InternetNZ

Network Neutrality in New Zealand

Public Discussion Document – June 2015

Network Neutrality

InternetNZ invites you to collaborate with us, and the New Zealand Internet Community in understanding Network Neutrality in a New Zealand context.

Network Neutrality is the sort of topic that InternetNZ is uniquely positioned to address. Our remit is to work for the Internet Community in all of its facets – business, consumer, government, academic and technical, and bring those perspectives to bear on issues. All of those constituent parts of our New Zealand Internet Community have a perspective on an issue like Network Neutrality, and we believe that uniquely robust and insightful solutions can be found through balancing those perspectives.

InternetNZ is also a cause-based organisation in that we stand for the Open Internet. At its heart, Network Neutrality is about ensuring that that openness is preserved, to ensure that the Internet remains a platform for unfettered communication, collaboration and innovation.

We have developed this discussion document because we believe that New Zealand will be best served if we start talking about Network Neutrality before there is a problem to solve. We envisage this being an open and collaborative process to develop an understanding of Network Neutrality grounded in the realities of the New Zealand market, and to propose solutions that are also uniquely appropriate to our challenges and opportunities.

This document seeks to establish a definition of Network Neutrality to guide discussions; to understand the limitations and challenges of that definition in a New Zealand context, and to establish whether there is any cause for concern about Network Neutrality in the New Zealand market. It does not seek to provide answers these challenges, or propose solutions or outcomes – we anticipate collaborating with the New Zealand Internet Community subsequent to this document to design such responses.

To facilitate this discussion we have included questions to guide where we would like your input. We invite your comments – what have we got wrong? What have we missed? What other angles on this are relevant to consider, and how best can we work together to develop a common understanding of Network Neutrality? We would appreciate your thoughts.

We look forward to hearing from you and working with you.

Jordan Carter
Chief Executive

Why think about Network Neutrality?

In 2015, Network Neutrality has become a serious issue for the Internet in other countries (e.g. the USA). This paper seeks to start a discussion about Network Neutrality to avoid problems here in New Zealand.

InternetNZ intends this discussion to be an open, collaborative process, involving as much of the New Zealand Internet Community as is possible and interested. This discussion document is one of the first phases in this process, designed to solicit feedback from key external stakeholders about shaping this discussion from here. The InternetNZ membership has provided their thoughts on this document as part of earlier drafting processes in December, January and May 2015.

Our Policy Principles

These are our guiding lights in Internet policy matters and they have guided us in developing this document.

- The Internet should be open and uncaptureable.
- Internet markets should be competitive.
- Internet governance should be determined by open, multi-stakeholder processes.
- Laws and policies should work with the architecture of the Internet, not against it.
- Human rights should apply online.
- The Internet should be accessible by and inclusive of everyone.
- Technology changes quickly, so laws and policies should focus on activity.
- The Internet is nationally important infrastructure, so it should be protected.

We think that Network Neutrality is relevant to New Zealand

We think this for a number of reasons, as are explored in the body of this document:

- The New Zealand market for fixed-line broadband services, while competitive, is highly concentrated in comparison to other markets with three ISPs controlling 94% of consumer connections.
- New Zealand ISPs have developed a voluntary Code of Practice that could be interpreted as providing the transparency required to allow customers to make informed choices about non-Network Neutral prioritisations of traffic.
- The nature and concentration of the New Zealand ISP market creates cause for concern on Network Neutrality, and a number of potential challenges to neutrality are easily conceivable in our market.
- In light of this concern and these challenges, it is worthwhile to consider Network Neutrality in a New Zealand context to both develop an appropriate definition to allow

innovation to occur, but also to prevent other issues from emerging due to a lack of clarity.

- There is much New Zealand can learn from how other jurisdictions have approached Network Neutrality, both in terms of how they have designed their responses and the impact that this has had on their markets and on the problems presented.

- There is worth in commencing a public discussion on Network Neutrality in New Zealand.

Key Questions

InternetNZ intends this to be the start of a conversation about Network Neutrality in New Zealand. Accordingly, we have attempted to outline some initial thoughts about how this may be relevant in New Zealand.

What would assist us from here are your thoughts, and to guide these, we propose the following questions. We would greatly appreciate your thoughts and views on the following questions.

1. **What do New Zealanders believe that Net Neutrality is, and what do they expect from their ISP in this regard?**

2. **What definition of Network Neutrality is most appropriate and useful in a New Zealand context? Is the following definition adequate?**

   "Network Neutrality means that all data on the Internet should be treated equally."

3. **How else could we define Network Neutrality? Is Network Neutrality in New Zealand best viewed as a matter of equality, fairness, or something else?**

4. **Have we accounted for the right metrics in defining Network Neutrality in a New Zealand context?**

5. **Is the concentration of the New Zealand fixed-line broadband market relevant to the risk of Network Neutrality issues in New Zealand?**

6. **Is the current transparency regime included in the TCF Broadband Product Disclosure Code of Practice sufficient to provide consumers with the information they need to make informed choices about non-Network Neutral behaviour?**

7. **Are we correct in concluding that the rise of alternative, Internet-based content delivery systems may create Network Neutrality challenges in New Zealand?**

8. **What other Network Neutrality issues are present, or may emerge, in the New Zealand market that we should consider in designing a response?**

9. **What other jurisdictions should we consider when looking for potential models for intervention on Network Neutrality?**

The rest of this document contains research and analysis to help you consider the issue of Network Neutrality, and these questions.

What is Network Neutrality?

The first part of this Discussion Document seeks to develop a workable understanding of Network Neutrality, and how it may be applied in theory to determine whether it is being maintained or violated.

We believe that Network Neutrality, at its most basic level, is easily defined, and we propose the following definition to start this Discussion Document:

Network Neutrality means that all data on the Internet should be treated equally.

By extension, this also defines the negative: that data should not be subject to discrimination or differential charging or encumbrance, regardless of the user, content, site, platform, application, type of attached equipment, or mode of communication.

In utilising this definition, we seek to refer to the common design principles that have been embodied in the Internet since its creation. Specifically, the end-to-end principle, sometimes called the dumb network – meaning that each part of the network should simply deliver packets as best it can with no attempt to discriminate based on their contents. Such a principle is embedded in both the design and architecture of the Internet as we know it today; indeed, in this regard Network Neutrality is and was the default setting by which the Internet was designed.

