



PROVISIONING GUIDE

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Poly CCX Business Media Phones with OpenSIP

Getting Help

For more information about installing, configuring, and administering Poly/Polycom products or services, go to Polycom Support.

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Before You Begin

Topics:

- [Audience, Purpose, and Required Skills](#)
- [Related Poly and Partner Resources](#)

This guide contains overview information for navigating and performing tasks on Poly CCX phones.

This user guide contains information for the following Poly products and accessories:

- Poly CCX 400 Business Media Phones
- Poly CCX 500 Business Media Phones
- Poly CCX 600 Business Media Phones
- Poly CCX 700 Business Media Phones

Audience, Purpose, and Required Skills

This guide is intended for beginning users, as well as intermediate and advanced users who want to learn more about the features available with CCX.

Related Poly and Partner Resources

See the following sites for information related to this product.

- The [Poly Online Support Center](#) is the entry point to online product, service, and solution support information including Video Tutorials, Documents & Software, Knowledge Base, Community Discussions, Poly University, and additional services.
- The [Polycom Document Library](#) provides support documentation for active products, services, and solutions. The documentation displays in responsive HTML5 format so that you can easily access and view installation, configuration, or administration content from any online device.
- The [Poly Community](#) provides access to the latest developer and support information. Create an account to access Poly support personnel and participate in developer and support forums. You can find the latest information on hardware, software, and partner solutions topics, share ideas, and solve problems with your colleagues.
- The [Poly Partners](#) are industry leaders who natively integrate the Poly standards-based RealPresence Platform with their customers' current UC infrastructures, making it easy for you to communicate face-to-face with the applications and devices you use every day.
- The [Poly Services](#) help your business succeed and get the most out of your investment through the benefits of collaboration.

Getting Started

Topics:

- [CCX Phone Hardware Overview](#)
- [Working with UC Software](#)
- [Power On and Configure Your Phone](#)

Getting Started with Poly CCX

Before you use your phone, familiarize yourself with its features and user interface.

Note: As you read this guide, remember that your system administrator configures certain features or your network environment may determine them. As a result, some features may not be enabled or may operate differently on your device. Additionally, the examples and graphics in this guide may not directly reflect available options or what your device screen displays.

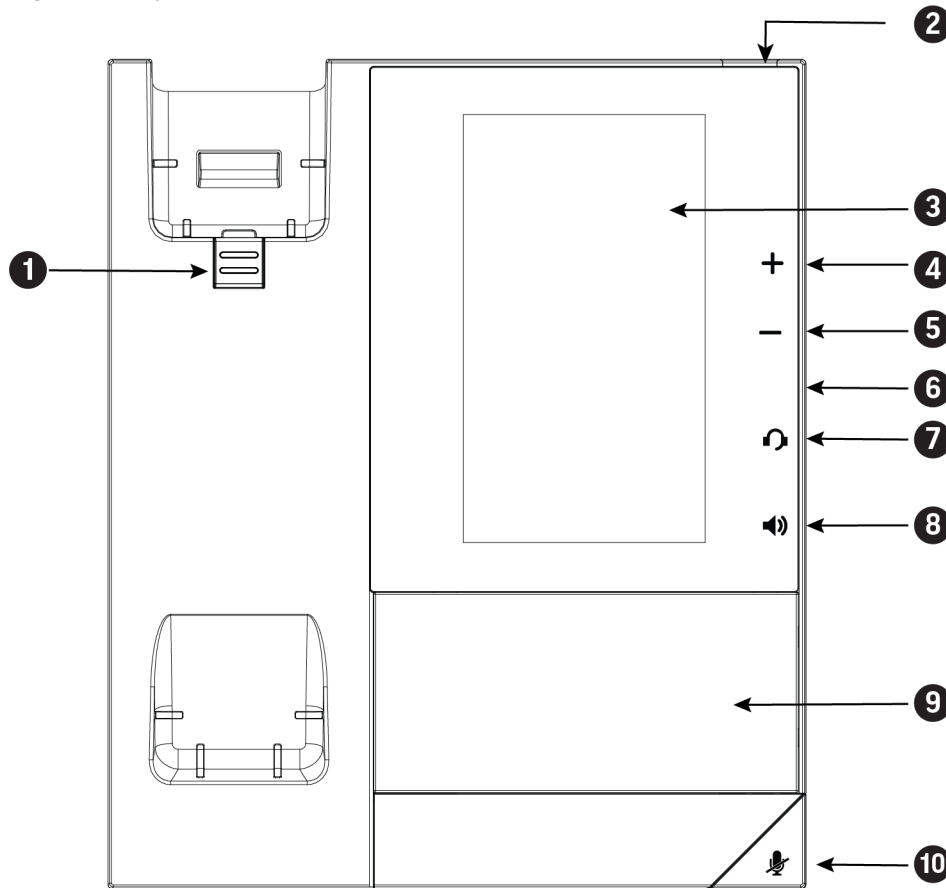
CCX Phone Hardware Overview

The following topics describe the hardware features for Poly CCX business media phones.

Poly CCX 400 Business Media Phones Hardware

The following figure displays the hardware features on Poly CCX 400 business media phones. The table lists each feature numbered in the figure.

