Cisco Expo
2012

Pohled do nitra virtuálních desktopů

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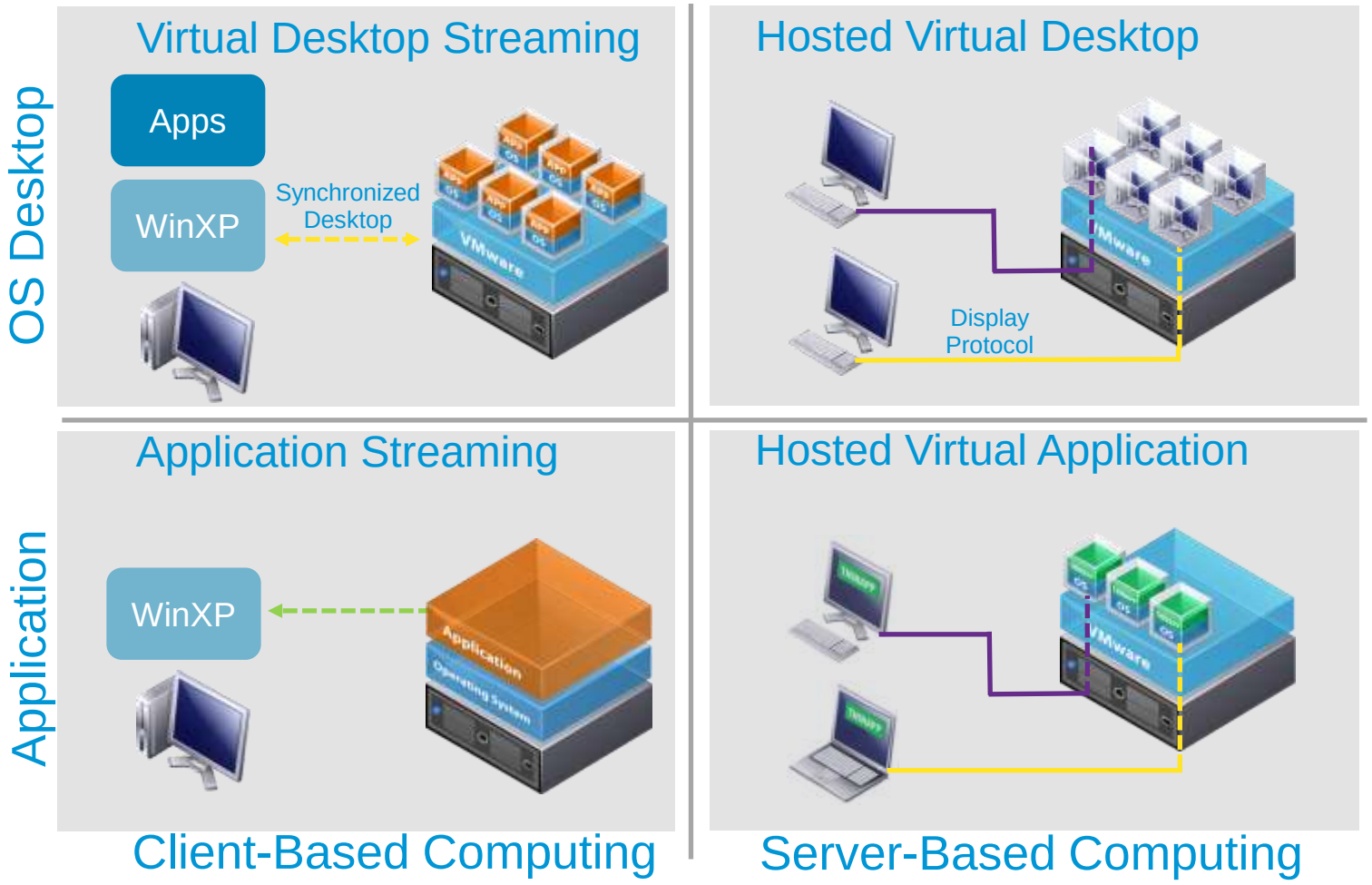
Program

- Desktop Virtualization Overview
- Cisco VXI Vision
- VXC Clients & Deployment
- WAN Optimalization
- Conclusion

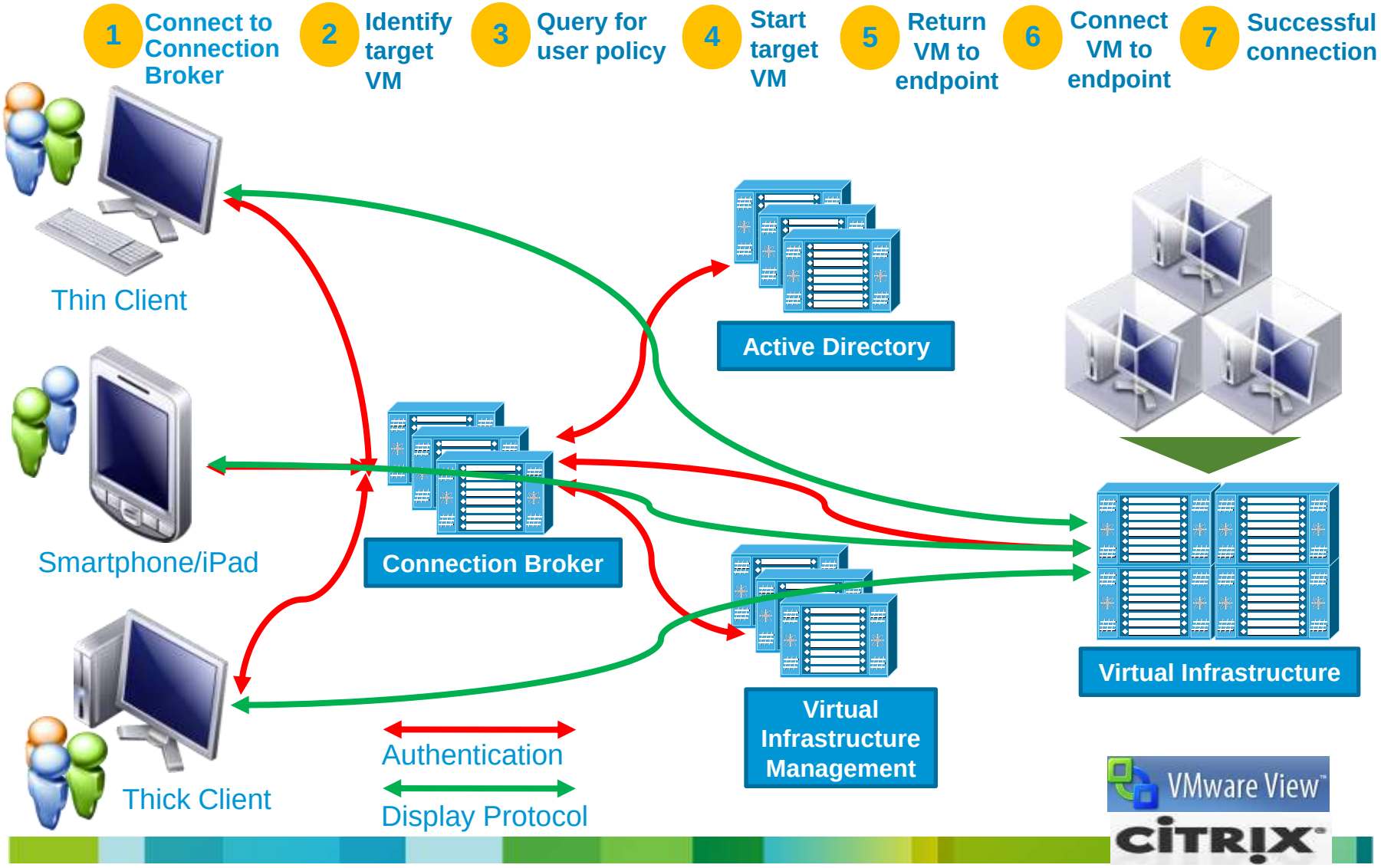
Desktop Virtualization Overview

Computing Architecture Choices

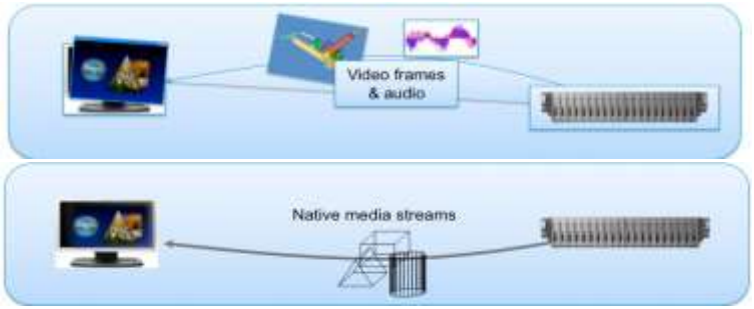
Where is computation happening?



