

Measuring Broadband Australia Program



Report 23 Appendix, December 2023

Report 23 is based on data measurements taken from 1 to 30 September 2023.

NBN fixed-line services tables

NBN video streaming tables

The following tables show information on the proportion of NBN services on the main NBN fixed-line plans which would be able to reliably stream (with a low chance of stopping and starting) a varying number of videos from Netflix simultaneously during busy hours. Data from underperforming and impaired services is included.

A Full High Definition stream from Netflix takes up around 5 Mbps data rate on average. For consumers with premium Ultra High Definition (4K) video stream, an Ultra High Definition stream from Netflix takes up 15 Mbps data rate on average. The actual data rate will vary during video streaming: for example Netflix would use a higher data rate during a fast-paced action scene. The actual data rate will also depend on how many other users are using Netflix.

The Whitebox measures the total downstream data rate available from Netflix's servers. Therefore, by using multiples of 5 Mbps (for Full High Definition) and 15 Mbps (for Ultra High Definition) it allows us to infer whether a NBN fixed-line service would be able to support different numbers of simultaneous streams. This assumes no other use of the connection at the time, i.e. that Netflix is the only application running.

By plan download speed

Download plan	1 FHD (5 Mbps)	2 FHD (10 Mbps)	3 FHD (15 Mbps)	4 FHD (20 Mbps)	5 FHD (25 Mbps)	Panel size
NBN25	100%	97%	96%	92%	72%	97
NBN50	100%	100%	100%	98%	96%	546
NBN100	100%	100%	100%	100%	99%	492
Download plan	1 UHD (15 Mbps)	2 UHD (30 Mbps)	3 UHD (45 Mbps)	4 UHD (60 Mbps)	5 UHD (75 Mbps)	Panel size
NBN25	96%	0%	0%	0%	0%	97
NBN50	100%	93%	76%	0%	0%	546
NBN100	100%	99%	96%	93%	86%	492

By RSP¹

RSP	Download plan	1 UHD	2 UHD	3 UHD	4 UHD	Panel size
Aussie Broadband	50	100%	97%	75%	0%	60
Dodo & iPrimus	50	100%	97%	80%	0%	69
Exetel	50	100%	93%	79%	0%	42
iiNet	50	100%	93%	73%	0%	59
Optus	50	100%	99%	82%	0%	67
Telstra	50	100%	99%	82%	0%	72
TPG	50	100%	97%	87%	0%	62
RSP	Download plan	1 UHD	2 UHD	3 UHD	4 UHD	Panel size
Aussie Broadband	100	100%	100%	99%	95%	77
Exetel	100	100%	93%	90%	85%	86
Optus	100	100%	100%	100%	96%	46
Telstra	100	100%	100%	99%	97%	69
Superloop	100	100%	100%	98%	97%	62

¹ These tables only show data for RSPs having at least 40 units on the respective download speed tier reporting measurements.

NBN RSP tables

The following tables show statistical information on download speeds, upload speeds, and outages for each RSP across all NBN plans, and for individual NBN plans in instances where at least 40 Whiteboxes reported successfully during the test period.

- The overall speed is the average speed (download or upload) for the RSP, measured as a percentage of plan speed.
- Standard deviation is a measure of how widely or narrowly test speeds are distributed in the data set.
- The 95% confidence interval is a range in which the 'true' average value is estimated to lie and is a function of the sample size (i.e. number of Whiteboxes online) and standard deviation.

If the standard deviation is larger then the confidence interval will be wider, reflecting greater variability in the underlying data. If the sample size is larger then the confidence interval will be narrower, reflecting more certainty in the underlying data.

For example: during testing, we measured an average download performance of 99.9% of plan speed for Dodo & iPrimus across all NBN plans with a 95% confidence interval of $\pm 2.2\%$. If we were to repeat our sampling 100 times, we expect that this average would fall between 97.7% and 102.1% in at least 95 cases.

