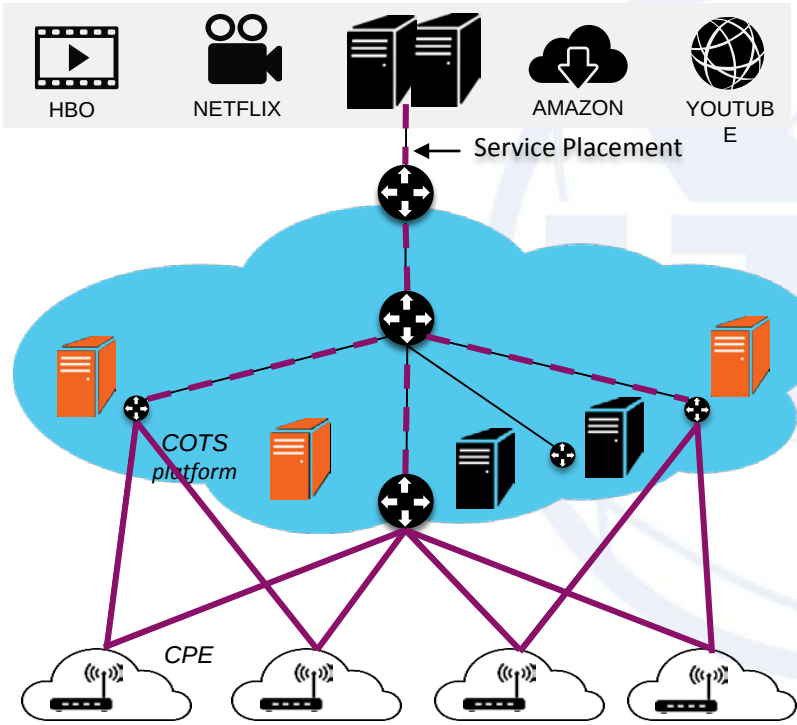

ITU

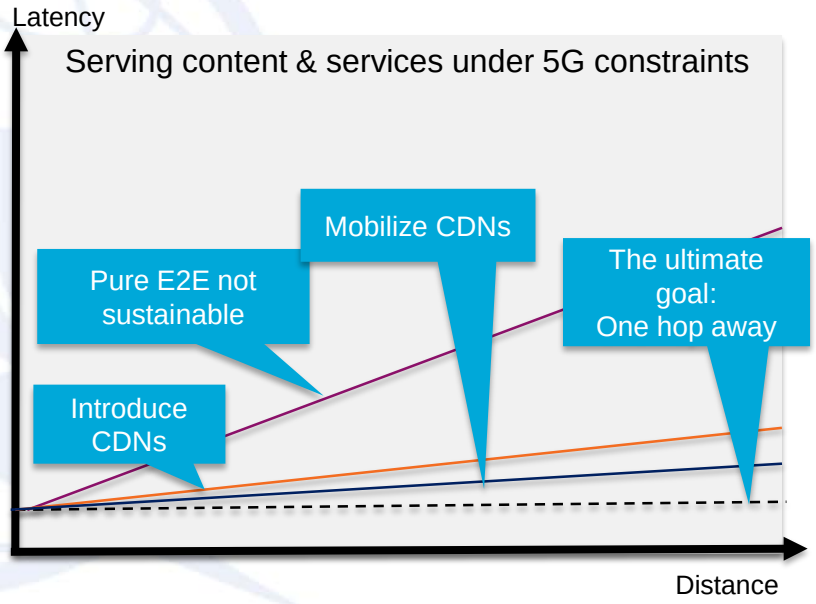
Cost efficient and low latency delivery of IP-based services

