



Addressing High-Density Wireless Needs and Enhancing Digital Learning

Overview

The Francisco Moreira da Costa Technical School of Electronics aimed to modernize its wireless infrastructure to enhance its digital learning and operational efficiency. The institution faced significant connectivity challenges due to its expansive infrastructure, which includes over 30,000 square meters of built space and a sprawling 20-hectare campus. With large rooms, high ceilings, and a high density of simultaneous users—particularly in technical laboratories and the auditorium—a reliable, high-performance wireless network was essential.

To address these challenges, Zyxel Networks' WAX610D and NWA55AXE access points were deployed, delivering a more stable WiFi experience with increased capacity. Even before the project's completion, the school had already observed notable improvements in signal coverage, network stability, and performance, even under heavy traffic conditions. Zyxel's solutions not only met the institution's technical requirements but also provided excellent cost-effectiveness.

A key factor in the success of this project was the collaboration with TIVX Tecnologia. Its technical expertise and strategic planning ensured the implementation was tailored to the unique layout and usage demands of the campus. The partnership between Zyxel Networks, TIVX Tecnologia, and the institution exemplifies how technology, when thoughtfully applied, can transform educational environments and improve access to learning.

Challenges

Before adopting Zyxel Networks' solutions, the school struggled to provide efficient and consistent wireless connectivity across its expansive 20-hectare campus and more than 30,000 square meters of built space. The network had to support over 700 students across three shifts, with high device density in

Customer

ETE FMC

Industry

Education

Location

Minas Gerais, Brazil

Partner

TIVX Tecnologia

Customer Background

The Francisco Moreira da Costa Technical School of Electronics, managed by ANEAS (Associação Nóbrega de Educação e Assistência Social), is a non-profit institution recognized for its social assistance work. Located on a 20-hectare campus, it serves over 700 students daily, offering education across three shifts. Through its PIEA program, the school provides scholarships and support for student success and promotes social assistance aligned with national welfare policies.



Our experience with Zyxel Networks' solutions has been very positive, primarily due to the signal stability, even with a high number of users connected to the access points, along with the cost-effectiveness of the equipment, which delivers excellent quality."

Luiz Gustavo Torquato Villela, IT Coordinator
ETE FMC

Challenges

technical labs—where 300 to 400 students could connect simultaneously—and in the auditorium, which holds up to 1,000 people. The existing network was hindered by coverage limitations, unstable signals, and performance drops during peak usage. The campus layout, with high-ceiling classrooms and simultaneous activities across multiple shifts, placed additional strain on the wireless network infrastructure, impacting the digital learning experience and daily operations. This highlighted the need for a more scalable and stable wireless solution.

Solutions

Zyxel Networks' solutions effectively tackled the school's connectivity challenges by significantly enhancing signal coverage, network stability, and performance, even before the full deployment of all planned access points. Forty-four WAX610D access points installed in classrooms and laboratories provided reliable service in high-density areas, while nine NWA55AXE outdoor access points ensured seamless connectivity for external buildings. Users immediately noticed a more stable WiFi signal and faster performance, even during peak usage times. Both students and staff enjoyed smoother access to digital resources, enriching the learning environment. Besides, the solution provided excellent value to the institution, balancing high performance with cost-effectiveness.

Product List



- WAX610D WiFi 6 Access Point
- NWA55AXE WiFi 6 Outdoor Access Point

Results

The choice of Zyxel Networks' solutions was driven not only by performance needs but also by long-term scalability and manageability. With more access points to be installed as infrastructure expands, the school is well-positioned to grow its digital resources and embrace future innovations in educational technology.

- Enhanced network stability and expanded wireless network coverage across the campus
- Reliable connectivity in high-density areas and seamless outdoor coverage for external buildings
- Resolved performance drops during peak usage, providing faster and more stable WiFi for students and staff

