Solution Brief

Data Center | Container Data Services

Easily Scale Your Apps and Data Services

Intel and Red Hat have co-developed workload-optimized data node configurations for Red Hat® OpenShift® Data Foundation, based on Intel® Xeon® Scalable processors and Intel® Optane™ technology

Red Hat OpenShift

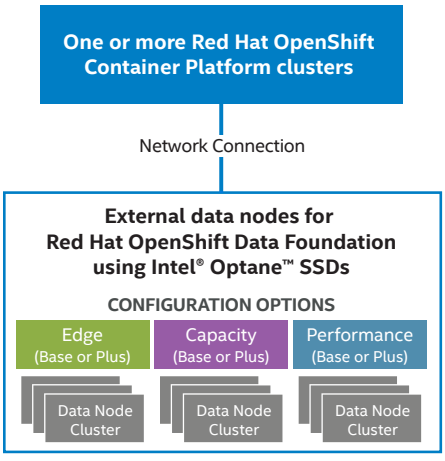

Figure 1. Predefined hardware-plus-software data node configurations eliminate guesswork and let you focus on scaling your apps and data services rather than infrastructure details.

In this era of digital transformation, data volumes are exploding while performance requirements escalate. Data pipelines and data access are increasingly complex. To keep up, your containerized apps must serve up data more quickly. But you don't have time to evaluate and test various combinations of hardware and software to determine if they meet your data services' needs. You just need your data services to work—on premises, in the cloud, or across multiple clouds.

Deliver Data Services with Ease

Red Hat delivers an automated, complete cloud-native development and deployment platform with integrated data services[1] through its Red Hat OpenShift and Red Hat OpenShift Data Foundation products. OpenShift Data Foundation delivers persistent storage through a data service and orchestration layer that's fully integrated with and built for Red Hat OpenShift. It natively includes all common storage services, including file, block, and object and also provides deterministic performance at scale to deliver a consistent user experience across any platform where Red Hat OpenShift is deployed. Red Hat and Intel combine cutting-edge software and hardware technologies to deliver a workload-optimized data services solution that uses an external data node featuring Intel® Xeon® Scalable processors and Intel® Optane™ SSDs.

Intel Optane SSDs serve as a cache tier in front of the capacity tier, speeding access to hot data and taking the write pressure off the capacity drives to create a solution that is optimized for both performance and cost. Intel Optane SSDs are fundamentally different from other types of SSDs because they feature a memory-like capability inside an SSD form factor. This provides lower latency, higher IOPS, and greater endurance. Data-centric workloads are I/O-intensive and benefit from Intel Optane SSDs' ability to support up to 100 drive writes per day (DWPD).[2] Intel Optane SSDs provide the performance, endurance, and reliability necessary to accelerate today's most demanding workloads, such as latency-sensitive big data analytics, machine learning/deep learning, and databases.

OpenShift Data Foundation data nodes are easy to deploy and configure, and are portable across clouds. They offer simplicity and flexibility, and streamline the process of going cloud-native using containers.

Choose the Data Node Configuration That Fits Your Workload

Red Hat and Intel have jointly developed three workload-optimized configurations for Red Hat OpenShift Data Foundation external data nodes: Edge, Capacity, and Performance. Each configuration is available in a Base and a Plus configuration. With this range of configuration choices, you can quickly and easily right-size your data nodes for your particular workload, whether it's edge computing, high-capacity big data analytics, or latency-sensitive database transactions. Each configuration features the most appropriate 3rd Gen Intel Xeon Scalable processors, Intel Optane SSDs for storage cache, and the Intel® Ethernet 800 Series. Core-for-core, 3rd Gen Intel Xeon Scalable processors offer industry-leading performance on popular databases, HPC workloads, and AI. These configurations provide business value across a wide range of workloads and are available through major OEMs, including Dell Technologies.

Using these data node configurations, you can achieve the portability, consistency, and performance that you need to run your specific workloads, with confidence that the overall platform is fully interoperable with existing infrastructure.

Why Use Red Hat OpenShift Data Foundation with Intel® Technology-Based Data Nodes?

- Scalable data services
- Simplified evaluation
- Fast and easy to deploy
- Workload-optimized

For more details, contact your Intel representative or visit **intel.com/RedHat** and **redhat.com/Intel**.

