

A Light Reading Webinar

# Making Broadcast IPTV Standard & Scalable

Wednesday, April 14, 2010

Hosted by  
**Adi Kishore**  
Senior Analyst  
*Heavy Reading*

Sponsored by:



# Speaker

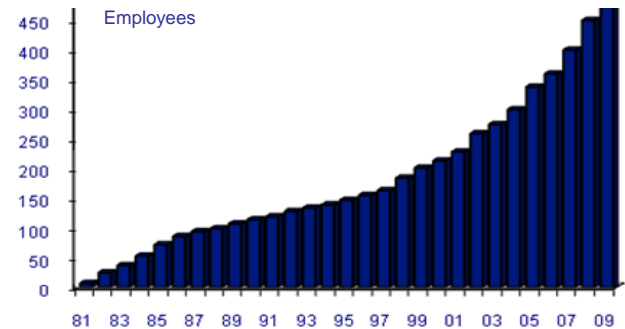
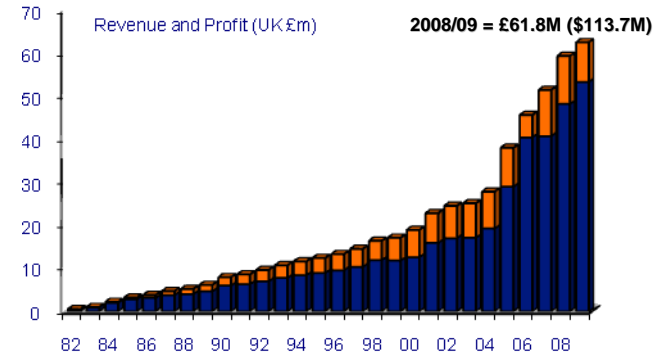
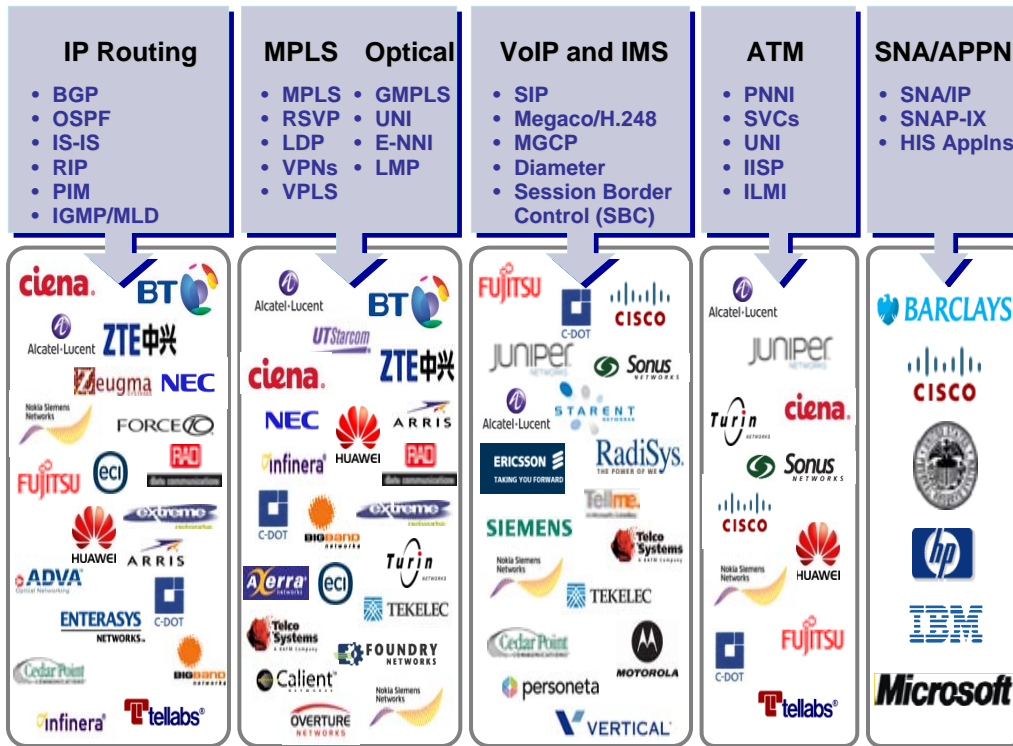
Tori Downes

