Barometer of Mobile Internet Connections in Indonesia

2019 report

Publication of February 25th, 2020

nPerf is a trademark owned by nPerf SAS, 87 rue de Sèze 69006 LYON – France.
Contents

1 Summary of overall results ........................................................................................................ 2
  1.1 nPerf score, all technologies combined ............................................................................... 2
  1.2 Our analysis ....................................................................................................................... 2
2 Overall results .......................................................................................................................... 3
  2.1 Data amount and distribution ............................................................................................... 3
  2.2 Success rate [2G->4G] ......................................................................................................... 4
  2.3 Download speed [2G->4G] .................................................................................................. 4
  2.4 Upload speed [2G->4G] ...................................................................................................... 5
  2.5 Latency [2G->4G] ............................................................................................................... 6
  2.6 Browsing test [2G->4G] ...................................................................................................... 7
  2.7 Streaming test [2G->4G] ..................................................................................................... 7
  2.8 4G connection rate ............................................................................................................ 8
  2.9 nPerf Score [2G->4G] ......................................................................................................... 8
3 You too, participate in the nPerf panel! .................................................................................... 9
4 Custom analysis & contact ......................................................................................................... 10
5 Appendices ............................................................................................................................... 11
  5.1 Methodology ...................................................................................................................... 11
    5.1.1 The panel ...................................................................................................................... 11
    5.1.2 Definitions and objectives ............................................................................................ 11
    5.1.3 Filtering of test results ................................................................................................. 12
    5.1.4 Statistical accuracy ...................................................................................................... 12
  5.2 Complete list of 4G terminals selected for 2019 ................................................................. 13
1 Summary of overall results

1.1 nPerf score, all technologies combined

Summary table of the nPerf barometer 2019
Mobile data connections in Indonesia

<table>
<thead>
<tr>
<th></th>
<th>3 Tri</th>
<th>Indosat Ooredoo</th>
<th>Smartfren</th>
<th>Telkomsel</th>
<th>XL Axiata</th>
</tr>
</thead>
<tbody>
<tr>
<td>Success ratio</td>
<td>80.27%</td>
<td>74.27%</td>
<td>74.24%</td>
<td>80.05%</td>
<td>78.38%</td>
</tr>
<tr>
<td>Download bitrate</td>
<td>4.81 Mb/s</td>
<td>5.79 Mb/s</td>
<td>10.62 Mb/s</td>
<td>9.96 Mb/s</td>
<td>7.07 Mb/s</td>
</tr>
<tr>
<td>Upload bitrate</td>
<td>4.98 Mb/s</td>
<td>5.09 Mb/s</td>
<td>3.94 Mb/s</td>
<td>7.89 Mb/s</td>
<td>5.67 Mb/s</td>
</tr>
<tr>
<td>Latency</td>
<td>66.30 ms</td>
<td>84.52 ms</td>
<td>64.89 ms</td>
<td>66.63 ms</td>
<td>62.02 ms</td>
</tr>
<tr>
<td>Browsing (performance rate)</td>
<td>32.29%</td>
<td>25.41%</td>
<td>24.37%</td>
<td>37.46%</td>
<td>30.56%</td>
</tr>
<tr>
<td>Streaming YouTube (performance rate)</td>
<td>59.92%</td>
<td>53.95%</td>
<td>51.34%</td>
<td>71.49%</td>
<td>67.04%</td>
</tr>
</tbody>
</table>

2G/3G/4G Score nPerf *

<table>
<thead>
<tr>
<th>3 Tri</th>
<th>Indosat Ooredoo</th>
<th>Smartfren</th>
<th>Telkomsel</th>
<th>XL Axiata</th>
</tr>
</thead>
<tbody>
<tr>
<td>23,190 nPoints</td>
<td>19,839 nPoints</td>
<td>23,107 nPoints</td>
<td>35,499 nPoints</td>
<td>28,384 nPoints</td>
</tr>
</tbody>
</table>

* The formula for calculating the score has changed since 1 January 2018, so the values are not comparable with those of previous publications. See details in the publication.

Final SCORE

Do you want to be part of the nPerf testing group?
install the nPerf app on your smartphone or tablet, there's nothing easier.

*** Telkomsel provided the Best Mobile Internet Performance 2019 ***

1.2 Our analysis

In 2019, nPerf users has made **651,618 connection tests** (including speed test, browsing and streaming test) with nPerf mobile app (iOS, Android). After filtering, our survey is based on **401,816 relevant tests**. With these tests nPerf measures the real customer performance.

