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Development Scenario of SoftSwitch Standards in China and China Telecom's Considerations on Network Evolution

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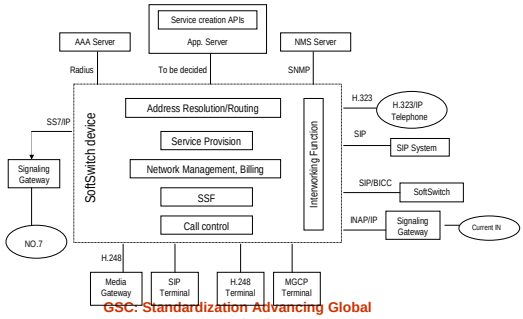
Outline

- SoftSwitch Standards Development in CCSA
- China Telecom's Considerations on Network Evolution

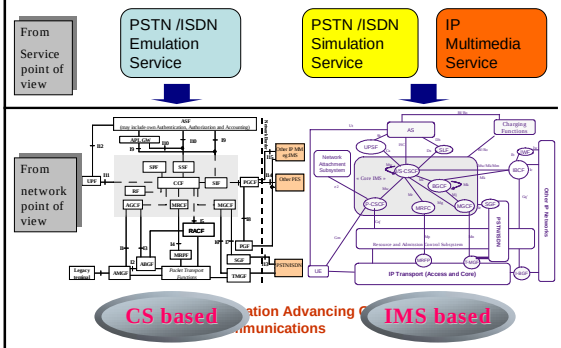
Development of SoftSwitch Industrial Standards

- CCSA started to develop specifications and standards related to softswitch network in 2001, which include:
  - Network equipment specifications and relevant testing specifications
  - Network protocol specifications and relevant testing specifications
  - Softswitch-based interface specifications and relevant testing specifications
  - Access equipment and terminals specifications and relevant testing specifications
  - Softswitch-based access management specifications and relevant testing specifications
  - Service architecture/API/service classification and general requirements
- CCSA has published 59 series of softswitch specificati

SoftSwitch Functional Architecture



Delivery of NGN Services



CCSA's Contribution to International Standards

- **China submitted a total of 270 NGN-related contributions to ITU-T SG11/13/19/FG from 2005 to February 2006.**
- **The contributions cover a wide range of areas including service requirement, architecture, security, QoS, future bearer network, network evolution, signalling, FMC,and user database.**
- **The quality of contributions is improving. 19 draft recommendations on international standards were developed based upon China's proposals. Breakthroughs were made in the following areas:**
  - Call server-based PSTN/ISDN Emulation: architecture and network delivery.
  - Resources control, including signalling requirement and relevant requirements
  - FMC: requirement and delivery

Future Plan

- SHLR-Network Intelligence
- FMC
- IMS based network requirements
- Service Requirements

Outline

SoftSwitch Standards Development in CCSA

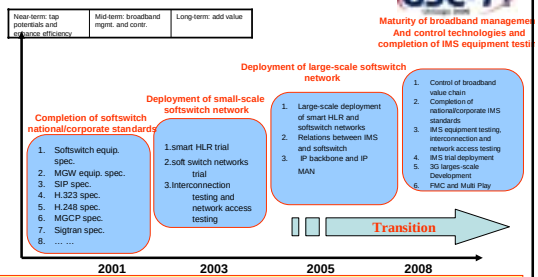
- China Telecom's Considerations on Network Evolution

China Telecom Status (by 2006.2)

- PSTN subscribers 154.5M
- PHS subscribers 58.52M

  Total: 213 M
- Broadband subscribers 22.43M

NGN Focuses at Different Stages



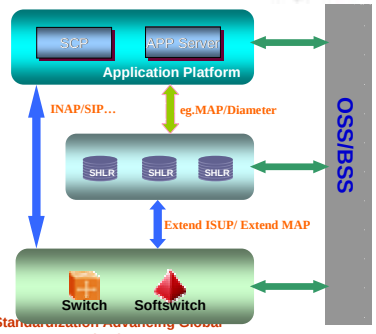
NGN focuses of China's fixed operators:

- **Near-term: enhance effectiveness and increase cash flow through network intelligence (smat HLR)**
- **Mid-term: improve the manageability and operability of broadband networks and create a rational broadband value chain to facilitate the transformation**
- **Long-term: add values (multiplay and FMC) based upon an integrated, manageable and operable broadband network.**

Smart HLR Introduced to Fixed Network

Smart HLR system components：

- Core: SHLR
- Switch,Softswitch
- Application platform
- BSS/OSS

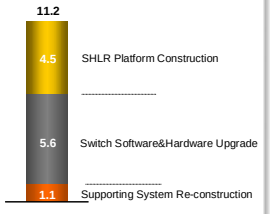


Case of SHLR

Trial and Operation in Fujian Subsidiary

Investment

RMB/User*



Note: * Users based on total local subs as of 2004

Oct. 2003 Initial trial in Quanzhou Branch
Oct. 2004 Commercial operation in Quanzhou Branch
Jan. 2005 Full upgrade in Fujian Subsidiary

New Services Provided

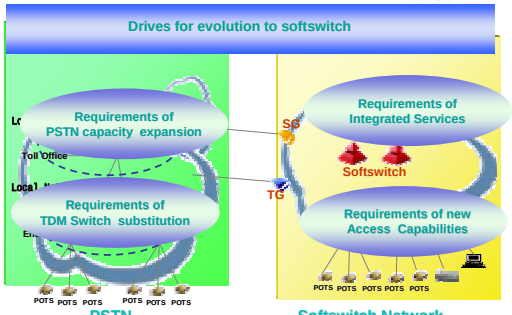
Number Portability
Simultaneous ring
Fixed-phone personal ring tone
One number
… …

