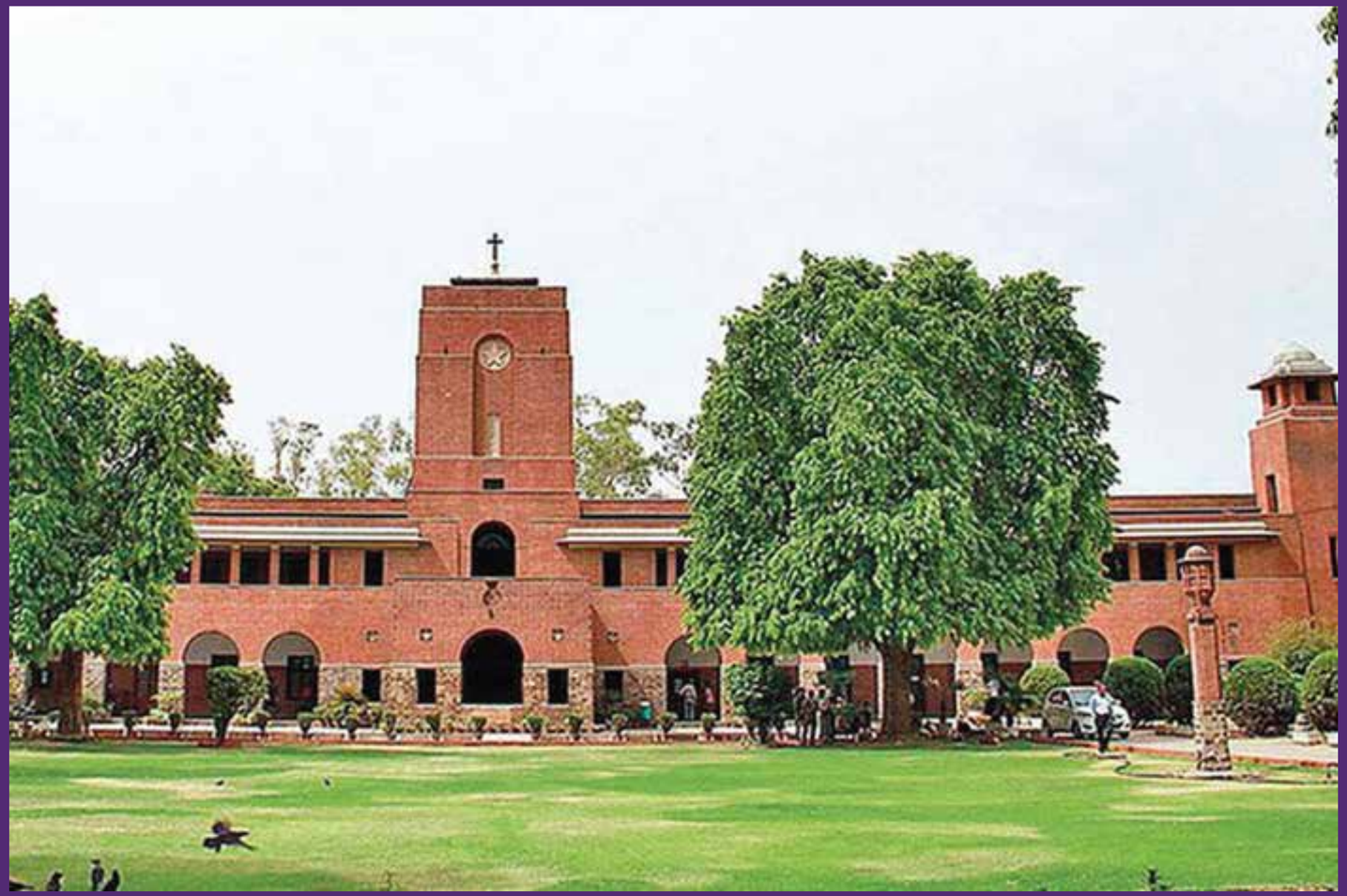
io by HFCL

Case Study

Delhi University (Educational Institution)

