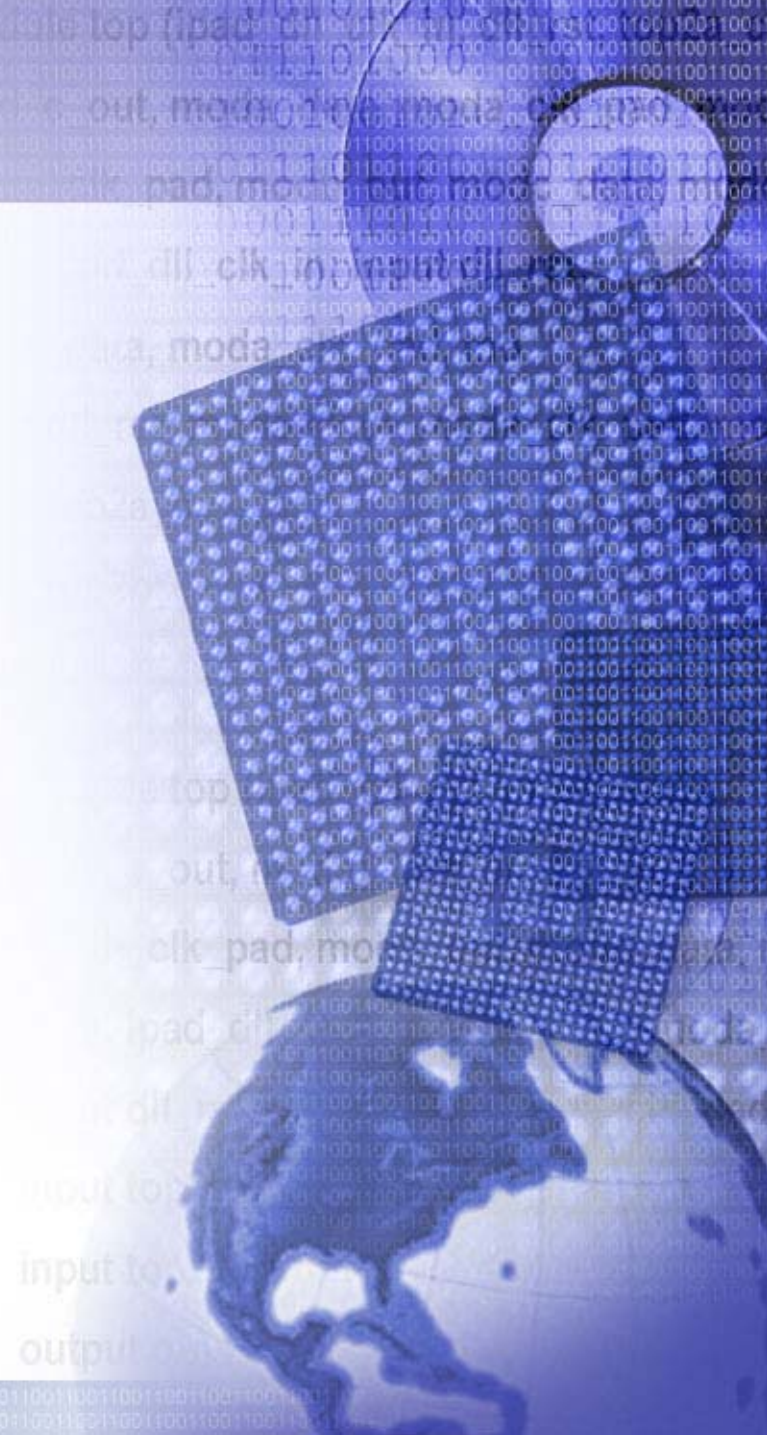




Traffic Management Solution



Convergence is in Full Swing

“Triple-Play” is a Reality

- Voice, Data, & Multimedia applications over one network
- Seamless Wired & Wireless connectivity
- IP is the unifying protocol
 - Emergence of IMS architecture
- Strong business drivers
 - Consumer broadband services
 - Enterprise IT infrastructure
 - Service providers
 - New revenue streams
 - Reduced CapEX & OpEX

