Overview

HPE Converged Network Adapters

The HPE Converged Network Adapters (CNAs) are dual port adapters that provide Ethernet, iSCSI, and Fibre Channel (FC) connectivity over 10GbE/25GbE using both Fibre Channel over Ethernet (FCoE) and Converged Enhanced Ethernet (CEE) standards. By consolidating Ethernet, iSCSI, and Fibre Channel onto a converged network adapter, HPE CNAs reduce the number of separate adapters and cables required for your datacenter and also reduce operational, power and cooling costs while preserving existing Ethernet and Fibre Channel infrastructure. HPE CNAs have been thoroughly tested with HPE Top of Rack (ToR) and End of Row (EoR) switches to ensure an optimal FCoE solution for your datacenter.

Key Features and Benefits

10G BASE-T

- Available with 10G BASE-T connectivity using RJ45 connectors for CAT6A or CAT7 cables, reduces implementation costs by eliminating need for SFP+ optics.

Converged Infrastructure

- Ethernet, iSCSI, and Fibre Channel in one adapter
- Combines the functionality of a NIC (Ethernet), iSCSI, and Fibre Channel onto a single converged network adapter reducing the number of adapters and cables and reducing acquisition and operational costs

Jumbo Frames

- Support jumbo frames (also known as extended frames), permitting up to a 9K byte (KB) transmission unit (MTU) when running Ethernet I/O traffic. This is over 5X the size of a standard 1500-byte Ethernet frame. With jumbo frames, networks can achieve higher throughput performance and improve CPU utilization. These attributes are particularly useful for database transfer and tape backup operations.

DPDK

- HPE CNAs supports DPDK with benefit for packet processing acceleration and use in NFV deployments.

TCP/IP Stateless Offloading

- TCP, IP, UDP checksum offload, Large Send Offload (LSO), TCP Segmentation Offload (TSO). These features optimize host efficiency, leaving the CPU available for other duties.

Tunnel Offload

- HPE CNAs minimize the impact of overlay networking on host performance with tunnel offload support for VXLAN and NVGRE. By offloading packet processing to adapters, customers can use overlay networking to increase VM migration flexibility and network scale with minimal impact to performance. HPE Tunnel Offloading increases I/O throughput, reduces CPU utilization, and lowers power consumption. NVGRE tunnel offload supports Microsoft OS environments and VxLAN supports select VMware and Linux (RHEL and SUSE) environments.

NVMe-Ready

- CN1300R and CN1200R-T hardware supports emerging NVMe Express (NVMe) over RDMA (RoCE, RoCEv2 and iWARP).

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MSI and MSI-X

- Message Signaled Interrupt (Extended) provides performance benefits for multi-core servers by load balancing interrupts between CPUs/cores.

802.1Q VLANs

- IEEE 802.1Q virtual local area network (VLAN) protocol allows each physical port of the HPE CNAs to be separated into multiple virtual NICs for added network segmentation and enhanced security and performance. VLANs increase security by isolating traffic between users. Limiting the broadcast traffic to within the same VLAN domain also improves performance.

Forward Error Correction (FEC)

- At 25GbE bandwidth, FEC may be required depending on physical cable and optics used. The CN1300R supports both RS-FEC and FC-FEC settings at 25Gb bandwidth.

Optimized for Virtualization

- I/O Virtualization support for VMware NetQueue and Microsoft VMQ help meet the performance demands of consolidated virtual workloads.
- Compliant with Single-Root I/O Virtualization (SR-IOV), accommodating multiple Virtual Machines (VMs) to share single PCIe resources.

Auto Negotiation

- BASE-T versions of HPE CNAs can auto negotiate between 1GbE and 10GbE connections, requiring no manual intervention. Similarly, the CN1300R utilizes a technology called SmartAN(TM) to automatically configure the adapter port when connecting to either 10GbE or 25GbE. When connecting to 25GbE, Bandwidth and FEC settings are match to the switch and cable type used for the connection.

Checksum & Segmentation Offload

- Normally the TCP Checksum is computed by the protocol stack. By selecting one of the "Checksum Offload" parameters, the checksum can be computed by the adapter.
- Segmentation Offload is technique for increasing outbound throughput of high-bandwidth network connections by reducing CPU overhead. The technique is also called TCP segmentation offload (TSO) when applied to TCP, or generic segmentation offload (GSO).

IPv6

- IPv6 uses 128-bit addressing allowing for more devices and users on the Internet. IPv4 supported 32-bit addressing.

RDMA

- CN1200R-T and CN1300R adapters support Remote Direct Memory Access (RDMA) allowing the adapter to bypass the CPU and have direct access to memory for I/O commands. Bypassing the CPU reduces the time it takes to process each I/O command and reduces I/O latency. The adapters support both iWARP and RDMA over Converged Ethernet (RoCE) protocols. iWARP and RoCE/RoCEv2 can run concurrently on the same adapter, but not on the same port.

Receive Side Scaling (RSS)

- RSS resolves the single-processor bottleneck by allowing the receive side network load from a network adapter to be shared across multiple processors. RSS enables packet receive-processing to scale with the number of available processors.

Time synchronization implementations (PTP)

- Synchronization of system clocks throughout a network, achieving clock accuracy in the sub-microsecond range, making it suitable for measurement and control systems.

Overview

Network Adapter Teaming

- HPE CNAs support for NIC teaming helps IT administrators increase network fault tolerance and increased network bandwidth. The team of adapters can work together as a single virtual adapter.

