Using Hyperconverged Infrastructure to Build an Integrated Virtual Platform That Excels in Scalability and Operational Management

**Customer name**
Social Medical Corporation
Yuuaikai Tomishiro
Central Hospital

**Location**
Tomishiro city, Okinawa, Japan

**Number of employees**
1,270 (as of July 2018)

**Challenges**
- Replacement accompanying the end of maintenance for the physical server
- An increase in the management and operational loads of business systems that have been built individually

**Solution**
- Construct a hyperconverged infrastructure (HCI) integrated virtual platform using the Cisco HyperFlex system
- Combine performance and cost improvements through solid state drive (SSD) and hard disk drive (HDD) hybrid configurations
- Stabilize and accelerate medical service system communication
- Enable the internal responses of P2V migration and business system environment construction in a short time

**Section 6 | Business results summary**
- Improve operational manageability by simplifying device configurations
- Plans to aggregate about 90% of the business system
- Consider the integrated operations management of remote systems
Social Medical Corporation Yuuaikai Tomishiro Central Hospital (hereinafter referred to as “Tomishiro Central Hospital”) has been providing secure and safe medical treatment as a core medical institution in the Okinawa Chunanbu region. The hospital is using the Cisco HyperFlex system, which is a Cisco hyperconverged infrastructure, while preparing to move to a new hospital in 2020. Tomishiro Central Hospital has constructed a new integrated virtual platform that excels in scalability, performance, and operational manageability, and has been sequentially migrating from conventional physical servers based on its three-year plan.

Since its opening in 1980, Tomishiro Central Hospital has been responsible for advanced medical treatments, including acute medical treatment and 24-hour emergency treatment. It provides secure and safe medical treatment as a core medical institution in the Okinawa Chunanbu region, including as a disaster center hospital and local medical support hospital. In 2020, it aims to eliminate the deterioration of facilities, and is preparing to build and migrate to a new hospital that is resilient in the face of disasters. In 2018, it adopted the Cisco HyperFlex system to run the hospital’s medical and administrative systems. It has constructed a new integrated virtual platform that excels in scalability, performance, and operational manageability, and has been sequentially migrating from conventional physical servers based on its three-year plan.

“The reasons we adopted HCI in the medical system, which demands sequential expansion that cannot stop by any means, were stability and the “era.”

Itaru Kamizato
Chief of the Information Systems Department at Tomishiro Central Hospital
Challenge

Itaru Kamizato, Chief of the Information Systems Department at Tomishiro Central Hospital, had the following to say regarding the background of the discussions and the issues. “Many of the physical servers in our possession are reaching the end of maintenance, so we were pressed to replace them without waiting for relocation. There are a wide range of systems used at medical sites. The management and operational loads of the tens of physical servers that were individually built in the past have also increased. Furthermore, the necessary resources and performance for things like electronic medical charts, PACS (medical imaging management system), and automatic calculations for analyses have also increased in recent years. In fact, on-site physicians have said things like the system performance is slow or stops, but it is difficult to distinguish the damage based on the composition of the conventional server, storage, and network layers. We have eliminated these, and have sought platforms that can be used for a long time in the future.” Tomishiro Central Hospital has received suggestions from several companies, including from local construction vendors that it has been cooperating with for many years. Kamizato had the following to say regarding the reason for adopting the hyperconverged infrastructure (HCI). “The reasons for adopting HCI were safety and “era”. It is unacceptable for medical systems to stop for any reason. A rapid recovery is required when failure occurs, so it would be better for the system to be simple. HCI can realize a redundant configuration without using external storage. It can obtain the full advantages of virtualization, and the ease of its construction and expansion were also appealing. We felt the increase in performance when migrating from the physical servers that had been built individually in the past. Another advantage is that expansion is easy, because if we want to add resources, we can just buy nodes.” In addition, Kamizato had the following to say regarding the reasons he chose the Cisco HyperFlex system from among the HCIs of various other companies. “It was simply because of the advantage it had in terms of cost. The current medical system uses a lot of data due to images. As of right now, the amount it uses has reached dozens of terabytes. Given the evolution of medical technology, I felt that a disk capacity three times greater than the current one would be needed in the future. Performance is also required, so other companies have recommended full SSD compositions, but of course that would mean higher costs. We needed an SSD and HDD hybrid configuration, which can combine both data capacity and performance based on usage. The Cisco HyperFlex system was able to meet our needs. We want to use this system for five to seven years after introducing it. For us, we chose Cisco because we can build the system within the range of the budget, and we can anticipate future scalability.”

