DELL EMC

# Building a private cloud platform with All-Flash vSAN Ready Nodes Improving proposal power and service level with HCI

To accommodate the growing popularity of sharing and watching video on smartphones, iTSherpa adopted Dell EMC vSAN Ready Nodes and built a private cloud platform with HCI.

iTSherpa | Software development | Japan

## Business Challenges

iTSherpa utilized physical servers and IaaS cloud services to provide service packages incorporating social media, live streaming, and EC functions to its customers through an all-in-one service infrastructure. However, performance and cost issues in the service caused the company to look for a flexible virtualization platform with high-availability features.

## Solutions

- Dell EMC vSAN Ready Nodes
  - Dell EMC PowerEdge R740xd
  - Dell EMC PowerEdge R440
  - Dell EMC Networking S4048T-ON
- Enterprise Support
  - Dell EMC ProSupport Plus

## Business Results

- Development of the infrastructure to accommodate the growing demand for smartphone video delivery using HCI
- Reduction in cloud service costs, which enabled lower service fees
- Provisioning of VM in as little as 30 minutes, which helped achieve rapid service development and improve quality
- The company can offer flexible services tailored to customer requirements, and proposal speed has improved by 20-30 percent
- Erasure Coding (RAID 6) on an all-flash configuration provides redundancy while also ensuring sufficient capacity and speed

**Several months → As little as 30 minutes**

Provisioning of VM in as little as 30 minutes enabled rapid development of services

**20-30 percent improvement**

The company can offer flexible services tailored to customer requirements due to improved proposal speed

iTSherpa Co., Ltd (iTSherpa) provides the social media package GLAS, live-streaming systems, and e-commerce systems, and also develops a variety of applications. The company's strength is its ability to offer the infrastructure platform for these services as an all-in-one solution.

In the past, iTSherpa provided its service infrastructure through physical servers at a data center and IaaS cloud services. However, recognizing the importance of providing infrastructure through its own private cloud, the company developed an HCI environment using Dell EMC PowerEdge-based VMware vSAN™ (a service platform created by an HCI using VMware vSAN). One year later, iTSherpa also adopted Dell EMC vSAN Ready Nodes designed with a pre-tested all-flash Dell EMC PowerEdge R740xd to develop and expand its HCI environment.

> *"Using Dell EMC vSAN Ready Nodes-based HCI for infrastructure that supports resource-intensive video delivery and other services solved the issues associated with a public cloud and physical servers, and allowed us to deploy high-quality resources swiftly."*
>
> Naoto Sonezaki
> Director
> Infrastructure Service Department
> iTSherpa Co., Ltd.

## Investigation for the introduction of a private cloud

iTSherpa uses its strengths in software development and building high-availability infrastructure to provide first-class services showcasing the potential of the Internet.

The company initially offered its service provisioning infrastructure through physical servers located in a data center; however, after launching a service to deliver video to PCs 10 years ago, the number of servers began to increase, eventually reaching several hundred. Naoto Sonezaki, Director of the Infrastructure Service Department of iTSherpa, explains, "We attempted to virtualize and aggregate servers in 2010, but couldn't achieve the necessary performance." As a result, the company relied on a public cloud and physical servers.

However, sharing and watching video on smartphones grew in popularity, and in 2014, use of the cloud and physical servers began presenting a variety of issues. "Delivering video required an immense amount of resources and traffic for coding, conversion, storage, reading, and delivery. As the volume of video delivered to smartphones increased, the required storage capacity and other necessities increased; we couldn't keep up with demand by using physical servers and there were cost issues with the cloud. Each release of a new smartphone OS version required preparation of new hardware, and even if we had used a high-quality, best-effort cloud service, congestion from other users would have decreased the speed. The possibility of maintenance was also an issue," Sonezaki continues.

iTSherpa recognized the importance of building its own infrastructure to provide flexible proposals that met the quality and cost demanded by users and began investigating the introduction of a private cloud in 2016.

## Building a private cloud platform with All-Flash vSAN Ready Nodes

iTSherpa focused on flexible, highly scalable HCI for the investigation and consulted Dell EMC. "After considering multiple technologies, we decided to introduce VMware vSAN due to its scalability, convenience, and mobility. VMware has a proven track record and a strong partnership with Dell EMC. We were also extremely confident we could receive support whenever necessary," reveals Sonezaki.

