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University of the Sunshine Coast selects Arista Networks for major data centre upgrade to power digital teaching innovation

Highlights

Challenge

UniSC, a major Australian University, selected Arista Networks to deliver a scalable data centre networking architecture offering enhanced performance, reliability, and flexibility.

Solution

- Dedicated Spine and Leaf architecture based on Arista 7050 switches
- Arista EOS[®] and CloudVision[®] for workload orchestration and workflow automation with enhanced network monitoring and visibility
- Robust network policy and security controls through micro-segmentation using VMware NSX-T

Results

- Improved data throughput and reliability with enhanced workflow flexibility
- Proven roadmap from 100 Gb/s to 800 Gb/s within a more open supplier ecosystem
- Simplified management with deep insights into network and application telemetry

As one of Australia's leading academic institutions, The University of the Sunshine Coast (UniSC) has continually invested in technology to support over 12,000 students across 19 subject areas taught at its 5 campuses across Southeast Queensland. With its aging data centre network starting to fail as switches reached end-of-life, UniSC selected Arista for its new Ethernet based spine and leaf data centre network architecture that has delivered reliability and performance with the flexibility needed to adapt to new digital teaching and distance learning requirements.



Company Background

The University of the Sunshine Coast (UniSC) is a young, fresh university driven by an unwavering belief that community and culture is just as important as a world-class education, delivered by world-class educators. UniSC opened its first campus in 1996 to teach around 500 students and today, its award-winning facilities host around 12,000 students spanning five campuses across Southeast Queensland, an area of unique geographical importance. UniSC is the world's only university with campuses on three connecting UNESCO biosphere reserves and the World Heritage Listed K'gari island.

Challenge

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UniSC has invested significantly in facilities and digital technology to support the 26 research fields it offers that are ranked at world standard or above. These include its state-of-the-art robotics and automation lab and CAVE2, 320-degree immersive 3D space for interacting with complex visual data - one of only four of its kind in the world, and the only one used for teaching and learning.

To support its continual investment in technology, in 2014, UniSC invested in a dedicated data centre that today supports hundreds of systems vital to its academic, teaching and research activities. Although fit for purpose at the time, with increased use of video, interactive content, and simulation – plus an enlarged student body; the data centre was starting to experience hardware and software issues along with occasional small outages.

"A lot of the networking equipment was starting to reach end-of-life and it became clear that the chance of a critical failure was becoming more likely," explains Angela Dales, Network Systems Team Lead for Information Technology Services at UniSC. "With so many systems dependent on access to the data centre, in 2020, we started a project to not just refresh the data centre but to build a new data centre architecture with the flexibility to adapt to our future IT requirements."



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Solution

The legacy data centre network was based on a 10GbE three-tier architecture of core, aggregation and top of rack switches. Although adequate in 2012 when the original data centre was designed, this approach offers limited scalability and flexibility. For the new design, UniSC decided to move to a 100GbE spine and leaf approach that would not only simplify deployment and management but also allow network virtualisation along with support for automation, orchestration, and segmentation capabilities.

"This is a major investment for the university and will impact all of our operations for the next decade, so we created a detailed tender document and approached a number of suppliers," explains Dales.

Dales and her team conducted an extensive Proof of Concept of the proposed Arista solution against an evaluation framework. "This was to ensure the technology met our standards before deployment," says Dales. "This set a great level of confidence going into the implementation stage.

UniSC deployed a spine and leaf, layer 3 network using highly resilient 7050 series switches supporting a flexible combination of speeds including 10G, 25G, 40G and 100G in compact form factors. The 7050X3 supports a rich feature set including single-pass VXLAN Routing for network segmentation, Dynamic Load Balancing (DLB) for optimized path selection and the addition of Network Address Translation (NAT).

To strengthen security and enforce more effective network policy management, UniSC has implemented micro-segmentation using VMware NSX-T as well as deployment of Arista CloudVision[®], a multi-domain management platform that leverages cloud networking principles to deliver a simplified NetOps experience.



Conclusion

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UniSC conducted two data centre upgrades at its main campus in the first year. For the next phase, UniSC is investigating migrating workloads to the cloud and potentially extending the Arista fabric to a third data centre facility to enhance resiliency and load balancing options.

"One of the things we really appreciate is that there is just a single, unified operating system image across every Arista switch which makes management far simpler," explains Dales. "Alongside significantly better performance, we have also seen a reduction in energy consumption on a per port basis - even as we have moved from 10G to 100G networking."

Following on from social distancing requirements introduced during the Covid pandemic, in late 2022, UniSC made the bold decision to no longer mandate traditional lectures either on campus or in person. These are instead replaced with a mix of in person seminars for students who wish to attend, supported with interactive online learning materials, video collaboration and other digital learning applications.

"Although carrying out a data centre migration during the pandemic was, at times, challenging, the end result could not have come at a better time with the university adopting more interactive and digital learning methods," explains Dales. "The data centre is at the heart of so many things we need to do to deliver the next generation of educational tools and the success of this project is part of the commitment we hold to our students to make sure that IT is there to help them succeed," Dales concludes.



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