DATA AVAILABILITY WITHOUT LIMITS

For mission- and business-critical applications and data
THE IDEA ECONOMY IS ALWAYS AVAILABLE

In today’s economy, most businesses require instant data access. With more applications being identified as mission- or business-critical, data protection and availability are more important than ever. In this white paper, you’ll learn about the requirements driving the need for increased availability, less complexity and improved reliability which all help optimize resources. Then you’ll see how Veeam and Hewlett Packard Enterprise solutions can help you meet your availability objectives, future-proof your data center investment, and gain capabilities that provide data protection without limits to meet your business needs. You’ll also see examples of how other organizations have used these technologies to attain mission-critical application availability, meeting recovery time objectives (RTOs) and recovery point objectives (RPOs), and providing fast, reliable disaster recovery capabilities for their modern data centers.

BUSINESS AVAILABILITY REQUIREMENTS

Today, globalization has become the norm. The explosion of mobile device usage and internet access now requires your website to be constantly available. Additionally, employees need 24x7 access to corporate resources. These types of requirements drive the need for increased levels of availability and recoverability for your business services.

It’s important to understand that downtime isn’t just the time that a given resource is unavailable. True, downtime must be counted as the time that users are unable to access the applications and resources they need. But loss of revenue and operational capabilities are only part of the costs. Downtime can also result in lost customer confidence, damage to brand reputation, employee productivity losses, and reduced confidence in IT. Outside of the organization, there might be financial impact to partners. The bottom line is that any amount of downtime equals lost revenue.

System failure is inevitable. The modern data center is comprised of many components, leading to significant complexity. To ensure application availability, you need to build in availability technologies, including data protection strategies, as you build out your infrastructure. Hewlett Packard Enterprise and Veeam help you ensure your application availability, meet your backup and restore objectives, and take advantage of reliable, high-speed disaster recovery capabilities resulting in decreased resource constraints and increased employee productivity.
MEETING YOUR DATA PROTECTION GOALS

Companies have turned to virtualization in order to improve efficiency, increase workload performance, and enhance business continuity. These changes have driven the need for less complicated solutions. Companies are executing on their digital transformation strategies to meet customer and business needs.

Improving availability, backup, and recovery are at the core of all enterprise data protection strategies. Today’s virtual environments present new challenges for protecting and recovering data. Legacy backup tools were built with physical servers in mind, which can cause long backup cycles, performance constraints, and limited recovery capabilities in a virtual environment. Due to the limitations of legacy backup tools for virtual environments, companies are turning to solutions that are not only purpose-built for virtual environments to protect their virtual machines (VMs), but can also serve as a holistic data protection solution across virtual, physical, and cloud environments.

One key factor is that legacy backup tools typically rely on agents running inside the VM to accomplish backup and recovery operations. These agents, running inside VMs, can create resource problems. They use guest CPU cycles and consume network bandwidth and memory. Agents also add to the complexity of maintaining software, and increase support costs. Plus, agent-based technology doesn’t work at all when VMs are powered off, unavailable, or newly provisioned. Adding further to this, more organizations are using multiple hypervisors, and in many cases each hypervisor utilizes a different backup solution, resulting in increased management demands.

Veeam uses agentless technology that is designed from the ground up to protect VMs. Veeam’s integration with HPE Storage solutions lets you create application-consistent backups from HPE Primera, HPE 3PAR, and HPE Nimble Storage snapshots for fast and efficient data protection. Veeam software integrates with HPE Primera, HPE 3PAR, HPE Nimble Storage, HPE Apollo, HPE StoreOnce, and HPE StoreEver products to provide a complete data protection strategy with improved availability.

In the overview you can see how the combination of Veeam and HPE storage technologies provide a comprehensive strategy for achieving any recovery and retention requirements.

