

Broadband Forum Market and Technology Update

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COO

Broadband Forum

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North America leads in regional broadband household penetration

Region	2008Q3_Total	2008Q3_HH%	2009Q3_Total	2009Q3_HH%
North America	85,385,061	67.23%	93,630,346	73.72%
Western Europe	102,324,320	61.74%	111,644,946	67.37%
Asia-Pacific	60,676,741	32.88%	64,499,762	34.96%
Latin America	24,371,134	19.29%	30,498,933	24.14%
Eastern Europe	20,713,774	17.82%	26,143,540	22.49%
South and East Asia	90,231,776	14.11%	112,138,081	17.54%
Middle East and Africa	11,575,894	13.41%	13,353,656	15.47%
Other	26,204	0.02%	34,500	0.03%

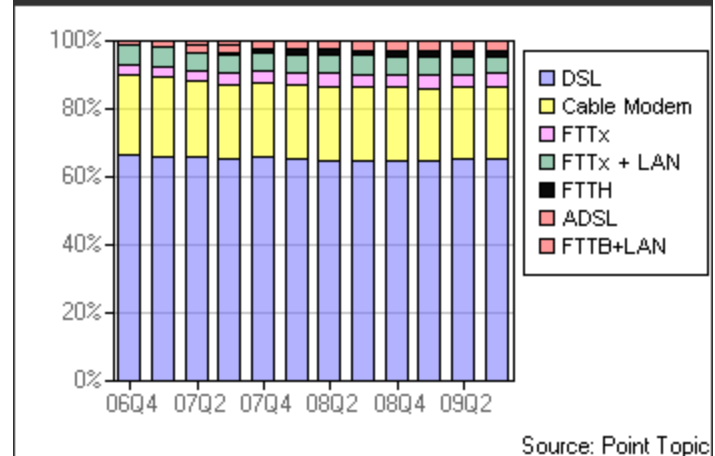
Source: Point Topic

Global View- Broadband

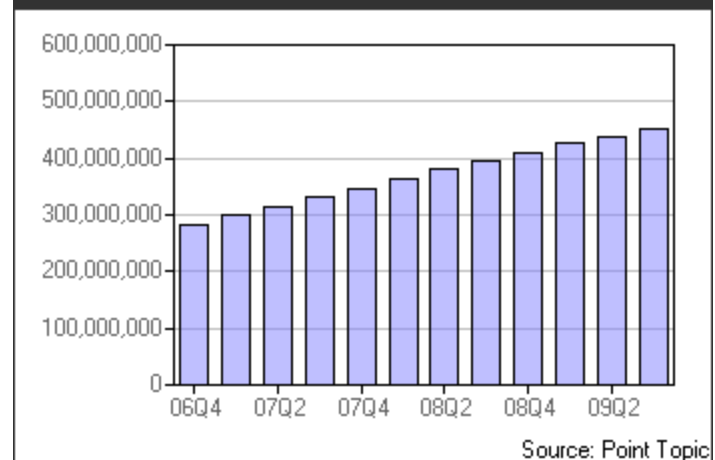
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451,943,764

