

# ***Broadband & IPTV Progress Report***

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# Agenda

- State of the Broadband & IPTV Market
- Latest Broadband Forum Deliverables
  - Just Released! MR-180
  - BroadbandSuite 5.0
  - BroadbandSuite 6.0
- Broadband Certification Program
- In the pipeline
- Q&A

# Report highlights

- Broadband serving close to 600 M customers (597,322,636)
- Largest increase in five years: 12.3% annual broadband growth
  - Eastern European surges forward: Russia is showing fastest growth rate in both broadband and IPTV globally, with strong broadband showings by Poland and the Ukraine
- IPTV has its strongest ever quarter in Q42011
  - China's IPTV subscribers passed France to give China the top country spot for both Broadband and IPTV

# Regional Broadband Growth

	2010Q4 Total Lines	2011Q3 Total Lines	2011Q4 Total Lines	% growth in quarter	% growth in year	Quarter net additions (q311-q411)	Year net additions (q410-q411)
Asia	218,825,136	246,838,921	<b>254,721,342</b>	3.19%	16.4%	7,882,421	35,896,206
Europe	160,169,881	172,580,392	<b>176,689,884</b>	2.38%	10.31%	4,109,492	16,520,003
Americas	136,099,030	144,530,608	<b>147,156,521</b>	1.82%	8.12%	2,625,913	11,057,491
Middle East and Africa	16,685,793	18,171,082	<b>18,685,889</b>	2.83%	11.99%	514,807	2,000,096
<b>TOTAL</b>	<b>531,779,840</b>	<b>582,121,003</b>	<b>597,253,636</b>	<b>2.6%</b>	<b>12.3%</b>	<b>15,132,633</b>	<b>65,473,796</b>

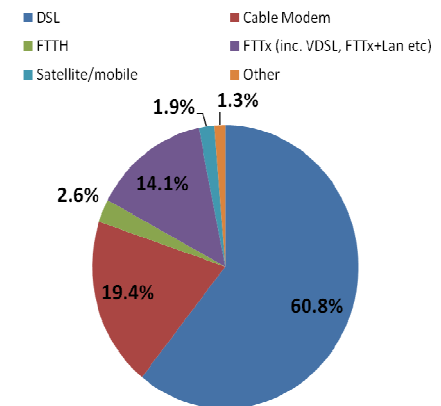
## Top 20 Broadband Countries

Country	2010Q4	2011Q3	2011Q4	% growth quarter	% growth year	yr add
China (all territories)	131,447,883	152,548,458	158,191,913	3.70%	20.35%	26,744,030
USA	87,197,827	90,512,692	91,633,360	1.24%	5.09%	4,435,533
Japan	34,169,900	35,999,100	36,695,200	1.93%	7.39%	2,525,300
Germany	26,706,200	28,157,000	28,511,300	1.26%	6.76%	1,805,100
France	21,168,700	22,381,000	22,837,200	2.04%	7.88%	1,668,500
Russia	15,156,300	19,359,900	20,740,900	7.13%	36.85%	5,584,600
UK	19,607,600	20,440,200	20,736,500	1.45%	5.76%	1,128,900
South Korea	17,224,102	17,816,717	17,975,507	0.89%	4.36%	751,405
Brazil	13,812,200	15,957,000	16,482,500	3.29%	19.33%	2,670,300
Italy	13,272,650	13,660,650	13,732,650	0.53%	3.47%	460,000
India	10,713,608	12,881,044	13,333,827	3.52%	24.46%	2,620,219
Mexico	11,402,094	12,263,263	12,587,401	2.64%	10.40%	1,185,307
Spain	10,557,849	10,940,720	11,135,177	1.78%	5.47%	577,328
Canada	10,547,239	10,920,540	11,041,882	1.11%	4.69%	494,643
Turkey	7,074,867	7,437,829	7,507,829	0.94%	6.12%	432,962
Netherlands	6,207,200	6,503,100	6,622,400	1.83%	6.69%	415,200
Australia	5,539,500	5,702,600	5,756,200	0.94%	3.91%	216,700
Poland	5,303,881	5,597,348	5,708,229	1.98%	7.62%	404,348
Taiwan	5,209,000	5,472,000	5,589,000	2.14%	7.30%	380,000
Ukraine	3,950,000	4,920,000	5,198,000	5.65%	31.59%	1,248,000

