

High speed broadband services demand side study

Issues paper 3 Content, applications and willingness to pay

Date: 9 February 2012

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Executive summary

1. This issues paper is the third in a series of three papers that the Commission has prepared on high speed broadband issues in New Zealand. The purpose of these papers is to inform readers of various issues that we have identified. We raise questions in places but do not necessarily seek to find answers. We are hopeful that these questions may be the starting point for further work following on from this study.
2. The Commission surveyed the level of consumers and SMEs interest in high speed broadband services. Close to 50% of consumers and SMEs showed some level of interest in at least one of the services and applications mentioned to them in the survey. Consumers were most interested in HD movies and video on demand, while SMEs were most interested online sales and marketing applications.
3. Video content is likely to be delivered over high speed broadband networks, enabling new players to enter the market and current market participants to deliver new products. The extent of these changes will depend on the ability of companies to access premium video content.
4. Most SMEs consider themselves to be well served by current broadband services. The development of cloud-based services could potentially increase SMEs' demand for faster broadband connectivity.
5. The Commission asked Roy Morgan and Nielsen to carry out surveys, respectively on consumer and SMEs' interest in high speed broadband services. The findings from both surveys were broadly consistent with those of overseas surveys:
 - The findings of the Roy Morgan survey show that while 4% of consumers said they were willing to pay more than \$20 extra per month, 37% said that they were willing to pay between \$5 and \$10 extra per month and 40% of consumers said that they were willing to pay up to \$5 extra per month.
 - The Nielsen SME survey found that 10% of SMEs said that they would be willing to pay more than 20% more for a high speed broadband service. Overall, 26% of SMEs said they would be willing to pay more than 10% more, 34% up to 10% more, and 35% no more, for a high speed broadband service.
6. While the findings show that most consumers said they were not willing to pay more than an additional \$10 per month, retail service providers think that consumers may be willing to pay a greater amount for services delivered over a high speed broadband network.

7. Ultimately, consumer willingness to pay a greater amount for high speed broadband services will depend on the attractiveness of the content and applications which are offered.
8. The next step for the study is [*The Future with High Speed Broadband: Opportunities for New Zealand*](#) conference, being held on 20 and 21 February 2012. The conference will be followed by the publication of the study's draft and final reports by the end of May 2012.
9. You are encouraged to comment on the issues papers either directly to the Commission (telco@comcom.govt.nz) or using any of the media that the Commission has made available, including [LinkedIn](#), [Twitter](#) (our twitter handle is @FutureBroadband or you can use the hashtag #FutureBB) and [Facebook](#). We also encourage you to participate in the conference and engage in the formal consultation on the report.

Introduction

10. The Commerce Commission (Commission) is carrying out a high speed broadband services demand side study (study) to identify and inform on any factors that may affect the uptake of high speed broadband services in New Zealand.¹
11. This study is conducted under Section 9A of the Telecommunications Act 2001, which empowers the Commission to conduct inquiries, reviews and studies into any matter relating to the telecommunications industry or the long-term benefit of end-users of telecommunications services within New Zealand.²
12. This paper is the third in a series of three papers that the Commission has prepared on high speed broadband issues in New Zealand. The purpose of these papers is to inform readers of various issues that we have identified. We raise questions in places but do not necessarily seek to find answers. We are hopeful that these questions may be the starting point for further work following on from this study.
13. This paper has two, inter-related parts:
 - An investigation of issues relating to customers' willingness to pay for high speed broadband services
 - A review of issues regarding content and applications that require high bandwidth connectivity.

High speed broadband definition

14. For the purpose of this study the Commission has defined high speed broadband as a broadband service capable of a peak speed of at least 50/50 Mbps³ with sufficient other technical characteristics to deliver the applications and content in the following table.
15. High speed broadband is not a static concept; it will evolve over time as applications, content, and needs change.

¹ A copy of the terms of reference for the study is at <http://www.comcom.govt.nz/high-speed-broadband-services-demand-side-study/>.

² Telecommunications Act 2001, subpart 2, section 9A.

³ The speed of a broadband service is generally described in terms of peak downstream and upstream speeds – for example, a 100/50 Mbps service would have peak speeds of 100 Mbps downstream and 50 Mbps upstream. Downstream refers to data transmitted from the remote server to the user's computer and upstream from the user's computer to the remote server. Peak speed refers to the fastest theoretical transmission of data over that connection.

Table 1: High Speed Broadband Applications and Content

Bandwidth (symmetrical ⁴ upstream and downstream)	Example applications and content delivered in real-time
500 kbps – 1 Mbps	<ul style="list-style-type: none"> • Voice over IP • Email • Basic web browsing • Streaming music (cached) • Low quality video
1 Mbps – 5 Mbps	<ul style="list-style-type: none"> • Email with large attachments • File sharing (small – medium) • Remote surveillance • IPTV Standard Definition (SD) • Streaming music
5 Mbps – 10 Mbps	<ul style="list-style-type: none"> • Telecommuting (converged services) • IPTV SD (multiple channels) • HD video streaming • Gaming • Medical – file sharing and remote diagnosis (basic) • Remote education • Building control
10 Mbps – 50 Mbps	<ul style="list-style-type: none"> • Telemedicine • Education services • IPTV – HD (2-3 channels) • Gaming (complex) • Telecommuting with HD video • HD surveillance • Smart building control

16. In this report, we have primarily used the 30/10 Mbps entry-level UFB wholesale service in illustrative examples. Although the 30/10 Mbps service does not provide high speed broadband as we have defined it, it is the UFB service most likely to be taken up by consumers in the first 5 years, and therefore the most relevant for analysing willingness to pay and cost structures. Beyond 5 years, new content and applications and the reduction in price of the 100/50 Mbps service will encourage take-up of that faster service.⁵

⁴ Symmetrical refers to a broadband service with the same peak speed downstream and upstream.

⁵ The reference offers of the UFB providers include a downward glide path in the price caps for some of the UFB wholesale services. The reference offers are available on the Crown Fibre website at: <http://www.crownfibre.govt.nz/publications-and-tenders/retail-service-providers.aspx>. For example, one of the 100/50 Mbps services is price capped at \$55 in 2011, gliding down to \$49.90 by 2019.

Content and applications

17. Content and applications requiring high bandwidth connectivity will be major drivers of consumers' uptake of high speed broadband services. In this section we identify various forms of content and applications and discuss related issues.
18. The information society is evolving at a very rapid pace, as technologies such as high speed broadband are developed and entire new 'ecosystems'⁶ emerge and transform.⁷ Applications and content will be an integral part of these new ecosystems. The rapid development of social networking over the last several years is an example of the change in applications and content that is occurring.
19. The Commission has based its analysis of high speed broadband content and applications on the developments that have occurred in other jurisdictions and near-term trends that commentators have predicted.
20. The discussion in this section is focussed on two customer segments:⁸
 - Residential and personal segment (collectively referred to as the 'consumer' segment)
 - Small and medium enterprises (SMEs).

Consumer interest in content and applications

21. The broad content categories that have the potential to drive uptake of high speed broadband in the consumer environment include:
 - consumer cloud computing applications and related content
 - video (including television, movies, short form video,⁹ long form video and video conferencing)
 - gaming.
22. These content categories are discussed later in this paper.

⁶ A digital ecosystem is a complex network or interconnected system, including hardware, software, and services.

⁷ Vinton Cerf, a pioneer of the Internet and Google's Chief Internet Evangelist has said 'I believe that 99% of the Internet's applications have yet to be invented.' Government Computer News (1996) 'The *search continues*'.

⁸ The government sector is likely to be another major high speed broadband user segment. Health and education sector issues are covered in Issues Paper 2, which has recently been published.

⁹ Cisco defines short form video as user-generated video and other video clips that are generally less than seven minutes in length. Cisco Visual Networking Index: Forecast and Methodology, 2010-2015. http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-481360_ns827_Networking_Solutions_White_Paper.html.

23. The Commission's November 2011 Roy Morgan survey of consumers measured the level of interest in these categories.¹⁰

24. The results of the survey are shown in the figure below.

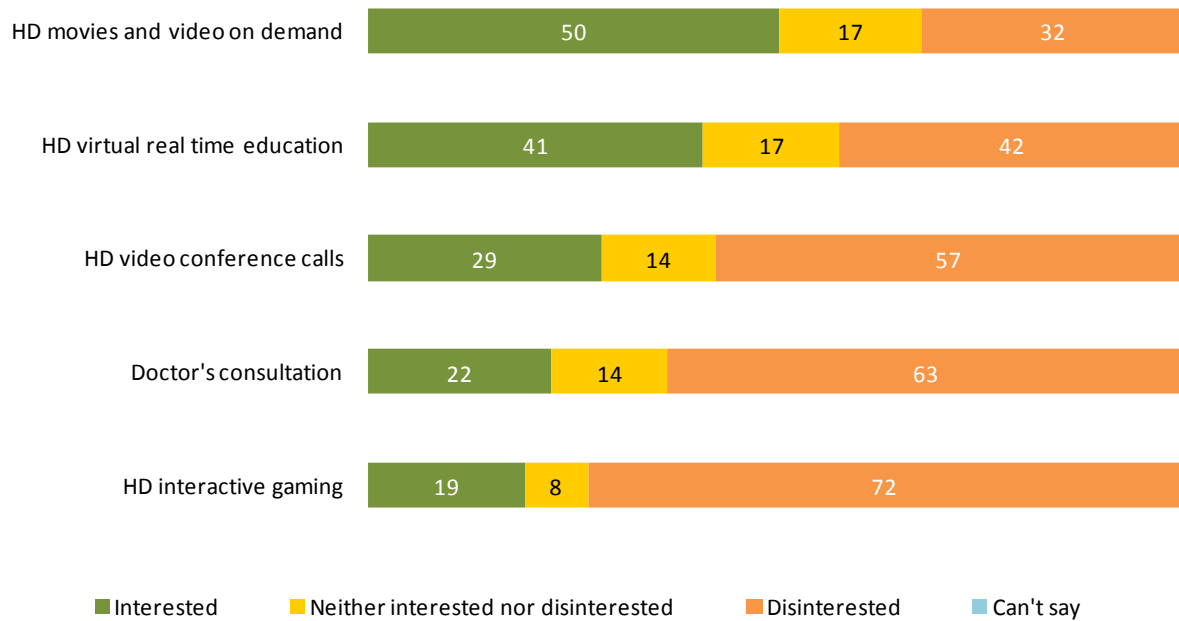


Figure 1: Level of interest in high speed broadband services, source: Roy Morgan consumer survey 2011

25. Survey respondents expressed the most interest in the HD movies and video on demand (VoD) category. Respondents also showed a significant level of interest in education content.¹¹ Interest levels in other categories were relatively modest. Around 72% of survey respondents stated they were interested in at least one high speed broadband service.
26. Demand for these services may be quite different to these survey results once the services are actually available and consumers have an understanding of the benefits they deliver (along with the costs of the services). For example the health discussion in Issues Paper 2 highlighted the potential for significant demand in online health services. Demand will also be affected by the prices of the various content services, and consumers' willingness to pay.
27. A caveat on this analysis is that consumers find it difficult to imagine totally new forms of service when they are surveyed; most can only imagine 'incrementally new' services

¹⁰ See Annex 1 for the question asked.

