



Hewlett Packard
Enterprise

Managing Nimble Storage snapshots, replication, and backup to HPE StoreOnce with Veeam

Nimble Storage, HPE StoreOnce, and Veeam introduce a new level of integration

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Executive summary

This paper describes the architecture of a combined Veeam and Hewlett Packard Enterprise (HPE) Storage (HPE StoreOnce and Nimble) solution. This solution enables key features and benefits not possible with many third-party products, including protection against ransomware attacks. Details of the integration of Veeam and HPE Storage provide an understanding of the end-to-end data protection process.

HPE StoreOnce, Nimble Storage snapshots, and integration with [Veeam 9.5](#) can provide customers with a complete disaster recovery and archiving solution. Individual item restores and backup copy jobs are also supported. Nimble snapshots and replication are created and then directed to the HPE StoreOnce system for backup. For Nimble customers, HPE StoreOnce provides affordable and secure storage that supports encryption. This combination is ideal for longer-term retention with fast restore performance.

With the announcement of Veeam 9.5, Nimble Storage and Veeam introduced a new level of integration. Nimble snapshots and replication can now be managed and scheduled with Veeam, the leading backup application for virtualized environments. Veeam backups can be created from Nimble snapshots as well as from replicated snapshots at a secondary location, thereby offloading backups from production. Creating a backup from a storage snapshot completes the virtual machine (VM) quiescence within seconds and transfers the processing to the storage array.

HPE StoreOnce system backups

[HPE StoreOnce systems](#) are fast and extremely scalable. With ingest rates ranging from 6.4 TB/hr to more than 184 TB/HR, customers can find a system to meet their backup windows and data requirements.

HPE StoreOnce systems support NAS (NFS/CIFS), virtual tape library (VTL), and [HPE StoreOnce Catalyst](#) protocols. Catalyst provides greater efficiency and client-side deduplication on the proxy server, the application server, or the appliance itself. Client-side deduplication on the proxy server reduces backup time and can significantly reduce network traffic because only the delta changes are transferred to the HPE StoreOnce system. This can significantly reduce the time required for backup windows.

Catalyst creates a synthetic full backup quickly. By default, Veeam uses a forward incremental backup scheme. The first backup is always a full backup. Every backup after that only transfers the incremental changes. To complete a restore, the incrementals as well as the full backup must be restored, which can be difficult if the full backup is several weeks or months old. To counteract this issue, Veeam creates a synthetic full backup. The synthetic full synthesizes all of the incrementals to create a new "full", making the restore point a full backup and making restores much faster.

Generally, a synthetic full is run once a week. However, many deduplication appliances have difficulty creating a synthetic full because each incremental must be read and rehydrated to create the synthetic full. Many deduplication appliances are forced to create an active full, which recreates a new full over the network from the client, thereby increasing completion time and network usage.

Catalyst has solved the synthetic full problem. Rather than rehydrating and recopying the data from the incremental backups, Catalyst moves metadata only to transform the data into a 'virtualized' synthetic full. No data needs to be moved or created because the data pointers are only updated. The virtualized synthetic full is also created extremely quickly. This eliminates the need to create an active full over the network.

Nimble integration with HPE StoreOnce systems and Veeam

You can easily integrate [Nimble storage](#) into [HPE data protection solutions](#). After you add Nimble arrays into the storage infrastructure in Veeam, you can schedule Nimble snapshots and replication to be performed. Backup jobs can be created on StoreOnce systems either from the primary snapshot or from the replicated snapshot at a secondary site.

You can add a StoreOnce system to Veeam as a backup repository. StoreOnce systems provide Nimble customers with very efficient data reduction, in some cases reducing data by 95%. The average dedupe rate is 15:1 but more than 30% of customers reach dedupe ratios of 40:1. The connection with StoreOnce can be VTL, NAS (NFS/CIFS), and Catalyst. From the Veeam drop-down list in the repository options, select the StoreOnce system. To ensure the best deduplication rates, select the following repository settings:

- Decompress backup data blocks before storing. This option allows any data that is compressed across the network during a backup to be decompressed before it lands on a StoreOnce system.
- Use per-VM backup files. This option places each VM that is backed up in its own backup chain, which allows multiple streams of data.
- Use StoreOnce encryption instead of Veeam encryption.
- Best practice when using Catalyst is to avoid Catalyst Store proliferation. For better dedupe, store multiple VMs in the same Catalyst store.



