The State of LTE (November 2017)

The global 4G market has reached a transition point. Instead of focusing on boosting speeds, we now see an industry intent on boosting accessibility to 4G signals. In our latest global report, OpenSignal parsed more than 50 billion measurements worldwide to see how 77 countries stacked up in 4G performance.

Report Facts

50,119,524,309 Measurements
3,816,934 Test Devices
Jul 1st – Oct 1st 2017 Sample Period
Global Report Location

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Highlights

No country has yet cracked 50 Mbps

Though individual operators have broken the 50 Mbps barrier for average 4G download speeds, we're still waiting for the first country to consistently provide LTE connections greater than 50 Mbps. South Korea and Singapore are the closest, averaging 45.8 Mbps and 46 Mbps respectively.

4G speeds have stalled in the top-performing countries

While LTE availability is increasing worldwide, the same can't be said for 4G speeds. No new country has joined the 40 Mbps club since our last report, and the number of countries that provide speeds greater than 25 Mbps has fallen, rather than increased.

LTE's reach continues its quick growth

In this test period, 50 countries of the 77 countries we examined had 4G availability scores above 70%, compared to 33 countries just six months ago. That means 4G users in those 50 countries were able to latch onto an LTE signal in more than 7 out every 10 attempts. It's a sign that 4G has reached maturity in many more countries.

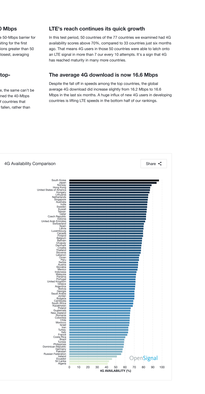
The average 4G download is now 16.8 Mbps

Despite the fall of n speeds among the top countries, the global average 4G download did increase slightly from 16.2 Mbps to 16.8 Mbps in the last six months. A huge influx of new 4G users in developing countries is lifting LTE speeds in the bottom half of our rankings.

4G Availability

This chart shows how consistently accessible 4G networks are in each country. Rather than measure geographic coverage, OpenSignal's measurements show the proportion of time users have access to a particular network.

4G Availability Comparison

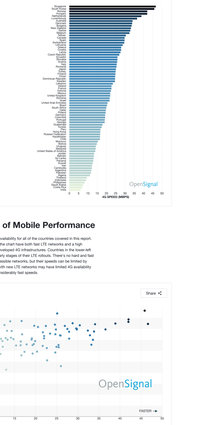


4G Speed

This chart shows the average download speed that users in each country see when connecting to LTE networks. Though some operators sometimes refer to HSPA or other technologies as 4G, we only count LTE 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 densely networks are built and how much congestion is on those networks. In general, though, the countries with the fastest speeds tend to be the ones that have built LTE-Advanced networks and have a large share of LTE-Advanced capable devices.

4G Speed Comparison



The Full Spectrum of Mobile Performance

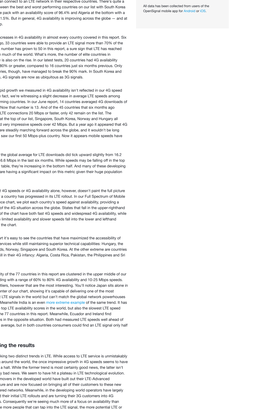
This chart compares 4G speed against 4G availability for all of the countries covered in this report. Countries higher up and toward the right in the chart have both fast LTE networks and a high proportion of LTE signals, reflecting more developed 4G infrastructures. Countries in the lower-left hand side of the graph, for example, are in the early stages of their LTE rollouts. Their networks tend and fast rural. Though. Countries can have highly accessible networks, but their speeds can be limited by capacity constraints. Meanwhile countries with new 700 MHz networks may have limited 4G availability but, due to their light loads, can support considerably fast speeds.

