Business Video Update

Presented by: Robert Bouchard
Jeff Corcoran
Business Video Update

One year after the acquisition of Tandberg this session will focus on the new products and features that have been recently launched from our business video group. During this session we will take a deep technical dive into the new software updates on various endpoint platforms that aim to help and evolve your video experience. These updates will range from the touch panel interface to Clearpath, our cutting edge error resiliency mechanism. We will also take a closer look at some of the new products such as our Advanced Collaboration rooms as well as the expansion of our desktop line with the EX60.
Agenda

• What We’ve Been Up To
• Demystifying the Endpoint Enigma
• Collaboration in a Box
• The TelePresence Video “Secret Sauce”
• What’s New, what’s Hot, and What’s Coming to a Video Endpoint Near You
• Where We’re Going
What We’ve Been Up To

Areas of integration focus since acquisition close

- Implementation of Cisco networking technologies on TANDBERG endpoints
  - MediaNet: Cisco Discovery Protocol, auxiliary VLANs, Auto QoS Quality of Service, location awareness

- Provisioning and registration of TANDBERG endpoints on UC Manager
  - E20 in UC Manager 8.5(1)
  - EX and C-Series in UC Manager 8.6(1)

- Interoperability between UC Manager and VCS
  - SIP Trunking
  - Alpha-numeric URI routing
  - BFCP and media negotiation enhancements

- TelePresence MCU on UC Manager
  - UC Endpoints can now use TelePresence MCU as ad hoc conferencing resource

- Standards-based H.264 support on CTS endpoints
  - CTS endpoints now natively compatible with standards-based H.264 endpoints and MCUs

- TIP and One Button to Push scheduling extended to TANDBERG endpoints
  - EX and C-Series interoperable with CTMS and scheduled by CTS-Manager
  - CTS endpoints scheduled by TMS

- TIP protocol succession to standards-bodies
Demystifying the Endpoint Enigma
Cisco TelePresence – A Complete End to End Solution

Applications

One Button To Push Scheduling
Corporate Email / Calendaring
Remote Operation Services
TelePresence Virtual Agent

TelePresence Infrastructure

TelePresence Endpoints
Multipoint Switching
Call Processing
Border Element

Network Infrastructure

Campus Access
Campus Distribution
Firewall
Campus WAN Aggregation

Global B2B Inter-Network
B2B Provider
Enterprise WAN

Branch Access
Branch WAN
With any Cisco TelePresence, you get:

**Quality**
- Natural communication
- High definition
- Face-to-face, in person experience
- Low latency
- Wideband audio

**Simplicity**
- One button to push
- Continuous presence
- Intuitive controls
- Integrated scheduling
- Ad hoc flexibility

**Reliability**
- Low TCO
- Standards based
- Investment protection
- Scalability

**Collaboration**
- Interoperability
- Intercompany
- WebEx
- New experiences
- Doing more, better
Cisco TelePresence endpoints at a glance

**Immersive**
- 3000 SERIES
  - 3010
  - 3210
  - T3 and T3 Custom
  - Active Collaboration Room

**Multipurpose**
- 1100 SERIES
  - Profile 65/52/42
  - Profile Dual 65/52

**Personal**
- 500 SERIES
  - 500-37
  - 500-32
  - EX60/90
  - Movi

**Solution Platforms**
- INTEGRATORS
  - C90
  - C60
  - C40
- QUICK SETS
  - C20 Quick Set
- VERTICALS
  - Healthcare
  - Education

**TelePresence Extensions**
- IP VIDEO TELEPHONY
  - E20
  - Clus
- COLLABORATION
  - WebEx
  - OneTouch
Immersive TelePresence Endpoints

face to face
Absolute quality, immersive face-to-face experience – feels like you’re in the same room

easy access
connect with who you want, when you want… it’s about your entire community

collaboration
Connect, share, discuss…easily collaborate over spreadsheets, presentations and more

3010
3210
1300 Series
Active Collaboration Room
Cisco TelePresence CTS 3010

First Cisco TelePresence Offering
- Award Winning Product
- First Native 1080p TelePresence
- Native 1080p Cameras
- 65' Native 1080p Plasmas
- 3 x 2-Seat Table Segments (6 people)

Cisco TelePresence Experience
- Life Size
- Spatial Audio
- Auto Collaborate for Data Video Sharing
- One Button to Push for Scheduled Meetings
- Audio Add-in
Cisco TelePresence CTS 3210

Multi-Row room design
Same front row as CTS 3000 (6 people)
Extra 2nd row table (12 people)
Room for “spectators” along back wall
No raised seating

