

# Polycom® RealPresence™ Experience

## RPX™ HD 400 & 200 Series

Software Version 3.0.3

Hardware Version I



## Video & Audio Technology

### Solution Includes:

- Polycom HDX Video Codecs Supporting 1080p at 30fps or 720p at 60fps
- Polycom Digital Ceiling Microphone Arrays
- Polycom StereoSurround™ Speaker Kit
- High Definition DLP® Projection Displays
- 3-CCD High Definition Video Cameras
- Polycom Touch Control
- 19-inch Widescreen Personal Content Displays

### Seating

Model	# Video displays	Seats on camera/Additional seats for multipurpose use	# Personal content displays	# LAN ports for laptops (2 ports per table leg)
RPX HD 204M	2	4/4	4	4
RPX HD 208M	2	8/4	6	6
RPX HD 210M	2	10/4	7	8
RPX HD 218M	2	18/4	11	14
RPX HD 408M	4	8/8	8	12
RPX HD 418M	4	18/8	14	22
RPX HD 428M	4	28/8	20	32

**Video and Audio Specifications**

Display Specification	High Definition Video Display Size	Aspect Ratio
RPX HD 200 Series	8 ft x 42 in [2.44m x 107 cm]	~24:9
RPX HD 400 Series	16 ft x 42 in [4.88m x 107 cm]	~48:9
Video	Description	
H.264	Video codec- Baseline, High Profile (HiP), Main line (TIP support)	
H.239	People + Content	
H.261 and H.263++	For compatibility with legacy video conferencing endpoints	
LPR (Lost Packet Recovery)	Video Error Concealment to preserve video quality during packet loss events	
AES Media Encryption	For secure video/audio and content	
Audio	Description	
Siren™ 22	22kHz bandwidth with StereoSurround™	
Siren™ LPR (Lost Packet Recovery)	Siren LPR preserves audio quality during high packet loss	
G722.1 Annex C	14kHz bandwidth with Polycom Siren 14	
G.722, G.722.1	7kHz bandwidth	
G.711	3.4kHz bandwidth	
AAC-LD	20kHz (TIP support)	

## Content Components

### Content Sharing

#### Description

H.239

- Dual streams support for sending People video and Content video in a single call
- People+Content for content sharing via digital and VGA plus audio cable(s) on multipurpose conference table
- People+Content IP for content sharing sent over corporate IP connection from your computer to the primary video conference system (no cables necessary)
- Support of 1024x768 analog input and output.
- Digital input supported:
  - WUXGA 1920x1200 @ 60Hz
  - HD 1920x1080 @ 60/50Hz
  - HD 1280x720 @ 60/50Hz
  - WSXGA 1680x1050 @ 60Hz
  - 900P 1600x900 @ 60Hz
  - SXVGA 1280x960 @ 60Hz
  - SXGA 1280x1024 @ 60/75Hz
  - XGA 1024x768 @ 60/70/75Hz
  - SVGA 800x600 @ 60/72/75Hz
  - VGA 640x480 @ 60/72/75/85Hz
- Polycom recommends the use of only H.264 content for ITP suites. Other algorithms will have lesser quality.

### Content Displays

19" high resolution content displays integrated in table

- Display content video on your content monitors whether they are 16:9 or 4:3 format by using the Polycom Telepresence Tool to specify either Standard VGA 1024x768 (for 4:3 displays) or Widescreen VGA 1280x720 (for 16:9 displays).

## Directory Support

Global Directory (LDAP/H.350)

Supports directory services via the Polycom Converged Management Application™ (CMA™) 5000

Local Directory support

Configure local directory for sites without CMA directory integration or for situations where entry on the CMA directory is not desirable

## User Interface



The color Touch Control is the interface for RPX HD suites. It enables initiation of video and audio calls, hang up calls, control the audio and perform other telepresence conferencing tasks. The Touch Control is placed within easy reach of the center seats at the main table.

Below is a summary of the tasks available via the color Touch Control.

