



CHAPTER 2

Preparing to Install the Cisco Unified IP Phone on Your Network

Cisco Unified IP Phones enable you to communicate 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 prestandard PoE, and so on.

This chapter focuses on the interactions between the Cisco Unified IP Phones 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, refer to 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. It includes these topics:

- [Understanding Interactions with Other Cisco Unified IP Communications Products, page 2-2](#)
- [Providing Power to the Phone, page 2-4](#)
- [Understanding Phone Configuration Files, page 2-7](#)
- [Understanding the Phone Startup Process, page 2-9](#)
- [Adding Phones to the Cisco Unified Communications Manager Database, page 2-11](#)
- [Using Cisco Unified IP Phones with Different Protocols, page 2-14](#)
- [Determining the MAC Address of a Cisco Unified IP Phone, page 2-15](#)

Understanding Interactions with Other Cisco Unified IP Communications Products

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 sending and receiving calls.

This section includes these topics:

- [Understanding How the Cisco Unified IP Phone Interacts with Cisco Unified Communications Manager, page 2-2](#)
- [Understanding How the Cisco Unified IP Phone Interacts with the VLAN, page 2-3](#)

Understanding How the Cisco Unified IP Phone Interacts with Cisco Unified Communications Manager

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, 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, refer to *Cisco Unified Communications Manager Administration Guide*, *Cisco Unified Communications Manager System Guide*, and *Cisco Unified Communications Manager Security Guide*.

For an overview of security functionality for the Cisco Unified IP Phone, see [Understanding Security Features for Cisco Unified IP Phones, page 1-13](#).



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 Topic

- [Telephony Features Available for the Phone, page 5-1](#)

Understanding How the Cisco Unified IP Phone Interacts with the VLAN

The Cisco Unified IP Phones 7975G, 7971G-GE, 7970G, 7965G, and 7945G have an internal Ethernet switch, enabling 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, 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 Voice-over-IP traffic
- Network security may indicate a need to isolate the VLAN voice traffic from the VLAN data traffic

You can resolve these issues by isolating the voice traffic onto a separate VLAN. The switch port that the phone is connected to 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 connected to the switch through the access port of the IP phone (native VLAN)

Isolating 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 there are not enough IP addresses for each phone.

For more information, refer to 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

- [Understanding the Phone Startup Process, page 2-9](#)
- [Network Configuration Menu, page 4-5](#)

Providing Power to the Phone

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



Note

When you install a phone that is 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 powering a phone:

- [Power Guidelines, page 2-4](#)
- [Phone Power Consumption and Display Brightness, page 2-5](#)
- [Power Outage, page 2-6](#)
- [Obtaining Additional Information about Power, page 2-6](#)

Power Guidelines

[Table 2-1](#) provides guidelines that apply to external power and to PoE power for Cisco Unified IP Phone 7975G, 7971G-GE, 7970G, 7965G, and 7945G.

Table 2-1 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.
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 is connected 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	<ul style="list-style-type: none"> • The Cisco Unified IP Unified IP Phones 7975G, 7971G-GE, 7970G, 7965G, and 7945G support IEEE 802.3af Class 3 power on signal pairs and spare pairs. • The Cisco Unified IP Unified IP Phones 7975G, 7971G-GE, 7970G, 7965G, and 7945G do not support Cisco inline PoE. • To ensure uninterrupted operation of the phone, make sure that the switch has a backup power supply. • Make sure that the CatOS or IOS version running on your switch supports your intended phone deployment. Refer to 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. See [Table 2-1](#) for a power configuration overview. See [Table 2-2](#) for 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 2-2 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
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 ¹
	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

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


Note

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 accessibility to emergency service through the phone is dependent on the phone being powered. If there is an interruption in the power supply, Service and Emergency Calling Service dialing will not function until power is restored. In the case of a power failure or disruption, you may need to reset or reconfigure equipment before using the Service or Emergency Calling Service dialing.

Obtaining Additional Information about Power

For related information about power, refer to the documents shown in [Table 2-3](#). These documents provide information about these topics:

- Cisco switches that work with the Cisco Unified IP Phones 7975G, 7971G-GE, 7970G, 7965G, and 7945G
- The Cisco IOS releases that support bidirectional power negotiation
- Other requirements and restrictions regarding power

Table 2-3 *Related Documentation for Power*

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/networking_solutions_package.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

Understanding Phone Configuration Files

Configuration files for a phone are stored on the TFTP server and define parameters for connecting to Cisco Unified Communications Manager. In general, any time you make a change in Cisco Unified Communications Manager that requires the phone to be reset, a change is automatically made to the phone's configuration file.

Configuration files also contain information about which image load the phone should be running. If this image load differs from the one that is currently loaded on a phone, the phone contacts the TFTP server to request the required load files. (These 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 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.

**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 it 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 will contain sensitive information. To ensure the privacy of a configuration file, you must configure it for encryption. For detailed information, refer to [Configuring Encrypted Phone Configuration Files](#) in *Cisco Unified Communications Manager Security Guide*.

