Measuring Broadband New Zealand Programme

Technical Frequently Asked Questions (FAQ)

Last updated December 2022

Purpose

1. This technical FAQ document seeks to record concerns raised by Retail Service Providers (RSPs) since the first SamKnows industry workshop in June 2018. It addresses a number of 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 market.regulation@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. Research and Education Advanced Network New Zealand (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 (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.

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

Location	Hosting Provider	Hostname
Wellington, NZ	REANNZ	http://n1-wellington-nz.samknows.com/
Auckland, NZ	REANNZ	http://n1-auckland-nz.samknows.com/
Christchurch, NZ	REANNZ	http://n1-christchurch-nz.samknows.com/
Fremont, US	Linode	http://n1-fremont-us.samknows.com/
Sydney, AU	Limelight	http://llnw3-sydney-au.samknows.com/
London, GB	HSO	http://n7-the1.samknows.com/

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

Location	Hosting Provider	Hostname
Sao Paulo, BR	StackPath	http://sp1-vm-saopaulo-br.samknows.com/
Bengaluru (Bangalore), IN	DigitalOcean	http://n1-bangalore-in.samknows.com/
Johannesburg, RSA	Cloud ZA	http://n1-johannesburg-za.samknows.com/
Tokyo, JP	Linode	http://n1-tokyo-jp.samknows.com/

Augmenting connections to test servers

9. 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.

10. 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:

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

    10.2 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

11. 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.

12. 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 do not provide to their other customers.

13. 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

14. All data for reporting periods until August 2021 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

15. All data for reporting periods after August 2021 is available upon request from the Commission. To request the data please email market.regulation@comcom.govt.nz.

16. 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 similar data, including the Federal Communications Commission (FCC) in the United States and Ofcom in the United Kingdom.

Sample plan

17. We want to test and report on as many plans and providers as possible. The Table below represents an indication of some of the breakdowns we will be looking to include in the programme. Our initial goals will be to be able to include results at a national level by technology first, then rural and urban breakdowns, followed by RSPs level breakdowns. Not all plans/technologies from all RSPs will be reported at an RSP level, and we expect the programme to evolve over time. This represents over 95% of all broadband residential consumers.

18. RSPs who are not listed on the Table are also able to be part of the programme, particularly for tech results, however we do require a minimum sample size before we will include results in our reports.

Retail Server Provider (RSP)	ADSL	VDSL	Fibre 300	Fibre Max	HFC Max	Fixed Wireless	Satellite
Orcon/Slingshot	At Tech level Not by provider	At Tech level Not by provider	At Tech level Not by provider	Yes			
2Degrees				Yes		Yes	
Spark				Yes		Yes	
Skinny (Spark sub-brand)							
Mercury/Trustpower				Yes			
MyRepublic				Yes			
Vodafone				Yes	Yes	Yes	
Contact				Yes			
Inspire						Yes	
Lightwire						Yes	
Sky Broadband				Yes			
Starlink							Yes
Gravity							Yes
Farmside							Yes

19. SamKnows will not report on any metric, technology or plan without sufficient data points in the relevant testing period. Note that ADSL covers both ADSL1 and ADSL2 connections, and VDSL will cover all VDSL variants.

20. 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, and potentially add to this over time:

    20.1 Urban - defined as areas where Fibre is available, using the Specified Fibre Area (SFA's) assessment and its definitions for availability

    20.2 Rural - defined as areas where Fibre is not available, as per SFA's

    20.3 Auckland

    20.4 Wellington

    20.5 Christchurch

    20.6 North Island Other Urban

    20.7 North Island Rural

    20.8 South Island Other Urban

    20.9 South Island Rural.

Test schedule

21. 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.