Note

Repositories are referred to as *stores* on a StoreOnce appliance. Refer to the [Veeam Backup & Replication version 9.x with HPEStoreOnce Configuration Guide](#) for more details.

Because StoreOnce cannot host the Veeam data mover service, StoreOnce requires a gateway server. The data mover service is a Veeam component that reads, writes, and transfers backup data to and from the Veeam backup repositories. The gateway server can be a proxy server or it can be a separate server. HPE recommends having both proxy and gateway services running on the same server to avoid an extra hop in the LAN.

Customers can move their data offsite efficiently when leveraging Nimble for replication within Veeam. Nimble snapshot replication only transfers the block level changes to the replicated site. Even better, with the ability to create backups at the remote location, this removes any workload for backups from production.

StoreOnce provides customers with data reduction and bandwidth reduction enabling fast efficient backups and archiving for long-term retention. Couple this with the Nimble Secondary Flash Array (SFA) with flash-enabled inline deduplication architecture that delivers fast backup and restores. You can quickly access files, VMs, applications, or entire systems and rapidly copy them back to primary storage. Alternatively, don't wait to restore—you can run production workloads at full speed on the Nimble SFA and restore in parallel. Run real workloads with flash performance, such as dev/ops, dev/test, QA, patch testing, and analytics.

Deploying Catalyst enables you to create synthetic fulls by just moving the metadata pointers. Catalyst protects the data from ransomware and malware because the repository is only visible through the Catalyst API.

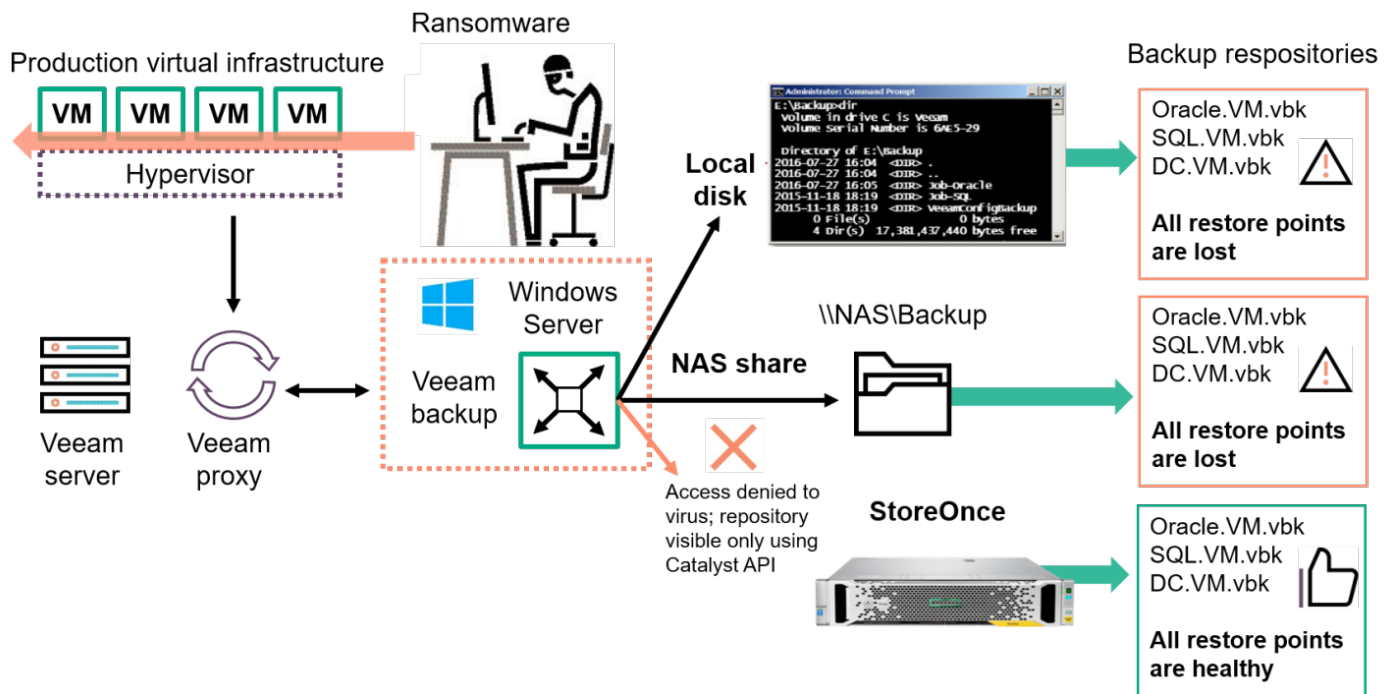


Figure 1. HPE StoreOnce Catalyst protects data from ransomware and malware because the repository is only visible through the Catalyst API

In addition to reducing the amount of data transferred and network bandwidth used, source-side duplication speeds up backups. Adding a Nimble SFA provides the speed to test and verify backups quickly; leveraging Nimble snapshots for backup creation eliminates backup windows. You can also eliminate restore windows when you run Veeam Instant VM Recovery (IVMR) from the SFA.