Common Components of Desktop Virtualization



Citrix XenDesktop and ICA/HDX



Real-Time	Interactive	Bulk	Background
Audio	ThinWire	MediaStream (Windows Media and Flash)	Printing
	Seamless	USB Redirection	COM Port Mapping
	MSFT TS Licensing	Clipboard	LPT Port Mapping
	SmartCard Redirection	Client Drive Mapping	Legacy OEM Virtual Channels
	Control Virtual Channel		
	End User Experience Monitoring		

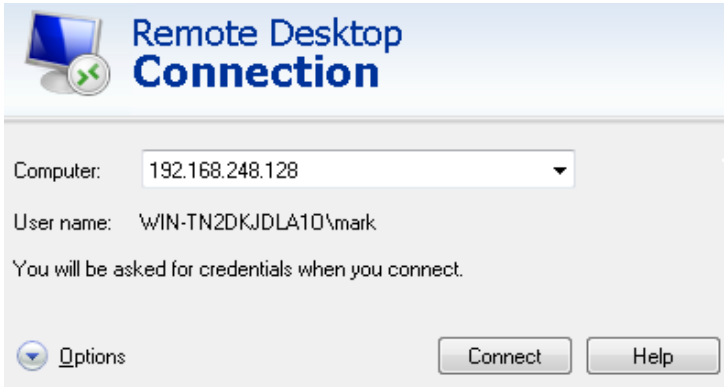
- Latest release: XenDesktop 5.5 – Improved HDX for WAN, better management
- Basic Characteristics
  - 64 Virtual Channels
  - TCP based protocol
  - Encryption/Compression
- HDX MediaStream and Adaptive Orchestration
  - Leverage client-side resources
  - Better server scalability
  - More simultaneous users over WAN (Controlling Bandwidth Explosion)
  - Handle changing network conditions
- HDX Flash Redirection
  - Now can handle 300 ms RTL
  - Linux now supported
  - Fallback to Server-side rendering adaptively
- HDX VoIP-Over-ICA
  - Inline with Cisco VXI approach of se
  - SDKs for VOIP providers
  - Multi-Stream ICA
  - Larger Audio Jitter buffers

VMware View with PCoIP

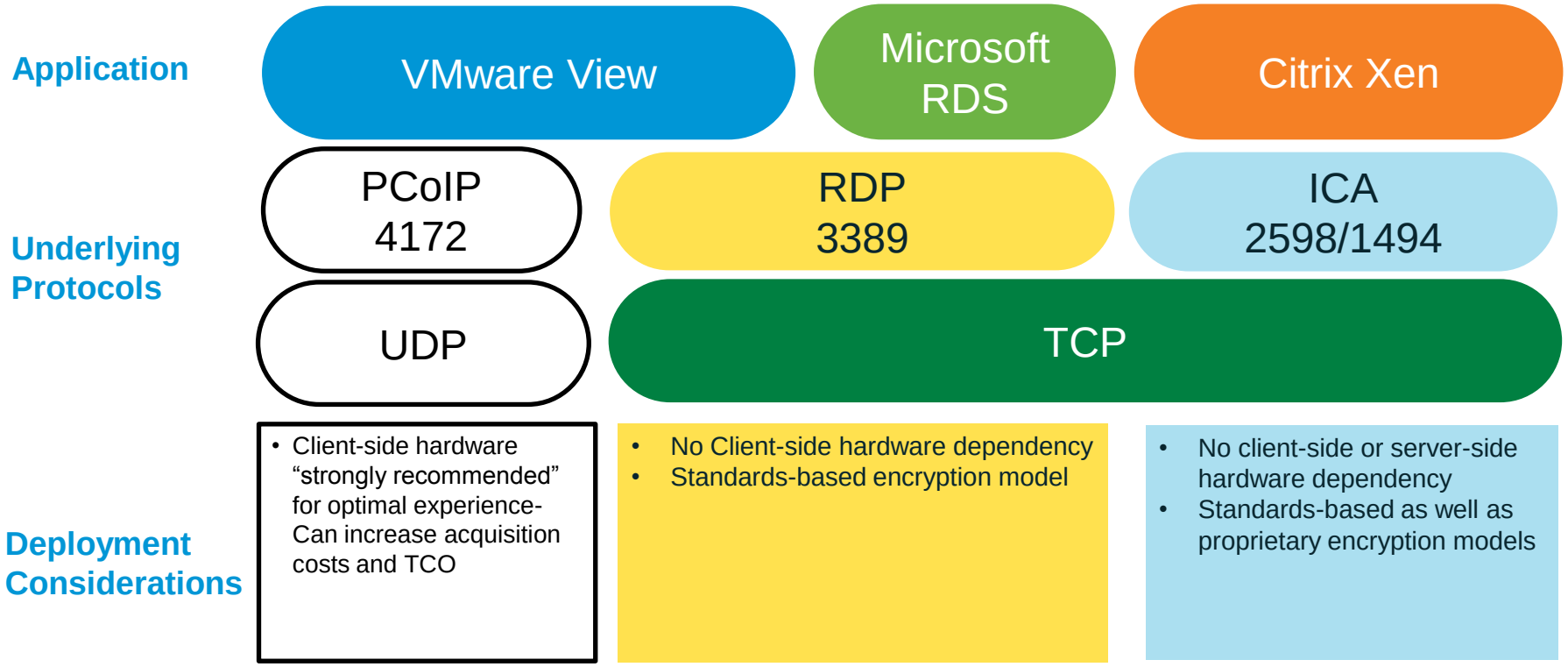
- PCoIP is a high-performance remote display protocol provided by VMware
- PCoIP can compensate for an increase in latency or a reduction in bandwidth, to ensure that end users can remain productive regardless of network conditions. PCoIP provides the following features:
  - Supports up to 4 monitors and adjust the resolution up to 2560 x 1600
  - PCoIP supports 32-bit color
  - PCoIP supports 128-bit encryption
  - PCoIP supports Advanced Encryption Standard (AES) encryption, which is turned on by default
- PCoIP uses the User Datagram Protocol (UDP) for streaming audio and video. Security servers support only TCP

Microsoft RDP

- Remote Desktop Protocol is the same protocol many people already use to access their work computer from their home computer. RDP provides access to all the applications, files, and network resources on a remote computer. Microsoft RDP provides the following features:
  - You can use multiple monitors in span mode
  - RDP supports 32-bit color
  - RDP supports 128-bit encryption
  - You can use this protocol for making secure, encrypted connections to a View security server in the corporate DMZ
  - RDP uses TCP port 3389



Borderless Network
Decoding the VDI Protocol Stack



Cisco VXI Vision

Cisco Virtualized Experience Infrastructure

- Data security & compliance
- Business continuity / agility
- Reduced TCO
- Standardized IT experience, customizable user experience

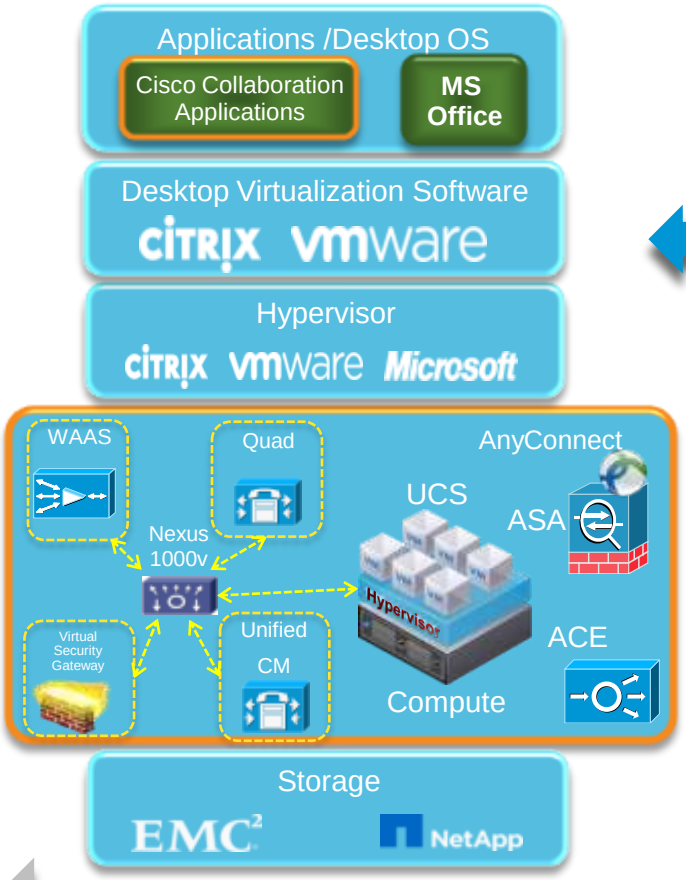
- Voice, Video, IM, Conference
- Presence
- Mobility
- Real time
- Range of devices