Designed to fit in large rooms
Minimum room size 31’w x 23’d x 8’h
Min 26’ depth for “spectator” seats
Additional data display required for back row viewing
10’ ceiling height for optional data display

Full “TelePresence Experience”
Inherited all features from Award Winning CTS 3000
All participants in the room have a full “seat at the table”
Spatial audio microphone at each seat, tuned 1080p video
Cisco TelePresence CTS 1300

**Immersive Multi-Purpose Room**
- 6 seats for TelePresence
- 10+ seats for general meeting

**Multi-Purpose Display**
- TelePresence + General Display
- Content Sharing
- DMP Integration

- All participants remain Life Size
- 1080p Native Resolution
- Wideband Audio
- Auto Collaborate
- Single Screen Bandwidth
Multipurpose TelePresence Endpoints

flexible
Broadest portfolio of integrated multipurpose room systems to fit various spaces and environments

best quality
Carefully engineered for the most realistic experience possible in non-customized rooms

1100 Series
Profile Series
Cisco TelePresence CTS 1100

- **Multi-Purpose Room**
  - 2 seats for TelePresence
  - 4+ seats for Audio Conference

- **Multi-Purpose Display**
  - TelePresence + General Display
  - Content Sharing
  - DMP Integration

- **All Participants Remain Life Size**
- **1080p Native Resolution**
- **Wideband Audio**
- **Auto Collaborate**
- **Single Screen Bandwidth**
Cisco TelePresence Profile System Series

Large Rooms and Collaborative Space

Small Rooms

Medium Rooms
Personal TelePresence Endpoints

face-to-face anywhere
Whether you’re in a cubicle, executive office or on the road, Cisco has a telepresence model for you

for anyone
Make video pervasive through your organization. Ad-hoc dialing makes it as easy to use as a telephone

EX Series
E20
Movi
# Cisco TelePresence Ex Series

## Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>EX90</th>
<th>EX60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Video Quality</td>
<td>1080p30 / 720p60</td>
<td>1080p30 / 720p60</td>
</tr>
<tr>
<td>Content Sharing</td>
<td>1080p30 / WUXGA</td>
<td>720p15 / WXGA</td>
</tr>
<tr>
<td>Screen size / res</td>
<td>24&quot; / 1920x1200</td>
<td>21.5&quot; / 1920x1080</td>
</tr>
<tr>
<td>Camera</td>
<td>1080p30, 45° - 65° view (zoom) Doc cam</td>
<td>1080p30, 50° view Doc cam</td>
</tr>
<tr>
<td>MultiSite</td>
<td>4-way HD embedded MultiSite (option)</td>
<td>- (Multiway in future release)</td>
</tr>
<tr>
<td>DVI / HDMI in</td>
<td>1 (PC) / 1 (2nd source)</td>
<td>1 (PC) / 0</td>
</tr>
<tr>
<td>HDMI out</td>
<td>Dual Display (option)</td>
<td></td>
</tr>
<tr>
<td>Audio</td>
<td>2 front speakers and subwoofer</td>
<td>2 front speakers</td>
</tr>
<tr>
<td>Input device</td>
<td>Cisco TelePresence touch screen</td>
<td></td>
</tr>
</tbody>
</table>
Cisco TelePresence solutions platforms
For custom and industry applications

C20 Quick Set
MXP Edge
Broad AV Codec Series (C90, C60, C40, MXP)

quick set
Bundled components Simple integration, and DIY option for fast deployment and replicable solutions

custom solutions
Flexible APIs and integration services for integrator solutions and differentiated service
## Cisco TelePresence C Series Codecs

<table>
<thead>
<tr>
<th>Resolution</th>
<th>C20</th>
<th>C40</th>
<th>C60</th>
<th>C90</th>
</tr>
</thead>
<tbody>
<tr>
<td>P2P</td>
<td>1080p30/720p60</td>
<td>1080p30/720p60</td>
<td>1080p30/720p60</td>
<td>1080p30/720p60</td>
</tr>
<tr>
<td>P2P + Duo</td>
<td>720p30 + WXGA</td>
<td>1080p30/720p60 + WXGA</td>
<td>1080p30 /720p60 + UXGA</td>
<td>1080p30 /720p60 + UXGA</td>
</tr>
<tr>
<td>AV IO</td>
<td>Mic in</td>
<td>2 mini-jacks</td>
<td>2 XLR</td>
<td>4 XLR</td>
</tr>
<tr>
<td></td>
<td>Video in</td>
<td>1 HDMI + 1 DVI</td>
<td>2 HDMI + 1 DVI + 1 S-Video/Comp</td>
<td>2 HDMI + 2 DVI + 1 S-Video/Comp</td>
</tr>
<tr>
<td></td>
<td>Video out</td>
<td>2 HDMI</td>
<td>1 HDMI + 1 DVI</td>
<td>1 HDMI + 1 DVI + Comp</td>
</tr>
<tr>
<td>MultiSite</td>
<td>Sites</td>
<td>NO</td>
<td>4 Way CP</td>
<td>4 Way CP</td>
</tr>
<tr>
<td></td>
<td>Resolution</td>
<td></td>
<td>576p30</td>
<td>720p30</td>
</tr>
<tr>
<td>Other</td>
<td>API</td>
<td>API</td>
<td>Video Compositing API</td>
<td>Video Compositing API</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>GPIO</td>
<td>GPIO</td>
</tr>
</tbody>
</table>
Vertical TelePresence Products