Button/Function	Description
Make a call	The user has the ability to dial manually or by using the Favorites menu or calling from the Directory
Search and directory capability	Select suites from a local or CMA directory and use advanced search capabilities
Polycom Calendaring for Microsoft® Outlook*	This feature allows the user to use the Touch Panel to quickly and easily view a list of scheduled meetings and join those meetings.
Meeting Composer*	Enables the meeting organizer to initiate and control a multipoint call from the Touch Control
Hang up	Allows the user to end the call
Audio controls	Allow the user to raise and lower audio levels
Audio mute	Allows the user to stop transmission of audio through the microphone(s)
Content controls	Enable the ability to start and stop sharing content Share and annotate content from USB drive attached to Polycom Touch Control Supports slideshows (.ppt and .pptx), documents (.pdf), and images (.bmp, .gif, .jpg, .png).
Help desk**	Button set up by the system administrator to place an audio call to a help desk that can assist users should they experience technical difficulties or have a question.

\* To complete the telepresence multipoint solution, an RMX 4000 or RMX 2000 MCU with the telepresence software option enabled and the Polycom Multipoint Layout Application (MLA) software are required. For more detailed information, please refer to the Polycom Multipoint Overview document found on the Partner Resource Center web site.

\*\* An analog (POTS) line must be present for access to the your VNOC or other help desk

## Multipoint Conferencing

The RPX HD Series telepresence solutions provide two methods for viewing participants in a multipoint conference.

Room Continuous Presence: In this standard mode, the multipoint view will automatically be generated either to follow the general principles of Polycom Immersive Telepresence multipoint (all participants are “present” during a multipoint conference) or to fit a custom-set view configured by the conference administrator for the particular combination of sites in the conference.

Voice Activated Room Switching (VARS): VARS is different from the standard Room Continuous Presence mode in that the speaker’s site is the only site seen by others. The view of the speaker’s site is sized to be as large as possible on all of the other participants’ displays. The current speaker sees the previous speaker’s site (i.e., the speaker’s layout remains unchanged). Layouts used in VARS are not customizable.

To implement telepresence multipoint conferencing with Polycom telepresence solutions, the following components are required:

Device	Function	Model(s) Supported
Endpoints/rooms	Provide experience, ease of use, etc...	RPX™, OTX, ATX™, HDX, Traditional videoconferencing endpoint
Multipoint server	Provide multisite call capability, gateway to other solutions such as SDN/H.320 Microsoft OCS, etc.	RMX™ 2000 and RMX™ 4000 with the telepresence option enabled and supported by Polycom’s Multipoint Layout Application
Global Directory Access	Directory	Converged Management Application™ (CMA™), HDX Directory
Others	Call control, firewall traversal, etc.	Varies depending on network infrastructure

For more detailed information about telepresence multipoint conferencing, please refer to the Polycom Telepresence Multipoint Overview posted on the Partner Resource Center web site.

## Rear Wall Graphics Panels

The graphics panels serve as the background to RPX telepresence suites and are visible to participants on the far end of a video conference. They can be used to display branding and site information during video conferences if desired. The graphics panel design consists of two independent panels of material each wrapped around a fiberglass frame, with each frame installed onto the rear wall. Customers must choose one of the three following options:

### Standard Graphics Panel

Standard sky blue background with white clouds. Not customized for a specific customer or site.



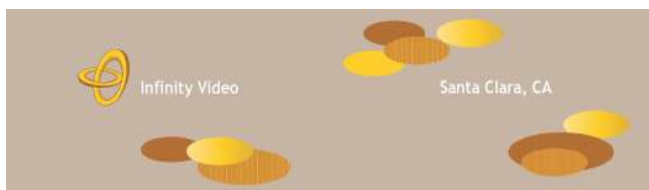
### Enhanced Graphics Panel

Allows addition of company name and logo, and one or two lines of text (usually specifying your suite location) to the standard sky blue background with white clouds, or to a solid background color within the specifications provided in the RPX HD Series Graphics Panel Design Guide.



