
TELSTRA CORPORATION LIMITED

Response to the ACCC Broadband Speed Claims discussion paper

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EXECUTIVE SUMMARY

We welcome this opportunity to comment on the Australian Competition and Consumer Commission (ACCC) broadband speed claims discussion paper.

Setting realistic expectations

We agree with the ACCC that it is important to provide information and set expectations for consumers about broadband speed and performance, as this directly contributes to a positive customer experience.

We note that many factors ultimately influence the broadband speed that a consumer will experience, including the performance of devices, Wi-Fi or cabling within a consumer's premises, the line speed of the broadband service, the capacity of the backhaul network to cope with changes in aggregate customer demand at different times of the day, and the performance of remote servers and their connections to the internet. These factors are all variable and many of them are outside the control of the RSP. Consequently, it is not possible to accurately forecast a specific speed for any individual customer for any specific time. The best that can be done is to forecast a probability that the actual speed experienced will be within a certain range of speeds.

We are actively taking steps to improve the information that we make available to new ADSL customers about the broadband performance that they can expect to receive. We have recently introduced an estimate at point-of-sale about the likely speed range they will experience, along with diagnostic tools to help identify the root cause in situations where factors beyond our control may mean the forecast speed range is not achieved. We are also actively supporting the work being undertaken by Communications Alliance to publish a comprehensive set of plain language information regarding broadband performance that can be referenced by customers.

The guidance needs to be updated

We think the current ACCC guidance on speed claims¹ needs to be updated so that it provides more flexibility to allow Retail Service Providers (RSPs) to make representations about speed, while also setting minimum expectations about the type of information required to substantiate such claims. The updated guidance should be in the form of principles to be followed rather than specific targets or measurement methodologies to allow for variations across technologies and service offerings and evolution of those technologies and service offerings over time.

We believe this updated guidance would be best provided in the form of a Communications Alliance Guideline (Guideline), on the basis that industry is best placed to ensure that the guidance is workable, based on sound technical principles, and kept up to date with ongoing changes. The Guideline would be developed by industry in close consultation with the ACCC and other regulatory and consumer stakeholders. We suggest that elements of the approach adopted by Ofcom in its 2015 voluntary code of practice on broadband speeds, along with content from the existing ACCC guidance, would form a useful starting point for the Guideline.

Consumers would not benefit from additional compensation measures

We do not see a need to introduce additional rules concerning the provision of customer compensation. Australian telecommunications consumers are already well served by a competitive broadband market, and are protected by existing consumer legislation and industry codes of practice which promote customer service and fair outcomes. Automatic compensation is a remedy that would only be appropriate where

¹ HFC and Optical Fibre Broadband "Speed" Claims and the *Competition and Consumer Act 2010* – An ACCC Information Paper, July 2011

providers are (a) responsible for all material factors affecting customer experience; and (b) not otherwise incentivised by competitive, legal and reputational consequences to deliver on their speed claims. Neither of these conditions applies in the Australian broadband market. So best practice regulatory principles would not support regulated compensation.

Mobile service performance is well understood

A variation in speed performance is normal and understood by mobile customers. Several independent, public reports on mobile service performance are already published on an annual basis. These reports show how mobile speeds in Australia are already world class and continuing to improve. There is no evidence of recent increases in the reporting of difficulties with mobile broadband speed related claims, and there is no ability to provide or charge for a speed boost on a mobile service, as there is for HFC or **nbn**TM network services. For these reasons we believe that no further specific guidance is required for mobile broadband services.

Consumers would not benefit from centralised performance reporting

We understand the ACCC continues to be interested in the possibility of implementing a centralised broadband monitoring and reporting program. The program proposed by the ACCC would not be beneficial for consumers or industry as insufficient suitable data would be gathered to reliably make comparisons between RSPs or predict the performance experienced by individual customers. Even a broader program would not be able to reliably predict the performance of legacy ADSL services due to the wide variability in the distance of ADSL customers from the nearest network node. Consumers are likely to be confused, and quite possibly misled, if the ACCC introduces additional information into the market that is seen by consumers to have some higher 'official' status when it is unlikely to be any more accurate or useful than information from other sources.

If such a program continues to be contemplated by the ACCC, it should be forward looking and focused on the **nbn**TM network and other Next Generation Network (**NGN**) services. The cost of any such program should not place any additional burden on industry or consumers.

Rather than seeking to establish a centralised monitoring and reporting programme, we suggest it would be more beneficial for the ACCC to promote a market solution. The ACCC could assist this outcome by encouraging RSPs to consider publishing their own measurements to substantiate the speed expectations that they are setting for their customers.

01 INTRODUCTION

We appreciate the opportunity to provide this response. As Australia's leading provider of broadband services, we are committed to helping our customers understand and optimise the performance of, and the experience they can expect from their service. In the past year we have introduced measures to better inform customers of their likely experience at the point of sale, as well as tools to help customers understand and even diagnose possible issues they may experience with the performance of their service. In this respect, we believe that Telstra is leading the industry in providing our customers with information to help set and manage their expectations.

Section 2 of our submission addresses the limitations that constrain the '*provision of accurate speed information*' to consumers, as well as outlining alternatives that will provide consumers with more information (e.g., a speed range).

Section 3 provides our view on the high-level concerns raised in the discussion paper. This includes detail about the actions we have already taken to address customer demand for good quality information about the likely performance of our service offerings. It also explains why we believe the introduction of measures such as automatic compensation or programs such as a centralised broadband performance monitoring and reporting program would not only be inappropriate and ineffective, but would also create unnecessary additional costs that are ultimately borne by consumers.

The remaining sections of our submission respond directly to the eight issues in the discussion paper.

The appendices to this submission provide examples of Telstra network measurements to support the stated positions. The first 2 appendices show the wide variability of the measured download speed from minute to minute within the busiest hours for a sample set of ADSL and **nbn**TM network services respectively. The third appendix shows the 10th and 90th percentile ADSL2+ access line speeds as a function of line attenuation (length) from the network node, demonstrating the wide range of possible speeds provided to ADSL2+ customers. The fourth appendix provides a list of definitions for the abbreviations used in this submission.

02 FACTORS LIMITING THE ABILITY TO MAKE SPEED CLAIMS

We are committed to providing customers with clear information about the performance of broadband services. However, it is difficult to provide *accurate* speed forecasts for customers as the customers' actual experience depends on many factors, many of which are outside the control of the service provider. This section of our submission considers some of the key factors and how they impact the ability of service providers to make accurate claims about broadband speeds.

