



Barometer of mobile Internet connections in Germany.

01/01/2023 - 31/12/2023



1

**Introducing
nPerf**

2

**Executive
summary**

3

Analysis

4

Methodology

5

**nPerf Network
assessment**

Expert in the telecom network optimization

nPerf is an independent French company based in Lyon (France). For over a decade, nPerf has been a trusted partner for both fixed and mobile operators, providing comprehensive network testing solutions and analysis. Our mission is to accurately measure, evaluate, and enhance the understanding of Internet connectivity around the world.



300k+ tests daily
worldwide.



26Md+ coverage
scans in total.



3k+ servers all
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nPerf allows you to test the quality of your fixed, mobile, or Wi-Fi Internet connections up to 10 Gb/s!
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2. Executive Summary



The subscribers of Telekom enjoyed the best mobile Internet performances in Germany during 2023.

Cellular Internet connections in Germany

	O2	Telekom	Vodafone
▼ Download bitrates (Mb/s)	68.45	138.13	96.10
▲ Upload bitrates (Mb/s)	15.14	24.72	19.57
◀▶ Latency (ms)	43.10	34.65	34.27
🌐 Web browsing (%)	73.24	76.90	73.84
🎥 Youtube streaming (%)	83.56	86.92	85.07
📶 nPerf Score (nPoints)	84 266	103 465	94 527

Source : nperf.com



Best mobile Internet performance
in 2023



Source : nperf.com

O₂









vodafone



Source : nperf.com

The subscribers of Telekom enjoyed the best 5G mobile connections in Germany during 2023.

5G mobile connections in Germany

	02	Telekom	Vodafone
 Download bitrates (Mb/s)	136.67	223.77	172.81
 Upload bitrates (Mb/s)	22.09	36.99	33.19
 Latency (ms)	37.28	31.22	30.17
 Web browsing (%)	79.33	81.84	79.59
 Youtube streaming (%)	86.91	89.91	89.53
 nPerf Score (nPoints)	102 991	119 408	113 982

Source : nperf.com

The mobile market in Germany showcases a competitive environment where ISPs strive to deliver high-quality services, with a particular focus on enhancing user experiences in web browsing and streaming. ISP assessment considers nPerf scores and various key performances metrics (KPIs) such as download and upload speeds, latency, web browsing scores, and YouTube streaming performance.

Telekom: Leader with unrivaled performance across all mobile technologies including 5G

In the German mobile market, Telekom stands out with an exceptional nPerf score of 103,465 nPoints, setting a high benchmark for its competitors. The ISP leads with the highest download bitrate of 138.13 Mb/s and an upload bitrate of 24.72 Mb/s, facilitating rapid data transfer rates. Telekom's latency is measured at a low 34.65 ms, ensuring a responsive and fluid internet experience. Additionally, the ISP scores impressively in web browsing and YouTube streaming, with percentages of 76.9% and 86.92% respectively, highlighting Telekom's excellence in delivering top-tier browsing and video streaming services. Telekom maintains its leader as well in 5G.

Vodafone: A robust competitor

Vodafone showcases a strong performance, positioning itself as a formidable contender in the German mobile market with a nPerf score of 94,527 nPoints. The ISP provides a solid download bitrate of 96.1 Mb/s alongside an upload speed of 19.57 Mb/s. With a latency of 34.27 ms, Vodafone offers a seamless and efficient internet experience. The web browsing and YouTube streaming scores stand at 73.84% and 85.07%, respectively, indicating Vodafone's commitment to delivering reliable and high-quality web and video streaming services.

O2: room for improvement

O2 maintains a steady position with consistent performance across key metrics, achieving a nPerf score of 84,266 nPoints. The ISP delivers a download bitrate of 68.45 Mb/s and an upload speed of 15.14 Mb/s. Although O2's latency of 43.1 ms, slightly higher than its competitors, it still supports a satisfactory online experience. The ISP's web browsing and YouTube streaming scores are recorded at 73.24% and 83.56%, respectively, showcasing O2's dedication to providing dependable browsing and streaming services.

Conclusion

The analysis of the German mobile market highlights Telekom's leadership, with its superior performance in download and upload speeds, as well as in delivering an exceptional browsing and streaming experience. Vodafone follows with competitive performance, offering commendable bitrates and low latency, while O2 shows room for improvement.

4. Methodology



nPerf provides a **free tool to assess Internet connection quality** via its website and mobile apps (Android, iOS). Daily, thousands of people rely on nPerf for speed tests in their country, contributing to a comprehensive crowdsourced database covering all operators.

The study employs a strong filtering method to reflect real customer experiences on a specific network (mobile or fixed line). Measures are taken to prevent probes and measurement robots from affecting the results.

For mobile connections, we assess:

▼ Download bitrate :

Indicates the amount of data your connection can receive in one second from the nPerf server. The highest the measured value, the best is the bitrate of your connection.

▲ Upload bitrate :

Indicates the amount of data your connection can send in one second from the nPerf server. The highest the measured value, the best is the bitrate of your connection.

◄► Latency (ping) :

It indicated the delay a small packet of data requires to make a round-trip from your computer to the nPerf server. The shorter the delay, the most reactive your connection is. The main is the minimum value.

