Case Study

Delivering a **High-Performance Wi-Fi Solution** at Scale for a Leading University in India

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Microsense
An IBUS Enterprise

Client

A private university in Bengaluru with **7,000+ students** and faculty.

Project Type

Campus-wide managed **Wi-Fi network** upgrade.

Business Need

To provide reliable, high-speed internet access across all **academic** and **residential** areas.

Challenges

High user density, weak mobile signal, high interference environment, and peak-time congestion.

Solution

Wi-Fi 6 deployment with room-level access points, **10G Fiber Uplink, real-time monitoring, and multiple-ISP links.**

Outcome

99.5% uptime, 0% packet loss during peak usage, improved user satisfaction, and reduced support tickets.

Client Overview

The digital campus was no longer a concept; it had become part of daily life. But the infrastructure powering it was starting to show its age.

At a prominent private university in Bengaluru, over 7,000 students lived, studied, and collaborated across a multi-block campus. From lecture halls and libraries to hostel rooms and lounges, the demand for reliable internet had become non-negotiable.

Online learning, real-time research, group assignments, and even downtime streaming had become part of the daily rhythm. But as usage grew, the existing Wi-Fi network began to fall short, leading to drop-offs, dead zones, and day-to-day disruptions.

What the university needed wasn't just better coverage, it needed a strategic upgrade, a network designed for density, built for consistency, and dependable enough to simply stay out of the way.

Project Scope

The goal was to Enable Digital Connectivity that worked across the entire campus, for every user, without frustrating limitations.

It had to support thousands of simultaneous users, manage peak-hour surges, and meet strict regulatory and security standards.
The network also needed the flexibility to grow alongside evolving digital expectations, particularly in areas with limited mobile coverage.

Scope at a glance:

- Seamless high-speed access across campus.
- Support for simultaneous high-volume usage.
- Secure, regulation-compliant architecture.
- Scalable backbone for future digital expansion.
- Optimized coverage to eliminate mobile signal gaps.
- 24×7 NOC support for proactive monitoring and uptime assurance.

