

# Storage Unification – Using iSCSI

## Reduces Operating Costs with Simple, Optimized Network Storage

### Key Features

Built on familiar standards

Flexible storage infrastructure reduces TCO

Rapid storage capacity expansion without impacting server or application operations

Reach greater distances with less infrastructure

Provides a high degree of interoperability

Unified Storage Architecture supports simultaneous transport of both file-level and block-level data

Virtual iSCSI disks are completely protected by the underlying RAID that protects the file-based data

IP storage networks are a new, cost-effective approach to deriving optimal value from both storage area networks (SANs) and network attached storage (NAS). This leapfrog step provides all the benefits of a SAN, but uses a network topology primarily based on IP networking. While IP as a SAN platform may be “emerging” for storage, IP and Ethernet have longstanding maturity and robustness from decades of use in networking. Balancing a combination of current block-accessed SAN devices with new file-accessed NAS devices increases flexibility, improves manageability, and reduces operating costs.

### The Challenge: Reaping Value from Networked Storage

Enterprises face tremendous pressure to find adequate solutions for storage needs such as data storage, protection, distribution, vendor aggregation, and capacity management. With ballooning capacity requirements, traditional storage architectures, such as direct attached storage (DAS) create an unending race to add more storage to servers even as management and administration costs skyrocket. Many companies have migrated servers with block-based DAS to Fibre Channel SANs. While this provides SAN benefits, such as higher availability, better scalability, and more efficient backup, it still falls short, requiring additional solutions such as remote backup and integration with file-based NAS. Internet Small Computer System Interface (iSCSI) is an emerging technology that creates a cost-effective bridge between these two storage disciplines.

### The Solution: Snap Servers with iSCSI Support

Networked storage is a mature and well-understood technology. The main issues slowing the transition from DAS are the cost and complexity of Fibre Channel. iSCSI technology, sometimes referred to as SCSI over IP, addresses these issues.

Snap Server™ by Adaptec supports both block (iSCSI) and file data simultaneously. Now, Ethernet-based storage deployment using Snap Servers facilitates more rapid expansion of new storage capacity without impacting individual server or application operation. With a flexible networked storage infrastructure in place, total costs decline.

iSCSI has much to offer. The most obvious benefit is cost. Gigabit Ethernet technology is far less expensive than Fibre Channel. Fibre Channel ports cost up to 50 percent more than copper Gigabit Ethernet ports, and that doesn't include the cost of the optics and host bus adapters (HBAs). Also, every IT administrator is familiar with deploying and provisioning Ethernet and TCP/IP networks. iSCSI can move data great distances over the Internet for light storage traffic or over leased lines without the need for the expensive optical gear Fibre Channel requires.

First-generation iSCSI is ideal for workgroup or departmental storage requirements. TCP/IP offload engines and faster Ethernet standards will further improve performance.

### How it Works

Internet SCSI (iSCSI) is a new Internet Engineering Task Force (IETF) standard protocol for encapsulating SCSI commands into TCP/IP packets and enabling block data transport over Gigabit IP networks. The iSCSI protocol is delivered via a standard Gigabit Ethernet port in the Snap Server. The high-level management activities of the iSCSI protocol — such as permissions, device information, and configuration — are built into GuardianOS™ by Adaptec and managed through the Snap Server administration application. The iSCSI protocol allows Snap Servers to function as a target (storage array, subordinate to a server.) With iSCSI, Snap Servers are capable of simultaneously transporting both file- and block-level data over an IP network. By using a Gigabit

**Network Transport Protocols**

- TCP/IP
- UDP/IP
- AppleTalk

**Network File Protocols**

- Microsoft Networks (CIFS/SMB)
- Linux/UNIX (NFS v2/3 over TCP & UDP)
- Apple (v2/v3)
- Web (HTTP1.1/HTTPS)
- File Transport Protocol (FTP)

**Network Block Protocols**

**iSCSI Target Support**

- Supports qualified iSCSI software and hardware initiators (see details below).

**iSCSI Software Initiator Support**

- Windows: Microsoft iSCSI Initiator v1.03, v1.04, v1.05, v1.06, v2.02
- Solaris: Cisco SN 5400 Series iSCSI Driver v3.3.5
- Linux: RHEL 3 & 4 and SLES 9: Built-in Initiator; Redhat 7.3 & 9.0: UNH-iSCSI Initiator v1.5.3
- NetWare: NetWare Initiator 6.5 SP1
  - emboot Bootable iSCSI Software for Windows
  - VMWare ESX v3.0 in-box iSCSI Initiator

**iSCSI Hardware Initiator Support**

- Intel PRO/1000T IP Storage Adapter v2.0, 2.1
- Alacritech SES1001 iSCSI Adapter
- QLogic QLA4010 iSCSI Initiator

**Solution Elements**

**Software**

- GuardianOS v3 or higher

**Snap Server Platforms**

**Fixed Capacity:**

- Snap Server 410, 210, 110

**Scalable Capacity:**

- Snap Server 650, 520
- SANbloc S50 JBOD

Ethernet port or adding an iSCSI HBA to enterprise application servers, the existing network infrastructure can be used to connect those servers to Snap Servers, which see them as local drives.

