Polycom® Zero-Touch Provisioning

Contents

Before You Begin

This provisioning guide shows you how to use the Polycom® Zero-Touch Provisioning (ZTP) solution to provision Polycom phones and video endpoints, and describes the operations you can use to perform device association without using the ZTP console.

Audience, Purpose, and Required Skills

This document is intended primarily for the following persons managing the deployment of Polycom devices:

- **Reseller**   A company that delivers products to end customers of Polycom devices. Resellers might be responsible for device associations, typically on behalf of a Service provider.
- **Service Provider**   A company that offers VoIP services to subscribers. The service provider might operate their own network or can purchase VoIP network services from a carrier as a wholesale or white label service. Service providers might be responsible for creating and managing device profiles and, optionally, performing device association operations.
- **Enterprise Administrators** Individuals responsible for managing corporate deployments of devices to locations outside of the enterprise network (such as home office or remote location).

Terminology Used in this Guide

The following table introduces the terms and acronyms you will find in this provisioning guide.

Terms and Acronyms Used in this Guide

Term	Definition
Admin	A Polycom administrator
API	Application Program Interface
Association	A relationship between a device and a profile. Associations are the primary mechanism by which configuration profiles are associated to devices within ZTP.
Company	The company identifier for an entity that has access to the ZTP solution.
CPE	Customer Premise Equipment
Device	A device entered into ZTP. Typically, one or more devices will be assigned to a Subscriber (customer) and will be associated with a ZTP Profile.
GUI	Graphical User Interface
MAC Address	The unique number used to identify Ethernet devices. Use this number to track devices within the ZTP solution.
Profile	A set of configuration details created by a service provider. The profile name will be used for device association operations and communicates "out of band" to people that will need to associate devices to this profile.

Term	Definition
Reseller	An organization that sells Polycom devices to end customers. Resellers will use ZTP to associate devices to an appropriate configuration profile that has been set up by a service provider.
Service provider	An organization that provides services to customers using Polycom devices. This entity uses ZTP to enable reseller partners to associate devices to a certain configuration profile.
SIP	Session Initiation Protocol (SIP) is a signaling protocol that is widely used for controlling multimedia communication sessions such as voice and video calls over Internet Protocol (IP).
Subscriber	An entity within ZTP that has one or more devices assigned to it. This entity is tracked by a reference ID created by the user when performing device associations.
ZTP	Zero-Touch Provisioning

Get Help

For more information about installing, configuring, and administering Polycom products, refer to *Polycom Support*.

The Polycom Community

The *Polycom Community* gives you access to the latest developer and support information. Participate in discussion forums to share ideas and solve problems with your colleagues. To register with the Polycom Community, simply create a Polycom online account. When logged in, you can access Polycom support personnel and participate in developer and support forums to find the latest information on hardware, software, and partner solutions topics.

Launch the Polycom Zero-Touch Provisioning Solution

This section shows you how to launch the Polycom Zero-Touch Provisioning (ZTP) solution. Before you begin, take a moment to read Understanding the ZTP Solution, which introduces the ZTP solution and shows you how to log in to the Polycom ZTP console.

Understand the ZTP Solution

The ZTP solution is a cloud-based Web service designed to simplify the deployment of Polycom devices. Specifically, the Polycom ZTP console is a Web interface—also called a *Web console*—that you can use to create and manage profiles and device associations.

The ZTP solution is intended primarily as a one-time step at initial deployment. There are several advantages to using the ZTP solution to deploy Polycom devices. Typically, end customers require a supplier or skilled installer to deploy devices out of the box. The ZTP Web console enables you to create provisioning profiles that you can associate with one or more devices. These profiles enable end customers to save time and money by installing the devices themselves. Most importantly, the profiles you create provide a central provisioning server address that automatically redirects multiple customer devices to your provisioning server.

In addition to setting the provisioning server address, you can also use the ZTP solution to do the following:

- Perform software updates (VOIP Phones only)
- Set additional configuration parameters that simplify deployment. For example, a custom CA certificate for HTTPS provisioning. (VOIP Phones only)

Access Services

Polycom ZTP users have access to the following services and components:

- An automated server available 24x7 that will accept requests from Polycom devices and provide an initial configuration of the product.
- A partner Web portal and API accessible by registered partners and channels that you can use:
  - ➢ To create configuration profiles
  - ➢ To associate devices to a configuration profile
  - ➢ To generate reports and query the status of devices associated with the ZTP solution

Limitations on the Use of ZTP

Consider the following limitations when using ZTP:

- Polycom® RealPresence® Group systems must be running software version 5.0. In addition, individual units must be manufactured after October 1, 2015.

● RealPresence Group systems support software updates using a public Polycom server or RealPresence Resource Manager. Software updates using ZTP are not available on these systems.

● You cannot download language files for the device using the ZTP server.

● Polycom makes available a number of language files with the UC Software. If you choose a language other than the default English in ZTP, you will need to place the language file on your final provisioning server. To apply a non-English language file to your devices, see *Set the Phone Language* in the *Polycom UC Software Administrator Guide*.

Before You Deploy Devices Using ZTP

Before you deploy devices using ZTP, ensure that all of the following conditions are met:

● Use ZTP to provision Polycom SoundPoint IP, SoundStation IP, and VVX business media phones running UCS 3.3.2 or later, RealPresence Group systems running version 5.0 or later, and Polycom® RealPresence® Debut systems.

● All devices have http or https access to ztp.polycom.com. You might experience TLS connection issues if you use an http proxy at the customer location.

● No server address is configured in DHCP Option 66 or 160 on the local deployment network DHCP server. Ensure that rtcconfig SRV record is not configured for DNS.

