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Case Study

Airport Authority of India - Goa (Aviation)

Connectivity Perfected with Wi-Fi 6

Setting the Standard: AAI Goa's Path to Seamless Airport Management

Background

The Airport Authority of India (AAI) plays a crucial role in India's civil aviation infrastructure, operating under the Ministry of Civil Aviation, Government of India. Responsible for managing and maintaining 137 airports across the nation, including international and domestic hubs, AAI's role goes beyond aviation management.

The AAI Goa is a regional branch of the Airports Authority of India and is responsible for the management, development, and operation of civil aviation infrastructure, including airports, in the state of Goa. As the governing body for civil aviation in Goa, AAI Goa oversees a wide range of responsibilities. It manages and oversees the day-to-day operations of the Goa International Airport, ensuring smooth and efficient functioning of all airport facilities and services. AAI Goa operates and maintains the Air Traffic Control (ATC) facilities, ensuring the safe and efficient movement of aircraft in the airport's airspace.

Furthermore, AAI Goa is responsible for planning, developing, and maintaining the airport infrastructure, including runways, taxiways, terminals, and other facilities, to meet the growing demand for air travel. The organization implements and enforces stringent safety and security measures to ensure the safety of passengers, staff, and aircraft operations.

Over the years, the Goa International Airport faced increasing pressure due to the growing tourism industry and the state's economic development. To address the rising demand for air travel and provide a modern, world-class aviation infrastructure, the Government of India approved the construction of a new international airport in Mopa, Goa followed by Manoharlal International Airport. AAI Goa played a crucial role in the planning, development, and implementation of this ambitious project, ensuring seamless integration with the existing aviation infrastructure in the state.

During FY 2023, airports across India collectively recorded a passenger traffic volume surpassing 327 million, with nearly 57 million of those passengers being international travelers. [1]

By 2030, as per projections from the International Air Transport Association (IATA), India is anticipated to surpass both China and the United States, becoming the world's third-largest air passenger market.[2]

Implementing the Wi-Fi 6 network solution at AAI Goa showcased our dedication to pioneering technology. Our comprehensive approach prioritized efficiency, ensuring seamless connectivity. The deployed solution reshaped connectivity standards, demonstrating our adaptability, resilience, and advanced technology integration for efficient communication within the airport ecosystem.

Ashish Jain
Associate Vice President

Overview

Wireless connectivity has become an indispensable part of modern office environments, enabling seamless communication, collaboration, and access to resources. In the context of the AAI Goa office, reliable wireless internet plays a pivotal role in supporting various day-to-day operations and ensuring efficient airport management. At the core of AAI Goa's operations lies the need for real-time data exchange and coordination among various departments, including air traffic control, security, ground handling, and passenger services. Wireless connectivity facilitates the seamless flow of information, enabling prompt decision-making and effective coordination across these interdependent units. Whether it's monitoring air traffic movements, managing passenger flow, or ensuring adherence to safety protocols, wireless access to critical systems and data is essential.

Moreover, the AAI Goa office relies heavily on digitized processes and paperless operations to streamline administrative tasks. Wireless connectivity allows employees to access databases, collaborate on documents, and conduct virtual meetings, enhancing productivity and efficient resource utilization. With the ever-increasing demand for air travel and the growing complexity of airport operations, the need for robust and reliable wireless connectivity at the AAI Goa office cannot be overstated. It serves as the backbone for efficient operations, effective communication, and superior passenger experiences, ultimately contributing to the overall success and reputation of the Goa International Airport.

Recognizing the critical importance of wireless connectivity, AAI Goa chose HFCL, to deploy a state-of-the-art Wi-Fi network that could cope with their unique needs. HFCL's expertise in delivering high-performance wireless solutions, combined with their prior experience of providing solutions to AAI Hyderabad, made them the ideal partner for this project, equipped to address the complex wireless connectivity requirements of the AAI Goa office.

