Academic Research | United Kingdom

Powering ambitious research

University of Nottingham

To continue supporting world-class research, the University of Nottingham collaborated with OCF and Lenovo to refresh its HPC facility with Lenovo ThinkSystem and NVIDIA accelerated computing technology.

1 Customer background

Who is the University of Nottingham?

The University of Nottingham (UoN) is an award-winning university with an international outlook, with campuses in the UK, China, and Malaysia. It is ranked among the Top 20 universities in the UK and in the world's Top 100 (QS World University Rankings 2026).

A member of the prestigious Russell Group of world-class, research-intensive universities, UoN delivers teaching excellence, empowering its graduates to go further, faster. It is committed to giving its 45,000 students an unparalleled experience that helps to prepare them for life after university.

University of Nottingham
UK | CHINA | MALAYSIA

2 The challenge

Powering meaningful research

Ranked eighth in the UK for research power, UoN is committed to providing a supportive environment for research. By investing in dedicated services and building a positive research culture, the university enables its people to thrive, achieve their potential, and produce exceptional research.

One such investment is in high-performance computing (HPC). The university's previous HPC facility, known as Augusta, had been in place for five years. It had become a cornerstone for research in that time, reaching an audience well beyond its original user base in the science and engineering departments.

2 The challenge

Meeting the demands of cutting-edge research

After many years of service, the time had come to replace Augusta (which itself was supplied by OCF and Lenovo) with a newer, more powerful HPC system.

Professor Jonathan Hirst, Royal Academy of Engineering Chair in Emerging Technologies and Professor of Computational Chemistry at UoN, comments: “Technology continues to evolve at an extraordinary pace, and it is crucial to ensure our HPC infrastructure can meet growing demand accordingly.

“High interest in computationally intensive research means that demand for HPC services is growing all the time. And the user base is broadening, too. As well as supporting science and engineering applications, we are seeing more and more non-traditional users from the humanities and social sciences.”

3 The solution

Powering Ada

Following a competitive tender process, UoN selected trusted partners OCF and Lenovo to implement a state-of-the-art new HPC system based on Lenovo ThinkSystem technology.

Named Ada, after 19th century mathematician and writer Ada Lovelace, the new GPU-accelerated cluster is based on a mix of 80+ Lenovo ThinkSystem SR645 V3, SR665 V3, SR675 V3, and SR650 V2 servers, featuring 32 NVIDIA® A100 GPUs in total. A Lenovo Distributed Storage Solution for IBM Storage Scale (DSS-G) solution offers 2.4 PB of usable capacity split across a high-performance SSD tier and a high-capacity HDD tier.

Hardware

Lenovo ThinkSystem SR645 V3
Lenovo ThinkSystem SR665 V3
Lenovo ThinkSystem SR675 V3
Lenovo ThinkSystem SR650 V2
Lenovo ThinkSystem SR680a V3
Lenovo Storage D1224
Lenovo Storage D3284 High Density Expansion Enclosure
NVIDIA® A100 GPUs
NVIDIA® H200 GPUs

Software

Lenovo Distributed Storage Solution for IBM Storage Scale (DSS-G)
Lenovo XClarity

Services

Lenovo Configuration Services
Lenovo EveryScale Networking Services
Lenovo EveryScale Rack Setup Services
Lenovo Premier Support for Data Centers

3 The solution

GPU acceleration with Lenovo Everyscale Best Recipe

Using the Lenovo EveryScale “Best Recipe” framework, OCF and Lenovo engineers designed, deployed, and configured the Lenovo ThinkSystem servers and third-party components to work together seamlessly, and optimized the cluster for peak application performance. The HPC facility is managed collaboratively by a team consisting of UoN and OCF’s Managed Services staff and backed by Lenovo Premier Support for Data Centers, which provides 24/7/365 direct access to expert assistance.

Professor Jonathan Hirst comments: “The Ada cluster has delivered a big uplift in the number of GPUs we have available for research, which has empowered users across many different disciplines to take advantage of the system. The NVIDIA GPUs enable emerging AI and machine learning workloads while also accelerating traditional workloads.”

