Success Story

Swiss School Connects Students with Wireless ZyXEL Network Solution

Overview

Customer Name
Institut International Notre-Dame du Lac (NDL)

Customer Industry
Education

Challenges
- Network upgrade necessary to service students and faculty
- Current network cannot handle new tablets and notebooks
- Large older buildings covering large area make wiring difficult
- Solution must be future-proof

Solution
- 802.11ac Dual Radio External Antenna 2x2 Access Point
- Wireless LAN Controller
- 12-port 10 Gigabit Smart Managed Switch
- 24/48-port Gigabit Smart-Managed PoE Switch

Benefits
- 802.11ac standard provides bandwidth to handle increased users traffic without reducing data transfer rates
- Smart antenna technology directs signals to wireless clients
- Easily scalable and expandable
- Little or no impact on building structure
- Sensitive enough to detect low-power signals from clients like tablets

Background

Founded 1946, Institut International Notre-Dame du Lac (NDL) is a prestigious private educational institution for children of preschool and primary age. Students are taught in 30 classrooms, with about 20 children per class.

The school is located in the municipality of Cologny in the canton of Geneva. The historic centuries-old campus on the shores of Lake Geneva makes for a picturesque educational setting.

Challenges

In keeping with the demands of a modern education, computer science-based teaching with Internet access has been encouraged at the school. To provide a comprehensive e-learning experience, the institute purchased tablet PCs and the latest generation of notebooks equipped with the 802.11ac wireless standard.

The institute is located in a massive, centuries-old landmark building. To minimize negative impact on the facilities, LAN cabling has always been kept to a strict minimum.

Over time, an organically grown ad hoc Wi-Fi network was created with standalone access points and single SSIDs, which served almost all clients, as well as peripherals such as printers and NAS. The performance and reliability of this network steadily declined over the years. With the new procurement of IT peripherals, it was clear that the time had come to upgrade the LAN and Wi-Fi infrastructure.

Solutions and Benefits

The concept produced by ZyXEL's IT partner, INNIX Sarl, began with usage optimization of the few LAN connections. The broadcast problem was solved with ZyXEL GS1920 Series smart managed switches by separating the traffic from different user groups — such as administration, teachers, students, guests and net management — into virtual networks. These VLANs were also implemented "in the air" with multiple SSIDs. A ZyXEL XS1920 Series12-port 10 Gigabit Smart Managed Switch serves as the core, which connects the central server to the network. However, there was still the problem of smoothly handling all the simultaneous traffic that takes place wirelessly. It was determined that access points were needed that could provide the necessary bandwidth to simultaneously process the multiple parallel data streams.

ZyXEL WAC6500 Series 802.11ac Dual Radio External Antenna 2x2 Access Points were selected for this project. These access point models provide significantly more networking power than conventional APs, and are distinctive for their compact dimensions and minimal weight. In this solution scenario, a Wi-Fi connection coupled with mobile clients are used in place of LAN connections for peripherals and NAS. Access points are managed centrally by a ZyXEL NXC2500 Wireless LAN control device. Thus, a centrally controlled structure is provided. The WAC6500 are the ideal choice and provide future-proofing for eventual expansion of the school's wireless network.

Introduced 2013, 802.11ac is the latest wireless networking standard. For some users, the high data throughput offered by 802.11ac might not be necessary when compared to the transfer rates available over most Internet connection, which tend to be slower. Nevertheless, 802.11ac has a significant advantage: The rapid communication between access point and client sends the Wi-Fi packets through the air faster than copper cable, thus ensuring better performance and stability overall.

Some models are equipped with smart antenna technology. The ZyXEL Smart Antenna continuously adapts its broadcast characteristic, amplifying its signal in the direction of the wireless clients, thus providing more stable signals and a greater range. It is supported by an outstanding AP sensitivity of -102 dBm, so that signals from tablet PCs with weak transmission can still be clearly picked up from a distance.

The school's network now performs at the level necessary to service the needs of students and faculty. Thanks to the concept, product selection, and implementation by ZyXEL's IT partner INNIX, an outstanding result was achieved in a difficult environment covering a larger area with sparse LAN connections.

Products Used

WAC6502D-E
802.11ac Dual Radio External Antenna 2x2 Access Point

- Advanced IEEE 802.11ac delivers up to 1.2 Gbps combined data rates
- Industry-leading receive sensitivity as low as -100 dBm
- APFlex,™ DCS and tool-less bracket design streamline deployment
- ZyXEL One Network is supported

NXC2500
Wireless LAN Controller

- Centralized management for up to 64* APs
- ZyMesh mitigates complex, inconvenient cabling for Wi-Fi deployments.
- Client steering enhances efficiency of wireless spectrum utilization.
- Auto healing maximizes Wi-Fi service availability.
- Seamless integration with external AD, LDAP, RADIUS authentication
- Best investment protection with built-in RADIUS server

*Management of 64 APs is supported with firmware version V4.10 or above

XS1920 Series
12-port 10 Gigabit Smart Managed Switch

- Upgrades your network to 10 gigabit connectivity easily and economically
- Simplified configuration with user-friendly web-based management GUI
- Flexible 10G connection to 10G servers and network storage through both copper and fiber
- ZyXEL One Network experience enables simple network management and maintenance
- Dual firmware imaging and configuration ensure network availability
- Future-proofed with IPv6 support

GS1920 Series
24/48-port Gigabit Smart-Managed PoE Switch

- Smart managed switch with essential L2 features
- GbE RJ-45, GbE combo (RJ-45/SFP) and fixed GbE SFP connectivity
- Compliant with IEEE 802.3af PoE and 802.3at PoE Plus
- High 375-watt power budget
- Supports ZON Utility, ZyXEL Smart Connect and
- iStacking facilitates easy network initialization andmanagement
- Reliable network availability with Loop Guard, IPSG, and CPU protection
- RADIUS, static MAC forwarding and 802.1x authentication -enhance network security
- Future-proofed with IPv6 support

About ZyXEL Communications

ZyXEL Communications Corp., founded in 1989 and headquartered in Taiwan, is the leading provider of complete broadband access solutions. As one of the early modem manufacturers, ZyXEL has gone through transformations in the fast-paced networking industry. Delivering cutting-edge communications innovations to more than 400,000 businesses and more than 100 million consumers throughout the world, today ZyXEL is one of the few companies in the world capable of offering complete networking solutions for Telcos, small to medium-sized businesses, and digital home users for a wide range of deployment scenarios. Telco solutions include Central Office Equipment, Customer Premise Equipment, Wired and Wireless Access Network Devices, and Carrier Switches. SMB and Enterprise solutions include Unified Security Gateways, LAN Switches, WLAN, and IP Telephony. Digital Home solutions include Network Connectivity Devices and Multimedia Solutions.

The company has 1000 employees and distributors in 70 countries, reaching more than 150 regional markets. The ZyXEL Communications Corp. includes 35 subsidiaries and sales offices and two research and development centers worldwide. For more information, visit the company's Website, http://www.zyxel.com.