TOMORROW
starts here.

Show and Share - Providing Video On Demand To The Enterprise

BRKUCC-2678

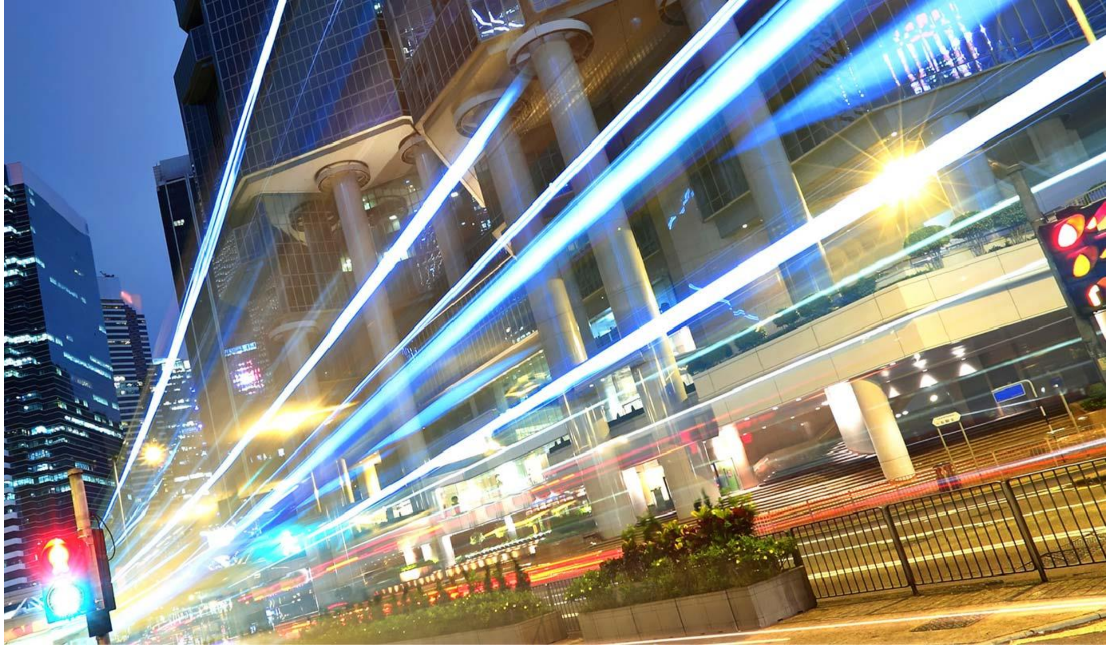
Robert Morris

Consulting Systems Engineer – Collaboration

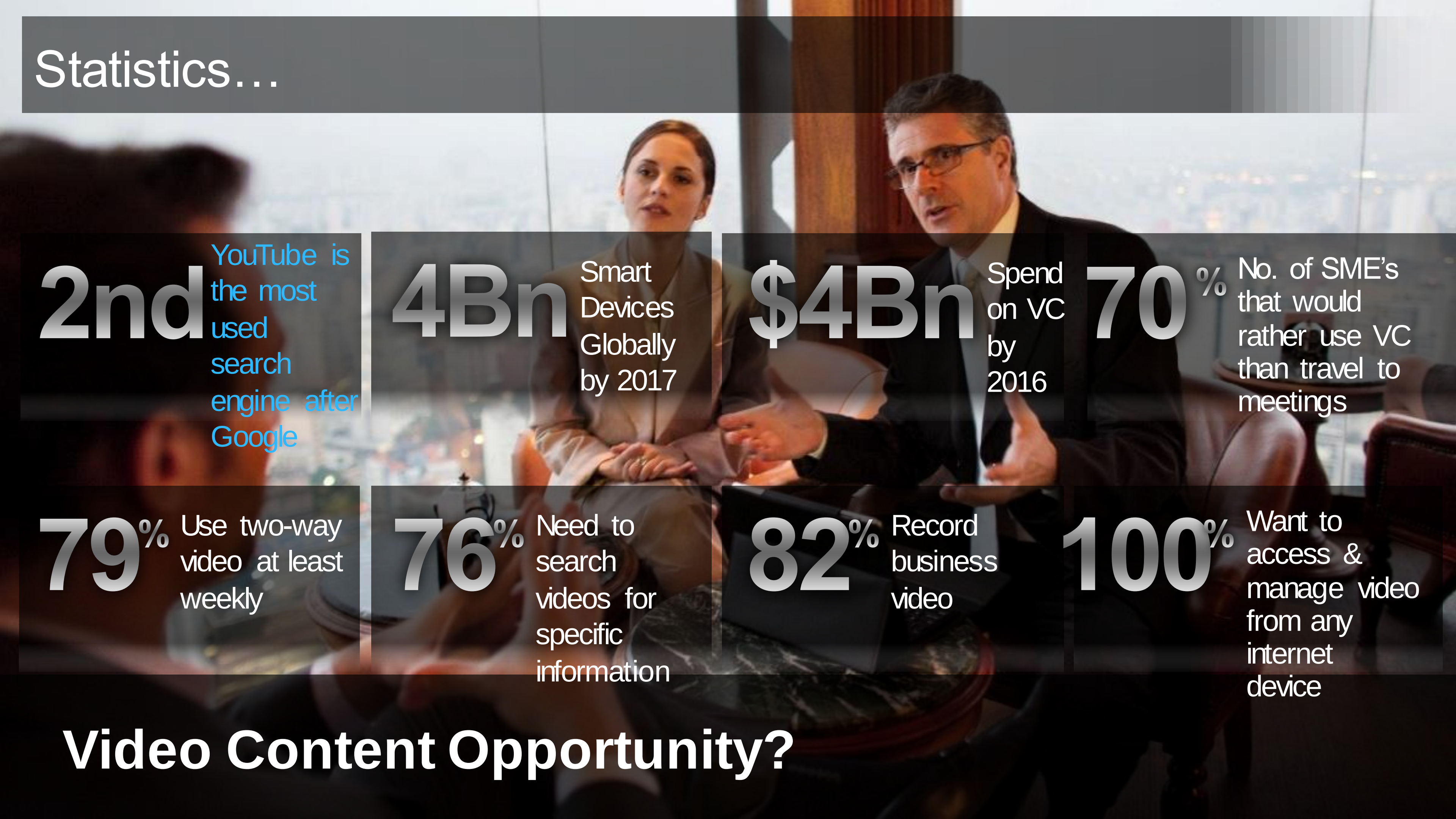
#clmel

Agenda

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



Statistics…



2nd YouTube is the most used search engine after Google

4Bn Smart Devices Globally by 2017

$4Bn Spend on VC by 2016

70% No. of SME's that would rather use VC than travel to meetings

79% Use two-way video at least weekly

76% Need to search videos for specific information

82% Record business video

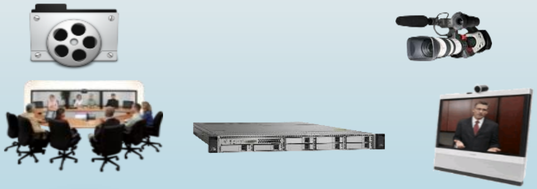
100% Want to access & manage video from any internet device

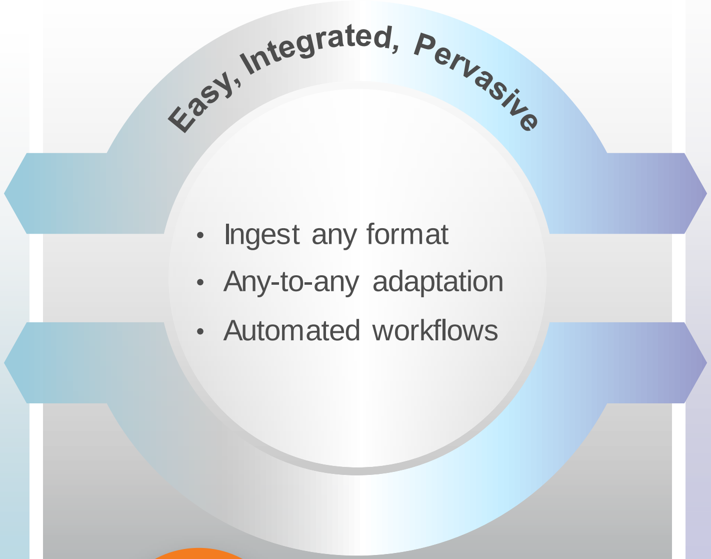
Video Content Opportunity?

Enterprise Video Content – Capture Transform Share

Capture from Any Device

- Recorded/On-Demand
- Live Streaming





Easy, Integrated, Pervasive

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

Output and Playback on Any Device

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

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

Solutions Overview

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)

New

- 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

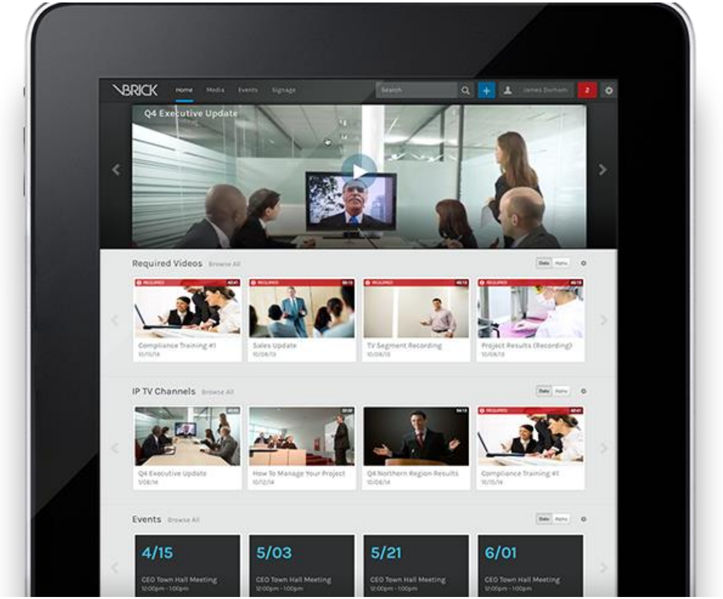
Cisco TelePresence Content Server (TCS)

Cisco live!
5

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


VBRICK
Home
Media
Events
Signage
Search
Q4 Executive Update
Required Videos
Browse All
Compliance Training #1
Sales Update
TV Segment Recording
Project Results (Recording)
IP TV Channels
Browse All
Q4 Executive Update
How To Manage Your Project
Q4 Northern Region Results
Compliance Training #1
Events
Browse All
4/15
CEO Town Hall Meeting
12:00pm - 1:00pm
5/03
CEO Town Hall Meeting
12:00pm - 1:00pm
5/21
CEO Town Hall Meeting
12:00pm - 1:00pm
6/01
CEO Town Hall Meeting
12:00pm - 1:00pm

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.

