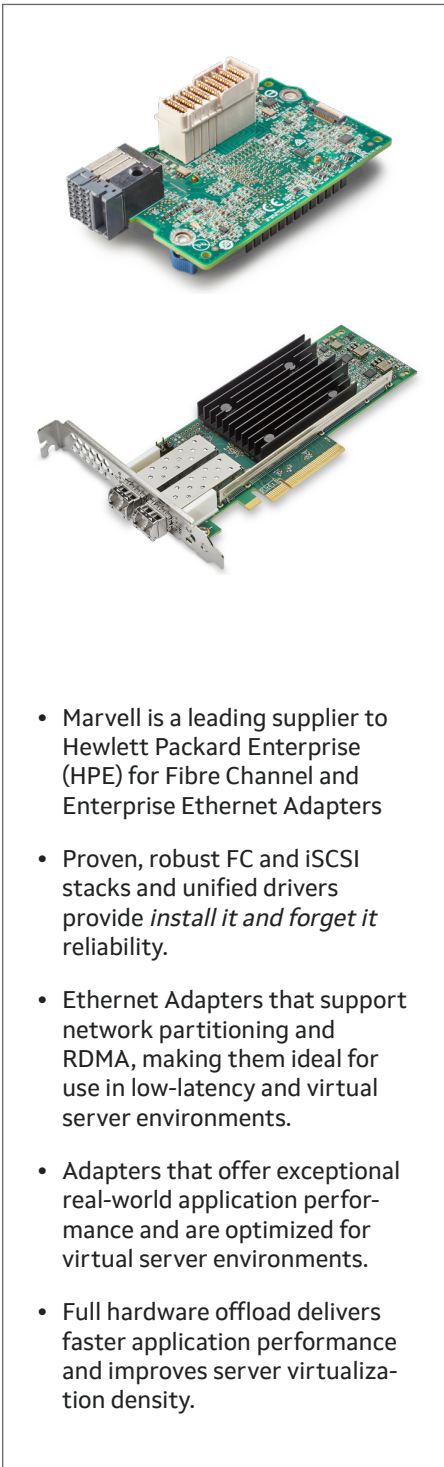


HPE Adapters from Marvell®

Marvell FastLinQ® Ethernet and Marvell QLogic® Fibre Channel Adapters Power HPE ProLiant/Apollo/Synergy Servers



- Marvell is a leading supplier to Hewlett Packard Enterprise (HPE) for Fibre Channel and Enterprise Ethernet Adapters
- Proven, robust FC and iSCSI stacks and unified drivers provide *install it and forget it* reliability.
- Ethernet Adapters that support network partitioning and RDMA, making them ideal for use in low-latency and virtual server environments.
- Adapters that offer exceptional real-world application performance and are optimized for virtual server environments.
- Full hardware offload delivers faster application performance and improves server virtualization density.

With the advances in server technology and the rapid growth in server virtualization, networks need more reliability, bandwidth, and security to keep up with current workloads. In addition, the emergence of cloud computing is forcing networks to support a broad ecosystem of applications, hypervisors, and OSes. These requirements force administrators to optimize network infrastructure and reduce costs.

Marvell offers a portfolio of network and storage adapters—from 10/20/25/50GbE Ethernet and Converged Network Adapters (CNA) to industry-standard Fibre Channel (FC) 32Gb (32GFC) and 16Gb (16GFC) adapters for HPE's ProLiant, Apollo, Integrity, and Synergy servers.

Fibre Channel Host Bus Adapters

Overview

The HPE SN1610Q Enhanced 32GFC HBAs are designed to provide secure and predictable storage networking performance, supporting the most demanding virtualized and mission-critical workloads in the data center. While fully leveraging the high performance 32GFC capability, these adapters also support root of trust (RoT) security and automatic congestion controls. Marvell 32GFC and 16GFC HBAs for HPE are ideal for shared storage environments requiring high bandwidth for I/O intensive applications such as server virtualization, media streaming, backup and recovery, data warehousing, and online transaction processing (OLTP). All of these adapters also fully support HPE Network Orchestrator and HPE Smart SAN for 3PAR®.

