



Cisco Unified Communications Express - Quick Configuration Tool User Guide

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This guide describes how to use the Cisco Unified Communications Express - Quick Configuration Tool (Cisco Unified Communications Express - QCT) 3.0 and later to configure IP telephony systems.



Note

Users guides for earlier versions of Cisco IPC Express QCT are downloaded with the Zip archive. The filename for the user guide in the ZIP archive of Cisco IPC Express QCT 2.1 and earlier is QCT_User_Guide.pdf.

Cisco Unified Communications Express - QCT is a GUI application provided for Cisco Partners and Resellers designed to simplify and expedite the configuration of Cisco Unified Callmanager Express (Cisco Unified CME) and Cisco Unity Express by reducing the the number of Cisco IOS commands with which the user must be familiar in order to deploy a Cisco Unified Communications Express telephony system.

Use Cisco Unified Communications Express - QCT to set up a simple, typical basic PBX or key system telephony configuration of 50 or fewer IP phone users on any Cisco Unified CME supported Cisco Integrated Services Router platform, including the Cisco 2800 and the Cisco 3800 product families. In addition, Cisco Unified Communications Express - QCT recognizes any Advanced Integrated Module (AIM) or NM-CUE module installed in the router, thus providing voice-mail and Auto Attendant (AA) capability to the Cisco Unified CME system.

After all the necessary information is entered, Cisco Unified Communications Express - QCT generates all of the required configuration commands which you can upload to the Cisco router to be configured or save as a template file to use to configure additional systems with similar system parameters.

Certain site-specific information is required for Cisco Unified Communications Express - QCT to generate the commands for configuring a Typical installation even when using default values. See *Cisco Unified Communications Express - QCT Worksheets* at http://www.cisco.com/en/US/products/sw/voicesw/ps4625/products_documentation_roadmap09186a0080189132.html for tables with descriptions of required parameters.

Finding Support Information for Platforms and Cisco IOS Software Images

Use Cisco Feature Navigator to find information about platform support and software image support. Cisco Feature Navigator enables you to determine which Cisco IOS and Catalyst OS software images support a specific software release, feature set, or platform. To access Cisco Feature Navigator, go to <http://www.cisco.com/go/cfn>. An account on Cisco.com is not required.

Finding Support Information for Cisco Unified CME

For information about Cisco IOS software and Cisco Unified CME compatibility, see the *Cisco Unified CME and Cisco IOS Software Version Compatibility Matrix* at

http://www.cisco.com/en/US/products/sw/voicesw/ps4625/products_documentation_roadmap09186a0080189132.html.

For information about Cisco Unified CME specifications, including number of supported phones and Cisco firmware filenames, see the appropriate *Cisco Unified CME Firmware, Platforms, Memory, and Voice Products* document at

http://www.cisco.com/en/US/products/sw/voicesw/ps4625/products_documentation_roadmap09186a0080189132.html.

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Prerequisites

- Your IP network is operational and you can access Cisco web.
- A PC with Microsoft® Internet Explorer 5.5 or later is connected, using a serial cable, to the console port of Cisco router to be configured. If you need assistance in connecting your PC to your router's console port, refer to the Install and Upgrade Guide for the Cisco router.
- The Block Pop-up Windows feature for Microsoft® Internet Explorer must be disabled.
- You must be a member of *Administrators* group under User Account settings for your PC.
- You must have a valid Cisco CCO account.
- The factory-default configuration is loaded in nonvolatile memory and in the running configuration of the Cisco router to be configured.
- If you are using Cisco Unified Communications Express - QCT to also upload firmware files for Cisco Unified IP phones after uploading the generated configuration, all Cisco firmware files to be uploaded must be installed in the folder named Phoneloads, within the local folder in which Cisco Unified Communications Express - QCT is installed.

**Note**

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- If you want to use Cisco Unified Communications Express - QCT to restore the factory-default configuration on a Cisco Integrated Services router, see the [“Restoring a Factory-Default Configuration” section on page 7](#).
 - If you want to use Cisco Unified Communications Express - QCT to install the appropriate firmware files on the PC, see the [“Downloading Cisco Firmware Files for IP Phones” section on page 25](#).
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Information About Cisco Unified Communications Express - QCT

To use the Cisco Unified Communications Express - QCT to set up a Cisco Unified Communications Express telephony system, you should understand the following concepts:

- [How to Use Cisco Unified Communications Express - QCT, page 3](#)
- [Types of IP Telephony Systems, page 4](#)

How to Use Cisco Unified Communications Express - QCT

Use Cisco Unified Communications Express - QCT to configure a PBX or Square Mode (key system) IP telephony system, with or without Cisco Unity Express voice mail, to reset the configuration of a Cisco router to factory default.

Accept the default values to quickly configure an IP telephony system or modify preconfigured values, enter data, and choose options to customize the configuration. After all the necessary information is entered, Cisco Unified Communications Express - QCT generates the commands for configuring an IP telephony system which can be uploaded to the Cisco router to be configured, along with the firmware files for all Cisco Unified IP phones to be connected to the Cisco router.

Certain site-specific information is required for Cisco Unified Communications Express - QCT to generate the commands for configuring a Typical installation even when using default values. See *Cisco Unified Communications Express - QCT Worksheets* at http://www.cisco.com/en/US/products/sw/voicesw/ps4625/products_documentation_roadmap09186a0080189132.html for tables with descriptions of required parameters.

Before starting configuration tasks, you must choose one of following three installation types for using Cisco Unified Communications Express - QCT:

- **Typical**—Loads the Cisco Unified Communications Express - QCT application with default values for the Recommended Install.
- **Custom Install**—Loads the Cisco Unified Communications Express - QCT application with default values and allows you to modify the default values if you desire.
- **Install Configuration from Template**—Loads the Cisco Unified Communications Express - QCT application with values from a configuration template and allows you to modify the default values if you desire. A configuration template is created from a previously generated configuration and can expedite the process for configuring systems with similar requirements.

Additionally, there are two types of configuration that Cisco Unified Communications Express - QCT can generate:

- **Typical Configuration**—Generates configuration using only preloaded default values for most configuration parameters. This type requires you to enter minimal site-specific data only.
- **Custom Configuration**—Generates configuration using combination of default and custom values, based on your input.

Which information is required while using Cisco Unified Communications Express - QCT depends on specified installation option, system type, and configuration type. Entering information in certain fields or choosing a particular option can cause additional fields to appear in a window. An asterisk (*) next to a parameter in a window indicates that the parameter information is required.

