

Broadband Forum Industry Update 1Q2011 Broadband Status Report

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Chief Executive Officer


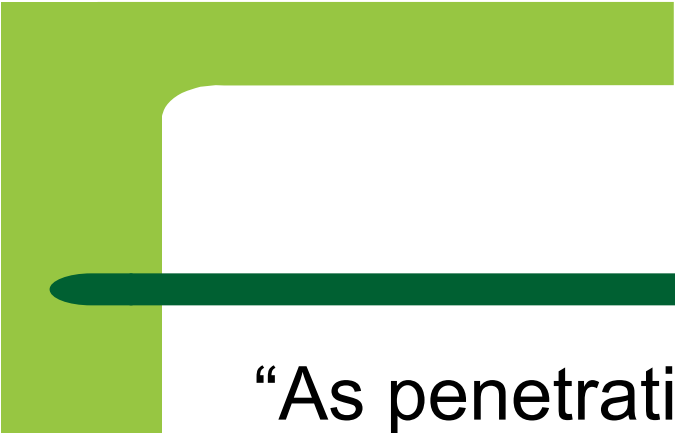
Broadband Forum

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Agenda

- Industry Growth Report
 - Broadband
 - Technology Breakdown
 - IPTV
- Broadband Forum Work overview
 - Latest Releases
 - BroadbandSuite™ 4.0
 - BroadbandSuite™ 4.1
 - White Papers
 - Coming soon!



“As penetration is increasing in all markets it becomes more and more difficult to pick up new subscribers. The fact that this far into the broadband deployment cycle we are still seeing double digit growth is indicative of how vital it has become to businesses, residential consumers and countries”

Oliver Johnson, CEO of Point Topic

1Q 2011 Broadband Highlights

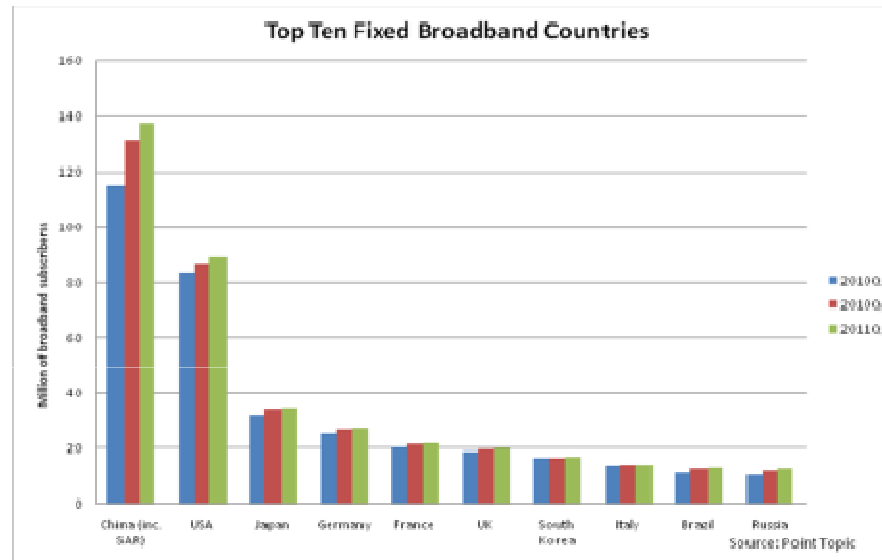
- **FASTEST GLOBAL BROADBAND GROWTH SINCE 2009**
 - Increase of over 15.2 million subscribers in the first three months of this year, fixed broadband grew by 2.9%
 - Biggest quarterly increase in the last two years
 - 11.93% annual growth
- **ASIA NOW DOMINATES**
 - 42% of global broadband subscribers
 - 16.2% annual growth

Regional Broadband Breakdown

Global Fixed Broadband	2010Q1	2011Q1	% growth in quarter	% growth year
Asia	194,853,371	226,436,844	3.91%	16.21%
Europe	146,274,402	159,736,246	2.03%	9.20%
Americas	127,099,672	137,963,717	2.33%	8.55%
Middle East & Africa	14,795,742	16,495,650	2.36%	11.49%
Total	483,023,187	540,632,457	2.90%	11.93%

