Key points

- Allows HP 3PAR StoreServ and StoreVirtual customers to leverage their existing investment by recovering vSphere VMs, guest files or application items in minutes from frequently created HP 3PAR StoreServ and StoreVirtual snapshots using Veeam Explorer for Storage Snapshots (included with all editions of Veeam Backup & Replication).
- Backup vSphere VMs from HP 3PAR StoreServ and StoreVirtual snapshots with little impact on production VMs with Veeam Backup from Storage Snapshots (included with Veeam Backup & Replication Enterprise Plus Edition).
- Allows Veeam Backup & Replication Enterprise Plus customers to leverage the capabilities of HP 3PAR StoreServ and StoreVirtual storage for backup and replication jobs.
- Store VM backups on HP StoreOnce backup systems with on-board deduplication to reduce the footprint of backup data as much as 95%—delivering cost efficiencies while enabling more recovery points for accelerated restore of VMs from backup images.
- Archive VMs on HP StoreEver LTO-6 tape libraries for safer, reliable and cost-efficient, long-term retention of backup images for compliance or offline/offsite vaulting.

HP and Veeam® have joined to present an end-to-end storage and data protection solution optimized for modern data centers. This paper will discuss two disruptive Veeam technologies: Veeam Explorer™ for Storage Snapshots and Veeam Backup from Storage Snapshots—features that are integrated with HP 3PAR StoreServ and StoreVirtual platforms and part of Veeam Backup & Replication™.

With Veeam, organizations can easily meet and exceed recovery point and recovery time objectives (RPOs and RTOs), dramatically improve backup speeds and create more flexible backup windows. By deploying HP StoreOnce backup systems with this solution, organizations are able to expand the uses of the backup storage and achieve some of the highest space savings in the industry. The combination of Veeam and HP delivers fast recovery of entire virtual machines (VMs), guest OS files, and granular application items from Microsoft Exchange and SharePoint—directly from HP 3PAR StoreServ and StoreVirtual snapshots. This reduces the amount of data at risk by using a combination of storage snapshots and frequent backups to HP StoreOnce and creates a joint solution capable of meeting RPOs of minutes rather than hours. With lower RPOs and improved RTOs, users are able to minimize downtime, provide better service levels and better protect the virtual environment.

HP and Veeam have extended this integration to performing backups and whole VM replication from HP HP 3PAR StoreServ and StoreVirtual snapshots, mitigating potential performance bottlenecks on vSphere VMs caused by traditional hypervisor snapshots while achieving even tighter RPOs.

VM data protection challenges

Today's virtual environments present new challenges for protecting and recovering data. For example, legacy backup methods using agents running inside VMs can create resource contention. In addition to wasting precious CPU cycles, network bandwidth and memory resources, agents add licensing and support costs as well as the complexity of maintaining additional software. The recovery process when using legacy backup solutions in a virtual environment is also cumbersome and time-consuming.

When using tape as the sole backup storage medium, managing tapes or dealing with lost tapes can lengthen the time it takes to recover a VM, negatively impacting service levels. Restore performance can also suffer when attempting to locate tape-based data, as random reads from tape do not lend themselves to high restore performance. By deploying image-level VM backups to disk first, you can eliminate issues with tape location and backup availability where you need it while simultaneously increasing backup performance. More importantly, image-level backup to disk will shorten the time it takes to recover VMs.

For backup and recovery of VMs, the best method of protection is a solution specifically built for virtualization that uses image-based backups to disk. With HP Storage and Veeam, you can deploy an easy-to-use data protection strategy in a matter of hours without “tearing out the plumbing” for backups of physical machines or alternate operating systems (such as HP-UX, AIX and others).

Disk-to-disk Backup: A Step in the right direction

Primary disk storage systems include data protection capabilities that augment backups. Snapshot functionality built into the storage system can capture point-in-time copies of production data at the volume level. SAN-based storage snapshots can be created at frequent intervals throughout the day and have a negligible impact on the production workload. Storage snapshots are excellent for rolling back an entire volume to a specified point in time. However, in virtualized environments, that volume could contain dozens of VMs.

