



UNIVERSITY of York

The University of York battles against network complexity, turning to VMware NSX as the backbone of its new agile approach to IT

INDUSTRY

Education

CORPORATE HEADQUARTERS

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WEBSITE

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OBJECTIVE

The University of York wanted to refresh its IT systems in order to develop a more manageable and sustainable solution. Looking to make IT infrastructure an enabler for the business' drive toward greater agility, the organisation looked to speed up the time it took to provision infrastructure; removing bottlenecks and limiting the amount of time the IT team had to spend in maintaining the current system.

SOLUTION

The University of York selected VMware NSX to offer software-defined networking and help deliver self-service server provisioning for the organisation's end users.

As a member of the Russell Group, the University of York is a research-intensive education establishment. With users becoming increasingly reliant on IT, the university found that its network was beginning to struggle with current demands. IT is vital in attracting the top research talent – something that impacts on the university's standing and attracts prospective students.

Looking to refresh its infrastructure, the university invested in VMware NSX. Although the system is not yet in production, the organisation is expecting a number of benefits – including the development of a self-service server provisioning portal that will allow end users to reduce the wait for a server from two weeks to less than 15 minutes.

Other benefits include a cost reduction on load balancing hardware replacement, a more efficient system for the IT team – with less resource required for regular network tasks – and improved security through microsegmentation.

Customer profile

Founded in 1963 with just 230 students, over the last 52 years the University of York has continued to grow and now boasts a student body of nearly 16,000 – all ably supported by around 3,000 teaching and administrative staff. A member of the Russell Group of research-intensive universities, the institution also boasts over 2,000 researchers across 30 academic departments and research centres.

The university has ambitious plans for growth and over recent years has invested £750m in expanding the campus with seven new buildings to help increase the capacity for students.

Organisational challenges

Operating as a converged services model to support the University of York's IT infrastructure and Library, the Information Directorate team consists of around 200 people. However, of these only 75 work in IT to provide a central

IT service, including networking for both internal and external connectivity, servers, managed desktops, storage and customer code development both to integrate systems and develop custom applications.

The networking and data centre team is smaller still with only 10 employees who are responsible for all aspects of the network across both of the University's campuses from development and strategy planning through to maintenance and operations.

Battling Complexity

It is something of an understatement to say the institution's IT infrastructure had become complex. As Mike Donley, Windows & Virtualization Team Leader at University of York explains: "Due to the growth of the University, the network had grown very rapidly over the last few years and it was a good time to look at how we provided services and increase our efficiency substantially."

The university had moved from a single data centre (with a disaster recovery suite) to an IT estate which used two purpose built data centres across two campuses. Running the network across both facilities was becoming a challenge; the university had VLANs stretched

ORGANISATIONAL IMPACT

- Reduced costs by removing the need to replace load balancing hardware as frequently and removing the need to buy a large data centre firewall
- Reduced the amount of time the IT team had to spend in repairing, maintaining and extending the network for ad hoc requests
- Created a self-service server provisioning portal, allowing end-users to spin up a new server in only 15 mins (as opposed to 2 weeks under the previous system)
- Servers are provisioned with automated security, saving the IT team time and improving organisational security
- NSX's Microsegmentation allows critical and non-critical apps to be managed more easily

across both data centres meaning that the system was far from optimized: "We had no segregation with critical apps running alongside non-critical solutions. The way we ran our virtualization systems and network had become very complex and we were keen to replace it with something more agile and easier to manage," adds Mike.

"From an operational perspective, disparate networks meant it could be hard to deliver services quickly enough. As the organisation was speeding up, networking and security were becoming a bottleneck. The business, as a whole, was driving towards a more agile strategy in order to better meet the demands of today's students and researchers. We wanted IT to be a key part of this transition, bringing in new processes in that could speed up projects and ensure we would be able to deliver applications and services to end-users as quickly as needed. Ultimately, we wanted IT to become an enabler in this push for agility. So from that point of view, refreshing our IT systems was a business decision and we wanted to find a tool that could help deliver for this new model."

Improving Efficiency

Cost was also an issue, not simply in pure monetary terms but also in resource. The complexity of the systems meant that maintenance or repair work was becoming more difficult. Even something as easy as adding a server would require numerous people. And with only 10 people on the team it could tie up key members of the department for weeks at a time.

"We wanted to move to a DevOps model," continues Mike. "We were wasting too many skilled people's time in building servers. By removing the silos from our IT estate the DevOps model would allow us to speed up many of the processes involved in extending or adapting our infrastructure.

Additionally, because it used to take so long to provision new IT estates, the University found its academics would go off and set up their own servers without the IT team's help, often with messy results that would take the IT department a long time to fix. Issues over under-the-radar-costs, added security risks and additional complexity meant change was imperative. Mike explains:

"We wanted to begin offering a self-service tool for researchers, student organisations and staff to provision their own servers quickly and easily. Any tool we implemented had to help us deliver on this."

