The State of LTE (February 2018)

The world is still waiting for the next big infusion of speed. For more than a year now, the fastest countries in the world seem to be stuck in a holding pattern, getting slower but not surpassing the 50 Mbps threshold for average 4G speed. What the mobile industry has failed to gain in speed, though, it has achieved in reach. 4G availability across countries is expand around the world at a steady pace. In OpenSignal's latest global report, we look at the 4G experiences collected in the 4G quarter to compare 4G performance in 95 countries.

Report Facts

58,752,909,349 Measurements
4,693,320 Test Devices
Oct 1 2016 - Dec 29th 2017 Sample Period
Global Report Location

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Highlights

The fastest aren't getting any faster

The fastest LTE speeds seem to have hit a plateau at around 40 Mbps. For the last several global reports, we've been to see any sizable increase in 4G speeds among the top performing countries, and the May Global 4G Speed report bears out an obvious trend.

The industry sets its sights on growing LTE's reach

It's becoming more clear that the global mobile industry is now focusing its collective energy on LTE upgrade to more people and places, rather than growing the top speed of 4G networks. We see significant increases in LTE availability across the board in our latest results.

5 countries now have 4G availability greater than 90%

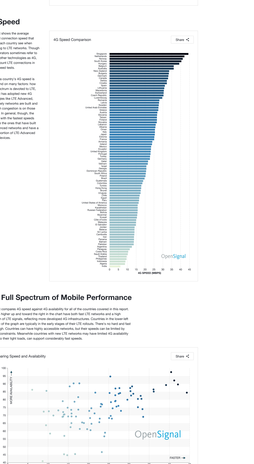
While top-line speeds may be stagnant, 4G availability among the elite countries is still steadily rising. Consumers in five countries had access to 4G on 90% of their mobile data 90% of the time — up from a mere two countries just three months ago.

Europe and North America get a speed boost

While 4G speeds have stalled in much of the world, there were a few regions where we saw a significant improvement in speed. Consumers in European countries, most notably the Netherlands and Spain, in North America, Canada's speeds surged past 30 Mbps on the strength of Telus's recent LTE upgrades, while the U.S. regained the top nationwide crown by AT&T and Verizon's reintroduction of unlimited plans.

4G Availability

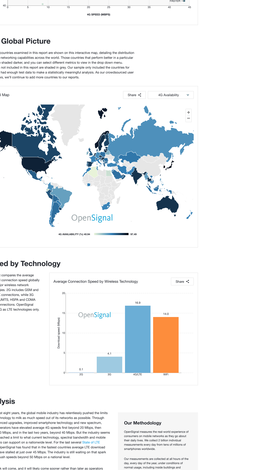
This chart shows how consistently accessible 4G networks are in each country, ordered by average geographic coverage. OpenSignal's availability metric tracks the percentage of time users access to a particular network.



4G Speed

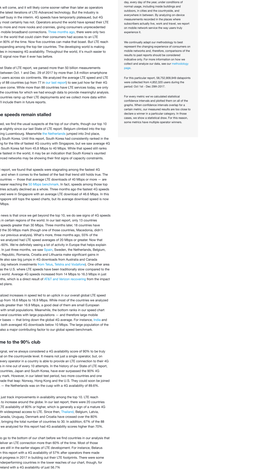
This chart shows the average download connection speed that users in each country see when connected to 4G networks. Some operators sometimes throttle 4G HSPA or other technologies as 4G, but we only include connections in our 4G speed tests.

How fast a country's 4G speed is can depend on many factors, how much spectrum is devoted to LTE, whether it has adopted new 4G technologies like LTE Advanced, how many people are using it, and how much congestion is on those networks. In general, though, the faster speeds in the top countries tend to be the ones that have built LTE Advanced networks and have a sizable share of LTE Advanced capable devices.



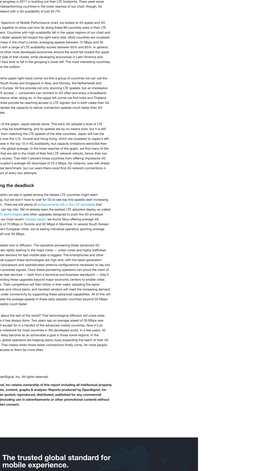
The Full Spectrum of Mobile Performance

This chart compares 4G speed against 4G availability for all of the countries covered in this report. Countries that have both high speeds and high availability for their 4G networks are in the top proportion of LTE signals, reflecting more developed 4G infrastructures. Countries in the lower-left held side of the graph are typically in the early stages of their LTE rollouts. There's no hard and fast rule for what makes a country's 4G network fast or slow, but it's a combination of network capacity constraints. Meanwhile countries with more LTE networks may have limited 4G availability but, due to their tight loads, can support considerably fast speeds.



