BROADCOM®

Product Brief

HBA 9405W Series x16 PCIe Tri-Mode Storage Adapters

12Gb/s SAS/SATA/PCIe (NVMe) Tri-Mode HBAs

Industry's First Single-Chip, x16 Low-Profile HBAs with Tri-Mode SerDes Technology

Broadcom enables high performance storage connectivity and flexible system designs that support any combination of SAS, SATA, and PCIe (NVMe) devices with the industry's first x16 HBA series with Tri-Mode SerDes technology. The x16 PCIe Gen3 Tri-Mode HBA series delivers high-performance storage for bandwidth-intense applications such as big data analytics, media applications and applications performing large sequential reads.

NVMe Performance Gains for Storage

The x16 Tri-Mode HBAs with 16 internal and external ports bring NVMe performance benefits to the storage tier by providing connectivity and data protection that HBAs have powered for over 20 years for SAS/SATA interfaces. Based on the single-core SAS3616W Tri-Mode Storage I/O controller (IOC), the HBAs provides bandwidth and an IOPS performance increase compared to the previous generation, connecting to large-scale external storage enclosures. The x16 Tri-Mode HBAs are ideal for big data applications such as analytics and business intelligence.

Endless design flexibility using Tri-Mode Controllers

Broadcom Tri-Mode SerDes Technology enables the operation of NVMe, SAS, or SATA storage devices in a single drive bay. A single controller can operate in all three modes concurrently servicing NVMe, SAS, or SATA drives. The controller negotiates between the speeds and protocols to seamlessly work with any of the three types of storage devices. Tri-Mode support provides a non-disruptive way to evolve existing data center infrastructure. By upgrading to a Tri-Mode HBA, users can expand beyond SAS/SATA and use NVMe without major changes to other system configurations. Take advantage of x16 slots and optimize two x8 controllers into one card; delivering more versatility and optimal slot performance density.
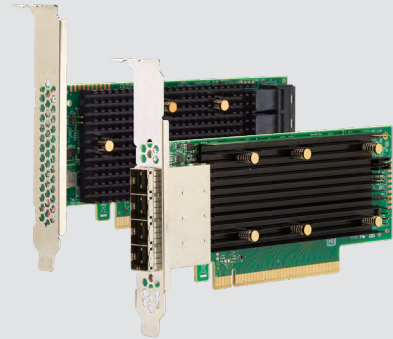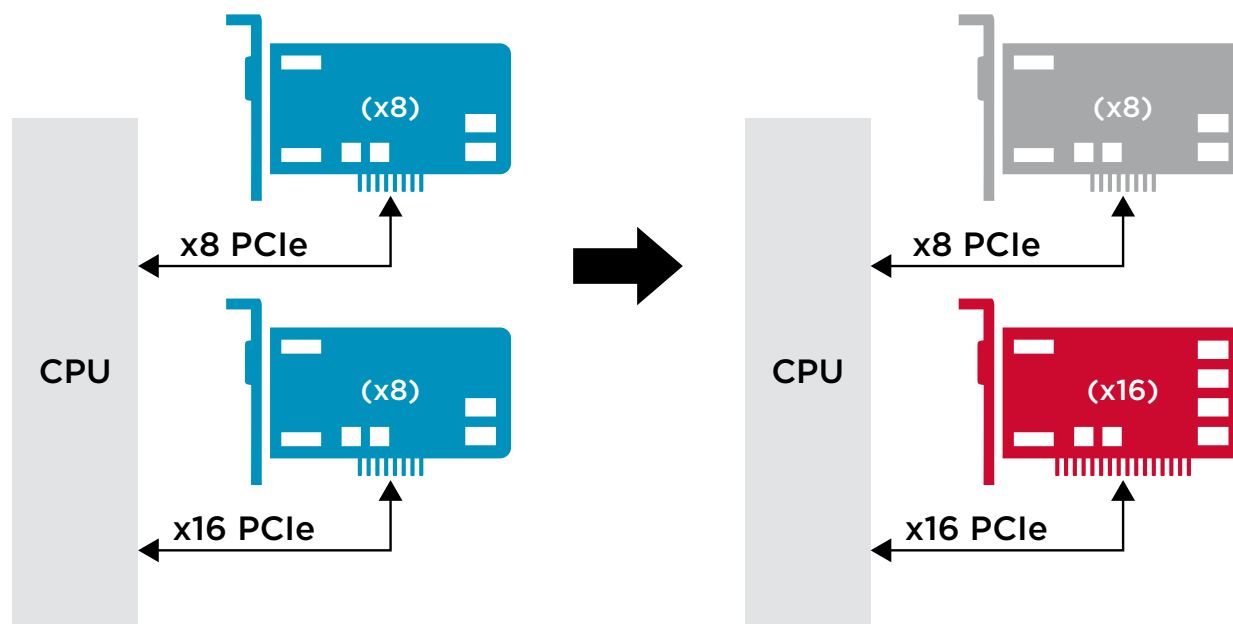
Applications

