

India Mobile Broadband Index 2019



About Nokia MBiT Index

Nokia MBiT Index is a report on mobile broadband performance in India. It aims to provide valuable insight, data and analysis on mobile broadband and traffic growth in India by co-relating these trends with various demand and supply-side drivers of the connectivity ecosystem such as handsets and devices, content, subscriber usage patterns and network investments by mobile operators.

This edition of the MBiT Index evaluates 3G, 4G and overall data traffic growth trends at a pan - India and circle category level, and data consumption per user on 3G and 4G for 2018. It highlights the current device ecosystem for 3G, 4G and VoLTE devices in India as well as users' data usage patterns in terms of type of content being consumed. Key developments on the content and OTT side of the market are covered. The report also captures potential key use cases and future roadmap for 5G.

MBiT Index has been created based on Nokia's analysis of data obtained from various sources. It analyses mobile broadband traffic trends only at a consolidated level and does not intend to provide a comparative analysis of data growth for different operators.

4G data traffic more than doubled in 2018 with 500 MN broadband subscribers, which is higher than the population of entire continent of South America

Migration of data users from 3G to 4G, emergence of bundled packages of OTT content from operators, and falling data tariffs led to increase in 4G traffic

01

Overall data traffic increased by **109%** purely on the back of exponential increase in 4G consumption, while 3G data traffic marginally decreased

02

4G constituted **92%** of total data traffic consumed across the country; Category B and C circles witnessed the highest increase in 4G payload

03

Overall average data usage per month registered a growth rate of **69%** in 2018 with average data usage per month reaching **~10GB** in December 2018

04

Driven by migration of data users from 3G to 4G devices, 3G and 4G device base grew **1.2x** and **1.5x** respectively; VoLTE handsets grew to 277 Million

05

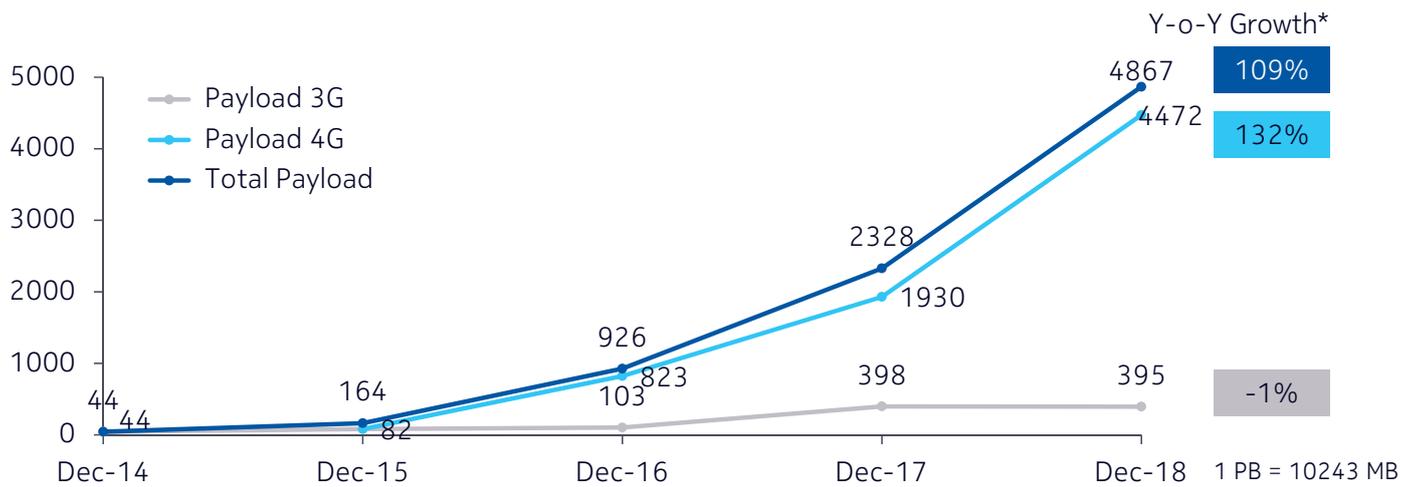
Surge in video consumption has been led by cheaper data plans coupled with unlimited video streaming packages

06

5G use cases in the field of manufacturing, utilities, public safety, connected homes and healthcare could drive the adoption of 5G across industries in India

2018 saw users consume more data in a single month as was consumed over 5 months in 2016

