

Multicast-Assisted Adaptive Bitrate (M-ABR) Overview

(Leveraging IP Multicast over an Operator's Network)

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The Need for Bandwidth Conservation

- Operators Deploying IP Video
- Increased Demand and Competition for Access Network Bandwidth
 - Increasing Broadband Tiers
 - Bandwidth Intensive Applications
 - Enhanced UIs
 - Increasing number of video devices
 - 4K/8K video



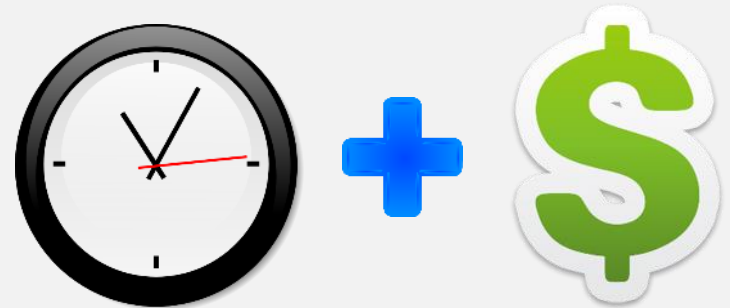
Slide 2

- **Increase Access Network Capacity**

- Segmentation
- Augmentation
- Next Gen Network

- **Reduce Bandwidth Requirements**

- Greater video compression
- Or...
- **Multicast-Assisted ABR**



- Re-use existing ABR infrastructure
- Normalization of spikes in viewership
- Extension of CDN into home
- Access network agnostic
- No stored keys
- Other Applications
 - Software updates
 - EAS/EAN
 - Advanced Advertising
 - Push VOD



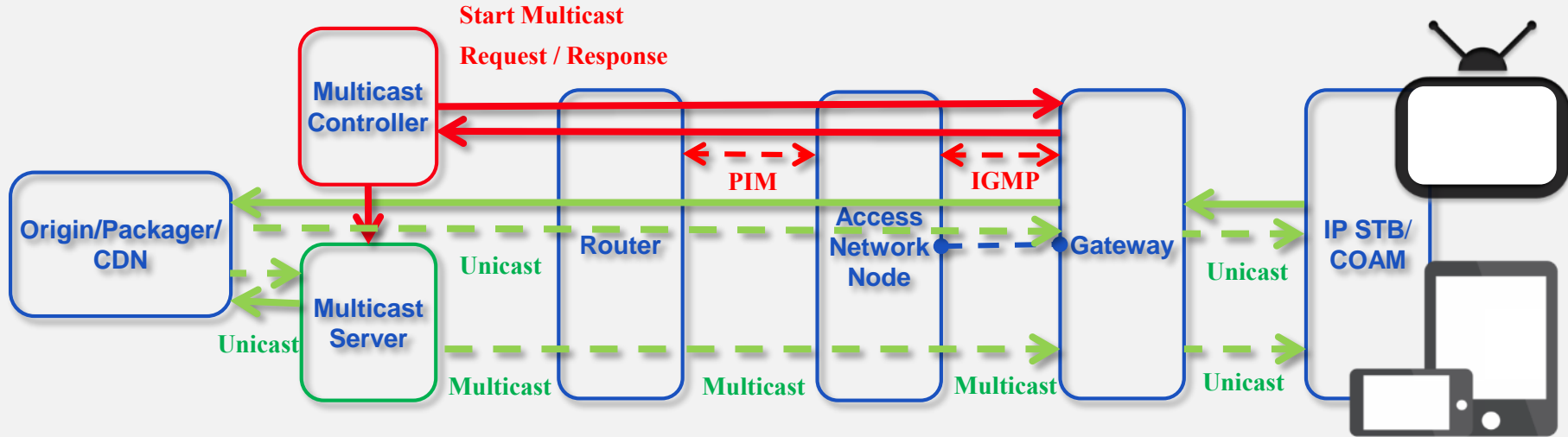
Multicast-Assisted ABR Cons

- Unicast services reduce multicast benefits
 - Live-derived on-demand services (lookback EPG, catch-up TV and nDVR) reduce efficiency of multicast
- Not applicable to VOD
- Smaller service groups and less IP video penetration reduce multicast gains

