Academic Research

Enabling groundbreaking genomics research

Badan Riset dan Inovasi Nasional (BRIN)

To help researchers in Indonesia push the frontiers of science through high-performance computing, BRIN deployed a next-generation HPC cluster. Powered by Lenovo ThinkSystem servers with Intel® Xeon® Scalable processors and running the Lenovo GOAST Plus bioinformatics solution, the new platform significantly accelerates genomics workloads.

Powered by

intel.
XEON
PLATINUM

Lenovo

1

Who is
Badan Riset dan Inovasi Nasional?

Badan Riset dan Inovasi Nasional (the National Research and Innovation Agency, also known as BRIN), is an agency formed by the Indonesian government in 2019. BRIN aims to contribute to the nation's economic and social progress by promoting science, technology, and innovation.

2

The
Challenge

Ever since it was founded, BRIN has strived to push the boundaries of many scientific fields. To further its mission, the organization offers high-performance computing (HPC) resources to researchers across the country.

Rifki Sadikin, Head of Computation Research at BRIN, elaborates: "HPC is important at BRIN, since it enables research that requires high-performance computation. One of our focus areas is the use of HPC for genomics, as it has important implications for health, food and agriculture, and basic life sciences. Through whole genome sequencing [WGS] and whole exome sequencing [WES] techniques, we can support the development of disease-resistant plants and personalized medical treatments."

BRIN depends on its HPC cluster to drive its workloads. With its existing cluster approaching capacity, the organization looked for a fresh HPC platform that could handle the increased demand for high performance computing, including bioinformatics and genomics workloads.

> "Our researchers are constantly increasing the size, scope, and complexity of their research, which means the need for compute and storage resources is growing all the time. To keep pace, we targeted a next-generation HPC platform."

Rifki Sadikin
Head of Computation Research, BRIN

Building a next-gen HPC platform

Working with experts from Lenovo, BRIN deployed a new HPC cluster built on Lenovo GOAST—a solution specifically architected to meet the demands of bioinformatics workloads, with a high-core, fast I/O, and high-memory configuration.

For bioinformatics and nucleotide sequencing jobs, BRIN deployed GOAST on a Lenovo ThinkSystem SR950 server powered by Intel® Xeon® Scalable processors, with 50 Lenovo ThinkSystem SR630 V2 servers powered by 3rd Gen Intel® Xeon® Scalable processors for other HPC workloads.

Hardware
Lenovo Storage D3284
Lenovo ThinkSystem SR630 V2 powered by Intel® Xeon® Scalable processors
Lenovo ThinkSystem SR950 powered by Intel® Xeon® Scalable processors

Software
Lenovo Genomics Optimization and Scalability Tool (GOAST)
Lenovo XClarity Administrator

Services
Lenovo Enterprise Server Software Support

3rd Gen Intel® Xeon® Scalable processors are especially advantageous for BRIN, as they deliver up to 53% higher performance across leading HPC benchmarks and real-world applications. With Lenovo Storage D3284, the organization gains high-I/O throughput for all jobs on the cluster.

"

"During the deployment, Lenovo provided excellent support that drew on their regional and international resources. We were particularly impressed with the expertise of the Lenovo technical account manager, and the implementation went very smoothly."

**Rifki Sadikin**
Head of Computation Research, BRIN

3

Results

With the new HPC platform, BRIN can help researchers across Indonesia push the frontiers of genomics and other scientific fields.

"Our long-term goal is to deliver petaflop-scale performance to our stakeholders, and through our collaboration with Lenovo we are well on the way," says Rifki Sadikin. "Although our work with Lenovo GOAST is just beginning, we're confident that we will see a substantial acceleration for nucleotide sequencing."

