




Regulation of New Technologies: IP Telephony and Next Generation Networks

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Outline of Presentation

- Policy objectives and principles
- Telecom market environment in Hong Kong
- Development of IP telephony
- Next Generation Networks (NGN)
- Some regulatory issues to be considered for new technologies


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Policy Objectives

- To enable Hong Kong to be recognized as a world-class telecommunications centre for doing business
- To ensure that Hong Kong has high quality services available at competitive prices
- To ensure that Hong Kong has high performance in telecommunications as measured against the Organisation for Economic Co-operation and Development (OECD) economies

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Regulatory and Licensing Framework

Principles

- Market driven solutions
- Technology neutral approach
- No foreign ownership restrictions
- No restriction on number of licenses within technical or spectrum constraints
- Comply with WTO's requirements

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Regulatory and Licensing Framework

Principles

- Minimum regulation, light-handed approach
- Promoting investment in telecom infrastructure within Hong Kong
- Expanding capacity for external connections (land cables, submarine cables, satellite)

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Existing Regulatory and Licensing Framework

Principles

- Removal of bottlenecks to access by end-users to telecom services and facilities
- Fair regulatory framework for interconnection
- Promoting competition and protection of consumer's interests

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Hong Kong Telecommunications Market

- External telecommunications services (ETS) was fully liberalised in 1999
- Facilities based external Fixed Telecommunications Network Services (FTNS) was liberalised in 2000
- In 2003, local FTNS was fully liberalised in 2003

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Hong Kong Telecommunications Market

- 3G Mobile Services become operational in January 2004, together with 2.75G services with both packet and circuit switched capabilities

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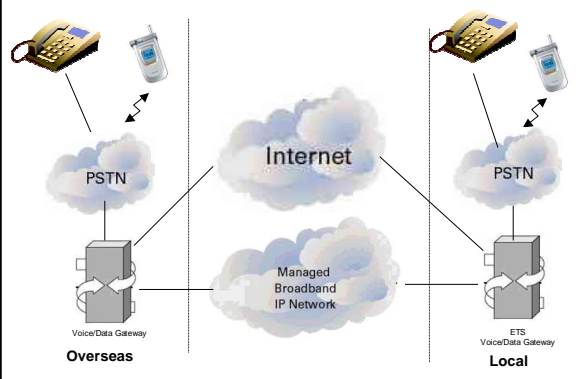
Hong Kong Telecommunications Market

- 13 local fixed networks, 226 external services operators and 196 ISP
- 2.4 million Internet subscribers and 54% of households connected to broadband networks
- 6 mobile operators with 7.5 million subscribers, i.e. 110% penetration

Development of IP Telephony

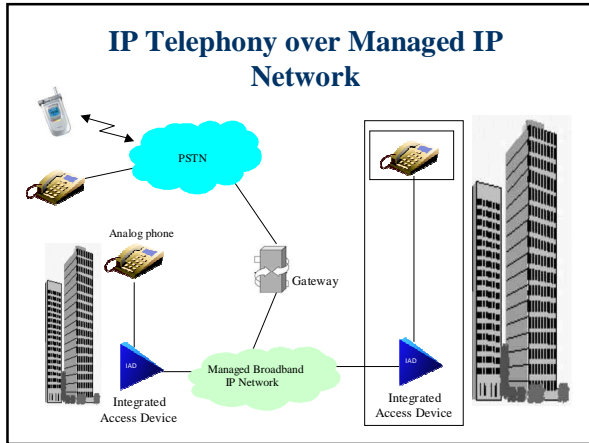
- IP telephony is considered a step or transition towards NGN
- Active development and discussions in the international telecommunications arena
- Implementation of IP Telephony by local FTNS operators
- Hong Kong has to address the regulatory and licensing issues of IP telephony and NGN

Use of IP-network by ETS Operators



Development of IP Telephony

- Some ETS providers make use of IP-based networks for conveyance of IDD calls
- Voice were packetized and delivered via IP-based networks (Internet or managed IP-based networks) and the process reverses at the destination gateway
- Save cost on the external bandwidth

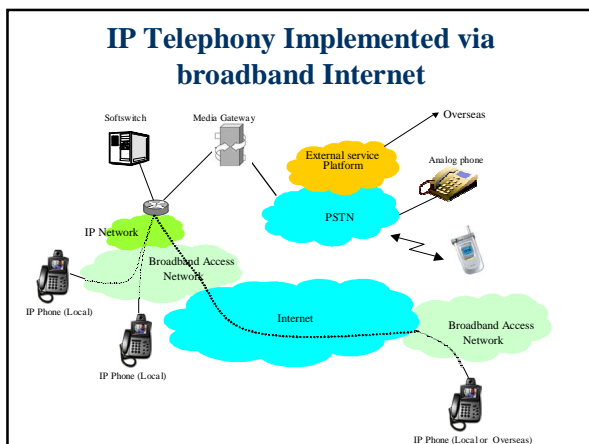


Development of IP Telephony

- IP Telephony service provided by FTNS operators as an economical alternative to traditional PSTN
- Conventional analogue telephone connected to an Integrated Access Device (IAD) interface between telephone to IP-based network

