Increasing access to university education through online learning.

How the **Pontifical Catholic University of Minas Gerais (PUC Minas)** used a hyperconverged infrastructure solution from Lenovo and Nutanix to enable more people to develop new skills and knowledge through online distance-learning degree courses.

Lenovo Infrastructure Solutions for The Data-Centered

1

Background

Founded in 1958, the Pontifical Catholic University of Minas Gerais (PUC Minas) is one of Brazil's leading universities and one of the largest Catholic universities in the world by congregation size. The university offers over 100 undergraduate and 700 postgraduate courses in a wide range of disciplines. Today, over 80,000 students are enrolled at the institution's seven campuses across Brazil.

Committed to digital innovation, PUC Minas offers a mix of on-campus, distance, and blended learning to provide high-quality teaching to as many students as possible. Over the last two decades, the university's decision to embrace remote learning has helped it to grow undergraduate enrollment from 288 students in 2003 to over 19,000 students today. Inspired by this success, PUC Minas is doubling down on its investment in digital learning technologies and preparing for further growth.

2 Challenge

Students, faculty, and support staff at PUC Minas depend on a wide range of applications—such as email clients, online learning portals, and digital libraries—to study, teach, and keep the university running. As university enrollment climbs, demand for these applications is also rising.

Even though the university had already widely embraced distance, online, and blended learning, the IT infrastructure supporting its core applications came under unprecedented pressure when the COVID-19 pandemic forced almost all students and faculty to switch to online learning and teaching.

Marcelo Nassau Malta, CIO at PUC Minas, comments: "A huge surge in demand for digital learning services during the pandemic prompted us to carry out a thorough evaluation of our IT infrastructure. We found that our existing systems were nearing end-of life and would not be able to provide the scalability, performance, and storage capacity required to fuel further growth in online learning."

"We were committed to expanding our distance learning courses and digital resources, so we set out to find the IT infrastructure that would enable us to achieve this quickly and cost-effectively. The COVID-19 pandemic made it crucial for us to accelerate this journey."
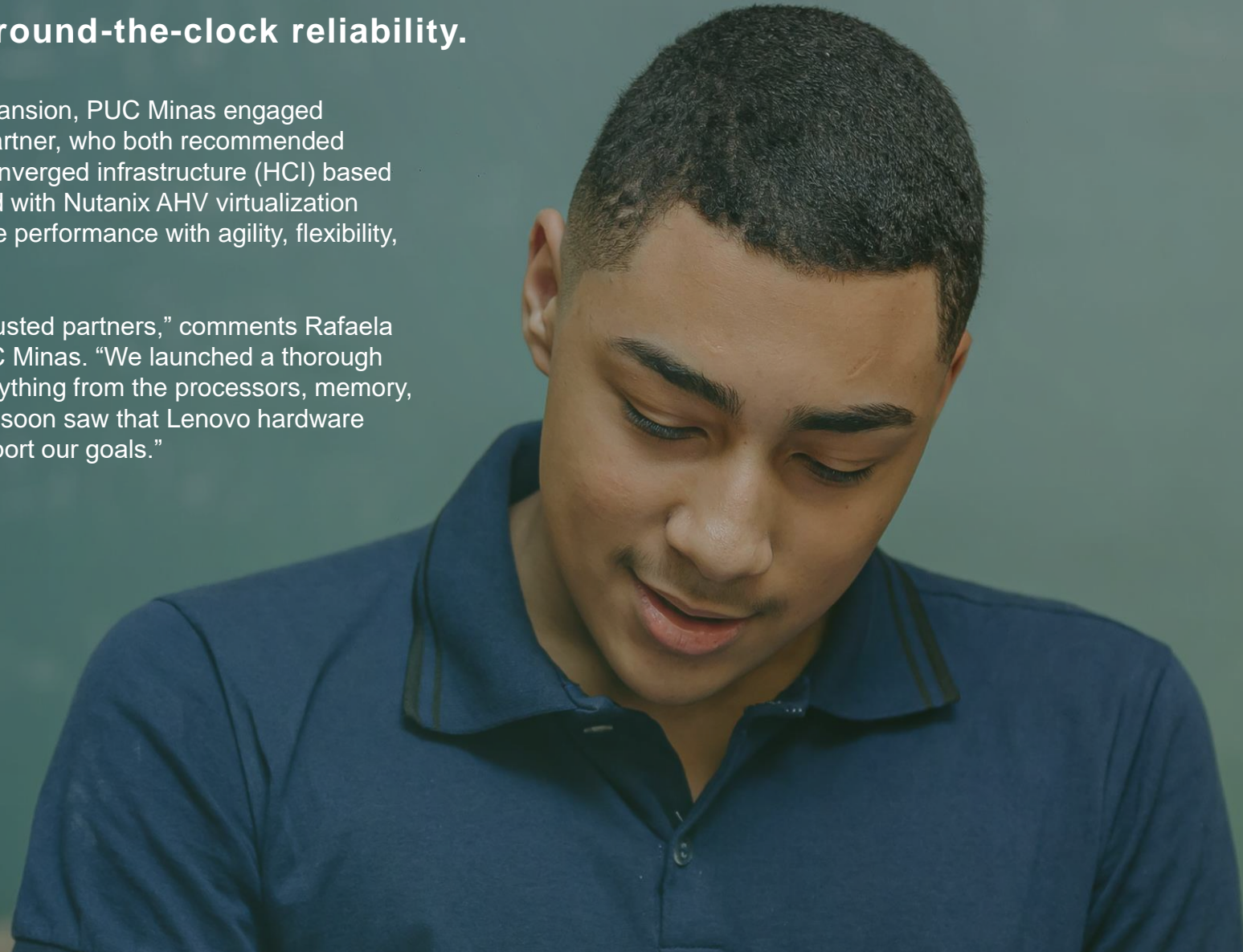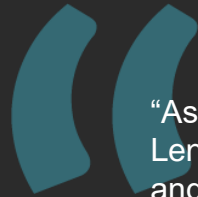
Júnia Padrão
Coordinator of Technology and Infrastructure, PUC Minas

Why Lenovo? Seamless scalability, round-the-clock reliability.

