



Preparing to Install Cisco Cius on Your Network

Cisco Cius allows you to communicate by using voice and video over a data network. To provide this capability, Cisco Cius depends on and interacts with several other key Cisco Unified IP Telephony components, including Cisco Unified Communications Manager.

This chapter focuses on the interactions between Cisco Cius and Cisco Unified Communications Manager, DNS and DHCP servers, TFTP servers, and switches. It also describes options for powering Cisco Cius. This chapter provides an overview of the interaction between Cisco Cius and other key components of the VoIP network.

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

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

This chapter comprises the following topics:

- [Understanding Interactions with Other Cisco Unified IP Telephony Products, page 1](#)
- [Providing Power to Cisco Cius, page 3](#)
- [Understanding the Cisco Cius Configuration Files, page 5](#)
- [Understanding Cisco Cius Startup Process, page 6](#)
- [Adding Cisco Cius Mobile Collaboration Endpoints to the Cisco Unified Communications Manager Database, page 10](#)
- [Determining the MAC Address for Cisco Cius, page 13](#)

Understanding Interactions with Other Cisco Unified IP Telephony Products

To function in the IP telephony network, Cisco Cius must be connected to a networking device, such as a switch or wireless network. You must also register Cisco Cius with a Cisco Unified Communications Manager system before sending and receiving calls.

This section contains the following topics:

- [Understanding How Cisco Cius Interacts with Cisco Unified Communications Manager, on page 2](#)
- [Understanding How Cisco Cius Interacts with the VLAN, on page 2](#)

Understanding How Cisco Cius 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 shuts down calls between Cisco Cius devices or between a Cisco Cius and a phone, including Cisco Cius, integrating traditional PBX functionality with the corporate IP network. Cisco Unified Communications Manager manages the components of the IP telephony system, such as Cisco Cius devices, access gateways, and the resources necessary for features such as call conferencing and route planning. Cisco Unified Communications Manager also provides the following:

- Firmware for Cisco Cius devices
- Configuration file, Certificate Trust List (CTL), and Identity Trust List (ITL) files from the TFTP service
- Cisco Cius registration
- Call preservation, so that a media session continues if signaling is lost between the primary Cisco Unified CM and Cisco Cius

For information about configuring Cisco Unified Communications Manager to work with Cisco Cius, go to the [Cisco Unified IP Phone Configuration](#) chapter in the *Cisco Unified Communications Manager Administration Guide*.

For an overview of security functionality for Cisco Cius, see the [Understanding Security Features for Cisco Cius](#).

**Note**

If Cisco Cius 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 (software update or device pack) for your version of Cisco Unified Communications Manager:

<http://www.cisco.com/cisco/software/navigator.html>

To start, enter Cisco Unified Communications Manager in the search field and click Find.

For more information, see the [Telephony Features Available for Cisco Cius](#).

Understanding How Cisco Cius Interacts with the VLAN

If a computer is connected to Cisco Cius media station, the computer and Cisco Cius 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 addresses might not be available to assign Cisco Cius to the same subnet as other devices that are connected to the same port.
- Data traffic present on the VLANs might reduce the quality of VoIP 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 Cisco Cius is connected to is configured for separate VLANs for carrying the following:

- Voice traffic to and from the Cisco Cius device (auxiliary VLAN on the Cisco Catalyst 6000 series, for example)
- Data traffic to and from the PC that is connected to the switch through Cisco Cius (native VLAN)

Isolating Cisco Cius on a separate, auxiliary VLAN increases the quality of the voice traffic and allows a large number of Cisco Cius devices to be added to an existing network on which there are not enough IP addresses for each Cisco Cius.

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

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

Related Topics

[Understanding Cisco Cius Startup Process](#), on page 6
[Ethernet Settings Menu](#)

Providing Power to Cisco Cius

Cisco Cius is powered by the following:

- CIUS-PWR-CUBE AC adapter
- removable battery
- Enhanced Power over Ethernet (PoE+ 802.3at) through the Media Station dock
- through the Media Station dock (the Media Station is powered by the CP-PWR-CUBE-4 AC adapter)

The following sections provide more information about powering Cisco Cius:

- [Power Outage](#), on page 3
- [Reducing Power Consumption on Cisco Cius](#), on page 4
- [Power Negotiation over CDP or LLDP](#), on page 4
- [Wi-Fi Power Management](#), on page 4
- [Obtaining Additional Information About Power](#), on page 5

Power Outage

If external power supply is interrupted, Cisco Cius operates using battery power. For information regarding battery life, see [Technical Specifications](#).

