TELECOM INFRA PROJECT

An Innovative Neutral-host NaaS Solution Offers Seamless Connectivity for Urban Rail Travelers

CloudExtel's urban NaaS solution at one of India's busiest railway stations demonstrates how to efficiently reduce network congestion and deliver a transformative customer experience

SNAPSHOT

THE CHALLENGE

Consumers in India rely heavily on their smartphones to connect to the internet. However, explosive demand in recent years for mobile data is putting strain on urban cellular networks. To continue offering quality services, mobile network operators (MNOs) must identify densification solutions for challenging urban environments.

WHY URBAN NETWORK-AS-A-SERVICE?

Urban network-as-a-service (NaaS) improves the economics of urban densification and offers a less disruptive, shared solution for MNOs to expand and improve coverage, especially in difficult-to-deploy, crowded areas. A single, shared network can support growing demand and ultimately reduce customer churn—with a much smaller footprint than side-by-side private networks.

THE SOLUTION

CloudExtel deployed a neutral-host NaaS solution on the Mumbai Central Railway Station. After a successful four-month trial in 2022, the project will add eight more Mumbai stations, delivering a better experience to hundreds of thousands of commuters daily.

ABOUT CLOUDEXTEL

CloudExtel is a Mumbai, India, based connectivity infrastructure company providing NaaS solutions to telecom operators, internet service providers, data centers, enterprises and large content providers for addressing the challenges emerging from the hyper growth of data consumption in India. It owns and operates networks across 320 cities that address critical points of network stress, leverage sharing and adopt emerging heterogeneous network technologies. CloudExtel has recently become an active infrastructure provider offering a turnkey neutral-host network densification solution to MNOs.

ABOUT THE TIP NAAS SOLUTION PROJECT GROUP

The Telecom Infra Project (TIP) NaaS Solution Project Group enables neutral-host NaaS business model deployments by promoting best practices and providing a market trial-to-scale platform for ecosystem collaboration.

INDIA'S DENSIFICATION CHALLENGE

More than 700 million people living in cities across India depend on their smartphones to connect to the internet for work, leisure, education, medical support and more. In recent years, mobile data usage has exploded in India's urban centers—in 2021, demand for 4G data increased by 31%.[1] Currently the average consumption per user per month is 17 GB and is increasing steadily.[2] With the move to 5G, demand for data will increase at an even faster pace.

MNOs in cities traditionally pursue network densification efforts to support growing demand, minimize network congestion and maintain customer quality of service (QoS). However, adding new infrastructure is challenging in crowded public spaces where network capacity shortages are also increasingly common. Construction and management of networks in these environments comes with layers of complexity.

For example, space and right of way negotiations on private and publicly owned property can stall efforts. Once commissioned, building sites can be tough to access, while construction scheduling is often regulated to low-use periods. Additionally, MNOs must train operational staff to work in these demanding locations. These challenges are exacerbated when multiple operators target the same locations.

NEUTRAL-HOST URBAN NAAS SIMPLIFIES URBAN NETWORKING

Neutral-host urban NaaS offers MNOs a more cost-effective way to densify in places where networks are especially challenging to build and manage. Under the model, a third-party neutral host, or NaaSCo, deploys a shared radio access network and transport network that it can lease to multiple operators while acting as a single intermediary between location owners. The NaaSCo plays a vital role as a specialist in planning, building and operating the network under specific and demanding conditions. As a result, there are fewer financial, logistical and technical burdens for MNOs leasing the network, freeing them up to focus on other priorities.

Urban NaaS also drives ancillary benefits including energy efficiency gains, simply due to the lower volume of equipment drawing power from the grid. Additionally, it minimizes public disruption in crowded areas by limiting the amount of construction and improves the performance of MNOs' neighboring sites by offloading the toughest traffic.

RESULTS

10x

Improvement in peak download speeds, from 4 mbps to 40 mbps

230,000+

Passengers per day

990

Data in GB/day being carried by the network across two MNOs

CLOUDEXTEL'S SOLUTION

The large stations along the Mumbai Suburban Railway system provide an ideal proving ground for urban NaaS. These locations are notoriously difficult to access from a construction and maintenance point of view, have limited space and placement options for new equipment and experience heavy demand for mobile data throughout the day.

In 2019, CloudExtel secured exclusive rights with RailTel, the telecom subsidiary of Indian Railways, to launch a neutral-host NaaS pilot project at nine stations along the western suburban transit system in Mumbai, with Mumbai Central as the pilot station for launch beginning in early 2022. At peak times, more than one train per minute travels through the station, amounting to more than 230,000 passengers daily. While the station offers free public Wi-Fi, slow network speeds and the hassle of swapping from cellular to Wi-Fi networks proved to be a less than ideal connectivity solution for travelers.

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CloudExtel needed to prove the technical and commercial viability of its approach as the first demonstration of urban NaaS in India. Working with TIP to define the business model and Nokia for technology and equipment, CloudExtel strived to show how the solution could meet aggressive service level agreement (SLA) targets for partner MNOs Vodafone Idea Limited and Bharti Airtel Limited by operating and optimizing the network at all times.

CloudExtel also needed to implement and manage technology with a minimal footprint due to the limited space and power at the site. Six remote radio units were placed strategically across the station's large waiting area, five platforms and three pedestrian bridges, utilizing a single backhaul unit. The power drawn from the equipment was minimal, and the small number of units minimized the impact of installation and day-to-day operations.

Within a short period, it was clear that CloudExtel's neutral-host NaaS solution could meet and exceed partner SLA targets while adhering to RailTel's space and operational requirements. The location saw a 10x service quality improvement, from 4 mbps to 40 mbps peak throughput, and an uplift of more than 20% organic traffic in the local area.[3]

Currently the CloudExtel-deployed solution is carrying 990 GB of payload across two operators every day. The CloudExtel solution offers a lower total cost of ownership in comparison to the existing self-deployed operator solution, thus resulting in delivering a lower cost per GB.

BENEFITS

- *Improved QoS, plus increased speed, payload and experience for network subscribers*
- *Reduced risk of customer dissatisfaction and churn*
- *Flexible, cost-effective solution designed to scale and support multiple MNOs sharing the same active infrastructure*

NEXT STEPS

Following the Mumbai Central Station pilot, CloudExtel is expanding the shared NaaS network model to eight additional stations across Mumbai, serving up to 2 million travelers daily. This neutral-host urban NaaS solution will improve connectivity where individual MNO solutions are not economically or logistically viable. It is a groundbreaking demonstration of the benefits of urban NaaS that will help to drive acceptance of shared urban networks across India and other parts of the globe.

Most importantly, CloudExtel's urban NaaS solution will ensure that customers in Mumbai maintain access to the Internet throughout their commutes without having to worry about delays or loss of coverage.

To learn more about CloudExtel, visit **cloudextel.com**.

1. Nokia, MBiT Index 2022.
2. Ibid.
3. Data provided by CloudExtel in October 2022.

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