



PRIVATE CLOUD SOLUTION BRIEF

Seagate and SUSE Software-Defined Storage Solution

TECHNOLOGY PAPER

POWERING THE MOST DEMANDING PRIVATE CLOUD

Data continues to drive growth in the private cloud, thanks to demands like edge computing, artificial intelligence, and machine learning. Traditional enterprise storage architectures can't efficiently scale to meet the needs; hence, the adoption of object storage in the form of private storage clouds.

By addressing demands with both on-premises and public cloud infrastructure, including moving some frequently accessed applications/workloads and associated data back on-premises, enterprise customers can manage growth and control costs in this hybrid IT/cloud world.

The public cloud is convenient to use and doesn't require much upfront investment in infrastructure. However, most users acknowledge that large scale data movement, storage, and processing can be very expensive. After analyzing the total costs for the public cloud versus an on-premise or colocation solution, these large public cloud customers are starting to repatriate their data and build their own private cloud infrastructure to store and process this data. Industry analysts such as IDC are forecasting the growth of the private cloud to exceed the public cloud during the next five years.

Public cloud has been overshadowed by concerns of cost and lack of control while at the same time companies are creating more data than ever before and putting that data to work to drive their business. The dynamic nature of data-intensive applications with today's public cloud utilization creates costly operational expenses and security concerns. Alternatively, you can operate your own private cloud, but how could you then seamlessly manage scale, control costs and securely operate a software-defined storage infrastructure?

To store and manage large data sets in a private cloud at lower costs than the public cloud requires implementing the storage hardware and software using a different approach than the traditional NAS and SAN used by IT. This approach is often called software-defined storage. The hardware commonly used by software-defined storage consists of industry-standard x86 servers and high-density storage arrays (also called JBOD or just a bunch of disks). The software used for storage at this scale is an object store such as SUSE Enterprise Storage, which is built on top of open-source Ceph.

This paper details key parts of the solution and how technology from Seagate and SUSE are altering long-held beliefs about the shape of the price/performance curve in a private cloud.

SEAGATE EXOS SYSTEMS

A key component of the software-defined storage hardware is the Seagate® Exos™ E 4U106, which supports a variety of Seagate Exos enterprise SAS HDDs, including the industry-leading Seagate Exos 16TB nearline HDD, as well as Seagate Nytro® SAS flash SSDs. The Seagate Exos E 4U106 combines the highest-density packing of storage in a 4U form factor with the highest-capacity HDD devices, providing the leading storage capacity of any disk array on the market.

Exos E 4U106 is the data center's largest building block. It delivers industry-first capacity and density without sacrificing data access speed. A vast amount of data fits in a 4U rack by leveraging

up to 106 high-capacity Seagate nearline enterprise SAS HDDs in a single enclosure, which holds up to an unprecedented 1.7PB¹ of raw capacity. With an overall maximum bandwidth of 36GB/s, you can access both mission-critical and archival data with lightning speed and be assured about data availability through must-have redundant hot-swappable components.

As both the designer and manufacturer of the HDDs and the storage platform, Seagate is able to optimize the system design to allow full performance of all 106 disks utilizing patented cooling and system technology.



SUSE ENTERPRISE STORAGE

SUSE, the world's largest independent open-source company, powers digital transformation with agile, enterprise-grade open-source solutions, edge to core to cloud. With over 25 years of collaboration with partners, communities, and customers, SUSE delivers and supports enterprise-grade Linux, software-defined infrastructure and application delivery solutions to create, deploy, and manage workloads anywhere—on-premise, hybrid, and multi-cloud—with exceptional service, value, and flexibility.

SUSE Enterprise Storage delivers a highly scalable, resilient, self-healing storage software system. It is designed for private cloud environments from petabytes up to exabytes in scale. This intelligent, software-defined storage solution is based on Ceph, an industry-leading SDS solution and the most popular one among OpenStack users. With Ceph, a single system administrator can manage up to 4PB of data—six times more than an administrator in an equivalent block-storage environment.

Ceph also comes with erasure coding, which enables you to define settings for data protection. The latest iteration of Ceph, available in SUSE Enterprise Storage, offers BlueStore, which doubles the write performance of previous releases and significantly reduces input and output latency. It can also help you free up capacity via data compression.

SUSE Enterprise Storage can reduce IT costs by optimizing data placement with the ability to automatically move data between tiers and leveraging industry-standard servers to present a unified storage servicing block, file, and object protocols. Having storage that can meet the current needs and requirements of the data center while supporting topologies and protocols demanded by new web-scale applications enables administrators to support the ever-increasing storage requirements of the enterprise with ease.

SOLUTION BENEFITS

This Seagate and SUSE software-defined storage solution enables optimal agility and cost benefits for the private cloud infrastructure by providing a unified platform where structured and unstructured data can coexist and be accessed as file, block, or object, depending on the application's requirements. The combination of open-source software (Ceph), industry-standard servers, and the latest proven technology innovations in Seagate HDDs and storage systems reduces time-to-market and cost while enabling easy to manage scalability needed to keep up with future demands.

¹ When using Exos 16TB drives

SUSE AND SEAGATE STRATEGIC ALIGNMENT

Seagate and SUSE have partnered to enable customers to quickly build and operate their own private storage cloud.

Seagate provides an industry-leading storage platform allowing up to 1.7PB in 4U, which increases rack density and lowers data center footprint while increasing performance required by machine learning, cloud-native container applications, and advanced telecom native applications.

SUSE Enterprise Storage enables IT organizations to adapt to changing business demands by providing a unified platform where structured and unstructured data can coexist and be accessed as file, block, or object depending on the application requirements.

Together, Seagate and SUSE provide the industry-leading solution to run your private cloud storage infrastructure that powers the most demanding applications in your private cloud and at the edge.

CONCLUSION

SUSE and Seagate give users the power to deploy a simple to manage, scale, and secure solution to power their own private cloud more cost effectively than ever.

- Cloud-like infrastructure on-premises for any application
- Easily scales from petabytes to exabytes
- Enterprise support

For more information about Seagate, visit seagate.com.

For more information on SUSE, visit suse.com.

For more information on Ceph, visit ceph.io.

We are happy to help with any questions you may have. Send us a note lyvelabs@seagate.com.



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