



Mobile Network Operators (MNO)

Unleashed, Unstoppable: Unlicensed Band Radio Network

HFCL's Last-Mile Connectivity Technology Efficiently Addressing Challenges Faced by MNOs



Background

Recent years have seen a transformative shift in the telecommunications sector, brought about by the rapid advancement of digital technology and the widespread integration of internet services into everyday life. Telcos face the dual challenge of extending network coverage to rural areas while meeting the high connectivity demands of urban environments. Rural areas present obstacles such as sparse population and rough terrain, making traditional fiber deployments economically unfeasible. Urban settings, conversely, struggle with limited infrastructure space, complex building designs, and high electromagnetic interference.

In response to these challenges and the growing emphasis on sustainability, telcos are turning to Unlicensed Band Radio (UBR) as a comprehensive solution. Utilizing the unlicensed 5 GHz spectrum, UBR offers Point-to-Point and Point-to-Multipoint solutions that bridge the digital divide across diverse landscapes. While fiber remains the primary high-speed internet solution, UBR provides a viable alternative, allowing telcos to offer reliable connectivity that complements existing infrastructure in both rural and urban areas.

Reliance Jio

- » Active subscriber base as of May 2024: 437 million.
- » 5G subscriber base as of June 2024: 130 million.

Bharti Airtel

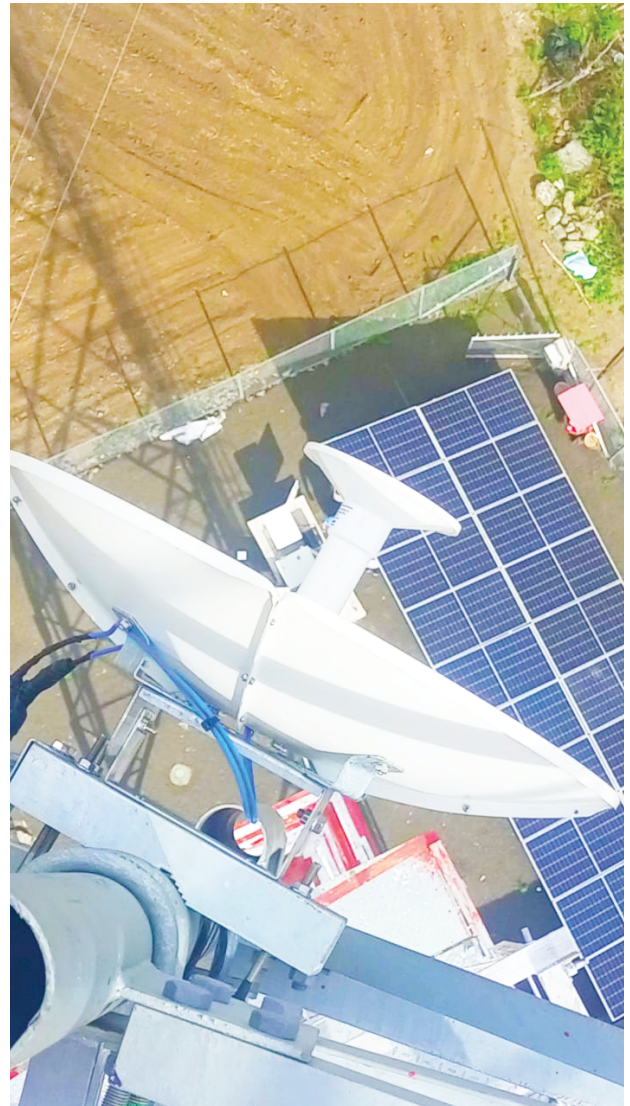
- » 5G consumer base at the end of Q1 FY25 (April-June 2024): 90 million.
- » Wireless subscriber base in December 2023: 381 million.

Vodafone Idea (VI)

- » Wireless subscriber base in December 2023: 223 million.
- » Subscriber base as of April 2024: 219.08 million.

