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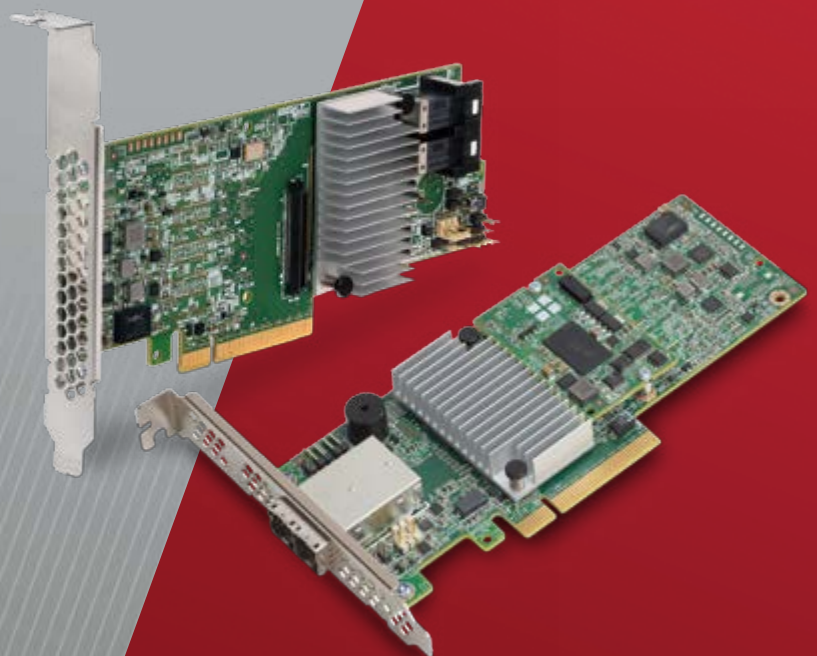
AVAGO
TECHNOLOGIES

STORAGE
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Storage Solutions



Product Guide



The amount and variety of data produced by content-rich Internet, cloud and enterprise applications poses unprecedented challenges for data centers of all sizes.

Table of Contents

- 4 HBAs
- 5 MegaRAID Entry (iMR)
- 6 MegaRAID and 3ware RAID
- 8 SafeStore
- 9 Cache Protection Options
- 10 Syncro
- 11 CacheCade Pro 2.0
- 12 Cables and Connectors

New approaches and technologies are needed to manage this deluge of data: to store it, protect it, and maximize the value from it. These challenges present opportunities to help the world make the most from its data.

Avago Technologies is focused on helping customers in wireless communications, wired infrastructure, enterprise storage and industrial and other markets solve their challenges. Avago has the industry's broadest portfolio of storage solutions, backed by decades of experience and trusted by the world's leading server and storage suppliers. Avago provides the building blocks for storage solutions that help customers understand, prioritize, store and protect critical data.