● RealPresence Group Series software version 5.0 must be factory installed on video endpoints and maintain that version or higher. Downgrading to a version earlier than version 5.0 will cause the TLS certificate to be destroyed and ZTP to become non-operational.

● In addition, make sure that the following are set on each phone:

   ➢ The phones and video endpoints have a factory-installed device certificate.

   ➢ The Provisioning Server/Server Address field listed in the VOIP device menu system is Null. By default, this field is Null on all Polycom devices.

   ➢ The ZTP feature is enabled on the device. Polycom devices manufactured in 2012 and later are configured with the ZTP feature enabled by default. RealPresence Group systems manufactured in 2015 are configured with the ZTP feature enabled by default.

   ➢ For RealPresence Debut systems, when the RealPresence Debut is configured manually, in the web interface ensure the provisioning server type is set to Polycom ZTP. When the RealPresence Debut is configured automatically, in the web interface do not configure the DHCP Server Option with a server address.

Technical Bulletin: 37148: Device Certificates on Polycom SoundPoint IP, SoundStation IP, and Polycom VVX 1500 Phones

Launch the Polycom ZTP Console

This section shows you how to launch the Polycom ZTP console. Functions displayed along the left side of the window vary depending on whether you are logged in as a service provider or a reseller. To begin, you need to use one of the following web browsers:

● Microsoft® Internet Explorer 9.0 or later

● Mozilla® Firefox® 22 or later

- Google Chrome™ 20 or later
- Apple® Safari® 6.04 or later

To launch the Polycom ZTP console:

1 Open your web browser, navigate to the Zero Touch Provisioning Solution page.

2 On the *Zero Touch Provisioning Solution* page, enter an email address and password and click **Log In**. This is the same email address and password that you use to access other Polycom sites, for example, the Partner Resource Center (PRC).

Search for Profile and Device Associations

You can use the Find Operations function to search for profiles or devices for informational purposes or for troubleshooting. You can also use the Find Operations function to search for profiles and devices when you want to associate a configuration profile with one or more devices, or when you want to manage your profiles or devices. Click on one of the links to modify a device.

- If you are modifying a device association, go to Modify a Device Association.
- If you are copying a Device Association, go to Add a Device to a Profile.
- If you are changing the device associated with a profile, go to Change the Device Associated with a Profile.
- If you are deleting a device, go to Delete a Device

Once you have launched the Polycom ZTP console, as shown in Launch the Polycom ZTP Console, you can begin searching for existing profile and device associations.

To search for a profile or device:

1 On the left navigation bar in the ZTP console, select **Find Operations**.

2 Enter search criteria in all, some, or none of the fields. The more fields you fill out, the narrower your search results. By default, your search results are displayed by reference ID. If you want device view, check Device View.

3 Click the **Search** button. Search Results screen displays, which including information about the access status of the ZTP device.

Search Fields for Find Operations.

Search Result Fields for Find Operations.

Why Did No Search Results Display?

Search Fields for Find Operations

Use the following fields to search for customer and device information:

Fields Names	Description
First Name	First name
Last Name	Last name

Fields Names	Description
Reference ID	A unique identifier that helps you reference a profile association. You can reference one or more devices with this identifier.
Phone Number	Phone number
Email	Email address
City	City

Use the following fields to search for devices:

Fields Names	Description
Serial Number	The serial number of a device. UC Software devices use the MAC address as the serial number.
Model	Select the device model from the drop-down menu.
MAC Address	The MAC address of the device.
Configuration Profile	Enter the name of the configuration profile. The configuration profile is created by the service provider and contains parameters specific to the service provider network such as redirection URL or software version
Device View	Check this box if you want to display search results by device MAC address or serial number rather than the default Reference ID.
No. of Results Per Page	By default, ten results display. The minimum is two.
Download Results	To save search results to a local file rather than viewing them on the screen, check this box.
Max Number of Entries	Enter the number of search records you want to save to the file. By default, all records are saved.
Ignore Case	If selected, the search will ignore capitalization. (MAC addresses in the Device Info section are always lower case.)
Subscriber Status	This field refers to the status of an association. You can choose to search for Complete or Partial associations.
Send to Email	Check this box if you want to email a file containing the search results.

The following is a list of all search result fields.

Fields Names	Description
MAC Address	Displays the device MAC address and links to the Device Summary Report screen, which displays device association information.
Details	Links to the Detailed Subscriber Information page, which provides the customer information your search captured.

Fields Names	Description
Name	Displays the first and last name of the subscriber. Click on the active column heading Name to sort the list by subscriber name.
Profile	Displays the names of the configuration profile associated with the device.
Serial Number	Displays the device serial number.
Reference ID	Displays the reference ID of the device association. If the reference ID is linked, you can click on it to get more information about the association, and to sort the column in ascending or descending order.
Device ZTP Access Status	Displays the current status of the device.

This section has shown you how to search for profiles and devices. Once you have a list of search results, you can search for profiles and devices when you want to associate a configuration profile with one or more devices or you can manage your profile and device associations.

- Refer to Make Profile Associations to make device associations.
- Refer to Manage Profiles and Devices to manage profile and device associations.

Make Profile Associations

This section shows you how to use the Profile Association function, which you can use to associate one or more devices with a configuration profile.

Once you have launched the Polycom ZTP console, you can begin making a profile association. To make a profile association, you will need to create a *customer contact profile,* the personal information that identifies the customer contact.

The following procedure enables you to choose a bulk or a manual profile method.

To perform an association:

1 On the left navigation bar in the ZTP console, click **Profile Association**. The *Add Personal Information* page displays.

2 Create a *customer contact profile* by entering information in one or more of the available fields:

   ➢ **Reference ID (mandatory)**   This ID must be unique for every association. It must be an alphanumeric string between four and 20 characters.

