What is the ideal way to manage data for the realization of Digital Transformation?

~ SUSE Enterprise Storage Solution on Fujitsu PRIMERGY server

The Digital Transformation (DX) era is in full swing and the best way to achieve the hybrid infrastructure required in such an era, storage must be fundamentally renewed. Current data management which is completely divided into cloud and on-premises is being reviewed, and the introduction of Software Defined Storage (SDS) is accelerating efforts to centralize data management. Vendors supporting businesses to build their infrastructures have also begun to focus on providing SDS solutions.
Fujitsu, one of the largest IT solution & services providers in Japan, is no exception. Using "SUSE Enterprise Storage" powered by the open source Ceph technology, an SDS solution for object storage, they are rolling out business worldwide. We spoke with Fujitsu's **Linux Development Division** about the company's initiatives.

Challenges with rapidly growing amounts of data

It has been over 18 months since the Japan Ministry of Economy, Trade and Industry announced the "DX Report" in September 2018. During this time, Since then, the phrase "2025 Digital Cliff", referring to the crisis highlighted in the report, has stirred up attention and many companies have started implementing DX initiatives.

The report concluded that the ultimate goal is to transfer enterprise systems to microservices and cloud native applications implementing DevOps, but this of course cannot be accomplished all at once. The development of applications for the realization of DX, along with the construction of the infrastructure needed to host them, are being carried out in stages, aiming for a complete transition in the next 5 years.

One of the major challenges, in particular, is data management. In a conventional system consisting of 3 layers, storage was merely a place for storing system data. In the DX era, however, it is necessary to collect, analyze, and utilize data across various systems to create new business opportunities. To accomplish this and manage vast amounts of data, storage that can be efficiently managed is required.

"With the spread of DX, the data handled by enterprise systems is rapidly increasing. Due to the spread of IoT systems and the rapid increase of unstructured data such as images and videos, data storage and management remain a challenge for general, scale-up storage systems designed in consideration of data capacity." (Fumio Matsushita, Business Development Manager, Planning Dept., Linux Development Div., Platform Software BU, Fujitsu Ltd.)

To resolve such issues, many companies have recently entrusted their data to storage services provided by cloud computing service providers. However, cloud storage has its own issues.

"With cloud storage, you do not need to worry about data capacity. However, it costs money not only to store data but also to retrieve it. In some cases, it may be less expensive to add on-premises storage." (Hironobu Ishii, Head of Support Engineering Dept., Linux Development Div., Platform Software BU, Fujitsu Ltd.)

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SUSE Enterprise Storage as a Ceph-based SDS solution

The solution to these problems lies in SDS which abstracts storage through software definition and scales out to expand data capacity.

"In contrast to general proprietary storage, SDS allows the flexible and unlimited scalability of data capacity. By creating a virtual storage pool, physical hardware can be completely divided from storage capability and storage can continue to be used virtually permanently." (Mr. Matsushita)

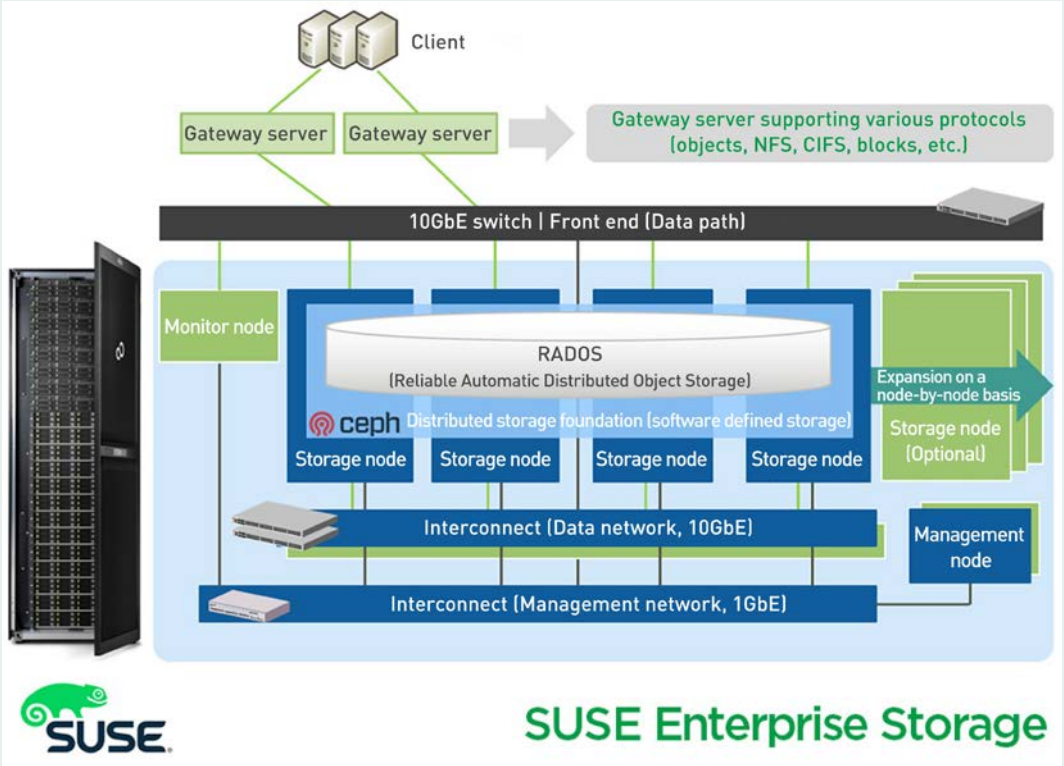
There are several SDS solutions, but Fujitsu has chosen SUSE Enterprise Storage (SES) as its object storage solution. Why did Fujitsu select SES?