**purpose built**
Specifically designed to meet industry demands and use cases

**industry expertise**
Developed in collaboration with experts to meet industry standards and regulations

**integrated solution**
Work natively with the core telepresence portfolio to extend video anywhere in the organization

Clinical Presence System
Intern
Media P2
Educator
Scholar
Synch
## Product Name Transition

<table>
<thead>
<tr>
<th>Old Name</th>
<th>New Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tandberg E20</td>
<td>Cisco IP Video Phone E20</td>
</tr>
<tr>
<td>Tandberg C Series</td>
<td>Cisco Telepresence System Integrator C Series</td>
</tr>
<tr>
<td>Tandberg Profile Series</td>
<td>Cisco Telepresence System Profile Series</td>
</tr>
<tr>
<td>Tandberg EX Series</td>
<td>Cisco Telepresence System EX Series</td>
</tr>
<tr>
<td>Tandberg Movi</td>
<td>Cisco Telepresence Movi</td>
</tr>
<tr>
<td>Tandberg T Series</td>
<td>Cisco Telepresence System T Series</td>
</tr>
<tr>
<td>Tandberg Codian MCU 4xxx</td>
<td>Cisco Telepresence MCU 4xxx Series</td>
</tr>
<tr>
<td>Tandberg Codian MSE 8000</td>
<td>Cisco Telepresence MSE 8000 Series</td>
</tr>
<tr>
<td>Tandberg Telepresence Server</td>
<td>Cisco Telepresence Server</td>
</tr>
<tr>
<td>Tandberg Video Communication Server</td>
<td>Cisco Telepresence Video Communication Server</td>
</tr>
<tr>
<td>Tandberg Management Suite</td>
<td>Cisco Telepresence Management Suite</td>
</tr>
<tr>
<td>Tandberg Content Server</td>
<td>Cisco Telepresence Content Server</td>
</tr>
</tbody>
</table>
What Endpoint is right for me?
Deciding Factors

- New Deployment?
- Existing CTS Deployment?
- Existing Standards based (SIP/H.323) Deployment?
- Immersive, Multipurpose, Personal/Mobile, Industry Vertical?
- Interoperability Requirements
- B2B Requirements
Collaboration in a box
Active Collaboration Room Overview
An Interactive Experience for Team Brainstorming

- A new TelePresence Experience
- Up to 15 participants per room (depending on café table configuration) can participate freely in brainstorming, design work and other collaboration exercises
- Collaborate globally with colleagues anywhere, anytime

*Interoperable with all other Cisco TelePresence rooms, video conferencing and Cisco WebEx participants*
Active Collaboration Room Design

- **Cisco Telepresence CTS 1300** captures entire room with one video stream. Voice-activated switching automatically captures whoever is speaking.

- **Electronic Whiteboard** shared with remote participants through WebEx.

- **Cisco WebEx** combined with video conferencing enables maximum participation from remote participants.

- **Interoperability** allows remote users to effectively participate using any Cisco Telepresence System, standards-based video conferencing systems, or Cisco Webex.

- **Flexible:** 0 or 3 café-height tables provides for 6 or 15 participants per room.

- **Steelcase café-height seating** allows participants to move freely and change postures while still remaining on camera.

- **Steelcase Media:scape furniture** enables rapid transition from presenter to presenter.

- **Ceiling-mounted video projector** allows for extremely large content display.