The following functions are available any time while using Cisco Unified Communications Express - QCT. Activate the function by clicking the corresponding button.

- Back—Displays the previously viewed window.
- Cancel—Deletes all custom values and choices, restarts the application, and opens the Installation Option window. Confirmation is required.
- Cancel—(Welcome window only) Closes the Cisco Unified Communications Express - QCT application.
- Next—(Available only when all required parameters are configured in a window) Saves custom data and choices in this window and displays the next window in sequence.

Types of IP Telephony Systems

When setting up a Cisco Unified Communications Express system, you must decide if call handling should be similar to that of a PBX or similar to that of a Key Telephone System.

Key System

A Key Telephone System (key system) is a system in which the telephones have multiple buttons (typically, 8 to 25) permitting the user to directly select outgoing or incoming PSTN lines. Most of the IP phones in a key system have nearly identical configurations enabling a phone user to answer any incoming PSTN call on any line.

A square model key system is a key system with a NxN arrangement of phones and lines. For example, an 8x8 key system has 8 PSTN lines shared across 8 telephones and all 8 PSTN lines appear on each of the 8 telephones. Each phone has the same shared lines.

When an incoming call arrives, it rings on all eight IP phones. When multiple calls are present within the system at the same time, each individual call (ringing or waiting on hold) is visible on every IP phone in the system and can be directly selected by pressing the corresponding line button on any phone. In this model, calls can be moved between phones simply by putting the call on hold at one phone and selecting the call using the line button on another phone.

Key systems can be used when no internal call switching is necessary.

PBX

The PBX model allows each IP phones in the system to have a single unique extension number. PBX configurations are usually required for larger companies who need both internal (extension numbers) and external (PSTN) phone capabilities. The PBX model also enables your configuration to support features such as intercom, call park, hunt groups, and caller ID blocking.

How to Configure IP Telephony Systems Using Cisco Unified Communications Express - QCT

This section contains the following tasks:

- [Installing Cisco Unified Communications Express - QCT, page 5](#)
- [Verifying the Installation, page 5](#)
- [Launching Cisco Unified Communications Express - QCT, page 6](#)
- [Restoring a Factory-Default Configuration, page 7](#)
- [Selecting Installation Options, page 8](#)

- [Configuring Basic Setup, page 9](#)
- [Configuring Network, page 10](#)
- [Configuring Internet Connection, page 13](#)
- [Configuring SIP Trunk, page 13](#)
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- [Using Optional FTP Utility to Upload Files to Flash Memory, page 24](#)
- [Downloading Cisco Firmware Files for IP Phones, page 25](#)

Installing Cisco Unified Communications Express - QCT

To download and install Cisco Unified Communications Express - QCT on your PC, perform the following steps.



Note

This installation procedure assumes the use of Windows XP. If you are using another Windows operating system, your display can differ slightly.

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- Step 1** Create a folder on your PC in which to install Cisco Unified Communications Express - QCT.
 - Step 2** Download the latest version of Cisco Unified Communications Express - QCT from the Cisco Software Download site at <http://www.cisco.com/cgi-bin/tablebuild.pl/cme-qct>.
 - Step 3** Extract all files and folders from the archive into the appropriate folder on your PC. Files and subdirectories for Cisco Unified Communications Express - QCT will install in the specified folder.
 - Step 4** Open the local folder in which Cisco Unified Communications Express - QCT is installed, then double-click **setup.bat** to start the setup program.
 - Step 5** Follow the screen prompts and install Cisco Unified Communications Express - QCT on your PC.
 - Step 6** When setup has completed, click **Finish**.
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Verifying the Installation

To verify that the required registry Keys for launching Cisco Unified Communications Express - QCT are installed, perform the following steps.

- Step 1** Open the Registry Editor: Choose **Start>Run**, then type **regedit**, then click **OK**. The Registry Editor window appears.

Note Do *not* edit, delete, or copy objects in the Registry Editor. Incorrectly editing the registry may severely damage your system.

- Step 2 In the Registry Editor window, choose **Edit > Find**. The Find window appears.
 - Step 3 Uncheck the **Keys** and **Values** check boxes.
 - Step 4 Enter **netcommocx.netcomm**, then click **Find Next**. A search of the system registry is conducted.
 - Step 5 Verify that “NETCommOCX.NETComm” is listed in the Data column in the right pane of the Registry Editor window.
 - Step 6 In the Registry Editor window, choose **Edit > Find**. The Find window appears.
 - Step 7 Enter **ezftp control**, then click **Find Next**. A search of the system registry is conducted.
 - Step 8 Verify that “EZFTP Control” is listed in the Data column in the right pane of the Registry Editor window.
 - Step 9 Close the Registry Editor window.
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What to Do Next

- If one or both of the objects is not found in the system registry, install Cisco Unified Communications Express - QCT. See the [“Installing Cisco Unified Communications Express - QCT” section on page 5](#).
- If you want to install the firmware files for IP phones on the PC before using Cisco Unified Communications Express - QCT to configure a Cisco router, see the [“Downloading Cisco Firmware Files for IP Phones” section on page 25](#).
- If you are ready to use Cisco Unified Communications Express - QCT to configure a Cisco router, see the [“Launching Cisco Unified Communications Express - QCT” section on page 6](#).

Launching Cisco Unified Communications Express - QCT

To launch Cisco Unified Communications Express - QCT, perform the following steps.

- Step 1 Open the local folder in which Cisco Unified Communications Express - QCT is installed.
 - Step 2 Double-click **QCT.html** to launch Cisco Unified Communications Express - QCT. The Cisco Unified Communications Express - Quick Configuration Tool window appears.
 - Step 3 To accept the License Agreement and launch Cisco Unified Communications Express - QCT, click **Launch Quick Config Wizard**. The Welcome window appears.
 - Step 4 Click **Next**. The Installation Option window appears.
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What to Do Next

- To use Cisco Unified Communications Express - QCT to configure a Cisco router that has the factory default configuration loaded in its nonvolatile memory and in its running configuration, see the [“Selecting Installation Options” section on page 8](#).

- To use Cisco Unified Communications Express - QCT to restore the factory default configuration on an in-use or already configured Cisco Integrated Services router, see the [“Restoring a Factory-Default Configuration”](#) section on page 7.
- To use Cisco Unified Communications Express - QCT to upload files such as Cisco firmware files to the flash memory of the Cisco router to be configured, see the [“Using Optional FTP Utility to Upload Files to Flash Memory”](#) section on page 24.

