ITU-D Regional Development Forum for the EUR and CIS Region: "NGN and Broadband, Opportunities and Challenges"
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NGN Overview

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Abstract

- NGN represents a major transition in the approach to providing both basic voice and enhanced communications services of all types. This presentation will highlight NGN concepts and summarize the current ITU work including definitions, functional entities, network structures, business and service benefits and transition paths from existing networks.

Outline

- Introduction
- Definition
- NGN Characteristics
- Mobility and NGN in ITU-T
- Transition from existing networks

We were always working on the next generation …

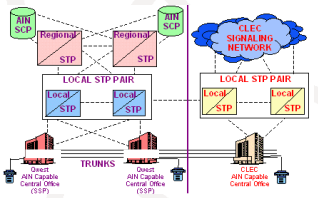
- We began with human operators handling switching and services for "hard-wired" subscribers, …

- … "progressed" to analog mechanical circuit switching (SxS), …

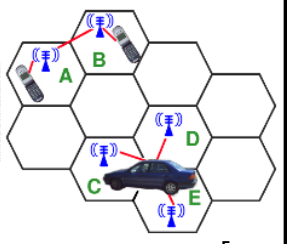
… refined it with stored program control (#5 XBar, SP1), …

but we were focused on refinements …

- … converted the analog circuits to digital transmission and switching, with replicated islands of intelligence (exchange based service logic and data), …



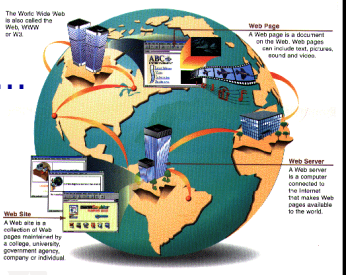
… added message based signalling (SS7) and centralized intelligence (Intelligent Networks), …



… then went from exclusively hard wired access by adding mobility with cellular telephony, …

until some key developments occurred …

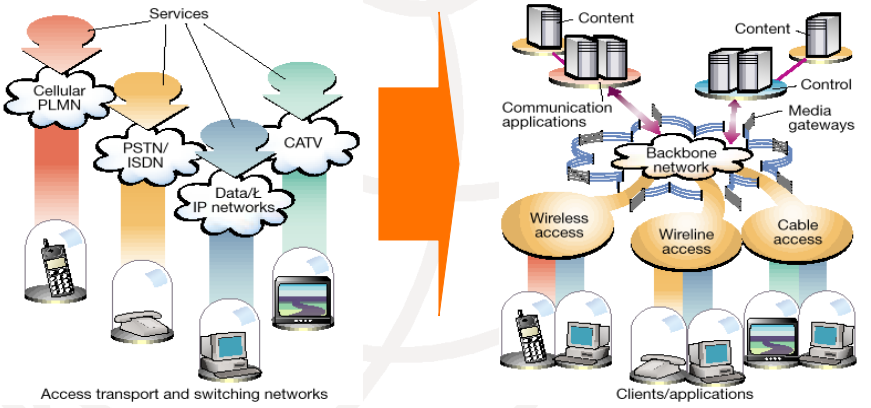
- … then along came the Internet …



- … coupled with almost unimagined computing technology advances in super computing, servers and personal computing …

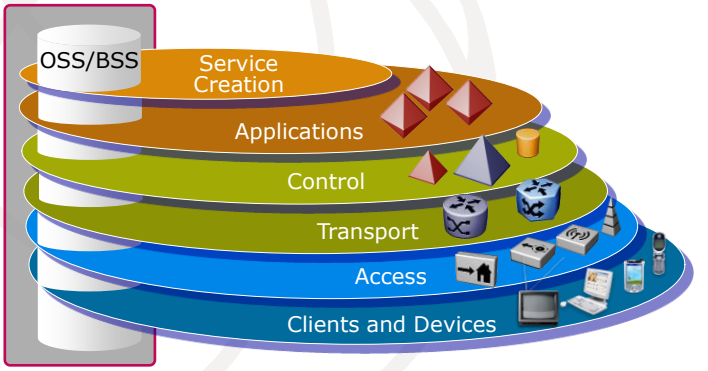
that require a paradigm shift …

- … and these technologies now ~~allow enable~~ require us to combine what used to be separate …



in how we do next generation telecommunications …

- … and we're taking advantage of all this to change the entire architectural framework and infrastructure for one that is much more flexible, much more capable and much less expensive …



… always keeping our eyes on the goal: meet user needs!

Key Definitions (Rec. Y.2001)

- **Next Generation Network (NGN)**: A packet-based network able to provide telecommunication services and able to make use of multiple broadband, QoS-enabled transport technologies and in which service-related functions are independent from underlying transport-related technologies. It enables unfettered access for users to networks and to competing service providers and/or services of their choice. It supports **generalized mobility** which will allow consistent and ubiquitous provision of services to users.

