Towards Fixed Mobile Convergence

Dan CHEN
ZTE Corporation

Agenda

- Views on NGN/IMS and FMC
- Global NGN Standard Efforts
- Migration to IMS-based Convergence
Consumer Expectation

- Simple and convenient
  - At anywhere,
  - On anytime
  - With any terminal
- Content
  - Multi-media
  - Personalized
- Enjoyable User Experience
  - Quality
  - Privacy
  - Security

Carrier’s Reality

**Challenges**
- Separated networks
- Separated management
- Fierce competition
- POTS Revenue gets flat

**Carriers want**
- Lower Capex/Opex
- Increasing RoI
- New Source of Revenue
Generic NGN Architecture

Support wide range of services
- Conversational
- Streaming
- TV Broadcast
- Messaging
- Web
Support fixed and mobile converged services
- Open Interface

Features
- Broadband
- Mobility
- Advanced Home network
- QoS
- Security
- IPv6
- Open API
- Convergence
  - Voice and data
  - fixed and mobile
  - Telecom and broadcast

Transport Network
- DSL/ATM
- DSL/Ethernet
- Cable
- WLAN
- UTRAN
- GPRS
- Mobility
- Broadband
- Advanced Home network
- QoS
- Open API
- Convergence

Consumer’s Interest in New Services

<table>
<thead>
<tr>
<th>Service</th>
<th>Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Picture Sharing</td>
<td>17%</td>
</tr>
<tr>
<td>Mobile Video Sharing</td>
<td>13%</td>
</tr>
<tr>
<td>Push-to-Talk</td>
<td>18%</td>
</tr>
<tr>
<td>Availability/Presence</td>
<td>19%</td>
</tr>
</tbody>
</table>

Source: Mori, August/2004
Views on NGN

- Services and applications are the carriers’ major focus
- It is very hard to find killer applications
- To build a “killer service platform” is more urgent
- Impacted by the internet business models, telecom carriers will join the new game and become an active player, instead of restricting the traffic.
- Fixed carriers are more aggressive on fixed and mobile convergence than mobile carriers.

FMC – Fixed Mobile Convergence

FMC has the following key aspects
- **Service**: A single service platform to provide services regardless of the access network type
- **User profile**: integrated user profile management for both fixed and mobile users
- **Control**: the same service control functionalities to support fixed and mobile applications.
- **Transport**: a common packet-based network
- **Terminal**: the same terminal with both fixed and mobile access capabilities
**Benefit of FMC**

- For users
  - One bill
  - One time setting
  - Service continuity
  - Optimized delivery

- For carriers
  - New source of revenue
  - Capex and Opex saving
  - Enlarge customer base & loyalty

**FMC Approaches**

- Bluetooth CTP
- UMA
- SIP over WiFi
- IMS-based FMC
  - IMS has been recognized as an key enabler for full-fledged convergence.
• IMS is originated from mobile world
• IMS is now also used by NGN standard bodies as session control architecture on ETSI (TISPAN) and ITU (SG13, FGNGN).

The Catalyst for IMS Deployment

- Pick best-of-bread components and seamless integration: 13.20%
- Lower Service Delivery Cost: 0.50%
- Blending Multi-Media Services: 16.60%
- Flexible Service Creation Environment: 41.30%
- Converged Fixed and Mobile Network: 22.80%

Survey of 189 service providers
Source: Heavy Reading 2005
IMS – Addressing Operator’s Concerns!

- **Increase the service capabilities**
  - Increase profit margin
  - IMS mainly focuses on this issue via
    - Open interface (more application developers)
- **Simplify the network architecture**
  - TDM based network is expensive to maintain with very limited service capability
  - IMS addresses this issue with a flat network architecture which provides multiple type of services on the same network
- **Efficient back-office, front-office to provide service management**
  - Many issues related to back-office, front-office operations
  - IMS addresses the following issues
    - Unified user database
    - Unified management system
    - Billing

*Source: Gartner 2005*

---

Potential Barriers for Current IMS Deployment

- Standard premature
- Lack of IMS capable terminals
- Lack of killer applications
- Lack of clear business case
- The operator’s network are not mainly packet based yet
Agenda

- Views on NGN/IMS and FMC
- Global NGN Standard Efforts
- Migration to IMS-based Convergence

NGN/FMC Related Standard Activities

- ITU-T
  - SG13
    - NGNFG
    - SG19
    - SG2
    - SG11
  
- ETSI
  - TISPAN NGN

- 3GPP/3GPP2
  - IMS/MMD

- IETF
  - SIP/IPv6/…

NGN Leading group on architecture, services, QoS and Security, etc.
Focus group to facilitate NGN deployment
Wireless and mobility, FMC
Naming, addressing and numbering
Protocols
IMS-based FMC
Architecture, protocols
Related protocols
3GPP IMS Features

- Fixed broadband access to IMS
- Emergency calls in PS and IMS
- Enhanced end-to-end QOS
- CSI
- IMS Local
- Policy control evolving and Charging

R6 IMS Features
- Inter-working with non-IMS IP networks
- Lawful Interception
- IMS Group Management (covered by Presence, IMS Messaging and IMS Conferencing)
- IP v4-based IMS
- Enhancements to Cx and Sh interfaces
- IMS Conferencing
- IMS Management
- IMS Charging
- IMS Messaging
- IMS Network Resource Model
- Additional SIP Capabilities support

R7 IMS Features
- Fixed broadband access to IMS
- Emergency calls in PS and IMS
- Enhanced end-to-end QOS
- CSI
- IMS Local
- Policy control evolving and Charging

R5 IMS Features
- SIP for IMS session control
- QoS
- OSA support
- Charging
- OAM&P
- IMS Security and authentication

Timeline of NGN/IMS standards

- 3GPP R7 (FBI)
- ITU-T FGNGN R1
- ETSI TISPAN R1
- 3GPP2 MMD
- 3GPP IMS R6
- 3GPP IMS R5

2003 2004 2005 2006
Agenda

- Views on NGN/IMS and FMC
- Global NGN Standard Efforts
- Migration to IMS-based Convergence

Softswitch vs. IMS

Softswitch is a physical implementation of part of IMS Core functions and other functions.

AGCF: Access Gateway Control Function
MGCF: Media Gateway Control Function
CSCF: Call session control Function
BGCF: Breakout Gateway Control Function
Migration for Full Service Providers

Chargeable multi-media services (a.k.a. IMS)

2G/3G Mobile Network

Fixed Network

Evolution to IMS (Stage 1-starting point)

Parley/OSA
Service Network (Mobile)

SCP

Parley/OSA
Service Network (Fixed)

SIP AS

IP Backbone

HLR

MSC Server

GMSC Server

GGSN

MGW

CS domain

PS domain

SIP Terminal
Evolution to IMS (Stage 2)

- Integrating mobile and fixed user data into IHLR (integrated HLR)
- SS supports PSTN/ISDN emulation service logic (optional)
- Converged services

Evolution to IMS (Stage 3)

- Integrating mobile and fixed user data into IHLR (integrated HLR)
- SS supports PSTN/ISDN emulation service logic (optional)
- Converged services
- Introducing IMS from mobile network side
- i-HLR migrates to "HSS" ("HSS" contains fixed user data)

Evolution to IMS (Stage 5)

- SS software upgrading as modular IMS function entities
Conclusion

• Killer application is hard to find, and even IMS does not bring any new specific services. But IMS architecture supports
  – Flexible service creation environment
  – Fixed mobile convergence
• Softswitch and IMS are closely related.
• Different carriers may have different FMC scenarios