Prepared by Polycom Professional Services

SOLUTION DESIGN REPORT

Polycom® RealPresence® Platform

SAMPLE REPORT (DO NOT COPY)

Table of Contents

GLOSSARY

Term	Description
ACL	Access Control List
AD	Microsoft Active Directory
ALG/SBC	Application Layered Gateway/Session Board Control
API	Application Programmable Interface
AVC	Advanced Video Coding
AVMCU	Audio Video Multi Point Unit
B2B/B2C	Business to Business/Business to Consumer
BFCP	Binary Floor Control Protocol, a method for coordinating access and control of shared resources
ContentConnect™	Content Sharing Suite, allows content sharing between the VC and Lync environments
CUCM	Cisco Unified Call Manager
DMA®	Distributed Media Application™ – MCU virtualization server
DMZ	Demilitarized Zone
DNS	Domain Name System
DSCP	Differentiated Services Code Point
DTMF	Dual Tone Multiple Frequencies
FQDN	Fully Qualified Domain Name
GAB	Global Address Book
GS	Polycom® RealPresence® Group Series endpoints
GRUU	Globally Routable User Agent URI
H.323	The ITU-T standard for video conferencing over IP
HA	High Availability
HDX	Polycom HDX endpoints

IETF	Internet Engineering Task Force
IP	Internet Protocol
IVR	Interactive Voice Response
MCU	Multipoint Control Unit - (i.e. a video/audio bridge)
MEA	Media Experience or Media Experience Portal – The Web Suite meeting conference interface
MIB	Management Information Base
MGC	Media Gateway Control
MSA	Media Service Agent
NAT	Network Address Translation
NFS	Network File Share
OCSP	Online Certificate Status Protocol
PBX	Private Branch Exchange
PFX	Personal Information Exchange
PRRM	Resource Manager
PSTN	Public Switched Telephone Network
PTR	Pointer Records – maps a network interface (IP) to a host name
QOS	Quality of Service
RPCS	The Polycom Multipoint Control Unit, also referred to as a Collaboration Server
RPAD	RealPresence® Access Director (Polycom's session border controller)
RPCC	RealPresence® ContentConnect™ (transcoding content solution)
RPD	RealPresence® Desktop (Polycom's desktop video client)
RPM	RealPresence® Mobile (Polycom's mobile video client)
RPPD	RealPresence® Platform Director™ (license and monitor)
RPRM	RealPresence® Resource Manager (endpoint management)
RPWS	RealPresence® Web Suite (web based video solution)
SIP	Session Initiation Protocol (A communication protocol over IP) an IETF standard
SNMP/SMTP	Simple Network Management Protocol/Simple Mail Transfer Protocol
SRV	Domain Name System resource record used to identify computers that host specific services
SVC	Scalable Video Coding
TCP	Transmission Control Protocol

TOS	Type of Service
UC	Unified Communications
UDP	User Datagram Protocol – core member of the Internet protocol suite
VAAS	Video as a service
VC	Video conferencing
VE	Virtual Edition
VEQ	Virtual Entry Queues
VMR	Virtual Meeting Room
VSX	Viewstation Endpoint
VOD	Voice On Demand
WSP	Web Service Portal – Web Suite scheduling interface
XMPP	Extensible Messaging and Presence Protocol

Icons Used in this Document:

Corporate documents may include any of the following icons to alert you to important information. This report includes icons used to draw attention to important information, warnings, considerations, highlight decisions made or recommendations.

Name	Icon	Description
Note		The Note icon highlights information of interest or important information needed to be successful in accomplishing a procedure or to understand a concept.
User Tip		The User Tip icon highlights techniques, shortcuts, or productivity related tips for users.
Caution		The Caution icon highlights information you need to know to avoid a hazard that could potentially impact device performance, application functionality, or successful feature configuration.
Warning		The Warning icon highlights an action you must perform (or avoid) to prevent issues which may cause you to lose information or your configuration setup, and/or affect phone, video, or network performance.
Web Info		The Web Info icon highlights supplementary information available online such as documents or downloads on support.Polycom.com or other locations.

Name	Icon	Description
Troubleshooting		The Troubleshooting icon highlights information which may help you solve a relevant problem or to refer you to other relevant troubleshooting resources.
Settings/Decision Required		The Settings icon highlights settings you may need to choose for a specific behavior, to enable a specific feature, or to access customization options.
Polycom Best Practices		Polycom icon references recommendations for best practices.

1 Introduction

1.1 Executive Summary

Customer is one of the most respected global engineering, construction and project management companies, and a cornerstone of innovation in the industry. Customer delivers landmark projects which foster sustainable progress and grow economies. Customer has the resources and reach to provide its customers confidence in delivery of projects. Since 1898, Customer has completed more than 25,000 extraordinary projects, many first-of-a-kind in 160 countries, on all seven continents, serving the energy delivery, defense, environmental cleanup, mining & metals, oil, gas & chemicals, infrastructure and transportation, and telecommunications industries.