Figure 1: Poly CCX 400 phone hardware features



Poly CCX 400 Phone Hardware Feature Descriptions

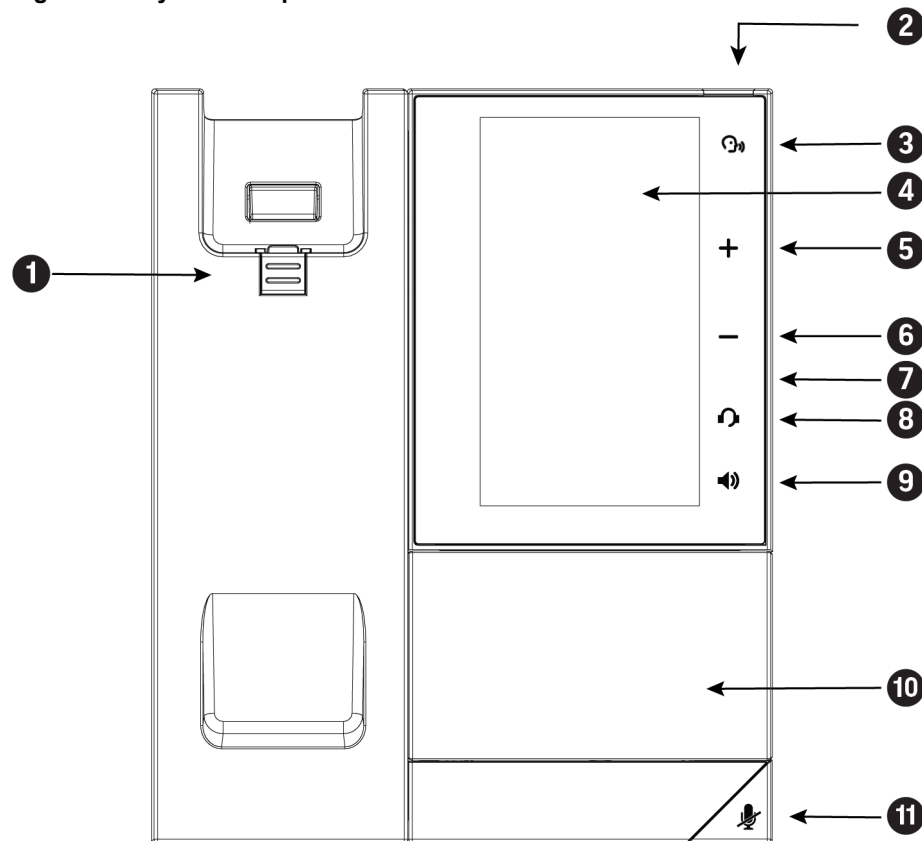
| Reference Number | Feature | Feature Description |
|------------------|---------------------------|--|
| 1 | Reversible tab | Secures the handset in the cradle when you position your phone stand at a high angle. To secure the handset, remove the tab, reverse it so the protrusion points up, and reinsert it. Position the handset so the protrusion on the tab fits into the slot on the handset. |
| 2 | Message waiting indicator | Flashes red to indicate you have an incoming call or a new message. |

| Reference Number | Feature | Feature Description |
|------------------|------------------------|--|
| 3 | Touchscreen | Enables you to select items and navigate menus on the touch-sensitive screen. |
| 4,5 | Volume keys | Adjusts the volume of the handset, headset, speaker, and ringer. |
| 6 | USB port(s) | CCX 400 phones contain one USB-A port. Enables you to attach a USB flash drive or USB headset. |
| 7 | Headset indicator | Displays when the phone is powered on. The icon glows green or blue when a headset is connected and activated. |
| 8 | Speakerphone indicator | Displays when the phone is powered on. The icon glows green when activated. |
| 9 | Speaker | Provides ringer and speakerphone audio output. |
| 10 | Mute key | Mute or unmute the microphone during an active call. |

Poly CCX 500 Business Media Phones Hardware

The following figure displays the hardware features on Poly CCX 500 business media phones with OpenSIP. The table lists each feature numbered in the figure.

Figure 2: Poly CCX 500 phone hardware features



Poly CCX 500 Phone Hardware Feature Descriptions

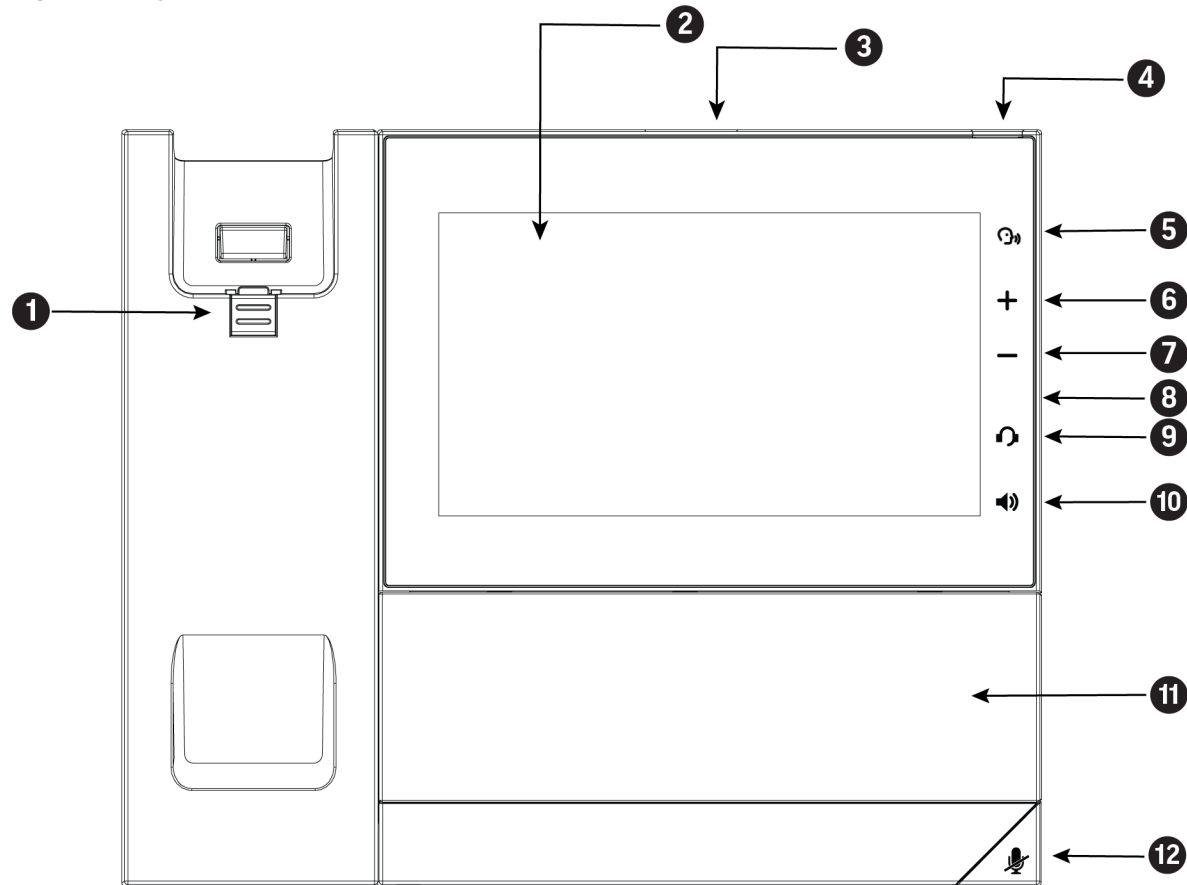
| Reference Number | Feature | Feature Description |
|------------------|---------------------------|--|
| 1 | Reversible tab | Secures the handset in the cradle when you position your phone stand at a high angle. To secure the handset, remove the tab, reverse it so the protrusion points up, and reinsert it. Position the handset so the protrusion on the tab fits into the slot on the handset. |
| 2 | Message waiting indicator | Flashes red to indicate you have an incoming call or new messages. |
| 3 | Application Command | Displays when the phone is powered on and the service is available. Icon may vary. |
| 4 | Touchscreen | Enables you to select items and navigate menus on the touch-sensitive screen. |