The nPerf score goal reflects the customer experience. It is based on the five most important KPI’s (download speed, upload speed, latency, streaming and browsing).

With 35,499 nPoints, **Telkomsel has provided the best mobile internet performance 2019**.
Telkomsel is the winner of following categories:

- **Best upload speed** with 7.9 Mb/s
- **Best browsing performance** with a rate of 37.4%
- **Best streaming performance** with a rate of 71.5%

And is in second position on the download speed with 9.9 Mb/s.

**XL Axiata has provided the best latency 2019**, good for the gamers.

**Indonesian networks still suffer from capacities**

When we look at the download speeds we notice that most of the mobile carriers deliver a speed that is limited for intensive uses such has video streaming in high definition.

## 2 Overall results

Results from all cell generations taken from tests carried out on 4G-compatible terminals.

### 2.1 Data amount and distribution

The nPerf application allows the user to perform a full test or each test separately. Between January 1, 2019 and December 31, 2019, we counted 651,618 tests, distributed as follows, after filtering (see §5.1.3):

<table>
<thead>
<tr>
<th>Technology</th>
<th>Speed</th>
<th>Browsing</th>
<th>Streaming</th>
</tr>
</thead>
</table>

The overall breakdown of the tests per provider is as follows:
2.2 Success rate [2G->4G]

The success rate is the number of successful tests compared to the number of tests performed.

![Success ratio / ISP chart]

The highest value is the best.

3 Tri and Telkomsel have recorded the best success rate in 2019, across all mobile technologies combined.

2.3 Download speed [2G->4G]

![Download bitrates averages chart]

The highest value is the best.

Smartfren has provided the best mobile download speed during 2019.

Telkomsel is not far behind Smartfren and has increased its download throughput by 23% (+2 Mb/s) compared to 2018.
This graph illustrates the ability of providers to ensure a constant download speed throughout the day, regardless of network load (number of connected end-users). We note for all operators a decline in download speed between 5 to 11 P.M.

### 2.4 Upload speed [2G->4G]

Telkomsel has provided the best mobile upload speed during 2019.
2.5 Latency [2G->4G]

XL Axiata has provided the best mobile latency during the year 2019.

This graph illustrates the ability of providers to maintain a constant latency during the year, regardless of network load (number of connected end-users).

We note that the gap is narrowing between all operators during last half of the year.
2.6 Browsing test [2G->4G]

Average performance of the loading times of the 5 websites most frequented by Indonesian Internet users (excluding YouTube).

Telkomsel has provided the best performance in mobile Internet browsing in 2019.

2.7 Streaming test [2G->4G]

Measuring the quality of watching a video on the YouTube streaming platform.

Telkomsel has provided the best performance in mobile video streaming in 2019.
2.8 4G connection rate

nPerf data is used to determine the 4G connection rate. This indicator is calculated from test data from nPerf applications.

The principle is simple: for each operator, the number of tests performed in 4G on the total number of cellular tests is calculated. For the relevance of the result, all tests carried out on the terminals that do not make it possible to benefit from 4G are excluded beforehand.

Important note: we do not have the possibility to distinguish commercial offers. As a result, although they are few, users who do not benefit from a 4G plan but who have a 4G mobile are not excluded from the results.

Statistics based on 325,498 tests performed on 4G terminals. List of 4G terminals in annex.

Smartfren got the best 4G/LTE connection rate for 2019.

2.9 nPerf Score [2G->4G]

The nPerf score, expressed in nPoints, gives an overall picture of the quality of a connection. It takes into account measured speed (2/3 download + 1/3 upload), latency and is equally affected by quality of experience tests (web browsing/streaming). The value of the points concerning throughputs and latency is calculated on a logarithmic scale to better represent the perception of the user. Thus, this score reflects the overall quality of the connection felt by the user.

The results below consider all the previous indicators and therefore all the tests carried out. As technologies are grouped together, the proportion of tests in different technologies strongly impacts this global trend. This shows a general ranking of providers for the whole of Indonesia.
The highest value is the best.

Telkomsel provided the best mobile internet performance 2019.

Thanks to the nPerf application, find this global indicator directly on your smartphone or tablet via the «Compare» function at the end of the full test. It is updated in real time over 14 rolling days.

3 You too, participate in the nPerf panel!

To participate in the panel, simply use the nPerf application, available for free on the Apple AppStore for iPhone and iPad, on Google Play for Android devices and on the Windows Store for Windows 10 Mobile phones.