Source: Data provided for the Broadband Forum by Point Topic (www.point-topic.com)

Top 10 Broadband Countries



Country	2010Q1	2010Q4	2011Q1
China (inc. SAR)	115,120,600	131,447,883	137,919,667
USA	83,671,128	87,174,827	88,734,728
Japan	32,322,400	34,267,000	34,609,100
Germany	25,264,150	26,655,350	27,157,350
France	20,433,500	21,387,530	21,676,800
UK	18,714,250	19,660,600	19,911,100
South Korea	16,552,222	16,767,847	16,856,663
Italy	13,548,650	14,012,650	14,014,650
Brazil	11,293,400	12,608,200	13,112,500
Russia	10,379,349	11,993,900	12,488,000

Fastest Growing Countries

Top 20 Broadband

Country	2010Q1	2010Q4	2011Q1	% growth qtr	% growth yr	qtr add
Serbia	450,000	623,000	756,000	21.35%	68.00%	133,000
Thailand	934,457	1,508,739	1,556,134	3.14%	66.53%	47,395
Belarus	686,000	966,000	1,022,000	5.80%	48.98%	56,000
Pakistan	703,255	916,159	1,028,344	12.25%	46.23%	112,185
Jordan	220,913	291,271	321,525	10.39%	45.54%	30,254
Indonesia	1,289,500	1,655,500	1,797,500	8.58%	39.40%	142,000
Algeria	598,000	757,000	830,000	9.64%	38.80%	73,000
Latvia	474,700	603,350	653,050	8.24%	37.57%	49,700
Oman	42,000	52,630	57,000	8.30%	35.71%	4,370
Sri Lanka	170,000	213,000	228,000	7.04%	34.12%	15,000
Egypt	1,107,156	1,415,200	1,474,000	4.15%	33.13%	58,800
Estonia	443,000	554,600	589,100	6.22%	32.98%	34,500
India	8,735,711	10,713,608	11,500,493	7.34%	31.65%	786,885
Kuwait	30,600	38,500	40,000	3.90%	30.72%	1,500
Bolivia	113,800	137,000	146,100	6.64%	28.38%	9,100
Venezuela	1,948,500	2,335,000	2,497,000	6.94%	28.15%	162,000
Kosovo	181,000	218,000	228,000	4.59%	25.97%	10,000
Senegal	65,000	78,000	81,000	3.85%	24.62%	3,000
Greece	2,102,868	2,508,238	2,608,350	3.99%	24.04%	100,112
Paraguay	93,433	111,433	115,433	3.59%	23.55%	4,000

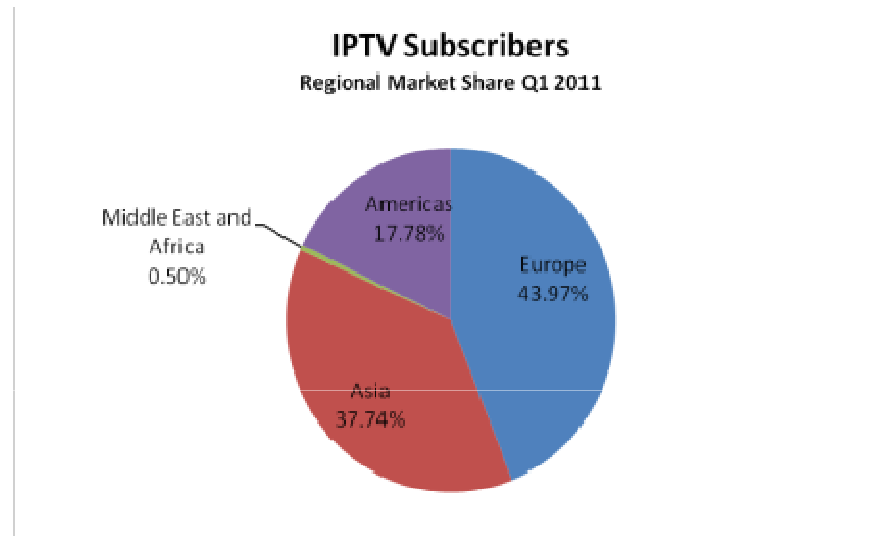
IPTV Headlines

- Exceptional annual increase of over 34%
- 6.4% increase in 1Q2011
- Total IPTV subscriber numbers - 48.2 million
- France still leading industry, with China a close second