Period	RSP	Download average % of plan speed (all hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
All hours	Aussie Broadband	98.9%	14.7%	96.7% - 101.0%	179	61,789
All hours	Dodo & iPrimus	99.9%	13.2%	97.7% - 102.1%	141	47,592
All hours	Exetel	102.7%	12.0%	100.9% - 104.5%	171	53,703
All hours	iiNet	98.6%	13.0%	96.1% - 101.1%	106	37,633
All hours	Launtel	105.8%	7.9%	103.6% - 107.9%	51	16,716
All hours	Optus	101.9%	12.3%	99.7% - 104.1%	123	42,743
All hours	Telstra	102.7%	11.7%	100.9% - 104.4%	169	62,034
All hours	TPG	99.1%	15.5%	96.3% - 101.9%	118	38,204
All hours	Superloop	98.2%	10.8%	96.1% - 100.2%	108	36,333
All hours	Vodafone	99.5%	10.8%	96.6% - 102.4%	52	18,599

Period	RSP	Download average % of plan speed (busy hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
Busy hours	Aussie Broadband	97.2%	16.5%	94.8% - 99.7%	178	10,657
Busy hours	Dodo & iPrimus	98.7%	13.5%	96.5% - 100.9%	140	8,208
Busy hours	Exetel	100.9%	12.1%	99.1% - 102.8%	171	9,045
Busy hours	iiNet	97.6%	13.1%	95.1% - 100.1%	106	6,370
Busy hours	Launtel	103.8%	8.7%	101.4% - 106.2%	51	2,875
Busy hours	Optus	100.6%	12.5%	98.4% - 102.8%	123	6,994
Busy hours	Telstra	101.0%	11.6%	99.2% - 102.8%	168	10,892
Busy hours	TPG	97.8%	15.9%	94.9% - 100.7%	118	6,493
Busy hours	Superloop	96.9%	10.8%	94.9% - 99.0%	108	6,005
Busy hours	Vodafone	98.1%	10.9%	95.1% - 101.0%	52	3,153

Period	RSP	Upload average % of plan speed (all hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
All hours	Aussie Broadband	85.9%	18.9%	83.1% - 88.6%	179	50,367
All hours	Dodo & iPrimus	88.9%	16.0%	86.3% - 91.5%	141	38,696
All hours	Exetel	92.1%	11.0%	90.4% - 93.7%	171	43,078
All hours	iiNet	84.9%	21.4%	80.8% - 89.0%	106	30,770
All hours	Launtel	91.0%	8.2%	88.8% - 93.3%	51	13,559
All hours	Optus	87.5%	14.7%	84.9% - 90.1%	123	35,024
All hours	Telstra	87.9%	15.0%	85.6% - 90.1%	169	50,352
All hours	TPG	86.6%	19.6%	83.0% - 90.1%	118	31,256
All hours	Superloop	88.3%	13.8%	85.7% - 90.9%	108	29,708
All hours	Vodafone	88.5%	16.2%	84.1% - 92.9%	52	15,215

Period	RSP	Upload average % of plan speed (busy hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
Busy hours	Aussie Broadband	85.4%	19.3%	82.5% - 88.2%	177	5,480
Busy hours	Dodo & iPrimus	88.7%	15.9%	86.1% - 91.3%	141	4,190
Busy hours	Exetel	91.6%	11.3%	89.9% - 93.3%	168	4,585
Busy hours	iiNet	84.8%	21.5%	80.7% - 88.9%	106	3,223
Busy hours	Launtel	90.7%	8.4%	88.4% - 93.0%	51	1,474
Busy hours	Optus	87.3%	14.8%	84.7% - 90.0%	123	3,563
Busy hours	Telstra	87.8%	14.9%	85.5% - 90.0%	168	5,556
Busy hours	TPG	86.4%	19.5%	82.9% - 89.9%	118	3,284
Busy hours	Superloop	87.9%	13.7%	85.3% - 90.4%	108	3,003
Busy hours	Vodafone	88.2%	16.1%	83.8% - 92.5%	52	1,596

Period	RSP	Download plan	Download average % of plan speed (all hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
All hours	Aussie Broadband	50	98.4%	14.6%	94.7% - 102.0%	60	20,752
All hours	Aussie Broadband	100	100.2%	12.9%	97.3% - 103.0%	79	27,132
All hours	Dodo & iPrimus	50	98.5%	14.4%	95.2% - 101.9%	70	24,334
All hours	Exetel	50	105.2%	8.2%	102.7% - 107.6%	43	14,233
All hours	Exetel	100	101.8%	11.9%	99.3% - 104.3%	87	26,234
All hours	iiNet	50	96.6%	15.9%	92.5% - 100.6%	59	21,306
All hours	Optus	50	102.4%	10.3%	99.9% - 104.9%	67	24,006
All hours	Optus	100	100.1%	15.4%	95.6% - 104.5%	46	15,196
All hours	Telstra	50	101.0%	14.0%	97.7% - 104.2%	73	26,540
All hours	Telstra	100	102.8%	10.7%	100.3% - 105.3%	70	25,335
All hours	TPG	50	101.6%	11.5%	98.7% - 104.4%	63	20,593
All hours	Superloop	100	98.4%	11.3%	95.6% - 101.2%	62	20,939

