Poly Trio Systems in Microsoft Environments

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

The information in this guide applies to the following Poly devices except where noted:
• Poly Trio 8300 system
• Poly Trio 8500 system
• Poly Trio 8800 system
• Poly Trio Visual+ system
• Poly Trio VisualPro system

The Poly Trio 8300 system is not supported in Skype for Business or Microsoft Teams environments.

Note: The Poly Trio 8500 system, Poly Trio 8800 system, and Poly Trio Visual+ accessory are also known as the Polycom Trio 8500 system, Polycom Trio 8800 system, and Polycom Trio Visual+ accessory or Polycom RealPresence Trio 8500 system, Polycom RealPresence Trio 8500 system, and Polycom RealPresence Trio Visual+ accessory. The Poly Trio VisualPro system is also known as the Polycom Trio VisualPro system.

Audience, Purpose, and Required Skills

This guide is written for a technical audience.
You must be familiar with the following concepts before beginning:
• Current telecommunications practices, protocols, and principles
• Telecommunication basics, video teleconferencing, and voice or data equipment
• Open SIP networks and VoIP endpoint environments

Related Poly and Partner Resources

See the following sites for information related to this product.
• The Polycom Support Site is the entry point to online product, service, and solution support information including Licensing & Product Registration, Self-Service, Account Management, Product-Related Legal Notices, and Documents & Software downloads.
• 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 Polycom 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 Polycom Partner Network 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 Polycom Collaboration Services help your business succeed and get the most out of your investment through the benefits of collaboration.
Getting Started

Topics:

- Microsoft Qualified Phones
- Skype for Business Topologies
- Poly Trio System Interoperability with Microsoft
- Prerequisites - On-Premises Deployments
- UC Software File Formats for Skype for Business

This guide provides general guidance on installing and provisioning with Polycom UC Software and shows you how to deploy Poly devices in Microsoft environments.

Support for Lync 2010 is limited to testing of basic call scenarios. Microsoft support of Lync and Skype for Business is documented on Microsoft’s website. Microsoft does not currently support IP phones on Lync 2010. For information, see [IP Phones on Microsoft Support](https://support.microsoft.com/en-us/help/277385).

Microsoft Qualified Phones

Poly offers Poly Trio systems already configured for use with Skype for Business on-premise deployments or Skype for Business Online. Poly Trio systems include Microsoft-qualified UC Software with a Poly feature license that enable you to start up and register with default Microsoft settings.

Feature Licenses

Poly devices purchased and shipped with a Skype or Lync Base Profile include a Poly feature license to register with Skype for Business, Lync Server, and Office 365.

If you do not purchase devices with a configured Skype or Lync Base Profile, you can use Poly phones in a Skype for Business, Lync Server, or Office 365 environment for trial purposes, without purchasing a license, for a maximum of 30 days.

For information about purchasing a Poly feature license, talk to your reseller or sales representative.

Skype for Business Topologies

Poly support for a Skype for Business topology varies by environment.

Supported Skype for Business Topologies

The following table lists Poly support for each Skype for Business topology.

<table>
<thead>
<tr>
<th>Poly-Supported Skype for Business Topologies</th>
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<tr>
<td><strong>Topology</strong></td>
</tr>
<tr>
<td>On-premises</td>
</tr>
</tbody>
</table>
Unsupported Skype for Business Topologies
The following table lists Skype for Business topologies that Poly doesn’t support.

<table>
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<th>Active Directory</th>
<th>Skype for Business</th>
<th>Exchange</th>
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<tr>
<td>Hybrid Voice/Cloud Connector Edition</td>
<td>On-premises</td>
<td>Online</td>
<td>Online</td>
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<tr>
<td>Office 365 Multi-tenant (O365MT)</td>
<td>Online</td>
<td>Online</td>
<td>Online</td>
</tr>
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<td>On-premises</td>
<td>On-premises</td>
<td>Online</td>
</tr>
<tr>
<td></td>
<td>On-premises</td>
<td>Online</td>
<td>Online</td>
</tr>
</tbody>
</table>

Poly Trio System Interoperability with Microsoft

Poly Trio systems support integration with:
- Skype for Business on-premises.
- Skype for Business Online including Microsoft Skype for Business Cloud PBX in Microsoft Office 365.
- Poly Trio Visual+ system interoperability with Skype for Business on-premises and Online (O365) is Poly supported but not Microsoft qualified.
- The migration of users from Skype for Business on-premises to Office 365
- Microsoft Exchange on-premises 2013 and 2010
- Exchange Online services
- Lync Server 2013 and Lync Server 2010 (audio only) for on-premise deployments.

Note: For full lists of Poly-supported Microsoft environments, features, client versions, and products tested, see the Poly Trio Solution - Release Notes on Poly Trio.

Prerequisites - On-Premises Deployments

Before you set up Poly devices for an on-premises Skype for Business deployment, ensure that you complete the following tasks:
• Set the server log levels to capture only low-level events. For information on setting logging levels, see Set-CsUCPhoneConfiguration on Microsoft Docs.

• Disable automatic device update by setting:
  ◦ Set-CsIPPhonePolicy -EnableDeviceUpdate $False  For more information see Set-CsIPPhonePolicy on Microsoft TechNet.
  ◦ device.prov.lyncDeviceUpdateEnabled.set="1"
  ◦ device.prov.lyncDeviceUpdateEnabled="0"

UC Software File Formats for Skype for Business

Poly offers UC Software for Skype for Business in two file formats:

• Combined or Split sip.ld.

• Poly offers UC Software in CAB file format. This Microsoft Windows archive file format, recommended by Microsoft for customer premises equipment (CPE), safely compresses data and embeds digital certificates.

This deployment guide refers to two configuration file templates:

• SkypeTrioSharedExample.cfg. This template file for the Poly Trio system provides you with all required parameters and default settings to register with Skype for Business Server.

• 000000000000.cfg. Use this master configuration file to load SkypeTrioSharedExample.cfg and all other configuration files containing settings you want to load to devices from a central provisioning server. For details on using template and master configuration files, see the Poly Trio Solution - Administrator Guide.

Note: All template files, Polycom UC Software, and supporting documentation is available on Poly Trio Support.
Provisioning Phones for Skype for Business

Topics:

- Configuring In-Band Provisioning Settings
- Set Up Polycom UC Software
- Provisioning Skype for Business Phones
- Provisioning and Updating Poly Trio Systems with a USB Device
- Configure the Network

Poly recommends using a centralized provisioning server when provisioning multiple phones. Centralized provisioning enables you to configure phones with the same settings, create phone groups, and customize single phones.

Configuring In-Band Provisioning Settings

You must provision phones using either in-band provisioning or your provisioning server and not both.

Where settings conflict, Skype for Business in-band provisioning device settings take precedence over the same settings configured on your provisioning server. If you are using your own provisioning server, avoid phone update loops by configuring lync.provisionDeviceParams.enabled=0 to disable the following in-band provisioning device settings sent from the Skype for Business Server or Skype for Business Online:

- EnableDeviceUpdate
- IPPhoneAdminPasswd
- LocalProvisioningServerAddress
- LocalProvisioningServerUser
- LocalProvisioningServerPassword
- LocalProvisioningServerType
- ucDiffServVoice

**lync.provisionDeviceParams.enabled**

1 (default) - Enable (accept) in-band provisioning device settings sent from Skype for Business.
0 - Disable (block) in-band provisioning device settings sent from Skype for Business.
Set Up Polycom UC Software

After you power your devices and set up the network, set up the Polycom UC Software.

The latest UC Software for Poly Trio systems registered with Microsoft deployments is available at Poly Trio on Polycom Support.

Note: To avoid placing the phone in a continuous reboot cycle, do not provision phones with UC Software from both a Microsoft server and your own provisioning server.

Procedure

1. Set up a provisioning server on your computer and create a root directory to hold all of the required UC Software, configuration files, and subdirectories. Name the directory to identify it as containing the Polycom UC Software release.

   To set up your own provisioning server, you need an XML editor, such as XML Notepad, installed on your computer. Your provisioning, or boot server must support one of the FTP, FTPS, TFTP, HTTP, or HTTPS protocols, FTP being the most common. FileZilla Server is a free FTP solution.

2. Decide if you are provisioning your phones from Skype for Business Server or using your own provisioning server.

   Deploying UC Software in CAB file format provisions the phones and enables default feature functionality, including the automatic software update feature. However, if you want to change or customize default functionality of the phone features, you need to set up and edit Polycom UC Software configuration files on your own provisioning server and send the custom settings to the phones.

3. Download, save, and extract UC Software to the root directory you created.

   • If you are deploying UC Software from Skype for Business Server, download the CAB file version of Polycom UC Software.

   • If you are deploying phones from your own provisioning server, download the split or combined version of Polycom UC Software in XML format.

4. After the UC Software directory is extracted, open the folder in your root directory.

5. Configure a Call Park Orbit Policy.

   You must configure a call park orbit policy to enable the call park feature. See Configuring Call Park on Microsoft TechNet.

Provisioning Skype for Business Phones

The method labeled device.set is an advanced method for users familiar with configuration files and uses centralized provisioning to set the Base Profile for multiple phones.

The Base Profile is a provisioning option available on Skype for Business-enabled devices that simplifies the process of registering your devices with Skype for Business. The Base Profile displays in the phone’s menu system and varies by phone model. The Base Profile automates registration with a default set of configuration parameters and settings; you cannot modify or customize the Base Profile or feature settings. Because you can provision only a single phone at a time from the local phone menu, use centralized provisioning for deployments of greater than 20 devices requiring only default Skype for Business settings.
If you are using Polycom UC Software 5.1.1 or later, the per-phone Web Configuration Utility is disabled by default and you cannot register phones using the Web Configuration Utility. If you want to configure phone options using a phone's Web Configuration Utility after registering the phone with the Skype for Business Server, you must enable access to the Web Configuration Utility.

For complete information on provisioning Poly Trio with UC Software, see the Poly Trio Systems Administrator Guide on Poly Trio Support.

Centralized Provisioning

Use a central provisioning server when provisioning multiple phones to:

• Configure multiple devices automatically
• Facilitate automated software updates
• Receive automatic log files
• Add, remove, or manage features and settings to multiple phones simultaneously
• Create phone groups and modify features and settings for each phone group

Note: Using an existing server to deploy your provisioning server can affect performance of your Skype for Business deployment. Misconfiguration or nonstandard deployment of the Microsoft Internet Information Services (IIS) web server may affect your ability to obtain accurate Microsoft support.

Centralized Provisioning Methods

Use one of the following methods to centrally deploy multiple devices:

• Use Skype for Business Online or Microsoft Exchange Online to set up phones and configure features.

• Download UC Software in CAB file format and place the software on Skype for Business Server. Default feature settings are applied to all your phones.
  ◦ This method requires you to set up your own provisioning server. Setting up your own provisioning server enables you to customize feature settings using the template configuration files included in the UC Software download. With this method, users can sign in with their credentials from the phone's interface.

• Use device.* parameters to configure multiple devices and only if you are familiar with centralized provisioning and configuration files.

Set Up Phones with Skype for Business Online and Exchange Online

Skype for Business Online and Microsoft Exchange Online provide applications and services including email and social networking, Exchange Server, SharePoint, Yammer, MS Office web applications, and Microsoft Office software.

Poly offers Skype for Business Online and Exchange Online for:

• Poly Trio systems

If you need to configure media ports for Skype for Business Online deployments, see Skype for Business Online for specific port numbers.

When using Skype for Business Online and Microsoft Exchange Online, note the following:

• You must use TLS-DSK to authenticate the phones
• The phones support use of ZTP staging for software upgrades

Procedure
1. Install and open the Skype for Business Online, Windows PowerShell Module.
2. Type the command Import-Module SkypeOnlineConnector.
3. Connect to the Skype for Business tenancy using the command:
   ```powershell
   $session=New-CsOnlineSession -Credential $cred
   ```
4. When the Powershell credential request dialog displays, enter your Skype for Business user name and password.
5. Import the session with the command.
   ```powershell
   Import-PSSession $session -Verbose -AllowClobber
   ```
6. Set policies with the command: CsIPPhonePolicies.

Deploy UC Software from Skype for Business Server
If you downloaded UC Software files in CAB format, complete the following procedure to deploy UC Software from Skype for Business Server.

Procedure
1. Download and save UC Software in CAB file format to your computer.
   You can obtain UC Software for Poly Trio on Poly Trio Support.
2. Go to Skype for Business Server and copy the CAB file to a C: drive directory.
3. Use the Skype for Business Server Management Shell to go to a particular directory.
4. In the Skype for Business Server Management Shell, run the following import command:
   ```powershell
   Import-CsDeviceUpdate -Identity service:1-WebServices-1 -FileName UCUpdates.cab
   ```
5. In the Skype for Business Control Panel, go to Clients > Device Update to view UC Software versions available on Skype for Business Server.
6. Go to Clients > Action > Approve to approve the UC Software.

Deploy UC Software for Poly Trio Systems from a Provisioning Server
Complete the following steps to deploy UC Software from a provisioning server.

Procedure
1. Locate the following Skype for Business configuration files templates on Poly Trio Support:
   - SkypeTrioSharedExample.cfg. This template file contains all default settings you need to register with Skype for Business Server.
   - 000000000000.cfg. This is the master configuration file. In the CONFIG_FILES field, enter the names of all the configuration files containing settings you want to apply to the phones.
2. Place these configuration files in your root provisioning directory, create a copy of each file, and rename them keeping the suffix .cfg.
Using edited copies of the template files ensures that you have unedited template files containing the default values.

3. If you are manually installing a root CA security certificate, go to step 4.
   If not, go to step 5.

4. Open your renamed file SkypeTrioSharedExample.cfg.
   If you are manually configuring a root CA certificate, configure the following two parameters:
   • Enter the root CA certificate, in Base64 format, in sec.TLS.customCaCert.1.
   • Set the application profile in sec.TLS.profileSelection.SIP.

5. Open the master configuration file 000000000000.cfg.
   In the CONFIG_FILES field, enter the name of your Skype for Business configuration file and save.
   Ensure that multiple configuration file names are comma separated.
   Configuration files you enter in the CONFIG_FILES field are read left to right. If you have configured the same setting in two configuration files, the setting listed first (left) is applied. Ensure that you do not have the same parameter in more than one configuration file.
   If you do not want to use the Microsoft Autodiscover service, use the following parameters to disable the feature and manually set the Skype for Business server address and SIP signaling port using:
   • Disable Autodiscover: reg.1.serverAutoDiscovery=0
   • Server: reg.1.server.1.address=<server_address>
   • Port: reg.1.server.1.port=<port_number>

6. Power on your phones.
   Your phones display the Skype for Business Sign In screen.

Set the Base Profile with device.* Parameters

This section shows you how to provision multiple devices using parameters in the device.cfg template configuration file included in your UC Software download.

Poly recommends using device.* parameters to configure multiple devices and only if you are familiar with centralized provisioning and configuration files.

Procedure

1. Locate the device.cfg template configuration file and place the device.cfg file on your provisioning server.
2. Locate and change the values of the following parameters:
   • device.baseProfile= <Base Profile value>
   • device.set=1
   • device.baseProfile.set=1
3. Rename and save the file.
4. Power on the phones.
5. Once boot-up is complete, remove device.set from the template configuration file and save the file again after removing device.set.
Manual Provisioning Methods
You can use per-phone, manual provisioning methods to register Poly devices with Skype for Business.

All manual provisioning methods set the Base Profile of a phone to Skype. The Base Profile is a feature on each phone that, when set to Skype, automatically provisions the phone with the default parameters required to work with Skype for Business.

When you use configuration files to provision the phones with Skype for Business, the phone Base Profile stays set to Generic. You do not need to set the Base Profile to Skype when provisioning with configuration files.

Set the Base Profile from the Settings Menu
You can set the Base Profile to Skype from the phone Settings menu.

Procedure
1. Go to Settings > Advanced > Administration Settings > Network Configuration, and set Base Profile to Skype.
2. Select Back > Save Configuration.
   The phone automatically restarts and displays the Sign In screen. Users can now sign in.

Set the Base Profile Using the Web Configuration Utility
You can use the Web Configuration Utility to manually set a phone’s Base Profile to Skype.

As part of a UC Software security update, phone access to the Web Configuration Utility is disabled by default when the phone registers with Skype for Business Server. You must manually enable the Web Configuration Utility to configure phone settings. You cannot configure sign-in credentials using the Web Configuration Utility.

Procedure
1. Provide power to your phones and allow the phones to complete the power-up process.
2. Get the IP address of each phone in your deployment by going to Settings > Status > Platform > Phone.
   The IP address displays in the IP: field.
3. Enter the phone’s IP address in the address bar of a web browser.
   The Web Configuration Utility login screen displays.
4. Choose Admin to log in as an administrator, and then enter the administrator password (default 456) and click Submit.
5. On the Home page, navigate to the Simple Setup menu.
6. From the Base Profile drop-down, choose Skype, and click Save at the bottom of the page.
7. In the confirmation dialog, choose Yes.
   The phone automatically restarts.
   Users can now sign in.

Related Links
Accessing the Web Configuration Utility on page 183
Provisioning and Updating Poly Trio Systems with a USB Device

You can store configuration files and settings on a USB flash memory device and provision or update Poly Trio systems during normal functioning or in recovery mode.

Recovery mode enables you to recover the Poly Trio systems or Poly Trio Visual+ systems to a normal provisioning state when other methods are not working or not available.

Note: The Poly Trio system automatically provisions and updates a connected and paired Poly Trio Visual+ system. You can, however, provision and update the Poly Trio Visual+ separately, for example, if you need to support IEEE 802.1x or provision on networks without DHCP.

Poly Trio systems support only File Allocation Table (FAT) file systems and Poly recommends using FAT32.

If other USB devices are attached to Poly Trio system, you must remove them and ensure that Poly Trio system correctly recognizes the USB device you want to install from.

If you use a USB device to provision while centralized provisioning server is in use, the USB configuration files override server settings. When you remove the USB device, the device returns to settings you configured on the server. Note, however, that the original server settings are subject to direct.set changes initiated by the USB device. The direct.set changes can alter parameters on the provisioning server and change basic provisioning settings.

When you attach a USB device, you are prompted for the administrator password (default 456). The Poly Trio system downloads and installs the configuration files and you can remove the USB when complete.

Provision or Update Poly Trio System Software Manually with a USB Device

You can manually provision a Poly Trio 8500 or 8800 system, one at a time, with a USB during normal phone functioning. The Poly Trio 8300 does not support USB provisioning.

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 UC Software from Poly Trio on Polycom Support.
3. Copy the configuration files you want to use to the root of the USB device.

The minimum required configuration files are as follows:

- **Master configuration file**: 000000000000.cfg
- **Poly Trio 8500**: 3111-66700-001.sip.ld
- **Poly Trio 8800**: 3111-65290-001.sip.ld

If you are using the Poly Trio Visual+, do one of the following:
- Rename the Poly Trio system sip.ld file to use the Poly Trio Visual+ part number: 3111-66420-001.sip.ld.
- Rename the Poly Trio system sip.ld file to sip.ld (delete 3111-xxxxx-001.) to use the same file for the Poly Trio system and Poly Trio Visual+.

4. Insert the USB into a USB port on the Poly Trio system or Poly Trio Visual+, follow the prompt for the Administrator password, and power cycle the device.
   Allow time for the devices to reboot.

**Place the Poly Trio System into Recovery Mode**

You can place Poly Trio systems into recovery mode when you want to provision with a USB and the provisioning process is not working during normal phone functioning.

**Procedure**

1. Ensure that the phone is powered off.
2. Plug in a USB device.
3. Power up the phone.
4. When the Poly logo displays, press and hold with four fingers the four corners of the LCD screen until the LEDs blink.
   (Blinking rotates between orange/red/green/off).
5. Remove fingers from the LCD screen.
   Recovery process is complete when the device reboots.

**Place Poly Trio Visual+ into Recovery Mode**

You can place the Poly Trio Visual+ into recovery mode when you want to provision with a USB and the provisioning process is not working during normal phone functioning.

**Procedure**

1. Ensure that the phone is powered off.
2. Plug in a USB device.
3. Power up the phone.
4. When the LED initially turns from on to off, press and hold the pairing button until the pairing LED turns orange and release the button.
   The pairing LED blinks. (Blinking rotates between orange/red/green/off).
   Recovery process is complete when the device reboots.

**Configure the Network**

Configure the following network settings to register Poly devices with Skype for Business.

**Procedure**

1. Set up or verify Domain Name System (DNS) service (SRV) records to allow the devices to discover Skype for Business server automatically.
For information on creating and verifying DNS SRV records, see the latest documentation on Microsoft TechNet.

2. (Optional) If you are setting Microsoft Call Admission Control (CAC) refer to Microsoft Plan for call admission control in Skype for Business Server 2015 for required bandwidth guidelines.

3. Obtain a root certificate authority (CA) security certificate using one of the following methods:

<table>
<thead>
<tr>
<th>Certificate Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lightweight Directory Access Protocol (LDAP) Domain Name System (DNS)</td>
<td>Devices running UC Software 5.3.0 or later that you are registering with Skype for Business automatically fetch the root certificate using a LDAP DNS query. Phones you register with Skype for Business are enabled with this feature by default and no additional configuration is required.</td>
</tr>
<tr>
<td>Dynamic Host Configuration Protocol (DHCP) Option 43</td>
<td>When provisioning phones from within an enterprise, you can use DHCP Option 43 to download a private CA root security certificate used by Skype for Business. The security certificate is required to support secure HTTPS and TLS connections. In conjunction with DHCP Option 43, ensure that your devices can access Skype for Business Server Certificate Provisioning Web Service over HTTP (TCP 80) and HTTPS (TCP 443). Note: If you configure DHCP Option 43 in on-premises Skype for Business deployments, the phone displays only the PIN Authentication menu to users. For more details and troubleshooting information on DHCP Option 43, see Microsoft TechNet.</td>
</tr>
</tbody>
</table>
| DHCP Option 66 | Use this method if you are using a provisioning server or set DHCP options using one of the following methods:  
  • DHCP Option 160. If you are using devices with a Skype or Lync Base Profile, use Option 161 with the address (URL or IP address) of the provisioning server. You can set the provisioning server address or URL on the device menu.  
  • DHCP Option 161. If you are using devices with an Open SIP Base Profile, use Option 160 with the address (URL or IP address) of the provisioning server. You can set the provisioning server address or URL on the device menu or set the Base Profile using the Web Configuration Utility. |

4. Set up each user with a Skype for Business account and credentials.

Related Links
Certificates on page 81

Skype for Business DHCP Options and Sub-Options on Poly Trio Solution

The following table lists the Skype for Business options and sub-options for DHCP Option 43 supported on Poly Trio systems.

For more detailed information on sub-options and URL formats for Microsoft, see Microsoft TechNet.

<table>
<thead>
<tr>
<th>DHCP Options</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option 1- Subnet mask</td>
<td>The phone parses the value from Option 43.</td>
</tr>
<tr>
<td>Option</td>
<td>Result</td>
</tr>
<tr>
<td>-------------------------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>Option 2 - Time offset</td>
<td>The phone parses the value.</td>
</tr>
<tr>
<td>Option 3 - Router</td>
<td>The phone parses the value.</td>
</tr>
<tr>
<td>Option 4 - Time server</td>
<td>The phone parses the value.</td>
</tr>
<tr>
<td>Option 6 - Domain Name Server</td>
<td>The phone parses the value.</td>
</tr>
<tr>
<td>Option 7 - Domain Log server</td>
<td>The phone parses the value.</td>
</tr>
<tr>
<td>Option 15 - Domain Name</td>
<td>The phone parses the value.</td>
</tr>
<tr>
<td>Option 42 - Network Time Protocol server</td>
<td>The phone parses the value.</td>
</tr>
<tr>
<td>Option 66 - TFTP Server Name</td>
<td>The phone parses the value.</td>
</tr>
</tbody>
</table>

**DHCP Sub-Options**

<table>
<thead>
<tr>
<th>Sub-Option</th>
<th>Example Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-option 1 - UC Identifier</td>
<td>UC client name</td>
</tr>
<tr>
<td>Sub-option 2 - URL Scheme</td>
<td>https</td>
</tr>
<tr>
<td>Sub-option 3 - Web Server FQDN</td>
<td>lyncsvrWebPoolFQDN</td>
</tr>
<tr>
<td>Sub-option 4 - Port</td>
<td>443</td>
</tr>
<tr>
<td>Sub-option 5 - Relative Path for Certificate Provisioning Web Service</td>
<td>/CertProvisioningService.svc</td>
</tr>
</tbody>
</table>

The system assembles the sub-option values into a single URL, like the following example: `https://lyncsvrWebPoolFQDN:443/CertProv/CertProvisioningService.svc.`
Microsoft Exchange Integration

Topics:

• Integrating with Microsoft Exchange
• Poly Trio Solution with Skype for Business
• Private Meetings in Microsoft Exchange
• Configuring the Microsoft Exchange Server
• Join a Meeting with a SIP URI
• Microsoft Exchange Advanced Login
• Troubleshooting

If you have a Skype for Business, Office 365, Lync Server 2010 or 2013 deployment, you can integrate with Microsoft Exchange Server.

You can set up visual voicemail, call log synchronization, Outlook contact search, and Skype for Business Address Book Service (ABS) adaptive search. Each of these features is enabled by default on Poly phones registered with Skype for Business.

After the phone is connected with the Exchange Server, you can:

• Verify the status of Exchange Server services on each phone.
• View the status of each service in the Web Configuration Utility.

Integrating with Microsoft Exchange

You can integrate with Microsoft Exchange using one of the following methods:

• Exchange Server auto-discover
• Provision the phone with the Microsoft Exchange address
• Web Configuration Utility

Note: If you enter sign-in credentials to the configuration file, phone users must enter credentials to the phone Sign In screen.

Provision the Microsoft Exchange Calendar

You can provision your Poly Trio systems with the Microsoft Exchange calendar.

When you connect a Poly Trio system to Skype for Business, a Calendar icon displays on the phone Home screen that enables users to access features. Users can view and join Outlook calendar events directly from the Poly Trio system which displays the day and meeting view for scheduled events. You can't schedule calendar events or view email from the phone.

When you pair Poly Trio with a Poly Trio Visual+, Trio VisualPro, or Polycom RealPresence Group Series system, you can configure whether or not users receive reminder notifications on the display monitor and whether or not an alert sound accompanies reminder notifications.
If you are using the Poly Trio Solution, parameters are included in Example Configuration File for Poly Trio Collaboration Kit with Skype for Business on Poly Trio > Documentation > Setup Documents.

Enable Microsoft Exchange Calendar Using the Web Configuration Utility

You can use the Web Configuration Utility to manually enable your phones with the Microsoft Exchange calendar.

This is useful for troubleshooting if auto-discovery is not working or mis-configured. This method applies only to a single phone at a time.

**Procedure**

1. Enable access to the Web Configuration Utility if the phone is registered with Skype for Business. For instructions, see Accessing the Web Configuration Utility.
2. Log in to the Web Configuration Utility as Admin (default password 456).
3. Go to **Settings > Applications > Exchange Applications**, and expand **Exchange Applications**.
4. In the **Exchange Calendar** field, select **Enable**.
5. Enter the exchange web services URL using a Microsoft Exchange Server URL, for example https://<mail.com>/ews/exchange.asmx.
   
   In this example, the URL part <mail.com> is specific to an organization.
6. At the bottom of the browser page, click **Save**.
7. When the confirmation dialog displays, click **Yes**.

Your Exchange Calendar is successfully configured and the Calendar icon displays on your phone screen.

**Related Links**

[Accessing the Web Configuration Utility](#) on page 183

**Calendar Meeting Details**

You can use **exchange.meeting.show*** parameters to show or hide the following meeting details from the calendar display on the Poly Trio system screen and monitor(s) connected to the paired Poly Trio Visual+, Trio VisualPro, or RealPresence Group Series system:

- Subject.
- Location.
- Invitee(s).
- Agenda/Notes. When you hide Agenda/Notes, a message indicates the meeting is private.
- Meeting organizer. The organizer does not display for meetings displayed on the monitor.
- Show More Actions. If multiple numbers are available to dial into a meeting, More Actions displays in Meeting Details to allow users to choose the dial-in number.

**Calendar Meeting Details Parameters**

Use the following parameters to configure calendar meeting details.

**exchange.meeting.showAttendees**
1 (default) - Show the names of the meeting invitees.
0 - Hide the names of the meeting invitees.

**exchange.meeting.showDescription**

1 (default) - Show Agenda/Notes in Meeting Details that display after you tap a scheduled meeting on the Poly Trio system calendar.
0 - Hide the meeting Agenda/Notes.

**exchange.meeting.showLocation**

1 (default) - Show the meeting location.
0 - Hide the meeting location.

**exchange.meeting.showMoreActions**

1 (default) - Show More Actions in Meeting Details to allow users to choose a dial-in number.
0 - Hide More Actions in Meeting Details.

**exchange.meeting.showOnlyCurrentOrNext**

0 (default) - Disable the limitation to display only the current or next meeting on the Calendar.
1 - Display only the current or next meeting on the Calendar.

**exchange.meeting.showOrganizer**

1 (default) - Show the meeting organizer in the meeting invite.
0 - Hide the meeting organizer in the meeting invite.

**exchange.meeting.showSubject**

1 (default) - Show the meeting Subject.
0 - Hide the meeting Subject.

**exchange.meeting.showTomorrow**

1 (default) - Show meetings scheduled for tomorrow as well as for today.
0 - Show only meetings scheduled for today.

**Meeting Reminder Messages**

Poly Trio systems display several meeting reminder messages.

A meeting reminder displays on the Poly Trio system screen at five minutes and one minute before the start of a meeting. The five-minute reminder disappears after 30 seconds if not dismissed. If the one-minute reminder has not been dismissed, the reminder message displays on the Poly Trio system Home
Screen during the duration of the meeting. The one-minute reminder disappears when the meeting ends or when the next meeting reminder pops up, whichever comes first.

When multiple meetings are booked at the same time or overlap, a message displays available meetings. Users can tap the message to display the calendar day view and choose which meeting to join.

You can also show or hide all-day events, configure the maximum number of future meetings, or configure a user requirement to enter the Skype for Business conference ID when a meeting organizer marks a meeting as ‘Private’. When meeting organizers mark a meeting invitation as Private in Outlook, the Poly Trio system displays the meeting invite on the Poly Trio system calendar and TV screens with ‘Private Meeting’ in the subject line and a lock icon. The conference ID is included in the Outlook invitation.

**Verify the Microsoft Exchange Integration**

You can verify if all of the Exchange services are working.

**Procedure**

1. Go to **Status > Diagnostics > Warnings** on the phone.
2. View the status of each service in the Web Configuration Utility.

**Poly Trio Solution with Skype for Business**

You can deploy a Poly Trio system with Skype for Business Online, Skype for Business 2013, and Lync 2010 on-premises.

For a list of available features and instructions on deploying Poly Trio solution with Skype for Business and Lync Server, see the latest *Poly Trio Solution in Microsoft Environments Administrator Guide* on Poly Trio.

When you register a Poly Trio system with Skype for Business, a Calendar icon displays on the phone Home screen that enables users to access features. Users can view and join Outlook calendar events directly from the Poly Trio system. This displays the day and meeting view for scheduled events; the month view is not currently available. Note you cannot schedule calendar events or view email from the phone.

When you pair a Poly Trio system registered with Skype for Business to a Poly Trio Visual+ system, the monitor’s Home screen automatically displays the Calendar and up to five meetings scheduled within the next 24-48 hours. You can configure whether or not users receive reminder notifications on the display monitor and whether or not an alert sound accompanies reminder notifications.
Private Meetings in Microsoft Exchange

When a Skype for Business meeting is set to Private, you can choose which meeting information to show or hide.

Skype for Business Private Meeting Parameters

Use the following parameters to configure Skype for Business private meetings.

echange.meeting.private.showAttendees

0 (default) - Meetings marked as private in Outlook do not show the list of meeting attendees and invitees on the Poly Trio calendar.
1 - Meetings marked as private in Outlook show the list of meeting attendees and invitees on the Poly Trio calendar.

echange.meeting.private.showDescription

0 (default) - Meetings marked as private in Outlook do not display a meeting description on the Poly Trio calendar.
1 - Meetings marked as private in Outlook display a meeting description on Poly Trio calendar.

echange.meeting.private.showLocation

0 (default) - Meetings marked as private in Outlook do not display the meeting location on the Poly Trio calendar.
1 - Meetings marked as private in Outlook display the meeting location on the Poly Trio calendar.

echange.meeting.private.showSubject

0 (default) - Meetings marked as private in Outlook do not display a subject line on Poly Trio calendar.
1 - Meetings marked as private in Outlook display a subject line on Poly Trio calendar.

echange.meeting.private.showMoreActions

1 (default) - Meetings marked as private in Outlook display the More Actions button, when applicable.
0 - Meetings marked as private in Outlook do not display the More Actions button.

echange.meeting.private.showOrganizer

1 (default) - Meetings marked as private in Outlook display the name of the meeting organizer on the Poly Trio calendar.
0 - Meetings marked as private in Outlook display the name of the meeting organizer on the Poly Trio calendar.
**exchange.meeting.private.enabled**

1 (default) - The Poly Trio considers the private meeting flag for meetings marked as private in Outlook.

0 - Treat meetings marked as private in Outlook the same as other meetings.

**exchange.meeting.private.promptForPIN**

0 (default) - Disable the Skype for Business Conference ID prompt that allows users to join meetings marked as private.

1 - Enable the Skype for Business Conference ID prompt that allows users to join meetings marked as private.

---

**Configuring the Microsoft Exchange Server**

You can configure the following settings to take advantage of Microsoft Exchange services on your phones.

---

**Note:**

For help with Lync Server 2010, refer to Microsoft [Configure Exchange Services for the Autodiscover Service](#).

For help with Lync Server 2013, refer to Microsoft [Configuring Unified Messaging on Microsoft Exchange Server to work with Lync Server 2013](#).

---

**Visual Voicemail**

On the exchange server, enable unified messaging and enable messages to play on the phone for each user.

If you disable feature.exchangeVoiceMail.enabled, the Message Center and Skype for Business Voice mail menus display the message: Skype for Business Server only plays voicemail and you cannot download voicemails or play locally on the phone.

**Synchronizing Call Logs**

On the Exchange server, you can enable the option to save calls logs to each user’s conversation history in Outlook.

**Address Book Service (ABS) Adaptive Search**

You can enable the ABS service on the Exchange server.

There are three possible configurations.

- Outlook and ABS are both enabled by default. When both are enabled, the phone displays the Skype for Business Directory.
- If you disable Outlook and enable only ABS, the phone displays the Skype for Business Directory.
- If you enable Outlook and disable ABS, the Outlook Contact Search displays in Directories.
Poly Trio systems registered with Skype for Business server display a one-touch Join button that allows you to join a Skype for Business conference in a federated environment, even if you haven’t configured Transport Neutral Encapsulation Format (TNEF).

**Microsoft Exchange Parameters**

The following parameters configure Microsoft Exchange integration.

**exchange.meeting.alert.followOfficeHours**

1 (default) - Enable audible calendar alerts during business hours.
0 - Disable audible calendar alerts.

**exchange.meeting.alert.tonePattern**

positiveConfirm (default) - Set the tone pattern of the reminder alerts using any tone specified by se.pat.*.

**exchange.meeting.alert.toneVolume**

10 (default) - Set the volume level of reminder alert tones.
0 - 17

**exchange.meeting.allowScrollingToPast**

0 (default) - Do not allow scrolling up in the Day calendar view to see recently past meetings.
1 - Allow scrolling up in the Day calendar view to see recently past meetings.

