

2000 SERIES

FAQs

R/Evolution™ Architecture: Next generation storage solutions

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Flexible Host Interface Options

- 2/4Gb Fibre Channel (2722, 2730, 2730T)
- 3Gb SAS (2522, 2530)
- 1Gb iSCSI (2330)

Built in Redundancy

- RAID 0, 1, 3, 5, 6, 10, 50
- Redundant, hot swap components
- AssuredSnap™ - Built-in snapshot capability
- AssuredCopy™ - Built-in volume copy capability
- Built-in schedule capability

Scalability and Performance

- Dual or single RAID controller
- JBOD models in 12 and 24 drive configurations
- Scales to 56TB utilizing 1TB SATA drives
- SAS, SATA or mixed drive configurations
- OS Support - Windows, Linux, Solaris, VMware

Environmentally Responsible / Lower TCO

- EcoStor™ - Economically and environmentally sound technologies
 - SimulCache™ - Low latency cache mirroring
 - Battery-free cache backup
- RoHS and WEEE compliant
- Modular design protects your investment
- Enterprise-class features and functionality without the enterprise price



12 Drives - 3.5-inch disks, FC, SAS, iSCSI standard depth



24 Drives - 2.5-inch disks, FC, SAS space saving short depth

Revolutionary flexibility

The 2000 Series features both 12-drive and 24-drive arrays housed in 2 rack-unit (RU) enclosures providing a choice of interface options (FC, SAS or iSCSI) and internal SAS, SATA-II, or SSD disk drive configurations. An internal SAS interface allows up to seven disk enclosures (including the RAID enclosure) supporting a total of 56 drives on the 12-drive RAID controller modules and 96 drives on the 24-drive RAID controller modules. The 2000 Series adapts to a broad range of applications, and the capability to mix both SATA and SAS technology within a single disk enclosure provides an optimum tiered storage environment for Information Lifecycle Management.

Revolutionary performance and reliability

The 2000 Series uses revolutionary new SimulCache™ technology that instantly and simultaneously mirrors cache between RAID controllers, leading to significant performance improvements over competitive implementations. In addition, the use of RAID cache batteries has been completely eliminated with the introduction of super capacitors and compact flash, which provide infinite cache backup during a power loss while being kinder to the environment.

AssuredSnap™ and AssuredCopy™ provide the 2000 Series with built-in data snapshot and volume copy capabilities allowing users to maximize their business continuity protection.

Dot Hill makes storage easy

Configuration and management is easy with the intuitive Web Based Interface (WBI) which provides storage setup and monitoring without the need for host software.

2000 Series



EVOLUTION[®]
RAPID EVOLUTION

What is the difference between the different models of the Dot Hill 2000 Series?

The differences lie in performance, host interface, and drive size used in the chassis. The core features and functions of these products, based on the R/Evolution Architecture, are common.

- The 2730 is a Fibre Channel disk array offering up to two 2/4Gb Fibre Channel host ports per controller.
- The 2730T is the next generation Fibre Channel disk array offering additional performance over the 2730.
- The 2530 is a SAS disk array offering up to four 3Gb SAS host ports.
- The 2330 is a iSCSI disk array offering up to two 1Gb iSCSI host ports per controller.
- These all feature 3.5-inch drive technology

What is the difference between the 2522 and 2722?

The host interface is the only difference. The features and functions of these products, based on the R/Evolution Architecture, are common.

- The 2722 is a Fibre Channel disk array offering up to two 2/4Gb Fibre Channel host ports per controller.
- The 2522 is a SAS disk array offering up to two 3Gb SAS host ports per controller.
- These models feature 2.5-inch disk technology, higher performance than the models using 3.5" drives in the RAID controller, RAIDar 2.0, support for up to 256 snapshots, and a shorter chassis depth.

What are Super Capacitors?

To eliminate the use of batteries Dot Hill designed its storage arrays with fault-tolerant and extremely robust super capacitors and flash memory systems. EcoStor technology not only protects cache better than batteries, it lasts longer, charges faster and is environmentally friendly. In addition, this technology reduces costs, improves end-user experience and eliminates the need for periodic battery maintenance. EcoStor does not require lengthy battery charges at the time of initial installation or after power restores. This permits the array to operate in high-performance, write-back cache mode within minutes, instead of hours, based on traditional battery technology

What is SimulCache™?

