TFTP option to **Yes**.

Step 3   Scroll to the TFTP Server 1 option, press **Edit**, and then enter a new TFTP server IP address.

Step 4   Press **Validate**, and then press **Save**.

Set TFTP Server 2 Field

Note   If you forgot to unlock the CTL or ITL file, you can change the TFTP Server 2 address in either file, then erase them by pressing **Erase** from the Security Configuration menu. A new CTL or ITL file downloads from the new TFTP Server 2 address.

Procedure

Step 1   Unlock the CTL or ITL file if necessary (for example, if you are changing the administrative domain of the phone). If both the CTL and ITL files exist, unlock either of the files.

Step 2   Unlock network configuration options.

Step 3   Enter an IP address for the TFTP Server 1 option.

Step 4   Scroll to the TFTP Server 2 option, press **Edit**, and then enter a new backup TFTP server IP address.

Step 5   Press **Validate**, and then press **Save**.

Set DHCPv6 Field

Procedure

Step 1   Unlock network configuration options.

Step 2   Scroll to the DHCPv6 option and press **No** to disable DHCP, or press **Yes** to enable DHCP.

Step 3   Press **Save**.

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Set IPv6 Address Field

Procedure

Step 1   Unlock network configuration options.

Step 2   Set the DHCPv6 option to **No**.

Step 3   Scroll to the IP Address option, press **Edit**, and then enter a new IP Address.

Step 4   Press **Validate** and then press **Save**.

Set IPv6 Prefix Length Field

Procedure

Step 1   Unlock network configuration options.

Step 2   Set the DHCPv6 option to **No**.

Step 3   Scroll to the IPv6 Prefix Length option, press **Edit**, and then enter a new subnet mask.

Step 4   Press **Validate** and then press **Save**.

Set IPv6 Default Router 1 Field

Procedure

Step 1   Unlock network configuration options.

Step 2   Set the DHCPv6 option to **No**.

Step 3   Scroll to the appropriate Default Router option, press the **Edit** softkey, and then enter a new router IP address.

Step 4   Press the **Validate** softkey.

Step 5   Repeat Steps 3 and 4 as needed to assign the backup router.

Step 6   Press the **Save** softkey.

Set IPv6 DNS Server 1 and IPv6 DNS Server 2 Fields

Procedure

Step 1   Unlock network configuration options.

Step 2   Set the DHCPv6 option to **No**.

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Step 3 Scroll to the appropriate DNS Server option, press **Edit**, and then enter a new DNS server IP address.

Step 4 Press **Validate**.

Step 5 Repeat Steps 3 and 4 as needed to assign the backup DNS server.

Step 6 Press **Save**.

Set DHCPv6 Address Released Field

Procedure

Step 1 Unlock network configuration options.

Step 2 Scroll to the DHCPv6 Address Released option and press **Yes** to release the IP address assigned by DHCP, or press **No** if you do not want to release this IP address.

Step 3 Press **Save**.

Set IPv6 Alternate TFTP Field

Procedure

Step 1 Unlock network configuration options.

Step 2 Scroll to the IPv6 Alternate TFTP option and press **Yes** if the phone should use an alternative TFTP server.

Step 3 Press **Save**.

Set IPv6 TFTP Server 1 Field

Procedure

Step 1 Unlock the CTL or ITL file if necessary. If both the CTL and ITL files exist, unlock either of the files.

Step 2 If DHCPv6 is enabled, set the Alternate TFTP option to **Yes**.

Step 3 Scroll to the IPv6 TFTP Server 1 option, press **Edit**, and then enter a new TFTP server IP address.

Step 4 Press **Validate**, and then press **Save**.

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Set IPv6 TFTP Server 2 Field

Procedure

Step 1	Unlock the CTL or ITL file if necessary. If both the CTL and ITL files exist, unlock either of the files.
Step 2	Unlock network configuration options.
Step 3	Enter an IP address for the IPv6 TFTP Server 1 option.
Step 4	Scroll to the IPv6 TFTP Server 2 option, press **Edit**, and then enter a new backup TFTP server IP address.
Step 5	Press **Validate**, and then press **Save**.

DHCPv6 and Autoconfiguration

You can configure the IP address and other network settings (such as the TFTP server, DNS server, domain, name) on an IP phone manually or by using a router or a DHCP server to automatically assign the IP address and other network information. For more information on how the Allow Auto Configuration for Phones and DHCPv6 settings determine where the IP phone acquires the IPv6 address and other network settings, see the following table.

Table 14: Determine where a Phone Acquires its Network Settings

DHCPv6	Auto IP configuration	How the phone acquires its IP address and network settings
Disabled	Disabled	You must manually configure an IP address and the other network settings. **Note** When DHCPv6 is disabled, the Auto IP Configuration setting is ignored.
Disabled	Enabled	You must manually configure an IP address and the other network settings. **Note** When DHCPv6 is disabled, the Auto IP Configuration setting is ignored.
Enabled	Disabled	The DHCP server assigns the IP address and the other network settings to the phone.

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DHCPv6	Auto IP configuration	How the phone acquires its IP address and network settings
Enabled	Enabled	When the M-bit is set on the router, the O-bit is ignored. The phone can set the IPv6 address based on an IPv6 address that it received from a DHCPv6 server or the phone can acquire the IPv6 address through stateless address autoconfiguration. When the M-bit is not set, you should set the O-bit on the router. The phone will then acquire the IPv6 address through stateless address autoconfiguration. The phone will not request an IPv6 address from the DHCPv6 server, but it will request other network configuration information.

Related Topics

Device Configuration Menu

The Device Configuration menu provides access to nine submenus from which you can view a variety of settings that are specified in the configuration file for a phone. The phone downloads the configuration file from the TFTP server. These submenus are:

For instructions about how to access the Device Configuration menu and its submenus, see Display Settings Menu, on page 62.

Unified CM Configuration Menu

The Unified CM Configuration menu contains the options Unified CM1, Unified CM2, Unified CM3, Unified CM4, and Unified CM5. These options show the Cisco Unified Communications Manager servers that are available to process from the phone, in prioritized order. To change these options, use Cisco Unified Communications Manager Administration, Cisco Unified CM Group Configuration.

For an available Cisco Unified Communications Manager server, an option on the Unified CM Configuration menu will show the Cisco Unified Communications Manager server IP address or name and one of the states shown in the following table.

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Table 15: Cisco Unified Communications Manager Server States

State	Description
Active	Cisco Unified Communications Manager server from which the phone is currently receiving call-processing services
Standby	Cisco Unified Communications Manager server to which the phone switches if the current server becomes unavailable
Blank	No current connection to this Cisco Unified Communications Manager server

An option may also display one of more of the designations or icons shown in the following table.

Table 16: Cisco Unified Communications Manager Server Designations

Designation	Description
SRST	Indicates a Survivable Remote Site Telephony router that can provide Cisco Unified Communications Manager functionality with a limited feature set. This router assumes control of call processing if all other Cisco Unified Communications Manager servers become unreachable. The SRST Cisco Unified Communications Manager always appears last in the list of servers, even if it is active. For more information, see the "Survivable Remote Site Telephony Configuration" chapter in the *Cisco Unified Communications Manager Administration Guide*.
TFTP	Indicates that the phone was unable to register with a Cisco Unified Communications Manager listed in its configuration file, and it registered with the TFTP server instead.
(Authentication icon)	Appears as a shield and indicates that the call is from a trusted device, and that the connection to Cisco Unified Communications Manager is authenticated. For more information about authentication, see the *Cisco Unified Communications Manager Security Guide*.

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Designation	Description
🔒 (Encryption icon)	Appears as a padlock and indicates that the call is from a trusted device, and that the connection to Cisco Unified Communications Manager is authenticated and encrypted. For more information about authentication and encryption, see the *Cisco Unified Communications Manager Security Guide*. The Encryption icon is also displayed when a Cisco Unified IP Phone is configured as protected. For more information about protected calls, see the *Cisco Unified Communications Manager Security Guide*. Protected calls are not authenticated.

SIP Configuration Menu for SIP Phones

The SIP Configuration menu is available on SIP phones. This menu contains these submenus:

SIP General Configuration Menu

The SIP General Configuration menu displays information about the configurable SIP parameters on a SIP phone. The following table describes the options in this menu.

Table 17: SIP General Configuration Menu Options

Option	Description	To Change
Preferred CODEC	Displays the CODEC to use when a call is initiated. This value will always be set to none.	Display only. Cannot configure.
Out of Band DTMF	Displays the configuration of the out-of-band signaling (for tone detection on the IP side of a gateway). The Cisco Unified IP Phone (SIP) uses the AVT tone method to support out of band signaling. This value will always be set to avt.	Display only. Cannot configure.
Register with Proxy	This value will always be set to Yes.	Display only. Cannot configure.
Register Expires	Displays the amount of time, in seconds, after which a registration request expires.	From Cisco Unified Communications Manager Administration, choose **Device** > **Device Settings** > **SIP Profile**.

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Option	Description	To Change
Phone Label	Displays the text that is displayed on the top right status line of the LCD on the phone. This text is for end-user display only and has no effect on caller identification or messaging. This value will always be set to null.	Display only. Cannot configure.
Enable VAD	This value is set to No by default.	From Cisco Unified Communications Manager Administration, choose **Device** > **Device Settings** > **SIP Profile**.
Start Media Port	Displays the start Real-Time Transport Protocol (RTP) range for media.	From Cisco Unified Communications Manager Administration, choose **Device** > **Device Settings** > **SIP Profile**.
End Media Port	Displays the end Real-Time Transport Protocol (RTP) range for media.	From Cisco Unified Communications Manager Administration, choose **Device** > **Device Settings** > **SIP Profile**.
NAT Enabled	Displays if Network Address Translation (NAT) is enabled. This value will always be set to false.	Display only. Cannot configure.
NAT Address	Displays the WAN IP address of the NAT or firewall server. This value will always be set to null.	Display only. Cannot configure.
Call Statistics	This value is set to No by default.	From Cisco Unified Communications Manager Administration, choose **Device** > **Device Settings** > **SIP Profile**.

Related Topics

Line Settings Menu for SIP Phones

The Line Settings menu displays information that relates to the configurable parameters for each of the lines on a SIP phone. The following table describes the options in this menu.

Table 18: Line Settings Menu Options

Option	Description	To change
Name	Displays the lines and the number used to register each line.	Use Cisco Unified Communications Manager Administration to modify.

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Option	Description	To change
Short Name	Displays the short name configured for the line.	Use Cisco Unified Communications Manager Administration to modify.
Longer Authentication Name	Displays the name used by the phone for authentication if a registration is challenged by the call control server during initialization. The length of the SIP digest authentication name has been increased to 128 characters for Cisco Unified 7900 Series SIP phones. The authentication name is used to verify that the phone is allowed to send SIP messages (REGISTER, INVITE, and SUBSCRIBE) to Cisco Unified Communications Manager.	Use Cisco Unified Communications Manager Administration to modify.
Display Name	Displays the identification the phone uses for display for caller identification purposes.	Use Cisco Unified Communications Manager Administration to modify.
Proxy Address	The value is left blank because it does not apply to SIP phones that are using Cisco Unified Communications Manager.	Display only. Cannot configure.
Proxy Port	The value is left blank because it does not apply to SIP phones that are using Cisco Unified Communications Manager.	Display only. Cannot configure.
Shared Line	Displays if the line is part of a shared line (Yes) or not (No).	Display only. Cannot configure.

Related Topics

Call Preferences Menu for SIP Phones

The Call Preferences menu displays settings that relate to the settings for the call preferences on a SIP phone. The following table describes the options in this menu.

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Table 19: Call Preferences Menu Options

Option	Description	To change
Caller ID Blocking	Indicates whether caller ID blocking is enabled (Yes) or disabled (No) for the phone.	From Cisco Unified Communications Manager Administration, choose **Device** > **Device Settings** > **SIP Profile**.
Anonymous Call Block	Indicates whether anonymous call block is enabled (Yes) or disabled (No) for the phone.	From Cisco Unified Communications Manager Administration, choose **Device** > **Device Settings** > **SIP Profile**.
Call Waiting Preferences	Displays a sub-menu that indicates whether call waiting is enabled (Yes) or disabled (No) for each line.	From Cisco Unified Communications Manager Administration, choose **Call Routing** > **Directory Number**.
Call Hold Ringback	Indicates whether the call hold ringback feature is enabled (Yes) or disabled (No) for the phone.	From Cisco Unified Communications Manager Administration, choose **Device** > **Device Settings** > **SIP Profile**.
Stutter Msg Waiting	Indicates whether stutter message waiting is enabled (Yes) or disabled (No) for the phone.	From Cisco Unified Communications Manager Administration, choose **Device** > **Device Settings** > **SIP Profile**.
Call Logs BLF Enabled	Indicates whether BLF for call logs is enabled (Yes) or disabled (No) for the phone.	Use Cisco Unified Communications Manager Administration.
Auto Answer Preferences	Displays a sub-menu that indicates whether auto answer is enabled (Yes) or disabled (No) for the each line.	From Cisco Unified Communications Manager Administration, choose **Call Routing** > **Directory Number**.
Speed Dials	Displays a sub-menu that displays the lines available on the phone. Select a line to see the speed dial label and number assigned to that line.	From Cisco Unified Communications Manager Administration, choose **Device** > **Add a New Speed Dial**.

Related Topics

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HTTP Configuration Menu

The HTTP Configuration menu displays the URLs of servers from which the phone obtains a variety of information. This menu also displays information about the idle display on the phone.

Note   Cisco Unified IP Phones do not support URLs with IPv6 addresses in the URL. This includes hostname which maps to an IPv6 address for directories, services, messages, and information URLs. If you support phone use of URLs, you must configure the phone and the servers that provide URL services with IPv4 addresses.

The following table describes the HTTP Configuration menu options.

Table 20: HTTP Configuration Menu Options

Option	Description	To change
Directories URL	URL of the server from which the phone obtains directory information.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
Services URL	URL of the server from which the phone obtains Cisco Unified IP Phone services.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
Messages URL	URL of the server from which the phone obtains message services.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
Information URL	URL of the help text that appears on the phone.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
Authentication URL	URL that the phone uses to validate requests made to the phone web server.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
Proxy Server URL	URL of proxy server, which makes HTTP requests to remote host addresses on behalf of the phone HTTP client and provides responses from the remote host to the phone HTTP client.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.

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Option	Description	To change
Idle URL	URL of an XML service that the phone displays when the phone has not been used for the time specified in the Idle URL Time option and no menu is open. For example, you could use the Idle URL option and the Idle URL Time option to display a stock quote or a calendar on the LCD screen when the phone has not been used for 5 minutes.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
Idle URL Time	Number of seconds that the phone has not been used and no menu is open before the XML service specified in the Idle URL option is activated.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.

Locale Configuration Menu

The Locale Configuration menu displays information about the user locale and the network locale used by the phone. The following table describes the options on this menu.

Table 21: Locale Configuration Menu Options

Option	Description	To change
User Locale	User locale associated with the phone user. The user locale identifies a set of detailed information to support users, including language, font, date and time formatting, and alphanumeric keyboard text information. For more information on user locale installation, see the *Cisco Unified Communications Operating System Administration Guide*.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
User Locale Version	Version of the user locale loaded on the phone.	Display only. Cannot configure.
User Locale Char Set	Character set that the phone uses for the user locale.	Display only. Cannot configure.

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Option	Description	To change
Network Locale	Network locale associated with the phone user. The network locale identifies a set of detailed information that supports the phone in a specific location, including definitions of the tones and cadences used by the phone.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
Network Locale Version	Version of the network locale loaded on the phone.	Display only. Cannot configure.
NTP Configuration (SIP phones only)	Provides access to the NTP Configuration Menu. For more information, see NTP Configuration Menu for SIP Phones, on page 95.	Display only. Cannot configure.

NTP Configuration Menu for SIP Phones

The NTP Configuration menu displays information about the NTP server and mode configuration used by SIP phones. The following table describes the options on this menu.

Table 22: NTP Configuration Menu Options

Option	Description	To change
NTP IP Address 1	IP address of the primary NTP server.	From Cisco Unified Communications Manager Administration, choose **System** > **Phone NTP Reference**.
NTP IP Address 2	IP address of the secondary or backup NTP server.	From Cisco Unified Communications Manager Administration, choose **System** > **Phone NTP Reference**.
NTP Mode 1	Primary server mode. Supported modes are Directed Broadcast and Unicast.	From Cisco Unified Communications Manager Administration, choose **System** > **Phone NTP Reference**.
NTP Mode 2	Secondary server mode. Supported modes are Directed Broadcast and Unicast.	From Cisco Unified Communications Manager Administration, choose **System** > **Phone NTP Reference**.

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UI Configuration Menu

The UI Configuration menu displays the status of various user interface features on the phone. The following table describes the options on this menu.

Table 23: UI Configuration Menu Options

Option	Description	To change
Auto Line Select	Indicates whether the phone shifts the call focus to incoming calls on all lines. When this option is disabled, the phone only shifts the call focus to incoming calls on the line that is in use. When this option is enabled, the phone shifts the call focus to the line with the most recent incoming call. Default: Disabled	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
BLF for Call Lists	Indicates whether the Busy Lamp Field (BLF) is enabled for call lists.	From Cisco Unified Communications Manager Administration, choose **System** > **Enterprise Parameters**.
Reverting Focus Priority	Indicates whether the phone shifts the call focus on the phone screen to an incoming call or a reverting hold call. Settings include: **Lower**: Focus priority given to incoming calls. **Higher**: Focus priority given to reverting calls. **Even**: Focus priority given to the first call.	From Cisco Unified Communications Manager Administration, choose **System** > **Device Pool**. See also: Hold Reversion.

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Option	Description	To change
Auto Call Select	Indicates whether the phone automatically shifts the call focus to an incoming call on the same line when the user is already on a call. When this option is enabled, the phone shifts the call focus to the most recent incoming call. When this option is disabled, all automatic focus changes, including Auto Line Select, are disabled regardless of their setting. Default: Enabled	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
"more" Softkey Timer	Indicates the number of seconds that additional softkeys display after the user presses **more**. If this timer expires before the user presses another softkey, the display reverts to the initial softkeys. Range: 5 to 30; 0 represents an infinite timer. Default: 5	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
Wideband Headset UI Control	Indicates whether the user can configure the Wideband Headset option in the phone user interface. Values: • Enabled: The user can configure the Wideband Headset option in the Audio Preferences menu on the phone (choose > **User Preferences** > **Audio Preferences** > **Wideband Headset**). • Disabled: The value of the Wideband Headset option in Cisco Unified Communications Manager Administration gets used (see Media Configuration Menu, on page 99). Default: Enabled	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.

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Option	Description	To change
Wideband Handset UI Control	Indicates whether the user can configure the Wideband Handset option in the phone user interface. Values: • Enabled: The user can configure the Wideband Handset option in the Audio Preferences menu on the phone (choose ▣ > **User Preferences** > **Audio Preferences** > **Wideband Handset**). • Disabled: The value of the Wideband Handset option in Cisco Unified Communications Manager Administration gets used (see Media Configuration Menu, on page 99**).** Default: Enabled	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
Personalization	Indicates whether the phone has been enabled for configuration of custom ring tones and wallpaper images. Default: Enabled	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
Single Button Barge	Indicates whether the Single Button Barge feature is enabled for the phone. Default: Disabled.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
Enbloc Dialing (SCCP only)	Indicates whether the phone will use Enbloc dialing. If "Enabled", the phone uses Enbloc dialing when possible. If "Disabled", the phone does not use Enbloc dialing. You should disable Enbloc dialing if either Forced Authorization Codes (FAC) or Client Matter Codes (CMC) dialing is in use. **Default**: Enabled	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.

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Media Configuration Menu

The Media Configuration menu displays whether the headset, speakerphone, and video capability (SCCP phones only) are enabled on the phone. This menu also displays options for recording tones that the phone may play to indicate that a call may be recorded. The following table describes the options on this menu.

Table 24: Media Configuration Menu Options

Option	Description	To change
Headset Enabled	Indicates whether the **Headset** button is enabled on the phone.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
Headset Hookswitch Control Enabled (for Cisco Unified IP Phone 7975G, 7965G, and 7945G)	Indicates whether the wireless headset hookswitch feature is enabled on the phone.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
Speaker Enabled	Indicates whether the speakerphone is enabled on the phone.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
Video Capability Enabled (SCCP phones only)	Indicates whether the phone can participate in video calls when connected to an appropriately equipped computer.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.

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Option	Description	To change
Recording Tone	Indicates whether a recording tone (often referred to as a beep tone) is enabled or disabled for the phone. If the recording tone option is enabled, the phone plays the beep tone in both directions of every call, regardless of whether the call actually gets recorded. The beep tone first sounds when a call is answered. You may want to notify your users if you enable this option. Default: Disabled Related Parameters: • Recording Tone Local Volume • Recording Tone Remote Volume • Recording Tone Duration Other related parameters—Beep tone frequency in Hz, the length of the beep tone (called duration), and how often the beep tone plays (called interval)—are defined on a per-Network Locale basis in the xml file that defines tones. This xml file is usually named tones.xml or g3-tones.xml.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
Recording Tone Local Volume	Indicates the loudness setting for the beep tone that is received by the party whose phone has the Recording Tone option enabled. This setting applies for each listening device (handset, speakerphone, headset). Range: 0 percent (no tone) to 100 percent (same level as current volume setting on the phone). Default: 100 See also Recording Tone in this table.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.

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Option	Description	To change
Recording Tone Remote Volume	Indicates the loudness setting for the beep tone that the remote party receives. The remote party is the party who is on a call with the party whose phone has the Recording Tone option enabled. Range: 0 percent to 100 percent. (0 percent is –66 dBM and 100 percent is –3 dBM.) Default: 84 percent (–10 dBM) See also Recording Tone in this table.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
Recording Tone Duration	Indicates the length of time in milliseconds that the beep tone plays. If the value you configure here is less than one third the interval, then this value overrides the default provided by the Network Locale. Range: 0 to 3000 **Note** For some Network Locales that use a complex cadence, this setting applies only to the first beep tone. See also Recording Tone in this table.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.

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Option	Description	To change
Wideband Headset	Indicates whether wideband is enabled or disabled for the headset. Default: Disabled	If Wideband Headset UI Control is enabled, you or the user can use the phone and choose ☑ > **User Preferences** > **Audio Preferences** > **Wideband Headset**. If Wideband Headset UI Control is disabled, from Cisco Unified Communications Manager Administration choose **Device** > **Phone** > **Phone Configuration** to set this value. **Note** If you allowed this option to be user controllable (in the Wideband Headset UI Control option), the user-configured value takes precedence.
Wideband Handset	Indicates whether wideband is enabled or disabled for the handset. Default: "Use Phone Default" on Cisco Unified Communications Manager Administration. (This default means that the phone will be enabled for a wideband handset only if the phone was shipped with a wideband handset.)	If Wideband Handset UI Control is enabled, you or the user can choose ☑ > **User Preferences > Audio Preferences > Wideband Handset.** If Wideband Handset UI Control is disabled, use Cisco Unified Communications Manager Administration and choose **Device** > **Phone** > **Phone Configuration** to set this value. **Note** If you allowed this option to be user controllable (in the Wideband Handset UI Control option), the user-configured value takes precedence.

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Option	Description	To change
Enterprise Advertise G.722 Codec	Enables/disables (enabled by default) Cisco Unified IP Phones to advertise the G.722 codec to Cisco Unified Communications Manager. For more information, see the *Cisco Unified Communications Manager System Guide*, "Cisco Unified IP Phones" chapter, "Codec Usage" section. **Note** When a phone is registered with a Cisco Unified Communications Manager that does not support this setting, the default is "Disabled."	From Cisco Unified Communications Manager Administration, choose **System** > **Enterprise Parameters**.
Device Advertise G.722 Codec	Allows you to override the Enterprise Advertise G.722 Codec on a per-phone basis. The default is "Use System Default," which means the value configured for the Enterprise Advertise G.722 Codec parameter gets used.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone**.

Power Save Configuration Menu

The Power Save Configuration menu displays the settings that control the LCD phone screen turning off to conserve power. The following table describes the options on this menu.

For detailed information about these settings, see EnergyWise Setup on Cisco Unified IP Phone, on page 168.

Table 25: Power Save Configuration Menu Options

Option	Description	To change
Display On Time	Time each day that the LCD screen turns on automatically (except on the days specified in the Days Display Not Active field).	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
Display On Duration	Length of time that the LCD screen remains on after it turns on at the time shown in the Display On Time option.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.

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Option	Description	To change
Display Idle Timeout	Length of time that the phone is idle before the display turns off. Applies only when the display was off as scheduled and the end user turned it on (by pressing a button on the phone, touching the touchscreen, or lifting the handset).	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
Days Display Not Active	Days that the display does not turn on automatically at the time specified in the Display On Time option.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
Display On When Incoming Call	Indicates whether the LCD screen automatically illuminates when a call is received.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.

Ethernet Configuration Menu

The Ethernet Configuration menu includes the options that are described in the following table.

Table 26: Ethernet Configuration Menu Options

Option	Description	To Change
Forwarding Delay	Indicates whether the internal switch begins to forward packets between the PC port and switched port on the phone when the phone becomes active. • When Forwarding Delay is set to disabled, the internal switch begins to forward packets immediately. • When Forwarding Delay is set to enabled, the internal switch waits 8 seconds before it begins to forward packets between the PC port and the switch port. Default is disabled.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.

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Option	Description	To Change
Span to PC Port	Indicates whether the phone will forward packets transmitted and received on the network port to the access port.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
	Enable this option if an application that requires phone traffic monitoring is running on the access port. These applications include monitoring and recording applications (common in call center environments) and network packet capture tools that are used for diagnostic purposes.	

Security Configuration Menu

The Security Configuration menu that you display from the Device Configuration menu displays settings that relate to security for the phone.

Note The phone also has a Security Configuration menu that you access directly from the Settings menu. For information about the security options on that menu, see Security Configuration Menu, on page 115.

The following table describes the options on the Security Configuration menu.

Table 27: Security Configuration Menu Options

Option	Description	To change
PC Port Disabled	Indicates whether the access port on the phone is enabled or disabled. **Note** If disabled, video will not work on this phone, even if video is enabled.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
GARP Enabled	Indicates if the phone accepts MAC addresses from Gratuitous ARP responses.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.

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Option	Description	To change
Voice VLAN Enabled	Indicates whether the phone allows a device attached to the access port to access the Voice VLAN. Setting this option to No (disabled) prevents the attached PC from sending and receiving data on the Voice VLAN. This setting also prevents the PC from receiving data that the phone sends and receives. Set this option to Yes (enabled) if an application that requires phone traffic monitoring is running on the PC. These applications include monitoring and recording applications and network monitoring software.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
Web Access Enabled	Indicates whether web access is enabled (Yes) or disabled (No) for the phone.	For more information, see Control Web Page Access, on page 211.
Security Mode	Displays the security mode that is set for the phone.	Use Cisco Unified Communications Manager Administration to modify.
Logging Display	For use by the Cisco Technical Assistance Center (TAC), if necessary.	

QoS Configuration Menu

The QoS Configuration menu displays information that relates to quality of service (QoS) for the phone. The following table describes the options on this menu.

Table 28: QoS Configuration Menu Options

Option	Description	To change
DSCP For Call Control	Differentiated Services Code Point (DSCP) IP classification for call control signaling.	From Cisco Unified Communications Manager Administration, choose **System** > **Enterprise Parameters**.
DSCP For Configuration	DSCP IP classification for any phone configuration transfer.	From Cisco Unified Communications Manager Administration, choose **System** > **Enterprise Parameters**.
DSCP For Services	DSCP IP classification for phone-based services.	From Cisco Unified Communications Manager Administration, choose **System** > **Enterprise Parameters**.

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Related Topics

Network Configuration Menu

The Network Configuration menu displays device-specific network configuration settings on the phone. The following table describes the options in this menu.

Note The phone also has a Network Configuration menu that you access directly from the Settings menu. For information about the options on that menu, see .

Table 29: Network Configuration Menu Options

Option	Description	To change
Load Server	Used to optimize installation time for phone firmware upgrades and offload the WAN by storing images locally, which negates the need to traverse the WAN link for each phone upgrade.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
	You can set the Load Server to another TFTP server IP address or name (other than the TFTP Server 1 or TFTP Server 2) from which the phone firmware can be retrieved for phone upgrades. When the Load Server option is set, the phone contacts the designated server for the firmware upgrade.	
	Note The Load Server option allows you to specify an alternate TFTP server for phone upgrades only. The phone continues to use TFTP Server 1 or TFTP Server 2 to obtain configuration files. The Load Server option does not provide management of the process and of the files, such as file transfer, compression, or deletion.	

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Option	Description	To change
RTP Control Protocol	Indicates whether the phone supports the Real-Time Control Protocol (RTCP). Settings include: • Enabled • Disabled (default) If this feature is disabled, several call statistic values display as 0. For more information, see the following sections: • Call Statistics Screen, on page 202 • Streaming Statistics, on page 222	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
CDP: PC Port	Indicates whether CDP is enabled on the PC port (default is enabled). Enable CDP on the PC port when Cisco VT Advantage/Unified Video Advantage (CVTA) is connected to the PC port. CVTA does not work without CDP interaction with the phone. **Note** When CDP is disabled in Cisco Unified Communications Manager, a warning displays to indicate that disabling CDP on the PC port prevents CVTA from working. The current PC and switch port CDP values are shown on the Settings menu.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone**.

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Option	Description	To change
CDP: SW Port	Indicates whether CDP is enabled on the switch port (default is enabled). • Enable CDP on the switch port for VLAN assignment for the phone, power negotiation, QoS management, and 802.1x security. • Enable CDP on the switch port when the phone is connected to a Cisco switch. **Note** When CDP is disabled in Cisco Unified Communications Manager, a warning displays to indicate that CDP should be disabled on the switch port only if the phone connects to a non-Cisco switch. The current PC and switch port CDP values are shown on the Settings menu.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone**.

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Option	Description	To change
Peer Firmware Sharing	The Peer Firmware Sharing feature provides these advantages in high speed campus LAN settings: • Limits congestion on TFTP transfers to centralized remote TFTP servers. • Eliminates the need to manually control firmware upgrades. • Reduces phone downtime during upgrades when large numbers of devices are reset. Peer Firmware Sharing may also aid in firmware upgrades in branch/remote office deployment scenarios over bandwidth-limited WAN links. Enabling this setting allows the phone to discover similar phones on the subnet that are requesting the files that make up the firmware image, and to automatically assemble transfer hierarchies on a per-file basis. Only the root phone in the hierarchy retrieves the individual files that make up the firmware image from the TFTP server, and then the files are transferred down the transfer hierarchy to the other phones on the subnet by using TCP connections. This menu option indicates whether the phone supports peer firmware sharing. Settings include: • Enabled (default) • Disabled	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.

