SPEEDCHECKER

Tanzania

August 2021

ABOUT THE DATA

Total number of samples: 203,547

Total number of unique devices: 112,593

Data collection period: 1 August - 16 August 2021

ABOUT THE REPORT

SpeedChecker aims to benchmark operators on the user experience and, therefore, the metrics in this report are designed with this in mind. Users accessing the services on the Internet are affected not only by the quality of the radio access network but also by other factors such as the mobile device performance, network backhaul capacity and interconnections to other networks.

Our methodology is designed to take into account all of those factors. Our metrics do not show the highest possible speeds or the lowest latencies that a particular operator can provide locally. The majority of the content accessed on the Internet is on CDNs and that is why SpeedChecker uses CDNs to perform the tests. Operators who have great radio access network as well as great connections to CDNs offer superior user experience and score better in our reports.

MNO SPEED BENCHMARK

The following table shows average download and upload speeds per MNO.

The measurements were made across the whole country and across the whole spectrum of available Radio Access Technologies (3G, 4G, 5G if available).

—— **95% Confidence interval**

Airtel
43,467 samples

Download speed (Mb/s)	9.14	+/- 0.13
Upload speed (Mb/s)	6.00	+/- 0.11

Halotel
44,691 samples

Download speed (Mb/s)	6.96	+/- 0.11
Upload speed (Mb/s)	3.93	+/- 0.10

Tigo
45,400 samples

Download speed (Mb/s)	4.81	+/- 0.07
Upload speed (Mb/s)	3.58	+/- 0.06

TTLC
5,309 samples

Download speed (Mb/s)	6.22	+/- 0.25
Upload speed (Mb/s)	3.38	+/- 0.17

Vodacom
52,924 samples

Download speed (Mb/s)	7.66	+/- 0.10
Upload speed (Mb/s)	3.98	+/- 0.07

Zantel
11,674 samples

Download speed (Mb/s)	4.21	+/- 0.11
Upload speed (Mb/s)	3.54	+/- 0.11

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MNO 4G AND 3G DOWNLOAD SPEED BENCHMARK

The following table shows average download speed per MNO and particular RAT.

— **95% Confidence interval**

Airtel
17,240 samples

4G Download speed (Mb/s)	9.71 +/- 0.20
3G Download speed (Mb/s)	5.61 +/- 0.23

Halotel
18,063 samples

4G Download speed (Mb/s)	7.76 +/- 0.19
3G Download speed (Mb/s)	4.04 +/- 0.14

Tigo
17,970 samples

4G Download speed (Mb/s)	5.11 +/- 0.11
3G Download speed (Mb/s)	3.51 +/- 0.14

TTLC
2,111 samples

4G Download speed (Mb/s)	6.79 +/- 0.40
3G Download speed (Mb/s)	3.30 +/- 0.41

Vodacom
21,694 samples

4G Download speed (Mb/s)	8.26 +/- 0.16
3G Download speed (Mb/s)	4.87 +/- 0.15

Zantel
4,561 samples

4G Download speed (Mb/s)	4.21 +/- 0.17
3G Download speed (Mb/s)	2.98 +/- 0.26

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MNO LATENCY BENCHMARK

As described in our <u>data collection methodology</u>, latency is measured to the CDN endpoints. Operators who interconnect with CDNs well tend to offer better user experience in latency-sensitive applications as well as score well in our latency comparison.

—— **95% Confidence interval**

Airtel
39,765 samples

Latency (ms) — 117 — +/- 0.55

Halotel
35,409 samples

Latency (ms) — 186 — +/- 0.87

Tigo
31.585 samples

Latency (ms) — 235 — +/- 0.60

TTLC
3,619 samples

Latency (ms) — 190 — +/- 1.77

Vodacom
49,251 samples

Latency (ms) — 109 — +/- 0.44

Zantel
8,226 samples

**Latency (ms)** — 112 — +/- 1.21

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MNO 4G AVAILABILITY BENCHMARK

Our 4G availability metrics correspond to the % of the tests done on 4G vs 3G.
This metric does not represent 4G coverage.

—— **95% Confidence interval**

Airtel
77,000 samples

4G availability (%) — **76.62**

Halotel
101,000 samples

4G availability (%) — **75.25**

Tigo
74,000 samples

4G availability (%) — **79.73**

TTLC
10,000 samples

4G availability (%) — **80.00**

Vodacom
93,000 samples

4G availability (%) — **78.49**

Zantel
16,000 samples

4G availability (%) — **68.75**
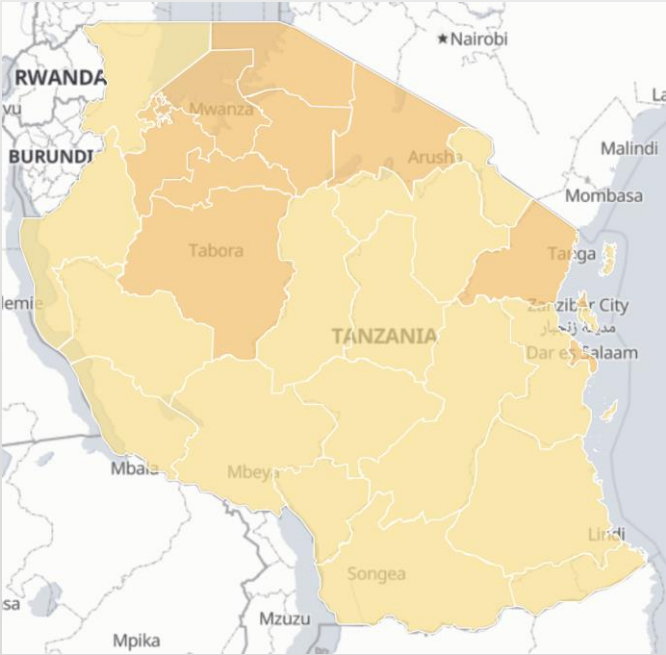
SPEEDCHECKER