Browsing performance :

The browsing test assesses the load time of the fully loaded pages, including images, JavaScript, CSS, and fonts, for the five most popular sites. This indicator reflects the user's perceived quality of the Internet network.

Streaming performance :

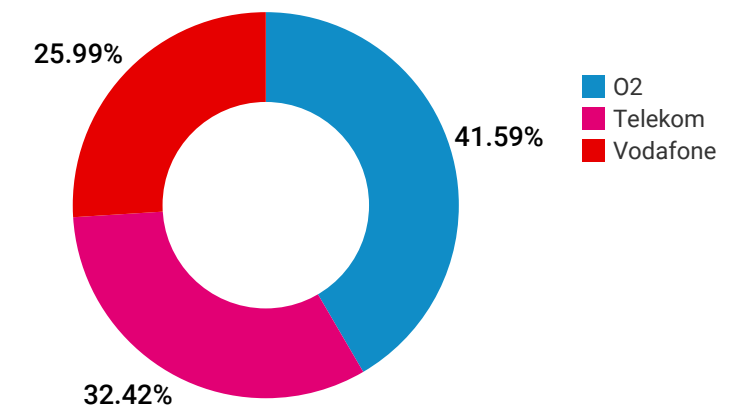
The video streaming test gauges the load time of a fully loaded video in three resolutions on YouTube, considering stalls during playback. This indicator reflects the user's perceived quality of the Internet network.

Statistical precision is crucial in accurately determining winners. At nPerf, we prioritize test quality, precise reporting, and transparency. Analyzing a large volume of tests in this study, we've achieved 3 % precision for absolute values and 1 point for percentage-based results, highlighting the reliability and accuracy of our data.

For a more comprehensive understanding of the user experience, our report features test results during both Busy hours (6 PM to 11 PM) and Idle hours (the rest of the day). Busy hours, marked by network strain, can impact user experience through congestion. This approach helps in understanding how network performance fluctuates throughout the day.

We only include national Internet service providers with test share above 5% share. The chart below shows the overall test distribution for each service provider.

Overall distribution of the tests per provider (ISPs Share)



Source : nperf.com



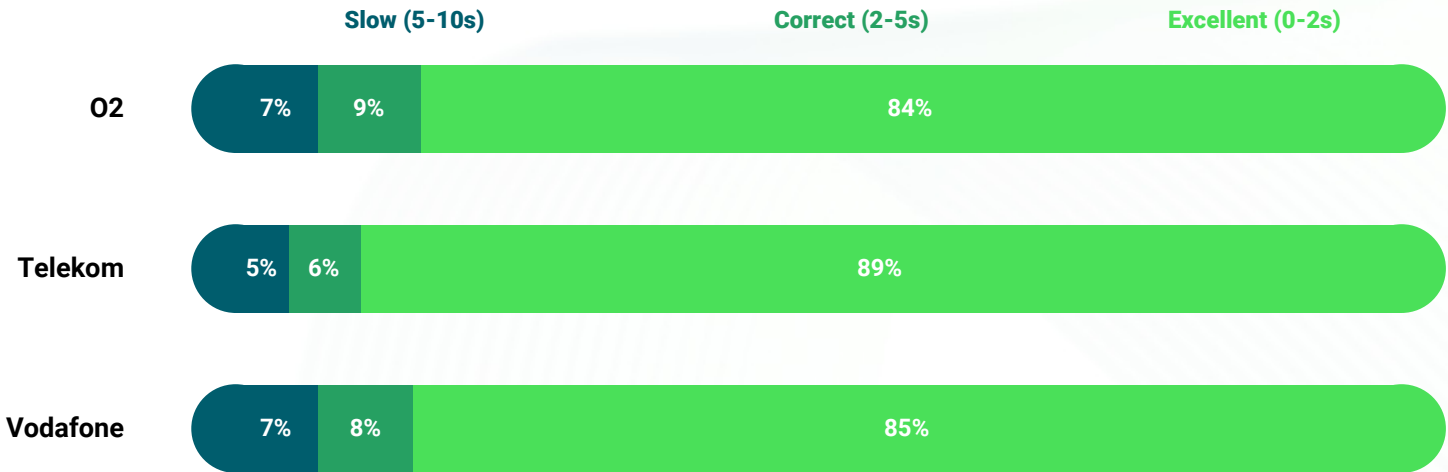
Browsing Performance rate (average)



Source : nperf.com

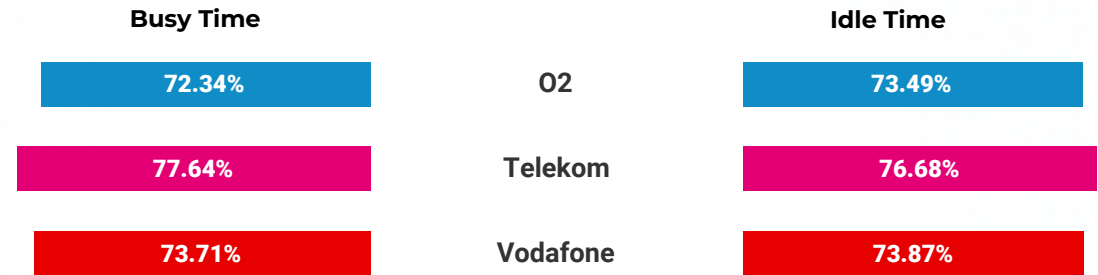
The subscribers of Telekom enjoyed the best mobile Internet browsing performance in 2023.

