



MEASURING
BROADBAND
AUSTRALIA

Initial Findings Report, March 2018

In 2017, the Australian Competition and Consumer Commission (ACCC) appointed SamKnows to launch a project to measure internet performance. The program, named Measuring Broadband Australia, gives internet users in Australia access to SamKnows Whiteboxes to measure quality of experience for fixed-line internet.

This first report provides an overview of the initial findings from the data collected during the early stages of the project. The goal of Measuring Broadband Australia is to increase transparency, and encourage greater performance-based competition and better internet performance throughout the country.

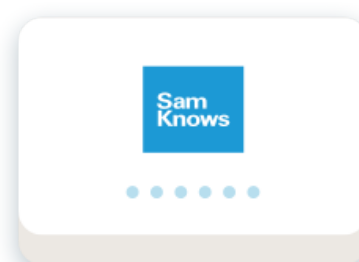
SamKnows One Analytics

- ◆ View all your data in one place.
- ◆ Create customised charts and save the results that mean the most to you.
- ◆ Track changes in your connection over time.



Measuring from homes across Australia







- ◆ The SamKnows Whitebox is a purpose-built testing agent that connects to your router.
- ◆ Measures every aspect of your internet service delivered to your home.
- ◆ Runs at regular intervals when you're not using the internet.



[Volunteer today!](#)

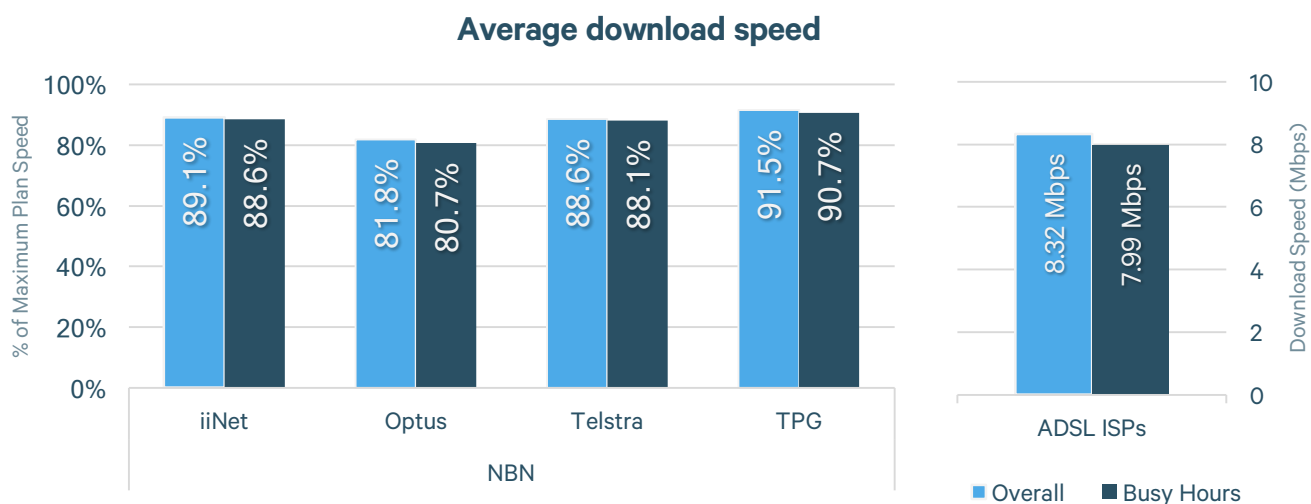
Test Packages

We're running a bunch of tests and look to add more in the future. See below to find out more!

Tests	Definitions
 Download	The speed at which data can be transferred from the SamKnows test server to your computer, measured in megabits per second (Mbps). We also measure the percentage of the maximum plan download speed achieved. For example, a busy hour speed measure of 90% means that an ISP with maximum 100 Mbps speed Plans is supplying an average speed of around 90 Mbps in the evening busy hours. For its 50 Mbps plans, it is supplying around 45 Mbps, and for 25 Mbps plans it is supplying around 22.5 Mbps.
 Upload	The speed at which information is transferred from your computer to the SamKnows test server, measured in megabits per second (Mbps).
 Latency	How long it takes a data packet to go from your device to our test server and back to your device. The shorter the latency, the better.
 Jitter	Jitter is the variation in the delay of received packets, essentially its a measure of the stability of your latency.
 Packet Loss	Packet loss is the number of packets that are sent over a network that don't make it to their destination, measured as a percentage of packets lost out of all packets sent.
 DNS	The Domain Name System (DNS) connects the website address to the actual website.
 Website load	The time it takes for a specific website to fully load. This is a combination test that includes download, latency and DNS in one test that accurately mimics real-world usage.

