

Healthcare

Ensuring key virtual desktop services run **securely and smoothly**

Nihonkai General Hospital

The hospital refreshed the information systems platform underpinning its virtual desktop infrastructure with a stable, secure, easy-to-manage hyperconverged solution based on Lenovo ThinkAgile HX Series with Nutanix Cloud Platform, migrated smoothly through Lenovo Professional Services.

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Who is Nihonkai General Hospital?

Nihonkai General Hospital is the main hospital of the Shonai region in Yamagata Prefecture, Japan. It was opened in Sakata City in April 2008 as a result of the merger of Yamagata Prefectural Nihonkai Hospital and Sakata Municipal Sakata Hospital. The organization attracted praise as a model case for hospital mergers nationwide.

Sakata City's healthcare system consists of Nihonkai General Hospital (responsible for acute care) and Nihonkai Sakata Rehabilitation Hospital (responsible for convalescent care), as well as Nihonkai Yahata Clinic and five other clinics within Sakata City which provide daily medical care.

The organization values compassion and strives to provide safe, high-quality medical care. It promotes cooperation with the local community and aims to improve the health and wellbeing of the residents of the Shonai region. The organization contributes to the local community through sustainable hospital management.



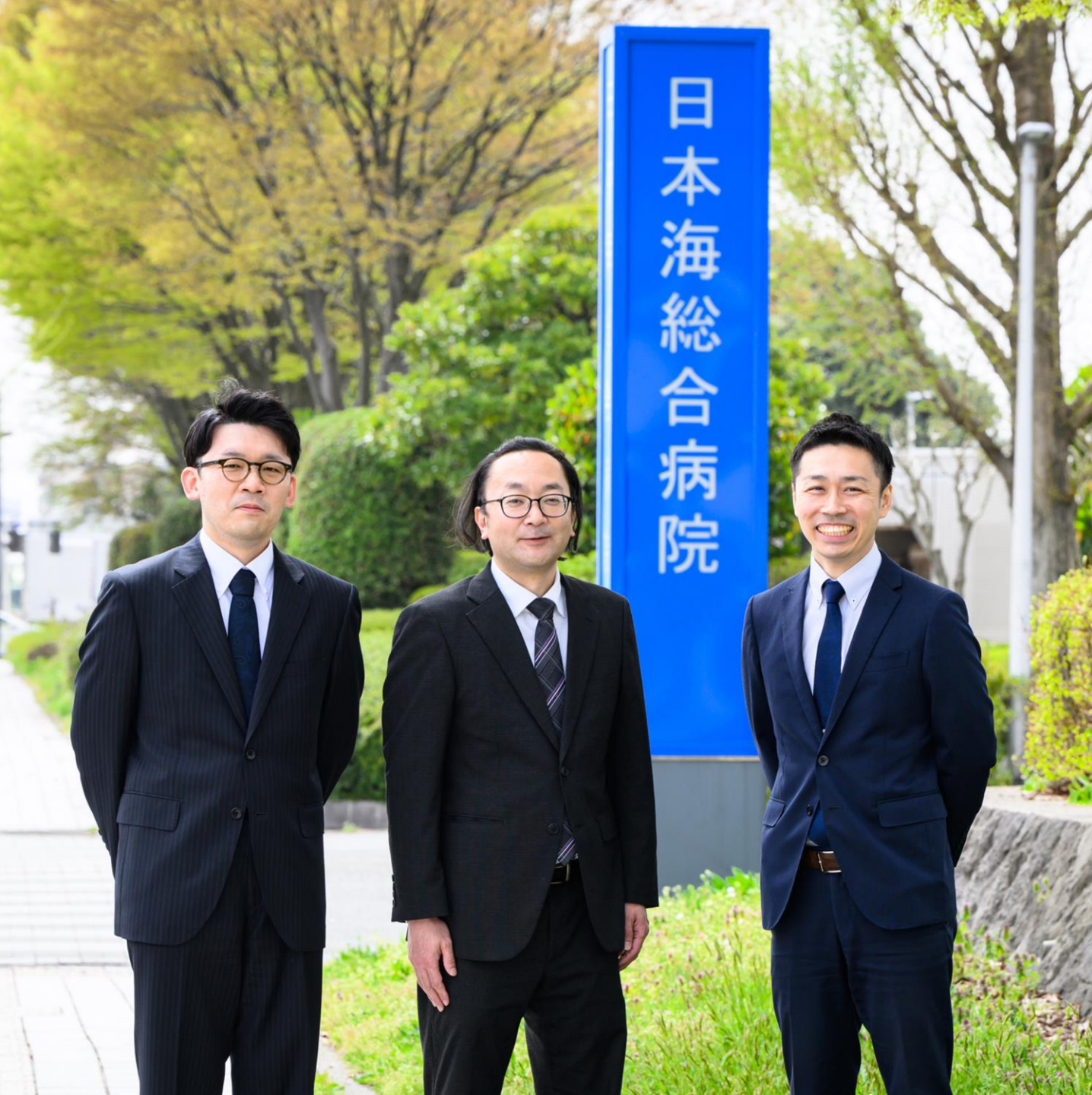
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The Challenge

Since its foundation in 2008, Nihonkai General Hospital has advanced medical treatment in the region. The hospital has opened an emergency medical center, a Positron Emission Tomography (PET) center and hybrid operating rooms, and even makes use of robotic surgery systems.

