

CommVault Optimizes Virtual Server Data Protection

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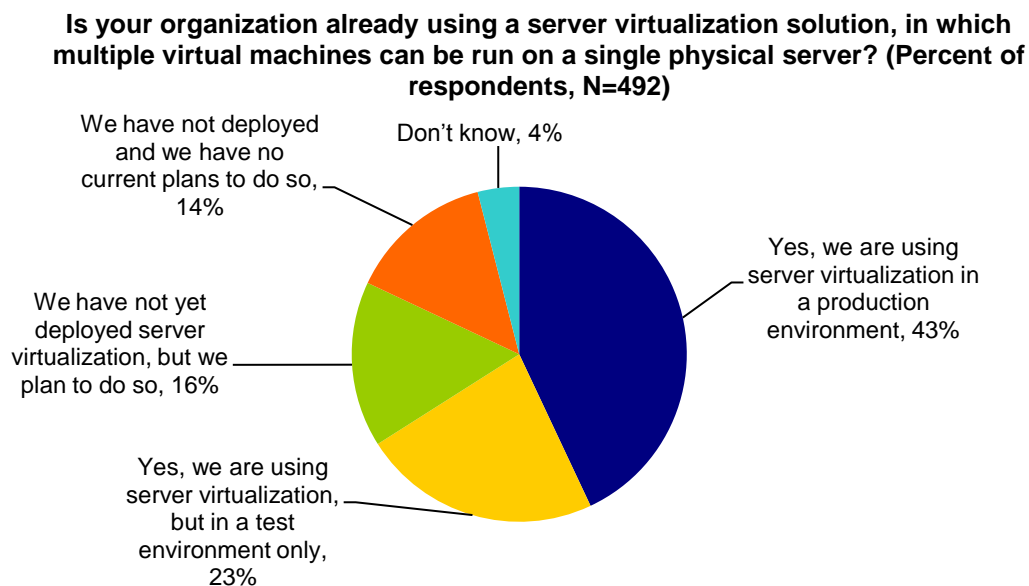
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Abstract: Server virtualization adoption is growing and IT organizations are gaining confidence in running mission-critical applications in virtual machines. Virtual servers introduce complexity to the environment and challenges for data protection—two things CommVault tackles with Simpana 8.

Overview

Server virtualization is being implemented to gain the benefits of server consolidation, including improved server and storage utilization, operational agility, business resilience for mission-critical applications, and lower data center operating costs. With virtualization, workloads share a common pool of physical resources. ESG research found that 66% of survey respondents have implemented server virtualization and of those, 43% are using it to run production workloads (see Figure 1).¹

