Measuring Broadband New Zealand Programme

Technical FAQ

Last updated August 2021

Purpose

1. This technical FAQ document seeks to record concerns raised by Retail Service Providers (RSPs) following the SamKnows industry workshop in June 2018. It addresses a number of the questions about the Measuring Broadband New Zealand programme which we have received, and will be updated as further questions arise.

2. For any further questions, please email regulation.branch@comcom.govt.nz. If your question is of a technical nature, we will forward it on to SamKnows, provide you with their response and then add it to this document. However, we will respond to RSP-specific questions on an individual and confidential basis, when necessary.

Server locations

3. REANNZ provides the servers that the tests will run to in New Zealand, which are located in Wellington, Auckland and Christchurch.

4. The Wellington, Auckland and Christchurch servers that will be used for testing are online and belong to AS38022 (Research and Education Advanced Network New Zealand (REANNZ)) and inside the block 163.7.129.0/24.

5. All three REANNZ servers have a 10 Gbps uplink. This has been completed to avoid possible bottleneck issues for testing.

6. There are seven international test servers as part of the programme.

   The locations of the servers testing connectivity and Download and Upload tests are:

   6.1 Wellington, NZ: n1-wellington-nz.samknows.com - 163.7.139.6, AS38022 (REANNZ)

   6.2 Auckland, NZ: n1-auckland-nz.samknows.com - 163.7.139.2, AS38022 (REANNZ)

   6.3 Christchurch, NZ: n1-christchurch-nz.samknows.com - 163.7.139.18, AS38022 (REANNZ)

   6.4 Sydney, Australia: n7-sydney-au.samknows.com - 27.50.80.195, AS45671 (ServersAustralia)

   6.5 Fremont, USA: n1-fremont-us.samknows.com - 96.126.97.189, AS63949 (Linode)

   Servers testing connectivity but not subject to Download or Upload tests are:

   6.6 n1-tokyo-jp.samknows.com - 172.105.212.126, AS63949 (Linode)

   6.7 n7-the1.samknows.com - 77.75.107.53, AS39326 (hSO)

   6.8 sp1-vm-saopaulo-br.samknows.com - 151.139.190.6, AS33438 (StackPath/Highwinds)

6.9 n1-johannesburg-za.samknows.com - 102.130.113.215, AS328364 (Host Africa)

6.10 n1-bangalore-in.samknows.com - 157.245.109.37, AS14061 (DigitalOcean)

Augmenting connections to test servers

7. We have received information from RSPs relating to the Measuring Broadband New Zealand testing server locations, their desire to ensure that the connection is appropriately sized, and that they anticipate making arrangements to ensure their connections to REANNZ servers are optimised.

8. The Commission has considered this in conjunction with SamKnows. We are comfortable that RSPs can choose to improve their connection to the REANNZ servers, on the following basis:

   8.1 RSPs improve their connection to all of REANNZ services, and not just the servers for testing. All of the RSP's customers (not just volunteers) should receive the benefit of improved connectivity for all aspects of the REANNZ network. SamKnows will perform testing to confirm this.

   8.2 RSPs notify the Commission that they are taking such action, to ensure transparency, and warrant that their improvements will apply to all their traffic to REANNZ.

Data validation

9. RSPs will be asked to confirm volunteers' plan, technologies, data allowance and expected synch rates (or attenuation speeds), so we can validate and normalise the test results to ensure they are accurate and meaningful for consumers.

10. All providers are subject to a Code of Conduct to ensure that they act in good faith and will not provide an increased level of service quality to volunteers that they don't provide to their other customers.

11. Volunteers acknowledge that we can share data about their technologies/plan, address etc. with their RSP as part of the End-user Licence Agreement, which they were required to agree to when signing up.

Data availability

12. All data for reporting periods is published on the Commerce Commission website: https://comcom.govt.nz/regulated-industries/telecommunications/monitoring-the-telecommunications-market/monitoring-new-zealands-broadband/Reports-from-Measuring-Broadband-New-Zealand

13. The anonymised testing data used to prepare the reports will be made available for public access. Overseas regulators who also run SamKnows programmes publish the same data, including the Federal Communications Commission (FCC) in the United States and Ofcom in the United Kingdom.

Sample plan

14. Our sample plan tests eight RSPs who between them provide broadband services for 95% of the market and pay the Telecommunications Development Levy (TDL).

