



Building a Smarter, More Connected Hospital with Secure, Seamless WiFi

Overview

As healthcare shifts toward digital, tech-driven care and patient management, the hospital network infrastructure needed to keep pace. This rehabilitation hospital in Goyang, South Korea, had to accommodate the growing number of wireless devices and the digital transformation of medical services. Yet, its switches and access points were managed separately, making network operations inefficient and issues harder to resolve. To improve WiFi performance and network security while centralizing network management, Zyxel Networks' Nebula solution provides a unified infrastructure for core medical systems, including Electronic Medical Records (EMR), Picture Archiving and Communication System (PACS), and Order Communication System (OCS). It enables real-time patient monitoring and faster information sharing among medical staff, while providing patients and visitors with high-quality WiFi throughout the hospital.

Challenges

Hospitals are high-density network environments where medical staff, patients, and mobile medical devices connect simultaneously. Stable WiFi is essential for real-time access to patient information and reliable data transmission. The Korean hospital's fragmented infrastructure made day-to-day operations inefficient and troubleshooting more difficult. In addition, relying solely on outdated equipment limited the hospital's ability to handle growing wireless traffic and ensure security protection. At the same time, the hospital needed to keep sensitive medical data secure while patients and visitors used the same WiFi network for everyday browsing, video streaming, and social media. This called for a way to separate guest traffic from clinical systems without compromising ease of use.

Solutions

WAX510D WiFi 6 access points, built on a Qualcomm processor and featuring OFDMA and MU-MIMO, ensure stable connectivity when multiple work terminals and medical equipment are connected simultaneously.

Customer

Rehabilitation Hospital in Goyang

Industry

Healthcare

Location

Goyang, South Korea

Partner

New One Systems

Organization Size

380+ beds; 150+ medical staff and therapists

Customer Background

Located in Ilsanseo-gu, Goyang, this hospital is the largest rehabilitation facility in northern Gyeonggi-do and a landmark institution in the city. The four-story hospital has around 380 beds and 2,300 sqm of rehabilitation treatment space, where more than 150 medical staff and therapists work to help patients recover function and improve quality of life.



Wireless optimization features such as Load Balancing, Band Steering, Airtime Fairness, and QoS prevents users from concentrating on specific access points and optimizes traffic for medical operations. By minimizing wireless dead zones and ensuring stable AP roaming, the solution enables seamless EMR operations and mobile medical communications while providing a scalable foundation for AI medical systems, smart wheelchairs, and medical robots.

Because clinical systems connect to internal servers and external parties such as insurance providers and remote consultation systems, the hospital needed to separate patient and visitor WiFi traffic from clinical operations. VLAN segmentation separates the business and guest networks, preventing outside users from reaching clinical systems. The guest network uses a dedicated Guest Network setting that allows internet access only and contains broadcast and multicast traffic within each VLAN, preventing it from spreading network-wide.

For visitors, a Click-to-continue captive portal was added to the guest network, allowing users to get online with a single tap instead of a login or complex authentication. Hospital staff can customize the portal with the hospital's logo, instructions, and completion message, and set it to redirect to the hospital's homepage, giving visitors and caregivers quick access to care information, facility details, and notices as soon as they connect.

Product List



- WAX510D WiFi 6 Access Point



- GS1920-24v2 Smart Managed Switch
- GS1920-8HPv2 Smart Managed PoE Switch

Results

The new infrastructure provides the hospital with a secure, stable, and centrally-managed WiFi environment through the Nebula solution. Administrators can monitor device status, network usage, and connected clients from a single dashboard anytime, anywhere, enabling quick troubleshooting and remote network adjustments. By delivering reliable WiFi services to patients and their guardians, the hospital has improved overall convenience and satisfaction while enhancing medical staff efficiency.

- Seamless roaming for EMR carts and mobile medical devices across wards and examination rooms
- VLAN-based separation of business and guest networks for stronger data protection
- One-tap guest WiFi access via a customizable captive portal
- Scalable wireless foundation ready for future technologies such as AI-powered diagnostics and medical robots
- Enhanced WiFi speed and security with centralized network management via Nebula secure cloud networking solution