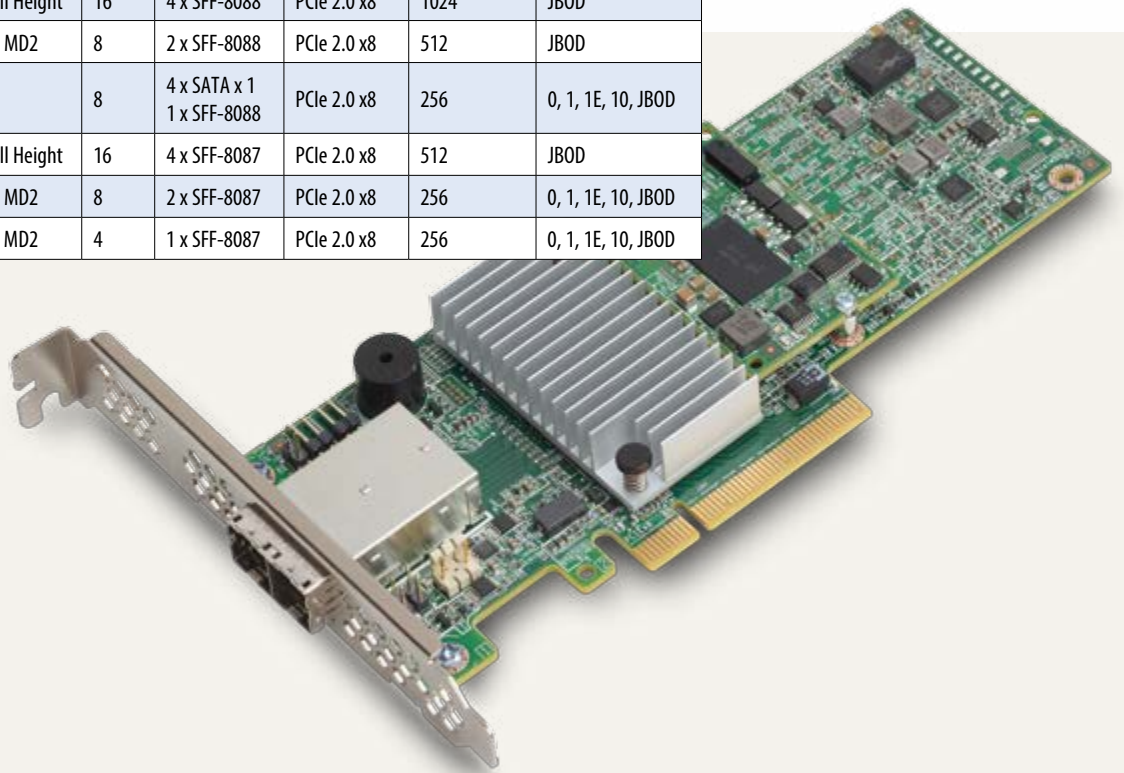
Whether you need to protect data, power your storage solutions, or deliver the performance needed by critical applications, Avago's 12Gb/s SAS MegaRAID® controller cards and Host Bus Adapters (HBAs), Advanced Software Options, and Syncro® shared DAS solutions are the smart choice.



HBAs

Equip storage solutions with the connectivity needed to meet any scaling needs from the smallest SMBs to the largest data centers. Avago HBAs can enable an easy, long-term storage growth strategy in practically any direct-attached storage scenario. Whether solutions use SAS or SATA, hard disk or flash, or even internal or external storage elements, our HBAs are designed to create the fabric tying any or all of those components together into a unified storage effort.

Product Name	Part Number	Form Factor	Ports	Connectors	Bus Interface	No. of Devices Supported	RAID Levels
12Gb/s SAS							
9300-16e	LSI00342 (SGL)	Full-Height	16	4 x SFF-8644	PCIe 3.0 x8	2048	JBOD
9300-8e	LSI00343 (SGL)	LP MD2	8	2 x SFF-8644	PCIe 3.0 x8	1024	JBOD
9300-16i	LSI00447 (SGL)	Full-Height	16	4 x SFF-8643	PCIe 3.0 x8	1024	JBOD
9300-8i	LSI00344 (SGL)	LP MD2	8	2 x SFF-8643	PCIe 3.0 x8	1024	JBOD
9300-4i4e	LSI00348 (SGL)	LP MD2	8	1 x SFF-8643 1 x SFF-8644	PCIe 3.0 x8	1024	JBOD
9300-4i	LSI00346 (SGL)	LP MD2	4	1 x SFF-8643	PCIe 3.0 x8	1024	JBOD
6Gb/s SAS							
9207-8e	LSI00300 (SGL)	LP MD2	8	2 x SFF-8088	PCIe 3.0 x8	1024	JBOD
9207-8i	LSI00301 (SGL)	LP MD2	8	2 x SFF-8087	PCIe 3.0 x8	256	JBOD
9207-4i4e	LSI00303 (SGL)	LP	8	1 x SFF-8087 1 x SFF-8088	PCIe 3.0 x8	256	JBOD
9206-16e	LSI00299 (SGL)	LP MD2	16	4 x SFF-8644	PCIe 3.0 x8	1024	JBOD
9201-16e	LSI00276 (SGL)	Full Height	16	4 x SFF-8088	PCIe 2.0 x8	1024	JBOD
9200-8e	LSI00188 (SGL)	LP MD2	8	2 x SFF-8088	PCIe 2.0 x8	512	JBOD
9212-4i4e	LSI00192 (SGL)	LP	8	4 x SATA x 1 1 x SFF-8088	PCIe 2.0 x8	256	0, 1, 1E, 10, JBOD
9201-16i	LSI00244 (SGL)	Full Height	16	4 x SFF-8087	PCIe 2.0 x8	512	JBOD
9211-8i	LSI00194 (SGL)	LP MD2	8	2 x SFF-8087	PCIe 2.0 x8	256	0, 1, 1E, 10, JBOD
9211-4i	LSI00190 (SGL)	LP MD2	4	1 x SFF-8087	PCIe 2.0 x8	256	0, 1, 1E, 10, JBOD



