The Multiservice Packet based Transport Network enables the Digital Services Delivery

Tunis, 21 Nov 2005

Mauro Filippi
Marketing Director
Marconi Communications

Broadband services trend

Worldwide DSL Subscribers (Ml) Worldwide Mobile Subscribers (Ml)

Source: Infonetics
Source: EMC
Broadband web services: “digital life” enabler

<table>
<thead>
<tr>
<th>Entertainment</th>
<th>Communications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broadcast SDTV/HDTV</td>
<td>Data &amp; Voice convergence</td>
</tr>
<tr>
<td>Video on Demand</td>
<td>Fix-Mobile convergence</td>
</tr>
<tr>
<td>Video/Audio Streaming and download</td>
<td>Two-way video comms</td>
</tr>
<tr>
<td>Multi player interactive Gaming</td>
<td>Unified Messaging</td>
</tr>
<tr>
<td>Gambling</td>
<td>Virtual Presence</td>
</tr>
<tr>
<td>Mobile Video/Audio</td>
<td>Home Management</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Information</th>
<th>Home Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet access</td>
<td>Utilities Management</td>
</tr>
<tr>
<td>E-shopping</td>
<td>Home automation</td>
</tr>
<tr>
<td>On-line booking</td>
<td>CCTV (Remote Surveillance)</td>
</tr>
<tr>
<td>Telemedicine</td>
<td>Door &amp; Window monitoring</td>
</tr>
<tr>
<td>M-commerce, cashless payments</td>
<td>Alarm monitoring</td>
</tr>
<tr>
<td>Location Based Services</td>
<td>Emergency &amp; localization</td>
</tr>
<tr>
<td>E-government</td>
<td></td>
</tr>
<tr>
<td>On line learning</td>
<td></td>
</tr>
<tr>
<td>Collaboration/Education</td>
<td></td>
</tr>
</tbody>
</table>

Reliable services

- More and more services are delivered on IP in a competitive environment
- Reliability requirements of business and residential users are linked to the ‘Quality of experience’
  - user’s ‘expectation’ for data services dominated by download time
  - voice and real time video reference: historical services (PSTN, aerial TV broadcast)
- The international standard bodies identify 6 classes of IP services on the basis of the availability target
- The spectrum of the services is so wide that the reliability index spans from 0.03 to 0.75 (IPLR)
The Corner Stones of an Excellent Transmission Network

Manageability

Convergence

Reliability

Scalability

Access & Transport Nodes

User traffic consumption

The evolving video coding and transmissions technologies will allow telecom operators, deploying most of the existing infrastructures, to distribute real broadband services to their customers. Figures with user bandwidth in 20 to 25Mbps range are conceivable.

- **Near Term - 20Mbps**
  - HDTV 1 x 12 Mbps
  - SDTV 1 x 4 Mbps
  - HSI 1 x 3.5 Mbps
  - Voice 2 x 0.128 Mbps
  - Video Tel.1 x 0.384 Mbps

- **Further step – 24Mbps**
  - HDTV 1 x 9 Mbps
  - SDTV 2 x 3 Mbps
  - HSI 1 x 8 Mbps
  - Voice 2 x 0.128 Mbps
  - Video Tel.1 x 0.75 Mbps

Traffic profile examples
Broadband: the Giga-Capacity access

1000 BB users with:
- HDTV broadcast = 10 channels
- SDTV broadcast = 20 channels
- HDTV VoD = 5% of the user-channel
- SDTV VoD = 10% of the user-channel
- HSI = contention ratio 50:1

Scalability = ready for unbound growth!

ITU-BDT Regional Seminar on Fixed Mobile Convergence and new network architecture for the Arab Region, 21-24 Nov '05

DSL enhancements: for bandwidth hungry services

20 Mb/s service
ADSL2+ application

Source: Texas Instrument

ITU-BDT Regional Seminar on Fixed Mobile Convergence and new network architecture for the Arab Region, 21-24 Nov '05
The Metro Aggregation Node

**MetroAggregation side**

- CWDM/DWDM
- Dual Homed ring
- 10GB
- 100E N x GBE
- NGSDH trib. Fibre-Radio ring
- CWDM tributaries
- S.H. ring

**MetroAccess side**

- Scalable: Nx10GB
- Tributary Interfaces
- 1+0; 1+1; 1:N
- Dual Homed ring

RTOS enabling:
- MPLS, PWE3, VLAN, GFP-
- SDH, OA&M

**ASTN Solution**

*Reducing Operator Expenditure*

- Network A
- Network B
- Network C
- ASTN control plane (GMPLS protocol)
- Auto-discovery
- Auto-provisioning
- Network resilience
- Full connectivity for Edge Router

Savings

ITU-BDT Regional Seminar on Fixed Mobile Convergence and new network architecture for the Arab Region, 21-24 nov '05
OCS for a scalable ASTN

ASTN Control-Plane
DWDM integrated
OTN/SDH switch and tribs

In-service upgrade
2.5, 10 & 40 Gbit/s interf.
Ethernet ports and switch

From 80 Gb/s to 3 Tbit/s

Network Management System

Focussed Domain-Based Management
Cross Domain Integration and Billing
Fault tolerant and secure architecture

Service Management
Network Management
Element Management

ITU-BDT Regional Seminar on Fixed Mobile Convergence and new network architecture for the Arab Region, 21-24 Nov '05
The Multiservice Packet based Transport Network enables the Digital Services Delivery

THANKS

Tunis, 21 Nov 2005
Mauro Filippi
Marketing Director
Marconi Communications

ITU-BDT Regional Seminar on Fixed Mobile Convergence and new network architecture for the Arab Region, 21-24 Nov '05