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Option	Description	To change
Log Server	Indicates the IP address and port of the remote logging machine to which the phone sends log messages. These log messages help to debug the peer to peer image distribution feature. **Note** The remote logging setting does not affect the sharing log messages that are sent to the phone log.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
LLDP: PC Port	Enables and disables Link Layer Discovery Protocol (LLDP) on the PC port. Use this setting to force the phone to use a specific discovery protocol. Settings include: • Enabled (default) • Disabled	From Cisco Unified Communications Manager Administration, choose **Device > Phone > Phone Configuration.**
LLDP-MED: SW Port	Enables and disables Link Layer Discovery Protocol Media Endpoint Discovery (LLDP-MED) on the switch port. Use this setting to force the phone to use a specific discovery protocol, which should match the protocol supported by the switch. Settings include: • Enabled (default) • Disabled	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
LLDP Asset ID	Identifies the asset ID assigned to the phone for inventory management.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
Wireless Headset Hookswitch Control	Enables users to receive notifications of incoming calls and answer or end calls while they work in a wireless environment.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.

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Option	Description	To change
LLDP Power Priority	Advertises the phone power priority to the switch, which enables the switch to appropriately provide power to the phone. Settings include: • Unknown (default) • Low • High • Critical	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
IP Addressing Mode	Displays the IP addressing mode that is available on the phone. IPv4 only, IPv6 only, or IPv4 and IPv6.	From Cisco Unified Communications Manager Administration, choose **Device** > **Device Settings** > **Common Device Configuration**.
IP Preference Mode Control	Indicates the IP address version that the phone uses during signaling with Cisco Unified Communications Manager when both IPv4 and IPv6 are available on the phone. The IP addressing mode preference is configured on Cisco Unified Communications Manager Administration. Displays one of the following options on the phone: • IPv4: The dual-stack phone prefers to establish a connection via an IPv4 address during a signaling event. • IPv6: The dual-stack phone prefers to establish a connection via an IPv6 address during a signaling event.	From Cisco Unified Communications Manager Administration, choose **Device** > **Device Settings** > **Common Device Configuration**.

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Option	Description	To change
Auto IP Configuration	Displays whether the auto configurations is enabled or disabled on the phone. The Auto IP Configuration setting along with the DHCPv6 setting determine how the IP phone obtains the IPv6 address and other network settings. For more information on how these two settings affect the network settings on the phone, see DHCPv6 and Autoconfiguration, on page 86. **Note** Use the "Allow Auto Configuration for Phones" setting in Cisco Unified Communications Manager Administration.	From Cisco Unified Communications Manager Administration, choose **Device** > **Device Settings** > **Common Device Configuration**.

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Option	Description	To change
IPv6 Load Server	Used to optimize installation time for phone firmware upgrades and offload the WAN by storing images locally, which negates the need to traverse the WAN link for each phone upgrade. You can set the Load Server to another TFTP server IP address or name (other than the IPv6 TFTP Server 1 or IPv6 TFTP Server 2) from which the phone firmware can be retrieved for phone upgrades. When the Load Server option is set, the phone contacts the designated server for the firmware upgrade. **Note** The Load Server option allows you to specify an alternate TFTP server for phone upgrades only. The phone continues to use IPv6 TFTP Server 1 or IPv6 TFTP Server 2 to obtain configuration files. The Load Server option does not provide management of the process and of the files, such as file transfer, compression, or deletion.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
IPv6 Log Server	Indicates the IP address and port of the remote logging machine to which the phone sends log messages. These log messages help to debug the peer to peer image distribution feature. **Note** The remote logging setting does not affect the sharing log messages that are sent to the phone log.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone > Phone Configuration**.

Related Topics

Display Settings Menu, on page 62

Network Configuration Menu, on page 66

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Security Configuration Menu

The Security Configuration that you access directly from the Settings menu provides information about various security settings. It also provides access to the Trust List menu. This menu indicates if the CTL or ITL file is installed on the phone.

For information about how to access the Security Configuration menu and its submenus, see Display Settings Menu, on page 62.

Note The phone also has a Security Configuration menu that you access from the Device menu. For information about the security options on that menu, see Security Configuration Menu, on page 105.

The following table describes the options in the security configuration menu.

Table 30: Security Configuration Menu Options

Option	Description	To change
Web Access Enabled	Indicates whether web access is enabled (Yes) or disabled (No) for the phone.	For more information, see Control Web Page Access, on page 211.
Security Mode	Displays the security mode that is set for the phone.	From Cisco Unified Communications Manager Administration, choose **Device** > **Phone** > **Phone Configuration**.
MIC	Indicates whether a manufacturing installed certificate (used for the security features) is installed on the phone (Yes) or is not installed on the phone (No).	For information about how to manage the MIC for your phone, see the "Using the Certificate Authority Proxy Function" chapter in the *Cisco Unified Communications Manager Security Guide*.
LSC	Indicates whether a locally significant certificate (used for the security features) is installed on the phone (Yes) or is not installed on the phone (No).	For information about how to manage the LSC for your phone, see the "Using the Certificate Authority Proxy Function" chapter in the *Cisco Unified Communications Manager Security Guide*.

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Option	Description	To change
Trust List	The Trust List is a top-level menu that provides submenus for the CTL, ITL, and Signed Configuration files. The CTL File submenu displays the contents of the CTL file. The ITL File submenu displays contents of the ITL file. The CTL and ITL files submenus also display the MD5 hash of the file. The MD5 hash value from the phone can be compared with the MD5 hash value of the file from the TFTP server to verify if the correct file is installed on the phone. The Signed Configuration File submenu displays the SRST certificate that is installed via the authenticated digitally signed configuration file.	For more information, see Trust List Menu, on page 120.
802.1X Authentication	Allows you to enable 802.1X authentication for this phone.	See 802.1X Authentication and Status Menus, on page 122.
802.1X Authentication Status	Displays real-time status progress of the 802.1X authentication transaction.	Display only. Cannot configure.
VPN Configuration	Allows you to configure VPN configuration for this phone. (Supported only for the Cisco Unified IP Phone 7945G, 7965G, and 7975G.)	For more information, see the "Configuring Virtual Private Networks" chapter in *Cisco Unified Communications Manager Security Guide*.

CTL File Submenu

The CTL File screen includes the options that are described in the following table.

If a CTL file is installed on the phone, you can access the CTL File menu by pressing the **Settings** button and choosing **Security Configuration** > **Trust List**.

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Table 31: CTL File Menu Options

Option	Description	To change
CTL File	Displays the MD5 hash of the CTL file that is installed in the phone. If security is configured for the phone, the CTL file installs automatically when the phone reboots or resets. • A locked padlock icon 🔒 in this option indicates that the CTL file is locked. • An unlocked padlock icon 🔓 indicates that the CTL file is unlocked.	For more information about the CTL file, see the "Configuring the Cisco CTL Client" chapter in the *Cisco Unified Communications Manager Security Guide*.
CAPF Server	Common Name (from the Cisco Unified Communications Manager Certificate) of the CAPF used by the phone. Also displays a certificate 🔖 icon if a certificate is installed for this server.	For more information about this server, see the "Using the Certificate Authority Proxy Function" chapter in the *Cisco Unified Communications Manager Security Guide*.
Unified CM/TFTP Server	Common Name (from the Cisco Unified Communications Manager Certificate) of a Cisco Unified Communications Manager and TFTP server used by the phone. Also displays a certificate 🔖 icon if a certificate is installed for this server. If the certificate of the TFTP (TFTP Server 1) or the backup TFTP (TFTP Server 2) is not in the CTL or ITL file, one of the files must be unlocked.	For information about these options, see Network Configuration Menu, on page 66.

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Option	Description	To change
Application Server	Common Name (from the Cisco Unified Communications Manager Certificate) of the trusted application server used by the phone. Also displays a certificate ⊞ icon. A phone-trust certificate is used to authenticate application servers with which the phone communicates. One Application Server menu item appears for each phone-trust store whose certificates have been uploaded into Cisco Unified OS Administration and later downloaded into the phone CTL file.	For more information about phone-trust certificates, see the following documents: *Cisco Unified Communications Operating System Administration Guide*, "Security" chapter *Cisco Unified Communications Manager Security Guide*, "Security Overview" chapter

Unlock CTL and ITL Files

To unlock the CTL and ITL files from the Security Configuration menu, perform these steps:

Procedure

Step 1   Press **#** to unlock options on the overall setting menu of the Cisco Unified IP Phone.

Step 2   Select **Trust List** > **CTL** or **ITL file** depending on which file is installed in your phone.

> **Note**   If both CTL and ITL files are installed in your phone, you can choose either option.

Step 3   Press **Unlock** to unlock Trust List files on the phone. The CTL or ITL files, if installed on your phone, will be unlocked together.

> **Note**   When you press **Unlock**, the softkey changes to **Lock**. If you decide not to change the TFTP server option, press **Lock** to lock the CTL file.

ITL File Submenu

The ITL File screen includes the options that are described in the following table.

If an ITL file is installed on the phone, you can access the ITL File submenu by pressing the Settings button and choosing **Security Configuration** > **Trust List**.

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Note   The TFTP server generates the ITL file. The Trust Verification Service does not generate the ITL file, as done in previous releases.

Table 32: ITL File Menu Options

Option	Description	To change
ITL File	Displays the MD5 hash of the Identity Trust List (ITL) file that is installed in the phone. If security is configured for the phone, the ITL file installs automatically when the phone reboots or resets. • A locked padlock icon 🔒 in this option indicates that the ITL file is locked. • An unlocked padlock icon 🔓 indicates that the ITL file is unlocked.	For more information about the ITL file, see the "Configuring the Cisco ITL Client" chapter in the *Cisco Unified Communications Manager Security Guide*.
CAPF Server	Common Name (from the Cisco Unified Communications Manager Certificate) of the CAPF used by the phone. Also displays a certificate 📄 icon if a certificate is installed for this server.	For more information about this server, see the "Using the Certificate Authority Proxy Function" chapter in the *Cisco Unified Communications Manager Security Guide*.
Unified CM/TFTP Server	Common Name (from the Cisco Unified Communications Manager Certificate) of a Cisco Unified Communications Manager and TFTP server used by the phone. Also displays a certificate 📄 icon if a certificate is installed for this server. If neither the certificate of TFTP (TFTP Server 1) nor the certificate of backup TFTP (TFTP Server 2) is not in the CTL or ITL file, you must unlock the CTL file or the ITL file.	For information about changing these options, see Network Configuration Menu, on page 66.

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Option	Description	To change
Application Server	Common Name (from the Cisco Unified Communications Manager Certificate) of the trusted application server used by the phone. Also displays a certificate icon. A phone-trust certificate is used to authenticate application servers with which the phone communicates. One Application Server menu item appears for each phone-trust store whose certificates have been uploaded into Cisco Unified OS Administration and later downloaded into the Phone ITL file.	For more information about phone-trust certificates, see the following documents: • *Cisco Unified Communications Operating System Administration Guide*, "Security" chapter • *Cisco Unified Communications Manager Security Guide*, "Security Overview" chapter
Trust Verification Service Server	Common Name (from the Cisco Unified Communications Manager Certificate) of the trusted application server used by the phone. Also displays a certificate icon. A phone-trust TVS certificate is used to authenticate TVS servers with which the phone communicates. There can be more than one entry for the TVS servers.	For more information, see the *Cisco Unified Communications Manager System Administrator Guide*.

Trust List Menu

The Trust List menu provides a top-level menu that contains the CTL, ITL, and the Signed Configuration submenus. The content of the Signed Configuration file is SRST.

The Trust List menu displays information about all of the servers that the phone trusts and includes the options that are described in the following table.

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Table 33: Trust List Menu Options

Option	Description	To change
CAPF Server	Common Name (from the Cisco Unified Communications Manager Certificate) of the CAPF server used by the phone. Also displays a certificate [icon] icon if a certificate is installed for this server.	For more information about these settings, see the "Configuring the Cisco ITL Client" chapter in the *Cisco Unified Communications Manager Security Guide*.
Unified CM/TFTP Server	Common Name (from the Cisco Unified Communications Manager Certificate) of a Cisco Unified Communications Manager and the TFTP server used by the phone. Also displays a certificate [icon] icon if a certificate is installed for this server.	For more information about these settings, see the "Configuring the Cisco ITL Client" chapter in the *Cisco Unified Communications Manager Security Guide*.
SRST Router	Common Name (from the Cisco Unified Communications Manager Certificate) of the trusted SRST router that is available to the phone, if such a device has been configured in Cisco Unified Communications Manager Administration. Also displays a certificate [icon] icon if a certificate is installed for this server.	For more information about these settings, see the "Configuring the Cisco ITL Client" chapter in the *Cisco Unified Communications Manager Security Guide*.
Application Server	Common Name (from the Cisco Unified Communications Manager Certificate) of the trusted application server used by the phone. Also displays a certificate [icon] icon. A phone-trust certificate is used to authenticate application servers with which the phone communicates. One Application Server menu item appears for each phone-trust store whose certificates have been uploaded into Cisco Unified OS Administration and later downloaded into the Cisco Unified IP Phone CTL file.	For more information about phone-trust certificates, see the following documents: • *Cisco Unified Communications Operating System Administration Guide*, "Security" chapter • *Cisco Unified Communications Manager Security Guide*, "Security Overview" chapter

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Option	Description	To change
TVS Server	Common Name (from the Cisco Unified Communications Manager Certificate) of the trusted application server used by the phone. Also displays a certificate icon. A phone-trust TVS certificate is used to authenticate TVS servers with which the phone communicates. There can be more than one entry for the TVS servers.	For more information, see the *Cisco Unified Communications Manager System Administrator Guide*.

802.1X Authentication and Status Menus

The 802.1X Authentication and 802.1X Authentication Status menus allow you to enable 802.1X authentication and monitor the progress. These options are described in the following tables.

You can access the 802.1X Authentication settings by pressing the Settings button and choosing **Security Configuration** > **802.1X Authentication**. To exit this menu, press **Exit**.

Table 34: 802.1X Authentication Menu Options

Option	Description	To change
Device Authentication	Determines whether 802.1X authentication is enabled: • Enabled: Phone uses 802.1X authentication to request network access. • Disabled: Default setting in which the phone uses CDP to acquire VLAN and network access.	Voice Quality Troubleshooting Tips, on page 251

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Option	Description	To change
EAP-MD5	Specifies a password for use with 802.1X authentication using the following menu options that are described in the following rows: • Device ID • Shared Secret • Realm	Choose **Settings** > **Security Configuration** > **802.1X Authentication** > **EAP-MD5**.
	Device ID: Derivative of the phone model number and unique MAC address displayed in this format: CP-<model>-SEP-<MAC>	Display only. Cannot configure.
	Shared Secret: Choose a password to use on the phone and on the authentication server. The password must be between 6 and 32 characters in length and can consist of any combination of numbers or letters. **Note** If you disable 802.1X authentication or perform a factory reset of the phone, the shared secret is deleted.	Set EAP-MD5 Shared Secret Field, on page 124 See Cisco Unified IP Phone Security Problems, on page 236 for recovery of a deleted shared secret.
	Realm: Indicates the user network domain, always set as Network.	Display only. Cannot configure.

To access the 802.1X Authentication Real-Time menu, press the **Settings** button and choose **Security Configuration** > **802.1X Authentication Status**. To exit this menu, press **Exit**.

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Table 35: 802.1X Authentication Status Menu Options

Option	Description	To change
802.1X Authentication Status	Real-time progress of the 802.1X authentication status. Displays one of the following states: • Disabled: 802.1X is disabled and the transaction was not attempted. • Disconnected: Physical link is down or is disconnected. • Connecting: System is trying to discover or acquire the authenticator. • Acquired: Authenticator has been acquired. System is waiting for authentication to begin. • Authenticating: Authentication is in progress. • Authenticated: Authentication was successful or implicit authentication occurred due to timeouts. • Held: Authentication failed. System is waiting before next attempt (approximately 60 seconds).	Display only. Cannot configure.

Set Device Authentication Field

Procedure

Step 1 Choose **Settings** > **Security Configuration** > **802.1X Authentication** > **Device Authentication**.

Step 2 Set the Device Authentication option to **Enabled** or **Disabled**.

Step 3 Press **Save**.

Set EAP-MD5 Shared Secret Field

See Cisco Unified IP Phone Security Problems, on page 236 for recovery of a deleted shared secret.

Procedure

Step 1 Choose **EAP-MD5** > **Shared Secret**.

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Step 2   Enter the shared secret.

Step 3   Press **Save**.

VPN Configuration Menu

The VPN Configuration menu allows you to enable a virtual private network (VPN) connection that uses Secure Sockets Layer (SSL) when a phone is located outside a trusted network or when network traffic between the phone and Cisco Unified Communications Manager crosses untrusted networks.

Note   VPN Client is supported only for the Cisco Unified IP Phone 7945G, 7965G, and 7975G.

Your system administrator configures the VPN Client feature as needed. If it is enabled and the VPN Client mode is enabled on the phone, you are prompted for your credentials as follows:

- If your phone is located outside the corporate network:

    - You are prompted at login to enter your credentials based on the authentication method that your system administrator configured on your phone.

- If your phone is located inside the corporate network:

    - If Auto Network Detection is disabled, you are prompted for credentials, and a VPN connection is possible.

    - If Auto Network Detection is enabled, you cannot connect through VPN so you are not prompted.

Connect to VPN

Use this procedure to access the VPN Configuration settings and connect through VPN.

Procedure

Step 1   Press **Settings** and choose **Security Configuration** > **VPN Configuration**.

Step 2   After the phone starts up and the VPN Login screen appears, enter your credentials based on the configured authentication method:

a) Username and password: Enter your username and the password that your system administrator gave you.

b) Password and certificate: Enter the password that your system administrator gave you. Your username is derived from the certificate.

c) Certificate: If the phone uses only a certificate for authentication, you do not need to enter authentication data. The VPN Login screen displays the status of the phone that is attempts the VPN connection.

Note   When the power is lost or in some scenarios when the phone is reset, all stored credentials are removed.

Step 3   To establish the VPN connection, press **Submit**.

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Step 4 To disable the VPN login process, press **Cancel**.

VPN Configuration Fields

The following table shows the VPN Configuration menu options on the Cisco Unified IP Phone.

Table 36: VPN Configuration Menu Options

Option	Description	To change
VPN	Determines whether the VPN Client is enabled or disabled: • Enable: Enables VPN feature. (When enabled, the Disable softkey is shown.) • Disable: Disables VPN feature. (When disabled, the Enable softkey is shown.) Settings do not have to be unlocked to set this option.	1. Choose **Settings** > **Security Configuration** > **VPN Configuration** > **VPN**. 2. Set the VPN option to Enabled or Disabled. If the feature is disabled on Cisco Unified Communications Manager, this option is disabled.
Clear Username and Password	Clears the current username and password.	The option is inactive when the authentication method is certificate only, or if the feature is disabled on Cisco Unified Communications Manager.
Auto Network Detection	Shows whether option is Enabled or Disabled.	Display only. Configured on Cisco Unified Communications Manager.
Concentrator 1 Concentrator 2 Concentrator 3	Allows you to see if concentrator 1, 2, or 3 is Connected or Inactive and view the concentrator details. In the VPN Configuration menu, choose **Concentrator 1**, **Concentrator 2**, or **Concentrator 3**, as desired: • For a configured concentrator, a status of Connected or Inactive is shown on the VPN Configuration screen. • For an unconfigured concentrator, no status is shown, and the Select softkey is inactive.	For configured concentrators, press **Select** to view concentrator details. A new screen appears that has a title of "Concentrator X," where X is the concentrator number. The URL configured for the concentrator is displayed in the window with the link to the URL on the first line and the URL itself on the second line.

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Option	Description	To change
Authentication Mode	Shows the authentication method: • Certificate • Username and Password • Password and Certificate	Display only. Configured on Cisco Unified Communications Manager.
Encryption Method	Shows the encryption method if the VPN tunnel is connected: • AES128-SHA • AES256-SHA • DES-CBC3-SHA If VPN is not connected, no method is shown.	Displays the encryption method only if a VPN tunnel is connected; otherwise, no value displays.

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Features, Templates, Services, and Users

Features, Templates, Services, and Users Overview

After you install Cisco Unified IP Phones in your network, configure their network settings, and add them to Cisco Unified Communications Manager, you must use Cisco Unified Communications Manager Administration to configure telephony features, optionally modify phone templates, set up services, and assign users.

This chapter provides an overview of these configuration and setup procedures. Cisco Unified Communications Manager documentation provides detailed instructions for these procedures.

For suggestions about how to provide users with information about features, and what information to provide, see Internal Support Web Site, on page 253.

For information about setting up phones in non-English environments, see International User Support, on page 267.

Telephony Features Available for Cisco Unified IP Phone

After you add Cisco Unified IP Phones to Cisco Unified Communications Manager, you can add functionality to the phones. The following table includes a list of supported telephony features, many of which you configure by using Cisco Unified Communications Manager Administration. The Configuration reference column lists Cisco Unified Communications Manager documentation that contain configuration procedures and related information.

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For information about using most of these features on the phone, see *Cisco Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G User Guide for Cisco Unified Communications Manager (SCCP and SIP)*.

Note Cisco Unified Communications Manager Administration also provides several service parameters that you can use to configure various telephony functions. For more information about service parameters and the functions that they control, see the *Cisco Unified Communications Manager Administration Guide*.

Table 37: Telephony Features for the Cisco Unified IP Phone

Feature	Description	Configuration reference
Abbreviated Dialing	Allows users to speed dial a phone number by entering an assigned index code (1-99) on the phone keypad. **Note** You can use Abbreviated Dialing while on-hook or off-hook. Users assign index codes from the User Options web pages.	For more information, see: • *Cisco Unified Communications Manager Administration Guide*, "Cisco Unified IP Phone Configuration" chapter • *Cisco Unified Communications Manager System Guide*, "Cisco Unified IP Phones" chapter .

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Feature	Description	Configuration reference
Agent Greeting	Allows an agent or administrator to create and play a prerecorded greeting automatically at the beginning of a call, such as a customer call, before the agent begins the conversation with the caller. An Agent can prerecord a single greeting or multiple ones as needed and create and update them. When a customer calls, both callers hear the prerecorded greeting. The agent can remain on mute until the greeting ends or answer the call over the greeting. All codecs supported for the phone are supported for Agent Greeting calls. To enable Agent Greeting in the Cisco Unified Communications Manager Administration application, choose **Device** > **Phone**, locate IP Phone that you want to configure. Scroll to the Device Information Layout pane and set Builtin Bridge to **On** or **Default**. If Builtin Bridge is set to **Default**, in the Cisco Unified Communications Manager Administration application, choose **System** > **Service Parameter** and select the appropriate Server and Service. Scroll to the Clusterwide Parameters (Device - Phone) pane and set Builtin Bridge Enable to **On**.	For more information, see: • *Cisco Unified Communications Manager Features and Services Guide*, "Barge and Privacy" chapter • *Cisco Unified Communications Manager System Guide*, "Cisco Unified IP Phones" chapter
Anonymous Call Block (SIP phones only)	Allows a user to reject calls from anonymous callers.	For more information, see the *Cisco Unified Communications Manager Administration Guide*, "SIP Profile Configuration" chapter.
Any Call Pickup	Allows users to pick up a redirected call via a CTI application, on any line in their call pickup group, regardless of how the call was routed to the phone.	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "Call Pickup" chapter.
Assisted Directed Call Park	Enables users to park a call by pressing only one button using the Direct Park feature. Administrators must configure a Busy Lamp Field (BLF) Assisted Directed Call Park button. When users press an idle BLF Assisted Directed Call Park button for an active call, the active call is parked at the Direct Park slot associated with the Assisted Directed Call Park button.	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "Assisted Directed Call Park" chapter.

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Feature	Description	Configuration reference
Audible Message Waiting Indicator	A stutter tone from the handset, headset, or speakerphone indicates that a user has one or more new voice messages on a line. **Note** The stutter tone is line-specific. You hear it only when using the line with the waiting messages.	For more information, see: • *Cisco Unified Communications Manager Administration Guide*, "Message Waiting Configuration" chapter • *Cisco Unified Communications Manager System Guide*, "Voice Mail Connectivity to Cisco Unified Communications Manager" chapter
AutoAnswer	Connects incoming calls automatically after a ring or two. AutoAnswer works with either the speakerphone or the headset.	For more information, see the *Cisco Unified Communications Manager Administration Guide*, "Directory Number Configuration" chapter.
Auto Dial	Allows the phone user to choose from matching numbers in the Placed Calls log while dialing. To place the call, the user can choose a number from the Auto Dial list or continue to enter digits manually.	No configuration required.
Auto Call Pickup	Allows a user to use one-touch pickup functionality for call pickup features.	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "Call Pickup" chapter.

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Feature	Description	Configuration reference
Automatic Port Synchronization	When the Cisco Unified Communications Manager administrator uses the Remote Port Configuration feature to set the speed and duplex function of an IP phone remotely, loss of packets can occur if one port is slower than the other. The Automatic Port Synchronization feature synchronizes the ports to the lowest speed among the two ports, which eliminates packet loss. When automatic port synchronization is enabled, it is recommended that both ports be configured for autonegotiate. If one port is enabled for autonegotiate and the other is at a fixed speed, the phone synchronizes to the fixed port speed. **Note** If both the ports are configured for fixed speed, the Automatic Port Synchronization feature is ineffective. **Note** The Remote Port Configuration and Automatic Port Synchronization features are compatible only with IEEE 802.3AF Power of Ethernet (PoE) switches. Switches that support only Cisco Inline Power are not compatible. Enabling this feature on phones that are connected to these types of switches could result in loss of connectivity to Cisco Unified Communications Manager, if the phone is powered by PoE.	To configure the parameter in the Cisco Unified Communications Manager Administration application, choose **Device** > **Phone**, select the appropriate IP phones, and scroll to the Product Specific Configuration Layout pane. To configure the setting on multiple phones simultaneously, enable Automatic Port Synchronization in the Enterprise Phone Configuration (**System** > **Enterprise Phone Configuration**).

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Feature	Description	Configuration reference
Barge (and cBarge)	Allows a user to join a nonprivate call on a shared phone line. Barge features include cBarge and Barge. • cBarge adds a user to a call and converts it into a conference, allowing the user and other parties to access conference features. • Barge adds a user to a call but does not convert the call into a conference. The phones support Barge in two conference modes: • Built-in conference bridge at the target device (the phone that is being barged). This mode uses the **Barge** softkey. • Shared conference bridge. This mode uses the **cBarge** softkey.	For more information, see: • *Cisco Unified Communications Manager Administration Guide*, "Cisco Unified IP Phone Configuration" chapter • *Cisco Unified Communications Manager System Guide*, "Cisco Unified IP Phones" chapter • *Cisco Unified Communications Manager Features and Services Guide*, "Barge and Privacy" chapter
Block External to External Transfer	Prevents users from transferring an external call to another external number.	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "External Call Transfer Restrictions" chapter.
Busy Lamp Field (BLF)	Allows a user to monitor the call state of a directory number associated with a speed-dial button, call log, or directory listing on the phone.	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "Presence" chapter.
Busy Lamp Field (BLF) Pickup	Provides enhancements to BLF speed dial. Allows you to configure a directory number (DN) that a user can monitor for incoming calls. When the DN receives an incoming call, the system alerts the monitoring user, who can then pick up the call.	For more information, see the *Cisco Unified Communications Manager Feature and Services Guide*, "Call Pickup" chapter.
Call Back	Provides users with an audio and visual alert on the phone when a busy or unavailable party becomes available.	For more information, see: • *Cisco Unified Communications Manager System Guide*, "Cisco Unified IP Phones" chapter • *Cisco Unified Communications Manager Features and Services Guide*, "Call Back" chapter

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Feature	Description	Configuration reference
Call Chaperone	Allows an authorized Chaperone user to supervise and record a call. The Call Chaperone user intercepts and answers the call from the calling party, manually creates a conference to the called party, and remains on the conference to supervise and record the call. Cisco Unified IP Phones that have the Call Chaperone feature configured on them have a Record softkey. The Call Chaperone user presses the Record softkey to record a call. For chaperoned calls, an announcement is played or spoken by one of the participants at the start of the call. An announcement alerts later participants that the call is being recorded. The Call Chaperone feature is supported only with External Call Control, which allows Cisco Unified Communications Manager to route audio and video calls to a route server that hosts routing rules.	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "External Call Control" chapter.
Call Display Restrictions	Determines the information that will display for calling or connected lines, depending on the parties who are involved in the call.	For more information, see: • *Cisco Unified Communications Manager Administration Guide*, "Cisco Unified IP Phone Configuration" chapter • *Cisco Unified Communications Manager System Guide*, "Understanding Route Plans" chapter • *Cisco Unified Communications Manager Features and Services Guide*, "Call Display Restrictions" chapter
Call Forward	Allows users to redirect incoming calls to another number. Call Forward options include Call Forward All, Call Forward Busy, Call Forward No Answer, and Call Forward No Coverage.	For more information, see: • *Cisco Unified Communications Manager Administration Guide*, "Directory Number Configuration" chapter • *Cisco Unified Communications Manager System Guide*, "Cisco Unified IP Phones" chapter • User Options Web Pages Options, on page 167

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Feature	Description	Configuration reference
Call Forward All Destination Override	Allows you to override Call Forward All (CFA) in cases where the CFA target places a call to the CFA initiator. This feature allows the CFA target to reach the CFA initiator for important calls. The override works whether the CFA target phone number is internal or external.	For more information, see the *Cisco Unified Communications Manager System Guide*, "Understanding Directory Numbers" chapter.
Call Forward All Loop Breakout	Detects and prevents Call Forward All loops. When a Call Forward All loop is detected, the Call Forward All configuration is ignored and the call rings through.	For more information, see the *Cisco Unified Communications Manager System Guide*, "Cisco Unified IP Phones" chapter.
Call Forward All Loop Prevention	Prevents a user from configuring a Call Forward All destination directly on the phone that creates a Call Forward All loop or that creates a Call Forward All chain with more hops than the existing Forward Maximum Hop Count service parameter allows.	For more information, see the *Cisco Unified Communications Manager System Guide*, "Cisco Unified IP Phones" chapter.
Call Forward Configurable Display	Allows you to specify information that appears on a phone when a call is forwarded. This information can include the caller name, caller number, redirected number, and original dialed number.	For more information, see: • *Cisco Unified Communications Manager Administration Guide* • *Cisco Unified Communications Manager System Guide*, "Cisco Unified IP Phones" chapter
Calling Party Normalization	Globalizes or localizes the incoming calling party number so that the appropriate calling number presentation displays on the phone. Supports the international escape character +.	For more information, see the *Cisco Unified Communications Features and Services Guide*, "Calling Party Normalization" chapter.
Call Park	Allows users to park (temporarily store) a call and then retrieve the call by using another phone in the Cisco Unified Communications Manager system.	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "Call Park and Directed Call Park" chapter.
Call Pickup	Allows users to redirect a call that is ringing on another phone within their pickup group to their phone. You can configure an audio and/or visual alert for the primary line on the phone. This alert notifies the users that a call is ringing in their pickup group.	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "Call Pickup" chapter.