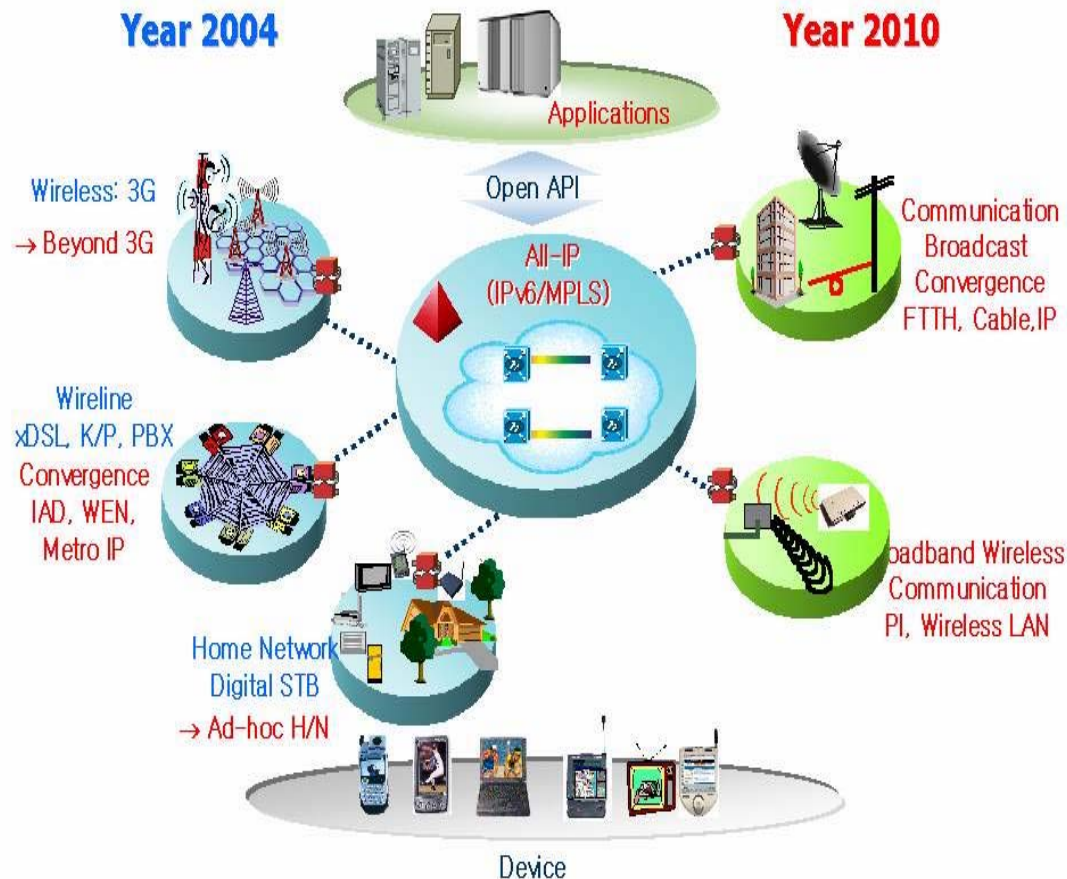


Image courtesy of Samsung

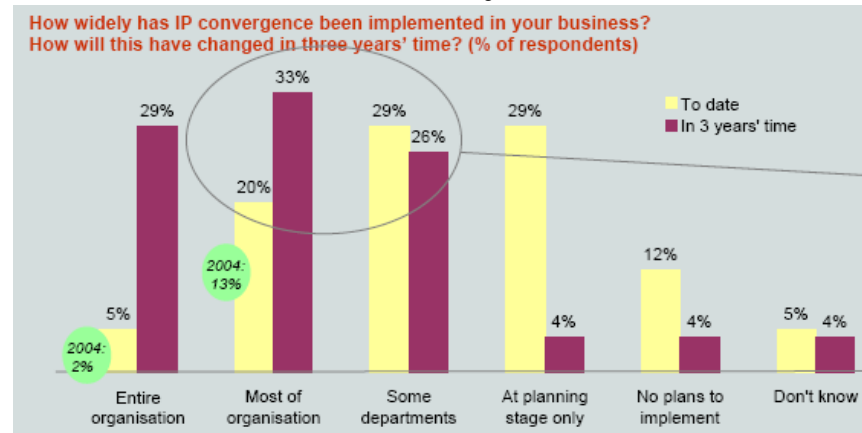


Enterprise & Consumer Demand

Enterprise Demand

- 62% of firms surveyed expect to have migrated to converged IP networks across all or most of their business in 3 years
- Innovation & value add benefits are equally as important as reduced CapEx/OpEX

Source: Economist Intelligence Unit, Oct. '05



Global Broadband Uptake

- Subscribers to more than double from '05 to '10 (19% CAGR)
