



Work items and main achievements in ITU-T NGN standardization

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Outline

- Mature deliverables in ITU-T NGN standardization
- NGN Release 1 environment: requirements and results in some key areas
 - Architecture and open service environment
 - Quality of Service
 - Mobility
 - Security
 - Management
 - Evolution
 - Access Networks, User Networks, Interconnection
- NGN Release 1 capabilities and services
- NGN Release 2 and beyond



Disclaimer

- o This presentation focuses on the main achievements in ITU-T NGN GSI, with the exception of some (few) protocol related Recommendations developed in SG11.
- o The presentation does not consider Recommendations progressed inside various ITU-T Study Groups which have (may have) relevance for the ITU-T NGN standardization activity.
- o Among its various duties, NGN GSI is actually tasked to ensure Inter-Study Group coordination and work plan management of the NGN project.



Mature deliverables in ITU-T NGN standardization



Foundational ITU-T NGN achievements

Oct-Dec 2004 (JRG NGN->SG13)

- o Y.2001: General overview of NGN
 - NGN Definition, Characteristics and Subject Areas
- o 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)

- o 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):

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



NGN Recommendations agreed at July 2006 ITU-T NGN GSI 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

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



NGN Recommendations agreed at July 2006 ITU-T NGN GSI 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

NOTE: Most documents initially progressed in ITU-T Focus Group NGN



Where we are now in summary

Basic achievements for NGN Release 1

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

Pieces in progress or still missing for Release 1

- o Service-specific scenarios, requirements and capabilities (stage 1)
- o High-level requirements and architecture for FPBN (stage 1 and 2)
- o Other components in detail (stage 2)
- o Other capabilities in detail (stages 1, 2)
- o Stage 3 (Protocols, Implementation aspects): very limited progress

In progress for Release 2

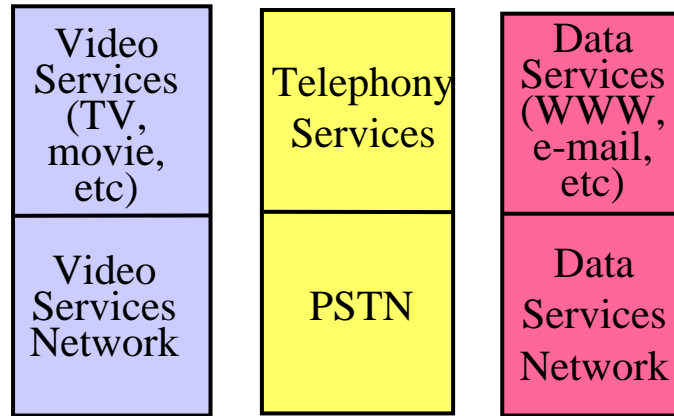
- o High level requirements and capabilities - start (stage 1)
- o Service-specific scenarios, requirements and capabilities (stage 1)
- o High level/component architecture evolution - start (stage 2)



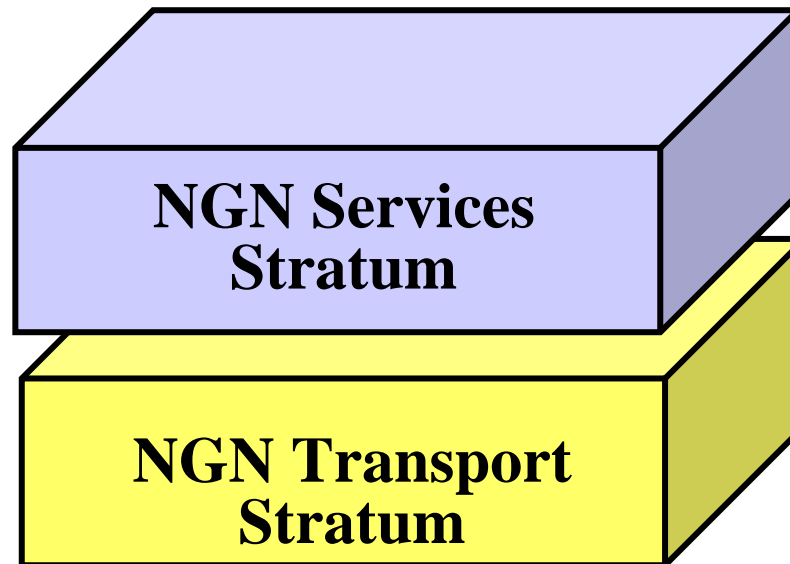
NGN Release 1 environment : requirements and results in some key areas

NGN General Reference Model (Y.2011)