Solution description

The integration between Veeam and Nimble provides additional features not available with some other arrays. Working with Nimble, Veeam not only manages hardware snapshots inside backup jobs, but it also can orchestrate hardware snapshots and manage them as independent restore points.

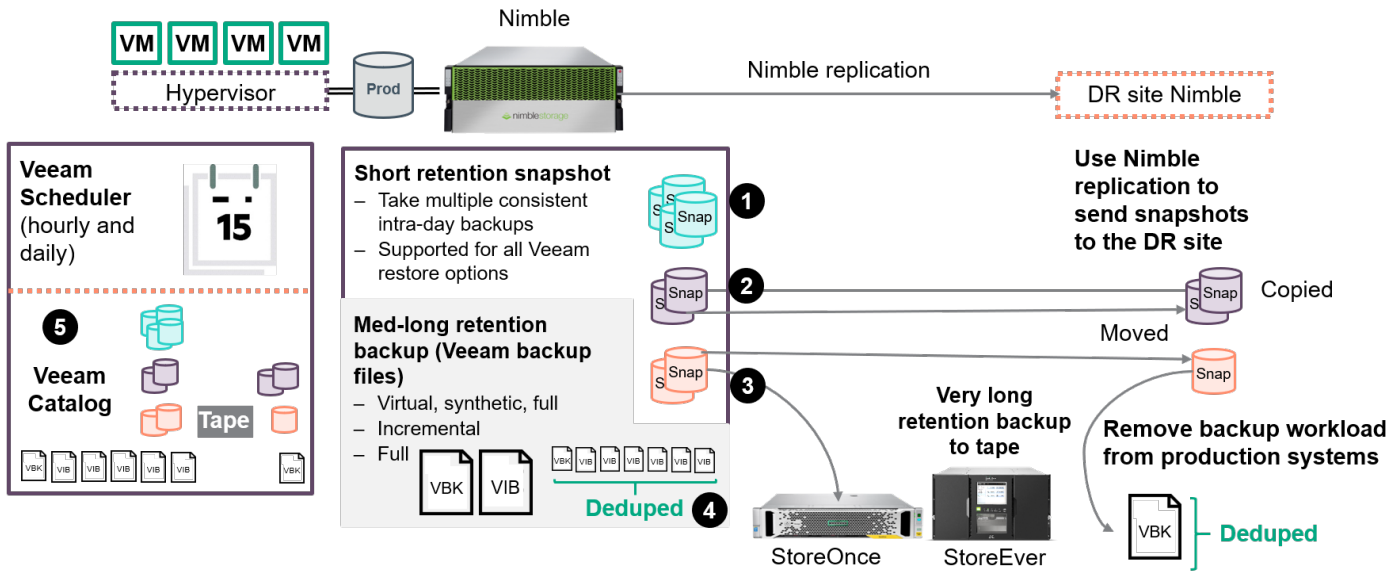


Figure 2. Veeam and HPE Storage end-to-end data protection process

As shown in Figure 2, the steps in the data protection process are:

1. Veeam schedules consistent Nimble snapshot creation and manages their retention. These snapshots are useful as intra-day restore points for an improved recovery point objective (RPO). Nimble snapshot creation requires fewer system resources in comparison with standard backup to HPE StoreOnce. Restore operations are faster from primary array snapshots than from StoreOnce systems and IVMR can run as fast as the production VM. Short-term snapshots are also cost-effective because they do not use a lot of primary storage. However, as they get older, short-term snapshots start using more capacity. Obviously, snapshots do not protect against hardware failures and it is necessary to use them along with regular backups to StoreOnce systems.
2. Veeam triggers Nimble snap replication to a remote array.
3. Veeam backs up to a StoreOnce system, reading data from local and remote Nimble snapshots. This further reduces the workload on the production site. Additionally, Veeam can keep these snapshots after the backup process has finished.
4. Veeam can copy selected backups from the StoreOnce system to tape for cost-effective long-term retention.
5. Finally, Veeam tracks all backup and snapshots in its catalog and shows all the restore points in the usual GUI page.