REGIONAL COMPARISON OF MNO DOWNLOAD SPEED PERFORMANCE
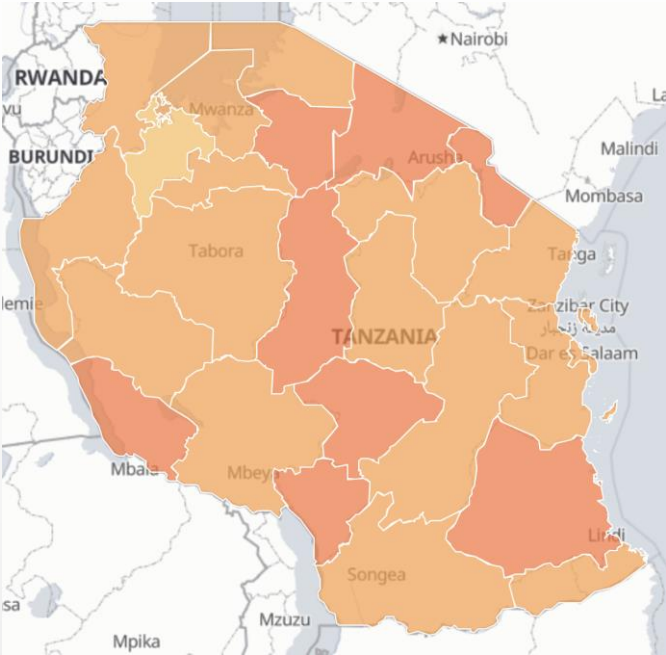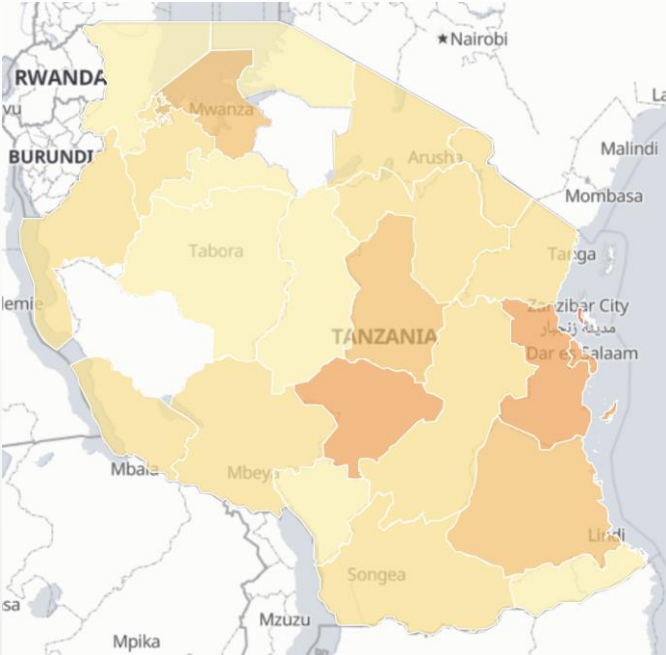