IT Standardization **High Quality Experience**

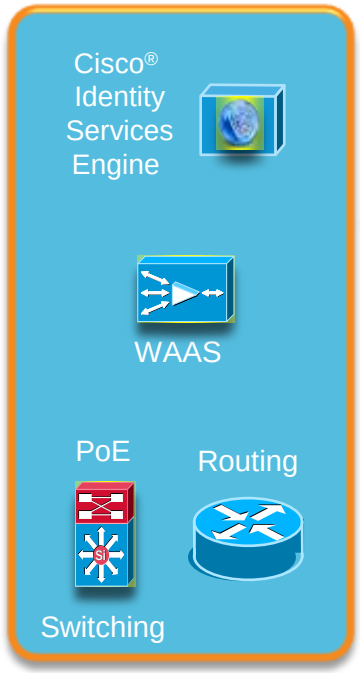
Cisco VXI Virtualized End-to-End System

= Cisco Products

Virtualized Data Center



Virtualization-Aware Borderless Network



End-to-End, Management and Optimization

atlantis COMPUTING · AppSense · Liquidware Labs · unidesk

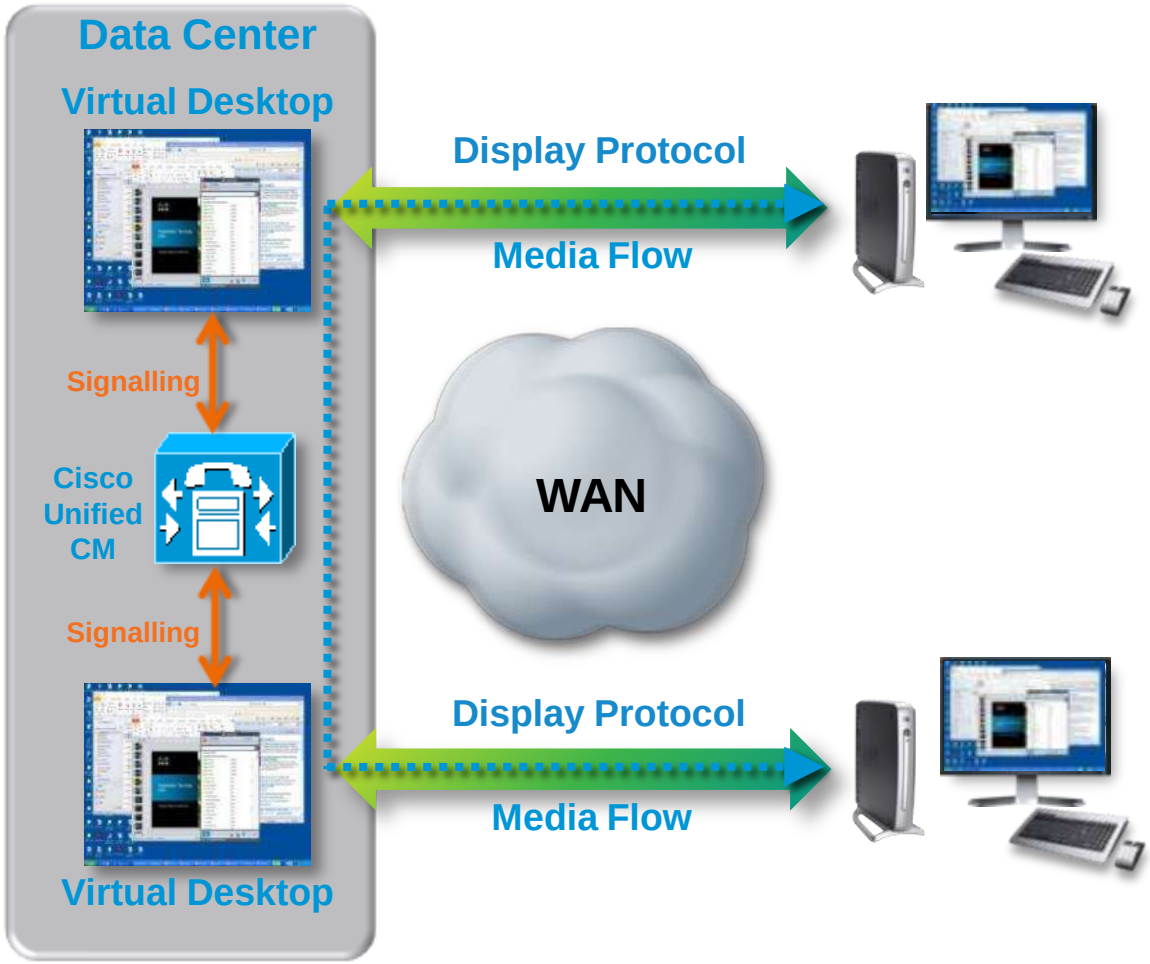
Virtualized Collaborative Workspace

VXI 2.5 System

Virtualization Experience Clients

Voice, Video, Virtual Desktop Challenge

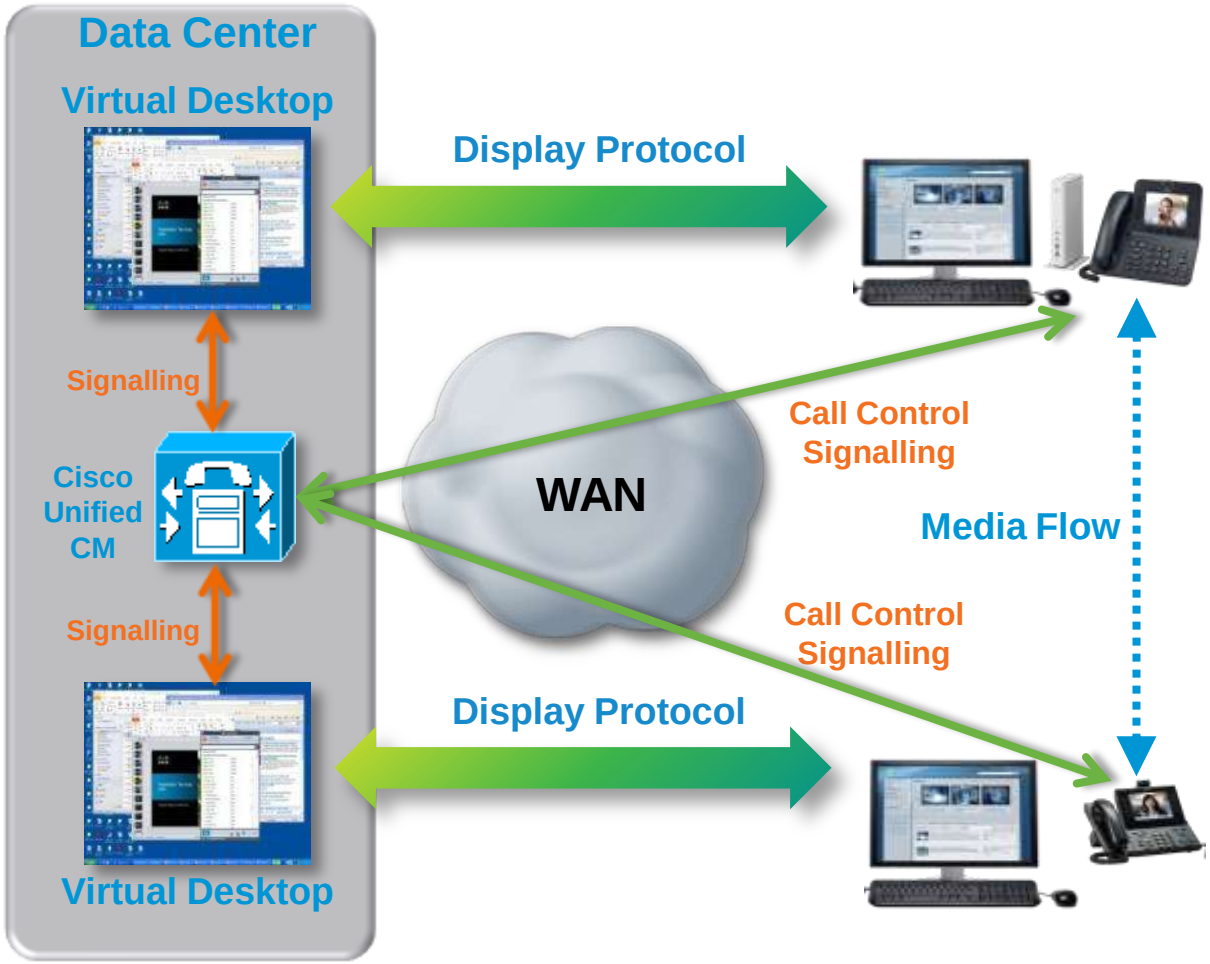
Hairpin Effect



- Voice/Video embedded in the display protocol
- Media flow goes all the way back to data center and back
- Heavy processing on virtual desktop in data center
- Bandwidth explosion
- Latency and jitter
- Display protocol and possible endpoint become unstable

Voice, Video, Virtual Desktop Zero Clients

Cisco Unified Communications using desk phone control



- UC media “voice/video” (RTP) flows outside the display protocol
- Signaling of Cisco UC Client back to Unified CM remains inside the display protocol
- QoS can be used on media
- Path is optimized
- Location Awareness and 911, Codec selection, CAC, SRST, Reference, Time Zone, Dial-Plan

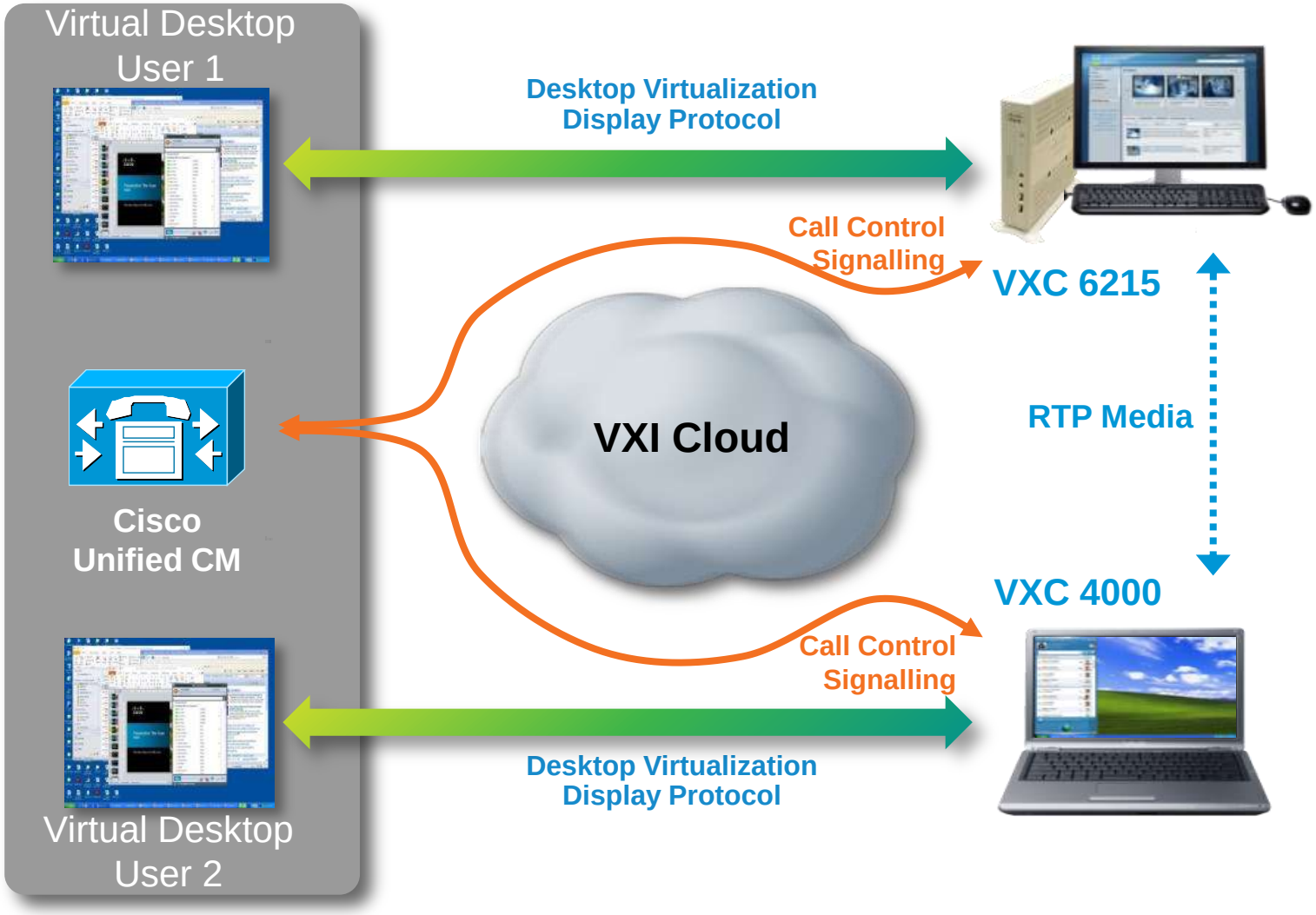
Collaboration
Citrix XenDesktop and RDP

	Phone Integrated	Stand Alone
Model	VXC-2112	VXC-2212