- **Cisco 40” or 52” LCD displays** may be used for smaller rooms.
Active Collaboration Room in Action

Source: Cisco IBSG, 2010
WebEx Enables Remote Participants To Share Rich Content

Webex participants can view and interact with annotations

Note: Cisco Telepresence Webex OneTouch does not support SmartBoard integration. Disable OneTouch when whiteboard integration is desired

Source: Cisco IBSG, 2010
## Design Overview

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details*</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room layout and furniture design</td>
<td>Steelcase Media:scape and café tables</td>
<td>Participants are free to stand up and move about the room while remaining life-sized and in focus. VGA pucks allow for quick access to content sharing sources and destinations</td>
</tr>
<tr>
<td>Microphone coverage / switching</td>
<td>Clear One mixer and Clock Audio ceiling-mounted microphones</td>
<td>Table mounted and ceiling-mount microphones allow participants to be heard anywhere within the room. CTS-1300 voice-activated switching ensures that current speaker is displayed on video at all times</td>
</tr>
<tr>
<td>Electronic White Board integration</td>
<td>Smart Technologies Smartboard</td>
<td>Wall-mounted SmartBoard can be viewed by all participants via Cisco Telepresence Auto Collaborate and Cisco Webex&lt;sub&gt;1&lt;/sub&gt;</td>
</tr>
<tr>
<td>Projection or Flat screen display</td>
<td>Chrystie hi-lumen, W-XGA ceiling-mounted projector</td>
<td>Ceiling-mounted projector allows for all participants in the room to view local or shared content easily</td>
</tr>
<tr>
<td>Webex and Video conferencing interoperability</td>
<td>Cisco Webex and Cisco Telepresence Server</td>
<td>Using Cisco Webex and Cisco Telepresence Server technologies, participants can join an ACR session via Webex or from any standards-based video conferencing system</td>
</tr>
</tbody>
</table>

* Preliminary. Details subject to change without notice
Solution Components

Standard Template Configuration

Cisco Components
• CTS-1300
  • CTS-3200 camera lenses for additional depth of field
  • Cisco 52” LCD display
    (for small room configurations)

Steelcase Furniture
• Media:scape table
  • Integrated VGA matrix switch
  • Dimensions: 60”D x 84”W x 38”H
  • Cafe height tables
    • 36”Diameters
    • Cafe Height
  • VGA, USB and power cabling

3rd-party AV Components
• Projection
• Smartboard
• Gowire USB sharing cable
• Ceiling Audio
• Clock Audio microphones
• ClearOne Mixer
• JBL Speakers

Value Add Options

Cisco Components
• WebEx
  • Adds multi-party interactivity for smartboard and remote participants
• HFR codec
  • Adds 30fps graphics
• Interoperability and Recording
  • Cisco Telepresence Server
  • Cisco Telepresence Content Server
• Digital Signage
  • Cisco DMS Player and LCD displays

3rd-party AV Components
• Document Camera
  • Wolfvision VZ-32 Visualizer
The TelePresence Video “Secret Sauce”
ClearPath: Media Resilience
How to Preserve User Experience in Non-Ideal Networks?

Old/QoS-unaware Network Devices
Small packet buffers
Encoder Shaping

Link Failures
Sudden decrease of bandwidth
Dynamic Rate Adjustment

Low-speed Links
Serialization delay affects frame jitter
Gradual Decoder Refresh Repair-P Frames

Loss Bursts
Repair scheme worsens things
Long-Term Reference Frames Repair-P Frames

“Bad” Links
Continuous packet loss (<5%)
Forward Error Correction
ClearPath: Media Resilience
Encoder Shaping (*CTS Example*)

- Each frame must be packetized onto the wire in 33 ms
- Packet scheduler disperses packets as evenly as possible

### CTS 1.0 Release
- 65KB
- One 33ms video frame interval

### CTS 1.2 and later
- 13KB
- One 33ms video frame interval

5 Mbps

1 second

33ms frame intervals
Serializaton delay on low-speed links can cause I-frame packets to arrive too late and be discarded.

Solution: **Gradual Decoder Refresh (GDR)** distributes Intra picture data over $N$ frames.

- GDR frames contain a portion of Intra macroblocks and a portion of predicted macroblocks.
- Once all $N$ frames have been received, decoder has fully refreshed the picture.
ClearPath: Media Resilience

Typical Packet Loss Scenario

- Loss of a P-frame triggers request for a new I-frame
  Encoding and transmitting large I-frame takes time
  If any of the I-frame packets get lost, restart the process

- Flickering/pulsing of video when new I-frame arrives
  Video freeze or artifacts when multiple packets are lost
ClearPath: Media Resilience
Long-Term Reference Frames and Repair-P Frames

- **Principle**: keep encoder and decoder in sync with active feedback messages
  - Encoder instructs decoder to store raw frames at specific sync points as Long-Term Reference Frames (part of H.264 standard)
  - Decoder uses back channel (i.e. RTCP) to acknowledge LTRF

- **When a frame is lost**, encoder creates Repair-P differential frame based on last synchronised LTRF
ClearPath: Media Resilience
Forward Error Correction (FEC)

Defined in RFC 5109, allows decoder to recover from limited amount of packet loss (up to ~5%) without losing synchronisation.

