A new approach to media delivery: Embracing the attributes of IP Cloud

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Mediakind
Welcome to MediaKind...

Who We Are

- **Global leader** - media processing, delivery, and TV service platforms for Broadcasters and Cable, Satellite, Telco, and OTT TV operators
- **Technology investor** - Approximately 1,000 HC in R&D
- **Innovation driver** – Media is our passion, Consumer experience drives us

Key R+D Locations

Global footprint, diverse customer base

What We Offer

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<th>Media Platforms</th>
<th>Media Processing</th>
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<td>MediaFirst</td>
<td>H/W Compression</td>
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<td>Mediaroom</td>
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<td>Media Delivery</td>
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<td>Advertising &amp; Content Rights Distribution</td>
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Segments We Serve

- **Media Platforms**
  - 75+ Telco & Cable Operators with 19M subscribers
- **Media Processing**
  - 2,000+ Broadcasters, Pay TV & OTT operators
- **Media Delivery**
  - 60+ Cable & Telco Pay TV operators
- **Product Delivery & Support Services**
Agenda

1. IP as an enabler technology
2. Cloud for Media
IP as an enabler technology
Broadcast Challenges

• Industry-specific interfaces
  – Impedes ability to scale and grow operation efficiently
  – Maintaining broadcast specificities: latency, reliability and uptime

• Separate Broadcast & IT infrastructures
  – Increases opex and inhibits flexibility
  – Removing technical and cost barriers for scaling and evolving

• New entrants able to offer compelling services, faster to market
  – How to leverage virtualization and other agile processes?
  – Enabling larger variety of commercial models
Equipment Center in 2020s
Why IP for Contribution, Live Production, & Playout?

1. To enhance the *flexibility* & *agility* of the video plant
2. Compatible with network interfaces on *commodity* Ethernet switches and *commodity* servers
3. *Flexible* association of streams into desired groups of media
4. *Network-based* registration and discovery of devices, streams, and media capabilities
5. *Denser* than SDI and inherently bi-directional
6. *Agnostic* to specific video format (resolution, bit depth, frame rate, etc.)

*The “on-ramp” to the software-oriented, virtualized video production plant*
Simplifies and Reduces Cabling

Example:
4K Ultra-HD
OB Truck

Equivalent amount of 3G-SDI cabling required

Photos courtesy of NAB18 IP Showcase
Industry Consensus on All-IP Standards & Specs?

• If we don’t align on standards, we lose the “network effect” of interconnected best-of-breed devices

• We also lose the solid foundations to build higher levels of standardized capabilities
Broadcast Migration to “All IP”
The IT transformation of Broadcasting

• Joint Taskforce on Networked Media (JT-NM) created
  – Defined the “All IP” architecture and did a gap analysis
  – Laid out the roadmap for open interoperability (regularly refined)

• Fostering Broadcast transformation
  – From media-specific to IT-based interfaces, protocols and infrastructures

• Real-Time Professional Media over IP standards
SMPTE ST 2110-x Suite of Standards

- **ST 2110-0** Roadmap for the document suite
- **ST 2110-10** “System Timing & Definitions”
- **ST 2110-20** “Uncompressed Active Video”
  - Based on RFC 4175
- **ST 2110-30** “PCM Digital Audio”
  - AES67
- **ST 2110-40** “SMPTE ST 291-1 Ancillary Data”
  - Captions, subtitles, time codes, active format description, dynamic range, etc.
  - Co-developed with IETF as new RFC 8331 RTP Payload for SMPTE ST 291-1
- **ST 2110-21** “Traffic Shaping & Delivery Timing for Video”
- **ST 2110-31** “AES3 Transparent Transport”
  - Includes compressed audio
- **ST 2110-22** “Compressed Video”
- **RP 2110-23** “Single Video Essence Transport over Multiple ST 2110-20 Streams”
Leverage IP Standards vs. Reinventing the Protocol Stack

IEEE 802.3 Ethernet
RFC 791 IP Internet Protocol
RFC 674 User Datagram Protocol
RFC 3550 RTP Real-time Transport Protocol
ST 2110-30
ST 2110-30
ST 2110-40

Video
Audio
ANC Data

SMPTE
IETF
IEEE
The “Stack” of Standards is stacking up!

- Media Flow Transport (putting r-t media in IP)
- Synchronization between Flows
- Flow Description
- Discovery / Registration / Identity
- Flow Control & QoS
- AMWA IS-05, IS-06
- AMWA IS-04
- IETF RFC 4566 SDP
- IEEE 1588 PTP / SMPTE ST 2059 Profile
- SMPTE ST 2110
- IETF RFC 4175, AES67 / IETF RFC 8331
Cloud for Media
Cloud – a fog of terminology

Orchestration

Virtual Machines

PaaS

Public Cloud

Containers

Openstack

Hypervisor

Serverless

Virtual Private Cloud

AWS

Unikernel

Hybrid Cloud

Kubernetes

Elastic Compute

Azure

Cluster

Private Cloud

Hypervisors

IaaS

Microservices

NFV

Virtual Private Cloud

SDN

Unikernel

Docker

Private Cloud

IaaS

Microservices

NFV
Cloud aims

- Scale
- Automation
- Repeatability
- Agility
- Flow
- Media
- High Availability
The Value of Cloud Solutions

Leverage Network and Infrastructure

Streamline Services & enable Cloud Operations

Develop Business

Best Customer Experience
Embrace Innovation

Hardware cost reduction
Infrastructure Agnostic

Full Automation
Fast Time to Market

Up to 40% capex and opex saving opportunities
Revenue growth opportunities
Cloud-based Operation Opens a New Era of Applications

**BOOST OPERATIONS**
- Improve Efficiency
- Agile Ops
- Fast roll-out

**AS-A-SERVICE**
- Live
- On Demand
- Events

**NEW APPLICATIONS**
- Scale Offload
- Cloud Disaster Recovery
- Ad Insertion

DATACENTER

PRIVATE CLOUD

PUBLIC CLOUD

Hybrid CLOUD
Sunshine is peaking for media!

**Matured Cloud**

- **Strong Operations** capabilities and infrastructure
- Cloud foundation OpenSource tools are reliable and mature
- Evolution of accelerated technology for appliance / Private / Public Cloud

**Overcome media barriers**

- **Standards for** end-to-end to IP adoption
- **Cloud Network** are media-friendly
- **Benefit for Cloud / IT attributes** are possible now for Media

**Industry is getting there**

- E2E video chain evolved to **Cloud awareness**
- Enhanced performance with Cloud native SW & available HW acceleration
- DevOps and IT practices enabled for Media & Broadcast
- **Flexible pay as you use** models
Cloud native media portfolio...

- Cloud agnostic: deploy on private or public clouds
- SW orchestration for roll-out, scaling and services management
- Microservice architecture: Qualify once, deploy anywhere
- Common deployment management and analytics
Cloud Native Portfolio architecture

Analytics and Monitoring

Application Management

Containers

Media µService

Media µService

Containers

Media µService

Media µService

Operating System

Operating System

High-Level Management

Micro-services, Containers and Networking

Application Management & Monitoring

Infrastructure

Seamless interface to private and public cloud
Building turnkey SaaS media solutions
Thank You

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