



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

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Mediakind



IP SHOWCASE THEATER AT NAB – APRIL 8-11, 2019

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

Media Platforms	Media Processing
<ul style="list-style-type: none"> ▶ MediaFirst ▶ Mediroom 	<ul style="list-style-type: none"> ▶ H/W Compression ▶ S/W Compression
Media Delivery	Additional value
<ul style="list-style-type: none"> ▶ Cloud DVR & Timeshift TV ▶ Optimized AV 	<ul style="list-style-type: none"> ▶ Content Mgmt. Sys. (CMS) ▶ Advertising & Content Rights Distribution ▶ Support and Services

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





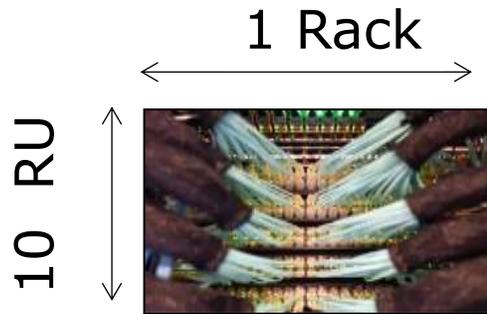
Why IP for Contribution, Live Production, & Playout?

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.)

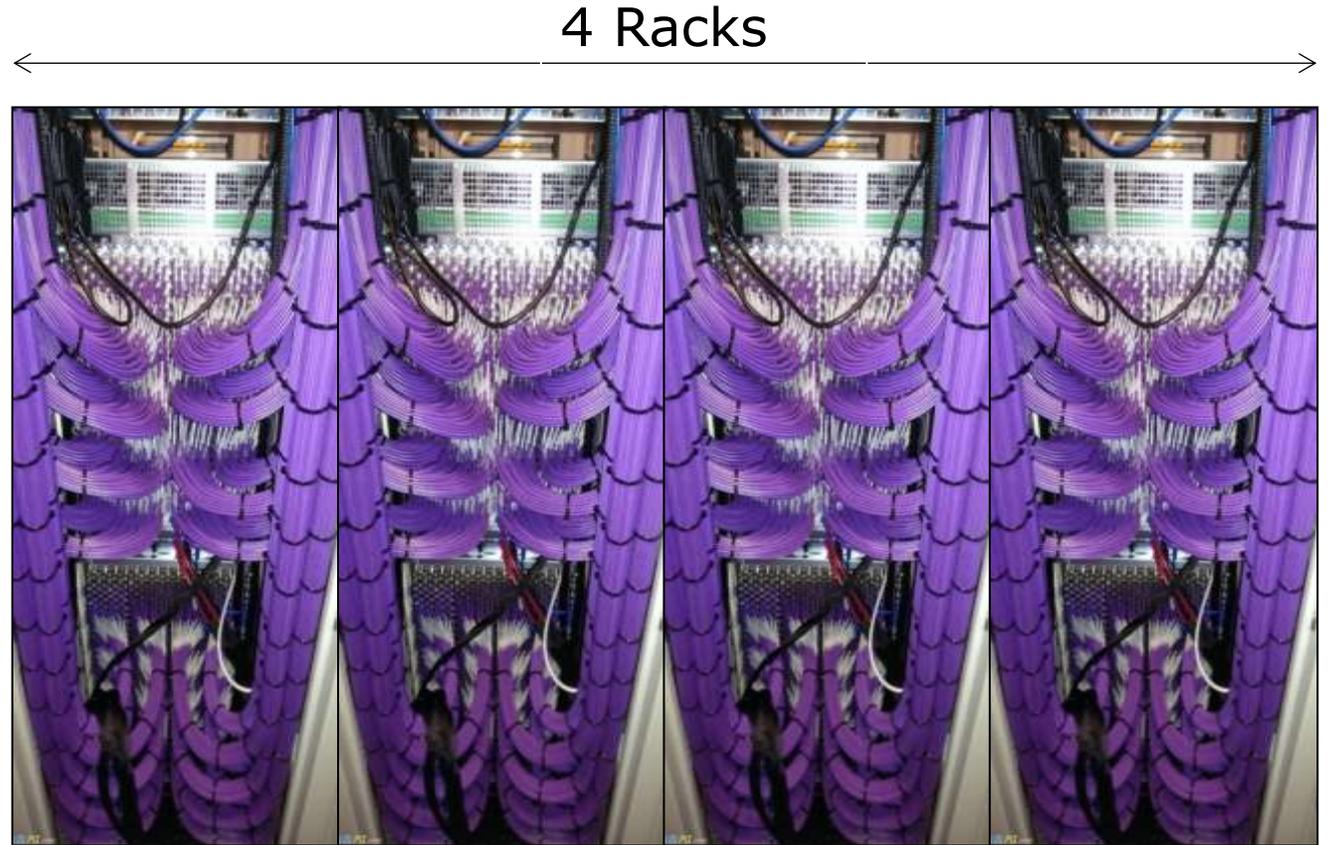
*The “on-ramp” to the **software-oriented, virtualized**
video production plant*