Restoring a Factory-Default Configuration



Caution

Save any required router configuration before you reset the router to factory default. Resetting the router will permanently erase any router configuration and return the router to its factory-default configuration.

To use Cisco Unified Communications Express - QCT to erase the configuration on a Cisco router and restore the factory-default configuration, perform the following steps.

- Step 1** If the router to be reset has a running configuration and is in service, save the running configuration.
- Step 2** Perform one of the following actions:
- If Cisco Unified Communications Express - QCT is already running: Click **Cancel**, then click **OK**. The Installation Option window appears.
 - Launch the Cisco Unified Communications Express - QCT application. See the [“Launching Cisco Unified Communications Express - QCT”](#) section on page 6.
- Step 3** Attached a serial cable from a Comm port on your PC to the console port on the Cisco router to be reset.
- Step 4** Power up the Cisco router to be reset.
- Step 5** In the Factory Default Router area of the Installation Option window, click the **No** radio button. The Reset Router area appears.

Reset Router

- Step 6** See [Table 5](#) for a description of the parameters to be configured. Enter the required information in the corresponding field.

Table 3 Current Router Parameters to Be Configured

Field Name	Description
Current Router Login	Login ID for the Cisco router to be reset.
Current Router Password	Password for logging in to the Cisco router to be reset.
Current Router's Host Name	(Optional) Host name of the Cisco router to be reset.
Current Router Enable Password	Password for logging in to the Cisco router to be reset.
Connect to Router Via	From the drop-down list, choose the Comm port on your PC to which the serial cable is connected

- Step 7** Click the **Reset Router to Factory Default** button.
- Step 8** Confirm that the Cisco router to be reset is powered on, then click **OK**.
- Step 9** Confirm that the serial cable is connected to the specified Comm port on your PC, then click **OK**.

- Step 10** To accept the ActiveX control, click **Yes**. Cisco Unified Communications Express - QCT resets the configuration of the router.
- Step 11** Click **Next**. The Basic Setup window appears.
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What to Do Next

After the Cisco router to be configured is reset to factory-default, you are ready to configure system parameters. See the [“Selecting Installation Options”](#) section on page 8.

Selecting Installation Options

To select the type of installation to be performed, perform the following steps.



Tip

Cisco Unified Communications Express - QCT is preconfigured with recommended, default values for common parameters. These default values may not be appropriate for every Cisco Unified Communications Express system. You can accept the default values to quickly configure an IP telephony system or you can change any preconfigured value to customize the configuration.



Note

Not all parameters and options are available for all installation, system, or configuration types.

- Step 1** In the Factory Default Router area of the Installation Option window:
- To configure an IP telephony system when the factory-default configuration is loaded in nonvolatile memory and in the running configuration of the Cisco router to be configured: Click the **Yes** radio button, then go to [Step 2](#).
 - To restore the factory default configuration on an in-use or already configured Cisco Integrated Services router: Click the **No** radio button, then see the [“Restoring a Factory-Default Configuration”](#) section on page 7.

Type of Installation

- Step 2** In the Type of Installation area of the Installation Option window, choose the type of values to be installed for Cisco Unified Communications Express - QCT.
- To load Cisco Unified Communications Express - QCT with default values for the Recommended Install: Click the **Typical** radio button, then go to [Step 4](#).
 - To load Cisco Unified Communications Express - QCT with default values and enable customizing of the parameters to be configured: Click the **Custom Install** radio button, then click **Next**, then go to [Step 3](#).
 - To load the Cisco Unified Communications Express - QCT application with values from a previously saved template, see the [“Loading Config Template”](#) section on page 24.

Custom Settings

- Step 3** See [Table 4](#) for a description of the parameters to be configured. Enter the required information in the corresponding field or use any of default values already in the field.

Table 4 Custom Settings to Be Configured

Field Name	Description
Debug	To enable or disable internal debugging and open a debug window for displaying trace and debug information, check or uncheck the Enable Debug check box.
Logging	To enable or disable logging after uploading the generated configuration to the router to be configured, check or uncheck the Enable Logging check box. Hardware detect and QCT-to-console-port dialog log files are stored in a folder named Logs, within the local folder in which Cisco Unified Communications Express - QCT is installed.
Auto Detect Hardware	To allow changes in the Hardware area in the Basic Setup window after using the Auto Detect Hardware function, uncheck the Lockout User Changes on Auto-Detect check box. To “lock” the Hardware area in the Basic Setup window after using the Auto Detect Hardware function, check the Lockout User Changes on Auto-Detect check box

Step 4 Click **Next**. The Basic Setup window appears.

Configuring Basic Setup

To configure basic setup parameters for an IP telephony system, perform the following steps.



Note

Certain site-specific information is required for Cisco Unified Communications Express - QCT to generate the commands for configuring a Typical installation, even when using default values. See *Cisco Unified Communications Express - QCT Worksheets* at http://www.cisco.com/en/US/products/sw/voicesw/ps4625/products_documentation_roadmap09186a0080189132.html for tables with descriptions of required parameters.

- Step 1 In the System Type area of the Basic Setup window, specify System Type.
- To configure an IP telephony system as a PBX system, click the **PBX** radio button.
 - To configure an IP telephony system as a Square Mode (keyssystem) system, click the **Square Mode** radio button.

Hardware

- Step 2 From the PC Serial Port drop-down list, choose the Comm port on your PC to which the serial cable is connected.
- Step 3 From the Router Platform drop-down list, choose the Cisco router to be configured.
- Step 4 In the Hardware area, specify how to configure your hardware layout.
- To automatically detect your hardware configuration, go to [Step 5](#).

- To manually configure your hardware layout: From the drop-down lists in the Hardware area, choose your hardware layout, then go to [Step 10](#).
- Step 5** Confirm that the Cisco router to be configured is powered on and that the router has been running for at least five minutes.
- Step 6** Click **Auto Detect Hardware Configuration**. The Detect Hardware Configuration window appears.
- Step 7** Click **Detect**.
- Step 8** Confirm that your serial cable is properly connected. Click **OK** in the confirmation dialog box.
- Step 9** Click **Yes** to accept ActiveX control. Cisco Unified Communications Express - QCT analyzes the router and loads the hardware layout information in the Hardware Configuration area of the Basic Setup window.

General Router Information

- Step 10** See [Table 5](#) for a description of the parameters to be configured. Enter the required information in the corresponding field or use any of default values already in the field.