MegaRAID Entry (iMR)

MegaRAID SAS entry controller cards provide trusted MegaRAID data protection and reliability for non-business critical applications. Offering the same management features and OS support as the mainstream MegaRAID lineup at an affordable price point, the entry controllers are great solutions for small and medium businesses (SMB) deploying entry-level server platforms and workstations.

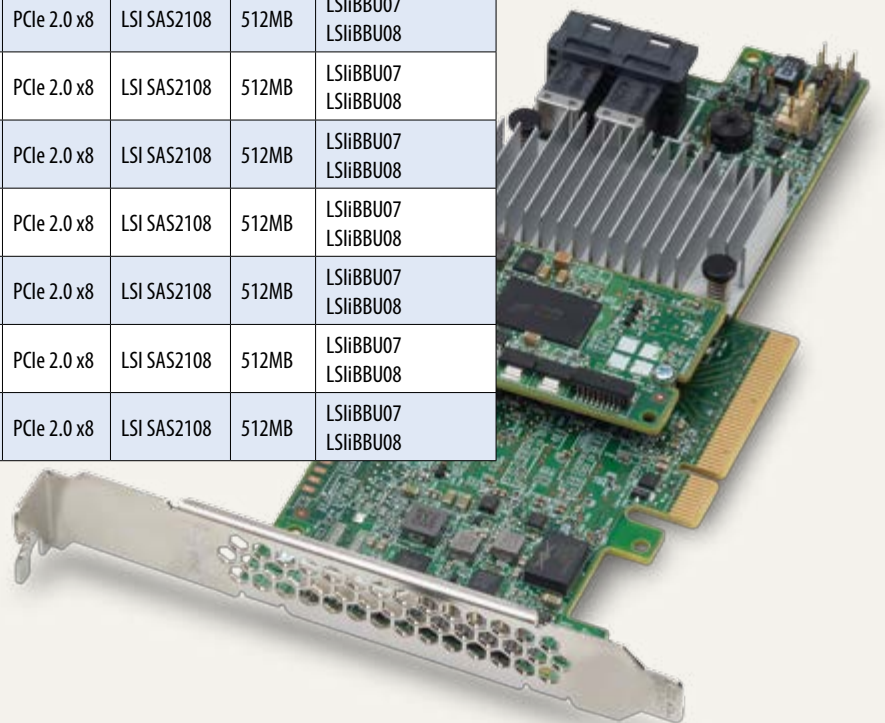
Product Name	Part Number	Form Factor	Ports	Connectors	Bus Interface	Processor	Cache Memory	Cache Protection
12Gb/s SAS								
9341-4i	LSI00419 (SGL)	LP MD2	4	1 x SFF-8643	PCIe 3.0 x8	LSI SAS3008		
9341-8i	LSI00407 (SGL)	LP MD2	8	2 x SFF-8643	PCIe 3.0 x8	LSI SAS3008		
6Gb/s SAS								
9240-4i	LSI00199 (SGL)	LP MD2	4	1 x SFF-8087	PCIe 2.0 x8	LSI SAS2008		
9240-8i	LSI00200 (SGL)	LP MD2	8	2 x SFF-8087	PCIe 2.0 x8	LSI SAS2008		



MegaRAID and 3ware RAID

Ensure critical data is protected and available with the most widely deployed RAID data protection architecture. Our broad range of MegaRAID and 3ware RAID controller cards are designed to address virtually all direct-attached storage environments where data protection, performance and expandability are crucial requirements – SATA or SAS, hard disk drives (HDDs) or solid state drives (SSDs), server-based storage or external direct-attached JBODs and storage enclosures.

