ITU-D Workshop for the Arab region on Interconnection and Next Generation Networks: *Addressing the regulatory challenges*

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Interconnection Charges: Bill & Keep, Peering, Transit or Calling Party's Network Pays? And a view of NGN Access from Europe

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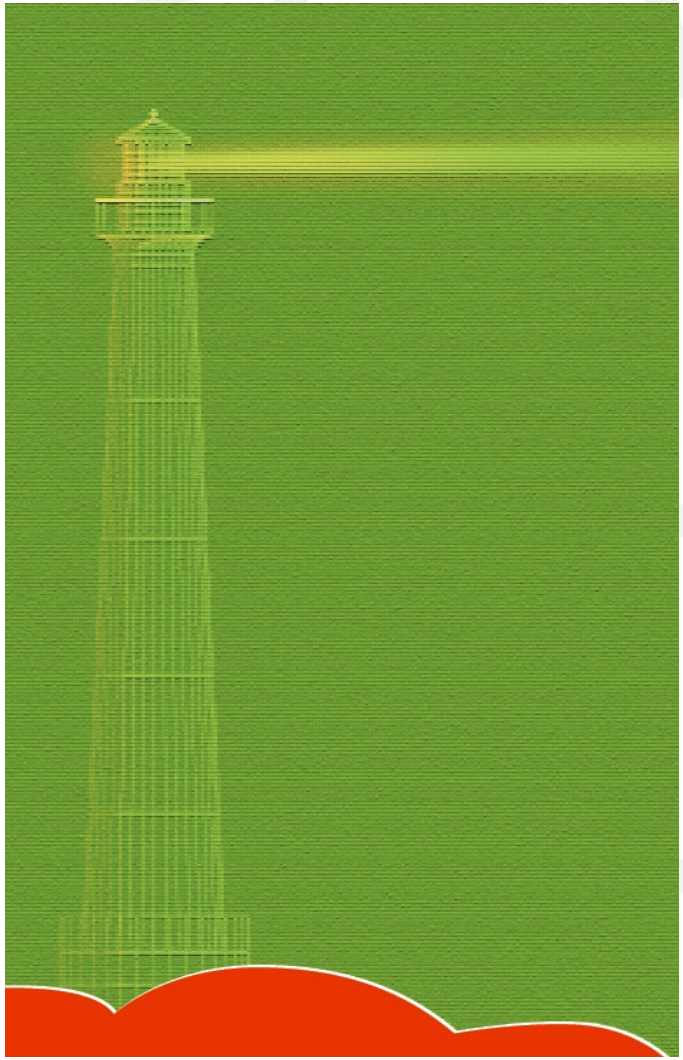
GSR 2007 Discussion Paper



Interconnection of IP-Based NGNs

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Interconnection of IP-Based NGNs

- Many operators, especially incumbents, look to migrate to NGNs.
  - Enhance economies of scope and scale.
  - Accelerate time-to-market for new IP-based services.
- NGN represents a marriage of PSTN and Internet.
  - Different technology.
  - Different culture.
  - Substantially different regulatory traditions.
- What should happen when these disparate worlds collide?

Interconnection of IP-Based NGNs

- PSTN – regulated arrangements.
  - Regulation to address market power.
  - Termination fees in the absence of regulation will tend to be very high, for both large and small operators.
  - Lack of interconnection implies a connectivity breakdown.
- Internet – “Coasian” private arrangements in most cases.
- Peering: two providers exchange traffic only for their respective customers, often with no explicit charges.
  - Sharing of facilities costs for interconnection may be unequal.
  - In most countries, no regulation of peering.
  - Lack of interconnection usually does not imply a loss of connectivity, but may have implications for costs.

