



Protecting critical servers and data in virtualized environments

How small- and mid-sized businesses can cost-effectively back up and recover virtual machines and their data

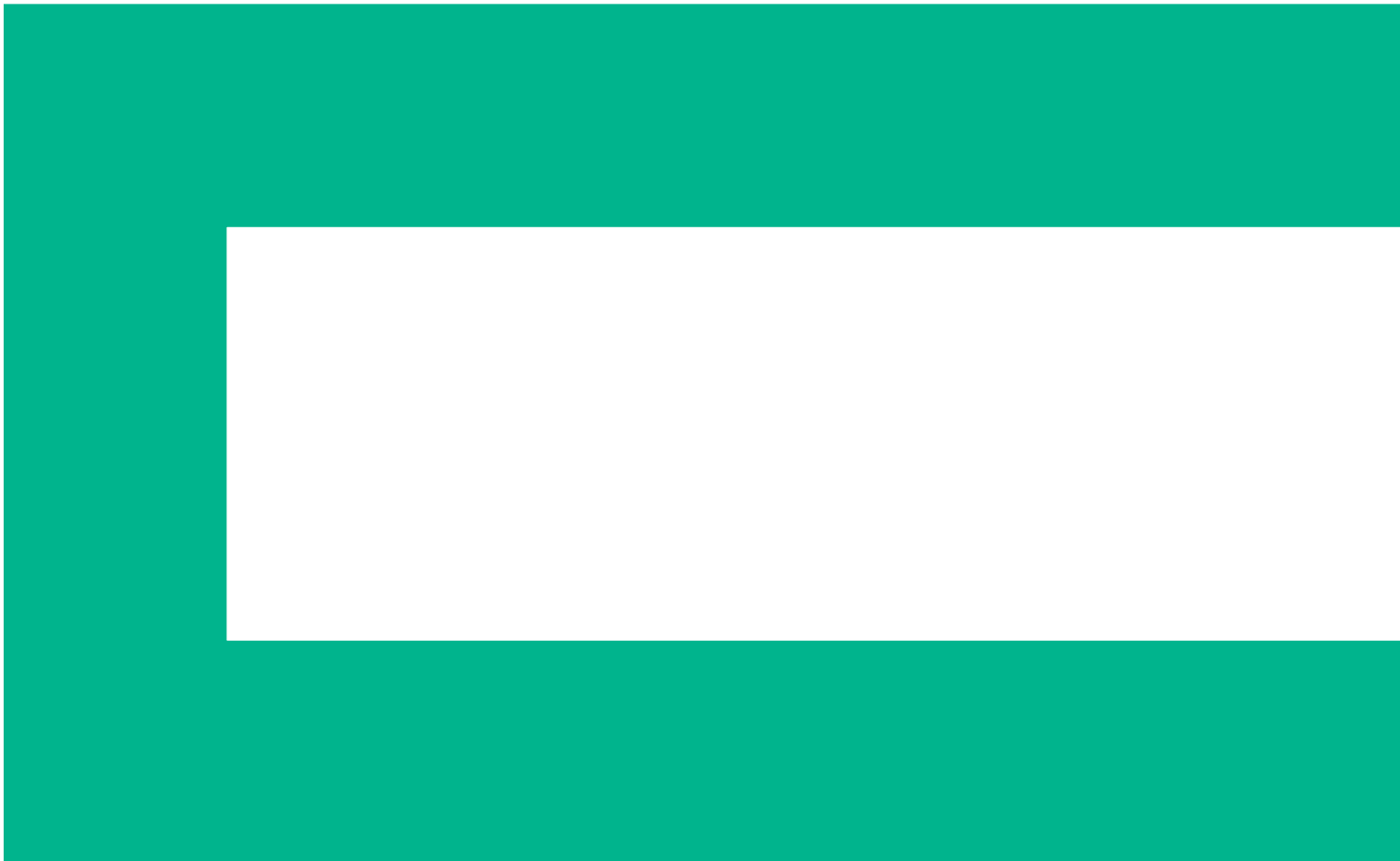




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Executive summary

Over the past 10 years, virtualization has grown into a cost-effective way for small- and mid-sized businesses (SMBs) to increase the value of their investments in information technology (IT) infrastructure. Organizations have also gained new options for storing backups, ranging from high-performance tape and disk technologies to cloud services.

However, related virtual machine (VM) backup and recovery capabilities have not kept pace with this rapid growth in virtualization and storage options—especially for SMBs with limited IT resources. Those enterprise-grade server backup applications that do offer advanced VM backup features are often too complex or expensive to meet the needs of SMB customers. As a result, many smaller businesses depend on time-consuming manual processes and inadequate tools. In turn, they lack confidence in their backup applications and can struggle to quickly or fully restore virtual machines in the event of a server failure or other problem.

HPE VM Explorer is designed to address the backup and recovery needs of smaller businesses operating virtualized servers. This paper explores the challenges that arise when SMBs seek to back up data, services, and applications in virtualized environments, and explains how HPE VM Explorer can help resolve these issues.



