Solution Overview: Data Protection

Virtual Machine Protection with Symantec NetBackup™ 7

Overview

There’s little question that server virtualization is the single biggest game-changing trend in IT today. Budget-strapped IT departments are racing to embrace the promise of virtualization for many reasons:

- **Extends current IT server investment**—maximizes each server’s compute capacity
- **Optimizes server utilization**—one server can run multiple operating systems (OS) and applications
- **Allows for flexible platform dynamics**—run Windows® today, Linux® tomorrow
- **Smaller server footprint**—very green IT that reduces energy and IT real estate costs

Because of the obvious total cost of ownership benefits of virtualization, and the maturing of the technology, virtual machines are assuming more business-critical roles in the data center. In a recent Symantec data center survey, more than 75% of all small, medium, and large enterprise companies listed server virtualization as one of the top technologies they are adopting.¹

The data management challenges of server virtualization

Data protection consistently tops the list of challenges that IT departments face. In a recent survey of VMware users, 36% said I/O bottlenecks were a challenge, 30% named backing up virtual machine (VM) data, and 28% listed storage management.²

- **Data protection**—As the number of servers being virtualized grows, management of backup and recovery becomes more problematic. Bandwidth-intensive backup and restore operations that run in VMs can lead to bottlenecks that increase backup windows and impact restore performance and reliability.
- **Disaster recovery**—The virtualization OS layer, on which the entire guest OS and other applications rely, represents a single point of failure for multiple business-critical applications.
- **Uncontrolled storage growth**—Virtual machine sprawl increases storage resources. The resulting uncontrolled growth in storage has a sharply negative impact on increasingly tight IT budgets.

Realize the promise of server virtualization

Companies are betting their business on virtualization being the new game-changer. The challenge that remains is how to minimize the data protection risks associated with virtualization while applying virtualization on a large enough scale so that the efficiencies promised really do, in fact, materialize.

How can all this be achieved?

- Implement a backup and recovery solution that reduces recovery time in the event of IT failure—one that’s easy to administer
- Reduce the cost of backup storage by reducing the amount of redundant data throughout the enterprise
- Implement a complete disaster recovery solution that enables rapid recovery of business critical data, applications, and systems
- Centralize management of the physical and virtual server environments in order to save time and improve responsiveness

² TechTarget’s “Virtualization Decisions 2009 (Oct 09) Purchasing Intentions Survey”
NetBackup transforms virtual machine data protection

Understanding how your organization protects information in virtual machines for local and disaster recovery purposes can help you quickly identify sources of wasted storage and infrastructure resources. The right platform should do more than automate virtual machine data protection; it should provide a consistent backup and recovery as well as disaster recovery approach for both physical and virtual servers, integrate with the latest hypervisor APIs, and offer flexible data deduplication options.

NetBackup delivers simple and comprehensive data protection for virtual environments by building on the successful foundation of its award-winning VMware support. Virtual machine protection is simplified by centralizing backup across both Microsoft® Hyper-V and VMware vSphere, speeding up backup times through deep API integration (for example, VMware vStorage API). NetBackup also provides built-in deduplication and incremental and replication technologies, as well as by delivering highly efficient granular recovery technology.

NetBackup centralizes management and reporting across physical and virtual machines and provides deep integration across applications, databases, and hypervisors.

Your data protection platform matters

Depending on which data protection technology you use, you may be forced to choose between two approaches for virtual machine backup and recovery. Neither approach is ideal, and each has specific performance and storage implications.

You can choose to perform a traditional backup with an agent in the guest OS (the virtual machine). Or you can back up the entire virtual machine as a single file and avoid placing agents in each virtual machine. Unfortunately, client-based backups can negatively impact other virtual machines on the same physical host and do not offer quick system recovery. By contrast, backing up the entire virtual machine image can have less impact, but requires more storage and database or application restores can be problematic. To address this, companies are forced to perform both types of backups, wasting even more storage. Finally, remember that any wasted backup storage usually gets amplified (or doubled) because most companies make two copies of backup data to meet local and disaster recovery needs.
NetBackup solves both the storage and data recovery problems associated with traditional virtual machine backup approaches. By installing a NetBackup deduplication client in the virtual machine, you can reduce virtual machine consumption by eliminating duplicate data across any type of virtual machine. For VMware and Microsoft Hyper-V, NetBackup provides deep integration for more sophisticated backup technologies including off-host and block-level incremental backup. In addition, NetBackup uses award-winning, patent-pending granular recovery technology that allows a single-pass, image-based backup to also deliver granular file recovery in virtual environments. This single-pass backup technology is more storage-efficient than traditional backups—while still retaining the ability to easily discover and recover an individual item of data, such as a single Microsoft Exchange email or a single Microsoft Word document. Companies already performing both client and virtual machine image backups can expect up to a 50% reduction in storage. And for companies who are using only one backup approach for virtual servers, NetBackup still offers better recovery features and more efficient storage usage with a single backup console that spans both physical and virtual environments.

NetBackup uses award-winning, patent-pending granular recovery technology that allows a single pass, image-based backup to also deliver single file recovery.

**Faster disaster recovery (DR) for global backup environments**

Though server virtualization can offer a measure of business continuity, if one guest VM should fail, you can quickly restart it on a different VM on the same or a different physical server. But this approach fails to address the greater risk of “all the eggs in one basket” should the physical server that supports multiple VMs fail.

Using NetBackup, you can increase the reliability of your recovery process by keeping all of your virtual machine backup data in one catalog, so you can see copies of data in the data center and in the DR site. This consolidation and visibility increases the speed of recovery at a DR site because you eliminate the need to import backup data back into the backup catalog. And because NetBackup can let you assign different retention periods to copies of data, you can easily migrate that VM image off to tape after a certain period of time with no change in your recovery process.
Replication to a secondary location is the most effective strategy for disaster recovery, but storage of redundant data is an unwanted by-product. Combining both NetBackup replication and deduplication capabilities can dramatically reduce the size of backups by only moving unique segments of data. This strategy also provides a bandwidth-efficient means to transfer large amounts of data to DR sites. More importantly, NetBackup manages all copies of backup data based on defined policies, which expedites restores from these DR copies and simplifies expiration of old data from both the data center and the DR site.

**Deduplicate everywhere—including virtual machines**

As companies move more environments to virtual machines, storage consumption rates will climb sharply, in large part due to redundant data residing on multiple virtual machines. Data deduplication technology has emerged as a means to tackle this data explosion.

In essence, deduplication is about shrinking the “footprint” required by only protecting the data that has changed. It can be done at the “source” before the data ever leaves a server or at the “target” where backup data is stored.

The NetBackup approach encourages organizations to deduplicate everywhere—at the source of the data (within the virtual machine) or at the backup target. This represents a significant cost and time savings in network bandwidth because you can deduplicate at multiple data centers, at remote offices, and at global locations. And because NetBackup is a software-based deduplication solution, customers can manage centrally and leverage their current disk storage environment. There is no need to purchase a separate disk appliance just for deduplication. Finally, NetBackup deduplication improves the return on server virtualization by providing storage consolidation, efficient virtual server protection, and simplified management.

**Summary**

NetBackup offers a comprehensive and centralized solution that provides customers with the critical features required to protect all your virtual environments—from remote offices to the data center. NetBackup enables highly efficient granular recovery technology and reduces the size of backups with a deduplication engine that can be deployed for storage reduction and bandwidth reduction. By delivering solutions that match data protection requirements and workloads in a variety of virtualization scenarios, NetBackup delivers advanced data protection capabilities that allow you to maximize your virtualization investment.
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