State of Mobile Networks: India (October 2017)

The Indian 4G revolution is on, but few are among revolution it's experiencing some growing pains. In the last month alone we've lost five reports. Chief among them has measured mobile increases in Reliance Jio's 4G speeds even while the speeds of its competitors declined, LTE availability ends up approximate parity on 3G speeds across most. The enormous demand for mobile data hasn't abated, but the burden of that demand has spread to different networks. In our second State of Mobile Networks report for India, OpenSignal drew on more than 7 billion tests collected this summer from 708,504 mobile devices throughout India.

Report Facts

7,369,029,252
Measurements

708,504
Test Devices

Jun 1 - Aug 31, - 2017
Sample Period

India
Report Location

Highlights

Jio takes our overall speed award as LTE speeds improves

We've tracked astonishing growth in Reliance Jio's LTE speeds in the last six months. At 18 Mbps, its 4G speed score was still the lowest of the four national 4G operators, but because of Jio's enormous LTE presence throughout India, it topped our overall speed charts.

Jio still the operator to beat in 4G availability

Jio's already impressive LTE footprint has gotten better in the last six months. Jio's 4G availability score increased to 91% — a signal more than 60.6% of the time, putting Jio 32 percentage points ahead of its nearest competitor in our availability metric.

Airtel tops OpenSignal's 3G, 4G speed charts

As it did six months ago, Airtel took top honors in our 4G speed and 3G speed awards. We measured average LTE downloads of 9.2 Mbps and 3G downloads of 3.6 Mbps on its networks. Despite its wins though, both metrics were down from our last report.

Idea, Vodafone and Airtel improve in LTE reach but decline in speed

Though Jio was by far the market leader in 4G availability, our measurements show that Idea, Vodafone and Airtel improved measurements in this metric as well. Even as access to LTE improved for Airtel, Idea and Vodafone, their lead speeds of decreased. This is likely a result of the intense competition for 4G customers since Jio's emergence.

Awards Table

OpenSignal | Awards

	3G Download Speed	3G Latency	4G Download Speed	4G Latency	4G Availability
Airtel	GOLD		GOLD		
BSNL					
Idea					
Jio				GOLD	GOLD
Reliance					
Vodafone		GOLD			

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Performance by Metric

Download Speed: 4G

This metric shows the average download speed for each operator on LTE connections as measured by OpenSignal users.

Download Speed: 3G

This metric shows the average download speed for each operator on 3G connections as measured by OpenSignal users.

Download Speed: Overall

This metric shows the average download speed experienced by OpenSignal users across all of an operator's 3G and 4G connections. Because it includes both 3G and 4G speeds, but also the availability of each network technology. Operators with lower LTE availability tend to have lower overall download speeds for customers spend more time connected to slower 3G networks.

Latency: 4G

This metric shows the average latency for each operator on LTE connections as measured by OpenSignal users. Latency, measured in milliseconds, is the delay data experiences as it travels across a network. It's a factor that affects how quick a page loads and how responsive network.

Latency: 3G

This metric shows the average latency for each operator on 3G connections as measured by OpenSignal users. Latency, measured in milliseconds, is the delay data experiences as it travels across a network. It's a factor that affects how quick a page loads and how responsive network.

Availability: 4G

This metric shows the proportion of time OpenSignal users have had an active connection to an LTE network. Availability is a measure of how often users can access a 4G network rather than a measure of geographic or population coverage.

Regional Performance

This chart shows the regional winners in each category OpenSignal measures. Click on the icons to see a more detailed graph showing each operator's metrics in a particular region.

Legend: Airtel, BSNL, Idea, Jio, Reliance, Vodafone

Region	Download Speed: 4G	Latency: 4G	Availability: 4G
DELHI	Vodafone	Airtel, Jio, Reliance	Jio
HARYANA	Airtel	Airtel	Jio
KARNATAKA	Airtel, Jio, Reliance	Airtel, Jio, Reliance	Jio
KERALA	Jio, Reliance	Airtel	Jio
KOLKATA	Airtel	Airtel	Jio
MADHYA PRADESH	Airtel	Jio, Reliance	Jio
MUMBAI	Airtel	Airtel	Jio
TAMIL NADU	Airtel	Airtel	Jio

Analysis

In OpenSignal's last India report we documented the intense battle for 4G dominance between incumbent Bharti Airtel and upstart Reliance Jio. Well, that battle still rages, but there's definitely a new leader. In the past six months, Jio's 4G speeds have risen dramatically and now it's the fastest 4G network in our India report. Though Airtel still has 3G and 4G speed awards, Jio's expansion of its availability drove it to the top of our overall speed rankings. In short, Jio may not have had the fastest LTE speeds, but it delivered the fastest overall mobile data experience, according to our data.

In our second State of the Mobile Network India report we analyzed more than 7 billion measurements collected from 708,504 mobile devices throughout the subcontinent. We examined the 3G and 4G consumer experience on six operator's networks. Three of those providers — Bharti Airtel, Idea Cellular and Vodafone — operate both 3G and 4G networks. Two, BSNL Mobile and Reliance Communications, solely operate 3G networks. The final operator, Reliance Jio, is a 4G-only provider. Though we have enough data to report on the 3G performance of the majority of operators, we feel that each provider is licensed to operate in a particular set of regions, known as telecom circles. We chose these six operators as they offer 3G and/or 4G services in a majority of those circles, making them the ideal candidates for our nationwide analysis.