Browsing Performance results ventilation (average)



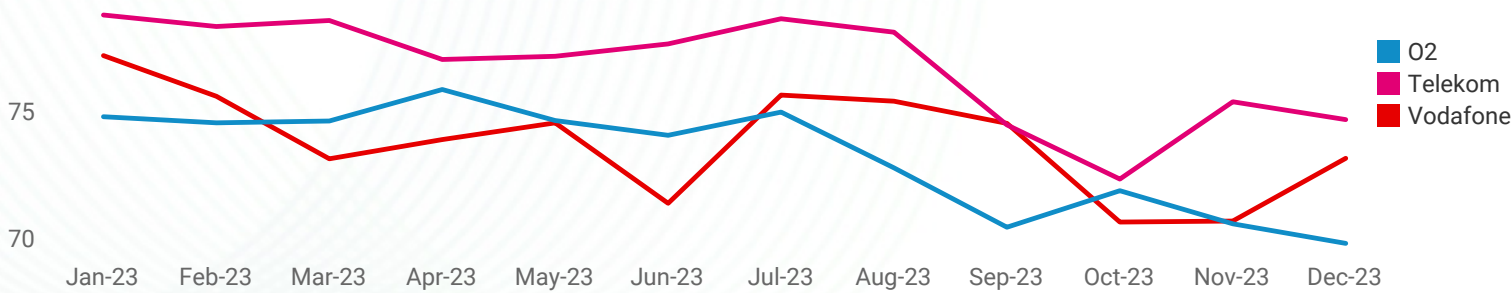
Source : nperf.com

Browsing Performance rate (average)



Source : nperf.com

Browsing performance rate (average) evolution over the year



Source : nperf.com



Quality of Experience : Streaming



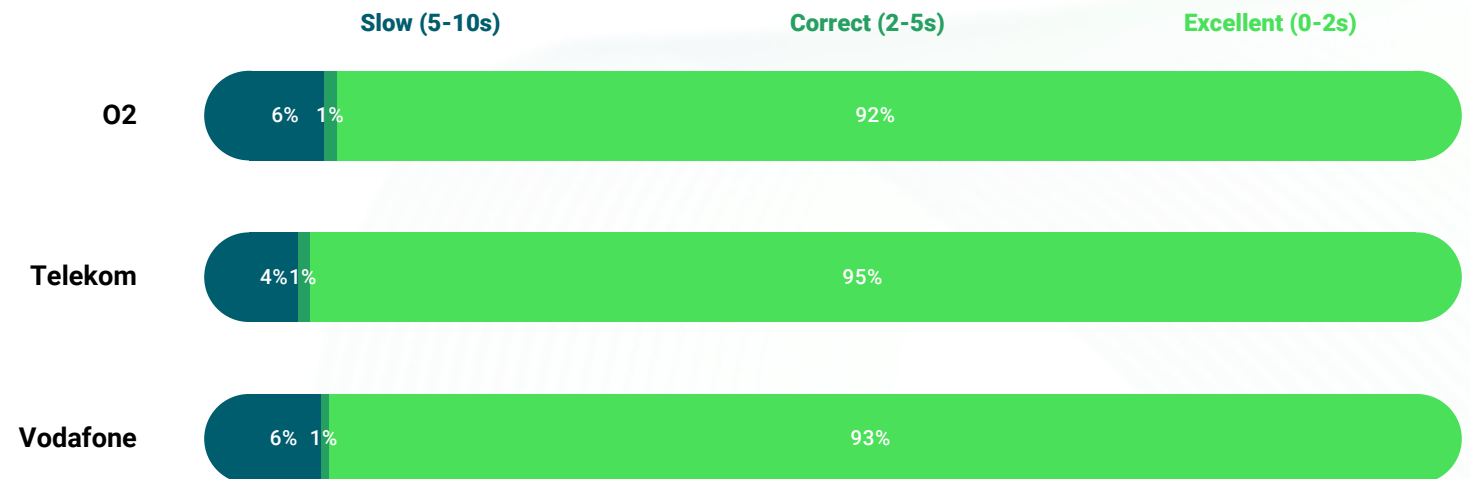
Streaming Performance rate (average)



Source : nperf.com

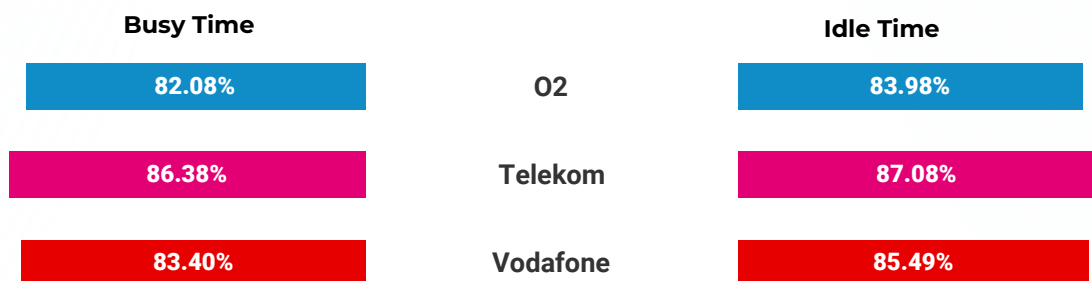
The subscribers of Telekom enjoyed the best mobile Internet streaming performance in 2023.

