

○ NET NEUTRALITY – HOW RELEVANT IS IT TO AUSTRALIA?

James Endres, Telstra

This paper defines net neutrality as a restriction on price differentiation or price discrimination by firms involved in the distribution and transport of online content and applications. Many argue that net neutrality is a uniquely American problem brought about by an abandonment of access regulation and a lack of competition in the retail provision of broadband Internet access. This paper reviews the issues at the core of the net neutrality debate and assesses their relevance to Australia. It concludes that the combination of strong competition in the provision of broadband Internet access, widespread adoption of volumetric pricing by ISPs and the existence of a well established regulatory framework for dealing with discriminatory behaviour negates the need for specific net neutrality regulation in Australia.

INTRODUCTION

Net neutrality is a heated and contested policy principle in the United States. In stark contrast, net neutrality has received little attention in Australia by either industry or policy makers. This paper argues there is good reason for this lack of attention including strong competition in the retail provision of broadband Internet access, wide spread adoption of volumetric pricing by ISPs and a well established regulatory framework for dealing with discriminatory behaviour that is detrimental to consumers and competition.

This paper consists of six sections. Section 2 examines the origins and history of the net neutrality debate. In doing so, it summarises arguments both for and against net neutrality regulation. Section 3 provides a number of alternative definitions of what is meant by the term 'net neutrality'. Section 4 looks at the economics of net neutrality and identifies those issues that are at the core of the net neutrality debate – discrimination and market power. Section 5 examines the relevance of the net neutrality debate to Australia. Finally, Section 6 draws some conclusions.

THE NET NEUTRALITY DEBATE SO FAR

The net neutrality debate has its origins in the United States and has become an important issue in telecommunications regulation. It was triggered in 2002 when the Federal Communications Commission (FCC) ruled that provision of cable modem services (i.e., cable Internet services) is an interstate information service and therefore exempt from the telecommunications common carrier requirements.¹ This ruling was upheld by the U.S Supreme Court in a June 2005 decision (*National Cable & Telecommunications Association v Brand X Internet Services*).

The debate gained further momentum in August 2005 following an FCC ruling to extend the same regulatory relief to wireline Internet broadband services (i.e. DSL Internet services). Concurrently, the FCC issued a 'Policy Statement,' declaring that consumers of Internet services should enjoy four 'entitlements':

1. access to lawful content of their choice;
2. ability to run chosen applications and services;
3. ability to connect their choice of legal devices that do not harm the network; and

4. competition among network, application and content providers.

The FCC's Policy Statement expressly stated that the Commission was not adopting rules and that the above 'entitlements' are subject to reasonable network management practices.

Subsequently the FCC has entertained complaints regarding alleged violations of its policy and has issued public notices and held public hearings specifically seeking information relating to broadband network management practices. Meanwhile the debate continues, not only within the industry, but also in the US Congress² (Cave & Crocioni, 2007: 671).

Proponents of net neutrality allege that ISPs and network operators have incentives to discriminate against competing or unaffiliated content and services to the detriment of competition in downstream content and applications markets. According to (Frieden 2006),

Network neutrality advocates worry that major ISPs have both the wherewithal and incentive to bifurcate the Internet into one medium increasingly prone to congestion and declining reliability and one offering superior performance and potential competitive advantages to users able and willing to pay, or affiliated with an ISP operating a major bitstream transmission network.

Supporters of net neutrality further argue that failure to mandate some form of net neutrality would mean that the Internet would cease to be free and open and that in the absence of net neutrality, innovation by content providers may be stifled in turn preventing the emergence of new highly-valued content. For example, it is often argued that the success of the World Wide Web, Google, Skype and Yahoo etc has been made possible by a decentralised Internet based on net neutrality and that any departure from net neutrality will stifle future innovation (Economides 2007, 241).