| Reference Number | Feature | Feature Description |
|------------------|------------------------|---|
| 5,6 | Volume keys | Adjusts the volume of the handset, headset, speaker, and ringer. |
| 7 | USB port(s) | Poly CCX 500 phones include one USB-A port and one USB-C port. Enables you to attach a USB flash drive or USB headset. |
| 8 | Headset indicator | Displays when the phone is powered on. The icon glows green or blue when a headset is connected and activated. |
| 9 | Speakerphone indicator | Displays when the phone is powered on. The icon glows green when activated. |
| 10 | Speaker | Provides ringer and speakerphone audio output. |
| 11 | Mute key | Mute or unmute the microphone during an active call. |

Poly CCX 600 Business Media Phones Hardware

The following figure displays the hardware features on Poly CCX 600 business media phones. The table lists each feature numbered in the figure.

Figure 3: Poly CCX 600 Phone Hardware Features



Poly CCX 600 Phone Hardware Feature Descriptions

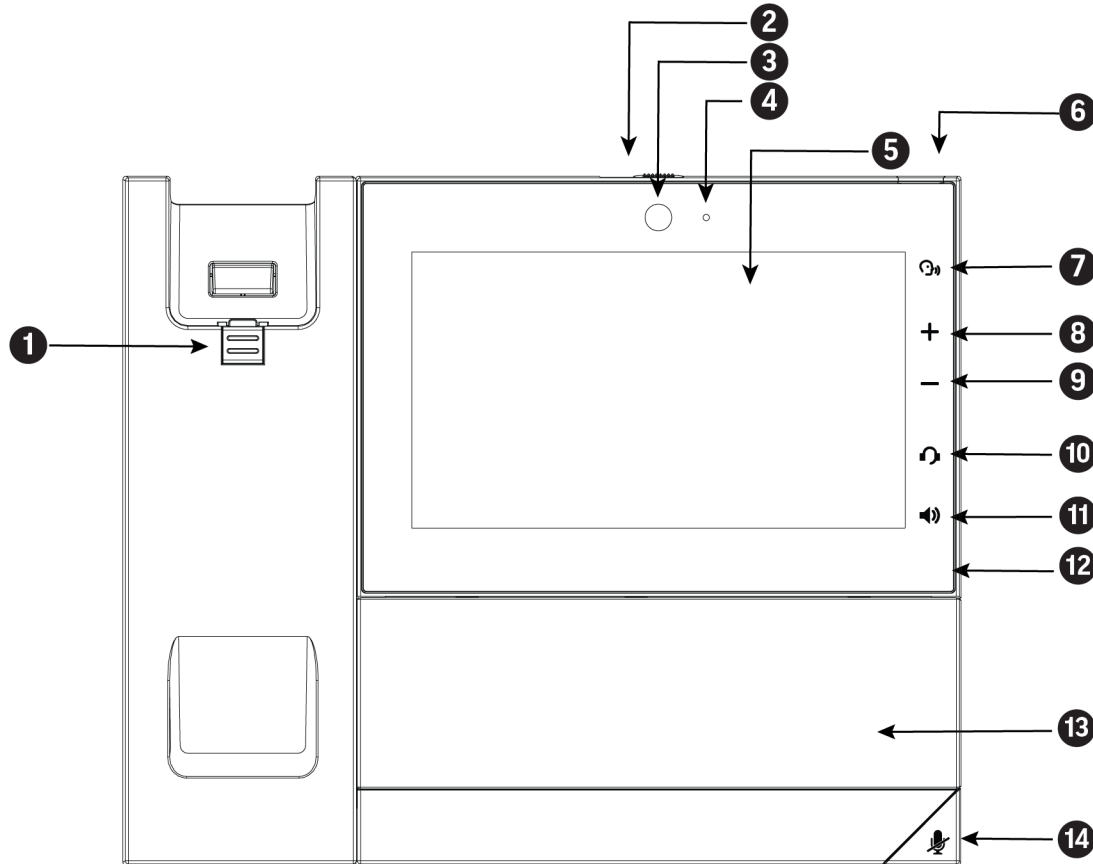
| Reference Number | Feature | Feature Description |
|------------------|----------------|--|
| 1 | Reversible tab | Secures the handset in the cradle when you position your phone stand at a high angle. To secure the handset, remove the tab, reverse it so the protrusion points up, and reinsert it. Position the handset so the protrusion on the tab fits into the slot on the handset. |
| 2 | Touchscreen | Enables you to select items and navigate menus on the touch-sensitive screen. Tap the screen to select and highlight screen items. To scroll, touch the screen, and swipe your finger up, down, right, or left. |
| 3 | Camera Port | Enables you to attach an optional Polycom EagleEye Mini USB camera. |

