



*Dual Redundant  
Controllers!*

High Capacity RAID 6 Storage

## JetStor SAS 642F

Continuing AC&NC's long track record of cost-efficient, feature-rich mid-range storage solutions, the affordable JetStor SAS 642F provides the optimal solution for your applications requiring high-performance, high-availability, easy deployment, administration, and on-line expansion.

The JetStor SAS 642F 42 bay RAID system delivers up to 1,200 MB/s read and 760 MB/s write access to up to 168 terabytes of storage to support your most demanding applications. A fifth-generation RAID controller architecture utilizes the IOP341 64-bit RISC storage processor to achieve unprecedented peak performance of 10.4 GB/sec internal bandwidth per controller. Four redundant 4 Gb/s Fibre Channel ports provide instantaneous access to your data, complete with automatic fail-over.

### ADVANCED DATA PROTECTION

Designed for mission critical applications, the JetStor SAS 642F's protects your data with:

- Redundant and hot-swappable active/active RAID controllers with shared cache
- Redundant flash image to protect configurations
- Redundant and hot-swappable power supplies, cooling blowers and air re-directors
- Redundant and automatic MPIO fail-over Fibre Channel ports
- Proactive event monitoring software
- On-line RAID set integrity verification
- A cableless design with a single backplane
- An embedded SMTP client for email notification
- An embedded SNMP agent for external monitoring applications
- MAID (Massive Array of Idle Disks) mode aids in energy-saving by reducing power consumption while the array is in idle state

Most importantly, the JetStor SAS 642F provides RAID 6 with ADS (Advanced Data Sentry) — over 1,000 times the data protection provided by RAID 5.



#### ✓ Compact Enclosure

- Up to 84 TB in 4U
- Expandable to 168 TB in 8U
- Forty two SAS/SATA bays

#### ✓ High Availability

- Dual redundant/failover hot-swappable RAID controllers
- Dual redundant/failover hot-swappable cooling with automatic airflow re-directors
- Dual/quad redundant/failover MPIO Fibre Channel ports - ALUA compliant
- RAID 6 survives two simultaneous drive failures
- Instant availability with background RAID set initialization

#### ✓ High Performance

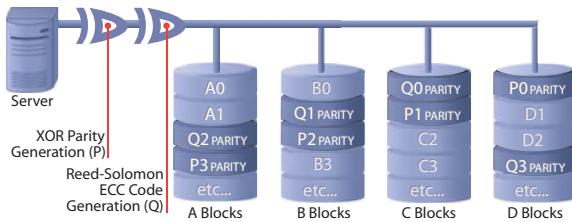
- 10.4 GB/sec peak internal bandwidth
- Optional 8Gb/s Fibre Channel ports

#### ✓ Outstanding Warranty

- Five years on disk drives and three years on all other components, extendable to five years.
- Optional advanced replacement program ships drive replacements within 24 hours. Optional on-site service also available.
- Free telephone and email support provided for the life of the unit

## State-of-the-art RAID 6 data protection

The JetStor SAS 642F's RAID 6 with ADS provides the highest level of data protection by tolerating multiple simultaneous drive failures without downtime or data loss. The JetStor SAS 642F's probability of data loss is 1/1,000 (three orders of magnitude) less than that of an equivalent RAID 5 array.

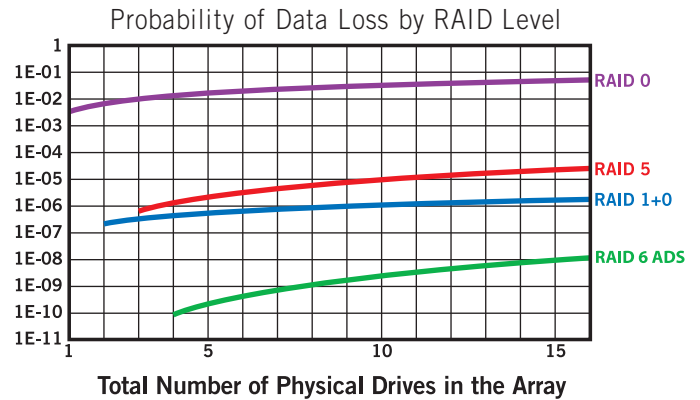


RAID 6 stores two parity blocks per stripe

Where RAID 5 writes one parity block for each stripe across the array, RAID 6 with ADS saves two parity blocks, allowing the JetStor SAS 642F to continue operating with two inoperative drives, without the loss of data or availability.