<table>
<thead>
<tr>
<th>Download the nPerf App</th>
</tr>
</thead>
<tbody>
<tr>
<td>iOS</td>
</tr>
</tbody>
</table>

Also participate in the Fixed Connections Barometer panel by testing your DSL, cable or fiber optic connection at [www.nPerf.com](http://www.nPerf.com).
4 Custom analysis & contact

Do you need further study or want to get the raw data, punctually or automatically, to compile it yourself?

You can contact nPerf via www.nPerf.com "Contact Us" section or directly from the mobile app.

Phone contact: +33 482 53 34 11

Address: nPerf SAS, 87 rue de Sèze, 69006 LYON, France

Stay in touch with us, follow us!
5 Appendices

5.1 Methodology

5.1.1 The panel

nPerf offers a free application for testing the quality of the Internet connection, downloadable on Android, iOS (Apple) and Windows Phone mobile devices.

Everyone is free to use this app to measure the quality of their mobile connection. All users of the nPerf application form the panel of this study.

Thus, the nPerf study is based on the tens of thousands of tests carried out each month exclusively by the operators’ end customers, making it the “crowdsourcing” study with the largest panel in Indonesia.

5.1.2 Definitions and objectives

5.1.2.1 Success rate

The success rate is the number of successful tests compared to the number of tests performed.

5.1.2.2 Speed and latency tests

The purpose of the nPerf Speed Test is to measure the maximum capacity of the connection in terms of bit rate and latency.

To achieve this, nPerf simultaneously establishes multiple connections to saturate the bandwidth to accurately measure it.

The speed measurements thus reflect the maximum capacity of the connection. This rate may not be representative of the user experience experienced during normal use of the Internet because it is measured only on nPerf servers.

The user experience will be measured by quality of service (QoS) tests.

5.1.2.3 nPerf servers

To ensure maximum user bandwidth at all times, nPerf relies on a network of servers dedicated to this task.

These servers are located with hosts in Indonesia and abroad. nPerf has also installed dedicated servers directly at Indonesia providers to maximize measurement reliability. The other providers are invited to contact us to setup a free nPerf server in their network.

The total nPerf bandwidth available for Indonesia is greater than 30 Gb/s and exceeds 4 Tb/s worldwide with more than 1000 active nPerf servers!

5.1.2.4 The browsing test

The browsing test allows the user to accurately measure the loading time of the 5 websites most frequented by Indonesian Internet users (YouTube is excluded from this test as it is subject to the following test).

This indicator reflects the quality of navigation perceived by the user. It can however be negatively impacted by the performance of the terminal used, especially if it is old.
It is calculated considering the loading time of the page. A page loaded in 10 seconds or more gets a 0% performance rate and a page loaded instantly gets a performance rate of 100%. For example, a page loaded in 2 seconds will get a performance rate of 80%.

5.1.2.5 YouTube streaming test
The goal of the streaming test is to measure the quality of video viewing on the most popular streaming platform around the world: YouTube.

It operates under conditions similar to the direct use of YouTube and therefore takes into account the quality of the network between the user and the YouTube servers.

It is calculated considering all the time required to load the video (before or during playback). If the ratio between the duration of the video and the overall reading time (reading + loading) tends to 1 then the performance index will tend towards 100%. And conversely, the more the ratio moves away from 1, the more the index will tend towards 0%.

5.1.3 Filtering of test results
The results obtained are subject to automatic and manual checks to avoid duplication and to rule out possible abusive or fraudulent use (massive tests, robots ...). The exclusive nPerf algorithm retains only the relevant tests, thus eliminating biases related to the overrepresentation of certain terminals, users or test locations.

The results are classified by provider. The results for each provider include the tests performed on the partner networks (roaming, pooling).

5.1.3.1 Filtering of devices
In order not to introduce any bias related to the capabilities of the terminals, only the tests carried out on the 4G compatible terminals are retained. The exhaustive list is provided in the appendix.

5.1.4 Statistical accuracy
With regard to the total volume of unit tests, the statistical precision used in this publication is:

- 2% for absolute values
- 1 point for percentages

If, for a given indicator, one or more operators have results very close to the best, in the confidence interval defined above, these will be share first place.
5.2 Complete list of 4G terminals selected for 2019

Any use of this document, in whole or in part, for promotional or advertising purposes in any form whatsoever, is subject to the prior written permission of nPerf SAS.