Business white paper

Converged Data Protection

HP StoreOnce Recovery Manager Central

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StoreOnce Recovery Manager Central (RMC) is designed to address the challenges organizations face in maintaining application availability. StoreOnce RMC integrates the speed and agility of storage array-based snapshots with low cost disk-based backup systems to provide up to 17X faster backups and up to 5X faster restores[1] than traditional backup processes at lower cost that are easier to manage.

Business challenges

Businesses and organizations of all sizes are facing an explosion of data that has become increasingly difficult to manage. The amount of data can be overwhelming. Analysts predict that by 2020 there will be 40 trillion gigabytes of data generated,[2] 90 percent of which will be less than 2 years old.[3] Today, 83 percent of organizations have a downtime tolerance of 3 hours or less and 49 percent have applications that can only tolerate downtime of 15 minutes or less.[4] With the pressure to run applications that have minimal tolerance for downtime, this data needs to be protected and recovered within minutes.

Service Level Agreements (SLAs) for these high-availability applications often require aggressive Recovery Point Objectives (RPOs) that must be created without interruption. Users also want to be able to recover data or VMs that could be days or weeks old, which creates a long-term storage and cost challenge. These SLAs also include Recovery Time Objectives (RTOs) that will allow them to minimize application downtime. In many cases, it is difficult for the IT staff to balance these needs versus cost. Traditional backup to tape or even disk based appliances struggle to meet these demands because of the cost, complexity, and long recovery time.

There are different technology approaches such as clones, snapshots, and disk based backup systems that have helped to address application availability issues, however, they also have limitations.

- Clones or mirrors are full copies of the data that are written at the same time as the base volume. The mirror is broken during off-hours in order to protect the data from corruption. Clones provide very fast recovery because they can be promoted to production and the application can be quickly restarted. However, clones have several limitations including application interruption for data consistency, and the high cost of storing the clones on expensive fast disk drives. Clones also require that the primary storage array is still operational for rapid recovery.

- Snapshots are point-in-time (PIT) copies of data that address some of the issues related to clones. Snapshots can be taken throughout the business day which improves the recovery point and are space efficient. Snapshots are limited by the amount of space on the array and the high cost of the disk space to store multiple snapshots to meet RPOs. Snapshots also require that the primary storage array is still operational for rapid recovery.

- Disk based backup systems that deduplicate full backups can offer a faster alternative to tape, but these systems use traditional backup processes that often impact application performance where the backup server can create a bottleneck.

Application owners and VM administrators now more than ever are demanding greater control and visibility over their application data protection from a familiar console, such as vCenter. They need non-disruptive data protection and do not want to compromise the application availability and performance during backup. They require a faster way to simply and reliably protect and restore data than traditional backup processes can provide. HP StoreOnce RMC is a solution to these problems.

HP StoreOnce RMC

- Reduces backup times by up to 17X and restore times by up to 5X[1]
- Improves recovery time
- Reduces the cost of storing multiple snapshots
- Simplifies recovery by application owners

[1] Based on HP testing of backup performance comparison between HP StoreOnce Recovery Manager Central and traditional backup processes
[2] IDC Predictions 2012: Competing for 2020, Document 231720, December 2011, Frank Gens
[3] SINTEF, May 2013
[4] ESG Research Report. Trends for Protecting Highly Virtualized and Private Cloud Environments, July 2013

Executive overview

StoreOnce RMC integrates the management of array-based snapshots with the efficiency and speed of disk based backup systems. It combines the availability of instant and non-intrusive local and remote snapshots with cost efficient disk backup systems to provide multiple recovery points, and rapid restore times. Since the backup is stored on a separate device, it provides protection against a storage array outage.

StoreOnce RMC integrates 3PAR StoreServ snapshot technology with native data movement to the StoreOnce Backup products. The first release integrates this process into VMware® vCenter and allows VMware administrators to manage the creation, backup, and the recovery of snapshots directly and seamlessly from within vCenter. StoreOnce RMC enables fast, efficient, reliable, and simple protection for your business. HP testing has proven that StoreOnce RMC delivers up to 17X faster backups and up to 5X faster restores than traditional backup methods. StoreOnce RMC includes an open RESTful API that will allow ISV's with backup software, infrastructure management tools and security systems to leverage this same technology.