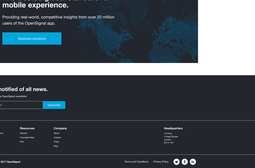
The Global Picture

All of the countries examined in this report are shown on this interactive map, detailing the distribution of mobile networking capabilities across the world. Those countries that perform better in a particular area are shaded darker, and you can select different metrics to view in the drop down menu. Hovering over a country will show its exact figure for that metric. Click on a country for more information on which we had enough data to make a statistically meaningful analysis. As our crowdsourced user base grows, we'll continue to add more countries to our reports.



Speed by Technology

This chart compares the average download connection speed globally for 3G, LTE, and LTE Advanced networks. Our sample size includes GSM and CDMA 1X connections, while 3G includes UMTS, HSPA and CDMA EVDO connections. Technology is defined 4G as LTE technology only.



Analysis

For the last eight years, the global mobile industry has relentlessly pushed the limits of what mobile networks can do, from upgrading existing networks to LTE and LTE-Advanced upgrades, improved smartphone technology and new spectrum, mobile operators have elevated average 4G speeds from beyond 10 Mbps, when we first started tracking the technology, to more than 40 Mbps today. Consumers have learned a thirst for ever faster mobile access to bandwidth and mobile economies can support on a nationwide level. For the last several State of LTE reports, OpenSignal has noted that the top countries in our rankings have seen their speeds have leveled out at around 40 Mbps. This industry wide pattern is still ongoing in that sports that will push speeds beyond 50 Mbps on a national level.

That spark will come, and it will likely come sooner rather than later as operators continue upgrading their networks. The mobile industry has a long track record of keeping itself busy in the interim. 4G speeds have historically plateaued, but 4G availability most certainly has not. Operators around the world have spread their LTE networks to more people and places, and have been steadily improving consumer access to mobile broadband connections. Three months ago, there were only two countries in the world that could claim their consumers had access to an LTE network more than 90% of the time. In our latest report, we found that there are now five, and that's expanding among the top tier countries. The developing world is making huge strides in increasing 4G availability. Throughout the world, it's much easier to find an LTE signal now than it ever has before.

In our latest State of LTE report, we parsed more than 50 billion measurements collected between Oct. 1 and Dec. 29 of 2017 to make the best 5.6 million connection and latest users across 95 countries. We analyzed the average LTE speed and LTE availability for each country, as well as the LTE Speed Index, which ranks the 50 countries with the most data. We've added 36 countries here to 19 versus last year, and only included the countries for which we had enough data to provide meaningful analysis. We've also added a section on LTE Advanced deployments as we collect more data within them, and include them in future reports.

Top-line speeds remain stalled

In 4G speed, we find the usual suspects at the top of our charts, though our top 10 did change slightly since our last State of LTE report. Belgium climbed into the top 10, replacing Luxembourg. Meanwhile the Netherlands jumped into 2nd place, displacing Hong Kong, which fell to 3rd. The Netherlands's average speed was in the top 5, along for the ride of fastest 4G country with Singapore, but we saw average 4G speeds in South Korea fall from 43.8 Mbps to 40 Mbps. While that speed still ranks as the second fastest in our report, it's a significant drop for the country that has been our fastest network every quarter we've analyzed. Hong Kong and the U.S. They could soon be joined by a sixth — the Netherlands was on the cusp with a 40.5 availability of 89.6%.

We didn't see much improvements in availability among the top 10. LTE match continues to increase around the globe. In our last report, there were 25 countries with 4G availability of 80% or higher. Now there are 31. Meanwhile, a dozen countries had availability of 90% or higher. Three months ago, it was just five. Most of the rest of the world is still in the early stages of their LTE rollouts, hence their low availability and speed. Many of the countries in the lower-left corner of our chart, for example, bringing the total number of countries to 35. In addition, 67% of the 95 countries we analyzed for this report had 4G availability scores higher than 70%.

We have to go to the bottom of our chart before we find countries in our analysis that failed to deliver an LTE connection more than 60% of the time. Most of those countries are in Africa, and they're joined by Iraq and Yemen. The latter two countries debuted in this report with a 4G availability of 57% after operators there made substantial progress in 2017 in building out their LTE footprints. There were some significant improvements throughout the developing world, though, with the Congo, for instance teamed with a 4G availability of just 60.1%.