Simplifies and Reduces Cabling

Example:
4K Ultra-HD
OB Truck



IP/Ethernet



Equivalent amount of **3G-SDI cabling** required

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



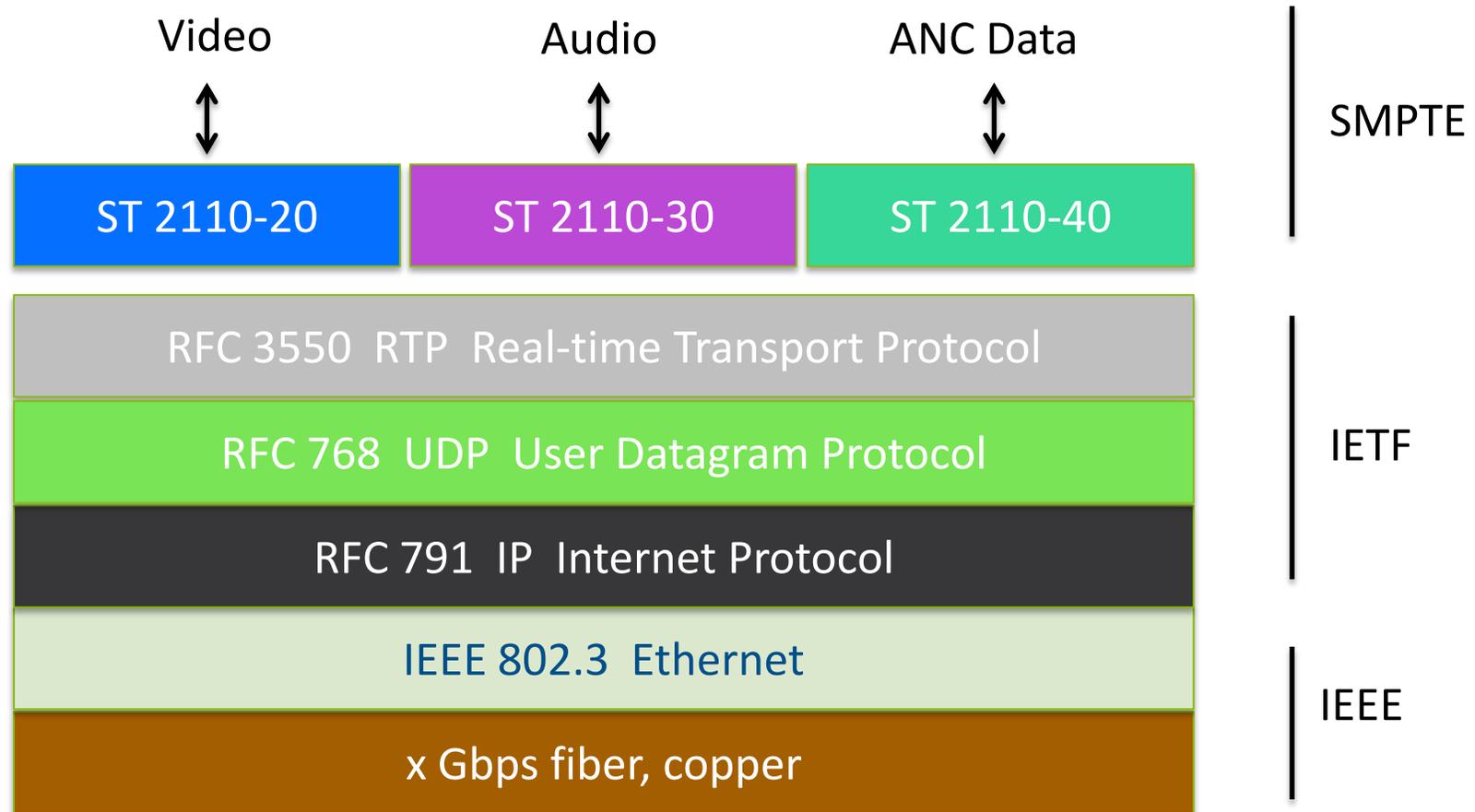
SMPTE ST 2110-x Suite of Standards

- **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"

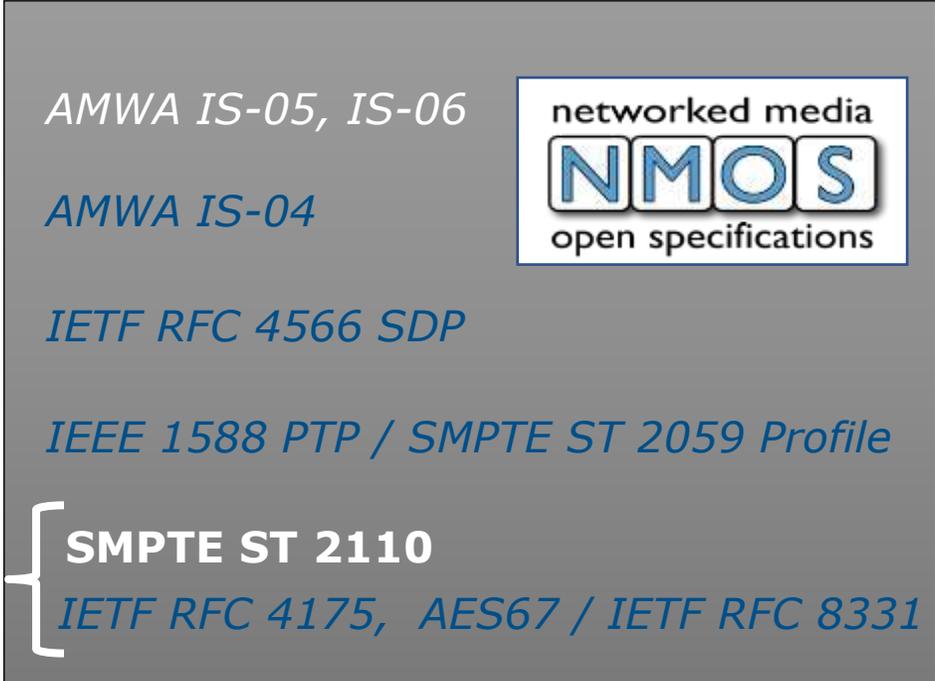
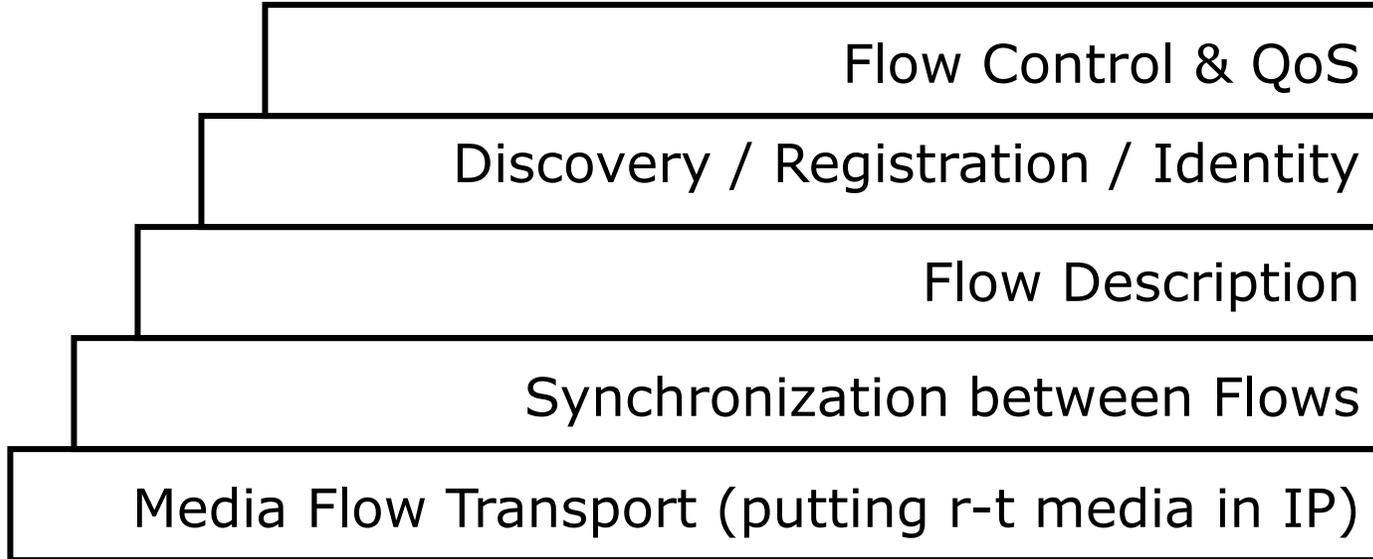


