

# TECHNOLOGY THAT SUPPORTS CARE

**CASE STUDY**



ULS  
TRÁS-OS-MONTES  
E ALTO DOURO

## EXECUTIVE SUMMARY



### The challenge

Critical hospital environment with:

- 3 hospital units and 23 geographically dispersed health centers
- Outdated infrastructure and equipment
- +80,000 connected devices
- Zero tolerance for failures or downtime
- Lack of real-time visibility and security



### The response

Redesign of the infrastructure to ensure greater security, full visibility, and automated access control



### Key results

- Reduction of operating costs and increased productivity
- +16,000 cataloged clinical devices
- +120 GB of logs analyzed per day
- Dynamic access, zero interruptions



### Impact

A secure, scalable hospital network ready for the future in a highly demanding environment

- Transversal service across all units for professionals and patients
- Proactive action based on predictive patterns
- Increased security maturity

## INTRODUCTION

# Technology that supports care: the ULSTMAD case

In the healthcare sector, where time does not wait and the margin for error is minimal, more than being reliable, technology must be invisible.

This is precisely the context in which the **Unidade Local de Saúde de Trás-os-Montes e Alto Douro (ULSTMAD)** operates daily, in the heart of northern inland Portugal.



With the mission to serve approximately 370,000 people and with 4,900 healthcare professionals, **ULSTMAD's technological infrastructure faced a silent urgency: it ensured operations but began to show signs of saturation.**

With the pace and complexity of hospital operations, with thousands of connected devices and activity that never stops, ensuring security, visibility, and continuity was becoming an increasing challenge. A small adjustment to the network could mean major human risks. It was urgent to look inside the network with the same attention given to each patient.

**THE CHALLENGE**

## The infrastructure behind care: when functioning is no longer enough

In the hospital environment, where nothing can be shut down, not even for a minute, ULSTMAD's network infrastructure, with more than 80,000 connected devices, worked but was beginning to show clear signs of limitation. It required great management effort, relied on manual processes, and lacked mechanisms to ensure consistency and scalability across 3 hospital units and 23 geographically dispersed health centers.

It was known how many devices existed, but not necessarily where they were located or what risks they posed. Medical devices moved between units without centralized policies or control and with difficulties in maintaining uniform and secure configurations.



*We used to spend hours solving problems that are now automatic. We had to trust that a device was where we thought it was, and many times it wasn't. In a hospital, that's a serious problem.*

**Victor Costa**

DIRECTOR OF THE INFORMATION MANAGEMENT SERVICE AT ULSTMAD

## When the network becomes the weakest link

The network operated with obsolete authentication mechanisms, based on MAC addresses and fixed VLANs, which increased the risk of human error and limited the ability to scale securely. Infrastructure data was scattered: logs, alerts, accesses, and behaviors were not correlated in real time, making it difficult to detect failures early, and respond effectively to incidents.



With GDPR and NIS2 directive requirements intensifying, keeping operations within acceptable risk levels was becoming increasingly challenging, especially in a critical ecosystem with multiple vendors and some legacy technologies.

ULSTMAD knew there was a real risk of inefficiency and that the current model was not keeping pace with the expected evolution. It was necessary to gain clarity, automate processes, and ensure security with rigor and vision.

## STRATEGY AND SOLUTION

# Modernizing with continuity and sustainability: a tailored plan

With risks mapped and limitations clearly identified, it was time to act with precision and plan this transformation as if it were surgery.

Each phase was carefully coordinated between technical and clinical teams, respecting the rhythms and demands of hospital operations. **The plan was based on three fundamental pillars: visibility, control, and security.**



*It wasn't just about modernization. We had to do it without compromising any essential service, and that would only be possible with a well-designed plan.*



**Victor Costa**

DIRECTOR OF THE INFORMATION MANAGEMENT SERVICE AT ULSTMAD

The choice of Warpcom as a technology partner was a result primarily of its ability to rigorously meet the technical requirements of the public tender launched by ULSTMAD. With proven capacity in developing complex projects in highly demanding contexts, Warpcom assumed from the beginning a **strategic and close role by supporting asset mapping, defining priorities, and designing a modular, scalable architecture compatible with existing systems.**

## A phased process, designed in detail

The complexity of the project required execution in well-defined stages, each with concrete objectives and critical dependencies.

