Academic Research

Driving
scientific
breakthroughs

Centre for Proteomic and Genomic Research

With demand for OMICS services surging, CPGR worked with Triple4 to enhance its IT infrastructure using Lenovo ThinkSystem servers and storage and VMware vSphere® virtualization—helping the organization increase sequencing capacity and offer cutting-edge capabilities.

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Who is the Centre for Proteomic and Genomic Research?

Formed in 2006 by the South African Department of Science and Innovation, the Centre for Proteomic and Genomic Research (CPGR) is a non-profit organization focused on supporting and facilitating world-class OMICS research—including genomics, proteomics, bioinformatics, and more. Today, the organization helps scientists and leading biotechnology companies from around the world conduct ground-breaking research into a wide variety of topics. In parallel, CPGR also provides testing and sequencing services to support medical diagnostics.

CPGR
CENTRE FOR PROTEOMIC
& GENOMIC RESEARCH

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The
Challenge

Africa is the most genetically diverse continent in the world, due to its biodiversity abundance. Genetic samples from across the region play an important role in helping scientists understand the origin of human life, tackle rare diseases, and discover new species. Because of this, demand for genetic sequencing and other OMICS services are skyrocketing across Africa.

From its laboratories in South Africa, CPGR is helping academics around the world carry out their research by providing cutting-edge OMICS services—all of which are incredibly data-intensive. The human genome has 3.2 billion base pairs, and sequencing just a small percentage generates terabytes of data. To facilitate fast and effective OMICS workflows, it is crucial that CPGR can store, access, and share huge volumes of data quickly and easily. However, as OMICS sequencing technologies advanced, CPGR found that its existing storage area network (SAN) was struggling to keep pace.

"To offer our clients and research partners a broad variety of OMICS services, we must ensure that we have a resilient, reliable, and scalable IT infrastructure to support these data-intensive workloads. The volumes of data generated by newer forms of genotyping and other OMICS processes are only going to increase in the years ahead, so being able to scale our storage environment easily is key to giving our clients access to cutting-edge research tools both now and in the future."

Hugh Napier
CEO, Centre for Proteomic and Genomic Research

Gearing up for growth

To support rising demand for OMICS solutions and offer an even more extensive range of services, CPGR worked with its technology partner Triple4 to replace its existing SAN environment with Lenovo ThinkSystem SR650 V2 servers and Lenovo ThinkSystem DE4000H storage arrays.

Virtualized with VMware vSphere, the Lenovo solutions provide a scalable, reliable, and easy-to-manage platform for data-driven scientific research. By upgrading its IT environment with Lenovo and VMware by Broadcom, CPGR can process up to 600 TB of OMICS-based clinical discovery and research.

Hardware
Lenovo ThinkSystem SR650 V2
Lenovo ThinkSystem DE4000H

Software
VMware vSphere®

Services
Lenovo Advisory and Professional Services

"Processing samples often requires our laboratory teams to call up vast amounts of complex data for intense periods of focused analysis. Lenovo and VMware solutions help us to access and manage our data quickly, while also ensuring that we have sufficient capacity to support numerous sequencing workflows in parallel—including long-read sequencing, which typically generates much higher data volumes per sequence."

Hugh Napier
CEO, Centre for Proteomic and Genomic Research

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Results

By enhancing its IT environment with Lenovo and VMware by Broadcom solutions, CPGR has the capacity to process 12 times the amount of data compared with its previous infrastructure. As a result, CPGR can process higher volumes of OMICS workflows quickly, helping it to meet growing demand for its services from within South Africa and beyond.

Since enhancing its IT infrastructure, CPGR has also successfully expanded its services to include long-read sequencing, a data-intensive technique that facilitates downstream analysis. Offering more services and scaling up capacity puts CPGR in a much better position to help South Africa become a world leader in bioeconomy.

✓ **12x increase in data processing capacity**

✓ **Enhances the efficiency of OMICS workflows**

✓ **Supports service expansion**

Harnessing the power of technology

Without capacity constraints holding it back, CPGR has been able to contribute to a wide range of ground-breaking research projects. For instance, CPGR helped support the 1KSA initiative—a diversity project focused on sequencing the genomes of endangered animals and plants. CPGR's long-read sequencing capabilities played a vital role in supporting researchers at 1KSA, who analyze the data to gain a deeper understanding of genetic diversity and build a biobank of species facing extinction.

As well as protecting plants and animals, long-read sequencing is helping scientists better understand rare diseases. The technique allows CPGR to spot structural changes in human DNA, which researchers can analyze to identify the potential causes of some of the least studied diseases facing humankind.

"We're proud of the groundbreaking scientific research that we have been able to support by expanding our IT capabilities with Lenovo and Triple4. As biotechnology advances, closer cooperation with leading technology partners like Lenovo and VMware will be key to pushing the boundaries of scientific research and making OMICS services more available to the scientific community."

Hugh Napier
CEO, Centre for Proteomic and Genomic Research

Why **Lenovo**?

To build a powerful IT infrastructure capable of supporting complex OMICS workflows, CPGR turned to the team at its trusted technology partner Triple4, who immediately recommended Lenovo and VMware by Broadcom solutions.

"Our core focus is on scientific research and diagnostics," comments Hugh Napier, CEO at CPGR. "For this reason, we want an IT infrastructure that is quick and easy to configure and simple to manage. Triple4 helped us find precisely this with Lenovo and VMware. Setting up the new environment was straightforward, and our IT team are very pleased with how user-friendly the solutions are."

Partner perspective: Triple4

"When CPGR asked us to help them select new hardware and a hypervisor for their IT infrastructure upgrade project, we instantly thought of Lenovo and VMware. Given that interruptions in CPGR's OMICS processes are absolutely unacceptable, we were keen to recommend technology partners that we know to be incredibly reliable from first-hand experience. And in the unlikely event that CPGR encounters an issue with its IT environment, we can rest assured that Lenovo will help us to resolve them—fast."

Kevin Mortimer
CEO, Triple4

How can biotechs keep pace with evolving technology?

Working with Lenovo and Triple4, CPGR built an IT environment that helps it harness the latest developments in OMICS sequencing.

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