Hyperconverged Infrastructure Improved VDI Performance and Simplified Network Operation at University

Chuo University is a university with a history and traditions spanning more than 130 years. The virtual desktop infrastructure (VDI) environment network infrastructure managed and operated at the Tama campus was revised by introducing Cisco HyperFlex™ Systems, the first hyperconverged infrastructure (HCI) in use at the university. As a result, performance has improved and operation management has become simplified.

Ever since Chuo University was established in 1885 as an English law school, it has dedicated itself to its founding spirit of “Fostering the Ability to Apply Knowledge to Practice.” The university contains six faculties, seven graduate programs, two professional graduate schools, four affiliated high schools, two affiliated junior high schools, and nine research institutes. Virtual desktop infrastructures (VDI) are used at the university to improve the centralized management and security of information access devices (IADs) used by staff and students. VDI is used for things such as multimedia classroom lessons, the library internet, and data preparation. However, numerous problems had emerged over the years.

Customer name
Chuo University

Industry
Education

Location
Tokyo
Business challenges:

- Degraded performance of the VDI used for classroom lessons and in the library
- Capacity and manageability deficiencies of the existing three-tier configuration system

Network solutions:

- Use Cisco HyperFlex Systems for short-term construction and integrated operation management
- Use All-Flash solid-state disk drives (SSD) to improve boot-up and file-copy speed

Business results:

- Elimination of anxieties related to physical impediments through simplification and reduction of equipment and cabling to half the space
- Promotion of integrated management through expansion of the system, even when opening a new campus
- Anticipation of uniform management of multiple campuses, using Cisco Intersight™
- Facilitation of remote collaboration, using Cisco Webex®
- BYOD implementation promotion with Cisco Umbrella™

“In addition to Cisco HyperFlex Systems’ performance and stability, Cisco’s enthusiasm and painstaking support solidified our adoption of them.”

Hirokazu Yamanaka
Chuo University Information Environment Development Center Administrative Office, Tama IT Center Division, Deputy Section Manager

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**Business challenges**

Mr. Hirokazu Yamanaka, the Deputy Section Manager of the Information Environment Development Center Administrative Office, Tama IT Center Division, responsible for the maintenance and building of the backbone network for the entire university and the educational environment of the Tama campus, had this to say about the existing issues: "We had been approached by many people, staff and student alike, describing how the VDI is slow and sluggish. In particular, we had been pressed for immediate measures regarding the multimedia classrooms, where dozens of people are connected at once. Lessons were being impeded by how long boot-up took. Since the VDI was set up in a three-tier configuration consisting of existing networks, servers, and storage, we initially began considering replacing it with equipment of the same configuration. There were worries, however, over whether or not that would solve the fundamental issues. As for the VDI, requests for necessary applications in the classrooms, such as statistics software, had increased. However, in a server environment without deduplication functions, insufficient capacity made it impossible to install them even if we wanted to. Besides that, the number of files with large sizes, such as images and movies, is increasing.

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**Chuo University VDI Environment**

Reduction of existing space (10RU equivalent) to half the space (5RU), including the planned removal of one rack system, leading to considerable benefits because of fewer devices and cables compared to the existing layout.

**Main features of Cisco HyperFlex:**

- **Simplicity**
  - Integration of computing, storage, and network elements.
  - Because of prior installation of VMware ESXi, the system setup is extremely simple.
  - Single-point management support and the ability to integrate management tools into VMware vCenter.
  - Simultaneous management of multisites through Cisco’s cloud-style system management service, Cisco Intersight.

- **Flexibility**
  - Computing and storage elements can be expanded independently, according to use
  - Ability to execute nonstop rolling upgrades as well as add and expand nodes
  - Storage optimization and highly efficient resource management, made possible through standard functionality, which includes inline deduplication and inline compression

- **Economy**
  - TCO-ensured enterprise-level data protection
  - Capability to execute rolling upgrades (data-migration costs excluded)
  - Full Cisco support and service provided
“Windows 7 support is ending soon, and its successor, Windows 10, has two big updates planned per year. It would be necessary to be able to deal with that cycle. Performance had reached its limits with a deduplicationless server environment. This caused us to start considering HCI after using this opportunity to fundamentally review the infrastructure. Upon reviewing catalogs of multiple HCI manufacturers, we were introduced to Cisco HyperFlex Systems from Cisco.”

**Network solutions**

Mr. Yamanaka had this to say about the merits and advantages of Cisco HyperFlex Systems compared to other competitors’ products: “There are several reasons we chose Cisco, but functionally, it was because of its performance, high compression rate, and deduplication. Compared to other products, Cisco HyperFlex Systems has advantages with its ability to perform functions that are unlikely to suffer performance degradation even under heavy loads, such as its dedicated distribution file system (Cisco HyperFlex HX Data Platform). We also conducted a third-party* evaluation because we were particularly concerned about performance. Additionally, we also heard manufacturer vendors talk about its abundance of previous precedent in the industry and its stability. Therein I recalled that our Cisco server, the Cisco Unified Computing System (Cisco UCS), has had absolutely no issues operating since its installation several years ago. The fact that using our Cisco UCS was as natural to us as breathing made us certain about the reliability of Cisco’s products. We were worried about the cost, but after receiving advice from Cisco and comparing the concrete sizing details, it came out to an all-time low price and fit within our budget with no problems.”

Mr. Yosuke Kokubu, Software Research Associates, Inc. Network System Services Division 1, IT Infrastructure Department 1 Chief, who is in charge of the system’s construction and operation, has been surprised by its intuitive usability ever since his prior hands-on training: “It took some time to decide on a product, so the construction time was extremely short, but even considering that, the fact that it’s already verified and can be used right after delivery is a big strong point of HCI. Just the construction would take a month to complete with the existing configuration, but it was finished in about a week. Setting it up can also all be done from the web instead of using several management tools. I feel like intuitive usability like that is another strong point for it when expanding, going forward. All-Flash (SSD), emphasizing speed, was used this time for the configuration, but it was faster than I thought it would be, and it surprised me with its startup and file-copy time. The network is configured with Cisco equipment as well, so its increasing integrated management is another strong point.”

**Business results**

“Rack space has been reduced by about half, and with less equipment and fewer cables, the rack is tidy. It makes me happy. Less equipment means failure–rate reductions and stable services. Also, we were able to verify that it was definitely faster than before, when we evaluated the VDI environment response times for things like user logins,” said Mr. Yamanaka, concerning the

results. In future, Chuo University will construct two new faculties in April 2019 as a part of its “Chuo Vision 2025” long-term business project. Two major campus operations in Tama and Korakuen are also planned as a part of this project.

Mr. Yamanaka had this to say about development going forward and expectations for Cisco: “As for new faculties, there are campuses where permanent personnel cannot be hired. We are going to further integrate management by expanding the system using Cisco HyperFlex as we did this time. From an operational optimization standpoint, we have great expectations for Cisco Intersight, since it enables integrated management from the cloud across campus. We are also considering whether or not Cisco Webex can be used, not only between campuses, but also as an exchange tool that goes hand in hand with globalization. In addition to this, when promoting BYOD to curb ever-increasing expenditures and maintenance costs, security applications like Cisco Umbrella that protect the entire campus without burdening users will most likely become necessary. Cisco’s enthusiasm and painstaking support were helpful this time. We are greatly looking forward to advanced solutions based on the evolution of our campus network going forward.”

For more information
Please visit www.cisco.com/go/hyperflex for details regarding Cisco HyperFlex Systems. Please visit www.cisco.com/go/intersight for details regarding Cisco Intersight.