



EDGE/WORLD

EXPERIENCE THE EDGE

Akamai LMS: The Secret Sauce in Cost-effective Delivery of High-Audience Live Simulcasts



EDGE

© 2019 AKAMAI

#EdgeWorld2019

Our World is Changing at an Accelerating Rate...

**Velocity
of
Change**

TV Service to managed set-top
Limited “walled garden” content
Proprietary protocols and architectures
Overlay network
Efficiency focused on linear



Unlimited set of content choices and services
Any device, multiple formats
Optimized for On-demand, time-shifted viewing
HTTP based standard delivery
Open, modular, software based delivery platforms

Time

Historically

Future

#EdgeWorld2019

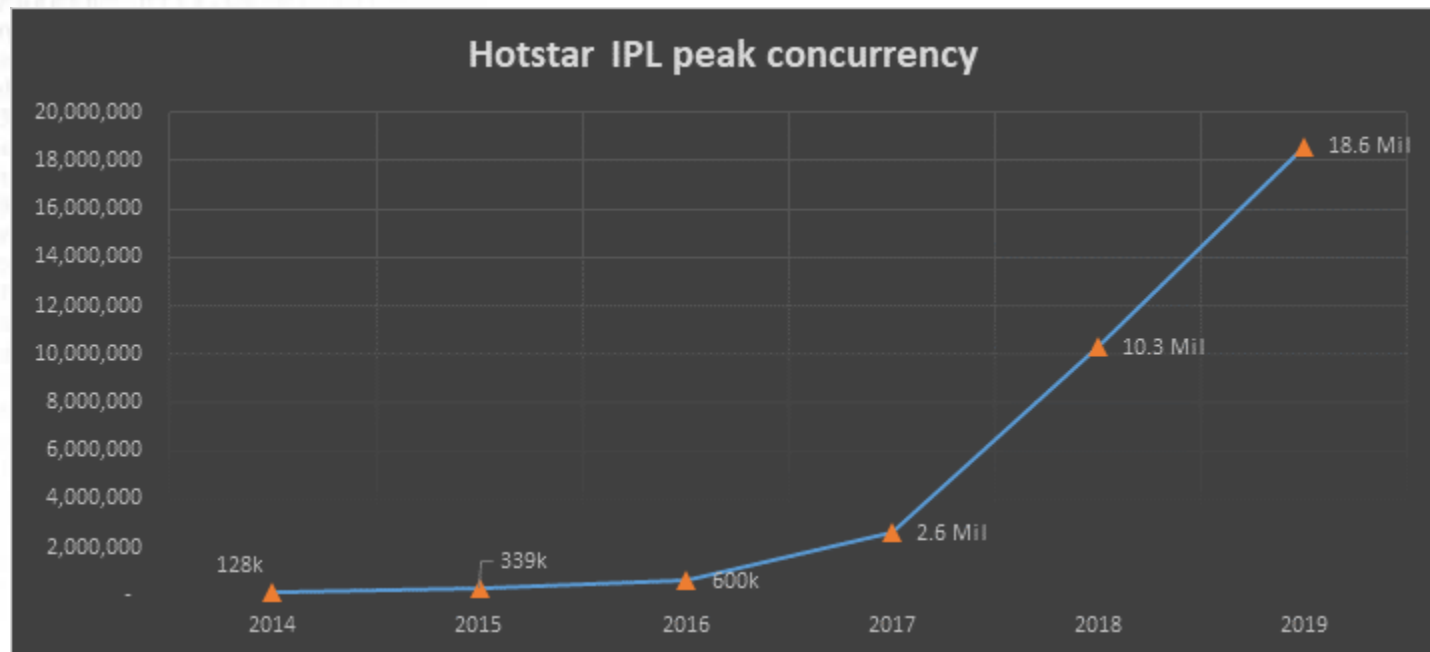
Traffic Record – Indian Premier League 2019

