



*TOMORROW
starts here.*

Cisco *live!*



An Introduction to Cisco Collaboration for Voice and Video

BRKUCC-1660

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Systems Engineer


#clmel

Cisco *live!*

Agenda

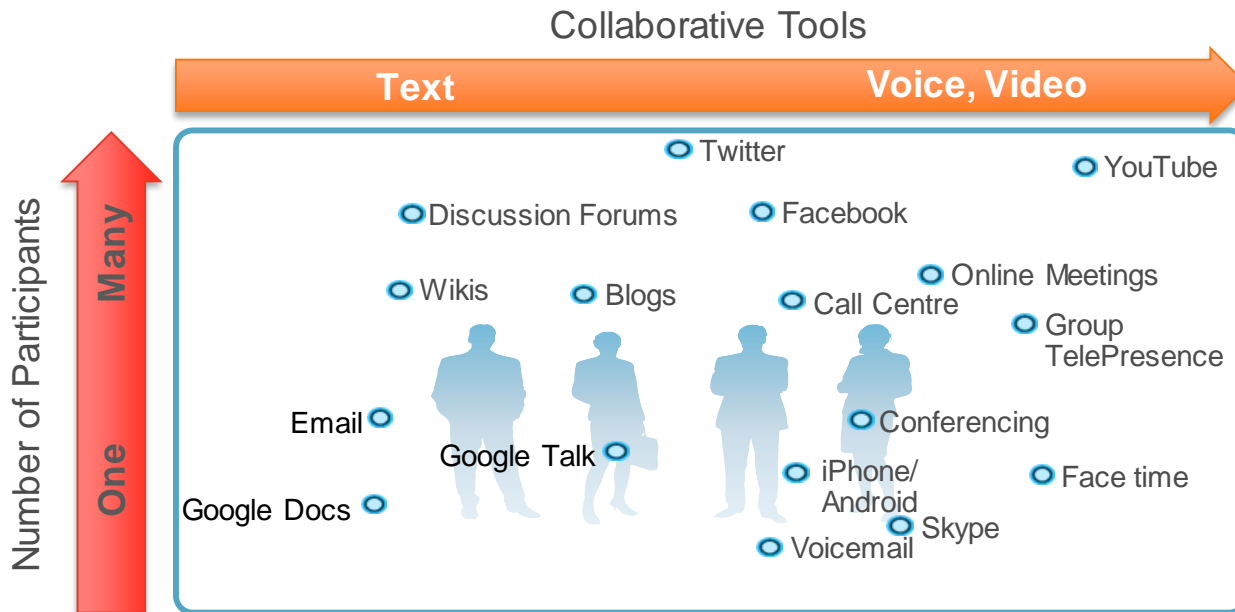
- Introduction
- Architectural View
- Sizing, deployment, Codec, QoS and licensing
- Recommendations





Introduction

The Way We Work is Changing...



Expanding Collaboration to include Broader, Richer Interactions

Work Is More Interconnected Than Ever

67%

of employees report
an increase in work
requiring active
collaboration

57%

increase in the number
of employees
collaborating from other
geographic locations

50%

of business
productivity
is tied to effective
collaboration

Yet Workers Want Choice and Flexibility

40%

of the workforce
will be mobile by 2016

40%

of users use three or
more devices for video
calling

94%

of business leaders
say cloud
collaboration
enables flexibility

Collaboration is Challenging

Most employees are better at individual performance than team performance

- Complex, evolving team networks
- Increase in non-routine work that requires team decisions
- Disjointed tools, inconsistent experiences





Collaboration

The act of people working together to reach a common goal.



Make Collaboration Simple

#1



Technology

Technology
Centric Approach
to Collaboration

#2



Experience

#1



Technology

Technology
Centric Approach
to Collaboration

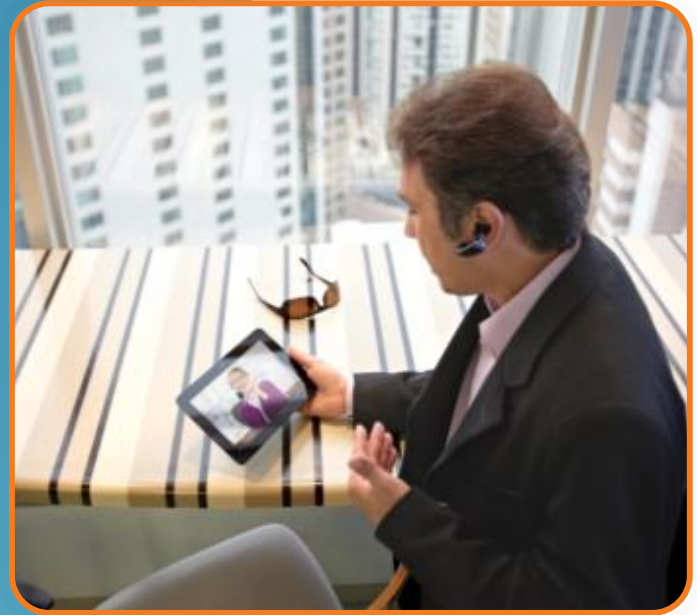
#2



Experience

What if you could take a new approach to collaboration?

- Expand beyond the desktop to mobility
- Make video collaboration that is as easy as voice
- Collaborate beyond corporate boundaries
- Mitigate security and compliance risks
- Support integration with existing investments
- Provide cost-effective deployment options

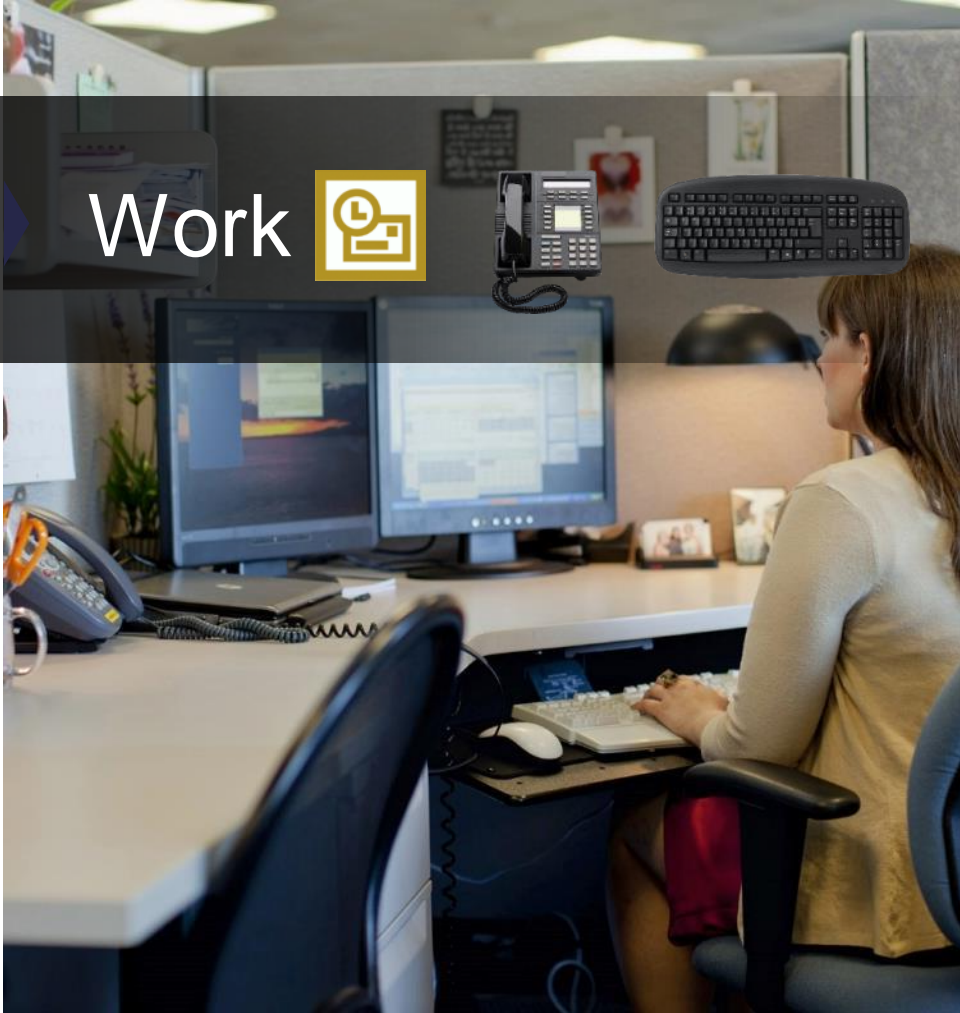




Home



Work



Business Collaboration



Mobile Worker
Account Manager



Information Worker
Financial Analyst



Executive
VP of Marketing



Deskless Worker
Factory Supervisor



Contact Centre
Contact Centre Agent

Cisco Collaboration



Customers



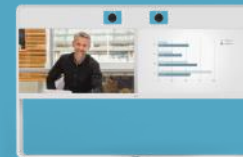
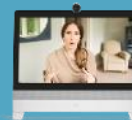
Partners



