

# SUSE and Fujitsu ETERNUS CD10000: Hyperscale Open Source Data Storage

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# Unlimited Scalability that's Cost-Effective Too

Staying ahead in business today means collecting and using more data more intelligently. But storing that rapidly growing data is straining IT resources across industries. By 2020, the average internet user could be creating 1.5 gigabytes of traffic per day. Connected airplanes could generate up to 5 terabytes daily and a smart factory might produce a full petabyte of data every day.

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Yesterday's storage solutions just aren't up to the task of handling this massive onslaught of data—you need a whole new kind of storage.

You need software-defined storage (SDS), a solution that delivers a full suite of persistent storage services via software running on an industry-standard hardware platform. Whether you're looking for archival storage, disaster recovery, storage for video streaming or storage for private cloud environments, SDS offers the only real way to keep up with demand.

Now, SUSE® and Fujitsu are working together to provide robust SDS with unlimited scalability on a highly flexible and cost-effective platform using SUSE Enterprise Storage and the Fujitsu Storage ETERNUS CD10000 reference architecture.

## Solving Enterprise Challenges Together

SUSE and Fujitsu have been working together for 15 years to offer organizations innovative, reliable and open solutions that can simplify complex enterprise IT management and reduce IT expenses. Fujitsu offers on-premises, hosted and cloud-based solutions—featuring SUSE Linux Enterprise Server, SUSE OpenStack and SUSE Enterprise Storage—that you can count on

for high performance, efficiency and reliability.

Now, the two companies bring their expertise to the world of SDS with the Ceph-based SUSE Enterprise Storage and Fujitsu Storage ETERNUS CD10000 reference architecture. Both SUSE and Fujitsu are closely involved in the Ceph open source project and are members of the Ceph advisory board. SUSE is now the number-two contributor to the Ceph project.

Together, the combined solution gives you cost-effective scaling; unified file, block and object storage; streamlined storage management; and the flexibility to tackle many different storage use cases. Plus, by buying your solution through Fujitsu, you get a one-stop shop for hardware, software and services.

## A Look at the Solution Components

### SUSE Enterprise Storage

SUSE Enterprise Storage is based on Ceph, an industry-leading SDS solution and the most popular one among OpenStack users.

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1 Source: Intel, [https://s21.q4cdn.com/600692695/files/doc\\_presentations/2017/2017\\_Intel\\_Investor\\_Meeting\\_Krzanich.pdf](https://s21.q4cdn.com/600692695/files/doc_presentations/2017/2017_Intel_Investor_Meeting_Krzanich.pdf).

It allows you to deploy a unified block, object and file storage environment to reduce the capital and operational costs of storage infrastructure. With Ceph, a single system administrator can manage petabytes of data, many times more than an administrator in an equivalent block-storage environment.

SUSE Enterprise Storage is designed as a distributed storage cluster to provide unlimited scalability, from tens of terabytes to petabytes. You can easily add Fujitsu hardware and extend SUSE Enterprise Storage at the rate your organization needs. Because it is self-managing, your IT burden does not grow faster than your storage. The solution automatically rebalances data without

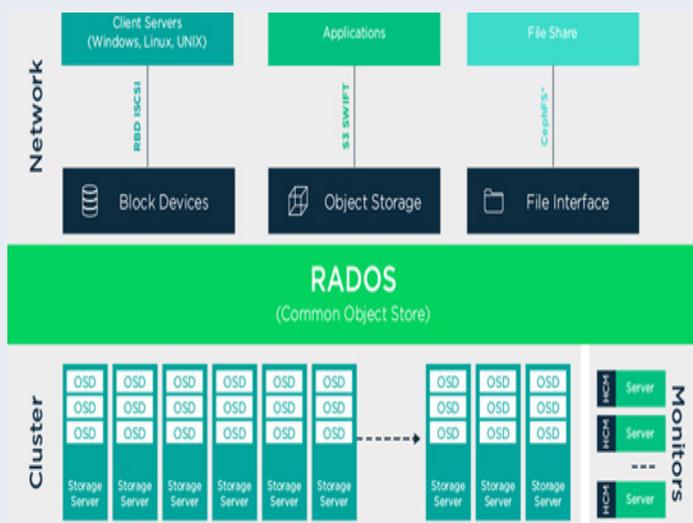
manual intervention. The Ceph Dashboard provides a single, easy-to-use console for managing the storage cluster, with real-time data on performance and status.

Ceph also comes with erasure coding, which enables you to define settings for data protection. The latest iteration of Ceph significantly reduces input and output latency, helps you free up capacity via data compression and provides faster and more granular backups.

SUSE Enterprise Storage can help to make your storage solution affordable because it is priced by node, not by the amount stored.

### SUSE Enterprise Storage Clusters

A SUSE Enterprise Storage cluster is made up of four types of nodes. The minimum SUSE Enterprise Storage cluster consists of at least one administration server (physical or virtual), four object storage device nodes (OSDs), three monitor nodes and one or more gateway nodes.



**Figure 1.** A logical diagram of the various kinds of SUSE Enterprise Storage nodes and the ways they interact with the rest of your environment.

**Object storage device nodes** are the workhorses of the cluster and do the actual data storage. SUSE recommends a minimum of four OSDs for each SUSE Enterprise Storage cluster.

