Adaptec® SmartHBA 2100 Series: 2100-24i/16i/8i8e/8i/4i4e

12 Gbps PCIe Gen3 SAS/SATA Host Bus Adapter with Basic Hardware RAID

Smart Storage, Connectivity and Hardware RAID

Today's data centers and enterprises need storage solutions that can keep pace with rapid data expansion. The SmartHBA 2100 Series is the newest product in the Smart Storage solutions family, forged through the convergence of SAS/SATA protocol controller expertise, more than 30 years of Microchip board innovation and the new Smart Storage stack.

The SmartHBA 2100 Series, available in four different 12 Gbps configurations with up to 24 ports, uniquely combines the capabilities of a full-featured host bus adapter (HBA) like the HBA 1100 with those of a basic RAID adapter using hardware RAID. With an optimal mix of resiliency, efficiency, and ease of use, it adds the robustness of true host-offloading hardware RAID, offers open-source driver compatibility and comes with a full set of storage management tools. The SmartHBA 2100 Series offers the flexibility of internal and external connectivity in a low-profile/MD2 form factor.

Resiliency, Efficiency and Data Availability

The SmartHBA 2100 is an ideal solution for server-based storage systems that require maximum bandwidth and I/O connectivity, low-power consumption, high reliability, plus options for data availability. The Smart Software stack even allows a combination of RAID and raw devices. This is useful in SDS environments where hardware RAID significantly increases OS boot reliability, but full HBA features and performance are otherwise needed. The SmartHBA 2100 also provides enhanced enclosure management capabilities to both RAID and raw devices, and enables enclosure services by providing a virtual SEP to software stacks if needed.[1]

The SmartHBA 2100 offers over 40 percent power savings compared to prior generations and significant power advantages versus competing solutions, giving it the lowest Total Cost of Ownership (TCO) for an HBA/basic RAID solution. It delivers a robust and scalable solution that can handle the toughest system workloads and configurations, from an array of high-performance SSDs to high-capacity HDDs. The 2100 can be used with or without SAS expanders.

[1] Provides a virtual SES processor to the host OS/SDS stack for passive backplanes with SGPIO/IBPI support.
[2] 16- and 24-port adapters can achieve 1.7M random read IOPS for 4 KB I/Os. Adapters with 8 ports and fewer are capable of 1.5M IOPS.

Maximum Performance

The SmartHBA 2100 Series provides the highest levels of storage performance and scalability for next-generation data centers. The SmartHBA 2100 provides connectivity to large numbers of storage devices, including HDDs, SSDs and SMR drives. These storage devices can aggregate the performance of devices to the limits of the PCIe Gen3 host bus at 6.6 Gbps, and achieve up to 1.7M IOPS and 60 percent higher IOPS performance with SATA devices without additional overhead or latency.[2]

Entry-Level RAID Functionality

The SmartHBA 2100 combines uncompromised HBA functionality with basic RAID support in hardware using the PM8222 SmartIOC 2100 silicon. Robust RAID support is the same for all platforms and operating systems, providing a consistent user experience. Metadata compatibility with SmartRAID 3100 products allows customers to upgrade to a full-feature hardware RAID solution with caching for acceleration if needed. The SmartHBA 2100 supports up to 32 hard disk drives or SSDs in RAID configurations using RAID levels 0, 1, 10, or even RAID 5, and can simultaneously use RAID arrays and raw devices in mixed mode.

Unified Storage Management Utilities

maxView provides both server and remote administration, including proactive failure notification, and supports all HBA, SmartHBA and SmartRAID products, including backward compatibility. This browser-based tool suite supports all standard browsers, and is also available as an offline USB boot image. maxView adapter management components include the maxView GUI, an ARCCONF command-line tool, an event monitor for logging and email alerts, a CIM provider and a vSphere plugin.

