

Measuring Broadband Australia Program



Report 20 Appendix, April 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 High Definition stream from Netflix takes up around 2.2 Mbps data rate on average. For consumers with premium Ultra High Definition (4K) video stream, an Ultra High Definition stream from Netflix takes up 12 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 2.2 Mbps (for High Definition) and 12 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 HD (2.2 Mbps)	2 HD (4.4 Mbps)	3 HD (6.6 Mbps)	4 HD (8.8 Mbps)	5 HD (11 Mbps)	Panel size
NBN25	100%	100%	99%	99%	99%	81
NBN50	100%	100%	100%	100%	99%	554
NBN100	100%	100%	100%	100%	100%	408
Download plan	1 UHD (12 Mbps)	2 UHD (24 Mbps)	3 UHD (36 Mbps)	4 UHD (48 Mbps)	5 UHD (60 Mbps)	Panel size
NBN25	99%	79%	0%	0%	0%	81
NBN50	98%	94%	84%	62%	0%	554
NBN100	100%	95%	92%	90%	87%	408

By RSP¹

RSP	Download plan	1 UHD	2 UHD	3 UHD	4 UHD	Panel size
Aussie Broadband	50	100%	97%	72%	36%	64
Dodo & iPrimus	50	100%	100%	91%	56%	43
Exetel	50	100%	98%	91%	80%	44
iiNet	50	100%	97%	89%	56%	64
Optus	50	100%	100%	96%	84%	67
Telstra	50	100%	98%	88%	76%	95
TPG	50	100%	100%	93%	71%	75
RSP	Download plan	1 UHD	2 UHD	3 UHD	4 UHD	Panel size
Aussie Broadband	100	100%	100%	97%	96%	76
Optus	100	100%	100%	100%	100%	49
Telstra	100	100%	100%	100%	100%	60

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 99.3% of plan speed for Dodo & iPrimus across all NBN plans with a 95% confidence interval of $\pm 2.4\%$. If we were to repeat our sampling 100 times, we expect that this average would fall between 96.9% and 101.8% 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	97.7%	15.8%	95.4% - 100.0%	184	64,616
All hours	Dodo & iPrimus	99.3%	11.3%	96.9% - 101.8%	82	30,127
All hours	Exetel	104.1%	11.3%	101.6% - 106.5%	85	28,265
All hours	iiNet	96.4%	14.9%	93.7% - 99.1%	117	42,998
All hours	Launtel	104.4%	10.5%	101.5% - 107.3%	51	15,786
All hours	MyRepublic	96.4%	15.6%	91.9% - 100.9%	46	16,607
All hours	Optus	101.2%	13.4%	98.8% - 103.6%	121	43,536
All hours	Telstra	100.7%	14.6%	98.5% - 102.8%	171	65,296
All hours	TPG	98.3%	14.9%	95.9% - 100.7%	148	51,363
All hours	Superloop	99.2%	10.1%	96.8% - 101.7%	63	23,075
All hours	Vodafone	98.5%	13.3%	95.1% - 101.9%	58	19,107

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	96.5%	15.8%	94.2% - 98.7%	184	11,366
Busy hours	Dodo & iPrimus	97.9%	11.7%	95.4% - 100.4%	82	5,338
Busy hours	Exetel	102.9%	11.3%	100.5% - 105.3%	85	4,996
Busy hours	iiNet	95.1%	14.9%	92.4% - 97.8%	117	7,382
Busy hours	Launtel	103.1%	10.7%	100.1% - 106.0%	51	2,776
Busy hours	MyRepublic	94.4%	15.6%	89.9% - 99.0%	46	2,787
Busy hours	Optus	99.9%	13.3%	97.6% - 102.3%	121	7,164
Busy hours	Telstra	99.0%	14.8%	96.8% - 101.2%	171	11,456
Busy hours	TPG	97.0%	14.8%	94.6% - 99.4%	148	8,917
Busy hours	Superloop	98.5%	10.0%	96.0% - 100.9%	63	3,944
Busy hours	Vodafone	97.3%	12.9%	93.9% - 100.6%	58	3,273

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	84.2%	17.8%	81.6% - 86.7%	184	52,533
All hours	Dodo & iPrimus	86.1%	15.4%	82.7% - 89.4%	82	24,451
All hours	Exetel	89.4%	11.1%	87.1% - 91.8%	85	23,123
All hours	iiNet	82.0%	21.2%	78.2% - 85.9%	117	34,899
All hours	Launtel	88.9%	9.8%	86.2% - 91.6%	51	12,841
All hours	MyRepublic	83.8%	22.3%	77.3% - 90.2%	46	13,596
All hours	Optus	87.9%	13.2%	85.6% - 90.3%	121	35,630
All hours	Telstra	85.7%	17.9%	83.0% - 88.4%	171	52,895
All hours	TPG	81.7%	21.7%	78.2% - 85.2%	148	41,970
All hours	Superloop	88.1%	14.3%	84.5% - 91.6%	63	18,707
All hours	Vodafone	88.6%	15.1%	84.7% - 92.5%	58	15,569

