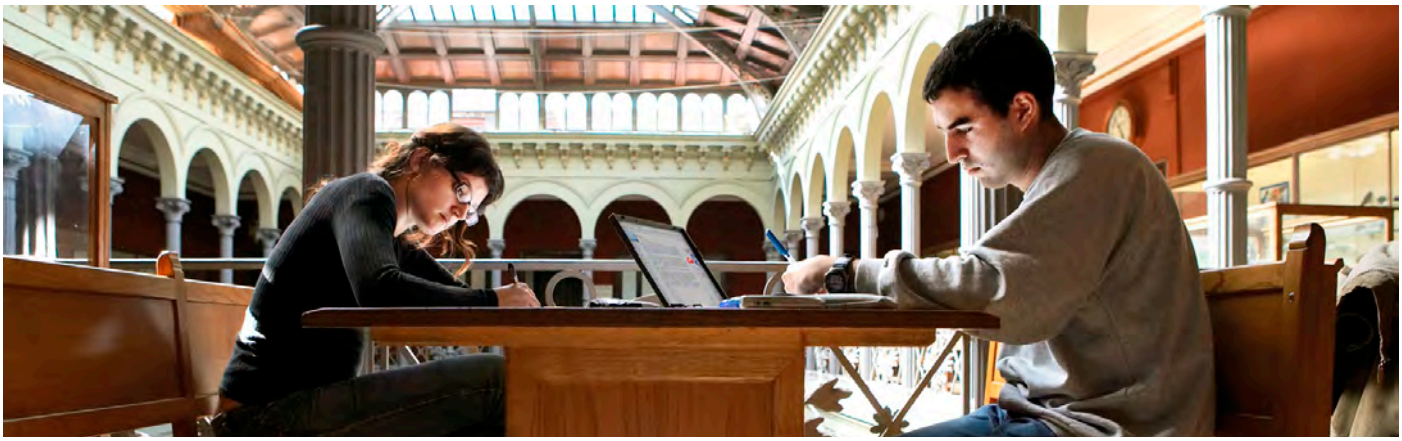
Danish University Focuses on Being in the Top 100 Worldwide

Customer Case Study



Aarhus University seizes 21st century opportunities with Cisco Unified Data Center, Borderless Network, and Collaboration integrated solution

EXECUTIVE SUMMARY

Customer Name: Aarhus University

Industry: Higher education

Location: Aarhus, Denmark

Institution size: 43,000 students and 11,000 staff on main campus with 20 satellite locations

Challenge

- Eradicate problems associated with a multi-technology legacy network resulting from the merger of six separate educational institutions
- Enable the consolidation and rationalization of servers and applications within a virtualized environment
- Provide top-flight network and IT facilities to attract the best staff and students to secure the university's place among the best in the world

Solution

- Cisco® Unified Data Center Architecture with Cisco UCS® servers and Cisco Nexus® switches
- Cisco Borderless Network Architecture with Cisco SecureX Architecture™ and Medianet technologies
- Cisco Collaboration Architecture with Cisco TelePresence® videoconferencing

Results

- Virtualized server environment reducing energy consumption and providing fast and flexible computing resources
- Integrated wide area, fixed, and wireless infrastructure enabling the development of new network-based educational services
- Reskilled IT staff focusing on strategic matters rather than dealing with multivendor issues

Challenge

Aarhus University has become one of the largest higher education institutions in Denmark. Having merged with five smaller institutions, Aarhus grew by more than 40 percent. With a staff of 11,000 the university now serves more than 43,000 students.

To achieve its goal of becoming one of the world's top 100 universities, Aarhus is recruiting leading researchers to enhance its appeal to students from around the world. The university also knows it has to meet high expectations in terms of IT infrastructure and resources.

Network reliability is paramount. The university's email platform plays host to the messaging needs of one percent of the Danish population. The different research sites across the university's 10Gbps wide area network need seamless fiber connectivity. The IP infrastructure also needs to support mobility and a range of devices, so that staff and students can work regardless of their location. The requirement for a robust, secure, and manageable network could hardly be starker.

However, as a result of the absorption by Aarhus of smaller institutions, and consolidation from 55 academic departments down to 26 with a number of interdisciplinary research centers, the university was left with a complex multivendor network that presented major management and service delivery challenges. Essentially, six independent IT architectures had to be amalgamated and standardized.

"Bringing together diverse departments is really an evolutionary process, in which the drivers are the desire for standardization and economy at all levels," says Flemming Bøge, CIO and deputy director of Aarhus University. "The mergers had given us a gift we did not want: a huge variation in network components and infrastructure. It was vital to move to a single supplier solution to give us simplified administration."

Solution

Aarhus University decided to standardize its computing environment by migrating to Cisco® Unified Data Center architecture. This would create a state-of-the-art infrastructure to enable the university's virtualization strategy. "We knew that we needed to consolidate a number of core business systems and processes," says Bøge. "As well as rationalizing the number of servers, this would also deliver energy and management resource savings."

"The Cisco Unified Data Center Architecture brings important benefits for the IT department. We've invested heavily in Cisco technology elsewhere, and taking advantage of it in the data center too offers significant management advantages."