**HPE primary storage arrays and Veeam**

HPE Primera, HPE 3PAR, and HPE Nimble Storage arrays can take fast, frequent snapshots of VMware® volumes without impacting production workloads. The HPE Primera and HPE 3PAR can take snapshots as frequently as every 15 minutes. In Figure 1 you can see an example of storage snapshots being taken as frequently as once an hour during peak business hours. With Veeam’s integration with HPE Storage you can leverage snapshots with the integration of Veeam’s Explorer for Storage Snapshots. You can now recover instantly from any one of the snapshots in minutes, reducing downtime and providing improved workload availability for any application.
HPE Primera, HPE 3PAR, and HPE Nimble Storage snapshots and Veeam radically improve RPOs by providing multiple up-to-date recovery points. Veeam’s integration with HPE Primera, HPE 3PAR, and HPE Nimble Storage snapshots allows you to recover your VMs and data directly from these frequent snapshots, thus minimizing any possible data loss and ensuring your data is as up-to-date as possible. Up to 999 storage snapshots can be specified in the backup job wizard. Veeam Explorer for Storage Snapshots provides visibility directly into the HPE Primera, HPE 3PAR, and HPE Nimble Storage snapshots, enabling granular recovery of entire VMs with Instant VM Recovery (IVMR) or the recovery of individual guest operating system files and application items. The process works also when the VM has disks on different volumes and arrays. Veeam Explorer for Storage Snapshots with HPE Primera, HPE 3PAR, and HPE Nimble Storage can shorten RTOs to less than 5 minutes, leveraging data from snapshots that could be just minutes old. This also enables you to implement a near-continuous data protection strategy without additional cost or complexity, thereby ensuring availability for all applications.

**FIGURE 1.** Using HPE 3PAR snapshots (similar to HPE Primera snapshots) with Veeam Backup & Replication

Veeam Backup & Replication also has the ability to back up from storage snapshots where the Veeam backup proxy server can mount storage snapshots directly. This capability enables fast, non-disruptive image-level backups by cutting down the need for VMware VM snapshots. This capability, while not new to the industry, is 20 times faster than the competition due to the use of VMware's Changed Block Tracking (CBT). If you have multiple backup proxy servers, Veeam uses automatic load balancing to choose the backup proxy server that will best execute a VM backup—each time the backup job runs. The automatic load balancing detects which backup proxy server has a combination of the best datastore connectivity and the lowest current task load. Together, these and other Veeam technologies can drastically decrease your backup window.

**HPE StoreOnce System and Veeam**

Veeam Backup & Replication is also integrated with HPE StoreOnce Catalyst and provides faster backups and recovery. HPE StoreOnce is a highly efficient deduplication solution that can increase a system’s backup capacity by almost 95 percent. This allows a greater number of backup images to be stored on disk, providing more recovery points and faster restores from backups. HPE StoreOnce’s variable length deduplication provides a fine-grained deduplication capability that increases the overall storage efficiency of backups and reduces costs. HPE StoreOnce allows you to deduplicate across Veeam backup jobs, further improving deduplication efficiency. Catalyst stores can do more than just house primary backup data. Restore points written to Catalyst stores can be copied to other stores through storage-based replication using Catalyst Copy jobs managed by Veeam. Veeam software orchestrates the workflow and is aware of the multiple copies. In a disaster recovery configuration, these copies can be sent to other StoreOnce systems. With Catalyst Copy and Veeam, any mix of 1-to-N and cascade replication models is supported with a high number of parallel streams.
HPE StoreOnce scale-out architecture allows you to add nodes to match your data growth. HPE StoreOnce supports in-flight encryption using IPSec and at-rest encryption using industry standard AES 256-bit encryption. HPE StoreOnce also delivers centralized system recovery for virtual or physical servers (from P2V or V2P) from a single backup. HPE also offers StoreOnce VSA, a standalone software solution, but it can be integrated into HPE’s Backup Appliance series running on any existing x86 server, turning it into a deduplication target that is ideal for small remote offices. Veeam can copy restore-points from any primary repository to StoreEver tape storage or to the cloud for long-term off-site data archival. This strategy enables you to meet the “3-2-1 rule” of data protection where there are three copies of the data, on two different media types, and one copy is kept off-site. This strategy also allows for more than 50 recovery capabilities in 15 minutes or less.

**HPE APOLLO SERVER BACKUP TARGET AND VEEAM**

The HPE Apollo Server and Veeam solution delivers a cost-effective data protection infrastructure for virtualized environments. By writing backup data to local storage in the HPE Apollo server, backups and restores of critical applications and workloads are faster compared to using a separate storage resource with a Fibre Channel or Ethernet based transfer medium. In addition to providing hundreds of terabytes of local storage capacity, the HPE Apollo server has the required compute resources for running the Windows operating system and Veeam Availability Suite software on the same server. This converged approach greatly simplifies the solution compared to designs based on compute-only and storage-only components. No additional storage licenses are required to deploy the storage capacity of the HPE Apollo server.

