ZyXEL

Success Story

Tunnel Project in Swiss Alps Gets Connected with ZyXEL Solution

Overview

Customer Name
Albula Tunnel

Customer Industry
Transportation

Challenges
• Provide network infrastructure to workers' village
• Create secure and stable wired and wireless network
• Connect to local fiber line
• Solution must be robust for challenging environment
• Provide multiple VLANs for staff, workers, visitors, VoIP, etc.

Solutions
• 802.11ac Dual Radio Smart Antenna 2x2 Access Point
• Next Generation Unified Security Gateway-Advanced Series
• Wireless LAN Controller
• Unified Access Gateway

Benefits
• High-speed connection to local fiber network
• Divides into seven VLAN
• Easy management of administration and authorization tasks
• High-performance wireless connectivity and enhanced signal coverage thanks to smart antenna technology

Background

The Albula Tunnel is approximately 6km in length and extends from Preda, Switzerland in the Albula Valley to Spinas in Engadin. Despite the challenging geological conditions and partial landslides, the tunnel has been in service since July 1, 1903. The construction took just four years and cost about 7 million Swiss francs—a bargain by current standards.

In 2010 after nearly 110 years of service, Rhaetian Railways announced the construction of a new parallel tunnel to be located 30 meters away from the original tunnel to be called Albula II. With a budget of 260 million Swiss francs, the construction will cost about 20 million francs more than a renovation of the old tunnel, but brings several advantages in terms of security and planning. After the commissioning of the new tunnel, the old tunnel will be used as a security tunnel.

Challenges

As one can imagine, the construction of such a tunnel is not an easy task, and requires advanced planning and sophisticated logistics. The construction village was built at the northern portal of the Preda Tunnel and was completed at the end of August, 2015. It contains more than 100 housing units, offices, health care facilities, and equipment containers, allowing over 80 miners and workers to live and work onsite. Deep, a ZyXEL solution partner based in Chur handled network deployment inside the construction village. In addition to the offices, a Wi-Fi network was also established for the worker housing areas.

Solutions and Benefits

Of particular interest in this project is the connection to the optical fiber cable from the UPC Cablecom network. The connection begins at the Samedan station and is transmitted through a Rhaetian Railways single phased optical fiber line. From there, the line leads to the Spinas Station, where the first office container is connected. The optical fiber line then continues through the tunnel to the Preda Station, where it ends at two redundant ZyXEL USG110 Next Generation Unified Security Gateway-Advanced Series through a media converter. In total, the network is divided into seven VLANs. This allows for the strict separation of VoIP, regular network traffic, and Wi-Fi for guests and staff, while UTM services provide additional security over the USG firewall.

Managing the wireless network is easy with a ZyXEL NXC2500 wireless LAN controller and a ZyXEL UAG2100 unified access gateway. Furthermore, the UAG is responsible for user administration and authentication. For wireless connections, the WAC6500 series of APs with smart antenna were used as they offer excellent performance for multiple users.

Product Used

WAC6502D-S
802.11ac Dual Radio Smart Antenna 2x2 Access Point

- Advanced IEEE 802.11ac delivers up to 1.75 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

USG110
Next Generation Unified Security Gateway-Advanced Series

- High-performance, high-value Next Generation Firewall (NGFW) for small and medium-sized businesses
- Anti-malware protection with firewall, anti-virus, anti-spam, content filtering, IDP, next-generation application intelligence and SSL inspection
- Robust SSL, IPSec and L2TP over IPSec VPN connectivity and VPN high availability (HA)
- Built-in WLAN controller for centralized AP management and effortless WLAN scalability of up to 18 APs
- Comprehensive mobile broadband USB modem compatibility and multi-WAN load-balancing, failover and fall back support

NXC2500
Wireless LAN Controller

- Centralized management for up to 64* APs
- ZyMesh mitigates complex, inconvenient cabling Wi-Fi deployments Comprehensive features for WLAN performance optimization and always-on Wi-Fi connectivity
- Seamless integration with external AD, LDAP, RADIUS authentication
- User-friendly authentication by QR code facilitates keyboard-less mobile devices accessing Internet

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

UAG2100
Unified Access Gateway

- IEEE 802.11 a/b/g/n dual-radio (2.4 GHz and 5 GHz) design
- Supports 100 concurrent logins by default and up to 200 via license upgrade
- Integrated account generator, Web-based authentication portal and billing system
- Supports external RADIUS servers
- Per account bandwidth management
- SP350E Service Gateway Printer enables one-click account and billing generation
- Built-in WLAN controller
- Facilitates compliance with data retention regulations

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.