

Net Neutrality – Overseas Experiences and Australia

Byron Frost tackles the debates surrounding net neutrality in key jurisdictions overseas and the foreseeable implications it could have for Australians.

1. INTRODUCTION

The net neutrality debate is gaining traction around the world, in particular in the United States and Europe, where lawmakers have already taken steps to enshrine the net neutrality principle in law. Meanwhile, net neutrality, the principle that all traffic on the internet should be treated equally, has barely raised an eyebrow in Australia (and is unlikely to) due to the inherent structural differences between the Australian broadband market, and that of the United States.

This paper discusses the net neutrality principle and examines the different approaches taken to regulate the issue in key jurisdictions, namely the United States and Europe. The current and future position in Australia is also considered. At Schedule 1, this paper summarises Foxtel's position in the Australian market and the current over-the-top (**OTT**) players in Australia.

2. WHAT IS NET NEUTRALITY?

Net neutrality is the principle that all traffic on the internet should be treated equally. The term was coined by Columbia University media law Professor Tim Wu when he was discussing the idea that internet service providers (**ISPs**) should be 'common carriers' under US law. 'Common carrier' is a common law term and when applied to the internet, refers to a company that transports content from a content provider to a customer and is responsible for delivery of the goods.¹

CNET's Marguerite Reardon describes the net neutrality principle as follows:

"whether you're checking Facebook, posing pictures to Instagram, shopping on Amazon, streaming Netflix movies or watching cat videos on YouTube, **all the information traveling across the Internet to you and from you should be treated the same** [emphasis added]".²

That is, your ISP, like Telstra's Bigpond or iiNet, cannot block or slow down your access to particular content. In Australia, there are no specific net neutrality laws.

As noted above, the underlying principle of net neutrality is that the internet is open like a public road system as opposed to a toll road system.³ However whether this principle is commercially practicable is another question altogether that sits at the centre of the debate currently on foot. This is especially the case

in the United States, where a new regulatory setting for net neutrality is about to take effect.

3. HOW IS THE NET NEUTRALITY PRINCIPLE DEALT WITH IN KEY JURISDICTIONS?

The net neutrality debate is gaining traction around the world as law makers, ISPs, content producers, distributors and internet users debate on how data flow on the internet should be regulated in the twenty first century. The debate has intensified as the market for content has become more competitive as content has become key to the commercial success of ISPs.

We examine below how key jurisdictions around the world are dealing with the principle of net neutrality.

3.1 United States of America

The loudest debate to date as to whether net neutrality laws should be adopted has been in the United States. This debate came to a head in February 2015 when the Federal Communications Commission (**FCC**) passed new net neutrality rules which classified ISPs under Title II regulation (phone carrier regulations). This new regulatory framework was needed following litigation where the FCC's previous attempts to introduce rules were found to be unlawful, due to the way in which broadband providers were classified by the FCC under US law at the time .

Below, we consider the history of the net neutrality debate in the United States which has led to the current regulatory position.

2010 position

In 2010, the FCC passed rules that forbid the United States' largest cable and DSL ISPs from blocking or slowing online services, while leaving wireless companies with much more latitude to engage in such activity.⁴ These rules were known as the *Open Internet Order* and the principle underpinning them was net neutrality.



1 Mark Gregory, *NBN and net neutrality: What it means for Australian consumers* (14 November 2014) Business Spectator <<http://www.businessspectator.com.au/print/898671>> .

2 Marguerite Reardon, *FCC and Net neutrality: What you really need to know* (7 February 2015) CNET <<http://www.cnet.com/news/fcc-and-net-neutrality-what-you-really-need-to-know/>>.

3 Ibid.

4 Same Gustin, *FCC Passes Compromise Net Neutrality Rules* (21 December 2010) Wired <<http://www.wired.com/2010/12/fcc-order/>>.

> The *Open Internet Order* had three key pillars, as follows:

- **Transparency** – fixed and mobile broadband providers were required to disclose the network management practices, performance characteristics and terms and conditions of their broadband services;
- **No blocking** – fixed broadband providers could not block lawful content, applications, services, or non-harmful devices, and mobile broadband providers could not block lawful websites, or block applications that competed with their voice or video telephony services; and
- **No unreasonable discrimination** – fixed broadband providers could not unreasonably discriminate in transmitting lawful network traffic.⁵

The Court Challenge

The *Open Internet Order* was challenged in federal court by US giant Verizon on several grounds, including that:

- the FCC lacked statutory authority to promulgate the rules;
- the FCC's decision to impose the rules was arbitrary and capricious; and
- the rules contravened statutory provisions prohibiting the FCC from treating broadband providers as common carriers.⁶

On 14 January 2014, the US Court of Appeals for the District of Columbia Circuit:

- affirmed the FCC's authority to regulate broadband internet access service; and
- upheld the FCC's judgment that internet openness encourages broadband investment and that its absence could ultimately inhibit broadband deployment.

Despite these wins for the FCC, the Court only upheld the transparency rule. The no-

blocking and no-unreasonable-discrimination rules were invalidated by the Court, because those rules could only apply to common carriers (as defined under US law).⁷ The ISPs were not considered common carriers under US law due to a 2005 US Supreme Court decision where the FCC had classified (and the Court had upheld) that cable broadband providers were *integrated information services* and not *telecommunications carriers* subject to Title II regulation (i.e. common carriers) (see *National Cable & Telecommunications Ass'n v. Brand X Internet Services*, 545 U.S. 967 (2005)).⁸

The Columbia Circuit Court's decision to vacate two out of the three rules saw the FCC go back to the drawing board to determine how it could legally implement net neutrality rules. The FCC sought public comment on this issue.⁹

A raging debate

How did a seemingly technical set of rules cause such debate within the business and wider community? A number of commentators trace the rise in awareness of net neutrality to a segment by John Oliver on his HBO show *Last Week Tonight*.¹⁰

In only the show's fifth episode, Oliver launched into a 13-minute piece (the show only runs for about half-an-hour) on the importance of net neutrality. He encouraged his viewers to lodge comments with the FCC on its proposed new rules (this was in June 2014). Oliver said: "Seize your moment, my lovely trolls....turn on caps lock, and fly, my pretties!"

