Identity Requirements in NGN: overview of ITU-T NGN GSI related work

Marco Carugi
ITU-T Q2/13 Rapporteur
Senior Advisor, Nortel Networks
marco.carugi@nortel.com

Outline

- Identity Management in ITU-T NGN GSI (SG13)
  - High-level requirements of NGN Release 1 (Q2/13)
  - Detailed work on Identity Management (Q15/13)

But overall, we are just at the beginning of NGN standardization in this domain !

Y.2201 "NGN Release 1 Requirements and Capabilities"

- Q2/13 Requirements and implementation scenarios for emerging NGN services

- Y.2201 Scope
  - **High level requirements & capabilities to support Rel.1 service objectives**

  NOTES:
  - Rel.1 addresses only NGN "network capabilities" (no user equipment)
  - Service-specific requirements are out of scope
  - Each NGN realisation may use an arbitrary set of services & capabilities

- The NGN Capabilities identified in Y.2201
  - Derived essentially from functionalities already developed in various technical bodies and considered ready for use in Rel.1 time frame
  - Described in terms of requirements (but these are not precise "Functional Requirements" for specific NGN entities)
  - Providing guidelines for the NGN architecture work so that the specified architecture FEs are able to support these capabilities and associated requirements

The NGN R1 capabilities identified in Y.2201

- Transport connectivity
- Communication modes
- Media resource management
- Codecs
- Access Networks and network attachment
- User networks
- Interconnection, Interoperability and Interworking
- Routing
- QoS
- Accounting and Charging
- Numbering, naming and addressing
- Identification, authentication and authorization
- Security
- Mobility management
- OAM
- Survivability
- Management
- Open Service Environment
- Profile management
- Policy management
- Service enablers
- PSTN/ISDN emulation and simulation
- Public Interest Services support
- Critical infrastructure protection
- Non disclosure of info across NNI
- Inter-provider exchange of user-related information

User Identities

- **NGN User Identity (NUI)**
  - Means for a NGN user to access telecommunication services at any terminal on the basis of a personal identifier and for a network/service provider to identify, authenticate and possibly authorize the NGN user
  - To enable network/service provider to provide those services delineated in user's profile
  - Means for others to refer to a user as a target for terminating services (e.g., voice calls), information queries, and other NGN services
  - The use and type of NUI may be tied to a specific set of NGN services
- **NGN user identifiable by one/two of following NUI types**
  - **public user identity**: information used by a NGN user to contact or communicate with another NGN user (identity visible to other users)
  - **private user identity**: information used to identify a NGN user to her/his network/service provider (identity not visible to other users)
- **But identifiers are needed not only for "user" entities !**

Identification, authentication, authorization and the two strata in NGN

- There are requirements for identification, authentication and authorization capabilities in both NGN service and transport strata
  - In the transport stratum, requirements are on how NGN transport resources can be used
  - In the service stratum, requirements are on association between a user and a service or possibly between a user and another user/entity (including users on different NGNs)
  - Identities at the transport stratum and identities at the service stratum
  - Both private and public identities of users of the transport stratum resources shall be administered by the relevant network operator
  - Both private and public identities of users of the service stratum resources shall be administered by the relevant service provider

Some general identification requirements (1)

- Multiple user identities support
  - It shall be possible for an NGN user to have multiple public and private identities, and it shall be possible to segregate one identity from another (e.g., for personal use and business use)
- Identity independency
  - The identity should be assigned to the user independent of its repository, the user terminal and the underlying network technologies
- Identity portability
  - NGN shall provide capabilities that provide the equivalent of "number portability" in PSTN environments
- Identity attributes support
  - Identity attribute information, such as identity lifetime for user, subscriber etc., may be associated with a user identity
  - NGN shall support selective authorization of attribute information by an attribute provider

Some general identification requirements (2)

- Users and terminals
  - NGN shall allow separate identification, authentication and authorization of users and terminal equipment
  - NGN shall support a dynamic binding of user identity and terminal equipment (identity)
  - NGN shall allow association of a user identity to multiple terminal equipment (identities) for certain services. A service provider may allow a user to access a service from multiple terminals in parallel using the same public and private user identity.

Ongoing work inside Q2/13

- **NGN Release 2 requirements - Y.NGN-R2-reqts**
  - Enhancements to NGN R1 capabilities (new requirements for those capabilities)
  - New capabilities in support of NGN R2 objectives and services

- **NGN service requirements and capabilities for network aspects of identification-based applications and services – Y.idserv-reqts**
  - Basic characteristics of identification-based services
  - Requirements from the service perspective
  - NGN capabilities and associated requirements
  - Service scenarios

Ongoing work on NGN Security and Identity Management

Q15/13 NGN Security

Security Requirements

- Y.2701 (Y.NGN Security) **Security requirements for NGN Release 1**
  - Security objectives and requirements for NGN network elements
- Y.secReqR2 **Living List for Security requirements for NGN Release 2**

NGN authentication : Y.NGN Authentication
NGN Certificate Management : Y.NGN Certificate Management

NGN Security Mechanisms and Procedures : Y.secMechanisms

Identity Management

- **Y.IdMsec NGN Identity Management Security**
  - Fundamental concepts associated with NGN Identity Management
  - Framework for Identity Management based on NGN FRA Release 2
  - Threats and risks to Identity Management within an NGN environment
  - Trust models for Identity Management within an NGN environment
  - Security objectives and requirements for NGN Identity Management

Y.IdMsec Table of Contents

ITU NGN-GSI Web Page:
http://www.itu.int/ITU-T/ngn

Thank you for your attention

Backup information: ITU-T NGN GSI (SG13) current deliverable status

ITU-T definition of NGN (Y.2001)

- Packet-based transfer
- Independence of service-related functions from underlying transport technologies
- Decoupling of service provision from transport, and provision of open interfaces
- Separation of control functions among bearer capabilities, call/session, and application/service
- Broadband capabilities with end-to-end QoS and transparency
- Interworking with legacy networks via open interfaces
- Support for a wide range of services, applications and mechanisms based on service building blocks
- Unified service characteristics for same service as perceived by the user
- Converged services between Fixed and Mobile networks
- Generalized mobility allowing consistent and ubiquitous provision of services to users
- Unfettered access by users to networks and to service providers and/or services of their choice
- A variety of identification schemes which can be resolved to IP addresses for the purposes of routing in IP networks
- Support of multiple access network technologies
- Compliant with all Regulatory requirements, for example concerning emergency communications and security/privacy, etc.