**exchange.meeting.hideAllDayNotification**

0 (default) - All-day and multi-day meeting notifications display on the Calendar screen.

**exchange.meeting.parseOption**

Select a meeting invite field to fetch a VMR or meeting number from.
Location (default)
All
LocationAndSubject
Description

**exchange.meeting.parseWhen**

NonSkypeMeeting (default) - Disable number-searching on the Calendar for additional numbers to dial while in Skype Meetings.
Always - Enable number-searching on the Calendar for additional numbers to dial while in Skype Meetings.
**exchange.meeting.phonePattern**

NULL (default)

string

The pattern used to identify phone numbers in meeting descriptions, where "x" is a digit and "|" separates alternative patterns (for example, xxx-xxx-xxxx|604.xxx.xxxx).

**exchange.meeting.realConnectProcessing.outboundRegistration**

Choose a line number to use to make calls on Polycom RealConnect technology.

2 (default)

1 - 34

Change causes system to restart or reboot.

**exchange.meeting.realConnectProcessing.prefix.domain**

Define the One-Touch Dial meeting invite prefix domain. Example: "mypolycom.com"

**exchange.meeting.realConnectProcessing.prefix.value**

Define the One-Touch Dial meeting invite prefix value.

**exchange.meeting.realConnectProcessing.skype.enabled**

0 (default) – Disable the Skype for Business meeting on Polycom RealConnect technology.

1 - Enable the Skype for Business meeting on Polycom RealConnect technology.

Change causes system to restart or reboot.

**exchange.meeting.reminderEnabled**

1 (default) - Meeting reminders are enabled.

0 - Meeting reminders are disabled.

**exchange.meeting.reminderInterval**

300 seconds (default)

60 - 900 seconds

Set the interval at which phones display reminder messages.

**exchange.meeting.reminderSound.enabled**

1 (default) - The phone makes an alert sound when users receive reminder notifications of calendar events. Note that when enabled, alert sounds take effect only if exchange.meeting.reminderEnabled is also enabled.

0 - The phone does not make an alert sound when users receives reminder notifications of calendar events.
**exchange.meeting.reminderType**
Customize the calendar reminder and tone.
2 (default) - The reminder is always audible and visual.
1 - The first reminder is audible and visual reminders are silent.
0 - All reminders are silent.

**exchange.meeting.reminderWake.enabled**
1 (default) - The phone wakes from low power mode after receiving a calendar notification.
0 - The phone stays in low power mode after receiving a calendar notification.

**exchange.meeting.showAttendees**
1 (default) - Show the names of the meeting invitees.
0 - Hide the names of the meeting invitees.

**exchange.meeting.showDescription**
1 (default) - Show Agenda/Notes in Meeting Details that display after you tap a scheduled meeting on the Poly Trio system calendar.
0 - Hide the meeting Agenda/Notes.

**exchange.meeting.showLocation**
1 (default) - Show the meeting location.
0 - Hide the meeting location.

**exchange.meeting.showMoreActions**
1 (default) - Show More Actions in Meeting Details to allow users to choose a dial-in number.
0 - Hide More Actions in Meeting Details.

**exchange.meeting.showOnlyCurrentOrNext**
0 (default) - Disable the limitation to display only the current or next meeting on the Calendar.
1 - Display only the current or next meeting on the Calendar.

**exchange.meeting.showOrganizer**
1 (default) - Show the meeting organizer in the meeting invite.
0 - Hide the meeting organizer in the meeting invite.

**exchange.meeting.showSubject**
1 (default) - Show the meeting Subject.
0 - Hide the meeting Subject.

**exchange.meeting.showTomorrow**

1 (default) - Show meetings scheduled for tomorrow as well as for today.
0 - Show only meetings scheduled for today.

**exchange.menu.location**

Features (default) - Displays the Calendar in the global menu under Settings > Features.
Administrator - Displays the Calendar in the Admin menu at Settings > Advanced > Administration Settings.

**exchange.pollInterval**

The interval, in seconds, to poll the Exchange server for new meetings.
30000 (default)
4000 minimum
60000 maximum

**exchange.reconnectOnError**

1 (default) - The phone attempts to reconnect to the Exchange server after an error.
0 - The phone does not attempt to reconnect to the Exchange server after an error.

**exchange.server.url**

NULL (default)
string
The Microsoft Exchange server address.

**feature.EWSAutodiscover.enabled**

If you configure `exchange.server.url` and set this parameter to 1, preference is given to the value of `exchange.server.url`.

Lync Base Profile default is 1.
Generic Base Profile default is 0.
1 - Exchange autodiscovery is enabled and the phone automatically discovers the Exchange server using the email address or SIP URI information.
0 - Exchange autodiscovery is disabled on the phone and you must manually configure the Exchange server address.

**feature.exchangeCalendar.enabled**

Lync Base Profile default is 1.
Generic Base Profile default is 0.
0 - The calendaring feature is disabled.
1 - The calendaring feature is enabled.
You must enable this parameter if you also enable `feature.exchangeCallLog.enabled`. If you disable `feature.exchangeCalendar.enabled`, also disable `feature.exchangeCallLog.enabled` to ensure call log functionality.

**feature.exchangeContacts.enabled**
Lync Base Profile default is 1.
Generic Base Profile default is 0.
1 - The Exchange call log feature is enabled and users can retrieve the call log histories for missed, received, and outgoing calls.
0 - The Exchange call log feature is disabled and users cannot retrieve call logs histories.
You must also enable the parameter `feature.exchangeCallLog.enabled` to use the Exchange call log feature.

**feature.exchangeVoiceMail.enabled**
Lync Base Profile default is 1.
Generic Base Profile default is 0.
1 - The Exchange voicemail feature is enabled and users can retrieve voicemails stored on the Exchange server from the phone.
0 - The Exchange voicemail feature is disabled and users cannot retrieve voicemails from Exchange Server on the phone.
You must also enable `feature.exchangeCalendar.enabled` to use the Exchange contact feature.

**feature.exchangeVoiceMail.skipPin.enabled**
0 (default) - Enable PIN authentication for Exchange Voicemail. Users are required to enter their PIN before accessing Exchange Voicemail.
1 - Disable PIN authentication for Exchange Voicemail. Users are not required to enter their PIN before accessing Exchange Voicemail.

**feature.lync.abs.enabled**
Lync Base Profile default is 1.
Generic Base Profile default is 0.
1 - Enable comprehensive contact search in the Skype for Business address book service.
0 - Disable comprehensive contact search in the Skype for Business address book service.

**feature.lync.abs.maxResult**
Define the maximum number of contacts to display in a Skype for Business address book service contact search.

12 (default)
5 - 50

**feature.wad.enabled**

Do not disable this parameter if you are using Skype Online or Web Sign-In.

1 (default) – The phone attempts to use Web auto-discovery and if no FQDN is available, falls back to DNS.

0 - The phone uses DNS to locate the server FQDN and does not use Web auto-discovery. does not recommend disabling this parameter when using Skype for Business Online and Web Sign In.

**feature.contacts.readonly**

0 (default) - Skype for Business Contacts are editable.

1 - Skype for Business are read-only.

**up.oneTouchVoiceMail1**

Lync Base Profile default is 1.

Generic Base Profile default is 0.

0 - The phone displays a summary page with message counts. The user must press the Connect soft key to dial the voicemail server.

1 - The phone dials voicemail services directly (if available on the call server) without displaying the voicemail summary.

---

### Join a Meeting with a SIP URI

When you set up a meeting in the Calendar, the Poly Trio system displays a meeting reminder pop up.

If a dial-in number is available for the meeting, the reminder pop-up presents a Join button that joins you to the meeting. If a meeting lists multiple dial-in numbers or URIs for the meeting, by default the Join button automatically dials the first number.

- SIP URI
- Tel URI
- PSTN number
- IP dial
Join a Meeting with SIP URI Parameters

The following table lists the parameters that configure dial-in information.

**exchange.meeting.join.promptWithList**

Specifies the behavior of the Join button on meeting reminder pop-ups.
- 0 (default) - Tapping Join on a meeting reminder should show a list of numbers to dial rather than immediately dialing the first one.
- 1 - A meeting reminder does not show a list of numbers to dial.

**exchange.meeting.parseWhen**

Specifies when to scan the meeting's subject, location, and description fields for dialable numbers.
- NonSkypeMeeting (default)
- Always
- Never

**exchange.meeting.parseOption**

Specifies where to search for a dialable number.
- All (default)

**exchange.meeting.parseEmailsAsSipUris**

List instances of text like user@domain or user@ipaddress in the meeting description or subject under the More Actions pane as dialable SIP URIs.
- 0 (default) - it does not list the text as a dialable SIP URI
- 1 - it treats user@domain

**exchange.meeting.parseAllowedSipUriDomains**

List of comma-separated domains that will be permitted to be interpreted as SIP URIs
- Null (default)
- String (maximum of 255 characters)

Microsoft Exchange Advanced Login

You can configure your phone to support the Advanced Login feature which enables a dual sign-in mode for users to make calls and join meetings separately.

When you enable the Advanced Login feature, users can log in to multiple phones using one account to access the Exchange calendar and another account for making calls.
Microsoft Exchange Advanced Login Parameters

Use the following parameters to configure Microsoft Exchange Advanced Login.

`exchange.showSeparateAuth`

  0 (default) - Phone disables the dual user sign-in mode.
  1 - Phone enables the dual user sign-in mode.

`exchange.auth.email`

  This parameter configures the email address of the Exchange account.
  NULL (default)
  String (maximum of 255 characters)

`device.loginAltCred.domain`

  This parameter configures the domain of the Exchange account.
  NULL (default)
  String (maximum of 255 characters)

`device.loginAltCred.user`

  This parameter configures the User ID of Exchange account.
  NULL (default)
  String (maximum of 255 characters)

`device.loginAltCred.password`

  This parameter configures the password of Exchange Account.
  NULL (default)
  String (maximum of 32 characters)

`device.loginAltCred.domain.set`

  This parameter overrides the value set for `device.loginAltCred.domain` using other configuration methods like the phone menu or the Web Configuration Utility.
  0 (default)

`device.loginAltCred.user.set`

  This parameter overrides the value set for `device.loginAltCred.user` using other configuration methods like the phone menu or the Web Configuration Utility.
  0 (default)
device.loginAltCred.password.set

This parameter overrides the value set for device.loginAltCred.password using other configuration methods like the phone menu or the Web Configuration Utility.

0 (default)

Troubleshooting

If you experience issues with Microsoft Exchange integration, try the following solutions to resolve certain issues.

No Voicemail Audio with G.722 Configuration

Symptom:
Your Polycom phones are configured with G.722 and you don't hear audio when retrieving voicemail from the Microsoft Skype for Business Server.

Workaround:
Change the following parameters:

- Change voice.codecPref.G7221.24kbps from 0 to 5.
- Change voice.codecPref.G7221.32kbps from 5 to 0.
- Add voice.audioProfile.G7221.24kbps.payloadType and set it to 112.
Microsoft Teams for Poly Trio Systems

Topics:

▪ Microsoft Teams Base Profile Parameter
▪ Access Poly Trio System Settings in Microsoft Teams
▪ Access the Teams Base Profile
▪ Microsoft Teams Support for Poly Trio System Feature Settings

You can configure the Poly Trio system to run Microsoft Teams in Shared mode with the integrated Microsoft Teams user interface. In Shared mode, users can initiate and join audio-only Teams calls and meetings.

You can set the Poly Trio system's Base Profile to Microsoft Teams from the system's Settings menu or by setting the parameter device.baseProfile to MSTeams.

Note: When you set the Poly Trio system's base profile to MSTeams, Microsoft controls the Microsoft Teams software experience and performance on the Poly Trio system. Send all feedback and queries to Microsoft.

Keep in mind that Microsoft's Teams IP Phone policies has the default, or Global, policy configured for “Personal Mode.” Poly Trio 8500 and 8800 phones support Shared Mode only. Make sure you enable your Office 365 tenant and assign a Shared Mode policy to all accounts used on Poly Trio systems. Refer to documentation provided by Microsoft for details on setting IP Phone policies.

Limitations on Poly Trio with Microsoft Teams

The following features aren't available on Poly Trio with Microsoft Teams:

▪ Microsoft Teams isn't supported in on-premises deployments.
▪ Poly Trio doesn't support Microsoft Teams in Personal mode.
▪ The Poly Trio system in Microsoft Teams base profile doesn't support the Poly Trio Visual+ system, video calls, or content sharing.

Microsoft Teams Base Profile Parameter

You can use the parameter device.baseProfile to set the base profile to Microsoft Teams for the Poly Trio system.

For details on using Poly device parameters, see the Poly Trio Administrator Guide on Poly Trio Support.
Access Poly Trio System Settings in Microsoft Teams

After you set the Poly Trio system base profile to Microsoft Teams, you can access and modify device settings from the Microsoft Teams Portal or from the phone menu. The Poly Trio system offers a subset of settings when in Microsoft Teams Base Profile.

See Manage your devices in Microsoft Teams on Microsoft Office Support for more information.

Procedure
1. On the Poly Trio system screen, tap the menu icon at top left.
2. Go to Settings > Device Settings.
3. Choose a Poly Trio system setting to configure.

Access the Teams Base Profile

You can access the Microsoft Teams Base Profile from the Poly Trio system.

Procedure
1. On the Poly Trio system screen, press the menu icon at top left.
2. Press Settings > Device Settings.
3. On the Device Settings screen, select Advanced and enter the password (default 456).
4. Go to Administrator Settings > Network Configuration > Base Profile, and select Microsoft Teams.

Microsoft Teams Support for Poly Trio System Feature Settings

The Microsoft Teams Administrator Portal enables you to configure settings for some Poly Trio system features. The table in this section lists the supported Poly Trio features, with configuration notes where applicable.

General Settings

<table>
<thead>
<tr>
<th>Feature</th>
<th>Supported?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device Lock</td>
<td>No</td>
</tr>
<tr>
<td>Device Lock Timeout</td>
<td>No</td>
</tr>
<tr>
<td>Device Lock PIN</td>
<td>No</td>
</tr>
<tr>
<td>Language</td>
<td>Yes</td>
</tr>
</tbody>
</table>
### Feature  
**Supported?**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Supported?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time zone</td>
<td>Yes</td>
</tr>
<tr>
<td>Time DST</td>
<td>Yes</td>
</tr>
<tr>
<td>Date format</td>
<td>No</td>
</tr>
<tr>
<td>Time format</td>
<td>No</td>
</tr>
</tbody>
</table>

#### Device Settings

<table>
<thead>
<tr>
<th>Feature</th>
<th>Supported?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display backlight brightness</td>
<td>Yes</td>
</tr>
<tr>
<td>Display backlight timeout</td>
<td>Yes</td>
</tr>
<tr>
<td>Display high contrast</td>
<td>No</td>
</tr>
<tr>
<td>Silent mode</td>
<td>No</td>
</tr>
<tr>
<td>Office hours</td>
<td>Yes</td>
</tr>
<tr>
<td>Power saving</td>
<td>Yes</td>
</tr>
<tr>
<td>Screen capture</td>
<td>Yes</td>
</tr>
</tbody>
</table>

The Poly Trio system converts the GMT offset (Timezone) and Time DST settings to the closest Olson Time Zone ID, which the system uses to configure the device time zone.

When you set Time DST to **On**, the system observes Daylight Savings. When you set Time DST to **Auto** or **Off**, the system doesn’t observe Daylight Savings.

Poly Trio systems support a minimum timeout of 60 seconds.

Control how quickly the system display screen turns off after no user activity, as set by the display backlight timeout value. Outside of office hours, the display screen turns off after one minute.

Control whether the display backlight turns off as set by the office hours.

If enabled, the [Screen Capture](#) menu displays on the Poly Trio system at **Device Settings > Basic > Preferences > Screen Capture**.
### Network Settings

<table>
<thead>
<tr>
<th>Feature</th>
<th>Supported?</th>
</tr>
</thead>
<tbody>
<tr>
<td>DHCP enabled</td>
<td>Yes</td>
</tr>
<tr>
<td>Logging enabled</td>
<td>Yes</td>
</tr>
<tr>
<td>Host name</td>
<td>Yes</td>
</tr>
<tr>
<td>Domain name</td>
<td>Yes</td>
</tr>
<tr>
<td>IP address</td>
<td>Yes</td>
</tr>
<tr>
<td>Subnet mask</td>
<td>Yes</td>
</tr>
<tr>
<td>Default gateway</td>
<td>Yes</td>
</tr>
<tr>
<td>Primary DNS</td>
<td>Yes</td>
</tr>
<tr>
<td>Secondary DNS</td>
<td>Yes</td>
</tr>
<tr>
<td>Device default admin password</td>
<td>Yes</td>
</tr>
<tr>
<td>Network PC port</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Topics:

- Polycom RealConnect Technology Parameters
- Configure Your Meeting Invite for One Touch Dial with Polycom RealConnect Technology

With Polycom RealConnect, you can "click-to-join" Microsoft Teams-hosted meetings and Skype for Business meetings from your Poly Trio system.

The Poly Trio system supports Polycom RealConnect technology in the following deployments:

- Microsoft Teams SIP Voice Gateway
- Polycom RealConnect technology for Teams Services
- RealConnect For Skype for Business On-Premises

With Polycom RealConnect, the Poly Trio system can be registered as an Open SIP, Skype for Business, or Microsoft Teams device, including Hybrid Registration scenarios.

For details on deploying Polycom RealConnect technology with Microsoft Teams, see Polycom RealConnect for Office 365.

### Polycom RealConnect Technology Parameters

Use the following parameters to configure the Poly Trio system for Polycom RealConnect for Microsoft Teams or Skype for Business meetings.

#### exchange.meeting.realConnectProcessing.outboundRegistration

Choose a line number to make Polycom RealConnect calls.

- 2 (default)
- 1-34

Change causes system to restart or reboot.

#### exchange.meeting.realConnectProcessing.skype.enabled

- 0 (default) – Disable the Skype for Business meeting from processing Polycom RealConnect meeting details.
- 1 - Enable the Skype for Business meeting to process Polycom RealConnect meeting details and display the details in the applicable format.

Change causes system to restart or reboot.

#### exchange.meeting.realConnectProcessing.teams.enabled
0 (default) - Disable the Microsoft Teams meeting from processing Polycom RealConnect meeting details.

1 – Enable the Microsoft Teams meeting to process Polycom RealConnect meeting details and display the details in the applicable format.

Change causes system to restart or reboot.

Configure Your Meeting Invite for One Touch Dial with Polycom RealConnect Technology

Customize your meeting invitation to include the dialing information meeting participants need to join using One Touch Dial.

Procedure

1. In the **Skype for Business 2015 Control Panel**, go to **Conferencing > Meeting Configuration**.
2. In the **Custom footer text** field, type the following text: "To join this meeting from a video conferencing device, use the numeric 'Conference ID' provided in this invitation".
3. Additionally, on the next line, type the following text based on your environment:
   - Format for Polycom RealConnect Hybrid:
     "Dial <TenantKey>.ConferenceID@h.plcm.vc"
     Replace `<TenantKey>` and `ConferenceID` with your tenant key and Conference ID. For example, 222222.12345@h.plcm.vc.
   - Format for Polycom RealConnect for Clariti:
     "Dial ConferenceID@customerdomain.com"
     Replace `ConferenceID` with your Conference ID. For example, 12345@customerdomain.com.
Microsoft USB Audio with Poly Trio Systems

Topics:

- Connect a Poly Trio System to a Microsoft Teams or Skype Room System
- Connect a Poly Trio System to a Microsoft Surface Hub
- Microsoft USB Audio Parameters

You can configure the Poly Trio 8500 or 8800 system to connect to a Mac or Windows computer or a Microsoft Surface Hub via USB and enable users to use the system as a microphone and speaker for the Lync client, Skype for Business client, Skype Rooms, or Microsoft Teams Rooms.

When you set the Poly Trio system to the MSTeams, Lync, or SkypeUSB Base Profile, the Poly Trio system is automatically set as the audio device for a USB-connected device running Microsoft Teams or Skype for Business. You can use the Poly Trio system as a speaker and microphone with a Skype Room System, Microsoft Teams Room System, or Microsoft Surface Hub to answer and end calls, mute and unmute the microphones, and adjust the call volume for the USB-connected device.

**Note:** When you run the Skype for Business client and the Microsoft Teams client at the same time on the connected computer, the Poly Trio system cannot control call functions. For more information, refer to Microsoft Office Support.

**Feature Limitations**

When you set the Base Profile to SkypeUSB, the following features and functions are not available:

- Dial a number
- Contacts
- Meetings
- Recent Calls
- Meet Now
- Automatic Gain Control (AGC)
- Bluetooth

The Polycom Acoustic Echo Cancellation (AEC) feature is not available when the Poly Trio system is connected to Microsoft Surface Hub.

**Connect a Poly Trio System to a Microsoft Teams or Skype Room System**

Complete the following steps before connecting a Poly Trio system to a Skype Room System or Microsoft Teams Room system:

- Update to the latest version of UC Software.
Procedure

1. Power the Poly Trio system.
2. Set the Poly Trio system's Base Profile to SkypeUSB.
3. Connect the Poly Trio system to a Room System via USB cable.
   When you connect the USB cable while the Room System is in a call, both systems go on hold until you rejoin the call from either system.
4. On the Room System, configure the Poly Trio system as the audio device - microphone and speaker.

Related Links
Accessing the Web Configuration Utility on page 183
Consumer Electronics Controls (CEC) over HDMI on Poly Trio Systems on page 151

Connect a Poly Trio System to a Microsoft Surface Hub

Complete the following steps before connecting a Poly Trio system to a Microsoft Surface Hub:

- Ensure the Microsoft Surface Hub has the latest software version.
- Update to the latest version of UC Software.

Procedure

1. Power the Poly Trio system.
2. Set the Poly Trio system's Base Profile to SkypeUSB.
3. Connect the Poly Trio system to the Microsoft Surface Hub via USB cable.
   When you connect the USB cable while the Microsoft Surface Hub is in a call, both systems go on hold until you rejoin the call from either system.
4. On the Microsoft Surface Hub, configure the Poly Trio system as the audio device - microphone and speaker.

Related Links
Accessing the Web Configuration Utility on page 183
Consumer Electronics Controls (CEC) over HDMI on Poly Trio Systems on page 151

Microsoft USB Audio Parameters

Use the following parameters to configure the Poly Trio system with Skype Room System, Microsoft Teams Room System, or Microsoft Surface Hub.

device.baseProfile

- Generic (default) - Disables the Skype for Business graphic interface.
- Skype - Use this Base Profile for Skype for Business deployments.
- SkypeUSB - Use this Base Profile when you want to connect Poly Trio to a Skype Room System, Microsoft Teams Room system, or Surface Hub.
MSTeams - Use this Base Profile for Microsoft Teams deployments.

**voice.usb.holdResume.enable**

0 (default) - The Hold and Resume buttons do not display during USB calls.

1 - The Hold and Resume buttons display during USB calls.

This parameter applies only when the Poly Trio system Base Profile is set to **SkypeUSB**.
Deploying Poly Trio Systems with Skype for Business

Topics:

- Sign In Methods
- Audio Features
- Call Controls
- Certificates
- Content
- Poly Trio System Contact Directories
- Network Configuration with Skype for Business
- Device and Software Support
- Poly Trio System Video with Skype for Business
- Skype for Business User Profiles
- Upload Logs to the Skype for Business Server

If you're using Poly phones shipped with Skype for Business-qualified UC Software and want to keep default settings with no change, you need only to configure the network. Otherwise, you need to set up the Polycom UC Software before the network configuration.

Following the UC Software setup and network configuration, you can set up numerous settings for your Skype for Business deployment.

Note: Poly phones shipped with the Skype or Lync Base Profile include Skype for Business-qualified software. This software allows you to start up the phone and register with Skype for Business Server with default settings.

Sign In Methods

You can configure users to sign in or out of the phone using one of the following methods:

- **User ID** - Enable users to sign in with their user credentials on the Sign In screen. You cannot configure login credentials using the Web Configuration Utility.

- **PIN Authentication** - Use this to sign in on the phone or from the Web Configuration Utility. As of UC Software 5.1.1, this sign in method is available on the SoundStructure VoIP Interface. This option is available in on-premises Skype for Business deployments when you configure DHCP Option 43 and is not available for online deployments.

- **Web Sign In for Skype for Business** - This method enables secure sign-in from a browser on your computer or mobile device. The phone generates a unique pairing code used to sign in on a secure Office 365 website.

- **Single Sign-On Solutions (SSO)** - Allows you to use the same login credentials across multiple cloud-based applications such as Microsoft Exchange and Skype for Business.
When you change the active directory password, the phone de-registers from the Skype for Business server with a registration expiry value.

The maximum length of the user name or sign in address (Name + Domain) is limited to 45 characters.

While signing in to the phone, the phone displays sign-in progress messages such as Discovering Skype for Business Server or Authentication in progress.

Configuring a Skype for Business Sign In Method and Credentials

The following parameters configure the type of sign in on the phones and user credentials.

**reg.1.auth.loginCredentialType**

Configure a login type and user credentials. You cannot log in to the phone with Microsoft credentials if the parameter reg.1.auth.loginCredentialType is set to the default value.

- LoginCredentialNone (default)
- usernameAndPassword - Set credentials to sign-in address, user name, domain, and password in the required format.
- extensionAndPIN - Set credentials to extension and PIN.

**reg.1.auth.useLoginCredentials**

You can use this method in the configuration file to automatically sign in users after the phone powers up.

- 1 (default) - SSI Login credentials, BToE Sign in, and Web Sign types are available for authentication with the server.
- 0 - SSI Login credentials, BToE Sign in, and Web Sign types are not available for authentication with the server.

**reg.1.auth.usePinCredentials**

You can use this method in the configuration file to automatically sign in users after the phone powers up.

To use this sign-in method, you must enable DHCP Option 43 or dhcp.option43.override.stsUri.

- 1 (default) - PIN authentication sign in method is available for authentication on the server.
- 0 - PIN authentication sign in method is not available for authentication on the server.

**auth.unblock.period**

If the authentication request attempts fail due to a server error, further authentication attempts are blocked for a defined number of minutes before reattempting.

- 30 minutes (default)
- 0 - 30
Example Sign In Configurations
You can set PIN Authentication or SSI login credentials in the configuration file to log in users automatically after the phone powers up.

The following example sets PIN Auth user credentials in the configuration file:

- `reg.1.auth.usePinCredentials="1"`
- `reg.1.auth.loginCredentialType="extensionAndPIN"`
- `device.set="1"
- `device.logincred.extension.set="1"
- `device.logincred.extension="xxxx"
- `device.logincred.pin.set="1"
- `device.logincred.pin="xxxx"

The following example sets SSI login credentials in the configuration file:

- `reg.1.auth.loginCredentialType="usernameAndPassword"
- `reg.1.address="xxxx@domain.com"
- `device.set="1"
- `device.logincred.user.set="1"
- `device.logincred.user="xxxx"
- `device.logincred.password.set="1"
- `device.logincred.password="xxxxx"
- `device.logincred.domain.set="1"
- `device.logincred.domain="domain"

PIN Authentication
You can enable users to sign in to Skype for Business using PIN authentication.

To use PIN authentication, you must enable the Web Configuration Utility, which is disabled by default. For information on enabling the Web Configuration Utility, see Accessing the Web Configuration Utility. After you enable the Web Configuration Utility, you can enable PIN authentication using `reg.1.auth.usePinCredentials`.

If you configure DHCP Option 43 in on-premises Skype for Business deployments, the phone displays only the PIN Authentication menu to users. The PIN Auth menu does not display and is not available for Skype for Business Online.

PIN Authentication Parameters
The following parameters configure PIN Authentication.

device.logincred.extension
NULL (default) - The phones will not trigger registration.
0 to 32 - Enter a user phone extension number or string to a maximum of 32 characters. The phone reads this extension when you configure PIN-Auth as the phone registration method.
device.logincred.pin

NULL (default) - If the default value is set, the phones will not trigger registration.

0 to 32 - Enter a user phone PIN to a maximum of 32 characters. The phone reads this PIN when you configure PIN-Auth as the phone registration method.

reg.1.auth.useLoginCredentials

You can use this method in the configuration file to automatically sign in users after the phone powers up.

1 (default) - SSI Login credentials, BToE Sign in, and Web Sign types are available for authentication with the server.

0 - SSI Login credentials, BToE Sign in, and Web Sign types are not available for authentication with the server.

Web Sign In for Skype for Business

Web Sign In is enabled by default on phones registered with the Skype for Business server and is available for Skype for Business Online and On-Premise deployments.

Web Sign In enables users to securely login to Skype for Business on their phone from a computer or a mobile web browser. It provides users with a way to authenticate their Skype for Business credentials without entering their credentials on the phone. The phone displays on-screen instructions to help users proceed through the process. With the Web Sign In method, a user can sign in concurrently to a maximum of eight phones. If a user signs in on multiple phones and signs out from one phone, the user remains signed in on the remaining phones.

Users authenticate their accounts using a pairing code that is generated on the phone. The pairing code that the Web Sign In method generates expires within a few minutes after the Skype for Business server sends the code to the phone. Users must sign in before the pairing code expires.

Web Sign In supports Multi-Factor Authentication (MFA) on phones. If you're using MFA, you must use Web Sign In as the user sign-in method with phones. For more information on configuring MFA for Office 365, refer to Microsoft's Configure Azure Multi-Factor Authentication Settings.

Web Sign In for Skype for Business server is supported only when the Hybrid Modern Authentication (HMA) environment is enabled. To use the capability of HMA with Skype for Business On-Premise, Active Directory should be federated with Azure Active Directory (AAD). For more information to configure HMA in your environment, refer to Hybrid Modern Authentication for Skype for Business.

Web Sign In for Skype for Business Parameters

The following parameters configure Web Sign In for Skype for Business Online and On-Premises deployments.

feature.webSignIn.enabled

1 (default) - In Skype for Business Base Profile, the web sign in option is displayed on the phone for the user.

0 - In Skype for Business Base Profile, the web sign in option is not displayed on the phone for the user.
**reg.1.auth.loginCredentialType**

Specify the credential type the user must provide to log in. You cannot log in to the phone with Microsoft credentials if `reg.1.auth.loginCredentialType` is set to the default value.

- **LoginCredentialNone** (default)
- **onlineDeviceAuth** - Enables users to sign in to the phone using Web Sign In.
- **usernameAndPassword** - Provide description of this value.

## Sign In Remotely using Web Sign-In for Skype for Business

You can sign in to Skype for Business remotely using the Poly Trio system's Web Configuration Utility.

### Procedure

1. Enter your phone’s IP address into a web browser on your computer.
2. Select **Admin** as the login type, enter the admin password (the default is 456), and click **Submit**.
3. Select **Settings > Skype for Business Sign In**.
4. Select **Web Sign In** from **Authentication Type**.
5. Select **Sign In**.
   - A URL and a sign-in code display.
6. Enter the URL into the web browser on your computer.
7. Enter the sign-in code and select **Continue**.
   - The Skype for Business Authentication website displays.
8. Enter your Skype for Business login information.
   - A confirmation message displays when the phone successfully signs in to Skype for Business.

## Modern Authentication Supported Topologies

The following table lists supported Modern Authentication topologies.

### Modern Authentication Supported Topologies

<table>
<thead>
<tr>
<th>Technology Name</th>
<th>Skype for Business</th>
<th>Modern Authentication on Skype for Business</th>
<th>Microsoft Exchange</th>
<th>Modern Authentication on Microsoft Exchange</th>
<th>Supported?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cloud Only</td>
<td>Online</td>
<td>On</td>
<td>Online</td>
<td>On</td>
<td>Yes</td>
</tr>
<tr>
<td>On Prem Only</td>
<td>On-Premise</td>
<td>On</td>
<td>On-Premise</td>
<td>On</td>
<td>Yes</td>
</tr>
<tr>
<td>Mixed 1</td>
<td>On-Premise</td>
<td>Off</td>
<td>Online</td>
<td>On</td>
<td>Yes</td>
</tr>
<tr>
<td>Mixed 2</td>
<td>Online</td>
<td>On</td>
<td>On-Premise</td>
<td>Off</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Audio Features

After you set up your phones on the network, users can send and receive calls using the default configuration.

However, you might consider configuring modifications that optimize the audio quality of your network.

This section describes the audio sound quality features and options you can configure for your phones. Use these features and options to optimize the conditions of your organization's phone network system.

Poly Trio System Audio Codec Support with Skype for Business

The following tables detail Poly Trio system audio codec support and priority when registered with Skype for Business.

Supported Audio Codecs

<table>
<thead>
<tr>
<th>Algorithm</th>
<th>Reference</th>
<th>Raw Bit Rate</th>
<th>Maximum IP Bit Rate</th>
<th>Sample Rate</th>
<th>Default Payload Size</th>
<th>Effective Audio Bandwidth</th>
</tr>
</thead>
<tbody>
<tr>
<td>SILK</td>
<td>SILK</td>
<td>6 to 20 Kbps</td>
<td>36 Kbps</td>
<td>8 kbps</td>
<td>20 ms</td>
<td>3.5 kHz</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7 to 25 Kbps</td>
<td>41 Kbps</td>
<td>12 kbps</td>
<td></td>
<td>5.2 kHz</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8 to 30 Kbps</td>
<td>46 Kbps</td>
<td>16 kbps</td>
<td></td>
<td>7 kHz</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12 to 40 Kbps</td>
<td>56 Kbps</td>
<td>24 kbps</td>
<td></td>
<td>11 kHz</td>
</tr>
<tr>
<td>Siren 7</td>
<td>SIREN7</td>
<td>16 Kbps</td>
<td>32 Kbps</td>
<td>16 kbps</td>
<td>20 ms</td>
<td>7 kHz</td>
</tr>
<tr>
<td>G.722.1</td>
<td>RFC 3047</td>
<td>24 Kbps</td>
<td>40 Kbps</td>
<td>16 kbps</td>
<td>20 ms</td>
<td>7 kHz</td>
</tr>
<tr>
<td>G.722 ¹</td>
<td>RFC 3551</td>
<td>64 Kbps</td>
<td>80 Kbps</td>
<td>16 kbps</td>
<td>20 ms</td>
<td>7 kHz</td>
</tr>
<tr>
<td>G.711 μ-law</td>
<td>RFC 1890</td>
<td>64 Kbps</td>
<td>80 Kbps</td>
<td>8 kbps</td>
<td>20 ms</td>
<td>3.5 kHz</td>
</tr>
<tr>
<td>G.711 A-law</td>
<td>RFC 1890</td>
<td>64 Kbps</td>
<td>80 Kbps</td>
<td>8 kbps</td>
<td>20 ms</td>
<td>3.5 kHz</td>
</tr>
</tbody>
</table>

¹ Per RFC 3551. Even though the actual sampling rate for G.722 audio is 16,000 Hz (16 ksp), the RTP clock rate advertised for the G.722 payload format is 8000 Hz because that value was erroneously assigned in RFC 1890 and must remain unchanged for backward compatibility.

Audio Codec Priority

<table>
<thead>
<tr>
<th>Algorithm</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>SILK</td>
<td>0</td>
</tr>
<tr>
<td>Siren 7 (16 Kbps)</td>
<td>0</td>
</tr>
<tr>
<td>G.722.1 (24 Kbps)</td>
<td>0</td>
</tr>
</tbody>
</table>
### Audio Codec Parameters

You can configure a set of codec properties to improve consistency and reduce workload on the phones.

Use the following parameters to specify audio codec priority on your phones.

- Permitted values to set audio codec priority are 1 - 27
- A value of 1 is the highest priority, 27 the lowest.
- If 0 or Null, the codec is disabled.
- A change to the default value does not cause a phone to restart or reboot

If a phone does not support a codec, the phone treats the value as 0, does not offer or accept calls using that codec, and continues to the codec next in priority.

