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Regulatory issues arising from the migration to NGN

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Agenda

- Regulatory challenges
- Universal Service Obligation (USO)
- Numbering, Naming and Addressing
- Emergency Call services
- Lawful interception
- Open Access, Interconnection Regime & QoS
- Interconnection Charging
- Network Neutrality
- NGN Developments in Hong Kong, China
- Way forward

Benefits of NGN

- Reduce network complexity
- Lower CAPEX and OPEX
- Improve efficiencies of the transmission network
- Enable integration of voice, video, and data services
- Increase market competition edge by providing more and innovative services
- Create potential business opportunities
- Support convergence of fixed and mobile

Regulatory Challenges

- Existing vertical-based   regulation framework is on "one network, one service".

- Horizontal-layer regulation approach may be required in NGN era, maintaining a balance of competition, investment and protection of consumer welfare.

- ***What are future regulatory concerns for NGNs and whether the regulator should review and map out regulatory issues and framework?***

Universal Service Obligation (USO)

- A USO is a set of requirement imposed on a service provider, typically the largest provider in the region, and is designed to ensure that all persons in that region have access to some minimum set of telephone services at an affordable price.

- There exist both social and economic rationales motivating the imposition of a USO.

- Existing USO covers basic services i.e. mainly fixed line service including public payphones.

- In many countries, broadband and mobile services not included.

- *Should USO be needed in the NGN and at what scope?*

Numbering, Naming and Addressing (1)

- Scarce resources: numbering

E.164 numbers (country code + local numbers)
- Widely adopted in traditional circuit-based network
- Also deploying in NGN (i.e. VoIP works on E.164)
- Keep using in short and medium term

ENUM (Electronic Numbering Mapping)
- Not yet mature
- A possible migration path from E.164 to ENUM

Domain Name Addressing (e.g. user@domain)
- Rely on Domain Name System (DNS) to translate domain name to IP address for packet transmission
- Widely deployed in IP world
- May be largely deployed in NGN

Numbering, Naming and Addressing (2)

Regulator to:

- Keep track of ENUM development and invite/encourage interested parties to conduct ENUM trials.

- Monitor the global development of numbering and addressing scheme.

- Adopt harmonised scheme(s), if necessary in the future.

- Consider the need to have number/address portability under the ENUM.

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Emergency Call Services

- Recommendations from ITU and ETSI support all PSTN-interconnected IP telephony service to provide access to emergency service in NGN domain.

- For VoIP, access to emergency services is problematic as nomadicity poses profound challenges. Emergency services need to know the caller's location.

- *Should regulator liaise with stakeholders to study the requirements and impacts from NGN to emergency call services, particularly about the provision of priority treatment, caller location information etc.?*

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Lawful interception

- Lawful intercept represents another problematic case.

- Traditional solutions in the fixed network have tended to rely on the inherent characteristics of the PSTN.

- In an IP-based network, reliably capturing the right data, without needlessly compromising the privacy of other users, is likely to add expense and complexity.

- ***Regulator to review the types of services subject to lawful interception in his own country and the responsibilities of facilities based and service-based operators***

Open Access, Interconnection Regime and QoS (1)

- **Open Access**

  - Non-discrimination as to transmission of content and applications by 3rd parties.
  - Right to attach any non-harmful appliance to the network.
  - Reasonable capacity or QoS for 3rd party services.
  - Whether "Open access" of services layer be regulated?
  - If regulated, what is the level?
    - Basic services only (need to define basic services from time to time)
    - Internet services
    - All other services (contents, games, entertainment, etc)

Open Access, Interconnection Regime and QoS (2)

- Interconnection regime

  - Existing interconnection regime formulated on PSTN environment. No explicit interconnection requirements imposed on Internet.

  - More reliable and guaranteed service level than just "best effort" approach of transmitting data packets is required for multi-media and real time NGN services.

- ***Should NGN-interconnection be regulated?***
- ***Should the regulator review interconnection issues and set certain QoS standards for NGN or allow the market to decide?***

Interconnection Charging

- Existing charging principles/ costing model on interconnection is on the basis of network resources involved in passing the traffic /delivery of service to end users.

- Call minutes or attempts are used as the basis of calculating the interconnection / access charges over dedicated circuits.

- All types of traffic in IP packets are delivered in different paths in NGN – there may be a need to review the existing costing methodology and charging of NGN-PSTN and NGN-NGN.

- ***Should the regulator review the interconnection charging regime for NGN and at what scope?***

Network Neutrality

- Network Neutrality is a principle to ensure the application of same treatment for the delivery of data packets irrespective of their origin, content and destination.

- In Hong Kong, there is sufficient facilities-based competition in the market and end users have plenty of choices to select their preferred network for accessing to the Internet.

- The market force is still considered the most effective means to address the relevant issues.

- *Regulator should continue to monitor the domestic and international developments in network neutrality to ensure that the legislative and regulatory frameworks remain proportionate and effective.*

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NGN Development in Hong Kong(1)

- ISPs have revamped their network to packet based network and aggressively promote high speed Internet access, VoIP service, and broadband TV service.
- Incumbent operator is replacing its core network with NGN. Started to replace its core and access networks in mid 2006 and planned to complete the migration in 2016.
- Some operators developed NGN with Metro Ethernet technology with high-capacity backbone. Home coverage broadband access network using FTTB, VDSL, metro-Ethernet and Powerline with speed from 10 ~ 1000 Mbps.

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NGN Development in Hong Kong(2)

- Triple-play services : VoIP, IPTV and broadband Internet services
- Operator partners with foreign service provider to offer cheaper VoIP services
- BISPs are promoting broadband TV service to gain the market share
- Regulator, operators and service providers are closely monitoring the new technologies development

Way forward

- Migration to NGN will be carried out gradually, old circuit switched networks will coexist with new packet-based infrastructures.
- Crucial tasks for regulators are to set appropriate incentives for investment and to avoid competition distortions during the migration period.
- Encourage innovative technologies and services.
- Technology neutral.
- Deregulate as far as possible.
- Regulate only when there is a need.

Thank you !!!

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