



CASE STUDY

From Paperwork Gridlock to Smart Port Operations in Just Five Days

Markoja d.o.o. is a leading Croatian systems integrator and infrastructure operator with more than 30 years of experience designing and deploying advanced technology ecosystems. With a team of over 60 specialized engineers and field technicians, Markoja delivers smart, secure, and sustainable solutions for B2B and B2G customers, including national infrastructure operators, telecommunications providers, and large enterprises. A flagship example of this expertise is Markoja's long-term partnership with the Port of Ploče Authority (PPA), one of Croatia's most strategically important maritime gateways on the Adriatic Sea. Together, the two organizations are working toward a shared vision: transforming Ploče into Croatia's first fully connected Smart Port, where digital systems directly support logistics efficiency, security, and user experience.





“The hardest part wasn’t the hardware—it was mapping existing fiber routes. Our experience and continuous training through Cambium tools allowed us to work quickly and precisely.”

— Gordan Jelača, Senior Technician, Markoja

“Configuring VLANs and deploying switches through cnMaestro is remarkably intuitive. Complex segmentation becomes simple when the architecture is right.”

— Dominik Šaić, Project Engineer, Markoja

The Challenge

Before the modernization project, the Port of Ploče relied primarily on a traditional wired network limited to administrative buildings. While the port had already invested in a private fiber-optic backbone, vast outdoor operational areas particularly truck entry and exit terminals had no usable wireless connectivity. This lack of connectivity created a critical operational bottleneck. International truck drivers arriving at the port are required to access and submit digital customs and transit documentation before cargo exchange. Many drivers, especially those from outside the EU, arrived without roaming data or local SIM cards, leaving them unable to access required online systems.

- Trucks stalled at entry points
- Drivers were forced to leave vehicles and queue inside administrative offices
- Port staff were diverted from core operational tasks
- Physical congestion increased, slowing overall throughput

The disconnect between physical port capacity and digital processes threatened the Port Authority’s goal of operating as a modern Mediterranean logistics hub.

The Solution

Markoja designed and deployed a resilient, end-to-end Cambium Networks fabric that extended secure, high-performance Wi-Fi connectivity from the administrative core to the outdoor operational perimeter. Cambium Networks solutions deployed included:

Wi-Fi 6 Access Points:

- XV2-2 indoor access points for the administrative building
- Ruggedized XV2-series outdoor access points for parking and terminal areas

cnMatrix™ Ethernet Switching:

- Redundant cnMatrix TX-series switches at the core
- cnMatrix EX-series switches at seven distributed network hubs

cnMaestro™ Network Management

- Centralized cloud management
- VLAN segmentation to isolate public guest access from secure port operations
- Zero-touch provisioning for rapid deployment

The design leveraged a ring fiber topology for resilience, ensuring continued operation even if a single fiber link fails. Public driver access was delivered via a professionally managed captive portal with defined terms of service and bandwidth controls.

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“This Cambium Wi-Fi deployment is a smart, immediate solution that fits into our broader Smart Port strategy. It works alongside our Private 5G network and opens new possibilities for secure, user-focused digital services.”

— Darko Plećaš, Head of Digitalization, Port of Ploče Authority



Field Results

The impact of the new Cambium-powered Wi-Fi fabric was immediate:

- Reliable outdoor Wi-Fi coverage across entry, exit, and parking zones
- Stable performance despite heavy RF interference from trucks and containers
- 20 Mbps per-user bandwidth limits ensured consistent quality of service
- Low latency enabled fast access to cloud-based documentation systems
- Secure captive portal reduced legal and operational risk

Despite the complexity of working within an active port environment, Markoja's in-house team completed the full deployment including fiber tracing, installation, configuration, and testing in just five business days.

Zero-touch provisioning through cnMaestro allowed devices to come online automatically once connected, significantly reducing installation time and eliminating manual configuration errors.

Business Results

By removing connectivity barriers, the Port of Ploče Authority eliminated physical congestion at administrative counters and significantly accelerated truck processing times. Staff reclaimed hundreds of operational hours previously spent assisting drivers with basic connectivity issues. From a financial and operational standpoint, the unified Cambium fabric reduced total cost of ownership by:

- Simplifying network operations under a single management platform
- Reducing maintenance requirements in harsh maritime conditions
- Minimizing hardware replacement through ruggedized design

Cambium ONE Network Advantage

This project demonstrates the strength of Cambium's ONE Network approach bringing Wi-Fi, switching, and management together under a single architecture. With unified visibility, policy control, and automation via cnMaestro, the Port of Ploče Authority can focus on logistics and growth instead of network complexity.

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.