Can be applied at different levels (1 FEC packet every $N$ data packets) to protect important frames in lossy environments.

Trade-off is bandwidth increase.
ClearPath: Media Resilience
Dynamic Rate Adjustment

- Receiver tracks packet loss over periods of time and triggers bitrate adjustment to adapt to network

- Two approaches possible:
  - Receiver-initiated adjustment via call signaling (H.323 flow control, SIP Re-invite) or explicit request in RTCP message
  - Pro-active sender-initiated adjustment based on periodic RTCP Receiver Reports
### CleathPath: Media Resilience

**Summary**

- Combining all these techniques has been shown to preserve user experience even in high packet loss situations (up to 10-15%).
- Many of these mechanisms are currently implemented in Cisco Telepresence endpoints:

<table>
<thead>
<tr>
<th></th>
<th>CTS Series</th>
<th>EX/C Series</th>
<th>Movi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Encoder shaping</td>
<td>1.2</td>
<td>TC 4.0</td>
<td>v4</td>
</tr>
<tr>
<td>GDR</td>
<td>1.6</td>
<td>TC 4.0</td>
<td>v4</td>
</tr>
<tr>
<td>LTRF and Repair-P</td>
<td>1.6</td>
<td>TC 4.0</td>
<td>v4</td>
</tr>
<tr>
<td>FEC</td>
<td></td>
<td>TC 4.0</td>
<td>v4</td>
</tr>
<tr>
<td>Dynamic Rate Adjustment</td>
<td>1.7</td>
<td>TC 4.0</td>
<td>v4</td>
</tr>
</tbody>
</table>
ClearPath Demo
What’s New, What’s Hot, and What’s Coming to a Video Endpoint Near You
What’s New
New Consistent Experience
Across Rooms and Personal Systems
A TelePresence Touch Revolution

It’s easy.
Simplicity of the touch technology. Visual and intuitive user interaction. Clean design of core user tasks.

It’s flexible.
It’s just as simple to join a scheduled meeting as it is to initiate an ad hoc meeting.

It’s optimized.
Adaptable user interface dependent on use scenarios and system capabilities.

It’s consistent.
Be confident. It’s the same familiar user experience whether you are at your desk or in a meeting room.
Feature Highlights

Local Camera Control
- For Meeting room systems with PTZ camera and EX systems with zoom there is local camera control.

Far end Camera Control
- On the context card for conference participants (participant bar) there is far end camera control function.

Layout Option
- Full Screen: Far end or presentation in full screen
- Speaker: Large window of active speaker, small POP window of others
- Speaker full: Full screen of active speaker, with PIP window of others
- Equal: Equally large windows of all participants.

Settings
- Access settings to configure the system and set user preferences.

Self View
To see what view you send to far end, use self view. A pip window appears.

Hold/Resume/Join/Swap
Place conference participants on hold, and resume them back to conference. Join and swap between conference participants.

Audio input
Easy select between speaker, handset and headset.

Do not Disturb
Ability to block incoming calls
Announcing the new TelePresence Touch 12” for the CTS series
CTS Touch 12” Demo
Enhanced User Experiences

- A new category of user Interface devices
- Portfolio of devices, functions optimized for endpoint segments
- Application and collaboration platform to add value and differentiation
- Common Design language across the family of products

<table>
<thead>
<tr>
<th>Functional Optimization</th>
<th>Control</th>
<th>Control and Presentation/limited collaboration</th>
<th>Collaboration, All-hands white-boarding, Multiples devices</th>
</tr>
</thead>
</table>

Available Today 6-12months
What’s new in Movi 4.2

- Updated look and feel
- Automatic updates for MAC OS X
- AD authentication with NTLM
- Automatic Gain Control
- SIP Outbound
- Windows presentation sharing enhancements
Cisco TelePresence System 500 32”
Personal TelePresence for the Individual Office

- Updated CTS 500 with 32” display and slim footprint
- Full Cisco TelePresence experience
  - One Button to Push, WebEx OneTouch, etc
- Auto-retractable camera
  - Full screen use for PC monitor, digital media
  - Superior eye contact
- Two dimensional microphone array
- Diffused integrated lighting
Cisco TelePresence 1300 47"
For the Small Multipurpose Conference Room

- Enhance Team Collaboration
  - Immersive face-forward experience across the table and around the globe
  - Fluidly move from a local meeting to a TelePresence call with an expert

- Versatile deployment
  - Mounting options: pedestal and tethered
  - Uses existing table
  - Bandwidth efficient for 4-6 participants with voice-activated switching

- Key components
  - 47" LCD ips for great viewing from all angles
  - Integrated lighting and multi-camera cluster for natural, life-like appearance
  - CTS microphones for true-to-life audio
What’s Hot
Multiway™

Bringing ad hoc multiparty calling to personal video.