Table 5 General Router Parameters to Be Configured

Field Name	Description
Company Name	(Optional) Company name to appear on the display of IP phones connected to the Cisco router to be configured.
Router Host Name	(Optional) Host name of the Cisco router to be configured.
Router Login	Login ID for the Cisco router to be configured.
Router Password	Password for logging in to the Cisco router to be configured.
Time Zone	(Optional) To specify information for timestamp to appear on phone displays connected to Cisco router to be configured: From the drop-down list, choose your timezone, then to enable or disable daylight savings, check or uncheck the Daylight Savings check box.
Daylight Savings	

- Step 11** Click **Next**. The Internal Network window appears.

Configuring Network

To configure network parameters, perform the following steps.

- Step 1** In the Configuration Type area of the Internal Network window, specify Configuration Type.
- (Recommended) To configure an IP telephony system using preloaded default values for most configuration parameters, click the **Typical Configuration** radio button. Go to [Step 5](#).
 - To configure an IP telephony system using a combination of default and custom values, based on your input, click the **Custom Configuration** radio button. Go to [Step 2](#).

Voice VLAN Parameters

- Step 2** See [Table 6](#) for a description of the parameters to be configured. Enter the required information in the corresponding field or use any of default values already in the field.

Table 6 *Voice VLAN Parameters to Be Configured*

Field Name	Description
Voice VLAN ID	Subinterface number for voice network. Range: 1 to 1004.
DHCP Network IP Address	IP address and subnet mask of Dynamic Host Configuration Protocol (DHCP) voice server.
Subnet Mask	
DHCP Excluded Addresses	IP addresses to be excluded from DHCP addressing on voice network.
CUCME IP Address	IP address and subnet mask of the Cisco router to be configured. Cisco Unified Communications Express - QCT excludes this IP address and subnet mask during DHCP assignments.
Subnet Mask	

Data VLAN Parameters

- Step 3** See [Table 7](#) for a description of the parameters to be configured. Enter the required information in the corresponding field or use any of default values already in the field.

Table 7 *Data VLAN Parameters to Be Configured*

Field Name	Description
Data VLAN ID	Subinterface number for data network. Range: 1 to 1004.
DHCP Network IP Address	IP address and subnet mask of Dynamic Host Configuration Protocol (DHCP) voice server.
Subnet Mask	
DHCP Excluded Addresses	IP addresses to be excluded from DHCP addressing on voice network.
CUCME IP Address	IP address and subnet mask of the Cisco router to be configured. Cisco Unified Communications Express - QCT excludes this IP address and subnet mask during DHCP assignments.
Subnet Mask	

NTP Servers

- Step 4** See [Table 8](#) for a description of the parameters to be configured. Enter the required information in the corresponding field or use any of default values already in the field.

Table 8 *NTP Server Parameters to Be Configured*

Field Name	Description
NTP Server 1 IP Address	(Optional) IP address of Network Time Protocol (NTP) 1 and NTP 2 servers.
NTP Server 2 IP Address	

- Step 5** Perform one of the following actions:
- If you are configuring a PBX system on a Cisco router with BRI modules installed, go to [Step 6](#).
 - If you are configuring a PBX system on a Cisco router with T1/E1 modules installed, go to [Step 6](#).
 - If you are configuring a PBX system on a Cisco router with 2- or 4-port FXO modules installed, go to [Step 7](#).
 - If you are configuring a PBX system on a Cisco router with FSX or Ports Switch modules installed: Click **Next**, then go to the “[Configuring Internet Connection](#)” section on [page 13](#).

- If you are configuring a Square Mode (keysystem), go to [Step 10](#).

Public Switched Telephone Network

- Step 6** See [Table 9](#) for a description of the parameters to be configured. Enter the required information in the corresponding field or use any of default values already in the field.

Table 9 *T1/E1 Parameters to Be Configured*

Field Name	Description
BRI	
BRI Switch Type	From the drop-down list, choose the type of BRI switch to be configure
T1/E1	
Digital Connection Type	Specify connection type, click the appropriate radio button.
Switch Type	From the drop-down list, choose the type of T1/E1 switch to be configured.
PR Group Timeslots	Specify an ISDN PRI group on a channelized T1 or E1 controller. Range for T1: 1 to 24. Range for E1: 1 to 31.

- Step 7** If you are configuring a PBX system, specify whether to configure DID numbers.
- To configure DID phone numbers: Click the **Yes** radio button, then go to [Step 8](#).
 - If you do *not* want to configure DID numbers: Click the **No** radio button, then click **Next**. See the “[Configuring Internet Connection](#)” section on page 13.
- Step 8** See [Table 10](#) for a description of the parameters to be configured. Enter the required information in the corresponding field or use any of default values already in the field.

Table 10 *DID Phone Number Parameters to Be Configured*

Field Name	Description
First Phone Number	First number in pool of DID numbers to be configured. Starting with this number, Cisco Unified Communications Express - QCT automatically configures the remaining extension numbers in a contiguous manner.
How many numbers are needed?	Corresponds to the number of PSTN <i>ports</i> in the Cisco router to be configured.

- Step 9** Click **Next**. The Internet Access Connection Window window appears. See the “[Configuring Internet Connection](#)” section on page 13.
- Step 10** If you are configuring a Square Mode (keysystem), configure at least one Central Office (CO) trunk number for your FXO analog ports.
- In the Public Switched Telephone Network area, enter the first CO trunk number, then click **Add>>**. The number appears in the pane.
 - Repeat the previous step for each CO trunk number to be added.
 - To remove a CO trunk number to be configured: In the pane, select the number to be removed and click **<<Remove**. The number is deleted from the pane.

- d. Click **Next**. The Internet Access Connection Setting window appears.

Configuring Internet Connection

To configure internet access, perform the following steps.

- Step 1** In the Internet Access area, specify whether this router will access the internet.
- To enable internet access for this router: Click the **Yes** radio button, then go to [Step 2](#).
 - To disable internet access for this router: Click the **No** radio button, then click **Next**. See the “[Configuring SIP Trunk](#)” section on page 13.
- Internet Interface**
- Step 2** From the Connection Port drop-down list, choose the internet port for the Cisco router to be configured.
- Internet Connection Type**
- Step 3** From the Connection Type drop-down list, choose the type of internet connection to be configured.
- Step 4** See [Table 11](#) for a description of the parameters for each option to be configured. Enter the required information in the corresponding field or use any of default values already in the field.