FIGURE 1. USE OF SERVER VIRTUALIZATION



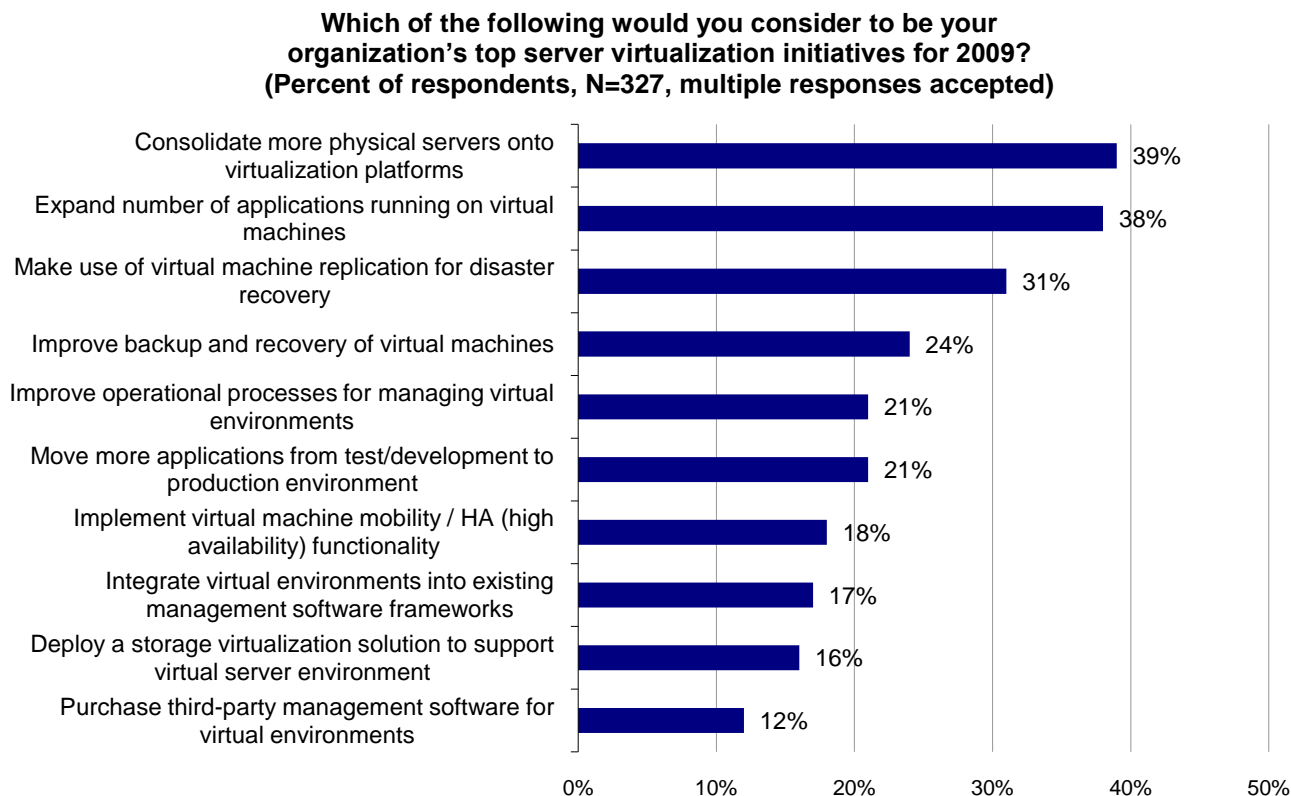
Source: Enterprise Strategy Group, 2009

While ESG found that top server virtualization initiatives in 2009 include expanding both server virtualization and the number of applications running in virtual machines, leveraging virtual machines for disaster recovery (DR), and improving backup of virtual machines are also high on the list (see Figure 2).² IT organizations need to guard against interruption of services as they run more virtual machines and more mission-critical applications on virtual machines.

¹ Source: ESG Research Report, *Data Center Spending Intentions*, March 2009.

² Ibid.

FIGURE 2. TOP SERVER VIRTUALIZATION INITIATIVES FOR 2009



Source: Enterprise Strategy Group, 2009

Data protection technology and practices in place in the “physical world” can be carried over to virtualized environments; however, there are still some challenges that must be overcome.

- **Server virtualization enables encapsulation of the operating environment.** A virtual machine is a file that contains the operating system, applications, and data. Virtualization increases both primary and secondary storage requirements due to proliferation and redundancy.
- **Server virtualization increases the amount of data maintained on a single physical server.** Physical resources are finite and backup processes can be resource intensive when it comes to IO, CPU, and network assets, potentially affecting operations on other virtual machines sharing the same system resources or networks, and, therefore, impacting the backup window.
- **Protecting virtual machine contents requires special consideration,** especially since the mobility of virtual machines across physical resource pools makes them difficult to track. Floating virtual machines complicate management of data protection policies, backup copies, and recovery.
- **Performing virtual machine-level backup is time-efficient and least disruptive to the environment.** System-level backup (i.e., backup of the virtual machine file) allows for rapid and complete virtual machine restoration, similar to bare metal recovery. However, recovery of a single file would require a less efficient, two-step recovery process. This method also consumes more storage capacity.
- **Performing file-level backup within virtual machines (via backup agent technology) is inefficient and can be disruptive to the environment.** However, the ability to recover a single file is often desired.
- **Backup licensing models for physical server environments applied to virtual ones could wreak havoc on the backup budget.** This is especially true if the ratio of virtual machines exceeds physical machines in the pre-virtualization environment.

CommVault is addressing many of these challenges with Simpana 8, a data management platform that combines backup, archiving, replication, reporting, and eDiscovery. Simpana 8 offers several features that improve how data is protected in virtualized environments.

Analysis

The goal of virtualization is optimization. For the most part, IT organizations virtualizing their infrastructure elect to refresh multiple components of the server and storage environment to fully realize optimization. This approach should be used for all components in the environment, including data protection.