Principal Technologist  
Network Protocols Division  
Metaswitch Networks

# Metaswitch Networks

## Network Protocols Division (NPD)

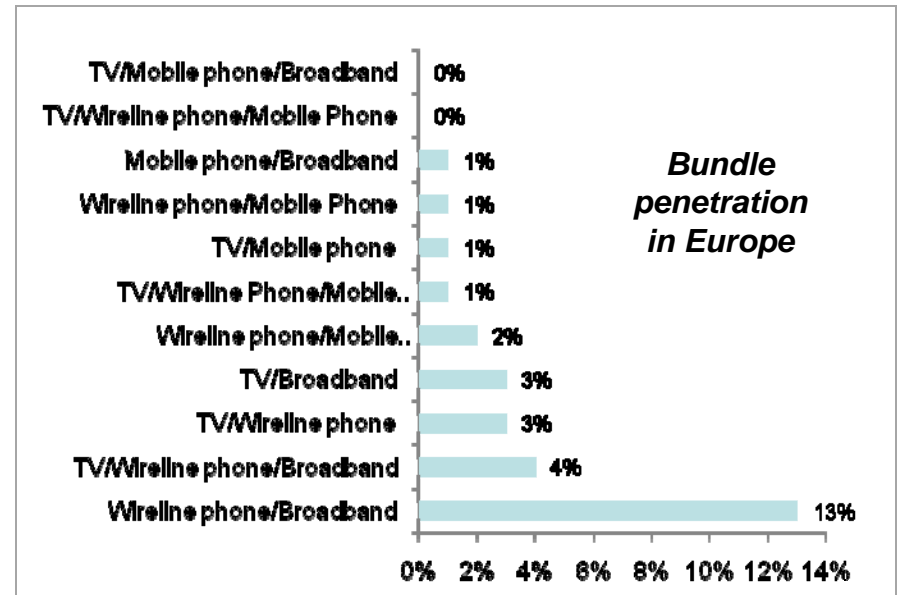
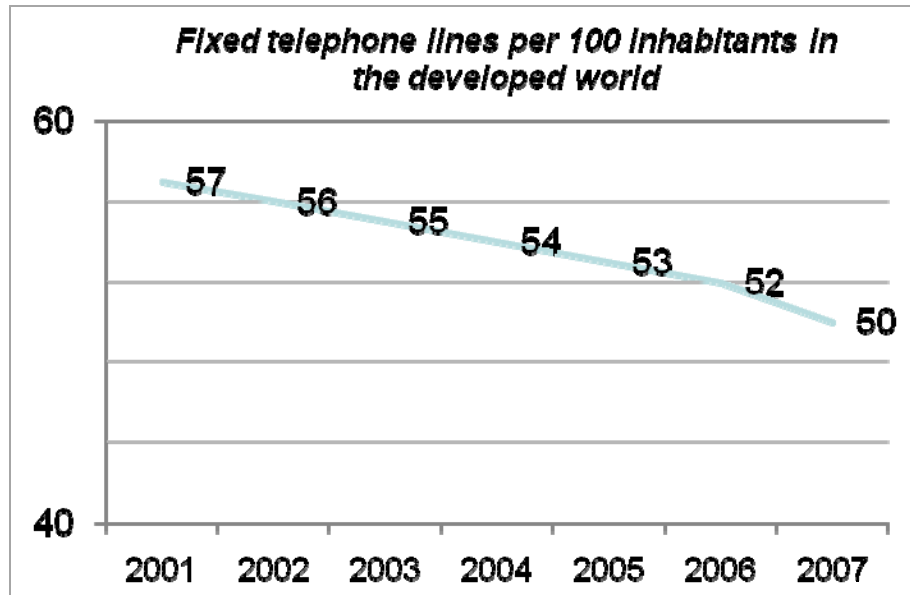
Customers include all of the top 10 worldwide communications equipment manufacturers



# Today's Discussion

- IPTV: Initial Deployment Drivers
- Claiming the Pay TV Market
- Video Trends & the Need for Rapid Innovation
- IPTV Network Requirements & Standards
- Summary/Conclusions
- Q&A

# Initial IPTV deployments driven by both defensive & offensive strategies



- Wireless substitution, competitive providers, MSOs, VoIP driving fixed line losses; providers need new revenue generating services