Product Name	Part Number	Form Factor	Ports	Connectors	Bus Interface	Processor	Cache Memory	Cache Protection
12Gb/s SAS								
9361-4i	LSI00415 (SGL)	LP MD2	4	1 x SFF-8643	PCIe 3.0 x8	LSI SAS3108	1GB	LSICVM02 (optional)
9361-8i	LSI00417 (SGL)	LP MD2	8	2 x SFF-8643	PCIe 3.0 x8	LSI SAS3108	1GB	LSICVM02 (optional)
9380-4i4e	LSI00439 (SGL)	LP MD2	8	1 x SFF-8643 1 x SFF-8644	PCIe 3.0 x8	LSI SAS3108	1GB	LSICVM02 (optional)
9380-8e	LSI00438 (SGL)	LP MD2	8	2 x SFF-8644	PCIe 3.0 x8	LSI SAS3108	1GB	LSICVM02 (optional)
6Gb/s SAS								
9271-4i	LSI00328 (SGL)	LP MD2	4	1 x SFF-8087	PCIe 3.0 x8	LSI SAS2208	1GB	LSiBBU09 LSICVM01
9271-8i	LSI00330 (SGL)	LP MD2	8	2 x SFF-8087	PCIe 3.0 x8	LSI SAS2208	1GB	LSiBBU09 LSICVM01
9270-8i	LSI00326 (SGL)	LP MD2	8	2 x SFF-8087	PCIe 3.0 x8	LSI SAS2208	1GB	LSiBBU09
9286-8e	LSI00332 (SGL)	LP MD2	8	2 x SFF-8088	PCIe 3.0 x8	LSI SAS2208	1GB	LSiBBU09
9286CV-8e	LSI00333 (SGL)	LP MD2	8	2 x SFF-8088	PCIe 3.0 x8	LSI SAS2208	1GB	CacheVault™ Included
9266-4i	LSI00305 (SGL)	LP MD2	4	1 x SFF-8087	PCIe 2.0 x8	LSI SAS2208	1GB	LSiBBU09 LSICVM01
9266-8i	LSI00295 (SGL)	LP MD2	8	2 x SFF-8087	PCIe 2.0 x8	LSI SAS2208	1GB	LSiBBU09 LSICVM01
9285CV-8e	LSI00298 (SGL)	LP MD2	8	2 x SFF-8088	PCIe 2.0 x8	LSI SAS2208	1GB	CacheVault™ Included
9260-4i	LSI00197 (SGL)	LP MD2	4	1 x SFF-8087	PCIe 2.0 x8	LSI SAS2108	512MB	LSiBBU07 LSiBBU08
9260-8i	LSI00198 (SGL)	LP MD2	8	2 x SFF-8087	PCIe 2.0 x8	LSI SAS2108	512MB	LSiBBU07 LSiBBU08
9261-8i	LSI00212 (SGL)	LP MD2	8	2 x SFF-8087	PCIe 2.0 x8	LSI SAS2108	512MB	LSiBBU07 LSiBBU08
9260-16i	LSI00208 (SGL)	Full Height	16	4 x SFF-8087	PCIe 2.0 x8	LSI SAS2108	512MB	LSiBBU07 LSiBBU08
9280-8e	LSI00205 (SGL)	LP MD2	8	2 x SFF-8088	PCIe 2.0 x8	LSI SAS2108	512MB	LSiBBU07 LSiBBU08
9280-16i4e	LSI00210 (SGL)	Full Height	20	1 x SFF-8088 4 x SFF-8087	PCIe 2.0 x8	LSI SAS2108	512MB	LSiBBU07 LSiBBU08
9280-24i4e	LSI00211 (SGL)	Full Height	28	1 x SFF-8088 6 x SFF-8087	PCIe 2.0 x8	LSI SAS2108	512MB	LSiBBU07 LSiBBU08





3ware

Product Name	Part Number	Form Factor	Ports	Connectors	Bus Interface	Processor	Cache Memory	Cache Protection
9750-24i4e	LSI00251 (SGL)	Full Height	28	1 x SFF-8088 6 x SFF-8087	PCIe 2.0 x8	LSI SAS2108	512MB	LSIiBBU07
9750-16i4e	LSI00252 (SGL)	Full Height	20	1 x SFF-8088 4 x SFF-8087	PCIe 2.0 x8	LSI SAS2108	512MB	LSIiBBU07
9750-8e	LSI00243 (SGL)	LP MD2	8	2 x SFF-8088	PCIe 2.0 x8	LSI SAS2108	512MB	LSIiBBU07
9750-4i4e	LSI00242 (SGL)	LP MD2	8	1 x SFF-8088 1 x SFF-8087	PCIe 2.0 x8	LSI SAS2108	512MB	LSIiBBU07
9750-8i	LSI00214 (SGL)	LP MD2	8	2 x SFF-8087	PCIe 2.0 x8	LSI SAS2108	512MB	LSIiBBU07
9750-4i	LSI00216 (SGL)	LP MD2	4	1 x SFF-8087	PCIe 2.0 x8	LSI SAS2108	512MB	LSIiBBU07