Table 11 Internet Connection Type Parameters to Be Configured

Field Name	Description
PPPoE	
User Name	Name to be used as authentication credential for PPPoE (Point to Point Protocol over Ethernet).
Password	Password for this user name.
Static IP	
Internet IP Address	IP address and subnet mask of the network on which the Cisco router to be configured is connected.
Subnet Mask	
Default gateway	IP address of the internal network interface.

- IOS Firewall**
- Step 5** Specify whether to enable basic IOS firewall on the Cisco router to be configured.
- To enable basic IOS firewall, click the **Yes** radio button.
 - To disable basic IOS firewall, click the **No** radio button.
- Step 6** Click **Next**. The SIP Trunk Service window appears.

Configuring SIP Trunk

To configure a SIP trunk, perform the following steps.

- Step 1** In the SIP Trunk Service provider area, specify if this router will connect to a SIP trunk service provider for PSTN access.
- If this router will not connect to a SIP trunk: From the drop-down list, choose **None**, then click **Next**. Go to the “[Configuring System / Voicemail](#)” section on page 15.
 - If this router will connect to a SIP trunk: From the drop-down list, choose the SIP trunk service provider, then go to [Step 2](#).

SIP Trunk Parameters

- Step 2** See [Table 12](#) for a description of the parameters to be configured. Enter the required information in the corresponding field or use any of default values already in the field.

Table 12 *SIP Trunk Parameters to Be Configured*

Field Name	Description
Domain Name	(Optional) DNS address of the primary SIP registrar server.
SIP Registrar	(Optional) IP address of the primary SIP registrar server.
SIP Proxy/AS	IP address of external SIP registrar server.
MWI Server	(Optional) IP address of external SIP-based MWI server.
Central Voicemail Number	(Optional) Extension or telephone number to be accessed that is speed-dialed when the Messages button on an IP phone is pressed.
Digest Authentication Username	(Optional) Name to be used as authentication credential for SIP phone registration. Must be a single word and cannot contain quotation marks or blank spaces.
Digest Authentication Password	(Optional) Password for this user name. Must be 1 to 25 characters and can contain embedded spaces.

IP Phone Extensions

- Step 3** If you want to create IP phone extensions from the SIP trunk DIDs, see [Table 13](#) for a description of the parameters to be configured. Enter the required information in the corresponding field or use any of default values already in the field.

Table 13 *IP Extensions for SIP Trunk Parameters to Be Configured*

Field Name	Description
Leading Extension Digit	(Optional) First number of DID extension numbers. Value: 0 to 9.
Total Extension Length	(Optional) Maximum length of DID extension numbers. Range: 2 to 9.

SIP Trunk DIDs

- Step 4** If you want to configure DID numbers for the SIP trunk account: Enter the first E.164 number to be configured, then press the Tab key to move to the next field. Repeat this step for each number to be configured.
- Step 5** Click **Next**. The Phone System and Voicemail window appears.

Configuring System / Voicemail

To configure general phone parameters, Cisco Unity Express voice mail, and your dial plan, perform the following steps.

- Step 1** From the drop-down list in the General Phone System Setup area, choose the version number of Cisco Unified CallManager Express to be configured.
- Step 2** See [Table 14](#) for a description of the parameters to be configured. Enter the required information in the corresponding field or use any of default values already in the field.

Table 14 *General Phone System Parameters to Be Configured*

Field Name	Description
Number of Phones to Deploy	Number of IP phones to be connected to the Cisco router to be configured. Maximum number is platform and version dependent.
Extension Digit Length	Maximum length of extension numbers. Range: 2 to 6.
First Extension Number	(Optional) First number in pool of extension numbers to be created for IP phones connected to the Cisco router to be configured. Starting with this number, remaining extension numbers are automatically configured in a contiguous manner.
Dual Line	(Optional) To enable or disable two phone lines for each extension number, check or uncheck the Dual Lines check box.

Voicemail Setup

- Step 3** In the Voicemail Setup area, specify whether to configure a voice-mail system.
- To configure Cisco Unity Express: Click the **Yes** radio button, then go to [Step 4](#).
 - If you do *not* want to configure Cisco Unity Express: Click the **No** radio button, then click **Next**, then go to [Step 5](#).
- Step 4** See [Table 15](#) for a description of the parameters to be configured. Enter the required information in the corresponding field or use any of default values already in the field.

Table 15 *Voicemail Parameters to Be Configured*

Field Name	Description
Feature License	Number of licensed voice-mail ports to be configured.
Auto Attendant Pilot Number	Extension number to be accessed for general company AA functions. Typically, this is the main phone extension number for your office.
Voicemail Access Number	Extension number to be accessed for welcome greeting. This is the extension number for a fully-automated front end for incoming calls.
Timeout	Number of seconds before voice mail is accessed for unanswered incoming calls. Directs calls to voice mail after the specified time has elapsed.

Field Name	Description
Message Waiting Indicator “On” number	Extension number to be configured for Message Waiting Indicator (MWI) on.
Message Waiting Indicator “Off” number	Extension number to be configured for Message Waiting Indicator (MWI) off

International and Domestic Dial Plan

Step 5 See [Table 16](#) for a description of the parameters to be configured. Enter the required information in the corresponding field or use any of default values already in the field.

Table 16 *International and Domestic Dial Plan Parameters to Be Configured*

Field Name	Description
Number of Digits in Area Code	(Optional) Length of area code numbers within the country where the Cisco router to be configured is installed. If the length is not fixed, leave this field blank. Range: 0 to 9.
Number of Digits in Local Number	(Optional) Length of telephone numbers within the local calling area. If the length is not fixed, leave this field blank. Range: 0 to 99.
Digits for Placing Long Distance Call	Numeric string that phone user must press after the outgoing call dialtone digit (if required) for placing outbound calls to phones outside of the local calling area (domestic long distance). String is 1 to 7 characters long and can include numbers 0 to 9. Default: 1 (for calling within USA only). Note Dialtone digit is digit that phone user must press to access PSTN connections.
Digits for Placing International Call	Numeric string that must press after the outgoing call dialtone digit (if required) for placing outbound calls to phones in one or more countries other than the one in which the Cisco router to be configured is installed. String is 1 to 7 characters long and can include numbers 0 to 9. Default: 011 (For calling outside USA only).

Step 6 Click **Next**. The Phone Systems Options window appears.