CommVault Simpana 8 enables new capabilities in server virtualization environments—including VMware and Microsoft—to improve data protection, expedite recovery, and optimize storage utilization.

Simplified Licensing

Simpana software's new Universal Virtual Server Agent leverages the hypervisor's snapshot capability (VMware Consolidated Backup [VCB] in VMware and Volume Shadow Copy Services [VSS] in Microsoft Hyper-V) to facilitate backup without the need for a backup agent in each virtual machine. This greatly simplifies licensing as CommVault requires one Universal Virtual Server Agent licensed per physical host machine (with a SKU for up to 20 virtual machines and another SKU supporting more than 20 virtual machines per physical host).

Optimized Backup and Expedited Recovery of Virtual Machines

A lot of solutions can back up and recover virtual machines. However, doing it in the most efficient fashion—accelerating processes, moving and storing the least capacity of data, being non-disruptive, and saving time and money in the process—is more exacting.

VMware Virtual Infrastructure

Simpana 8 optimizes backup and recovery with its support of image-level, off-host backup of VMware virtual machines. Simpana software integrates with VMware VCB to offload backups from virtual machines to a proxy server—eliminating the need for backup agents in every virtual machine and any issues with resource contention for backup of virtual machines on the same physical host. Simpana provides several methods of protecting VMware virtual machines at the proxy server, including file-, image-, and volume-based backup/recovery.

Data can be recovered at the file-, image-, or volume-level. Recovering at the virtual machine-level accelerates recovery, minimizing downtime. To recover an individual file, Simpana software doesn't require the two-phase (first virtual machine recovery and then file recovery) process. When a disk-based, image-level backup is performed, Simpana software inspects the virtual machine image, cataloging and indexing the files contained within. This allows Simpana to provide granular recovery of data. Incremental backup to disk constitutes a full recovery point and can be directly recovered.

Microsoft Hyper-V and Virtual Server

Simpana software takes advantage of Microsoft VSS snapshot technology to quiesce virtual machines and perform consistent backups. Simpana software's Universal Virtual Server Agent facilitates block-level incremental image backups in Microsoft virtual server environments. As in VMware environments, recovery of whole virtual machines or individual folders/files—without a two-pass process—expedites recovery.

Cross-Platform Capabilities

In addition to single-step recovery, Simpana 8 supports various levels of cross-platform data recovery. For example, physical-to-virtual (P2V), virtual-to-virtual (V2V) (VMware to Microsoft or vice versa), and virtual-to-physical (V2P) to simplify off-host processing tasks.

Efficient Storage and Network Utilization

Further optimization is delivered through incremental delta block image-level backup to disk. Simpana software only transfers changed blocks, speeding backup and using less network resources. Simpana software's global, embedded, content-aware data deduplication further enhances storage efficiency.

Eliminating redundant data at the segment level—especially in a virtual machine environment where duplicates abound—reduces the capacity of data stored—on either disk or tape media.

Automated Discovery and Policy Management

To address the dynamic nature of server virtualization environments where virtual machines are created, deleted, and moved, Simpana 8 has the ability to automatically discover virtual machines and assign default protection policies, as well as track their locations. This allows Simpana software to monitor sprawling virtual server environments and maintain control. Setup is simplified, saving valuable administrative time, and newly deployed virtual machines won't be stranded in the backup process, mitigating holes in the data protection strategy.

Today, CommVault's virtualization support is limited to VMware and Microsoft. As server virtualization from Citrix, Parallels, Oracle, and others gain in adoption, CommVault will need to expand its capabilities.

The Bottom Line

As deployments of server virtualization proliferate, workloads running on different operating systems, on the combination of physical and virtual servers, and on a variety of hypervisors add new levels of complexity for operational and disaster recovery. CommVault is addressing not only the heterogeneity in these environments, but their complexity. Simpana 8 simplifies and optimizes data protection for these environments.

While virtual server vendors offer the tools and interfaces to enable more effective data protection, CommVault took extra steps to simplify management and licensing, accelerate backup and recovery, and reduce storage and bandwidth requirements. This allows IT organizations to deliver better protection service levels, while maintaining or lowering costs and administrative overhead. IT organizations implementing (or considering implementing) server virtualization to yield optimization benefits should consider Simpana 8 to fully realize efficiency in data protection processes.