World Broadband By Technology



World Broadband

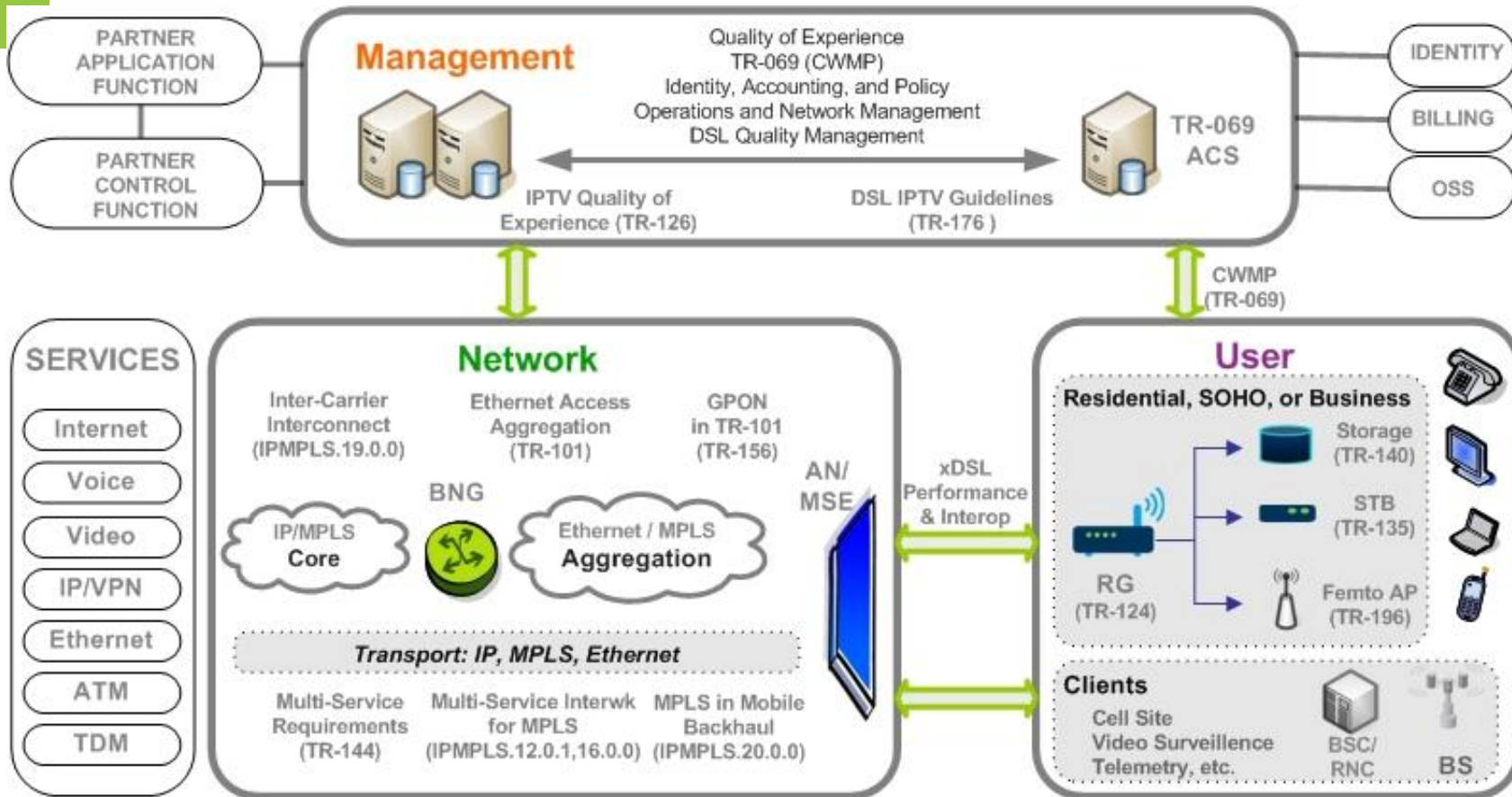
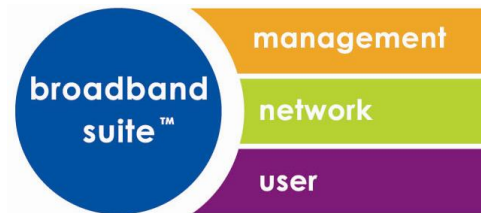


Global IPTV- Approx 10 Million subs added in 12 months

Region	2008Q3_Total	2009Q3_Total	2009Q3_HH%	2009Q3_Growth
Western Europe	9,433,704	13,280,100	8.40%	28.96%
North America	3,227,378	5,525,718	4.35%	41.59%
South and East Asia	3,248,000	4,925,000	1.25%	34.05%
Asia-Pacific	3,177,918	4,495,833	5.61%	29.31%
Eastern Europe	739,865	1,415,901	1.37%	47.75%
Latin America	19,211	68,023	0.08%	71.76%
Middle East and Africa	10,000	20,000	0.17%	50.00%
	19,856,076	29,730,575		

Broadband Forum Scope

What areas of your network do we touch?



Global Footprint



Thank you OPASTCO

- Your input is invaluable!
 - The technical committee provides feedback on all Forum questionnaires
 - At the meetings, OPASTCO is the voice for the small carriers and rural areas
 - OPASTCO made the contribution for ADSL2plus to include line testing from the modem
 - Your voice ensures the small and rural environment is considered when developing TR's (long distance truck rolls, powering issues, etc.)
 - OPASTCO representative, Lynn Merrill, serves on committees to help further the work of the Forum.
 - Provided speakers on many occasions for Forum meetings

IP/MPLS Value Proposition

- Industry shift is occurring: TDM to Packet migration
 - Enabled by IP/MPLS in the Core (common today)
 - Further enabled as MPLS moves from the Core and Edge to Access and Transport
- Key to L2 and L3VPN based services
- In production use by providers for over 10 years
- Empowers-
 - Full Traffic Engineering and QoS capabilities
 - Multicast – for next gen video based services
 - OAM enhancements to serve transport space
- Established multi-vendor interoperability
- Five new specifications in development to help with this industry transition
- MPLS in Mobile Backhaul (MMBI) is a cost saving option for providers
 - Broadband Forum certification is launching now, providing MPLS certification of protocol and architectural features

We are the United Broadband Forum



- The Broadband Forum is the central organization driving broadband wireline solutions and empowering converged packet networks worldwide to better meet the needs of vendors, service providers and their customers.
- We develop multi-service broadband packet networking specifications addressing interoperability, architecture and management. Our work enables home, business and converged broadband services, encompassing customer, access and backbone networks.

