Datasheet

ONTAP 9
Data Management Software

Harness the power of the hybrid cloud

Key Benefits

Simplify Deployment and Management
- Deploy new workloads in less than 10 minutes.
- Unify data management across flash, disk, and cloud.
- Gain a global view of storage with a single management console.

Future-Proof Your Data Infrastructure
- Deploy on engineered systems, converged infrastructure, software-defined storage, and cloud.
- Support traditional and emerging applications.
- Manage SAN and NAS workloads on a unified storage architecture.

Power Your Enterprise Applications
- Deliver rich data services with high performance and consistent low latency.
- Reduce storage costs with comprehensive data-reduction technologies.
- Eliminate planned and unplanned downtime for continuous business availability.
- Scale capacity and performance without disruption.

The Challenge

Businesses today are under pressure from their digital transformation. They need to effectively manage data that is becoming distributed, dynamic, and diverse. They must take a more modern approach to their data storage while integrating into their existing environment. Businesses must also manage data wherever it resides—on the premises and in the cloud—while reducing costs and operating with existing IT staff.

The Solution

Harness the power of the hybrid cloud with NetApp® ONTAP® 9, the next generation of the industry's leading enterprise data management software. It combines new levels of simplicity and flexibility with powerful data management capabilities and storage efficiencies.

With ONTAP 9, you can build a hybrid cloud that is the foundation of a Data Fabric that spans flash, disk, and cloud. You can seamlessly manage your data as it flows to wherever you need it most to help you make the best possible decisions for your organization. ONTAP 9 addresses the challenges that face your digital enterprise by:

- Simplifying deployment and data management
- Future-proofing your data infrastructure
- Powering your enterprise applications

Simplify your storage environment with proven operational efficiency. You can deploy and configure new storage systems for enterprise workloads—Oracle, SAP, Microsoft SQL Server, Virtual Desktop Infrastructure (VDI), and VMware—in less than 10 minutes. By automating important processes, you can increase productivity. Built-in encryption helps you secure your data, and the single management console gives you a global view of your storage. You can also perform updates during regular work hours without disrupting applications or users.

With ONTAP 9, you can flexibly deploy storage on your choice of architectures—engineered systems, software-defined storage (SDS), and the cloud—while unifying data management across all of them. You can modernize your infrastructure with new software stacks such as Docker and OpenStack. And as your business grows, you can add capacity across both SAN and NAS environments. Plus, combine all-flash and hybrid flash storage nodes into a larger storage cluster and connect them to the cloud. You can then nondisruptively move and access your data from the node that delivers the optimal combination of performance, capacity, and cost-efficiency.

■ NetApp®

Accelerate your enterprise applications with flash—without compromising on the rich data services that you need. You can start small and grow with your business by scaling your storage environment, leveraging high-capacity solid-state drives (SSDs) or hard disk drives (HDDs) and growing up to 24 nodes in a cluster. Reduce your overall storage costs by leveraging leading ONTAP data reduction technologies to minimize your storage footprint and to maximize your effective capacity.

Plus, you can service your infrastructure without disrupting access to user data and applications, even during regular business hours. ONTAP 9 supports your business operations with continuous availability and leading data protection.

Simplify Deployment and Management
Whether you are adding new workloads or managing your existing environment, it is important to simplify your processes to maximize the efficiency of your staff. ONTAP gives you a common set of features across deployment architectures, which simplifies complex tasks so that your IT staff can be more productive and can focus on business priorities. With ONTAP, when your data doubles in size, it no longer means that you have twice as much work to manage.

Deploy workloads in less than 10 minutes
New fast provisioning workflows enable you to deploy new storage systems for key workloads—Oracle, SAP HANA, SQL Server, VDI, and VMware—in less than 10 minutes from power-on to serving data. 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.

And as you deploy new workloads, ONTAP 9 gives you the visibility to know which node has the most performance capacity available for optimally deploying the new workload.

