DATA SHEET

Cleversafe®
The Smarter Equation

Software +/– Hardware. It's Your Choice.

Cleversafe offers flexibility of choice to scale from terabytes to petabytes to exabytes easily.

The ever-increasing repositories of digital images, audio, videos, and digital records continue to grow at an alarming pace. These large-scale repositories are built across geographies enabling global access and collaboration.

But life isn't perfect. Disks fail. Bits flip, making data useless. Servers get stolen or hacked. Network connections go down. And traditional storage architectures just weren't designed to handle this scale. How can IT professionals deliver exabyte storage that both the organization and customers can trust?

Cleversafe enables enterprises, government, and service providers to easily store and manage terabytes, petabytes or exabytes of digital content today. Gain flexibility to start locally and grow globally across multiple data centers. Cleversafe is secure, reliable and scalable at a fraction of the cost.

Count on Cleversafe

SECURE
- Secures data in motion and data at rest
- Keeps confidential information confidential
- Puts end users in control

RELIABLE
- 100 million times more reliable than RAID
- Bit-perfect storage and delivery

SCALABLE
- Just-in-time scaling
- No centralized servers
- "Always on" architecture

COST-EFFECTIVE
- Reduces storage costs by up to 70%
- Single administrator can manage terabytes to petabytes easily

Cleversafe offers the flexibility of choice.

Scale limitlessly with software or software and hardware.

Features

SECURE

SecureSlice™ Confidentiality
Cleversafe virtualizes, encrypts and disperses data, making it completely unrecognizable and inherently secure. Only authorized users can recreate their data bit-perfectly.

Network Security
Cleversafe ensures all connections between access devices and storage nodes are secure, untappable, and unspoofable. Multiple security schemes including IP access controls, SSL connection encryption and authentication certificates, work together to protect data.

RELIABLE

Tunable Reliability
Cleversafe's Dispersed Storage™ technology provides tunable reliability with K of N fault tolerance. The approach is 100 million times more reliable than RAID, and enables configuring reliability to match system requirements and infrastructure.

PerfectBits™ Integrity
Cleversafe guarantees bit-perfect data storage and delivery. With two levels of integrity checks, the solution ensures data cannot be modified without authorization, detects malicious threats, and self-heals by proactively detecting and correcting bit errors.

SCALABLE

Exabyte Scale
With secure multi-tenancy, different applications securely share the same storage resources. Cleversafe's object storage enables data mobility, scalability, and storage efficiency crucial for exabyte scale storage.

"Always On" Architecture
Since Cleversafe's architecture has no centralized servers, capacity and performance are scaled independently without interruption. Just-in-time scaling and zero downtime upgrades means the system runs smoothly 24/7.

COST-EFFECTIVE

Storage Efficiency
Disaster recovery is achieved without costly replication. Thin provisioning is built in. And it utilizes industry standard, high density drives. This adds up to a green solution that uses less power and space, and lowers the total cost of ownership.

Easy to Manage
A single administrator can manage terabytes to petabytes easily with an easy to use web-based application for provisioning and system monitoring.

SOFTWARE

Manager 2100

Comprehensive Insight

- Fault management
- Reporting
- Provisioning
- Performance monitoring
- Storage configuration
- System optimization