Deployments

On-Prem, SaaS, and or Hybrid models supported

Multi-Tenancy

Multi-portal, branding, users, admins, sub-admins

Performance

Asynchronous Architecture, NoSQL, multi-instance

High Availability

No single point of failure, distributed & redundant

Next Gen UI

Bootstrap, HTML5, Responsive, Web 3.0

Administration

Streamlined, role-based permissions, simple to use

Device Control

Integrated control of capture and distribution devices

Open API

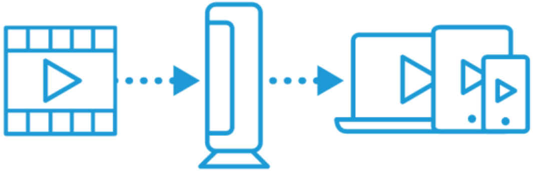
Integration, extensibility, workflows, and ability to grow

REV and Show and Share Comparison

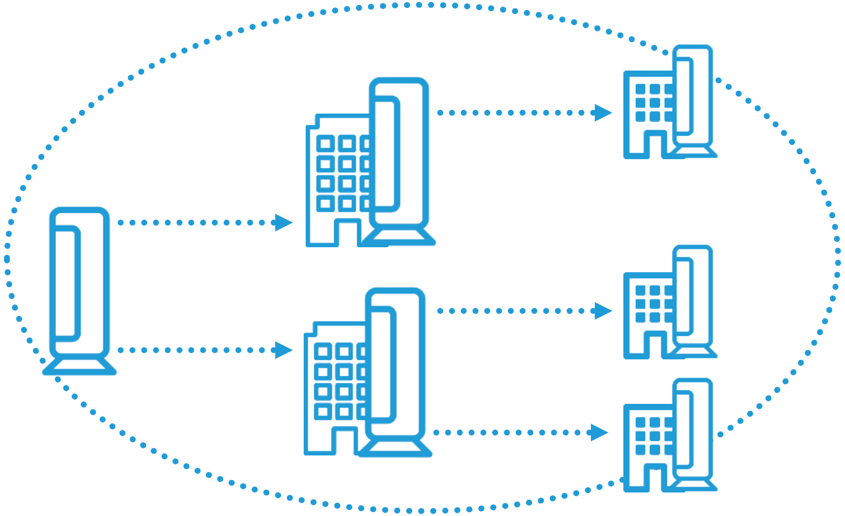
	Rev	**SNS**
Architecture	Cloud/Hybrid/Virtual	Appliance
Mobile	Native/HTML5	iOS app only
Scale	Horizontal Scalability	<4000 concurrent
High Availability	Distributed	Active/Standby
Video Distribution	DME	ECDS
Licensing	User based	Author Based

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



(Video Format Conversion)



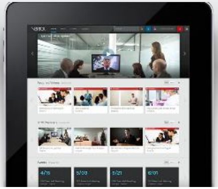
Automated Workflow

Use Cases

Any Video Endpoint (H.323 or SIP)

- Corporate training, education
- Organisational communications
- Town hall live events
- Enhanced meetings

YouTube for the Enterprise



Content Distribution Network

AUTOMATED WORKFLOW: Easy / integrated / pervasive

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

Distributed Media Engine (DME)

- Advanced Streaming technology
- Distributed streaming architecture
- Scales Video distribution across the Enterprise

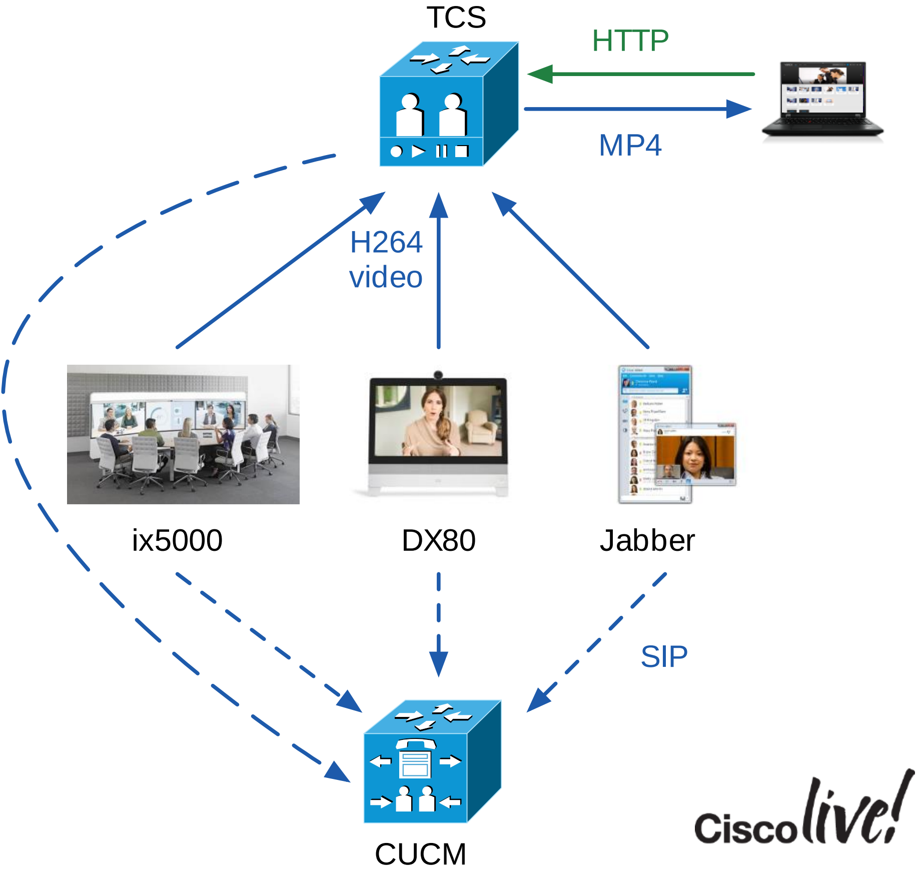
Demo

TelePresence Content Server Design

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
HTTP
MP4
H264
video
ix5000
DX80
Jabber
SIP
CUCM

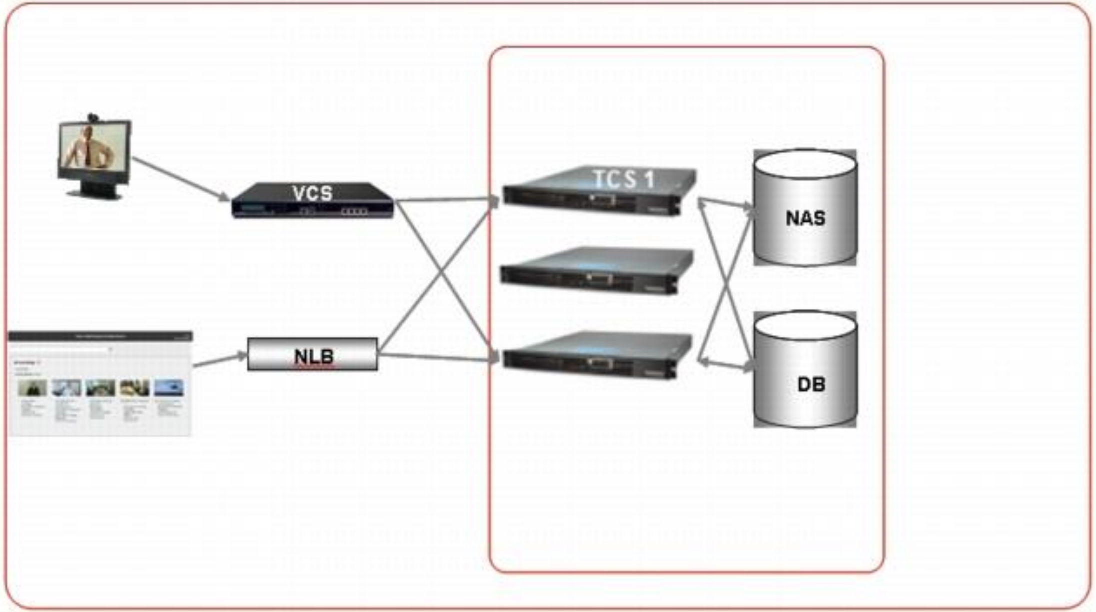
TCS Only Limitations

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

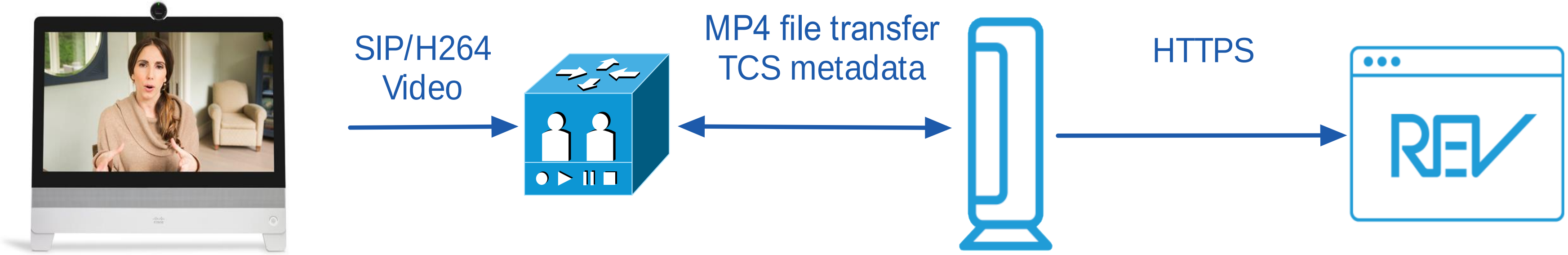
TCS Clustering

- Cluster up to 10 TelePresence Content Servers:
- Mange 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