Customer deployed Microsoft Lync 2013, standardizing upon Lync Online Meeting functionality for telephony, PC, smartphone, tablet, and web conferencing. A parallel Cisco conferencing solution is used for conducting video meetings between two or more rooms. There is limited integration between these two environments and intervention is required for both scheduling and joining conferences utilizing the Cisco conferencing solution.

Customer partnered with Polycom to design a solution that:

- Enables users to easily schedule and join conferences
- Leverages the existing Microsoft Lync investment
- Integrates Lync Online Meeting workflow with meeting room visual collaboration systems
- Geo Resilient providing in-region resources with out of region resiliency and scalability
- Avoids adding complexity
- Sustains a consistent conferencing experience, thereby increasing user satisfaction and adoption

Polycom will design and implement a solution that utilizes Polycom® RealPresence® One™ platform in conjunction with Polycom® RealConnect™ functionality to enable intuitive scheduling, joining, and participation in Lync Online Meetings from Customer, partners and customer's visual collaboration rooms.

1.2 Business Drivers

The following issues have been identified with the current conferencing solutions:

- **Multiple / Different Scheduling Workflows:** Scheduling of people and Lync Online Meetings is simple and intuitive as Outlook is used across the organization. There are many different tools used for scheduling meeting rooms across the organization which often confuses users. Scheduling of video meetings between rooms requires a form to be submitted to the HelpDesk as the scheduling interface for the Cisco conferencing solution is an IT tool, and some locations use mobile video conferencing devices requiring the HelpDesk to temporarily install.

- **Complex Joining Experience from Meeting Rooms:** The HelpDesk is usually required to launch meetings on behalf of users. The user interface differs from room to room which leads to user confusion. If the meeting involves telephony or desktop participants, the HelpDesk must join one of the video conferencing rooms to the Lync Online Meeting via its telephone line.
- **Difficult to Share PC Content:** Sharing PC content during a videoconference usually requires either a separate display or reconfiguration of the displays as users prefer to perform content sharing through Lync.

1.3 Service Delivery Methodology

Polycom performed a structured and strategic phased approach based on Customer's unique requirements.

- **Track 1:** Discovery Workshop (data, user)
- **Track 2:** Analysis
- **Track 3:** Review
- **Track 4:** Final Report

In each track, Polycom developed actions in the areas of process, culture, and technology.

2 Scope of Service

2.1 Project Milestones

- **Produce Solution Design**: Meet Customer's functional requirements as outlined in Section 3.1 Solution Requirements.
- **Implement Polycom® RealPresence One™ Platform:** Hosted on Customer's VMware environment in the AMERS, EAMS and APAC regions.
- **Migrate video conferencing room devices:** Migrate Customer's video conferencing devices from the Cisco conferencing solution to the Polycom® RealPresence One™ Platform.

2.2 Out of Scope

Any activity, deliverable, or service not explicitly stated in this document as a deliverable is considered out of scope. Specifically, the following is considered beyond the scope of this project:

- Replacement or unification of the existing room scheduling solutions
- Integration with the existing Multicast streaming solution
- Implementation of click-to-join user interface in rooms equipped with Crestron, AMX or other third party control system. Polycom will implement the functionality on the HDX or Group Series device. Customer will work with preferred audiovisual partner(s) to implement functionality on the touch screen user interface.
- Network performance assessment and QoS recommendations

3 Project Objectives

3.1 Solution Requirements

Design a solution to meet the following functional requirements:

- Enables users to easily incorporate static and mobile video conferencing room devices into the Lync Online Meeting scheduling workflow via Outlook
- Automatically notifies and requires approval by the HelpDesk for conferences involving mobile video conferencing devices
- Provides a click-to-join user experience from Customer video conferencing room devices
- Provides connectivity for partners or customers with H.323 or SIP compatible video conferencing devices via the internet
- Provides connectivity for partners or customers with H.320 ISDN compatible video conferencing devices via the existing Public Switched Telephone Network Cisco video conferencing gateways
- Enables bidirectional audio and video (where applicable) between Lync clients video conferencing, web conferencing, and telephony participants
- Enables PC content shared by Lync clients, video conferencing, or web conferencing participants to be seen by all parties
- Enables conference recording and archiving via the existing Cisco Content server
- Provides in-region video conferencing resources for the AMERS, EAMS and APAC regions with out-of-region scalability and resiliency
- Provides configuration, software, management, and reporting of Customer video conferencing devices
- Integrates with Customer SNMP for proactive management and reporting of potential issues impacting performance and/or operation

3.2 Polycom Areas of Focus

Polycom's focus during the Discovery and Analysis phase was to:

- **Partner** with Customer to design a simple, easy-to-use, reliable solution and to address functional and technical requirements.
- **Assess** the environment, systems, and services.
- **Understand** the current conferencing utilization and end-user experience.
- **Identify** existing support issues, concerns, and pain points.
- **Document** desired use cases and interoperability requirements.
- **Recognize** where solution growth can have a positive effect.

