



6GB SAS to SAS

Highlights

Reliability and Availability

- Snapshot and volume copy/mirror functionality enables quick data recovery after logical and physical errors
- Redundant and hot-swappable hardware components eliminate single point of failure
- Multiple hardware RAID levels protect data against drive failure
- CacheSafe technology protects cached data during a power outage

Performance

- Leading performance supports demanding business applications
- Leverage 2.5-inch drives to achieve optimal performance density
- Hybrid SAS/iSCSI connectivity models offer remote replication and DAS/SAN consolidation

Optimized Utilization

- Thin provisioning optimizes capacity utilization and simplifies storage planning and monitoring

Scalability

- Scale capacity (up to 144 drives) as needed through expansion enclosures

Management

- User-friendly and intuitive SANWatch interface allows for simple storage management

Green

- Energy efficient power supplies
- Dynamic cooling
- Intelligent multi-level drive spin-down

Downtime can have serious consequences for enterprises and SMBs. The challenge for SMBs is to pro-actively prevent downtime within a limited budget. With today's price points in mind, CRS provides comprehensive data protection to ensure highest data availability for Fibre Channel and iSCSI- host systems in storage area networks (SAN) and SAS-host systems in direct attached storage (DAS) environments. Coupled with advanced hardware, modular architecture, easy and intuitive management and exceptional price- performance, CRS brings price-conscious companies a decisive competitive edge by making IT efficiency keep up with growing storage needs.

High-Availability Product Design Delivers Great Price-Performance

Data availability is critical to any business operation. Cheetah's CRS storage solution features high-availability hardware designs with redundant, hot-swappable hardware components, such as RAID controllers, power supplies and cooling fans, to eliminate single point of failure. Hardware RAID protection ensures data accessibility during drive failure. In the event of a power outage, CacheSafe technology will automatically leverage power of the Battery Backup Unit (BBU) to safeguard cached data by writing it to a flash module for permanent retention. To protect valuable data sets against more critical threats, CRS also supports snapshot and volume copy/mirror features. Data availability can be achieved with minimal downtime in case of human errors or data volume failure by employing these features. Leveraging Cheetah's world-class RAID engine, the CRS SAS-series delivers excellent performance for demanding business applications. The models supporting Small Form Factor (SFF) drives can further increase performance density to support highly IO-intensive applications.

Flexible Scalability

The CRS storage solution supports dynamic scaling to aid in the planning for future storage growth while satisfying current storage needs. Flexible drive type and capacity support (2.5-inch or 3.5-inch SAS drives and various drive sizes) satisfies current applications and enables you to accommodate future needs. A single CRS SAS-series storage system can be expanded up to 144 drives to meet the proliferation of storage growth. The "scale as you grow" flexibility of the CRS storage solution minimizes upfront investments and provides the best overall Total Cost of Acquisition (TCA).

Intuitive and Easy Management

Storage management should be simple. The CRS storage solution includes a comprehensive management software suite, SANWatch, to centrally manage multiple CRS subsystems over a standard TCP/IP network. CRS status and event information summary can be viewed on the portal window. Necessary functions to configure, manage and monitor the CRS are only a few clicks away. Besides providing all firmware features through a user-friendly GUI, SANWatch also supports script-based configuration of multiple CRS subsystems simultaneously. Automatic critical event notifications can be customized to suit the most critical storage environment. SANWatch will guide users through initializing, configuring and maintaining the CRS every step of the way.

High Energy Efficiency

Contributing to environmental sustainability, the CRS storage solution enables energy cost savings while maintaining performance. It is equipped with power saving designs such as high-efficiency power supplies, dynamic cooling mechanism and intelligent multi-level drive spin-down technology.

