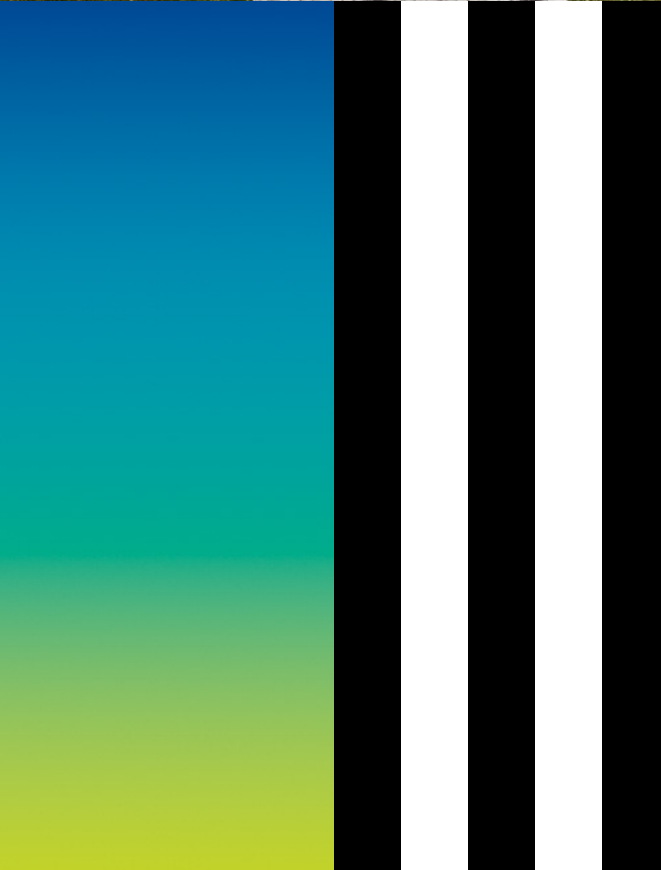


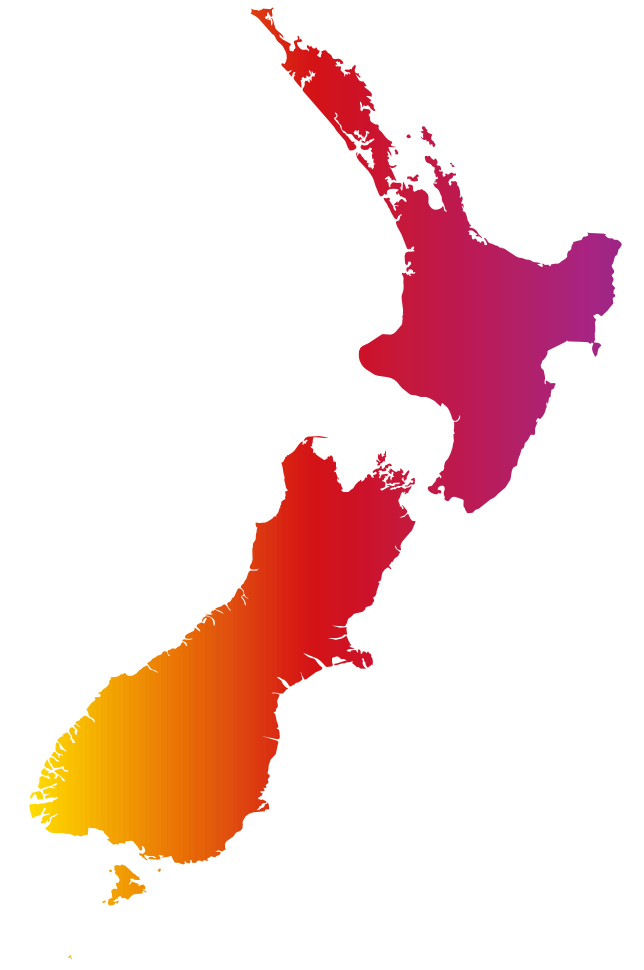
# Audit Report

New Zealand, Canterbury 09/2023





# Foreword



For the inhabitants of New Zealand, it is particularly interesting to see how the operators perform in metropolitan areas as well in areas of low population density.

Therefore, we have performed individual analyses for Canterbury, the largest region in the country by area.



# Intro

The leader in mobile benchmarking, umlaut, has analyzed the mobile networks in Canterbury, a region of New Zealand, located in the central-eastern South Island, with regards to mobile network performance.

We measure smartphone voice and data performance based on extensive drivetests. In addition crowdsourced performance data has been collected and evaluated in a 24 weeks period between 17 April 2023 and 1 October 2023.

