Cambium Networks™

CASE STUDY

Vesuvius National Park Goes Digital: Wi-Fi Connectivity for a Smart Visitor Experience

Vesuvius National Park is a treasure trove of biodiversity and history, where unspoiled nature coexists with one of the world's most iconic volcanoes. With its scenic trails, rich Mediterranean flora, and unique geological heritage, the park is a premier destination for hikers, researchers, and nature enthusiasts alike. From the crater's summit to the lush green slopes, Vesuvius tells a story of millennia—of history, culture, and resilience—offering an immersive experience in the vibrant heart of Campania. With around 700,000 visitors per year, it is one of Italy's most visited natural destinations.

The Challenge

The Gran Cono area of Vesuvius and other access points lacked any form of data connectivity, and access control systems relied on turnstiles with QR code readers, which, moreover, needed to be connected to a network in order to enable real-time monitoring of entries.

A solution was also needed to address the challenges related to managing last-minute ticket sales, which were impossible to handle without connectivity. Another priority was to combat the widespread issue of ticket scalping.

The park's management also aimed to provide visitors with Internet access for communication and entertainment purposes. Lastly, there was a need for a separate virtual network dedicated to park staff, to improve both internal and external communications.

"The objectives set by the Park for the implementation of this project have been fully achieved, with great satisfaction both from the visitors' perspective and in terms of management."

– Raffaele De Luca, President of the park

The Solution

To address all these needs, the Park Authority turned to Airlan S.r.l., a telecommunications provider specializing in IoT, blockchain, AI, connectivity, and vertical ICT applications, operating in the region since 2002.

Following the necessary site surveys, Airlan implemented Cambium Networks products and solutions, including access points (APs), switches, and a network management platform. The installation required careful planning and meticulous execution due to the complex volcanic terrain, high altitude, and variable weather conditions.

Specifically, the solutions include:

1. Gran Cono Trail Access (1,000 meters altitude): equipped with two Wi-Fi APs, models XV2-T1 and XV2-2T
2. Imbò Access (900 meters altitude): equipped with one XV2-23T Wi-Fi AP
3. Ottaviano Access (1,050 meters altitude, southeast slope): equipped with one XV2-23T Wi-Fi AP and one cnMatrix™ EX2010-P switch
4. (Underway) Trecase Access, Info Point, and surrounding square: to be equipped with one XV2-23T Wi-Fi AP and one indoor Wi-Fi AP

The entire system is managed via the cnMaestro™ platform.

The Results

In the first year, approximately 350,000 total connections were recorded, with daily peaks of around 1,500 users. Wi-Fi access is granted exclusively through a QR code that integrates identification data and security keys.

2000 Center Drive Suite East A401, Hoffman Estates, Illinois 60192 USA

The captive portal, developed specifically for Vesuvius National Park, not only helps prevent ticket scalping but also allows visitors to certify their presence by registering a digital postcard, implemented using Algorand blockchain technology.

This solution, called AlgoWiFi, is a globally unique application and has received official recognition from the Algorand Foundation in Boston.

Park staff access their dedicated network through the ePSK (Extended Pre-Shared Key) functionality provided by Cambium Networks, ensuring secure and controlled connectivity.

In this specific case, a point-to-point connection was initially established to bring bandwidth on-site, delivering 500 Mbps symmetric bandwidth with a 200 Mbps Guaranteed Minimum Bandwidth (GMB). On the opposite side (at 1,050 meters altitude), connectivity is provided via 100 Mbps symmetric Fixed Wireless Access (FWA).

Next Steps

The digital transformation of Vesuvius National Park marks just the beginning of a broader journey aimed at increasingly integrating technology with the protection of natural heritage. The next phase will extend Wi-Fi coverage to inner areas of the park, including new access points, secondary trails, and nature observation sites. The goal is to ensure continuous connectivity for visitors, support environmental monitoring activities, and promote new digital experiences linked to sustainable tourism.

The model implemented demonstrates that—even in a unique and complex environment like Mount Vesuvius—it is possible to deploy advanced, resilient network infrastructure thanks to the collaboration between public institutions, local tech operators like Airlan S.r.l., and cutting-edge solutions provided by Cambium Networks. The integration of Wi-Fi devices, the cnMaestro management platform, and advanced authentication technologies (such as ePSK and AlgoWiFi powered by blockchain) provide the park with a scalable, secure, and centrally managed infrastructure.

About Cambium Networks

Cambium Networks enables service providers, enterprises, industrial organizations, and governments to deliver exceptional digital experiences, and device connectivity, with compelling economics. Our ONE Network platform simplifies management of Cambium Networks' wired and wireless broadband and network edge technologies. Our customers can focus more resources on managing their business rather than the network. We make connectivity that just works.

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2000 Center Drive Suite East A401, Hoffman Estates, Illinois 60192 USA