Industry Strategic Challenges

The sharp rise in data volume continues and so does the evolution of powerful ways to use that data. For today’s businesses, this can mean significant competitive opportunity. But it can also overwhelm and make painfully obvious where their infrastructure, particularly storage, is lacking. Red Hat Ceph is an open, scalable storage solution, designed for today’s demanding workloads like cloud infrastructure, data analytics, media repositories, and backup and restore systems. It’s used by enterprises, government agencies, and cloud-based customers for a range of use cases, including video surveillance, collaboration and file sharing, content delivery networks, and web hosting—all of which demand high performance and low latency. Even small losses in performance and throughput can have a big effect on a company’s day-to-day or long-term success. In fact, among Red Hat Ceph users, 63 percent have identified performance as a top need going forward.²

Red Hat Ceph Storage (RHCS) is an increasingly popular platform—an open, unified solution for software-defined storage on a choice of industry-standard hardware. RHCS’ massive scalability is just one reason organizations that use it are looking to maximize performance and take full advantage of its capabilities. A growing number of companies are looking to the platform for block storage, a valuable option when low latency and maximum performance are priorities.

Intel® Optane™ DC SSDs can potentially offer a cost-effective way to boost RHCS cluster performance—helping businesses keep up with and get the most benefit from the huge volumes of data at their disposal.

Intel® Optane™ technology is a unique combination of building blocks. It is built around Intel® Optane™ memory media, a new type of non-volatile media that is different from NAND. The media is combined with Interconnect IP software and media and storage controllers for an SSD with unparalleled performance.

Adding Intel Optane SSDs, especially for RocksDB, WAL, and optional OSD caching can improve performance in Red Hat Ceph Storage. Even a small number of Intel Optane SSDs as an accelerator can boost performance of all-flash clusters. Adding Intel Optane SSDs significantly reduces latency and increases throughput for more efficient data storage.³

Adding a single Intel Optane DC SSD per node to the cluster for RocksDB and the write-ahead log (WAL) partitions with the option of adding one Intel Optane DC SSD for caching can significantly boost RHCS performance by improving the cluster’s P99 latency and IOPS.¹ Organizations can also use Intel® Cache Acceleration Software (Intel® CAS) available for Intel® SSDs to increase storage performance by caching frequently accessed data and/or selected I/O classes.
**Business Drivers and Desired Outcomes**

- Handle ever-expanding data volume efficiently and effectively
- Optimize performance for increasingly demanding workloads
- Consolidate or reduce nodes to lower costs
- Reduce latency to keep the business productive
- Increase throughput to speed analytics and other compute-intensive operations

**Solution Value Proposition**

Using Intel® Optane™ SSDs with Red Hat Ceph Storage 3.2 BlueStore on all-flash compared to a similar configuration without Intel Optane SSDs results in:

- **About 14% lower latency**
- **Up to 10% higher IOPS**

**Solution Advantages**

- The unique architecture of Intel® Optane™ DC SSDs enables them to achieve writes at the byte or page level for fast and predictable performance with no need for garbage collection.
- Intel Optane DC SSDs have much higher write endurance compared to Intel® 3D NAND SSDs.1
- Over the entire cluster, Intel 3D NAND SSDs and Intel Optane DC SSDs help provide excellent cost savings and price-per-performance.

**Enabling Transformation**

Intel has been pioneering technologies to enable data center modernization—a major goal for most enterprises today. New storage solutions are a key component. With Intel Optane DC SSDs, companies can modernize at their own pace within their own budget requirements, maximize performance of their existing infrastructure, and reduce costs through efficiencies like consolidation.

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1 Testing by Red Hat as of July 2019.


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