

Simple, Scale-out Block Storage with Ceph Technology Using OSNEXUS QuantaStor

Date: January 2016

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Abstract: This report provides a first look at OSNEXUS's scale-out block functionality with Ceph technology. OSNEXUS enables organizations to utilize software-defined storage to simultaneously deploy scale-out block, file, and object storage on commodity hardware.

According to ESG Research:¹

83%

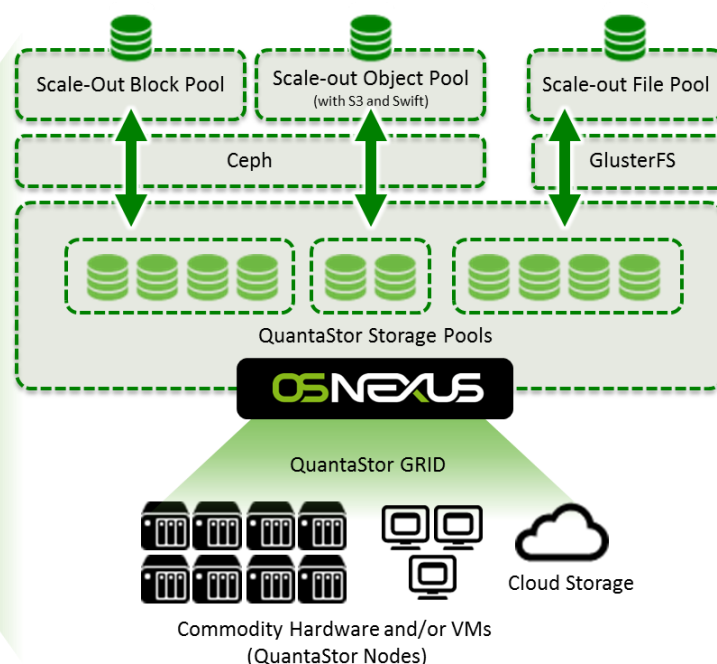
The percentage of organizations that are interested in leveraging **software-defined storage** (SDS) as a long-term storage strategy.

13%

The percentage of organizations that consider themselves prepared to implement SDS solutions using **open sourced software** and commodity hardware as a do-it-yourself (DIY) deployment.

OSNEXUS: Simplified Scale-out SDS for Block, File, and Object

OSNEXUS QuantaStor is an SDS solution that allows organizations to turn commodity hardware into a globally scalable, software-defined storage solution with block, file, and object protocol access. OSNEXUS leverages the scale-out capabilities of proven open source solutions from Ceph, GlusterFS, and ZFS in conjunction with its own proprietary storage hardware virtualization capabilities. This enables OSNEXUS to offer organizations storage deployment flexibility from the open source technologies, while also removing many of the complexities related to configuration, management, and growth. And because QuantaStor supports simultaneous deployments of high-performance file, block, and object storage via Ceph, GlusterFS, and ZFS, organizations gain agility to dynamically allocate storage resources to applications with different storage requirements whenever they are needed.



The QuantaStor software can be installed on any 64-bit commodity server or virtual machine and can be scaled out to as many as 32 physical and/or virtual nodes locally located or geographically dispersed. The resources are then virtually brought together to form a QuantaStor Grid. The Grid can easily be managed through either a single management interface or with REST APIs, and management of all resources is done without special client-side software. Once the QuantaStor Grid is created, administrators can easily deploy scale-out block, file, and object filesystems, while also being able to dynamically allocate unused storage from the Grid to any of the filesystems that may require additional capacity or a specific class of storage. QuantaStor supports all major SAN and NAS protocols (iSCSI, FC, CIFS (SMB), and NFS) and most enterprise features, including encryption, snapshots, high-availability RAID, compression, remote replication, SSD caching, quality of service (QoS) controls, and thin provisioning. OSNEXUS can even leverage low-cost cloud storage from providers like Amazon S3 for backups and/or NFS shares.

OSNEXUS QuantaStor provides organizations with deployment flexibility and infrastructure agility. IT administrators can choose which initial configuration makes the most sense for their applications, and they are able to react quickly if the needs of the business change and the applications require a modification to the underlying infrastructure. QuantaStor delivers on the promise of software-defined storage by allowing organizations to dynamically provide storage to any host application, across any protocol, while utilizing the underlying infrastructure as efficiently and cost-effectively as possible.