### Premium Graphics Panel

Allows for a more customized background. While there is ample room for creativity in the design of Premium graphics panels, there are limitations to the extent of customization available. Please see design guidelines for more information.



Please refer to the RPX HD Series Graphics Panel Design Guide posted on the [Partner Resource Center](#) for more information about graphics panel guidelines.

## Options

### Chairs

Chairs for the RPX suites may either be provided by the customer or purchased through Polycom. It is recommended for the best telepresence experience that the chairs be identical in all RPX suites.

- Low-back
- Seat height and tilt adjustments
- Ergonomic features: tension adjustment, chair tilt lock, seat height, contoured cushions, center-tilt movement
- Leather cushions
- Casters



		Width	Depth	Height
<b>Chair Body</b>	in	23 ¾	26½	39
	cm	60.33	67.31	99.06
<b>Wheel Base</b>	in	26	26½	39
	cm	66.04	67.31	99.06

For customers choosing to supply their own chairs, the dimensions must NOT exceed:

- Arm span: 24½" [62.23 cm]
- Wheel base: 27" [68.58 cm]

### Document Camera Specifications

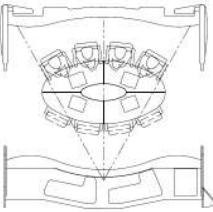
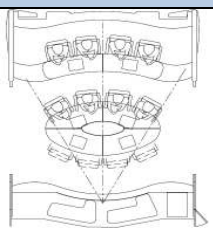
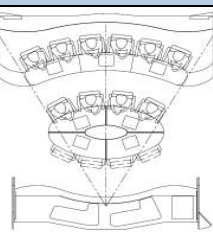
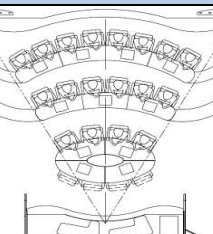
Polycom optionally offers the WolfVision® VZ-C12<sup>3</sup> high definition document camera for the RPX™ HD Series solutions. Integrating the document camera will allow the user to transmit images of a document or object. Contact [cprequests@polycom.com](mailto:cprequests@polycom.com) for ordering information.



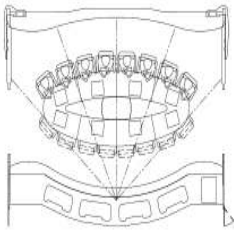
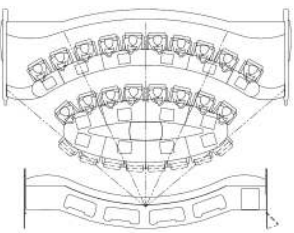
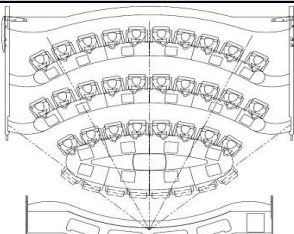
Camera	1- CCD progressive scan
Measured horizontal resolution	820 lines
Resolution in image turn mode	1050 lines
Color reproduction	Very good colors (sRGB color precision)
Effective pixels	1280 x 960 (=1,228,800)
Frames per second	30 frames
Content resolution (4:3)	XGA (1024x768)
Zoom / Lens	two telezoom lenses, 64x zoom (16x optical + 4x digital)
Maximum document/object size	26" W x 20" H [66 cm x 51 cm]
Minimum document/object size	1.75" W x 1.5" H [4.44 cm x 3.81 cm]
Document camera hang (under cloud)	9" [22.86 cm]

## Room Environment

### RPX HD 200 Series Minimum Suite Dimensions

Model	Units	Room Width	Room Depth (door included in this dimension)	Ceiling Height (min)	Room Area ft <sup>2</sup> - m <sup>2</sup>
 <b>RPX HD 204M</b>	ft/in	17 ft 5 ½ in	16 ft 8 ¼ in	8 ft 6 in	291
	m	5.323	5.087	2.591	27.1
 <b>RPX HD 208M</b>	ft/in	17 ft 5 ½ in	21ft 4 ¼ in	9 ft 0 in	373
	m	5.323	6.506	2.743	34.6
 <b>RPX HD 210M</b>	ft/in	18 ft 11 ½ in	21 ft 7 in	9 ft 0 in	409
	m	5.776	6.578	2.743	38.0
 <b>RPX HD 218M</b>	ft/in	22 ft 7 in	26 ft 9 5/8 in	10 ft 0 in	605
	m	6.885	8.170	3.048	56.3



