Italian Cable Car Elevates Network Connectivity

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The Faloria Cable Car—the oldest in Italy—embraces innovation for greater safety and reliability.

Executive Summary	
Customer Name: Faloria SpA **Industry:** Transportation **Location:** Cortina d'Ampezzo, Italy	
Challenges	• Outdated connectivity with insufficient throughput • Inability to support remote operation • Aging system driving up maintenance costs
Solutions	• Cisco® Ultra-Reliable Wireless Backhaul • SecurityTrust Cable Car 4.0
Results	• Greater safety and reliability for Faloria customers and employees • Connectivity required for remote-controlled operation • Integrated safety systems protect passengers and employees



View from the top

Located in the Dolomite Mountains in northeastern Italy, Cortina d'Ampezzo is sometimes called the "Aspen of Italy." One of the highlights is the Faloria Cable Car managed by Faloria SpA, which offers both breathtaking views and pragmatic transportation. Built in 1939, it is Italy's oldest cable car and features four cabins connected to three stations: the lowest near the bus station in the city center, an intermediate station in Mandres, and a mountain station that arrives at the top of Mount Faloria.

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All told, the Faloria Cable Car rises to more than 900 meters in altitude—transporting skiers to the slopes and offering all passengers a stunning view of the Dolomites. Annually, the cable car supports about 15,000 visitors a year.

In recent years, Italian regulations shifted to allow "driverless" cable cars. The rules permit this functionality when the "driver" is monitoring the cable cars from a remote-control room. So even at a distance, the cable car operator can still see and hear the same things as though the operator were physically on board a car.

Leaders at Faloria SpA recognized that this shift in regulations to allow remote driving could improve efficiency and safety for the cable car. But they also knew that the legacy infrastructure powering the cable car was not equipped to deliver the necessary audio and video in real time to efficiently support driverless capabilities.

"Leaky" to low latency

Upgrading for remote-control operation was just one of many challenges. As the cable car infrastructure aged, it had presented other issues in terms of maintenance requirements and costs. In general, the legacy communications technology was impeding adoption of newer innovations—not only for more automated operation and maintenance, but also for enhanced security and improved rider experience.

The legacy technology included "leaky" cables, which, as the name suggests, function by emitting a small amount of radio signal via holes in the cable. Although the cables enable two-way mobile communication, they support only a few kilobytes of throughput. That's far less than what's needed to power the secure, high-throughput, low-latency communications needed to fully modernize the Faloria Cable Car.

The cable car company turned to a leading Italian manufacturer to design a next-generation, smart electromechanical architecture that integrates automation and security across the three stations and four cabins that comprise the Faloria Cable Car. The architecture also calls for integrated diagnostics of the entire system—whether from one of the three stations or from a remote operations center.

The manufacturer engaged SecurityTrust for the design, installation, and maintenance of integrated safety systems. SecurityTrust then turned to Cisco for the needed network and communication infrastructure.

Together, SecurityTrust and Cisco implemented a new infrastructure with three main components. The first is a backbone system connecting the three cable car stations using PROFINET and VLAN on Cisco Ultra-Reliable Wireless Backhaul tubes and panels. Along the track is a second network system, which also incorporates omni antennas next to each station to provide local coverage outside each structure. The third component is the onboard system, which includes radios mounted on each car. The radios have horn antennas to provide wider coverage and accommodate tilting of the cable cars.

"At SecurityTrust, we have been testing several systems and have found Cisco Ultra-Reliable Wireless Backhaul to be the best for mobility applications," says Mario Pasquino, CIO, SecurityTrust. "Two of the strengths are that there's no disconnect while roaming and the PROFINET integration. This makes the Cisco solution the best option for vehicles and heavy equipment running programmable logic controllers (PLCs) while roaming."

Ready for the future now

The infrastructure from SecurityTrust and Cisco helps enable safe, remote management of all three kilometers of the funicular and the cable car cabins that travel across it. The additional bandwidth also

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facilitates integrated diagnostics and more comprehensive video surveillance, with closed-circuit television (CCTV) cameras in the stations and cabins.

Faloria is already appreciating the benefits of innovation from SecurityTrust and Cisco compared to its outdated transmission system.

The new system allows for throughput on each cabin at more than 20 Mbps. This transmission band guarantees the transmission of the video stream of the on-board cameras in Full-HD 1080p resolution (two external cameras for viewing the running line and one internal for viewing the passengers' area) as well as the new audio system in VoIP technology, which manages both the driver's communications and passenger communications with the control room.

On board the cabins it is possible to implement other innovative services, such as guest Wi-Fi or multimedia monitors for an enhanced guest experience.

Cortina d'Ampezzo has a thousand-year history, but its renowned Faloria Cable Car is thoroughly modern. It now operates full video surveillance, maintains voice over IP (VoIP) capabilities, and leverages sensor-driven telemetry applications. The combination of SecurityTrust and Cisco IoT solutions helped Faloria SpA get one step closer to "driverless" cable cars—a modern twist to a traditional transportation.

"We are now positioned to improve automation and security of our cable car operations," says Ghezze Enrico, CEO, Faloria SpA. "We have maintained the history and charm of the Faloria Cable Car while making it ready for the future."

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