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Feature	Description	Configuration reference
Call Recording	Allows a supervisor to record an active call. The user might hear a recording audible alert tone during a call when it is being recorded. When a call is secured, the security status of the call is displayed as a lock icon on Cisco Unified IP Phones. The connected parties might also hear an audible alert tone that indicates the call is secured and is being recorded. **Note** When an active call is being monitored or recorded, you can receive or place intercom calls; however, if you place an intercom call, the active call will be put on hold, which causes the recording session to terminate and the monitoring session to suspend. To resume the monitoring session, the party whose call is being monitored must resume the call.	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "Monitoring and Recording" chapter.
Call Waiting	Indicates and allows users to answer an incoming call that rings while on another call. Displays incoming call information on the phone screen.	For more information, see the *Cisco Unified Communications System Guide*, "Understanding Directory Numbers" chapter.
Caller ID	Displays caller identification such as a phone number, name, or other descriptive text on the phone screen.	For more information, see: • *Cisco Unified Communications Manager Administration Guide*, "Cisco Unified IP Phone Configuration" chapter • *Cisco Unified Communications Manager System Guide*, "Understanding Route Plans" chapter • *Cisco Unified Communications Manager Features and Services Guide*, "Call Display Restrictions" chapter • *Cisco Unified Communications Manager Administration Guide*, "Directory Number Configuration" chapter

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Feature	Description	Configuration reference
Cisco Extension Mobility	Allows a user temporarily to apply a phone number and user profile settings to a shared Cisco Unified IP Phone by logging into the Extension Mobility service on that phone. Extension Mobility can be useful if users work from a variety of locations within your company or if they share a workspace with coworkers.	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "Cisco Extension Mobility" chapter.
Cisco Extension Mobility Change PIN	Enables a user to change the PIN from a Cisco Unified IP Phone. The PIN can be changed by: • Using the Change Credentials service of a Cisco Unified IP Phone • Using the **ChangePIN** softkey on the Extension Mobility logout screen	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "Cisco Extension Mobility" chapter.
Cisco Extension Mobility Cross Cluster	Enables a user configured in one cluster to log into a Cisco Unified IP Phone in another visiting cluster. Users from a home cluster log into a Cisco Unified IP Phone at a visiting cluster. **Note** Even though the Intercom feature works with Cisco Extension Mobility (EM), it cannot be used with EMCC because the feature must be enabled with a real phone device. The Intercom feature cannot be enabled with EM profiles.	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "Cisco Extension Mobility Cross Cluster" chapter.
Cisco Unified Communications Manager Assistant	Enables managers and their assistants to work together more effectively by providing a call-routing service, enhancements to phone capabilities for the manager, and desktop interfaces that are primarily used by the assistant.	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "Cisco Unified Communications Manager Assistant with Proxy Line Support" and "Cisco Unified Communications Manager Assistant with Shared Line Support" chapters.
Client Matter Codes (CMC) (SCCP phones only)	Enables a user to specify that a call relates to a specific client matter. **Note** If you are using this feature, you must disable Enbloc dialing. See the Enbloc Dialing row in this table for details.	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "Client Matter Codes and Forced Authorization Codes" chapter.

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Feature	Description	Configuration reference
Computer Telephony Integration (CTI) Applications	A computer telephony integration (CTI) route point can designate a virtual device to receive multiple, simultaneous calls for application-controlled redirection.	For more information, see the *Cisco Unified Communications Manager Administration Guide*, "CTI Route Point Configuration" chapter.
Conference	Allows a user to talk simultaneously with multiple parties by calling each participant individually. Conference features include Conference, Join, cBarge, and Meet-Me. Allows a noninitiator in a standard (ad hoc) conference to add or remove participants; also allows any conference participant to join together two standard conferences on the same line.	For more information, see: • *Cisco Unified Communications Manager System Guide*, "Cisco Unified IP Phones" chapter • The service parameter, Advanced Adhoc Conference (disabled by default in Cisco Unified Communications Manager Administration), allows you to enable these features. **Note** Be sure to inform your users whether these features are activated.
Control Default Wallpaper	Administrators can specify the default background image file for the phone in the Cisco Unified Communication Manager administration console administration console. The image is set as the background image only if the administrator has disabled the Enable End User Access to Phone Background Image Setting checkbox.	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "Common Phone Profile Configuration" chapter.
Default Audio Path Support	Allows the user to press Answer or a Line button for, and redirect the call to, the last audio path used, by default.	No configuration required.
Device Invoked Recording	Provides end users with the ability to record their telephone calls via a softkey. In addition administrators may continue to record telephone calls via the CTI User Interface.	For more information, see Enable Device Invoked Recording, on page 165.

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Feature	Description	Configuration reference
Directed Call Park	Allows a user to transfer an active call to an available directed call park number that the user dials or speed dials. A Call Park BLF button indicates whether a directed call park number is occupied and provides speed-dial access to the directed call park number. **Note** If you implement Directed Call Park, avoid configuring the Park softkey. This prevents users from confusing the two Call Park features.	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "Call Park and Directed Call Park" chapter.
Direct Transfer	Allows users to connect two calls to each other (without remaining on the line).	For more information, see the *Cisco Unified Communications Manager System Guide*, "Cisco Unified IP Phones" chapter.
Directed Call Pickup	Allows a user to answer a call that is ringing on a particular directory number.	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "Call Pickup" chapter.
Distinctive Ring	Users can customize how their phone indicates an incoming call and a new voice mail message. Users can customize up to six distinctive rings.	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "Custom Phone Rings" chapter.

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Feature	Description	Configuration reference
Do Not Disturb (DND)	When DND is turned on, either no audible rings occur during the ringing-in state of a call, or no audible or visual notifications of any type occur. You can configure the phone to have a softkey template with a DND softkey or a phone-button template with DND as one of the selected features. The following DND-related parameters are configurable in Cisco Unified Communications Manager Administration: • Do Not Disturb: Choose **Device** > **Phone** > **Phone Configuration**. • DND Option: Choose "Call Reject" (to turn off all audible and visual notifications), or "Ringer Off" (to turn off only the ringer). DND Option appears on both the Common Phone Profile window and the Phone Configuration window (Phone Configuration window value takes precedence). • DND Incoming Call Alert: Choose the type of alert to play, if any, on a phone for incoming calls when DND is active. This parameter is located on both the Common Phone Profile window and the Phone Configuration window (Phone Configuration window value takes precedence). • BLF Status Depicts DND: Enables DND status to override busy/idle state.	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "Do Not Disturb" chapter.
Enbloc Dialing (SCCP phones only)	Enbloc dialing enables SCCP to send all digits of a phone number simultaneously. This feature must be disabled if either Forced Authorization Codes (FAC) or Client Matter Codes (CMC) dialing is being used.	To disable enbloc dialing, in Cisco Unified Communications Manager Administration, go to **Device** > **Phone**. On the Phone Configuration window, in the Product Specific Configuration Layout area, uncheck the Enbloc Dialing check box, click **Apply Config**, and click **Save**.

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Feature	Description	Configuration reference
Enhanced Secure Extension Mobility Cross Cluster	Improves the Secure Extension Mobility Cross Cluster (EMCC) feature by preserving the network and security configurations on the login phone. By so doing, security policies are maintained, network bandwidth is preserved and network failure is avoided within the visiting cluster (VC).	For more information, see *Cisco Unified Communications Manager Features and Services Guide*.
Fast Dial Service	Allows a user to enter a Fast Dial code to place a call. Fast Dial codes can be assigned to phone numbers or Personal Address Book entries. (See Services in this table.)	For more information, see: • *Cisco Unified Communications Manager Administration Guide*, "Cisco Unified IP Phone Configuration" chapter • *Cisco Unified Communications Manager System Guide*, "Cisco Unified IP Phone Services" chapter
Forced Authorization Codes (FAC) (SCCP phones only)	Controls the types of calls that certain users can place. **Note** If you are using this feature, you must disable Enbloc dialing. See Enbloc Dialing in this table for details.	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "Client Matter Codes and Forced Authorization Codes" chapter.
Group Call Pickup	Allows a user to answer a call that is ringing on a directory number in another group.	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "Call Pickup" chapter.

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Feature	Description	Configuration reference
Hardware Updates	Improves the compatibility of internal phone components. Phone models manufactured with the following hardware versions must run Firmware Release 9.3(1) SR1 or later. The phone firmware does not allow the phone to be downgraded to releases earlier than Release 9.3(1) SR1. • Cisco Unified Wireless IP Phone 7945G with hardware versions 13.0 and higher. • Cisco Unified Wireless IP Phone 7965G with hardware versions 13.0 and higher. • Cisco Unified Wireless IP Phone 7975G with hardware versions 12.0 and higher. The hardware version is found on the Device Information web page for the phone.	No configuration required
Headset Sidetone Control and Send Gain	Allows an administrator to set the sidetone level and send gain level of a wired headset. **Note** The sidetone and send gain levels are applicable only to Cisco Unified IP Phones 7945, 7965, and 7975. Available sidetone levels are: • Off • Lowest • Default • Low • Mid • Mid-High • High • Higher • Highest Available send gain levels are: • Lowest • Lower • Default • High	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "Cisco Unified IP Phone Configuration" chapter.

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Feature	Description	Configuration reference
Help system	Provides a comprehensive set of topics that appear on the phone screen.	No configuration required.
Hold/Resume	Allows the user to move a connected call between an active state and a held state.	Requires no configuration, unless you want to use Music on Hold. See the "Music on Hold" entry in this table for more information. Also, see the "Hold Reversion" entry in this table.
Hold Reversion	Limits the amount of time that a call can be on hold before reverting back to the phone that put the call on hold and alerting the user. Reverting calls are distinguished from incoming calls by a single ring (or beep, depending on the new call indicator setting for the line). This notification repeats at intervals if not resumed. A call that triggers Hold Reversion also displays an animated icon in the call bubble and a brief message on the status line. You can configure call focus priority to favor incoming or reverting calls.	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "Hold Reversion" chapter.
Hold Status	Enables phones with a shared line to distinguish between the local and remote lines that placed a call on hold.	No configuration required.
Hunt Group Display	Provides load sharing for calls to a main directory number. A hunt group contains a series of directory numbers that can answer the incoming calls. When an incoming call is offered to a directory number that is part of the hunt group, this feature displays the main directory number in addition to the calling party.	For more information, see: • *Cisco Unified Communications Manager Administration Guide*, "Hunt Group Configuration" chapter • *Cisco Unified Communications Manager System Guide*, "Understanding Route Plans" chapter • *Cisco Unified Communications Manager Administration Guide*, "CTI Route Point Configuration" chapter
Immediate Divert	Allows a user to transfer a ringing, connected, or held call directly to a voice-messaging system. When a call is diverted, the line becomes available to make or receive new calls.	For more information, see the *Cisco Unified Communications Manager System Guide*, "Cisco Unified IP Phones" chapter.

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Feature	Description	Configuration reference
Immediate Divert—Enhanced	Allows users to transfer incoming calls directly to their voice messaging system or to the voice messaging system of the original called party.	For more information, see the *Cisco Unified Communications Manager System Guide*, "Cisco Unified IP Phones" chapter.
Intelligent Session Control	Reroutes a direct call to a user mobile phone to the enterprise number (desk phone). For an incoming call to a remote destination (mobile phone), only the remote destination rings; the desk phone does not ring. When the call is answered on the mobile phone, the desk phone displays a Remote in Use message. During these calls, a user can use the various features of the mobile phone.	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "Cisco Unified Mobility" chapter.
Intercom	Allows users to place and receive intercom calls using programmable phone buttons. You can configure intercom line buttons to: • Directly dial a specific intercom extension. • Initiate an intercom call and then prompt the user to enter a valid intercom number. **Note** If a user logs into the same phone on a daily basis using their Cisco Extension Mobility profile, assign the phone button template that contains intercom information to their profile, and assign the phone as the default intercom device for the intercom line.	For more information, see the *Cisco Unified Communications Manager Feature and Services Guide*, "Intercom" chapter.
Join/Select	Creates a conference by joining together existing calls that are on a single phone line.	For more information, see the *Cisco Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G User Guide for Cisco Unified Communications Manager (SCCP and SIP)*, "Calling Features" chapter, "Making Conference Calls" section.
Join Across Lines/Select	Allows users to apply the Join feature to calls that are on multiple phone lines.	For more information, see: • Softkey Templates, on page 164 • *Cisco Unified Communications Manager System Guide*, "Cisco Unified IP Phones" chapter

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Feature	Description	Configuration reference
Line Select	If this feature is disabled (default), then the ringing line is selected. When enabled, the primary line is picked up even if a call is ringing on another line. The user must manually select the other line. **Note** This feature can also be enabled or disabled for Extension Mobility.	For more information, see the "Always use prime line" option in the following chapters of *Cisco Unified Communications Manager Administration Guide*: • Device Profile Configuration • Common Phone Profile Configuration • Cisco Unified IP Phone Configuration
Line Select for Voice Messages	When disabled (default), pressing the Messages button selects the line that has a voice message. If more than one line has voice mail, then the first available line is selected. When enabled, the primary line is always used to retrieve voice messages. **Note** This feature can also be enabled or disabled for Extension Mobility.	For more information, see the "Always use prime line option for voice message" in the following chapters of *Cisco Unified Communications Manager Administration Guide*: • Device Profile Configuration • Common Phone Profile Configuration • Cisco Unified IP Phone Configuration
Log Out of Hunt Groups	Allows users to log out of a hunt group and temporarily block calls from ringing their phone when they are not available to take calls. Logging out of hunt groups does not prevent non-hunt group calls from ringing their phone.	For more information, see: • Softkey Templates, on page 164 • *Cisco Unified Communications Manager System Guide*, "Understanding Route Plans" chapter
Malicious Call Identification (MCID)	Allows users to notify the system administrator about suspicious calls that are received.	For more information, see: • *Cisco Unified Communications Manager System Guide*, "Cisco Unified IP Phones" chapter • *Cisco Unified Communications Manager Features and Services Guide*, "Malicious Call Identification" chapter
Meet Me Conference	Allows a user to host a Meet Me conference in which other participants call a predetermined number at a scheduled time.	For more information, see the *Cisco Unified Communications Manager Administration Guide*, "Meet-Me Number/Pattern Configuration" chapter.

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Feature	Description	Configuration reference
Message Waiting	Defines directory numbers for message-waiting on and message-waiting off indicator. A directly connected voice-messaging system uses the specified directory number to set or to clear a message-waiting indication for a particular Cisco Unified IP Phone.	For more information, see: • *Cisco Unified Communications Manager Administration Guide*, "Message Waiting Configuration" chapter • *Cisco Unified Communications Manager System Guide*, "Voice Mail Connectivity to Cisco Unified Communications Manager" chapter
Message Waiting Indicator	A light on the handset that indicates that a user has one or more new voice messages.	For more information, see: • *Cisco Unified Communications Manager Administration Guide*, "Message Waiting Configuration" chapter • *Cisco Unified Communications Manager System Guide*, "Voice Mail Connectivity to Cisco Unified Communications Manager" chapter
Missed Call Logging	Allows a user to specify whether missed calls will be logged in the missed calls directory for a given line appearance.	For more information, see the *Cisco Unified Communications Manager Administration Guide*, "Directory Number Configuration" chapter.
Mobile Connect	Enables users to manage business calls using a single phone number and pick up in-progress calls on the desktop phone and mobile phone. Users can restrict the group of callers according to phone number and time of day.	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "Cisco Unified Mobility" chapter.
Mobile Voice Access	Extends Mobile Connect capabilities by allowing users to access an interactive voice response (IVR) system to originate a call from a remote device such as a mobile phone.	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "Cisco Unified Mobility" chapter.
Multilevel Precedence and Preemption (MLPP) (SCCP phones only)	Provides a method of prioritizing calls within your phone system. Use this feature when users work in an environment where they need to make and receive urgent or critical calls.	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "Multilevel Precedence and Preemption" chapter.
Multiple calls per line appearance	Each line can support multiple calls. Only one call can be active at any time; other calls are automatically placed on hold.	For more information, see the *Cisco Unified Communications Manager Administration Guide*, "Directory Number Configuration" chapter.

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Feature	Description	Configuration reference
Music On Hold	Plays music while callers are on hold.	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "Music On Hold" chapter.
Mute	Mutes the microphone from the handset or headset.	No configuration required.
Onhook Call Transfer	Allows a user to press a single Transfer softkey and then go onhook to complete a call transfer.	For more information, see the *Cisco Unified Communications Manager System Guide*, "Cisco Unified IP Phones" chapter.
Onhook Predialing	Allows a user to dial a number without going off hook. The user can then either pick up the handset or press the Dial softkey.	For more information, see the *Cisco Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G User Guide for Cisco Unified Communications Manager (SCCP and SIP)*, "Basic Call Handling" chapter.
Other Group Pickup	Allows a user to answer a call ringing on a phone in another group that is associated with the user group.	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "Call Pickup" chapter.
Phone Screen Illumination Disabling (Cisco Unified IP Phone 7965G and 7945G only)	Allows user to disable phone screen illumination on a phone, which would override other rules that determine when the phone screen gets illuminated. To provide this feature, you must implement the Display URI, which includes configuring the length of time that illumination remains disabled.	For more information, see the *Cisco Unified IP Phone Service Application Development Notes* at the following location: http://www.cisco.com/en/US/docs/voice_ip_comm/cuipph/all_models/xsi/5_0/english/programming/guide/5_0/xsi.html
Phone Secure Web Access	Cisco Unified IP Phones can now securely access the web with the use of a phone trust store called "phone-trust."	For more information, see the *Cisco Unified Communications Manager Security Guide*, "Security Overview" chapter.
Plus Dialing	Allows the user to dial E.164 numbers prefixed with a "+" sign. To dial the + sign, the user needs to press and hold the "*" key for at least 1 second. This applies to dialing the first digit for an on-hook or off-hook call only.	No configuration required
Presence-Enabled directories	Allows a user to monitor the call state of another directory number (DN) listed in call logs, speed dials, and corporate directories. The Busy Lamp Field (BLF) for the DN displays the call state.	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "Presence" chapter.

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Feature	Description	Configuration reference
Private Line Automated Ringdown (PLAR)	The Cisco Unified Communications Manager administrator can configure a phone number that the Cisco Unified IP Phone dials as soon as the handset goes off hook. This can be useful for phones that are designated for calling emergency or "hotline" numbers.	For more information on SIP, see the *Cisco Unified Communications Manager System Guide*, "SIP Dial Rules Configuration" chapter. For more information on SCCP, see the *Cisco Unified Communications Manager Administration Guide*, "Directory Number Configuration" chapter, "Configuring PLAR" section.
Privacy	Prevents users who share a line from adding themselves to a call and from viewing information on their phone screens about the call of the other user.	For more information, see: • *Cisco Unified Communications Manager Administration Guide*, "Cisco Unified IP Phone Configuration" chapter • *Cisco Unified Communications Manager System Guide*, "Cisco Unified IP Phones" chapter • *Cisco Unified Communications Manager Features and Services Guide*, "Barge and Privacy" chapter
Programmable Line Keys	The administrator can assign features to line buttons. Softkeys normally control these features; for example, New Call, Call Back, End Call, and Forward All. When the administrator configures these features on the line buttons, they always remain visible, so users can have a "hard" New Call key.	For more information, see: • *Cisco Unified Communications Manager System Guide*, "Cisco Unified IP Phone" chapter • *Cisco Unified Communications Manager Administration Guide*, "Phone Button Template Configuration" chapter
Protected Calling	Provides a secure (encrypted) connection between two phones. A security tone is played at the beginning of the call to indicate that both phones are protected. Some features, such as conference calling, shared lines, Extension Mobility, and Join Across Lines are not available when protected calling is configured. Protected calls are not authenticated.	For more information about security, see Supported Security Features, on page 15. For additional information, see the *Cisco Unified Communications Manager Security Guide*, "Configuring a Phone Security Profile" chapter.

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Feature	Description	Configuration reference
Quality Reporting Tool (QRT)	Allows users to use the QRT softkey on a phone to submit information about problem phone calls. QRT can be configured for either of two user modes, depending upon the amount of user interaction desired with QRT.	For more information, see: • *Cisco Unified Communications Manager System Guide*, "Cisco Unified IP Phones" chapter • *Cisco Unified Communications Manager Features and Services Guide*, "Quality Report Tool" chapter
Redial	Allows users to call the most recently dialed phone number by pressing a softkey.	No configuration required.
Remote Port Configuration	Allows the administrator to configure the speed and duplex function of the phone Ethernet ports remotely by using Cisco Unified Communications Manager Administration. This enhances the performance for large deployments with specific port settings. **Note** If the ports are configured for Remote Port Configuration in Cisco Unified Communications Manager, the data cannot be changed on the phone.	To configure the parameter in the Cisco Unified Communications Manager Administration application, choose **Device** > **Phone**, select the appropriate IP phones, and scroll to the Product Specific Configuration Layout pane (Switch Port Remote Configuration or PC Port Remote Configuration). To configure the setting on multiple phones simultaneously, configure the Remote Port Configuration in the Enterprise Phone Configuration (**System** > **Enterprise Phone Configuration**).
Ring Setting	Identifies ring type used for a line when a phone has another active call.	For more information, see: • *Cisco Unified Communications Manager Administration Guide*, "Directory Number Configuration" chapter • Custom Phone Ring Creation, on page 176

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Feature	Description	Configuration reference
Ringer Volume Control	The Ringer Volume Control feature enables the system administrator to control the minimum ringer-volume setting and adjust the minimum volume level for the ringer. Individual users cannot make the changes to the minimum ringer-volume setting. When a user presses the minus (−) side of the Volume button to reduce the ringer volume in an on-hook state, the volume decreases only to the configured minimum volume-level setting. When the minimum volume level is reached, no status message appears. After a system restart, the minimum ringer volume resets to the minimum ringer-volume setting that is received from the configuration file. If the system administrator configured a new minimum volume level since the last startup and the end user had previously set the minimum ringer volume lower, the ringer volume will be set to the minimum value from the configuration file, not to the user setting. This feature does not apply to handset, speaker, and headset volumes during calls.	To configure the parameter in the Cisco Unified Communications Manager Administration application, choose **Device** > **Phone**, select the appropriate IP phones, and scroll to the Product Specific Configuration Layout pane.
RTCP Hold For SIP	The RTCP Hold For SIP feature ensures that held calls are not dropped by the gateway. The gateway checks the status of the RTCP port to determine if a call is active or not. By keeping the phone port open, the gateway will not end held calls. Enable the RTCP option on the Cisco Unified Communications Manager to support this feature.	No configuration required.

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Feature	Description	Configuration reference
Secure and Nonsecure Indication Tone		No configuration required.

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Feature	Description	Configuration reference

	When a phone is configured as secure (encrypted and trusted) in Cisco Unified Communications Manager, it can be given a protected status. Afterward, the protected phone can be configured to play an indication tone at the beginning of a call:
	
	• Protected Device: To change the status of a secure phone to protected, check the "Protected Device" check box in Cisco Unified Communications Manager Administration (**Device** > **Phone** > **Phone Configuration**).
	
	• Play Secure Indication Tone: To enable the protected phone to play a secure or nonsecure indication tone, set the "Play Secure Indication Tone" to True. (The default is False.) You set this option in Cisco Unified Communications Manager Administration (**System** > **Service Parameters**). Select the server and then the Cisco CallManager service. In the Service Parameter Configuration window, select the option in the Feature - Secure Tone area. (The default is False.)
	
	Only protected phones hear these secure or nonsecure indication tones. (Nonprotected phones never hear tones.) If the overall call status changes during the call, the indication tone changes accordingly. At that time, the protected phone plays the appropriate tone.
	
	A protected phone plays a tone or not under these circumstances:
	
	• When the option to play the tone is enabled Play Secure Indication Tone option is enabled (True):
	
	    • When end-to-end secure media is established and the call status is secure, the phone plays the secure indication tone (three long beeps with pauses).
	
	    • When end-to-end nonsecure media is established and the call status is nonsecure, the phone plays the nonsecure	

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Feature	Description	Configuration reference
	indication tone (six short beeps with brief pauses). • If the Play Secure Indication Tone option is disabled, no tone plays.	
Secure Extension Mobility Cross Cluster	Secure Extension Mobility Cross Cluster (EMCC) feature enables a user configured in one cluster to log into a Cisco Unified IP Phone in another cluster. The users from a home cluster log into a Cisco Unified IP Phone at a visiting cluster. The visiting cluster fails to log into home cluster in secure mode.	For more information, see *Cisco Unified Communications Manager Features and Services Guide*, "Cisco Extension Mobility Cross Cluster" chapter.
Secure Conference	Allows secure phones to place conference calls by using a secured conference bridge. As new participants are added by using Confrn, Join, cBarge, Barge softkeys or Meet-Me conferencing, the secure call icon displays as long as all participants use secure phones. The Conference List displays the security level of each conference participant. Initiators can remove nonsecure participants from the Conference List. Noninitiators can add or remove conference participants if the Advance Adhoc Conference parameter is set.	For more information about security, see Supported Security Features, on page 15. For more information, see: • *Cisco Unified Communications Manager System Guide*, "Conference Bridges" chapter • *Cisco Unified Communications Manager Administration Guide*, "Conference Bridge Configuration" chapter • *Cisco Unified Communications Manager Security Guide*
Security Hardening	Improves the phone firmware security.	No configuration required.
Services	Allows you to use the Cisco Unified IP Phone Services Configuration menu in Cisco Unified Communications Manager Administration to define and maintain the list of phone services to which users can subscribe.	For more information, see: • *Cisco Unified Communications Manager Administration Guide*, "Cisco Unified IP Phone Configuration" chapter • *Cisco Unified Communications Manager System Guide*, "Cisco Unified IP Phone Services" chapter

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Feature	Description	Configuration reference
Services URL Button	Allows users to access services from a programmable button rather than by using the Services menu on a phone.	For more information, see: • *Cisco Unified Communications Manager Administration Guide*, "Cisco Unified IP Phone Configuration" chapter • *Cisco Unified Communications Manager System Guide*, "Cisco Unified IP Phone Services" chapter
Session Handoff	Allows users to switch calls from a mobile phone to Cisco Unified devices that share the same line. Handsets on all the devices on the shared line then flash simultaneously. After a user answers the call from one of the Cisco Unified devices, the other Cisco Unified devices that share the same line display a Remote in Use message. However, if the call fails to switch from the mobile phone, the mobile phone might display a Cannot Move Conversation message.	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "Cisco Unified Mobility" and "Cisco Unified Mobility Advantage and Cisco Unified Mobile Communicator Integration" chapters.
Shared Line	Allows a user to have several phones that share the same phone number or allows a user to share a phone number with a coworker.	For more information, see the *Cisco Unified Communications Manager System Guide*, "Directory Number Configuration" chapter.

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Feature	Description	Configuration reference
Silent Monitoring	Allows a supervisor to silently monitor an active call. The supervisor cannot be heard by either party on the call. The user might hear a monitoring audible alert tone during a call when it is being monitored. When a call is secured, the security status of the call is displayed as a lock icon on Cisco Unified IP Phones. The connected parties might also hear an audible alert tone that indicates the call is secured and is being monitored. **Note** When an active call is being monitored or recorded, you can receive or place intercom calls; however, if you place an intercom call, the active call will be put on hold, which causes the recording session to terminate and the monitoring session to suspend. To resume the monitoring session, the party whose call is being monitored must resume the call.	For more information, see the *Cisco Unified Communications Manager Features and Services Guide*, "Monitoring and Recording" chapter.
Single Button Barge	Allows users to press a line key to Barge or cBarge into a remote-in-use call on a shared line.	For more information, see: • *Cisco Unified Communications Manager Administration Guide*, "Device Pool Configuration" chapter • *Cisco Unified Communications Manager System Guide*, "Cisco Unified IP Phones" chapter • *Cisco Unified Communications Manager Features and Services Guide*, "Barge and Privacy" chapter
SIP Phone No Alert Name	Identifies the original source of a transferred call. The call appears on the call display as an Alert Call followed by the original caller telephone number.	No configuration required.

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Feature	Description	Configuration reference
Speed Dialing	Dials a specified number that has been previously stored.	For more information, see: • *Cisco Unified Communications Manager Administration Guide*, "Cisco Unified IP Phone Configuration" chapter • *Cisco Unified Communications Manager System Guide*, "Cisco Unified IP Phones" chapter
SSH Access	Allows the administrator to enable or disable the SSH Access setting by using the Cisco Unified Communications Manager Administration application. This option indicates whether the phone supports the SSH Access. Settings include: • Enabled • Disabled (default) When enabled, the feature allows the phone to accept the SSH connections. Disabling the SSH server functionality of the phone blocks the SSH access to the phone.	To configure the parameter in the Cisco Unified Communications Manager Administration application, choose **Device** > **Phone**, select the appropriate IP Phones, scroll to the **Product Specific Configuration Layout** area and select **Enable** from the **SSH Access** drop-down list box. If you set the same parameter in the Common Phone Profile window (**Device** > **Device Settings** > **Common Phone Profile**), the precedence order of the settings is: 1. Phone Configuration window settings 2. Common Phone Profile window settings
Time-of-Day Routing	Restricts access to specified telephony features by time period.	For more information, see: • *Cisco Unified Communications Manager Administration Guide*, "Time Period Configuration" chapter • *Cisco Unified Communications Manager System Guide*, "Time-of-Day Routing" chapter
Time Zone Update	Updates the Cisco Unified IP Phone with time zone changes.	For more information, see the *Cisco Unified Communications Manager Administration Guide*, "Date/Time Group Configuration" chapter.