Technical Specifications

6Gb/s SAS to 6Gb/s SAS

	CRS S-S24-S2240	CRS S-S16-R2240 CRS S-S16-S2240	CRS S-S12-R2240 CRS S-S12-S2240	CRS S-S04-S2240
Hardware Configurations				
Storage Controller	Single	Dual redundant or single	Dual redundant or single	Single
Host Connectivity (per controller)	Two (2) 6Gb/s SAS 4x wide ports			
Cache Memory (per controller)	Default 1GB ¹ , up to 4GB			
Drive Connectivity	Exclusively 6Gb/s SAS			
Max. Drives (per system)	24	16	12	4
Max. Drives (via JBOD)	104	112	84	-
Expansion Enclosure (JBOD)	CRS S-S16 -J2000-S	CRS S-S16 -J2000-R CRS S-S16 -J2000-S	CRS S-S12 -J2000-R CRS S-S12 -J2000-S	-
SAS Expansion Port (per controller)	1 x 6Gb/s SAS 4x wide port	1 x 6Gb/s SAS 4x wide port	1 x 6Gb/s SAS 4x wide port	-
Supported Drives ²	300GB, 450GB or 600GB - 3.5" 15,000 RPM 6Gb/s SAS drives 1TB or 2TB - 3.5" 7,200 RPM 6Gb/s Nearline SAS drives 300GB, 450GB or 600GB - 2.5" 10,000 RPM 6Gb/s SAS drives			
Power Supplies	Three redundant 405W	Two redundant 530W	Two redundant 530W Two redundant 350W	Single 200W
Form Factor ³	4U, 19-inch rackmount	3U, 19-inch rackmount	2U, 19-inch rackmount	1U, 19-inch rackmount
Green	80 PLUS-certified power supplies ⁴ delivering more than 80% energy efficiency Intelligent multi-level drive spin-down			
RAID Configurations	RAID level 0, 1(0+1), 3, 5, 6, 10, 30, 50, 60 Up to 32 logical drives and 64 partitions per logical volume Up to 1024 LUNs			
Data Services				
Local Replication ⁵	Snapshot	Standard License: 64 / Advanced License: 256 Standard License: 1,024 / Advanced License: 4,096		
	Volume Mirror/Copy	Standard License: 16 / Advanced License: 32 Standard License: 4 / Advanced License: 8 Standard License: 64 / Advanced License: 256		
Thin Provisioning ⁶	"Just-in-time" capacity allocation optimizes storage utilization and eliminates allocated but unused storage space.			
Availability and Reliability	Redundant, hot-swappable hardware modules Multi-pathing support (EonPath); Device mapper support CacheSafe technology: protects cached data during power outage by flushing data into flash memory			
Management	SANWatch management suite; Embedded RAIDWatch; Terminal via RS-232C; Telnet/SSH; LCD keypad panel			
Notification	Email, Fax, LAN broadcast, SNMP traps, SMS, MSN messenger			
OS Support²	Windows Server 2003, Windows Server 2008, Windows Server 2008 R2 (including Hyper-V), Red Hat Enterprise Linux, VMware			
Service and Support⁷				
Standard Service	3-year limited hardware/software warranty and 8x5 phone, web and email support			
Upgrade/Extension Options ⁸	Replacement part dispatch on the next business day (up to 5 years) Advanced Service: 24x7 phone, web and email support + on-site diagnostics on the next business day (up to 5 years) Premium Service: 24x7 phone, web and email support + on-site diagnostics in 4 hours (up to 5 years) Extended Standard Service up to 5 years			