Period	RSP	Download plan	Download average % of plan speed (busy hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
Busy hours	Aussie Broadband	50	97.1%	14.6%	93.4% - 100.9%	60	3,489
Busy hours	Aussie Broadband	100	98.0%	17.0%	94.2% - 101.7%	79	4,710
Busy hours	Dodo & iPrimus	50	97.4%	14.6%	93.9% - 100.8%	69	4,190
Busy hours	Exetel	50	103.9%	8.7%	101.4% - 106.5%	43	2,471
Busy hours	Exetel	100	100.1%	12.1%	97.6% - 102.6%	87	4,317
Busy hours	iiNet	50	95.5%	15.9%	91.4% - 99.6%	59	3,563
Busy hours	Optus	50	101.0%	10.6%	98.5% - 103.6%	67	3,922
Busy hours	Optus	100	98.8%	15.6%	94.3% - 103.3%	46	2,484
Busy hours	Telstra	50	99.2%	14.0%	96.0% - 102.4%	73	4,625
Busy hours	Telstra	100	101.2%	10.4%	98.8% - 103.7%	69	4,410
Busy hours	TPG	50	100.5%	11.5%	97.6% - 103.3%	63	3,514
Busy hours	Superloop	100	97.2%	11.2%	94.4% - 100.0%	62	3,424

Period	RSP	Upload plan	Upload average % of plan speed (all hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
All hours	Aussie Broadband	20	86.7%	20.2%	82.9% - 90.4%	112	31,442
All hours	Dodo & iPrimus	20	87.4%	18.5%	83.7% - 91.1%	97	26,868
All hours	Exetel	20	92.3%	12.0%	89.9% - 94.7%	98	24,756
All hours	iiNet	20	80.8%	23.3%	75.3% - 86.3%	69	20,135
All hours	Optus	20	87.0%	16.3%	83.5% - 90.4%	86	25,218
All hours	Telstra	20	87.2%	16.0%	84.5% - 89.9%	136	40,251
All hours	TPG	20	85.6%	18.4%	81.7% - 89.5%	84	21,977
All hours	Superloop	20	86.2%	17.6%	81.5% - 90.9%	53	15,126
All hours	Vodafone	20	89.5%	13.8%	85.6% - 93.5%	47	13,571

Period	RSP	Upload plan	Upload average % of plan speed (busy hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
Busy hours	Aussie Broadband	20	86.2%	20.7%	82.4% - 90.1%	112	3,363
Busy hours	Dodo & iPrimus	20	87.2%	18.5%	83.5% - 90.9%	97	2,903
Busy hours	Exetel	20	92.0%	12.4%	89.5% - 94.4%	96	2,645
Busy hours	iiNet	20	80.6%	23.3%	75.1% - 86.1%	69	2,085
Busy hours	Optus	20	86.8%	16.4%	83.3% - 90.3%	86	2,554
Busy hours	Telstra	20	87.0%	15.9%	84.3% - 89.6%	136	4,424
Busy hours	TPG	20	85.4%	18.3%	81.5% - 89.3%	84	2,270
Busy hours	Superloop	20	85.9%	17.5%	81.2% - 90.6%	53	1,567
Busy hours	Vodafone	20	89.2%	13.7%	85.3% - 93.1%	47	1,402

RSP	Percentage of units having no outages	Percentage of units having outages at most every other day	Percentage of units having outages on most days	Percentage of units having outages at least once a day
Aussie Broadband	27.4%	61.5%	3.4%	7.8%
Dodo & iPrimus	17.0%	68.1%	7.1%	7.8%
Exetel	29.2%	62.6%	2.9%	5.3%
Launtel	13.7%	74.5%	3.9%	7.8%
Optus	30.1%	64.2%	4.9%	0.8%
Superloop	28.7%	63.0%	4.6%	3.7%
TPG	21.2%	66.1%	4.2%	8.5%
Telstra	32.5%	59.8%	6.5%	1.2%
Vodafone	23.1%	67.3%	3.8%	5.8%
iiNet	33.0%	58.5%	5.7%	2.8%

