

Pilgrimage in the Internet Age

A photograph of a snowy mountain landscape. In the foreground, a path of dark rocks or dirt is partially covered in snow. Several people are walking along the path, some carrying backpacks. The background features large, rugged mountains covered in snow under a blue sky with some clouds.

Executive Summary

India, the cradle of spirituality, presents a rich blend of ancient wisdom, diverse practices, and profound philosophies that have shaped its culture for millennia. From the sacred verses of the Vedas to the tranquil teachings of meditation and yoga, India's spiritual heritage offers a timeless journey into the depths of human consciousness. One such revered spiritual journey is the iconic Char Dham Yatra—a pilgrimage attracting millions to the sacred Hindu sites of Yamunotri, Gangotri, Kedarnath, and Badrinath in Uttarakhand. These locations are perched at altitudes exceeding 3000 meters above sea level. The allure of these sites draws millions of global pilgrims and travelers annually, and in a remarkable surge, more than 7 lakh pilgrims visited Kedarnath alone between May 10 and June 6, 2024.

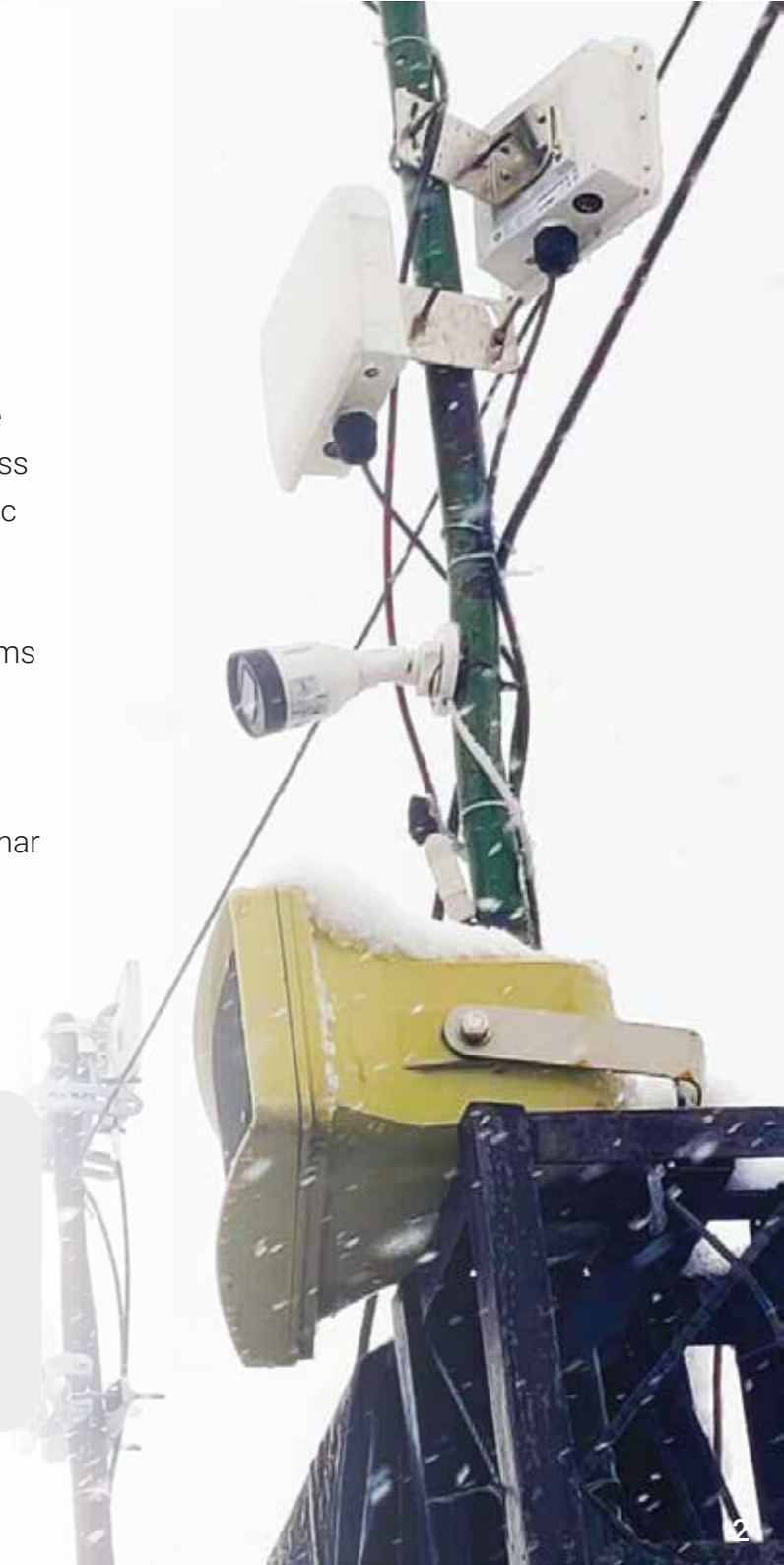
To enhance the pilgrim experience, a pioneering project was undertaken to blanket the entire Char Dham route with seamless internet connectivity. Overcoming formidable obstacles like harsh weather and remoteness, HFCL provided high-speed, reliable Wi-Fi to devotees, ensuring they could stay connected with loved ones, access public services, and share their spiritual experiences over social media.