**Note**

Monitor Cisco Cius battery usage by choosing **Setting > About Cius > Battery use**. View the battery status and level by choosing **Setting > About Cius > Status**. When Cisco Cius operates on the battery, battery life is optimized when the access point supports the Cisco Client Extensions (CCX) proxy ARP information client. For more information, see the *Cisco Cius Wireless LAN Deployment Guide*.

Reducing Power Consumption on Cisco Cius

You can reduce the amount of energy that Cisco Cius consumes by scheduling when the unit goes into power-save mode. In power-save mode, the backlight on the screen is not lit when Cisco Cius is not in use. Cisco Cius remains in power-save mode for the scheduled duration or until the user lifts the handset or presses any button. In the Product Specific Configuration Layout window in Cisco Unified Communications Manager Administration, configure the following parameters:

- Days Display Not Active - Specifies the days that the backlight remains inactive
- Display On Time - Schedules the time of day that the backlight automatically activates
- Display On Duration - Indicates the length of time that the backlight is active after the backlight is activated by the programmed schedule
- Display Idle Timeout - Defines the period of user inactivity on the Cisco Cius device before the backlight is turned off

Power Negotiation over CDP or LLDP

When Cisco Cius is connected to a switch that supports power negotiation, the device and the switch negotiate the power that Cisco Cius consumes. Cisco Cius devices operate at multiple power settings, which lowers the consumption of the device when less power is available.

After Cisco Cius reboots, the switch locks to one protocol (CDP or LLDP) for power negotiation. It locks to the first protocol (containing a power Threshold Limit Value [TLV]) that Cisco Cius transmits. If the system administrator disables that protocol on the device, it cannot power up any accessories because the switch does not respond to power requests in the other protocol.

Cisco recommends that Power Negotiation always be enabled (default) when Cisco Cius connects to a switch that supports power negotiation.

If Power Negotiation is disabled, the switch may disconnect power to the Cisco Cius device. If the switch does not support power negotiation, disable the Power Negotiation feature before you power up accessories over PoE+. When the Power Negotiation feature is disabled, the media station can power the accessories up to 12.9 W.

To enable or disable power negotiation, see [Telephony Features Available for Cisco Cius](#).

Wi-Fi Power Management

Cisco Cius uses Unscheduled Auto Power Save Delivery (U-APSD) for power management if Wi-Fi MultiMedia (WMM) is enabled and U-APSD is supported. If WMM is disabled, or U-APSD is not available, Cisco Cius

uses Power Save Poll (PS-POLL) for power management. For more information, see the [Cisco Cius Wireless LAN Deployment Guide](#).

Obtaining Additional Information About Power

For related information about power, see the documents shown in the following table. These documents provide information about the following topics:

- Cisco switches that work with Cisco Cius
- The Cisco IOS releases that support bidirectional power negotiation
- Other requirements and restrictions regarding power

Table 1: Related Documents

Document topics	URL
Cisco Catalyst Switches	http://cisco.com/en/US/products/hw/switches/index.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 the Cisco Cius Configuration Files

Configuration files for Cisco Cius 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 Cisco Cius to be reset, a change is automatically made to the configuration file.

The configuration file upgrade process includes the following steps.

- 1 The configuration file is parsed and Upgrade Services requests an upgrade from the DOWND process.
- 2 DOWND forks the image process.
- 3 Image downloads the specified loads file.



Note

The server is either automatically discovered from DHCP, alternate settings, or loadserver.

- 4 Image process interfaces with DOWND to obtain files, HTTP first then TFTP as a backup.
- 5 The loads file is parsed to determine which file(s) to load to complete the upgrade.
- 6 A package file named `pkg.cius<version>.tgz` is downloaded. The file contains all components of Cisco Cius upgrade.
- 7 Image burns the new image files to the appropriate inactive partitions.

- 8 Image returns successful LOAD indication.
- 9 Upgrade Services initiates an UPGRADE operation through DOWND, and image performs the upgrade partition flop.

Configuration files also contain information about which image load Cisco Cius is running. If this image load differs from the one currently loaded on Cisco Cius, Cisco Cius contacts the TFTP server to request the required load files.