Initial findings

4th Feb 2018 – 5th March 2018



ISPs on NBN fixed-line¹ delivered download speeds that ranged from 80% to almost 92% of their maximum plan speed, whilst users on ADSL saw average download speeds of 8.3Mbps.

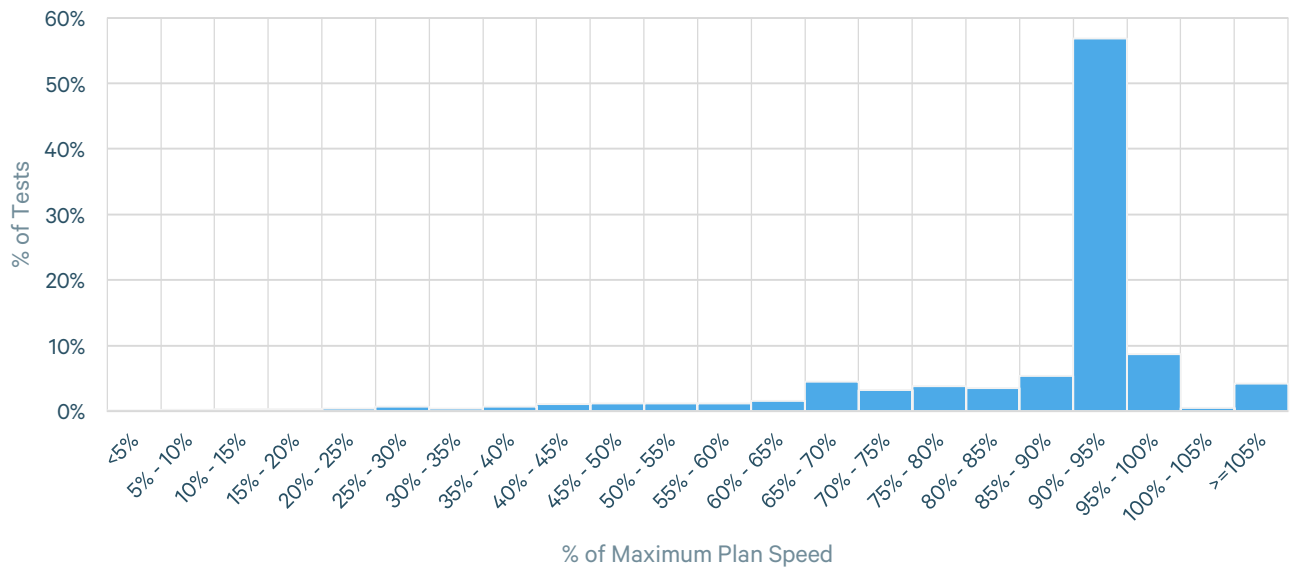
A busy hour speed measure of 90% means that, for example, an ISP with maximum 100Mbps speed plans is supplying an average speed of around 90Mbps in the evening busy hours. For its 50Mbps plans, it is supplying around 45Mbps, and for 25Mbps plans it is supplying around 22.5Mbps.

Slowdowns during busy hours (7pm to 11pm) were negligible across all NBN fixed-line ISPs (reaching at most 1.1%), although ADSL services saw a more pronounced drop.

The mix of NBN products in the sample did not materially affect results as download speed test results across the different products were relatively consistent. This can be seen later in the hourly download and upload charts, which are broken down by NBN product.

¹ All charts refer to NBN 25/5 and above.

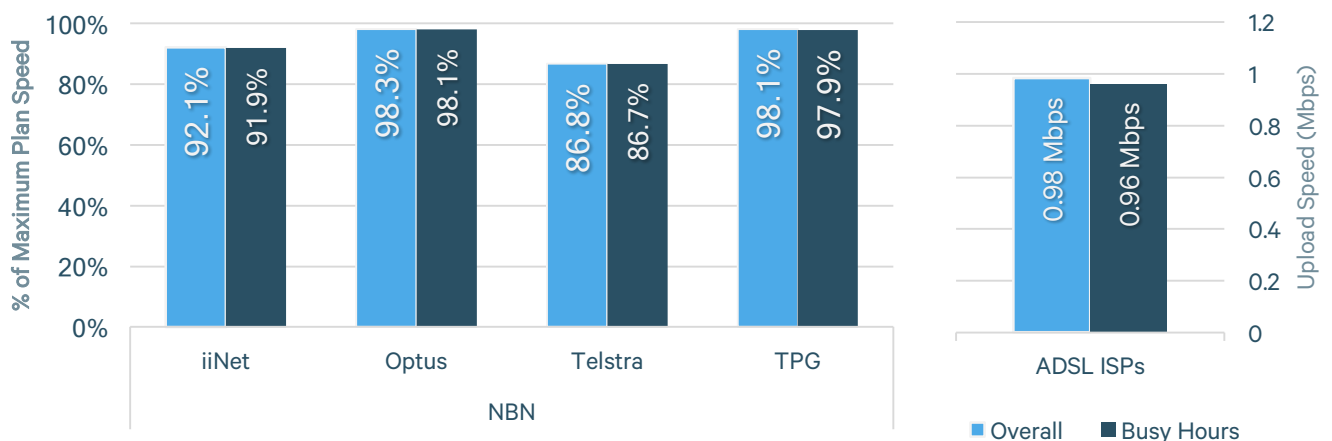
Average NBN download speeds attained during tests