This report has been commissioned by One New Zealand.

As the de-facto industry standard, our benchmarking methodology focuses on customer-experienced network quality and covers a wide range of mobile services. Today, more than 200 mobile networks in more than 120 countries are being evaluated by our unique methodology. It allows a technical analysis that is unprecedented in its level of detail and enables comparisons between the network performance and capability of each mobile network. Our benchmarks help network operators to demonstrate how well they are delivering wireless connections to consumers, business users and enterprises and reveals the areas of improvement.

Drivetest	Voice	Data
Device	Samsung Galaxy S23+(5G)	Samsung Galaxy S23+(5G)
Test Cases	Mobile-to-Mobile (M2M) Side1 (5G Preferred) to Side2 (5G Preferred) 105 sec call window 70 sec call duration 15 sec call setup timeout Multi-RAB traffic injection on both sides  Conversational speech app	Data 5G preferred HTTP DL DataStream 7s HTTP UL DataStream 7s HTTPS 10MB DL fixed file transfer HTTPS 5MB UL fixed file transfer Web Browsing – Kepler E-Gaming   Live web pages 1 YouTube Full HD video ~ 45s 1 YouTube live stream ~ 45s
Mobility and Route Types	100% Drivetest Small Country Approach	
Samples	1279	11420
Dates	3 measurement days 27.09.2023 – 29.09.2023	
Crowd Data Assessment	24 weeks CW16 2023– CW39 2023	



# Testing area

The map shows the total driving area for Canterbury. The routes were independently selected by umlaut based on the official coverage maps provided by the network operators.