By Monday (the day after the program was broadcast) the FCC's commenting system had stopped working due to the lodgement of more than 45,000 new comments on net neutrality.¹¹ A principle which Oliver called "even boring by C-SPAN standards"¹² had now grabbed the attention of a large slice of the American population. The FCC eventually received a record 3.7 million comments to its *Notice on Proposed Rule-making* which began with the fundamental question "What is the right public policy to ensure the Internet remains open?"¹³

5 Federal Communications Commission, *Open Internet Order* (23 December 2010) Federal Communications Commission <https://apps.fcc.gov/edocs_public/attachmatch/FCC-10-201A1_Rcd.pdf>

6 Kevin E McCarthy, *OLR Backgrounder: Appellate Court Decision on Net Neutrality* (11 February 2014) Office of Legislative Research, Connecticut General Assembly <<http://www.cga.ct.gov/2014/rpt/pdf/2014-R-0033.pdf>>.

7 Ibid.

8 Ibid.

9 *Open Internet* Federal Communications Commission <<http://www.fcc.gov/openinternet>>.

10 Link to the *net neutrality* segment on HBO's *Last Week Tonight* - www.youtube.com/watch?v=fpbOEoRrHyU

11 Ben Brody, *How John Oliver Transformed the Net Neutrality Debate Once and for All* (27 February 2015) Bloomberg <<http://www.bloomberg.com/politics/articles/2015-02-26/how-john-oliver-transformed-the-net-neutrality-debate-once-and-for-all>>.

12 Ibid.

13 *Report and Order on Remand, Declaration Ruling, and Order in the matter of Protecting and Promoting the Open Internet* - Federal Communications Commission (26 February 2015) <http://transition.fcc.gov/Daily_Releases/Daily_Business/2015/db0403/FCC-15-24A1.pdf>, page 23; and Marguerite Reardon, *Net Fix: FCC chief on solving the Open Internet puzzle* (Q&A) 14 January 2015 <<http://www.cnet.com/news/net-fix-fcc-chief-on-solving-the-open-internet-puzzle-q-a>>.

2015: a dawn of a new era

The FCC's decision to push for new rules was backed by US President Barack Obama (even though the FCC is an independent government body). The President called an open internet "essential to the American economy, and increasingly to our very way of life."¹⁴

On 26 February 2015, the FCC passed new rules by three to two Commissioners (the Commissioners voted on party lines) and described the new rules as protecting "free expression and innovation on the Internet" and promoting "investment in the nation's broadband networks."¹⁵

The new rules, known as 'bright line rules', are guided by the principle that America's broadband networks must be "fast, fair and open."¹⁶ The rules are as follows:

- **No blocking** – broadband providers may not block access to legal content, applications, services, or non-harmful devices;
- **No throttling** – broadband providers may not impair or degrade lawful internet traffic on the basis of content, applications, services, or non-harmful devices; and
- **No paid prioritisation** – broadband providers may not favour some lawful internet traffic over other lawful traffic in exchange for consideration of any kind – in other words, no "fast lanes".¹⁷

The new rules also establish that ISPs cannot:

unreasonably interfere with or unreasonably disadvantage the ability of consumers to select, access, and use the lawful content, applications, services, or devices of their choosing; or of edge providers to make lawful content, applications, services or devices available to consumers.¹⁸

While the new rules prohibit 'throttling' and 'blocking', they also introduce the concept of *reasonable network management* for ISPs. This exception recognises the need for broadband providers to manage the technical and engineering aspects of their networks.¹⁹ ISPs can rely on this exception where the traffic management steps taken can be characterised as steps pri-

marily used for and tailored to achieve legitimate network management, not a business purpose.²⁰ The scope of this exception is likely to be an area of contention moving forward.

As noted above, the *2010 Open Internet Order* was struck down because of the legal authority the FCC relied on to enact the rules, and not the purpose or effect of the rules. The FCC purported to address this issue in the new rules by reclassifying broadband internet access under Title II of the Communications Act and by relying on section 706 of the Telecommunications Act, i.e. the internet is a telecommunications service. The Court in *Verizon* held that section 706 is an independent grant of authority to the FCC that supports adoption of the *Open Internet Rules*.²¹ For those interested in understanding the FCC's legal foundation for the new net neutrality rules, its 400-page order was released publicly on 12 March 2015.²²

It was widely anticipated that the net neutrality rules would be challenged in the US Courts by ISPs,²³ however challenges could not be brought until the rules "were formally published in the Federal Register, the nation's official record of government actions."²⁴ Publication occurred on 13 April 2015.²⁵ The rules will come into effect 60 days after their publication in the Federal Register.²⁶

Almost immediately after publication, the USTelecom trade group, National Cable and Telecommunications Association (**NCTA**), CTIA-The Wireless Association and American Cable Association filed petitions in the US Court of Appeals for the D.C. Circuit challenging the validity of the rules. AT&T also filed a petition.²⁷

all the information traveling across the Internet to you and from you should be treated the same

14 Brody, above n 11.

15 *FCC Adopts strong, sustainable rules to protect the open internet* (26 February 2015) Federal Communications Commission <<http://www.fcc.gov>>.

16 Ibid.

17 Ibid.

18 Ibid.

19 Ibid.

20 Ibid.

21 Ibid.

22 *Protecting and Promoting the Open Internet - Report and Order on Remand, Declaratory Ruling, and Order* (12 March 2015) Federal Communications Commission <http://transition.fcc.gov/Daily_Releases/Daily_Business/2015/db0312/FCC-15-24A1.pdf>.

23 Marguerite Reardon, *13 things you need to know about the FCC's Net neutrality regulation* (14 March 2015) Cnet <<http://www.cnet.com/news/13-things-you-need-to-know-about-the-fccs-net-neutrality-regulation/>>.

24 Ryan Knutson, *FCC Sends Net Neutrality Rules to Federal Register* (1 April 2015) Wall Street Journal <<http://www.wsj.com/articles/fcc-sends-net-neutrality-rules-to-federal-register-1427927749>>.

25 Cat Zakrzewski, *After Net Neutrality Rules Are Published, Congressional Republicans Take A Stand* (13 April 2015) TechCrunch <http://techcrunch.com/2015/04/13/after-net-neutrality-rules-are-published-congressional-republicans-take-a-stand/?ncid=rss&utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+Techcrunch+%28TechCrunch%29>.

26 Malathi Nayak, *AT&T, trade groups mount court challenge to FCC Internet rules* (14 April 2015) Reuters <<http://uk.reuters.com/article/2015/04/14/uk-fcc-netneutrality-idUKKBN0N51NT20150414>>.