Unify data management
Simplify operations by unifying data management across a hybrid cloud that can span flash, disk, and cloud running SAN and NAS workloads. You can increase the efficiency of your staff and easily move your data between nodes to where it's needed most. ONTAP is the foundation for a Data Fabric that gives you freedom, choice, and control across your storage environment.

Get simplified, powerful management capabilities
The NetApp OnCommand® software portfolio includes products that are well suited for managing virtualized private and hybrid cloud environments. You can centrally monitor capacity, availability, performance, and data protection. And you can take advantage of storage service analytics to make better informed decisions about your storage.

Our OnCommand management platform helps you automate your storage processes. You can also integrate storage processes into your data center orchestration platform for end-to-end service delivery for your private and hybrid cloud services.

Future-Proof Your Data Infrastructure
ONTAP 9 provides the flexibility you need to design and deploy your storage environment across the widest range of architectures, so you can match the approach that's optimal for your evolving business needs:

• NetApp engineered systems: All Flash FAS (AFF) systems and hybrid-flash FAS systems
• Converged infrastructure: FlexPod® solution
• On commodity servers as SDS: ONTAP Select
• In front of third-party arrays: NetApp FlexArray® software
• Next to the cloud: NetApp Private Storage (NPS) for Cloud
• In the cloud: ONTAP Cloud

You can seamlessly move your data between each architecture to place your data in the optimal environment for performance, capacity, and cost-efficiency. Plus, you have the flexibility to consolidate both NAS and SAN workloads onto any ONTAP environment while delivering consistent data services.

Power Your Enterprise Applications
To support your critical applications, you need a storage environment that cost-effectively delivers high performance and availability, that can scale with business growth, and that protects your valuable data. ONTAP 9 delivers on all these requirements with highly efficient flash performance for scalable, nondisruptive operations.

Optimized for flash
ONTAP 9 delivers the horsepower that critical applications require, without compromising on rich data services. AFF systems running ONTAP 9 are optimized specifically for flash, providing up to double the performance than the same workloads running on recent ONTAP 8 releases, while still delivering consistent submillisecond latency.

ONTAP 9 also enables FAS hybrid storage systems to deliver flash-accelerated performance that is balanced with HDD economies. Hot data is automatically cached in flash to accelerate application performance.

Nondisruptive operations
With ONTAP, you can perform critical tasks without interrupting 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. You can also replace storage controllers and disk shelves without disruption. With ONTAP, you can mix models and generations of hardware to extend the life of existing investments.

Integrated data protection
ONTAP provides NetApp Integrated Data Protection (IDP) to safeguard your operations and keep them running smoothly. Meet your requirements for business continuity and disaster recovery with near-instant backup and recovery using space-efficient NetApp Snapshot™ and SnapVault® technologies as well as with synchronous and asynchronous replication using NetApp MetroCluster™ and SnapMirror® technologies.

ONTAP 9
Common Data Management

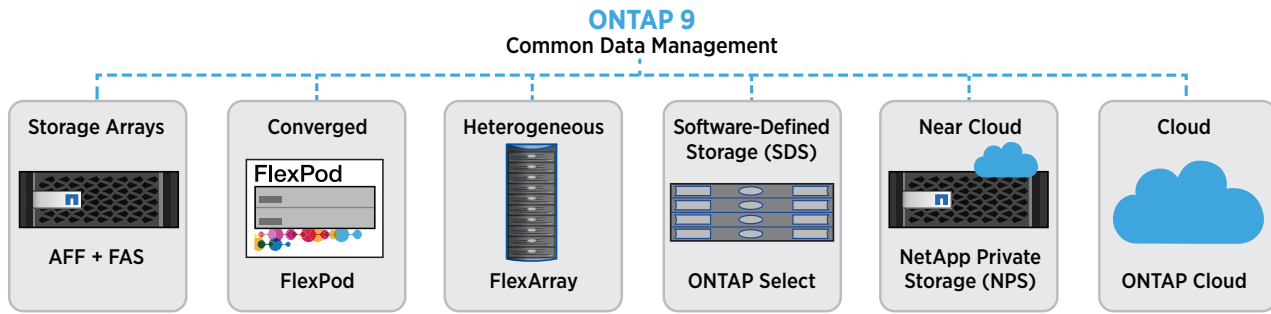| Storage Arrays	Converged	Heterogeneous	Software-Defined Storage (SDS)	Near Cloud	Cloud
AFF + FAS	FlexPod	FlexArray	ONTAP Select	NetApp Private Storage (NPS)	ONTAP Cloud

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

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.