Suppliers

Enabled by a Comprehensive Architecture

Consistent Experience



Collaboration Services

Voice and Video

Content Sharing

Scheduling and Calendaring

Edge

IM and Presence

Conferencing

Messaging and Recording

Workflow

Network-Based Platform

Security

Data Centre

Network

Medianet

Management

Deployment Models



On Premises



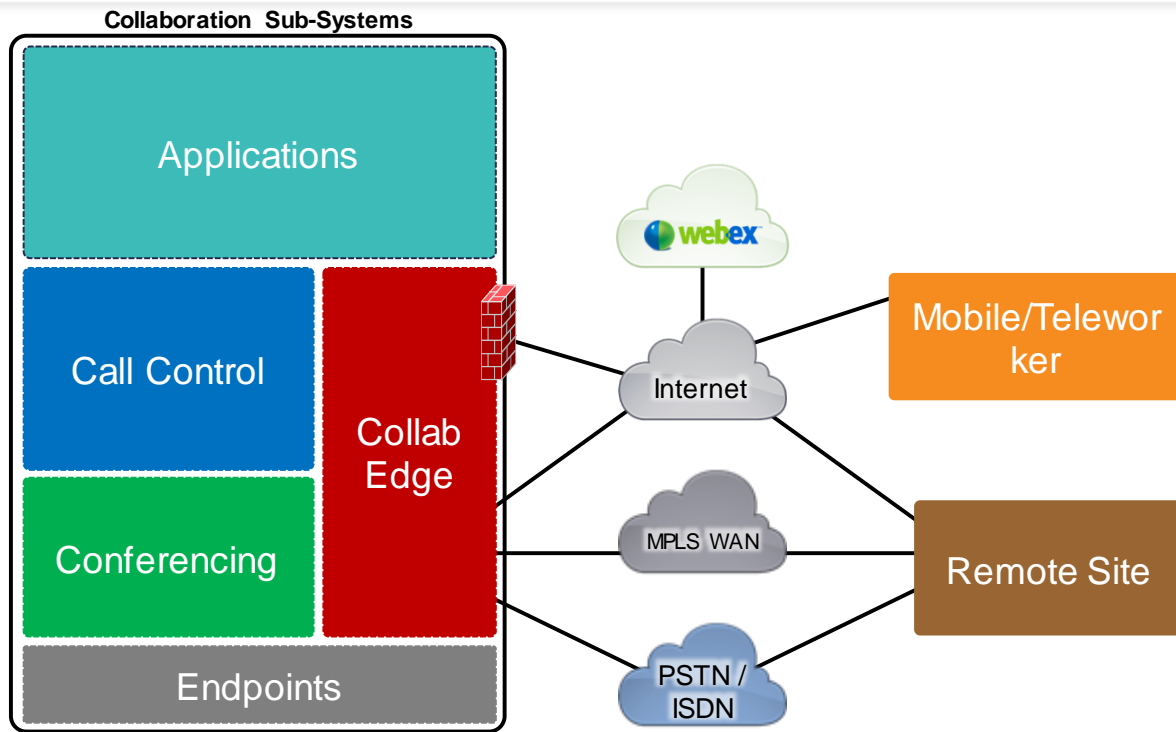
Cloud



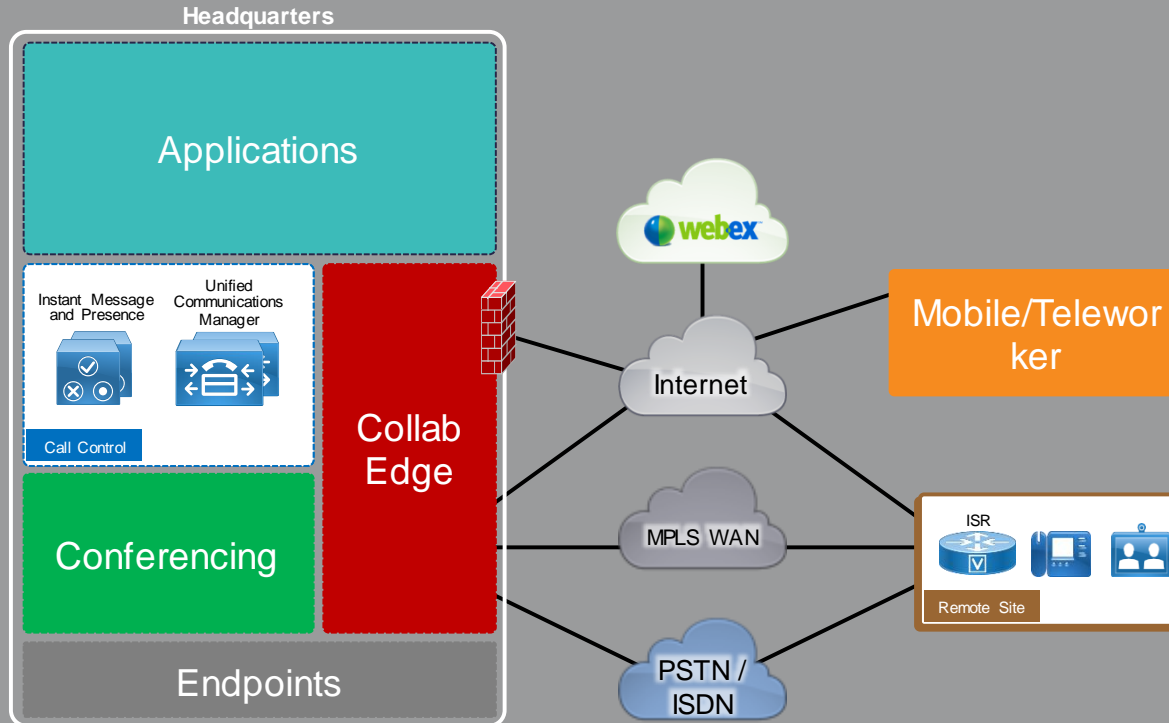
Architectural View



How are the Architectures Organised?



Call Control



Business Architecture Transformation

Capabilities

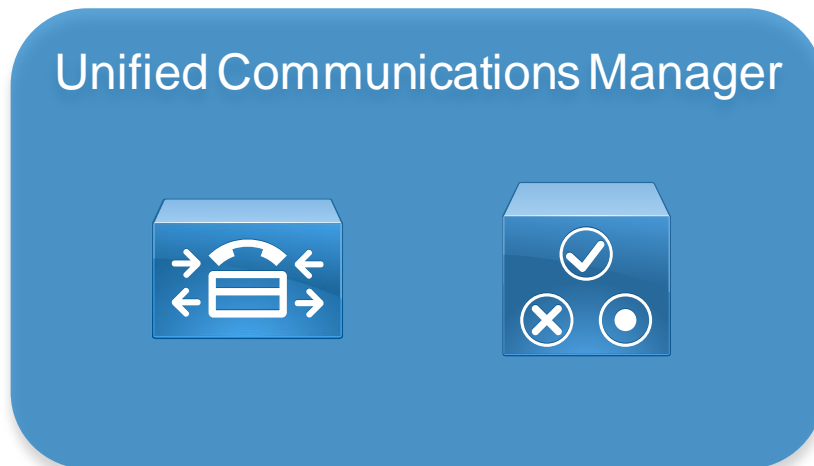
- Deploy a Unified Communications Architecture
- Support Teleworkers & Remote Offices
- Consolidate Communications Infrastructure
- Extend Telephony with Video
- Improve Interoperability
- Improve User Experiences
 - Simple Global-Reach Identities
 - User Adaptable Dialing
 - Make Communications Personal

Business Value

- Improve Employee Productivity
- Enhance Relationships
- Increase Adoption
- Streamline Processes

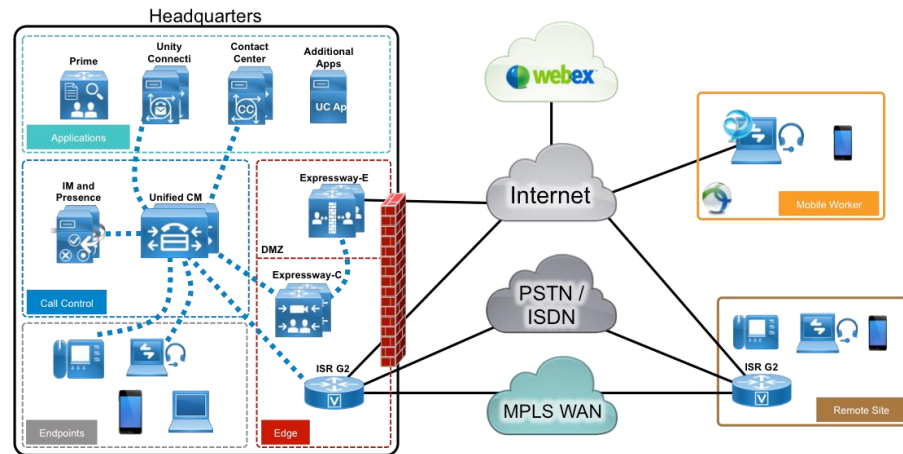
Component Products

- Unified Communications Manager
- Unified Communications Manager – Instant Messaging & Presence
- Integrated Services Routers (ISR) – Survivable Remote Site Telephony (SRST)



Call Control – Presence Server Functions

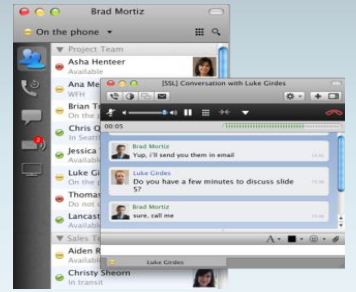
- User / Endpoint Identities & Status
- Endpoint Registration & Management
- Session Management
- Central “Dial Plan” Authority
- Presence information and Application Integration
- Third-Party Interoperability



Unified Communications Manager is the **Heart of the Architecture.**
The “Glue” that binds it all together.