¹¹ The potential demand for high speed broadband from the education and health sectors was examined in Issues Paper 2.

(for example, video on demand¹²). Accordingly, these results may be quite different to the level of consumer interest that may actually transpire once high speed broadband networks have been in the ground for a few years and services developed. For example, in the 1993 Wall Street Journal¹³, Willard Zangwill noted that the results from market research may be somewhat limited when respondents are asked to evaluate a product that has not been introduced (ie, a concept or an abstraction).¹⁴ This caveat proved true for the uptake of mobile phones by consumers and businesses. In 2002, the authors of an article on mobile phones noted that “[t]he last five years have seen a startling boom in the uptake of mobile phone technology with sales far exceeding even the most optimistic predictions.”¹⁵ Similarly, Steve Jobs said that “A lot of times, people don’t know what they want until you show it to them.”¹⁶

28. Many forms of content and applications do not require high speed broadband, at least in their current form. However, as high speed broadband becomes more widely spread, content will evolve to use this high speed capability.
29. For instance, many consumers use some form of cloud computing today, including applications such as Facebook, Twitter and other social media applications and on-line e-mail. The evolution of consumer cloud computing applications may lead to significantly greater demand for high speed broadband connectivity. Consumer cloud issues are discussed in more detail later in this paper.
30. In addition, households will access multiple forms of content and applications simultaneously. A recent survey¹⁷ found that UK households already have an average of 4.6 devices connected to a home Wifi network at any given time. The combined use of these various applications (the multi user household) will lead to an increased demand for high speed broadband connectivity.

¹² An interactive service that enables consumers to select and watch video content on demand.

¹³ Willard Zangwill (1993). “When Customer Research is a Lousy Idea”, The Wall Street Journal, March 8.

¹⁴ For instance, Zangwill said, “... when the telephone answering machine was consumer tested, it faced an almost universally negative reaction. Back then, most people believed that using a mechanical device to answer the phone was rude and disrespectful. Today, of course, many people regard their answering machines as indispensable and consider scheduling daily activities without them as impossible”.

¹⁵ O’Hara, Perry, Sellen & Brown, *Exploring the relationship between mobile phone and document activity during business travel*, 2002.

¹⁶ Business Week Online, May 12, 1998.

¹⁷ <http://thenextweb.com/uk/2011/12/09/uk-households-have-an-average-of-4-6-devices-connected-to-wifi/>

SME interest in content and applications

31. Small and medium-sized enterprises (SMEs) are defined as organisations with fewer than 20 employees. The Ministry of Economic Development and Statistics New Zealand estimate that SMEs account for around 40% of New Zealand’s total output and employ approximately 31% of the New Zealand workforce.
32. Businesses are categorised by Statistics New Zealand by employee as set out in the table below:

Table 2: Number of NZ businesses categorised by employee number

Employee count size group							
0	1-5	6-9	10-19	20-49	50-99	100+	Total
324,778	96,916	19,430	15,805	8,477	2,524	2,118	470,048

33. There are 456,929 SMEs – 97% of businesses in New Zealand.
34. SMEs include a very diverse range of organisations, with different ICT needs. Accordingly, the demand for high speed broadband, including the content and services used on this infrastructure, will vary widely between SMEs. For instance, a small graphic design firm may be interested in purchasing high bandwidth connectivity. On the other hand, an owner-operated trade enterprise (e.g. a plumber or electrician) is likely to have significantly lower demand. General socio-economic and technological trends are likely to drive an increased requirement for ICT capabilities in all SMEs. Many SMEs do not have the resources (people, time and funds) to build and manage ICT functions. An option for SMEs is to use cloud computing to meet their ICT requirements.

SME cloud computing

35. Cloud computing is an IT evolution occurring across all sectors, from government to business to individual consumers. Cloud computing refers to the use of applications and content that are located in remote servers and accessed via the internet – referred to as a ‘cloud’. The cloud is a way of providing services, rather than a service itself. Many businesses already use some form of cloud computing application today. Consumer cloud computing is discussed in paragraphs 42 to 46 below.
36. Cloud computing applications range from back office functions (eg, payroll and accounting applications) through to sales applications. The potential benefits of cloud computing in a SME environment typically include an overall reduction in ICT costs.

These costs shift from fixed to mainly variable cost structures; specifically, cloud computing reduces companies' capital spend as ICT costs are met on a variable, pay-as-you-go basis. Computing resources, including both hardware and software, scale with the size of the enterprise and its IT needs.

- 37. For cloud computing to be a viable proposition for SMEs (and indeed any organisation), connectivity to the cloud must be reliable and secure. There must be sufficient low-latency bandwidth to enable seamless interaction with cloud-based applications; the user experience should be the same as if the applications were resident on the desktop computer. High speed broadband connectivity has the potential to deliver on these requirements.

Nielsen SME survey

- 38. The Commission has surveyed SMEs to understand their issues with current broadband services and interest in high speed broadband connectivity. The majority of SMEs are satisfied that current broadband services give them the ability to use the applications they want to use (76% very satisfied or satisfied) and with reliability (70%).¹⁸ Even so, around a quarter are dissatisfied with price, download/upload time and mobile broadband coverage.

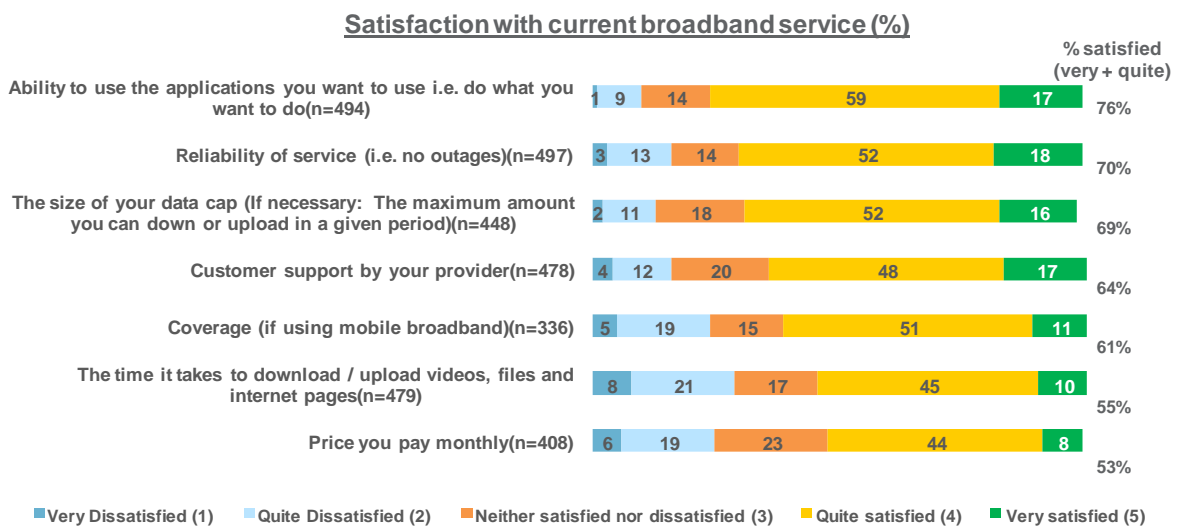


Figure 2: SME Satisfaction with current broadband service, source: Nielsen SME survey 2011

¹⁸ See Annex 1 for the question asked.

39. We tested four high speed broadband applications in the survey. SMEs were asked: using the following scale... not at all interested, not very interested, quite interested and very interested please indicate how interested your business would be in the following potential uses of broadband....?:

- Telecommuting using HD video and HD voice – where the daily commute to the place of work is replaced by telecommunication links
- HD security surveillance - enabling the use of HD videos for surveillance purposes, eg HD surveillance would enable you to have photographic quality images
- High Definition Telepresence – it’s like people are in the same room even though they could be anywhere in the world – the quality of sound and picture is like they are right in front of you (Specific examples: examination of person/ animal by a specialist; receive/provide clinical health care at a distance; sales pitches/ consultations; meetings and presentations
- Virtual training
- Online sales and marketing functionality eg uploading of desired specifications for product/ service from your customers, or providing high definition demonstrations of products and services for customers (Specific examples: measurements for clothes/ interior design, machine specifications)

40. Around 40% of SMEs indicated some level of interest in these applications, as shown in the figure below.

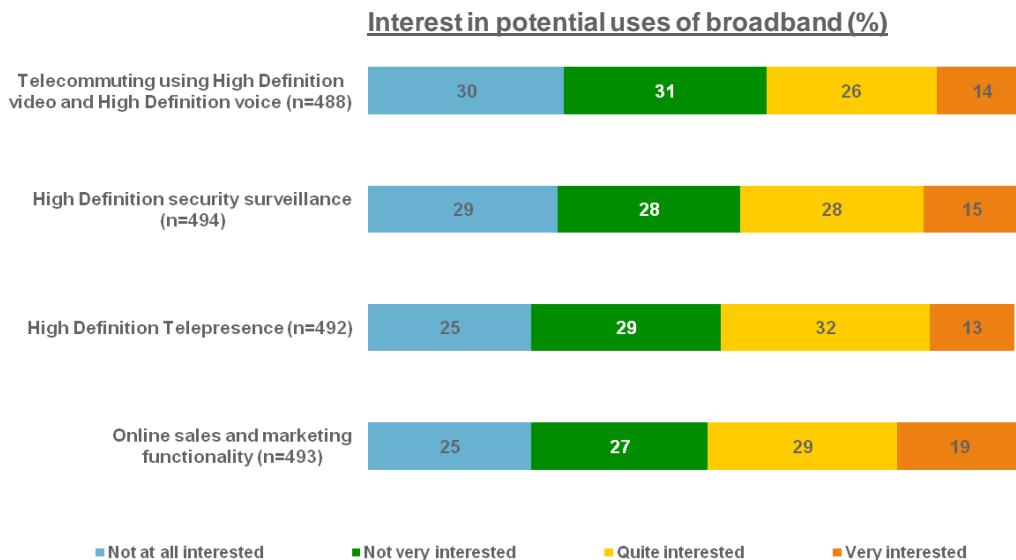


Figure 3: SME Interest in high speed broadband applications, source: Nielsen SME survey 2011

41. Actual levels of demand may be higher or lower than these results. As discussed in paragraph 27, survey participants find it difficult to imagine totally new forms of

service when they are surveyed. These levels of interest are only indicative of possible levels of future demand.

