Protect and manage data copies with intelligent storage

HPE Recovery Manager Central and HPE StoreOnce Catalyst Plug-ins for Oracle, SAP HANA, and Microsoft SQL Server
The database protection and copy data management challenge

Protecting and recovering database environments is becoming more challenging in the face of large and increasing data volumes, more complex business demands, and rising costs. Organizations deploying large-scale Oracle, SAP HANA, and Microsoft® SQL Server databases struggle with protecting rapidly growing and changing mission-critical data.

Some of the pain points in protecting databases include:

- Backing up large databases with minimum complexity and within a short time frame
- Keeping data protection costs under control
- Maintaining a reasonably low recovery time objective (RTO) and recovery point objective (RPO) for an application in case of disasters or logical issues

On the SAP HANA platform, the database, data processing, and application platform capabilities are combined in a single in-memory platform and a persistent storage layer recovers data to the most recent committed state after a restart or power loss. However, protection against logical or user errors and catastrophic failures is not possible from the persistent storage layer alone.

Array-based snapshots offer fast, nondisruptive point-in-time copies of data. But snapshots alone cannot deliver comprehensive backup. They have retention limitations, corruption vulnerabilities, and dependence on the underlying storage system. Moreover, snapshots are at risk if the storage system fails. Replication might protect against site loss, but it does not protect against viruses because they are replicated to the secondary site.

Typically backups require production database application resources for extended time periods, which might be disruptive to users. Backup and recovery of SAP HANA databases involve heavy reliance on scripts and slow performance. The Backint for SAP HANA interface supports third-party backup and recovery software, but a dedicated backup media server is needed and backup scheduling can be complex.
Enterprises and small businesses alike are relying more and more on multiple copies of their production database for IT functions beyond data protection. Tasks such as testing and development, analytics, report generation, and copies for application development purposes are common in every IT organization. Yet, managing the creation and use of these copies can become complex and costly to the point that it can negatively impact daily business operations. A faster, easier, and more efficient way to manage data copies is needed.

Hewlett Packard Enterprise can help provide an application-managed, storage-integrated data protection and copy data management offering.

The HPE solution

HPE StoreOnce Catalyst Plug-ins are available free of charge for Oracle Recovery Manager (RMAN), Backint for SAP HANA, and SQL Server. These high-performance plug-ins provide database administrators (DBAs) with faster backup and recovery of databases. An alternative to traditional NAS and virtual tape library (VTL) backup modes, the plug-ins are installed directly on your database servers. They are also integrated with Oracle Enterprise Manager, SAP HANA Studio, or SQL Server Management Studio to initiate backup, as well as restore operations and replicate data to a secondary target including the cloud.

As a result, your DBAs can back up their databases without the need for an additional backup application. The plug-ins also provide the option to deduplicate the database backup on the nodes, reducing the data flow through the network. Another option is to deduplicate on the target HPE StoreOnce appliance, reducing the deduplication load on the database application servers.

Most importantly, HPE StoreOnce Catalyst makes it practically impossible for ransomware to attack database backup stores directly. It effectively isolates the data from traditional lines of communication and command sets leveraged by ransomware attackers.

HPE Recovery Manager Central (RMC) offers a practical, efficient, and unified approach to copy data management and database protection so that backing up multi-terabyte databases is possible within a short window. It provides a converged availability and backup service for Oracle, SAP HANA, and SQL Server to augment or replace traditional backup approaches.
Without requiring any additional licenses, HPE RMC for Oracle, SAP HANA, and SQL Server is included with every HPE 3PAR StoreServ while HPE RMC for SQL Server is also included with every HPE Nimble Storage array. HPE RMC combines the performance of local and remote snapshots with the protection of backups to enable fast, efficient, reliable, and simple protection of Oracle and SQL Server data, as well as log volumes of SAP HANA data.

In addition to data protection, HPE RMC allows copy data management for databases. Oracle and SQL Server DBAs can mount the snapshots on a designated server for operations such as database migration or use them to create a clone of the database on a backup server. SAP HANA copy data management includes system copy or refresh operations, which involve moving one or more tenants or entire SAP HANA systems from one host to another to create production and nonproduction copies of existing systems. System copy or refresh processes use HPE RMC and many other methods to manage data copies.

Additionally, if you are considering cloud storage for long-term data retention and lower cost disaster recovery, HPE Cloud Bank Storage enables you to implement a simple and reliable off-site disaster recovery solution. It backs up your database to and restores from the cloud storage. HPE Cloud Bank Storage is integrated into HPE RMC and HPE StoreOnce Catalyst Plug-ins.

