



intelliSTOR™
NETWORK STORAGE ARCHITECTURE

White Paper Summary

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ABSTRACT

“It has taken 300,000 years of people to accumulate 12 exabytes of information. It will take just 2.5 more years to create the next 12 exabytes”

School of Information Management Systems at UC Berkeley.

As the dependency of organizations on their IT resources and their reliance on e-commerce, online transactions and database processing increases, the amount of data requiring storage will always expand beyond the available storage capacity. Increasing performance and scalability while reducing cost has become paramount in the storage industry as more users and companies communicate via the web. Retention of data is ever increasing, as information is the only effective tool in the net economy to gain competitive advantage. Once a peripheral concern, storage today is an issue of strategic importance.

CURRENT STORAGE MODEL

There are currently three distinct models of storage.

- Direct Attached Storage (DAS) – In this model, all internal and external storage is directly attached to a specific server; this model dictates that storage devices must be managed individually at each server. Furthermore, other servers cannot share storage space available locally to one server. In an environment where the space consumption rates of servers are unpredictable, the end result is constant over estimation and over allocation of storage space. This leads to storage islands that are harder to manage and therefore raise the total cost of ownership of an IT solution. Should a particular server run out of space, the amount of work required to increase the storage space is very labor intensive and service interruption is inevitable.
- Network Attached Storage (NAS) – NAS is a storage asset that connects to a primary network to provide **FILE LEVEL** services. NAS consists of an engine, which implements the file services and one or more storage devices. Despite the growing awareness of storage technology, many people remain unsure about NAS and SAN. This may be due to vendors casting NAS and SAN as rivals rather than complementary storage solutions.
- Storage Area Network (SAN) – SAN is a secondary network dedicated to moving **DATA BLOCKS** between server and storage assets. SAN adds a layer of abstraction between server and storage, which therefore facilitates efficient management of resources by employing the divide and conquer principle. This allows the administrators to add storage on-the-fly, take snapshot copies of data and mirror/replicate partitions all without interruption in service. Unlike DAS, SAN is built to scale terabytes of storage.

While SAN is a network that deals with movement of data blocks, NAS is involved with providing file level services to the front end or primary network. NAS represents a quick and easy way to add general purpose storage to users and some applications, whereas SAN represents a way to separate the server and storage into two independently managed systems, thereby simplifying the complexity of the over all IT infrastructure.

intelliSTOR

bigVAULT has introduced a storage solution that is built from flexible and modular building blocks based on open standard. This presents an alternative to the large monolithic solutions that have dominated the market place until now.



intelliSTOR is a network storage architecture designed with Scalability, Reliability and Flexibility as the three corner stones of its framework. Its suite of Products are built on the fundamental principal that one size **DOES NOT** fit all. intelliSTOR's unique architecture incorporates fault tolerant computing, high-speed networking and highly scalable storage all in one purpose built system. For Instance streaming media applications have different requirements than online transaction applications. Therefore, using an intelliSTOR with a SAN module is scalable to 360 MB/s bandwidth per storage module, upwards of 36TB of storage capacity and 12000 IO/s. The product line includes S-Stor a SAN module, N-Stor a NAS module and I-Stor an Internet storage module.

S-Stor Fibre Channel SAN Module

- Hardware/Software module responsible for, out-of-data-path creation and management of virtual volumes from a global storage pool.
- Allows the capability to dynamically and non-disruptively add and reconfigure storage resources.
- Provides for on-the-fly volume expansion with non consecutive storage space
- Software responsible for mirror/replication, snapshot copies without effecting host server performance.

S-Stor IP SAN Module

- All of the above features plus the ability to use IP as the underlying transport.
- Support for Fibre Channel and SCSI devices without the need of a FC to SCSI Bridge.
- Provides the capability to preserve data found on existing storage devices.
- Provides scalable IP throughput via link aggregation to multi-gigabit per second.
- Allows for an inexpensive entry point into the SAN arena.

I-Stor Internet Storage Module

- Delivers the capability to provide client side virtualization of storage. (Storage to the Desktop™)
- Enables secure online anytime anywhere access to the user's data via standard Internet browser and drive letter assignment.
- Enables collaboration within workgroup by allowing end users to selectively assign security privileges to their files and folders, including DateTime Stamp™ and upload limits to their accounts.
- Provides a feature rich IP based backup solution optimized for low bandwidth requirements.
- Includes an optional billing and reporting module for user management.

N-Stor NAS Module

- Adds standard SMB and NFS file shares, enabling any Windows or Unix client to access these shares on a LAN via standard network redirectors provided by the operating system.
- Provides the capability to take snapshots of data.
- Enables intelliSTOR to provide both block (SAN) and file (NAS) level services from a single module.

CONCLUSION

intelliSTOR is an innovative storage architecture based on open standards; it provides support for a full range of operating systems including Windows 9.x, Windows NT, Windows 2000 and major implementation of Unix. It supports the latest technologies including fibre channel controllers, drives and Gigabit Ethernet transport, enabling storage solutions which dramatically reduce the cost of network storage and infrastructure management while increasing performance and availability.