Hosted by Hotstar, India's largest OTT provider

18.6M concurrent viewers, mostly mobile

9.72Tbps delivered in-country

Average bitrate of 550Kbps



© 2019 AKAMAI

#EdgeWorld2019

Scale and Cost are Key Drivers

All video content moving to HTTP ABR delivery

- Whether evolving from public broadcasters (BBC, NBC), Pay TV providers (Comcast, ATT), or pure OTT players (Netflix, DAZN, HBO), whether local or global

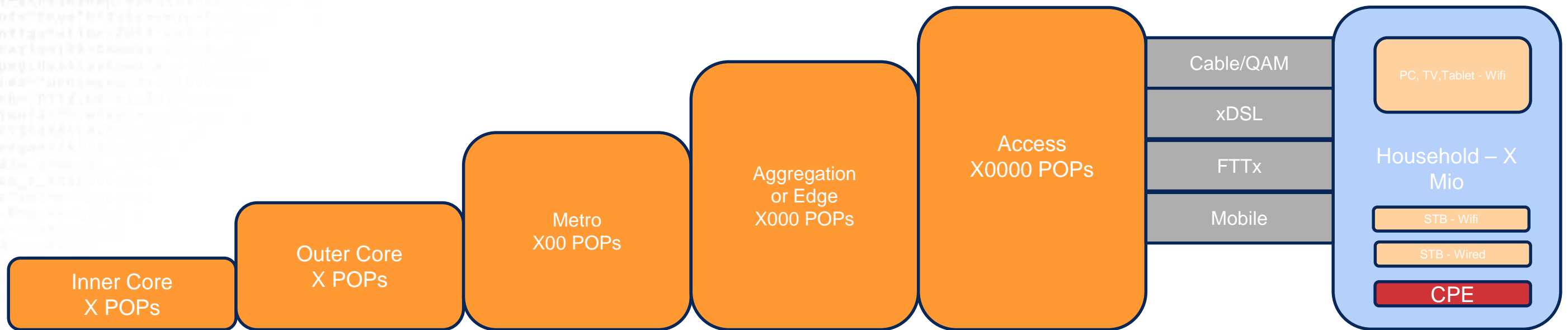
Largest OTT audiences are a fraction of the entire audience

- Pay TV still growing
- 71% of global consumers watch live sports through cable subscriptions*

Even with the cost per Mbps declining, each unicast stream adds additional linear cost

Broadcast Economics - Unicast Distribution

Unicast - 38 Million streams end to end to reach 38 million people



Understanding The Need for Multicast

Multicast has been widely used by operators in live networks (EQAM, IPTV)

Tame peak-to-average variance

- Reduce CapEx and OpEx investments in cache and network capacity

Improve viewer quality of experience during peak live events, less dependent on the unicast infrastructure capacity limitations