Delivered on all Dot Hill RAID arrays, SimulCache is a data caching architecture. With Dot Hill's SimulCache, the cache memory controller eliminates the primary latency overhead and reduces bandwidth requirements on the primary cache by automatically "broadcasting" the write data to the other controller's cache. Plus, the broadcast does not require software intervention for data input/output or to support SAS target mode or simultaneous target/initiator fiber channel mode on host channels. This significantly minimizes command overhead on both controllers. And, as stated above, there is also no additional memory bandwidth required on the primary controller to mirror the write data. The overall result is an exceptionally high bandwidth, low latency, active-active write-back cache capability, which approaches the performance of a dual independent cache mode operation.

What is AssuredSnap™?

AssuredSnap is a component of the R/Evolution Architecture. AssuredSnap provides the ability to create point-in-time copies or backups of disk volumes, often called snapshots, with instant restoration of data to any captured point in time snapshot. Since AssuredSnap only copies data that has changed to disk it can virtually eliminate backup windows. The 2xx0 models support a maximum of 64 snapshots with an optional license, the 2xx2 models support a maximum of 256. All 2000 Series models include a license for 16 AssuredSnaps at no additional cost.

Are 2000 Series storage arrays compliant with new environmental standards such as Reduction of Hazardous Substances (RoHS) and Waste in Electrical and Electronic Equipment (WEEE)?

Yes, the 2000 Series is fully compliant with RoHS, utilizing the lead in solder waiver, and WEEE standards .

What management interfaces are available for the 2000 Series?

The 2000 Series can be accessed via:

- RAIDar, a graphical user interface (GUI) using industry standard web browsers, referred to as embedded web browser interface (WBI), accessed via the Ethernet port.
- A command line interface (CLI) via an RS-232 interface, or Telnet

Do any of the management interfaces require additional software on the server?

No, the management interfaces are embedded in the 2000 Series controller modules.

What drive options are available for the 2330, 2530, 2730 and 2730T which have 12 3.5-inch drives?

SAS: 146GB @ 15K RPM, 300GB @ 15K RPM, 450GB @ 15K RPM
SATA II: 500GB @ 7200 RPM, 750GB @ 7200 RPM, 1TB @ 7200 RPM, 1TB @ 5400 RPM

What drive options are available for the 2522 and 2722 which have 24 2.5-inch drives?

SAS: 36GB @ 15K RPM, 72GB @ 15K RPM, 146GB @ 10K RPM, 300GB @ 10K RPM
SATA II: models will be introduced in March of 2009
SATA SSD: 32GB SSD, 64GB SSD, 80GB SSD, 160GB SSD

What is the purpose of the additional board in the 3.5-inch drive sled?

For SAS drives the additional board is simply a pass through device. The interface board allows the single-ported SATA drives to utilize the dual paths in the 2000 Series architecture. The interface has an FC drive mechanically compatible SCA-II 40-pin connector that mates to the mid-plane. The interface includes an active-active SATA MUX, power switching FETs and the drive fault and activity LEDs. The simple microcontroller is used on the interface to decode a single-wire serial interface from each controller.

What configurations are available for the 2000 Series?

The 2000 Series is available in both single controller and fully redundant dual RAID controller configurations. Capacity is scalable via expansion JBODs.

How many expansion trays can be connected to a 2000 Series array?

Currently you can connect up to four expansion trays, providing a total of 56 disks. The maximum configuration will provide a total raw storage capacity of 56TB when configured with 1TB SATA drives.

Why are only 56 disks supported when the trays can hold up to 12 drives each?

The R/Evolution architecture utilizes 2 "addresses" for each of the drives and other entities on the internal SAS interface. Because of a limitation with the SAS expander used, only 56 drives can be supported with dual paths. An additional 4 drives can be "housed" in the tray as cold spares.

How do I connect an expansion tray to my 2000 Series array?

1. Connect a SAS cable between the top controller's expansion port and the top SAS 'In' port of the expansion tray.
 2. Connect a SAS cable between the bottom controller's expansion port and the bottom SAS 'In' port of the expansion tray.
- Expansion arrays can be added without powering down existing systems.

Can I use the high capacity SATA drives for my heavy duty cycle, business critical needs?

No, the purpose of SATA drives within the industry is for static reference data, secondary storage purposes and for use as near line storage. High performance SAS drives are ideal for your heavy duty cycle business critical needs.

How many hosts can be connected to a 2000 Series array without the use of switches?

