

Note: Coverage of Software Defined Storage has been discontinued. The NetApp ONTAP Select Product brief is no longer receiving updates as of September, 2023.

NetApp ONTAP Select

Overview

NetApp ONTAP Select is a software-defined storage solution that runs the NetApp ONTAP operating system on user-provided hardware. Deployed as a virtual machine appliance on industry-standard servers (nodes), ONTAP Select can create a storage solution with the features of a NetApp FAS or AFF and the flexibility of a scale-out architecture.

ONTAP Select software runs as a VM appliance on VMware vSphere hypervisor installed on Intel x86 server hardware, with Cisco, Dell, HPE, Fujitsu, Lenovo and Supermicro currently supported. Earlier ONTAP Select versions also supported KVM hypervisors, but NetApp discontinued KVM support with version 9.10.1 released in 2021.

ONTAP Select clusters can contain one, two, four, six, or eight server nodes. The single-node deployment is for small or remote offices. The other node options are deployed in HA pairs. Each cluster node is deployed as a separate VM. Storage capacity is direct-attached to each node, typically internal hard drives or SSDs. ONTAP Select can also access VMFS datastores hosted on external storage systems or provided by vSAN.

ONTAP Select nodes can support up to 60 HDDs or SSDs, or 16 NVMe drives. Each ONTAP Select node supports up to 400TB of storage, bringing the maximum capacity of an eight-node cluster to 3.2PB.

ONTAP Select provides block (iSCSI) and file services (NFS/CIFS) to VM-based workloads running on hosts connected to the cluster, but does not support Fibre Channel workloads. Container workloads are also supported via the Trident Container Storage Interface (CSI), which provides persistent volumes in the Read/Write Once (RWO) access mode for block and NFS storage and the Read/Write Many (RWX) access mode for NFS only.

While ONTAP Select is based on NetApp's ONTAP enterprise storage operating system, there are design differences. The HA architecture used with ONTAP Select is based on a non-shared storage

Highlights

- NetApp enterprise-level storage in scale-out topology
- Software-only storage system runs on VMware hypervisor with user-supplied hardware
- HDD, AF, external, and cloud storage support
- Multi-protocol storage sharing with iSCSI, NFS, SMB
- ONTAP snapshot-based data services - backup, restore with synchronous replication

model. That means one node in an HA pair cannot directly access the storage owned by the other node. This design can affect certain ONTAP Select operational characteristics.

Licensing is also different for ONTAP Select than ONTAP. ONTAP Select uses a consumption-based model. Customers must purchase a license with storage capacity for each node or shared capacity pool when deploying an ONTAP Select cluster in production. Through ONTAP Select’s Deploy utility, license files must be applied to establish storage capacity for cluster nodes.

ONTAP Select supports many ONTAP features at no additional cost, including SnapMirror, SnapVault, FlexClone, SnapRestore, Volume Encryption, FlexCache and SyncMirror, data deduplication/compression, plus the OnCommand management suite. However, SnapLock Enterprise, FabricPool, Data Availability Services, SnapCenter, SnapManager and SnapDrive do require additional licenses. MetroCluster SDS doesn’t require an additional license, but does require a Premium capacity license as a minimum.

Usage and Deployment

ONTAP Select is designed to provide enterprise-level NetApp storage in a flexible, scale-out topology, with user-supplied hardware. Use cases include hybrid cloud deployments that can leverage NetApp's Cloud Volumes ONTAP but need the scalability and economics of "commodity" hardware; also, remote or branch office storage with one- or two-node clusters connected to a central data center, utilizing SnapMirror and SnapVault replication. An ONTAP Select cluster can be used as a synchronously replicated stretched cluster or as a target for remote backup.

Evaluator Group EvaluScale™: ONTAP Select

Evaluator Group product review methodology “EvaluScale” assesses each product within a specific technology area. The definitions of the criteria and explanations of how products are reviewed can be found in the [Evaluation Guides](#).

	Criteria	Description	EG View of ONTAP Select	Explanation for ONTAP Select
1	Scalability	Total storage capacity, flexible, efficient expansion	Meets requirements	~3.2 PB total capacity, min 1-node cluster, 8 node max cluster, 400TB/node
2	Performance	Resources and design elements to maximize performance	Meets requirements	Provides all-flash configurations, plus NVMe devices, DRAM cache, auto tiering
3	Vendor / Product Stability	Company viability, product longevity, impact of OEM partnerships	Exceeds requirements	Enterprise supplier, very mature tech (ONTAP is foundation for all NetApp products)

4	Economics	Design elements minimize costs and OPEX, incl data reduction, ease of use/deployment	Meets requirements	In-line dedupe and compression, thin provisioning, hybrid configs, granular capacity-based pricing
5	Storage Sourcing	Storage devices pooled, platforms, locations supported	Exceeds requirements	Supports HDD or AF internal devices, block, NAS external storage systems
6	Storage Sharing	Storage protocols, sharing options	Meets requirements	Multiple protocol options -, iSCSI, NFS, SMB
7	Data Protection / Availability	Device- and node-level failure protection, synch and asych replication, failover, DR	Exceeds requirements	MetroCluster sync replication, NetApp Snapshots, SnapMirror/Restore provided integrated data protection, on prem and to/from the cloud
8	Platform Options	Options to run SDS locally, in cloud, server options, OEM integrations	Area for development	VM-only (vSphere and KVM), no bare-metal deployment, no integrated K8S orchestration
9	Management Options	Mgmt interface, integration with hypervisor, SRM, third-party tools	Meets requirements	vCenter plug-in, CLI, REST API, GUI, OnCommand suite
10	Advanced Features	Leverage functionality enabled by SDS, provide unique or adv efficiency or mgmt features	Meets requirements	Policy-based management, extensive NetApp Snapshot-based data services, external storage system connectivity

Evaluator Group Opinion: Differentiating Elements for NetApp ONTAP Select

Software-defined storage was originally developed as an alternative to traditional DAS and SAN-based arrays, but found more success as the storage virtualization layer in hyperconverged infrastructure solutions. Now, as HCIs have matured, and companies are looking for dedicated storage solutions with some of the same benefits, SDS is making a comeback of sorts. But most of the offerings are from new or smaller companies, including container-based solutions.

ONTAP Select is the software-only version of one of the most widely used storage systems ever developed. With this product, NetApp offers a scale-out deployment option for existing NetApp customers, one that leverages the economics of commodity, bring-your-own hardware. It also gives enterprises looking into SDS another option, one with enterprise-level features and a tier-one support infrastructure.

ONTAP Select offers the snapshot-based data services that NetApp has made famous, including SnapMirror, SnapVault, etc. It supports HDD or AF internal storage devices in the cluster, as well as block

and file capacity from external storage systems. The Trident Container Storage Interface provides support for Kubernetes environments, although ONTAP Select has not direct integration with K8s, as container-native storage systems do.

As a cluster that runs on VMs (not on bare-metal servers), most deployments also require VMware licenses. This probably makes ONTAP Select a better choice for environments that run mainly hypervisor-based workloads, while **container-native storage (CNS)** solutions are better for Kubernetes environments.

Information that is more detailed is available at <http://evaluatorgroup.com>

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