27 Ibid.

- > According to *The Wall Street Journal* the filings by AT&T, USTelecom, NCTA and CITA are nearly identical, with the rules being challenged on the basis that they are arbitrary and capricious, and violate federal law.²⁸ Michael Powell, the NCTA's CEO said in a statement that:

This appeal is not about Net neutrality but the FCC's unnecessary action to apply outdated utility style regulation to the most innovative network in our history...²⁹

we see that ISPs were using that technology to influence their own content over other content then that would be of concern to us

It is unclear when these proceedings will be heard. CNET reported that if NCTA and others ask for a stay, a court could block the rules from taking effect if it decides any of the lawsuits have merit.³⁰

Response to the new rules

The new *Open Internet Rules* have been approved by the FCC but because they are now subject to legal challenges and because they have not yet taken effect, they have not reached the end of their journey.

Although the White House has endorsed the FCC's decision saying that the new rules "...will protect innovation and create a level playing field for the next generation of entrepreneurs",³¹ there has been strong criticism of the FCC's move. Those opposed to the new rules argue that they will stymie rewards for successful innovation³² and that the legal foundation on which the rules have been developed affords too much power to the FCC. There are also arguments that the onerous compliance costs will have negative economic consequences for ISPs and limit investment in network infrastructure.³³

The FCC has said that incentives for broadband operators to invest in their networks remain in place, as amongst other things, the new rules forbid the FCC from applying utility-style rate regulation, including rate regulation or tariffs, last-mile unbundling, and burdensome administrative filing requirements or accounting standards.³⁴ The FCC argues that the rules adopt a 'light-touch' regulatory approach.³⁵ However, the NCTA, which represents the largest US cable companies, said the new rules:

...only confirm our fear that the commission has gone well beyond creating enforceable open internet rules, and has instead instituted a regulatory regime change for the internet that will lead to years of litigation, serious collateral consequences for consumers, and ongoing market uncertainty that will slow America's quest to advance broadband deployment and adoption.³⁶

Verizon also made view on the FCC's decision clear by releasing a press release in faux typewriter and Morse code formats to emphasise its claim that the FCC had imposed 1930s Rules on the internet. The telecommunications giant said that the:

...decision by the FCC to encumber broadband Internet services with badly antiquated regulations is a radical step that presages a time of uncertainty for consumers, innovators and investors. Over the past two decades a bipartisan, light-touch policy approach unleashed unprecedented investment and enabled the broadband Internet age consumers now enjoy...the FCC's move is especially regrettable because it is wholly unnecessary. The FCC had targeted tools available to preserve an open Internet, but instead chose to use this order as an excuse to adopt 300-plus pages of broad and open-ended regulatory arcana that will have unintended negative consequences for consumers and various parts of the Internet ecosystem for years to come.³⁷

28 Ryan Knutson, AT&T Sues To Overturn FCC's Net Neutrality Rules (14 April 2015) *The Wall Street Journal* <<http://www.wsj.com/articles/at-t-sues-to-overturn-fccs-net-neutrality-rules-1429052166>>.

29 Marguerite Reardon, *Cable and wireless industries sue FCC over Net neutrality rules* (14 April 2015) CNET <<http://www.cnet.com/news/cable-and-wireless-industries-sue-fcc-over-net-neutrality-rules/>>.

30 Ibid.

31 *Net Neutrality: A Free and Open Internet* (26 February 2015) The White House <<http://www.whitehouse.gov/net-neutrality>>.

32 Brody, above n 11.

33 Geoffrey A. Manne, *Opinion: The FCC's Net Neutrality victory is anything but* (3 March 2015) *Wired* <<http://www.wired.com/2015/03/fcc-better-call-saul/>>.

34 *FCC Adopts strong, sustainable rules to protect the open internet* (26 February 2015) Federal Communications Commission <<http://www.fcc.gov>>.

35 *Report and Order on Remand, Declaration Ruling, and Order in the matter of Protecting and Promoting the Open Internet* - Federal Communications Commission (26 February 2015) <http://transition.fcc.gov/Daily_Releases/Daily_Business/2015/db0403/FCC-15-24A1.pdf>, page 16.

36 Dominic Rushe, *Critics attack FCC as it releases new rules to protect net neutrality* (13 March 2015) *The Guardian* <<http://www.theguardian.com/technology/2015/mar/12/fcc-rules-internet-report>>.

37 *FCC's 'Throwback Thursday' Move Imposes 1930s Rules on the Internet* (26 February 2015) Verizon <http://publicpolicy.verizon.com/assets/docs/VZ_NR_-_2-26-15_VZ_Statement_on_Open_Internet_Order_FINAL_1.pdf>.

America's other major telecommunications provider AT&T joined Verizon in condemning the FCC's decision, stating that:

unfortunately, the order released today begins a period of uncertainty that will damage broadband investment in the United States. Ultimately, though, we are confident the issue will be resolved by bipartisan action by Congress or a future FCC, or by the courts.³⁸

In contrast, Netflix welcomed the FCC's decision as the rules will likely prevent ISPs from throttling Netflix's content streams to customers. Netflix said:

the net neutrality debate is about who picks winners and losers online: Internet service providers or consumers. Today, the FCC settled it: Consumers win.

Today's order is a meaningful step towards ensuring ISPs cannot shift bad conduct upstream to where they interconnect with content providers like Netflix. Net neutrality rules are only as strong as their weakest link, and it's incumbent on the FCC to ensure these interconnection points aren't used to end-run the principles of an open Internet.

Given the lack of competition among broadband providers, today's other FCC decision preventing regulations that thwart local investment in new broadband infrastructure also is an important step toward ensuring greater consumer choice. These actions kick off a new era that puts the consumer, not litigious corporate giants, at the center of competition policy.³⁹

Netflix's position has sparked outrage in some quarters given its deal in Australia with iiNet which exempts Netflix's streams from counting towards an iiNet customer's download cap.⁴⁰

Despite Netflix's position in favour of the rules, its CFO David Wells, in comments at the 2015 Morgan Stanley Technology, Media & Telecom Conference in San Francisco (in March), said the company would have preferred that broadband internet service was not regulated by the US government as a telecommunications utility. However, after some ISPs required payment to deliver video traffic, he was happy with the FCC's recent "Open Internet" ruling.⁴¹ Last year, Netflix cut deals with several big ISPs - including Comcast, AT&T, Verizon and Time Warner Cable - under which it pays for dedicated interconnections. Those deals are to ensure Netflix has enough bandwidth to deliver high-quality streaming video to its subscribers.⁴²