SIP/H264
Video
MP4 file transfer
TCS metadata
HTTPS
REV

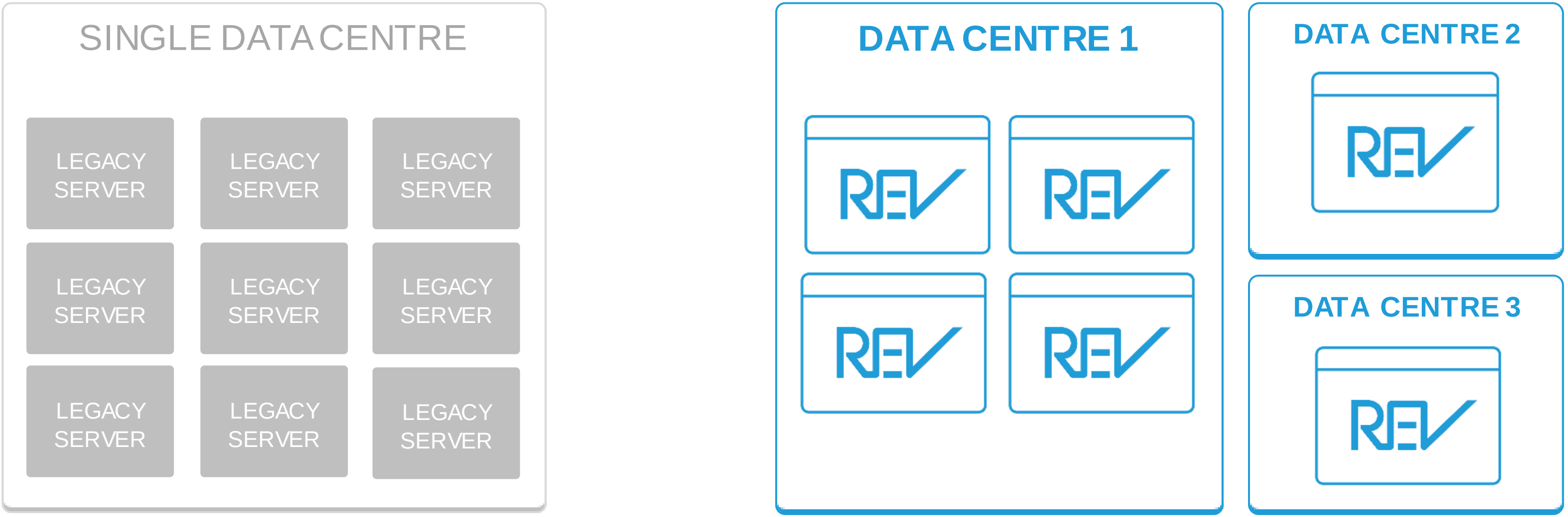
Rev Architecture and Design

Deployment Flexibility

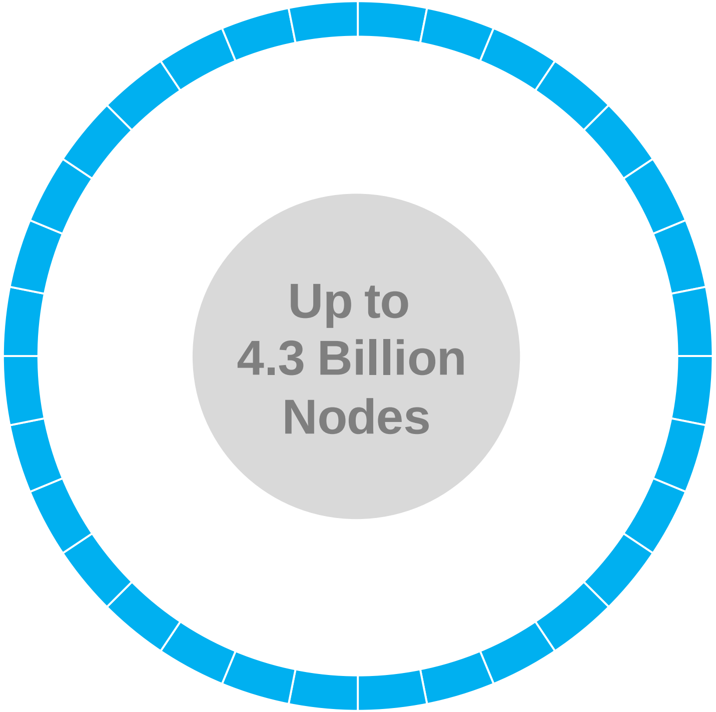
Rev is built from the ground up to be deployed across large enterprises that require efficient use of hardware resources.

LEGACY DEPLOYMENT MODEL
ALL SERVERS IN ONE LOCATION

CLOUD NATIVE DEPLOYMENT MODEL
DISTRIBUTE SERVERS


SINGLE DATA CENTRE
LEGACY SERVER
LEGACY SERVER
LEGACY SERVER
LEGACY SERVER
LEGACY SERVER
LEGACY SERVER
LEGACY SERVER
LEGACY SERVER
LEGACY SERVER
DATA CENTRE 1
REV
REV
REV
REV
DATA CENTRE 2
REV
DATA CENTRE 3
REV

Distributed Instances



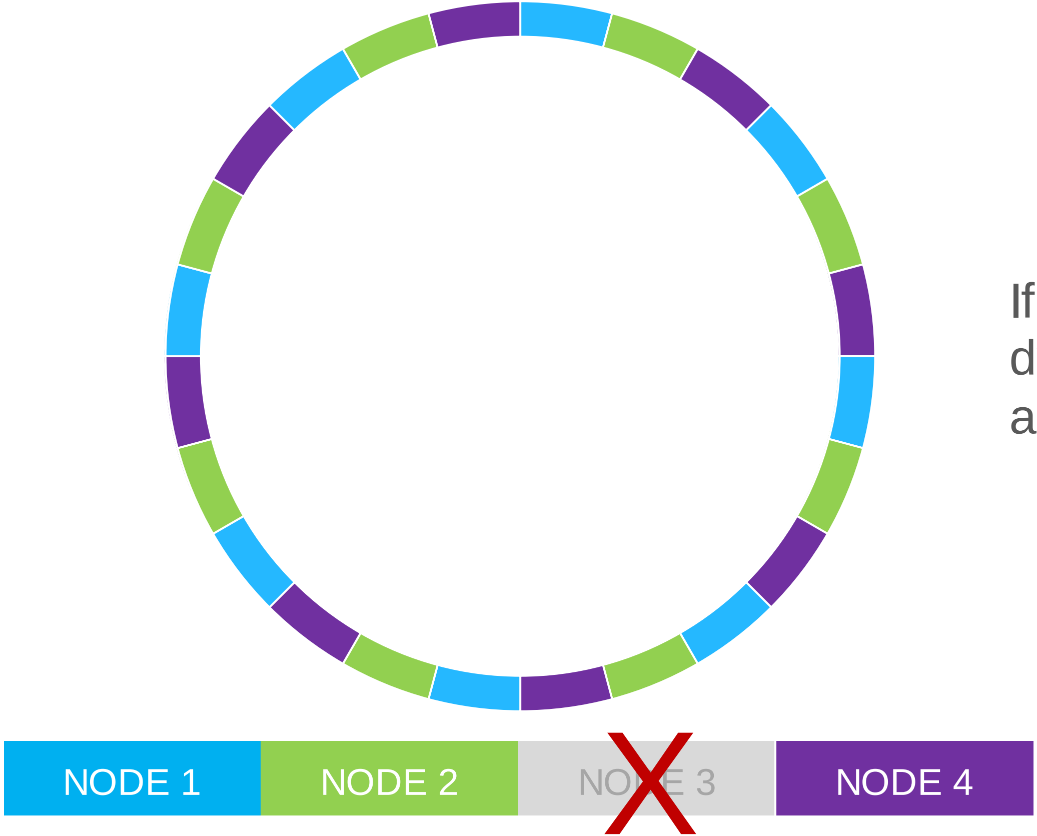
Node 2 gains instant redistribution when added to the cluster

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

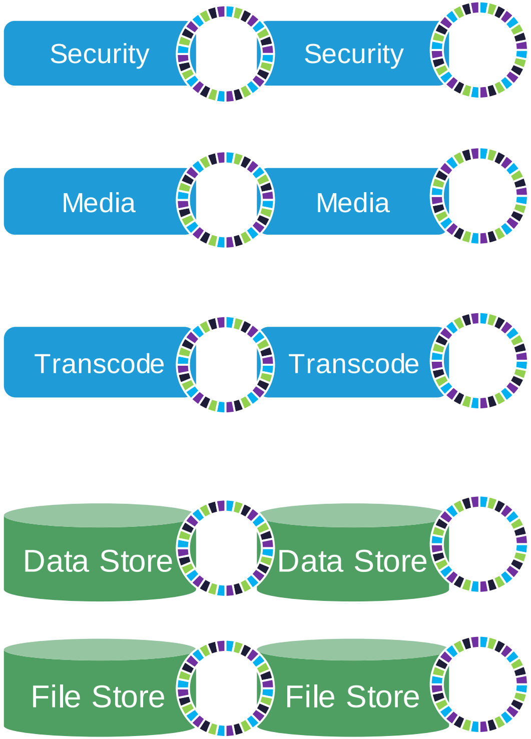
NODE 1

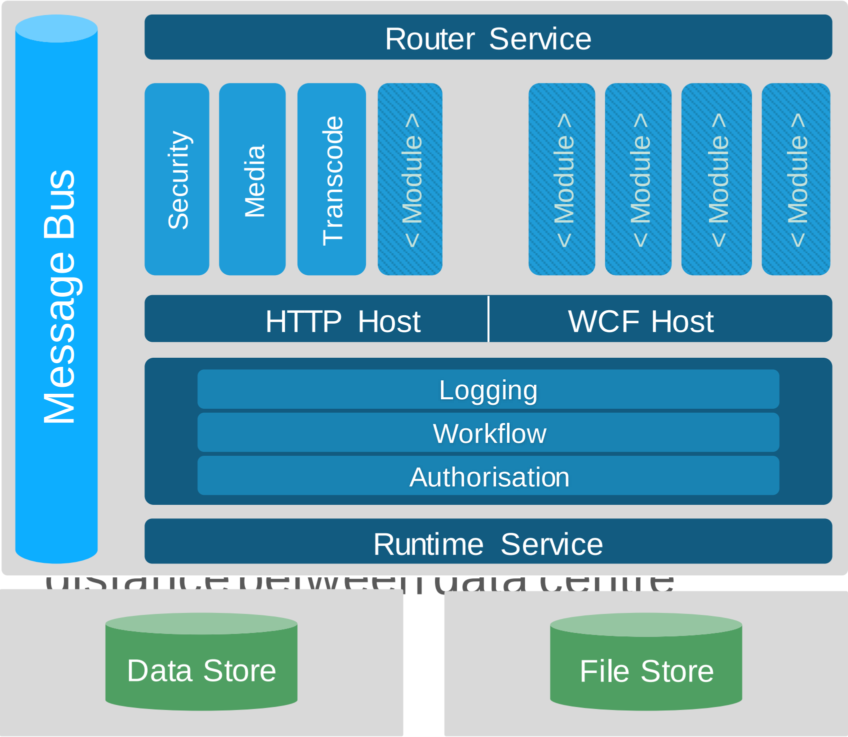
Distributed Instances - Failover


NODE 1
NODE 2
NODE 3
NODE 4

If a node fails, the system will dynamically reallocate resources among the remaining active nodes

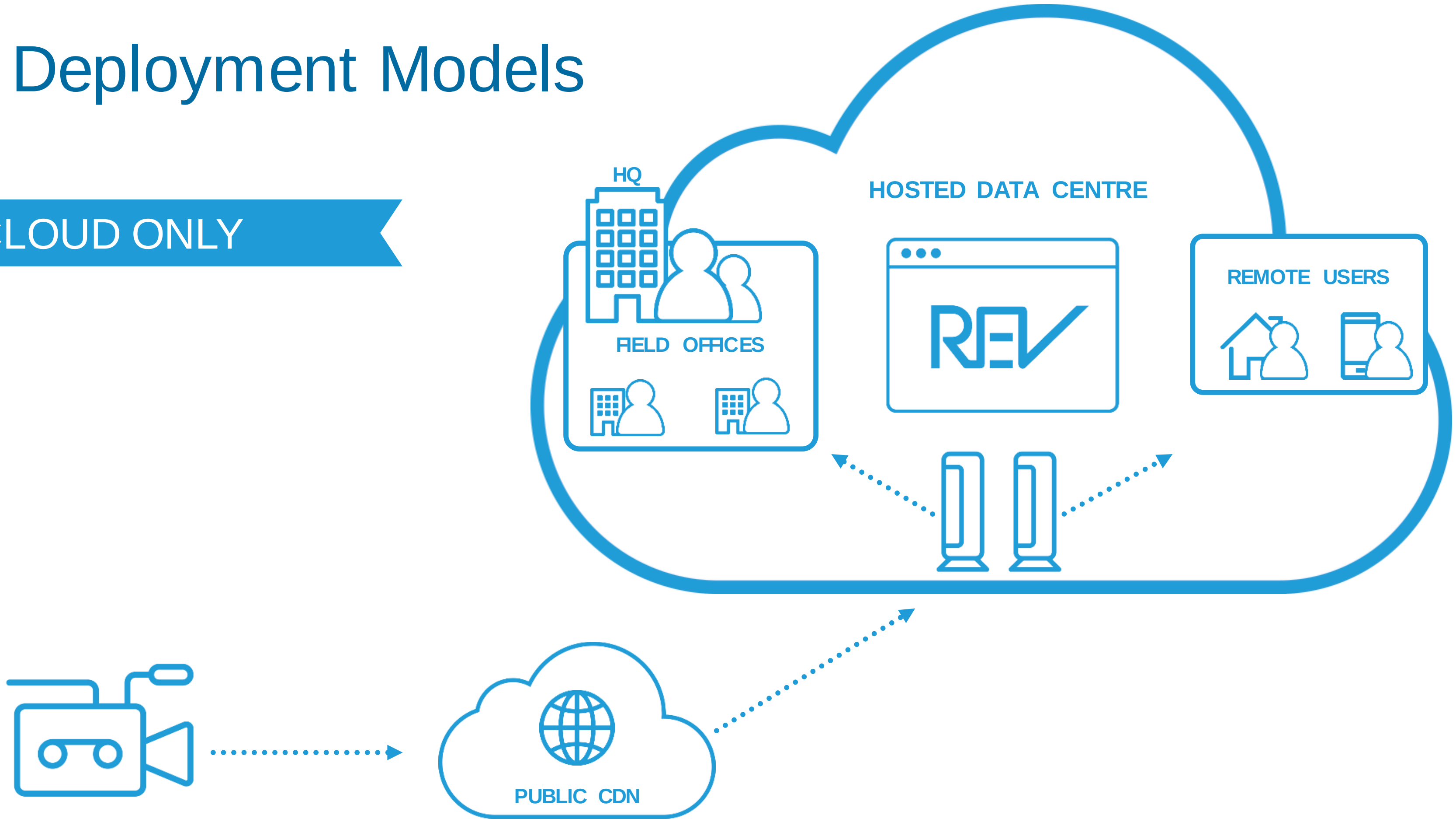
Distributed Instances


Security
Security
Media
Media
Transcode
Transcode
Data Store
Data Store
File Store
File Store


