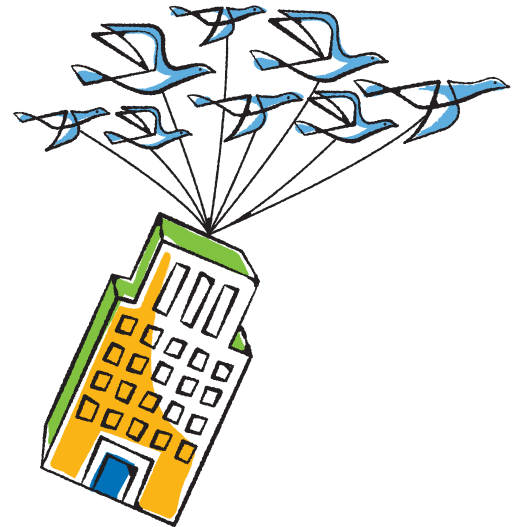




NetApp®



*Datasheet*

# Clustered Data ONTAP Operating System

Revolutionize your storage software, remove IT constraints, and speed response to business changes

## KEY BENEFITS

### Nondisruptive Operations

- Perform storage maintenance, hardware lifecycle operations, and software upgrades without interrupting your business
- Eliminate planned and unplanned downtime for continuous business availability

### Proven Efficiency

- Drive storage cost reductions with comprehensive storage efficiency
- Consolidate and share the same infrastructure for workloads or tenants with different performance, capacity, and security requirements
- Increase efficiency as you scale capacity

### Seamless Scalability

- Scale capacity, performance, and operations without compromise
- Scale SAN and NAS from terabytes to tens of petabytes without reconfiguring running applications
- Combine different generations of storage hardware for investment protection

## The Challenge

Businesses today struggle with the increasing amount of data that they need to store, manage, and back up. Growing competitive pressure and 24-hour business cycles require that your mission-critical business processes and data remain accessible around the clock.

With your business environment in a constant state of evolution, you need a more agile approach to storage that can eliminate downtime, improve the efficiency of your infrastructure and your IT staff, scale nondisruptively as your business grows, and quickly adapt to changing business requirements.

## The Solution

Clustered Data ONTAP® addresses the challenges facing your growing and dynamic business by extending the innovation of NetApp Data ONTAP, the world's number one branded storage operating system<sup>1</sup>. Our unified cluster architecture scales and adapts to your changing needs, reducing risk and cost. Clustered Data ONTAP is designed to eliminate downtime, allowing you to service your infrastructure without disrupting access to user data and applications, even during regular business hours.

Proven operational efficiency helps you simplify your overall storage environment and manage storage

infrastructure at scale by automating important processes and increasing productivity. You can add capacity as you grow across both SAN and NAS environments without reconfiguring running applications. We let you start small and grow big without the disruptive hardware upgrades required by other storage vendors.

Clustered Data ONTAP provides up to 24 storage controllers—or nodes—managed as a single logical pool so your operations scale more easily.

NetApp supports the broadest set of storage protocols and is the only provider to deliver full SAN and NAS data access from a single, unified scale-out platform.

## Prevent Business Disruptions

With IT now integral to your business operations, the impact of downtime goes beyond dollars or productivity lost. Your company's reputation might be at stake. Clustered Data ONTAP eliminates sources of downtime and protects your critical data against disaster.

## Nondisruptive operations

Our nondisruptive operations capabilities allow you to perform critical tasks without interrupting your business. The ability to dynamically assign, promote, and retire storage resources lets you

# Clustered Data ONTAP “lets us move data—for load balancing, for moving less-used or inactive data to lower cost drives, or for technology updates—without having to stop the application... It used to take 28 days to restore a 100TB Oracle® DB—now it takes 15 minutes.”

CERN

improve service levels over the lifecycle of an application. Storage controllers and disk shelves can be replaced without disruption.

When data movement is required to achieve management objectives, you can nondisruptively move data between controllers—for instance, as an application transitions from development to production or to adjust service levels.

Because you can mix generations of hardware, you can add new storage systems and retire older ones without affecting operations. All storage maintenance operations and software upgrades can be performed without interrupting your business.

