



Healthcare

# Closing healthcare gaps

Henan Children's Hospital

As Henan Children's Hospital evolves into a major regional medical center, it's embracing a flexible cloud model—backed by best-in-class Lenovo servers, powered by 3rd Gen Intel® Xeon® Scalable processors.

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## Who is Henan Children's Hospital?

Henan (Zhengzhou) Children's Hospital is a leading pediatric hospital with 2,200 beds and more than 3,000 employees. Established in 1960, the hospital now operates across four locations: Zhengdong Campus (Main Campus), East Third Street Campus, South Campus, and West Campus. In 2021, the institution received 2 million outpatients and emergency visits, treated 90,000-plus inpatients, and performed more than 25,000 operations.



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## The Challenge

In China, there can be big gaps in healthcare service levels between different regions, meaning patients often have to travel to hospitals far away for quality treatment. To bridge the divide and bring best-in-class care closer to patients, China's government has been working to establish a larger network of national and regional medical centers.

Henan Children's Hospital has been at the center of these plans: in 2016, it became the main unit for the establishment of a new National Children's Regional Medical Center. In the next three to five years, the hospital will be transformed into a high-level center for diagnosis, treatment, training, and research, as well as a major hub for collaboration with other regional medical centers.

Such a large-scale transformation was putting the hospital's IT infrastructure under greater pressure than ever. Henan Children's Hospital had been operating a traditional three-tier architecture, and it soon became clear that this would not be enough to support new demands. The institution needed a flexible platform that could scale to accommodate fast-growing data volumes, support a wide variety of workloads across multiple sites, and enable secure collaboration with other medical institutions. It also needed a highly available and resilient infrastructure that it could count on to run its most critical medical applications and store sensitive patient data.



**“Our operations were expanding fast, and we had to accommodate all-new demands for increased information sharing and data availability. The speed and scale of change were just too much for our traditional architecture, and it was clear that we needed a new approach.”**

**Zhou Qi**

Chief of Information Section, Henan Children's Hospital

# Moving IT in a new direction

Henan Children's Hospital determined that a move to the cloud offered the most efficient path to its goals, and chose Lenovo to provide the hardware building blocks for the new landscape. Working closely with a team from Lenovo, Henan Children's Hospital began a large-scale transformation, adding all-new Lenovo servers at three data centers, located on its East Campus and South Campus, to extend its existing physical infrastructure.

The hospital deployed six Lenovo ThinkSystem SR860 V2 appliances to serve as database servers. For its virtualization layer, the institution deployed 32 Lenovo ThinkSystem SR650 V2 servers. A further three Lenovo ThinkSystem SR650 V2 nodes support a new management cluster. The architecture is rounded out with an external network service layer, based on three Lenovo ThinkAgile VX7530 appliances, powered by hyperconverged infrastructure software from VMware.

## Hardware

Lenovo ThinkSystem SR650 V2  
Lenovo ThinkSystem SR860 V2  
Lenovo ThinkAgile VX7530  
3rd Gen Intel® Xeon® Scalable  
processors

## Software

Lenovo ThinkCloud OpenStack  
Cloud Management Platform  
Lenovo Software Defined  
Infrastructure Management Platform  
VMware vSAN  
VMware vSphere Enterprise Plus

All of the Lenovo servers feature 3rd Gen Intel® Xeon® Scalable processors, which drive extremely high levels of per-core performance, I/O, and memory bandwidth. As its core server virtualization platform, the hospital uses VMware vSphere Enterprise Plus, gaining a robust and dynamic foundation for the new cloud environment.

In addition, the hospital takes advantage of the Lenovo Software Defined Infrastructure (SDI) Management Platform to manage its ThinkAgile VX cluster. The Lenovo SDI Management Platform provides an integrated interface for both software and hardware resources, which makes life easier for both IT operations and maintenance teams. The platform gives teams real-time insight into the status and performance of all HCI components.

To ensure that vital medical data and applications remain highly available, Henan Children's Hospital undertook an extensive reconfiguration of its Microsoft SQL Server database environment and established an active-active cluster configuration across two datacenters. This enables the hospital to achieve application-level active-active access and maintain continuous operations in the event of disruption or downtime to production systems.

For efficient cloud orchestration and maintenance, Henan Children's Hospital makes use of the Lenovo ThinkCloud OpenStack Cloud Management Platform. The solution offers unified multi-cloud resource management and large-scale intelligent scheduling capabilities, allowing IT administrators to monitor, allocate, and manage virtual machines, physical servers, storage, and networking resources for multiple locations from a single, intuitive interface. The hospital's IT team uses the platform to monitor and manage operations across all of its data centers in real time, supporting faster service delivery, as well as rapid identification, analysis, and resolution of any issues.



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“We selected a mix of Lenovo two- and four-socket servers as they have been tested by the market and proven to offer excellent quality, stability and reliability, along with easy operation and maintenance.”

**Zhou Qi**

Chief of Information Section, Henan Children's Hospital

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## Results

With reliable, high-performance Lenovo servers supporting its new cloud landscape, Henan Children's Hospital is ready to meet new demands while continuing to deliver top-quality care for pediatric patients. The cloud enables rapid systems deployment, elastic scalability, and easier information sharing, so the hospital can expand operations faster and more efficiently and collaborate with other healthcare institutions more effectively.

In addition, a highly resilient cloud architecture and multi-site disaster recovery strategy mean the hospital can rely on its systems to run around the clock and avoid unplanned disruptions to patient care. In the event of downtime or emergency, the institution can rapidly fail over to its disaster recovery site, with recovery time objective (RTO) and recovery point objective (RPO) indicators both close to zero. What's more, the new approach has decreased annual downtime by around 28%.<sup>1</sup>

<sup>1</sup>Data provided by Henan Children's Hospital



Moving to a cloud-based data center and embracing straightforward management with Lenovo ThinkCloud OpenStack Cloud Management Platform has considerably reduced workload for IT administrators. Troubleshooting time has dropped 40%, while IT department productivity has been lifted by 31%.<sup>2</sup> It's saving the IT team valuable time and effort, so they can play a bigger part in helping Henan Children's Hospital meet its strategic goals.

Zhou Qi, Chief of Information Section at Henan Children's Hospital, states: "With Lenovo, we have established a dependable cloud platform to support our continued expansion and development as a regional medical center. We look forward to building on this foundation to bring a better balance of care to a larger number of pediatric patients and strengthen our collaboration with local and regional healthcare partners."



40% drop in troubleshooting time



31% improvement in IT productivity



28% cut in annual downtime

<sup>2</sup>Data provided by Henan Children's Hospital

# Why **Lenovo**?

Henan Children's Hospital was already familiar with Lenovo's strong credentials, having used Lenovo servers and storage systems for many years. The IT team felt that Lenovo offered the strongest performance among all hardware manufacturers. This first-hand experience played a critical role in the hospital's decision to choose Lenovo as the strategic hardware provider for its infrastructure evolution.

Zhou Qi confirms: "Lenovo is a brand that is synonymous with strength and innovation. Having used many different Lenovo products for some time now, we can attest to their advantages, and we are confident that our latest investments will support the hospital's continued development."



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