Top 10 IPTV countries

	2010Q1	2010Q4	2011Q1
France	9,018,305	10,155,000	10,615,000
China (inc. SAR)	6,337,000	9,191,000	9,829,000
USA	6,071,898	7,301,036	7,743,080
South Korea	2,576,663	3,645,650	3,983,348
Japan	2,056,127	2,643,117	2,869,816
Germany	1,194,900	1,484,200	1,592,000
Belgium	814,000	975,000	1,029,000
Spain	824,520	858,200	855,400
Taiwan	665,000	800,000	850,000
Netherlands	490,000	727,000	810,000

IPTV Regional Breakdown

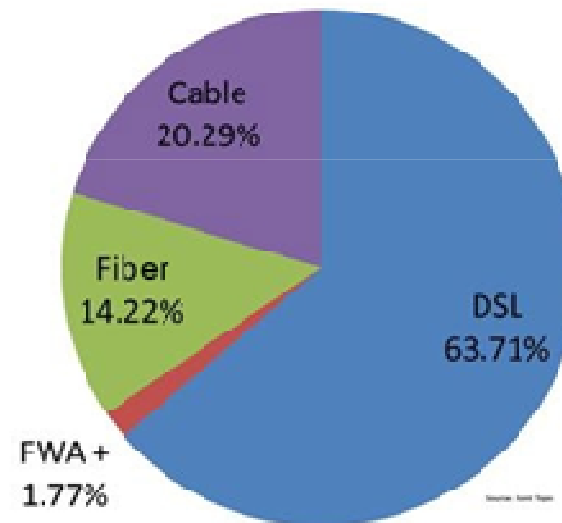


- Europe continues to be the largest region with over 21 million subscribers
- Asia is catching up fast with 18 million
 - Both China and Taiwan showing growth of over 50%
 - Of the 2.9M new subscribers added this year (Q1 2011), 1.4M came from Asia

Technology Breakdown

- Fiber is fastest growing with more than 20% growth
 - This includes hybrid fiber/DSL solutions
- DSL holding market share
- Fixed Wireless for the first time has notable market share

Fixed Broadband Market Shares
Q1 2011



Broadband Technology Growth

	2010Q1	2010Q4	2011Q1	% growth in quarter	% growth in year
DSL	309,211,392	334,093,430	341,616,417	2.25%	10.48%
Cable	98,445,505	105,892,316	108,808,664	2.75%	10.53%
Fibre	63,554,659	72,076,853	76,242,315	5.78%	19.96%
FWA +	8,212,263	9,200,911	9,516,865	3.43%	15.89%

Industry Growth Report



Broadband Forum

Engineering smarter & faster connections

Architecting a connected lifestyle

- Defining best practices for global networks
- Enabling multi-service and content delivery
- Establishing technology migration strategies
- Engineering critical device & service management tools
- Redefining Broadband

Who are we?