Configuring System Features

Depending on the configuration for Installation Type, System Type Configuration, and Configuration Type, some or all of the following phone system options can be configured using the Phone System Features window in Cisco Unified Communications Express - QCT:

- Intercom
- Paging
- Group Pickup
- Call Park
- Hunt Groups

- Caller ID Block

To configure phone system options, perform the following steps.

- Step 1** Configure Outgoing Call Dialtone Digit parameters. See [Table 17](#) for a description of the parameters to be configured. Enter the required information in the corresponding field or use any of default values already in the field.

Table 17 *Outgoing Call Dialtone Digit Parameters to Be Configured*

Field Name	Description
Outgoing Call Dialtone Digit	Digit that phone user must press to access PSTN connections. Range: 0 to 9.
Emergency Number	Phone number that phone user must dial to access emergency services. Number can be 0 to 999.

- Step 2** Click **Next**. The Phone Systems Options window appears.

- Step 3** To enable or disable a phone system option, check or uncheck the check box next to the option name.

- Step 4** See [Table 18](#) for a description of the parameters for each option to be configured. Enter the required information in the corresponding field or use any of default values already in the field.

Table 18 *Phone System Parameters to Be Configured*

Field Name	Description
Paging Parameters	
Number of Paging Groups	From the drop-down list, choose number of paging groups to be configured.
Paging Group Extension Numbers	Extension number for each paging group to be configured.
Pickup Group Parameters	
Number of Pickup Groups	From the drop-down list, choose number of pick up groups to be configured. This feature allows administrators to associate pickup groups with individual IP phones, making it easier for phone users to answer, or pick up, a call that is ringing on a different extension or telephone number.
Pickup Group Numbers	Number for each group to be configured.
Call Park Parameters	
Number of Park Slots	From the drop-down list, choose number of park slots to be configured. This feature provides temporary holding locations for incoming calls. When a call is parked, it is transferred to the parking slot number and put on hold until it is retrieved by another employee, who is paged with the park slot number where the call is parked.
Park Slot Extension s	Extension number for each park slot be configured.
Hunt Group Parameters	

Field Name	Description
Number of Hunt Groups	From the drop-down list, choose number of hunt groups to be configured. This feature enables sequential or round-robin selection among a group of IP phones for call distribution.
Hunt Timeout	Number of seconds after which a call that is not answered is redirected to the next number in a voice hunt-group list. Range: 5 to 20.
Hunt Group Pilot Number	Separate extension number for each hunt group to be configured. This is the first extension in a hunt group and the extension that callers dial in order to reach the voice hunt group.
Hunt Type	From the drop-down list, choose type for each hunt group to be configured. <ul style="list-style-type: none"> • Sequential—Call hunting always starts with the pilot number in the group and continues to each number in the group in the order in which they are listed, left to right • Longest Idle—Calls go to the directory number that has been idle for the longest time, according to the timestamp of the most recent call taken by that extension. If that extension is unavailable, the search continues to the next extension in the group. • Peer—Hunt group in which the first number called is selected round-robin from the list.
Forward to VM	To enable or disable directing the unanswered call from the voice hunt group to the voice mailbox of the original called extension, check or uncheck the Forward to VM check box.
Caller ID Block Code	
Caller ID Block Code	Four digit code that phone users can dial before making a call to ensure that the Caller ID is not displayed on the target phone. Code is * plus a three digit number. The first character must be an asterisk (*). Number can be 000 to 999.

Step 5 Click **Next**. The Phones and Users window appears.

Configuring Phones / Users

You can use a Bulk Administration Tool (BAT) file to configure IP phones or you can manually enter specific information for each IP phone to be connected to the Cisco router to be configured.

If you choose to manually configure IP phones in the IP telephony system, you can use a bar-code scanner to enter IP phone MAC address and phone types. A Flic™ scanner has been tested with Cisco Unified Communications Express - QCT.

This section contains the following tasks:

- [Using a BAT File to Configure IP Phones and Users, page 19.](#)

- [Manually Configuring Phones and Users, page 20.](#)


Using a BAT File to Configure IP Phones and Users

Cisco Unified Communications Express - QCT provides support for uploading a bulk administration tool (BAT) file, created using Microsoft® Office Excel, for configuring IP phone parameters. Cisco Unified Communications Express - QCT provides a sample BAT file that you can revise and load for configuring IP phones in the IP telephony system to be configured.

**Note**

The qct-bat.csv sample BAT file provides a template for configuring IP phone parameters for a PBX system. If you are using the qct-bat.csv BAT file template to configure a Square Mode (keysystem), you must manually enter certain key system information that is not included in the qct-bat.csv BAT file.

To upload IP phone parameter information from a BAT file, perform the following steps.

-
- Step 1** In the local folder in which Cisco Unified Communications Express is installed, open the batch subdirectory.
- Step 2** Open the **qct-bat.csv** file.
-  **Note** The qct-bat.csv file provides configuration information as an example only. Update the qct-bat.csv file to reflect your actual configuration.
-
- Step 3** Enter the actual values for each IP phone in the IP telephony system to be configured into the qct-bat.csv file and save.
- Step 4** In the bottom of the Phones and Users window, click **Browse** and choose the filename of the BAT file to be loaded. Click **Open**.
- Step 5** Click **Go**. The Phones and Users window with the data from the BAT file appears.
- Step 6** Confirm the contents of the Phones and Users window, then:
- To accept the parameters as configured: Click **Next**. The Confirmation window appears. Go to [Step 7](#).
 - To modify values in Phones and Users window, see the [“Manually Configuring Phones and Users” section on page 20.](#)
- Step 7** After reviewing the generated commands, specify whether to save or discard the Start-up configuration of the Cisco router to be configured.
- To discard the existing Start-up configuration of the Cisco router to be configured and save the commands created by the Cisco Unified Communications Express - QCT in the router’s start-up configuration, check the check box.
 - To save the existing Start-up configuration of the Cisco router to be configured even after uploading the commands created by the Cisco Unified Communications Express - QCT, uncheck the check box.
- Step 8** From the Connect to Router via: drop-down list, choose the Comm port on your PC to which the serial cable is connected.
- Step 9** Click **Next**.
-

What to Do Next

- If you want to skip uploading to the Cisco router to be configured, see the [“Skipping the Upload” section on page 22](#).
- If you want to upload the generated commands to the Cisco router to be configured, see the [“Uploading the Configuration Commands” section on page 23](#).

Manually Configuring Phones and Users

To manually enter IP phone parameters information, perform the following steps.