Such a definition also seeks to preserve the Internet as a platform for innovation. By covering a wide range of challenges to network neutrality, it provides for those challenges which we already have in mind, as well as establishing a flexible, principle-based guide for innovative uses of networks which are likely not yet conceived. The relevance of Network Neutrality to innovation was a theme noted in the judgment in *Verizon v. Federal Communications Commission* in the United States, referencing the Federal Communications Commission's Network Neutrality rules as set out in the Open Internet Order:

> *According to the Commission, the [net-neutrality] rules [set forth in the Open Internet Order] furthered this statutory mandate by preserving unhindered the "virtuous circle of innovation" that had long driven the growth of the Internet. Internet openness, it reasoned, spurs investment and development by edge providers, which leads to increased end-user demand for broadband access, which leads to increased investment in broadband network infrastructure and technologies, which in turn leads to further innovation and development by edge providers. If, the Commission continued, broadband providers were to disrupt this "virtuous circle" by "[r]estricting edge providers' ability to reach end users, and limiting end users' ability to choose*

which edge providers to patronize," they would "reduce the rate of innovation at the edge and, in turn, the likely rate of improvements to network infrastructure."[1]

This conception of Net Neutrality also relates to defining the threats that this concept was created to address. The most common, basic concern is that Internet Service Providers and Network Owners have both the power and the financial incentive to privilege those content and service providers that are willing to pay for privileged treatment. Such privileging has the potential to both stifle innovation and impede the free flow of ideas on the Internet. Understanding Network Neutrality is therefore important because it also therefore raises issues of economic innovation and growth within the Internet Service Provider (ISP) and content industries, but also to the ability of the public to engage with information on the Internet.

Limitations of the definition

One key challenge with this definition is that while it indeed encompasses Net Neutrality in its purest, most commonly expressed and accepted form that this definition is simply too broad to be useful, and that seeking to apply this definition will be difficult in practice.

At the most primary level, the definition calls for "equal" treatment of traffic – something that is in practice hard to deliver on any resource that is limited, as indeed the Internet is.

An example of the challenges that this broad definition impose is that it leaves no room for common (and advisable) network management practices such as egress filtering or throttling DDOS attacks. The reality is different; many or most ISPs implement traffic management practices, arguably if they did not their service would suffer as a few high traffic streams consumed all their resources. As such, prioritisation is done on New Zealand ISPs all the time, for a wide variety of reasons:

- Prioritisation of 111 calls across the telephone network. This ensures that 111 emergency calls are prioritized end-to-end across the network, at the expense of other uses of the network in that moment.
- De-prioritisation of certain types of traffic by ISPs, depending on packet inspection of uses. This is most commonly used to de-prioritise peer-to-peer file sharing applications, for example, to preserve the performance of the network for all other users.
- Differentiated grades of service for different "classes" of customer. Corporate users have far different Internet requirements than home users; these are serviced through the creation of different service "tiers" that provide greater bandwidth, stability or security in access to allow for those requirements at the price points that those different markets are prepared to tolerate.
- Blocking of content, such as that performed by the Department of Internal Affairs' Digital Child Exploitation Filtering System, which has been deployed by a number of ISPs in New Zealand.
- The inspection and filtering out of unauthenticated SMTP traffic for the purposes of controlling email-based spam.

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[1] *Verizon v. Federal Communications Commission*. 740 F.3d 623 (D.C. Cir. 2014), at 15 (internal citations omitted).

These exceptions to Network Neutrality are common features of the New Zealand Internet landscape. Many of them are in the public interest, and are essential to preserving the performance of the Internet, or at least in protecting those users from further harm.

For this reason, the use of "equally" in this definition may be unwise, impractical or overly idealistic.

Developing a workable definition

An important output from this process is therefore to develop a workable definition of what Network Neutrality means in a New Zealand context. We have started from the point *that all data on the network should be treated equally*; we have also identified that in practical terms, that that definition does not account for what is reasonable and accepted network practice in New Zealand.

What we will be seeking to achieve in this process therefore is a more workable definition; more detailed and nuanced that allows for accepted practices, but does indeed provide guidance as to what is acceptable and what is unacceptable forms of traffic discrimination.

Other parties have proposed alternative and more detailed definitions. We reference some of these below:

- The ability of all Internet end-users '… to access and distribute information or run applications and services of their choice'.
- Assurance that all traffic on the Internet is treated equally, whatever its source, content or destination. More recently, the TSM Regulation as adopted in the first reading of the European Parliament in April 2014 defines the principle of net neutrality in the open Internet as signifying 'that traffic should be treated equally, without discrimination, restriction or interference, independent of the sender, receiver, type, content, device, service or application.' •
- Absence of unreasonable discrimination on the part of network operators in transmitting Internet traffic.
- In his recent video remarks regarding network neutrality, US President Obama spoke of 'openness, fairness, and freedom' and of the absence of gatekeepers who can decide which sites users are permitted to access.

Some other considerations that we believe may be relevant in developing a workable definition of Network Neutrality in a New Zealand context are:

- Is strict equality in access best suited to reflecting the commercial and technical realities of Internet infrastructure in New Zealand?
- Given our geographic isolation as a country, do we need to consider how the equal treatment of all kinds of data may impact the quality of service or experience that New Zealanders experience on the Internet, compared to users elsewhere in the world?
- Should we accept that it is indeed beneficial to offer different "classes" of service to allow for innovation that benefits different use cases – for example, allow discrimination in favour of reducing jitter or latency, which are important metrics for many of the emerging use-cases for the Internet, such as Voice over IP services,

> Video on Demand services and real time transactional services, at the expense of applications that are less sensitive to these factors?
> - If we were to define this definition as treating all traffic "fairly" as opposed to "equally", does that resolve this challenge? Or does that simply shift the challenge to requiring definition of what is "fair"?

One of the other options for defining Network Neutrality is based on intent, which we consider below.

Defining violations by intent

All of the examples listed above however are done for reasons of preserving or enhancing customer experiences on the network; of managing scarce network resources to prioritise traffic that delivers the maximum utility to all of the different users. Network Neutrality, in its purest form, could therefore be an expression of what is currently an unachievable utopia – that we would like to ensure that all traffic was treated equally and that there was sufficient bandwidth for all, but in practice the capacity of the Internet in New Zealand is still subject to inherent limitation. In the face of these limitations, some form of prioritisation is arguably necessary to deliver an acceptable experience to all different customer classes and use cases.

It therefore seems appropriate to make a distinction between different kinds of prioritisation based on the intent of the party doing the prioritising. If we accept that some degree of prioritisation is necessary to deal with a limited, constrained network in New Zealand; and if we also agree that the examples listed above are all, in some way, justifiable exceptions, then an intent test seems appealing. As expressed above, the most common, basic concern with Network Neutrality is that Internet Service Providers and Network Owners have both the power and the financial incentive to privilege those content and service providers that are willing to pay for privileged treatment. This is a very different manner to prioritising to benefit consumer utility; this is prioritisation by ISPs serving their own commercial interests.

There are two such practices worthy of further consideration: zero-rating and caching.