#### Audio Codec Priority Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default Priority Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>voice.codecPref.G711_A</td>
<td>7</td>
</tr>
<tr>
<td>voice.codecPref.G711_Mu</td>
<td>6</td>
</tr>
<tr>
<td>voice.codecPref.G719.32kbps</td>
<td>0</td>
</tr>
<tr>
<td>voice.codecPref.G719.48kbps</td>
<td>0</td>
</tr>
<tr>
<td>voice.codecPref.G719.64kbps</td>
<td>0</td>
</tr>
<tr>
<td>voice.codecPref.G722</td>
<td>4</td>
</tr>
<tr>
<td>voice.codecPref.G7221.24kbps</td>
<td>0</td>
</tr>
<tr>
<td>voice.codecPref.G7221_C.24kbps</td>
<td>5</td>
</tr>
<tr>
<td>voice.codecPref.G7221.32kbps</td>
<td>0</td>
</tr>
<tr>
<td>voice.codecPref.G7221_C.48kbps</td>
<td>2</td>
</tr>
<tr>
<td>voice.codecPref.G729_AB</td>
<td>8</td>
</tr>
<tr>
<td>voice.codecPref.iLBC.13_33kbps</td>
<td>0</td>
</tr>
<tr>
<td>voice.codecPref.iLBC.15_2kbps</td>
<td>0</td>
</tr>
<tr>
<td>Parameter</td>
<td>Default Priority Value</td>
</tr>
<tr>
<td>----------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>voice.codecPref.Lin16.8ksps</td>
<td>0</td>
</tr>
<tr>
<td>voice.codecPref.Lin16.16ksps</td>
<td>0</td>
</tr>
<tr>
<td>voice.codecPref.Lin16.32ksps</td>
<td>0</td>
</tr>
<tr>
<td>voice.codecPref.Lin16.44_1ksps</td>
<td>0</td>
</tr>
<tr>
<td>voice.codecPref.Lin16.48ksps</td>
<td>0</td>
</tr>
<tr>
<td>voice.codecPref.Siren7.16kbps</td>
<td>0</td>
</tr>
<tr>
<td>voice.codecPref.Siren7.24kbps</td>
<td>0</td>
</tr>
<tr>
<td>voice.codecPref.Siren7.32kbps</td>
<td>0</td>
</tr>
<tr>
<td>voice.codecPref.Siren14.24kbps</td>
<td>0</td>
</tr>
<tr>
<td>voice.codecPref.Siren14.32kbps</td>
<td>0</td>
</tr>
<tr>
<td>voice.codecPref.Siren14.48kbps</td>
<td>0</td>
</tr>
<tr>
<td>voice.codecPref.Siren22.32kbps</td>
<td>0</td>
</tr>
<tr>
<td>voice.codecPref.Siren22.48kbps</td>
<td>0</td>
</tr>
<tr>
<td>voice.codecPref.Siren22.64kbps</td>
<td>1</td>
</tr>
<tr>
<td>voice.codecPref.SILK.8ksps</td>
<td>0</td>
</tr>
<tr>
<td>voice.codecPref.SILK.12ksps</td>
<td>0</td>
</tr>
<tr>
<td>voice.codecPref.SILK.16ksps</td>
<td>0</td>
</tr>
<tr>
<td>voice.codecPref.SILK.24ksps</td>
<td>0</td>
</tr>
</tbody>
</table>

**Polycom NoiseBlock**

Polycom NoiseBlock technology automatically mutes the microphone during audio-only and audio/video calls when a user stops speaking.

This feature silences noises that interrupt conversations such as paper shuffling, food wrappers, and keyboard typing. When a user speaks, the microphone is automatically unmuted.

**NoiseBlock Parameters**

Use the following parameters to configure NoiseBlock.

```plaintext
voice.ns.hf.blocker
```
1 (default) - Enables NoiseBlock.
0 - Disables NoiseBlock.

**Microphone Mute**

All phones have a microphone mute button.

By default, when you activate microphone mute, a red LED glows or a mute icon displays on the phone screen, depending on the phone model you are using.

You cannot configure the microphone mute feature.

However, you can configure Poly Trio systems to play an audible tone when the mute status of the device is changed either from any of the mute buttons of the system (device and any connected devices) or far-end system (remote mute). This allows you to know if the system microphones are in a mute or un-mute state. In addition, you can set a periodic reminder which plays a tone periodically when the phone is in the mute state. The time interval can be set using configuration parameter and the value must not be less than 5 seconds.

**Microphone Mute Parameters**

The following parameters configure microphone mute status alert tones.

**se.touchFeedback.enabled**

0 - Does not play an alert tone when the mute status is changed on the Poly Trio system.
1 - An alert tone is played when the mute status is changed either from the Poly Trio or far-end system.

**call.mute.reminder.period**

The time interval in seconds to play an alert tone periodically when the Poly Trio system is in the mute state.

5 (default)
5 - 3600

**Audio Output Options**

By default, audio plays out of the Poly Trio speakers.

When paired with a Poly Trio Visual+ or Trio VisualPro system, you can play audio out of the connected the monitor(s) and external speakers.

Using the parameter `up.audio.networkedDevicePlayout`, you can configure the following audio output options:

- Poly Trio system speakers only
- Poly Trio Visual+ using HDMI or a connected 3.5mm analog output
- Trio VisualPro system using HDMI
Audio Output Options Parameters

The following table includes the parameters you can use to set the audio routing options for the Poly Trio solution.

**up.audio.networkedDevicePlayout**

- **PhoneOnly** (default) - Use the Poly Trio system speakers.
- **TvOnly** - Use the monitor speakers and external speakers (if present).
- **Auto** - Audio-only calls use the Poly Trio system speakers. Video calls use the monitor speakers and external speakers (if present).

**feature.usb.device.hostOs**

- **Windows** (default) - The computer connected by USB to the Poly Trio uses a Windows operating system.
- **Other** — The operating system of the computer connected via USB to the Poly Trio system is other than Windows or Mac.
- **Mac** — The computer connected by USB to the Poly Trio uses a Mac operating system.
- **Confirm** — The user is prompted to confirm the computer's operating system each time a USB cable is used to connect to the Poly Trio system.

USB Audio Calls

You can enable Poly Trio systems as an audio device for a tablet or laptop when connected to the Poly Trio system with the USB cable supplied in the box.

When a Microsoft® Windows® computer is connected to the Poly Trio solution using a USB cable, users can control the volume of audio and video calls from the computer or the Poly Trio solution, and the volume is synchronized on both devices.

Poly Trio systems supports Mac computers running the following software versions when connected by USB and used as an audio speakerphone:

- OS X 10.9.x (Mavericks)
- OS X 10.10.x (Yosemite)
- OS X 10.11.x (El Capitan)

USB Audio Call Parameters

The following table includes the parameters you can use to configure USB audio calls for connected devices.

**feature.usb.device.audio**

- **0** – Disables the ability to use Trio as a USB speakerphone.
- **1** (default) – Enables the ability to use Poly Trio as a USB speakerphone.
Requires restart

**device.baseProfile**

NULL (default)

- Generic - Disables the Skype for Business graphic interface.
- Lync - Use this Base Profile for Skype for Business deployments.
- SkypeUSB - Use this Base Profile when you want to connect Poly Trio to a Microsoft Room System or a Microsoft Surface Hub.

**voice.usb.holdResume.enable**

- 0 (default) - The Hold and Resume buttons do not display during USB calls.
- 1 - The Hold and Resume buttons display during USB calls.

This parameter applies only when Poly Trio Base Profile is set to SkypeUSB.

### Poly Trio System Audio Codec Support with Skype for Business

The following tables detail Poly Trio system audio codec support and priority when registered with Skype for Business.

#### Supported Audio Codecs

<table>
<thead>
<tr>
<th>Algorithm</th>
<th>Reference</th>
<th>Raw Bit Rate</th>
<th>Maximum IP Bit Rate</th>
<th>Sample Rate</th>
<th>Default Payload Size</th>
<th>Effective Audio Bandwidth</th>
</tr>
</thead>
<tbody>
<tr>
<td>SILK</td>
<td>SILK</td>
<td>6 to 20 Kbps</td>
<td>36 Kbps</td>
<td>8 kbps</td>
<td>20 ms</td>
<td>3.5 kHz</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7 to 25 Kbps</td>
<td>41 Kbps</td>
<td>12 kbps</td>
<td></td>
<td>5.2 kHz</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8 to 30 Kbps</td>
<td>46 Kbps</td>
<td>16 kbps</td>
<td></td>
<td>7 kHz</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12 to 40 Kbps</td>
<td>56 Kbps</td>
<td>24 kbps</td>
<td></td>
<td>11 kHz</td>
</tr>
<tr>
<td>Siren 7</td>
<td>SIREN7</td>
<td>16 Kbps</td>
<td>32 Kbps</td>
<td>16 kbps</td>
<td>20 ms</td>
<td>7 kHz</td>
</tr>
<tr>
<td>G.722.1</td>
<td>RFC 3047</td>
<td>24 Kbps</td>
<td>40 Kbps</td>
<td>16 kbps</td>
<td>20 ms</td>
<td>7 kHz</td>
</tr>
<tr>
<td>G.722</td>
<td>RFC 3551</td>
<td>64 Kbps</td>
<td>80 Kbps</td>
<td>16 kbps</td>
<td>20 ms</td>
<td>7 kHz</td>
</tr>
<tr>
<td>G.711 μ-law</td>
<td>RFC 1890</td>
<td>64 Kbps</td>
<td>80 Kbps</td>
<td>8 kbps</td>
<td>20 ms</td>
<td>3.5 kHz</td>
</tr>
<tr>
<td>G.711 A-law</td>
<td>RFC 1890</td>
<td>64 Kbps</td>
<td>80 Kbps</td>
<td>8 kbps</td>
<td>20 ms</td>
<td>3.5 kHz</td>
</tr>
</tbody>
</table>

1 Per RFC 3551. Even though the actual sampling rate for G.722 audio is 16,000 Hz (16 kps), the RTP clock rate advertised for the G.722 payload format is 8000 Hz because that value was erroneously assigned in RFC 1890 and must remain unchanged for backward compatibility.
Audio Codec Priority

<table>
<thead>
<tr>
<th>Algorithm</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>SILK</td>
<td>0</td>
</tr>
<tr>
<td>Siren 7 (16 Kbps)</td>
<td>0</td>
</tr>
<tr>
<td>G.722.1 (24 Kbps)</td>
<td>0</td>
</tr>
<tr>
<td>G.722</td>
<td>4</td>
</tr>
<tr>
<td>G.711 μ-law</td>
<td>6</td>
</tr>
<tr>
<td>G.711 A-law</td>
<td>7</td>
</tr>
</tbody>
</table>

Call Controls

This chapter shows you how to configure call control features.

Call Forwarding with Skype for Business

The Skype for Business server automatically sends call forwarding functionality in-band to the phones.

When Call Forwarding is enabled on the Skype for Business server, you can override Microsoft settings from a provisioning server using the Poly parameters in the following table or from the Web Configuration Utility.

If call forwarding is disabled on the Microsoft server then call forwarding is also disabled on the phone. To disable call forwarding sent in-band from the Microsoft server, disable the settings for call forwarding and simultaneous ring on the Microsoft server.

**feature.forward.enable**

1 (default) - Enables call forwarding from the phone menu.
0 - Disables call forwarding from the main menu.

**homeScreen.forward.enable**

1 (default) - Displays the Forward icon on the Home screen.
0 - Removes the Forward icon from the Home screen.

**softkey.feature.forward**

1 (default) - Displays the Forward soft key.
0 - The Forward soft key does not display.

To configure the `softkey.feature.forward` parameter, you must configure `feature.enhancedFeatureKeys.enabled="1"`. 

Deploying Poly Trio Systems with Skype for Business
Skype for Business Local and Centralized Real-Time Audio and Video Calling on Poly Trio Systems

You can set up MeetNow, local or centralized Skype for Business calls with audio and video or audio-only, and share content using the Skype for Business client. If you set calls to audio-only, users can add video during a call if the far end is video capable.

Set Up Poly Trio Systems for Video Calls

Pair Poly Trio 8500 or Poly Trio 8800 systems with a Poly Trio Visual+ or Poly VisualPro to add video and content sharing capabilities to Skype for Business calls.

Procedure

1. Pair the Poly Trio system to a Poly Trio Visual+ or Poly Trio VisualPro system.
   For pairing instructions, refer to that system's Setup Sheet.
2. Connect the Poly Visual+ or Poly VisualPro system to a display screen and a supported camera.
   When successfully paired, the connected display screen shows a small self-view window.

Skype for Business Audio and Video Calling Parameters

The following parameters set up Skype for Business calls on Poly Trio systems.

softkey.feature.MeetNow

1- The Meet Now soft key displays.
0 - The Meet Now soft key does not display.
1 (default) - Skype Base Profile
0 (default) - Open SIP Base Profile

Using an API to Join a Skype for Business Meeting on Poly Trio Systems

This feature allows third-party application developers to join the Poly Trio system to a scheduled Skype for Business meeting using an API.

The third-party application requires independent access to the Skype for Business meeting information.

The following example API illustrates how you can use a third-party application on your computer or mobile device to join the Poly Trio system to a Skype for Business meeting.

