areca®
At the Heart of Storage

ARC-8060-SAS/Fibre/iSCSI/PCIe x4
External SAS RAID Controller (Cable Solution)

(3Gb SAS-to-SAS)/(4Gb Fibre-to-SAS) (1Gb iSCSI-to-SAS)/(PCIe x4-to-SAS)

The ARC-8000 series external RAID controller features two 4Gb Fibre/two Min SAS 4x 3Gb SAS/two 1Gb iSCSI/PCIe x4 host and SAS device attachment. The array controller provides reliable data protection for servers and offers a new level polynomial technology to implement the extreme performance RAID 6 function. The controller can provide up to (122) devices using SAS expanders. Applications that benefit most features from these controllers include NAS, server, medical imaging, supercomputing, multi-media on demand (MOD) and streaming applications server.

SAS for Maximum Scalability

SAS builds on parallel SCSI by providing higher performance, improving data availability, and simplifying system design. The SAS interface supports both SAS disk drives for data-intensive applications, and Serial ATA (SATA) drives for low-cost bulk storage of reference data. The controller can support up to 16 SAS ports to the custom-made backplane and via two external Min SAS 4x connector for easy expansion. When used with SAS expanders, the controller can provide up to 122 devices through one or more SAS JBODs, making it an ideal solution for enterprise-class storage applications that call for maximum configuration flexibility.

Unparalleled Performance

The SAS controller new high-performance architecture comes from Intel New IOP341 storage processor, dual 133MHz/64-bit PCI-X/PCIe x8, a new polynomial RAID 6 engine and DDRII-533 memory architecture. The data flow at 133MHz/64 bit PCIX/PCIe x8 bus and 64-bit 533MHz ECC DDR2 SDRAM makes its high data throughput more than existing RAID controller with SAS drive.The controllers each include one DIMM socket for ECC DDR-2 533 SDRAM with optional battery backup module, upgrade to 4GB. The test result is against overall performance compared to other SAS RAID controllers.

Unsurpassed Data Availability

As storage capacities continue to rapidly increase, users need greater level of disk drive fault tolerance, which can be implemented without doubling the investment in disk drives. The RAID 6 can offer fault tolerance greater that RAID 1 or RAID 5 but only consumes the capacity of 2 disk drives for distributed parity data. The SAS RAID controllers with extreme performance RAID 6 engine installed provide the highest RAID 6 feature to meet this requirement. The controller can concurrently compute two parity blocks and get very similar RAID 5 performance.

The high data availability and protection derives from the following capabilities: Online RAID Capacity Expansion, Array Roaming, Online RAID Level / Stripe Size Migration, Global Online Spare, Automatic Drive Failure Detection, Automatic Failed Drive Rebuilding, Disk Hot-Swap, Online Background Rebuilding, Instant Availability/Background Initialization, Auto Reassign Sector, Redundant Flash Image and Battery Backup Module. Greater than 2 TB support allows for very large volume set application in 64-bit environment such as data-mining and managing large databases.

Easy RAID Management

It can be managed either through the LCD control panel, RS232 port or Ethernet port. Manual configuration and monitoring can be done through the LCD Control Panel. 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 or WAN with no software or patches required. The firmware contains SMTP manager monitors all system events and user can select either single or multiple user notifications to be sent via "Plain English" e-mails. The firmware-embedded SNMP agent allows remote to monitor events via LAN with no SNMP agent required. 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 Disk Stress Test utility kicks out disks meeting marginal spec before the RAID unit is actually put on-line for real business. The hardware monitor can monitor system voltage, temperature and FAN. The warning message will show in the LCD, alarm buzzer and respect LED.

RAID Architecture

- Intel 800MHz IOP341 I/O processor
- Up to 4GB DDR2-533 SDRAM on one DIMM socket with ECC protection
- NVRAM for RAID event & transaction log
- Write-through or write-back cache support
- Redundant flash image for adapter availability
- Real time clock support
- Battery Backup Module ready (Option)

RAID Feature

- RAID level 0, 1, 1E, 3, 5, 6, 10, 30, 50, 60 or JBOD
- Multiple RAID selection
- 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
- Automatic drive insertion / removal detection and rebuilding
- Greater than 2TB per volume set (64-bit LBA support)
- Disk scrubbing/ array verify scheduling for automatic repair of all configured RAID sets
- Login record in the event log with IP address and service (http, telnet and serial)
- Support intelligent power management to save energy and extend service life
- Support NTP protocol to synchronize RAID controller clock over the on-board Ethernet port
- Max 122 devices
- Max 128 LUNs (volume set) per controller

Monitors/Notification

- LCD Control Panel for setup, alarm mute and configuration
- System status indication through LCD, LED and alarm buzzer
- Enclosure management ready

Drive Interface

- Up to 122 devices using SAS expanders (one external Min SAS 4x connectors)
- Up to 3Gb/s per port

Host Interface

- **3Gb SAS-to-SAS**
  Two Min SAS 4x 3Gb SAS Ports - 300MB/sec per port
- **4Gb Fibre-to-SAS**
  Two 4Gb Fibre Channels - 400MB/sec per channel
- **1Gb iSCSI-to-SAS**
  Two 1Gb Ethernet Channel - Full iSCSI offload (complete ULP, TCP offload)
- **PCIe x4-to-SAS**
  One external PCIe x4 link

RAID Management

- Field-upgradeable firmware in flash ROM
- Firmware-embedded manager via RS-232 port
- Firmware-embedded web browser-based RAID manager - access your RAID subsystem from any standard internet browser via 10/100 Lan port
- Firmware-embedded SMTP manager Monitor all system events and user can select either single or multiple user notifications to be sent via "Plain English" e-mails
- Firmware-embedded SNMP agent allows remote to monitor events via LAN with no SNMP agent required
- Access terminal menu by telnet via 10/100 LAN port
- API library for customer to write its own monitor utility
- SAP management feature to easily manage multiple RAID units in the network

Environment

- Operating
  Temperature : +5 C to +50 C Humidity : 15-80%, non-condensing
- Storage Temperature
  Temperature : -40 C to 70 C Humidity : 5-90%, non-condensing

Electrical

- Power Requirements
  3.2W max. On +5V   20W max. On +12V

Model Name	ARC-8060-SAS	ARC-8060-Fibre	ARC-8060-iSCSI	ARC-8060-PCIe
I/O Processor	Intel IOP341			
Host Bus	2 x 4 lanes 3Gbps SAS	2 x 4Gbps Fibre	2 x 1Gbps Ethernet	1 x PCIe x 8
Host Connector	2 x SFF-8088	2 x SFP	2 x RJ45	1 x External PCIe
Drive Connector	(3/4) x Internal SFF-8087 + 1 x External SFF-8088			
Drive Support	122 devices (Using SAS JBOD)			
RAID Level	0, 1, 1E, 3, 5, 6, 10, 30, 50, 60, Single Disk and JBOD			
On-Board Cache	On 240 DIMM DDR2-533 Socket with Default 512MB, Upgrade to 4GB			
Management Port	In-Band: SAS/Fibre Out-of-Band: LCD, RS-232 and LAN Port		Out-of-Band: LCD and LAN Port	In-Band: PCIe Out-of-Band: LCD, RS-232 and LAN Port
Host Driver	OS Independent			Same as Areca PCIe SATA/SAS RAID Driver
Enclosure Ready	Individual Fault/Activity Header, SGPIO and Serial Bus Interface			
Form Factor	One 5.25"Half-height Drive Bay 146 (W) x 43 (H) x 289 (D)mm			