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Feature	Description	Configuration reference
Touchscreen Illumination Disabling (Cisco Unified IP Phone 7975G, 7971G-GE, and 7970G only)	Allows user to disable touchscreen illumination on a phone, which would override other rules that determine when the touchscreen gets illuminated. To provide this feature, you must implement the Display URI, which includes configuring the length of time that illumination remains disabled.	For more information, see the *Cisco Unified IP Phone Service Application Development Notes* at the following location: http://www.cisco.com/en/US/products/sw/voicesw/ps556/products_programming_reference_guides_list.html
UCR 2008	The IP phones that use SCCP support Unified Capabilities Requirements (UCR) 2008 by providing the following functions: • Support for Federal Information Processing Standard (FIPS) 104-2 • Support for TVS IPv6 • Support for 80-bit SRTCP Tagging As an IP Phone administrator, some of these functions require you to set up specific parameters in Cisco Unified Communications Manager Administration.	For more information, see UCR 2008 Setup, on page 172.
Video Mode (SCCP phones only)	Allows a user to select the video display mode for viewing a video conference, depending on the modes configured in the system.	For more information, see: • *Cisco Unified Communications Manager Administration Guide*, "Conference Bridge Configuration" chapter • *Cisco Unified Communications Manager System Guide*, "Understanding Video Telephony" chapter
Video Support (SCCP phones only)	Enables video support on the phone.	For more information, see: • *Cisco Unified Communications Manager Administration Guide*, "Conference Bridge Configuration" chapter • *Cisco Unified Communications Manager System Guide*, "Understanding Video Telephony" chapter • *Cisco VT Advantage Administration Guide*, "Overview of Cisco VT Advantage" chapter

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Feature	Description	Configuration reference
Voice Messaging System	Enables callers to leave messages if calls are unanswered.	For more information, see: • *Cisco Unified Communications Manager Administration Guide*, "Cisco Voice-Mail Port Configuration" chapter • *Cisco Unified Communications Manager System Guide*, "Voice Mail Connectivity to Cisco Unified Communications Manager" chapter
VPN Client (Cisco Unified IP Phone 7945G, 7965G, and 7975G only)	Provides a VPN connection using SSL on Cisco Unified IP Phone 7945G, 7965G, and 7975G for situations in which a phone is located outside a trusted network or when network traffic between the phone and Cisco Unified Communications Manager must cross untrusted networks.	For more information, see *Cisco Unified Communications Manager Security Guide*, "Virtual Private Network Configurations" chapter.

Product-Specific Parameters

Cisco Unified Communications Manager Administration allows you to set some product specific configuration parameters for Cisco Unified IP Phones. The following table lists the configuration windows and path in Cisco Unified Communications Manager Administration.

Table 38: Configuration Windows for Cisco Unified IP Phone

Configuration window	Path
Enterprise Phone Configuration window	**System** > **Enterprise Phone Configuration**
Common Phone Profile window	**Device** > **Device Settings** > **Common Phone Profile**
Phone Configuration window	**Device** > **Phone**; Product Specific Configuration area of window

You can set the following parameters in any of the three configuration windows:

• Settings Access
• Video Capabilities
• Web Access
• Load Server
• RTCP
• Peer Firmware Sharing
• Cisco Discovery Protocol (CDP): Switch Port
• Cisco Discovery Protocol (CDP): PC Port
• Link Layer Discovery Protocol - Media Endpoint Discover (LLDP-MED): Switch Port

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- Link Layer Discovery Protocol (LLDP): PC Port
- IPv6 Load Server
- 802.1x Authentication
- Switch Port Remote Configuration
- PC Port Remote Configuration
- Automatic Port Synchronization
- SSH Access

When you set the parameters, select the Override Common Settings check box for each setting you wish to update. If you do not check this box, the corresponding parameter setting does not take effect. If you set the parameters at the three configuration windows, the setting takes precedence in the following order:

- Phone Configuration window (highest precedence)
- Common Phone Profile Configuration window
- Enterprise Phone Configuration window (lowest precedence)

Corporate and Personal Directories

The **Directories** button on the Cisco Unified IP Phones gives users access to several directories. These directories can include:

- Corporate Directory: Allows a user to look up phone numbers for coworkers.

  To support this feature, you must configure corporate directories.

- Personal Directory: Allows a user to store a set of personal numbers.

  To support this feature, you must provide the user with software to configure the personal directory.

Corporate Directory Setup

Cisco Unified Communications Manager uses a Lightweight Directory Access Protocol (LDAP) directory to store authentication and authorization information about users of Cisco Unified Communications Manager applications that interface with Cisco Unified Communications Manager. Authentication establishes a user right to access the system. Authorization identifies the telephony resources that a user is permitted to use, such as a specific telephone extension.

For more information on directories, see the *Cisco Unified Communications Manager System Guide*, "Understanding Directory" chapter.

To install and set up these features, see the *Cisco Unified Communications Manager Administration Guide*, "LDAP System Configuration", "LDAP Directory Configuration", and "LDAP Authentication Configuration" chapters.

After completing the LDAP directory configuration, users can use the Corporate Directory service on their Cisco Unified IP Phone to look up users in the corporate directory.

Personal Directory Setup

Personal Directory consists of the following features:

- Personal Address Book (PAB)

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• Personal Fast Dials (Fast Dials)

• Address Book Synchronization Tool (TABSync)

Users can access Personal Directory features by these methods:

• From a web browser: Users can access the PAB and Fast Dials features from the Cisco Unified Communications Manager User Options web pages.

• From the Cisco Unified IP Phone: Users can choose **Directories** > **Personal Directory** to access the PAB and Fast Dials features from their phones.

• From a Microsoft Windows application: Users can use the TABSync tool to synchronize their PABs with Microsoft Windows Address Book (WAB). Customers who want to use the Microsoft Outlook Address Book (OAB) should begin by importing the data from the OAB into the Windows Address Book (WAB). TabSync can then be used to synchronize the WAB with Personal Directory.

To ensure that Cisco Unified IP Phone Address Book Synchronizer users have access only to end user data that pertains to them, activate the Cisco UXL Web Service in Cisco Unified Serviceability.

To configure Personal Directory from a web browser, users must access their User Options web pages. You must provide users with a URL and login information.

To synchronize with Microsoft Outlook, users must install the TABSync utility, which you provide. For more information, see Obtain Cisco Unified IP Phone Address Book Synchronizer, on page 256 and Cisco Unified IP Phone Address Book Synchronizer Deployment, on page 256.

Phone Button Templates

Phone button templates let you assign speed dials and call-handling features to programmable line buttons. Call-handling features that can be assigned to buttons include call forward, hold, and conference.

Ideally, you modify templates before registering phones on the network. In this way, you can access customized phone button template options from Cisco Unified Communications Manager during registration.

To modify a phone button template, choose **Device** > **Device Settings** > **Phone Button Template** from Cisco Unified Communications Manager Administration. To assign a phone button template to a phone, use the Phone Button Template field in the Cisco Unified Communications Manager Administration Phone Configuration window. For more information, see the *Cisco Unified Communications Manager Administration Guide* and the *Cisco Unified Communications Manager System Guide*.

Cisco Unified IP Phone 7975G, 7971G-GE, and 7970G Phone Button Templates

The default template that ships with the Cisco Unified IP Phone 7975G, 7971G-GE, and 7970G uses buttons 1 and 2 for lines and assigns buttons 3 through 8 as speed dial.

The recommended standard Cisco Unified IP Phone 7970 Series template uses buttons 1 and 2 for lines, assigns buttons 3 through 5 as speed dial, and buttons 6 through 8 as Hold, Conference, and Transfer, respectively.

To avoid confusion for users, do not assign a feature to a button and a softkey at the same time.

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Cisco Unified IP Phone 7965G Phone Button Templates

The default Cisco Unified IP Phone 7965G template that ships with the phone uses buttons 1 and 2 for lines and assigns buttons 3 through 6 as speed dial.

The recommended standard Cisco Unified IP Phone 7965G template uses buttons 1 and 2 for lines, assigns button 3 as speed dial, and buttons 4 through 6 as Hold, Conference, and Transfer, respectively.

To avoid confusion for users, do not assign a feature to a button and a softkey at the same time.

Cisco Unified IP Phone 7945G Phone Button Templates

The default Cisco Unified IP Phone 7945G template that ships with the phone uses buttons 1 and 2 for lines.

The recommended standard Cisco Unified IP Phone 7945G template uses buttons 1 and 2 for lines.

To avoid confusion for users, do not assign a feature to a button and a softkey at the same time.

Phone Button Template for Personal Address Book or Fast Dials

To avoid confusion for users, do not assign a feature to a button and a softkey at the same time.

For additional information on IP phone services, see the *Cisco Unified Communications Manager Administration Guide*, "IP Phone Services Configuration" chapter. For more information on configuring line buttons, see the *Cisco Unified Communications Manager Administration Guide*, "Cisco Unified IP Phone Configuration" chapter.

Related Topics

Set Up PAB or Fast Dial in IP Phone Services

To configure PAB or Fast Dial as an IP phone service, perform these steps:

Procedure

Step 1   Choose **Device** > **Device Settings** > **Phone Services**.

The Find and List IP Phone Services window displays.

Step 2   Click **Add New**. The IP Phone Services Configuration window displays.

Step 3   Enter the following settings:

- Service Name and ASCII Service Name: Enter **Personal Address Book**.

- Service Description: Enter an optional description of the service.

- Service URL

  For PAB, enter the following URL:

  http://<*Unified CM-server-name*>:8080/ccmpd/login.do?name=#DEVICENAME#&service=pab

  For Fast Dial, enter the following URL:

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> **http://<*Unified-CM-server-name*>:8080/ccmpd/login.do?name=#DEVICENAME#&service=fd**

- Secure Service URL

  For PAB, enter the following URL:

  https://<*Unified CM-server-name*>:8443/ccmpd/login.do?name=#DEVICENAME#&service=pab

  For Fast Dial, enter the following URL:

  https://<*Unified-CM-server-name*>:8443/ccmpd/login.do?name=#DEVICENAME#&service=fd

- Service Category: Select **XML Service**.

- Service Type: Select **Directories**.

- Enable: Select the check box.

Step 4   Click **Save**.

You can add, update, or delete service parameters as needed as described in "IP Phone Service Parameter" chapter in the *Cisco Unified Communications Manager Administration Guide*.

Note   If you change the service URL, remove an IP phone service parameter, or change the name of a phone service parameter for a phone service to which users are subscribed, you must click **Update Subscriptions** to update all currently subscribed users with the changes, or users must resubscribe to the service to rebuild the correct URL.

Change Phone Button Template for PAB or Fast Dial

To modify a phone button template for PAB or Fast Dial, perform these steps:

Procedure

Step 1   From Cisco Unified Communications Manager Administration, choose **Device** > **Device Settings** > **Phone Button Template**.

Step 2   Click **Find**.

Step 3   Select the phone model.

Step 4   Click **Copy**, enter a name for the new template, and then click **Save**.

The Phone Button Template Configuration window opens.

Step 5   Identify the button you would like to assign, and select **Service URL** from the Features drop-down list box associated with the line.

Step 6   Click **Save** to create a new phone button template using the service URL.

Step 7   Choose **Device** > **Phone** and open the Phone Configuration window for the phone.

Step 8   Select the new phone button template from the Phone Button Template drop-down list box.

Step 9   Click **Save** to store the change and then click **Apply Config** to implement the change.

The phone user can now access the User Options pages and associate the service with a button on the phone.

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For additional information on IP phone services, see the *Cisco Unified Communications Manager Administration Guide*, "IP Phone Services Configuration" chapter. For more information on configuring line buttons, see the *Cisco Unified Communications Manager Administration Guide*, "Cisco Unified IP Phone Configuration" chapter, "Configuring Speed-Dial Buttons" section.

Softkey Templates

Using Cisco Unified Communications Manager Administration, you can manage softkeys associated with applications that are supported by the Cisco Unified IP Phone. Cisco Unified Communications Manager supports two types of softkey templates: standard and nonstandard. Standard softkey templates include Standard User, Standard Feature, Standard Assistant, Standard Manager, and Standard Shared Mode Manager An application that supports softkeys can have one or more standard softkey templates associated with it. You can modify a standard softkey template by making a copy of it, giving it a new name, and making updates to that copied softkey template. You can also modify a nonstandard softkey template.

To configure softkey templates, choose **Device** > **Device Settings** > **Softkey Template** from Cisco Unified Communications Manager Administration. To assign a softkey template to a phone, use the Softkey Template field in the Cisco Unified Communications Manager Administration Phone Configuration window. For more information, see the *Cisco Unified Communications Manager Administration Guide* and the *Cisco Unified Communications Manager System Guide*.

Note   The Cisco Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G supports all the softkeys that are configurable in Cisco Unified Communications Manager Administration.

Services Setup

The **Services** button on the Cisco Unified IP Phone gives users access to Cisco Unified IP Phone Services. You can also assign services to the programmable buttons on the phone (see the Cisco Unified IP Phone User Guide for more information). These services comprise XML applications that enable the display of interactive content with text and graphics on the phone. Examples of services include local movie times, stock quotes, and weather reports.

Before a user can access any service:

- You must use Cisco Unified Communications Manager Administration to configure available services.

- The user must subscribe to services by using the Cisco Unified IP Phone User Options web pages. This web-based application provides a graphical user interface (GUI) for limited, end user configuration of IP Phone applications.

Before you set up services, gather the URLs for the sites that you want to set up and verify that users can access those sites from your corporate IP telephony network.

To set up these services, choose **Device** > **Device Settings** > **Phone Services** from Cisco Unified Communications Manager Administration. See the *Cisco Unified Communications Manager Administration Guide* and the *Cisco Unified Communications Manager System Guide* for more information.

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After you configure these services, verify that your users have access to the Cisco Unified CM User Options web pages, from which they can select and subscribe to configured services. See Phone Features User Subscription and Setup, on page 255 for a summary of the information that you must provide to end users.

Cisco Unified IP phones can support up to four HTTP/HTTPS active client connections and up to four HTTP/HTTPS active server connections at one time. A few examples of HTTP/HTTPS services include:

- Extension Mobility

- Directories

- Messages

Enable Device Invoked Recording

Configure the Device Invoked Recording feature from Cisco Unified Communications Manager Administration. For more information and detailed instructions, see the "Monitoring and Recording" chapter in the *Cisco Unified Communications Manager Features and Services Guide*.

Procedure

Step 1   Set the IP phone Built In Bridge to **On**.

Step 2   Set Recording Option to **Selective Call Recording Enabled**.

Step 3   Select the appropriate Recording Profile.

Cisco Unified Communications Manager User Addition

Adding users to Cisco Unified Communications Manager allows you to display and maintain information about users and allows each user to perform these tasks:

- Access the corporate directory and other customized directories from a Cisco Unified IP Phone.

- Create a personal directory.

- Set up Call Forwarding numbers.

- Subscribe to services that are accessible from a Cisco Unified IP Phone.

You can add users to Cisco Unified Communications Manager using either of these methods:

- To add users individually, choose **User Management** > **End User** from Cisco Unified Communications Manager Administration.

  For more information on adding users, see the *Cisco Unified Communications Manager Administration Guide*. For details on user information, see the *Cisco Unified Communications Manager System Guide*.

- To add users in batches, use the Bulk Administration Tool. This method also enables you to set an identical default password for all users.

  For more information, see the *Cisco Unified Communications Manager Bulk Administration Guide*.

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• To add users from your corporate LDAP directory, choose **System** > **LDAP** > **LDAP System** from Cisco Unified Communications Manager Administration.

> ✎
>
> **Note**   After the Enable Synchronization from LDAP Server is enabled, you will not be able to add additional users from Cisco Unified Communications Manager Administration.

For more information on LDAP, see the *Cisco Unified Communications Manager System Guide*, "Understanding the Directory".

• To add a user and a phone at the same time, choose **User Management** > **User/Phone Add** from Cisco Unified Communications Manager.

User Options Web Page Management

From the User Options web page, users can customize and control several phone features and settings. For more information about the User Options web pages, see the *Cisco Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G User Guide for Cisco Unified Communications Manager (SCCP and SIP)*.

User Access to User Options Web Pages

Before a user can access the User Options web pages, you must add the user to the standard Cisco Unified Communications Manager end user group and associate the appropriate phone with the user.

Make sure to provide end users with the following information about the User Options web pages:

• The URL required to access the application. This URL is:

http://<*server_name:portnumber*>**/ccmuser/**, where *server_name* is the host on which the web server is installed.

• A user ID and default password are needed to access the application.

These settings correspond to the values you entered when you added the user to Cisco Unified Communications Manager.

For more information, see:

• *Cisco Unified Communications Manager Administration Guide*, "User Group Configuration" and "End User Configuration" chapters

• *Cisco Unified Communications Manager System Guide*, "Roles and User Groups" chapter

Related Topics

Cisco Unified Communications Manager User Addition, on page 165

Add User to End User Group

To add the user to the standard Cisco Unified Communications Manager End User group, perform these steps:

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Procedure

Step 1	From Cisco Unified Communications Manager Administration, choose **User Management** > **User Groups**.
	The Find and List Users window displays.
Step 2	Enter the appropriate search criteria and click **Find**.
Step 3	Click **Standard CCM End Users**. The User Group Configuration page for the Standard CCM End Users displays.
Step 4	Click **Add End Users to Group**. The Find and List Users window displays.
Step 5	Use the Find User drop-down list to find the end users that you want to add and click **Find**.
	A list of end users that matches your search criteria displays.
Step 6	In the list of records that displays, click the check box next to the users that you want to add to this user group. If the list comprises multiple pages, use the links at the bottom to see more results.
	Note The list of search results does not display end users that already belong to the user group.
Step 7	Click **Add Selected**.

Associate Phones with Users

To associate appropriate phones with the user, perform these steps:

Procedure

Step 1	From Cisco Unified Communications Manager Administration, choose **User Management** > **End User**.
	The Find and List Users window displays.
Step 2	Enter the appropriate search criteria and click **Find**.
Step 3	In the list of records that display, click the link for the user.
Step 4	Click **Device Association**.
	The User Device Association window displays.
Step 5	Enter the appropriate search criteria and click **Find**.
Step 6	Choose the device that you want to associate with the end user by checking the box to the left of the device.
Step 7	Click **Save Selected/Changes** to associate the device with the end user.

User Options Web Pages Options

Most options that are on the User Options web pages appear by default. However, the following options must be set by the system administrator using the Enterprise Parameters Configuration settings in Cisco Unified Communications Manager Administration:

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- Show Ring Settings

- Show Line Text Label Settings

- Show Call Forwarding

Note The settings apply to all User Options web pages at your site.

Set Up User Options Web Page Options

To specify the options that appear on the User Options web pages, follow these steps:

Procedure

Step 1 From Cisco Unified Communications Manager Administration, choose **System** > **Enterprise Parameters**.

The Enterprise Parameters Configuration window displays.

Step 2 In the CCMUser Parameters area, specify if a parameter appears on the User Options web pages by choosing one of these values from the **Parameter Value** drop-down list box for the parameter:

- **True**—Option displays on the User Options web pages (default).

- **False**—Option does not display on the User Options web pages.

- **Show All Settings**—All call forward settings display on the User Options web pages (default).

- **Hide All Settings**—No call forward settings display on the User Options web pages.

- **Show Only Call Forward All**—Only call forward all calls displays on the User Options web pages.

EnergyWise Setup on Cisco Unified IP Phone

To reduce power consumption, you can configure the phone to sleep (power down) and wake (power up) if your system includes an EnergyWise controller (for example, a Cisco Switch with the EnergyWise feature enabled).

You configure settings in Cisco Unified Communications Manager Administration to enable EnergyWise and configure sleep and wake times. These parameters are closely tied to the phone display configuration parameters.

When EnergyWise is enabled and a sleep time is set, the phone sends a request to the switch to wake it up at the configured time. The switch sends back either an acceptance or a rejection of the request. If the switch rejects the request or if the switch does not reply, the phone does not power down. If the switch accepts the request, the idle phone goes to sleep, reducing its power consumption to a predetermined level. A phone that is not idle sets an idle timer, and goes to sleep after the timer expires.

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At the scheduled wake time, the system restores power to the phone, waking it up. To wake up the phone before the wake time, you must power on the phone from the switch. For more information, see the switch documentation.

The following table explains the Cisco Unified Communications Manager Administration fields that control the EnergyWise settings. You configure these fields in Cisco Unified Communications Manager Administration by choosing **Device** > **Phone**. You can also configure EnergyWise parameters in the Enterprise Phone Configuration and Common Phone Profile Configuration windows.

Table 39: EnergyWise Configuration Fields

Field	Description
Enable Power Save Plus	Selects the schedule of days for which the phone powers off. Select multiple days by pressing and holding the **Control** key while clicking on the days for the schedule.
	By default, no days are selected.
	When Enable Power Save is checked, you receive a message to warn about emergency (e911) concerns.
	Caution While Power Save Plus mode (hereafter, *the mode*) is in effect, endpoints configured for the mode are disabled for emergency calling and from receiving inbound calls. By selecting this mode, you agree to the following: (i) you are taking full responsibility for providing alternate methods for emergency calling and receiving calls while the mode is in effect; (ii) Cisco has no liability in connection with your selection of the mode and all liability in connection with enabling the mode is your responsibility; and (iii) you will inform users of the effects of the mode on calls, calling and otherwise.
	Note To disable Power Save Plus, you must uncheck the Allow EnergyWise Overrides check box. Leaving the Allow EnergyWise Overrides checked with no days selected in the Enable Power Save Plus field does not disable Power Save Plus.

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Field	Description
Phone On Time	Determines when the phone automatically turns on for the days selected in the Enable Power Save Plus field.
	Enter the time in this field in 24 hour format, where 00:00 is midnight.
	For example, to automatically power up the phone at 7:00 a.m. (0700), enter 7:00. To power up the phone at 2:00 p.m. (1400), enter 14:00.
	The default value is blank, which means 00:00.
Phone Off Time	The time of day that the phone powers down for the days selected in the Enable Power Save Plus field. If the Phone On Time and the Phone Off Time fields contain the same value, the phone does not power down.
	Enter the time in this field in 24 hour format, where 00:00 is midnight.
	For example, to automatically power down the phone at 7:00 a.m. (0700), enter 7:00. To power down the phone at 2:00 p.m. (1400), enter 14:00.
	The default value is blank, which means 00:00.
Phone Off Idle Timeout	The length of time that the phone must be idle before the phone powers down.
	The range of the field is 20 to 1440 minutes.
	The default value is 60 minutes.

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Field	Description
Enable Audible Alert	When enabled, instructs the phone to play an audible alert starting at 10 minutes before to the time specified in the Phone Off Time field.
	The audible alert uses the phone ringtone, which briefly plays at specific times during the 10-minute alerting period. The alerting ringtone plays at the user-designated volume level. The audible alert schedule is:
	• 10 minutes before power down, play the ringtone four times.
	• 7 minutes before power down, play the ringtone four times.
	• 4 minutes before power down, play the ringtone four times.
	• 30 seconds before power down, play the ringtone 15 times or until the phone powers down.
	This check box applies only if the Enable Power Save Plus list box has one or more days selected.
EnergyWise Domain	The EnergyWise domain that the phone is in. The maximum length is 127 characters.
EnergyWise Secret	The security secret password that is used to communicate with the endpoints in the EnergyWise domain.
	The maximum length is 127 characters.

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Field	Description
Allow EnergyWise Overrides	This check box determines if you will allow the EnergyWise domain controller policy to send power level updates to the phones. The following conditions apply:
	1. If the phone is in full power save mode and the level is set to any standby level, the phone will go to Power Save when idle and remain in that mode until the next Cisco Unified CM scheduled power level change or user interaction.
	2. If the phone is in Power Save or at full power and the level is set to any nonoperational level, the phone will power down when idle and remain powered off until the switch reapplies power or the user wakes the phone.
	For example, assume the Phone Off Time is set to 22:00 (10:00 p.m.), the value in the Phone On Time field is 06:00 (6:00 a.m.), and the Enable Power Save Plus has one or more days selected.
	• If EnergyWise directs the phone to turn off at 20:00 (8:00 p.m.), then the directive remains in effect until the configured Phone On Time at 6:00 a.m., assuming no phone user intervention occurs.
	• At 6 a.m., the phone will turn on and resume receiving its power level changes from the settings in Cisco Unified Communications Manager Administration.
	• To change the power level on the phone again, EnergyWise must reissue a new power level change command.
	Note To disable Power Save Plus, you must uncheck the Allow EnergyWise Overrides check box. Leaving the Allow EnergyWise Overrides checked with no days selected in the Enable Power Save Plus field does not disable Power Save Plus.

UCR 2008 Setup

You configure the parameters that support UCR 2008 in Cisco Unified Communications Manager Administration. The following table describes the parameters and indicates the procedure to change the setting.

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Table 40: UCR 2008 Parameter Location

Parameter	Administration path	Procedure
FIPS Mode	**Device** > **Device Settings** > **Common Phone Profile**	Set Up UCR 2008 in Common Phone Profile Configuration Window, on page 174
	System > **Enterprise Phone Configuration**	Set Up UCR 2008 in Enterprise Phone Configuration Window, on page 174
SSH Access	**Device** > **Phone**	Set Up UCR 2008 in Phone Configuration Window, on page 173
	Device > **Device Settings** > **Common Phone Profile**	Set Up UCR 2008 in Common Phone Profile Configuration Window, on page 174
Web Access	**Device** > **Phone**	Set Up UCR 2008 in Phone Configuration Window, on page 173 Control Web Page Access, on page 211
HTTPS Server	**Device** > **Phone**	Set Up UCR 2008 in Phone Configuration Window, on page 173
	System > **Enterprise Phone Configuration**	Set Up UCR 2008 in Enterprise Phone Configuration Window, on page 174
80-bit SRTCP	**Device** > **Device Settings** > **Common Phone Profile**	Set Up UCR 2008 in Common Phone Profile Configuration Window, on page 174
	System > **Enterprise Phone Configuration**	Set Up UCR 2008 in Enterprise Phone Configuration Window, on page 174
IP Addressing Mode	**Device** > **Device Settings** > **Common Device Configuration**	See Network Configuration Menu, on page 66.
IP Addressing Mode Preference for Signaling	**Device** > **Device Settings** > **Common Device Configuration**	See Network Configuration Menu, on page 66.

Set Up UCR 2008 in Phone Configuration Window

Use this procedure to set the following parameters:

- SSH Access
- Web Access
- HTTPS Server

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Procedure

Step 1	Choose **Device** > **Phone**.
Step 2	Set the SSH Access parameter to **Disabled**.
Step 3	Set the Web Access parameter to **Disabled**.
Step 4	Set the HTTPS Service parameter to **HTTPS only**.
Step 5	Click **Save**.

Set Up UCR 2008 in Common Phone Profile Configuration Window

Use this procedure to set the following parameters:

- FIPS Mode
- SSH Access
- 80-bit SRTCP

Procedure

Step 1	Choose **Device** > **Device Settings** > **Common Phone Profile**.
Step 2	Set the FIPS Mode parameter to **Enabled**.
Step 3	Set the SSH Access parameter to **Disabled**.
Step 4	Set the 80-bit SRTCP parameter to **Enabled**.
Step 5	Click **Save**.

Set Up UCR 2008 in Enterprise Phone Configuration Window

Use this procedure to set the following parameters:

- FIPS Mode
- HTTPS Server
- 80-bit SRTCP

Procedure

Step 1	Choose **System** > **Enterprise Phone Configuration**.
Step 2	Set the FIPS Mode parameter to **Enabled**.
Step 3	Set the HTTPS Server parameters to **HTTPS only**.
Step 4	Set the 80-bit SRTCP parameter to **Enabled**.
Step 5	Click **Save**.

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Cisco Unified IP Phone Customization

Configuration File Customization and Modification

You can modify configuration files and add customized files to the TFTP directory. You can modify files or add customized files to the TFTP directory in Cisco Unified Communications Operating System Administration, from the TFTP Server File Upload window. For information about how to upload files to the TFTP folder on a Cisco Unified Communications Manager server, see the *Cisco Unified Communications Manager System Guide*.

You can obtain a copy of the Ringlist.xml or Ringlist-wb.xml files and the List.xml file from the system using the following admin command-line interface (CLI) "file" commands:

- admin:file

    - file list

    - file view

    - file search

    - file get

    - file dump

    - file tail

    - file delete

For more information, see the *Cisco Intercompany Media Engine Command Line Interface Reference Guide*.

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Custom Phone Ring Creation

The Cisco Unified IP Phone ships with two default ring types that are implemented in hardware: Chirp1 and Chirp2. Cisco Unified Communications Manager also provides a default set of additional phone ring sounds that are implemented in software as pulse code modulation (PCM) files. The PCM files, along with an XML file (named Ringlist.xml) that describes the ring list options that are available at your site, exist in the TFTP server on each Cisco Unified Communications Manager server.

For more information, see the "Custom Phone Rings" chapter in the *Cisco Unified Communications Manager Features and Services Guide* and the "Software Upgrades" chapter in the *Cisco Unified Communications Operating System Administration Guide*.

The following sections describe how you can customize the phone rings that are available at your site by creating PCM files and editing the Ringlist.xml file:

Ringlist.xml File Format Requirements

The Ringlist.xml file defines an XML object that contains a list of phone ring types. This file includes up to 50 ring types. Each ring type contains a pointer to the PCM file that is used for that ring type and the text that appears on the Ring Type menu on a Cisco Unified IP Phone for that ring. The Cisco TFTP server for each Cisco Unified Communications Manager contains this file.

The CiscoIPPhoneRinglist XML object uses the following simple tag set to describe the information:

```
<CiscoIPPhoneRingList>
    <Ring>
        <DisplayName/>
        <FileName/>
    </Ring>
</CiscoIPPhoneRingList>
```

The following characteristics apply to the definition names. You must include the required DisplayName and FileName for each phone ring type.

- DisplayName specifies the name of the custom ring for the associated PCM file that displays on the Ring Type menu of the Cisco Unified IP Phone.

- FileName specifies the name of the PCM file for the custom ring to associate with DisplayName.

Note The DisplayName and FileName fields must not exceed 25 characters in length.

