



ARI-400 2U 12 Bay



ARI-403 2U 24 Bay



ARI-409 5U 84 Bay



ARI-450 2U 24 Bay (AFA)

# ARI-400 SERIES

## STORAGE ARRAYS

Meet the ARI-400 series: ARI-400 Series of storage products is designed for all purpose high performance applications and high demands of all parallel file systems including Spectrum Scale and Lustre. Foundation, distributed erasure coding technology, ensures the best data protection designed for HDD, hybrid, and all flash arrays. There are four versions in the series: 2U 12-Bay, 2U 24-Bay Hybrid, 2U 24-Bay Flash, and a 5U 84-Bay. 5.7GB/s Writes, 7GB/s Reads and also sustain 450,000 IOPs making this series ideal for any high performance computing Big Data or cloud applications.

*The ARI-100 Series is ideal for any high performance applications where budget AND performance are key.*

# ARI-400 SERIES

## STORAGE ARRAYS

### ENHANCED PERFORMANCE:

Storage system leverages patent cache technology that instantly and simultaneously mirrors cache between RAID controllers, leading to significant performance improvements over traditional implementations.

### AUTOMATIC DRIVE TIERING (OPTIONAL):

This technology overcomes the two major limitations found in most tiered storage systems today by (1) automating the migration of data, and (2) migrating data in real-time. The system virtualizes both the SSDs and HDDs at the sub-LUN level using 4 MB pages distributed across multiple RAID sets. Intelligent Tiering algorithms then continuously monitor I/O access patterns and automatically move Hot Data to the SSDs to maximize I/O operations and; therefore, improve performance of the aggregate application workload.

### VIRTUAL DISK POOLS:

Rebuild of conventional (Linear) storage requires that the entire VDisk is rebuilt prior to returning the VDisk (and thus the Volumes on the VDisk) to a fault tolerant state. The rebuild operates at the VDisk level and has no knowledge of Volumes or customer data contained therein.

### FOUNDATION (DECLUSTERED RAID):

Declustered RAID data protection with high performance I/O. Fastest rebuild times. No spares. Eliminates enclosure geometry restrictions. Allows mixed drive sizes and easy capacity expansion. Up to 128 drives per disk group. Works with SSD and HDD disk groups.

### REMOTE REPLICATION:

Equipped with remote replication software, RAID Inc.'s ARI-400 series provides the easiest array-to-array remote replication solution on the market today, enabling disaster recovery protection and business continuity with support for up to 1000 snapshots per storage array. By providing centralized, array-level replication, Remote Replication offloads backup operations from critical application servers, and aids IT managers in complying with regulations such as the HIPAA and Sarbanes-Oxley acts.

### THIN-PROVISIONING:

The increase in the volume and velocity of high density data can cause storage costs to exceed available budgets without some prudent provisioning. With the ARI's Thin Provisioning feature, IT managers can dedicate available storage space to volumes only when actually needed and add storage capacity transparently to any application, also as needed. Thin Provisioning enables LUN (volume) size to be configured independently of physical disk space and supports LUNs up to 128 TB.

### SELF-ENCRYPTING DRIVES:

SED drives provide instant data destruction via cryptographic erase. In normal use, you do not need to maintain authentication keys (otherwise known as credentials or passwords) in order to access the drive's data. The SED will encrypt data being written to the drive and decrypt data being read from it, all without requiring an authentication key from the owner. Available in 1.2TB small form factor (2.5") or 4 TB large form factor (3.5").

### VOLUME COPY AND SNAPSHOT (OPTIONAL):

With up to 1000 snapshots capability, the ARI-400 series offers necessary protection for business critical applications such as email, databases, and file sharing. With this capability, the ARI-400 series instantly takes volume snapshots, creating point-in-time backups that can be used to instantly restore your data after a system failure. In addition, VolumeCopy protects against disk failures