Airtel
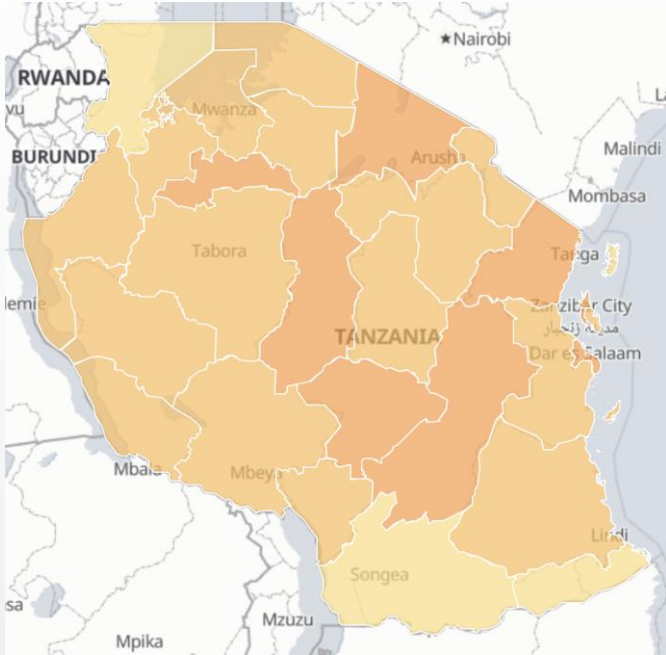
Halotel

Tigo

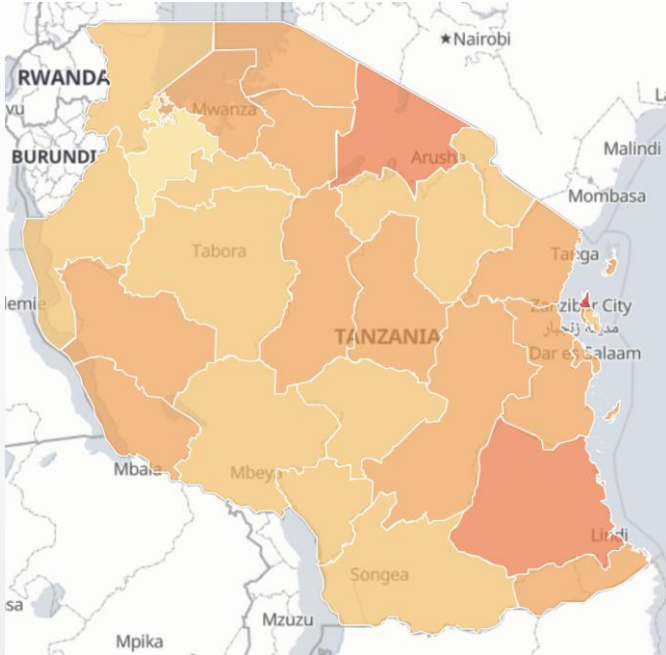**Avg. Download mbit/s**
- 1 - 3
- 3 - 5
- 5 - 7
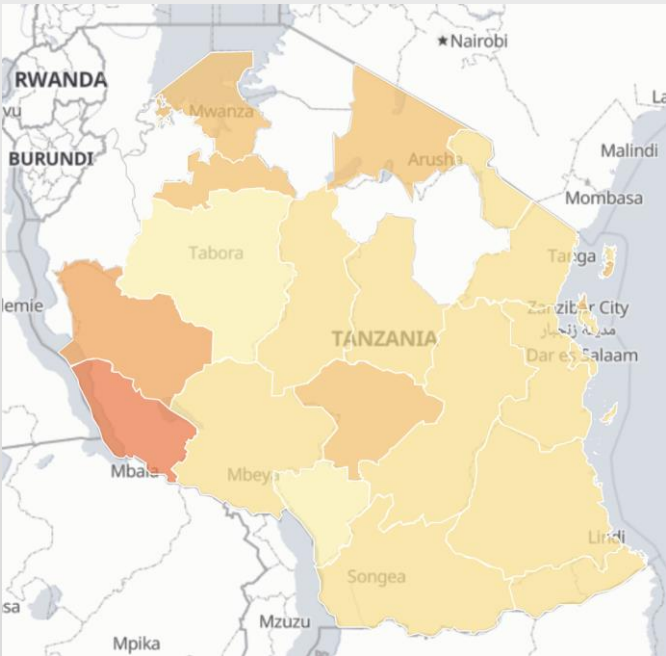- 7 - 10
- 10 - 15
- 15 - 20
- 20 - 30
- 30 - 50

REGIONAL COMPARISON OF MNO DOWNLOAD SPEED PERFORMANCE

TTLC

Vodacom

Zantel

Avg. Download mbit/s

- 1 - 3
- 3 - 5
- 5 - 7
- 7 - 10
- 10 - 15
- 15 - 20
- 20 - 30
- 30 - 50

AVERAGE DOWNLOAD SPEEDS IN DIFFERENT REGIONS OF TANZANIA

The following table shows the average download speeds in different regions of Tanzania. The 2nd column is an average of all MNOs in a particular region.

The fastest regions are at the top of the table measured in Mb/s.

Region	All operators	Airtel	Halotel	Tigo	TTLC	Vodacom	Zantel	Test count #
Arusha	8.75	10.21	8.10	5.05	4.68	10.41	6.04	5,690
Dar es Salaam	7.88	9.62	7.75	5.08	7.61	9.00	4.67	69,605
Dodoma	6.58	8.04	6.76	4.71	5.09	8.05	3.44	11,440
Geita	5.47	6.19	6.12	5.32	4.20	4.86	-	3,071
Iringa	6.63	10.04	7.62	4.58	7.14	6.73	5.60	3,818
Kagera	5.66	7.97	4.34	3.28	1.59	6.79	-	2,220
Katavi	6.93	8.03	6.37	4.35	-	7.11	9.25	1,717
Kigoma	5.64	7.73	5.67	4.65	3.60	5.69	-	2,794
Kilimanjaro	5.98	10.47	6.41	3.75	3.23	6.60	3.52	4,258
Lindi	6.53	10.48	5.18	4.23	5.20	11.99	3.57	1,065
Manyara	5.65	7.81	5.49	3.59	4.31	5.89	-	1,486
Mara	6.86	7.79	6.34	5.03	2.14	7.78	-	1,527
Mbeya	5.70	7.42	5.67	4.39	3.50	6.27	3.62	9,606
Morogoro	6.82	9.42	7.63	4.93	3.63	7.34	3.34	7,637
Mtwara	5.44	9.72	4.79	4.11	1.27	7.98	3.40	2,503
Mwanza	7.05	7.90	6.88	5.84	6.83	7.38	5.24	11,143
Njombe	5.47	13.27	5.09	3.06	1.83	6.26	1.75	2,109
Pemba North	3.97	-	3.16	4.26	-	-	3.80	321
Pemba South	5.46	-	3.46	4.79	-	7.74	6.36	352
Pwani	6.69	8.27	6.97	4.66	7.09	7.74	4.12	1,566
Rukwa	6.79	10.53	6.00	4.26	4.22	7.66	10.84	1,329
Ruvuma	5.16	8.84	4.00	4.88	3.09	5.93	3.94	2,467
Shinyanga	6.95	9.70	7.86	5.70	1.61	5.84	5.66	2,256
Simiyu	7.80	12.49	6.07	5.10	-	8.18	-	902
Singida	7.29	11.25	9.99	3.15	2.66	7.45	4.20	2,134