This example shows a Ringlist.xml file that defines two phone ring types:

```
<CiscoIPPhoneRingList>
    <Ring>
        <DisplayName>Analog Synth 1</DisplayName>
        <FileName>Analog1.raw</FileName>
    </Ring>
    <Ring>
        <DisplayName>Analog Synth 2</DisplayName>
        <FileName>Analog2.raw</FileName>
```

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```
    </Ring>
</CiscoIPPhoneRingList>
```

PCM File Requirements for Custom Ring Types

The PCM files for the rings must meet the following requirements for proper playback on Cisco Unified IP Phones:

- Raw PCM (no header)

- 8000 samples per second

- 8 bits per sample

- Mu-law compression

- Maximum ring size = 16080 samples

- Minimum ring size = 240 samples

- Number of samples in the ring = multiple of 240.

- Ring start and end at zero crossing.

To create PCM files for custom phone rings, use any standard audio editing package that supports these file format requirements.

Set Up Custom Phone Ring

To create custom phone rings for the Cisco Unified IP Phone, perform these steps:

Procedure

Step 1	Create a PCM file for each custom ring (one ring per file). Ensure the PCM files comply with the format guidelines that are listed in PCM File Requirements for Custom Ring Types, on page 177.
Step 2	Upload the new PCM files that you created to the Cisco TFTP server for each Cisco Unified Communications Manager in your cluster. For more information, see the "Software Upgrades" chapter in *Cisco Unified Communications Operating System Administration Guide*.
Step 3	Use a text editor to edit the Ringlist.xml file. See Ringlist.xml File Format Requirements, on page 176 for information about how to format this file and for a sample Ringlist.xml file.
Step 4	Save your modifications and close the Ringlist.xml file.
Step 5	To cache the new Ringlist.xml file, stop and start the TFTP service by using Cisco Unified Serviceability or disable and reenable the "Enable Caching of Constant and Bin Files at Startup" TFTP service parameter (that is found in the Advanced Service Parameters area.)

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Custom Background Images

You can provide users with a choice of background images for the LCD screen on their phones. Users can select a background image by choosing **Settings** > **User Preferences** > **Background Images** on the phone.

The image choices that users see come from PNG images and an XML file (called List.xml) that are stored on the TFTP server that the phone uses. By storing your own PNG files and editing the XML file on the TFTP server, you can designate the background images from which users can choose. In this way, you can provide custom images, such as your company logo.

The following sections describe how you can customize the background images that are available at your site by creating your own PNG files and editing the List.xml file.

List.xml File Format Requirements

The List.xml file defines an XML object that contains a list of background images. The List.xml file is stored in the following subdirectory on the TFTP server:

- /Desktops/320x212x16 for Cisco Unified IP Phone 7945 and 7965

- /Desktops/320x212x12 for Cisco Unified IP Phone 7971 and 7970

- /Desktops/320x212x12 for Cisco Unified IP Phone 7975

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Tip If you are manually creating the directory structure and the List.xml file, you must ensure that the directories and files can be accessed by the user\CCMService, which is used by the TFTP service.

For more information, see "Software Upgrades" chapter in *Cisco Unified Communications Operating System Administration Guide*.

The List.xml file can include up to 50 background images. The images are in the order that they appear in the Background Images menu on the phone. For each image, the List.xml file contains one element type, called ImageItem. The ImageItem element includes these two attributes:

- Image: Uniform resource identifier (URI) that specifies where the phone obtains the thumbnail image that will appear on the Background Images menu on a Phone.

- URL: URI that specifies where the phone obtains the full size image.

The following example (for a Cisco Unified IP Phone 7971G-GE and 7970G) shows a List.xml file that defines two images. The required Image and URL attributes must be included for each image. The TFTP URI that displays in the example is the only supported method for linking to full size and thumbnail images. HTTP URL support is not provided.

List.xml Example