Technical Specifications

6Gb/s SAS to 6Gb/s SAS

	CRS S-S24-S2240-4	CRS S-S16-R2240-4 CRS S-S16 -S2240-4	CRS S-S12 -R2240-4 CRS S-S12 -S2240-4
Hardware Configurations			
Storage Controller	Single	Dual redundant or single	Dual redundant or single
Host Connectivity (per controller)		Four (4) 6Gb/s SAS 4x wide ports	
Cache Memory (per controller)		Default 1GB ¹ , up to 4GB	
Drive Connectivity		Exclusively 6Gb/s SAS	
Max. Drives (per system)	24	16	12
Max. Drives (via JBOD)	104	112	84
Expansion Enclosure (JBOD)	CRS S-S16 -J2000-S	CRS S-S16 -J2000-R CRS S-S16 -J2000-S	CRS S-S12 -J2000-R CRS S-S12 -J2000-S
SAS Expansion Port (per controller)		1 x 6Gb/s SAS 4x wide port	
Supported Drives ²	300GB, 450GB or 600GB - 3.5" 15,000 RPM 6Gb/s SAS drives 1TB or 2TB - 3.5" 7,200 RPM 6Gb/s Nearline SAS drives 300GB, 450GB or 600GB - 2.5" 10,000 RPM 6Gb/s SAS drives		
Power Supplies	Three redundant 405W	Two redundant 530W	Two redundant 530W Two redundant 350W
Form Factor ³	4U, 19-inch rackmount	3U, 19-inch rackmount	2U, 19-inch rackmount
Green	80 PLUS-certified power supplies ⁴ delivering more than 80% energy efficiency Intelligent multi-level drive spin-down		
RAID Configurations	RAID level 0, 1(0+1), 3, 5, 6, 10, 30, 50, 60 Up to 32 logical drives and 64 partitions per logical volume Up to 1024 LUNs		
Data Services			
Local Replication ⁵	Snapshot	Snapshot images per source volume Snapshot images per system	Standard License: 64 / Advanced License: 256 Standard License: 1,024 / Advanced License: 4,096
	Volume Mirror/Copy	Source volumes per system Replication pairs per source volume Replication pairs per system	Standard License: 16 / Advanced License: 32 Standard License: 4 / Advanced License: 8 Standard License: 64 / Advanced License: 256
Thin Provisioning ⁶	"Just-in-time" capacity allocation optimizes storage utilization and eliminates allocated but unused storage space.		
Availability and Reliability	Redundant, hot-swappable hardware modules Multi-pathing support (EonPath); Device mapper support CacheSafe technology: protects cached data during power outage by flushing data into flash memory		
Management	SANWatch management suite; Embedded RAIDWatch; Terminal via RS-232C; Telnet/SSH; LCD keypad panel		
Notification	Email, Fax, LAN broadcast, SNMP traps, SMS, MSN messenger		
OS Support²	Windows Server 2003, Windows Server 2008, Windows Server 2008 R2 (including Hyper-V), Red Hat Enterprise Linux, Sun Solaris, VMware		
Service and Support⁷			
Standard Service	3-year limited hardware/software warranty and 8x5 phone, web and email support		
Upgrade/Extension Options ⁸	Replacement part dispatch on the next business day (up to 5 years) Advanced Service: 24x7 phone, web and email support + on-site diagnostics on the next business day (up to 5 years) Premium Service: 24x7 phone, web and email support + on-site diagnostics in 4 hours (up to 5 years) Extended Standard Service up to 5 years		