✓ Boosts HPC performance

✓ Accelerates sequencing workloads

✓ Supports innovative research
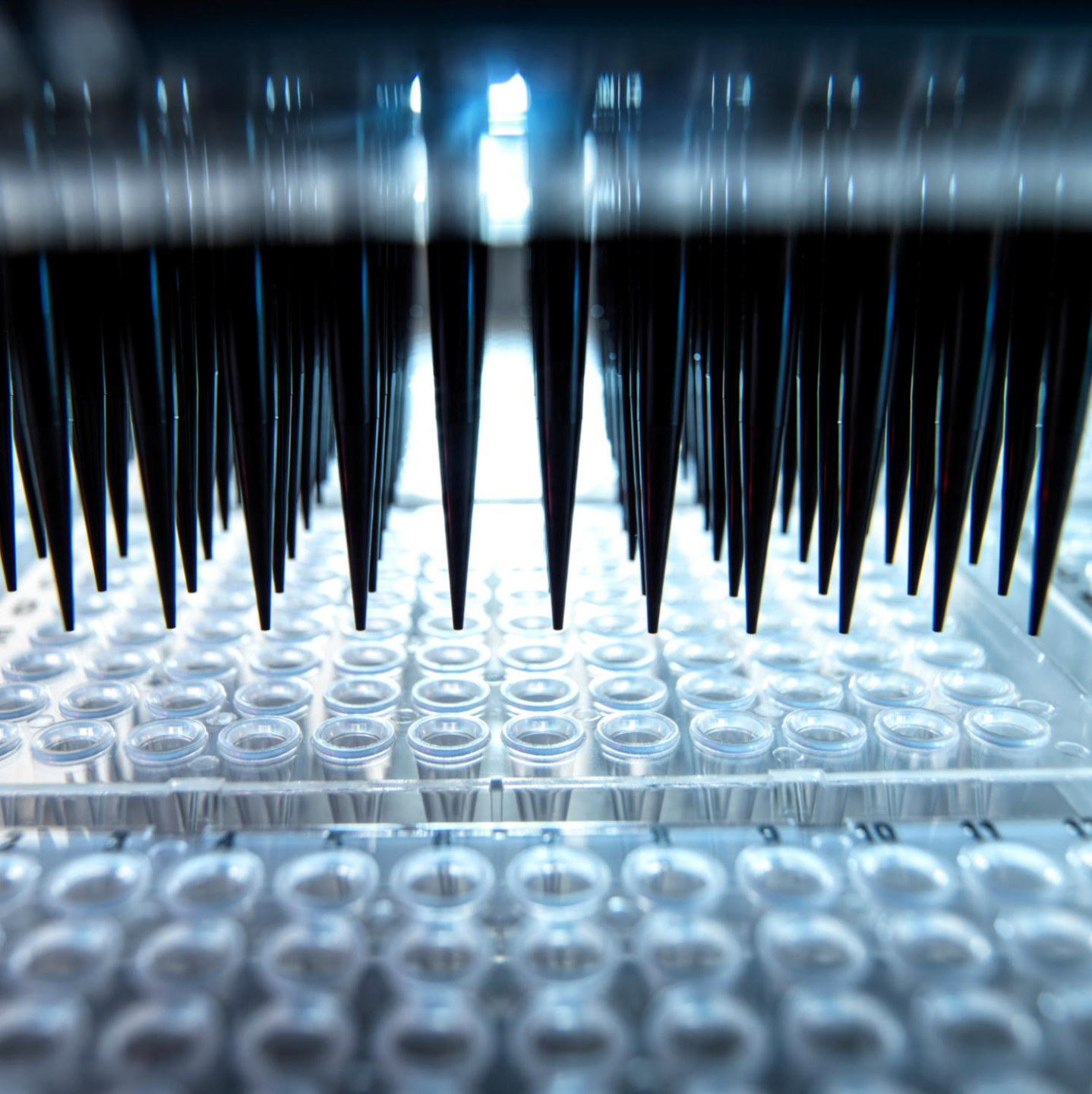
"Our HPC platform from Lenovo and Intel will open the door to many new research possibilities, including AI, big data analytics, and advanced modeling and simulation. We're excited to explore how we might partner with Lenovo to further optimize our infrastructure to support this cutting-edge research."

Rifki Sadikin
Head of Computation Research, BRIN

Why Lenovo?

One of the key factors for selecting the Lenovo and Intel solution was its excellent performance for HPC workloads, with eight-socket servers for Intel® Xeon® Platinum 8280 Processors.

"For example, we saw that the Lenovo and Intel platform could significantly boost performance for Genome Analysis Toolkit [GATK] jobs—the set of open-source bioinformatic tools we use to drive genomic analysis," comments Rifki Sadikin. "The fact that Lenovo GOAST is open source also factored into our decision, and we were very impressed by how easy the cluster is to manage using Lenovo XClarity Administrator."

How can research organizations stay at the cutting edge?

BRIN uses Lenovo ThinkSystem servers powered by Intel® Xeon® Scalable processors to boost performance for demanding genomics workloads.

Explore Lenovo HPC solutions

Powered by

Lenovo

intel. XEON PLATINUM