Deltapath® Connector™ for Polycom® RealPresence™ Trio 8800
Partner Solution Guide – Deltapath

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Supported Polycom Products

This section introduces the Polycom endpoints that are impacted by Deltapath’s Deltapath Connector solution.

**Polycom® RealPresence® Trio 8800**
Polycom RealPresence Trio™ 8800 is the first smart hub for group collaboration that transforms the iconic three-point conference phone into a voice, video and content sharing system that can fit into any team environment, large or small.

**Polycom® RealPresence® Desktop (RPD)**
Polycom RealPresence Desktop for Windows and Apple® Mac OS X is a powerful, enterprise-grade collaboration app that extends video communications beyond the typical conference room setting to mobile professionals. RealPresence Desktop combines quality, power and ease-of-use with industry-leading interoperability, and security that is both cost effective, and highly scalable.

**Polycom® RealPresence® Group 300/500/700**
Polycom RealPresence Group Series is the engine that drives enterprise-grade video, voice and collaboration experiences, accelerating decision-making and fostering innovation. Only Polycom delivers video collaboration experiences that bring users closer together and drive meaningful conversation for geographically dispersed teams.

**Polycom® RealPresence® Mobile (RPM)**
Polycom RealPresence Mobile is a powerful, enterprise-grade collaboration app that meets the needs of organizations to extend video communications beyond the typical conference room to tablets and smartphones.

**Polycom® VVX® Business Media Phones**
Polycom VVX Business Media Phones provide a unified voice and video communication experience for executives, knowledge workers and call attendants in organizations of all sizes. By combining Polycom’s superior audio and video technology with innovative industrial designs and user interfaces, these Business Media Phones improve productivity by simplifying communication processes and business workflows. In particular, they are often used as a desktop video solution for users in their home offices.

**Polycom® RealPresence® Collaboration Server (RMX)**
Polycom RealPresence Collaboration Server is the software for multiparty video, voice, and content collaboration that connects the most people at highest quality and lowest cost. Based on open standards, the architecture of the Collaboration Server series is uniquely integrated with hundreds of business, UC, and social networking applications and protocols to make it easy to meet face to face with others over video.
Document Purpose

The Partner Solutions Guide is a comprehensive overview of how a partner solution seamlessly integrates with Polycom to solve specific business needs. This guide describes how Deltapath Connector, an all-in-one solution, enables organizations to improve utilization of their Polycom endpoints and workplace collaboration. The guide introduces the main features and functionality of the solution, key components, and demonstrates the use cases enabled by Deltapath Connector.

Please consult the appropriate Polycom documentation and Deltapath’s Deltapath Connector Administrator guide before installing or operating the system.

Audience

This document is intended for CIOs, solution architects and technical administrators in the Polycom community with an interest in learning about and using Deltapath Connector to enhance the utilization of their Polycom video endpoints while improving collaboration that leads to powerful business relationships as well as powerful connections between dispersed teams.

Business Challenge

Organizations are well aware that workplace collaboration is vital to an organization’s success. Through collaboration, organizations can innovate faster, make decisions faster, grow their business successfully, and remain competitive. While many organizations have successfully invested in room based videoconference systems and have made these systems their core collaboration tool, they are often challenged by the need to make videoconferencing available beyond their conference rooms. While room based video conferencing systems offer all the bells and whistles such as high definition videoconferencing, staff must be physically present in a conference room.

Transforming the way organizations collaborate through videoconference involves overcoming many challenges:

1. Polycom’s infrastructure is currently not integrated with their telephony infrastructure, which keeps Polycom endpoints on an isolated video island. Regular telephones cannot be used to join a videoconference that’s in progress.
2. Organizations must have the infrastructure so staff can make and receive video calls regardless of whether they are inside or outside the corporate network.
3. Communicating with devices outside the corporate network means opening your video endpoints to the internet, which makes privacy and security a dominant concern.
4. Different time zones can make it challenging for staff to attend in office videoconferences. When key participants are missing, less is accomplished.
5. The amount of time invested in preparing for videoconferences - scheduling, testing, and troubleshooting - discourages ad-hoc discussions.
6. Setup and operation of videoconferencing calls typically require onsite IT support, which places a strain on IT resources and time.
7. There are expensive audio conferencing bridging service fees.
8. You possess the ability to offer high definition voice quality, but you are not taking advantage of it because audio conferencing bridging uses an ordinary telephone line.
9. Inability to share content on demand and in real-time anywhere, negatively impacts decision-making.

Single platform, seamlessly integrating and unifying all Polycom video endpoints and infrastructure

Solution Overview

Deltapath’s Deltapath Connector is an all-in-one solution that envisions the workplace as an ecosystem of equipment, devices, and other things that must seamlessly and collectively work together. Specifically, Deltapath Connector allows all Polycom endpoints to connect and register to Deltapath Connector, a central controller and a partner solution for Polycom video endpoint systems such as RealPresence Trio, HDX Series (4000, 6000-9000), RealPresence Group Series (300-700), RealPresence Mobile (RPM), RealPresence Desktop (RPD), RealPresence Collaboration Server (RMX), and VVX Business Media phones.

Figure 1 – Deltapath’s Deltapath Connector Unit

The section below describes solutions presented by Deltapath Connector.

1. Allows integration between Polycom infrastructure and third party PBX so meeting participants can call into a conference with an ordinary telephone.
   • Offers numerous gateway configuration scenarios to integrate with your existing telephone system

2. Delivers and enables the infrastructure needed for others to make or receive video calls regardless of whether they are inside or outside the corporate network.
   • Deltapath Connector is also bundled with a H.323 Gatekeeper for backward compatibility with legacy H.323 only video endpoints.

3. Your endpoints are concealed and never exposed to the public WAN with one-time guest access. Access is only granted after the system completes a rigorous check. In addition, Deltapath Connector also has a built in firewall to filter malicious packets along with a built-in SIP Application firewall that inspects and monitors all SIP dialogue exchanges between the public Internet and the Deltapath Connector.

4. Empowers mobile conferencing and mobile collaboration using any device so organizations can adapt videoconferencing to the workplace of the future where teams and customers are dispersed.

5. Dynamically create a conference room to accommodate ad-hoc meetings.
6. Initiating a videoconference call is as easy as making an ordinary telephone call, which decreases the need for IT support.

7. Audio conference calls are free and can host a maximum of 32 participants on an audio conference bridge.

8. Organizations can host high definition audio conference calls.

9. Share content wirelessly through RealPresence Mobile, RealPresence Desktop, and on any Polycom room based systems.
   - Annotate content you are sharing right from a tablet or conduct a whiteboard session from your tablet.
   - Participants can get more involved and drive-up collaboration by projecting content from their tablets to a room based system during an in office conference meeting.
   - Collaborate through video and share content to dispersed team members.

The Solution

Deltapath and Polycom have partnered together to offer a comprehensive solution that allows you to securely collaborate and share content across different modalities, in different geographical locations, and across different time zones. Imagine sitting in your hotel room in England, actively participating in a videoconference in the United States from your RealPresence Desktop. Your colleague is participating in the same videoconference from his RealPresence Mobile application on a tablet while in a taxicab on the way to the office, while a remote worker participates from her home office using a Polycom VVX phone. This is collaboration at its peak performance.

Figure 2 - RealPresence Trio 8800, Group series, Mobile, and PSTN Phone Connecting to Deltapath Connector

In figure 2, you can designate one port for internet on Deltapath Connector, another port for SIP trunk, and also connect your internal LAN so callers can gain access from the internet. Callers’ unique PIN codes are validated by the system for added security before access is granted to a video endpoint or video conference on RMX.
Participants using one-time guest access to prevent video endpoint exposure to the WAN are locked out of the video endpoint or conference room on RMX when the scheduled meeting time expires.