Streaming Performance results ventilation (average)



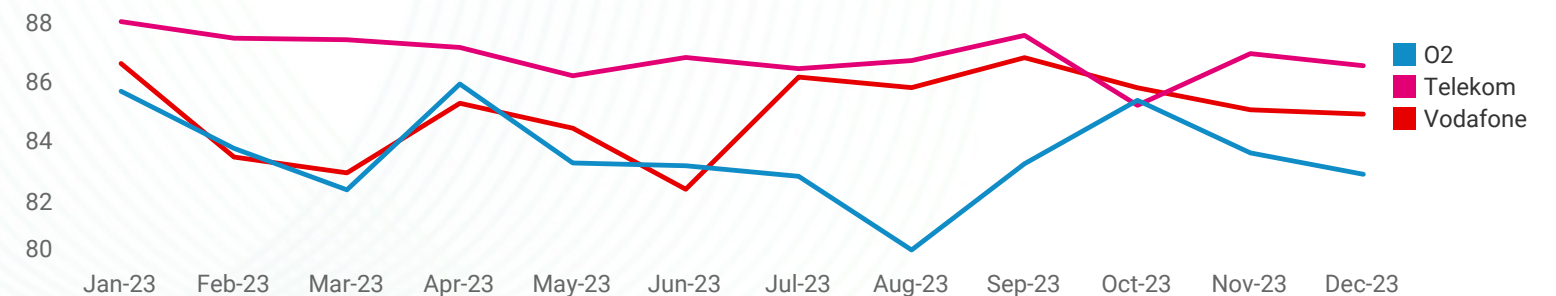
Source : nperf.com

Streaming Performance rate (average)



Source : nperf.com

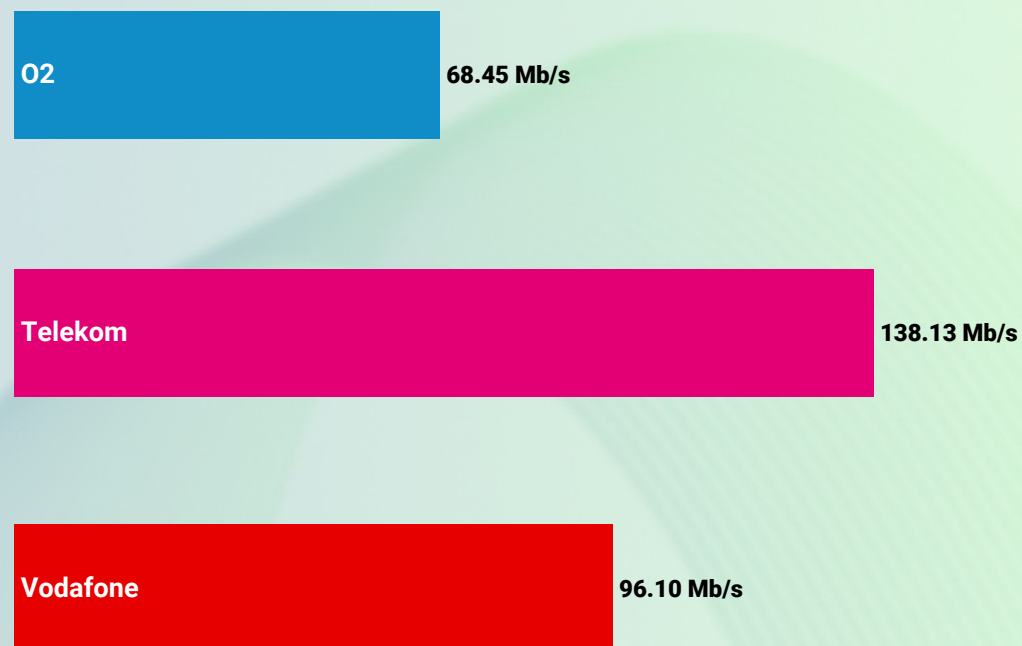
Streaming performance rate (average) evolution over the year



Source : nperf.com



Download Speed (average)



Source : nperf.com

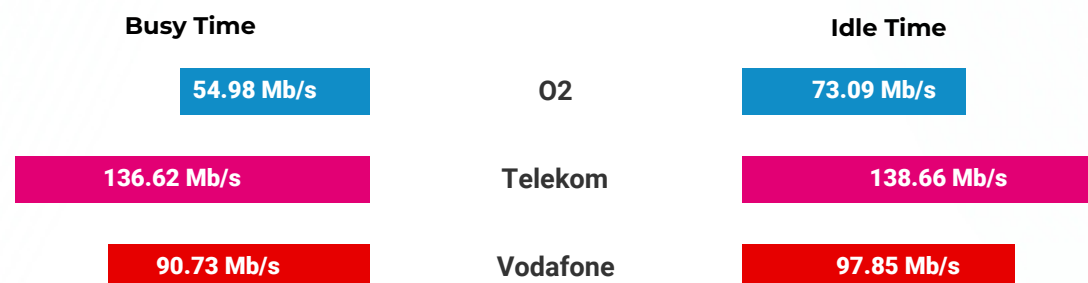
The subscribers of Telekom enjoyed the best average mobile Internet download speed in 2023.