3.3 Assumptions

The Polycom® RealPresence One™ Platform will be hosted on Customer's VMware environment. Polycom has provided the VM requirements for the processor, memory, storage, and network connectivity for each virtual instance. It is assumed that Customer will be able to meet these requirements.

There is currently no Quality of Service implemented on Customer's network, therefore it is not possible to prioritize the delay sensitive audio and video packets over less time sensitive applications. During the consultation with users, the in-call quality was generally acceptable; therefore it is assumed the network will offer adequate performance.

Deployment of the Polycom® RealPresence One™ platform requires activities be performed by the various Customer teams responsible for the VMware, network and firewall, Microsoft Active Directory, Microsoft Exchange, Microsoft Lync, DNS, and F5 Networks Load Balancers. It is assumed Customer will align the necessary resources to carry out these tasks in line with the project timeline.

3.4 Constraints

The solution to be designed and implemented by Polycom enables PC content shared by Lync clients, video conferencing or web conferencing participants to be seen by all parties. The solution does not enable users of video conferencing devices to request control of a Lync shared application or desktop and vice versa.

Lync Online Meeting features will not be visible to video conferencing users, including the following:

- PowerPoint presentations uploaded and shared via the Office Web Apps Server
- Voting/polling
- White boarding
- Instant Messaging features
- Roster functionality

The workflow for adding a video conferencing device to a Lync Meeting is by sending a Lync Online Meeting invitation via Outlook. The video conferencing devices will not appear as contacts in the Lync Client and therefore peer-to-peer calling between a Lync client and a video conferencing device will not be supported.

Video conferencing devices can participate in Lync Meet Now conferences by dialing the numerical conference ID contained in the meeting information. It is not possible to add the video conferencing device directly from the Lync client, nor is the click-to-join functionality available on the video conferencing device in this scenario.

4 Discovery Findings

4.1 Existing Collaboration Experience

The existing scheduling experience for videoconferences is complex and requires significant involvement by the HelpDesk. The process for scheduling a call is typically as follows:

- Executives provide call requirements to Administrative Assistant or Project IT Manager (VC requirement, sharing requirement, date, time, participant list)
- Administrative Assistant or Project IT Manager schedules room(s) using the appropriate room booking tool for the location(s) and completes a video conferencing booking request form
- The HelpDesk reviews requirements and schedules conference via the Cisco Telepresence Management System scheduling tool
- The HelpDesk creates Outlook calendar invitation including conference details and dialing instructions for any external parties.
- Where applicable, HelpDesk arranges for mobile video conferencing device to be installed within the room
- If content sharing is required, Administrative Assistant or Project IT Manager must schedule a Lync Online Meeting in addition to room(s) and video conferencing request

The initiation and in-call experience for videoconferences is as follows:

- The HelpDesk typically dial calls on behalf of the users as the user interface differs from room to room.
- Video conferencing participants are hosted on a Cisco conferencing bridge
- Telephony, Lync client, and web conferencing participants are hosted on a Lync AVMCU
- For conferences requiring both telephony and video conferencing participants, the HelpDesk must dial both the Cisco conferencing bridge and the Lync Online Meeting audio conferencing number from one of the video conferencing devices.
- Meetings requiring PC content sharing are conducted via separate Lync conference. This requires either a separate content screen to be used in the room or all participants to bring laptops and join the Lync conference.
- Interconnectivity between Lync and video conferencing platforms is not promoted to users due to reliability issues

4.2 Perception of Video Conferencing

- The general perception of the current video conferencing solution is that it can only be used with assistance from the HelpDesk.
- The scheduling process is complex often involving the HelpDesk teams across several offices and therefore requires significant planning.
- The system is perceived as a closed loop that can only be used for room to room conferencing.
- Telephony integration is complex and often introduces problems when attempted.