Pre-NGN:
Vertically
Integrated
Networks

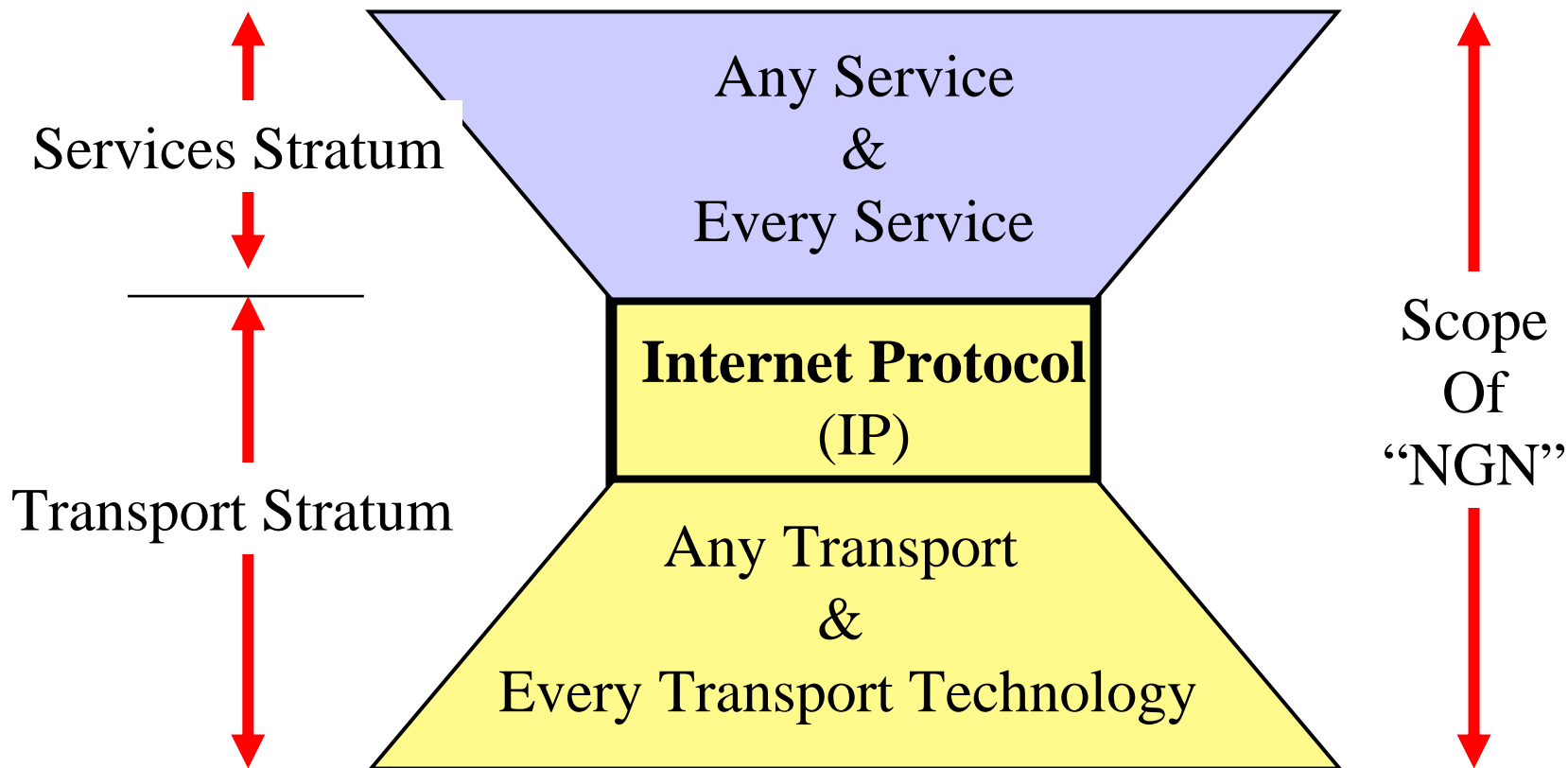


NGN:
Horizontally
Integrated
Networks





Unifying IP convergence layer





Release 1 environment - Architecture

- o **Advanced Architecture objectives**
 - *Services separable from transport stratum into service stratum*
 - *Comprehensive set of services over a unifying IP layer network*
 - *Transport stratum has to support a multiplicity of access networks and a variety of mobile and fixed terminal types*
 - Service not limited to those provided by the "home network"
 - Services shall be able to traverse multiple providers' networks

- o **The positioning of the *IP Multimedia Subsystem (IMS)***
 - Unanimously agreed starting point for Release 1: to leverage the 3GPP IMS capabilities
 - The capabilities of IMS need to be extended to support the heterogeneous access transport environment of Release 1



Release 1 environment – Open Service Environment

- **“Open Service Environment” objectives for service creation and service provisioning**
 - Flexible service framework for implementation of value added services using network capabilities
 - Capabilities can be portable or reusable across networks
 - Capabilities are exposed via standard application interfaces (ANI)
 - Applications and capabilities can be easily developed by network providers as well as Third Parties

- **Release 1 should support the following classes of service creation environments:**
 - IN-based service creation environment (INAP, CAMEL, WIN, ...)
 - IMS-based service creation environment
 - Open service creation environment (OSA/Parlay, Parlay X, OMA, ...)



Opening the NGN: an essential topic going forward

- o How to open
 - Service Oriented Architecture (SOA) as framework ?
 - Web Services as implementation tool set ?
- o What to open
 - Network capabilities <-> Applications ?
 - Network capabilities <-> Network capabilities ?
- o Various work items in ITU-T NGN GSI
 - Open Service Environment capabilities
 - Web Services - scenarios, security (SG17)
 - Functional entities in Y.CSF
 - OCAF model and components (OCAF Focus Group->new Q16/13)
- o Relationships with other SDOs to be developed
 - OMA, OASIS, WS-I, Parlay, DMTF, ...
- o A lot of interest in the market
 - Service Delivery Platforms, Middleware



Release 1 environment – Quality of Service

High level objectives

- End-to-end QoS environment for the services offered to end users via QoS coordination across the transport stratum
- NGN Release 1 shall provide an initial set of requirements, architectures, mechanisms and guidelines to enable end-to-end QoS

Work items under study

- Performance objectives
 - Network performance classes
 - Network performance allocation
- Dynamic QoS controls
 - Signaling of performance requirements (IP QoS signaling)
 - Resource and admission control
 - Interworking of QoS mechanisms
 - Inter-domain considerations
 - Frameworks and guidelines
- Performance measurement, management and assessment

