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Hewlett Packard
Enterprise

Configuration Guide for Veeam Backup & Replication with the HPE Hyper Converged 250 System

AVAILABILITY
for the Always-On Enterprise™

1 + 1 = 3
HPE + Veeam
Better Together

Contents

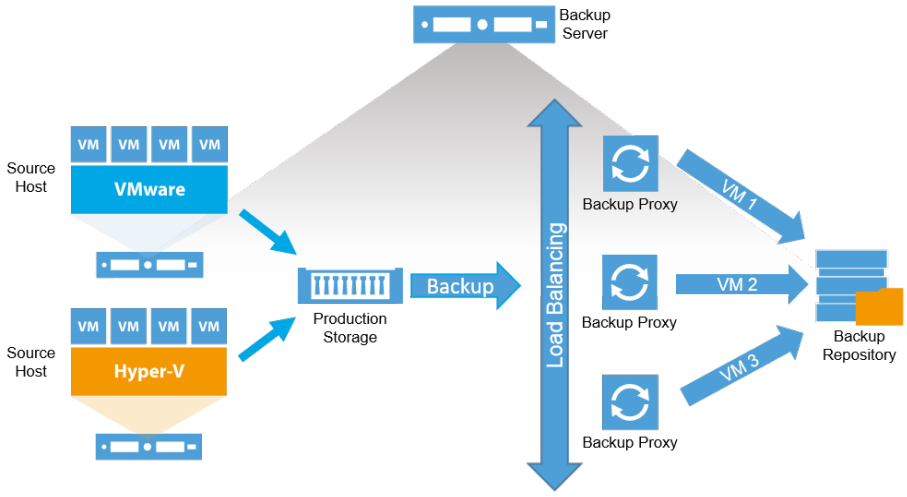
Intended audience

This guide is intended for those involved in the design, acquisition and implementation of data protection solutions for the Hewlett Packard Hyper Converged 250 System (HC 250). It was written for IT generalists and specialists alike, whether they need to back up a dozen virtual machines (VMs) or hundreds of them. The audience includes, but is not limited to, systems administrators responsible for servers, hypervisors, storage and backup; sales engineers; systems engineers; solution architects; professional services engineers; and consultants. The technical information contained herein is intended as a starting point for designing and implementing a Veeam® VM data protection solution. Hewlett Packard Enterprise and Veeam have jointly tested and certified this backup and replication solution.

Veeam Backup & Replication overview

Veeam Backup & Replication™ is one of the most powerful solutions for VM backup, replication and recovery in VMware vSphere and Microsoft Hyper-V environments. With Veeam Backup & Replication, users can back up VMs to disk, archive them to low-cost or off-site storage and replicate them from one host to another. VM recovery can occur in a matter of minutes using Veeam's patented technology integrated with HPE Storage.

The major components of Veeam Backup & Replication consist of a management server, proxy servers, backup repository servers and disk-based backup repositories. The backup proxy servers are Windows-based installations. The backup repositories can be Windows- or Linux-based or network-attached storage systems. These resources can be virtual or physical depending upon the storage and network topology, desired throughput of backup and recovery data streams, and the available server resources.



Veeam backup architecture

Adding Veeam to the HPE Hyper Converged 250 System

Configuring the backup infrastructure

In this guide, a single Windows Server 2008 SP2 or newer virtual server is used for the Veeam backup server, proxy server and repository server. You can scale the Veeam backup infrastructure by adding additional Veeam backup proxy servers to move data and disk-based backup storage devices to store Veeam backups. You can also add Veeam repository servers to store backups both locally and remotely. The Veeam User Guide for VMware outlines detailed instructions and system requirements. You can download the latest version of Veeam Backup & Replication from https://www.veeam.com/backup-replication-vcp-download.html