Message Bus
Router Service
Security
Media
Transcode
< Module >
< Module >
< Module >
< Module >
< Module >
HTTP Host
WCF Host
Logging
Workflow
Authorisation
Runtime Service
Distance between data centre
Data Store
File Store

Deployment Models

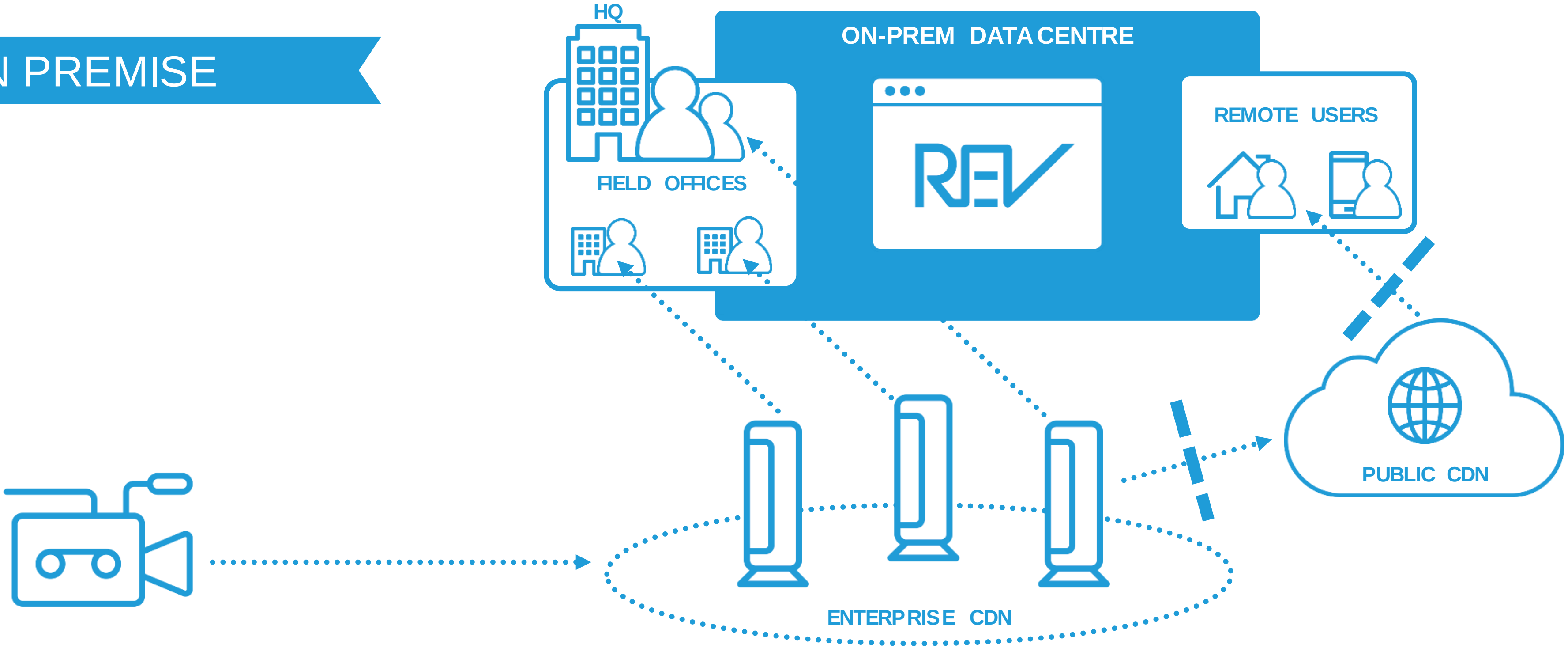
CLOUD ONLY



HQ
FIELD OFFICES
HOSTED DATA CENTRE
REV
REMOTE USERS
PUBLIC CDN

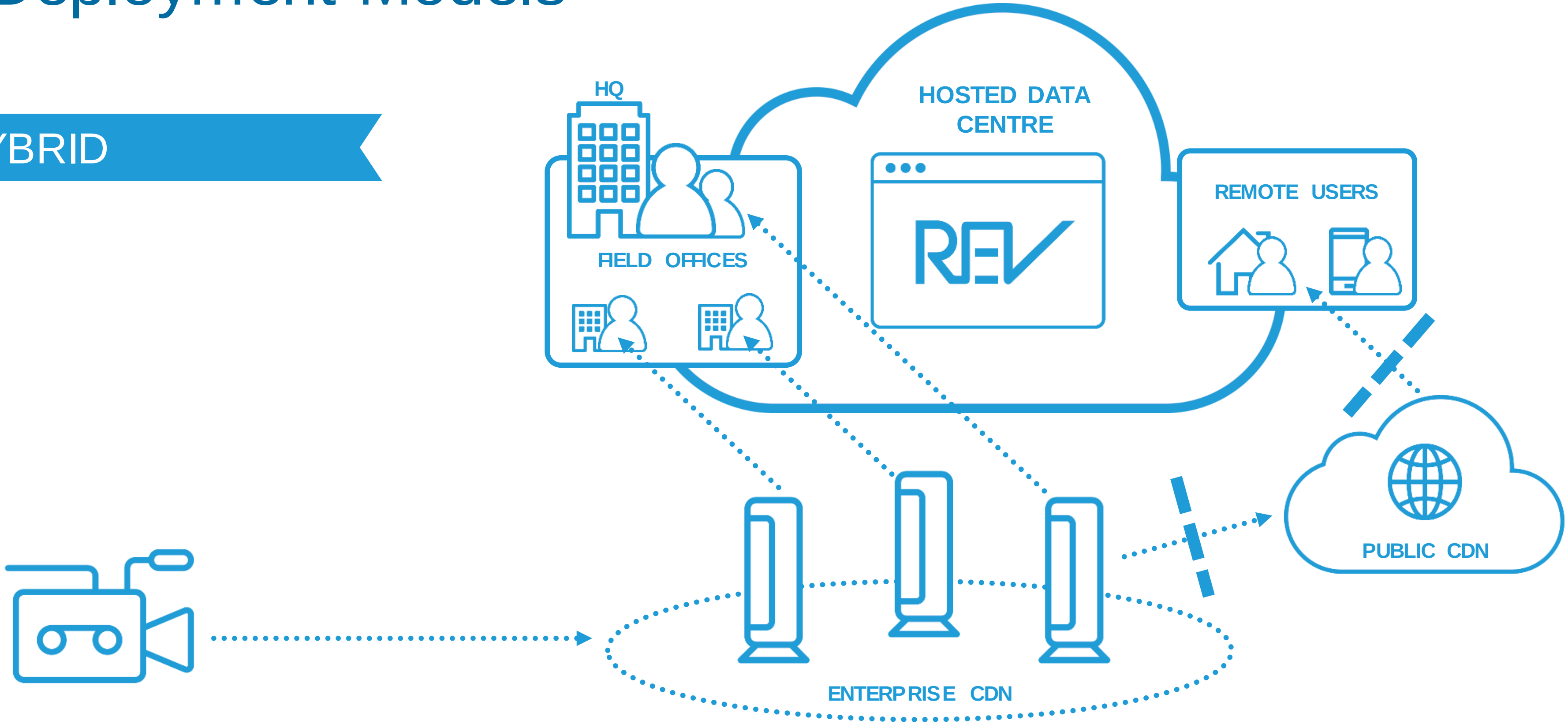
Deployment Models

ON PREMISE


HQ
ON-PREM DATA CENTRE
REV
FIELD OFFICES
REMOTE USERS
PUBLIC CDN
ENTERPRISE CDN

Deployment Models

HYBRID

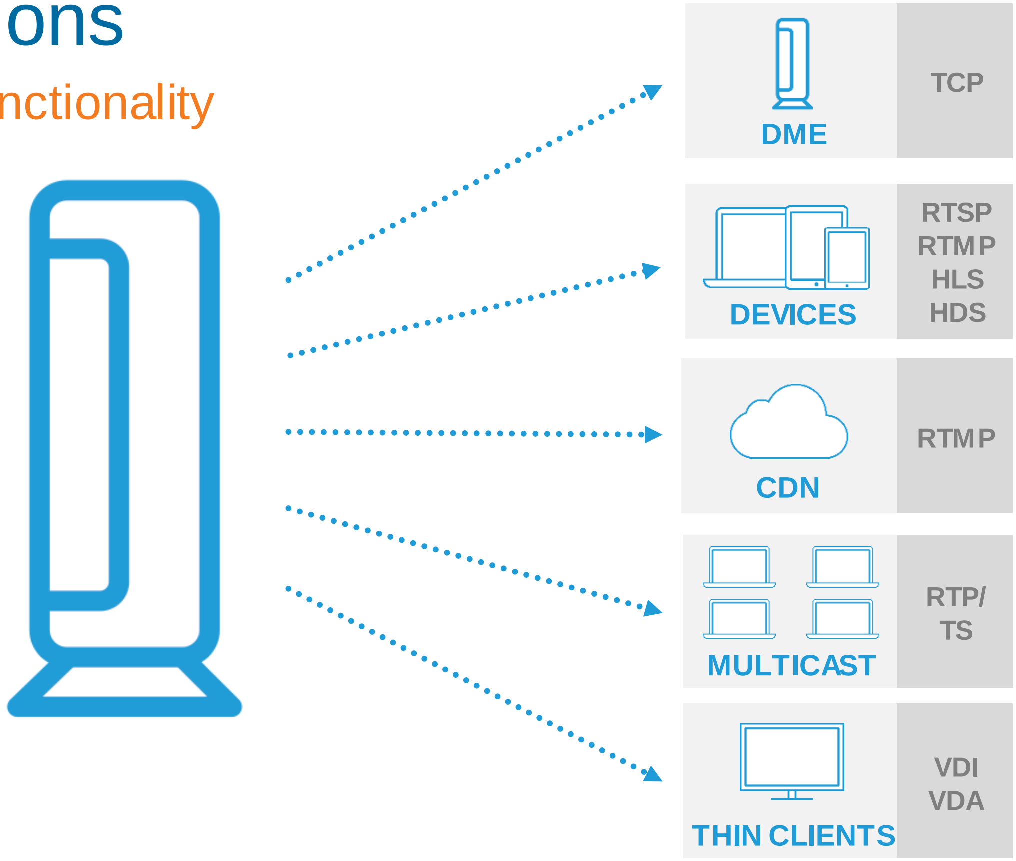

HQ
HOSTED DATA CENTRE
REV
REMOTE USERS
FIELD OFFICES
PUBLIC CDN
ENTERPRISE CDN

Streaming Technologies and DME Design

DME Streaming Functions

Advanced Streaming and ECDN functionality

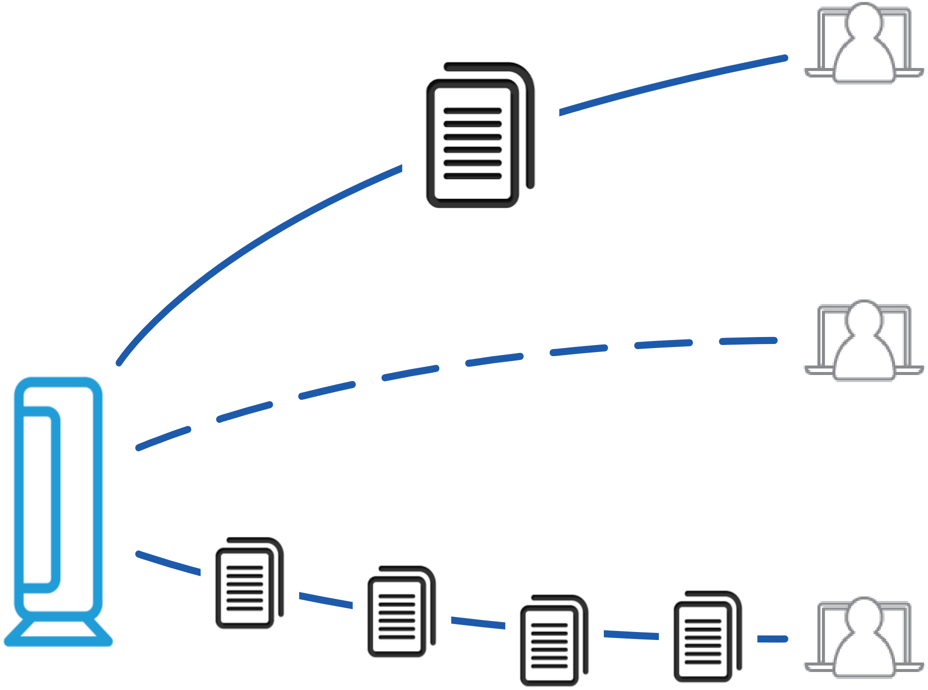
- Streaming Technology
  - Format/Device support
  - Transrating
  - Multicast support
- Enterprise Content Distribution
  - Caching
  - Distributed Streaming


