A New Wave of U2BB

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www.huawei.com
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New Achievements in 2010

- New Achievements in 2010
- A New Wave of U2BB
- What are We Doing Now

U2BB:
Ultra and Ubiquitous Broadband
Steady Growth in Network

• Strong performance with a CAGR of **24%** from 2007 to 2010.
• Continuous growth in Edge Route by **11%** YoY.
• Above industry average growth in WDM up to **13%** YoY.
• Strong leadership of FTTX in accelerating growth up to **62%** YoY.
• Two-digital growth in Microwave Radio by **11%** YoY, while the industry average is decreasing.

USD/RMB rate of RMB 6.607, including partial network rollout
Growth Across All Regions

- +73% yoy growth in North America in WDM
- +13% yoy growth in CALA in Router and Switches
- +52% yoy growth in CALA in Microwave Radio
- +26% yoy growth in APAC in WDM
- +13% yoy growth in China in Router and Switches
- +30% yoy growth in EMEA in Microwave Radio
- +52% yoy growth in EMEA in FTTX.

- Keep momentum in advantage market and breakthrough in untapped market
### Key Wins in Global Network Market

#### DWDM
- 40G large-scale sales and stay ahead with 70+ network which is about half of global 40G network.
- 9 100G field trials completed as of 2010.
- **Breakthrough** in VDF BBNS, Ti BB, OSP, ET, ITPC, KT, Bharti, BT GS, TT, MTS, TDC
- Large-scale sales in Swisscom and Level 3

#### IP Core
- 2600+ sets of NE5000E worldwide including 160+ sets cluster system, overseas sales doubled
- **Breakthrough** in Russia Svyazinvest (SVI), DU, OSP, Viettel
- Cluster breakthrough in STE, Mobily
- Swap in CTC, PLDT, STE, MCCI, MTN

#### ME
- **Broadband Metro**
  - Breakthrough in BT, Oi, TATA, Bharti, Optus, South Africa Telkom, MTS, Viettel, ET, STC, FT short list, swap in SVI, VIP, Netherlands TMO, STE, RTC, Bharti, PTCL
- **Mobile IP Bearing**
  - Breakthrough in BT, VDF Czech, O2 Ireland, FT Mauritius & Cote Divoire, OI, Telkomsel, VIP, MTS
  - Large-scale sales in TIM, VIVO, SKT

#### FTTx
- Won 5 of the 6 global national broadband projects
- Large-Scale sale in TdE, BT, TI, FT
- **Breakthrough** in VNPT, Fastweb, Belgacom, Qtel, Maxis, Turkcell
- ODN breakthroughs in BT, Qtel, Maxis, ET & Triple T

#### Microwave Radio
- Leadership in IP radio and partnership with top operators in 40+ sub-networks.
- Large-Scale sale in VDF, MegaFon, Glo, Vivo
- **Breakthrough** in DT, Telenor, Bharti (Zain), OT, Telkomsel
IP: Partner with All Major European Carriers

- Deployed in almost all of major carriers in Europe
A New Wave of U2BB

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A New Wave of U2BB is Underway

**Internet @ bigger screen, FBB traffic fast growing**
- TV@Home / Video@Home / App@Home
- Video: single screen -> multi-screen, single room -> multi-room
- Internet innovation: GoogleTV, AppleTV
- National broadband, global broadband

**Small screen with bigger traffic, MBB traffic fast growing**
- Smart device: online time increased by 50%
- iPhone 4: 960*640
- Macro/Micro/Femto: deep coverage drives MBH expansion

**Enterprise informationize acceleration**
- More intercommunication within enterprise
- Telepresence instead of voice conference
- Storage and computing demands
The 1st Force of Broadband: Society & Government

Broadband is a societal broadband

“in the 21st century, affordable, ubiquitous broadband networks will be as critical to social and economic prosperity as networks like transport, water and power”

“therefore, likely in the new millennium a new energy crisis - the bandwidth. Bandwidth will become a new era of "black gold"

Broadband is a national broadband

- Policy changed: competition encouragement to network construction encouragement
- Global NBN: 50+ countries, 100+ billion

