Multicast-Assisted Adaptive Bitrate (M-ABR) Overview

(Leveraging IP Multicast over an Operator's Network)

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- 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
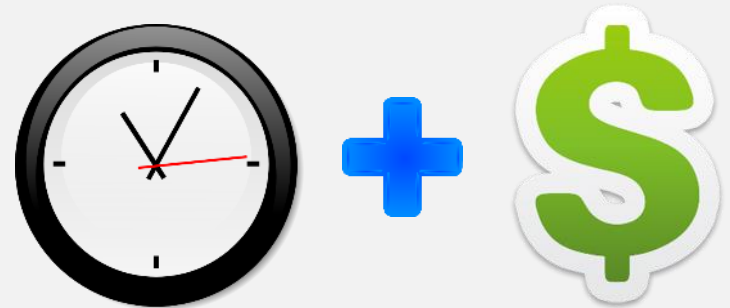 - 4K/8K video

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

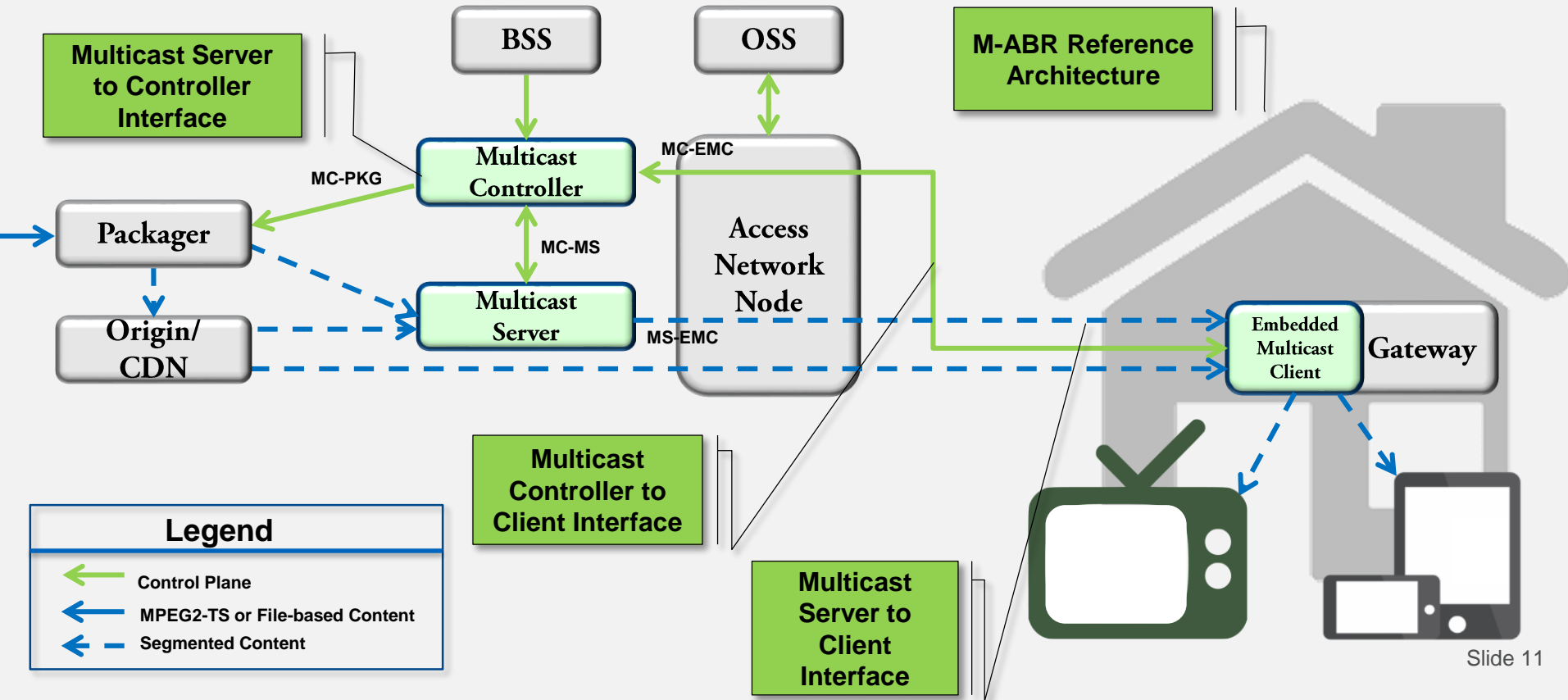- Smaller service groups and less IP video penetration reduce multicast gains

Slide 9

How does Multicast-Assisted ABR work?

Simplified Operation

Slide 10
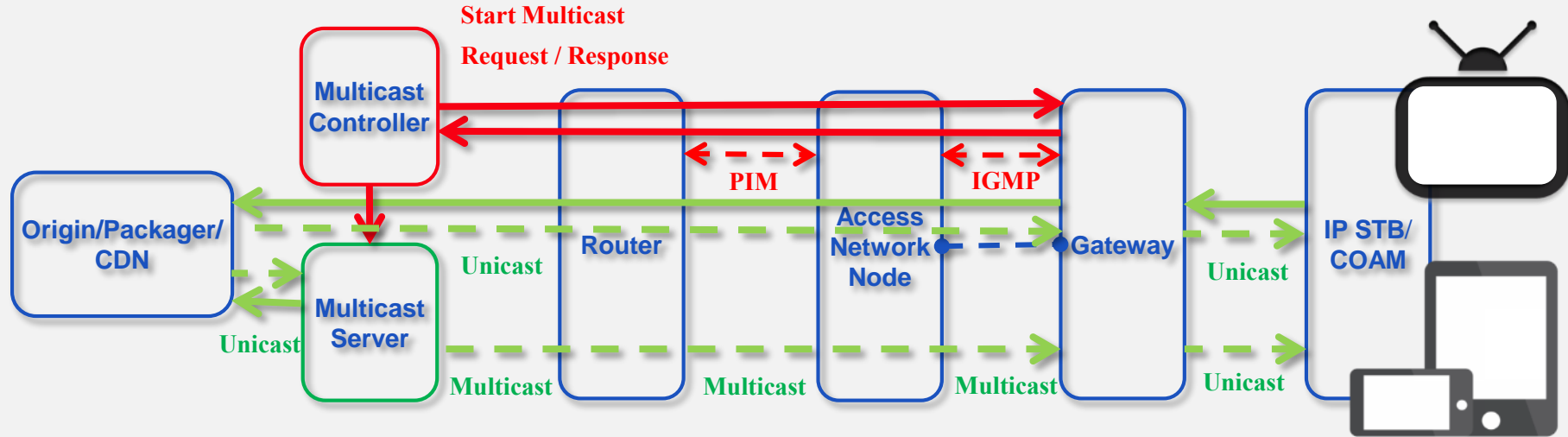
CableLabs WG Key Deliverables

Conclusions

- **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