# From No Connectivity to Full Digital Integration: A College Campus Upgrade

## Overview

In today's academic environment, uninterrupted connectivity is no longer a luxury but a necessity. The Government College of Engineering and Leather Technology (GCELT), one of Kolkata's oldest and most prestigious engineering institutions, recognized this need as it set out to build a fully WiFi-enabled campus. Spread across multiple facilities including the main building, administrative offices, hostels, workshops, and outdoor areas, the college wanted to transform its academic ecosystem by ensuring seamless access to digital resources. Until recently, labs, classrooms, and workshops lacked internet connectivity, restricting the use of modern teaching aids, digital panels, and collaborative learning platforms. Hence, the institution envisioned a robust, scalable, and centrally managed network that could integrate academic, administrative, and residential zones into one digitally connected campus. Zyxel Networks, in collaboration with its partner M/S Active, delivered the solution through the deployment of enterprise-grade switches, WiFi 6 indoor and outdoor access points, all managed from a single platform via the Nebula solution.

## Challenges

The lack of any pre-existing wireless infrastructure made this project particularly complex. Classrooms, laboratories, and workshops had no connectivity, making it difficult for faculty to integrate digital collaboration tools, smart panels, or live online content into lessons. Workshop and laboratory activities that required access to online resources, software updates, or real-time demonstrations were constrained by offline limitations. The hostels lacked the ability to support multiple devices per student, leaving students disconnected after class hours.

The college needed more than just WiFi. It required a solution capable of supporting high device density, ensuring secure coverage from lecture halls to outdoor areas, and staying simple enough for a lean IT staff to manage. Cost efficiency was also a critical factor, as the college needed enterprise-grade connectivity without exceeding budget constraints.

**Customer**
Government College of Engineering & Leather Technology

**Industry**
Education

**Location**
Kolkata, India

**Partner**
Active Networks

### Customer Background

Established in 1919, GCELT has stood at the forefront of technical education for more than a century. Today, it serves hundreds of students across diverse engineering disciplines and is renowned for combining its legacy of excellence with a forward-looking approach to technology. With its commitment to modernization, the institution wanted to provide students and faculty with a smart learning environment where digital tools enhance teaching, collaboration, research, and daily life.

**This project was a true milestone for us. The college needed not just WiFi but also a reliable digital backbone to modernize the academic environment. With Zyxel Networks' WiFi solutions and Nebula solution, we were able to deliver a campus-wide network that is secure, fast, and simple to manage. The feedback from the faculty and students has been overwhelmingly positive, and we're proud to have contributed to building such a future-ready campus."**

**Technical Team**
Active Networks

## Solutions

Delivering a connected campus of this scale required not just technology but also expertise on the ground. M/S Active, Zyxel Networks' trusted partner in Kolkata, played a pivotal role in designing, deploying, and fine-tuning the network to meet the unique requirements of the college. Collaborating closely with the institution, the team ensured that every corner of the campus, from classrooms and labs to hostels and outdoor areas, was equipped with seamless, secure connectivity.

At the heart of the solution, thirteen GS2220-10HP smart managed PoE switches were installed, creating a reliable wired backbone with 10G uplink capability to power access points and ensure consistent bandwidth availability.

Forty NWA110AX WiFi 6 access points were strategically deployed across administrative offices, classrooms, labs, and workshops. These access points deliver AX1800 dual-radio performance with up to 1.8 Gbps throughput, featuring advanced MU-MIMO and OFDMA technologies to handle multiple simultaneous connections, while enhancing energy efficiency for optimized usage throughout the day.

To extend coverage outdoors, three NWA55AXE WiFi 6 outdoor access points were mounted in key open areas, providing seamless roaming that allows students to stay connected beyond classrooms and hostels. The entire setup is managed via the Nebula cloud platform, which enables real-time monitoring, zero-touch provisioning, and advanced analytics from a single dashboard. IT administrators can now configure and troubleshoot remotely, reducing operational effort significantly while maintaining robust security with WPA3 encryption and role-based access.

By combining enterprise-grade switches, next-gen WiFi 6 access points, and intelligent cloud management, GCELT has successfully transformed into a connected, future-ready campus. The project demonstrates how legacy institutions can modernize effectively, creating a digital-first environment that empowers both teaching and learning.

## Results

With high-performance access points, and intelligent cloud management, GCELT has successfully transformed into a connected, future-ready campus. Now, students and faculty have uninterrupted WiFi connections across academic and residential facilities, enabling seamless access to e-learning platforms, digital panels, and research tools. Workshops and seminars run more efficiently, while administrative tasks are streamlined through connected systems. Hostel residents have benefited from stable connectivity to support projects, virtual learning, and global collaboration. The project shows how legacy institutions can modernize effectively, creating a digital-first environment that empowers both teaching and learning.

The deployment has revolutionized the digital landscape of the GCELT campus.

- Nearly 95% campus-wide WiFi coverage achieved across indoor and outdoor zones
- Over 70% reduction in downtime and connectivity related complaints compared to the previous system
- 65% faster IT response time enabled through Nebula's centralized management and remote troubleshooting
- Significant improvement in teaching outcomes and student satisfaction with reliable access to digital tools and online resources

## Product List

- NWA110AX WiFi 6 Access Point
- NWA55AXE WiFi 6 Outdoor Access Point


- GS2220-10HP L2+ Managed PoE Switch