ITU-T Rec. Y.2001 General overview of NGN
www.itu.int/rec/T-REC-Y/recommendation.asp?lang=en&parent=T-REC-Y.2001

Key Definitions (Rec. Y.2001)

- **Generalized mobility**: The ability for the user or other mobile entities to communicate and access services irrespective of changes of the location or technical environment. The degree of service availability may depend on several factors including the Access Network capabilities, service level agreements between the user's home network and the visited network (if applicable), etc. Mobility includes the ability of telecommunication with or without service continuity.

ITU-T Rec. Y.2001 General overview of NGN
www.itu.int/rec/T-REC-Y/recommendation.asp?lang=en&parent=T-REC-Y.2001

NGN Characteristics I

- Packet-based transfer
- Separation: control/bearer, call/session, application/service
  - Independence of service-related functions from underlying transport technologies
  - Decoupled service provision from transport
- Service building blocks: wide range of services, applications
  - Consistent user perception of services
- Generalized mobility
  - Converged services between fixed/mobile

NGN Characteristics II

- Access independence
  - Made easier with everything on IP
- Support of multiple last mile technologies
  - Broadband capabilities with end-to-end QoS
- Unrestricted user access to different service providers
  - Multiple identification schemes
- Interworking with legacy networks
- Compliant with regulatory requirements
  - emergency communications, security, privacy, lawful interception, etc.

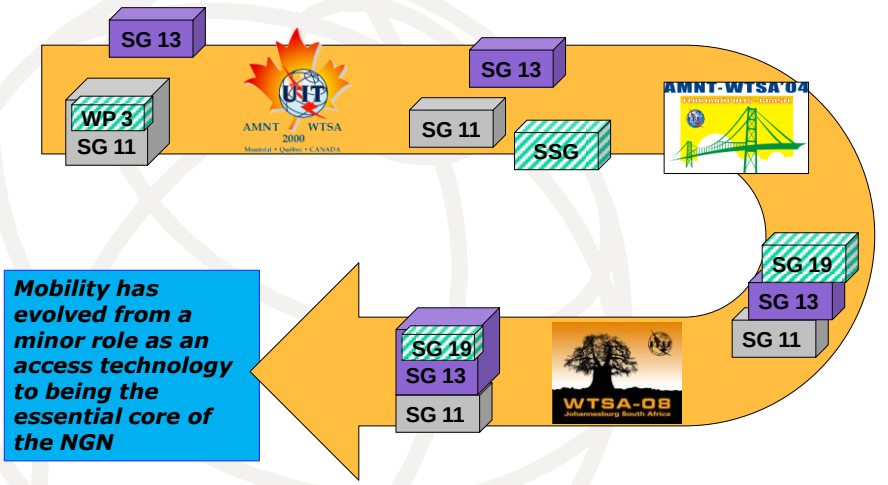
NGN Benefits

- NGN: forward looking technologies, lower costs, greater flexibility
- NGNs will:
  - promote fair competition
  - encourage investment
  - meet regulatory requirements
  - provide open access to networks
- while:
  - ensuring universal access to services
  - promoting equality of opportunity to users
  - promoting cultural and linguistic diversity
  - recognizing need for global cooperation

Convergence

- NGN is not about fixed-mobile convergence *per se*
- NGN is about telephony to internet migration
  - Applies to both fixed and mobile
  - Growth of mobile vs. fixed, changing balance is also a paradigm shift
  - Leads to commonality and hence convergence

Evolution of Mobility and NGN Studies in ITU-T



ITU-T NGN-GSI

- NGN is a major transition in the approach to basic voice and enhanced telecom services: shift to "native IP"
- Mobility has evolved from being merely an access technology to becoming one of the essential capabilities required of NGN
- ITU-T formed the NGN-GSI in the previous study period and it is continuing its work
- More information:
  - www.itu.int/ITU-T/ngn/

Transition from Existing Networks

- Addressed in ITU-T and ITU-D
- ITU-T: Q.14/13: Service scenarios and deployment models of NGN
  - NGN needs simple, clear deployment models: use case service scenarios, user point of view
  - Need scenarios with multiple service providers to realize service convergence
  - Study items include service scenarios and technology-based scenarios
  - www.itu.int/ITU-T/studygroups/com13/sg13-q14

Transition from Existing Networks

- Addressed in ITU-T and ITU-D
- ITU-D: Q.18-1/2 Implementation aspects of IMT-2000 and information-sharing on systems beyond IMT-2000 for developing countries
  - Ways of implementing IMT
  - Key elements to provide efficient and cost effective implementation of IMT
  - www.itu.int/ITU-D/study_groups/SGP_2006-2010/documents/Questions/Q18-1-2.pdf
- More input and effort is needed to progress these areas in both ITU-T and ITU-D

Summary

- NGN is a major transition in the technology for both basic voice and enhanced telecom services
- NGN is based on IP packet transport with separation of control/bearer, call/session, application/service
- NGN transition from legacy networks and interworking with other networks are key parts of ITU-T NGN-GSI program
- ITU-T and ITU-D cooperation continuing