

Evolution towards Future Network Solutions Sonatel Service Provider case

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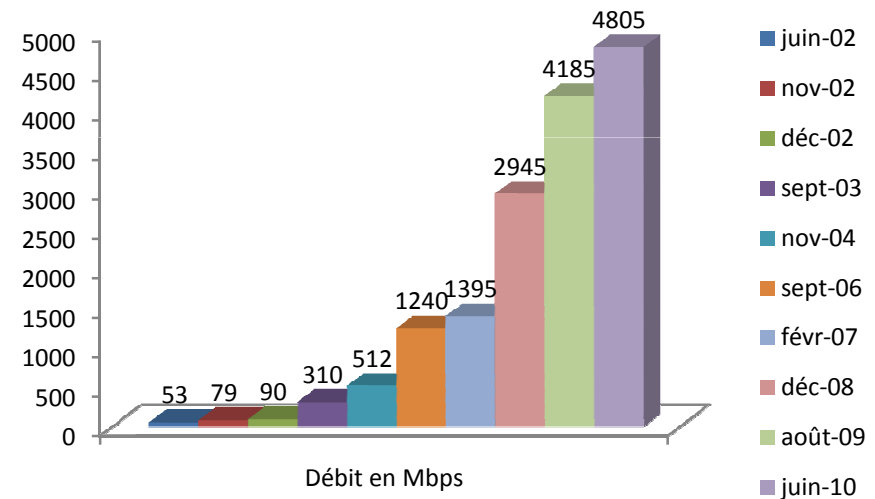


agenda

- Context
- Overview of current situation / network and services
- Challenges
- Access network evolution
- Backbone and Transmission evolution
- Evolution of the network control
- VAS platform evolution
- Green Network

context

- ENTERPRISES AND CONSUMERS RAPIDLY ADOPTING IP-ENABLED APPLICATIONS
Driving demand for bandwidth and integrated services
- CUSTOMER EXPECTATIONS SOARING : Demanding differentiated services and exceptional service levels
- Strong Growth of the Internet Traffic
 - 53 Mbps in 2002 to 4.8Gbps in 2010 : (CAGR of 76%)
 - 28% of streaming video traffic
 - 35% of P2P traffic
- Poor development of local content



overview of current situation/network and services...

Fixed Network :

- IP/MPLS network (IPv4/IPv6) which mainly support the following services : Internet, MPLS VPN services for corporates, IPTV services, Mobile network signalling and some voice traffic etc.
- Transmission layer based on SDH, Ethernet over SDH, DWDM, CWDM
- ADSL /ADSL2+ at the access layer with maximum speed of 10Mbps offered to our customers
- CDMA access for rural and suburban areas with a maximum speed of 2Mbps

Mobile Network :

- 2G : Transport based on TDM
- 3G underdeployment with IP RAN solution
- Migration towards IP NGN R4 of the whole MSC legacy : split architecture over IP for signaling and Bearer
- Significant uptake of Mobile Data: iPhone, Blackberry, Business Everywhere
- VAS platforms: SMSC, NgHLR, IN ... all moving to IP and SIGTRAN

challenges (1)

- Internet Services development : fixed and mobile, transit and peering services
broadband anywhere, anytime, with any device
- Broadcast TV (SD → HD → 3D) and VoD over Broadband
requirements lead to increased downstream bandwidth (some tens of Mbit/s)
- Mobile Data Services (GPRS, Edge, 3G) uptake
- L2/L3 VPNs (IPv4/IPv6) services to business customers
- Business Video, Telepresence and Telemedicine services and others
beyond bandwidth requires interactivity and low latency
- Managed Services : Security, Unified Com and Collaboration Services, Cloud Based Services

challenges (2)

- Fixed and Mobile convergence network
- RAN (Radio Access Network) consolidation over IP
- Infrastructure management and operations: DCN evolution over IP. To include access control, physical surveillance, power management
- PSTN Voice signalling to IP
- PSTN Voice: Class4, Class 5 replacement to VoIP
- Local content development
- To bring the content as close as possible to the users
- Migration towards IPv6
- Handover inter system

access network evolution

Fixed network

- DSLAM evolve toward a **convergent platform** called Multiservice Access Node (MSAN) with support xDSL, GPON, POTS, BTS/NodeB interconnections, and full routing capabilities (MPLS), IPv6 support
- Evolution towards **FTTC/VDSL2, FTTX/GPON** in order to support traffic growth driving by usage evolution in the home network

Mobile network

- Mobile Backhaul to evolve toward Packet Technology (GE interfaces on BTS/Node B, BSC/RNC)
- 3G → 3.5G → LTE → LTE advanced
- Fixed Mobile Convergence at infrastructure level by converging 2G/3G/3G+/LTE traffic over a single **IP/MPLS collect (IP RAN transport)**

backbone and transmission evolution

- **IP/MPLS network as the multiservice infrastructure for voice/data/video**
 - IPv6 support
 - High Speed in the core Network (routers with 10G+ / Tera routers !) in order to convey traffic burst
 - Mutualisation of IP/MPLS backbone for fixed and mobile
 - QoS and security end to end
 - High availability
- **CDN (Content Delivery Network)** located in several points of the network in order to have the content near **the customers**
- **Virtualization** : application, storage, **network** !!!
- **flexible hybrid WDM layer using ROADM** equipment to support transmission capacity growth
- Layer 2 switching & control plane in support of **IP transport on the WDM layer**

evolution of the network control

- Keep intelligence in the network even if the transport is now based on IP !
- Convergent fixed-mobile services based on an IMS (IP Multimedia Subsystem) technology !
- IMS based multimedia services in mobile networks
- Telephony support with SIP phone

VAS platforms evolution

- Mutualization of main mobile services platforms (SMS Center, MMSC, USSD Browser, OTA etc..) in one platform called Multi-VAS platform
- VAS platforms: SMSC, HLR, IN... all moving to IP and SIGTRAN

devices evolution

- Explosion of the number of devices connected at home (PC, 2 x TV, Game box, Radio, Home Library box, etc..) --- Then need for autoconfiguration in order to simplify the management (IPv6 !)
- Set Top Box HD & 3D ready !
- Most mobile devices will include fixed wireless access (Eg : 802.11) and mobile (Eg : LTE)
- PCs will integrate mobile technologies such as LTE

Green network

- Challenges of reducing customer's energy bills by reducing consumption of equipment in the Home Network
- Trend towards data center with less energy consumption : a target of a Power Usage Effectiveness (PUE) between 1.5 and 1.8
- Optimization of power consumption on some vendors equipments (No power consumption When no Service Provision)

thank you

