Case Study

RUCKUS ACCESS POINTS HELP UNIVERSITY FACILITIES AND STUDENTS REACH THEIR FULL POTENTIAL

Nine campuses spread across five states	Youngest university to receive A++ grade from India's NAAC	Ranked #1 in India and #81 in the world by THE Impact Rankings 2024	Offers 300+ degrees to more than 30,000 students

Amrita Vishwa Vidyapeetham (Amrita University) is a multi-campus, multi-disciplinary, research-intensive, private university in India. It offers hundreds of undergraduate, postgraduate, integrated-degree, dual-degree and doctoral degrees in programs such as engineering, medicine, management, agricultural, law and social sciences. This deemed university has not only been granted higher education accreditations by India's Ministry of Education, but it has also received an A++ grade by the National Assessment and Accreditation Council (NAAC) as a best-in-class institution of higher learning.

AMRITA VISHWA VIDYAPEETHAM

Customer
Amrita Vishwa Vidyapeetham

Location
Amritapuri and Bengaluru campuses

Challenges

- Accommodate large classroom sizes
- Must work with legacy system
- Scalable for future growth

Solutions

- RUCKUS access points (APs) (R550s, R650s and R750s)
- Virtual SmartZone

Benefits

- Improved network performance
- Compatible with existing network switches
- APs can handle more than 60 clients simultaneously
- Controller can grow to manage more APs

For nearly a decade, Amrita University campuses have experienced reliable network connectivity thanks to RUCKUS® Networks solutions. But following the COVID pandemic, network administrators at the Amritapuri and Bengaluru (Bangalore) locations needed to keep up with the demand for more digital access. As Amrita grew and new campuses came online across India, students and faculty required a more robust and dependable network to participate in online classes and discussions.

In addition, with new applications and more sophisticated devices becoming more prevalent, the network had a difficult time accommodating the new technology. By migrating the network APs to Wi-Fi CERTIFIED 6® to provide for more bandwidth, speed and throughput, network administrators saw a way to resolve their network challenges in a cost-effective manner.

Evaluating solutions via proof-of-concept testing

Despite knowing firsthand the value of RUCKUS solutions, Amrita chose to perform some due diligence before upgrading its network. Administrators pitted various manufacturers against RUCKUS in proof of concept (POC) tests to verify whether RUCKUS can still make the grade. By pitting all new network solutions against each other in real-world applications, Amrita could actually see which products really would perform in their challenging environment.

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>
> **Sachin Vinay, Assistant Manager, Networks**
> **Amrita Vishwa Vidyapeetham**

One of the first tests conducted was to see how APs would perform inside the classrooms. Since Amrita buildings are constructed of cement, Wi-Fi® signal distance and penetration often suffer. During the test, APs that used omnidirectional antennas ended up causing interference issues that reduced signal strength. But RUCKUS APs and its BeamFlex® adaptive antenna technology would physically focus the antenna pattern to each client signal and mitigate interference. On average, RUCKUS high-performance APs are able to deliver up to 6 decibels of additional gain to client device signals, allowing them to cover further distances even in this environment.

"Once there was a wall or any hard thing in between," said Sachin Vinay, assistant manager, networks, at Amrita Vishwa Vidyapeetham, "[the signal] would completely stop and it would not penetrate out. But the R650 AP has a powerful antenna and was able to handle more distance and penetrate more when compared to others."

The various APs were also evaluated on how they would respond to the network RADIUS (Remote Authentication Dial-In User Service) authentication protocols. Again, the RUCKUS APs bested the competition by not requiring any manual configuration. "Once [they were] set up, they worked perfectly fine," said Sachin.

But the final exam is where RUCKUS APs showed its mettle: large classroom sizes. Some Amrita classrooms hold more than 60 students at a time, and the students and faculty not only need the network for online lecture access, but certain classes also require a reliable network to access the server for their coursework.

In these real-world critical situations, many APs were not able to maintain a consistent, stable connection. "When we went beyond 30 clients," said Sairam B, IT-HOD, Amritapuri Campus, "they started showing issues. Some clients dropped out [and] we had to restart the access point." Meanwhile, RUCKUS APs accommodated all the clients thrown at them with no drop in performance.

"One example is our M. Tech. Cyber Security [classroom], where 60 students need direct access to the server," said Sairam. "We would not need to put two access points in the classroom. We just put one RUCKUS AP in those specific classrooms and could manage all clients."