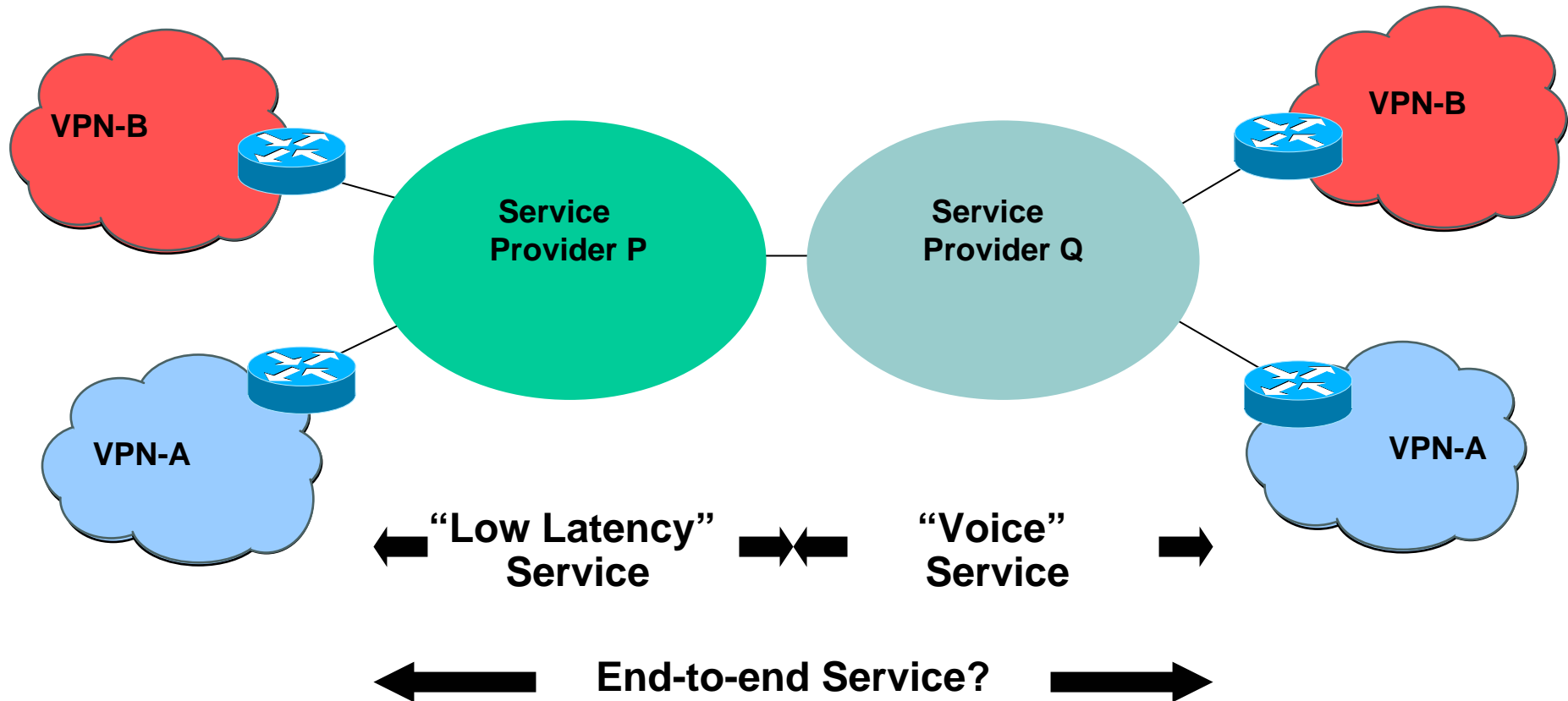


Release 1 environment – Quality of Service (2)

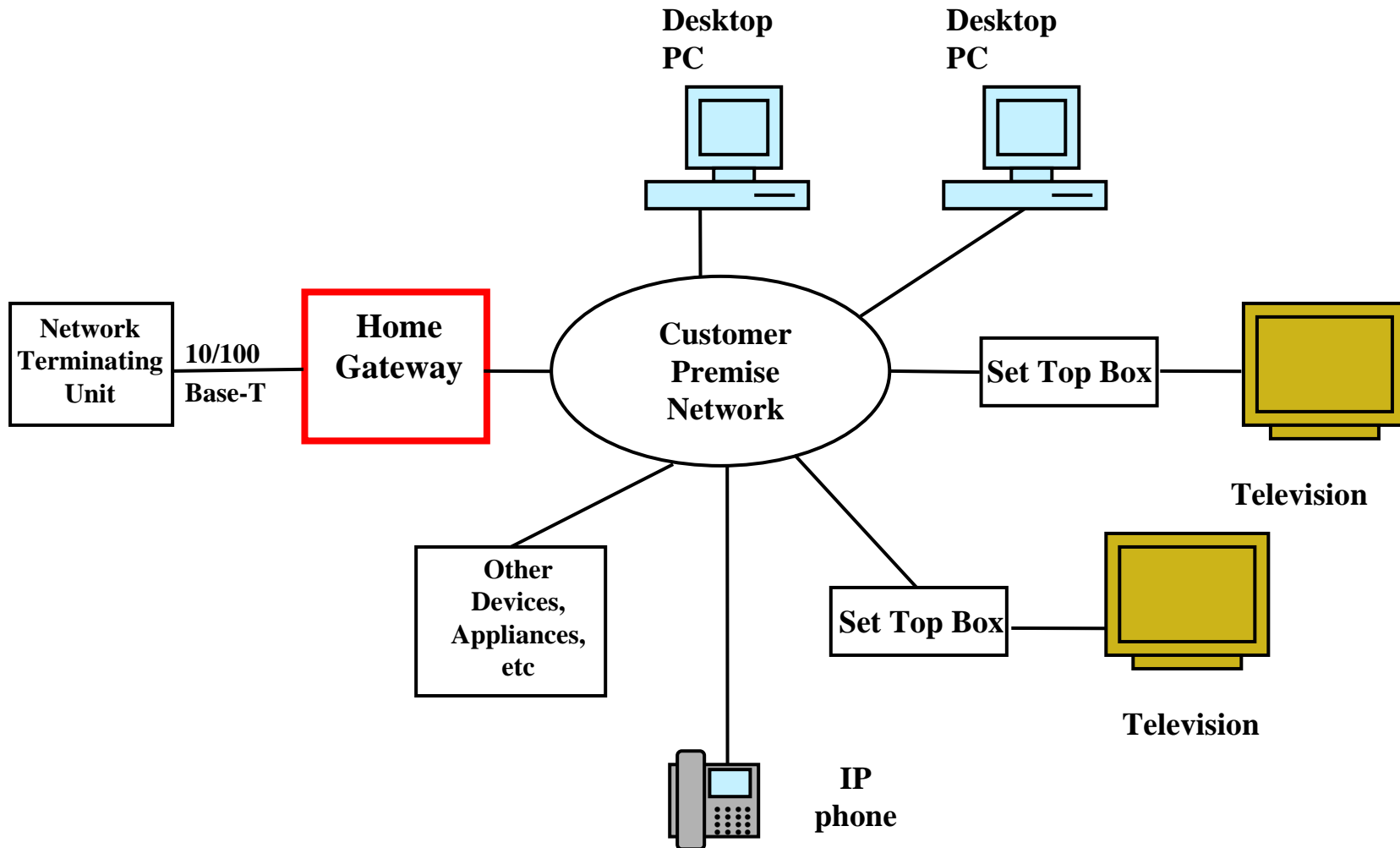
- **Focus on Resource and Admission Control Functions (Y.2111)**
 - Authorization checking based on various criterias
 - QoS transport stratum coordination (access-core, core-other NGN)
- **RACF is good example of inter-SDO discussions to single specification convergence: ETSI TISPAN alignment in progress**
 - TISPAN R1 QoS solution limited to access network (assumption of QoS in core achieved via other means (out of scope) - e.g. over provisioning)
- **A lot to do towards end-to-end application-driven QoS**
 - Y.e2eqos.1 Requirements and framework for end-to-end QoS architecture
 - Y.mpm Management of performance measurement for NGN
 - Y.RestPriority Service Restoration Priority Levels in IP Networks
 - Y.flowreq Requirements for the support of stateful flow-aware transport technology in NGN

And more

QoS challenges: Inter-Provider QoS



But QoS is just one of various aspects to consider at the interconnection !