## **Eliminating unplanned downtime**

NetApp uses big data analytics to identify patterns in billions of rows of log data gathered from thousands of deployed NetApp systems. Continuously updated risk signatures allow you to identify issues and perform maintenance when it's needed rather than waiting weeks or months for a downtime window. This improves storage availability and reduces the number of priority 1 support cases by up to 80%.<sup>2</sup>

## **Integrated data protection**

To protect your operations, clustered Data ONTAP provides integrated data protection (IDP) technologies with near-instant backup and recovery, replication for disaster recovery, and best-in-class integration with enterprise backup vendors and leading applications. IDP extends to include integrated and unified disk-to-disk backup and DR in a single process for VMware® and Microsoft® virtualization.

## **Manage Infrastructure at Scale with Proven Efficiency**

Clustered Data ONTAP gives you the capabilities and tools you need to make both your storage and your IT staff more productive, so you can scale your storage infrastructure without scaling your IT organization. A common set of features and procedures simplifies complex tasks so your IT staff can focus on solving higher level problems.

## **Superior storage efficiency**

Clustered Data ONTAP drives pervasive cost reductions with the most comprehensive storage efficiency offering in the industry, including innovative Snapshot™ copies, replication and cloning technologies, thin provisioning, compression, and deduplication. NetApp is the only storage provider to deliver proven

efficiencies for both SAN and NAS on entry-level, midtier, enterprise, software-based, converged infrastructure, and virtualized third-party arrays.

## **Optimized for flash**

Clustered Data ONTAP supports the full range of NetApp Virtual Storage Tier technologies, resulting in hybrid storage that combines the performance of flash with the capacity of hard disk drives. Hot data is automatically cached in flash, accelerating applications. You achieve optimal performance with little or no tuning, no time-consuming data migrations, and no ongoing management.

## **Manage data at scale**

Clustered Data ONTAP management processes scale so that twice as much storage no longer means twice as much work.

All storage systems running clustered Data ONTAP use a common set of management tools. NetApp OnCommand® software allows you to automate, virtualize, and manage service delivery and SLAs through policy-based provisioning and protection. You can rapidly deploy resources and redeploy as your business and IT needs change, while you reduce backup windows and infrastructure requirements.

2. NetApp Customer Fitness At a Glance: Unlock the secret to nonstop operations.

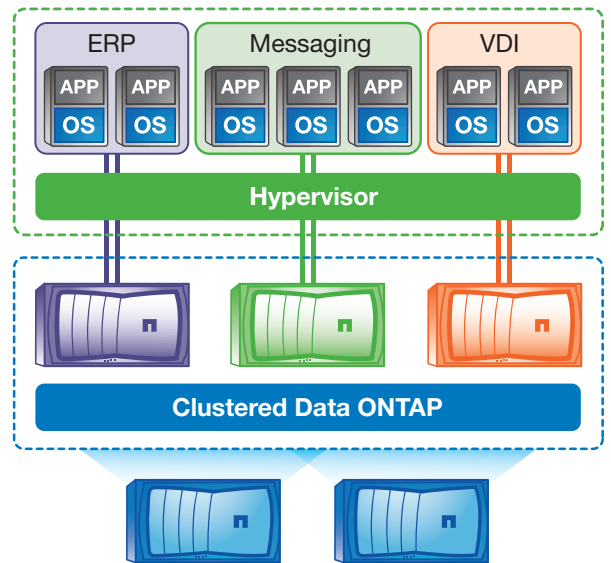


Figure 1) With native multi-tenancy, clustered Data ONTAP appears to each application or tenant as a separate, secure storage system. QoS policies control consumption of cluster performance resources.

### Maximize Shared Storage Investments

Clustered Data ONTAP lets you save time and money by consolidating and sharing the same infrastructure for workloads or tenants that have different performance, capacity, and security requirements.

#### Multi-tenancy

A storage cluster can be subdivided into secure partitions governed by rights and permissions. These Storage Virtual Machines (SVMs) can be used to securely isolate individual tenants—for instance, in a service provider environment—or individual applications, workgroups, business units, and so on. Because SVMs aren't tied to particular physical resources, you can move an SVM or adjust the resources available to it without disruption.

#### Quality of service

Clustered Data ONTAP offers QoS workload management that allows you to control the resources that can be consumed by each workload to manage performance spikes and improve customer satisfaction. You can consolidate many workloads or tenants on a cluster without fear that the most important workloads will suffer or that activity in one tenant partition will affect another.