Storage snapshots can also be used to facilitate faster, non-intrusive VM backups. With hardware-agnostic backups (no snapshot integration at the hardware level) backups are created by reading a snapshot created in software by the hypervisor. While hypervisor-based snapshots don't require special hardware integration with the storage platform, they can negatively impact VM and application performance during the "commit and stun" operation for VMware environments. This operation merges I/O that was pending while the snapshot was being taken back into the production VM after snapshot removal. This can have a noticeable impact on busy VMs including disruption of applications and it can even cause VMs to become unresponsive.
Veeam Backup from Storage Snapshots (included in the Enterprise Plus Edition) utilizes the storage snapshot technology of HP 3PAR StoreServ and StoreVirtual arrays to mitigate these issues and increase backup performance—up to 20 times that of other technologies. This process is an orchestrated sequence of communication between vSphere, Veeam Backup & Replication and the arrays. The first step involves taking a VMware snapshot of all of the VMs to be backed-up on a volume, triggered by Veeam Backup & Replication. When VM snapshots are written to the storage by the hypervisor, a storage snapshot is made for a point-in-time copy of the entire volume by the storage system. The VM snapshot is then removed. Next, the storage snapshot copy of the VMFS volume is directly read by Veeam and transformed into backup images.

Leveraging disk systems for recovery

When it comes to VM recovery, using SAN-based snapshots alone is a time-consuming process requiring multiple manual steps. With volume-level snapshot technology, the snapshot must be promoted to a volume, mounted to a host and then one or more VMs inventoried in vSphere. After these steps are completed the process of recovering the VM can begin. Once the recovery of the VM is complete, the snapshot mounting process must be undone, and so on, in order to clean up. In many cases this same process must be followed just to recover an individual file. This multiple-step process lengthens recovery time due to guess work and the margin for error when faced with the duress of an outage.

In addition to the challenges of recovering individual VMs, a snapshot of a volume residing on primary production storage is not a substitute for backing up to disk or tape. A catastrophic hardware failure of production storage could result in the loss of the original volume and its associated snapshot copies. A distinction must be made that snapshot recovery from primary storage is not a substitute for backup to secondary storage.

As part of a tiered backup and recovery strategy, backing up VMs to external storage is recommended to maintain business continuity and disaster preparedness. However, duplication of information across virtualized datastores drives enormous consumption of backup storage resources and associated capital expenditures. Veeam, when combined with HP StoreOnce backup, delivers a highly efficient deduplication solution to effectively increase the backup capacity of a system by almost 95%. This allows backup images to be stored on disk for long periods providing more recovery points and faster restores from backups.

A new approach for recovering VMs from storage snapshots and another tool to help reduce RPOs and RTOs

As a secondary or additional recovery capability, HP customers should consider utilizing HP 3PAR StoreServ and StoreVirtual storage snapshots. Veeam makes it easy to recover VMs and therefore beneficial to take frequent snapshots for recovery. This approach provides the shortest RPOs to minimize data loss of highly transactional VMs or mission-critical applications.

Veeam Explorer for Storage Snapshots provides intelligence to the storage snapshot to allow for granular recovery of VMs, guest OS files and application items from HP 3PAR StoreServ and StoreVirtual snapshots in just a few clicks from the easy-to-use Veeam Backup & Replication interface. The time-consuming process of recovering a vSphere VM from a mounted snapshot is reduced to a simple task that takes two minutes, significantly improving RTOs. Since snapshots of production volumes can be taken frequently without disrupting production VMs, administrators can lower RPOs by recovering from the most recent snapshot instead of last night’s backup to reduce data loss. With Veeam Explorer for Storage Snapshots, administrators can shorten both RPOs and RTOs when using HP 3PAR StoreServ and StoreVirtual storage and Instant VM Recovery™ from Veeam to deliver improved service levels.

Backup, verification and recovery

A backup solution designed for virtualization is critical when protecting a virtual environment. Veeam’s agentless solution delivers efficient backup that does not interfere with the VM. Furthermore, a backup product built specifically for virtualization can natively leverage the storage network (iSCSI or Fibre Channel) to perform VM backups.

The VMs defined in a backup job can take advantage of built-in compression and deduplication to reduce the amount of storage required for disk-based backups. Even in a compressed and deduplicated state, these VMs can be started directly from their backup image on disk with Veeam’s patented vPower® technology. Instant VM Recovery can meet an RTO of as little as a few minutes. Depending on the performance of the backup storage, the performance of the recovered VM will be correspondingly slower, but even with reduced performance the ability to restore critical VMs in minutes from backup storage is an indispensable asset to business continuity plans. The Instant VM Recovery task also completes the process by migrating the VM back to production storage using Veeam Quick Migration or Storage vMotion, if available.
In summary
- Save money and improve service levels by minimizing downtime and disruption with the fastest possible recovery and the lowest RPO and RTO.
- Leverage existing investments in HP 3PAR StoreServ and StoreVirtual storage by utilizing SAN-based storage snapshots to accelerate backups as much as 20x faster and recover vSphere VMs in minutes for the lowest RPO and RTO.
- Save time and improve operational efficiency by streamlining VM recovery down to the level of an Exchange message or calendar item with a simple wizard-driven interface and a few clicks—all from an agentless backup.
- Ensure that backup jobs will work with automatic recovery verification (SureBackup)—part of Veeam Backup & Replication.
- Reduce costs of storing backup images for a longer term by using HP StoreOnce deduplication in conjunction with built-in deduplication for further cost savings and reduced storage footprint.
- Increase reliability and durability of archives by deploying HP StoreEver tape libraries for safe and durable long-term retention option.

