Growing Operators with ZTE Innovative VoIP and Broadband Solution

Benjamin Li  
Director  
Regional Technical and Commercial Department

Vincent Zhu  
Senior Engineer  
Core Network Division
GoTa – Path Leading to Profit

- Understandings of VoIP and Broadband
- Step to Build and Migrate
- ZTE with its strong local presence
Let’s talk about VoIP and Broadband...

VoIP = Voice + IP ... ... 
- Main revenue stream
- Everything over IP: convergent platform, further proved

Broadband = Step out of Narrowband, or, no more Narrowband at all...
- Technical Developments: State of the Art solution at a lower cost
- End Customer: more services, better quality at lower price
- Competitors: They are deploying a modern system...
ZTE’s Total Solution for NGN

Core Packet Network

Service
- SCE
- HSS
- AAA Server
- App. Server
- Media Server
- Policy Server

Control
- MSC
- Server
- Parlay GW

Core
- SS
- MSC Server
- HSS
- SS7
- Policy Server

Access
- SG
- TG
- AG
- NAS
- H.323
- IP P3X
- MSAG
- MGW
- GSN

SS7
- Network

PSTN/ISDN/PLMN
- Broadband Access

RNC
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ZTE’s Total Solution for NGN
Step 1: National Transmission Backbone

**Backbone Layer:**
- High bandwidth, reliable connectivity
- Large scale traffic aggregation

**Metro / Regional Layer:**
- Multi-service access points
- Traffic aggregation
- Flexible protection mechanisms

**Access Layer:**
- Multi-service access points
- Flexible protection mechanisms

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Step 1: National Transmission Backbone

Visibility

TDM E1/T1/E3 …

IP FE/GE …

STM - N

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Step 2: Metro Network in Major Cities

2.1 Metro Backbone

- OADM for Metro Core
  - Versatile bandwidth Provisioning
  - Sophisticated Optical layer Protection
  - Sub-rate Aggregation Interface Card

- CWDM for Metro Access

- RPR over MSTP

- IP Router

- DWDM OADM

- CWDM

- SDH

- GbE

- ATM

- SAN
2.2 Metro Access Roadmap

Step 2: Metro Network in Major Cities

- DialUp/PSTN
- DialUp/ISDN
- xDSL
- CMTS
- Wireless Broadband Access
- FTTx
2.2 Metro Access

**Wired Line**

- xDSL - FSAP Full Service Platform: IPTV, VoIP ....
- FTTx – EPON/GPON, MSAG, MSG

![Diagram of Wired Line Network](image)
Step 2: Metro Network in Major Cities

2.2 Metro Access

**Wireless**

- **WiMAX**: 802.16d – 802.16e
- **Wi-Fi**: WLAN
- **Mobile data**: GPRS/EDEG, EV-Do

From hotspot to MAN

Internet / WAN

Backhauling

Hybrid networking

From hotspot to MAN
Step m, n ... X?

IP Multimedia Subsystem
Introduction of IMS

- **Business:**
  - IMS provides an open, standard, and efficient multi-media service delivery mechanism, which is controllable, chargeable and manageable.

- **Technical:**
  - IMS provides an open, access-independent, standard session control architecture to support multi-media services.
• Be regarded as the generic service enabler for IP multimedia applications
  – Presence
  – Messaging
  – Location management
  – Group management
  – …

SIP AS  3rd-party AS  Parlay AS  SCP

Group management  Presence  Messaging  Charging
Highlights of IMS

• Built on IETF Protocols
  – SIP: The single Call Control Protocol for IP Multimedia Services
  – Diameter: AAA protocol
  – XML: User Profile protocol
  – COPS, …

• Home Control
  – The home network controls the services for a roaming user
  – S-CSCF is the only service triggering point

• Access Independence
  – IMS is designed independent of the underlying IP connectivity network
  – Specifications re-used by 3GPP2 for CDMA2000 systems
  – Access via WLAN and xDSL being defined
Highlights of IMS

• Open and standard Interface
  – Increase the service capabilities

• Simplified network architecture
  – Flat network

• Enhanced Charging functions
  – Online charging
  – Offline charging

• Enhanced Security
  – Integrated security framework, based on IPSec and AKA

• QoS
  – SBLP
  – Resource reservation
Can we migrate to IMS directly – not a good idea.