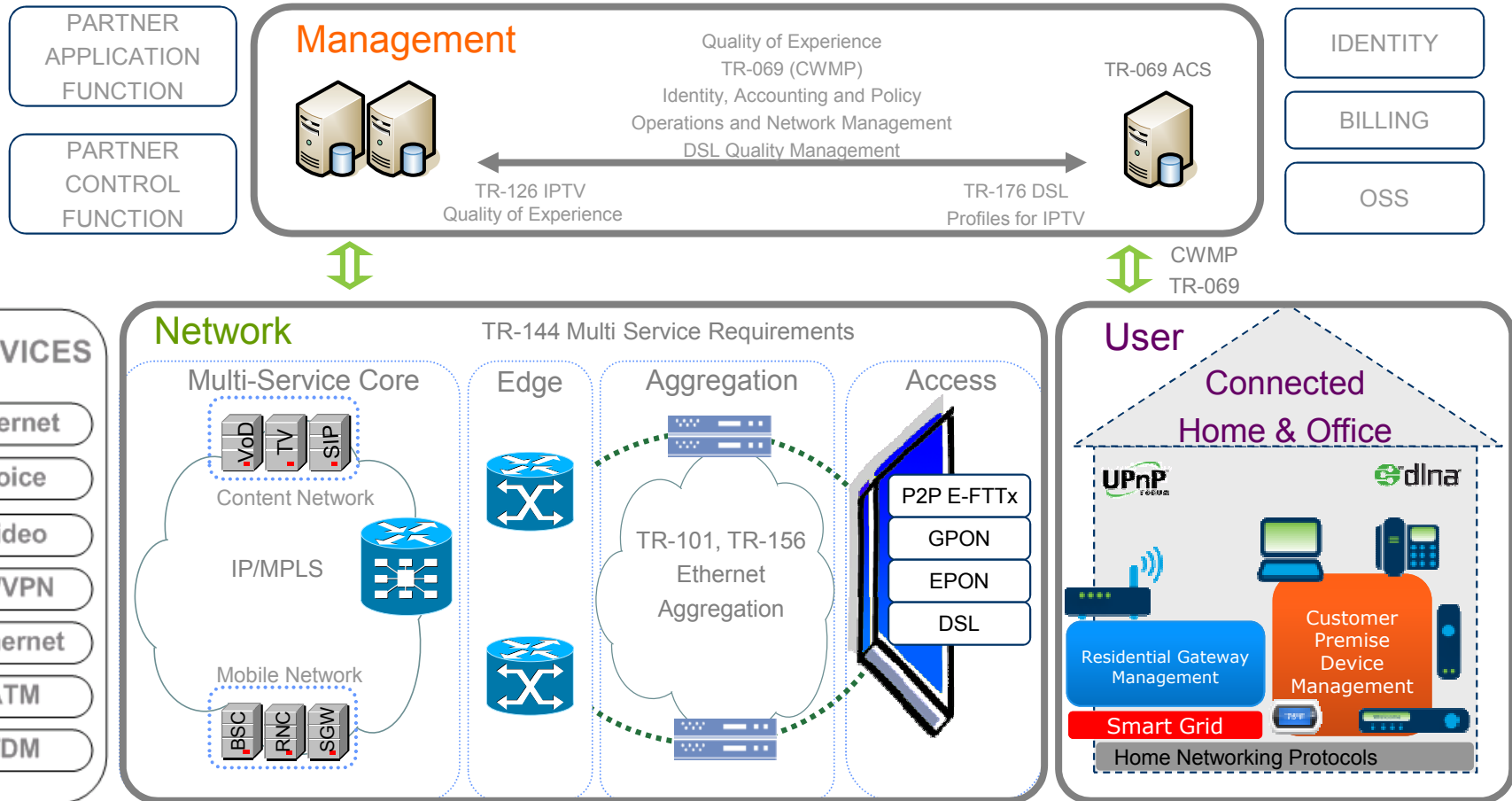
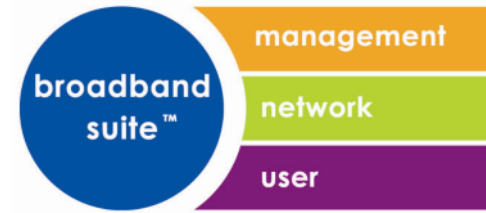
- Industry consortium made up of approximately 200 service providers, vendors, consultants, academia and test labs
- Predominant broadband industry forum since 1994
- Engineer technology solutions to help service providers achieve standards based, economical and effective broadband deployments

