GigaOm Vendor Profile: OSNEXUS v1.0
An Exploration Based on Key Criteria for Evaluating Object Storage

Object Storage
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1. Summary

OSNEXUS QuantaStor is a software-defined storage solution based on the open-source Ceph project. QuantaStor eliminates all of the complexity of Ceph, thanks to advanced and easy-to-use management tools and the granular control over supported hardware resulting from the built-in storage grid technology. Even better, its tight collaboration with Western Digital lets OSNEXUS provide the same level of sophistication with an NVMe-oF backend based on WD OpenFlex technology. The solution is fully compatible with Ceph, eliminating any risk of lock-in, and it provides the same interfaces (block, file, and object) and services.

The product builds on the Ceph core to provide good S3 compatibility and efficient erasure coding and compression. It also uses data placement algorithms that are disk-, node-, and rack-aware for the best resiliency and availability.

Due to the outstanding control over infrastructure resources and the flexibility QuantaStor provides, you get fast provisioning and effective infrastructure utilization, which gives enterprises and service providers a composable infrastructure without the need for custom hardware or infrastructure the size of a hyperscaler. And though ease of deployment and management are the main selling points of this product, its flexibility and efficiency can also strongly impact TCO. Furthermore, thanks to NVMe-oF support, QuantaStor’s performance is better than that of other Ceph-based solutions.

Other additions made by OSNEXUS to Ceph include multi-cluster management, strong multi-tenancy capabilities, hardware integration, and remote replication. Security has also been improved and the product is certified to operate in compliance with several demanding regulations.

QuantaStor benefits from the large Ceph ecosystem for integration with Elastic and other tools for searching and event notifications, but the company itself doesn’t offer any solution that integrates these capabilities. The Ceph community is very active regarding the containerization of the entire solution and it is expected that QuantaStor will take advantage of this. A CSI plug-in for Kubernetes is available as well.

The product has a good analytics tool, the UI is easy to use with several standard dashboards already available, and the engine on the backend can be quickly customized to create additional dashboards with Grafana.
This GigaOm report is one of a series of documents that helps IT organizations assess competing solutions in the context of well-defined features and criteria. For a fuller understanding consider reviewing the following reports:

**Key Criteria report**: A detailed market sector analysis that assesses the impact that key product features and criteria have on top-line solution characteristics—such as scalability, performance, and TCO—that drive purchase decisions.

**GigaOm Radar report**: A forward-looking analysis that plots the relative value and progression of vendor solutions along multiple axes based on strategy and execution. The Radar report includes a breakdown of each vendor’s offering in the sector.

**Vendor Profile**: An in-depth vendor analysis that builds on the framework developed in the Key Criteria and Radar reports to assess a company’s engagement within a technology sector. This analysis includes forward-looking guidance around both strategy and product.
2. Key Criteria Analysis

QuantaStor lets users work with Ceph, a popular and highly scalable open-source SDS solution, without having to deal with its complexity, automating and simplifying most operations in its initial deployment and optimization, and all operations for provisioning. Even better, the user interface lets users deploy and manage complex, multi-cluster layouts and data replication between them. In fact, this is a particularly user-friendly solution and users don’t need any Linux or Ceph knowledge to operate it effectively and at scale.

OSNEXUS QuantaStor supports hardware from a variety of vendors, including Western Digital, Dell, Lenovo, SuperMicro, Intel, Cisco, and HPE. In fact, when deployed with certified servers, QuantaStor provides complete visibility of the hardware and its status, further simplifying support and maintenance operations.

QuantaStor includes useful system analytics, with detailed dashboards that are easy to use. Good integration with the hardware underneath allows visibility of the entire infrastructure, with a comprehensive view of the data path and potential issues, as well as performance and capacity metrics.

OSNEXUS takes full advantage of Ceph core security features and improves on them. Along with data-at-rest and in-transit encryption, the software supports several authentication mechanisms, IAM, improved role-based access control (RBAC) and multi-tenancy features that isolate S3 tenant access to specific resources. It is also noteworthy that OSNEXUS has filed for FIPS 140-2 L1 certification with NIST (currently under review).

OSNEXUS doesn’t offer integrated serverless capabilities (the ability to run code against objects and their metadata triggered by events) but it can take full advantage of the open-source ecosystem and integrations with Ceph, such as Apache Kafka for event streaming, and other services. Indexing and search are offered via external integration with Elastic. Even though QuantaStor has a CSI plug-in, Ceph cannot yet be deployed in a containerized version on top of Kubernetes and there is no specific operator to further integrate it with the orchestrator. However, QuantaStor’s roadmap does show that several Ceph services will be containerized in future product releases.