**Coverage Maps One New Zealand:**

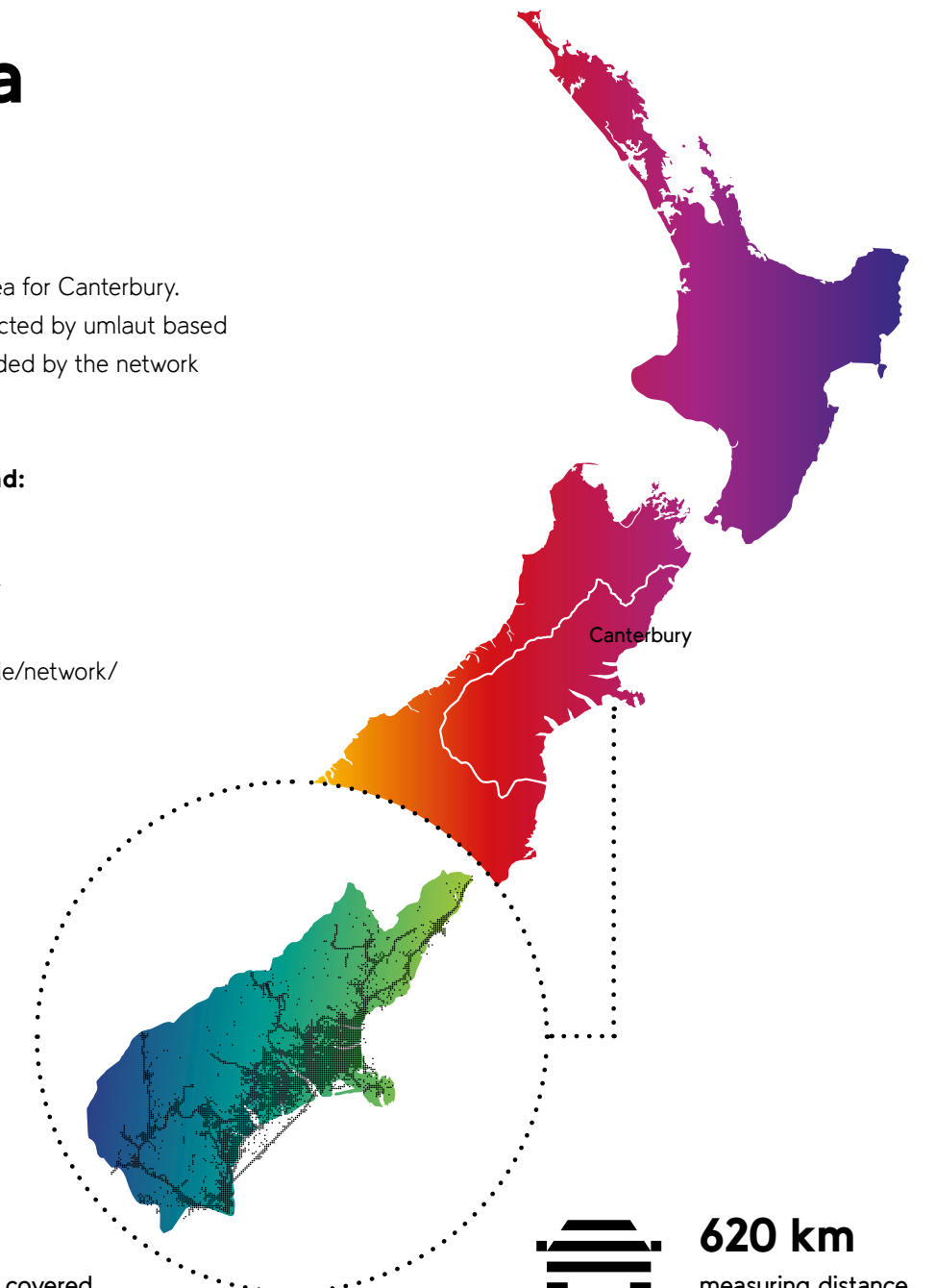
<https://one.nz/network/coverage/>

**Coverage Maps 2degrees:**

<https://www.2degrees.nz/coverage/>

**Coverage Maps Spark:**

<https://www.spark.co.nz/shop/mobile/network/>



**13906 km<sup>2</sup>**  
size of tested area

**97.0 %**  
of the 'build-up area' covered

**97.9 %**  
of the 'Population area' covered

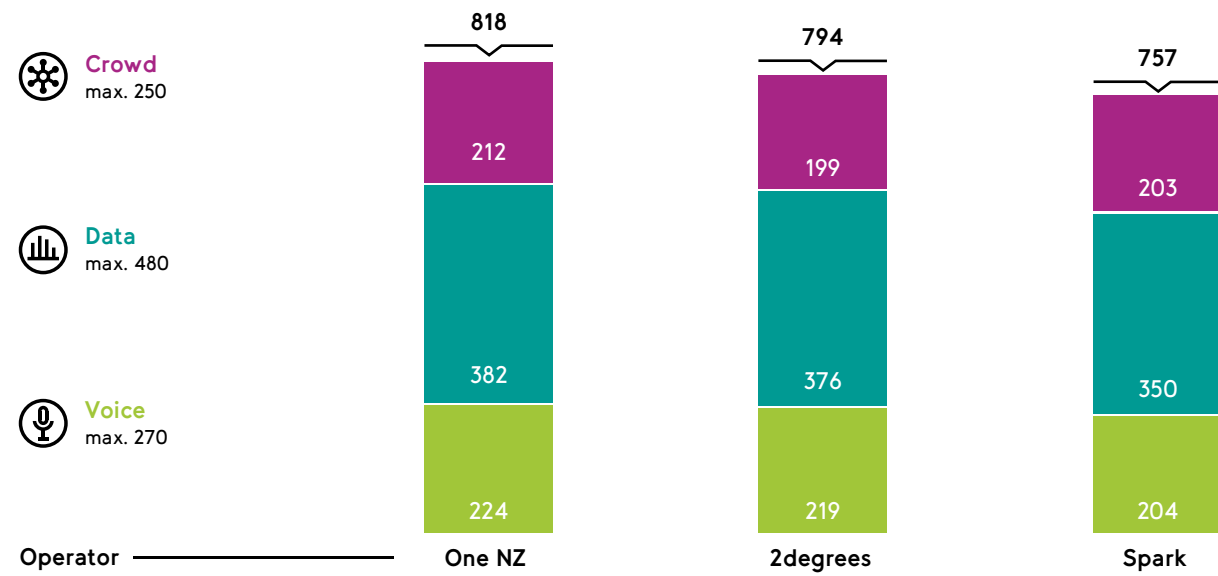
**620 km**  
measuring distance



# Total Score

## Overall results

Total Score  
1000 Dots



→ Shown total scores are rounded.

Score achieved by the networks under test.





# Reliability



Reliability score considering Voice Reliability, Data Reliability and Consistent UE.