2.1. Factors affecting broadband performance

As highlighted by the Australian and Communications and Media Authority (ACMA)², a customer's internet experience is affected by many factors including:

- the performance of the device used by the customer (such as a tablet, laptop or smart TV);
- the electromagnetic interference environment for DSL broadband services in the customer's premises;
- how the access network and end user devices are connected together in the customer's premises, including whether this is achieved using wired or wireless technologies, or a combination of both;
- the performance of the service provider's access network;
- the capacity and traffic loading in the service provider's core network;
- the capacity and traffic loading in the international backhaul network (where relevant); and
- the performance of the remote content servers.

2.2. Broadband access network parameters

In the case of ADSL2+/ADSL services, the line speed is not fixed by the service offering, but can vary widely depending on factors such as line attenuation (approximately proportional to the distance from the network node), the quality of the customer premises cabling and electromagnetic interference in the customer premises. Even customers with the same line attenuation may experience quite different access line speeds as shown in Appendix 3. For ADSL2+ services, this wide range of access line speeds is a major factor in determining the distribution of actual speed outcomes experienced by end users. For a customer intending to purchase an ADSL2+ service, it is more helpful to inform them about the expected line speed *range* on a specific access line (the one they intend to purchase) rather than to inform them about the average speeds (or other statistical measures) that apply to ADSL2+ lines more generally. Even then, it is worth noting that where a range of possible speeds is quoted, a percentage of customers will still experience a line speed that is *outside* the range. For example, using an 80th and 20th percentile range, as Ofcom recommends in its 2015 voluntary code of practice, will result in 40% of customers experiencing a line speed that is *outside* the range (20% at each end).

NGNs such as the **nbn**TM network provide more certainty as the variations with distance from the network node are greatly reduced. However, even NGNs, especially where there is a mix of technology such as, FTTN with VDSL and HFC are not immune to variances in line speed rates across the entire population of users. These services are also still susceptible to the vagaries of the cabling and electromagnetic interference environment within the customer's premises. Consequently, in the case of customers intending to purchase

² ACMA Slow home internet: symptoms, causes and cures -

http://www.acma.gov.au/theACMA/engage-blogs/engage-blogs/Telco/Slow-home-internet-symptoms-causes-and-cures?utm_medium=email&utm_campaign=engage%20issue%2056%20July%202016&utm_content=engage%20issue%2056%20July%202016+CID_3dbbd26fa52d9b43ac38a3fa4b6a81e7&utm_source=SendEmailCampaigns&utm_term=internet%20speed%20back%20up%20to%20scratch

"It's worth noting that a slow home internet connection may result from a number of factors, some of which you can't control. But other factors, typically within the home, are more likely to be within your control."

an NGN service, it is more appropriate to inform them about the expected maximum speed (i.e., “up to”) rather than informing them about a speed range. We note that a customer’s expected maximum speed is not the wholesale provider’s speed.

2.3. Other performance parameters

The ACCC asks whether service providers should report on other performance parameters, including latency and packet loss, for their services. We believe that reporting these parameters would not be helpful. They are not measures that are easily explained to customers and on their own are not representative of customer experience.

They are also measures that are significantly affected by congestion and are therefore highly variable. As congestion levels increase, the standard internet Transmission Control Protocol (TCP, a layer 3 protocol) slows down users’ data by increasing latency (in intermediate buffers) and by dropping packets when buffers overflow. Hence, packet loss and latency are the results of congestion, and perceived ‘speed’ becomes extremely variable under congestion. The parameters are so variable over the busy hours that it is necessary to choose a statistical measure for reporting and this would be of little relevance to individual customers, and difficult for RSPs to explain and customers to understand.

Other factors that can materially influence customer experience include dropouts, error burst rates and delay. In this context, the customer experience depends on the type of application being used, with some applications more affected than others. For example the performance of applications such as video streaming and VoIP will be impacted by packet loss, stability and delay, whereas the downloading of large files is largely immune to these effects. Thus, it is not correct to say that faster broadband (download) speeds always deliver better performance as many applications do not work any faster beyond a modest download speed threshold. Some applications like electronic payment processing are insensitive to speed but are highly sensitive to packet loss.

Even for speed sensitive applications there are different impacts. Some applications, such as file or movie downloading, are compatible with wide speed variations and are sensitive only to average speed, whereas other applications such as video streaming, which require a consistent data speed, are sensitive to low speed spikes. This means that movie downloading can be fine in the busy hour if a provider has sufficient backhaul capacity but video streaming may still suffer because of demand spikes during that busy period.

2.4. Peak period broadband demand is widely variable and difficult to forecast

The ACCC’s discussion paper makes several references to broadband speeds during peak periods and uses terms such as “speeds that the broadband service can consistently achieve”. As we have outlined in sections 2.1 and 2.2, this is an unrealistic expectation. Further, for applications that are sensitive to latency, jitter or packet loss, quoting a speed during peak times, or a speed that can be consistently achieved, are not the most important indicators of an optimal experience. Even a properly dimensioned service with mild congestion will demonstrate highly variable speeds in the busy hours and be difficult to measure reliably. Further information to support this point is provided in Appendices 1 and 2.

This situation is analogous to driving on a freeway at 100km/h at quiet times but being forced to slow down to a fraction of this speed and then maybe speeding up again during the commuting rush hour and other periods when traffic congestion occurs. Drivers expect to be able to travel up to the maximum speed but also recognise there will be times and sections of the freeway when this is not possible and speed will fluctuate. With a sufficiently broad data set it might be possible to model average peak hour speeds to provide some general guidance to drivers, but it would not be possible to offer minimum peak hour speed guarantees that are meaningful or realistic for drivers.

For these reasons we think it is not realistic to report on the factors described sections 2.1 and 2.2. Nonetheless, we recognise the influence these factors have on the customer experience, and believe there

is a role for RSPs to educate customers about them. Telstra has published material³ to explain why variations in speed occur. This information seeks to describe the effects customers can experience in plain language and in a manner that is easy for consumers with no technical knowledge to understand.

³ <http://telstra.com/speeds>

03 KEY ISSUES AND RECOMMENDATIONS

This section of our submission presents our views in response to matters raised in the introduction section of the ACCC's discussion paper. We provide information about:

- actions we have already taken to address consumer demand for greater information about the performance of our broadband service offerings;
- why we think some of the actions suggested by the ACCC will not address underlying consumer concerns and will simply add unnecessary cost to industry and consumers and reduce customer choice; and
- what we think should be done to improve the information about performance for consumers.

3.1. Actions Telstra has taken to introduce a speed estimate

We agree with the ACCC that it is important to provide information and set expectations for consumers about broadband speed and performance related matters, as this directly contributes to a positive customer experience.