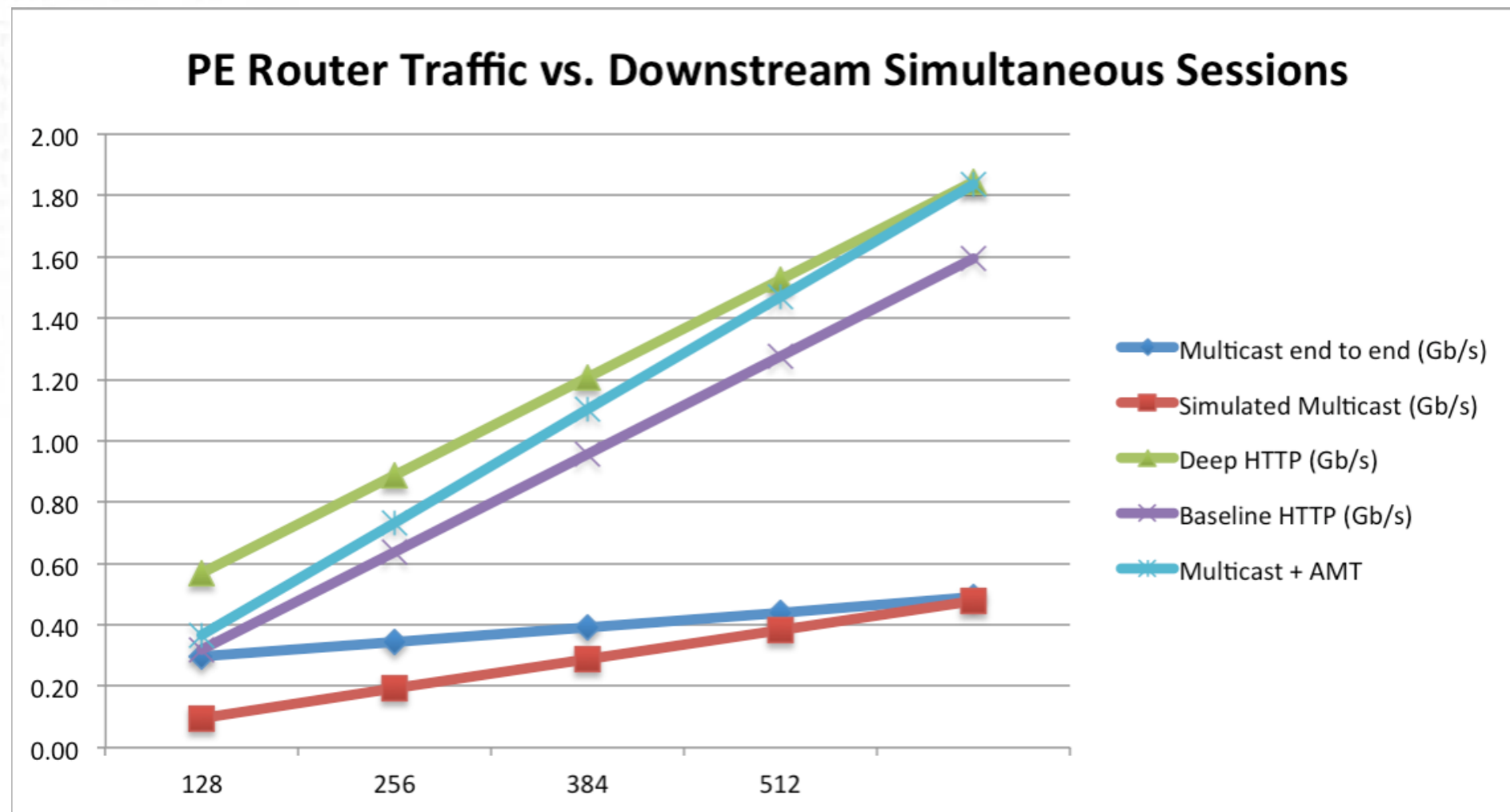
No need to plan for major events on origin

Fully utilize broadcast media capabilities in modern access network architectures (xPON, DOCSIS 3.x, 4G and 5G eMBMS)

- Maximize carrier customer and partner investments in their networks

Multicast Network Efficiency

Multicast provides the best efficiency at the operator's local network, or last-mile network infrastructures



Multicast-assisted ABR Standards

- No widely accepted standard or specification for mABR across all network infrastructures
- Better transport level standards can drive adoption (e.g. AMT, DRIAD)
- We also believe that broader support of multicast in browsers can help significantly (joint effort with Chromium)

Multicast – Akamai's Approach

Maintain current HTTP media workflows

Maintain current delivery mechanism(s) globally for scalability & reliability

Enable delivery to all devices (STB, mobile, tablet, PC, etc.)