Cisco Cius accesses a default configuration file named XmlDefault.cnf.xml from the TFTP server when the following conditions exist:

- Auto-registration is enabled in Cisco Unified Communications Manager.
- Cisco Cius has not been added to the Cisco Unified Communications Manager database.
- Cisco Cius is registering for the first time.

If auto-registration is not enabled and Cisco Cius has not been added to the Cisco Unified Communications Manager database, Cisco Cius registration request will be rejected. Cisco Cius displays either `Telephone service is unavailable` or `Lost connection to the server` on the screen.

Cisco Cius accesses the configuration file named SEPmac_address.cnf.xml, where mac_address is the Ethernet MAC address of Cisco Cius. The description field in the Phone Configuration window of Cisco Unified Communications Manager Administration is pre-populated when the device is first configured. The MAC address uniquely identifies the Cisco Cius device.

For information on troubleshooting the configuration file upgrade process, see the [Troubleshooting Configuration File Upgrades](#).

Understanding Cisco Cius Startup Process

When connecting to the VoIP network, Cisco Cius goes through a standard startup process that is described in the following table. Depending on your specific network configuration, not all of these steps may occur on your Cisco Cius.

Table 2: Cisco Cius Startup Process

Tasks	Purposes	Related topics
Load the stored phone image.	<p>Cisco Cius has nonvolatile Flash memory in which it stores firmware images and user-defined preferences. At startup, Cisco Cius runs a bootstrap loader that loads a phone image stored in Flash memory. Using this image, Cisco Cius initializes its software and hardware.</p> <p>Note Wireless and wired connections are not both required, but can operate at the same time. Cisco Cius prefers the wireless network for connectivity to Cisco Unified Communications Manager for registration and TFTP.</p>	General Troubleshooting
Obtain power from the switch.	<p>If Cisco Cius is not using external power, the switch provides in-line power through the Ethernet cable attached to the Cius.</p> <p>Alternatively, Cisco Cius can be powered using battery power.</p>	Adding Cisco Cius Mobile Collaboration Endpoints to the Cisco Unified Communications Manager Database, on page 10 General Troubleshooting
Scan for an access point.	<p>Cisco Cius scans the Radio Frequency (RF) coverage area. Cisco Cius searches its network profiles and scans for access points with a matching SSID and authentication type. Cisco Cius associates with the access point with the highest RSSI that matches with its network profile.</p>	Interacting with Cisco Unified Wireless APs Cisco Cius Wireless LAN Deployment Guide
Authenticate with the access point.	<p>Cisco Cius begins the authentication process.</p>	Authentication Methods Cisco Cius Wireless LAN Deployment Guide

Tasks	Purposes	Related topics
Configure the VLAN.	If Cisco Cius is connected to a Cisco Catalyst switch, the switch next informs Cisco Cius of the voice VLAN defined on the switch. Cisco Cius requires its VLAN membership before it can proceed with the Dynamic Host Configuration Protocol (DHCP) request for an IP address.	Ethernet Settings Menu General Troubleshooting
Obtain an IP address.	If Cisco Cius is using DHCP to obtain an IP address, Cisco Cius queries the DHCP server to obtain one. If you are not using DHCP in your network, you must assign static IP addresses to each Cius locally.	Ethernet Settings Menu General Troubleshooting
Access a TFTP server.	In addition to assigning an IP address, the DHCP server directs Cisco Cius to a TFTP Server. If Cisco Cius has a statically defined IP address, you must configure the TFTP server locally on Cisco Cius; Cisco Cius then contacts the TFTP server directly. You can also assign an alternative TFTP server to use instead of the one assigned by DHCP.	Ethernet Settings Menu General Troubleshooting
Request the CTL file.	The TFTP server stores the CTL file. This file contains the certificates necessary for establishing a secure connection between Cisco Cius and Cisco Unified Communications Manager.	See the <i>Cisco Unified Communications Manager Security Guide, Configuring the Cisco CTL Client</i> chapter.
Request the ITL file.	Cisco Cius requests the ITL file after it requests the CTL file. The ITL file contains the certificates of the entities that Cisco Cius can trust. The certificates are used for authenticating a secure connection with the servers or authenticating a digital signature signed by the servers. The ITL file is supported on the Cisco Unified Communications Manager 8.5 and later.	See the Troubleshooting and Maintenance chapter.

