



# University of Liverpool future-proofs its twin data centres with innovative ACI Multi-Pod architecture



The University of Liverpool is one of the UK's most vibrant, diverse and forward-thinking universities. Founded in 1881, and a member of the prestigious Russell Group of universities, it has more than 22,000 campus-based undergraduate and postgraduates, enrolled onto some 400 different courses.

The University is currently part way through a ten-year strategic plan to further extend its reputation as a world leader in research. It also has ambitious plans to boost collaboration and inter-disciplinary working and has already established links with some 1,300 external organisations.

As well as its main campus in Liverpool, the University also has campuses in London, Singapore, and Suzhou, China. It also has approximately 10,000 online students located across 160 countries.

## Agile service delivery is key

With its increasing focus on external collaboration, online learning and ground-breaking research, it is vital that the University's underlying IT infrastructure enables agile service delivery and global connectivity.



Central to this infrastructure are the University's two data centres, which are both based on its main campus close to Liverpool city centre. While many organisations run a primary data centre and a dedicated disaster recovery (DR) facility – which will only operate in the event of a failure or outage at the primary site – the University's two data centres are active around the clock, with both fulfilling the role of primary and DR site on a dynamic basis.

This configuration, was designed to enable optimal utilisation the University's data centre estate.

## Technology refresh

The University recognised that it needed to upgrade its data centre infrastructure. Its existing architecture – a traditional three tier infrastructure – was built on Cisco Nexus 5000 and 2000 series switches, both of which were nearing end of life. Moreover, to improve the efficiency of its data centre operations and to support a growing IT requirement, the University needed to invest in a solution that would centralise control and simplify the delivery of new applications.

The University elected to upgrade to Cisco's software defined data centre infrastructure, Application Centric Infrastructure (ACI). Based on a clos network topology, rather than a three-tier architecture, this would provide more reliable, scalable data centre operations.

Following a competitive tender exercise, the University of Liverpool chose the WhiteSpider team to design, test and deploy the new data centre infrastructure. The decision was based on WhiteSpider's unrivalled experience of managing ACI deployments in complex environments.

## Applying the WhiteSpider methodology

Our team followed WhiteSpider's systematic and proven framework for project delivery, which encompasses a number of steps to ensure the solution would deliver on the expected outcomes:

- At the outset, we undertook a comprehensive audit of the University's existing IT infrastructure plus its various technology and business interdependencies, to ensure the new data centre would interoperate effectively from day one, as well as for the long term.
- We also hosted a workshop to explain the proposed design and rollout, providing a number of migration and deployment scenarios, taking into account the potential addition of extra virtual and physical servers, additional switches and new policies in the future.
- Once the infrastructure was fully tested and operational, the team undertook a comprehensive four-day knowledge transfer programme, to ensure the University's network team was fully equipped to manage the infrastructure on a day-to-day basis.

## Migrating to a multi-pod architecture

At the outset of the tender process, the University specified it required a significant upgrade of its data centre infrastructure, migrating from its legacy three tier architecture to a more flexible 'clos' architecture. As the University's IT team was eager to manage both the data centre facilities as a single entity it the initial design concept was based a Stretched Fabric architecture which would enable this single point of management.

The WhiteSpider team, however, quickly identified that the emerging Multi Pod architecture would further enhance the resilience of the fabric (by providing a single availability zone split into multiple fault domains) and delivering simpler management of the active-active pair of data centres - ensuring the University's network team could administer the entire estate efficiently as a single fabric.

## Applications and Services

The University has quickly started to see the benefits of the ACI platform. With higher throughputs and lower latency, the new data centre infrastructure has dramatically improved application performance.

For example, the widely used, latency-sensitive whiteboarding application, used by lecturers use to teach both inside lecture theatres and to remote students, is now visibly faster and more responsive.

## Other Benefits

In addition to improved performance, the Multi-Pod architecture improves the resilience of the University's underlying infrastructure. Most importantly, however, with ACI's simplified, flexible architecture and centralised control, the University is now better placed to boost collaboration with other organisations across the world through rapid scalability and service delivery.

*"WhiteSpider managed the transition smoothly, allowing us to significantly save time, money and resources. Now most day-to-day tasks are taken care of and we can really focus on making IT lead digital change in our organisation."*

*Craig Reynolds, head of IT*