RPX HD 400 Series Minimum Suite Dimensions					
Model	Units	Room Width	Room Depth (door included in this dimension)	Ceiling Height (min)	Room Area ft <sup>2</sup> – m <sup>2</sup>
 <p><b>RPX HD 408M</b></p>	ft/in	26 ft 8 ½ in	19 ft 6 ½ in	8 ft 6 in	522
	m	8.138	5.958	2.591	48.5
 <p><b>RPX HD 418M</b></p>	ft/in	29 ft 2 ¾ in	23 ft 10 ¾ in	9 ft 0 in	698
	m	8.912	7.284	2.743	64.9
 <p><b>RPX HD 428M</b></p>	ft/in	29 ft 3 in	29 ft 2 in	10 ft 0 in	853
	m	8.918	8.888	3.048	79.3

Ceiling Microphone Arrays	
Model	# of HDX Ceiling Microphone Arrays
RPX HD 204M	2
RPX HD 208M	3
RPX HD 210M	3
RPX HD 218M	4
RPX HD 408M	2
RPX HD 418M	3
RPX HD 428M	4

## Power Outlets

The quantity of power outlets vary per region. The matrix below shows the number of outlets that ship in North America and is the minimum number available (2 outlets per table leg). Other regions may include more than what is shown.

Model	Multipurpose Table	First Row	Second Row	Total
RPX HD 204M	4	n/a	n/a	4
RPX HD 208M	4	2	n/a	6
RPX HD 210M	4	4	n/a	8
RPX HD 218M	4	4	6	14
RPX HD 408M	12	n/a	n/a	12
RPX HD 418M	12	10	n/a	22
RPX HD 428M	12	10	10	32

## Power Consumption and Budget\*

Model	Standby (minimum)	In a video call (average)*	Power budget (maximum)**
RPX HD 204M	1024	1724	2369
RPX HD 208M	1458	2208	2781
RPX HD 210M	1458	2233	2806
RPX HD 218M	1459	2334	2907
RPX HD 408M	1399	2830	3709
RPX HD 418M	1690	3246	4077
RPX HD 428M	1692	3373	4204

\* The calculations in a video call indicate expected average power draw

\*\* The power budget is the maximum theoretical power consumption each RPX Series could consume. This assumes each suite at full occupancy with all components operating at maximum power.

## Heating & Cooling\*

	204M	208M	210M	218M	408M	418M	428M
BTUs/hour	12563	16219	17431	22283	21628	28515	34584
Cooling in Tons	1.05	1.35	1.45	1.86	1.80	2.38	2.88

\* The heating and cooling calculations above are based on suites at full occupancy and using power budget calculations which assumes all components operating at maximum power.

<b>Environmental Conditions</b>	
Conference room operating temperature	41-86° F, 5-30° C
Relative humidity	20% to 80% (non-condensing)
Sound Pressure Level	43 dBA or better
Recommended NC rating	30 or better

<b>Non-Operating / Storage Constraints*</b>	
Room Temperature	32-104° F, 0-40° C
Relative humidity	10% to 90% (non-condensing)
*The length of storage time near the higher temperatures and humidity levels limits should not exceed 90 days. Shipping crates should be stored on a flat surface (not stacked), in a dry environment, and out of direct sun.	