SafeStore

Whether it is sensitive customer information, intellectual property or proprietary data that helps a company reach its strategic objectives, a company's data may be its most valuable asset. If this data is misplaced or stolen, organizations run the risk of lost revenue, legal implications and a tarnished reputation. With SafeStore software, businesses can be assured that the highest level of security is placed on their data, while preserving system performance and ease-of-use. Together with self-encrypting drives (SEDs), SafeStore software secures a drive's data from unauthorized access or modification resulting from theft, loss or repurposing of drives.

SafeStore™ Software	LSI00268 (SW License)	MR SAS 9260/9261/9265/9266/9270/9271/9280/9285/9286/9361/9380 series controllers
	LSI00245 (HW Key)	9260 (-4i, -8i, -16i, CV-4i, CV-8i), 9280 (-8e, -4i4e, -16i4e, -24i4e)
	LSI00287 (HW Key)	9265-8i, 9266 (-4i, -8i), 9270-8i, 9271 (-4i, -8i, -8iCC), 9285 (-8e, CV-8e), 9286 (-8e, CV-8e, CV-8eCC), 9361 (-4i, -8i), 9380 (-4i4e, -8e)



Cache Protection Options

RAID caching is a cost-effective way to improve I/O performance by writing data to a controllers' cache before it is written to disk. In write-back mode, data written to cache is vulnerable until it is made permanent on disk. To help avoid the possibility of data loss or corruption during a power or server failure, Avago offers the CacheVault flash cache protection module or the battery backup units for MegaRAID SAS controllers cards.

Cache Protection Option	Part Number	Compatible Controller Cards
LSICVM02	LSI00418	9361 and 9380 Series
LSICVM01	LSI00297	9266 and 9271 Series
LSiBBU09	LSI00279	9265, 9266, 9270, 9271, 9285, and 9286 Series
LSiBBU08	LSI00264	9260, 9261 and 9280 Series
LSiBBU07	LSI00161	8880EM2, 9260, 9261, 9280 and 9750 Series
LSiBBU06	LSI00160	8704EM2, 8708EM2
LSiBBU05	LSI00183	8704ELP, 8708ELP, 8888ELP
BBU-BRACKET-05	LSI00291	Remote Mounting Bracket for LSI BBUs and CacheVault Power Modules
Remote Cable/Interposer Kit	LSI00260	Needed ONLY if require remote cable for LSiBBU06/07 OR connecting LSiBBU07/08 remotely to 9260-4i or 9260-8i