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	84.0%	17.9%	81.4% - 86.5%	184	5,744
Busy hours	Dodo & iPrimus	85.9%	15.4%	82.6% - 89.3%	82	2,708
Busy hours	Exetel	89.2%	11.1%	86.8% - 91.6%	85	2,531
Busy hours	iiNet	81.8%	21.3%	77.9% - 85.6%	117	3,779
Busy hours	Launtel	88.6%	9.7%	85.9% - 91.2%	51	1,405
Busy hours	MyRepublic	83.3%	22.4%	76.9% - 89.8%	46	1,409
Busy hours	Optus	87.7%	13.2%	85.4% - 90.0%	121	3,687
Busy hours	Telstra	85.3%	18.0%	82.6% - 88.0%	171	5,781
Busy hours	TPG	81.4%	21.6%	77.9% - 84.9%	148	4,557
Busy hours	Superloop	87.8%	14.2%	84.2% - 91.3%	63	1,982
Busy hours	Vodafone	88.1%	15.2%	84.2% - 92.0%	58	1,657

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	95.4%	16.5%	91.4% - 99.5%	64	22,996
All hours	Aussie Broadband	100	98.1%	15.6%	94.6% - 101.6%	76	26,174
All hours	Dodo & iPrimus	50	96.1%	13.5%	92.1% - 100.2%	43	16,690
All hours	Exetel	50	104.5%	10.4%	101.5% - 107.4%	48	15,666
All hours	iiNet	50	94.1%	17.5%	89.8% - 98.4%	64	23,690
All hours	Optus	50	103.1%	11.5%	100.3% - 105.8%	67	24,459
All hours	Optus	100	99.1%	14.0%	95.2% - 103.0%	49	17,013
All hours	Telstra	50	99.5%	17.0%	96.1% - 102.9%	95	36,775
All hours	Telstra	100	100.8%	11.9%	97.8% - 103.8%	60	22,922
All hours	TPG	50	99.2%	12.0%	96.6% - 101.9%	77	26,644

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	94.4%	16.5%	90.3% - 98.4%	64	4,098
Busy hours	Aussie Broadband	100	96.8%	15.6%	93.3% - 100.3%	76	4,597
Busy hours	Dodo & iPrimus	50	94.7%	14.1%	90.5% - 98.9%	43	2,946
Busy hours	Exetel	50	103.5%	10.3%	100.6% - 106.4%	48	2,777
Busy hours	iiNet	50	92.9%	17.4%	88.7% - 97.2%	64	4,076
Busy hours	Optus	50	101.7%	11.5%	98.9% - 104.4%	67	4,031
Busy hours	Optus	100	98.0%	13.7%	94.2% - 101.9%	49	2,765
Busy hours	Telstra	50	97.7%	17.2%	94.3% - 101.2%	95	6,494
Busy hours	Telstra	100	99.4%	11.9%	96.4% - 102.4%	60	3,942
Busy hours	TPG	50	97.6%	12.0%	94.9% - 100.3%	77	4,558

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	82.7%	19.9%	79.1% - 86.3%	116	32,856
All hours	Dodo & iPrimus	20	84.3%	17.3%	79.8% - 88.7%	57	17,085
All hours	Exetel	20	88.0%	13.6%	84.4% - 91.7%	54	14,526
All hours	iiNet	20	77.6%	23.6%	72.3% - 83.0%	74	22,058
All hours	Optus	20	87.7%	13.6%	84.8% - 90.6%	83	24,534
All hours	Telstra	20	85.1%	18.6%	82.1% - 88.1%	148	46,260
All hours	TPG	20	79.0%	23.2%	74.4% - 83.6%	98	27,473
All hours	Vodafone	20	89.6%	12.5%	86.3% - 93.0%	54	14,759

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	82.7%	20.0%	79.0% - 86.3%	116	3,599
Busy hours	Dodo & iPrimus	20	84.1%	17.3%	79.7% - 88.6%	57	1,893
Busy hours	Exetel	20	87.8%	13.6%	84.2% - 91.5%	54	1,589
Busy hours	iiNet	20	77.4%	23.7%	72.0% - 82.8%	74	2,389
Busy hours	Optus	20	87.4%	13.5%	84.5% - 90.3%	83	2,517
Busy hours	Telstra	20	84.7%	18.8%	81.7% - 87.7%	148	5,014
Busy hours	TPG	20	78.7%	23.0%	74.2% - 83.3%	98	2,908
Busy hours	Vodafone	20	89.1%	12.7%	85.7% - 92.5%	54	1,565

