TOMORROW starts here.
Agenda

- Call Control
- Conferencing
- Scheduling
- Emerging Video Technologies
- MediaSense
Call Control
Cisco Unified Communications Solution

- **IP Telephony**
  (PSTN Gateways, IP phones, Toll Bypass, Voice BRI/PRI/T3/FXO/FXS, Provisioning)

- **Unified Messaging**
  (Unity Voicemail, Jabber Chat, Speech Connect, Voice IVR, Email integration, Click to Call)

- **Contact Center**
  (Enterprise/Express, Agent Presence, Routing Logic)

- **Mobility**
  (Single Number Reach, Barge, Shared Lines)

- **TelePresence**
  (Provisioning/managing of CTS, E, SX, EX, MX, TX and C series endpoints)

- **Business to Business**
  (Expressway Traversal)

- **Additional Video Services**
  (H.323 to SIP, 3rd party video, IPv4 to IPv6, Jabber Video)

- **Remote Registrations**
  (Without VPN)

**Cisco Unified Communications Manager (CUCM)**

**Visual Collaboration Services (VCS)**
Reasons for a VCS only deployment

- H.323 endpoints
- Existing voice PBX in place (non-Cisco)
- Video only deployment
- Mostly room based systems
- TMS needed for provisioning
A New Feature and a New Product

**New Feature:** Mobile and Remote Access

- Connect remotely with Jabber and TC endpoints
- Register directly to UCM 9.1.2 (or higher)
- Voice, Video, IM&P, Directory, Visual Voicemail outside the network without a VPN

**New Product:** Cisco Expressway C and Expressway E

- Based on same OS as VCS-C and VCS-E
- Same GUI, SIP Stack as VCS-C and VCS-E
- Supported with limited scale on existing VCS appliance via upgrade and new option key
Both VCS and Expressway run x8.1 software

- Specialized video applications for video-only customer base (GK, SIP Proxy, interworking, traversal)
- **Superset** of X8.1 features
- No changes to existing licensing model

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New Offering

- Solution designed for and sold exclusively with UCM 9.x and above
- **Subset** of X8.1 features
- No additional cost for server software license for CUCM 9.1+ customers
- Video / TelePresence Device Registration & Provisioning is not possible
Cisco Expressway Licensing

No Additional Cost for Virtual Edition

- Mobile and Fixed Endpoint registration
- IM & Presence
- Video and Audio Media Sessions
- **No Cost** with UCM 9.x

Business to Business – Concurrent Sessions

- Business to Business Video and Audio Media Sessions
- Expressway Rich Media Session license $750 a la carte
- Two Rich Media Session licenses are needed for one video session

Similar to "Traversing Calls"
Conferencing
Types of Conferences

- **Ad hoc Conference**
  - Impromptu meetings, they are not scheduled beforehand, nor require an administrator to initiate them. Suitable for smaller, on-the-fly, meetings. A point-to-point call escalated to a multipoint call is considered ad hoc.

- **Rendezvous Conference**
  - Also called meet-me/permanent/static conferences, requires endpoints to dial in to a predetermined number. Often used for recurring meetings which involve different endpoints each time.

- **Scheduled Conference**
  - Provides a guarantee that endpoints and multipoint resources will be available at a certain time. Endpoints join manually or are automatically connected by the multipoint resource.
## Embedded Conferencing - Multisite

Endpoints capable of Multisite:
- C40
- C60
- C90
- EX90
- SX20
- MX200 G2
- SX80
- MX700
- MX300 G2
- MX800

### Product Specific Configuration Layout

<table>
<thead>
<tr>
<th>Feature</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room Name (from Exchange(R))</td>
<td></td>
</tr>
<tr>
<td>Web Access®</td>
<td>Enabled</td>
</tr>
<tr>
<td>SSH Access®</td>
<td>Enabled</td>
</tr>
<tr>
<td>Default Call Protocol®</td>
<td>SIP</td>
</tr>
<tr>
<td>Quality Improvement Server</td>
<td></td>
</tr>
<tr>
<td>Multipoint Mode®</td>
<td>Use Endpoint</td>
</tr>
</tbody>
</table>

### System Configuration

- **Multipoint Mode**
  - **Auto**
  - CUCM Media Resource Group List

- **Telephony Prefix**
  - Off
  - MultiSite
  - MultiWay
  - CUCM Media Resource Group List
Conferencing
One platform for all **video** conferencing

