

Six Ways to Reduce Your Overall Backup Window



vizioncore™

whitepaper

INTRODUCTION

At many organizations, virtual infrastructures are imposing greater demands on backup windows that system administrators are finding difficult to satisfy. Virtual machine sprawl and the virtualization of production systems are putting pressure on administrators to back up more VMs, and to back them up more often. However, while backup needs are growing, available backup windows are not. Backup windows usually cannot be extended and kept open longer, so organizations must do what they can to get more VMs through the window.

As virtual environments grow, backup & recovery operations have to grow and evolve with them. Throughput is rarely a concern when organizations get started with virtualization, but as production systems are virtualized and VM populations grow, backup throughput – if overloaded – can become a threat to system integrity. If backup operations are too slow or can't scale, administrators may be forced to alter their backup schedules and back up some systems less often than they would like. Backup scalability therefore is important for reducing risk and ensuring reliability in virtual environments.

There are many proven best practices, tips and technologies, plus newly available options, to improve backup throughput without having to increase the backup window or exclude VMs from the backup plan. This white paper presents six ways to reduce backup window requirements.

1. Backup Multiple VMs Simultaneously

Organizations can reduce the total time required to execute backups by making full use of available processing power. Traditionally, VMs are backed up in a pre-set sequence by backup software running on a proxy server. One-by-one processing limits throughput and does not take advantage of all the resources available on the system. Virtualization allows computing resources to be shared, and this advantage can be extended to backup operations. Multiple virtual machines can be backed up simultaneously by using a resource manager within the backup solution to discover and utilize all available hosts. Rather than one-by-one backup from a single server, simultaneous backup takes advantage of multiple virtual servers within the environment. The result is much faster execution and better resource utilization. As a result, organizations can shrink their backup windows, or back up more VMs in the time available.

2. Allow Multiple Recoveries from a Single Backup

The growing complexity of virtual environments is making backup operations especially hard to manage. With production systems being virtualized, many VMs now require daily backup, others only weekly. Administrators would benefit from a time-efficient way to execute file-level restores that doesn't require increasing backup frequency or volume.

Today it is common for the same VM to be backed up twice, to support both image-level and file-level recovery needs. Backing up the same VM twice also doubles the time and storage needed. Organizations faced with tight backup windows can not afford the time that redundant backup requires.

The time-efficient alternative is to back up VMs only once in a way that enables both file-level and image-level recovery, which some solutions now enable. File directories are created as the VM images are backed up, so administrators can easily search repositories to recover specific files without having to mount the entire image. With this approach, VMs only need to be backed up once to meet multiple needs. Multiple recovery options from a single backup also eliminates the need for the processing time, network bandwidth and storage to support redundant backups.

3. Be Incremental

Most organizations have already reduced their backup time requirements by replacing full backups with differentials for select virtual machines. Even more time can be saved by adding incremental backup to the mix. Differential backups work by scanning the source VM and only backing up what has changed since the last full backup, which typically results in only a small percentage of the VM having to be backed up, transferred and stored. The next time a differential backup is run (typically 24 hours later in a nightly backup program), all the files that have changed since the last full backup will be backed up again -- even if they have not changed since the previous differential backup.

Incremental backups are even more efficient. They perform a block-by-block scan and only back up the files (or data and VM settings within them) that have changed since the last backup, regardless of type (full, differential or incremental). This approach adds a layer of granularity to systems that prevents backed up files that haven't changed from being backed up again. Incremental backup is a complementary capability that can enhance other backup tactics.

Incremental backups result in less data to be processed than differentials. As a result, the backup takes less time to execute, transfer to the target is faster with less network bandwidth required, and storage needs are reduced. A solution that offers administrators a spectrum of options for scheduling full, differential and incremental backups lets them choose the best option in the cycle to reduce redundancies, which is both less taxing on throughput and reduces the size of the files and therefore the storage required.

4. Go Direct to Target

Architectures can be revamped to reduce backup time. Today almost all virtual backup operations are architected to run through a proxy server. Source VMs are backed up onto the proxy, then transferred over a network to the storage target. Because the proxy must communicate with source and target destinations, it often becomes a bottleneck in the backup process. Direct-to-target backup solutions are now available that generate the backup file at the source and transfer it directly to the target. This architecture removes the proxy server, and all associated bottlenecks.

Direct to Target continued...

Direct-to-target backup also reduces network bandwidth, because only one transmission instead of two is needed to complete the backup operation. Plus, backup workloads are spread among multiple hosts, providing the benefits of simultaneous backup.

Besides reducing backup time and network traffic, direct-to-target backup also provides flexibility and scalability advantages. Backups can run on virtual or physical servers, which provides flexibility and cost savings. With proxy-based backup, additional proxy servers need to be added along with more storage. Direct-to-target backup is much more scalable because organizations only need to add more storage to accommodate additional VM backups, not more proxy servers to process them.

5. Reduce Backup Sizes

Regardless of what backup methods and architectures are used, organizations should take steps to reduce the size of their backup files, which will complement other efforts to improve throughput. Data de-duplication, file compression and other reduction techniques such as eliminating white space and deleted data in the VMDK file remain good options. Ideally the backup solution will have the native ability to reduce the VMDK, so that no separate steps or products will be required. The more white space found in the VM, the better the backup time.

Intelligent solutions that skip over deleted files and white space when compressing and backing up VMs can improve performance up to 80 percent. As with incremental backup and enabling multiple recoveries from a single backup image, anything that reduces the size and amount of VMs being backed up helps improve throughput by causing less data to be processed, transferred and stored. Smaller backup images are also more resource efficient, requiring less storage and less energy to power and cool the storage environment.

