Success Story

Smart city application on a Siklu network - Vail, Colorado

Introduction

Vail is an alpine village in the heart of the Rocky Mountains. With more than 5,200 acres of terrain, it is one of the largest ski resorts in the world. The area hosts concerts and music festivals for large audiences year round. Almost two million visitors from all over the world flock the area annually to enjoy the resort's luxurious amenities and Colorado's alpine powder snow.

Details such as security, capacity-rich Wi-Fi and also environmental aesthetics are of utmost importance to residents and visitors alike. With social events taking place simultaneously in multiple locations, maintaining connectivity as well as communication between first responders, volunteers, and town officials is complicated but essential to ensure the safety of the public. The town has underground fiber infrastructure which connects the town buildings (city hall, visitor center, fire dept.), parking lot machines and surveillance cameras, and delivers high speed public Wi-Fi. Vail also has a pavement heating system under the main sidewalks. All of these pose challenges when considering expanding connectivity via traditional wireline or fiber trenching.

Challenges

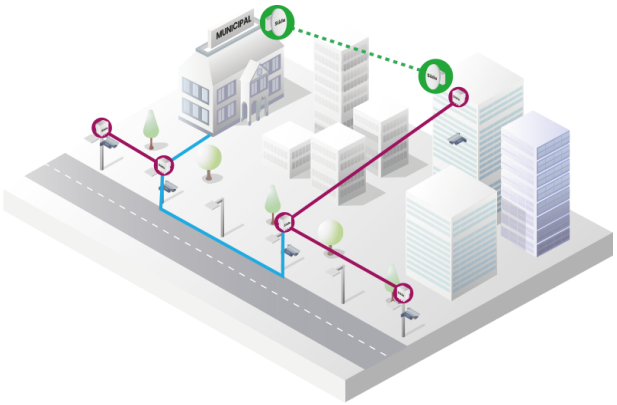
The reach of the municipal fiber network needed to be extended, as in many locations terrain challenges made fiber laying a physical impossibility. The town also suffers fiber cut-offs from time to time. These issues had been impeding the essential 24/7 operation of the video surveillance network, greatly hindering the communication flow and compromising site monitoring. In addition, these problems consume heavy OPEX, and take a long time to resolve. Aspen Wireless, a local ISP realized that due to difficulties in expanding the fiber infrastructure, mmWave wireless was a perfect candidate to extend the existing fiber footprint. The solution would need to be interference-free and have plenty of capacity for future needs – new higher capacity Ruckus WiFi Access Points, HD and 4K video cameras being two examples. Siklu's multigigabit mmWave products were chosen for this role.

In addition to capacity needs now and in the future, the chosen solution needed to meet requirements such as:

- Reliable performance year round.
- Quick and easy installation to minimize tourist impact.
- Utilize another band aside from 5GHz, leaving that frequency for high speed WiFi.
- Low profile and minimal aesthetic impact.

The Solution

While many wireless technologies provide fast and simple installations delivering hundreds of Mbps, Ron Braden, Vail's IT Director, decided to 'go Gigabit' - even over wireless connections. Jim Selby, CEO, Aspen Wireless Technologies, Inc., selected Siklu's cost-effective, discreet Point to Point EtherHaul 600 and EtherHaul 1200 mmWave radios to deliver interference-free Gbps with low latency to futureproof Vail's Wi-Fi and CCTV services. Aspen Wireless deployed the links within days and was impressed with the ease and speed of the installation.



Braden added IP cameras to improve video quality and coverage. The need for an aesthetic look without compromising CCTV quality or the newly enabled wider coverage led to deploying multi-sensor panoramic cameras from Arecont Vision and megapixel network cameras from Axis Communications. All the above-mentioned, market-leading gear was integrated by Aspen Wireless to create a reliable network ready to handle today's and tomorrow's challenges. Projects such as this are never the work of one person or even one company. It took a team of partners, each an expert in their domain, to execute the plan properly.

- Siklu Communications – Supplier of EH-600T and EH-1200TL radios
- Aspen Wireless - Design, deployment and maintenance of the network
- Milestone - XProtect® Expert Video Monitoring Software
- Ruckus Wireless - ZoneFlex™ 7762 dual-band and ZoneFlex™ Series carrier-class outdoor APs
- Axis Communications - Megapixel dome network cameras
- Arecont Vision - SurroundVideo® - multi-sensor panoramic cameras

Results

Today the Vail mmWave network utilizes 60, 70/80GHz frequencies for wireless backhaul, with the 2.4GHz and 5GHz spectrum left free to service end-user Wi-Fi devices. The network reaches speeds and performance beyond expectations. Wireless backhaul capacity has soared from 20-50Mbps to multiple Gbps, and the new cameras have improved video quality from low-rate standard resolution to multiple megapixels at 30fps and 4K video at 20fps. Ruckus ZoneFlex™ 7762 outdoor dual band

Wi-Fi access points and ZoneFlex 7782 Series carrier-class 3x3:3 2.4/5 GHz outdoor APs, featuring integrated antennas with patented BeamFlex™ technology for unprecedented performance in high-density, high-capacity applications, perform at top throughputs of over 100Mbps per end user device, while apps run without a snag. Recently the Vail Police Department and Fire Department were added to the network.

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With these applications acting as an anchor to build out the mmWave network, additional use cases have arisen. Applications such as connecting freeway signs, temporary event connectivity and the backbone serving as a backup should fiber cuts occur are all applications not originally thought of but are now running on this network.

Shortly after project deployment, an optic fiber was damaged when a heavy duty tractor drove down the main walkway. Luckily, Jim Selby from Aspen Wireless immediately suggested deploying a Siklu EH-600T, link which he had kept as a spare to resolve communications. Within a few hours after site approval, the link was deployed, and communication restored.
“Who cares about 100’s of megabits, when everyone wants Gigabit?” said Jim Selby, CEO, Aspen Wireless Technologies, Inc.