Market Feasibility of NGN Technology
Helmut Schink
helmut.schink@siemens.com
Content

1. Trends
2. Convergence scenarios
3. use cases
4. market figures
5. trials
6. summary
Broadband and IP open the door to IT

Main trend

Network drives value generation
Network is differentiator
Network defines and constrains services

Power shifts from network to the end user

Services drive value generation
Value added services are differentiator
Services are network-agnostic

SIEMENS
© Siemens 3
Convergence of:
Networks – Services – Application

Fixed Mobile Convergence

Mobile Network

Fixed Network

Enterprise Network

Home Network

Mobile Enterprise

Home Entertainment

Hosted Office
Examples for Converged Network Services

- **Business Connection**
  - Hosted Office/ IP Centrex, Office Integration, Call Handling Applications Conferencing

- **Fixed Mobile Convergence**
  - Push-to-Talk, Chat, Instant Messaging, Unified Messaging, Push Services Community Portal

- **Home Entertainment**
  - TV Centric Applications – Video Telephony, VoD/AoD*, Internet on TV, Games –, Ring Back Music

- **Mobile Enterprise**
  - Mobile Centrex Mobile Workforce Private mobile numbering office zone solutions

Available on any device – seamless/unified user experience –
– Single sign-on –

*) VoD = Video on Demand, AoD = Audio on Demand
Example for Converged Services: TV-based Home Entertainment

- bandwith of network access is driven by Home Entertainment and Video Communication.

Stefanie: What do you think about this movie...?
LifeWork Applications: Business Impact of Push-to-talk

**Value Add**
- Revenues in Fixed networks generated by IOC
- Dedicated use case will benefit from convergence, Taxi, Cycle Courier, Police, Firefighters, Emergency services, Transportation services, Delivery services (DHL, ...)
- Faster service uptake for Mobile due to higher critical mass and use cases that require fixed end station

**Penetration (%)**
- 2007: Mobile Consumers: 33\%
  - Mobile Business users: 10\%
- Fixed Users: Low Case: 0.5\%
- Fixed Users: High Case: 3\%
  - (Nextel US: Mobile Business 70\%)

**Revenue per active user**
- 2007: Mobile Consumer: € 4.50 / month
  - Mobile Business: € 20.00 / month

**Major Barriers**
- No critical mass of SIP capable fixed phones
- Service might be offered by ASPs/ISPs with portal based service, which provides a lot of challenges for Siemens to obtain business

---

1 ICM User Survey: 06/2003  2 Own analysis
LifeWorks Applications: Business Impact of Presence

Penetration (%)

- 2007: 50% of mobile subscribers\(^1\)
- 5% of fixed subscribers\(^2\)
- 26% of internet users\(^3\)

Price

- 2007: Fixed/Mobile: € 1,50 per month additional charge\(^1\)

Value add

- Service is basis for many other services (IM, Chat, PTT, …) and implies to be offered in Fixed and Mobile network

Usage

- 2007: For all IMs, Chats, PTTs, Gaming Sessions

Barriers

- Service in Fixed might be introduced by ASPs/ISPs mainly
- No critical mass of SIP capable fixed phones

ARPU Contribution

- 2007: Mobile € 0,75 / month
- Fixed € 0,1 / month

\(^1\)ICM User Survey: 06/2003 \(^2\)All SIP subscribers \(^3\) All Instant Messaging Users
LifeWorks Applications: Business Impact of Instant Messaging

Value add

- IOC will make it possible for fixed operators/ISPs/ASPs to bill for this service
- Mobile Operators benefit from installed base of Internet IM/Chat users
- Faster service uptake due to higher critical mass – enhanced reachability

Penetration (%)

2007: 30 % of mobile users
26 % of internet users
5% of fixed users

Price

2007: Mobile: € 0,10 (per receiver) or € 5 flat monthly fee
Fixed Corporate: € 2 per user /month

ARPU Contribution

2007: Mobile: € 1,50 / month
Fixed: € 0,25 / month

1 ICM User Survey: 06/2003
2 Raymond James & Associates, Inc.
3 Deutsche Telekom
4 AT&T Wireless & Yahoo & AOL
5 MSN

Major Barriers

- Standardization on SIP or Wireless Village?
- No critical mass of SIP capable fixed phones
- Providers such as AT&T provide interworking with AOL/Yahoo based on AOL/Yahoo Messenger installed on mobile phones
- Challenge for Siemens to obtain business in case of portal based solution
Wireline Carrier Market Highlights and Trends

- The Wireline Carrier Market reached 52.4 bil € in 2003. The overall market growth (CAGR 03-09) is estimated at 7.6%. Asia/Pacific with most attractive growth rates (9.0%) among the top regions (Western Europe 7.8%, North America 5.9%).
- The combination of secure wireless home/office networking with entertainment applications such as online gaming, networked Private Video Recording and digital audio is fertilizing the whole CPE industry.
- Most carriers making steady progress toward sustained profitability, but they continue to spend CAPEX conservatively to ease their debt burdens and improving cash flow. Instead of building new, most incumbents are optimizing existing infrastructures.
- WLAN and WiMAX are opportunities for wireline carriers to provide wireless and even mobility services.
- Blurring of Communication, IT and Entertainment around the Internet does change the role of carriers.
- Delayering of Hardware and Software; Modularization of HW and Software components.
- A new Security model is a key issue for Next Generation Networks.
- Asia Pacific is dominating the Local Loop Market in mostly all subsegments. While the DSLAM market is flat, new access alternatives such as PON, WLAN and WiMax are growth drivers.
- Vendors add additional functions to NG SONET/SDH such as WDM support, distributed cross-connect, and data aggregation and switching, enabling carriers to reduce the number of equipment in the metro network.
- Service providers see the need for packet-based services as a key driver to deploy next generation voice equipment.
- The growth in Converged Network investment will not compensate the decline in traditional CO Switching.
- Data Network Convergence and adoption of MPLS are driving factors in future network deployments.
- As Carriers were not able to reduce OPEX significantly over the last few years (compared to their successful CAPEX-reductions), the Service Market continues to open up for external service suppliers.
Tomorrow’s Voice Service will be different from Yesterday’s Voice Service