Approved &
Published!

Leverage IP Standards vs. Reinventing the Protocol Stack



The “Stack” of Standards is stacking up!



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

Virtual Private Cloud

AWS

Serverless

Hybrid Cloud

Kubernetes

Unikernel

Docker

Elastic Compute

Azure

Cluster

Private Cloud

Hypervisors

IaaS

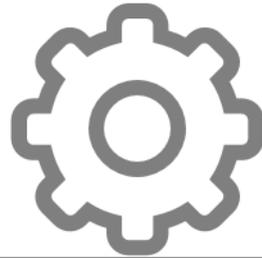
Microservices

NFV

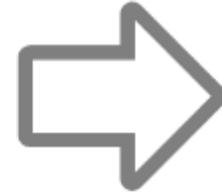
Cloud aims



Scale



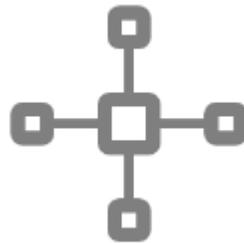
Automation



Flow



Repeatability



Agility

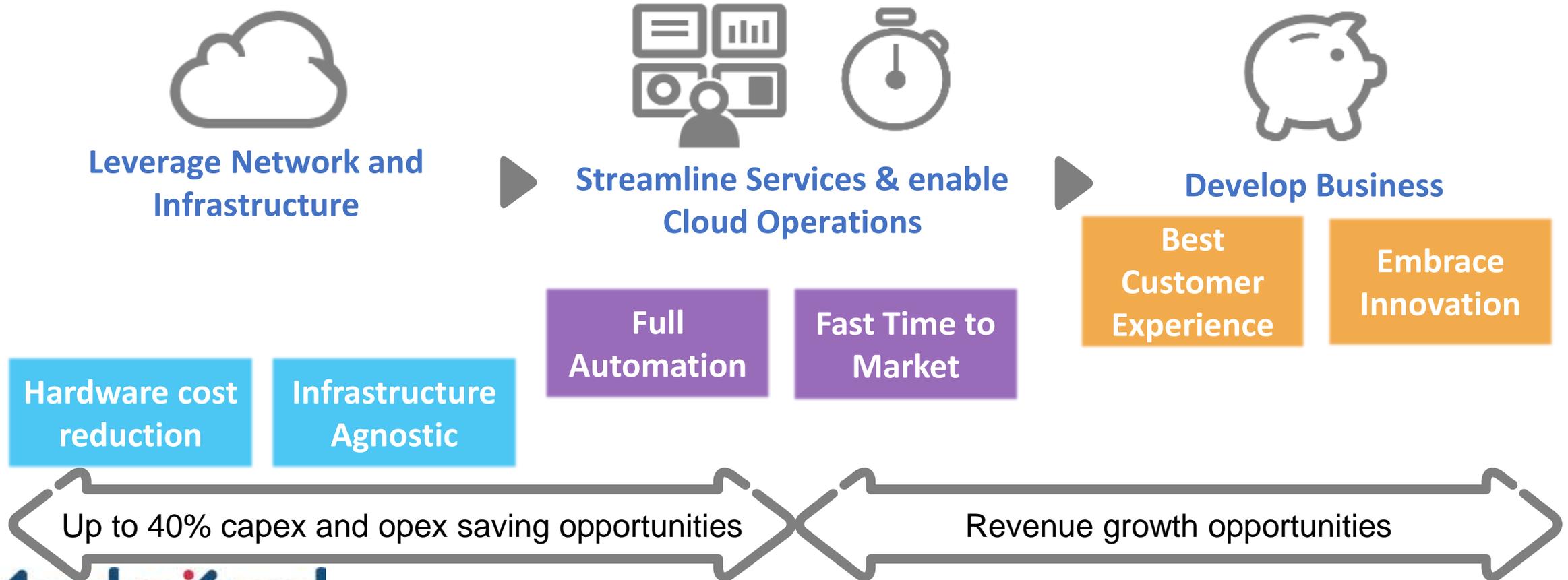


