Cisco Videoscape
Enabling the Cloud Delivered Experiences

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BDM, IPVS SPVTG

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Discussion Topics

- Dynamic Market
- Videoscape overview
- Videoscape infrastructure in Cloud, Network and Home
- Videoscape for Cable Specifics
# Market Dynamics and Implications

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<thead>
<tr>
<th>Market Trends</th>
<th>Market Impact</th>
<th>Service Impact</th>
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<tr>
<td>New IP-video enabled consumer devices</td>
<td>Device Proliferation 15 Billion IP devices by 2015*</td>
<td>Home and Access Bandwidth Constraints</td>
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<tr>
<td>Multi-screen video service launches</td>
<td>Traffic Explosion 4x Increase in IP traffic by 2015*</td>
<td>Transport and CDN Network Scalability</td>
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<tr>
<td>Accelerating consumption of online video services</td>
<td>Cloud-based Video 25% Increase in online video consumption time**</td>
<td>Cloud Scalability and Flexibility</td>
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</table>

*Based on Cisco Visual Networking Index (VNI) Forecast

**Estimate based on historical trends and current consumer behavior
Cisco Video Strategy

Architectural Evolution

New Products
- Cloud
- Network
- Client

Existing Products
- Phys. Security
- SP Video
- C-X-S
- TelePresence
- Digital Signs

Big Bets

Accelerate

New Markets
- Video Entertainment
- Video Collaboration
- Video Sharing & Engagement

Existing Markets
- UC & WebEx
- Biz
- Home

New Use Cases
- New Experiences

MEDIANET

NETWORK . MEDIA SERVICES . END POINTS/APPLICATIONS
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Cisco Videoscape
Empowering Service Providers for Continued Success

Integrated Experiences and Business Models
Across Devices, Networks & Content

Cloud + Network + Client
Quality of Experience

Investment Protection
Extended to Legacy Infrastructure
思科Videoscpe 解决方案
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Cisco CloudVerse
Enabling Customer Public, Private and Hybrid Clouds

Cloud Applications

Collaboration, Video
3rd Party Cloud Services

Unified Computing
Unified Fabric
Unified Management

Unified Data Center

Cloud Intelligent Network

Cloud-to-Cloud Connect
Cloud-Customer Connect
Network Management

Cloud Enablement Services
Introducing Videoscape Media Suite

A carrier grade cloud-based platform

- Manage, publish and monetize many types of content
- Includes CMS, offer management, multi-screen entitlement, publisher, player
- Across multi-screens: TV, PC, tablets, mobile devices

Integrated experiences for multiple media types over multiple device and networks

Purpose built for SPs and Media Companies to:

Accelerate
Transition to multi-screen IP Video offering
Super Flexible, JumpStart Tool Kit, Pre-Integrated

Differentiate
Experience against peers and OTTs
e.g. Multi-screen Multi-content Entitlement
Virtual DVD

Proven: 4 out of top 5 North American Telcos, 2 out of top 5 Studios
Videoscape Media Suite Components

CMS
- Multiple content formats
- Sophisticated content bundling
- Customizable metadata model
- Metadata normalization
- Extensible workflow
- Transcoding and encryption
- Distribution to delivery network

Entitlement
- Product/Offer rules creation
- Subscription, rental, EST, ad-supported models supported
- Custom entitlement checks prior to authorization
- Multi-DRM framework
- Customer Care functionality

Publisher
- Feed aggregation & harmonization
- Multipoint catalog publishing
- Category management
- Playlist publishing
- Search and Rating
- Metering & reporting

Client Technologies
- Player Framework & Widgets
- Streaming & Download
- License acquisition
- Library management
- Ad Network integration

Players And Widgets

API’s/Web Services

OSS/BSS
Introducing Cloud Based Transcoding Solutions for Multi-screen Delivery

Cloud Based Transcoding Solution for N-screen with ABR Support

VoD
Cisco Transcode Manager
High-volume, file based distributed platform
Highly automated

Live
Cisco Media Processor
Scalable and flexible software platform
Optimized for Cisco UCS

Reduce OpEx
Highly Automated and Scalable
Integrated with Videoscape Solution
Unified Transcoding Solution for n-Screens

Best Possible Experience
with Dynamic Bandwidth
Purpose Built for ABR Support

Now In Production Networks
Cisco Transcode Manager Solution (CTM)

CTM is the automated way to expand the revenue potential of content delivered to any device.

High-volume, file-based transcoding platform
Multi-format, multi-CPU, high-output architecture

Scalable, distributed-encoding software solution
Software based and can be used with Cisco UCS hardware

High automation, low touch points, end-to-end
E2E encodes, ingests, and pushes the CDN to the cloud

Support for the popular source and output formats
Including H.264/AVC and ABR.

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Automate processing of large amounts of VoD content through a transcoding system with minimal human intervention.