By Ulises Olvera

Meeting 5G KPIs

Your Service Just One Hop Away – Enabled by Our ICN Intelligence





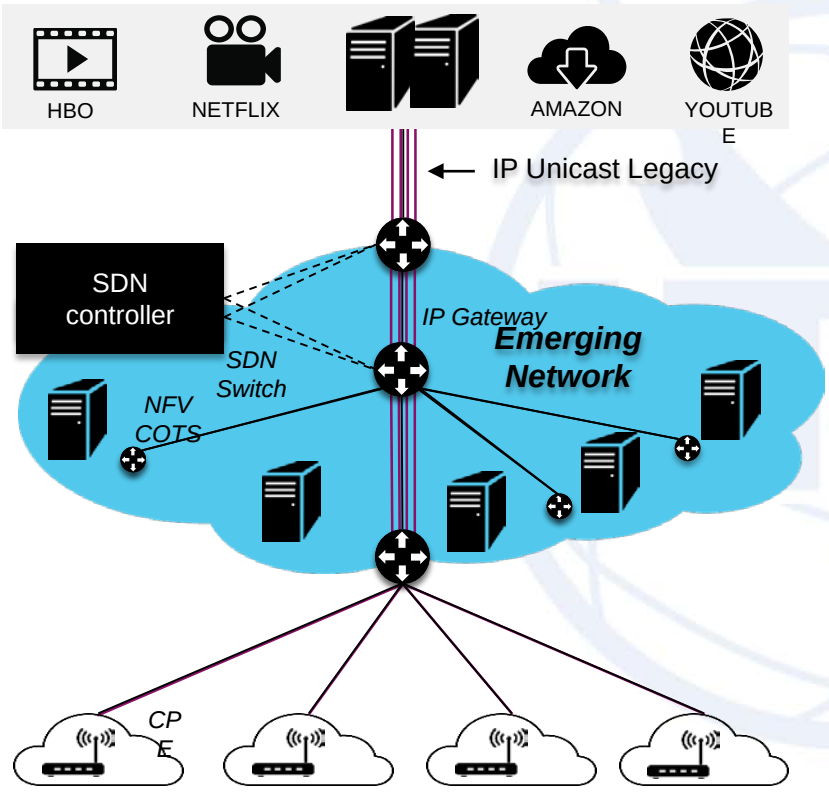
Project Elevator Pitch

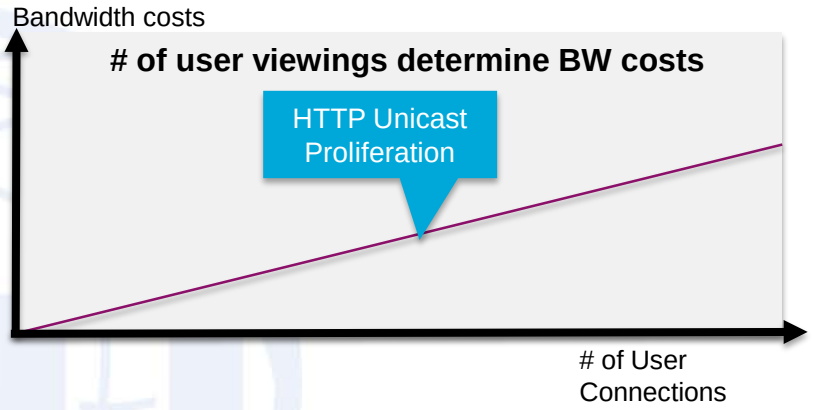
Reinventing the approach to IP based services through a backward compatible introduction of new methodologies supported by an SDN/NFV enabled network fabric & designed to meet challenging 5G KPIs

It looks like IP, it smells like IP, BUT with this technology inside networks will simply work better…