| Reference Number | Feature | Feature Description |
|------------------|---------------------------|---|
| 4 | Message waiting indicator | Flashes red to indicate you have an incoming call or new messages. |
| 5 | Application Command | Displays when the phone is powered on and the service is available. Icon may vary. |
| 6,7 | Volume keys | Adjusts the volume of the handset, headset, speaker, and ringer. |
| 8 | USB port(s) | One USB-A port and one USB-C port. Enables you to attach a USB flash drive or USB headset. You can connect an EagleEye Mini USB camera to the USB-A port. |
| 9 | Headset indicator | Displays when the phone is powered on. The icon glows green or blue when a headset is connected and activated. |
| 10 | Speakerphone indicator | Displays when the phone is powered on. The icon glows green when activated. |
| 11 | Speaker | Provides ringer and speakerphone audio output. |
| 12 | Mute key | Mute or unmute the microphone during an active call. |

Poly CCX 700 Business Media Phones Hardware

The following figure displays the hardware features on Poly CCX 700 business media phones. The table lists each feature numbered in the figure.

Figure 4: Poly CCX 700 Phone Hardware Features



Poly CCX 700 Phone Hardware Feature Descriptions

| Reference Number | Feature | Feature Description |
|------------------|-----------------|--|
| 1 | Reversible tab | Secures the handset in the cradle when you position your phone stand at a high angle. To secure the handset, remove the tab, reverse it so the protrusion points up, and reinsert it. Position the handset so the protrusion on the tab fits into the slot on the handset. |
| 2 | Privacy Shutter | Allows you to cover the camera lens. |
| 3 | Built-in Camera | Enables you to send video during a video-enabled call. |
| 4 | Camera LED | Turns green when the camera is on and sending video. Turns amber when you are not sending video. |

| Reference Number | Feature | Feature Description |
|------------------|---------------------------|---|
| 5 | Touchscreen | Enables you to select items and navigate menus on the touch-sensitive screen. Tap the screen to select and highlight screen items. To scroll, touch the screen, and swipe your finger up, down, right, or left. |
| 6 | Message waiting indicator | Flashes red to indicate when you have new messages. |
| 7 | Application Command* | Displays when the phone is powered on and the service is available. Icon may vary. |
| 8,9 | Volume keys | Adjusts the volume of the handset, headset, speaker, and ringer. |
| 10 | Headset indicator | Displays when the phone is powered on. The icon glows green or blue when a headset is connected and activated. |
| 11 | Speakerphone indicator | Displays when the phone is powered on. The icon glows green when activated. |
| 12 | USB port(s) | CCX 700 phones contain one USB-A port and one USB-C port. Enables you to attach a USB flash drive or USB headset. |
| 13 | Speaker | Provides ringer and speakerphone audio output. |
| 14 | Mute key | Mute or unmute the microphone during an active call. |

LED Indicators on CCX Phones

The LEDs on Poly CCX phones indicate phone and accessory states.

CCX Phones LED Descriptions

| LED | Color State and Description |
|--------------|---|
| Speakerphone | Off – Phone is in sleep mode. White – Speakerphone is off, but the phone is active. Green – Speakerphone is on. |
| Headset | Off – Phone is in sleep mode. White – No headset is active. Green – An electronic hookswitch (EHS) headset is connected and activated. Blue – A USB or Bluetooth headset is connected and activated. |

| LED | Color State and Description |
|---------------------------------|---|
| Mute | Off – No call is active. Red – The phone microphone is muted. |
| Message Waiting Indicator (MWI) | Off – No new messages are available. Blinking Red – New or unread voicemails are available, incoming call and missed call. |

Poly CCX Phones Model Numbers

The following table lists the product names, model numbers for Poly CCX business media phones.

| Product Name | Model Number |
|-----------------------------------|----------------|
| Poly CCX 400 business media phone | 3111-49700-001 |
| Poly CCX 500 business media phone | 3111-49710-001 |
| Poly CCX 600 business media phone | 3111-49770-001 |
| Poly CCX 700 business media phone | 3111-49740-001 |

Working with UC Software

Poly phones come installed with updater software that resides in the flash memory of the phone.

When you boot up or reboot the phone, the updater automatically updates, downloads, and installs new software versions or configuration files as needed, based on the server or phone settings.

UC Software Provisioning Methods

Poly provides several methods to provision phones and configure phone features. The method you use depends on the number of phones in your deployment, the phone model(s), and how you want to apply features and settings.

You can use multiple methods simultaneously to provision and configure features. There is a priority among the methods that impacts your phone deployment when you use multiple methods simultaneously. If there is a discrepancy among multiple provisioning methods or configuration settings, the Poly phone uses the setting set with the higher-priority method based on the following hierarchy:

1. Quick setup
2. Local interface (the phone menu)
3. System web interface (Web Configuration Utility)
4. USB
5. Polycom RealPresence Resource Manager
6. Centralized provisioning

7. Default phone values

For example, when you provision the phones using a provisioning server and subsequently apply settings using the system web interface, the system web interface setting overrides any duplicate settings you set from the provisioning server. Likewise, any settings set from the local interface override any duplicate settings you set using the system web interface.

For more information on provisioning phones, see the Poly CCX Business Media Phones with Microsoft Admin Guide.

Record the Phone's Version Information

In case you need to contact technical support, record the following information for future reference:

- Phone model(s)
- Updater version
- UC software version
- Partner platform

Power On and Configure Your Phone

After powering on your phone for the first time, complete the phone setup wizard.

