



# An Overview of the Cisco Unified IP Phone

---

The Cisco Unified IP Phone provides voice communication over an Internet Protocol (IP) network. It functions much like a traditional analog telephone, allowing you to place and receive phone calls and to access features such as mute, hold, transfer, and speed dial. In addition, because the phone is connected to your data network, it offers enhanced IP telephony features, including access to network information and customizable features.

This manual describes the Cisco Unified IP Phone 7905G and 7912G. The Cisco Unified IP Phone 7905G and 7912G include softkeys and an LCD screen. The Cisco Unified IP Phone 7912G adds an internal Ethernet switch.

These phones encode G.711a, G.711u, G.729a, G.729ab, and decode all variants of G.711 and G.729.

A Cisco Unified IP Phone must be configured and managed like other network devices.

This chapter includes the following topics:

- [Understanding the Cisco Unified IP Phone 7905G and 7912G, page 1-2](#)
- [What Networking Protocols Are Used?, page 1-5](#)
- [What Features are Supported on the Cisco Unified IP Phone 7905G and 7912G?, page 1-7](#)
- [Understanding Security Features for Cisco Unified IP Phones, page 1-10](#)
- [Understanding the Requirements for Installing and Configuring the Cisco Unified IP Phone 7905G and 7912G, page 1-11](#)

**Caution**

---

Using 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, refer to the manufacturer's documentation of the interfering device.

---

## Understanding the Cisco Unified IP Phone 7905G and 7912G

The Cisco Unified IP Phone 7905G and 7912G are basic IP phones that address the voice communication needs of employees who engage in low to medium telephone use. The phones provide a pixel display and dynamic softkeys for easy access to a core set of business features. They support a maximum of two calls and one directory number, and inline power for receiving power through and Ethernet connection. The Cisco Unified IP Phone 7912G includes an integrated 10/100 Ethernet switch for connecting a PC.

**Note**

---

The hardware updated version of the Cisco Unified IP Phone 7912G (CP-7912G-A) offers IEEE 802.1Q VLAN-based switching of packets received from the attached PC and from the network port (upstream switch). This allows the phone to operate more efficiently in networks which may be subject to large amounts of broadcast, multicast and/or unknown unicast traffic.

---





**Figure 1-1** shows the main components of the Cisco Unified IP Phone 7905G and 7912G.

Figure 1-1 Cisco Unified IP Phone 7905G and 7912 Features



91031

1	LCD screen	Displays features such as the time, date, phone number, caller ID, call status, and softkey tabs.
2	Cisco Unified IP Phone series type	Indicates the Cisco Unified IP Phone series to which the phone belongs.
3	Softkeys	Enable you to engage any of the functions displayed on the corresponding LCD screen tabs. Softkeys point to feature options that are displayed along the bottom of the LCD screen. Softkey functions change depending on the status of the phone.

4	Navigation button 	Enables you to scroll through text and select features displayed on the LCD screen. Also provides access to speed dial numbers when there are no text or features to scroll through.
5	Menu button 	Displays a menu that provides access to a voice messaging system, phone logs and directories, and settings.
6	Hold button 	Puts a current call on hold or takes a call off hold.
7	Keypad	Works exactly like the keypad on a traditional telephone.
8	Volume button 	Increases or decreases volume for the handset and speaker. Also controls the ringer volume (if on-hook).
9	Handset	Functions like a traditional handset. The light strip at the top of the handset blinks when the phone rings and remains lit to indicate a new voice message (depending on your voice messaging system).
10	Footstand	Allows the phone to stand at a convenient angle on a desk or table.

# What Networking Protocols Are Used?

Cisco Unified IP Phones support several industry-standard and Cisco networking protocols for voice communication. [Table 1-1](#) provides an overview of the networking protocols that the Cisco Unified IP Phone 7905G and 7912G support.

