

The University Hospital Schleswig-Holstein (UKSH) delivers improved performance and reliability with Arista campus network

Highlights

Challenge

A major consolidation and building project prompted University Hospital Schleswig-Holstein (UKSH) to upgrade its legacy network to a spine and leaf Arista Network following a two-year tender and extensive evaluation process.

Solutions

- Arista 7000 Series spine and leaf switches for high performance, low latency and scale
- CloudVision and DANZ Monitoring Fabric
- Arista Advanced Services to guide through the migration and automation with CloudVision

Results

- Improved network and application performance and reliability
- Open standards-based approach to simplify support and future upgrades
- Consistent Extensible Operating Systems across entire network simplifies management tasks

As one of Europe's largest medical centres, University Hospital Schleswig-Holstein chose Arista as its core network technology to help improve performance and reliability to meet the growing needs of IT to delivering patient critical health care and ongoing medical research.



Project Background

The University Hospital Schleswig-Holstein (UKSH), with its core locations in Kiel and Lübeck, is one of the largest medical care centres in Europe. It serves Germany's northernmost federal state and guarantees medical care at the highest level, especially for patients who require highly differentiated diagnosis and therapy. Alongside delivering health care, UKSH conducts research and provides teaching through multidisciplinary centres. With 14,000 employees in over 85 clinics and institutes, UKSH is the largest employer in Schleswig-Holstein.

Challenge

A key point in the creation of UKSH, was the 2010 merger of hospital campus' in Lübeck and Kiel that formed the modern organisation and provided the perfect opportunity for UKSH to reorganise and upgrade its IT and network connectivity to deliver a more reliable and efficient infrastructure to support its staff, applications and ongoing research projects within the enlarged campus.

In 2017, as Jan Eckloff, Head of Network Operations at UKSH Gesellschaft für IT Services mbH explains, "...this was the point where we really wanted to rethink our longer-term strategy. What are the major trends in networking? What could be beneficial for a university hospital?"

For its network UKSH had previously been a long-term customer of a traditional networking vendor, but with the vendor's failure to progress its networking technology, it was felt that a new supplier with a more modern approach was needed to take the UKSH network forward. UKSH initially looked at an open source-based network switching solution, but following a brief proof of concept it was decided that this option was not mature or reliable enough to support its demands including more east-west traffic on its network.

Instead, Eckloff and his team began a deep evaluation of the market with the goal of moving away from its current three tier network design that was suffering from severe local loop bottlenecks and towards a more progressive spine and leaf design favoured by cloud providers.

"If you look at the top right quadrant and adjacent zones of network switching within the Gartner magic quadrant, well we spoke to them all!" explains Eckloff. "Our goal was to prepare the network for the next decade and as a public funded hospital, we have limited investment over a relatively long period, so we were looking at what could reassure management and offer us the best future capability."



Solution

UKSH undertook an EU-wide public tendering process that took a total of 2 years to complete, including its preparation. The processes entailed deep technical evaluations and, as Eckloff explains, "The result of such a bidding process is to find a combination of quality while meeting the specifications for required functionality and of course, to a large extent, it was the price of the package."

Based on this extensive evaluation process UKSH selected Arista as the solution that scored highest across the aggregate criteria. In total, UKSH deployed 10 Arista 7500R series switches combining high density 10/40 and 100GbE with low latency and wire speed performance - designed for large virtualized data centres, internet peering, cloud networks and mission critical environments. To deal with the increased east-west traffic, 7500R Series features a FlexRoute Engine that provides the flexible scalability to support deployment as a routing platform with Internet scale routing enabling capabilities not natively available in merchant chipsets.

UKSH deployed an additional 60 Arista 7280R Series fixed configuration switches that combine dynamic and deep buffering for lossless forwarding with high density, internet scale table sizes and comprehensive L2 and L3 features. The new network uses a spine and leaf topology along with an Ethernet virtual private network (EVPN) that allows UKSH to unify the control plane and separates it from the data plane with the option to support multiple protocols including MPLS, segment routing, Virtual Extensible LAN (VXLAN), Network Virtualization and other data-plane encapsulations.

To complement the solution with additional provisioning and visibility tools, UKSH deployed Arista CloudVision and the DANZ Monitoring Fabric software. The Arista Advanced Services team was fundamental in guiding the UKSH team through the migration and automation with CloudVision to ensure a smooth roll-out to the new network structure.

As part of the project, alongside the move to a new spine and leaf design, the UKSH network distribution layer was upgraded from predominantly 1Gb links to multiple 10Gb links with cores operating at 40Gb and 100Gb in parts. The flexibility of the 7000 series allows UKSH to further upgrade as needed based on the evolution of its requirements.



Conclusion

A major change for UKSH was the consolidation of most of its IT into two new data centres in Lübeck which serves as dual active configuration for resiliency – and over the next few months, two new dedicated 100G fibre links will link the two campus' together to allow for an easier to manage, centralised IT capability.

Around 90% of the network has been migrated from the legacy networking vendor platform and Eckloff explains that the change has been dramatic both in terms of better performance, but also reliability. "There is a new feeling among the team responsible for networking that we have a trusted environment that we can rely on – where a lot of the incidents we were previously dealing with really can't happen anymore!"

"Before we had to work in firefighter mode," he says. "All through the week, if you had some other things to do or you're trying to plan ahead, you always had to use extra hours just to keep the network running. We were constantly looking at the ticket system, looking at which problem with the highest priority to solve next. Now, we really have time to discuss issues on a higher level with more communication between the different branches of our IT support group to work with applications teams and clinical researchers to find out how we can help meet their demands."

Examples of this is forward-looking position offered by the improved network is a new IPTV solution that delivers over 100 TV channels to each patient's bedside – as well as an upgraded WI-FI connectivity. The team is now progressing a major project to enhance network security elements. "Overall, this has been a very successful project," says Eckloff, "and it highlights UKSH in a very positive light for new researchers who want to work in our campus, knowing that the IT environment is able to serve their needs – both now – and into the future," he concludes.

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