In terms of IT, Nihonkai General Hospital operates 'Chokai Net', the region's medical information-sharing network. In 2022, the hospital participated in an electronic prescription model project that was implemented in four regions across Japan to promote the use of electronic prescriptions.

Mr. Kuniyoshi Sasaki, Chief of Information Systems, Management Division, Nihonkai General Hospital, says: "Operating the regional medical information-sharing network means that we need communicate with the medical institutions, pharmacies, and patients that we work with face to face."



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“As the core hospital in the Shonai region, we are a leader in promoting the use of IT to improve healthcare—not just within the hospital setting, but outside hospital too.”

Mr. Kuniyoshi Sasaki

Chief of Information Systems, Management Division, Nihonkai General Hospital

Hardware refresh

In 2023, Nihonkai General Hospital was due to update the information systems used by approximately 110 employees at administrative management department through virtual desktop infrastructure (VDI) terminals. Previously, the VDI ran on a three-tier architecture comprising of physical servers, shared storage devices and storage area network (SAN).

Mr. Rui Saito, Chief of Information Systems Section, Management Division, Nihonkai General Hospital, recalls: “We had issues with the stability of the software, the reliability and scalability of the hardware, and other problems. The difficulty in expanding infrastructure, such as the addition of storage capacity to deal with the increase of clients as well as business operations, was a concern.”

Mr. Kuniyoshi Sasaki adds: “Operating system updates often stumble where hardware requirements become higher, bringing about a shortage of memory and HDD. And the costs associated with adding compute and storage resources to our conventional three-tier architecture was an issue.”

Seeking stability and security

Security was another concern, as Mr. Yoshinori Sato, Head of Information Systems Section, Management Division, Nihonkai General Hospital, explains: “There have been reports of other healthcare organizations affected by ransomware and other cyberattacks, causing their systems to shut down. We felt that we needed to further strengthen our security as well as our business continuity readiness by establishing a system that would enable rapid recovery in the unlikely event of an attack.”

Mr. Kuniyoshi Sasaki adds: “Before the introduction of VDI, each employee managed their own company-issued PC, and there were many instances where data was stored on the local device rather than the shared file server. We introduced VDI to prevent the risk of data leakage and data loss due to theft or breakdown, and to improve the situations where information is scattered. However, we knew that we needed to further strengthen data protection and management through establishing a backup environment and so on.”

Selecting Lenovo ThinkAgile HX Series

To solve these issues, Nihonkai General Hospital decided to replace the three-tier architecture supporting its VDI with a hyperconverged infrastructure (HCI) solution. The hospital engaged technology partner NEC Networks & System Integration Corporation (NESIC) to support the refresh and selected a solution based on Lenovo ThinkAgile HX3330-F Appliances.

Lenovo ThinkAgile HX Series is an HCI solution that integrates Lenovo servers with Nutanix software. By pooling compute, storage, and networking in a single, shared virtual structure, Lenovo ThinkAgile HX Series simplifies infrastructure management while offering easy flexibility and scalability. The hyperconverged nature of the solution makes adding capacity simple, as each node can be expanded, separated, and upgraded without interruption. This significantly reduces the time and cost of migration work.

Hardware

Lenovo ThinkAgile HX3330-F
Lenovo ThinkSystem SR250 V2
Lenovo ThinkSystem SR650 V2
IBM TS4300 Tape Library
APC Smart-UPS SMT1500RMJ2U

Software

Nutanix Cloud Platform
Veeam Backup & Replication
VMware Horizon

Services

Lenovo Professional Services

Ultra-reliable hardware

Nihonkai General Hospital implemented three Lenovo ThinkAgile HX3330-F Appliances to support its VDI environment using VMware Horizon Client, along with a Lenovo ThinkSystem SR250 V2 server as a management node. For the new backup environment, the hospital deployed a Lenovo ThinkSystem SR650 V2 server running Veeam Backup & Replication, connected to an IBM TS4300 Tape Library and APC SMT1500RMJ2U uninterruptible power supply (UPS). This configuration improves security and business continuity, with full countermeasures against ransomware.

