# Impact-free Backup of VMware Environments

## Highlights

**The FalconStor solution for VMware backup delivers the following benefits, with no impact on production systems:**

- Integrates with VADP for LAN-free, agent-free backup

- Eliminates performance impact from production VMware ESX servers during backup

- Reliable recovery from tape with transactionally consistent data up to the application layer

- Scales to large VMware environments, allowing for more simultaneous backup jobs

- Back up anytime with no impact to production systems

- Comprehensive recovery options including local and remote recovery and restore from tape

While server virtualization brings numerous benefits, it also creates unique challenges with regards to data backup and recovery. Traditional application-based backup falters when faced with five or ten virtualized servers on a single physical machine. The VMware vStorage API for Data Protection (VADP) featuring Changed Block Tracking (CBT) is a step in the right direction, but it can impact the performance of production systems, especially post-backup, and does not scale well in large virtual machine (VM) deployments.

The FalconStor® HyperTrac Backup Accelerator for VMware, an extension of the FalconStor® Network Storage Server (NSS) solution, enables organizations to offload backup processes entirely from the production VMware ESX servers by leveraging VADP. This frees up valuable resources in the production environment from a utilization perspective (I/O and CPU) as well as in terms of meeting VMware requirements for free storage space. This allows backups to complete at any time, even during a company's busiest hours, without any impact on storage services.

### EASY INTEGRATION WITH ZERO PRODUCTION IMPACT

FalconStor HyperTrac for VMware works with existing backup software environments, enabling accelerated backup, even for backup software products that do not offer VMware integration. Storage LUNs are mapped through FalconStor NSS. (For new deployments, virtualized LUNs can be created.) The HyperTrac agent is installed on the media server, along with the backup software. FalconStor HyperTrac for VMware functions as a management point, coordinating operations between the VMware vCenter Server, FalconStor NSS, and the backup software.

FalconStor NSS uses snapshot technology to capture images of the storage LUNs that contain the VMware files (such as .vmdk). When backup begins, snapshot images are provisioned to a standby VMware ESX Server. These identical copies of production data are used to create standby virtual machines that are mounted but not activated. The backup software sees these standby machines as production systems. Both file-level and image-level backups are available.

In the standard VADP and VMware Consolidated Backup (VCB) model, VMware snapshots are triggered on production systems. During the backup, new data is written to re-do logs. When the backup completes, data must be written back to the primary storage, which can have considerable impact on operations.

With the FalconStor solution, VMware snapshots are moved to an inactive standby system. No data is accumulated, and there is no need to write back to primary storage. The production VMware ESX Server is not involved in the backup process at

all. Backup administrators are free to choose any backup window they desire without worrying about slowing down production systems. Furthermore, VADP can scale to back up far more VMware ESX servers simultaneously than before.

## FLEXIBLE DEPLOYMENT FOR SMALLER ENVIRONMENTS

While a dedicated VMware ESX Server for backup is suggested for larger environments, FalconStor HyperTrac for VMware does not require this configuration. It works equally well on a single VMware ESX Server containing both production machines and standby systems dedicated to backup. This makes it a cost-effective solution in smaller organizations or departments where only a single server is available.

## FALCONSTOR SNAPSHOT DIRECTOR FOR VMWARE ENSURES DATA INTEGRITY

The FalconStor® Snapshot Director for VMware works with FalconStor NSS to ensure that snapshot images captured for backup are transactionally consistent. Rather than backing up crash-consistent images of VMware files, which could delay restore attempts, the FalconStor Snapshot Director coordinates the snapshot process between the application layer, VMware ESX layer, and disk layer to ensure 100% transactional integrity of backup images. With quality point-in-time copies providing backup content, administrators can have peace-of-mind knowing that the restore process will be quick and reliable.

## QUICK LOCAL/REMOTE RECOVERY FROM SNAPSHOTS

An added benefit of the FalconStor NSS solution is the ability to use snapshot images for fast, disk-based recovery. Instead of restoring a file or a full virtual machine from tape, the standby VMware ESX Server can use a snapshot image to quickly boot up onto an earlier copy of the production system. This provides a much shorter recovery time objective (RTO) than tape-based restore; and if multiple snapshots are taken through the day, recovery point objectives (RPO) can also be significantly improved.

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FalconStor snapshots can be replicated to a remote site as well. FalconStor WAN-optimized replication is integrated with VMware Site Recovery Manager to provide coordinated and automated disaster recovery (DR).

## TOTAL PROTECTION FOR VMWARE ENVIRONMENTS

The FalconStor HyperTrac for VMware agent solves specific performance issues that limit VADP-supported backup software deployments. With FalconStor HyperTrac for VMware, VM backup becomes impact-free and scalable to the largest VMware environments. Powered by FalconStor NSS, which provides a storage virtualization layer, and combined with FalconStor snapshots and integration with VMware Site Recovery Manager, this enables comprehensive VMware data protection.
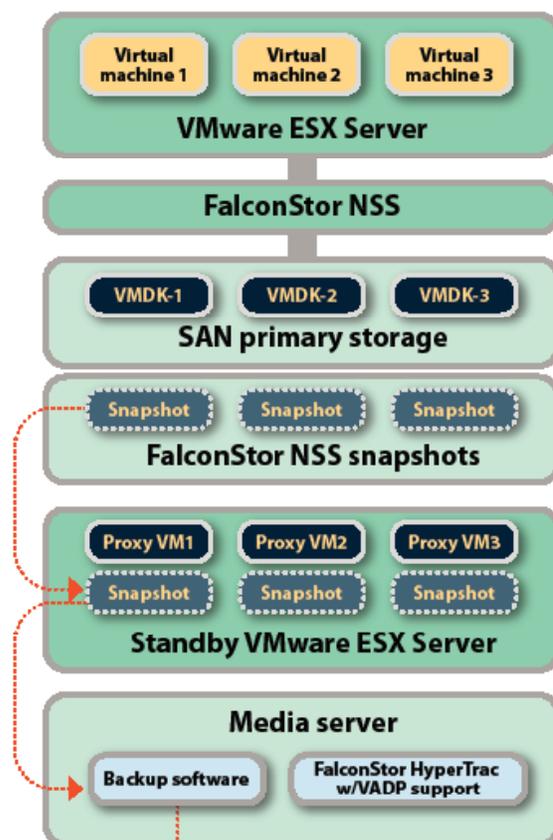


*FalconStor HyperTrac for VMware enhances VADP by eliminating impact on storage I/O. Using snapshot images created by FalconStor NSS, it eliminates the performance impact of VMware snapshots and the need for redo logs. Backups can be run at any time with no impact to production systems. Because all processing is handled by dedicated systems, backup is a fast process.*