42. The Commission's conclusion from this survey is that most SMEs consider themselves to be well served by current broadband services. There is some level of interest in the new services that high speed broadband may deliver; but there is no strong demand at present for any of the potential applications surveyed.

Key Points

SMEs include a very diverse range of organisations. Accordingly, SMEs' demand for high speed broadband, including the content and services that use this infrastructure, is likely to be varied.

Most SMEs consider themselves to be well served by current broadband services. The development of cloud-based services could potentially increase SME's demand for faster broadband connectivity.

Consumer Cloud Computing

43. Many consumers already use some form of cloud computing application today. Facebook, Twitter and other social networking applications are examples of cloud applications – virtual applications that are accessed through the browser. Likewise, internet-based email (eg, Yahoo! mail and G-Mail) and Flickr are cloud applications. Companies like Apple, Microsoft, Google and Amazon have launched their own consumer cloud environments.
44. High speed broadband connectivity is likely to increase the opportunities for consumers to use increasingly sophisticated cloud applications. The benefits of cloud computing for consumers include lower costs (with costs incurred on a transactional basis rather than an up-front lump sum), seamless application upgrades and lower technical requirements for consumers' IT equipment.
45. Many cloud computing applications require reliable, secure connectivity (eg, the Google Apps, Microsoft Office 365 software suites, telecommuting applications). Other applications, such as on-line storage, need fast upload and download speeds to work effectively.
46. Cloud computing also enables consumers to 'placeshift' their content. With placeshifting, consumers can choose both when and where to watch their media: they can watch films, television programmes or video, listen to a music library or view photo albums anywhere, on any device. Potentially, consumers could store all of their content in the cloud, enabling access by any device. This model is already starting to develop with music and pictures shifting to the cloud (eg, Amazon Cloud Player, Google Music, Flickr and Apple iCloud).
47. Consumer cloud services are emerging rapidly. The ICT industry is expecting that the demand for cloud computing services will increase significantly over the next few years. For instance, Cisco has estimated¹⁹ that global consumer cloud IP traffic will increase from 115 petabytes (PB) in 2010 to 1,503 PB in 2015, a compound annual growth rate of 67%.
48. Cloud computing is expected to be a major driver behind consumers' uptake of high speed broadband. While the Cisco Index provides one forecast, the size and nature of consumer cloud services is uncertain. Cloud computing has the potential to change the way that consumers use ICT, including their use of high speed broadband.

¹⁹ Cisco Global Cloud Index: Forecast and Methodology, 2010-2015.
http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns1175/Cloud_Index_White_Paper.html.

Key Points

Consumer cloud computing will be a major driver of fast broadband. Significant growth in the demand for cloud computing services is expected over the next several years.

Cloud computing may change the way that consumers use ICT, including their use of high speed broadband.

Video content

49. Industry commentators expect that long form video content²⁰ will be the major driver behind consumers' uptake of high speed broadband over the next several years. Telecommunications companies are increasingly bundling services that include video as a core component. There is a growing range of over the top (OTT) video services delivered using fast broadband. These trends are consistent with the results from the Roy Morgan survey, as shown earlier.
50. Video content is currently the major form of traffic on existing IP networks; the 2011 Cisco Visual Networking Index²¹ estimates that video content is currently around 76% of overall consumer IP traffic (see the figure below). Cisco forecasts that video content will grow by 214% between 2011 and 2015 and will be around 82% of consumer IP traffic in 2015. Long form video is expected to be 54% of all video delivered over IP in 2015.

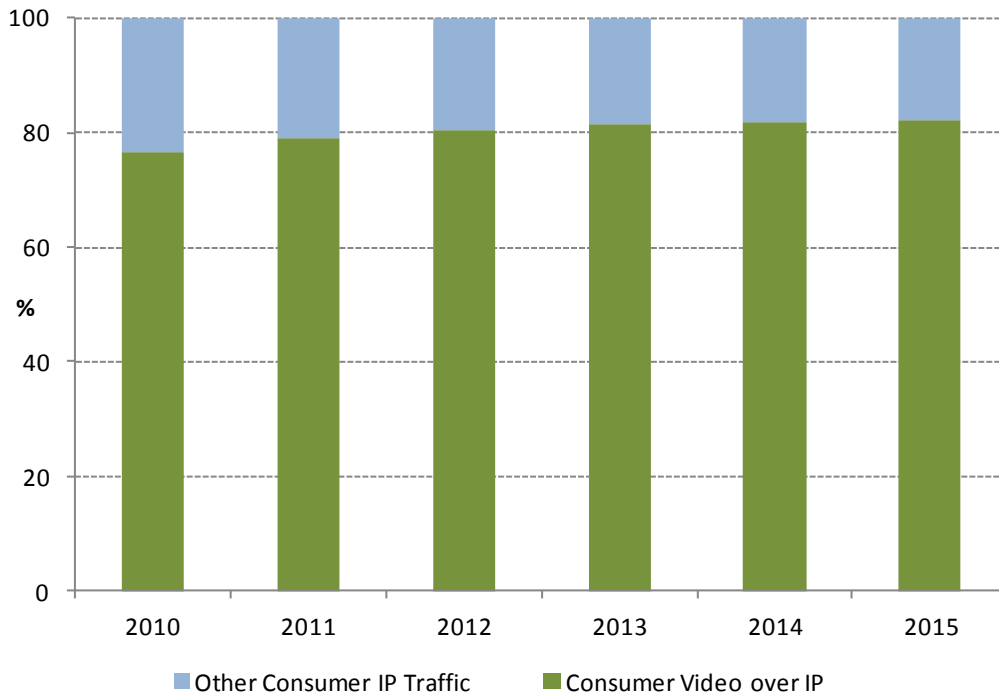


Figure 4: Cisco Visual Networking Index: video as a proportion of total consumer IP traffic, 2010 - 2015

51. From a household perspective, video (particularly HD video) represents the highest bandwidth usage of applications and content available today. A single SD video service

²⁰ Cisco defines long form video as video that is over seven minutes in length. Cisco Visual Networking Index: Forecast and Methodology, 2010-2015. http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-481360_ns827_Networking_Solutions_White_Paper.html.

²¹ Cisco (2011). 'Cisco Visual Networking Index: Forecast and Methodology, 2010-2015'.

requires a bandwidth of around 1.5 - 2 Mbps, using MPEG4. HD video requires between 5 - 10 Mbps (for example, see ACMA²²). 3D video also uses more bandwidth. The bandwidth required for video scales with the number of channels being consumed simultaneously.

52. High quality video delivered over high speed broadband has begun to change the shape of the video content sector in overseas jurisdictions.
53. This change is expected to accelerate as high speed broadband becomes widely available.

New Zealand video content sector

54. The current (high level) value chain for the video content sector is described below.²³

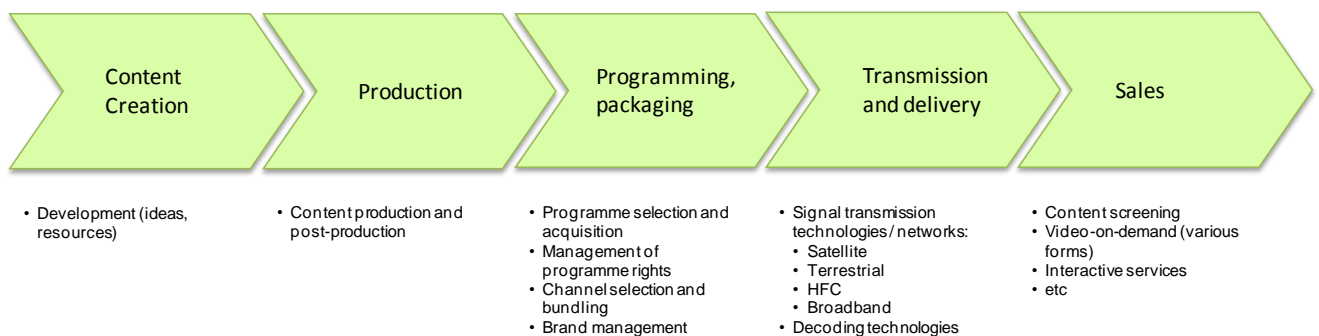


Figure 5: Video content industry value chain

55. The industry spans several activity groups:
 - *Content creation.* This value chain component includes various development activities. For a particular piece of content, these activities may include the formulation of ideas and outlines, talent acquisition, financing activities and scheduling.
 - *Production.* This component includes the various production and post production activities, such as securing locations, booking facilities, scriptwriting, direction and filming. Much of the long-form video content shown in New Zealand is produced by studios, based mainly in the US. New Zealand companies produce some local content including news and current affairs and local drama.