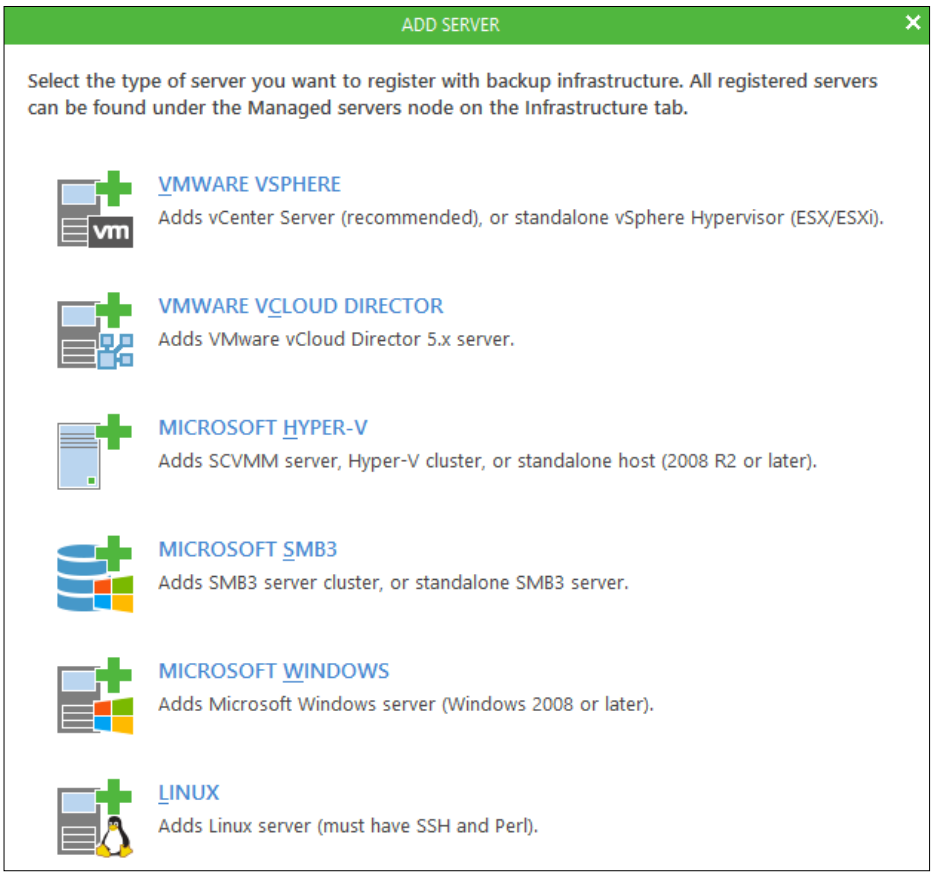
The Veeam virtual server for the HC 250 should have a minimum configuration of 8 vCPUs and 24 GB of RAM when running the supplied SQL Server 2012 Express instance (standalone SQL servers should be used for more than 1,000 protected VMs). Veeam backup proxies scale based on a 1 vCPU per running virtual disk backup ratio. With the configuration outlined in this document up to four concurrent virtual disks can be backed up. Depending on the backup storage chosen, this configuration can protect up to 2 TB of data per hour.

Also, ensure that the Veeam VM has a virtual network adapter that is a member of a virtual machine port group attached to the iSCSI VMkernel port. The Windows guest OS must have a properly configured IP address for the iSCSI network, and the in-guest iSCSI Initiator service must be running. Veeam integration does not require configuration of the in-guest iSCSI Initiator.

NOTE: *Additional backup proxy servers should be configured with at least 1 vCPU and 2 GB RAM and an additional 200 MB of RAM per concurrent virtual disk being backed up. Linux- or Windows-based repositories require at least one modern x64 processor (minimum one core) and 4 GB RAM for each concurrent virtual disk being backed up.*

Add the virtual infrastructure to Veeam Backup & Replication

You can add the virtual infrastructure you want to protect, as well as servers you want to use as proxies or repositories, to *Managed Servers* via the *Add Server* wizard.



NOTE: *Backing up the Veeam VM is not required as VM backups can be used with any new Veeam instance. Backup server configuration backups can also be stored inside of Veeam backup repositories alongside Veeam VM backups, and restored onto a new Veeam server as outlined in the Veeam Backup & Replication v8 User Guide.*