Test Name	Standard Schedule (frequency)	Lightweight Test Schedule (frequency)	Test Targets	Server Location
Social Media Test	Hourly, 7pm-11pm; Once every 6 hours, midnight-6pm	N/A	Instagram, Instagram Messenger, WhatsApp, Snapchat, Twitter, Facebook, Facebook Messenger	Various
Games Test	Hourly	Hourly	23 different games currently	Various

Test Name	Standard Schedule (frequency)	Lightweight Test Schedule (frequency)	Test Targets	Server Location
Web browsing	Once every 3 hours	Once every 3 hours	1https://www.google.co.nz 2https://www.facebook.com/policies/ 3https://www.youtube.com 4https://www.trademe.co.nz 5https://nz.yahoo.com 6https://www.stuff.co.nz 7https://www.nzherald.co.nz 8https://www.amazon.com 9https://www.wikipedia.org 10https://www.twitter.com	Various
Video Conferencing Test	Hourly, 7pm-11pm; Once every 6 hours, midnight-6pm	N/A	Cisco Webex, Google Meet, LogMeIn GoToMeeting, Microsoft Teams, Skype, Zoom	Various
DNS Test	Hourly	Hourly	1www.google.co.nz 2www.facebook.com 3www.youtube.com 4www.trademe.co.nz 5nz.yahoo.com 6www.stuff.co.nz 7www.nzherald.co.nz 8www.amazon.com 9www.wikipedia.org 10www.twitter.com	Various
Traceroute	Once every 12 hours	N/A		Various New Zealand locations
Netflix	Once every 6 hours	Once every 12 hours		Netflix OCA Caches
YouTube	Once every 6 hours	Once every 12 hours		YouTube Google Global Caches (if available), or YouTube directly
UDP latency	Permanent	Permanent		Various New Zealand locations, London, San Francisco, Tokyo, Johannesburg, Bengaluru (Bangalore), Sao Paulo, Sydney
UDP packet loss / Jitter / VoIP	Permanent	Permanent		Various New Zealand locations, London, San Francisco, Tokyo, Johannesburg, Bengaluru (Bangalore), Sao Paulo, Sydney
Disconnections	Permanent	Permanent		Various New Zealand locations, London, San Francisco, Tokyo, Johannesburg, Bengaluru (Bangalore), Sao Paulo, Sydney

Test Name	Standard Schedule (frequency)	Lightweight Test Schedule (frequency)	Test Targets	Server Location
UDP Jitter	Hourly	Hourly		Various New Zealand locations, London, San Francisco, Tokyo, Johannesburg, Bengaluru (Bangalore), Sao Paulo, Sydney
Download speed test (MT)	Hourly, 7pm-11pm; Once every 6 hours, midnight-6pm	Once every 12 hours		Various New Zealand locations
Upload speed test (MT)	Hourly, 7pm-11pm; Once every 6 hours, midnight-6pm	Once every 12 hours		Various New Zealand locations
Upload speed test (MT)	Once every 6 hours	Once every 12 hours		Sydney
Download speed test (MT)	Once every 6 hours	Once every 12 hours		Sydney
Upload speed test (MT)	Once every 6 hours	Once every 12 hours		San Francisco
Download speed test (MT)	Once every 6 hours	Once every 12 hours		San Francisco
Upload speed test (MT)	Once every 6 hours	Once every 12 hours		London
Download speed test (MT)	Once every 6 hours	Once every 12 hours		London

22. 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 or satellite technologies) if they do not want to use this much of their own data.

23. 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 lightweight vs standard test schedule

24. The lightweight testing schedule has been created for fixed wireless and satellite volunteers because it runs tests less frequently, and therefore uses less data than the standard test schedule. 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?

25. The Whiteboxes do not all run their testing at the same times, and the testing is fairly randomly distributed during the test periods (a given hour or so). This avoids having a thousand or more Whiteboxes all trying to run the same test at the same time in the network.

Tests of note

Gaming tests

26. The 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.

27. Games included in the new tests:

- Apex Legends
- DOTA2
- Counter Strike: Global Offensive
- FIFA 2022
- 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
- PUBG Mobile
- Call of Duty Warzone/Vanguard
- Gears of War 5
- Halo Infinite
- Battlefield V

Latency under Load Test

28. 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.

29. 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.

RealSpeed

30. SamKnows RealSpeed is a tool that can offer both useful data to Commission and also a diagnostic tool to consumers. Any volunteer with a Whitebox can use this tool to help diagnose in home issues with their connection. This empowers consumers by providing them information about what could be limiting in home performance and how they might make improvements, rather than immediately calling a RSP.