Enable multicast within service provider networks without requiring all network sectors (Mobile, DSL, FTTx, Cable) to be multicast-enabled

Enable multicast across multicast-capable and non-multicast domains

- Cable access networks are multicast-enabled
- Existing DSL / FTTx networks were/are enabled for IPTV
- Separate network handling (multicast, unicast) from application (HTTP(S) ABR)
 - Enables independent evolution – applications will move faster

LMS Components and Functions

Multicast Controller (MC)

- Resource allocation
- Instructs Multicast Generator
- Creates stream map

Multicast Generator (MG)

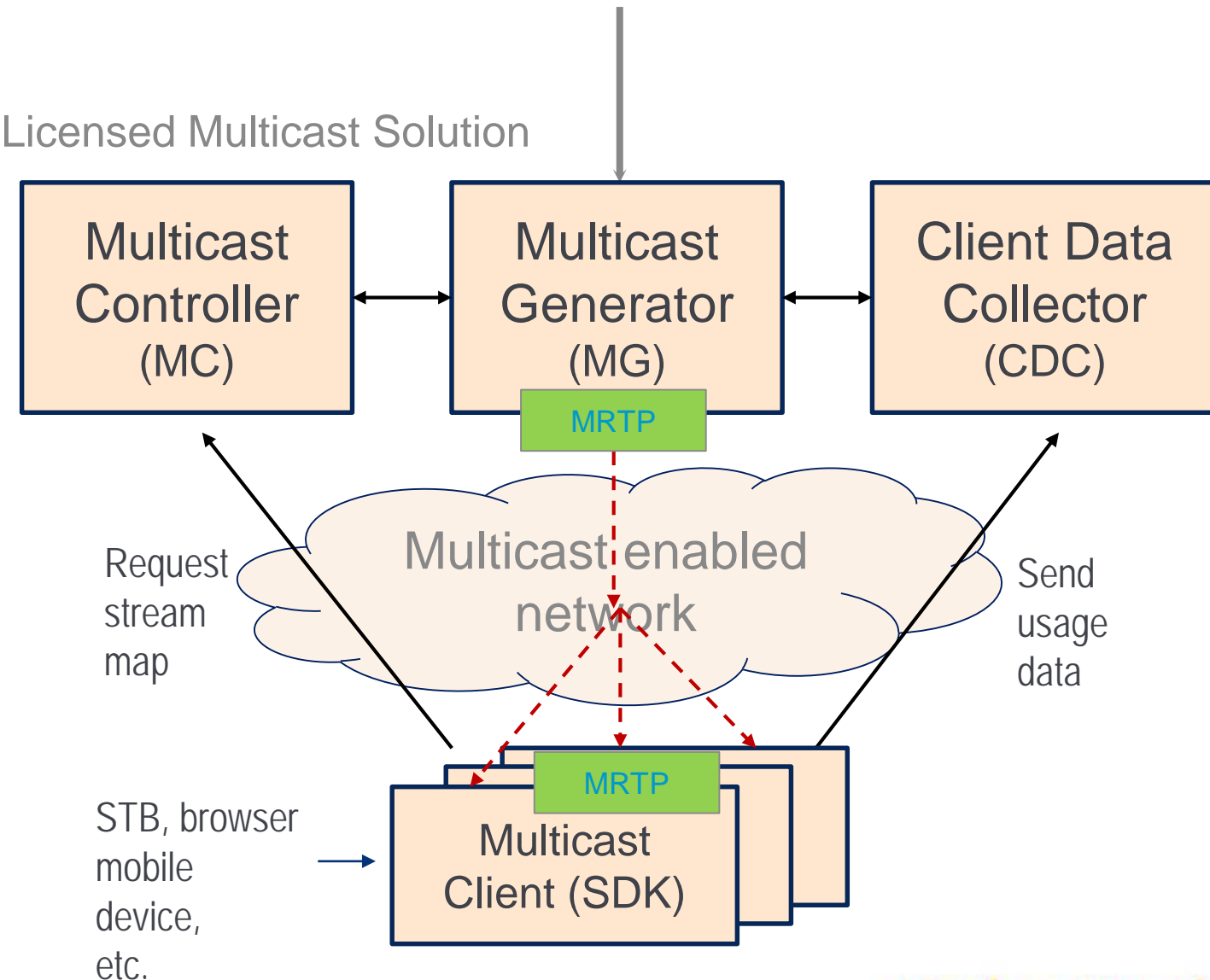
- Ingests content
- Pack and encapsulate
- Apply forward error correction (FEC)
- Transmit data packets
- Supported Formats (HLS, DASH, CMAF)

