



## Datasheet

# ONTAP 9 Data Management Software

Simplify your hybrid cloud. Unify your data.

### Key Benefits

#### Smart: Simplify Operations and Reduce Costs

- Minimize capex and opex with leading storage efficiency.
- Provision storage in minutes for Oracle, SAP, Microsoft SQL, VMware, and other business apps.
- Tier your cold data to the cloud. Automatically.

#### Powerful: Respond to Changing Business Requirements

- Accelerate critical workloads with industry-leading performance.
- Scale capacity and performance without disruption.
- Deploy enterprise applications on NetApp storage systems, commodity servers, or in the cloud.

#### Trusted: Protect and Secure Your Data Across the Hybrid Cloud

- Guard against data loss and accelerate recovery with integrated data protection.
- Eliminate business disruptions due to failures, maintenance, and site disasters.
- Protect your sensitive company and customer information with built-in data security.

### The Challenge

Businesses today are under pressure to become more efficient, respond quickly to new opportunities, and improve customer experience. During their digital transformation to address these challenges, they must modernize their IT infrastructure and integrate new types and uses of data into their existing environment. They also need to effectively manage and protect their data wherever it resides—on premises and in the cloud—while reducing costs, increasing security, and operating with existing IT staff.

### The Solution

Create a storage infrastructure that is smart, powerful, and trusted. Simplify how you manage your data that is spread across your hybrid cloud environment. NetApp® ONTAP® 9, the industry's leading enterprise data management software, combines new levels of simplicity, flexibility, and security with powerful data management capabilities, proven storage efficiencies, and leading cloud integration.

With ONTAP 9, you can build an intelligent hybrid cloud that is the foundation of a NetApp Data Fabric that spans flash, disk, and cloud. Flexibly deploy storage on your choice of architectures—hardware storage systems, software-defined storage (SDS), and the cloud—while unifying data management across all of them. Accelerate your enterprise applications with flash, without compromising on the essential data services that you need. And seamlessly manage your data as it flows to wherever you need it most to help you make the best possible decisions for your organization.

### Smart: Simplify Operations and Reduce Costs

#### Get proven storage efficiency

With ONTAP, you get a comprehensive, industry-leading portfolio of storage efficiency capabilities. Inline data compression, deduplication, and compaction work together to reduce your storage costs and maximize the data you can store. Plus, you can multiply your savings with space-efficient NetApp Snapshot™ copies, thin provisioning, replication, and cloning technologies.

### Deploy workloads in less than 10 minutes

Built-in application workflows enable you to quickly and confidently provision storage for key workloads in less than 10 minutes—from power-on to serving data. These workloads include Oracle, SAP, SQL Server, and virtual desktops and servers. Years of NetApp experience and best practices are integrated into the System Manager wizard and factory configurations, enabling you to quickly set up your new configuration just by answering a few questions.

### **Simplify operations and unify data management**

Whether you're adding new workloads or managing your existing environment, it's important to simplify your processes to maximize the productivity and responsiveness of your staff. ONTAP gives you a common set of features across deployment architectures, which simplifies administrative operations so that your IT team can focus on strategic business priorities. Unify data management across a hybrid cloud that can span flash, disk, and cloud running SAN and NAS workloads. Easily move your data within or between storage clusters, or to the cloud—wherever it is most useful. ONTAP is the foundation for a Data Fabric that gives you flexibility, choice, and control across your storage environment.

### **Tier automatically to cloud**

Deliver high performance to your applications and reduce storage costs by automatically tiering cold data from the performance tier to a private or public cloud. FabricPool frees up space on your existing NetApp AFF infrastructure, so you can consolidate more workloads. For new all-flash purchases, FabricPool enables you to buy a smaller initial AFF configuration.

### **Maximize investment protection**

ONTAP gives you the flexibility to create an integrated, scalable storage environment by clustering storage controllers from different families—AFF all-flash and FAS hybrid-flash systems—and from different generations. You can grow your system with the latest hardware, continue to use your older hardware, and connect all of it to the cloud.