Opponents of net neutrality argue that any imposition which reduces the ability of ISPs to manage their networks and develop their product offerings (including pricing) would be inefficient and undermine their ability to defray the high investment costs of upgrading and expanding consumer broadband networks (Schwartz & Weiser, 2009). Opponents also argue that a one-size fits all approach will restrict the Internet to only carrying limited types of content and applications which will in turn limit innovation (Ralph, 2007).

In Europe and Australia, the net neutrality debate has not received significant attention from either consumers or industry. In Europe, the net neutrality debate has been dismissed by many as an American problem caused by the abandonment of local loop unbundling regulation for broadband competition in the local access network (Marsden, 2007). Similarly, in Australia, the net neutrality debate is widely considered to be a commercial issue for American ISPs resulting from the fact that unlimited broadband Internet usage plans have failed to generate additional revenue in line with traffic growth and demand for additional broadband capacity (Winterford & Hill, 2008).

WHAT IS NET NEUTRALITY?

As noted by (Cave & Crocioni 2007, 670), the concept of net neutrality is difficult to define because not only is it not clearly and unanimously articulated, but it is often linked to vague concepts

of fairness and civil liberty much more than economics. Advocacy group, (Save the Internet 2009), contends that:

Net neutrality ... is the guiding principle that preserves the free and open Internet. Put simply, net neutrality means no discrimination. Net neutrality prevents Internet providers from blocking, speeding up or slowing down Web content based on its source, ownership or destination. Net neutrality is the reason why the Internet has driven economic innovation, democratic participation, and free speech online. It protects the consumer's right to use any equipment, content, application or service on a non-discriminatory basis without interference from the network provider. With net neutrality, the network's only job is to move data – not choose which data to privilege with higher quality service.

A less emotive definition, provided by (Baumol et al. 2007, 1), describes net neutrality as a policy proposal that would, among other things, regulate how network providers manage and price use of the network.

An alternative way of understanding the concept of net neutrality is to view it as a number of propositions rather than a single concept (Sidak 2006, 351). First, proponents of net neutrality argue that ISPs should be prevented from charging more for priority delivery. Second, ISPs should not be allowed to deny access to specific websites or Internet applications by final users. Third, and largely a corollary to the above, ISPs should not be allowed to integrate backwards into the production of content or applications.

The common concern underlying all of these propositions is the ability of ISPs to discriminate among content and applications. The first proposition reflects a concern about discrimination based on quality of service, whereby ISPs could designate ‘fast lanes’ and charge content providers or end-users for use of these lanes. Additionally, ISPs could use local ‘on-ramps’ to ensure that affiliated content gets to the customer quicker and at better quality than unaffiliated content (Ralph 2007). It is argued that these practices could harm innovation in the development and competition in the provision of content and applications. The second proposition reflects a concern that ISPs could use port blocking or other technological means to unilaterally block or discriminate against content or applications that compete with ISP services (Ralph 2007). For example, an integrated ISP that offers standard voice telephony or Pay TV services in addition to broadband may choose to block Voice over IP (VoIP) traffic or video content from unaffiliated sources. The third proposition reflects a concern that ISPs will face increasingly strong incentives to invest in the development and production of content which will threaten the ‘free and open’, decentralised and democratic nature of the Internet.

THE ECONOMICS OF NET NEUTRALITY

If net neutrality is about discriminatory behaviour by ISPs and network operators in favour of the provision of affiliated content and/or applications then it is only a new tag-line for a very old issue (Speta 2009). It is well understood by policy makers and competition regulators that when firms with market power discriminate against downstream rivals there may be concerns about anti-competitive effect and/or purpose. This could be aimed at either favouring the downstream operator’s arm or to fend off rivals who may threaten to integrate backwards (Ralph 2007). The

history of this issue as it relates to broadband and telecommunications is summarised by (Speta 2009):

At the dawn of the broadband era, the issue was framed as whether independent ISPs would have 'open access' to sell the highspeed Internet services offered by cable companies. Earlier, as competition developed in long-distance telephony, long-distance carriers began to design customized offerings for their big-business customers. When challenged as discriminatory, the FCC ordered the tariffs open to all comers, which meant that carriers built in artificial terms to make them unpalatable (to customers other than their intended beneficiary). Before the telephone era, the non-discrimination rule of the Interstate Commerce Act was interpreted to force railroads to permit freight-forwarders to access discounted rates for aggregated carload lots, despite the manner in which this competition eroded the rate structures expressly approved by regulators to ensure that these utilities covered their costs.