Comparing Speed and Availability

The Global Picture

All of the countries examined in the report are shown on this interactive map, detailing the distribution of 4G availability and download speeds. You can click on individual countries to see how particular metrics are shaded darker and you can select different metrics to view on the drop down menu. Countries not included in this report are shaded in grey. Our sample only includes the countries for which we had enough total data to make a statistically meaningful analysis. As our crowdsourced user base grows, we'll continue to add more countries to our reports.

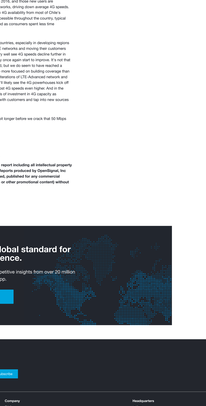
Global Map



Speed by Technology

This chart compares the average download connection speed globally of the major wireless network technologies. 2G includes GSM and CDMA 1X connections, while 3G includes UMTS and CDMA EV-DO connections. OpenSignal defines 4G as LTE technologies only.

Average Connection Speed by Wireless Technology



Analysis

In OpenSignal's last State of LTE report, we anticipated we would soon see a country that exceeded 50 Mbps in average 4G download speed, setting a new benchmark for high-performance mobile networking. But that 50 Mbps mark remains elusive. Instead, 4G's once steady growth in speed has stopped, and OpenSignal has even seen the speeds of some of the top-performing networks in our report fall. We can all beat rental cars in our 4Cs ratings. While speeds have stalled, OpenSignal has measured some massive gains in LTE availability around the world. 4G signals are consistently accessible more often and in more places now than six months ago. The mobile industry — for the time being at least — appears to have shifted its focus from building powerful LTE networks to building far reaching networks.

For our latest installment of OpenSignal's State of LTE report, we examined more than 50 billion measurements collected by more than 3.8 million smartphone and smart device users. We used these measurements to compare 4G speed and 4G availability in 77 countries, ranking them first in each respective category and then comparing speed against availability for each state. In addition, we've dropped the 2G and 3G results from our global speed charts to focus on the gap between 4G, 3G, 4G and WiFi. While more than 77 countries have LTE services today, we only included the countries for which we had enough data to provide meaningful analysis. As these countries ramp up their LTE deployments and we collect more data within them, we'll include them in future reports.

Shifting LTE trends

OpenSignal's 4G availability metric is a measure of how often consumers with 4G devices can connect to an LTE network in their respective countries. There's quite a divide between the best and worst performing countries on our list with South Korea leading the pack with an availability score of 96.4% and Algeria at the bottom with a score of 11.5%. But in general, 4G availability is improving across the globe — and at a rapid clip.

We saw increases in 4G availability in almost every country covered in this report. Six months ago, 33 countries were able to provide an LTE signal more than 70% of the time. That number has grown to 50 in this report, a sure sign that LTE has reached maturity in much of the world. What's more, the number of elite countries in OpenSignal's 4Cs ranking, those that provide LTE signals with a 4G availability score of 80% or greater, compared to 16 countries just six months previous. Only two countries, though, have managed to break the 90% mark: In South Korea and Singapore, 4G signals are now as ubiquitous as 3G signals.

But the rapid growth we measured in 4G availability isn't reflected in our 4G speed metrics. In fact, we're witnessing a slight decrease in average LTE speeds among the top-performing countries. In our last State of LTE report, we observed an average of 30 Mbps. Now that number is 15. And of the 45 countries that six months ago managed LTE connections 30 Mbps or faster, only 40 remain on the list. The countries at the top of our list, Singapore, South Korea, Norway and Hungary all maintained very impressive speeds over 40 Mbps. But a year ago it appeared that 4G speeds were about hurtling forward across the globe and it wouldn't be long before we saw our first 50 Mbps plus country. Now it appears mobile speeds have stalled.

That said, the global average for LTE downloads did tick upward slightly from 16.2 Mbps to 16.8 Mbps over the last six months. While speeds may be falling off in the top half of our table, they're increasing in the bottom half. And many of these developing countries are having a significant impact on this metric given their large population sizes.