<b>RPX HD Suite Distributed Load</b>					
Model	Units	Rear wall, deck and clouds	Multipurpose conference table	Dark room and clouds	Static load* lb/ft <sup>2</sup> -kg/m <sup>2</sup> (average)
RPX HD 204M	lb	1886	518	2231	47.52
	kg	855	235	1012	225.78
RPX HD 208M	lb	3175	518	2361	35.96
	kg	1140	235	1071	175.57
RPX HD 210M	lb	3457	518	2366	34.83
	kg	1569	235	1073	170.14
RPX HD 218M	lb	7518	518	2431	32.68
	kg	3410	235	1103	159.55
RPX HD 408M	lb	2586	1048	3155	35.51
	kg	1173	475	1431	173.07
RPX HD 418M	lb	6267	1048	3285	31.72
	kg	2843	475	1490	154.87
RPX HD 428M	lb	8025	1048	3876	26.54
	kg	3640	475	1758	129.59

## Network Technology

### Network Interoperability

Microsoft® Office Communications Server 2007 integration	Manages all real-time (synchronous) communications including: instant messaging, VoIP, audio and video conferencing.
Microsoft™ Lync support	A single platform that can enhance, extend, and even replace traditional and IP PBX systems.
Telepresence Interoperability Protocol (TIP)	Cisco Proprietary protocol used to communicate in native mode to Cisco CTS systems
Dual Stack H.323/SIP	Supports the Polycom Open Collaboration Network (POCN) for integration with UC partners including Siemens, BroadSoft and Avaya

### H.264 High Profile Bandwidth Requirements

#### RPX 400 Series

Frame Rate	Minimum	Recommended	Maximum
1080p30	6 Mbps per suite	12 Mbps per suite	24 Mbps per suite
720p60	6 Mbps per suite	12 Mbps per suite	24 Mbps per suite
720p30	4032 Kbps per suite	4032 Kbps per suite	4032 Kbps per suite

#### RPX 200 Series

Frame Rate	Minimum	Recommended	Maximum
1080p30	3 Mbps per suite	6 Mbps per suite	12 Mbps per suite
720p60	3 Mbps per suite	6 Mbps per suite	12 Mbps per suite
720p30	2016 Kbps per suite	2016 Kbps per suite	2016 Kbps per suite

#### Performance

- Packet loss < 0.1%
- End to end latency <150 ms
- Packet jitter < 40 ms

**Note:** Bandwidth estimates are based on network traffic in one direction and do not include overhead and management traffic.

**H.264 Bandwidth Requirements (without High Profile)****RPX 400 Series**

<b>Frame Rate</b>	<b>Minimum</b>	<b>Recommended</b>
1080p30	12 Mbps per suite	24 Mbps per suite
720p60	8 Mbps per suite	16 Mbps per suite

**RPX 200 Series**

<b>Frame Rate</b>	<b>Minimum</b>	<b>Recommended</b>
1080p30	6 Mbps per suite	12 Mbps per suite
720p60	4 Mbps per suite	8 Mbps per suite

**Note:** Bandwidth estimates are based on network traffic in one direction and do not include overhead and management traffic.

# LAN Connection and Configuration

Choosing a LAN wiring option depends on whether or there will be a managed switch in the suite or if home runs back to a managed switch are preferred. There is also the choice of separating the suite components and the table leg ports onto two separate physical LANs. The customer is responsible for supplying the either the managed switch or the table leg switch.

The user interface, the Polycom Touch Control, requires an IP address from the network. The Polycom Touch Control connects to the primary codec in the LAN side of the codec switch.

For voice add-on, an **analog line** is required. Voice add-on is necessary to enable access to a VNOC or other help desk.

If there is not a managed switch in the telepresence suite, the RPX HD solution needs the following number of 100/1000BASE-T network connections, on RJ-45 connectors