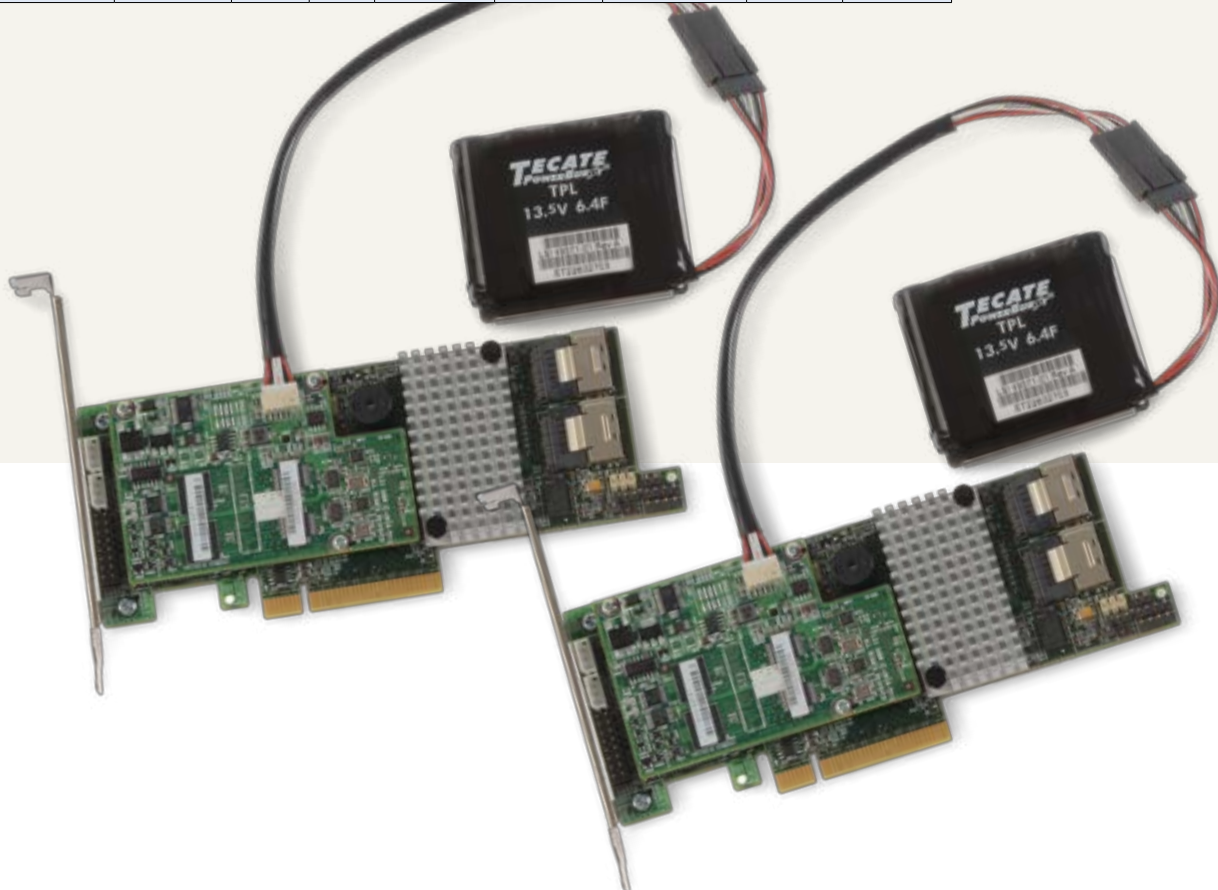


Syncro

As data volumes continue to grow, the need for a sharable, scalable storage solution that increases efficiency and uptime, while lowering costs and power usage, is now more important than ever.

Avago's Syncro solutions provide small to medium businesses (SMBs) needing a High Availability (HA) solution for their mission-critical applications, with an easier to deploy shared direct attached storage (DAS) solution. Syncro solutions are built on MegaRAID technology, designed to deliver uptime at the right price point.

Product Name	Part Number	Form Factor	Ports	Connectors	Bus Interface	No. of Devices Supported	Cache Memory	Cache Protection
12Gb/s SAS								
Syncro 9361-8i	LSI00457 (KIT)	LP MD2	8	2 x SFF-8643	PCIe 3.0 x8	96	2GB	CacheVault Included
Syncro 9380-8e	LSI00458 (KIT)	LP MD2	8	2 x SFF-8644	PCIe 3.0 x8	96	2GB	CacheVault Included
6Gb/s SAS								
Syncro 9271-8i	LSI00392 (KIT)	LP MD2	8	2 x SFF-8087	PCIe 3.0 x8	96	1GB	CacheVault Included
Syncro 9286-8e	LSI00356 (KIT)	LP MD2	8	2 x SFF-8088	PCIe 3.0 x8	96	1GB	CacheVault Included