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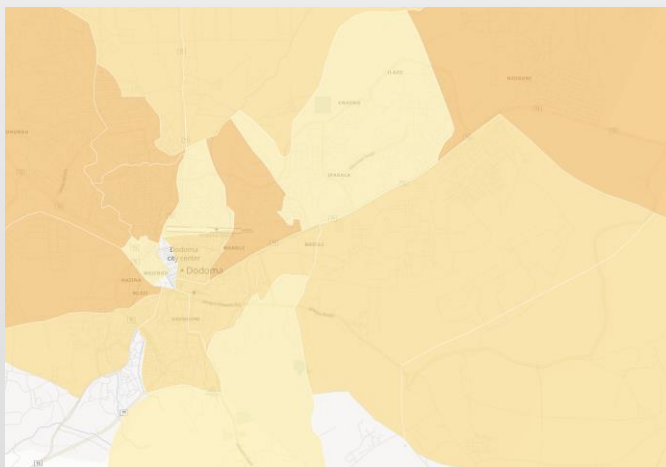| Region	All operators	Airtel	Halotel	Tigo	TTLC	Vodacom	Zantel	Test count #
Tabora	6.91	9.44	6.65	6.06	2.15	6.68	2.74	2,931
Tanga	7.09	9.47	8.86	5.50	3.40	8.55	4.67	4,177
Zanzibar North	10.71	-	9.24	6.29	-	25.73	6.22	73
Zanzibar South and Central	5.12	9.39	5.78	4.46	-	6.19	3.83	369
Zanzibar West	6.03	8.61	7.69	4.34	11.58	7.96	4.04	7,241

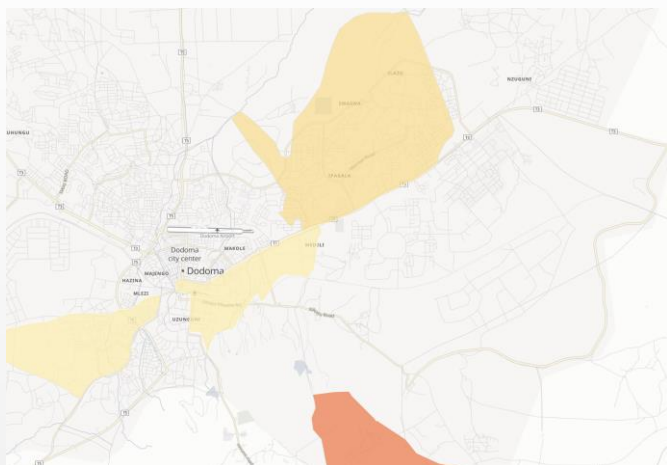# MNO DOWNLOAD SPEED PERFORMANCE IN DODOMA
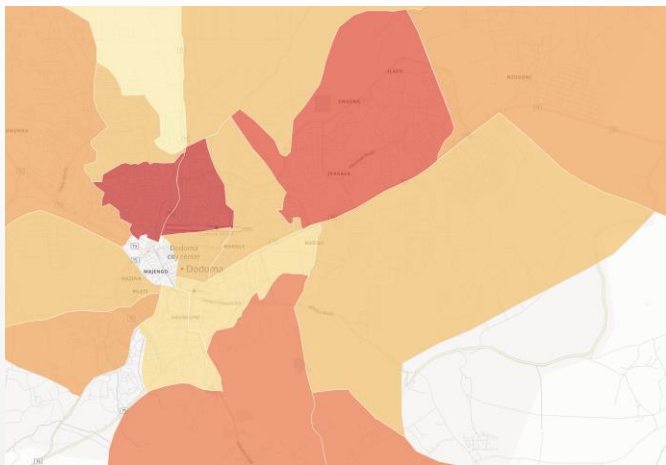
Airtel
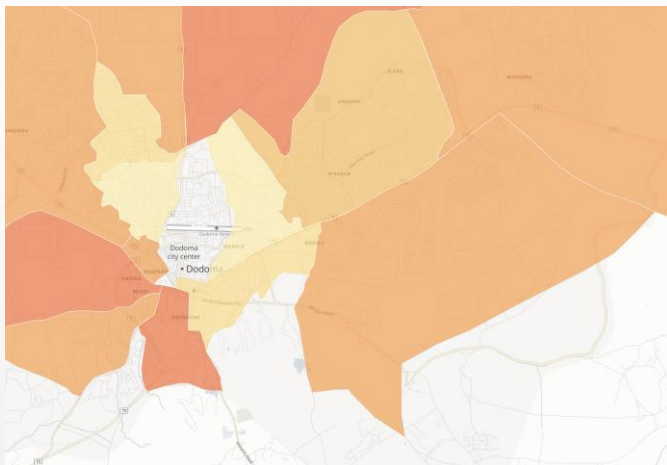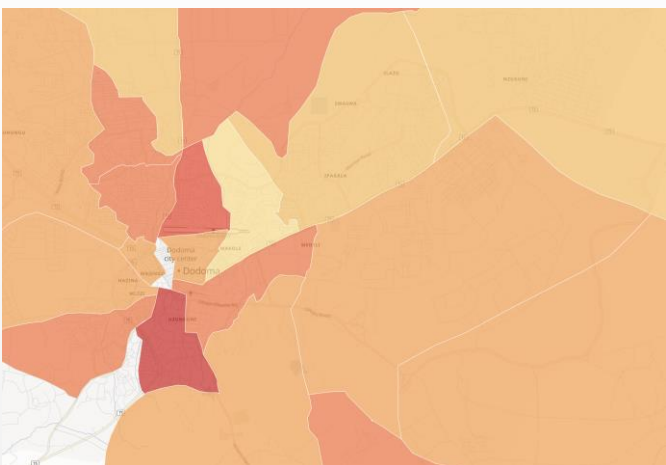