Broadband Forum Service Provider Members – driving requirements

Broadband Forum Service Provider Members

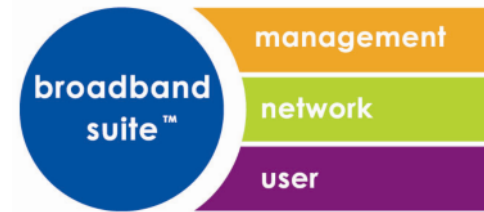


Broadband Forum Scope

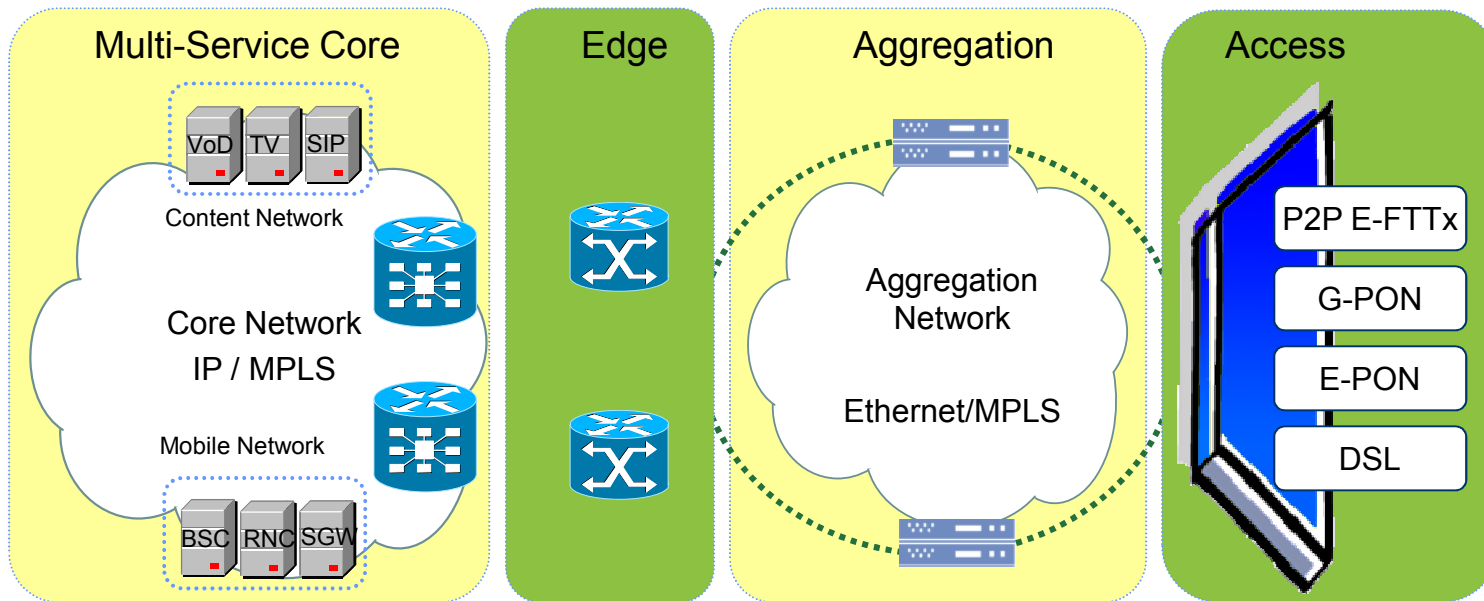


Multi Service Architecture & Requirements IPv6 Certification, Test and Interoperability

BroadbandNetwork™



- End-to-End Architecture
 - TR-144 Multi Service Requirements, WT-145 Architecture, WT-178 Nodal Requirements
 - History: TR-058 Requirements, TR-059 (ATM), TR-101 (Ethernet)
- IPv6 Enabled (TR-177, TR-187, WT-242)
- MPLS in Carrier Ethernet (WT-224)
- LTE Ready Mobile Backhaul (MR-238, WT-221, WT-225, WT-242)



Multi Service Architecture & Requirements IPv6 Certification, Test and Interoperability

Multi-service Architecture Work

Status	Work Item	Title
Completed	TR-144	Broadband Multi-Service Architecture & Framework Requirements
Completed	TR-226	XML Data Model for TR-169
Completed	MD-235	White paper: Considerations in Broadband Architecture moving to FMC
Completed	MR-245	Tutorial: MPLS-TP in Multi-Service Packet Network Deployments
In Progress	WT-134	Policy Control Framework
In Progress	WT-145	Multi-service Broadband Network Functional Modules and Architecture
In Progress	WT-146	Internet Protocol (IP) Sessions
In Progress	WT-178	Multi-service Broadband Network Architecture and Nodal Requirements
In Progress	WT-203	Interworking between Next Generation Fixed and 3GPP Wireless Access
In Progress	WT-223	Requirements for MPLS over Aggregated Interfaces
In Progress	WT-224	MPLS in Carrier Ethernet Networks
In Progress	MD-259	White paper: Next Generation Multi-service Architecture (WT-145, et. al.)