## KEY FEATURES

- ✓ 5.7GB/s Reads, 7GB/s Writes
- ✓ Advanced Virtualization Features
- ✓ Proven 99.999% uptime
- ✓ Automatic Drive Tiering (optional)
- ✓ Declustered RAID
- ✓ Fastest Drive Rebuild Times
- ✓ Virtual Disk Pools = Faster
- ✓ SSD Flash Cache
- ✓ VolumeCopy, SnapShot & Remote Replication (optional)
- ✓ Thin Provisioning
- ✓ Max Drive Support 336 HDD, SSD, NLSAS
- ✓ SED & FIPS-2 Support
- ✓ Host Options
  - (8) 16GB FC
  - (8) 12 GB SAS
  - (8) 10 GB iSCSI
- ✓ Degraded Disk Detection
- ✓ Disk Background Scrub
- ✓ Battery Free Backup
- ✓ Automated Provisioning Tool

[WWW.RAIDINC.COM](http://WWW.RAIDINC.COM)  
[SALES@RAIDINC.COM](mailto:SALES@RAIDINC.COM)  
(800) 330-7335



## ARI-400 Series Technical Specifications: Features

	ARI-400 (2U 12 Bay)	ARI-403 (2U 24 Bay)	ARI-409 (5U 84 Bay)	ARI-450 (2U 24 Bay AFA)
<b>HOSTS</b>				
<b>External Ports</b>	8 per system	8 per system	8 per system	8 per system
<b>Fibre Channel</b>				
<b>Host speed</b>	16Gb, 8Gb Fibre Channel	16Gb, 8Gb Fibre Channel	16Gb, 8Gb Fibre Channel	16Gb, 8Gb Fibre Channel
<b>Interface type</b>	SFP+	SFP+	SFP+	SFP+
<b>iSCSI</b>				
<b>Initiators</b>	10Gb iSCSI	10Gb iSCSI	10Gb iSCSI	10Gb iSCSI
<b>Interface type</b>	SFP+	SFP+	SFP+	SFP+
<b>SAS</b>				
<b>Initiators</b>	12Gb, 6Gb SAS	12Gb, 6Gb SAS	12Gb, 6Gb SAS	12Gb, 6Gb SAS
<b>Interface type</b>	HD Mini-SAS	HD Mini-SAS	HD Mini-SAS	HD Mini-SAS
<b>DRIVE SUPPORT</b>				
	3.5" SAS	2.5" SFF	Nearline SAS	SATA SSD, SAS SSD
<b>DRIVE EXPANSION</b>				
	144 DRIVES	144 DRIVES	336 DRIVES	96 DRIVES
<b>HIGH-AVAILABILITY FEATURES</b>				
	Redundant Hot-Swap Controllers Redundant Hot-Swap Disks, Fans, Power Dual Power Cords Hot Standby Spare Automatic Failover Multi-Path Support	Redundant Hot-Swap Controllers Redundant Hot-Swap Disks, Fans, Power Dual Power Cords Hot Standby Spare Automatic Failover Multi-Path Support	Redundant Hot-Swap Controllers Redundant Hot-Swap Disks, Fans, Power Dual Power Cords Hot Standby Spare Automatic Failover Multi-Path Support	Redundant Hot-Swap Controllers Redundant Hot-Swap Devices, Fans, Power Dual Power Cords Hot Standby Spare Automatic Failover Multi-Path Support