DME
TCP
DEVICES
RTSP
RTMP
HLS
HDS
CDN
RTMP
MULTICAST
RTP/
TS
THIN CLIENTS
VDI
VDA

Streaming Technology Overview

Protocols for delivering streaming video

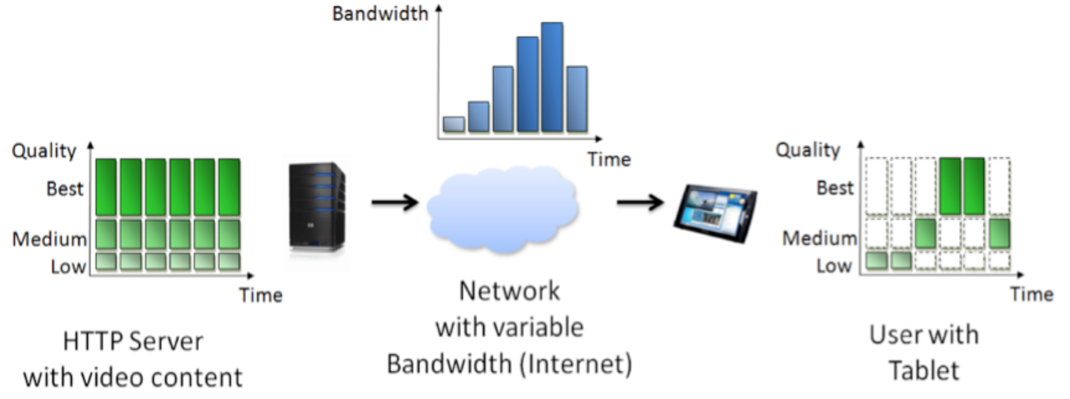
- HTTP
  - Single, large file delivered
  - Maximum compatibility
  - Not really streaming, can't skip ahead
- RTMP
  - Adobe Flash standard
  - Protocol sends segments of original video
  - Streaming, skip ahead
- HLS (HTTP Live Streaming)
  - Apple Standard, used by Mobile Devices
  - File is 'pre-chunked' 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**


Bandwidth
Time
Quality
Best
Medium
Low
Time
Quality
Best
Medium
Low
Time

HTTP Server
with video content

Network
with variable
Bandwidth (Internet)

User with
Tablet

Multicast Considerations

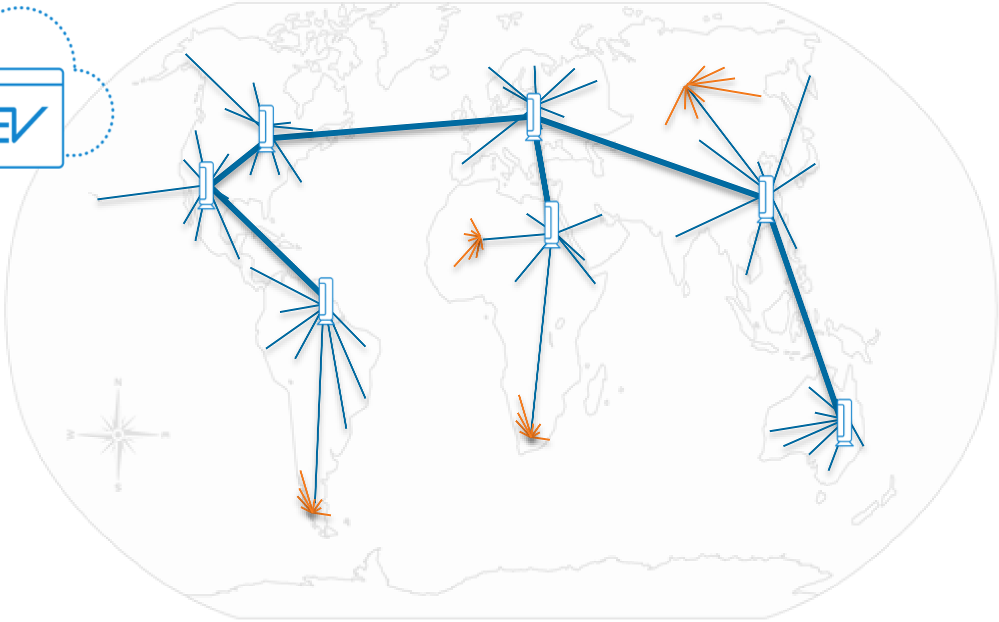
When and where to use it

- 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

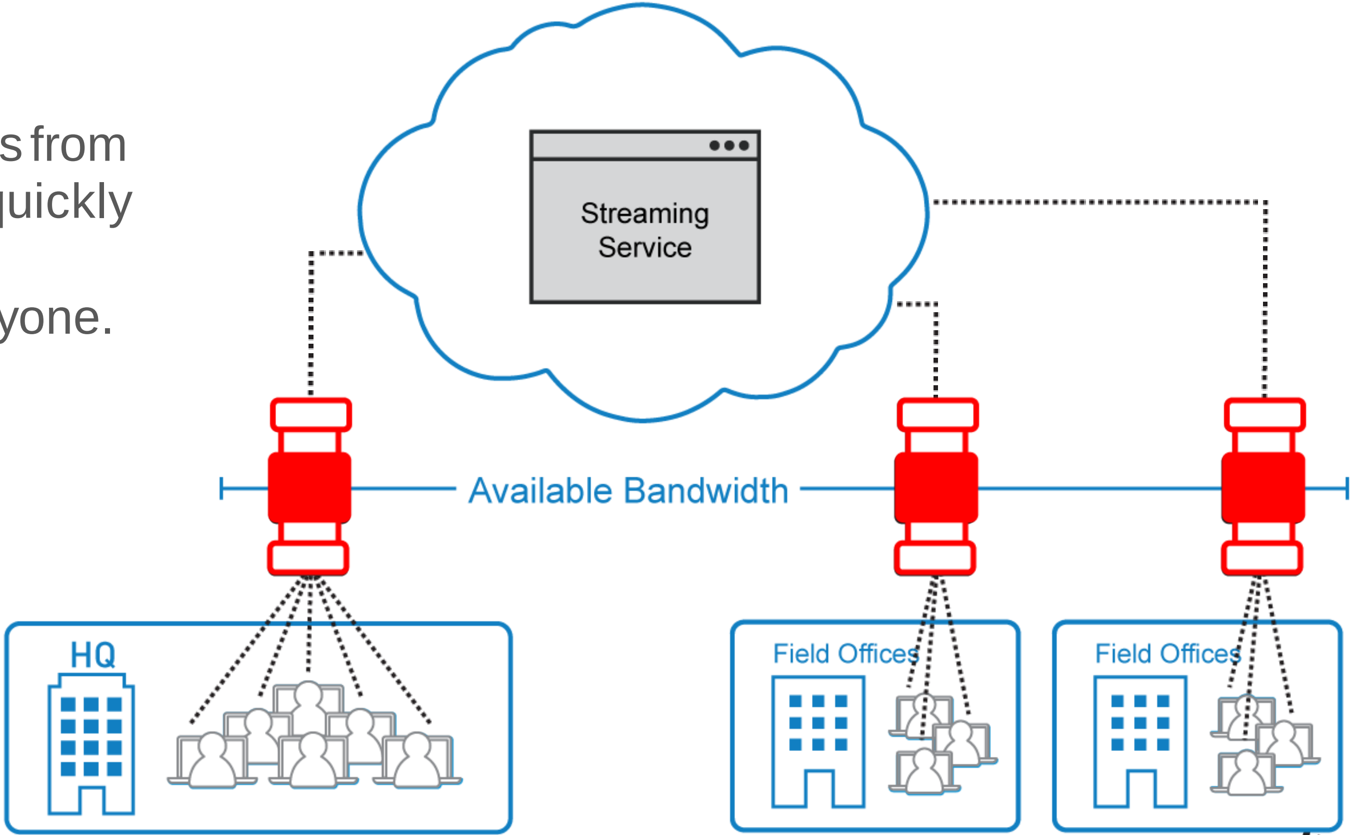
Enterprise Content Distribution (ECDN)