## Technology breakdown: Hybrid fiber/DSL solutions gaining most market share

Technology	2010Q4	2011Q3	2011Q4	Quarter % growth	Year % growth	Market share
DSL	335,519,895	357,550,075	<b>363,068,656</b>	1.54%	8.21%	60.78%
Cable Modem	105,796,376	113,140,990	<b>115,621,123</b>	2.19%	9.29%	19.36%
FTTx (inc. VDSL, FTTx+Lan etc)	62,014,189	78,349,972	<b>83,937,396</b>	7.13%	<b>35.35%</b>	14.05%
FTTH	12,882,737	14,822,215	<b>15,661,790</b>	5.66%	21.57%	2.62%
Satellite/mobile	9,455,883	10,826,790	<b>11,205,269</b>	3.50%	18.50%	1.88%
Other	6,159,960	7,494,961	<b>7,828,402</b>	4.45%	27.09%	1.31%

Broadband Line Market Shares - Q4 2011

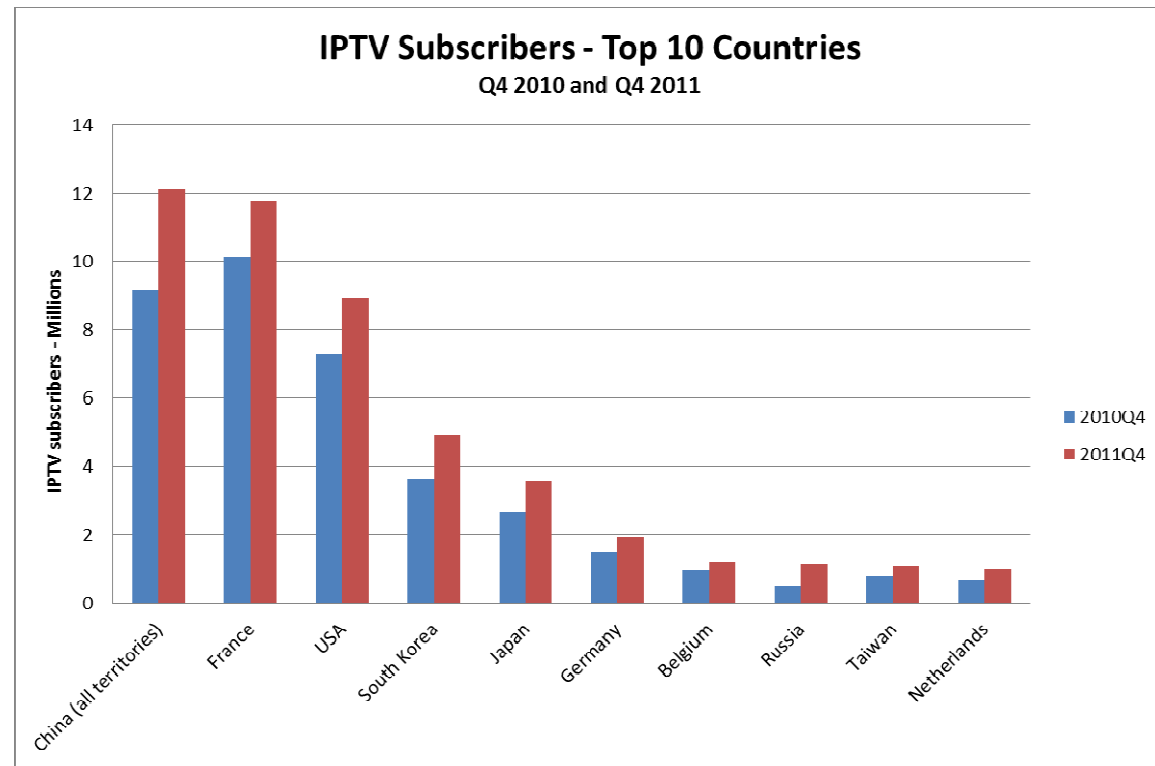


# The IPTV market

- IPTV had the strongest growth quarter 4Q2011
- 58.2 million IPTV subscribers worldwide
  - Adding 3.68 M subscribers fourth quarter, for an annual growth of 12.8 M
- Europe holds on to top regional position against strong growth out of Asia
  - European markets continue to strengthen on an individual basis and while some saturation is taking place there is fundamental strength in the market.
  - European operators seem to be having the most success in up-selling their customers and have driven the region to a **3-year high in quarterly net additions**.
- China took the top spot from France at year end

# IPTV market snapshot

- Europe still strongest region for IPTV (42.72% of market)
- China inches ahead of France
- Russia, with fastest growth rate, move up two spots in ranking