Collaborative
No need to leave the desk to collaborate.
A new level of multi party video capabilities for personal video.

Enterprise Ready
A product of the Cisco solution.
Standards based and network friendly.

Spontaneous
Always on, always ready, no matter where your day takes you.
Multiway: How it works

Scenario 1

1. Point to Point Video Call between A and B.

2. A and B want to call C. A places B on hold and calls C.

3. A selects “Join”, and now A, B and C are in a multiparty call hosted on the MCU, using Multiway™.

Multiway™ is powered by VCS and brings multiparty conferencing capabilities to video devices…
Multiway: How it works

Scenario 2

1. Point to Point Video Call between A and B.

2. A and B are in a call when C calls A. A places B on hold and consults with C.

3. A selects “Join”, and now A,B and C are in a multiparty call hosted on the MCU, using Multiway™.
Multiway vs. MultiSite...a Comparison

**Multiway**
- Scalable for large conference
- Lower bandwidth requirement on the endpoint site
- Shared resource

**MultiSite**
- No need for central MCU, available on the endpoint
- Always available, easily accessed
- Perfect for smaller deployments
The Requirements for Multiway™

1. Endpoint to Initiate Multiway™ Conference
   - Must be a Cisco Endpoint
   - MXP, E20, C20 or Movi (Other C-Series coming soon..)

2. Participating Endpoints in Multiway™ Conference
   - SIP Endpoint that supports TANDBERG SIP Call and Hold
   - H.323 Endpoint that supports Facility Based Call Transfer

3. Cisco VCS Control
   - VCS Software version X4.1 or later

4. 4500 or 4200 Series MCU or MSE 8510 Media Blade
   - MCU Software version 3.0 or later
Cisco TelePresence C90 Codec features

- Matrix Switcher
- Digital Audio Mixer
- Video Scalars
- Video Compositor
- 1080p Hi-Def Codec
Video Scaling – general principle

1080p Camera

720p

XGA – 1024x768

Video Monitor
Digital Audio Mixing

- Balanced XLR inputs are mic/line switchable
  - Each has its own echo canceller
- Additional audio ins and outs on HDMI and RCA
- Eight EQs can be defined, and assigned to any in or out
Cisco TelePresence C Series Codec
API Basics

- Accessed via RS-232, SSH, HTTP(s)
- Two methods
  - XACLI – Command Line Interface
  - XML
- Programmer-friendly API *
  - Ready for 3rd party development
- Main command sets are xCommand, xConfiguration, and xStatus

* Documentation of API is published on developer.tandberg.com
Cisco TC Console
Efficient method of using the API

The Cisco TC Console application allows to customize different parts of Cisco TelePresence System Codec C90, Codec C60 and Codec C40

Creates profiles to be applied to the codec at a later time, or you configure the system in real-time

Video Compositor allows to modify the default video compositing behavior of the codec without the need for any programming.

Audio Console allows to change the default audio mixing, routing, equalization and set various input- and output-connector properties.
Video Compositing

Ability to send multiple images or multiple windows arranged on the screen to the far end as one image or displayed locally on the monitor.
Video Compositing Demo
What’s Coming to a Video Endpoint Near You
UCM 8.6 - Endpoints Can Be Deployed…

Perspective: Telepresence endpoints on UCM and VCS. Other scenarios omitted

- **New!** E20, EX and C-Series endpoints can now be deployed on UC Manager
- Existing VCS customer can begin to migrate to Unified Communications
- Existing UC and Telepresence customers can begin to deploy VCS
# E20, EX and C-Series on UCM 8.6

**Perspective:** When registered to UC Manager

<table>
<thead>
<tr>
<th>What Works</th>
<th>What Does Not Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>§ Cisco Discovery Protocol</td>
<td>Register endpoints to VCS when these features are required</td>
</tr>
<tr>
<td>§ Medianet: AutoQoS and SmartPorts</td>
<td>§ Encryption</td>
</tr>
<tr>
<td>§ UC Manager Provisioning, Registration and Call Control</td>
<td>§ H.323</td>
</tr>
<tr>
<td>§ Voicemail Message Waiting Indication (E20)</td>
<td>§ Alpha-numeric URI registration</td>
</tr>
<tr>
<td>§ “One Button to Push” scheduling and call launch (EX and C-Series)</td>
<td>§ Registering through VCS Expressway</td>
</tr>
<tr>
<td>§ BFCP presentation sharing</td>
<td>§ IPv6</td>
</tr>
<tr>
<td>§ Native interoperability with existing CTS and UC clients</td>
<td></td>
</tr>
</tbody>
</table>
Features Supported / Not Supported
Perspective: E20, EX and C-Series endpoints registered to UC Manager

