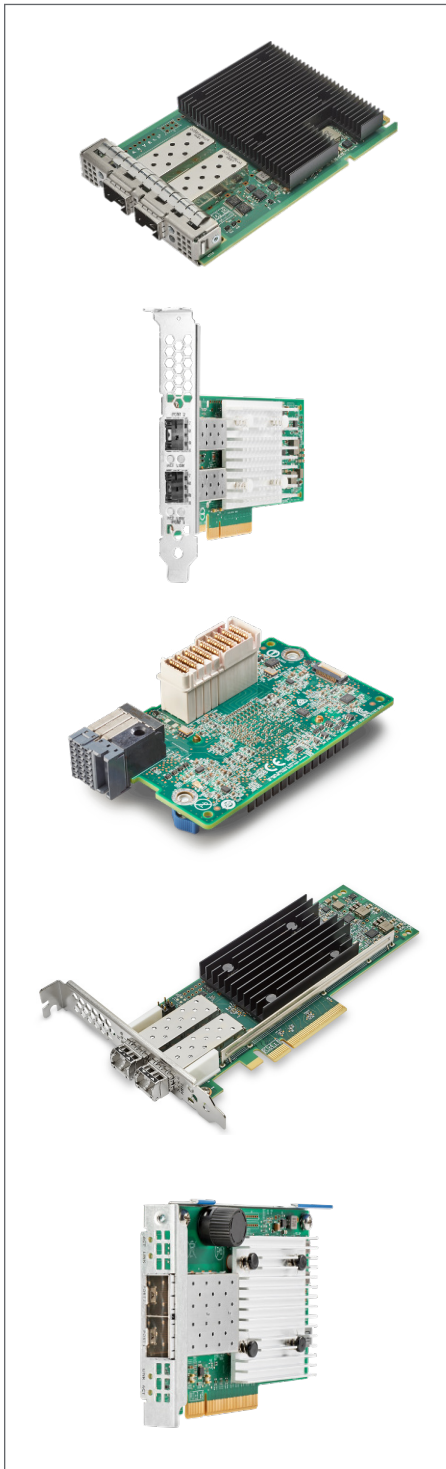


HPE Adapters from Marvell

Marvell FastLinQ Ethernet and Marvell QLogic Fibre Channel Adapters Power HPE ProLiant/Apollo/Synergy Gen10 Servers



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 **full portfolio** of network and storage adapters—from 10Gb Ethernet (10GbE), 25Gb Ethernet (25GbE), and 50Gb Ethernet (50GbE) adapters to industry-standard Fibre Channel (FC) 8Gb (8GFC), 16Gb (16GFC), and 32Gb (32GFC) adapters, as well as 10/20/25/50GbE Converged Network Adapters (CNAs) for HPE's ProLiant®, Apollo®, Integrity®, and Synergy® servers.

Fibre Channel Host Bus Adapters

The HPE® SN1100Q HBA and HPE Synergy 3830C HBA are 16GFC Adapters that provide storage networking infrastructure capable of supporting the most demanding virtualized and cloud-enabled environments, while fully leveraging the capabilities of high-performance 16GFC. The HPE SN1600Q, HPE SN1610Q, and HPE Synergy 5830C HBAs are 32GFC adapters that provide even more performance and efficiency for shared storage connectivity. These 16GFC and 32GFC adapters are ideal for shared storage environments requiring high bandwidth and 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).

- 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.

Fibre Channel Adapters

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	✓	✗

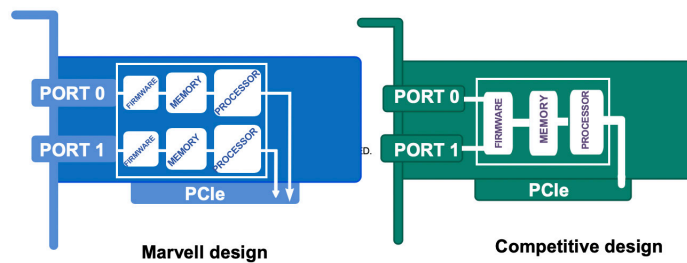


Figure 1. Marvell Design Provides Reliable Full-port Isolation

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](#)).