Halotel

Tigo

Avg. Download mbit/s
- 1 - 3
- 3 - 5
- 5 - 7
- 7 - 10
- 10 - 15
- 15 - 20
- 20 - 30
- 30 - 50

MNO DOWNLOAD SPEED PERFORMANCE IN DODOMA

TTLC
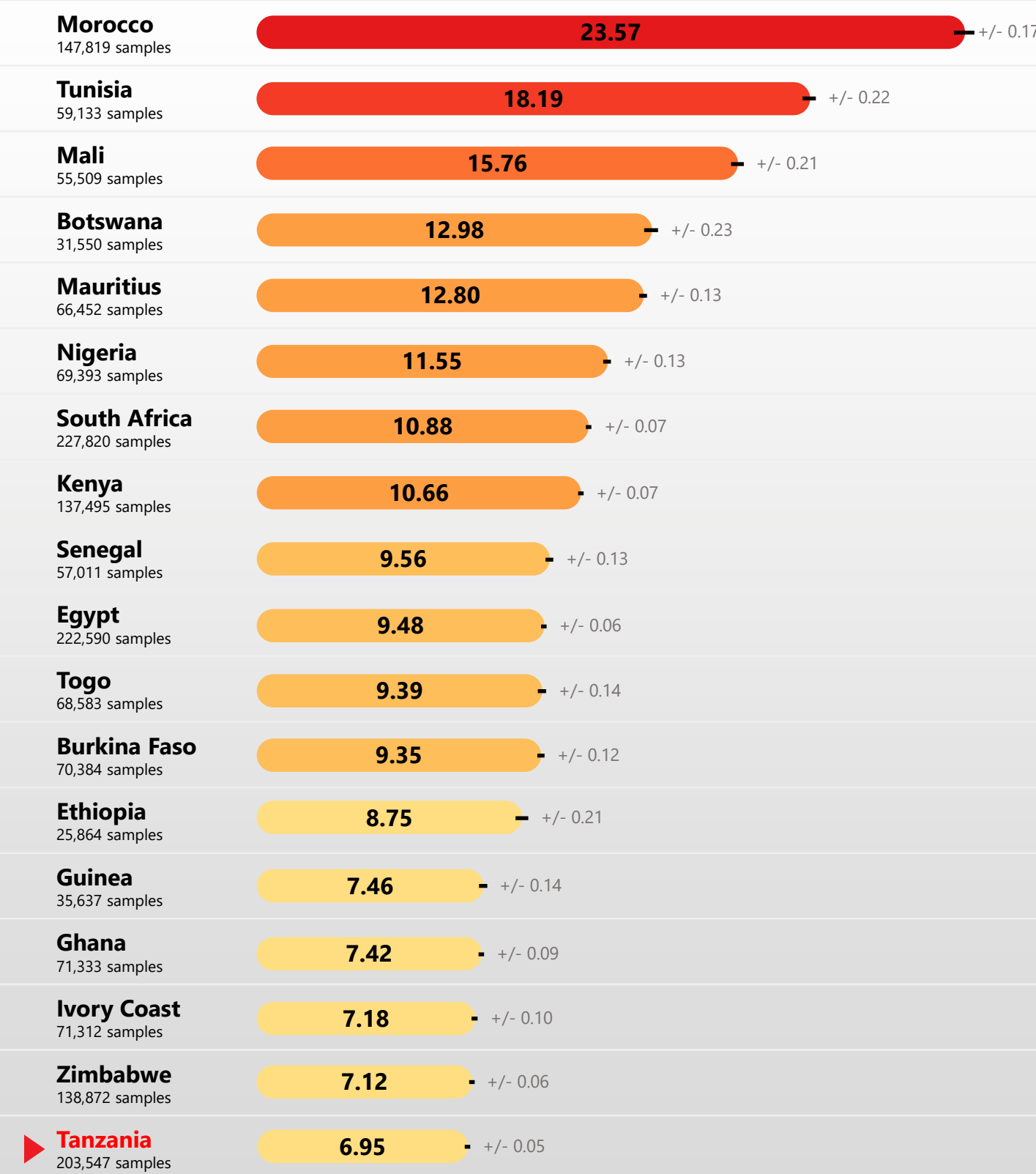

Vodacom

No data

Zantel

Avg. Download mbit/s
- 1 - 3
- 3 - 5
- 5 - 7
- 7 - 10
- 10 - 15
- 15 - 20
- 20 - 30
- 30 - 50

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DOWNLOAD SPEED (Mb/s) AFRICAN BENCHMARK

— 95% Confidence interval

Morocco
147,819 samples
23.57 +/- 0.17

Tunisia
59,133 samples
18.19 +/- 0.22

Mali
55,509 samples
15.76 +/- 0.21

Botswana
31,550 samples
12.98 +/- 0.23

Mauritius
66,452 samples
12.80 +/- 0.13

Nigeria
69,393 samples
11.55 +/- 0.13

South Africa
227,820 samples
10.88 +/- 0.07

Kenya
137,495 samples
10.66 +/- 0.07

Senegal
57,011 samples
9.56 +/- 0.13

Egypt
222,590 samples
9.48 +/- 0.06

Togo
68,583 samples
9.39 +/- 0.14

Burkina Faso
70,384 samples
9.35 +/- 0.12

Ethiopia
25,864 samples
8.75 +/- 0.21

Guinea
35,637 samples
7.46 +/- 0.14

Ghana
71,333 samples
7.42 +/- 0.09

Ivory Coast
71,312 samples
7.18 +/- 0.10

Zimbabwe
138,872 samples
7.12 +/- 0.06

▶ **Tanzania**
203,547 samples
6.95 +/- 0.05

⬇ **Continue on the next page** ⬇   🏁 **SPEEDCHECKER**

DOWNLOAD SPEED (Mb/s) AFRICAN BENCHMARK

—— **95% Confidence interval**

Benin
51,507 samples
6.28 +/- 0.12

Algeria
430,861 samples
5.40 +/- 0.03

ARE YOU LOOKING FOR MORE DETAILED CROWDSOURCED DATA IN TANZANIA?

