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Best Practice Guidelines for Next-Generation Networks (NGNs) Migration¹

We, the regulators participating in the 2007 Global Symposium for Regulators, have identified and proposed best practice guidelines for the migration to NGNs. Our goal is to promote regulatory frameworks that foster innovation, investment and affordable access to NGNs and that facilitate the migration to NGNs. We believe the best practices outlined below can contribute to reaching this goal and deliver real benefits to citizens and consumers, including innovative new services and technologies.

An enabling regulatory regime that fosters innovation, investment and affordable access to NGNs and facilitates migration to NGNs

1. We encourage political support for creating a forward-looking and enabling environment for the development of NGNs at the highest government levels and expressed in national or regional policy goals.
2. We encourage the establishment of an effective regulator separated from the operator. Regulators are also encouraged to enhance their functionality by adopting clear and transparent regulatory processes, including those relating to the adoption and enforcement of rules for the sector.
3. We encourage regulators to adopt a coherent approach to regulating the converged information and communication technology (ICT) sector. One approach could be through the establishing of converged ICT regulatory authorities.
4. We believe that government policy should also promote and enable public/private sector partnerships to support and promote advancement in affordable and secure NGN infrastructure development, particularly where private investment alone is unlikely to lead to NGN deployment.
5. We encourage regulators to establish forward-looking regulatory regimes and to regularly reassess them in order to remove undue regulatory barriers to competition and innovation as well as to allow the regulatory framework to evolve with the objective of enabling users and providers to migrate to succeeding generations of networks when the market dictates.
6. We believe that regulatory flexibility and technology neutrality is needed to permit technological innovation and to support technical and service evolution and that there should be no undue distortion of competitiveness or of the discipline and efficiency of the market.
7. We encourage regulators to design regulatory frameworks that enable cost-based regulatory charging mechanisms, competitive network provision, and competitive infrastructure builds and to monitor for incidents of NGN network providers/operators restricting service level competition to their own undue advantage which could warrant a regulatory response. Such frameworks should also be aimed at ensuring that NGN network providers and operators maintain incentives for technological and market creativity and innovation.
8. We believe that establishing investment-friendly regulation while maintaining a level playing field and protecting consumer interests is of paramount importance for facilitating NGN deployment.
9. We encourage regulators to keep consumers informed on the transition to NGNs and the new services which may be on offer, in order to provide them with the necessary information to make well-informed choices.
10. We encourage regulators to keep in mind the need to create regulatory certainty for both incumbent and competing/alternative providers, in order not to stifle innovation. We recommend that they balance this goal with that of fostering robust, competitive markets and that contingency plans be in place.
11. We encourage regulators to closely monitor developments of radio access networks in general and the developments of their internal mobile and broadband markets in order to make the necessary

policy decision to enable future deployment of systems that will accommodate the seamless transition between fixed and mobile settings in an NGN environment.

12. We believe that promoting diversification of access networks is a policy option and a strategy to promote infrastructure deployment and increase broadband penetration and competition and that promoting diversification of access networks such as wireless and cable television networks is a strategy directed at achieving robust inter-modal competition.
13. We encourage regulators to monitor local, regional and international developments regarding NGN-related issues, such as IP-interconnection, standardization, and numbering (including next-generation identification systems) and, to the extent possible, to participate in such initiatives by attending meetings and providing input and comments into the process. Regulators are also encouraged to implement to the greatest extent possible international best practices regarding NGN-related issues into their respective regulatory frameworks.

Innovative Regulatory Policies Must Be Developed To Facilitate NGNs

1. We believe that regarding the evolution of Next-Generation Networks, regulators should carefully analyse and as appropriate define innovative policies both in the short term (relating to, for example, parallel existence of PSTN/IP networks, VoIP services, triple play, etc.) and in the long term (with a more complete NGN environment) analyse issues including:
 - a. the comparison between fixed, mobile & broadcast approaches to NGN deployment and develop convergent approaches to NGN in particular as regards access, interconnection, QoS, security and tariffs
 - b. issues relating to Access and Core technology growth and development
 - c. the co-existence of legacy, hybrid and NGN networks in the interest of consumers
 - d. the changing nature of the relationship between networks, services and applications (including content)
 - e. the emerging new services and the related challenges of maintaining competition and the ability to offer end-to-end innovative services across competitive NGNs
 - f. the interdependence of NGN and the Internet.
 - g. how NGN could be the engine for convergence
 - h. standardization, interconnection and interoperability issues.
 - i. how acceptable levels of Quality of Service can be maintained
 - j. how to ensure universal access through NGN and broadband access
 - k. how NGN services could enhance services to users with special needs
2. We recommend that regulators initiate consultations and promote awareness of NGNs through various regulatory processes and initiatives, including close collaboration with industry and that self-regulatory and co-regulatory measures are considered within such procedures.
3. We recommend that the dialogue between regulators and stakeholders include the full range of NGN issues such as ex ante access obligations to NGNs, IP-interconnection, competition issues, consumer issues including privacy issues, Emergency Telecommunications Services, Accessibility to users with disabilities, quality of service issues, monitoring and lawful interception (LI) compliance issues, authorization issues, numbering, and the universal services implications of IP-based services, particularly voice.
4. In view of protecting the consumer, we encourage regulators to consider applying symmetric regulation to all operators and providers of telephony services, notably in areas such as interoperability, interconnection, quality of service, numbering, portability, security and integrity of the network, information and consumer protection.
5. Competition: In order to create enabling regulation for the transition towards an NGN environment, regulators are also encouraged to analyze issues based on specific market conditions, in particular how best to foster a competitive environment, and what obstacles need to be addressed to sustain competition between incumbent operators and alternative/competitive providers.
6. Authorization:
 - a. We encourage regulators to adopt licensing frameworks which are flexible and technology neutral, recognizing that these attributes are vital for the transition towards an NGN world, characterized by the decoupling of service/application provision from the underlying infrastructure.
 - b. We encourage regulators to simplify procedural requirements to obtain a license by introducing registrations, notifications, and in certain instances, deregulation and to

