Next Generation of Multimedia Services in Context of Future Networks

Eugen Mikoczy
T-Com, Slovak Telekom, a.s.
eugen.mikoczy@t-com.sk

ETSI Future Network Technologies Workshop
10/03/2010
ETSI HQ, Sophia Antipolis, France

Content

- NGN vs. NGI vs. FN – architecture & service aspects
- Operator view – NGN evolution towards FN
- NG MM services in FN and future media discussion
- Standardization effort – future media ecosystems
- ST related projects
- Conclusion
Next Generation of Multimedia Services in Context of Future Networks

The Technology trends – NGx – really new concept?

The following picture has been in place several years …

…Which services could not be provided by NGN?

Looking for service evolution with NGN?

Future NGx Services?

- Service & Network Control (QoS, Security, IP Mobility)
- Network Virtualization
- Beyond IP Backbone
- NGA, NGHomeNet, FMC

Access Transport & Switching Networks

Too costly, per-service network architecture

Single/simple/cost-effective network infrastructure for existing & new services

Legacy PSTN

Softswitch based NGN

IMS based NGN

Future Networks

<table>
<thead>
<tr>
<th>Voice only</th>
<th>Voice oriented</th>
<th>Multimedia enabled</th>
<th>Rich personalized multimedia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switching and control within exchange</td>
<td>Separation call control and media</td>
<td>Distribution and decomposition of functions</td>
<td>??? Client, network/servers support functions, virtualization</td>
</tr>
<tr>
<td>Telephony, IN services</td>
<td>Enhanced Voice services</td>
<td>Multimedia services, Shared enablers</td>
<td>Fully Converged services</td>
</tr>
<tr>
<td>Phone world, Internet world (POTS/POIS)</td>
<td>Separate networks, interworking possible</td>
<td>Multiple access, Common IP core, Mobile Domain</td>
<td>Future converged, packet based (B2IP)</td>
</tr>
</tbody>
</table>

Telco designer view: network evolution with NGN

- Goal: Understand the role of NGN in FN and NGI discussion, could Goal: Understand the role of NGN in FN and NGI discussion, could

- Source: most famous slide about vertical vs. horizontal approach mentioned almost on all Telco conferences ∈ ETSI Future Networks Technologies WS 10th March 2010 | 3

ETSI Future Networks Technologies, Sophia Antipolis, France 10/03/2010
Challenges for “clean slate” Internet - NGI

Addressing and identity
Security and privacy
Resistance to DDoS attacks
End-to-end QoS/QoE
Mobility
Reliability

What is needed to be discussed:
Backward compatibility?
Cost/ROI effectiveness?
Service independence?
Technology independence?
Scalability? Simplicity?
Changing protocol stack? Layers? HW?

NGN requirements??
Do we want NGNanize Internet? Pros/Cons.

Operator vision – Evolution of NGN towards FN

Reused and extend existing NGN capabilities and services:
- follow the real user demand for new services -> define new service requirements
- independence of the service and transport, extend a mechanism for NG access/transport (e.g. FTTx)
- allow smooth and flexible service and platform evolution with new technologies
- improve scalability, reliability, robustness, security and privacy
- generalized mobility, openness, interoperability and interconnectivity
- extend E2E QoS mechanism for new content services
- utilize service creation flexibility and service orchestration

New aspect have to be covered on FN:
- virtualization (can be achieved already now, depending on operator deployment)
- content centric services, content aware networks (improve multimedia services/capabilities, content selection, delivery& distribution, 3D&VR)
- social media, support of selected socio-economic aspects and energy awareness
NGN vs. NGI vs. FN – service aspects

- PSTN/ISDN simulation/emulation, legacy telephony
- Multimedia Telephony
- Rich communication (presence, messaging, phonebook, sharing,...)
- New content services like Next Generation of IPTV services
- Business services (enterprises solutions)
- Regulatory services
- Smart home services
- Hybrid services

What are services missing in the portfolio of NGN? Internet services?
Differentiate the services over managed and unmanaged networks?
User/Content centric services, future media?
Personalization/Interactivity/Accessibility/Targeting/Profiling?

NGx MM services in FN and future media

- Rich set of multimedia services accessibility from anywhere, anytime
- User friendly interface and multi-device/screen support
- Service personalization on user/group/community level
- Any to any interaction & communication (U2U, U2S, S2U, UinC)
- Advance search (SD&S) and user/service/content/context metadata
- Support for QoS and QoE, adaptive service/media delivery
- Interconnections/mobility, advanced content delivery networks
- New media and scalable formats (for HD, 3D, VR)
- Non-linear service behavior, combinational services, hybrid scenarios
- Security, privacy and trust
- “Reusable capabilities” concept to minimize complexity of systems
- Openness, flexibility, reliability
Next Generation of Multimedia Services in Context of Future Networks

Eugen Mikoczy, Slovak Telekom

ETSI role in Media Delivery ecosystem

ETSI in the Media Delivery ecosystem

NGN based IPTV in ETSI TISPAN

- Linear/ Broadcast TV
- Linear/ Broadcast TV with Trick Play
- Time Shifted TV
- Content on Demand
- Push CoD
- Near COD
- Network PVR
- Client PVR
- Audio
- Pay-Per-View
- Interactive TV
- Service discovery
- Service Information (EPG)
- Parental Control
- User Profiling & personalization
- Communications and Messaging
- Notifications
- IPTV Presence
- Interaction between users
- Interaction with NGN services
- Advertising
- Targeted Advertising
- User Generated Content
- Internationalization
- Content recommendation
- Games
- Picture
- Bookmarks (Content Marking)
- Personalized channel
- Personalized Service Composition
- Service Portability
- Service Continuation between IPTV UEs
- Service Continuation fixed-mobile
- Remote Control of IPTV services
- Emergency Information
- Interaction with 3rd Party application (e.g. Parlay)
- Interaction with Internet Services
- Service synchronization
- Incoming call management
Next Generation IPTV - NGN based IPTV evolution
Enhancing user experiences with NGN based IPTV

