Show and Share - Providing Video On Demand To The Enterprise

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#clmel
Agenda

• Enterprise Video Content overview
• Product updates
• Demo
• Streaming technologies discussion
• Deployment scenarios
• Cisco Live Case Study
• Q&A
Statistics...

- YouTube is the second most used search engine after Google.
- 79% use two-way video at least weekly.
- 76% need to search videos for specific information.
- 82% record business video.
- 70% want to access & manage video from any internet device.
- 70% of SMEs would rather use VC than travel to meetings.
- $4Bn spend on VC by 2016.
- 4Bn smart devices globally by 2017.

Video Content Opportunity?
Enterprise Video Content – Capture Transform Share

Capture from Any Device

- Recorded/On-Demand
- Live Streaming

Output and Playback on Any Device

- Video On-Demand
- Live Streaming/Live Events
- Social tools such as commenting, rating, and tagging

Easy, Integrated, Pervasive

- Ingest any format
- Any-to-any adaptation
- Automated workflows

CAPTURE

TRANSFORM

SHARE
Organisational Communications Enabled by CXS

Cisco Video/TelePresence + Capture/Transform/Share technology enables direct, consistent, high-quality and intelligent communication, leveraging video endpoints, to reach the entire organisation.

Training & Knowledge
- Training events and demos
- Lecture capture
- Team updates
- Webcasts and seminars
- Podcasts/video blog

Internal Communication
- Town halls
- Live events
- Broadcast announcements
- Breaking news
- Team updates

Enhanced Business
- Business reviews
- Staff meetings
- Team updates
- Working sessions
- Planning meetings
Extend the Value and Reach of Video

Turn your video endpoints into HD Broadcast & Recording Studio’s
Capture
TelePresence Content Server (TCS)

- TCS available as a VM
- Dedicated appliance on Cisco C220 UCS
- Can be preloaded on BE6000 and BE7000 (TCS 6.2)
- Integration with CUCM (TCS 6.2)
- Record and stream video and synchronised presentations
- Up to 10 ports of 1080p Recording / 2 ports of Streaming
- Cluster up to 10 TCS’s (100 ports of Recording)
- Live and on-demand streaming
- Record scheduled (TMS) and ad hoc calls
- Premium resolution option (up to 1080p30)
- Secure Calling

Capture
Record and stream HD live video from H/323 / SIP Video-enabled endpoints

Share any Content
Share presentations, document camera, desktop synchronised with video

Distribution
Multiple live streaming formats
Open APIs
Introducing Rev

The Enterprise Video Portal

- Next Generation Enterprise Video Portal
- Video on Demand and Live Events
- Cloud/On Prem/Hybrid Deployments
- Mobile friendly HTML5/Responsive design
- Enterprise Security
- Available through Cisco Solutions Plus
Cloud-Based vs. Cloud-Native

Cloud-Based
Single instance per client software simply installed on servers in a hosted environment.

No sharing of hardware resources.

Fewer insights into customer usage trends.

Client on-boarding more cumbersome.

Cloud-Native
Software can be distributed over many servers, in different locations, shared by clients.

Elastic so it can scale up or down depending the needs of end users.

Multi-tenant so hardware resources are shared.

New client **onboarding is fast** since there is no hardware to order and wait for.

**Insights into each customer** so that usage based pricing models are easily achievable.
<table>
<thead>
<tr>
<th>Deployments</th>
<th>Multi-Tenancy</th>
<th>Performance</th>
<th>High Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-Prem, SaaS, and or Hybrid models supported</td>
<td>Multi-portal, branding, users, admins, sub-admins</td>
<td>Asynchronous Architecture, NoSQL, multi-instance</td>
<td>No single point of failure, distributed &amp; redundant</td>
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<thead>
<tr>
<th>Next Gen UI</th>
<th>Administration</th>
<th>Device Control</th>
<th>Open API</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bootstrap, HTML5, Responsive, Web 3.0</td>
<td>Streamlined, role-based permissions, simple to use</td>
<td>Integrated control of capture and distribution devices</td>
<td>Integration, extensibility, workflows, and ability to grow</td>
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### REV and Show and Share Comparison

<table>
<thead>
<tr>
<th></th>
<th>REV</th>
<th>SNS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Architecture</strong></td>
<td>Cloud/Hybrid/Virtual</td>
<td>Appliance</td>
</tr>
<tr>
<td><strong>Mobile</strong></td>
<td>Native/HTML5</td>
<td>iOS app only</td>
</tr>
<tr>
<td><strong>Scale</strong></td>
<td>Horizontal Scalability</td>
<td>&lt;4000 concurrent</td>
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<tr>
<td><strong>High Availability</strong></td>
<td>Distributed</td>
<td>Active/Standby</td>
</tr>
<tr>
<td><strong>Video Distribution</strong></td>
<td>DME</td>
<td>ECDS</td>
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<tr>
<td><strong>Licensing</strong></td>
<td>User based</td>
<td>Author Based</td>
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Distributed Media Engine (DME) Overview