**Key Features**

**All-In-One Architecture**
Deltapath Connector is an all-in-one device that includes a Firewall, Session Border Controller (SBC), Audio Conference Bridge, SIP Proxy, Call Routing Engine and an Endpoint-Provisioning Server.

**Ease of Use**
Centrally manage and provision all Polycom endpoints. Video calling is as easy as dialing a phone. Dial an extension to reach a conference room, other staff members, or enter a room number to join a video conference.

**Native Support for RealPresence Trio 8800**
Deltapath Connector offers the best support for basic telephony, advanced telephony, video, content sharing, and provisioning.

**One-Time Guest Access**
Offers secure business-to-business calling without exposing your video and audio endpoints to the public WAN. No registration or special firewall configuration is required. Create one-time disposable meeting access codes for external parties to use through a SIP URL such as `123456789@sip.company.com` from any SIP based video endpoints. The system automatically validates the code and ensures the caller is calling within the scheduled meeting time or 5 minutes before the scheduled time. If the conditions are met, the system grants permission and routes the caller to the predefined video endpoint or videoconference room on the RMX. Once outside of the scheduled meeting time, the code is no longer valid. This mechanism prevents uninvited guests from calling in, callers from randomly dialing video endpoints or videoconference rooms, or guests calling in at a time not desired by the conference host.

**Conference Room Availability**
Deltapath Connector can dynamically create a temporary audio conference room. This feature is helpful for ad-hoc conversations and when meeting rooms are unavailable.

**Dial by Extension or Room Number**
Polycom videoconference users typically dial by IP address to connect to each other. While this is intuitive for a user with IT knowledge, it may pose a challenge for other users. With Deltapath Connector, Polycom endpoints can register to Deltapath Connector as an extension number. This enables users across the network to dial by extension regardless of whether they are accessing an RMX conference room, HDX conference room, RealPresence Group conference room, or an audio conference room without ever needing to know the endpoint’s IP address.

**Connect Your Polycom Infrastructure to the Telephone Network**
Have you ever wanted to have someone make a regular phone call to your RealPresence Group conference room? Or perhaps, you wished you could call someone on your corporate telephone system right from the RealPresence Trio. Deltapath Connector allows you to connect your entire Polycom video network with your voice network, which results in unified access between the two.
Host your own High Definition Audio Conferences
Deltapath’s Deltapath Connector eliminates the need for expensive third party conferencing services. Deltapath Connector comes with an embedded audio conference bridge feature that allows up to 32 participants in the same conference. With IP replacing regular telephone lines, organizations can also enjoy free audio conferencing and high definition voice. Participants calling in from a regular telephone are still supported and won’t downgrade the entire conference. However, these participants cannot enjoy high definition voice.

Mobile Collaboration
Arm mobile staff with RealPresence Desktop and RealPresence Mobile so they can enjoy mobile video collaboration with their teams and customers anywhere and at anytime. Never miss an important meeting again.

Remote Branches and Home Offices
Connect home offices or remote branches with Polycom VVX Business Media video phones or Polycom RealPresence Group Convene™ so staff can easily communicate with other team members, business partners, and customers through video.

Share Content
Enjoy true video collaboration by seeing content shared on demand or in real-time by others. Push content directly from your laptop or tablet using RealPresence Desktop and RealPresence Mobile. Anyone using a tablet with RealPresence Mobile can hold whiteboard sessions and even annotate the file being shared. Deltapath Connector supports H.239, which can stream data content and video at the same time to supported endpoints. Deltapath Connector also supports H.224 Far-end Camera Control so supported Polycom endpoints such as Polycom HDX series, RealPresence Group series, RealPresence Mobile tablet edition, and RealPresence Desktop can tilt, pan, and zoom the far-end camera. This functionality ensures mobile participants’ viewing ability is not compromised by screen size. Other participants in the conference room are not disrupted by the far-end camera.

Secure Provisioning
To safeguard sensitive account provisioning data, Deltapath Connector supports encryption on all supported Polycom endpoints’ provisioning data. Devices in the field can download provisioning data in encrypted format over WAN. In the rare event hackers eavesdrop on communication between the device and the server or gain access to the provisioning server, account credentials are still secured.

Safeguard Against Threats on the Public Internet
To address concerns about enabling a WAN access point on your video network, Deltapath Connector has a built-in firewall that automatically filters malicious packets. Packets are never forwarded from WAN to the internal LAN directly. Only approved packets such as RTP video and audio are relayed to other endpoints in the network. The internal endpoints are only able to connect to the Deltapath Connector to retrieve the approved packets. Any packets the internal endpoints want to send to an endpoint in the public Internet is sent to the Deltapath Connector for further relay to the endpoint on the public Internet. As a result, the topology of your network is masked and protected from external parties.

In addition, the built-in SIP Application firewall inspects and monitors all SIP dialogue exchanges between the public Internet and the Deltapath Connector. Attacks such as brutal force attempts, number guessing, or application layer denial-of-service attacks are quickly filtered by the application firewall.
Deltapath Connector Design Considerations

Two network designs are discussed; Typical and Alternative. In a Typical network design, the Deltapath Connector unit acts as a firewall with one of its interface connecting directly to the WAN and the other interface connecting to the internal LAN IP. In the Alternative network design, the Deltapath Connector sits inside your LAN. Port forward a WAN IP with one-to-one NAT mapping to the internal IP of the Deltapath Connector unit.

Typical Configuration
A Typical network configuration is illustrated below.
The network topology is relatively simple. The Deltapath Connector unit acts as a firewall to prevent unauthorized packets reaching the endpoints sitting in the internal LAN.

**Alternative Configuration**

An Alternative network configuration is illustrated below.

![Alternative Network Configuration using Deltapath Connector](image)

In this network design, the Deltapath Connector unit is placed on the DMZ behind a corporate firewall that manages the WAN. The network topology is slightly more complex in this configuration, but necessary in some organizations due to the organization’s security policies.

**Important Configuration Parameters**

<table>
<thead>
<tr>
<th>Mode</th>
<th>Deltapath Connector Configuration</th>
<th>Corporate Firewall Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deltapath Connector connecting directly to WAN (Typical)</td>
<td>Set interface connecting to WAN as Untrust (WAN)</td>
<td>No configuration changes required</td>
</tr>
<tr>
<td></td>
<td>Set interface connecting to video network as Trust</td>
<td></td>
</tr>
<tr>
<td>Deltapath Connector connecting to DMZ. Firewall does a one-to-one NAT mapping to Deltapath Connector DMZ IP (Alternative)</td>
<td>Set interface connecting to DMZ as Untrust (LAN)</td>
<td>Activate one-to-one NAT mapping to VMC DMZ IP</td>
</tr>
<tr>
<td></td>
<td>Set interface connecting to video network as Trust</td>
<td>Deny all ports except the following ports: TCP 21</td>
</tr>
<tr>
<td></td>
<td>Add the WAN IP that is port forwarded to Deltapath Connector DMZ IP into the frSIP Virtual Interface</td>
<td>TCP 443</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TCP/UDP 5060</td>
</tr>
<tr>
<td></td>
<td></td>
<td>UDP 10000 - 20000</td>
</tr>
</tbody>
</table>

*Table 1 - Typical and Alternative Network Configuration Parameters*
Installation

This section discusses the configuration and installation of Deltapath Connector in your environment. It is important to note that Deltapath Connector comes with most of its common parameters preconfigured to enable you to deploy the system within 15 minutes.