REST API Command: WebCallControl.Dial

Structure

```json
{
    "data": api/v1/callctrl/dial
}
{
    "data":
    {
        "Dest": "<SIP URI of meeting organizer>;gruu;opaque=app:conf:focus:id:<SfB Meeting Focus ID>",
    }
}
Configure Your Meeting Invite for One Touch Dial with Polycom RealConnect Technology

Customize your meeting invitation to include the dialing information meeting participants need to join using One Touch Dial.

Procedure

1. In the Skype for Business 2015 Control Panel, go to Conferencing > Meeting Configuration.
2. In the Custom footer text field, type the following text: "To join this meeting from a video conferencing device, use the numeric 'Conference ID' provided in this invitation".
3. Additionally, on the next line, type the following text based on your environment:
   - Format for Polycom RealConnect Hybrid:
     "Dial <TenantKey>.ConferenceID@h.plcm.vc"
     Replace <TenantKey> and ConferenceID with your tenant key and Conference ID. For example, 222222.12345@h.plcm.vc.
   - Format for Polycom RealConnect for Clariti:
     "Dial ConferenceID@customerdomain.com"
     Replace ConferenceID with your Conference ID. For example, 12345@customerdomain.com.

Poly Trio System Hybrid Line Registration

Poly Trio systems support hybrid line registration, which enables you to register one line with the Skype for Business server and another line with an OpenSIP server. You can also use hybrid line registration to register lines on the phone with two different OpenSIP servers. If you plan to configure and register Skype for Business on one line, you must register Line 1 with the Skype for Business server. You can't register two Skype for Business lines simultaneously.

Line Switching for Hybrid Registrations

When you configure hybrid line registration on Poly Trio, you can also configure the line switching feature, which enables any number dialed on Poly Trio to automatically switch to the corresponding line based on the dial plan set when the phone is on-hook. You can configure line switching based on the dial plan when the phone is off-hook. By default, line switching for on-hook and off-hook dialing are disabled.

For dial plan-based line switching, when all the lines are registered to an OpenSIP server, the value defined in the global parameter for a dial plan takes the priority. If the line is registered to Skype for Business, the value defined in the per-registration dial plan parameter takes priority over general dial plan parameter.

Examples of global parameters for dial plans are:
   - dialplan.impossibleMatchHandling
   - dialplan.conflictMatchHandling

Examples of per-registration dial plan parameters are:
• `dialplan.1.conflictMatchHandling`
• `dialplan.1.impossibleMatchHandling`

When multiple digit maps are matched to the dialed number (resulting in a conflict match) and the `dialplan.conflictMatchHandling` parameter is disabled, the first matching digit map starting from left to right takes priority. However, if the `dialplan.conflictMatchHandling` parameter is enabled, the matching digit map having the lowest timeout value takes priority. For more information on dial plan parameters, see Local Digit Maps Parameters.

**Related Links**
Local Digit Maps Parameters on page 66

## Hybrid Line Registration Limitations

The Hybrid Registration feature include the following limitations:

• Merging of local conference is only supported with open SIP registrations and not supported with Skype for Business (bridging a Skype for Business with an open SIP line is not supported).

• Local merging of two point-to-point calls made using two different lines between two Poly Trio systems is not supported.

• Only call transfers between different SIP registrations with the same SIP call servers is supported. Call transfer between SIP registrations on different SIP call servers is not supported.

• Transport Layer Security (TLS) encryption of Real-time Transport Protocol (RTP) media for secure communication in hybrid Open SIP registrations is not supported.

## Presence Status Indicators for Hybrid Line Registration

The Presence feature is available only on the Skype for Business line and will display the Device status. The following table list the Presence status for specific environment.

### Presence Status Indicators for Hybrid Line Registration

<table>
<thead>
<tr>
<th>Use Cases</th>
<th>Presence State on SfB Line</th>
<th>Presence String</th>
<th>Presence State on Open SIP Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Skype line in a call</td>
<td>Busy</td>
<td>In a call</td>
<td>Not Supported</td>
</tr>
<tr>
<td>Skype line in a call</td>
<td>Busy</td>
<td>In a call</td>
<td>Not Supported</td>
</tr>
<tr>
<td>Content shared over PPCIP</td>
<td>Busy</td>
<td>In a call</td>
<td>Not Supported</td>
</tr>
<tr>
<td>Non-Skype line in conference</td>
<td>Busy</td>
<td>In a conference</td>
<td>Not Supported</td>
</tr>
<tr>
<td>Skype line in conference</td>
<td>Busy</td>
<td>In a conference</td>
<td>Not Supported</td>
</tr>
<tr>
<td>DND on Skype line</td>
<td>DND</td>
<td>Do Not Disturb</td>
<td>Not Supported</td>
</tr>
<tr>
<td>Use Cases</td>
<td>Presence State on SfB Line</td>
<td>Presence String</td>
<td>Presence State on Open SIP Line</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------------------------</td>
<td>-----------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>DND on Open SIP line</td>
<td>Available</td>
<td>Available</td>
<td>Not Supported</td>
</tr>
</tbody>
</table>

**Hybrid Line Registration Parameters**

The following table lists the parameters to configure dial plan and line switching for Hybrid Registration.

- **dialplan.digitmap.lineSwitching.enable**
  - 0 (default) - Disable the line switching in dial plan to switch the call to the dial plan matched line.
  - 1 - Enable the line switching in dial plan to switch the call to the dial plan matched line.
  This is not applicable for off-hook dialing.

- **reg.limit**
  - Specify the maximum number of lines to use for registration.
  - 1 (default)
  - 12 maximum (1-3 supported)

- **reg.1.mergeServerDigitMapLocally**
  - 1 (default) - Allows the dialplans from `dialplan.1.digitmap` to append on top of the dialplans received from the server.
  - 0 - Does not allow the dial plans from `dialplan.1.digitmap` to append on top of the dialplans received from the server.

**Configure Hybrid Line Registration using the Web Configuration Utility**

You can configure the phone to support the Hybrid (Skype for Business/ Open SIP) Registration from phone's Web Configuration Utility page after enabling the feature using configuration parameter.

Make sure to set the Base profile as Skype for Business on the Poly Trio system.

**Procedure**

1. Sign in to the Poly Trio system’s Web Configuration Utility page using Admin account.
   - If configuring Skype for Business on Line 1, sign in to the Web Configuration Utility as Skype for Business user.
2. On the Web Configuration Utility page, navigate to **Settings > Line**.
   - The number of lines enabled to configure is displayed.
3. Configure the Skype for Business registration on Line 1.
4. Configure the Open SIP registration on Line 2.
   - You can configure other lines with Open SIP registration.
Dial Plans
This section on dial plans includes information on dial plan normalization, multiple emergency number dial
plans, parameters you can configure on your provisioning server, and examples of supported and
unsupported dial plans.

Dial Plan Normalization
Dial Plan Normalization enables you to configure dial plans on the Skype for Business server or on your
provisioning server.

For more information on regular expressions used on Skype for Business server, see .NET Framework
Regular Expressions on Microsoft Developer Network.

Multiple Emergency Number Dial Plan
When registering phones with Skype for Business, you can configure multiple emergency numbers on the
Skype for Business server.

When you correctly configure the multiple emergency numbers on the Skype for Business server, users
can make calls to the emergency numbers from the Skype for Business client or from a phone, even
when the phone is locked.

Phones receive emergency numbers through in-band provisioning and can conflict with the emergency
dial string and mask. When a phone receives both multiple emergency numbers and emergency dial
string and mask, the client and phone use multiple emergency numbers.

For instructions on creating a multiple emergency number dial plan, see Configure Multiple Emergency
Numbers in Skype for Business 2015 on Microsoft TechNet.

Poly Trio System SIP URI Dialing
When making a URI call, Poly Trio systems allow dial plan matching for SIP URI calls to append strings to
the dialed number.

SIP URI dial plan can also be used with auto line switching in Hybrid registration scenarios to
automatically select the line based on dial plan.

The following examples illustrate the semantics of the syntax:

- sip:\:764xxxxxRR@registrar.polycomcsn.comR - appends
  @registrar.polycomcsn.com to any URI calls matching with "764xxxxx".
  
  For example, if you make a SIP URI call with 76412345 then @registrar.polycomcsn.com is
  appended to the string such that the SIP URI call INVITE becomes sip::
  76412345@vc.polycom.com. Here, @domain string is required only for SIP URI calls from
  unregistered lines.

- sip:\:xxxx\@registrar\polycomcsn\com - This will match with any four digit URI calls
  having the domain registrar.polycomcsn.com.

  For example, if you configure three lines and enable dial plan-based line switching, and the third
  line's dial plan is sip:\:xxxx\@registrar\polycomcsn\com then calls will be initiated from
  the third line if you dial 1234@registrar.polycomcsn.com because it matches the third line's
dial plan.
Dial Plan, Dial Plan Normalization, and Digit Map Parameters

Poly does not support all regular expression dial plans.

The following parameters configure supported dial plans with Skype for Business Server.

dialplan.1.digitmap

x.T

In the above expression, enter the phone number for "x". Enter the timeout in seconds for "T".

Specify the digit map used for the dial plan using a string compatible with the digit map feature of MGCP described in 2.1.5 of RFC 3435. This parameter enables the phone to automatically initiate calls to numbers that match a digit map pattern.

The string is limited to 2560 bytes and 100 segments of 64 bytes, and the following characters are allowed in the digit map.

- A comma (,), which turns dial tone back on.
- A plus sign (+) is allowed as a valid digit.
- The extension letter 'R' indicates replaced string.
- The extension letter 'Pn' indicates precedence, where 'n' range is 1-9.
  1—Low precedence
  9—High precedence

dialplan.1.digitmap.timeOut

Specify a timeout in seconds for each segment of digit map. After you press a key, the phone waits the number of seconds you specify to match the digits to a dial plan and dial the call.

4 seconds (default)

String of positive integers separated by | for example 3 | 3 | 3 | 3 | 3 | 3

Note: If there are more digit maps than timeout values, the default value is used. If there are more timeout values than digit maps, the extra timeout values are ignored.

dialplan.1.lyncDigitmap.timeOut

This parameter applies to lines registered with Skype for Business or Lync Server.

Specify a timeout in seconds for each segment of a digit map. After you press a key, the phone waits the number of seconds you specify to match the digits to a dial plan and dial the call.

4 seconds (default)

0 to 99 seconds

Note: If there are more digit maps than timeout values, the default value is used. If there are more timeout values than digit maps, the extra timeout values are ignored.

Note also that if you configure a value outside of the permitted range, the default value is used.

dialplan.userDial.timeOut
Specify the time in seconds that the phone waits before dialing a number you enter while the phone is on hook. This parameter applies only when its value is lower than `up.IdleTimeOut`.

4 seconds (default)
0 to 99 seconds

**reg.1.applyServerDigitMapLocally**

Skype Base Profile: 1 (default)
Generic Base Profile: 0 (default)

1 - Enable dial plan normalization. Dial plan normalization rules are downloaded from the Microsoft Server and processed on the phone.
0 - Disable dial plan normalization. Dial plan rules are processed by the Microsoft Server.

**up.IdleTimeOut**

Set the number of seconds that the phone is idle for before automatically leaving a menu and showing the idle display.

During a call, the phone returns to the Call screen after the idle timeout.

40 seconds (default)
0 to 65535 seconds
Change causes system to restart or reboot.

**Supported Dial Plans**

Poly phones support Skype for Business External Access Prefix functionality.

Examples of supported dial plans include the following:

- Support for multiple combination of braces (): ^91(727|813)((2-9)\d(6))$@+9$1$2@0
- Support for 'ext': ^64(\d{2})$@+86411845933$1;ext=64$1@0

<table>
<thead>
<tr>
<th>Number</th>
<th>Element</th>
<th>Meaning</th>
<th>Example</th>
<th>Description of Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>^</td>
<td>Match at beginning of string</td>
<td>^123</td>
<td>Match the digits 123 at the beginning of the string</td>
</tr>
<tr>
<td>2</td>
<td>()</td>
<td>Captures the matched subexpression</td>
<td>(456)</td>
<td>Capture what is between the parentheses into a numbered variable, starting at 1 which can be accessed as $n, for example, $1</td>
</tr>
</tbody>
</table>
### Unsupported Dial Plans on Poly Trio Systems

Examples of dial plans not supported include the following:

- Braces within the braces with pipes: `^56(12(3|4))((4|5)6)@+1$2$1@0`
- Non-sequential $ values in translation patterns: `^1(45)(89)@+123$2$1@0`

<table>
<thead>
<tr>
<th>Number</th>
<th>Element</th>
<th>Meaning</th>
<th>Example</th>
<th>Description of Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>{.m}</td>
<td>Specifies at most m matches</td>
<td>\d (.6)</td>
<td>Match at most 6 digits</td>
</tr>
<tr>
<td>2</td>
<td>{n,}</td>
<td>Specifies at least n matches</td>
<td>\d (3,)</td>
<td>Match at least 3 digits (with no limit to number of digits matched)</td>
</tr>
<tr>
<td>3</td>
<td>{n,m}</td>
<td>Specifies at least n, but no more than m, matches</td>
<td>\d (3,6)</td>
<td>Match at least 3 digits but no more than 6 digits</td>
</tr>
<tr>
<td>Number</td>
<td>Element</td>
<td>Meaning</td>
<td>Example</td>
<td>Description of Example</td>
</tr>
<tr>
<td>--------</td>
<td>---------</td>
<td>------------------------</td>
<td>------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>4</td>
<td>$</td>
<td>The match must end at ‘$’</td>
<td>^(123$</td>
<td>125$)</td>
</tr>
</tbody>
</table>

**Local Digit Map**

The local digit map feature allows the phone to automatically call a dialed number you configure.

Dial plans apply on-hook when no Skype for Business line is registered or when line switching is enabled and at least one line has a non-empty dial plan.

Digit maps are defined by a single string or a list of strings. If a dialed number matches any string of a digit map, the call is automatically placed. If a dialed number matches no string— an impossible match—you can specify the phone’s behavior. If a number ends with #, you can specify the phone’s behavior, called trailing # behavior. You can also specify the digit map timeout, the period of time after you dial a number that the call is placed. The configuration syntax of the digit map is based on recommendations in section 2.1.5 of [RFC 3435](https://tools.ietf.org/html/rfc3435).

**Local Digit Maps Parameters**

Poly support for digit map rules varies for open SIP servers and Microsoft Skype for Business Server. Use the following parameters to configure the local digit map.

**dialplan.applyToCallListDial**

Choose whether the dial plan applies to numbers dialed from the received call list or missed call list, including sub-menus.

1 (default)

0

Change causes system to restart or reboot.

**dialplan.applyToDirectoryDial**

Lync Base Profile – 1 (default)

Generic Base Profile – 0 (default)

0— The dial plan is not applied to numbers dialed from the directory or speed dial, including auto-call contact numbers.

1— The dial plan is applied to numbers dialed from the directory or speed dial, including auto-call contact numbers.

Change causes system to restart or reboot.

**dialplan.applyToForward**

Lync Base Profile – 1 (default)

Generic Base Profile – 0 (default)
0—The dial plan does not apply to forwarded calls.
1—The dial plan applies to forwarded calls.
Change causes system to restart or reboot.

dialplan.applyToTelUriDial
Choose whether the dial plan applies to URI dialing.
1 (default)
0
Change causes system to restart or reboot.

dialplan.applyToUserDial
Choose whether the dial plan applies to calls placed when the user presses Dial.
1 (default)
0
Change causes system to restart or reboot.

dialplan.applyToUserSend
Choose whether the dial plan applies to calls placed when the user presses Send.
1 (default)
0
Change causes system to restart or reboot.

dialplan.conflictMatchHandling
Selects the dialplan based on more than one match with the least timeout.
0 (default for Generic Profile)
1 (default for Skype Profile)

dialplan.digitmap.timeOut
Specify a timeout in seconds for each segment of the digit map using a string of positive integers separated by a vertical bar (|). After a user presses a key, the phone waits this many seconds before matching the digits to a dial plan and dialing the call.
(Default) 3 | 3 | 3 | 3 | 3 | 3
If there are more digit maps than timeout values, the default value 3 is used. If there are more timeout values than digit maps, the extra timeout values are ignored.
Change causes system to restart or reboot.

dialplan.digitmap
Specify the digit map used for the dial plan using a string compatible with the digit map feature of MGCP described in 2.1.5 of RFC 3435. This parameter enables the phone to automatically initiate calls to numbers that match a digit map pattern.

Generic Base Profile (default) –

\[2-9]\{1\}1|0T|+011xxx.T|0[2-9]xxxxxxxx|x\{1\}[2-9]xxxxxxxxx|\{2-9\}xxxxT

Lync Base Profile (default) – NULL

\[2-9]\{1\}1|0T|+011xxx.T|0[2-9]xxxxxxxx|x\{1\}[2-9]xxxxxxxxx|\{2-9\}xxxxT (default)

The string is limited to 2560 bytes and 100 segments of 64 bytes, and the following characters are allowed in the digit map.

- A comma (,), which turns dial tone back on.
- A plus sign (+) is allowed as a valid digit.
- The extension letter ‘R’ indicates replaced string.
- The extension letter ‘Pn’ indicates precedence, where ‘n’ range is 1-9.
  1—Low precedence
  9—High precedence

Change causes system to restart or reboot.

dialplan.filterNonDigitUriUsers

Determine whether to filter out (+) from the dial plan.

0 (default)
1

Change causes system to restart or reboot.

dialplan.impossibleMatchHandling

0 (default)—The digits entered up to and including the point an impossible match occurred are sent to the server immediately.
1—The phone gives a reorder tone.
2—Users can accumulate digits and dispatch the call manually by pressing Send.
3 (default) (Skype for Business) — No digits are sent to the call server until the timeout is configured by dialplan.impossibleMatchHandling.timeout parameter.

If a call orbit number begins with a pound (#) or asterisk (*), you need to set the value to 2 to retrieve the call using off-hook dialing.

Change causes system to restart or reboot.

dialplan.removeEndOfDial

Sets if the trailing # is stripped from the digits sent out.

1 (default)
Change causes system to restart or reboot.

**dialplan.routing.emergency.outboundIdentity**

Choose how your phone is identified when you place an emergency call.

NULL (default)

10-25 digit number

SIP

TEL URI

If using a URI, the full URI is included verbatim in the P-A-I header. For example:

- `dialplan.routing.emergency.outboundIdentity = 5551238000`
- `dialplan.routing.emergency.outboundIdentity = sip:john@emergency.com`
- `dialplan.routing.emergency.outboundIdentity = tel:+16045558000`

**dialplan.routing.emergency.preferredSource**

Set the precedence of the source of emergency outbound identities.

ELIN (default)— the outbound identity used in the SIP P-Asserted-Identity header is taken from the network using an LLDP-MED Emergency Location Identifier Number (ELIN).

Config— the parameter `dialplan.routing.emergency.outboundIdentity` has priority when enabled, and the LLDP-MED ELIN value is used if `dialplan.routing.emergency.outboundIdentity` is NULL.

**dialplan.routing.emergency.x.description**

Set the label or description for the emergency contact address.

x=1: Emergency, Others: NULL (default)

string

x is the index of the emergency entry description where x must use sequential numbering starting at 1.

Change causes system to restart or reboot.

**dialplan.routing.emergency.x.server.y**

Set the emergency server to use for emergency routing (`dialplan.routing.server.x.address` where x is the index).

x=1: 1, Others: Null (default)

positive integer

x is the index of the emergency entry and y is the index of the server associated with emergency entry x. For each emergency entry (x), one or more server entries (x,y) can be configured. x and y must both use sequential numbering starting at 1.
Change causes system to restart or reboot.

**dialplan.routing.emergency.x.value**

Set the emergency URL values that should be watched for. When the user dials one of the URLs, the call is directed to the emergency server defined by `dialplan.routing.server.x.address`.

- x=15: 911, others: Null (default)
- SIP URL (single entry)
- x is the index of the emergency entry description where x must use sequential numbering starting at 15.

**dialplan.routing.server.x.address**

Set the IP address or hostname of a SIP server to use for routing calls. Multiple servers can be listed starting with x=1 to 3 for fault tolerance.

- Null (default)
- IP address
- hostname

Blind transfer for 911 or other emergency calls may not work if registration and emergency servers are different entities.

Change causes system to restart or reboot.

**dialplan.routing.server.x.port**

Set the port of a SIP server to use for routing calls.

- 5060 (default)
- 1 to 65535

Change causes system to restart or reboot.

**dialplan.routing.server.x.transport**

Set the DNS lookup of the first server to use and dialed if there is a conflict with other servers.

- DNSnaptr (default)
- TCPpreferred
- UDPOnly
- TLS
- TCPOnly

For example, if `dialplan.routing.server.1.transport` = "UDPOnly" and `dialplan.routing.server.2.transport` = "TLS", then UDPOnly is used.

Change causes system to restart or reboot.
**dialplan.userDial.timeOut**

Specify the time in seconds that the phone waits before dialing a number entered while the phone is on hook.

- Generic Base Profile (default) – 0
- Lync Base Profile (default) – 4
- 0-99 seconds

You can apply `dialplan.userDial.timeOut` only when its value is lower than `up.IdleTimeOut`.

**Related Links**

[Poly Trio System Hybrid Line Registration](#) on page 59

**Open SIP Digit Map**

If you are using a list of strings, each string in the list can be specified as a set of digits or timers, or as an expression which the gateway uses to find the shortest possible match.

In addition, the digit map feature allows SIP URI dialing to match the URIs based on dial plan.

When making a URI call, the Poly Trio system allows dial plan matching for SIP URI calls to append strings to the dialed number. SIP URI dial plan can also be used with auto line switching in Hybrid registration scenarios to automatically select the line based on dial plan.

The following is a list of digit map string rules for open SIP environments.

- The following letters are case sensitive: x, T, R, S, and H.
- You must use only *, #, +, or 0-9 between the second and third R.
- If a digit map does not comply, it is not included in the digit plan as a valid map. That is, no match is made.
- There is no limit to the number of R triplet sets in a digit map. However, a digit map that contains less than a full number of triplet sets (for example, a total of 2 Rs or 5 Rs) is considered an invalid digit map.
- Digit map extension letter R indicates that certain matched strings are replaced. Using an RRR syntax, you can replace the digits between the first two Rs with the digits between the last two Rs. For example, `R555R604R` would replace 555 with 604. Digit map timer letter T indicates a timer expiry. Digit map protocol letters S and H indicate the protocol to use when placing a call.
- If you use T in the left part of RRR's syntax, the digit map will not work. For example, `R0TR322R` will not work.

The following examples illustrate the semantics of the syntax:

- **R9R604Rx** - Replaces 9 with 604
- **xR601R600Rx** - When applied to `1160122` gives `1160022`
- **R9RxxxxxRx** - Remove 9 at the beginning of the dialed number (replace 9 with nothing)
  - For example, if you dial `914539400`, the first 9 is removed when the call is placed.
- **RR604RxxxxxRx** - Prepend 604 to all seven-digit numbers (replace nothing with 604)
  - For example, if you dial `4539400`, 604 is added to the front of the number, so a call to `6044539400` is placed.
- **xR60xR600RxxxxxRx** - Replace any 60x with 600 in the middle of the dialed number that matches.
For example, if you dial 16092345678, a call is placed to 16002345678.

- 911xxx.T-A period (.) that matches an arbitrary number, including zero, of occurrences of the preceding construct. For example:
  - 911123 with waiting time to comply with T is a match
  - 9111234 with waiting time to comply with T is a match
  - 91112345 with waiting time to comply with T is a match and the number can grow indefinitely given that pressing the next digit takes less than T.

- `sip:764xxxxxRR@registrar.polycomcsn.comR` - appends `@registrar.polycomcsn.com` to any URI calls matching with "764xxxxx".

  For example, if you make a SIP URI call with 76412345 then `@registrar.polycomcsn.com` is appended to the string such that the SIP URI call INVITE becomes sip::76412345@vc.polycom.com. Here, `@domain` string is required only for SIP URI calls from unregistered lines.

- `sip:xxxx@registrar.polycomcsn.com` - This will match with any four digit URI calls having the domain `@registrar.polycomcsn.com`.

  For example, if you configure three lines and has dial plan based line switching enabled. Now, if the third line’s dial plan has `sip:xxxx@registrar.polycomcsn.com` then call will be initiated from the third line if user dial `1234@registrar.polycomcsn.com` because it matches with the third line’s dial plan.

**Generating Secondary Dial Tone with Digit Maps**

You can regenerate a dial tone by adding a comma ",," to the digit map.


By adding the digit "8", the dial tone plays again, and users can complete the remaining seven-digit number. In this example, if users also have a 4-digit extension that begins with "8", then users will hear dial tone after the first "8" was dialed because "8" matches the "8" in the digit map.

If you want to generate dial tone without the need to send the "8", replace one string with another using the special character "R" as shown next in the rule `R8RR`. In the following example, replace "8" with an empty string to dial the seven-digit number:


**Join a Meeting with a SIP URI**

When you set up a meeting in the Calendar, the Poly Trio system displays a meeting reminder pop up.

If a dial-in number is available for the meeting, the reminder pop-up presents a Join button that joins you to the meeting. If a meeting lists multiple dial-in numbers or URIs for the meeting, by default the Join button automatically dials the first number.

- SIP URI
- Tel URI
- PSTN number
- IP dial
Join a Meeting with SIP URI Parameters
The following table lists the parameters that configure dial-in information.

exchange.meeting.join.promptWithList
   Specifies the behavior of the Join button on meeting reminder pop-ups.
   0 (default) - Tapping Join on a meeting reminder should show a list of numbers to dial rather than immediately dialing the first one.
   1 - A meeting reminder does not show a list of numbers to dial.

exchange.meeting.parseWhen
   Specifies when to scan the meeting's subject, location, and description fields for dialable numbers.
   NonSkypeMeeting (default)
   Always
   Never

exchange.meeting.parseOption
   Specifies where to search for a dialable number.
   All (default)

exchange.meeting.parseEmailsAsSipUris
   List instances of text like user@domain or user@ipaddress in the meeting description or subject under the More Actions pane as dialable SIP URIs.
   0 (default) - it does not list the text as a dialable SIP URI
   1 - it treats user@domain

exchange.meeting.parseAllowedSipUriDomains
   List of comma-separated domains that will be permitted to be interpreted as SIP URIs
   Null (default)
   String (maximum of 255 characters)

Local Call Recording
Local call recording enables you to record audio calls to a USB device connected to the phone.
You can play back recorded audio on the phone or devices that run applications like Windows Media Player® or iTunes® on a Windows® or Apple® computer. To use this feature, ensure that the USB port is enabled.
Audio calls are recorded in .wav format and include a date/time stamp. The phone displays the recording time remaining on the attached USB device, and users can browse all recorded files using the phone's menu.

**Note:** Federal, state, and/or local laws may legally require that you notify some or all of the call parties when a call recording is in progress.

### Local Call Recording Parameter

Use the following parameter to configure local call recording.

**feature.callRecording.enabled**

- 0 (default) - Disable audio call recording.
- 1 - Enable audio call recording.

Change causes system to restart or reboot.

### International Dialing Prefix

Enter a plus (+) symbol before you dial an international phone numbers to identify to the switch that the phone number you are dialing is international.

### International Dialing Prefix Parameters

The following parameters configure the international dialing prefixes.

**call.internationalDialing.enabled**

- This parameter applies to all numeric dial pads on the phone, including for example, the contact directory.

Changes you make to this parameter cause a restart or reboot.

- 1 (default) - Disable the key tap timer that converts a double tap of the asterisk "*" symbol to the "+" symbol to indicate an international call. By default, this parameter is enabled so that a quick double tap of "**" converts immediately to "+". To enter a double asterisk "**", tap "*" once and wait for the key tap timer to expire to enter a second "*".

- 0 - When you disable this parameter, you cannot dial "+" and you must enter the international exit code of the country you are calling from to make international calls.

Change causes system to restart or reboot.

**call.internationalPrefix.key**

- The phone supports international call prefix (+) with both "0" and "*".

- 0 (default) - Set the international prefix with "*".
- 1 - Set the international prefix with "0".
Centralized Conference Control Protocol (CCCP)

CCCP is enabled by default when the Poly Trio's Base Profile is set to Skype.

CCCP enables users to initiate conference calls with Skype for Business contacts from their phone, manage conference participants, enable announcements, and lock a conference. Users can manage a maximum of 24 Skype for Business conference calls at a time on their phone. However, users can have only one active conference call in progress on their phone.

Centralized Conference Control Protocol (CCCP) Parameters

The following parameters configure CCCP on the Poly Trio system.

**feature.cccp.enabled**

- 1 (enabled) - Enable use of CCCP.
- 0 - Disable use of CCCP.

Enhanced 911 (E.911)

This E.911 feature allows you to configure one of three sources the phone obtains location information from:

- LLDP-MED
- DHCP via option 99
- LIS compliant with RFC 5985

Configuring the source of location information allows the phone to share its location details in the invite sent when a 911 call is made to ensure the 911 operator dispatches emergency services to the correct address.

Enhanced 911 (E.911) Parameters

Use the following parameters to configure E.911.

**feature.E911.locationInfoSchema**

- HYBRID (default) - SIP invites use an XML schema as per the RFC4119 and RFC5139 standards.
- RFC 4119 - SIP invites use an XML schema as per the RFC4119 standards.
- RFC5139 - SIP invites use an XML schema as per the RFC5139 standards.

**feature.E911.HELD.server**

- NULL (default)

Set the IP address or hostname of the Location Information Server (LIS) address. For example, host.domain.com or https://xxx.xxx.xxx.xxx.

- 0 - 255

**feature.E911.HELD.username**
NULL (default)
Set the user name used to authenticate to the LIS.

**feature.E911.HELD.password**

NULL (default)
Set the password used to authenticate to the Location Information Server.

0-255

**feature.E911.HELD.identity**

Set the vendor-specific element to include in a location request message. For example, 'companyID'.

NULL (default)
String 255 character max

**feature.E911.HELD.identityValue**

Set the value for the vendor-specific element to include in a location request message.

NULL (default)
String 255 character max

**feature.E911.locationRetryTimer**

Specify the retry timeout value in seconds for the location request sent to the Location Information Server (LIS).

The phone does not retry after receiving location information received through the LIS.

60 seconds (default)
60 - 86400 seconds

**feature.E911.HELD.nai.enable**

0 (default) – The NAI is omitted as a device identity in the location request sent to the LIS.

1 - The NAI is included as a device identity in the location request sent to the LIS.

**locInfo.source**

Specify the source of phone location information. This parameter is useful for locating a phone in environments that have multiple sources of location information.

LLDP (default for Generic Base Profile) – Use the network switch as the source of location information.

MS_E911_LIS (default for Lync Base Profile) – Use the Skype for Business Server as the source of location information.
CONFIG – You can manually configure the source of location information for Skype for Business.
LIS – Use the location information server as the source of location information. Generic Base Profile only.
DHCP – Use DHCP as the source of location information. Generic Base Profile only.

If location information is not available from a default or configured source, the fallback priority is as follows:

Generic Base Profile: No fallback supported for Generic Base Profile
Lync Base Profile: MS_E911_LIS > CONFIG > LLDP

**locInfo.x.label**

Enter a label for the location.
Null (default)

**locInfo.x.country**

Enter the country where the phone is located.
Null (default)

**locInfo.x.A1**

Enter the national subdivision where the phone is located. For example, a state or province.
Null (default)

**locInfo.x.A3**

Enter the city where the phone is located.
Null (default)

**locInfo.x.PRD**

Enter the leading direction of the street location.
Null (default)

**locInfo.x.RD**

Enter the name of road or street where the phone is located.
Null (default)

**locInfo.x.STS**

Enter the suffix of the name used in `locInfo.x.RD`. For example, street or avenue.
Null (default)
locInfo.x.POD
Enter the trailing street direction. For example, southwest.
Null (default)

locInfo.x.HNO
Enter the street address number of the phone’s location.
Null (default)

locInfo.x.HNS
Enter a suffix for the street address used in locInfo.x.HNS. For example, A or ½.
Null (default)

locInfo.x.LOC
Enter any additional information that identifies the location.
Null (default)

locInfo.x.NAM
Enter a proper name to associate with the location.
Null (default)

locInfo.x.PC
Enter the ZIP or postal code of the phone’s location.
Null (default)

feature.E911.enabled
0 (default) – Disable the E.911 feature.
1 – Enable the E.911 feature.
The INVITE sent for emergency calls from the phone includes the geolocation header defined in RFC 6442 and PIDF presence element as specified in RFC3863 with a GEOPRIV location object specified in RFC4119 for in Open SIP environments.
This parameter is mutually exclusive of the Ribbon Communications E.911 feature and if this parameter and feature.genband.E911.enabled are enabled, this parameter takes precedence.

feature.E911.HELD.requestType
Any (default) - Send a request to the Location Information Server (LIS) to return either ‘Location by Reference’ or ‘Location by Value’. Note this is not the ‘Any’ value referred to in RFC 5985.
Civic – Send a request to the LIS to return a location by value in the form of a civic address for the device as defined in RFC 5985.

RefID – Send a request to the LIS to return a set of Location URIs for the device as defined in RFC 5985.

**voIpProt.SIP.header.priority.enable**

0 (default) – Do not include a priority header in the E.911 INVITE message.

1 - Include a priority header in the E.911 INVITE message.

**voIpProt.SIP.header.geolocation-routing.enable**

0 (default) – Do not include the geolocation-routing header in the E.911 INVITE message.

1 - Include the geolocation-routing header in the E.911 INVITE message.

**feature.E911.HELD.secondary.server**

Set the IP address or hostname of the secondary Location Information Server (LIS) address. For example, host.domain.com or https://xxx.xxx.xxx.xxx.

NULL (default)

0-255

Dotted-decimal IP address

Hostname

Fully-qualified domain name (FQDN)

**feature.E911.HELD.secondary.username**

Set a user name to authenticate to the secondary Location information Server (LIS).

NULL (default)

String

0-255

**feature.E911.HELD.secondary.password**

Set a password to authenticate to the secondary LIS.

NULL (default)

String

**feature.E911.usagerule.retransmission**

0 (default) - The recipient of this location object is not permitted to share the enclosed location information, or the object as a whole, with other parties.

1 - Distributing this location is permitted.
**lync.E911.notificationUri.expansion.enabled**

0 (default) - Disables expansion of distribution lists.
1 - Enables users to expand distribution lists received as part of the notification URI.

**lync.E911.notificationUri.maxUrls**

Set the limit for the number of URLs in the notification URI.
30 (default)
1 - 100

### PSTN Gateway on Failover

When a phone becomes unregistered due to an outage and can’t reach the Skype for Business server for a specified time interval, the phone fails over to an alternate PSTN gateway server.

You can view the PSTN failover details in the Web Configuration Utility.

When you enable this feature, calls switch to the configured PSTN gateway in the event of an outage. However, if the phone fails over, only basic call-related functions and soft keys are available.

Make sure the value of `call.enableOnNotRegistered` and `reg.x.srtp.simplifiedBestEffort` parameter is set to 1.

**Note:** The failover feature does not work if you enable the hybrid line registration feature.

Ensure the Direct Inward Dialing number registered on the Skype for Business server and the number used for the PSTN gateway are same.

### PSTN Gateway Failover Parameters

The following parameters configure phones to fail over to an alternate PSTN gateway in the event of an outage or if the phones can’t reach the Skype for Business server.

**feature.sfbPstnFailover.enabled**

Enable or disable for phones to fail over to a PSTN gateway during an outage.

0 (default)
1

Change causes system to restart or reboot.

**reg.x.server.y.address**

If this parameter is set, it takes precedence even if the DHCP server is available.

Null (default) - SIP server does not accepts registrations.

IP address or hostname - SIP server that accepts registrations.

This parameter is only applicable during a failover to PSTN gateway in Skype for Business deployments.
**reg.x.server.y.pstnServerAuth.userId**

Specify the user identification for the PSTN gateway.
- Null (default)
- String (maximum of 255 characters)

**reg.x.server.y.pstnServerAuth.password**

Specify the PSTN user's password.
- Null (default)
- String (maximum of 255 characters)

### DMA Record Route Parameter

When Polycom Trio is registered with the Polycom RealPresence Distributed Media Application (DMA) some call issues may arise due to the route-set on a UPDATE response.

If there are any call issues with a Polycom Trio system registered to DMA, disable the following parameter to resolve the issues.

**feature.updateRecordRoute.enabled**

- 1 (default) - The system does not update the route-set on SIP UPDATE response.
- 0 - The system updates the route-set on SIP UPDATE response

Change causes system to restart or reboot.

### Certificates

If you need to set up a remote worker, you must manually enter a certificate to the phone. You can add the certificate using parameters included in the `SkypeTrioSharedExample.cfg` file. You also have the option to create your own XML configuration file and upload it to a phone using the Web Configuration Utility.

You can manually install certificates on a per-phone basis only. You must use Base64 format.

When phones are signed in and the software is downgraded, the phones will be in the signed-in state until the User Certificates are valid.

If you are setting up your network and you want more information on certificate options see Configure the Network.

**Related Links**

- [Configure the Network](#) on page 19

### Install a Certificate for Poly Trio Systems Using Configuration Files

You can manually install a certificate using configuration parameters in the template files available with UC Software.
Procedure

1. Locate the SkypeTrioSharedLCExample.cfg configuration file template on Poly Trio Support.
2. Place the configuration file in a location in your Skype for Business directory.
3. Enter the certificate and application profile to the following two parameters:
   - `sec.TLS.customCaCert.1=<enter the certificate>`
   - `sec.TLS.profileSelection.SIP=<ApplicationProfile1>`
4. Enter the root CA certificate, in Base64 format, in `sec.TLS.customCaCert.1` and set the application profile in `sec.TLS.profileSelection.SIP`.

   You have successfully installed a security certificate.

Manually Install a Certificate with the Web Configuration Utility

You can use the Web Configuration Utility to install a certificate manually after you access the Web Configuration.

Procedure

1. Log into the Web Configuration Utility as an Administrator.
2. Go to UtilitiesImport & Export Configuration.
3. Under Import Configuration, click Choose File.
4. In the dialog, choose the XML configuration file you created and click Import.

   The XML configuration file is successfully loaded to the phone.
5. To verify that the file is loaded, go to Menu > Settings > Status > Platform > Configuration.

Content

Poly offers several content sharing options for phones deployed with Skype for Business.

Using Conference Room Accounts to Receive Content with Skype for Business

The Poly Trio system enables you to use native Skype for Business content protocols, Remote Desktop Protocol (RDP), and Video-based Screen Sharing (VbSS) to receive content. These protocols enable both application and desktop sharing.

To maximize the benefits of content sharing, Poly recommends creating a Skype for Business Room account or CsMeetingRoom account to allow sharing from in-room clients. When you create a conference room account, the Skype for Business Room System or Microsoft Teams Room System prompts content presenters to mute the microphone and speaker to avoid audio feedback.

The Poly Trio solution can only receive Skype for Business-based content. Users cannot transmit content from the Poly Trio solution.

Create a Skype for Business Room System Account

To create a Skype for Business Room System account, complete the following procedure and update your account name and server details on your Exchange Server Management Shell.
Procedure

1. Within your Exchange Management Shell, set the following:
   - `New-Mailbox -Name 'Trio Room01' -Alias 'Trio.Room01' -UserPrincipalName 'Trio.Room01@domain.com' -SamAccountName 'Trio.Room01' -FirstName 'Trio' -Initials '' -LastName 'Room01' -Room`
   - `Set-CalendarProcessing -Identity Trio.Room01 -AutomateProcessing AutoAccept -AddOrganizerToSubject $false -RemovePrivateProperty $false -DeleteSubject $false`
   - `Set-Mailbox -Identity Trio.Room01@domain.com -MailTip "This room is equipped with a Polycom Trio 8800, please make it a Skype for Business Meeting to take advantage of the enhanced meeting experience."
   - `Set-ADAccountPassword -Identity Trio.Room01`
   - `Enable-ADAccount -Identity Trio.Room01`

2. Within your Skype for Business Management Shell, set:
   - `Enable-CsMeetingRoom -SipAddress "sip:Trio.Room01@domain" -domaincontroller dc.domain.local -RegistrarPool pool01.domain.local -Identity Trio.Room01`

Video-based Screen Sharing (VbSS)

Poly Trio systems registered with Skype for Business allow you to enable Video-based Screen Sharing (VbSS) for sharing content using Skype for Business clients. VbSS enables both application and desktop sharing.

**Note:** Poly Trio systems can only receive Skype for Business VbSS content. You cannot transmit VbSS content from Poly Trio systems.

Whereas Microsoft's traditional content sharing uses remote desktop protocol (RDP), VbSS uses User Datagram Protocol (UDP). The following are some advantages of VbSS using UDP over content sharing with RDP:

- Faster connection times
- Faster video and more frames-per-second.
- Works better in low-bandwidth conditions, even when receiving high motion content, such as 3-D graphics.

**Note:** If any participant in a Skype for Business conference does not support VbSS, the Skype for Business server switches from VbSS to RDP.

Video-based Screen Sharing Parameters

The following table lists the parameters for configuring Video-based Screen Sharing (VbSS).

**content.vbss.enable**

1 (default) – Enable use of VbSS to receive content from the Skype for Business client.
0 – Use remote desktop protocol (RDP) to receive content from the Skype for Business client.

**content.vbssPush.enable**

This parameter applies only when using a paired Poly Trio VisualPro system.

1 (default) - The phones use VbSS to send content in Skype for Business conference and point-to-point calls.

0 - The phone does not use VbSS to send content in Skype for Business conference and point-to-point calls.

**content.vbssPushP2P.enable**

This parameter applies only when using a paired Poly Trio VisualPro system.

1 (default) - The phones use VbSS to send content in Skype for Business point-to-point calls.

0 - The phones do not use VbSS to send content in Skype for Business point-to-point calls.

This parameter is ignored if `content.vbssPush.enable=0`.

**Content Sharing**

You can share content to the local monitor when your Poly Trio system is paired with a Poly Trio Visual+ or Trio VisualPro system. You cannot share content in a Skype for Business meeting.

To share content:

- The Poly Trio Visual+ or Trio VisualPro system must be paired with a Poly Trio system.
- The computer and Poly Trio system must be able to communicate on the same IP network.

You can use the following methods to share content locally:

- Polycom® People+Content™ (PPCIP) technology
- Polycom Content App
- Polycom® RealPresence® Desktop for Windows® or Mac®
- Polycom® RealPresence® Mobile app
- Device connected to a paired Trio VisualPro system with an HDMI or VGA cable

You can download People+Content IP and RealPresence Desktop from Polycom Support and RealPresence Mobile from your mobile application store.

For information about using PPCIP on the Poly Trio solution registered with Skype for Business, see the *Poly Trio - User Guide* at Poly Trio on [Polycom Support](https://www.poly.com).

**Note:** The default port used by Group Paging when enabled conflicts with the UDP port 5001 used by Polycom® People+Content™ on the Poly Trio system. Since the port used by People+Content is fixed and cannot be configured, configure one of the following workarounds:

- Configure a different port for Group Paging using parameter `ptt.port`.
- Disable People+Content IP using parameter `content.ppcipServer.enabled="0"`. 
Content Sharing Parameters

Use the following parameters to configure content sharing options.

To enable device pairing with the Poly Trio solution, use the smartpairing* parameters.

**content.autoAccept.rdp**

1 (default) - Content sent via Skype for Business Remote Desktop Protocol (RDP) by far-end users is automatically accepted and displayed on a near-end Poly Trio solution.

0 - Near-end users are prompted to accept Skype for Business RDP content sent to Poly Trio solution from a far-end user.

**content.bfcp.enabled**

1 (default) - Enable content sharing by offering or accepting the Binary Floor Control Protocol (BFCP) in Session Description Protocol (SDP) negotiation during SIP calls. Does not apply to Skype for Business calls.

0 - Disable content sharing using BFCP.

**content.bfcp.port**

15000 (default)

0 - 65535

**content.bfcp.transport**

UDP (default)

TCP

**content.local.bitRate**

Set the default maximum bit rate for local content, content not shared during an active call.

8000000 (8Mb/s) (default)

2000000 - default for Poly Trio 8300

Range is 1000000 (1Mb/s) to 20000000 (20Mb/s).

This parameter does not apply to content shared using Screen Mirroring with Airplay or the Wireless Display feature.

**mr.content.rdp.tls.enabled**

Enable or disable TLS encryption of Skype for Business RDP content between hubs and devices.

1 (default)

0
**mr.content.rdp.tls.enabled**
1 (default) - Enable TLS encryption of Skype for Business RDP content between hubs and devices.
Disable TLS encryption of Skype for Business RDP content.

**mr.contentStreamPortEnd**
The IP port range end port used for content input streams received from the Poly Trio Visual+ system.
4320 (default)
1024 – 65436

**mr.contentStreamPortStart**
The IP port range start port used for content input streams received from the Poly Trio Visual+ system.
4300 (default)
1024 – 65436

**mr.localContent.autoDisplay.enable**
1 (Default) – Content automatically displays when an HDMI cable is plugged in.
0 – Content does not automatically start if HDMI is plugged in. Use the Poly Trio system user interface to begin sharing content.

**reg.x.content.bfcp.enabled**
1 (default) - Enable Binary Floor Control Protocol content to be shared during calls for the line you specify.
0 - Disable Binary Floor Control Protocol content.

**smartPairing.mode**
Enables users with People+Content IP or Desktop on a computer or Mobile on a tablet to pair with the Poly Trio conference phone using SmartPairing.
Disabled (default) - Users cannot use SmartPairing to pair with the conference phone.
Manual - Users must enter the IP address of the conference phone to pair with it.

**smartPairing.volume**
The relative volume to use for the SmartPairing ultrasonic beacon.
6 (default)
0 - 10
Polycom People+Content IP

Sharing content with Polycom People+Content IP from a computer connected over IP supports 1080p resolution at a maximum of 30 frames per second (fps) on one or more connected monitors. The computer and Poly Trio solution must be able to communicate on the same IP network, and you must pair your Polycom software application with the Poly Trio system.

When you register Poly Trio systems with Skype for Business, you can only share content to a local monitor. You can’t share content from a Poly Trio system over a Skype for Business call. For instructions, see the Poly Trio Solution User Guide at Poly Trio in the Polycom Documentation Library.

Polycom People+Content IP Parameters

The following table lists parameters that configure content sharing with the Poly Trio solution.

**content.ppcip.resolutionPreferred**
- 1 (default) – The Poly Trio system attempts to get higher resolution content with lower frames per second after the SDP negotiation.
- 0 - Content resolution is set based on the SDP negotiation.

**content.ppcipServer.authType**
The authentication type used for PPCIP content sessions.
- none (default) - No security code for Polycom People+Content IP-enabled clients is required.
- passcode - Use a security code to authenticate Polycom People+Content IP-enabled clients.

**content.ppcipServer.enabled**
- 1 (default) - Enable Polycom People+Content IP content server for sharing.
- 0 - Disable Polycom People+Content IP content server.

**content.ppcipServer.enabled.Trio8500**
- 1 (default) - Enable Polycom People+Content IP content server for content sharing with Poly Trio 8500.
- 0 - Disable Polycom People+Content IP content server for Poly Trio 8500.

**content.ppcipServer.enabled.Trio8800**
- 1 (default) - Enable Polycom People+Content IP content server for content sharing with Poly Trio 8800.
- 0 - Disable Polycom People+Content IP content server for Poly Trio 8800.
Polycom People+Content IP over USB
You can use Polycom® People+Content® IP (PPCIP) to share video or data to a local monitor connected to the Poly Trio system using a Windows® or Mac® computer connected by USB to the Poly Trio system.

When you install PPCIP version 1.4.2 and run it unopened in the background, the PPCIP application pops up immediately when you connect the computer to Poly Trio solution via USB.

Keep the following points in mind:

• You can show content with People+Content IP on a Windows or Mac computer connected by USB to Poly Trio to a maximum of 1080p resolution and a maximum of 30 frames per second (fps).
• Audio content is not shared.
• Content sent from People+Content is sent over USB, and no network connection is needed. This is useful for environments where guest IP access is not allowed. You must use UC Software 5.4.3AA or later to share your desktop at up to 1080p resolution using a Mac computer connected by USB to the Poly Trio solution.

**Important:**
The default port used by Group Paging when enabled `ptt.pageMode.enable="1"` conflicts with the UDP port 5001 used by Polycom® People+Content™ on the Poly Trio system. Since the port used by People+Content is fixed and cannot be configured, configure one of two workarounds:

◦ Configure a different port for Group Paging using parameter `ptt.port` or
◦ Disable People+Content IP using parameter `content.ppcipServer.enabled="0"`.

Polycom People+Content IP over USB Parameter
The following parameter configures the People+Content over USB feature.

`feature.usb.device.content`

1 (default) - Enable content sharing using the People+Content IP application on a computer connected by USB to Poly Trio solution.

0 - Disable content sharing using the People+Content IP application on a computer connected by USB to Poly Trio solution.

Polycom Content Application
The Polycom Content App enables users to share content over IP from a Poly Trio 8500 or 8800 system with a paired Poly Trio Visual+ or Poly Trio Visual Pro system.

When a user connects to a Poly Trio system over IP in the Polycom Content app, if enabled, the pass code displays in the Global menu on the system and on the connected monitor when the system is idle; when in a call, the pass code displays in the Global menu, but it does not display on the connected monitor.

For more information on using the Polycom Content App, refer to the *Polycom Content App User Guide* on the Polycom Documentation Library.
Bluetooth Discovery on Poly Trio with the Polycom Content Application

You can share content through the Polycom Content App, version 1.3 or later, by connecting the Poly Trio system to the application.

To enable users to connect Poly Trio to the Polycom Content application, you need to configure Poly Trio to advertise the system's IP address over Bluetooth using the parameter `bluetooth.beacon.ipAddress.enabled`. When this parameter is set to 1, the Bluetooth radio is automatically turned on for the system, and the IP address for the system is sent to the Polycom Content app over Bluetooth. You can also enable Bluetooth discovery on the phone and in the Web Configuration Utility.

The parameter `bluetooth.beacon.ipAddress.enabled` also replaces the parameter `content.airplayServer.discovery.bluetooth.enabled` for AirPlay discovery over Bluetooth.

**Bluetooth Discovery Parameters**

Use the following parameter to enable Bluetooth Discovery between Poly Trio and the Polycom Content App.

`bluetooth.beacon.ipAddress.enabled`

Set to send the IP address of the system over Bluetooth.

1 (default) - Enables sending the system IP address over Bluetooth. Turns Bluetooth radio on when `feature.bluetooth.enabled = 1`.

0 - Disables sending the system IP address over Bluetooth

**Note:** Enable the parameter `feature.bluetooth.enabled` to use this feature.

Screen Mirroring

The Poly Trio 8800 system supports screen mirroring locally from Apple®-certified devices and the Wireless Display feature for Miracast®-certified Android™ and Windows® devices.

Screen Mirroring with AirPlay-Certified Devices

This section provides information you need to set up and configure a Poly Trio 8800 system to work with AirPlay-certified devices.

The following information applies to using AirPlay-certified devices with the Poly Trio system:

- You can display local content only from your AirPlay-certified device to the Poly Trio 8800 system monitor.
- Sharing content from direct streaming sources, such as YouTube™ or web links, is not supported.
- If you share content during a point-to-point or conference call, the content is not sent to far-end participants.
- Audio-only content is not supported. If you only want to share audio, consider using Bluetooth or USB connectivity.
- Apple Lossless Audio Codec (ALAC) is not supported.

Poly Trio 8800 systems support the following AirPlay-certified devices:

- Apple®
The Poly Trio 8800 system supports a maximum resolution and frame rate of 720p@60fps or 1080p@30fps. If configured for 1080p resolution, an iPad often sends 60fps video, which can result in latency in mirroring, visual artifacts, or both.

When the Poly Trio 8800 system receives content from a Skype for Business client using the Remote Desktop Protocol (RDP) at the same time as content from an AirPlay-certified device, the AirPlay content takes precedence and displays. When you end AirPlay content, available Skype for Business content displays.

Requirements for Screen Mirroring with AirPlay

You must meet the following requirements to use the screen mirroring feature on an AirPlay-certified device with a Poly Trio 8800 system:

- Poly Trio collaboration kit running UC Software version 5.4.4AA or later
- The Poly Trio system and Apple devices are on the same subnet.
  The devices can be on different subnets if the devices are routable and multicast DNS (Bonjour) is bridged between the subnets for discovery. The devices can also be on different subnets if AirPlay Discovery over Bluetooth is enabled, the subnets are routable to each other, and the device is within Bluetooth range.
- The screen mirroring feature uses the following ports:
  - Discovery: UDP port 5353
  - Sessions: TCP ports 7000, 7100, 8009, and 47000; UDP port 1900

Poly Trio 8800 for AirPlay Parameters

Use the following parameters to configure the Poly Trio 8800 system for AirPlay-certified devices.

**bluetooth.beacon.ipAddress.enabled**

Set to send the IP address of the system over Bluetooth.

1 (default) - Enables sending the system IP address over Bluetooth. Turns Bluetooth radio on when `feature.bluetooth.enabled = 1`.
0 - Disables sending the system IP address over Bluetooth

Note: Enable the parameter `feature.bluetooth.enabled` to use this feature.

**content.airplayServer.authType**

none (default) - No security code for AirPlay certified devices is required.

passcode - Use a security code to authenticate AirPlay-certified devices.

**content.airplayServer.enabled**

0 (default) - Disable the content sink for AirPlay-certified devices.
1 - Enable the content sink for AirPlay-certified devices.

```
content.airplayServer.maxResolution
```

Set the content resolution.

- 720p (default)
- 1080p
- 1024x1024
- 960x960
- 480x480

```
content.airplayServer.name
```

Specify a system name for the local content sink for AirPlay certified devices. If left blank the previously configured or default system name is used.

NULL (default)

```
content.local.authChangeInterval
```

Set the interval in minutes between changes to the local content authentication credentials.

- 1440 (default)
- 0 - 65535
- 0 - Do not change

```
content.local.authChangeMode
```

Specify when the security code for content sharing with AirPlay-certified devices changes.

- session (default) - Code changes at the end of each content sharing session.
- relativeTime - Code changes at an interval specified by the `content.local.authChangeInterval` parameter.

**Troubleshooting**

This section provides solutions to common issues you may have using the Poly Trio 8800 system with AirPlay-certified devices.

**The Poly Trio 8800 system does not advertise on my device**

The Poly Trio may not be broadcasting for discovery, or the broadcasts are being blocked.

- Ensure your Apple device is on the same subnet as the Poly Trio 8800 system and that Poly Trio has screen mirroring enabled.
AirPlay Debugging Log Parameters
If you experience further issues using AirPlay-certified devices with the Poly Trio 8800 system, you can enable the following logging parameters on your Poly Trio to get extended debugging data.

