

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

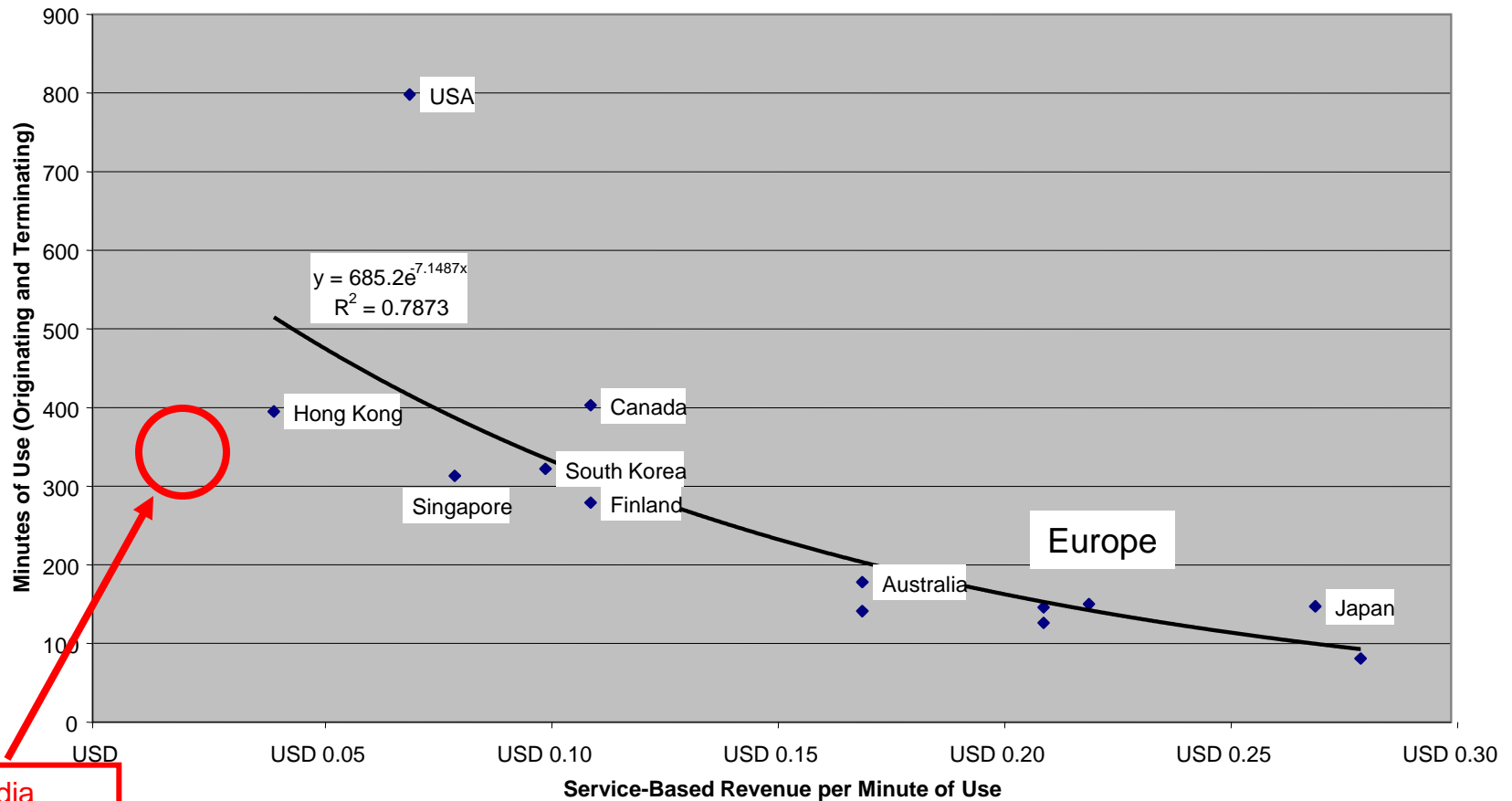
- The migration to IP-based NGNs breaks the strong historical linkage between the *service* and the *network*, thus enabling the emergence of independent service providers.
- Implications for regulation in support of competitive entry:
 - NGN introduces new forms of competition.
 - Does not necessarily eliminate traditional market power.
 - May enable the emergence of new competitive bottlenecks.
- Traditional interconnection arrangements represent an attempt to use wholesale payments (between network operators) to correct for imbalanced retail payments (between service providers). To the extent that the network and service providers are different firms, this system will break down for a variety of technical and practical reasons. Moreover, the reason for existence of current arrangements must be called into 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

Revenue per Minute versus Minutes of Use



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

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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.



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