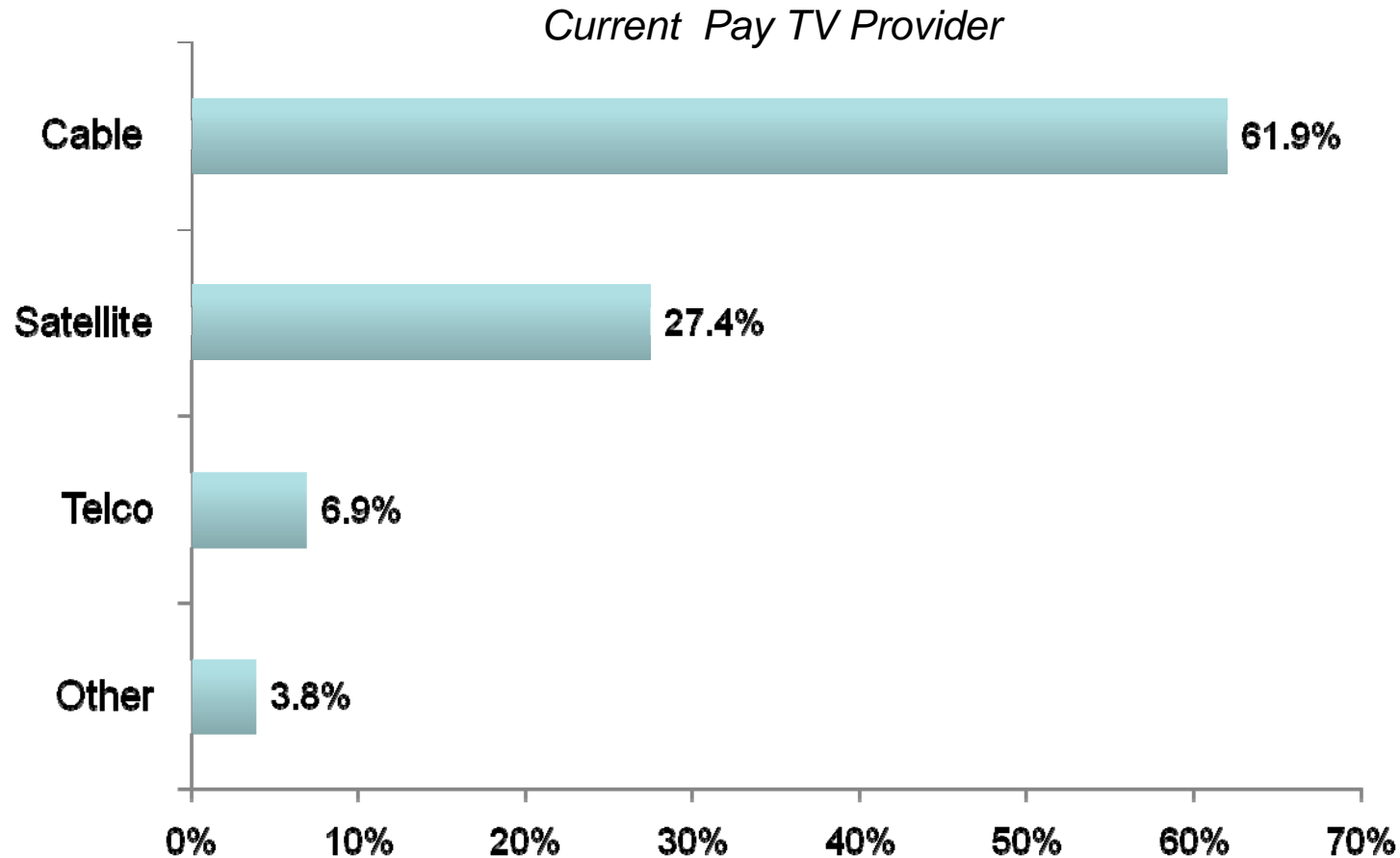


- HSI becomes the battleground of the future, forcing network capacity expansion
- ROI for network capex better with IPTV



- Consumer demand for bundling; competitive benefits for single service provider
- Triple-play bundle penetration still limited

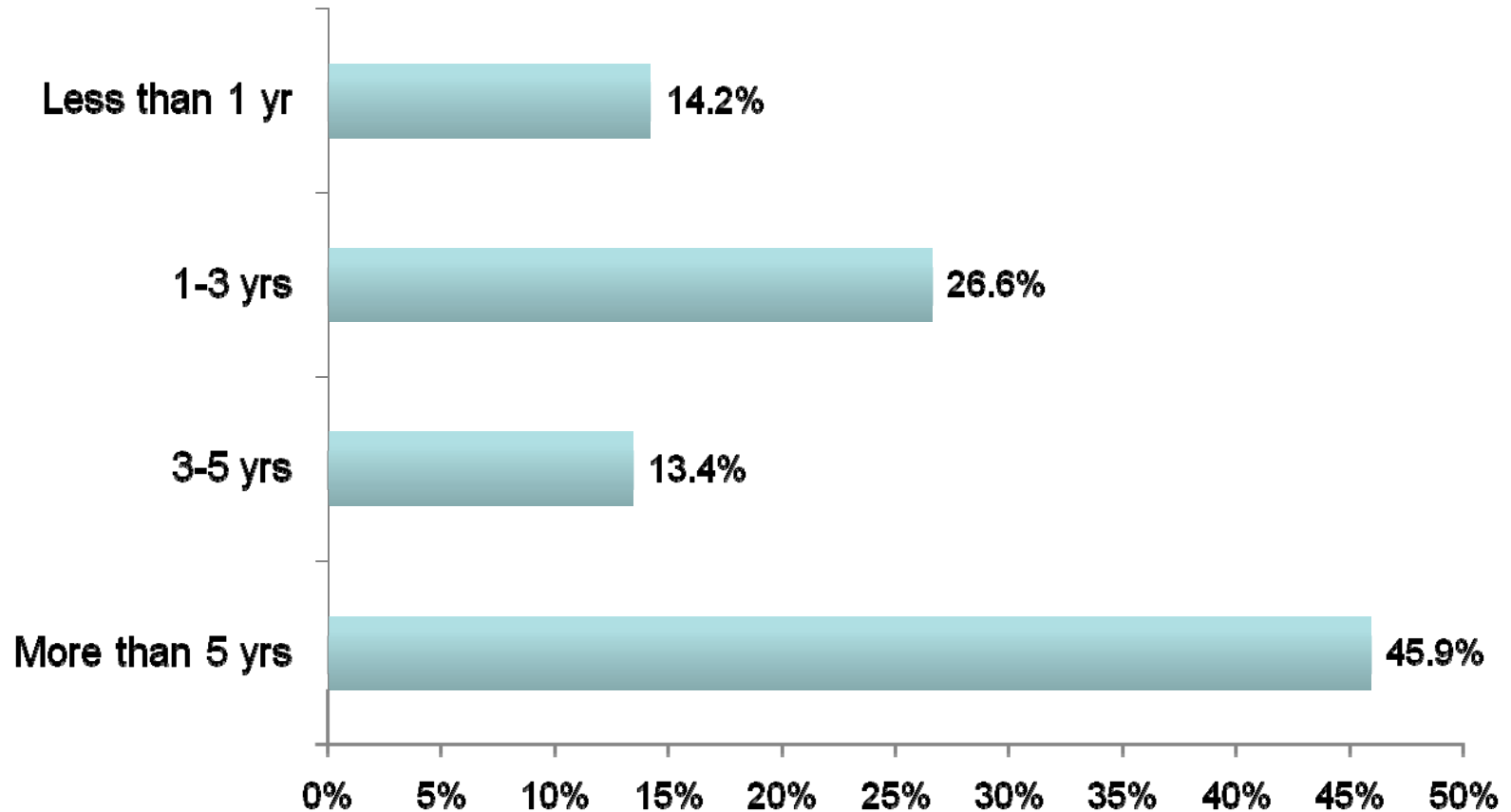
But IPTV providers are entering an established market; in many geographies they will need to steal subscribers away from other providers



