



The customer summary

Customer name
University of Derby

Industry
Higher Education

Location
Derby, England

Number of employees
33,000 staff and students

Extending Infrastructure-as-Code to the Network

The University of Derby has modernized its data centers with Cisco ACI



Challenges

- Increase network flexibility and automation
- Improve infrastructure security and resiliency
- Simplify and accelerate data center operations



Solution

- Highly automated, software-defined network



Results

- Accelerated network deployments and troubleshooting from hours to minutes
- Automated network patches and upgrades, eliminating manual, multi-day efforts
- Segregated managed and unmanaged devices across four security zones
- Increased application performance and student record page loads

Challenge: Increase data center programmability and automation

With the University of Derby expanding its research focus in recent years, the demands on its technology infrastructure have steadily increased. To meet these demands without hiring more staff, the university's IT team has been modernizing its two data centers with software-defined programmability and automation.

"We established Infrastructure-as-Code with the servers and applications running on our hyperconverged compute and storage platform," says Richard Lock, principal infrastructure engineer at University of Derby. "And we wanted the same level of flexibility and automation with our data center network."

The university's former network had design limitations, he explains. Although Layer 2 had been stretched across the two active/active data centers, resilience and security segmentation at the network level were concerns. The university needed better network performance to support east-west application traffic within the new hyperconverged environment. And there was a desire to simplify network operations and reduce human errors.

The University of Derby chose Cisco® Application Centric Infrastructure (Cisco ACI™), extending Infrastructure-as-Code to its data center network. Using Cisco Nexus Dashboard Orchestrator and Ansible playbooks, the network is highly automated and has accelerated the university's data center operations.

"Rolling out new VLANs takes minutes instead of hours, using repeatable code we know is safe," Lock says. "And we can implement changes or patches collectively instead of doing it manually, switch-by-switch. What used to take multiple days is now a hands-off, set-and-forget process."

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Richard Lock

Principal Infrastructure Engineer,
University of Derby

Providing connectivity for a new compute and storage platform, the Cisco ACI network has also had a positive impact on application speeds.

“There’s been a significant improvement in performance,” Lock says. “Ninety-nine percent of page loads from our student records system are now delivered in less than three seconds, which has a direct impact on the user experience.”

Boosting security and access control

Without full fault isolation, the university’s previous network was susceptible to certain disaster scenarios. Cisco ACI has eliminated those vulnerabilities. The university’s two data centers are now fully synchronized, and a variety of internal tests have validated the efficacy and seamlessness of automatic failover. What’s more, the university is leveraging the segmentation capabilities of Cisco ACI to isolate managed and unmanaged devices across four security zones.

“We’ve never had segregation between roles and devices until now, and having that flexibility is very attractive,” Lock says.

In addition to segmenting its network, the university is using Cisco Identity Services Engine (ISE) to improve security management and access control.

“ISE allows us to establish a common, software-defined security policy across our data center and campus networks,” Lock says, noting the latter is expected to be transitioned to Cisco SD-Access. “It’s focused on users and workloads instead of the network, and gives us more flexible and dynamic access control.”

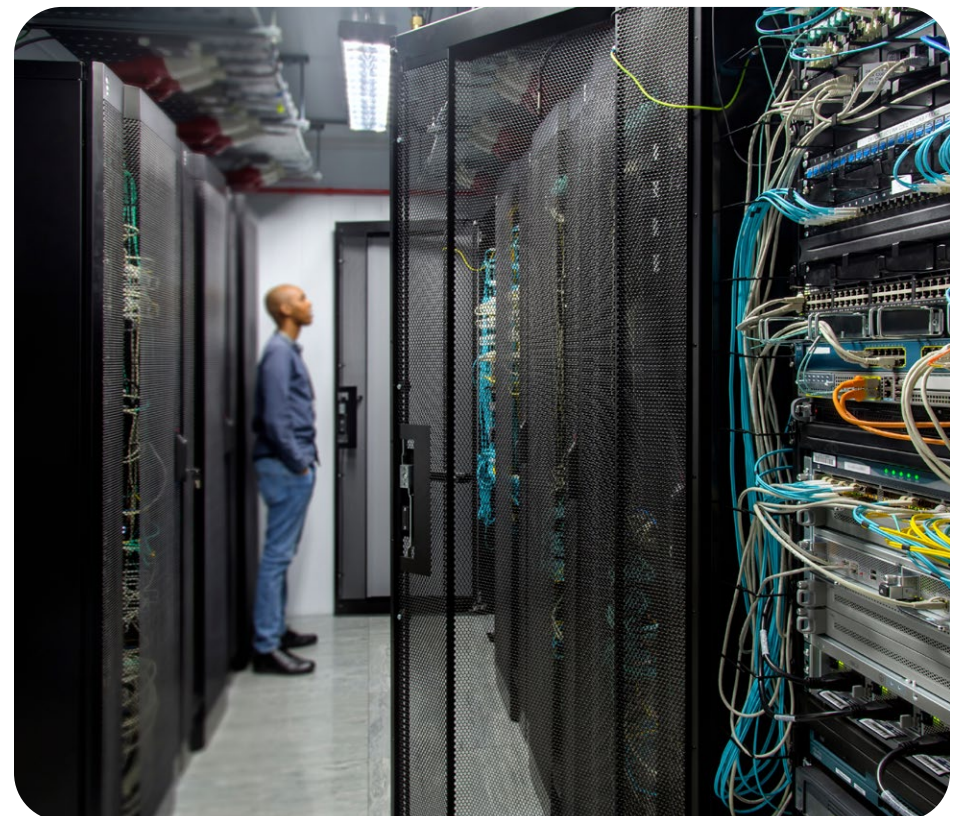
If there’s ever a problem, Lock says the increased visibility and data insights provided by Cisco ACI help speed up troubleshooting and mean-time-to-repair (MTTR).

“The network provides health scores, and we can easily drill down if something is flagged,” he explains. “There’s no need to go into individual switches or third-party monitoring tools. Troubleshooting takes minutes instead of hours.”

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Quickly adapting to the pandemic

COVID-19 was the ultimate stress test for the university's new data center network, and according to Lock, it passed with flying colors.

"Cisco ACI is very flexible and our virtual learning environment was already on the network, so we didn't have a problem with the increased load," he says. "It took us one or two days to get everyone working from home and carrying on like normal."

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The university can also extend its network – and associated policies – to the cloud as future needs dictate.

"We're not currently planning to do so, but it's certainly an option for us," Lock says. "The combination of Cisco ACI and Cisco Nexus Dashboard Orchestrator make it easy to stretch network policies and migrate workloads to Azure and other cloud environments."

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Product list

- [Cisco ACI](#)
- [Cisco Nexus 9000](#)
- [Cisco Nexus Dashboard Orchestrator](#)
- [ISE](#)
- [Cisco SD-Access](#)