RSP	Percentage of outages lasting 30-60 sec	Percentage of outages lasting 1-3 min	Percentage of outages lasting 3-10 min	Percentage of outages lasting 10 min or more
Aussie Broadband	45.4%	25.1%	22.8%	6.8%
Dodo & iPrimus	25.1%	23.8%	40.3%	10.8%
Exetel	36.8%	26.0%	26.1%	11.1%
Launtel	49.6%	16.2%	22.7%	11.6%
Optus	25.6%	26.3%	29.2%	18.8%
Superloop	18.3%	26.9%	32.8%	21.9%
TPG	28.7%	23.8%	36.0%	11.6%
Telstra	16.5%	24.8%	26.8%	31.9%
Vodafone	18.7%	40.8%	19.3%	21.2%
iiNet	18.8%	14.0%	43.7%	23.6%

NBN plan tables

The following tables show statistical information on download and upload speeds for each NBN plan, including all tested RSPs.

Period	Download plan	Download average % of plan speed (all hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
All hours	25	102.9%	10.1%	100.9% - 104.9%	101	37,233
All hours	50	100.1%	13.0%	99.0% - 101.2%	552	194,263
All hours	100	99.7%	13.1%	98.6% - 100.9%	499	165,925
All hours	250	101.6%	13.0%	99.2% - 104.0%	113	36,192
Period	Download plan	Download average % of plan speed (busy hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
Busy hours	25	101.4%	11.1%	99.2% - 103.6%	100	6,588
Busy hours	50	98.7%	13.1%	97.6% - 99.8%	551	33,097
Busy hours	100	98.1%	13.9%	96.9% - 99.4%	498	27,835
Busy hours	250	99.3%	14.4%	96.6% - 101.9%	113	6,221

Period	Upload plan	Upload average % of plan speed (all hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
All hours	5	90.6%	15.1%	86.9% - 94.4%	62	19,094
All hours	20	87.1%	17.5%	86.0% - 88.3%	878	247,360
All hours	25	90.4%	8.9%	88.8% - 92.1%	109	28,172
All hours	40	89.9%	11.1%	88.3% - 91.6%	179	47,491
Period	Upload plan	Upload average % of plan speed (busy hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
Busy hours	5	90.4%	15.0%	86.7% - 94.2%	62	2,156
Busy hours	20	86.8%	17.6%	85.7% - 88.0%	876	26,154
Busy hours	25	90.1%	8.9%	88.5% - 91.8%	109	3,037
Busy hours	40	89.7%	11.2%	88.0% - 91.3%	177	4,974

NBN technology tables

The following tables show statistical information on download speeds, upload speeds, and outages on a per-technology basis.

Period	Technology	Download average % of plan speed (all hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
All hours	Fibre to the premises - FTTP	103.9%	9.1%	103.1% - 104.8%	444	147,390
All hours	Fibre to the curb - FTTC	102.2%	7.3%	100.8% - 103.7%	96	32,287
All hours	Hybrid fibre-coaxial - HFC	104.1%	7.6%	103.2% - 104.9%	312	106,664
All hours	Fibre to the node - FTTN	94.0%	16.9%	92.5% - 95.6%	461	162,680
Period	Technology	Download average % of plan speed (busy hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
Busy hours	Fibre to the premises - FTTP	102.3%	9.7%	101.4% - 103.2%	443	25,081
Busy hours	Fibre to the curb - FTTC	100.9%	7.8%	99.3% - 102.5%	96	5,440
Busy hours	Hybrid fibre-coaxial - HFC	102.2%	9.9%	101.1% - 103.3%	311	18,348
Busy hours	Fibre to the node - FTTN	92.7%	17.0%	91.2% - 94.3%	460	27,514
Period	Technology	Upload average % of plan speed (all hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
All hours	Fibre to the premises - FTTP	92.8%	8.6%	92.0% - 93.6%	444	119,916
All hours	Fibre to the curb - FTTC	91.5%	8.8%	89.7% - 93.2%	96	26,403
All hours	Hybrid fibre-coaxial - HFC	91.7%	6.4%	91.0% - 92.4%	312	87,081
All hours	Fibre to the node - FTTN	80.3%	23.1%	78.2% - 82.4%	461	132,131