Media



High Availability

The Value of Cloud Solutions



Cloud-based Operation Opens a New Era of Applications

BOOST OPERATIONS



**Improve
Efficiency**

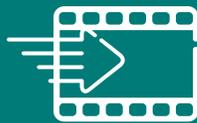


Agile Ops

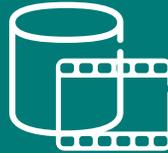


**Fast
roll-out**

AS-A-SERVICE



Live

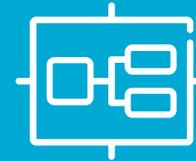


On Demand

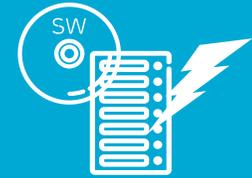


Events

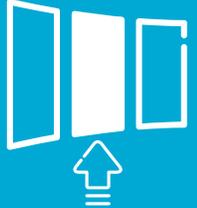
NEW APPLICATIONS



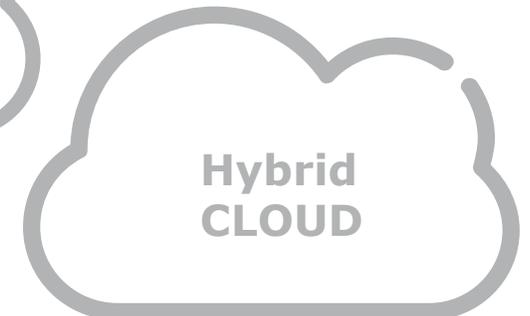
**Scale
Offload**



**Cloud
Disaster
Recovery**



**Ad
Insertion**



