STORAGE CENTER TECHNICAL SPECIFICATIONS

Compellent is built on a flexible, persistent platform that supports the continual adoption of new technologies as you grow. You can easily mix and match drive technologies and build a unified storage solution without ever worrying about a forklift upgrade. Integrated software applications allow you to move beyond simply storing data to actively, intelligently managing data to cut the time, cost and risk of enterprise storage.

Modular, Scalable Hardware

» Standards-based, technology independent

» Highly available architecture

» Add capacity, connectivity and performance incrementally to match demand

» Mix and match any number of drives, and enclosures (including multiple-speed SAS drives in the same enclosure)

» Choose from Storage Center with NAS (Windows Storage Server 2008-based) or zNAS (ZFS-based) network attached storage solutions for file-level requirements

Intelligent, Automated Software

» Suite of powerful, innovative software applications

» Provision unlimited volumes from a single, shared pool

» Optimize utilization, speed local and remote replication

» Automate tiered storage

Intuitive, Unified Interface

» Centralized, point-and-click wizard-based setup and management

» Comprehensive Phonehome capabilities

» Automatic notification when user-defined capacity thresholds are reached

» Advanced storage resource management capabilities

INTERFACE

Management Interface

Centralized interface streamlines administration and speeds common storage management tasks.

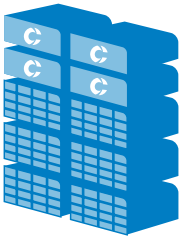
SOFTWARE

Applications

A powerful suite of enterprise capabilities to manage your data.

- Automated Tiered Storage
- Thin Provisioning
- Storage Virtualization
- Unlimited Snapshots
- Remote Replication
- Reporting

HARDWARE



Disk Enclosures

- Supports any external interfaces and disks
  - SAS
  - Solid State
  - Fibre Channel
  - Serial ATA
- Storage Center with NAS (boots from Compellent SAN)
- zNAS (boots from Compellent SAN)

Controllers

- Clustered controllers provide automatic failover
- Seamlessly connects to any open-systems server without the need for server agents
- Mix and match Fibre Channel and iSCSI server connectivity

CONTROLLER	SERIES 20	SERIES 30
Number of Controllers	1 or 2	1 or 2
PCI Expansion Slots	PCI-X = 4 PCI-E = 1	PCI-X = 1 PCI-E = 4
Expansion Slot Adapters	Fibre Channel and/or iSCSI	Fibre Channel, iSCSI, SAS
Maximum Number of Ports	18	18
Modular Architecture	Yes	Yes
Processor Speed	3.2 GHz	3.0 GHz Dual-core
Active/Active Cluster	Yes	Yes
Power Supplies Redundant and Hot-swappable	Yes	Yes
Cooling Fans Redundant and Hot-swappable	Yes	Yes
Controller(s) Redundant and Hot-swappable	Yes, with Clustered Controllers	Yes, with Clustered Controllers
Controller Cluster Distance	300 meters	300 meters
CACHE	**SERIES 20**	**SERIES 30**
Maximum Cache Size per System	2.25 GB	3.50 GB
Multi-threaded Read Ahead, Mirrored Write Cache	Yes	Yes
Cache Back-up Battery	72 hours	72 hours

Storage Center Hardware continued

FRONT END (HOST) INTERFACE	SERIES 20 & SERIES 30
Host Interface Support	Fibre Channel (4 Gb) iSCSI
Simultaneous Host Interface Support	Yes, Fibre Channel and/or iSCSI
Maximum Host Ports	16
Fabric Switch Support	Yes
Host Operating System Support	Microsoft Windows, Sun Solaris, HP-UX, Linux, IBM, AIX, Novell NetWare, Apple, Tru64, VMware
Server Agent Required	No
Microsoft Cluster Server Support	Yes
Microsoft Multipath Input/Output (MPIO) Support	Yes
File-level Support	Yes, Storage Center with NAS and zNAS Boot from Compellent SAN

