ARC-8088-SAS/Fibre/iSCSI

External 12Gb/s SAS RAID Controller
(Cable Solution Dual Controller)

SAS for Maximum Scalability

The 12Gb/s SAS interface supports both 12Gb/s SAS disk drives for data-intensive applications and 6Gb/s SATA drives for low-cost bulk storage of reference data. The Fibre/SAS/iSCSI to 12Gb/s SAS RAID controllers attach directly to SATA/SAS midplanes with 6 x Min SAS HD SFF-8644 external connectors or increase capacity using one additional Min SAS HD SFF-8644 external connector. The ARC-8088 supports flexibility interface configuration; 8 x 12Gb/s SAS ports, 2/4 x 16Gb/s fibre channels or 2 x 10Gb/s iSCSI channel host and 4 x 12Gb/s SAS ports expander for performance and easy expansion. When used with 12Gb/s SAS expanders, the controller can provide up to (256) devices through one or more SAS JBODs, making it an ideal solution for enterprise class storage applications that called for maximum configuration flexibility.

The ARC-8088 RAID controller provides a rack-mounted external storage chassis capable of accommodating up to 12/16/24 12.0-Gb/s, Serial-Attached SCSI (SAS) drives or 6.0-Gb/s Serial ATA (SATA) drives. It provides three kinds of host interface link to the host board on the server system. The redundant controller model provides fault-tolerant links across separate host interface, while the single controller model provides a single, straight-through data path.

Unparalleled Performance for 12Gb/s SAS

The ARC-8088 RAID controller raises the standard to higher performance levels with several enhancements including new high performance 1.2 GHz dual core ROC processor, a DDR3-1866 memory architecture and high performance PCIe 3.0 interface bus interconnection. The ARC-8088 each includes 2GB on-board DDR3-1866 ECC SDRAM. The 12Gb/s SAS is designed for backward compatibility with 6Gb/s and 3Gb/s SAS and SATA hard drives. Regardless of the drive speed, 12Gb/s SAS RAID controllers will provide maximum read/write performance improvements for the most performance-hungry database and IT applications.

The ARC-8088 includes one 12Gb/s SAS expander that incorporates the latest enhancements in SAS along with new LSI DataBolt bandwidth optimizer technology. This is designed to help facilitate the industry transition to 12Gb/s SAS-enabled systems by allowing users to take advantage of 12Gb/s speeds while utilizing existing 6Gb/s drives and backplanes. Using DataBolt, the subsystem buffers 6Gb/s data and then transfers it out to the host at 12Gb/s speeds in order to match the bandwidth between faster hosts and slower SAS or SATA devices.

Easy RAID Management

Configuration and monitoring can be managed either through the LCD control panel (optional), RS232 port or LAN port. The firmware also contains an embedded terminal emulation via the RS-232 port. The firmware-embedded web browser-based RAID manager allows local or remote to access it from any standard internet browser via a LAN port. The controller also supports API library for customer to write its own monitor utility. The Single Admin Portal (SAP) monitor utility can support one application to manage multiple RAID units in the network. The ARC-8088 firmware and EPLD has implemented the SES-2 protocol and disk activity map to SGPIO based indicator LEDs. For backplane without SGPIO supporting, the expander box also provides two kinds of alternative LED cable header to support the individual fault/activity status indicator for those backplanes. In addition to meet different enclosure, ARC-8088 box has implemented autonomous chassis management of two power supplies status connectors, four fan monitor/speed control connectors through the SES-2 protocol.

Unsurpassed Data Availability

Designed and leveraged with Areca's existing high performance RAID solution, ARC-8088 provides superior levels performance and enterprise level data protection for the most demanding next generation server and storage environments. It supports the hardware RAID 6 engine to allow two HDDs failures without impact the existing data and performance. It allows users to hot swap drive in the event of a drive failure with zero downtime. With innovative new RAID-on-Chip 12Gb/s SAS feature and support for SATA, SAS and SSDs, the SAS RAID subsystems provides small- to mid-sized enterprises with superior levels of RAID performance and scalability for external storage. The optional flash-based backup module (FBM) provides power to transfer the cache data from the SDRAM memory to the NAND flash memory if it contains data not yet written to the drives when power is lost. The subsystem also supports traditional Lithium-ion (Li-ion) battery backup module (BBM) to protect cached data on RAID adapters.