"Zero-rating" means allowing access to certain content for free. Where a capped data allowance is the norm, zero-rated content may be favoured by users. For example, Orcon used to have a "free zone" on its website - a list of preferred media providers, consumption of whose content was not counted towards a customer's data cap. Such a "free zone" benefits end-users by giving them something for free that they otherwise may not enjoy. On the other hand, such preferential treatment may ultimately decrease the diversity of content and serve to artificially benefit the interests of those content owners that are included in the "free zone" versus those that are not. Further, if such a "free zone" is not "free" to the content provider, in that it pays for its content to be privileged with zero-rated status, then this may act as a barrier to entry or constraint on what would otherwise be a competition on equal terms between content providers. Price is one factor which ISPs control. Another is the preferential provision of fast local data.

"Caching" operates by making copies of commonly requested content, to reduce the cost of multiple end-to-end distributions of the same material. Caching serves to minimise the cost of content distribution and improve user experience through reduced latency. By its very nature, caching privileges certain content. This raises questions about whether caching can

be a "neutral" practice: what would "neutral caching" mean? One approach is that "neutral" caching would follow demand from users. The most commonly accessed items would be cached to allow for the most efficient delivery pathway across the network to the users who wish to access those items.

If neutral caching follows user demand, non-neutral caching would be subject to some other, more selfish motive. For example, an ISP which also provided content services might preferentially cache its own content, or refuse to cache competitor's content at reasonable prices. An ISP with a large customer base could "hold to ransom" popular content providers wishing to provide content to customers of that ISP at satisfactory speed and quality.

These are examples of discriminatory practices, which reprioritise or charge for customer traffic differentially according to its source or destination in a way that is not transparent to the customer. On one hand, these practices work against openness and that lead to capture. They reduce the usefulness of the Internet by altering people's choices and making it harder for new services to compete with established ones. More specifically, they adversely affect the Internet experiences of the customers of ISPs that seek to use those services that are not "privileged" by their ISP.

On the other hand, both of these practices can be applied to enhance the benefits of the Internet to end-users, ensuring that desired content is served efficiently. Without caching for example, many users would miss out on high-bandwidth services such as video streaming. Content Delivery Networks (CDNs) are one example of a way in which content providers can pay to ensure that their customers have better access to their content (e.g. online shopping sites, videos or gaming servers). CDNs do not exist to degrade other traffic, instead they are private services for content providers who have large, global customer bases. However, CDNs are powerful commercial entities and their influence and negotiations with ISPs has the potential to lead to traffic prioritisation (or degradation) by ISPs to advantage preferred providers, or provide leverage for billing content providers (as well as their customers).

These examples illustrate that while an intent test for non-neutral practices seems logically appealing, there is a difficulty in gauging the consequences of, and intent behind, network management practices. In the absence of complete transparency in underlying commercial arrangements relating to network access and prioritisation, which no New Zealand Internet Service Provider is likely to provide, any assurances about intent would need to be taken on faith.

The importance of transparency

The common feature of discriminatory practices is that they are not directly visible to the customer, i.e. they are not transparent. For example, ISPs have to be open about what they are providing to their end users and at what price, but they don't have to publish any deals they do with content providers. Deals with providers may not be in the customers' interest, e.g. prioritising the traffic of one provider over that of its competition.

In an ideal world, customers would be able to have access to all the information they require to make an informed choice about which ISP is best able to meet their requirements; including any underlying content arrangements that an ISP may have. Transparency considerations are therefore important to any consideration of Network Neutrality. Without this transparency, the reasons for prioritisations aren't understood - if it is not transparent in

what happens upstream of the consumer's connection, in how traffic is prioritised and in whether it follows a sensible path from provider to consumer, then no qualification can be made as to whether such a violation of neutrality is justified.

Internet pioneer John Gilmore famously observed that the Net interprets censorship as damage and routes around it. This is true when the Internet is considered as a community rather than just the pipes and technology; likewise, New Zealand customers are capable of comparing the relative merits of different ISPs and determining which is most appropriate for them.

This can only be done however when there is sufficient information upon which to make those decisions. Both establishing intent to prioritise traffic for commercial benefit, and determining violations of Neutrality in the negative, require such transparency. It is indeed difficult to see how any conception of a Neutral Internet can work without such transparency being paramount.

Is Network Neutrality relevant to the New Zealand Market?

The second part of this Discussion Document seeks to clarify the New Zealand context within which we should consider the proposed definition of Network Neutrality. This is a vitally important piece of this process – in order to develop an appropriate solution to Network Neutrality in New Zealand, it is necessary that this discussion is grounded in the context of the New Zealand market, and that it considers the relevant behaviours, offerings and providers that are unique to our market.

Defining the role of New Zealand Internet Service Providers in a Network Neutrality Context

The most commonly cited concerns about Network Neutrality can be reduced to concerns about the power of ISPs to control access to information distributed over their networks for their sole commercial gain. To then understand the challenges of Network Neutrality in a New Zealand context, the next logical step is to understand how the New Zealand ISP market, and whether and how that creates an environment where Neutrality concerns may manifest.

The Commerce Commission undertakes market monitoring of the New Zealand telecommunications market to fulfil exactly this function. The most recent report reviewed the 2013 year and was released in May 2014.[2] There are a number of useful metrics in this report that are relevant to this discussion about Network Neutrality. Firstly, the Commission notes that the ISP market in New Zealand is consolidating:

> *"After its acquisition of TelstraClear, Vodafone now retails around one-third of all fixed-line broadband connections. CallPlus under its various brands of Slingshot, CallPlus, and Flip is some way behind, but clearly the third player in the broadband market with an estimated 8% market share. Orcon is clearly the fourth player with an estimated market share of 5%. All the remaining retailers have an estimated market share totalling 6%."[3]*

Subsequent to the Commission's report, Callplus has acquired Orcon as an example of further concentration in this market. The Commerce Commission estimates current market shares of the fixed-line ISP market in the chart included below; of note is that Spark

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[2] Commerce Commission, *2013 Annual Telecommunications Monitoring Report,*
http://www.comcom.govt.nz/regulated-industries/telecommunications/monitoring-reports-and-studies/monitoring-reports/
[3] Ibid., p19

(previously Telecom) holds approximately 49% of the retail connections, and that between Spark, Vodafone and the combined Callplus and Orcon, they account for approximately 94% of connections in this market.