HPE database protection enables you to follow the 3-2-1 best practice by:

- Maintaining three copies of data (the primary data and two copies) to avoid losing data to a faulty backup
- Storing backup copies on two different media types such as tape, disk, secondary storage, or the cloud
- Keeping one copy off-site—either on tape or in the cloud—in the event of local hazards or ransomware infections within the network
Benefits of HPE RMC for Oracle, SAP HANA, and SQL Server

HPE RMC combines the speed of taking nondisruptive snapshots on HPE 3PAR StoreServ and HPE Nimble Storage arrays with the reliability and efficiency of deduplicated backups on HPE StoreOnce. This delivers a converged availability and a fast backup and recovery solution for Oracle, SAP HANA, and SQL Server that DBAs can easily manage. HPE RMC offers the following benefits for database environments:

• **Fast backup and recovery:** Unlike traditional approaches, HPE RMC only sends changed data blocks to HPE StoreOnce, leading to faster and more efficient database backup. When a database crashes, HPE RMC quickly recovers data using multiple block-based streams, enabling you to deliver on aggressive RTO service-level agreements (SLAs). You can also commit to tight RPO SLAs with frequent recovery points. HPE RMC accelerates backups to and restores from next-generation HPE StoreOnce systems by 30% compared to the previous StoreOnce generation.\(^1\)

• **Reduced cost and complexity:** Data protection with HPE RMC is simple with direct backup from array snapshots to HPE StoreOnce. Because the stored backups on HPE StoreOnce are deduplicated, backup storage costs are contained—and in fact, you can economically store data on HPE StoreOnce for extended periods. Infrastructure costs and the datapath are also reduced because HPE RMC runs natively on HPE StoreOnce.

• **Application-managed and granular data protection:** DBAs can monitor and manage snapshots, backup, and recovery directly and seamlessly from within the HPE RMC GUI that is launched from Oracle Enterprise Manager, SAP HANA Studio, or SQL Studio. Additionally, Element Recovery Technology (ERT) enables granular recovery of an individual database file or files from an HPE StoreOnce backup, providing the same recovery experience for both snapshots and backups, depending on RPOs and RTOs.

• **Efficient copy data management:** HPE RMC offers a one-click clone database feature, which allows administrators to automatically bring up a fully functional single-instance Oracle or SQL Server database clone. This function provides a copy of the production database for testing and development, QA, reporting, analytics, or migration purposes. HPE RMC also enables DBAs to start the Oracle or SQL Server clone in mounted mode for backup and restore operations.

Moving these operations off the production server reduces risk and improves the performance of the production environment. For SAP HANA databases, HPE RMC takes an application-consistent data snapshot of the source database and copies it to an HPE StoreOnce Catalyst store. This can be restored to a snapshot on the same HPE 3PAR or to a new volume on the same or different HPE 3PAR. Using SAP HANA Studio, you can then restore from the data snapshot of the source database. In summary, HPE RMC copy data management delivers the following benefits:

- Policy-based copy automation where a single copy policy helps minimize secondary copy data sprawl across tiers
- Creation of live and updatable clones of production databases without consuming additional storage space or impacting production
- Enabling zero footprint clones to run at production speeds, even while servicing multiple copies from the same original volume by high I/O delivered by all-flash HPE 3PAR and HPE Nimble Storage

---

\(^1\) HPE Nimble Storage only supports HPE RMC for SQL Server

\(^2\) HPE RMC for SAP HANA protects only SAP HANA data volumes because snapshots cannot be taken from log volumes

\(^3\) Based on HPE internal testing, July 2018
Benefits of HPE StoreOnce Catalyst Plug-ins

The HPE StoreOnce Catalyst Plug-ins for Oracle, SAP HANA, and SQL Server are integrated with Oracle RMAN, Backint for SAP HANA, and SQL Server backup functions, respectively. This allows DBAs to efficiently transfer backups from the database to the backup target. The plug-ins have the following benefits for database environments:

• **Efficient resource consumption:** The plug-ins deliver efficient use of network bandwidth and fast backup processing time with source-side deduplication. This means only unique data is sent to HPE StoreOnce, thereby helping optimize network utilization and significantly reducing bandwidth requirements. In addition, Oracle and SQL Server backups and restores are accelerated by 50% and 15%, respectively, with next-generation HPE StoreOnce systems compared to the previous generation.

