



The UK Atomic Energy Authority (UKAEA) Case Study

BACKGROUND

The UK Atomic Energy Authority (UKAEA) carries out nuclear fusion research and development in the UK on behalf of the government. Working with partners around the world, scientists and engineers from UKAEA conduct research into developing nuclear fusion as a new source of clean energy for the future. UKAEA researchers carry out extensive experimental studies, predictive modelling and data analysis, which demand a resilient and high performance IT infrastructure. An efficient communications system is also vital for UKAEA, to enable its staff to collaborate effectively with peers at other international research sites.

THE CHALLENGES

Fit for purpose network

UKAEA operates two nuclear fusion experiments at its Oxfordshire location, the European JET device and the UK's own MAST experiment. Since 2000 the IT

infrastructure and support services of these two experiments has been moved to centralised management. Both experiments operated a distributed structure of diverse switches and routers from different manufacturers, installed at various times over the last decade. Not having been replaced since 2001, UKAEA's existing core switches and routers had also reached end of life support. Oliver Hemming, Central Computing Group Leader, CODAS & IT Department and his team of 3 staff are responsible for IT infrastructure and services at UKAEA.

"UKAEA holds a responsibility to deliver research information to key government and European research stakeholders. This demands a high performance and always-on network environment," said Hemming. *"The legacy infrastructure installed at the two sites simply wasn't capable of delivering the class of service we needed, and this was affecting user productivity. Previously linked by an*

aggregated pair of 10Gb fibre and one 1Gb fibre channels, port capacity was being exceeded, Power over Ethernet (PoE) was unsupported and bandwidth capacity between the core switches at each site was insufficient."

Managing budgetary constraints

Akin to many sectors, UKAEA has faced cost cutting measures in its research, and expenditure on core services needs to deliver the optimum level of service at the lowest cost.

"Optimising our investment was a key consideration in upgrading our LAN infrastructure. Minimising the cost of the technology itself was critical, as was reducing our overall ongoing operational overheads," recalled Hemming.

Improving communications

As part of its IT and communications infrastructure, UKAEA was using an analogue telephone system with its own onsite exchange. The support

contract for this system was coming to an end, so UKAEA made the decision to move to an IP telephony solution to provide more flexible communications for its staff.

“Our teams need to collaborate across the globe effectively, using voice conferencing and sharing data analysis for example, so the initial business case behind upgrading our LAN infrastructure was built around the need to support a new IP telephony system,” commented Hemming.

THE APPROACH

UKAEA went to tender under the JISC framework agreement to find a new supplier to support a new high-throughput, core network infrastructure.

Of the twelve suppliers that were approached with the Request for Proposal (RFP), five responded - one of which was Vanix, a highly skilled systems integrator and Extreme Networks Diamond Partner, specialising in high performance networks. With extensive experience in networking and security in the public sector, Vanix (part of the Ampito Group) is an approved supplier for the JISC Framework.

“We needed to choose a partner that understood our market, was easy to do business with and would deliver on time, and to budget. Vanix provided us with a very thorough response to our RFP, and it was clear from the start that they understood the complexities of our sector and had extensive experience in delivering solutions in complex network environments,” said Hemming.

“Vanix is one of the most professional and knowledgeable suppliers we have dealt with, and the entire process of upgrading our backbone infrastructure was seamless.”

Oliver Hemming, Central Computing Group Leader, CODAS & IT Department UKAEA

THE SOLUTION

As part of its detailed tender response Vanix proposed a future proofed and resilient core and edge switch and routing infrastructure built around the Extreme Networks platform for UKAEA.

“We wanted to invest in a platform that provides us with a building block for the future, and we knew that Extreme Networks could deliver the capabilities we needed at the right price point. Our choice was confirmed when we spoke to other Extreme customers which had undergone similar upgrades,” commented Hemming.

The proposed solution comprised groups of network switches from Extreme Networks, consisting of the X670, X440, X460 and X430 platforms deployed at the core, distribution and access layers.

“We had a clear idea of what we wanted from the start as the technology we needed to replace was fairly standard. We wanted prospective suppliers to affirm our choice, and in fact the solution that Vanix proposed was simpler than we originally suggested,” Hemming added.

Future proofed for software defined networking

The UKAEA tender mandated that the solution should allow for Software Defined Networking (SDN) to enable the research organisation to preserve its investment and to avoid vendor reliance in the future. Designed to evolve and keep pace with emerging security, wireless, and converged SDN infrastructures, the Extreme Networks SDN platform delivered by Vanix was fully compliant with this need, ensuring that UKAEA made a solid investment for the future.

Ongoing support

As well as supplying the Extreme Networks equipment, Vanix also now provides UKAEA with ongoing support in the form of a 24x7 helpdesk service.

“During implementation Vanix provided us with a safe pair of hands to turn to when we had a query. Their lead technical engineer, who himself comes from a research background, undertook invaluable knowledge transfer to our own network engineers to help us become self-sufficient,” said Hemming. *“Moving forward it’s reassuring to know Vanix are there for support when we need them.”*

THE BENEFITS

Working with Vanix

“Vanix is one of the most professional and knowledgeable suppliers we have dealt with, and the entire process of upgrading our backbone infrastructure was relatively seamless. Throughout the implementation, they kept everything on track with a

consistent project management team, ensuring we were kept fully informed with clear communications and an accurate roadmap,” he added.

Enhanced network performance

The new core network has increased throughput and fully supports UKAEA’s requirements, both now and in the future. *“Due to the increased throughput capabilities of our new backbone infrastructure, users that were previously challenged by poor network performance are now benefitting from improved productivity. It’s also reassuring that our network is now highly resilient – our users are now much better protected if we were to experience a failure.”*

Meeting budgetary requirements

Having worked extensively in the public sector, Vanix is very experienced in meeting budgetary and timing requirements. The complete solution, encompassing equipment, support and services, was supported by a competitive pricing framework to meet UKAEA’s budgetary requirements. *“One of the challenges we faced was ensuring that the equipment was delivered before a certain deadline to ensure it complied with our budget period. We only had five months within which to make the switchover to our new backbone, and Vanix made sure this happened.”*

Enhanced management

Management of the new LAN infrastructure is now easier for UKAEA’s IT team. The solution includes one unified operating and management system across all platforms, allowing UKAEA to fully monitor and manage its IT estate and to distribute software and firmware updates with ease.

Improved communications

Its new high performance infrastructure also provides UKAEA with full support for IP-based video and voice traffic, with the ability to prioritise time dependent protocols and applications, like video conferencing and voice. This ensures that UKAEA staff are now able to enjoy better quality communications to support their work, and the overall costs of international communications are lowered.

THE FUTURE

“Like many organisations, we have cloud systems on the agenda and are looking at how cloud hosting, cloud storage and virtualisation could enhance the services we deliver to our users, and upgrading our network was just part of this journey. As our facilities adapt and expand, we need to be able to provide new IT services to our stakeholders. Our new network backbone provides us with a future-proofed platform to enable us to achieve this,” concluded Hemming.

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