The target for this tech: Telcos & Switch Vendors

The Problem & Current Approaches



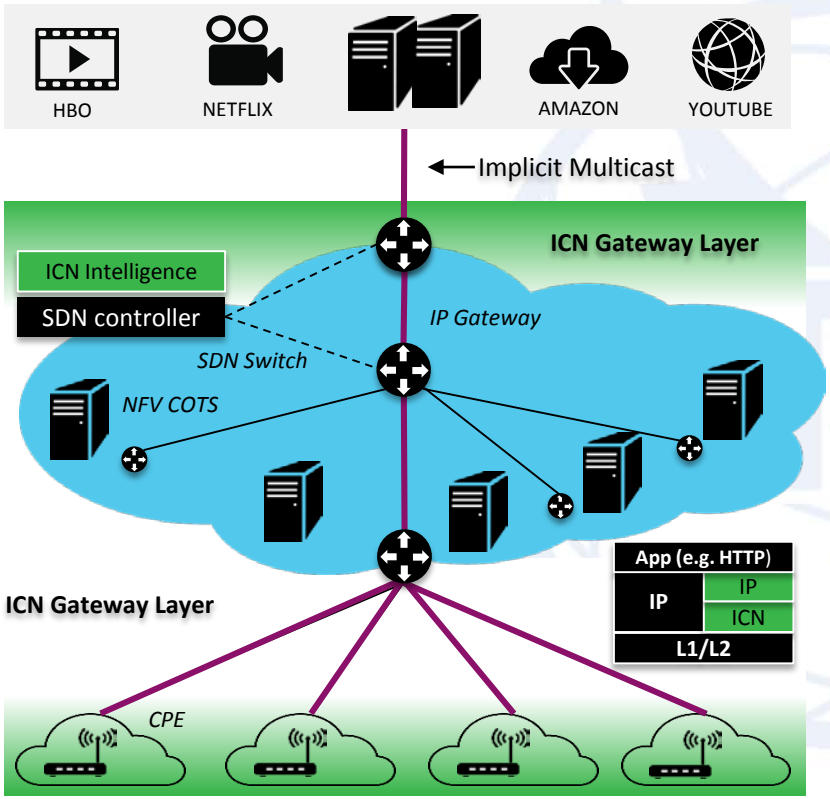


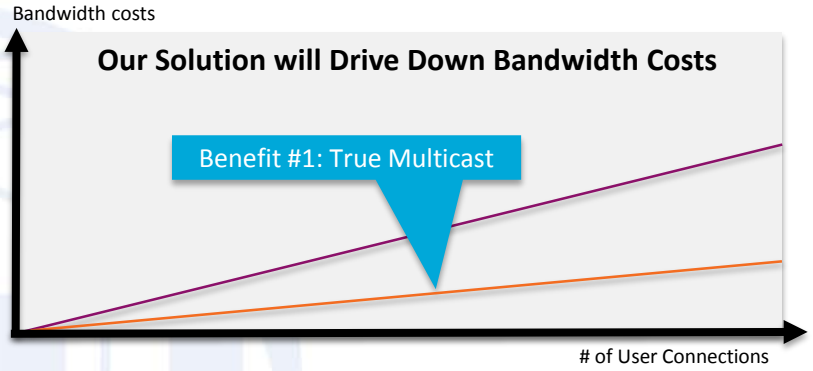
Two current approaches – Two shortcomings

- CDNs are currently used for popular content but this is overly complex and results in inefficiencies associated with indirections
- Overprovisioning of resources drives unsustainable spiraling costs