Figure 14: Estimated ISP market share
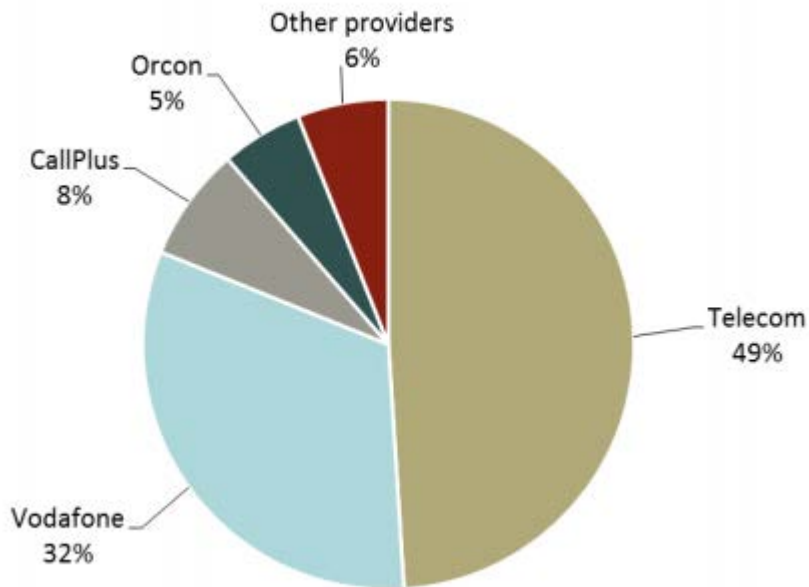
Source: Commerce Commission, *2013 Annual Telecommunications Monitoring Report*

This consolidation is increasing the market concentration of the fixed-line ISP market in New Zealand – in other words, more market power is vested in fewer operators. The New Zealand retail broadband market is more concentrated than both Australia and the United Kingdom; a statement that has been true ever since the start of the Commission's monitoring:

**Figure 15: Retail broadband market HHI index**
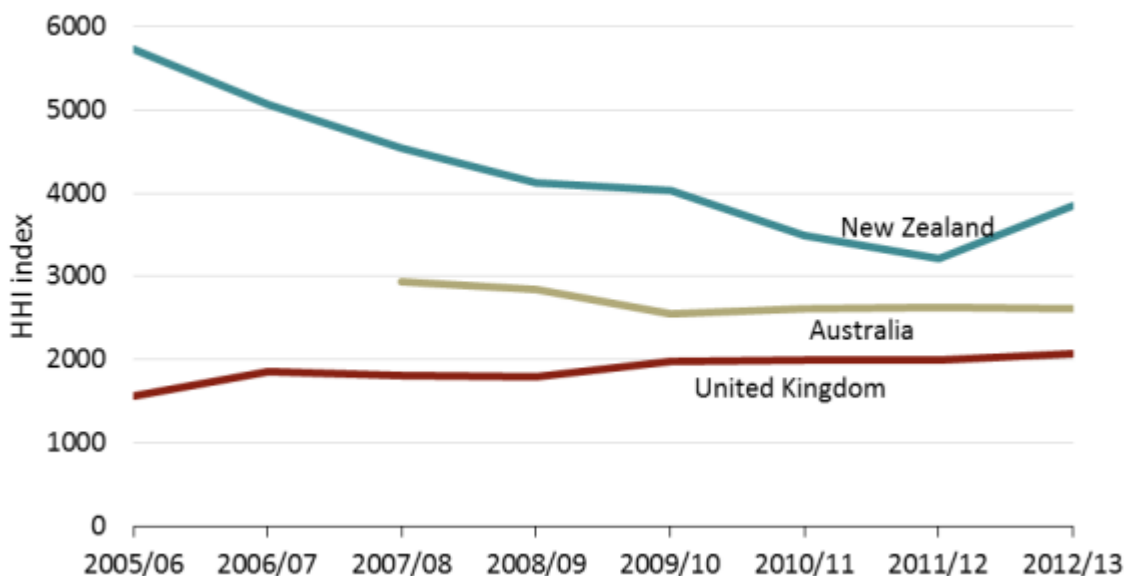
The Commission does however summarise the market for fixed-line broadband services as competitive:

> *The retail fixed-line broadband market, which reached 1.32 million connections by 30 June 2013, continues to be one of the most competitive telecommunications markets.[4]*

One of the reasons for this conclusion is that it is commonly understood that there are over 70 ISPs providing fixed-line broadband services to New Zealanders, and that therefore consumers benefit from a wide range of choices. Also, price outcome-wise, New Zealanders are reaping the benefits of this competitive landscape, as the Commission itself notes:

> *Keen competition in bundled broadband pricing is probably responsible for broadband and internet revenues showing a smaller rise than prior years.[5]*

Some evidence of this is shown in customers seeking higher broadband caps, for example:
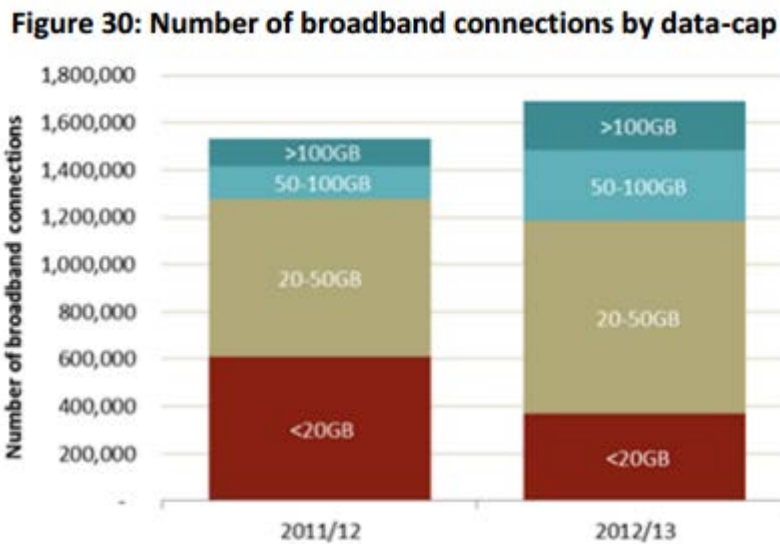
Figure 30: Number of broadband connections by data-cap

The insights that this monitoring report provide suggest that there is indeed grounds for concern about potential Network Neutrality issues in New Zealand. A small number of ISPs hold the vast majority of customer connections. These larger ISPs therefore have the ability to disproportionately influence the market through any non-Network Neutral decisions that they make.

Conversely, consumers have the ability to switch to a great number of alternative ISPs that do not engage in non-neutral behaviours, and that current trends show that consumers are benefiting from competition between these ISPs though increasing their utilisation of network data.

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[4] Ibid., p19
[5] Ibid., p17

How transparent are New Zealand ISPs?

In order to engage in such switching behaviours though, customers require the information necessary to understand what prioritisations their ISPs are doing to ensure that this meets their requirements. This was discussed in Part One of this paper. It is therefore important to understand what obligations New Zealand ISPs already hold to provide this information.