Supporting internet of things (IoT) devices everywhere

In addition to the RUCKUS R650s, Amrita deployed a number of R750s—very high-performance Wi-Fi® 6 indoor APs that feature a 3.5 Gbps max rate and embedded IoT technology. For a higher education institute that performs a lot of research, deploying APs that can manage IoT devices was extremely important. "We have IoT devices across the campus," admits Sachin. "We actually provide a separate network for all these IoT devices."

From IoT sensors that monitor power fluctuations and water levels in research labs to humidity sensors in the university data centers, Amrita relies heavily on reliable APs that can accommodate all the traffic and provide continual connectivity.

What's more, the university also employs facial recognition devices for security authentication and attendance management, which can typically bog down an average network. Fortunately, R750s bridge the performance gap from "gigabit" Wi-Fi to "multi-gigabit" Wi-Fi and provide exceptional end-user experience no matter how many clients are online.

Seeing RUCKUS real-world benefits firsthand

It was during the POC trials that Amrita tested the APs in a number of high-density issues on which the competition performed poorly. "Sometimes, we saw clients get kicked out of the channels," said Sachin. "When channel congestion happens, [the APs] were not actually dividing the channels uniquely to all."

But Amrita saw for themselves how RUCKUS APs didn't experience these same issues. Network administrators discovered how RUCKUS patented technology could determine the optimal channel based on real-time statistical analysis of actual throughput measurements automatically, behind the scenes.

"Regarding the management of wireless channels," said Sachin, "this was the most important thing we saw with RUCKUS. When we're putting three or four access points in the same hall, RUCKUS actually managed the clients well [with ChannelFly®]. It will actually check all the channels and it will properly distribute the signals."

Bringing it all together

To manage all the different RUCKUS APs throughout the campuses, Amrita installed a virtual SmartZone™ controller. This enterprise-grade appliance not only allows Amrita to control all the new Wi-Fi 6 APs, but it's also backwards compatible with some of the older RUCKUS APs that were still active in less demanding areas on the campuses.

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> **Amrita Vishwa Vidyapeetham**

"[Virtual SmartZone] can support the older access points," explains Sandeep Raghurajan, senior systems engineer for RUCKUS. "We have an N-2 option in the virtual controller where we can have the newer firmware at the same time you can have some older firmware versions. So, the older access points can also be supported."

When deploying virtual SmartZone, the network administrators were also impressed with how agile and simple it was to install and use without needing the constant tech support other controllers required. The intuitive graphic user interface design allowed the network administrators to quickly see what's going on with their network through a single pane of glass. "The SmartZone controller implementation was super-fast," said Sairam. "And because it is very easy and user-friendly, we can actually do it ourselves."

Since Amrita anticipates migrating more of their network solutions to Wi-Fi 6 in the near future, the flexibility of virtual SmartZone was also a big selling point. While virtual SmartZone can easily accommodate the existing network, it can also grow to manage up to 10,000 APs, up to 2,000 switches and up to 100,000 clients per controller. For a growing Amrita, this allowed network administrators to minimize up-front costs while having maximized scalability later.

University recommended. Student approved.

Despite passing all the tests the university conducted, the ultimate approval would need to come from the faculty, staff and students who expect an always-on network. And after months of usage, the residents of the university were delighted that RUCKUS APs and the improved network met all their needs.

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Not only did the students use the network for accessing coursework in the cloud, streaming classes online, and researching projects, but they also operated a number of high-bandwidth apps that required speedy connectivity and low latency such as VoIP (Voice over Internet Protocol) services to call their family across the country without incident.

In addition to VoIP calls, students would also organize into video gaming teams that tested the new APs to the max. Normally, the university would have the students connect to a wired port to join the network. But thanks to RUCKUS, they were able to connect wirelessly even when the number of players exceeded 60 students—and still be able to enjoy fast connectivity.

"Before, what we preferred was a LAN connection," explains Sachin. "But with the Wi-Fi 6 implementation, we were able to connect 60-plus people wirelessly. We provided a complete SSID specifically for gaming and we actually manage clients only in the access point. So, that's the kind of things also we were able to achieve with RUCKUS."

An eye toward the future

With the successful upgrade of the busiest network locations, Sachin and Amrita can now focus on planning for the future instead of reacting to existing challenges. Because their network controller is easy to use and very scalable, Sachin is looking at how they might continue to improve the network across the Amritapuri 80-acre campus. "In the future," said Sachin, "we are actually planning to add more access points to this virtual SmartZone."

Highly satisfied with the impressive network results they have gotten and how easy the deployment was, Sachin is also championing RUCKUS solutions to other campuses that have experienced network issues with their legacy APs. "Currently they are not all RUCKUS," said Sachin, "so we are guiding them also to implement RUCKUS in future because of the performance that we get in this campus."

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