Pan-India mobile data usage – in Petabytes (PB) per month, December¹

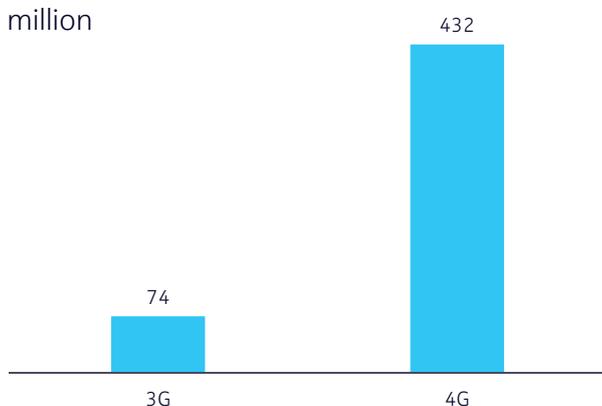


The continued increase in 4G data consumption has been fueled by migration of data users from 3G to 4G and from 2G to 4G

- 4G data traffic grew by 132% whereas 3G data traffic remained stagnant with a de-growth of 1% Y-o-Y
- 99.7% of the total data traffic, carried over mobile networks in December 2018 was driven through 3G and 4G technology users
- 4G data consumption has been driven by increase in 4G device penetration, heavy discounts and offers from telecom operators and OEMs, and a growing digital ecosystem

Data subscribers by technology, December 2018²

In million



- 4G data users have increased by 137% Y-o-Y, driven by intense competition between operators
- Operators are focusing on upgrading data users to 4G, coupled with availability of affordable 4G capable handsets

Source: 1. Nokia Analysis; 2. Operator Quarterly Reports, TRAI, KPMG Analysis

* Represents Y-o-Y growth for Dec-17 to Dec-18

4G data traffic continued its exponential growth across all categories

■ 3G ■ 4G

Metro payload¹ (contributed to 12.3% of overall 4G payload)

Y-o-Y Growth²



Category A payload¹ (contributed to 34.4% of overall 4G payload)

Y-o-Y Growth²



Category B payload¹ (contributed to 39% of overall 4G payload)

Y-o-Y Growth²



Category C payload¹ (contributed to 14.4% of overall 4G payload)

Y-o-Y Growth²



While 4G data traffic grew across all categories, Category B and Category C circles saw higher growth rates in 2018 than previous year due to network roll out in these circles

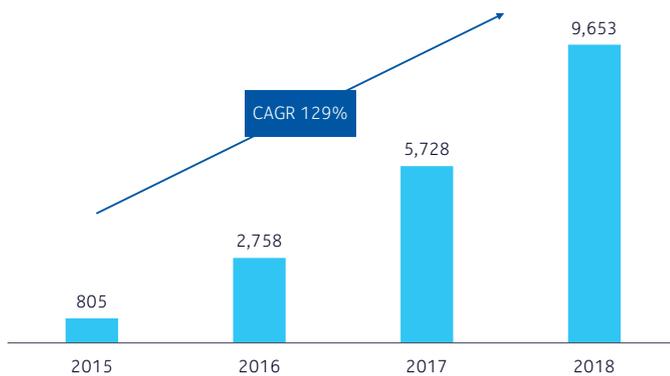
1. Payload in PB/ Month 2. Represents Y-o-Y growth for Dec-17 to Dec-18

Source: Nokia Analysis

Average data traffic usage in 2018 has increased over 12 times in last three years

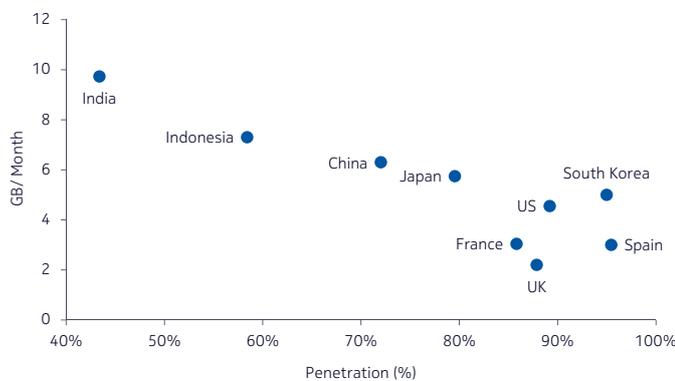
Average data traffic increased by 69% in 2018 driven by significant increase in data subscribers and overall data consumption