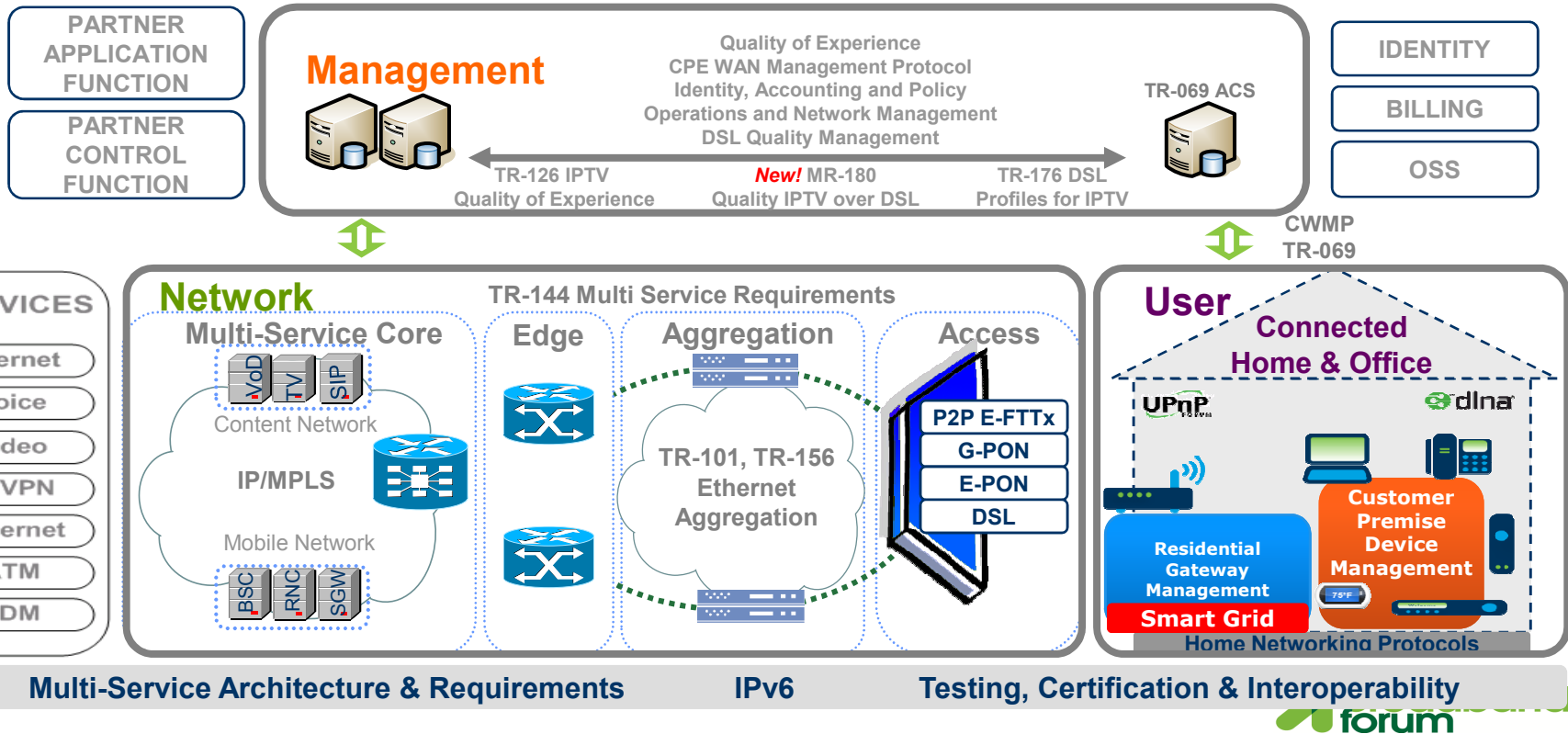
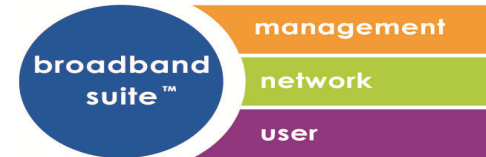




# Role of the Broadband Forum



# Broadband Forum Scope



# New Service Provider Resource

- MR-180 [Achieving Quality IPTV over DSL](#)
  - White Paper that provides techniques for optimizing DSL networks to ensure IPTV Quality of Experience (QoE)
  - Covers:
    - DSL Quality Management (DQM) techniques
    - Active noise cancelation using Vectored DSL – ITU-T G.993.5
    - Physical Layer Retransmission using G.998.4 to reduce the effects of impulse noise
    - Seamless Rate Adaptation (SRA) enhancements that increase DSL robustness to changing line conditions
    - DSL ‘SOS’ techniques which enable rapid recovery from temporarily degraded line conditions while avoiding service interrupting DSL retrains
    - Application Layer tools such as Application Layer FEC and retransmission

