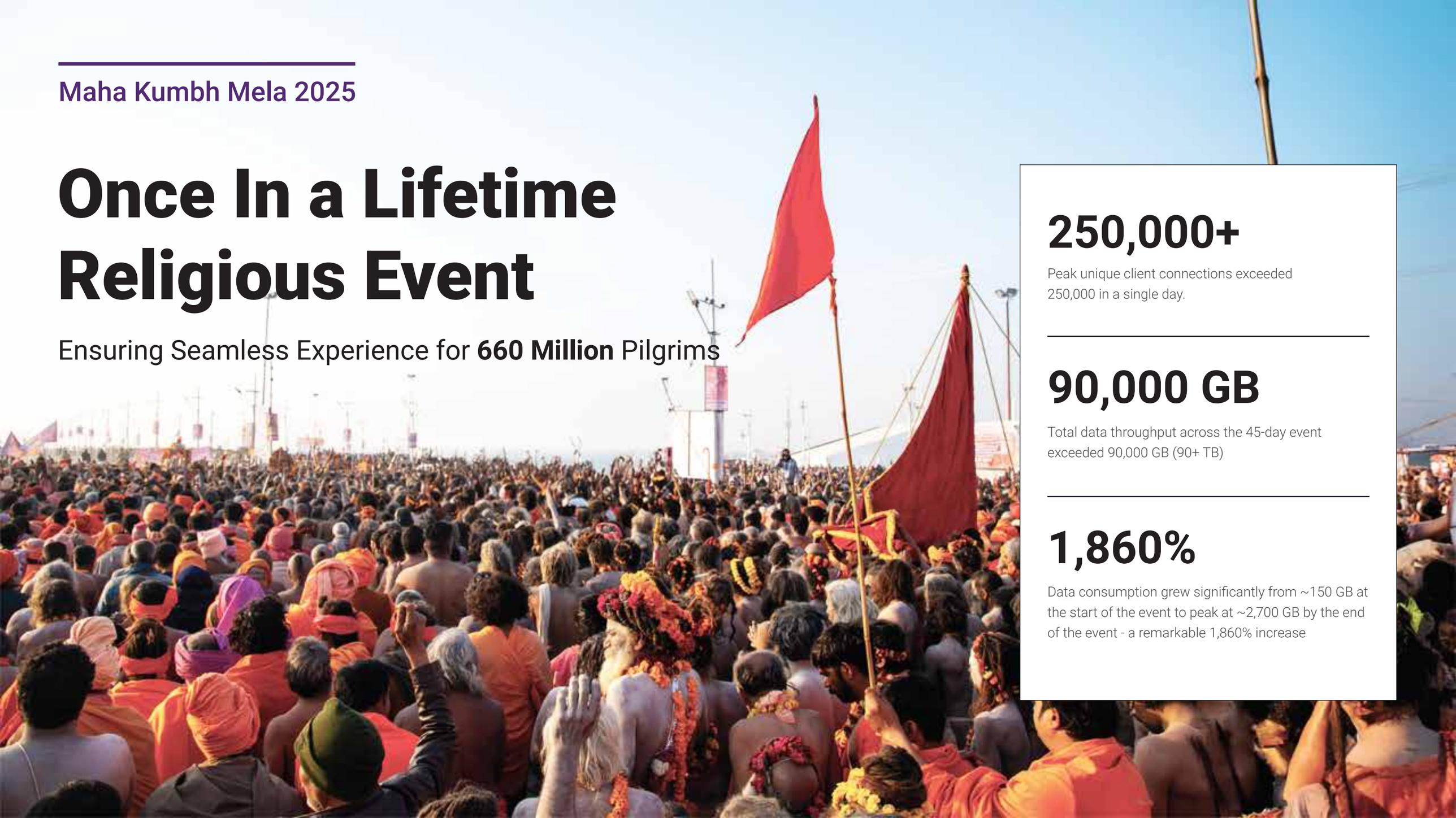
Maha Kumbh Mela 2025

Once In a Lifetime Religious Event

Ensuring Seamless Experience for **660 Million** Pilgrims



250,000+

Peak unique client connections exceeded 250,000 in a single day.

90,000 GB

Total data throughput across the 45-day event exceeded 90,000 GB (90+ TB)

1,860%

Data consumption grew significantly from ~150 GB at the start of the event to peak at ~2,700 GB by the end of the event - a remarkable 1,860% increase

Overview

The 2025 Prayag Maha Kumbh Mela, held from January 13 to February 26 at the Triveni Sangam in Prayagraj, Uttar Pradesh, was not only one of the world's largest religious gatherings but also a monumental feat in terms of technological infrastructure. With up to 660 million visitors over 45 days, millions of pilgrims, tourists, security personnel, and event staff congregated at the sacred confluence of the Ganges, Yamuna, and the mythical Saraswati river, making robust and uninterrupted communication critical. Given the size and scale of the event, traditional communication and network infrastructure would have been insufficient.

