Telecom Service Delivery Platforms in Next Generation Networks

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Outline

- Telecom SDP
- ITU-T NGN SDP developments
- Current status and evolution paths (SDPaaS)
An open service environment for the Telecom Infrastructure

- Reusable Telecom capabilities for reduced service development costs
  - Applying the development approach from IT industry to telecoms
- Open service environment for flexible and agile service creation, execution, management and deployment
  - “Rapid change” is key for satisfying the changing customer needs
  - New business opportunities via an environment integrating applications and telecom infrastructure

Telecom “Service Delivery Platform” (SDP)
A Telecom SDP for competing with Web Companies

**Telecom Providers and Web reality**

- Web apps: many, diverse, rich, high speed dev.
- « Web » is the platform of Web companies
- Telecom providers face the risk to become only ‘bit pipe’ providers (Over The TOP services)

**New services are a strategic differentiator for Telecom Providers and a way to counter lower voice revenues**

**Legacy service delivery: inefficient, expensive**

**Telecom SDP as a new framework for service deployment**

- Multi-party business model
- Multi service
- Web orientation, mashups
Increased business opportunities in a SDP ecosystem

- Personalisation
- On-Demand
- Self-Service
- Collaboration

End user created applications

3rd Party applications

NP/SP services

Common Telecom capabilities
SDP for convergent services (service examples)

Telecom Services
- MMS
- mNews
- UC
- IPTV

Internet/Mobile Internet
- diary
- blog
- video surf
- mBook
- map

Machine to Machine (M2M) Applications
- eHealth
- eTraffic
- agriculture monitoring
- City emergency
- Smart Grid

SDP for convergent services
- Telecom adaptors
- Internet/Web App adaptors
- M2M App adaptors
Position of SDP in Telecom Infrastructure

Applications
- Streaming
- Download
- Video Mail
- Location
- E-business
- Multimedia Messaging
- Mobile Payment

Service Delivery Platform

Enablers
- LCS
- Content Download
- WAP Gateway
- MMSC
- SMSC
- Streaming Server
- DRM

Underlying networks
- CDMA2000
- WCDMA
- Cable
- Fixed Broadband
- GPRS
- GSM
- PSTN
NGN SDP (NGN-SIDE)

ITU-T draft Rec. Y. NGN-SIDE-Req (Q.3/13)

Requirements for NGN Service Integration and Delivery Environment

- NGN-SIDE ecosystem
  - Business roles
- Functional overview
  - Layers and functional positioning within the NGN architecture
- General requirements
- NGN-SIDE capabilities
  - Description and requirements for each capability
- NGN-SIDE interface requirements
  - For Resource Interfaces, for Service Interfaces (UNI, NNI, ANI, SNI)
  - No reqts among different NGN-SIDE components
- Appendixes
  - Application scenarios (3rd party app., in-house app., M2M app.)
  - Survey of API standardisation (no survey of overall SDP activities)
  - Cloud computing service models and NGN-SIDE
  - Business deployment scenarios in the NGN-SIDE ecosystem
NGN-SIDE eco-system

NGN-SIDE aims to support a multi-fold business model and a comprehensive ecosystem for all stakeholders in the NGN value chain.

NGN-SIDE provides an open environment in NGN, with integration of resources from different domains, including Telecom domain (e.g. Fixed and Mobile Networks), Internet domain, Broadcasting domain, Content Provider domain.
NGN-SIDE business deployment scenarios

**NGN-SIDE users**

- Application provider
- 3rd Party Application Developer
- Application provider
- 3rd Party Application Provider
- Application provider (In-House)
- Resource Provider (NGN capabilities)

**NGN Provider**

- Content provider
- Content Provider
- Service enabler provider
- 3rd Party Resource Provider
- Application provider
- 3rd Party Resource Provider

**NGN-SIDE Resource providers**

**Actors**

**Business roles**

In this example scenario the NGN provider acts as NGN SDP provider.
Main functionalities of NGN-SIDE

- **Integration of resources from different domains** over NGN (e.g. telecom domain (fixed and mobile networks), broadcast domain, internet domain, content provider domain etc.)
- **Adaptation, including abstraction and virtualization, of resources** from different domains
- **Resource brokering for mediation** among applications and resources
- **Application development environment** for application developers
- **Different service interfaces across ANI, UNI, SNI and NNI for exposure** of NGN-SIDE capabilities and access to resources in different domains
- **Mechanisms for support of diverse applications**, including cloud, machine to machine, and ubiquitous sensor network applications
- **Mechanisms for support of context-aware services**
- **Mechanisms for content management**
NGN-SIDE functional framework – current ITU-T draft
NGN-SIDE within the NGN architecture (Y.2012)
Telecom SDP standardization

Various SDOs/Forums/Consortia involved in the ongoing process
- Framework perspective
  - ITU-T: SG13 (NGN/Future Networks), SG16 (IPTV)
  - OMA: OMA Service (Provider) Environment, enablers, APIs
  - IEEE: NGSON (Next Generation Service Overlay Network)
  - ATIS: Service Oriented Networks (SON)
- Management perspective: TMF Service Delivery Framework
- IMS focus: 3GPP
- Others (Wholesale Application Community etc.)

Some challenges of the standardization process
- Process coordination among relevant SDOs
- A minimum set of standardized APIs to be adopted by each SDP
- Interoperability among different SDP implementations
Telecom SDPs today and Web (platform) attributes

Current Telecom SDPs status
- Emphasis on “control and management” - SDP (and IMS) are centralized environments
- Services are geographically-bound (with service interoperability issues between Telecom Providers)
- Function-centric service architectures
- Not so open
  - Proprietary control mechanisms, SDK, market is restricted
- Existence of multiple domain-specific SDPs (for mobile, IPTV, legacy and broadband services, Machine-to-Machine applications etc.)