Up to two hosts can be connected to the Fibre Channel 2722, 2730 and 2730T or SAS 2522, 2530 without the use of switches in a redundant configuration. Up to four hosts can be connected without redundancy. The 2330 supports up to 32 hosts with a switch.

What are the power requirements for the 2000 Series?

The 2000 Series power supplies are auto-ranging and can accept voltage in the range of 100 to 240 volts alternating current (VAC) with an input frequency of 50 to 60 Hz. DC power supplies can accept voltage in the range of -34 to -72 volts DC with an input frequency of -48 to -60V. The power supplies meet both domestic and international requirements. Each power supply uses standard industrial wiring with the line-to-neutral or line-to-line power connections. It is recommended that each power supply be connected to a separate circuit.

How does the 2000 Series cooling system function?

The chassis cooling system is comprised of four 80mm x 38mm fans in a tandem parallel array. These variable speed fans provide low noise and high mass flow rates. Airflow is front to back with each of the 12 drive bays drawing ambient air in at the front of the drive. The airflow then moves over the drive surfaces and then through tuned apertures in the chassis mid-plane.

What operating systems are supported by the 2000 Series?

- Windows
- Red Hat Linux
- SuSE Linux
- Solaris SPARC
- VMware

What benefits does the 2000 Series offer?

- The 2000 Series family provides innovative technologies addressing real business requirements
- SimulCache™ delivers superior cache mirroring performance in dual controller configurations
 - EcoStor™ protects write cache contents far beyond the typical 72 hours batteries offer
 - Tiered storage capabilities via SAS and SATA-II disk technologies
 - Modular hardware platform enabling future upgrades to new host interface technologies

Can I use the SAS expansion units as JBODs directly connected to a server?

Not at this time. The SAS expansion units are supported only behind a RAID controller. Additional management software development is required to support using SAS expansion units as JBODs.

Why is the R/Evolution architecture superior to other vendors providing this type of host interconnect and SAS/SATA drive support?

No one else in the industry can provide end-users with the flexibility of Dot Hill storage solutions in a rugged 2U footprint. Dot Hill's unique R/Evolution architecture provides data-in-place migration between FC, iSCSI and SAS interfaces, enables multi-tier storage with the ability to mix SAS and SATA drive configurations, allows user to tune cost-per-performance by choosing between single or dual-controller RAID systems, and enables business to grow their storage as they grow their business with scaleable capacity up to 56 or 96 drives depending on model. Most importantly, the R/Evolution architecture extends investment protection to higher levels by allowing customers the seamless ability to upgrade to new technologies without performing a "fork lift" upgrade.

What is RAID 6?

The definition of RAID 6, according to SNIA (The Storage Networking Industry Association) is: "Any form of RAID that can continue to execute read and write requests to all of a RAID array's virtual disks in the presence of any two concurrent disk failures." RAID 6 provides the additional level of protection needed to implement the use of higher capacity drives like 1TB SATA drives. RAID 6 protects against a catastrophic multi-disk failure, unlike RAID 5, which can only handle a single drive failure. A RAID 5 set comprised of these large capacity drives can take a significant amount of time to recover, during which time if another drive fails, data loss occurs.

When should I consider using RAID 6 instead of RAID 5?

Any time using large capacity drives or RAID sets consisting of >10 drives.

Is there a performance impact when using RAID 6?

Yes. RAID 6 performance, on the average, is within 3-5% of standard RAID 5 performance.

Is there a premium charge for RAID 6?

No, it is included in the base product.

What is AssuredCopy?

An array based data management service that is used to protect against a full volume or RAID group loss or corruption. AssuredCopy utilizes the snapshot technology and can copy up to 254 volumes. AssuredCopy creates a complete physical and independent copy of a specified data volume.

What is AssuredCopy used for?

AssuredCopy provides data protection to minimize data loss and enable rapid recovery of a volume, folder, or even a single file. AssuredCopy creates independent copies of production data for application support and AssuredCopy volumes can be utilized to help eliminate product application bottlenecks. Key applications to consider for use with AssuredCopy are Data Restoration, Backup, Development & Test, Decision Support & Data Mining, Data Migration and Regulatory Compliance.

Is there a premium charge for AssuredCopy?

Yes. Contact your Sales Representative for additional information.

Is the AssuredCopy license based on specific capacity points?

No, it is based on the RAID controller array. You can use AssuredCopy for any capacity supported by the array.

2000

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