Tasks	Purposes	Related topics
Request the configuration file.	The TFTP server has configuration files, which define parameters for connecting to Cisco Unified Communications Manager and other information for Cisco Cius.	Adding Cisco Cius Mobile Collaboration Endpoints to the Cisco Unified Communications Manager Database , on page 10 General Troubleshooting
Contact Cisco Unified Communications Manager	<p>The configuration file defines how Cisco Cius communicates with Cisco Unified Communications Manager and provides Cisco Cius with its load ID. After obtaining the file from the TFTP server, Cisco Cius attempts to make a connection to the highest-priority Cisco Unified Communications Manager on the list.</p> <p>If the security profile of Cisco Cius is configured for secure signaling (encrypted or authenticated), and the Cisco Unified Communications Manager is set to secure mode, Cisco Cius makes a TLS connection. Otherwise, it makes a nonsecure TCP connection.</p> <p>If Cisco Cius was manually added to the database, Cisco Unified Communications Manager identifies Cisco Cius. If Cisco Cius was not manually added to the database and auto-registration is enabled in Cisco Unified Communications Manager, Cisco Cius attempts to auto-register in the Cisco Unified Communications Manager database.</p> <p>Note Auto-registration is disabled when Cisco Unified Communications Manager is in Mixed Secure Mode. In this case, Cisco Cius must be manually added to the Cisco Unified CM database.</p>	See the Troubleshooting and Maintenance chapter.

Adding Cisco Cius Mobile Collaboration Endpoints to the Cisco Unified Communications Manager Database

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

- [Adding Cisco Cius Devices with Auto-Registration, on page 10](#)
- [Adding Cisco Cius Devices with Auto-Registration and TAPS, on page 11](#)
- [Adding Cisco Cius Mobile Collaboration Endpoints with Cisco Unified Communications Manager Administration, on page 12](#)
- [Adding Cisco Cius Devices Using BAT Phone Template, on page 12](#)

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

Table 3: Methods for Adding Cisco Cius Mobile Collaboration Endpoints to the Cisco Unified Communications Manager Database

Method	Requires MAC Address?	Notes
Auto-registration	No	Results in automatic assignment of directory numbers
Auto-registration with TAPS	No	Requires auto-registration and the Bulk Administration Tool (BAT); updates information in Cisco Cius and in Cisco Unified Communications Manager Administration
Using Cisco Unified Communications Manager Administration	Yes	Requires Cisco Cius mobile collaboration endpoints to be added individually
Using BAT	Yes	Allows for simultaneous registration of multiple Cisco Cius mobile collaboration endpoints

Adding Cisco Cius Devices with Auto-Registration

By enabling auto-registration before you begin installing Cisco Cius, you can do the following:

- Add Cisco Cius devices without first gathering MAC addresses from the devices.
- Automatically add Cisco Cius devices to the Cisco Unified Communications Manager database when you physically connect Cisco Cius to your IP telephony network. During auto-registration, Cisco Unified Communications Manager assigns the next available sequential directory number to Cisco Cius.

- Quickly enter Cisco Cius devices in to the Cisco Unified Communications Manager database and modify any settings, such as the directory numbers, from Cisco Unified Communications Manager.
- Move any auto-registered Cisco Cius devices 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 Cisco Cius devices to your network. To add more than 100 Cisco Cius devices to your network, use the Bulk Administration Tool (BAT). See the [Adding Cisco Cius Devices Using BAT Phone Template](#), on page 12.

Auto-registration is disabled by default. In some cases, you might not want to use auto-registration; for example, if you want to assign a specific directory number to Cisco Cius, or use a secure connection with Cisco Unified Communications Manager as described in Cisco Unified Communications Manager Security Guide. For information about enabling auto-registration, see the [Enabling Auto-Registration](#) section in the *Cisco Unified Communications Manager Administration Guide*.

Related Topics

[Adding Cisco Cius Devices with Auto-Registration and TAPS](#), on page 11

[Adding Cisco Cius Mobile Collaboration Endpoints with Cisco Unified Communications Manager Administration](#), on page 12

[Adding Cisco Cius Devices Using BAT Phone Template](#), on page 12

Adding Cisco Cius Devices with Auto-Registration and TAPS

You can add Cisco Cius devices with auto-registration and TAPS, the Tool for Auto-Registered Phones Support, without first gathering MAC addresses from the Cisco Cius devices.

TAPS works with the Bulk Administration Tool (BAT) to update a batch of Cisco Cius devices 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 Cisco Cius devices.

