Transforming Fire Safety Training with WiFi 7 and Enhanced Security

Overview

By partnering with New One Systems and Zyxel Networks, the Fire Safety Training Institute set out to elevate the training experience across seventy-three sites. Zyxel Networks' WiFi 7 access points now deliver seamless HD video and 3D interactive content, creating a more immersive, hands-on learning environment. Staff can capture and report information instantly, while the headquarters manages every branch from a single dashboard. This integrated, centrally managed wireless infrastructure significantly enhances operational efficiency and supports the institute's digital transformation goals.

Challenges

As fire safety training increasingly moves to digital and immersive formats, the institute faced growing pressure to support advanced applications. To deliver a smooth, hands-on experience, 3D learning content is delivered via electronic whiteboards and smart devices. Trainees access responsive, realistic 3D virtual training on smartphones and tablets, and with many streaming and interacting simultaneously, a high-performance wireless network became essential. However, the existing network struggled to keep up, leading to outages, slow connections, and frozen content, which disrupted learning and lowered training effectiveness.

Another major challenge was the fragmented network. Each branch ran its wireless network independently, making it difficult for the headquarters to resolve issues or monitor performance remotely. IT staff had to travel to troubleshoot, wasting time and resources. Besides, roaming issues caused delays and frequent disconnections for training apps and video calls, while legacy routers with their own DHCP servers created IP conflicts and further network instability.

Solutions

The institute deployed WBE630S WiFi 7 access points to ensure smooth user performance in the high-density environment. The WBE630S features smart antennas that analyze user locations and wireless conditions in real time, selecting the best pattern to optimize connectivity and reduce latency during training.

Customer
Firefighting Training Institute

Industry
Public safety

Location
Seoul, South Korea

Partner
New One Systems

Customer Background
The fire safety training institutes, located across 15 cities and provincial branches, serve as dedicated centers for fire prevention assessments, education, research, and international collaboration. A key part of their mission is to train qualified safety managers in firefighting and hazardous materials. Each branch operates its own training center and hands-on practice facility, offering programs that integrate theoretical learning with real-world experience.

With BandFlex technology, the access point can switch from the 5GHz to 6GHz band through simple configuration changes, eliminating future hardware replacement and reducing operating costs for more efficient TCO.

At the headquarters, USG FLEX 700H firewalls were deployed as wireless LAN controllers to centrally manage access points. IT staff can monitor branch network conditions in real time, such as connection status, channel usage, and interference levels, and apply tailored settings based on each branch's size and user density. Crucially, two USG FLEX 700H units were installed in a High Availability (HA) configuration to provide redundancy, automatically failing over to the backup unit in the event of a primary unit failure and ensuring continuous network operations.

To prevent IP conflicts caused by unauthorized routers, DHCP Snooping was enabled on branch switches to block improper IP assignments. A unified SSID environment was also established, supported by 802.11r, 802.11k, and 802.11v for fast roaming. Users can move seamlessly throughout a building and automatically connect to the nearest access point with a single authentication, ensuring uninterrupted WiFi during training or work. Additionally, the Zyxel Nebula cloud networking platform enables administrators to manage multiple sites under a single account, offering simplified, centralized control without the need for direct device access.

Product List

- WBE630S WiFi 7 Access Point

- GS1920-8HPv2/24HPv2 Smart Managed PoE Switches

- USG FLEX 700H Firewall

Results

This WiFi 7-based deployment goes beyond simply improving speed. It creates a unified infrastructure that connects all branches into a single network. The new network enables advanced network operations, including branch-specific QoS policy management, batch firmware updates, and enhanced security policies. It also builds a foundation for next-generation digital training content that requires high bandwidth, including AR/VR training and real-time feedback systems.

- Advanced wireless learning environment for seventy-three training and practice centers
- Centralized management of all WiFi APs across nation wide branches
- Seamless WiFi roaming while on the move
- Prevention of network failures caused by incorrect router connections
- Responsive and realistic hands-on training through 3D virtual programs on PCs and smart devices
- Interactive content makes firefighting knowledge easy to learn