



NVIDIA.

Staying a step ahead of global competitors by accelerating innovation.

How **SANY Group** uses Lenovo ThinkSystem SR650 servers, powered by NVIDIA® T4 GPUs, with Lenovo ThinkSystem DM7000H storage arrays to support the development of next-generation construction equipment and power smarter business processes.

Lenovo Infrastructure Solutions
for The Data-Centered

Lenovo

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Background

Since its formation in 1989, SANY Group has grown to become one of the largest construction equipment manufacturers in the world. The group has developed many breakthrough technologies, and expanded into the manufacture of port machinery and mining, oil drilling, and renewable energy equipment at 25 facilities and 10 industry parks across China.

Headquartered in Changsha in Hunan Province, SANY Group also operates subsidiaries in India, Europe, the Americas, and Australia, and has interests in banking, property, and insurance companies. Each year, the group achieves combined revenues of more than US\$11 billion.

After a long history of successful growth, SANY Group—and Chinese industry at large—stands at a crossroads. A rapidly aging population means a shortage of skilled labor and higher production costs, while increasing global competition places companies under huge pressure. Focusing on innovation has never been so important—so how could SANY Group reinforce its status as a world-leader?

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Challenge

In recent years, SANY Group has made digital transformation the heart of its growth strategy, deploying many big data, automation, artificial intelligence (AI), and industrial internet of things (IIoT) solutions. In total, the group uses thousands of applications, sensors, and devices that generate around 1.2 trillion data points covering every stage in the manufacturing lifecycle.

Research teams collect this data and use powerful simulation and modeling software to uncover trends and test new strategies. Ultimately, the researchers aim to use the insights to develop next-generation construction equipment, and to build smarter operational processes that will help to improve manufacturing output while keeping headcount requirements lean.

Over time, these research activities placed a growing strain on SANY Group's IT infrastructure, which is deployed at several data centers. The existing server and storage environment proved difficult to scale, and was not optimized for such processor-hungry workloads, leading to slowing application response times and increasing the risk of delays to crucial product development work.

SANY Group planned a comprehensive refresh of its infrastructure landscape to help solve these challenges. To accelerate product development cycles, SANY Group targeted a solution with much higher levels of compute and storage capacity, which would better support data-intensive simulation workloads.



“Prioritizing research and development helps us to stay one step ahead of other manufacturers. We looked to modernize our infrastructure to support the sophisticated software tools that enable us to design and fine-tune new industrial equipment.”

Huang Yi

Senior Engineer of Process Information Department, SANY Group

A large construction crane is silhouetted against a clear, light-colored sky. The crane's long jib extends from the right side of the frame towards the left. A bucket is suspended from the end of the jib. The background shows the skeletal structure of a building under construction.

Why Lenovo? Proven experience and world-leading HPC solutions.

SANY Group identified high-performance computing (HPC) clusters as the most effective approach to support its research teams, and searched for a partner with proven experience on large-scale HPC infrastructure deployments. After assessing offerings from various vendors, the group selected Lenovo ThinkSystem server and storage solutions.

Huang Yi explains the decision: “Lenovo offered an impressive turnkey solution, with exceptional performance and scalability, and high levels of integration between the servers and storage. We were also impressed with Lenovo’s track-record for delivering successful HPC projects, and their engagement model, which offered direct access to their infrastructure experts.”

In addition, SANY Group felt that Lenovo offered a stronger understanding of its unique challenges than other vendors. “We recognized that Lenovo was both a technology and manufacturing company, just as we are,” adds Huang Yi. “As we transition towards a more data- and automation-driven business model, we believe Lenovo will offer insightful guidance and support.”



“We see that Lenovo is a world-leader in HPC infrastructure, with extensive experience supporting digital transformation projects in China. We felt confident that we had found the right partner.”

Huang Yi

Senior Engineer of Process Information Department, SANY Group

Completing a rapid multi-site implementation.

During the two-phase project, SANY Group worked with Lenovo to deploy Lenovo ThinkSystem SR650 servers, equipped with powerful NVIDIA® T4 and NVIDIA Quadro RTX 6000 GPUs to support the demanding simulation applications. Alongside this, the group added Lenovo ThinkSystem DM7000H hybrid storage arrays, Lenovo switches, and third-party HPC cluster and network management tools.

To implement the HPC clusters, Lenovo Services teams worked on site over 15 days at SANY Group industrial facilities in Shenyang, Beijing, Kunshan, Huzhou, Ningxiang, and Changsha. The Lenovo engineers completed racking, installation, and configuration of the new infrastructure, before running testing and delivering training to SANY Group employees on how to manage and maintain the solutions. Moving forward, Lenovo will deliver 24/7 support services for the next five years.

Huang Yi continues: “Lenovo provided very professional and efficient deployment services. Working with the factory engineers responsible for the development and manufacture of the servers was a major bonus, ensuring a fast installation and effective knowledge transfer to our teams.”



“Having access to round-the-clock support from Lenovo is especially valuable, helping us to keep our critical HPC environment working at optimum levels at all times.”

Huang Yi

Senior Engineer of Process Information
Department, SANY Group

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Results

With the Lenovo platform in place, SANY Group has accelerated cutting-edge research and development projects. Even as researchers work with more and more data sources, the Lenovo solutions provide the scalable, high-performance compute and storage resources needed to ensure that complex simulations and modeling workloads run quickly and efficiently.

Huang Yi adds: “In some cases, the performance of the Lenovo HPC cluster has far exceeded our expectations. For example, the storage data transfer rate is more than five-times higher than we initially hoped, and much greater than systems we use from other vendors. This extra speed ensures researchers gain rapid access to information and can work more productively on development projects.”

With research teams completing tasks faster than before, SANY Group can now launch innovative new construction equipment and other products sooner—helping to win new business and strengthen its market position. Similarly, the group is uncovering more ways to improve manufacturing processes that will increase production yields while reducing costs and human resources requirements.

Looking ahead, SANY Group plans to continue to scale the Lenovo infrastructure, and has already started the third phase of the project. Following upgrades and new server deployments, the HPC cluster will soon reach more than 100 nodes—supporting continuously growing research workloads.



- ✓ **Delivers the high performance needed to run powerful simulation and data modeling tools**
- ✓ **Provides rapid access to information, helping researchers work more productively**
- ✓ **Accelerates development projects, enabling the group to bring new products to market sooner**
- ✓ **Helps SANY Group to optimize processes, increasing production output while reducing costs**



“We are entering a new phase for Chinese manufacturing, and working with Lenovo is helping us to achieve our growth objectives. With our new Lenovo infrastructure, we can harness data to sharpen our service proposition to prospects, and optimize our business processes. Supported by Lenovo, we are well-placed to continue our long history of success.”

Huang Yi

Senior Engineer of Process Information Department, SANY Group



“Our partnership with Lenovo will help us to strengthen our competitive edge and reinforce our position as a world leader in the manufacturing of construction and other large-scale industrial equipment.”

Huang Yi

Senior Engineer of Process Information Department, SANY Group

What will you do with Lenovo HPC solutions?

The Data-Centered accelerate research and development with
Lenovo smarter infrastructure solutions, powered by NVIDIA®.

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