```
<CiscoIPPhoneImageList><ImageItem Image="TFTP:Desktops/320x212x12/TN-Fountain.png"
 URL="TFTP:Desktops/320x212x12/Fountain.png"/>
<ImageItem Image="TFTP:Desktops/320x212x12/TN-FullMoon.png"
URL="TFTP:Desktops/320x212x12/FullMoon.png"/>
</CiscoIPPhoneImageList>
```

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The Cisco Unified IP Phone firmware includes a default background image. This image is not defined in the List.xml file. The default image is always the first image that appears in the Background Images menu on the phone.

PNG File Requirements for Custom Background Images

Each background image requires two PNG files:

- Full size image: Version that displays on the on the phone.

- Thumbnail image: Version that displays on the Background Images screen from which users can select an image. The thumbnail image must be 25% of the size of the full-size image.

Tip Many graphics programs provide a feature that will resize a graphic. An easy way to create a thumbnail image is to first create and save the full size image, then use the sizing feature in the graphics program to create a version of that image that is 25% of the original size. Save the thumbnail version with a different name than the full-size image.

The PNG files for background images must meet the following requirements for proper display on the Cisco Unified IP Phone:

- Full size image: 320 pixels (width) X 216 pixels (height)

- Thumbnail image: 80 pixels (width) X 53 pixels (height)

- Color palette:

  - For Cisco Unified IP Phone 7971G-GE and 7970G)—Includes up to 12-bit color (4096 colors). You can use more than 12-bit color, but the phone will reduce the color palette to 12-bit before displaying the image. For best results, reduce the color palette of an image to 12-bit when you create a PNG file.

    Tip: If you are using a graphics program that supports a posterize feature for specifying the number of tonal levels per color channel, set the number of tonal levels per channel to 16 (16 red X 16 green X 16 blue = 4096 colors).

  - For Cisco Unified IP Phone 7975G, 7965G, and 7945G)—Includes up to 16-bit color (65535 colors). You can use more than 16-bit color, but the phone will reduce the color palette to 16-bit before displaying the image. For best results, reduce the color palette of an image to 16-bit when you create a PNG file.

    Tip: If you are using a graphics program that supports a posterize feature for specifying the number of tonal levels per color channel, set the number of tonal levels per channel to 40 (40 red X 40 green X 40 blue = 64000 colors). This is as close as you can posterize to 65535 colors without exceeding the maximum.

Set Up Custom Background Image

To create custom background images for the Cisco Unified IP Phone, follow these steps:

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Procedure

Step 1	Create two PNG files for each image (a full size version and a thumbnail version). Ensure the PNG files comply with the format guidelines that are listed in PNG File Requirements for Custom Background Images, on page 179.
Step 2	Upload the new PNG files that you created to the following subdirectory in the TFTP server for Cisco Unified Communications Manager:

  • /Desktops/320x216x16 for Cisco Unified IP Phone 7975G

  • /Desktops/320x212x16 for Cisco Unified IP Phone 7965G and 7945G

	Note	The file name and subdirectory parameters are case sensitive. Be sure to use the forward slash "/" when you specify the subdirectory path.

To upload the files, choose **Software Upgrades > Upload TFTP Server File** in Cisco Unified Communications Operating System Administration. For more information, see the "Software Upgrade" chapter in *Cisco Unified Communications Operating System Administration Guide*.

	Note	If the folder does not exist, the folder is created and the files upload to the folder.

Step 3	You must also copy the customized images and files to the other TFTP servers that the phone may contact to obtain these files.

	Note	Cisco recommends that you also store backup copies of custom image files in another location. You can use these backup copies if the customized files are overwritten when you upgrade Cisco Unified Communications Manager.

Step 4	Use a text editor to edit the List.xml file. See List.xml File Format Requirements, on page 178 for the location of this file, formatting requirements, and a sample file.
Step 5	Save your modifications and close the List.xml file.

	Note	When you upgrade Cisco Unified Communications Manager, a default List.xml file will replace your customized List.xml file. After you customize the List.xml file, make a copy of the file and store it in another location. After upgrading Cisco Unified Communications Manager, replace the default List.xml file with your stored copy.

Step 6	To cache the new List.xml file, stop and start the TFTP service by using Cisco Unified Serviceability or disable and re-enable the Enable Caching of Constant and Bin Files at Startup TFTP service parameter (located in the Advanced Service Parameters).

Wideband Codec Setup

If Cisco Unified Communications Manager has been configured to use G.722 (G.722 is enabled by default for the Cisco Unified IP Phone) and if the far endpoint supports G.722, the call can connect using the G.722 codec in place of G.711. This situation occurs regardless of whether the user has enabled a wideband headset or wideband handset, but if either the headset or handset is enabled, the user may notice greater audio sensitivity during the call. Greater sensitivity means improved audio clarity but also means that more background noise

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can be heard by the far endpoint: noise such as rustling papers or nearby conversations. Even without a wideband headset or handset, some users may prefer the additional sensitivity of G.722. Other users may be distracted by the additional sensitivity of G.722.

Two parameters in Cisco Unified Communications Manager Administration affect whether wideband is supported for this Cisco Unified Communications Manager server or a specific phone:

- Advertise G.722 Codec: From Cisco Unified Communications Manager Administration, choose **System** > **Enterprise Parameters**. The default value of this enterprise parameter is True, which means that all Cisco Unified IP Phone models that are described in this administration guide and are registered to this Cisco Unified Communications Manager will advertise G.722 to Cisco Unified Communications Manager. For more information, see the *Cisco Unified Communications Manager System Guide*, "Cisco Unified IP Phones" chapter.

- Advertise G.722 Codec: From Cisco Unified Communications Manager Administration, choose **Device** > **Phone**. The default value of this product-specific parameter is to use the value specified in the enterprise parameter. If you want to override this on a per-phone basis, choose Enabled or Disabled in the advertises G.722 Codec parameter on the Product Specific Configuration area of the Phone Configuration window.

Idle Display Setup

You can specify an idle display that appears on the phone LCD screen. The idle display is an XML service that the phone invokes when the phone has been idle (not in use) for a designated period and no feature menu is open.

XML services that can be used as idle displays include company logos, product pictures, and stock quotes.

Configuration of the idle display requires these general steps:

1. Format an image for display on the phone.

2. Configure Cisco Unified Communications Manager to display the image on the phone.

For detailed instructions about creating and displaying the idle display, see *Creating Idle URL Graphics on Cisco Unified IP Phone* at this URL:

http://www.cisco.com/en/US/products/sw/voicesw/ps556/products_tech_note09186a00801c0764.shtml

In addition, see the *Cisco Unified Communications Manager Administration Guide* or the *Cisco Unified Communications Manager Bulk Administration Guide* for the following information:

- Specify the URL of the idle display XML service:
  - For a single phone: Idle field in the Cisco Unified Communications Manager Phone Configuration window
  - For multiple phones simultaneously: URL Idle field on the Cisco Unified Communications Manager Enterprise Parameters configuration window, or the Idle field in the Bulk Administration Tool (BAT)

- Specify the length of time that the phone is not used before the idle display XML service is invoked:
  - For a single phone: Idle Timer field on the Cisco Unified Communications Manager Phone configuration window

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• For multiple phones simultaneously: URL Idle Time field on the Cisco Unified Communications Manager Enterprise Parameters configuration window, or the Idle Timer field in the Bulk Administration Tool (BAT)

From a phone, you can see settings for the idle display XML service URL and the length of time that the phone is not used before this service is invoked. To see these settings, choose **Settings** > **Device Configuration** and scroll to the Idle URL and the Idle URL Time parameters.

Cisco Unified IP Phone Backlight

To conserve power and ensure the longevity of the LCD screen on the phone, you can set the LCD to turn off when it is not needed.

You can configure settings in Cisco Unified Communications Manager Administration to turn off the display at a designated time on some days and all day on other days. For example, you may choose to turn off the display after business hours on weekdays and all day on Saturdays and Sundays.

When the display is off, the LCD screen is dark and disabled, and the **Display** button lights. You can take any of these actions to turn on the display any time it is off:

• Press any button on the phone.

If you press a button other than the **Display** button, the phone will take the action designated by that button in addition to turning on the display.

• Touch the touchscreen (or phone screen, whichever is applicable).

• Lift the handset.

When you turn the display on, it remains on until the phone remains idle for a designated length of time, then it turns off automatically.

Note   You can use the **Display** button to temporarily disable the touchscreen (or phone screen) for cleaning. See Cisco Unified IP Phone Cleaning, on page 252 for more information.

Note   The XSI Screen Width Enhancement feature, when implemented on Cisco Unified IP Phones, enhances the viewability of the Messages, Directories, and Services screens. These screens may appear in Normal mode or in Wide mode, depending on how the phone is set up. For information, see the *Cisco Unified IP Phone Services Application Development Notes* at http://www.cisco.com/en/US/products/sw/voicesw/ps556/products_ programming_reference_guides_list.html.

The following table explains the Cisco Unified Communications Manager Administration fields that control when the display turns on and off. You configure these fields in Cisco Unified Communications Manager Administration in the Product Specific configuration window. (You access this window by choosing **Device** > **Phone** from Cisco Unified Communications Manager Administration.)

You can view the display settings for a phone from the Power Save Configuration menu on the phone. For more information, see Power Save Configuration Menu, on page 103.

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Table 41: Display On and Off configuration fields

Field	Description
Days Display Not Active	Days that the display does not turn on automatically at the time specified in the Display On Time field. Choose the day or days from the drop-down list. To choose more than one day, Ctrl-click each day that you want.
Display On Time	Time each day that the display turns on automatically (except on the days specified in the Days Display Not Active field). Enter the time in this field in 24 hour format, where 0:00 is midnight. For example, to automatically turn the display on at 7:00 a.m., (0700), enter **7:00**. To turn the display on at 2:00 p.m. (1400), enter **14:00**. If this field is blank, the display will automatically turn on at 0:00.
Display On Duration	Length of time that the display remains on after turning on at the time specified in the Display On Time field. Enter the value in this field in the format hours:minutes. For example, to keep the display on for 4 hours and 30 minutes after it turns on automatically, enter **4:30**. If this field is blank, the phone will turn off at the end of the day (0:00). **Note** If Display On Time is 0:00 and the display on duration is blank (or 24:00), the display stays on continuously.
Display Idle Timeout	Length of time that the phone is idle before the display turns off. Applies only when the display was off as scheduled and was turned on by an end user by pressing a button on the phone, touching the touchscreen or phone screen, or lifting the handset). Enter the value in this field in the format hours:minutes. For example, to turn the display off when the phone is idle for 1 hour and 30 minutes after an end user turns the display on, enter **1:30**. The default value is 0:30.

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Field	Description
Display On When Incoming Call	Disable/enable automatic illumination of the LCD screen when a call is received. Default: Disabled

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Model Information, Status, and Statistics

Model Information, Status, and Statistics Overview

This chapter describes how to use the following menus and screens on the Cisco Unified IP Phone to view model information, status messages, network statistics, and firmware information for the phone:

- Model Information screen: Displays hardware and software information about the phone.

- Status menu: Provides access to screens that display the status messages, network statistics, and firmware versions.

- Call Statistics screen: Displays counters and statistics for the current call.

You can use the information on these screens to monitor the operation of a phone and to assist with troubleshooting.

You can also obtain much of this information, and obtain other related information, remotely through the phone web page. For more information, see Remote Monitoring, on page 209.

For more information about troubleshooting the Cisco Unified IP Phone, see Troubleshooting and Maintenance, on page 229.

Display Model Information Screen

Procedure

Step 1   To display the Model Information screen, press the **Settings** button and then select **Model Information**.

Step 2   To exit the Model Information screen, press **Exit**.

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Model Information Settings

Table 42: Model Information Settings

Option	Description	To Change
Model Number	Model number of the phone.	Display only. Cannot configure.
MAC Address	MAC address of the phone.	Display only. Cannot configure.
Load File	Identifier of the factory-installed load running on the phone.	Display only. Cannot configure.
Boot Load ID	Identifier of the factory-installed load running on the phone.	Display only. Cannot configure.
Serial Number	Serial number of the phone.	Display only. Cannot configure.
MIC	Indicates whether a manufacturing installed certificate is present on the phone.	For more information about how to manage the MIC for your phone, see the "Using the Certificate Authority Proxy Function" chapter in *Cisco Unified Communications Manager Security Guide*.
LSC	Indicates whether a locally significant certificate is present on the phone.	For more information about how to manage the LSC for your phone, see the "Using the Certificate Authority Proxy Function" chapter in *Cisco Unified Communications Manager Security Guide*.
Call Control Protocol	Indicates the call processing protocol used by the phone.	For more information, see Cisco Unified IP Phones and Different Protocols, on page 42.

Status Menu

The Status menu includes these options, which provide information about the phone and its operation:

- Status Messages: Displays the Status Messages screen, which shows a log of important system messages.

- Network Statistics: Displays the Network Statistics screen, which shows Ethernet traffic statistics.

- Firmware Versions: Displays the Firmware Versions screen, which shows information about the firmware that is running on the phone.

- Expansion Modules: Displays the Expansion Modules screen, which shows information about the Cisco Unified IP Phone Expansion Modules, if connected to the phone.

Related Topics

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Display Status Menu

Procedure

Step 1   Press **Apps**.

Step 2   Select **Admin Settings** > **Status Menu**.

Status Messages Screen

The Status Messages screen displays the 10 most recent status messages that the phone has generated. You can access this screen at any time, even if the phone has not finished starting up. See Status Messages, on page 187, which describes the status messages that might display. This table also includes actions that you can take to address errors.

Display Status Messages Screen

To display the Status Messages screen, follow these steps:

Procedure

Step 1   Press **Settings**.

Step 2   Select **Status**.

Step 3   Select **Status Messages**.

Step 4   To remove current status messages, press **Clear**.

Step 5   To exit the Status Messages screen, press **Exit**.

Status Messages

Table 43: Status Messages on the Cisco Unified IP Phone

Message	Description	Possible explanation and action
BootP server used	The phone obtained its IP address from a BootP server rather than a DHCP server.	None. This message is informational only.

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Message	Description	Possible explanation and action
CFG file not found	The name-based and default configuration file was not found on the TFTP Server.	Cisco Unified Communications Manager creates a configuration file for the phone with the phone is added to the database. If the phone has not been added to the Cisco Unified Communications Manager database, the TFTP server generates a **CFG File Not Found** response. • Phone is not registered with Cisco Unified Communications Manager. You must manually add the phone to Cisco Unified Communications Manager if you are not allowing phones to autoregister. See Cisco Unified Communications Manager Administration Phone Addition, on page 41 for details. • If you are using DHCP, verify that the DHCP server is pointing to the correct TFTP server. • If you are using static IP addresses, check configuration of the TFTP server. See Network Configuration Menu, on page 66 for details on assigning a TFTP server.
CFG TFTP Size Error	The configuration file is too large for the file system on the phone.	Power cycle the phone.
Checksum Error	Downloaded software file is corrupted.	Obtain a new copy of the phone firmware and place it in the TFTP directory. You should only copy files into this directory when the TFTP server software is shut down, otherwise the files may be corrupted.

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Message	Description	Possible explanation and action
CTL and ITL installed	CTL and ITL files are installed on the phone.	None. This message is informational only. Neither the CTL file nor the ITL file was installed on the phone previously. For more information about the Trust List, see the *Cisco Unified Communications Manager Security Guide*.
CTL installed	The CTL file is installed on the phone.	None. This message is informational only. The CTL file was not installed previously. For more information about the CTL file, see the *Cisco Unified Communications Manager Security Guide*.
DHCP timeout	DHCP server did not respond.	• Network is busy: The errors should resolve themselves when the network load reduces. • No network connectivity between the DHCP server and the phone: Verify the network connections. • DHCP server is down: Check configuration of DHCP server. • Errors persist: Consider assigning a static IP address. See Network Configuration Menu, on page 66 for details on assigning a static IP address.
Disabled	802.1X Authentication is disabled on the phone.	You can enable 802.1X authentication by using the **Settings** > **Security Configuration** > **802.1X Authentication** option on the phone. For more information, see 802.1X Authentication and Status Menus, on page 122.

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Message	Description	Possible explanation and action
DNS timeout	DNS server did not respond.	Network is busy: The errors should resolve themselves when the network load reduces. No network connectivity between the DNS server and the phone: Verify the network connections. DNS server is down: Check configuration of DNS server.
DNS unknown host	DNS could not resolve the name of the TFTP server or Cisco Unified Communications Manager.	Verify that the host names of the TFTP server or Cisco Unified Communications Manager are configured properly in DNS. Consider using IP addresses rather than host names.
Duplicate IP	Another device is using the IP address assigned to the phone.	If the phone has a static IP address, verify that you have not assigned a duplicate IP address. See Network Configuration Menu, on page 66 for details. If you are using DHCP, check the DHCP server configuration.
Erasing CTL and ITL files	Erasing CTL or ITL file.	None. This message is informational only. For more information about the CTL and ITL files, see the *Cisco Unified Communications Manager Security Guide*.

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Message	Description	Possible explanation and action
Error update locale	One or more localization files could not be found in the TFTP directory or were not valid. The locale was not changed.	From Cisco Unified Operating System Administration, check that the following files are located within the subdirectories in TFTP File Management: • Located in subdirectory with same name as network locale: • tones.xml • Located in subdirectory with same name as user locale: • glyphs.xml • dictionary.xml • kate.xml
Failed	The phone attempted an 802.1X transaction but authentication failed.	Authentication typically fails for one of the following reasons: • No shared secret is configured in the phone or authentication server. • The shared secret configured in the phone and the authentication server do not match. • Phone has not been configured in the authentication server.

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Message	Description	Possible explanation and action
File auth error	An error occurred when the phone tried to validate the signature of a signed file. This message includes the name of the file that failed.	The file is corrupted. If the file is a phone configuration file, delete the phone from the Cisco Unified Communications Manager database by using Cisco Unified Communications Manager Administration. Then add the phone back to the Cisco Unified Communications Manager database by using Cisco Unified Communications Manager Administration. The CTL file has a problem and the key for the server from which files are obtained is bad. In this case, run the CTL client and update the CTL file, making sure that the proper TFTP servers are included in this file.
File not found	The phone cannot locate, on the TFTP server, the phone load file that in the phone configuration file specifies.	From Cisco Unified Operating System Administration, ensure that the TFTP File Management lists the phone load file.
IP address released	The phone has been configured to release its IP address.	The phone remains idle until it is power cycled or you reset the DHCP address. See Network Configuration Menu, on page 66 for details.
ITL installed	The ITL file is installed in the phone. The ITL file was not installed.	None. This message is informational only. Phone does not have prior installation of the ITL file. For more information about the ITL file, see the *Cisco Unified Communications Manager Security Guide*.

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Message	Description	Possible explanation and action
ITL update failed	Updating ITL file failed.	Phone has CTL or ITL file installed and it failed to update new ITL file. Possible reasons for failure: • Network failure • TFTP server was down • Trust Verification Service (TVS) server was down Possible solutions: • Check the network connectivity. • Check whether the TFTP server is active and functioning normally. • Check whether the Trust Verification Service (TVS) server is active and functioning normally. • Manually delete CTL and ITL files if all the above solutions fail.
Load Auth Failed	The phone could not load a configuration file.	Check that: • A good version of the configuration file exists on the applicable server. • The phone load being downloaded has not been altered or renamed. • Phone load type is compatible; for example, you cannot place a DEV load configuration file on a REL-signed phone.
Load ID incorrect	Load ID of the software file is of the wrong type.	Check the load ID assigned to the phone (from Cisco Unified Communications Manager, choose **Device** > **Phone**). Verify that the load ID is entered correctly.

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Message	Description	Possible explanation and action
Load rejected HC	The application that was downloaded is not compatible with the phone hardware.	Occurs if you were attempting to install a version of software on this phone that did not support hardware changes on this newer phone. Check the load ID assigned to the phone (from Cisco Unified Communications Manager, choose **Device** > **Phone**). Re-enter the load displayed on the phone. See Firmware Version Screen, on page 200 to verify the phone setting.
Load Server is invalid	Indicates an invalid TFTP server IP address or name in the Load Server option.	The Load Server setting is not valid. The Load Server specifies a TFTP server IP address or name from which the phone firmware can be retrieved for upgrades on the phones. Check the Load Server entry (from Cisco Unified Communications Manager Administration choose **Device** > **Phone**).
No default router	DHCP or static configuration did not specify a default router.	If the phone has a static IP address, verify that the default router has been configured. See Network Configuration Menu, on page 66 for details. If you are using DHCP, the DHCP server has not provided a default router. Check the DHCP server configuration.
No DNS server IP	A name was specified but DHCP or static IP configuration did not specify a DNS server address.	If the phone has a static IP address, verify that the DNS server has been configured. See Network Configuration Menu, on page 66 for details. If you are using DHCP, the DHCP server has not provided a DNS server. Check the DHCP server configuration.

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Message	Description	Possible explanation and action
No Trust List installed	The Trust List is not configured on Cisco Unified Communications Manager, which does not support security by default.	Occurs if the Trust List is not configured on Cisco Unified Communications Manager and Cisco Unified Communications Manager does not support security by default. For more information about CTL and ITL files, see the *Cisco Unified Communications Manager Security Guide*.
Programming Error	The phone failed during programming.	Attempt to resolve this error by power cycling the phone. If the problem persists, contact Cisco technical support for additional assistance.
Successful – MD5	The phone attempted an 802.1X transaction and authentication achieved.	The phone achieved 802.1X authentication.
TFTP access error	TFTP server is pointing to a directory that does not exist.	If you are using DHCP, verify that the DHCP server points to the correct TFTP server. If you are using static IP addresses, check configuration of TFTP server. See Network Configuration Menu, on page 66 for details on assigning a TFTP server.
TFTP Error	The phone does not recognize an error code provided by the TFTP server.	Contact the Cisco TAC.
TFTP file not found	The requested load file (.bin) was not found in the TFTP directory.	Check the load ID assigned to the phone (from Cisco Unified Communications Manager, choose **Device** > **Phone**). Verify that the TFTP directory contains a .bin file with this load ID as the name.

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Message	Description	Possible explanation and action
TFTP timeout	TFTP server did not respond.	Network is busy: The errors should resolve themselves when the network load reduces. No network connectivity between the TFTP server and the phone: Verify the network connections. TFTP server is down: Check configuration of TFTP server.
Timed Out	Supplicant attempted 802.1X transaction but timed out due the absence of an authenticator.	Authentication typically times out if 802.1X authentication is not configured on the switch.
Trust List update failed	The CTL and ITL files are installed on the phone, and it failed to update the new files.	Phone has CTL and ITL files installed and it failed to update the new CTL and ITL files. **Possible reasons for failure**: • Network failure. • TFTP server was down. • The new security token used to sign CTL file and the TFTP certificate used to sign ITL file are introduced, but are not available in the current CTL and ITL files in the phone. • Internal phone failure. **Possible solutions**: • Check the network connectivity. • Check if the TFTP server is active and functioning normally. • If the Trust Verification Service (TVS) server is supported on Cisco Unified Communications Manager, check if the TVS server is active and functioning normally. • Verify if the security token and the TFTP server are valid. • Manually delete the CTL and ITL files if all the above solutions fail, and reset the phone.

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Message	Description	Possible explanation and action
Trust List updated	The CTL file, the ITL file, or both files are updated.	None. This message is informational only. For more information about the Trust List, see the *Cisco Unified Communications Manager Security Guide*.
Version error	The name of the phone load file is incorrect.	Make sure that the phone load file has the correct name.
XmlDefault corresponding to the phone device name	Name of the configuration file.	None. This is an informational message indicating the name of the configuration file for the phone.

Network Statistics Screen

The Network Statistics screen displays information about the phone and network performance. Network Statistics Items, on page 197 describes the information that displays in this screen.

Display Network Statistics Screen

To display the Network Statistics screen, perform these steps:

Procedure

Step 1 Press **Applications**.

Step 2 Select **Settings**.

Step 3 Select **Status**.

Step 4 Select **Network Statistics**.

Step 5 To reset the Rx Frames, Tx Frames, and Rx Broadcasts statistics to 0, press **Clear**.

Network Statistics Items

The following table describes the Network Statistics items.

Table 44: Network Statistics Information

Item	Description
Rx Frames	Number of packets that the phone receives
Tx Frames	Number of packets that the phone sends
Rx Broadcasts	Number of broadcast packets that the phone receives

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Item	Description
One of the following values: • Initialized • TCP-timeout • CM-closed-TCP • TCP-Bad-ACK • CM-reset-TCP • CM-aborted-TCP • CM-NAKed • KeepaliveTO • Failback • Phone-Keypad • Phone-Re-IP • Reset-Reset • Reset-Restart • Phone-Reg-Rej • Load Rejected HC • CM-ICMP-Unreach • Phone-Abort	Cause of the last phone reset
Elapsed Time	Amount of time that has elapsed since the phone connected to Cisco Unified Communications Manager
Port 1	Link state and connection of the Network port
Port 2 (applies to 7911G only)	Link state and connection of the PC port. For example, `Auto 100 Mb Full-Duplex` means that the PC port is in a link up state and has autonegotiated a full-duplex, 100-Mbps connection.

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Item	Description
IPv4	Information on the DHCP status. This includes the following states: • CDP BOUND • CDP INIT • DHCP BOUND • DHCP DISABLED • DHCP INIT • DHCP INVALID • DHCP REBINDING • DHCP REBOOT • DHCP RENEWING • DHCP REQUESTING • DHCP RESYNC • DHCP UNRECOGNIZED • DHCP WAITING COLDBOOT TIMEOUT • SET DHCP COLDBOOT • SET DHCP DISABLED • DISABLED DUPLICATE IP • SET DHCP FAST

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Item	Description
IPv6	Information on the DHCPv6 status. This includes the following states: • DHCP6 BOUND; • DHCP6 DISABLED • DHCP6 RENEW • DHCP6 REBIND • DHCP6 INIT • DHCP6 SOLICIT • DHCP6 REQUEST • DHCP6 RELEASING • DHCP6 RELEASED • DHCP6 DISABLING • DHCP6 DECLINING • DHCP6 DECLINED • DHCP6 INFOREQ • DHCP6 INFOREQ DONE • DHCP6 INVALID • DHCP6 DECLINED DUPLICATE IP • DHCP6 WAITING COLDBOOT TIMEOUT • DHCP6 TIMEOUT USING RESTORED VAL • DHCP6 TIMEOUT. CANNOT RESTORE • STACK TURNED OFF

Firmware Version Screen

The Firmware Version screen displays information about the firmware version that is running on the phone. describes the information that displays on this screen.

Display Firmware Version Screen

To display the Firmware Version screen, follow these steps:

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Procedure

Step 1   Press **Settings**.

Step 2   Select **Status**.

Step 3   Select **Firmware Version**.

Step 4   To exit the Firmware Version screen, press **Exit**.

Firmware Version Items

Table 45: Firmware Version Information

Item	Description
Load File	Load file running on the phone
App Load ID	JAR file running on the phone
JVM Load ID	Java Virtual Machine (JVM) running on the phone
OS Load ID	Operating system running on the phone
Boot Load ID	Ffactory-installed load running on the phone
Expansion Module 1 Expansion Module 2	Load running on the Expansion Modules, if connected to a SIP or SCCP phone
DSP Load ID	Digital signal processor (DSP) software version used

Expansion Modules Screen

The Expansion Modules screen displays information about each Cisco Unified IP Phone Expansion Module that is connected to the phone.

explains the information displays on this screen for each connected expansion module. You can use this information to troubleshoot the expansion module, if necessary. In the Expansion Modules screen, a statistic preceded by "A" applies to the first expansion module. A statistic preceded by "B" applies to the second expansion module.

Display Expansion Modules Screen

To display the Expansion Modules screen, follow these steps:

Procedure

Step 1   Press **Settings**.

Step 2   Select **Status**.

Step 3   Select **Expansion Modules**.

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Step 4 To exit the Expansion Modules screen, press **Exit**.

Expansion Module Items

Table 46: Expansion Module Information

Item	Description
Link State	Overall expansion module status
RX Discarded Bytes	Number of bytes that are discarded due to errors
RX Length Err	Number of packets that are discarded due to improper length
RX Checksum Err	Number of packets that are discarded due to invalid checksum information
RX Invalid Message	Number of packets that are discarded because a message was invalid or unsupported
TX Retransmit	Number of packets that are retransmitted to the expansion module
TX Buffer Full	Number of packets that are discarded because the expansion module was not able to accept new messages

Call Statistics Screen

The Call Statistics screen displays counters statistics and voice-quality metrics in these ways:

- During call: You can view the call information by rapidly pressing the **?** button twice.

- After the call: You can view the call information captured during the last call by displaying the Call Statistics screen.

Note You can also remotely view the call statistics information by using a web browser to access the Streaming Statistics web page. This web page contains additional RTCP statistics not available on the phone. For more information about remote monitoring, see Remote Monitoring, on page 209.

A single call can have multiple voice streams, but data is captured for only the last voice stream. A voice stream is a packet stream between two endpoints. If one endpoint is put on hold, the voice stream stops even though the call is still connected. When the call resumes, a new voice packet stream begins, and the new call data overwrites the former call data.

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Display Call Statistics Screen

To display the Call Statistics screen for information about the last voice stream, follow these steps:

Procedure

Step 1	Press **Settings**.
Step 2	Select **Status**.
Step 3	Select **Call Statistics**.

Call Statistics Items

The following table explains the items displayed in the Call Statistics screen:

Table 47: Call Statistics Items

Item	Description
Rcvr Codec	Type of voice stream received (RTP streaming audio from codec): G.729, G.711 Mu-law, G.711 A-law, or Lin16k.
Sender Codec	Type of voice stream transmitted (RTP streaming audio from codec): G.729, G.728/iLBC, G.711 Mu-law, G.711 A-law, or Lin16k.
Rcvr Size	Size of voice packets, in milliseconds, in the receiving voice stream (RTP streaming audio).
Sender Size	Size of voice packets, in milliseconds, in the transmitting voice stream.
Rcvr Packets	Number of RTP voice packets received since voice stream opened. **Note** This number is not necessarily identical to the number of RTP voice packets received since the call began because the call might have been placed on hold.
Sender Packets	Number of RTP voice packets transmitted since voice stream opened. **Note** This number is not necessarily identical to the number of RTP voice packets transmitted since the call began because the call might have been placed on hold.

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Item	Description
Avg Jitter	Estimated average RTP packet jitter (dynamic delay that a packet encounters when going through the network) observed since the receiving voice stream opened.
Max Jitter	Maximum jitter observed since the receiving voice stream opened.
Rcvr Discarded	Number of RTP packets in the receiving voice stream that have been discarded (such as bad packets or packets received too late). **Note** The phone discards payload type 19 comfort noise packets that by Cisco Gateways generate, which increment this counter.
Rcvr Lost Packets	Missing RTP packets (lost in transit).
Voice Quality Metrics	
MOS LQK	Score that is an objective estimate of the mean opinion score (MOS) for listening quality (LQK) that rates from 5 (excellent) to 1 (bad). This score is based on audible concealment events due to frame loss in the preceding 8-second interval of the voice stream. For more information, see Voice Quality Monitoring, on page 250. **Note** The MOS LQK score can vary based on the type of codec that the Cisco Unified IP Phone uses.
Avg MOS LQK	Average MOS LQK score observed for the entire voice stream.
Min MOS LQK	Lowest MOS LQK score observed from start of the voice stream.
Max MOS LQK	Baseline or highest MOS LQK score observed from start of the voice stream. These codecs provide the following maximum MOS LQK score under normal conditions with no frame loss: • G.711 gives 4.5. • G.722 gives 4.5. • G.728/iLBC gives 3.9. • G.729 A/AB gives 3.8.

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Item	Description
MOS LQK Version	Version of the Cisco proprietary algorithm used to calculate MOS LQK scores.
Cumulative Conceal Ratio	Total number of concealment frames divided by total number of speech frames received from start of the voice stream.
Interval Conceal Ratio	Ratio of concealment frames to speech frames in preceding 3-second interval of active speech. If using voice activity detection (VAD), a longer interval might be required to accumulate 3 seconds of active speech.
Max Conceal Ratio	Highest interval concealment ratio from start of the voice stream.
Conceal Secs	Number of seconds that have concealment events (lost frames) from the start of the voice stream (includes severely concealed seconds).
Severely Conceal Secs	Number of seconds that have more than 5 percent concealment events (lost frames) from the start of the voice stream.
Latency (see note)	Estimate of the network latency, expressed in milliseconds. Represents a running average of the round-trip delay, measured when RTCP receiver report blocks are received.
Network Protocol	Identifies the current Network Protocol—IPv4.

Note When the RTP Control Protocol is disabled, no data generates for this field and thus displays as 0.

Test Tone

The Cisco Unified IP Phone supports a test tone, which allows you to troubleshoot echo on a call as well as to test low volume levels.

To use a test tone, you must:

- Enable the tone generator

- Create a test tone

Enable Tone Generator

To enable the tone generator, follow these steps:

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Procedure

Step 1   Verify that the phone is unlocked.

When options are inaccessible for modification, a locked padlock icon 🔒 appears on the configuration menus. When options are unlocked and accessible for modification, an unlocked padlock 🔓 icon appears on these menus.

To unlock or lock options on the Settings menu, press ****#** on the phone keypad. This action either locks or unlocks the options, depending on the previous state.

Note   If a Settings Menu password has been provisioned, SIP phones present an "Enter password" prompt after you enter ****#**.

Make sure to lock options after you have made your changes.

Caution   Do not press ****#**** to unlock options and then immediately press ****#**** again to lock options. The phone will interpret this sequence as ****#****, which will reset the phone. To lock options after unlocking them, wait at least 10 seconds before you press ****#** again.

Step 2   While offhook, press **Help** twice to invoke the Call Statistics screen, or press **Settings** > **Status** > **Call Statistics** to invoke the Call Statistics screen.

Step 3   Look for the Tone softkey.

When the Tone softkey is visible, the softkey remains enabled for as long as this Cisco Unified IP phone is registered with Cisco Unified Communications Manager.

Step 4   If the Tone softkey is present, proceed to Create Test Tone, on page 206.

Step 5   If the Tone softkey is not present, exit the Call Statistics screen and enter the Setting Menu.

Step 6   Press ****3** on the phone keypad to enable (toggle) the Tone softkey.

Note   If you press ****# **3** consecutively, with no pause, you will inadvertently reset the phone because of the ****#**** sequence.

Step 7   While offhook, press the Help button twice to invoke the Call Statistics screen, or press **Settings** > **Status** > **Call Statistics** to invoke the Call Statistics screen.

Step 8   Verify that the Tone softkey is present.

When the Tone softkey is visible, the softkey remains enabled for as long as this Cisco Unified IP Phone is registered with Cisco Unified Communications Manager.

Create Test Tone

Note   When measuring echo, make sure you first set the input and output levels to 0 dB gain/attenuation on the trunk. This is set for the gateway (in Cisco Unified Communications Manager for MGCP) or under IOS CLI for H.323 or SIP.

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To create a test tone, follow these steps:

Procedure

Step 1   Place a call.

Step 2   After the call is established, press **Help** twice, or press **Settings** > **Status** > **Call Statistics**.

The Call Statistics screen and Tone softkey should appear.

Step 3   Press **Tone**.

The phone generates a 1004 Hz tone at -15 dBm.

- For a good network connection, the tone sounds at the call destination only.

- For a bad network connection, the phone generating the tone may receive echo from the destination phone.

Step 4   To stop the tone, end the call.

For information on interpreting the results of test tone for volume and echo, see *Echo Analysis for Voice over IP*.

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Remote Monitoring

Remote Monitoring Overview

Each Cisco Unified IP Phone has a web page from which you can view a variety of information about the phone, including:

- Device information

- Network configuration information

- Network statistics

- Device logs

- Streaming statistics

Note   The Cisco Unified IP Phone does not support web access on its IPv6 address.

This chapter describes the information that you can obtain from the phone web page. You can use this information to remotely monitor the operation of a phone and to assist with troubleshooting.

You can also obtain much of this information directly from a phone. For more information, see Model Information, Status, and Statistics, on page 185.

For more information about troubleshooting the Cisco Unified IP Phone, see Troubleshooting and Maintenance, on page 229.

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Access Web Page for Phone

To access the web page for a Cisco Unified IP Phone, perform these steps.

✎

Note   If you cannot access the web page, it may be disabled. See for more information.

Procedure

Step 1   Obtain the IP address of the Cisco Unified IP Phone by using one of these methods:

    a) Search for the phone in Cisco Unified Communications Manager by choosing **Device** > **Phone**. Phones registered with Cisco Unified Communications Manager display the IP address at the top of the Phone Configuration window.

    b) On the phone, press the **Settings** button, choose **Network Configuration**, and then scroll to the IP Address option.

Step 2   Open a web browser and enter the following URL, where *IP_address* is the IP address of the Cisco Unified IP Phone:

http://<*IP_address*> or https://<*IP_address*> (depending on the protocol supported by the Cisco Unified IP Phone)

Cisco Unified IP Phone Web Page Information

The web page for a Cisco Unified IP Phone includes these hyperlinks:

- Device Information: Displays device settings and related information for the phone.

- Network Configuration: Displays network configuration information and information about other phone settings.

- Network Statistics: Includes the following hyperlinks, which provide information about network traffic:

    - Ethernet Information: Displays information about Ethernet traffic.

    - Access: Displays information about network traffic to and from the PC port on the phone.

    - Network: Displays information about network traffic to and from the network port on the phone.

- Device Logs: Includes the following hyperlinks, which provide information that you can use for troubleshooting:

    - Console Logs: Includes hyperlinks to individual log files.

    - Core Dumps: Includes hyperlinks to individual dump files.

    - Status Messages

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• Debug Display: Displays messages that might be useful to the Cisco TAC if you require assistance with troubleshooting.

• Streaming Statistics: Includes the **Stream 1**, **Stream 2**, **Stream 3**, **Stream 4** , and **Stream 5** hyperlinks, which display a variety of streaming statistics.

Related Topics

Control Web Page Access

For security purposes, you may choose to prevent access to the web pages for a phone. If you do so, you will prevent access to the web pages that are described in this chapter and to the Cisco Unified Communications Manager User Options web pages.

You can enable or disable access to the web pages for an individual phone, a group of phones, or to all phones in the system.

To enable or disable access to the web pages for all phones on the system, choose **System** > **Enterprise Parameters** and select Enabled or Disabled from the Web Access drop-down menu.

To enable or disable access to the web pages for a group of phones, choose **Device** > **Device Settings** > **Common Phone Profile** to create a new phone profile or to update an existing phone profile, select Enabled or Disabled from the Web Access drop-down menu and select the common phone profile when you configure your phone.

To enable or disable access to the web pages for a phone, follow these steps from Cisco Unified Communications Manager Administration.

Procedure

Step 1 Choose **Device** > **Phone**.

Step 2 Specify the criteria to find the phone and click **Find**, or click **Find** to display a list of all phones.

Step 3 Click the device name to open the Phone Configuration window for the device.

Step 4 Scroll down to the Product Specific Configuration section. From the Web Access drop-down list box, choose **Disabled** if you want to disable the phone and choose **Enabled** if you want to enable the phone.

Step 5 Click **Update**.

Note   Some features, such as Cisco Quality Report Tool, do not function properly without access to the phone web pages. Disabling web access also affects any serviceability application that relies on web access, such as CiscoWorks.

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Cisco Unified IP Phone and HTTP or HTTPS Protocols

The Cisco Unified IP Phone can be configured to use:

- HTTPS protocol only

- HTTP or HTTPS protocols

If your Cisco Unified IP Phone is configured to use the HTTP or HTTPS protocols, use **http://**<IP_address> or **https://**<IP_address> for phone web access.

If your Cisco Unified IP Phone is configured to use only HTTPS protocol, use **https://**<IP_address> for phone web access.

Device Information Area

The Device Information area on a phone web page displays device settings and related information for the phone. The following table describes these items.

To display the Device Information area, access the web page for the phone as described in Access Web Page for Phone, on page 210, and then click the **Device Information** hyperlink.

Table 48: Device Information Area Items

Item	Description
MAC Address	Media Access Control (MAC) address of the phone
Host Name	Unique, fixed name that is automatically assigned to the phone based on its MAC address