The key challenge lay in managing the surge in mobile network traffic, especially in high-density areas, while also maintaining safety protocols, ensuring a seamless attendee experience, and supporting operational efficiency across a sprawling event space that included 12 kilometers of bathing ghats and 25 sectors. With millions of visitors trying to access mobile data simultaneously, the event required a comprehensive solution encompassing not just connectivity but also robust surveillance and security infrastructure.

HFCL played a pivotal role in the event by providing an end-to-end solution that addressed both connectivity and security requirements. Through strategic deployment of Wi-Fi Access Points, Unlicensed Band Radios for backhaul, L2 Switches for the surveillance backbone, and a Video Management System, HFCL enabled a secure and connected environment for this massive gathering.

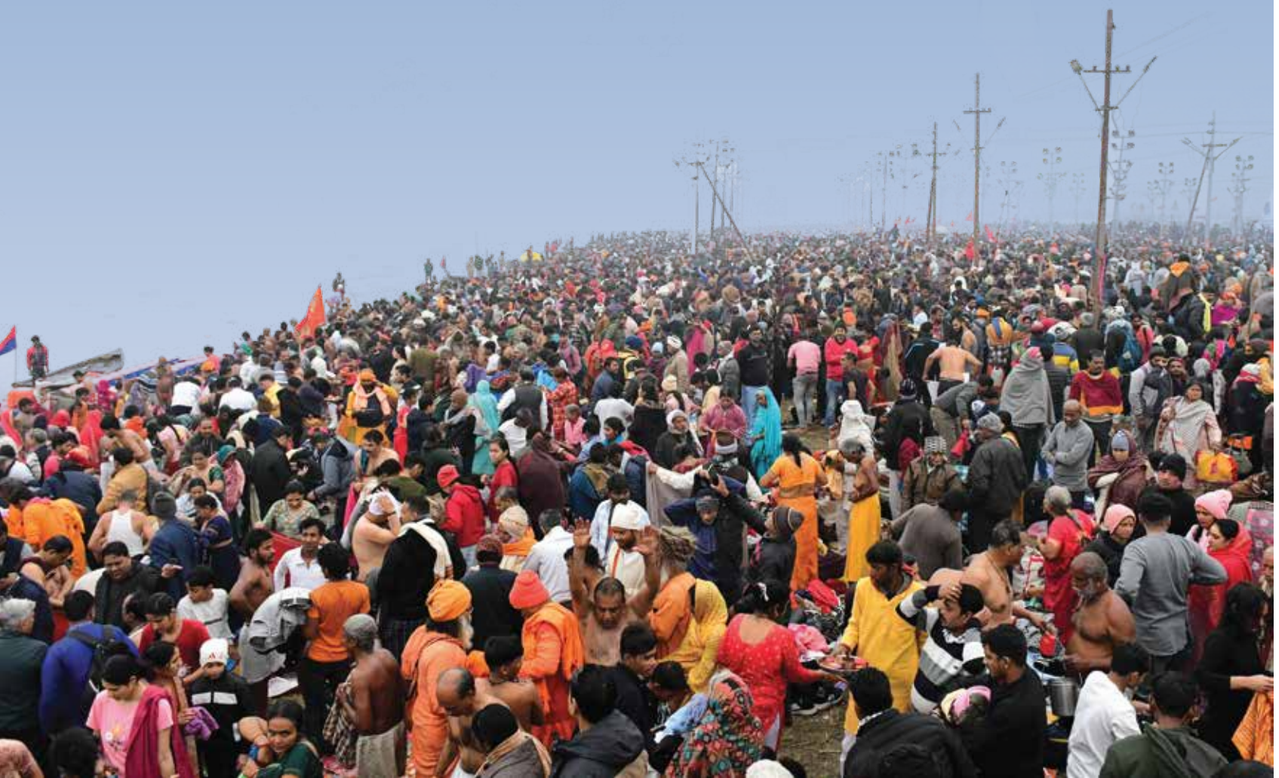
144 Years
of Tradition

45 Days
One Sacred Destination

660 Million
Visitors

Challenge

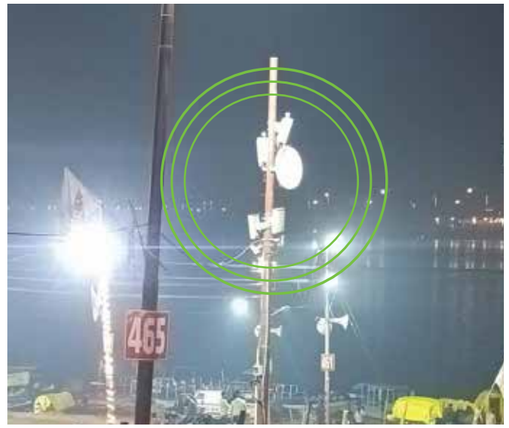
The 2025 Maha Kumbh Mela presented multiple critical challenges that demanded innovative solutions. Beyond the sheer scale of providing network connectivity for 660 million visitors, the event required comprehensive surveillance infrastructure to ensure safety and security. Network congestion in high-density zones risked causing service disruptions, while the need for real-time video monitoring and management added another layer of complexity. The sprawling event area demanded not just extensive Wi-Fi coverage but also reliable backhaul infrastructure to support both Wi-Fi and cellular networks.