Veeam integration with the HPE HC 250 System

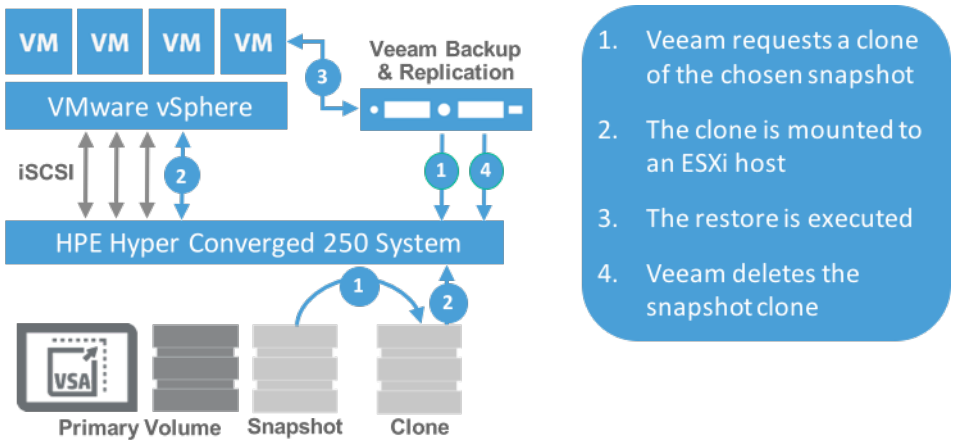
Veeam integrates with the HC 250 storage snapshot technology to create Veeam Explorer™ for Storage Snapshots and Veeam Backup from Storage Snapshots. These integrations enable a recovery point objective (RPO) of 30 minutes or less, automated recovery in minutes and superior backup performance that is non-disruptive to production VM workloads.

Veeam Explorer for Storage Snapshots

Veeam Explorer for Storage Snapshots integrates Veeam's agentless recovery technologies with the efficiency of the underlying HPE StoreVirtual VSA volume-level snapshots. Once a volume-level snapshot of a vSphere VMFS volume is created — ideally by a storage snapshot schedule — it becomes visible on the Veeam backup server. Veeam Explorer for Storage Snapshots uses these snapshots for restores such as:

- **Veeam Explorers for applications** — Agentless recovery of Microsoft SQL, Microsoft Active Directory, Microsoft Exchange, Microsoft SharePoint and Oracle application items
- **Guest OS file recovery** — Agentless recovery of Linux and Windows files
- **Instant VM Recovery™** — Recover an entire VM in as little as 2 minutes

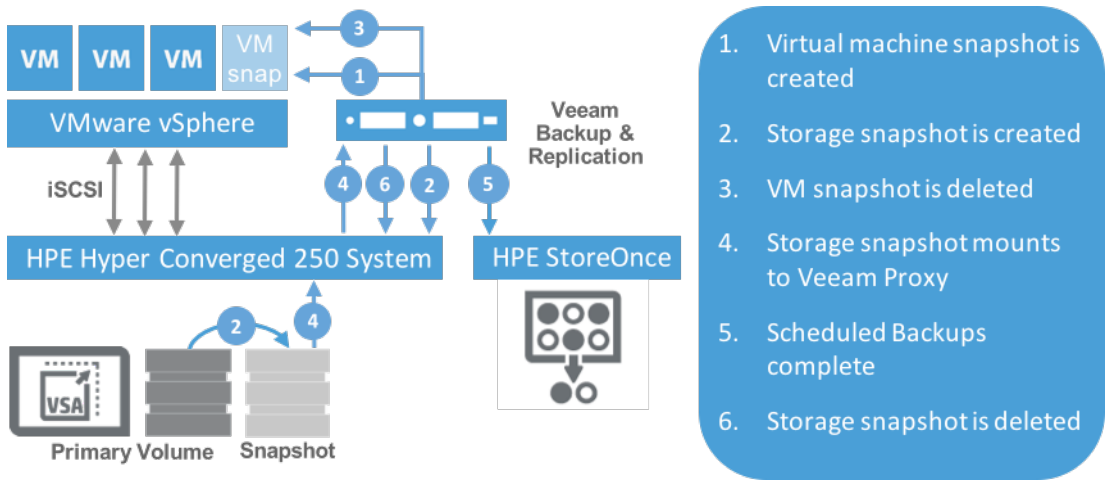
In a restore scenario, Veeam coordinates with the StoreVirtual VSA storage system to create a clone of the desired volume-level snapshot. This clone is then promoted to a read-only volume and mounted to the chosen vSphere host system as a datastore. Once the VM, guest OS file or application-item recovery is complete, Veeam runs a series of clean up steps, including the removal of the datastore from the infrastructure and coordinating with the HC-200 to delete the snapshot clone from the StoreVirtual storage system.