Ethernet Adapters

Customers using HPE's ProLiant, HPE Apollo, or HPE Synergy servers can achieve 10GbE/20GbE/25GbE/50GbE network connectivity with the HPE Ethernet 57810S/57840S/QL41401 Series Adapters, HPE Synergy 4820C/6820C CNAs, HPE Ethernet Synergy 6810C Adapter, and HPE CN1200R/CN1300R Series CNAs. These adapters are based on Marvell FastLinQ® technology and provide high-performance networking connectivity, and are NVMe over Ethernet fabric (NVMe-oF) capable. Select adapters support remote direct memory access (RDMA) for low latency connectivity. This includes support for both RDMA over Converged Ethernet (RoCE) and Internet Wide Area RDMA Protocol (iWARP) RDMA protocols. Customers looking for converged connectivity supporting FCoE, iSCSI, and L2 can leverage Marvell FastLinQ technology in the HPE FlexFabric 57810S/57840S/QL41401 Series, HPE Synergy 4820C Series, and HPE CN1200R/CN1300R Series CNAs. These high-performance adapters are available in standard PCIe®, HPE Mezzanine OCP 3.0, and Flexible LOM Rack (FLR) form factors. PCIe, OCP 3.0, and FLR versions also support SFP28, SFP+, and 10GBASE-T connection options.

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.

For low-cost 10GBASE-T connectivity, HPE offers the BASE-T 57810/57840/QL41401 Series, and CN1200R adapters. Customers can connect these adapters to the network with low-cost RJ-45 CAT6a cables. Eliminating the need for high-cost optical transceivers makes this an economical way to deploy high performance I/O. The HPE CN1200R also supports iWARP and RoCE RDMA (*Universal RDMA*) for low-latency applications as well as NVMe-oF.

HPE-branded 57810/57840 Series Adapters from Marvell support network partitioning (NPAR). NPAR enables a single 10GbE or 20GbE port of the adapter to be presented to the OS as four independent physical functions. Therefore, a single dual-port adapter can be presented to the OS as eight individual adapters. NPAR enables administrators to split up the 10/20GbE connection to divide and allocate bandwidth and resources as needed at the adapter level. Working with Marvell, HPE provides 10/20GbE NPAR in the ProLiant Gen9 and Gen10 server families, giving IT organizations enhanced flexibility and capacity as they migrate to higher speed networks. These adapters are also designed to work in next-generation HPE servers.

The HPE QL41401 Series Ethernet Adapters, the HPE Synergy 4820C/6820C CNAs, and the HPE CN1200R/CN1300R CNAs for HPE ProLiant and Apollo servers 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 25GbE adapters for HPE ProLiant and Apollo servers utilize Marvell SmartAN™ technology, which allows the adapter to be automatically configured when switching between 10GbE and 25GbE network switch ports. This technology eliminates the System Administrator's job of reconfiguring the adapter when upgrading from 10GbE to 25GbE connectivity.

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.

For Hyper-Converged Infrastructure (HCI) implementations, all the HPE adapters based on Marvell FastLinQ technology are supported in Microsoft® Azure Stack HCI, Storage Space Direct (S2D), Windows Live Migration, Windows SMB Direct, Linux® NVMe-oF over RoCEv2/iWARP/TCP, CEPHS, NFS over RDMA (NFSoRDMA), Linux/Windows VF RDMA) and VMware® PVRDMA and vSAN Ready Node configurations. The combination of HPE and Marvell FastLinQ Ethernet are a one-stop shop for certified I/O for HCI environments.

Table 1. HPE FC Adapters from Marvell

	81Q/82Q/84Q	SN1100Q	SN1600Q	SN1610Q	HPE Synergy 3830C	HPE Synergy 5830C
Physical Specifications						
Port Count	1/2/4	1/2	1/2	1/2	2	2
Port Connector	SFP+	SFP+	SFP+	SFP+	N/A	N/A
Host Bus Interface Specifications						
Bus Type	PCIe 2.0, x4/x8	PCIe 3.0, x8	PCIe 3.0, x8	PCIe 4.0, x8	PCIe 3.0, x4	PCIe 3.0, x8
Data Path	FC	FC	FC	FC	FC	FC
Port Speed	8GFC	16GFC	32GFC	32GFC	16GFC	32GFC
FC Specifications						
Auto-negotiation	8/4/2GFC	16/8/4GFC	32/16/8GFC	32/16/8GFC	16/8/4GFC	32/16/8GFC
IOPS (per port)	200,000	650,000	650,000	1,000,000	600,000	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 ¹					
Advanced Features						
HPE Smart SAN-optimized Support	FC ping, FC traceroute, enhanced FDMI, RDP	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, CS_CTL, FA-WWN, F-BLD	D_Port, FC ping, FC traceroute, enhanced FDMI, RDP, LCB, FEC, CS_CTL, FA-WWN, F-BLD, BB-CR
Support and Management						
Management	HPE SIM ² , HPE SUM ³ , QCC ⁴					
Secure FW Update with Silicon RoT	N/A	N/A	N/A	Yes	N/A	N/A
OS Support ⁵	Microsoft Windows®, RHEL®, SLES®, Oracle® UEK, Solaris®, VMware®, Citrix® XenServer®	Microsoft Windows, RHEL, SLES, Oracle UEK, VMware, Citrix XenServer	Microsoft Windows, RHEL, SLES, VMware	Microsoft Windows, RHEL, SLES, VMware	Microsoft Windows, RHEL, SLES, VMware	Microsoft Windows, RHEL, SLES, VMware
Server Support	ProLiant G5–G7, Gen8, Gen9 ⁶	ProLiant Gen9, Gen10	ProLiant Gen10	ProLiant Gen10	HPE Synergy Gen9, Gen10	HPE Gen10
Ordering Information						
Part Number	AK344A/AJ764A/P9D91A	P9D93A/P9D94A	P9M75A/P9M76A	R2E08A/R2E09A	777452-B21	777456-B21

