A Next Generation Network (NGN) is a packet-based network able to provide services including 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 offers unrestricted access by users to different service providers. It supports generalized mobility which will allow consistent and ubiquitous provision of services to users.

The separation of services from the network is a key cornerstone of the NGN, i.e., two distinct blocks of functionality:

- Packet-based transfer
- Separation of control functions among bearer capabilities, call/session, and application/service
- Decoupling of service provision from network, and provision of open interfaces
- Support for a wide range of services, applications and mechanisms based on service building blocks (including real time/ streaming/ non-real time services and multi-media)
- Broadband capabilities with end-to-end QoS and transparency
- Interworking with legacy networks via open interfaces

Generalized mobility
- Unrestricted access by users to different service providers
- A variety of identification schemes which can be resolved to IP addresses for the purposes of routing in IP networks
- Unified service characteristics for the same service as perceived by the user
- Converged services between Fixed/Mobile
- Independence of service-related functions from underlying transport technologies
- Compliant with all Regulatory requirements, for example concerning emergency communications and security/privacy

Multi layer & service network scenario

(Source: Brian Moore, Shanghai, April 2004)
Meetings, Forums, Seminars, Workshops, Trainings etc.
Expertise and consultancies
Equipments and facilities for infrastructure and new technology development
Define the NGN: i.e., international standardizations

Past Actions

• Regional technology awareness seminar on IP V6, Togo, (May 2004)
• ITU/ITC Regional Seminar on Network Evolution to NGN and Fixed Mobile Convergence for CEE, CIS and Baltic States, Russia, (April 2004)
• IP Networking and IPv6 for Engineers working in PTOs in the framework of the Centre of Excellence, Mauritania, (19-23 May 2004)
• IP Technologies and Applications for Arab region, Tunisia, (17-19 June 2002)
• Sub-regional seminars on Internet and IP telephony, Guatamala (Nov. 2002), Australia, (Oct. 2001), & Peru, (July 2001)
• Several national workshops and seminars addressing technology strategies for e-security organized in a number of countries (e.g., Azerbaijan, Cameroon, Chad, Mongolia, Pakistan, Paraguay and Uzbekistan)

“Questions” related to NGN: e.g.,
• 19/1: Implementation of IP telephony in developing countries;
• 12-1/2: Examination of broadband communications over traditional copper wires, taking into account certain aspects of technologies, systems and applications;
• 19/2: Strategy for migration from circuit-switched networks to packet-switched networks;
• 20/2: Examination of access technologies for broadband communications.

Activities of Two Study Groups

• Internet case studies on how countries have fostered deployment of IP-based networks;
• Telecommunication – now extended to ICT - indicators reports and databases;
• Internet Training Centres Initiative for the Developing Countries
• Virtual and traditional Center of Excellency (CoE) in each region with learning and training modules

Publications & HRD

• NGN trial, Nepal
• NGN pilot project (e.g., Wi-Fi), Bhutan
• Setting up of an NGN (VoIP) Test-bed, India
• ICT Infrastructure for Rural Communities in Bhutan (trial for NGN): project under the ITU Telecom Surplus
• Expertise & Facilities: e.g., ASP Region

• NGN trial, Nepal
• NGN pilot project (e.g., Wi-Fi), Bhutan
• Setting up of an NGN (VoIP) Test-bed, India
• ICT Infrastructure for Rural Communities in Bhutan (trial for NGN): project under the ITU Telecom Surplus
• ITU’s NGN (e.g., IP) related standards are being developed in cooperation with other standards development organizations (SDOs) to add to ITU’s long-term expertise in telecommunications to the process of developing new Internet standards and the evolution of old ones.

• A number of ITU-T IP-related standardization activities are done in cooperation with the Internet Engineering Task Force (IETF). A common interest mapping of IETF Working Groups to ITU-T Study Groups is available on the ITU-T Study Group 13 website.

• Create ITU-T Focus Group on NGN

• ITU-T also conducts seminars and workshops within its domains of competence: e.g.,

  ✓ Workshop on All Star Network Access, Switzerland, June 2004, ITU-T

  ✓ Next Generation Networks, Switzerland, June 2004, ITU-T FG

• Allocation and harmonization of radio spectrum for wireless communication networks (NGN) and services to optimize
  ✓ economies of scale in manufacturing of equipment;
  ✓ competitive market for equipment procurement; &
  ✓ spectrum efficiency

For examples:

• 3G within the allocated frequency bands of 1885-2025 MHz, 2110-2200 MHz, 806-960 MHz, 1710-1885 MHz, 2500-2690 MHz

• 4G for Internet (IPv6) access and seamless interconnection with other networks based on high security & QoS
37. Spam and cyber-security should be dealt with at appropriate national and international levels.

48. The international management of the Internet should be multilateral, transparent and democratic, with the full involvement of governments, the private sector, civil society and international organizations.

49. The management of the Internet encompasses both technical and public policy issues and should involve all stakeholders and relevant intergovernmental and international organizations.

50. International Internet governance issues should be addressed in a coordinated manner.

64. The core competences of the International Telecommunication Union (ITU) in the fields of ICTs—assistance in bridging the digital divide, international and regional cooperation, radio spectrum management, standards development and the dissemination of information—are of crucial importance for building the Information Society.

Plan of Action: e.g.,

9.j) Optimize connectivity among major information networks by encouraging the creation and development of regional ICT backbones and Internet exchange points, to reduce interconnection costs and broaden network access.

9.k) Develop strategies for increasing affordable global connectivity, thereby facilitating improved access.

13.c) Governments are invited to:
   I) facilitate the establishment of national and regional Internet Exchange Centres;
   II) manage or supervise, as appropriate, their respective country code top-level domain name (ccTLD);
   III) promote awareness of the Internet.

13.d) In cooperation with the relevant stakeholders, promote regional root servers and the use of internationalized domain names in order to overcome barriers to access.

Q1. Whether existing regulatory frameworks such as interconnection (e.g., circuit & packet switched networks), numbering (ENUM) & number portability, quality of service, universal service obligation, pricing & tariffs etc. are applicable to NGN?
   - IF SO, how and which frameworks to deal with the two blocs of functionality?

Q2. Whether the regulatory frameworks are required to be updated to accommodate the NGN?
   - IF SO, what and how to be updated?

Q3. Whether any new regulatory frameworks are required to implement the NGN?
   - IF SO, what are they?
Q. Whether to develop and implement NGN based on top-down or bottom-up approach: i.e., Regulator-push or Industry-led self regulation?
  - What are the views and practices of policy-makers and regulators?
  - What are the views and approaches of industries - operators and manufacturers?
  - How to accommodate consumers’ needs and public interests?
  - What will be recommendations for the developing countries, LDCs in particular?

Q. Whether such regulatory regimes as lawful interception, protection of communications, health and safety aspects of customer equipment, network control and information security, emergency services etc. applicable to NGN?
  - IF SO, how have countries been preparing for the NGN?
  - Whether there are any additional regulations required to implement the NGN in a timely manner?

Q. Why standards are required for NGN?
Q. How to deal with IP address management: e.g., private network traversing for IPv4 address, IPv6 address assignment and security, IPv6 and IPv4 interworking?
Q. Are there any other technical issues to be taken into account and reflected in policy and regulatory decisions for the NGN?

This Seminar on “NGN & Telecom Regulations” in China is hoped to pave the way to tackle potential regulatory issues and challenges of NGN.
Dr. Eun-Ju Kim
Senior Advisor for Asia & Pacific
ITU
At eun-ju.kim@itu.int