Accesser Software

Dispersed Storage Router

- Slices
- Disperses
- Retrieves data

Slicestor® Software

Dispersed Storage Servers

- Storage for slices
- Single site or multi-site
- Capacity based pricing

HARDWARE

Manager 2100

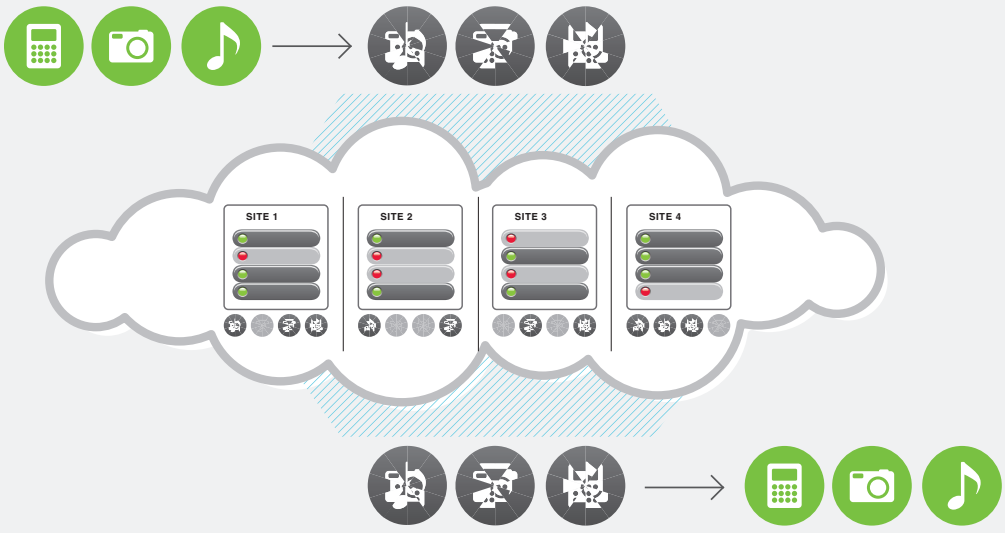
Accesser® 2100

Slicestor® Series

Slicestor 2100
8 TB raw capacity
1U form factor

Slicestor 2210
24 TB or 36 TB raw capacity
2U form factor

How Cleversafe Works

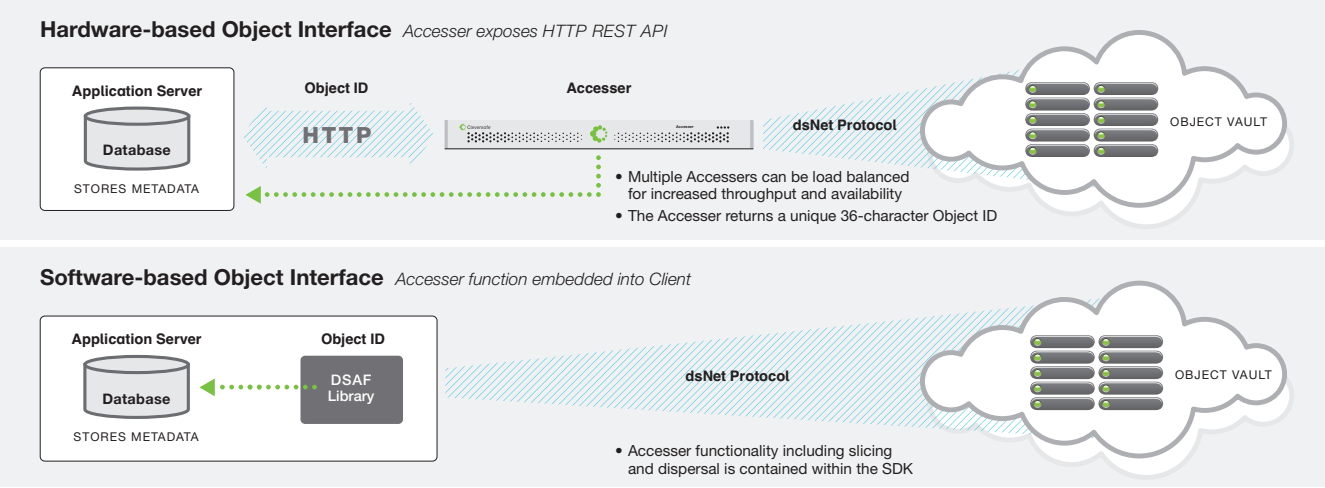


1 Cleversafe slices and scrambles data using Information Dispersal Algorithms

2 Cleversafe distributes the slices to separate disks, storage nodes and geographic locations

3 Even with individual servers or entire sites down, Cleversafe delivers real time bit perfect data retrieval from a subset of the data slices

Object-Based Access Methods



Specifications

APPLIANCES

Capacity

Slicestor Raw Capacity	4, 8, 24 TB (36 TB coming in Q4 2011)