4.3 General Feedback Summary

Below are some examples of feedback from users and the HelpDesk:

- **Example of scheduling issues**
  "When someone requests a VC between multiple locations, it is required that a meeting request be sent to the various distribution lists set up for video conferencing (example: video conferencing_Frederick, video conferencing_Houston, video conferencing_London, video conferencing_New Delhi). Those groups each have to update the meeting request with the name of the deskside support contact responsible for the meeting and the room they reserved. If a location is added at the last minute, they will not have the meeting request or information required to join the VC."
- **Video conferencing is under-utilized and not integrated with other communication platforms**
  "Typically, I do not use Polycom (VC infrastructure) because it is a closed-loop system."
- **Example of complex telephony integration**
  "This past week, I supported a meeting where the person that created the Skype for Business (SFB) invitation also wanted me to connect the meeting or "join" the bridge (7772000) with SFB meeting invitation. The problem occurs when that same person opens up SFB on their PC to share content, if they don't pay attention and DO NOT uncheck join audio…the PC connection will cause audio problems."

4.4 Last Month's Utilization Report

Not available as existing deployment does not include Polycom RealPresence platform.

4.5 Existing Environment

4.5.1 Existing Video Conferencing and Software Review (Production)

	Model	Production Quantity	Customer Production Version	Latest Polycom Assured Design (PAD) versions
Endpoints	Polycom HDX Series	177	various versions	3.1.9
	Polycom Group Series	8	4.x.x and 5.x.x	5.0.2
	LifeSize	25	Unknown	N/A
	Cisco MXP	2	Unknown	N/A
Core Infrastructure				

4.5.2 Existing Video Infrastructure

The existing video conferencing solution utilizes Cisco video conferencing infrastructure deployed within the AMERS, EAMS and APAC data centers as depicted below:

******Diagram removed to protect customer confidentiality*******

The solution includes regional call control, multiparty conferencing, and ISDN gateway services. The AMERS region also hosts servers providing:

- Conference scheduling and management
- meeting recording and archiving
- Internet calling

The solution is integrated with the existing CUCM IP telephony solution and Lync 2013 conferencing environment. Lync integration is not actively promoted to users as the video quality is poor and connectivity issues frequently occur.

4.5.3 Existing Video Endpoints

Customer has approximately 225 video conferencing codecs, comprising of:

- 198 Polycom devices
- 25 LifeSize devices
- 2 Cisco Devices

Of the 198 Polycom devices approximately 177 are HDX HD video conferencing devices and 8 the latest Group Series HD devices.

5 Solution Design Overview

The Polycom® RealPresence® Platform Solution Design Service process began with gathering requirements from Customer to fully understand the UC business drivers, objectives, and conferencing use cases and needs. Polycom will use the output from the consultation to design and implement a solution that utilizes Polycom® RealPresence One™.

A complete software and services solution, Polycom® RealPresence One™ is the industry's most reliable, interoperable, and scalable solution to video-enable an organization. Polycom® RealPresence® Platform contains intelligent infrastructure, which makes video collaboration always available to everyone across any network, protocol, application, or device.

RealPresence One™ is a holistic offering that fits the needs of any organization, inclusive of virtualized infrastructure. Simply decide on the number of people/room devices to enable with video and collaboration services and how many concurrent multiparty connections. The solution is packaged with a yearly subscription which includes access to updates and support services.

RealPresence One™ is a flexible collaboration framework software optimized for deployment within a virtualized VMware or Hyper-V data center, increasing the flexibility, manageability, and efficiency of the video deployment. The software, provides a single pane for management and monitoring, and allows IT Managers to plan and optimize resources in their virtual data center.

RealPresence One™ supports Polycom's long-standing philosophy for open standards, making it natively interoperable with UC solutions that already exist within Customer's network.

5.1 RealPresence® Platform Components

Polycom will deploy the following RealPresence One™ Platform components:

- **Polycom® RealPresence® Distributed Media Application™ (DMA®)** provides H.323/SIP call control and facilitates the joining of Lync Online Meetings by video conferencing devices
- **Polycom® RealPresence® Collaboration Server (RPCS)** provides multiparty conferencing services and the joining of Lync Online Meetings by video conferencing devices as managed by DMA®
- **Polycom® RealPresence® ContentConnect™ (RPCC)** provides content sharing gateway services between Lync Online Meeting and video conferencing devices connected via the RPCS
- **One Touch Dial Application (OTDA)** enables Polycom HDX/Group Series video conferencing device users to join Lync Online Meetings via a "Join" meeting button
- **Polycom® RealPresence® Access Director™ (RPAD)** video conferencing proxy provides connectivity with external H.323/SIP compatible video conferencing devices via the internet
- **Polycom® RealPresence® Resource Manager (RPRM)** provides device management, reporting, and address book services for the video conferencing room devices
- **Polycom® RealPresence® Platform Director (RPPD)** provides licensing, software upgrades, and reporting for the RealPresence® Platform components

5.1.1 Key Solution Capabilities

The solution design consultation process identified the following functional requirements:

- Enable users to easily schedule conferences by integrating with the existing Lync Online Meeting scheduling workflow
- Support static and mobile video conferencing devices
- Automatically notify the HelpDesk of conferences requiring the installation of a mobile video conferencing device
- Provide a click-to-join experience for static and mobile video conferencing devices via either the Polycom remote control or Crestron/AMX room control system, where applicable
- Integrate with Lync Online Meeting to enable telephony, Lync client, smartphone, tablet, web conferencing and video conferencing users to participate in the same meeting

- Enable connectivity with external parties with H.323 or SIP compatible video conferencing devices via the internet and ISDN H.320 compatible video conferencing devices via the PSTN
- Provide regional call control, multiparty, and gateway resources with failover to out-of-region resources for resiliency and scalability
- Enable conference recording and archiving
- Provide a management solution to enable the HelpDesk to proactively manage, monitor, and troubleshoot the RealPresence® Platform components, in addition to static and mobile video conferencing devices

5.1.2 Infrastructure Locations

Polycom will implement virtual instances of the RealPresence One™ Platform components in the following Customer data centers:

******Locations removed to protect customer confidentiality*******

5.1.3 Infrastructure VM Specifications

Polycom® RealPresence One™ virtual appliances include the operating system and application. Each virtual appliance is made available as an OVA file for installation on Customer's VMware 5.1 or 5.5 release hypervisors.

The tables below summarize the hosting requirements for each data center. For detailed specifications refer to the Requirements section.

5.2 New Solution Architecture

The RealPresence One™ Platform components will be deployed within Customer's regional data centers as depicted below.

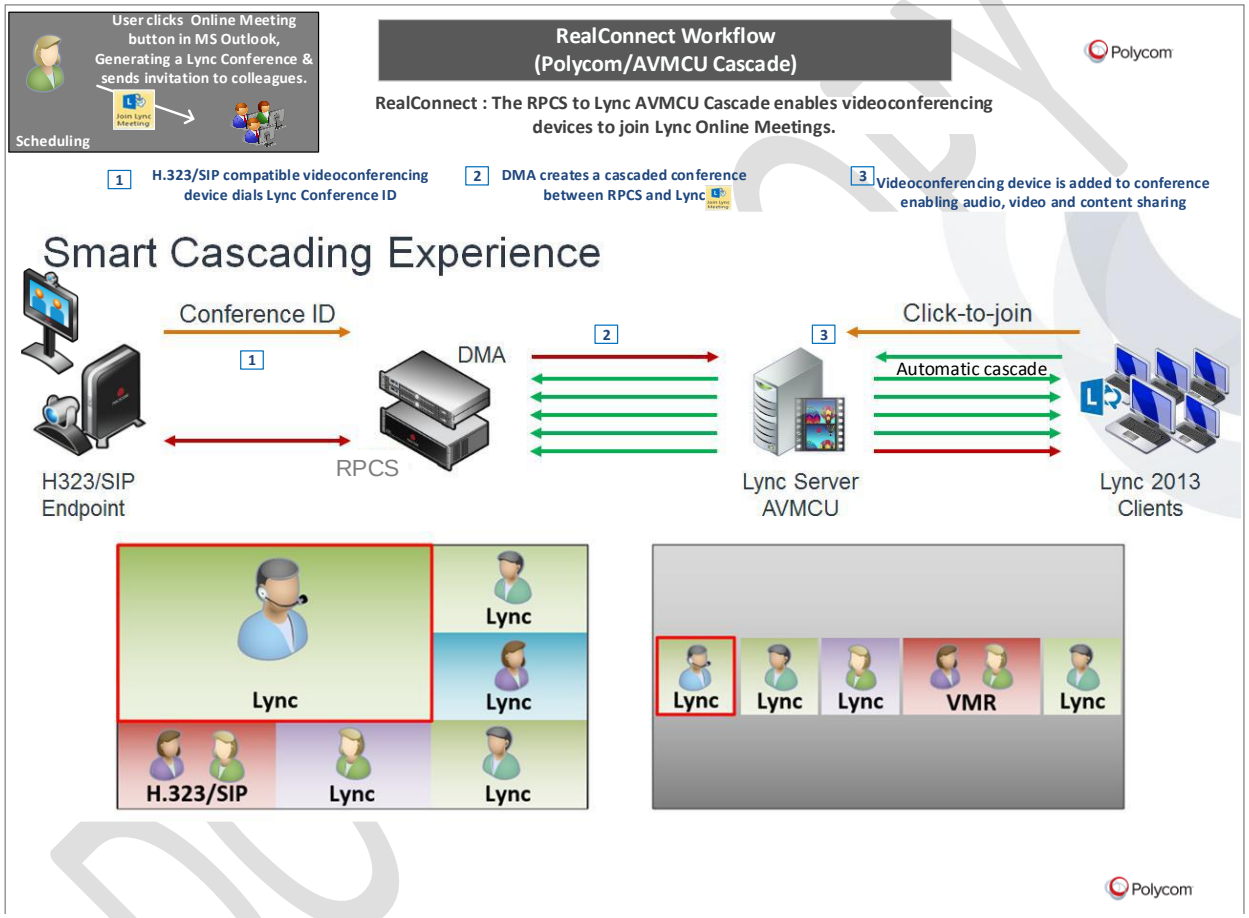
******Diagram removed to protect customer confidentiality*******