   ➢ **Company Name**   Enter the name of the company that will use the devices.

   ➢ **First Name**   Enter the first name of the customer contact.

   ➢ **Last Name**   Enter the last name of the customer contact.

   ➢ **Phone Number**   Enter the phone number of the customer contact.

   ➢ **Email Address**   Enter the email address of the customer contact.

   ➢ **Street**, **Address**, **City**, **State**, **Zip/Postal Code**, **Country Code**

   ➢ If you want to clear all fields, click the **Reset** button.

Any devices that you associate with a profile will be linked to the reference ID you enter here.

3 From the Profile Association Mode drop down choose Manual Profile Association or Bulk Profile Association.

> ➢ If you want to manually upload your profile associations, choose Manual Profile and continue to the section Manual Profile Association.

> ➢ If you want to upload a file to associate multiple devices in an automated server, choose Bulk Profile Association as the Profile Association mode and continue to the section Bulk Profile Association.

Launch the Polycom ZTP Console

Manual Profile Association

This section shows you how to make manual profile associations.

To make manual profile associations:

1   Once you have chosen Manual Profile Association, click **Next** to display the *Create* screen displays

2   In the *Create* screen, enter the device details. If you want to make per-device configuration changes to settings in the Configuration Profile, click on **Click Here to Enter Vendor Extension** to expose and view available per-device fields. Note that where per-device settings are duplicated in the Configuration Profile, the per-device settings will override the Configuration Profile.

    If you want to associate more devices, click Next and continue creating device associations with the customer contact profile you created.

3   Click **Finish** after entering all devices details to associate with this customer contact profile.

    You have successfully associated the devices with the customer contact profile.

Create Device Fields

Create Device Fields

This section details the device fields that you can enter from the Web UI if using the Manual Mode of Association, or using a Comma Separated set of values if using Bulk Profile Association. All fields are string values except the Enable provisioning polling which is a selection box in manual mode and a Boolean value if using Bulk profile Association.

Use the available fields to associate a device with the customer contact profile you created:

Fields Names	Description
MAC Address	The MAC address of the device
Serial Number	The serial number of a device. For Bulk Associations you can leave this field blank.
Vendor Model	Enter Polycom_UCS_Device in this field for the SoundPoint IP, SoundStation IP, VVX, RealPresence Debut, and SpectraLink 8400 Series products. For RealPresence Group systems, enter Polycom Video Endpoint. You can leave this field blank for Bulk Associations.
Configuration Profile	Enter the name of the configuration profile that you want to associate with this device.

The following is a list of the per-device Vendor Extension fields. For Bulk Associations you can leave all or any of these fields blank. Entering values for these fields is optional.

Fields Names	Description
Click Here to Enter Vendor Extension	Click this to expose and view available parameters for single devices. Note that any settings you make in these fields will override settings in the Configuration Profile.
SIP Server Address	Enter the SIP registration server address.
Outbound Proxy Address	Enter the IP address or URL/FQDN of the applicable SIP Outbound Proxy server.

Fields Names	Description
Provisioning Server Address	Enter the provisioning server address of the service provider you want to download the configuration file from
Provisioning Server Username	Enter the user name for authenticating with the provisioning server
Provisioning Server Password	Enter the password used for authenticating with the provisioning server.
Enable Provisioning Polling	Enter None, Enable, or Disable. If using Bulk Association you must enter a value of 1 for Enable, 0 for Disable, or leave this field blank if you want the device to use the default setting.
SIP Authentication User ID	Enter the user name of the SIP device.
SIP Authentication Password	Enter the password of the SIP device.
Line Label	Enter the line label that will display on the SIP device.
SIP Display Name	Enter the name of the SIP device that you want to display.

For Provisioning Server Username, Provisioning Server Password, Provisioning Server Address If this are already included in the Configuration Profile, leave this field blank to avoid overriding the value in the Configuration Profile.

Bulk Profile Association

Bulk Profile Association is designed to be used when you want to create multiple profile associations in a single step. In this mode you upload a comma separated (CSV) file to the ZTP database and ZTP performs the associations for you. When using this method, confirm that the association is successful using the Find Operations function in the main menu to verify that the upload has been successful.
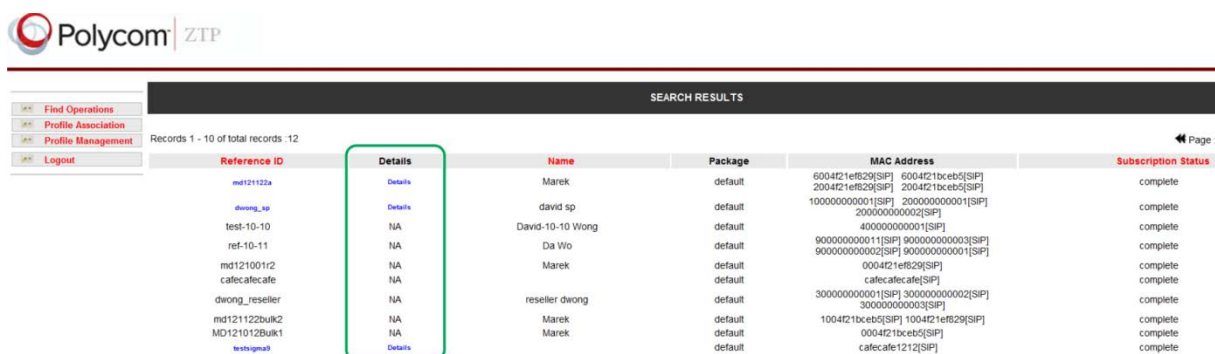
To perform a bulk association:

1 Select Bulk Profile Association, click **Next** to display Bulk Profile Association screen.

2 Select the CSV file from your PC, and choose **Upload File**.

The file uploads to ZTP and displays the Subscription Status screen.