In response to the Netflix CFO's comments, Jim Cicconi, AT&T Senior Executive Vice President of External and Legislative Affairs, said:

Netflix has spun a lot of tales during this FCC proceeding. But it's awfully hard to believe their CFO would go into a major investor conference and misspeak on an issue supposedly so crucial to their future. More likely he had an attack of candor. At least 'til his company's lobbyists got hold of him. I'm sure they'll also have some terrific spin to explain Netflix's data cap deal in Australia.⁴³

Since Jim Cicconi made his comments, Netflix has clarified its position on the data cap deals it reached in Australia. In the Q1 2015 Letter to Shareholders, CEO Reed Hastings and CFO David Wells told shareholders that:

In Australia, we recently sought to protect our new members from data caps by participating in ISP programs that, while common in Australia, effectively condone discrimination among video services (some capped, some not). We should have avoided that and will avoid it going forward.⁴⁴

As such, Netflix is now clearly against data caps as in its view data caps "inhibit Internet innovation and are bad for consumers."⁴⁵ Instead, Netflix supports "strong net neutrality across the globe...[as it allows]...all consumers to enjoy the Internet access they pay for without ISPs blocking, throttling, or influencing content in the last mile or at interconnection points."⁴⁶

It's not just carriers and cable companies that object to the new rules, with Finland-based network equipment maker Nokia Networks, whose customers include ISPs, also criticising the new rules. CEO Rajeev Suri said:

Net neutrality as it exists today needs to change...It will be hard to ensure rock-

Therefore the incentive, or at least the need, for ISPs to generally throttle certain traffic is significantly reduced

38 AT&T Statement on Release of FCC's Net Neutrality Order (12 March 2015) AT&T Public Policy Blog <<http://www.attpublicpolicy.com/fcc/att-statement-on-release-of-fccs-net-neutrality-order/>>.

39 Netflix says consumers win today's FCC decisions on net neutrality, community broadband (26 February 2015) Netflix <<https://pr.netflix.com/WebClient/getNewsSummary.do?newsId=1941>>.

40 Janko Roettgers, Netflix wont count against iiNet broadband caps in Australia (2 March 2015) Gigaom <<https://gigaom.com/2015/03/02/netflix-wont-count-against-iinet-broadband-caps-in-australia/>>.

41 Todd Spangler, Updated: Netflix CFO Says Pressing FCC for Title II Broadband Regs Was Not Its Preferred Option (4 March 2015) Variety <<http://variety.com/2015/digital/news/netflix-cfo-pleased-with-fcc-title-ii-ruling-although-its-preference-would-have-been-no-broadband-regulation-1201446282/>>.

42 Ibid.

43 AT&T Blog Team, AT&T Remarks on Netflix CFO Remarks (4 March 2015) AT&T Public Policy Blog <<http://www.attpublicpolicy.com/broadband-classification/att-statement-on-netflix-cfo-remarks/>>.

44 Reed Hastings and David Wells, Q1 2015 Shareholder Letter (15 April 2015) Netflix <http://files.shareholder.com/downloads/NFLX/52537523x0x821407/db785b50-90fe-44da-9f5b-37dbf0dcd0e1/Q1_15_Earnings_Letter_final_tables.pdf>.

45 Ibid.

46 Ibid.

- > solid reliability if carriers can't prioritize some network traffic...Yes, it's pro-consumer in the short term, but it won't be pro-consumer in the long term if you don't focus on investment.⁴⁷

Cisco CEO John Chambers told the Mobile World Congress in March 2015 that the US net neutrality rules will help Europe take the lead in broadband because the regulations approved by the FCC will slow down broadband deployment. In his view, the US government should aim for more available broadband instead of focusing on net neutrality.⁴⁸

Dr Hossein Eslambolchi, Chairman & CEO of Cyberflow Analytics wrote on his LinkedIn blog that the net neutrality ruling was analogous to a situation where the Federal Aviation Authority prohibited airlines from offering classes of service.⁴⁹

There is plenty of debate in the US as to whether the net neutrality rules as adopted by the FCC are necessary and the debate is far from over. As noted above, there have already been a number of lawsuits filed seeking that the net neutrality rules be overturned.⁵⁰ We will have to wait to see whether the challenges are successful or not.

3.2 Europe

The United States is well-advanced in its net neutrality debate, but what about the other side of the Atlantic?

In March 2014, the European Parliament took its first steps to enshrine the net neutrality principles in law by voting in favour to restrict ISPs from charging data-hungry services for fast network access.⁵¹ The Members of the European Parliament agreed to introduce strict rules to prevent telecoms companies from degrading or blocking internet connections to their competitors' services and applications.⁵²

Based on the rules adopted in March 2014, companies would still be able to offer specialised services of higher quality, such as video on demand and business-critical data-intensive cloud applications, provided that it did not interfere with the internet speeds promised to other customers.⁵³

In response to the 2014 decision of the European Parliament, four trade bodies representing cable and telecom operators, issued a joint statement noting that:⁵⁴

Whilst we support an open internet, a set of misconceptions about our industry, together with a rushed legislative process and a lack of technical analysis, risk transforming the Connected Continent Regulation into an anti-innovation and anti-consumer choice legislation.

The proposals will result in a lower quality internet for all. The European Parliament position, as it stands, would put in jeopardy services currently provided to broadband users, such as VPNs for businesses, IP-TV and telepresence. They would also prevent operators from efficiently managing their networks and from providing innovative services that require enhanced levels of quality, such as telemedicine or e-education.

This would threaten innovation and new growth opportunities for those who invest in Europe's digital spine.

A good example is video traffic, which is predicted to rise to 70% of the internet traffic during 2014. Given this impressive figure, the debate around how such traffic is managed and optimized is going to be essential to the effective operation of the internet.⁵⁵

Despite the European Parliament passing net neutrality rules in March 2014, the European Council moved to water them down less than a year later.

This move began in November 2014 under the Italian presidency where the European Council proposed removing the very definition of net neutrality from the rules and allowing differential charging for services.⁵⁶ This was followed by the now Latvian-led European

47 Roger Cheng, *Net neutrality critics are flat-out wrong, says FCC chief* (4 March 2015) <<http://www.cnet.com/au/news/us-fcc-chairman-net-neutrality-rules-nothing-like-utility-style-regulations/>>.

48 Stephen Lawson, *Net neutrality will put U.S. behind Europe, Cisco's Chambers says* (4 March 2015) <<http://www.cio.com.au/article/569471/net-neutrality-will-put-u-behind-europe-cisco-chambers-says/>>.