Surfing the Digital Wave



Delhi University’s Wi-Fi Revamp for Limitless Learning

Background

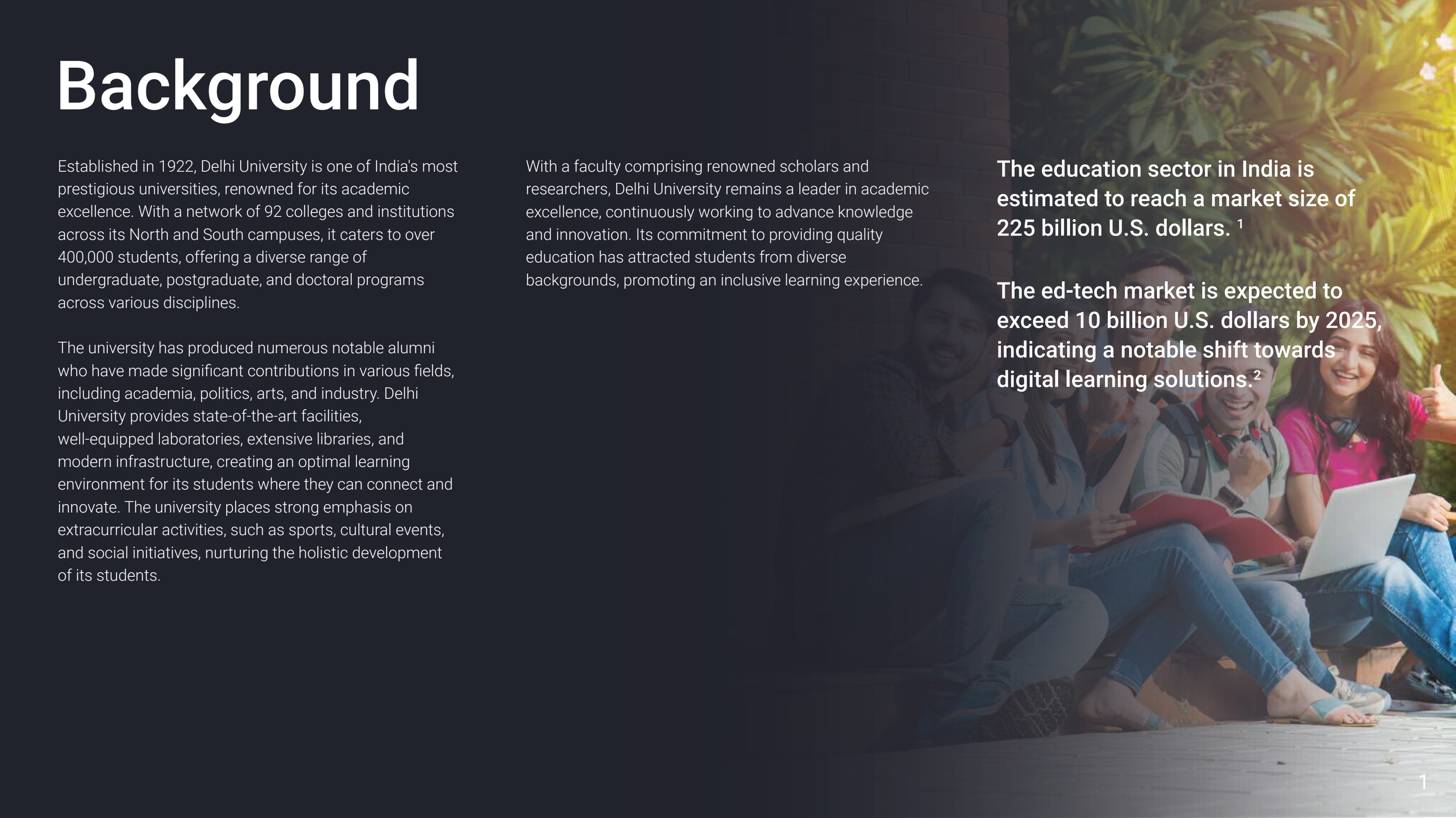
Established in 1922, Delhi University is one of India's most prestigious universities, renowned for its academic excellence. With a network of 92 colleges and institutions across its North and South campuses, it caters to over 400,000 students, offering a diverse range of undergraduate, postgraduate, and doctoral programs across various disciplines.