**HPE NIMBLE STORAGE BACKUP TARGET AND VEEAM**

The HPE Nimble Storage and Veeam solution is another data protection option when HPE Nimble Storage is the storage array of choice in the organization and can be used not only as a primary storage, but also as a secondary storage where backups and restores of critical applications and workloads are fast. In addition, backups on HPE Nimble Storage can be used for test and development. A read-only copy of the backup file can be placed into a sandbox where testing, development, and application updates can occur.

“We conduct more than 12.5 million background checks each year to help employers find qualified candidates, and Veeam and Nimble support us every step of the way by helping to keep our IT systems available. Veeam also makes it easier for us to maintain our compliance obligations.”

– Elliott Peterson, Vice President of Global IT, HireRight
**PAYBOOST**

Payboost is a Fintech startup that has customers including the billing departments of suppliers of essential goods that have a social impact (i.e., gas, electricity, local authorities, etc.) as well as banks and individuals. Payboost represents a total of more than 2,500 B2B users and 500,000 B2C users worldwide. To comply with the backup requirements of the financial sector, Payboost sets up three data centers, all with the same technical configuration: a production site, a mirror site that operates in continuity of service and a third site for disaster recovery. This enables Payboost to process payments totaling several hundred million euros a year without disruption.

With HPE 3PAR, HPE StoreOnce and Veeam Availability Suite, Payboost was able to successfully handle the collection of several hundred million euros each year, upholding its 99.99% service continuity commitment. It also optimized Service Level Agreements (SLAs) and freed up time for value creation by spending half the time managing the solution compared to prior solution.

To learn more about how Payboost uses Veeam and Hewlett Packard Enterprise technologies to meet its service continuity commitment, read the success story [Fintech’s Payboost processes payments from more than 500,000 users every year without interruption, thanks to the combined performance of Veeam and HPE](#).

**HIRERIGHT**

HireRight provides flexible, tailored screening solutions containing more than 150 unique background-check services that help employers manage risk when hiring. The faster HireRight can verify candidates’ resumes and job applications, the faster employers can make informed hiring decisions. Slow backup and recovery can place HireRight’s IT systems at risk for downtime and may also present compliance challenges.

By replacing its legacy backup infrastructure with HPE Nimble Storage and Veeam Availability Suite, HireRight has helped to mitigate its risk of system downtime. Backup and recovery speed has increased by 99% and HireRight has been able to achieve 99.9% uptime. Management and compliance profile have been streamlined globally and the data protection environment has been simplified, freeing up two full-time storage IT employees to focus on other critical roles.

To learn more about how HireRight uses Veeam and Hewlett Packard Enterprise technologies to mitigate its risk of system downtime, read the success story [HireRight Helps the World’s Biggest Brands Hire Top Talent and Saves $1 million per Year with Veeam and HPE Nimble Storage](#).
INCREASING APPLICATION AVAILABILITY

Availability starts with choosing a primary storage platform that provides the levels of high availability and performance that your business-critical applications require. HPE Primera and HPE 3PAR provide a proven, highly available, Tier-1 architecture common across midrange, all-flash, and high-end storage array models. HPE Primera and HPE 3PAR offer the only six-nines (99.9999) guaranteed availability program in the storage market and provides a storage system with the availability required for your most critical business data.

HPE Primera and HPE 3PAR Persistent Cache eliminates any performance impacts that might be caused by a node outage. Plus, HPE Primera and HPE 3PAR eliminate all active single points of failure by using completely redundant components and power paths. Clustering allows each volume to be active on all nodes at all times. For proactive maintenance, HPE Primera and HPE 3PAR implement a dedicated service processor with phone-home capabilities that can notify you and HPE support of system alerts, enabling you to address any potential issues or errors. HPE Virtual Copy Software enables you to take instant point-in-time copies of your data volumes with little or no impact to your applications, providing a built-in solution for storage as well as resource efficient, volume-level protection and roll back for data that reside on the HPE Primera and HPE 3PAR arrays.