Fast

Deliver on SLAs with fast, non-disruptive, application consistent backup and recovery

Efficient

Eliminate cost and complexity of traditional backup approaches with flat backup *from* HP 3PAR to StoreOnce

StoreOnce Recovery Manager Central

Reliable

Protect applications with the availability of snapshots and the protection of backups

Simple

Empower hypervisor and application owners to control backup and recovery *directly* and *seamlessly* from their preferred native interfaces
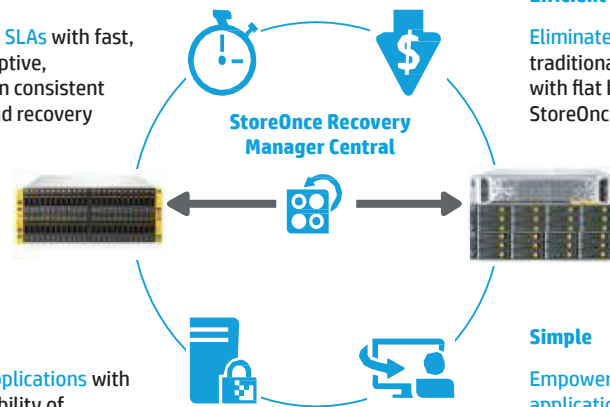
Technical overview

HP StoreOnce RMC—how it works

Most organizations protect their data using **traditional backup** methods where a backup application installed on a media server requests data from a primary storage array and moves it to disk or tape via the backup application/media server. Traditional backup processes are often disruptive to application SLAs and require backups to be scheduled during less busy times.

StoreOnce RMC employs a **flat backup** model to orchestrate the snapshot lifecycle and protect the data on a separate backup target without a backup application. With flat backup, once the first full backup is complete each subsequent backup is a differential making it significantly faster than traditional backup methods particularly for higher volumes of data.

StoreOnce RMC leverages 3PAR StoreServ SnapDiff technology to create an application consistent snapshot. Only changed blocks are sent to the StoreOnce Backup system which minimizes network traffic and saves disk space on the backup system. The backups complete at the speed of a traditional block-level incremental but are stored as a synthetic full backup. It is a consistent full recovery point which makes restore time much faster. StoreOnce RMC uses the Express Protect feature to enable the backup of the snapshot to the StoreOnce Backup system for deduplication and long-term retention. HP StoreOnce Catalyst software for the StoreOnce Backup systems optimizes movement of deduplicated backups and manages all data movement.
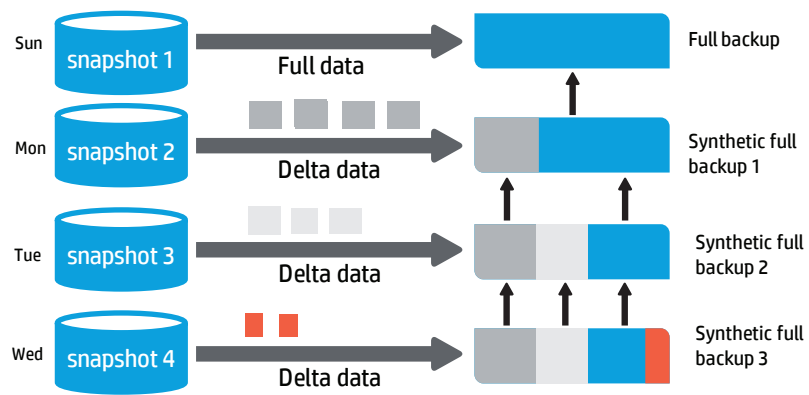
The copies on the StoreOnce system are independent volumes that provide flexible restore options:

• Restore to the original volume on the same array

• Restore to a snapshot of the original volume or another volume on the array

• Restore to any other volume on another 3PAR StoreServ array

In the initial release of StoreOnce RMC, three technologies are supported:

• HP 3PAR StoreServ

• HP StoreOnce Backup systems including HP StoreOnce VSA

• VMware vCenter integration

HP 3PAR StoreServ Storage
The first primary storage array supported by StoreOnce RMC is 3PAR StoreServ. It offers the application availability and performance of Tier-1 storage at midrange costs.

HP 3PAR StoreServ can meet even the most stringent SLAs with performance acceleration for your most frequently accessed data. A flash-optimized architecture enables optimal performance of flash-based SSDs while block-level storage tiering and mixed workload optimization enables high levels of performance for both spinning and non-spinning media. As a result, you can put more applications on the same storage to lower total infrastructure cost. Unlike traditional arrays that require you to purchase larger arrays to support growth or increase performance, the 3PAR StoreServ design delivers capacity and performance that scale, even at extremely high capacity utilization levels.

