



SELECTION GUIDE

Storage Solutions



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

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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.

Broadcom is focused on helping customers in wireless communications, wired infrastructure, enterprise storage and industrial and other markets solve their challenges. Broadcom 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. Broadcom 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, Broadcom's 12Gb/s SAS MegaRAID® controller cards and Host Bus Adapters (HBAs), and Advanced Software Options are the smart choice.



Host Bus Adapters (HBAs)

Equip storage solutions with the connectivity needed to meet any scaling needs from the smallest SMBs to the largest data centers. Broadcom HBAs can enable an easy, longterm storage growth strategy in practically any direct-attached storage scenario. Whether solutions use SAS or SATA, NVMe (PCIe), 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.

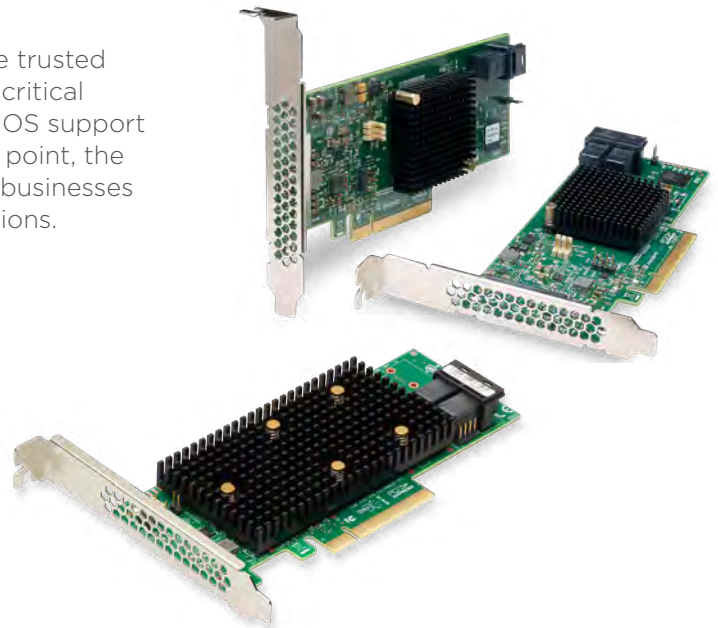


HBA Specifications

Product Name	MPN (SGL)	Form Factor Ports	Ports	Connectors	Bus Interface	No. of Devices Supported		RAID Levels
						SAS/SATA	NVMe	
12Gb/s SAS/SATA/NVMe								
9405W-16i	05-50047-00	LPMD2	16	Four SFF-8643	PCIe 3.1 x16	1024	up to 24	JBOD
9405W-16e	05-50044-00	LP MD2	16	Four SFF-8644	PCIe 3.1 x8	1024	up to 24	JBOD
9400-8i8e	05-50031-02	LP MD2	16	Two SFF-8643; Two SFF-8644	PCIe 3.1 x8	1024	up to 24	JBOD
9400-16i	05-50008-00	LP MD2	16	Four SFF-8643	PCIe 3.1 x8	1024	up to 24	JBOD
9400-16e	05-50013-00	LP MD2	16	Four SFF-8644	PCIe 3.1 x8	1024	up to 24	JBOD
9400-8i	05-50008-01	LP MD2	8	Two SFF-8643	PCIe 3.1 x8	1024	up to 24	JBOD
9400-8e	05-0013-01	LP MD2	8	Two SFF-8644	PCIe 3.1 x8	1024	up to 24	JBOD
12Gb/s SAS/SATA								
9305-24i	05-25699-00	LP MD2	24	Six SFF-8643	PCIe 3.0 x8	1024		JBOD
9305-16e	05-25704-00	LP MD2	16	Four SFF-8644	PCIe 3.0 x8	1024		JBOD
9305-16i	05-25703-00	LP MD2	16	Four SFF-8643	PCIe 3.0 x8	1024		JBOD
9300-16e	H5-25520-00	Full-Height	16	Four SFF-8644	PCIe 3.0 x8	1024		JBOD
9300-8e	H5-25460-00	LP MD2	8	Two SFF-8644	PCIe 3.0 x8	1024		JBOD
9300-16i	05-25600-00	Full-Height	16	Four SFF-8643	PCIe 3.0 x8	1024		JBOD
9300-8i	H5-25573-00	LP MD2	8	Two SFF-8643	PCIe 3.0 x8	1024		JBOD
9300-4i4e	H5-25515-00	LP MD2	8	One SFF-8643 One SFF-8644	PCIe 3.0 x8	1024		JBOD
9300-4i	H5-25473-00	LP MD2	4	One SFF-8643	PCIe 3.0 x8	1024		JBOD
6Gb/s SAS/SATA								
9207-8e	H5-25427-00	LP MD2	8	Two SFF-8088	PCIe 3.0 x8	1024		JBOD
9207-8i	H5-25412-00	LP MD2	8	Two SFF-8087	PCIe 3.0 x8	256		JBOD
9207-4i4e	H5-25434-00	LP MD2	8	One SFF-8087 One SFF-8088	PCIe 3.0 x8	256		JBOD
9201-16e	H5-25379-00	Full Height	16	Four SFF-8088	PCIe 2.0 x8	1024		JBOD

MegaRAID Entry (iMR)

MegaRAID SAS/SATA/NVMe 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.