Software	ICA 11.x, RDP 6.x (No View 4 support)	
I/O	4 x USB 2.0 1 x DVI-D 1 x VGA (1920x1200) 1 x Analog Audio	4 x USB 2.0 1 x DVI-D 1 x VGA (1920x1200) 1 x RJ45, 1 x Analog Audio
Network	89XX/99XX Phone Phone Ethernet (No WiFi)	Ethernet (No WiFi)
Power Over Ethernet	802.3AT supports Phone with No Camera All other configurations require a Power Brick	1 Display – 802.3AF Optional Power Brick

Collaboration
VMware View PCoIP

	Phone Integrated	Stand Alone
Model	VXC-2111	VXC-2211
I/O	4 x USB1.1 2 x DVI-I (1920x1200) 1 x Analog Audio	4 x USB1.1 2 x DVI-I (1920x1200) 1 x RJ45, 1 x Analog Audio
Network	89XX/99XX Phone Phone Ethernet (No WiFi)	Ethernet (No WiFi)
Power Over Ethernet	802.3AT supports Phone with No Camera All other configurations require a Power Cube	1 Display – 802.3AF 2 Displays – 802.3AT Optional Power Cube

Convergence of VDI, Video, and Voice



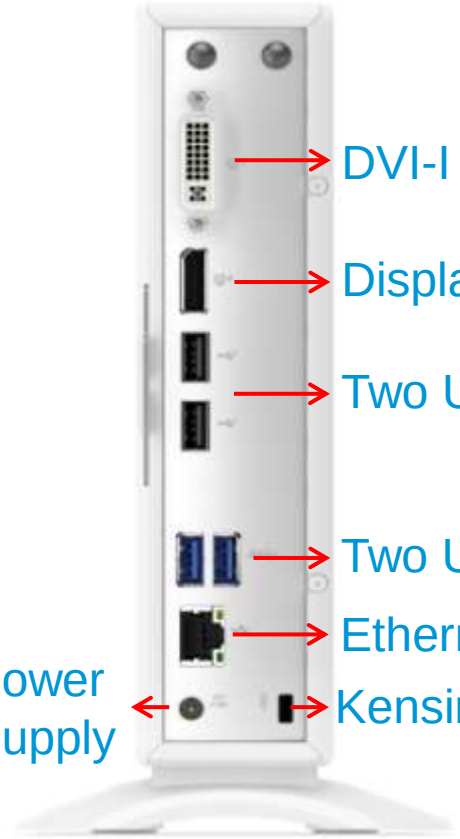
VXC 6215

Cisco VXC 6215

- A thin client that unifies voice, video, and virtual desktop in one device
- Supports high quality, scalable voice and video, delivering optimal user experience
- Introduces unique voice and video processing capabilities that efficiently use network and data center CPU resources, eliminating the hairpin effect
- Linux based platform supports VDI deployment only with HDX/ICA, PCoIP, & RDP