QuantaStor is well optimized to work with commodity hardware and offers good overall performance
and strong consistency with all supported hardware in both hybrid and all-flash configurations. Furthermore, the simplicity and automation offered by the product do not preclude performance optimization. In fact, the work done with Western Digital and its OpenFlex NVMe-oF platform showed improved performance, reaching up to 9GB/s write and 17GB/s read throughput with just one OpenFlex Data24 tray.

Integration with external cloud services is limited and there aren’t automated tiering mechanisms to move cold data to the cloud or synchronize data with external S3-compatible object stores, a feature that is planned for future versions. On the other hand, QuantaStor offers bidirectional asynchronous data replication across clusters with granular per-bucket control. An S3-compatible NAS gateway that supports NFS and SMB on the front end is available for edge deployments, and you can get a virtual appliance for hybrid-cloud deployments or testing purposes.

The OSNEXUS QuantaStor licensing model is based on capacity, with subscriptions that can be very convenient for both high-capacity use cases and for high-performance use cases that leverage all-flash configurations, thanks to discounts based on the overall deployed capacity. Storage Grid licensing also favors large-scale systems with discounts based on system capacity. OSNEXUS solutions are available through channel partners (distributors and VARs) as well as MSPs.
3. Evaluation Metrics Analysis

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+++ : strong focus and perfect fit of the solution
++ : The solution is good in this area, but there is still room for improvement
+  : The solution has limitations and a narrow set of use cases
-  : Not applicable or absent.

Source: GigaOm 2021

OSNEXUS QuantaStor shows an overall $/GB that's very good. Its high configurability and support for large hard-disk drives, erasure coding, and compression all contribute to improve this metric. Moreover, the excellent visibility of the server components provided by the user interface, and all the mechanisms to take advantage of the available resources enhance infrastructure utilization.

The system's efficiency comes from a combination of ease of use, hardware integration, and Ceph features that enable users without any knowledge of Linux and Ceph to operate the system correctly and at scale.Granular control over system resources, flexible erasure coding and data replication, and compression give users options to optimize the system for every workload. OSNEXUS design tools and support services can also help new customers quickly identify the appropriate solution and assist the customer in their first steps with the product.

QuantaStor can be installed in minutes, no CLI required, and the web-based GUI is accessible from any cluster to provide a full picture of the infrastructure and allow users to manage complex multi-cluster infrastructures from a single UI. APIs, a CLI, and a Python library support Web UI capabilities and are available for expert users who need to provide automation and integration with other infrastructure systems.

QuantaStor offers additional products to integrate QuantaStor with existing infrastructures, including a NAS gateway that provides SMB and NFS connectivity, and an NFS option to make data accessible simultaneously via object and file protocols, easing the transition to object storage for legacy applications. At the same time, QuantaStor takes advantage of the open-source ecosystem and Ceph community for additional integrations with third-party products and open-source solutions.

QuantaStor’s potential: TCO looks very good. Its Storage Grid technology, helpful UI, and end-to-end integration with the hardware stack are remarkable and greatly help simplify operations, while data footprint optimization techniques are on par with most of the competition. The work done by OSNEXUS around NVMe-oF with Western Digital is just at the beginning but has great potential to increase overall infrastructure utilization and flexibility.

QuantaStor’s heterogeneous hardware support is a feature to consider, especially with regard to the
long-term evolution of the infrastructure. Because QuantaStor is based on Ceph, the infrastructure can be easily migrated to an upstream version of the product if necessary, avoiding any sort of lock-in risk. Additionally, the product is available for cloud and virtual machine deployments for testing purposes or to build hybrid infrastructures.
4. Bottom Line

OSNEXUS QuantaStor combines an open-source core with additional enterprise features that make the product very appealing and suitable for a large number of scenarios. Additionally, support for NVMe-oF on the back end enables, for example, high-performance use cases with improved flexibility and quicker resource provisioning.

The solution is solid and easy to adopt. Moreover, the Ceph community is very active, working on a series of improvements for the next generation of the open-source project. QuantaStor will benefit from the upstream version of Ceph while its own roadmap shows a similar path and the same commitment to overall user experience.
5. About Enrico Signoretti

Enrico has 25+ years of industry experience in technical product strategy and management roles. He has advised mid-market and large enterprises across numerous industries and software companies ranging from small ISVs to large providers.

Enrico is an internationally renowned visionary author, blogger, and speaker on the topic of data storage. He has tracked the changes in the storage industry as a Gigaom Research Analyst, Independent Analyst and contributor to the Register.
6. About GigaOm

GigaOm provides technical, operational, and business advice for IT’s strategic digital enterprise and business initiatives. Enterprise business leaders, CIOs, and technology organizations partner with GigaOm for practical, actionable, strategic, and visionary advice for modernizing and transforming their business. GigaOm’s advice empowers enterprises to successfully compete in an increasingly complicated business atmosphere that requires a solid understanding of constantly changing customer demands.

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