What you see in this free report is a high-level snapshot of the crowdsourced data we offer to our clients.

Our crowdsourcing system contains billions of data points collected from mobile devices worldwide.

Unlike our competitors, we can sell access to the data with different granularity: Our clients can pick data they need with significant cost savings associated with a reduced scope.

CONTACT US FOR MORE INFORMATION ✉

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FLEXIBILITY IS IN OUR DNA

Our customers value our flexible and modular approach in delivering our solutions. There is no one size fits all in providing crowdsourcing projects. Customers increasingly require tailored solutions which will satisfy all technical, operational and legal requirements.

With reduced scope comes reduced price. Our Basic KPI set is a more cost effective way to get speed test data. Our Advanced KPI set is more comprehensive with 100+ active and passive KPIs.

Crowdsourcing is about trade-offs. Do you want more tests or do you want tests to run longer ? Do you want to collect data passively without impacting the network and user bandwidth or run active tests which will stress and assess the capacity better?

Do you want us to host the solution for fast & easy deployment or do you require data to be within your data center for compliance purposes?

You not only want the data but you also want your own app or web-based tester? We can do it all. Our team can produce iOS, Android, HTML, Windows and MAC clients tailored to your specific needs.

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BASIC CROWDSOURCING SYSTEM

Our Basic Crowdsourcing System offers full analytical options like our Advanced system but with the limitation of a smaller Basic KPI set.
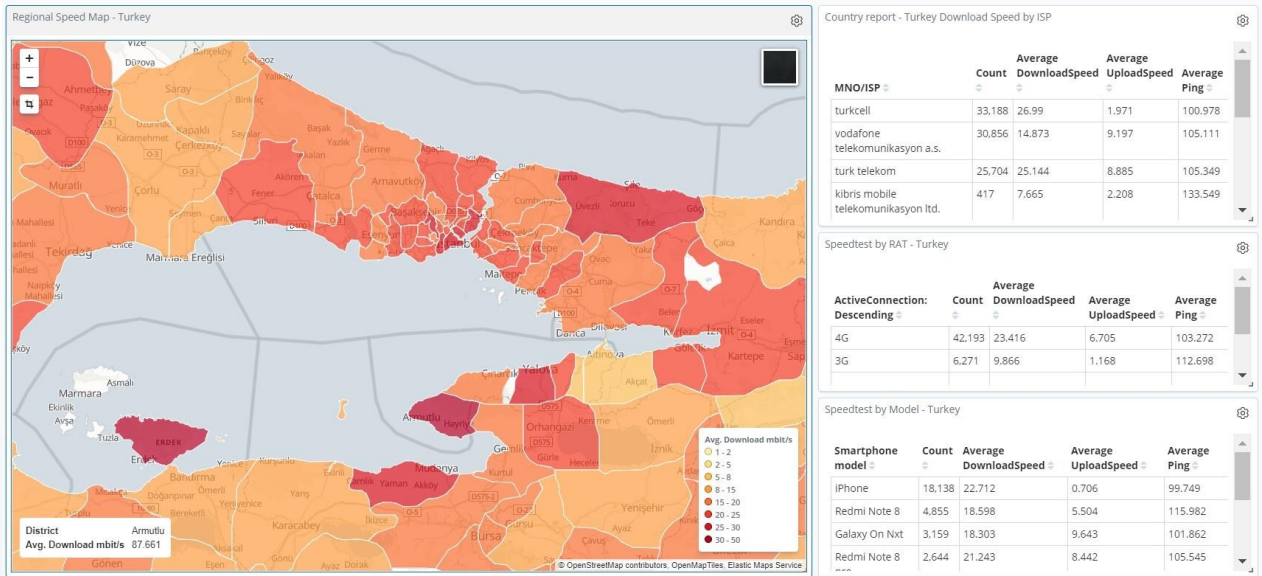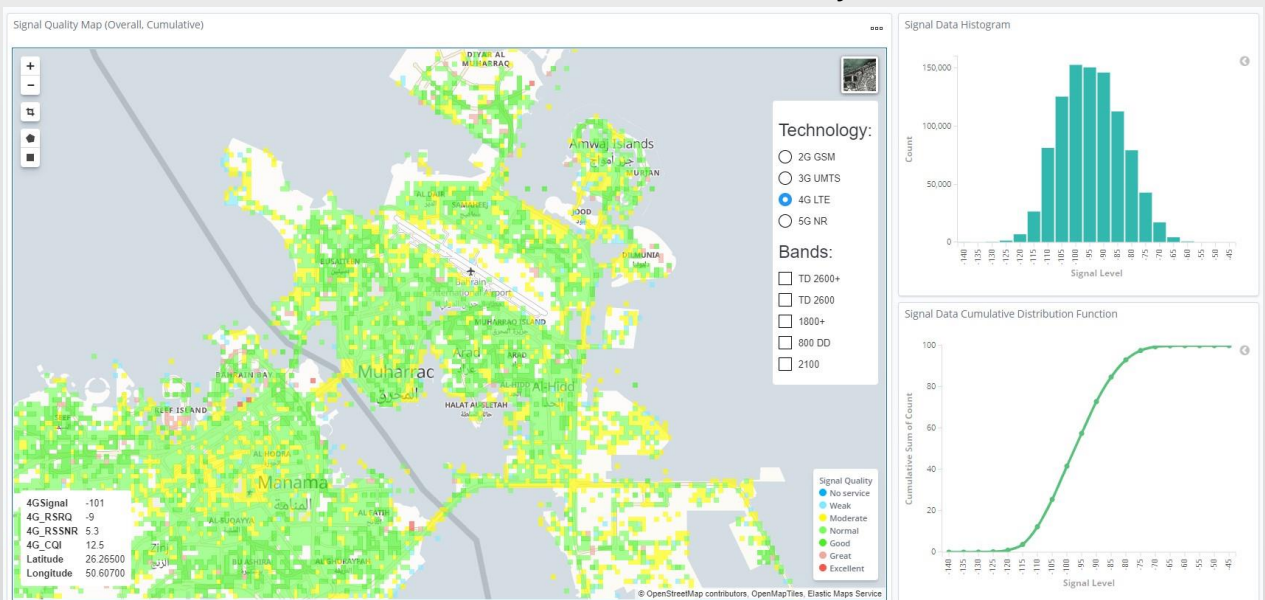