Quick Start Checklist

1. Plan ahead. Decide how Deltapath Connector will connect to your network, what type of clustering, if any, will be used, and decide if it is necessary to prioritize IP packets using QOS.
2. Configure network interfaces based on your network design, Typical or Alternative.
3. Change default administrator account credentials.
4. If you are using two Deltapath Connector units, configure a local cluster for a single site failover or a geographical cluster for high availability and disaster recovery.
5. Activate built-in firewall on untrusted interface.
6. Customize enterprise specific settings under Configuration / General Settings such as User Profile, Contexts, E-mail Templates, and Permission Groups.
7. Setup H.323 Gatekeeper if needed.
8. Create Users.
9. Add SIP Trunk and outbound routing to Polycom RealPresence Collaboration Server (RMX) and/or any third party SIP based PBX if needed.
10. Setup and provision gateway if you have purchased one.
11. Setup Corporate directory if you have an LDAP or Microsoft Active Directory in service.

H.323 Gatekeeper

A gatekeeper is an optional component in the H.323 network that is often used to provide a number of services such as endpoint registration and address resolution. If you decide to use an H.323 gatekeeper, ensure it is configured before you create users since you would be unable to register users’ endpoints to the gatekeeper.

Deltapath Connector is bundled with a H.323 gatekeeper for backward compatibility with legacy H.323 only video endpoints. The H.323 gatekeeper allows untrusted devices (devices on the internet) to dial into your network using H.323 as well as extension to extension dialing within your trusted devices. One thing to note, H.323 gatekeeper is not a translator. If your device only supports H.323 then you will only be able to call another device that supports H.323. Some equipment such as Polycom HDX series, RealPresence Group series, and RMX support both H.323 and SIP. These devices can register to the Deltapath Connector H.323 Gatekeeper and the Deltapath Connector through SIP concurrently.

H.323 Settings

Gatekeeper External IP: Input the internet routable IP address attached to the Deltapath Connector so the internal Session Boarder Controller can process H.323 external calls to internal calls. Specifically, if you used the Typical Configuration as shown in Figure 4, you will need to enter the assigned WAN IP address in this box. If you
use the Alternative Configuration as shown in Figure 5, you will need to enter the WAN IP address that is port forwarding to the Deltapath Connector into this box. This is the same IP used in Deltapath Connector’s Virtual interface.

Add Users
Before configuring RealPresence Trio 8800, RealPresence Group series, HDX series, RealPresence Desktop, and RealPresence Mobile, user accounts must be configured. While the majority of the fields you configure in the User dialog box are identical for the different endpoints, the equipment field is different. As a result, the equipment field is discussed separately for each endpoint.

1. Click User on the administrator portal. The User dialog box opens.
2. Click User.
3. Click Add User.
4. Use the information in the table below to help you complete the User Settings dialog box.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Recommended Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extension</td>
<td>User’s extension number</td>
<td>For simplicity, the same extension assigned to the employee by the company can be reused. This number is used to call the user from any device. Note: The extension number cannot be changed.</td>
</tr>
<tr>
<td>PIN</td>
<td>Enter user password. This field can also be left blank. If left blank, the system auto-generates a password.</td>
<td>No recommended default</td>
</tr>
<tr>
<td>Group</td>
<td>Associate the user to a Group / Department</td>
<td>No recommended default</td>
</tr>
<tr>
<td>E-mail</td>
<td>E-mail address of the employee</td>
<td>Email address is required</td>
</tr>
<tr>
<td>User Profile</td>
<td>User profiles are templates. Different templates are assigned to different groups of users. The user profile dictates users' permission access.</td>
<td>No recommended default</td>
</tr>
</tbody>
</table>
| Device Location| This parameter controls whether the Group needs to go through the built-in Session Border Controller.  
  - Inside Network: The Group is in a routable network to a Deltapath Connector interface without any NAT.  
  - Outside Network: The Group is located in a non-routable network and goes through a NAT router before reaching the Deltapath Connector interface. This usually applies when the Group is registering to the WAN interface of Deltapath Connector. | No recommended default                                                               |

Table 2 - Description and Recommended Defaults for Adding Users
Integration with Polycom RealPresence Trio 8800

1. Enter the information in the equipment fields of the User Settings dialog box.

2. A one-time notice is displayed referencing the user’s PIN.

Once the user is created, the system sends an email to the user with important details as illustrated below.
Configure RealPresence Trio 8800
RealPresence Trio can be configured from the physical device or a web browser.

Configure RealPresence Trio from the Physical Device
1. Press Settings.
2. Press Advanced.
3. **Password**: Enter 456 and then press done.

   ![Password Input](image)

   *Note: When RealPresence Trio is in factory default mode, the password is 456. Once your device is provisioned by Deltapath Connector, the password is automatically reset to 46709394.*

4. Press Administration Settings.
5. Press Network Configuration.

   ![Network Configuration](image)

7. Press DHCP menu.
8. Press Boot Server and then Press Static.
9. Press the back arrow.
10. Press Server Address and then enter the server IP address.

11. **Server User Name**: Enter the username. This information is found by going to Equipment and then Polycom Settings on the administrator portal.
12. **Server Password**: Enter the password. This information is found by going to Equipment and then Polycom Settings on the administrator portal.
13. Press Back arrow.
15. Press Back arrow.
16. Press Save Config.

The phone is registered when a green checkmark next to the extension on the phone appears. If you do not change your default password, an exclamation mark appears on the phone screen. When clicked by a user, it will state the default administrator password is in use.

**Configure RealPresence Trio from the Web**

This section describes the RealPresence Trio configuration steps using the Web UI. To access the web interface for setup, you must first enable the web interface by following the steps below. After system boot-up, do the following.

**Enable Web Server from the RealPresence Trio Device**: 
1. Press Settings.

2. Press Advanced.
3. Enter administrator password.

4. Press Administrator Settings.
5. Press Web Server Configuration.
6. Enable Web Server by moving slider to the right.

Once the web server is enabled, you are ready to provision RealPresence Trio.

**Provision RealPresence Trio from a Web Browser:**

1. Open web browser and enter the IP address of RealPresence Trio.
2. Enter the administrator password in the Welcome to Polycom Web Configuration Utility dialog box.

The administrator menu opens.
3. Click Settings at the top of screen and then Click Provisioning Sever.
4. Enter the server information for Deltapath Connector in the fields located in the Provisioning Server dialog box.

![Provisioning Server](image)

5. Reboot RealPresence Trio 8800 once your configurations are complete.

Settings are provisioned automatically. You are now ready to use RealPresence Trio 8800.

Integration with Polycom RealPresence Group Series

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Select “Own CPE”</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>“Polycom HDX/Group”</td>
</tr>
</tbody>
</table>

1. Enter the equipment information in the equipment fields of the User Settings dialog box.
2. A one-time notice containing a SIP account credential is displayed.

3. The employee receives an email notice similar to the one below.

Dear Polycom Group 300,

The administrator has created an account for your soft phone. The username and password as follows:

SIP User ID: 8000
SIP Password: 9HxhcmbH0
Server IP:

The SIP password generated after user setup is used when you connect to your group series device from a browser as illustrated below in the screenshot to configure SIP.
Provisioning Group Series
To provision a RealPresence Group, configure H.323 (H.323 is optional), SIP, and Firewall.