Procedure

1. Enter the default admin password 456.
2. Enter a new admin password and verify the password.
3. Read and accept the EULA.
4. Choose a system language.
The default system language is English (United States).
5. Choose a timezone.
6. Choose the Generic base profile.
The phone completes the startup process.

Network Requirements and Supported Configurations

Topics:

- [Network Requirements for Provisioning](#)
- [Supported Network Configurations](#)

This section provides UC software network requirements and supported network configurations when using centralized provisioning.

Network Requirements for Provisioning

Centralized provisioning requires that your phones can securely communicate with the provisioning server and that network time settings are in sync with your phones. This section shows you how to set up secure network communications and synchronize time settings.

Recommended Security Settings

Poly recommends using the following security settings with a provisioning server.

- 802.1X
- VLAN
- File transfers using HTTPS
- SIP signaling over Transport Layer Security (TLS)
- Permissions for configuration and override files

Configure File Upload Permissions

When you modify settings from the local interface or Web Configuration Utility, the phone attempts to upload override files that contain phone settings to the central server.

By default, provisioned phones attempt to upload phone-specific settings in an override file to the server and you must configure server permissions to allow these files to upload. You can permit the phone to upload override files to the provisioning server by giving the phone write access to the provisioning server. All other files that the phone needs to read, such as the application executable and standard configuration files, should be read-only. You can set permissions for other configuration files as needed for your deployment.

The default override file names are as follows:

- Phone Menu <MAC Address>-phone.cfg
- Web Configuration Utility <MAC Address>-web.cfg

Write access enables:

- User settings to survive restarts, reboots, and software upgrades that you apply to phones from the provisioning server.

- Override files you can use to save user custom preferences and to apply specific configurations to a single phone or phone group.
- Log files you can use to troubleshoot issues.

Ensure that the file permissions you create provide the minimum required access and that the administrator account has no other rights on the server.

If you reset the phone to factory settings, the override file is deleted from the phone.

Procedure

1. Configure the server account with read, write, and delete permissions, as needed.
2. Create a separate directory on the server for each file type and configure the permissions for each directory.

You can set different access permissions for each directory, for example:

- Log files
 - Override files
 - Contact directory
 - License directory
3. Edit the attributes of the primary configuration file that correspond to the directories you created.
 4. To allow a phone's override files to upload to the server, configure the override files with enable, read, and write access.

Dynamic Host Configuration Protocol (DHCP)

Poly recommends using DHCP where possible to eliminate repetitive manual data entry.

After establishing network connectivity, the phone needs to acquire several IPv4 network settings. These settings are typically obtained automatically from a Dynamic Host Configuration Protocol (DHCPv4) server.

Synchronized Time Settings

It is important to use a Simple Network Time Protocol (SNTP) server in your network environment.

If SNTP settings are not available through DHCP, you may need to edit the SNTP GMT offset or SNTP server address, especially for the default daylight savings parameters outside of North America. Depending on your local security policy, you might need to disable the local web (HTTP) server or change its signaling port.

DNS

You need to set up Domain Name System (DNS).

Poly supports the following DNS records types:

- DNS A record
- Service (SRV) record for redundancy
- Name Authority Pointer (NAPTR)

User Accounts

Each phone user must have an account on your SIP call server.

Supported Network Configurations

You need the following to operate Poly phones as SIP endpoints in large-scale deployments:

- A working IP network
- Routers configured for VoIP
- VoIP gateways configured for SIP
- An active, configured call server to receive and send SIP messages and to register and authenticate voice endpoints.

At minimum, your call server requires:

- A call server address that registers voice endpoints with the SIP server
- SIP authentication user name and password the phone uses to respond to any SIP authentication challenges from the SIP server.

In addition to these requirements, your deployment network should work within the Poly-supported parameters of network settings, discovery methods such as DHCP, and supported Ethernet network settings.

Ethernet Line Rates

The phones automatically negotiate the Ethernet rate and no special configuration is required.

Typical network equipment supports one of the three following Ethernet line rates:

- 10 Mbps
- 100 Mbps
- 1000 Mbps

While you can change the line rates and duplex configuration, Poly recommends keeping the default settings.

Supported Denial of Service Filters

The phone supports two filters to prevent Denial of Service (DoS):

- Storm Filtering—This filter is enabled by default.
- VLAN Filtering—VLAN filtering cannot be disabled.

When these filters are enabled, Ethernet packets are filtered to prevent overflow caused by bad or excessive data. Support for Storm and VLAN filtering varies by device.

Supported 802.1x Configurations

Poly phones support the following EAP authentication methods:

- EAP-TLS (requires Device and CA certificates)
- EAP-PEAPv0/MSCHAPv2 (requires CA certificates)
- EAP-PEAPv0/GTC (requires CA certificates)

- EAP-TTLS/MSCHAPv2 (requires CA certificates)
- EAP-TTLS/GTC (requires CA certificates)
- EAP-FAST (optional Protected Access Credential (PAC) file, if not using in-band provisioning)
- EAP-MD5

For more information about EAP methods, see [RFC 3748: Extensible Authentication Protocol](#).

Ethernet Network Connection Methods

You can connect the phone to a network using Ethernet with the following methods:

- Virtual Local Area Networks (VLANs)
- Link Layer Discovery Protocol and Supported Type Length Values
- Link Layer Discovery Protocol and Supported Type Length Values

Virtual Local Area Networks (VLANs)

Settings from higher priority methods override settings from lower priority methods.

