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Internal SAS RAID Products Introduced

High-Throughput Redundancy For AM-8000™ Series III Systems

Dear Alpha Micro Dealer:

Several VARs have requested a high-performance RAID capability that utilizes the current high-speed Serial Attached SCSI disk drives presently used in the AM-8000 Series III systems. Alpha Micro is therefore pleased to announce a family of RAID products as options for our current AM-8000 Series III servers. This AM-453™ RAID product family is a simple and cost effective way to incorporate disk mirroring or disk striping SAS RAID technology, and it uses only one free 5.25" half-height bay!

Three Configurations Available

The AM-453 internal SAS RAID family consists of a hot-swappable, non-stop SAS disk array that can be configured for RAID Level 1 (disk mirroring), RAID Level 5 (disk striping with rotating parity), or RAID Level 5EE (disk striping and rotating parity with distributed spare) operation for AM-8000 Series III systems. It requires one 5.25" half-height drive bay for physical mounting for each four 2.5" drives included in the RAID array. The AM-453M provides RAID 1 array (disk mirroring) capabilities, while the AM-453S and AM-453E provide advanced RAID 5 and RAID 5EE capabilities, utilizing the same SAS disk drives currently sold with AM-8000 systems.

The basic AM-453 disk array can house up to four identical 2.5" hard disks (current capacity is 73GB unformatted each), mounted in hot-swappable disk drive trays, as shown in the adjacent picture.



First Option: The standard configuration **AM-453M** includes three SAS disk drives, configured for **RAID Level 1** array operation (two active drives plus a hot spare). Should one of the hard disk drives fail, an indicator light on the front panel identifies the failed drive. The hot spare is automatically and transparently rebuilt to provide the original redundancy of the disk drive that failed, resulting in no system down time due to a single drive failure. Total data capacity for this configuration is the size of a single disk drive.

Second Option: The standard configuration **AM-453S** uses a minimum of three SAS disk drives configured for **RAID Level 5** operation. RAID Level 5 configuration uses data striping and parity data to provide the data protection, and striping improves performance. Total data capacity for this configuration is (n-1) times the size of the disk drive, where n is the number of drives in the RAID array. Due to RAID 5 array redundancy, the system will continue to operate in a degraded

mode until the failed disk drive is replaced. Then the array is automatically and transparently rebuilt to provide the original redundancy of the drive that failed. Should one of the hard disk drives fail, an indicator light on the front panel identifies the failed drive.

Third Option: The standard configuration **AM-453E** includes four SAS disk drives configured for **RAID 5EE**, also known as a *hot space* [sic]. This configuration is similar to a RAID 5 array except that it includes a *distributed spare drive* and must be built from a minimum of four disk drives. Total data capacity for this configuration is (n-2) times the size of the disk drive, where n is the number of drives in the RAID array. Unlike a hot spare, a distributed spare is striped evenly across the disk drives with the stored data, parity data and cannot be shared with other logical disk drives. A distributed spare improves the speed at which the array is rebuilt following a disk drive failure. Due to RAID 5EE array redundancy, the system will continue to operate in a degraded mode until the data of the failed drive is automatically and transparently rebuilt to provide the original redundancy of the drive that failed. Should one of the hard disk drives fail, an indicator light on the front panel identifies the failed drive.

Exceptional Disk Performance

The AM-453 uses the same 2.5” 15K SAS drives used in the AM-8000 Series III. These are the fastest SAS disk drives on the market today.

Physical Configuration Overview

Constructed from steel components, the AM-453 disk drive array tray is a durable unit designed to withstand years of drive tray exchanges. It can house up to four 2.5” SAS disk drives and connects directly to the SAS ports on the AM-8000 Series III motherboard (AM-453M) or to the system RAID controller (AM-453S and AM-453E). It is a very compact unit and takes only one standard 5-1/4” peripheral slot in the system. A maximum of two AM-453 disk trays can be included in an AM-8000 system, resulting in a maximum of eight 2.5” SAS disk drives. These drives can be configured in the actual RAID array or can be set up as hot spares to facilitate array rebuilding automatically in case of a drive failure.

The base AM-453M and AM-453S family configuration includes two 73 GB SAS disk drives, plus the standard 73 GB SAS drive that is included with all AM-8000 Series III systems. Therefore, the resulting minimum system configuration that includes one AM-453 has three disk drives.

Consider purchasing an extra drive so that you have an additional disk module on hand in the event of a drive failure.

AM-453 Family Specifications

Specifications for the AM-453 internal SAS RAID family are as follows:

Interface:	SAS
Mounting:	One free 5.25” bay with front access for four 2.5” disk drives
Disk Capacity:	A total of four disk drives per mounting tray, 73 GB each

Disk Speed	15K RRM
Max Number of Drives	Eight drives total, four drives per drive tray
RAID Configuration:	RAID 1 (AM-453M) RAID 5 (AM-453S) RAID 5EE (AM-453E)
Hot Spare Configuration:	Up to two hot spares
Drive Hot Swap Capability:	Yes
Drive Auto Rebuild:	Yes
Drive Failure Alert:	Yes, visual alarm for up to eight total disk drives
RAID Controller	AM-453M - On AM-8000 motherboard AM-453S and AM-453E - PCIe controller

Availability

The AM-453 SAS RAID is available for shipment now, for current AM-8000 system builds and upgrades to existing AM-8000 Series III systems.