Download Speed results ventilation (average)



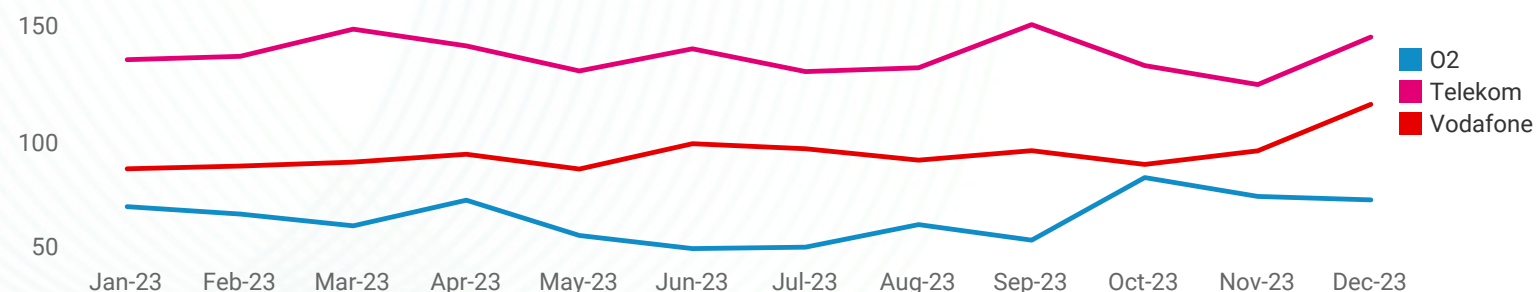
Source : nperf.com

Download Speed (average)



Source : nperf.com

Download Speed evolution over the year (average)



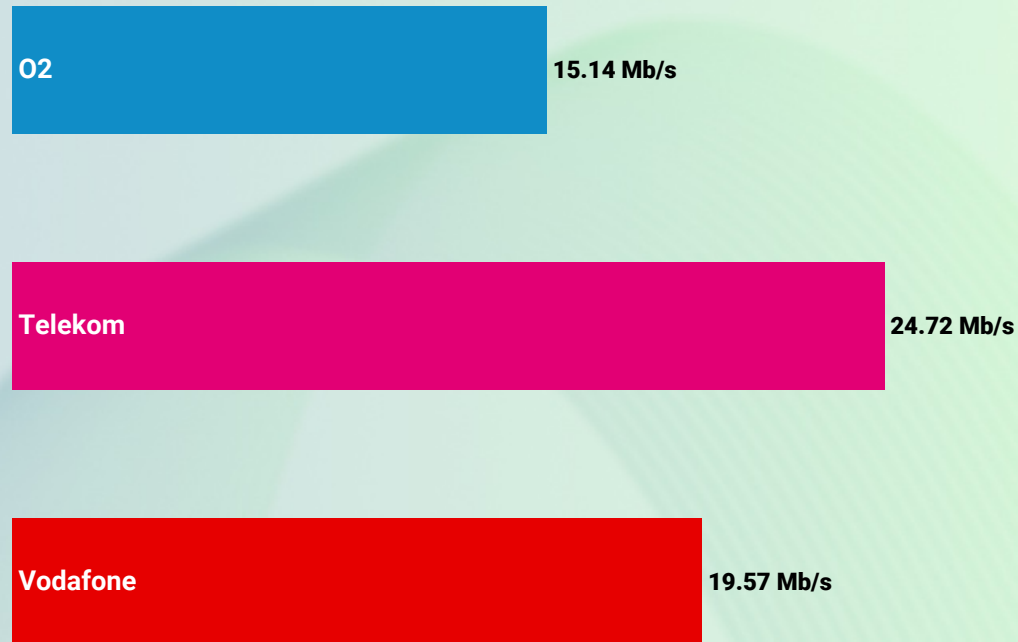
Source : nperf.com



Speed : Upload



Upload Speed (average)



Source : nperf.com

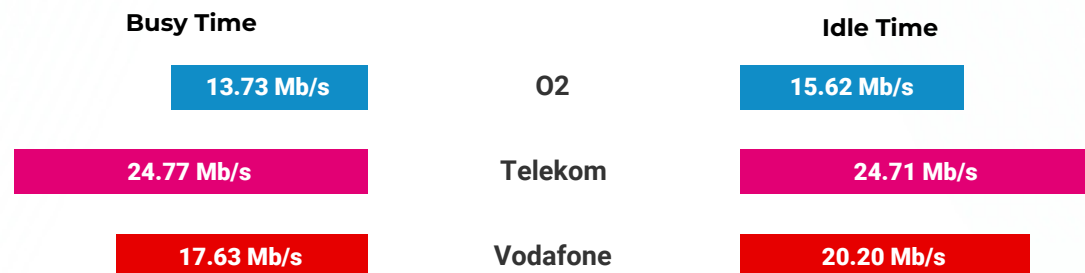
The subscribers of Telekom enjoyed the best average mobile Internet upload speed in 2023.