<b>PROTOCOLS AND STANDARDS</b>				
<b>IP (RFC, 894, 1092)</b>				
<b>RAID Levels supported</b>	0, 1, 3, 5, 6, 10 and 50	0, 1, 3, 5, 6, 10 and 50	0, 1, 3, 5, 6, 10 and 50	0, 1, 3, 5, 6, 10 and 50
<b>SYSTEM CONFIGURATION</b>				
<b>System Memory</b>	16GB per controller 32GB total	16GB per controller 32GB total	16GB per controller 32GB total	16GB per controller 32GB total
<b>Volumes per system</b>	1024	1024	1024	1024
<b>Mirrored Cache</b>	Yes	Yes	Yes	Yes
<b>Supercapacitor Cache Backup</b>	Yes	Yes	Yes	Yes
<b>Cache Backup to Flash</b>	Yes - Non-volatile	Yes - Non-volatile	Yes - Non-volatile	Yes - Non-volatile
<b>MANAGEMENT</b>				
<b>Interface types</b>	10/100/1000 Ethernet, Mini USB	10/100/1000 Ethernet, Mini USB	10/100/1000 Ethernet, Mini USB	10/100/1000 Ethernet, Mini USB
<b>Protocols supported</b>	SNMP, SSL, SSH, SMTP, HTTP(S)	SNMP, SSL, SSH, SMTP, HTTP(S)	SNMP, SSL, SSH, SMTP, HTTP(S)	SNMP, SSL, SSH, SMTP, HTTP(S)
<b>Management Consoles</b>	WEB GUI, CLI	WEB GUI, CLI	WEB GUI, CLI	WEB GUI, CLI
<b>Management Software</b>	RAIDar 2.0, Remote Diagnostics, Non-disruptive Updates, Volume Expansion	RAIDar 2.0, Remote Diagnostics, Non-disruptive Updates, Volume Expansion	RAIDar 2.0, Remote Diagnostics, Non-disruptive Updates, Volume Expansion	RAIDar 2.0, Remote Diagnostics, Non-disruptive Updates, Volume Expansion
<b>DIMENSIONS</b>				
<b>Height</b>	88.9mm (3.5") 2 EIA units	88.9mm (3.5") 2 EIA units	8.75 in / 222.3 mm	3.46 in / 87.9 mm
<b>Width</b>	483mm (19") IEC rack compliant	483mm (19") IEC rack compliant	17.5 in / 444.5 mm 19.01 in / 483 mm with ear mounts	17.44 in / 443 mm 19.01 in / 483 mm with ear mounts
<b>Depth</b>	630mm (24.8")	630mm (24.8")	38.63 in / 981 mm	24.8 in / 630 mm
<b>Weight</b>	26kg (57.2lb) with drives	24kg (53lb) with drives	180 lb / 82 kg RBOD weight 298 lb / 135 kg RBOD weight with drives 175 lb / 80 kg EBOD weight 287 lb / 130 kg EBOD weight with drives	38 lb / 17 kg 66 lb / 30 kg with drives