MegaRAID Entry (iMR) Specifications

Product Name	MPN (SGL)	Form Factor	Ports	Connectors	Bus Interface	Processor
12Gb/s SAS/SATA/NVMe						
9440-8i	05-50008-02	LP MD2	8	Two SFF-8643	PCIe 3.1 x8	SAS3408
12Gb/s SAS/SATA						
9341-4i	05-26105-00	LP MD2	4	One SFF-8643	PCIe 3.0 x8	SAS3008
9341-8i	05-26106-00	LP MD2	8	Two SFF-8643	PCIe 3.0 x8	SAS3008



MegaRAID

Ensure critical data is protected and available with the most widely deployed RAID data protection architecture. Broadcom enables high performance storage connectivity and flexible system designs that support any combination of NVMe, SAS and SATA devices with the industry's first hardware RAID adapter with Tri-Mode SerDes technology.

The MegaRAID Tri-Mode storage adapters bring NVMe performance benefits to the storage tier by providing connectivity and data protection that MegaRAID technology has offered for over 20 years for SAS/SATA interfaces.

Broadcom's Tri-Mode SerDes technology enables operation of NVMe, SAS or SATA devices in a single drive bay. A single controller can operating in all three modes concurrently servicing NVMe, SAS or SATA devices. Tri-Mode support provides a non-disruptive way to evolve existing data center infrastructure.



MegaRAID Specifications

Product Name	MPN (SGL)	Form Factor	Ports	Connectors	Bus Interface	No. of Devices Supported		Cache Memory	Cache Protection*
						SAS/SATA	NVMe		
12Gb/s SAS/SATA/NVMe									
9460-16i	05-50011-00	LP MD2	16	Four SFF-8643	PCIe 3.1 x8	255	up to 24	4GB	CVPM05
9460-8i	05-50011-02	LP MD2	8	Two SFF-8643	PCIe 3.1 x8	255	up to 24	2GB	CVPM05
9480-8i8e	05-50031-00	LP MD2	16	Two SFF-8643, Two SFF-8644	PCIe 3.1 x8	255	up to 24	4GB	CVPM05
12Gb/s SAS/SATA									
9365-28i	05-50028-00	LP MD2	28	Six SFF-8643, One SFF-8654	PCIe 3.0 x8	240		4GB	CVPM05
9361-24i	05-50011-00	LP MD2	24	Six SFF-8643	PCIe 3.0 x8	240		4GB	CVPM02
9361-16i	05-25708-00	LP MD2	16	Four SFF8643	PCIe 3.0x8	240		2GB	CVPM02
9361-8i	05-25420-08	LP MD2	8	Two SFF-8643	PCIe 3.0 x8	128		1GB	CVM02
	05-25420-17	LP MD2	8	Two SFF-8643	PCIe 3.0 x8	128		2GB	CVM02
9361-4i	05-25420-10	LP MD2	4	One SFF-8643	PCIe 3.0 x8	128		1GB	CVM02
9380-8e	05-25528-04	LP MD2	8	Two SFF-8644	PCIe 3.0 x8	240		1GB	CVM02
9380-8i8e	05-25716-00	LP MD2	16	Two SFF-8643, Two SFF-8644	PCIe 3.0 x8	240		2GB	CVPM02
9380-4i4e	05-25190-02	LP MD2	8	One SFF-8643, OneSFF-8644	PCIe 3.0 x8	240		1GB	CVM02 (optional)
6Gb/s SAS/SATA									
9271-8i	L5-25413-18	LP MD2	8	Two SFF-8087	PCIe 3.0 x8	128		1GB	LSliBBU09, LSICVM01
9271-4i	L5-25413-17	LP MD2	4	One SFF-8087	PCIe 3.0 x8	128		1GB	LSliBBU09, LSICVM01
9270-8i	L5-25422-19	LP MD2	8	Two SFF-8087	PCIe 3.0 x8	128		1GB	LSliBBU09
9286-8e	L5-25421-20	LP MD2	8	Two SFF-8088	PCIe 3.0 x8	240		1GB	LSliBBU09
9286CV-8e	L5-25421-21	LP MD2	8	Two SFF-8088	PCIe 3.0 x8	240		1GB	CacheVault™ Included
9266-8i	L5-25413-16	LP MD2	8	Two SFF-8087	PCIe 2.0 x8	128		1GB	LSliBBU09, LSICVM01
9266-4i	L5-25413-15	LP MD2	4	One SFF-8087	PCIe 2.0 x8	128		1GB	LSliBBU09, LSICVM01

