SOFTWARE-DEFINED MEDIA PROCESSING

Matthew Goldman
SVP Technology, TV & Media
AGENDA

- Media Processing Challenges
- Value of Virtualization
- Software Defined Media Processing
- Moving to the Cloud
Processing Performance was judged by individual codec bandwidth savings.

Flexibility was a trade-off against performance.
Cloud conveying how costly fixed infrastructure may not be essential.

Tier 1 and Tier 0 customers leveraging IT buying power.

Multiple cycle increases in x86 processing power.

Content owners leveraging IP transformation enabling more flexible business models.
INTERNET ERA OF TELEVISION CHALLENGES

- Launch new services quickly
- Maximize revenue from content
- Simplifying operational processes
- Leverage latest technologies: HDR, 4K, HEVC

- Operational efficiency
- Choice of deployment method
- Bandwidth efficiency
- Agile solutions
INDUSTRY FUTURE
APPLICATION TREND

Capture and Control Devices

Applications
- QC
- Asset Management
- Transcoding
- Graphics
- Resource Management
- Subtitling
- Playout
- Packaging
- Encoding

COTS, CUSTOM HARDWARE, CLOUD
Cloud Requires a New Approach

Traditional IT Management

Services and assets tied together in complex, brittle, vertical stacks that are hard to change and manage

Business agility suffers

Cloud Management

Service components are abstracted and sourced from dynamic resource pools with horizontal layers loosely bound into services

IT able to keep up with speed of the business
THE VALUE OF VIRTUALIZATION
-> CLOUD SOLUTIONS

Leverage Network and Infrastructure

Streamline Services & Enable Cloud Operations

Develop Business

- Hardware Cost Reduction
- Infrastructure Agnostic
- Full Automation
- Fast Time-to-Market

Best Customer Experience
Embrace Innovation

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

PRIVATE CLOUD
PUBLIC CLOUD
PUBLIC CLOUD
PUBLIC CLOUD

DATACENTER
Services Orchestration

Foundation for New Media Architecture

Cloud Native Solution

Empower DevOps

Control and Optimize end to end Media Flow

Unified portfolio with one common architecture

Leverage latest IT technologies for Media

Agile and Continuous delivery
ARCHITECTURE PRINCIPLES

- Microservice
- Cloud Native
- Media Flow Centric
- DevOps & Agile
- Containerized
- Open, Standard Tools Wherever Possible
- Automation Everywhere
THE SOLUTION REMAINS SIMILAR

Management & Workflow

Supervise

Receive

Check

Encode
Live / On-Demand

Multiplex / Package

Store

Personalization

Video Processing

Stream Processing
NEXT GENERATION HEADEND
EMPOWERING TV TRANSFORMATION

CLOUD NATIVE TV SOFTWARE

MODULAR SOFTWARE ARCHITECTURE

IP TRANSFORMATION
Enables efficiency and scalability in transport, routing and remote media production

MICRO-SERVICES
Enables flexibility, fast technology deployment and up-to-date media operations

VIRTUALIZATION
Enables reliability and agility of media technology to efficiently address business needs

Any combination of applications or services media companies require
Empowering TV Transformation

- Containers
- Hardware Acceleration
- Micro-services, Containers and Network Interface
- Application Management & Monitoring
- Service / Support Interface
- Operating System
- Supervision & Analytics
- Network Virtualization
- Software Defined Storage
- Compute Virtualization
- Compute & Process
- Virtualization
- Hardware Acceleration

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MANAGEMENT CONTROLLER

- Centralized operations
- Service based management
- Service availability
- Flexible licensing
- Simplified configuration & control
- Improved User interface
- Configuration templates
ORCHESTRATION

Optimize resources usage
- Spin-up processing resources on-the-fly
- Apply configuration using templates

Simplify software management
- Centralized version management
- Containers for fast upgrade and rollback
- Abstract hardware & operating systems

Next Gen High Availability
- Service resilience via orchestrator
- Granularity per service
- Reduce backup resources
FLEXIBLE LICENSING

Flexible
Complies with appliance and cloud models (centralized, not hardware dependent)

Scalable
Combination of different applications and scalability of every application
CONVERGED HEADEND TODAY

DEPLOYMENT, CONTROL, REDUNDANCY, MONITORING

Encoder
Packager
Mux
Op. System
Op. System
Op. System

Virtualization
Compute

Ericsson AVP
Ericsson MX
Ericsson RX

Dedicated Hardware Processing
Software Processing for Datacenter
ENABLING THE SOFTWARE JOURNEY TO THE CLOUD

- Highly Optimized Software
- Virtualization and Optimization
- Micro-Services
- Component Orchestration for the Cloud
CONVERGED HEADEND EVOLUTION
THE SOFTWARE DEFINED MEDIA STACK

DEPLOYMENT, CONTROL, REDUNDANCY, MONITORING

Application Orchestration

Micro-services, Containers

Infrastructure Management

Intel / Ericsson Media Hardware Acceleration

Network Virtualization

Software Defined Storage

Compute Virtualization

Network

Storage

Compute & Process
LEGACY MEDIA PROCESSING

Media Ingest → Media Processing → Network → Client Device

Production → Transformation → Delivery → Consumption
MOVING TO CLOUD

Media Ingest

Private Cloud

Network

Client Device

Production  Transformation  Delivery  Consumption

- Client Application
- Cache / Storage
- Media Processing
EXAMPLE: ERICSSON MEDIAFIRST CLOUD ARCHITECTURE

Application, µService and Virtual Infrastructure Orchestration

Media Processing App Domain
Microservices
- Decode
- Playout
- Graphics
- Package
- Encode
- Multiplex

Cloud DVR App Domain
Microservices
- Ingest
- Storage
- Ad Insertion
- Package
- Secure
- Origin

Media Delivery App Domain
Microservices
- Cache
- Distribute
- Ad Insertion
- Re-package
- Secure
- Flow Manager

TV Platform App Domain
Microservices
- Secure
- Service Info
- Discovery
- Personalization
- Content Rights
- Subscriber

Open Innovation Platform
Micro-services, Containers and Virtual Interface

Operating System

Virtual Infrastructure Interface

Private Cloud
Public Cloud
Bare Metal
MEDIA PROCESSING TRANSFORMATION

Technology

Dedicated platform

Datacenter and Software

Virtualized Software

Cloud Infrastructure

Micro-services and containers SDI over IP

Component Stream Transport

Media Acceleration

Operational gains

2014

2015

2016

2017

2018

2019

Standard IT environment

Faster deployment

Infrastructure efficiency

Continuous delivery

All-IP Media Processing

Media-Centric Data Centers

Faster deployment

Infrastructure efficiency

Continuous delivery

All-IP Media Processing

Media-Centric Data Centers
SUMMARY

MEDIA PROCESSING HAS EVOLVED BEYOND THE CODEC

CLOUD AND VIRTUALIZATION ARE DRIVING ROADMAPS

FURTHER DEMANDS CONTINUE TO PUSH MEDIA PROCESSING BOUNDARIES