These HPE FC adapters support StorFusion™ technology, which means they integrate with HPE B-Series and C-Series 16GFC and 32GFC fabrics to address the needs of IT organizations that require reliability, security, and guaranteed network performance. Key benefits of StorFusion technology include rapid deployment and orchestration, advanced diagnostics, and improved resiliency and quality of service (QoS).

NVMe® Over Fibre Channel (FC-NVME)

Workloads that demand higher throughput, IOPS, and lower latency are moving to flash. The NVMe protocol has been designed from the ground up for flash and features deep parallelism, random access, and flash access over PCI Express® (PCIe®) to maximize bandwidth.

NVMe works best when coupled with a network that can provide lossless, low-latency, and high-performing transport. FC-NVMe extends these benefits over a Fibre Channel fabric.

The HPE Fibre Channel Adapters support low-latency access to scale out with full support for the FC-NVMe-2 protocol. The HPE Fibre Channel Adapters can

simultaneously support FC-NVMe and FCP-SCSI storage traffic on the same physical port, enabling customers to migrate to NVMe at their own pace.

The HPE Fibre Channel Adapters bring the best of both worlds by offering up to 4 million IOPS and line rate 32GFC performance, while delivering low-latency access to NVMe and SCSI storage over a Fibre Channel network.

Reliability

Marvell QLogic FC Adapters are legendary for reliability, ease of use, and interoperability. All HPE-branded Marvell QLogic adapters offer full port isolation for enterprise-class reliability (Figure 1).

Per Port Functionality	Marvell	Comp.
Independent CPU	✓	✗
Isolated Memory	✓	✗
Independent Firmware Image	✓	✗

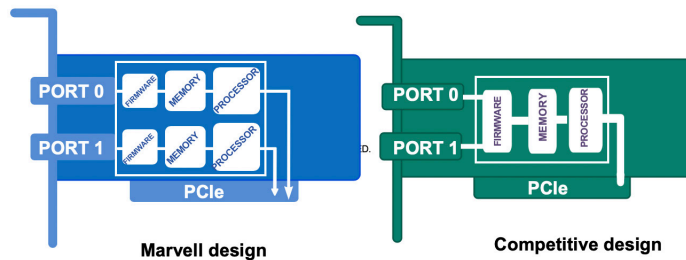


Figure 1. Marvell Design Provides Reliable Full-port Isolation

In addition, a single common driver per OS for multiple generations of FC Adapters (32GFC, 16GFC, 8GFC, and 4GFC) simplifies deployment and upgrading existing FC infrastructure. Marvell drivers are supported across all major OSes and hypervisors.

To augment new deployments with faster and lower latency NVMe™ storage, concurrent FC-NVMe (NVMe over Fabrics support for Fibre Channel) is supported on 16GFC and 32GFC adapters (see [Table 1](#)).

Marvell Universal SAN Congestion Mitigation Technology (USCM)

Implementing industry standard Fabric Performance Impact Notifications (FPINs), HPE Fibre Channel Adapters with USCM Technology work both independently and in coordination with Brocade® and Cisco® FC fabrics to avoid SAN congestion by enabling congestion detection, notification, and mitigation.

Firmware Integrity Protection With Hardware Root of Trust

Security threats continue to evolve and increase, driving Chief Information Officers towards securing the server all the way down to the firmware at the lowest layers of the server platform, where attacks are the most difficult to detect. To address this issue, select HPE Fibre Channel Adapters incorporate a hardware RoT that prevents malicious

firmware from hijacking the FC HBA. HPE Fibre Channel Adapters with RoT enable both integrity and authenticity during adapter firmware updates by both validating firmware embedded signatures with hardware embedded keys to ensure that only trusted firmware executes, and protecting firmware updates that are applied over public networks.