Networking & QoS
- Cisco Discovery Protocol
- Auxiliary VLANs
- Medianet: AutoQoS / Smartports
- DSCP and 802.1p as per UCM service parameters
- Discard 802.1Q/p tagged frames received on PC port
- RTP port range as per UCM service parameters
- 802.1X Aux-VLAN override and MAC-Auth Bypass
  - 802.1X Proxy-EPOL Logoff
  - 802.1X Suppliant

Registration
- Auto-Registration
- SIP - Non Secure
- SIP - Digest Authentication
  - SIP - TLS
- Primary UCM node
  - Secondary/Tertiary UCM nodes
  - SRST / UCME
  - Register using E.164 (Directory Number)
  - Register using Alpha-numeric URI

Provisioning
- DHCP Option 150
- Automatic configuration and firmware downloads
  - HTTP port 6970, not TFTP
  - device defaults and device specific loads
- HTTP/SSH enable/disable

Service Control Events
- Reset / Restart / Check Config
  - Firmware downloads in background
  - Call Preservation (graceful disconnect)

Voicemail (E20 only)
- Message Waiting Indication (MWI)
- Messages Pilot Number
- Messages shortcut key (included in config file)
Features Supported / Not Supported

Perspective: E20, EX and C-Series endpoints registered to UC Manager

- **Directories**
  - Corporate Directory
  - Personal Favorites / Speeddials
  - Personal Directory
  - TMS-style hierarchical folder view

- **Localization**
  - User Interface Local (chosen locally on the phone, not provisioned in UCM)
  - Network locals (tones / cadences)

- **Enhanced Shared Line Appearances** (E20 only)
  - Remote State Notifications
  - Hold / Resume
  - Unified Mobility
    - Resume on Mobile Disconnect
    - Hand-off from mobile to desk
    - Hand-off from desk to mobile

- **Calling Features**
  - Enbloc dialing
  - Off-Hook dialing - Digit-by-digit KPML dialing
  - Alpha-numeric URI dialing
  - +, * and # character dialing
  - Hold / Resume
  - Transfer
    - Blind
    - Attended
    - Early Attended

- **Line Appearance**
  - Multiple Calls (1 active, 4 held)
  - Multiple Line Appearances
  - Call Forwarding
    - All, Busy, No Answer, No Coverage, Unregistered
  - Park / Pickup
  - Music on Hold
    - Unicast
    - Multicast
Features Supported / Not Supported
Perspective: E20, EX and C-Series endpoints registered to UC Manager

**B** Conferencing Initiation
- Multisite (embedded)
- Multiway (when registered to UCM)
- Multiway (when registered to VCS)
- UCM-style Conf/Join
- cBarge (E20 only)

**B** DTMF
- RFC 2833
- KPML

**B** Media Encryption
- When registered to UCM
- When registered to VCS

**B** TIP
- EX and C-Series only
- Single-screen, single audio stream profile

**B** Contact Center
- CTI Monitoring of device availability
- CTI Remote Call Control (remote-cc)

**B** Licensing
- CUWL/CUCL
- Release Keys and Option Keys provisioned in UCM

**B** XML / Java Applications
- Experimental on E20
- Provisioned in UCM

**B** One Button to Push
- EX and C-Series only
- Using CTS-Manager
- Using TMS
- On Touch UI
- On OSD UI
CDP and Auxiliary VLANs

Perspective: E20, EX and C-Series endpoints registered to UC Manager

Prior to CDP, TANDBERG endpoints support 802.1Q, but had to be manually configured
- Tagged (with VLAN ID specified)
- Untagged
- Default = Untagged

CDP introduced in E20 release TE4.0, and EX / C-Series release TC4.2
- Auto (use CDP). Will be set to this when CUCM mode is selected
- Manual (equivalent to Tagged in previous releases). User may manually set the VLAN ID. If VLAN ID is received from CDP the ID received will take precedence over the manually configured ID
- Off (equivalent to Untagged in previous releases. Ignores CDP, even if CDP advertises a VLAN ID
802.1Q/p and DSCP

Endpoint will advertise itself to the switch
Capability TLV = Host/Phone (0x90)

AutoQoS
Switch will automatically extend trust to the endpoint
  trust-cos recommended for endpoints that offer a PC port (E20, EX60, EX90)
  trust-dscp recommended for endpoints that do not offer a PC port (C20/40/60/90)