Tip

You can use a bar-code scanner to enter IP phone MAC address and phone types. Cisco Systems has tested a scanner manufactured by Flic™.

Step 1

See [Table 19](#) for a description of the parameters to be configured. Enter the required information in the corresponding field or if you used a Bat file to upload IP phone parameters, use any of values already entered in the field. Press **Tab** to move to the next field.

The information in the table is presented in the left-to-right order it which it appears on the Phone and Users window. Not all parameters may be present on the window because parameters are system, network, and feature dependent.

Table 19 Phones and Users Parameters for Configuring a PBX

Field Name	Description
MAC Address	MAC address for each IP phone to be configured.
Phone	Phone type for each IP phone to be configured.
Dual Line	To enable or disable dual-line operation for this IP phone, check or uncheck the Dual Line check box. This feature provides a virtual voice port on a single phone line so that an IP phone can receive multiple incoming calls.
Ext	Extension number for this IP phone. Extensions can be an actual phone or extension number assigned to this IP phone or a virtual number for special features such as MWI.
Voice Mail	To enable or disable a voice mailbox for this IP phone, check or uncheck the check box. Voice Mail is enabled on the System/Voicemail window.
First/Last Name	First and last name of phone user for this IP phone.
User ID	User ID for this phone user. This parameter is used by the phone user when logging into this IP phone to change phone settings.
Password	Password for User ID to be configured for this IP phone. This parameter is used by the phone user when logging into this IP phone to change phone settings.

Field Name	Description
CO	To enable or disable a central office (CO) line associated with this IP phone, check or uncheck the check box. CO trunk phone numbers are configured in the Public Switched Telephone network area of the Internal Network window.
PSTN Number	DID number of FXO port for incoming calls to this IP phone. DID phone numbers are configured in the Public Switched Telephone network area of the Internal Network window.
Permission	From the drop-down list, choose the class of restriction (COR) list that determines which dial peers the phone user on this extension or telephone number can access. Valid options are: <ul style="list-style-type: none"> • Internal—Can place outgoing calls by dialing internal and emergency numbers only. Restricted from placing all other calls. • Local—Can place outgoing calls by dialing local, internal, and emergency numbers only. Restricted from placing domestic long distance or international calls. • Domestic—Can place outgoing calls to by dialing domestic long distance, local, internal, and emergency numbers only. Restricted from placing international calls. • International—Can place outgoing calls by dialing internal, local, domestic long distance, and international numbers.
Block 900/976	To block the phone user on this extension or telephone number from dialing 900 and 976 numbers, check the check box. To enable outgoing calls to numbers with a 900 or 976 area code, uncheck this check box.
Call Forward Busy	Target extension number to which to transfer incoming calls when the extension for this IP phone is busy.
Pickup Group	From the drop-down list, choose the number of the pickup group to which this IP phone is assigned. Pickup Group Parameters must be configured on the Phone Systems Options window.
Paging Grp	From the drop-down list, choose the number of the paging group number to which this IP phone is assigned. Paging Parameters must be configured on the Phone Systems Options window.
Call Forward No Answer	Target extension number to which to transfer incoming calls when the extension for this IP phone does not answer.
Hunt Group	From the drop-down list, choose the number of the voice hunt group in which this IP phone is a member. Hunt Group Parameters must be configured on the Phone Systems Options window.
CFNA Timeout	Number of seconds after which an unanswered call is transferred to the target extension.

Field Name	Description
Intercom To	From the drop-down list, choose user name with which this IP phone can interact using a single button, push-to-talk intercom line. Intercom must be enabled on the Phone Systems Options window.
Intercom Mute	To activate or deactivate the speaker-mute function on intercom calls, check or uncheck the check box. Intercom must be enabled on the Phone Systems Options window.

- Step 2** To add a row, one at a time, to the list of phones to be configured, click **Add**. A new row for an IP phone is added to the bottom of the Phones and Users window. Maximum number of phones to be added is platform and version dependent.
- Step 3** To remove a row, one at a time, from the list of phones to be configured, click **Remove**. The last row in the Phones and Users window is deleted.
- Step 4** After all of the information for all IP phones to be configured is entered, click **Next**. The Confirmation window with the commands generated by Cisco Unified Communications Express - QCT appears.
- Step 5** After reviewing the generated commands, specify whether to save or discard the Start-up configuration of the Cisco router to be configured.
- To discard the existing Start-up configuration of the Cisco router to be configured and save the commands created by the Cisco Unified Communications Express - QCT in this router's start-up configuration, check the check box.
 - To save the existing Start-up configuration of the Cisco router to be configured even after uploading the commands created by the Cisco Unified Communications Express - QCT, uncheck the check box.
- Step 6** From the Connect to Router via: drop-down list, choose the Comm port on your PC to which the serial cable is connected.
- Step 7** Click **Next**.

What to Do Next

- If you want to skip uploading the generated commands at this time, see the [“Skipping the Upload” section on page 22](#).
- If you want to upload the generated commands to the Cisco router to be configured, see the [“Uploading the Configuration Commands” section on page 23](#).

Skipping the Upload

To skip uploading the generated commands at this time and save the commands as a template or as a configuration, perform the following steps.

- Step 1** In the Skip Upload area of the window, check the **To skip uploading to the router** check box.
- Step 2** Click **Next**. The Save Configuration window appears.

- Step 3** To save the generated commands as a template in a text (.txt) file to be loaded into Cisco Unified Communications Express - QCT, go to [Step 4](#). To save the generated commands as a configuration in a text (.txt) file to be uploaded to a Cisco router, go to [Step 6](#).
- Step 4** To save the generated commands as a template in a text (.txt) file: In the Save Configuration area of the window, click **Browse**. Using the Choose File window, open the templates subdirectory in the local folder in which Cisco Unified Communications Express - QCT is installed, then choose the filename for the template to be saved. Click **Open**.
- Step 5** Click **Save Template**. If you want to also save the generated commands as a configuration file, go to the next step. Otherwise, go to [Step 8](#).
- Step 6** To save the generated commands as a configuration file, in text (.txt) file format: In the Save Configuration CLI area of the window, click **Browse**. Using the Choose File window, choose directory in which you want to save the file, then choose the filename for the configuration to be saved. Click **Open**.
- Step 7** Click **Save CLI**.
- Step 8** Click **Finish**.
-

Uploading the Configuration Commands

To upload the generated commands to the Cisco router to be configured, perform the following steps.