- 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?**

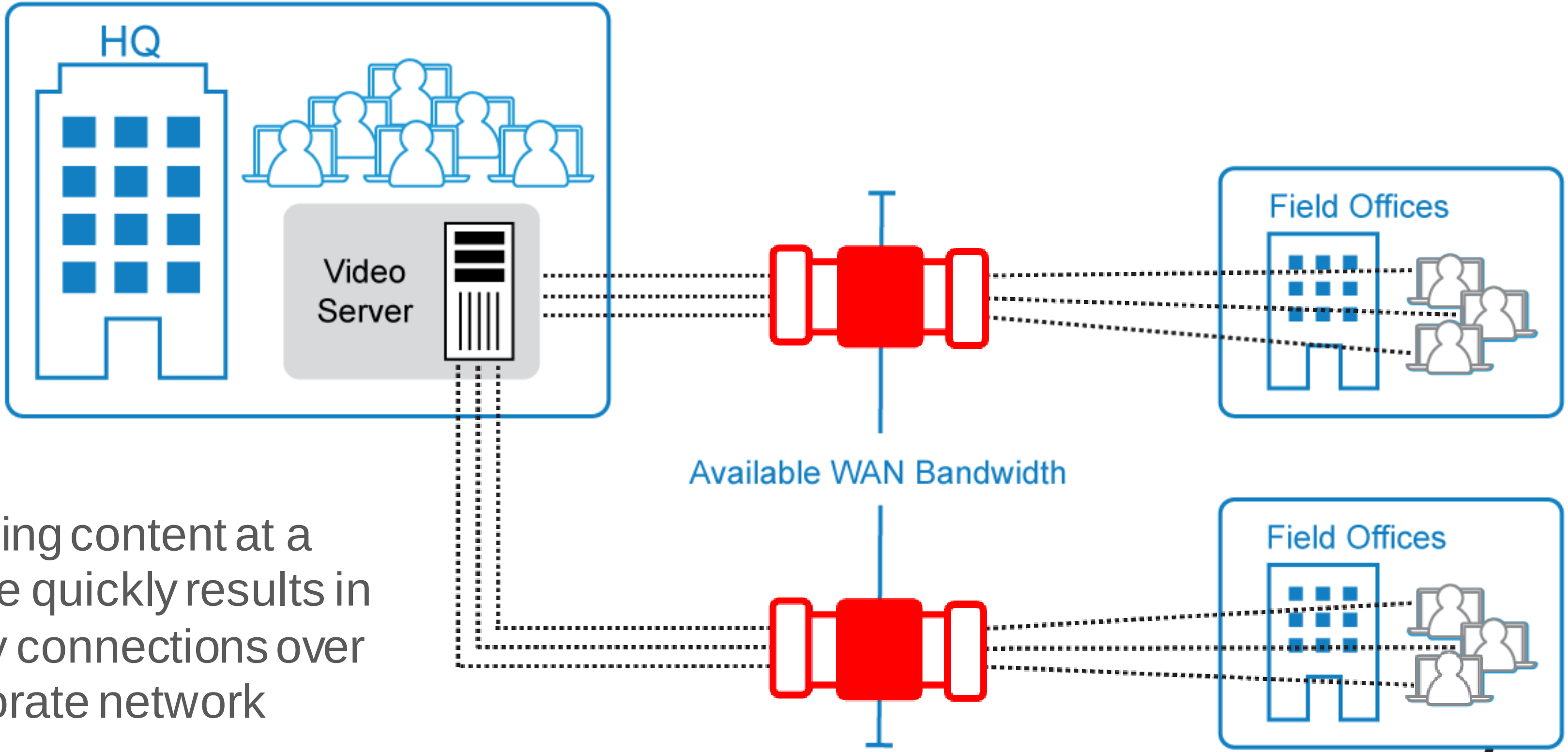


Distribution Challenge: Cloud

Unicast connections from the public internet quickly clog the network connection for everyone.

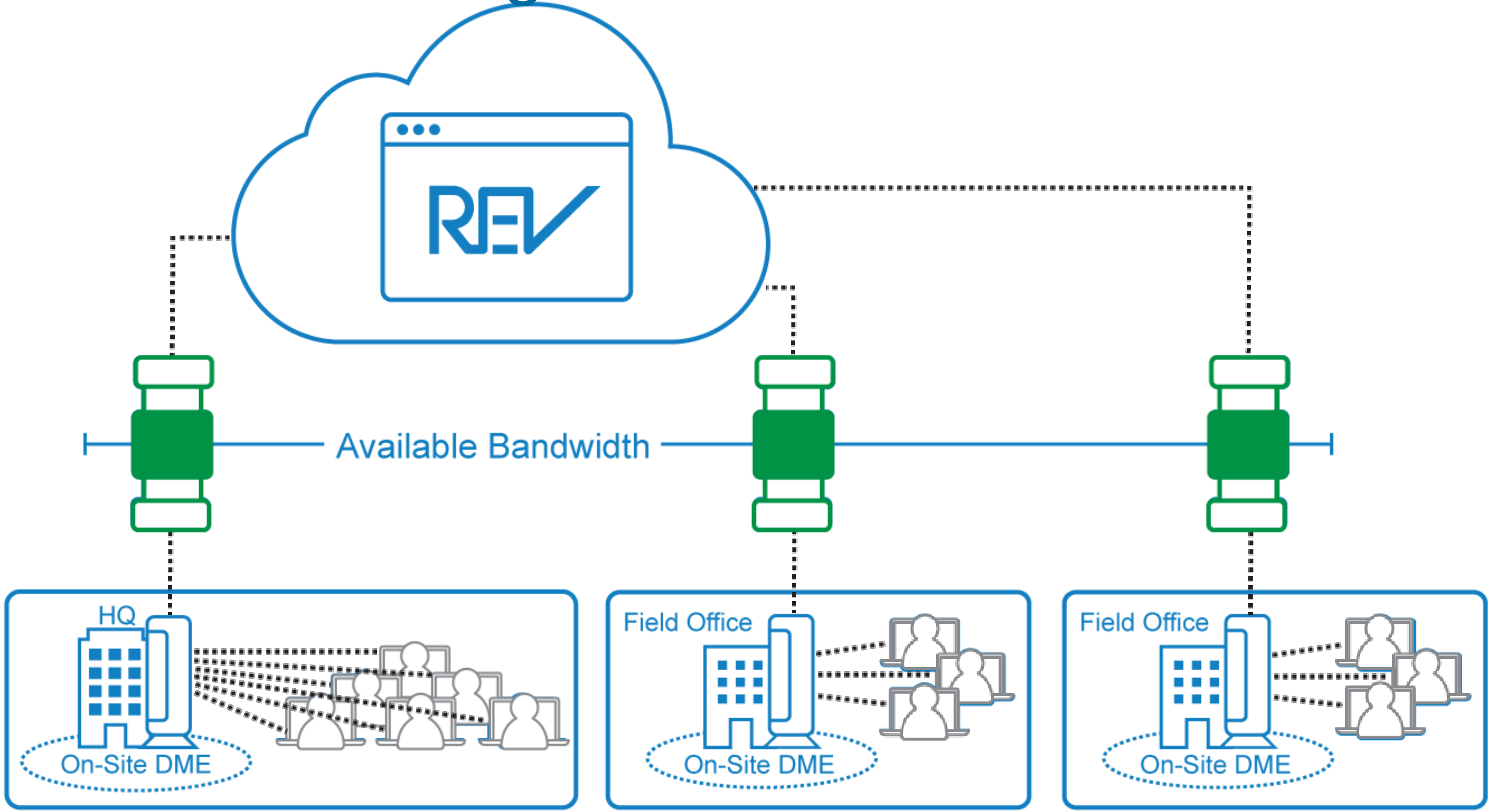

Streaming Service
Available Bandwidth
HQ
Field Offices
Field Offices

Distribution Challenge: On Prem

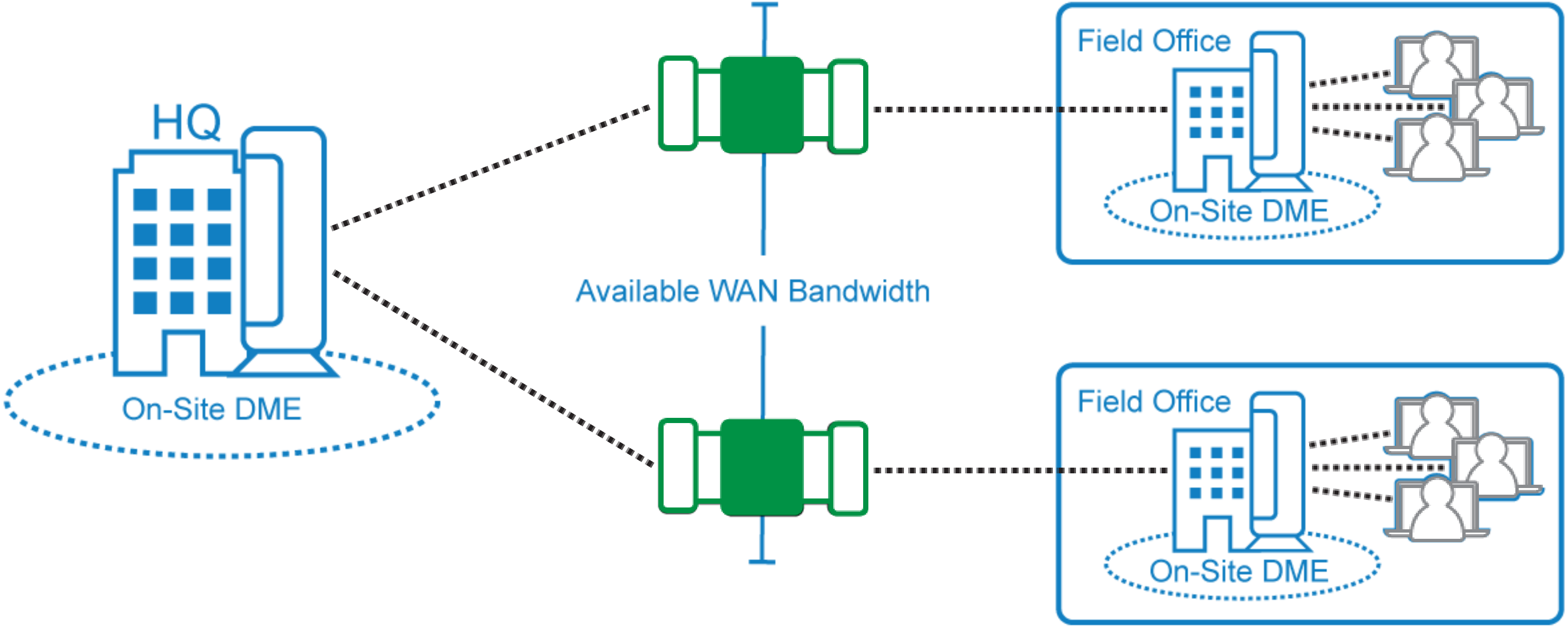

HQ
Video Server
Available WAN Bandwidth
Field Offices
Field Offices

Centralising content at a single site quickly results in too many connections over the corporate network

