

# Level 2 Development Training

## Telepresence Solutions

## Contents

1 – Introduction .....	3
Introduction .....	3
Available Resources .....	3
2 - Overview .....	4
Level 1 Recap .....	4
Level 2 Overview.....	4
3 – Key Features .....	5
Endpoint Management .....	5
Software Keys .....	5
Content Sharing .....	5
SoundStation Integration.....	6
StereoSurround.....	6
Polycom Conferencing for Outlook.....	6
4 - Architecture .....	7
HDX Chassis.....	7
Microphone Array.....	7
EagleEye Cameras .....	7
EagleEye Director .....	8
Other Capabilities.....	8
5 – RealPresence Immersive .....	9
ATX .....	9
OTX.....	9
RPX.....	10
6 – Conclusion and Self Test .....	11

# 1 – Introduction

## Introduction

This document is intended to be a self-study guide to be used to prepare the reader for the subsequent Level 2 Instructor-Led Training (ILT) course. Its primary purpose is to ensure all participants attending the ILT course arrive with the technical knowledge and solution understanding to successfully complete the hands-on training undertaken in Level 2.

It is a required prerequisite with an accompanying qualification examination. Attendance of the ILT will not be permitted without the completion of all prerequisite training and examinations.

## Available Resources

In addition to the information contained in this document, please also take a moment to familiarize yourself with the following resources available:

- **Solution brochures** - [http://www.polycom.com/products/telepresence\\_video/telepresence\\_solutions/index.html](http://www.polycom.com/products/telepresence_video/telepresence_solutions/index.html)
- **White papers** - [http://www.polycom.com/products/resources/white\\_papers/index.html](http://www.polycom.com/products/resources/white_papers/index.html)
- **Customer success stories** - [http://www.polycom.com/company/customer\\_success/index.html](http://www.polycom.com/company/customer_success/index.html)
- **Product documentation** – [www.polycom.com/videodocumentation](http://www.polycom.com/videodocumentation)
  - HDX Admin Guide
  - HDX Integrator Reference Manual
- **Video solution matrix** (registration to the Partner Resource Center required)
  - From the PRC homepage > [Sales & Marketing Toolkit](#) > [Sales Tools](#) > [Product Reference Matrices](#)
  - Select NA (North America) or ROW (Rest of the World)

## 2 - Overview

Level 1 introduced three distinct learning paths which all converge when discussing telepresence solutions. They are Polycom terminology for features and functions, technical video terminology which is used to detail how those features and functions work, and also the actual solutions themselves.

We will develop each of these three paths further through each training level, but first we will recap the key points covered so far which specifically apply to endpoints and take a look at what is coming up.

### Level 1 Recap

#### *Polycom terminology*

- **UltimateHD** – the term for the complete Polycom HD experience consisting of HD Video, HD Voice and HD Content
- **Lost Packet Recovery (LPR)** – a proprietary error correction technology which protects the video traffic at up to 5% packet loss with no visible difference to the end-user

#### *Video terminology*

- **H.264 High Profile** – video compression technology which enables HD from only 512kbps, allowing up to 50% bandwidth savings

#### *Polycom Telepresence solutions*

- **RealPresence Desktop (formerly UC Personal)** – all endpoints which are designed as personal solutions, for example Telepresence m100 and HDX 4500
- **RealPresence Room (formerly UC Group)** – all endpoints which are designed as room solutions, for example HDX 6000 and HDX 7000
- **RealPresence Immersive (formerly Immersive Telepresence)** – endpoint solutions which are fully integrated into a room to provide an immersive experience, for example RPX and OTX

### Level 2 Overview

We will now begin looking specifically at the HDX family, how it is built and how the entire range fits together in terms of value proposition and positioning.

We will also take a deeper look at some of the features and benefits and introduce some more concepts which are often part of discussions involving telepresence solutions.

## 3 – Key Features

There are several features which sit across the entire Polycom solution that have not yet been mentioned, which we will discuss here, along with some more detail on the HDX range.

### Endpoint Management

Management of the HDX range is undertaken either via the remote control or via a browser interface, which is reached by entering the IP address of the HDX in a browser window. If there is an admin password configured on the HDX the browser will automatically bring up an authentication dialog box where the password can be entered. When entering authentication details a username of 'admin' should be used.

