io by HFCL

Case Study

Public Wi-Fi

Access Secure Wi-Fi on the Move

Delhi Free Wi-Fi: Connecting Urban India with Last Mile Connectivity

Background

The Delhi Free Wi-Fi initiative, launched in December 2019, is a significant project undertaken by the Government of NCT of Delhi to address the growing need for accessible and affordable internet services with the goal of transforming connectivity for over 26.50 million residents and visitors in Delhi.Recognizing the increasing reliance on digital platforms for government and essential services, the government aimed to bridge the gap in internet access, which was often perceived as an expensive commodity for the common citizen.

Committed to enhancing digital access, the Delhi government guaranteed the citywide implementation of a Wi-Fi network, promising free internet services across Delhi. This strategic move aims to foster growth by providing affordable internet connectivity, facilitating e-governance, and promoting various online activities, all while ensuring accessibility without imposing high costs. The motivation behind the Delhi Free Wi-Fi Scheme stemmed from the understanding that quality internet is a basic necessity in the modern era, essential for economic, educational, and social opportunities. The government recognized that the lack of affordable internet access could result in a digital divide, limiting citizens' participation in various aspects of life.

To address this issue, the Delhi government introduced the Delhi Free Wi-Fi Scheme as a pioneering effort to establish Wi-Fi hotspots in public spaces, government offices, schools, markets, and bus stops. Key features of the scheme included each hotspot's capacity to support a significant number of concurrent users, high average Wi-Fi speeds, and data usage limits to ensure fair distribution of resources. The scheme's progress was monitored, and by July 2022, a significant network of Wi-Fi hotspots had been installed, benefiting a substantial number of residents who availed themselves of the free Wi-Fi facility.

To transform this vision into reality, the government partnered with a prominent system integrator, who in turn collaborated with HFCL, for fulfilling the end-to-end network requirements for this extensive project.

- As of June 2022, the leading service area with the largest number of broadband internet subscribers in urban India was the capital city of India, Delhi, with nearly 42 million users.[1]
- In 2019, global public Wi-Fi hotspots numbered 362 billion. By 2020, this count surged to 454 million, escalating further to 542 million in 2021, and marginally increasing to 549 million by 2022.[2]

Free Wi-Fi is the backbone of the government's vision for Delhi, transforming the city into a digitally empowered society and a knowledge economy. Residents across the city are accessing high-quality and secure public Wi-Fi connectivity to generate income, be a part of the digital economy, and improve their quality of life.

This is just the beginning!

Overview

Nestled in the heart of India, Delhi, the bustling capital, is home to an impressive 26.50 million residents, securing its place as the world's fifth most populous city. Despite its vibrancy and rich cultural heritage, Delhi grappled with challenges such as unequal digital opportunities, economic disparities, and digital exclusion. These obstacles restricted certain segments of the population from accessing education, employment opportunities, and essential services, resulting in a digital divide. The project aimed to address these challenges by providing widespread Wi-Fi coverage, ensuring that residents and visitors alike could benefit from reliable internet access across key locations. This initiative aimed to cultivate a more inclusive and digitally connected city.

Going beyond mere coverage aspirations, the project placed a significant emphasis on stability and security, acknowledging the diverse needs of Delhi's populace. The primary objective was to strategically establish Wi-Fi hotspots throughout the city. Each hotspot was meticulously designed to support 150-200 concurrent users, providing an impressive Wi-Fi speed averaging 150 to 200 Mbps. To ensure equitable access, users with a single ID were subject to a monthly limit of 15GB data usage. At the core of the project's commitment was the assurance that no resident in densely populated areas would be more than 500 meters away from a Wi-Fi hotspot. This dedication to accessibility aimed to democratize internet availability, addressing the digital needs of all residents, regardless of their specific location within the city.