Both shortcomings are unsustainable for 5G

Our Solution: Re-Introducing Multicast

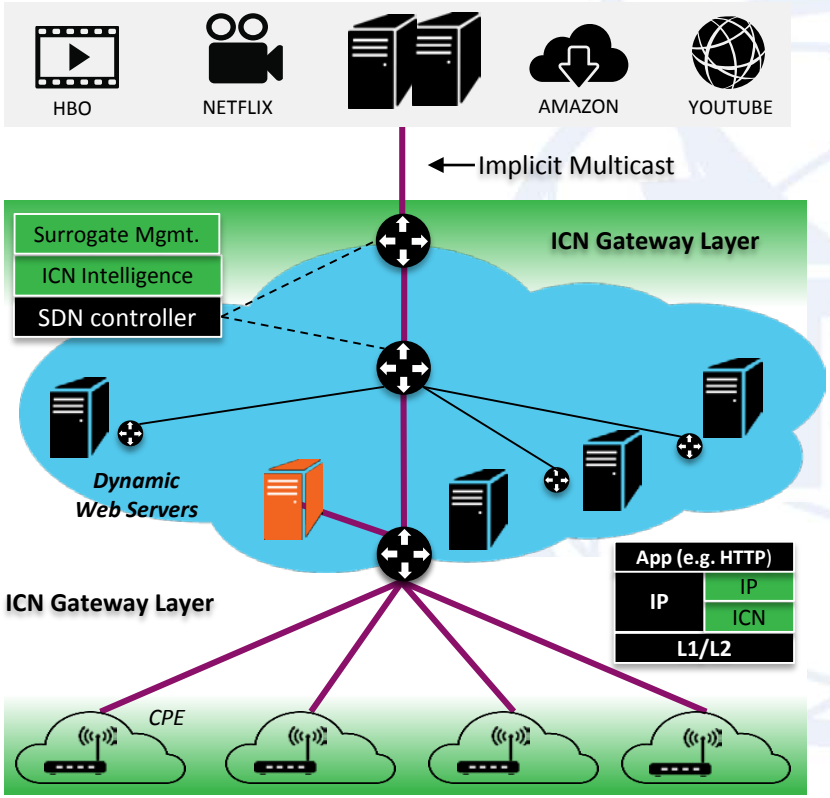


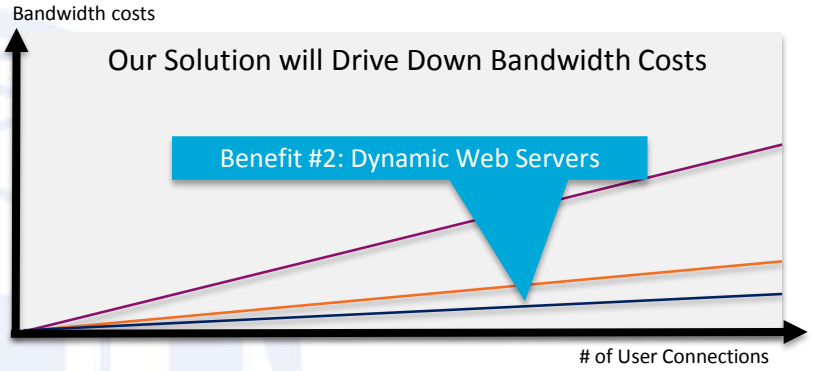


POINT/RIFE: The Innovative ICN approach for competitive 5G (or before) operator networks

- Re-introduce multicast into world of predominantly personalized web experience
  -> **higher network utilization**
- Flexible routing at runtime through *cloudifiable* software elements
  -> **increased resilience, latency reduction**

Our Solution: Localize Communication





The next logical step: Dynamic Web Servers, spun up possibly just one hop away

- Creates new service possibilities for operators, utilizing in-network NFV-based computing capabilities
- Helps meeting challenging 5G KPIs, such as 5ms service-level latency & 1000x capacity increase

Other Opportunities

- Easy SDN integration
  - Uses existing OF1.3 features
  - In-the-night shipping possible
- Mobility support
  - Direct path routing with no anchor point and only slightly higher ctrl signalling as proxy MIPv6 (see http://arxiv.org/abs/1610.09011)
- Network management through ICN itself
  - Pub/sub-based context awareness framework
- Compliance with 5G control plane architecture

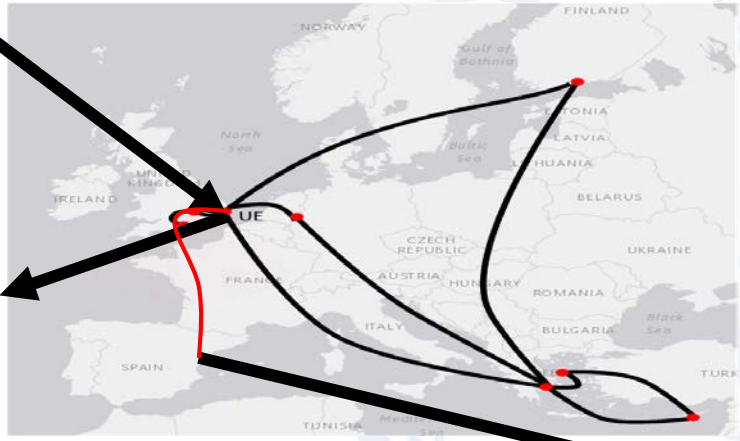
UK NextGen Network
Our Demo

Demo S

Improvement:
Improved local playout quality (scale to HD quality)
(while emulated users will continue to receive SD quality from Bristol)