Results: Save time, headcount and expense, while reducing errors.
Introducing Cisco Media Processor (CMP) Portfolio for Live ABR Transcoding

**IP Input**
Live video encoding, packaging, encryption, and distribution to any device

**UCS Platform**
Software model enables scalable deployments on the UCS B-Series Blade
Enhanced density and throughput

**SDI Input**
Supports PCs, Macs, Tablets
Connected TV, Mobile Phones,
Game Consoles

Delivery To Any Screen
CMP Powers Live ABR Content Delivery to Any Device

**Optimize**
Optimize Content for Delivery to Any Screen

**Monetize**
Monetize Content via Targeted Ad Insertion

**Protect**
Apply DRM and Encryption to Live Streams

Delivery To Any Screen
Scalable platform for Multiple Formats from Multiple Sources, Linear & On-Demand

Intelligent & flexible Service Routing adapted to the Network Topology

Multi-level caching system with low latency content propagation

Non-stop Service Availability

Possibilities to interconnect to other CDN’s for redundancy or efficiency or to accommodate CDN Federation models.

ABR / HTTP streaming optimizations
- Optimized small object caching & distribution
- Proxy Caching for OTT video
- Embedded Origin Server into the CDN
- Mounting of External Storage Devices
Conductor is an integral element of the Videoscape

<table>
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<tr>
<th>Videoscape = solving business problems</th>
<th>Conductor</th>
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<tbody>
<tr>
<td>Enable new services faster and cheaper</td>
<td>Services SDK: TV Everywhere, Cloud DVR, …</td>
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<tr>
<td>Access agnostic user / service experience</td>
<td>Cable, Telco, Mobile….</td>
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<tr>
<td>Reduced Operational Complexity</td>
<td>Open Standards, Pre Integrated, Network abstraction</td>
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<tr>
<td>Highly Scalable</td>
<td>T1 – T3 ready, all markets (<em>T1 initial focus</em>)</td>
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<tr>
<td>Legacy infrastructure friendly</td>
<td>Published SDKs, Graceful Evolution</td>
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<tr>
<td>TCO Friendly</td>
<td>SW &amp; Application Centric</td>
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</table>
Introducing Videoscape CDN Analytics
Optimize Your CDN Infrastructure with Real Time, Deep and Broad Analytics

Cisco CDN Analytics

Traffic Distribution
Allocate resources according to peaks and troughs

Capacity Utilization
Better capacity planning for business growth

Asset Popularity
Cache content that subscribers watch most

Billing Trends
Analyze consumption trends and package offerings accordingly

Bandwidth Consumption
Monitor subscriber usage and offer alerts once thresholds are met
Cisco Videoscape Client Portfolio

Videoscape Media Gateways
- Cloud-driven service enablement
- Video Optimized
- Application Centric

Videoscape STBs
- Infinite Content Choices (Broadcast, VoD and Online)
- Web 2.0 enabled
- Open publishing environment

Videoscape Soft Clients
- Supports tablets, gaming consoles, PCs, Connected TVs, mobile phones
- Customisable UI

Common Software Framework
Common connectivity to Conductor & Media Suite
DCM Product Family Overview

**Video Processor**
- Protocol conversion (IP, ASI, S2, 8VSB, SFN)
- Up to 8 ATSC 8-VSB inputs
- Up to 12 DVB-S2 / 2 RU
- Flexible Common Interface
- Multiple Input Stream (MIS)
- Digital Program/Ad Insertion
- Multi-Format Transcoding / Rating
- Prepared for advanced AVC Processing e.g., low resolution, downconversion...
- PIP, MSTV, Captions & Metadata handling
- Logo and text crawl insertion

**Video Gateway**
- Uncompressed video over IP (6 SD/HD/3G per slot)
- Electrical & Optical SDI Interfacing
- 1G & 10G IP interface
- JPEG-2000 (3 SD/HD per slot) decode or encode
- COP4 FEC Support
- Adaptive Clock Recovery
- Reference Input
- Monitoring SDI outputs
- 3D Full resolution contribution transport
DCM Multi Format Processor
Multi Format Processing Card

DCM-MFP-S
Single layer MFP card for DCM 1RU & 2RU chassis

Key Features

AVC Transrating
- Brings DCM MPEG-2 transrating features to AVC applications

AVC and MPEG-2 Transcoding & Statmux
- Converts to and from either codec, per service
- Audio transcoding or pass-through
- Up to 24 SD/8 HD per DCM-MFP-S
- Up to 48 SD/16 HD per DCM-MFP

AVC Splicing Capabilities
- Real transrated seamless splice, SD and HD
- Audio splicing including MPEG-1, AC-3, AAC
- Up to 24 SD/4 HD per DCM-MFP-S
- Up to 48 SD/8 HD per DCM-MFP

Prepared for advanced AVC Processing
- Graphic overlays for logo Insertion, text crawls, etc.
- Rescaling for PIP generation and high density multi-resolution (adaptive)
DCM Next Gen Video Processing
OPEX & CAPEX Savings e.g. 120 channel HE

Traditional Setup
Decode + Encode

All Digital Setup
IRD + DCM Transcoder

All Digital Setup
DCM DRD MFP

All Digital Setup
Nearest Competitor

Racks: 12
IP ports: 252; SDI cabling
43kW estimate
Devices: 256
GUI’s and mgt IP addresses: 256
N:M IRD BU, 1:1 TC BU

Racks: 3
IP ports: 100; No SDI coax
28kW estimate
Devices: 54
GUI’s and mgt IP addresses: 54
N:M IRD BU, 1:1 TC BU

Racks: 1
IP ports: 16; No SDI coax
14kW estimate
Devices: 10
GUI’s and mgt IP addresses: 10
Full 1:1 Backup Scheme!