Home Gateway issues and QoS per device/terminal



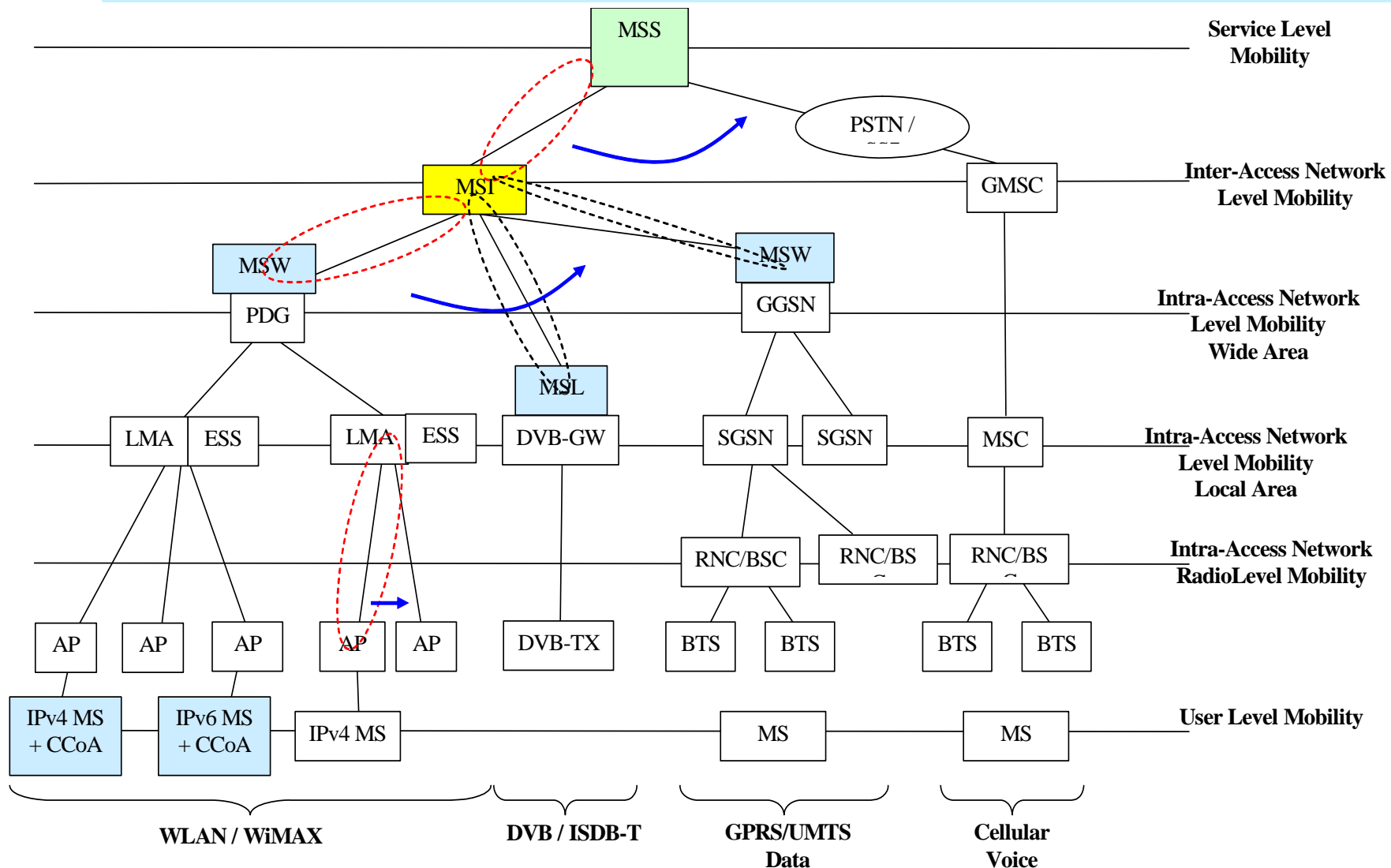
Release 1 objectives for Mobility

- o Mobile users requirements
 - Access from variety of environments with variety of terminals with varying capabilities
 - Seamless and transparent mechanisms for roaming between operators
- o Nomadism is the key requirement (“ability to change network access point on moving, without maintaining service continuity”)
 - Supported between networks and within a network
 - It doesn't exclude support for mobility with service continuity
- o No major new interfaces for mobility proposed for Release 1
 - Personal mobility will exist where users can use registration to associate themselves with a terminal that network can associate with the user
 - Terminal Mobility will exist within and among networks where terminals can register to the network

Release 1 is just a first step towards Full Mobility and Fixed-Mobile Convergence (FMC)



Network architecture and mobility levels (examples)





Mobility Management (MM) complexity

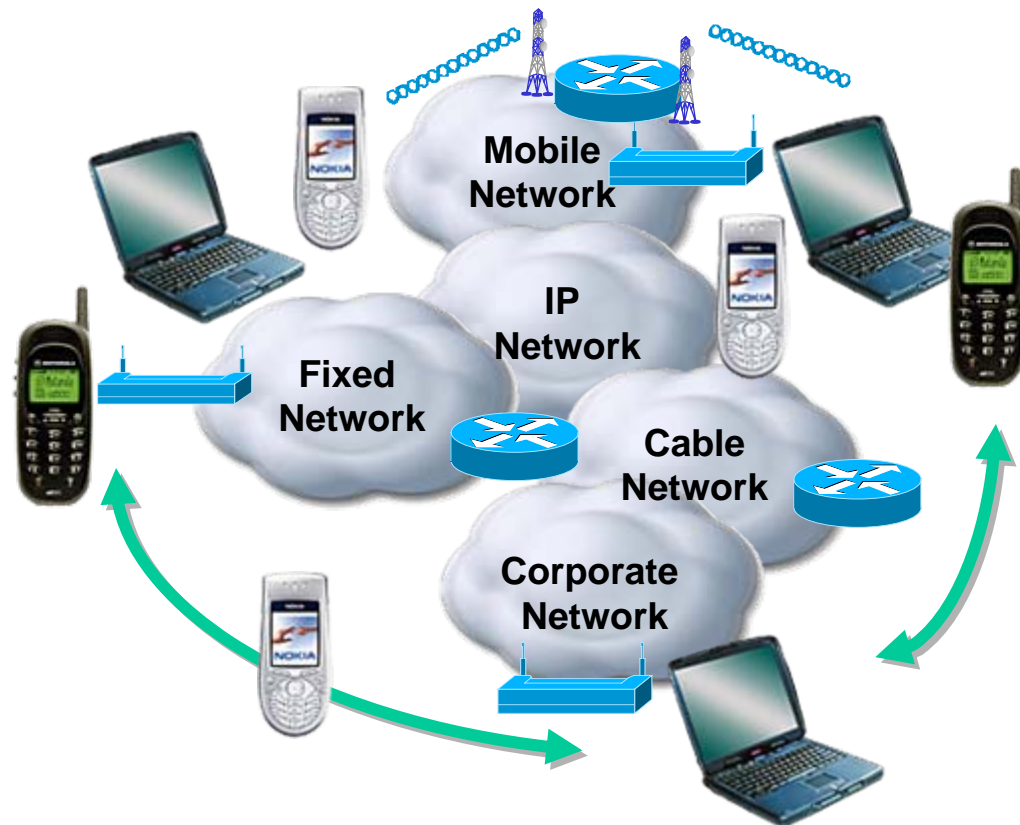
- 3GPP and 3GPP2 do MM in slightly different ways: not fully compatible
- There are multiple Mobility Management protocols*:
 - Mobile IP (MIP); extensions: HMIP and FMIP
 - Session Initiation Protocol (SIP)
 - Cellular IP (CIP): with MIP for MM; with SIP for MM
 - mobile Stream Control Transmission Protocol (mSCTP)
 - 3GPP MM Protocols: MAP (MIP and SIP in 3GPP system)
 - 3GPP2 MM Protocols (MM in the ANSI-41 evolved IP MMD core network)
 - BRAIN Candidate Mobility Protocol (BCMP)