StoreOnce RMC leverages the HP 3PAR Virtual Copy and Remote Copy Software to create the instant Point in Time local and remote copies of the data. 3PAR Virtual Copy and Remote Copy Software is a reservationless, non-duplicative, snapshot product that consumes capacity only for changed data. It does this in fine-grain increments and without duplicating changed data within a snapshot tree. HP 3PAR Virtual Copy Software helps eliminate the cost and performance overhead of host-based snapshots.

The unique performance advantages of 3PAR StoreServ enable you to leverage snapshots without the performance concerns that weigh down traditional array-based copies. The system's automatic load balancing capabilities decrease the contention between base and snapshot volumes that are inherent in other architectures. To further reduce administration time and decrease the chance of human error, you can automate creation and expiration of snapshots across multiple boot and data volumes. These snapshots can be centrally administered from within VMware vCenter.

HP StoreOnce Backup

HP StoreOnce Backup systems help organizations to address backup sprawl, reduce inefficiencies, and improve reliability. StoreOnce provides a cost effective disk based platform that is available in a range of scalable dedicated appliances and flexible virtual appliances. HP StoreOnce deduplication reduces the amount of backup data you need to store by up to 95 percent. These systems provide automated backup and DR operations with secure data retention and built-in encryption.

HP StoreOnce VSA delivers these capabilities in a software-defined form factor with 50 TB of capacity that can reduce storage costs compared to a purpose built appliance by running on existing virtualization infrastructure. For small environments, deploying StoreOnce in a software-defined form factor can reduce storage costs by up to 65 percent compared to deploying purpose built appliances. HP StoreOnce VSA is a cost-effective virtual appliance that can be deployed as a virtual machine on VMware, Hyper-V, and KVM hypervisors that delivers fast, efficient, and scalable backup.

StoreOnce RMC Integration with VMware vCenter

StoreOnce RMC for VMware vSphere is a plugin that allows VMware administrators to create and manage non-disruptive, application consistent snapshots. These administrators can initiate online recovery directly from within vCenter console. They can schedule the automatic snapshot creation and movement to the StoreOnce Backup system.

With the ability to create more snapshots that consume very little space, VMware administrators can meet more aggressive Recovery Point Objectives. More snapshots taken during the day create opportunities to restore data that is the most current and improve overall application availability.

The figure below is an example that shows the integration with VMware vCenter.
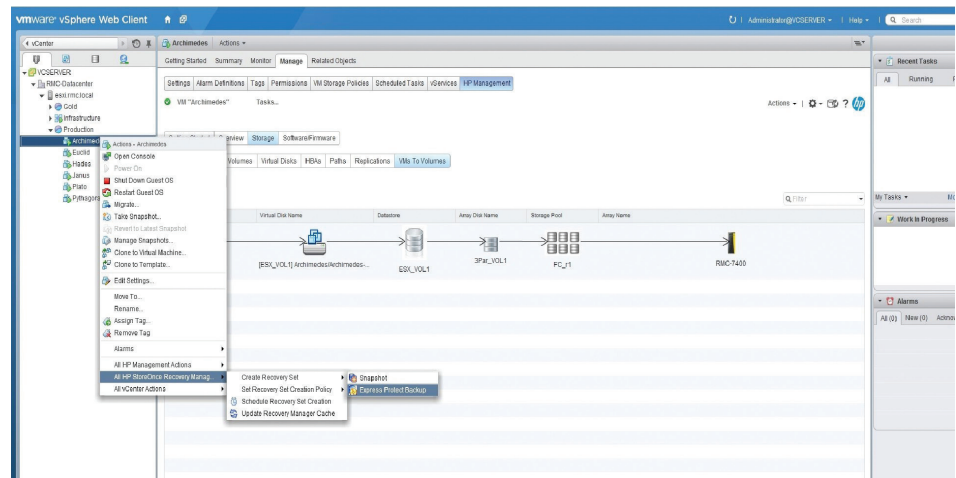
Why HP StoreOnce RMC

Organizations are balancing the demands of the application users versus their limited IT budgets and staff. HP StoreOnce RMC enables infrastructures that can meet all of these demands cost effectively and provide additional business, technology, and operational benefits.

Business advantages

• **Lower risk.** StoreOnce RMC provides a fully tested complete converged infrastructure for backing up and restoring VMware environments by integrating 3PAR StoreServ snapshots and StoreOnce Backup systems with management through VMware vCenter. This integration results in few components which simplifies the process and lowers business risk.