In addition to our national rankings, OpenSignal has again turned the spotlight on India's regional mobile markets. We've calculated the winners in each of 22 regional level. In our last report we examined four of India's most economically significant regions, but for this analysis we're expanding our scope. In addition to metro circles Delhi, Mumbai and Kolkata and major regions like Tamil Nadu and Karnataka, we're seeing how the operators fair in three mid-sized circles: Haryana, Kerala and Madhya Pradesh. We feel this sample set provides a more comprehensive picture of how India's rapidly growing 4G market looks in different parts of this vast country.

Jio's wild ride

Jio has had quite the first year. Launching in a huge wave of media attention late last December, Jio's service was initially available only to Jio Prime members, for a nearly unlimited data plan. It was free for six months, Jio had more than 100 million users subscribing to its 4G-only service, and in July, Jio President of Devices Sunil Dutt claimed that 85% of all mobile data consumption in India rode over Jio 4G connections. But Jio's enormous growth came at a cost. In our first State of Mobile Networks India report, we noted that Jio's speeds were the slowest among competitors in 4G speed, even though it offered by far the greatest level access to 4G signals in the country. The picture was pretty clear: while it was easy to find a Jio connection, there was much competition for bandwidth that customers found those connections slowest down to near 3G speeds.

But when Airtel arrived we started noticing some big changes in our measurements. Jio's LTE speeds fell by 5.1 Mbps, while Airtel's speeds started increasing at a rapid pace after its free data promotions ended on March 31. In our six month period covered in this report, Jio's average 4G download speed result climbed from 3.9 Mbps to 5.8 Mbps — an astonishing 49% increase. As the free data promotion ended, we saw the opposite happened to ease the congestion on Jio's network. A likely explanation is that Jio subscribers who were willing to put up with the network congestion in exchange for the gigabytes they consumed, through network upgrades or customer losses could also explain the shift in speeds. Regardless of the reason, Jio's customers suddenly found themselves with more access to the 4G bandwidth, causing Jio's average LTE speed to increase consistently in our measurements.

Meanwhile Jio's competitors found out they weren't impervious to the congestion problems that originally hit Jio. Our LTE speed results for Airtel, Idea and Vodafone all dropped in the last six months. We measured the biggest decline in 4G speed on Airtel, falling from 11.5 Mbps to 9.1 Mbps. Meanwhile, Idea and Vodafone's average 4G speeds fell by roughly 1 Mbps each. Jio's competitors have been working hard to stem the almost perfectly opposite effects of the Indian mobile industry's response to Jio's massive growth. As Airtel, Idea and Vodafone try to combat Jio's aggressive mobile data pricing with cheap data plans of their own, usage on their networks is most likely increasing. That, in turn, is likely causing more congestion on their networks and forcing average speeds down.

Despite all of these changes we're seeing, most of OpenSignal's speed rankings remained unchanged. As it did in our last report, Airtel won our 4G and 3G speed awards with average downloads of 9.2 Mbps Mbps and 3.6 Mbps respectively. Idea and Vodafone were still deadlocked for 2nd place in 4G downloads, each with a measured average LTE speed of 7.4 Mbps. And despite its big speed surge, Jio still finished last in 4G speed. Jio's measurements for latency, jitter and packet loss on 4G operations has contracted, and the dynamics of speed in India are clearly changing. Nowhere is that trend more evident than in our overall speed measurements.

OpenSignal's overall speed metric takes into account both 3G and 4G speeds as well as the level of access consumers have to each service. It's intended to measure the mobile data experience users have across a network. Because Reliance Jio claimed our overall speed prize in this last period, averaging 5.8 Mbps beating out Airtel's overall speed result of 5.1 Mbps. The difference maker here was Jio's 4G reach. While our Airtel testers spent nearly half their time on slower 3G connections, Jio was able to provide a relatively faster 4G link the vast majority of the time in our tests. Although Jio's 4G speed results may, since that Airtel has faster 4G speeds, but Jio provided a consistently faster mobile data experience overall.

Searching for 4G signals

We're seeing significant improvements in 4G reach among all of the major operators in India. All four 4G operators saw their LTE availability scores increase by at least 2 percentage points since our last report. Jio still has the greatest reach of any 4G, but it's who saw their availability score jump by 4 percentage points each. In our last India report, only a single operator had 4G availability greater than 60%. Now three of India's four nationwide 4G operators have surpassed that benchmark. What this means is access to 4G services is on the rise in India as consumers can link to 4G networks more often.

There was still a huge gap between the best performer in 4G availability and worst, though. Our users were able to connect to Jio's LTE network 90.6% of the time, a testament to how comprehensive its 4G rollout has been. Meanwhile, Airtel ranked at the bottom of our availability charts. Our Airtel users were only able to find a 4G signal 57.2% of the time. Even though Airtel is improving its 4G availability results significantly year, which is one of the key reasons it fell behind Jio in our overall speed tests.