Period	Technology	Upload average % of plan speed (busy hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
Busy hours	Fibre to the premises - FTTP	92.5%	8.8%	91.6% - 93.3%	443	12,796
Busy hours	Fibre to the curb - FTTC	91.3%	8.8%	89.6% - 93.1%	96	2,743
Busy hours	Hybrid fibre-coaxial - HFC	91.3%	6.6%	90.5% - 92.0%	308	9,338
Busy hours	Fibre to the node - FTTN	80.1%	23.1%	78.0% - 82.2%	460	13,931

Technology	Percentage of units having no outages	Percentage of units having outages at most every other day	Percentage of units having outages on most days	Percentage of units having outages at least once a day
Fibre to the curb - FTTC	25.0%	59.4%	3.1%	12.5%
Fibre to the node - FTTN	24.1%	61.8%	6.9%	7.2%
Fibre to the premises - FTTP	32.9%	59.5%	2.5%	5.2%
Hybrid fibre-coaxial - HFC	16.3%	72.1%	6.4%	5.1%

Technology	Percentage of outages lasting 30-60 sec	Percentage of outages lasting 1-3 min	Percentage of outages lasting 3-10 min	Percentage of outages lasting 10 min or more
Fibre to the curb - FTTC	44.5%	20.8%	27.3%	7.4%
Fibre to the node - FTTN	23.9%	24.8%	36.1%	15.1%
Fibre to the premises - FTTP	42.3%	32.0%	16.7%	9.0%
Hybrid fibre-coaxial - HFC	30.1%	31.0%	25.3%	13.6%

NBN state tables

This table shows statistical information on download speeds on a per-state basis. In this report, we have been able to draw upon all of the test results from a range of locations.

Period	State or Territory	Download average % of plan speed (all hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
All hours	NSW	101.3%	11.9%	100.2% - 102.5%	423	147,467
All hours	ACT	95.6%	17.3%	91.1% - 100.0%	59	20,327
All hours	VIC	101.1%	12.3%	99.8% - 102.4%	346	116,414
All hours	QLD	100.4%	11.8%	98.8% - 102.0%	216	72,485
All hours	WA	96.8%	17.1%	93.8% - 99.8%	126	42,543
All hours	TAS	101.6%	11.2%	98.6% - 104.7%	51	18,252
All hours	NT + SA	100.5%	12.4%	98.0% - 103.0%	92	31,533
Period	State or Territory	Download average % of plan speed (busy hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
Busy hours	NSW	100.1%	11.9%	99.0% - 101.3%	422	25,598
Busy hours	ACT	93.2%	18.5%	88.5% - 97.9%	59	3,405
Busy hours	VIC	99.5%	12.5%	98.2% - 100.9%	346	19,846
Busy hours	QLD	99.0%	12.3%	97.3% - 100.6%	215	12,462
Busy hours	WA	94.5%	19.2%	91.1% - 97.8%	126	6,727
Busy hours	TAS	99.4%	11.4%	96.3% - 102.6%	51	3,020
Busy hours	NT + SA	98.8%	12.6%	96.2% - 101.4%	91	5,325

NBN50 and NBN100 advertised speed tables

The figures in the following table are based on the typical evening hour speeds that were the predominant speed advertised by RSPs during the measurement period. The single weighted average speed claim is calculated based on the number of Whiteboxes online for each RSP for each plan (excluding underperforming and impaired services).

RSP	NBN50 advertised % of plan speed	NBN100 advertised % of plan speed	Number of NBN50 Whiteboxes (excluding underperforming and impaired services)	Number of NBN100 Whiteboxes (excluding underperforming and impaired services)	Weighted advertised % of plan speed
Aussie Broadband	100.0%	100.0%	48	70	100.0%
Dodo & iPrimus	100.0%	95.0%	62	34	98.2%
Exetel	100.0%	100.0%	40	85	100.0%
Optus	100.0%	100.0%	58	39	100.0%
Superloop	96.0%	95.0%	25	58	95.3%
TPG	100.0%	90.0%	56	20	97.4%
Telstra	100.0%	100.0%	62	65	100.0%
Vodafone	100.0%	90.0%	25	19	95.7%
iiNet	100.0%	90.0%	46	25	96.5%

There were 120 busy hours (Monday–Sunday) across the 30 day period from 1st September 2023 to 30th September 2023. The following table shows the proportion of busy hours in which each RSP’s average speed for each plan met the advertised claims above.