The university has produced numerous notable alumni who have made significant contributions in various fields, including academia, politics, arts, and industry. Delhi University provides state-of-the-art facilities, well-equipped laboratories, extensive libraries, and modern infrastructure, creating an optimal learning environment for its students where they can connect and innovate. The university places strong emphasis on extracurricular activities, such as sports, cultural events, and social initiatives, nurturing the holistic development of its students.

With a faculty comprising renowned scholars and researchers, Delhi University remains a leader in academic excellence, continuously working to advance knowledge and innovation. Its commitment to providing quality education has attracted students from diverse backgrounds, promoting an inclusive learning experience.

The education sector in India is estimated to reach a market size of 225 billion U.S. dollars. [1]

The ed-tech market is expected to exceed 10 billion U.S. dollars by 2025, indicating a notable shift towards digital learning solutions.[2]



Our deployment across Delhi University has significantly improved campus connectivity. With our advanced Wi-Fi solution, we've ensured uninterrupted internet access for students and faculty. It's a prime example of HFCL's innovation driving tangible improvements in educational settings. Delhi University is a prestigious institution, and we are delighted to cater to the connectivity needs of the future leaders of this country. Having Delhi University as a valued customer is a great accomplishment for our brand.

Anand Kumar

Associate Vice President (Communications)

Overview

In the changing dynamics of the education sector, seamless connectivity and high-speed internet have become fundamental pillars for academic institutions worldwide. At the core of Delhi University lies a critical requirement for a network that surpasses conventional limitations and offers a comprehensive learning environment. Within the expansive hostel area of educational institutions under Delhi University, the dire necessity for uninterrupted connectivity becomes evident. The need extends beyond mere convenience, evolving into an indispensable tool that inspires students in their pursuit of knowledge and innovation.

Uninterrupted connectivity facilitates a fluid, continuous learning experience by providing access to an extensive array of educational resources. From virtual lectures to digital libraries and collaborative platforms, a reliable internet connection enables an ecosystem where education is not confined by physical limitations. Moreover, it facilitates the exploration of a variety of subjects and real-time information.

Students depend on swift access to online databases, scientific journals, and collaborative platforms to further their investigations. The access to high-speed internet expedites the exchange of ideas, facilitates cross-disciplinary collaborations, and fuels the pace of scientific discoveries and technological advancements. Beyond the academic sphere, reliable connectivity plays a pivotal role in skill development and future readiness.

To excel in the academic, research, and extracurricular pursuits, students of Delhi University needed access to high-speed internet round the clock. The need was for a network that was always on and comprehended with their requirements in terms of high-speed and throughput. Recognizing the essential role of connectivity, IO by HFCL deployed a comprehensive solution featuring WiFi 6 Access Points across the hostel area, ensuring that high-speed internet is always available to support the diverse pursuits of students.

In the National Institutional Ranking Framework (NIRF) of 2023, Delhi University secured the 11th position.[3]

QS Sustainability ranking 2024 has placed the University of Delhi at No.01 position in India, 52 in Asia and 220 Globally.[4]

Challenge

The Delhi University faced a significant challenge in providing high-speed wireless connectivity to its students residing in the numerous hostels across both campuses as their existing Wi-Fi products have gone out of warranty and support. The demand for data has increased manifold since the last network was deployed. Upgrading to a Make in India and future proof wireless solution became imperative to meet the evolving needs of the student community. Despite the advancements in current network infrastructure and technology, students were still encountering issues with Security Assertion Markup Language (SAML) authentication and G Suite.