**Note**

Cisco recommends you use auto-registration and TAPS to add less than 100 Cisco Cius devices to your network. To add more than 100 Cisco Cius devices to your network, use the BAT. See the [Adding Cisco Cius Devices Using BAT Phone Template](#), on page 12.

To implement TAPS, dial a TAPS directory number and follow the voice prompts. Cisco Cius downloads its directory number and other settings and is 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 enabled automatically.

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

Related Topics

[Adding Cisco Cius Devices with Auto-Registration, on page 10](#)

[Adding Cisco Cius Mobile Collaboration Endpoints with Cisco Unified Communications Manager Administration, on page 12](#)

[Adding Cisco Cius Devices Using BAT Phone Template, on page 12](#)

Adding Cisco Cius Mobile Collaboration Endpoints with Cisco Unified Communications Manager Administration

You can add Cisco Cius mobile collaboration endpoints individually to the Cisco Unified Communications Manager database by using Cisco Unified Communications Manager Administration. To do so, you first must obtain the MAC address for each Cisco Cius. For information about determining a MAC address, see the [Determining the MAC Address for Cisco Cius, on page 13](#).

To add Cisco Cius to the Cisco Unified Communications Manager, follow these steps:

Procedure

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- Step 1** After you have collected MAC addresses, in Cisco Unified Communications Manager Administration, choose **Device > Phone**.
- Step 2** Click **Add New**.
- Step 3** If you are adding a Cisco Cius Wi-Fi mobile collaboration endpoint, choose **Cisco Cius** from the **Phone Type** drop-down menu. If you are adding a Cisco Cius SP mobile collaboration endpoint, choose **Cisco Cius SP**.
- Note** Depending on the CUCM version, adding Cisco Cius mobile collaboration endpoints may require installing a Device Enabler before installing the firmware.
- Step 4** Click **Next**.
- Step 5** Enter the details of Cisco Cius-specific parameters (Device Pool, Phone Button Template, Device Security Profile and so on).
- Step 6** Click **Save**.
- For complete instructions and conceptual information about Cisco Unified Communications Manager, go to the [Cisco Unified Communications Manager Overview](#) chapter in the *Cisco Unified Communications Manager System Guide*.
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Related Topics

[Adding Cisco Cius Devices with Auto-Registration, on page 10](#)

[Adding Cisco Cius Devices with Auto-Registration and TAPS, on page 11](#)

[Adding Cisco Cius Devices Using BAT Phone Template, on page 12](#)

Adding Cisco Cius Devices Using BAT Phone Template

The Unified Communications Bulk Administration Tool (BAT) allows you to perform batch operations including registration on multiple Cisco Cius devices.

To add Cisco Cius devices using BAT only (not in conjunction with TAPS), you must obtain the appropriate MAC address for each Cisco Cius. For information about determining a MAC address, see the [Determining the MAC Address for Cisco Cius](#), on page 13.

For detailed instructions about adding Cisco Cius devices using the Bulk Administration menu, see the [Inserting Phones](#) chapter of the *Cisco Unified Communications Manager Bulk Administration Guide*.

To add Cisco Cius 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 **Cisco Cius** from the **Phone Type** drop-down menu and click **Next**.
 - Step 4** Enter the details of Cisco Cius-specific parameters (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 Cisco Cius using an existing BAT phone template.
For more information about using BAT, see the *Cisco Unified Communications Manager Bulk Administration Guide*. For more information about creating BAT Phone Templates, see the [Phone Template](#) chapter of the *Cisco Unified Communications Manager Bulk Administration Guide*.
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Related Topics

- [Adding Cisco Cius Devices with Auto-Registration](#), on page 10
- [Adding Cisco Cius Devices with Auto-Registration and TAPS](#), on page 11
- [Adding Cisco Cius Devices Using BAT Phone Template](#), on page 12

Determining the MAC Address for Cisco Cius

Several procedures described in this manual require you to determine the MAC address of a Cisco Cius device. You can determine the MAC address for Cisco Cius in these ways:

- From Cisco Cius home screen, tap the Applications Menu button and then choose **Settings > About Cius > Status** and look at the Ethernet MAC address field.
- Look at the MAC Address entry on the label on the back of your Cisco Cius. The label is located behind the removable battery.
- Display the web page for your Cisco Cius and click the **Device Information** hyperlink.

For information about accessing the web page, see the [Accessing the Web Page for Cisco Cius](#).