<table>
<thead>
<tr>
<th>Country</th>
<th>Cost</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>100M</td>
<td>2015-20</td>
</tr>
<tr>
<td>Portugal</td>
<td>1 billion USD/3years</td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>18 billion USD/15years</td>
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<tr>
<td>Kuwait</td>
<td>23 billion USD/3years</td>
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<tr>
<td>Malaysia</td>
<td>3.3 billion USD</td>
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<tr>
<td>Australia</td>
<td>35 billion USD</td>
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<td>New Zealand</td>
<td>1 billion USD</td>
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<tr>
<td>Brazil</td>
<td>6 billion USD/5years</td>
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</table>

Broadband Declaration of U.N. ---- Broadband Everyone, Broadband Everywhere
The 2nd Force of Broadband: Terminal & Cloud

Explosive growing of interactive traffic
- Explosive traffic increasing
  - terminal and cloud: 30x
  - cloud and cloud: 600x
  - within cloud: 1200x
- Traffic get more converged
  - Ultra-capacity box request

From PC screen to TV screen, small screen but more bandwidth

iPhone 4
Definition: 960 × 640
Mobile TV time: 50% growing

Apple TV
Google TV
The 3rd Force of Broadband: OTT & Competition

Internet communication vs traditional

User > 471million
Annual growth > 100%
App > 500k
Download > 500million
SNS

User > 85million
Annual growth > 130%
App > 185k
Download > 5billion
iPhone / iTouch / iPad

More heterogeneity competitors

In 10Q2, 700k+ video users shifted from cable to OTT (USA)

<table>
<thead>
<tr>
<th>Cost Unit: USD</th>
<th>Fixed Voice</th>
<th>Mobile Voice</th>
<th>Storage</th>
<th>Video</th>
<th>Message</th>
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</thead>
<tbody>
<tr>
<td>Telecom</td>
<td>0.05</td>
<td>0.10</td>
<td>15/MB</td>
<td>40/month</td>
<td>0.2/pcs</td>
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<tr>
<td>OTT</td>
<td>0.000069</td>
<td>0.000120</td>
<td>0.1/GB</td>
<td>1/month</td>
<td>0.0000001/pcs</td>
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New pipe provider?

Voice

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<thead>
<tr>
<th>Year</th>
<th>USA</th>
<th>West Europe</th>
<th>CAGR</th>
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<tr>
<td>2008</td>
<td>118.0</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>112.5</td>
<td>109</td>
<td>-2%</td>
</tr>
<tr>
<td>2011</td>
<td>109.0</td>
<td>105</td>
<td>-4%</td>
</tr>
<tr>
<td>2012</td>
<td>105.5</td>
<td>102</td>
<td></td>
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</table>

Message

<table>
<thead>
<tr>
<th>Year</th>
<th>USA</th>
<th>West Europe</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>11.3</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>14.0</td>
<td>14.3</td>
<td>10%</td>
</tr>
<tr>
<td>2011</td>
<td>14.2</td>
<td>13.6</td>
<td>-2%</td>
</tr>
<tr>
<td>2012</td>
<td>14.3</td>
<td>13.0</td>
<td></td>
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</table>

“"The competition is not only from homogeneity enterprise, but also from heterogeneity enterprise or the company who is turning into pipe provider. Who provide the lower cost and better quality service, who will be chose by subscribers"”

- China Mobile, 2010
Operators: Back to Pipe, but a Golden Pipe

No Pipe, Failure Now

- Broadband revenue can fetch up the loss of voice

Golden Pipe, Win Future

- Why to build 100M?
  - Request (cloud and terminal)
  - Threat (OTT competition)

- How to deliver 100M quickly?

Revenue come from pipe almost make up the shrinking voice revenue

Golden Pipe

"carriers must position themselves as service providers who handle sourcing and delivery of content to consumers... Open ecosystems and government policies towards content rights will be key elements in telco’s future success”

---- Didier Lombard, Chairman

Note: Wireline Pipe revenue including internet access, IDC, IP VPN etc.
Operators: New Requirements of Delivering a Golden Pipe

“EOT” based delivery is requested to match the new requirements of operators

Various equipments
- Core Router
- P/PE/S-POP/BRAS
- OTN/DWDM/CWDM
- MSTP/PTN
- MSAN/DSLAM
- Microwave/IP
- Microwave
- LSW/AR

Market requirements
- 5 million population coverage
- 100k IPTV user released
- 20M ready for 50% users
- Wholesale service ready
- 1000 business building coverage
- 10k business VPN released
- 800 applications ready

Huawei
Establish
Matching network, service and commercial plan.