In April this year, we introduced an ADSL2+ speed estimate as part of the service qualification process when a customer is signing up for a broadband service. A sample of the message supplied to the customer is shown in the figure below. Customers who call us rather than using our on-line channels to order a service are provided this information verbally. Importantly, the provision of the speed estimate also contains a link to a more detailed description of the other factors that will affect actual speed.



We have also made the expected speed information available to our wholesale customers through the service qualification function in our ordering systems⁴. This was introduced in February 2016, ahead of the launch to our retail channel, to provide Telstra's wholesale customers time to introduce the information through their channels to consumers.

We have also taken steps to assist our retail customers at an individual level if their expectations are not met after signing up to a Telstra broadband service. The following web link explains to Telstra customers how to test their broadband connection and identify faults through the use of our on-line troubleshooting tool.

<https://www.telstra.com.au/support/category/broadband/fix/how-to-check-your-broadband-connection>

3.2. Improving the guidance about broadband performance information – Communications Alliance Guideline

⁴ <https://www.telstrawholesale.com.au/service/ordering.html>

The ACCC's discussion paper discusses the need for an improvement in the headline speed, product description and comparable performance information. One option contemplated in the paper is that the ACCC "could refresh its current guidance to assist RSPs to implement improved advertising practices". We agree that there is a need to review the guidance material published by the ACCC, as the guidance is no longer aligned with the NGN developments, nor is it aligned with consumer expectations for information about broadband speed.

We think the guidance needs to provide more flexibility for RSPs to make representations about speed. As we have illustrated in section 2, actual speed can vary with many factors (such as line speed, latency, packet loss, and backhaul congestion) and can vary across application type (e.g., file/video download, streaming, and web-browsing applications). Introducing greater flexibility into the guidelines will permit RSPs to develop innovative ways to communicate to customers how or when these variances will occur and how they may affect various applications.

The new guidance needs to promote and set realistic expectations for customers, based on technically sound principles that are workable for service providers and do not impose unnecessary additional costs. It also needs to promote consideration of the wider range of factors (not only speed) that contribute to a customer's broadband performance experience, noting that many of these factors are often outside the direct control of the service provider but still impact the customer experience.

The guidance also needs to set expectations about the information required to be able to substantiate speed claims. The existing guidelines simply state that where a speed claim is made, the RSP must be able to substantiate it to an extent that would satisfy the ACCC that the RSP is not being misleading or deceptive. Introducing a minimum set of expectations around the types of information required (such as speed ranges and time of day variance) to substantiate a claim should enable greater alignment of information between RSPs and make it easier for consumers to compare service offerings. Such expectations should not be mandatory for all customer communications but rather should be available for an RSP to include should the communications content and medium warrant the information.

It is important that the updated guidance is in the form of principles to be followed (such as the types of information) rather than attempting to prescribe specific structures, target values or measurement methodologies, as the latter will restrict the ability of RSPs to demonstrate innovation in this area, will vary with different technologies and service offerings, and will also evolve over time as technologies and service offerings change.

We believe this updated guidance would be best provided in the form of a Communications Alliance Guideline, on the basis that industry is best placed to ensure that the guidance is workable, based on sound technical principles, and kept up to date with ongoing changes in technologies and services. Industry also has a strong incentive to listen to and respond to the demands of customers for more information about broadband performance. The Guideline would be developed by industry in close consultation with the ACCC and other regulatory stakeholders. We suggest that aspects of the approach adopted by Ofcom in its 2015 voluntary code of practice on broadband speeds, along with content from the existing ACCC guidance, could form a useful starting point for the Guideline. We further suggest that the industry developing the guideline include representatives from wholesale providers and third party content providers (such as Netflix) who also make speed related information available to the public to influence customer expectations.

3.3. A centralised broadband monitoring and reporting program would not be beneficial

We understand the ACCC continues to be interested in introducing a centralised broadband performance monitoring and reporting program along the line of the trial program that it conducted in 2015⁵. We are concerned that the program proposed by the ACCC would not be beneficial for consumers or industry as insufficient suitable data would be gathered to reliably make comparisons between RSPs or predict the performance experienced by individual customers. Additionally, it would not be possible to effectively sample ADSL services because the ADSL end user speed experience largely depends on the ADSL access line speed (which varies with distance and type of cable). For these reasons, it is not realistic to use sample probe data to forecast the speeds that will be experienced by an individual customer in a meaningful way. Consumers are likely to be confused, and quite possibly misled, if the ACCC introduces additional information into the market that is seen by consumers to have some higher 'official' status when it is unlikely to be any more accurate or useful than information from other sources.

If the ACCC is still of a mind that some sort of broadband performance monitoring and reporting program is required then we believe the program should only be for **nbn**TM network services. The methodology must be designed to fairly report the relative performance of services from different service providers without bias caused by differences of demographics, geographic coverage, congestion outside the RSP's control (e.g., at the source of the content) or customer premises effects. The program should not impose a financial burden on any service provider.

Rather than seeking to establish a centralised monitoring and reporting programme, we suggest it would be more beneficial for the ACCC to promote a market solution. The ACCC could assist this outcome by encouraging RSPs to consider publishing their own measurements to substantiate the speed expectations that they are setting for their customers.

3.4. Consumers would not benefit from additional compensation measures

We do not see a need to introduce additional rules concerning the provision of compensation to customers.

Australian telecommunications consumers are already well served by a competitive broadband market, and are protected by consumer legalisation and industry codes of practice which promote good customer service and fair outcomes. For example the Telecommunications Consumer Protection Code, which is registered and enforced by the ACMA, includes rules on advertising, selling practices, and dealing with customer fairly to ensure they make informed choices. The Code specifically references compliance with the ACCC's guidance on broadband speeds in the relevant advertising requirements to ensure unsubstantiated claims are not made.

Automatic compensation is a remedy that would only be appropriate where providers are (a) responsible for all material factors affecting customer experience; and (b) not otherwise incentivised by competitive, legal and reputational consequences to deliver on their speed claims. Neither of these conditions applies in the Australian broadband market. So best practice regulatory principles would not support regulated compensation.

In addition, Australian Consumer Law provides a range of protections for consumers that apply to the promotion, sale and supply of broadband services including the prohibitions against misleading and unconscionable conduct and unfair terms, as well as remedies for goods and services that fail to meet the consumer guarantees. An automatic compensation regime in Australia would overlap with current consumer protection arrangements and also add an unnecessary compliance cost.