Given 4G signals are at times scarce in India, 3G remains a very important technology. 3G not only fills in the gaps between 4G connections, it's the primary network technology for BSNL and Reliance Jio. Jio's 4G-only network, of course, lives, too, we found a diverse range of average speeds. Reliance was the slowest 3G provider in our rankings, averaging download speeds of 1.7 Mbps, while Airtel was the fastest, averaging downloaded speeds of 3.6 Mbps. Vodafone, however, was close on Airtel's heels. Its average 3G speed was 3.5 Mbps to our tests.

From a global perspective, both 2G and 4G speeds in India are fairly slow. No nationwide operator's average 2G download speed measured more than 100 kbps or 4 Mbps on the global 4G download average of 19.2 Mbps that we measured in our last State of LTE report. What's more, the same congestion problems affecting 4G speed in India appear to be taking a toll on 3G as well. We recorded sizable drops in 3G speed from all five national operators examined in this report. BSNL took by far the biggest 3G hit. The average 3G speed in the test period was half of what it was six months ago.

The last category of metric we looked at was latency, which is a measure of a network's responsiveness. Low latency connections begin rendering websites much more quickly and cut down on delay in real-time communications apps like video chat. Latency is becoming a particularly important consideration as operators move more and more of their voice traffic onto their networks. Latency can make or break a VoIP phone call. In our tests, Vodafone had the fastest mobile link with an average latency of 54.3 milliseconds, as well as the best 3G latency, averaging 83.7ms.

Region by region

For our telecom circle analysis, we dive on our three cores LTE metrics, examining which 4G network delivered the fastest download speeds, which had the lowest latency to note, however, that while all four 'national' 4G operators do provide services across the majority of India's 22 circles, they don't own licenses in all of them (with the exception of Jio). For instance, doesn't have 4G service in the Delhi and Kolkata metro circles, though it does in Mumbai. Meanwhile, Vodafone is absent from Madhya Pradesh. We've only included the relevant operators in the relevant regions.

We see many of the same operators that won our national awards winning their respective regional categories, but there are some interesting trends within the data. Jio dominated the 4G availability rankings in all eight regions, as it did nationally. But the other operators saw significant improvements in key areas. Airtel's speed and latency LTE availability scores were much higher than their national scores in Haryana, Karnataka, Kerala and Madhya Pradesh, which helped it win the majority of the speed categories in these areas. Meanwhile, Idea showed the strength of its 4G rollout in south India, with LTE availability scores over 70% in the states of Karnataka and Tamil Nadu.

Airtel was the uncontested leader in our 4G speed metrics in five circles, and in several of those markets it's average download speed was significantly faster than Reliance Jio. Madhya Pradesh saw 4G speed results for Airtel exceeded 10 Mbps — double its national average. In Karnataka and Kerala, though, competitors vied with Airtel for the 4G speed crown. In Tamil Nadu, Vodafone was the clear winner with average 4G downloads of 14 Mbps in our tests.

Idea and Airtel gave national 4G latency winner Vodafone a stiff challenge in our regional latency results, with each operator winning two circles. Idea took control in Airtel took the prize in Mumbai and Tamil Nadu respectively. We recorded drops in the remaining three regions, in Madhya Pradesh, Jio tied with Idea for the win even though nationally it had the worst 4G latency in our tests.

India is a mobile market that continues to captivate us as it maps out its mobile data future. Not only does it have an incredibly diverse set of operators and cellular technologies, but it's also a market that's undergoing a transformation in how people data. Jio's emergence last year clearly unlocked a pent up demand for data, and how the operators are now responding to that demand is producing significant changes in our metrics. What's more, there are few signs that things will settle anytime soon. As the data deluge grows, operators are upgrading and expanding their LTE networks. In our last State of LTE report, we noted that 4G rollout in India was 2.5 times as long list of service providers dots poised to shrink considerably. Airtel and Telenor and Idea and Vodafone are in various stages of merger deals. Today we see Jio and Airtel edging a war for 4G dominance, but in another year we could see that battle fought by many more combatants.

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Our Methodology

OpenSignal measures the real-world experience of consumers on mobile networks as they go about their daily lives. Over 2.5 billion individual measurements every day from tens of millions of smartphone workdays.

Our measurements are collected at all hours of the day and night, in all locations consumers live normal usage, including inside buildings and outdoors, in cities and the countryside, and while moving and stationary. Our analysis only measurements recorded in the places where subscribers actually live, work and travel, we report what network service the way users truly experience it.

We continually adjust our methodology to best represent the changing experience of consumers on mobile networks and we recalculate previous results to post 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, 7,369,029,252 datapoints were collected from 708,504 users during the period Jun 1 - Aug 31, 2017.

For every metric we've calculated statistical confidence intervals to ensure that what we show in graphs. When confidence intervals overlap for a certain metric, our measured results are too close to declare a winner in a particular category. In those cases, we show a statistical draw. For this report, some metrics have multiple operator winners.