Configure H.323
1. In a web browser, connect to your RealPresence Group device.
2. Click Admin Settings.
3. Click Network.
4. Click IP Network.
5. Click the arrow next to H.323.
6. **H.323 Extension (E.164):** Enter an extension such as 8000.
7. **Require Authentication:** Select checkbox.
8. **User Name:** Enter the extension number of the user.
9. **Enter Password:** Enter the password you received after configuring the user.
10. **Primary Gatekeeper IP address:** Enter IP address, 192.168.77.42.
11. Click Save.
12. Verify H.323 is successfully registered at the top of the screen as illustrated in the screenshot below.

Configure SIP

1. Click the dropdown arrow next to SIP.

2. Enable SIP: Select checkbox.
3. SIP Server Configuration: Click the dropdown arrow and then Click Specify.
4. Transfer Protocol: Click the dropdown arrow and then Click UDP.
5. BFCP Transport Preference: Click the dropdown arrow and then Click Prefer UDP.
6. Sign-in Address: Enter the phone extension@Deltapath Connector IP address. Example: 8000@192.168.77.42 where 3000 is the extension number and 192.168.77.42 is the Deltapath Connector IP that can be reached from the RealPresence Group
7. User Name: Enter the extension number of the user.
8. Password: Select the checkbox.
9. Enter Password: Enter the password you received in the Notice dialog box after creating the user.
10. Confirm Password: Reenter the password.
11. Registrar Server: Enter IP address of Deltapath Connector or FQDN.
   
   Note: Use the LAN IP of the Deltapath Connector if the RealPresence Group is within your corporate network.
   Only use the Deltapath Connector WAN IP if the RealPresence Group is located outside your corporate network.
12. Proxy Server: Enter IP address of Deltapath Connector or FQDN. See note in step 11.
13. Registrar Server Type: Click the dropdown and then Click Unknown.
14. Click Save.
15. Check the Registration status, which is displayed at the top of the Group Series screen as illustrated in the screenshot below.
Configure Firewall
If your RealPresence Group is Outside the Network, meaning there is a NAT router between the RealPresence Group and the Deltapath Connector network interface that you are registering, which is usually the case when you are registering to the WAN IP of the Deltapath Connector, then you will need to enable the firewall.

1. Click Network.
2. Click IP Network.
3. Click Firewall section.

Integration with Polycom HDX Series Endpoints

| Equipment | Select “Own CPE” | “Polycom HDX/Group” |

1. Enter the equipment information in the equipment fields of the User settings dialog box.
2. A one-time notice with a SIP account credential is displayed. This password is used when provisioning the HDX. Keep a copy of the password.

3. The user receives an email notice similar to the one below.

Dear Polycom HDX8000,

The administrator has created an account for your soft phone. The username and password as follows:

SIP User ID: 9000
SIP Password: oaeWTC34
Server IP:

If you have been given an Eyebeam soft client, the license is:

4. Connect to the HDX interface from a web browser.
5. Click Admin Settings in the menu bar at the top of the screen.
6. Click Network.
7. Click IP Network. Use the table below to complete the fields in the HDX interface.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Recommended Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable SIP</td>
<td>Activate the SIP stack on HDX.</td>
<td>Must be enabled</td>
</tr>
<tr>
<td>SIP Server Configuration</td>
<td>Type of SIP Server</td>
<td>Must select “Specify”</td>
</tr>
<tr>
<td>Server Name or IP Address</td>
<td>FQDN or IP address of Deltapath Connector</td>
<td>The Deltapath Connector IP Address that the HDX will register to. Use internal LAN IP of VMC if HDX is within your corporate network. Only use the VMC WAN IP if the HDX is located outside your corporate network.</td>
</tr>
<tr>
<td>Transport Protocol</td>
<td>Protocol that will be used for the SIP signaling</td>
<td>UDP</td>
</tr>
<tr>
<td>Sign-in Address</td>
<td>Put the SIP username here. This is usually the extension of the user.</td>
<td>No recommended default</td>
</tr>
<tr>
<td>User Name</td>
<td>As Above</td>
<td>No recommended default</td>
</tr>
</tbody>
</table>
If your Polycom HDX is Outside the Network, meaning there is a NAT router between the HDX and the Deltapath Connector network interface that you are registering to, which is usually the case when you are registering to the WAN IP of the Deltapath Connector, you will need to scroll down to the firewall section.

8. **Enable SIP Keep-Alive Messages**: Select checkbox.

Integration with Polycom RealPresence Desktop & Polycom RealPresence Mobile

To eliminate the need for users to remember the Deltapath Connector’s IP address or FQDN, it is recommended that an external DNS SRV record be added. Create a DNS service record (SRV record) on the external DNS server to map the SRV service address for endpoint provisioning to the FQDN of the Deltapath Connector.

```
_cmaconfig._tcp.example.com. IN SRV 0 100 443 trioconnector.example.com.
Where: Service = _cmaconfig, Protocol = _tcp, Priority = 0, Weight = 100, Port = 443 and Host offering this service = trioconnector.example.com
```

*Note: Once the DNS SRV record is created. Create user accounts for all your mobile users.*
2. Click OK. The Notice dialog box opens.

The notice contains a User PIN. Users also receive an e-mail with the pin they must use to sign into Polycom RealPresence Desktop and Polycom RealPresence Mobile.

Dear hitoshi koreeda,

The administrator has created an account on the PBX for you.

User ID: 1111
Password: 6456

Your login will be used for:
- Logging into the fxsIP Switchboard for call control, profile management, phone book and call history.
- Checking your voicemail at the phone
- Making IDD Calls (if required)
- Remote dial-in access from your mobile (if required)

Please remember to keep your password secure. You may at anytime call into Ext.XXXX, User Management Centre to change your password.

Thank You

******************************************************************************
This is an automated message generated by the phone system. Please do not reply to this message as this account is not monitored by any personnel.
******************************************************************************

Download and Sign in to RealPresence Desktop and RealPresence Mobile
1. Download Polycom RealPresence Desk or RealPresence Mobile. To download and install RealPresence Desktop, visit

http://support.polycom.com/PolycomService/support/us/support/video/realpresence_desktop/realpresence_desktop.html

To download and install Polycom RealPresence Mobile, visit Apple’s App Store or Google’s Play Store.

2. Users enter their corporate e-mails to sign-in to Polycom RealPresence Mobile or Polycom RealPresence Desktop. Polycom RealPresence Desktop users will first need to click Enterprise Sign-in. If your DNS SRV record was configured, it should automatically resolve the FQDN of the Deltapath Connector. Simply enter the user extension and PIN to sign-in.

Sign-in from RealPresence Desktop

Note: The User Name is always the user’s extension number. The password is provided to the administrator when a user is created and each user is emailed the password details as illustrated above in step 2. For example, the User ID is 1111 and the Password 6456 in the email above. This information is used to sign-in on RPD and RPM.
Sign-in from RealPresence Mobile

Once a user is signed in, the user can dial by extension to any endpoints registered to Deltapath Connector and enjoy a suite of video collaboration tools.

Integration with Polycom RealPresence Collaboration Server (RMX)

This section of the document discusses how to integrate Deltapath’s Deltapath Connector with Polycom’s RMX, create meeting rooms, and map the room numbers on Deltapath Connector. In summary, you need to perform the following steps to complete the integration:

1. Configure the RMX to support SIP (H.323 is optional)
2. Create static meeting rooms and/or enable ad-hoc mode
3. Create SIP Trunk on Deltapath Connector to interface with RMX SIP signaling interface
4. Create Outbound Routing to map desired conference room number ranges to RMX SIP Trunk
5. Add the same Outbound Routing rule(s) under H.323 Routing (Optional)
**Configure RMX**

1. Launch RMX Manager.
2. In the left Pane, Click Rarely Used to open the Rarely Used list.

**IP Network Services**

3. Click IP Network Services.
4. At the top of the main window, Click Set default SIP Services (second green icon). The Network Service Properties box opens.
5. **IP Network Type**: Click the dropdown arrow and then Click either SIP or H.323 & SIP.