* *Q series Supplement 52 - Technical Report on NNI MM Requirements*

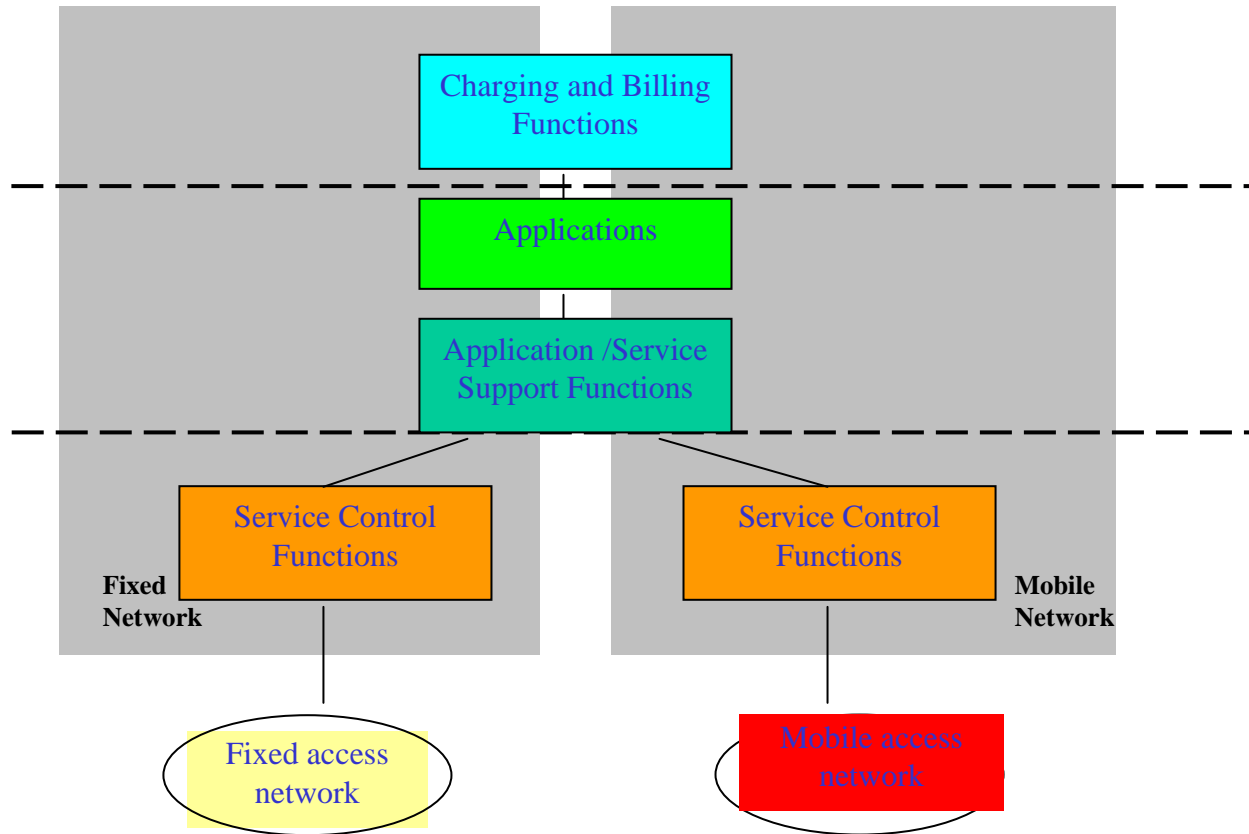
- MIP (used by 3GPP2 MM), SIP (used by 3GPP IMS), 3GPP MM come now closest to meeting all identified requirements

Any Service, Anywhere, Anytime

- Converged Services
 - Voice and multimedia, messaging, presence, VPN, corporate applications, ...
 - Always on
 - Self service, intuitive
 - Simple for the end user
 - Secure, trusted, reliable
- Converged Devices
 - Phones, smartphones, PDAs, laptops
- Converged Networks
 - Access and core, incumbent and competitive wireline, incumbent and competitive wireless, VNO, ISPs and Broadband SPs



Functional scenarios of convergence (Rec. FMC Req)



Example of convergence at Application/Service Support Functions



Ongoing work in NGN mobility

- Mobility Management Framework (Stage 2) - Rec. MMF
- Location Mobility Management Framework (Stage 2) - Rec. LMF
- Handover Management Framework (Stage 2) - Rec. HMF
- FMC general requirements from NGN point of view - Rec. FMC Req
 - Fundamental characteristics, requirements and capabilities that a FMC should be able to support
- FMC with common IMS session control domain (Stage 2) -Rec. FMC IMS
- FMC with PSTN as fixed AN for UMTS network - Rec. FMC-PAU

- **Inter-Study Group team of 4 Questions**
 - Q.2/19 Mobility management
 - Q.5/19 Convergence of evolving IMT-2000 and evolving fixed networks
 - Q.6/13 NGN mobility and fixed-mobile convergence
 - Q.29/16 Mobility for Multimedia Systems and Services



Release 1 environment - Security

Security objectives

- Address security dimensions
 - Access control, Authentication, Non-repudiation, Data confidentiality, Communication security, Data integrity, Availability, Privacy
- Address security features required for secure domain interconnection

Security Requirements for NGN Release 1 (Y.2701)

- Security dimensions and threats countered (ITU-T X.805 principles)
- Security threats and risks in NGN
- Security trust models
 - Single network, peering network
- Security architecture
 - Mapping to FRA, resources for security protection
- Security objectives
 - General objectives
 - Objectives across multiple domains
 - Objectives for specific dimensions
- Requirements of NGN network elements
 - Common requirements
 - In Trusted Zone
 - Network border elements in Trusted-But-Vulnerable domain
 - CPE border elements in Un-Trusted domain
 - CPE in Un-Trusted domain
- Appendix: Objectives and requirements for Emergency Telecommunication Services