7 Lakh

pilgrims visited Kedarnath alone between May 10 and June 6, 2024.

29.52 Lakh

registrations for the Char Dham Yatra in 2024 highlight strong interest and fervor among spiritual seekers for this revered pilgrimage.





The Connectivity Challenge

During the divine journey, devotees faced a formidable hurdle – the daunting challenge of staying connected amidst rugged terrains, erratic power supply, extreme weather conditions, and unreliable cellular connectivity.

Navigating through such harsh environments posed a constant struggle, as communication networks often faltered, hindering timely updates and coordination among the devotees and on-ground operations team.

This challenge highlighted the need for resilience and resourcefulness to overcome not just spiritual trials but also the practical hardships of contemporary pilgrimage.



Pilgrimage Meets Innovation at Char Dham

HFCL endeavored to enhance the pilgrimage experience at Char Dham by providing high-speed, reliable Wi-Fi connectivity. This initiative involved collaboration with a Tier-1 Internet Service Provider (ISP) and closely working with the Government of Uttarakhand, Temple Authorities, and Local Partners. A thorough survey of the four temples and key checkpoints was conducted to understand the feasibility of deploying Wi-Fi hotspots at different places.

Based on the analysis, strategic locations were identified for the deployment of cutting-edge access solutions, including Access Points, Managed Switches, a scalable Cloud Network Controller, and a Captive Portal for secure user onboarding. This integrated approach was adopted to ensure optimal performance, remote manageability, granular access control, and a secure user experience, tailored to the challenging conditions of the remote Char Dham locations.

Strategic Deployment & Resilient Technology

Following the initial survey of the four temples and critical checkpoints along the pilgrimage route, a meticulous analysis led to the identification of 15 user hotspot areas. In these locations, outdoor Access Points were deployed. These Access Points offered faster data rates, increased capacity, and improved performance in crowded environments, making them well-suited for seamless and reliable connectivity under challenging conditions. IP67 certification ensured robustness in the unpredictable mountainous terrain of Char Dham.

Phased Installation & Minimal Disruption

To ensure seamless integration and minimal disruption, we deployed Access Points in a phased manner. Beginning at base camps and progressively expanding coverage to the entire temple complex, our team completed installation within the specified timeframe while minimizing disruption to ongoing pilgrimage activities. This approach streamlined deployment logistics and maintained uninterrupted connectivity for pilgrims throughout their journey.

Enhanced Operational Efficiency

Alongside outdoor Access Points, we installed fully managed Layer 2, 8-Port switches. These switches featured customizable settings and robust network protection protocols such as Ethernet Ring Protection Switching (ERPS), enabling efficient uplink connectivity for up to 8 Access Points per switch. They were instrumental in ensuring the smooth operation of the Wi-Fi network across various pilgrimage sites.