⁵ The ACCC's Pilot Broadband Performance Monitoring & Reporting Program September 2015

3.5. RSPs require time to respond to recent market developments

The recent spike in broadband performance issues coincides with the uptake of subscription video on demand (SVOD) services. For example, Deloitte's 2016 Media Consumer Survey⁶ reports that 22% of respondents pay for a subscription video on demand (SVOD) service (compared to 12% in 2015). It is likely that many of the recent performance issues relate to the limited download speed capability of longer ADSL lines operating at speeds below 5 Mbps, where customers' demands on the service have increased and the access line speed remains the same. In those cases, service providers will be able to do very little to improve the customer experience until after the customers have been migrated to the **nbn**TM network.

While we have maintained network performance in spite of a 50% year on year growth in data consumption, some longer ADSL lines are not designed for the large increase in data customers are now expecting to be supported. It is expected that migration of these services to the **nbn**TM network will address the problem for most customers, and we will be able to validate this as the **nbn**TM network is rolled out and more customers are migrated to it.

Service providers have had only a short time to adapt to this shift in consumer demand and are now responding to accommodate the shift in demand. More time is required to allow RSPs to complete the adaption activity, including moving customers to the **nbn**TM network where ADSL line speeds are the limiting factor.

3.6. Room for more consumer education

Consumer information on the expected performance of broadband services is available from a disparate range of sources designed for different purposes. This can include information from the consumers' RSP, typically in the form of advertising claims, information from the RSPs website or from consultants, from regulators such as the [ACMA](#) or [ACCC](#), consumer groups such as [ACCAN](#), and from content providers like Netflix.

We think there is a need for a more comprehensive and accurate set of information about broadband performance to be made available for consumers. Consequently, we are very supportive of Communications Alliance plans to establish an industry based on-line portal where consumers can find technically accurate, comprehensive, plain language information about broadband performance.

The information provided to consumers should include advice about the factors that can affect the performance of a broadband service for the end user, such as:

- The speeds at which the web server can deliver data (e.g. high demand for data by other users, may affect and slow down download speeds).
- The speed of the access network, e.g. ADSL, HFC or the **nbn**TM network.
- The different types of access network technologies, e.g., FTTP, FTTN, FTTB, ADSL, HFC, fixed wireless and satellite.
- The speed of the network connections within the customer premises (e.g., the performance of cabling, Wi-Fi and routers) and the speed of the consumer's computers and applications.
- The time it takes computers to contact the host and begin the data retrieval process.
- How network capacity affects speed.

⁶ <http://www2.deloitte.com/au/en/pages/technology-media-and-telecommunications/articles/media-consumer-survey-2016.html>

The information should also provide information on how to troubleshoot broadband performance problems, including explaining the benefits and limitations of public tools such as the “[My Broadband](#)”, “[Speedtest.net](#)” sites and modem diagnostic tools.

04 ISSUE 1 – Network Management and Monitoring services delivered on NGNs

4.1. Using standard traffic engineering methods

We use standard traffic engineering methods and network management tools to monitor traffic.

Q1. How do RSPs, content service providers and access network owners/operators currently manage and monitor their fixed broadband network and speed performance?

Response

We monitor the busy hour utilisation levels of all shared channels (e.g., CVCs in the case of the **nbn**TM network) to ensure they do not become congested to the extent that speeds degrade to an unacceptable level. This is done using standard traffic engineering methods and is regularly checked against results from access network robots.

In the case of ADSL services, we also use an ADSL Network Analyser tool that can automatically optimise performance parameters and diagnose causes of degradation.

Q2. When issues are detected through performance monitoring or in this context, what are the key measures available to improve network performance and therefore speed of service? What timeframes are needed to implement any such measures?

Response

In the case of **nbn**TM network services, when capacity utilisation thresholds are exceeded, we provide extra CVC or backhaul capacity, or migrate some of the end users onto another channel where there is available capacity. A month of data is typically required to gather adequate statistical evidence that thresholds have been exceeded. The required upgrades are then usually applied within a matter of weeks.

For ADSL services, similar measures are used to manage the backhaul capacity. Upgrades are generally performed between 3 to 12 months after a threshold is exceeded, but the actual timing depends on a number of factors including the availability of core capacity, whether legacy technology is involved, and whether a major network upgrade is required.

Q3. Does the move to next generation access networks provide opportunities for RSPs to better manage their networks and more accurately assess the service performance and speeds that they deliver in practice?

Response

While service providers can now rely on the **nbn**TM network to provide access network speeds that are faster than ADSL and most ADSL2+ services, the service provider's core network and CVC capacity still needs to be monitored to manage congestion. Network management for **nbn**TM network services is similar to the current practice for legacy networks, except service providers cannot control or monitor the utilisation of **nbn**TM network shared access links. Service providers must rely on **nbn**TM's commitment to upgrade capacity when its 70% design threshold for busy hour channel utilisation is reached.

Q4. What information is available to RSPs to assist them in making accurate performance claims in their marketing materials and at point of sale?

Response

It is difficult to make accurate performance claims that are relevant to end user application performance as many factors have to be taken into account. In the case of fibre access services, service provider headline speed claims would be expected to be close to the access speed during non-busy periods. However, for VDSL2 or ADSL2+ access the speed will be within a wide range and based on the line attenuation. For

ADSL2+ Telstra surveys its line speeds across the network and can report the expected 10th to 90th percentile speed range for a new service based on those surveys and cable plant records. We also make this information available to wholesale customers.

The problem with making accurate claims is that the speeds experienced vary widely during busy times and the statistical description and would be difficult for customers to understand (More detail is provided in Appendix 1).

Q5. Is information generated through network monitoring and diagnostics used by RSPs to inform speed claims made to consumers? If so, how?

Response

We perform network wide sampling of ADSL2+ access line speeds. We use this data to inform each customer at the point of sale about the expected speed range they can expect to receive. This is the 10th to 90th percentile speed range which takes into account the expected line attenuation based on the a customer's distance from the DSLAM, as per Figure C1 in Appendix 3.

Q6. Is information on expected service performance available to RSPs when establishing a particular retail service? Is information on actual service performance available to RSPs shortly after service activation? How is this information provided to consumers or otherwise taken into account by RSPs when communicating with consumers?

Response

Prior to activating a new service, the access line speed is known for FTTP and HFC services, but can only be estimated for ADSL services using a calculated attenuation value based on our cable plant records. This is because ADSL performance is primarily affected by the length of copper cable and the electromagnetic interference environment in the customer premises. Based on this information, we predict an estimated ADSL speed range corresponding to the 10th and 90th percentile data points. A similar approach could be used for **nbn**TM network FTTP services once sufficient data is available.

After a service is activated, we can immediately observe the access line speed for ADSL or VDSL2 services. However, this does not include any impact due to congestion. Congestion is random and it takes time to collect congestion data. Appendix 1 provides more information about the likely impact of CVC congestion on average download speeds.