```plaintext
airp
Session management and communication specifically for AirPlay certified devices.

airpl
Protocol library for AirPlay-certified devices

airps
Android service AirPlay-certified devices

lc
Local Content (including for AirPlay-certified devices and PPCIP) session management
```

Screen Mirroring with Miracast-Certified Devices
The Wireless Display feature lets you display content wirelessly from your Miracast-certified Android or Windows device to a local monitor paired with a Poly Trio 8800 system.

Windows or Android devices can discover and connect directly with the Poly Trio 8800 system and don’t have to be on the same network. The Poly Trio 8800 system supports content sharing from the following Android and Windows devices:

- Miracast-certified devices running Windows 10
- Samsung Galaxy smartphones and tablets running Android version 4.4 or earlier

**Note:** Poly can’t guarantee connectivity with all Miracast-certified devices. Connectivity has been validated to work well with Samsung smartphones and tablets using Android version 4.4 or later and the Microsoft Surface® 3 Pro and Surface® 4 Pro running Windows 10.

Requirements
You must meet the following requirements to use the Wireless Display feature on a Miracast-certified device with the Poly Trio 8800 system:

- Poly Trio 8800 collaboration kit running UC Software version 5.4.4AA or later

If you do not allow auto-negotiation, some devices might fail to pick the best possible video stream parameters.

Limitations
The following is a list of limitations when using Wireless Display with Poly Trio and supported Miracast-devices:

- Some devices can't establish direct connection to Trio if they are already connected to 5GHz-only Wi-Fi Access Point. If experiencing this issue, disconnect the device from the Access Point while
sharing content or by reconfiguring the Access Point to operate on 2.4GHz-only or 2.4Ghz + 5GHz bands.

- Wireless Display can’t be used on a Poly Trio system configured for WLAN mode as the Poly Trio Visual+ does not support WLAN.
- The Poly Trio system can display content up to a maximum resolution and frame rate of 720 at 60fps or 1080 at 30fps. If the system is configured to auto-negotiate the frame rate of transmitted content some tablets might send 1080p at 60fps video, which can cause multiple second latency in mirroring, visual artifacts, or both.

Requirements

You must meet the following requirements to use the Wireless Display feature on a Miracast-certified device with the Poly Trio 8800 system:

- Poly Trio 8800 collaboration kit running UC Software version 5.4.4AA or later

If you do not allow auto-negotiation, some devices might fail to pick the best possible video stream parameters.

Poly Trio 8800 for Miracast-Certified Devices Parameters

Use the following parameters to configure Wireless Display on the Poly Trio 8800 system.

**content.wirelessDisplay.sink.authorizationType**

- Auto (Default) - Content is automatically accepted and displays on the Poly Trio 8800 system.
- Button - Users must confirm content acceptance on a popup message.

**content.wirelessDisplay.sink.bitrate**

Set the content maximum bitrate in Mbps

- 30 (default)
- 0 - 60
- 0 allows auto-negotiation.

**content.wirelessDisplay.sink.enabled**

- 0 (default) - Disable Wireless Display.
- 1 - Enable Wireless Display.

**content.wirelessDisplay.sink.fps**

Set the content frame rate in frames per second.

- 30 (default)
- 0 - 60
- 0 allows auto-negotiation

**content.wirelessDisplay.sink.height**
Set the maximum content height in pixels.
1080 (default)
0 - 1200
0 allows auto-negotiation

content.wirelessDisplay.sink.name

NULL - default
Specify a system name for the local content sink for Android or Windows devices. If left blank the previously configured or default system name is used.

content.wirelessDisplay.sink.width

Set the maximum content width in pixels.
1920 (Default and Maximum)
0 allows auto-negotiation

Troubleshooting

This section provides solutions to common issues you may have using Wireless Display on the Poly Trio 8800 system.

My Poly Trio 8800 system does not advertise on my smartphone or tablet

If the Poly Trio 8800 system does not advertise on your smartphone or tablet device, check the following:

• Ensure Wi-Fi is enabled on your device and the band is set to 2.4GHz or Auto. The Auto setting allows the connecting device better access to a free wireless channel.

• Ensure the correct country of operation is set and that both bands are selected on the Poly Trio 8800 system by configuring the following:

device.wifi.country.set="1"device.wifi.country="CA"device.wifi.radio.band2_4GHz.enable.set="1"
device.wifi.radio.band2_4GHz.enable="1"device.wifi.radio.band5GHz.enable.set="1"device.wifi.radio.band5GHz.enable="1"device.wifi.enabled.set="1"device.wifi.enabled="0"device.net.enabled.set="1"device.net.enabled="1"

Note: The WLAN operating mode on the Poly Trio 8800 system is mutually exclusive of the Wireless Display feature. You can enable Wireless Display only if wired Ethernet is used for calling and conferencing. Ensure that wired Ethernet is used for calling and conferencing.

Video Quality is Poor

Incorrect image resolution can cause content delays and video artifacts.

Note that the Poly Trio 8800 system does not accept 1080@60fps video resolution.

• To resolve video quality issues, configure the following for the Poly Trio 8800 system:

content.wirelessDisplay.sink.width="0"content.wirelessDisplay.sink.height ="0"content.wirelessDisplay.sink.fps="0"

• In addition, you can set a limit on the live stream parameters by setting:

content.wirelessDisplay.sink.fps="30"
Wireless Display Debugging Log Parameters
If you experience further issues using Wireless Display on the Poly Trio 8800 system, you can enable the following logging parameters on your Poly Trio 8800 system to get extended debugging data.

\textbf{wdisp}

Wireless Display session management and communication with the Wireless Display source

\textbf{apps}

Wireless Display support for Android

\textbf{lc}

Local Content (including Wireless Display and PPCIP) session management

Access Diagnostic Information
If you experience issues using Wireless Display on the Poly Trio 8800 system, you can access diagnostic information from the Poly Trio 8800 menu.

On the phone menu, go to one of the following settings:

- Settings > Status > Diagnostics > Local Content Media Statistics
- Settings > Status > Diagnostics > Graphs > Local Video Content Statistics
- Settings > Status > Diagnostics > Graphs > Networked Devices Graphs
- Settings > Status > Diagnostics > Networked Devices > Statistics

Configuring HDMI Content Input Settings
Polycom Trio when paired with RealPresence Group Series system, allow the HDMI or VGA content input ports of the RealPresence Group Series system to display the content locally and share the content to the far-end participants during a call.

HDMI Content Input Parameters
The following parameters are used to configure the HDMI content input on network device module.

\textbf{mr.contentStreamPortStart}

Determines the start range of IP ports used for content input streams received from a network device module.

4300 (default)
1024 - 65436
Change causes system to restart or reboot.

\textbf{mr.contentStreamPortEnd}
Determines the end range of IP ports used for content input streams received from a network device module.

4300 (default)
1024 - 65436

Change causes system to restart or reboot.

**Poly Trio System Contact Directories**

When the Poly Trio system Base Profile is set to Skype, you can access contacts using the Skype for Business contact list and set the contact list to be editable or read-only.

The local contact directory is disabled by default when the Poly Trio system Base Profile is set to Skype and you can enable it using the parameter `feature.directory.enabled`. You can protect the local contact directory with user credentials and set contacts to be read-only or editable. If the Poly Trio system Base Profile is set to 'SkypeUSB', no local contact directory is available and you can access the Skype for Business contact list.

The maximum number of contacts you can configure is 3000 and the maximum file size of the local Contact Directory is 4MB. To reduce use of phone memory, use the parameter `dir.local.contacts.maxNum` to set a lower maximum number of contacts.

**Unified Contact Store**

Administrators can unify users' contacts with Microsoft Exchange Server to enable users to access and manage contacts from any application or device synchronized with the Exchange Server including Poly phones, Skype for Business client, Outlook, or Outlook Web Application from a mobile device.

For example, if a user deletes a contact from a phone, the contact is also deleted on the Skype for Business client. Note users can manage (move, copy) contacts across Groups only on the Skype for Business client and Group contacts on the phone stay unified.

When an administrator enables Unified Contact Store, users can:

- Add a contact
- Delete a contact
- Add and delete a Distribution List (DL) group
- Manage contacts or groups

To set up this feature, administrators must use a PowerShell command using the instructions on the Microsoft TechNet web site Planning and deploying unified contact store in Lync Server 2013.

**Call Lists**

The phone records and maintains user phone events to a call list, which contains call information such as remote party identification, time and date of the call, and call duration.

The list is stored on the provisioning server as an XML file named `<MACaddress>-calls.xml`. If you want to route the call lists to another server, use the `CALL_LISTS_DIRECTORY` field in the master configuration file. All call lists are enabled by default.
The phones automatically maintain the call lists in three separate call lists that users can access: Missed Calls, Received Calls, and Placed Calls. Users can clear lists manually on their phones, or delete individual records or all records in a group (for example, all missed calls).

**Call List Parameters**

Use the following parameters to configure call lists.

**callLists.collapseDuplicates**

Lync Base Profile – 0 (default)

Generic Base Profile – 1 (default)

1 – Consecutive incomplete calls to/from the same party and in the same direction are collapsed into one record in the calls list. The collapsed entry displays the number of consecutive calls.

0 – Each call is listed individually in the calls list.

**callLists.logConsultationCalls**

Lync Base Profile – 1 (default)

Generic Base Profile – 1 (default)

0 – Consultation calls not joined into a conference call are not listed as separate calls in the calls list.

1 – Each consultation call is listed individually in the calls list.

**feature.callList.enabled**

1 (default) - Allows you to enable the missed, placed, and received call lists on all phone menus including the Home screen and dial pad.

0 - Disables all call lists.

Hiding call lists from the Home screen and dial pad requires UCS 5.4.2 RevAA or higher.

**feature.callListMissed.enabled**

0 (Default) - The missed call list is disabled.

1 - The missed call list is enabled.

To enable the missed, placed, or received call lists, **feature.callList.enabled** must be enabled.

**feature.callListPlaced.enabled**

0 (Default) - The placed call list is disabled.

1 - The placed call list is enabled.

To enable the missed, placed, or received call lists, **feature.callList.enabled** must be enabled.
**feature.callListReceived.enabled**

0 (Default) - The received call list is disabled.
1 - The received call list is enabled.

To enable the missed, placed, or received call lists, **feature.callList.enabled** must be enabled.

**feature.exchangeCallLog.enabled**

If Base Profile is:
- Generic - 0 (default)
- Skype for Business - 1 (default)

1 - The Exchange call log feature is enabled, user call logs are synchronized with the server, and the user call history of Missed, Received, and outgoing calls can be retrieved on the phone.

You must also enable the parameter **feature.callList.enabled** to use the Exchange call list feature.

0 - The Exchange call list feature is disabled, the user call list history cannot be retrieved from the Exchange server, and the phone generates call lists locally.

**Local Contact Directory Parameters**

The following parameters configure the local contact directory.

**contactPhotoIntegration.hideMyPhoto**

Don’t show the signed-in user’s photo on the line key but still show other users’ photos.

0 (Default) - Disable the Hide My Photo feature
1 - Enable the Hide My Photo feature

**dir.local.contacts.maxNum**

Set the maximum number of contacts that can be stored in the Local Contact Directory. The maximum number varies by phone model, refer to section 'Maximum Capacity of the Local Contact Directory'.

- 2000 (default)
- Maximum 3000 contacts

Change causes system to restart or reboot.

**dir.local.readonly**

0 (default) - Disable read only protection of the local Contact Directory.
1 - Enable read-only protection of the local Contact Directory.

**feature.directory.enabled**
0 - The local contact directory is disabled when the Poly Trio solution Base Profile is set to Lync.
1 (default)- The local directory is enabled when the Poly Trio solution Base Profile is set to Lync.

dir.search.field
Specify whether to sort contact directory searches by first name or last name.
0 (default) - Last name.
1 - First name.

voIpProt.SIP.specialEvent.checkSync.downloadDirectory
0 (default) - The phone downloads updated directory files after receiving a checksync NOTIFY message.
1 - The phone downloads the updated directory files along with any software and configuration updates after receiving a checksync NOTIFY message. The files are downloaded when the phone restarts, reboots, or when the phone downloads any software or configuration updates.

Note: The parameter hotelingMode.type set to 2 or 3 overrides this parameter.

dir.local.passwordProtected
Specify whether you are prompted for an Admin/User password when adding, editing, or deleting contacts in the Contact Directory.
0 - Disabled (default)
1 - Enabled

feature.pauseAndWaitDigitEntryControl.enabled
1 (default) - Enable processing of control characters in the contact phone number field. When enabled, "," or "p" control characters cause a one second pause.
For example, "," or "p" control characters cause a one second pause. ";" or "w" control character cause a user prompt that allows a user-controlled wait. Subsequent digits entered to the contact field are dialed automatically.
0 - Disable processing of control characters.

up.regOnPhone
0 (default) – Contacts you assign to a line key display on the phone in the position assigned.
1 – Contacts you assign to a line key are pushed to the attached expansion module.
Change causes system to restart or reboot.
Outlook Contact Photo Integration
You can configure the Poly Trio system to display profile photos for the registered line and all Skype for Business contacts, if a photo is set for the Skype for Business or Microsoft Exchange account.

When enabled, a profile photo shows for contacts on all contact-related screens, including the Call, Recent Calls, and Directory search screens, as space permits. Set the parameter `feature.contactPhotoIntegration.enabled = 1` to enable outlook photos to display on the system.

Contact Photo Integration Limitations
The following are limitations on Poly Trio with the Outlook Photo Integration feature:

- Outlook photo integration is not supported in the Generic Base Profile.
- The Poly Trio system cannot access contact photos for non-federated accounts, from image URLs, or imported from Active Directory.

Outlook Contact Photo Parameters
Use the following parameters to configure Skype for Business or Microsoft Exchange profile photos to display on the Poly Trio system for contacts on supported contact screens.

`feature.contactPhotoIntegration.enabled`
Set to retrieve and display Outlook profile photos for contacts on the Poly Trio system.

- 1 (default) - Retrieves profile photos from Outlook and displays the photos for contacts.
- 0 - Does not show Outlook contact photos.

`contactPhotoIntegration.videoMute`
Set to display the profile photo for the signed-in user's video mute icon.

- 1 (default) - Shows the signed-in user's profile photo when on video mute.
- 0 - Shows the generic video mute icon.

Network Configuration with Skype for Business
You can configure network options when registered with Skype for Business.

Web Proxy Auto Discovery (WPAD)
The Web Proxy Auto-Discovery Protocol (WPAD) feature enables Poly phones to locate the URL of a Proxy Auto-Configuration (PAC) file you configure. Microsoft recommends using Blue Coat proxy with WPAD.

Poly Trio systems support WPAD beginning UC Software 5.7.1 and later.

WPAD is enabled by default. You can configure WPAD using configuration parameters on your provisioning server, DHCP Option 252, or DNS-A protocol mechanism to discover the PAC file location.
When using a provisioning server or DHCP, the phone looks for the file name you specify. If using DNS-A, the phone looks only for the \texttt{wpad.dat} file.

The priority for PAC file searching is as follows, from first to last:

- **Provisioning server. Example:** \texttt{feature.wpad.curl=\textasciitilde http://server.domain.com/proxy.pac}
- **DHCP Option 252.** For instructions, see \textit{Creating an Option 252 entry in DHCP} on Microsoft TechNet: \url{https://technet.microsoft.com/en-us/library/cc995090.aspx}
- **DNS-A.** For instructions, see \textit{Creating a WPAD entry in DNS} on Microsoft TechNet: \url{https://technet.microsoft.com/en-us/library/cc995062.aspx}

\textbf{Note:} If the proxies you configure in the PAC file or configuration file are either invalid or unreachable with a working fallback proxy, the time to register with Skype for Business is delayed and the responsiveness of features that support WPAD degrade.

The phones also support Digest and NTLM Authentication mechanisms to authenticate with a proxy server. When you sign in to Skype for Business, the phone uses the Skype credentials to sign into the Web proxy. To manually configure proxy-specific credentials common to all users, use Basic Authentication which is supported only when you configure the following parameters on a provisioning server:

- \texttt{feature.wpad.proxy.username}
- \texttt{feature.wpad.proxy.password}

\textbf{Supported HTTP/HTTPS Web Proxy Services}

When the Web proxy server is successfully configured and operational, the phones route the following HTTP/HTTPS Web proxy services to the Web proxy server:

\textbf{Skype for Business Services}

- Registration Services
- Address Book Service (ABS)
- Location Information Server (LIS)
- Device Update (To ensure reliable software updates, device update is direct in case a proxy is not available.)
- Server Log Upload
- Exchange Web Services

\textbf{Other}

- HTTP/HTTPS Provisioning
- Core File Upload

\textbf{View WPAD Diagnostic Information}

You can confirm that the Web proxy server is successfully configured and operational, and access important WPAD diagnostic information to track HTTP and HTTPS traffic flowing via the proxy you configure for WPAD.

You can view the following diagnostic information on a pre-phone basis by logging into a phone's Web Configuration Utility.

- View if the WPAD PAC file fetch is successful
• View the configured method used to fetch the PAC file and source URLs
• View the DNS domain if configured
• View PAC file expiry details
• View the Exchange and Upload proxy
• Download the PAC file

Procedure
1. Enter your phone’s IP address into a Web browser.
2. Select Admin as the login type, enter the administrator password (the default is 456), and click Submit.
3. Go to Diagnostics > Skype for Business Status > WPAD.

WPAD Configuration Parameters
The following parameters configure the Web Proxy Auto Discovery (WPAD) feature.

feature.wpad.enabled
    Skype for Business Base Profile (default) - 1
    Generic Base Profile (default) - 0
    You can configure values for this parameter from your provisioning server or from the phone to enable to disable WPAD.
    Change causes system to restart or reboot.

feature.wpad.curl
    Enter the Proxy Auto-Configuration (PAC) file location.
    Change causes system to restart or reboot.

feature.wpad.proxy
    Configure the web proxy server address. If you configure this parameter with a proxy address, the phones do not discover DHCP or DNS-A or fetch the PAC file even if you configure a PAC file location using feature.wpad.curl.
    0-255
    You can specify multiple proxies using this parameter by separated each with a semicolon the same way you specify them in the PAC file. For example:
    PROXY 0.10.1.1:8080;
    PROXY 10.12.2.1:8080
    Change causes system to restart or reboot.

feature.wpad.proxy.username
    Enter the user name to authenticate with the proxy server.
    0-255
**feature.wpad.proxy.password**

Enter the password to authenticate with the proxy server.

The credentials you can use depend on how authentication is enabled on the proxy server. You can use administrator or user credentials. If Skype for Business Active Directory is integrated with the proxy server, you do not need to configure user name or password credentials.

Change causes system to restart or reboot.

---

**Bluetooth and NFC-Assisted Bluetooth for Poly Trio Systems**

Poly Trio systems support Bluetooth connection and pairing with a compatible Bluetooth device such as a mobile phone, tablet, laptop, or headset. The Poly Trio 8800 system supports near-field communication (NFC).

When you enable Bluetooth, users can connect a Bluetooth-capable device, such as a mobile phone, tablet, or laptop to the Poly Trio system. You can make calls from the connected device and play audio from calls, video, or music from the Poly Trio system speaker. Note you can connect one device at a time to the Poly Trio system via Bluetooth. You cannot connect via Bluetooth during an active call. The Poly Trio 8800 conference phone can remember up to 10 previously paired devices.

When NFC is enabled on the Poly Trio 8800 system and you connect a personal device to the Poly Trio 8800, the NFC logo displays on the device screen. When your device is connected over Bluetooth during an audio or a video call, you can use the Poly Trio system microphones for audio instead of the microphone(s) of your connected device.

Note that using a Bluetooth headset can affect voice quality on the phone due to inherent limitations with Bluetooth technology. You may not experience the highest voice quality when using a Bluetooth headset while the 2.4 GHz band is enabled or while you are in an environment with many other Bluetooth devices.

---

**Note:** The Poly Trio system does not automatically reconnect to paired devices after the device Bluetooth connection is disconnected or after a reboot of the Poly Trio system. If the paired Bluetooth device is disconnected or the Poly Trio system reboots, you must manually reconnect and pair the device to the Trio system.

---

**Bluetooth and NFC-Assisted Bluetooth Parameters**

Use the following parameters to configure Bluetooth on Poly Trio systems and NFC on the Poly Trio 8800 system.

**bluetooth.beacon.ipAddress.enabled**

Set to send the IP address of the system over Bluetooth.

1 (default) - Enables sending the system IP address over Bluetooth. Turns Bluetooth radio on when `feature.bluetooth.enabled = 1`.

0 - Disables sending the system IP address over Bluetooth

Change causes system to restart or reboot.
Note: Enable the parameter `feature.bluetooth.enabled` to use this feature.

`bluetooth.device.discoverable`
1 (default) - This device is discoverable for Bluetooth pairing.
0 - This device is not discoverable for Bluetooth pairing.

`bluetooth.device.name`
NULL (default)
UTF-8 string
Enter the name of the device that broadcasts over Bluetooth to other devices.

`bluetooth.discoverableTimeout`
0 (default) - Other devices can always discover this device over Bluetooth.
0 - 3600 seconds
Set the time in seconds after which other devices can discover this device over Bluetooth.

`bluetooth.pairedDeviceMemorySize`
10 (default)
0 - 10

`bluetooth.radioOn`
0 - The Bluetooth radio (transmitter/receiver) is off.
1 (default) - The Bluetooth radio is on. The Bluetooth radio must be turned on before other devices can connect to this device over Bluetooth.

`feature.bluetooth.enabled`
For high security environments.
1 (default) - Bluetooth connection is enabled and the Bluetooth menu displays.
0 - Bluetooth connection is disabled and the Bluetooth icon does not display.

`feature.nfc.enabled`
0 - The NFC pairing feature for the Poly Trio 8800 system is disabled.
1 - The NFC pairing is enabled and users can pair NFC-capable devices to the Poly Trio 8800 solution.
Wireless Network Connectivity (Wi-Fi)

Poly Trio systems support several wireless modes, security options, radio controls, and Quality of Service monitoring.

To ensure the best performance in your location, set a proper country code with the parameter `device.wifi.country` before enabling Wi-Fi.

You can configure Wi-Fi options to display in the phone’s basic settings menu to allow users to manually add a Wi-Fi network. You can also configure the phone to display the Wi-Fi icon on the phone’s status bar and home screen.

Enabling Wi-Fi automatically disables the Ethernet port. You cannot use Wi-Fi and Ethernet simultaneously to connect phones to your network. When you connect the system to your network over Wi-Fi, only audio-only calls are available. The phones do not support Wi-Fi captive portals or Wireless Display (WiDi).

Note: When you provision via Wi-Fi connection to the network, the phone looks for files on the provisioning server using the LAN MAC address and not the Wi-Fi MAC address.

The following wireless modes are supported:

- 2.4 GHz / 5 GHz operation
- IEEE 802.11a radio transmission standard
- IEEE 802.11b radio transmission standard
- IEEE 802.11g radio transmission standard
- IEEE 802.11n radio transmission standard

Note: You cannot pair or daisy-chain a Poly Trio system with another Poly Trio system or with a Poly Trio Visual+, Poly Trio VisualPro, or RealPresence Group Series system when it is connected to your network using Wi-Fi.

Wi-Fi Parameters

Poly Trio 8800 solutions are shipped with a security-restrictive worldwide safe Wi-Fi country code setting.

Use the following parameters to configure wireless network settings for your organization, which is dependent on the security mode for your organization and whether or not you enable DHCP. The Poly Trio solution supports the following Wi-Fi security modes:

- WEP
- WPA PSK
- WPA2 PSK
- WPA2 Enterprise

Note: The Poly Trio 8500 solution does not support Wi-Fi connectivity.

device.wifi.country

Enter the two-letter code for the country where you are operating the Poly Trio system with Wi-Fi enabled.
NULL (default)
Two-letter country code

device.wifi.dhcpBootServer
  0 (default)
  1
  2
  V4
  V6
  Static

device.wifi.dhcpEnabled
  Enable or disable DHCP for Wi-Fi.
  0 (default)
  1

device.wifi.enabled
  Enable or disable Wi-Fi.
  0 (default)
  1

device.wifi.ipAddress
  Enter the IP address of the wireless device if you are not using DHCP.
  0.0.0.0 (default)
  String

device.wifi.ipGateway
  Enter the IP gateway address for the wireless interface if not using DHCP.
  0.0.0.0 (default)
  String

device.wifi.psk.key
  Enter the hexadecimal key or ASCII passphrase.
  0xFF (default)
  String
device.wifi.radio.enable2ghz

device.wifi.radio.enable5ghz

device.wifi.securityMode
  Specify the wireless security mode.
  NULL (default)
  None
  WEP
  WPA-PSK
  WPA2-PSK
  WPA2-Enterprise

device.wifi.ssid
  Set the Service Set Identifier (SSID) of the wireless network.
  SSID1 (default)
  SSID

device.wifi.subnetMask
  Set the network mask address of the wireless device if not using DHCP.
  255.0.0.0 (default)
  String

device.wifi.wep.key
  Set the length of the hexadecimal WEP key.
  0 = 40-bits (default)
  1 = 104-bits

device.wifi.wpa2Ent.method
  Set the Extensible Authentication Protocol (EAP) to use for 802.1X authentication.
  NULL (default)
  EAP-PEAPv0/MSCHAPv2
  EAP-FAST
  EAP-TLS
  EAP-PEAPv0-GTC
  EAP-TTLS-MSCHAPv2
Enable Wi-Fi
You can wirelessly connect phones to your network using Wi-Fi, which is disabled by default.
When you enable Wi-Fi, the system reboots.

Procedure
1. Go to Settings > Advanced > Administration Settings > Network Configuration > Network Interfaces > Wi-Fi Menu, and turn Wi-Fi to On.
   The phone restarts.
2. When the phone completes restart, go to Settings > Advanced > Administration Settings > Network Configuration > Network Interfaces > Wi-Fi Menu to view available networks.
3. Select a network you want to connect to and press Connect.

Configure Wireless Network Settings
Polycom UC Software supports wireless network connectivity.

You can manually configure the phone to connect to a wireless network by selecting an enterprise-based network and EAP method for better security.

Procedure
1. Go to Settings > Advanced > Administrator Settings > Network Configuration > Network Interfaces > Wi-Fi Menu.
2. Turn Wi-Fi to On.
3. The phone restarts.
4. When the phone completes restart, go to Settings > Advanced > Administration Settings > Network Configuration > Network Interfaces > Wi-Fi Menu to view available networks.
5. Select a network you want to connect to and press Connect.
6. Select the SSID name of the wireless network.
7. Select the security type of the wireless network. If you have an enterprise-based network, enter the User ID and Password and select one of the following EAP-Method types for authentication:
   • EAP-TLS
   • EAP-PEAP-MSCHAPv2
   • EAP-PEAP-GTC
• EAP-TTLS-MSCHAPv2
• EAP-TTLS-GTC
• EAP-MD5
• EAP-FAST

8. Save the settings to apply your changes.

Wi-Fi Settings in Basic Menu Parameter
Use the parameter below to allow access to Wi-Fi settings in the Basic menu on Poly Trio 8800 systems.

```plaintext
feature.basicWifiMenu.enabled
```

Enable to allow access to Wi-fi Menu in Basic settings.
0 (default) - Disabled
1 - Enabled

TURN / ICE Parameters
This section lists parameters that configure the following Microsoft network features:
• Traversal Using Relays Around NAT (TURN)
• Interactive Connectivity Establishment (ICE)

```plaintext
tcpIpApp.ice.ConnCheckInetvalPairs
```

Time interval in milliseconds to serialize first attempt of connectivity check of identified ICE candidate pairs per call.
25 - 100

```plaintext
tcpIpApp.ice.ConnCheckInetvalRetries
```

Time interval in milliseconds to serialize the retry attempts of connectivity check for identified pairs per call.
25 - 100

```plaintext
tcpIpApp.ice.MaxRetries
```

The maximum number of retry attempts performed on each ICE connectivity check pair identified in case of a request timeout or failure.
5 (default)
2 - 25

```plaintext
tcpIpApp.ice.mode
```

MSOCS (default)
Disabled
Standard

tcpIpApp.ice.NetworkMode
   TCPUDP (default) – Gathers all the possible UDP and TCP ICE candidates.
   TCPOnly – Gathers all the TCP candidates along with UDP host candidates.
   UDPOnly - Gathers all the UDP candidates.

tcpIpApp.ice.password
   Enter the password to authenticate to the TURN server.
   NULL (default)

tcpIpApp.ice.ReflexiveChecksRequired
   1 (default) - TCP and UDP reflexive candidates will be collected in candidate gathering process.
   0 - TCP and UDP reflexive candidates will not be collected in candidate gathering process.

tcpIpApp.ice.stun.server
   Enter the IP address of the STUN server.
   NULL (default)

tcpIpApp.ice.stun.udpPort
   The UDP port number of the STUN server.
   3478 (default)
   1 - 65535

tcpIpApp.ice.tcp.enabled
   1 (default) - Enable TCP.
   0 - Disable TCP.

tcpIpApp.ice.turn.server
   Enter the IP address of the TURN server.
   NULL (default)

tcpIpApp.ice.turn.tcpPort
   443 (default)
   1 - 65535

tcpIpApp.ice.turn.udpPort
The UDP port number of the TURN server.
443 (default)
65535

tcpIpApp.ice.username
Enter the user name to authenticate to the TURN server.
NULL (default)

Extended Link Layer Discovery Protocol (LLDP)
The Link Layer Discovery Protocol (LLDP) is used by network devices to advertise their identity, capabilities, and neighbors on an IEEE 802 local area network, principally wired Ethernet.
LLDP is enabled by default.
Media Endpoint Discover (MED) capabilities include:
• Network policy discover
• Endpoint location identification discovery
• Extender power discovery required for endpoint

Configuring LLDP Fast Start Count
Fast start count enables a device to initially advertise itself over the network at a fast rate for a limited time when an LLDP-MED endpoint has been newly detected or connected to the network.

device.net.lldpFastStartCount
Configure the fast-start LLDP packets that the phone sends when booting up or when the network comes up.
5 (default)
3 - 10
If fast-start packet count is configured > 10, the value resets to 10. If the fast-start packet count is < 3, the value resets to 3. If you configure an invalid value—for example, a negative value, string, or character—the value resets to default 5.

Device and Software Support
This section provides information on updating and maintaining your devices and the UC Software.
You can update the UC software running on Poly phones in your organization. The update process varies with the version of Polycom UC Software that is currently running on your phones and the version you want to update to.
If you are not using in-band provisioning to register your device to a Microsoft server, best practices for configuring software updates are outlined in Technical Notification 275: Software Updates for Devices Registered to Microsoft.
Data Center Resiliency

Data Center Resiliency ensures that minimum basic call functions remain available in the event of a server shutdown or Wide Area Network (WAN) outage.

The phones you register with Skype for Business on-premises are enabled with this feature by default and no additional configuration is required.

In the event of an unplanned server shutdown or outage, phone behavior changes to the following:

- The phone displays a scrolling banner message 'Limited functionality due to outage'.
- Your presence status displays as 'Unknown'.
- The presence status of your contacts displays as 'Unknown'.
- You cannot change your presence status.
- You cannot add or delete Skype for Business contacts.
- Phones in the locked state display a message on the Sign In menu 'Limited functionality due to outage'.
- You can access current Call Forwarding settings in read-only mode.

Microsoft Quality of Experience Monitoring Server Protocol (MS-QoE)

Microsoft Quality of Experience Monitoring Server Protocol (MS-QoE) enables you to monitor the user's audio quality and troubleshoot audio problems.

QoE reports contain only audio metrics and do not contain video or content sharing metrics. This feature also enables you to query the QoE status of a phone from the Web Configuration Utility.

MS-QoE is compatible with Skype for Business and Lync Server 2010 and 2013.

All parameters for enabling or disabling QoE are included in the in-band provisioning parameters sent from the Skype for Business server. Note that Poly supports only those elements listed in section Supported Skype for Business QoE Elements.

For a list of all parameters that report QoE data, see Microsoft [MS-QoE] PDF at [MS-QoE]: Quality of Experience Monitoring Server Protocol.

To help deploy QoE, you can enable client media ports and configure unique port ranges on the Skype for Business Server. For details, see Configuring Port Ranges for your Microsoft Lync Clients in Lync Server 2013.

Set QoE Parameters on the Skype for Business Server

Set the following QoE parameters on the Skype for Business Server.

Procedure

» Use the following parameters to set Quality of Experience settings on the Skype for Business server.

<table>
<thead>
<tr>
<th>Skype Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EnableQoE</td>
<td>Set to ‘True’ to enable QoE on the server and automatically assign the URI to which QoE reports are published.</td>
</tr>
<tr>
<td>Skype Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>EnableInCallQoS</td>
<td>Set to True to enable in-call QoE on the server. If set to False, only end-call QoE reports are sent. EnableInCallQoS maps to the in-band element enableInCallQoS.</td>
</tr>
<tr>
<td>InCallQoSIntervalSeconds</td>
<td>Set the time interval in seconds to publish in-call QoE reports only if there is a transition in call quality. If no change in call quality is detected, no report is sent at the interval time you set. InCallQoSIntervalSeconds maps to the in-band element inCallQoSIntervalSeconds.</td>
</tr>
<tr>
<td>voice.qualityMonitoring.rtcpxr.enable</td>
<td>Set to 1 (default) to allow the phone to collect RTCP XR metrics.</td>
</tr>
</tbody>
</table>

The following figure illustrates the QoE parameter values you need to set.

**Figure 1: QoE Parameters on Server Media Configuration**

```
PS C:\Users\administrator.GOHOMINERY> Get-CsMediaConfiguration -f1
Identity       : Global
EnableQoS      : True
EncryptionLevel: RequireEncryption
EnableSiren    : False
MaxVideoRateAllowed: VBR640K
EnableInCallQoS: True
InCallQoSIntervalSeconds: 35
EnableRtcpMultiplexing: True
```

**Enable In-Call QoE within your Skype Environment**

When you enable in-call QoE, you do not need to wait until the end of the call to view call quality data. In-call QoE is off by default and you can enable it on Windows PowerShell using the following command:

```
Set-CsMediaConfiguration -Identity Global -EnableInCallQoS:$TRUE -InCallQoSIntervalSeconds x (where x is a digit from 1 to 65535)
```

**Query QoE Status from the Web Configuration Utility**

Users and administrators can query the in-band QoE status, interval, and URI from a phone’s Web Configuration Utility.
Procedure

1. Enter the IP address of the phone into a web browser and log in as Administrator or User.
2. Go to Diagnostics > Skype for Business Status > Quality of Experience.

QoE Parameters

Use the following parameters to configure MS-QoE from a provisioning server.

**voice.qoe.event.lossrate.threshold.bad**
Defines the threshold for the network loss rate. Total packets lost for an interval/total packets expected for the interval *256 as stated in RFC 2611, section 4.7.1.
38 (default) - Approximately a 15% packet loss.
0 to 100

**voice.qoe.event.lossrate.threshold.poor**
Defines the threshold for the network loss rate. Total packets lost for an interval/total packets expected for the interval *256 as stated in RFC 2611, section 4.7.1.
25 ms (default) - Approximately a 10% packet loss.
0 to 100

**voice.qoe.event.networkmos.threshold.bad**
Defines the threshold for Network MOS as follows:
The average of MOS-LQO wideband, as specified by [ITUP.800.1] section 2.1.2, based on the audio codec used and the observed packet loss and inter-arrival packet jitter.
19 (default) - Indicates a MOS score of 1.9.
10 - 50 - Indicates a MOS score between 1 - 5.
networkMOS > 2.9 signifies good quality
networkMOS > 2.9 < 1.9 signifies poor quality
networkMOS < 1.9 signifies bad quality

**voice.qoe.event.networkmos.threshold.poor**
Defines the threshold for Network MOS as follows:
The average of MOS-LQO wideband, as specified by [ITUP.800.1] section 2.1.2, based on the audio codec used and the observed packet loss and inter-arrival packet jitter.
29 (default) - Indicates a MOS score of 2.9.
10 - 50 - Indicates a MOS score between 1 - 5.
networkMOS > 2.9 signifies good quality
networkMOS > 2.9 < 1.9 signifies poor quality
networkMOS < 1.9 signifies bad quality
Supported Skype for Business QoE Elements
This section lists supported Microsoft Quality of Experience (QoE) elements.
For a list of all parameters that report QoE data, see Microsoft [MS-QoE] PDF at [MS-QoE]: Quality of Experience Monitoring Server Protocol.

Supported Skype for Business QoE Elements

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<th>Child Elements/Attributes</th>
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<td>Endpoint</td>
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<td>v2:OS</td>
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<td>v2:VirtualizationFlag</td>
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<td>v4:JitterBufferSizeAvg</td>
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<td>v4:JitterBufferSizeMin</td>
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<td>v4:NetworkJitterAvg</td>
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<td>v4:NetworkJitterMax</td>
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<td>NoiseLevel</td>
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<td>InitialSignalLevelRMS</td>
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<td>RecvSignalLevelCh1</td>
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<td>RecvNoiseLevelCh1</td>
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<td>SendSignalLevelCh1</td>
</tr>
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<td></td>
<td>SendNoiseLevelCh1</td>
</tr>
</tbody>
</table>
Quality of Service for Audio and Video Calls

When the Quality of Service (QoS) setting is enabled on the Skype for Business server, Poly Trio systems receive the Differentiated Services Code Point (DSCP) value from the server for Quality of Service (QoS) of audio calls placed or received from phones registered to the Skype for Business server.

The Skype for Business server does not provide in-band provisioning for DSCP for QoS of video calls for outbound video streams. When video is enabled, provision the phones to receive DSCP for QoS of audio calls using the parameter `qos.ip.rtp.dscp` and for video calls using `qos.ip.rtp.video.dscp`.

**Note:** If the parameter `lync.provisionDeviceParams.enabled` is set to 0 and DSCP is not set in the Web Configuration Utility, the phone marks IP packets with the DSCP value Expedited Forwarding (EF).

**QoS Parameters for Audio and Video Calls**

Use the following parameters to configure DSCP for Quality of Service for audio and video calls.

**qos.ip.rtp.dscp**

Specify the DSCP of packets. If the value is set to the default NULL the phone uses `quality.ip.rtp.*` parameters.

If the value is not NULL, this parameter overrides `quality.ip.rtp.*` parameters.

- Null (default)
- 0 to 63
- EF
- Any of AF11, AF12, AF13, AF21, AF22, AF23, AF31, AF32, AF33, AF41, AF42, AF43

**qos.ip.rtp.video.dscp**

Allows you to specify the DSCP of packets.

If the value is set to the default NULL the phone uses `qos.ip.rtp.video.*` parameters.

If the value is not NULL, this parameter overrides `qos.ip.rtp.video.*` parameters.

- NULL (default)
- 0 to 63
- EF
Polycom UC Software Update
You can update UC Software on a per-phone basis from the phone menu or Web Configuration Utility.

Update UC Software Manually
You can use an USB flash drive to update the software and configure the phone.

When you configure the phone using a USB drive, the configuration on the USB overrides all previous configurations. When the USB drive is removed, the system returns to the previous configuration.

Procedure
1. Download and unzip UC Software to a directory on your provisioning server.
2. On the phone, go to Settings > Advanced, enter the password (default 456).
4. In the Boot Server menu, choose Static if you are testing or provisioning a few phones, or choose Option 66 if you are provisioning in a large environment and want phones to use a boot server defined in DHCP.
   If you choose Option 66, skip step 5 and go to step 6.
5. Go back to Provisioning Server and do the following:
   • Choose a server type in the Server Type field.
   • Enter the server address. For example, http://server.domain.com/41X or ftp://ftp.domain.com/41X
   • Enter your server user name and server password, if required.
6. Press Back until you are prompted to save your settings.
7. Choose Save Configuration to save your settings.
   The phone reboots.

For details on how to update the phone software using the Web Configuration Utility, see Feature Profile 67993: Using the Software Upgrade Option in the Web Configuration Utility.

Automatic UC Software Updates
By default, the phones poll the Skype for Business Server for software updates and automatically download updated software if it's available. This automatic software update feature is available on all devices registered with Skype for Business Server using UC Software 5.0.0 and later.

An information dialog displays on the phone when a software update becomes available. The dialog provides three options:

• Reboot - Select to restart the phone and automatically update the phone's software.
• Cancel - Select to cancel the automatic software update. When you select Cancel, a DevUpdt softkey displays on the phone's home screen. Press DevUpdt at any time to update your phone's software.
• Details - Select to view information about current and available software.
When a software update is available and the phone is inactive for a long period of time, the phone automatically reboots and updates the phone's software.

**Configuring Automatic Software Updates**

The following parameters configure automatic software updates and polling of the provisioning server.

**device.prov.lyncDeviceUpdateEnabled**

0 - The automatic device update is disabled and the phone does not receive software updates from the server.

1 - The automatic device update is enabled and the phone receives software updates from the server.

Change causes system to restart or reboot.

**device.prov.lyncDeviceUpdateEnabled.set**

0 (default) - Disable automatic device update for all devices.

1 - Enable automatic device update for all devices and use device.prov.lyncDeviceUpdateEnabled.

Change causes system to restart or reboot.

**lync.deviceUpdate.popUpSK.enabled**

0 (disable) - Disable the Information popup that indicates when an automatic software update is available.

1 - Enable the Information popup that indicates when an automatic software update is available.

Change causes system to restart or reboot.

**lync.deviceUpdate.serverPollInterval**

7200 seconds (default) - The time interval in seconds that the phone sends a software update request to the Skype for Business Server.

min=1800 seconds

max=28800 seconds

Change causes system to restart or reboot.

**lync.deviceUpdate.userInactivityTimeout**

900 seconds [15 minutes] (default) - Sets the user inactivity timeout period after which the phone's software is automatically updated.

Min=300 seconds

Max=1800 seconds

Change causes system to restart or reboot.
prov.polling.enabled

You can choose to automatically poll the provisioning server for software updates.

1 (default) - the phone automatically polls the server for software updates.
0 - Disable automatic polling.

prov.polling.mode

Choose the polling mode.

abs (default) - The phone polls every day at the time specified by prov.polling.time.
rel - The phone polls after the number of seconds specified by prov.polling.period.
random - The phone polls at random between a starting time set in prov.polling.time and an end time set in prov.polling.timeRandomEnd.

Note that if you set the polling period in prov.polling.period to a time greater than 86400 seconds (one day) polling occurs on a random day within that polling period (meaning values such as 86401 are over 2 days) and only between the start and end times. The day within that period is determined by the phone MAC addresses and does not change with a reboot. The time within the start and end is calculated again with every reboot.

prov.polling.period

The polling period in seconds.

86400 (default)
integer > 3600

The polling period is rounded up to the nearest number of days in absolute and random mode you set in.

In relative mode, the polling period starts once the phone boots.

If random mode is set to a time greater than 86400 (one day) polling occurs on a random day based on the phone MAC address.

prov.polling.time

Specify the polling start time in absolute or random polling mode you choose with prov.polling.mode.

03:00 (default)
hh:mm

prov.polling.timeRandomEnd

The polling stop time when the polling mode is set to random.

NULL (default)
hh:mm
Update Poly Trio System using Windows Update Server

You can use Windows Update Server to update software on the Poly Trio systems connected as a USB device to a Microsoft Surface Pro or to a computer running Windows 10 when you set the Base Profile to Skype USB Optimized.

The Windows Update is enabled by default on Poly Trio systems.

Software Update using Windows Update Server Parameters

Use the following parameter to configure the Software update using Windows Update feature.