Cloud-Optimized Management

Our solution further optimized operational efficiencies through a cloud-based approach to network management. By configuring the entire solution on a cloud controller, we enabled remote monitoring, management, and maintenance of the network infrastructure. This cloud-enabled flexibility ensured proactive responsiveness to evolving pilgrimage dynamics and environmental conditions, reinforcing the reliability and resilience of the deployed solution.



Advanced Authentication and Access Control

For secure and authorized access, we implemented a fully integrated Captive Portal solution. This advanced portal went beyond basic authentication, defining user permissions and monitoring activities for enhanced security and administration. Pilgrims and administrators alike benefited from stringent access controls, protecting sensitive data and maintaining network integrity.

Visualizing Deployment: A Pictorial Journey



User Experience Enhancement

The deployment of HFCL's high-speed Wi-Fi solution at Char Dham has revolutionized the pilgrimage experience, offering seamless connectivity with over 200 Mbps throughput. This network supports more than 2,000 concurrent users daily, handling over 100 TBs of data traffic. Pilgrims benefit from uninterrupted communication with their loved ones, secure transactions, and real-time sharing of spiritual experiences through social media.

Moreover, the integration of an advanced Captive Portal ensures security, data privacy and network integrity, enhancing safety and convenience. Pilgrims receive timely updates on weather and route conditions, facilitated by efficient visitor flow management and personalized communication from the Char Dham administration. This initiative not only modernizes Char Dham into a technology-enabled destination but also preserves its spiritual sanctity, resonating positively with millions of visitors seeking connectivity and reverence in their pilgrimage journey.