On an average, the airport handles around 100 aircraft movements and about 15,000 passengers daily. It is the fifteenth busiest airport in India.[3]

The airport, inaugurated in January last year, has a capacity to accommodate 4.4 million passengers annually, projected to increase to 4.5 million by the first half of 2024.[4]

Challenge

AAI Goa faced the challenge of implementing a robust wireless network that could seamlessly cater to their evolving needs. There was a need for a reliable Wi-Fi network that could enable seamless connectivity for monitoring and managing daily operations, while also providing secure access for employees and guests. The solution had to be scalable and high-performing, capable of handling the high-density environment of airports and supporting mission-critical applications like Air Traffic Control (ATC).

Solution

To address the challenges and enable a robust wireless network, a comprehensive solution was deployed at AAI Goa. The solution consisted of Wi-Fi 6 indoor Access Points, an on-premise controller for centralized management, and 24-Port Power over Ethernet (PoE) switches. Leveraging the Wi-Fi 6 technology, these Access Points offered significantly higher data rates, increased capacity, and improved performance, even in the high-density environment with numerous concurrent users. The deployment leveraged advanced Wi-Fi 6 features such as Orthogonal Frequency Division Multiple Access (OFDMA), which efficiently shared the wireless channel among multiple devices simultaneously, and Multi-User Multiple-Input Multiple-Output (MU-MIMO), which allowed the APs to communicate with multiple devices concurrently using optimized spatial streams. Additionally, support for wider channel bandwidths of up to 160 MHz and higher-order modulation schemes like 1024 Quadrature Amplitude Modulation (QAM) contributed to enhanced data rates and spectral efficiency. To ensure seamless management and monitoring of the wireless infrastructure, an on-premise controller was deployed. This centralized platform enabled unified configuration, monitoring, and troubleshooting of all deployed Access Points, simplifying network administration and ensuring optimal performance.

The controller also facilitated real-time analytics, enhancing decision-making for network enhancements and resource allocation. It also facilitated centralized firmware upgrades, security policy enforcement, and seamless client roaming.

Additionally, the controller's advanced analytics capabilities enabled data-driven decision-making for network enhancements and resource allocation, ensuring optimal wireless performance. Furthermore, the solution included the deployment of ten 24-Port Managed PoE switches. These PoE switches played a crucial role in interconnecting various network segments, providing power to network devices and desktops, enabling seamless communication and data transfer across the entire facility. The deployed solution catered to the connectivity needs of both employees and guests, ensuring secure and reliable access to mission-critical applications and services. Additionally, the Wi-Fi 6 Access Points were integrated with the Air Traffic Control (ATC) center, providing a robust and high-performance wireless communication network for this critical operational area.

Indoor Wi-Fi

Wi-Fi 6 Access Points

Managed Switches

24-Port PoE Switches

Result

01 Seamless and reliable connectivity for monitoring and managing daily operations across AAI Goa's facilities.

02 Secure wireless access for employees and guests, enabling efficient collaboration and productivity.

03 Leveraged cutting-edge Wi-Fi 6 technology to boost network capacity, data rates, and performance in high-density areas.

04 Gained centralized management and monitoring capabilities for the entire wireless infrastructure through the on-premise controller.

05 Powered network devices and desktops through the deployment of PoE switches, enabling seamless communication across facilities.

Conclusion

The deployment of HFCL's network solution at AAI Goa has successfully addressed their wireless connectivity challenges. Implementing the robust indoor Access Points, centralized controller, and PoE switches enabled high data rates, increased capacity, secure wireless access for employees and guests, and a reliable wireless network for critical operations. With centralized management and a streamlined wired infrastructure, AAI Goa can efficiently operate and maintain their advanced wireless capabilities to support efficient airport operations now and in the future.

References

1. India: air passenger traffic by type 2023 | Statista
2. Indian Airports Analysis Presentation | IBEF
3. https://en.wikipedia.org/wiki/Manohar_International_Airport#:~:text=It%20serves%20North%20Goa%20and,fifteenth%20busiest%20airport%20in%20India.
4. https://travel.economictimes.indiatimes.com/news/aviation/domestic/goas-manohar-intl-airport-capacity-to-touch-eight-million-this-year/108474109

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