Upload Speed results ventilation (average)



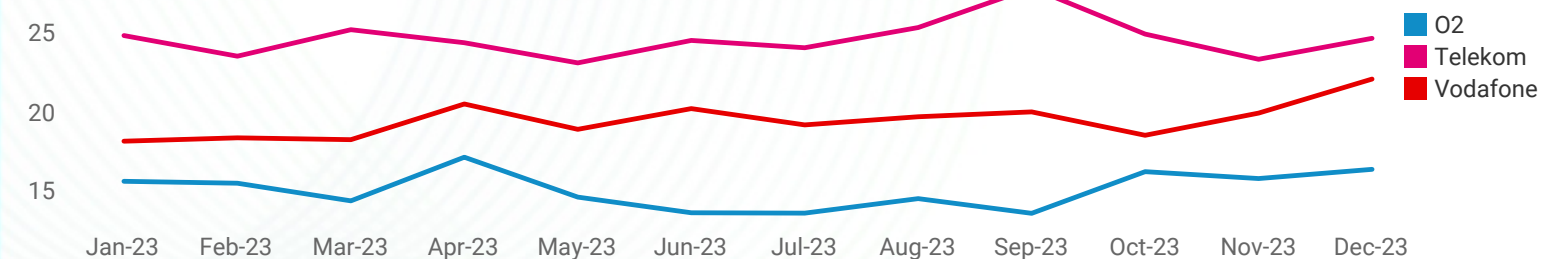
Source : nperf.com

Upload Speed (average)



Source : nperf.com

Upload Speed evolution over the year (average)



Source : nperf.com



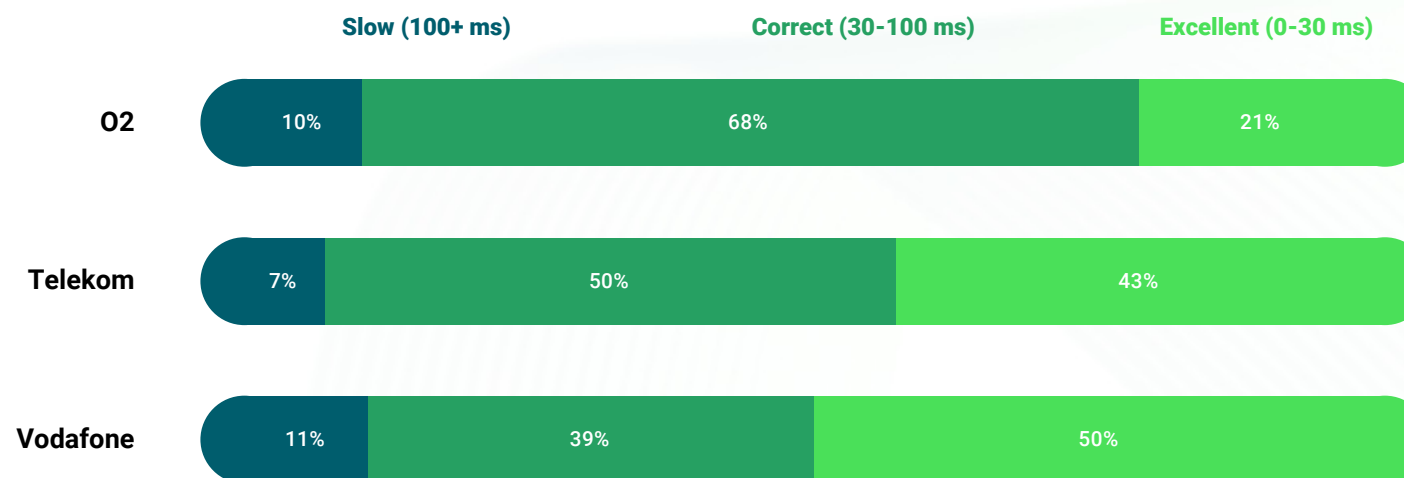
Latency Speed (average)



Source : nperf.com

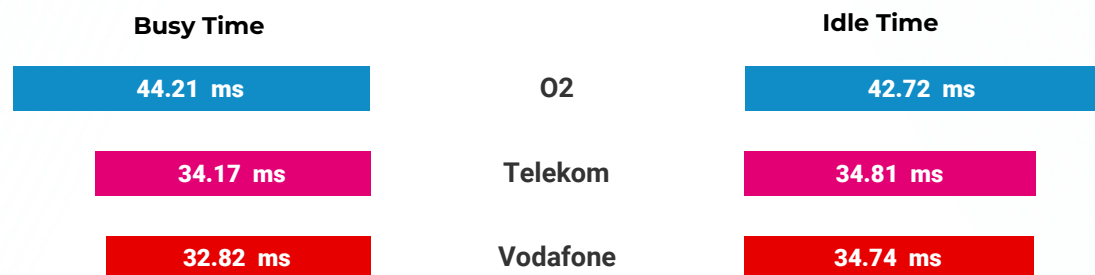
The subscribers of Vodafone and Telekom enjoyed the best average mobile Internet latency speed in 2023.