6. **Signaling Host IP Address**: Enter the SIP signaling host IP address. This address must be unique on your network and will be used to communicate with Deltapath Connector.

   - Do not use the Management IP address of the RMX.

7. **Subnet Masks**: Enter the subnet to route traffic.

**Routers**

8. In the left pane of the dialog box, Click Routers.
9. **Default route IP Address**: Enter default gateway IP.
10. **Static Routes**: Click on row in the Static Route table and add static route information if applicable.

**DNS**

11. In the left pane, Click DNS.
12. **Service Name (FQDN):** Enter a fully qualified domain name. Example: RMX.deltapath.com
13. **DNS:** Click the dropdown and then Click Specify.
14. **Local Domain Name:** Enter local domain name. Example: deltapath.com
15. **DNS Server Address:** Enter DNS service address.

**SIP Servers**

16. In the left pane, Click SIP Servers.
17. **SIP Server**: Set to Off.
18. **Transport Type**: Set to UDP.

**SIP Advanced**

19. Click Sip Advanced in the left pane.
20. **ICE Environment**: Set to None.
21. Click OK. RMX reboots to activate the changes.

### Create Static or Dynamic Meeting Rooms

There are two ways to integrate with Polycom RMX. Both methods are described below.

- **Option 1**: Set Entry Queue Mode to Ad Hoc in RMX and route whatever range of room numbers you desire from Deltapath Connector through Outbound Routing. Use this method when you do not have specific settings or reservation of resources for specific conference room.
- **Option 2**: Create your desired conference rooms on the RMX and create Outbound Routing that matches the conference room ranges created on RMX. Use this method when you have different settings for different conference rooms such as participant limits and reservation of resources.

Identify the type of conference rooms, dynamic or static, you want to create. The steps for both are illustrated below.

**Create Static Meeting rooms**
1. Login to RMX Manager.
2. Click Frequently used in the left pane to view list.
3. Click Meeting Rooms.

4. **Display Name**: Enter the room owner’s name.
5. **ID**: Enter a meeting room number.
   
   *Note: ID always refers to a meeting room number. It is important to ensure the assigned meeting room number can be routed to the RMX. This is done in outbound routing where you either identify the specific meeting room or identify a numbering pattern that includes the ID in order to permit the room number to route to the RMX.*

6. **Conference Password**: Optional Field. Enter a number if you want participants to enter a password when calling to the RMX.

7. **Chairperson Password**: Optional Field. Enter a number if you want the meeting leader to enter a password when call to the RMX.

8. **Reserve Resources for Video Participants**: Click the up and down arrows to reserve spots for video participants.
   
   *Note: This is an important step. RMX allows you to book resources. Since RMX defines the maximum number of participants allowed to use the endpoint at any given time, you never want to be in a situation where you invite participants to a meeting only to discover they cannot be part of the meeting because the maximum number has been reached due to others using the RMX in concurrent calls.*

9. **Reserve Resources for Voice Participants**: Click the up and down arrows to reserve spots for voice participants. See note in step 7.

10. **Maximum Number of Participants**: Enter the maximum number of participants permitted in the meeting.
11. Click OK.
Create Ad Hoc Meeting Rooms

1. Launch RMX Manager.
2. In the left pane, Click Rarely Used to view the Rarely Used list.

3. Click Entry Queues.

4. Click the green plus sign above the main window. The New Entry Queue dialog box opens.

5. **Entry Queue Mode:** Click the dropdown arrow and then Click Ad Hoc.
   
   *Note: By choosing Ad Hoc, you do not have to create a conference room on the RMX. Any number you send via Outbound Routing will cause RMX to dynamically create a room with that number as long as the number satisfies the conference ID minimum and maximum length defined by the administrator in RMX Manager.*

6. Click OK.
Add A SIP Trunk that Points to the RMX

1. Launch the administrator portal for a browser.
2. Click SIP Trunk.
3. Click Add SIP Trunk.
4. **Trunk ID:** Enter a word that identifies the SIP trunk.
5. **Short Name:** Enter a short name for RMX.
6. **Host Name/IP:** Enter the IP address that you assigned in "Signaling Host IP Address" on the RMX.
7. **Port:** By default, RMX uses 5060.
8. **frSIP UC Platform:** No.
9. **Main Protocol**: UDP
10. **Nat Support**: If there is an NAT router between the Deltapath Connector and RMX then select Yes, or else select No.
11. **INVITE Require Auth**: No
    Note: If no is selected then no other fields require completing under Registration Options.
12. **Call Restriction**: No, unless you are doing logical partitioning.
13. **Incoming Calls Permission Group**: Click the dropdown arrow and then Click a Permission Group.
    Note: Use this field to identify the numbers the RMX can dial out. Recommended default: Internal Only. If you want to enable PSTN access, ensure your RMX is fully secured to ensure you do not become a victim of toll fraud.
14. **Allowed Codec**: Click the dropdown arrow and then Click the following: G.722.1C, G.722, G.711U, G.711A, and H.264. The codec is displayed from high definition to narrowband.
15. **DTMF Mode**: Click the dropdown arrow and then Click rfc2833. This is the recommended default.
16. **Copy Caller ID Name to Number**: No
17. **Global Conference Bridge Routing Method**: This option does not apply if the frSIP UC Platform field is set to No.
18. **Authentication Mode**: Click the dropdown arrow and then Click IP and Source Port.
19. **Allow SIP Info Method**: Enable (must be enabled in order for video to work properly with RMX)
20. **Force RTP packets Through Server**: Yes
21. **Session timer**: Click Accept. RMX requires SIP Session Timer to be enabled.
22. **Session Expires**: Enter a number in seconds. By default, session expires in 1800 seconds for RMX.
23. Click Save.

**Create Number in Outbound Routing**
Conference room numbers or a number pattern must be created in outbound routing so users can connect to the RMX.

1. Click Numbering Plan in the Administrator Portal.

2. Click Outbound Routing.

---

**Partner Solution Guide – Deltapath**
3. Click Add Outbound routing.

4. **Number**: This is the meeting room number range. Consult the Number Patterns table below for more information. If RMX has Ad-hoc mode turned on, you may use any range you desire. Otherwise, you will need to ensure the number range you define here matches the conference room ID you created on the RMX.

5. **Context**: Click the dropdown arrow and then select a context. Recommended is Internal Extensions.

6. **Send to Peer**: Select Peer.

   **Note**: Peer refers to the SIP Trunk you just created to connect to the RMX.

7. **Outbound Peer**: Click the dropdown arrow and then Click the RMX route you created.

8. Click Save.

### Number Patterns

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>X matches any digit from 0-9</td>
<td>_1xxx such as 1053</td>
</tr>
<tr>
<td>Z matches any digit from 1-9</td>
<td>_1zzz such as 1153</td>
</tr>
<tr>
<td>N matches any digit from 2-9</td>
<td>_1zxx such as 1108</td>
</tr>
<tr>
<td>. wildcard, must have a character in the place of the period.</td>
<td>_1nnn such as 1253</td>
</tr>
<tr>
<td>! wildcard. You can insert a number in place of the exclamation mark or not</td>
<td>_1xx.  The system will accept 123 plus a number from 0-9 with an unlimited amount of numbers such as 1239 or 1234567890.  The system only accepts four digits. 123 would not be acceptable.</td>
</tr>
</tbody>
</table>
add a number at all.