*n= 394*

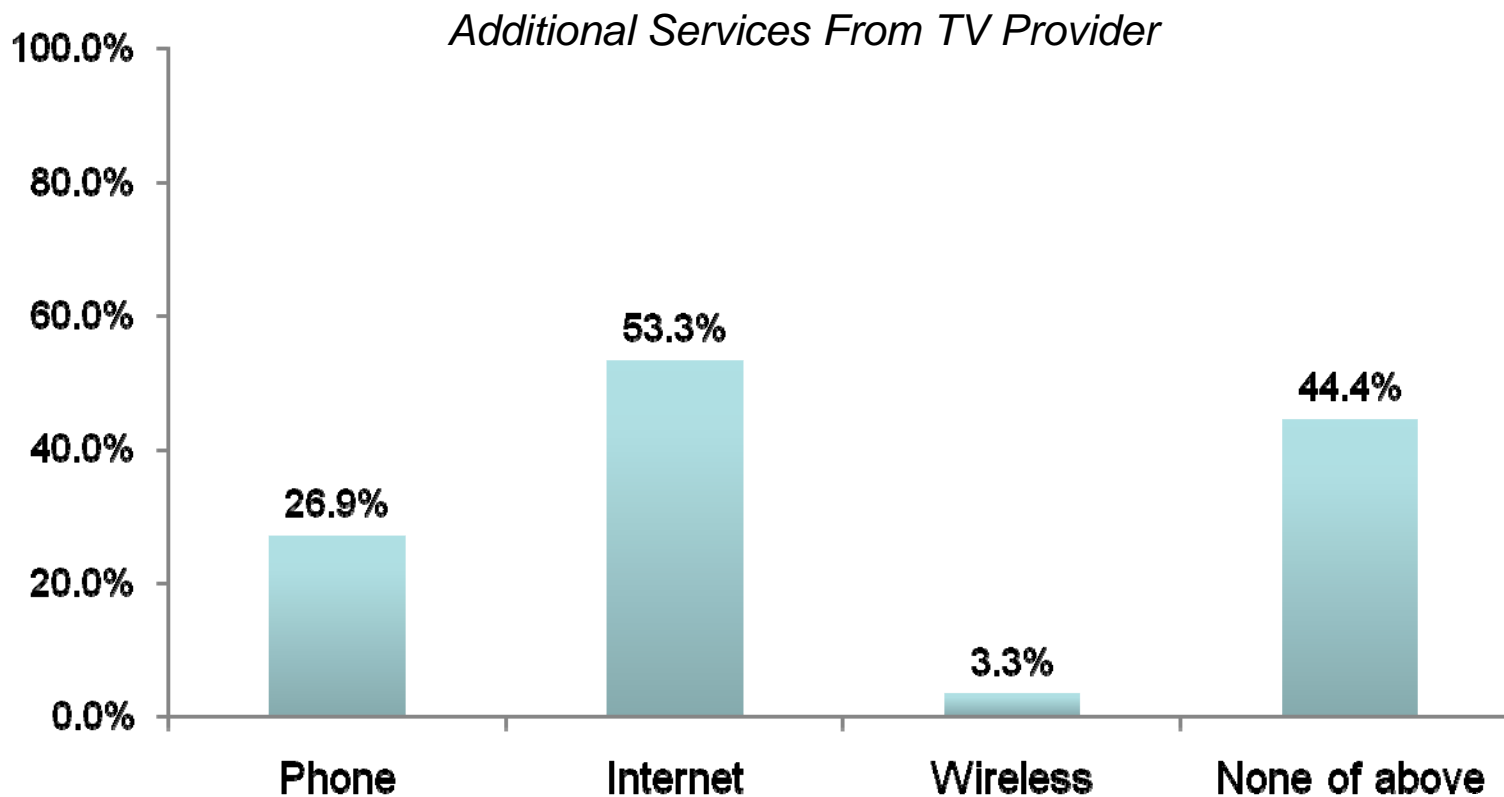
# Bundling does seem to be slowing churn, as average tenure is growing among pay TV subscribers