## Total score

	Service Group	max	One New Zealand	2degrees	Spark
Reliability	Voice Reliability	149	88%	86%	87%
	Data Reliability	264	90%	80%	79%
	Consistent User Experience	131	92%	91%	83%

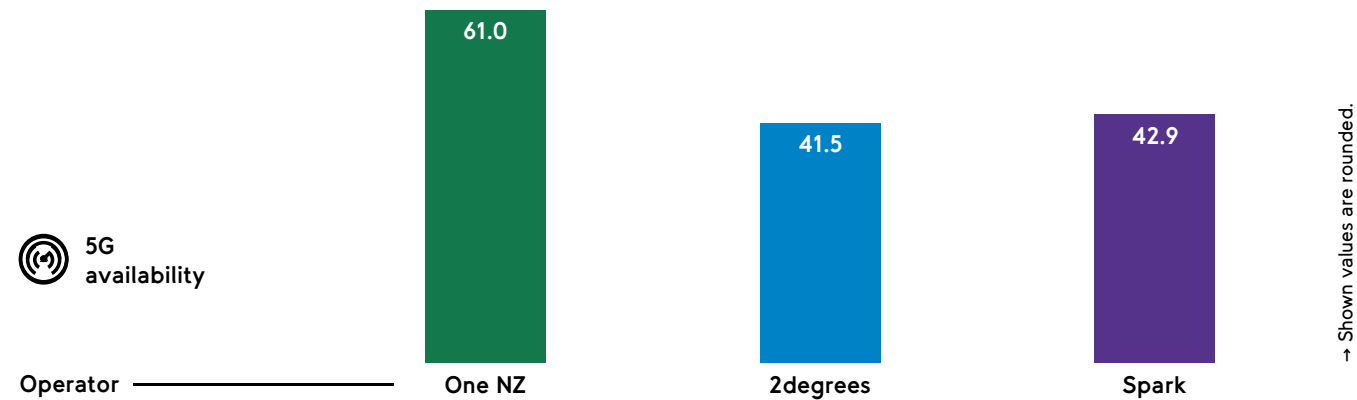
Score achievement in school grades:  
outstanding (≥95%), very good (≥85% and <95%), good (≥75% and ≤85%), satisfactory (≤65% and <75%), sufficient (≤55% and <65%).



# Data 5G availability

Measured from UE

Canterbury  
[%]



The graph shows the 5G availability measured in Canterbury. All data sequences from the umlaut use case are taken into account.



	Technology List	Unit	One NZ	2Degrees	Spark
Canterbury	EN-DC	[%]	44.50	31.37	28.70
	EN-DC-LTE Mixed Session	[%]	16.48	10.11	14.23
	LTE	[%]	38.20	54.44	54.93
	UMTS	[%]	0.28	2.67	0.98
	GSM	[%]	0.00	0.00	0.00
	LTE-UMTS Mixed Session	[%]	0.35	0.49	0.70

The table shows the 5G availability measured in Canterbury. All data sequences from the umlaut use case are taken into account.

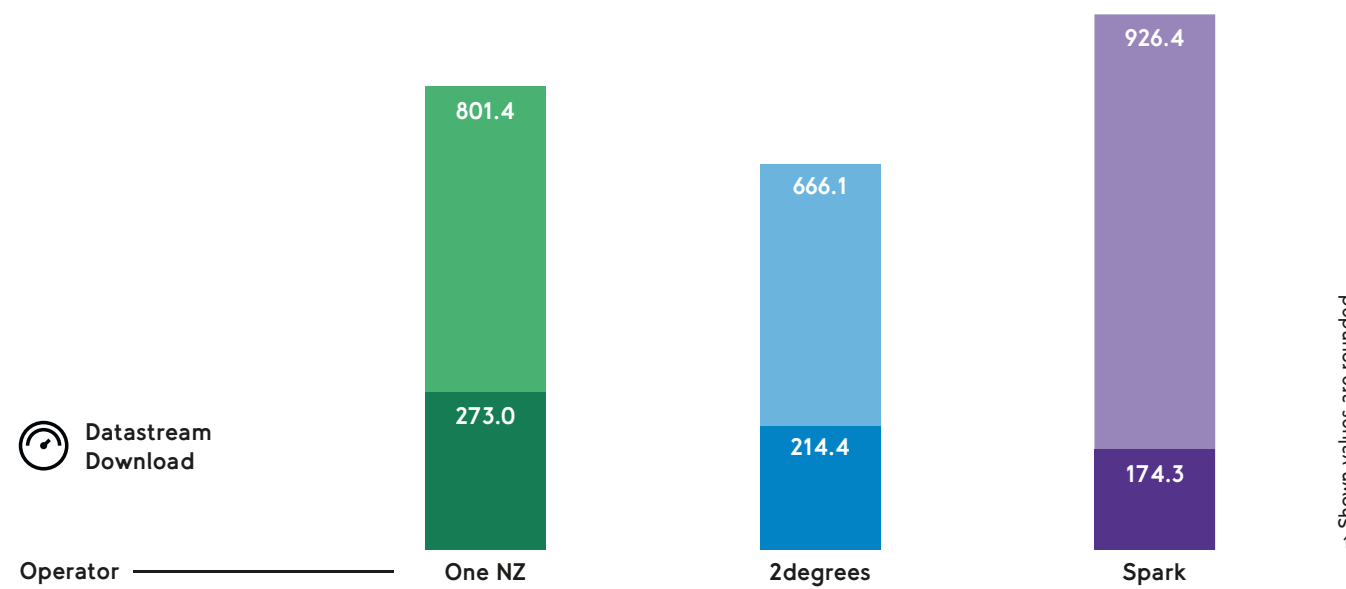
5G availability is defined as the share of time a user is actually using the 5G network (represented by the percentage of test cases during which the UE was using 5G).