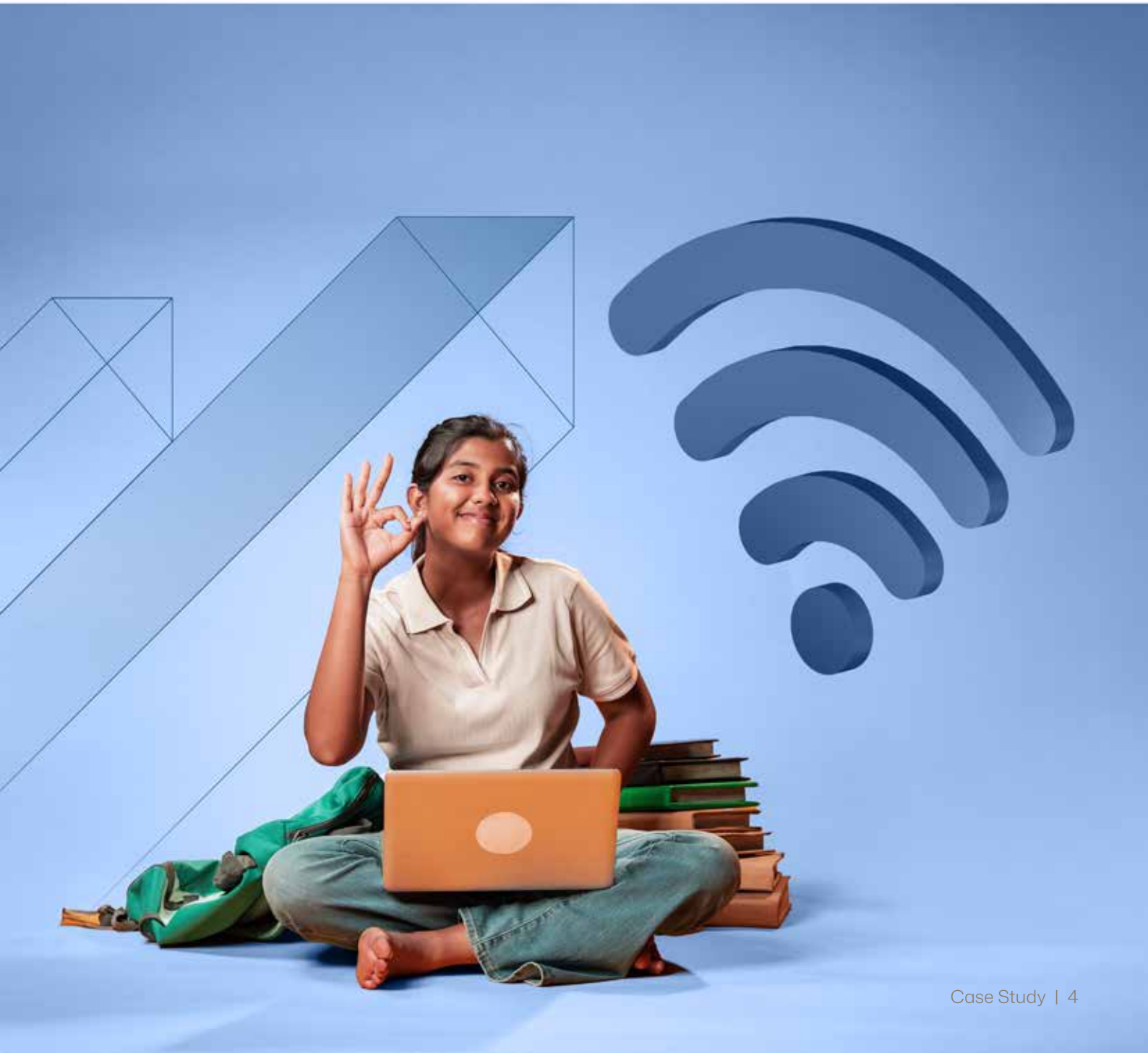
Challenges

Creating that kind of network came with real-world constraints.

The campus's proximity to high-security zones led to a high-interference environment that weakened signal quality. Routing fiber through restricted areas required careful coordination and planning. Traffic spikes during late hours strained the existing infrastructure. And in many blocks, mobile networks did not reach at all, making Wi-Fi the only available lifeline.

Key obstacles:

- High interference environment from nearby defence facilities
- Limited fiber routing pathways
- High nighttime traffic loads
- Weak or absent mobile network coverage



The Microsense Solution

Ekahau AI Pro was used to map and fine-tune AP placement, leveraging AI to simulate network behavior across various scenarios for precise planning and optimization of signal strength and coverage.

Key Elements

Wi-Fi 6 Across the Campus	High-performance 802.11AX access points were deployed across academic and residential zones to support modern usage patterns and device volumes.
One Room, One AP	Instead of the usual corridor placement, each student room received its own AP ensuring stronger signal strength and fewer connection issues during peak hours.
Scalable Network Backbone	High-capacity PoE switches and 10G Fiber uplinks formed the foundation supporting seamless traffic flow today, with room to scale tomorrow.
Smart Planning and Monitoring	Ekahau AI Pro was used to map and fine-tune AP placement. Everest enabled real-time monitoring and diagnostics, helping the team stay ahead of performance issues.
Traffic Prioritization with QoS	Learning platforms, conferencing tools, and shared academic apps were prioritized automatically, keeping critical tools running smoothly even under load.
Redundant ISP Architecture	Dual ISPs ensured there was no single point of failure, with auto-failover to maintain consistent uptime.

Deployment Highlights

The rollout was paced to minimize disruption with thoughtful sequencing, responsive adjustments, and a deep understanding of how the campus functioned.

Deployment in action:

- Access points placed where students needed them.
- Planning optimized for high-interference environments.
- Close coordination with vendors for restricted fiber routing.
- Network evaluated against peak evening load scenarios.
- 24×7 NOC support with real-time alerts and issue resolution from day one.

Results

Connectivity went from a daily concern to a quiet strength.

Students could work, stream, or collaborate without worrying about signal drops. Faculty could rely on online tools with confidence. Helpdesk tickets dropped, and IT teams gained visibility into network health without needing to troubleshoot reactively.

What changed:

- 99.5% wireless uptime across campus
- Zero packet loss during peak usage hours
- 7,000+ users supported simultaneously.
- Satisfaction score consistently above 4.0
- Fewer complaints, faster response times
- Resilient uptime with dual-ISP architecture
- Consistent performance for academic applications

Impact Snapshot

99.5%
Uptime Maintained

0%
Packet Loss During Peak Load

7,000+
Users Reliably Connected

Satisfaction Score
> 4.0

Ticket Volume Significantly Reduced

Dual-ISP Setup Ensured Uptime

24/7
Network Monitoring in Place

Conclusion

With a campus-wide Wi-Fi 6 network, fiber-backed infrastructure, and 24/7 managed services, Microsense delivered a high-performance digital foundation built for scale, designed for learning, and aligned with the demands of modern education.

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