Because of rapidly increasing storage requirements, many industries and companies are faced with a dilemma concerning their overnight offsite backups for disaster recovery. This whitepaper proposes an economical solution to those problems.

Critical Storage

Most critical storage (especially in virtualized computing environments) is implemented with SAN block storage technology. This is typically done using a variety of connectivity solutions: Infiniband, Fibre-Channel, and/or iSCSI Ethernet.

As the amount of data stored in the volume(s) grows, a critical point is reached when the nightly offsite backups can't finish before the new business day starts. This problem is even more troubling in Tier-2 Internet markets where the bandwidth is low and the cost is high.

Storage Options

Non-critical data is often stored in the SAN and backed up nightly. This is unnecessary and adds time to the backup process. An economical and much more effective solution can be achieved by purchasing a block storage appliance from Nfina Technologies™, and offloading this non-critical data from the SAN. Because the cost of the Nfina NAS is less expensive than current SAN solutions, two units with back-up duplication could be purchased for each site. The result is a significant reduction of the amount of critical storage that is backed up nightly, assuring that backups can be completed before the next day's start of business.

Storage Operating System Considerations

Several new storage operating system features are now available that greatly help in this disaster recovery storage quest. Two key features to consider are: Deduplication, and Compression.

Deduplication is a specialized data compression technique for eliminating duplicate copies of repeating data, thus improving storage utilization. In the deduplication process, unique patterns are identified and stored during the analysis phase. As the analysis continues, other chunks are compared to the stored copy and whenever a match occurs, the redundant chunk is replaced with a marker that points to the stored chunk. Given that the same byte pattern may occur frequently, the amount of data that must be stored or transferred can be greatly reduced.

Most data stored on disk today has at least some statistical redundancy and is easily compacted, or compressed. Compressing this information cuts the amount of physical storage required to as little as one-third the space. Compression techniques work on a couple of different levels.

File system compression works on each file as it is written to disk. However, it is well known that databases make horrible file system compression candidates, while on the other hand, application logs are great candidates.

With the advent of ZFS file from Oracle® (orginally developed by Sun Microsystems®), storage appliances can now be built with the addition of compression of storage arrays at the block level.

Nfina Technologies is pleased to provide the latest storage OS from Open-E®, JovianDSS. This is a ZFS-based storage operating system, offering unlimited scalability and high performance, at the same time providing back-end storage for virtualization and backup. Thin provisioning, tiered caching and Deduplication make this an ideal solution for demanding enterprise environments. Key features include: Tiered RAM and SSD caching, Data compression, Inline data deduplication, Data integrity, Thin provisioning and over provisioning.

Location A **Location B**

Server   Server

SAN   SAN

NAS   NAS

⟷ Critical Data
Backed up nightly

⟷ Non-Critical Data
Offloaded to NAS,
backed up as necessary