In the Full Spectrum of Mobile Performance chart, we looked at 4G speed and 4G availability together to show just how far along these 95 countries were in their LTE deployments. We've divided the chart into four quadrants, and we found that those with faster speeds fell toward the right-hand side. Most countries are clustered in a large mass in the chart's center, averaging speeds between 10 Mbps and 30 Mbps and availability between 70% and 90%. Countries in the upper-right quadrant, Europe and other more developed economies, generally scored both toward the upper right-hand side of that cluster, while developing economies in Latin America and Southeast Asia, for instance, fell in the grouping's lower left. The most interesting outliers, though, are the outliers.

In the extreme upper-right hand corner we find a group of countries we can call the LTE elite: South Korea and Singapore in Asia, and Norway, the Netherlands and Sweden in Europe. These countries have built fast, ubiquitous 4G networks with a lot of LTE access — consumers can connect to 4G often and enjoy a broadband-level experience when doing so. In the upper left corner we find India and Thailand. These countries have made 4G connections available to a large share of their LTE networks but have the capacity to deliver connection speeds much faster than 3G technologies.

At the top of the graph, Japan stands alone. This early 4G adopter's level of LTE availability may be breathtaking, and its speeds are by no means slow, but it is still well away from matching the LTE speeds of the elite countries. Japan isn't the advantage over the U.S., Russell and Hong Kong, which are clustered in Japan's left and slightly lower. Japan's 4G networks are fast and ubiquitous compared to most speeds in the global average. In the lower reaches of the graph, we find many of the countries that are still in the mesh of their first LTE rollouts networks, hence their low availability and speed. Many of these countries are in Africa and Southeast Asia. Iraq's speeds, Ecuador's average 4G disregard of 22.5 Mbps, for instance, was well ahead of the global benchmark, but our users there could find 4G network connections in only one out of every two attempts.

Breaking the deadlock

The stagnation we see in speed among the fastest LTE countries might seem disappointing, but it's a sign that the LTE industry is still deploying and increasing since speeds. There are still plenty of advancements left in the LTE standards that operators can tap into. We've already seen the earliest LTE adopters deploy so-called Gigabit LTE networks, which can theoretically support download speeds of up to Gigabit per second. We've found Telus offering average 4G downloads of 75 Mbps in Toronto and 52 Mbps in Montreal. In several South Korean cities, for instance, we're seeing individual operators supporting average speeds well over 50 Mbps.

What's needed now is efficiency. The operators pioneering these enhanced 4G iterations are rightly shouting in the rooftop tops — urban cores and highly trafficked areas can now support much faster speeds. But the LTE standards include a device that support these technologies are high-end, with the latest and most bleeding-edge basebaud processors and sophisticated antenna configurations necessary to tap into the faster speeds. Consumers who don't have those devices can't connect to those super-fast services — both from a technical and business standpoint — they'll begin extending these upgrades beyond major economic centers to smaller cities. Operators will have to balance the cost of upgrading their networks with the technologies and rollout plans, and handset vendors will need the increasing demand for higher-order connectivity by supporting these advanced capabilities. All of this will take time, and we'll be needed in these early adopter countries because of 4G availability — and possibly more speed.

And what about the rest of the world? That technological diffusion will cross state borders at a less obvious time. Two years ago an average speed of 30 Mbps was a pipe dream in most of the world's developing economies, and now it's not only achievable milestone for most countries in the developed world. In a few years, 40 Mbps will likely become as achievable a goal in those same regions. In the developing world, operators are deploying their networks for the first time or in major renovations. That means when those better connections finally come, for many people will have access to them for more often.

Our Methodology

OpenSignal measures the real world experience of consumers on mobile networks as they go about their daily lives. We collect 2 billion individual measurements from a sample size of millions of smartphone worldwide.

Our measurements are collected at all hours of the day, every day of the year, under a wide range of normal usage, including inside buildings and outdoors, in cities and rural areas, and on all carriers in between. By analyzing our service to reflect the experience of our community of subscribers actually live, work and travel, we report on what matters most to the way users use their smartphones.

We continually adapt our methodology to best approach the changing experience of consumers on mobile networks and, therefore, comparisons of the results between different time periods are indicative only. For more information on how we collect and analyze our data, see our methodology page.

For this particular report, 58,752,909,349 datapoints were collected by 4,693,320 devices during the period Oct 1st - Dec 29th 2017.

For every metric we've calculated statistical confidence intervals and plotted them on all of the graphs. Wind confidence intervals overlap for a particular metric, we don't have enough data to declare a winner in particular category. In those cases, we show a statistical draw. For this report, we've found a statistical draw for no results.

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