Many Lenovo servers are manufactured at the NEC Personal Computers Limited (NEC PC)'s Yonezawa plant in Yamagata Prefecture, local to Nihonkai General Hospital—ensuring rapid delivery and secure supply of hardware. The plant uses high-quality manufacturing technology, also known as the 'Yonezawa Production Method,' and offers customizations over production, memory expansion, software preload, and pre-delivery inspection services. Lenovo server and storage systems are also equipped with Predictive Failure Analysis (PFA) and Light Path Diagnostics—a system of LEDs on various external and internal components of the server that leads you to the failed component. These features make Lenovo hardware highly reliable.

Why **Lenovo** and Nutanix?

For Mr. Rui Saito, scalability and backup were the two main reasons for selecting Lenovo ThinkAgile HX Series. “Our workforce is growing year-on-year, and we need to be able to accommodate new VDI users quickly. We felt that the Lenovo HCI solution offered excellent scalability. The ability to easily create online backups also fit our needs.”

Another key reason deciding factor was longevity; the hospital’s previous three-tier architecture had made it difficult and time-consuming to upgrade the VDI from Windows 7 to Windows 10. Mr. Kuniyoshi Sasaki confirms: “We made the move to HCI with an eye to the future.”

He continues: “Migrating to a new infrastructure is not easy; even just coordinating with the relevant parties can take time and effort. When I received the proposal to move to a HCI solution, I asked about future system renewals. The team explained to me that with HCI, it’s possible to migrate workloads without any downtime.”

Mr. Kuniyoshi Sasaki had been aware of HCI technology for some time, but first learned about Nutanix Cloud Platform during the evaluation process. “The team explained the solution very clearly, highlighting the benefits: simplicity, scalability, flexibility, and lower costs.” Mr. Yoshinori Sato agrees: “I had been interested in HCI for a while, but the team’s presentation convinced me that it would enable more efficient operations.”



Full support

From July to December 2023, Nihonkai General Hospital carried out the infrastructure refresh with support from NESIC and Lenovo. The project team completed the migration in January 2024. Lenovo not only delivered the solution, but Lenovo Professional Services also supported the implementation, configuration, and migration working alongside the hospital's IT team and NESIC.

Mr. Rui Saito recalls: “Starting with a meeting to confirm the technical specifications, Lenovo Professional Services then built the platform, deployed the software, designed and deployed the VDI—explaining everything along the way. They were quick to respond to all our inquiries, providing accurate answers promptly. Our relationship and trust deepened as the project progressed. The project was a success; I cannot think of any negative aspects.”

Mr. Yoshinori Sato adds: “I was impressed with how carefully Lenovo responded to each of our inquiries, both by phone and by email. I think Lenovo Professional Services provided a complete support system.”

Both Mr. Rui Saito and Mr. Yoshinori Sato felt that the Lenovo team's high level of skill was the key success factor in completing the project without any issues. This is one of the advantages of working with Lenovo, as the company has completed many similar projects.



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“As we enter the operational phase, we can count on continued support from Lenovo in the event of any issues. We trust Lenovo as a partner.”

Mr. Kuniyoshi Sasaki

Chief of Information Systems, Management
Division, Nihonkai General Hospital

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Results

Nihonkai General Hospital's new VDI environment went into full operation in 2024. With only a few months since go-live, the hospital has already seen benefits—chiefly, ease of management and maintenance.

For healthcare organizations, stability is paramount. Mr. Rui Saito says: “Previously, we had to collect equipment logs and check them in detail to detect hardware failures. We were unable to immediately determine which part of which server had failed, and it sometimes took time to recover from the failure. With Lenovo, the LEDs on the diagnostic panel light up to show which components have failed or are likely to fail. This helps us to minimize unplanned downtime.

Mr. Kuniyoshi Sasaki says: “The HCI management tools we use are not only functional, but also cost-effective.”



Easy scalability



Reliable system



Simple management

Growing partnership

Based on the success of this implementation, Nihonkai General Hospital is considering adopting HCI to support other areas of the organization, including HR and accounting. What's more, the hospital is also planning to upgrade its electronic medical record (EMR) system and is considering gradually expanding the HCI platform to support the medical systems used by each department.

Mr. Kuniyoshi Sasaki comments: "We would like to use the knowledge gained from this HCI implementation to inform future infrastructure upgrades. We would certainly ask Lenovo for support in this."

In the coming years, Nihonkai General Hospital expects the use of IT to continue to grow, for example through more regional medical collaboration networks and connected medical systems. Stable, secure systems are a must, so there is no doubt Lenovo will play a key role in helping Nihonkai General Hospital to support the healthcare needs of the local community.

How can hospitals ensure stable, secure operations for employees' virtual desktops?

Nihonkai General Hospital moved VDI to a reliable, secure, easily scalable hyperconverged infrastructure from Lenovo and Nutanix.

Explore Lenovo ThinkAgile HX Series

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