

Mauritius Metro

# Connecting the Future of Transit

Transforming Mauritius Metro with Wi-Fi 6 for Smarter Transit Connectivity



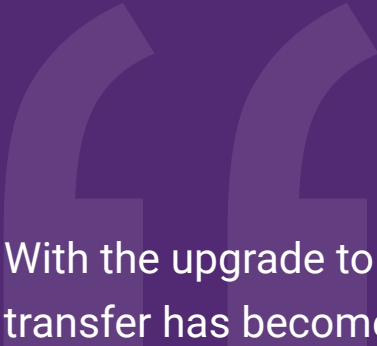
# Background

The Mauritius Metro system has emerged as a vital component of urban transportation infrastructure, carrying thousands of passengers daily while generating massive amounts of critical operational data. Every journey produces gigabytes of information, from high-definition security footage to essential operational metrics, all of which must be efficiently collected and analyzed for optimal system performance.

At the core of the metro's operations is its DEPOT, where Light Rail Vehicles (LRVs) return nightly for maintenance and essential data synchronization. What was once a simple requirement for basic operational data has evolved into a complex need for high-speed, reliable data transfer. Today, the system depends on robust wireless infrastructure to support various critical functions, including security camera footage transfer, operational metrics collection, and real-time monitoring systems.

As technology advanced and operational requirements grew, the limitations of the LRVs' existing wireless capabilities became increasingly apparent. The vehicles' Wi-Fi modules struggled with consistent connectivity and could only achieve maximum speeds of 135Mbps - less than half the potential speed of standard equipment.

These limitations jeopardized operational efficiency and data integrity, particularly during critical nighttime maintenance windows when large volumes of data needed to be transferred. Recognizing the need for a comprehensive upgrade, the Mauritius Metro partnered with HFCL, leveraging their expertise in enterprise Wi-Fi solutions. Together, they initiated the implementation of a state-of-the-art Wi-Fi 6 infrastructure that would not only address current operational challenges but also future-proof the system for years to come.



With the upgrade to Wi-Fi 6, our data transfer has become much faster and more reliable. The improved coverage and real-time monitoring have made our operations smoother and more efficient. We're now better equipped for future needs, thanks to HFCL's support.

## Mauritius Metro Team

# Challenge

The Mauritius Metro faced a critical data management challenge in its daily operations. Large volumes of data accumulated by LRVs needed to be efficiently and securely transferred to the central DEPOT FTP server during specific nighttime windows. The existing infrastructure lacked the capability to handle this large-scale, time-sensitive data transfer, potentially impacting operational efficiency and data integrity. The LRVs' limited wireless capabilities, with maximum speeds of only 135Mbps and unreliable 5GHz connections, further complicated this challenge.

# Solution

To address the Mauritius Metro's connectivity challenges, a comprehensive Wi-Fi 6 infrastructure was designed and implemented. At the core of this solution was the deployment of HFCL's Cloud Network Management System (cNMS) LITE version 4.0.8.2 on a dedicated server at the DEPOT premises. This central management platform underwent rigorous stability testing, including system availability checks after reboots and shutoff/bootup cycles, ensuring reliable performance for the metro's critical operations. The cNMS provides real-time monitoring capabilities, enabling proactive issue resolution and efficient network management across the entire facility. The physical infrastructure was built around strategically placed Wi-Fi 6 Outdoor Access Points, carefully positioned to ensure comprehensive coverage throughout the DEPOT. These Access Points were installed in four key locations to maximize connectivity efficiency. The outdoor track installation featured APs mounted on Overhead Line (OHL) poles, positioned to face LRVs frontwards for optimal connectivity with moving vehicles. Within the maintenance bay area, APs were carefully placed and oriented to ensure consistent coverage during routine maintenance procedures. Additional coverage was provided through outdoor wall installations, with APs mounted to cover LRVs from the side, while Traction Sub-Station installations offered supplementary coverage for complete facility connectivity.

Integration with the Light Rail Vehicles formed a crucial component of the solution. Each LRV was equipped with a wireless module in the cockpit area, complemented by roof-mounted Wi-Fi antennas for optimal signal reception. This configuration enables automatic connection to the DEPOT's Wi-Fi network, facilitating seamless data transfer without manual intervention. The system was designed to automatically detect and connect to the broadcasted SSID from the DEPOT's Access Points, ensuring reliable data upload to the central FTP server during designated maintenance windows.

The implementation process followed a carefully structured approach to minimize disruption to daily operations. This included comprehensive system testing and validation procedures, along with strategic optimization of Access Point placement based on detailed coverage analysis. The solution incorporated automated data transfer mechanisms and network segmentation for enhanced security and performance. Ongoing monitoring and optimization ensure the network continues to meet the demanding requirements of the metro's operations.

## Outdoor Wi-Fi



Wi-Fi 6  
Access Points

# Result

- 01** Automated daily data transfer from LRVs to central servers
- 02** Expanded coverage throughout the DEPOT facility
- 03** Enhanced network capacity supporting multiple simultaneous transfers
- 04** Improved operational efficiency through automated processes
- 05** Real-time network monitoring and management capabilities
- 06** Reduced manual intervention requirements

# Conclusion

The successful implementation of Wi-Fi 6 infrastructure at the Mauritius Metro DEPOT demonstrates the transformative potential of modern wireless technology in transit operations. This project serves as a blueprint for similar deployments in transportation systems worldwide, showcasing how strategic investment in connectivity infrastructure can dramatically improve operational efficiency and data management capabilities. The partnership between Mauritius Metro and HFCL has established a new standard for transit system modernization, creating a foundation for future technological advancement while enhancing current operational excellence.



# Deployment Images



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