Veeam Explorer for Storage Snapshots

Veeam Backup from Storage Snapshots

In order to have a comprehensive strategy for protecting VM data, VM image-level backups are important to have in addition to the short-term retention of volume-level storage snapshots. Image-level backups can be stored in a different location to avoid major problems in the storage array. Veeam Backup from Storage Snapshots enables this capability and can reduce backup windows by hours when utilizing the HC 250 System and StoreVirtual VSA storage snapshots as the source for VM backups. Without the use of storage snapshots, VM backup images must be created using VMware VM snapshots alone. When VMware VM snapshots are used to back up heavily utilized VMs, the performance of the hosts, the storage system, the VMs and the applications can be severely affected. With Backup from Storage Snapshots, the VM snapshot is used briefly to create an application-consistent state of the VM, followed by the creation of a volume-level storage snapshot. Immediately after the creation of the storage snapshot, the VM snapshot is deleted and the storage snapshot becomes the source of the VM backup, independent of the VM or the hypervisor. For incremental backups, the VM's changed block tracking (CBT) map is queried, enabling quick identification and backup of only new or changed data blocks. The use of CBT for storage snapshot backup is unique to the industry and is responsible for the dramatic reduction in backup windows when deploying Veeam with the HC 250.

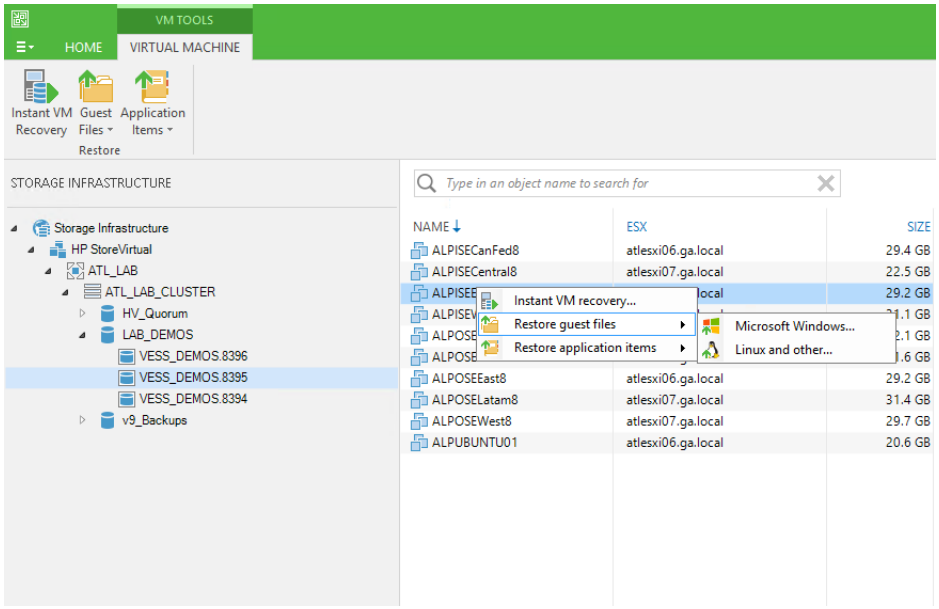


Veeam Backup from Storage Snapshots

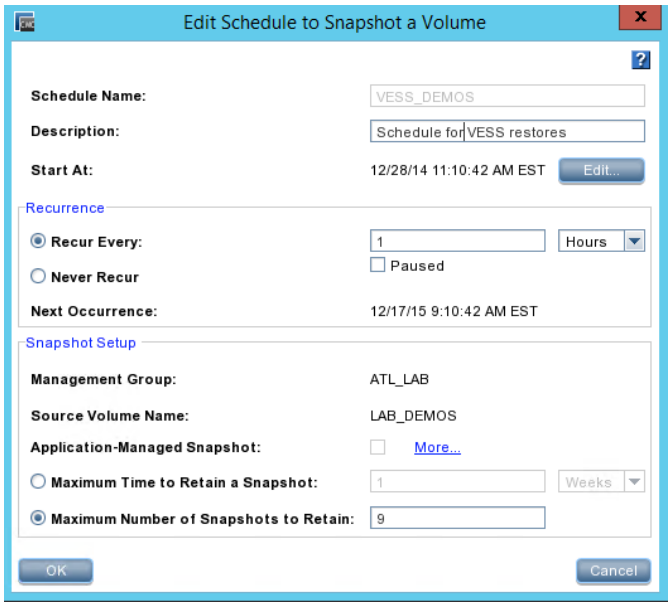
NOTE: *Veeam Explorer for Storage Snapshots is included in all version of Veeam Backup & Replication, while Veeam Backup from Storage Snapshots is part of the all-inclusive Enterprise Plus edition. All models of 200-HC with StoreVirtual VSA are supported by these features.*

