NetApp Backup and Recovery Solutions

Protect your critical enterprise applications with a modern approach to backup and recovery

Key Benefits

Protect All Your Critical Data

- Maximize recoverability by enabling state-consistent backups at all levels.
- Scale to protect thousands of hosted applications.
- Simplify backup management with a single interface for leading enterprise applications, including Microsoft SQL Server, Oracle Database, and SAP HANA, as well as custom applications.
- Use REST APIs to integrate with cloud orchestrators.

Shrink Backup Windows and Enable Rapid Recovery

- Reduce the risk of data loss and back up your data more frequently without affecting application performance.
- Leverage application-consistent Snapshot™ copies to enable rapid operational recovery, disaster recovery, or dev/test.

Empower IT Specialists

- Provide self-service capabilities with centralized oversight by using role-based access control.
- Reduce testing and development time with embedded NetApp® ONTAP® functionality.
- Reduce overall TCO by up to 60% by putting your secondary site to active business use.
- Use space-efficient data copies on secondary or tertiary storage for business intelligence or for development and testing without affecting your production system.

The Challenge

Protecting data is one of the top concerns of any IT manager. As applications proliferate and the organization grows, managing a diverse IT environment can be a real challenge. This challenge is especially evident for organizations that have application, database, and backup specialists who are required to back up the company's data but might not be responsible for the storage infrastructure.

Traditional backup and restore technologies that are based on streaming data protection devices, such as tape or streaming disk devices that emulate tape, can be slow and resource-intensive. These devices can ingest large amounts of data, but it can be difficult or time-consuming to restore or to retrieve that data from them.

How do you easily manage backups across disparate applications and infrastructures, empower application and database owners, and do these things at scale?

The Solution

Protect your most critical enterprise data with confidence. NetApp integrated data protection and enterprise management technologies deliver industry-leading backup and recovery for:

- Enterprise databases, including Microsoft SQL Server, Oracle Database, SAP HANA, and more
- VMware virtual environments

When you deploy NetApp primary storage with NetApp SnapCenter® backup management software backing up to a secondary NetApp target, you gain a rich data management environment that is enhanced by the underlying capabilities of NetApp ONTAP data management software.

Built-in NetApp Snapshot and SnapMirror® replication technologies also provide a robust foundation for backing up and restoring your enterprise applications. NetApp Snapshot technology creates fast, space-efficient copies at the data layer. You can improve recovery point objectives with more frequent, nondisruptive backups; rapid restores of your entire environment; and incremental-forever updates.

By layering on NetApp SnapCenter backup management software, you can deploy a unified, scalable platform for application-consistent data protection and clone management across your hybrid cloud, all with a single interface. This single interface provides visibility and management for thousands of application instances.

■ NetApp®

Applications/databases	Exchange	Microsoft SQL Server	ORACLE	SAP HANA
File systems				Windows Server
Hypervisors				vmware
Community-supported plug-ins		mongoDB	IBM DB2	MySQL
Storage systems		9 ONTAP	ONTAP	ONTAP

Figure 1) NetApp provides comprehensive support and flexible deployment options. Consult NetApp IMT for supported software versions.

NetApp SnapCenter includes both the SnapCenter Server and individual lightweight application, database, and operating system plug-ins that are all controlled from a central management console. SnapCenter Server also includes Snapshot management to facilitate rapid and easy rollback to point-in-time copies.

Protect All Your Critical Data

SnapCenter creates application-consistent Snapshot copies to safeguard against corrupted data blocks in the event of a failure. SnapCenter quiesces the app, flushes data from buffers and caches it to storage, and makes a Snapshot copy before it resumes data processing, all within milliseconds to provide a consistent recovery point for every application.

SnapCenter can also schedule near-zero impact, crash-consistent Snapshot copies to provide the shortest possible recovery point objectives. Recovery times might be longer with this approach, so most customers implement a combination of crash-consistent and application-consistent Snapshot copies, depending on their recovery point objectives.

SnapCenter provides seamless scalability to support thousands of applications and databases. SnapCenter plug-ins for VMware virtual machines, Windows File System, Microsoft SQL Server, Oracle Database, and SAP HANA talk to all NetApp storage that is running ONTAP software. Plug-ins can also be created for custom applications.

All plug-ins are controlled from a single management console that delivers a consistent user experience across all applications or databases. The SnapCenter management console uses an intuitive GUI with visual representations of data copies across hybrid cloud resources. You get job monitoring, event notification, logging, dashboard reporting, scheduling, and policy management for all application or database plug-ins. And by offering enhanced REST APIs for the integration of third-party orchestration and cloud management software, SnapCenter is also built to be open.

Shrink Backup Windows and Improve Performance

Traditional backup software that uses streaming backup can affect performance and extend backup windows by creating a longer I/O path and placing a significant burden on the application server, which now must also stream data for backup. This point is where many backup windows fail. The application server simply cannot stream all the data in time. It also affects the performance of the application server, which is streaming data while trying to process its jobs.