Distribution Challenge Solved: Cloud

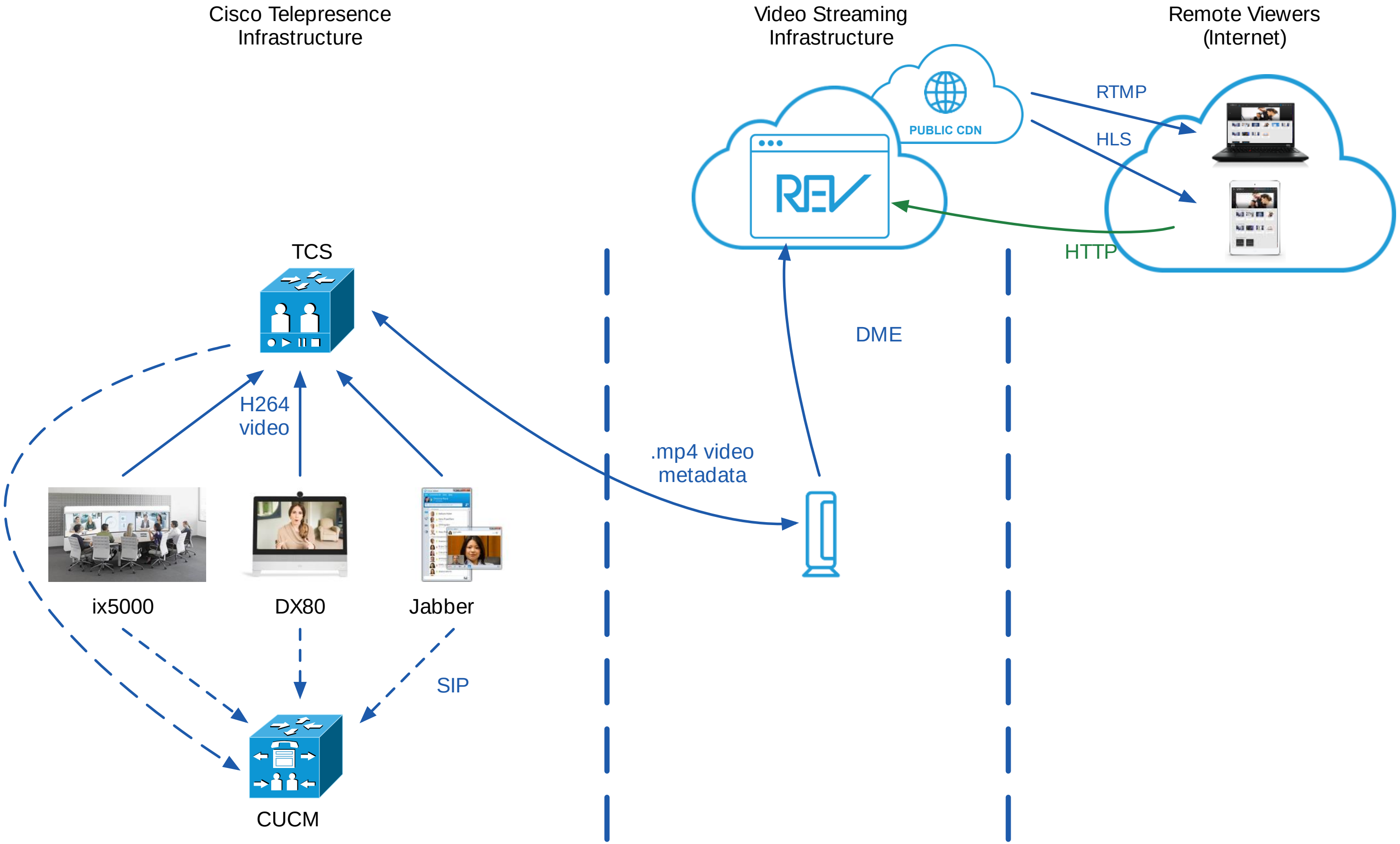

REV
Available Bandwidth
HQ
On-Site DME
Field Office
On-Site DME
Field Office
On-Site DME

Distribution Challenge Solved: On Prem

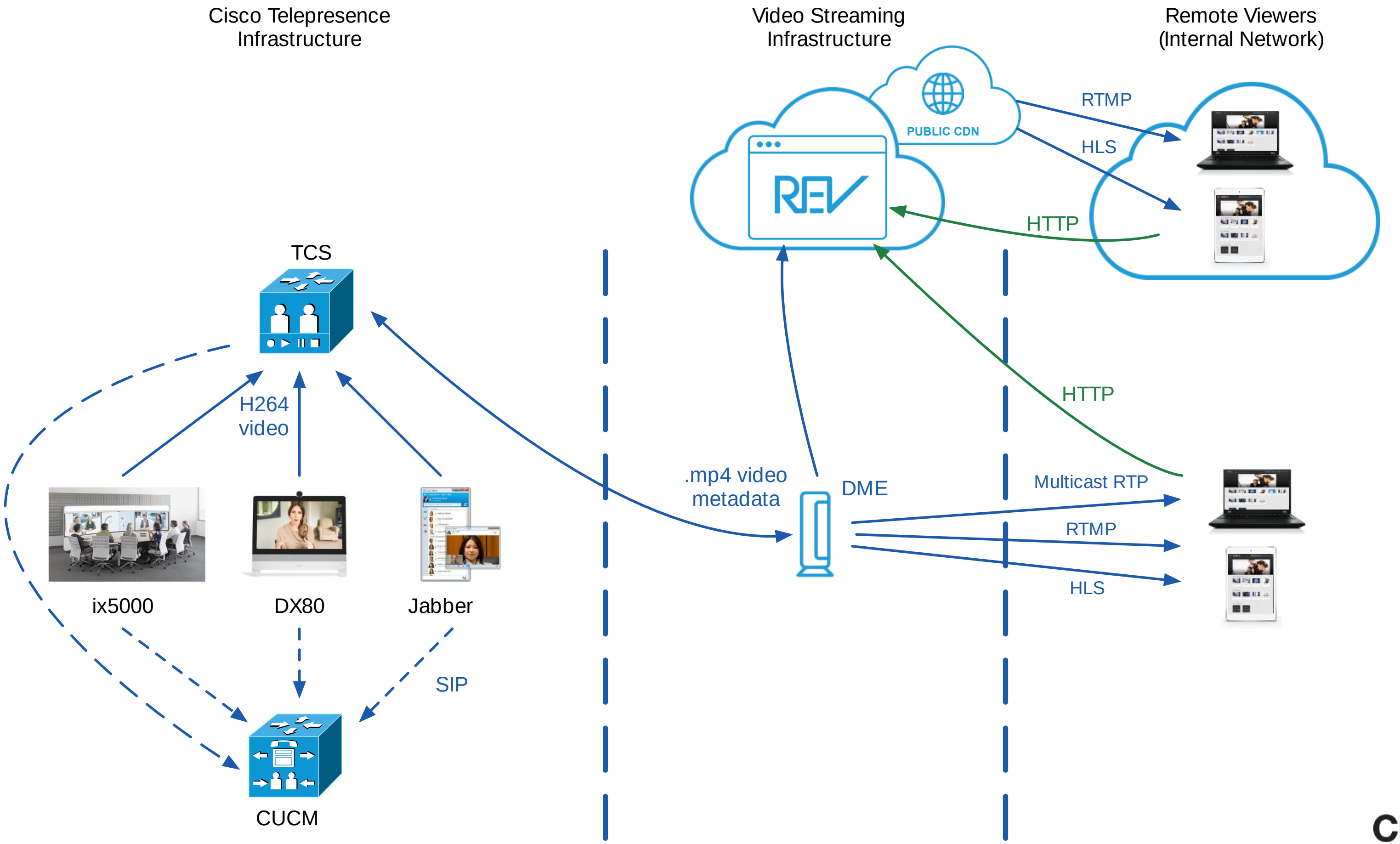

HQ
On-Site DME
Available WAN Bandwidth
Field Office
On-Site DME
Field Office
On-Site DME

Enterprise Video Content Design

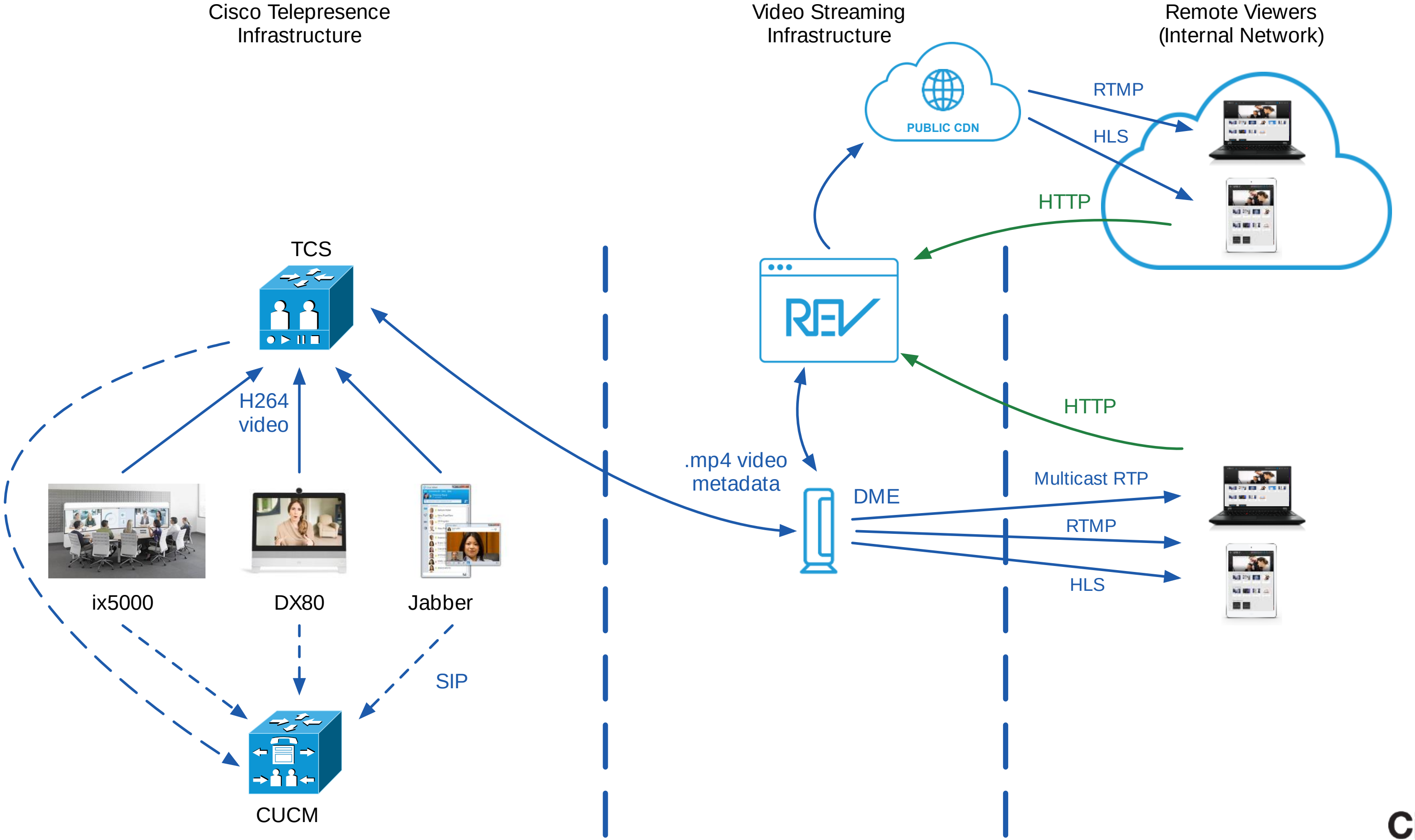
Cloud Only Deployment


Cisco Telepresence
Infrastructure
Video Streaming
Infrastructure
Remote Viewers
(Internet)
PUBLIC CDN
REV
RTMP
HLS
HTTP
TCS
H264
video
.mp4 video
metadata
DME
ix5000
DX80
Jabber
SIP
CUCM