• **Reduced backup footprint:** An improved deduplication ratio allows backups to be stored longer with reduced storage capacity compared to file backup implementations. Storage capacity requirements are reduced by 95% compared to a fully hydrated backup—guaranteed.12

• **Increased cost savings:** By enabling direct backups to HPE StoreOnce, third-party data protection software is not required. The HPE StoreOnce Catalyst Plug-in controls the backup using Oracle RMAN, SAP HANA Backint, or SQL Server backup functions to make a direct copy to HPE StoreOnce. This helps eliminate the need to pass through a backup media server.

• **Control and simplicity:** The HPE StoreOnce Catalyst Plug-in is installed directly onto the database nodes with only a few clicks. DBAs can back up, restore, and delete database backups directly from Oracle Enterprise Manager, SAP HANA Studio, and SQL Server Studio. DBAs have complete control of the backups.

---

11 Based on HPE internal testing, July 2018
12 Refer to the HPE StoreOnce Get Protected Guarantee Program
HPE Cloud Bank Storage

HPE Cloud Bank Storage is an HPE StoreOnce feature that delivers highly efficient storage and data transfer to the cloud. The combination of HPE StoreOnce deduplication and cloud storage provides a low-cost, high-performance, zero-risk, and long-term retention solution. HPE Cloud Bank Storage is:

• **Economic:** Protect more than 100 PB\(^ {13} \) of data at 20X\(^ {14} \) lower cost than existing public cloud services. You can triple\(^ {15} \) the native capacity of HPE StoreOnce systems by leveraging on-premises or public cloud storage. HPE Cloud Bank Storage and HPE StoreOnce deliver 3X to 5X\(^ {16} \) lower cost over a five-year period when compared to third-party software backups to the cloud.

• **Efficient:** Reduce your storage capacity requirements by 20X\(^ {17} \) with HPE StoreOnce deduplication technology and help optimize bandwidth utilization cost while transferring the data. HPE Cloud Bank Storage and HPE RMC deliver 10X\(^ {18} \) faster backups when compared to third-party software backups to the cloud.

• **Flexible:** Protect Oracle, SAP HANA, and SQL Server data on-premises and off-premises with public and private cloud services by simply upgrading your HPE StoreOnce software. You can upgrade by purchasing an HPE Cloud Bank Storage license and pointing it at either AWS, Microsoft Azure, or even your own private cloud with Scality RING, Accenture Cloud Platform (ACP), SUSE, or IBM Cloud Object Storage (formerly Cleversafe).

• **Reliable:** Mitigate risk with a simple, encrypted, and reliable cloud disaster recovery solution. HPE Cloud Bank Storage moves data to cloud storage and from the cloud back to the local HPE StoreOnce system. The self-describing backup data in the cloud enables you to restore to any HPE StoreOnce system if access to the original on-premises system is lost.

---

\(^{13}\) 100 PB assumes deduplication ratio of 20:1 and the maximum logical capacity of HPE StoreOnce 6600 of 34 PB.

\(^{14}\) This value reflects the long-term cost of retaining backup data with HPE Cloud Bank Storage for HPE StoreOnce. It assumes deduplication ratio of 20:1 and Amazon Web Services (AWS) S3 standard object storage pricing of $0.02 per GB per month.

\(^{15}\) Capacity can triple compared to a fully hydrated backup using external object storage.

\(^{16}\) \(^{17}\) \(^{18}\) Lab Insights—Data Protection in a Hybrid Cloud Environment, Evaluator Group and Demartek, May 2018.
Choose **HPE Recovery Manager Central** for fast backup and recovery of databases on HPE 3PAR StoreServ and HPE Nimble Storage systems, as well as for copy data management tasks. HPE RMC seamlessly integrates robust, flash-optimized HPE 3PAR StoreServ and HPE Nimble Storage arrays, along with fast, scalable, and highly resilient HPE StoreOnce systems.

If you want to deploy a native database protection solution, such as Oracle RMAN, Backint for SAP HANA, or SQL Server backup functions, choose the HPE StoreOnce Catalyst Plug-in. This enables DBAs to back up and restore directly to or from HPE StoreOnce through Oracle Enterprise Manager, SAP HANA Studio, or SQL Server Studio.

Consider HPE Cloud Bank Storage to retain data for a longer time on high-capacity and low-cost cloud storage. HPE Cloud Bank Storage also enables you to implement a simple and reliable off-site disaster recovery solution by backing up to and restoring from cloud storage.

HPE data protection and copy data management solutions for databases simply and efficiently deliver the end-to-end availability, agility, and business continuity that your database environment demands.

Learn more at

**hpe.com/storage/storeonce**

**hpe.com/storage/rmc**