

HIGH-PERFORMANCE AND AUTOMATED SOFTWARE STORAGE FOR OPENSTACK

SysEleven Leverages Quobyte to Boost their Public OpenStack Cloud Architecture.



Summary

Needs/ Challenge: Build a rock-solid and scalable storage foundation for an OpenStack-based infrastructure to deliver excellent IOPS levels that meet and exceed expectations of the client base and that automates management to allow for lights-out operations.

Solution: Quobyte's software storage system

Platform: A hyper-converged and mostly-flash setup at a starting size of 500 TB.

Use Case: Software Storage – Cloud Service Provider

Benefits

- Seamless integration with the whole OpenStack ecosystem and a unified storage solution covering block, shared file and object storage
- High-performance storage that allows for massive scale-out
- Highly automated operations result in cost savings for maintenance and administration
- Simple S3-integration for self-service capabilities
- Enables tailor-made solutions for customers thanks to multi-workloads support

“ Quobyte does what Ceph can't do: saturate the network and deliver write latency that matches what the network provides. All of that wrapped in API, CLI and GUI that can be automated. Scalable distributed storage that delivers filer performance. ”

Kristian Köhntopp, *Cloud Architect at SysEleven*

SysEleven – Pioneering a New Kind of Managed Hosting

No garden-variety hosting provider, SysEleven always sought for new ways to bring their customers the best and most economical services that current technology could provide. Their newly developed SysEleven Stack pioneers a public cloud architecture that's based on OpenStack. Customers now have a more fine-grained infrastructure access so that they can create their own tailor-made solutions. SysEleven's portfolio offers cutting-edge IT infrastructure services for companies of all sizes. Those services include managed hosting solutions for customers' websites, private cloud storage, server management, database management, and other related services.

Boosting Performance at Scale

Bringing their own blend into the public cloud mix, SysEleven decided to go through all of OpenStack's nooks and crannies to make sure they could provide their customers with a first-rate hosting experience. They found out quickly that the new setup required a storage performance that lay beyond the reach of traditional storage hardware which was just too slow, especially for its price tag. But also most of the software storage solutions SysEleven put to the test could not deliver satisfying numbers. Eventually, Quobyte's software storage



system prevailed as SysEleven's preferred solution, delivering a performance that outpaced the other candidates'. "Deploying Quobyte for testing, we initially measured an IOPS performance that was five times higher than that of the other candidates. Later on and now in production, the results are even more impressive," says Jan Peschke, Platform Integration Specialist at SysEleven.

Quobyte was designed with scalability in mind and consequently also scored high when taken to the test. Adding additional drives drove performance numbers up linearly. A related feat of Quobyte's horizontal storage infrastructure was that it didn't matter whether those drives were HDDs or SSDs, proving that Quobyte masters resource heterogeneity. SysEleven could thus rely on commodity hardware and drive down costs by a factor.

Enabling Lights-Out Operations

Key in SysEleven's endeavor to meet its customers' performance and scalability expectations is management automation so that error prone manual operations are avoided as far as possible. More importantly, automation equips the admin team with the ability to scale a system up to its tenfold size and larger without the need to correspondingly add manpower. Quobyte ships with the necessary tools to easily accomplish this feat and, for example, enabled SysEleven to update their machines hands-free and without any downtime. They established an automated rollout of new software releases on their servers: migrate the VMs transparently, take the servers in question offline, update them, reboot, and go back online. No manual intervention or individual server maintenance was required.

SysEleven could control the functionality of storage operations via Quobyte's web UI or management API and save their admin team a lot of time and headache. More importantly, Quobyte enabled a seamless workflow in SysEleven's general management automation.

"Quobyte's automation capabilities greatly ease our workflow."

Jan Peschke, SysEleven's Platform Integration Specialist

OpenStack Integration Unlocks Full Potential

Quobyte passed SysEleven's rigorous OpenStack integration test with flying colors: it is a fully-featured storage system that consolidates block, object, and shared file storage. It

ships the corresponding drivers Cinder/Nova, Manila, and an S3 interface) with all recent OpenStack releases.

The OpenStack-certified block storage system, for example, was required in order to run MySQL shop backends in virtual machines. High block IO performance coupled with Quobyte's fault tolerance that holds up under network failures, helped prevent SysEleven's customers from data loss.

To complete its storage solution, Quobyte offers an S3 object storage interface – an indispensable feature for SysEleven and its customers – and has shared file storage capabilities for Manila baked in. Both come at no additional cost: there is no further administration overhead since Quobyte is a unified storage infrastructure. They can also both resort to the shared resources and don't require additional hardware. The capstone to the all-encompassing storage solution is the keystone-based authentication that allows Quobyte to implement a complete self-service management.

Playing Well With OpenStack

SysEleven deployed Quobyte as a full-fledged and production-ready software-defined storage solution for their OpenStack-based cloud services. Quobyte's drivers and overall fit with the OpenStack ecosystem made the integration with the SysEleven Stack seamless and straightforward. The performance bottlenecks SysEleven had experienced with traditional storage could be eliminated – with Quobyte excelling in terms of speed – delivering a fivefold increase and up – and enabling new levels of scalability. Together with Quobyte's automation capabilities, SysEleven now benefits from reduced cost thanks to lights-out operations.

SysEleven started with a hyper-converged system of around 500 TB in size (consisting of mostly SSDs) with the clear intention to grow considerably in the future. "We distinctly support the hyper-converged solution that software-defined storage enables. The benefits we have achieved this way in just a short time are remarkable," states Marc Korthaus, SysEleven's CEO, and adds "We don't just want to be a Quobyte customer but also a partner and continue bringing out solutions where we can work together and then bundle the results for our customers' benefits."

"And as far as operations are concerned, Quobyte is a tremendous help. Their automated management capabilities make it possible to drain and update servers without any downtime and without the need for our admins to manually intervene. That greatly eases our workflow," adds Peschke.

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About Quobyte®

Quobyte combines recent distributed systems research with proven concepts for large-scale storage systems. With its scalability, reliability and automation, Quobyte's software storage system builds the foundation for next-generation warehouse-scale data centers. The company was founded in 2013 and draws on a decade of research with the open-source distributed file system XtreamFS.

Quobyte Inc.
720 University Avenue
Suite 100
Palo Alto, CA 94301
info@quobyte.com
617-982-2600