As drive sizes have increased, the time required to rebuild an inoperative drive's data has stretched to several hours. During a rebuild, data on the remaining drives within a RAID 5 array is unprotected. Should a second drive fail, the rebuild will halt, and the entire RAID set may be lost. Because RAID 6 with ADS tolerates two simultaneous drive failures, your data remains fully protected during the rebuild process.

RAID set verification may be run ad-hoc or scheduled to test every sector for proactive error detection. Furthermore, the system constantly monitors drive health to proactively predict failure, and to automatically copy data to a spare drive before the drive fails.



### RAID Specific Features

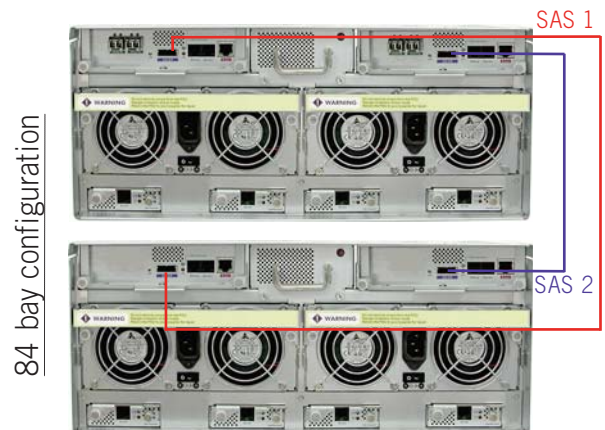
- Supports RAID levels 0, 1, 0+1, 3, 5, 30, 50, 60 and **6 with ADS**
- Up to 128 array groups
- Up to 128 LUNs
- Online and automatic RAID expansion
- Hot spares designated global or local to one RAID set
- Array roaming simplifies moving RAID drives between cabinets
- Immediate RAID availability (background RAID set initialization)
- Cache policy management for fine-tuned performance
- Online and automatic background rebuild of replacement drives
- Proactive disk failure monitoring and preemptive replacement drive cloning
- Variable stripe size for application-specific tuning
- Dual ALUA controller redundancy with mirrored cache
- RAID 6 hardware acceleration integrated within the ASIC for maximum performance

## Easily expands for future demand

The JetStor SAS 642F RAID system supports up to 84 TB within its enclosure, and is further expandable with an additional 42 bay SAS JBOD cabinet, for a total of 168 TB of high-performance, high-availability storage.

The JetStor SAS 642F provides you the choice of high-performance SAS (15,000 rpm) or less-expensive SATA (7,200rpm) drives to optimally meet your application's capacity requirements. You can choose to use "green" drives for additional energy savings.

Expansion cabinets are interconnected by two high-speed SAS cables, directly extending the system's backplane. The optional SCSI Enclosure Services (SES) interface further monitors all connected JBOD expansion cabinets without additional cabling.



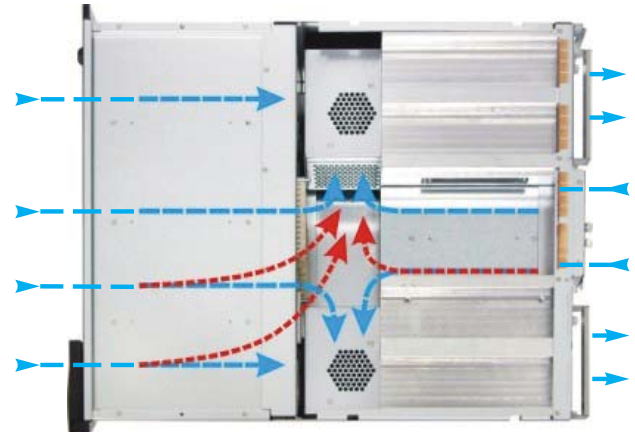
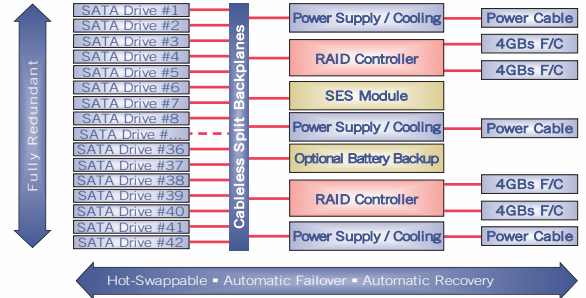
## Reliable, fault-tolerant design

The JetStor SAS 642F provides complete redundancy of all system components for non-stop, high-availability access to your data. Should any component report an error, its counterpart immediately takes over without interruption. All components may be hot-swapped while the system is on-line and operational. All redundant components are active individually, each contributing to system performance (ALUA compliant).