The file takes several minutes to upload depending on the number of profile associations contained in the uploaded CSV file. Check the status of the processing periodically until the status changes to Completed or Completed with Errors. To perform this status check, go to Find Operations in the main menu, search for a Reference ID, and select the Details link for a record, as shown in the next image.

When you click Details, ZTP provides status details in the Detailed Subscriber Information screen.

Once the processing is complete, the status changes. If ZTP indicates errors with your associations, click on the link Completed With Error, a file opens that details the errors that were encountered in one or more record. You need to correct these errors and re-upload the file entries. Note that correct entries are applied to the database – you need to re-upload only those files that ZTP indicated were Completed With Errors.

Bulk Association Parameter Details

CSV File Format

Bulk Association Parameter Details

The following table provides details of the bulk association parameters.

Parameter	Field	Description	Presence
1	MAC Address	MAC address of the SIP Device	Mandatory
MAC address can be in either small or capital letters.			
2	Serial number	Serial Number of the SIP Device.	Optional
If not provided Serial number will be MAC address in upper case.			
3	Vendor Model	Model of the SIP Device	Optional
If there is no value coming for this parameter then it will default to "Polycom_UCS_Device"			
4	Configuration Profile	Profile name you want to associate with a SIP device.	Mandatory
Vendor Extensions	Vendor extension parameters in key value format		Optional
Allowed Keys are listed below in the order they appear. Each parameter values should be separated by comma (,). The parameters are listed below.			
5	SIP Server Address		Optional

Parameter	Field	Description	Presence
String – Possible values are IP address or hostname			
6	Outbound Proxy Address		Optional
String – Possible values are IP address or hostname			
7	Provisioning Server Address		Optional
String – Possible values are IP address or hostname			
8	Provisioning Server Username		Optional
String – user name string			
9	Provisioning Server Password		Optional
String – user name string			
10	Enable Provisioning Polling		Optional
String – Possible values 1 (to Enable) or 0 (to Disable)			
11	SIP Authentication User ID		Optional
String – user ID string			
12	SIP Authentication Password		Optional
String – Password string			
13	Line Label		Optional
String – Label to be displayed on the phone			
14	Display Name		Optional
String – Display name used in SIP signaling			

CSV File Format

The file should contain the desired parameters in CSV format. Data in each line should contain comma separated values without double quotes. Parameter values are identified by their indices so file should contain the parameters strictly in this order. Any optional values that are not being entered should be identified by a pair of commas (,,) If none of the vendor extension fields are being entered then it is not necessary to enter any commas. The file format is compatible with files created in Microsoft Excel and saved in CSV format.

Example Configurations

This section provides five example associations. You can enter association separately or in a single CSV file.

Example One
`0000cafebabe,,,profile1` No serial number, Vendor Model and vendor extension is passed.

Example Two
`0000cafebabe,, Polycom_UCS_Device ,profile1`   No serial number and vendor extension is passed.

Example Three
`0000cafe1234,0000CAFE1234, Polycom_UCS_Device,profile1`   No vendor extension parameter is passed.

Example Four
`0000cafe1234,0000CAFE1234,Polycom_UCS_Device,profile1,192.168.1.178, 192.168.1.171`   Vendor extension includes SIP Server Address and Outbound Proxy Address.

Example Five
`0000cafe1234,0000CAFE1234,Polycom_UCS_Device,profile1, 192.168.1.178,,,user,password` Vendor extension includes SIP server address, provisioning server, user name, and provisioning server password, for example, the first, fourth, and fifth parameter values.

Configuration File Size Limitations

To avoid processing delays, a single configuration file is limited to a maximum of 1000 entries.

Parameter and Validation

Restrictions on characters per field apply. Character restrictions are shown in the following table.

Character Restrictions

Parameter	Allowed Characters	Type	Length Range
MAC Address	[a-fA-F0-9]{12}	Hex String	12
Serial No	[[^\p{Punct}&&[^\s]&&[^\p{Sc}] &&[^\p{Cntrl}]]|[_.]]+	Allowed Digits, letters, _, -	12-13
Vendor Model	^[a-zA-Z0-9._-]*$	Allowed Digits, letters, _, -	1-50
Configuration Profile	[[^\p{Punct}&&[^\s]&&[^\p{Sc}] &&[^\p{Cntrl}]]|[_.]]+	Alphanumeric	2-50
Vendor extensions	All characters are allowed except , & < > ' "		

> ⚠ Because the input file is a comma separated values (CSV) list, you cannot use a comma (,) in any parameter values including the vendor extension

Manage Profiles and Devices

This section shows you how to manage configuration profiles and devices using the Profile Management function.The Profile Management function is available only when logged in as a service provider.The Profile Management function enables service providers to perform the following operations:

- Create a Profile
- Modify a Profile
- Delete a Profile
- Modify a Device Association
- Add a Device to a Profile
- Change the Device Associated with a Profile
- Delete a Device

Manage Configuration Profile

This section shows you how to create, modify, add, and delete device profiles.

Create a Profile

Once you have launched the Polycom ZTP console, you can begin managing profiles.

To create a profile:

1 In the ZTP console, click **Profile Management**. The *Profile Editor* displays in the *Profile Management* screen, enter the profile details in any of the fields. The fields marked with an asterisk (*) are mandatory.

2 Click **Add** to display the created configuration profile in the *Configuration Profiles* list.

Launch the Polycom ZTP Console

Profile Editor Fields

Modify a Profile

You can modify a configuration profile by changing the profile parameters.

To modify a profile:

1 On the *Profile Management* screen, under *Configuration Profiles* click on the **Profile Name** of the configuration profile that you want to modify.