Latency Speed results ventilation (average)



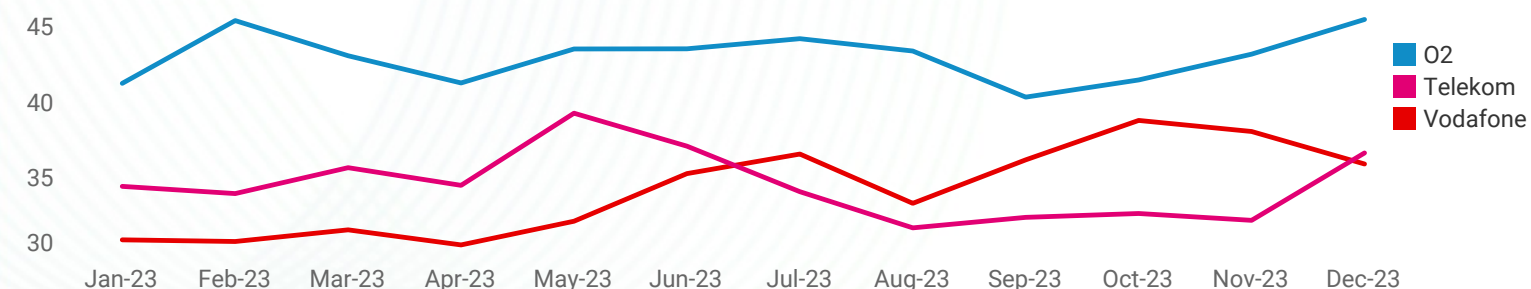
Source : nperf.com

Latency Speed (average)



Source : nperf.com

Latency Speed evolution over the year (average)



Source : nperf.com

5G nPerf score (average)



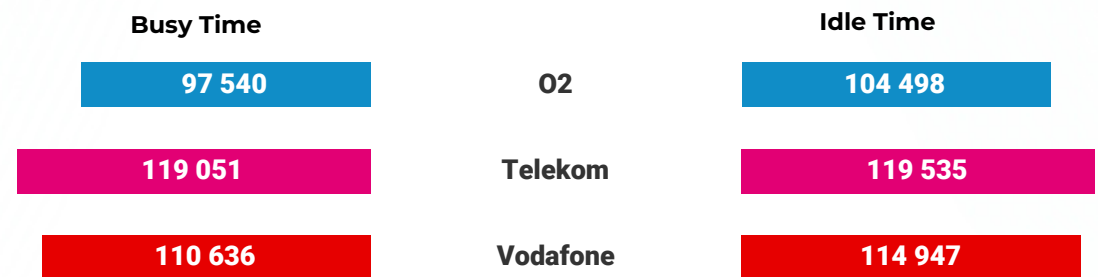
Source : nperf.com

The subscribers of Telekom enjoyed the best 5G mobile connections in Germany during 2023.

- Best 5G Mobile Performance : Telekom (119 408 nPoints)
- Best 5G Mobile Download speed : Telekom (223.77 Mb/s)
- Best 5G Mobile Upload speed : Telekom (36.99 Mb/s)
- Best 5G Mobile Latency speed : Vodafone (30.17 ms)
- Best 5G Mobile Browsing experience : Telekom (81.84 %)
- Best 5G Mobile Video experience : Telekom (89.91 %) and Vodafone (89.53 %)

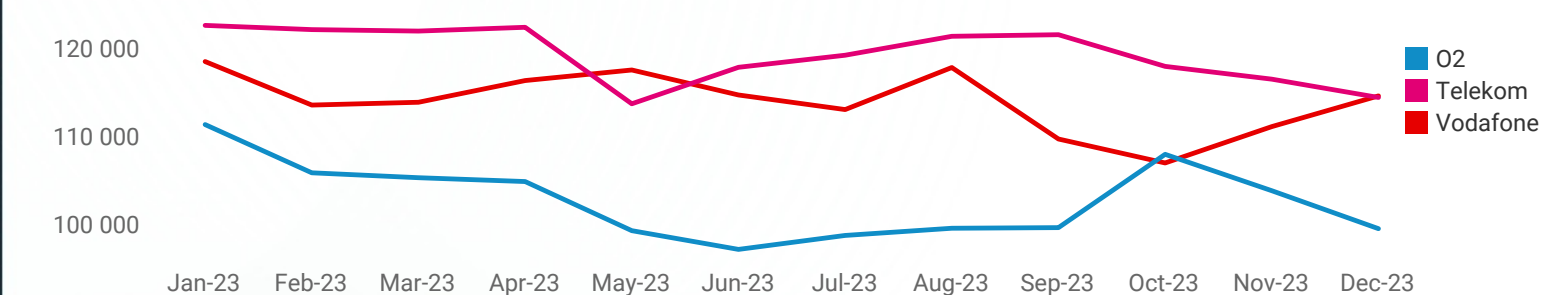
Source : nperf.com

5G nPerf score (average)