If the phone receives a Virtual Local Area Network (VLAN) setting from more than one of the following methods, the priority is as follows:

1. LLDP—Link Layer Discovery Protocol (LLDP) is a vendor-neutral Layer 2 protocol that allows a network device to advertise its identity and capabilities on the local network.
2. CDP—Cisco Discovery Protocol (CDP) is a proprietary Data Link Layer network protocol. CDP Compatible follows the same set of rules.
3. DHCP VLAN Discovery vs VLAN via DHCP—Dynamic Host Configuration Protocol (DHCP) is an automatic configuration protocol used in IP networks. Note that use of DHCP for assigning VLANs is not standardized and is recommended only if the switch equipment does not support LLDP or CDP Compatible methods.
4. Static—The VLAN ID can be manually set by entering it through the phone's menu.

Virtual Local Area Network (VLAN) ID Assignment Using DHCP

In deployments where it is possible or desirable to assign a Virtual Local Area Network (VLAN) using LLDP, CDP, or Static methods, you can assign a VLAN ID to the phones by distributing the VLAN ID via DHCP.

When using this method to assign the phone's VLAN ID, the phone first boots on the Native VLAN/Data VLAN and then obtains its intended VLAN ID from the DHCP offer before it continues booting on the newly obtained VLAN.

Note: If a VLAN tag is assigned by CDP or LLDP, DHCP VLAN tags are ignored.

Valid DVD String DHCP Options

The DVD string in the DHCP option must meet the following conditions to be valid:

- Must start with "VLAN-A=" (case-sensitive)
- Must contain at least one valid ID
- VLAN IDs range from 0 to 4095
- Each VLAN ID must be separated by a "+" character

- The string must be terminated by a semi colon “;”
- All characters after the semi colon “;” are ignored
- There must be no spaces before the semi colon “;”
- VLAN IDs may be decimal, hex, or octal

The following DVD strings result in the phone using VLAN 10:

- VLAN-A=10;
- VLAN-A=0x0a;
- VLAN-A=012;

Assign a VLAN ID Using DHCP

When the VLAN Discovery in the DHCP menu is set to **Fixed**, the phone examines DHCP options 128, 144, 157, and 191 in that order for a valid DHCP VLAN Discovery (DVD) string..

When set to **Custom**, a value set in the VLAN ID Option is examined for a valid DVD string.

If DHCP option 128 is configured for SIP outbound proxy, do not configure VLAN Discovery option 128 to **Fixed**.

Procedure

- » In the DHCP menu of the Main setup menu, set **VLAN Discovery** to **Fixed** or **Custom**.

Enhancement to VLAN ID

After installing a new software package and changing the Virtual Local Area Networks (VLANs), the following are behavioral changes:

Updater

The phone doesn't reboot and starts the DHCP sequence on new VLAN to get the new IP address.

Application

- When the phone has a valid VLAN ID, the phone will restart and trigger DHCP sequence after discovering either a valid or an invalid VLAN ID.
- When the phone has an invalid VLAN ID, the phone doesn't restart and triggers DHCP after discovering either a valid or an invalid VLAN ID.

Link Layer Discovery Protocol and Supported Type Length Values

A Link Layer Discovery Protocol (LLDP) frame must contain all mandatory Type Length Values (TLVs).

Poly phones running UC Software support LLDP frames with both mandatory and optional TLVs.

The phones cannot determine their physical location automatically or provision to a statically configured location. Hence, they do not transmit location identification TLV in the LLDP frame. However, the location information from the switch is decoded and displayed on the phone's menu.

DHCPv4 Parameters

Poly recommends using DHCP where possible to eliminate repetitive manual data entry.

After establishing network connectivity, the phone needs to acquire several or IPv4 network settings. These settings are typically obtained automatically from a Dynamic Host Configuration Protocol (DHCPv4) server.

You have the option to configure IPv4 network settings manually from the phone screen or using `device.set` capability. When making the DHCP request, the phone includes information in Option 60 that can assist the DHCP server in delivering the appropriate settings to the device.

IPv4 Network Parameters

The following table lists the ways a phone can obtain IPv4 and related parameters in an IPv4 network.

| Parameter | DHCPv4 Option | DHCPv4 | DHCPv4 INFORM | Configuration File (application only) | Device Settings |
|------------------------------|--|--|---------------|---------------------------------------|-----------------|
| IPv4 address | No | Yes | No | No | Yes |
| Subnet mask | 1 | Yes | No | No | Yes |
| IPv4 Gateway | 3 | Yes | No | No | Yes |
| Boot server address | | Yes | Yes | No | Yes |
| SIP server address | 151 You can change this value by changing the device setting. | Yes | No | Yes | Yes |
| SNTP server address | Look at option 42, then option 4. | Yes | No | Yes | Yes |
| SNTP GMT offset | 2 | Yes | No | Yes | Yes |
| Syslog | | Yes | No | No | Yes |
| DNS server IP address | 6 | Yes | No | Yes | Yes |
| DNS INFORM server IP address | 6 | - | - | - | - |
| DNS domain | 15 | Yes | No | Yes | Yes |
| VLAN ID | | Warning: Link Layer Discovery Protocol (LLDP) overrides Cisco Discovery Protocol (CDP). CDP overrides Local FLASH which overrides DHCP VLAN Discovery. | | | |

Vendor Specific DHCP Options

DHCP Option 60 controls how the phone identifies itself to a DHCP server for Poly-specific options that must be returned.

If Option 60 format is set to [RFC 3925](#), all returned values of Option 43 are ignored. If the format is set to an ASCII string, the Option 43 would have a hexadecimal string value encapsulating sub-options that override options received outside DHCP Option 43.

If you do not have control of your DHCP server or do not have the ability to set the DHCP options, enable the phone to automatically discover the provisioning server address. You can do this by connecting to a

secondary DHCP server that responds to DHCP INFORM queries with a requested provisioning server value. For more information, see [RFC 3361](#) and [RFC 3925](#).