Table 1. Predefined Data Node Configurations for Red Hat OpenShift Data Foundation

	Edge Configuration	Capacity Optimized (Big Data and AI/ML)	Performance I/O Optimized (Analytics/Database)
Options	**Base (10 TB) or Plus (20 TB)**	**Base (30 TB) or Plus (60 TB)**	**Base (15 TB) or Plus (30 TB)**
Workloads or Services	Small footprint edge configurations	Big data workloads	Latency-sensitive workloads
Platform	2U 1 node	2U 1 node	2U 1 node
Server	Dell EMC PowerEdge R750	Dell EMC PowerEdge R750	Dell EMC PowerEdge R750
CPU	**Base:** 2x Intel® Xeon® Gold 5318Y processor (24 cores, 2.10 GHz) **Plus:** 2x Intel Xeon Gold 5318Y processor (24 cores, 2.10 GHz, 36 MB cache)	**Base:** 2x Intel® Xeon® Gold 5320 processor (26 cores, 2.20 GHz) **Plus:** 2x Intel® Xeon® Gold 6330 processor (24 cores, 2.0 GHz, 33 MB cache)	**Base:** 2x Intel® Xeon® Gold 6338 processor (32 cores, 2.0 GHz) **Plus:** 2x Intel Xeon Gold 6338 processor (32 cores, 2.0 GHz, 48 MB cache)
Memory	**Base**: 96 GB **Plus:** 192 GB	**Base**: 96 GB **Plus:** 192 GB	**Base**: 192 GB **Plus:** 384 GB
Data Network	**Base:** 2x Intel® Ethernet Network Adapter 810-CQDA2 (10 GbE) **Plus:** 2x Intel Ethernet Network Adapter 810-CQDA2 (10 GbE)	**Base:** 2x Intel Ethernet Network Adapter 810-CQDA2 (25 GbE) **Plus:** 2x Intel Ethernet Network Adapter 810-CQDA2 (25 GbE)	**Base:** 2x Intel Ethernet Network Adapter E810-CQDA2 (50 GbE) **Plus:** 2x Intel Ethernet Network Adapter E810-CQDA2 (100 GbE)
Storage Cache	**Base:** 1x Intel® Optane™ SSD P5800X (400 GB) **Plus:** 1x Intel Optane SSD P5800X (800 GB)	**Base:** 1x Intel Optane SSD P5800X (800 GB) **Plus:** 2x Intel Optane SSD P5800X (800 GB)	**Base:** 2x Intel Optane SSD P5800X (800 GB) **Plus:** 2x Intel Optane SSD P5800X (1.6 TB)
Storage Media	**Base:** 6x SSD D3-S4510 (1.92 TB, 2.5", SATA, TLC) **Plus:** 6x SSD D3-S4510 (3.84 TB, 2.5", SATA, TLC)	**Base:** 8x SSD D3-S4510 (3.84 TB, 2.5", SATA, TLC) **Plus:** 16x SSD D3-S4510 (3.84 TB, 2.5", SATA, TLC) ***or*** 8x SSD D3-S4510 (7.68 TB, 2.5", SATA, TLC)	**Base:** 4x SSD D7-P5510 (3.84 TB, 2.5", U.2 NVMe, TLC) **Plus:** 8x SSD D7-P5510 (3.84 TB, 2.5", U.2 NVMe, TLC)
Red Hat OpenShift Subscription[3]	Red Hat OpenShift Platform Plus with OpenShift Data Foundation Advanced Bare metal: MW01701 Core pricing: MW01699		

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[1] Data services are collections of small, independent, and loosely coupled functions that enhance, organize, share, or calculate information collected and saved in data storage volumes. Data services amplify traditional data by improving its resiliency, availability, and validity, as well as adding characteristics to data that it doesn't already have natively—like metadata.

[2] Source, Intel: https://www.intel.com/content/www/us/en/products/docs/memory-storage/solid-state-drives/data-center-ssds/optane-ssd-p5800x-p5801x-brief.html

[3] OpenShift Data Foundation subscriptions are entitled on Red Hat OpenShift worker nodes that consume the data. For the Red Hat OpenShift clusters, customers can benefit from a bundled offering with a discounted price point. For each Red Hat OpenShift node requiring a subscription, add MW01701 per node (1-2 sockets, up to 64 cores) when using the bare-metal pricing model, or MW01699 per core pair if using the per-core pricing model. This provides entitlement for Red Hat OpenShift Platform Plus and OpenShift Data Foundation Advanced with Premium support.