   The *Profile Editor* window of the profile displays.

2 Edit any fields of the selected configuration profile in the *Profile Editor*.

3 Click **Modify** to display the modified profile on *Configuration Profiles* List.

Profile Editor Fields

Profile Editor Fields

This section details the Profile Editor fields that you can enter from the Web UI. For fields like Provisioning Server Username, Provisioning Server Password, Provisioning Server Address If this are already included in the Configuration Profile, leave this field blank to avoid overriding the value in the Configuration Profile.

The following table provides details of Profile Editor Fields

Fields Names	Description
Profile Name	Enter the profile name. This is the name of the configuration profile that provisions the devices.
Vendor Model	Enter Polycom_UCS_Device in this field for the SoundPoint IP, SoundStation IP, VVX, RealPresence Debut and SpectraLink 8400 Series products. Enter Polycom Video Endpoint for RealPresence Group systems.
Upload File	Click Browse to choose a configuration file associated with the configuration profile. Note that you must format this file according to Polycom Unified Configuration (UC) Software configuration file format.
Provisioning Server Address	This is an optional field. Enter the provisioning server address of the service provider you want to download the configuration file from.
Provisioning Server Username	Enter the user name for authenticating with the provisioning server
Provisioning Server Password	Enter the password used for authenticating with the provisioning server.
Software Version	Select the software revision from the drop-down menu. The device will update to the software version you specify here. This field does not apply to RealPresence Group systems and RealPresence Debut.
Enable Provisioning Polling	Select the polling option from the drop-down menu. You can choose to enable or disable polling.
Boot Server DHCP Option setting	Select the boot server use options from the drop-down menu. This field does not apply to RealPresence Group systems and RealPresence Debut systems.
Option 60 Type	Select the DHCP option for SIP from the drop-down menu. You can choose ASCII or Binary. This field does not apply to RealPresence Group systems and RealPresence Debut systems.
Enable Quick Setup	Select the enable quick setup option from the drop-down menu. You can choose to enable or disable this option. For more information about this function, see Quick Setup of Polycom Phones in the latest version of the Polycom UC Software Administrator Guide.
Language	Select the language for the SIP device. This field does not reply to RealPresence Debut systems.

Delete a Profile

You can delete a profile from the list of *Configuration Profiles*.

To delete a profile:

1   On the *Profile Management* screen, click on the **Delete** (x) icon beside the profile you want to delete.

2   Click **OK**.

Manage Devices

This section shows you how to:

- Modify a device association. This operation is useful, for example, if you need to move a phone to a new location. Note that the ZTP feature will need to be re-enabled on the device in order to contact the ZTP server.

- Copy an association from one device to another. This operation is useful if you want to add devices to a customer site without having to enter the configuration profile anew.

- Change the device associated with a profile. This operation is useful, for example, when you want to replace a faulty device.

- Add additional device associations to a Reference ID. This operation is useful, for example, when you want to ship additional devices to an existing customer.

Modify a Device Association

You can use ZTP to modify the Configuration Profile of a device or properties of that profile.

To modify a device association:

1   Perform a search for a profile or device association by choosing Find Operations from the main menu.

2   In the Find Operations screen, search for a device association using any of the available fields.

    A list of search results displays.

3   In the *Search Results* screen, click on an entry under **Reference ID**.

4   In the *Modify Service or Package* window, click on the **MAC address** of the device you want to modify. The *Modify* window displays.

5   Modify any of the device properties and click **Done** when you are finished.

6   Click **OK** to confirm the modification.

Modify Device Fields

Modify Device Fields

Use the available fields to associate a device with the customer contact profile you created:

Fields Names	Description
MAC Address	The MAC address of the device
Serial Number	The serial number of a device. For Bulk Associations you can leave this field blank.
Vendor Model	Enter Polycom_UCS_Device in this field for the SoundPoint IP, SoundStation IP, VVX, RealPresence Debut, and SpectraLink 8400 Series products. For RealPresence Group systems, enter Polycom Video Endpoint. You can leave this field blank for Bulk Associations.
Configuration Profile	Enter the name of the configuration profile that you want to associate with this device.

The following is a list of the per-device Vendor Extension fields:

Fields Names	Description
Click Here to Enter Vendor Extension	Click this to expose and view available parameters for single devices. Note that any settings you make in these fields will override settings in the Configuration Profile.
SIP Server Address	Enter the SIP registration server address.
Outbound Proxy Address	Enter the IP address or URL/FQDN of the applicable SIP Outbound Proxy server.
Provisioning Server Address	Enter the provisioning server address of the service provider you want to download the configuration file from. As a shortcut, you can embed the port number, username, and password in the URL you enter in this field in the following format: protocol://username:password@hostname.domain.ca:port/filepath/
Provisioning Server Username	Enter the user name for authenticating with the provisioning server
Provisioning Server Password	Enter the password used for authenticating with the provisioning server.
Enable Provisioning Polling	Enter None, Enable, or Disable.
SIP Authentication User ID	Enter the user name of the SIP device.
SIP Authentication Password	Enter the password of the SIP device.
Line Label	Enter the line label that will display on the SIP device.
SIP Display Name	Enter the name of the SIP device that you want to display.

Add a Device to a Profile

You can add devices to a profile one at a time or you can add multiple devices to a profile.

To add a device association:

1   Choose **Find Operations** in the main menu.

2   In the *Find Operations* screen, search for a device profile using the available fields.

3   In the *Search Results* screen, click on an entry under **Reference ID**.

4   You can choose to add a device one at a time or you can add multiple devices to a single profile.

   ➢ Click **Add** to add a device one at a time.

      If you choose Add, the Create screen displays. Enter the device information in the available fields. To view all available fields, choose **Click Here to Enter Vendor Extension**.