## ARI-400 Series Technical Specifications: Detailed Specifications

	ARI-400 (2U 12 Bay)	ARI-403 (2U 24 Bay)	ARI-409 (5U 84 Bay)	ARI-450 (2U 24 Bay AFA)
<b>POWER REQUIREMENTS - AC INPUT</b>				
<b>Input Power Requirements</b>			200-240VAC 50-60Hz 1047W maximum continuous	100-200VAC 50/60Hz 346W maximum continuous
<b>Max Input Power</b>			3572 BTUs/hour Platinum rated power supplies	1181 BTUs/hour Gold rated power supplies
<b>Heat Dissipation</b>				
<b>POWER REQUIREMENTS - DC INPUT</b>				
<b>Voltage</b>	100-240V AC	100-240V AC	200-240VAC 50-60Hz	100-200VAC 50/60Hz
<b>Max Input Power</b>			1047W maximum continuous	346W maximum continuous
<b>Heat Dissipation</b>			3572 BTUs/hour	1181 BTUs/hour
<b>TEMPERATURE AND HUMIDITY RANGES</b>				
<b>Operating temperature</b>	41°F to 104°F (5°C to 40°C)	41°F to 104°F (5°C to 40°C)	RBOD: 5oC to 35oC (41oF to 95oF) EBOD: 5oC to 40oC (41oF to 104oF)	RBOD: 5oC to 35oC (41oF to 95oF) EBOD: 5oC to 40oC (41oF to 104oF)
<b>Shipping temperature</b>			-40oC to +70oC (-40oF to +158oF)	-40oC to +70oC (-40oF to +158oF)
<b>Operating humidity</b>	20% to 80% non-condensing	20% to 80% non-condensing	20% to 80% non-condensing	20% to 80% non-condensing
<b>Non-operating humidity</b>			5% to 100% non-precipitating	5% to 100% non-precipitating
<b>Sound power</b>	≤LWAd 6.5Bels (re 1pW) @ 23°C ambient	≤LWAd 6.5Bels (re 1pW) @ 23°C ambient	<LWAd 6.6 Bels (re 1 pW) @ 23oC	
<b>Sound pressure</b>				
<b>SHOCK AND VIBRATION</b>				
<b>Shock, Operational</b>	5g 10ms half sine	5g 10ms half sine	5.0 g, 10 ms, ½ sine pulses, Y-axis	5.0 g, 10 ms, ½ sine pulses, Y-axis
<b>Shock, Non-operational</b>	30g 10ms half sine	30g 10ms half sine	30.0 g, 10 ms, ½ sine pulses (Z-axis); 20.0 g, 10 ms, ½ sine pulses (X- and Y-axes)	30.0 g, 10 ms, ½ sine pulses
<b>Vibration, Operational</b>	Random 0.21g RMS	Random 0.21g RMS	0.21 Grms 5 Hz to 500 Hz random	0.21 Grms 5 Hz to 500 Hz random
<b>Vibration, Non-operational</b>	Random 1.04g RMS	Random 1.04g RMS	1.04 Grms 2 Hz to 200 Hz random	1.04 Grms 2 Hz to 200 Hz random
<b>REGULATORY</b>				
<b>Safety</b>	UL 60950-1 (USA & Canada) EN 60950-1 (European Union) IEC 60950-1 (International)	UL 60950-1 (USA & Canada) EN 60950-1 (European Union) IEC 60950-1 (International)	UL 60950-1 (United States) CAN/CSA-C22.2 No.60950-1-07 (Canada) EN 60950-1 (European Union) IEC 60950-1 (International) CCC (China PRC – CCC Power Supplies) BIS (India – BIS Power Supplies)	UL 60950-1 (United States) CAN/CSA-C22.2 No.60950-1-07 (Canada) EN 60950-1 (European Union) IEC 60950-1 (International) CCC (China PRC – CCC Power Supplies) BIS (India – BIS Power Supplies)
<b>Electromagnetic Compatibility</b>				
<b>Emissions</b>	CFR 47 Part15, subpart B, class A; CES/NMB-003 Class A (North America) EN55022 Class A, EN55024, EN61000-3-2, EN61000-3-3 (Europe)	CFR 47 Part15, subpart B, class A; CES/NMB-003 Class A (North America) EN55022 Class A, EN55024, EN61000-3-2, EN61000-3-3 (Europe)	FCC CFR 47 Part 15 Subpart B Class A (United States) ICES/NMB-003 Class A (Canada) EN 55022/EN 55032:2012 Class A (EU) AS/NZS CISPR 22/CISPR 32 Class A (Australia/New Zealand) VCCI Class A (Japan) KN 22/KN 32 Class A (S. Korea) CNS 13438 Class A (Taiwan) EN 61000-3-2 (EU) EN 61000-3-3 (EU) EN 55024 (EU) KN 24/KN 35 (S. Korea)	FCC CFR 47 Part 15 Subpart B Class A (United States) ICES/NMB-003 Class A (Canada) EN 55022/EN 55032:2012 Class A (EU) AS/NZS CISPR 22/CISPR 32 Class A (Australia/New Zealand) VCCI Class A (Japan) KN 22/KN 32 Class A (S. Korea) CNS 13438 Class A (Taiwan)
<b>Harmonics</b>			EN 61000-3-2 (EU)	EN 61000-3-2 (EU)
<b>Flicker</b>			EN 61000-3-3 (EU)	EN 61000-3-3 (EU)
<b>Immunity</b>			EN 55024 (EU)	EN 55024 (EU)
			KN 24/KN 35 (S. Korea)	KN 24/KN 35 (S. Korea)
<b>RoHS and WEEE</b>			RoHS Directive (2011/65/EU), WEEE Directive (2012/19/EU)	RoHS Directive (2011/65/EU), WEEE Directive (2012/19/EU)
<b>Country Approvals</b>				
	North America, Europe, China, Taiwan, Korea, Japan, Australia/New Zealand	North America, Europe, China, Taiwan, Korea, Japan, Australia/New Zealand	Australia/New Zealand, Canada, China, European Union, Japan, South Korea, Taiwan, United States	Australia/New Zealand, Canada, China, European Union, Japan, South Korea, Taiwan, United States