Building Smart Academic Network with 100G Switches and WiFi 7 APs

Overview

The top academic institution in Taiwan faced the challenge of processing and analyzing massive volumes of data in real time, requiring a high-speed and stable network environment. Fast connectivity ensures efficient data transfer, supports multiple devices simultaneously, and safeguards system reliability and data security, enabling researchers to collaborate seamlessly across offices and research areas.

To address these needs, the institution adopted Zyxel Networks' integrated solution, which combines advanced wired infrastructure with high-speed, top-notch wireless technology. With this deployment, the institution now enjoys a stable, efficient, and easily manageable smart network environment, enabling researchers to focus on their work without network limitations and ensuring smooth, collaborative, data-intensive research operations.

Customer
Academic research institution

Industry
Academic Research

Location
Taipei, Taiwan

Challenges

The academic institution faced significant networking challenges due to large volumes of data, which exceeded the capacity of the existing network and slowed down data exchange. The campus's wide-ranging office and research areas also suffered from weak wireless signals and multiple dead zones, resulting in unstable connections.

Researchers rely on a variety of devices that need to connect simultaneously, but the current infrastructure could not support high-density usage. With no dedicated IT staff, the institution required an easy-to-use network management interface and a centralized management solution to simplify maintenance and speed up troubleshooting.

Customer Background

Located in Taipei, Taiwan, this leading humanities research institute is committed to advancing academic research. It also works on fostering interdisciplinary collaboration across its diverse research fields. Through innovative data digitization and analysis, the institute leverages technology to enhance research efficiency and enable seamless collaboration among scholars.

Solutions

To support the institution's demanding research environment, Zyxel Networks' CX4800-56F L3 aggregation fiber switch was deployed as the backbone core. Equipped with forty-eight high-speed 10G/25GbE SFP28 ports and eight 100GbE uplinks, the switch delivers up to 4.0 Tbps of switching capacity and 2.0 Bpps of forwarding performance, making it ideal for environments requiring exceptional reliability while processing massive data volumes and high-performance computing tasks. It supports intensive workloads for advanced research and digitalization, as well as emerging AI-driven applications that rely on high CPU or GPU computing with low latency, high bandwidth, and strong scalability. To ensure uninterrupted research operations, the CX4800-56F incorporates high-standard redundancy designs that minimize unexpected failures and reduce the risk of downtime.

For edge connectivity, GS1920-24HPv2 smart managed PoE switches provide flexible connections and reliable power delivery, ensuring stable operation for all connected devices. Paired with the NWA130BE WiFi 7 access point, the network offers broad coverage and high capacity, enabling smooth multi-device connectivity, reducing signal dead zones, and boosting overall wireless performance.

With no dedicated IT staff, the academic institution benefits from centralized cloud management, which simplifies maintenance, speeds up issue resolution, and strengthens cybersecurity.

Product List

- CX4800-56F L3 Aggregation Fiber Switch with 100G Uplinks
- GS1920-24HPv2 Smart Managed PoE Switch
- NWA130BE WiFi 7 Access Point

Results

The solution provides a robust, high-speed network capable of handling large-scale data efficiently. PoE-enabled switches ensure stable endpoint connectivity, while high-capacity WiFi supports multiple devices simultaneously and eliminates dead zones. Centralized cloud management streamlines monitoring, speeds up troubleshooting, and enhances security. Together, these features enable the academic institution to achieve a highly efficient, stable, and easily manageable smart network environment, providing a fast and scalable foundation for research operations.

- Robust and stable core network for high-speed, large-scale data transmission
- Flexible connectivity and PoE support ensure reliable endpoint operation
- High-capacity WiFi environment for multiple simultaneous connections, eliminating dead zones
- Centralized cloud management for simplified monitoring, faster troubleshooting, and enhanced security