Remote Video Feed

30+ emulated users in data center



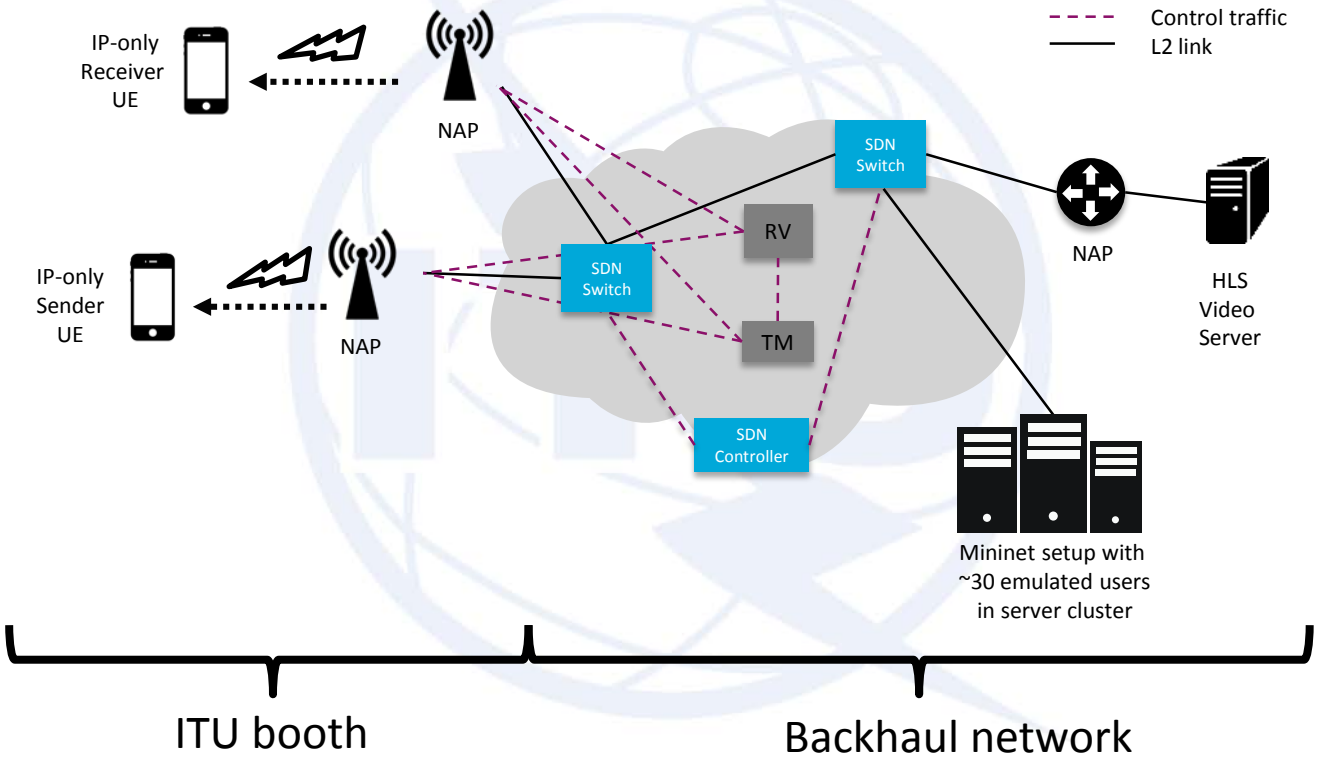
From our POINT/RIFE European Network

Local visitors using IDC-provided demo tablets or their own devices

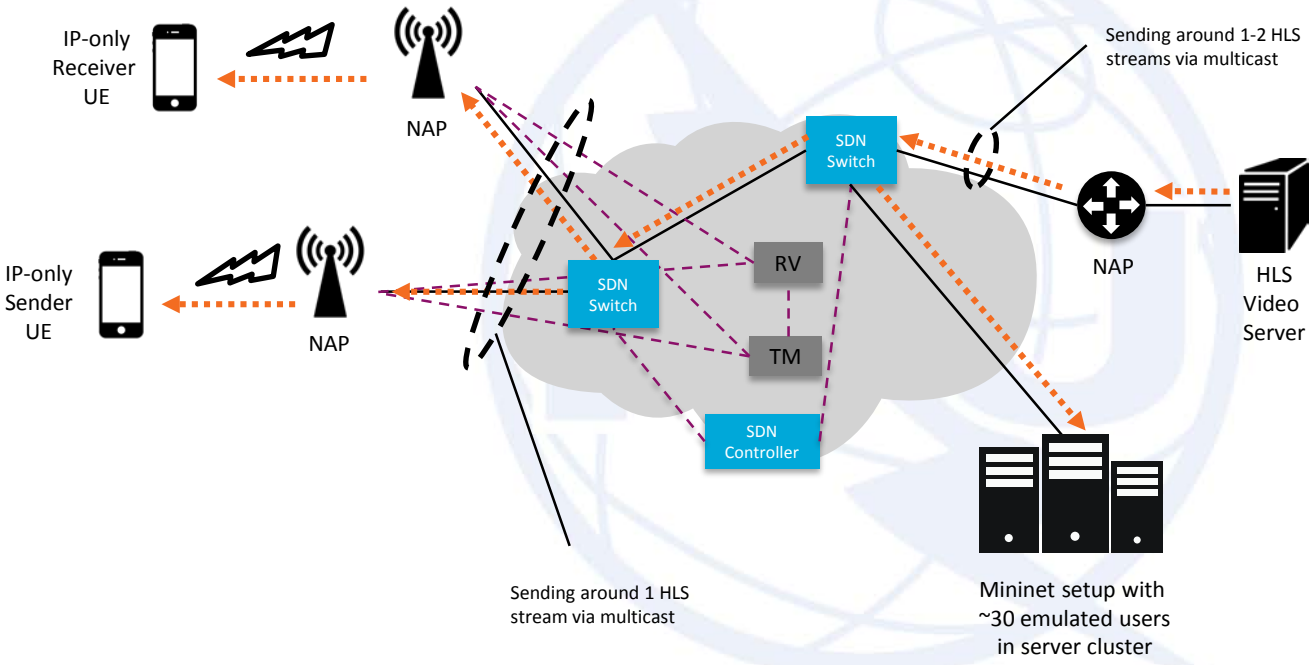
Local Video Feed

…To Our Booth in Geneva

Schematic Setup

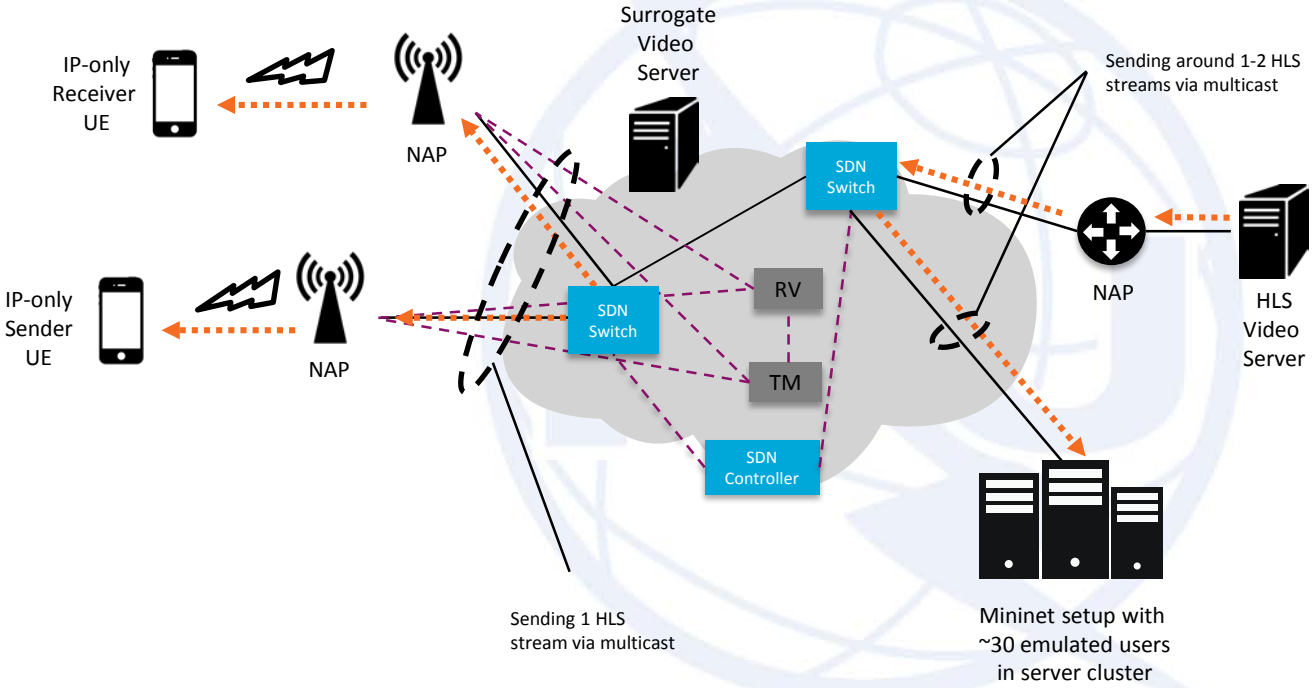


Demo Aspect 1: Multicast Gain



Aspect 1 demonstrates the multicast gain as well as the reduced server load through multicast delivery of HTTP responses in HLS video streaming scenario

Demo Aspect 2: Surrogate Server for Latency Reduction (This aspect will not be demonstrated, left just for info)



Aspect 2 demonstrates the latency reduction and video quality improvement through surrogate server at MWC

Video traffic
Control traffic
L2 link