Presence Server: Consistent User Experience on Your Choice of Devices with Cisco Jabber

Rich, Real-time Communications



One-One | One-to-Few | Real-Time

Securely Unify Presence, IM, Voice, Video, Messaging, Desktop Sharing and Conferencing



All-in-One UC Application

- Presence, IM
- Voice, Video, Voice messaging
- Desktop sharing, Conferencing

Collaborate from Any Workspace

- PC, Mac, tablet, smart phone
- On-premises and Cloud
- Integration with Microsoft Office

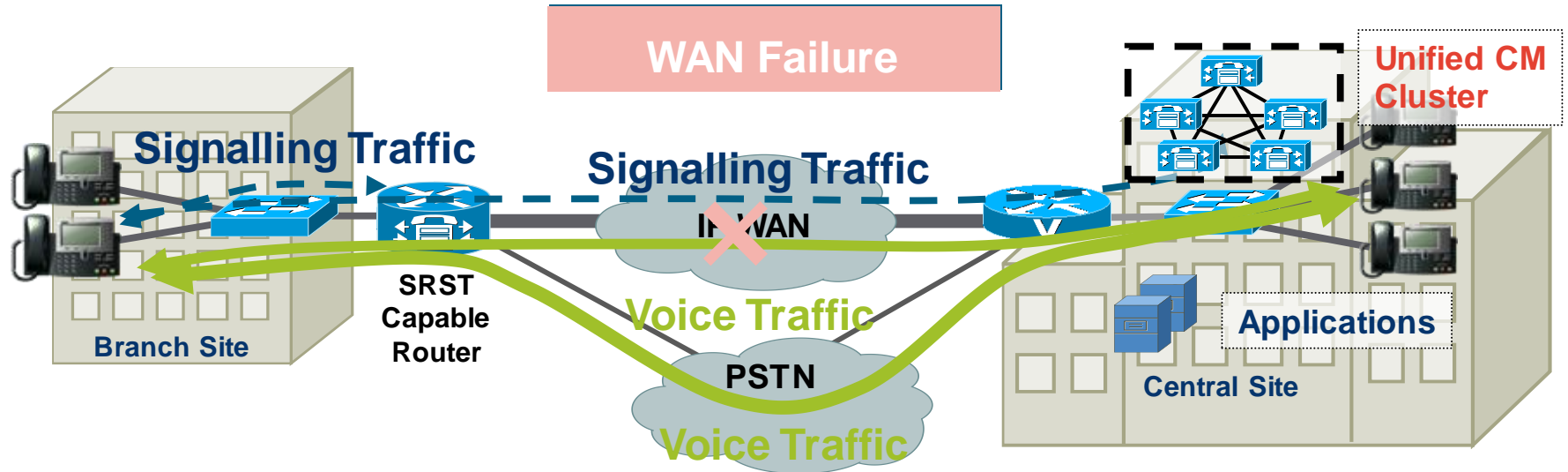
Call Control: What's new / different?

- Voice and Video Endpoints registered to UCM
- Single Call Control – UCM *(No VCS as call control)*
- **Single Cluster** – Voice, Video, & Presence
- **+E.164 & URI Routing**
- Consolidated Identities
- **Globally Consistent Routing**
- **Separation of User Dialing Behaviours & Call Routing**



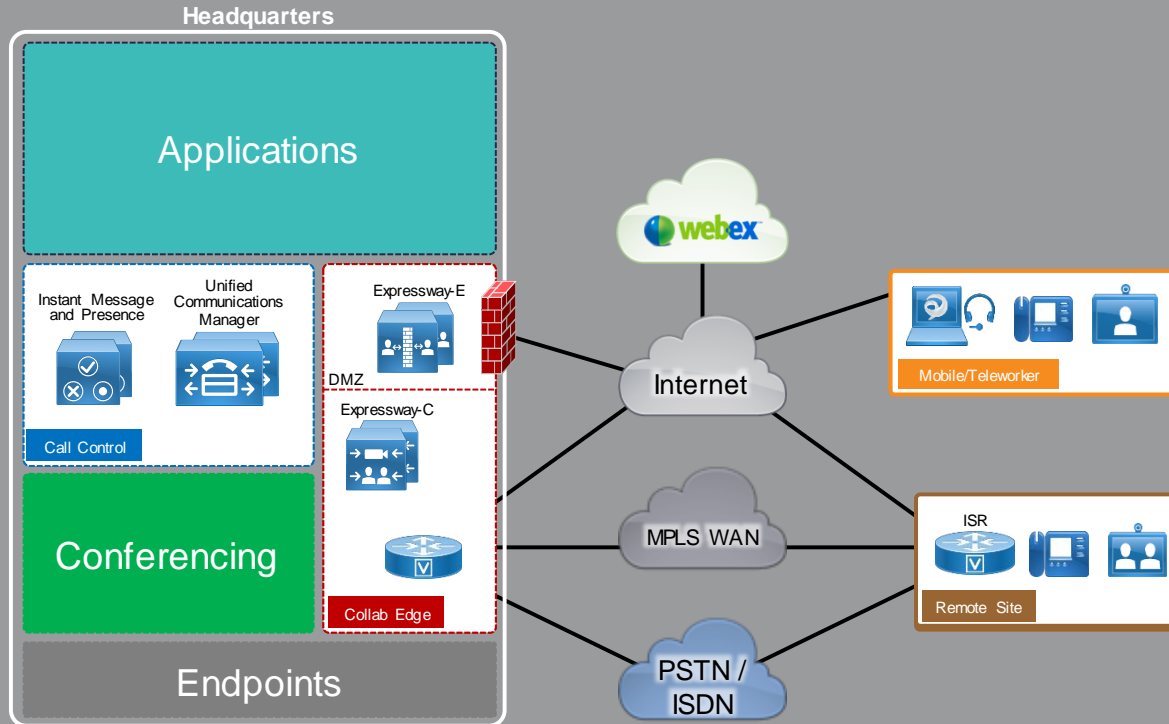
Topology View

Call Flow: Failover and Redundancy



- IP Phones have SRST router IP as the last option in their CM GROUP configuration
- Support for both SIP and SCCP IP Phones
- With SRST, only a **subset** of features are available to the phones

Collaboration Edge



Business Architecture Transformation

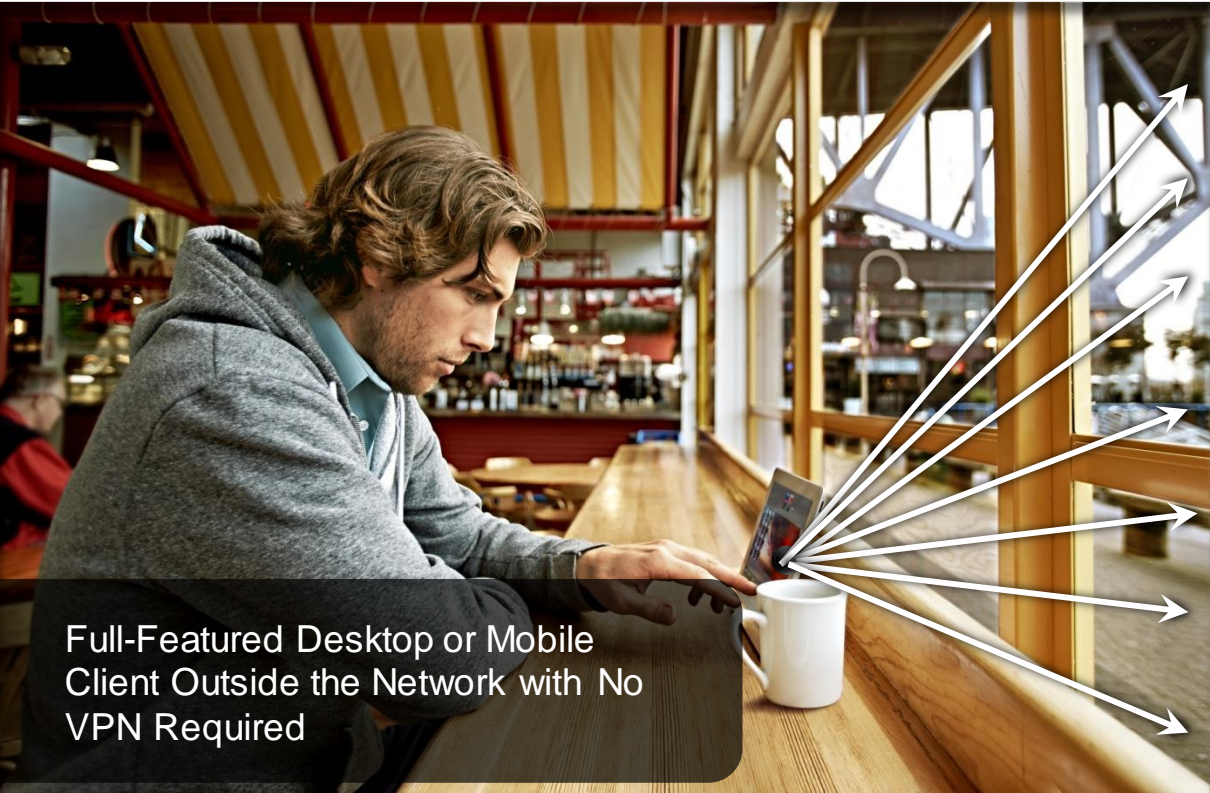
Capabilities

- Support Teleworkers & Remote Offices
- Extend Telephony with Video
- Improve Interoperability
- Improve User Experiences
 - Anytime Anywhere Access
 - Global Connectivity & Federation

Business Value

- Improve Employee Productivity
- Enhance External Relationships
- Increase Adoption
- Streamline Processes

Collaboration as Easy and Effective Outside the Network as It Is Inside with Cisco Jabber - No VPN



Full-Featured Desktop or Mobile Client Outside the Network with No VPN Required



Use Cisco WebEx®



Share content



Make video calls



Make voice calls



Access visual voicemail



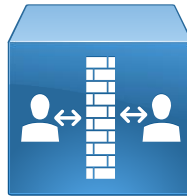
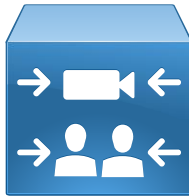
Use IM and presence