RSP	Average daily outages lasting longer than 30 seconds	Standard deviation	95% confidence interval of the mean	Panel size
Aussie Broadband	0.33	1.04	0.18 - 0.48	184
Dodo & iPrimus	0.39	1.37	0.10 - 0.69	82
Exetel	0.21	0.62	0.08 - 0.35	85
iiNet	0.19	0.46	0.11 - 0.27	115
Launtel	0.53	1.90	0.01 - 1.06	51
MyRepublic	0.35	0.73	0.14 - 0.56	46
Optus	0.19	1.29	-0.04 - 0.42	121
Telstra	0.39	0.99	0.24 - 0.53	171
TPG	0.40	1.52	0.16 - 0.65	147
Superloop	0.38	1.12	0.10 - 0.66	63
Vodafone	0.29	0.71	0.10 - 0.47	58

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	33.3%	21.7%	34.1%	11.0%
Dodo & iPrimus	28.2%	28.8%	35.0%	8.1%
Exetel	20.3%	25.5%	23.9%	30.3%
iiNet	13.8%	21.8%	51.4%	13.0%
Launtel	42.5%	28.1%	24.2%	5.2%
MyRepublic	35.8%	35.1%	17.8%	11.3%
Optus	30.9%	37.9%	22.5%	8.7%
Superloop	26.3%	23.3%	34.6%	15.7%
Telstra	30.8%	24.6%	16.6%	28.0%
TPG	18.1%	27.7%	37.9%	16.4%
Vodafone	23.2%	46.1%	14.4%	16.3%

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	103.4%	8.3%	101.6% - 105.2%	83	31,089
All hours	50	98.5%	15.1%	97.2% - 99.7%	561	202,791
All hours	100	98.5%	13.7%	97.2% - 99.8%	412	144,407
All hours	250	100.1%	16.2%	96.3% - 103.8%	71	23,650

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	102.1%	8.5%	100.3% - 103.9%	83	5,547
Busy hours	50	97.0%	15.2%	95.8% - 98.3%	561	35,237
Busy hours	100	97.1%	13.8%	95.8% - 98.5%	412	24,746
Busy hours	250	98.5%	16.5%	94.6% - 102.3%	71	4,069

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	88.4%	15.5%	83.9% - 92.8%	47	14,377
All hours	20	83.9%	19.1%	82.6% - 85.2%	812	236,441
All hours	40	88.6%	12.4%	86.7% - 90.5%	169	48,230

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	88.2%	15.5%	83.8% - 92.6%	47	1,624
Busy hours	20	83.6%	19.1%	82.3% - 84.9%	812	25,456
Busy hours	40	88.1%	12.6%	86.2% - 90.0%	169	5,149

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	104.3%	8.0%	103.4% - 105.1%	331	113,400
All hours	Fibre to the curb - FTTC	102.4%	7.0%	101.0% - 103.8%	93	33,026
All hours	Hybrid fibre-coaxial - HFC	103.7%	8.3%	102.7% - 104.8%	257	92,116
All hours	Fibre to the node - FTTN	92.6%	17.8%	91.0% - 94.2%	490	177,622
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	102.8%	8.4%	101.9% - 103.7%	331	19,674
Busy hours	Fibre to the curb - FTTC	101.2%	7.2%	99.8% - 102.7%	93	5,620
Busy hours	Hybrid fibre-coaxial - HFC	102.4%	8.5%	101.3% - 103.4%	257	16,042
Busy hours	Fibre to the node - FTTN	91.2%	17.8%	89.7% - 92.8%	490	30,724
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	91.6%	6.0%	91.0% - 92.3%	331	92,519
All hours	Fibre to the curb - FTTC	90.0%	9.7%	88.0% - 92.0%	93	26,934
All hours	Hybrid fibre-coaxial - HFC	90.3%	10.5%	89.0% - 91.6%	257	74,998
All hours	Fibre to the node - FTTN	77.6%	23.1%	75.6% - 79.6%	490	144,347

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	91.4%	6.0%	90.8% - 92.1%	331	10,097
Busy hours	Fibre to the curb - FTTC	89.9%	9.6%	87.9% - 91.9%	93	2,851
Busy hours	Hybrid fibre-coaxial - HFC	89.8%	10.7%	88.5% - 91.1%	257	8,097
Busy hours	Fibre to the node - FTTN	77.3%	23.1%	75.3% - 79.4%	490	15,544

Technology	Average daily outages lasting longer than 30 seconds	Standard deviation	95% confidence interval of the mean	Panel size
Fibre to the premises - FTTP	0.17	0.54	0.11 - 0.23	330
Fibre to the curb - FTTC	0.51	1.72	0.16 - 0.86	93
Hybrid fibre-coaxial - HFC	0.54	1.64	0.34 - 0.74	257
Fibre to the node - FTTN	0.35	1.25	0.24 - 0.46	488