²² ACMA (2008), 'IPTV and Internet Video Services'.
http://www.acma.gov.au/webwr/_assets/main/lib310210/iptv_and_internet_video_in_aust.pdf.

²³ Source: Adapted from Zerdick A, Picot A, Schrape K, Artopé A, Goldhammer K, Lange U.T., Vierkant E, López-Escobar E and Silverstone R (2000). E-economics: Strategies for the Digital Marketplace, European Communication Council Report, Springer-Verlag, Berlin.

Other content (for example, sports and movie content) is developed outside of the industry.

- *Programming and Packaging.* This value chain component includes the core activities of all video companies – purchase of content rights from studios, rights management, aggregation of content into packages and brand management.
- *Transmission and delivery.* Video delivery is provided by companies that specialise in transmission infrastructure and services. Transmission services are currently provided using satellite, cable (HFC in New Zealand) and terrestrial transmission technologies. Broadband networks provide potential alternative forms of transmission and delivery; the current FTTN line speed capacity of 10Mbps to 84% of telephone lines is already sufficient to deliver content by broadband. High speed broadband will enable more and higher quality content to be delivered over IP networks.
- *Sales.* This value chain component includes the various final video content products provided to customers, typically in the form of free to air television, subscription television, video on demand and pay per view.

56. The content production and programming components are key parts of the video content sector value chain. These activities drive the shape of the current pay-TV and Free to Air (FTA) business models:

- *Pay-TV* companies secure rights to content (including sports, movies and premium drama) to deliver multiple channels with specialised programming. These specialised channels attract viewers to companies' walled gardens.²⁴
- *Free to Air* companies secure rights to mass market programming to attract mass audiences. FTA companies' product is effectively viewers' eyeballs, which they sell to advertisers.

57. Both business models include video on demand services as well as linear broadcasting.²⁵ The business models of both FTA and pay-TV companies hinge on the ability to access premium content. Channels are constructed around this premium video content.

58. Industry participants have previously advised the Commission that premium content falls into the following three categories:²⁶

- Live sport
- Feature films

²⁴ In the media industry, a walled garden is a set of content that may only be accessed by subscribers.

²⁵ A video service where the viewer has to watch scheduled content at the particular time it's offered and on the particular channel it's presented on

²⁶ See Commerce Commission Decision No. 573 regarding the clearance of Prime Television New Zealand Limited by SKY Network Television Limited.

- First run television series

59. These categories are discussed below.

Live sport

60. New Zealanders have a significant interest in live sports content, including rugby, netball, rugby league, cricket and football, and the upcoming Olympic Games. For instance, SKY Television (SKY) has previously advised the Commission that live sport is its main driver of subscriptions (Commerce Commission Decision No. 573). It advised that the cornerstone of its sports programming is rugby.
61. Sport content rights vary by sporting code/event. Rights are usually exclusive in nature, for a period determined through negotiation. They are also typically defined by geographic location.
62. Currently, SKY has many of the rights to New Zealand's popular sports (including most rugby, netball, rugby league, cricket, football and the Olympic Games).

Feature Films

63. The film industry traditionally has an orderly content rights window sequence for the release of movies. This sequence involves a series of discrete windows for various platforms (eg, theatrical, DVD, on-line) and business models. Rights are typically exclusive for a period - this period varies considerably by content provider, content form and window. A typical rights structure is illustrated in figure 6 below (timings from new release are shown from left to right).

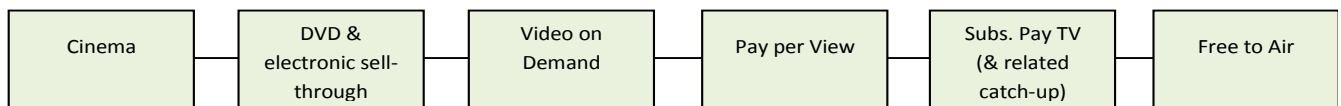


Figure 6: timings from new release for various media

64. This diagram shows that DVD releases precede the release windows for video content providers and that the window for pay-TV occurs before FTA.
65. This rights window structure is adjusting as new technologies emerge and the market for content changes. For instance, there is a trend towards a disaggregation of rights to serve an increasing array of platforms. Rights windows are also compressing, leading to increasing proximity and in some cases overlaps of windows. These changes are expected to continue to evolve as fibre to the home (FTTH) becomes more widely available internationally.

First run television series

66. First run television series are usually purchased as part of output deals with selected production studios. These deals include a range of video content. The term for these arrangements is generally 3-7 years. Much of this content is sourced from overseas studios. New Zealand companies produce a small amount of local content, including news and current affairs and local drama. In 2009, New Zealand content was 34% of the content shown on the six major FTA channels.²⁷ A third of this local content was news and current affairs. Māori video content is an important part of the initiatives underway to promote and revitalise the Māori language.

Discussion

67. The rights for these various premium content categories are also defined by geographic region. For instance, the rights to show a TV series or movie in New Zealand are different to the rights for this content in Australia.
68. Relative to the FTA companies, SKY also has an earlier 'screening window' for movies given the staggered structure of film rights.
69. The rights for first run television content are distributed among the various New Zealand video content industry participants. Māori Television is the major provider of Māori related content.
70. High speed broadband infrastructure creates the potential for change in the video content value chain. This technology may enable new players to enter the market. It may also enable current market participants to deliver new products. The extent of these changes will depend on companies' ability to access premium video content.
71. Over time, new forms of content could potentially emerge that may further shape this value chain.
72. These issues are discussed in the following sections.

OTT propositions

73. Broadband networks provide the technology infrastructure for Over the Top (OTT) propositions. OTT is defined as video delivered by content providers over third party broadband networks to a range of end-user devices.²⁸ A defining characteristic of OTT services is that these content providers do not own or lease the transmission network; consumers' access to OTT content is independent of a dedicated facility or network. Examples of OTT companies and services include Netflix, BBC iPlayer, Quickflix,

²⁷ TV One, TV2, TV3, Prime, MTS and C4

FetchTV, Hulu, Amazon TV, Apple TV, Google TV, Microsoft (X Box 360), Sony and YouTube.

74. OTT services alter the established video content industry value chain. New players can enter existing parts of the value chain, unencumbered by the need to have transmission capabilities. The value chain potentially shortens, as existing activities become less relevant. For instance, programme bundling is important for both FTA and pay-TV models. With OTT, content can be delivered to consumers based on their individual requirements: any content, anywhere and anytime (see the cloud discussion later on). Under this model, channel bundles and channel branding become less relevant.

International trends

75. Overseas, OTT services are developing rapidly. OTT services are being marketed by a number of companies in several adjoining sectors. Netflix is currently the largest OTT company. It accounts for around 30% of downstream internet traffic in North America during the evening peak period.²⁹ Netflix has expanded into a number of other countries, most recently entering the UK and Ireland markets.
76. Apart from these new players, current video content companies are delivering 'catch-up' programming using OTT services over broadband. In the US, Comcast / Time Warner provide OTT access to their pay-TV 'walled gardens'³⁰ using TV Everywhere.
77. A major issue for OTT companies is the ability to obtain access to sufficient, quality content to compete with pay TV providers. Studios' content rights structures have traditionally limited the ability of these companies to obtain content. The geographical nature of rights (typically rights are defined on a country by country basis) has slowed the international expansion of OTT companies.
78. OTT companies are beginning to create their own content, partly to improve their negotiating position with content providers. Netflix has licensed an original TV series 'House of Cards' and is considering other similar projects. YouTube is investing \$US 100 million in 100 content producers to create original YouTube channels. An advantage of YouTube's approach is that the content (and associated advertising) will be delivered to a worldwide audience.

²⁸ These devices include any consumer electronic device able to connect to an IP network: computers, set-top boxes, internet-capable TVs, blu-ray players, entertainment consoles (eg, PS3, Xbox 360, Wii), tablets and smartphones.

²⁹ Sandvine (2011). 'Global Internet Phenomena Spotlight - Netflix Rising', http://www.sandvine.com/downloads/documents/05-17_2011_phenomena/Sandvine%20Global%20Internet%20Phenomena%20Spotlight%20-%20Netflix%20Rising.pdf.

³⁰ In the media industry, a walled garden is a set of content that may only be accessed by subscribers.

New Zealand situation

79. Currently New Zealand has a limited number of OTT services:

- The FTA channels offer catch-up TV. Some ISPs deliver some catch-up content unmetered.
- Ziln³¹ has around 25 channels, though content is limited.
- Apple TV³² has some movie content, the US Major League Baseball (MLB) channel (see below) and access to Apple's iCloud.
- Telecom's TiVo service includes CASPA³³ content.
- SKY has iSKY, an OTT service that enables SKY subscribers to stream SKY content over broadband connection to their computer.
- SKY and TVNZ have recently announced Igloo, which potentially has some OTT elements. Igloo is a limited pay-TV and FTA service delivered over a proprietary set-top box. The service is targeted mainly at consumers that have not taken up SKY's current pay-TV services. All pay-TV content will be SD digital video. It is understood that this service will also include Freeview, pay-per-view and video on demand content. Linear pay-TV and Freeview content will be delivered over a terrestrial transmission network. The Igloo website states that '[Igloo] has the ability to stream loads of blockbuster movies and TV episodes over the internet'. Further details on this service will be announced over the next few months.

80. New Zealand is significantly behind the OTT developments in regions such as Europe, Asia, North and South America and Australia. For instance, Netflix has recently entered the UK and Ireland markets. Other OTT services in the UK include LoveFilm, Blinkbox, HMV on-demand, BBC iPlayer and YouView. These OTT companies have been able to acquire sufficient content to deliver competitive video content services.

81. Content providers surveyed by the Commission have expressed limited interest in using high speed broadband networks to deliver their existing content to consumers, as current transmission technologies are adequate and cost effective for the delivery of current video content services (video over IP is used for some 'catch-up' programming).