*Tenure with current provider*



*n* = 394

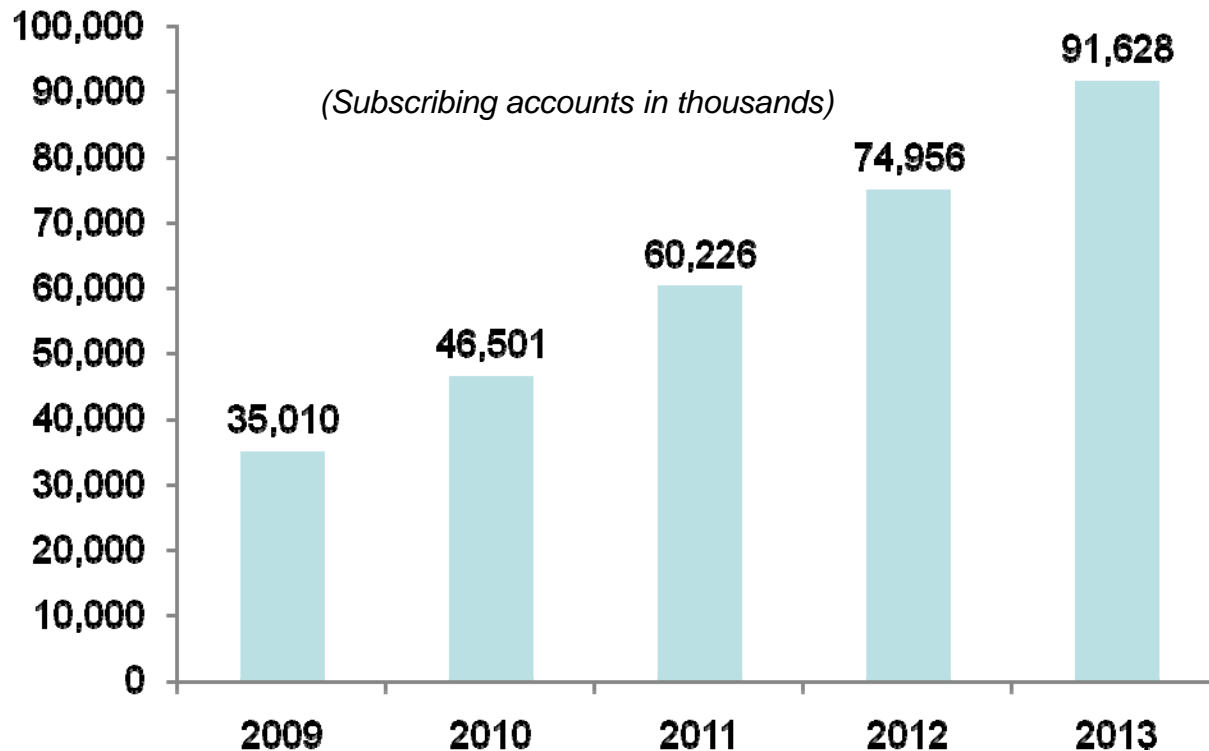
# Still, more than 40% of subscribers are not getting multiple services from their pay TV provider, which could be an opportunity



Telco TV subscribers more likely to be bundled subs.

*n*= 394

# IPTV is set to grow, but the expectation of innovation as a differentiator is implicit in market projections



*IPTV share of pay TV to grow more than 4x over the forecast period, primarily at the expense of cable*

*Growth driven by bundle value, customer dissatisfaction, monopoly end & new services/innovation*

Rapid innovation is an important part of the IPTV value proposition; a differentiated service is important to grow beyond the “low hanging fruit” of dissatisfied customers