49 Dr Hossein Eslambolchi, *Net Neutrality: One Size Fits All* (5 March 2015) LinkedIn <<https://www.linkedin.com/pulse/net-neutrality-one-size-fits-all-dr-hossein-eslambolchi>>.

50 Malathi Nayak, *AT&T, trade groups mount court challenge to FCC Internet rules* (14 April 2015) Reuters <<http://uk.reuters.com/article/2015/04/14/uk-fcc-netneutrality-idUKKBN0N51NT20150414>>.

51 *Net neutrality law adopted by European Parliament* (3 April 2014) BBC News <<http://www.bbc.com/news/technology-26865869>>.

52 *Net neutrality: Industry MEPs want stricter rules against blocking rival services* (18 March 2013) European Parliament <<http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-%2f%2fEP%2f%2fTEXT%2bIM-PRESS%2b20140318IPR39210%2b0%2bDOC%2bXML%2bV0%2f%2fEN&language=EN>>.

53 Ibid.

54 *Net neutrality law adopted by European Parliament* (3 April 2014) BBC News <<http://www.bbc.com/news/technology-26865869>>.

55 *Joint E-Communications Industry Statement on the Open Internet Debate* (1 April 2014) Cable Europe <<http://www.cable-europe.eu/joint-e-communications-industry-statement-on-the-open-internet-debate/>>.

56 Loek Essers, *Pressure mounts in Europe for strict net neutrality* (27 November 2014) PC World <<http://www.pcworld.idg.com.au/article/560573/pressure-mounts-europe-strict-net-neutrality/>>.

Council in January this year tabling a compromise text on net neutrality (the European presidency rotates every 6-months).

Under the Latvian proposal, ISPs would be obliged to treat all traffic equally, except where their networks face "congestion", where they were ordered to block some content by a court, or they needed to intervene to ensure the security of the network. ISPs would also be free to offer specialised services, typically at higher speeds and guaranteed quality, as long as broader internet access is not impaired.⁵⁷

In early March 2015, a majority of 28 European Union (EU) member states in the European Council voted in favour of changing the rules in line with the Latvian proposal, namely the prioritisation of some "specialised" services that require high quality internet access to function.⁵⁸

The watering down of the proposal sparked opposition from more than 100 members of the European Parliament who in a letter to the Telecoms Council wrote that "weakened proposals on net neutrality go against the European Parliament's repeated calls for clear definitions."⁵⁹

What is the next step in the European debate? The *Financial Times* reported that at the Mobile World Congress in Barcelona in March 2015, the CEOs of both Vodafone and Deutsche Telekom AG (two of Europe's biggest telecommunications companies) argued for rules that would allow them to give priority to specific 'essential' services, like those connected to hospitals or driverless cars.⁶⁰

There is no guarantee that the proposals put forward by Latvia will come into force as drafted. EU lawmaking is a complicated three-way dance between the presidency, the European Parliament and the European Commission, the union's secretariat.⁶¹

European Commissioner Guenter Oettinger said at the Mobile World Congress in Barcelona (March 2015) that he hopes that the EU will be able to finalise a new law on the subject by the European summer of 2015. The European Commission, as enforcer of the EU's single market, is keen to avoid a situation whereby all 28 states have different rules on regulating internet speeds.⁶² At this stage only the Netherlands and Slovenia of the 28-nation bloc have enshrined the net neutrality principle in law.⁶³

The Wall Street Journal, reflecting on the recent EU developments, said that:

Still, this climb down on net neutrality raises the prospect that the EU could end up with a more pro-investment business climate than the U.S. Not everyone wants to follow Washington's lead in tightening government's grip on the Internet.⁶⁴

This pro-business sentiment is reflective of the message from four industry bodies representing the likes of Vodafone, Alcatel-Lucent, Orange and Liberty Global, which said it is "not technologically efficient or beneficial for consumers if all traffic is treated equally. Nor has this ever been the case."⁶⁵

We will have to wait to see what further developments come out of Europe, but at this stage it appears the EU will adopt a less prescriptive regulatory setting (compared to that in the US) as it seeks to protect net neutrality but also develop a single digital economy as a way of driving the European economy forward.

3.3 Australia

Overview

The Australian Communications Consumer Action Network (ACCAN) in its submission to the Harper Review noted that Australia has not embraced the ideals of net neutrality to the same degree as the United States.⁶⁶ This is because the Australian debate around net neutrality is at a much earlier stage and is heavily influenced by the current market structure for ISPs in Australia.

While some have argued that it is likely that the net neutrality debate in Australia will heat up as the National Broadband Network (NBN) becomes the primary medium for content distribution,⁶⁷ this author's view is that it is the NBN which in fact will result in the idea of net neutrality never finding strong support in

It seems that the rollout of the NBN is not going to result in the principle of net neutrality gaining traction in Australia.

57 Julia Fioretti, *Europe's telecoms heavyweights call for lighter 'net neutrality' rules* (26 January 2015) <<http://www.reuters.com/article/2015/01/26/us-eu-telecommunications-neutrality-idUSKBN0KZ21920150126>>.

58 Duncan Geere, *Europe reverses course on net neutrality legislation* (6 March 2015) <<http://www.wired.co.uk/news/archive/2015-03/06/europe-reverses-on-net-neutrality>>.

59 Ibid.

60 Geoffrey Smith, *Net neutrality is not for Europe* (4 March 2015) *Fortune* <<http://fortune.com/2015/03/04/net-neutrality-is-not-for-europe/>>.

61 Ibid.

62 Ibid.

63 *Net neutrality law adopted by European Parliament* (3 April 2014) *BBC News* <<http://www.bbc.com/news/technology-26865869>>.

64 *Europe's Net Neutrality Sense* (10 March 2015) *The Wall Street Journal* <<http://www.wsj.com/articles/europes-net-neutrality-sense-1426030850>>.

65 Julia Fioretti, *Europe's telecoms heavyweights call for lighter 'net neutrality' rules* (26 January 2015) <<http://www.reuters.com/article/2015/01/26/us-eu-telecommunications-neutrality-idUSKBN0KZ21920150126>>.

66 *Competition Policy Review - Submission by the Australian Communications Consumer Network to the Harper Review* (June 2014) ACCAN <<http://competitionpolicyreview.gov.au/files/2014/06/ACCAN.pdf>>.

67 Patrick Hubbard, *Bracing the Network for change in 2015* (2 February 2015) *ABC Technology and Games* <<http://www.abc.net.au/technology/articles/2015/02/02/4172375>>.