The Broadband Product Disclosure Code of Practice developed by the Telecommunications Forum (TCF) includes such transparency obligations. [6] These obligations apply to all members of the TCF as it is a "mandatory" Code under the TCF's rules. Membership of the TCF is not however required in order to be an ISP in New Zealand. Those ISPs that are currently members of the TCF and therefore committed to this Code of Practice are:

- 2degrees Mobile
- AWACS Communications (NZ) Ltd
- CallPlus
- Chorus
- Compass Communications Ltd
- Enable Networks
- FX Networks
- Kordia
- Northpower Fibre
- NOW
- Orcon Internet Ltd
- Spark New Zealand
- Ultrafast Fibre
- Unison Fibre
- Vector Communications
- Vodafone
- Woosh

The transparency obligation that this places upon these ISPs that is relevant to Network Neutrality is as follows:

> 7.1.3 (k). Traffic Management Policy - circumstances in which traffic management may apply and the effect this may have on Customers. Suggested wording: "A traffic management policy is in place which may influence your broadband performance at busy times. See [insert web link] for more details." and provide a link to where the Customer can find a more detailed description of the traffic management policy.

This obligation would arguably require ISPs to disclose any arrangements that prioritised certain traffic kinds over another.

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[6] http://www.tcf.org.nz/content/91e8297b-8548-4285-b211-501650db702e.html

Emerging challenge? Bundling of video content services with telecommunications in New Zealand

The final aspect of the market to consider as to whether Network Neutrality is a relevant concern in New Zealand relates to whether there are any market developments that give cause for concern about non-Neutral behaviour. One of these is potentially the provision of content, and the bundling of video content services with telecommunications or specifically, fixed-line broadband services.

The specific concern from a Network Neutrality perspective in this context is with regard to blocking, throttling or deprioritising of content that is outside of that which is bundled by the ISP; for example, if an ISP was to partner with Netflix, but in doing so disabled the ability for customers of that ISP to access content from Lightbox, or if the experience in using Lightbox was degraded. In doing so, the ISP is effectively leveraging its relationship in the provision of telecommunications services with that customer to influence that customer's buying behaviour of content, in a manner that serves to benefit the ISP alone. Content blocking or modifying behaviours are widely regarded as quintessential network neutrality concerns.

Content delivery in New Zealand has traditionally been separate from telecommunications in New Zealand. This is a marked contrast to the United States, for example, where a number of cable operators provide both Internet and Content services, and likewise ISPs have moved into the content business to compete with similarly bundled offerings.

There is some evidence however to suggest that more bundling is taking place in New Zealand. Again the Commerce Commission's Market Monitoring Report for 2013, shows that it remains uncommon for New Zealanders to purchase bundled products that combine both telecommunications and content (TV) services.

Figure 16: Household fixed-line purchasing trends
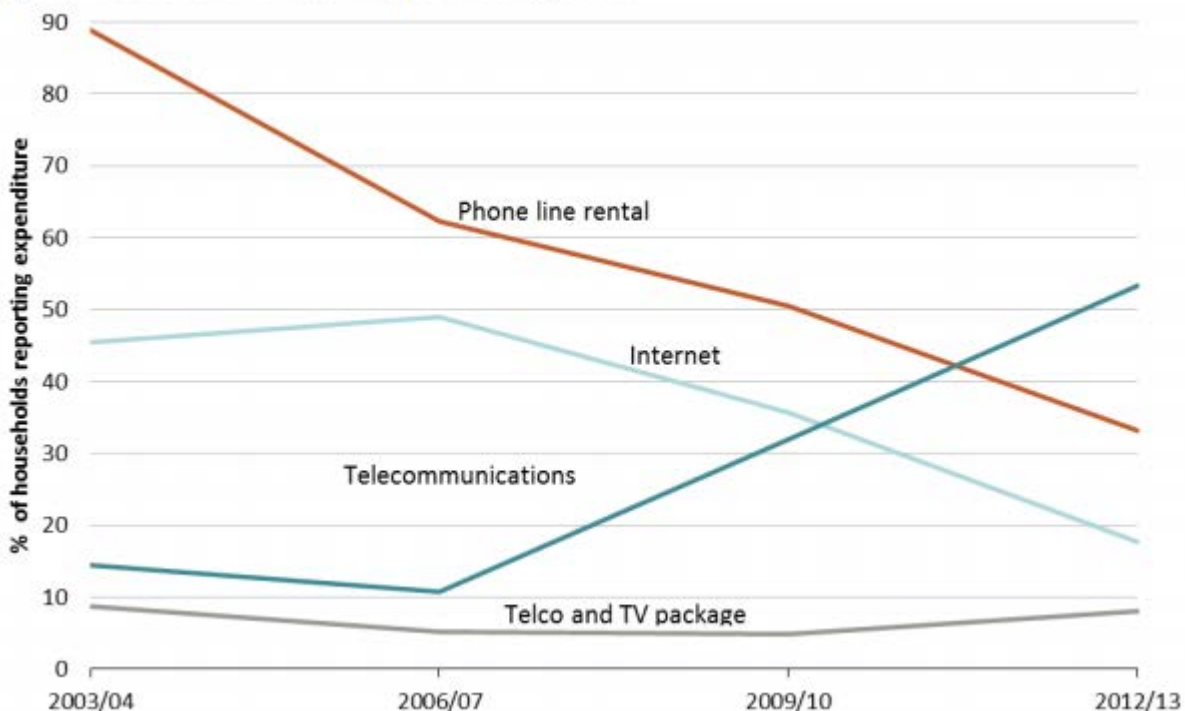
Source: Commerce Commission, *2013 Annual Telecommunications Monitoring Report*

That said the market for content delivery is changing rapidly in New Zealand. The above charts appear to consider TV to be only through "traditional" modes of broadcasting. The Internet has provided a platform through which alternative content distribution modes have emerged, in particular Video on Demand (VOD) content delivery models.

At present, there are five major internet-based VOD content delivery options available to New Zealand consumers:

- Lightbox, provided by Spark – www.lightbox.co.nz
- Premier League Pass, provided by Coliseum – www.premierleaguepass.com
- QuickFlix – www.quickflix.co.nz
- Neon, provided by Sky Television[7]
- Netflix[8]

In addition to this, a number of ISPs have also launched "Global Mode" services that allow their customers to evade geo-blocking protections that are present on foreign content delivery platforms, and gain access to content in those ways.

InternetNZ is not aware of any publicly available metrics that account for the growing demand for content services over the Internet; that however there are a number of providers entering this market indicate that there is growing consumer demand for these services.

This may indeed therefore be the battleground through which Network Neutrality concerns manifest in New Zealand; particularly as one of the VOD is owned by the largest ISP in the market (Lightbox, owned by Spark) and given that other ISPs are promoting alternative services such as Global Mode.

Emerging challenge? Telecommunications companies enforcing payment for video content delivery over networks in New Zealand

This is another content-dominated concern, and in many ways closely related to the emerging challenge outlined above. Due to the fact that video content generates a large amount of internet traffic, ISPs may seek to recover "costs" or otherwise enforce payment obligations upon content distributors in exchange for the efficient distribution of their content. If content distributors do not meet those demands for payment, then ISPs have a range of options available that may hamper the distribution of that content – for example:

- Not installing caching for those content providers, which would otherwise reduce the cost of distribution and increase performance and availability of that video content.
- Deliberately degrading or throttling the delivery of specific video content on the basis that payments for delivery have not been received.