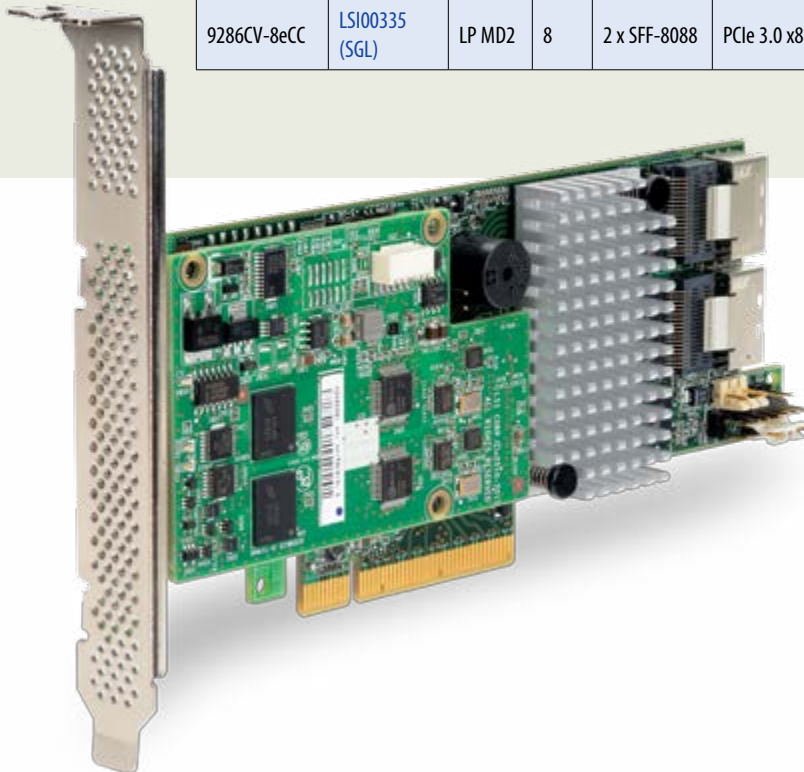
CacheCade Pro 2.0

CacheCade Pro 2.0 software provides a combination of caching intelligence and trusted MegaRAID data protection to accelerate applications in direct-attached storage environments. When IT pushes hard disk drives (HDD) arrays to reach their I/O potential, data “hot spots” become inevitable. Utilizing a small solid state drive (SSD) investment as a front-side flash cache for the much larger disk array, CacheCade Pro 2.0 software dynamically keeps the “hottest” data in flash memory. This can dramatically improve read/write speeds and drop latency.

CacheCade® Pro 2.0 Software Pack	LSI00293 (SW License)	MR SAS 9260/9261/9265/9266/9270/9271/9280/9285/9286/9361/9380 series controllers
	LSI00292 (HW Key)	9260 (-4i, -8i, -16i, CV-4i, CV-8i), 9280 (-8e, -4i4e, -16i4e, -24i4e)
	LSI00290 (HW Key)	9265-8i, 9266 (-4i, -8i), 9270-8i, 9271 (-4i, -8i, -8iCC), 9285 (-8e, CV-8e), 9286 (-8e, CV-8e, CV-8eCC), 9361 (-4i, -8i), 9380 (-4i4e, -8e)

CacheCade Software-Enabled MegaRAID Boards

Product Name	Part Number	Form Factor	Ports	Connectors	Bus Interface	Processor	Cache Memory	Cache Protection
9271-8iCC	LSI00334 (SGL)	LP MD2	8	2 x SFF-8087	PCIe 3.0 x8	LSI SAS2208	1GB	LSiBBU09 LSiCVM01
9286CV-8eCC	LSI00335 (SGL)	LP MD2	8	2 x SFF-8088	PCIe 3.0 x8	LSI SAS2208	1GB	CacheVault™ Included



