

Article Overview

Wired access networks rely on strategically deployed switches to ensure high performance, scalability, and secure connectivity across enterprise environments.

Case Study Overview

A co-working enterprise deployed a high-performance wired and wireless network across a 70,000-square-meter office campus to support over 5,000 employees and 15,000 terminals. The network included more than 70 enterprise switches for core, aggregation, and access layers, with 48-port PoE switches providing power to APs and security cameras. The deployment ensured high-bandwidth, low-latency connections for cloud computing, AI, and big data applications, while addressing peak traffic congestion and ISO 27001 compliance for secure access .

Key Deployment Strategies

- o Centralized Management and AI Automation: AI-driven centralized switching simplified configuration, monitoring, and troubleshooting, reducing operational delays and human errors. Centralized analytics enabled proactive issue resolution and optimized network performance .
- o Cloud-Managed Switches: Platforms like Extreme Networks' Universal Wired portfolio offered edge-to-core cloud management, automated policy enforcement, and optional MACsec encryption. This approach eliminated the need for extra controllers, reduced operational complexity, and allowed flexible redeployment as network needs evolved .
- o Scalability and Future-Proofing: Switches were selected with sufficient ports and SFP uplinks to accommodate current and future growth. For example, adding 20-30% extra ports ensured the network could handle additional devices without bottlenecks .
- o Security and Access Control: Certificate-based authentication using Cisco ISE allowed devices without proper certificates to be restricted to a default VLAN, while authorized devices gained full network access. This approach enforced 802.1X authentication and VLAN segmentation for secure wired access .
- o Integration with Wireless Networks: Wired switches supported PoE for Wi-Fi 6 APs, enabling seamless wired and wireless integration. This unified approach simplified management and ensured consistent policy enforcement across the campus .

Benefits Achieved

- o Enhanced Network Reliability: Redundant switch architecture and AI-driven monitoring minimized downtime and improved business continuity .
- o Operational Efficiency: Centralized management and automated orchestration reduced manual configuration, troubleshooting time, and operational costs .

Wired Access Case Study of Switch

- o High Performance: The network supported resource-intensive applications with low latency and high throughput, even during peak usage hours .
- o Security Compliance: Certificate-based access control and optional MACsec encryption ensured secure data transmission and compliance with industry standards .

Conclusion

This case study demonstrates that strategically deployed wired switches, combined with AI-driven management, cloud orchestration, and integrated security, can deliver a scalable, high-performance, and secure network. Enterprises benefit from simplified operations, future-ready infrastructure, and seamless integration with wireless networks, ensuring reliable connectivity for thousands of users and devices.

Deployed more than 70 enterprise switches for core, aggregation, and access to support a high-performance and

The document discusses secure wired access and how Cisco ISE simplifies it. Cisco ISE allows organizations to gain visibility and

The company configured every switch as multiple separate sets of user, operational, and control microsegments so that nothing

Extreme's Universal Platforms combine the power of cloud management with next-generation switches and access points that can

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What is Not Covered in This Document? Although this is a case study document for Cisco software defined access,

All of the use cases shown in the Block Diagram and Logic and Translation Use Cases sections of this document are commonly seen

“Cisco SD-Access solution with Cisco DNA Centre, Identity Services Engine, Stealthwatch, and Catalyst 9300 switches help us

Cisco ISE simplifies secure wired access control Cisco Identity Services Engine (ISE) makes it easy to gain visibility and control over

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This case study builds on the previously published Cisco SD-WAN Small Branch Design Case Study which detailed how American

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Two popular, commercial-off-the-shelf devices (one access point and one switch) were used as case studies for the LCA.

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