Both of these examples raise network neutrality concerns. They are different from the challenges raised above as they do not seek to modify consumer behaviour directly; instead these seek to solicit additional payments from content distributions. In doing so, they not

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[7] http://www.skytv.co.nz/Default.aspx?tabid=202&art_id=51383
[8] http://www.stuff.co.nz/entertainment/tv-radio/63335745/Netflix-announces-NZ-launch-date

only raise the costs of providing these content distribution services in a manner which is likely to be passed onto end-users of these services, but they also institute higher barriers to market entry for alternative content distributors. This is because it is easily conceivable that these new distributors are less likely to be able to afford to pay network access charges to ISPs in the absence of a developed customer base.

This challenge has been demonstrated in other markets, most notably the United States in the case of Comcast and Netflix. As expressed by Netflix in their petition to the Federal Communications Commission (FCC) when it was considering the merger between Comcast and Time Warner Cable:

> *"The combined entity would have the incentive and ability-through access fees charged at interconnection points and by other means-to harm Internet companies, such as online video distributors ("OVDs"), which Applicants view as competitors. The transaction would give Applicants control of a dominant share of the nation's residential high-speed broadband customers at a time when those customers increasingly engage with more content-rich applications that require high-speed broadband to work properly, such as Internet-delivered video."[9]*

Indeed this incentive and ability had been demonstrated in Netflix's own interactions with Comcast and other cable operators, in that the performance of Netflix's video content delivery services changed markedly upon meeting the ISPs demands for payment:[10]

Image Attribution: Netflix, http://money.cnn.com/2014/04/14/technology/netflix-comcast/?iid=EL
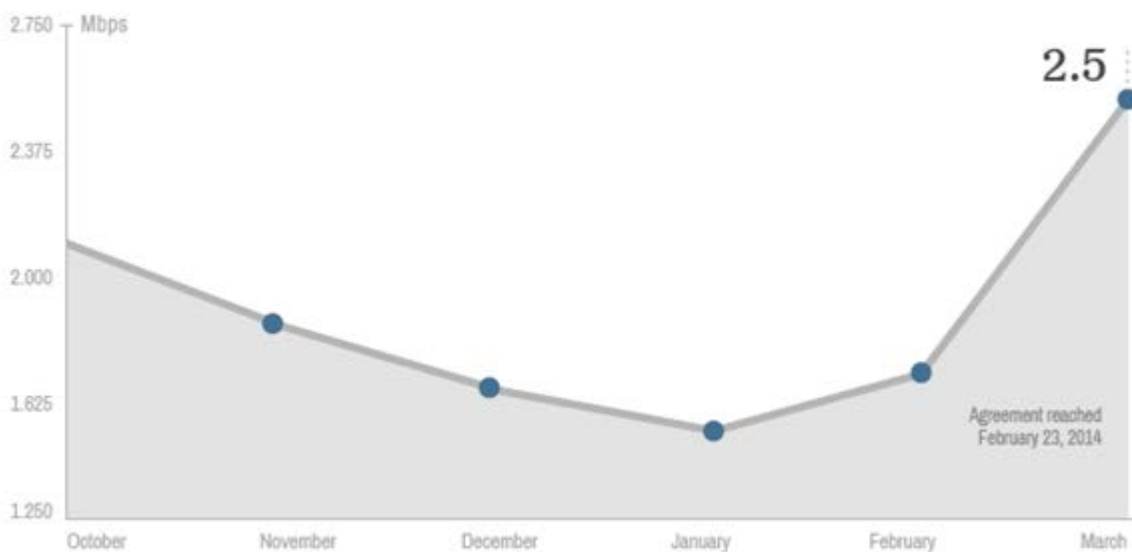
There is no evidence currently of such behaviours taking place in New Zealand. However, InternetNZ is concerned that such behaviours could occur in this market and that in doing so Network Neutrality concerns would be realised.

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[9] http://apps.fcc.gov/ecfs/document/view?id=7521819696&_ga=1.235764675.337222476.1409081769, p. IV.
[10] http://money.cnn.com/2014/04/14/technology/netflix-comcast/?iid=EL

Other Network Neutrality challenges?

There may be other Network Neutrality challenges present in the New Zealand market already, or that may be emerging. These will be partially dependent upon what definition of Network Neutrality is decided as appropriate for application in a New Zealand context.

As part of this process, we are very interested in highlighting and discussing other areas of concern about non-Network Neutral behaviours so that they may be taken into consideration in designing potential solutions. We are very interested in what other risk factors parties that review this document observe.

InternetNZ

How other jurisdictions are dealing with Network Neutrality

The third part of this document serves to identify how other jurisdictions are approaching Network Neutrality, and what can be learned from their measures and experiences that may aid New Zealand in developing an approach.