# Service providers also face threats from a whole new set of competitors

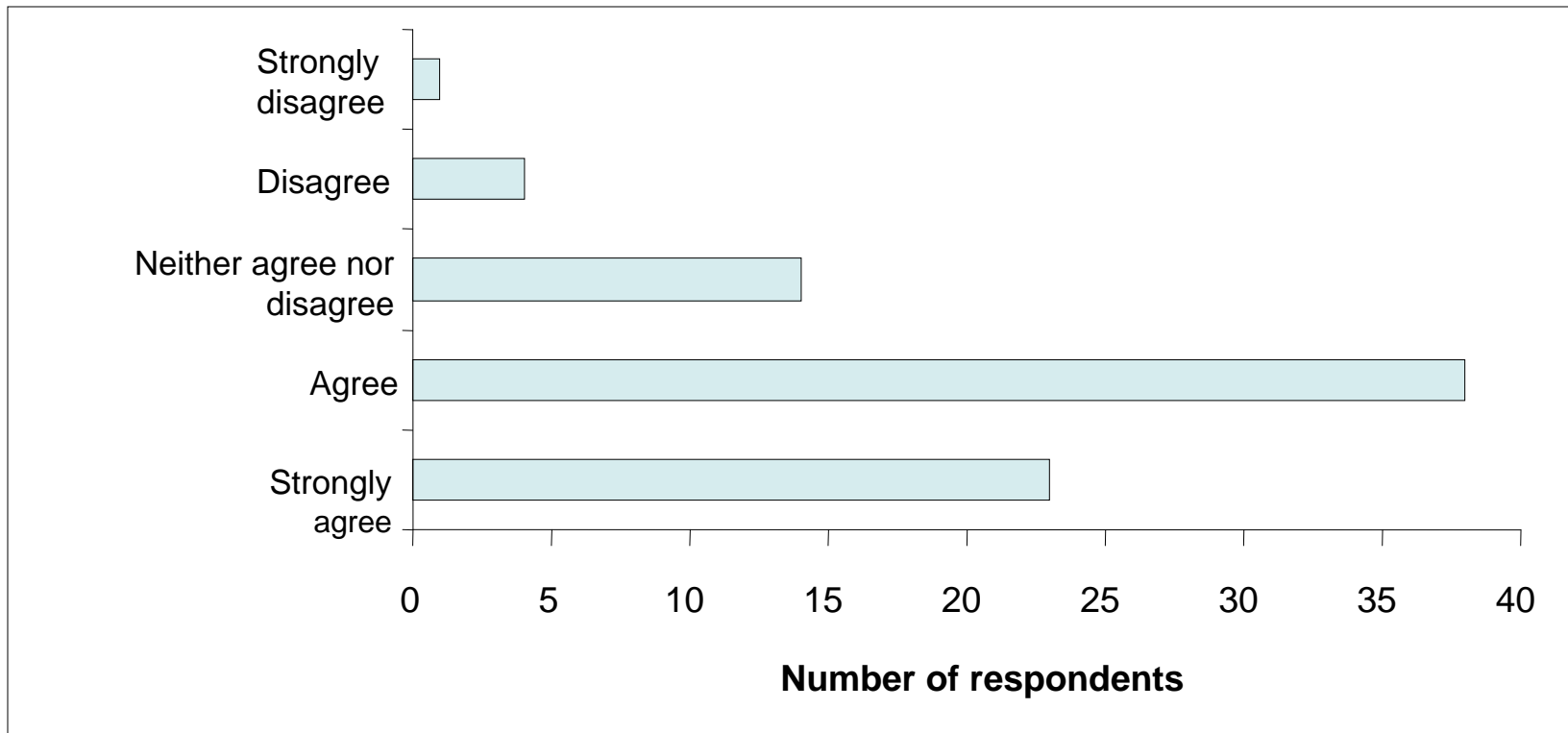


- In October 2009 unique viewers of online video grew 14.8% over the previous year, streams per viewer grew 9.9%, and time spent per viewer grew 23.8%. – *Nielsen VideoCensus*
- Time spent viewing video on social networking sites increased 98% year-over-year, from 503.8 million minutes in Oct. 08 to 999.4 million in Oct. 09. Video streams increased 45%, from 240.8 million in Oct. 08 to 349.5 million in Oct. 09. – *The Nielsen Company*
- 10+ billion songs cumulatively downloaded from the iTunes store; 250+ million TV episodes and 33+ million movies purchased and rented to March 09. – *Apple corporate statements*



# Third-party app enablement is a recognized opportunity for service providers

Please indicate your level of agreement with the following statement:  
***“Exposing resources and capabilities to third-party service providers will be critical to my company’s future success.”***