PC Port
Ethemet frames arriving on PC port with 802.1Q/p headers will be dropped (vs. just stripping the header and forwarding untagged)

Endpoint will use DSCP and 802.1p values assigned by UC Manager
  DSCP for Audio Calls (EF) – maps to 802.1p CoS 5
  DSCP for Video Calls (AF41) – maps to 802.1p CoS 4

Endpoint will use RTP port range assigned by UC Manager
  16384 - 32768
### Media Encryption Example Scenarios

#### Point-2-Point

<table>
<thead>
<tr>
<th></th>
<th>CTS</th>
<th>E20/EX/C on UCM</th>
<th>E20/EX/C on VCS</th>
<th>VTG endpoints (e.g. 9971)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTS</td>
<td>Encrypted</td>
<td>Non-Secure</td>
<td>Encrypted</td>
<td>Encrypted (audio-only)</td>
</tr>
<tr>
<td>E20/EX/C on UCM</td>
<td>Non-secure</td>
<td>Non-Secure</td>
<td>Non-Secure</td>
<td>Non-Secure</td>
</tr>
<tr>
<td>E20/EX/C on VCS</td>
<td>Encrypted</td>
<td>Non-Secure</td>
<td>Encrypted</td>
<td>Encrypted (audio-only)</td>
</tr>
<tr>
<td>VTG endpoints (e.g. 9971)</td>
<td>Encrypted (audio-only)</td>
<td>Non-Secure</td>
<td>Encrypted</td>
<td>Encrypted (audio-only)</td>
</tr>
</tbody>
</table>
Media Encryption Example Scenarios

<table>
<thead>
<tr>
<th>Multipoint</th>
<th>CTMS</th>
<th>TS 7000/8700</th>
<th>MCU 4500/8500</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTS</td>
<td>Encrypted</td>
<td>Encrypted</td>
<td>Encrypted</td>
</tr>
<tr>
<td>E20/EX/C on UCM</td>
<td>Non-secure</td>
<td>Non-Secure</td>
<td>Non-Secure</td>
</tr>
<tr>
<td>E20/EX/C on VCS</td>
<td>Non-secure</td>
<td>Encrypted</td>
<td>Encrypted</td>
</tr>
<tr>
<td>VTG endpoints (e.g. 9971)</td>
<td>N/A</td>
<td>Encrypted (audio-only)</td>
<td>Encrypted (audio-only)</td>
</tr>
</tbody>
</table>
Alpha-Numeric URI Example Scenario

Alice dials bob@cisco.com

UCM routes "@cisco.com" to VCS, replacing @<cm_ip_addr> with @cisco.com in the From: address
To: bob@cisco.com
From: “Alice” 14085551212@cisco.com

User sees call coming from: “Alice” 14085551212@cisco.com
User can call Alice back at: 14085551212@cisco.com
One Button To Push on EX and C series codecs

- One Button to Push (OBTP)
  - Scheduling information is pushed to endpoints
  - Upcoming meetings are displayed on the endpoint via main display and In-Touch display or on screen (for remote control systems).
  - User will have a single button to push (via In-Touch, or remote control) to join the meeting.
OBTP Demo on Ex90
Where We’re Going
Cisco TelePresence Endpoint Strategy

C Series

CTS

Target 6-12 months

Feature releases

Unified User Platform

Native Interop
- SIP on CTS
- H.264 bp
- Direct P2P
- CTS, C Series, VTG
- SD/HD resolutions

CTS

TIP on C Series
- Multi-screen interop
- Spatial Audio
- HD to 1080p30

Feature releases

ClearPath
- Error Resiliency
  - FEC
  - LRTP

Feature Parity
- OBTP
- Content Sharing
- Encryption
- CUCM on C Series

Interface
- Call Control
- Conferencing & Collaboration
- Media Service
- Management
Priorities for CY12
Perspective: E20, EX and C-Series endpoints registered to UC Manager

- Encryption when registered to UCM (CAPF, CTL, TLS, sRTP)
- Support for UCM-style ad hoc conferencing
- Enhanced alphanumeric URI support on UC Manager
- AS-SIP support
- IPv6 (Expanded Support)
- Enhanced Shared Lines on EX60/EX90
- Enhanced Message Waiting Indication on EX60/EX90
- KPML DTMF
- JTAPI Remote-CC support for Contact Center and softclient control
- CM Failover/Fallback and SRST
- Extension Mobility support (including cross-cluster)
- Registering to UC Manager through VCS Expressway
- Harmonize UC Manager and VCS bandwidth controls (regions/locations, zones/pipes)
For conference presentations visit:

www.networkerssolutionsforum.com

Please take a moment to complete the Networkers Conference Event Evaluation Form
Thank you.