

Team

2310030018-B.Yashwant

2320090019-P.Harsha

2320090047-D.Nagarjuna

2320030067-D.Ritesh

Case Study: University Campus Network at KL University

Introduction

KL University is a large institution with 25,000 students, 2,000 staff members, and multiple campuses spread across 100 acres. The university's core need was to build a robust, secure, and scalable network that could handle high-speed internet for academic purposes, administrative functions, and student activities.

Objectives

The main objectives of the university's network were:

1. **Seamless Connectivity:** To ensure uninterrupted internet access across classrooms, libraries, dormitories, and administrative buildings.
2. **High Bandwidth:** To support data-intensive research, video conferencing, and virtual labs.
3. **Security:** To protect sensitive academic and personal data.
4. **Scalability:** To accommodate increasing users and future technologies like IoT and AI-driven systems.

Design and Solution

1. **Core Network Architecture:** A fiber-optic backbone was installed throughout the campus, forming the foundation for high-speed data transmission.
2. **Wi-Fi 6 Deployment:** Wi-Fi 6 access points were strategically placed in all major areas, ensuring high-speed wireless access.

3. **Network Segmentation:** The network was segmented into zones (student, academic, guest, and administrative) to ensure security and prioritization of traffic.
4. **VPN Access:** Secure VPN was implemented for off-campus access by students and faculty for remote learning and research.
5. **Redundancy and Disaster Recovery:** Redundant systems were set up to prevent downtime, and data centers were equipped with disaster recovery plans.

Implementation Challenges

- **Budget Constraints:** The initial setup, especially fiber-optic cabling and high-end equipment, required significant investment.
- **Campus Layout:** Sprawling and varied terrain made it difficult to ensure consistent Wi-Fi coverage in all areas.
- **Security:** Continuous monitoring and upgrading of security protocols to prevent cyberattacks on student and staff data.

Outcomes

- **Increased Efficiency:** Faster internet speeds enabled smooth online lectures, file sharing, and virtual collaboration.
- **Enhanced Research Capabilities:** High-bandwidth support facilitated data-intensive research and computational work.
- **Improved Security:** Implementing network segmentation and enhanced firewalls protected sensitive data and minimized breaches.
- **Scalability:** The network was future-proofed, allowing the university to add new IoT devices and advanced digital tools without compromising performance.

Conclusion

XYZ University's campus network upgrade significantly improved academic, administrative, and student experiences, positioning it as a technology-forward institution ready to meet future educational and technological demands.

Thank You