• Outcome as of Sept. 2005

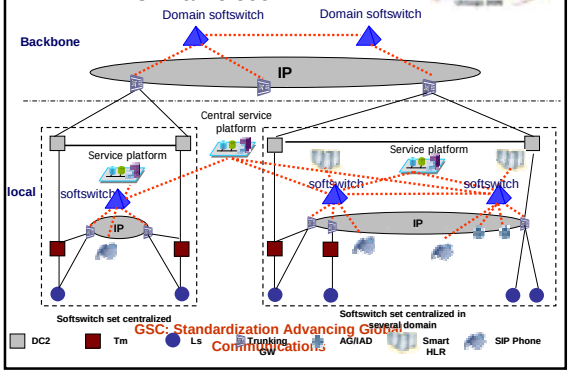
Over 470 thousand users, accounting for around 4% of total local subscribers

More than RMB 32 million revenue

China Telecom's SoftSwitch Strategy



SoftSwitch Network Structure of China Telecom



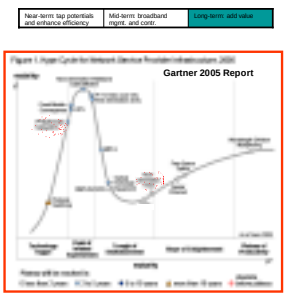
Trial Commercial Services of China Telecom

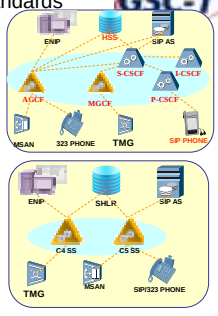
Service name	Main function description
Video Communication	Point-to-point video communication for broadband subscribers
IP Centrex	Short-number service within broadband group subscribers
UPT Personal Tone	Fixed-line, PHS and mobile numbers are bound through UPT. UPT and Personal Tone can be bound or provided separately.
Web800	'PC-to-Phone' 800 service
UC (Unified Communications)	Combines enterprise office system with telecom capabilities. Provides service features such as address book, point-to-point video, instant message, click-to-conference, etc.

China Telecom's NGN Practice

- July 2001: Launched NGN softswitch trial project
- July 2002 ~ Jan. 2003: Conducted Phase 1 field trial and evaluated more than 2, 600 test items in 4 cities with products from 5 vendors
- Apr.2003 ~ Dec.2003: Conducted Phase 2 field service tests, including API test, interoperability test, service experiment, trial running, etc.
- 2004: Put NGN softswitch in trial commercial deployment in Guangdong, IPTV testing and commercial trial in 5 Province,
- 2005: Put NGN softswitch into commercial operation on long distance networks and north China, deploy smart HLR in fixed network, IP network "CN2" deployment
- 2006 ~ : focus on IMS solution for fixed operator and FMC

Future Core Control Network: Substantive Progress Made for IMS Standards





- According to Gartner, IMS will become mature in 2 to 5 years.
- IMS is a better core network architecture for multimedia broadband users and softswitch is a mature control core of voice networks.

NGN Is a Controllable Architecture

- **Telecom operators is seeking for solutions that can control IP networks.**
- **Providing operations with capabilities to control and manage IP-based networks and services**
- **Network convergence capabilities - IMS**
- **Flexible extension and combination in the service plane**
- **Access control, ID and management in the user access plane – NASS and RACE**

IMS Is the Future Platform of Convergence

- **Adoption of SIP signaling as call control, enhanced service control capability.**
- **Better openness and higher degree of standardization**
- **IMS is the future network architecture, which can improve the controllability and manageability of IP stream. IMS architecture is design for service control and convergence.**
- **Wireless and wire line access have a single core network, a centralized user database in the network layer, an integrated billing system and service development platform, a unified services authentication architecture and automatic roaming abilities through nationwide network.**

Technical Highlights of CN2

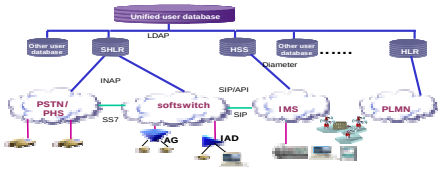
- Multi-services bearing capability
- IPv6-supported hardware platform
- MPLS-based new technologies: Traffic Engineering, FRR
- State-of-the-art in terms of network scale and equipments: 10G port capacity, 640G switching fabric
- Hierarchical QoS
- Multi-vendor network

Considerations on IP MAN

- **Identify levels, enhance functions, standardize equipment and focus upon performance**
- **Clear Network levels. The separation of layer 2 and layer 3, construction of a clear 3-layered routing network (backbone metropolitan area network) and a 2-layered access network (broadband access network).**
- **Flat network structure. Reducing the physical and logic cascade progression of IP MAN through backbone MAN having large capacity and a small number of nodes and broadband access network having wide coverage.**
- **Differentiation of network quality. Differentiate service mechanisms through IP MAN and provide differentiated services of varied QoS for different services and users.**
- **Concentration of management and control. Construct a clear service access control layer to have a centralized management and control of services BRASs and SRs.**
- **Standardization of equipment requirements. The functions and performance of new equipment must be able to meet the management requirements of the MAN.**

Unified User Database

- **Unified user database is a logic entity, It realizes centralized storage and usage of user data based upon user databases of service networks.**
- **Logic centralization. Data can be stored and used in a centralized way through the introduction of a logic data layer and distributed database technology. All networks have to go through the access gateways to access the integrated user database.**



Need further study

THANK YOU

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