Solution

To address the pressing challenges of providing secured, high-speed, reliable wireless connectivity across the hostel facilities, the Delhi University sought a revamp of its Wi-Fi infrastructure. After a diligent evaluation process, HFCL, a renowned OEM, was selected to provide its Wi-Fi 6 solution for all the hostels across the university's North and South campuses. To further validate the solution and build confidence within the university's IT team, we conducted a successful proof of concept, demonstrating the capabilities of their proposed solution. With a pressing timeline and an urgent delivery requirement of 1000 Access Points, we confirmed the availability of devices and successfully delivered the order within one week, enabling the university to swiftly implement the new Wi-Fi infrastructure across its hostel facilities. The deployment involved the installation of Wi-Fi 6 Dual Band 2x2:2 Indoor Access Points. Offering an aggregate throughput of up to 1.78 Gbps, the Wi-Fi 6 Access Points are equipped to handle the most demanding bandwidth-intensive applications, such as high-definition video streaming, augmented reality (AR), and virtual reality (VR) experiences.

The Access Points support fast roaming and fast handover that help in seamless transition amongst the APs, as the user moves from one location to another, without any drop in the network connection, letting the users experience flawless connectivity across the hostels. Eliminating the need for expensive cabling, indoor Access Points automatically form a self-healing and self-optimizing wireless mesh network, ensuring connectivity in every corner of the hostel facilities. The support for EasyMesh ensures interoperability with third-party Access Points and routers, allowing for a seamless integration with the university's existing network infrastructure.

Equipped with WPA3, the latest Wi-Fi security standard, the Wi-Fi 6 Access Points provide robust protection against hacker attacks, offering secure connectivity for students and guests alike. To further strengthen network security, we have also implemented a fully integrated and highly secure AAA+ Captive portal. This advanced portal extends beyond standard authentication and access control, ensuring that only authorized users can access the network. User permissions are clearly defined, and all activities are meticulously tracked for both security and management purposes.

The deployed Wi-Fi 6 solution seamlessly integrates with the university's existing G Suite implementation, leveraging SAML (Security Assertion Markup Language) for Single Sign-On (SSO) authentication. This integration ensures that students can securely and efficiently access their G Suite email, collaboration tools, and other cloud-based services from their connected devices, without the need for multiple logins or authentication steps.

Indoor Wi-Fi

Wi-Fi 6 Access Points

Result

01 Significant improvement in throughput, speed, and coverage, addressing the escalating demand for higher data transfer rates and faster internet speeds.

02 High-speed internet for seamless digital learning and bandwidth-intensive applications, such as high-definition video streaming, AR, VR experiences.