The solution will be configured to enable Polycom® RealConnect™ functionality. With Polycom® RealConnect™, Lync enabled users do not have to change their workflow or learn a new process to schedule or join an Online meeting. They can use the tools they are currently familiar with while the integrated solution automatically sets up the call in the background.

Any H.323/SIP standards-based video conferencing endpoint, including telepresence systems; desktop and mobile video conferencing applications; can be used in conjunction with those natively supported by Microsoft Lync Online Meeting. The solution enables Lync-enabled users to utilize click-to-join calls from the meeting invitation and users of standards-based video conferencing systems to dial using normal dialing methods. Polycom One Touch Dial Application allows users to easily

utilize click-to-join for scheduling meetings using Exchange-enabled HDX and Group Series video conferencing devices.

Polycom® RealConnect™ solution provides a great user experience and eliminates end user frustration, while determining ways to connect people who have varying devices. By allowing users to follow familiar and intuitive workflows over video, they can collaborate on Lync or with a traditional video conference system. Polycom® RealConnect™ makes joining a meeting easy.



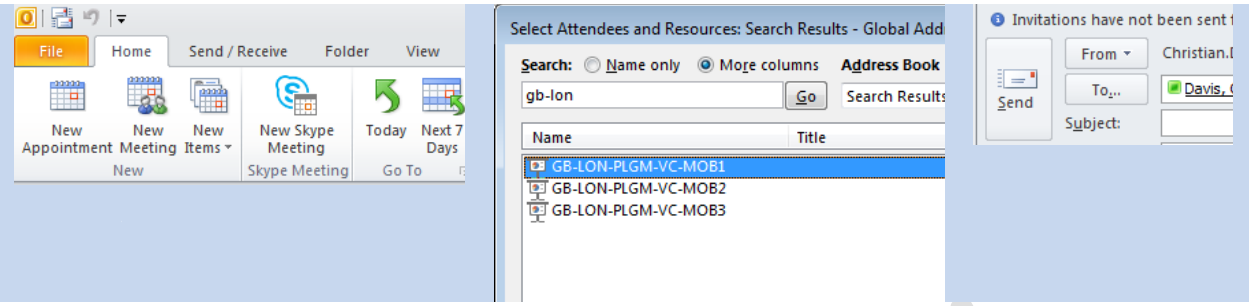
5.3 User Persona Experience & Workflows

5.3.1 Conferencing User

5.3.1.1 Scheduling workflow

Users schedule an Online Meeting via Microsoft Outlook calendar, adding attendees and the required room based and/or mobile video conferencing resource. Meeting rooms are scheduled via the applicable process for the location.

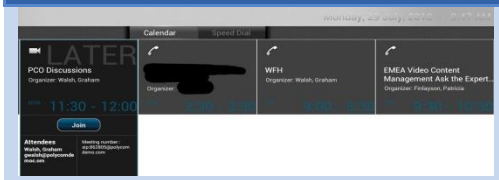
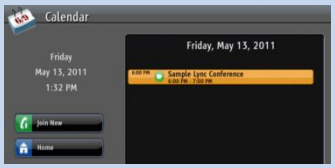
Select New Skype Meeting	Add people and devices	Send



5.3.1.2 Join Workflow

Customer users of meeting rooms equipped with a static or mobile Polycom HDX or Group Series video conferencing device join the meeting via the Join button.

- HDX users use the remote control to select the calendar button followed by the Join button next to the meeting entry.
- Group Series users use the remote control to select the Join button beneath the meeting entry on the home screen.
- Users of rooms equipped with a Crestron or AMX controller select the Calendar button on the touch screen followed by the Join button. Customer needs to work with their preferred audiovisual partner(s) to implement this functionality.