• Advanced Video streaming technology
  – BYOD/Mobile

• Solving the Enterprise Video Distribution Challenge
  – ‘I have dozens of TelePresence endpoints, but 1000’s of live streaming viewers’

• Flexible deployment options
  – Virtual and appliances available
Automated Workflow

**Use Cases**
- Any Video Endpoint (H.323 or SIP)
  - Corporate training, education
  - Organisational communications
  - Town hall live events
  - Enhanced meetings

**TelePresence Content Server (TCS)**
- Recording / streaming in the network
- Turns every TelePresence endpoint into a HD broadcast / streaming studio
- Full integration with TMS, CUCM

**Rev Enterprise Video Portal**
- Cloud Native Architecture
- Mobile support with HTML 5/Responsive Design
- Modern, consumer friendly UI
- Video-on-Demand and Live streaming Events
- Flexible Deployment options

**YouTube for the Enterprise**

**Content Distribution Network**
- Corporate training, education
- Organisational communications
- Town hall live events
- Enhanced meetings

**AUTOMATED WORKFLOW:** Easy / integrated / pervasive
Demo
TCS Deployment Discussion

All-in-one Video recording and playback

- TCS has SIP trunk to CUCM
- Video Codec calls TCS via SIP signalling
- TCS receives dual stream (main+presentation) H264 video, composites the streams into a single output
- PC user accesses TCS portal via HTTP
- User Views VoD via Flash player on TCS portal
TCS Only Limitations

One size does not fit all

• Uses built in Windows Media Streaming Server, or HTTP server
  – Limited to WMV for live streaming (uses Silverlight player on PC and Mac)
  – MP4 VoD’s are streamed via HTTP progressive download (can’t skip ahead until downloaded)

• Single box design limits scalability for viewing
  – 100 concurrent viewers maximum per TCS in cluster
  – Does not effect 10 concurrent recordings per TCS in cluster

• Uses TCS as the user portal, not SNS, certain features not available
  – Only content from TCS recordings is available, no other sources
TCS Clustering

- Cluster up to 10 TelePresence Content Servers:
- Manage a single pool of resources with up to 100 recording ports (with options)
- CUCM load balances incoming calls across multiple SIP trunks via Route Group
- Cluster wizard makes adding and removing nodes easy
- Use common network load balancers for HTTP front end
REV/TCS Integration

- TCS can publish to external streaming server (DME)
- DME has built in interface to Rev
- Allows seamless publishing from TCS to Rev
Rev Architecture and Design
Deployment Flexibility

Rev is built from the ground up to be deployed across large enterprises that require efficient use of hardware resources.
Distributed Instances

Node 2 gains instant redistribution when added to the cluster.

Rev distribution logic performs its best effort to distribute load equally.

With each new node, Rev dynamically senses and prepares to distribute data across the cluster.

Up to 4.3 Billion Nodes
Distributed Instances - Failover

If a node fails, the system will dynamically reallocate resources among the remaining active nodes.
Each service syncs across nodes in real-time. As services are added, each is instantly synced across nodes. Data is kept in sync regardless of distance between data centres.

**Message Bus**
- Security
- Media
- Transcode
- Data Store
- File Store

**Router Service**
- Security
- Media
- Transcode
- Module
- Module
- Module

**HTTP Host**
- Logging
- Workflow
- Authorisation

**WCF Host**
- Module

**Runtime Service**
- Data Store
- File Store
Deployment Models

CLOUD ONLY

HOSTED DATA CENTRE

HQ

RELD OFFICES

PUBLIC CDN

REMOTE USERS
Deployment Models

ON PREMISE

ON-PREM DATA CENTRE

HQ

RELD OFFICES

REMOTE USERS

PUBLIC CDN

ENTERPRISE CDN

ON-PREMISE
Deployment Models

HOSTED DATA CENTRE

HQ

FIELD OFFICES

REMOTE USERS

PUBLIC CDN

ENTERPRISE CDN
Streaming Technologies and DME Design
DME Streaming Functions

Advanced Streaming and ECDN functionality

• Streaming Technology
  – Format/Device support
  – Transrating
  – Multicast support

• Enterprise Content Distribution
  – Caching
  – Distributed Streaming
Streaming Technology Overview

Protocols for delivering streaming video

- **HTTP**
  - Single, large file delivered
  - Maximum compatibility
  - Not really streaming, can't skip ahead

- **RTMP**
  - Adobe Flash standard
  - Protocol sends segments of original video
  - Streaming, skip ahead

- **HLS (HTTP Live Streaming)**
  - Apple Standard, used by Mobile Devices
  - File is ‘pre-chunked’ into many smaller files
  - Manifest file is an index of the smaller files
  - Chunks are delivered via HTTP
Adaptive Bitrate Discussion