Technical Specifications

6Gb/s SAS to 6Gb/s SAS

	CRS S-S16 -R2242 CRS S-S16 -S2242	CRS H24-R2242 CRS H24-S2242	
Hardware Configurations			
Storage Controller	Dual redundant or single		
Host Connectivity (per controller)	Two (2) 6Gb/s SAS 4x wide ports + Two (2) 1GbE iSCSI ports		
Cache Memory (per controller)	Default 1GB ¹ , up to 4GB		
Drive Connectivity	Exclusively 6Gb/s SAS		
Max. Drives (per system)	16	24	
Max. Drives (via JBOD)	112	144 ²	
Expansion Enclosure (JBOD)	CRS S-S16 -J2000-R CRS S-S16 -J2000-S	CRS H24S-J2000-R CRS S-S16 -J2000-R ³ CRS S-S12 -J2000-R ³ CRS H24-J2000-S CRS S-S16 -J2000-S ³ CRS S-S12 -J2000-H ³	
SAS Expansion Port (per controller)	1 x 6Gb/s SAS 4x wide port		
Supported Drives ⁴	300GB, 450GB or 600GB - 3.5" 15,000 RPM 6Gb/s SAS drives 1TB or 2TB - 3.5" 7,200 RPM 6Gb/s Nearline SAS drives 300GB, 450GB or 600GB - 2.5" 10,000 RPM 6Gb/s SAS drives	300GB, 450GB, 600GB - 2.5" 10,000 RPM 6Gb/s SAS drives	
Power Supplies	Two redundant 530W		
Form Factor ⁵	3U, 19-inch rackmount	2U, 19-inch rackmount	
Green	80 PLUS-certified power supplies ⁶ delivering more than 80% energy efficiency Intelligent multi-level drive spin-down Dynamic cooling ⁷		
RAID Configurations	RAID level 0, 1(0+1), 3, 5, 6, 10, 30, 50, 60 Up to 32 logical drives and 64 partitions per logical volume Up to 1024 LUNs		
Data Services			
Local Replication ⁸	Snapshot	Snapshot images per source volume Snapshot images per system	Standard License: 64 / Advanced License: 256 Standard License: 1,024 / Advanced License: 4,096
	Volume Mirror/Copy	Source volumes per system Replication pairs per source volume Replication pairs per system	Standard License: 16 / Advanced License: 32 Standard License: 4 / Advanced License: 8 Standard License: 64 / Advanced License: 256
Remote Replication ⁹	Replication source volume Replication pairs per source volume Replication pairs per system	16 4 64	
Thin Provisioning ⁹	"Just-in-time" capacity allocation optimizes storage utilization and eliminates allocated but unused storage space.		
Availability and Reliability	Redundant, hot-swappable hardware modules Multi-pathing support (EonPath); Device mapper support CacheSafe technology: protects cached data during power outage by flushing data into flash memory		
Management	SANWatch management suite; Embedded RAIDWatch; Terminal via RS-232C; Telnet/SSH; LCD keypad panel		
Notification	Email, Fax, LAN broadcast, SNMP traps, SMS, MSN messenger		
OS Support⁴	Windows Server 2003, Windows Server 2008, Windows Server 2008 R2 (including Hyper-V), Red Hat Enterprise Linux, SUSE Linux Enterprise, Sun Solaris, VMware		
Service and Support¹⁰			
Standard Service	3-year limited hardware/software warranty and 8x5 phone, web and email support		
Upgrade/Extension Options ¹¹	Replacement part dispatch on the next business day (up to 5 years) Advanced Service: 24x7 phone, web and email support + on-site diagnostics on the next business day (up to 5 years) Premium Service: 24x7 phone, web and email support + on-site diagnostics in 4 hours (up to 5 years) Extended Standard Service up to 5 years		

Technical Specifications

6Gb/s SAS to 6Gb/s SAS

	CRS H24-R2240 CRS H24-S2240	CRS H12-R2240 CRS H12-S2240	
Hardware Configurations			
Storage Controller	Dual redundant or single		
Host Connectivity (per controller)	Two (2) 6Gb/s SAS 4x wide ports		
Cache Memory (per controller)	Default 1GB ¹ , up to 4GB		
Drive Connectivity	Exclusively 6Gb/s SAS		
Max. Drives (per system)	24	12	
Max. Drives (via JBOD)	144 ²	108 ³	
Expansion Enclosure (JBOD)	CRS H24-J2000-R CRS S-S16 -J2000-R ⁴ CRS S-S12 -J2000-R ⁴ CRS H24S-J2000-S CRS S-S16 -J2000-S ⁴ CRS S-S12 -J2000-S ⁴	CRS H12-J2000-R CRS S-S16 -J2000-R ⁴ CRS S-S12 -J2000-R ⁴ CRS H12-J2000-S CRS S-S16 -J2000-S ⁴ CRS S-S12 -J2000-S ⁴	
SAS Expansion Port (per controller)	1 x 6Gb/s SAS 4x wide port		
Supported Drives ⁵	300GB, 450GB, 600GB - 2.5" 10,000 RPM 6Gb/s SAS drives		
Power Supplies	Two redundant 530W	Two redundant 380W Two redundant 250W	
Form Factor ⁶	2U, 19-inch rackmount	1U, 19-inch rackmount	
Green	Intelligent multi-level drive spin-down Dynamic cooling		
RAID Configurations	RAID level 0, 1(0+1), 3, 5, 6, 10, 30, 50, 60 Up to 32 logical drives and 64 partitions per logical volume Up to 1024 LUNs		
Data Services			
Local Replication ⁷	Snapshot	Snapshot images per source volume Snapshot images per system	Standard License: 64 / Advanced License: 256 Standard License: 1,024 / Advanced License: 4,096
	Volume Mirror/Copy	Source volumes per system Replication pairs per source volume Replication pairs per system	Standard License: 16 / Advanced License: 32 Standard License: 4 / Advanced License: 8 Standard License: 64 / Advanced License: 256
Thin Provisioning ⁸	"Just-in-time" capacity allocation optimizes storage utilization and eliminates allocated but unused storage space.		
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Management	SANWatch management suite; Embedded RAIDWatch; Terminal via RS-232C; Telnet/SSH; LCD keypad panel		
Notification	Email, Fax, LAN broadcast, SNMP traps, SMS, MSN messenger		
OS Support⁵	Windows Server 2003, Windows Server 2008, Windows Server 2008 R2, Red Hat Enterprise Linux, VMware		
Service and Support⁹			
Standard Service	3-year limited hardware/software warranty and 8x5 phone, web and email support		
Upgrade/Extension Options ¹⁰	Replacement part dispatch on the next business day (up to 5 years) Advanced Service: 24x7 phone, web and email support + on-site diagnostics on the next business day (up to 5 years) Premium Service: 24x7 phone, web and email support + on-site diagnostics in 4 hours (up to 5 years) Extended Standard Service up to 5 years		