Concerns about market power and discrimination, in either telecommunications or any other market, do not necessarily require a blanket prohibition. Instead any justified regulatory or policy response should first satisfy two necessary preconditions. First, the existence of substantial market power in the provision of an access service needs to be confirmed. Second, any practice of discrimination needs to have adverse consequences for competition and consumer welfare.

Both price and non-price discrimination can be welfare enhancing. In particular, by charging different prices for the same product in different segments of the market (i.e. third degree price discrimination) a downstream monopolist can extract a greater surplus and expand output (Schmalensee 1981; Varian 1985). However, while overall welfare is increased, third degree price discrimination generally leads to a transfer of surplus from consumers to producers. In essence, this means that imposing an absolute ban on price and non-price discrimination in these circumstances may lead to lower output because some smaller markets may no longer be served.

BANNING TRAFFIC PRIORITISATION AND CHARGING FOR PRIORITISATION

Net neutrality advocates often claim that the Internet was designed to assign equal treatment and rights of delivery to each packet (Save the Internet 2009). While there may be some truth in this statement it should be viewed in the context of the following:

- Excess capacity was a feature of communication networks at the beginning of the proliferation of Internet use. Hence there was no need to prioritise traffic or engage in network management to ensure the efficient use of network capacity. This is not dissimilar to a newly built uncongested road.
- Earlier Internet applications were not delay sensitive. This is reflected by the best-efforts nature of most ISPs product offerings.

Much has changed since then. ISPs have come to realise that network capacity is finite and that increasing bandwidth-intensive content applications will require ongoing investment in additional bandwidth and network capacity. There has also been a realisation that sophisticated online content and applications are not all the same. Some content such as email and text based web

pages may not be delay sensitive, which contrasts with applications such as IP television (IPTV) and VoIP that have a low tolerance of delay and jitter.

The ability to discriminate on the basis of quality of service is an efficient means of managing demand when it exceeds the network's capacity – i.e. network congestion. When congestion occurs, all traffic is delayed irrespective of its value. As this is an economically inefficient outcome, charging more for priority traffic and allowing higher valued content to receive a greater quality of service will increase efficiency. Such an outcome is not dissimilar to a congested road where buses are given priority over cars during peak times or where drivers can pay a toll for the use of an uncongested express lane.

In the absence of network congestion, price discrimination based on differences in the customer's willingness to pay may also lead to greater overall efficiency. In particular, the recovery of fixed and common costs from those services which are relatively inelastic is Ramsey efficient.³ Indeed, Ramsey efficient pricing has been widely used by telecommunications operators to efficiently recover fixed and common costs associated with PSTN networks. Such pricing, while undesirable to advocates of net neutrality, may not necessarily be anticompetitive or harmful to consumer welfare.

BLOCKING ACCESS TO CONTENT, WEBSITES OR APPLICATIONS

The second plank of the net neutrality argument is that ISPs and network operators should not deny access by end users to specific content, websites or Internet applications. Indeed it is easy to think about how such behaviour can have an anticompetitive effect in the markets for Internet content and applications. While this behaviour is possible, its probability will be tempered by competition in, and contestability of, the market for the provision of retail Internet access.

The blocking of unaffiliated content or applications is most likely to occur where the network operator or ISP has significant market power in the provision of Internet access and has vertically integrated into content and applications. Such a firm could maximise profit and reduce output by blocking unaffiliated content. However where an integrated network operator or ISP faces competition in the market for retail Internet access, the practice of blocking unaffiliated content may result in a loss of 'access customers' as well as 'content customers'. Similarly, where there may be little competition in the provision of Internet access but the barriers to entry are low, the blocking of unaffiliated content may result in the entry of a new competitor seeking to compete on the basis that it offers access to all content.