Benefits

- Ideal for high-performing I/O solutions supporting SAS/SATA HDDs and SSDs requiring maximum connectivity
- Combines full HBA functionality with basic hardware RAID
- Offers basic RAID functionality for up to 32 devices supporting RAID levels 0, 1, 10 and 5 in conjunction with full HBA functionality for up to 238 devices
- Broad operating system support through highly efficent, low-latency PQIdriver driver (fully open-source for Linux®/FreeBSD)
- Performance of up to 1.7M random read IOPS with extremely low-latency 4 KB I/Os

Highlights

- Up to 24 native SAS/SATA ports; low-profile MD2 form factor
- 12 Gbps SAS data rates using mini-SAS HD connectors
- Basic hardware RAID plus full-featured high-performance HBA in the same solution
- Significant power savings delivers lowest total cost of ownership versus competing solutions
- The unified maxView management tools and drivers across the HBA, RAID, and expander solutions enable easy manageability across the entire product line
- Proven compatibility with existing Adaptec® solutions, multiple operating systems, servers, enclosures, SSDs, HDDs and LTO tape drives
- Uses the latest 28 nm SmartIOC 2100 SAS/SATA protocol controller to drive efficiency and performance while also having the industry's lowest-power consumption
- Quality and reliability through the unified, hardened Smart Storage stack, which is deployed in over 30M servers

Parameters

Parameter	Description		

Key Software Features	• Support for up to 256 SAS/SATA target devices (238 SSD/HDDs maximum support and remainder are reserved for expanders and enclosure management)
	• Support for up to 32 drives in RAID arrays
	• Hardware RAID level 0,1,10,5 support
	• Multi-LUN support
	• SAS expander support
	• TLR
	• SATA NCQ
	• Hot plug drive support
			• S.M.A.R.T.
			• MPIO support
			• Multi-initiator (host)/clustering for SAS (HBA devices only)
			• Enclosure management
			  • SES-2, SES-3
			  • SFF-8485, SGPIO
			  • SFF-8489, IBPI
			• BMC support

Management Utilities	maxView Storage Manager • Web-based GUI management utility • OS X support: Windows®, Linux®, Solaris • VMware • Remote configuration, monitoring and notification • Remote firmware updates • SMI-S support • SMTP	ARCCONF • Command-line interface • SMI-S support for VMware BIOS Configuration Utility (CTRL+A) • Legacy configuration utility • Flashable BIOS support	ROM-Based uEFI BIOS Configuration Utilities • HII-based pre-boot GUI configuration utility • Arcconf CLI for uEFI shell Flashable BIOS support • Lightweight event monitoring and logging tool • Distributes adapter events and notifies user
Operating Systems	Microsoft Windows, Red Hat, SuSE, CentOS, Ubuntu, VMware ESXi, FreeBSD, Solaris, Citrix Xen Server, and open-source Linux drivers. The latest drivers and OS support are at storage.microsemi.com/en-us/support/start		
Physical Dimensions	2.535" H × 6.6" L (64 mm × 167 mm) or all SKUs except the SmartHBA 2100-4i4e, which is 2.535" H × 5.2" L (64 mm × 132.08 mm)		
Operating Temperature	50°C ambient and 55°C with 200 LFM airflow. Note: This adapter contains a powerful I/O processor that requires adequate airflow to operate reliably. Please install this card only into server or PC chassis with at least 200 LFM airflow. Temperature measured 1 inch from adapter.		
Regulatory Certification	CE, FCC, UL, C-tick, VCCI, KCC, CNS		
Environmental Compliance	RoHS		
Warranty	3 years		
Accessories	Serial Attached SCSI (SAS) cables (www.microsemi.com/product-directory/storage-boards/3686-cables-accessories)		

Ordering Information

SmartHBA 2100 Series	Part Number	Host Interface	Form Factor	SAS/SATA Ports	Connectors	MTBF	RAID Levels
SmartHBA 2100-24i	2301600-R	×8 Gen3 PCIe	Low-profile, MD2	24 internal	6 (×4) SFF-8643	2.73M hours	0, 1, 10, 5
SmartHBA 2100-16i	2302100-R			16 internal ports	4 (x4) SFF-8643	2.73M hours	
SmartHBA 2100-8i8e	2301900-R			8 internal/ 8 external ports	2(x4) Sff-8643/ 2 (x4) SFF-8644	2M hours	
SmartHBA 2100-8i	2290400-R			8 internal	2 (×4) SFF-8643	1.36M hours	
SmartHBA 2100-4i4e	2292200-R			4 internal/4 external	1 (×4) SFF8644/1 (×4) SFF-8643	>1.4M hours	

For More Information

https://www.microsemi.com/product-directory/smart-storage-platform/4324-12g-smarthba-2100-series-adapters

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