**Table 1-1 Supported Networking Protocols on the Cisco Unified IP Phone**

Networking Protocol	Purpose	Usage Notes
Cisco Discovery Protocol (CDP)	<p>CDP is a device-discovery protocol that runs on all Cisco-manufactured equipment.</p> <p>Using CDP, a device can advertise its existence to other devices and receive information about other devices in the network.</p>	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.
Dynamic Host Configuration Protocol (DHCP)	<p>DHCP dynamically allocates and assigns an IP address to network devices.</p> <p>DHCP enables you to connect an IP phone into the network and have the phone become operational without you needing to manually assign an IP address or configure additional network parameters.</p>	<p>DHCP is enabled by default. If disabled, you must manually configure the IP address, subnet mask, gateway, and an TFTP server on each phone locally.</p> <p>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, refer to <i>Cisco Unified CallManager System Guide</i>.</p>
HyperText Transfer Protocol (HTTP)	HTTP is the standard way of transferring information and moving documents across the Internet and the World Wide Web.	The Cisco Unified IP Phones use HTTP for the XML services and for troubleshooting purposes.

**Table 1-1 Supported Networking Protocols on the Cisco Unified IP Phone (continued)**

Networking Protocol	Purpose	Usage Notes
Internet Protocol (IP)	IP is a messaging protocol that addresses and sends packets across the network.	<p>To communicate using IP, network devices must have an assigned IP address, subnet, and gateway.</p> <p>IP addresses, subnets, and gateways identifications are automatically assigned if you are using the Cisco Unified IP Phone with Dynamic Host Configuration Protocol (DHCP). If you are not using DHCP, you must manually assign these properties to each phone locally.</p>
Real-Time Transport (RTP)	RTP is a standard for transporting 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.
Session Description Protocol (SDP)	SDP is the portion of the SIP that determines which parameters are available during a connection between two endpoints. Conferences are established using only the SDP capabilities that are supported by all endpoints in the conference.	SDP capabilities, such as codec types, DTMF detection and comfort noise, are normally configured on a global basis by the Cisco Unified CallManager or the Media Gateway in operation. Some SIP endpoints may allow these parameters to be configured 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 CallManager.
Trivial File Transfer Protocol (TFTP)	<p>TFTP allows you to transfer files over the network.</p> <p>On the Cisco Unified IP Phone, TFTP enables you to obtain a configuration file specific to the phone type.</p>	TFTP requires a TFTP server in your network, which can be automatically identified from the DHCP server. If more than one TFTP server is running in your network, you must manually assign a TFTP server to each phone locally.

**Table 1-1 Supported Networking Protocols on the Cisco Unified IP Phone (continued)**

Networking 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 that can be used to establish, maintain, and terminate calls between two or more endpoints.	The Cisco Unified IP Phone 7905G/7912G support UDP-based SIP signalling. Like other VoIP protocols, SIP is designed to address 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.
User Datagram Protocol (UDP)	UDP is a connectionless messaging protocol for delivery of data packets.	Cisco Unified IP Phones receive and process UDP messages.

**Related Topics**

- [Understanding the Phone Startup Process, page 2-4](#)
- [Understanding Interactions with Other Cisco Unified Communications Products, page 2-2](#)
- [Network Configuration Menu Parameter Descriptions, page 4-10](#)

## What Features are Supported on the Cisco Unified IP Phone 7905G and 7912G?

The Cisco Unified IP Phone 7905G and 7912G function much like traditional analog phones, allowing you to place and receive telephone calls. In addition to traditional telephony features, the Cisco Unified IP Phones include features that enable you to administer and monitor the phone as a network device.

This section includes the following topics:

- [Feature Overview, page 1-8](#)
- [Configuring Telephony Features, page 1-8](#)

- [Configuring Network Features Using the Cisco Unified IP Phone](#), page 1-9
- [Providing Users with Feature Information](#), page 1-10

## 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. For an overview of the telephony features that the Cisco Unified IP Phone 7905G and 7912G support, see [Chapter 5, “Configuring Telephony Features.”](#)

Like other network devices, you must configure the Cisco Unified IP Phones to prepare them to access Cisco Unified CallManager and the rest of the IP network. Using DHCP, you have fewer settings to modify, but you can choose to assign a static IP if your network requires it. For instructions on configuring the network settings on the Cisco Unified IP Phones, see [Chapter 4, “Configuring Settings on the Cisco Unified IP Phone.”](#)

Because the Cisco Unified IP Phone is a network device, you can obtain detailed status information about it. This information can assist you in troubleshooting problems that users might encounter when using their IP phones. See [Chapter 7, “Troubleshooting the Cisco Unified IP Phone”](#) for tips on using this information.