Construction of the private cloud platform started in early 2017 and was completed in less than three months. The platform consists of 10 Dell EMC PowerEdge R630 servers and has 34TB of usable storage, with redundancy provided through RAID 1. To guarantee a sufficient I/O performance, the platform uses NVMe (Non-Volatile Memory Express) for caching, which is used in a hybrid configuration with SAS SSD.

iTSherpa initially deployed vSAN. This allowed the system to switch to a different node if a failure occurred, guaranteeing consistent service quality for customers. However, the demand for video delivery services grew beyond expectations and iTSherpa required new infrastructure immediately. Sonezaki continues, "We anticipated that the system would eventually need more storage, so we made the first build Generation One (G1), then decided to build and operate a new Generation Two (G2) HCI. Due to device compatibility and other

*"Our HCI built with Dell EMC PowerEdge servers exhibited a high level of performance in all benchmarks. Erasure Coding on an all-flash configuration provides redundancy while also ensuring sufficient storage capacity."*

Hideyuki Ezaki
Infrastructure Service Department
iTSherpa Co., Ltd.


*"vCenter is extremely convenient as we can centrally manage the G1 and G2 environments as well as the added validation servers."*

Tomislav Knezevic
Infrastructure Service Department
iTSherpa Co., Ltd.

verification problems in the first build, we turned to Dell EMC vSAN Ready Nodes, which were released after the G1 build."

The G2 HCI used six Dell EMC PowerEdge R740xd servers and featured an all-flash SSD configuration. The all-flash configuration enabled vSAN RAID 6 Erasure Coding, which secured redundancy while also ensuring sufficient storage capacity (100TB). "G2 exhibited a high level of performance in every benchmark. Although performance would also have improved if we had used RAID 1 on G2, Erasure Coding provided redundancy with a greater usable disk capacity. We are also considering utilizing different configurations on a per-case basis, such as using RAID 1 for services where performance is crucial," explains Hideyuki Ezaki of the iTSherpa Infrastructure Service Department.

## Rapid provisioning of VMs improves service quality and proposal capabilities

While iTSherpa is currently using both G1 and G2 HCIs to provide services, it is gradually transitioning to the G2 and will rebuild the G1 in the future to improve its performance. The company has also added a Dell EMC PowerEdge R440 equipped with VMware vCenter® to act as a monitoring server for the G1 and G2, and a R740xd and Dell EMC PowerEdge R530 to the G2 as test and validation servers. According to Tomislav Knezevic of the iTSherpa Infrastructure Service Department, "VMware vCenter is extremely convenient as we can centrally manage the G1 and G2 environments as well as the added validation servers."

iTSherpa has been operating the vSAN-based HCI for over a year and is running more than 300 VM on the system. The number of VM increases daily to match demand from the development side. "As there are dozens of prepared templates, we are able to provision a VM in around 30 minutes to an hour once we receive a request; this is very convenient. It takes a little bit of time if we are adding multiple middleware, but it rarely takes an entire day. With physical servers, the process would take at least one month–possibly several. We now spend this time on development, and we are able to expand services rapidly. It also gives us time for trial and error," says Daichi Hiratsuka of the iTSherpa Infrastructure Service Department.

With the G1 and G2 HCI, iTSherpa has overcome the issues of scalability and speed associated with physical servers, solved the problem of cloud costs and quality, and can now offer services at the quality and price that users demand. "HCI allows us to trial customer requests immediately and make swift proposals that become services; we can also make proposals to customers that have a high volume of traffic and require a large disk capacity. Our proposal speed is 20-30 percent higher than what is used to be," adds Tsutomu Aizono, Executive Director of iTSherpa.

## Future infrastructure expansion for higher availability

iTSherpa is also investigating the development of a third-generation HCI to keep up with newer vSAN versions and functions, as well as an upgrade of G1 and G2 to newer versions. “Although we haven’t yet had to ask for support, as Dell EMC provides one-stop support for both hardware and VMware, we know it’s always available. As the data that we handle will continue to grow, Dell EMC will also give us advice regarding the infrastructure needed to support this growth,” says Aizono. In regard to the future aspirations of the company, Aizono continues, “We will need to challenge ourselves in new fields such as IoT and AI. For example, we would like to provide a new service that collects and analyzes the data of e-commerce sites, and also turn to new ventures that combine image recognition AI and video delivery.”

Using its strengths in software development and building high-performance infrastructure, iTSherpa will continue to develop high-value services for its users, and use the company’s high-flexibility / high-availability infrastructure to provide these services with exceptional quality.

> *“Templates allow us to provision VM in as little as 30 minutes and match demand from the development side. We now have more time to spend on development and performing trial and error to improve quality.”*
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