	CRS S-S16-R1030 CRS S-S16-S1030	CRS S-S12-R1032 CRS S-S12-S1033	
Hardware Configurations			
Storage Controller	Dual redundant or single		
Host Connectivity (per controller)	Two (2) 3Gb/s SAS 4x wide ports		
Cache Memory (per controller)	Default 1GB, up to 2GB		
Drive Connectivity	Exclusively 3Gb/s SAS		
Max. Drives (per system)	16	12	
Max. Drives (via JBOD)	64 80	48 60	
Expansion Enclosure (JBOD)	CRS S-S16-J1000-R ES S-S16-J1000-R CRS S-S16-J1000-S CRS S-S16-J1000-S	CRS S-S12-J1002-R ES S-S12-J1002-R CRS S-S12-J1000-S CRS S-S12-J1000-S	
SAS Expansion Port (per controller)	1 x 3Gb/s SAS 4x wide port		
Supported Drives ¹	300GB or 450GB - 3.5" 15,000 RPM 3Gb/s SAS drives 450GB or 600GB - 3.5" 15,000 RPM 6Gb/s SAS drives		
Power Supplies	Two redundant 530W	Two redundant 530W Two redundant 350W	
Form Factor ²	3U, 19-inch rackmount	2U, 19-inch rackmount	
Green	Intelligent multi-level drive spin-down		
RAID Configurations	RAID level 0, 1(0+1), 3, 5, 6, 10, 30, 50, 60 Up to 32 logical drives and 64 partitions per logical volume Up to 1024 LUNs		
Data Services			
Local Replication ³	Snapshot	Snapshot images per source volume Snapshot images per system	Standard License: 64 / Advanced License: 256 Standard License: 1,024 / Advanced License: 4,096
	Volume Mirror/Copy	Source volumes per system Replication pairs per source volume Replication pairs per system	Standard License: 16 / Advanced License: 32 Standard License: 4 / Advanced License: 8 Standard License: 64 / Advanced License: 256
Availability and Reliability	Redundant, hot-swappable hardware modules Multi-pathing support (EonPath); Device mapper support		
Management	SANWatch management suite; Embedded RAIDWatch; Terminal via RS-232C; Telnet/SSH; LCD keypad panel		
Notification	Email, Fax, LAN broadcast, SNMP traps, SMS, MSN messenger		
OS Support¹	Windows Server 2003, Windows Server 2008, Windows Server 2008 R2 (including Hyper-V), Red Hat Enterprise Linux, SUSE Linux Enterprise, Sun Solaris, Mac OS X		
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Standard Service	3-year limited hardware/software warranty and 8x5 phone, web and email support		
Upgrade/Extension Options ⁵	Replacement part dispatch on the next business day (up to 5 years) Advanced Service: 24x7 phone, web and email support + on-site diagnostics on the next business day (up to 5 years) Premium Service: 24x7 phone, web and email support + on-site diagnostics in 4 hours (up to 5 years) Extended Standard Service up to 5 years		