

## Snapshot Director for VMware

Continuous availability of VMware applications with complete data integrity

*FalconStor<sup>®</sup> Snapshot Director for VMware dramatically enhances data protection for VMware ESX Server 3.0 and 3.5 virtual machines (VMs) by providing rapid, 100% transactionally consistent recovery for the fastest possible restore with complete application data integrity.*

### Highlights

- > Continuous availability through fast, reliable data recovery
- > 100% transactional integrity of VMware snapshots, for efficient recovery without lengthy consistency checks
- > Consolidates and simplifies snapshot management and DR
- > Coordinates with VMware ESX Server and the database, email, and file systems hosted on VMs
- > Integrates with all leading applications including Oracle, Microsoft Exchange and Microsoft SQL Server, IBM DB2 UDB, and Lotus Notes/Domino
- > Cost-effective and easy to deploy; minimizes backup overhead
- > TOTALLY Open™ architecture easily integrates with VMware environments without costly infrastructure changes or impact on existing procedures

### Optimize VMware snapshot technology

Today's businesses are embracing VMware technology to enhance the efficiency of their IT operations. VMware allows a single powerful server to host many application instances through hardware abstraction. The virtualization of physical resources via VMware ESX Server enables IT managers to consolidate servers for optimal capacity utilization, reduced overhead, and streamlined application development and testing. It also facilitates cost-effective disaster recovery (DR) since there are fewer physical machines to protect.

For data protection purposes, VMware ESX Server includes utilities to take snapshots of VM instances running on the VMware ESX system. However, it lacks coordination with the hosted applications to make them aware that a snapshot is about to take place. Without this coordination, snapshots result in crash-consistent images. If these images are used for recovery, the system behaves as if it has crashed, forcing databases, messaging applications, and file systems to undergo an extensive and cumbersome repair process that can include application reinstalls. This creates costly downtime and difficulty meeting recovery time objectives (RTO) and recovery point objectives (RPO).

Furthermore, in order to back up application data, users typically install a backup software client for each VM instance and back up using traditional methods. Because of the increased application density on the physical server, this backup method can strain server, network, and storage resources, significantly impacting VMware environment performance.

### 100% application-aware solution

FalconStor Software supports VMware environments with a compelling, application-aware tool that solves these backup issues: FalconStor Snapshot Director for VMware. This cost-effective, easy-to-deploy tool integrates into FalconStor Continuous Data Protector (CDP) and FalconStor Network Storage Server (NSS) solutions, leveraging VMware snapshot technology and enhancing it with the intelligence needed to comprehend, communicate with, and capture application-specific data.

The FalconStor Snapshot Director for VMware facilitates immediately usable snapshots of VM instances that are accurate, transactionally consistent, and up-to-the-moment. Users can quickly recover data with minimal risk of data loss, for improved data availability and an ability to meet RTO and RPO requirements.

FalconStor Snapshot Director for VMware features a TOTALLY Open architecture that integrates with existing storage infrastructures and does not require costly changes to processes. Organizations and users can enjoy the immediate benefits of rapid, consistent recovery of VM instances.

## Multiple benefits of application-aware snapshot technology

The FalconStor Snapshot Director for VMware installs directly onto the VMware ESX Server while application-specific FalconStor snapshot agents install in the appropriate virtual machines. The FalconStor Snapshot Director for VMware coordinates the snapshot process between the VMware ESX Server and the hosted applications, making sure that all applications are placed in a “hot” backup mode when VMware takes a snapshot of the entire VMware ESX storage infrastructure. As soon as the snapshot is taken, all systems return to normal operational mode.

Because systems are only in backup mode for a brief period of time, the overhead from the VMware snapshot process is minimized compared with other backup models that require VMware to remain in hot backup mode for the duration of the process. Those models incur overhead both during and after the backup process because the VMware delta file needs to submit accumulated data to the VMware file system.

The FalconStor Snapshot Director provides an additional benefit by consolidating snapshot management. In a shared-storage VMware environment, information is automatically gathered from the VMware vCenter Server. This enables it to understand where all files belonging to a given VMware ESX Server reside. When a snapshot is initiated for a given storage volume, all the appropriate VMware ESX Servers are put into backup mode. This is especially helpful in environments with multiple virtual machines, where snapshot management can become confusing and difficult to coordinate. Snapshots can be used for immediate system recovery, as a source for backup to disk or tape, and for offsite data replication.

Snapshot agents are available for a wide variety of popular database and messaging applications, ensuring full transactional integrity. By allowing the entire virtualization stack to coordinate with the SAN, the FalconStor Snapshot Director provides fast, reliable snapshots with full integrity to guarantee that the application can be easily and instantly restored. Since each protected file system and hosted application is aware that a snapshot backup has taken place, recovery is quick and simple.

## Peace of mind for your VM-hosted applications

Only FalconStor provides the intelligence and deep level of integration needed to enable VMware systems to communicate with each individual application in the “language” that it understands, for the most complete snapshots and robust data protection possible.

### Specifications

Supports	VMware ESX Server 3.01, 3.02, and 3.5
Solution Components	<ul style="list-style-type: none"><li>• FalconStor Snapshot Director for VMware runs on the VMware ESX Server</li><li>• FalconStor SAN Client software runs on each VM</li><li>• File system-specific or application-specific FalconStor snapshot agents run on their respective VMs</li></ul>
Snapshot Agents <i>Available for virtual machines operating within the VMware ESX Server environment</i>	<ul style="list-style-type: none"><li>• For Linux environments: IBM Lotus Notes/Domino, Oracle, Linux file system</li><li>• For Microsoft Windows environments: Microsoft Exchange Server, IBM Lotus Notes/Domino, Microsoft SQL Server, Oracle, Sybase, Informix, IBM DB2 UDB, SAP, Pervasive SQL, Microsoft Volume Shadow Copy Service, Microsoft Windows file systems</li></ul>

## About FalconStor

FalconStor Software, Inc. (NASDAQ: FALC), the provider of TOTALLY Open™ Data Protection solutions, delivers the most comprehensive suite of products for data protection and storage virtualization. Based on the award-winning IPStor® platform, products include the industry-leading Virtual Tape Library (VTL) with deduplication, Continuous Data Protector (CDP), File-interface Deduplication System (FDS), and Network Storage Server (NSS), each enabled with WAN-optimized replication for disaster recovery and remote office protection. Our solutions are available from major OEMs and solution providers and are deployed by thousands of customers worldwide, from small businesses to Fortune 1000 enterprises.

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