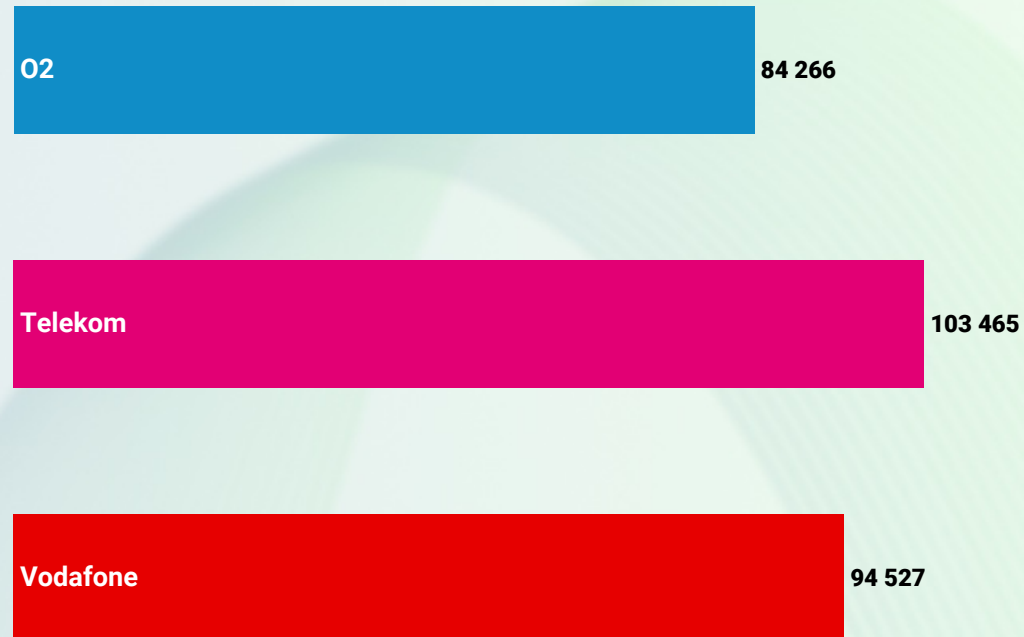
Source : nperf.com

nPerf score evolution over the year (average)



Source : nperf.com

nPerf Score (nPoints)



Source : nperf.com

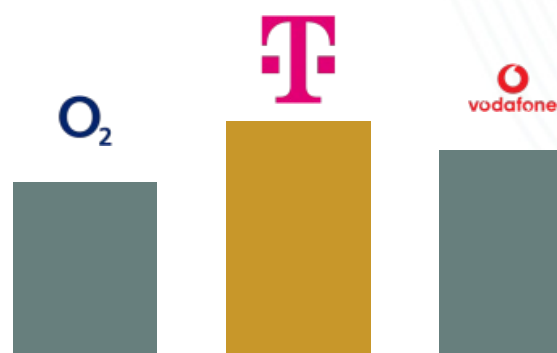
The subscribers of Telekom enjoyed the best mobile Internet performances in Germany during 2023.

The nperf score takes into account the measured bitrates, the latency and the Qoe tests. The value of the points for the rates and the 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 experienced by the user.

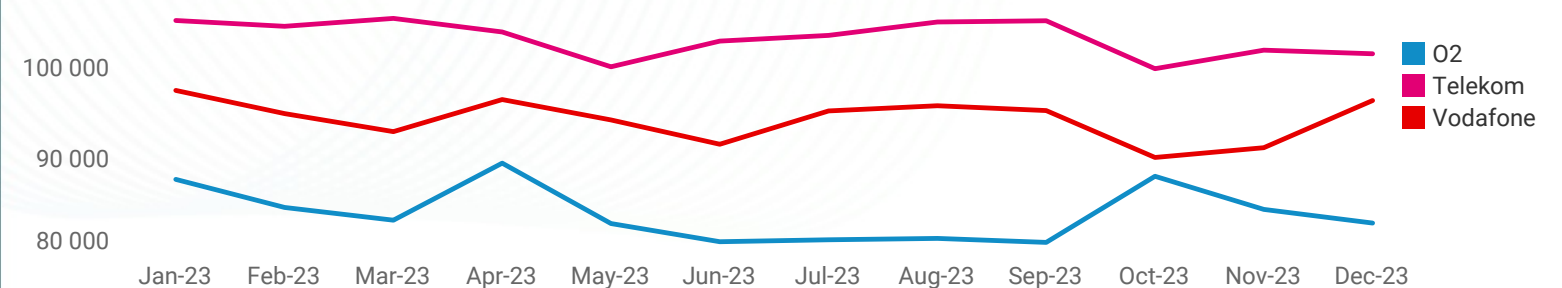
Source : nperf.com


Best mobile Internet performance
in 2023



Source : nperf.com

nPerf score evolution over the year (average)



Source : nperf.com