When it's time to retire a storage system, you can simply upgrade the controllers and keep data in place on the existing disk shelves. You can also get more value from your existing investments in third-party arrays by virtualizing them with NetApp FlexArray® software and using the storage capacity for your ONTAP environment.

### **Get simple, powerful management capabilities**

NetApp data management infrastructure software is designed to manage hybrid clouds. You can centrally monitor the health of your environment by viewing metrics on capacity utilization, performance, availability, and data protection. It can also help automate your storage processes and integrate them into your data center orchestration platform for end-to-end service delivery for your private and hybrid cloud services.

In addition, NetApp Active IQ® intelligence provides predictive analytics and actionable insights based on machine learning and artificial intelligence applied to the vast data lake from the installed base of ONTAP systems. This intelligence helps you optimize your NetApp investment, simplify and automate operations, and achieve data center efficiencies.

### **Powerful: Respond to Changing Business Requirements**

To support your critical applications, you need a storage environment that delivers high performance and availability. But you also need the versatility to scale and adapt as your business changes. ONTAP 9 delivers on all these requirements with flash performance for scalable, nondisruptive operations.

### **Get flash optimization**

ONTAP 9 delivers the high throughput and low latency that enterprise applications require, while providing comprehensive data services. ONTAP 9 is optimized for flash, including AFF systems with NVMe solid-state drives (SSDs) and NVMe over Fabrics. AFF running the most recent versions of ONTAP provide up to twice the throughput of the same workloads compared to running on prior ONTAP releases, while still delivering consistent submillisecond latency.

ONTAP 9 running on NetApp FAS hybrid-flash systems improves the performance of HDD storage by automatically caching hot read data in flash. This provides a balance between performance and cost that is appropriate for many workloads.

### **Deliver consistent performance**

To maintain high customer satisfaction, adaptive quality of service (QoS) helps you deliver consistent performance by automatically adjusting storage resource levels to respond to changes in workloads (number of terabytes of data, priority of the workload, and so on). Adaptive QoS simplifies the implementation of policies to keep your workloads within prescribed minimum and maximum throughput targets.

### **Stay ahead of business changes with seamless scalability**

You can start small and grow with your business by using high-capacity SSDs or HDDs to scale your storage environment. Storage systems that run ONTAP can handle SAN and NAS workloads that range from a few terabytes up to 176PB. You can scale by adding capacity to existing storage controllers or scale out by adding controllers to seamlessly expand your cluster up to 24 nodes.

ONTAP also supports massive NAS data containers that are easy to manage. With NetApp ONTAP FlexGroup, a single namespace can grow to 20PB or 400 billion files while delivering consistent high performance and resiliency.

### **Future-proof your data infrastructure**

ONTAP 9 lets you design and deploy your storage environment across the widest range of architectures, so you can match the approach that's right for your evolving business needs:

- On NetApp hardware systems: AFF all-flash systems and FAS hybrid-flash systems
- Within a converged infrastructure: FlexPod® converged infrastructure solution from NetApp and Cisco
- As software-defined storage on commodity servers: ONTAP Select
- In front of third-party arrays: FlexArray storage virtualization software
- Next to the cloud: NetApp Private Storage (NPS) for Cloud
- In the cloud: Cloud Volumes ONTAP

You can move your data seamlessly between architectures to place it in the optimal environment for performance, capacity, and cost efficiency.