Functional architecture with Veeam, Nimble, and StoreOnce

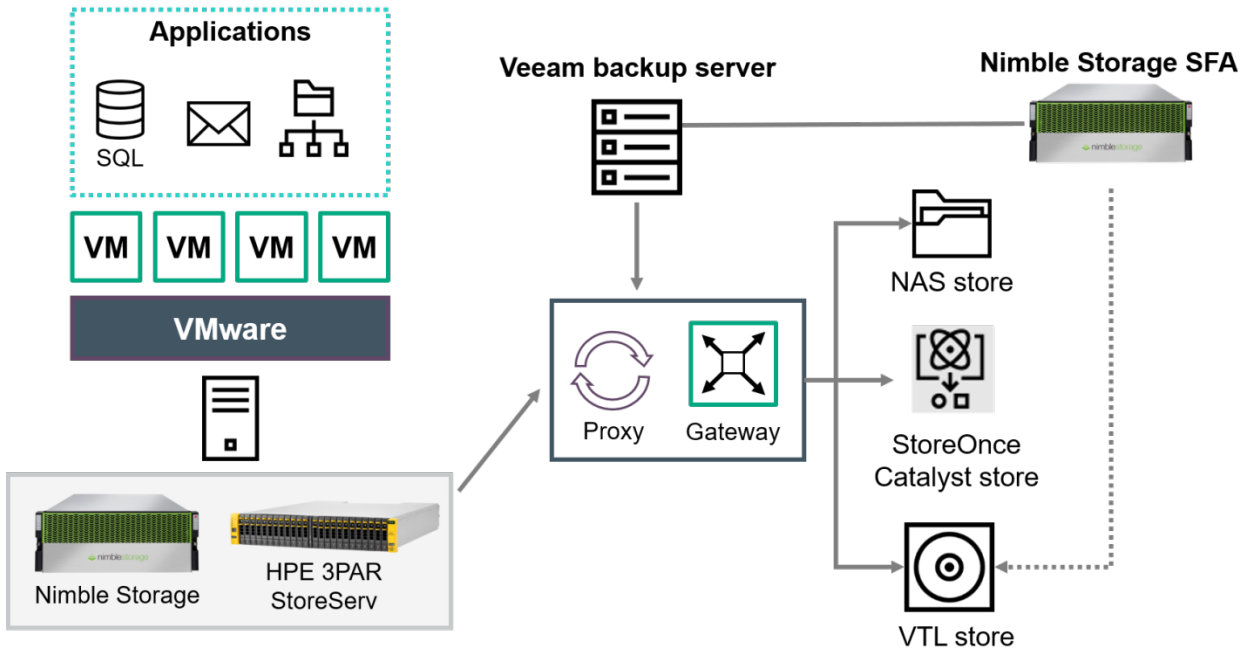


Figure 3. Functional architecture with Veeam, Nimble, and StoreOnce

Figure 3 shows a high-level architectural diagram of the complete end-to-end data protection solution comprising HPE Storage products and Veeam backup and recovery software. A Veeam backup server, through the proxy and gateway components, orchestrates the creation of various backups and restore points. It quiesces the VMs, triggers snapshots on the 3PAR/Nimble arrays, and moves the data to StoreOnce or Nimble SFA secondary storage.

Conclusion

HPE StoreOnce, Nimble Storage snapshots, and integration with Veeam 9.5 can provide customers with a complete disaster recovery solution. With industry-leading deduplication, fast ingest, and the ability to confirm backups and restore individual items, there is less impact to production environments as well as complete long-term data protection coverage.

With the introduction of Veeam 9.5, a new level of integration is possible with the HPE StoreOnce and Nimble storage portfolio. Each product portfolio provides unique benefits with this integration, so customers can choose the best platform for their data storage needs and have a complete solution for their deployment.



Resources, contacts, or additional links

Nimble SFA


hpe.com/us/en/product-catalog/storage/disk-storage/pip.nimble-storage-all-flash-arrays.1009969160.html

HPE QuickSpecs: Veeam software

veeam.com/hpe-availability-solution.html

Learn more at:

hpe.com/info/storeonce



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