The following map records which countries have implemented Network Neutrality rules, and the method through which they have done so:
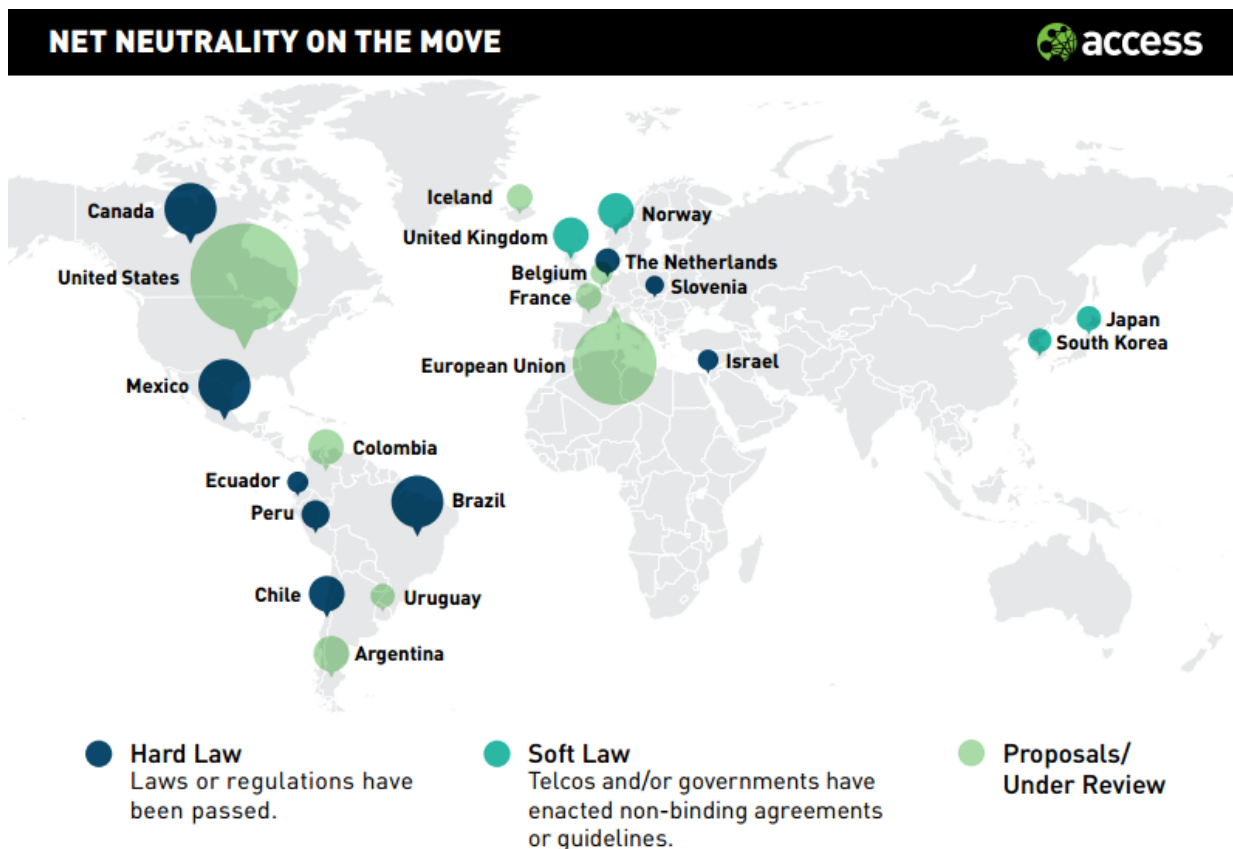
Image Attribution: Access Now, https://www.accessnow.org/blog/2014/09/10/today-is-the-internet-slowdown

The following jurisdictions have been reviewed on this basis:

- United States of America – example of an emerging "hard law" regime.
- The Netherlands – example of a "hard law" approach.
- European Union – example of a policy development process.
- United Kingdom – example of a "soft law" approach.
- South Korea - example of a "soft law" approach.

United States of America

The Federal Communications Commission (FCC) has responsibility for considering matters of telecommunications regulation in the United States. They have been considering whether to regulate Network Neutrality for some time. In doing so, they are clarifying whether they will apply existing legislative measures to Net Neutrality; and as such it is

Most recently, as of February 2015, the FCC has issued "Open Internet" rules. These rules seek to "protect and maintain open, uninhibited access to legal online content without broadband Internet access providers being allowed to block, impair, or establish fast/slow lanes to lawful content."

The FCC's rules are grounded in United States Federal Law in Title II of the Communications Act 1934 and Section 706 of the Telecommunications Act 1996. The FCC believes that these rules appropriately protect freedom of traffic movement across networks while also incentivizing investment in connectivity. These rules will also apply to both fixed and mobile access technologies, and are therefore intended to be as universal as possible.

The FCC's Open Internet rules are summarized though the following principles or "Bright Line Rules":

- 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.
- No Paid Prioritization: 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." This rule also bans ISPs from prioritizing content and services of their affiliates.

More information about the FCC's Open Internet rules may be found here: http://www.fcc.gov/openinternet. As this is still a relatively recent proposal, the impacts of this are not yet known.

The Netherlands

The Netherlands is an example of a "hard", legislative approach to Network Neutrality. This was developed in response to concerns about non-neutral behaviour from some ISPs operating in the Netherlands, in blocking access to certain types of traffic or applications on the basis that they competed with these ISPs' own services.

Article 7.4a of the Telecommunications Act prohibits the hindrance or slowing down of services or applications on the Internet by ISPs and network owners. This prohibition holds across both fixed and mobile Internet services. There are a number of exceptions to this designed to accommodate the realities of network operation:

- to reduce congestion, while treating similar traffic equally;
- to preserve the integrity and security of the network and service of the provider or the equipment of the end-user. If the breach of integrity or security is caused by the equipment of the end-user, the provider has to notify the end-user first and give them sufficient time to rectify the situation.
- to block the transmission of unwanted communications (e.g. spam) to an end-user, only if the end-user has given consent beforehand; or
- to comply with the law or a warrant.

In addition the law also prevents ISPs from charging end-users differently for the use of different types of Internet services or applications.

As a result of the passage of this legislation, the major mobile phone providers operating in the Netherlands all raised their prices, claiming that this was required as a direct result of the introduction of Network Neutrality protections.[11]

European Union

The Dutch approach to Network Neutrality has also encouraged the European Union to commence a process considering whether and how Network Neutrality should be implemented across Europe, as part of their Digital Single Market initiative for Europe. The details of the European Union plan are still under development. Both the European Parliament and the European Council have committed to measures that will *"safeguard open Internet access"*.

The European Council's approach is summarised as follows:

> *"The draft regulation is to enshrine the principle of end-users' right to access and distribute content of their choice on the internet. It also sets out to ensure that companies that provide internet access treat traffic in a non-discriminatory manner.*
>
> *It sets common rules on traffic management, so that the internet can continue to function, grow and innovate without becoming congested. Blocking or slowing down specific content or applications will be prohibited, with only a limited number of exceptions and only for as long as it is necessary. For instance, customers may request their operator to block spam. Blocking could also be necessary to prevent cyber attacks through rapidly spreading malware.*
>
> *As regards services other than those providing internet access, agreements on services requiring a specific level of quality will be allowed, but operators will have to ensure the quality of internet access services.*

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[11] http://arstechnica.com/tech-policy/2012/05/netherlands-becomes-worlds-second-net-neutrality-country/

National regulatory authorities will play a key role in ensuring that telecom companies and operators respect the rules on open internet. For this, they will receive guidance from the Body of European Regulators BEREC."

It is unclear how these measures will progress through the European Parliament at this time, though if it does so this would be another example of a "hard", legislative approach to Network Neutrality.

The United Kingdom

The United Kingdom has proceeded with a "soft" approach to Network Neutrality, favouring a mixture of regulatory statements made by the market regulator (Ofcom) and self-regulatory instruments introduced by the ISPs.[12]

Ofcom has summarised its stance on Network Neutrality as follows:

- Ofcom recognise the benefits associated with 'best-efforts' internet access and the provision of managed services, and seek for them to co-exist.
- Ofcom would be concerned if network operators were to prioritise managed services in a manner that leaves insufficient network capacity for 'best-efforts' access to the open internet. In such circumstances we would consider using the powers which allow us to safeguard 'best-efforts' access to the open internet by imposing a minimum quality of service on all communications providers.
- Ofcom regards any blocking of alternative services by providers of internet access as highly undesirable. Where providers of internet access apply traffic management in a discriminatory manner, our view is that this could have a similar impact to outright blocking. Our current view is that we should be able to rely on the operation of market forces to address the issues of blocking and discrimination, but we will keep this position under review.
- Ofcom believes that effective competition requires that sufficient information is available to enable consumers to make good purchasing decisions. This document sets out our current view as to what we believe to be necessary, both in terms of technical information on traffic management practices, and transparency as to services which are blocked or discriminated against.