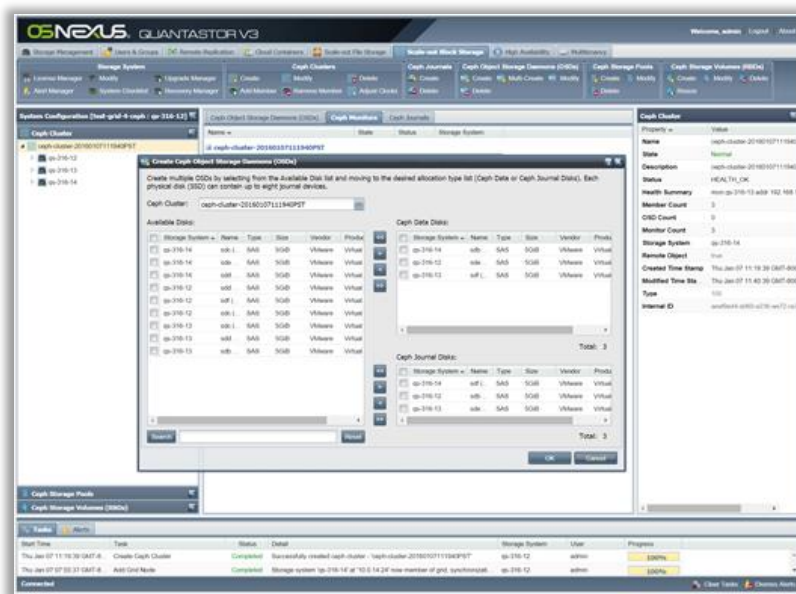
¹ Source: ESG Research Report, [2015 Data Storage Market Trends](#), October 2015.

ESG Lab Demo Highlights

ESG Lab performed hands-on testing of QuantaStor by deploying a scale-out, Ceph-based block storage solution in under ten minutes.

Quick and Easy Deployment

- Using three QuantaStor VMs, ESG Lab first initialized the appliances by entering the license information, IP addresses, and DNS settings.
- After logging in to each appliance, ESG Lab created a new Grid and added the three nodes to it.
- Next, ESG Lab created a new Ceph cluster, which consisted of all three nodes in the Grid.
- In just a few clicks from one screen, ESG Lab created Ceph OSDs on each node. This process automatically created the required RAID protected storage pools and the journal devices (SSD) to be used by the Ceph OSDs without any further intervention.
- After creating Ceph OSDs on each node, a new Ceph Storage Pool was created that consisted of all the OSDs from the storage nodes in the QuantaStorGrid.
- The Ceph Storage pool was then used to allocate block storage that was protected across all of the nodes in the QuantaStor Grid. Because QuantaStor has abstracted the Ceph storage pool from the physical hardware, the QuantaStor Grid could be independently expanded or reduced by simply adding or removing nodes. Storage capacity could also be added to or removed from the Ceph storage pool by allocating space from the Grid as needed.
- Finally, ESG Lab provisioned storage volumes (RDBs) from the Ceph storage pool and mapped them to iSCSI hosts with a single click. This simplified provisioning and assignment is enabled and assigned by QuantaStor's vendor neutral management capabilities.
- The entire process including setting up the QuantaStor appliances, configuring the block storage, installing/configuring a Ceph cluster and storage pool, provisioning block storage, and attaching an iSCSI storage device to a host was completed in under ten minutes! ESG Lab estimates that deploying a DIY Ceph-based storage solution can take anywhere from hours to days depending on the level of expertise, the number of tools and management interfaces, and the time involved in kernel builds and testing of target drivers.



First Impressions

ESG research clearly shows that organizations are overwhelmingly interested (83%) in leveraging the benefits of software-defined storage, but despite the obvious cost benefits, very few organizations are willing to wrestle with the complexity and uncertainly involved in deploying open source SDS solutions such as Ceph, GlusterFS, and OpenStack. In addition to the complexity and support issues, organizations that require a mix of scale-out block, file, and object-based storage are stuck managing and maintaining hardware across three separate deployments, meaning higher operational and capital expenses.

It may be difficult to comprehend the full benefits of OSNEXUS' technology until you see it in action for yourself. ESG Lab found that a QuantaStor deployment from OSNEXUS greatly simplified the deployment and management of a Ceph-based, scale-out block solution. By consolidating management tasks into a single interface and both reducing and automating a number of configuration steps, deployment times were cut from days to minutes. Perhaps even more important, with the scale-out QuantaStor Grid being fully abstracted from the Ceph, GlusterFS, and OpenStack technologies, OSNEXUS can deliver scale-out block, file, and object storage across a shared set of resources, lowering both capital and operational expenses. If you're considering deploying an SDS solution and looking for simplicity, flexibility, and savings, ESG Lab suggests considering OSNEXUS.