* CacheVault Kit/Power Module sold separately

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

Product	MPN	Product Name
MegaRAID SafeStore Electronic Software License (LSI00268)	MR SAFESTORE OCS	MR SAS 9260/9261/9265/9266/9270/9271/9280/9285/9286/9361/9380 series controllers
MegaRAID SafeStore Software Physical Key	L5-25150-00	9260 (-4i, -8i, -16i, CV-4i, CV-8i), 9280 (-8e, -4i4e, -16i4e, -24i4e)
MegaRAID SafeStore Software Physical Key	L5-25188-01	9265-8i, 9266 (-4i, -8i), 9270-8i, 9271 (-4i, -8i, -8iCC), 9285 (-8e, CV-8e), 9286 (-8e, -8e, -8eCC), 9361 (-4i, -8i, -16i, -24i), 9380 (-4i4e, -8e, -8i8e), 9460 (-16i, -8i), 9480 (-8i8e)



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, Broadcom offers the CacheVault flash cache protection module or the battery backup units for MegaRAID SAS controllers cards.

Cach Protection Product Specifications

Cache Protection Option	MPN	Compatible Controller Cards
CVPM05	05-50039-00	9365, 9460 and 9480 Series
CVPM02	05-50038-00	9361, 9380 Series
CVM02	05-25444-00	9361 and 9380 Series
CVM01	L5-25419-04	9266 and 9271 Series
LSIiBBU09	L5-25407-00	9265, 9266, 9270, 9271, 9285, and 9286 Series
BBU-BRACKET-05	L5-25376-00	Remote Mounting Board for LSI BBUs and CacheVault Power Modules

For additional details, view the Cache Protection Options Matrix.



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

Product	MPN	Product Name
MegaRAID CacheCade Pro 2.0 Software Pack with Fast Path (electronic license)	MR CACHECADE2 OCS	MR SAS 9260/9261/9265/9266/9270/9271/9280/9285/9286/9361/9380 series controllers
MegaRAID CacheCade Pro 2.0 Software Pack with Fast Path (physical key)	L5-25150-08	9260 (-4i, -8i, -16i, CV-4i, CV-8i), 9280 (-8e, -4i4e, -16i4e, -24i4e)
MegaRAID CacheCade Pro 2.0 Software Pack with Fast Path (physical key)	L5-25188-01	9265-8i, 9266 (-4i, -8i), 9270-8i, 9271 (-4i, -8i, -8iCC), 9285 (-8e, CV-8e), 9286 (-8e, CV-8e, CV-8eCC), 9361 (-4i, 8i, 16i, 24i), 9380 (-4i4e, -8e, -8i8e)

CacheCade Software-Enabled MegaRAID Boards

Product Name	MPN	Form Factor	Ports	Connectors	Bus Interface	Processor	Cache Memory	Cache Protection
9271-8iCC	L5-25413-19	LP MD2	8	Two SFF-8087	PCIe 3.0 x8	LSI SAS2208	1GB	LSIiBBU09 LSICVM01
9286CV-8eCC	L5-25421-22	LP MD2	8	Two SFF-8088	PCIe 3.0 x8	LSI SAS2208	1GB	CacheVault Included