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

If auto registration is not enabled and you did not add the phone to the Cisco Unified Communications Manager database, the phone does not attempt to register with Cisco Unified Communications Manager. The phone continually displays the “Configuring IP” message until you either enable auto-registration or add the phone to the Cisco Unified Communications Manager database.

If the phone has registered before, 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 are derived from the MAC Address and Description fields in the Phone Configuration window of Cisco Unified Communications Manager Administration. The MAC address uniquely identifies the phone. For more information refer to *Cisco Unified Communications Manager Administration Guide*.

For more information about how the phone interacts with the TFTP server, refer to *Cisco Unified Communications Manager System Guide*, [Cisco TFTP](#).

Understanding the Phone Startup Process

When connecting to the VoIP network, the Cisco Unified IP Phone goes through a standard startup process, as described in [Table 2-4](#). Depending on your specific network configuration, not all of these process steps may occur on your Cisco Unified IP Phone.

Table 2-4 Cisco Unified IP Phone Startup Process

Task	Purpose	Related Topics
1.	Obtaining 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 Providing Power to the Phone , page 2-4. See Resolving Startup Problems , page 9-1.
2.	Loading the StoredPhone Image. The Cisco Unified IP Phone has non-volatile 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. Using this image, the phone initializes its software and hardware.	See Resolving Startup Problems , page 9-1.
3.	Configuring 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 , page 4-5. See Resolving Startup Problems , page 9-1.
4.	Obtaining an IP Address. If the Cisco Unified IP Phone is using DHCP to obtain an IP address, the phone queries the DHCP server to obtain one. If you are not using DHCP in your network, you must assign static IP addresses to each phone locally.	See Network Configuration Menu , page 4-5. See Resolving Startup Problems , page 9-1.
5.	Accessing 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 assigned by DHCP.	See Network Configuration Menu , page 4-5. See Resolving Startup Problems , page 9-1.
6.	Requesting the CTL file. The TFTP server stores the CTL file. This file contains the certificates necessary for establishing a secure connection between the phone and Cisco Unified Communications Manager.	Refer to <i>Cisco Unified Communications Manager Security Guide</i> , Configuring the Cisco CTL Client .

Table 2-4 Cisco Unified IP Phone Startup Process (continued)

Task	Purpose	Related Topics
7.	<p>Requesting the ITL file.</p> <p>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 for authenticating a secure connection with the servers or authenticating a digital signature signed by the servers.</p>	Refer to <i>Cisco Unified Communications Manager Security Guide</i> , Security by Default .
8.	<p>Requesting the Configuration File.</p> <p>The TFTP server has configuration files, which define parameters for connecting to Cisco Unified Communications Manager and other information for the phone.</p>	<p>See Understanding Phone Configuration Files, page 2-7.</p> <p>See Resolving Startup Problems, page 9-1.</p>
9.	<p>Contacting Cisco Unified Communications Manager.</p> <p>The configuration file defines how the Cisco Unified IP Phone communicates with Cisco Unified Communications Manager and provides a phone with its load ID. After obtaining 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 the Cisco Unified Communications Manager is set to secure mode, the phone makes a TLS connection. Otherwise, it makes a nonsecure TCP connection.</p> <p>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 auto-registration is enabled in Cisco Unified Communications Manager, the phone attempts to auto-register itself in the Cisco Unified Communications Manager database.</p> <p>Note Auto-registration is disabled when you configure the CTL client. In this case, the phone must be manually added to the Cisco Unified Communications Manager database.</p>	<p>See Understanding Phone Configuration Files, page 2-7.</p> <p>See Resolving Startup Problems, page 9-1.</p>

Adding Phones to the Cisco Unified Communications Manager Database

Before installing the Cisco Unified IP phone, you must choose a method for adding phones to the Cisco Unified Communications Manager database. These sections describe the methods:

- [Adding Phones with Auto-Registration, page 2-11](#)
- [Adding Phones with Auto-Registration and TAPS, page 2-12](#)
- [Adding Phones with Cisco Unified Communications Manager Administration, page 2-13](#)
- [Adding Phones with BAT, page 2-13](#)

Table 2-5 provides an overview of these methods for adding phones to the Cisco Unified Communications Manager database.

Table 2-5 **Methods for Adding Phones to the Cisco Unified Communications Manager Database**

Method	Requires MAC Address?	Notes
Auto-registration	No	<ul style="list-style-type: none"> • Results in automatic assignment of directory numbers. • Not available when security or encryption is enabled.
Auto-registration with TAPS	No	Requires auto-registration 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.
Using the Cisco Unified Communications Manager Administration	Yes	Requires phones to be added individually.
Using BAT	Yes	<p>Can add groups of same model of phone.</p> <p>Can schedule when phones are added to the Cisco Unified Communications Manager database.</p>

Adding Phones with Auto-Registration

By enabling auto-registration 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 Communications Manager database when you physically connect the phone to your IP telephony network. During auto-registration, 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 auto-registered phones to new locations and assign them to different device pools without affecting their directory numbers.

**Note**

Cisco recommends you use auto-registration to add less than 100 phones to your network. To add more than 100 phones to your network, use the Bulk Administration Tool (BAT). See [Adding Phones with BAT, page 2-13](#).