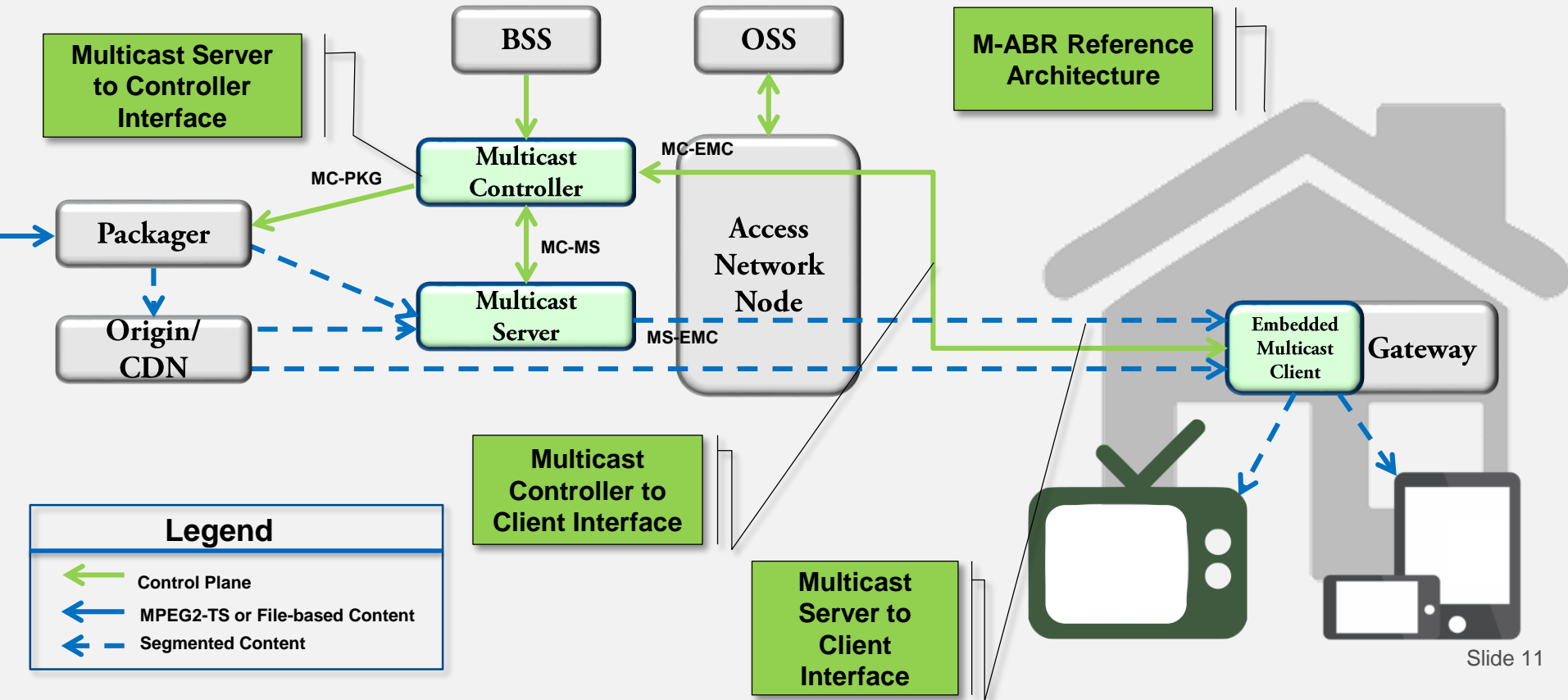


How does Multicast-Assisted ABR work?

Simplified Operation



CableLabs WG Key Deliverables



- **There is no wrong answer for capacity planning for IP video**
 - Increased capacity of access network will happen organically
 - Encoder/Decoder evolution will take place over time
- **However, there is a great tool in the toolbox that takes advantage of concurrency...**
 - ***Multicast-Assisted ABR***
 - Comparatively low cost and low complexity
 - Reduces access network bandwidth utilization
 - Provides network overload protection
 - Based on proven technologies
 - Allow operators to deploy IP video at larger scale
 - No real tradeoff for deploying it

Thank You!

Comments or Questions: m.white@cablelabs.com

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