NET NEUTRALITY: RELEVANCE TO AUSTRALIA

THE COMPETITIVE LANDSCAPE

The retail provision of Internet access in Australia is highly competitive with low barriers to entry. According to the Australian Communications and Media Authority, as at June 2008 there were 678 ISPs operating in Australia using a range of different access technologies (ACMA 2008, 2). Of this total, 37 ISPs reported a customer base of more 10,000 (ABS 2008).

While many of the ISPs serve specific geographical areas, there are numerous national ISPs that compete throughout most, if not all, areas of Australia. Hence, most areas of Australia are served by at least two competing ISPs. This is in contrast to the competitive landscape in the

United States where competition is more geographically focused and most areas are served by either one or both fixed line operators (cable and/or DSL providers).

Australia's market for the provision of retail Internet access also exhibits no significant barriers to entry or expansion. New entrants have available to them a range of entry options including:

- to resell the incumbent's, or another network provider's, wholesale services (i.e. resale competition),
- partial facilities based competition using the declared Unconditioned Local Loop Service (ULLS) or Line Sharing Service (LSS), or
- full facilities based competition by investing in the provision of competitive network infrastructure such as next generation wireless networks, Fibre to the Home or Curb (FTTH or FTTC) infrastructure.

Perhaps the strongest evidence of these low barriers to entry is the significant market participation that has taken place over the last few years. According to JP Morgan the number of unbundled lines as a proportion of total active broadband services has grown from around one percent in June 2004 to around 11.5 percent in June 2007 (JP Morgan 2007, 14). This growth in unbundled lines is in addition to competition from resellers and infrastructure based competitors that provide retail broadband services via competitive networks including 3G/HSDPA mobile and HFC networks, and represents real market entry and expansion by competitors.

As discussed previously, competition in the retail provision of Internet access coupled with low barriers to entry and expansion dampens the incentives for network operators and ISPs to block access to content, web pages or applications. Such behaviour by any one ISP will reduce the attractiveness of its service offering, putting it at a competitive disadvantage.

BUSINESS MODELS AND PRICING STRUCTURES

Australia's market for Internet access is characterised by the widespread use of volumetric charging by ISPs. Volumetric pricing refers to a pricing structure whereby the end-user pays the access provider for access to the Internet at a certain speed and a pre-determined maximum download usage allowance. Once a consumer reaches the monthly usage allowance, the service provider either slows the speed of the service to dial-up speeds or it charges the end-user additional usage charges – normally on a per megabyte basis.

Some net neutrality advocates argue that volumetric pricing restricts consumer access to content on the public Internet. For example, Marsden argues that where an ISP undertakes traffic shaping, they have strong incentives to block or 'throttle' the transmission of low value content such as either unaffiliated content or user generated content (Marsden 2007, 412–413).

Australia's experience of volumetric pricing clearly shows that the concerns of net neutrality advocates are overstated. Indeed volumetric pricing has several advantages which, taken together, dampen the incentives that ISPs and network operators face to discriminate against or block traffic based on its source or type. First, the imposition of monthly download quotas and additional per megabyte usage charges allows ISPs to more effectively set user prices to marginal costs. As detailed in Table 1, effective per megabyte charges decrease as monthly usage increases. This is both efficient and consistent with the declining marginal cost structures of high fixed costs networks.