Q7. What arrangements can RSPs implement to minimise the impact where an individual service will not meet the represented retail product specification that is generally available to users of the service? Are the consumers of these services offered the opportunity to exit their contracts without penalty?

Response

If the VDSL2 access line speed is below **nbn**TM's stated access line speed of 25 Mbps (or 12 Mbps during coexistence with ADSL services), the following steps need to be considered:

- The cause of the degradation needs to be determined and any customer premises issues need to be fixed by the customer.
- The service provider or customer may need to do a professional installation of a central filter or central connection from the NBP (Network Boundary Point) to the Gateway via Cat 5 or 6 cables.
- **nbn**TM may need to perform an assurance check on the access line and possibly the customer premises to rectify any cabling and/or interference issues.

In the case of any service (whether it be the **nbn**TM network or legacy) experiencing low speed in the busy period it is not sufficient to only check for network congestion. The required response may include an assessment by the service provider, in cooperation with the customer, to isolate the cause of the problem including investigating the home network data usage, Wi-Fi problems, packet loss issues, etc.

Telstra currently does not offer service commitments on our consumer grade broadband services. If the line loss is greater than a certain level we will not provide an ADSL service, but otherwise our consumer grade broadband services are offered on a best endeavours basis. We also offer the customer an alternative HFC service (if available) or a mobile broadband service. We are of course conscious of our obligations under the Australian Consumer Law and the Telecommunications Consumer Protection Code, as well as our contractual obligations to customers under Our Customer Terms, and do take these matters into account when dealing with customer issues on a case by case basis.

05 ISSUE 2 – Presentation of speed information to consumers

5.1. Speed information is variable

The current ACCC guidance on speed claims needs to be updated. It needs to provide more flexibility for RSPs to make speed representations while also setting appropriate expectations for customers.

The ACCC's guidance on speed claims articulates the ACCC's approach to the enforcement of speed claims relating to HFC and Fibre networks. It states that attractive headline claims should not be made unless experienced by a customer and supported by real world evidence and should not be overly qualified by fine print.

While the ACCC may be suggesting that end users are possibly misled by advertising headline speeds, there seems to be an underlying assumption that a simple message about actual performance can be provided to end users. That is despite the actual behaviour and outcomes being extremely variable and difficult to describe without statistical constructs.

Service providers to date have therefore often avoided listing a speed in marketing headlines and are instead, as Telstra is doing, talking about service speed expectations with individual customers where the variables can be better understood and explained.

For ADSL2+ or VDSL2 products it is not possible to make universal headline statements about speeds because there is the strong dependence of access line speed on both the distance from the DSLAM and the electromagnetic interference environment in the customer premises. Instead, we provide our retail and wholesale customers with information about the 10th to 90th percentile speed range that they can expect to achieve for a specific customer address.

It should also be noted that RSPs are not the only entities talking with consumers about speed. Promotion of the **nbn**TM network has included much discussion about minimum speed commitments. The **nbn**TM network has also been described and is being advertised as being designed to provide a dramatically superior experience for customers. Similarly, content providers, like Netflix and Google are providing comparative speed information. This all contributes to setting increased customer expectations without explaining what the numbers really mean for customers.

Q1. What are the impediments to RSPs making more meaningful speeds information available to consumers, including the speeds that the RSP's retail products support on fixed services during peak periods?

Response

Our focus is on the customer experience and speed is only one factor affecting a customer's broadband experience. There are many factors that can affect "speed" as explained earlier in our submission.

We make ADSL access line speed predictions (necessarily within a wide range) available to customers before and after they apply for a service. However the busy hour speeds vary so widely that it is difficult to report such statistical outcomes in a way that is understandable by most end users. The variable nature of ADSL services means that any aggregate view presented to customers based on a geographic areas, such as an exchange area, will not necessarily be an accurate representation of the speeds that individual customers within that area will receive during busy-periods.

We do not make **nbn**TM network access line speed predictions due largely to the lack of persistent and consistent data to support such predictions. We do expect this to change however as we serve more customers using the **nbn**TM network and acquire more data about the performance of our **nbn**TM network services.

Q2. Do RSPs consider they need additional information/support from access network owners/operators to effectively communicate broadband speed information to consumers?**Response**

In the short term it would be helpful if access network operators make service qualification data available at that time a service request is lodged. In the longer term service providers will build up their own data points to support their own marketing and promotion ambitions. Telstra has already taken steps to provide ADSL retail and wholesale customers with estimates of ADSL speeds based on the distance of customers from DSLAMs.

Q3. What aspects of the RSP service should be the basis of performance and speed claims? For instance, should RSP claims be limited to the service delivered into the premise (excluding in building networks operated by the end-user)? Should claims be based on the performance of actual end-user services and/or on network testing performed using domestic/international test servers?**Response**

The most accurate and feasible representation of end-user speeds would be the experience delivered to the customer premises. However, while this is the most accurate representation of the end user experience, it must be noted that there are multiple factors which affect the speeds which can be delivered to the gateway, not just the busy hour performance at a network level.

We observe that many reported “faults” turn out to be degradations in the customer premises that are beyond our direct control. This includes home network and computer issues, home network congestion, interference issues and cabling/connector faults. We attempt to locate the problem and correct any network faults as part of our assurance processes. When the problem is within the customer premises we will assist the retail customer. However some interference problems in the customer premises (e.g., where an interfering electromagnetic source is located within neighbouring premises) are difficult to rectify.

In relation to international services, a large number of international servers would need to be used to fairly compare service provider’s provisioning on international routes.

Q4. How could impediments be overcome so that consumers will receive meaningful speeds information?**Response**

Given the difficulty, as outlined in Section 2, in presenting statistical download speeds with wide variance, and their inapplicability to video streaming viability, it may be more appropriate to:

- Advertise headline speeds or speed tiers when referring to **nbn**TM network services;
- Advertise support for certain types of applications that customers use (e.g. HD video streaming); and
- Complement the basic information with detailed industry-based educational material covering relative performance of various technologies, speed tiers and those geographical and home network factors that impact on speed.

Q5. Could a standard product disclosure template or similar information tool assist RSPs to present information? If so, what sort of information should be included in the template so that it is comparable by consumers?**Response**

We would like to understand this proposal better. We already have a Critical Information Summary (CIS) that is intended to provide customers with the key information they require about the service they are purchasing. If ‘speed’ is a key feature of a service this can be accommodated within the CIS, noting that service providers must be judicious about the information to be included in the CIS given it is, for good reason, restricted to two pages. However ‘speed’ will not always be a key feature and always requiring

'speed' information in addition to the CIS could potentially lead to unintended consequences. For example, specific and persistent comparative speed data could crowd out other features that differentiate competitors.

