



## Software and Hardware Innovation Deliver Cost-Effective Ceph Storage Solution

With continued advances in Red Hat® Ceph® Storage, choosing a high-performance software-defined storage solution with the ability to scale to double-digit petabyte capacities has become easy. Architected with the right hardware, Red Hat Ceph Storage can provide the optimal combination of high performance and smart economics. That's why Micron has collaborated with Red Hat and AMD to create a solution using a combination of Micron's fastest NVMe™ SSDs (providing a high-performance tier) and cost-effective SATA SSDs with Micron's latest quad-level cell (QLC) NAND technology. Micron's unique hardware coupled with recent performance increases in Red Hat Ceph Storage using the BlueStore storage engine provide a challenge to traditional storage architectures.

Micron's new scalable Ceph solution is ideal for a wide variety of workload storage requirements. Built on the latest AMD® EPYC™ server architecture, using Micron® 9200 MAX NVMe SSDs and Micron 5210 ION SATA SSDs in a tiered configuration, it offers a high-performance, ultra-dense, all-flash Ceph Storage infrastructure you can count on — today and tomorrow.

## Key Features



Nearly one million read IOPS base configuration easily scales to meet growing needs 2U and 114TB at a time



Built on a foundation of latest-generation AMD EPYC server platforms, open software and blazing fast NVMe storage



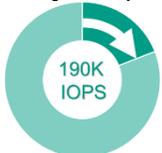
Pre-engineered to optimize compute, networking and storage into a highly compact, efficient design that delivers



Ideal for web-scale active archives, media content repositories, OpenStack® cloud storage and content distribution

### 4KiByte Block Performance

100% Random Write Performance and Avg. Latency



70% Read/30% Write Performance and Avg. Latency



100% Random Read Performance and Avg. Latency



### 4MB Object Performance

100% Sequential Read and Avg. Latency



100% Sequential Write and Avg. Latency

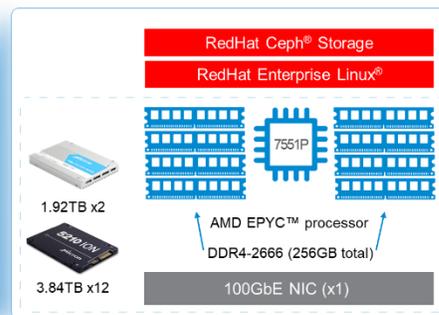
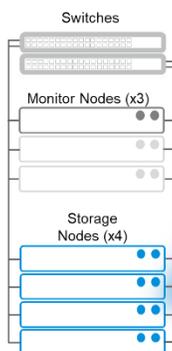


## Scalable Solution Offers High Capacity, Low Latency

The Micron 9200 MAX SSDs with NVMe used in this solution offer tremendous performance with low latency. The Micron 5210 ION SATA SSDs used provide fast capacity for less thanks to Micron's industry-first QLC NAND technology.

Capacity per rack unit (RU) is maximized with 2x NVMe SSDs and 12x 8TB SATA SSDs per two RU node. These storage nodes occupy just eight RU (the entire reference architecture occupies nine RU including one monitor node<sup>1</sup>) and can easily be scaled up by two RU and 114TB at a time<sup>2</sup>.

With four nodes, this RA supports 456TB of total data storage. Ten storage nodes are the recommended scale for an enterprise Ceph Storage cluster.



## Micron Reference Architectures Deliver

The Micron 9200 MAX NVMe SSDs + 5210 SATA QLC SSDs for Red Hat Ceph Storage on AMD EPYC Servers reference architecture describes the hardware and software building blocks and tuning parameters needed to construct a performance-focused, scalable block and object Ceph Storage platform. This tiered-storage solution is optimized for block performance while also providing high object performance in a compact, rack-efficient design. Benefits include:

- **Faster deployment:** A pre-validated and thoroughly documented configuration enables faster deployment.
- **Balanced design:** The right combination of NVMe SSDs, DRAM, processors and networking helps to ensure that subsystems are balanced and performance-matched.
- **Broad use:** Complete tuning and performance characterization across multiple IO profiles enables broad deployment for multiple use cases and industries.

### Learn More



Version 3.2 of Red Hat Ceph Storage is the latest scale-out software-defined storage solution from Red Hat. Based on open-source Ceph version 12.2 (Luminous), Red Hat Ceph Storage provides a complete Ceph solution using the new BlueStore storage engine supported by Red Hat.

To learn more about all of Micron's Ceph reference architectures, visit the [Micron Accelerated Ceph Solutions](#) site.

## micron.com

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<sup>1</sup>It is recommended that a minimum of three monitor nodes be deployed in any production Ceph Storage solution. See the details in the reference architecture available at [micron.com](#)

<sup>2</sup>Scaling is based on the use of the Supermicro AS-2113S-WTRT configuration's support for up to 16 SATA and two NVMe SSDs per node. For more information, see the specifications for the AS-2113S-WTRT at [supermicro.com](#).