Cables

Cable Part Numbers	Length	Sideband Support	To Controller	To Drives/ Backplane	Compatible Controllers (“i” = internal connectivity, “e” = external connectivity)
CBL-SFF8087-SATASB-06M	0.6m	✓	SFF-8087	Discrete	Internal connectivity: MegaRAID 9280 (-4i4e, -16i4e, -24i4e) MegaRAID 9271 (-4i, -8i, -8iCC) MegaRAID 9270-8i MegaRAID 9266 (-4i, -8i) MegaRAID 9261-8i MegaRAID 9260 (-4i, -8i, -16i) MegaRAID 9240 (-4i, -8i) SAS 9212-4i4e SAS 9211 (-4i, -8i) SAS 9207 (-4i4e, -8i) SAS 9201-16i 3Ware 9750 (-4i, -8i, -4i4e, -16i4e, -24i4e) Syncro CS 9271-8i (only SFF-8087 to SFF-8087 Connection)
CBL-SFF8087-SATASB-10M	1.0m	✓			
CBL-SFF8087OCF-05M	0.5m		SFF-8087	Discrete	
CBL-SFF8087OCF-06M	0.6m				
CBL-SFF8087OCF-10M	1.0m				
CBL-SFF8087SB-08M	0.8m	✓	SFF-8087	SFF-8087	
CBL-SFF8087SB-05M	0.5m	✓			
CBL-SFF8087SB-06M	0.6m	✓			
CBL-SFF8087-05M	0.5m				
CBL-SFF8087-06M	0.6m				
CBL-SFF8087-10M	1.0m				
CBL-SAS8087OCF-06M	0.6m		SFF-8087	SFF-8482	
CBL-RA8087SATASB-10M	1.0m	✓	SFF-8087 (RA)	Discrete	Internal Connectivity: 3Ware 9750 (-16i4e, -24i4e) MegaRAID 9280 (-16i4e, -24i4e)
CBL-RA8087SB-10M	1.0m	✓	SFF-8087 (RA)		
CBL-RA8087-08M	0.8m				
CBL-RA8087-10M	1.0m				
CBL-SFF8088SAS-10M	1.0m		SFF-8088	SFF-8088	External connectivity: MegaRAID 9286 (-8e, CV-8e, CV-8eCC) MegaRAID 9285CV-8e MegaRAID 9280 (-8e, -4i4e, -16i4e, -24i4e) SAS 9212-4i4e SAS 9207 (-4i4e, -8e), SAS 9206-16e SAS 9201-16e, SAS 9200-8e 3Ware 9750 (-4i4e, -8e, -16i4e, -24i4e) SAS6160 SAS Switch Syncro CS 9286-8e
CBL-SFF8088SAS-20M	2.0m				
CBL-SFF8088ASAS-100M (Active)	10m				
CBL-SFF8088ASAS-200M (Active)	20m				
CBL-SFF8644-8088-10M	1.0m		SFF-8644	SFF-8088	External connectivity: MegaRAID 9380 (-4i4e, -8e) SAS 9300 (-4i4e, -8e, -16e) SAS 9206-16e
CBL-SFF8644-8088-20M	2.0m				
CBL-SFF8644-8088-60M	6.0m				
CBL-SFF8644-10M	1.0m		SFF-8644	SFF-8644	
CBL-SFF8644-20M	2.0m				
CBL-SFF8644-60M	6.0m				
CBL-SFF8643-8087-06M	0.6m		SFF-8643	SFF-8087	Internal connectivity: MegaRAID 9380-4i4e MegaRAID 9361 (-4i, -8i) MegaRAID 9341 (-4i, -8i) SAS 9300 (-4i, -4i4e, -8i, -16i)
CBL-SFF8643-8087-08M	0.8m				
CBL-SFF8643-8087-10M	1.0m				
CBL-SFF8643-06M	0.6m		SFF-8643	SFF-8643	
CBL-SFF8643-08M	0.8m				
CBL-SFF8643-10M	1.0m				
CBL-SFF8643-SATASB-05M	0.5m	✓	SFF-8643	x4 SATA	
CBL-SFF8643-SATASB-06M	0.6m	✓			
CBL-SFF8643-SATASB-10M	1.0m	✓			
CBL-SFF8643-SAS8482SB-06M	0.6m	✓	SFF-8643	SFF-8482	
CBL-RA8643-04M	0.4m		SFF-8643 (RA)	SFF-8643	



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Avago Technologies is a leading designer, developer and global supplier of a broad range of analog, digital, mixed signal and optoelectronics components and subsystems with a focus in III-V compound semiconductor design and processing. Backed by an extensive portfolio of intellectual property, Avago products serve four primary target markets: wireless communications, wired infrastructure, enterprise storage, and industrial and other. Avago has a global employee presence and rich heritage of technical innovation spanning over six decades.

Avago has strong market positions across a broad range of market segments with highly differentiated products that include:

- Film Bulk Acoustic Resonator (FBAR) Filters
- RF Front End Modules
- Parallel Optics Transceivers
- High Speed SerDes ASIC
- HDD Read Channel & Preamplifiers
- RAID and SAS I/O Controllers
- PCIe Switches
- Optocouplers
- Motion Encoders
- Industrial Fiber Solutions
- LED Display & Signage Solutions



For more information on Avago LSI storage products and where to buy, please visit :

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