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	53.2%	28.4%	15.1%	3.3%
Fibre to the node - FTTN	36.0%	21.4%	29.6%	13.0%
Fibre to the premises - FTTP	22.1%	30.4%	25.4%	22.2%
Hybrid fibre-coaxial - HFC	24.2%	29.5%	27.8%	18.5%

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	99.8%	14.1%	98.4% - 101.3%	378	136,083
All hours	ACT	94.0%	17.0%	89.7% - 98.3%	59	20,483
All hours	VIC	100.1%	13.1%	98.6% - 101.5%	322	113,747
All hours	QLD	98.1%	14.4%	96.0% - 100.1%	188	65,246
All hours	WA	96.7%	17.0%	93.4% - 100.0%	100	35,295
All hours	TAS	99.6%	14.0%	95.8% - 103.3%	54	19,286
All hours	NT + SA	101.4%	10.4%	98.9% - 103.8%	70	26,024

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	96.0%	97.0%	50	65	96.6%
Dodo & iPrimus	100.0%	95.0%	34	22	98.0%
Exetel	100.0%	100.0%	44	21	100.0%
iiNet	100.0%	90.0%	48	25	96.6%
Optus	100.0%	100.0%	58	41	100.0%
Superloop	96.0%	95.0%	15	34	95.3%
Telstra	100.0%	100.0%	80	54	100.0%
TPG	100.0%	90.0%	63	28	96.9%
Vodafone	100.0%	90.0%	29	22	95.7%

There were 124 busy hours across the 31 day period from 1st December 2022 to 31st December 2022. 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	23%	98%
Dodo & iPrimus	47%	88%
Exetel	86%	98%
iiNet	49%	89%
Optus	47%	97%
Superloop	82%	99%
Telstra	38%	95%
TPG	39%	98%
Vodafone	75%	90%

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	184	15	8%
Dodo & iPrimus	82	3	4%
Exetel	85	4	5%
iiNet	117	8	7%
Launtel	51	1	2%
MyRepublic	46	4	9%
Optus	121	6	5%
Other RSPs	45	4	9%
Superloop	63	2	3%
Telstra	171	9	5%
TPG	148	13	9%
Vodafone	58	2	3%
Total	1,171	71	6%

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	8	0	0%
Fibre to the node - FTTN	25	56	2	4%
Fibre to the node - FTTN	50	305	43	14%
Fibre to the node - FTTN	100	114	21	18%
Fibre to the node - FTTN	Other NBN plans	7	0	0%
Fibre to the node - FTTN	All NBN Plans	490	66	13%

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	796.1 Mbps	209.6 Mbps	760.5 Mbps - 831.8 Mbps	133	42,759
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	726 Mbps	196.3 Mbps	692.6 Mbps - 759.3 Mbps	133	7,332
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	46.2 Mbps	1.6 Mbps	45.9 Mbps - 46.5 Mbps	133	35,085
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	45.9 Mbps	2.9 Mbps	45.4 Mbps - 46.4 Mbps	133	3,779
Plan	Average daily outages lasting longer than 30 seconds		Standard deviation	95% confidence interval of the mean		Panel size
Very High Speed	0.37		1.5	0.11 - 0.62		132
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	22.9%	30.6%	29.4%	17.1%		

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	109.2%	26.4%	103.6% - 114.8%	85	31,119
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	84.7%	29.5%	78.4% - 91.0%	85	5,409
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	73.0%	32.8%	66.1% - 80.0%	85	25,501
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	58.7%	31.7%	52.0% - 65.5%	85	2,751
Technology	Average daily outages lasting longer than 30 seconds		Standard deviation	95% confidence interval of the mean	Panel size	
Fixed Wireless	0.36		0.85	0.18 - 0.54	85	
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	31.5%	27.8%	23.1%	17.6%		









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	104%	11%	101% - 107%	60	21,833
Period	Download average % of plan speed (busy hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
Busy hours	101%	14%	98% - 105%	60	3,838
Period	Upload average % of plan speed (all hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
All hours	89%	6%	88% - 91%	60	17,634
Period	Upload average % of plan speed (busy hours)	Standard deviation	95% confidence interval of the mean	Panel size	Number of tests
Busy hours	89%	6%	88% - 91%	60	1,985
Technology	Average daily outages lasting longer than 30 seconds		Standard deviation	95% confidence interval of the mean	Panel size
Other superfast access networks	0.24		0.7	0.06 - 0.42	60
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	35.5%	32.6%	21.0%	10.9%	

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.
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.
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.
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.
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.