Internet Speeds

🔍 *See Full Screen image*

Basic KPIs include speed test data along with device and network information but do not contain Streaming Video, detailed Radio KPI's nor passive measurements.

ADVANCED CROWDSOURCING SYSTEM

Step up from our Basic system to our Advanced Crowdsourcing system with more than 100+ KPIs to analyse
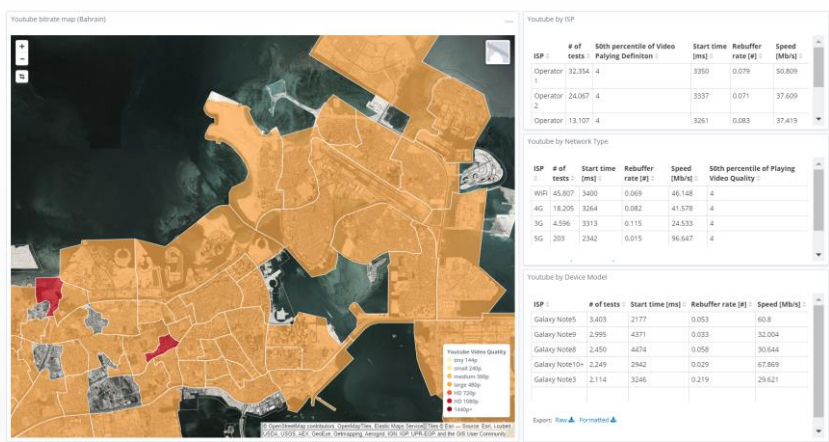

Coverage Analysis

🔍 *See Full Screen image*

- Statistical research on the basis of millions of crowdsourced samples
- Multiple signal metrics RSRP, RSRQ, SNR, RSSI, CQI
- Split by MNO, Radio Access Type, Band (down to individual ARFCN)
- Possibility to filter by: Speed (e.g. High Speed Scenario) and Indoor
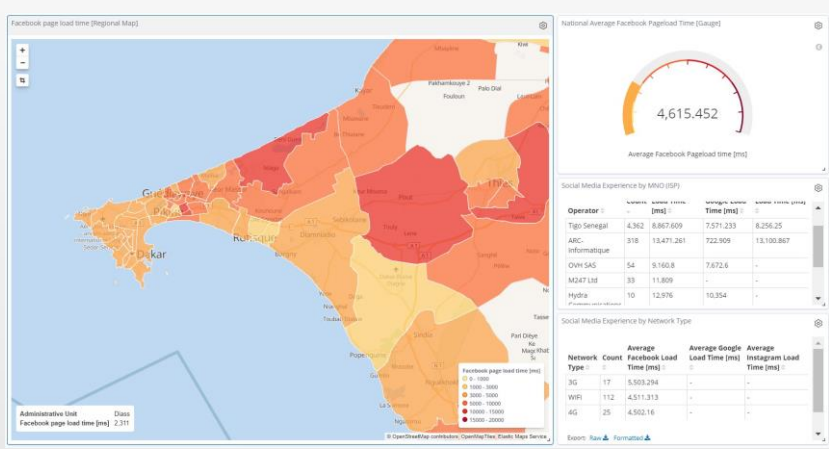
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ADVANCED *CROWDSOURCING SYSTEM*

YouTube Quality

YouTube quality dashboard provides information about YouTube regional performance. It features metrics such as YouTube playing definition, buffering time, start delay.