"Fujitsu has been developing storage products for many years. We've used that experience to leverage excellent open source technologies and have chosen to use "Ceph" as Fujitsu's object storage solution." (Kensuke Shiozawa, Director, Service Engineering Dept. Linux Development Div., Platform Software BU, Fujitsu Ltd.)

Mr. Shiozawa has been involved in open source community activities for many years as an engineer of Fujitsu. He has researched efficient data protection and recovery mechanism and greatly contributed towards the development of open source SDS technology, Ceph.

"With open source Ceph, you can find out all features by looking at the source code.

Kensuke Shiozawa
Director, Service Engineering Dept.
Linux Development Div.
Platform Software BU
Fujitsu Ltd



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It avoids vendor lock-in and supports multi-vendor environments combined with third-party hardware. Meanwhile, it also allows flexibility to add functions which Fujitsu wants to supplement, such as operation management or other functions to satisfy client needs." (Mr. Shiozawa)

Providing an SDS solution using the Ceph technology requires a data management tool. The SUSE Enterprise Storage is what drew attention as that tool as Ceph Dashboard.

"Fujitsu has used SUSE Enterprise Linux as the Operating System for our enterprise server "PRIMERGY" since the 1990s. We have provided Ceph solutions to overseas clients for over five years, developing the necessary knowledge and experiences. That is why we chose SES based on the Ceph technology as Fujitsu's object storage SDS solution." (Mr. Shiozawa)

Developing an SDS solution unique to Fujitsu

Following Fujitsu's choice to use SES, SUSE Software Solutions Japan, who provides local sales and technical support, has been worked very closely with Fujitsu business development and support team.

"Fujitsu is a vendor with excellent system integration expertise. As SUSE expands its SDS business with SES, I believe that together with Fujitsu, we can not only solve corporate storage issues, but also provide additional value through Fujitsu." (Michiko Nogi, Senior Storage Technologist, SUSE Software Solutions Japan)

Michiko Nogi
Senior Storage Technologist
SUSE Software Solutions Japan

Fujitsu and SUSE are targeting companies that are building a hybrid cloud/on-premises system infrastructure and gradually moving to cloud native applications across a hybrid infrastructures.

"SES has many features but one that stands out is its high affinity with "Kubernetes," which deploys and manages containerized applications. With the launch of "Rook," which integrates Ceph's storage functionality with Kubernetes, Ceph can be containerized, run, and managed on Kubernetes. SES is already supported as a tech preview in the current version." (Ms. Nogi)

Further, Fujitsu is now focusing on start-up services for companies that wish to introduce SDS.

"In general, SDS provides custom solutions for each company that wants to implement it, but that approach is time consuming and labor-intensive. Accordingly, taking advantage of our work to date and rich operational experience, Fujitsu has created a start-up service that provides technical consulting, a manual summarizing how to introduce/construct/operate SDS using SES, Q&As and more. Benefits that clients receive by introducing SES through Fujitsu include not having to be familiar with software and hardware themselves and the availability of one-stop support after beginning operations." (Mr. Matsushita)

According to Fujitsu, the company plans to take this one step further and create a menu of their recommended system carried configurations that package systems required for the introduction of SDS.

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Deployment started in areas handling large data amounts

Fujitsu's widespread efforts to provide SDS solutions have already paid off, with success in providing their service mainly to companies overseas.

"Taking the medical/healthcare market as an example, our solutions are already being used for genome analysis in gene/chromosome research and as Vendor Neutral Archives (VNA) in Picture Archiving and Communication Systems (PACS). In genome analysis, over 1TB of data is sometimes required to be stored per person, and it is expected that medical images will significantly increase in data volume as high definition images and videos like those in 4K and 8K further advance; it would be impossible to handle this with conventional storage systems. SDS comes into play in those situations, and Fujitsu provides those SDS solutions using SES. Other fields that have introduced these solutions include the HPC (High-Performance Computing) field, which handles large amounts of data, and the connected car field, which collects/processes/analyzes vast amounts of sensor data." (Mr. Ishii)

* PACS Picture Archiving and Communication Systems

In Japan, the number of companies that are focusing on SDS is increasing and inquiries are being received from many companies, not just Fujitsu storage users. In light of the situation, SUSE is also attempting to drive SES business in Japan.

"SUSE will continue to work with Fujitsu to develop SES solutions tailored to requirements of Japanese clients and configurations that they need. As SDS is expected to further promote storage commodities in the future, SUSE hopes to enhance SES functions to extend Enterprise Customers requirements more than ever." (Ms. Nogi)