```
feature.usb.device.mrSoftwareUpdate
```

1 (default) - Enable the software update using Windows Update feature.
0 - Disable the software update using Windows Update feature.

Manually Update Poly Trio System Software using Windows Update

You can manually update the software for Poly Trio systems connected to a Windows 10 computer or Microsoft Surface Pro through Windows Upgrade server.

Procedure

1. Connect the Poly Trio system to a computer running Windows 10 operating system.
2. Right-click Polycom Trio 8800 USB-Interface under Universal Serial Bus devices in the Device Manager.
3. Select Update Driver Software.
4. In the dialog, choose Search automatically for updated driver software.
   If a software update is available the Poly Trio system updates automatically.

Poly Trio System Video with Skype for Business

After you set up phones on your network with the default configuration, you can make custom configurations to optimize video calling for your phones, if supported.

Poly Trio system support for the Poly Trio Visual+ and VisualPro systems varies by model:

The Poly Trio 8500 or 8800 system with a paired Poly Trio Visual+ or VisualPro system supports transmission and reception of high quality video images with the following supported cameras:

- Polycom EagleEye IV USB camera
- Polycom EagleEye Mini USB camera
- Poly EagleEye Cube USB camera
- Polycom EagleEye Director II camera (Poly Trio 8800 only)
- Logitech C930e webcam
- Poly Studio USB video bar
Video Quality Parameters

Use the following parameters to configure quality settings for video calls.

**video.quality**

The optimal quality for video that is sent in a call or a conference.

- `motion` (default) — For outgoing video that has motion or movement.
- `sharpness` — For outgoing video that has little or no movement.

**Note:** If `motion` is not selected, moderate to heavy motion can cause some frames to be dropped.

**video.quality.content**

- `motion` (default) - For outgoing video that has motion or movement.
- `sharpness` — For outgoing video that has little or no movement.

**video.autoFullScreen**

0 (default) — Video calls only use the full screen layout if it is explicitly selected by the user.

1 — Video calls use the full screen layout by default, such as when a video call is first created or when an audio call transitions to a video call

**video.callRate**

The default call rate (in kbps) to use when initially negotiating bandwidth for a video call.

- 2048 (default)
- 128 - 6144

**video.forceRtcpVideoCodecControl**

0 (default) — RTCP feedback messages depend on a successful SDP negotiation of `a=rtcp-fb` and are not used if that negotiation is missing.

1 — The phone is forced to send RTCP feedback messages to request fast I-frame updates along with SIP INFO messages for all video calls irrespective of a successful SDP negotiation of `a=rtcp-fb`.

For an account of all parameter dependencies when setting I-frame requests, refer to the section I-Frames.

**video.maxCallRate**

Sets the maximum call rate that the users can select. The value set on the phone cannot exceed this value. If `video.callRate` exceeds this value, this parameter overrides `video.callRate` and this value is used as the maximum.

- 4096 (default)
**Video and Camera Options**

At the start of a video call, video-enabled phones, including those with a connected USB camera, transmit an RTP encapsulated video stream by default. Use the following configuration parameters to configure the video and camera options for supported cameras.

Use the global video and camera parameters to configure settings for any Poly camera. Use per-camera video parameters to control settings for specific Poly camera models.

**Video and Camera Parameters**

Use the following parameters to configure video and camera options for all Poly cameras.

```plaintext
feature.fecc.enabled

1 (default) – Enable far-end camera control.
0 – Disable far-end camera control.
Change causes system to restart or reboot.

feature.fecc.payload

Set the RTP payload used to receive far-end camera control data.

124 (default)
100 - 127

homeScreen.camera.enable

0 (default) - A Camera menu item is shown on the main menu.
1 - A Camera menu item displays on the Home Screen allowing users to pan, tilt, or zoom.

mr.video.camera.focus.auto

NULL (default)

0 - Disable the camera's automatic focus.
1 - Enable the camera's automatic focus.
Change causes system to restart or reboot.

mr.video.camera.focus.range

Specify the distance to the camera's optimally-focused target.

NULL (default)

0
0 - 255
```
**reg.x.fecc.enabled**
1 (default) – Enable far-end camera control for the line you specify with x.
0 - Disable far-end camera control for the line.

**up.arrow.repeatDelay**
Choose the milliseconds (ms) an arrow button must be held before the arrow starts repeating in the Camera Controls menu for supported Poly USB cameras.
500 ms (default)
100 – 5000 ms

**up.arrow.repeatRate**
Choose the milliseconds (ms) between repeated simulated presses while an arrow button is being held down. This applies to the arrows in the Camera Controls menu for supported Poly USB cameras.
80 ms (default)
50 – 2000 ms

**video.camera.autoWhiteBalance**
0 – Disable auto white balance.
1– Enable auto white balance.

**video.camera.backlightCompensation**
NULL (default)
0 - 1000

**video.camera.brightness**
Sets the brightness level of the video stream. The value range is from 0 (dimmest) to 1000 (brightest).
NULL (default)
0 - 1000

**video.camera.contrast**
Sets the contrast level of the video stream for all supported USB cameras. The value range is from 0 (no contrast increase) to 3 (most contrast increase), and 4 (noise reduction contrast).
NULL (default)
0 - 1000

**video.camera.controlStyle**
Choose whether to control pan and tilt Poly USB cameras with directional arrow buttons or separate pan/tilt sliders.

Default (default)
Alternate

**video.camera.flickerAvoidance**
Sets the flicker avoidance for all supported USB cameras.
Null (default) - Flicker avoidance is automatic.
50hz AC power frequency flicker avoidance (Europe/Asia).
60hz AC power frequency flicker avoidance (North America).
Disabled

**video.camera.focus.auto**
NULL (default)
0 - Disable the camera's automatic focus.
1 - Enable the camera's automatic focus.
Change causes system to restart or reboot.

**video.camera.focus.range**
Specify the distance to the camera's optimally-focused target.
NULL (default)
0 - 255

**video.camera.frameRate**
Sets the target frame rate (frames per second) for all supported USB cameras. Values indicate a fixed frame rate from 5 (least smooth) to 30 (most smooth).
25 (default)
5 - 30
If `video.camera.frameRate` is set to a decimal number, the value 25 is used instead.

**video.camera.menuLocation**
Specify if camera settings display under the Advanced menu for administrators or the Basic menu for users.
Basic (default)
Advanced

**video.camera.preset.home.pan**
Set the pan coordinate for a camera home preset.
Default values are set by and depend on the camera you are using.
0 – 1000

**video.camera.preset.home.tilt**

Set the tilt coordinate for a camera home preset.
Default values are set by and depend on the camera you are using.
0 - 1000

**video.camera.preset.home.uponIdle.delay**

Set the number of minutes after the idle timeout expires to move the camera to the home preset.
0 (default)
0 - 3600

**video.camera.preset.home.uponIdle.enabled**

0 (default) – Do not move the camera to the home preset when the phone is idle.
1 - Move the camera to the home preset when the phone is idle.

**video.camera.preset.home.zoom**

Set the zoom coordinate for a camera home preset.
Default values are set by and depend on the camera you are using.
0 - 1000

**video.camera.presetIndex**

Preset Index
(default)
0-1000

**video.camera.saturation**

Sets the saturation level of video captured by any supported USB camera.
NULL (default)
0 - 1000

**video.camera.sharpness**

Sets the sharpness level of video captured.
NULL (default)
video.camera.trackingEnabled

For the EagleEye Director II, EagleEye Producer, Poly Studio, or EagleEye Cube USB cameras.

1 (default) - Enables automatic camera tracking. You can then set the tracking type, speed, and size.

0 - Disables camera tracking.

video.camera.trackingFramingMode

For the EagleEye Director II, EagleEye Producer, Poly Studio, or EagleEye Cube USB cameras.

0 (default) - Frame Speaker: Frames the active speaker.

1 - Frame Group: Frames the participants in the room (camera movement is seen on the far end).

2 - Frame Group with Transition (EagleEye Producer only): Frames the participants in the room (camera movement is seen on the far end).

video.camera.trackingFramingSize

For the EagleEye Director II, EagleEye Producer, Poly Studio, or EagleEye Cube USB cameras.

1 - Medium (default): Average-sized frame.

0 - Wide: Most expansive frame.

2 - Tight: Close-up frame.

video.camera.trackingPipEnabled

For the EagleEye Director II, EagleEye Producer, Poly Studio, or EagleEye Cube USB cameras.

1 (default) - Enables People in Picture (PIP), which displays a group or room view to far-end participants.

0 - Disables PIP.

video.camera.trackingSpeed

For the EagleEye Director II, EagleEye Producer, Poly Studio, or EagleEye Cube USB cameras.

1 (default) - Normal: Tracks transitions at a medium rate.

0 - Slow: Tracks transitions slowly.

2 - Fast: Tracks transitions quickly.

video.camera.whiteBalance

Use to correct the white balance tint of video captured by any supported USB camera.

NULL (default)

0 - 1000
video.localCameraView.callState

This parameter applies only when video.localCameraView.userControl is set to PerSession or Hidden.

1 (default) - The local camera view displays on the Poly Trio Visual+ monitor.
0 - The local camera view does not display on the Poly Trio Visual+ monitor.

video.localCameraView.fullScreen.callState

Set to determine how the local call view (LCV) displays when the phone is in a call.

0 (default) - Displays the LCV in PIP during a call.
1 - Displays the LCV in full screen during a call.

video.localCameraView.fullScreen.idleState

Set to determine how the local call view (LCV) displays when the phone is idle.

0 (default) - Does not display the LCV when the phone is idle.
1 - Displays the LCV in picture-in-picture (PIP) when the phone is idle.

video.localCameraView.fullScreen.userControl

Set to enable users to control how the local call view (LCV) displays during a call.

Persistent (default) - Enables users to access the Layout menu and control how the LCV displays before a call.
PerSession - Enables users to access the Layout menu and control how the LCV displays before or during a call.
Hidden - Hides the Layout menu so that users cannot control how the LCV displays.

video.vc4Decode.overrunTolerance

Set the overrun errors per second for video decoder tolerance. If the decoder generates more overrun errors than the number you set, the Poly Trio system drops SVC video layer 1 to reduce the decoder load.

0 (default) – Disable tolerance for decoder overrun errors.
0 – 100 overrun errors per second

Per-Camera Video Parameters

You can use the following per-camera parameters to configure camera and video options for each type of Poly camera used in your environment.

Using the parameter video.camera.x.type, you can configure parameters differently for the following cameras supported with Poly Trio 8500 and 8800 systems paired with Poly Trio Visual+:

- Polycom EagleEye IV USB camera
- Polycom EagleEye Mini USB camera
• Poly EagleEye Cube USB camera
• Polycom EagleEye Director II camera (Poly Trio 8800 only)
• Logitech C930e webcam

You also can use the parameter `video.camera.x.type` to configure the following cameras that are supported with a paired Trio VisualPro system:

• Polycom EagleEye IV camera
• Polycom EagleEye Director II camera
• Polycom EagleEye Producer camera
• Polycom EagleEye Acoustic camera
• Poly EagleEye Cube HDCI camera
• Poly Studio USB video bar

Below is an example of per-camera configurations for the EagleEye IV USB camera and EagleEye Mini USB camera.

**Example Per-Camera Configuration**

<table>
<thead>
<tr>
<th>Camera Type Configuration</th>
<th>Per-Camera Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>video.camera.1.type = EagleEyeIVUSB</code></td>
<td><code>video.camera.1.focus.auto=1</code>&lt;br&gt;<code>video.camera.1.orientation=Inverted</code></td>
</tr>
<tr>
<td><code>video.camera.2.type=EagleEyeMini</code></td>
<td><code>video.camera.2.focus.auto=0</code>&lt;br&gt;<code>video.camera.2.focus.range=150</code></td>
</tr>
</tbody>
</table>

For information about camera parameters with a paired RealPresence Group Series system, see the Poly Trio with Polycom RealPresence Group Series Integration Guide.

**call.singleKeyPressCameraControls**

1 (default) - Tapping **Camera** in the call view directly shows the **Camera Controls** menu for Poly USB cameras.

0 - Tapping **Camera** in the call view shows a menu with camera preferences, presets, and camera controls menu items for Poly USB cameras.

**feature.fecc.allowLocalCameraFarEndControl**

1 (default) – Allow the far-end user to control the local near-end camera controls, such as pan, tilt, and zoom, for the Poly USB cameras.

0 - The far-end user cannot control the local near-end camera.

**video.camera.gamma**

Set the factor to use for gamma correction applied to each frame of video captured by the Poly USB cameras. You can use this setting to correct for video that appears too dark or too light.

NULL (default)
**video.camera.hue**

Use to correct the color of video captured by the Poly USB cameras.

NULL (default)

0 - 1000

**video.camera.invertPanControl**

Invert the direction of the pan control for the Poly USB camera.

0 (default)

**video.camera.orientation**

Specify the camera mounting orientation for Poly USB cameras: Normal or Inverted (upside down)

Normal (default)

Inverted

**video.camera.x.presetIndex**

Set the number of presets available.

NULL (default)

0-1000

**video.camera.preset.x.label**

Enter a label for the Poly USB camera preset.

NULL (default)

String 0 – 12 characters

**video.camera.preset.x.pan**

Set the pan for the Poly USB camera presets, where x equals the preset.

NULL (default)

0 - 1000

**video.camera.preset.x.tilt**

Set the tilt for the Poly USB camera presets, where x equals the preset.

NULL (default)

0 - 1000
**video.camera.preset.x.zoom**
Set the zoom for the EagleEye IV USB camera presets, where x equals the preset.

- NULL (default)
- 0 - 1000

**video.camera.x.autoWhiteBalance**
Set for per-camera configuration when you specify the camera type using the `video.camera.x.type` parameter.

- 1 – Enable auto white balance. This overrides the `video.camera.whiteBalance` parameter.
- 0 – Disable auto white balance.

**video.camera.x.backlightCompensation**
Set for per-camera configuration when you specify the camera type using the `video.camera.x.type` parameter.
Set the backlight compensation of the video stream.

- NULL (default)
- 0 - 1000
This overrides the `video.camera.backlightCompensation` parameter.

**video.camera.x.brightness**
Set for per-camera configuration when you specify the camera type using the `video.camera.x.type` parameter.
Sets the brightness level of the video stream. The value range is from 0 (dimmest) to 1000 (brightest).

- NULL (default)
- 3
- 0 - 1000
This overrides the `video.camera.brightness` parameter.

**video.camera.x.contrast**
Set for per-camera configuration when you specify the camera type using the `video.camera.x.type` parameter.
Sets the contrast level of the video stream. The value range is from 0 (no contrast increase) to 3 (most contrast increase), and 4 (noise reduction contrast).

- NULL (default)
- 0 - 1000
This overrides the `video.camera.contrast` parameter.
**video.camera.x.flickerAvoidance**

Set for per-camera configuration when you specify the camera type using the `video.camera.x.type` parameter.

Null (default) - Flicker avoidance is automatic.

50hz AC power frequency flicker avoidance (Europe/Asia).

60hz AC power frequency flicker avoidance (North America).

Disabled

This parameter overrides `video.camera.flickerAvoidance`.

**video.camera.x.focus.auto**

Set for per-camera configuration when you specify the camera type using the `video.camera.x.type` parameter.

NULL (default)

0 - Disable the camera's automatic focus.

1 - Enable the camera's automatic focus. This overrides the `video.camera.focus.auto` parameter.

Change causes system to restart or reboot.

**video.camera.x.focus.range**

Set for per-camera configuration when you specify the camera type using the `video.camera.x.type` parameter.

Specify the distance to the camera's optimally-focused target.

NULL (default)

0

255

This overrides the `video.camera.focus.range` parameter.

**video.camera.x.gamma**

Set for per-camera configuration when you specify the camera type using the `video.camera.x.type` parameter.

Set the factor to use for gamma correction applied to each frame of video captured. You can use this setting to correct video that appears too dark or too light.

NULL (default)

0

1000

This parameter overrides `video.camera.gamma`. 
**video.camera.x.hue**

Set for per-camera configuration when you specify the camera type using the `video.camera.x.type` parameter.

Use to correct the color of video captured.

NULL (default)

500

1000

This parameter overrides `video.camera.hue`.

**video.camera.x.orientation**

Specify the camera mounting orientation for Poly USB cameras: Normal or Inverted (upside down)

Normal (default)

Inverted

This parameter overrides `video.camera.orientation`.

**video.camera.x.saturation**

Set for per-camera configuration when you specify the camera type using the `video.camera.x.type` parameter.

Sets the saturation level of video captured by any supported USB camera.

NULL (default)

0 - 1000

This parameter overrides `video.camera.saturation`.

**video.camera.x.sharpness**

Set for per-camera configuration when you specify the camera type using the `video.camera.x.type` parameter.

Sets the sharpness level of video captured.

NULL (default)

0 - 1000

This parameter overrides `video.camera.sharpness`.

**video.camera.x.trackingEnabled**

For the EagleEye Director II, EagleEye Producer, Poly Studio, or EagleEye Cube USB cameras.

1 (default) - Enables automatic camera tracking. You can then set the tracking type, speed, and size.

0 - Disables camera tracking.
**video.camera.x.trackingFramingMode**

For the EagleEye Director II, EagleEye Producer, Poly Studio, or EagleEye Cube USB cameras.

0 (default) - Frame Speaker: Frames the active speaker.

1 - Frame Group: Frames the participants in the room (camera movement is seen on the far end).

2 - Frame Group with Transition (EagleEye Producer only): Frames the participants in the room (camera movement is seen on the far end).

**video.camera.x.trackingFramingSize**

For the EagleEye Director II, EagleEye Producer, Poly Studio, or EagleEye Cube USB cameras.

1 - Medium (default): Average-sized frame.

0 - Wide: Most expansive frame.

2 - Tight: Close-up frame.

**video.camera.x.trackingPipEnabled**

For the EagleEye Director II, EagleEye Producer, Poly Studio, or EagleEye Cube USB cameras.

1 (default) - Enables People in Picture (PIP), which displays a group or room view to far-end participants.

0 - Disables PIP.

**video.camera.x.trackingSpeed**

For the EagleEye Director II, EagleEye Producer, Poly Studio, or EagleEye Cube USB cameras.

1 (default) - Normal: Tracks transitions at a medium rate.

0 - Slow: Tracks transitions slowly.

2 - Fast: Tracks transitions quickly.

**video.camera.x.type**

Choose a camera type that corresponds to x, where x = 1 to 3. The value set for x in this parameter and related parameters determines the configuration settings for the camera type you specify.

NULL (default)

EagleEyeMini

EagleEyeDirectorII

EagleEyeProducer

EagleEyeAcoustic

EagleEyeCubeUSB

EagleEyeIVUSB
EagleEyeIV12x
EagleEyeIV4x
EPTZ_EECUBE
LogitechC930e
PolycomStudio

**video.camera.x.whiteBalance**

Set for per-camera configuration when you specify the camera type using the `video.camera.x.type` parameter.

Use to correct the white balance tint of video captured.

- NULL (default)
- 0 - 1000

This parameter overrides `video.camera.whiteBalance`.

### Video and Content Layouts

When you connect and pair one or more Poly Trio Visual+ and Trio VisualPro systems with a Poly Trio system, you can configure how participant video and content display on the monitors. Layout options depend on the number of monitors you are using.

You can connect and pair up to three monitors using any combination of the Poly Trio Visual+ and Poly Trio VisualPro systems.

If you are using one monitor to show video and content, you can configure a default Gallery view, a Picture-in-Picture (PIP) frame, or a fullscreen view. If you are using two or more monitors, you can configure which screen(s) to show content on. For example, if using two monitors, you can configure content to show on one or both monitors. If you are using three monitors, you can configure content to show on one monitor, a combination of two monitors, or all three monitors.

You also have the option to hide layout options available to users from the Poly Trio system menu.

### Video and Content Layout Parameters

Use the following parameters to configure video and content layouts. The layout parameters and permitted values you can configure vary with the number of monitors you are using.

**video.conf.displayLayout.activeLayout.userControl**

- PerSession (default) - Users can change the layout on a per-session basis. Use the parameter `video.display.x.activeLayout` to set the per-session default layout for a particular registered line.
- Hidden - Hide user layout controls. Users cannot change the initial default layout.
- Persistent - Users cannot change the initial default layout.

**video.conf.displayLayout.autoPreference**
When using one monitor, set the default video and content layout. Use
`video.conf.displayLayout.autoPreference.peopleOnly` to set the layout of only call participants.

Auto (default) - The system automatically chooses the best layout.
Gallery - Set to Gallery layout.
PIP – Set layout to a Picture-in-Picture (PIP) frame.
FullScreen – Set to a fullscreen layout.

**video.conf.displayLayout.autoPreference.peopleOnly**

When using one monitor, set the layout when only participant video is showing and no content is showing. Use `video.conf.displayLayout.autoPreference` to set the layout for call participant video and content.

Auto (default) - The system automatically chooses the best layout.
Gallery - Set to Gallery layout.
PIP – Set layout to a Picture-in-Picture (PIP) frame.
FullScreen – Set to a fullscreen layout.

**video.conf.displayLayout.avatars.audioCalls**

1 (default) – User avatars display during audio-only calls.
0 – User avatars do not display during audio-only calls.

**video.conf.displayLayout.double.activeLayout**

Set the default layout when using two monitors.

Auto (default) - Allow the system to choose the best layout.
ContentOnFirstScreen – Display video and content on monitor 1.
ContentOnSecondScreen – Display video and content on monitor 2.
ContentOnAllScreens – Display video and content on monitors 1 and 2.

**video.conf.displayLayout.gallery.allowContent**

1 (default) - Enable the Gallery layout for video and content when you set `video.conf.displayLayout.autoPreference` to Gallery. Content is scaled to fit the 720p window of a gallery window.
0 - Disable the Gallery layout. Content displays in a fullscreen window.

**video.conf.displayLayout.PIP.peopleMode**

Choose what the Picture-in-Picture (PIP) frame displays when you set `video.conf.displayLayout.autoPreference` to PIP.

selfView (default) - Display your own video.
recentTalker - Display video from the current or most recent talker.

**video.conf.displayLayout.single.activeLayout**

Set the default layout when using one monitor.
- Auto (default) - Allow the system to choose the best layout.
- Gallery (default) - Set to Gallery layout.
- PIP – Set layout to a Picture-in-Picture (PIP) frame.
- FullScreen – Set to a fullscreen layout.

**video.conf.displayLayout.triple.activeLayout**

Set the default layout when using three or more monitors.
- Auto (default) - Allow the system to choose the best layout.
- ContentOnFirstScreen – Display video and content on monitor 1.
- ContentOnSecondScreen – Display video and content on monitor 2.
- ContentOnThirdScreen - Display video and content on monitor 3.
- ContentOnFirstTwoScreens – Display video and content on monitors 1 and 2.
- ContentOnSecondAndThirdScreens – Display video and content on monitors 2 and 3.
- ContentOnAll Screens – Display video and content on all monitors.

**video.display.x.activeLayout**

Set the initial default layout for registered line x.
- PerSession (default) - Users can change the layout on a per-session basis.
- Hidden - Hide user layout controls. Users cannot change the initial default layout.
- Persistent - Users cannot change the initial default layout.

**Toggling Between Audio-only or Audio-Video Calls**

You can enable users to toggle between audio-only and audio-video calls.

When this feature is enabled on a phone using video capabilities, you can toggle calls between audio-only or audio-video.

This feature applies only to outbound calls from your phone; incoming video calls to your phone are answered using video even when you set the feature to use audio-only.

When the phone is registered, you can:

- **Use** `video.callMode.default` **to begin calls as audio-video or audio only.** By default, calls begin as audio-video. After a video call has ended, the phone returns to audio-only. If you set this parameter to audio, users can choose to add Video to the call.

- **Use** `up.homeScreen.audioCall.enabled` **to enable a Home screen icon that allows users to make audio-only calls.** Far-end users can add video during a call if the far-end device is video capable.
Audio-only or Audio-Video Call Parameters
The following parameters configure whether the phone starts a call with audio and video.

video.autoStartVideoTx
1 (default) - Automatically begin video to the far side when you start a call.
0 - Video to the far side does not begin.
Note that when the phone Base Profile is set to Skype or Lync, the default is 1.

audioVideoToggle.callMode.persistent
0 - Resets the call mode set by a user to the default.
1 - Maintains the call mode set by a user.

feature.audioVideoToggle.enabled
Applies to the video-enabled business media phones.
0 (default) - the audio/video toggle feature is disabled.
1 - the feature is enabled.

video.callMode.default
Allow the user to begin calls as audio-only or with video.
audio (default) - Calls begin with audio only and the Start Video soft key displays.
video - Calls begin with video.

Forward Error Correction
The phones support Forward Error Correction (FEC) DV0 and DV1 with Skype for Business Server 2015, Skype for Business 2015 client, and Lync 2013 environments for H.264 SVC. The scheme introduces recovery packets on the transmitter which recover lost video packets on the receiver.
FEC performance and quality improvements with this release may vary depending on network conditions.

Forward Error Correction Parameter
Use the following parameter to set values for forward error correction.

video.codecPref.XulpFecUC
Set the forward error correction (FEC) codec priority.
8 (default) - for Poly Trio systems
0 - 8 - Poly Trio
Simulcast Video
Supported phones registered to Skype for Business can simultaneously send a low resolution video stream and a second higher-resolution video stream to conference participants in a Skype for Business AVMCU meeting. Simulcast is enabled by default.

Skype for Business AVMCU-based video meetings are driven by endpoint requests to receive video, which is called a video source request (VSR). The VSR specifies the resolution (among other constraints) and the participant(s) whose video the endpoint would like to display. The requested resolution in Skype for Business client video calls is based on the size of the video window and new VSRs are sent when the size of the window changes.

Configure Video Resolution from the Phone
You can configure the video resolution for simulcast video from the phone.

Procedure
1. Go to Settings > Basic > Video.
2. Select Video Call Settings > Centralized Conferencing Profile.

Simulcast Video Resolution Parameters
You can configure video resolution using centralized provisioning parameters.

video.callRate
The default call rate (in kbps) to use when initially negotiating bandwidth for a video call.
2048 (default) - The overlay does not time out.
128 - 6144

video.camera.flickerAvoidance
Sets the flicker avoidance for all supported USB cameras.
NULL (Default)
0 - Flicker avoidance is automatic.
1 - 50hz AC power frequency flicker avoidance (Europe/Asia).
2 - 60hz AC power frequency flicker avoidance (North America).

video.conf.profile
Sets the video resolution to large window in all layouts.
540p (default)
1080p
720p
360p
240p
Supported Video Codecs with Poly Trio

Poly supports the following video standards and codecs:

- H.264 advanced video coding (AVC) baseline profile and high profile
- H.264 scalable video coding (SVC) (X-H264UC) and Remote Desktop Protocol (RDP) for desktop and application sharing. (Microsoft only)

The following table lists video codecs supported by Poly Trio systems.

Supported Video Codecs

<table>
<thead>
<tr>
<th>Algorithm</th>
<th>MIME Type</th>
<th>Frame Size</th>
<th>Bit Rate (kbps)</th>
<th>Frame Rate (fps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>H.264</td>
<td>H264/90000</td>
<td></td>
<td>6144 kbps</td>
<td>30</td>
</tr>
<tr>
<td>XH264UC</td>
<td></td>
<td></td>
<td>6144 kbps</td>
<td></td>
</tr>
</tbody>
</table>

Video Codec Parameters for Poly Trio

To support Poly Trio solution video interoperability with Cisco, set the following parameters:

- `video.codecPref.H264HP="0"`
- `video.codecPref.H264HP.packetizationMode0="0"
- `video.codecPref.H264="0"

Use the parameters in the following table to prioritize and adjust the video codecs used by the Poly Trio solution.

- `video.codecPref.H264HP`
  - Sets the H.264 High Profile video codec preference priority.
  - 0 - 8
  - 2 (default)

- `video.codecPref.H264HP.packetizationMode0`
  - 0 - 8
  - 5 (default)

- `video.codecPref.H264SVC`
- `video.codecPref.Xdata`
  - Sets the Remote Desktop Protocol (RDP) codec preference priority. A value of 1 indicates the codec is the most preferred and has highest priority.
  - 0 - 8
video.codecPref.XH264UC

Sets the Microsoft H.264 UC video codec preference priority.

0 - 8
1 (default)

video.codecPref.XUlpFecUC

Set the forward error correction (FEC) codec priority.

8 (default)
0 - 8

Skype for Business User Profiles

You can enable users to access their personal settings from any phone in the organization registered to Skype for Business.

For example, users can access their contact directory and speed dials – as well as other phone settings – even if they temporarily change work areas. This feature is particularly useful for remote and mobile workers who do not use a dedicated work space and conduct business in multiple locations. The user profile feature is also useful if an office has a common conference phone from which multiple users need to access their personal settings.

You must decide whether to require users to always log in to a phone or not. If you do not require users to log in, users have the option to use the phone as is – without access to their personal settings – or they can log in to display their personal settings. You can also specify if, after the device restarts or reboots, a user is automatically logged out.

You can choose to define default credentials. If you specify a default user ID and password, the phone automatically logs itself in each time an actual user logs out or the device restarts or reboots. When the device logs itself in using the default login credentials, a default profile displays, and users retain the option to log in and view their personal settings.

You can configure the phones so that anyone can call authorized and emergency numbers when not logged in to a phone using the parameter dialplan.routing.emergency.outboundIdentity.

Poly recommends that you create a single default user password for all users. You can reset a user's password by removing the password parameter from the override file. This causes the phone to use the default password in the <user>.cfg file.

To set up the user profile feature, you must:

- Create a phone configuration file or update an existing file to enable the feature's settings, and configure attributes for the feature.
- Create a user configuration file in the format <user>.cfg to specify each user's password and registration and other user-specific settings that you want to define.
Create a User Profile Configuration File

You can create a configuration file with user-specific profile details and provision multiple phones with that file.

Procedure
1. Create a configuration file for the phone and place it on the provisioning server.
2. Add the prov.login* parameters you want to use to your configuration.
3. Copy the prov.login* parameters you want to use for each user and enter user-specific values.

Create a User Configuration File

Create a user-specific configuration file that stores user names, passwords, and registrations.

After a user logs in with their user ID and password (The default password is 123.), users can:

- Log in to a phone to access their personal phone settings.
- Log out of a phone after they finish using it.
- Place a call to an authorized number from a phone that is in the logged out state.
- Change their user password.

If a user changes any settings while logged in, the settings save and display the next time the user logs in. When a user logs out, the user's personal phone settings no longer display.

Procedure
1. On the provisioning server, create a user configuration file for each user to log in to the phone.
   The name of the file is the user's ID to log in to the phone. For example, if the user's login ID is user100, the name of the user's configuration file is user100.cfg.
2. In each <user>.cfg file, you can add and set values for the user's login password (optional).
3. Add and set values for any user-specific parameters, such as:
   - Registration details (for example, the number of lines the profile displays and line labels).
   - Feature settings (for example, browser settings).

   **Note:** If you add optional user-specific parameters to <user>.cfg, add only those parameters that will not cause the phone to restart or reboot when the parameter is updated.

Stored User Settings

If a user updates their password or other user-specific settings using the Main Menu on the phone, the updates are stored in <user>-phone.cfg, not <MACaddress>-phone.cfg.

If a user updates their contact directory while logged in to a phone, the updates are stored in <user>-directory.xml. Directory updates display each time the user logs in to a phone. An up-to-date call lists history is defined in <user>-calls.xml. This list is retained each time the user logs in to their phone.

Configuration parameter precedence (from first to last) for a phone that has the user profile feature enabled is:

- <user>-phone.cfg
• Web Configuration Utility
• Configuration files listed in the master configuration file (including `<user>.cfg`)
• Default values

### Upload Logs to the Skype for Business Server

To help troubleshoot phone issues for phones registered with Skype for Business, you can allow users to upload logs to the Skype for Business server from the phone or Web Configuration Utility. Users can also set log levels for the phone.

This feature is available on the phones registered with Skype for Business Server On-premises or Online and with Microsoft Lync 2013 or 2010 Server.

Logs are uploaded to the Skype for Business Server at the following location, which you can specify in the Skype for Business topology builder or at initial installation:

```
<LYNC_SERVER_LOG_PATH>\1-WebServices-1\DeviceUpdateLogs\Client\CELog
```

Phones support Core File Uploads to help log phone crashes. The logs are uploaded to the Skype for Business server in `tar.gz` format. The Skype for Business server must support `tar.gz` format to decrypt the log file uploaded to server.

### Upload Logs Parameters

Use the following parameters to configure log uploading to the Skype for Business server.

- **feature.logUpload.enabled**
  - 1 (default) - Enable users to upload logs to the Skype for Business server from the phone.
  - 0 - Do not allow users to upload log files to the Skype for Business server.

### Send Logs from the Phone

To help troubleshoot issues, you can send logs from the phone to the Skype for Business server.

**Procedure**

» Go to Settings > Basic > Diagnostic Logs > Upload Logs.
   
   The files are uploaded to the server as plain text.

### Send Diagnostic Logs from the Web Configuration Utility

To help troubleshoot issues, you can send diagnostic logs to the Skype for Business server from the Web Configuration Utility.

This option is available when logged in as Administrator or User.

**Procedure**

1. Enter the IP address of the phone into a web browser and log in as Administrator or User.
2. Go to **Diagnostics > Upload Logs**.
   The files are uploaded to the server as plain text.

3. View uploaded URLs at **Skype for Business Status > Skype for Business Parameters** and one of the following locations:
   - Update Server Internal URL for on-premises deployments.
   - Update Server External URL online deployments.

### Setting Log Levels
You can set log levels from the phone or Web Configuration Utility. By default, the phone sends log levels set on the server.

#### Set Log Levels from the Phone
You can set log levels from the phone.

**Procedure**

» On the phone, go to **Settings > Basic > Diagnostic Logs > Server Log Level**.

#### Set Log Levels from the Web Configuration Utility
You can set log levels from the Web Configuration Utility.

**Procedure**

1. Enter the IP address of the phone into a web browser and log in as Administrator or User.
2. Go to **Settings > Logging**.
3. In **Server Log Level**, select a log level.
Hardware and Power for Poly Trio Systems

Topics:
• Powering Poly Trio Systems
• Poly Trio System Power Management
• Power-Saving on Poly Trio Systems
• Consumer Electronics Controls (CEC) over HDMI on Poly Trio Systems
• Pairing Polycom EagleEye Director II Camera System with Poly Trio
• Rebooting the Poly Trio System at a Scheduled Time
• Pairing the Poly Trio Visual+ or Trio VisualPro with Poly Trio Systems
• Daisy-Chaining Poly Trio Systems

This section provides information on hardware and powering for the Poly Trio system and Poly Trio Visual+ accessory, as well as information on power management.

Powering Poly Trio Systems
Powering requirements and options vary between Poly Trio models.
Read the powering requirements and options carefully to understand powering for your Poly Trio system. For more information, see the Setup Sheet for your Poly Trio system model at Poly Trio on Polycom Support.

Powering the Poly Trio 8800
You can power the Poly Trio 8800 system with Power over Ethernet (PoE) or PoE+ (IEEE 802.3at Type 2). When the Poly Trio 8800 system is booting up, an on-screen message indicates the available power supply type. Note that PoE+ provides Poly Trio systems with full functionality.
The following features are not available on Poly Trio 8800 system when using PoE:
• The Poly Trio 8800 system LAN OUT port out does not provide PoE+ power and cannot be used to power the Poly Trio Visual+.
• No USB charging is provided to devices (mobile phones, tablets) connected to the Poly Trio 8800 system USB port.
• Maximum peak power to the loudspeaker is limited.

Powering the Poly Trio 8500 System
You can power Poly Trio 8500 systems with Power over Ethernet (PoE).
Poly Trio 8500 systems do not support:
• PoE+
• Power Sourcing Equipment (PSE)
• LAN Out / PC Port
• USB charging

Power the Poly Trio 8800 System with the Optional Power Injector

If your building is not equipped with PoE+ you can use the optional power injector to provide PoE+ and full functionality to Poly Trio 8800 system.

**Note:** Place the PoE injector in a clean and dry area out of a walkway, and provide sufficient space around the unit for good ventilation. Do not cover or block airflow to the PoE injector. Keep the PoE injector away from heat and humidity and free from vibration and dust.

When using the power injector to power the Poly Trio 8800 system, you must connect cables in the following sequence:

**Procedure**

1. Plug the AC power cord of the power injector into the wall and use a network cable to connect the power injector to the Poly Trio 8800 system.
2. Connect the power injector to the network with a CAT-5E or CAT-6 Ethernet cable.

The power adapter LED is green when the Poly Trio 8800 system is correctly powered. If the LED is yellow, the power injector is bypassed and the Poly Trio 8800 system is drawing PoE power from the outlet.

**Tip:** If the Poly Trio Visual+ loses power after a Poly Trio 8800 system reboot, unplug both devices and repeat steps 1 and 2.

If the power injector LED is yellow, turn off the PoE network port or connect the Poly Trio system in the following sequence:

1. Power up Poly Trio 8800 and Visual+ using the power injector but do not plug the devices into the network wall port.
2. Wait for the Poly Trio 8800 and Visual+ systems to boot up.
3. Plug the devices into the network wall port.
4. Ensure the LED indicator on the power injector is green.

Powering the Poly Trio Visual+ Solution

How you power the Poly Trio Visual+ can depend on the power options your building is equipped with.

Consider the following setup points:

• If you are using PoE+ or the optional power injector, you can power the Poly Trio Visual+ directly from the Poly Trio 8800 system using an Ethernet cable. In this scenario, you do not need to pair the Poly Trio system with the Poly Trio Visual+.
• If you are using PoE, you must power the Poly Trio Visual+ separately using an Ethernet cable or use the optional power injector. In this scenario, you must pair the Poly Trio system with the Poly Trio Visual+.
• If you use PoE+, you have the option to power the Poly Trio 8800 system and Poly Trio Visual+ separately and then pair. When powering separately, you do not need to connect the Poly Trio system directly to Poly Trio Visual+. 
Poly Trio System Power Management

Power available to Poly Trio systems is limited and you must choose how to power the system and which features to enable or disable.

Power management options vary between Poly Trio system models. Read the powering requirements and options carefully to understand powering for your Poly Trio system.

Poly Trio 8500 System Power Management

The Poly Trio 8500 system supports:

• USB devices consuming < 2.5W power
• USB port over current detection

Poly Trio 8500 systems do not support:

• PoE+
• Power Sourcing Equipment (PSE)
• LAN Out / PC Port
• USB charging

USB Port Power Management

Device charging with the USB port on the Poly Trio 8800 system is disabled by default and when disabled the USB host port provides 100mA of power for peripheral devices.

USB charging is disabled when powering the Poly Trio Visual+ from a LAN Out port.

To enable USB charging, you must power your Poly Trio 8800 system with an IEEE 802.3at Power over Ethernet Plus (PoE+) compliant power source. When USB charging is enabled, you can power and charge USB 2.0 compliant devices having a power draw of up to 1.500mA/7.5W.

Using Power over Ethernet (POE) Class 0

Powering the Poly Trio 8800 system from a Power over Ethernet (POE) Class 0 source provides full core functionality and results in the following limitations:

• The LAN Out port does not provide PoE power but otherwise is fully functional.

Using Power Sourcing Equipment Power (PoE PSE Power)

You can use Power Sourcing Equipment Power (PoE PSE Power) to power a Poly Trio Visual+ system from the LAN OUT port of the Poly Trio 8800 system.

To use PoE PSE Power, you must power the Poly Trio 8800 system with an IEEE 802.3at Power over Ethernet Plus (PoE+) compliant power source.

Note: You cannot enable USB Charging of the USB host port and PSE PoE Power of LAN OUT port at the same time. If both are enabled, the Poly Trio 8800 system uses PSE PoE Power and ignores the USB charging setting.
Poly Trio System Power Management Parameters

You can use the parameters listed to manage the Poly Trio system's power usage.

**poe.pse.class**

Specify the LAN OUT PoE class.

- 0 (default)
- 0 - 3

**poe.pse.enabled**

1 (default) - The Poly Trio LAN OUT interface provides PoE power to a connected device.

0 - PoE power is not provided by the LAN OUT port.

**usb.charging.enabled**

0 (default) - You cannot charge USB-connected devices from the USB charging port.

1 - Enable fast charging of devices connected by USB port up to 7.5W power / 1.5A current.

---

**Power-Saving on Poly Trio Systems**

Power-saving automatically puts the phone into a lower-power state to conserve energy when not in use. When the phone is in power-saving, an LED light flashes at intervals. The phone returns to a full power state after detecting user movement, or after a button press, screen touch, or incoming call.

You can configure several power-saving options for Poly Trio systems including:

- Configure power-saving during work days.
- Turn on power-saving during nonworking days.
- Configure an idle inactivity time after which the phone enters power-saving.

---

**Note:** Poly Trio systems cannot enter power-saving mode while idle in the **Bluetooth** menu. To ensure the phone can enter power-saving, do not leave the phone idle in the **Bluetooth** menu.

---

**Power-Saving Parameters**

Use the following parameters to configure the power-saving features and feature options.

**powerSaving.cecEnable**

0 (default) - The paired device display behavior is controlled only by the value set for **powerSaving.tvStandbyMode**.

1 - When the Poly Trio system enters power-saving mode, the paired device display switches to standby mode and powers up when the system exits power-saving mode.
**powerSaving.cecEnable**

1 (default) - Enable the LCD power-saving feature.
0 - Disable The LCD power-saving feature.

Note that when the phone is in power-saving mode, the LED Message Waiting Indicator (MWI) flashes. To disable the MWI LED when the phone is in power saving mode, set the parameter `ind.pattern.powerSaving.step.1.state.x` to 0 where x=your phone's model.

**powerSaving.idleTimeout.offHours**

The number of idle minutes during off hours after which the phone enters power saving.

1 (default)
1 - 10

**powerSaving.idleTimeout.officeHours**

The number of idle minutes during office hours after which the phone enters power saving.

30 (default)
1 - 600

**powerSaving.idleTimeout.userInputExtension**

The number of minutes after the phone is last used after which the phone enters power saving.

10 (default)
1 - 20

**powerSaving.officeHours.duration.x**

Append the day of the week for "x". For example, `powerSaving.officeHours.duration.Monday`.

Set the duration of the office working hours by week day.

Monday - Friday = 12 (default)
Saturday - Sunday = 0
0 - 24

**powerSaving.officeHours.startHour.x**

Specify the starting hour for the day's office working hours.

7 (default)
0 - 23

Set x to Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, and Sunday (refer to `powerSaving.officeHours.duration` for an example).
**powerSaving.tvStandbyMode**

- black (default) - The paired device displays a black screen after entering power-saving mode.
- noSignal - Power-saving mode turns off the HDMI signal going to the paired device monitor(s).

**Consumer Electronics Controls (CEC) over HDMI on Poly Trio Systems**

Consumer Electronics Control (CEC) enables monitor standby on Poly Trio systems when using the Poly Trio Visual+ system to connect to CEC-capable monitors with HDMI.

Check the feature settings and sub-settings on your monitor to verify that your monitor supports CEC.

When you enable CEC, any connected CEC-capable monitors switch to standby mode to save power when the Poly Trio system enters standby mode. When the system awakes, the monitors are powered up before displaying Poly Trio system video. Use of system standby requires CEC-capable monitors. Note that not all HDMI monitors support CEC.

During start up, the Poly Trio Visual+ system might display messages about potential issues when a monitor is connected to the HDMI port, for example:

- **HDMI connectivity issues.** The Poly Visual+ message may indicate monitor capability issues. Check the HDMI connection and replace the HDMI cable if necessary.
- **Low resolution monitor.** The Poly Visual+ message indicates when a low resolution monitor is connected. Use a full HD monitor if possible.

**Note:** CEC features can vary by the brand of monitor. Specifically, some monitors have sub-feature settings under the main CEC setting that control whether or not the monitor responds to CEC commands. Ensure that you enable all CEC features and sub-features on all monitors connected to the Poly Trio systems.

**Related Links**

- [Connect a Poly Trio System to a Microsoft Surface Hub](#) on page 44
- [Connect a Poly Trio System to a Microsoft Teams or Skype Room System](#) on page 43

**Configure Consumer Electronics Control (CEC) using the Web Configuration Utility for Poly Trio Systems**

You can enable or disable CEC on Poly Trio systems using the Web Configuration Utility.

**Procedure**

1. Enter the IP address of the Poly Trio system to a web browser.
2. Log into the Web Configuration Utility as an administrator.
3. Go to **Settings > Networked Devices > Power Saving Settings**.
4. Beside **Consumer Electronic Control**, select **Enable** or **Disable**.
Consumer Electronics Controls (CEC) over HDMI Parameters

The following parameters configure CEC when using HDMI with Poly Trio systems.

**powerSaving.cecEnable**

0 (default) - The Poly Trio Visual+ display behavior is controlled only by the value set for `powerSaving.tvStandbyMode`.

1 - When the Poly Trio system enters power-saving mode, the Poly Trio Visual+ display switches to standby mode and powers up when the Poly Trio system exits power-saving mode.

Pairing Polycom EagleEye Director II Camera System with Poly Trio

Enable users to place video calls by pairing Polycom EagleEye Director II camera with Poly Trio 8800 system. You can pair the EagleEye Director II camera to the system using `mr.pair.uid.1` parameter or from the Poly Trio system menu. Make sure to pair correct device with Poly Trio system.

**Note:** You cannot use EagleEye Director II camera system when Poly Trio Visual+ system is paired to the Poly Trio system. Make sure to unpair Poly Trio Visual+ system and pair EagleEye Director II camera system.

You can connect the EagleEye Director II camera system with Poly Trio system using Ethernet cable directly or corporate network. The Poly Trio connects to MSR Dock and Surface Hub using USB.

The following figure illustrates the connectivity between EagleEye Director II camera system, Poly Trio and MSR Dock.

The following figure illustrates the connectivity between EagleEye Director II camera system, Poly Trio and Surface Hub.
Pair Polycom EagleEye Director II Camera System

If you are using a Polycom EagleEye Director II camera system with Polycom MSR Dock or Microsoft Surface Hub, you can pair the Poly Trio system from the local interface.

Ensure the Poly Trio system is in Skype USB Optimized mode, and that it is configured on your network.

Procedure

1. Set up EagleEye Director II camera system.
2. On the Poly Trio system, go to Settings > Advanced > Network Devices.
3. Tap the filter icon and select the checkbox for Camera.
4. Navigate to the Network Devices screen.
   - The EagleEye Director II camera system's last six characters of the serial number displays in the Available Devices screen.
5. Tap the EagleEye Director II camera system's serial number in the Available Devices screen.
6. Tap Pair button in Details screen.
7. Tap Complete.
   - The EagleEye Director II Camera system LED blinks purple when pairing with Trio system.

For more information on EagleEye Director II Camera system LED indicators, see Polycom EagleEye Director II Camera Administrator Guide.

Rebooting the Poly Trio System at a Scheduled Time

You can configure Poly Trio systems to reboot at a scheduled time, period, or days. With this feature, you can schedule a Poly Trio system to reboot daily.
Scheduled Reboot Parameters

Use the following parameters to configure scheduled reboot times for Poly Trio systems.

prov.scheduledReboot.enabled
- 0 (default)—Disables scheduled reboot.
- 1—Enables scheduled reboot.

prov.scheduledReboot.periodDays
Specify the time in days between scheduled reboots.
- 1 day (default)
- 1–365 days

prov.scheduledReboot.time
Specify a time to reboot the Poly Trio system. Use the 24 hour time format (HH:mm).
- 03:00 (default)

prov.scheduledReboot.timeRandomEnd
If this parameter is set to a specific time, the scheduled reboot occurs at a random time between the time set for prov.scheduledReboot.time and prov.scheduledReboot.timeRandomEnd. The time is in 24-hour format.
- 0–5 hours
  hh:mm

Pairing the Poly Trio Visual+ or Trio VisualPro with Poly Trio Systems

Pair the Poly Trio Visual+ or Trio VisualPro system with a Poly Trio 8500 or 8800 system so users can place video calls and share content.

You can pair only one Poly Trio Visual+ or Trio VisualPro system to a Poly Trio system. Poly recommends that you plug your systems into a local gigabit switch. You can pair the system using configuration files or from the Poly Trio system menu.

To pair, make sure connect the systems to the same subnetwork and unblock the following network components:
- Multicast address 224.0.0.200
- Port 2000
Manually Pair with Poly Trio Systems

You can manually pair a Poly Trio 8500 or 8800 system with Poly Trio Visual+ or Trio VisualPro system from the Poly Trio system’s menu.

Procedure

1. Set up the system you plan to pair with the Poly Trio system.
   For setup instructions, refer to your system’s setup sheet.
   The Welcome screen displays on your monitor and indicates steps to pair with a Poly Trio system.

2. (Poly Trio Visual+ only) Tap the **Pair** button on Poly Trio Visual+ to broadcast discovery to the Poly Trio.

3. On the phone menu, go to **Settings > Advanced > Networked Devices** and make sure **Notification of New Devices** is **On**.

4. Choose one of the following:
   • If you have not paired the device before, tap **Pair with New Device**, tap the device you want to pair from the Discovered Devices list, and in the Details screen, tap **Pair**. All currently paired devices display under Paired Devices.
   • If the device has been paired before, select the device from the **Available Devices** list and tap **Pair**.

5. When you see the message prompting you to complete pairing, do one of the following:
   • Tap **Complete**.
   • (Poly Trio Visual+ only) Tap the **Pair** button on the device.

If paired, a success message displays on the monitor(s) along with a self-view window. The LED light on the device paired with your phone is also continuously green (Poly Trio Visual+) or blue (Trio VisualPro), and a paired icon displays on the phone. If pairing is unsuccessful, you see a message that the devices could not pair. After successful pairing, if your devices disconnect for 60 seconds, a message displays that the devices have temporarily lost connection.

Poly Trio Visual+ Pairing Parameters

To pair using configuration files, enter the MAC address of your Poly Trio Visual+ device as the value for the parameter `mr.pair.uid.l`.

The MAC address can be in either of the following formats:

- `00e0d::B09128D`
- `00E0DB09128D`.

Use the following parameters to configure this feature and additional feature options.

**mr.PairButton.notification**

- `1` (default) - The Poly Trio system displays notifications of devices available to pair with after you press the Pair button on the Poly Trio Visual+.
0 - The Poly Trio system does not display pairing notifications.

**mr.audio.srtp.require**
1 (default) - SRTP is used to encrypt and authenticate modular room audio signals sent between Poly Trio and Poly Trio Visual+.
0

**mr.pair.uid.1**
Enter the MAC address of the Poly Trio Visual+ you want to pair with.
Null (default)
String (maximum of 64 characters)

**mr.pair.tls.enabled**
1 (default) - Enable TLS to encrypt communication between the Poly Trio and Poly Trio Visual+ systems.
0 - Disable TLS for communication between Poly Trio systems and Poly Trio Visual+ systems.
Change causes system to restart or reboot.

**mr.video.camera.focus.auto**
NULL (default)
0 - Disable the camera's automatic focus.
1 - Enable the camera's automatic focus.
Change causes system to restart or reboot.

**mr.video.camera.focus.range**
Specify the distance to the camera's optimally-focused target.
NULL (default)
0
0 - 255

**mr.video.iFrame.minPeriod**
Choose the minimum time in seconds between transmitted video i-Frames or transmitted i-Frame requests.
2 (default)
1 - 60

**smartPairing.mode**
Enables users with RealPresence Desktop on a laptop or RealPresence Mobile on a tablet to pair with the Poly Trio system using SmartPairing.

discharged (default)

manual

**smartPairing.volume**

The relative volume to use for the SmartPairing ultrasonic beacon.

6 (default)

0 - 10

**Identify Paired Devices**

If you’re using multiple Poly Trio systems, you can verify which one is paired with a specific Poly Trio Visual+ or Trio VisualPro system.

**Procedure**

1. On the phone menu, go to **Settings > Advanced > Networked Devices**, and ensure that **Notification of New Devices** is **On**.
2. Select a device that displays under Paired Devices or Available Devices.
3. Tap **Identify**.
   
   The LED of the device you selected flashes to indicate it is paired.

**Daisy-Chaining Poly Trio Systems**

You can pair (daisy-chain) a Poly Trio 8500 or 8800 system with up to three other Poly Trio systems for enhanced audio performance in large or acoustically challenging rooms. Or you can pair a Poly Trio system with two other Poly Trio systems and one Poly Trio Visual+, Poly Trio VisualPro, or Polycom RealPresence Group Series to add video and content sharing capabilities.

When you daisy-chain Poly Trio systems, the speakers and microphones act as a single speaker and microphone array for superior acoustic performance.

**Note:** You cannot pair or daisy-chain a Poly Trio system with another Poly Trio system or with a Poly Trio Visual+, Poly Trio VisualPro, or RealPresence Group Series system when it is connected to your network using Wi-Fi.

**Daisy-Chaining Requirements**

**Daisy-Chain Requirements for Audio-Only**

You can daisy-chain up to three Poly Trio systems to a Poly Trio 8500 or 8800 system for audio-only calls when you meet the following requirements:

- The Poly Trio systems must be connected to the same IP network.
- The Poly Trio systems must be connected to the same network subnet.
- The network must support multicast and multicast must be enabled.
• All daisy-chained Poly Trio systems are running UC Software 5.8.0AA or later.
• For optimal performance, follow the guidelines for setting the distance between Poly Trio systems:
  ◦ Set Poly Trio 8800 systems about 3.0 m (10 ft) apart.
  ◦ Set Poly Trio 8500 systems about 2.5 m (8 ft) apart.
• When signing in to Office 365/Skype for Business Online from a Poly Trio system daisy-chained to another Poly Trio system:
  ◦ Do not enter a domain. Leave the Domain field blank.
  ◦ Complete the Username field with a fully-qualified domain name, for example, user@domain.com.

Daisy-Chain Requirements for Video and Content
You can add video and content-sharing capabilities to your daisy-chained devices when you meet the above and following requirements:
• A Poly Trio 8500 or 8800 system is paired with two Poly Trio systems and only one Poly Trio Visual+, Poly Trio VisualPro, or Group Series system for video and content
• Set the parameter mr.pair.maxDevices to the maximum number of paired devices (up to 4), minus 1 for the Hub system. For example, if you have a Poly Trio system set as the Hub with two daisy-chained Poly Trio systems and a paired Poly Trio Visual+, set the mr.pair.maxDevices to 3.

Poly Trio System Daisy-Chain Scenarios
You can daisy-chain Poly Trio 8500 an 8800 systems in any of the following configuration scenarios.

Scenario: Audio-Only
You can daisy-chain up to three Poly Trio systems to a Poly Trio 8500 or 8800 system for enhanced audio-only when the Poly Trio systems are in Skype for Business, USB Optimized, or Generic Base Profile.
• Maximum of four Poly Trio systems.
• You must configure Poly Trio systems to the same Base Profile.
• Video or content-sharing are not supported when more than two Poly Trio systems are paired.

Scenario: Video and Content Sharing
You can daisy-chain a Poly Trio 8500 or 8800 system with two Poly Trio systems and one paired Poly Trio Visual+ system, Poly Trio VisualPro system, or RealPresence Group Series system with a Poly Trio system configured to Skype for Business, Generic, or USB Optimized Base Profile.
• Maximum of three Poly Trio systems.
• You must configure Poly Trio systems to the same Base Profile.
• Maximum of one Poly Trio Visual+ system, Poly Trio VisualPro system, or Poly RealPresence Group Series system.

Daisy-Chain Poly Trio Systems
You can daisy-chain up to four Poly Trio 8500 and 8800 systems for audio-only calls or up to three Poly Trio systems and one Poly Trio Visual+, VisualPro, or RealPresence Group Series system to add video
and content sharing capabilities. You must configure one Poly Trio system as the Hub and the other systems as Devices.

**Procedure**

1. On the Poly Trio system you want to set as the Hub, go to **Settings > Advanced > Networked Devices**, and confirm **Networked Device Role** is set to **Hub**.
2. On the systems you want to set as the Device, go to **Settings > Advanced > Networked Devices**, and set **Networked Device Role** to **Device**.
   The systems you set as Device reboot.
3. After the Device systems reboot, on the Hub system, go to **Settings > Advanced > Networked Devices**, and under **Available Devices**, select the **Device** system.
4. Tap **Pair** and wait for the devices to connect.

When two or more Poly Trio systems are daisy-chained, both systems display the same user interface.

**Daisy-Chaining Parameters**

Use the following parameters to configure daisy-chaining options for Poly Trio systems.

**up.daisyChain.device.style**

Choose how to visually indicate which Poly Trio system is set to **Device** in a daisy-chaining scenario.

- LineAtTopOfScreen (default) - A line displays at the top of the Poly Trio screen.
- GlobalMenuIcon - An icon displays on the Poly Trio system Home screen.

Change causes system to restart or reboot.
Poly Trio System Port Usage with Skype for Business

Topics:

- Inbound and Outbound Ports for Poly Trio System with Skype for Business
- Poly Trio System Real-Time Transport Protocol (RTP) Port Parameters for Skype for Business
- Client Media Port Ranges for QoE

This section lists ports used by Polycom phones and ports you can configure.

Inbound and Outbound Ports for Poly Trio System with Skype for Business

This section provides port usage information when configuring network equipment to support Poly Trio systems with Skype for Business.

For details, see Port and protocol requirements for servers on Microsoft TechNet.

Inbound Ports for Poly Trio Systems with Skype for Business

The following table lists the inbound IP ports currently used by Polycom UC Software running on the Poly Trio systems with Skype for Business.

<table>
<thead>
<tr>
<th>Inbound Port</th>
<th>Type</th>
<th>Protocol</th>
<th>Function</th>
<th>Default</th>
<th>Configurable Port Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>Static</td>
<td>TCP</td>
<td>SSH Administration</td>
<td>Off</td>
<td>No</td>
</tr>
<tr>
<td>80</td>
<td>Static</td>
<td>TCP</td>
<td>HTTP Pull Web interface, HTTP Push</td>
<td>Off</td>
<td>Yes</td>
</tr>
<tr>
<td>443</td>
<td>Static</td>
<td>TCP</td>
<td>HTTP Pull Web interface, HTTP Push</td>
<td>On</td>
<td>Yes</td>
</tr>
<tr>
<td>1023</td>
<td>Static</td>
<td>TCP</td>
<td>Telnet Diagnostics</td>
<td>Off</td>
<td>No</td>
</tr>
<tr>
<td>1024 - 65535</td>
<td>Dynamic</td>
<td>TCP/UDP</td>
<td>RTP media packets</td>
<td>On</td>
<td>Yes</td>
</tr>
</tbody>
</table>
### Inbound Port Usage on Poly Trio Systems with Skype for Business

<table>
<thead>
<tr>
<th>Inbound Port</th>
<th>Type</th>
<th>Protocol</th>
<th>Function</th>
<th>Default</th>
<th>Configurable Port Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1024 - 65535</td>
<td>Dynamic</td>
<td>TCP/UDP</td>
<td>RTCP media packets statistics</td>
<td>On</td>
<td>Yes</td>
</tr>
<tr>
<td>5001</td>
<td>Static</td>
<td>TCP</td>
<td>People+Content IP</td>
<td>On</td>
<td>No</td>
</tr>
<tr>
<td>5060</td>
<td>Static</td>
<td>TCP/UDP</td>
<td>SIP signaling</td>
<td>On</td>
<td>No</td>
</tr>
<tr>
<td>5061</td>
<td>Static</td>
<td>TLS</td>
<td></td>
<td>On</td>
<td>No</td>
</tr>
<tr>
<td>8001</td>
<td>Static</td>
<td>TCP</td>
<td>SIP over TLS signaling</td>
<td>On</td>
<td>Yes, mr.deviceMgmt. port</td>
</tr>
<tr>
<td>8150 - 8153</td>
<td>Static</td>
<td>TCP</td>
<td>Airplay audio control</td>
<td>On</td>
<td>No</td>
</tr>
<tr>
<td>8150 - 8153</td>
<td>Static</td>
<td>UDP</td>
<td>Airplay audio data</td>
<td>On</td>
<td>No</td>
</tr>
</tbody>
</table>

### Outbound Ports on Poly Trio Systems with Skype for Business

The following table lists the outbound IP ports currently used by Polycom UC Software running on the Poly Trio systems with Skype for Business.

#### Outbound IP Ports

<table>
<thead>
<tr>
<th>Outbound Port</th>
<th>Type</th>
<th>Protocol</th>
<th>Function</th>
<th>Default</th>
<th>Configurable Port number</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>Static</td>
<td>TCP</td>
<td>FTP Provisioning, Logs</td>
<td>On</td>
<td>No</td>
</tr>
<tr>
<td>22</td>
<td>Static</td>
<td>TCP</td>
<td>SSH</td>
<td>On</td>
<td>No</td>
</tr>
<tr>
<td>53</td>
<td>Static</td>
<td>UDP</td>
<td>DNS</td>
<td>On</td>
<td>No</td>
</tr>
<tr>
<td>67</td>
<td>Static</td>
<td>UDP</td>
<td>DHCP Server</td>
<td>On</td>
<td>No</td>
</tr>
<tr>
<td>68</td>
<td>Static</td>
<td>UDP</td>
<td>DHCP Client</td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>69</td>
<td>Static</td>
<td>UDP</td>
<td>TFTP Provisioning, Logs</td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Outbound Port</td>
<td>Type</td>
<td>Protocol</td>
<td>Function</td>
<td>Default</td>
<td>Configurable Port number</td>
</tr>
<tr>
<td>---------------</td>
<td>------</td>
<td>----------</td>
<td>------------------------------------</td>
<td>---------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>80</td>
<td>Static</td>
<td>TCP</td>
<td>HTTP Provisioning, Logs, Web Interface</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>123</td>
<td>Static</td>
<td>UDP</td>
<td>NTP time server</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>389</td>
<td>Static</td>
<td>TCP/UDP</td>
<td>LDAP directory query</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>443</td>
<td>Static</td>
<td>TCP</td>
<td>HTTPS Provisioning, Logs, Web Interface</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>514</td>
<td>Static</td>
<td>UDP</td>
<td>SYSLOG</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>636</td>
<td>Static</td>
<td>TCP/UDP</td>
<td>LDAP directory query</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>1024 - 65535</td>
<td>Dynamic</td>
<td>TCP/UDP</td>
<td>RTP media packets</td>
<td>On</td>
<td>Yes</td>
</tr>
<tr>
<td>1024 - 65535</td>
<td>Dynamic</td>
<td>TCP/UDP</td>
<td>RTCP media packets statistics</td>
<td>On</td>
<td>Yes</td>
</tr>
<tr>
<td>5060</td>
<td>TCP/UDP</td>
<td></td>
<td>SIP signaling</td>
<td>On</td>
<td></td>
</tr>
<tr>
<td>5061</td>
<td>TCP</td>
<td></td>
<td>SIP over TLS signaling</td>
<td>On</td>
<td></td>
</tr>
<tr>
<td>5222</td>
<td>Static</td>
<td>TCP</td>
<td>Polycom Resource Manager: XMPP</td>
<td>On</td>
<td>No</td>
</tr>
<tr>
<td>8001</td>
<td>Static</td>
<td>TCP</td>
<td>HTTPS for modular room provisioning</td>
<td>On</td>
<td>Yes</td>
</tr>
<tr>
<td>8150 - 8153</td>
<td>Static</td>
<td>TCP</td>
<td>Airplay audio control</td>
<td>On</td>
<td>No</td>
</tr>
</tbody>
</table>
Poly Trio System Real-Time Transport Protocol (RTP) Port Parameters for Skype for Business

Use the following parameters to configure RTP packets and ports for Poly Trio systems registered with Skype for Business.

The Poly Trio 8500 supports audio only and does not support video or content; you cannot configure video and content port ranges for the Poly Trio 8500 system.

**tcpIpApp.port.rtp.lync.audioPortRangeStart**
Determines the start port for the audio port range.
- 5350 (default)
- 1024 - 65436

**tcpIpApp.port.rtp.lync.videoPortRangeStart**
Determines the start port for the video port range.
- 5390 (default)
- 1024 - 65486

**tcpIpApp.port.rtp.lync.contentPortRangeStart**
Determines the start port for the content port range.
- 5430 (default)
- Min - 1024
- Max - 65486

**tcpIpApp.port.rtp.lync.audioPortRangeEnd**
Determines the end port for the audio port range.
- 5389 (default)
- Min - 1024
- Max - 65485

**tcpIpApp.port.rtp.lync.videoPortRangeEnd**
Determines the end port for the video port range.
- 5429 (default)
- Min - 1024
- Max - 65535
**tcpIpApp.port.rtp.lynx.contentPortRangeEnd**

Determines the end port for the content port range.

- 5469 (default)
- Min - 1024
- Max - 65535

**Poly Trio and Visual+ System Media Transport Parameters**

These parameters provide additional RTP port ranges to transmit media between the Poly Trio system and Poly Trio Visual+ systems.

Use these parameters only when the default port ranges of these parameters overlaps with the audio, video, and content port ranges.

**mr.displayStreamPortStart**

- Determines the start port range for video streams that display on the Poly Visual+.
- 4000 (default)
- 1024 - 65436

Change causes system to restart or reboot.

**mr.displayStreamPortEnd**

- Determines the end port range for video streams that display on the Poly Visual+.
- 4019 (default)
- 1024 - 65436

Change causes system to restart or reboot.

**mr.cameraStreamPortStart**

- Determines the start port range for video streams received from the Poly Visual+ camera.
- 4020 (default)
- 1024 - 65436

Change causes system to restart or reboot.

**mr.cameraStreamPortEnd**

- Determines the end port range for video streams received from the Poly Visual+ camera.
- 4219 (default)
- 1024 - 65436

Change causes system to restart or reboot.

**mr.audioStreamPortStart**
Determines the start port range for audio streams sent to the Poly Visual+.

6000 (default)
1024 - 65436

Change causes system to restart or reboot.

**mr.audioStreamPortEnd**

Determines the end port range for audio streams sent to the Poly Visual+.

6199 (default)
1024 - 65436

Change causes system to restart or reboot.

**Client Media Port Ranges for QoE**

To help deploy QoE, you can enable client media ports and configure unique port ranges on the Skype for Business Server.

**Procedure**

» Enable client media ports as shown in Configuring Port Ranges for your Microsoft Lync Clients in Lync Server 2013.
Phone Display Features

Topics:

- Poly Trio System Time and Date Wizard
- Poly Trio System Name for Wireless Content Connections
- Poly Trio System Theme
- Poly Trio System Display Name
- Poly Trio Visual+ and Trio VisualPro Monitor Display Options
- Number or Custom Label
- Poly Trio System Status Messages
- Direct Inward Dialing Number
- Time Zone Location Description
- Reverse Name Lookup
- Administrator Menu on Poly Trio Systems

This section explains features you can configure for the phone's screen display and lists parameters you can use to configure these features.

Poly Trio System Time and Date Wizard

Users signing into Skype for Business on the Poly Trio system for the first time are prompted to set the time zone, time format, and date format before they start using the system.

This feature is enabled by default.

Poly Trio System Time and Date Wizard Parameters

Use the following parameters to enable or disable the Time and Date Wizard.

device.set

0 (default) - Do not use any device.xxx fields to set any parameters.
1 - Use the device.xxx fields that have device.xxx.set=1. Set this to 1 only for the initial installation and set back to 0 after the initial installation.

device.lync.timeZone.set

0 (default) - Do not use the device.xxx value.
1 (default) - Use the device.xxx value.

For example, if device.lync.timeZone.set = 1, then use the value set for device.lync.timeZone.
device.lync.timeZone

1 (default) - Skype for Business Time Zone Control is enabled.
0 - Skype for Business Time Zone Control is disabled.

Poly Trio System Name for Wireless Content Connections

When the Poly Trio 8800 system is registered with Skype for Business, you can determine if the Skype for Business display name shows in the list of available devices that supported Apple, Windows, or Android devices can connect with to share content using AirPlay or Miracast.

The Airplay or Miracast devices search for a system name, which you can specify in one or more of the following parameters. The device displays the name you configure for the system in the following priority in order:

- content.airplayServer.name for AirPlay or content.wirelessDisplay.name for Miracast
- system.name
- displayname (on the Skype for Business server)
- reg.1.displayname
- reg.1.label
- reg.1.address
- Default system name based on the model and MAC address

Poly Trio System Name for Wireless Content Connections Parameters

Set the system name using one or more of the following parameters.

content.airplayServer.name

Specify a system name for the local content sink for AirPlay certified devices. If left blank, the system name specified by the system.name parameter is used.

NULL (default)

content.wirelessDisplay.sink.name

Specify a system name for the local content sink for Miracast-certified devices. If left blank, the system name specified by the system.name parameter is used.

NULL (default)

reg.x.address

The user part (for example, 1002) or the user and the host part (for example, 1002@polycom.com) of the registration SIP URI or the H.323 ID/extension.

NULL (default)
string address

\textbf{reg.x.displayname}

The display name used in SIP signaling and/or the H.323 alias used as the default caller ID.

Null (default)

UTF-8 encoded string

\textbf{reg.x.label}

The text label that displays next to the line key for registration x.

The maximum number of characters for this parameter value is 256; however, the maximum number of characters that a phone can display on its user interface varies by phone model and by the width of the characters you use. Parameter values that exceed the phone's maximum display length are truncated by ellipses (...). The rules for parameter up.cfgLabelElide determine how the label is truncated.

Null (default) - the label is determined as follows:

- If \texttt{reg.1.useteluriAsLineLabel=1}, then the tel URI/phone number/address displays as the label.
- If \texttt{reg.1.useteluriAsLineLabel=0}, then the value for \texttt{reg.x.displayName}, if available, displays as the label. If \texttt{reg.x.displayName} is unavailable, the user part of \texttt{reg.x.address} is used.

**Poly Trio System Theme**

You can set the Poly Trio system theme, labels, and colors that display on the user interface.

When the Poly Trio system's Base Profile is set to Skype, the Skype for Business theme displays by default.

**Poly Trio System Theme Parameter**

The following parameter configures the Poly Trio system theme.

\textbf{up.uiTheme}

Default (default) - The phone displays the default Poly theme.

SkypeForBusiness - The phone displays the Skype for Business theme.

**Poly Trio System Display Name**

The system name displays in the Global menu of the Poly Trio systems and on monitor(s) connected to a paired Poly Trio Visual+ or Trio VisualPro system.

The system name also displays on any devices connected with the system wirelessly, such as Bluetooth-enabled or AirPlay-certified devices.
By default, the system name displays as Poly Trio <model number> (xxxxxx) where (xxxxxx) is the last six
digits of the phone's MAC address. For example, Poly Trio 8800 (01161C).

You can configure the name that displays on the system, the connected monitor, and any devices
wirelessly connected to the system. The name you configure for the system, using any of the following
parameters, displays in the subsequent priority order:

- system.name
- reg.1.displayname
- reg.1.label
- reg.1.address
- Default system name

If you set the system name using the system.name parameter, the value you set displays for the
system unless you configure a name to display for a specific feature.

The system name you set using any of the following feature parameters takes precedence over the name
set in system.name:

- AirPlay: content.airplayServer.name
- Bluetooth: bluetooth.device.name
- Wireless Display: content.wirelessDisplay.name

### System Display Name Parameters

Set the system name using one or more of following parameters.

**content.airplayServer.name**

Specify a system name for the local content sink for AirPlay-certified devices. If left blank, the
previously configured or default system name is used.

- NULL (default)
- UTF-8 encoded string

**content.wirelessDisplay.sink.name**

Specify a system name for the local content sink for Android or Windows devices. If left blank
the previously configured or default system name is used

- NULL (default)
- UTF-8 encoded string

**bluetooth.device.name**

Enter the name of the system that broadcasts over Bluetooth to other devices.

- NULL (default)
- UTF-8 encoded string

**reg.1.address**
The user part (for example, 1002) or the user and the host part (for example, 1002@polycom.com) of the registration SIP URI or the H.323 ID/extension.
Null (default)
string address

reg.1.displayname
The display name used in SIP signaling and/or the H.323 alias used as the default caller ID.
Null (default)
UTF-8 encoded string

reg.1.label
The text label that displays next to the line key for registration x.
The maximum number of characters for this parameter value is 256; however, the maximum number of characters that a phone can display on its user interface varies by phone model and by the width of the characters you use. Parameter values that exceed the phone's maximum display length are truncated by ellipses (...). The rules for parameter up.cfgLabelElide determine how the label is truncated.
Null (default)
UTF-8 encoded string

system.name
The system name that displays at the top left corner of the monitor, and at the top of the Global menu of the Poly Trio system.
Enter a string, maximum 96 characters.

Poly Trio Visual+ and Trio VisualPro Monitor Display Options
When using the Poly Trio system with a paired peripheral system, you can configure display options on the connected monitor(s), including system information, user menu options, and background images and logos.

Poly Trio Visual+ and Trio VisualPro Display Parameters
Use the following parameters to hide or display icons and features on monitors connected with Poly Trio Visual+ or Trio VisualPro systems when paired with a Poly Trio system.

feature.exchangeVoiceMail.menuLocation
Default (default) - Show the Voicemail menu in the global menu only when unread voicemails are available. After the voicemail is accessed, the Voicemail option no longer displays in the global menu and is accessible in the phone menu.
Everywhere - Always show the Voicemail menu in the global menu and phone menu.
MenusOnly - Show the Voicemail menu only in the phone Features menu.

**mr.bg.selection**

Sets a background image for the connected monitor(s).

- **Poly** (default)
- **Auto** - Automatically cycles through HallstatterSeeLake, BavarianAlps, and ForgetMeNotPond. The background image changes each time a video call ends.
- **BlueGradient**
- **BavarianAlps**
- **ForgetMeNotPond**
- **HallstatterSeeLake**
- **Custom** - Use a custom background specified by `mr.bg.url`.

A custom background image must be a JPEG with 1920x1080 resolution and a maximum size of 2.9 MB for it to display correctly on the paired Trio VisualPro or RealPresence Group Series system monitor(s). (PNG images, which typically are supported on Poly Trio, are not supported in this setup.)

**mr.bg.showPlcmLogo**

- **1** (default) - The Poly logo shows on the connected monitor(s).
- **0** - Hides the Poly logo.

**mr.bg.showWelcomeInstructions**

- **All** (default) - Display the content-sharing graphic and welcome message on the connected monitor(s).
- **TextOnly** - Hide the content-sharing graphic.
- **None** - Hide both the content-sharing graphic and welcome message.

**mr.bg.url**

Specify an HTTP URL location of a background image to use on the connected monitor(s).

The Poly Trio system supports PNG and JPEG images up to 2.9 MB.

A custom background image must be a JPEG with 1920x1080 resolution and a maximum size of 2.9 MB for it to display correctly on the paired Trio VisualPro or RealPresence Group Series system monitor(s). (PNG images, which typically are supported on Poly Trio, are not supported in this setup.)

This background image is used only if `mr.bg.selection= "Custom"`

- **Null** (default)
- **String** (maximum 256 characters)
**up.hideSystemIpAddress**

Specify where the IP address of the Poly Trio system and Poly Trio Visual+ system are hidden from view.

You can access the IP address from the phone Advanced menu if you set this parameter to 'Menus' or 'Everywhere'.

---

**Number or Custom Label**

On Poly Trio systems you can choose to display a number, an extension, or a custom label on the Home Screen below the time and date.

**Configure the Number or Label from the System**

You can configure the display of the number or label on the Home screen from the system menu.

**Procedure**

- Navigate to **Settings > Advanced > Administration Settings > Home Screen Label**.

**Number and Label Parameters**

You can configure display of the Poly Trio number or label on the Home screen using centralized provisioning parameters.

**homeScreen.placeACall.enable**

1 (default) - Specify Dial a Number label to display on the home screen.

0 - Does not display the label on the home screen.

**homeScreen.customLabel**

Specify the label to display on the phone's Home screen when **homeScreen.labelType="Custom"**. The label can be 0 to 255 characters.

Null (default)

**homeScreen.labelLocation**

Specify where the label displays on the screen.

- **StatusBar** (default) - The phone displays the custom label in the status bar at the top of the screen.
- **BelowDate** - The phone displays the custom label on the Home screen only, just below the time and date.

**homeScreen.labelType**

Specify the type of label to display on the phone’s Home screen.
Phone Number (default)

- When the phone is set to use Lync Base Profile, the phone number is derived from the Skype for Business server.
- When the phone is set to use the Generic Base Profile, the phone uses the number you specify in reg.1.address.

Custom - Enter an alphanumeric string between 0 and 255 characters.

PrimaryPhoneNumber – The status bar displays only the first phone number rather than all of the phone numbers.

None - Don't display a label.

**reg.1.useteluriAsLineLabel**

1 - If reg.x.label="Null" the tel URI/phone number/address displays as the label of the line key.
0 - If reg.x.label="Null" the value for reg.x.displayName, if available, displays as the label. If reg.x.displayName is unavailable, the user part of reg.x.address is used.

**up.formatPhoneNumbers**

1 (default) - Enables automatic number formatting.
0 - Disables automatic number formatting and numbers display separated by "-".

---

**Poly Trio System Status Messages**

You can choose to display a maximum of five multi-line messages in the Poly Trio Visual+ or Trio VisualPro system Status Bar.

Each message can contain a maximum of 64 characters. If the length of the message exceeds the size of the status bar, the message wraps into multiple lines.

When you configure multiple messages, you can adjust the number of seconds each message displays.

**Poly Trio System Status Message Parameters**

Use the following parameters to configure status messages on the Poly Trio system.

**up.status.message.flash.rate**

Specify the number of seconds to display a message before moving to the next message.

- 2 seconds (default)
- 1 - 8 seconds

**up.status.message.x**

- &lt;message line one&gt;
- &lt;message line two&gt;
Direct Inward Dialing Number

The Direct Inward Dialing (DID) number assigned to the user on the Skype for Business server displays on the Lock, Home, and Incoming Call screens.

You can configure the format of the DID number to display on phones using parameter. You can also configure the phone to display DID numbers on phone screens of your choice with parameter.

Direct Inward Dialing Number Parameters

Use the following parameters to configure DID number.

**up.DIDFormat**

- NumberAndExtension (default) – Display the DID number and extension.
- NumberOnly – Display the DID number on the phone screen.

**up.showDID**

- AllScreens (default) – Display the DID number on all the screens.
- None – Disable DID number on phone.
- LockedScreen – Display the DID number on the lockscreen.
- StatusScreen – Display the DID number on the Statusscreen/Idle screen.
- LockedAndStatusScreen – Display the DID number on the lock and Status/Idle screen.

Time Zone Location Description

The following two parameters configure a time zone location description for their associated GMT offset:

- **device.sntp.gmtOffsetcityID** If you are not provisioning phones manually from the phone menu or Web Configuration Utility and you are setting the `device.sntp.gmtOffset` parameter, then you must configure `device.sntp.gmtOffsetcityID` to ensure that the correct time zone location description displays on the phone menu and Web Configuration Utility. The time zone location description is set automatically if you set the `device.sntp.gmtOffset` parameter manually using the phone menu or Web Configuration Utility.

- **tcpIpApp.sntp.gmtOffsetcityID** If you are not provisioning phones manually from the Web Configuration Utility and you are setting the `tcpIpApp.sntp.gmtOffset` parameter, then you must configure `tcpIpApp.sntp.gmtOffsetcityID` to ensure that the correct time zone location description displays on the Web Configuration Utility. The time zone location description is set automatically if you set the `tcpIpApp.sntp.gmtOffset` parameter manually using the Web Configuration Utility.
# Time Zone Location Parameters

The following parameters configure time zone location.

## Time Zone Location Parameter Values

<table>
<thead>
<tr>
<th>Permitted Value</th>
<th>Time Zone Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>(GMT -12:00) Eniwetok,Kwajalein</td>
</tr>
<tr>
<td>1</td>
<td>(GMT -11:00) Midway Island</td>
</tr>
<tr>
<td>2</td>
<td>(GMT -10:00) Hawaii</td>
</tr>
<tr>
<td>3</td>
<td>(GMT -9:00) Alaska</td>
</tr>
<tr>
<td>4</td>
<td>(GMT -8:00) Pacific Time (US &amp; Canada)</td>
</tr>
<tr>
<td>5</td>
<td>(GMT -8:00) Baja California</td>
</tr>
<tr>
<td>6</td>
<td>(GMT -7:00) Mountain Time (US &amp; Canada)</td>
</tr>
<tr>
<td>7</td>
<td>(GMT -7:00) Chihuahua,La Paz</td>
</tr>
<tr>
<td>8</td>
<td>(GMT -7:00) Mazatlan</td>
</tr>
<tr>
<td>9</td>
<td>(GMT -7:00) Arizona</td>
</tr>
<tr>
<td>10</td>
<td>(GMT -6:00) Central Time (US &amp; Canada)</td>
</tr>
<tr>
<td>11</td>
<td>(GMT -6:00) Mexico City</td>
</tr>
<tr>
<td>12</td>
<td>(GMT -6:00) Saskatchewan</td>
</tr>
<tr>
<td>13</td>
<td>(GMT -6:00) Guadalajara</td>
</tr>
<tr>
<td>14</td>
<td>(GMT -6:00) Monterrey</td>
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<td>15</td>
<td>(GMT -6:00) Central America</td>
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<tr>
<td>16</td>
<td>(GMT -5:00) Eastern Time (US &amp; Canada)</td>
</tr>
<tr>
<td>17</td>
<td>(GMT -5:00) Indiana (East)</td>
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<tr>
<td>18</td>
<td>(GMT -5:00) Bogota,Lima</td>
</tr>
<tr>
<td>19</td>
<td>(GMT -5:00) Quito</td>
</tr>
<tr>
<td>20</td>
<td>(GMT -4:30) Caracas</td>
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<td>Permitted Value</td>
<td>Time Zone Description</td>
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<td>-----------------</td>
<td>-----------------------------------------------</td>
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<tr>
<td>21</td>
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<td>(GMT -4:00) Asuncion, Cuiaba</td>
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<td>25</td>
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<td>26</td>
<td>(GMT -3:30) Newfoundland</td>
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</tr>
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</tr>
<tr>
<td>46</td>
<td>(GMT +1:00) Budapest</td>
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<td>47</td>
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</tr>
<tr>
<td>48</td>
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<td>49</td>
<td>(GMT +1:00) Sarajevo, Skopje</td>
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<td>(GMT +1:00) Brussels</td>
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<td>52</td>
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<td>56</td>
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<td>(GMT +3:30) Tehran</td>
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<td>(GMT +5:30) Kolkata,New Delhi</td>
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<td>91</td>
<td>(GMT +5:30) Sri Jayawardenepura</td>
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<td>92</td>
<td>(GMT +5:45) Kathmandu</td>
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<td>(GMT +6:00) Astana,Dhaka</td>
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<td>(GMT +6:00) Almaty</td>
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<td>95</td>
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<td>96</td>
<td>(GMT +6:30) Yangon (Rangoon)</td>
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<tr>
<td>97</td>
<td>(GMT +7:00) Bangkok,Hanoi</td>
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<tr>
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<td>(GMT +7:00) Jakarta</td>
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<td>99</td>
<td>(GMT +7:00) Krasnoyarsk (RTZ 6)</td>
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<tr>
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<td>(GMT +8:00) Irkutsk (RTZ 7)</td>
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<tr>
<td>106</td>
<td>(GMT +8:00) Ulaanbaatar</td>
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<td>107</td>
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<td>108</td>
<td>(GMT +9:00) Sapporo,Yakutsk (RTZ 8)</td>
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<tr>
<td>109</td>
<td>(GMT +9:30) Adelaide,Darwin</td>
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<tr>
<td>110</td>
<td>(GMT +10:00) Canberra</td>
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</tbody>
</table>
### Permitted Value

<table>
<thead>
<tr>
<th>Permitted Value</th>
<th>Time Zone Description</th>
</tr>
</thead>
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<td>(GMT +10:00) Magadan (RTZ 9)</td>
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<td>112</td>
<td>(GMT +10:00) Melbourne</td>
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<td>113</td>
<td>(GMT +10:00) Sydney, Brisbane</td>
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<td>114</td>
<td>(GMT +10:00) Hobart</td>
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<td>115</td>
<td>(GMT +10:00) Vladivostok</td>
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<td>(GMT +11:00) Solomon Islands</td>
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<td>118</td>
<td>(GMT +11:00) New Caledonia</td>
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<td>119</td>
<td>(GMT +11:00) Chokurdakh (RTZ 10)</td>
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<td>120</td>
<td>(GMT +12:00) Fiji Islands</td>
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<td>(GMT +12:00) Auckland, Anadyr</td>
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<td>(GMT +12:00) Wellington</td>
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<td>124</td>
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<tr>
<td>125</td>
<td>(GMT +13:00) Nuku'alofa</td>
</tr>
<tr>
<td>126</td>
<td>(GMT +13:00) Samoa</td>
</tr>
</tbody>
</table>

### Reverse Name Lookup

You can configure the phone to display incoming caller names, outgoing recipient names, and the source location where the phone obtains names.

The phone displays all Skype for Business participant names for the following functions:

- CCCP conference calls
- Response group calls
- Team calls
- Voicemail
- Placed, Received, and Missed call lists

If the phone cannot match the number of the incoming or outgoing name to a name in your organization, the phone displays the name given in the SIP signaling.

If a user saves a contact in the phone’s local contact directory, the call lists display that name regardless of the priority you configure.
Reverse Name Lookup Parameter
The following parameter configure Reverse Name Lookup.

\texttt{up.rnl.priority}
Outlook,SIP,ABS,Local (default)
This parameter overrides \texttt{up.useDirectoryNames} in the Skype Base Profile.
Enter a comma-separated \texttt{up.useDirectoryNames}, no spaces, for components you want to enable with Reverse Name Lookup. If you misconfigure the string, the parameter value falls back to the default priority order. The string isn’t case-sensitive and can include any of the following values, listed here in the default priority order the phone looks for a matching name:
For example, if you configure ”ABS,SIP,Outlook,Local”, the phone tries to match the incoming number with contact names in the order of components you list.
If you don’t configure the value SIP as one of the values, and the phone doesn’t obtain the contact name using any one of the others values you configure, the phone uses the name given in the SIP signaling.
If you configure this parameter as disabled to avoid look up from Outlook, ABS, and local sources, then the phone uses the contact name given in the SIP signaling.

Administrator Menu on Poly Trio Systems
On the Poly Trio systems, you can add the Advanced menu containing a subset of administrator settings.
The Advanced menu item does not require a password but one can be assigned to it.
After enabling this feature, the Advanced menu provides access to all administrator features except:
\begin{itemize}
  \item Line Configuration
  \item Call Server Configuration
  \item TLS Security
  \item Test Automation
\end{itemize}

Administrator Menu Parameters
Use the following parameters to enable the Administrator or Advanced menu.

\texttt{device.auth.localAdvancedPassword.set}
Set a password for the Advanced menu.
0 (default) - You cannot set a password for the Advanced menu.
1 - You can set a password for the Administrator menu.

\texttt{device.auth.localAdvancedPassword}
Enter a password for the Administrator menu.
Null (default)
String (0 to 64 characters)

**feature.advancedUser.enabled**

0 (default) - The password-protected **Advanced** menu displays.
1 - Renames the **Advanced** menu item to **Admin** and adds a menu item **Advanced** that contains a subset of administrator features.

The **Advanced** menu does not require a password, but you have the option to assign one to it.
Poly Trio System Security

Topics:

- Lock Poly Trio System Phone Ports and Interface
- Accessing the Web Configuration Utility
- Device Lock for Skype for Business
- Smart Login on Poly Trio Systems
- Administrator and User Passwords
- Securing Audio Using Master Key Identifier (MKI)
- SCEP Security Protocol

Polycom UC Software enables you to optimize Microsoft security settings.

Lock Poly Trio System Phone Ports and Interface

You can make the Poly Trio systems more secure by disabling Wi-Fi, Bluetooth and NFC, USB host, and USB device ports.

The following table lists parameters that lock ports and disable features.

Phone Port Lock and Interface Parameters

The following parameters lock the phone ports and disable phone interface features.

**feature.usb.host.enabled**

Use the host port for memory sticks, mouse, keyboards, and charging your devices.

1 (default) - The USB host port is enabled.
0 - The USB host port is disabled. Use the host port for memory sticks, mouse, keyboards, and charging your devices.

**feature.usb.device.enabled**

The device port allows you to use Poly Trio systems as an audio device for your laptop.

1 (default) - The USB device port is enabled.
0 - The USB device port is disabled. When you disable the USB device port, the USB Connections settings do not display on the phone at Settings > Advanced > Administration Settings > USB Computer Connections.

**feature.bluetooth.enabled**

1 (default) - The Bluetooth feature is enabled. When enabled, the Bluetooth menu shows in the Poly Trio system user interface. 0 - The Bluetooth feature is disabled.
feature.nfc.enabled
1 (default) - Use NFC for Bluetooth pairing.
0 - NFC for Bluetooth pairing is disabled.

device.wifi.enabled
0 - Wi-Fi is disabled.
1 - Wi-Fi is used instead of wired Ethernet for VoIP calls. You cannot use Poly Trio Visual+ for video when using Wi-Fi.

Accessing the Web Configuration Utility

When the Base Profile of a phone is set to **Skype** or **SkypeUSB**, access to the Web Configuration Utility is disabled by default.

Administrators must enable access to a phone's Web Configuration Utility from the phone menu system or using configuration parameters.

If a phone Base Profile is set to **Skype** or **SkypeUSB**, or you use the centralized provisioning method to enter user credentials to the configuration files, the phone displays a screen prompting an administrator to change the default Admin password (456). Poly strongly recommends that administrators change the default password. This password is not the Skype for Business Sign In password. The password you enter here is the same password administrators use to access the advanced settings on the phone menu and to log in to a phone's Web Configuration Utility as an administrator.

**Related Links**
- [Enable Microsoft Exchange Calendar Using the Web Configuration Utility](#) on page 23
- [Set the Base Profile Using the Web Configuration Utility](#) on page 17
- [Connect a Poly Trio System to a Microsoft Surface Hub](#) on page 44
- [Connect a Poly Trio System to a Microsoft Teams or Skype Room System](#) on page 43

Enable Access to the Web Configuration Utility From the Phone Menu

When the phone's Base Profile is set to Skype, you can enable access to a phone's Web Configuration Utility form the phone's menu system.

**Procedure**

1. On the phone's menu system, go to **Settings > Advanced**, enter the password (default 456), and go to **Administration Settings > Web Server Configuration**.
   Web Server and Web Config Mode display.
2. Set **Web Server** to **Enabled**.
3. Set **Web Config Mode** to **HTTP Only**, **HTTPS Only**, or **HTTP/HTTPS**.
Configuring the Web Configuration Utility

The security update for Skype for Business includes a device parameter and a corresponding `device.set` parameter

Poly recommends using `device.*` parameters only if you are familiar with the centralized provisioning method and with Polycom UC Software.

Use the following parameters to enable and configure the Web Configuration Utility.