- Step 1** If the generated configuration includes Cisco Unity Express and you do *not* want to upload the generated commands for Cisco Unity Express to the Cisco router to be configured: In the Skip Upload area of the window, check the **If you like to upload everything EXCEPT the CUE voicemail configuration, check here** check box.
- Connectivity Checklist**
- Step 2** Verify that the PC on which Cisco Unified Communications Express - QCT is installed is connected using a serial cable to the console port of the Cisco router to be configured. Check the check box.
- Step 3** Using a straight-through Ethernet cable, connect the Ethernet port of the PC to the Ethernet switch port of the Cisco router to be configured. Check the check box.
- Step 4** Click **Upload**. The configuration command are uploaded to the Cisco router to be configured.
- Step 5** Specify whether to upload all supported Cisco firmware files to the Cisco router being configured.
- To upload *all* supported Cisco firmware files for the Cisco Unified CME version to be configured, to flash memory of the Cisco router to be configured, click **OK**.
 - To use FTP to upload individual Cisco firmware file to the Cisco router to be configured: Click **No**, then see the [“Using Optional FTP Utility to Upload Files to Flash Memory”](#) section on page 24.
-

What to Do Next

After uploading the generated commands to the Cisco router to be configured, connect or reboot the Cisco Unified IP phones to register the phones in Cisco Unified CME.

Loading Config Template

To preload Cisco Unified Communications Express - QCT with values from a previously saved template, perform the following steps.

-
- Step 1** In the Type of Installation area of the Installation Option window: Click the **Install Configuration From Template** radio button.
- Step 2** Click **Next**. The Loading an Existing Configuration Template window appears.
- Step 3** In the Load Template area of the window, click **Browse**. Using the Choose File window, choose the filename of the template to be uploaded. Click **Open**.
- Step 4** Click **Load Template**. The template is loaded.
-

What to Do Next

You are ready to set up the basic configuration for the Cisco router to be configured, go to the [“Configuring Basic Setup” section on page 9](#).

Using Optional FTP Utility to Upload Files to Flash Memory

To upload any file, such as a Cisco firmware file, to flash memory of the Cisco router to be configured, perform the following steps.

-
- Step 1** Perform one of the following actions:
- If Cisco Unified Communications Express - QCT is already running: Click **Cancel**, then click **OK**. The Installation Option window appears.
 - Launch the Cisco Unified Communications Express - QCT application. See the [“Launching Cisco Unified Communications Express - QCT” section on page 6](#).

Configure FTP utility

- Step 2** In the Upload File to the Router (Optional Utility) area of the Installation Option window: check the **Upload File to the Router** check box.
- Step 3** See [Table 20](#) for a description of the parameters to be configured. Enter the required information in the corresponding field or use any of default values already in the field.

Table 20 FTP Server Parameters to Be Configured

Field Name	Description
Router Address	IP address of the FTP server.
User Name	User name for the FTP server.
User Password	Password for this user.
File to Upload	Filename of file to be uploaded. Enter the filename or use the Browse tool to locate and choose the file to be uploaded.

- Step 4** Click **Upload File**. The file is uploaded to flash memory of the Cisco router.
-

Downloading Cisco Firmware Files for IP Phones



Note

To identify Cisco firmware filenames associated to specific Cisco Unified IP phone types and compatible with the Cisco IOS release and Cisco Unified CME version installed on the Cisco router to be configured, see the appropriate *Cisco Unified CME Supported Firmware, Platforms, Memory, and Voice Products* at

http://www.cisco.com/en/US/products/sw/voicesw/ps4625/products_documentation_roadmap09186a0080189132.html.

To download Cisco firmware files for Cisco Unified IP phones to a PC so that the files can be uploaded to the Cisco router to be configured, perform the following steps.

- Step 1** Verify whether the Cisco firmware files associated with the Cisco Unified CME version to be configured are installed in the folder named Phoneloads, within the local folder in which Cisco Unified Communications Express - QCT is installed. If you must install firmware files, go to [Step 2](#). Otherwise, see the “[Launching Cisco Unified Communications Express - QCT](#)” section on [page 6](#).
- Step 2** From the Cisco Software Download site at <http://www.cisco.com/cgi-bin/tablebuild.pl/ip-key>, download the same version of Cisco Unified CME that is installed on the Cisco router to be configured, to the PC on which Cisco Unified Communications Express - QCT is installed.
- Step 3** Extract all individual Cisco firmware files and all firmware zip (.tar) files of Cisco firmware from the Cisco Unified CME archive into the folder named Phoneloads, within the local folder in which Cisco Unified Communications Express - QCT is installed.
- Step 4** Close the archive window.
- Step 5** If the extracted files include zip (.tar) files of Cisco firmware files: Open the Phoneloads folder, then open the firmware zip (.tar) file and extract all files into the Phoneloads folder. Delete the zip (.tar) files from the Phoneloads folder.
-

What to Do Next

- You are ready to use Cisco Unified Communications Express - QCT to configure a Cisco router, see the “[Launching Cisco Unified Communications Express - QCT](#)” section on [page 6](#).

Additional References

Related Documents.

Related Topic	Document Title
Worksheets for configuring Typical installation	<i>Cisco Unified Communications Express - QCT Worksheets</i> at http://www.cisco.com/en/US/products/sw/voicesw/ps4625/products_documentation_roadmap09186a0080189132.html
Installing Cisco Unified CME and Cisco Unity Express	<i>Installing Cisco Unified Communications Express: Cisco Unified CME and Cisco Unity Express</i>
Installing AIM Voice or CUE modules	<i>Installing Advanced Integration Modules in Cisco 2600 Series, Cisco 3600 Series, and Cisco 3700 Series Routers</i>
Installing AIM	<i>AIM Installation Quick Start Guide</i>
Installing internal modules	<i>Installing and Upgrading Internal Modules in Cisco 2800 Series Routers</i>

Standards

Standard	Title
No new or modified standards are supported by this feature, and support for existing standards has not been modified by this feature.	—

MIBs

MIB	MIBs Link
No new or modified MIBs are supported by this feature, and support for existing MIBs has not been modified by this feature.	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

RFCs

RFC	Title
No new or modified RFCs are supported by this feature, and support for existing RFCs has not been modified by this feature.	—

Technical Assistance

Description	Link
<p>The Cisco Technical Support & Documentation website contains thousands of pages of searchable technical content, including links to products, technologies, solutions, technical tips, and tools. Registered Cisco.com users can log in from this page to access even more content.</p>	<p>http://www.cisco.com/techsupport</p>

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