secure rights of way in order to facilitate the roll-out of NGN access networks. This will ultimately allow market players to make use of NGN to access global markets and consumers to benefit from such global competition in the provision of services.

7. Access:

- a. We believe that regulators may consider promoting competition by ensuring access as to assets that are enduring economic bottlenecks.
- b. We encourage regulators to carefully analyze whether to promote unbundling of core and access networks or infrastructure sharing among operators.
- c. We encourage regulators and policy makers to consider promoting the diversification of access networks as a policy option and to consider adopting a strategy to promote infrastructure deployment and increase broadband penetration and competition.
- d. Regulators may, however, also wish to take into consideration the existence of different cost-effective network topologies for both the urban and rural applications.

8. Interconnection and Interoperability:

- a. Recognizing that interconnection is the key to the success of the transition to a new environment, we urge regulators to promote, and as appropriate to design, flexible and accurate interconnection models so as to allow smooth transitioning to NGNs.
- b. We encourage regulators to analyze the full range of issues relating to the transition to NGN networks, including, for example: the definition of economic or relevant markets, changing interconnection charging models, end-to-end quality as relating to interconnection in an IP environment and data or service interconnection as opposed to voice interconnection.
- c. We encourage regulators to embrace regulatory initiatives that give rise to new business areas such as interconnection "carrier hotels" in which the "hotelier" offers a venue where telecommunications and network services providers and their customers can place their routers, network and storage equipment in proximity to one another.
- d. We recognize that in an IP environment the any to any connection of all services is no longer a clear issue and that interoperability of services depends on a large number of technical parameters to be agreed upon between parties, as well as on peering policies and on possible special admission requirements. We encourage regulators to follow and analyze developments and as appropriate, to define regulatory policies concerning mandatory services.

9. Numbering and next-generation identification systems:

- a. We encourage regulators to foresee flexibility in their numbering plans and to consider modifications to numbering policies and regulations to accommodate convergence and the migration towards IP-based NGN services, and to address issues such as whether numbering resources should be assigned for VoIP and whether traditional telephone service operator obligations should be imposed on VoIP providers.
- b. We believe that given that the ENUM protocol, databases and services are a key element in routing communications in IP interconnection, regulators should closely follow and contribute to developments of different ENUM concepts and encourage the national and regional implementation of these.

10. Universal access:

- a. Experience around the globe has shown that increased competition leads to lower prices and greater service penetration. Technological progress and the right choice of technology can transform a rural customer in a remote area into a profitable customer.
- b. Where specific measures for the promotion of universal access still exist, regulators are encouraged to take into account the separation of network and service provision in an NGN environment and to design competitively neutral universal service policies that strictly define and are applicable only to the areas where the market is not seen to be able to ensure affordability of services, thus emphasizing the implementation of demand side promotion measures as opposed to the supply side subsidization.

11. Quality of service:

- a. We believe that defining appropriate and transparent quality of service requirements can assist carriers in developing economies to provide quality services at affordable costs.

- b. We recommend that regulators carefully analyze the full range of NGN quality of service issues, for example, traffic prioritization and shaping.
- c. We recommend that regulators consider whether to define appropriate parameters and methodologies for QOS measurements, which are applicable to networks supporting both IPv4 and IPv6.
- d. We believe that, when defining appropriate quality of service standards, it is also important to maintain an environment where consumers have the ability to choose services according to their specific needs.

12. Consumer awareness, security and protection:

- a. We believe that regulators should focus on raising awareness of the benefits of NGN for the market and consumers, and at the same time carefully consider issues relating to security and consumer protection (for example personal and data protection, protection of minors, the protection of end-users from the invasion of privacy, as well as e-commerce, law enforcement related issues and access to emergency telecommunications services.)
- b. We believe that the security of communications will become increasingly important in a new IP based communication environment, and therefore encourage regulators to follow developments of security issues, and implement appropriate measures such as, for example consider requiring reports from relevant service providers on security incidents and failures.
- c. We recommend that regulators should also define ways to inform consumers on security and privacy risks in IP/NGN environment and look for ways to increase consumer awareness on protection methods, including, for example, media campaigns and telecommunications fora and seminars.

¹ This document draws from the contributions of Argentina, Botswana, Bulgaria, Cameroon, Canada, Costa Rica, Côte D'Ivoire, Finland, France, Indonesia, Japan, Jordan, Kenya, Lithuania, Morocco, Nepal, Pakistan, Peru, Poland, Romania, Singapore, Tanzania, Thailand, Tunisia, the United Arab Emirates, the United Kingdom, and the United States. The Organization of Utility Regulators (OOCUR) and the World Bank also commented.