Challenges

When it comes to backing up and restoring data in environments featuring tens of virtual machines running on one or more physical servers, SMBs face at least three challenges: Technical complexity and constant updates to underlying software, meeting performance goals, and costs arising from software licensing and resourcing requirements.

Technical complexity

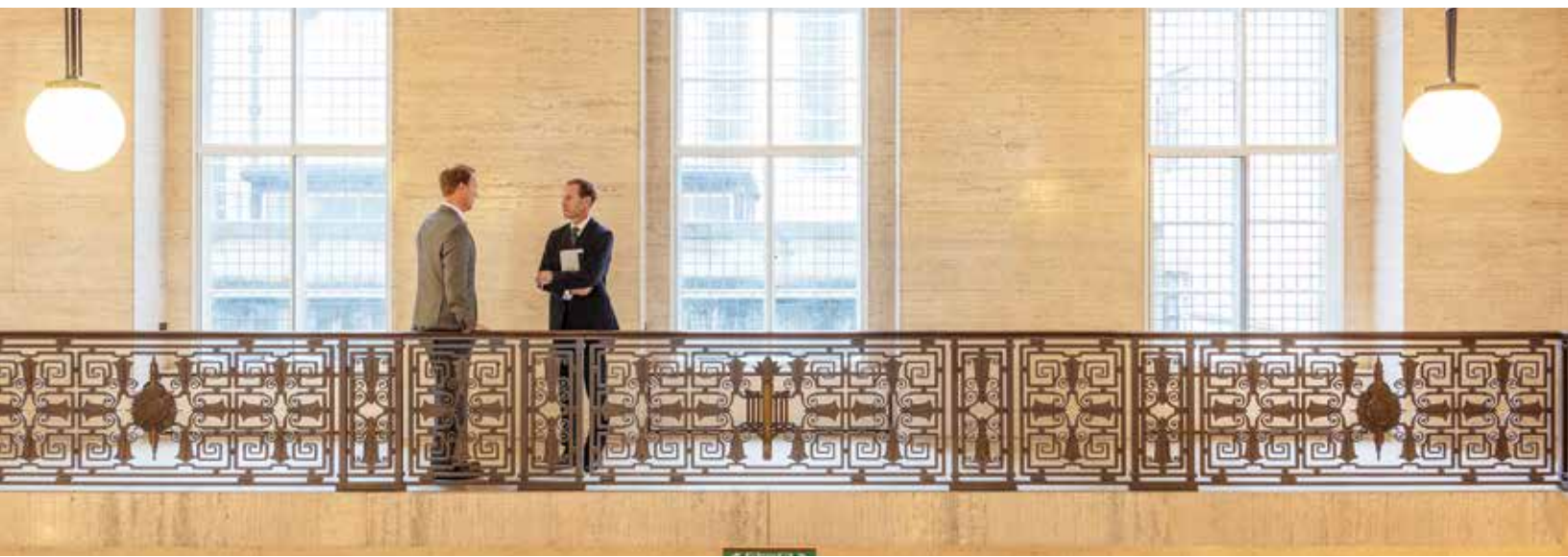
To virtualize servers, businesses create VMs that operate as complete servers but are abstracted from the underlying hardware they run on. This means they can run multiple VMs on a single physical server to better utilize the machine's computing power and storage capabilities. The most common "hypervisor" software tools for achieving this are Hyper-V from Microsoft® and vSphere from VMware®.

Virtualization delivers many benefits but complicates the task of backing up and restoring data and applications—the business is no longer backing up just data from hard drives, it must back up entire VMs and the configuration information that goes with them.

IT administrators must also keep track of their VMs and the assets they contain. Even small organizations can quickly find themselves running more than 10 VMs across multiple physical servers and sites. Some run up to hundreds of VMs to cater for their full range of internal computing requirements.

In addition, Microsoft and VMware regularly upgrade their hypervisor software. This can change, or even break, an organization's existing VM backup and recovery processes.

Another source of complexity can be the backup solution itself. Counter-intuitive graphical user interfaces or using self-written manual command lines can make backing up data time-consuming and frustrating. This challenge can be exacerbated if backup processes are not well integrated with other programs in a business's environment (for example, an enterprise management system or performance monitoring tools).



Recovery point and time objectives

Given that even the smallest businesses may now need to protect terabytes of critical data and applications, the time required to complete backups is a major concern. Without the right tools, organizations must often allow hours or even days to complete backups—especially if they are backing up a full copy of their data or VMs to an offsite storage location.

This can lead to excess strain on the company's network, making it more difficult for administrators to schedule backups at convenient times, and potentially lead the business to back up data less frequently than required to meet backup and recovery targets. These targets are known as recovery point and recovery time objectives—or RPOs and RTOs—and relate to the state to which the organization would like to be able to return its system (such as to go back to four hours earlier) and how long it would take to achieve that restoration.

Software and resourcing costs

Backup and recovery software suitable for use in virtualized environments can be prohibitively expensive for small businesses, especially if those businesses consider using backup tools built to meet the needs of large enterprises with complex IT environments. Not only can those tools be expensive to license, but the business must also consider the cost of the expert technicians required to deploy them and to operate them over time.