### Software Keys

As mentioned in Level 1, a software key is used to 'unlock' extra features should they be required by the customer. Software keys are available for the following features:

- **1080p resolution**
  - This can be added to any HDX with the exception of the HDX 4002
  - With the addition of this key the HDX 6000 is capable only of receiving 1080p, but not sending 1080p
  - The HDX 4500, 7000, 8000 and 9000 are capable of sending and receiving 1080p with the addition of this key
- **RTV option**
  - This can be added to any HDX
  - RTV refers to a proprietary Microsoft codec, which allows the HDX to send and receive up to 720p when in a Microsoft Lync or OCS call
- **TIP option**
  - This can be added to any HDX with the exception of the HDX 6000
  - TIP refers to the Telepresence Interoperability Protocol, which was written by Cisco to allow interoperability between Cisco TelePresence systems and any vendor who incorporates this technology
- **4-way Multipoint option (host plus 3 other connections)**
  - This can be added to any HDX with the exception of the HDX 6000
  - The HDX 4002 and HDX 7000 will provide 4-way multipoint at SD resolution
  - The HDX 4500, HDX 8000 and HDX 9000 can all provide 4-way multipoint at 720p resolution, providing all endpoints connect at a HD resolution

### Content Sharing

Level 1 covered People+Content IP, which is sharing content using a software application. The HDX can also share content by the use of a content cable. This uses an open standard called H.239, but is also sometimes referred to as People+Content, which is the name Polycom gave to the legacy proprietary protocol developed to provide this functionality prior to open standards being developed.

In addition, People On Content is also available on all HDX systems with the exception of the HDX 6000 and HDX 7000. People On Content uses chromakey technology (also known as 'green screen', where a brightly coloured background is used to superimpose a second image over the camera image – most commonly used to allow a weather forecaster to appear in front of the weather map). On the HDX, the content being shared becomes the 'background' and the presenter shares the content by presenting in front of a coloured background in the same manner.

## **SoundStation Integration**

All HDX models are able to integrate with a SoundStation IP 7000 conference phone. This enables use of the IP 7000 as the HDX microphone while the IP 7000 is registered to a SIP PABX for audio conferencing.

Benefits of this are only needing one microphone on the table, and also being able to integrate an audio participant into a video call. The IP 7000 also has limited capability to control the HDX by making and ending video and audio calls, and altering the volume.

## **StereoSurround**

Polycom's heritage as an audio company is often visible through the features built into the audio product range, and StereoSurround is a great example of this.

When in a call, the far end will hear the location of the participants, meaning that if participant A is on the left hand side of the room, participant A will be heard from the left hand speaker at the far end. Should participant B walk from one side of the room to the other while speaking, the far end will hear participant B move across the speakers from one side to the other while watching them do so. The microphone is even clever enough to know if the microphone is rotated or moved, and correct the audio stream accordingly.

This feature is of tremendous importance when showing the capability of Polycom to provide a life-like, immersive conferencing experience.

## **Polycom Conferencing for Outlook**

PCO uses a calendar built into in the HDX to display the booking information. This is achieved by authenticating the HDX to the Active Directory account used by the room it is located in. Although there is more to the solution than only this, this is the part the HDX plays.

## 4 - Architecture

### HDX Chassis

All the endpoints which encompass the HDX range are built using the same chassis, have the same form factor, and all run on a Linux platform, which is very secure and not susceptible to network threats or attacks.

Many of the internal components are the same, and the entire platform uses the same software to provide an identical look and feel across all models. Indeed, with the addition of the Polycom Touch Control, all telepresence solutions, including the Immersive Telepresence rooms, can have the same experience for unparalleled ease of use.

When positioning a specific HDX model for a customer it is very important to understand the capabilities of each, both to be very clear when discussing the customer's requirements, and also to be sure of encompassing them in the final solution.

### Microphone Array

The HDX microphone products contain not just one microphone but an array of three microphones in each. This provides not only excellent coverage across a room, but is also a key part of the StereoSurround technology discussed earlier.