Ongoing work: NGN Authentication, AAA, Certificate Mgt, Security mechanisms



Release 1 environment - Management Interface Capabilities

- **Management objectives**
 - Principles of NGN Management (M.3060)
 - Monitoring and control of NGN services and components via communication of management information across interfaces
- **Release 1 work items**
 - Definition of realistic Release 1 objectives and corresponding solutions
 - Focus on identification of management requirements, architecture, and protocol-neutral/protocol-specific interface specifications for managing NGN services and components
- **Output based on collaboration among ITU-T NGN Management Focus Group/SG4 and partner organizations**
 - SG15, TISPAN WG8, ATIS TMOC, TMF, 3GPP SA5, OASIS, IETF O&M
 - Emphasis on reuse of partner specifications
- **NGN Management Specification Roadmap**
 - Gaps and best organization to fill the gaps
 - Overlaps and stimulating harmonization among partners



Evolution requirements to NGN: PSTN/ISDN Emulation and Simulation (PIES)

NGN Release 1 shall support (in evolution path to NGN) :

- o legacy terminal equipment (e.g. PSTN/ISDN phones)
- o PSTN/ISDN-like capabilities

PSTN/ISDN Emulation

- o From the end user perspective, the NGN “appears” supporting the same types of services offered by the existing PSTN/ISDN
- o Legacy terminals are enabled to continue to use existing telecommunication services while connected to NGN

PSTN/ISDN Simulation

- o NGN terminals in an NGN network are enabled to use PSTN/ISDN-like service capabilities
- o But legacy terminals with terminal adaptations may be used too
- o Implemented over IP-based control infrastructure (e.g. using SIP)



Progress in Evolution to NGN

Achievements

- Principles and requirements for evolution: Y.nev (ongoing)
- Scenarios for PSTN/ISDN evolution to NGN: Y.2261
- PIES generalities: Y.emsim (ongoing)
- Emulation approaches: Call Server (Y.2271), IMS-based (ongoing), Emulation architecture (Y.2031)
- Simulation services: Y.ngn-rtconv (ongoing)

NOTE: PSTN/ISDN Simulation is based on IMS capabilities

Next steps

- Selection of PIES candidates from legacy services
- Identification of additional capabilities
- Control, signalling, management and protocol aspects

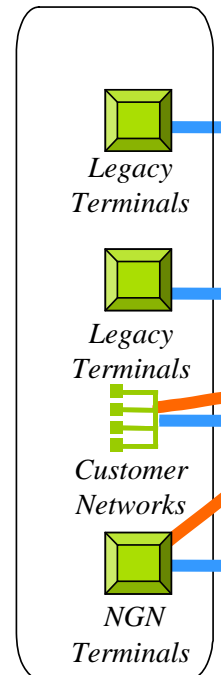
NOTE: next steps will benefit from significant TISPAN R1 progress in:

- Description and requirements of Simulation services
- PIES protocol specifications (partial results)

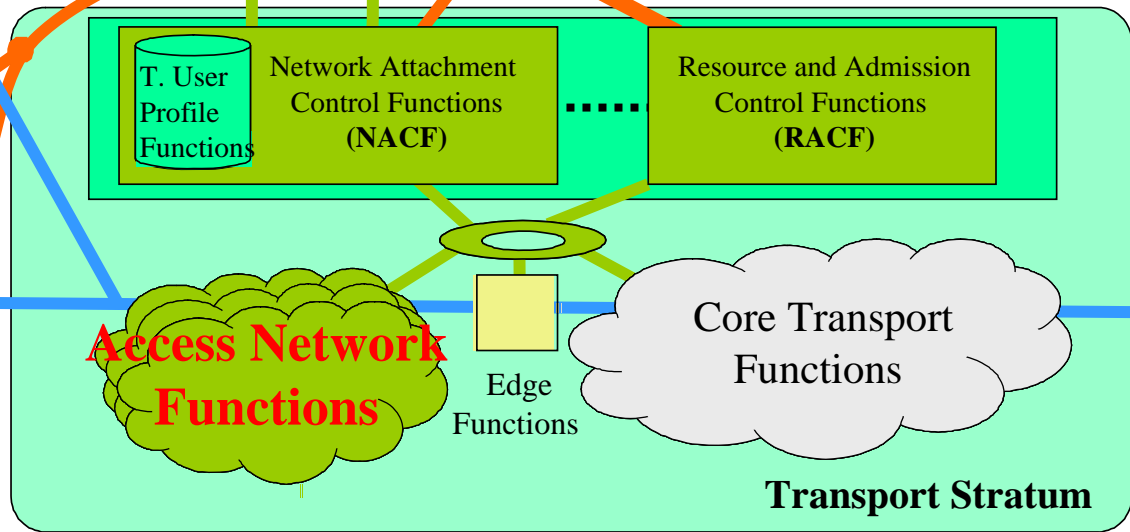
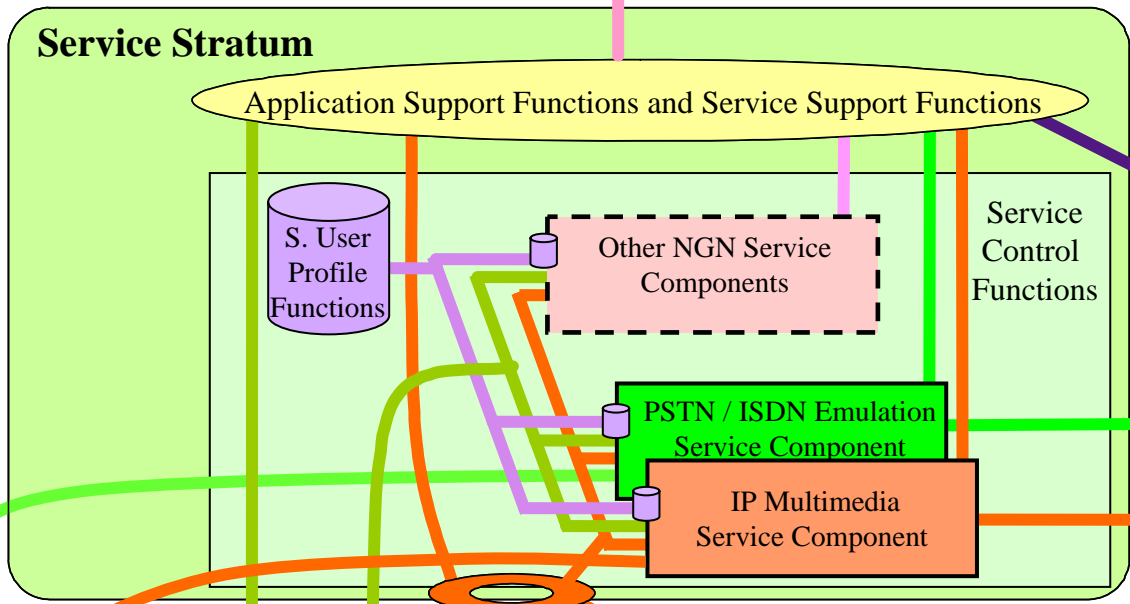