**TelePresence Server**
- Support for wide range of codecs
- Optimized conferencing
- ActiveControl support
- Multiple layouts and PIN support
- Available in hardware and VMware
- Supports multiscreen and single screen endpoints
- Uses new Flex API for advanced features

**MCU**
- H.323 and SIP support
- Auto Attendant
- Basic cascading
- No TIP support
- No optimized conferencing
- Legacy API

**CTMS**
- Only supports TIP endpoints (and 9971)
- No transcoding – all endpoints must negotiate same resolution
- No layouts, full screen active speaker only
- **EoS (Jan 2014)**

**PVDM3**
- No content channel
- No encryption
- Max 4CIF resolution on transcoded video
- Limited codec support
- No support for H.263
Why do I need Conductor?

- Support for TelePresence Server
- Support for direct integration with CUCM
- SIP B2BUA puts Conductor in the signaling path

- Improvements to logging
- Limited TMS scheduling support

Allows CUCM multipoint resources to be shared for both ad hoc and rendezvous conferences

Advanced features like optimized resources on the TS are possible

Central point of management for all conferencing needs
Conferencing
Example of optimization of resources

Without Conductor

Once full, additional endpoints cannot join

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With Conductor

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Full HD (1080p30)  HD (720p30)  SD (480p30)
Conferencing
TelePresence Server – Deployment

VCS

CUCM

Conductor

TS

Ad Hoc

Rendezvous

Scheduled

SIP

H.323

HTTP(s)
TelePresence and traditional UC (telephony and SD video) all collapsed on a converged UC Manager cluster. Former TANDBERG endpoints predominantly still on VCS Control

- Full native any-to-any interoperability between all endpoints and bridges. Ad hoc bridges under Conductor on UCM, scheduled bridges still on VCS Control

- Product functional overlap diminished; roles clarified but not all consolidation fully realized yet

- Homogenized dial plans: both numeric and alphanumeric now fully supported across most of the portfolio

- Provisioning, management, monitoring coming together – Prime Collaboration growing in functionality

- Feature and User Experience consistency across the portfolio getting better and better

- New compelling solutions like WebEx-enabled TelePresence
- All endpoints and infrastructure collapsed onto a converged UC Manager call control with Expressway (C&E) for Remote & Mobile Access to UCM, B2B and WebEx/Cloud-enabled TelePresence connectivity and 3rd-party interworking

- Multiparty bridging for audio and video, for all types of conferences now trunked through UC Manager (TMS scheduled resources still separate from Conductor ad hoc resources)

- Jabber now available on Windows, Mac, iOS and Android using Expressway for VPN-less access to UC Manager and related UC services (directories, presence, visual voicemail)

- Video now a table-stakes feature: infused in a growing number of applications like Cloud-enabled TelePresence, Unity messaging, Contact Center with new enabling technologies like Jabber Guest and WebRTC, H.265 and Scalable Video Coding (SVC)
- Multiparty bridging for audio and video, for all types of conferences now consolidated under Conductor with TMS for scheduling and meeting management

- Lots more exciting things in the pipeline but this isn’t meant to be a roadmap presentation 😊
Scheduling
TMS Scheduling on UC Manager

TMS Features Available for Endpoints on UC Manager

- **TMS**
  - Scheduling
  - Automated call launching
  - Meeting management

- **Prime Collaboration**
  - Diagnostics
  - Monitoring
  - Notification
  - Trouble management
  - Reporting

- **TMSXE**
  - Scheduling integrations

- **TMSPE**
  - Provisioning
  - Smart Scheduler
  - User Portal

- **Phones books**
  - New! in TMS 14.4 and TC 7.0

- **Endpoint management**
  - **X**

- **Resource management**
  - **X**
Emerging Video Technologies
H.265 or HEVC (High Efficiency Video Coding)

- Higher compression efficiency
  - Half the bandwidth for the same quality, compared to H.264
  - HD for everyone, everywhere: 720p30 < 500kbps

- Higher resolutions: UHD 8k, 4k, 120 Hz
  - H.264 Level 5.2: 4k (2160p) 60 Hz, 0.5 Gpixels/s
  - H.265 Level 6.2: 8k (4320p) 120 Hz, 4.2 Gpixels/s (8x pixel rate)

- Low complexity options
  - Enables simpler decoders (mobiles)
  - Tiles for memory bandwidth reduction