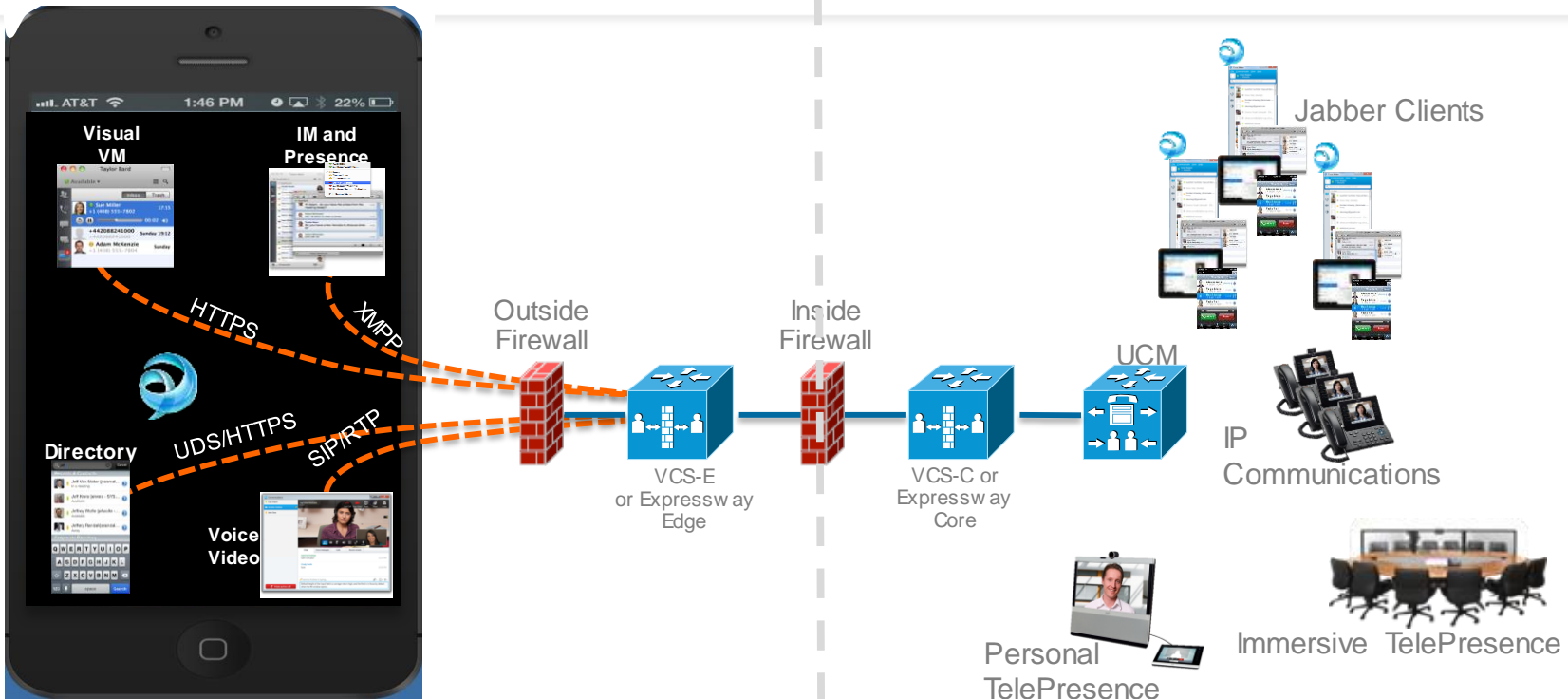
Search corporate directory

Component Products

- Adaptive Security Appliance (ASA)
- Expressway – Core & Edge
- Integrated Services Router – Cisco Unified Border Element (CUBE)
- ISDN Video Gateways



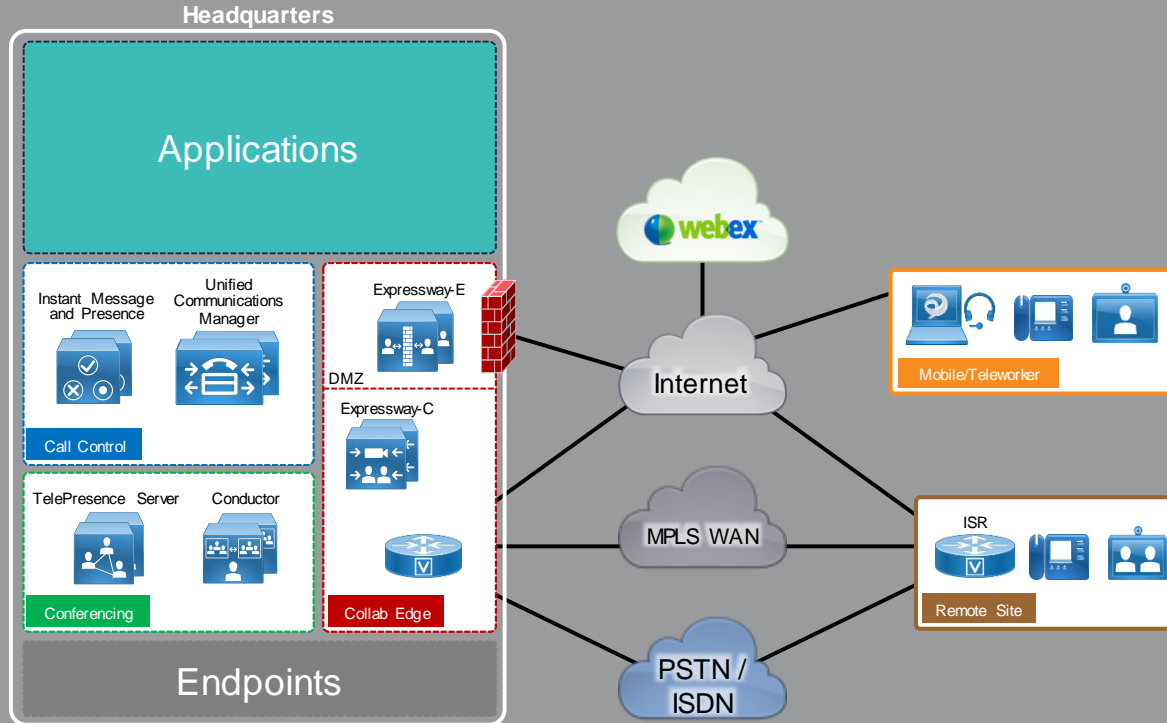
Collaboration Edge



The Result: Communities Become Teams



Conferencing



Business Architecture Transformation

Capabilities

- Deploy a Unified Communications Architecture
- Consolidate Communications Infrastructure
- Incorporate Video into Meetings
- Create Flexible Work Areas
- Improve User Experiences
 - Make Communications Personal
 - Better than Being There

Business Value

- Improve Employee Productivity
- Enhance Relationships
- Increase Adoption
- Streamline Processes

Understanding Conferencing Types

- **Adhoc**

“Hold on, let me conference in John.”

- **Rendezvous**

“Everyone just dial into **my bridge** for the team meeting.”

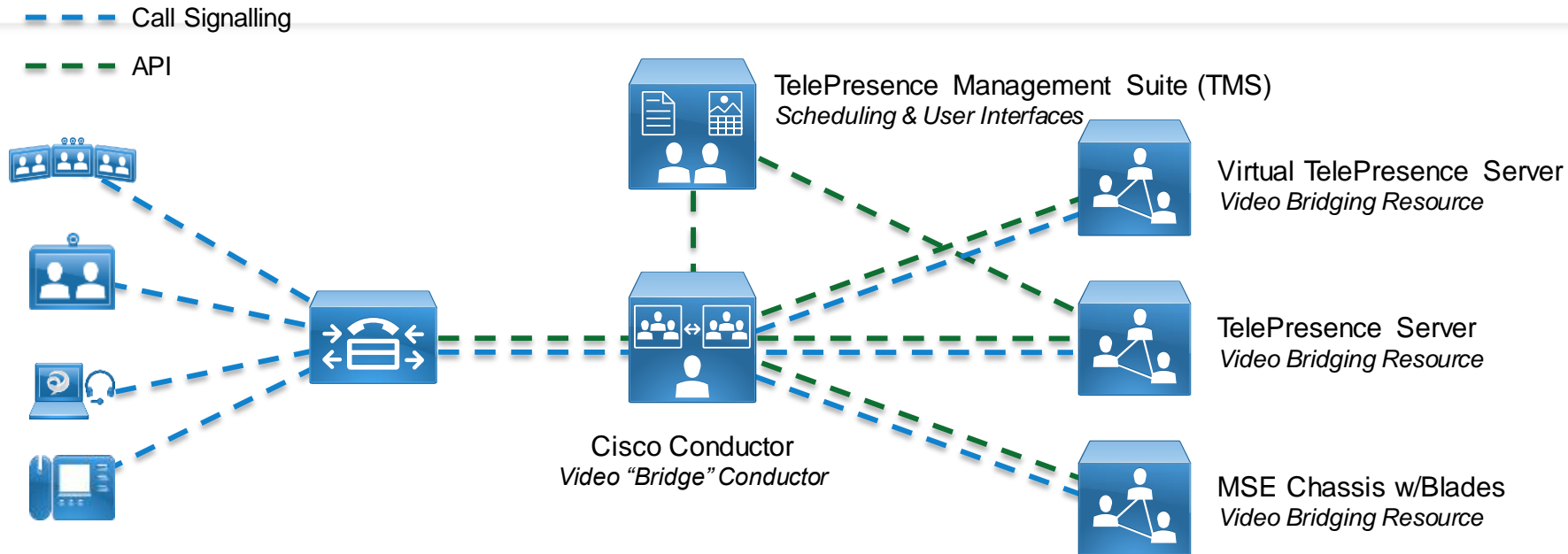
- **Scheduled**

“You should have **received an invite** for the meeting with the customer.”