To find the best infrastructure to drive online learning expansion, PUC Minas engaged consultants from Gartner and Altasnet, a Lenovo Gold Partner, who both recommended enhancing the university's IT environment with a hyperconverged infrastructure (HCI) based on the Lenovo ThinkAgile HX Series platform. Pre-loaded with Nutanix AHV virtualization software, Lenovo ThinkAgile HX3320 appliances combine performance with agility, flexibility, and simple management.

"Lenovo technology came highly recommended by our trusted partners," comments Rafaela Fátima de Souza, Information Technology Analyst at PUC Minas. "We launched a thorough analysis of Lenovo and Nutanix solutions, looking at everything from the processors, memory, and drives to the height and depth of the appliances. We soon saw that Lenovo hardware offered the performance, scalability, and reliability to support our goals."

"As a university, we're always looking for ways to redirect investment in student learning. Lenovo stood apart from other vendors because they could offer excellent performance and flexibility at a very competitive price."

Júnia Padrão
Coordinator of Technology and Infrastructure, PUC Minas

Maximizing business continuity.

As well as deploying the Lenovo ThinkAgile HX platform to support key teaching, learning, and administrative applications, PUC Minas also configured two Lenovo ThinkSystem DE4000H Hybrid Storage Arrays as backup repositories, with a maximum capacity of 460 TB. To ensure best practice during the implementation, PUC Minas worked with Lenovo Premier Support to optimize the Lenovo solutions to meet the university's unique needs and provide ongoing support for the new systems.

Júnia Padrão says: "To avoid disruption to student learning and enrollment, we decided to take an iterative approach to the implementation that required only 20 minutes of downtime for each appliance. First, we migrated the virtual machines associated with administrative activities from our old systems to the Lenovo ThinkAgile HX platform. Next, we moved the virtual machines containing learning and teaching resources. By setting up a large-capacity backup environment at the same time, we built in additional resiliency into our infrastructure, which will help to protect the university should we encounter a disaster scenario."

Marcelo Nassau Malta adds: "The Lenovo Premier Support and Altasnet teams provided invaluable assistance throughout the implementation process, helping us to configure the Lenovo and Nutanix solutions to enable excellent availability, strong reliability, and ease of system management. Whenever we encountered issues, Lenovo always helped us to resolve them quickly and efficiently—accelerating the deployment."

"Thanks to the Lenovo Support team, we implemented the Lenovo and Nutanix solutions much faster than we initially anticipated. For instance, we migrated all our administrative systems in one evening, and they were up and running perfectly the next morning."

Rafaela Fátima de Souza
Information Technology Analyst, PUC Minas

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Results

By enhancing the underlying IT infrastructure supporting its mission-critical academic and administrative applications, PUC Minas can deliver seamless digital learning experiences—even during a global pandemic.

"The high performance and excellent scalability of the Lenovo ThinkAgile HX platform not only helped us to keep students and faculty connected during COVID-19 lockdowns, but also to expand our distance learning courses from 135 to 507," comments Marcelo Nassau Malta. "We are also preparing to migrate one of our affiliated institutions, Santa Maria Minas Colleges, which will add a further 13,000 students to the digital platform. Previously, we simply wouldn't have had the capacity to take on this project. But with the Lenovo ThinkAgile HX platform, we have the resources and tools we need to make this a success."

By moving to the Lenovo-Nutanix HCI solution, PUC Minas has significantly reduced energy consumption in its data center, too.

Rafaela Fátima de Souza explains: "Our energy consumption is much lower than we ever expected: it takes approximately 13kVA to run each rack, and sometimes even less. Our data warehouse workloads execute over 60% faster and we can provision a new virtual machine in seconds, something that previously took several minutes. Ultimately, lower energy consumption and improved IT operational efficiency help us to reduce costs and optimize the use of our resources, so we can focus on delivering high-quality learning for all students."

PUC Minas

✓ **>3x increase in distance learning courses achieved**

✓ **60% faster execution of data warehouse workloads**

✓ **Reduces energy consumption to less than 13kVA per rack**
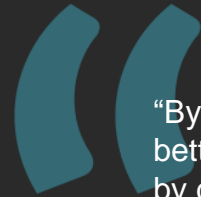
"By enhancing our IT infrastructure with Lenovo and Nutanix technology, we are much better placed to develop innovative ways of supporting students and faculty members. And by driving the expansion of our online and distance learning courses, Lenovo solutions are helping us to make university education available to more people throughout Brazil."

Marcelo Nassau Malta
CIO, PUC Minas

What will you do with Lenovo software-defined infrastructure solutions?

The Data-Centered provide high-quality education to as many students as possible through distance learning courses with Lenovo smarter infrastructure solutions, powered by Nutanix.

Explore Lenovo Software-Defined Infrastructure Solutions