The following table lists supported DHCP Option 43 individual sub-options and combination sub-options:

| Option | Results |
|--|---|
| Option 1- subnet mask | The phone parses the value from Option 43. |
| Option 2 - Time offset | The phone parses the value. |
| Option 3 - Router | The phone parses the value. |
| Option 4 - TIME/ITP server address (RFC 868) | The phone parses the value. |
| Option 6 - Domain Name Server | The phone parses the value. |
| Option 7 - Domain Log server | The phone parses the value. |
| Option 15 - Domain Name | The phone parses the value. |
| Option 42 - Network Time Protocol server/ SNTP server address (RFC 1769) | The phone parses the value. |
| Option 66 - Provisioning Server Address | The phone parses the value. |
| Option 128 - 255 | Available option range for configuring a custom boot server address when option 66 is not used. |
| Sub-options configured in Option 43 | |
| Options 1, 2, 3, 4, 5, 6, 7, 15, 42, and 66 | The phone parses the value. |
| Option 128 - 255 | Available option range for configuring a custom boot server address when option 66 is not used. |

Parse Vendor ID Information

As a part of configuration, the Vendor ID information must be parsed with the phone.

Polycom follows [RFC 3925](#) which specifies use of a unique Internet Assigned Numbers Authority (IANA) private enterprise number. The private enterprise number assigned to Poly is 13885 (0x0000363D) and is represented as an array of binary data.

Procedure

1. Check for the Poly signature at the start of the option: 4 octet: 00 00 36 3d
2. Obtain the length of the entire list of sub-options: 1 octet
3. Read the field code and length of the first sub-option, 1+1 octets
4. If this is a field you want to parse, save the data.
5. Skip to the start of the next sub-option.
6. Repeat steps 3 to 5 until you have all the data or you encounter the End-of-Suboptions code (0xFF).

Provisioning for Different Environments

Topics:

- [Working with Configuration Files](#)
- [Install Provisioning Tools](#)
- [Set Up a Single Provisioning Server](#)
- [Set Up Multiple Provisioning Servers](#)
- [Provision Your Phone with a USB Device](#)

The provisioning method you use varies based on the base profile you choose.

- **OpenSIP provisioning**

In OpenSIP environments you can set up your own provisioning server or use your phone providers provisioning offering.

Working with Configuration Files

Polycom UC Software includes a number of resource files and template configuration files that contain parameters you can use to configure features and apply settings to phones. UC Software also includes an XML schema file that provides examples of parameter types and permitted value types you can use in the configuration files. To work with configuration files, you'll need to install an XML editor.

Primary Configuration File

The primary configuration file provides flexibility in large deployments to customize features and settings for your phones.

You can use the primary configuration file to configure features and apply settings for all the phones in your deployment, including groups of phones, specific phone models, or a single phone.

The default name for the primary configuration file is `000000000000.cfg`. You can use the default name or rename the primary configuration file. The file name must contain at least five characters and end with `.cfg`.

You can also specify the location of the primary configuration file you want the phones to use, for example, `http://usr:pwd@server/dir/example1.cfg`.

The primary configuration file applies settings from the component configuration files listed in the `CONFIG_FILES` XML attribute in the following ways:

- Phones read the files you enter from left to right.
- Duplicate settings are applied from the configuration file in the order you list them.

The following table describes the XML field attributes in the primary configuration file and the `APPLICATION` directories.

Primary Configuration File XML Field Attributes

| Attribute | Description |
|-------------------------|---|
| APP_FILE_PATH | <p>The path name of the UC software application executable. The default value is <code>sip.ld</code>. Note that the phone automatically searches for the <code>sip.ld</code> and <code><part number>.sip.ld</code> files. This field can have a maximum length of 255 characters.</p> <p>If you want the phone to search for a <code>sip.ld</code> file in a location other than the default or use a different file name, or both, modify the default. For example, you can specify a URL with its own protocol, user name, and password: <code>http://usr:pwd@server/dir/sip.ld</code>.</p> |
| CONFIG_FILES | <p>Enter the names of your configuration files in this attribute as a comma-separated list. Each file name has a maximum length of 255 characters and the entire list of file names has a maximum length of 2047 characters, including commas and spaces. If you want to use a configuration file in a different location or use a different file name, or both, you can specify a URL with its own protocol, user name, and password, for example <code>ftp://usr:pwd@server/dir/phone2034.cfg</code>. The files names you enter to the CONFIG_FILES field write are read from left to right. Duplicate settings are applied from the configuration file in the order you list them.</p> |
| MISC_FILES | <p>A comma-separated list of files. Use this to list volatile files that you want phones to download, for example, background images and ringtone.wav files. The phone downloads files you list here when booted, which can decrease access time.</p> |
| LOG_FILE_DIRECTORY | <p>An alternative directory for log files. You can also specify a URL. This field is blank by default.</p> |
| CONTACTS_DIRECTORY | <p>An alternative directory for user directory files. You can also specify a URL. This field is blank by default.</p> |
| OVERRIDES_DIRECTORY | <p>An alternative directory for configuration overrides files. You can also specify a URL. This field is blank by default.</p> |
| LICENSE_DIRECTORY | <p>An alternative directory for license files. You can also specify a URL. This field is blank by default.</p> |
| USER_PROFILES_DIRECTORY | <p>An alternative directory for the <code><user>.cfg</code> files.</p> |
| CALL_LISTS_DIRECTORY | <p>An alternative directory for user call lists. You can also specify a URL. This field is blank by default.</p> |
| COREFILE_DIRECTORY | <p>An alternative directory for Poly device core files to use to debug problems. This field is blank by default.</p> |

Note: The directories labeled `APPLICATION_SPIPXXXX` indicate phone models that are not compatible with the latest UC software version. If you are using any of the phone models listed in these directories, open the directory for the phone model you are deploying, and use the available fields to provision and configure your phones.

XML Resource Files

The UC software download contains optional resource configuration files you can apply to the phones.