🔍 See Full Screen image

Social Media Experience

Social media experience dashboard shows regional performance of major social media platforms such as Facebook, Google and Twitter.
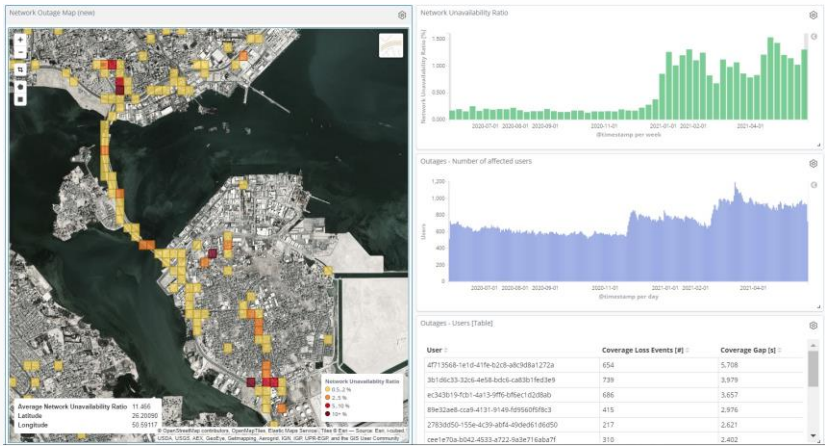
🔍 See Full Screen image

Point of Interest Performance

Reveals Internet performance in specific important locations such as Airports, Malls, Stadiums and other places located outside of drive test routes.
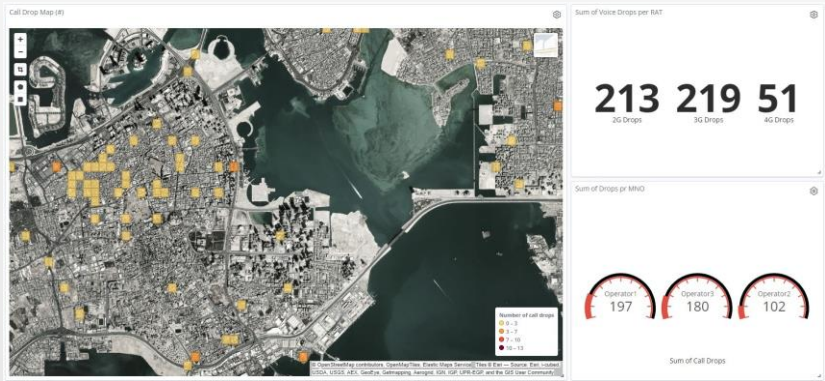
🔍 See Full Screen image

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ADVANCED CROWDSOURCING SYSTEM

Outages

Network Availability is the number one metric for any network. While OSS data provides overall information, crowdsourcing is able to spot exact locations where subscribers are not able to attach to the network.
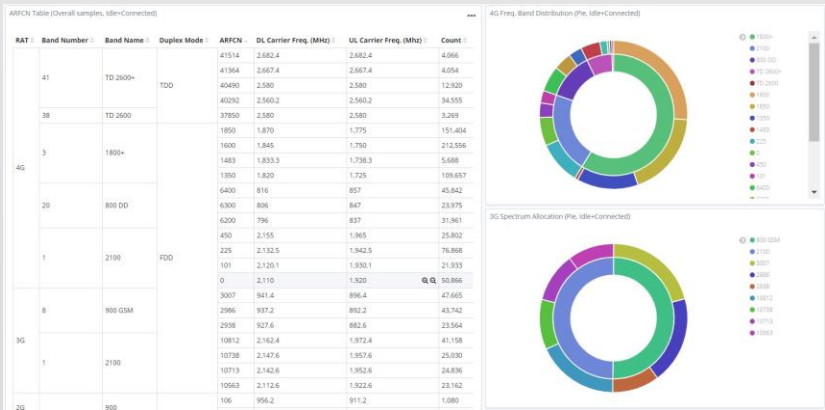
🔍 See Full Screen image

Voice Quality

The Voice Quality dashboard shows the user issues visualized on a map to spot any areas where users are making calls and their quality is not satisfactory or where calls are being dropped.

🔍 See Full Screen image

Spectrum Usage

Spectrum utilization dashboard allows the monitoring of how the available spectrum is used in various locations. It may reveal the load balancing situation or the fact that individual band are overloaded or unloaded.

🔍 See Full Screen image

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DATA COLLECTION METHODOLOGY

Our data is collected from end user devices running Android and iOS systems. All measurements are executed towards a CDN that has a large geographical footprint and hosts a significant part of the content that is being accessed by the users. This ensures our results are a good approximation of the user's actual quality of experience.

All measurements must contain accurate location information using GPS or wi-fi geolocation methods. Measurements are considered only from the apps that have been approved by SpeedChecker. Submitted measurements are checked to see if they are within expected ranges and additional security precautions are implemented to ensure measurement data is not being manipulated.

The data collection process aims to deliver a single measurement sample from every device in our crowdsourcing system device pool and we strive to remove all duplicates. Due to privacy settings on some users phones we cannot reliably detect unique devices therefore some devices have contributed to more than 1 measurement into this dataset.

MEASUREMENT METHODOLOGY

The methodology is based on the concept of the ITU-T Q.3960 (2016) "Framework of Internet related performance measurements" and "Supplement 71 to ITU-T Q-series Recommendations".

This test methodology aims at delivering an accurate measurement of the maximum bandwidth available over a given internet connection. This is achieved by transferring multiple parallel data streams over separate TCP connections within a predefined amount of time. The transferred data consists of randomly generated data with high entropy.

#	Parameter	Unit	ITU Range	Current Setting
1	Number of parallel threads	#	$1 \leq n \leq 10$	Dynamic addition from 1 to 10
2	Duration of pre-test	s	$0 \leq T_p \leq 5$	1s
3	Duration of the downlink test	s	$5 \leq T_d \leq 15$	5s
4	Duration of the uplink subtest	s	$5 \leq T_u \leq 15$	5s
5	Number of 'pings' during delay subtest	#	$5 \leq p \leq 20$	$p = 10$

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