      OR

   ➢ Click **Bulk_Add** to add multiple devices.

      If you choose **Bulk_Add**, the Bulk Profile Association screen displays. Upload a CVS file containing the list of devices you want to associate with a profile.

Copy a Device Profile

When you want to deploy a new device with the same or similar configuration to that of an existing device, you can copy the association of the existing device to the new device.

To copy a device association:

1   Choose **Find Operations** in the main menu.

2   In the *Find Operations* screen, search for a device profile using the available fields.

3   In the *Search Results* screen, click on an entry under **Reference ID**.

4   Locate the device you want to copy by MAC address, and click **Copy.**

5   Enter the MAC address (mandatory) or Serial Number of the device you want to copy to, and click **Done**.

   The Modification Successful window displays.

6   Click **OK** to confirm the copy.

Change the Device Associated with a Profile

You can change or swap the device associated with a configuration profile.

To change the device associated with a profile:

1   Perform a search for a profile or device association

2   In the *Search Results* screen, click on the **Reference ID**.

   The *Modify Service or Package* screen displays.

3   Locate the MAC address or Device ID of the device you want to change or swap, and click **Change.**

4 Enter the MAC address or Device ID of the new device in the *New Mac Address/Device Id Of Device* field, and click **Done**. (The MAC address of the device you are changing or swapping displays in the *MAC Address/Device ID* field.)

The Modification Successful window displays.

5 Click **OK** to confirm the change or swap.

Search for Profile and Device Associations

Delete a Device

You can delete one or more devices.

To delete a device:

1 Perform a search for a profile or device association.

2 In the *Search Results* screen, click **Reference ID**. The M*odify Service or Package* window displays.

3 Locate the device you want to delete by MAC address, and click the **Delete** (x) icon.

The Modification Successful screen displays.

4 Click **OK** to confirm the deletion.

Search for Profile and Device Associations

Provisioning with ZTP

This section shows you how to use the ZTP solution as part of the provisioning server discovery process, and shows you how to use the ZTP solution to update the Polycom Unified Communication Software (UCS) running on your devices.

Provision Server Discovery

The ZTP solution is used as part of the provisioning server discovery process on the SoundPoint IP, SoundStation IP, VVX business media phones, RealPresence Debut, and RealPresence Group systems video endpoints. If you want to use ZTP as part of the server discovery process for your SpectraLink 8400 Series wireless handsets, the handsets must be running UCS release 4.0.1 or later. Note that when you enable the ZTP feature, an additional step is added to the provisioning server discovery process.

A device will carry out the following steps until it finds the provisioning server address:

1 Search in DHCP:

   a UCS Devices and RealPresence Debut: If DHCP provisioning server discovery is set on the device to *Custom*, *Option 66*, or *Custom+Option 66* (the factory default), the device will look for a provisioning server address in DHCP or DHCP INFORM.

   b Video Endpoints: The device will look for the provisioning server address in DHCP record option 66.

2 Search for server address:

    a UCS Devices: The device will look for a statically configured provisioning server address (not 0.0.0.0 or Null).

    b Video Endpoints: The device will query DNS for the_rtcconfig SRV record.

3 If ZTP is enabled, the device will contact ZTP. (UCS Devices and Video Endpoints) Once ZTP completes:

- Video Endpoints: ZTP will be disabled and the endpoint will remain connected to the provisioning server.

- RealPresence Debut: ZTP will be enabled and the endpoint will remain connected to the provisioning server.

- UCS Devices: Once the provisioning server discovery process is complete, you can enable or disable ZTP in one of two ways:

    ➢ On the phone, press **Menu** > **Settings > Advanced** and enter the phone's password (default 456). Choose **Admin Settings > Network Configuration > Provisioning Server/Server Menu > ZTP.**

       OR

    ➢ Use the Polycom centralized provisioning method. You will need to locate the following parameters in either the **device.cfg** or **site.cfg** template configuration file, and set the value of each of the following parameters to **1**:

        ◆ device.set

          device.prov.ztpEnabled

          device.prov.ztpEnabled.set

> By default, the ZTP feature is disabled on a phone when you update to a UC Software version that supports ZTP.

Provisioning on ZTP

This section describes how the device interacts with ZTP.

When a device running BootROM 4.3.1/UCS 3.3.2, or newer 3.3.x patches, contacts ZTP:

1 The device will request the BootROM.ld using http. This file will not be delivered by ZTP unless a software update is required.

2 The device or video endpoint will request its own *<MACaddress>.cfg*.

    If there is a device or endpoint association in ZTP:

    b A software update will be carried out, if required.

    c The phone or video endpoint will request its <MACaddress>.cfg using https, and a mutually authenticated TLS session will be used to deliver the configuration profile defined in <MACaddress>-profile.cfg to the phone or video endpoint.

    d The ZTP feature on the phone or video endpoint will be disabled.

    If there is no device association in ZTP:

The device or video endpoint will serve up *000000000000.cfg,* which will set `ztpEnabled=0` and the provisioning server address to *Null*.

4 the phone will request and receive <MACaddress>.cfg using http as an initial stage. This additional step is required since the BootROM software does not support file download using the https protocol. Note also that the <MACaddress>.cfg file does not contain sensitive or confidential information.

When a device contacts ZTP running UCS 4.0.0 and later:

* All files will be delivered using mutually authenticated https sessions.
* A software update will be triggered after initial configuration.

Software Updates Using ZTP

Software Updates Using ZTP for UCS Devices

You can use the ZTP solution to update your devices to UC Software version 4.0.0 and all later UCS versions. You will not be able to use the ZTP solution to update your devices with UCS versions earlier than 4.0.0. Note, the information provided in this section does not apply to video endpoints. These systems must use either the Polycom public server or a provisioning server, such as RealPresence Resource Manager, to obtain software updates.