Ethernet Adapters

Customers using HPE Synergy servers can achieve 25GbE/50GbE network connectivity with the HPE Synergy 4820C/6820C CNAs and the HPE Ethernet Synergy 6810C Adapter. The HPE Synergy 25/50GbE 6810C/6820C Adapters provide up to 200Gbps bidirectional, dual port, server-to-server connectivity. These adapters also support both RoCE and iWARP RDMA protocols. In addition, the HPE Synergy 6820C supports iSCSI and FCoE storage offload and 16 physical functions per adapter to support converged infrastructure virtualization (virtual connect). With RDMA, the 6820C can support iSCSI over Ethernet with RDMA or iSER. For customers with applications requiring small packet acceleration, these adapters support the Data Plane Developer Kit (DPDK), with up to 68-million packet per second processing capability.

The HPE Synergy 4820C/6820C CNAs support 10GbE, 25GbE, and 50GbE (2x25GbE) connectivity along with Universal RDMA (support for concurrent RoCE and/or iWARP) and DPDK support. The HPE CNAs from Marvell support iSCSI and FCoE storage offloads.

All of these HPE flexible network adapters also support network virtualization using Generic Network Virtualization Encapsulation (GENEVE), generic routing encapsulation (NVGRE), and virtual extensible LAN (VXLAN) tunnel offloads. This support allows IT administrators to accommodate increasingly large quantities of virtual LANs (VLANs) and to isolate physical L2 networks. In addition, these adapters support precision time protocol (PTP), which synchronizes the server system clocks in the Internet computing infrastructure. PTP is documented in IEEE 1588-2002 PTPv1 and enhancement 802.1as/1588-2008 PTPv2.

Table 1. HPE FC Adapters from Marvell

	SN1100Q	SN1600Q	SN1610Q	HPE Synergy 5830C
Physical Specifications				
Port Count	1/2	1/2	1/2	2
Port Connector	SFP+	SFP+	SFP+	N/A
Host Bus Interface Specifications				
Bus Type	PCIe 3.0, x8	PCIe 3.0, x8	PCIe 4.0, x8	PCIe 3.0, x8
Data Path	FC	FC	FC	FC
Port Speed	16GFC	32GFC	32GFC	32GFC
FC Specifications				
Auto-negotiation	16/8/4GFC	32/16/8GFC	32/16/8GFC	32/16/8GFC
IOPS (per port)	650,000	650,000	1,000,000	650,000
Topology	FC-AL, FC-AL-2, point to point, switched fabric			
Protocols	FCP-3-SCSI, FC-Tape (FCP-2), FC-NVMe™ over Fabrics			
Advanced Features				
HPE Smart SAN-optimized Support	D_Port, FC ping, FC traceroute, enhanced FDMI, RDP, LCB, FEC, CS_CTL, FA-WWN, F-BLD, BB-CR	D_Port, FC ping, FC traceroute, enhanced FDMI, RDP, LCB, FEC, CS_CTL, FA-WWN, F-BLD, BB-CR	D_Port, FC ping, FC traceroute, enhanced FDMI, RDP, LCB, FEC, CS_CTL, FA-WWN, F-BLD, BB-CR	D_Port, FC ping, FC traceroute, enhanced FDMI, RDP, LCB, FEC, CS_CTL, FA-WWN, F-BLD, BB-CR
Virtualization	VM-ID and Tagless VM-ID ¹			
SAN Congestion Mitigation	FPIN			
Support and Management				
Management	HPE SIM ² , HPE SUM ³ , QCC ⁴			
Secure FW Update with Silicon RoT	N/A	N/A	Yes	N/A
OS Support ⁵	Microsoft Windows, RHEL, SLES, Oracle UEK, VMware, Citrix XenServer	Microsoft Windows, RHEL, SLES, VMware	Microsoft Windows, RHEL, SLES, VMware	Microsoft Windows, RHEL, SLES, VMware
Server Support	ProLiant Gen10/Gen10 Plus	ProLiant Gen10	ProLiant Gen10 Plus/Gen11	HPE Gen10
Ordering Information				
Part Number	P9D93A/P9D94A	P9M75A/P9M76A	R2E08A/R2E09A	777456-B21

1. Brocade FC switches only

2. SIM = System Insight Manager

3. SUM = Smart Update Manager

4. QCC = QConvergeConsole[®] management tools: VMware vSphere GUI QCC plug-in, VMware ESX CLI QCC plug-in, Linux/VMware/Windows PowerKit CLI QCC extensions, Windows Admin Center QCC extensions, and Linux/Windows QCC CLI. Available from the download pages on www.marvell.com.