Configuring the storage infrastructure

Under **Storage Infrastructure** on the Veeam backup server, you will choose to Add Storage and input the cluster (VIP) IP address with credentials for the HC 250's storage array. Upon completion, you will see that volumes within the CMC management interface appear within Veeam Backup & Replication, and any associated volume snapshots will appear along with VMs that live on those volumes.

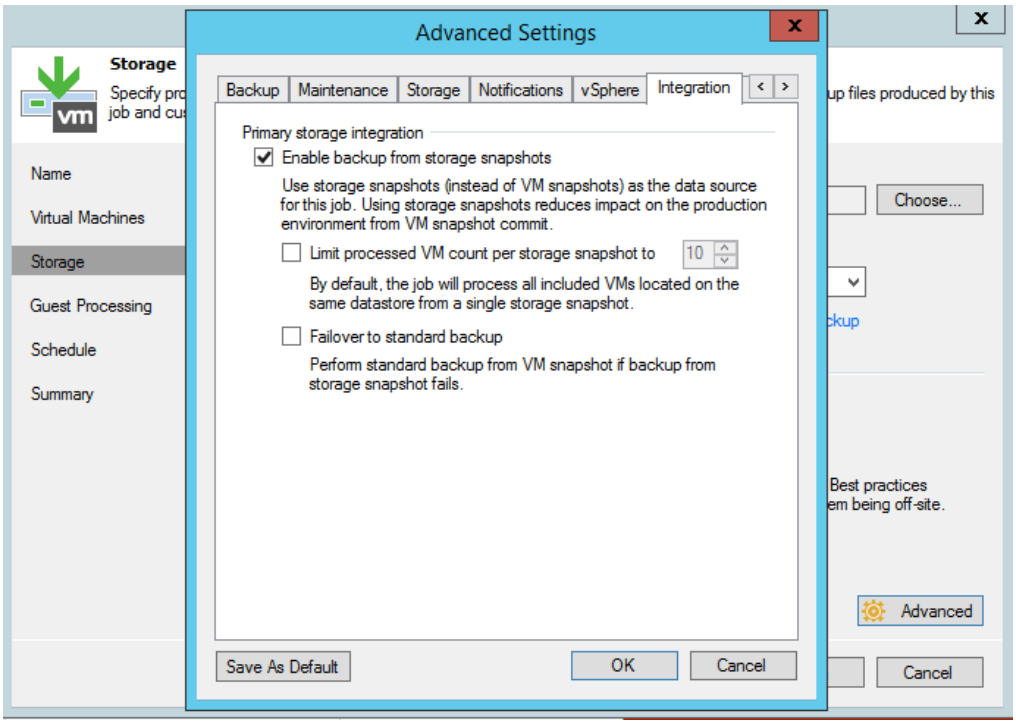


We recommend that you create a recurring snapshot schedule in the CMC storage management interface based on your desired RPO. For example, you might schedule a snapshot every hour with a retention of nine to ensure that there is never more than an hour of data loss during a business day. This will supplement the standard nightly backups.