With many organizations missing backup windows for critical enterprise applications, many are now looking to Snapshot technology for backup and recovery. NetApp ONTAP is ahead of the trend with built-in replication based on Snapshot technology that is fast, efficient, and an all-around better approach.

USE PRIMARY OR SECONDARY DATA FOR ALTERNATIVE USES	DESCRIPTION
Data distribution	SnapMirror makes it easy to quickly and efficiently move data at the turn of a lease or when you switch storage, consolidate remote offices, or set up new locations.
Data analytics and business intelligence	With SnapMirror and FlexClone technology, you can leverage replicated data to run complex analyses on secondary data copies.
Development and testing	You can accelerate application development by quickly cloning as many data copies as you need for on-demand development and testing.
Data retention and compliance	SnapMirror supports NetApp SnapLock® software for write once, read many (WORM) data retention, so you can meet compliance requirements to protect data through backup and disaster recovery.

Table 1) Use SnapMirror with FlexClone technology for multiple business functions.

IT operations administrator

- Makes sure that backup jobs are being successfully executed from a single interface with centralized monitoring and reporting
- Offloads restore and clone management tasks to application administrators with role-based access control (RBAC)
- Nondisruptively tests DR failover without disrupting production replication

Application and database administrators

- Define protection policies for workloads deployed on physical or virtual environments using RBAC
- Restore applications/databases for operational or disaster recovery using RBAC
- Create instant and space-efficient clones of databases for development and testing using RBAC

Virtualization administrators

- Simplify backup and recovery of virtual machines and datastores from vCenter by using the SnapCenter Plug-In for VMware vSphere
- Take frequent Snapshot copies of virtual machines at scale, without affecting their performance, by leveraging SnapCenter
- Restore virtual machines from primary or secondary storage
- Manage backups of virtual machines in large deployments by leveraging policy-based management provided by SnapCenter
- Monitor virtual machine backups with a centralized dashboard and job monitoring and reporting with the SnapCenter GUI

Application owners and developers

- Shrink application development time by up to 50% by using NetApp FlexClone technology on primary or secondary storage
- Create self-provisioned sandboxes by using Snapshot copies and rapid restores on datasets
- Modify or update developer environments without affecting the production environment
- Reduce risk of error with cloning and testing

Figure 2) Empower a wide range of IT specialists with self-service features and RBAC.

NetApp SnapCenter Software
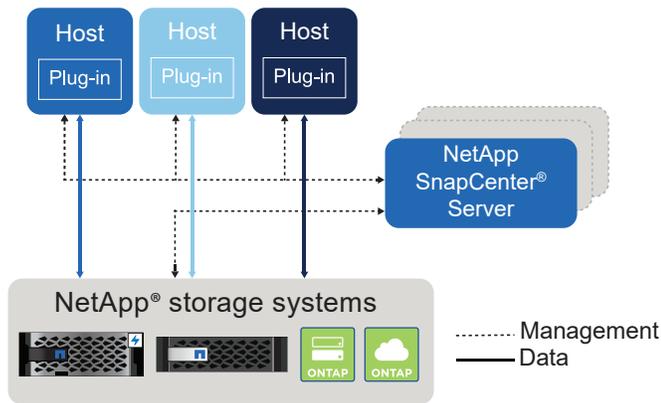**Unified, scalable software for data protection and clone management**

Figure 3) SnapCenter centralizes and simplifies data protection and clone management.

NetApp Snapshot copies are created in a fraction of the time that it takes to run a backup script. SnapMirror efficiently replicates data directly between storage endpoints with no performance impact to either the application or hypervisor host—just a pause in I/O processing—eliminating hours from backup windows. By backing up data in seconds or minutes instead of in hours or days, even during business hours, you can protect applications more frequently without affecting production workloads. SnapMirror replication also preserves data efficiencies implemented in the primary storage prior to transmitting changed bocks, reducing the network I/O traffic and data processing on the secondary storage.

Empower IT Specialists

IT organizations face the challenge of providing self-service capabilities for individual administrators while also retaining oversight and control of the storage infrastructure by the storage administrator. SnapCenter uses RBAC to delegate functionality to application and database owners while retaining oversight and control by a central IT operations administrator. This level of control and security frees storage administrators from tedious tasks that application and database owners can do for themselves. At the same time, such control protects the overall infrastructure from abuse from colleagues who have the best intentions.

Administrators can use the SnapCenter plug-ins for applications such as SAP and Oracle Database to enable various restore capabilities. Plug-ins can roll forward logs and enable application or database administrators to clone or to recover to the latest information that is available or to a specific point in time.

With SnapMirror replication, you can put your secondary site to active business use, reducing your overall TCO by up to 60% and making it easier to justify the secondary storage investment. Because our solutions help increase the efficiency of your storage utilization, you no longer need multiple physical copies of data for each business use. With NetApp FlexClone technology, you can create near-instantaneous, space-efficient copies of data on your primary, secondary, or tertiary storage. Data is stored natively, enabling you to use these copies for multiple business functions (Figure 1). You can use them for data distribution, data analytics and business intelligence, development and testing, and data retention and compliance without affecting your production system.

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