Applications

NGN components



End User Functions



Other Networks



Basic components: Release 1 Requirements for Access Networks (AN)

- NGN shall support AN of diverse technologies and capabilities
 - All AN types are required to provide IP connectivity
- Release 1 Scope provides a “proposed list” of technologies (wireline and wireless domains) implementing access transport functions for R1 ^{*}
 - Not a mandatory list of technologies
 - Other emerging technologies may be ready for deployment (e.g. WiMAX)
 - Stage 3 (protocol work) will identify their respective ability to support various other R1 requirements
- Basic requirements for network attachment
 - AN authentication, AN address space management, etc.
- ^{*} TISPAN R1 has focused on a limited set of technologies
 - xDSL and 3GPP/3GPP2 Packet Switched domain



Basic components : Release 1 Requirements for User Networks

- A variety of network configurations inside user networks may be deployed
- Access solutions to NGN shall have minimal impact on existing user network deployments
- It is not precluded access to NGN via user networks deploying firewalls and private IP addresses in combination with NAT/NAPT

- Serious limitations in Release 1
 - Management of user networks is out of scope
 - Implications of complex configurations (e.g. Home Networking) are out of scope
 - Specific functions to control user gateways may not be supported in R1

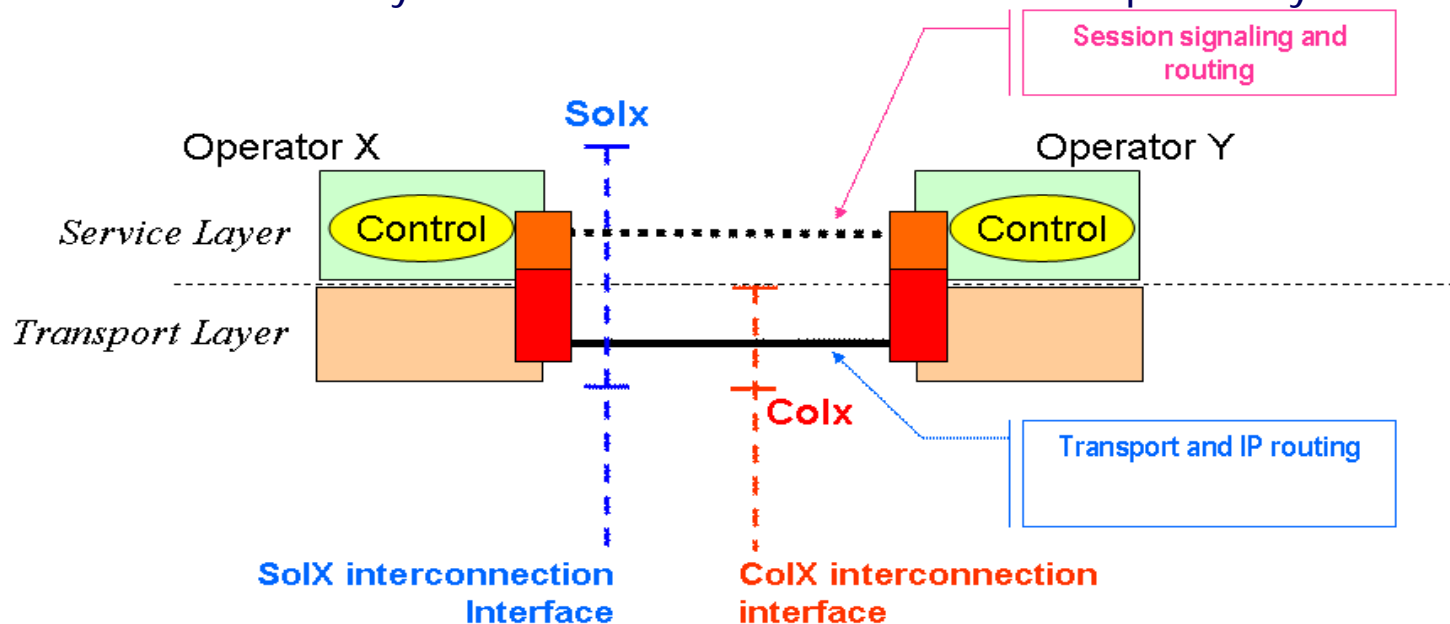


Basic components : Release 1 Requirements for User Equipment

- NGN is expected to support a large variety of user equipment
- Both direct and indirect (e.g. via IP PBX) connectivity between terminals and NGN shall be supported
- NGN Release 1 does not mandate specific requirements for user equipment, except for
 - Requirements for access arrangements
 - Compatibility with NGN authentication, control and transport protocol stacks
 - Attachment of user equipment enabling interface adaptation to varying user requirements (including accessibility needs) is not precluded
- R2 will probably consider user equipment requirements
 - Ongoing studies in SG13 (Y.CMTP), SG16 (Next Gen MultiMedia terminal) etc.

Basic components : Release 1 Requirements for Interconnection with peer networks (1)

- o Interconnection at the Network Node Interface (NNI)
 - Between multiple NGNs
 - Between NGN and other networks
- o Two types of Interconnection
 - **Connectivity-oriented Interconnection (Colx)** is required
 - Simple IP connectivity, irrespective of interoperability levels
 - No service awareness, specific requirements not necessarily assured
 - **Service-oriented Interconnection (Solx)** is not precluded
 - Services may offered with defined levels of interoperability





Basic components : Release 1 Requirements for Interconnection with peer networks (2)

Interoperability inside/between NGN

- Required for appropriate components in single NGN
- Not precluded between NGNs deploying identical sets of capabilities

Interworking with non-NGN networks

- Interworking required (doesn't imply all services can be interworked)
- Interworking capabilities - provided as list of objectives
- Supported network types
 - PSTN/ISDN
 - Circuit-based networks: same requirements than PSTN/ISDN
 - PLMN, Cable networks, Broadcast networks
 - Circuit-based Enterprise networks via PSTN/ISDN or PIE gateway
 - IP-based networks : interconnection not excluded



Interconnection between NGNs: complex topic requiring further work

- Practicable Interconnection arrangements for seamless service operations are critical for NGN success
- GSMA is considering to extend the GRX backbone to IMS
 - Will NGN share the same backbone than IMS ?
 - Which impact on IMS standards if another choice ?
- Which NGN backbone routing choice ?
 - Public Internet: Internet routing
 - Private IP domain: routing across common backbone
 - IP isolated subnets: step-by-step routing (PSTN-like model)
- Related issues
 - IP addressing : IP connectivity, private vs public, IPv4 vs IPv6
 - User identification options for routing and DNS/ENUM options
 - QoS and security

- Significant business implications exist in this area
- Progress is not only a matter of standards
- Standardisation advances require cooperation inside ITU-T and with other SDOs (regional bodies, IETF, 3GPP etc.)