DISK ENCLOSURES	FC	SATA	SAS
Disk Enclosure Interface Speed	4 Gb	2 Gb	3 Gb
Max Number of Backend Ports	16	16	16
Max Number of Backend Loops/Chains	8	8	8
Enclosures per Loop/Chain	7	5	4
Disk Drive Support	FC	SATA	SAS
Intermixed Disk Drive Capacities	Yes	Yes	Yes
Max Number of Disk Drives per Enclosure	16	16	12
Maximum Number of Disk Drives	896	640	384
Maximum Raw Capacity	537 TB	1280 TB	384 TB
Disk Drive Capacities	SSD: 146 GB 15,000 RPM: 300 GB, 450 GB, 600 GB 10,000 RPM: 450 GB	7,200 RPM: 1 TB, 2 TB	15,000 RPM: 450 GB 7,200 RPM: 1 TB
RAID Level Support	RAID 0, 5, 6 and 10	RAID 0, 5, 6 and 10	RAID 0, 5, 6 and 10
Power Supplies Redundant and Hot-swappable	Yes	Yes	Yes
Disk Drives Redundant and Hot-swappable	Yes	Yes	Yes
Automatic Drive Failover	Yes	Yes	Yes
Automatic Drive Rebuild	Yes	Yes	Yes
Maximum Number of Hot Spares	Configurable	Configurable	Configurable

NETWORK ATTACHED STORAGE	STORAGE CENTER WITH NAS	zNAS
Hardware		
Form Factor	1U rack mount	1U rack mount
Clustering	Yes, up to 16 NAS 1U servers	Yes, 2 1U configuration
CPU	Dual-Core Xeon 5240 (3.0 GHz), 64-bit	2 Quad-Core Xeon E5540 (2.53 GHz), 64-bit
Memory Capacity	8 GB FB DDR2 RAM	24 GB or 48 GB ECC DDR3 DIMM RAM
Expansion Slots	2 PCI-Express, 1 universal I/O slot	2 PCI-Express
Network Connectivity	LAN: 2 on-board 1 Gb Ethernet ports, 1 quad-port 1 Gb add-on NIC card SAN: 1 dual-port 4 Gb FC HBA, or 1 dual-port 1 Gb iSCSI HBA	LAN: 2 on-board 1 Gb Ethernet ports, 1 quad-port 1GbE add-on NIC card SAN: 1 PCI-Express dual-port 8 Gb FC HBA
Remote Management	IPMI card	Embedded IPMI card
Hard Disk	No, boot from SAN (diskless)	No, boot from SAN (diskless)
Peripheral Devices	CD/DVD-ROM	CD/DVD-ROM
High Availability	Redundant power supplies	Redundant power supplies, clustered heads with active/active failover
Software		
Platform	Windows Storage Server 2008	OpenSolaris ZFS
OS Environment	Ideal for Windows CIFS	Ideal for Unix or mixed CIFS/NFS
Administration	Active Directory	LDAP or mixed
WORM	n/a	Optional

PORTABLE VOLUME	
Number of Disk Drives (per kit)*	2 enterprise-class external hard drives
Disk Drive Capacity	2 TB each
Connectivity	USB 2.0
Encryption**	128-bit AES
SAN Auto-detect	Yes
Travel Case	Ruggedized w/TSA-approved lock

Available as complete kit only. Multiple kits can be used concurrently.

***User selectable.*

Operating Environment

	SERIES 30 CONTROLLER	SERIES 20 CONTROLLER	SBOD FIBRE CHANNEL ENCLOSURE	JBOD SATA ENCLOSURE	EBOD SAS ENCLOSURE
Physical Configuration	Rack	Rack	Rack	Rack	Rack
Height	5.2" (132 mm), 3 EIA Units	5.1" (132 mm), 3 EIA Units	5.12" (130 mm), 3 EIA Units	5.12" (130 mm), 3 EIA Units	3.46" (87.9 mm), 2 EIA Units
Width	17.2" (437 mm)	17.1" (434 mm)	19.0" (482.6 mm)	17.6" (447 mm)	19.01" (483 mm)
Depth	25.5" (648 mm)	25.5" (648 mm)	19.7" (500 mm)	21.7" (551 mm)	24.8" (630 mm)
Weight	75 lbs. (34.1 kg)	75 lbs. (34.1 kg)	77.6 lbs. (35 kg)	81 lbs. (30.5 kg)	57.2 lbs. (26 kg)
Power Consumption	360 watts	375 watts	450 watts	450 watts	580 watts
Power Supplies	Dual (redundant)	Triple (redundant)	Dual (redundant)	Dual (redundant)	Dual (redundant)
Heat Dissipation (BTU/hr)	1,229	1,280	1,540	1,540	1,540
Temperature	50ºF - 95ºF (10ºC - 35ºC)	50ºF - 95ºF (10ºC - 35ºC)	41ºF - 104ºF (5ºC - 40ºC)	41ºF - 104ºF (5ºC - 40ºC)	41ºF - 104ºF (5ºC - 40ºC)
Humidity (non-condensing)	8% - 90%	8% - 90%	20% - 80%	20% - 80%	8% - 80%
Inlet Type	NEMA 5-15/CS22.2, n˚42	NEMA 5-15/CS22.2, n˚42	NEMA 5-15/CS22.2, n˚42	NEMA 5-15/CS22.2, n˚42	NEMA 5-15/CS22.2, n˚42