Attracting Talent

As a member of the Russell Group, the University of York relies on having access to the most talented academics and researchers that the world can offer. Improving the IT facilities would help attract the skilled personnel the university needs to maintain its standing as an academic powerhouse: "Part of our challenge was to help York maintain its competitive edge in the education industry," adds Mike. "We saw an opportunity to make the IT facilities a weapon for growth, showing prospective recruits that we are a very serious institution that can offer a high quality research experience."

Improved Security

Furthermore, information security is a key issue for the University. As Mike notes, "We had a segmented environment where different applications were hosted on physically separate environments. This made it time consuming to manage, while the lack of internal network restrictions or firewalling reduced security."

Security is crucial for an institution like the University of York: it has a lot of intellectual property being created by academics and researchers and some departments also have large amounts of sensitive data. Keeping this data secure is key in helping the University compete and enabling it's world class research.

Finally, the university has many compliance demands. Issues over point-of-sales systems, personal identification and information, and social media mean that the IT department needs complete control over its data.

The solution

The organisation decided to embark on an infrastructure refresh, looking at a variety of different solutions designed to enable software-defined networking – including Microsoft's Hyper-V. However, the University decided that Microsoft could not offer as much value for money because the IT team was already skilled

in using VMware, and viewed the facilities offered by VMware as more advanced and easier to manage.

Mike notes: "Having used vSphere for a number of years we had already made the investment in terms of skills. Our team was familiar with the system; they enjoyed using the platform and trusted that it could do the job we wanted."

Selecting VMware NSX, the department was so sure of its decision and the product's technical capabilities, that it did not run a proof of concept, instead choosing to begin the deployment process as quickly as possible: "With our existing knowledge of both VMware and competing products, we felt very comfortable with our decision" says Mike. "VMware have been very helpful in providing support information and guidance enabling us to feel confident about implementing NSX on our own."

While the new system is not in production yet, Mike confirmed that all of the university's primary workloads will be reliant on NSX: over 800 virtual machines carrying everything from database servers, application servers, web servers, virtual learning environments, student records, the timetabling system, the library, funding requests and file servers. This equates to around 85 per cent of the server estate and this percentage will increase in the near future.

Business results and benefits

The University of York is expecting its deployment of VMware NSX to yield a significant number of benefits, helping to transform the way it can deliver IT services.

Bringing Better Services to the Users

NSX will play a key part in enabling the university to deploy self-service server provisioning for its users. Under the complex old system setting up an ad-hoc server (for a research project or a student society's website) would have taken at least half a day of work, as well as up to a week of prep time, but now users can spin up a server in only 15 minutes.

"The bonus," adds Mike, "is that NSX can be fully automated so that any newly provisioned servers will come with the right security set-up. While we used to have users go off and set up their own

servers without our help, this new system will make our lives so much easier. We don't have to worry about security risks from users as we can trust NSX to have everything set up properly."

A more secure environment

On top of this, as NSX has a micro segmentation function, the university's infrastructure security will be improved. "Bringing all of our applications into the same environment will be safer, easier to manage and help save time for our IT department, says Mike. "Currently key IP has to be kept in separate silos to ensure security. The micro segmentation enabled by software-defined networking will allow us to be more flexible in how we store and access this information. That means our academics – and the academics we want to attract – will know that their work is under lock and key, all student information and personal identification software will be completely secure but we will have complete operational flexibility in how this data is stored. With micro segmentation we have complete control over the individual workloads and can automate specific security protocols at the hypervisor level – improving on the traditional 'hard perimeter' model of data center security."

Cutting Costs

"We're expecting a number of cost savings from using NSX", says Mike. "First of all we will be leveraging the inbuilt load balancing functionality. At the moment our load balancers are physical, and very expensive as we have so much traffic running across the network that we need to buy high-capacity hardware. With NSX this will no longer be the case, we expect continued cost savings

The university's networking team will also be able to deliver more value by reducing the time spent on routine tasks: "We can do our jobs much faster – for example, while previously setting up a new subnet took up to two weeks, it can now be done within 30 seconds."

A Forward-Thinking Institution

"Perhaps most importantly," concludes Mike, "NSX helps us be more competitive in the education industry. It has given us more agility so we can bring services to the end user far quicker than we could

VMWARE CASE STUDY

SOLUTIONS USED

- VMware NSX

before. This is especially important for researchers who often rely on us to set up IT infrastructure for them as part of their funding grant requests. If we can help more researchers achieve gain grants it will have a significant impact on the university's bottom line and the level of talent it can attract."

Future

The university is yet to put NSX into production though is aiming to go live later this year. "VMware NSX is a big part of our current IT refresh. I'd go far to say that it will be the backbone for us, a fundamental component."

In the future the institution will certainly look to work with VMware: "We don't have any specific plans yet but if VMware's vision continues to align with our own, as we hope it will, then it's a no-brainer."