RSP	% of busy hours in which advertised download speed met or exceeded	% of busy hours in which advertised download speed met or exceeded (excluding underperforming and impaired services)
Aussie Broadband	19%	97%
Dodo & iPrimus	54%	93%
Exetel	76%	90%
Optus	62%	100%
Superloop	74%	97%
TPG	41%	100%
Telstra	61%	96%
Vodafone	78%	94%
iiNet	50%	97%

NBN Whiteboxes connected to underperforming services

The following table shows the number of Whiteboxes on NBN services for each RSP, alongside the number of Whiteboxes connected to underperforming services.

RSP	NBN Whiteboxes	NBN Whiteboxes on underperforming services	% NBN Whiteboxes on underperforming services
Aussie Broadband	179	12	7%
Dodo & iPrimus	141	7	5%
Exetel	171	3	2%
Launtel	51	0	0%
Optus	123	5	4%
Other RSPs	95	4	4%
Superloop	108	5	5%
TPG	118	8	7%
Telstra	169	8	5%
Vodafone	52	2	4%
iiNet	106	6	6%
Total	1,313	60	5%

As highlighted earlier in the report, the majority of underperforming services are connected to fibre to the node infrastructure. The following table shows the number of Whiteboxes on fibre to the node services for each plan, alongside the number of underperforming services.

Technology	Plan	NBN Whiteboxes	NBN Whiteboxes on underperforming services	% NBN Whiteboxes on underperforming services
Fibre to the node - FTTN	12	6	0	0%
Fibre to the node - FTTN	25	64	0	0%
Fibre to the node - FTTN	50	279	33	12%
Fibre to the node - FTTN	100	107	20	19%
Fibre to the node - FTTN	Other NBN plans	5	1	20%
Fibre to the node - FTTN	All NBN Plans	461	54	12%

NBN very high speed services tables

The figures in the following table are based on very high speed services, where the underlying wholesale product sold by NBN Co has a download/upload speed range of 500-990/50 Mbps.

Period	Plan	Download average Mbps (all hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
All hours	Very High Speed	823.7 Mbps	173.8 Mbps	797.9 Mbps - 849.5 Mbps	174	54,298
Period	Plan	Download average Mbps (busy hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
Busy hours	Very High Speed	746 Mbps	166 Mbps	721.3 Mbps - 770.6 Mbps	174	9,184
Period	Plan	Upload average Mbps (all hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
All hours	Very High Speed	46 Mbps	3.2 Mbps	45.5 Mbps - 46.5 Mbps	174	44,468
Period	Plan	Upload average Mbps (busy hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
Busy hours	Very High Speed	45.7 Mbps	3.5 Mbps	45.2 Mbps - 46.2 Mbps	174	4,629
Technology	Percentage of units having no outages	Percentage of units having outages at most every other day	Percentage of units having outages on most days	Percentage of units having outages at least once a day		
Very High Speed	23.6%	65.5%	4.0%	6.9%		
Plan	Percentage of outages lasting 30-60 sec	Percentage of outages lasting 1-3 min	Percentage of outages lasting 3-10 min	Percentage of outages lasting 10 min or more		
Very High Speed	24.0%	24.2%	42.7%	9.1%		

NBN fixed wireless services tables

The figures in the following table are based on both the 25/5Mbps fixed wireless plan and the Fixed Wireless Plus plan.

Period	Technology	Download average % of plan speed (all hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
All hours	Fixed Wireless	109.6%	30.0%	103.5% - 115.7%	93	32,049
Period	Technology	Download average % of plan speed (busy hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
Busy hours	Fixed Wireless	89.5%	33.3%	82.8% - 96.3%	93	5,495
Period	Technology	Upload average % of plan speed (all hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
All hours	Fixed Wireless	75.5%	35.0%	68.4% - 82.6%	93	26,168
Period	Technology	Upload average % of plan speed (busy hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
Busy hours	Fixed Wireless	62.9%	34.2%	55.9% - 69.9%	92	2,715
Technology	Percentage of units having no outages	Percentage of units having outages at most every other day	Percentage of units having outages on most days	Percentage of units having outages at least once a day		
Fixed Wireless	14.0%	73.1%	3.2%	9.7%		
Technology	Percentage of outages lasting 30-60 sec	Percentage of outages lasting 1-3 min	Percentage of outages lasting 3-10 min	Percentage of outages lasting 10 min or more		
Fixed Wireless	40.3%	25.8%	22.2%	11.7%		









Other superfast access networks

The figures in the following table show results for services on other superfast access networks (all plans).