- > Australia. This view is supported by the limited academic commentary that there is on net neutrality in Australia.⁶⁸

Further, Australia has a powerful competition regulator (the Australian Competition and Consumer Commission (**ACCC**)), which is prepared to intervene where there are attempts to advantage some content over others,⁶⁹ therefore negating the need for net neutrality rules. For example, in 2013, Telstra revealed plans to test new ways of managing its broadband network with some of its Victorian customers. The effect of the tests would be to slow-down content for some high-bandwidth internet content.⁷⁰ The ACCC Chairman Rod Sims' position on the issue was clear, he said "where traffic management practices are implemented, however, network providers should ensure that such practices are transparent and customers can easily understand the implications of these practices on the service they receive."⁷¹

Sims told *The Australian Financial Review* that "clearly there is a vertical integration issue where internet service providers can control what comes down their pipe and obviously if, unrelated to reports about Telstra, **we see that ISPs were using that technology to influence their own content over other content then that would be of concern to us** [emphasis added]."⁷²

Differences between USA and Australia

One of the key reasons the net neutrality principle is unlikely to be enshrined into law in Australia is that the broadband market in Australia is markedly different to that in the United States both through the payment model adopted and the number of ISP competitors in each market.

User-pay model

The distance between Sydney and Los Angeles is some 12,066 kilometres. Distance is a

crucial factor as to why broadband providers in Australia have adopted a user-pays model instead of selling speed (as in the US).

The backbone of the internet is in the United States, which means that Australia's broadband market has developed differently due to the high cost of transmitting data to the internet's backbone.⁷³ These high costs had to be covered by charges on users related to their downloading, resulting in a user-pay model. In the US, close proximity to the backbone meant that these transmission costs were minimal and the service providers absorbed this cost, resulting in a speed payment model.⁷⁴ For example:

- in Australia, iiNet offers a 600GB plan for \$69.95 per month on its ADSL2+ network;⁷⁵ and
- in the United States, Verizon offers plans of 0.5-1.0 Mbps speed download plans at US\$19.99 per month versus enhanced speed plans (up to 7.1-15 Mbps download speeds) at US\$29.99 per month.⁷⁶

However with increased hours of video being streamed in the US (Netflix are reportedly responsible for 35% of downstream traffic during peak hours, with YouTube at 14%),⁷⁷ broadband providers have sought to develop slow and fast lanes in order to facilitate investment in network infrastructure. On this issue, Jim Cicconi, AT&T's Senior Executive Vice President of External and Legislative Affairs, wrote in an AT&T Public Policy Blog in relation to Netflix that:

It's simply not fair for Mr. Hastings to demand that ISPs provide him with zero delivery costs - at the high quality he demands - for free. Nor is it fair that other Internet users, who couldn't care less about Netflix, be forced to subsidize the high costs and stresses its service places on all broadband networks.⁷⁸

The position is substantially different in Australia where consumers have now accepted the user-pay model for both fixed and wireless broadband solutions. Therefore the incentive, or at least the need, for ISPs to gen-

68 Angela Daly, *Net Neutrality in Australian: an emerging debate* - Network Neutrality: an Ongoing Regulatory Debate. 2nd Report of the UN IGF Dynamic Coalition on Network Neutrality, (2014), page 48.

69 James Hutchinson, *ACCC takes aim at internet slowdowns* (12 February 2013) *The Australian Financial Review* <<http://www.afr.com/business/telecommunications/accc-takes-aim-at-internet-slowdowns-20130212-j1596>>.

70 Ibid.

71 Josh Taylor, *ACCC endorses network congestion pricing* (11 April 2013) *ZDNet* <<http://www.zdnet.com/article/accc-endorses-network-congestion-pricing/>>.

72 James Hutchinson, *ACCC takes aim at internet slowdowns* (12 February 2013) *The Australian Financial Review* <<http://www.afr.com/business/telecommunications/accc-takes-aim-at-internet-slowdowns-20130212-j1596>>.

73 Gary McLaren, *What the US can learn from Australia on net neutrality* (6 March 2015) *Business Spectator* <<http://www.businessspectator.com.au/article/2015/3/6/technology/what-us-can-learn-australia-net-neutrality>>.

74 Ibid.

75 Plan information accessed on iiNet's website on 7 April 2015 - <http://www.iinet.net.au/internet/broadband/adsl/>.

76 Plan information accessed on Verizon's website on 2 April 2015 - <http://www.verizon.com/home/highspeedinternet/>.

77 Netflix generates a third of all US web traffic - over twice as much as YouTube (21 November 2014) *The Drum* <<http://www.the-drum.com/news/2014/11/21/netflix-generates-third-all-us-web-traffic-over-twice-much-youtube>>.

78 Jim Cicconi, *Who should pay for Netflix* (21 March 2014) *AT&T Public Policy Blog* <<http://www.attpublicpolicy.com/consumers-2/who-should-pay-for-netflix/>>.

erally throttle certain traffic is significantly reduced because an ISP can allocate network resources based on the knowledge that it has sold X number of data caps. Further, most data cap plans shape internet speed once the cap is exceeded. This means there is already an accepted throttling practice in Australia as a means for ISPs to manage network traffic.

As such, the need to introduce fast and slow lanes has not arisen and it is unlikely such differentiation will develop so long as a large portion of data is still under the user-pay model, although as discussed later, we note that NBN has introduced the capability for different traffic lanes.⁷⁹

Zero Rating

As noted above, Australian broadband providers sell plans to consumers based on data usage (a user pay model) rather than selling speed. As such, to try and gain a competitive advantage in the market, ISPs have increasingly offered consumers certain services on a zero rating basis when accessed on their network. Zero rating occurs where providers do not charge customers to use data services such as video streaming, that is, use of such services will not 'eat' into the customer's data plans/volume caps.⁸⁰

The practice of zero rating has come to the fore in 2015 with the launch of subscription-video-on-demand (SVOD) services and the increase in video content being delivered over IP, such as IPTV. Examples of zero rating options for consumers in Australia, include:

- AFL and NRL mobile streams for Telstra customers record zero data against a customer's cap as Telstra holds the AFL/NRL digital rights;
- Foxtel and Telstra broadband customers can access Presto as unmetered content (Presto is a Foxtel/Seven JV and Foxtel is a News Corp Australia/Telstra company);⁸¹
- Foxtel from Telstra customers can access Foxtel on-demand content with a zero rating when accessing that content via a Telstra Bigpond account; and
- Netflix can be enjoyed by iiNet customers without impacting a user's iiNet data cap.