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

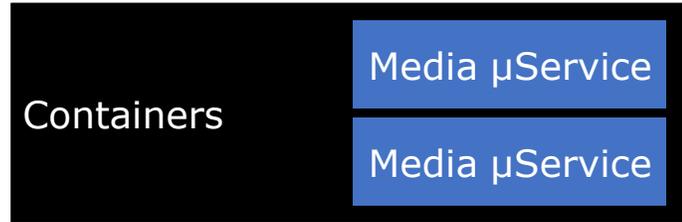


Common deployment
management and
analytics

Cloud Native Portfolio architecture

Analytics and Monitoring

Application Management



Operating System

Operating System



High-Level Management

Micro-services,
Containers and
Networking



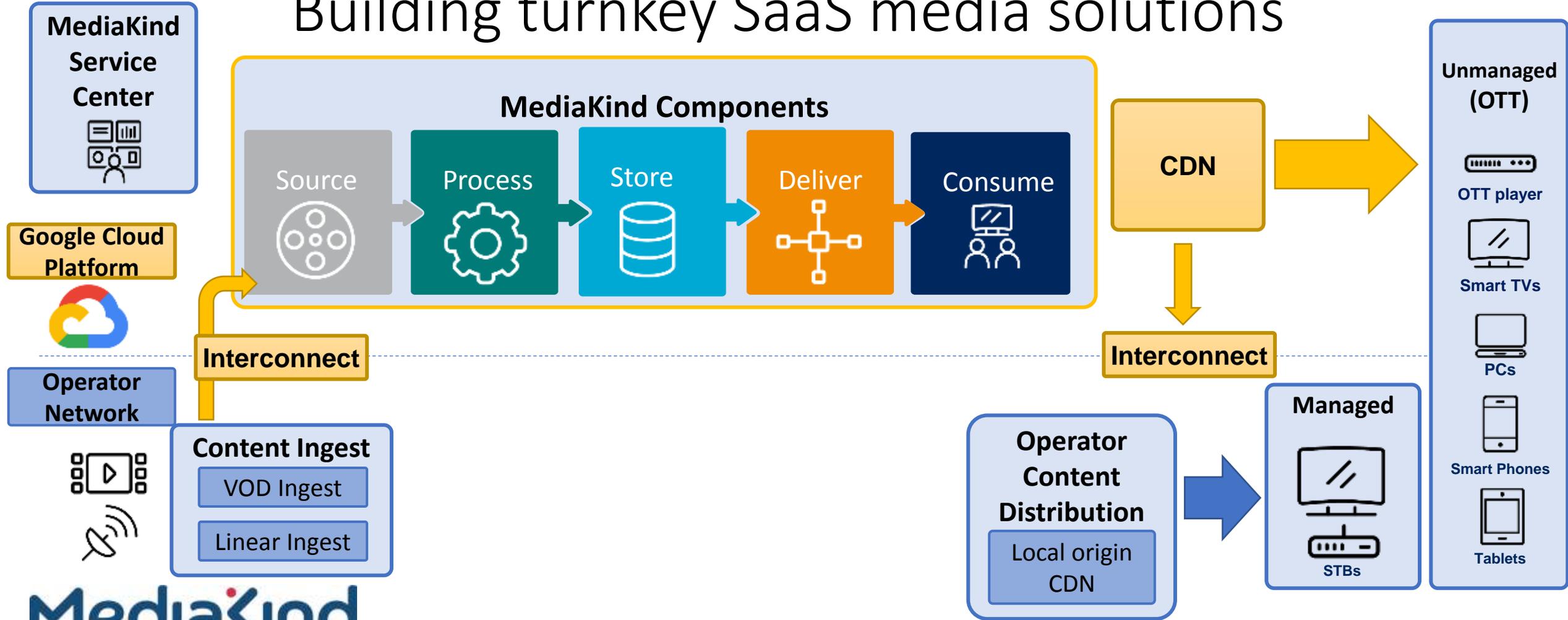
Application
Management
& Monitoring



Infrastructure

Seamless interface to private and public cloud

Building turnkey SaaS media solutions





Thank You

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