Phones use the following process when you perform a software update:

* If the current software is BootROM 4.3.1/UCS 3.3.x (as determined by the HTTP user Agent string) then ZTP uses a re-direction procedure to update to the version of software (UCS 4.0.0 or later) specified in the profile.

> The re-direction used for the software update will cause the provisioning server address to be modified during the software update. This should be taken into account if you are troubleshooting a deployment issue when you select a software update as part of a profile.

* If the software on the phone is already UCS 4.0.0 or newer, then the APP-FILE-PATH string in the *<MACaddress>*.cfg file is used to specify where the new software is located.

Polycom RealPresence Group Series Administrator Guide

Polycom RealPresence Debut Administrator Guide.

Notes About Updating Software

Before you begin updating your software, consider the following points:

* ZTP is designed to be used once for your initial device installation. It is not designed to be used for ongoing management of devices.
* The ZTP system will use configuration parameters to disable the ZTP features once you have completed provisioning the devices and the devices contact ZTP for the first time.
* If it is necessary to use ZTP at a later time, you can re-enable it and re-apply a profile.
* The following device requirements must be met to use ZTP:
  ➢ Devices must be running software revision UCS3.3.2/BR4.3.1 or later.
  ➢ Devices must have a factory installed device certificate that is activated.

> ➢ Devices must be able to contact the ZTP solution using HTTP and HTTPS protocols (typically using Ports 80 and 443) from their point of installation.

Technical Bulletin 37148: Device Certificates on Polycom SoundPoint IP, SoundStation IP, and VVX 1500 Phones.

Troubleshoot ZTP

This section contains troubleshooting tips for ZTP users, and is intended primarily for Polycom and partner technical support personnel.

> If ZTP is not functioning properly for video endpoints, the system will automatically go through the normal out-of-box wizard.

Identify Issues

There might be an issue with your provisioning if you observe one or more of the following:

- The phone does not show a registration icon on the idle display screen.
- The time and date display is flashing, indicating the phone did not get a valid time setting.
- The line key label says SoundPoint IP, as shown in the following illustration.

There are a number of ways to troubleshoot ZTP provisioning issues.

- If ZTP is disabled on the device:
  - ➢ The software running on the phone might not support ZTP.
  - ➢ Ensure that ZTP is enabled on the device.
- If the device could not contact the ZTP server:
  - ➢ Ensure that the device has internet access to https://ztp.polycom.com.
- If Mutual TLS authentication with https://ztp.polycom.com failed:
  - ➢ Ensure that the device has a Polycom factory installed certificate.
  - ➢ There can be an issue getting the system time, which caused the phone to reject the server certificate.
- If the device association is partial or not correctly applied:
  - ➢ Ensure that the device is associated with a configuration profile.
  - ➢ Ensure that the profile for the device is correct.

This section describes several troubleshooting strategies in more detail. There are two strategies you can use to troubleshoot ZTP: using the ZTP Web console and, if you have access to the device, using the device user interface.

Use the ZTP Console to Troubleshoot

You can use the ZTP console to identify and resolve provisioning issues.

To troubleshoot using the ZTP console:

1 To begin you must obtain the MAC address of the device you are troubleshooting. If you do not know the MAC address, the end user can locate the MAC address of a Polycom device in one of two ways:

   ➢ On a label on the back of the device. The MAC address is a hexadecimal number located on the bar code label, directly above the bar code, in the following format: 0004f2000001.

     OR

   ➢ Navigate on the Polycom device:

     ♦ If you are using a SoundPoint IP or VVX device, go to **Menu > Status > Platform > Phone**. The MAC address is in the Serial Number (S/N) field.

     ♦ If you are using a SpectraLink device, go to **Settings > Status > Platform > Phone**. The MAC address is in the MAC field.

2 Once you have the MAC address, log in to the ZTP console.

3 From the ZTP console, select **Find Operations**.

4 Check Device View, enter the MAC address of the device into the MAC Address field.

5 Click Search. The device details display in the *Search Results* screen.

   If your device search yields no search results, this is a good indication that the device association was not performed correctly or was performed by someone outside of your company.

6 In the *Search Results* screen, view the Device ZTP Access Status field for the device you want to troubleshoot. This field can display any of the following details:

   ➢ **Last access time**   This can indicate any of the following events:

     ♦ The last time the device contacted the ZTP server

     ♦ The device contacted ZTP and downloaded at least one configuration file at the time indicated.

     ♦ If someone viewed a configuration file from the ZTP console

     ♦ If the configuration file download failed due to an issue, for example, a failed TLS transaction or network issue

   ➢ Number of times accessed   Indicates that an association exists, and how many times the device has contacted the ZTP server.

   ➢ Double-dashes (--)   Indicates that the device has not contacted the ZTP server. If you see a double dash, see the section If the Device Did Not Contact ZTP.

Note that display of the **Device ZTP Access Status** field does not necessarily indicate that a device was properly associated with a profile.

Use the Device or Web Configuration Utility to Troubleshoot

In addition to using the ZTP Web console to troubleshoot, you can also use either a device's user interface, if you have access to it, or the Web Configuration Utility. There are a number of device fields you can use to verify that the device accessed ZTP during boot-up, and which you can reset by rebooting the phone. This section shows you how to use the device interface and the Web Configuration Utility to troubleshoot.

To troubleshoot using the device interface:

1 Go to **Menu > Settings > Advanced**, enter the password (default 456), and press **Enter**.

2 Go to Admin Settings > Network Configuration > Provisioning Server, and press Select.

The Provisioning Server/Server Menu fields display.

