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.

High-Performance to Big Data Applications

The x16 Tri-Mode HBAs with 16 internal or external ports bring performance benefits to the storage tier by providing connectivity and data protection to large-scale storage enclosures computing big data applications such as analytics and business intelligence. Based on the single-core SAS3616W Tri-Mode I/O controller (IOC), the HBAs provide a bandwidth and IOPS performance increase compared to previous generations.

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 and negotiate 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.
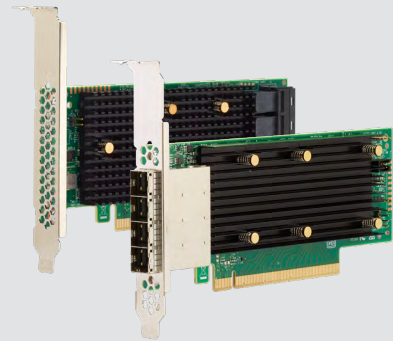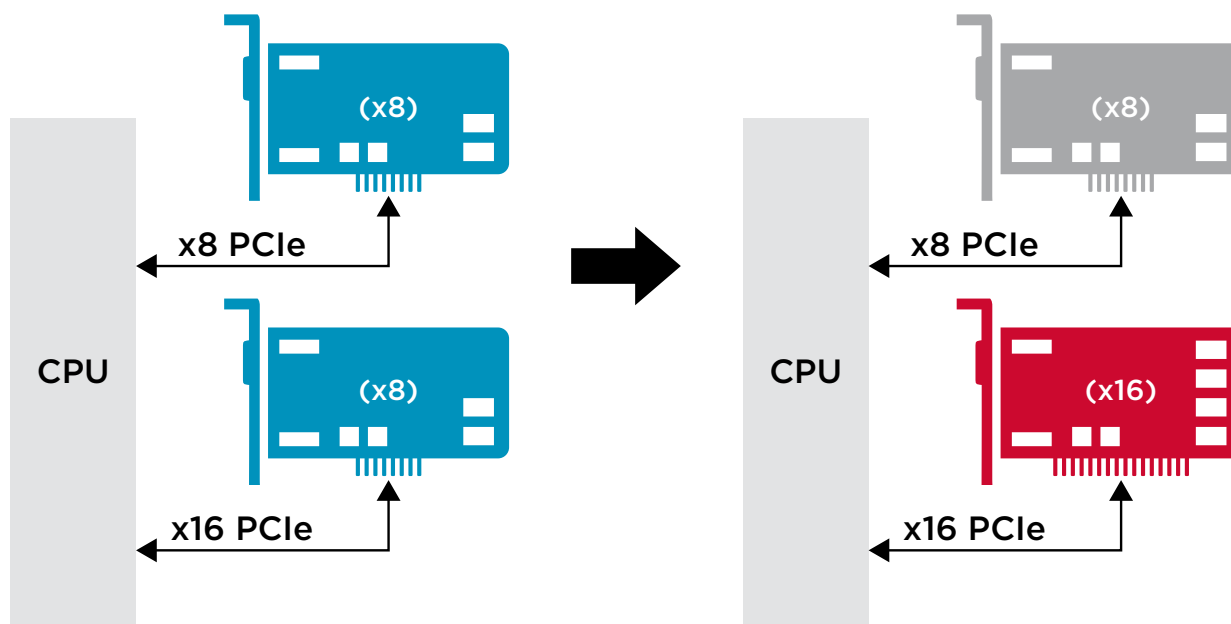
Applications

- Ideal for bandwidth-intense applications 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 storage to SAS, SATA, or NVMe devices

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: 0°C to 55°C, 20 to 80% non-condensing Airflow: 200 LFM Storage: -45°C to 105°C, 5 to 90% non-condensing	Operating: 0°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

*9405W-16e designs connecting to external PCIe JBOF enclosures have unique design constraints. Contact your Broadcom sales representative or FAE before starting these designs.

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