- Driven by Triple-play, IPTV, VoIP and higher speed Internet
 - IPTV: 47M users by '09 vs 2M '05
 - VoIP: 11.7M in '04 to 221M in '09

Source: OVUM RHK, Jan. '06



Growth of IP-based Applications & Services

Consumer

- Internet
- VoIP
- IPTV
- Online Gaming
- E-learning

Enterprise

- Internet
- VoIP
- Video Conferencing
- IP VPN
- Storage over IP
- Hosting
- E-learning

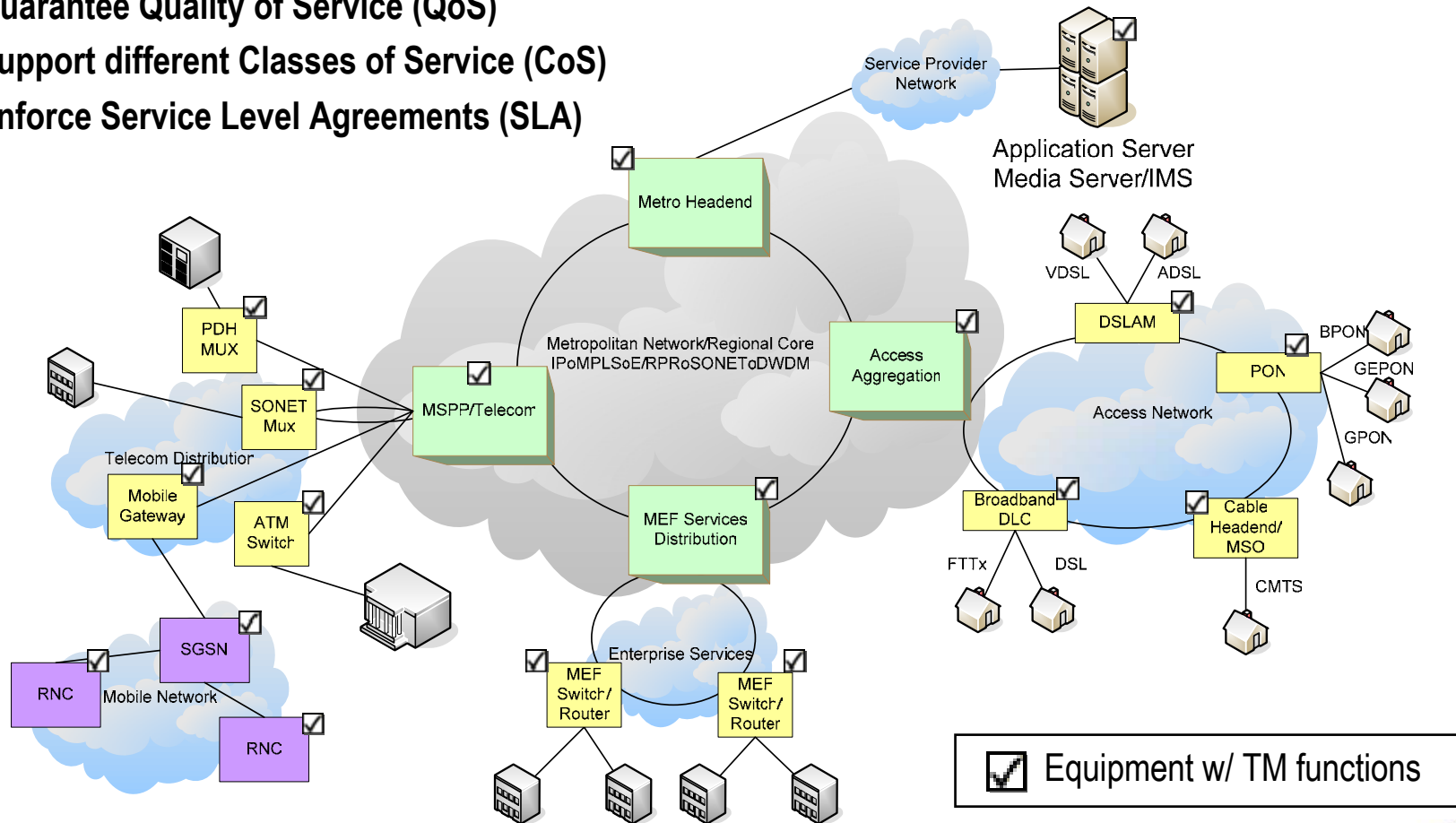
Effective Traffic Management capabilities across infrastructure equipment is becoming a must rather than just a nice feature