Conferencing Component Products

- TelePresence Conductor
Manages / Implements all Conferences (Settings, Bridge Resources / Pools)
- TelePresence Server (TS)
Audio and video conferencing resources
- TelePresence Management Suite
Scheduling Function and Interfaces, User CMR Interface, and WebEx integration
- WebEx SaaS
Subscription-based web conferencing delivered through WebEx Collaboration Cloud
- WebEx Meeting Server (CWMS)
On-premises WebEx conferencing solution

Understanding Conferencing Implementation



What is the scale of your environment? How many endpoints are you supporting? How many resources are you using?

Cisco Conductor



Functions

- Stores Configurations / Templates for Conferences
 - Quality Settings (HD, SD, Audio)
 - Participant Limits
 - Conference Names, PINs, etc.
- Manages Bridge Pools

What bridge should I create this conference on?
- Creates Conference
- Conducts Participants to Conference

Things you should know...

- Enables bridges to be used for **all types** of conferences

Now including scheduling!!!
- Manages and Optimises bridging resources (FullHD, HD, SD, nHD, Audio)
- **Required for new TS and vTS bridges** (MM3xx, vTS, MM4xx)
- Conductor is what “implements” on-premise CMR’s

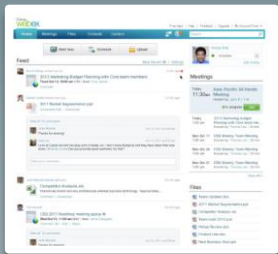
Call and Conference Quality

Quality	Use	H.264 Bandwidth ¹	Resolution	Screen Licenses ²
FullHD	Immersive	~ 3 Mbps	1920x 1080 @30fps	1
HD	TelePresence	~ 1.5 Mbps	1280x 720 @30fps	½
SD	Desktop Video	~ 0.5 Mbps	786x 448 @30fps	¼
nHD	Mobile Video	~ 384 Kbps	480x 360 @20fps	1/8
Audio	Voice Only	64 Kbps		1/52

1. The bandwidth values shown are approximates for the specified quality and resolution. They do account for network overhead, and are representative of what will be seen “on the wire.” These do not reflect the bandwidth needed for content sharing outside of the main video stream.
2. The screen license counts do not include the effects that content sharing has on port/license utilisation. Please consult the TelePresence Server data sheet for a complete matrix of video + content options

Cisco WebEx

1 | PREPARE



Attendee Organisation

2 | MEET



HD Conferencing
Real-Time Screen Sharing
Mobile Meetings

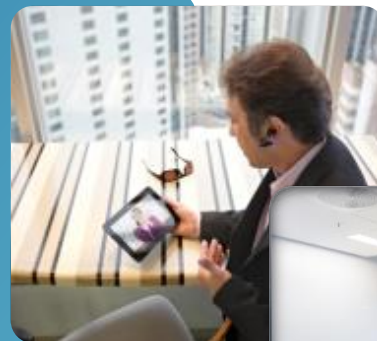
3 | FOLLOW UP



Recordings and Discussions

Cisco Collaboration Meeting Room

- Consistent meeting room experience across any mobile, desktop or room-based video endpoint
- Users can be provisioned easily
- Seamless scalability - 25 video endpoints and 1000 WebEx® users in a common meeting
- Flexible deployment options - on premises, cloud, hybrid



Personal Multiparty Licensing

Introducing Personal Multiparty Advanced

A user can host a conference anywhere, on any device : only the host needs a license



Personal Multiparty Basic

Host licenses for conferences between up to 4 participants, for spontaneous discussions (ad-hoc, rendezvous and personal CMR meetings) at resolutions up to 720p30

Previously Personal
Multiparty 4-way calling



Personal Multiparty Advanced

Host licenses for conferences between any number* of participants, for spontaneous (ad-hoc, rendezvous and personal CMR) or scheduled meetings, at resolutions up to 1080p30. Includes B2B and MS Lync interop

New! Conferencing in a
single license

Collaboration Meeting Rooms Deployment Options

CMR Cloud



Hosted by Cisco WebEx

CMR Hybrid



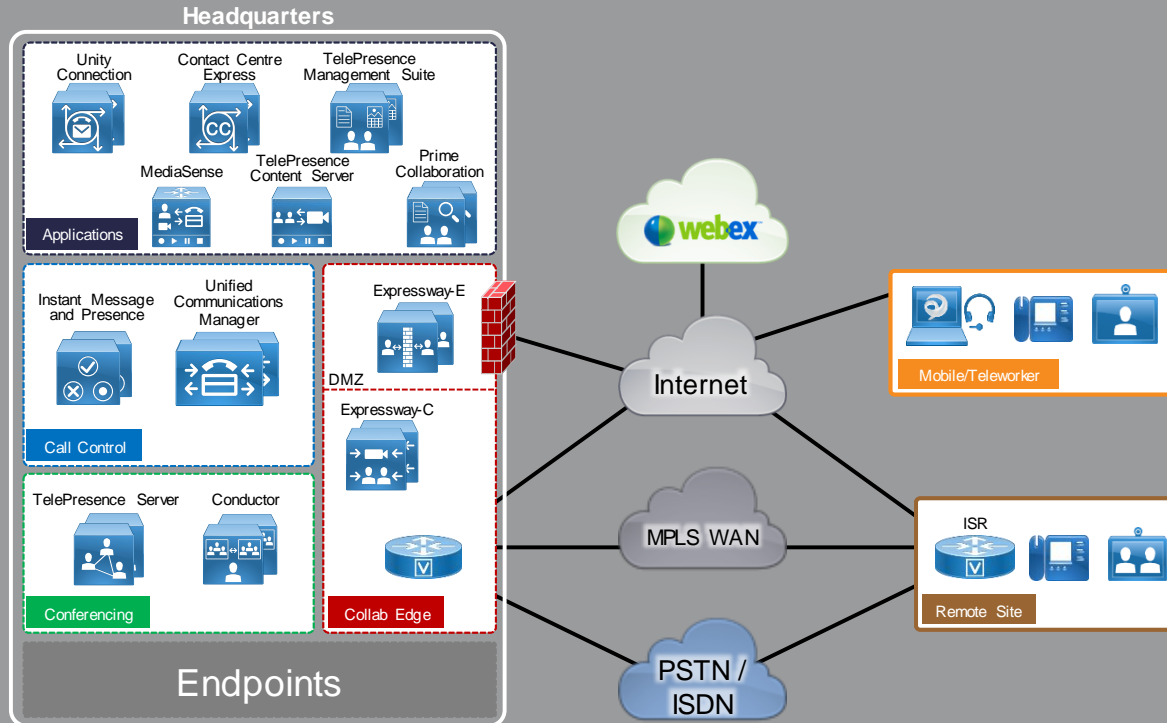
TelePresence on Premise plus
Cisco WebEx

CMR Premise



TelePresence infrastructure @
Customer Data centre

Applications

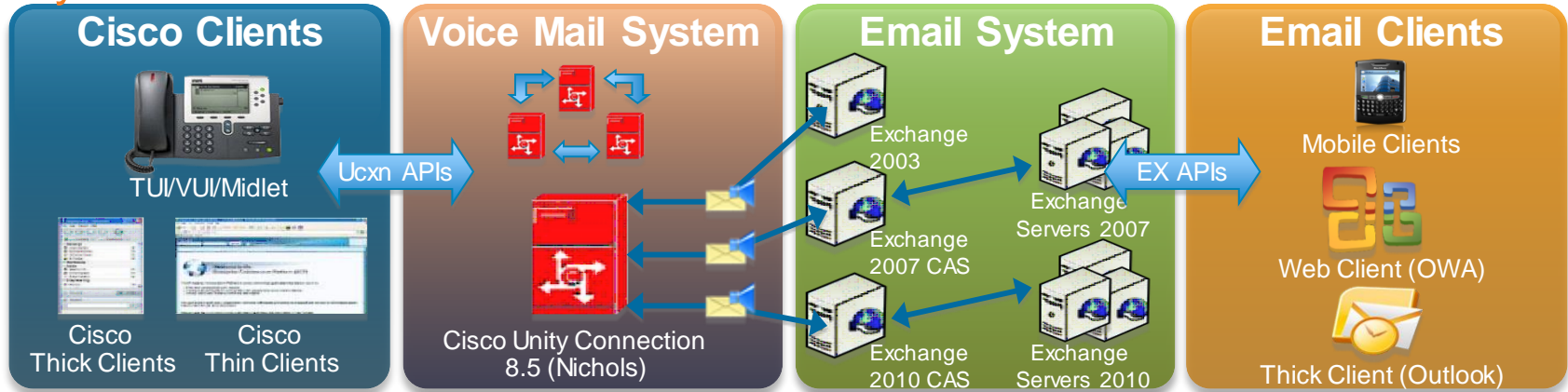


Component Products

- Unity Connection
- Contact Centre
- Prime Collaboration
- TelePresence Management Suite (TMS)
- TelePresence Content Server (TCS)
- MediaSense
- More... Cisco & Third-Party Application Solutions

Voicemail

Unity Connection Architecture



- Voice messages are stored in Unity Connection or synchronised with Microsoft Exchange mailboxes

Multiple Greetings including Video

Auto attendant, Time based, Basic Call Handling, Message Notification

Contact Centre

Call Centre agent support for:

