

# **Hifn: Not Just Another iSCSI SAN but Secure Storage for SMBs**

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## Introduction

Like larger companies, SMBs (small to medium businesses) need to store, manage and quickly access rapidly growing amounts of data. iSCSI SANs represent a cost-effective alternative to more expensive (and harder to manage) FC SANs as data repositories.

While out-of-pocket cost is important in choosing an iSCSI SAN, EMA believes SMBs also need to consider their needs for data encryption to meet regulatory and business requirements; data protection (the ability to quickly recover data in the case of a system failure or natural or man-made disaster) failover (the ability to continue to access data in the event of a system failure) and the need to provide all these functions for remote as well as central locations.

EMA believes Hifn's Swarm Encryption Storage Appliances deliver five key benefits that competitors such as LeftHand and EqualLogic either do not provide, or offer only at higher cost. In cases where competitive products do offer similar features, they do so with fewer capabilities or require more effort on the part of the customer compared to the Hifn Swarm appliances. While Hifn is less well known than other vendors, it is strategically positioned as a major provider of encryption hardware for major OEMs. Its acquisition of Siafu in July, and its status as a publicly traded company, makes it a vendor on which customers can rely to support and enhance its solutions over time.

The five areas in which HiFN excels are 1) data protection, 2) data security, 3) integrated snapshots, 4) system availability and 5) cost.

## Data Protection

In today's legal and regulatory environment, data protection means more than just being able to recover data; it also requires an ability to recover data quickly in cases where a delay increases the risk of regulatory actions or would make it harder for a company to defend itself in a lawsuit. Many iSCSI SANs use some version of RAID (most typically, RAID 5), protecting data integrity through a combination of data striping, parity striping, and mirroring so that even after a drive fails, its data remains available.

Unfortunately, RAID systems rely on a series of concepts first developed in the mid-1980s when disk drive

sizes were measured in megabytes. Today, as terabyte-sized drives appear on data center floors, the technology is obsolescing. Because drive rebuild times have not kept up with the increases in drive capacity, the time required to rebuild a failed disk can stretch to hours (in extreme cases, days)—an impossible situation for a company requiring pervasive data access. Also, should a second drive fail during the rebuild, all data is lost. A RAID 6 scheme such as that used on the HiFN Swarm 3000 series can sustain the loss of a second drive.

Hifn Swarm 3000-HA uses RAID 61, a combination of RAID 6 and RAID 1 that eliminates any single point of failure by mirroring multiple RAID 6 systems. This is not the case with competitive offerings: EqualLogic supports Raid 5, RAID 10 (mirroring plus striping) and RAID 50 (which stripes data over multiple RAID 5 systems). Such RAID 5 implementations offer no advantage when it comes to data protection and leave open several points of failure, including power loss, backplane failure, and motherboard failure.

## Data Security

Securing customer and partner data is often as important for SMBs as for enterprises. But encryption is often too expensive, too complex or (if performed through software) slows application performance unacceptably by consuming too many compute resources.

Unlike EqualLogic and LeftHand, Hifn Swarm provides hardware-based, AES 256-bit encryption that encrypts volumes at the point of creation without bogging down applications. This means data can always be encrypted even at remote sites, where hardware is more susceptible to theft. When encryption is combined with Swarm's replication feature, data is protected both "at rest" and "in flight." Key management is also included, which reduces the complexity and cost of data encryption.

## Integrated Snapshots

Hifn Swarm is built on Windows Storage Server 2003 R2, allowing its use of Microsoft's VSS technology to perform snapshots that provide instant recovery of data to ensure business continuity. Snapshot technology is also used in Swarm's replication function, reducing bandwidth demand doing replication by only transmitting changed data blocks.

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## System Availability

Hifn Swarm provides instant failover even if an entire system fails. The Swarm IP appliances implement iSCSI targets that support Multi-Path I/O (MPIO) and independent read/write operations to both sides of the RAID 61 mirrored array while keeping each side of the mirror in sync. This results in four independent data paths from the storage arrays to the network switches and two paths from the server to the switches. Using Microsoft's iSCSI initiator, an MPIO scheme can be set up to automatically failover an I/O path if a path somehow becomes unavailable.

EqualLogic and LeftHand provide failover at the controller level. For example, a single EQ system with dual controllers will failover if one of the controllers fails, but if one of the other components of the system (such as the motherboard) fails, users lose access to data. The unique HiFN Swarm synchronization algorithm also allows it to provide Active/Active failover at the systems level.

Unlike LeftHand and EqualLogic, Hifn's IP appliances support both block mode iSCSI and file-based NAS access to data within the same appliance, and allow users to utilize both forms of access simultaneously. NAS volumes inherit the same failover, encryption, and replication properties as iSCSI volumes, further reducing cost of ownership while assuring data protection, availability and security.

## Cost

Hifn Swarm offers similar capacities at a much lower cost than either LeftHand or EqualLogic, and is the only

manufacturer to offer appliances targeted for the SMB space for under \$9,000 including hardware-based encryption. Since the underlying operating system is Windows Storage Server 2003 R2, the Swarm can be used as a backup server for its volumes. Each Swarm includes an Ultra 320 SCSI port where a tape device can be connected. The combination of Swarm's snapshot feature, SCSI port for tape, and the customer-supplied backup software allows a storage administrator to literally create volumes that back themselves up. The fact that administrators can manage multiple Swarm appliances using a single GUI simplifies management and thus reduces management costs.

## Conclusion

All iSCSI SANs are not created equal. The HiFN Swarm appliance delivers important and unique benefits that better known competitors such as LeftHand and EqualLogic do not. These differentiators are not just technical bells and whistles, but deliver real value in the areas of improved security, non-stop access to data, and lower costs due to improved ease of management. Enterprise Management Associates (EMA) feels that these advanced technologies make the Hifn Swarm appliances legitimate contenders when companies require advanced data protection but must implement such protection without adding to operational expenses. Add to this the fact that this is a solution that comes from a publicly traded company that has a long history of providing key technologies to the storage industry, and it is clear to EMA that Hifn Swarm is a proven and reliable choice for SMBs that need solid, reliable, secure storage.

## Customer Comments

*Since buying a 3Tbyte HiFN Swarm iSCSI SAN and NAS gateway, IT director Derrick Arias of the City of Sunny Isles Beach, Fla., has been freed from manually restoring files from tape. The NAS gateway automatically performs twice-daily snapshots of the file shares through Windows ShadowCopy. "150 end-users at city hall can now just go to 'folder properties,' select 'previous versions,' and their snapshots are all listed there," he says. The Swarm 3000 also eased the management of the data, to assign an iSCSI initiator from one of his servers to the SAN, he only has to add the iSCSI initiator on the server and point the server at the IP address of the Swarm appliance. The initiator's name then appears automatically in the Swarm management interface, which allows him to create a volume and then check off the initiator's number in the GUI to point it at that volume. "The other products I looked at used a multi-step process where you'd have to know the long name [for the initiator], or copy and paste it several times, as well as align the data path from server to storage and the volume setup manually."*

*He's also pleased that the snapshots come without an additional charge, as would be the case with competing solutions from either NetApp or EMC. "Price and ease of administration have won us over."*

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