- Incumbents like SBC, Qwest, Verizon, BT starting VoBB offerings to reduce churn. First Voice over WLAN offerings.
- Class 4 replacement, IP offload, International Long distance globally
- 5mil VoBB lines in Japan (Yahoo BB, NTT), 100k in USA (Vonage) Free of charge offerings like Skype, Yahoo IM

Characteristics
Technology:
Topology:
Tarif structure:
Quality:
Subscriber associated with:
Services:
Service Provision:

Main Line
TDM, proprietary
centralized
time and distance
Hard QoS, lifeline
physical fixed line voice centric
Telco

Packet Voice Client
IP, standardized
De-centralized
flat rate, part of defined service bundle
Soft QoS, „lifeline“ through multiple access alternatives
one personal number, network/access agnostic
data centric, voice is only one application
Telco, ISP, MSO, etc.
Digitalization, Miniaturization, Internet and Broadband Access are underlying trends

Wireline Carrier Market Highlights and Trends

**Business Trends**
- Revenue growth
- Competitive advantage
- Real-time enterprise
- Virtualization
- Globalization
- Business continuity
- Productivity
- Cost reduction

**IT Trends**
- The new systems architecture
- Web-based applications
- Business process fusion
- CRM, supply chain management or enterprise resource planning
- Web services
- Grid computing
- Disaster recovery

**Telecom Trends**
- Convergence
- Internet Protocol
- Broadband
- Wireless
- Mobility
- Video
- Net intelligence vs. Peer to Peer
- Net applications
- Decentralization
- Outsourcing of Services
- Distinction blurring with computing

**Consumer Trends**
- Convergence Entertainment with Computing
- Networked and Connected Home
- Broadband to the Home
- Wireless/Power-line Home Netw.
- Personal Area Network
- Ad-hoc Network
- Video on-demand
- Smart Home
- Vehicular network
In 2015, more than 40 bn devices/Smart objects will be connected. This „connectivity“ trend is driving Routing & Switching and Applications.

Number of Computers connected to the Internet (in million)

In 1995, there were 6 million computers on the Internet.

Including mobile devices, computers on the Internet may reach 1.3 bn in 2005.

Including smart objects, the number may reach more than 40 bn in 2015.

Source: DellOro, ICM, IDC, ICN GS SD

© Siemens
Broadband Access is Key for Application Revenue

Access Technology Change [million broadband lines in service]
Worldwide telecommunication services revenues grow at 5.5% p.a. The growth is in Wireline/Mobile Internet/Data Services.

Carrier Service Revenues

Carrier Service Revenues, world, bn US$

Growth rate by service

(CAGR 03/08)

Source: Gartner June, December/2003, ICM for mobile data trend; *Wireline Internet Service Revenue w/o Games, Video, Audio
Applications use Network Architecture and Building Blocks According to TISPAN and ITU NGN

**NGN**

- **Application Logic**
  Voice, Video, Multimedia, Unified Messaging, Collaboration, PTT, …

- **Application Enabling**
  Presence, Media Resources, Security

- **Session & Resource control**
  Session connection, Admission, Authentication, Authorization

- **Media Client**
  Phones, Home Gateways, IADs, Setop Boxes,…

**TISPAN NGN guides early phase of Network Architecture and Function split**

IETF, ITU-T and ETSI defined Interfaces and Protocols

**Interworking**

- **Signaling Gateway**

**PSTN, PLNM**

- **Circuit Switched Infrastructure**

- **Media Gateway**
FMC trial implementation up and running

Session control

Application enabling

VoIP

Instant Messaging

SIP

Group List
Manag, Presence

HSS

Client

PS-Domain

Router +
IP Phone

Fixed IP Net

PSTN / ISDN

PSTN

CS-Domain

MSC

Switch

MGW

MGCF

GMSC

STP

SS7

MGCP

trunk, access

Voice and IP
CTX Application
Server (2nd step)

SIP ALG/
NAT-PT

P-CSCF

I-CSCF

S-CSCF

Push and Talk

PoC

IM

MPM

SIP
extended FMC trial

Application
- Instant Messaging
- Chat
- Voice Appl. Server

Session control
- HSS
- P-CSCF
- I-CSCF
- S-CSCF

Group List Management
- MPM
- Presence

Firewall/NAT
- S-CSCF

Application enabling
- MRF
- ENUM

Client
- CPG
- Router + PC Client
- Router + IP Phone
- Wireless Router
- WLAN PDA

Legacy interworking
- MGCF
- MRF
- MGCP
- SS7/ISUP
- trunk, access
- MGW

SIP

© Siemens
Conclusions

The market is ready

- for cost savings
- for new applications
- for various kinds of convergence

Technology

- very mature for softswitches, gateways
- IMS successfully introduced
- provides for real value add

Let go!