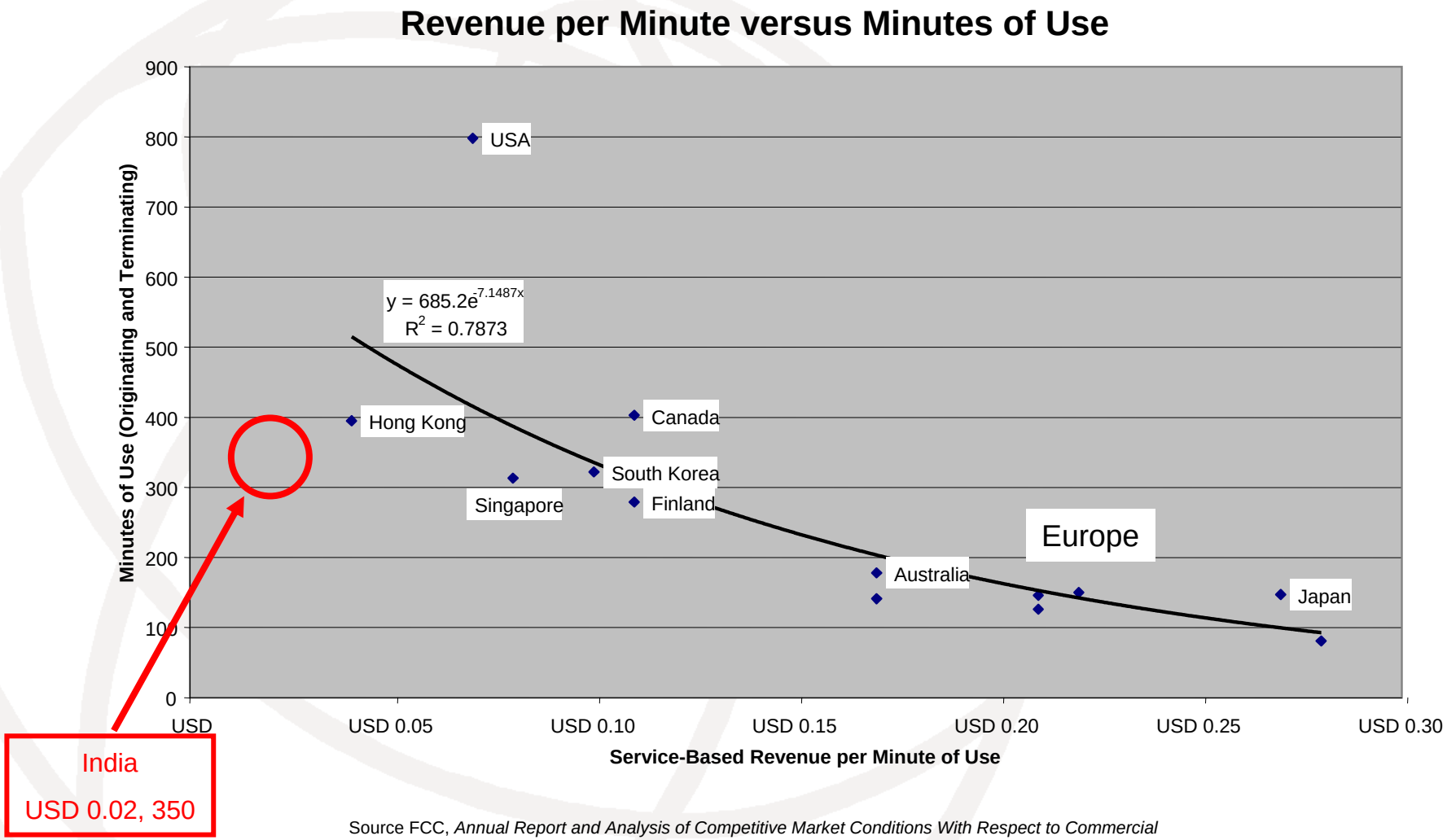
Interconnection of IP-Based NGNs

- The migration to IP-based NGNs breaks the strong historical linkage between the *service* and the *network*, enabling the emergence of independent service providers.
- Implications for regulation in support of competitive entry:
  - NGN introduces new forms of competition.
  - Does not necessarily eliminate traditional market power.
  - May enable the emergence of new competitive bottlenecks.
- To the extent that the network and service providers are different firms, traditional interconnection arrangements can break down for a variety of technical and practical reasons. Moreover, the reason for current arrangements is in question.

Wholesale and retail arrangements

- Wholesale arrangements
  - Calling Party's Network Pays (CPNP): termination fee to the operators that completes the call.
  - Bill and Keep: private arrangements, no regulatory obligation to pay a termination fee.
- Retail arrangements
  - Calling Party Pays (CPP): the recipient pays nothing.
  - Receiving Party Pays (RPP): rarely used, not interesting.
  - Flat rate: prevalent in Bill and Keep countries, and Internet.
- Flat rate retail arrangements are attractive going forward.
  - Better reflect costs in an industry with high sunk costs.
  - Consumers greatly prefer flat rate.