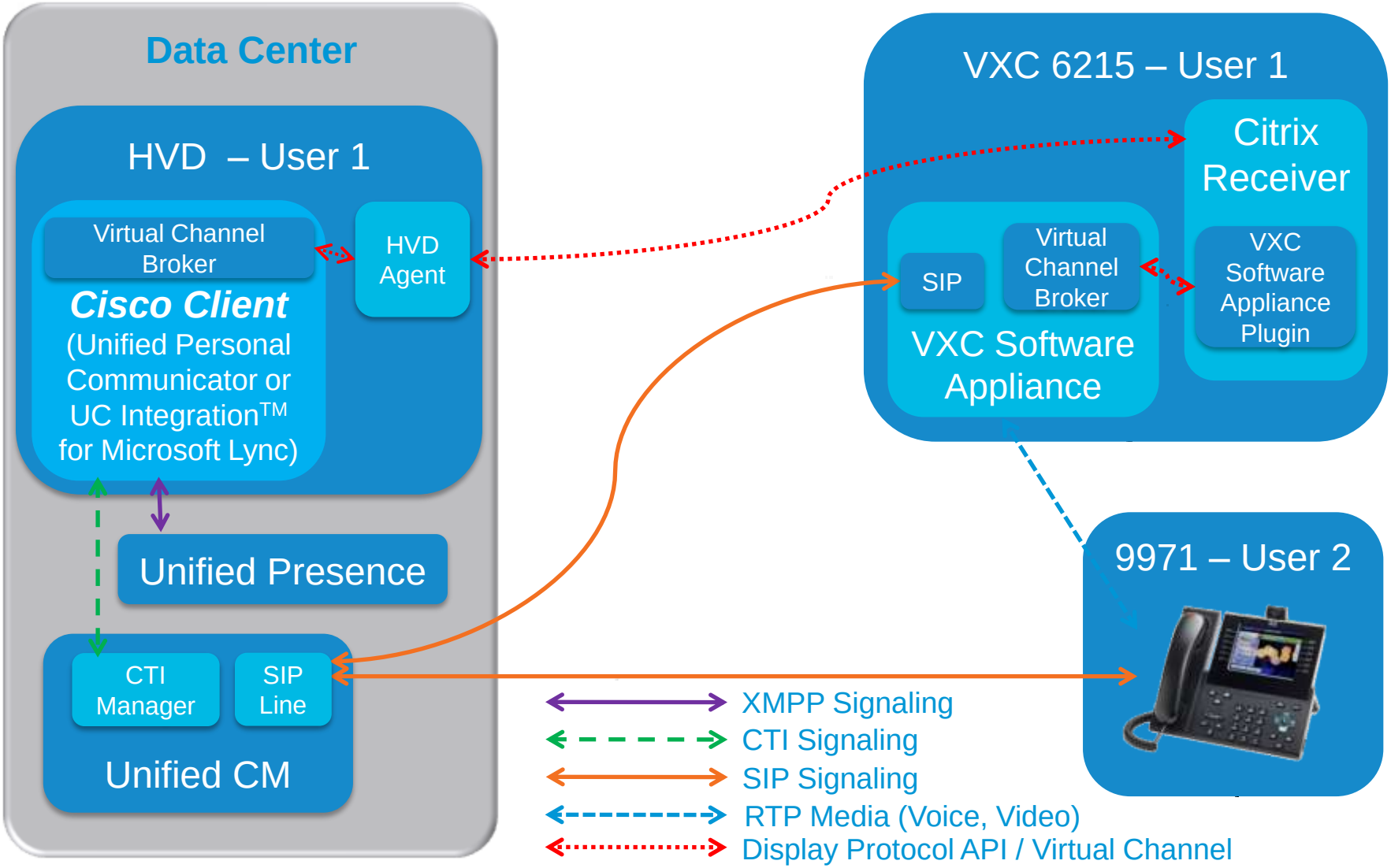
Cisco Virtualization Experience Client (VXC) 6215

Front View



Rear View

VXC Software Appliance Virtual Desktop (VDI) Interaction



Collaboration
VXC 6215 Software Stack

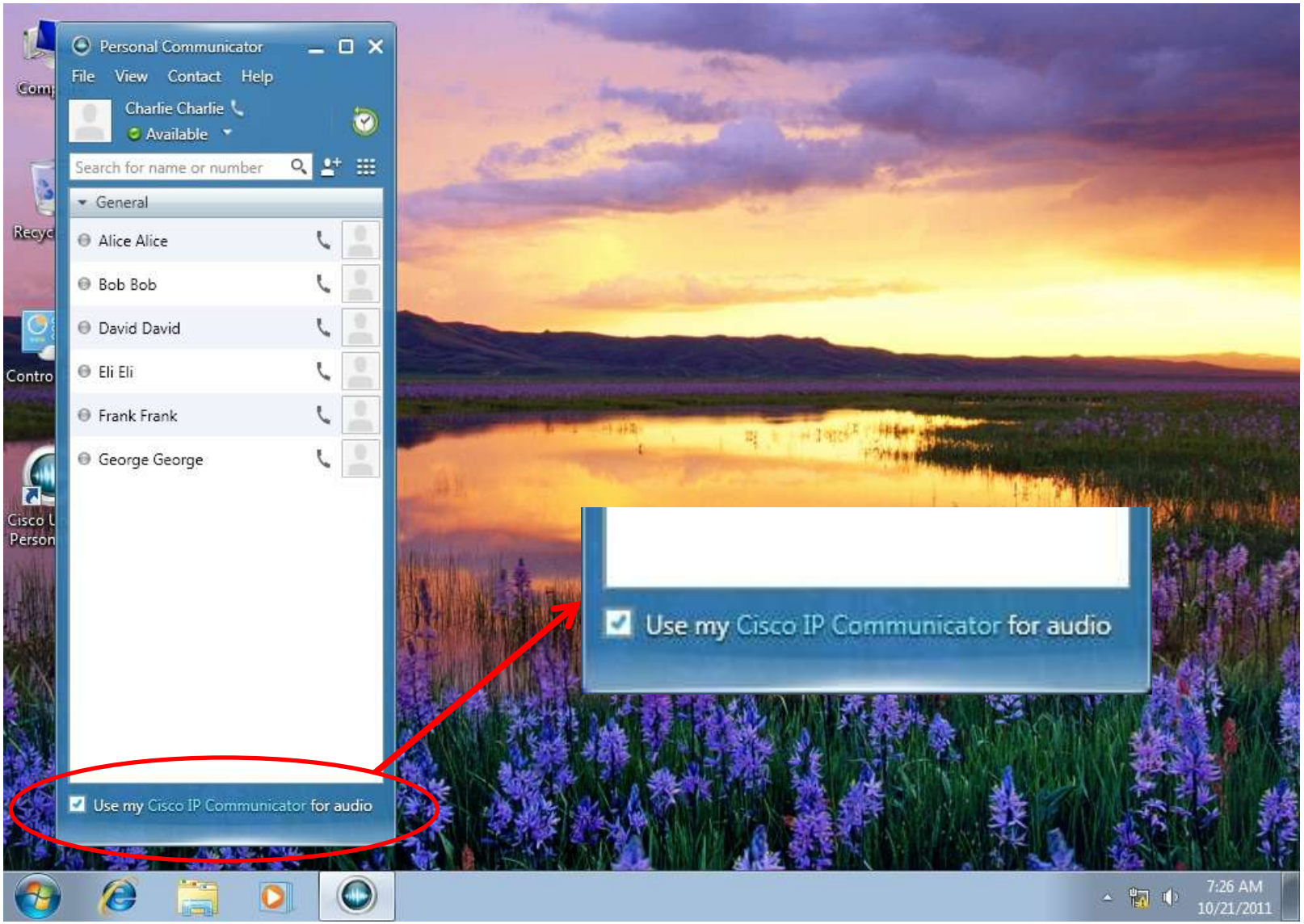
VXC 4000

Cisco VXC 4000 Release 1

- Enables UC voice only capabilities for repurposed windows PCs for virtual desktops
- Introduces unique voice processing capabilities that efficiently use network and data center CPU resources, eliminating the hairpin effect
- Supports Citrix XenDesktop and VMware View
- Based on Cisco IP Communicator
- OS support: Windows XP, Windows 7