Challenge

Mobile Network Operators (MNOs) face an array of challenges as they strive to ensure ubiquitous network coverage. Rural areas pose economic challenges for fiber deployment due to sparse populations and difficult terrain. Urban settings present their own hurdles with limited space, complex structures, and high interference. Regulatory requirements for infrastructure installation further complicate network expansion efforts. MNOs must balance these challenges with the need to minimize deployment costs and accelerate time-to-market to maintain competitiveness. Moreover, ensuring consistent performance, maintaining network stability, and meeting stringent Service Level Agreements (SLAs) in the interference-prone unlicensed band added to the challenges.





Proven Solution

HFCL's UBR presents MNOs with a comprehensive and enduring strategy to address the hurdles of rural connectivity and urban network densification. It plays a pivotal role in helping MNOs deliver the seamless connectivity experience that end customers demand. The UBR solution has already made significant strides in the Indian telecommunications landscape, with leading telecom service providers adopting it for 4G and 5G backhaul solutions.

High-Capacity Wireless for 4G & 5G Backhaul

- » Over 300,000 operational links deployed nationwide
- » Leverages unlicensed 5 GHz spectrum for cost-effective connectivity
- » Complements and extends existing fiber and microwave infrastructure

Versatile Deployment Options

- » Adaptable to urban, suburban, and rural environments
- » Supports both short and long-range link distances
- » Rapid deployment within a single working day

Advanced Interference Mitigation

- » Dynamic Channel Selection (DCS) and Dynamic Data Rate Selection (DDRS)
- » AI-based algorithms for optimal spectrum utilization
- » Ensures stable links in interference-prone environments

Comprehensive Network Management

- » Plug-and-play provisioning for quick deployment
- » Adaptive RF technology for optimized performance
- » Eliminates need for manual intervention in addressing interference

Enhanced Customer Experience

- » Up to 30% traffic offload from licensed bands in high-density areas
- » 25% improvement in customer satisfaction scores
- » Seamless connectivity across diverse landscapes

Cost-Effective and Efficient

- » Significant CAPEX and OPEX reductions compared to traditional solutions
- » Made in India, promoting domestic manufacturing capabilities
- » Substantial Total Cost of Ownership (TCO) savings for operators

Easy Planning and Management

To ensure optimal placement and achieve the desired network performance, we utilized LinkXpert - Link Planning Tool, an industry-leading solution for precise network planning. This tool played a crucial role in accurately designing the network, taking into account various factors such as terrain, interference, and capacity requirements. To efficiently manage the deployed solution, we provided an Element Management System (EMS). With its scalable, flexible, and centralized management features, the EMS offers comprehensive network oversight accessible through a user-friendly web interface. Additionally, its Zero Touch Provisioning capability streamlines deployment processes, ensuring rapid and hassle-free network expansion.

The IO Difference

Interference Mitigation

Implementing advanced algorithms like Dynamic Channel Selection (DCS) and Dynamic Data Rate Selection (DDRS) to intelligently manage interference and ensure stable, reliable links in crowded spectrum environments.

Versatility

Offering solutions adaptable to diverse settings, from dense urban centers to remote rural areas, with versatile antenna options catering to short, medium, and long-range link distances.

Rapid Deployment

Enabling swift setup within a single working day, providing quick solutions for network needs compared to extensive lead times required for fiber optic installations.

Cost-Effectiveness

Delivering significant cost savings in both CAPEX and OPEX compared to traditional backhaul solutions, while maintaining competitive pricing without compromising on features.

Made in India

Underscoring a commitment to promoting domestic manufacturing capabilities and contributing to national economic growth.



Within the dynamic field of mobile communications reliable connectivity and high-speed data delivery are paramount. Working closely with MNOs, our focus delved deep into countering data congestion and ensuring seamless connectivity across diverse terrains. Deploying UBR reshaped the landscape of network solutions for MNOs. Our strategy focused on swift deployment, effectively countering data traffic and connectivity hurdles. With HFCL's portfolio of UBR, we seamlessly bridged connectivity gaps, ensuring uninterrupted service and substantial operational efficiencies for our clients. This innovative deployment not only optimized resources but also elevated service standards, setting a new benchmark in network infrastructure evolution.

Manish Gangey

(Executive President - PLM)

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. 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.