In some markets, wholesale access is seen as essential to enable competition

Passive access

Duct access

- Digging is the major cost in fibre deployment – in France and other countries with good infrastructure duct access can help enable competition

Dark fibre

- Where duct access is difficult or not available, dark fibre is often considered as the next best passive access remedy

Sub-loop unbundling (SLU)

- In countries with FTTC deployments, there is focus on SLU.

Wavelength

- DWDM PON is being deployed in Korea but is thought to be too expensive in Europe – for the moment

Bitstream (or Active Access)

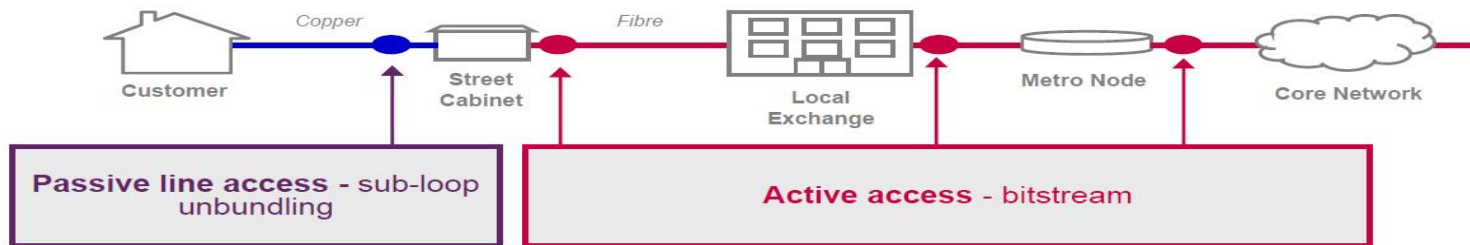
- Considered as an option where passive access is not available, rather than a preferred remedy

Active Access

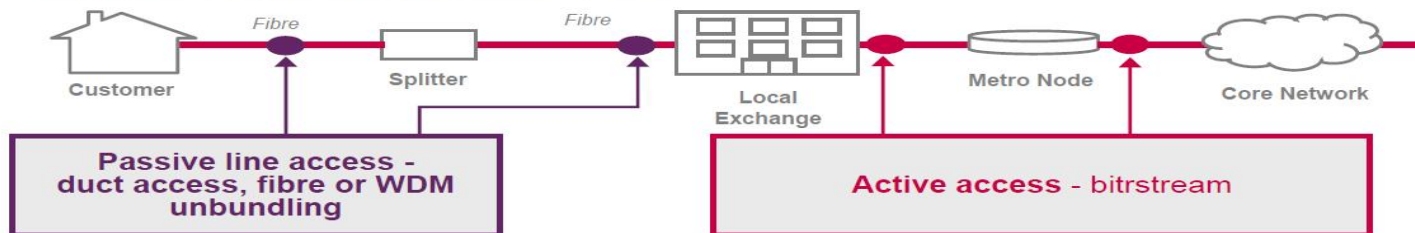
Passive vs Active Regulatory Remedies for NGA

Passive and active wholesale access

Proposed regulatory products - FTTC



Proposed regulatory products - FTTH

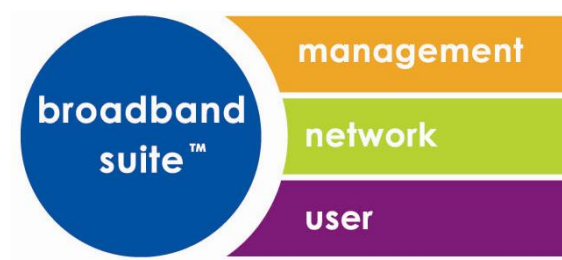


ALA : Ethernet-Centric Approach

‘Active line access’ is a form of *Ethernet* bitstream which

- Retains as much as possible of the level of innovation supported by passive access
- Is neutral to higher layers:
 - IP-VPN, VLAN, PBB, PBT...
- Is implementation neutral to the underlying media
 - PtP fibre, GPON, copper, bonded copper...
- Is service neutral to the applications:
 - Video, HDTV, voice, data...
- Helps overcome technology isolation
 - One wholesale access for all technologies
- Benefits from the economics of scale of Ethernet
- And the economics of distribution and management of bitstream
 - Customer acquisition does not necessitate truck roll
 - Interconnect at different points

BroadbandManagement™



BroadbandManagement™ facilitates the BroadbandNetwork™ and BroadbandUser™ domains to enable new services and assure end-user Quality of Experience.