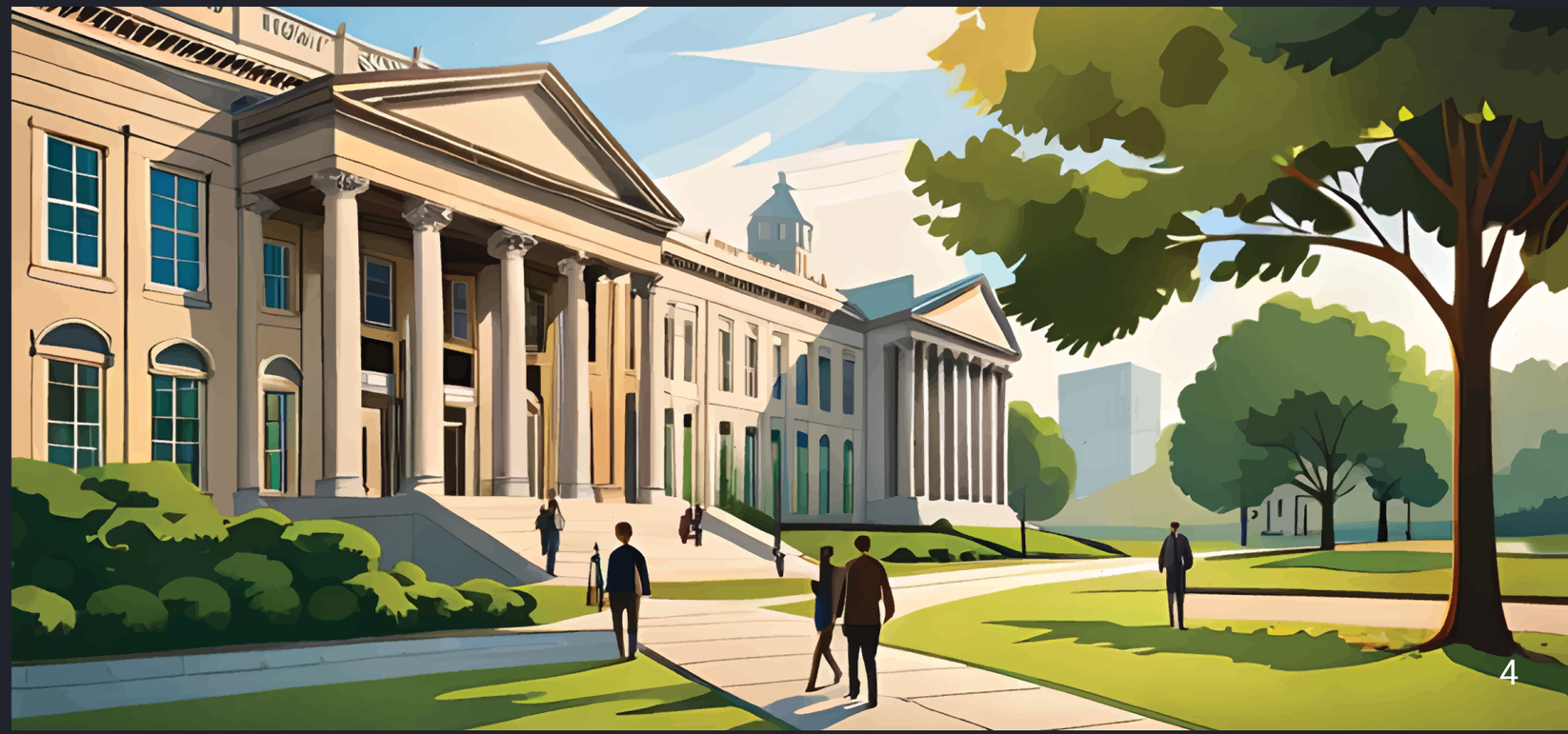
03 Reliable performance ensuring consistent uptime and connectivity, with the self-healing and self-optimizing wireless mesh network formed by the indoor Access Points.

04 Seamless roaming and mobility across the hostel facilities, enabling students to move freely without interruptions or dropped connections. Enhanced network security with the implementation of a secure AAA+ Captive portal.

05 Robust and secure access to G Suite services through SAML-based Single Sign-On (SSO) authentication, simplifying user management and improving the overall experience.

Conclusion

The successful deployment of indoor Access Points marked a significant enhancement in Delhi University's wireless infrastructure, effectively addressing the challenges of uninterrupted connectivity and the growing demand for higher throughput and increased speed. The strategic combination of Wi-Fi 6 Access Points and AAA authentication ensured seamless connectivity, enhanced security, and high-speed data transfer with minimal latency. This solution resulted in a comprehensive network covering all key locations across the vast campus and hostels, meeting the diverse academic and personal needs of students and faculty. Moreover, G Suite authentication provides a robust and secure solution for Delhi University, ensuring that users can efficiently and safely access essential services. By leveraging modern authentication technologies, the university enhances security, simplifies user management, and improves the overall experience for its community.



Deployement Images

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