This comprehensive initiative entailed a meticulous process of identifying key strategic locations for the installation of latest Wi-Fi standard outdoor Wi-Fi Access Points. The objective was to ensure the delivery of not only flawless and secure connectivity but also to achieve remarkable throughput, minimal latency, and consistent performance throughout the city. The strategic placement of these Wi-Fi Access Points was crucial to creating a robust network infrastructure capable of meeting the diverse connectivity needs. Through considerations such as population density, usage patterns, and geographical features, the project aimed to optimize the effectiveness of these access points, providing an optimal and seamless internet experience for all users.

According to the Internet and Mobile Association of India (IAMAI) study, the national capital territory of Delhi has recorded the highest internet penetration at the state level.[3]

Challenge

The State Government sought to establish Public Wi-Fi hotspots not only to offer free connectivity but also to provide a secure and stable network for the seamless user experience of Delhi residents and visitors. The primary challenge was to design, integrate, and implement an advanced network infrastructure capable of meeting the colossal demand for free, high-quality Wi-Fi in a densely populated city like Delhi.

Solution

HFCL, a leading technology company, aimed to deliver high-speed and reliable Wi-Fi services to residents and visitors in Delhi, ensuring an outstanding user experience. Partnering with a leading systems integrator, our collective objective was to address end-to-end network requirements. Through an extensive survey, we identified key hotspot locations across the city, with the focus on delivering uninterrupted Wi-Fi connectivity and the establishment of a robust network infrastructure. This initiative involved the strategic deployment of Wi-Fi 5 outdoor Access Points in targeted locations such as public spaces, government offices, schools, markets, and bus stops.

These strategically positioned Wi-Fi 5 outdoor Access Points transformed communication by introducing seamless connectivity, faster data transfer rates, enhanced capacity, and improved performance, especially in crowded environments.

In addition to their impact on connectivity and speed, these Access Points significantly contributed to creating a safe and secure network infrastructure. Incorporating WPA2 security protocols ensured robust protection against unauthorized access and data breaches, bolstering the overall cybersecurity of the network. Furthermore, their adherence to IP67 standards made them resilient in harsh environmental conditions, solidifying their reliability and contributing to the creation of a network that prioritized safety and performance.

By seamlessly combining high-speed data transfer capabilities with state-of-the-art security measures, these Access Points not only met the connectivity needs of Delhi's residents and visitors but also instilled confidence in the secure transmission of their data across a network designed for reliability, safety, and optimal performance. This collaborative effort, leveraging cutting-edge technology and expertise, culminated in the creation of a reliable and secure network capable of satisfying the substantial data demands of the population.

Outdoor Wi-Fi

ion4 Wi-Fi 5 2x2

High capacity outdoor Access Points

Result

01 Surge in data consumption: 10,000 GB during off-peak hours, averaging 20–25K GB per day. Exponential increase in data usage reflects project success in meeting community connectivity needs.

02 Each hotspot supports up to 200 concurrent users within the network infrastructure.

03 Enhanced user experience with average high-speed internet accessibility of up to 200 Mbps for residents and visitors.

Conclusion

The Delhi Free Wi-Fi Project stands as a beacon of success, not only in India but globally. It has set a precedent for cities worldwide, showcasing the possibilities of implementing similar initiatives to enhance the quality of life for their citizens. The partnership between HFCL and a leading systems integrator has laid the foundation for a connected and digitally empowered Delhi, offering a blueprint for other regions to follow suit. By deploying strategically positioned Wi-Fi hotspots and Access Points, the project has revolutionized internet accessibility, ensuring that no citizen in densely populated areas is more than 500 meters away from free public Wi-Fi. This initiative not only met but exceeded expectations, witnessing an extraordinary surge in data consumption, reaching 10,000 GB during off-peak hours and averaging 20-25K GB daily.

References

1. tinyurl.com/yckvbvsb
2. Vital Statistics on Public WiFi: Usage, Safety & Trends - BroadbandSearch
3. Delhi ranks top in Internet penetration, Kerala comes second - The Hindu BusinessLine

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