# Data Datastream Download

## Avg. & Max. Throughputs

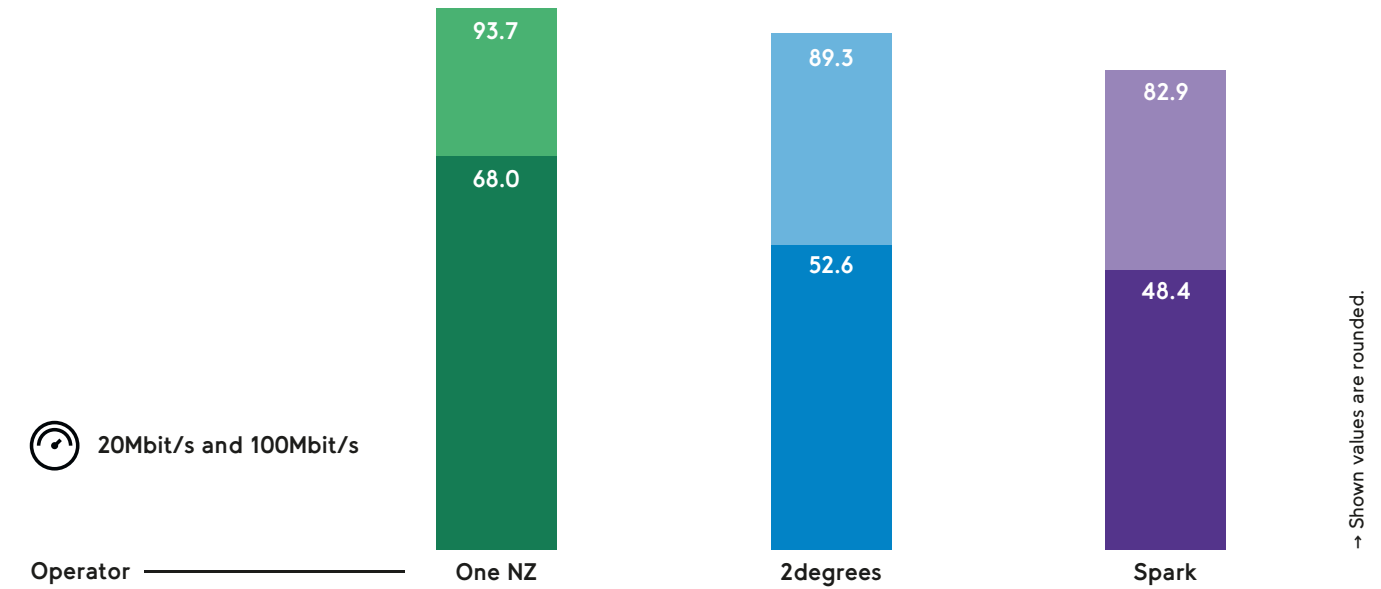
Canterbury [Mbps]



The graph shows the average throughput (darker shade) and the maximum throughput (lighter shade) for all technologies. All data sequences from the umlaut use case are taken into account.