Operator
Transfer
Capabilities Transfer

Service quality

Operate
What are We Doing Now?

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Leverage Global Talents to Lead in Technology

- About **13500** R&D employees works for Network Product Line.
Convergence Drives Efficiency, Synergy Brings Value

Customer Based Solution → Carrier Market
3 Solutions (SDT) → Enterprise Market
Products (SPDT) → Personal Consumption Market
321 Platform (Product Platforms) → FBB Carrier
Basic Capability (ASIC + OM) → MBB Carrier

1. U2000 (Unified Network Management + Maintenance Software Platform)
2. VRP Software Platform
3. USP Software Platform
4. Mini-box Platform
5. IP Frame Platform
6. Transmission Frame Platform

ASIC
Optical Module

FBB Carrier
MBB Carrier
Enterprise Carrier
Contributions in Standards

Contribute in standards

Access
- Chairman in ITU-T GPON and IEEE 10G EPON group.
- Chief contributor in PON, DSL (ADSL2/2+ /VDSL2).

Transport
- Chief contributor in OTN, WSON, 40G/100G, Submarine fibre, and Synchronization.
- Chairman in ITU-T OTN group.

IP/MPLS
- Chairman in 10 IETF routing Groups..
- Chief contributor in IPV6, MPLS-TP.
- Huawei is the 2nd most active router vendor in IETF.
Network Innovation Centre, Win-Win

- **Operator Engagement**
  - User Study
  - BP
  - Product trial environment and test specs
  - Marketing & channels

- **Huawei Engagement**
  - Global practices and knowledge sharing
  - Solution R&D experts
  - Equipments
  - Solution fulfillment and verification

- **NIC**
  - Platform
  - R&D
  - Lab

- **Go to market**

- **5 NICs + 9 NICs**

- **Customer Satisfaction**
- **Cost Reduction**
- **Value Enhancement**

- **New Solution**
- **TCO Savings**
- **New App & Service**
- **New Terminals**
- **New Experience**
- **New Business Model**

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Continuous Innovation in All-IP Broadband

- 1997
  - 1st 155/622M SDH.
  - 1st IP DSLAM.

- 2001
  - 1st 200GE router.
  - 1st Nodal IP microwave.

- 2002
  - 1st Demonstrates OBTN Prototype.
  - Smart Power Management (SPM), Green network, golden pipe

- 2006
  - 1st SuperWDM, 5000km without electrical regeneration.

- 2008
  - 1st T-bit GPON.
  - 1st WDM/OTN.

- 2009
  - 1st end-to-end 100G Prototype.

- 2010
  - 1st 300mm-depth Metro Services Platform.
  - 1st 1588v2-Compliant xDSL Syn. Prototype.
  - 1st release SuperMIMO (700Mbps DSL) prototype.
  - 1st intelligent Optical Distribution Network (iODN) Prototype.
  - 1st release Hitless Adjustment of ODUflex (G.HAO) Prototype.
  - 1st IP microwave.

- 2011
  - Q1
Delivering U2BB to Realize ABC Value

ABC: building a lower cost, higher bandwidth and profitable golden pipe

D: Delivering ABC value by EOT model
Our Vision: The Best Partner of Global Operators

• **Vision:** To provide most competitive solutions for Bearer, Access and Enterprise Network to become the best partner of global operators.

• **Strategic Goals:** Become the leader of FBB, MBB & Enterprise market. Competing & cooperating, fostering a healthy business mode in the industry and ensuring continuous profit growth.

• **Key actions:** Leveraging convergence and synergy to help operators stretch channels to households and enterprise, thus providing solutions with difference.
Our Next Goal......

Our next goal: $20 Billion USD in 5 Years.
Thank you

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