SATA+SAS Cables

Cable Specifications

Product	MPN	Length	Sideband Support	To Controller	To Drives/ Backplane	Compatible Controllers ("i" = internal connectivity, "e" = external connectivity)	
CBL-SFF8087-SATASB-06M	L5-00194-00	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	
CBL-SFF8087-SATASB-10M	L5-00195-00	1.0m	✓	SFF-8087	Discrete		
CBL-SFF8087OCF-05M	CBL-SFF8087OCF05M	0.5m					
CBL-SFF8087OCF-06M	CBL-SFF8087OCF06M	0.6m		SFF-8087	Discrete		
CBL-SFF8087OCF-10M	CBL-SFF8087OCF10M	1.0m					
CBL-SFF8087SB-08M	L5-00190-00	0.8m	✓				
CBL-SFF8087SB-05M	L5-00192-00	0.5m	✓				
CBL-SFF8087SB-06M	L5-00191-00	0.6m	✓				
CBL-SFF8087-05M	CBL-SFF8087-05M	0.5m		SFF-8087	SFF-8087		
CBL-SFF8087-06M	CBL-SFF8087-06M	0.6m					
CBL-SFF8087-10M	L5-00209-00	1.0m					
CBL-SAS8087OCF-06M	CBL-SAS8087OCF06M	0.6m		SFF-8087	SFF-8482		
CBL-RA8087SATASB-10M	L5-00197-00	1.0m	✓	SFF-8087 (RA)	Discrete		Internal Connectivity: MegaRAID 9280 (-16i4e, -24i4e)
CBL-RA8087SB-10M	L5-00198-00	1.0m	✓				
CBL-RA8087-08M	L5-00207-00	0.8m		SFF-8087 (RA)	SFF-8087		
CBL-RA8087-10M	L5-00208-00	1.0m					
CBL-SFF8088SAS-10M	CBL-SFF8088SAS10M	1.0m				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	
CBL-SFF8088SAS-20M	CBL-SFF8088SAS20M	2.0m					
CBL-SFF8088ASAS-100M (Active)	L5-25146-00	10m		SFF-8088	SFF-8088		
CBL-SFF8088ASAS-200M (Active)	L5-25147-00	20m					
CBL-SFF8644-8088-10M	L5-25196-00	1.0m				External connectivity: MegaRAID 9380 (-4i4e, -8e) MegaRAID 9480-8i8e SAS 9305-16e SAS 9300 (-4i4e, -8e, -16e) SAS 9206-16e HBA 9400-16e (-8e) HBA 9405W-16e	
CBL-SFF8644-8088-20M	L5-25199-00	2.0m		SFF-8644	SFF-8088		
CBL-SFF8644-8088-60M	L5-25194-00	6.0m					
CBL-SFF8644-10M	L5-25198-00	1.0m					
CBL-SFF8644-20M	L5-25201-00	2.0m		SFF-8644	SFF-8644		
CBL-SFF8644-60M	L5-25195-00	6.0m					
CBL-SFF8643-8087-06M	05-26117-00	0.6m				Internal connectivity: MegaRAID 9380-4i4e MegaRAID 9361 (-4i, -8i) MegaRAID 9341 (-4i, -8i) MegaRAID 9365-28i MegaRAID 9460-16i (-8i) MegaRAID 9480-8i8e MegaRAID 9440-8i SAS 9305 (16i, 24i) SAS 9300 (-4i, -4i4e, -8i, -16i) HBA 9400-16i (-8i) HBA 9405W-16i	
CBL-SFF8643-8087-08M	05-26118-00	0.8m		SFF-8643	SFF-8087		
CBL-SFF8643-8087-10M	05-26119-00	1.0m					
CBL-SFF8643-06M	05-26114-00	0.6m					
CBL-SFF8643-08M	05-26113-00	0.8m		SFF-8643	SFF-8643		
CBL-SFF8643-10M	05-26112-00	1.0m					
CBL-SFF8643-SATASB-05M	L5-00219-00	0.5m	✓				
CBL-SFF8643-SATASB-06M	L5-00220-00	0.6m	✓	SFF-8643	x4 SATA		
CBL-SFF8643-SATASB-10M	L5-00221-00	1.0m	✓				
CBL-SFF8643-SAS8482SB-06M	L5-00222-00	0.6m	✓	SFF-8643	SFF-8482		
CBL-RA8643-04M	L5-00223-00	0.4m		SFF-8643 (RA)	SFF-8643		
CBL, RA x4 SFF-8654 to x4 SFF-8643 1M	05-50066-00	1.0M	✓	SFF-8654 (RA)	SFF-8643	9365-28i	

U.2 Enabled Cables

Cable Specifications

These cables enable connections from 9400 series MegaRAID and HBA Tri-Mode Adapters to NVMe storage devices either through backplane or direct to drive connections.

MPN	Description	Length	Side Bands Supported	To Controller	To Drives/Backplane	Compatible Controllers (i = internal, e = external connectivity)
05-50061-00*	Cable, U.2 Enabler, HD to HD(W) 1M	1m	Yes	x8 SFF-8643	2 x4 SFF-8643 Mini SAS HD (White)	Internal Connectivity: MegaRAID 9460 (-16i, 8i) MegaRAID 9480 (-8i8e) MegaRAID 9440 (-8i) HBA 9400 (-16i, -8i, -8i8e) HBA 9405W (-16i)
05-50062-00	Cable, U.2 Enabler, HD to OCuLink 1M	1m	Yes	x8 SFF-8643	2 x4 SFF-8612 OCuLink	
05-50063-00	Cable, U.2 Enabler, HD to SlimLine 1M	1m	Yes	x8 SFF-8643	2 x4 SFF-8654 SlimLine	
05-50065-00	Cable, U.2 Enabler, HD to SFF8639 0.5M	0.5m	Yes	x8 SFF-8643	2 x4 SFF-8639 Direct Drive Connect	
05-50064-00	Cable, U.2 Enabler, HD to SFF8639 1M	1m	Yes	x8 SFF-8643	2 x4 SFF-8639 Direct Drive Connect	

*U.2 Enabled cable 05-50061-00 designed for SuperMicro NVMe enabled backplanes. These backplanes identify NVMe drive connections through white Mini SAS HD connectors.

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