- Cisco Unified Contact Centre
- Contact Service Queues (CSQ)
- Cisco Agent Desktop (CAD)
- Cisco Supervisor Desktop
- Skills based routing
- Flexible workforce



Cisco Prime Collaboration

Delivering Unified Management

- Unified console and primary platform for all management activities
- Prime™ Standard Edition Bundled with UCM 10.0



Deployment Server

Schedule and monitor UC upgrades

Self-Care

Convenient end-user service options

Provisioning

Simplified deployment and configuration

Assurance

Health and diagnostics

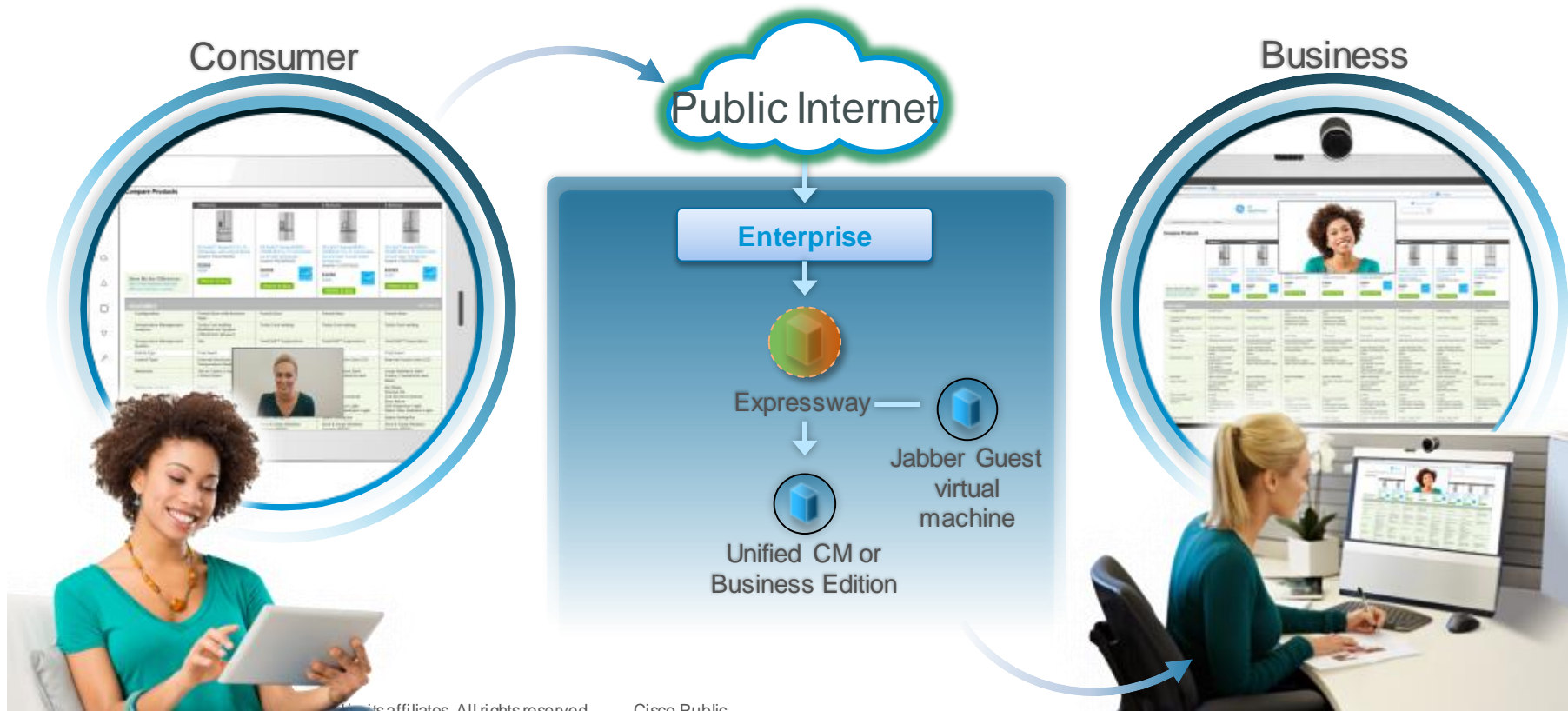
Cisco Jabber: All-in-One Unified Communications Application

- Best-in-class unified communications capabilities
 - Presence and IM
 - Voice, video, voice messaging
 - Desktop sharing, conferencing
- Collaborate from any workspace
 - PC, Mac, tablet, smartphone
 - On premises and cloud
 - Integration with Microsoft Office



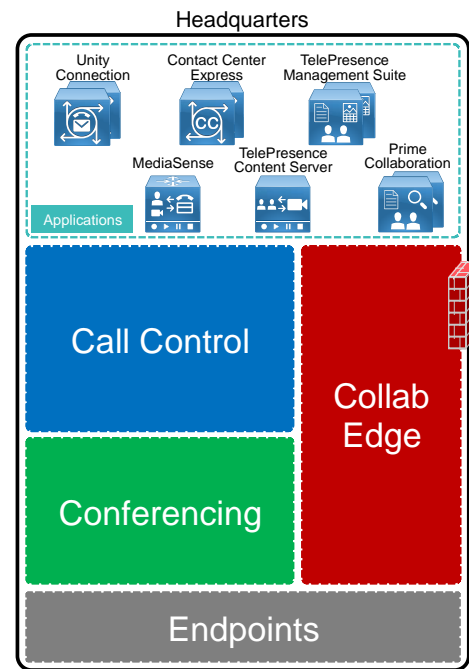
Jabber Guest

Reinventing Public to Enterprise Collaboration

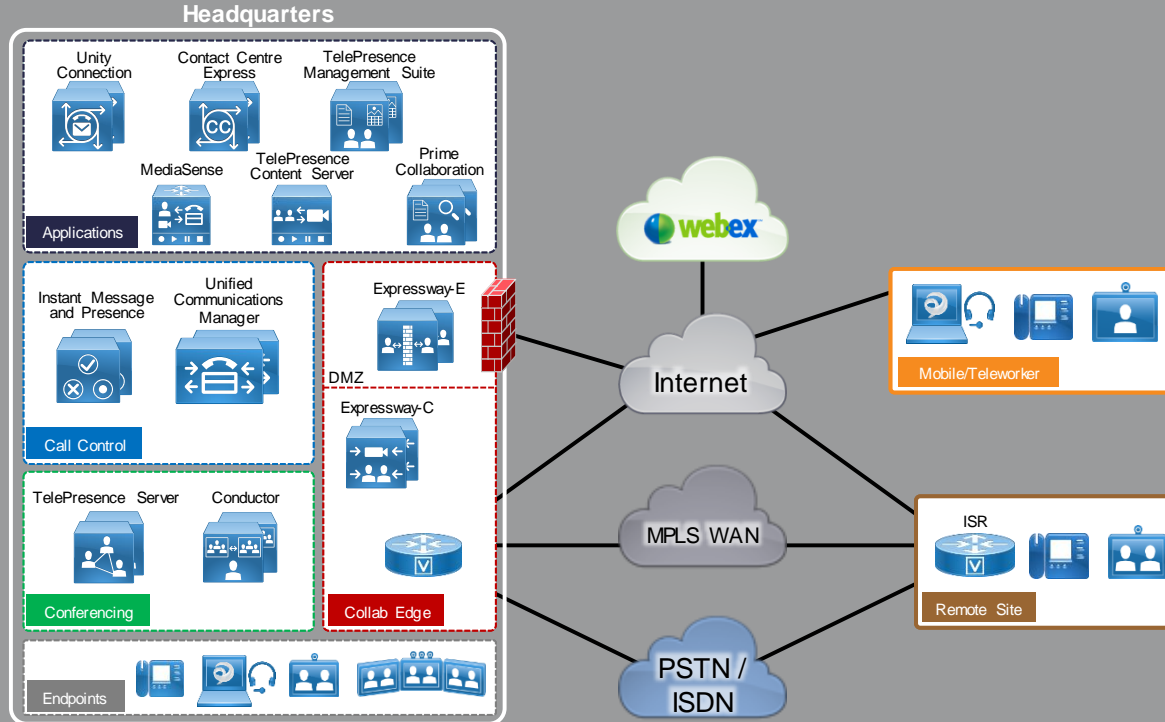


Applications Value Extension

“Built on top of the Call Control, Conferencing and Edge sub-systems; customer, third-party and Cisco applications are enabled to deliver advanced capabilities that can transform business processes and extend the value of the integrated architecture.”