Processors, Memory and Storage

Accesser® 2100	Intel Quad Core Xeon 2.4 GHz, 8 MB cache 4 × 4 GB DDR3 ECC/REG SDRAM 1 × 500 GB 7200 RPM Enterprise Class SATA HDD Redundant Power Supplies
Slicestor® 2100	Intel Dual Core 2.6 GHz, 800 MHz, 2 MB cache 2 × 1 GB DDR2 SDRAM 4 × 2 TB 7200 RPM Enterprise Class SATA HDDs
Slicestor® 2210	Intel Quad Core Xeon 2.8 GHz, 8 MB cache 4 × 4 GB DDR3 ECC SDRAM 12 × 2 TB or 3 TB 7200 RPM Enterprise Class SATA HDDs Redundant Power Supplies
Manager 2100	Intel Quad Core Xeon 2.4 GHz, 8 MB cache 2 × 4 GB DDR3 ECC/REG SDRAM 2 × 1 TB 7200 RPM Enterprise Class SATA HDDs Mirrored (RAID 10) Redundant Power Supplies

Software

All Appliances	**OPERATING SYSTEM** ClevOS™ – Cleversafe Linux OS variant optimized for information dispersal **SUPPORTED CLIENTS** Linux Open iSCSI Initiator / Microsoft iSCSI Initiator
Software Features	• Dispersed Storage protocol and configuration to meet reliability requirements • Cyclical Redundancy Check to ensure data at rest integrity • SecureSlice technology for data at rest confidentiality • SmartWrite technology improves write performance • SmartRead technology improves read performance
Management	• Separate out of band management process polling core components of a dsNet • Web-based configuration and management • Standard reporting and interfaces into higher management framework • Interactive graphs and management framework provide customers with intuitive management and IT reporting tools
Protocols	• HTTP, WebDAV and RESTful interface for object interface • S3 API Compliance (coming in Q4 2011)

Network Interface

Accesser® 2100	2 × 1GigE on-board + 2 × 1GigE add-in NIC 2 × 10GigE add-in NIC (optional) w/o cables
Slicestor® 2100	2 × 1 GigE on-board
Slicestor® 2210	2 × 1 GigE on-board
Manager 2100	2 × 1 GigE on-board

Physical Planning

Accesser® 2100	**FORM FACTOR** 1 U rack mounted **DIMENSIONS (W×H×D)** 17.2" × 1.7" × 25.6" **WEIGHT** 45 lbs (20.4 kg) **POWER** 205 W (1 GbE maximum) / 210 W (10 GbE maximum); 100/240 AC power
Slicestor® 2100	**FORM FACTOR** 1 U rack mounted **DIMENSIONS (W×H×D)** 17.2" × 1.7" × 19.8" **WEIGHT** 40 lbs (18.1 kg) **POWER** 210 W (maximum); 100/240 AC power
Slicestor® 2210	**FORM FACTOR** 2 U rack mounted **DIMENSIONS (W×H×D)** 17.2" × 3.5" × 25.5" **WEIGHT** 75 lbs (34.0 kg) **POWER** 530 W (maximum); 100/240 AC power
Manager 2100	**FORM FACTOR** 1 U rack mounted **DIMENSIONS (W×H×D)** 17.2" × 1.7" × 25.6" **WEIGHT** 45 lbs (20.4 kg) **POWER** 200 W (maximum); 100/240 AC power

Environment

Operating Temperature	10 to 35°C (50 to 95°F)
Non-Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	8% to 90% (non-condensing)
Non-Operating Humidity	5% to 95% (non-condensing)

Compliance

Regulatory	RoHS, FCC, ICES, EN, VCCI, CE, UL (US and Canada), CSA (US and Canada), NOM

This product includes software developed by the following contributors: OpenSSL Project for use in the OpenSS Toolkit (http://www.openssl.org); Eric Young (eay@cryptsoft.com); Jordan Ritter; University of California, Berkeley and its contributors; Systemics Ltd (http://www.systemics.com); and Digital Creations for use in the Z Object Publishing Environment (http://www.zope.org).

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