While in the US context this practice would likely be frowned upon (especially under the new net neutrality

rules), such arrangements do not fall foul of competition laws in Australia.

The future - National Broadband Network

Consumers in Australia understand and accept the practice of ISPs and mobile cellular operators using premium content as a means to grow customer numbers.⁸² The question is whether the growth in video content delivered over internet protocol will see ISPs move away from the user-pay model. The rollout of the NBN may influence the strategy of ISPs as it has been built as a tiered service (be that 25Mbps down or 100Mbps down).⁸³ However, any impact has yet to be seen as current NBN retailers sell plans on a combined speed and data cap usage basis.⁸⁴

On the issue of speed and data cap plans, *The Australian* recently published comments from Akamai. The global internet infrastructure provider said that it wants to "put an end to the metered internet in Australia" and that it is in discussions with telcos over its plans to do so.⁸⁵ Akamai, is reportedly working on turning off metering for some content by making it cheaper for telcos to deliver broadcast quality content across networks.⁸⁶

This move to remove data caps has gained attention recently due to the "Netflix effect" - big increases in internet data use due to an increase in streaming video traffic.⁸⁷ There are already reports that iiNet users are suffering slower speeds due to Netflix use on its network since it arrived in Australia in late March.⁸⁸

On the launch of Netflix in Australia, Netflix CEO Reed Hastings said:

there's no reason for data caps. We want to make the internet unmetered. Period. The capped model is antiquated: we want to make it about speed. 10Mbps will

**More
competition
would be a
better solution**



79 Gary McLaren, *What the US can learn from Australia on net neutrality* (6 March 2015) Business Spectator <<http://www.businessspectator.com.au/article/2015/3/6/technology/what-us-can-learn-australia-net-neutrality>>.

80 Supratim Adhikari, *Netflix takes it on the chin on net neutrality* (5 March 2015) Business Spectator <<http://www.businessspectator.com.au/article/2015/3/5/technology/netflix-takes-it-chin-net-neutrality>>.

81 Harry Tucker, *How Foxtel Plans to fight Netflix* (23 March 2015) News.com.au <<http://www.news.com.au/technology/home-entertainment/how-foxtel-plans-to-fight-netflix/story-fn8tnfhh-1227273967905>>.

82 Mark Gregory, *NBN and net neutrality: What it means for Australian consumers* (14 November 2014) Business Spectator <<http://www.businessspectator.com.au/article/2014/11/14/technology/nbn-and-net-neutrality-what-it-means-australian-consumers>>.

83 Luke Hopewell, *Netflix CEO Reed Hastings On The NBN, Piracy And Launching In Australia* (24 March 2015) Business Insider <<http://www.businessinsider.com.au/netflix-ceo-reed-hastings-on-the-nbn-piracy-and-launching-in-australia-2015-3>>.

84 Plan information accessed on iiNet's website on 7 April 2015 - <http://www.iinet.net.au/internet/broadband/nbn/plans/>.

85 Lara Sinclair, *Netflix effect to pave way for removal of data caps* (6 April 2015) <<http://www.theaustralian.com.au/business/media/netflix-effect-to-pave-way-for-removal-of-data-caps/story-fna03wxu-1227292393375>>.

86 Ibid.

87 Ibid.

88 Ben Grubb, *The real reason iiNet customers are facing internet speed slowdowns after Netflix's arrival* (8 April 2015) The Age <<http://www.theage.com.au/digital-life/digital-life-news/the-real-reason-iinet-customers-are-facing-internet-speed-slowdowns-after-netflixs-arrival-20150408-1mgvas.html>>.

- > cost more than 1Mbps and 50Mbps will cost more than 10Mbps and that makes sense. Historically, there was so little content in Australia that many users went over the international links and those are pretty expensive, but now there's more and more content and content caching in Australia.⁸⁹

While a charging model based on speed rather than data caps is preferred by services like Netflix as more of their content is likely to be streamed, as Reed Hastings notes the Aussie ISPs "don't really care what we [Netflix] feel." Further, in relation to the net neutrality debate he said that while it is difficult to say whether there will be a fight in Australia over net neutrality, the ISPs are "embracing us [Netflix] because they [the ISPs] get to sell bigger plans...so there's a lot of positives for them in terms of revenue in that way."⁹⁰

Although it is possible that Australia will join the rest of the westernised world in benching data cap plans in favour of selling speed, given that the user-pay model is accepted by consumers (as evidenced by consumers buying higher data caps to facilitate streaming video content) it is unlikely that ISPs will change their position, given that currently it is consumers and not ISPs that effectively cover delivery costs. If this position remains, it is difficult to see a push for specific net neutrality rules gaining traction in Australia and instead competition issues will be left to the ACCC to manage.

NBN Co's product offering features four traffic classes which enables retail providers to develop targeted retail offerings for key segments (e.g. the business market, the voice-only or triple play residential market, etc).⁹¹ This is a form of paid prioritisation which demonstrates that one of the key net neutrality rules has already been thwarted in Australia by commercial realities of a future need for slow and fast lanes. As such, it appears that market forces in a competitive environment will alleviate any net neutrality concerns. The *Business Spectator* notes that:

...most Australians [currently] experience NBN Co's Traffic Class 4 and this is when traffic is sent across the internet without any quality of service or traffic class management. However traffic class management comes at a cost and Australian RSPs [Retail Service Providers] have been reluctant to embrace the need to provide an improved customer experience.⁹²

It seems that the rollout of the NBN is not going to result in the principle of net neutrality gaining traction in Australia. Further data cap plans, where speed throttling is employed by ISPs once a data cap is exceeded (for the remainder of that month's billing period) are an effective means of traffic management for ISPs,⁹³ meaning there is no incentive for the status quo to change and no desire by consumers for net neutrality to be enshrined in law. For example, Telstra has recently offered (for free) certain data cap increases to its customers, where the cap increase offered was more than double the existing limit.

ISP competition

Aside from the user-pay model and zero rating, the other key difference between the United States and Australia is competition amongst broadband providers.

According to the Australian Communications and Media Authority's (**ACMA**) *2013-14 Communications Report*, there were 71 ISPs with more than 1,000 subscribers operating in Australia as at June 2014, compared to 77 in June 2013. The drop in numbers can be largely attributed to M&A activity. The distribution of ISPs by number of internet subscribers was:

- 45 ISPs with 1,001-10,000 subscribers;
- 18 ISPs with 10,001-100,000 subscribers; and
- eight ISPs with 100,001 or more subscribers.⁹⁴

In 2013 there were 1.2 million people estimated to have switched ISP providers in the previous 12 months.⁹⁵ This shows that there is strong competition within the broadband market.