Strong security
With the NetApp volume encryption feature that is built into ONTAP, you can easily and efficiently protect your at-rest data by encrypting any volume and any AFF or FAS system. No special encrypting disks are required.

Superior storage efficiency
With ONTAP, you can reduce costs with one of the most comprehensive storage efficiency offerings in the industry. You get space-efficient NetApp Snapshot copies, thin provisioning, replication, and cloning technologies. Plus, inline data compression, deduplication, and compaction work together to reduce your storage costs and to maximize your effective capacity. In addition, FabricPool automates the cost-efficient tiering of cold data to both public and private clouds.

Maximized shared storage investments
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. To maintain high customer satisfaction, adaptive quality-of-service (QoS) automatically adjusts storage resource levels to respond to changes in workloads and deliver consistent performance.

Staying ahead of business changes with seamless scalability
Storage systems that run ONTAP can transparently scale SAN and NAS from a few terabytes up to 172PB. As your business grows, you can scale up by adding SSD and HDD capacity, or you can scale out by adding storage controllers to seamlessly expand your cluster up to 24 nodes.

ONTAP also supports massive NAS containers that are easy to manage. With NetApp ONTAP FlexGroup, a single namespace can grow to 20PB and 400 billion files while maintaining consistent high performance and resiliency. You can also rebalance capacity to improve service levels by redeploying workloads dynamically and avoiding hot spots.

Maximize Investment Protection
ONTAP gives you the flexibility to create an integrated, scalable storage environment by clustering storage controllers from different families—AFF and FAS—as well as from different generations. You can grow your system with the latest hardware and continue to use your older hardware.

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 and using the storage capacity for your ONTAP environment.

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.

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. #DataDriven

NetApp Software and Features

	Function	Benefits
Balance placement	Automates loading of new workloads onto a cluster	Increases cluster utilization and performance by adding a new workload to the optimal node
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
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
Headroom	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
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 Volume volumes
MetroCluster	Combines array-based clustering with synchronous mirroring to deliver continuous availability and zero data loss; up to 300km distance between nodes	Maintains business continuity for critical enterprise applications and workloads if a data center disaster occurs
QoS (adaptive)	Simplifies set-up of QoS policies and automatically adjusts storage resources to respond to workload changes (number of TB of data, priority of the workload, etc.)	Simplifies operations and maintains consistent workload performance within your prescribed minimum and maximum IOPS boundaries
RAID DP® and RAID-TEC™ technologies	Provide a double-parity and triple-parity RAID 6 implementation that prevents data loss when two or three drives fail	Protect your data without the performance impact of other RAID 6 implementations; reduce risks during long rebuilds of large-capacity HDDs
SnapCenter® and SnapManager®	Provides host-based data management of NetApp storage for databases and business applications	Offers application-aware backup and disaster recovery; automates error-free data restores
SnapDrive®	Provides host-based data management of NetApp storage from Microsoft Windows, UNIX, and Linux servers	Lets you automate OS-consistent backup, restore, cloning, and other operations, taking full advantage of NetApp capabilities
SnapLock	Provides WORM file-level locking	Supports regulatory compliance and organizational data retention requirements
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 a 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
Volume encryption	Provides data-at-rest encryption that is built into ONTAP	Lets you easily and efficiently protect your at-rest data by encrypting any volume on AFF or FAS system; no special encrypting disks are required

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