Phone DN	Directory number assigned to the phone
App Load ID	Identifier of the firmware running on the phone
Boot Load ID	Identifier of the factory-installed load running on the phone
Version	Version of the firmware running on the phone
Expansion Module 1	Phone load ID for the first Cisco Unified IP Phone Expansion Module.
Expansion Module 2	Phone load ID for the second Cisco Unified IP Phone Expansion Module.
Hardware Revision	Revision value of the phone hardware
Serial Number	Serial number of the phone
Model Number	Model number of the phone
Message Waiting	Indicator of a voice message on any line of this phone

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Item	Description
UDI	Displays the following Cisco Unique Device Identifier (UDI) information about the phone: • Device Type: Indicates hardware type. For example, phone displays for all phone models. • Device Description: Displays the name of the phone that is associated with the indicated model type. • Product Identifier: Specifies the phone model. • Version Identifier: Represents the hardware version of the phone. The Version Identifier field might display blank if using an older model Cisco Unified IP Phone because the hardware does not provide this information. • Serial Number: Displays the unique serial number of the phone.
Time	Time obtained from the Date/Time Group in Cisco Unified Communications Manager to which the phone belongs.
Time Zone	Time zone obtained from the Date/Time Group in Cisco Unified Communications Manager to which the phone belongs.
Date	Date obtained from the Date/Time Group in Cisco Unified Communications Manager to which the phone belongs.
LLDP: PC Port	Indicates whether Link Layer Discovery Protocol (LLDP) is enabled on the PC port.
LLDP-MED: SW Port	Indicates whether Link Layer Discovery Protocol Media Endpoint Discovery (LLDP-MED) is enabled on the switch port.

Network Configuration Area

The Network Configuration area on a phone web page displays network configuration information and information about other phone settings. The following table describes this information.

You can view and set many of these items from the Network Configuration Menu and the Device Configuration Menu on the Cisco Unified IP Phone. For more information, see Features, Templates, Services, and Users, on page 129.

To display the Network Configuration area, access the web page for the phone as described in the Access Web Page for Phone, on page 210, and then click the **Network Configuration** hyperlink.

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Table 49: Network Configuration Area Items

Item	Description
DHCP Server	IP address of the Dynamic Host Configuration Protocol (DHCP) server from which the phone obtains its IP address.
BOOTP Server	Indicates whether the phone obtains its configuration from a Bootstrap Protocol (BootP) server.
MAC Address	Media Access Control (MAC) address of the phone.
Host Name	Host name that the DHCP server assigned to the phone.
Domain Name	Name of the Domain Name System (DNS) domain in which the phone resides.
IP Address	Internet Protocol (IP) address of the phone.
Subnet Mask	Subnet mask used by the phone.
TFTP Server 1	Primary Trivial File Transfer Protocol (TFTP) server used by the phone.
Default Router 1 to 5	Default router used by the phone (Default Router 1) and optional backup routers (Default Router 2–5.
DNS Server 1 to 5	Primary Domain Name System (DNS) server (DNS Server 1) and optional backup DNS servers (DNS Server 2–5) used by the phone.
Operational VLAN ID	Auxiliary Virtual Local Area Network (VLAN) configured on a Cisco Catalyst switch in which the phone is a member.
Admin. VLAN ID	Auxiliary VLAN in which the phone is a member.

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Item	Description
Unified CM 1 to 5	Host names or IP addresses, in prioritized order, of the Cisco Unified Communications Manager servers with which the phone can register. An item can also show the IP address of an SRST router that is capable of providing limited Cisco Unified Communications Manager functionality, if such a router is available.
	For an available server, an item will show the Cisco Unified Communications Manager server IP address and one of the following states:
	• Active: Cisco Unified Communications Manager server from which the phone is currently receiving call-processing services.
	• Standby: Cisco Unified Communications Manager server to which the phone switches if the current server becomes unavailable.
	• Blank: No current connection to this Cisco Unified Communications Manager server.
	An item may also include the Survivable Remote Site Telephony (SRST) designation, which identifies an SRST router capable of providing Cisco Unified Communications Manager functionality with a limited feature set. This router assumes control of call processing if all other Cisco Unified Communications Manager servers become unreachable. The SRST Cisco Unified Communications Manager always appears last in the list of servers, even if it is active. You configure the SRST router address in the Device Pool section in Cisco Unified Communications Manager Configuration window.
Information URL	URL of the help text that appears on the phone.
Directories URL	URL of the server from which the phone obtains directory information.
Messages URL	URL of the server from which the phone obtains message services.
Services URL	URL of the server from which the phone obtains Cisco Unified IP Phone services.
DHCP Enabled	Indicates whether DHCP is being used by the phone.
DHCP Address Released	Indicates the setting of the DHCP Address Released option on the phone Network Configuration menu.
Alternate TFTP	Indicates whether the phone is using an alternative TFTP server.

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Item	Description
Idle URL	URL that the phone displays when the phone has not been used for the time specified by Idle URL Time, and no menu is open.
Idle URL Time	Number of seconds that the phone has not been used and no menu is open before the XML service specified by Idle URL is activated.
Proxy Server URL	URL of proxy server, which makes HTTP requests to non-local host addresses on behalf of the phone HTTP client and provides responses from the non-local host to the phone HTTP client.
Authentication URL	URL that the phone uses to validate requests made to the phone web server.
SW Port Configuration	Speed and duplex of the switch port, where: • A = Auto Negotiate • 10H = 10-BaseT/half duplex • 10F = 10-BaseT/full duplex • 100H = 100-BaseT/half duplex • 100F = 100-BaseT/full duplex • 1000H = 1000-BaseT/half duplex • 1000F = 1000-BaseT/full duplex • No Link = No connection to the switch port
PC Port Configuration	Speed and duplex of the switch port, where: • A = Autonegotiate • 10H = 10-BaseT/half duplex • 10F = 10-BaseT/full duplex • 100H = 100-BaseT/half duplex • 100F = 100-BaseT/full duplex • 1000H = 1000-BaseT/half duplex • 1000F = 1000-BaseT/full duplex • No Link = No connection to the PC port To configure the setting on multiple phones simultaneously, configure the Remote Port Configuration in the Enterprise Phone Configuration (**System** > **Enterprise Phone Configuration**). **Note** If the ports are configured for Remote Port Configuration in Unified CM, the data cannot be changed on the phone.
TFTP Server 2	Backup TFTP server that the phone uses if the primary TFTP server is unavailable.

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Item	Description
User Locale	User locale associated with the phone user. Identifies a set of detailed information to support users, including language, font, date and time formatting, and alphanumeric keyboard text information.
Network Locale	Network locale associated with the phone user. Identifies a set of detailed information to support the phone in a specific location, including definitions of the tones and cadences used by the phone.
Headset enabled	Indicates whether the Headset button is enabled on the phone.
User Locale Version	Version of the user locale loaded on the phone.
Network Locale Version	Version of the network locale loaded on the phone.
PC Port Disabled	Indicates whether the PC port on the phone is enabled or disabled.
Speaker Enabled	Indicates whether the speakerphone is enabled on the phone.
GARP Enabled	Indicates whether the phone learns MAC addresses from Gratuitous ARP responses.
Video Capability Enabled	Indicates whether the phone can participate in video calls when connected to an appropriately equipped PC.
Voice VLAN Enabled	Indicates whether the phone allows a device attached to the PC port to access the Voice VLAN.
Auto Line Select	Indicates whether the phone shifts the call focus to incoming calls on all lines.
DSCP for Call Control	DSCP IP classification for call control signaling.
DSCP for Configuration	DSCP IP classification for any phone configuration transfer.
DSCP for Services	DSCP IP classification for phone-based services.
Security Mode	Displays the security mode that is set for the phone.
Web Access Enabled	Indicates whether web access is enabled (Yes) or disabled (No) for the phone.
Span to PC Port	Indicates whether the phone will forward packets transmitted and received on the network port to the access port.

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Item	Description
PC VLAN	VLAN used to identify and remove 802.1P/Q tags from packets sent to the PC.
Forwarding Delay	Indicates whether the internal switch begins forwarding packets between the PC port and switched port on the phone when the phone becomes active.
CDP: PC Port	Indicates whether CDP is supported on the PC port.
CDP: SW Port	Indicates whether CDP is supported on the switch port.
LLDP-MED: SW Port	Indicates whether Link Layer Discovery Protocol Media Endpoint Discovery (LLDP-MED) is enabled on the switch port.
LLDP: PC Port	Indicates whether Link Layer Discovery Protocol (LLDP) is enabled on the PC port.
LLDP Asset ID	Identifies the asset ID assigned to the phone for inventory management.
Wireless Headset Hookswitch Control	Enables users to receive notifications of incoming calls and answer or end calls while working in a wireless environment.
LLDP Power Priority	Advertises the phone power priority to the switch, enabling the switch to appropriately provide power to the phones. Settings include: • Unknown(default) • Low • High • Critical

Network Statistics Area

These network statistics areas on a phone web page provide information about network traffic on the phone:

- Ethernet Information area: Displays information about Ethernet traffic.

- Access area: Displays information about network traffic to and from the PC port on the phone.

- Network area: Displays information about network traffic to and from the network port on the phone.

To display a network statistics area, access the web page for the phone as described in Access Web Page for Phone, on page 210, and then click the **Ethernet Information**, **Access**, or **Network** hyperlink.

Related Topics

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Ethernet Information Area

Table 50: Ethernet Information Area Items

Item	Description
Tx Frames	Total number of packets that the phone transmits
Tx broadcast	Total number of broadcast packets that the phone transmits
Tx multicast	Total number of multicast packets that the phone transmits
Tx unicast	Total number of unicast packets that the phone transmits
Rx Frames	Total number of packets the phone receives
Rx broadcast	Total number of broadcast packets the phone receives
Rx multicast	Total number of multicast packets the phone receives
Rx unicast	Total number of unicast packets the phone receives
RxPacketNoDes	Total number of shed packets that a missing Direct Memory Access (DMA) descriptor causes

Access and Network Areas

Table 51: Access Area and Network Area Items

Item	Description
Rx totalPkt	Total number of packets that the phone receives
Rx crcErr	Total number of packets that are received with CRC failed
Rx alignErr	Total number of packets between 64 and 1522 bytes in length that are received with a bad Frame Check Sequence (FCS)
Rx multicast	Total number of multicast packets that the phone receives
Rx broadcast	Total number of broadcast packets that the phone receives

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Item	Description
Rx unicast	Total number of unicast packets that the phone receives
Rx shortErr	Total number of FCS error packets or Align error packets that are received with less than 64 bytes in size
Rx shortGood	Total number of good packets that the phone receives are less than 64 bytes size
Rx longGood	Total number of good packets that the phone receives are greater than 1522 bytes in size
Rx longErr	Total number of FCS error packets or Align error packets that the phone receives that are greater than 1522 bytes in size
Rx size64	Total number of packets received, including bad packets, that are between 0 and 64 bytes in size
Rx size65to127	Total number of packets that the phone receives, including bad packets, that are between 65 and 127 bytes in size
Rx size128to255	Total number of packets that the phone receives, including bad packets, that are between 128 and 255 bytes in size
Rx size256to511	Total number of packets that the phone receives, including bad packets, that are between 256 and 511 bytes in size
Rx size512to1023	Total number of packets that the phone receives, including bad packets, that are between 512 and 1023 bytes in size
Rx size1024to1518	Total number of packets that the phone receives, including bad packets, that are between 1024 and 1518 bytes in size
Rx tokenDrop	Total number of packets dropped due to lack of resources (for example, FIFO overflow)
Tx excessDefer	Total number of packets delayed from transmitting due to medium being busy
Tx lateCollision	Number of times that collisions occurred later than 512 bit times after the start of packet transmission
Tx totalGoodPkt	Total number of good packets (multicast, broadcast, and unicast) that the phone receives

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Item	Description
Tx Collisions	Total number of collisions that occurred while a packet was being transmitted
Tx excessLength	Total number of packets not transmitted because the packet experienced 16 transmission attempts
Tx broadcast	Total number of broadcast packets that a phone transmits
Tx multicast	Total number of multicast packets that a phone transmits
Neighbor Device ID	Identifier of a device connected to this port
Neighbor IP Address	IP address of the neighbor device
Neighbor Port	Neighbor device port to which the phone is connected
LLDP FramesOutTotal	Total number of LLDP frames sent out from the phone
LLDP AgeoutsTotal	Total number of LLDP frames that have been time out in cache
LLDP FramesDiscardedTotal	Total number of LLDP frames that are discarded when any of the mandatory TLVs is missing or out of order or contains out of range string length
LLDP FramesInErrorsTotal	Total number of LLDP frames that received with one or more detectable errors
LLDP FramesInTotal	Total number of LLDP frames that a phone receives
LLDP TLVDiscardedTotal	Total number of LLDP TLVs that are discarded
LLDP TLVUnrecognizedTotal	Total number of LLDP TLVs that are not recognized on the phone
CDP Neighbor Device ID	Identifier of a device connected to this port discovered by CDP protocol
CDP Neighbor IP Address	IP address of the neighbor device discovered by CDP protocol
CDP Neighbor Port	Neighbor device port to which the phone is connected discovered by CDP protocol
LLDP Neighbor Device ID	Identifier of a device connected to this port discovered by LLDP protocol
LLDP Neighbor IP Address	IP address of the neighbor device discovered by LLDP protocol

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Item	Description
LLDP Neighbor Port	Neighbor device port to which the phone is connected discovered by LLDP protocol

Device Logs Area

The Device Logs area on a phone web page provides information that you can use to help monitor and troubleshoot the phone.

- Console Logs: Includes hyperlinks to individual log files. The console log files include debug and error messages received on the phone.

- Core Dumps: Includes hyperlinks to individual dump files.

- Status Messages area: Displays up to the 10 most recent status messages that the phone has generated since it was last powered up. You can also see this information from the Status Messages screen on the phone. Status Messages Screen, on page 187 describes the status messages that can appear.

  To display the Status Messages, access the web page for the phone as described in Access Web Page for Phone, on page 210, and then click the **Status Messages** hyperlink.

- Debug Display area: Displays debug messages that might be useful to Cisco TAC if you require assistance with troubleshooting.

Streaming Statistics

A Cisco Unified IP Phone can stream information to and from up to three devices simultaneously. A phone streams information when it is on a call or running a service that sends or receives audio or data.

The streaming statistics areas on a phone web page provide information about the streams. Most calls use only one stream (Stream 1), but some calls use two or three stream. For example, a barged call uses Stream 1 and Stream 2.

To display a Streaming Statistics area, access the web page for the phone as described in Access Web Page for Phone, on page 210, and then click the **Stream 1**, the **Stream 2**, or the **Stream 3** hyperlink (Cisco Unified IP Phones 7975G, 7965G, and 7945G also include **Stream 4** and **Stream 5** hyperlinks).

The following table describes the items in the Streaming Statistics areas.

Table 52: Streaming Statistics Area Items

Item	Description
Remote Address	IP address and UDP port of the destination of the stream.
Local Address	IP address and UPD port of the phone.
Start Time	Internal time stamp indicating when Cisco Unified Communications Manager requested that the phone start transmitting packets.

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Item	Description
Stream Status	Indication of whether streaming is active.
Host Name	Unique, fixed name that is automatically assigned to the phone based on its MAC address.
Sender Packets	Total number of RTP data packets transmitted by the phone since starting this connection. The value is 0 if the connection is set to receive only mode.
Sender Octets	Total number of payload octets transmitted in RTP data packets by the phone since starting this connection. The value is 0 if the connection is set to receive only mode.
Sender Codec	Type of audio encoding used for the transmitted stream.
Sender Reports Sent (See Note)	Number of times the RTCP Sender Reports have been sent.
Sender Report Time Sent (See Note)	Internal time stamp indicating when a RTCP Sender Report was sent.
Rcvr Lost Packets	Total number of RTP data packets that have been lost since starting receiving data on this connection. Defined as the number of expected packets less the number of packets actually received, where the number of received packets includes any that are late or duplicate. The value displays as 0 if the connection was set to send-only mode.
Avg Jitter	Estimate of mean deviation of the RTP data packet inter-arrival time, measured in milliseconds. The value displays as 0 if the connection was set to send-only mode.
Rcvr Codec	Type of audio encoding used for the received stream.
Rcvr Reports Sent (See Note)	Number of times the RTCP Receiver Reports have been sent.
Rcvr Report Time Sent (See Note)	Internal time stamp indicating when a RTCP Receiver Report was sent.
Rcvr Packets	Total number of RTP data packets received by the phone since starting receiving data on this connection. Includes packets received from different sources if this is a multicast call. The value displays as 0 if the connection was set to send-only mode.

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Item	Description
Rcvr Octets	Total number of payload octets received in RTP data packets by the device since starting reception on the connection. Includes packets received from different sources if this is a multicast call. The value displays as 0 if the connection was set to send-only mode.
MOS LQK	Score that is an objective estimate of the mean opinion score (MOS) for listening quality (LQK) that rates from 5 (excellent) to 1 (bad). This score is based on audible concealment events due to frame loss in the preceding 8-second interval of the voice stream. For more information, see Voice Quality Monitoring, on page 250. **Note** The MOS LQK score can vary based on the type of codec that the Cisco Unified IP Phone uses.
Avg MOS LQK	Average MOS LQK score observed for the entire voice stream.
Min MOS LQK	Lowest MOS LQK score observed from start of the voice stream.
Max MOS LQK	Baseline or highest MOS LQK score observed from start of the voice stream. These codecs provide the following maximum MOS LQK score under normal conditions with no frame loss: **For Cisco Unified IP Phone 7975G, 7965G, and 7945G:** • G.711 gives 4.5. • G.722 gives 4.5. • G.728/iLBC gives 3.9. • G.729 A/AB gives 3.8. **For Cisco Unified IP Phone 7971G-GE and 7970G:** • G.711 gives 4.5 • G.729 A /AB gives 3.7
MOS LQK Version	Version of the Cisco proprietary algorithm used to calculate MOS LQK scores.

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Item	Description
Cumulative Conceal Ratio	Total number of concealment frames divided by total number of speech frames received from start of the voice stream.
Interval Conceal Ratio	Ratio of concealment frames to speech frames in preceding 3-second interval of active speech. If using voice activity detection (VAD), a longer interval might be required to accumulate 3 seconds of active speech.
Max Conceal Ratio	Highest interval concealment ratio from start of the voice stream.
Conceal Secs	Number of seconds that have concealment events (lost frames) from the start of the voice stream (includes severely concealed seconds).
Severely Conceal Secs	Number of seconds that have more than 5 percent concealment events (lost frames) from the start of the voice stream.
Latency (See Note)	Estimate of the network latency, expressed in milliseconds. Represents a running average of the round-trip delay, measured when RTCP receiver report blocks are received.
Max Jitter	Maximum value of instantaneous jitter, in milliseconds.
Sender Size	RTP packet size, in milliseconds, for the transmitted stream.
Sender Reports Received (See Note)	Number of times RTCP Sender Reports have been received.
Sender Report Time Received (See Note)	Last time at which an RTCP Sender Report was received.
Rcvr Size	RTP packet size, in milliseconds, for the received stream.
Rcvr Discarded	RTP packets received from network but discarded from jitter buffers.
Rcvr Reports Received (See Note)	Number of times RTCP Receiver Reports have been received.
Rcvr Report Time Received (See Note)	Last time at which an RTCP Receiver Report was received.
Voice Quality Metrics	

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Item	Description
MOS LQK	Score that is an objective estimate of the mean opinion score (MOS) for listening quality (LQK) that rates from 5 (excellent) to 1 (bad). This score is based on audible concealment events due to frame loss in the preceding 8-second interval of the voice stream. For more information, see Voice Quality Monitoring, on page 250. **Note** The MOS LQK score can vary based on the type of codec that the Cisco Unified IP Phone uses.
Avg MOS LQK	Average MOS LQK score observed for the entire voice stream.
Min MOS LQK	Lowest MOS LQK score observed from start of the voice stream.
Max MOS LQK	Baseline or highest MOS LQK score observed from start of the voice stream. These codecs provide the following maximum MOS LQK score under normal conditions with no frame loss: For Cisco Unified IP Phone 7975G, 7965G, and 7945G: • G.711 gives 4.5. • G.722 gives 4.5. • G.728/iLBC gives 3.9. • G.729 A/AB gives 3.8. For Cisco Unified IP Phone 7971G-GE and 7970G: • G.711 gives 4.5 • G.729 A /AB gives 3.7
MOS LQK Version	Version of the Cisco proprietary algorithm used to calculate MOS LQK scores.
Cmltve Conceal Ratio	Total number of concealment frames divided by total number of speech frames received from start of the voice stream.
Interval Conceal Ratio	Ratio of concealment frames to speech frames in preceding 3-second interval of active speech. If using voice activity detection (VAD), a longer interval might be required to accumulate 3 seconds of active speech.

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Item	Description
Max Conceal Ratio	Highest interval concealment ratio from start of the voice stream.
Conceal Secs	Number of seconds that have concealment events (lost frames) from the start of the voice stream (includes severely concealed seconds).
Severely Conceal Secs	Number of seconds that have more than 5 percent concealment events (lost frames) from the start of the voice stream.

Note   When the RTP Control Protocol is disabled, no data generates for this field and thus displays as 0.

Related Topics

Cisco Unified IP Phone Settings, on page 61

Features, Templates, Services, and Users, on page 129

Call Statistics Screen, on page 202

Voice Quality Monitoring, on page 250

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CHAPTER **9**

Troubleshooting and Maintenance

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.

For additional troubleshooting information, see the *Using the 79xx Status Information For Troubleshooting* tech note. This document is available to registered Cisco.com users at this URL:

http://www.cisco.com/en/US/products/hw/phones/ps379/products_tech_note09186a00800945bd.shtml

Troubleshooting

This section includes the following topics:

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 Phone Startup Process, on page 57. 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, and the LCD screen should display information.

Cause

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

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Solution

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

1. 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 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.

2. Verify that the phone is receiving power:

   • If you are using external power, verify that the electrical outlet is functional.

   • 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.

   • Make sure that the phone is connected to a switch that supports IEEE 802.3af Class 3 (15.4 W in-line power at the switch port).

3. If the phone still 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.

4. If the phone still does not start up properly, perform a factory reset of the phone.

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

Related Topics

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

If the phone proceeds past the first stage of the startup process (LED buttons flashing on and off) but continues to cycle through the messages displaying on the LCD screen, 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.

These sections can assist you in determining the reason the phone is unable to start up properly:

Phone Displays Error Messages

Problem

Status messages display errors during startup.

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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. See Status Messages Screen, on page 187 for instructions about accessing status messages and for a list of potential errors, their explanations, and their solutions.

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 241.

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. See Check DHCP settings, on page 241.

DNS Settings

Problem

The DNS settings may be incorrect.

Solution

If you are using DNS to refer to the TFTP server or to Cisco Unified Communications Manager, you must ensure that you have specified a DNS server. See Verify DNS Settings, on page 242.

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Cisco Unified Communications Manager Settings on Phone

Problem

The phone may have the wrong Cisco Unified Communications Manager information.

Solution

On the Cisco Unified IP Phone, press the **Settings** button, choose **Device Configuration**, and look at the Unified CM Configuration options. The Cisco Unified IP Phone attempts to open a TCP connection to all the Cisco Unified Communications Manager servers that are part of the assigned Cisco Unified Communications Manager group. If none of these options contain IP addresses or show Active or Standby, the phone is not properly registered with Cisco Unified Communications Manager. See Cisco Unified Communications Manager Phone Registration, on page 232 for tips on resolving this problem.

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 243.

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 Phone Configuration File, on page 242.

Cisco Unified Communications Manager Phone Registration

Problem

The phone is not registered with 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. Review the information and procedures in Cisco Unified Communications Manager Phone Addition Methods, on page 39 to ensure that the phone has been added to the Cisco Unified Communications Manager database.

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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 Cisco Unified IP Phone MAC Address Determination, on page 43.

If the phone is already in the Cisco Unified Communications Manager database, its configuration file may be damaged. See Configuration File Corruption, on page 232 for assistance.

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 Security Error Message

Problem

The phone displays "Security Error" on the screen.

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 message "Security Error" appears on the screen.

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 Factory Reset, on page 248.

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. These sections can help you identify the cause of a phone resetting in your network:

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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 Setting Errors

Problem

The DHCP settings may be incorrect.

Solution

The following suggestions can help you determine if the phone has been properly configured to use DHCP:

1. Verify that you have properly configured the phone to use DHCP. For more information, see Network Configuration Menu, on page 66.

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.

   Cisco Unified IP Phone 7971G-GE and 7970G 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 Cisco Unified IP Phone 7971G-GE and 7970G to restart and request a new IP address from the DHCP server.

Static IP Address Setting Errors

Problem

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

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Solution

If the phone has been assigned a static IP address, verify that you have entered the correct settings.

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 same switch as 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.

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 whether a Cisco Unified IP Phone received a command from Cisco Unified Communications Manager to reset by pressing the **Applications Menu** button on the phone and choosing **Settings** > **Status** > **Network Statistics**. If the phone was recently reset one of these messages appears:

- Reset-Reset: Phone received a Reset-Reset request from Cisco Unified Communications Manager Administration.

- Reset-Restart: Phone received a Reset-Restart request 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 243.

Power Connection Problems

Problem

The phone does not appear to be powered up.

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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.

Cisco Unified IP Phone Security Problems

The following sections provide troubleshooting information for the security features on the Cisco Unified IP Phone. For information about the solutions for any of these issues, and for additional troubleshooting information about security, see *Cisco Unified Communications Manager Security Guide*.

CTL File Problems

The following sections assist in troubleshooting CTL file problems.

Authentication Error, Phone Cannot Authenticate CTL File

Problem

A device authentication error occurs.

Cause

CTL file does not have a Cisco Unified Communications Manager certificate or has an incorrect certificate.

Solution

Install a correct certificate.

Phone Cannot Authenticate CTL File

Problem

Phone cannot authenticate the CTL file.

Cause

The security token that signed the updated CTL file does not exist in the CTL file on the phone.

Solution

Change the security token in the CTL file and install the new file on the phone.

ITL File Authenticates but Other Configuration Files Do Not Authenticate

Problem

Phone cannot authenticate any configuration files other than the ITL file.

Cause

The configuration file may not be signed by the corresponding certificate in the phone Trust List.

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Solution

Re-sign the configuration file by using the correct certificate.

Phone Does Not Register

Problem

Phone does not register with Cisco Unified Communications Manager.

Cause

The CTL file does not contain the correct information for the Cisco Unified Communications Manager server.

Solution

Change the Cisco Unified Communications Manager server information in the CTL file.

Signed Configuration Files Are Not Requested

Problem

Phone does not request signed configuration files.

Cause

The CTL file does not contain any TFTP entries with certificates.

Solution

Configure TFTP entries with certificates in the CTL file.

802.1X Authentication Problems

802.1X authentication problems can be broken into the categories described in the following table.

Table 53: Identifying 802.1X Authentication Problems

If all the following conditions apply,	See
• Phone cannot obtain a DHCP-assigned IP address. • Phone does not register with Cisco Unified Communications Manager. • Phone status displays as "Configuring IP" or "Registering." • 802.1X Authentication Status displays as "Held" (see 802.1X Authentication and Status Menus, on page 122 for more details). • Status menu displays 802.1X status as "Failed" (see Status Menu, on page 186 for more details).	802.1X Enabled on Phone but Phone Does Not Authenticate, on page 238

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If all the following conditions apply,	See
• Phone cannot obtain a DHCP-assigned IP address • Phone does not register with Cisco Unified Communications Manager • Phone status display as "Configuring IP" or "Registering" • 802.1X Authentication Status displays as "Disabled" • Status menu displays DHCP status as timing out	802.1X Not Enabled, on page 238
• Phone cannot obtain a DHCP-assigned IP address. • Phone does not register with Cisco Unified Communications Manager. • Phone status display as "Configuring IP" or "Registering." • Cannot access phone menus to verify 802.1X status.	Factory Reset of Phone Has Deleted 802.1X Shared Secret, on page 239

802.1X Enabled on Phone but Phone Does Not Authenticate

Problem

The phone cannot authenticate.

Cause

These errors typically indicate that 802.1X authentication is enabled on the phone, but the phone is unable to authenticate.

1. Verify that you have properly configured the required components (see 802.1X Authentication, on page 21 for more information).

2. Confirm that the shared secret is configured on the phone (see 802.1X Authentication and Status Menus, on page 122 for more information).

   • If the shared secret is configured, verify that you have the same shared secret entered on the authentication server.

   • If the shared secret is not configured, enter it, and ensure that it matches the one on the authentication server.

802.1X Not Enabled

Problem

The phone does not have 802.1X configured.

Cause

These errors typically indicate that 802.1X authentication is not enabled on the phone.

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Solution

To enable it, see 802.1X Authentication and Status Menus, on page 122.

Factory Reset of Phone Has Deleted 802.1X Shared Secret

Problem

After a reset, the phone does not authenticate.

Cause

These errors typically indicate that the phone has completed a factory reset (see Factory Reset, on page 248) while 802.1X was enabled. A factory reset deletes the shared secret, which is required for 802.1X authentication and network access.

Solution

To resolve this, you have two options:

- Temporarily disable 802.1X authentication on the switch.

- Temporarily move the phone to a network environment that is not using 802.1X authentication.

Once the phone starts up normally in one of these conditions, you can access the 802.1X configuration menus and re-enter the shared secret (see 802.1X Authentication and Status Menus, on page 122).

Audio and Video Problems

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

Phone Display Is Wavy

Problem

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

Cause

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

Solution

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

No Speech Path

Problem

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

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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

This section describes troubleshooting of general telephone call problems.

VPN-Connected Phone Does Not Log Calls

Problem

A remote location (home office) phone that is connected through the VPN does not log missed, placed, or received calls.

Cause

Without explicitly setting the Alternate TFTP setting, the Cisco IP Phone cannot contact the TFTP server and download the configuration and other files, and function properly.

Solution

Set up the phone to use the Alternate TFTP server and configure the TFTP server IP address.

Related Topics

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.

Set Up Remote Phone

Cisco IP Phones that are configured for SSL VPN to ASA using the built-in client in a remote location (for example, a home office) have a special configuration requirement.

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We recommend that you provide the phone with an Alternate TFTP server setting manually. This setting allows the phone to download the configuration and other files from TFTP. The phone in a remote location (home office) cannot correctly provide OPTION 150 to the phone using DHCP.

The IP phone can register to the last-known Cisco Unified Communications Manager, but any configuration updates cannot applied until you configure the manual TFTP server address.

Procedure

Step 1	On the phone, select **Applications**.
Step 2	Navigate to the **IPv4 Settings** window.
Step 3	Scroll to the Alternate TFTP option and set the field to **Yes**.
Step 4	In the TFTP Server 1 field, set the TFTP server address.
Step 5	Save the changes.

Check TFTP Settings

Procedure

Step 1	You can determine the IP address of the TFTP server used by the phone by pressing the **Settings** button on the phone, choosing **Network Configuration** > **IPv4**, and scrolling to the **TFTP Server 1** option.
Step 2	If you have assigned a static IP address to the phone, you must manually enter a setting for the TFTP Server 1 option. See Network Configuration Menu, on page 66.
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.
Step 4	You can also 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 Network Configuration Menu, on page 66 for instructions.

Check DHCP settings

Procedure

Step 1	On the Cisco Unified IP Phone, press the **Settings** button, choose **Network Configuration**, and look at the following options:

- DHCP Server: If you have assigned a static IP address to the 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* at this URL: http://www.cisco.com/en/US/products/hw/switches/ps708/prod_tech_notes_list.html

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- 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 Network Configuration Menu, on page 66 for instructions.

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* at this URL:
http://www.cisco.com/en/US/tech/tk648/tk361/technologies_tech_note09186a00800f0804.shtml

Verify DNS Settings

To verify DNS settings, perform these steps.

Procedure

Step 1 Verify this setting by pressing **Settings**.

Step 2 Choose **Network Configuration** and scroll to the **DNS Server 1** option.

Step 3 Verify that a CNAME entry exists in the DNS server for the TFTP server and for the Cisco Unified Communications Manager system.

Step 4 Ensure that DNS is configured to do reverse look-ups.

Create New Phone 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 configuration file is deleted from the Cisco Unified Communications Manager TFTP server. The phone directory number or numbers remain in the Cisco Unified Communications Manager database. They are called "unassigned DNs" and can be used for 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. See the *Cisco Unified Communications Manager Administration Guide* for more information.

- 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 the phone has no button with which calls 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:

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Procedure

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 Cisco Unified Communications Manager Phone Addition Methods, on page 39 for details.

Step 4 Power cycle the phone.

Start Service

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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.

Determine DNS or Connectivity Issues

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

Procedure

Step 1 Use the **Erase** softkey to reset phone settings to their default values. See Cisco Unified IP Phone Reset or Restore, on page 248 for details.

Step 2 Modify DHCP and IP settings:

   a) Disable DHCP. See Network Configuration Menu, on page 66 for instructions.
   b) Assign static IP values to the phone. See Network Configuration Menu, on page 66 for instructions. Use the same default router setting used for other functioning Cisco Unified IP Phones.

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    c)   Assign TFTP server. See Network Configuration Menu, on page 66 for instructions. 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 its DNS name.

Step 5   From Cisco Unified Communications Manager, choose **Device** > **Phone** and verify that you have assigned the correct MAC address to this Cisco Unified IP Phone. For information about determining a MAC address, see Cisco Unified IP Phone MAC Address Determination, on page 43.

Step 6   Power cycle the phone.

General Troubleshooting Information

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

Table 54: Cisco Unified IP Phone Troubleshooting

Summary	Explanation
Daisy-chaining IP phones	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 do not work.
Poor quality when calling mobile phones using the G.729 protocol	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 an IP phone and a mobile phone will have poor voice quality. Use G.729 only when absolutely necessary.
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 come up until a broadcast storm ends.

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Summary	Explanation
Moving a network connection from the phone to a workstation	If you are powering your phone through the network connection, you must be careful if you decide to unplug the phone network connection and plug the cable into a desktop computer. **Caution** 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 no phone is on the line and to stop providing power to the cable.
Changing the telephone 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. See Unlock and Lock Options, on page 62 for details.
Codec mismatch between the phone and another device	The RxType and the TxType statistics show the codec that is 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, 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, on page 202 for information about displaying these statistics.
Sound sample mismatch between the phone and another device	The RxSize and the TxSize statistics show the size of the voice packets that are used in a conversation between this Cisco Unified IP phone and the other device. The values of these statistics should match. See Call Statistics Screen, on page 202 for information about displaying these statistics.
Gaps in voice calls	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. See Call Statistics Screen, on page 202 for information about displaying these statistics.

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Summary	Explanation
Loopback condition	A loopback condition can occur when the following conditions are met: • The SW Port Configuration option in the Network Configuration menu on the phone is set to **10 Half**(10-BaseT/half duplex). • The phone receives power from an external power supply. • The phone is powered down (the power supply is disconnected). In this case, the switch port on the phone can become disabled and the following message will appear in the switch console log: HALF_DUX_COLLISION_EXCEED_THRESHOLD To resolve this problem, re-enable the port from the switch.
Peer to peer image distribution fails.	If the peer to peer image distribution fails, the phone will default to using the TFTP server to download firmware. Access the log messages stored on the remote logging machine to help debug the peer to peer image distribution feature. **Note** These log messages are different than the log messages sent to the phone log.
Cisco VT Advantage/ Unified Video Advantage (CVTA)	If you are having problems getting CVTA to work, make sure that the PC Port is enabled, and that CDP is enabled on the PC port.
Phone call cannot be established	The phone does not have a DHCP IP address, is unable to register to Cisco Unified Communications Manager, and shows a Configuring IP or Registering message. Verify the following: 1. The Ethernet cable is attached. 2. The Cisco CallManager service is running on the Cisco Unified Communications Manager server. 3. Both phones are registered to the same Cisco Unified Communications Manager. 4. Audio server debug and capture logs are enabled for both phones. If needed, enable Java debug.

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Summary	Explanation
Call established with the iLBC protocol does not show that the iLBC codec is being used	Call statistics display does not show iLBC as the receiver/sender codec. 1. Check the following by using Cisco Unified Communications Manager Administration: • Both phones are in the iLBC device pool. • The iLBC device pool is configured with the iLBC region. • The iLBC region is configured with the iLBC codec. 2. Capture a sniffer trace between the phone and Cisco Unified Communications Manager and verify that SCCP messages, OpenReceiveChannel, and StationMediaTransmit messages have media payload type value equal to 86. If so, the problem is with the phone; otherwise, the problem is with the Cisco Unified Communications Manager configuration. 3. Enable audio server debug and capture logs from both phones. If needed, enable Java debug.

General Troubleshooting Tips for Cisco Unified IP Phone Expansion Module

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

Table 55: Cisco Unified IP Phone Expansion Module Troubleshooting

Problem	Solution
No display on the Cisco Unified IP Phone Expansion Module.	Verify that all of the cable connections are correct. Verify that you have power to the Cisco Unified IP Phone Expansion Module.
Lighted buttons on the first Cisco Unified IP Phone Expansion Module are all red.	Verify that the Cisco Unified IP Phone Expansion Module is configured in Cisco Unified Communications Manager.
Lighted buttons on the second Cisco Unified IP Phone Expansion Module are all amber.	Verify that the Cisco Unified IP Phone Expansion Module is configured in Cisco Unified Communications Manager.

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Cisco Unified IP Phone Reset or Restore

Two methods exist for resetting or restoring the Cisco Unified IP Phone:

Basic Reset

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

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

Table 56: Basic Reset Methods

Operation	Performing	Explanation
Restart phone	From the Main screen, press **Settings** to display the Settings menu, then press ****#****. **Note** This factory reset sequence also works from any other screen that does not accept user input.	Resets any user and network configuration changes that you have made but that the phone has not written to the flash memory to previously saved settings, then restarts the phone.
Erase softkey	From the Settings menu, unlock phone options (see Unlock and Lock Options, on page 62). Then press **Erase**.	Resets user and network configuration settings to their default values, deletes the CTL file from the phone, and restarts the phone.
	From the Network Configuration menu, unlock phone options (see Unlock and Lock Options, on page 62). Then press **Erase**.	Resets network configuration settings to their default values and resets the phone. (This method causes DHCP reconfigure the IP address of the phone.)
	From the Security Configuration menu, unlock phone options (see Unlock and Lock Options, on page 62). Then press the **Erase** softkey.	Deletes the CTL file from the phone and restarts the phone.

Factory Reset

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

- CTL file: Erased
- LSC: Erased
- User configuration settings: Reset to default values
- Network configuration settings: Reset to default values

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- Call histories: Erased
- Locale information: Reset to default values
- Phone application: Erased (phone recovers by loading the appropriate default load file, which depends on the phone model term75.default.loads, term71.default.loads, term70.default.loads, term65.default.loads, or term45.default.loads)