• **Increase business flexibility.** Applications owners can control their own backup and recovery. Through VMware vCenter, the VM administrator can restore any VM or datastore which greatly improves productivity. The staff closest to the application and the business requirements, can control their own environment.

- **Improve application uptime.** With StoreOnce RMC, customers can make application consistent local and remote copies of data throughout the day without interruption to the application. Restores are much faster because the user can select a snapshot that represents the last known good copy. Recovery could be within minutes.

Technology advantages

- **Improve time to backup.** StoreOnce RMC can reduce backup times by up to 17X and restore times by up to 5X. Since the copy of the data on the StoreOnce Backup system is a synthetic full backup, it can be restored to the designated storage array quickly.

- **Provide scalability.** StoreOnce RMC leverages platforms that scale from small systems for remote sites to systems with hundreds of terabytes that support the largest data centers. 3PAR StoreServ arrays are available in different configurations that can scale from 1 TB to over 3 PB. This capacity does not include the space savings that can be achieved with thin provisioning. The StoreOnce Backup is based on a scale-out architecture with capacity points that start small and allow you to add in virtual capacity, shelves, or nodes. For small and remote offices, the StoreOnce VSA virtual appliance can scale from 1 TB to 50 TB. For larger sites and enterprise data centers the StoreOnce Backup system can scale from 24 TB to 2240 TB of raw capacity. These quoted capacities do not take into consideration the deduplication that can reduce the amount of backup storage required by up to 95 percent.

- **Leverage flexible 3PAR StoreServ Snapshots.** The 3PAR StoreServ snapshot capability is built into the basic architecture and has been used for years by customers. It is a tested and proven method to protect data and provide multiple restore options for applications. HP StoreOnce RMC leverages this proven snapshot capability by enabling native data movement to and from the StoreOnce Backup system and the 3PAR StoreServ array.

- **Utilize the efficiency of StoreOnce Backup.** HP StoreOnce Backup is a disk-based backup system with a deduplicating engine that is available in a range of scalable dedicated appliances and flexible virtual appliances. HP StoreOnce Backup systems reduce the amount of backup data you need to store by up to 95 percent. This efficient architecture dramatically reduces the amount of storage that is required for data protection.

Improve VMware protection

- Lower RPOs and RTOs

- Self-service restore from within vCenter

- Eliminate cost and complexity from backup

Operations advantages

- **Simplify management.** With StoreOnce RMC, organizations can eliminate the complexity of managing traditional backup software, hardware, and servers. StoreOnce RMC provides a single interface through VMware vCenter that allows application owners to create, schedule, manage, and restore the entire virtualized environment. For customers who currently use VMware, these tools are familiar and well understood. It makes implementation easy and simplifies ongoing management.

- **Increase operational efficiency.** By leveraging 3PAR StoreServ SnapDiff technology, only changed blocks are sent to the StoreOnce Backup system. This reduces network traffic and reduces the capacity requirements for the backup system. Customers can purchase less storage capacity and still provide improved RPOs and RTOs.

Invest effectively with HP Technology Services

Accelerate your technology return on investment (ROI), reduce implementation time and impact on backup environments, and manage data more effectively with HP services. HP and HP authorized channel partners can help you to select the right level of personalized, proactive, and simplified support for your business.

- **The HP StoreOnce RMC Software Installation and Startup Service** provides deployment of the HP StoreOnce RMC software, helping to ensure proper installation and integration in your storage environment.

- **HP Foundation Care** is system-level IT hardware and software support that delivers flexible coverage window and response time for more choice and simplicity.

- **HP Proactive Care** combines reactive and proactive services to provide easy-to-purchase, cost-efficient system-level support coupled with personalized expert advice and products connected to HP to help prevent problems and reduce downtime.

- **HP Proactive Care Advanced** builds and incorporates on Proactive Care and also gives customers personalized technical and operational advice from an assigned, local Account Support Manager for personalized technical collaboration, flexible access to specialist skills to help optimize business critical IT, and enhanced Critical Incident Management to help so the business is not affected if there is a system or device outage.

- **HP Datacenter Care** provides the support you need to deploy, operate, and evolve your data center environment to be hybrid-cloud ready with single-point-of-accountability for HP and others' product.

Next steps

Contact your local HP sales representative or an HP authorized partner to design and implement a backup/recovery solution that will meet your needs today and allow room for expansion as your business grows. Find a local HP partner. hp.com/go/locator.

Learn more about HP StoreOnce RMC

To learn more about the HP StoreOnce RMC, visit:

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To learn more about the HP Care Pack implementation and support services or for information on support options, please visit:

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