



Academic Research

Supporting world-class brain research

CUBRIC

Boosting storage capacity to support cutting-edge research with Lenovo ThinkSystem SR650 servers, powered by 2nd Gen Intel® Xeon® Scalable processors, and Lenovo Storage D3284.

Powered by



Lenovo

1

Who is CUBRIC?

Cardiff University Brain Research Imaging Centre (CUBRIC) brings together world-leading expertise in brain imaging, mapping, and simulation to better understand the causes of neurological and psychiatric conditions. CUBRIC plays a pivotal role in the global effort to better understand the causes of dementia, schizophrenia, and multiple sclerosis, enabling the development of better treatments.

CUBRIC's vision is to be an international center of excellence for innovation in neuroimaging methods and interpretation, helping researchers to develop a deeper understanding of the brain. The aim is to optimize diagnosis, prognosis, treatment development and patient monitoring, increasing the value of neuroimaging for patients worldwide.



2

The Challenge

As a hub for neuroscience, CUBRIC houses multiple brain imaging facilities under one roof, including specialist scanning equipment; brain stimulation, cognitive testing, and sleep laboratories; and high-performance computing (HPC) resources. These facilities are available for research, clinical, and commercial purposes, and generate huge volumes of data each year—putting pressure on CUBRIC’s storage infrastructure.

Garin Hughes, Compute & Data Team Leader at CUBRIC, begins: “Storage is at the heart of CUBRIC; everything depends on it. We store hundreds of terabytes of high-resolution brain images alone, in addition to raw data from our MRI, MEG, and EEG scanners, processed data from our HPC cluster, medical diagnosis and clinical trial data for the UK National Health Service [NHS], research projects, and collaboration spaces.”

CUBRIC’s data had grown to hundreds of terabytes and was expected to swell to petabytes before long. With its existing system fast approaching capacity, CUBRIC urgently looked for a new storage solution.



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Storage is the foundation of everything we do—if it fails, research outputs are impacted. As well as increasing capacity, we also aimed to step up the performance and scalability of our storage infrastructure.”

Garin Hughes

Compute & Data Team Leader, CUBRIC

Supercharging storage

Working closely with Lenovo, CUBRIC designed a solution based on Lenovo ThinkSystem SR650 servers, powered by 2nd Gen Intel® Xeon® Scalable processors, and Lenovo Storage D3284 direct-attach expansion enclosures.

Hughes comments: “Lenovo brought in storage and HPC experts both before and after the sale to support us. They answered our technical questions, sense-checked our plans, and helped us to find the right solution for our needs and budget.”

CUBRIC deployed one Lenovo ThinkSystem SR650 server equipped with three Lenovo D3284 enclosures on site, delivering 3 PB storage capacity. The IT team deployed a second ThinkSystem SR650—also with three D3284 enclosures—at the central Cardiff University data center for off-site mirrored backup. CUBRIC uses the OpenZFS file system and volume manager for storage management and snapshots.

Hardware

Lenovo ThinkSystem SR650
powered by 2nd Gen Intel®
Xeon® Scalable processors
Lenovo Storage D3284 External
High Density Drive Expansion
Enclosure

Software

OpenZFS

Services

Lenovo Preconfigured Support –
Warranty Service Upgrades,
Committed Service Repair
Lenovo YourDrive YourData

3

Results

With the new Lenovo storage system, CUBRIC can easily accommodate rapidly growing volumes of research and clinical data.

“By moving to Lenovo, we have tripled storage capacity from 1 PB to 3 PB,” says Hughes. “This means that we can support many more research projects. Before, we could accommodate hundreds of projects; now, we can support thousands. This extra capacity has also enabled us to increase the storage quota for each individual project, so that users can collect, share, and analyze more data, run more scripts, and uncover new insights. This will also help users to secure grant funding for exciting new research.”

While 3 PB gives CUBRIC plenty of headroom for growth for the next few years, the easy scalability of the Lenovo storage system means that it will support operations well into the future. “The Lenovo Storage D3284 provides 1 PB storage capacity per enclosure and each ThinkSystem SR650 can support up to four enclosures,” explains Hughes. “This means that we can simply slot another drive into the servers, and instantly boost capacity.”

Storage performance has increased dramatically, too. The Lenovo Storage D3284 expansion enclosures support 12 Gbps SAS connectivity—double the data transfer rate of CUBRIC’s previous 6 Gbps SAS storage solution—to maximize the performance of storage I/O-intensive applications.

Impressed with its Lenovo storage system, CUBRIC is already in talks to add two Lenovo ThinkSystem SR650 V2 servers to its HPC environment to meet growing demand for AI and machine learning workloads.

- ✓ 3x storage capacity
- ✓ 2x faster data transfer rate
- ✓ 100% uptime

¹Data provided by CUBRIC



“Lenovo storage is the beating heart of CUBRIC, underpinning vital research that aims to provide a more sensitive and specific understanding of the brain.”

Garin Hughes

Compute & Data Team Leader, CUBRIC

Why **Lenovo**?

Lenovo offered a high-capacity, high-performance storage solution at a cost-effective price. “Storage capacity was our primary concern, so we wanted to get as much kit as possible for our budget,” says Hughes. “Lenovo’s proposal offered the best value for money without compromising on quality.”

But it wasn’t just price that set Lenovo apart from the competition. Good collaboration with the sales team, fast response times, and access to technical experts convinced CUBRIC that Lenovo was the right partner.

“We have built a great relationship with the Lenovo team,” confirms Hughes. “Their advice was very helpful during the design and deployment stages, and even now they are just a phone call away if we ever need them.”



How do you accommodate ever-growing data volumes?

Boosting storage capacity to support thousands more research projects with Lenovo and Intel® technology.

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