Group Series calendar	HDX calendar	Crestron control example
		

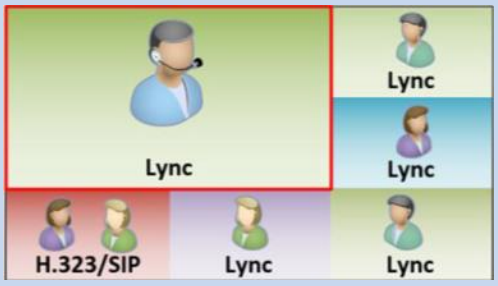
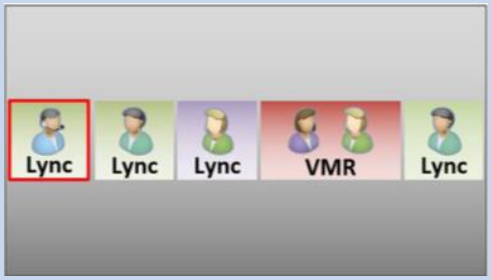
Customer users of the relatively few meeting rooms equipped with a non-Polycom static or mobile video conferencing device join the meeting by dialing the conference ID shown within the meeting invitation.

External users with H.323 or SIP compatible video conferencing devices connected to the internet, join the meeting by dialing the ConferenceID@Customer.com as instructed within the Online Meeting invitation.

The solution enables external users of H.320 ISDN compatible video conferencing devices to join a meeting by dialing one of the existing regional Cisco ISDN gateways and entering the conference ID when prompted. This functionality will not be advertised to users as ISDN is no longer widely used for video conferencing.

5.3.1.3 In-call experience

Users of video conferencing devices will see the five most active Lync video-enabled users, in addition to all other video conferencing devices. Lync users will see the five most active speakers (Lync gallery view). The video conferencing devices will display in one of the five windows and show the last active video conferencing device.

RealPresence RPOne™ hosted conference	Video flows	Microsoft Lync hosted conference
		

Telephony users can communicate with all users.

PC content shared during the meeting will be received by Lync and video conferencing users. Lync users receive content via the Lync stage, while video conferencing users receive content on the designated content display.

RealPresence® RPOne™ hosted conference	Microsoft Lync hosted conference
	

The video conferencing devices receive content shared by Lync users selecting to either share their desktop or an application. PowerPoint presentations uploaded via the Lync client to the Office Web Apps server, white boarding, voting and instant message will not appear on the video conferencing devices. Video conferencing users will send content by either attaching their PC to the video conferencing device or by joining the meeting as a data-only participant using their Lync client.

Caution: Users in video conferencing room choosing to present content by joining the Lync conference from their PC must ensure they do not select to join as an audio/video participant as this will cause an audio feedback loop.

The Lync client roster displays ConferenceID@Customer.com in the participant's list when one or more video conferencing devices dials the conference ID invoking the creation of a Polycom® RealConnect™ conference on the RealPresence One™ platform.

Video conferencing users can record conferences using the following DTMF tones:

- *1 pause
- *2 start/resume
- *3 stop

Conferences will record on the existing Cisco content server, while Lync users will record conferences via the Lync client. The conferences will record to the local computer.

5.3.1.4 Post-call experience

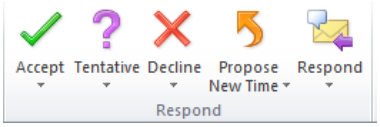
Meetings recording to the Cisco content server will be available for playback shortly after the meeting ends. The recordings can be accessed from a video conferencing device or browser.

5.3.2 HelpDesk Staff

The HelpDesk will be responsible for day to day delivery of the video conferencing service and the mobile video conferencing devices within their office.

5.3.2.1 Pre-call experience

The HelpDesk staff will receive a calendar approval notification via Outlook when users schedule a mobile video conferencing device.



GSO staff revises the existing process to perform the following:

- Confirm with scheduler the desired room, if not detailed in the invitation.
- Check availability of the device and the room prior and after the requested meeting time to ensure both are available for setup and removal of the device.
- Book the device as appropriate prior to and after setup and removal

- Accept the booking, or if there is a conflict, forward to another available device or advise the scheduler and discuss other options.

5.3.2.2 In-call experience

In most instances, users initiate the call using the click-to-join functionality. However, the HelpDesk may be asked to support VIP conferences or assist with dialing out to external parties.

5.3.2.3 Post-call experience

The HelpDesk will be responsible for the removal of mobile video conferencing devices.

6 Infrastructure Detailed Descriptions

6.1 DMA® Virtual Edition

Content removed

6.2 Resource Manager – RPRM Virtual Edition

Content removed

6.3 RealPresence Collaboration Server RPCS

Content removed

6.4 Access Director – RPAD Virtual Edition

Content removed

6.5 RealPresence® Platform Director™ – RPPD

Content removed

6.6 ContentConnect™

Content removed

6.7 One Touch Dial Application

Content removed

7 Endpoints Configuration Descriptions

7.1 Polycom HDX and Group Series

The Polycom HDX and Group Series devices will download configuration settings automatically from the RPRM. Display settings are applied locally, as these differ from room to room. To configure the devices for dynamic management, select admin

settings > global services > provisioning server. Enter the server address rprm.iCustomer.com and domain credentials for the AD equipment resource mailbox.