82. While existing New Zealand content providers and potential new domestic entrants (such as new OTT players, ISPs and telcos) are interested in OTT for delivering VOD services using some form of subscription mode, the provision of these services

³¹ <http://www.ziln.co.nz>

³² <http://www.apple.com/nz/appletv/#instant>

³³ CASPA On-Demand is an on-demand content service that is packaged with TiVo in Australia and New Zealand.

depends on companies having access to premium content. Currently, most of the rights to this content in New Zealand are held by a small number of market participants.

- 83. International OTT companies may also find it difficult to enter the New Zealand market in the immediate future. For example, at the Auckland ITEX conference in November, Netflix³⁴ said that it had no current plans to launch its service in New Zealand, citing poor broadband connectivity and content issues as reasons preventing its entry.

'Triple play' bundles, including IPTV

- 84. A feature of overseas telecommunications markets (including traditional 'telcos', ISPs and cable companies) is the 'triple play' bundled service proposition, which combines voice, broadband and video services into a single bundled package.
- 85. Overseas, the video services included in the bundle are increasingly being delivered over broadband networks.
- 86. The figures below shows that around 30% of broadband services in several major countries are now part of a triple play offer.

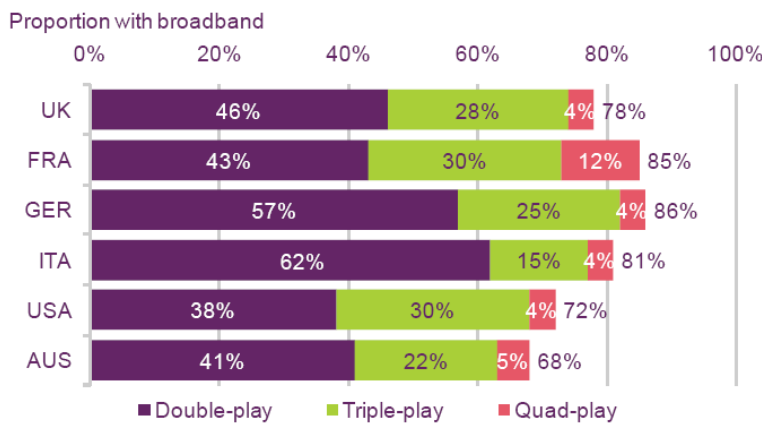


Figure 7: Take-up of multi-service 'bundles' among fixed broadband customers³⁵

- 87. As it is likely that the only immediate mass-market demand for high speed broadband³⁶ offered under the UFB is video content, the wholesale availability of such content as an input to triple play bundles is likely to be an important driver of

³⁴ <http://computerworld.co.nz/news.nsf/news/itex-netflix-not-coming-to-nz-blames-poor-broadband-and-content-deals>

³⁵ OfCom, International Communications Market Report, 14 December 2011 (figure 6.75 page 302).

³⁶ In the longer-term other services such as the currently embryonic cloud computing may also promote uptake.

competition and innovation in broadband markets and the take-up of high speed broadband.

International trends

88. Triple play propositions are particularly prevalent in Western Europe. France has the highest penetration of IPTV services in the world (over 11 million customers in Q2 2011,³⁷ representing over 50% of French broadband lines).³⁸ The success of IPTV in France is due in part to a fragmented pay TV sector (eg, the uptake of satellite TV in France has been hindered by planning laws that impose restrictions on the placement of satellite dishes). The relatively low penetration of cable TV in this market has meant that 'triple play' companies can acquire a greater portion of their customers from the 'new-to-pay-TV' segment. Cable companies are more interested in sharing content with IPTV providers. Triple play providers in other European markets have had varying levels of success, largely driven by their ability to access premium content.
89. Triple play propositions have a lower penetration in the US. This lower market share is partly due to the established positions of cable TV companies,³⁹ which have been in the market in some form since 1950. AT&T (U-verse, IPTV delivered using FTTH or FTTP) and Verizon (FiOS⁴⁰, delivered using FTTP) are two major triple-play bundle providers in the US, with around 3.6 million and 4 million customers in Q3 2011 respectively. Verizon is reportedly considering either the acquisition or development⁴¹ of an OTT service as a way of extending its video content service beyond its physical fibre network. It considered purchasing Hulu earlier in 2011.
90. Closer to home, several companies in Australia offer triple play bundles. Telstra has a range of bundles that include media content from Foxtel, Australia's largest pay-TV company (Telstra has a 50% shareholding in Foxtel). Most of Telstra's triple play video services are delivered currently over satellite and cable infrastructure. However, Telstra is also delivering video over IP with its T-Box service. T-Box is based around a proprietary set-top box with internet connectivity.
91. FetchTV wholesales aggregated content and set-top boxes to ISPs and telecommunications companies. Several ISPs (including iiNet, Internode and Adam Internet) offer triple play bundles that include FetchTV packages. iiNet offers the FetchTV 'starter' and 'entertainment' packages for AU \$10 and AU \$20 per month.

³⁷ Point Topic (2011). "IPTV Statistics Q2 2011: A Short Report from Broadband Money Makers".

³⁸ Major French triple play bundle providers include Free (ISP, owned by a telco parent), France Telecom (telco), Neuf Cegetel (telco), Orange (telco), Bouygues Telecom (telco).

³⁹ The penetration of basic cable video (as a ratio of homes passed) was 45% in September 2011. Source: National Cable & Telecommunications Association, <http://www.ncta.com/Statistics.aspx>.

⁴⁰ Verizon's Fibre Optic Service.

⁴¹ http://online.wsj.com/article/SB10001424052970204903804577082933818763926.html?mod=WSJ_qtoverview_wsjlatest.

Optus includes Foxtel services in its triple play packages. Optus and FetchTV have recently agreed to collaborate to develop an internet video service. Optus markets FetchTV under its MeTV brand.

New Zealand situation

92. There is no content differentiation in the NZ market. Vodafone and TelstraClear deliver SKY's pay-TV service for the video part of their service bundles. The content is SKY content (SKY's bundle of channels, identical to that shown by SKY) with SKY branding. TelstraClear retransmits SKY content over its HFC cable, with either a branded digital set-top box for SD video or a TelstraClear T-Box set-top box for HD content and recording. Vodafone resells SKY's entire service, including its satellite transmission and set-top box components.
93. Telecom has offered several video content services over the last two decades. It launched First Media, a cable TV service delivered over HFC, in 1996. First Media was closed two years later because of cost issues. Telecom has also offered SKY Television as a component of various bundles. It no longer actively markets SKY; however, it is understood that Telecom still provides SKY to 'legacy' customers. Telecom's current TV offering is based on the TiVo media device and CASPA on-demand content. CASPA is an OTT service delivered over Telecom's broadband network. CASPA's content is somewhat limited; for instance, its latest, 'new release' movies were released in 2008-2010. Telecom and SKY announced a three-year commercial agreement in May 2011; however, details of any triple play bundled products are yet to be released.⁴²
94. Slingshot has signed a reselling agreement with SKY, however it is not yet providing a service to its customers. Orcon is the only major ISP that does not resell SKY services.
95. Differentiated triple play services would be expected to emerge as high speed broadband networks are deployed. As noted earlier, consumers surveyed by Roy Morgan for the Commission expressed the most interest in the HD movies and video on demand category. The emergence of these services in New Zealand over the next few years is likely to depend on parties' ability to access premium content. Currently, most of the rights to this content in New Zealand are held by a small number of content rights holders.
96. Over a longer horizon, the wide deployment of high speed broadband connectivity may lead to new forms of content from a wide array of content producers (for instance, see the previous discussion on YouTube's channels). While this could assist the development of a range of bundled services in the future, these changes are unlikely to occur within the next 3-5 years during the early period of UFB rollout.

⁴² http://telecom.custhelp.com/app/answers/detail/a_id/1398.

Content providers delivering direct to customers

97. Some content providers are starting to use high speed broadband connectivity to access customers directly. For example, Major League Baseball (MLB) in the US provides subscriber-based, live streaming and download content for all of its games on any type of device. MLB currently streams live games at 640x360 (standard definition (SD) resolution) and expects to expand its service to include a 1280x720 high definition (HD) stream.
98. This 'direct-to-fans' approach potentially enables content providers to capture a greater portion of the value of their content, rather than share it with intermediate parties in the value chain. Under this business model, the value chain illustrated earlier shortens considerably. Many of the intermediate activities are either eliminated or their scope reduced considerably.
99. Some New Zealand content producers interviewed by the Commission are investigating this model. However, these investigations are at a very preliminary stage, with any commercial service some years away from commercial deployment.

Key Points

Long form video content is likely to be a major driver behind consumers' uptake of high speed broadband over the first few years.

Video delivered over IP has the potential to change the shape of the video content sector. Overseas, new players are using high speed broadband connectivity to enter the video content sector and deliver new services. The value chain itself may change as content evolves and the activities in the sector alter.

The content creation, production and management components are key parts of the value chain. High speed broadband could support the emergence of new video over IP services based on both current and new forms of content.

Existing content arrangements will continue to define the New Zealand market over the next few years.

OTT Propositions

New Zealand is significantly behind the OTT developments in many parts of the world.

While existing New Zealand content providers and potential new entrants are interested in OTT for delivering VOD services, the provision of these services rely on companies having access to premium content.

Triple Play Bundles, Including IPTV

Internationally, telecommunications sector companies are using high speed broadband connectivity to deliver triple play bundles that include video services as a core component. This is resulting in increased competition in both the telecommunications and video content sectors.

Consumers are benefiting from these triple play propositions through reduced prices for video content and greater choice.

Currently, most bundled services in New Zealand resell SKY content for the video part of the bundle. Differentiated triple play services could potentially emerge as high speed broadband networks are deployed. The emergence of these services will depend on parties' ability to access premium content.