Controller Architecture

• Dual core RAID-on-Chip (ROC) 1.2GHz processor
• 2GB on-board DDR3-1866 SDRAM with ECC protection
• Write-through or write-back cache support
• Supports up to 256 SATA or SAS devices using SAS expanders
• DataBolt™ Bandwidth Optimizer for balance faster host and slower SAS or SATA devices.
• Redundant flash image for controller availability
• Real time clock support
• Support flash-based or battery backup module (FBM/BBM) ready (optional)

RAID Feature

• RAID level 0, 1, 10(1E), 3, 5, 6, 30, 50, 60, Single Disk or JBOD
• Multiple RAID 0 and RAID 10(1E) support (RAID 00 and RAID100)
• Multiple RAID selection
• Configurable stripe size up to 1024KB
• Support HDD firmware update
• Online array roaming
• Online RAID level/stripe size migration
• Online capacity expansion and RAID level migration simultaneously
• Online volume set growth
• Instant availability and background initialization
• Support global and dedicated hot spare
• Support for native 4K and 512 byte sector SAS and SATA devices
• Multiple pairs SSD/HDD disk clone function
• SSD automatic monitor clone (AMC) support
• Redundant controller operation with active/active and failover/failback function
• Dual-active RAID controller with cache mirroring through dedicated high speed bus
• Automatic synchronization of firmware version in the dual-active mode
• Multi-path & load-balancing support (MPIO)
• Max 128 LUNs (volume set) per controller
• Management port seamless take-over

Drive Interface

• Up to 24 x 12Gb/s SAS ports
• 1 x SAS "Expansion Out" for an additional JBOD enclosure

Host Interface

• **SAS-to-SAS**
  Two 12Gb/s SAS Ports
• **Fibre-to-SAS**
  Two or Four 16Gb/s Fibre channels
• **iSCSI-to-SAS**
  Two 10Gb/s iSCSI channels

Monitors/Notification

• LCD control panel for setup and configuration (optional)
• System status indication through LCD, LED and alarm buzzer
• SMTP support for email notification
• SNMP support for remote manager
• Enclosure management ready

RAID Management

• Field-upgradeable firmware in flash ROM
• Firmware-embedded manager via RS-232 port
• Firmware-embedded web browser-based RAID manager access RAID controller from any web browser via a LAN port
• Access terminal menu by telnet via a LAN port
• API library for customer to write its own monitor utility
• SAP management utility to easily manage multiple RAID units in the network

Software Drivers

• OS Independent

Environment

Temperature:
• Operating 0° to 40°C
• Storage –40° to 60°C
Relative humidity:
• Operating 10% to 80% (non-condensing)
• Storage 5% to 95% (non-condensing)

Electrical

• Power Requirements
  65.52W max. on +12V

Model Name	ARC-8088-SAS	ARC-8088-2FC/4FC	ARC-8088-iSCSI
I/O Processor	Dual Core RAID-on-Chip (ROC) 1.2GHz		
Host Bus	2 x 4 lanes 12Gbps SAS	2/4 x 16Gbps Fibre	2 x 10Gbps Ethernet
Host Connector	2 x SFF-8644	2/4 x SFP	2 x SFP+
Drive Connector	6 x Internal SFF-8643 + 1 x External SFF-8644 Connector		
Drive Support	256 Devices (Using SAS JBOD)		
On-Board Cache	2GB On-Board DDR3-1866 SDRAM with ECC Protection		
Management Interface	2 x RJ11: Serial Port, 1 x RJ45: Ethernet Port		
Form Factor	146 (W) x 43 (H) x 250 (L)		
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