	ADSL	VDSL	Fibre 100	Fibre Max	Fixed wireless	Cable Max
Trustpower	*	*	*	*		
Orcon	*	*	*	*		
MyRepublic (NZ)			*	*		
Slingshot	*	*	*	*		
Skinny					*	
2degrees	*	*	*	*		
Vodafone	*	*	*	*	*	*
Spark	*	*	*	*	*	

15. SamKnows will not report on any metric, technology or plan without sufficient data points in the relevant testing period. To ensure that we achieve this, our confirmed sample plan allows for 100 Whiteboxes for each of the technologies/plans and RSP that we are testing. Note that ADSL covers both ADSL1 and ADSL2 connections, and VDSL will cover all VDSL variants.

16. We intend to provide a high-level geographical breakdown of the technologies/plans. To the extent we are able to, we will report technology breakdowns into the following geographical regions:

    16.1 Auckland

    16.2 Wellington

    16.3 Christchurch

    16.4 North Island Other Urban

16.5 North Island Rural

16.6 South Island Other Urban

16.7 South Island Rural.

Test schedule

17. The table below shows the confirmed tests and testing frequencies that the Whiteboxes will perform. More information on how the tests work can be found here.

Metric	NZ Standard	NZ Lightweight
Domestic		
Download Speed Test		
Duration (seconds)	5	5
Frequency (per day)	7	4
Upload Speed Test		
Duration (seconds)	5	5
Frequency (per day)	7	4
UDP latency/loss/disconnections		
Usage (MB)	0.5	0.5
VoIP emulation		
Usage (MB)	1	1
International		
Number of international destinations	3	3
Download Speed Test		
Duration (seconds)	5	5
Frequency (per day)	4	2

Upload Speed Test		
Duration (seconds)	5	5
Frequency (per day)	4	2
UDP latency/loss/disconnections		
Usage (MB)	0.5	0.5
VoIP emulation		
Usage (MB)	1	1
Global		
DNS resolution		
Usage (MB)	0.5	0.5
YouTube		
Duration (seconds)	10	10
Frequency (per day)	4	2
Netflix		
Duration (seconds)	10	10
Frequency (per day)	4	2
Web browsing set		
Websites	10	10
Frequency (per day)	8	8

18. Each test runs for designated durations, rather than fixed file sizes, so that we get an accurate measure of the faster technologies/plans. This means that, in general, the faster the technology/plan, the more monthly volunteer data will be used. Information on the expected monthly data usage has been emailed to current volunteers and the sign-up page has been amended to inform new volunteers of these amounts. All volunteers are given the opportunity to opt out of the programme (or choose the lightweight testing schedule for fixed wireless) if they do not want to use this much of their own data.

19. Netflix, YouTube, video conferencing, web browsing, DNS, social media, and gaming tests in the schedule will run to the servers hosted by the application providers in each case. Each of the other tests in the schedules will run to the three domestic

servers in Auckland, Christchurch, and Wellington. Latency, packet loss, download, upload, and jitter tests will also run to the three international servers hosted in Sydney, San Francisco, and London. Additionally, latency, packet loss, and jitter tests will run to international servers hosted in Japan, South Africa, India, and Brazil. Impact of testing on the light weight vs standard test schedule

20. The lightweight testing schedule has been created specifically for fixed wireless volunteers because it runs tests less frequently, and therefore uses less data. It will still run the same tests as the standard schedule, so the results will remain comparable as long as enough data points are recorded.

Will all Whiteboxes run tests at the same time?

21. The Whiteboxes don't all run their testing at the same times, and the testing is fairly randomly distributed during the test periods (a given hour or so, avoids having all 3,000 Whiteboxes all trying to run the same test at the same time in the network).

New Tests

New Gaming Tests

22. The new gaming test automatically identifies the most appropriate server to run the latency test to for that specific game. The test focuses on latency measurements and distance to the server, when more than one server is available the test performs server selection.

23. Games included in the new tests:

- Apex Legends
- Dota 2
- Counter Strike: Global Offensive
- FIFA 21
- Fortnite
- League of Legends
- PlayerUnknown's Battlegrounds
- Diablo 3
- Heroes of the Storm
- Hearthstone
- Overwatch
- StarCraft 2
- World of Warcraft

- Among Us
- Tom Clancy's Rainbow Six Siege
- Rocket League
- Valorant
- Roblox

Latency under Load Test

24. This is the same as the usual latency test however it is run at the same time as a download or upload test. This is because some broadband connections suffer from excessive latency and packet loss when the connection is being heavily utilised to download or upload data. In normal operation, the SamKnows UDP latency & packet loss test is paused during other tests, to ensure that the latency and loss statistics are not adversely impacted by these tests.

25. When configured to report the latency-under-load metric, the UDP latency & loss test sends and receives packets during download and upload speed tests, reporting latency and loss statistics (as “latency under load”) after each test as a separate metric depending on the direction of the test.