It should also be noted that a standard product disclosure template, like the one adopted by the FCC, is not going to achieve a consistent approach across the broader industry. If focussed on service providers it would miss other influencers of consumers like wholesale providers, **nbn**TM, government, and content service providers like Netflix who are also creating their own speed indexes and expectations.

Oversimplified reporting of a single speed index would not provide consumers with confidence that their specific requirements and applications could be adequately supported.

Q6. Which performance measures would be most appropriate for the provision of more accurate performance information to consumers? Should 'speed' remain the focus, or should the approach be broadened to include other measurable performance factors?

Response

As already explained in Section 2, other factors such as latency, packet loss and congestion can affect different applications in different ways. Further, these effects can be very transient in nature. We recommend against trying to report other performance measures, as they could easily create false impressions about the performance of an otherwise workable service. Although speed is an imperfect representation of performance, and difficult to represent, at the moment it is used as a proxy of performance by many consumers. However when used, it needs to be supported by explanatory information to set appropriate expectations.

Q7. What strategies could be adopted to ensure any changes to the way that RSPs present speeds information to consumer are implemented at the same time?

Response

Updated guidance in the form of the proposed industry Guideline, and the establishment of the Communications Alliance broadband performance portal for consumers, would be helpful for promoting an industry wide improvement in the way that information about broadband speeds is presented to consumers.

06 ISSUE 3 – Peak period demand

6.1. Peak period demand is always variable

It is not practical, nor possible to provide accurate speed information for peak demand periods.

The variability in broadband demand that causes speed fluctuations is fundamental to the internet and cannot be avoided. It is similar to driving on a freeway during the peak period where the speed will vary while driving. The maximum speed on a busy metropolitan highway might be 100 km/hr but during morning and evening peak periods it is highly variable and might range anywhere between 10 km/hr and 100 km/hr during this period. Most road users get to their destination in an acceptable time based on their average speed. This is why streaming video services need to use large buffers of the order of minutes to cope with the speed fluctuations. Even with such buffers, speed fluctuation on longer timescales can still lead to video re-buffering and/or video quality reduction.

The graph below is an example of how the speed reduces during busy periods for a 20 Mbps ADSL2+ service, both before and after network capacity is upgraded. More information is provided in Appendix 1.

[CIC begins]

[CIC ends]

Downloading a file is like driving in peak hour traffic because only the average speed matters. But streaming video requires a different measure because the video streaming rate must be available at all times in order to play the video without breaks in the presentation. That places the useful video speed at the lowest speeds in the above graph at peak times. Streaming video services need to use large buffers of the order of minutes to partially average out the speed fluctuations and achieve rates that are somewhat higher than the minimum speed. Even with such buffers, speed fluctuation on longer timescales can still lead to video re-buffering and/or video quality reduction, unless the backhaul channels are dimensioned to support downloading at several times the video streaming rate.

Looking at day 40 which represents a fairly congested (but not saturated) link, the average speed in the evening busy time is around 12 Mbps, but with very wide variations from 3 to 20 Mbps, while the video streaming speed that could be supported without interruptions or speed reductions would only be about 4 Mbps.

Q1. Do RSPs design and manage their networks and fixed services to deliver the same service performance and speeds during both peak and off peak periods? Does this differ by service/plan?

Response

No. To dimension any network to not have congestion during busy hours would be a highly inefficient use of resources, resulting in vastly underutilised infrastructure for the majority of the day. Such an approach would significantly increase costs to deliver services and inevitably be passed on to consumers in the form of higher retail prices.

Q2. Do RSPs provide information to consumers about whether their services are likely to be impacted during peak periods? What representations are made to consumers in this regard?

Response

We don't currently make specific claims about broadband performance during busy periods but we do provide [advice to](#) explain that performance may be reduced during these periods.

Q3. What tools are available to RSPs to monitor their services during peak periods? Do these tools and associated information provide a sound basis for RSPs to make reliable representations

to consumers about the performance of their services during peak and off peak periods respectively?***Response***

We monitor the half hour average utilisations of each backhaul and core network channel and can infer busy hour performance of services at different access line speeds from the monitoring data. These performance levels are verified at a few locations using access network robots. However, these robots are not the primary triggers for channel capacity upgrades because they cannot identify which part of the network is congested. We perform capacity upgrades when utilisation thresholds exceed the set design target.

Q4. How do RSPs manage complaints and enquiries from consumers about peak speed problems?***Response***

Speed related complaints are managed through our standard front of house process for managing complaints from customers. Issues related to peak speed are escalated to a higher level of support. First, we check for any home issues such as electromagnetic interference causing line errors, or for excessive usage within the home. If the matter is still not resolved it is escalated to our Network Planning team for further investigation.

At an aggregate level we track all network assurance indicators, including complaints, to ensure we are maintaining the correct level of performance across the network. Volume changes which result in congestion issues are addressed by implementing network relief measures within our capacity planning process.

07 ISSUE 4 – Premium speed products

7.1. All product tiers are affected during peak periods

We do not prioritise data services but ensure that there is an acceptable level of speed performance across all broadband users to ensure acceptable fairness across all speed tiers. All speed product tiers are affected in a similar way during busy periods.

The graph below illustrates the measured speeds during busy times on 100 Mbps and 25 Mbps AVCs that shared the same heavily congested CVC before it was upgraded. The round robin⁷ scheduling weightings that were applied to the traffic in this case resulted in roughly the same percentage reduction for each service. Service providers may choose to use different weightings to produce different outcomes.

More information is provided in Appendix 2. **[CIC begins]** **[CIC ends]**

Q1. Is it possible for RSPs to distinguish traffic on their fixed networks to prioritise premium speed services or otherwise differentiate service levels by service/plan type, particularly during busy hours?

Response

We do not prioritise data services because such absolute priority can severely degrade lower priority content if the higher priority content uses most of the capacity. However priority is applied to VoIP services because of their sensitivity to delay; such prioritisation has minimal impact on other services because the VoIP traffic is low speed and typically only requires a small fraction of the total capacity available.

We ensure graceful degradation of all services during busy hour congestion by applying higher round robin sharing weightings to higher speed services to ensure that they are not unduly degraded.

Modem vendors and service providers also prioritise some upstream traffic (e.g. VoIP, TCP acknowledgements) to ensure it is not delayed by large uploads.

Q2. What tools do RSPs use to ensure consumers who sign up for premium speed services receive a higher speed as a consequence of paying for a more expensive service?

Response

We do not sell premium plans. A customer who is on a higher speed product receives proportionally more speed during busy periods. (See our response to Question 1 above.)