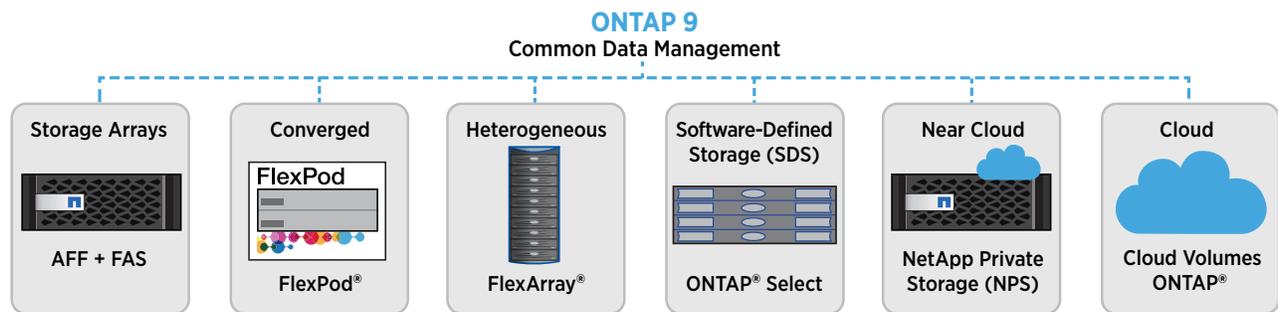


Figure 1) Standardize data management across architectures with a rich set of enterprise data services.

### Trusted: Protect and Secure Your Data Across the Hybrid Cloud Integrated data protection and nondisruptive operations

ONTAP provides NetApp integrated data protection (IDP) to safeguard your operations and keep them running smoothly. Meet your requirements for local backup with nearly instantaneous recovery by using space-efficient Snapshot copies. Achieve remote backup/recovery and disaster recovery with NetApp SnapMirror® asynchronous replication. Get zero data loss protection (RPO=0) with SnapMirror Synchronous replication.

NetApp MetroCluster™ technology delivers business continuity by synchronously mirroring between locations for continuous data availability. A MetroCluster storage array, using FC or IP connectivity, can be deployed at a single site, across a metropolitan area, or in different cities.

With ONTAP, you can service and update your infrastructure during regular work hours without disrupting your business. Dynamically assign, promote, and retire storage resources without downtime over the lifecycle of an application. Data can be moved between controllers without application interruption, so you can get the data on the node that delivers the optimal combination of speed, latency, capacity, and cost.

### Robust security

The leading portfolio of security capabilities in ONTAP helps you integrate data security across your hybrid cloud and avoid unauthorized data access. With the NetApp Volume Encryption feature that is built in to ONTAP, you can easily and efficiently protect your at-rest data by encrypting any volume on an AFF or FAS system. No special encrypting disks are required. In-flight encryption for backup and replication protects your data in transit. Plus, other features such as multifactor authentication, role-based access control (RBAC), and onboard and external key management increase the security of your data.

### Secure consolidation

You can save time and money by sharing the same consolidated infrastructure for workloads or tenants that have different performance, capacity, and security requirements. And with ONTAP, you don't have to worry that the activity in one tenant partition will affect another. With multitenancy, a storage cluster can be subdivided into secure partitions that are governed by rights and permissions.

### Rigorous compliance

To meet your stringent compliance and data retention policies, NetApp SnapLock® software enables write once, read many (WORM) protected data for your ONTAP environment. NetApp also provides superior integration with enterprise backup vendors and leading applications. Our IDP solutions also include integrated and unified disk-to-disk backup and disaster recovery in a single process for VMware and Microsoft virtualization. In addition, cryptographic shredding enables General Data Protection Regulation (GDPR) compliance.

### Make a Simple, Straightforward Transition to ONTAP 9

No matter what your starting point is, NetApp streamlines your move to ONTAP 9:

- Upgrade from ONTAP 8.3 with a simple update of your ONTAP software—no disruption and zero downtime.
- Make a smooth transition from NetApp Data ONTAP operating in 7-Mode with proven tools and best practices, including the 7-Mode Transition Tool (7MTT) and copy-free transition (CFT).
- Use straightforward import processes from third-party storage to ONTAP 9.

Consult our experts to plan and implement your transition and gain the latest ONTAP advantages from day one. You can use NetApp Services or NetApp Services Certified Partners, you can do it yourself by using our proven tools and processes, or you can combine these approaches.

Plus, when you're running ONTAP, you can use the Managed Upgrade Service to get the most from your investment by ensuring that your ONTAP software is always up to date.