The *Server Address* field should be set to the provisioning server address. If the Server Address field is *Null*, it is a good indication that ZTP did not find an association for the device.

3 Scroll down to the **ZTP** field.

ZTP is automatically disabled each time the device accesses ZTP. If the ZTP field reads *Enabled*, it is a good indication that the device could not access ZTP.

Additional Troubleshooting

You can perform additional troubleshooting in the following ways:

● Restart the phone, repeat the steps in Use the ZTP Console, and observe changes in Device ZTP Access Status field.

● Delete the profile association, perform the profile association again, and restart the device.

● Open and view the configuration file, and confirm that the settings match your expectations.

To view the configuration files:

1 Perform the steps in Use the ZTP Console.

2 From the *Search Results* screen, choose a device and click on **Details.** The *Detailed Subscriber Information* screen displays, shown next.

3 Click on a blue configuration file icon.

A dialog displays the configuration parameters.

Confirm that the settings match your expectations. If the configuration settings do not match what you expect, go to Manage Configuration Profiles and try reviewing settings in the Profile Editor on the Profile Management screen.

Why Did No Search Results Display?

If you used the *Find Operations* function to search for devices and no search results display:

- The MAC address might have been incorrectly entered during the association.
- The association was started but not fully completed. These partial associations are labeled Partial in the Subscriber Status field, as shown next.

To search for partial associations:

1 Enter the MAC address of a device in the MAC Address field or enter the % character if you want to search for all partial associations. The % character is a wild card and will generate search results for all matches for that field.

2 In the *Subscriber Status* field, choose **partial**.

The *Subscriber Status* field is available to service providers. If you are logged in as a reseller, the *Subscriber Status* field will not be available and both partial and complete associations will be displayed for all searches.

> Partial associations, which display in the *Subscriber Status* field, will be removed from the database after a few hours.

3 Press **Search**, the *Search Results* screen displays all partial device associations.

4 Click on the *Reference ID* of a device, a confirmation screen displays.

5 Click **OK**. You must click the OK button to enter the device association to the ZTP database.

To find out whether the MAC address was entered incorrectly or the association is partial, return to the *Find Operations* screen and enter other information that will identify the device, for example, a customer name that was entered during the association.

If you believe the association was performed by someone outside of your company, try to associate the device to a profile yourself. If the device has already been associated, you will see a warning message. Contact Polycom Tech Support to resolve this issue.

If the Device Did Not Contact ZTP

If the device did not contact ZTP, you can troubleshoot settings on the device, you can verify the VLAN settings, and you can verify the device certificate.

Troubleshoot Settings on the Device

To troubleshoot settings on the device:

1 Verify that ZTP is enabled on the device. To verify that ZTP is enabled on the device, go to **Menu > Settings > Advanced**, enter the password (default 456), and press **Enter**. Then, choose **Admin Settings > Network Configuration > Provisioning Server**, and press **Select**. Scroll down to **ZTP** and choose **Enabled**, as shown in the next image.

Note that each time the device contacts ZTP, the ZTP field becomes disabled.

2 Verify that the Boot Server menu is set to *Static.* On the *Provisioning Server* menu, choose **DHCP Menu**, press **Select**, set the *Boot Server* field to **Static**, press the **Back** soft key twice, and choose **Save Configuration**, as shown next.
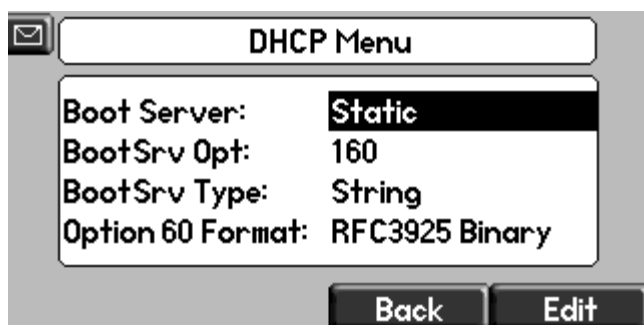
3 Verify that the provisioning server *Server Address* field is *Null*. If the *Server Address* field is *Null*, the device likely did not contact the ZTP server.

Verify that the Device has HTTP/HTTPS Access to ZTP

If you want to check whether the device network allows access to the ZTP server, try the following:

● Enter the following URL to your browser: http://ztp.polycom.com/000000000000.cfg. If the device can access the server, you should be able to view this configuration file. If you get an error message, it is likely that your network does not allow access to the ZTP server.

Verify the Security Certificates

The Mutual TLS transactions that enable the device and ZTP to communicate require that the device and server cross-validate security certificates. During this process, validation steps might fail and cause ZTP server communication to terminate. If this occurs:

● The phone might have failed the server certificate because the date is outside the validity range.

● If a time server is configured but not reachable, the certificate check will be carried out and might fail. In this scenario the time and date displayed on the phone will be inaccurate and will flash. The phone will not check the server certificate date validity if there is no time server configured either statically or in the Time Server DHCP Option.

You can also check if the certificate is installed on the device. The server will reject the connection if the device does not contain a factory installed device certificate.

To confirm whether a certificate is installed on the device:

» Go to **Menu > Status > Platform > Phone**, and scroll down to Device Certificate.

● The device certificate must be set to Factory Installed for the device to access ZTP. If the device certificate is set to Not Installed or Self-Signed, the device will not be able to access ZTP. Note that even if the device cannot access ZTP, ZTP will log an access.

● The Device Certificate field on devices that were updated to UC Software 4.0.0 and subsequently downgraded will indicate Factory Installed even though the certificate might not been installed. For more information on phone revisions that include factory installed device certificates,

Technical Bulletin: 37148: Device Certificates on Polycom SoundPoint IP, SoundStation IP, and Polycom VVX 1500 Phones.