NGSON Architecture and Service Oriented Networking

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Purpose: Proposal
Agenda

- Key Motivations and Strategy
- Evolution Steps
- NGSON and standards
- Evolution with NGSON
- Proposal
Mobile Internet is challenging operators profitability and they need to think about transforming their networks and business model in the next 3 years (Developing country operators need to take important decision by Q3 2014. Business cannot be sustained by simply increasing the capacity or “dumb pipes”) – TellLabs Study.
Strategy

IP based SERVICE INFRASTRUCTURE
(User Centric Service Ecosystem)

Operators control the whole value chain

Vendors implement the strategy into the Infrastructure with standards compliance

- Secure access & operations
- Exploit virtualization
- Increase service innovation
- Heterogeneous service types
- Fast service blending
- Emerging terminal platforms
- Enable competitive Business models
- E2E loose coupling
- Convergence of services
- E2E QoS
- Information Service source
- Huge App market
- Lower OPEX
- Inter-operable service systems
- Exploit underlay

User/Terminal

Applications

STORES

3rd Party Services

Service Platforms
1st Step: Dumb Pipes to Smart Pipes

**Smart Terminals**

**Wireless Internet App**

**Smart Pipe**

**IP bearer**

**Strengths:**
- Fine grained control over the pipe.
- User/Terminal personalized experience.
- Value shift from Network to Services.
- User ID and AAA
- Billing, Customer Care, Brand

**Challenges:**
- An adaptive service architecture for information service
- Capable of handling User 2.0
- Multi-industry integration

The Smart Pipe concept helps the operator enhance not only the strength of connectivity, but also the integration of service enablers, terminals and the mobile Internet feature.
Next Step: Service Ecosystem

- Develop a Service Infrastructure to support converged services and applications, including both fixed and mobile (3G and LTE) access, and both internet and operator-based services.
  - Easy to use services to support smooth integration of mobile WEB, IMS, traditional and multi-source applications (*Dynamic Adaptation*)
  - Better support for coordination of user preference and context (*Context Awareness*)
  - Support Self-provisioning functions for decrease OPEX (*Self Organization*)

- This Service Infrastructure can be best deployed with enhanced underlying network support.

- Service Router based NGSON delivers:
  - Multi-Industry Service Interaction
  - Enhanced service delivery and user experience
  - Self-organization capabilities for the service layer
  - Provides better E2E service value chain management
NGSON enables Service Ecosystem

Unified Service Dir for BSS system and Service system, description, registration, discovery, support

Engine based service combination system support mashup/blending of bss and service

Service network level user ID Broker and manager

Meet with intelligent service/application interaction management, support distribution of data and files, support data and service migration and distribution,

Context to make service more dynamic and customized.
NGSON Requirements

NGSON RD

Common
- Addressing
- Interaction
- Interworking
- Cross-layer
- ID Management
- QoS
- Security
- Service framework to 3rd party providers
- Infrastructure virtualization
- Global ID

Service
- Service routing
- Service registration
- Service Discovery and Publication
- Negotiation
- Service Composition
- Charging
- Seamless Mobility
- Context Awareness
- Service related Self Organization
- Brokering
- Service Co-ordination
- Service Collaboration
- Virtualization
- Messaging for O&M through Service Routing
- Service related P2P Overlay
- Service replication
- Community based services

Delivery
- Network Routing
- Transport Related Functions
- Self Organization Adaptiveness
- Identity
- Resource Virtualization
- Network Composition
- Resource Scheduling
- Network Traffic Optimization
- Transport related P2P Overlay

O&M
- Manageability
- FCAPS
- Lifecycle management
- Service arrangements and provisioning between providers

GE-2010xxxx
GISIF#06, 27th to 29th Sep’11
IEEE NGSON Standards

Application and services

NGSON
[Context-aware, dynamically adaptive and self organizing networking capabilities]

Underlying Networks

Study Group

Sponsored by IEEE ComSoc, CaG
June’07 to May’08
1) IEEE NesCom, SASB Approval
2) PAR Approved.

1) 1st WG Meeting – May’08, China
2) 2nd WG Meeting – Sep’08, Korea
3) 3rd WG Meeting – Dec’08, USA
4) 4th WG Meeting – Mar’09, China
5) 5th WG Meeting – May’09, Swiss (Joint Workshop with ITU-T)
6) 6th WG Meeting – Aug’09, Korea
7) 7th WG Meeting – Dec’09, China
8) 8th WG Meeting – Mar’10, USA
9) 9th WG Meeting - Jun’10, China
10) 10th WG Meeting – Sep’10, Korea
11) 11th WG Meeting – Dec’10, USA
12) 12th WG Meeting – Mar’11, China
13) 13th WG Meeting – Jun’11, Korea

Working Group

Ballot Voted by:
CMCC, KT, KDDI, Telcordia, ETRI, RITT, NICT, Boeing, Fujitsu, Broadcom, Huawei.

IEEE P1903™/D1 Draft White Paper for Next Generation Service Overlay Network

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Evolution: SDP + NGSON

- Distributed and Inter-operable SDPs.
- Reduce Time to Market by enabling fast application creation.

APP Market
  - application convergence and Store framework
  - application convergence and creation environment

SDP Media
  - Management Framework
    - FMC and service convergence
    - Media service convergence
    - Centralized management and Charging

APP Client Framework
  - Integration and open service capability

SDP Openness
  - Basic Service Capability
    - SMS
    - MMS
    - WAP
    - …

Mobile Media Service
  - RBT
  - DLS
  - Streaming
  - …
IMS and NGSON can interact at Application Domain (SIP App Server).
NGSON can enable enhanced service interaction using the IMS functions.
Evolution: LTE/EPC + NGSON

- 3GPP EPC has completed the wireless broadband access. NGSON could help to construct an application layer infrastructure to satisfy mobile internet.
Evolution: Cloud + NGSON

**SaaS: Software as a Service**
NGSON can offer the standard mashup/applications over the cloud by providing properties of multi-tenancy.

**PaaS: Platform as a Service**
NGSON itself can be considered as the service platform cloud, through which mashups/application can be carved out and deployed dynamically.

**IaaS: Infrastructure as a Service**
NGSON can benefit by elastically scaling on Hardware/Software resources for Mashup/Application deployment.
NGSON can run TASKS related to personalization utilizing the compute power of the Cloud.
NGSON can centrally had large user information and analytics for operation optimization, marketing and promotion utilizing the Cloud based Data Center.

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Proposal

• NGSON architecture caters to some challenges addressed in SeON WG
  – Context Aware and Self Organizing Network
  – Service Creation Environment
  – Telecom Service Virtualization
  – E2E QoS handling
  – Blending new business models

• Possible inclusion of NGSON as a potential architecture in SeON framework.

• Liaison with IEEE P1903 (NGSON) WG
  – Develop co-operation framework.
  – Collaboration in working methods.
  – Co-ordination of necessary standards development.
References

- NGSON web site: http://grouper.ieee.org/groups/ngson/index.html
- NGSON PAR - http://grouper.ieee.org/groups/ngson/P1903_0001_r0_PAR.pdf
- IAMAI: http://www.iamai.in/
THANK YOU!