Make your move to ONTAP 9.

### About NetApp

NetApp is the data authority for hybrid cloud. We provide a full range of hybrid cloud data services that simplify management of applications and data across cloud and on-premises environments to accelerate digital transformation. Together with our partners, we empower global organizations to unleash the full potential of their data to expand customer touchpoints, foster greater innovation and optimize their operations. For more information, visit [www.netapp.com](http://www.netapp.com). #DataDriven

## NetApp Software and Features

Table 1) ONTAP 9 offers a robust set of standard and optional features.

	Function	Benefits
Data compaction	Packs more data into each storage block for greater data reduction	Works with compression to reduce the amount of storage that you need to purchase and operate
Data compression	Provides transparent inline and postprocess data compression for data reduction	Reduces the amount of storage that you need to purchase and maintain
Deduplication	Performs general-purpose deduplication for removal of redundant data	Reduces the amount of storage that you need to purchase and maintain
FabricPool	Automates data tiering to the cloud (public and private)	Decreases storage costs for cold data
Flash Pool™ Caching	Creates a mixed-media storage pool by using SSDs and HDDs	Increases the performance and efficiency of HDD pools with flash acceleration
FlexCache®	Caches actively read datasets within a cluster and at remote sites	Accelerates read performance for hot datasets by increasing data throughput within a cluster, and improves the speed and productivity of collaboration across multiple locations
FlexClone®	Instantaneously creates file, LUN, and volume clones without requiring additional storage	Saves you time in testing and development and increases your storage capacity
FlexGroup	Enables a single namespace to scale up to 20PB and 400 billion files	Supports compute-intensive workloads and data repositories that require a massive NAS container while maintaining consistent high performance and resiliency
FlexVol®	Creates flexibly sized volumes across a large pool of disks and one or more RAID groups	Enables storage systems to be used at maximum efficiency and reduces hardware investment
MetroCluster	Combines array-based clustering with synchronous mirroring to deliver continuous availability and zero data loss; up to 700km distance between nodes	Maintains business continuity for critical enterprise applications and workloads if a data center disaster occurs
Performance capacity	Provides visibility of performance capacity that is available for deploying new workloads on storage nodes	Simplifies management and enables more effective provisioning of new workloads to the optimal node
QoS (adaptive)	Simplifies setup of QoS policies and automatically allocates storage resources to respond to workload changes (number of terabytes of data, priority of the workload, and so on)	Simplifies operations and maintains consistent workload performance within your prescribed minimum and maximum IOPS boundaries
RAID-TEC™ and RAID DP® technologies	Provides triple parity or double-parity RAID 6 implementation that prevents data loss when three or two drives fail	Protect your data without the performance impact of other RAID implementations; reduce risks during long rebuilds of large-capacity HDDs
SnapCenter®	Provides host-based data management of NetApp storage for databases and business applications	Offers application-aware backup and clone management; automates error-free data restores
SnapLock	Provides WORM file-level locking	Supports regulatory compliance and organizational data retention requirements
SnapMirror	Provides integrated remote backup/recovery and disaster recovery with incremental asynchronous data replication; preserves storage efficiency savings during and after data transfer	Provides flexibility and efficiency when replicating data to support remote backup/recovery, disaster recovery, and data distribution
SnapMirror Synchronous	Delivers incremental, volume-granular, synchronous data replication; preserves storage efficiency savings during and after data transfer	Achieve zero data loss protection (RPO=0)
SnapRestore®	Rapidly restores single files, directories, or entire LUNs and volumes from any Snapshot copy	Instantaneously recovers files, databases, and complete volumes from your point-in-time Snapshot copy
Snapshot	Makes incremental data-in-place, point-in-time copies of a LUN or a volume with minimal performance impact	Enables you to create frequent space-efficient backups with no disruption to data traffic
NetApp Volume Encryption	Provides data-at-rest encryption that is built into ON-TAP	Lets you easily and efficiently protect your at-rest data by encrypting any volume on an AFF or FAS system; no special encrypting disks are required