In addition UK ISPs have committed to the following:

- To provide more information to consumers about what traffic management takes place, why and with what impact;
- To provide customers with clear, easy-to-understand information on traffic management so that they can better compare broadband packages, and
- To publish a common Key Facts Indicator (KFI) table, summarising the traffic management policy for each package on offer. These tables have been available on signatories' websites since July 2011.

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[12] http://stakeholders.ofcom.org.uk/consultations/net-neutrality/statement/

South Korea

The Korean Communications Commission (KCC) has also adopted a "soft" approach to Network Neutrality regulation through the introduction of Guidelines on Net Neutrality and Internet Traffic Management in 2011.

These guidelines are unofficially translated as follows:

" Ⅰ. Objective

1. *These guidelines aim at fostering an open and fair Internet usage environment, and to improve a healthy and sustainable Information and Communication Technology (hereinafter referred to as "ICT") ecosystem through the basic principles for Net Neutrality and Internet Traffic Management.*

Ⅱ. Basic Principles

User's Rights

2. *Internet users have the right to use lawful content, application, service, and not harmful devices or equipment freely, and to be provided with information regarding Internet traffic management by related carriers.*

   ■ *Internet users mean end users.*

Transparency on Internet Traffic Management

3. *An Internet access service provider shall disclose the traffic management policy which clarifies objectives, scopes, conditions, processes, and ways, etc. of Internet traffic management. When implementing the necessary measures of traffic management, it shall inform the relevant users of the facts and the effects. (However, when there are unavoidable reasons that prevent them from informing users of important information, it can be replaced by a notice.) The Korean Communications Commission could lay down additional rules regarding the scopes and the ways of disclosure, and the information to be provided.*

   ■ *An Internet access service provider means a Telecommunications carrier which provides a fixed and wireless Internet access service pursuant to the Telecommunications Business Act.*

No Blocking

4. *An Internet access service provider shall not block lawful content, applications, services, or not harmful devices or equipment. However, it is allowed when the need for reasonable traffic management is approved.*

No Unreasonable Discrimination

5. *An Internet access service provider shall not unreasonably discriminate against any lawful contents according to the types or providers of these contents, applications, and services. However, it is allowed when the need for reasonable traffic management is approved.*

Reasonable Traffic Management

6. *The need for reasonable traffic management includes, but is not limited to, the following subparagraphs. The Korean Communications Commission will lay down additional rules on the scope, condition, processes, ways of reasonable traffic management; a standard of judgment on whether traffic management is*

reasonable, etc. In these cases, it could be different, according to the type of network (fixed or wireless, etc), and technology characteristics.

1) *For Net security and stability*

2) *For protecting most users' interests by avoiding net congestion caused by temporary overload etc.*

3) *For the request of states' agencies according to the laws, or need of enforcement by other laws.*

Ⅲ. Managed Service

7. *An Internet access service provider could provide Managed Service, without quality deterioration of Best Effort Internet below the reasonable standard. The Korean Communications Commission additionally monitors the Best Effort Internet's quality, and the effect on the market when Managed Service is implemented.*

   ■ *Managed Service means a service which guarantees the traffic transmission quality, such as transmission bandwidth, etc., by traffic management technology other than generally Best Effort Internet.*

Ⅳ. Mutual Cooperation

8. *Internet access service providers and content/application/service providers, etc. shall collaborate with each other for the healthy and sustainable development of the ICT ecosystem, and according to principle of good faith, they especially shall cooperate to give information regarding providing content/applications/service, and operating a stabilized net, etc. when necessary. Also they could organize a policy consultative body for building market self-regulating standards, etc. regarding Net Neutrality and Internet traffic management when necessary.*

Ⅴ. Building and Managing Policy Consultative Body

9. *The Korean Communications Commission builds and manages the additional policy consultative body in which interest groups, specialists, etc., participate, for the improving Internet traffic management transparency, pertaining to the necessary measurement of these guidelines implementation, such as providing judgment standards for reasonable traffic management scopes, conditions, procedures, whether it is reasonable, discussing on policy direction for spreading emerging services, such as mVoIP, etc., and trying to find a way for new market order according to the ICT ecosystem change. The Korean Communications Commission additionally will decide its requirements regarding its members, management, etc."*[13]

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[13] http://act.jinbo.net/drupal/node/8351

InternetNZ overview

A better world through a better Internet

InternetNZ is a voice, a helping hand and a guide to the Internet for all New Zealanders. It provides a voice for the Internet, to the government and the public; it gives a helping hand to the Internet community; and it provides a guide to those who seek knowledge, support or any other method of benefiting the Internet and its users.

InternetNZ's vision is for a better world through a better Internet. To achieve that, we promote the Internet's benefits and uses and protect its potential. We are founded on the principle of advancing an open and uncaptureable Internet.

The growing importance of the Internet in people's everyday lives means that over the last twelve months we have significantly reoriented our strategic direction. The Internet is everywhere. We are a voice for the Internet's users and its potential to make life better.

InternetNZ helps foster an Internet where New Zealanders can freely express themselves online – where they can feel secure in their use of the Internet. We foster an Internet where a start-up can use the web to develop a presence and customer base for a new product, and we foster an Internet where gamers can get online and battle it out.

We work to ensure this Internet is safe, accessible and open.

The work we do is as varied as what you can find on the Internet.

We enable partner organisations to work in line with our objects – for example, supporting Internet access for groups who may miss out. We provide community funding to promote research and the discovery of ways to improve the Internet. We inform people about the Internet and explain it, to ensure it is well understood by those making decisions that help shape it.

We provide technical knowledge that you may not find in many places, and every year we bring the Internet community together at NetHui to share wisdom, talk about ideas and have discussions on the state of the Internet.

InternetNZ is the delegated manager for the .nz country code top-level domain and represents New Zealand at a global level through that role.

InternetNZ is a non-profit open membership incorporated society, overseen by a council elected by members. We have two wholly owned subsidiaries that ensure that .nz is run effectively and fairly – the Domain Name Commission (DNC) develops and enforces policies for the .nz domain name space, and .nz Registry Services (NZRS) maintains and publishes the register of .nz names and operates the Domain Name System for .nz.

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InternetNZ (Internet New Zealand Inc.) is the
open membership incorporated society,
established to promote the Internet's benefits
and uses, and protect its potential.

InternetNZ has overall responsibility for the .nz
domain name space, and is an advocate for the
interests of Internet users and domain name
registrants in New Zealand and overseas.