Wholesale and retail arrangements



Source FCC, *Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services, 11th Report*, September 2006, Table 12, based on *Interactive Global Wireless Matrix 4Q05*, Merrill Lynch, Telecom Services Research

Wholesale and retail arrangements

- CPNP with high mobile termination rates tends to lead to:
  - Subsidies for mobile adoption, and thus rapid penetration.
  - High retail prices.
  - Exclusion of calls with high termination from flat rate plans.
  - Low usage.
- Rapid penetration is beneficial; the other aspects are harmful.
- There is no economic rationale for CPNP in an NGN world.
- What role for the regulator?
  - Regulators need not regulate retail arrangements except to the extent necessary to address market power distortions.
  - Nonetheless, the implications of wholesale regulation for retail behavior are entirely relevant to the regulator.

Implications for developed countries

- If deployment of mobile and fixed services are substantially complete, there is no advantage in continuing to promote CPNP.
  - Stimulating adoption when penetration approaches or exceeds 100% provides no genuine benefit to consumers.
  - CPNP tends to lead to high retail charges, and to low use.
  - Cross-subsidies from fixed to mobile distort the development of the market, and may inhibit the evolution of the fixed network.
- The migration time from PSTN to NGN represents an opportunity to consider migration from CPNP to Bill and Keep.
  - Conventional CPNP is probably unsustainable anyway.
  - Bill and Keep is sustainable and economically rational.
  - If a change is needed anyway, probably best to migrate directly to the preferred end state.

Implications for developing countries

- For most developing countries, migration to NGN is years in the future.
- CPNP fosters faster penetration of mobile services, which is generally a positive development.
- Internationally, settlement arrangements generate net subsidies in favor of developing countries.
- Immediate abandonment of CPNP arrangements might be premature.
- Maintaining CPNP, but with substantially lower termination rates (ideally less than 0.02 USD) may provide an appropriate balance between stimulating mobile penetration and encouraging use of services.
- Low termination rates pave the way to later migration to Bill and Keep.

A view to NGN Access Regulation from Europe

- European Commission and European Regulators Group: "No regulatory holidays"
- When Europeans talk about NGN Access, they are focusing on FTTH, FTTcab and FTTB
- Incumbents DON'T expect to reach all homes with fibre
- Some homes to be reached by ADSL or WiMax
- ERG issuing its recommendations on NGN Access soon

KPN Plans

- KPN to phase out leased lines, both analog and digital when it starts its NGN
- KPN plans to dismantle its exchanges (MDFs) and switch off old network.
- Sale of buildings where old exchanges housed to net EUR 1 billion which can finance NGN deployment
- KPN suggests BWA could be a solution where it doesn't provide sub-loop unbundling
- Can BWA offer same functionality as fibre?
- KPN will have a reference sub-loop unbundling offer

European Regulators Group

- Concerned about some EC market definitions. Would “metallic loop” market definition include fibre?
- Unbundling fibre depends . . .
  - Point to point – unbundling easy
  - Point to multipoint – more challenging
  - Length of loops
- Collocation at street cabinet could be imposed
- Backhaul from street cabinet to operator’s network could be required

Infrastructure sharing to promote fibre buildout

- Civil engineering costs expensive and bulk of deployment
- In house wiring also a bottleneck
- It may not make economic sense to deploy multiple fibre networks
  - France, e.g., estimates several tens of billions of euros to deploy fibre nationwide
- Passive infrastructure sharing – shared civil engineering and wiring costs – necessary to remove entry barriers

Infrastructure sharing solutions in France

- Duct sharing could be imposed – new networks should be designed to provide ducts for competitors
- ARCEP (French regulator) questions whether PON can be unbundled
- ARCEP will issue guidelines to define reasonable access to passive local loop
- ARCEP is not arguing for active infrastructure sharing but is considering a model of local government providers on an open access basis – local governments could sell passive capacity without becoming operators themselves

Implications for Developing Countries

- Perspective is needed: Even developed countries can't afford nation wide FTTx coverage!
- A pro-competitive passive infrastructure sharing regulatory framework may make sense
- More information is needed on PON for countries planning to deploy national fibre backbones – is it compatible with open access?
- ERG guidelines may offer guidance
- TRAI (Indian regulator) recommendation on passive, active and backhaul networks for mobile networks is also an excellent resource
- Reference sub-loop offer may be needed

Thank you!

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