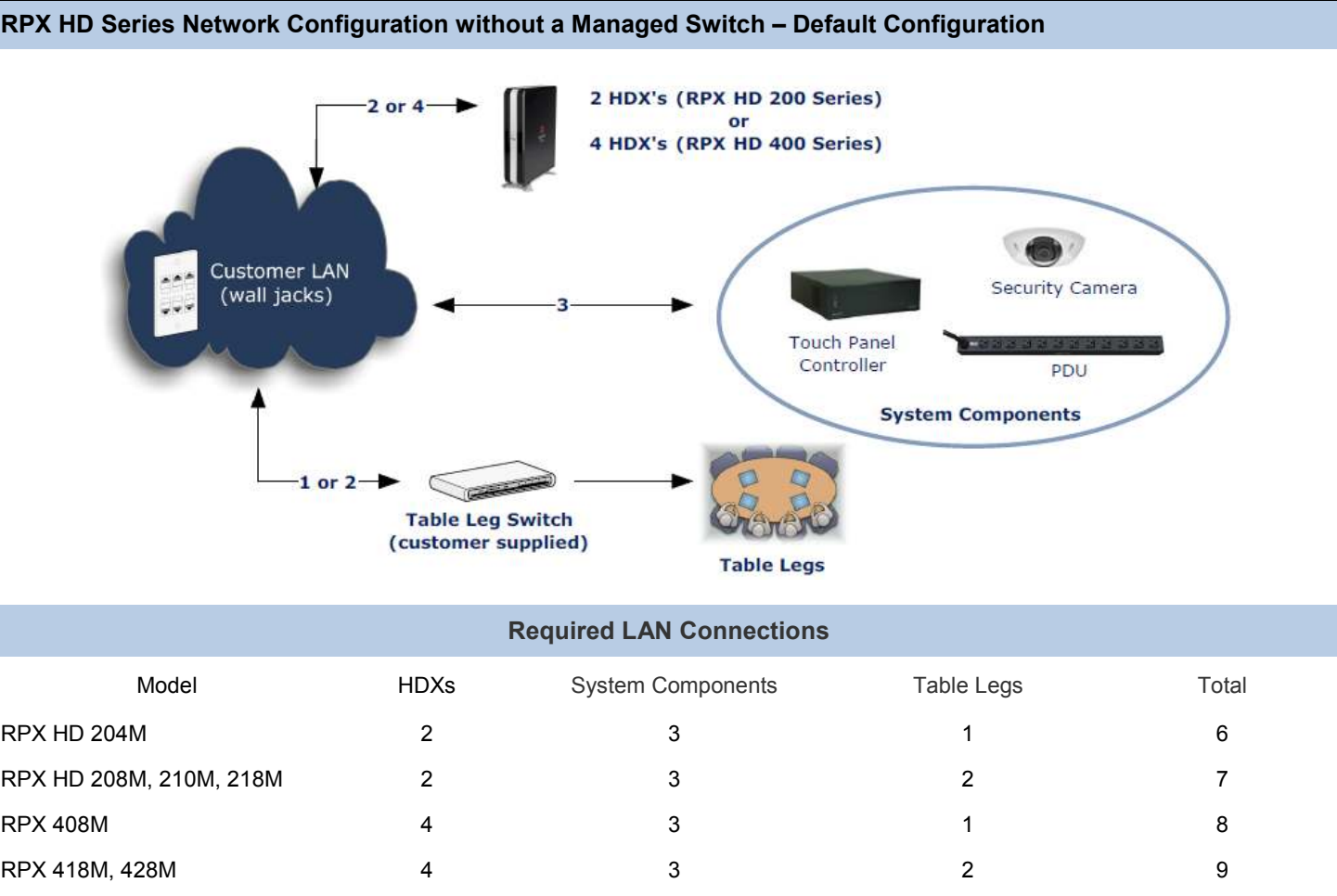
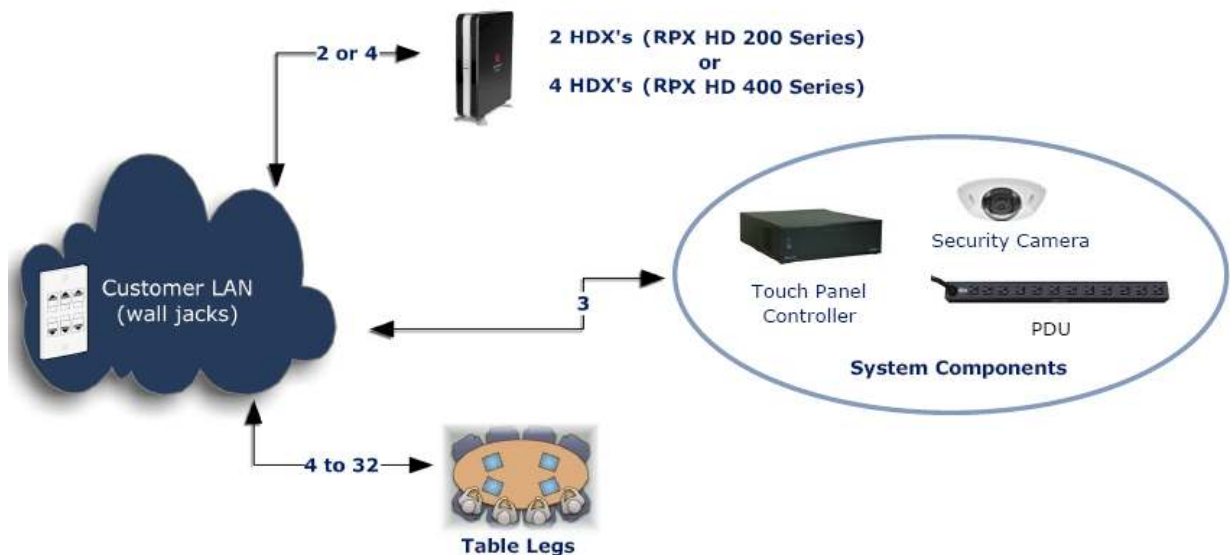


