

Weekly Review

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FalconStor Provides Data Protection for VMware

By David Hill Mesabi Group

There is a strong case for using virtualization to consolidate both server and storage resources, and for good reason. The benefits of server and storage consolidation are clear. The utilization of physical resources is greatly improved, leading to long-term cost savings and the simplification of IT administrative tasks. A side benefit is that reductions in an IT infrastructure footprint can have green benefits, such as reductions in power cooling requirements.

But putting more server and storage "eggs" in fewer baskets can expose a business to greater data protection risks. That is why management of the data protection process in conjunction with server and storage virtualization is so important. If done well, the data protection process can even potentially improve data availability. That is why VMware has a great interest in data protection and why FalconStor is focusing on interacting with VMware products to help ensure that businesses have solid data protection capabilities in place.

But first a word about FalconStor, which uses a tag line of TOTALLY Open (as in TOTALLY Open Data Protection) with solutions including virtual tape library (VTL), continuous data protection (CDP) and virtualization that run on heterogeneous platforms. The company's base software product is IPStor, which is, in essence, a turbocharged software Swiss army knife platform. The IPStor software architectural base enables derivatives for multiple different sets of software functionality to be added relatively easily (in most cases, but not all!). However, IPStor is turbocharged in that its enterprise-class functionality allows it to master each of the areas that it tackles.

For a highly-specialized software vendor, FalconStor is doing well financially with \$22.2 million in revenues in the second quarter of 2008. One reason that the company is financially successful is that it has hit the jackpot in the virtual tape library (VTL) market. Among the Tier 1 OEMs for its VTL product are EMC and Sun. Such partners are not only nice to have, but, if a market takes off, as has VTL, the relationships can be lucrative as well.

Now back to data protection for virtualized environments. When you start to read the fine print about server virtualization, storage also plays a prominent role. For example, in such environments many applications share the same physical server so that even one server failure (either hardware or software) could cause a major service-level-impacting disruption. There are ways to mitigate this, such as VMware's VMotion which enables the live migration of virtual machines to ensure continuous service availability. But to work properly, VMotion requires networked storage — either SAN or NAS — shared storage resources that allow both copies of the same virtual machine to have access to the same data in case one of them fails.

It's a Snap

FalconStor has developed a set of tools that enhance data protection in VMware environments. One way of doing this is taking snapshots to protect data. A key FalconStor tool for taking and managing snapshots is the Application Snapshot Director (ASD) which provides the transactional integrity necessary to ensure that data is preserved uncorrupted. ASD runs on the ESX server within VMware's Service Console. ASD ensures that transactional integrity by coordinating the snapshot process between VMware and FalconStor snapshot

agents. In addition, ASD integrates with VMware's Site Recovery Manager (SRM), the disaster recovery and automation solution for VMware infrastructures.

ASD also works with Application Snapshot Agents which reside within each application within a virtual machine to provide what is called application-awareness. By application-aware, FalconStor means database management systems, such as Oracle and DB2 as well as office productivity — Microsoft Exchange — and collaborative applications — IBM Lotus Notes/Domino — plus the well known ERP application SAP. ASD's application-awareness means that the FalconStor tool knows what each application requires to achieve the necessary state of transactional integrity and can be used to help VMware environments maintain that state.

As an aside, FalconStor also deserves credit for using word agents as some vendors disparage the use of agents and proclaim that going agentless is better. That is not necessarily the case. An agent is a small software program that performs a specific function (such as taking a snapshot) according to a policy — at a set time, when a specific event occurs, or when invoked from another server by a master program (such as Central Client Manger, a tool that automates and streamlines application-level data protection processes). Vendors that sell agentless applications proclaim them superior as users don't have to manage an extra piece of agent software or worry about possible resource drains. However, there is a time and place for everything and in many situations agents are a practical necessity. FalconStor states that their agents are dormant until needed and don't drain system resources so the process of managing them should be miniscule if anything. Overall, we believe that FalconStor seems to have found the right time and place for agents.

Providing Disaster Recovery Protection

FalconStor also couples the Application Snapshot Director and related agents with its Network Storage Server (NSS), gateway software that provides virtualized storage and replication services and runs just above a storage array on a standard piece of Linux-based hardware. VMware has certified FalconStor NSS Gateway as a Storage Virtualization Device (SVD), i.e. software that virtualizes storage in a VMware environment. According to FalconStor, its NSS gateway is the first SVD to be integrated with VMware's Site Recovery Manager (SRM).

The combination of FalconStor's NSS and VMware's SRM has a lot of value for disaster recovery. Since NSS supports physical-to-virtual replication (as well as virtual-to-virtual replication), there is no need for one-to-one duplication of primary servers at the disaster recovery (DR) site, which results in lower overall costs for DR. Another FalconStor tool that helps with this process is the Storage Replication Adapter (SRA) which integrates the company's replication capabilities with VMware's SRM. In addition to providing the normal recovery benefits, disaster recovery scenarios can be tested at any time by using what FalconStor calls a temporary TimeView snapshot. Since it is important to test disaster recovery plans regularly, testing should be easy, fast, and non-disruptive. FalconStor's DR tools appear likely to help clients accomplish those goals.

Turning VMware Servers into Virtual SANs

FalconStor's NSS gateway can also be used as a virtual appliance to turn a VMware ESX and ESXi server into a virtual iSCSI-based SAN. By doing so, a server's internal disk storage can be transformed into an iSCSI SAN environment that multiple servers can commonly share.

This is accomplished without additional storage investments (since the storage is still physically attached to the server) and also enables the use of VMware advanced features, namely, VMotion, High Availability, and Site Recovery Manager. The solution is targeted at both the small-to-medium business (SMB) and the remote office-branch office (ROBO) markets.

The Net Net

Server virtualization provides both opportunity and risk for data protection. FalconStor has delivered a set of software tools to improve the data protection process in a VMware environment. These include tools for taking and managing snapshots on a local basis for operational recovery, but also extending those capabilities across a network to a remote site for disaster recovery protection.

In addition, FalconStor has created a simple iSCSI-based SAN solution that can enable smaller business to use shared storage to get more out of their VMware implementation as well as enabling larger businesses to extend the benefits of shared storage that a SAN enables to their remote or branch offices. An IT administrator will have to learn to understand a number of tools (as well a number of new acronyms), but the potential benefits of using the FalconStor software toolset with VMware merits further consideration.

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About the Mesabi Group

The Mesabi Group (www.mesabigroup.com) helps organizations make their complex storage, storage management, and interrelated IT infrastructure decisions easier by making the choices simpler and clearer to understand.