*Base: 81 service provider executives*

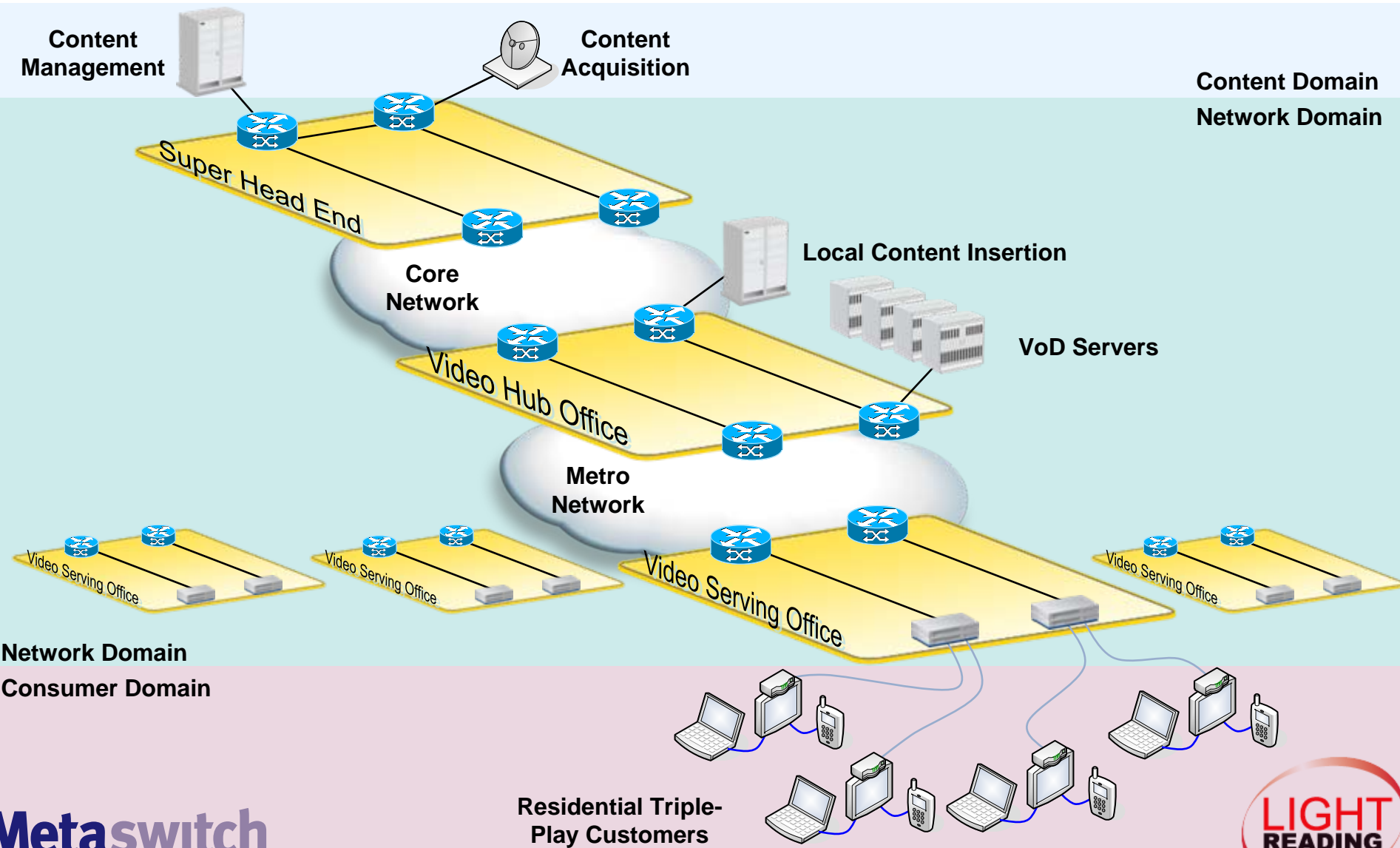
# IPTV: Problem Space

- Providers
  - Service provider – walled gardens
  - Content provider – “over the top”
  - “Free TV”
  - Moving from more to less control of network/delivery
- Applications
  - Broadcast IPTV – multiple viewers per channel in real-time
  - Video-on-demand – fixed/granular start-times

# IPTV: Deployments

- High-profile carriers – AT&T, Verizon, BT...
- Slightly different approaches in last mile
  - AT&T U-verse = FTTHNode + DSL
  - Verizon FIOS = FTTHome
  - Bandwidth versus cost?
- Most using same vendors...?
- Solutions are semi-proprietary
  - Difficult to swap solution elements?
  - IPTV in semi-isolated network subset?

# IPTV: Typical Architecture



# Audience Poll

How urgently do service providers need to deploy broadcast IPTV?

- Should have already deployed it
- Need to deploy within the next year
- Need to deploy within three years
- Need to deploy within five years
- Don't need to deploy

# IPTV: Network Requirements

- High quality
- Less than one visible artifact per two-hour movie = packet loss rate lower than  $10^{-6}$
- High availability
- Need to provide > 5 nines (99.999%) availability
- Impacts the network and individual devices
- Scale
  - Millions of subscribers – ideally without limits
- Interactivity
  - “Instant” channel change?
- Maximal use of network resources
  - Video bandwidth per channel is 2-12 Mbit/s
  - Common infrastructure with voice, data...

# IPTV: Standards (1)

- Multiple standards bodies – IETF, IMS (ITU & ETSI)
- Multiple forums - Open IPTV Forum, IMS Forum
- Mostly driven by vendors
  - Service providers have been slow to get involved
- Multiple / partially overlapping approaches / options
- None meet the requirement on their own
  - So have to mix n' match – and cross-pollinate
  - And some are relatively immature / incomplete

# IPTV: Standards (2)

- Delivery approaches include...
  - IP multicast
    - QoS/TE can only be solved by provisioning
    - But effective at head-end and over “last mile”
  - Multicast LDP (mLDP)
    - Maps IP multicast to LSPs
    - Relies on CoS (802.1p) / Diffserv; no QoS / TE
  - VPLS (Virtual Private LAN Service) with pseudowire (PW) mesh
    - Only scale to (at most) hundreds of PWs?
    - No bandwidth sharing