## 20Mbit/s and 100Mbit/s

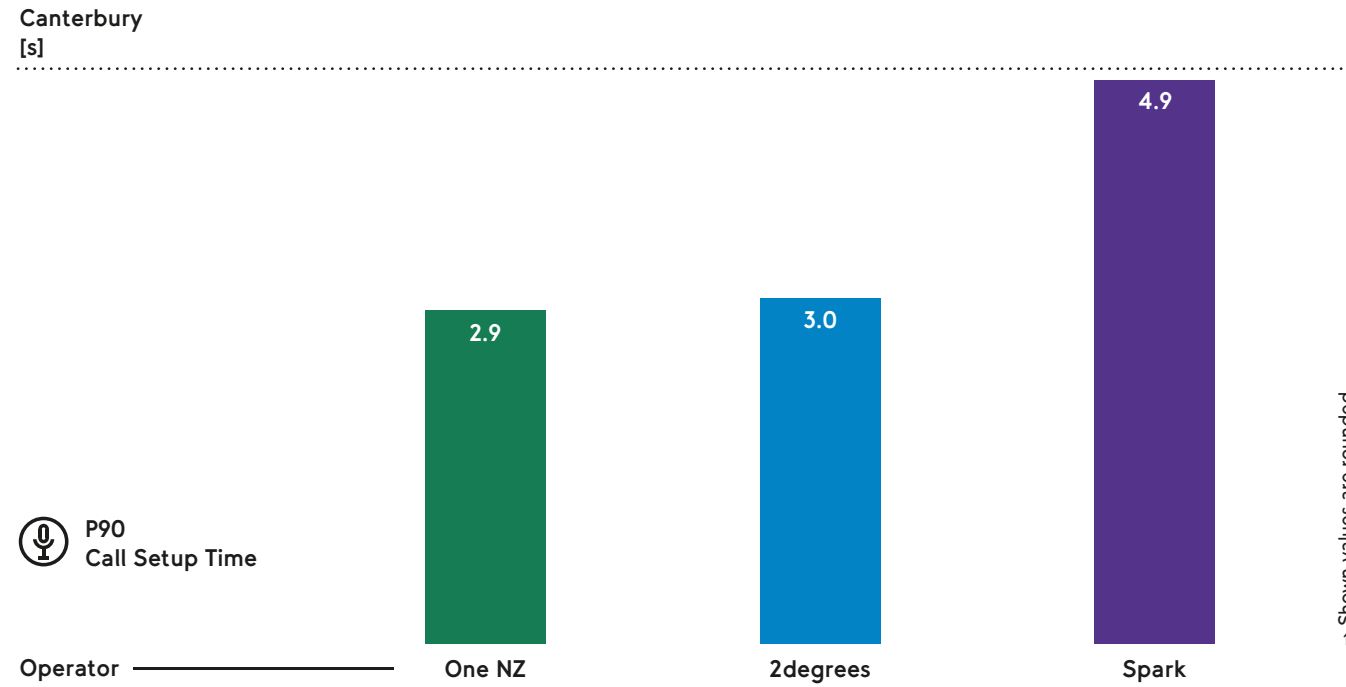
Canterbury [%]



The graph shows the number of samples at least achieving 100Mbit/s (darker shade) and 20Mbit/s (lighter shade) for all technologies. All data sequences from the umlaut use case are taken into account.