Client Data Collector (CDC)

- Receives data from clients
- Aggregates the data
- Serves queries for the results

HTTP 1.1 ingest from:
Origin / LCDN / MCDN / any CDN

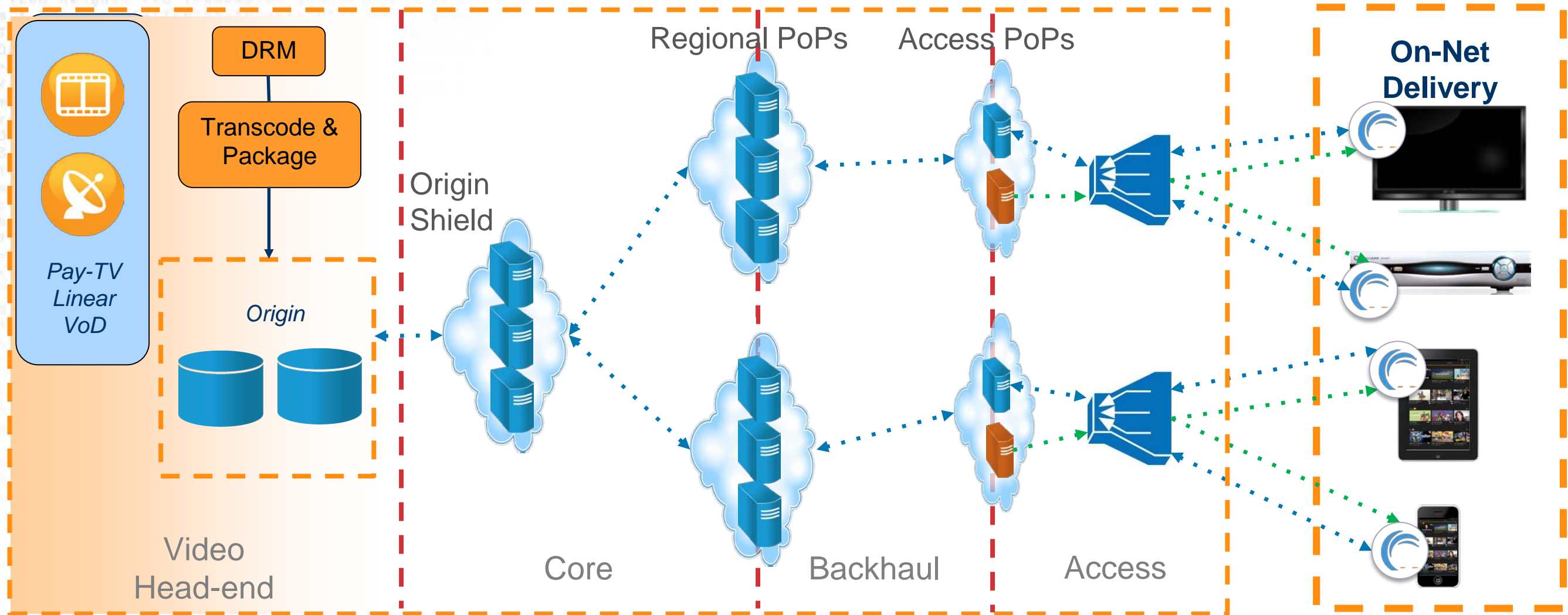
Licensed Multicast Solution








LMS Design Goals

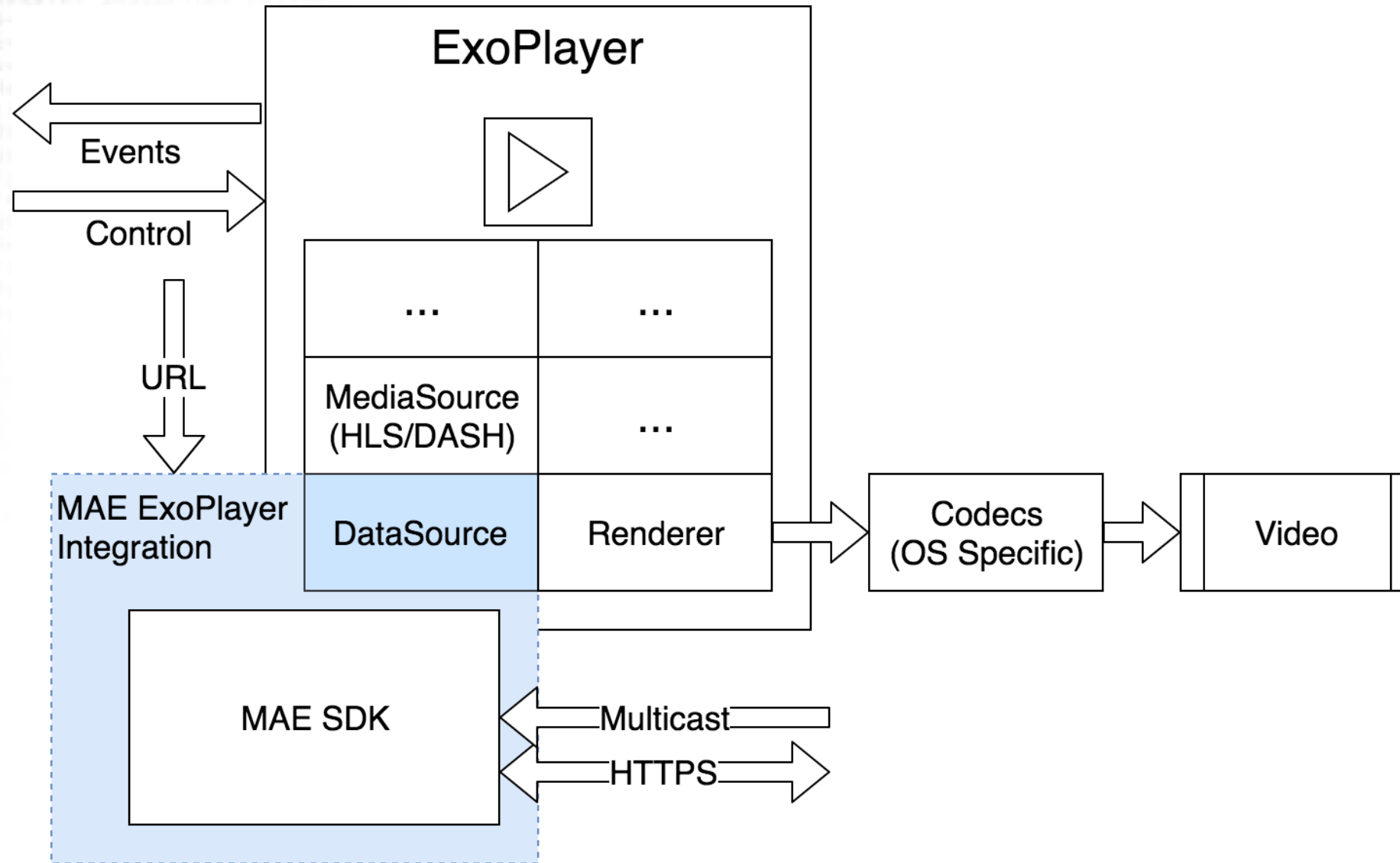
- High quality over unmanaged vs. managed networks
- Single content preparation workflow for HTTP ABR (“OTT”) and LMS delivery
 - Replaces traditional IPTV single bitrate MPTS-based managed multicast delivery
- Supports viewing by many devices, not just “first screen”
 - Ability to support multiple device operating systems
- Supports ability to migrate smoothly from live to time-shifted viewing
 - Seamlessly uses same CDN infrastructure for unicast-multicast conversion
- Provides critical feedback on the viewer experience for monitoring and analytics