**Monitor nodes** maintain information about cluster health, a map of other monitoring nodes and an overall map of the cluster. Monitor nodes also keep a history of changes performed to the cluster. SUSE recommends a minimum of three monitor nodes.

**Gateway nodes** translate between your backup server and the SUSE Enterprise Storage cluster. If you have two different backup servers or archive applications, one using object storage and one using block storage, you will need two gateway nodes.

- For object storage (such as S3 and Swift), use a Ceph RADOS Gateway.
- For block storage, SUSE uses iSCSI gateways that enable block and multipathing storage to heterogeneous clients such as Windows and VMware vSphere.
- For file storage, use either Ceph Filesystem (CephFS) or NFS-Ganesha.

**Admin nodes** enable you to make changes to your Ceph cluster. They have the smallest requirements of any of the nodes and can be run as a virtual machine or on repurposed existing hardware, if desired.

Guidelines for deployment are available in the SUSE Enterprise Storage documentation.

## Fujitsu Storage ETERNUS CD10000

### Reference Architecture

The ETERNUS CD10000 reference architecture is based on software-defined and hyperscale principles. It provides a template that enables you to start with a capacity of a few terabytes and can scale up to 50 petabytes or more by adding storage nodes. The reference architecture enables you to create a hyperscale stack tailored to your specific requirements, without any storage hardware vendor lock-in.

The internal mechanisms automatically create copies of data that are spread across the cluster. Thus, a disk or node failure does not result in downtime. And, because the system is software defined, its lifetime is not tied to the hardware.

When storage nodes reach end of life, you can replace them with newer nodes without shutting down the system. Teams can provision or replace storage nodes and disks using one or two commands, drastically reducing the effort of managing even large amounts of data.

The reference architecture is built on the PRIMERGY family's broad selection of servers. Fujitsu Server PRIMERGY systems provide the most powerful and flexible data center solutions for organizations of all sizes, across all industries and for any type of workload. For your monitor or admin nodes, you might select Fujitsu Server PRIMERGY RX1330 M3, RX2510 M2 or RX2530 M4 models. For your OSD nodes, the storage-dense Fujitsu PRIMERGY RX2520 M4 or RX2540 are excellent choices.

Fujitsu Server PRIMERGY systems are optimized to provide the best energy efficiency. From the mainboards developed and manufactured in Germany to the selection of components, everything is aimed at providing minimum power consumption and the best compute performance simultaneously.

### Use Cases

You can use SUSE Enterprise Storage and the Fujitsu Storage ETERNUS CD10000 reference architecture to solve many of today's hardest storage challenges. Here's a look at several common workloads supported by the solution.

### Target for Compliance Archiving

To remain compliant with various regulations, you might have to store emails, legal documents and other files for specified periods of time. SUSE Enterprise Storage works with archiving systems to meet these very specific requirements.

### Data Archiving and Bulk Storage

Enterprises often have a lot of data that must be stored for long periods of time—such as old emails, logs, transaction histories, reports and more. SUSE Enterprise Storage on the ETERNUS CD10000 reference architecture provides an affordable way to handle all that data.

### Target for Disaster Recovery or Disk-Based Backup

Enterprises need a storage solution with costs close to tape, but with much higher performance and capacity. SUSE Enterprise Storage on the ETERNUS CD10000 reference architecture provides that and more, with an affordable and scalable way to meet backup windows and recovery times. SUSE and Fujitsu also provide SDS solutions certified with backup vendors such as Commvault.

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**“For IT organizations undergoing digital transformation, SDS provides a good match for the capabilities needed—flexible IT agility; easier, more intuitive administration driven by the characteristics of autonomous storage management; and lower capital costs due to the use of commodity and off-the-shelf hardware.”**

**ERIC BURGNER**

*Research Director for Storage*  
IDC

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<sup>2</sup> Source: “IDC Forecasts Software-Defined Storage Solutions to Generate Worldwide Revenues of Nearly \$16.2 Billion in 2021,” IDC press release, October 3, 2017.

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### **Audio/Video Streaming**

If you're in the content and media business, you likely need to store high quantities of large files. These video and content files might also need to be available at all times. The combined SUSE and Fujitsu solution offers affordable, scalable storage to fulfill these essential industry demands.

### **Storage for Internal or Private Clouds (OpenStack)**

Ceph is the leading solution for OpenStack storage. To support the rapid growth in storage in most private clouds, organizations are embracing SDS. The combined solution provides a way to do so that smoothly integrates with your OpenStack implementation.

### **High-Performance Computing**

The combined solution provides efficient storage for demanding environments such as high performance computing (HPC), where input/output needs can be high and large volumes of data are required.

### **Robust and Cost-Effective Storage for Today's Demands**

To keep up with today's growing data, you not only need storage that can scale without limits, you also need storage that eases management and can scale cost-effectively because your IT budget definitely has limits. With SUSE Enterprise Storage and the Fujitsu Storage ETERNUS CD10000 reference architecture, you can get that unlimited scalability on a highly flexible and cost-effective platform, so that your data can continue to power your business for years to come.

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**SUSE Enterprise Storage is priced by node rather than by capacity, so you can scale your storage without per-gigabyte software pricing weighing you down.**

Additional contact information and office locations:  
[www.suse.com](http://www.suse.com)

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