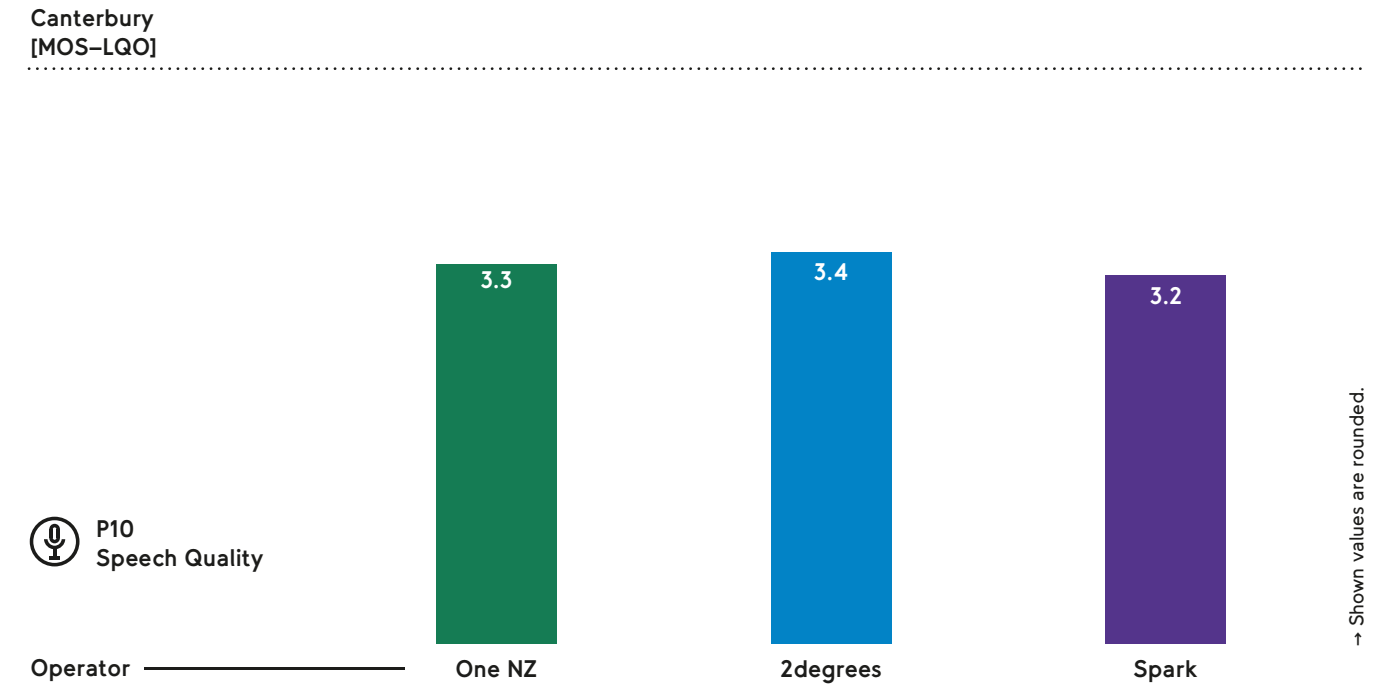
# Voice Call Setup Time



Achieved values of all networks under test in Call Setup Tme for Canterbury.



# Voice Speech Quality



Achieved values of all networks under test in Speech Quality for Canterbury.





# KPI overview

## Data

Data Canterbury	KPI Name	Unit	One New Zealand	2degrees	Spark
HTTP Web Page DL Smartphone	Qualifier	[%]	98,8	98,5	98,9
	Overall Session Time	[s]	2,2	1,8	2,1
HTTP 10MB DL Smartphone	Qualifier	[%]	100,0	98,6	99,7
	Overall Session Time	[s]	7,6	2,8	3,5
	90% faster than	[Mbit/s]	7,0	16,1	11,6
	10% faster than	[Mbit/s]	97,8	239,5	176,9
HTTP 5MB UL Smartphone	Qualifier	[%]	98,9	99,0	98,6
	Average Session Time	[s]	5,0	4,2	5,2
	90% faster than	[Mbit/s]	4,4	6,4	3,3
HTTP DL FDTT	10% faster than	[Mbit/s]	48,9	59,9	50,9
	Qualifier	[%]	99,3	99,3	99,3
	10% faster than	[Mbit/s]	627,0	519,6	486,1
HTTP UL FDTT	faster than 20 Mbit/s	[%]	93,7	89,3	82,9
	faster than 100 Mbit/s	[%]	68,0	52,6	48,4
	Qualifier	[%]	98,6	98,3	99,0
HTTP UL FDTT	10% faster than	[Mbit/s]	99,6	90,7	81,4
	faster than 2 Mbit/s	[%]	94,9	95,4	94,8
	faster than 5 Mbit/s	[%]	86,3	91,5	86,1
YouTube	Qualifier	[%]	98,3	96,2	96,6
	Start Time	[s]	3,0	2,7	3,3
	AVG Resolution	[p]	1077,5	1077,1	1067,7
YouTube Live Smartphone	Qualifier	[%]	98,9	94,1	94,8
	Start Time	[s]	3,7	3,3	3,7
	AVG Resolution	[p]	1077,5	1071,3	1065,0
Interactivity	Qualifier	[%]	92,7	95,9	58,1
	Interactivity eGaming	[%]	48,4	68,6	49,7
Conversational App	Qualifier	[%]	99,8	99,8	99,8
	P10 Speech Quality	[MOS-LQO]	3,7	3,3	3,5

Achieved values of all networks under test in each of the relevant Data Key Performance Indicators (KPIs) in Canterbury from all collected test samples.



## Voice

Voice Canterbury	Service Group	Unit	One New Zealand	2degrees	Spark
Canterbury	Qualifier	[%]	98,8	98,6	98,7
	Call Setup Time (P90)	[s]	2,9	3,0	4,9
	Speech Quality (P10)	[MOS-LQO]	3,3	3,4	3,2
	Multirab connectivity	[%]	100,0	99,0	100,0

Achieved values of all networks under test in each of the relevant Voice Key Performance Indicators (KPIs) for Canterbury.