Average data usage/month (MB)¹



- Average data usage per month has registered an exponential growth rate of 129% over the last three years on the back of increased 4G data traffic
- The 4G average data usage per month is at 10.4 GB
- The growth in data usage has been further fueled by increase in the sources of content, growing migration to smartphones, falling data prices and improved network coverage

Average Mobile Data usage (excludes Wi-Fi) per month vs Broadband Penetration²



Data usage on mobile devices in India has further scope of increase in usage with rise in broadband penetration

- The current broadband penetration in India is at around 45%, which is at a much lower level compared to China at 72%, and other European nations at around 85-95%
- Mobile data usage in India will further rise as the broadband penetration in India reaches the level of other countries

Source: 1. Nokia, KPMG Analysis 2. GSMA intelligence country markets data accessed in Jan, 2019, Country specific analyst report, Japan Country Intelligence Report

4G capable devices in India is higher than entire US population

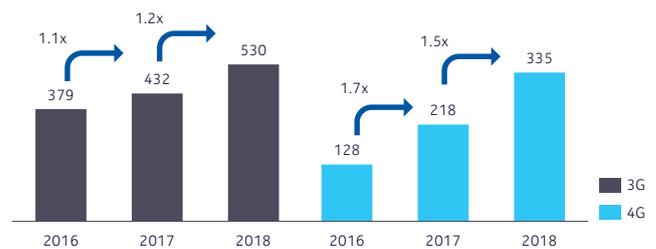
Installed base of 4G capable devices grew by 1.5x, with 3G device base at 1.2x of 2017, driven by availability of economical 4G devices from major OEMs and intense competition between telecom operators for 4G market share

Handset sales

- Rise in smartphone demand can be attributed to aggressive smartphone launches across price-points by OEMs looking to increase their market share
- Reliance Jio's entry into the OEM space has led to creation of a new category "Fusion Phones", feature phones with 4G capability, comprising 27% of mobile phone shipments³

3G/4G capable device base in India¹

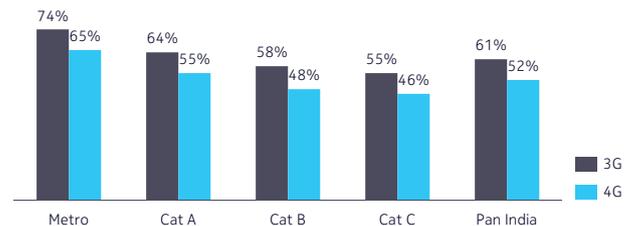
- Growth rate in 4G device base can be attributed to migration from 2G and 3G device base
- Smartphones shipment in 2018 increased by 12% to reach 150 million²



277 Million VoLTE capable devices
(83% of Total LTE capable device base)

3G/4G capable device penetration by circle category (% of active subscriber base)¹

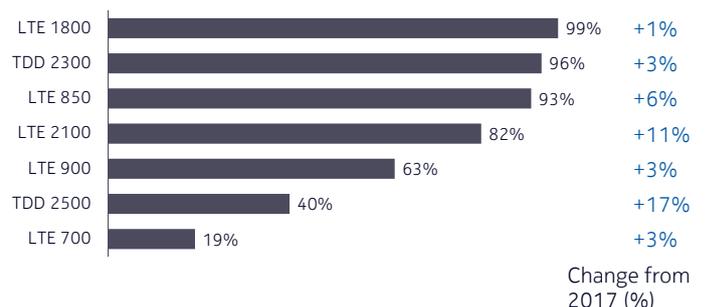
- 4G capable device penetration reached more than 50% at a pan-India level in 2018 up from 22% in 2017.