Traffic Management Across the Converged IP Infrastructure

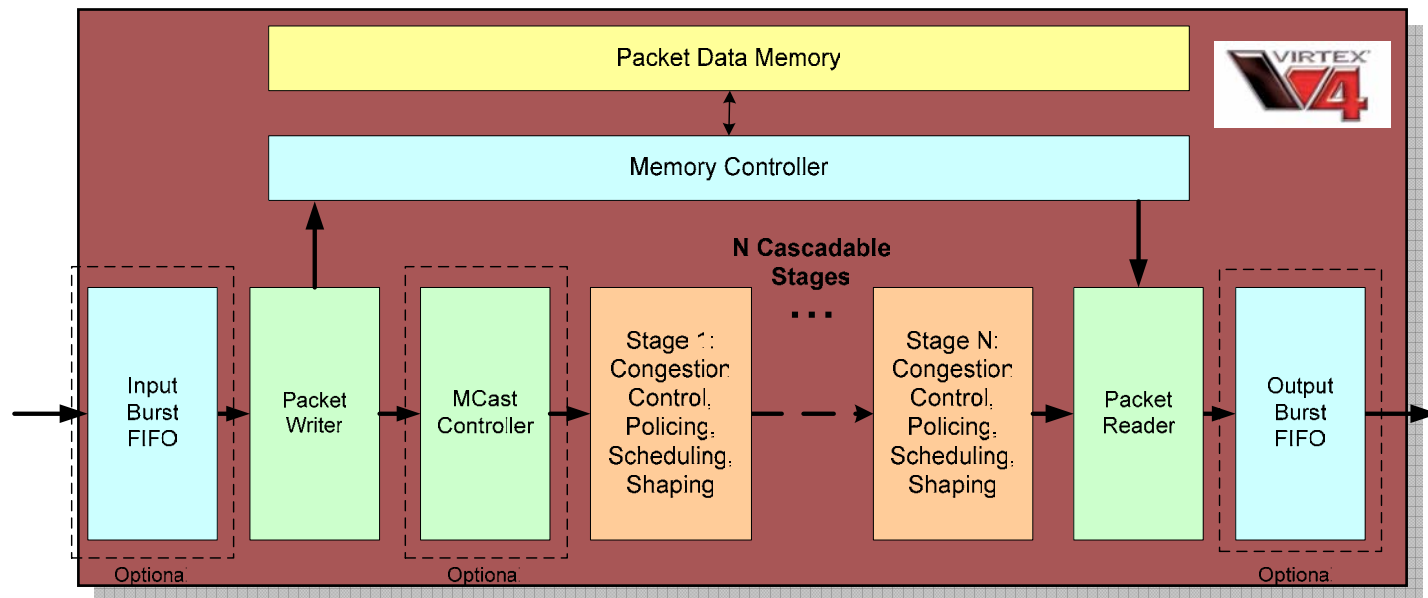
Goals

- Guarantee Quality of Service (QoS)
- Support different Classes of Service (CoS)
- Enforce Service Level Agreements (SLA)