ITU-T NGN GSI : current status in summary

Basic achievements for NGN Release 1

- **NGN principles, Release 1 Scope**
- **High level requirements and capabilities (stage 1)**
- **High level architecture, some components in detail (stage 2)**
- **Some capabilities in detail (stages 1, 2) - QoS, Security, Mobility**

Pieces in progress or still missing for Release 1

- Service-specific scenarios, requirements and capabilities (stage 1)
- High-level requirements and architecture for future transport (stages 1, 2)
- Other components in detail (stage 2)
- Other capabilities in detail (stages 1, 2)
- **Stage 3 (Protocols, implementation aspects): limited progress, but increasing activity at the October 2006 meeting**

Release 2

- High level requirements and capabilities – start (stage 1)
- High level/component architecture evolution – start (stage 2)
- Service-specific scenarios, requirements and capabilities (stage 1)

Foundational achievements

Oct-Dec 2004 (JRG NGN->SG13)

- **Y.2001: General overview of NGN**
  - NGN Definition, Characteristics and Subject Areas
- **Y.2011: General principles and reference model for NGN**
  - High level paradigms, separation of concerns
  - Architectural principles, OSI and G.805 model relevance

2005 (FG NGN->NGN GSI)

- **Adoption of a Release-based approach for the production of NGN recommendations (scope and completion deadlines defined for each release)**

March 2006 (FG NGN Management->SG4):

- **Y.2401/M.3060: Principles for the Management of NGN**

ITU-T NGN GSI: Recommendations agreed at the July 2006 Meeting (1)

Consented for Last Call (AAP-Rec.A.8)

Architecture

- Y.2012 (Y.FRA) **Functional requirements and architecture of the NGN**
  - generic service control functions, generic transport control functions
- Y.2021(Y.IFN) **IMS for NGN**
  - IMS functions, positioning with respect to Y.FRA
- Y.2031 (Y.PIEA) **PSTN/ISDN emulation architecture**
  - Call Server based emulation, IMS based emulation

Quality of Service

- Y.2171 (Y.CACPriority) **Admission control priority levels in NGN**
- Y.2111 (Y.RACF) **Resource and admission control functions in NGN**

Mobility

- Q.1706 (Q.MMR) **Mobility management requirements for NGN**

Evolution

- Y.2261 (Y.piev) **PSTN/ISDN evolution to NGN**
- Y.2271 (Y.csem) **Call server based PSTN/ISDN emulation**

Terminology

- Y.2091 (Y.term) **Terms and definitions for NGN**

ITU-T NGN GSI: Recommendations agreed at the July 2006 Meeting (2)

Determined (TAP – Resolution 1)

Requirements

- Y.2201 (Y.NGN-R1-Reqts) **NGN Release 1 requirements**
  - NGN capabilities and associated requirements

Security

- Y.2701 (Y.NGN Security) **Security requirements for NGN Release 1**
  - Security objectives and requirements for NGN network elements

Approved Supplements

NGN objectives

- Supplement 1 to Y.2000-series **NGN Release 1 scope**

Architecture

- Supplement 1 to Y.2012 **Session/border control (S/BC) functions**

ITU-T NGN GSI: Recommendations agreed at the October 2006 Meeting

Consented for Last Call (AAP-Rec.A.8)

NGN requirements, services and architecture (SG13)

- Y.2013 (Y.csf) **Converged Services Framework Functional Requirements and Architecture**
  - Service coordination across heterogenous systems and technologies, overlay architecture across diverse systems
- Y.2262 (Y.emsim) **PSTN/ISDN emulation and simulation**

NOTE:

- This list doesn't include some protocol-related documents consented in SG11
- Most documents were initially progressed inside ITU-T Focus Group on NGN

Services and Capabilities work items: current Q2/13 work program

Q2/13 Requirements and implementation scenarios for emerging NGN services

General NGN Requirements

- NGN Release 2 requirements - Y.NGN-R2-reqts

Focused on NGN services and scenarios

- IMS-based Real Time Conversational MMedia services over NGN - Y.ngn-rtconv
- UPT (Universal Personal Telecommunications) service over NGN - Y.ngn-upt
- NGN service requirements and capabilities for network aspects of identification-based applications and services - Y.idserv-reqts
- Requirements of Managed Delivery Services – Y.MDS-req

Focused on NGN capabilities

- Requirements and framework allowing accounting, charging and billing capabilities in NGN - Y.ngn-account
- Open Service Environment Capabilities for NGN Applications - Y.ngn-openenv
- VPN Service Capabilities in NGN mobile environment - Y.ngn-vpn
- NGN Multicast Service Framework - Y.ngn-mcastsf
- NGN Multicast service capabilities with MPLS-based QoS support - Y.ngn-mcast
- MPLS-based Mobility and QoS capabilities for NGN services - Y.mpls-mob

NOTE: other Questions also contribute to the ITU-T NGN service activities