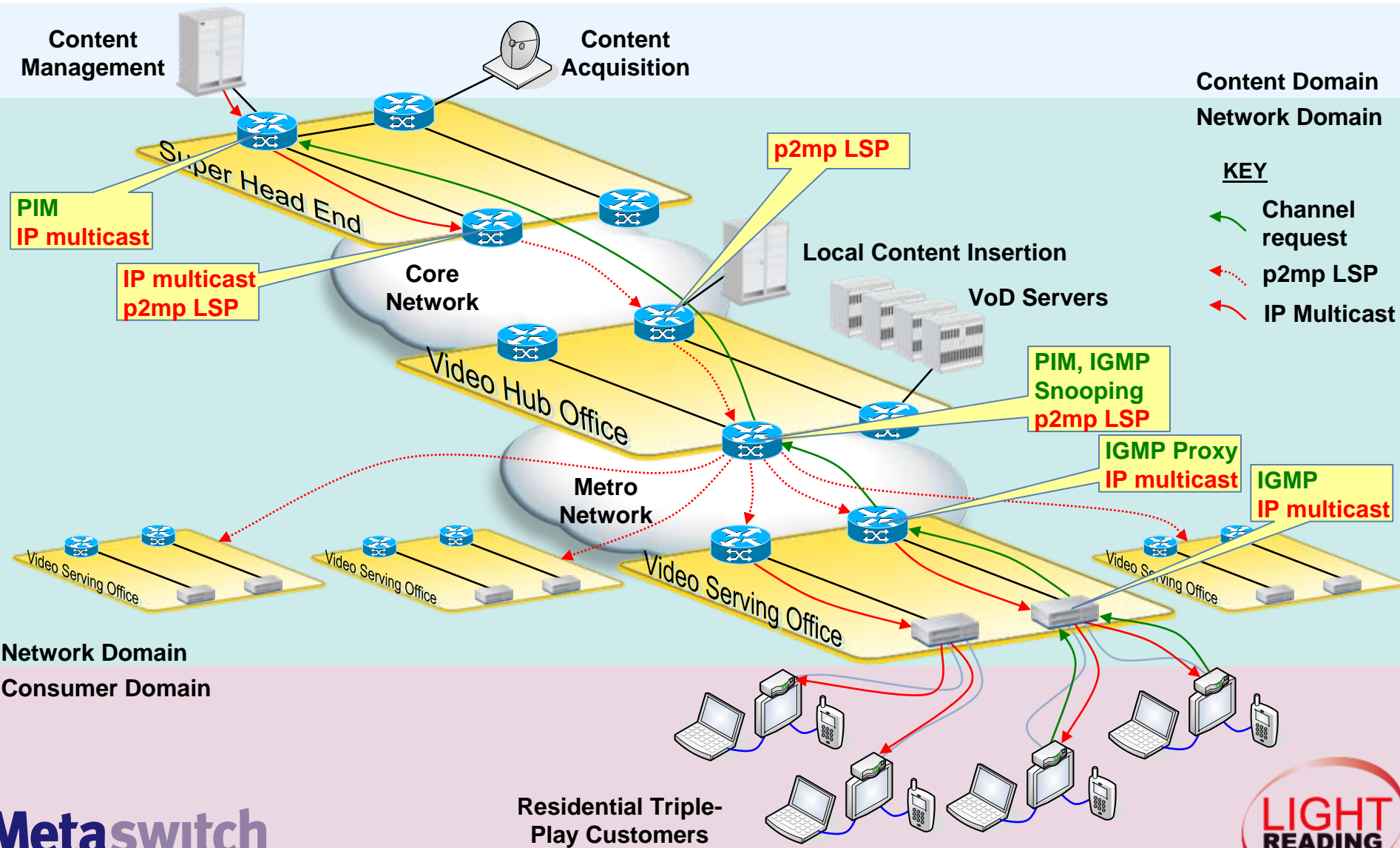
# IPTV: Standards (3)

- Delivery approaches (cont'd)...
  - L3VPN multicast – scales but competing approaches
    - Draft-ietf-l3vpn-2547bis-mcast = RFC in a few weeks
    - But draft-ietf-rosen-vpn-mcast is implemented / deployed
    - 2547bis-mcast uses BGP to build multicast tree whereas rosen uses PIM and BGP
  - P2MP RSVP LSPs
    - QoS / TE is built-in
    - Scales well - especially with “LSP hierarchy with segmentation”
    - Multiple protection + restoration schemes
    - Check out our p2mp RSVP-TE white paper - [www.metaswitch.com/rescenter/whitepapers.aspx](http://www.metaswitch.com/rescenter/whitepapers.aspx)

# IPTV: Standards (4)

- Interactivity approaches...
  - IGMP proxy
    - Consolidates downstream “channel request”
    - Reduces load on head-end
  - IGMP/PIM snooping
    - A necessary “hack” for fast channel change
    - Head-end and network deliver large subset of channels to “edge”
    - Edge device filters / switches channels as “channel requests” go by
  - Multi-topology PIM
    - Builds multiple (diverse?) multicast trees
    - Helps with head-end / path redundancy

# IPTV: One Solution?



# IPTV: Moving Forward

- Service providers getting more involved in requirements
  - For example - RFC 5501
  - Sets out requirements for “Multicast Support in Virtual Private LAN Services” (e.g., IPTV), with authors from AT&T, NTT, France telecom & Cisco
  - Strongly hints at L3VPN multicast over p2mp RSVP-TE LSPs – but only to provider edge
- Role for forums – Open IPTV Forum, IMS Forum
  - Defining recommended approaches/ profiles

# Summary & Conclusions

- Current IPTV network delivery status
  - Early deployments
  - No real standardization on a single IPTV solution
  - There are multiple options, and service providers need to:
    - a) Assess the merits and
    - b) Pick one
  - Vendors have a harder choice because different service providers might pick different solutions, forcing vendors to support more than one

# Q&A