Solution

Tomishiro Central Hospital is implementing a migration based on its three-year plan. During its first year in 2018, it migrated its business system on the server, whose maintenance was about to end. During its second year in 2019, it migrated main systems such as PACS. During its third year in 2020, it plans to complete its migration of the administrative system for personnel and other parties, and move to a new hospital. Kamizato had the following to say regarding the advantages he experienced when migrating to the Cisco HyperFlex system.

Surprised by the increase in performance. The necessary system platform can be easily built.

“I was most surprised by the performance. The P2V (physical to virtual) migration, which used to take an entire day in the past, could now be completed in just a
Case study
Cisco HyperFlex

few hours. Also, another advantage is that it can create a server environment on the spot. In the past, when we built the business systems at the site needed, we purchased a physical server and had to rely on a vendor to build it. That also required a lot of time and money, but from now on, our internal employees can handle it.”

Improving manageability by aggregating business systems
Kamizato said these advantages are also linked to the aggregation of the systems scattered across various sites in the past, as well as the improvement of

Solutions introduced at Tomishiro Central Hospital

Before

Physical server environments built for each system

After

Integrated virtual platform using HCI

Aggregate primary components using virtualization technology software

Business system to be integrated

(Medical treatment systems)
• Electronic Medical Record
• PACS linkage/report
• Virtual browser
• Endoscopic image
• Laboratory tests
• Bacteria tests
• Gynecology and obstetrics department fetus monitor, etc.

(Information systems)
• Human resources system
• File server
• Mail server
• Antivirus server
• Hospital DNS server, etc.

Other Introduced Products

Cisco HyperFlex system (HX240C-M5SX)

Cisco UCS 6332-16UP
Fabric Interconnect

Management server
Cisco Unified Computing System (UCS) C series (UCSC-C220-M5SX)

Cisco Nexus 3000 Series
10 G Switch (N3K-C3524P-10GX)
manageability. “For example, at medical sites, there are business systems that divide image clips, measurement values, calculation values, etc., from electronic medical charts and multiple PACS, integrate and store them for each patient, then use them during diagnoses. In the past, we used a PC terminal as a server, and had it connected at all times for processing. This became a cause of malfunctions, such as when the PC stops, becomes disconnected, or lags. With the new virtual platform, communication has been sped up and stabilized through direct connections from various devices, and at the same time, manageability has been greatly improved through aggregation.”

About one year has passed since the migration to Cisco HyperFlex began. The migration has been going smoothly without any major trouble. The resources, which had been a cause of concern, are being used at a lower rate than initially planned. “There has been no notable trouble since the start of the migration. The migration has been progressing smoothly without us doing much work. In addition, as for whether the deduplication function is effective, we are extremely happy that the amount of resources used is lower than expected, so we have some room to spare. We can migrate about 90% of the current business system. Even for systems in which the new system has not been installed yet at this point, various vendors have little experience with construction using an HCI or Cisco HyperFlex system, so I expect that the aggregation rate will further increase in due time. Also, simplifying the devices and wiring makes me feel at ease when relocating.”

Will be completed in late March 2020; new hospital under construction in Yone District, Tomishiro

Number of floors: 8 floors above ground; Site area: About 24,000 tsubo; Total floor area: About 14,500 tsubo; Number of hospital beds: 378

Characteristics of new hospital: • Enhanced emergency medical treatment • Resistant against disasters • Strengthened specialized medical treatment functions • Establishment of a multidisciplinary cancer treatment system
Benefits and Future Plans

Tomishiro Central hospital is accelerating its preparations towards moving to a new hospital ward in 2020, including a migration to a new platform. Kamizato had the following to say regarding the results up until now, his outlook on the future, and his expectations of Cisco. “First of all, in light of the situation regarding the performance and resources after migrating to the main system this fiscal year, I want to examine the resources for the future expansion and complete the migration. As of right now, I feel we can guarantee there will be spare resources, so it will be easier to take on new initiatives. For the medical treatment, it is very advantageous that the business system operates stably, can expand without stopping, and requires only a short amount of downtime when it absolutely must stop, so I hope HCI will spread to more medical institutions in the future. Furthermore, I would like to aggregate the systems at related facilities, such as our hospital’s health management center and Nanbu Hospital in Itoman.”

Other Detailed Information

For details about the Cisco HyperFlex system, please visit www.cisco.com/go/hyperflex.