Introducing the Xilinx Traffic Management Solution

- Industry's most Flexible and Scalable Traffic Manager
 - Powered by the Virtex-4 family of FPGAs
 - Jointly developed with Xilinx partner, Modelware Inc.
- Ideal for Access, Metro & Wireless Applications
- Enables QoS and CoS support; enforcement of SLAs



Xilinx Solution vs. Traffic Management Requirements

- Key Requirement #1 => **Performance**
 - High maximum performance
 - Breadth of performance to meet high-end and lower rate applications
 - Efficient use of bandwidth
- **Performance Benefits** of TM Solution
 - Advanced Virtex-4 FPGA and clever TM architecture allow high and broad throughput support
 - 10 Gbps allows the core to be used in high-end equipment such as Metro Core Routers
 - Also appropriate for lower-rate access applications such as PON OLTs and WiMAX BTSs with throughput support as low as 50 Mbps
 - Statistical muxing capabilities ensures efficient bandwidth usage



Xilinx Solution vs. Traffic Management Requirements

- Key Requirement #2 => **Flexibility/Scalability**
 - Solution must accommodate different TM “recipes”
 - Variety in policing, shaping, congestion avoidance & management algorithms/methods
 - TM is a key differentiator and customers do not want to compromise
 - Solution must be able to scale in terms of throughput, number of queues, number of stages, multicast groups, etc.
- **Flexibility/Scalability Benefits** of TM Solution
 - Scalable set of parameters which include
 - # of Queues: Up to 1.2 million
 - # of Scheduling Levels: Up to 5 levels
 - # of multicast groups: Up to 64K groups
 - Most robust set of schemes and algorithms for policing, shaping, congestion avoidance, and congestion management
 - Scalable memory architecture ensures memory throughput across designs



Xilinx Solution vs. Traffic Management Requirements

- Key Requirement #3 => **Integration / Cost Optimization**
 - Must provide high integration and optimization to meet various cost points
 - High end solution may work for Metro headend, but not for IP DSLAM
- **Integration/Cost Optimization Benefits** of TM Solution
 - Designs are optimized to a customers specification
 - Fits in just the right size FPGA, no “bloated” designs
 - TM can be combined with custom logic, integrated PowerPC processors and Multi-Gigabit transceivers (e.g. XAUI) to reduce the total BOM
 - Support for both internal BlockRAM memories and a variety of external SRAM/DRAM types allows efficient management of packets, descriptors & statics.



Traditional FPGA Benefits

- Quick Time to Market
 - FPGAs are available off-the-shelf
- No up front NREs
 - Cost of ASIC development continues to increase
- Field Upgradeability
 - ASICs and ASSPs are typically fixed function
 - FPGAs allow design modifications even after product is deployed
- Cost reduction path via EasyPath program



Example Applications

- Metro
 - MSPP
 - Metro Headend
 - Metro Ethernet
 - Access Aggregation
- Access
 - IP DSLAM
 - PON OLT
 - CMTS (Cable)
 - Digital Loop Carrier
- Enterprise
 - Enterprise Router
- Wireless
 - WiMAX basestation
 - UMTS
 - Radio Network Controllers
- Servers
 - Application Server
 - Media Servers / IMS

Design Deliverables & Support

- Design Netlist
 - Optimized to a customers specification for a standard set of parameterizable features
- Software drivers
- Testbenches
- Documentation
 - Data sheet
 - User's guide
- Completely supported AllianceCore product
 - SignOnce licensing agreement
- Available March 29, 2006



Summary

- Effective Traffic Management is a key requirement for enabling the next generation, all-IP network
 - Support for QoS, CoS, as well as SLA enforcement
- Xilinx is the best solution for Traffic Management
 - Industry's most flexible & scalable Traffic Manager
 - Enables creation of customized and optimized TM designs for networking equipment with quick time to market



Thank You!