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.
- The default load file for your phone model and the files specified in that file should be available on the TFTP server that is specified by the DHCP packet.

To perform a factory reset of a phone, follow these steps:

Procedure

Step 1   Unplug the power cable from the phone and then plug it back in.

The phone begins the power-up cycle.

Step 2   While the phone is powering up, and before the Speaker button flashes on and off, press and hold #.

Continue to hold # until each line button flashes on and off in sequence in orange (for the Cisco Unified IP Phone 7975G, 7971G-GE and 7970G) or amber (for the Cisco Unified IP Phone 7965G and 7945G).

Step 3   Release # and press **123456789*0#**.

You can press a key twice in a row, but if you press the keys out of sequence, the factory reset does not take place.

After you press these keys, the line buttons on the phone flash orange and then green (for the Cisco Unified IP Phone 7975G, 7971G-GE and 7970G) or red (for the Cisco Unified IP Phone 7965G and 7945G), and the phone goes through the factory reset process. This process can take several minutes.

Do not power down the phone until it completes the factory reset process, and the main screen displays.

Additional Troubleshooting Information

If you have additional questions about troubleshooting the Cisco Unified IP Phones, these Cisco.com websites provide you with more tips.

- Cisco Unified IP 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

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Maintenance

This section contains the following topics

Quality Report Tool

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

You can configure Cisco Unified IP Phones with QRT. When you do so, users can report problems with phone calls pressing **QRT**. This softkey is available only when the Cisco Unified IP Phone is in the Connected, Connected Conference, Connected Transfer, or OnHook states.

When a user presses **QRT**, 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 if the destination device is a Cisco Unified IP Phone.

For more information about using QRT, see the *Cisco Unified Serviceability Administration Guide*.

Voice Quality Monitoring

To measure the voice quality of calls that are sent and received within the network, Cisco Unified IP Phones use these statistical metrics based on concealment events. The Digital Signal Processor (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 Cisco Unified IP 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, Cisco Voice Transmission Quality (CVTQ) index. Depending on the MOS LQK version number, these scores might be compliant 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.

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.

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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.

You can access voice quality metrics from the Cisco Unified IP Phone by using the Call Statistics screen (see Call Statistics Screen, on page 202) or remotely by using Streaming Statistics (see Remote Monitoring, on page 209).

Voice Quality Metric Interpretation

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 Cisco Unified IP Phone uses. The following codecs provide these maximum MOS LQK scores under normal conditions with zero frame loss:

- For Cisco Unified Phone 7975G, 7965G, and 7945G:

    - G.711 gives 4.5 score.

    - G.722 gives 4.5.

    - G.728/iLBC gives 3.9.

    - G.729A/AB gives 3.8.

- For Cisco Unified Phone 7971G-GE and 7970G:

    - G.711 codec gives 4.5 score.

    - G.729A/AB gives 3.7.

Note

- CVTQ does not support wideband (7 kHz) speech codecs, as ITU has not defined the extension of the technique to wideband. Therefore, MOS 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/low packet loss, and lower scores (approximately 3.5) indicate low quality/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:

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Table 57: Changes to Voice Quality Metrics

Metric change	Condition
MOS LQK scores decrease significantly	Network impairment from packet loss or high jitter: • Average MOS LQK decreases could indicate widespread and uniform impairment. • Individual MOS LQK decreases indicate bursty impairment. Cross-check with Conceal Ratio and Conceal Seconds for evidence of packet loss and jitter.
MOS LQK scores decrease significantly	Check to see whether the phone is using a different codec than expected (RxType and TxType). Check to see whether the MOS LQK version changed after a firmware upgrade.
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.	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. Acoustic problems coming from a speakerphone, handsfree cellular phone, or wireless headset. Check packet transmit (TxCnt) and packet receive (RxCnt) counters to verify that voice packets are flowing.

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

Cisco Unified IP Phone Cleaning

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

Disable the screen before cleaning it so that you will not inadvertently choose a feature from the pressure of the cleaning cloth. To disable the screen, press **Display** for more than one second. The phone displays `Touchscreen Disabled` or `Phone Screen Disabled` and the **Display** button flashes green.

After one minute, the screen automatically reenables itself. To reenable the screen before that, press the flashing **Display** button for more than one second. The phone displays `Touchscreen Enabled` or `Phone Screen Enabled`.

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Internal Support Web Site

Internal Support Web Site Overview

If you are a system administrator, you are likely the primary source of information for Cisco Unified IP Phone users in your network or company. It is important to provide current and thorough information to users.

Cisco recommends that you create a web page on your internal support site that provides users with important information about their Cisco Unified IP Phones.

This chapter describes information that you might want on the support web site.

Cisco Unified IP Phone User Support

To successfully use some of the features on the Cisco Unified IP Phone (including Speed Dial, Services, and voice message system options), users must receive information from you or from your network team or must be able to contact you for assistance. Make sure to provide users with the names of people to contact for assistance and with instructions for contacting those people.

User Options Web Pages Access

Before a user can access the User Options web pages, you must use Cisco Unified Communications Manager Administration to add the user to a standard Cisco Unified Communications Manager End User group: choose **User Management** > **User Groups**. For more information, see:

- *Cisco Unified Communications Manager Administration Guide*, "User Group Configuration" chapter

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• *Cisco Unified Communications Manager System Guide*, "Roles and User Groups" chapter

Online Help on Phone

The Cisco Unified IP Phones provide access to a comprehensive online help system. To view the main help menu on a phone, press the **?** button. If you are already in Help, press **Main**.

Main menu topics include:

• About Your Cisco Unified IP Phone: Descriptive information about the phone model

• How do I...?: Procedures and information about commonly used phone tasks

• Calling Features: Descriptions and procedures for using calling features, such as conference and transfer

• Help: Tips on using and accessing Help

You can also use the **?** button to obtain information about softkeys, menu items, and the help system itself. See your User Guide for more information.

Cisco Unified IP Phone Manuals

You should provide users with access to user documentation for the Cisco Unified IP Phones. Each user guide includes detailed user instructions for key phone features.

Several Cisco Unified IP Phone models are available, so to assist users in finding the appropriate documentation on the Cisco website, Cisco recommends that you provide links to the current documentation. If you do not want to or cannot send users to the Cisco website, Cisco suggests that you download the PDF files and provide them to the users on your website.

For a list of available documentation for Cisco Unified IP Phones, go to this URL:

http://www.cisco.com/en/US/products/hw/phones/ps379/tsd_products_support_series_home.html

For a list of available documentation for Cisco Unified Communications Manager, go to this URL:

http://www.cisco.com/en/US/products/sw/voicesw/ps556/tsd_products_support_series_home.html

Cisco Unified IP Phone 7900 Series eLearning Tutorials for SCCP Phones

Cisco Unified IP Phone 7900 Series eLearning tutorials use audio and animation to demonstrate basic calling features for SCCP phones. The eLearning tutorials are currently available for the Cisco Unified IP Phone 7970 Series (7970G, 7971G-GE) and the Cisco Unified IP Phone models 7905G, 7912G, 7940G, 7941G, 7941G-GE, 7960G, 7961G, and 7961G-GE.

Users can access runtime versions of the eLearning tutorials (English only) from Cisco.com by looking for tutorials under relevant phone models at this site:

http://cisco.com/en/US/products/hw/phones/ps379/products_user_guide_
list.htmlhttp://cisco.com/en/US/products/hw/phones/ps379/products_user_guide_list.html

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Administrators can download customizable versions of the eLearning tutorials (English only) from the phone product pages on cisco.com at

http://cisco.com/en/US/products/hw/phones/ps379/prod_models_home.html

Refer to the tutorial Read Me file that is included with the relevant eLearning tutorial for specific instructions, including how to link to the most recent user guide PDF.

Note The eLearning tutorials are updated periodically and therefore might not contain the latest feature information for users. For the latest feature information, see the *Cisco Unified IP Phone User Guide* that applies to the phone model and Cisco Unified Communications Manager version.

Phone Features User Subscription and Setup

Users can perform a variety of activities by using the Cisco Unified Communications Manager User Options web pages. These activities include subscribing to services, setting up speed dial and call forwarding numbers, configuring ring settings, and creating a personal address book. Keep in mind that configuring settings on a phone using a website might be new for your users. You need to provide as much information as possible to ensure that they can successfully access and use the User Options web pages.

Make sure to provide users with the following information about the User Options web pages:

- The URL required to access the application. This URL is:

  http://<*server_name:portnumber*>**/ccmuser/**, where *server_name* is the host on which the web server is installed.

- A user ID and default password are needed to access the application.

  These settings correspond to the values you entered when you added the user to Cisco Unified Communications Manager (see Cisco Unified Communications Manager User Addition, on page 165).

- A brief description of what a web-based, graphical user interface application is, and how to access it with a web browser.

- An overview of the tasks that users can accomplish by using the web page.

User Voice Messaging System Access

Cisco Unified Communications Manager lets you integrate with different voice messaging systems, including the Cisco Unity voice messaging system. Because you can integrate with a variety of systems, you must provide users with information about how to use your specific system.

You should provide this information to each user:

- How to access the voice messaging system account.

  Make sure that you have used Cisco Unified Communications Manager to configure the Messages button on the Cisco Unified IP Phone.

- Initial password for accessing the voice messaging system.

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Make sure that you have configured a default voice messaging system password for all users.

• How the phone indicates that voice messages are waiting.

Make sure that you have used Cisco Unified Communications Manager to set up a message waiting indicator (MWI) method.

User Personal Directory Entries Setup

Users can configure personal directory entries on the Cisco Unified IP Phone. To configure a personal directory, users must have access to the following:

• User Options web pages: Make sure that users know how to access their User Options web pages. See Phone Features User Subscription and Setup, on page 255 for details.

• Cisco Unified IP Phone Address Book Synchronizer: Make sure to provide users with the installer for this application:

Obtain Cisco Unified IP Phone Address Book Synchronizer

To download a copy of the synchronizer to send to your users, follow these steps:

Procedure

Step 1 To obtain the installer, choose **Application** > **Plugins** from Cisco Unified Communications Manager Administration.

Step 2 Select **Download**, which is located next to the Cisco Unified IP Phone Address Book Synchronizer plugin name.

Step 3 When the file download dialog box displays, select **Save**.

Step 4 Send the TabSyncInstall.exe file and the instructions in Cisco Unified IP Phone Address Book Synchronizer Deployment, on page 256 to all users who require this application.

Cisco Unified IP Phone Address Book Synchronizer Deployment

The Cisco Unified IP Phone Address Book Synchronizer synchronizes data that is stored in your Microsoft Windows address book with the Cisco Unified Communications Manager directory and the User Options Personal Address Book.

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Tip To successfully synchronize the Windows address book with the Personal Address Book, all Windows address book users should be entered in the Windows address book before you perform the following procedures.

Install Synchronizer

To install the Cisco Unified IP Phone Address Book Synchronizer, follow these steps:

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Procedure

Step 1	Get the Cisco Unified IP Phone Address Book Synchronizer installer file from your system administrator.
Step 2	Double-click the TabSyncInstall.exe file that your administrator provided.
	The publisher dialog box displays.
Step 3	Select **Run**.
	The Welcome to the InstallShield Wizard for Cisco Unified CallManager Personal Address Book Synchronizer window displays.
Step 4	Select **Next**.
	The License Agreement window displays.
Step 5	Read the license agreement information, and select the **I Accept**. Select **Next**.
	The Destination Location window displays.
Step 6	Choose the directory in which you want to install the application and select **Next**.
	The Ready to Install window displays.
Step 7	Select **Install**.
	The installation wizard installs the application to your computer. When the installation is complete, the InstallShield Wizard Complete window displays.
Step 8	Select **Finish**.
Step 9	To complete the process, follow the steps in Set Up Synchronizer, on page 257.

Set Up Synchronizer

To configure the Cisco Unified IP Phone Address Book Synchronizer, perform these steps:

Procedure

Step 1	Open the Cisco Unified IP Phone Address Book Synchronizer.
	If you accepted the default installation directory, you can open the application by choosing **Start** > **All Programs** > **Cisco Systems** > **TabSync**.
Step 2	To configure user information, select **User**.
	The Cisco Unified CallManager User Information window displays.
Step 3	Enter the Cisco Unified IP Phone user name and password and select **OK**.
Step 4	To configure Cisco Unified Communications Manager server information, select **Server**.
	The Configure Cisco Unified CallManager Server Information window displays.
Step 5	Enter the IP address or host name and the port number of the Cisco Unified Communications Manager server and select **OK**.

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If you do not have this information, contact your system administrator.

Step 6   To start the directory synchronization process, select **Synchronize**.

The Synchronization Status window provides the status of the address book synchronization. If you chose the user intervention for duplicate entries rule and you have duplicate address book entries, the Duplicate Selection window displays.

Step 7   Choose the entry that you want to include in your Personal Address Book and select **OK**.

Step 8   When synchronization is complete, select **Exit** to close the Cisco Unified CallManager Address Book Synchronizer.

Step 9   To verify whether the synchronization worked, sign in to your User Options web pages and choose **Personal Address Book**. The users from your Windows address book should be listed.

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Feature Support by Protocol for Cisco Unified IP Phones

This appendix provides information about feature support for the Cisco Unified IP Phones using the SCCP or SIP protocol with Cisco Unified Communications Manager Release 8.6.

The following table provides a high-level overview of calling features and their support by protocol. This table focuses primarily on end user calling features and is not intended to represent a comprehensive listing of all available phone features. For details about user interface differences and feature use, see the *Cisco Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G User Guide*.

The guide is available at this URL:

http://www.cisco.com/en/US/products/hw/phones/ps379/tsd_products_support_series_home.html

The specific sections that describe the features in the user guide are referenced in the table.

Table 58: Cisco Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G Feature Support by Protocol

Features	Protocol: SCCP	Protocol: SIP	For more information
Calling features			
Abbreviated Dialing	Supported	Supported	Calling features: Additional call options
Agent Greeting	Supported	Supported	Calling features: Call answer
Anonymous Call Block	Not supported	Supported	
Assisted Directed Call Park	Not supported	Supported	Calling features: Advanced call handling - Call park
Audible Message Waiting Indicator	Supported	Supported	Voice messages
AutoAnswer	Supported	Supported	Handset, headset, and speakerphone
Auto Call Pickup	Supported	Supported	

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Features	Protocol: SCCP	Protocol: SIP	For more information
Auto Dial	Supported	Supported	Calling features: Basic call options
Barge (and cBarge)	Supported	Supported	Calling features: Advanced call handling - Shared lines
Block External to External Transfer	Supported	Supported	
Busy Lamp Field (BLF)	Supported	Supported	Calling features: Advanced call handling - Busy Lamp Field features
Busy Lamp Field (BLF) Pickup	Supported	Supported	Calling features: Advanced call handling - Busy Lamp Field features
Call Back	Supported	Supported	Calling features: Additional call options
Call Chaperone	Supported	Supported	
Call Display Restrictions	Supported	Supported	
Call Forward All	Supported	Supported	Calling features: Call Forward
Call Forward All Breakout	Supported	Supported	
Call Forward All Loop Prevention	Supported	Supported	
Call Forward Busy	Supported	Supported	Calling features: Call Forward
Call Forward Configurable Display	Supported	Supported	
Call Forward Destination Override	Supported	Supported	
Call Forward No Answer	Supported	Supported	Calling features: Call Forward
Call Park	Supported	Supported	Calling features: Advanced call handling - Call Park
Call Pickup Group Call Pickup Directed Call Pickup Other Call Pickup	Supported	Supported	Calling features: Advanced call handling - Call PickUp
Call Recording	Supported	Supported	

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Features	Protocol: SCCP	Protocol: SIP	For more information
Call Waiting	Supported	Supported	Calling features: Call answer
Caller ID	Supported	Supported	Phone features: Phone screen features
Caller ID Blocking	Supported	Supported	
Call Back	Supported	Supported	
Cisco Unified Communications Manager Assistant	Supported	Supported	
Cisco Extension Mobility	Supported	Supported	Calling features: Advanced call handling - Cisco Extension Mobility
Cisco Extension Mobility Change PIN	Supported	Supported	Calling features: Advanced call handling - Cisco Extension Mobility
Cisco Extension Mobility Cross Cluster	Supported	Supported	
Client Matter Codes (CMC)	Supported	Not supported	Calling features: Advanced call handling - Place call using billing or tracking code
Computer Telephony Integration (CTI) Applications	Supported	Some support (such as Call Park, MWI)	
Configurable Call Forward Display	Supported	Supported	
Device Invoked Recording	Supported	Supported	
Direct Transfer	Supported	Supported	
Directed Call Park	Supported	Supported	Calling features: Advanced call handling - Call Park
Do Not Disturb (DND)	Supported	Supported	Calling features: Do Not Disturb
Enbloc Dialing	Supported	Not Supported	
Distinctive Ring	Supported	Supported	Phone customization: Rings and message indicator customization
Fast Dial Service	Supported	Supported	Calling features: Advanced call handling - Speed Dial
Forced Authorization Codes (FAC)	Supported	Not supported	Calling features: Additional call options - Place call using billing or tracking code

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Features	Protocol: SCCP	Protocol: SIP	For more information
Group Call Pickup	Supported	Supported	
Headset Sidetone Control and Send Gain	Supported	Supported	Handset, headset, and speakerphone: Headset - Control wired headset sidetone and send gain
Headset Recording	Supported (7945G, 7965G, and 7975G only)	Supported (7945G, 7965G, and 7975G only)	
Help System	Supported	Supported	Phone features: Feature buttons and menus
Hold/Resume	Supported	Supported	Calling features: Hold and resume
Hold Reversion	Supported	Supported	Calling features: Hold and resume
Hunt Group Display	Supported	Supported	
Immediate Divert	Supported	Supported	Calling features: Call answer
Immediate Divert—Enhanced	Supported	Supported	Calling features: Call transfer to voice message system
Intelligent Session Control	Supported	Supported	
Inter-Cluster Trust (Bulk Certificate Replication)	Supported	Supported	
Intercom	Supported	Supported	Calling features: Intercom calls
Intra-Cluster Trust (Bulk Certificate Replication)	Supported	Supported	
Join/Select	Supported	Supported	Calling features: Conference calls
Join Across Lines/Select	Supported	Supported	Calling features: Conference calls
Log Out of Hunt Groups	Supported	Supported	Calling features: Advanced call handling - Hunt Groups
Malicious Call ID	Supported	Supported	Calling features: Advanced call handling - Suspicious call trace
Meet-Me Conference	Supported	Supported	Calling features: Conference calls
Message Waiting Indicator	Supported	Supported	

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Features	Protocol: SCCP	Protocol: SIP	For more information
Mobile Connect	Supported	Supported	Calling features: Advanced call handling - Cisco Extension Mobility
Mobile Voice Access	Supported	Supported	
Multilevel Precedence and Preemption (MLPP)	Supported	Not supported	Calling features: Advanced call handling - Priority calls
Multiple Calls per Line Appearance	200	50	Phone features: Line and call definitions
Music-on-Hold	Supported	Supported	
Mute	Supported	Supported	Calling features: Mute
Ringer Volume Control	Supported	Supported	
On-hook Dialing/Pre-Dial	Supported	Supported	Calling features: Basic call options
Onhook Call Transfer	Supported	Supported	Calling features: Call transfer
Other Group Pickup	Supported	Supported	
Plus Dialing	Supported	Supported	
Presence-Enabled Directories	Supported	Supported	
Privacy	Supported	Supported	Calling features: Advanced call handling - Shared lines
Private Line Automated Ringdown (PLAR)	Supported	Supported	
Programmable Line Keys	Supported	Supported	Calling features
Protected Calling	Supported	Supported	
Quality Reporting Tool (QRT)	Supported	Supported	Troubleshooting: Quality Reporting Tool
Redial	Supported	Supported	Calling features: Basic call options - Redial number
Ring Setting	Supported	Supported	Phone features: Buttons and hardware identification
Secure and Nonsecure Indication Tone	Supported	Supported	Calling features: Advanced call handling - Secure calls
Secure Conference	Supported	Supported	Calling features: Conference calls

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Features	Protocol: SCCP	Protocol: SIP	For more information
Services	Supported	Supported	
Services URL button	Supported	Supported	
Session Handoff	Supported	Supported	Calling features: Call transfer
Shared Line	Supported	Supported	Calling features: Advanced call handling - Shared lines
Sidetone Level	Supported	Supported (7970G and 7971G only).	Handset, headset, and speakerphone: Headset - Control wired headset sidetone
Silent Monitoring	Supported	Supported	
Single Button Barge	Supported	Supported	Calling features: Advanced call handling - Shared lines - Barge, cBarge, and shared lines
Speed Dialing	Supported	Supported	Calling features: Advanced call handling - Speed Dial
SSH Access	Supported	Supported	
Time-of-Day Routing	Supported	Supported	
Touchscreen Illumination Disabling	Supported	Supported	
Transfer	Supported	Supported	Calling features: Call transfer
Transfer - Direct Transfer	Supported	Supported	Calling features: Call transfer
Time Zone Update	Supported	Supported	
URL Dialing	Not supported	Supported	Call logs and directories: Call logs - Place call from URL entry in call log
Video Mode	Supported	Not supported	
Video Support	Supported	Not supported	Additional options
Virtual Private Network Support in Phones	Supported	Supported	
Voice Mail	Supported	Supported	Voice messages
VPN Client	Supported (7945G, 7965G, and 7975G only)	Not supported	Calling features: Advanced call handling - Secure calls

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Features	Protocol: SCCP	Protocol: SIP	For more information
WebDialer	Supported	Supported	User Options web pages: Features and services setup on web - Cisco WebDialer
Settings			
Automatic Port Synchronization	Supported	Supported	
Call Statistics	Supported	Supported	Troubleshooting: Phone troubleshooting data
Power Save Plus (EnergyWise)	Supported	Not supported	Phone features: Energy savings
Remote Port Configuration	Supported	Supported	
SSH Disable	Supported	Supported	e
UCR 2008	Supported	Not Supported	
Voice Quality Metrics	Supported	Supported	Troubleshooting: Phone troubleshooting data
Services			
SDK Compliance	Supported	Supported	
Directories			
Call Logs	Supported	Supported	Call logs and directories: Directory features
Corporate Directories	Supported	Supported	Call logs and directories: Directory features
Personal Directory Enhancements	Supported	Supported	Call logs and directories: Directory features
Supplemental Features and Applications			
Cisco Unified Communications Manager Assistant	Supported	Supported	*Cisco Unified Communications Manager Assistant User Guide*
Cisco Unified Communications Manager Auto-Attendant	Supported	Supported	*Cisco Unified Communications Manager Features and Services Guide*
Cisco Unified Business Attendant Console Cisco Unified Department Attendant Console Cisco Unified Enterprise Attendant Console	Supported	Supported	These are third-party products. See Cisco Unified Attendant Consoles, Maintain and Operate Guides

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Features	Protocol: SCCP	Protocol: SIP	For more information
Cisco Unified IP Phone Expansion Module 7914	Supported (7965, 7970, 7971, 7975 only)	Supported (7965, 7970, 7971, 7975 only)	*Cisco Unified IP Phone Expansion Module 7914 Guide*
Cisco Unified IP Phone Expansion Module 7915	Supported (7965, 7975 only)	Supported (7965, 7975 only)	*Cisco Unified IP Phone Expansion Module 7915 Guide*
Cisco Unified IP Phone Expansion Module 7916	Supported (7965, 7975 only)	Supported (7965, 7975 only)	*Cisco Unified IP Phone Expansion Module 7916 Guide*
Cisco VT Advantage	Supported	Not supported	*Cisco VT Advantage User Guide*

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International User Support

International User Support Overview

Translated and localized versions of the Cisco Unified IP Phones are available in several languages. If you are supporting Cisco Unified IP Phones in a non-English environment, the following sections ensure that the phones are set up properly for your users.

Language Overlays for Phone Buttons

To support the needs of international users, the button labels on the Cisco Unified IP Phones display icons rather than text to indicate the purposes of the buttons. You can purchase language-specific text overlays to add to a phone. To order these language-specific overlays, go to this website:

http://www.overlaypro.com/cisco/

Phone overlays are available only for languages in which the Cisco Unified IP Phone software has been localized. All languages may not be available immediately, so continue to check the website for updates.

Unified Communications Manager Endpoints Locale Installer

By default, Cisco IP Phones are set up for the English (United States) locale. To use the Cisco IP Phones in other locales, you must install the locale-specific version of the Unified Communications Manager Endpoints Locale Installer on every Cisco Unified Communications Manager server in the cluster. The Locale Installer installs the latest translated text for the phone user interface and country-specific phone tones on your system so that they are available for the Cisco IP Phones.

To access the Locale Installer required for a release, access https://software.cisco.com/download/navigator.html?mdfid=286037605&flowid=46245, navigate to your phone model, and select the Unified Communications Manager Endpoints Locale Installer link.

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For more information, see the documentation for your particular Cisco Unified Communications Manager release.

✎

Note   The latest Locale Installer may not be immediately available; continue to check the website for updates.

Language Limitation

There is no localized Keyboard Alphanumeric Text Entry (KATE) support for the following Asian locales:

- Chinese (China)
- Chinese (Hong Kong)
- Chinese (Taiwan)
- Japanese (Japan)
- Korean (Korea Republic)

The default English (United States) KATE is presented to the user instead.

For example, the phone screen will show text in Korean, but the **2** key on the keypad will display `a b c 2 A B C`.

International Call Logging Support

If your phone system is configured for international call logging (calling party normalization), the call logs, redial, or call directory entries may display a plus (+) symbol to represent the international escape code for your location. Depending on the configuration for your phone system, the + may be replaced with the correct international dialing code, or you may need to edit the number before dialing to manually replace the + with the international escape code for your location. In addition, while the call log or directory entry may display the full international number for the received call, the phone display may show the shortened local version of the number, without international or country codes.

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Technical Specifications

- Physical and Operating Environment Specifications, on page 269
- Cable Specifications, on page 271
- Network and Access Port Pinouts, on page 271
- Phone Behavior During Times of Network Congestion, on page 272

Physical and Operating Environment Specifications

The following table shows the physical and operating environment specifications for the Cisco Unified IP Phone.

Table 59: Physical and Operating Specifications

Specification	Value or range
Operating temperature	32° to 104°F (0° to 40°C)
Operating relative humidity	10% to 95% (non-condensing)
Storage temperature	14° to 140°F (−10° to 60°C)
Height	9.07 in. (23.03 cm) **For Cisco Unified IP Phone 7975G:** 8.2 in (20.32 cm)
Width	**For Cisco Unified IP Phone 7965G, and 7945G:** 10.82 in. (27.48 cm) **For Cisco Unified IP Phone 7975G, 7971G-GE and 7970G:** 10.5 in. (26.67 cm)

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Specification	Value or range
Depth	• 2.54 in. (6.45 cm)—with footstand fully closed • 6.0 in. (15.24 cm)—with footstand fully open • 3.54 in. (9.00 cm)—with optional wall mount kit (Cisco Unified IP Phone 7975G, 7965G, and 7945G)
Weight	3.25 lb (1.47 kg)
Power options	Cisco Unified IP Phone 7975G, 7965G and 7945G: • 100-240 VAC, 50-60 Hz, 0.5 A—when using the AC adapter • 44V - 57V DC, 0.25 A—when using the in-line power over the network cable Cisco Unified IP Phone 7971G-GE and 7970G: • The phone can receive power from IEEE 802.3af-compliant data switches (Class III). • The phone can be powered locally with a power adapter (Cisco part number CP-PWR-CUBE-3=) and the appropriate power cord (power requirements for the power adapter: 100-240 VAC, 50-60 Hz, 0.5 A).

Cables	**For Cisco Unified IP Phone 7975G, 7965G, and 7945G:**
	
	• Category 3/5/5e/6 for 10-Mbps cables with 4 pairs
	
	• Category 5/5e/6 for 100-Mbps cables with 4 pairs
	
	• Category 5e/6 for 1000-Mbps cables with 4 pairs
	
	  Note Cables have 4 pairs of wires for a total of 8 conductors.
	
	For Cisco Unified IP Phone 7971G-GE and 7970G:
	
	• Category 3/5/5e for 10-Mbps cables with 4 pairs
	
	• Category 5/5e for 100-Mbps cables with 4 pairs
	
	• Category 5e/6 for 1000-Mbps cables with 4 pairs
	
	  Note Cables have 4 pairs of wires for a total of 8 conductors.

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Specification	Value or range
Distance requirements	As supported by the Ethernet specification, it is assumed that the maximum cable length between each Cisco Unified IP Phone and the switch is 100 meters (330 feet).

Cable Specifications

- RJ-9 jack (4-conductor) for handset and headset connection.

- RJ-45 jack for the LAN 10/100/1000BaseT connection (labeled 10/100/1000 SW).

- RJ-45 jack for a second 10/100/1000BaseT compliant connection (labeled 10/100/1000 PC).

- 3.5 mm jack for microphone and speaker connection (for Cisco Unified IP Phone 7971G-GE and 7970G only).

- 48-volt power connector.

Network and Access Port Pinouts

Although both the network and access ports are used for network connectivity, they serve different purposes and have different port pinouts. The access port is also known as the computer port.

Network Port Connector

The following table describes the network port connector pinouts.

Table 60: Network Port Connector Pinouts

Pin number	Function
1	BI_DA+
2	BI_DA-
3	BI_DB+
4	BI_DC+
5	BI_DC-
6	BI_DB-
7	BI_DD+
8	BI_DD-

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Pin number	Function
Note	BI stands for bidirectional, while DA, DB, DC and DD stand for Data A, Data B, Data C and Data D respectively.

Computer Port Connector

The following table describes the computer port connector pinouts.

Table 61: Computer (Access) Port Connector Pinouts

Pin number	Function
1	BI_DB+
2	BI_DB-
3	BI_DA+
4	BI_DD+
5	BI_DD-
6	BI_DA-
7	BI_DC+
8	BI_DC-
Note	BI stands for bidirectional, while DA, DB, DC and DD stand for Data A, Data B, Data C and Data D respectively.

Phone Behavior During Times of Network Congestion

- Administrative tasks, such as an internal port scan or security scan

- Attacks that occur on your network, such as a Denial of Service attack

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APPENDIX **E**

Basic Phone Administration Steps

Phone Administration Overview

This appendix provides minimum, basic configuration steps for you to perform the following actions:

- Add a new user to Cisco Unified Communications Manager Administration
- Configure a new phone for that user
- Associate that user to that phone
- Complete other basic end-user configuration tasks

The procedures provide one method for performing these tasks and are not the only way to perform these tasks. They are a streamlined approach to get a new user and corresponding phone running on the system.

These procedures are designed to be used on a mature Cisco Unified Communications Manager system where calling search spaces, partitions, and other complicated configuration have already been done and are in place for existing users.

Example User Information

In the procedures that follow, examples are given when possible to illustrate some of the steps. Example user and phone information used throughout these procedures includes:

- User's Name: John Doe
- User ID: johndoe
- MAC address listed on phone: 00127F576611
- Five-digit internal telephone number: 26640

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Cisco Unified Communications Manager User Addition

This section describes steps for adding a user to Cisco Unified Communications Manager. Follow one of the procedures in this section, depending on your operating system and the manner in which you are adding the user:

Add User from External LDAP Directory

For more information and limitations on configuring LDAP system, see the *Cisco Unified Communications Manager Administration Guide*, "LDAP System Configuration", "LDAP Directory Configuration", and the "LDAP Authentication Configuration" chapters and *Cisco Unified Communications Manager System Guide*, "Understanding the Directory" chapter.

If you added a user to an LDAP Directory (a non-Cisco Unified Communications Server directory), you can immediately synchronize that directory to the Cisco Unified Communications Manager on which you are adding this same user and the user phone by following these steps:

Procedure

Step 1   Log onto Cisco Unified Communications Manager Administration.

Step 2   Choose **System** > **LDAP** > **LDAP Directory**.

Step 3   Use the **Find** button to locate your LDAP directory.

Step 4   Click on the LDAP directory name.

Step 5   Click **Perform Full Sync Now**.

> **Note**   If you do not need to immediately synchronize the LDAP Directory to Cisco Unified Communications Manager, the LDAP Directory Synchronization Schedule on the LDAP Directory window determines when the next autosynchronization occurs. However, the synchronization must occur before you can associate a new user to a device.

Step 6   Proceed to .

Add User Directly to Cisco Unified Communications Manager

If you are not using an LDAP directory, you can add a user directly to Cisco Unified Communications Manager Administration by following these steps:

Procedure

Step 1   Choose **User Management** > **End User**, then click **Add New**. The End User Configuration window appears.

Step 2   In the User Information pane of this window, enter the following:

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- User ID: Enter the user identification name. Cisco Unified Communications Manager does not permit modifying the user ID after it is created. You may use the following special characters: =, +, <, >, #, ;, \, , "", and blank spaces.

Example: *johndoe*

- Password and Confirm Password: Enter five or more alphanumeric or special characters for the end user password. You may use the following special characters: =, +, <, >, #, ;, \, , "", and blank spaces.

- Last Name: Enter the user last name. You may use the following special characters: =, +, <, >, #, ;, \, , "", and blank spaces.

Example: *doe*

- Telephone Number: Enter the primary directory number for the user. End users can have multiple lines on their phones.

Example: 26640 (John Doe's internal company telephone number)

Step 3   Click **Save**.

Step 4   Proceed to the section .

Phone Setup

To configure the phone, you must first identify the phone and then configure using the following procedures.

Identify Phone

To identify the user phone model and protocol, follow these steps:

Procedure

Step 1   From Cisco Unified Communications Manager administration, choose **Device** > **Phone**.

Step 2   Click **Add New**.

Step 3   Select the user phone model from the Phone Type drop-down list, then click **Next**.

Step 4   Select the device protocol (SCCP or SIP) from the drop-down list, then click **Next**. The Phone Configuration window appears.

Set Up Phone Fields

On the Phone Configuration window, you can use the default values for most of the fields.

To configure the required fields and some key additional fields, follow these steps:

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Procedure

Step 1 For the required fields, possible values, some of which are based on the example of user johndoe, can be configured as follows:

a) In the Device Information pane of this window:

- MAC Address: Enter the MAC address of the phone, which is listed on a sticker on the phone.

  The MAC address is 12 hexadecimal characters long.

  Example: 00127F576611 (MAC address on John Doe's phone)

- Description: This is an optional field in which you can enter a useful description, such as *John Doe's phone*. This will help you if you need to search on information about this user.

- Device Pool: Choose the device pool to which you want this phone assigned. The device pool defines sets of common characteristics for devices, such as region, date/time group, softkey template, and MLPP information.

  Note Device Pools are defined on the Device Pool Configuration window of Cisco Unified Communications Server Administration (**System** > **Device Pool**).

- Phone Button Template: Choose the appropriate phone button template from the drop-down list. The phone button template determines the configuration of buttons on a phone and identifies which feature is used for each button.

  Note Phone button templates are defined on the Phone Button Template Configuration window of Cisco Unified Communications Manager Administration (**Device** > **Device Settings** > **Phone Button Template**). You can use the search fields in conjunction with the **Find** button to find all configured phone button templates and their current settings.

- Softkey Template: Choose the appropriate softkey template. The softkey template determines the configuration of the softkeys on Cisco Unified IP Phones. Leave this field blank if the common device configuration contains the assigned softkey template.

  Note Softkey templates are defined on the Softkey Template Configuration window of Cisco Unified Communications Manager Administration (**Device** > **Device Settings** > **Softkey Template**). You can use the search fields in conjunction with the **Find** button to find all configured softkey templates and their current settings.

- Common Phone Profile: From the drop-down list box, choose a common phone profile from the list of available common phone profiles.

  Note Common Phone Profiles are defined on the Common Phone Profile Configuration window of Cisco Unified Communications Manager Administration (**Device** > **Device Settings** > **Common Phone Profile**). You can use the search field in conjunction with the **Find** button to find all configured common phone profiles and their current settings.

- Calling Search Space: From the drop-down list box, choose the appropriate calling search space (CSS). A calling search space comprises a collection of partitions (analogous to a collection of available phone books) that are searched to determine how a dialed number should be routed. The

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calling search space for the device and the calling search space for the directory number get used together. The directory number CSS takes precedence over the device CSS.

> **Note**   Calling Search Spaces are defined on the Calling Search Space Configuration window of Cisco Unified Communications Manager Administration (**Calling routing** > **Class of Control** > **Calling Search Space**). You can use the search fields in conjunction with the **Find** button to find all configured Calling Search Spaces and their current settings.

- • Location: Choose the appropriate location for this Cisco Unified IP Phone.

- • Owner User ID: From the drop-down menu, choose the user ID of the assigned phone user.

b) In the Protocol Specific Information pane of this window, choose a Device Security Profile from the drop-down list. To enable security features for a phone, you must configure a new security profile for the device type and protocol and apply it to the phone. If the phone does not support security, choose a nonsecure profile.

To identify the settings that are contained in the profile, choose **System** > **Security Profile** > **Phone Security Profile**.

> **Note**   The security profile chosen should be based on the overall security strategy of the company.

c) Also in the Protocol Specific Information pane of this window, choose the applicable SIP Profile from the drop-down list for SIP phones.

d) In the Extension Information pane of this window, check the Enable Extension Mobility box if this phone supports Cisco Extension Mobility.

e) In the Product Specific Configuration Layout pane of this window, enable the Video Capabilities field if this field appears on your window.

f) Click **Save**.

Step 2   Configure line settings:

a) On the Phone Configuration window, click Line 1 on the left pane of the window. The Directory Number Configuration window appears.

b) In the Directory Number field, enter a valid number that can be dialed.

> **Note**   This field should contain the same number that appears in the Telephone Number field on the User Configuration window.

Example: 26640 is the directory number of user John Doe in the example above.

c) From the Route Partition drop-down list, choose the partition to which the directory number belongs. If you do not want to restrict access to the directory number, choose <None> for the partition.

d) From the Calling Search Space drop-down list (Directory Number Settings pane of the Directory Number Configuration window), choose the appropriate calling search space. A calling search space comprises a collection of partitions that are searched for numbers that are called from this directory number. The value that you choose applies to all devices that are using this directory number.

e) In the Call Pickup and Call Forward Settings pane of the Directory Number Configuration window, choose the items (for example, Forward All, Forward Busy Internal) and corresponding destinations to which calls should be sent.

Example: If you want incoming internal and external calls that receive a busy signal to be forwarded to the voice mail for this line, check the Voice Mail box next to the "Forward Busy Internal" and "Forward Busy External" items in the left column of the Call Pickup and Call Forward Settings pane.

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f) In the "Line 1 on Device..." pane of the Directory Number Configuration window, configure the following fields:

- Display (Internal Caller ID field): You can enter the first name and last name of the user of this device so that this name is displayed for all internal calls. You can also leave this field blank to have the system display the phone extension.

- External Phone Number Mask: Indicate phone number (or mask) that is used to send Caller ID information when a call is placed from this line.

You can enter a maximum of 24 number and "X" characters. The Xs represent the directory number and must appear at the end of the pattern.

Example: Using the john doe extension in the example above, if you specify a mask of 408902XXXX, an external call from extension 6640 displays a caller ID number of 4089026640.

Note   This setting applies only to the current device unless you check **Update Shared Device Settings** and click **Propagate Selected**. The check box at right displays only if other devices share this directory number.

g) Click **Save**.

h) Click **Associate End Users** at the bottom of the window to associate a user to the line being configured. Use the **Find** button in conjunction with the Search fields to locate the user, then check the box next to the name, and then click **Add Selected**. The name and user ID should now appear in the "Users Associated With Line" pane of the Directory Number Configuration window.

i) Click **Save**. The user is now associated with Line 1 on the phone.

j) If the phone has a second line, configure Line 2.

k) Associate the user with the device:

- Choose **User Management** > **End User**.

- Use the search boxes and the Find button to locate the user you have added (for example, Doe for the last name).

- Click on the user ID (for example, johndoe). The End User Configuration window appears.

- Click **Device Associations**.

- Use the Search fields and the Find button to locate the device with which you want to associate to the user.

- Select the device, then click **Save Selected/Changes**. The user is now associated with the device.

- Click **Go** next to the **Back to User** link in the upper-right corner of the screen.

Step 3   Proceed to .

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Perform Final End User Setup

If you are not already on the End User Configuration page, choose **User Management** > **End User** to perform some final configuration tasks. Use the Search fields and the Find button to locate the user (for example, John Doe), then click on the user ID to get to the End User Configuration window for the user.

In the End User configuration window, do the following:

Procedure

Step 1   In the Directory Number Associations pane of the screen, set the primary extension from the drop-down list.

Step 2   In the Mobility Information pane, check **Enable Mobility**.

Step 3   In the Permissions Information pane, use the User Group buttons to add this user to any user groups. For example, you may want to add the user to a group that has been defined as a "Standard CCM End User Group."

To view all configured user groups, choose **User Management** > **User Group**.

Step 4   Click **Save**.

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