Configuring hardware-assisted VM backups

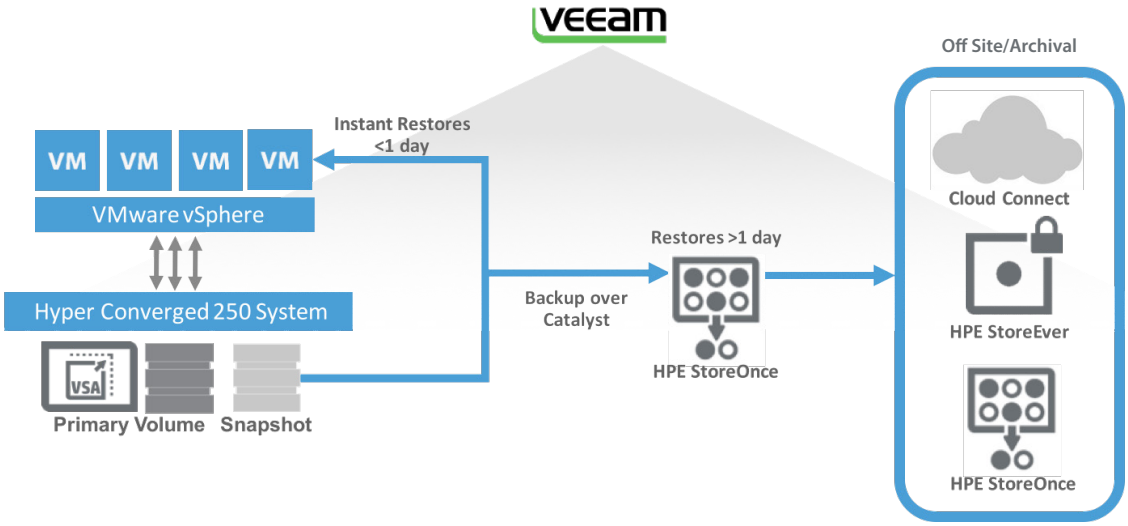
By default, Veeam Backup & Replication jobs are configured to use storage snapshots to retrieve VM data. However, it is possible to enable or disable this capability manually by right-clicking on a backup or replication job and clicking *Edit,* followed by *Storage* and then the *Advanced* button. You will see a tab labeled *Storage Integration*. It is also possible to enable failover to standard backup modes if Backup from Storage Snapshots is not possible for the job.



Comprehensive tiered protection

While we don't discuss the configuration of specific backup storage technologies in this document, we do recommend that those choices be made considering multiple factors, such as required retention – on-site and off-site, data change rate, and desired RPO and RTO. Veeam and HPE provide several options, but we strongly encourage that you design your data Availability strategy in a way that provides at least three copies of your data, on two different types of media, with at least one copy stored off site. Examples of these options are listed below:

- HPE StoreOnce backup storage for performance and backup consolidation
- Veeam host-based replication for off-site VM-level disaster recovery
- Veeam Cloud Connect, tape, or off-site StoreOnce for backup archival



General best practices for backup jobs

While two virtual infrastructures are rarely the same when it comes to data size, application types, SLAs and RPOs, there are several data protection practices that remain constant. The table below outlines some of the more common ones.

Recommendation	Explanation
Create jobs that contain a manageable amount of data	A Veeam backup job is not complete until all VMs included within it have finished processing. For this reason, we recommend you put very large VMs in their own job to stop them from becoming a bottleneck in meeting backup windows and preferred RPOs for other VMs being backed up.
Select objects based on resource pools, virtual infrastructure folders or datastores	Creating jobs based on resource pools, folders or datastores can simplify backup management. New machines that become members of these groups are automatically included in the backup job. Notes: • This approach requires monitoring jobs to make sure there is enough space. • If using datastores (or a mix of resource pools), make sure you do not get overlap in object selection because VMs have disks in multiple datastores.
Limit the number of exclusions used in backup object selection	While exclusions can be very useful, virtual infrastructures have a tendency to be dynamic and change over time. Therefore, you must carefully consider their use in your environment. It's quite easy to move a VM to a folder or resource pool that is excluded and move jobs or become unprotected.

Resources

Veeam's HPE Solutions web page

Veeam Backup and Replication User Guide for VMware

Veeam Community Forums — Backup and Replication

HPE Storage Landing Page

HPE Business Support Center

Veeam Support

About Veeam Software

Veeam® recognizes the new challenges companies across the globe face in enabling the Always-On Business™, a business that must operate 24/7/365. To address this, Veeam has pioneered a new market of *Availability for the Always-On Enterpriser*™ by helping organizations meet recovery time and point objectives (RTPO™) of less than 15 minutes for all applications and data, through a fundamentally new kind of solution that delivers high-speed recovery, data loss avoidance, verified protection, leveraged data and complete visibility. Veeam Availability Suite™, which includes Veeam Backup & Replication™, leverages virtualization, storage, and cloud technologies that enable the modern data center to help organizations save time, mitigate risks, and dramatically reduce capital and operational costs.

Founded in 2006, Veeam currently has 37,000 ProPartners and more than 183,000 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.

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