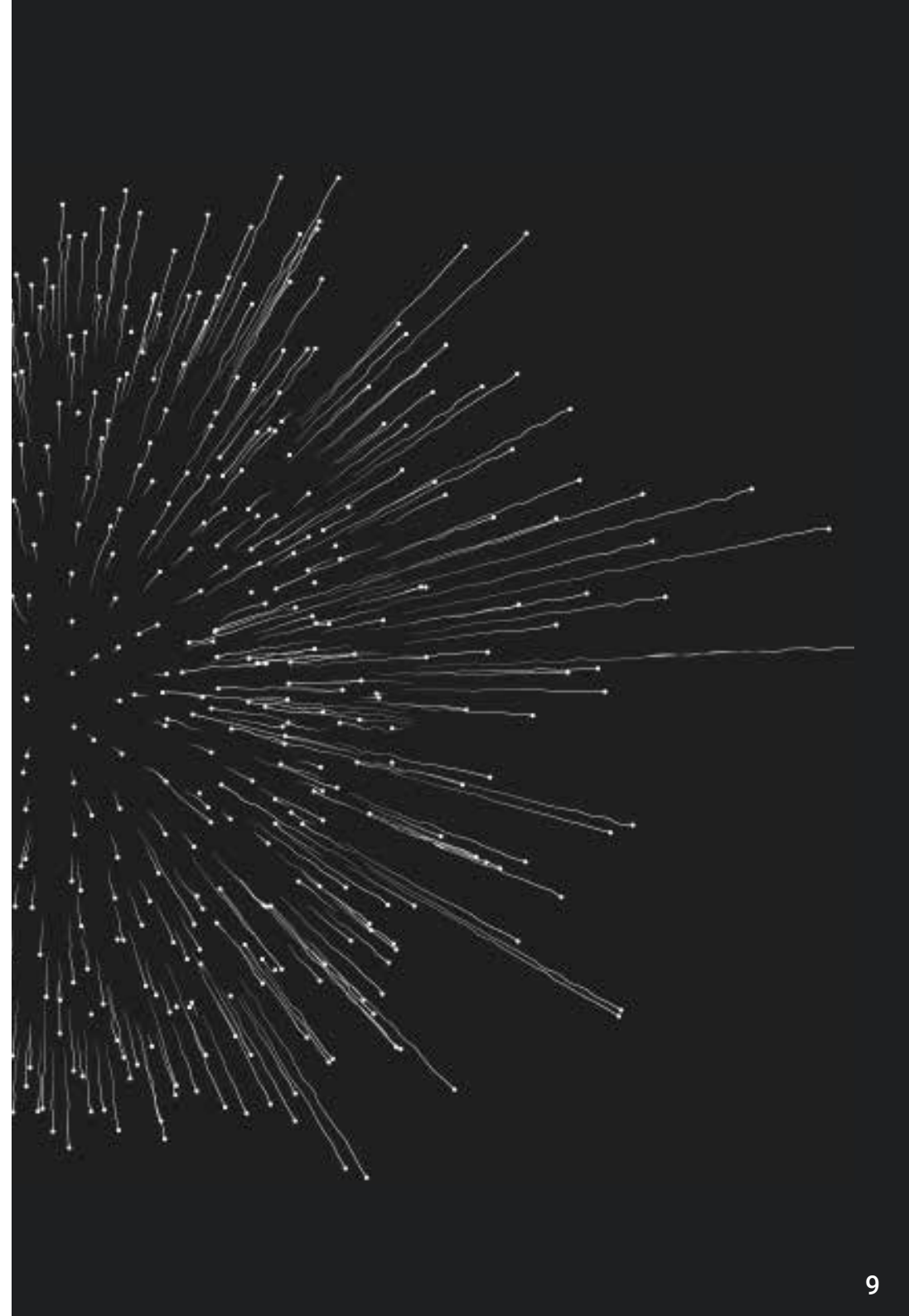


Scale of Market Impact

The deployment of our Wi-Fi infrastructure at Char Dham has made a significant impact on the market, both regionally and nationally. Serving the connectivity needs of over 700,000 pilgrims at Kedarnath alone within a short span of May and June, this project has set a new benchmark for pilgrimage management and visitor experience in India.

This initiative has not only enhanced the appeal of Char Dham as a spiritual destination but also stimulated tourism and economic activities in Uttarakhand. The scalable nature of the Wi-Fi solution ensures it can accommodate the increasing influx of pilgrims and travelers year after year, future-proofing the infrastructure against technological obsolescence.

Furthermore, the success of this deployment has inspired similar initiatives across other pilgrimage sites and remote regions worldwide facing connectivity challenges. By demonstrating the feasibility and benefits of integrating advanced technology with traditional practices, HFCL has catalyzed a transformation in how pilgrimage experiences are perceived and managed globally.



About HFCL

HFCL is a leading technology company specializing in creating digital networks for telcos, enterprises and governments. Over the years, HFCL has emerged as a trusted partner offering sustainable high-tech solutions with a commitment to providing the latest technology products to its customers. Our strong R&D expertise coupled with our global system integration services and decades of experience in fiber optics enables us to deliver innovative digital network solutions required for the most advanced networks.

The Company's in-house R&D Centers located at Gurgaon & Bengaluru along with invested R&D Houses and other R&D collaborators at different locations in India and abroad, innovate a futuristic range of technology products and solutions. HFCL has developed capabilities to provide premium quality Optical Fiber and Optical Fiber Cables, state-of-the-art telecom products including 5G Radio Access Network (RAN) products, 5G Transport Products, Wi-Fi Systems (Wi-Fi 6, Wi-Fi 7), Unlicensed Band Radios, Switches, Routers and Software Defined Radios.

The Company has state-of-the-art Optical Fiber and Optical Fiber Cable manufacturing plants at Hyderabad, Optical Fiber Cable manufacturing plant in Goa and in its subsidiary HTL Limited at Chennai.

We are a partner of choice for our customers across India, Europe, Asia Pacific, the Middle East, Africa and the USA. Our commitment to quality and environmental sustainability inspires us to innovate solutions for ever-evolving customer needs.



visit our website: io.hfcl.com | hfcl.com