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Success Story

Research University Makes the Grade with Wired and Wireless Network Solution from Zyxel

INDUSTRY	CUSTOMER	REGION	SOLUTIONS
Education	IUAC	India	Wired and Wireless Solution

Overview

Challenges

- The customer faced poor connectivity from wireless network
- WiFi network lacked centralized management
- There was no WiFi roaming on campus
- WiFi connections were not secured
- There was no redundancy of a wireless connections

Solutions

- Wireless LAN Controller
- 802.11ac Dual Radio Dual-optimized Antenna 3x3 Access Point
- 802.11ac Dual Radio External Antenna 3x3 Outdoor Access Point
- 24-port Gigabit L2 PoE Switch
- 24-port Gigabit L2 Switch

Benefits

- Expandable and scalable solution
- Achieved project requirements
- Secure and stable gigabit WiFi connectivity on latest 802.11ac technology
- Centrally managed WiFi connectivity with roaming

"We were profoundly gratified with the wireless network solution provided by Zyxel. Their proficient staff was vital in selecting the right solution to meet our needs. With their help, we could overcome many of the specific challenges we faced with this project. Zyxel's assistance and their solution partner Star Comnet's after-sales support has given our staff the assurance to manage our network with absolute ease."

Mr. Sumit Mookerjee
IT Head, Inter-University Accelerator Centre

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Background

The primary mission of Inter-University Accelerator Centre (IUAC) is to provide front-ranking accelerator-based research facilities to create opportunities for internationally competitive research within the university system. The Centre has been playing a very special role as a research institute where the scientific and technical staff has the dual responsibilities of facilitating research for a large user community as well as conducting their own research. Emphasis is put on encouraging group activities and sharing facilities at the Centre in synergy with those existing elsewhere. The Centre has established sophisticated accelerator systems and experimental facilities in project mode involving several universities for internationally competitive research in the areas of nuclear physics, materials science, atomic physics, radiation biology, radiation physics and accelerator mass spectrometry

The project was intended to provide WiFi connectivity at campus. This replaces the legacy network's poor and

scattered internet and wireless connectivity. A strong and reliable WiFi solution would allow users to take advantage of email, surf the Internet, and access online data, such as e-journals, databases, and online research portals. This is helpful for acquiring and enhancing knowledge from the latest research globally.

Challenges

The institution was tired from managing a variety of scattered, standalone Internet connections across various departments inside the campus.

To meet growing demand, the institution required sufficient connectivity for approximately 500 users on campus, all of whom would be using Internet and intranet on the same

network. In addition, the network must provide the wireless connectivity in indoor and outdoor areas of campus. Another requirement included centrally managed wireless roaming without disconnection or re-authentication.

The solution should prevent interference generated by heavy use of testing equipment.

Solutions and Benefits

Zyxel worked with local partner Star Comnet to understand and overcome challenges faced by IUAC and provide exactly what they required within their budget. Zyxel proposed a controller-based, centrally managed solution that included the WAC6103D-I 802.11ac Dual Radio Dual-optimized Antenna 3x3 Access Point and WAC6553 outdoor access point managed by NXC5500 Wireless LAN Controller.

The solution included a MGS3520 managed L2 Switch at the core level, connecting to GS2210-24HP 24-port Gigabit L2 PoE Switch. The access switches connect access points at various locations across campus.

The proposed controller is redundant to avoid failure. It connects to the core fiber switch and managing wireless access points, which are spread throughout different

buildings and across campus. The institution can centrally manage and implement policy for wireless access. For open areas, outdoor access points with omnidirectional antennas were deployed. The authentication is handled by an existing radius server at the customer server room. The proposed solution fulfills higher bandwidth demand with WAC series AP support with 802.11ac gigabit connectivity up to 1.75 Gbps on dual band with simultaneous 2.4GHz and 5GHz frequencies. This provides the easy loading of a single band with the flexibility of a dual band. The customer uses two different SSID subsets, one for visitors and another for internal staff.

Access points receive power and data on the same UTP copper cable via PoE switch. This avoids access point power adaptor failures, providing easy deployment and

troubleshooting. The Ethernet PoE switch is capable of delivering data and power to the access points over the same cable. This allows all access points to receive power centrally from the UPS without requiring a separate power adaptor.