Provider/Service	Speed	Monthly Price (\$)	Download Quota (MB/month)	Effective MB Charge (cents/MB)	Additional MB Price (cents/MB)
BigPond Cable	8 Mbps/128 kbps	29.95	200	14.98	15
BigPond Cable	8 Mbps/128 kbps	39.95	400	9.99	15
BigPond Cable	8 Mbps/128 kbps	59.95	12000	0.5	Throttled
BigPond Cable	8 Mbps/128 kbps	79.95	25000	0.32	Throttled
BigPond Cable	Up to 30 Mbps	39.95	200	19.98	15
BigPond Cable	Up to 30 Mbps	49.95	400	12.49	15
BigPond Cable	Up to 30 Mbps	69.95	12000	0.58	Throttled
BigPond Cable	Up to 30 Mbps	89.95	25000	0.36	Throttled
BigPond Cable	Up to 30 Mbps	129.95	60000	0.22	Throttled
Optus Broadband	Up to 20 Mbps	29.99	2000	1.50	Throttled
Optus Broadband	Up to 20 Mbps	39.99	5000	0.80	Throttled
Optus Broadband	Up to 20 Mbps	59.99	15000	0.40	Throttled
Optus Broadband	Up to 20 Mbps	99.99	30000	0.33	Throttled
iiNet ADSL	ADSL 2+ speeds	29.95	2000	1.50	Throttled
iiNet ADSL	ADSL 2+ speeds	39.95	10000	0.40	Throttled
iiNet ADSL	ADSL 2+ speeds	49.95	30000	0.17	Throttled
iiNet ADSL	ADSL 2+ speeds	59.95	45000	0.13	Throttled
iiNet ADSL	ADSL 2+ speeds	69.95	65000	0.11	Throttled
iiNet ADSL	ADSL 2+ speeds	99.95	100000	0.10	Throttled
iiNet ADSL	ADSL 2+ speeds	129.95	140000	0.09	Throttled

Table 1 Residential Internet Plans – selected ISPs

Note: All prices reflect the cost of the broadband service assuming that the customer bundles a PSTN telephony service. All prices were obtained from the relevant ISPs' websites as at 21 April 2009.

Second, as demand for Internet traffic grows, volumetric pricing allows ISPs' revenues to grow, which in turn provides network operators incentives to invest in additional network capacity and capabilities. By contrast, truly unlimited plans, such as those commonly offered by US ISPs, provide little incentive for ISPs to invest in network upgrades and capacity. Third, volumetric pricing provides strong incentives for ISPs to maximise the transmission of all network traffic, regardless of its source or type, because this will allow ISPs to earn additional revenues and maximise profits. This is clearly the case where an ISP imposes additional download charges on the end user once they have reached their monthly download quota. However, if an ISP undertakes traffic shaping or throttling of customers' traffic, that ISP has an incentive to structure its menu of access plans in such a way that its customers will choose a higher priced monthly plan which provides excess download capacity. Such pricing structures maximise an ISP's revenues from fixed monthly charges as opposed to variable usage charges. Finally, volumetric pricing is a transparent network management practice whereby the ISP is agnostic about what type of traffic is shaped. Instead congestion is managed on the basis of the customer's willingness to pay.

REGULATION

The transition of Australia's telecommunications industry from a government owned monopoly to full and open competition has been accompanied by industry specific regulation. This regulation

comprises both ex-ante access regulation and behavioural regulatory instruments that are designed to prevent the misuse of substantial market power. This industry-specific regulation operates in addition to Australia's well-established trade practices regulation, which is enshrined in the *Trade Practices Act 1974*. Accordingly, Australian regulators have several options to deal with the sort of discriminatory behaviour that concerns net neutrality advocates.

PART XIC OF THE TRADE PRACTICES ACT

Part XIC establishes a process whereby providers of carriage services, and of content services supplied by means of carriage services, can obtain access to particular (input) services. There is no general right of access. Rather, the Australian Competition and Commission (ACCC) must first declare the service.

Part XIC confers power on the ACCC to declare:

- a carriage service; or
- a service that facilitates the supply of a carriage service.

The ACCC must first conduct a public inquiry into the declaration of a service and determine whether declaration will promote the long-term interests of end users (LTIE).