1xx!
The system will accept three digits such as 123 or 123 plus a number from 0-9 such as 1230 or 1235.
The system will also accept and replace the exclamation mark (!) with the same number in the last digit so 1239! becomes 12399

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X, N, Z, ., and !</td>
<td>Variables indicating patterns such as 1xx!</td>
</tr>
</tbody>
</table>

**Important Note:** You must prepend the underscore (_) when the rules contain variables indicating patterns such as X, N, Z, ., and !

Table 4 – Numbering Patterns

Any outbound routing created in this section must be added in H.323 Gatekeeper, which is discussed in the next section.

**Map Conference Room Number Range to H.323 Gatekeeper**

Traditionally, when users dial to a Polycom video endpoint, the number is lengthy. An example is 192.168.77.13##1004, where ##1004 represents the room number or extension. You can map your conference room number range to the H.323 Gatekeeper to allow users to simply dial by room number (extension 1004), which routes the user to the endpoint connected to 1004.

Follow the procedures below to create the mapping.

1. Click H.323 Gatekeeper on the administrator portal.
2. Click H.323 Routing.
3. Click Add. The H.323 Routing dialog box opens.
   - Use the table titled, H.323 Routing Options below to complete the information in the H.323 Routing dialog box.
4. Click Ok.
### H.323 Routing Options

<table>
<thead>
<tr>
<th>Pattern:</th>
<th>Example</th>
</tr>
</thead>
</table>
| X matches any digit from 0-9  
Z matches any digit from 1-9  
N matches any digit from 2-9  
. wildcard, must have a character in the place of the period.  
! wildcard. You can insert a number in place of the exclamation mark or not add a number at all. | _1xxx such as 1053  
_1zzz such as 1153  
_1zx such as 1108  
_1nnn such as 1253  
_1xx such as 1108  
_1xx such as 1108  
_1xx! |  
| Important Note: You must prepend the underscore ( _ ) when the rules contain variables indicating patterns such as X, N, Z, . and ! | The system will accept 123 plus a number from 0-9 with an unlimited amount of numbers such as 1239 or 1234567890.  
The system only accepts four digits. 123 would not be acceptable.  
_1xx! |  
| | The system will accept three digits such as 123 or 123 plus a number from 0-9 such as 1230 or 1235.  
The system will also accept and replace the exclamation mark (!) with the same number in the last digit so 1239! becomes 12399 |
### PSTN and Third Party PBX Integration

This section introduces different types of gateway models and their associated telephone circuits. This section also focuses on the different ways an organization can use a gateway before discussing setup of a gateway.

### Connecting your Telephone Line to Deltapath Connector

Based on the organization’s telephone circuit, find the gateway model that is needed.

<table>
<thead>
<tr>
<th>Telephone Circuit</th>
<th>Deltapath® Connector® Gateway Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRI Line</td>
<td>M800 4B</td>
</tr>
</tbody>
</table>

---

Table 5 – H.323 Routing Options

<table>
<thead>
<tr>
<th>Priority</th>
<th>Assign routing priority 1 is the highest priority</th>
<th>priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepend</td>
<td>Add numbers to the front of an existing number to appear in the final destination.</td>
<td>1023 becomes 408-723-1023</td>
</tr>
<tr>
<td>Example:</td>
<td>If the Prepend field has 408723 and the Pattern field has 1xxx then if you dialed 1023, 4087231023 is sent.</td>
<td></td>
</tr>
<tr>
<td>Append</td>
<td>Add numbers to the end of an existing number to appear in the final destination.</td>
<td>102 becomes 1023</td>
</tr>
<tr>
<td>Example:</td>
<td>If the Append field has 7231023 and the Pattern field has 4xx then when you dial 7231023, 4087231023 is sent.</td>
<td></td>
</tr>
<tr>
<td>Strip</td>
<td>Identify the number of digits to be stripped</td>
<td>1 or 12</td>
</tr>
<tr>
<td>Address</td>
<td>Enter the destination IP address</td>
<td>192.168.77.43</td>
</tr>
</tbody>
</table>
Foreign eXchange Subscriber (FXS) and Foreign eXchange Office (FXO) are two of the most common ports used by analog phone lines or phones. The Primary Rate Interface (PRI) and Basic Rate Interface (BRI) are used on an Integrated Services Digital Network.

**Interfacing with Telco using SIP (No Gateway is needed)**

![Interfacing with Telco using SIP](image)

---

<table>
<thead>
<tr>
<th>ISDN PRI (E1/T1/J1)</th>
<th>M800 1ET, M800 2ET (with additional 4 FXS ports)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional Telephone Circuit</td>
<td>Analogue gateway with FXO ports MP114 4FXO – 4 FXO ports</td>
</tr>
<tr>
<td>Analogue Device (E.g. Faxes, Analogue Phones, Credit Card Machine)</td>
<td>Analogue gateway with FXS ports MP124 – 24 FXS ports</td>
</tr>
</tbody>
</table>

Table 6 – Gateway Models needed based on an Organization’s Telephone Circuit

---

Figure 6 - No Gateway: Interfacing with Telco using SIP
Interfacing with Third Party SIP Based PBX

![Diagram showing interconnection between PSTN, PBX, and SIP gateway](image1)

**Figure 7** - Gateway that interfaces with Third Party Based PBX

Interfacing with Telco using FXO or PRI

![Diagram showing interconnection between PSTN, Telco, and gateway](image2)

**Figure 8** - Gateway that interfaces with Telco using FXO or PRI
Interfacing with Legacy PBX and Telephone Company

![Gateway diagram](image)

Figure 9 - Gateway that interfaces with Legacy PBX and Telephone Company

Test/Validation Annex

Products and Software Tested with this Release

Deltapath’s Deltapath Connector has been tested against the devices and software listed in the table below.

<table>
<thead>
<tr>
<th>Product</th>
<th>Versions Tested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polycom® RealPresence™ Trio</td>
<td>5.4.3 Rev AD</td>
</tr>
<tr>
<td>Polycom® RealPresence® Desktop on MAC</td>
<td>3.6.0</td>
</tr>
<tr>
<td>Polycom® RealPresence® Mobile on Android</td>
<td>3.5.1</td>
</tr>
<tr>
<td>Polycom® RealPresence® Mobile on IOS IPad</td>
<td>3.5.1</td>
</tr>
<tr>
<td>Polycom® VVX 1500</td>
<td>5.4.1</td>
</tr>
</tbody>
</table>
Tests Conducted and Known Issues
A number of symbols are used in the tables below to describe the outcome of each test. The symbols and their description appear below.

<table>
<thead>
<tr>
<th>Symbols</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔</td>
<td>Test validation was successful</td>
</tr>
<tr>
<td>≠</td>
<td>Test was not carried out</td>
</tr>
<tr>
<td>✗</td>
<td>Test validation was unsuccessful</td>
</tr>
<tr>
<td>±</td>
<td>Pass with limitations</td>
</tr>
</tbody>
</table>

Table 8 – Legend of Symbols used in Test Tables

Endpoint 2 Endpoint Video Testing
Tests were conducted to establish video calls between different endpoints. The results are listed in the table below.