Solution

To address these multifaceted challenges, HFCL in collaboration with one of the largest telecom service providers implemented a comprehensive solution that seamlessly integrated various technological components. At the core of the connectivity infrastructure were ~400 Wi-Fi Access Points, strategically deployed to create Wi-Fi hotspots at Prayagraj and nearby railway stations, high-density zones, including the 12 kilometers of bathing ghats, entry points, and key congregation areas.

The Wi-Fi network enabled pilgrims to stay connected, access real-time information, and communicate seamlessly. The Access Points were deployed in such a way that high-density requirements are met while ensuring high-quality end user experience. The Wi-Fi infrastructure was complemented by 1Gbps UBR, which provided crucial backhaul support by efficiently transferring data from mobile network (4G/5G) base stations to the core network, ensuring that users and connected devices such as Wi-Fi hotspots, CCTV cameras, and mobile phones could access high-speed internet even during peak usage periods.



The surveillance infrastructure was built upon a foundation of L2 Switches, both 8-port and 24-port variants, forming the backbone of the CCTV system. These switches ensured uninterrupted data transmission between cameras and the monitoring system while enabling reliable and high-speed connectivity across multiple surveillance points. Our Video Management System (VMS) served as a centralized platform for monitoring and managing CCTV feeds, providing real-time video analytics for improved security and crowd management. The VMS ensured high-quality video streaming and recording for better situational awareness, enabling security personnel to effectively monitor the entire event space. This integrated approach to surveillance and connectivity ensured that both communication and security requirements were met effectively.

Network Beyond Limits

Usage Growth and Scale

- Data consumption grew significantly from ~150 GB at the start of the event to ~2,700 GB by the end of the event - a remarkable **1,860%** increase
- Total data throughput across the 45-day event exceeded **90,000 GB** (90+ TB)
- 5 GHz band carried approximately 80% of total traffic, demonstrating the effectiveness of your dual-band deployment strategy

User Adoption

- Peak unique client connections exceeded **250,000** in a single day (151,553 on 5 GHz + 105,129 on 2.4 GHz)
- Total unique user connections across the event likely exceeded **2.5 million**
- Consistent growth in daily users, from approximately 10,000 initially to over 200,000 during peak days

Network Performance

- Average usage per Access Point increased from 0.46 GB to over 7 GB at peak - showcasing network scalability
- Successfully handled over **2.5 TB** of data in a single day without service degradation
- Number of high-usage APs (>10 GB/day) increased from 0 to 84, demonstrating load-balancing capability

Infrastructure Reliability

- Maintained consistent service despite enormous user growth - the ratio of data to clients remained stable
- Over **90%** of Access Points consistently active throughout the event with minimal downtime
- 5 GHz usage consistently outpaced 2.4 GHz as the event progressed, showing successful band steering of compatible devices

The Maha Kumbh 2025 tested the resilience of digital infrastructure like never before and we are proud that HFCL's indigenously developed solutions were not only able to meet but exceed expectations. This deployment underscores our expertise in deploying large-scale, high-density network solutions which was able to handle terabytes of data traffic seamlessly while ensuring uninterrupted, high-speed connectivity and real time surveillance. More importantly, this is a testament to India's growing capability to develop world class technology solutions under the 'Make in India' vision. This achievement sets a new benchmark for HFCL in managing digital infrastructure at such mega-events.

Mahendra Nahata
(Managing Director, HFCL)

Results

01 Attendees experienced seamless internet connectivity with minimal service disruptions and high-speed access, enhancing their ability to stay connected and share experiences.

02 Total data volume exceeded 90,000 GB (90+ TB) across the 45-day event, with 80% of traffic carried on the 5 GHz band.

03 Peak unique client connections exceeded 250,000 in a single day.

04 The UBR technology for backhaul effectively supported the high data demands, maintaining a robust network performance.

05 The integrated surveillance system provided comprehensive security coverage, while L2 Switches and VMS enabled efficient monitoring and management of security cameras, boosting overall event safety.

Conclusion

The successful deployment of HFCL's comprehensive solution at the 2025 Maha Kumbh Mela showcased the company's ability to address complex infrastructure challenges at massive scale. Through strategic implementation of Wi-Fi Access Points, Unlicensed Band Radios, L2 Switches, and VMS, HFCL delivered a solution that ensured both connectivity and security for one of the world's largest gatherings. This implementation set new benchmarks for large-scale event infrastructure, demonstrating how integrated technology solutions can effectively support massive gatherings while ensuring both communication reliability and public safety.

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