

## CASE STUDY



### OVERVIEW

Founded in 1956 and located in Patiala (Punjab), the Thapar Institute of Engineering & Technology (TIET) is one of India's leading engineering education and research facilities. Spread over a sprawling 250-acre campus, TIET houses 8500 engineering students and 900 staff members.

### REQUIREMENTS

- A scalable WLAN infrastructure
- Campus-wide Wi-Fi connectivity
- Secure and fast network on-boarding for staff members
- Seamless network management

### SOLUTION

- SmartMesh networking to optimize AP performance
- 1,267 indoor and outdoor APs were deployed to offer campus-wide Wi-Fi connectivity
- Dynamic Pre-Shared Keys (DPSK) ensured secure on-boarding for students and staff members
- ZoneDirector 3000 and SmartZone controller simplified management of APs

### OUTCOMES

- Campus network accommodates over 7000 devices concurrently with seamless Wi-Fi
- Self-organizing SmartMesh networking facilitated seamless connectivity over architectural hurdles of the campus.
- DPSK ensured real time network on-boarding for students, freeing IT staff to focus on other more important tasks
- The ZoneDirector and SmartZone controllers simplified complexity by scaling and managing both wired switches APs through a unified interface

## RUCKUS HELPS BUILD A SMARTER CAMPUS

With a 63-year legacy, the Thapar Institute of Engineering & Technology (TIET) has contributed to many technological advancements and scientific breakthroughs within India and beyond. With the growing prevalence of multimedia in higher education and the Bring Your Own Device (BYOD) trend, having seamless Wi-Fi connectivity forms the very backbone of the digital pedagogy at the campus, as well as to enhance both research efforts and activities, including improving research outcomes for both undergraduate and post-graduate programs.

### THE CHALLENGE

TIET's 250-acre campus houses 33 active sites including 14 student hostels, staff residences, academic buildings, a library, a dining area and the director's office. As the hub of activity for 8500 students and 900 staff members, the institute wanted to revamp the network infrastructure as the Wi-Fi experience was inconsistent. This was due to an increasingly burgeoning digital footprint, which led to the existing Wi-Fi infrastructure not being able to keep up with the demands of an agile 24x7 student body. IT staff also spent significant time onboarding new devices on the network, as well as to upgrade or replace access points (APs) as they failed.

### RUCKUS PAVES THE WAY FOR SEAMLESS CONNECTIVITY

"We wanted to empower our students by incorporating video within classroom lectures; however, due to a poor wireless network and bad video streaming performance as a result, our students were losing interest. Thanks to Ruckus BeamFlex Technology, we have been able to replicate global pedagogy standards within our classrooms." said Dr. Maninder Singh, Head, Computer Science and Engineering Department, Thapar Institute of Engineering & Technology. "Ruckus WiFi has significantly curtailed frequent network drops as well," added Dr. Singh.

Dr. Singh's team were also challenged by the architectural limitations of the campus, as the older buildings were not provisioned to set up ethernet cabling backhaul. To retain the aesthetic legacy of the campus buildings, the use of Ruckus SmartMesh networking saved the team from the additional cost of setting up cabling infrastructure. Both faculty residences and multi-storey student accommodations were Wi-Fi enabled within a short time frame, and with no compromise on bandwidth capabilities either.



“We are proud of our state-of-the-art classroom with video conferencing and streaming capabilities. This digital transformation would not have been possible without a robust network infrastructure, especially wireless access, where Ruckus technology has delivered beyond our expectations.”

### **PROFESSOR PRAKASH GOPALAN**

Director  
Thapar Institute of Engineering & Technology

“Ruckus WiFi has significantly curtailed frequent network drops as well. Our common student areas, such as the dining area, is brimming with student activity again.”

### **DR. MANINDER SINGH**

Head  
Computer Science and Engineering Department  
Thapar Institute of Engineering & Technology

## **MORE EFFICIENT NETWORK MANAGEMENT**

In many academic environments in India, network access is facilitated using usernames and passwords. While relatively simple to implement, students could conveniently pass on network access to unauthorized individuals or would burden the lean IT team with frequent new login requests.

For a simplified, efficient, and highly secure way to on-board students on the campus network, the IT team turned to Dynamic Pre-Shared Keys (DPSK), unique encryption keys that are installed on end users' devices with little or no human intervention. This helped devices to be effectively logged-off as the individual left the campus. Similarly, as soon as authenticated users came within range, they were afforded connectivity, seamlessly.

When the institute deployed their initial wireless network, it was a huge task for the IT team to manage the numerous APs installed. When network downtime occurred, the technician had to manually update, reconfigure, or replace the AP in question to get that part of the network up and running. As the network grew, it became extremely challenging to push configurations and update firmware for individual APs. The use of Ruckus ZoneDirector and SmartZone controllers helped the IT team seamlessly configure all APs from a single point of control, without having to manually manage each AP.

“The Ruckus console provided heat-maps that alert the team on density requirements, and at the same time providing automatic updates on bandwidth being consumed, as well as network signal strength. This insight helps us keep our network in tip-top shape, and to get ahead of any potential issues before they occur, thus delivering a better network experience for all,” said Dr. Singh.

## **HOW TECHNOLOGY ENABLES WORLD-CLASS EDUCATION**

Highlighting the making of a smart campus, Professor Prakash Gopalan, Director, Thapar Institute of Engineering & Technology says, “As we move beyond the fixed-line PC, we are now re-inventing the campus for our students' laptops, smart phones and tabs. We are building the digital groundwork to house over 12,000 students by 2020. With technology, we aspire to build a world class facility to help our students scale new heights in Science, Technology, Engineering and Math (STEM) studies.”

Today, both students and faculty can seamlessly access both the internet and intranet across the 250-acre campus. Faculty members are proactively exploring newer methods of teaching such as online quizzes, as well as to improve digital lab performance through the improved network connectivity. Through the institute's streaming servers, the classroom sessions are now available 24x7 for students to access when needed. Thanks to seamless connectivity, students also now have unified access to Massive Open Online Courses (MOOC), national and international academic repositories. What's more, through newly deployed web kiosks, students and parents now have real time access to student academic information such as their choice of electives, grades, and transcripts.

“We are proud of our state-of-the-art classroom with video conferencing and streaming capabilities. This digital transformation would not have been possible without a robust network infrastructure, especially wireless access, where Ruckus technology has delivered beyond our expectations,” added Professor Gopalan.