

Energy & Utilities

Fueling **top performance** for large-scale design workloads

China Petroleum East China
Institute of Design

How China Petroleum East China Institute of Design used a hyperconverged infrastructure solution from Lenovo and Nutanix to supercharge capacity, flexibility, and manageability of a massive virtual desktop infrastructure.



Lenovo

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NUTANIX

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Who is China Petroleum East China Institute of Design?

China Petroleum East China Institute of Design (CEI) was established in 1974 and is affiliated with China National Petroleum Corporation Huanqiu Engineering Co., Ltd. CEI is a technology and design-led company providing consulting, research and development, design, procurement, construction management, startup, and operation services. A domestic leader in general contract engineering for the petroleum refining and chemical engineering fields, CEI boasts Grade-A qualifications for engineering design, engineering consulting, and engineering cost consulting.

To date, CEI has provided critical design and construction support for more than 1,000 large and medium-sized oil refining and chemical production plants both nationally and abroad, as well as more than 300 oil and gas storage, transportation, and field surface engineering projects.



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The Challenge

CEI had been using a virtual desktop infrastructure (VDI) for several years. Over time, however, the institute had started to experience growing issues around compute and storage performance, stability, and manageability.

A Senior Engineer at CEI elaborates: “Our designers and engineers work with huge data files that need to be stored for a long time. At the same time, there are dozens of applications with high I/O requirements that need all-flash space to accelerate performance. We have continuously scaled the cloud environment and expanded its storage capacity multiple times, but the additional space would be consumed almost instantly. We eventually reached a point where we were unable to add more servers because we were limited by storage I/O.”

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“Operating a VDI as large as ours was no easy task. In addition to the virtualized environment itself, there were countless underlying servers, storage systems, optical switches, and more that had to be maintained. Our technical team is very skilled, but even they struggled to keep up with the mountain of day-to-day work.”

Senior Engineer

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Why **Lenovo**?

After exploring several possible configurations for its VDI, CEI determined that a hyperconverged infrastructure (HCI) offered an elegant solution to its challenges. The institute evaluated offerings from multiple hardware providers, and ultimately opted for a HCI built around the Lenovo ThinkAgile HX Series: a best-in-class hyperconverged system with Nutanix's industry-leading software preloaded on Lenovo platforms.

The Senior Engineer states: "CEI has been using Lenovo hardware for many years now; at least 95% of the existing servers in our data center are from Lenovo. We know from experience that the performance and stability of the equipment is guaranteed. We also found the Nutanix technology to be very mature. We were confident in making the evolution to HCI together with Lenovo and Nutanix."



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“During the evaluation process, Lenovo arranged a visit to an existing HCI client, who was operating a very large desktop cloud environment. We were able to see Lenovo’s ThinkAgile HX technology in action, which helped resolve many of our questions and convinced us that this would be the right solution for CEI.”

Senior Engineer

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Reimagined infrastructure approach pays off

Together with Lenovo, CEI deployed three hyperconverged clusters based on 15 Lenovo ThinkAgile HX5520 appliances with Nutanix Cloud Platform software, including the built-in hypervisor AHV, as the basis for a new private cloud HCI platform. In total, the platform will support some 200 virtual machines (VMs) and includes 480 cores, 7.68 TB of memory, and 1.2 PB of storage capacity.

The Senior Engineer comments: “We chose to build our own private cloud rather than move workloads to the public cloud for several reasons. Firstly, our business requires fast application response times and low latency. Data security was another concern as our data is mostly related to research and development, and we must protect our intellectual property.”

Hardware

Lenovo ThinkAgile HX5520

Software

Nutanix Cloud Platform with built-in AHV hypervisor

The Lenovo-Nutanix solution consolidates compute, storage, and virtualization software into one resource pool. CEI can manage all hyperconverged nodes, as well as the VMs and cloud desktops running on them, through a single interface. As the size of the cluster expands, performance is scaled linearly to avoid storage I/O bottlenecks.

To ensure high levels of data protection and availability, CEI now uses a lossless snapshot protection mechanism as part of its backup strategy. VM snapshots are taken every minute, alongside regular backups, allowing data and VMs to be rapidly restored in the event of an error or disaster.



“Although we were cautious about moving to a HCI initially, we are now very pleased with our decision. The solution from Lenovo and Nutanix has completely solved our storage capacity and performance problems. We have gained a very reliable platform that will serve our business well into the future.”

Senior Engineer

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Results

With the Lenovo-Nutanix HCI-based solution, CEI has achieved its goal of improving overall VDI performance, stability, and scalability. Compute and storage capacity can now be expanded on demand, helping meet changing business needs and ensure a high level of service.

The HCI-based private cloud is much simpler to manage. Each business system no longer occupies independent physical server, storage, and network resources. Now, everything is integrated in a shared cloud resource pool that can be managed uniformly and allocated flexibly.

Another plus is that Nutanix AHV virtualization offers a considerably lower total cost of operation compared to the institute's previous virtualization solution. Likewise, with the Lenovo-Nutanix solution offering simplified management, CEI has been able to cut down on operation and maintenance costs.

Looking to the future, CEI plans for HCI to play a central role in powering further transformation across the entire business.



Delivers on demanding capacity and performance requirements of design and engineering applications



Quick and easy to provision storage and server resources, helping CEI meet ever-growing business needs



Offers lower total cost of operation and reduced management effort



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“We have set a very high bar with Lenovo and Nutanix. Our engineering design cloud is now an industry benchmark, and has brought many benefits to CEI in terms of quality improvement, cost reduction, and efficiency gains.”

Senior Engineer

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How do you help designers work without disruption?

Giving VDI a new lease of life with
Lenovo and Nutanix technology.

Explore Lenovo ThinkAgile HX Series

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