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

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GSC: Standardization Advancing Global Communications

Development of SoftSwitch

Industrial Standards

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

Outline

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

SoftSwitch Functional Architecture

Deliver 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

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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

Smart HLR Introduced to Fixed Network

Case of SHLR Trial and Operation in Fujian Subsidiary
China Telecom’s SoftSwitch Strategy

- Drives for evolution to softswitch
- Requirements of PSTN capacity expansion
- Requirements of PSTN switch substitution
- Requirements of Integrated Services
- Requirements of new Access Capabilities

Future Core Control Network: Substantive Progress Made for IMS Standards

- 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

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

SoftSwitch Network Structure of China Telecom

- Backbone
- Domain softswitch
- Service platform
- Service platform
- Service platform

Trial Commercial Services of China Telecom

<table>
<thead>
<tr>
<th>Service name</th>
<th>Main function description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Video Communication</td>
<td>Point-to-point video communication for broadband subscribers</td>
</tr>
<tr>
<td>IP Centrex</td>
<td>Short-number service within broadband group subscribers</td>
</tr>
<tr>
<td>UPT</td>
<td>Fixed-line, PHS and mobile numbers are bound through UPT. UPT and Personal Tone can be bound or provided separately.</td>
</tr>
<tr>
<td>Web000</td>
<td>PC-to-Phone’ 800 service</td>
</tr>
<tr>
<td>UC (Unified Communication)</td>
<td>Combines enterprise office system with telecom capabilities. Provides service features such as address book, point-to-point video, instant messaging, click-to-conference, etc.</td>
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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 value creation.
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 designed 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.
- 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.

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THANK YOU