The Australian position is markedly different to that in the United States where a majority of the households are served by only two service providers:

- a cable company; and
- a telecom company.

89 Luke Hopewell, Netflix CEO Reed Hastings On The NBN, Piracy And Launching In Australia (24 March 2015) Business Insider <<http://www.businessinsider.com.au/netflix-ceo-reed-hastings-on-the-nbn-piracy-and-launching-in-australia-2015-3>>.

90 Ibid.

91 *Ethernet Bitstream Service - Product Fact Sheet* (2014) NBN Co <<http://www.nbnco.com.au/content/dam/nbnco2/documents/Ethernet%20Bitstream%20Fact%20Sheet.PDF>>.

92 Mark Gregory, *NBN: The good, the bad and the downright unfair* (16 February 2015) Business Spectator <<http://www.businessspectator.com.au/article/2015/2/16/technology/nbn-good-bad-and-downright-unfair>>.

93 John de Ridder, *Is this the last chance to reform NBN pricing?* (2 April 2015) CommsWire Magazine, page 25.

94 *2013-14 Communications Report* (December 2014) <http://www.acma.gov.au/~media/Research%20and%20Reporting/Publication/Comms%20Report%202013%2014/PDF/Communications%20report%20201314_LOW-RES%20FOR%20WEB%20pdf.pdf>.

95 Angela Daly, *Net Neutrality in Australian: an emerging debate - Network Neutrality: an Ongoing Regulatory Debate*. 2nd Report of the UN IGF Dynamic Coalition on Network Neutrality, (2014), pp.43-58, page 48.

Only about 15% have a third option. A quarter of households have one broadband provider or less.⁹⁶ Looking at some US states the position is even worse. For example, in Texas, more than 30% of households do not have access to broadband.⁹⁷

The difference between the Australian and the United States market is likely to grow in the coming decade with the rollout of Australia's National Broadband Network (**NBN**) as ISPs become retail providers only by selling access to the NBN, rather than by owning the underlying infrastructure.

The transition has already begun. ACMA found that as at June 2013, 210,628 premises had activated an NBN service, an increase of 200 per cent since June 2012.⁹⁸

As more and more households switch over to the NBN, competition in the retail market will increase, leaving the issue of net neutrality behind. If network speed is being shaped or users are not able to access certain content they will likely just change retail providers. The 1.2 million Australians who changed broadband providers in 2013 evidences a willingness of Australian consumers to preference a better deal over brand loyalty.

Further, as ISPs appear to be adopting a combined speed/data cap plan offering for NBN plans, the need for shaping or blocking content will already have been embedded upfront into the terms of the plan, as choosing a speed/data plan combination is effectively choosing a fast or slow lane to access the internet. This leaves the Australian position markedly different to that in the United States, meaning that for the foreseeable future net neutrality will not be a major factor in Australian broadband policy.

4. CONCLUSION

A recent *Wired* article explained the basis for the net neutrality argument in the American context:

The recent Net neutrality victory at the FCC is not a silver bullet. We can expect costly court challenges, complicated enforcement, and the risks that come with entrusting a large government bureaucracy to manage a technological problem. **More competition would be a better solution** [emphasis added]...As Marc Andreessen recently told *The Washington Post*, "The ultimate answer would be if you had three or four or five broadband providers to every house."

In such a world, Andreessen explained, "net neutrality is a much less central issue, because if you've got competition, if one of your providers started to screw with you, you'd just switch to another one of your providers."⁹⁹

It is these market and structural differences between the US and Australian broadband markets which result in the net neutrality debate failing to gain traction in Australia. Consumers in Australia already participate in a competitive ISP marketplace with increasing avenues available to access content at good speeds.

As demand for video content grows, Australian ISPs are not needing to make the same capital outlays for infrastructure to meet user demand (as their American cousins) given that the Australian Government (via NBN Co) is building and funding a national broadband network. As such, the net neutrality debate is unlikely to get louder in Australia, especially where competition laws are enforced by a strong competition regulator, the ACCC, which is prepared to intervene where ISP conduct becomes anti-competitive.¹⁰⁰

NBN Co's Public Affairs Manager Tony Brown wrote on NBN's blog in February that "while the net neutrality drama hasn't yet hit our shores...it does not mean it will not become a major issue here [Australia]."¹⁰¹ The reasoning for his position was that as the TV market switches from "broadcast-led to broadband-led" some of the US issues may arise here.¹⁰² However this seems unlikely with the broadband market structure that Australia has developed and will continue to develop over the next decade.

Net neutrality is a principle which is being fiercely fought on both sides of the Atlantic. However given Australia's unique differences it is unlikely to follow the path of its northern hemisphere cousins.

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96 Robert Faris, *Municipal broadband offers hope for lagging US internet* (21 January 2015) *The Conversation* <<http://theconversation.com/municipal-broadband-offers-hope-for-lagging-us-internet-36473>>.

97 Masayoshi Son, *The Promise of Mobile Internet in Driving American Innovation, the Economy and Education - Transcript of a Presentation by Masayoshi Son* (11 March 2014) *Softbank Presentation Transcript* <http://webcast.softbank.jp/en/press/20140311/pdf/press_20140311_02.pdf>.

98 *2013-14 Communications Report* (December 2014) <http://www.acma.gov.au/~media/Research%20and%20Reporting/Publication/Comms%20Report%202013%2014/PDF/Communications%20report%20201314_LOW-RES%20FOR%20WEB%20pdf.pdf>.

99 Peter Van Valkenburgh, *Opinion: Bitcoin may be what gets us real net neutrality* (9 March 2015) *Wired* <<http://www.wired.com/2015/03/opinion-bitcoin-may-gets-us-real-net-neutrality/>>.

100 James Hutchinson, *ACCC takes aim at internet slowdowns* (12 February 2013) *The Australian Financial Review* <<http://www.afr.com/business/telecommunications/accc-takes-aim-at-internet-slowdowns-20130212-j1596>>.

101 Tony Brown, *Net Neutrality - What's the big deal?* (11 February 2015) *NBN Co* <<http://www.nbnco.com.au/blog/net-neutrality-whats-the-big-deal.html>>.

102 *Ibid.*