<table>
<thead>
<tr>
<th>Video</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Caller</td>
<td>Group</td>
<td>HDX</td>
<td>Trio</td>
<td>RPD</td>
<td>RPM</td>
<td>VVX</td>
</tr>
<tr>
<td></td>
<td>Group</td>
<td>HDX</td>
<td>Trio</td>
<td>RPD</td>
<td>RPM</td>
<td>VVX</td>
</tr>
<tr>
<td>Group</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✗</td>
</tr>
<tr>
<td>HDX</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✗</td>
</tr>
<tr>
<td>Trio</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>RPD</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>RPM</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>VVX</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>
Table 9 – Endpoint to Endpoint Video Test Results

**Known Issues:**

- Video was only available on the RealPresence Group when it was used to call a Polycom VVX Business Media phone
- Video was only available on the Polycom HDX when it was used to call a Polycom VVX Business Media phone

**Far-End Camera Control**
Different endpoints were used to navigate and zoom in and out of the Far End camera.

<table>
<thead>
<tr>
<th>Caller</th>
<th>Recipient</th>
<th>Group</th>
<th>HDX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>Group</td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>HDX</td>
<td>HDX</td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>RPD</td>
<td>RPD</td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>RPM</td>
<td>RPM</td>
<td>✅</td>
<td>✅</td>
</tr>
</tbody>
</table>

Table 10 – Endpoint to Endpoint Far-End Camera Control Test Results

**Content Share**
Dual Stream testing was conducted to validate whether or not the content shared could be seen by participants at the same time. Polycom VVX was not tested because it does not support dual streaming.

<table>
<thead>
<tr>
<th>Caller</th>
<th>Recipient</th>
<th>Group</th>
<th>HDX</th>
<th>Trio</th>
<th>RPD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>Group</td>
<td>✅</td>
<td>✕</td>
<td>✕</td>
<td>✕</td>
</tr>
<tr>
<td>HDX</td>
<td>HDX</td>
<td>✅</td>
<td>✅</td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>Trio</td>
<td>Trio</td>
<td>✅</td>
<td>✅</td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>RPD</td>
<td>RPD</td>
<td>✅</td>
<td>✅</td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>RPM</td>
<td>RPM</td>
<td>✅</td>
<td>✅</td>
<td>✅</td>
<td>✅</td>
</tr>
</tbody>
</table>

Table 11 – Endpoint to Endpoint Content Sharing Test Results

**Known Issues:**

- Content sharing did not work when RealPresence Group called Polycom HDX.
  - Workaround: Always use Polycom HDX to call RealPresence Group to share content.
- Content sharing did not work when RealPresence Group called RealPresence Trio.
  - Workaround: Always have Trio call RealPresence Group to share content.

**Multipoint Testing**
Known issues with the RPD PC version have been found. These issues were not experienced in the RPD MAC version. The issues are detailed below:

- When Polycom Group is hosting and RealPresence Trio and RPD dial to the RealPresence Group, RPD disconnects after approximately 21 seconds. Changing the order in which RealPresence Trio and RPD connect to the RealPresence Group, yields the same results.
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- If content is shared within the first 21 seconds of RealPresence Trio and RPD connects to the RealPresence Group, RPD crashes and/or RealPresence Trio freezes.
- When Polycom’s HDX is hosting and RealPresence Trio and RPD dial to the HDX, video does not display on RealPresence Trio. In addition, video from RealPresence Trio does not display on other endpoints on the call.
- When Polycom’s RMX is hosting RealPresence Trio and RPD, content sharing cannot be initiated by RPD. In addition, RPD cannot see content shared by RealPresence Trio.
- When RealPresence Group or Polycom’s HDX hosts RPD and VVX 1500, RPD cannot share content when VVX 1500 is on the call.

Video

Tests were carried out using three different meeting hosts: RealPresence Group, Polycom HDX, and RMX. Two different participants called in such as RealPresence Trio, RPD, RPM in the sequence displayed in each table below. The goal was to ensure all endpoints could see each other.

Multipoint Video: Group as Multiparty Conferencing Unit (MCU) Host

<table>
<thead>
<tr>
<th>First Participant in Call</th>
<th>Second Participant in Call</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trio</td>
<td>RPD (MAC)</td>
<td>✓</td>
</tr>
<tr>
<td>Trio</td>
<td>RPM</td>
<td>✓</td>
</tr>
<tr>
<td>Trio</td>
<td>HDX</td>
<td>✓</td>
</tr>
<tr>
<td>Trio</td>
<td>VVX</td>
<td>✓</td>
</tr>
<tr>
<td>RPD</td>
<td>RPM</td>
<td>✓</td>
</tr>
<tr>
<td>RPD</td>
<td>HDX</td>
<td>✓</td>
</tr>
<tr>
<td>RPD</td>
<td>VVX</td>
<td>✓</td>
</tr>
<tr>
<td>RPD (MAC)</td>
<td>Trio</td>
<td>✓</td>
</tr>
<tr>
<td>RPM</td>
<td>HDX</td>
<td>✓</td>
</tr>
<tr>
<td>RPM</td>
<td>VVX</td>
<td>✓</td>
</tr>
<tr>
<td>RPM</td>
<td>Trio</td>
<td>✓</td>
</tr>
<tr>
<td>RPM</td>
<td>RPD</td>
<td>✓</td>
</tr>
</tbody>
</table>

Table 12: Multipoint Video Tests were Conducted with Group Hosting to Verify All Participants had Video of Each Other

Multipoint Video: HDX as MCU Host

<table>
<thead>
<tr>
<th>First Participant in Call</th>
<th>Second Participant in Call</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trio</td>
<td>RPD (MAC)</td>
<td>✓</td>
</tr>
<tr>
<td>Trio</td>
<td>RPM</td>
<td>✓</td>
</tr>
<tr>
<td>Trio</td>
<td>Group</td>
<td>✓</td>
</tr>
<tr>
<td>Trio</td>
<td>VVX</td>
<td>✓</td>
</tr>
<tr>
<td>RPD</td>
<td>RPM</td>
<td>✓</td>
</tr>
</tbody>
</table>
Partner Solution Guide – Deltapath

RPD Group ✓
RPD VVX ✓
RPD (MAC) Trio ✓
RPM Group ✓
RPM VVX ✓
RPM Trio ✓
RPM RPD ✓

Table 13 - Multipoint Video Tests were Conducted with HDX Hosting to Verify that All Participants had Video of Each Other

Multipoint Video: RMX as MCU Host

<table>
<thead>
<tr>
<th>First Participant in Call</th>
<th>Second Participant in Call</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trio</td>
<td>RPD</td>
<td>✓</td>
</tr>
<tr>
<td>Trio</td>
<td>RPM</td>
<td>✓</td>
</tr>
<tr>
<td>Trio</td>
<td>Group</td>
<td>✓</td>
</tr>
<tr>
<td>Trio</td>
<td>HDX</td>
<td>✓</td>
</tr>
<tr>
<td>Trio</td>
<td>VVX</td>
<td>✓</td>
</tr>
<tr>
<td>RPD</td>
<td>RPM</td>
<td>✓</td>
</tr>
<tr>
<td>RPD</td>
<td>Group</td>
<td>✓</td>
</tr>
<tr>
<td>RPD</td>
<td>HDX</td>
<td>✓</td>
</tr>
<tr>
<td>RPD</td>
<td>VVX</td>
<td>✓</td>
</tr>
<tr>
<td>RPD</td>
<td>Trio</td>
<td>✓</td>
</tr>
<tr>
<td>RPM</td>
<td>Group</td>
<td>✓</td>
</tr>
<tr>
<td>RPM</td>
<td>HDX</td>
<td>✓</td>
</tr>
<tr>
<td>RPM</td>
<td>VVX</td>
<td>✓</td>
</tr>
<tr>
<td>RPM</td>
<td>Trio</td>
<td>✓</td>
</tr>
<tr>
<td>RPM</td>
<td>RPD</td>
<td>✓</td>
</tr>
</tbody>
</table>