In addition, you can allow phone-specific override files containing user settings to be uploaded to the central server. Resource and override files include:

- Language dictionaries for the phone menu and Web Configuration Utility
- Configuration override files that store settings made from the phone menu and Web Configuration Utility
- Ringtones
- Log files
- A template contact directory `0000000000000-directory~.xml`
- A licensing directory

Using Correct Parameter XML Schema, Value Ranges, and Special Characters

The configuration parameters available in the UC software templates use a variety of value types.

UC software includes an XML schema file (`polycomConfig.xsd`) that provides information about parameter type, permitted values, default values, and valid enumerated type values. You can view this template file with an XML editor.

Poly configuration parameters support the following value types:

- Boolean
- Enumerated
- Integer
- String

The following rules apply to UC software parameter values:

- Boolean values are not case sensitive.
- UC software interprets `Null` as empty.
- The values `0`, `false`, and `off` are supported and interchangeable.
- The values `1`, `true`, and `on` are supported and interchangeable.

The following rules apply when you set a parameter with a numeric value outside of its valid range:

- If the value is greater than the allowable range, the maximum allowable value is used.
- If the value is less than the allowable range, the minimum allowable value is used.
- If you insert invalid parameter values into the configuration file, the value is ignored and the default value is used. Examples of invalid parameter values include enumerated values that do not match values defined in the UC software, numeric parameters set to non-numeric values, string

parameters whose value is too long or short, and null strings in numeric fields. Invalid values are logged in the phone's log files.

You must use the appropriate XML code for special characters in a configuration file:

- & as `&`;
- " as `"`;
- ' as `'`;
- < as `<`;
- > as `>`;
- random numbers as `&0x12;`

Provisioning Phones

You provision phone features and settings with the UC software configuration files that you create and modify on your provisioning server.

You can also create and update specific phone configuration files, use variable substitution to update all phones in your deployment simultaneously, or configure phone groups.

When provisioning phones, you can create and name configuration files as needed to support your deployment; however, the following file names are reserved and cannot be used:

- `<MACaddress>-phone.cfg`
- `<MACaddress>-web.cfg`
- `<MACaddress>-app.log`
- `<MACaddress>-boot.log`
- `<MACaddress>-license.cfg`

Install Provisioning Tools

Before you begin provisioning devices with UC Software, install tools on your computer and gather some information.

Procedure

1. If using Power over Ethernet (PoE) with the phone, obtain a PoE switch and network cable.
2. Install an XML editor, such as XML Notepad 2007, on your computer.
3. Install an FTP server application on your computer.

FileZilla and **wftpd** are free FTP applications for windows and **vsftpd** is typically available with all standard Linux distributions.

4. Take note of the following:
 - **SIP server address** The host name or IP address of the call server that handles VoIP services on your network.
 - **SIP account information** SIP account credentials and the phone's registration address.
 - Although a user name and password are not required to get the phone working, Poly strongly recommends using them for security reasons.

- **Phone MAC addresses** The unique 12-digit serial number just above the phone's bar code on the back of the phone. You need the MAC address for each phone in your deployment.
- **Provisioning server IP address** The IP address of the system the phones use as the provisioning server. If you want to use your computer system as the provisioning server, you'll need your computer's IP address.

Set Up a Single Provisioning Server

You can set up a single provisioning server for your phone deployment.

Procedure

1. Power on the phones and connect them to your VoIP network using a Power over Ethernet (PoE) switch or external adapter and a network cable.
2. Create a root FTP directory on the provisioning computer with full read and write access to all directories and files.

This is where you need to place configuration files.

3. In your FTP server application, create a user account for the phone to use and take note of the user name and password.
4. Launch the FTP application.

You must keep it running during provisioning so that the phones can communicate with the UC software.

5. Download Polycom UC Software from [Polycom Support](#) and extract the files into your root FTP directory.

You can choose the combined UC software package or the split UC software package.

- The combined version contains all files for all phone models.
- The split software package is smaller, downloads more quickly, and contains `sip.ld` files for each phone model, enabling you to choose provisioning software for your phone model(s) and maintain software versions for each model in the same root directory.

Set Up Multiple Provisioning Servers

You can configure multiple (redundant) provisioning servers—one logical server with multiple addresses.

You can set up a maximum of eight provisioning servers.

You must be able to reach all of the provisioning servers with the same protocol, and the contents on each provisioning server must be identical.

Procedure

1. Power on the phones and connect them to your VoIP network using a Power over Ethernet (PoE) switch or external adapter and a network cable.
2. Create a root FTP directory on the provisioning computer with full read and write access to all directories and files.

This is where you need to place configuration files.

3. In your FTP server application, create a user account for the phone to use and take note of the user name and password.

4. Launch the FTP application.

You must keep it running during provisioning so that the phones can communicate with the UC software.

5. Download Polycom UC Software from [Polycom Support](#) and uncompress the files into your root FTP directory.

You can choose the combined UC software package or the split UC software package.

- The combined version contains all files for all phone models.
- The split software package is smaller, downloads more quickly, and contains `sip.ld` files for each phone model, enabling you to choose provisioning software for your phone model(s) and maintain software versions for each model in the same root directory.

6. Map the provisioning server DNS name to a unique IP address for each server.

7. Configure the following settings:

- Number of times a file transfer tries each server
- How long to wait between each file transfer attempt
- Maximum number of servers to which you want to try to transfer files

Provision Your Phone with a USB Device

You can provision Poly phones individually, using a USB storage device.

Procedure

1. Format a USB flash drive as FAT32.

Poly recommends that you use a USB 2.0 flash drive. If you are using a drive that is already formatted, ensure that previous files are deleted from the flash drive.

2. Download the software from the Polycom Support site.

3. Copy the configuration files you want to use to the root of the USB device.

The minimum required configuration files are as follows:

- Primary configuration file: `000000000000.cfg`
- Firmware: `<part number>.sip.ld`

4. Insert the USB into a USB port on the phone.

5. When the USB Provisioning prompt appears, enter the administrator password.

6. Select **Yes**.

Allow time for the device to reboot.