

# Universal service: the telephone meets the Internet

*Trying to find a consistent regulatory approach to the fundamentally different technologies employed in telecommunications networks is providing an important test for universal service funding arrangements*

**R**ecent attention has been focused on the interaction between universal service regimes and new forms of telephony. In particular, the use of Internet protocol (IP) to emulate voice connections (IP telephony).

Events in Australia and the U.S. have thrown into sharp relief the difficulties experienced in forming a consistent regulatory approach to technologies with such fundamentally different modes of operation to "conventional" forms of telephony.

In the U.S., the Federal Communication Commission (FCC) was required to report to congress on the progress of the universal service regime under the (U.S.) *Telecommunications Act 1996*.<sup>1</sup> Much of the report focused on FCC funding of telecommunications and other data services to schools and libraries. But the FCC also commented on its approach to determining whether universal service levies would be paid by service providers offering IP telephony from PCs or (via "gateway" technology) telephone handsets.

In Australia, Senator Richard Alston, the Federal Minister for Communications and the Arts, has released for public comment draft statutory rules determining how universal service contributions are to be calculated for participating carriers under the *Telecommunications Act 1997*. The draft *Telecommunications Universal Service Obligation (Eligible Revenue) Regulations 1998* sets out a system for determining whether money earned by carriers should be considered for the purpose of calculating the amount they owe under the universal service regime - i.e., how to calculate "eligible revenue".

Before exploring what the FCC said, and how the issues might affect regulation in Australia, let's consider what we mean by IP telephony, how it differs from, and is similar to, normal telephony.

In a conventional telephony system, initiating a call opens a continuous channel between two parties, allowing two-way and open communication between end-points. Establishing such circuits requires the ability to change the connections sustained by the network over time; this is "switching". A circuit in such a network, once established, is unaffected by traffic elsewhere on the network. But the reverse is not true, network congestion being largely the result of how many circuits are required to be established at one time, and the average length of calls.

By contrast, IP telephony depends on a "packet switched" network where the role of Internet protocol is to provide a basis on which packets of information are passed over an open network platform. Since packets may travel different routes before arriving at their destination, integrity of the signal is not guaranteed and the resultant signal quality may be highly sensitive to the impact of increased traffic flow elsewhere on the network. IP telephony

refers to the use of packet-switching networking using Internet protocol to pass a digitised stream of audio information as a series of packets, reassembling the audio (voice) signal at the far end. The equipment used to create and decode the signal may be a PC or regular telephone.

Under section 254(d) of the (U.S.) *Telecommunications Act 1996*, the FCC has to establish "specific, predictable and sufficient" mechanisms for determining carrier contributions to universal service funding.

Under the FCC's *Universal Service Order* (and affirmed in the Report) the commission signalled its intention to construe the final sentence of section 254(d), which notes that in addition to interstate carriers, "any other provider of interstate telecommunications may be required to contribute to ... universal service if the public interest so requires".

So, the FCC assumes a broad discretionary authority to determine the extent to which providers of underlying transmission capacity and other telecommunications must contribute to universal service. For example, providers of private networks (which cross state boundaries) and payphone aggregators are required to contribute; providers of telecommunications "wholly for their internal needs", including government entities such as state networks or broadcasters - and including Internet access providers who provide themselves with leased lines - are not.

In deciding how to exercise this discretion, the FCC distinguished between services which include a carriage component (in U.S. terms, "include telecommunications") and those which inherently *are* carriage services ("provide telecommunica-

tions"). An online service for booking airline tickets was used to illustrate this principle. The FCC considered that users of that service obtain telecommunications (carriage) services from their local phone company, then information services provided by their Internet access provider (and, potentially, the online content provider) to access the service. This second set of services is seen by the commission as wholly "informational" (i.e., as content service) rather than being treated as a telecommunications (carriage) service, notwithstanding that information passes between the locations of the proprietor and customer using the service.

This does not mean that all online services would be exempt from universal service simply by virtue of their character as information services. Instead, the FCC adopted a "case-by-case" approach to this question.

So, the question of whether universal service contributions must be paid by firms - other than interstate carriers (who are "mandatory" contributors) - is determined by deciding whether that firm is a "provider of interstate telecommunications", and then whether the FCC has elected to require it to contribute under the "permissive" contribution regime. This more significant question is resolved by reference to services: are they "mere" information, or is a telecommunications service being provided?

Universal service is governed in Australia by Part 7 of the *Telecommunications Act 1997* and by related legislation (notably the *Telecommunications (Universal Service Levy) Act 1997*).

The obligation to ensure that certain services such as "standard telephone services" are available to all Australians on an equitable basis, wherever they reside or do business, is imposed on one or more carriers as directed by the

minister. Those carriers must identify the avoidable cost of providing those services. A proportion of this aggregate cost (the "total net universal service cost") is then paid by each "participating carrier", with the share of total cost to be paid determined by the proportion of all "eligible revenue" that participating carriers earned during the relevant period.

The draft *Regulations* set out a method for determining "eligible revenue". Though they provide a broad starting point for calculating payments (being the "sales" and other attributable income of the carrier), they also provide that amounts earned "for the content of a content service" will not be included.

Since section 15 of the Act provides that a "content service" includes all "online" or information services, it seems likely that the controversy in the U.S. as to whether IP telephony constitutes a "telecommunications service" or an "enhanced" or "information" service is likely to be mirrored by the question in Australia as to whether IP telephony is a "carriage" or "content" service. In Australia, as in the U.S., the cost of universal service will be borne by end-users of "carriage services", and - to the extent that the distinction between content and carriage is blurred in IP telephony - functioning substitute services to circuit-switched telephony will not automatically be included.

Of course, most Internet users do not use their Internet access for IP telephony. Only a tiny proportion of all Internet traffic is related to sustaining a voice signal.<sup>2</sup> But IP telephony represents an important challenge to standard regulatory approaches.

For example, it was argued in submissions to the FCC that email was "nothing more or less than a paperless fax". After considering these issues, the FCC determined that Internet access services other

than the specific application of IP telephony were definitely in the "information" category, so providers of those services would not be liable for universal service contributions. Ducking the key issue of substitutability of IP and "regular" telephony, the FCC resorted to distinguishing between different forms of telephony based on the use of particular hardware.<sup>3</sup> Such an approach is not without its critics.<sup>4</sup>

Regardless of whether one considers IP telephony should, or should not, be included in universal service funding, the likelihood is that the impact so far of its exclusion has been minimal. But over time, price differentials between IP access and conventional telephony will have the inevitable effect of increasing uptake of IP telephony.

As events in Australia and the U.S. have demonstrated, when that happens regulators are likely to feel more keenly the inherent tension between universal service regimes designed in a world of conventional telephony on the one hand and the need to remain "technology neutral" on the other.

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1 FCC 98-67 (Report to Congress) adopted April 10, 1998

2 Reliable information is obscured by the rapid rate of change of these markets, the inherent inability of Internet traffic to be easily divided into "voice" and other data types and the small time available to gather data. See, for example the discussion in section (III)(B)(2)(c) in Werbach, K (1997) *Digital Tornado: The Internet and Telecommunications Policy*, OPP Working Paper No. 29.

3 See FCC 98-67 at paragraphs 87-88.

4 Most notably, Commissioner Furchtgott-Roth, who issued a separate dissenting Report to Congress.