Looking at 4G speeds or 4G availability alone, however, doesn't paint the full picture of how fast a country has progressed in its LTE rollout. In our Full Spectrum of Mobile Performance chart, we plot each country's speed against availability, providing a snapshot of the 4G situation across the globe. States that fall in the upper-right-hand corner of the chart have both fast 4G speeds and widespread 4G availability, while those with limited availability and slower speeds fall into the lower and left-hand regions of the chart.

In this chart it's easy to see the countries that have maximized the accessibility of their 4G services while still maintaining superior technical capabilities: Hungary, the Netherlands, Norway, Singapore and South Korea. At the other extreme are countries that are still in their infancy: Algeria, Costa Rica, Pakistan, the Philippine and Sri Lanka.

The majority of the 77 countries in this report are clustered in the upper middle of our chart, landing with a range of 60% to 80% 4G availability and 10-25 Mbps speeds. It's the cluster, however that are the most interesting. You'll notice Japan sits alone in the top-center of our chart, showing it's capable of delivering one of the most accessible 4G networks in the world. But it's not nearly as competitive as its neighbors in speed. Meanwhile India is an even more extreme example of the same trend. It has one of the top LTE availability scores in the world, but also the slowest LTE speed rating of the 77 countries in this report. Meanwhile, Ecuador and Ireland find themselves in the opposite situation. Both had measured LTE speeds well ahead of the global average, but in both countries consumers could find an LTE signal only half the time.

Analyzing the results

We're tracking two distinct trends in LTE. The first, to achieve LTE service is unmistakably increasing around the world, the once impressive growth in 4G speeds seems to have stalled. The second, that many of the top-performing networks in our report have reached a ceiling in their speeds. We seem to have hit a plateau in LTE technological evolution. 4G's first movers in the developed world have built out their LTE Advanced infrastructure and are now focused on bringing all of their customers to these new high-powered networks. Meanwhile, in the developing world operators have largely focused on building out their initial LTE networks to bring 4G connectivity to their customers. Consequently we're seeing much more of a focus on availability than speed. The more people that can tap into the LTE signal, the more potential LTE or LTE-Advanced users can sign up.

Even though LTE speeds have declined in many countries, that doesn't mean that the user experience has similarly declined. As OpenSignal's worldwide measurements show, 4G speeds still outpace 3G speeds in most countries with widespread 3G networks. Chile is a good example of this trend. In our State of Mobile Networks: Chile report we found that LTE speeds had dropped significantly in the space of 12 months, coinciding with a huge wave of 4G adoption. Chilean users now flaunt a reported 192% growth in 4G connections in 2016, and those new users are overwhelming the network. As a result, 4G speeds have fallen below 3G speeds. But we also measured dramatic increases in 4G availability from most of Chile's operators. With LTE service more readily accessible throughout the country, typical overall mobile data speeds actually increased as consumers spent less time connected to slow 3G networks.

We see similar patterns to Chile's in many countries, especially in developing regions where operators continue to connect LTE users to their initial LTE networks and upgrade into 4G services. Consequently we may very well see a focus on availability rather than speed. The more people that can tap into the LTE signal, the more potential LTE or LTE-Advanced users can sign up.

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Our Methodology

OpenSignal data is collected from consumer smartphones and recorded under conditions of normal usage. As opposed to drive test data, which measures network performance along predetermined routes, we rely on the same devices to measure network performance in a small number of locations, we take measurements from millions of smartphones covered by regular people who have downloaded OpenSignal's app.

Those measurements are taken whenever users have their phones on and have the app. We collect in the countryside, representing a mobile data service the way users experience it. We continually adapt our methodology to better approximate the actual experience of consumers on mobile networks and therefore comparisons of the results to past reports should be considered indicative only. For more information on how we collect and analyze our data see our methodology page.

For this particular report, 50,119,524,309 datapoints were collected from 3,816,934 users during this period, Jul 1st - Oct 1st 2017.

All data has been collected from users of the OpenSignal mobile app for Android or iOS.

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