Racks: 2
IP ports: 92; No SDI coax
26kW estimate
Devices: 50
GUI’s and mgt IP addresses: 50
N:M IRD BU, 1:1 TC BU

OPEX and CAPEX savings: high density, less power, higher availability
DCM Dense Receiver Decryptor
DCM DRD saves in CAPEX and OPEX
High density, less power, higher availability

- System Cost / Service ($)
- System Rack Size (RU)
- Total Power Consumption (W)
- Total IP Ports

Single Program IRD
Multi Program IRD
Acquisition DRD
HE-in-a-box DRD
D9036 Platform

- Single rack unit
- Baseband encoding 8xSD or 4xHD
- MPEG-2 and AVC, HD, SD
- IP and ASI input/output
- Closed loop statistical multiplexing
- Up to 32 stereo encodes per module
- Redundant power supplies - replaceable modules, power supplies and air filters

- Scalable high density encoding platform
- Significant Quality improvement as compared to previous generation
- IP focused architecture
- Green - Low power consumption
- Multi-resolution, multi-format video with premium quality
- Easily upgraded through licenses
- Field serviceable modules
CDE250 Multipurpose Platform
Versatility in a dense multi-function platform

• Product Specifications Summary
  Form Factor: 2RU – 24 Front Load Drives
  Engine: Dual Westmere 2.4GHz
  Storage Capacity: up to 12 TB SSD cache
  up to 14 TB SAS HDD Cache
  up to 24 TB SATA HDD Storage
  Fill/Streaming: Up to 4x 10GE – SFP+ Media
  + 4x 1GE Fixed
  Management: 2x 1GE
  Logging: Dual load sharing SSD log drives
  Power: Redundant AC / DC

• Key Platform Features
  Flexible Platform: Multiple Storage Bundle Options
  Up-gradable: Storage Upgrade Bundles - 12 or 24 drive Configurations
  Ingest Targets: 2Gbps
  Storage Targets 12K SDE Hours
  Streaming Targets: Up to 8000 MPEG2 SD Equivalent Streams (4000 SDE/RU)
  Multi-Protocol: Support for MPEG-2/4, H.264
  Content Distribution: High-Performance Asset Propagation (Segmented Cache Fill)
  Resiliency: Stream Resiliency for high availability

HW Model: CDE250
SW Application: TV / IS Streaming
Discussion Topics

Dynamic Market

Videoscape overview

Videoscape infrastructure in Cloud, Network and Home

Videoscape for Cable Specifics
Is Videoscape for Cable?

- Even though Videoscape is designed for an all IP world based on ABR streaming, migration and specific DVB-C legacy support is in scope:
  - Support for Hybrid STB
    - Base mode is DVB-C for linear and ABR over IP for non-linear, DVB-C VOD can be supported depending on the legacy VOD back-office
  - Support for VS gateways
Why IP Video Technology Implications

**Consumer Experience**

- Interactive, multi-screen, “4 Any” experience
- High quality content
- Linear, non-linear video, premium content, choices!
- Common experience across devices and environments
- Applications and widgets (e.g. social networking, information, gaming, etc.)
- Rapid service evolution

**Technology Implication**

- Cloud video delivery via IP, scalable orchestration layer, session shifting.
- Optimized for the consumption screen (RTSP, HTTP, multiprofile delivery), content pushed to the edge (CDN)
- Web/PC-based DRM. Transition scenarios will require support for traditional CA
- IP end-points. Service delivered over managed and/or un-managed networks
- ABR delivery over HTTP
- Open platform, w/ ecosystem of developers for 3rd party services

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Evolution of the Home Network
Network Requirements

- **Legacy STB**
  - DVB-C QAM
  - Linear
  - VOD
  - Data

- **Hybrid STB**
  - Docsis QAM
  - IP unicast
  - Linear
  - VOD
  - Data
  - Non Linear
  - Linear

- **Video Gateway**
  - Cloud
  - Linear
  - VOD
  - Data
  - Non Linear
  - Linear

- **Client STB**
  - PC/Mac
  - Linear
  - VOD
  - Data
  - Non Linear
  - Linear
思科Videoscape价值总结

思科Videoscape为运营商提供

- 通过云、网络、终端的整合提供跨网络、跨终端的全视频体验
- 业界公认的专业性来保证整体迁移有效地保护先期投资
- 开放的接口，端到端的解决方案，端到端的部署
- 多屏的体验
- 新业务的无限扩展
Thank you.