Flemming Bøge
CIO and deputy director
Aarhus University

The university previously had thousands of standalone servers located in small datacenters across Denmark, presenting significant security challenges for the IT department. There was also a tendency for individual research teams to build their own applications on countless local servers. "We want to make it easier for them to use central solutions than to build their own servers," says Bøge. "Meanwhile, the Cisco Unified Data Center Architecture brings important benefits for the IT department. We've invested heavily in Cisco technology elsewhere, and taking advantage of it in the data center too offers significant management advantages."

The Cisco Unified Data Center Architecture adopted in the main Aarhus University data center consists of two Unified Computing System™ (Cisco UCS®) chassis, each equipped with sixteen Cisco UCS B200 M2 Blade Servers. The switching platform uses four Cisco Nexus® 5000 Series switches and eight Cisco Nexus 2000 Series Fabric Extenders, chosen because they provide high performance and an attractive cost per port. These switches interconnect at 10Gbps with the university's heterogeneous storage environment, which includes NetApp, EMC, HP and other technologies.

VMware vSphere Hypervisor virtualizes a comprehensive range of applications across the thirty-two Cisco UCS servers. These include several business-critical, SQL-based databases such as Filemaker and Elasticsearch, as well as file and print services, network monitoring, user validation, document management, and research programs.

Across the campus and beyond, Cisco Borderless Network Architecture enables users to access those virtualized applications. It consists of 20 Cisco Catalyst® 6500 Series Switches in the core and over 200 Cisco Catalyst 3750X and 2960S Series Switches in the distribution and access layers. There are Cisco ASA 5580 Series Firewalls as well, which also provide authenticated remote access. Nearly 2000 Cisco Aironet® 1142 Wireless Access Points with five Cisco 5508 Series Wireless Controllers interconnect to the fixed LAN environment via the Catalyst 3750-X Series Switches.

The university has a strong bring-your-own-device (BYOD) culture. This plays to new technologies introduced by Cisco Borderless Networks, such as Cisco SecureX technology, which provides context-aware security based on device type, location, application, and time of day. "The wireless network must perform so that wherever the students are—on the campus, at home, in a café—they can access vital learning resources," says Bøge.

Aarhus University is also using videoconferencing technology, part of the Cisco Collaboration Architecture. The university has six Cisco TelePresence® System C60 units at strategic locations, which are pretty much fully booked throughout the working day. For example, the university's IT department employs 250 people based in seven different locations, who hold regular video conferences to coordinate their activities.

Results

Since the Cisco Unified Data Center Architecture went live at the start of 2012, Aarhus University has been reaping the business benefits of its investment, not least in the speed at which new servers can be provisioned using service profiles.

Videoconferencing is saving Aarhus University huge amounts of time and expense once wasted on travelling. Also being tested in relation to distance learning, video is an important consideration in a competitive market where students are attracted by the facilities offered. Bøge says: "We want to educate our lecturers to use, for example, video and podcasts in delivering classes."

"We have bought into an architecture that provides standardized management processes treating the wide area and wired and wireless environments as a single cohesive entity."

Flemming Bøge
CIO and deputy director
Aarhus University

End users at the university expect the network to be always available in sufficient quantities, just like water. Beyond satisfying that requirement, the Cisco Borderless Network will help extend secure and transparent access to the university's research and education partners around the world. "We have bought into an architecture that provides standardized management processes," says Bøge, "treating the wide area and wired and wireless environments as a single cohesive entity."

With the volume of network traffic growing exponentially, it is important that the infrastructure can expand and incorporate new technologies as they emerge. So the explicit commitment by Cisco to evergreen technology means that Aarhus University does not need to worry about changing its platform strategy for the foreseeable future. "I am confident that we've chosen a vendor who will protect the value of our historic investment," says Bøge.

Next Steps

Aarhus University is now experimenting with Cisco CleanAir wireless technology, which provides visibility of all wireless devices within range and mitigates against radio frequency interference. This assures optimum wireless network performance–an important consideration in a BYOD environment. For example, in a test project, 800 students took an exam in one building, each using their own device. Equipped with Cisco Aironet 3500 Series Wireless Access Points with CleanAir technology, the wireless network was stable enough to provide eight hours of consistent, uninterrupted access.

For More Information

For details on the Cisco architectures and solutions featured in this case study, visit:
www.cisco.com/go/borderless
www.cisco.com/go/collaboration
www.cisco.com/go/datacenter

Product List

Cisco Unified Data Center

- Cisco Unified Computing System (UCS) B200 M2 Blade Servers
- Cisco Nexus 5000 Series Switches
- Cisco Nexus 2000 Series Fabric Extenders

Applications Virtualized

- SQL-based databases such as Filemaker and Elasticsearch
- File and print services
- Network monitoring and user validation
- Document management
- Scientific research programs

Cisco Borderless Networks

- Cisco Catalyst 6500, 3750X, and 2960S Series Switches
- Cisco ASA 5580 Series Firewalls
- Cisco Aironet 1142 Wireless Access Points
- Cisco Aironet 3500 Series Wireless Access Points with CleanAir technology
- Cisco 5508 Series Wireless Controllers

Collaboration

- Cisco TelePresence System C60 videoconferencing units

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