Q3. Do RSPs have measures in place to ensure that consumers are not encouraged to take up more expensive services (to address network congestion problems on basic services) if the premium service will also be affected by network congestion problems?

Response

No. We offer speed boosts for a fee on our own HFC network and for services we supply using nbn™ network FTTP services. We dimension the network capacity of both services to ensure an acceptable performance during busy periods. Telstra's congestion management strategies maintain higher speed for speed boost customers.

⁷ Round robin process applies weightings to different downstream data.

08 ISSUE 5 – Prioritisation of network traffic

8.1. Network traffic is not prioritised

We do not prioritise traffic based services (except for VoIP), classes or applications.

Q1. Do RSPs currently prioritise certain network traffic on fixed broadband services? If so, how is network prioritisation communicated to consumers?

Response

No. We do not currently prioritise data traffic for consumer broadband services. Voice traffic using VoIP is managed to ensure we meet minimum performance requirements and regulatory obligations. Modems in customer premises may prioritise VoIP over other traffic from the same customer.

There is no need to communicate this prioritisation to customers as VoIP has minimal impact on the performance of other services.

Q2. How do RSPs manage and monitor the performance of their services in respect of delivering prioritised applications and other applications respectively?

Response

See our response to Q1 above.

Q3. Would there be any practical impediments to RSPs disclosing to consumers whether they prioritise traffic for certain applications? Is it possible for RSPs to disclose the resulting service quality experienced by users of prioritised applications and how this compares to service performance more generally?

Response

See our response to Q1 above.

Q4. Is information made available by applications service providers a reliable basis for consumers interested in those applications to make broadband purchase decisions more generally?

Response

No. Factors such as the performance of customer devices, the proportion of customers subscribing to higher performance services from RSPs, and a single national metric, means the information will only be of marginally relevance to an individual customer making a decision about which RSP to buy services from. Individual customers cannot rely on these ratings to determine if a specific broadband service will support the application they wish to use in their area. Such measures are typically not granular enough to factor in a specific end user's circumstances.

These measures also suffer from biases because they don't sample and compare "like for like" (e.g. ADSL and HFC) and in some cases don't measure real performance. For example, the Netflix speed measure is an average that is biased towards those providers with higher access line speeds on their networks. The Netflix IPTV index is not a direct speed measure because customers can manage their speeds to control overall broadband usage from their service providers that do not include Netflix as free content.

09 ISSUE 6 – Data intensive applications and services

9.1. Traffic forecasting is done at a macro level

A wide range of local and global information is used to forecast traffic data growth, including market forecasts for known “data intensive applications”. Our network planning and implementation process identifies when a link reaches a predefined upgrade threshold and triggers a program to schedule the installation of additional capacity.

The performance of our fixed broadband and mobile services is assessed by their aggregate performance, and not by the performance of any single application.

We target 12 monthly cycles of network upgrades (in line with the financial years). We would only attempt to monitor the performance of a specific application if we had reason to believe it posed a risk to general user performance or the overall health or capacity of our network.

Q1. How do RSPs currently plan for and present consumer information about new data intensive applications and services for fixed broadband services?

Response

We forecast traffic growth at a macro level. Information on underlying drivers for that traffic growth, such as data intensive applications, is used to build up that forecast. This supports our overall plan, but at the network planning level upgrades are made as each link reaches the upgrade threshold.

Q2. How is service performance for new data intensive applications monitored?

Response

We work closely with content providers such as Google, Akamai, and Netflix to understand the impact of new applications and growth of their traffic. However, this is about monitoring traffic volume rather than performance.

We have analytics capability to monitor traffic from different applications to provide an understanding of customer and industry trends. When we have limited visibility of new applications (such as Pokemon Go and Olympics applications) we undertake ad-hoc investigations to understand the impact.

In general if the application provider works with us we can work to develop a plan to jointly manage the impact. Our primary objective is to provide our customers with the best experience across all applications and from all geographic locations.

Q3. How quickly can RSPs respond to changes in demand when this places pressure on network capacity? How is information about this and any limitations on service performance best communicated to consumers, both upfront and during the life of a retail contract?

Response

Our timeframe for responding to pressure on the network depends on where the congestion occurs.

We forecast traffic increases and have network planning processes in place to ensure timely upgrades.

Upgrades are usually performed within a period of 3 to 12 months, depending on a number of factors such as if core capacity is available, it involves legacy technology or if major network upgrade is required. All upgrades are still subject to normal investment planning priorities.

Q4. How do RSPs currently respond to complaints about short term capacity issues where these are related to data intensive applications? Are there any steps that could be taken to improve these practices for future events?

To manage any short term capacity issues we employ industry best practice traffic⁸ management techniques to ensure all customers across all traffic types receive acceptable service levels.

As explained above, if traffic “special events” are anticipated, we may decide to work with the content provider to better integrate this demand into our longer term capacity planning process. However if the content provider does not provide a reliable forecast then this limits our ability to respond in a proactive manner. In these cases our engineering team will review the situation and respond with tactical solutions to increase capacity while longer term capacity projects are put in place as needed. Our objective is to always maintain the appropriate service levels.

⁸ Based on ITU E.490 – E.505 Measurement and recording of traffic

010 ISSUE 7 – Managing isolated cases of poor service performance

Q1. What thresholds would provide a reasonable basis for performance claims that RSPs use in their marketing materials for fixed broadband services?

Response

We use both the Communications Alliance ADSL2+ benchmarks⁹ and the 10th percentile of speed at the given attenuation from the DSLAM as thresholds for assuring ADSL2+ access line speed. As previously explained it is difficult to make precise performance claims for ADSL2+ access line speeds when the 10th to 90th percentile range of speeds is so large. This is used to set customer expectation when they request an ADSL service.

Q2. What measures could RSPs reasonably implement to minimise the impact on consumers should their service not meet the represented retail product specification?

Response

We use assurance processes that identify ADSL services that are degraded below the expected speed thresholds and repair those services to the best of our ability. However degradations due to customer premises factors outside our control mean that not all services can be repaired to the levels sought by the customers.

Q3. What factors should the ACCC consider in determining a level of response to individual instances of broadband services failing to meet the advertised level of performance?

Response

We think the ACCC should consider the steps an RSP has taken to rectify any problem. As explained in our earlier responses, Telstra has established processes and self-help tools to address performance problems that customers may encounter with their broadband services. There are many factors that can impact the performance of a broadband service and RSPs, who have the expertise, should be given adequate opportunity to resolve the customer's concerns.