Additional info:
- 3PAR StoreServ
- StoreVirtual
- StoreOnce
- StoreEver
- BURA Solutions

HP StoreOnce backup repositories
HP StoreOnce backup systems employ the highest data deduplication coupled with relatively low RAID overhead to reduce cost by saving disk space. The result is a purpose-built D2D backup appliance providing highly efficient capacity utilization. For the lowest overall cost per GB and efficient mass storage, a purpose-built backup appliance with deduplication is an excellent solution for companies whose data is growing 30% or more year over year. In conjunction with Veeam and HP StoreOnce, HP StoreEver tape devices can be used for long-term retention and off-site archiving of backups. Using StoreOnce as a backup repository also enables the use of Veeam's vPower and Virtual Lab technologies which provide the ability to verify backups using SureBackup®. Available with Veeam Backup & Replication Enterprise and Enterprise Plus Editions, SureBackup automates recovery verification. VMs are automatically started from their backup images while the OS and applications are automatically tested for recoverability. A report is e-mailed at the conclusion of each SureBackup session to highlight the status of the VMs that were verified. HP StoreOnce also can provide Virtual Tape Library (VTL) emulation for Veeam backups, providing even more options for companies today.

Recovering Microsoft Exchange and SharePoint items
Another challenging recovery scenario that IT staffs face is that of recovering SharePoint and Exchange items such as deleted MS Office documents, mail messages, contacts and calendar items. There are products on the market that address this challenge, but not without the use of agents on mail servers and expensive add-on licensing. With Veeam Explorer for Microsoft Exchange and Veeam Explorer for Microsoft SharePoint—integrated with Veeam Backup & Replication—you can browse the backup of an Exchange or SharePoint VMs virtual disk, open the database and search it in less than two minutes.

With this solution, administrators can use advanced search capabilities across multiple Microsoft SharePoint and Exchange Server databases and object types. Exchange items can be exported to .pst and .msg files or attached to mail messages. With Veeam Backup & Replication Enterprise and Enterprise Plus editions, Exchange items can be restored to their original mailbox location or to a different mail server.

When this capability is paired with Veeam Explorer for Storage Snapshots and HP 3PAR StoreServ and StoreVirtual snapshots of VMFS volumes, administrators can recover Exchange and SharePoint items directly from storage snapshots, taking advantage of the low RPO provided by Veeam Explorer for Storage Snapshots. With fast and reliable item recovery, IT staff can spend time managing instead of reacting.

The bottom line
HP Storage and Veeam reduce costs by minimizing disruption and downtime with the fastest recovery of VMs, minimizing your RPOs and RTOs. A complete VM data protection and recovery solution from HP and Veeam saves money by dramatically reducing the time it takes to back up and recover a VM, guest file or application object back into production. With HP and Veeam you will realize savings by eliminating the cost and complexity associated with the VM recovery process.

About Veeam Software
Veeam® is Protection for the Modern Datacenter™—providing powerful, easy-to-use and affordable solutions that are Built for Virtualization™ and the Cloud. Veeam Backup & Replication delivers VMware backup, Hyper-V backup, recovery and replication. This #1 VM Backup™ solution helps organizations meet RPOs and RTOs, save time, eliminate risks and dramatically reduce capital and operational costs. Veeam Backup Management Suite™ provides all the benefits and features of Veeam Backup & Replication along with advanced monitoring, reporting and capacity planning for the backup infrastructure. Veeam Management Pack™ (MP) extends enterprise monitoring to VMware through Microsoft System Center and also offers monitoring and reporting for the Veeam Backup & Replication infrastructure. The Veeam Cloud Provider Program (VCP) offers flexible monthly and perpetual licensing to meet the needs of hosting, managed service and cloud service providers. VCP currently has over 4,000 service provider participants worldwide. Monthly rental is available in more than 70 countries from more than 50 Veeam aggregators.

Founded in 2006, Veeam currently has 23,000 ProPartners and more than 91,500 customers worldwide. Veeam’s global headquarters are located in Baar, Switzerland and the company has offices throughout the world. To learn more, visit http://www.veeam.com.