The managed switch can be configured for different management features like VLAN, RSTP, MSTP, SNMP, QOS, and Loopback detection, among others. "The customer benefits from the secured wireless connections controlled centrally with seamless roaming.

The controller handles roaming, interference, traffic load balancing, and other tasks. The solution is future-proof and scalable. We have addressed all the customer's pain points while proposing solutions," explained Yogesh Singh, senior manager of Zyxel India. The comprehensive hands-on training conducted by local partners allowed for smooth implementation and transition to the new network.

Products Used

NXC5500 • Wireless LAN Controller

- Centralized WLAN management and auto provisioning
- Manages up to 512 APs with granular access control
- ZyMesh simplifies complex, inconvenient cabling WiFi deployments
- Comprehensive features for WLAN performance optimization and always-on WiFi connectivity
- Wireless LAN performance optimization via dynamic channel selection and load balancing
- Guest authentication by QR code

WAC6103D-I • 802.11ac Dual Radio Dual-optimized Antenna 3x3 Access Point

- Enterprise class 3x3 802.11ac AP supports combined data rates of up to 1.75 Gbps
- "Dual-optimized antenna" allows pattern optimization adapting to wall- or ceiling mount installations
- Dynamic Channel Selection, Load Balancing and Smart Client Steering ensure optimal wireless experience
- Stylish, ultra-slim ID design as the 32 mm height blends perfectly into modern interior decorations
- APFlex™ and Zyxel One Network utilities make deployment simple and fast

WAC6553D-E • 802.11ac Dual Radio External Antenna 3x3 Outdoor Access Point

- Dual-band 2.4GHz and 5GHz 802.11ac Wave 1 Wireless Access Point
- Designed with IP66-rated weather protection which is ideal for harsh outdoor environments
- Advanced IEEE 802.11ac delivers up to 1.75 Gbps combined data rates
- Industry-leading receive sensitivity as low as -102 dBm
- APFlex™, and DCS streamline deployment
- Zyxel One Network is supported

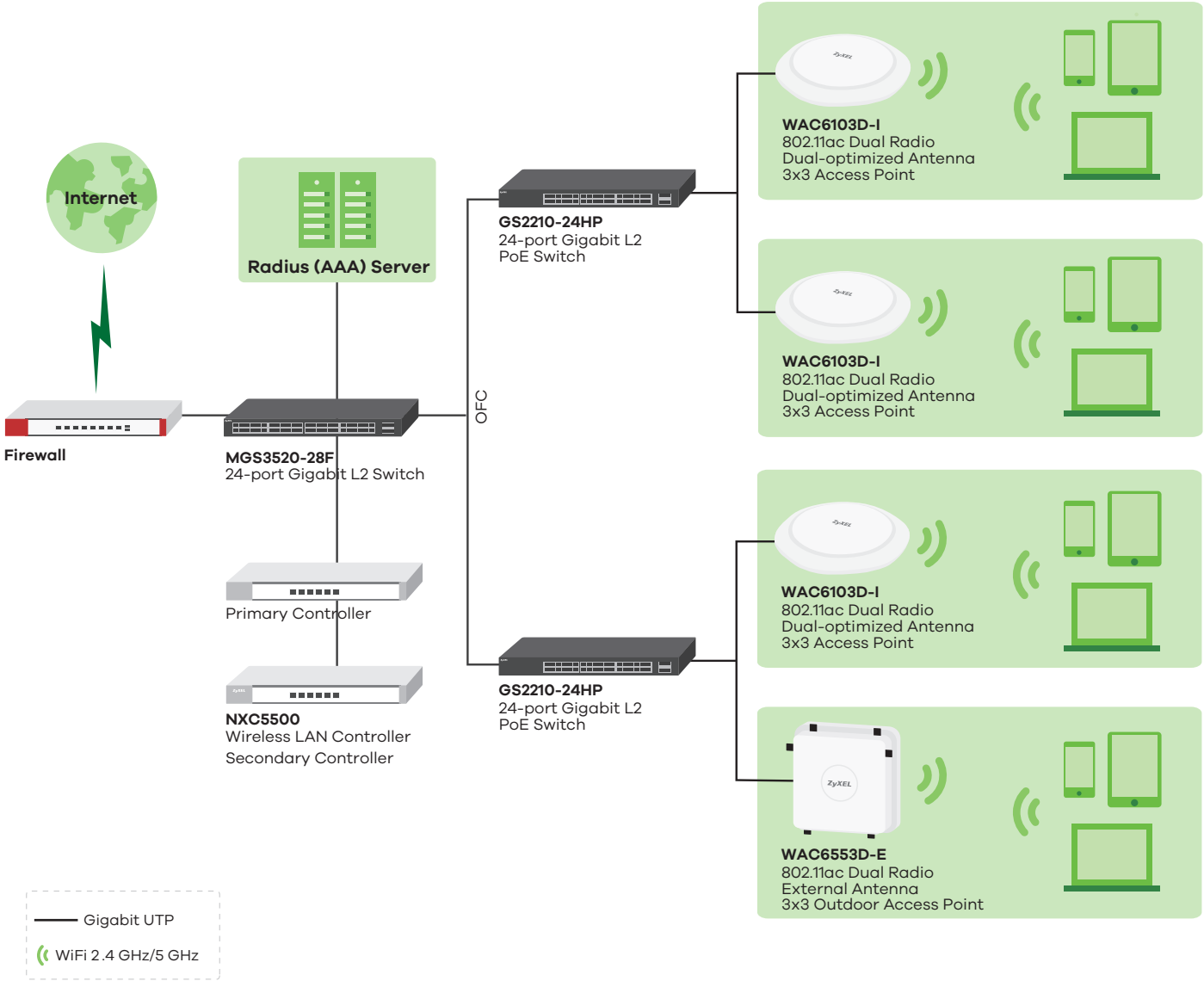## GS2210-24HP • 24-port Gigabit L2 PoE Switch