LMS – Multicast-Assisted ABR Delivery



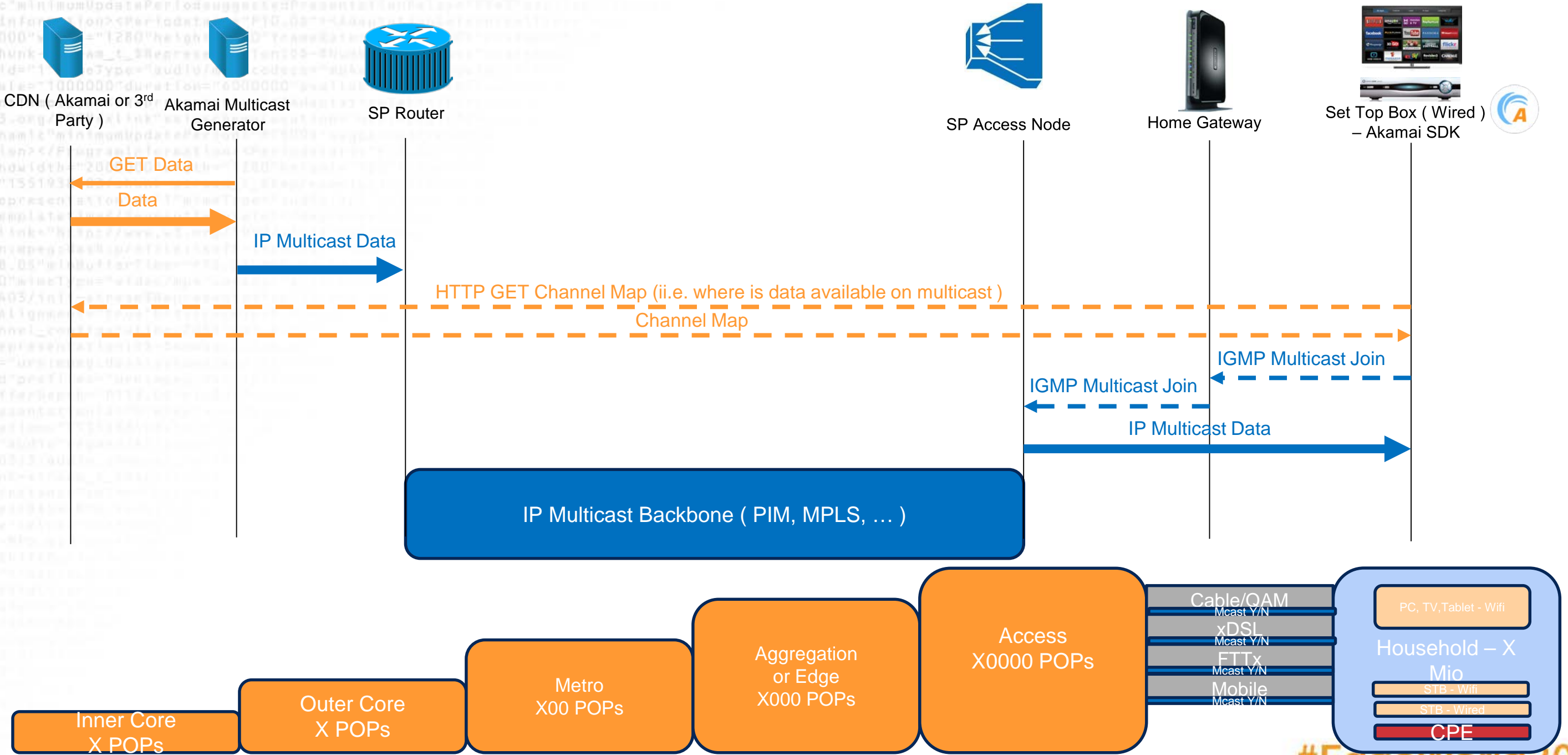
-  LCDN HyperCache
-  Akamai Client
-  LMS Multicast Gateway
-  Unicast
-  Multicast