Once a service is declared by the ACCC, the provider (the access provider) of that service must, if requested to do so by an access seeker, supply that service on non-discriminatory terms and conditions in accordance with the standard access obligations (SAOs). Both price and non-price terms and conditions are covered by the SAOs. Additionally, the SAOs require that an access provider take all reasonable steps to ensure that the technical and operational quality of the service and ancillary services (fault detection, handling and rectification, and the timing of those services) is equivalent to that which it provides to itself.

Part XIC negates the need for a specific net neutrality rule. In practice, if the ACCC were to form the view that discriminatory treatment of Internet traffic by an ISP or network owner (either price or non-price behaviour) was undesirable and that declaration of the relevant carriage service would be in the LTIE, then it could declare the service, which would obligate the access providers to provide that service to access seekers on non-discriminatory price and non-price terms and conditions.

The declaration inquiry into the Internet Interconnection Service, in 2004, confirms the adequacy of Part XIC in addressing access issues relating to data carriage and Internet traffic. Importantly, if the ACCC had decided in favour of declaration, Australia would have had, in effect, a quasi net neutrality rule whereby preferential treatment or quality of service for on-net traffic could have been restricted. Moreover, while the focus of the ACCC's Inquiry was on transport in the backbone network, several of the ACCC's comments might well indicate a view that traffic prioritisation could adversely affect competition. In particular, its Final Report the (ACCC 2004) noted that:

Internet markets generally are in a state of transition. As such, the Commission believes that it should proceed with caution in deciding whether or not to regulate. In particular, there is a shift from dial-up to broadband access, the retail market is continuing to grow, and applications that drive the Internet's growth continue to develop and evolve. It is not certain that market power is constrained

by this dynamism, or whether requirements for quality of service associated with newer applications may act to reinforce existing market power.

REGULATORY PROVISIONS ON CONDUCT

It is likely that discriminatory conduct, of the kind that concerns net neutrality advocates, would be dealt with under Part XIC of the Act. That said, where the conduct in question is undertaken by an ISP or network operator with substantial market power, the ACCC could choose to invoke its powers under either the general (section 46) or telecommunications-specific anti-competitive conduct provisions (Part XIB) of the Trade Practices Act.

Part XIB of the Trade Practices Act establishes a competition test that deters carriers with a substantial degree of market power in a telecommunications market from misusing that power with the effect of substantially lessening competition. This is equivalent to the effects-based anti-trust legislation long-established and used in the United States.⁴

Part XIB applies in addition to section 46 of the Act. Both are judicial enforcement models that prescribe general rules of conduct which are enforceable by the courts. There are however a number of important differences between Part XIB and section 46 of the Act:

- Part XIB applies specifically to telecommunications while Part IV applies generally to all markets;
- Part XIB makes use of an effect or likely effect test, whereas section 46 uses a purpose test;
- Part XIB, but not Part IV, allows the ACCC to issue competition notices to firms it alleges are engaged in anti-competitive conduct. A ‘Part B competition notice’ has the effect of reversing the onus of proof; and
- the pecuniary penalty in Part XIB (\$10 million plus \$1 million per day) is potentially much greater than in Part IV (\$10 million).

It should be noted that Part XIB and section 46 are ex-post regulatory instruments. Hence, for the ACCC to initiate a Part XIB or section 46 action the offending behaviour would have needed to occur. This contrasts with Part XIC of the Act, which allows the ACCC to address the conduct before it has occurred.

CONCLUSIONS

The presence of strong competition in the retail provision of Internet access, the widespread adoption of volumetric pricing and the existence of a well established and comprehensive regulatory framework for dealing with anti-competitive behaviour gives good grounds for the belief that there is little justification for specific net neutrality regulation in Australia. Strong competition coupled with low barriers to entry dampens the incentives for network operators and ISPs to block access to content, webpages or applications. Volumetric pricing provides strong incentives for ISPs to maximise the transmission of all network traffic regardless of source or type. It is also a transparent network management practice whereby congestion is managed on the basis of the customer’s willingness to pay. Finally, Australia’s existing regulatory frameworks that apply to telecommunications are well placed to deal with any competition concerns that may arise from discriminatory network management practices on behalf of ISPs and network operators.