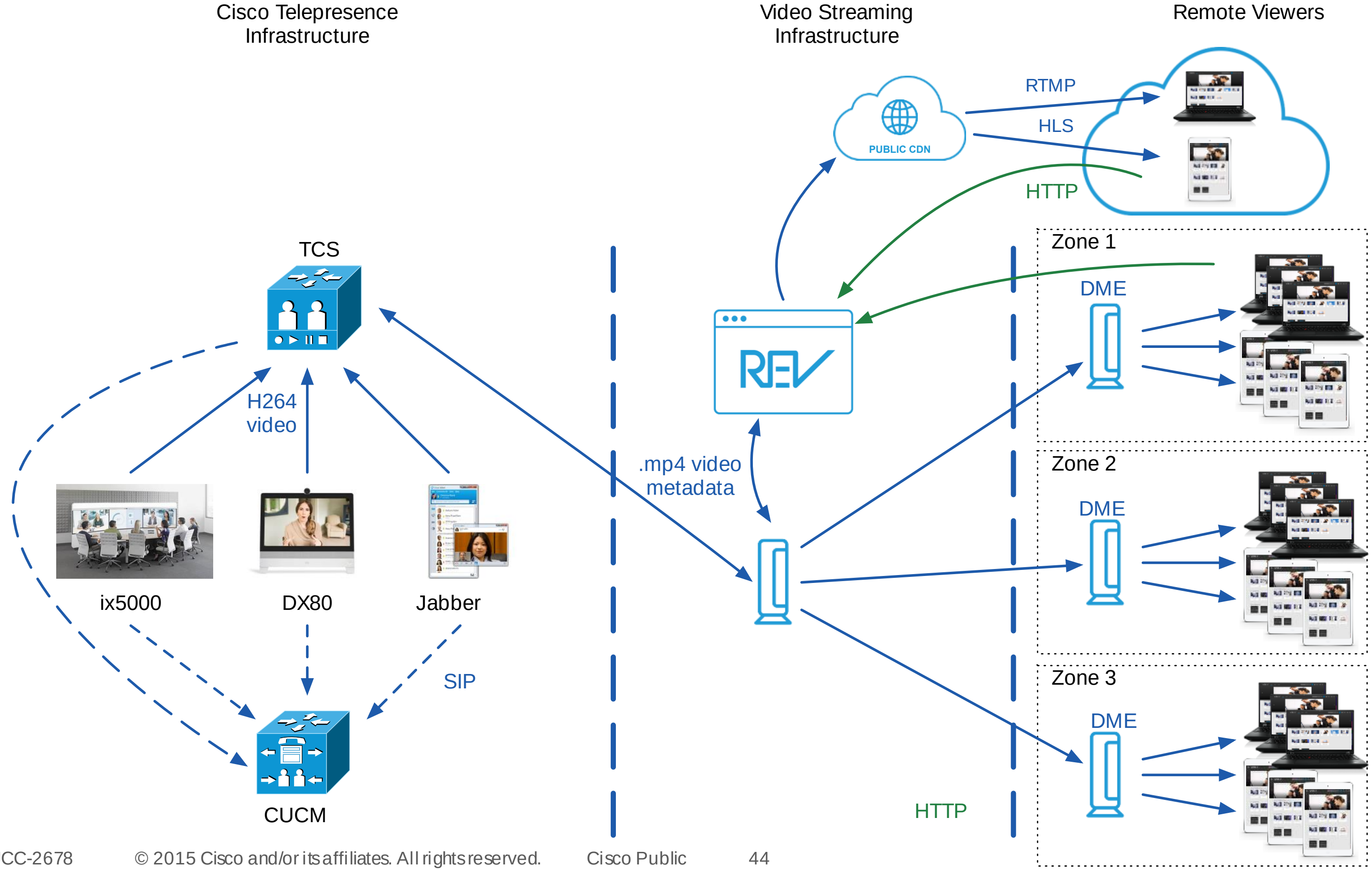
Cloud-Hybrid Deployment


Cisco Telepresence
Infrastructure
Video Streaming
Infrastructure
Remote Viewers
(Internal Network)
PUBLIC CDN
RTMP
HLS
HTTP
TCS
H264
video
ix5000
DX80
Jabber
SIP
CUCM
.mp4 video
metadata
DME
HTTP
Multicast RTP
RTMP
HLS

On Premise Deployment


Cisco Telepresence Infrastructure
Video Streaming Infrastructure
Remote Viewers (Internal Network)
PUBLIC CDN
RTMP
HLS
HTTP
TCS
REV
H264 video
HTTP
.mp4 video metadata
DME
Multicast RTP
RTMP
HLS
ix5000
DX80
Jabber
SIP
CUCM

Multisite/Distributed Deployment

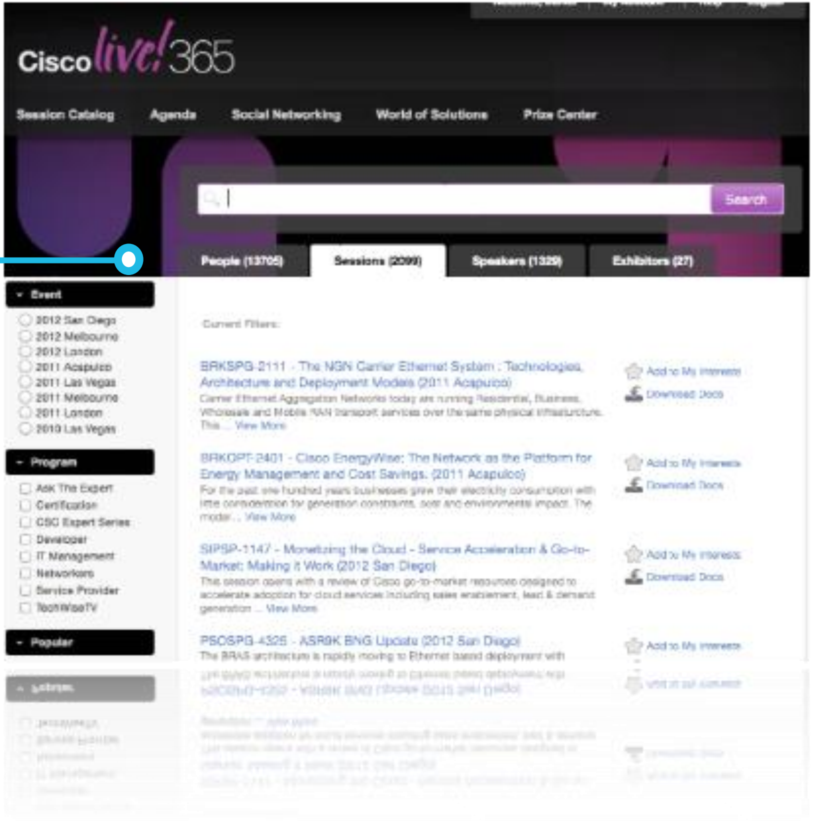

Cisco Telepresence Infrastructure
Video Streaming Infrastructure
Remote Viewers
PUBLIC CDN
RTMP
HLS
HTTP
TCS
H264 video
ix5000
DX80
Jabber
SIP
CUCM
REV
.mp4 video metadata
Zone 1
DME
Zone 2
DME
Zone 3
DME
HTTP

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


Cisco live! 365
Session Catalog
Agenda
Social Networking
World of Solutions
Prize Center
Search
People (13705)
Sessions (2099)
Speakers (1329)
Exhibitors (27)
Event
○ 2012 San Diego
○ 2012 Melbourne
○ 2012 London
○ 2011 Acapulco
○ 2011 Las Vegas
○ 2011 Melbourne
○ 2011 London
○ 2010 Las Vegas
Program
☐ Ask The Expert
☐ Certification
☐ CSC Expert Series
☐ Developer
☐ IT Management
☐ Networkers
☐ Service Provider
☐ TechWiseTV
Popular
Current Filters:
Add to My Interests
Download Docs

BRKSPG-2111 - The NGN Carrier Ethernet System : Technologies, Architecture and Deployment Models (2011 Acapulco)

Carrier Ethernet Aggregation Networks today are running Residential, Business, Wholesale and Mobile RAN transport services over the same physical infrastructure. This ... View More

BRKOPT-2401 - Cisco EnergyWise: The Network as the Platform for Energy Management and Cost Savings. (2011 Acapulco)

For the past one hundred years businesses grew their electricity consumption with little consideration for generation constraints, cost and environmental impact. The model ... View More

SIPSP-1147 - Monetizing the Cloud - Service Acceleration & Go-to-Market: Making it Work (2012 San Diego)

This session opens with a review of Cisco go-to-market resources designed to accelerate adoption for cloud services including sales enablement, lead & demand generation ... View More

PSOSPG-4325 - ASR9K BNG Update (2012 San Diego)

The BRAS architecture is rapidly moving to Ethernet based deployment with

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.

Conclusion

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
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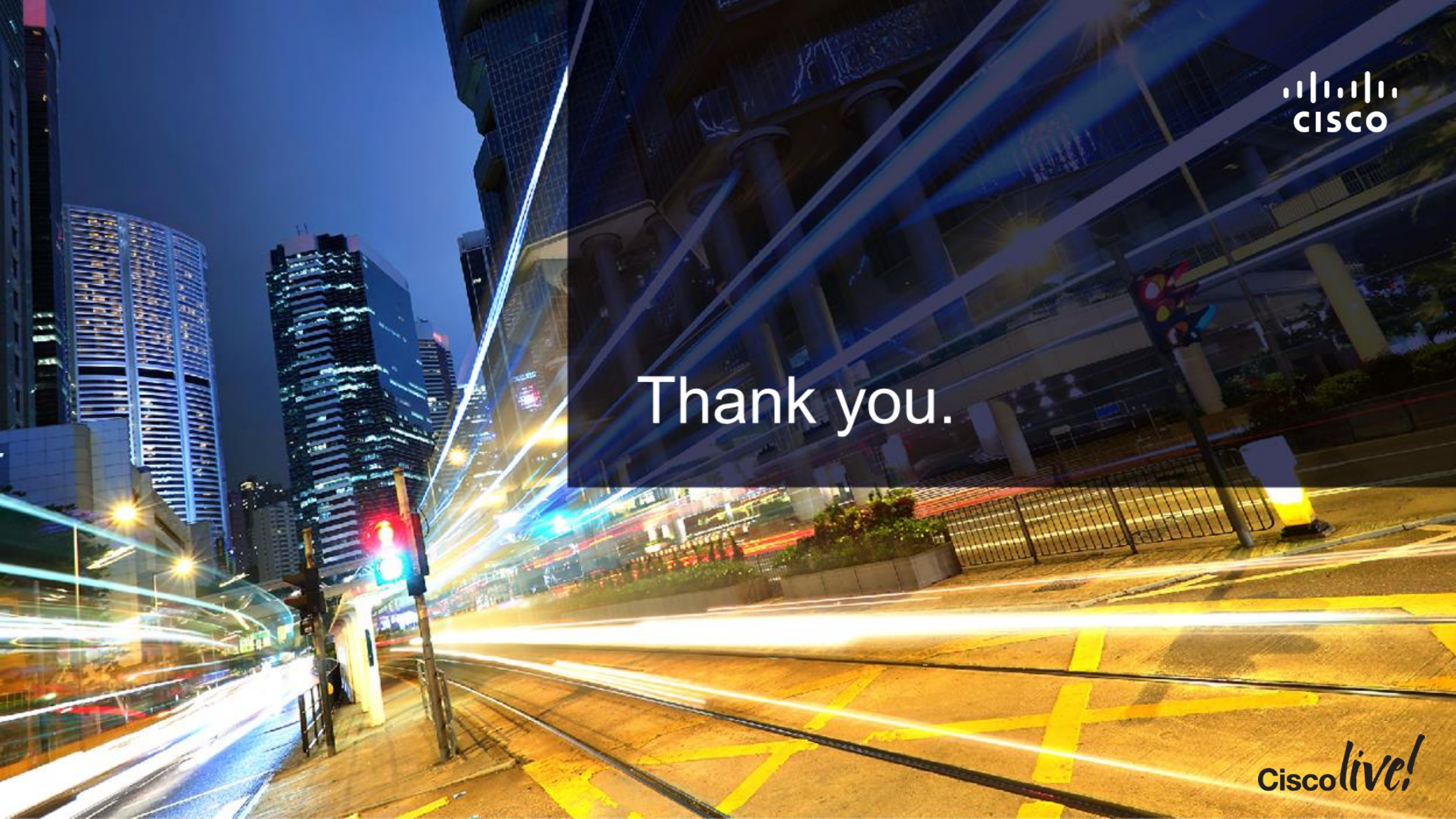

Thank you.

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