The good attributes of Overlay SDPs (Web 2.0 platform)
- A single and distributed environment
- Services are global, always available
- Data-centric service architectures
- Open APIs for 3rd parties and social features
Some interesting evolution paths for an enhanced value Telecom SDP

- SOA and open APIs pave the way to open and decentralized (distributed) SDPs
- All services on demand: a Cloud-based SDP
- SDP offered as a Service of the Cloud (SDPaaS)
- Modular SDP architecture with common general purpose functional modules and device/service-specific functional modules
- Data enhanced SDP (e.g. via data mining capabilities)
- Interconnection/federation of SDPs for geographical pervasiveness
- Others (SDP as a Broker)
Cloud based service models

ITU-T FG Cloud definition proposals

► **Cloud Services**: products and solutions delivered and consumed on demand (utilizing IT Resources and capabilities of Platform) at any time, through any access network and using any connected devices

► **Cloud Computing**: an emerging IT development, deployment and delivery model, enabling on-demand delivery of products, services and solutions over any network and for any devices

**Software as a Service (SaaS)**
- Offers software applications as IP-based services
  - ✔ Lower CAPEX
  - ✔ Configurable
  - ✔ Multi-Tenant
  - ✔ Elasticity

**Platform as a Service (PaaS)**
- Offers service delivery platform as IP-based services
  - ✔ Enablers opened as APIs
  - ✔ Mash-up
  - ✔ SDK, Testing Environment
  - ✔ Managed Operations
  - ✔ Developer community

**Infrastructure as a Service (IaaS)**
- Offers storage, computing, connectivity as IP-based services
  - Massive, efficient, cheap way to offer infrastructure via hardware resource abstraction
Cloud Ecosystem (ITU-T FG Cloud)
SDPaaS functional overview
(extract from ITU-T FG Cloud Ecosystem draft)
Evolution from SDP to SDPaaS

- Decouple the functions of each subsystem of a SDP
- Distribute the construction and deployment of each SDP subsystem
- Make the services of each SDP subsystem into a resource pool
- Implement the essential distributed Services and cloud management

SDP as a Cloud service

- Web offers today include service marketplaces and SDP in the cloud (developer support, SDP capabilities as a service, API-based mashups)
- **Key requirements of Telecom SDP in the cloud**
  - platform exposure in the cloud
  - developer support and governance with respect to 3rd parties
  - service discovery and agile service composition and provision
ZTE SDP product achievements

Around the world more than 50 sites, serving 100,000,000 subscribers

- SFR France
- Telenor Montenegro
- China (China Unicom, China Telecom)
- Argentina Telecom
- Etisalat Egypt
- ETC Ethiopia
- Smart Indonesia
The biggest SDP - China Unicom Guangdong Branch

- The largest SDP platform in China with 35 M users, 1000 CP/SP, 2000 active applications, 41 M subscription data, 174 M $ revenue per year.
- The most complex SDP project with integration with a lot of service engines and systems (see table)
- Fast engineering deployment in 4 months
- Attentive customized service helps quick service deployment
- Statistical analysis & report system helps operator master service operations status in real-time

<table>
<thead>
<tr>
<th>System</th>
<th>Protocol</th>
<th>Vendor Name</th>
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<tbody>
<tr>
<td>SMSC</td>
<td>SMPP</td>
<td>ZTE</td>
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<tr>
<td>MMSC</td>
<td>MM7</td>
<td>Comverse, Huawei</td>
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<tr>
<td>WAP GW</td>
<td>PAP</td>
<td>Huawei</td>
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<tr>
<td>LBS</td>
<td>Le/LIF</td>
<td>Moto</td>
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<tr>
<td>SMS Gateway</td>
<td>ISMAP</td>
<td>ZTE</td>
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<tr>
<td>SMS PUSH Platform</td>
<td>SGIP</td>
<td>ZTE</td>
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<tr>
<td>OTA</td>
<td>ISMAP</td>
<td>Jingpeng</td>
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<td>SMPP+</td>
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<td>CAP</td>
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<td>GGSN</td>
<td>Diameter</td>
<td>Nokia-Siemens</td>
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Statistical analysis & report system helps operator master service operations status in real-time.
ZTE SDP in Etisalat Egypt (ready for launch)

- ZTE SDP is helping Etisalat Egypt to deliver service applications like business advertisement and promotion information message by SMS, MMS, WAP PUSH, USSD and VSMS (1000 TPS as target).
**ZTE SDP roadmap**

- **SDP1.0**
  - VAS platform solution with open telecom enablers and integrated management platform

- **SDP2.0**
  - Phase 1
    - SOA framework with W/S encapsulation and exposure for convergent networks
  - Phase 2
    - Telecom and IT enablers; Service Orchestraton; REST interfaces

- **SDP3.0**
  - Distributed deployments; Cloud services; SDPaaS
  - [Coupled with ZTE developments in Cloud technology]

*today*
ZTE Convergent Service Network (CSN) platform

Application Layer
- AE (Application & Application Engine)
- CSN Node
- CSN Node
- CSN Node
- CSN Node
- CSN Node

Control Layer
- CSN Node

Service Layer
- SE (Service Enablers)
- BE (Business Enablers)
- IMS
- NonIMS
- Web/P2P
- CDN
- IPTV

Underlying networks
- Access Network
- Access Network
- Access Network
Thank you for your attention