### Related Topics

- [Configuring Settings on the Cisco Unified IP Phone](#), page 4-1
- [Configuring Telephony Features](#), page 5-1
- [Troubleshooting the Cisco Unified IP Phone](#), page 7-1

## Configuring Telephony Features

You can modify additional settings on the Cisco Unified IP Phone from the Cisco Unified CallManager Administration application. Use this web-based application to set up phone registration criteria and calling search spaces, among other tasks. For more information, see [Chapter 5, “Configuring Telephony Features.”](#)



In some places, this manual provides partial instructions for procedures that involve Cisco Unified CallManager Administration. These instructions are intended to point you to the appropriate page in the Cisco Unified CallManager application and to provide some initial guidance.

For more information about the Cisco Unified CallManager Administration application, refer to Cisco Unified CallManager documentation, including *Cisco Unified CallManager Administration Guide*. You can also use the context-sensitive help that is available within the application. Access context-sensitive help by choosing **Help > For this screen** from the main menu bar.

You can access the complete Cisco Unified CallManager documentation suite at this location:

[http://www.cisco.com/univercd/cc/td/doc/product/voice/c\\_callmg/index.htm](http://www.cisco.com/univercd/cc/td/doc/product/voice/c_callmg/index.htm)

#### Related Topic

- [Chapter 5, “Configuring Telephony Features”](#)

## Configuring Network Features Using the Cisco Unified IP Phone

You can locally configure features 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.

For more information about configuring features and viewing statistics from the phone, see [Chapter 4, “Configuring Settings on the Cisco Unified IP Phone”](#) and see [Chapter 6, “Viewing Model and Status Information on the Cisco Unified IP Phone.”](#)

#### Related Topics

- [Configuring Settings on the Cisco Unified IP Phone, page 4-1](#)
- [Troubleshooting the Cisco Unified IP Phone, page 7-1](#)

## Providing Users with Feature Information

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/univercd/cc/td/doc/product/voice/c\\_ipphon/index.htm](http://www.cisco.com/univercd/cc/td/doc/product/voice/c_ipphon/index.htm)

From this site, you can view and order various user guides, including wallet cards. For complete ordering information, see the “[Obtaining Documentation](#)” section on page xiv.

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

For a summary of some of the key information that phone users need their system administrators to provide, see [Appendix B, “Providing Information to Users Via a Website.”](#)

### Related Topic

- [Providing Information to Users Via a Website, page B-1](#)

## Understanding Security Features for Cisco Unified IP Phones

The Cisco Unified IP Phone 7905G/7912G provides the following security:

- Image authentication—Signed binary files (with the extension .sbn) prevent tampering with the firmware image before it is loaded on a phone. Tampering with the image causes a phone to fail the authentication process and reject the new image.
- Encrypted configuration files—This ensures the privacy of phone configuration files. For more information, see the “[Configuring the Encryption Key](#)” section on page 4-7.

**Note**

---

For more information about these features and about Cisco Unified CallManager and Cisco Unified IP Phone security, refer to *Cisco Unified CallManager Security Guide*.

---

## Understanding the Requirements for Installing and Configuring the Cisco Unified IP Phone 7905G and 7912G

To install and configure the Cisco Unified IP Phone 7905G and 7912G, you must configure some network settings, set up Cisco Unified CallManager, and make changes locally on the phone.

See [Table 1-2](#) for an overview of required procedures. For detailed information about these procedures, refer to the sources shown.

**Note**

---

You can specify additional configuration settings using profile files stored on the TFTP server. For more information, see [Appendix A, “Reference List of Parameters.”](#)

