IPv6 IN FIXED AND MOBILE NETWORKS

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IPv6 as the world catalysts

- Common & More Flexible Service bundling
- Millions of different peering options and levels of quality
- Flexible way of accessing and distributing content
- New revenue opportunities
- Dynamics of new IP Multicasting
- IP streaming to dispersed audiences
Evolution of a „IP World“

- Migration from circuit switched applications to wireless internet
  - Terminals need IP addresses
  - Multimedia applications
- Convergence of wireless and wireline services
  - Common infrastructure/services
- Higher bandwidths available
  - Greater need for differing QoS
  - Possible to tolerate more signalling
- Switch from call-oriented to always connected model
- Desire for push services
Benefits of IPv6

For end users / companies
- Autoconfiguration management:
- Embedded encryption support and authentication
- Embedded mobility
- Embedded multicasting
- Internet Provider selection
- Efficient packet processing in routers
- Real-time support
- Protocol extensions for proprietary solutions

For ISPs / Operators
- Autoconfiguration Management
- Efficient address allocation
- Improved multicast management
- Renumbering possible
- Efficient network route aggregation
- Efficient router packet processing
- Real-time support
major network change

Circuit Switched
— older technology
— voice focus, low latency
— POTS, ISDN

Packet Switched
— new, data focused
— the future
— Ethernet, IP, ATM
IP Unifies NETWORKS

Services

Voice Services
Dispatch
Data Services
Content Provider
Operator Supplied
3rd Party Supplied

Core Network
Control
Net Management

IP Backbone

Access Network(s)
Cellular
WLAN
WxDSL
Cable
Enterprise
Satellite
Wireline

Subscribers

Unified Network Architecture

Packet IP Backbone
Supports all Access Technologies

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IP & ATM AS BASIS FOR MANY NETWORKS

Multi-service data
- FR/X.25
- IP
- PBX/Mux

Service adaptation
Router
IP
SDH/SONET
WDM

Data Networks
Access/Edge and Core/Backbone

Mobile radio access network
AAL2 switching required
ATM
AAL2
RNC
RNC
GPRS
Router
Internet
PSTN

Converged Mobile Networks
Converged Core

Integrated broadband access
Voice
PRX
NT
PSTN

ATM
DSSLAM
RAS

Local Loop
(DSLAM/Access (VoDSL) Gateway)

Converged Fixed Networks
Local/Trunk GatewaySwitch

Voice over ATM
SS7
MGCP
MGCP
SS7

CO
Local
Router
CO
Trunk

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FRAGMENTED Backbone - for Enhanced Services

Today: Best-effort IP backbone

Focus: Enhanced services
- CoS/DiffServ enhanced router/IP-switches (overlay)
- Enhanced IP over ATM (MPLS) with SLAs, Voice, QoS-VPNs, ...
- "private Internet"

National/regional ISPs

Focus: Higher bandwidth
- Gigabit/Terabit router/IP switches

Public Internet backbone + newly emerging carriers

Tomorrow: QoS/CoS-capable
- Gigabit/Terabit router/IP switches

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Service Level Convergence

- Content Aggregation
- User
- LBS
- DxB
- Convergence Gateway
- UMTS
- MHP
- Portals
- Internet

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Network Operators need

- Higher revenue from new, SIP-based multi-media applications
- IP Transport: Reduced cost of ownership of converged IP backbone
Major architectural change

- Session Initiation Protocol (SIP) Control and Dynamic QoS negotiation
- IMS (IP Multimedia Subsystem)-IPv6 Only
- IPv4/IPv6 Backbone
- IPv6 for security Issues
IMS offers a promising platform for innovative multimedia services

IMS further enables combined voice-data services

HSS=home subscriber server
MRF=Multimedia resource function

Enabling Services
- Payment
- Prepaid
- Rating
- Location, Presence, ...

Applications
- SIP
- ISUP
- HSS
- MRF
- SIP

IP terminals

SIP

UTRAN

3G SGSN

GGSN

PSTN / PLMN

TDM

IP Network

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Different Mobile Technologies

- Pico Level - Bluetooth, IR
- Link Level - Access Network like Cellular (GSM, EDGE, WCDMA), 802.11(b)
- Network Level - MobileIP, GTP
- Application Level - SIP, H.323 Mobility, Dynamic DNS

Common denominator is IP
— Then security, mobility and QoS should also be solved at the network layer by IPv6
ON GOING WORK

Multimedia will stress LAN design, but issues are identifiable and fixable

Much work remains, progress will be steady towards integrated audio, video, data over LAN and WAN with network transparency

ISDN (H.320) and IP (H.323) will coexist for several years

Implement prudently, remember QoS
Thank you for your attention!!