Refer to the RPRM provisioning section to review the list of settings.

7.2 All other video conferencing devices

All other video conferencing devices will be configured manually to register with the in-region DMA® call server for H.323 gatekeeper and SIP registrar services:

- callserver-amers.dma.iCustomer.com
- callserver-eams.dma.iCustomer.com
- callserver-apac.dma.iCustomer.com

For devices which support SIP registration, Customer may choose to create a SIP speed dial entry on the home screen. It will be named Online Meeting. It dials the alias assigned to the DMA® VEQ. The VEQ prompts the user to enter the conference ID followed by "#".

8 Test Validation Plan

Polycom will configure testing using standard installation test plans. Provided below is an example of User Acceptance Testing (UAT) to be performed by Customer to validate that the functional requirements have been met.

8.1 User Acceptance Testing

	Expected Behavior	Actual Results (Pass/Fail)	Additional Notes
User Story #1			
Pre-Call Experience (Calendar, IM, None)			
Before the Meeting			
1. Meeting organizer sends Lync Online Meeting invite to schedule participants and equipment including static and mobile devices	Static VC devices auto-accept the invitation, mobile send approval request to the HelpDesk		
Joining the Meeting (Dial In, URL, Concierge)			
2. Internal VC participant joins the call	Internal Polycom HDX or GS display calendar join. Other devices dial conference ID.		
3. External VC participant joins the call	Dials confID@Customer.com		

4. Lync client, Mobile/telephone, web participant joins the call	Join following instruction in invite		
During the Meeting (Voice, Content, Video, Control)	Lync participants see active VC device. VC device sees all other VC devices, up to 5 Lync video clients.		
Recording			
5. Meeting organizer initiates meeting to be recorded	VC user presses *2 to invoke recording. Lync user records using their Lync client		
Content Sharing			
6. Meeting organizer shares content	Lync users receive content on Lync stage. VC devices display content on screen.		
After the Meeting (Replay, Share, Measure)			

9 Solution Design Recommendations

9.1 Solution Design Summary

- Implement Polycom® RealConnect™ functionality to enable video conferencing devices to participate in Lync Online Meetings.
- Create Exchange Equipment Resource mailboxes for every video conferencing device to incorporate into the online meeting scheduling workflow.
- Implement HDX and Group Series calendaring to provide click-to-join functionality
- Assign the HelpDesk as an approver for mobile video conferencing devices to enable validation that devices can be installed within room for requested date and time and removed in a timely manner afterwards.
- Deploy RealPresence One™ across three regional data centers to provide regional resources as geo-resiliency.
- Use site topology to host conferences on RPCS in-region of first caller.
- Use endpoint automatic provisioning to standardize configuration of HDX and Group Series.
- Use AD permissions to determine who can manage video conferencing room devices and platform.
- Integrate with SNMP platform for proactive management of environment.

10 Conclusion

The solution provided by Polycom optimizes the use of video conferencing and Unified Communications in the Customer environment. Based on requirements established early in the process, this solution deployed as designed and in accordance with Customer's associated project plans provides high quality video conferencing, improved collaboration, streamlined operations, and faster, more informed decisions for both individuals and groups.

Delivery of this Solution Design Report marks the end of the Polycom Solution Design Service phase. It also provides the opportunity to move forward to the next phase, which is the implementation phase of this solution.

11 Future Considerations

- Investigate migration of meeting room bookings to Exchange for booking meeting rooms.
- Review whether mobile video conferencing devices could be statically assigned to rooms to free up HelpDesk resources.
- Implement QoS for prioritization of video conferencing and Lync Online meeting packets.
- Investigate utilization of ISDN video conferencing. Potentially reduce line rental by removal of ISDN gateways.
- Consider Polycom® RealAccess™ Service, which monitors performance, capacity, and utilization of video conferencing devices.

12 Polycom Support Policy

12.1 Solution Design Services for RealPresence® Platform

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13 Appendix

A. Prerequisites

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B. General Infrastructure Descriptions

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C. Branding Guidelines

Customer will provide the welcome slides and voice prompts needed to customize the RPCS IVR Services or choose to use the RPCS defaults. Below are the guidelines for changing audio, images, and music files:

D. Documents & Downloads

Go to Documents & Downloads on the Polycom Support Homepage.
http://support.Polycom.com/PolycomService/support/us/support/network/index.html

E. Firewall Ports

General Polycom Core Port Requirements

The following tables list the firewall ports used by Polycom® DMA® and RPCS:

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F. Dependency Check Lists