# Latest Broadband Forum Releases

## *BroadbandSuite 5.0 & 6.0*

Addressing today's most  
pressing requirements



## BroadbandSuite 5.0: Fiber related Architecture, Management and Market Requirements Specifications

Work in progress

- TR-156 : Using G-PON Access in the Context of TR-101
- TR-167 : G-PON-fed TR-101 Ethernet Access Node
- TR-142 : Framework for TR-069 Enabled PON Devices
- TR-155 : G-PON ONU Requirements for CPE
- TR-247 : G-PON ONU Conformance Abstract Test Plan
- OD-247: G-PON ONU Conformance Test Plan
- WT-255 : G-PON OLT/ONU Interoperability Test Plan
- PD-205 : G-PON and XG-PON1 Management

Background:

- TR-101: Ethernet based aggregation for DSL access
- TR-069: CPE management protocol

## BroadbandSuite 6.0 LTE Ready Mobile Backhaul

- IP.MPLS 20.0.0 “MPLS in Mobile Backhaul Networks”
- TR-221 “Technical Specs for MPLS based Mobile Backhaul Networks for LTE”
- Certification
  - TR-248: Abstract Test Plan for TDM over MPLS

### White Papers

- [MR-238: Use of MPLS in LTE](#)
- [MR-258: Enabling Next Generation Transport and Services using Unified MPLS](#)

### Tutorials

- MR-234: MPLS in Mobile Backhaul Networks Tutorial
- MR-245: MPLS-TP in Multi-Service Packet Network Deployments Tutorial
- MR-275: Data Center Interconnection Tutorial

# Broadband Forum G-PON ONU Certification Program



Expediting market  
deployment of fiber  
networks



# G-PON interoperability is critical

- Many strong market drivers:
  - Facilitate competition and expedite growth, develop G-PON as an open technology
  - Address various operators' services (residential, business, mobile backhaul...) in multi-vendor environments
  - Enable business models where the retail service provider may not operate the access network



## Broadband Forum G-PON Certification Program

- Industry's first G-PON certification program based on test plans developed by the Broadband Forum with support of FSAN and ITU-T for OMCI
  - Open to G-PON ONU products with Ethernet interfaces and is based on the OD-247 test plan.
  - It proves conformance to TR-156 using OMCI as defined in the ITU G.998, which are the most critical standards to interoperable implementations.
- Currently eight companies with certified products
  - For the list and more information see [http://www.broadband-forum.org/technical/test\\_cert\\_programs.php](http://www.broadband-forum.org/technical/test_cert_programs.php)
- Additional testing planned: more ONU modules, XG-PON1 conformance as well as G-PON interoperability test suite

# First certified products!

*Below are the companies with a product certified*

Alcatel-Lucent 

  
BROADLIGHT

 **CIG**  
CAMBRIDGE INDUSTRIES GROUP

  
HUAWEI

 **TECOM**  
Converging Your Networks

**PMC**  
PMC-SIERRA

 **INOVAÇÃO**

**ZTE中兴**

[www.Broadband-Forum.org/CertifiedGPON](http://www.Broadband-Forum.org/CertifiedGPON)

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# Pipeline



# In the pipeline

- The global Broadband Forum Certification Program will grow with-
  - G-PON certification options with additional modules for ONUs, interoperability test suite, as well as XG-PON1 test requirements
  - MMBI certification option for Ethernet Service emulation over MPLS (EoMPLS)
  - TR-069 CWMP Device Conformance Program
- DSL testing continues, including VDSL2, bonding, vectoring, G.fast requirements and DQM measures
- Home networking support will continue with test suite development for G.hn, and new splitter and IPTV home wiring best practices released
- End-to-End Multi-service Network Architecture work will progress
- Network interworking & convergence work with 3GPP will continue
- New work on MPLS in Carrier Ethernet Networks and the MPLS in Mobile Backhaul Initiative (MMBI) developments, including energy efficient mobile backhaul
- Business services addressed; cloud, data center interconnection and machine-to-machine (M2M) requirements as well
- New access node management models and interface specifications

# Summary

- Broadband market is thriving globally with best growth seen in 5 years
- IPTV Market is advancing and evolving; driving the need for speed, stability and quality delivery
- Broadband Forum provides the tools for providers to address those needs
  - New “Achieving Quality IPTV over DSL” (MR-180) white paper
  - G-PON certification program to reduce network costs and testing headaches
  - BroadbandSuite 5.0 provide a valuable suite of fiber architecture, management and testing resources
  - New BroadbandSuite 6.0 release provides a migration strategy for moving from legacy 2G/3G to 4G/LTE ready mobile backhaul
- The work continues with special focus on interoperability & certification, multiservice architecture definitions and enhanced management specifications

***Thank you for your attention!***

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