Auto-registration is disabled by default. In some cases, you may not want to use auto-registration; for example, if you want to assign a specific directory number to the phone or if you plan to use secure connection with Cisco Unified Communications Manager as described in *Cisco Unified Communications Manager Security Guide*. For information about enabling auto-registration, refer to Enabling Auto-Registration in the *Cisco Unified Communications Manager Administration Guide*.

**Note**

When you configure the cluster for mixed mode through the Cisco CTL client, auto-registration is automatically disabled. When you configure the cluster for nonsecure mode through the Cisco CTL client, auto-registration is not automatically enabled.

Related Topics

- [Adding Phones with Auto-Registration and TAPS, page 2-12](#)
- [Adding Phones with Cisco Unified Communications Manager Administration, page 2-13](#)
- [Adding Phones with BAT, page 2-13](#)

Adding Phones with Auto-Registration and TAPS

You can add phones with auto-registration 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 pre-defined configurations for phones.

**Note**

Cisco recommends you use auto-registration 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). See [Adding Phones with BAT, page 2-13](#).

To implement TAPS, you or the end-user dial a TAPS directory number and follow voice prompts. When the process is complete, the phone will have downloaded its directory number and other settings, and the phone will be updated in Cisco Unified Communications Manager Administration with the correct MAC address.

Auto-registration 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, auto-registration is automatically disabled. When you configure the cluster for nonsecure mode through the Cisco CTL client, auto-registration is not automatically enabled.

Refer to *Cisco Unified Communications Manager Bulk Administration Guide* for detailed instructions about [BAT](#) and about [TAPS](#).

Related Topics

- [Adding Phones with Auto-Registration, page 2-11](#)
- [Adding Phones with Cisco Unified Communications Manager Administration, page 2-13](#)
- [Adding Phones with BAT, page 2-13](#)

Adding Phones with Cisco Unified Communications Manager Administration

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

For information about determining a MAC address, see [Determining the MAC Address of a Cisco Unified IP Phone, page 2-15](#).

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, refer to *Cisco Unified Communications Manager Administration Guide* and to *Cisco Unified Communications Manager System Guide*.

Related Topics

- [Adding Phones with Auto-Registration, page 2-11](#)
- [Adding Phones with Auto-Registration and TAPS, page 2-12](#)
- [Adding Phones with BAT, page 2-13](#)

Adding 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, on multiple phones.

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

For information about determining a MAC address, see [Determining the MAC Address of a Cisco Unified IP Phone, page 2-15](#).

To add a phone to the 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 like Device Pool, Phone Button Template, Device Security Profile and so on.
 - Step 5** Click **Save**.

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

For detailed instructions about using BAT, refer to 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](#).

Related Topics

- [Adding Phones with Auto-Registration, page 2-11](#)
- [Adding Phones with Auto-Registration and TAPS, page 2-12](#)
- [Adding Phones with Cisco Unified Communications Manager Administration, page 2-13](#)

Using Cisco Unified IP Phones with Different Protocols

The Cisco Unified IP Phone can operate with SCCP (Skinny Client Control Protocol) or SIP (Session Initiation Protocol). You can convert a phone that is using one protocol for use with the other protocol.

This section includes these topics:

- [Converting a New Phone from SCCP to SIP, page 2-14](#)
- [Converting an In-Use Phone from One Protocol to the Other Protocol, page 2-15](#)
- [Deploying a Phone in an SCCP and SIP Environment, page 2-15](#)

Converting a 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:

- To auto-register the phone, set the Auto Registration Phone Protocol parameter in Cisco Unified Communications Manager Administration to SIP.
- To provision the phone using the Bulk Administration Tool (BAT), choose the appropriate phone model and choose SIP from the BAT.
- To provision the phone manually, make the appropriate changes for SIP on the Phone configuration window in Cisco Unified Communications Manager Administration.

Refer to *Cisco Unified Communications Manager Administration Guide* for detailed information about Cisco Unified Communications Manager configuration. Refer to *Cisco Unified Communications Manager Bulk Administration Guide* for detailed information about using the [BAT](#).

Step 2 If you are not using DHCP in your network, configure the network parameters for the phone. See [Configuring Startup Network Settings, page 3-15](#).

Step 3 Save the configuration updates, click **Apply Config**, click **OK** when the Apply Configuration Information dialog displays, then have the user power cycle the phone.

Converting an In-Use Phone from One Protocol to the Other Protocol

For information about 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](#), section Migration Existing Phone Configuration to a Different Phone.

Deploying a Phone in an 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 Auto-Registration parameter is SCCP, perform these general steps:

1. Set the Cisco Unified Communications Manager `auto_registration_protocol` parameter to SCCP.
From Cisco Unified Communications Manager Administration, choose **System > Enterprise Parameters**.
2. Install the phones.
3. Change the Auto Registration Protocol enterprise parameter to SIP.
4. Auto-register the SIP phones.

Determining the MAC Address of a Cisco Unified IP Phone

Several of the procedures that are described 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 look at 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.

For information about accessing the web page, see [Accessing the Web Page for a Phone, page 8-2](#).

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