Multicast Client: SDK for Android ExoPlayer



Network Level Data Flow

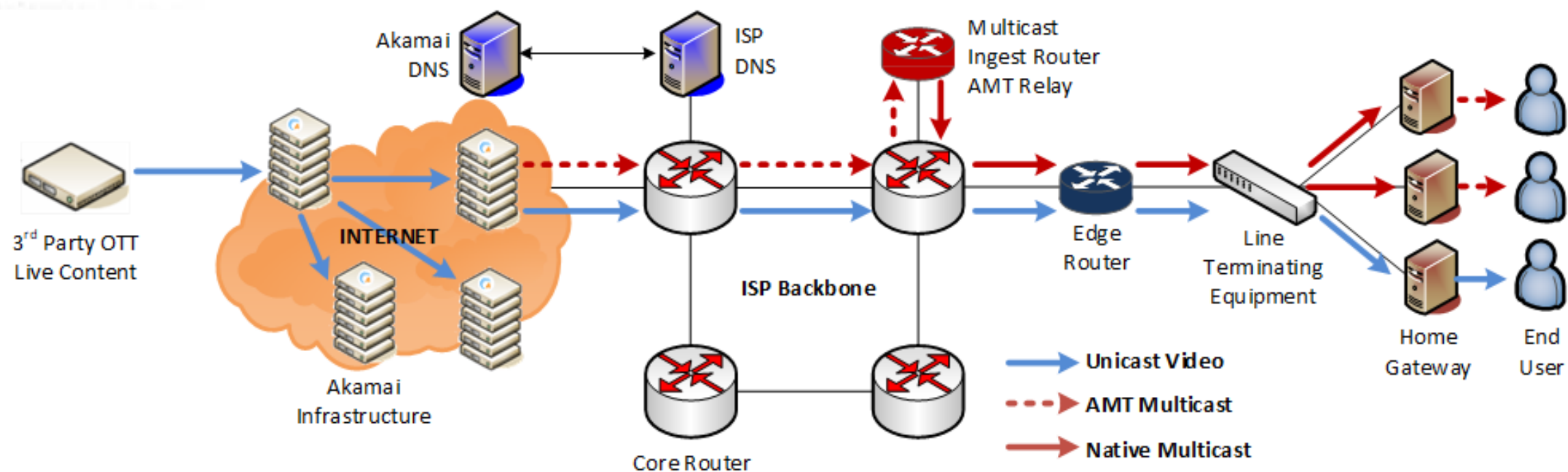
Licensed Multicast Solution – End to End Multicast





Akamai “Disrupt” – 3rd Party OTT Video

- Huge potential to change the cost & scale of live video delivery as well as potentially other applications like software and IoT delivery
- Challenges – few interoperability standards, many moving parts all need to align
- Akamai Disrupt is using LMS as a sandbox for practical engagements with ISP’s & content owners to test what we think is a viable & repeatable end state multicast architecture.



Where to Learn More

LMS Product Page on akamai.com

<https://www.akamai.com/us/en/products/network-operator/licensed-multicast-solution.jsp>

Recorded Webinar

<https://content.akamai.com/us-en-ME12286-multicast-webinar-2019.html>



EDGE/WORLD

THANK YOU