5. For more Linux OS support and certification information, see HPE's Single Point of Connectivity Knowledge (SPOCK) Web site, www.hpe.com/storage/spock

Table 2. HPE 10/25/50GbE CNAs and Intelligent Ethernet Adapters from Marvell

	HPE Synergy 4820C	HPE Synergy 6810C	HPE Synergy 6820C
Physical Specifications			
Port Count	2	2	2
Port Connector	N/A	N/A	N/A
Host Bus Interface Specifications			
Bus Type	PCIe 3.0, x16	PCIe 3.0, x16	PCIe 3.0, x16
Data Path	Converged Ethernet	Ethernet	Ethernet
Port Speed	2x10Gbps/20Gbps/25Gbps	2x25Gbps/50Gbps ¹	2x25Gbps/50Gbps ¹
Ethernet Specifications			
Jumbo Frames	Yes	Yes	Yes
Hardware iSCSI Offload	Yes	No	Yes
Hardware FCoE Offload	Yes	No	Yes
MSI/MSI-X	Yes	Yes	Yes
Checksum and Segmentation Offload	Yes	Yes	Yes
Receive Side Scaling (RSS)	Yes	Yes	Yes
802.1Q VLAN Tagging	Yes	Yes	Yes
IEEE 1588 PTPv1/v2	Yes	Yes	Yes
NPAR	No	No	No
SR-IOV	Yes	Yes	Yes
Overlay Network Support (GENEVE, NVGRE, VXLAN, GRE)	Yes	Yes	Yes
VMware NetQueue and Microsoft VMQ/VMMQ	Yes	Yes	Yes
Pre-Boot Execution Environment (PXE)	Yes	Yes	Yes
ProLiant Heterogeneous Teaming Driver	Yes	Yes	Yes
RDMA (RoCE, RoCEv2, and iWARP)	Yes	Yes	Yes
NVMe over Fabrics	Yes	Yes	Yes
DPDK	Yes	Yes	Yes
Support and Management			
Management	QCS ³ CLI, QCC ³ GUI, UEFI		
OS Support	Microsoft Windows, RHEL, SLES, VMware	Microsoft Windows, RHEL, SLES, VMware	Microsoft Windows, RHEL, SLES, VMware
Server Support	HPE Synergy Gen10	HPE Synergy Gen10	HPE Synergy Gen10
Ordering Information			
Part Number	4820C: 876449-B21	6810C: 867322-B21	6820C: P02054-B21

1. 50Gbps is 2x25Gbps

2. 1300R and 622FLR-SFP28

3. QCS = QLogic Control Suite management tools (Linux/Windows QCS CLI). QCC = QConvergeConsole management tools: VMware vSphere GUI QCC plug-in, VMware ESX CLI QCC plug-in, Linux/VMware/Windows PowerKit CLI QCC extensions, Windows Admin Center QCC extensions, and Linux/Windows QCC CLI. Available from the download pages on www.marvell.com.

Resources

See the following Web site for more information:

www.marvell.com/hpe

For questions or enquiries, e-mail hpesolutions@marvell.com



Marvell first revolutionized the digital storage industry by moving information at speeds never thought possible. Today, that same breakthrough innovation remains at the heart of the company's storage, networking and connectivity solutions. With leading intellectual property and deep system-level knowledge, Marvell semiconductor solutions continue to transform the enterprise, cloud, automotive, industrial, and consumer markets. For more information, visit www.marvell.com.

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