Gaming

100. Gaming is another form of content that could drive the uptake of higher speed broadband in the consumer market.
101. Gaming over high speed broadband networks includes the following activities:
 - online game distribution (eg, Steam⁴³, EA's Origin⁴⁴)
 - massively multiplayer online gaming (eg, World of Warcraft)
 - cloud –based gaming (eg, On Live⁴⁵, a gaming service that allows users to play graphic intensive games in a cloud environment using a relatively thin client).
102. On-line gaming currently represents only around 0.4% of global consumer IP traffic (Cisco VNI⁴⁶). Cisco forecasts that gaming traffic could grow by about 490% over the next four years.
103. The Digital New Zealand 2012 (DNZ12)⁴⁷ survey found that 93% of New Zealand households have a device that is used for playing computer games. These include PCs, consoles and mobile devices. It found that a quarter of gamers would be 'motivated' or 'very motivated' to sign up to a faster broadband service for game downloads and online play.
104. Consistent with this DNZ12 finding, the Roy Morgan survey showed that 19% of surveyed individuals would be interested in high definition interactive gaming across a fast broadband network. The technical requirements of games do tend to scale with the latest technology capabilities. Accordingly, consumers may find high speed broadband connectivity could be required to play the latest generation of games. For instance, it is rumoured that the next versions of Sony's Playstation and Microsoft's Xbox may include cloud functionality.
105. Gaming applications are likely to be a driver of uptake of high speed broadband connectivity for some consumers. However, it is unclear what portion of the consumer population these gamers might represent.

Key Points

Online gaming will be a driver for the uptake of high speed broadband. However current forecasts of the size of this demand over the next several years are relatively small.

⁴³ <http://store.steampowered.com/>.

⁴⁴ <http://store.origin.com/>.

⁴⁵ <http://www.onlive.com/>.

⁴⁶ Cisco Visual Networking Index: Forecast and Methodology, 2010-2015'.
http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-481360_ns827_Networking_Solutions_White_Paper.html

⁴⁷ Digital New Zealand 2012 (2011). Interactive Games & Entertainment Association,
<http://www.igea.net/wp-content/uploads/2011/10/DNZ12FinalLinkVideo.pdf>.

Willingness to pay

106. This section sets out assessments of the amount customers are willing to pay for high speed broadband services, including surveys of consumers and SMEs conducted for the Commission by Roy Morgan and Nielsen.

107. As discussed at paragraph 27 above, a caveat on this analysis is that customers find it difficult to imagine totally new forms of service when they are surveyed; most can only imagine 'incrementally new' services (for example, video on demand). Accordingly, the results of these surveys may be quite different to the level of customer interest that may actually transpire once high speed broadband services have developed.

Consumer willingness to pay for high speed broadband services

Current broadband retail services provided to New Zealand consumers

108. There are two main types of broadband service provided to New Zealand consumers:

- Broadband services that include VoIP telephony. These services are generally priced at around \$80 per month with some price differentiation by data cap and other services such as unlimited national calling⁴⁸
- Broadband services bundled with PSTN POTS. The prices of these bundles vary considerably because broadband services are price differentiated by data caps and PSTN services are price differentiated by geographical area. Some of these bundles include other services such as unlimited calling and mobile. A number of bundles are more expensive than \$80 per month.⁴⁹

Consumer willingness to pay

109. There are approximately 1.6 million households in New Zealand.⁵⁰ We have used this number for estimates of households below.

⁴⁸ For example, Slingshot offers a naked broadband service with VoIP in two bundles: (1) 30 GB for \$80 per, or (2) unlimited data for \$90 per month, <http://www.slingshot.co.nz/internet>. Orcon's Genius product is available for \$75 per month in two bundles: (1) 30 GB per month, or (2) unlimited national calling and 5 GB per month <http://www.orcon.net.nz/external/genius/?genius=1#>.

⁴⁹ For example, Telecom lists the following residential broadband/POTS bundles on its website:

- (1) Total Home Starter with 2 GB of data from \$75 per month
- (2) Total Home Lite with 10 GB of data and an included My Favourites number from \$85 per month
- (3) Total Home Mobile with 20 GB of data, 29 cent mobile national calling and 300 national texts from \$99 per month
- (4) Total Home with 20 GB of data and unlimited calls to landlines in New Zealand from \$105 per month
- (5) Total Home Broadband with 60 GB of data from \$105 per month.

⁵⁰ http://www.stats.govt.nz/browse_for_stats/population/estimates_and_projections/dwelling-and-household-estimates.aspx.

110. As part of the Commission's demand side study, Roy Morgan has undertaken a survey of consumers' willingness to pay for a high speed broadband service, including questions to ascertain consumer willingness to pay for high speed broadband services. The survey tied the question on willingness to pay to concrete examples of the types of services that consumers could use high speed broadband for, such as streaming of high definition video and real time virtual education.⁵¹
111. The findings of the Roy Morgan survey show that while 4% of consumers (64,000 households) say they are willing to pay more than \$20 extra per month, 37% (592,000 households) said that they were willing to pay between \$5 and \$10 extra per month and 40% of consumers (640,000 households) said that they are willing to pay up to \$5 extra per month.

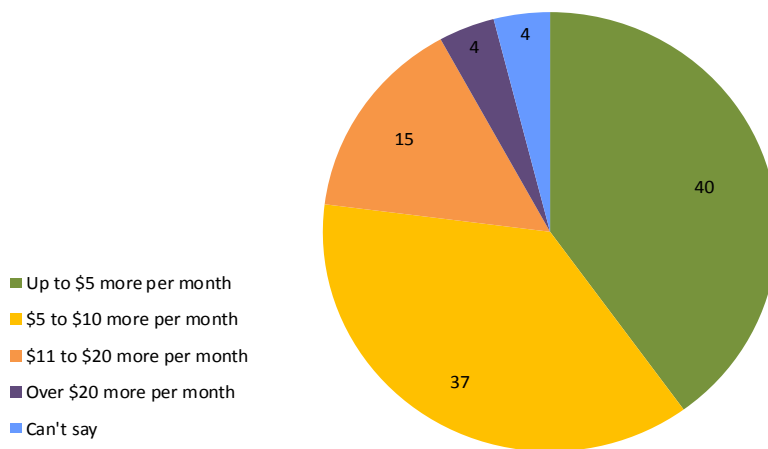


Figure 8: Additional amount consumers are willing to pay for high speed broadband, source: Roy Morgan consumer survey 2011

112. If the survey answers were translated into action based on the above figure of \$80 per month for a broadband service that includes a VoIP phone, the graph below shows the amount that consumers would be willing to pay for a high speed broadband service.

⁵¹ The questions asked were:

- I'm now going to read out a list of services which you might be able to access with faster broadband. For each, please tell me how interested, on a scale from 1 to 10 with 1 being not at all interested and 10 being very interested, you might be in subscribing to that service, assuming that it was not too expensive.
- About how much more than you currently pay per month would you be willing to pay for broadband internet that enabled you to use these services?

The questions are set out in full in Annex 1.

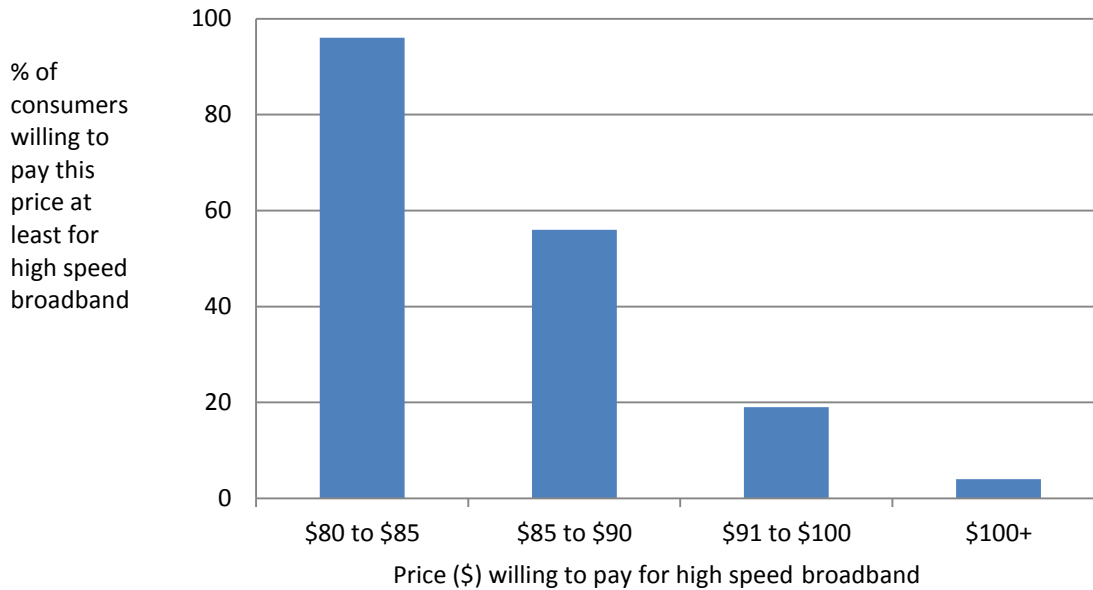


Figure 9: The accumulated willingness of consumers to pay for high speed broadband assuming a base of \$80⁵²

Comparison with German survey

113. The results of the survey of New Zealand consumers are similar to the results of a survey of German consumers commissioned by 1&1 Internet AG.⁵³
114. The results of the New Zealand and German SME surveys are compared in the graph below:

⁵² Note, the first column of this graph is only 96% because 4% of consumers said they did not know how much more they would pay.

⁵³ The willingness to pay question asked in the German survey was:
How much more are you willing to pay for extra bandwidth (more than 16 Mbps)?
1&1 Internet Ag survey. A presentation on the survey is available at:
http://www.wik.org/fileadmin/Konferenzbeitraege/2011/Fibre_Network/Osthaus.pdf.