Metros reported the highest 4G capable device penetration at 65%

LTE band ecosystem (% LTE-capable devices)¹

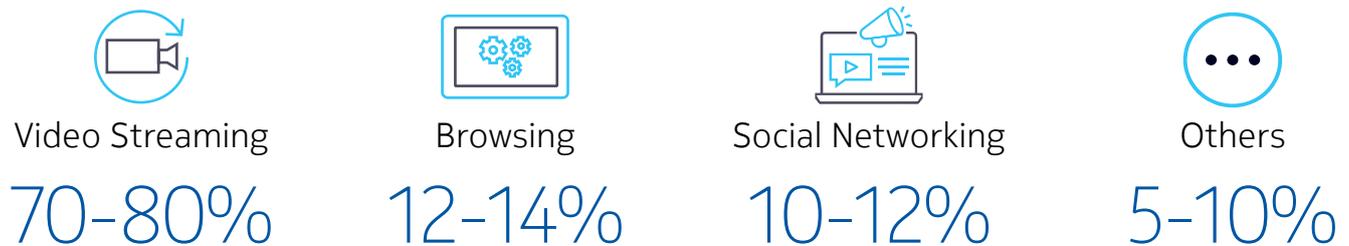
- LTE is predominantly deployed on spectrum bands of 1800, 2300 and 850 MHz, reflected by LTE device penetration by spectrum band
- While TDD 2500 has exhibited double digit growth, not all devices support entire TDD 2500



Source: 1. Nokia, KPMG Analysis 2. India's smartphone shipments to reach 160 MN next year, Economic Times, Dec'2018; accessed on 31 Jan, 2019; India Smartphone Shipment data, techARC, accessed on 24 Jan'2019; 3. Reliance retail's Jio phone has successfully been able to create a new category of fusion phones in India article published in CMR India on 2 Aug 2018; accessed on 31 Jan 2019

Mobile remains the primary access point for internet in India

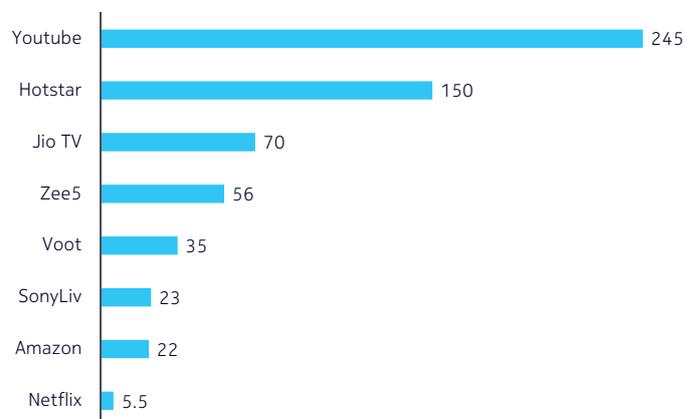
Mobile Data Traffic by content category¹



- Video streaming continues to remain a major contributor to mobile data traffic constituting 70-80% of the total traffic
- Over a 90% fall in 4G data prices over the last five years has fueled video streaming in the country
- Emergence of short form videos in several social networking apps like Instagram and TikTok has led to deeper engagement levels.

Monthly Active Users (Mn) of OTT Platforms²

- Operators joining hands with OTT content providers to boost their subscriber base with offerings like free subscriptions and unlimited video streaming has been a major driver for the OTT market in India
- Increasing smartphone penetration in rural areas will further drive the growth
- Regional language content and other events like sports have predominantly led to increase in OTT consumption



Key trends in Social media and communication

- From only a means to connect, social media platforms are now being used for multiple purposes like entertainment, commerce and gaming.
- Content is changing from static feeds to more interactive stories, driven by digital tools and technologies with power shifting from content creator to user.

Video contributes to the bulk of mobile data traffic driven by low data tariffs, availability of diverse OTT content, and the growing availability of content in regional languages

Source: 1. KPMG Analysis based on industry discussions, Mobile App 'State of Mobile 2019 report' from AppAnnie, news article published on Forbes.com on 30 Jan, 2019; accessed in Feb, 2019 2. Industry discussions, Company Reports

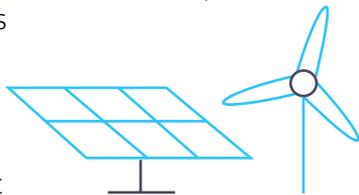
Realizing 5G potential

With unprecedented growth in 4G data traffic, coupled with need for higher broadband speeds and latency, it is anticipated that the need for 5G may trigger in some key markets, in near future.