Figure 1.0 RPX HD Series default network diagram

RPX HD Series Default Configuration without a Managed Switch, with Homeruns to Table Legs

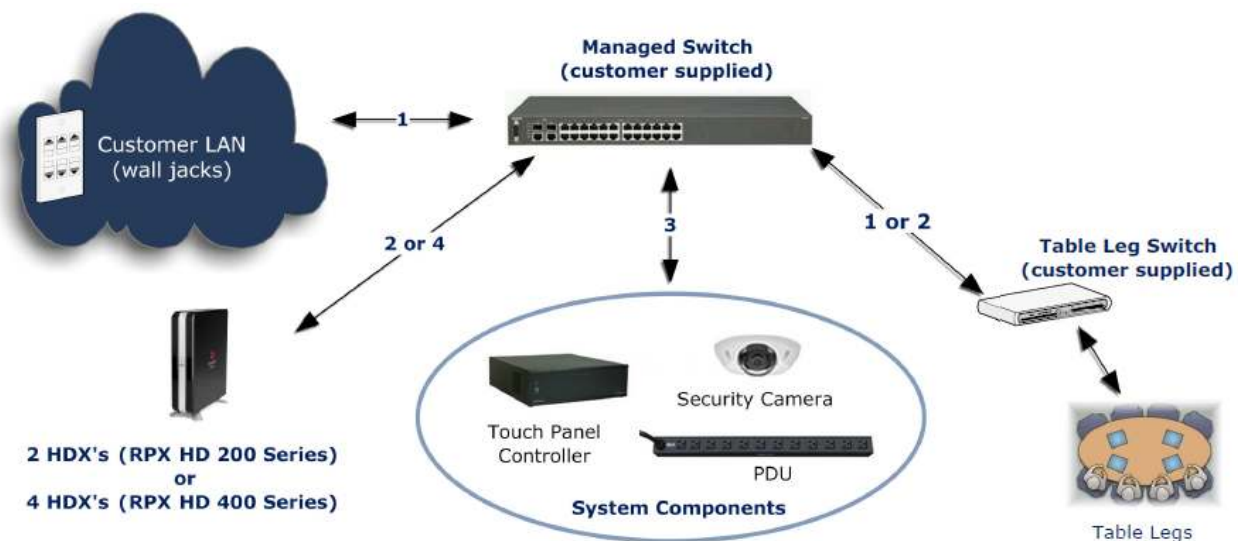


Required LAN Connections

Model	HDXs	System Components	Table Legs	Total
RPX HD 204M	2	3	4	9
RPX HD 208M	2	3	6	11
RPX HD 210M	2	3	8	13
RPX HD 218M	2	3	14	19
RPX HD 408M	4	3	12	19
RPX HD 418M	4	3	22	29
RPX HD 428M	4	3	32	39