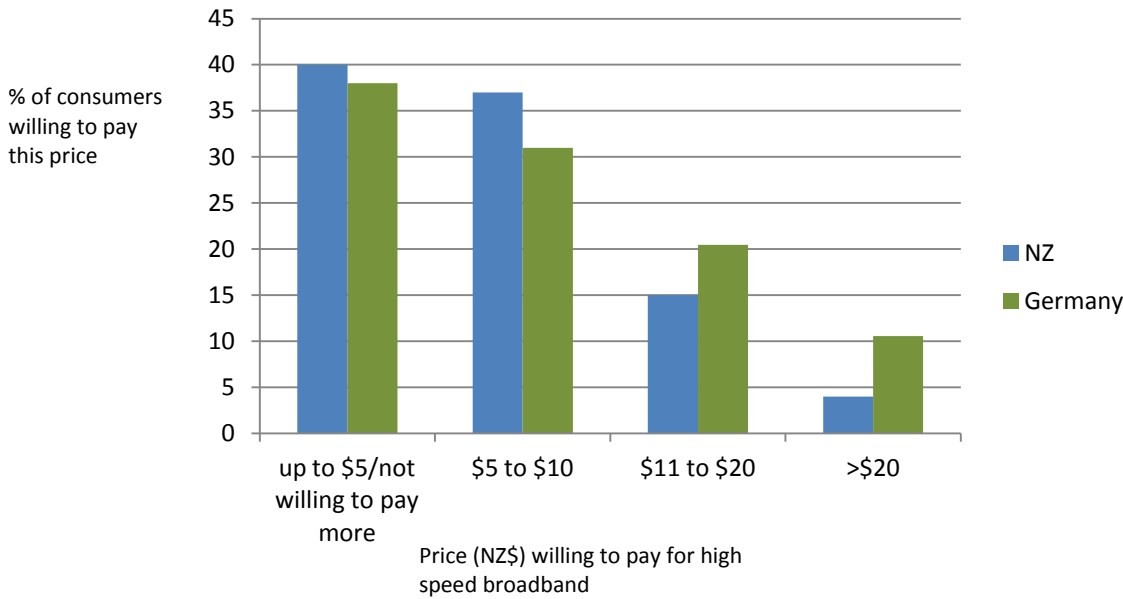


Figure 10: Comparison of the Roy Morgan and 1&1 Internet AG survey of New Zealand and German broadband users^{54,55}

Retail service provider assessment of consumer willingness to pay for entry-level UFB service

115. Retail service providers interviewed by the Commission who commented on the issue, assessed the willingness of consumers to pay for the entry-level UFB service at about \$99,⁵⁶ which is about \$19 more than the cost of the average phone and broadband bundles at present.
116. This assessment is more optimistic than the findings of the Roy Morgan consumer survey, in which less than 20 percent of New Zealand consumers stated that they would be willing to pay more than \$10 extra per month for a high speed broadband service. Ultimately, consumer willingness to pay this greater amount will depend on the attractiveness of content and applications which are offered to consumers.
117. In addition, some customers with a broadband and POTS bundle may find savings in a UFB-based service that includes VoIP. This will depend on the current price being paid by customers for their broadband/POTS bundle.

⁵⁴ The German survey refers to “not willing to pay” – we have used this as a comparator for the “up to \$5 more” category in the NZ survey.

⁵⁵ For simplicity, we have used a NZ dollar to euro exchange rate of NZ\$1/€0.50 rather than New Zealand’s 10 year weighted average exchange rate with Germany of NZ\$1/€0.53 or PPP rate of NZ\$1/€0.54.

⁵⁶ The cost elements of a retail UFB service include: UFB wholesale service costs, GST and other taxes, retailing costs, national and international transport and transit costs, set-up costs, VoIP switching equipment, subsidised home wiring and CPE.

Question

Given the additional services that will be available using high speed broadband, will consumers be willing to pay the additional amount required to provide high speed broadband services?

SME willingness to pay for high speed broadband services

118. As discussed above in paragraphs 31 to 34, a SME is defined as an organisation with fewer than 20 employees.

SMEs survey

119. As part of the demand side study, the Commission asked Nielsen to survey SMEs on various issues, including willingness to pay for a high speed broadband service. Nielsen surveyed 500 SMEs with 1 to 19 employees. SMEs without employees were excluded from the survey to avoid double-counting with the consumer willingness to pay survey.
120. The survey tied the question on willingness to pay to concrete examples of the types of services that consumers could use high speed broadband for, such as high definition telepresence and high definition security.⁵⁷
121. The Nielsen SME survey found that 10% of SMEs said that they would be willing to pay more than 20% more for a high speed broadband service. Overall, 26% of SMEs said they would be willing to pay more than 10% more, 34% up to 10% more, and 35% no more, for a high speed broadband service.

⁵⁷ The questions asked were:

- Using the following scale... not at all interested, not very interested, quite interested and very interested please indicate how interested your business would be in the following potential uses of broadband....?
- How much more than you currently pay, would you be willing to pay for a faster broadband service that enabled you to use the type of applications in the previous question?

The questions are set out in full in Annex 1.

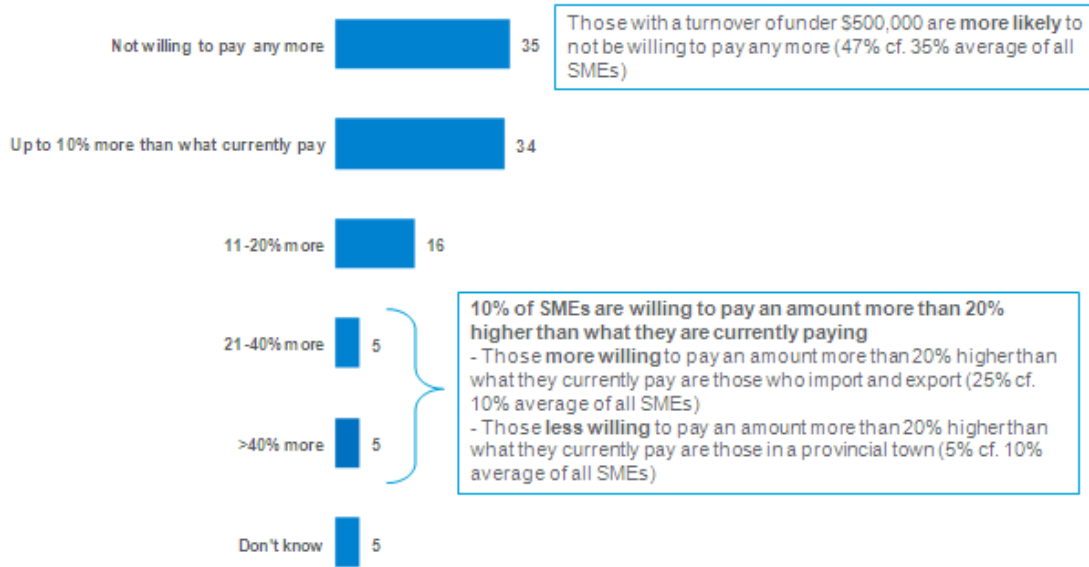


Figure 11: Additional percentage SME are willing to pay for high speed broadband, source: Nielsen SME survey 2011

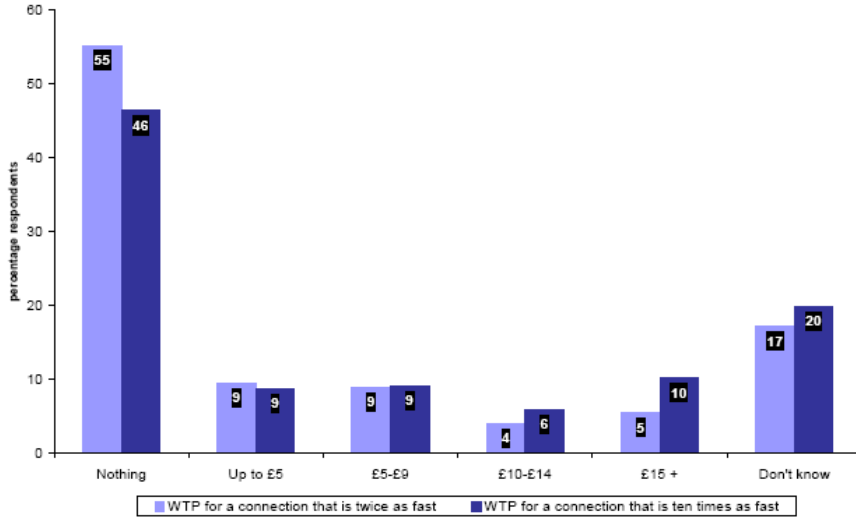
Comparison with the Scottish business survey

122. The New Zealand SME survey results are comparable to the results reported by a GEN/Research Resource survey⁵⁸ of Scottish businesses using the internet. The findings are set out in the figure below. As with the New Zealand and German consumer surveys discussed earlier, the similarities between the New Zealand and Scottish SMEs surveys show that willingness to pay issues are not specific to the New Zealand market, and overseas experience is relevant to New Zealand.⁵⁹

⁵⁸ Research on Broadband and Business in Scotland, March 2011. The report is available at: <http://www.scotland.gov.uk/Resource/Doc/342391/0113934.pdf>

⁵⁹ The willingness to pay questions asked in the Scottish survey were:

- How much EXTRA would your organisation (across all its sites) be prepared to pay per month in addition to your current subscription to upgrade to a broadband service that was *twice* as fast as your current connection?
- How much EXTRA would your organisation be prepared to pay per month in addition to your current subscription to upgrade to a broadband service that was *ten times* as fast as your current connection?



N = 748
 Source: GEN/ Research Resource telephone survey
 Base: businesses that use the internet

Figure 12: Willingness to pay per month to upgrade to a faster broadband service

Question

Given the additional services that will be available using high speed broadband, will SMEs be willing to pay the additional amount required to provide high speed broadband services?

Annex 1

Roy Morgan consumer survey questions QB2 and QB3

ASK ALL:

QB2. I'm now going to read out a list of services which you might be able to access with faster broadband. For each, please tell me how interested, on a scale from 1 to 10 with 1 being not at all interested and 10 being very interested, you might be in subscribing to that service, assuming that it was not too expensive. (ROTATE LIST)

QB2A. HD movies and TV on demand over broadband

SCALE 1-10

CAN'T SAY

QB2B. HD video conference calls over broadband, e.g. attending an office meeting from home

SCALE 1-10

CAN'T SAY

QB2C. HD interactive Gaming

SCALE 1-10

CAN'T SAY

QB2D. A doctor's consultation over the internet

SCALE 1-10

CAN'T SAY

QB2E. HD Virtual real time education e.g. guitars lesson online and live, university education online and live from domestic or international education institutions

SCALE 1-10

CAN'T SAY

ASK ALL:

QB3. About how much more than you currently pay per month would you be willing to pay for broadband internet that enabled you to use these services (REPEAT SERVICES AT QB2 IF NECESSARY)?