1. FC-NVMe over Fabrics is supported only on SN1100Q, SN1600Q, SN1610Q, and HPE Synergy 5830C.

2. SIM = System Insight Manager

3. SUM = Smart Update Manager

4. QCC = QConvergeConsole®

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

6. 84Q supported on select ProLiant Gen9 servers only

Table 2. HPE Ethernet Adapters from Marvell

	HPE FlexFbr 10GbE 2P FLR-SFP+ 57810 (534FLR)	HPE 10GbE 2P BASE-T QL41401, HPE CN1200R CNA	HPE 10GbE 2P SFP+ 57810S (530SFP+)	HPE 10GbE 2P BASE-T 57810S, HPE FlexFbr 10Gb 2P FLR-T 57810S (533FLR-T), HPE FlexFbr 10Gb 4P FLR-T 57840S (536FLR-T)
Physical Specifications				
Port Count	2	2	2	2/4 ¹
Port Connector	SFP+	RJ-45	SFP+	RJ-45
Host Bus Interface Specifications				
Bus Type	PCIe 2.0, x8	PCIe 3.0 x 16	PCIe 2.0, x8	PCIe 2.0, x8; PCIe 3.0, x8 ¹
Data Path	Converged Ethernet	Ethernet (521T) Converged Ethernet (CN1200R)	Ethernet	Ethernet (530T) Converged Ethernet (533FLR-T, 536FLR-T)
Port Speed	10Gbps	1/10Gbps	10Gbps	1/10Gbps
Ethernet Specifications				
Jumbo Frames	Yes	Yes	Yes	Yes
Hardware iSCSI Offload	Yes	Yes ²	No	Yes ²
Hardware FCoE Offload	Yes	Yes ²	No	Yes ²
MSI/MSI-X	Yes	Yes	Yes	Yes
Checksum and Segmentation Offload	Yes	Yes	Yes	Yes
Receive Side Scaling (RSS)	Yes	Yes	Yes	Yes
802.1Q VLAN Tagging	Yes	Yes	Yes	Yes
IEEE 1588 PTPv1/v2	Yes	Yes	Yes	Yes
NPAR	Yes ³	No	Yes ³	Yes ³ , No ⁴
SR-IOV	Yes	Yes	Yes	Yes
Overlay Network Support (GENEVE, NVGRE, VXLAN, GRE)	Yes	Yes	Yes	Yes
VMware NetQueue and Microsoft VMQ	Yes	Yes	Yes	Yes
Pre-Boot Execution Environment (PXE)	Yes	Yes	Yes	Yes
ProLiant Heterogeneous Teaming Driver	Yes	Yes	Yes	Yes
RDMA (RoCE, RoCEv2, and iWARP)	No	Yes	No	No
NVMe over Fabrics ⁵	Yes	Yes	Yes	Yes
DPDK	Yes	Yes	Yes	Yes

Continued on next page

Table 2. HPE Ethernet Adapters from Marvell (continued)

	HPE FlexFbr 10GbE 2P FLR-SFP+ 57810 (534FLR)	HPE 10GbE 2P BASE-T QL41401, HPE CN1200R CNA	HPE 10GbE 2P SFP+ 57810S (530SFP+)	HPE 10GbE 2P BASE-T 57810S, HPE FlexFbr 10Gb 2P FLR-T 57810S (533FLR-T), HPE FlexFbr 10Gb 4P FLR-T 57840S (536FLR-T)
Support and Management				
Management	QCS ⁶ CLI, QCC ⁶ GUI, UEFI			
OS Support	Microsoft Windows, RHEL, SLES, VMware, Citrix XenServer	Microsoft Windows, RHEL, SLES, VMware, Citrix XenServer	Microsoft Windows, RHEL, SLES, VMware, Citrix XenServer	Microsoft Windows, RHEL, SLES, VMware, Citrix XenServer
Server Support	ProLiant/Apollo Gen8, Gen9, Gen10	ProLiant/Apollo Gen10	ProLiant/Apollo Gen8, Gen9 ⁷ , Gen10	ProLiant/Apollo Gen8, Gen9, Gen10
Ordering Information				
Part Number	534FLR-SFP+: 700751-B21	521T: 867706-B21 CN1200R: P0F26A	530SFP+: 652503-B21	530T: 656596-B21 533FLR-T: 700759-B21 536FLR-T: 764302-B21