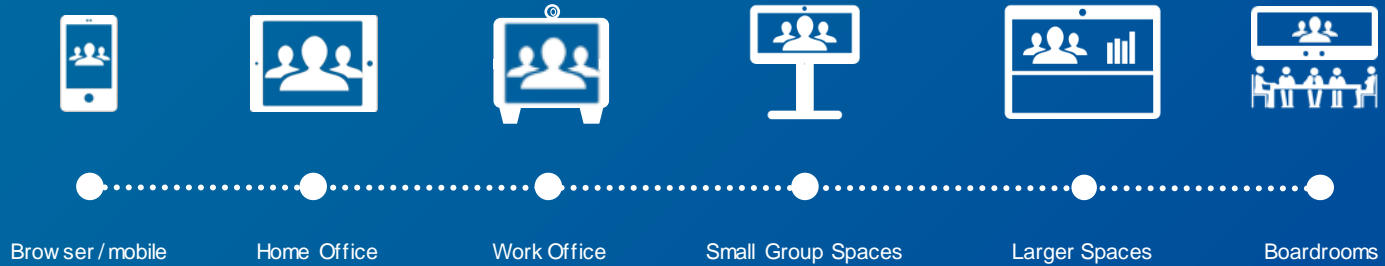


Endpoints



Cisco Collaboration Endpoints:

From the Browser to the Boardroom



Collaboration Desk Portfolio



DX650



DX70



DX80

Collaboration Room Portfolio



MX200 G2



MX300 G2



MX700



MX800



TX9000



SX10



SX20



SX80

Bringing the Preferred Experience to The Entire Portfolio





Intelligent Proximity

Intelligent Proximity Features

Target 2HCY14

Auto-sync contacts and call log from your mobile phone to your desk phone



Experience quality audio for mobile devices at the desktop



View and share content wirelessly in the meeting room



Making Every Screen Count with Intelligent Proximity

- Extend the video collaboration experience to any device
- Smart, system-based device pairing connects participants instantly to the meeting
- View shared materials, save slides, and review previously shared content from any mobile device





SpeakerTrack 60

SpeakerTrack 60

Two next-generation Precision 60 cameras

Each camera operates independently

Support for large seating areas

Up to 9m long by 5m wide



High sensitivity six microphone array
Used for triangulation only

Easy and flexible
mounting configuration

Mount above or below
monitors; mount next
to a projection screen

Theory of Operation

- Audio triangulation
 - The microphone array behind the fabric panel is able to accurately locate voices within the room
- Facial detection
 - Identification of a full or partial face at the same location as the voice is required to form a positive match
- Camera control
 - With a positive match, the processor in the camera base instructs the cameras directly where to move
- Camera switching
 - The processor in the camera base instructs the codec which camera to use. The codec does the actual camera switching

Theory of Operation

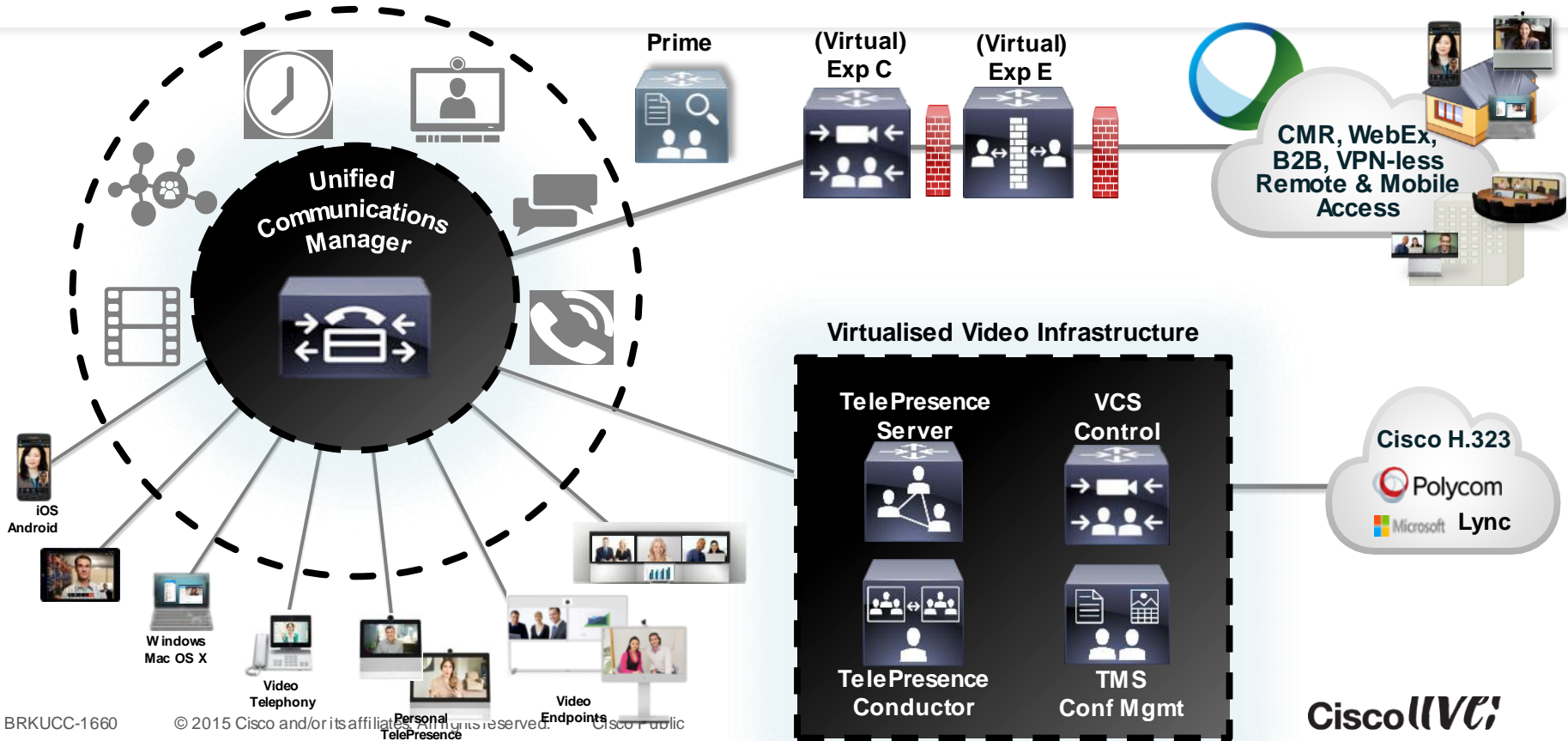


In this example, the woman in the white blouse is speaking. Audio triangulation locates the source of her voice, there is a facial match, the second camera zooms in, and the codec switches cameras. People sitting adjacent are purposely included in the shot. If they start to speak, the camera does not have to move again.

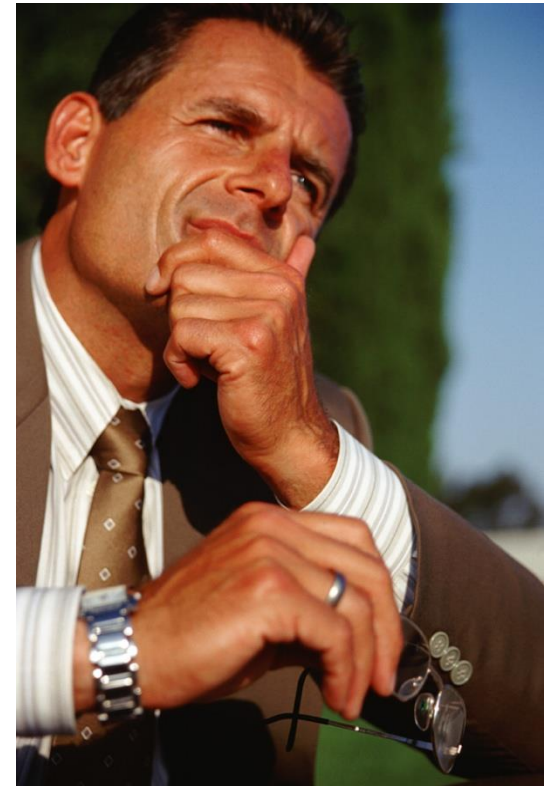
A nighttime city street scene with a pedestrian bridge in the background. The foreground is dominated by long, curved light trails from moving vehicles, creating a sense of motion and energy. The background shows modern buildings with lit windows and streetlights.

Sizing, Deployment, Codec, QoS and Licensing

Cisco Collaboration Architecture



- Size
 - Number of endpoints and desktops
 - Number of locations
 - Growth projections
- Application Integration
- Mobility Requirements
- Video
- Centralised vs. Decentralised (or hybrid)
- Management



UCM 10.0+ License Types

Personal Multiparty

Allows for up to 4 parties in a video conference; included in CUWL Pro

WebEx Meetings

One Named Host subscription for 1 year for WebEx Meetings (cloud) and one user license for CWMS (on-premise); included in CUWL Pro