- Backward compatibility
  - H.264 base layer with H.265 enhancement layers

- New target applications
  - Screen content (Class F test streams)
  - Still pictures (half the size of JPEG)

- Parallel processing
  - Exploit multi-core hardware and reduce latency
  - 2D Tiles vs. 1D Slices, Dependent Slices, and Wavefronts
  - Deblocking filter and CABAC entropy coding are parallel-friendly
Scalable Video Coding

- Encode a high fidelity source using multiple layers of increasing fidelity

<table>
<thead>
<tr>
<th>Layer Type</th>
<th>Description</th>
<th>Resolution</th>
<th>Frame Rate</th>
<th>Bit Rate</th>
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<tbody>
<tr>
<td>Base</td>
<td>Layer with lowest fidelity</td>
<td>360p</td>
<td>30Hz</td>
<td>0.5Mb/s</td>
</tr>
<tr>
<td>Spatial Enhancement</td>
<td>Enhancement Layer to increase resolution</td>
<td>720p</td>
<td>30Hz</td>
<td>1.0Mb/s</td>
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<tr>
<td>Temporal Enhancement</td>
<td>Enhancement Layer to increase frame rate</td>
<td>720p</td>
<td>60Hz</td>
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<tr>
<td>Quality Enhancement</td>
<td>Enhancement Layer to increase bit rate</td>
<td>720p</td>
<td>60Hz</td>
<td>2.0Mb/s</td>
</tr>
</tbody>
</table>

- Main motivation is scalable conference servers
  - Switching vs. transcoding, trading flexibility for scale and speed

- Other benefits include rate adaptation and error resilience
- Drawbacks include interoperability and lower coding efficiency
Spatial Scalability
Multiple Resolutions

- Supported in H.264 SVC (Annex G)
- Planned in H.265 SHVC (in progress)
- H.265 SHVC will support a base layer of H.265 HEVC or H.264 AVC

- Drawbacks: interoperability, bandwidth overhead

...
Simulcast SVC (SSVC)
Independent Spatial Layers

- Advantages: better interoperability, lower aggregate and downstream bandwidth

- Drawbacks: upstream bandwidth overhead
Dedicated Expressway C or VCS C Needed for SVC Integration
HTML5 Overview
Actually, HTML5 & Friends … Standards Finalizing in Parallel with Implementations
Browsers lack UC/Video Capabilities
Plugins and native apps fill these gaps

- Softphone engine
- Real-time voice codecs
- Real-time video codecs
- Real-time data/content sharing
- Call signaling
- Media encryption

- Ability to send media to other endpoints
- Notifications
- Firewall traversal negotiation
- Peripheral controls
- System activity detection
And Mobile Browsers Are Not Extensible
Native mobile apps are required
**Jabber Guest WebRTC Vision**

**HTML5 Standard**

- Native Video in the browser
- ZERO Download
- Standards still evolving at IETF and W3C
- Video Codec support outstanding
- Jabber Guest Call Control designed to be WebRTC compatible

*Images for illustration purpose only. Final UI subject to change.*
Jabber Guest Components

Jabber Guest …

- Serves up Javascript call control based on URL
- For mobile, uses Cisco® app from app store or integrates it into third-party app
- For laptop browsers, initiates H.264 plugin install as needed for Cisco or 3rd-party Web app
- Converts HTTP call request to SIP INVITE
- The Expressway-C/VCS C used for Mobile and Remote Access cannot also be used for Jabber Guest

MediaSense
MediaSense

Video On Hold, Video in Queue and Video Greetings in Unity Connection Voicemail

**Video on Hold (VoH)**
- In UC Manager, MediaSense server(s) can be defined as Video on Hold resources and assigned to Media Resource Groups and used with Native Hunt Groups queuing

**Video Greetings**
- In Unity Connection, MediaSense server(s) can be defined as storage/playback servers
- When a call is forwarded (busy / no answer) to Unity voicemail caller will now “see” your voicemail greeting
- Recording of video messages is planned for a future release

**Video in Queue (ViQ)**
- In UCCE, MediaSense server can be defined as Video on Hold and Video in Queue servers and integrate into the Finesse agent desktop
- When a caller is in queue waiting for an agent
- When an agent places a customer on hold

Find out more at http://www.cisco.com/en/US/docs/voice_ip_comm/cust_contact/contact_center/mediasense/10/srnd/CUMS_BK_MC36D963_00_mediasense-srnd.html