**Ideal Environments**

Snap Servers with iSCSI volumes can be used in almost any environment. Firms experiencing data growth will appreciate the value of carrying new types of data across existing infrastructure. Those considering Fibre Channel can implement a similar solution much more economically.

Existing SAN environments can now scale SAN data onto simple, scalable, and economical hardware platforms and align data value more closely with infrastructure value. Naturally, most enterprises face a proliferation of Intel architecture servers in simply diverse environments. Snap Servers now allow a common, unified and centralized location for database and application storage, and data backup and archiving.

**Storage Consolidation via iSCSI**

Server proliferation is increasing the complexity and expense of storage management in many distributed enterprise environments, where Microsoft Exchange/SQL Server, Oracle, and other

applications are significantly growing data. To support this growth, Microsoft and others are investing in the development and deployment of iSCSI. Snap Servers with iSCSI can centralize network storage for these servers and applications to deliver significant savings in total cost of ownership (TCO), and greatly improve data availability and recoverability.

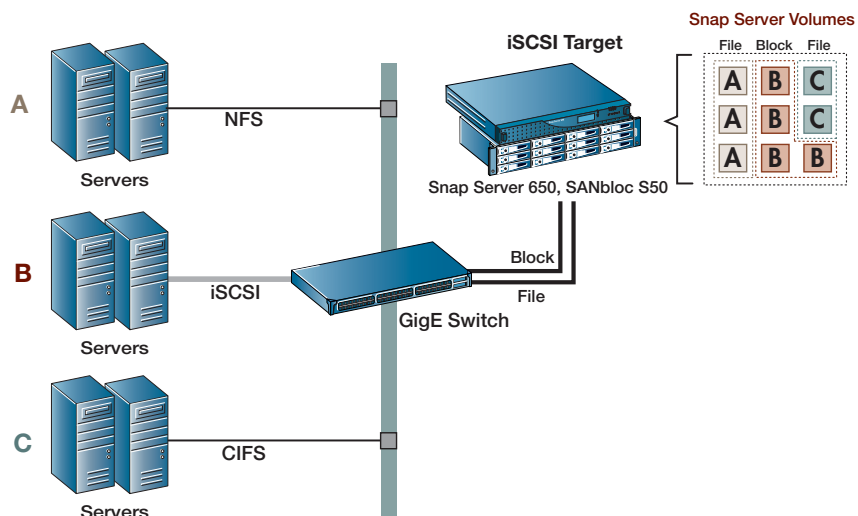
**Cost-Effective Storage Consolidation for Linux/UNIX Servers**

Many organizations are building “computer farms” of dozens of rack-mounted servers running Linux/UNIX to reduce the cost of analytical or computer-intensive applications. DAS in this environment often makes data management prohibitively complex, while traditional SANs are too costly. However, iSCSI-capable Snap Servers solve the complexity problem at an affordable price.

**Centralized SAN/NAS Data Management for Divisional Workgroups**

Server data management needs often make it impossible to support departmental and regional data centers with minimal staff. iSCSI-enabled Snap Servers let organizations easily centralize storage management using standard Ethernet infrastructure to connect servers to storage.

**Storage Consolidation Using Snap Servers for Both File and Block Services**



691 South Milpitas Boulevard  
Milpitas, CA 95035

888.343.7627 Tel  
408.262.2533 Fax

Copyright 2007 Adaptec, Inc. All rights reserved. Adaptec, the Adaptec logo, Snap Appliance, the Snap Appliance logo, Snap Server, Snap Disk, GuardianOS, SnapOS, and Snap Server Storage Manager are trademarks of Adaptec, Inc., which may be registered in some jurisdictions. Microsoft and Windows are registered trademarks of Microsoft Corporation, used under license. All other trademarks used are owned by their respective owners.

Information supplied by Adaptec, Inc., is believed to be accurate and reliable at the time of printing, but Adaptec, Inc., assumes no responsibility for any errors that may appear in this document. Adaptec, Inc., reserves the right, without notice, to make changes in product design or specifications. Information is subject to change without notice.

P/N: 906943-012 Printed in U.S.A. 03/07 3209\_6.0