## Crowd

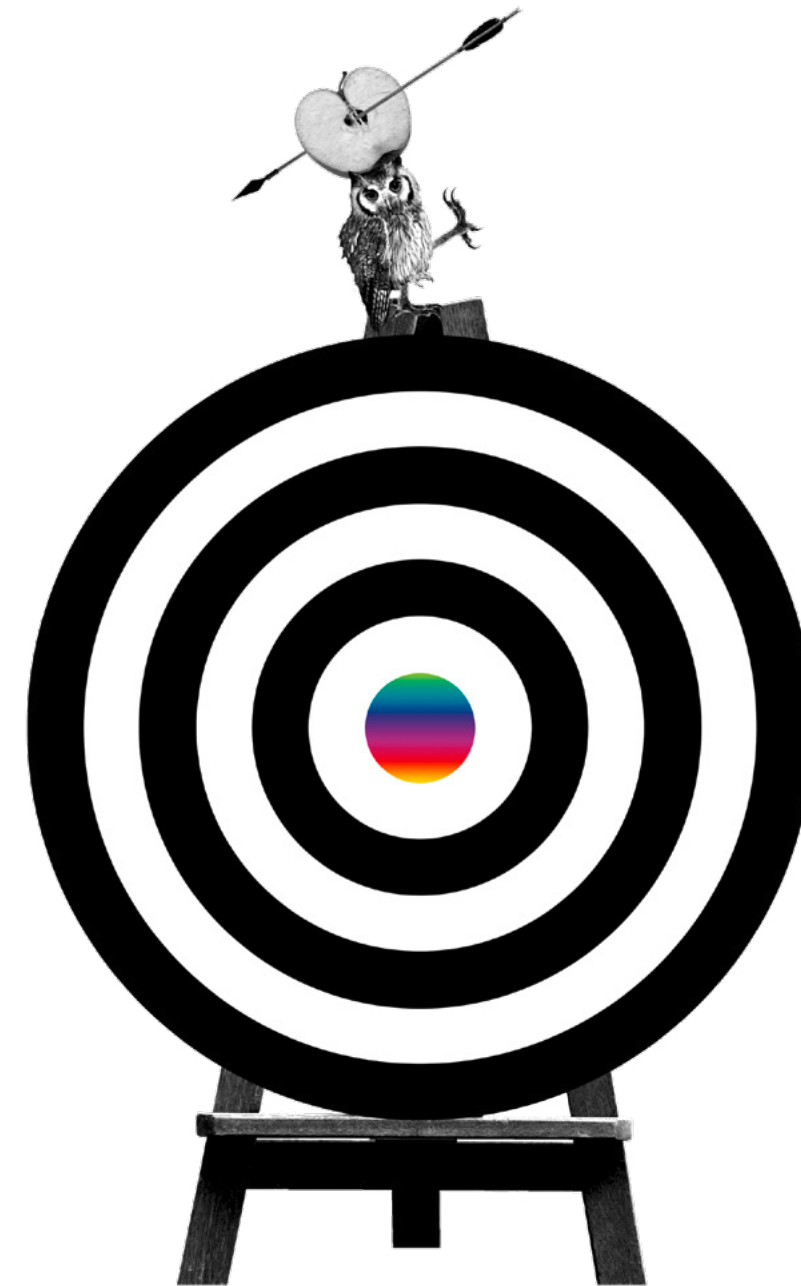
Crowd Canterbury	KPI name	Unit	One New Zealand	2degrees	Spark
Broadband Coverage	Coverage Quality	[%]	83.0	83.2	87.7
	Coverage Reach	[%]	57.2	46.7	75.5
	Time on broadband	[%]	96.3	95.5	91.3
Download Speed	Basic internet class	[%]	95.3	95.7	90.0
	HD video class	[%]	84.8	85.7	78.9
	UHD video class	[%]	28.4	32.3	28.2
Latency	OTT voice class	[%]	98.0	97.1	96.1
	Gaming class	[%]	82.1	59.9	71.5
Voice	HD voice	[%]	95.0	93.3	94.0

Achieved values of all networks under test in each of the relevant Crowd Key Performance Indicators (KPIs) for the categories "Broadband Coverage", "Download Speed", "Latency" and "Voice Crowd".



# Key takeaways

- || One New Zealand is leading with the highest overall umlaut score in Canterbury.
- ≡ One New Zealand achieves the highest reliability score.
- || One New Zealand has the highest 5G availability in the region.
- ≡ In the data category, One New Zealand achieves the highest overall score.
- ≡ In the data category, One New Zealand has the best average download throughput, while Spark has the highest maximum download throughput.
- || One New Zealand achieves the shortest call setup time, while 2degrees achieves the highest speech quality.
- ≡ One New Zealand achieves the highest crowd score in Canterbury region reflecting the customer experience on their device.





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