Table 14 - Multipoint Video Tests were Conducted with RMX Hosting to Verify that All Participants had Video of Each Other

Content Share

Content Sharing was tested across different devices. Tests were carried out using three different meeting hosts: RealPresence Group, Polycom HDX, and RMX. Different endpoints such as Trio, RPD, RPM called into the host in the sequence displayed in the table below.
### Content Sharing: Group

<table>
<thead>
<tr>
<th>First Participant on Call</th>
<th>Second Participant on Call</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trio</td>
<td>RPD (MAC)</td>
<td>✓</td>
</tr>
<tr>
<td>Trio</td>
<td>RPM</td>
<td>✓</td>
</tr>
<tr>
<td>Trio</td>
<td>HDX</td>
<td>✓</td>
</tr>
<tr>
<td>RPD</td>
<td>RPM</td>
<td>✓</td>
</tr>
<tr>
<td>RPD</td>
<td>HDX</td>
<td>✓</td>
</tr>
<tr>
<td>RPD</td>
<td>Trio</td>
<td>✓</td>
</tr>
<tr>
<td>RPM</td>
<td>HDX</td>
<td>✓</td>
</tr>
<tr>
<td>RPM</td>
<td>Trio</td>
<td>✓</td>
</tr>
<tr>
<td>RPM</td>
<td>RPD</td>
<td>✓</td>
</tr>
</tbody>
</table>

Table 15 - Content Sharing Tests were Conducted with RealPresence Group to Validate if Participants could Receive Content

### Content Sharing: HDX

<table>
<thead>
<tr>
<th>First Participant on Call</th>
<th>Second Participant on Call</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trio</td>
<td>RPD (MAC)</td>
<td>✓</td>
</tr>
<tr>
<td>Trio</td>
<td>RPM</td>
<td>±</td>
</tr>
<tr>
<td>Trio</td>
<td>Group</td>
<td>±</td>
</tr>
<tr>
<td>RPD</td>
<td>RPM</td>
<td>✓</td>
</tr>
<tr>
<td>RPD</td>
<td>Group</td>
<td>✓</td>
</tr>
<tr>
<td>RPD</td>
<td>Trio</td>
<td>✓</td>
</tr>
<tr>
<td>RPM</td>
<td>Group</td>
<td>✓</td>
</tr>
<tr>
<td>RPM</td>
<td>Trio</td>
<td>±</td>
</tr>
<tr>
<td>RPM</td>
<td>RPD</td>
<td>✓</td>
</tr>
</tbody>
</table>

Table 16 - Content Sharing Tests were Conducted with Polycom HDX to Validate if Participants could Receive Content

### Known Issues:

- **Trio cannot push content when it is the first participant that calls into the Polycom HDX.**
  - **Workaround 1:** Ensure RealPresence Trio is not the first participant when Polycom HDX is hosting.
  - **Workaround 2:** Have Polycom HDX initiate an outbound call to RealPresence Trio.

- **Content sharing is unsuccessful when HDX is the host and RealPresence Trio or Group call into the host regardless of the call sequence.**
  - **Workaround:** Have Polycom HDX initiate an outbound call to RealPresence Trio and RealPresence Group.
Content Sharing: RMX

<table>
<thead>
<tr>
<th>Trio</th>
<th>RPD (MAC)</th>
<th>✓</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trio</td>
<td>RPM</td>
<td>✓</td>
</tr>
<tr>
<td>Trio</td>
<td>HDX</td>
<td>✓</td>
</tr>
<tr>
<td>Trio</td>
<td>Group</td>
<td>✓</td>
</tr>
<tr>
<td>PRD</td>
<td>RPM</td>
<td>✓</td>
</tr>
<tr>
<td>RPD</td>
<td>Group</td>
<td>✓</td>
</tr>
<tr>
<td>RPD</td>
<td>HDX</td>
<td>✓</td>
</tr>
<tr>
<td>RPD (MAC)</td>
<td>Trio</td>
<td>✓</td>
</tr>
<tr>
<td>RPM</td>
<td>Group</td>
<td>✓</td>
</tr>
<tr>
<td>RPM</td>
<td>HDX</td>
<td>✓</td>
</tr>
<tr>
<td>RPM</td>
<td>Trio</td>
<td>✓</td>
</tr>
<tr>
<td>RPM</td>
<td>RPD</td>
<td>✓</td>
</tr>
</tbody>
</table>

Table 17 - Content sharing tests were conducted with RMX to validate if participants could receive content

Latecomer and Content Sharing

When participants joined a call late when Polycom HDX series and RealPresence Group series was hosting the call in its internal MCU, content sharing stopped. The content had to be shared out again. However, late participants entering a call while content was being shared was supported when RMX was hosting.

<table>
<thead>
<tr>
<th>RMX Hosting</th>
<th>Pushing Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>RPD (MAC)</td>
<td>✓</td>
</tr>
<tr>
<td>Trio</td>
<td>✓</td>
</tr>
<tr>
<td>VVX</td>
<td>✓</td>
</tr>
<tr>
<td>HDX</td>
<td>✓</td>
</tr>
<tr>
<td>Group</td>
<td>✓</td>
</tr>
</tbody>
</table>

Table 18 - RPD Pushed Content while RMX was hosting to validate if late participants could seamlessly view content

<table>
<thead>
<tr>
<th>RMX Hosting</th>
<th>Pushing Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>RPD (MAC)</td>
<td>✓</td>
</tr>
<tr>
<td>Trio</td>
<td>✓</td>
</tr>
<tr>
<td>VVX</td>
<td>✓</td>
</tr>
<tr>
<td>HDX</td>
<td>✓</td>
</tr>
<tr>
<td>Group</td>
<td>✓</td>
</tr>
</tbody>
</table>

Table 19 - RealPresence Trio pushed content while RMX was hosting to validate if late participants could seamlessly view content

<table>
<thead>
<tr>
<th>RMX Hosting</th>
<th>Pushing Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>RPD (PC)</td>
<td>✓</td>
</tr>
<tr>
<td>Trio</td>
<td>✓</td>
</tr>
<tr>
<td>VVX</td>
<td>✓</td>
</tr>
<tr>
<td>HDX</td>
<td>✓</td>
</tr>
</tbody>
</table>

Table 19 - RealPresence Trio pushed content while RMX was hosting to validate if late participants could seamlessly view content
Table 20 - Polycom HDX pushed content while RMX was hosting to validate if late participants could seamlessly view content

<table>
<thead>
<tr>
<th>RMX Hosting</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>RPD (PC)</td>
<td>✅</td>
</tr>
<tr>
<td>Trio</td>
<td>✅</td>
</tr>
<tr>
<td>VVX</td>
<td>✅</td>
</tr>
<tr>
<td>HDX</td>
<td>✅</td>
</tr>
<tr>
<td>Group</td>
<td>Pushing Content</td>
</tr>
</tbody>
</table>

Table 21 - RealPresence Group pushed content while RMX was hosting to validate if late participants could seamlessly view content
Additional Information
For More Information, consult the following links below.

Product Information
For more information about Deltapath, visit www.deltapath.com
For more information about Deltapath Connector, visit http://www.deltapath.com/products/trio-connector/

Deltapath Support
Online support is available at http://www.deltapath.com/services-and-support/support-portal/
By country sales contact information is available at http://www.deltapath.com/company/contact-us/

Polycom Support
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For more information about Polycom Technology Partner Program and the Technology and Developer Partner solutions, visit http://www.polycom.com/partners