- GbE RJ-45, GbE combo (RJ-45/SFP) and fixed GbE SFP connectivity
- PoE models comply with IEEE 802.3at PoE Plus with high power budget
- L2 multicast, IGMP snooping, and MVR for convergence
- Enhanced network protection with IP source guard, DHCP snooping, ARP inspection, CPU protection
- L2, L3 and L4 filtering, MAC freeze, port isolation, guest VLAN for improved isolation and access control

MGS3520-28F • 24-port Gigabit L2 Switch

- 24 GbE SFP open slot + 4 Combo Gigabit ports
- 56 Gbps non-blocking switching fabric; 41.67 Mpps forwarding rate
- 16K MAC address table; 12 KB jumbo frame; 4K multicast forwarding table
- Front access; external alarm block (4 inputs, 1 output)
- IPTV, L2 multicast, IGMP snooping, and MVR for convergence
- Enhanced network protection with IP source guard, DHCP snooping, ARP inspection, CPU protection
- High redundancy and resilient architecture with RSTP and port trunking
- Remote configuration & management via IEEE 802.3ah(OAM)
- Tiered service provisioning: the build-in rate limiting feature to control both ingress and egress date rate

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Diagram

Internet

Firewall

MGS3520-28F
24-port Gigabit L2 Switch

Radius (AAA) Server

Primary Controller

NXC5500
Wireless LAN Controller
Secondary Controller

OFC

GS2210-24HP
24-port Gigabit L2
PoE Switch

GS2210-24HP
24-port Gigabit L2
PoE Switch

WAC6103D-I
802.11ac Dual Radio
Dual-optimized Antenna
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WAC6553D-E
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External Antenna
3x3 Outdoor Access Point

——— Gigabit UTP

))) WiFi 2.4 GHz/5 GHz

About Zyxel Communications

Focused on innovation and customer-centricity, Zyxel Communications has been connecting people to the Internet for nearly 30 years. Our ability to adapt and innovate with networking technology places us at the forefront of creating connectivity for telcos and service providers, business and home users. Zyxel is building the networks of tomorrow, unlocking potential, and meeting the needs of the modern workplace — powering people at work, life, and play. Zyxel, Your Networking Ally.