The tight integration of HPE storage solutions and Veeam brings improved business continuity and better application availability. Veeam Availability Platform enables VMs to be backed up to disk for fast recovery, and copied to low-cost storage media like HPE StoreOnce for long-term retention. Using Veeam Availability Platform in conjunction with HPE Primera and HPE 3PAR snapshots lets you recover VMs in minutes using Veeam’s Instant VM Recovery from Storage Snapshots. Using Veeam with HPE snapshots allows far faster backup and recovery than traditional snapshot technologies. For instance, while hypervisor-based snapshots don’t require any special hardware integration with the storage platform, they negatively impact VM and application performance. Likewise, recovery from standard SAN-based snapshots is a time-consuming process requiring multiple manual steps. With volume-level snapshot technology, the snapshot must first be promoted to a volume, then mounted to a host, and then the process of recovering the VM or data can begin. Once the recovery is complete, the snapshot mounting process must be undone to clean up. Veeam, in combination with HPE Primera and HPE 3PAR snapshots, provides intelligence to the storage snapshot allowing for streamlined, efficient, and fast granular recovery of VMs, guest OS files and application items directly from those HPE snapshots. The resulting high performance and low overhead of leveraging storage snapshots enables you to create more frequent restore points and increases granular protection. This, in combination with the rapid recovery capabilities, improves your RTO, minimizing downtime.

Veeam’s Instant VM Recovery enables you to quickly restore a VM from a storage snapshot to production, reducing recovery time and improving application availability. Once the VM is restored, VMware vSphere® Storage vMotion®, or Veeam Quick Migration can be used to migrate from the storage snapshot to production volume.

As seen in Figure 2, a snapshot can be created from HPE Primera and HPE 3PAR StoreServ Management Console (SSMC) or from Veeam management console using a feature called “Snapshot Orchestration” which enables the storage administrator to leave the Veeam management console less often. The HPE Primera and HPE 3PAR SSMC lists available snapshots and the Veeam management console lets you easily recover VMs with just a few clicks. To recover a VM or its contents, you select the snapshot that you want to use and then select the VM that you want to recover. You then select options for using Instant VM Recovery, restoring application items, and restoring guest OS files. Instant VM Recovery will restore the entire VM after you select the recovery point in time and destination. The Restore Application Items option will start one of the Veeam Explorers that are covered in the following section.
Veeam enables you to perform granular restore options from backups or directly from storage snapshots using Veeam Explorer for Storage Snapshots. Veeam Explorer lets you browse and search the contents of Veeam backup files, then optionally restore VMs, individual files, and the following application items:

- **Veeam Explorer for Microsoft Active Directory**—Search for and restore all Active Directory object types, including users, groups, computer accounts, and contacts. You can also restore user and computer passwords.

- **Veeam Explorer for Microsoft Exchange**—View Exchange Server 2010 and 2013 backups. The Explorer provides advanced search capabilities and quick recovery of individual Exchange items, including individual email messages, contacts, and notes.

- **Veeam Explorer for Microsoft SQL Server**—Accomplish fast, transaction-level recovery of SQL Server databases. You can restore your SQL Server databases to a precise point in time using agentless transaction-log backup and replay.

- **Veeam Explorer for Microsoft SharePoint**—Browse SharePoint 2010, 2013 and 2016 backups. You can search for specific SharePoint files and quickly recover items to their original SharePoint server, or you can send them as email attachments.

- **Veeam Explorer for Oracle**—Accomplish fast transaction-level recovery of Oracle databases. You can restore your Oracle databases to a precise point in time using agentless transaction-log backup and replay.

Options for subscription licenses, perpetual licenses, or Veeam delivered through HPE GreenLake enable customers to purchase Veeam up front, or pay annually. Instance licensing is a new portable subscription license that enables the use of one license across many products and workloads, deployable on-premises or in a cloud environment. Veeam Instance Licensing (VIL) allows you to use a single type of licensing across all workloads—physical, virtual, and on-premises and across public clouds, with no additional cost. The introduction of the industry’s first Veeam Instance Licensing provides a single instance/single license that is portable and flexible across Veeam products and workloads with the new Veeam Availability 9.5 Update 4, avoiding license sprawl across multiple products and environments.
HPE AND VEEAM PARTNERS FOR AVAILABILITY

In today’s modern data center, availability is paramount and data protection must be built into the infrastructure. It’s not something that can be added on later. The combination of HPE Storage solutions and Veeam intelligent data management software increases your application availability while minimizing disruption and downtime. Veeam and HPE provide more than 50 ways for fast recovery of VMs, files, and other application objects, delivering RPOs and RTOs of less than 15 minutes. Veeam Availability Suite includes Veeam Backup & Replication for enterprise-level data protection and Veeam ONE for monitoring reporting and complete visibility. The Veeam Availability Suite, combined with efficient and powerful HPE Primera, HPE 3PAR, HPE Nimble Storage, HPE Apollo Server, and HPE StoreOnce, is a solution that provides your business with data protection without limits.

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