Powering AI Mobility and Efficiency in Hospital with Smart, Secure Network

Overview

The 10-story, 100-bed general hospital in Namyangju, Gyeonggi Province, is driving digital transformation to enhance its operations. Working with New One Systems and deploying Zyxel Networks' solutions, the hospital overhauled its network to deliver seamless connectivity, enhanced security, and a foundation for AI-powered mobility services. The upgrade replaced outdated, fragmented equipment with a centrally managed network that supports key medical systems, including Electronic Medical Records (EMR), Office Communications Systems (OCS), and Picture Archiving and Communications Systems (PACS), and guest connectivity, while preparing the hospital for advanced digital healthcare solutions.

Challenges

In the existing network environment, key infrastructure components such as security firewalls, switches, and wireless access points were managed separately. This fragmented setup increased operational complexity and reduced overall management efficiency. When network issues occurred, IT teams found it difficult to quickly identify the root cause, delaying response times and increasing the risk of service disruptions. Besides, business systems, medical information platforms, and guest networks shared the same infrastructure without proper segmentation. This created potential security vulnerabilities and performance interference. At the same time, parts of the network relied on outdated equipment that could no longer meet modern requirements for performance, stability, and security.

Solutions

The lower floors of the hospital are high-density areas where staff, patients, and medical devices share wireless networks, making stable connectivity essential. Through careful onsite planning, WAX510D APs were optimally placed with overlapping coverage for seamless roaming. The APs feature load balancing, band steering, and QoS, ensuring multiple devices operate smoothly.

Customer
General Hospital in Namyangju

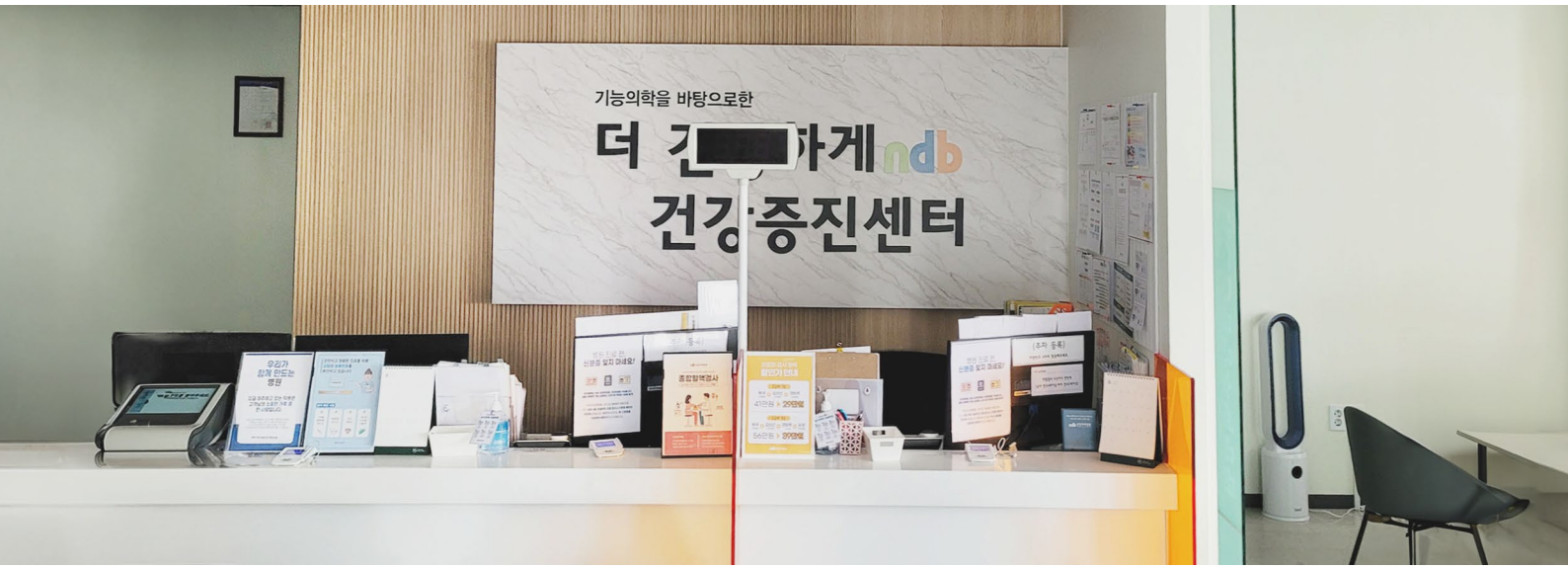
Industry
Healthcare

Location
Gyeonggi, South Korea

Partner
New One Systems

Customer Background

The general Hospital in Namyangju is a 10-story, 100-bed regional healthcare hub in Gyeonggi Province, pioneering the digital transformation of small- and medium-sized hospitals. In response to the evolving medical environment, the hospital is actively advancing digital transformation and pursuing significant upgrades to its wired and wireless network infrastructure.



Solutions

To protect the network, USG FLEX 700H firewalls were set up to block malware, DDoS attacks, malicious URLs, and other threats. The network supports medical systems, external healthcare services, and public WiFi, creating a complex traffic environment. To manage this securely, the network was restructured using VLAN-based segmentation, separating medical, business, and guest traffic. A dedicated guest network restricts access to internal systems, while bandwidth control and traffic filtering ensure stable, secure performance even in high-density environments.

Any failure in core equipment or the internet could disrupt hospital operations. To prevent this, two USG FLEX 700H firewalls were deployed as core gateways, operating in a high-availability configuration. Line redundancy ensures automatic failover if a connection fails. Device redundancy allows seamless switchover to the standby unit. This resilient setup enables medical staff to access patient records and transmit imaging data without interruption, minimizing the risk of system-wide downtime.

The Nebula cloud networking solution manages network devices across the hospital. Its intuitive dashboard provides a complete overview of the equipment, enabling real-time monitoring and root cause analysis to ensure quick responses and stable network operation in case of failure.

Product List

- WAX510D WiFi 6 Access Point
- XGS4600-32F L3 Aggregation Fiber Switch
- GS1920-24v2/8HPv2 Smart Managed Switch
- USG FLEX 700H Firewall

Results

The hospital now operates on a reliable, secure wired and wireless network connecting key systems (EMR, OCS, PACS) for real-time patient monitoring and rapid communication. Optimized wireless enables staff to access patient information instantly via tablets and mobile devices. It also supports AI-assisted robots, including smart wheelchairs and autonomous carts, enhancing operational efficiency and patient care.

- Reliable network performance, even in high-density areas
- Secure VPN access with robust, integrated protection against cyberthreats
- High availability keeps critical systems online continuously
- Fast, dependable access to patient data for staff
- Future-ready foundation for AI-driven mobility services and smart healthcare