EMISSIONS/SAFETY	
Controller Series 20 & 30	FCC Class B; EN55022 Class B; EN 61000-3-2/-3-3; CISPR 22 Class B; EN55024/CISPR 24; (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11); EN60950/IEC 60950 Compliant UL Listed (USA), CUL Listed (Canada), TUV Certified (Germany), CE Marking (Europe)
Enclosure SBOD Fibre Channel	UL and cUL listed. Tested to UL/IO/EN 60950. Certified Body Certificate and Report to IEC60950. CE marked to the requirements of the Low Voltage Directive 73/23/EEC and the Electromagnetic Compatibility Directive 89/336/EEC. FCC Class A. EMC: EN55022/EN61000-3-2, EN61000-3-3
JBOD SATA	UL and cUL listed. Tested to UL/IO/EN 60950. Certified Body Certificate and Report to IEC60950. CE marked to the requirements of the Low Voltage Directive 73/23/EEC and the Electromagnetic Compatibility Directive 89/336/EEC. FCC Class A. EMC: EN55022/EN61000-3-2, EN61000-3-3
EBOD SAS	EMC FCC pt15B Class A, EN55022 Class A, CISPR 22 Class A, EN 55024, CISPR24, aEN61000-3-2/3, CNS13438 Safety EN/IEC/UL 60950-1, CNS14336 CB report: CE, UL, cUL, FCC, BSMI

Storage Center Software

Storage Center Core

Disk Virtualization	Manage disks as a single pool and present disk resources to any server.
Port Virtualization	Increase port capacity, disk bandwidth and I/O connectivity while enhancing failover.
Server Mapping	Rapidly map hundreds of virtual servers simultaneously.
Disk Optimizer	Intelligently restripes data as disks are added to optimize performance.
Thin Import	Convert data from legacy systems into thin provisioned volumes on a Compellent SAN.
Application Optimizer	Set the size of data transfers within the SAN to match I/O performance for different applications.
Copy-Mirror-Migrate	Make copies or mirrors and migrate volumes without impacting users.
Boot from SAN	Allow diskless servers to share storage resources and boot from the SAN.
Heterogeneous OS	Support any number of simultaneous operating systems.
LUN Masking	Hide unassigned LUN/ID numbers for secure storage domains.
Performance Monitoring	Real-time reports to identify and optimize performance and utilization.
Unified User Interface	Enterprise-level functionality through a common intuitive user interface.
System Administration	Operate from any standard browser. Create unique user profiles with administrator configured priveleges.
Remote Monitoring/ Phonehome	Remotely report status and automatically trigger service responses.

About Compellent

Compellent Technologies (NYSE: CML) provides Fluid Data storage solutions that automate the movement and management of data at a granular level, enabling organizations to constantly adapt to change, reduce costs and secure information against downtime and disaster. This patented storage automation and built-in intelligence provides significant efficiency, scalability and ease of use. With an all-channel sales network in 35 countries, Compellent is one of the fastest growing enterprise storage companies in the world. For more information and news, visit www.compellent.com.

Storage Center Applications

Data Instant Replay	Create space-efficient Replays (snapshots) that restore data instantaneously while ensuring the integrity of enterprise application data spanning multiple volumes (Consistency Groups).
Remote Instant Replay	Create space-efficient Replays (snapshots) of data at multiple locations and expedite initial synchronization (Portable Volume).
Dynamic Capacity	Allocate space based on actual data written (Thin Provisioning).
Data Progression	Automate tiered storage between storage classes based on user-defined rules.
Fast Track	Place active data on the outer tracks of a disk.
Dynamic Controllers	Cluster storage controllers to increase system availability and performance.
Enterprise Manager	Comprehensive monitoring, reporting and remote replication management.
Multipath Manager for Microsoft Servers	Failover and load balancing for Microsoft Servers (MPIO).
Replay Manager for Microsoft Servers	Non-disruptive Replays for Microsoft Servers (VSS).

HARDWARE AND SOFTWARE WARRANTY

- 5-Year Hardware Warranty
- 90-Day Software Warranty
- 24x7 Call Center Support
- Advance Hardware Parts Exchange

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