Figure 1.1 RPX HD Series default network diagram with homeruns

### RPX HD Series Network Configuration with a Managed Switch



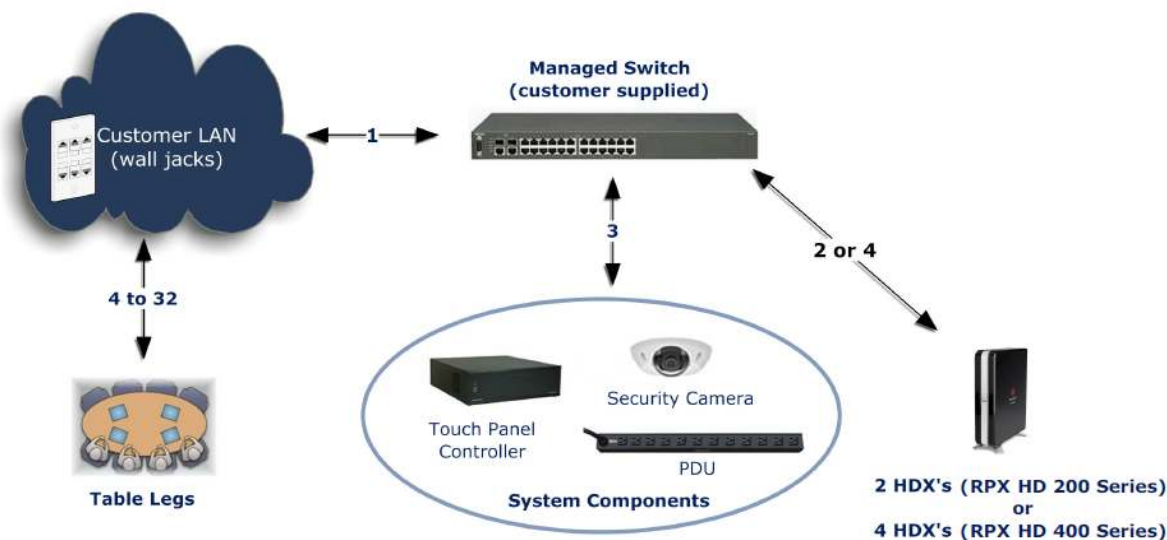
#### Required LAN connections

Model	Managed Switch Connections for HDXs	Managed Switch Connections for System Components	Managed Switch Connections for Table Legs	Wall Jack Connections For Managed Switch	Total LAN (Wall Jack) Connections
RPX HD 204M	2	3	1	1	1
RPX HD 208M	2	3	2	1	1
RPX HD 210M	2	3	2	1	1
RPX HD 218M	2	3	2	1	1
RPX HD 408M	4	3	1	1	1
RPX HD 418M	4	3	2	1	1
RPX HD 428M	4	3	2	1	1

Figure 1.3 RPX HD Series network configuration with Managed Switch



RPX HD Series with a Managed Switch and with Homeruns to Table Legs



Required LAN connections

Model	Managed Switch Connections for HDXs	Managed Switch Connections for System Components	Managed Switch Connections for Table Legs	Wall Jack Connections For Managed Switch	Total LAN (Wall Jack) Connections
RPX HD 204M	2	3	4	1	5
RPX HD 208M	2	3	6	1	7
RPX HD 210M	2	3	8	1	9
RPX HD 218M	2	3	14	1	15
RPX HD 408M	4	3	12	1	13
RPX HD 418M	4	3	22	1	23
RPX HD 428M	4	3	32	1	33

Figure 1.4 RPX HD Series network configuration with Managed Switch and Homeruns

Regulatory Compliance

- CE Marking
- FCC Part 15 Class A