Over 61,000 download speed tests were performed across Whiteboxes connected to the NBN network, with over 70% of tests achieving over 90% of maximum plan speeds. However, a minority of tests (5%) failed to reach at least 50% of maximum plan speeds.

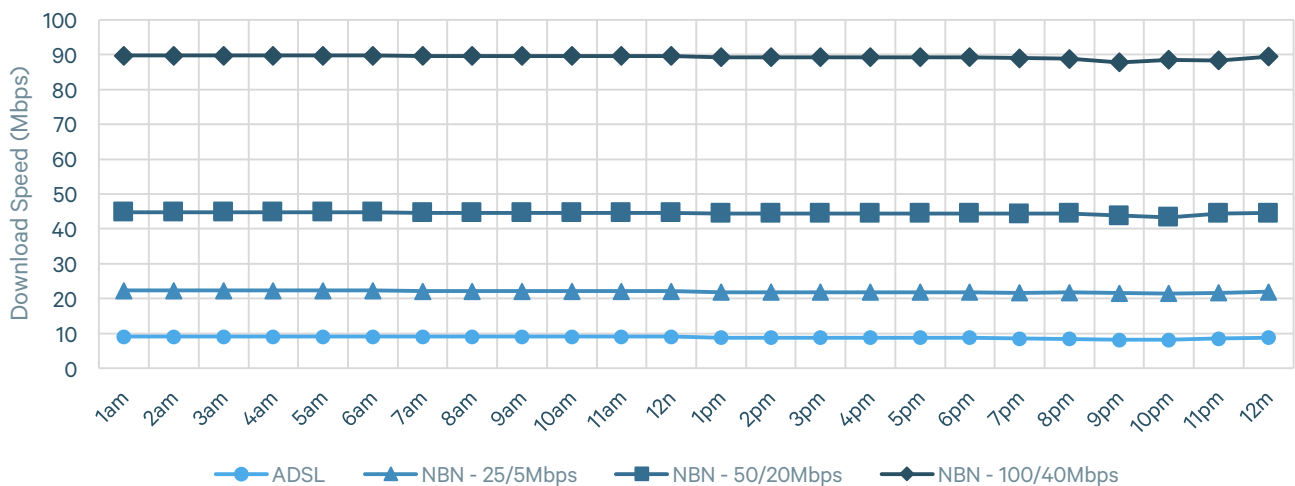
These results are based on tests conducted throughout the day and across ISPs. The poorer performance on services not meeting 50% of the maximum plan speed is likely being caused by limitations in the access network, rather than congestion during the busy hours and ISPs' provisioning of their networks. We will likely explore this further in future reports.

Average upload speed



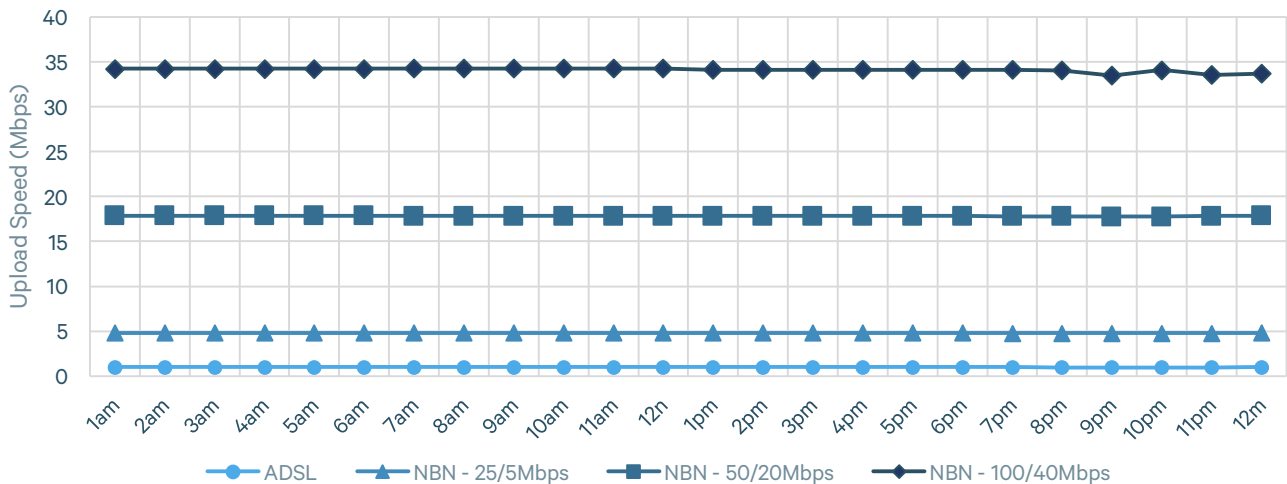
Upload speeds performed well across both the NBN fixed-line, where users experienced, on average, between 86% and 98% of their maximum plan speeds, whilst average uploads of just under 1Mbps were recorded for users on ADSL connections. The effect of network congestion during the busiest hours of the day was very low.