⁹ Communications Alliance Code C559:2012 Unconditioned Local Loop Service (ULLS) Network Deployment

011 ISSUE 8 – Mobile broadband speeds and representations

11.1. Mobile broadband services

We believe that no further specific guidance is required for mobile broadband services. Wide variations in speed performance are understood by mobile customers. There are at least two independent public reports on mobile services in Australia. These reports show how mobile speeds in Australia are already world class and continuing to improve. There is no evidence of recent increases in the reporting of difficulties with mobile broadband speed related claims. Generally mobile customers know their speed will vary depending on their local environment.

We are already providing advice to consumers on typical real world speed ranges our customers can expect for different services and areas – for example, on our 4GX service, typical download speeds with Cat 4 devices are in the range 2 to 75Mbps. These speed ranges are advertised for specific devices and for the various coverage layers that we show in online maps.

It is important to realise and acknowledge (as we do on our web-pages and online mapping) that there are additional factors which impact wireless speeds compared to fixed broadband, including the motion of customers and their devices. This is why mobile speeds are even more variable and difficult to predict than fixed broadband speeds.

APPENDIX 1: Variability of measured ADSL2+ download speeds

[CIC begins]

[CIC ends]

APPENDIX 2: Variability of nbn™ network (100 Mbps & 25 Mbps) download speeds in busy hours

[CIC begins]

[CIC ends]

APPENDIX 3: Variability of ADSL2+ access line speed

This Appendix provides information about the wide variability of ADSL access line speeds, highlighting the difficulty of predicting the speed of an end user's line, which is the main determining factor for overall ADSL speed for most end users.

The plot below in Figure C1 shows the 10th and 90th percentiles of the ADSL2+ access line speeds across Telstra's network of wholesale and retail services, as a function of service qualification attenuation which is the best line length based predictor of speed. Because the line and customer premises conditions experienced by other providers are similar, the outcomes would be similar. Note that 60 dB is Telstra's service qualification limit, corresponding to about 4 to 5 km of 0.4 mm copper pair cable. When a customer orders a service, Telstra looks up the cable data for the customer's line and calculates the SQ Loss, from which it obtains the range of speeds. The speeds quoted are the maximum throughput of the line which is 85% of the actual ADSL data rate (after allowing 15% for overhead data).

It is clear from this plot that providing the consumer with the average or median speed values is not adequate as many services with the same attenuation (or loss) fall well below that speed. Such unpredictability requires a range to be quoted, and even with the 10th to 90th percentile range quoted by Telstra there are still many services below the lower bound. **[CIC begins]** **[CIC ends]**

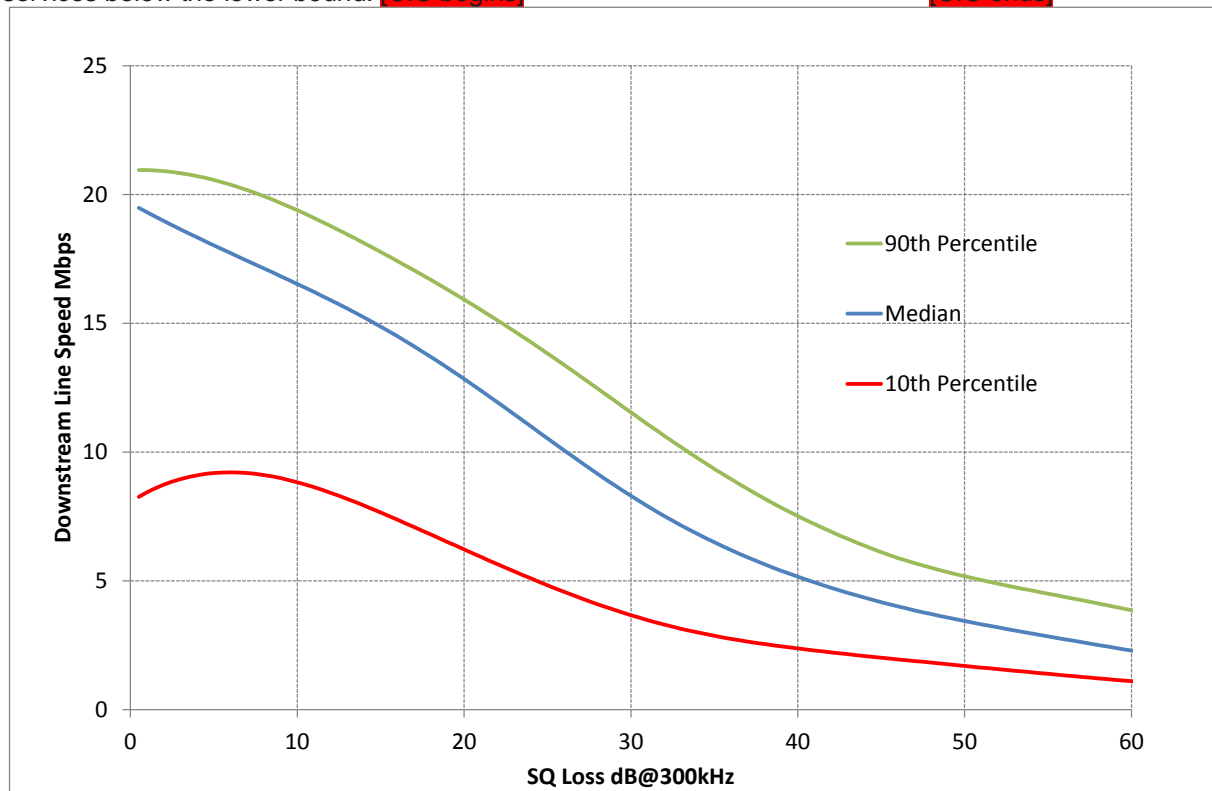


Fig C1. Network wide ADSL2+ speeds are fairly evenly distributed between 1 and 20 Mbps. It is clear that a significant proportion of all services are below 5 Mbps.

APPENDIX 4: Abbreviations

ACCC	Australian Competition and Consumer Commission
ACMA	Australian Communications and Media Authority
ADSL	Asymmetric Digital Subscriber Line
ADSL2+	Asymmetric Digital Subscriber Line extended capability to ADSL
AVC	Access Virtual Circuit
CA	Communications Alliance
CVC	Connectivity Virtual Circuit
DSL	Digital Subscriber Line
DSLAM	Digital Subscriber Line Access Multiplexer
FTTN	Fibre To The Node
FTTP	Fibre To The Premises
HD	High Definition
HFC	Hybrid Fibre Coax
IPTV	Internet Protocol Television
NGN	Next generation networks
Ofcom	Office of Communications (UK Communications Regulator)
RSP	Retail service provider
SD	Standard Definition
SVOD	Subscription Video On Demand
TC1	Traffic Class 1
TCP	Transmission Control Protocol
VDSL2	Very-high-bit-rate Digital Subscriber Line