### Stay Ahead of Business Changes with Seamless Scalability

#### Start small, grow big

Storage systems running clustered Data ONTAP can scale SAN and NAS from terabytes to tens of petabytes transparently and without reconfiguring running applications. You can start with a single cluster node or two nodes and seamlessly expand your cluster up to 24 nodes as your business needs grow.

#### Adapt

Rebalance capacity and workloads as needed. You can improve service levels by dynamically redeploying workloads and avoid hot spots by moving volumes to less active disk aggregates or spreading workloads across multiple controllers. Each dataset gets the right technology to meet your performance and cost targets.

#### Scale up and scale out

Scale up individual storage controllers by adding high-capacity hard disk drives (HDDs), high-performance hard disk drives, or low-latency SSDs or scale out by adding additional storage controllers to a cluster.

Most scale-out storage solutions provide a single large repository. Clustered Data ONTAP takes a different approach that gives you more flexibility and greater

control. NetApp Infinite Volume lets you create large, flexible, and easy-to-manage content repositories within a cluster, but you also have the ability to isolate workloads and offer different levels of service using different controller technologies, storage tiers, and QoS policies. In addition, you can span multiple controllers for nearly limitless scalability.

#### Maximum Investment Protection

You can mix storage controllers from various NetApp FAS product lines and virtualize third-party arrays with NetApp V-Series. Because you can mix different generations of hardware in the same cluster, you can grow your cluster with the latest hardware and keep older hardware longer. When it's time to retire a storage system, you can simply upgrade the controllers, keeping data in place.

#### About NetApp

NetApp creates innovative storage and data management solutions that deliver outstanding cost efficiency and accelerate business breakthroughs. Discover our passion for helping companies around the world go further, faster at [www.netapp.com](http://www.netapp.com).

Go further, faster\*

Software/Feature	Function	Benefits
Data compression	Transparent inline and postprocess data compression for data reduction	Reduces the amount of storage you need to purchase and maintain
DataMotion™	Nondisruptive data mobility for volumes	Allows you to move data nondisruptively while your applications keep running
Deduplication	General-purpose deduplication for removal of redundant data objects	Reduces the amount of storage you need to purchase and maintain
Flash Pool™	Creates a mixed-media storage pool using SSD and HDD	Increases the performance and efficiency of HDD pools with flash acceleration, especially for random workloads
FlexCache®	Scale-out caching of NFS and CIFS/SMB files for increased read bandwidth	Improves your system's read performance and response times
FlexClone®	Instantaneously creates file, LUN, and volume clones without requiring additional storage	Saves you time in testing and development and increases your storage capacity
FlexVol®	Creates flexibly sized volumes across a large pool of disks and one or more RAID groups	Enables your storage systems to be used at maximum efficiency and reduces your hardware investment
Infinite Volume	Creates a volume that can scale up to 20PB with one file system	Provides a large container for content repositories. A single cluster can contain multiple Infinite Volumes.
QoS	Quality of service that creates a performance limit for a storage workload	Can prevent one workload or tenant from affecting the performance of another in multiworkload and multi-tenant environments
RAID-DP®	A double-parity RAID 6 implementation that prevents data loss when two drives fail; default RAID option	Protects your data without the performance impact of other RAID 6 implementations
SnapDrive®	Provides host-based data management of NetApp storage from Windows®, UNIX®, and Linux® servers	Automate OS-consistent backup, restore, cloning, and other operations, taking full advantage of NetApp capabilities
SnapManager®	Provides host-based data management of NetApp storage for databases and business applications	Application-aware backup and disaster recovery; automates error-free data restores
SnapMirror®	Enables automatic, incremental asynchronous data replication between systems	Provides you with flexibility and efficiency when mirroring for data distribution and disaster recovery
SnapRestore®	Rapidly restores single files, directories, or entire LUNs and volumes from any Snapshot copy backup	Instantaneously recovers files, databases, and complete volumes from your backup
Snapshot	Makes incremental data-in-place, point-in-time copies of a LUN or volume with minimal performance impact	Enables you to create frequent space-efficient backups with no disruption to data traffic
SnapVault®	Exports space-efficient Snapshot copies, preserving compression and deduplication savings to another NetApp system, providing an incremental backup solution	Provides you with cost-effective, long-term backups of disk-based data

Table 1) Clustered Data ONTAP offers a robust set of standard and optional features