Cisco VXC 4000 Release 1

Unified Personal Communicator



Cisco CIUS

Enterprise tablet that combines voice, video, collaboration, and VDI

Supports external Bluetooth/USB mouse & keyboard when docked

Supports external display in "mirror mode"

Supports Citrix Receiver, VMware View Client and Wyse PocketCloud

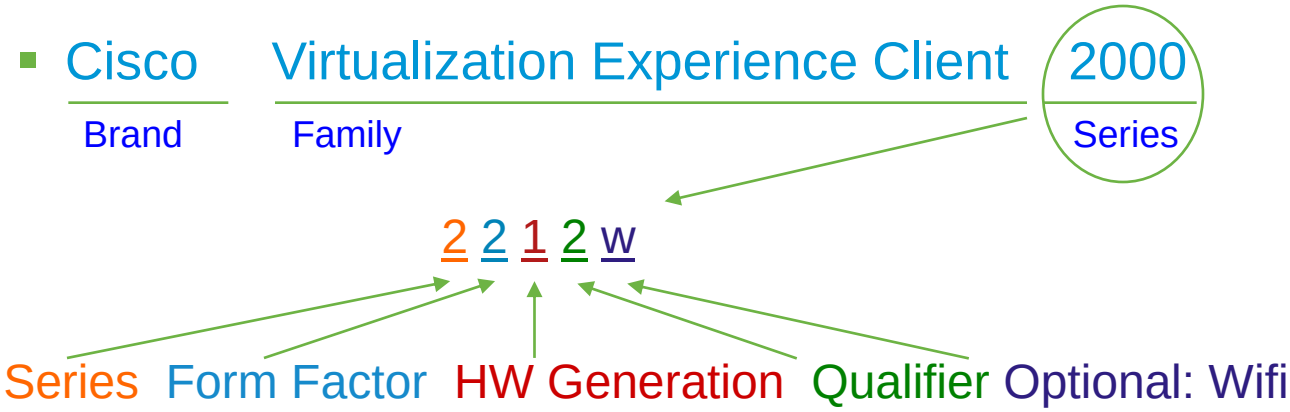
VXC Feature Comparison





	VXC 2100 Series	VXC 2200 Series	VXC 4000*	VXC 6215*	Cisco Cius
Form Factor	“Backpack” Integrated	“Tower” Standalone	PC Software	“Tower” Standalone	Enterprise Tablet
Availability	Shipping	Shipping	Shipping	Shipping	Shipping
Platform	Zero Client	Zero Client	Win7, XP	Linux	Android (x86)
HVD Protocol Support	2111 – PCoIP 2112 – HDX,RDP	2211 – PCoIP 2212 – HDX,RDP	Citrix XenDesktop, VMware View	Citrix XenDesktop, VMware View, RDP	Citrix XenDesktop, VMware View
UC Protocol Support (add on)	N/A	N/A	Software Appliance	HDX, RDP PCoIP	N/A
UC Client Support*	CUPC, Connect	CUPC, Connect	CUPC, CUCILync	CUPC, CUCILync	Native
Voice	IP Phone 8961, 9951, 9971	N/A, can be used with IP Phone	Yes	Yes	Yes
Video	IP Phone 9971, 9951	N/A, can be used with IP Video Phone	No	Yes	Yes
Monitor Support	Single or Dual, 1920x1200	Single or Dual, 1920x1200	Varies based on underlying HW	Single:2560x1600 Dual:1920x1200	Single Mirror, 1024x600 (on the roadmap for dual monitor support)
PoE	PoE	PoE	N/A	No	PoE
Encoding & Decoding	Via IP Phone	Via IP Phone	Audio only. Video on the roadmap.	Standard Video HD Capable*	HD Capable (720p)

Cisco VXC Naming Framework



- Series: Zero (2), Soft (4), Thin (6), Not Applicable (0)
- Form Factor: Integrated (1); Standalone (2); Not Applicable (0)
- HW Generation: Gen 1 (1); Gen 2 (2); Not Applicable (0)
- Qualifier: PCoIP (1); ICA (2); Multi-protocol (5), Not Applicable (0)
- Optional: Wifi (w)

2000 Series – Zero Client
4000 Series – Software Appliance
6000 Series – Thin Client

VXC Deployment

Communications Manager

- VXI leverages existing CUCM implementation
- Support for CUCM 7.1(5), 8.0.x, 8.5.x, 8.6.x
- 89xx and 99xx handsets managed as normal
- Cius registered and managed as a handset
- VXC 4000 & 6215 Endpoint managed as a handset

Presence Server

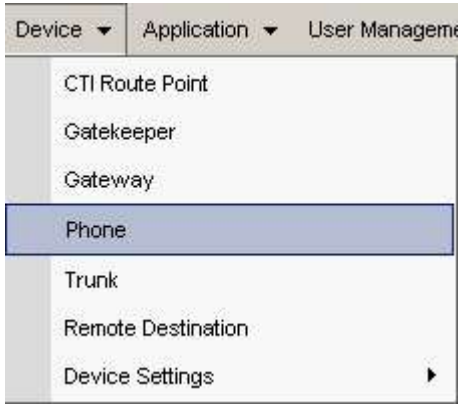
- As with CUCM, VXI leverages existing Presence Server infrastructure
- Support for CUPS 8.5.x, 8.6.x
- VXC 2x00 & 4000 operate in desk phone control mode
- 6215 leverage special version of client for HVD deployment
- Hosted option available with Jabber

Jabber and CUPC

- CUPC 8.03 introduced support for XD and View
- Jabber 9.0 will support XD and View at FCS
- Jabber 9.0 will support XenApp at FCS

Cisco VXC Software Appliance

Unified CM Device Configuration



VXC Software Appliance

VXC 6215

Installed using VXC Device Type COP file on earlier Unified CM versions

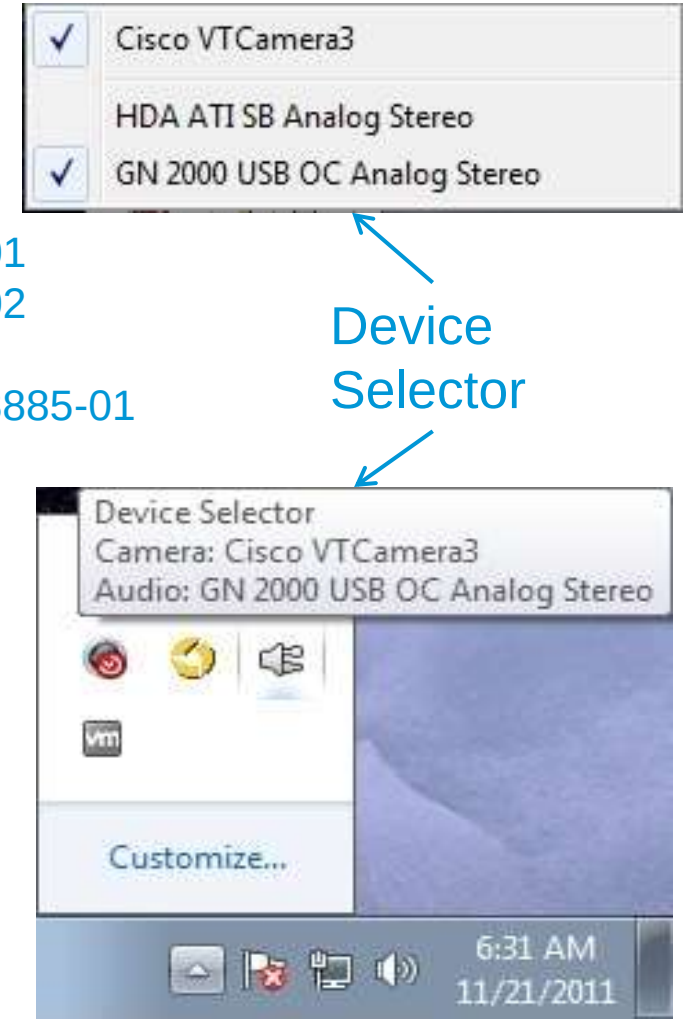
Cisco VXC 6215
Device Selector

Headsets currently tested and supported

- Plantronics USB headset Blackwire C420 82632-01
- Plantronics USB headset Blackwire C610 81964-41
- Plantronics USB headset Blackwire C620 81966-41
- Plantronics USB headset Savi Office WO200 79957-01
- Plantronics USB headset Savi Office WO300 81794-02
- Plantronics USB headset Savi 3in1 W740 83542-01
- Plantronics USB headset VoyagerPro UC V2 B230 38885-01
- Plantronics USB headset VoyagerPro UC 38667-01
- Plantronics USB adaptor DA DA45 77559-41
- Jabra USB headset GN2000 20001-495
- Jabra USB headset GN2000 20001-435

