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NGN interconnection – when worlds collide

The pricing paradigms in the worlds of circuit switched and IP networks are different and it is not yet clear which will prevail.

The “next” generation network (NGN) is here “now”. Globally and locally, policy and regulation has yet to get to grips with the regulatory implications of the NGN [1].

Different worlds

The worlds that “collide” in the NGN are (i) the traditionally regulated PSTN and unregulated internet respectively (ii) the different models for charging IP and PSTN traffic; both at wholesale and retail level and (iii) the carriers and content providers (ie the net neutrality debate).

(i) Price by service or class of service?

At a minimum, current regulated wholesale interconnect and access services must have an equivalent on the NGN; especially because legacy and NGN networks will co-exist. But what happens when a new service comes along? The ACCC would be obliged to hold a public consultation and inquiry process before it can regulate a new service. But, this approach may not provide the certainty that the industry needs to develop the many new services that the NGN will enable.

A different approach might be to pigeon-hole any new service into a traffic type. For example, VOD would simply fall under “streaming” with QOS and based on this class of service. But, that would mean any new service would be treated the same way as any other in that class; possibly at regulated rates. That would not encourage NGN carriers to work with others to develop new services. And, several new players may have to work together to make new services happen.

(ii) Bill and keep or keep billing?

It seems clear that wholesale charging arrangements constrain retail pricing and the latter will influence adoption and use.

The current paradigm for interconnection of IP networks is peering and transit. In the PSTN, interconnection is circuit switched and is time charged. The NGN is rather more complex than both of these. Because it separates the services and applications layer from the transport layer, interconnection can occur at several different layers in the protocol stack – sometimes simultaneously!

The ITU’s forthcoming “Trends in Regulation” is likely to support bill and keep (BAK) wherever possible while the European Regulators Forum (ERG) seems to favour element or capacity-based charges. Maybe it depends upon which level of interconnection is

considered and also the structural arrangements (eg BAK could not be used by a wholesale provider of transport services).

(iii) Who pays for bandwidth?

One of the key features in the NGN is quality of service. And, of course, this provides an extra dimension for pricing. Content providers like Google, are very unhappy about the possibility of setting and charging for different QOS. This is part of the “net neutrality debate”.^[2]

There are a number of different ways of ensuring QOS but there is no agreement yet on how to map, say, DiffServ to different levels of QOS. Perhaps, a menu of options could be agreed to provide, say, gold, silver and finally tin (best efforts only) QOS.

There is no doubt that interconnection arrangements will become more complex. Hubbing at an NGN exchange (as some ISPs do currently at IXs) might simplify matters. But, membership of such an exchange will lead to the lowest common denominator in what QOS its members can all accept. That’s a start. But, I see a replay of how the Tier 1s backbones emerged. That is, there may be larger NGN players who will make bi-lateral agreements to seek better end to end QOS. This is a prediction, not a criticism.

The NGN will shift the focus of regulation from transport to services and new sources of market power will emerge. That’s another story for a future column.

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[1] Global organisations like the ITU promote understanding and develop standards at meetings like the workshop on NGN interconnection in Bahrain that I contributed to last week. All the papers (including the technical session) can be found at <http://www.itu.int/ITU-D/treg/Events/Seminars/2007/Bahrain/agenda.html>

[2] For a discussion of what discrimination is acceptable and what is not, see Robert Frieden (2006) “Net Neutrality or Net Bias?--Handicapping the Odds for a Tiered and Branded Internet”, 35th Telecommunications Policy Research Conference <http://www.personal.psu.edu/faculty/r/m/rmf5/>