Less than \$5 more per month

\$5-\$10 more per month

\$11-\$20 more per month

More than \$20 more per month

CAN'T SAY

Nielsen SME survey questions 8 and 9

Q8 **Read out. Repeat rating scale if necessary.**

Randomise statements.

Using the following scale... not at all interested, not very interested, quite interested and very interested please indicate how interested your business would be in the following potential uses of broadband....?

	Not at all interested	Not very interested	Quite interested	Very interested	(Do not read out) Don't know / NA
<p>(R1) High Definition Telepresence – it’s like people are in the same room even though they could be anywhere in the world – the quality of sound and picture is like they are right in front of you.....</p> <p>Specific examples:</p> <ul style="list-style-type: none"> • examination of person/ animal by a specialist • receive/provide clinical health care at a distance • sales pitches/ consultations • meetings and presentations • virtual training 	01	02	03	04	99
<p>(R2) Online sales and marketing functionality e.g. uploading of desired specifications for product/ service from your customers, or providing high definition demonstrations of products and services for customers.....</p> <p>Specific examples:</p> <ul style="list-style-type: none"> • measurements for clothes/ interior design, machine specifications 	01	02	03	04	99

(R3) Telecommuting using HD video and HD voice – where the daily commute to the place of work is replaced by telecommunication links	01	02	03	04	99
(R6) HD security surveillance - enabling the use of HD videos for surveillance purposes, e.g. HD surveillance would enable you to have photographic quality images	01	02	03	04	99

Q9

Read out if necessary.

How much more than you currently pay, would you be willing to pay for a faster broadband service that enabled you to use the type of applications in the previous question?

	Code	Route
Up to 10% more than what currently pay	01	
11-20% more	02	
21-40% more	03	
>40% more.....	04	
(Don't read out) Not willing to pay any more.....	97	
(Don't read out) Don't know	99	

Glossary

Term	Definition
3G	Third Generation. A term commonly used to describe the third generation of technology used in a specific application or industry. In cellular telecommunications, third generation systems use wideband digital radio technology as compared to second generation narrowband digital radio.
4G	Defined by the International Telecommunications Union (ITU) as mobile systems with new capabilities that go beyond those of IMT-2000 (3G). Also referred to as 'IMT-Advanced'. Such systems will provide access to a wide range of telecommunication services (including advanced mobile services), supported by mobile and fixed networks that are increasingly packet-based. The ITU has determined that "LTE-Advanced" and "WirelessMAN-Advanced" should be accorded the official designation of IMT-Advanced.
Byte/ bits relationship	1 byte (B) = 8 bits (b).
Bitstream	A stream of compressed data.
Caching	The storage of data closer to the end user, for use at a later time.
CIR	Committed information rate. CIR is a guaranteed minimum data transmission rate of service that will be available to the user through a network. Applications that use CIR services include voice and real time data applications. CIR can be measured in bits per second, burst size, and burst interval.
CPE	Customer Premises Equipment. CPE is all telecommunications terminal equipment located on the customer's premises, including telephones, private branch exchanges (PBXs) and data terminals.
Dimensioning	Dimensioning the capacity of a link determines the maximum amount of traffic that can flow over that link during a given period.
EUBA	The regulated enhanced unbundled bitstream access service.
FDS	First data switch.
Fibre jointing point	The point at which a fibre lead-in is jointed to the distribution network fibre.
Fixed wireless	Fixed wireless is the use of wireless technology to provide voice, data, or video service to fixed locations. Fixed wireless services include wireless local loop (WLL), point-to-point microwave, wireless broadband, and free-space optical communication. Fixed wireless systems may replace or bypass wired telephone service, high-speed telephone communication links, and cable television systems.

Term	Definition
FTTP	Fibre to the premise is a distribution system that uses fibre optic cable to connect telephone networks to nodes that are located within businesses and homes. FTTP is also known as fibre to the home (FTTH) and fibre to the building (FTTB).
GB	A gigabyte is one billion bytes of data. When a gigabyte is used to identify the amount of data storage space (such as computer memory or a hard disk), it commonly refers to 1,073,741,824 bytes of information.
GSM	Global system for mobile communication (GSM) is a wide area wireless communications system that uses digital radio transmission to provide voice, data, and multimedia communication services. A GSM system coordinates the communication between a mobile telephones (mobile stations), base stations (cell sites), and switching systems.
Handover point	The point of interconnection between networks at which traffic is handed from one network to the other.
HD	High definition. HD video is the resolution of enhanced analogue video and digital video. The resolutions of HD range from 480/60p-480 pixels (vertical) by 728 pixels (horizontal) with 60 progressive fields (60p) per second to 1080/60p-1080 pixels (vertical) by 1920 pixels (horizontal) with 60 progressive fields per second.
HFC	The hybrid fibre coax (HFC) system is an advanced CATV transmission system that uses fibre optic cable for the head end and feeder distribution system and coax for the customers end connection.
IEEE 802.16	802.16™ is an IEEE standard that defines the network management information base (MIB) parts that are used for the 802.16 WiMax system.
IEEE 802.11n	An IEEE 802.11 wireless network standard that increases transmission speeds to 300 Mbps and beyond. Because 802.11n works in both the 2.4 GHz and 5 GHz frequency bands, it is compatible with legacy 11a and 11b/g users.
IP	Internet protocol. IP is low-level network protocol that is used for the addressing and routing of packets through data networks. IP is the common language of the Internet. The Internet protocol only has routing information and no data confirmation rules. To ensure reliable data transfer using Internet protocols, higher level protocols such as TCP are used. IP is specified in RFC-791.

Term	Definition
IPTV	Internet protocol television. IPTV is the process of delivering video and/or audio services over Internet protocol (IP) networks. These IP networks initiate, process, and receive voice or multimedia communications using Internet protocol. These IP systems may be public IP systems (e.g. the Internet), private data systems (e.g. LAN based), or a hybrid of public and private systems.
ISP	Internet service provider. An ISP is a company that receives and converts (formats) information to and from Internet connections to Internet end users. An ISP purchases a high-speed link to the Internet and divides up the data transmission to allow many more users to connect to the Internet.
Jitter	The short-term variation of transmission delay time for data packets that usually results from varying time delays in transmission due to different paths or routing processes.
Kbps	Kilobit per second. kbps is a measure of data transmission equal to one thousand bits per second.
Latency	Latency is the amount of time delay between the initiation of a service request for data transmission or when data is initially received for retransmission to the time when the data transmission service request is granted or when the retransmission of data begins.
Layer 2 service	Services that operate at Layer 2 of the Open Systems Interconnection Model of network architecture. Layer 2 is normally associated with active fibre optic network infrastructure (the electronics that light fibre). Often known as "lit" services (source: http://www.crownfibre.govt.nz/ultra-fast-broadband/glossary.aspx).
Lead-in	The lead-in cable is the cable from the fibre or copper jointing pit to the customer's premises.
LFC	Local Fibre Company.
LTE	Long term evolution, a 4 th generation mobile technology. Relative to 3 rd generation wireless, the LTE specification enables 100 Mbps+ data transmission rates, increased system capacity and shorter transmission latency times.
Massively multiplayer online gaming	A massively multiplayer online game (MMO or MMOG) is a multiplayer video game which is capable of supporting hundreds or thousands of players simultaneously.
MB	Megabyte. A megabyte is one million bytes of data. When megabyte is used to identify the amount of data storage space (such as computer memory or a hard disk), a megabyte commonly refers to 1,048,576 bytes of information.

Term	Definition
Mbps	Megabit per second. A measurement of digital bandwidth where 1 Mbps =1 million bits per second (1,000,000 bits per second). The word "mega" is sometimes used to describe the nearest integral power of 2, namely 1,048,567.
OECD	Organisation for Economic Co-operation and Development.
OTT	OTT is defined as video delivered by content providers over third party broadband networks to a range of end-user devices.
P2P	Peer to peer is the exchange of information between devices or systems that are capable of operating as both a server (provider) of information and a client (consumer) of information.
POI	Point of interconnect. The geographical location where two networks interconnect and exchange traffic.
POTS	Plain old telephone service.
Primary links	Primary links are the backhaul links between provincial and metro exchanges.
PSTN	Public Switched Telephone Network.
QoS	Quality of service (QoS) is an attribute of desired performance and priorities of a communications system. QoS measures may include service availability, maximum bit error rate (BER), minimum committed bit rate (CBR) and other measurements that are used to ensure quality communications service.
RBI	Rural broadband initiative.
SD	Standard definition. SD video is the resolution of traditional analogue video. Standard definition for PAL/SECAM is 576 lines with 50 interlaced fields (50i) per second.
SDSL	Symmetrical digital subscriber line.
Secondary links	Secondary links are the backhaul links between Telecom's 29 points of interconnect (POI).
SME	<p>Small and medium business. A SME business is a business with 19 or fewer employees which also meet at least one of the following criteria:</p> <ul style="list-style-type: none"> • annual expenses or sales subject to GST of more than \$30,000 • 12-month rolling mean employee count of greater than three • part of a group of enterprises • registered for GST and involved in agriculture or forestry • over \$40,000 of income recorded in the IR10 annual tax return (this includes some units in residential property leasing and rental).

Term	Definition
UFB	Ultra-fast broadband.
VDSL	Very high speed Digital Subscriber Line.
VOIP	Voice Over Internet Protocol (VoIP) is a process of sending voice telephone signals over the Internet or other data network. If the telephone signal is in analogue form (voice or fax) the signal is first converted to a digital form. Packet routing information is then added to the digital voice signal so it can be routed through the Internet or data network.
WCDMA	Wideband code division multiple access is a 3rd generation mobile communication system compatible with GSM mobile radio communication system.
WiMAX	WiMAX is a wireless communications standards-based technology that is used in Point-to-Point and Point-to-Multipoint wireless networks. WiMAX is based on the IEEE 802.16 standard and the name WiMAX is a marketing term coined by the WiMAX Forum.