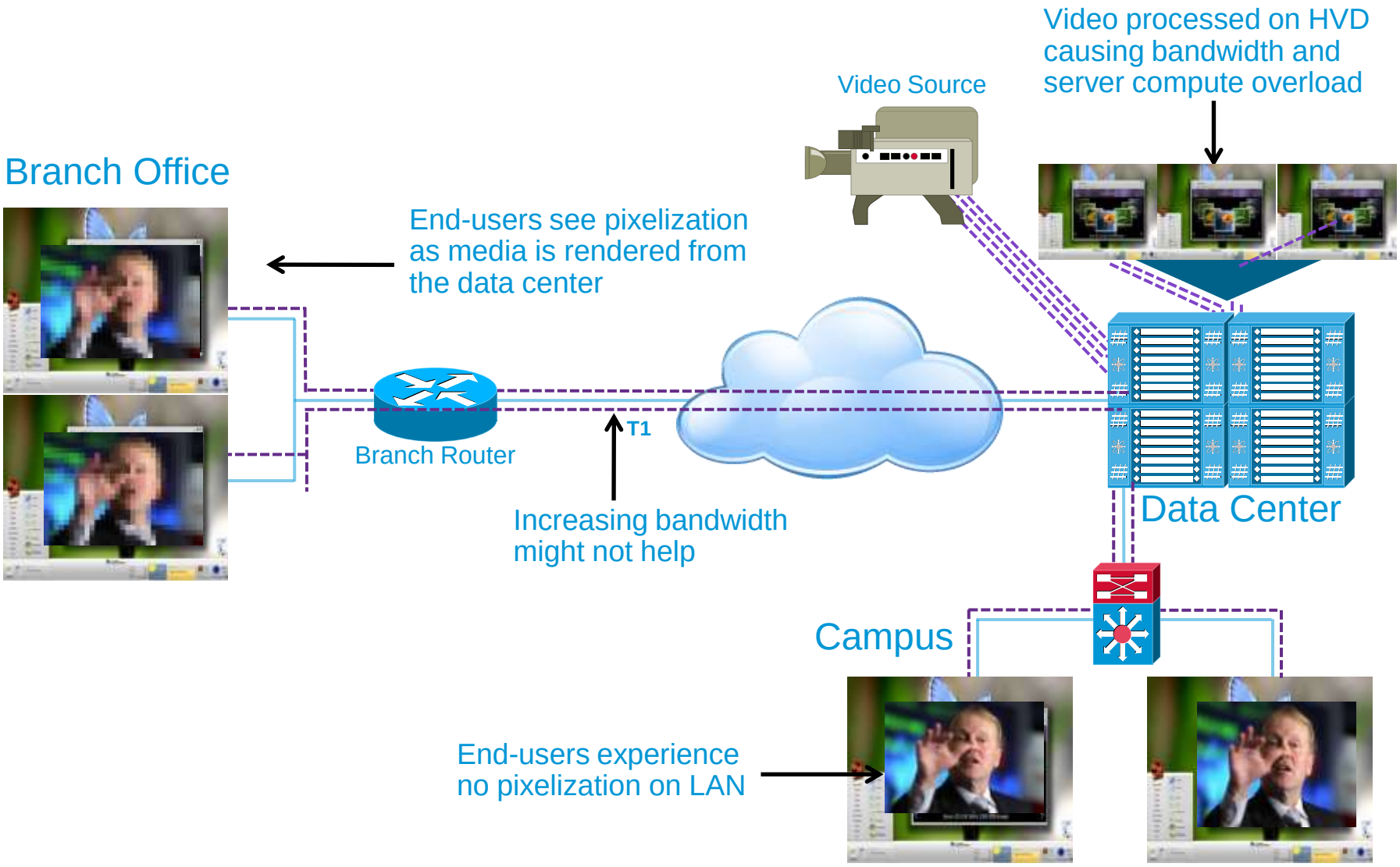
Cameras currently tested and supported

- Cisco USB Camera VT III
- Cisco USB Camera VT II
- Cisco USB PrecisionHD*
- Logitech USB Camera Quickcam Pro 9000
- Microsoft USB Camera Lifecam Cinema

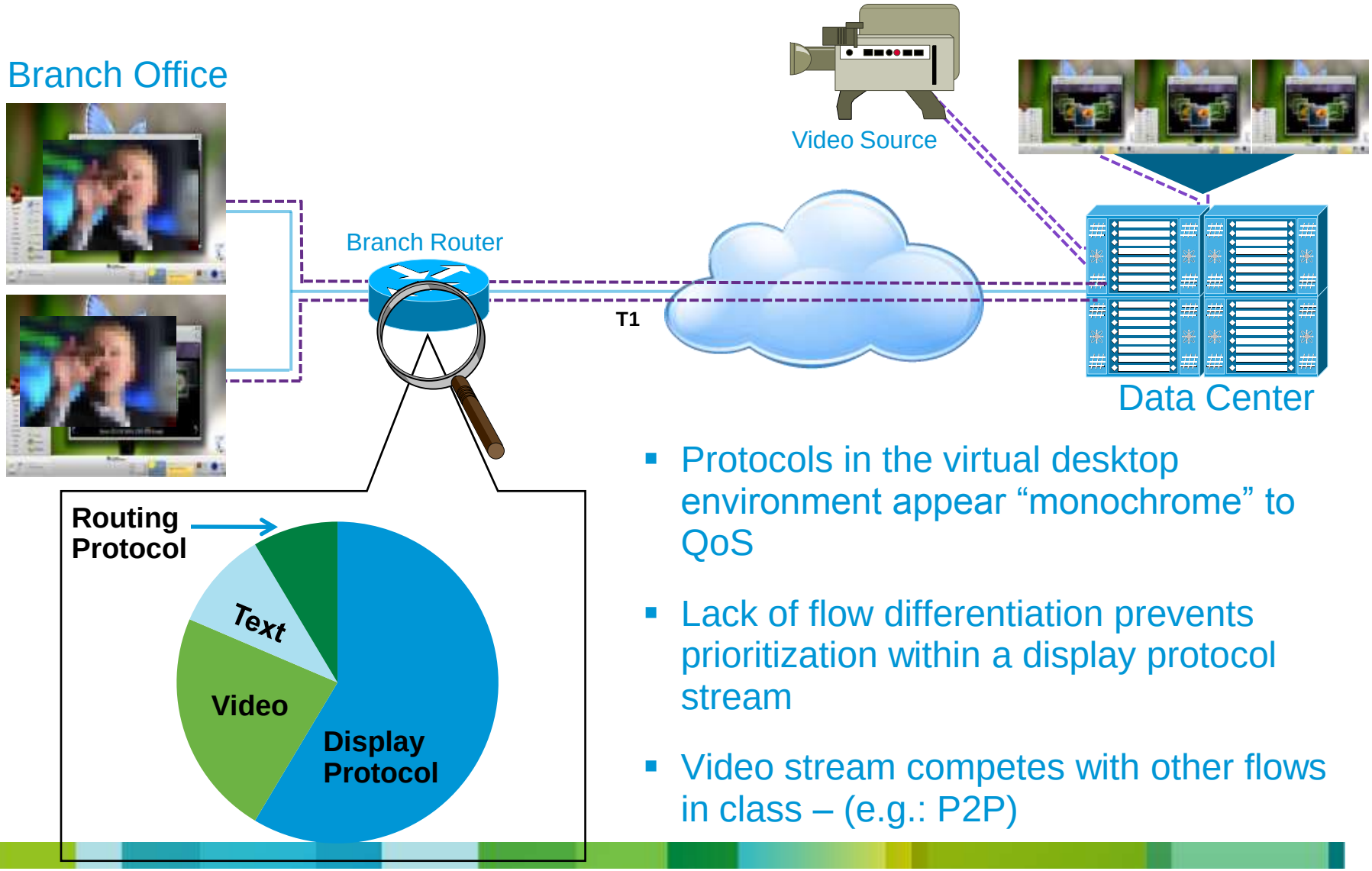


WAN Optimalization

WAN's effects on Users Experience



Display Protocol Opaque to the Network

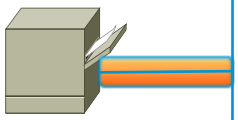


- Protocols in the virtual desktop environment appear “monochrome” to QoS
- Lack of flow differentiation prevents prioritization within a display protocol stream
- Video stream competes with other flows in class – (e.g.: P2P)