One video, multiple quality levels

- Every File is created at multiple quality/bitrate levels
- Player detects bandwidth and requests appropriate quality/bitrate
- Quality of playback can go up/down over time based on network conditions
- Especially important for mobile devices/networks
Multicast Considerations

When and where to use it

• No Mobile (iOS/Android/etc) Support
• Does not help with VoD delivery
• Protocol Support
  – Windows Media: Legacy, no longer in development
  – Flash: RTMFP, Proprietary server required
  – RTP/TS: broadcast standard
• Player Support
  – Windows Media Player: Only windows desktops, legacy
  – Flash Player: commonly deployed
  – Vbrick player: supports RTP/TS multicast,
    • requires player installation (Win/Mac OS)
DME Distribution Functions

Enterprise Content Distribution (ECDN)

- DME can take single live stream across the WAN and deliver to all 50 users on the LAN
- DME can preposition and cache VoD content locally and playback on LAN
- Consider a remote site with 50 users watching a 1Mbps live stream – how much bandwidth?
Distribution Challenge: Cloud

Unicast connections from the public internet quickly clog the network connection for everyone.
Centralising content at a single site quickly results in too many connections over the corporate network.
Distribution Challenge Solved: Cloud
Distribution Challenge Solved: On Prem

HQ

On-Site DME

Available WAN Bandwidth

Field Office

On-Site DME

Field Office

On-Site DME
Enterprise Video Content Design
Cloud Only Deployment

Cisco Telepresence Infrastructure
- TCS
  - H264 video
- ix5000
- DX80
- Jabber
- SIP
- CUCM

Video Streaming Infrastructure
- DME
- .mp4 video
- .mp4 video metadata

Remote Viewers (Internet)
- PUBLIC CDN
- HLS
- HTTP
- RTMP

Cisco Telepresence 
Infrastructure
Video Streaming
Infrastructure
Remote Viewers
(Internet)
Cloud-Hybrid Deployment

Cisco Telepresence Infrastructure

Video Streaming Infrastructure

Remote Viewers (Internal Network)

 ix5000
 DX80
 Jabber

TCS

H264 video

SIP

CUCM

.mp4 video metadata

DME

Multicast RTP

RTMP

HTTP

HLS

PUBLIC CDN

RTMP

HTTP

HLS

Cisco Telepresence Infrastructure

Video Streaming Infrastructure

Remote Viewers (Internal Network)
On Premise Deployment

Cisco Telepresence Infrastructure

Video Streaming Infrastructure

Remote Viewers (Internal Network)

Cisco Telepresence Infrastructure

Video Streaming Infrastructure

Remote Viewers (Internal Network)

Public CDN

HLS

HTTP

TCS

H264 video

.mp4 video

.metadata

ix5000

DX80

Jabber

SIP

CUCM

DME

MP4 video

Multicast RTP

PUBLIC CDN

HLS

HTTP

Remote Viewers

(Internal Network)

Multicast RTP

RTMP

HTTP

HTTP

HLS

HTTP

HLS

HTTP

HTTP
Multisite/Distributed Deployment

Cisco Telepresence Infrastructure

Video Streaming Infrastructure

Remote Viewers

TCS

ix5000

DX80

Jabber

CUCM

SIP

H264 video

.mp4 video

metadata

PUBLIC CDN

RTMP

HLS

HTTP

Zone 1

DME

Zone 2

DME

Zone 3

DME

HTTP
Cisco Live! Case Study
You Already Know This Solution!

TCS in use at Cisco Live!
Every Session from Cisco Live! the last 3 years running was captured using Capture-Transform-Share
Capture

• 36 breakout rooms were outfitted with a C90 Codec, connected to:
  – Cisco onsite network, private VLAN
  – Speaker PPT feed from laptop (VGA)
  – Cisco camera (HDSDI & control)

• Scheduling
  – All sessions were entered into the TMS scheduling system, and set with 2 participants: room codec & TCS recording port.

• Monitoring
  – The content editors monitor the feeds from the rooms, and move the camera if the speaker wanders off.
  – If they see an issue, the codec team is contacted via radio and immediately responds.
Results

- Over 250 session recordings (400+ hours of on-demand video content)
- 3 trained content editors (no previous TelePresence experience)
- Total Cisco on Cisco deployment: UCS, VXI, TMS, CUCM, TCS
- On-demand content made available to attendees within 3 business days, inside CiscoLive365.com
- 25% more sessions captured, with video, at 30% of the cost of the previous year with outsourced provider.
Key Take-Aways

• High impact use cases for video
  • Corporate Training
  • Town Halls
  • Executive / CEO broadcasts
  • Recording / Streaming meetings
  • Enterprise Video Sharing Portal
  • Corporate Communications
• Little to no training required
• Integrates seamlessly with Cisco TelePresence Solutions
• Extends the value of existing Cisco Unified Communications
• Leverage Cisco Video Content to have a dramatic impact on your corporate communications and collaboration.
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