HDX microphones are available in a desktop microphone format which provides coverage of approximately 10ft / 3m in diameter, and a ceiling microphone format which provides coverage of approximately 30ft / 10m in diameter and is available in black or white. Microphones can also be 'daisychained' for additional coverage where necessary, though capacity to do so differs depending on the HDX in use (the admin guide has detailed information about microphone arrangement for each):



HDX model	Maximum mic arrays
HDX 4002	3
HDX 4500	-
HDX 6000	1
HDX 7000	2
HDX 8000	3
HDX 9000	4



### EagleEye Cameras

There are two variations of the EagleEye camera. The first is the EagleEye camera itself (pictured to the right), which is capable of sending 1080p at up to 60fps. It provides 12x optical zoom (meaning that the camera itself provides the zoom capability through the camera optics, as opposed to digital zoom where the zoom is achieved by changing the picture digitally).



The second is the EagleEye View (pictured to the left). It is capable of sending 720p at up to 30fps, and provides 4x digital zoom. It has integrated microphones which have coverage of approximately 6ft / 2m.

## EagleEye Director

The EagleEye camera is also able to integrate into the EagleEye Director camera tracking solution, which uses two cameras to provide a seamless experience when in a call. By using one camera to provide a fixed view of the entire room, and one camera to zoom in on a speaker, then EagleEye Director will cross-fade from one camera to the other. When the speaker changes, there will be a cross-fade back to the room view and so on.

The EagleEye Director unit contains microphones used for finding sound, and uses the moving camera with facial recognition to locate the face of the person speaking, so only a person who is speaking is able to get the camera to zoom in, eliminating distractions caused by maybe a door slamming, papers on the microphone, or similar.



## Other Capabilities

Here is a final table detailing some other capabilities of the range:

HDX model	PSTN	ISDN*	EagleEye Cameras	EagleEye Director	Video Inputs
HDX 4000	Y	Y	-	-	1
HDX 4500	-	-	-	-	2
HDX 6000	-	-	1	Y	1
HDX 7000	-	Y	1	Y	2
HDX 8000	Y	Y	2	Y	3
HDX 9000	Y	Y	2	Y	3

\*ISDN is provided via an optional module which can be purchased separately



## 5 – RealPresence Immersive

The RealPresence Immersive solutions consist of ATX (Architected Telepresence Experience), OTX (Open Telepresence Experience) and RPX (RealPresence Experience, as briefly covered in Level 1. What we will do here is decipher the different model names and explain the additional extras available with each.

The title of each solution is made up of the product name, followed by a number. The first digit of the number denotes how many cameras make up the solution (one camera is required per screen). In addition to this, the RPX title includes two additional digits designating the number of seats in the room, and an 'M' at the end – this denotes the multipurpose style of the room, given that chairs can encircle the table when not in use for conferencing, maximizing the real estate.



### ATX

The ATX solution differs from the others in that the Polycom part numbers for ATX only include HDX 8000s, microphones and cameras. From there, the integrator designs the room around the customer specifications and provides all furniture, screens and chairs.

The ATX is available in 2, 3 or 4 camera versions, known as ATX 200, ATX 300 or ATX 400 respectively.

### OTX

The OTX solution is a complete 'out of box' solution, including the table, displays, camera housing, content screens and rear mount wall. Chairs are not included and can be supplied, or the customer can supply their own.

There are also several options to customize the OTX solution, including:

- Optional table finishes
- Complete Experience Kit including acoustic wall with aesthetic finish and lighting
- Freestanding rear wall kit for where the OTX rear wall will not be affixed to the wall of the room

The OTX is available in 1 or 3 camera versions, known as OTX 100 (Compact or Standard) or OTX 300 respectively. There is also an option to add a second row to the OTX 300 should this be required.



## RPX

The RPX solutions are also complete 'out of box' solutions and are literally a room within a room, including walls, screens and table, plus content screens. As with the OTX, chairs are not included, though Polycom are able to supply them if the customer wishes.

The RPX is available in 2 or 4 screen versions, from the RPX 204M for 4 participants, to the RPX 428M for 28 participants. Several of these include tiered seating to maximize the space available and provide the best possible experience for everyone.



## 6 – Conclusion

This guide has provided a further foundation to the fundamentals covered in the Level 1 Infrastructure Overview Course.

It will be of assistance when working through the Level 2 Development courses and ILT.