Expressway Remote Worker

Firewall traversal for voice and video; included in UCL Enhanced & above

Firewall traversal for IM&P; included with all UCM licenses

Prime Collaboration

Cisco Prime Collaboration Standard; included with UCM

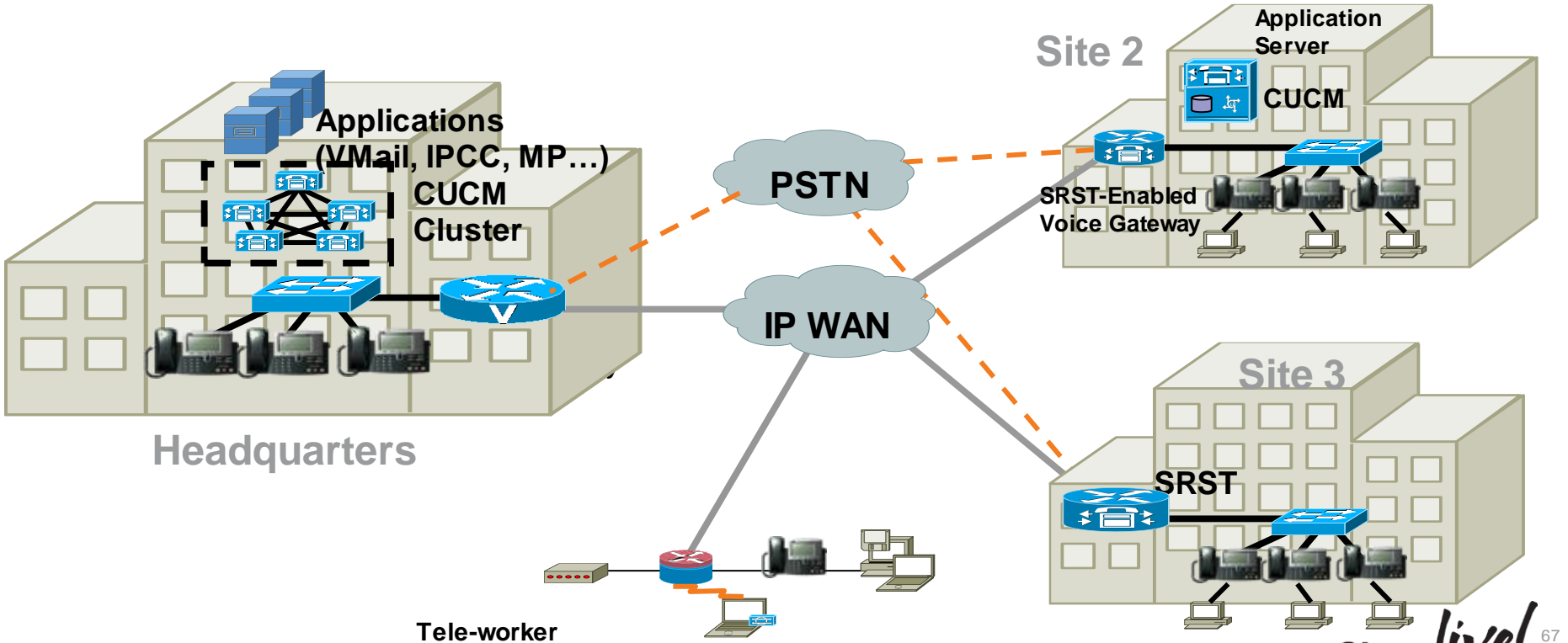
Personal Multiparty	✓		+	+	+	+
WebEx Conferencing	✓		+	+	+	+
Unity Connection	✓		✓	+	+	+
Expressway	✓		✓	✓	N/A	N/A
Jabber UC	✓		✓	✓	N/A	N/A
Jabber IM/P	CPE & Hosted ✓	CPE & Hosted ✓	✓	✓	✓	✓
Prime Collaboration	✓		✓	✓	✓	✓
# of Devices Supported	Multiple	Multiple	One / Two	One	One	One
	CUWL Professional	CUWL Standard	UCL Enhanced Plus / Enhanced	UCL Basic	UCL Essential	

✓ = included w/ license

+ = optional add-on

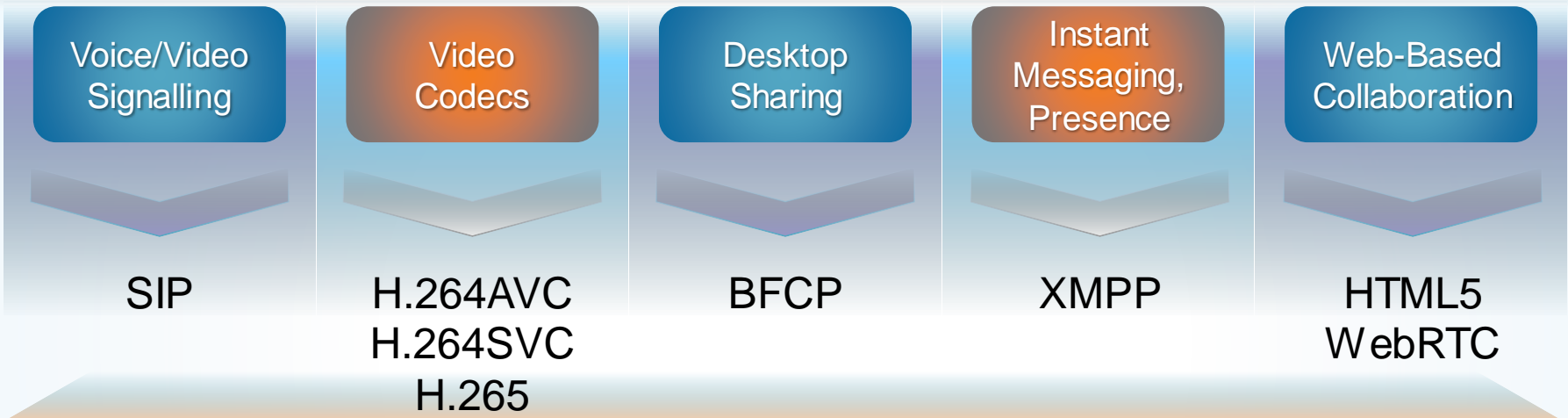
N/A = not available w/ license

Deployment Considerations



Holistic Collaboration Experiences, Investment Protection

Standards-Based Interoperability



Most Widely Adopted Protocols in Their Categories

Multivendor, Demonstrated Interoperability, Broad Industry Support

Includes Support for Legacy Protocols: QSIG, H.323, ISDN PRI, More

Why Enable QoS?

HA, Security, and QoS Are Interdependent Technologies



QoS:

- Enables UC and other collaborative applications
- Drives productivity by enhancing service levels to mission-critical applications
- Cuts costs by bandwidth optimisation
- Helps maintain network availability in the event of DoS/worm attacks

Enabling QoS in the Network

Traffic Profiles and Requirements

Voice



- Smooth
- Benign
- Drop sensitive
- Delay sensitive
- UDP priority

Bandwidth per Call Depends on Codec, Sampling-Rate, and Layer 2 Media.

- Latency ≤ 150 ms
- Jitter ≤ 30 ms
- Loss $\leq 1\%$

One-Way Requirements

Video



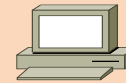
- Bursty
- Greedy
- Drop sensitive
- Delay sensitive
- UDP priority

Network requirements for video traffic can vary greatly, based on the type of application being used, as well as whether the media flows are standard or high definition.

- Latency $\leq 150 - 300$ ms
- Jitter $\leq 10 - 50$ ms
- Loss $\leq .05\%$

One-Way Requirements

Data



- Smooth/bursty
- Benign/greedy
- Drop insensitive
- Delay insensitive
- TCP retransmits

Traffic patterns for Data Vary Among Applications.

Data Classes:

Transactional/Interactive

Ops, Admin and Mgt

Bulk Data**

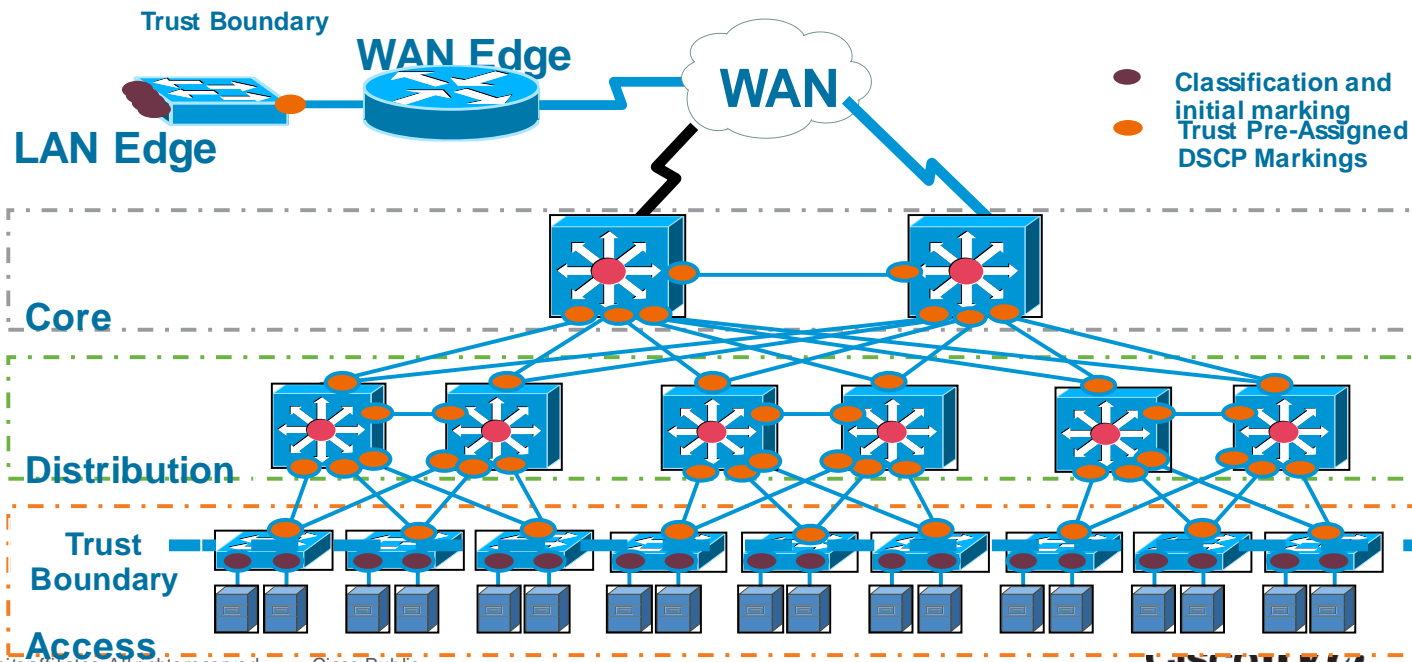
Best

- Less than Best Effort

Classification and Marking

Where Should It Be Done?

Classification and marking should be performed as close as technically feasible to the sources so that prioritisation may be implemented at congestion points throughout the network; DSCP should be used wherever possible...



Subsequent points in the network can now “trust” the marked values and queue based on these baseline values outlined below

Classify and mark traffic at the physical port or VLAN,
Queue on uplinks to Distribution

Recommendations

- Apply QoS as close as possible to client
- Think about the traffic flow and bandwidth restrictions
- Size the requirement, understand the business cases
- On prem, Hybrid and Cloud video / conferencing
- Use VCS-Control for third-party video endpoint registrations
- Use Expressway-Core & Edge for Firewall Traversal and Interop
- Make the experience Simple and Easy



Q & A

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