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Development of IP Telephony

- Terminal equipment directly connected to broadband Internet or managed IP-based Network
- Calls to PSTN routed through gateway
- Delivery of video/image to IP telephony users, in addition to voice
- Users could communicate with overseas users without having to make international call

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International Developments of IP Telephony

- Regulators such as US, UK, Australia and Canada are considering /consulting with the industry on the regulation of IP Telephony

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United States

- Light-handed approach
- Major US carriers like Sprint, AT&T & MCI offer VoIP services
- FCC just concluded that Pulver.com's Free World Dialup should be classified as an information service
- Formalized the FCC's policy of not imposing traditional telecommunications rules to new Internet applications

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Canada

- Canadian Radio-television and Telecommunications Commission (CRTC) issues preliminary view on VoIP Service (April 2004)
 - Voice services using IP that utilize telephone numbers based on the North American Numbering Plan are functionally the same as circuit-switched telecommunication services
 - Existing regulatory framework should apply to VoIP services
- Public Consultation in May 2004

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United Kingdom

- The commercial provision of VoIP services is permitted
- Imposes no technical standards or quality of service requirements on VoIP
- Services providers may be required to apply for a licence if it is used by customers as a substitute for their existing telephone service
- BT, Cable & Wireless, etc. are offering VoIP services

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European Union

- Light-handed policy on IP telephony
- In 2000, the European Commission judged that Internet telephony should be treated differently from regular voice telephony
- Internet telephony did not offer the same level of reliability and speech quality
- Internet transmissions were not subject to the regulatory regime of traditional phone companies

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Japan

- Supports the development of IP Telephony
- Major operators like KDDI, Japan Telecom provides IP Telephony services
- As of Oct 2002, there were 2.9 million IP telephony users
- MPHPT has been issuing telephone numbers for IP Telephony since Nov 2002

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Australia

- Australian Communications Authority (ACA) issued report in May 2003
- ACA's definition of standard telephone service (STS) requires any-to-any connectivity
- Individual users sending voice over a packet network (the same way as data), ACA consider it as a data service
- STS shall apply if service operators offer a public telephony service over a packet-switched network

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Definitions of NGN

Working definition of ITU

- 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

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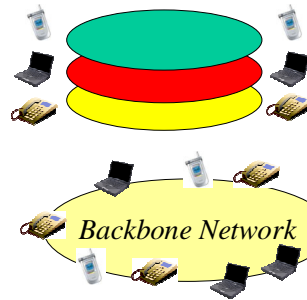
Definitions of NGN

- Generally refers to the expectations of future converged ICT services and infrastructure
- No unique definition
- Fundamental characteristics - Packet-based networks
- Internet Protocol (IP) based network is broadly viewed as the underlying infrastructure for all NGN systems

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Next Generation Network



Today :
Multiple Networks

Next Generation Network :
•Single Network
•Multimedia services

Challenges of IP Telephony and NGN

- Current telecom regulations based on legacy systems (e.g. circuit-switched networks)
- Review of regulatory and licensing framework for IP Telephony and NGN necessary
- Consumer's interests and confidence in services migration to new technologies
- Encourage investment and innovative services by the industry on new technologies

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Some Regulatory Issues for New Technologies

- Regulations and licensing
- Technology neutrality
- Resources allocations
- Interconnection and charging
- Issues of customers' interests

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Regulations and Licensing

- Reviewing existing regulations for traditional PSTN to assess its applicability to new technologies
- Considering which types of licence or new class of licence to be adopted: whether a new set of licensing criteria and conditions to be developed
- Caution of not to impose too much regulations to hinder new entrants' incentive for investments and innovations

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Technology Neutrality

- Technology neutrality - the principal regulatory objective to facilitate competition and innovative ideas
- Licensees should be at their own commercial decision for investment and selection of any new technologies

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Numbering Resources

- Number allocation essential for users to have any-to-any connectivity
- Some suggested a specific number allocation scheme to differentiate IP telephony from traditional telephone services
- Implementation of electronic numbers (ENUM) when matured

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Interconnection and Charging Issues

- Any-to-any connectivity - allows customers connected to a network can communicate with customers, and access service providers, connected to any other networks
- Interconnection between IP-based networks and PSTN essential
- Review the charging principles for interconnection (payment of interconnection charges, local access charges and universal service contribution etc.)

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Issues of Consumer Interests

- Emergency services – assure users to have access to emergency services, provision of caller location/identification to facilitate rescue
- Number portability – to allow users to retain the existing numbers when changing to other networks - be applied between IP-based and circuit-switched networks and among IP-based networks

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Issues of Consumer Interests

- Calling Line Identification – passed between IP-based and circuit switched networks for charging and Calling Number Display purposes
- Service and technical performances i.e. quality of services to be devised and published by operators to allow consumers to have informed choice

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Is HK Ready for IP Telephony and NGN?

- Advanced infrastructure, especially excellent broadband access in Hong Kong
- Industry ready to invest in innovative opportunities
- A customer base eager to try out new technologies
- HK is ready for the challenges of new technologies

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Way Forward

- Consultations to be conducted with the public and industry on the regulation of IP telephony
- Monitor newest international developments – e.g. ENUM, Standardisation works of ITU Focus Group on NGN

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