Connected Cities

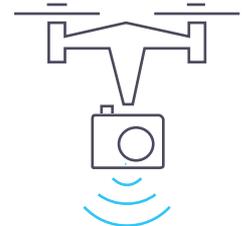
Energy and Utilities

- Smart Grids and Smart Lighting will help enhance demand side management by supporting load balancing, reducing electricity peaks and ultimately reducing energy costs.
- LED street lights have already been installed in Bhopal and Indore with similar plans being initiated for Delhi
- Operators will be required to provide high levels of network reliability for connectivity of smart streetlights
- They will need the ability to receive input from a large network of low-cost sensors and provide a private network with the required properties



Public safety

- Public safety in crowded areas can be enhanced by providing radio-frequency identification tags to locate those who might get lost, apps that offer real time travel information, emergency helplines and area routes.
- For Kumbh Mela, operators have rolled out special services and plans over the two months that the event will run.
- Operators can provide public safety as a service to civic authorities and also offer live streaming of proceedings among other content.



Connected Industries

Manufacturing

- Private 5G networks in factories will help perform labor intensive, precision as well as manufacturing activities and improve productivity while encouraging Government's Make in India scheme.
- Leading automakers have plans to build own private LTE at production sites. This will enable them to connect manufacturing robots and other devices faster and more securely than existing Ethernet, Wi-Fi or 4G LTE
- Operators will provide networking equipment, software, and most importantly access to spectrum
- Companies can outsource the overseeing of their networks due to liability and security concerns, and to leverage large technology teams of the operator.



Realizing 5G potential (continued)

Smart Consumers

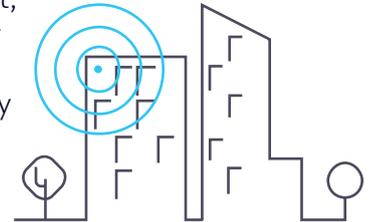
Healthcare

- Smart Care and Tele-Health could provide remote diagnosis for complex cases, medication and care while also improving the reach and quality of healthcare services to rural areas
- Telemedicine and Tele-robotic surgery is being implemented in India to reach out to rural and remote regions, where access to healthcare is limited
- Operators will need security framework to prevent cyber attacks that are more serious threat to healthcare systems
- A secure access to an online central repository of medical records will be required



Connected Homes

- 5G could provide networked homes to enable the interconnection and interoperability of multiple devices, services and apps
- It can help in providing services like building maintenance, improved safety and security, advanced metering infrastructure, efficient energy management, vehicular and visitor management and network connectivity
- Operators can bundle connectivity and cloud solution and partner with providers to offer plug and play home security solutions that raise alarms and enable real time monitoring from remote places





Way Forward

4G data consumption will increase further, driven by increase in penetration of smartphones, migration of users from 2G, 3G to 4G and rise in OTT data consumption

- 4G will continue to form the bulk of data traffic in 2019 as more parts of the country get access to 4G network
- Stiff competition and tariff wars among the operators could lead to sharing of infrastructure for achieving common goals. PPP models may also be explored for rolling out shared infrastructure and rationalize costs
- In the next 2-3 years penetration of 4G capable devices is likely to further increase in Metros and other categories due to increasing availability of affordable handsets
- Consumption of video content online will continue to constitute the majority of data traffic driven by development of regional content on OTT apps along with affordable data tariffs
- Trend of growing number of 4G users and fast pace growth in 4G data traffic could lead to early adoption of 5G network to accommodate the data demands of the country
- Early adoption of 5G could provide a boost to Government's initiatives like Digital India, 'Make in India' etc. while also improving accessibility for Utilities and Healthcare to rural parts of India which also aligns with NDCP's vision



Nokia India
7th Floor, Building 9A, DLF Cyber city Phase III
Gurgaon – 122 002, Haryana, India
Tel. +91 124 4504000 / +91 124 4504000

Document code: SR1902032735EN (February) CID206056

About Nokia

We create the technology to connect the world. We develop and deliver the industry's only end-to-end portfolio of network equipment, software, services and licensing that is available globally. Our customers include communications service providers whose combined networks support 5.7 billion subscriptions, as well as enterprises in the private and public sector that use our network portfolio to increase productivity and enrich lives.

Through our research teams, including the world-renowned Nokia Bell Labs, we are leading the world to adopt end-to-end 5G networks that are faster, more secure and capable of revolutionizing lives, economies and societies. Nokia adheres to the highest ethical business standards as we create technology with social purpose, quality and integrity. [nokia.com](https://www.nokia.com)

Nokia is a registered trademark of Nokia Corporation. Other product and company names mentioned herein may be trademarks or trade names of their respective owners.