3 The solution

Quantum leap

Through OCF, UoN recently expanded the Ada cluster with a Lenovo ThinkSystem SR680a V3 server, equipped with eight high-performance NVIDIA H200 GPUs.

This extension was part of the “Quantum computing for covalent inhibitors in drug discovery” project led by Professor Jonathan Hirst and Dr Katie Inzani, and funded by Quantum for Bio (Q4Bio) by Wellcome Leap. The project aims to explore the capabilities of quantum computing for developing new drugs for myotonic dystrophy, a genetic condition that causes progressive muscle weakness and wasting.

3 The solution

Lenovo and NVIDIA for quantum compute

The NVIDIA-accelerated Lenovo ThinkSystem SR680a V3 server acts as an important intermediary step in the project, enabling researchers to emulate quantum computer hardware on conventional HPC technology.

“This latest extension delivers high performance and large, fast memory, which is imperative to run emulations of quantum algorithms,” says Professor Jonathan Hirst. “By using NVIDIA H200 GPUs, we more than doubled our performance versus the standard NVIDIA A100 GPUs.”

Professor Peter Licence, Head of the School of Chemistry at UoN, adds: “Quantum computing is an exciting research frontier, and it is great to see colleagues from the School of Chemistry spearheading work in this area.”

4 The results

More compute, faster analysis

Based on powerful new Lenovo and NVIDIA technology, the Ada cluster delivers approximately 4x more compute power than its predecessor, enabling users to process and analyze more data and perform ever-more complex calculations at higher speed. Ultimately, this means researchers can further their work and make new discoveries faster.

Bang Huynh, Research Fellow in Theoretical and Computational Chemistry at UoN, comments: “Augusta was fantastic, but I could only run CPU-based calculations because it didn’t have a lot of GPU resources. The quantum algorithms that I'm developing nowadays need the computational power that can only be offered by GPUs, and that’s what Ada has enabled me to do.”

4 The results

Thinking bigger

Professor Jonathan Hirst adds: “Ada will be available for experimentation beyond larger, funded projects, leading to more ambitious research and enabling funding, more high-quality outputs, and increased inter-disciplinary collaboration.”

- 4x more compute power
- GPU acceleration
- Supports ambitious research

“The new facility will enhance research capabilities across a wide range of disciplines, fueling innovation and growth in strategic areas of the university, such as quantum technologies, nanoscience, artificial intelligence, imaging, and bioinformatics. It’s a really exciting step forward for the University of Nottingham.”

Professor Phil Williams

Professor of Biophysics, University of Nottingham

Why Lenovo and OCF?

Lenovo partners with some of the most advanced technology partners in the business. OCF is one of those partners, delivering scalable HPC solutions to organizations of all sizes, from compact departmental systems to colossal supercomputers found within premier research institutions.

OCF and Lenovo crafted a proposal based on best practices and technology that would meet UoN's research and computational needs. The proposal met all UoN's technical requirements within budget. "We run an open competitive tender process for a HPC technology refresh on a four- to five-year cycle, and OCF and Lenovo have been very successful in recent years—they also delivered our previous Augusta cluster," says Professor Jonathan Hirst. "We've been delighted with the quality of both the hardware and the support over the years."

Supported by Lenovo, OCF was responsible for the design, development, and installation of the cutting-edge new Ada facility. "Our OCF and Lenovo colleagues continue to be very supportive, and keep us up to date with the latest developments in HPC technology," concludes Professor Jonathan Hirst.

“This is the second HPC system we’ve supplied to the University of Nottingham together with Lenovo. The Lenovo engineers were incredibly important in the design process, helping us make sure we put forward the right technology to meet the university’s requirements.”

Andrew Dean

Sales Director, OCF

How can universities help researchers further their work?

Working with OCF and Lenovo, the University of Nottingham refreshed its HPC cluster to deliver 4x more compute power, helping to accelerate research.

Explore Lenovo HPC Solutions