BroadbandManagement™ is a collection of the following:

- Operations & Network Management
- CPE Management via CWMP (TR-069)
- Identity, Accounting and Policy Management
- Quality of Experience
- Layer 2 Control Protocol (L2CP)
- DSL Quality Management (DQM)

(See note page for details of each area)

TR-069

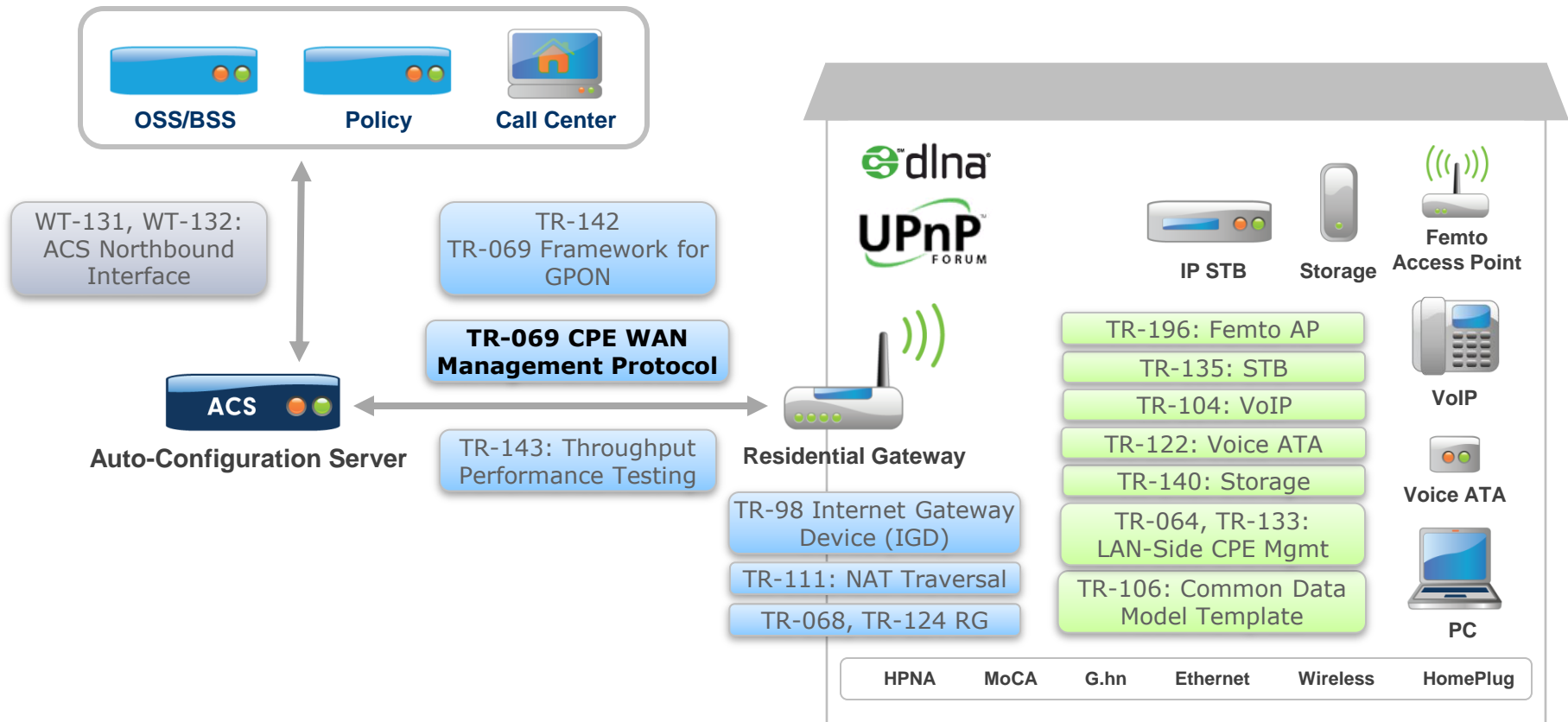
Remote Management Framework

broadband
suite™

management

network

user



Resources for OPASTCO members

- New White Papers
 - Next Generation Broadband Access (MR-185)
 - BroadbandSuite 3.0 Companion Guide (MR-186)
 - Energy Efficiency, Dematerialization and the Role of the Broadband Forum (MR-204)
- Latest technical release- BroadbandSuite 3.1
 - Includes the test suite for VDSL2, vectoring guidelines, important splitter test guidelines for IPTV support and new device management models
- Tutorials available!
 - MPLS in Mobile Backhaul *Now available*

**Thank you for taking time to learn more
about the Broadband Forum**

For more information,
visit us at

<http://www.broadband-forum.org>