MPLS Mobile Backhaul Initiative Work

Status	Work Item	Title
Completed	IP.MPLS 20.0.0	MPLS in Mobile Backhaul Networks
Completed	BBF.246	TDMoMPLS
Completed	MR-238	White paper: Use of MPLS in LTE
Completed	MR-258	White paper: Enabling Next Generation Transport and Services using Unified MPLS
Completed	MR-234	Tutorial: MPLS in Mobile Backhaul Networks
In Progress	WT-221	Technical Specifications for MPLS in Mobile Backhaul Networks
In Progress	WT-225	Abstract Test Suite for ATM Services Over MPLS
In Progress	WT-241	Abstract Test Suite for Ethernet Services Over MPLS

BroadbandSuite Releases

<http://www.broadband-forum.org/technical/releaseprogram.php>



BroadbandSuite™ 4.0

IPv6 Toolkit

Provides integration and migration solutions for network and management support of the new numbering protocol- IPv6

- TR-177: IPv6 for TR-101
- TR-187: IPv6 for PPP
- TR-124 Issue 2: IPv6 in Gateway Requirements
- MD-244: Tutorial IPv6
- WT-146: IP Sessions
- WT-242: IPv6 Transition Mechanisms for Broadband Networks

New!

BroadbandSuite™ 4.1

Quality Service Delivery

- This release provides techniques and tools to provision, measure and manage at each segment the broadband network to ensure quality delivery of Connected Home services
- Broadening the concept of the Connected Home to include metering, monitoring and a variety of new applications
- Topics covered
 - DSL Quality Management (DQM) Suite of TRs
 - Broadband Architecture recommendations
 - ADSL2plus & Splitter functional measurements
 - IPTV Performance Monitoring and Diagnostics
 - BBF Value Prop for Connected Home white paper
 - Release Companion Guide

BroadbandSuite™ 4.1

Quality Service Delivery

Status	Working Item	Title
Completed	MR-239	White paper: Broadband Forum Value Proposition for Connected Home
Completed	TR-105	G.992.3/5 (ADSL2/ADSL2+ Functionality Test Plan
Completed	TR-127 Issue 2	Dynamic testing of splitters and in-line filters with xDSL transceivers
Completed	TR-138	Validation of G.997.1 Parameters
Completed	TR-160	IPTV Performance Monitoring & Diagnostics (Current)
Completed	TR-188	DSL Quality Suite
Completed	TR-198	DQS: DQM Systems and Functional Architecture and Requirements
Completed	TR-252	xDSL Protocol-Independent Management Model
In Progress	MD-180	IPTV over DSL Anywhere WP
In Progress	MD-261	White paper: IPTV Home Networking Series: Splitters
In Progress	PD-135	TR-135 Updates
In Progress	PD-199	Alias Addressing

Upcoming Releases

- **BroadbandSuite 5.0 *G-PON Integration/Certification***
 - Focus: Network G-PON architecture solutions, RG PON integration, G-PON Educational Materials and G-PON ONU Conformance/Certification
 - Includes new G-PON ONU Test Suite
 - Currently in beta testing
- **BroadbandSuite 6.0 *LTE Ready Mobile Backhaul***
 - Focus: Technical Specifications for MPLS in Mobile Backhaul Networks for LTE, Certification for Ethernet o MPLS
 - Educational materials – white papers and tutorials exploring the next gen mobile backhaul scenarios

Check out the latest

Educational Tools from the Forum

- Industry Resource Guides (ask today for your copy)
- More than 100 free Technical Reports online
- Latest White Papers include:
 - MR-235, Considerations in Broadband Architecture Moving to FMC
 - MR-239, BBF Value Proposition in the Connected Home
 - MR-229, Leveraging Standards for Next Generation Wholesale Access
 - MR-258, Enabling Next-Gen Transport & Services using Unified MPLS
 - MR-238, Use of MPLS in LTE
 - MR-230, TR-069 Deployment Scenarios
 - MR-185, Next Generation Broadband Access
- Private Tutorials also available:
 - IPv6, GPON, MPLS-TP, Mobile Backhaul

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Thank you**

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