---

**Table 1-2 Overview of Configuration Procedures for the Cisco Unified IP Phone**

Required Task	Purpose	For More Information
<p><b>1.</b> Gather the following information about the phone for use in Cisco Unified CallManager Administration:</p> <ul style="list-style-type: none"> <li>– Information requested in the Device Information fields, if applicable, such as the device pool and calling search space.</li> <li>– The Cisco Unified CallManager user to associate with the phone.</li> <li>– The number of lines and associated directory numbers to assign to the phone.</li> <li>– Features to be added and configured for the phone.</li> </ul>	<p>You will refer to this information when using the Cisco Unified CallManager Administration Phone Configuration web page to configure a phone.</p> <p>The Device Information fields on this page will auto-populate if information is relevant and available. Edit fields if you want to override system settings on a per-device basis.</p>	<p>See the <a href="#">“Adding Phones to the Cisco Unified CallManager Database”</a> section on page 2-12.</p> <p>See the <a href="#">Chapter 5, “Configuring Telephony Features”</a>.</p> <p>Refer to <i>Cisco Unified CallManager System Guide</i>.</p> <p>Refer to <i>Cisco Unified CallManager Administration Guide</i>.</p>
<p><b>2.</b> Configure routers, gateways, and switches to handle voice communication.</p>	<p>Establishes the infrastructure for the IP telephony network.</p>	<p>See the <a href="#">“Understanding How the Cisco Unified IP Phone Interacts with the Cisco Catalyst Family of Switches”</a> section on page 2-3 and the documentation included with these devices.</p>

**Table 1-2 Overview of Configuration Procedures for the Cisco Unified IP Phone (continued)**

Required Task	Purpose	For More Information
<p>3. Decide how you want to add phones to the Cisco Unified CallManager database:</p> <ul style="list-style-type: none"> <li>- With auto-registration</li> <li>- With Cisco Unified CallManager Administration only</li> <li>- With the Bulk Administration Tool (BAT) only</li> <li>- With BAT and the Tool for Auto-Registered Phones Support (TAPS)</li> </ul>	<p>How you add the phones to Cisco Unified CallManager determines how the directory number is assigned and whether you need to obtain a MAC address first, among other things.</p>	<ul style="list-style-type: none"> <li>• See the <a href="#">“Adding Phones to the Cisco Unified CallManager Database”</a> section on page 2-12.</li> <li>• Refer to <i>Cisco Unified CallManager Administration Guide</i>.</li> <li>• Refer to <i>Cisco Unified CallManager Bulk Administration Guide</i>.</li> </ul>
<p>4. Obtain the MAC address from the IP phone.</p>	<p>Not necessary if you plan to add phones to the Cisco Unified CallManager database using auto-registration only or in conjunction with the Tool for Auto-Registered Phones Support (TAPS).</p>	<p>See the <a href="#">“Determining the MAC Address of a Cisco Unified IP Phone”</a> section on page 2-12.</p>
<p>5. Choose to power through the Cisco AC adapter or Cisco Catalyst switch.</p>	<p>Determines whether the phone receives power from an external power source over a power cord or from the in-line power source over the Ethernet cable.</p>	<ul style="list-style-type: none"> <li>• See the <a href="#">“Providing Power to the Cisco Unified IP Phone”</a> section on page 2-9.</li> <li>• Refer to the documentation included with the Cisco Catalyst switch.</li> </ul>
<p>6. Install the phone in the network.</p>	<p>Adds the phone to the network.</p>	<p>See <a href="#">Chapter 3, “Setting Up the Cisco Unified IP Phone.”</a></p>

**Table 1-2 Overview of Configuration Procedures for the Cisco Unified IP Phone (continued)**

Required Task	Purpose	For More Information
7. Configure network settings on the Cisco Unified IP Phone.	Sets IP settings (if not using DHCP in the network) and assigns a TFTP server.	<ul style="list-style-type: none"> <li>• See the “<a href="#">Configuring IP Settings</a>” section on page 4-7.</li> <li>• See the “<a href="#">Network Configuration Menu Parameter Descriptions</a>” section on page 4-10.</li> </ul>
8. Configure the phone features such as call waiting, call forward, call park, and call pickup.	Provides enhanced telephony functionality.	<ul style="list-style-type: none"> <li>• See <a href="#">Chapter 5, “Configuring Telephony Features.”</a></li> <li>• Refer to <i>Cisco Unified CallManager Administration Guide</i>.</li> </ul>
9. Add users to Cisco Unified CallManager.	Associates a user with a phone.	Refer to <i>Cisco Unified CallManager Administration Guide</i> .
10. 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 successfully use their Cisco Unified IP Phones.	See the <a href="#">Appendix B, “Providing Information to Users Via a Website.”</a>