- High-port count SAS/SATA/NVMe adapters for bandwidth-intense application such as UHD and big data analytics
- Tri-Mode connectivity enabling maximum data center flexibility
- Highest sequential throughput; ideal for video streaming, big data analytics, medical imaging and media applications
- High bandwidth external storage to SAS, SATA, or PCIe enclosures

Key Features

- x16 PCIe 3.1 Host Interface
  - Supports x16, x8, x4, x2, x1 PCIe lanes at a transfer rate up to 8.0 GT/s per lane, full duplex
  - Lane and polarity reversal
  - Variable PCIe bandwidth negotiation
- Low Profile MD2 Form Factor
- Tri-Mode enabled external storage interface
- Supports 12Gb/s SAS, 6Gb/s SATA, and PCIe (NVMe) up to 8.0 GT/s

HBA 9405W Series of x16 Tri-Mode Storage Adapters

9405W Tri-Mode HBAs

	9405W-16e	9405W-16i
Ports	16 external	16 internal
Connectors	Four (x4) SFF-8644	Four (x4) SFF-8643
Storage Interface Support	SAS, SATA, PCIe (NVMe)	SAS, SATA, PCIe (NVMe)
Max Devices Per Controller	SAS/SATA: 1024, NVMe: 24	SAS/SATA: 1024, NVMe: 24
I/O Processor / SAS Controller	SAS3616W	SAS3616W
Host Bus Type	PCIe 3.1 x16	PCIe 3.1 x16
Power	14.0W	14.0W
Physical Dimensions	6.600" x 2.712" (167.65 mm x 68.90 mm)	6.127" x 2.712" (155.65 mm x 68.90 mm)
Cable Support	Passive copper, active copper, active optical	Passive
Operating Conditions	Operating: 10°C to 55°C, 20 to 80% non-condensing Airflow: 200 LFM Storage: -45°C to 105°C, 5 to 90% non-condensing	Operating: 10°C to 55°C, 20 to 80% non-condensing Airflow: 200 LFM Storage: -45°C to 105°C, 5 to 90% non-condensing
MTBF (Calculated)	>4,500,000 hours at 40°C	>4,500,000 hours at 40°C
Operating Voltage	+12V +/-8%; 3.3V +/-9%	+12V +/-8%; 3.3V +/-9%
Hardware Warranty	3 years; with advanced replacement option	3 years; with advanced replacement option
Regulator Certifications	USA (FCC 47 CFR part 15 Subpart B, class B); Canada (ICES -003, Class B); Taiwan (CNS 13438); Japan (VCCI V-3); Australia/New Zealand (AS/NZS CISPR 22); Korea (RRA no 2013-24 & 25); Europe (EN55022/EN55024); Safety: EN/IEC/UL 60950; RoHS; WEEE	
OS Support	Microsoft Windows, Linux, VMware. Contact Oracle support for Oracle Solaris driver or software support. See www.broadcom.com/support/download-search for details on versions.	
Ordering Information		
Single Pack	05-50044-00	05-50047-00