QoS in VXI

End User Workspace

Network Printer



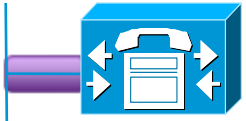
Virtual Desktop Display Protocols
(ICA, RDP, PCoIP)

Locally Attached Printer

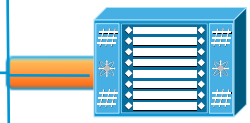
Cisco Unified Communications Endpoint
(SCCP, SIP, RTP, SRTP)

Campus or WAN Network

Data Center



Cisco UCM



Cisco UCS with Service VMs (like print server)

Cisco UCS with Virtual Desktops

Protocol	TCP/UDP Port	DSCP/CoS Value
RDP 7	TCP 3389	DSCP af21 and CoS2
ICA	TCP 1494	DSCP af21 and CoS 2
PC over IP (PCoIP)	TCP & UDP 4172	DSCP af21 and CoS 2
SCCP	TCP 2000	DSCP cs3 and CoS 3
SIP	TCP 5060	DSCP cs3 and CoS 3
CTI	TCP 2748	DSCP cs3 and CoS 3
Media (RTP, sRTP)	UDP 16384 to 32767	DSCP ef (audio only), DSCP af41 (audio/video) and CoS 5

Local DC flows (Storage, Hypervisor management, etc) not shown

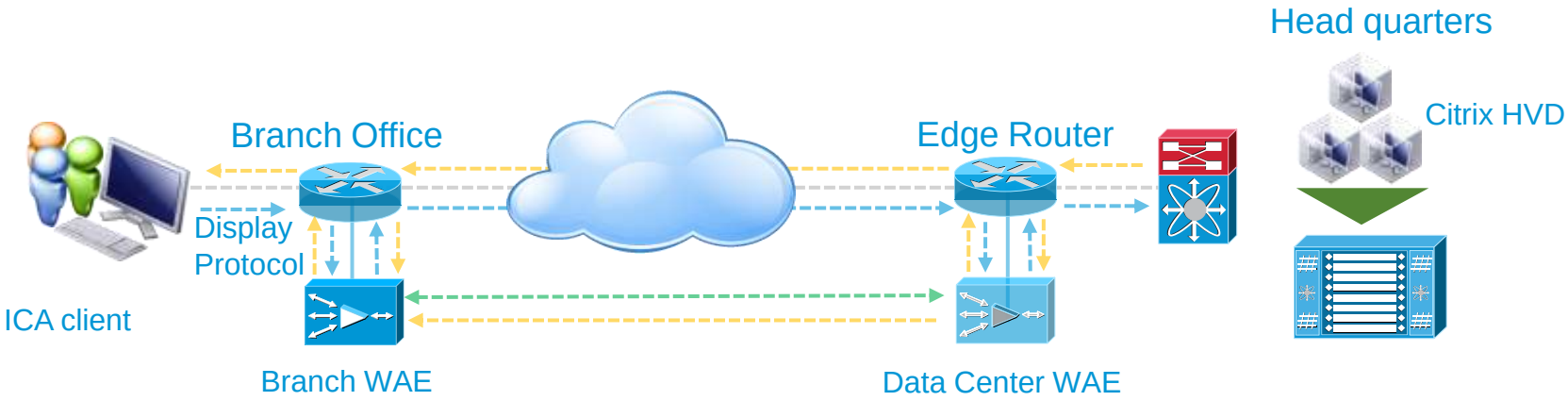
Bandwidth Reduction with WAAS

Protocol	Vendor	Transport	Bandwidth without WAAS (Approx) Cisco KW+	Bandwidth without WAAS (Approx) Task Worker	Bandwidth with WAAS (Approx) Task Worker
Remote Desktop Protocol (RDP)	Microsoft	TCP 3389	1.5 Mbps	384 Kbps	96 Kbps
Independent Computing Architecture (ICA)	Citrix XenDesktop 4.0/5.0	TCP 2598 CGP TCP 1494	967 Kbps	120 Kbps	60 Kbps
PC over IP (PCoIP)	Teradici / VMware 4.6	Media – UDP 50002/4172 Control – TCP 50002/4172	1.5 Mbps	192 Kbps Note: PCoIP can't be optimized by WAAS	192 Kbps

WAAS 4.5 optimization with Citrix ICA AO

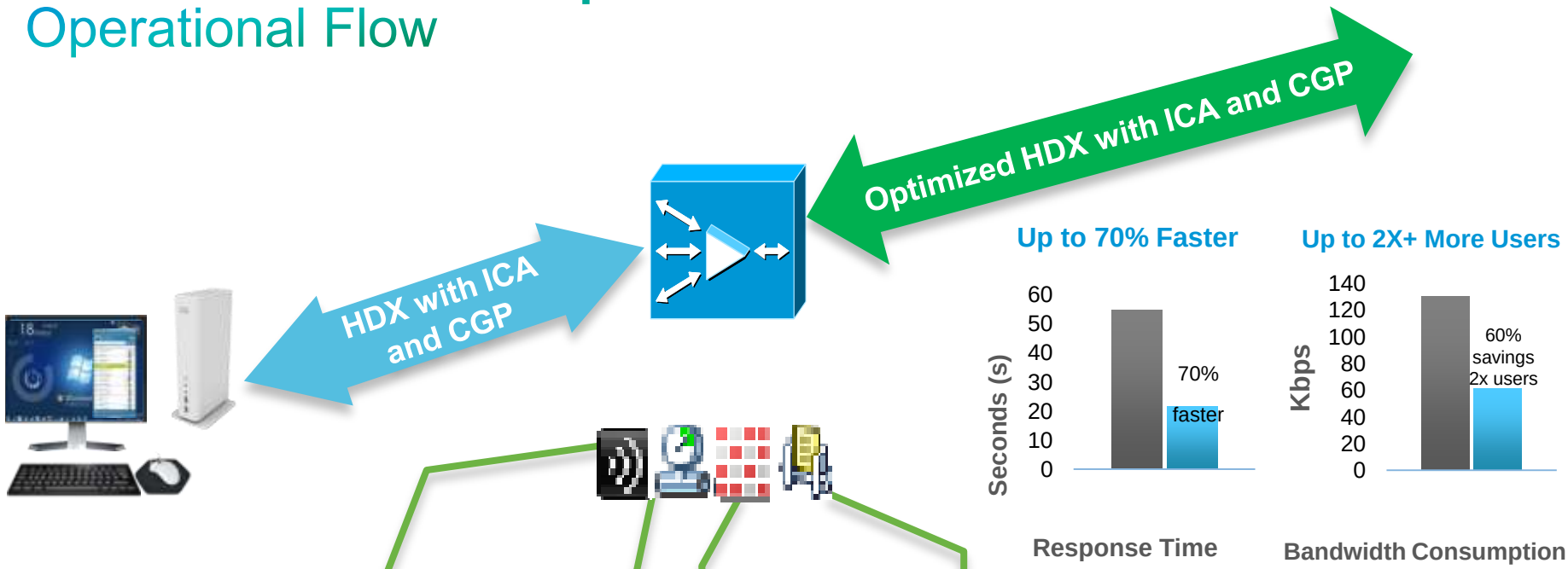
WAAS will optimize encrypted and compressed ICA desktop session traffic (no changes required on ICA client, HVD, or DC infrastructure) for all versions of XenDesktop and XenApp

Includes WAAS 4.4 Application aware DRE feature for unidirectional caching of desktop session traffic which improves the scalability and Application performance



Cisco WAAS Optimized for Citrix

Operational Flow



Transparent insertion into encrypted ICA/CGP (Common Gateway Protocol) communication.

WAAS applies an inline compression algorithm over the optimized data, maximizing savings

WAAS applies TCP flow optimization to maximize bandwidth usage and mitigate packet loss.

WAAS delivers multi-user Context-Aware Data Redundancy that removes redundant data from across all end user connections.

Conclusion

Conclusion

- Cisco VXI Virtualized End-to-End System
- VXC & User Experience
- WAN Optimalization

Odkazy

- VXI Page

  http://www.cisco.com/go/vxi

- VXC Clients

  http://www.cisco.com/go/vxc

- VXI Design Zone

  http://www.cisco.com/en/US/solutions/ns340/ns414/ns742/ns1100/landing_vxi.html

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  2.den 16:30 – 17:00