6. Use Flexible Tools for the Job

One of the most practical and welcome advances in virtual backup technology has been the development of solutions that can provide convenient backup protection for large-scale virtual environments. Highly manual, one-off backup tools that require a lot of configuration, scripting and monitoring simply aren't practical for high-volume operations. Now there are solutions available with 64-bit processing, which provides the scalability needed to back up large environments. There are also systems that provide Windows PowerShell access for more administrative flexibility and control in Windows environments, support SQL Server databases to back up business systems, and can connect to multiple vCenter Server installations for managing operations at multiple sites from a single location. Backup solutions also offer a variety of enterprise-grade automation, scheduling and reporting features.

Backup Scalability is Essential To Reduce Risk and Ensure Performance

Today many organizations are learning hard lessons about the limited scalability of the backup systems for their virtual environments. Backup needs are growing at a time when available backup windows are remaining static, which makes it very difficult to back up all VMs as required on a nightly basis. Rather than trying to find more time for backup, organizations should focus on ways to back up more VMs in the limited time that is available. There are several ways to improve backup throughput, including promising new processes, architectures and technology features. These include simultaneous backup via resource sharing, direct-to-target architecture, flexible recovery capabilities, incremental backup, VM reduction techniques and scalable, enterprise-class backup solution platforms.

It is much easier to add virtual machines than it is to scale backup and storage operations to support them. A scalable platform for backup & recovery is needed to counter VM sprawl. Today Vizioncore is keeping pace with the growing sophistication of virtual environments by providing the options and features needed to protect large-scale, business-critical systems.

The vRanger Pro 4.0 Data Protection Platform

vRanger Pro 4.0 Data Protection Platform (DPP) is the next generation of Vizioncore's market-leading vRanger Pro virtual backup and recovery solution. vRanger Pro 4.0 DPP was designed from the ground up to reduce overall backup windows and provide a platform for fast, comprehensive and scalable backup and recovery for a wide range of environments.

vRanger Pro 4.0 DPP works in VMware environments and can be installed on a PC with no server required. Users can opt for full, differential or incremental backups to CIFS or SFTP repositories and recover the full VMDK or individual files from backup images. vRanger Pro 4.0 DPP runs without a proxy server for fast, efficient and scalable direct-to-target backup.

Building on the success of previous generations of vRanger Pro, used by thousands of organizations worldwide, vRanger Pro 4.0 DPP is easy enough to use for small environments and routine backup operations, and has built-in features for scalability to support large, decentralized virtual environments. Administrators can remotely start and stop jobs, disable and edit functions, connect to multiple vCenter Server installations and use the integrated Windows Service Scheduler. vRanger Pro 4.0 DPP also provides PowerShell access, supports Microsoft SQL Server and offers customizable screens for more powerful management and control.

vRanger Pro 4.0 DPP reduces the overall backup footprint so users can back up more VMs, back them up faster, optimize network traffic and reduce storage space needs. It combines the industry-leading virtual backup solution with a rebuilt backup engine to attain new levels of convenience, speed and scalability. For more information visit www.vizioncore.com/products/vRangerPro/.

ABOUT VIZIONCORE

Founded in 2002 and headquartered in Buffalo Grove, IL, Vizioncore Inc. is a fully owned subsidiary of Quest Software. The company has operations in the Americas, EMEA, Asia and Australia. As a leader in virtualization data protection and management solutions, Vizioncore's products help customers safeguard and optimize their IT systems while allowing them to extract the maximum return on their investment in virtualization. Vizioncore's products are built from the ground up to support virtual environments with none of the legacy encumbrances of products built for physical servers. Over 17,000 organizations around the world, from SMBs to large-scale enterprises, use Vizioncore's products. Vizioncore operates independently and distributes its products through an extended partner network of 2,200 value-added resellers worldwide. For more information please visit www.vizioncore.com or www.vizioncorum.com, Vizioncore's official blogging site.

How vRanger Pro 4.0 DPP Supports the Six Ways for Reducing Backup Windows

1. Backup Multiple VMs Simultaneously: vRanger Pro 4.0 DPP features innovative new backup technology that can backup multiple virtual machines simultaneously by using a Smart Backup Manager that discovers and utilizes all available hosts. When performing backups, vRanger Pro 4.0 DPP fills all available workloads on ESX servers to maximize throughput. Administrators can set it to back up as many or as few VMs as needed.

2. Allow Multiple Recoveries from a Single Backup: Individual files can be recovered from vRanger Pro 4.0 DPP backup images, so only a single backup operation is necessary to satisfy image- and file-level recovery needs.

3. Be Incremental: Users have their choice of incremental, differential or full backup with vRanger Pro 4.0 DPP.

4. Go Direct to Target: vRanger Pro 4.0 DPP does not use a proxy and backs up directly from the source to the target. This architecture puts the vRanger Pro server out-of-band to the backup traffic instead of in-band like proxy-based solutions.

5. Reduce Backup Sizes: Users can reduce their backup needs by taking advantage of vRanger Pro 4.0 DPP's strong compression capabilities and incremental backup option. It automatically reduces VMDK sizes by eliminating white space and executing compression. The solution does not include white space blocks in the backup, which further reduces sizes and required time. Additional methods to further reduce backup size will be available in future releases of vRanger Pro.

6. Use Flexible Tools for the Job: Flexibility and scalability are built into vRanger Pro 4.0 DPP through the ability to do file-level restores from backup images, direct-to-target architecture that makes it easy to add more storage targets, connection to multiple vCenter Server installations for viewing and managing the entire virtual infrastructure, 64-bit support, PowerShell access, automated scheduling, a service-based architecture and numerous customizable features.



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