Jump to IMS – Risky
- Immature Standards
- Lack IMS Terminals

Progressive
- Softswitch is a mature technology
- Mature environment for commercial deployment
  * Softswitch can be upgraded to IMS smoothly
Migration Path

Fixed Carrier
- From Softswitch to IMS

Mobile Carrier
- From WCDMA core network to IMS
- From CDMA Core network to IMS

Full Service provider
- Both WCDMA and fixed network
Scenarios A
IMS is firstly introduced in mobile network

Chargeable multi-media services (IMS)

2G/3G Mobile Network

Fixed Network

Migration for full service providers
Evolution to IMS (Stage 1)

Service Network (Mobile)
- Parley/OSA
- SCP
- Service Network (Mobile)
- HLR
- MSC Server
- GMSC Server
- MGW
- GGSN
- SGSN
- PS domain

Service Network (Fixed)
- Parley/OSA
- SCP
- SIP AS
- Service Network (Fixed)
- HLR
- MSC Server
- GMSC Server
- MGW
- MGW
- GGSN
- SGSN
- IP Backbone
- ss

Networks:
- CS domain
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- PSTN
- PSTN
- TG/SG
- AG
- IAD
- SIP Terminal

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Mobile service network and fixed service network evolves to be one convergence service network.
Scenario #1:
- User data moved to SHLR
- SS supports 3rd party emulation service logic
Scenario #2:
- Integrating mobile and fixed user data into one HLR
- SS supports 3rd party emulation service logic
- Interworking
Evolution to IMS (Stage 4 – starting from mobile network)

- Introducing IMS from mobile network side
- HLR Migrates to HSS (HSS will contain the fixed user data)
• SS software upgrading as modular IMS function entities

Evolution to IMS (Stage 5)

Parley/OSA
SCP
SIP AS
Converged Service Network

HSS
S/I-CSCF
MGCF
MSC Server
MGW
GGSN
P-CSCF

CS domain
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MGCF
/GMSC Server

PS domain

PSTN

TG/SG

AGCF

IAD

SIP Terminal

P-CSCF

HSS

S/I-CSCF

MGCF

I/S-CSCF

P-CSCF
Evolution to IMS (Stage 6)

Converged Service Network

Parley/OSA
SCP
SIP AS
HSS

S/I-CSCF
P-CSCF
MGCF
AGCF

MGW

MSC Server
MGW

MGCF
/GMSC Server

PSTN
CS/PSTN
/PLMN

IP Backbone

SGSN

PS domain

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Scenarios B
IMS is firstly introduced in fixed network

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

2G/3G Mobile Network

Fixed Network
Mobile service network and fixed service network evolves to be one convergence service network.
Scenario #1:
- SS shifts user data to SHLR
- SS supports 3rd party emulation service logic
Evolution to IMS (Stage 3-2)

Scenario #2:
- Integrating mobile and fixed user data into one HLR
- SS supports 3rd party emulation service logic
- Interworking
Evolution to IMS (Stage 4)

- Introducing IMS from fixed network side
- HLR evolves to HSS
- Interworking
Evolution to IMS (Stage 5)

- Target Network

Parley/OSA

Converged Service Network

SCP

SIP AS

HSS

MGCF

S/I-CSCF

P-CSCF

MGW

IP Backbone

CS/PSTN/PLMN

SGSN

SIP Terminal

PS domain

MGW

MGW
Conclusions On IMS

• Migration path may be different for specific carrier
• For fixed carriers, at present it is more practical to migrate via Softswitch than jumping directly to IMS
• For mobile carriers, IMS is introduced to provide complementary services
• For full service provider, the convergence is the major consideration when IMS is introduced.
• ZTE is capable to provide solutions for different migration cases
• ZTE provides smooth migration path to meet different networking requirement
Step 0: move!

Poor Coverage?

Poor CRM?

Poor CC&Billing System?

More BTS, Full-IP, NGN, Softswitch…
In 1997, Listed in Shenzhen Stock Exchange Market; In 2004, Listed in Hong Kong Stock Exchange Market

Voted as one of Top Three Listed Companies among more than 1000 listed companies in China Stock Market in year 2001, 2002, 2003

Voted as the Best-Value company in China by CCTV, 2004

ZTE Shares Structure

- Unlisted shares 62.28%
- Listed shares 37.72%

Who’s ZTE
Rapid and Steady Growth

Total Assets (Million USD)

- 1997: 168
- 1998: 505
- 1999: 482
- 2000: 1159
- 2001: 1692
- 2002: 2010
- 2003: 3035
- 2004: 4111

Contracted Revenue

- 2000: 1159
- 2002: 2010
- 2004: 4111
- Over 25,000 employees in 70+ countries
- 70% with bachelor’s degree and above, 8500 masters and 400 PhDs
What do we offer

**Strategy**
- Business Modeling for NGN
- Assessment of evolving technologies

**Network Design**
- Migration to NGN Architecture
- IP Based Multi-Service networks
- Network QoS
- Support on Rollout

**Operations Support**
- Project Management
- QoS Management
- Colocation support
- Billing related Services

**Network Innovations**
- VPN /Convergence solutions
- Development of new services
- Network Optimalisation
- Smart Wholesale and Interconnect

**Commercial Service**
- Business Planning
- Marketing of New services
- State of the Art CRM Solutions for NGN Operators
Thank You!

li.shiwei@zte.com.cn