ENDNOTES

- 1 The common carrier requirements of the *Communications Act 1934* stipulate that wholesale network access is to be provided upon request without unreasonable discrimination as to rates, terms and conditions of service.
- 2 As Cave & Crocioni 2007 note, there is a political economy aspect to the Net Neutrality debate – being an attempt by content and application providers to constrain the behaviour of broadband Internet access providers through political pressure.
- 3 Ramsey efficient pricing is a pricing approach that weights the allocation of non-marginal costs to customers inversely to their price responsiveness (demand elasticity).
- 4 Sections 1 and 2 of the Sherman Act prevent firms with market power from using that power to undermine the competitive process.

REFERENCES

- Australian Bureau of Statistics (2008). Cat No 8153.0, 'Internet Activity', Australia, June 2008.
- ACCC (2004). *Internet Interconnection Service*, Final Report, 1 December 2004, p. 20.
- Australian Communications and Media Authority. (2008). 'ACMA Communications Report 2007–08'. Accessed 18 May 2009. Available from: http://www.acma.gov.au/WEB/STANDARD/pc=PC_311541.
- Baumol, W.J. et al. (2007). 'Economists' Statement on Net Neutrality', AEI-Brookings Joint Centre for Regulatory Studies, Washington.
- Cave, M; Crocioni, P. (2007). 'Does Europe Need Network Neutrality Rules?'. *International Journal of Communication* 1: 669–679.
- Economides, N. (2007). 'Net Neutrality, Non-Discrimination and Digital Distribution of Content Through the Internet'. Accessed 18 May 2009. Available from: http://www.stern.nyu.edu/networks/Economides_Net_Neutrality.pdf.
- Frieden, R. (2006). 'Internet 3.0: Identifying Problems and Solutions to the Network Neutrality Debate'. Accessed 18 May 2009. Available from: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=962181.
- J.P. Morgan Securities Australia. (2008). 'Australian Broadband Market: FY07 Review – The Big Fish in This BigPond Just Keeps Getting Bigger', Sydney.
- Marsden, C.T. (2007). 'Net Neutrality and Consumer Access to Content'. *SCRIPTed*, 4 (4), 407. Accessed 18 May 2009. Available from: .
- Ralph, E.K. (2007). 'Net Neutrality: Issues and Relevance to Australia'. *Concept Economics*, Australia.
- Save the Internet. (2009). Accessed 18 May 2009. Available from: <http://www.savetheinternet.com/=faq>.
- Schmalensee, R. (1981). 'Output and Welfare Implications of Monopolistic Third-Degree Price Discrimination'. *American Economic Review* 71 (1): 242–247.
- Schwartz, M; Weiser, P. (2009). 'Introduction to a Special Issue on Network Neutrality', *Review of Network Economics*. 8 (1) March 2009. Accessed 18 May 2009. Available from: .
- Sidak, J. G. (2006). 'A Consumer-Welfare Approach to Network Neutrality Regulation of the Internet'. *Journal of Competition Law & Economics* 2 (3): 351.
- Speta, J. B. (2009). 'A Sensible Next Step on Network Neutrality: The Market Power Question'. *Review of Network Economics* 9 (1) March: 115.
- Varian, H. R. (1985). 'Price Discrimination and Social Welfare'. *American Economic Review* 75 (4): 870–875.
- Winterford, B.; Hill, J. (2008). 'Net Neutrality: An American Problem?' *Cnet News*, September 28, 2008. Accessed 18 May 2009. Available from: http://news.cnet.com/8301-1035_3-10053045-94.html.

Cite this article as: James Endres. 2009. 'Net neutrality – How relevant is it to Australia?'. *Telecommunications Journal of Australia*. 59 (2): pp. 22.1 to 22.10. DOI: 10.2104/tja09022.