All components plug directly into the JetStor SAS 642F's backplanes utilizing the highest quality industry standard SAS connectors to ensure transfer speed and reliability. This simple design eliminates all cabling points of failure. All components are field-replaceable by untrained office personnel.

Each redundant component is engineered to maintain full system performance in the event of a component failure. Should a RAID controller fail, all virtual connections automatically MPIO failover to the remaining controller without interruption or data loss, continuing service with 800 MB/s access. Three power supplies are individually capable of powering a fully populated cabinet indefinitely. The JetStor SAS 642F's 1100 watt power supplies provide excess power to support future drive demands.

Innovative air flow management technologies include two dedicated intra-chassis fans to automatically redirect air within the cabinet to balance interior temperatures, forwarding airflow to the failed blower towards its counterpart. Each blower is capable of sufficiently cooling a fully populated cabinet indefinitely. This unique temperature management ensures every component maintains a consistent low temperature for the longest possible life.

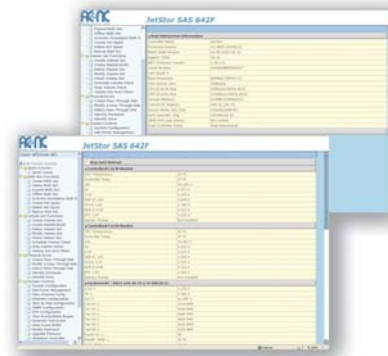


--- Normal air flow  
 --- Redirected air flow

## Easily managed over your network

The Jetstor RAID Manager configuration and monitoring software allows you to remotely manage all JetStor systems over your network. An integrated SMTP client delivers e-mail to the appropriate designated personnel of all significant events, including proactive detection of failing drives.

HTTP interface allows monitoring and management of the enclosures from any computer equipped with a web browser. SNMP (Simple Network Management Protocol) support allows the JetStor SAS 642F to be monitored by enterprise-wide infrastructure management applications.



The JetStor RAID Manager provides easy configuration, management and monitoring of all JetStor systems



## Specifications



### JetStor SAS 642F

Number of bays / size	42 bay / 4U
Maximum expansion capacity	84 bays / 8U
Storage capacity <sup>1</sup>	84TB SATA raw
Maximum storage capacity <sup>1</sup>	168TB with opt. expansion
RAID level support	0,1,0+1,3, 5, 30, 50, 60 and <b>6with ADS</b>
RAID processor(s)	Intel IOP341 64-bit RISC storage processor, embedded XOR engine
Backplane interface	PCI express X4
Disk backplane interface	Fourty-two dual-ported 3Gb SAS channels
Fibre Channel interface	Two, 4Gbit/sec Optical SFP LC ports per RAID controller
Cache (ECC supported)	2 - 4 GB per RAID controller (One 667 MHz DDR2)
Management ports	RJ45 Ethernet
Power supplies (Hot-swappable)	Two redundant N+1 1100W Two power Connections
Cooling blowers (Hot-swappable)	Dual redundant Dual re-director fans
Battery backup	Optional, 72 hour
Controller VMware Certified for vSphere	

## Warranty and support

Five years on disk drives and three years on all other components. Optional advanced replacement program ships drive replacements within 24 hours. Optional on-site service also available. Free telephone and email support provided for the life of the unit. 5 year warranty on all components is optional.

## Operating systems

Windows Server 2003, Windows Server 2008, VMware ESX and vSphere, Linux, Xen

<sup>1</sup>Maximum storage capacities are calculated with 2TB SATA drives. Drive support not limited to drive capacities listed, all future drive capacities supported when available.

All features, hardware and software performance specifications are subject to change without notice.

## Hot-swappable drive trays



Ergonomically designed drive trays allow for safe on-line replacement or expansion with SAS / SATA disk drives. No additional tools are required for drive removal at anytime.

## Convenient rear panel access



Redundant variable speed fans maintain optimal temperature inside the chassis.

Redundant, hot-swappable RAID controllers, each with two 4Gb F/C port. Optional 8Gbit ports are available.

Optional battery module keeps data online through power interruptions

Dual redundant, hot-swappable power supplies with integrated cooling and individual power connections

## Convenient front panel control



Front panel display and controls show the status of the system, power supplies, fans and drives, with an audio event alarm.

Disk status lights provide "at a glance" drive health information.