NGN Release 1 capabilities and services



NGN Release 1 Requirements and capabilities (Y.2201)

- Capabilities identified in Y.2201
 - Basically derived from functionalities already developed in various technical bodies and considered ready for use in Release 1 time frame
 - Essentially provide guidelines for the NGN architecture work so that the functional building blocks identified in the NGN architecture are able to support these capabilities
 - Associated requirements do not constitute precise functional requirements for specific NGN entities
- Scope of Y.2201
 - High level requirements and capabilities to support Release 1 service objectives
 - Service-specific requirements are out of scope
 - Specific NGN realisations may use an arbitrary set of services and identified capabilities
- Y.2201 is in TAP approval process
 - Discussions expected on “shall”, “should” and “may”



The list of NGN capabilities identified in Y.2201

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



Capabilities for Open Service Environment

- General requirements
 - Independence from network providers and manufacturers
 - Location, Network and Protocol transparency
 - Secure access to capabilities
- Service coordination
 - Coordination with applications, tracking of capabilities, availability of capability state change information
- Service discovery
 - Scalable and secure User/Device-interest service discovery
- Service registration
 - Features for registration of capabilities in directories accessible by other capabilities and applications
- Development support
 - To construct, trial, deploy and remove applications
 - Component reusability, mixing-and-matching, life cycle support, dependency tracking, delivery-agnostic design
- Interworking with service creation environments



Service enablers

Capabilities providing features for specific or advanced services, and/or enabling access to, and/or handling of, the specific information provided by these same capabilities

NOTE: main sources for Release 1 enablers are 3GPP and OMA

- o Group management
- o Personal information management
- o Message handling
- o Multicast support
- o Presence
- o Location management
- o Push
- o Device management
- o Session handling
- o Web-based application support
- o Content processing
- o Data synchronization



Capabilities for support of Public Interest Services

NGN shall provide capabilities for support of public interest services required by regulations or laws of national or regional administrations and international treaties

- o Lawful Interception
- o Malicious communication identification
- o Unsolicited bulk telecommunications
- o Emergency Telecommunications (including Early Warning)
- o User Identity presentation and privacy
- o Network or Service Provider selection
- o Users with disabilities
- o Number portability
- o Service unbundling



The Service Shift in NGN as consequence of the NGN model

- Networks today
 - Services are typically “vertically integrated”
 - Required specific infrastructure components for their delivery
- NGN flexible service creation and provisioning
 - Convergence: services not expected to be vertically integrated
 - Network functions are componentised: standard “capabilities” as service enabling toolkit
- A new challenge for regulation
 - NGN moves the competition from lower layers to service layers
 - Leading to new sources of possible market power, bottlenecks
 - “Control Points” identification: major area of NGN regulators’ work



Key objective in NGN service standardisation

- Services specified in terms of NGN required capabilities
- Precise service definitions are not an objective as in legacy world
 - Public Interest Services are a special case

Services expected to be supported in NGN R1

- Multimedia services
- PSTN/ISDN Simulation services
- PSTN/ISDN Emulation services
- Data communication services
- Public Interest Services
- NGN is not intended to preclude access to the Internet

NOTE: The selection of services to be included in any specific network is a deployment decision of the network operator

More details in NGN Release 1 Scope



Mapping of services to service enablers (examples)

Services\Service Enablers	Presence	Location management	Group management	Message handling	Multicast support	Push	Session handling
Real-time Conversational Voice services							X
Real-time Text							X
Messaging services	X		X	X			X
Push to talk over NGN	X		X				X
Point to Point interactive multimedia services			X				X
Collaborative interactive communication services		X	X				X
Content Delivery Services		X				X	
Push-based Services		X				X	
Broadcast/Multicast Services					X		
Hosted and transit services for enterprises			X				X
Information Services	X	X				X	
Presence and general notification services	X	X	X				
3GPP Release 6 and 3GPP2 Release A OSA-based services	X	X	X	X	X	X	X
Data retrieval applications	X					X	
VPN services			X		X		



Work items in Services and Capabilities – current work program inside Q.2/13

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 Voice services over NGN - Y.ngn-rtconv
- UPT (Universal Personal Telecommunications) service over NGN - Y.ngn-upt
- NGN service requirements for ID-based applications - Y.idserv-reqts

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 topic progress



Release 2 and beyond

Non exhaustive list based on existing work items and current discussions inside ITU NGN GSI, as well as work and discussions in other communities (regional bodies, market)

NOTE: A new draft Recommendation on NGN Release 2 requirements and capabilities was just started in July 2006



Which requirements and capabilities for R2?

- Additional requirements/capabilities based on service scenarios
 - Business models, Interconnection, AN variety, Converged services
- Advances in Customer Networks
 - Delivering QoS to end terminal, Home Networking integration with NGN
- More support on Corporate communications
 - NGN services and scenarios (Business Trunking, Hosted services)
 - Cooperation with NGN in service provisioning
 - Integration with NGN (addressing, identification, security, QoS, mobility)
- More services
 - Extensions to R1 (simulation services)
 - Multicast-based services
 - More interactive entertainment: IPTV services
 - Identification-based services (Sensor/RFID)
 - Grid applications
- Full Mobility -> true Fixed-Mobile Convergence
- Advances in QoS
 - Resource monitoring, Traffic Engineering



Which requirements and capabilities for R2?

- o Advances in Transport
 - To satisfy Service stratum requirements (FPBN)
 - Broadband Wireless Access, Carrier Ethernet
- o Solutions for Interconnect issues
 - Addressing, routing, security, QoS
- o Open Service Environment
 - Third party access, Web services linkage
 - Multiple business models and service scenarios
 - Positioning versus self-provisioned services over the Internet
- o Advanced Management capabilities
 - Subscription, Interconnect, Customer Management, ...
- o Identity Management (including Single-Sign on)
- o Others
 - Auto configuration, User Data, Online Charging
- o Related functional architecture evolution (NACF, RACF etc.)
- o **Protocols (profiles!) to deliver the NGN promise**



NGN GSI and NGN roadmap



- Release 2 Services and Capabilities
- Functional Architectures and Requirements
- Mobility Management and FMC
- IPv6 application into NGN
- End-End QoS
- NGN Signaling with Resource Admission Control
- Migration and Interworking aspects
- NGN Security
- Identification-based services, IPTV, HN, others

- o NGN GSI is working on the ITU-T NGN roadmap
 - Completion of Release 1 and future releases
 - Coordination inside ITU-T, cooperation with other SDOs
- o Consideration of regional requirements is essential
 - ETSI (Europe), ATIS (North America), ASTAP (Asia-Pac)
 - **Looking for specific requirements from Africa !**



International Telecommunication Union

**Thank you for your
attention**