Case Study

CROWN CASTLE

Expanding coverage while preserving beauty in Vail.

Vail, Colorado, is a picturesque community, famous for its beautiful mountains and ski slopes. That makes it a popular vacation destination for thousands of recreational travelers; however, the challenging topography surrounding the Village and residential neighborhood makes it especially difficult to provide reliable wireless coverage.

A few nearby towers and rooftop installations provided some coverage, but were inadequate to handle today's data demands. Upcoming local events, like the FIS Alpine World Ski Championships, were expecting up to 150,000 visitors—making it clear that an upgrade was necessary. We installed a small cell network that consists of several strategically placed nodes that accommodate multiple wireless service providers as well as the city's wi-fi and video-monitoring system. The network has improved wireless coverage and provided much needed data capacity to the Village.

The Need

With all its peaks and valleys, Vail's difficult topography required careful planning to make sure each node was strategically placed to maximize coverage and deliver the needed capacity. This all had to be done in accordance with the town's strict aesthetic regulations and several layers of approval. To complete the project on time and on budget, we had to navigate these and other challenges:

- The network needed to be hardened to withstand adverse weather conditions.
- The area needed enough capacity to accommodate the large crowds that visit Vail throughout the year.
- We needed to balance different audiences' conflicting needs, aesthetic requirements and technical radio frequency (RF) challenges.
- All installation work had to be completed within very tight construction schedules.

The Solution

To meet the voice and data demands of the visitors and residents of Vail, we designed and installed a fiber optic small cell network. Twenty-nine custom-designed slimline poles—similar in size and appearance to streetlights—were placed on public rights of way. Each node was strategically placed to maximize coverage and preserve the look and feel of the Village. We coordinated with various government stakeholders to obtain approval for the entire project during the design phase, which helped streamline the deployment process and keep the project on time and on budget. Vail residents and visitors now have access to a state-of-the-art 4G LTE network.

Supporting Public Safety

In support of the 2015 Alpine World Ski Championships, public safety officials and other stakeholders, led by the state of Colorado FirstNet team, wanted a wireless infrastructure solution in the Village that was capable of supporting 4G LTE applications to monitor activities during the event. We worked closely with the state of Colorado to set up a public safety network demonstration. The state secured rights to the FirstNet spectrum, and we provided four of our existing nodes to host equipment dedicated to the trial. The network demonstration enables officials to test applications in practical situations, including real-time video, push-to-talk, Voice over IP (VoIP), situational awareness and others. The installation marks an important milestone, as it's the first small cell network to operate using 700 MHz Band Class 14 over the same infrastructure as a commercial Distributed Antenna System (DAS). The trial serves as a model for FirstNet in other states as they consider the various deployment options for the new Nationwide Public Safety Broadband Network (NPSBN).

Custom-designed slimline poles accommodate small cell nodes.

Nodes are strategically placed near roads and residential areas.

Why Crown Castle?

We have more than 20 years of experience implementing small cells in communities of all kinds, from dense urban centers to residential neighborhoods.

Discreet, innovative technology
We provide shared infrastructure that enables the wireless service you have come to depend on—all while blending in with your environment.

Collaboration
We involve residents in every major decision so everyone has a say in the solutions that are developed.

Long-term commitment
Our business is all about infrastructure, so you can count on us to be here for the long haul no matter how technology or carriers change.

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Crown Castle owns, operates and leases more than 40,000 cell towers and approximately 90,000 route miles of fiber supporting small cells and fiber solutions across every major US market. This nationwide portfolio of communications infrastructure connects cities and communities to essential data, technology and wireless service—bringing information, ideas and innovations to the people and businesses that need them.