Even if organizations use their own scripts and run them manually, they must consider the cost of the internal or external labor required to run those processes. Finally, businesses must weigh up the potential cost of downtime should their servers fail, and, it takes significant time to get up and running again. A recent study among United States-based businesses estimated that unplanned downtime can cost businesses some \$7900 USD a minute.¹

¹ emersonnetworkpower.com/en-US/About/NewsRoom/NewsReleases/Pages/Emerson-Ponemon-Cost-Unplanned-Data-Center-Outages.aspx

Solutions

A successful data protection solution should allow for the rapid, reliable, and comprehensive recovery of systems and data to desired points to reduce the impact on business operations.

Rapid backup and recovery

Backup and recovery solutions can slow businesses down in two ways. Firstly, they may require businesses to complete full backups, which as mentioned earlier, can take hours or even days to complete depending on the amount of data to be backed up. Secondly, they may include lackluster disaster recovery processes.

HPE VM Explorer addresses these problems with a suite of features designed to streamline the backup and restoration process. For example, the software includes integrated job scheduling so that backups can take place when business activity is reduced.

HPE VM Explorer also allows businesses to perform incremental backups, meaning that only new data is backed up and transmitted to a location that already contains previous backups. To transmit the data quickly (for example, from a business's headquarters to the cloud), HPE VM Explorer uses dynamic compression, a tool that also saves space on the target system.

When it comes to restorations, HPE VM Explorer is designed to support fast and hassle-free recoveries. The software supports integrated file-level restorations, which means that administrators can restore individual files from any backup (FAT, NTFS, EXT, LVM, or LDM) without restoring the full backup.

Where restorations of an entire backup are required, administrators can use HPE VM Explorer's server-to-server fast copying function to get up and running as quickly as possible. In practice, this means that IT administrators can vastly reduce the amount of time (and money) they spend on managing the VM backup and restoration process.

Customer experience—Institut Universitaire de Technologie

At the Institut Universitaire de Technologie (University of Technology, or IUT) of Valence, France, David Chechat uses HPE VM Explorer to back up six physical servers. “It is impossible to completely eliminate occasional crashes and system disruptions,” he says. “But it is possible to reduce the impact they have on critical system functions. HPE VM Explorer has allowed us to respond to interruptions in less than a couple of hours, whereas before, we would have needed at least an entire day to get everything back on track.”

**Reliable and easy to use**

HPE VM Explorer helps SMBs with virtualized IT infrastructures to streamline their VM backup and recovery processes in several ways:

- It allows them to schedule key VM backup processes, such as incremental backups, so that they no longer require manual administration
- It supports multiple backup targets, so that SMBs can tailor their backup processes, replicating data to a range of targets including local machines, VMware servers (including free versions of ESX), Microsoft servers, and cloud storage solutions such as Amazon S3
- It offers an intuitive and easy-to-use Web interface with no complex menus
- It is easy to set up and operate, and doesn't require special training
- It is a complete solution that allows SMBs to manage backups and replications for both their VMware and Microsoft environments from within one application
- It performs automatic backup tests, so IT teams do not need to worry that their backups might prove unreliable in the event of a disaster

Customer experience—The Salvation Army New Zealand

The Salvation Army New Zealand—a non-profit organization that supports more than 120,000 people each year—used to rely on complicated command scripts to manage its 45 VMs, which contained 1.5 TB of data spread across five physical servers and four hosts. To save money, it was using manual scripts to initiate backups and had to repeat each command four times—a time-consuming and inefficient process. Now, the organization uses HPE VM Explorer to schedule backups of its VMware vSphere servers from a single console using a graphical interface. “If I’m on leave, my colleague can easily pick up my job because the reports are easy to read,” says Holmes Lam, Senior Systems Analyst.

**Affordable licensing and automation**

In the past, many VM backup and recovery solutions for virtualized environments were merely repackaged enterprise offerings that hadn't been tailored to the unique needs and priorities of SMBs. Today, the overall maturity of virtualization technologies has led to more and more SMB-specific products becoming available and—importantly—affordable.

HPE VM Explorer is a cost-effective virtual machine backup solution for SMBs, with customers typically spending as little as one-eighth of what they would spend on an equivalent solution targeted at larger enterprises. As above, by automating many of the steps involved in reliably backing and recovering data and servers in virtualized environments, the software can also enable organizations to substantially reduce their IT administration resourcing costs.

Whether an SMB is just starting out and looking for increased agility and cost savings; building momentum and requiring increased availability, manageability, and flexibility; or growing rapidly and looking for a scalable solution with increased performance, HPE VM Explorer is a flexible, powerful, and affordable choice.

Customer experience—ZaneRay

ZaneRay is an American SMB that designs and hosts e-commerce websites for high-profile outdoor brands, as well as related production and business systems. In August 2015, ZaneRay started using HPE VM Explorer to back up more than 70 VMs and meet clients' strict performance and Payment Card Industry (PCI) e-commerce requirements. "We could run two instances on separate licenses to support as many servers as we need, and still stay within budget," says Brennan Sandusky, ZaneRay's Systems Director. "VM Explorer is exactly the product I was looking for."



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