1. HPE 536FLR-T is a 4-port adapter with a PCIe 3.0, x8 bus type
2. 533FLR-T, 536FLR-T, CN1200R
3. NPAR is supported in Windows, VMware, RHEL, and SLES OSes
- 4 . NPAR is not supported on the 536FLR-T.
5. NVMe-oF includes support for NVMe/RoCE at the time of publication and will support NVMe/TCP when OS support is available.
6. QCS = QLogic Control Suite. QCC = QConvergeConsole. Available from the download pages on www.marvell.com.
7. See HPE Server QuickSpecs for limitations

Table 3. HPE 10/25/50GbE CNAs and Intelligent Ethernet Adapters from Marvell

	HPE Synergy 4820C	HPE Synergy 6810C	HPE Synergy 6820C	10/25GbE 2P SFP28 QL41401 (621SFP28), HPE 10/25GbE 2P FLR-SFP28 QL41401 CNA (622FLR), HPE 1300R CNA
Physical Specifications				
Port Count	2	2	2	2
Port Connector	N/A	N/A	N/A	SFP28
Host Bus Interface Specifications				
Bus Type	PCIe 3.0, x16	PCIe 3.0, x16	PCIe 3.0, x16	PCIe 3.0, x16
Data Path	Converged Ethernet	Ethernet	Ethernet	Ethernet (621SFP28) Converged Ethernet (622FLR-SFP28, CN1300R)
Port Speed	2x10Gbps/20Gbps/25Gbps	2x25Gbps/50Gbps ¹	2x25Gbps/50Gbps ¹	10Gbps/25Gbps
Ethernet Specifications				
Jumbo Frames	Yes	Yes	Yes	Yes
Hardware iSCSI Offload	Yes	No	Yes	Yes ²
Hardware FCoE Offload	Yes	No	Yes	Yes ²
MSI/MSI-X	Yes	Yes	Yes	Yes
Checksum and Segmentation Offload	Yes	Yes	Yes	Yes
Receive Side Scaling (RSS)	Yes	Yes	Yes	Yes
802.1Q VLAN Tagging	Yes	Yes	Yes	Yes
IEEE 1588 PTPv1/v2	Yes	Yes	Yes	Yes
NPAR	No	No	No	No
SR-IOV	Yes	Yes	Yes	Yes
Overlay Network Support (GENEVE, NVGRE, VXLAN, GRE)	Yes	Yes	Yes	Yes
VMware NetQueue and Microsoft VMQ/VMMQ	Yes	Yes	Yes	Yes
Pre-Boot Execution Environment (PXE)	Yes	Yes	Yes	Yes
ProLiant Heterogeneous Teaming Driver	Yes	Yes	Yes	Yes
RDMA (RoCE, RoCEv2, and iWARP)	Yes	Yes	Yes	Yes
NVMe over Fabrics	Yes	Yes	Yes	Yes
DPDK	Yes	Yes	Yes	Yes

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Table 3. HPE 10/25/50GbE CNAs and Intelligent Ethernet Adapters from Marvell (continued)

	HPE Synergy 4820C	HPE Synergy 6810C	HPE Synergy 6820C	10/25GbE 2P SFP28 QL41401 (621SFP28), HPE 10/25GbE 2P FLR-SFP28 QL41401 CNA (622FLR), HPE 1300R CNA
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	Microsoft Windows, RHEL, SLES, VMware, Citrix XenServer
Server Support	HPE Synergy Gen10	HPE Synergy Gen10	HPE Synergy Gen10	ProLiant/Apollo Gen10
Ordering Information				
Part Number	4820C: 876449-B21	6810C: 867322-B21	6820C: P02054-B21	621SFP28: 867328-B21 622FLR-SFP28: 867333-B21 CN1300R: Q0F09A

1. 50Gbps is 2x25Gbps
2. 1300R and 622FLR-SFP28
3. QCS = QLogic Control Suite. QCC = QConvergeConsole. 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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