- Most of the end user usually really don’t care over which technology we provide them the service, what they care:
  - Price
  - Quality of service & reliability, support
  - Quality & Quantity of Content (TV channel portfolio, VoD assets, HD)
  - Usability (friendly UI) & feature and services

- The main goal of NGN based IPTV is standard based SP solution & UE, integration with transport network, unified infrastructure for all services (NGN & IPTV)

- NGN based IPTV will change user experience – via quality, personalization, new services, mobility, user interactions, targeted services (Ad), multi-devices

- NGN IPTV will provide new kind of services like integration with communication services, user generated content, content personalization, recommendation, personalized channels, FMC continuation, etc.
ETSI TISPAN future topics – Beyond Release 3

**TISPAN R4:**
1) Evolution of NGN in context of Future Networks
2) Next Generation Access and required support of NGN
3) Future home networks (smart homes services...)
4) NGN interconnection and support of mobility and QoS cross converged networks (FMC)
5) Evolution of NGN based IPTV (see IPTV topics)

**IPTV topics R4:**
1) New IPTV services (e.g. enhanced R3 services, social media/communities, TV commerce, new media, hybrid scenarios, multi-screen approach, public interest services, fully personalized IPTV...)
2) IPTV security (S&G Protection, content mobility)
3) Hybrid IPTV models (partial delivery of TISPAN IPTV services over "non-TISPAN" networks e.g. DVB-H/T/S/C/SH, OMA BCAST, 3GPP MBMS/PSS, DOCSIS3.0, unmanaged networks)
4) Integration of CDN, P2P
5) IPTV interconnection (roaming, interconnection with MCD)
6) IPTV management (content distribution management, interconnection aspects)
7) Home network support for managed/unmanaged models, convergence of end devices (converged CN/G for IMS/non-IMS IPTV)
8) Converged NGN based IPTV
9) Adaptation of NGN based IPTV for Future Networks expectation
10) Migration scenarios, guidance for migration towards NGN based IPTV

Source: TISPAN, 226TD113_Discussion_on_Future_Topics

---

**NGNlab – NGN/IMS application development platform with virtualization, open source, testbed interconnections**

- Logically separated HW machine
- Xen virtualization
- All components via NAT behind proxy
- Different VLANs
- VPN client on proxy connects to external testbed (e.g. Leipzig GW)
- Focus on Converged services and service development for NGN
- Students, R&D projects

---

ETS Future Networks Technologies, Sophia Antipolis, France 10/03/2010
OASE - Optical Access Seamless Evolution
FP 7 - ICT2009.1.1: The Network of the Future

Next Generation – Optical Access
NG-OA network architectures with the highest potential of enabling:

- ≥ 1 Gbit/s per customer
- ≥ 1000 customers per fibre feed
- ≥ 100 km transmission distance
- at economically competitive
- open market environment.

The aim of the OASE project is the assessment and development of next-generation optical access (NG-OA) network architectures and systems concepts for the “2020” time horizon, focused on European requirements. The OASE project will examine FTTH based on four multidisciplinary aspects which are: regulation, technical aspects, financial aspects and business models.
Conclusions & topics for discussion

- NGI is driven by clean slate (“revolutionary” approach) of Internet architecture/protocol re-design (Netco vision?) - (R&Ds, IETF?)
- Future Network is driven by network architecture evolution approach of NGN (Telco vision?) - (ITU-T, ETSI?)
- Check existing technology, protocols, architectures available today (e.g. TISPAN NGN R3). Be aware some targets for NGN/FN/FGI may be similar.
- Any NGx can benefit from both approaches and coexist, overlapping areas have to be analyzed (pros/cons and managed/unmanaged).
- We can first focus on real service/technical requirements of users and providers. Do not forget standardization role and technology life cycle:
  Requirements -> Architecture -> Protocol & Implementation Specs. -> Prototype/Test -> Deploy -> O&M -> Phase out
- How can ETSI/TISPAN evolve NGN beyond R3 to fulfill some of Future Networks and Future Multimedia Services requirements?

Thank You for Your Attention!
Any Questions???

Eugen Mikóczy
Senior Innovation Specialist
Design and Architecture of Applications
Slovak Telekom, a.s.
Postal address: Karazicova 10, 825 13 Bratislava, Slovakia
Phone: +421 2 5881 2286
E-mail: eugen.mikoczy@t-com.sk
Next Generation of Multimedia Services in Context of Future Networks

Eugen Mikoczy, Slovak Telekom

References

- Mikoczy, E., Kotuliak, I.: Future of NGN vs. Future Networks/Internet: evolution or revolution approach?
- Mikoczy, E., Kadlic, R., Podhradsky, P.: Concept for Mobility and Interconnections Aspects in Converged NGN-Based IPTV Architecture
  http://www.itu.int/ITU-T/focusgroups/fn/index.html
- ETSI TISPAN NGN R3 specifications – latest drafts
  http://docbox.etsi.org/TISPAN/Open/NGN_LATEST_DRAFTS/RELEASE3/
  http://docbox.etsi.org/TISPAN/Open/Information/NGN_Presentations/
- NGNlab at Slovak University of Technology, Bratislava, Slovakia, http://ngnlab.eu
- FP7 OASE project, http://www.ict-oase.eu/

ETSI TISPAN NGN R3 - IPTV related specifications

Source: ETSI/TISPAN