Average hourly download speeds – ADSL and NBN products



Download speeds were generally very steady throughout the day across all speed tiers, with only minor decreases, of limited effect, to users between the hours of 9pm and 11pm.

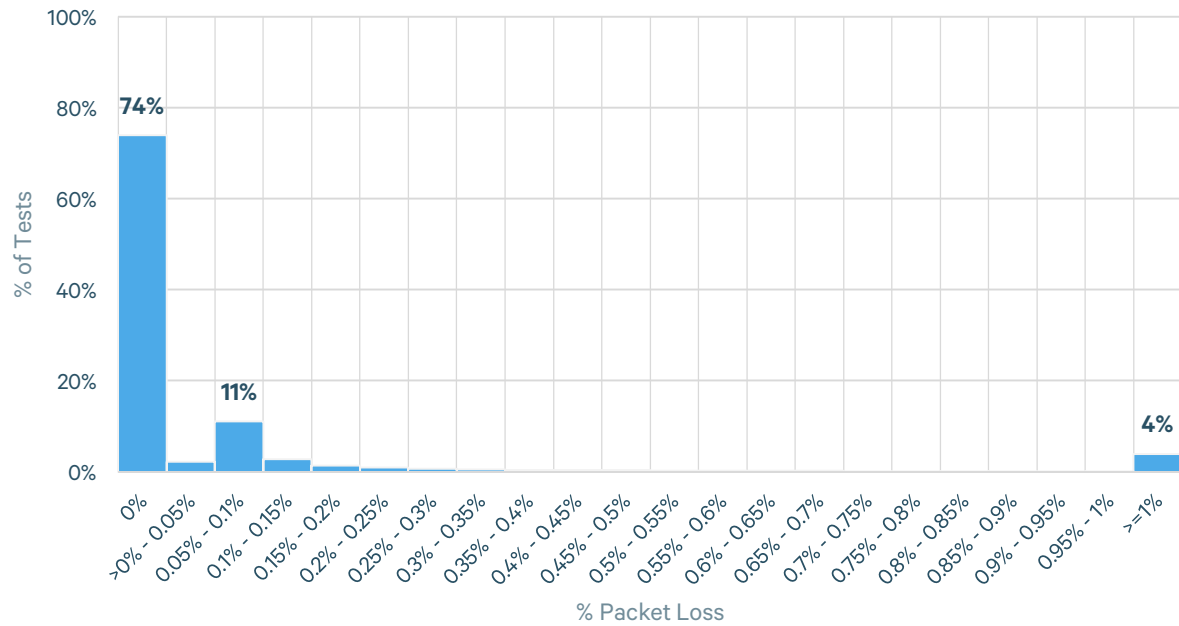
Average hourly upload speeds – ADSL and NBN products



Similar to download speeds, upload speeds were very steady throughout the day. Users on a NBN fixed-line 100/40Mbps product experienced a slight decrease in average performance after 9pm, but the effect would have been negligible for any common internet application available today.

The upload speed tests showed that the product mix can influence test results. Upload performance was highest for 25/5 products and lowest for 100/40 products in percentage terms.

Frequency of packet loss – ADSL and NBN fixed-line products



The chart above shows the percentage of tests performed in which packet loss met a given range. In 74% of the over 218,000 tests performed, no packet loss was recorded; users would have had an optimal web-browsing experience. In 11% of tests, packet loss was between 0.05-0.1% - a level low enough to have no effect on the user's experience. However, 4% of tests also crossed the 1% packet loss threshold at which users might see failures when loading websites or videos.

If we were to split these results by ADSL and NBN fixed-line, we would see that ADSL services saw 6.4% of tests exceed 1% packet loss, whilst NBN only saw 3.4% of tests exceed 1% packet loss.