

Luleå's future-focused tech strategy saves student access to powerful learning tools

Luleå University of Technology rapidly expands Citrix DaaS pilot to extend learning access to all students during COVID-19

A cloud-first strategy and a computer lab proof of concept meant Sweden's Luleå University of Technology (LTU) was perfectly placed to respond to the COVID-19 pandemic.

Sweden's most northerly university ("great ideas grow better below zero") has 19,000 students and enjoys an international reputation for Arctic studies, space engineering and computer games design. As CIO Daniel Ström says, "We are a university of technology. Education and research are in our DNA. It is expected that we are at the forefront of IT too."

Working with [Platinum Citrix Solution Advisor Atea](#), LTU had equipped two games design computer labs with thin-client terminals and [Citrix DaaS](#) (formerly Citrix Virtual Apps and Desktops service) to provide the applications, desktops and computing resources students required to do their work.

"These are demanding, resource-intensive apps to handle the 3D graphics rendering involved in games design," Ström says. "If it works for this, it will work for everything."

As the pilot successfully concluded, the global pandemic struck, and universities everywhere had to adapt to a new way of teaching and learning.

Providing computing resources and 300 apps to stay-at-home students

"The pandemic forced us to expand from the pilot and create cloud-based workplaces for teachers and students – and we succeeded," explains Project Manager and Head of Administration for Student Computer Labs and Digital Workplace, Lennart Isaksson.

As a technology university, LTU's students use 300 different applications. Some of these, like those used in games design, require significant computing power traditionally provided by powerful workstations available in on-campus computer labs.



Industry
Education

Location
Sweden

Citrix Products
• [Citrix DaaS](#)

For students to continue learning from home, often using low-powered, personal laptops and other devices, LTU needed to provide students with remote access to powerful datacenter resources.

The university had already migrated its back-end infrastructure to Microsoft Azure and, with Citrix DaaS, Isaksson says, “it was very easy for us to step up and make this available for all the students through their own computers.”

Within a matter of days, LTU had successfully scaled from a small pilot to full remote availability for 19,000 students.

As Ström says, “teaching has become space-independent.”

Hybrid study is here to stay

Using Citrix solved the client-side challenge of using graphics-intensive applications. Students could securely access their desktops and applications from anywhere with Citrix DaaS and Microsoft Azure allocating the processing power and computing resources required.

The solution proved popular with students. At the peak of lockdown, Citrix was supporting 150-200 concurrent users daily. After six months of students being back on campus, the solution still supports 100 concurrent users and Isaksson’s team is installing the Citrix client on all student-accessible computers in labs, libraries and other public areas.

As existing PCs become due for refreshing, LTU will replace some of them with thin clients. It has also reduced the number of computer labs as students now access what they require from their own devices.

“The biggest benefit of Citrix is the flexibility to use resource-intensive applications anywhere,” Isaksson says. “It’s very much appreciated by our students.”

Dynamic scaling and simplified management save time and money

“One of the biggest advantages of Citrix, from an IT perspective, is the time saved in application management,” Isaksson explains. “With the traditional PC model, it would take several hours to install all the necessary applications on each PC. And we have over 800 student computer lab PCs. If a student begins to use the computer during installation, some applications will be missing. With Citrix, it’s much better. We have a single, base image with all the applications, and we just replicate it to all the virtual machines that we are spinning up.

“That’s a much safer approach than the traditional PC model. It’s more secure. All the apps are up to date and always available from any endpoint device.”

LTU uses dynamic autoscaling to scale virtual desktops up or down to meet demand, without incurring unnecessary cost.

“Historically, capex-driven IT costs couldn’t scale up and down with the size of the organization. IT costs were largely fixed. With the Citrix-Azure cloud model because everything is an operational cost, we can quickly scale down if we need to and have a cheaper delivery,” adds Ström.

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Lennart Isaksson, Head of Student Computer Lab Administration, Luleå University of Technology

The Citrix and Azure infrastructure also brings sustainability benefits. As well as autoscaling virtual machines to avoid running more resources than required, Citrix enables the university to extend the life of existing end-point devices as they become terminals for the Citrix virtual desktop. When those PCs are eventually replaced, Isaksson and his team will replace some of them with low-energy thin-client devices.

Moving to cloud means that LTU switches from its in-house datacenter to efficient, environmentally friendly Azure datacenters and, of course, enabling staff and students to work from home reduces commuting-related carbon costs.

Importantly, LTU's cloud-first strategy and its Citrix-Azure infrastructure makes it easier for the university to maintain the IT performance expected of a leading technology university.

“Young people today are raising the bar,” Ström says. “When you build a new computer lab under the traditional model, you get only 12 to 24 months when it is modern. After that, the students get less and less satisfied. By the time you get to years four, five and six of a typical refresh cycle, every student is dissatisfied. But, with the Citrix model, we can add new machines in the background as the technology evolves, so the computer labs are always new and fresh.

“Nothing comes close to Citrix. It's the first product that comes to mind for remote desktop use cases,” he concludes. “And, of course, the Citrix-Microsoft partnership has made it easier for me to make this strategic investment for the university. With this Citrix-Microsoft solution, we can transform the delivery of education.”

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