```
device.sec.coreDumpEncryption.enabled
  0 (default)
  1

device.sec.coreDumpEncryption.enabled.set
  0 (default)
  1

httpd.cfg.enabled
  Base Profile = Generic
  1 (default) - The Web Configuration Utility is enabled.
  0 - The Web Configuration Utility is disabled.
  Base Profile = Skype, SkypeUSB
  0 (default) - The Web Configuration Utility is disabled.
  1 - The Web Configuration Utility is enabled.

httpd.cfg.secureTunnelRequired
  1 (default) - Access to the Web Configuration Utility is allowed only over a secure tunnel (HTTPS) and non-secure (HTTP) is not allowed.
  0 - Access to the Web Configuration Utility is allowed over both a secure tunnel (HTTPS) and non-secure (HTTP).

httpd.enabled
  Base Profile = Generic
  1 (default) - The web server is enabled.
  0 - The web server is disabled.
  Base Profile = Skype, SkypeUSB
  0 (default) - The web server is disabled.
  1 - The web server is enabled.
```
Device Lock for Skype for Business

You can configure phones to be protected with a lock code that enables users to access personal settings from different phones.

You must enable Device Lock on the Skype for Business server. After you enable Device Lock, you can enable or disable Device Lock and configure options for your phones using Poly parameters. You cannot enable or disable Device Lock using the Web Configuration Utility.

Device Lock is enabled by default for Skype for Business and is different from the Phone Lock feature offered by Poly for Open SIP deployments. If you enable Phone Lock and Device Lock for Business at the same time on a phone with the Base Profile set to Skype, the Device Lock feature takes precedence over Phone Lock.

Administrators can configure phone behavior after six unsuccessful user unlock attempts. If users forget their lock code, they can reset it from the phone when signed in to their Skype for Business account. If users sign in to their Skype for Business account using the Web Sign-In method, they cannot reset their lock code from the phone.

Users must sign into the phone before using Device Lock. If a phone restarts or reboots after a user sets the lock code, the phone is locked after the restart or reboot. Users can lock the phone from the phone screen or Skype for Business client when the phone and computer are connected using BToE. If Device Lock is used in conjunction with BToE, the phone and computer always remain synchronized if either the phone or computer restarts or reboots. If the BToE connection is broken between phone and computer, the phone is locked.

You can also:
- Define authorized outbound emergency numbers from a locked device
- Set up a minimum lock code length on the Skype for Business server

Profile Photo on Device Lock Screen

When a user is signed in to their Skype for Business account, that user’s Microsoft Exchange or public website profile photo displays on the Lock screen.

The profile photo appears when the Device Lock feature and the Microsoft Exchange Service are enabled. Profile photos set using Active Directory are not supported and do not display on the phone.

Adding Authorized Emergency Contacts on a Locked Device

You can configure emergency contact numbers that users can call on a locked device in one of two ways:
- Create a policy for emergency numbers on the Skype for Business Server. Note that this method must be supported by a voice routing trunk configuration.
- Create an authorized list for a line by configuring the value of the parameter phoneLock.authorized.x.value to a Tel URI or SIP URI, for example, phoneLock.authorized.1.value="cwi57@cohovineyard.com".

When the Base Profile of the phone is set to Skype for Business, you can configure the phone to set the order of display for the authorized emergency numbers when the device is locked.
Device Lock for Skype for Business Parameters

The following parameters configure the Skype for Business Device Lock feature.

**feature.deviceLock.enable**

Enables or disables the Device Lock feature on the phone.

- 1 (default) - Device Lock is enabled.
- 0 - Device Lock is disabled.

**phoneLock.authorized.x.value**

Specify a registered line for 'x' and an authorized call list when the device is locked using a Tel URI or SIP URI, for example, `phoneLock.authorized.1.value="cwi57@cohovineyard.com"`.

**up.btoeDeviceLock.timeOut**

Configure a time delay after which the phone locks when the user locks the computer paired with the phone.

- 10 seconds (default)
- 0 - 40 seconds

**up.configureDeviceLockAuthList**

EmergencyNumberAtTop (default) - The E911 emergency number will be displayed followed by authorized numbers when the phone is locked.

EmergencyNumberAtBottom - The authorized numbers will be displayed followed by the E911 number when the phone is locked.

EmergencyNumberDisabled - Only the authorized numbers will be displayed when the phone is locked.

**up.deviceLock.createLockTimeout**

Specify the timeout in minutes after which the Create Lock Code screen disappears and the user is signed out.

- 0 (default) - No timeout for the Create Lock Code prompt.
- 0 - 3 minutes - If the user does not provide input to the Create Lock Code within the time you specify, the Create Lock Code screen disappears and the user is signed out of the phone.

**up.deviceLock.signOutOnIncorrectAttempts**

Specify whether to sign out the user from the phone after six unsuccessful attempts to unlock the phone.

- 0 (default) - After six unsuccessful unlock attempts, the phone displays a message indicating a countdown of 60 seconds after which the user can attempt to unlock the phone.
1 - After six unsuccessful unlock attempts, the user is signed out of the phone, must sign in again, and is prompted to create a new lock code.

**Smart Login on Poly Trio Systems**

Smart Login determines if a network environment is capable of PIN Authentication. If the STS-URI is not configured via DHCP Option43 or manually through configuration files, then PIN Authentication will not be enabled for the phone or in the Web Configuration Utility for a Skype for Business sign in.

**Administrator and User Passwords**

You can change the default administrator and user passwords.

When you set the Base Profile to Skype or update your phones to UC Software 5.x.x or later, the phones display a message prompting you to change the default administrator password (456). Poly strongly recommends that you change the default password. This password is separate from the Skype for Business user Sign In password. The default administrator password enables administrators to access advanced settings menu on the phone menu and to log in to a phone's Web Configuration Utility as an administrator.

You can change the default password using any of the following methods:

- The pop-up prompt when the phone first registers
- Phone menu
- Web Configuration Utility
- Use the parameter `reg.1.auth.password`

You must have a user or administrator password before you can access certain menu options on the phone and in the Web Configuration Utility. You can use the following default passwords to access menu options on the phone and to access the Web Configuration Utility:

- **Administrative password:** 456
- **User password:** 123

You can use an administrator password where a user password is required, and you will see all of the user options. While you can use the user password where the administrator password is required, you are presented with limited menu options. Note that the Web Configuration Utility displays different features and options depending on which password is used.

Each time you connect a Poly Trio system with a Poly Trio Visual+ accessory, the Visual+ user password is reset to match the Poly Trio system user password. You can change the Poly Trio Visual+ password on the Poly Trio menu or Web Configuration Utility.

When the Poly Trio solution Base Profile is set to SkypeUSB, you can set the keyboard entry mode for the password in the Advanced menu on the phone.
Change the Default Administrator Password on the Phone

If you do not change the default administrative password, the phone displays a warning and a reminder message each time the phone reboots.

If you are registering phones with Microsoft Skype for Business Server, a message displays on the phone screen prompting you to change the default password.

Procedure

1. On the phone, navigate to Settings > Advanced, and enter the default password.
2. Select Administration Settings > Change Admin Password.
3. Enter the default password, enter a new password, and confirm the new password.

Change the Default Passwords in the Web Configuration Utility

You can change the administrator and user passwords on a per-phone basis using the Web Configuration Utility.

If the default administrative password is in use, a warning displays in the Web Configuration Utility.

Procedure

1. In the Web Configuration Utility, select Settings > Change Password.
2. Update the passwords for the Admin and User.

Administrator and User Password Parameters

Use the following parameters to set the administrator and user password and configure password settings.

**sec.pwd.length.admin**

The minimum character length for administrator passwords changed using the phone. Use 0 to allow null passwords.

1 (default)

0 - 32

Change causes system to restart or reboot.

**sec.pwd.length.user**

The minimum character length for user passwords changed using the phone. Use 0 to allow null passwords.

2 (default)

0 - 32

Change causes system to restart or reboot.

**up.echoPasswordDigits**

1 (default) The phone briefly displays password characters before being masked by an asterisk.
0 - The phone displays only asterisks for the password characters.

device.auth.localAdminPassword

Specify a local administrator password.
0 - 32 characters
You must use this parameter with device.auth.localAdminPassword.set="1"

device.auth.localAdminPassword.set

0 (default) - Disables overwriting the local admin password when provisioning using a configuration file.
1 - Enables overwriting the local admin password when provisioning using a configuration file.

**Securing Audio Using Master Key Identifier (MKI)**

For secure audio communications, phones offer support for the crypto header with and without MKI in the offer SDP.

The following optional parameter allows you to include the crypto header in the SDP that uniquely identifies the SRTP stream within an SRTP session. The far end can choose to include a crypto with or without MKI.

sec.srtp.mki.enabled

1 (default) - The phone offers two cryptos in the SDP offer: one without an MKI, and one with a four-byte MKI parameter in the SDP message of the SIP INVITE / 200 OK.
0 - The phone offers only one non-MKI crypto in the SDL offer.

**SCEP Security Protocol**

The Simple Certificate Enrollment Protocol (SCEP) enables you to automatically and securely provision multiple phones with a digital device certificate.

**SCEP Parameters**

Use the following parameters to configure SCEP.

SCEP.CAFingerprint

Configure the CA certificate fingerprint to confirm the authenticity of the CA response during enrollment.
null (default)
0 - 255 characters
SCEP.certPoll.retryCount
Specify the number of times to poll the SCEP server when the SCEP server returns a Certificate Enrollment Response Message with pkiStatus set to pending.
12 (default)
1 - 24

SCEP.certPoll.retryInterval
Specify the number of seconds to wait between poll attempts when the SCEP server returns a Certificate Enrollment Response Message with pkiStatus set to pending.
300 (default)
300 - 3600

SCEP.certRenewalRetryInterval
Specify the time interval to retry certificate renewal.
86400 minutes (default)
28800 - 259200 minutes

SCEP.certRenewalThreshold
Specify the percentage of the certificate validity interval to initiate a renewal.
80 (default)
50 - 100

SCEP.challengePassword
Specify the challenge password to send with the Certificate Signing Request (CSR) when requesting a certificate.
null (default)
0 - 255 characters

SCEP.csr.commonName
Specify the common name to use for CSR generation.
null (default)
0 - 64

SCEP.csr.country
Specify the country name to use for CSR generation.
null (default)
0 - 2
SCEP.csr.email
Specify the email address to use for CSR generation.
null (default)
0 - 64

SCEP.csr.organization
Specify the organization name to use for CSR generation.
null (default)
0 - 64

SCEP.csr.state
Specify the state name to use for CSR generation.
null (default)
0 - 128 characters

SCEP.enable
0 (default) - Disable the SCEP feature.
1 - Enable the SCEP feature.

SCEP.enrollment.retryCount
Specify the number of times to retry the enrolment process in case of enrolment failure.
12 (default)
1 - 24

SCEP.enrollment.retryInterval
Specify the time interval to retry the enrolment process.
300 seconds (default)
300 - 3600 seconds

SCEP.http.password
Specify the password that authenticates with the SCEP server.
null (default)
string, max 255 characters

SCEP.http.username
Specify the user name that authenticates with the SCEP server.
null (default)
string, max 255 characters

**SCEP. url**

Specify the URL address of the SCEP server accepting requests to obtain a certificate.
null (default)
0 - 255 characters