Period	Download average % of plan speed (all hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
All hours	100%	21%	95% - 105%	65	21,885
Period	Download average % of plan speed (busy hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
Busy hours	96%	24%	90% - 102%	65	3,725
Period	Upload average % of plan speed (all hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
All hours	91%	8%	89% - 93%	65	17,739
Period	Upload average % of plan speed (busy hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
Busy hours	90%	9%	88% - 92%	65	1,882
Technology	Percentage of units having no outages	Percentage of units having outages at most every other day	Percentage of units having outages on most days	Percentage of units having outages at least once a day	
Other superfast access networks	16.9%	69.2%	7.7%	6.2%	
Technology	Percentage of outages lasting 30-60 sec	Percentage of outages lasting 1-3 min	Percentage of outages lasting 3-10 min	Percentage of outages lasting 10 min or more	
Other superfast access networks	36.1%	28.8%	21.9%	13.3%	

Test Definitions & Glossary

Test definitions

	Test	Definition
	Download	The speed at which data can be transferred from the SamKnows test server to your computer, measured in megabits per second (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, measured in milliseconds (ms). The shorter the latency, the better.
	Jitter	The variation in the delay of received packets, measured in milliseconds (ms). Essentially it is a measure of the stability of latency.
	Packet loss	Packet loss counts packets that are sent over a network and don't make it to their destination, measured as a percentage of packets lost out of all packets sent.
	Webpage loading time	The time it takes for a specific webpage to fully load. This is a combination test that includes download, latency and DNS in one test that accurately mimics real-world usage.
	Outages	The outages metric tracks how many times per day your broadband connection goes offline for at least 30 seconds. Outages between 12am and 5am are excluded from this metric as this is when network maintenance typically occurs.
	Video streaming	Measures the highest bitrate (in Mbps), and therefore quality level, you can reliably stream from real content servers.

Glossary

Term	Definition
Advertised speed	The speed claim made by an RSP for a given plan during a Measuring Broadband Australia reporting period. May be the same as or lower than plan speed.
All hours	Refers to tests conducted at any time of the day.
Busiest hour	Fifth lowest hourly average speed out of all busy hours in the month (including weekends cf. 'busy hours').
Busy hours	Refers to tests conducted between 19:00:00 and 22:59:59, Monday to Friday. For calculating the busiest hour and for determining the % of busy hours where the speed claim was attained, "busy hours" include 19:00:00 and 22:59:59, Monday to Sunday
Customer-premises equipment (CPE)	Network equipment provided by an RSP (generally including a home router/gateway).
Download performance	Measured download speed expressed as a percentage of plan speed. e.g. for an NBN50 service, 100% download performance would be 50 Mbps. Prior to overprovisioning this was capped at 100%. Since NBN has begun overprovisioning services, results above 100% are common.
FTTN / Fibre to the node	Measuring Broadband Australia treats the FTTN / Fibre to the Node and FTTB / Fibre to the Building access technologies as identical for reporting.
Fixed-Line	For reporting, fixed-line encompasses the FTTP (Fibre to the Premises), FTTB (Fibre to the Building), HFC (Hybrid Fibre-Coaxial), FTTC (Fibre to the Curb), and FTTN (Fibre to the Node) access technologies.
Impaired service	FTTN / Fibre to the Node services where the maximum attainable line speed measured by NBN Co is below plan speed.
NBN service	A proxy for a single household which accesses the internet through the NBN.
Plan and plan speed	Plan refers to the retail broadband product. Each plan has an associated download and upload speed. For example, a 100/20 Mbps plan includes a 100 Mbps download plan speed and a 20 Mbps upload plan speed. The term "NBN100" refers to a download plan speed of 100 Mbps, but the upload plan speed may vary.
SamKnows	The independent testing provider appointed to conduct testing for Measuring Broadband Australia. https://samknows.com/
Testing infrastructure	SamKnows-maintained test servers hosted within Australia.
Underperforming service	Services which reach above 75% of plan speed in no more than 5% of download tests. These are services which rarely or never attain plan speed.
Very high speed service	Services where the underlying wholesale product sold by NBN Co has a download/upload speed range of 500-990/50 Mbps (referred to by NBN Co as 'Home Ultrafast').
Whitebox	A purpose-built hardware measurement agent manufactured by SamKnows, installed in volunteers' homes.