1

The first stage focused on **visibility and inventory of infrastructure**, implementing Claroty's xDome solution, essential for understanding the starting point and categorizing all devices connected to the network.

2

This was followed by the **application of dynamic authentication and access control policies**, with Cisco ISE. This transition enabled the abandonment of manual flows and adoption of an automated, more secure, and efficient model.

3

In the third stage, **advanced security layers, event correlation, and continuous monitoring** were integrated, with firewall and SIEM solutions to ensure faster incident detection and reinforce organizational compliance.

More than a well-defined plan, executing these phases required proximity, technical knowledge, and the ability to operate in environments that cannot stop. Throughout the process, Warpcom was on the ground, side by side with ULSTMAD's teams, ensuring that every technological decision fit the clinical context without creating disruptions.



*We played a major role in shaping the project design, from defining the phases to the on-site technical integration. But the most important thing was being able to articulate everything (different technologies, hospital context, and operational rhythms), without losing control and, above all, without compromising what was already in production. That was our responsibility: ensuring everything evolved safely and smoothly.*



**Carlos Oliveira**

NETWORKING & INFRASTRUCTURE SOLUTIONS ARCHITECT DE WARPCOM

## RESULTS

## Outcomes seen in the network and felt in patient care

With the new architecture in operation, ULSTMAD achieved **full visibility over the network and connected devices, granular control over access and behaviors, and a management model based on automation** rather than reaction.

What once required manual validation, repetitive processes, and tacit knowledge evolved into a **documented, automated system with real-time monitoring**. From an infusion pump to a laptop, all devices are now identified, categorized, and associated with specific access and security policies, **drastically reducing manual work, human error, and operational risks**.



*Today we know exactly where each device is, what is connected, with what permissions, and we can act as soon as something goes wrong. Before, many decisions were made by trial and error.*



**Victor Costa**

DIRECTOR OF THE INFORMATION MANAGEMENT SERVICE AT ULSTMAD

Beyond strengthening security, the change brought **tangible benefits to technical teams: less effort on repetitive tasks, less time spent on troubleshooting, and more focus on evolving operations**. Network management shifted from being slow and fragmented to proactive and integrated.

## Indicators that reflect this change:

**+80.000**

devices monitored across  
the network

---

**+16.000**

clinical devices inventoried

---

**+300**

infusion pumps with automated  
access management

---

**+120 GB**

of logs analyzed per day

---

## Authentication

100% automated  
authentication and  
segmentation processes

## Security

Continuous security  
integration with event  
correlation

This project marked the beginning of a new era in ULSTMAD's technological management: more predictable, scalable, aligned with critical clinical activity flows, and above all, prepared to continue evolving.

## CONCLUSION

## Next steps: caring for the network as you care for a hospital

After mapping, organizing, and automating, ULSTMAD now looks to the future with more knowledge to decide, improve, and evolve its network and systems. The focus is on **refining network segmentation, managing external access securely, and continuing to adapt technology to the real pace of provided care.**

This project is just one step in a broader journey, ongoing for several years, with defined next steps and a common goal: **putting technology at the service of the hospital's clinical mission.**



*This project is clearly a reference for other institutions due to its complexity and scope. At first, it could have been seen as an impossible mission, but the truth is, with solid planning, by breaking down activities, setting clear goals, and bringing together the right resources and partners, we are able to achieve success stories like this one.*



**Bruno Gonçalves**

CYBERSECURITY BUSINESS UNIT MANAGER AT WARPCOM

## From infrastructure to mission: technology at the service of care



*Today, for the first time, we are able to plan technically ahead of time. We know where we are, what we have, and where we want to go, and that changes everything. If I could give one piece of advice to other healthcare units, it would be this: **don't let complexity delay the essential.** Start, even if it's with a well-thought-out first step.*



**Victor Costa**

DIRECTOR OF THE INFORMATION MANAGEMENT SERVICE AT ULSTMAD

This project is not just about security solutions, networks, infrastructure, or management platforms, but about **how to gain clinical time through accurate technological decisions.** Because in the end, true transformation is not about technology, but about when a patient is treated, and everything around works seamlessly without notice.





ULS  
TRÁS-OS-MONTES  
E ALTO DOURO

Learn more at

**[WARPCOM.COM/EN/ULSTMAD](https://www.warpcom.com/en/ulstmad)**