

# University of Copenhagen Builds Innovative, Resilient, and High-Performance Network Platform

## Summary

**Company:**

University of Copenhagen

**Industry:**

Education

**Challenges:**

- Provide a cost-effective and scalable network to be accessed by staff and students
- Enable researchers from nine remote locations to access the network and handle “big data”
- Enable “bring your own device” (BYOD) with secure guest access

**Selection Criteria:**

Copenhagen selected Juniper after checking with other universities that had partnered with Juniper on their network infrastructures, and finding that they had very positive things to say about the experience.

**Network Solution:**

- SRX Series Services Gateways
- SSG Series Secure Services Gateways
- WLA532 Wireless LAN Access Point
- WLC880 Wireless LAN Controller

**Results:**

- Juniper Networks wireless technology has been adopted across the University
- Scientists can collaborate online, enhancing research quality.
- High-performance and scalable network supports the use of innovative research methods and big data
- The solution is green and meets all of the University’s current environmental guidelines

Most universities fulfill both an academic and research purpose in life. But not many institutions attach equal importance to teaching and research in the daily work of the academic and scientific staff, nor do they base all of their research on premise at the university. This is how the University of Copenhagen operates, and it presents its own unique challenges for its network infrastructure.

Research takes place in various remote locations around the world, and scientists need to be able to access the university’s network to back up their work and findings, as well as stay in touch with fellow scientists around the world and have access to the latest data. Scientists conducting research into malaria and yellow fever, on location in Africa, often will have very patchy connections at best, through dial-up modems, so once connected, the University’s network cannot fail them.

## Challenges

With over 37,000 students and more than 7,000 employees, the University of Copenhagen is the largest research and educational institution in Denmark. The importance of its research is illustrated by the fact that the University boasts eight Nobel Prize laureates from its research community. Together, the six faculties offer over 200 programs for study in health and medical sciences, humanities, law, science, social sciences, and theology. Teaching and research are closely integrated to prepare students for a broad range of jobs, both in the private and public sectors.

*“We’ve seen a massive explosion in large data and now use 10GbE for our backbone technology. With Juniper Networks, we were able to scale up to meet these new requirements without complicating the network.”*

**Allan Have Sørensen, Head of Infrastructure, Health and Medical Sciences faculty, Copenhagen University**

The faculty of Health and Medical Sciences is leading the field when it comes to building a sustainable network infrastructure. Allan Have Sørensen, head of infrastructure for the faculty, explains: “Because of the amount of research which takes place within our faculty, we had an early requirement for a very robust VPN solution which then prompted the discussion around a secure firewall as well. Many of our 4,700 staff are scientists conducting research on location anywhere in the world. We have to provide a secure means of network access for them, hence our search for the right partner.”



He continues: "We have to provide a high-performance network connection with maximum uptime. This is especially important when our scientists are conducting experiments which rely on this. These experiments are expensive and cannot easily be recreated, so the connection has to be absolutely guaranteed. For this reason, we decided to go with the market leader for both VPN and wireless LAN solutions, which was Juniper Networks."

## Selection Criteria

It was important to Sørensen that there weren't too many vendors involved in the network, as that, in his view, tends to confuse matters. Instead, he preferred an established company that could take on the complexities and specific requirements of the University. Sørensen discovered that many universities before him partnered with Juniper on their network infrastructures, and he had some very reassuring conversations with his colleagues in the academic field.

## Solution

Because the University had no existing in-house firewall expertise and the open source firewall technology which had been in use couldn't provide the needed redundancy, the decision was made to deploy a high-performance network based on Juniper Networks® SRX Series Services Gateways, Juniper Networks SSG Series Secure Services Gateways, Juniper Networks WLA532 Wireless LAN Access Point, and Juniper Networks WLC880 Wireless LAN Controller. The SSG Series Secure Services Gateways are linked to the main site via a high-performance MPLS connection and the access points provide connectivity between the faculties and the two data centers.

Sørensen explains his decision: "The attraction of the SRX Series Services Gateway for us was that it provides everything we need in one box. We use it as a firewall and router, Network Address Translation (NAT) services, as well as our VPN concentrator. The virtual, multifunctional technology, in a clustered environment, also gives us high performance at scale and full redundancy. We needed something which could easily grow as we did, and the Juniper Networks technology with its modular approach gives us just that."

## Results

The infrastructure is being tested on a daily basis. The University uses proxy Web links and provides access for its scientists from some of the most remote locations on earth. Bring your own device (BYOD) has been in practice in the University long before the term was coined and is an important part of the teaching and learning environment. Juniper's consistent security is a big reassurance in this scenario.

The University also works with virtual microscope, a project that provides simulated scientific instrumentation for students and researchers worldwide. The virtual microscope aims to present users with a method for exploring pre-captured image data as if they were using the real instrument in real time. "The University is excited to be part of this fantastic initiative," Sørensen says, "but it definitely has an impact on our network. Huge numbers of large images are created with the virtual microscope and need to be managed. We've seen a massive explosion in large data and now use 10GbE for our backbone technology. With Juniper Networks, we were able to scale up to meet these new requirements without complicating the network."

When the University first started to look at network technology, environmental issues weren't a part of the decision making process. However today, green initiatives are very much at the forefront. Sørensen reflects on the decision he made for Juniper: "Even though it wasn't part of the criteria when we worked on the initial implementation, I'm glad to say the Juniper solution is green. Today, all projects, new and existing, have to adhere to very strict environmental guidelines, and we would have had to start all over again if our network was not compliant with these."

The faculty of Health and Medical Sciences was an early adopter of network technology, due to its specific requirements, and, although all six faculties are at liberty to make autonomous technology decisions, this early experience is being used all over the University.

Sørensen concludes: "In working with Juniper, we have found a highly capable network partner with very skilled engineers. In the early days of our implementation we sometimes had cause to use our 24/7 support and we were pleasantly surprised to see that it actually meant 24/7, in a follow-the-sun service model! We believe in close mutual relationships with our technology partners, which also gives us the opportunity to influence the products' future releases. We value the relationship we've built with Juniper over the years."

## For More Information

To find out more about Juniper Networks products and solutions, please visit [www.juniper.net](http://www.juniper.net).

## About Juniper Networks

Juniper Networks is in the business of network innovation. From devices to data centers, from consumers to cloud providers, Juniper Networks delivers the software, silicon and systems that transform the experience and economics of networking. The company serves customers and partners worldwide. Additional information can be found at [www.juniper.net](http://www.juniper.net).

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