Network Partitioning (NPAR)

- Select HPE CNAs support Network Partitioning (NPAR) for ProLiant rack servers. Allowing administrators to configure a 10 Gb port as four separate partitions or physical functions. Each PCI function is associated with a different virtual NIC. To the OS and the network, each physical function appears as a separate NIC port.

Reliability

Converged Enhanced Ethernet reliability standards

- Sends Fibre Channel data packets via Fibre Channel over Ethernet (FCoE) using Converged Enhanced Ethernet (CEE) standards ensuring high standards of data integrity and lossless Ethernet.

Provides HPE ProLiant Connectivity to Storage and Networks

Robust interoperability testing

Provides an HPE-branded CNA solution which has undergone extensive HPE interoperability testing for connecting HPE ProLiant servers into storage and networking environments.

Flexible Connect

Optical or direct attach copper cables

- Choose between SFP+ SR (optical) or direct attach copper cable connectivity allowing maximum flexibility in connecting to HPE FCoE Converged Network Switches.
- The 10G BASE-T HPE adapter can use existing UTP CAT6A (or better) cable to deliver Gigabit Ethernet over copper, according to the IEEE 802.3an specifications. For new installations, CAT6A shielded cable is recommended.

NOTE: A minimum of two Gigabytes (2 GB) of server memory is required per each adapter.

NOTE: Direct Attach Cable (DAC) for copper environments or fiber transceivers and cables for fiber-optic environments must be purchased separately.

Cabling details:

- CAT6A UTP or better twisted-pair
- 22-26 AWG, 100 @ 1 MHz
- EIA/TIA 568-B.2-10b

	Description	Part Number
CN1300R	HPE StoreFabric CN1300R 10/25Gb Dual Port Converged Network Adapter	Q0F09A
CN1200E	HPE StoreFabric CN1200E 10Gb Converged Network Adapter	E7Y06A
CN1100R	HPE StoreFabric CN1100R Dual Port Converged Network Adapter	QW990A
CN1200R-T	HPE StoreFabric CN1200R 10GBASE-T Converged Network Adapter	Q0F26A
CN1200E-T	HPE StoreFabric CN1200E 10GBASE-T Dual Port Converged Network Adapter	N3U51A
CN1100R-T	HPE StoreFabric CN1100R 10GBASE-T Dual Port Converged Network Adapter	N3U52A

Copper Cables and SFP+ Ethernet Optical Modules (SR)

SFP+ Active Copper Cables for HPE B-series FCoE Converged Network Switches

Description	Part Number
HPE 1m B-series Active Copper SFP+ Cable	AP818A
HPE 3m B-series Active Copper SFP+ Cable	AP819A
HPE 5m B-series Active Copper SFP+ Cable	AP820A

Overview

SFP+ Copper Cables for HPE C-series FCoE Converged Network Switches

Description	Part Number
HPE StoreFabric C-series 3M Passive Copper SFP+ Cable	K2Q21A
HPE StoreFabric C-series 5M Passive Copper SFP+ Cable	K2Q22A
HPE C-series SFP+ to SFP+ Active Copper 7.0m Direct Attach Cable	QK701A
HPE C-series SFP+ to SFP+ Active Copper 10.0m Direct Attach Cable	QK702A

Direct Attach Copper Cables

Description	Part Number
HPE FlexNetwork X240 10G SFP+ to SFP+ 0.65m Direct Attach Copper Cable	JD095C
HPE FlexNetwork X240 10G SFP+ to SFP+ 1.2m Direct Attach Copper Cable	JD096C
HPE FlexNetwork X240 10G SFP+ to SFP+ 3m Direct Attach Copper Cable	JD097C
HPE FlexNetwork X240 10G SFP+ to SFP+ 5m Direct Attach Copper Cable	JG081C
HPE 25Gb SFP28 to SFP28 1m Direct Attach Copper Cable	844474-B21
HPE 25Gb SFP28 to SFP28 3m Direct Attach Copper Cable	844477-B21
HPE 25Gb SFP28 to SFP28 5m Direct Attach Copper Cable	844480-B21

10Gb SFP+ Ethernet Optical Modules (SR)

Description	Part Number
HPE BladeSystem c-Class 10Gb SFP+ SR Transceiver	455883-B21
HPE 25Gb SFP28 SR 100m Transceiver	845398-B21

Optical Cables

NOTE: Refer to product release notes for more information regarding support of specific cables.

Premier Flex OM4 type cables	Part Number
HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 1m Cable	QK732A
HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 2m Cable	QK733A
HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 5m Cable	QK734A
HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 15m Cable	QK735A
HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 30m Cable	QK736A
HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 50m Cable	QK737A

OM3 LC-LC type cables

HPE LC to LC Multi-mode OM3 2-Fiber 0.5m 1-Pack Fiber Optic Cable	AJ833A
HPE LC to LC Multi-mode OM3 2-Fiber 1.0m 1-Pack Fiber Optic Cable	AJ834A
HPE LC to LC Multi-mode OM3 2-Fiber 2.0m 1-Pack Fiber Optic Cable	AJ835A
HPE LC to LC Multi-mode OM3 2-Fiber 5.0m 1-Pack Fiber Optic Cable	AJ836A
HPE LC to LC Multi-mode OM3 2-Fiber 15.0m 1-Pack Fiber Optic Cable	AJ837A
HPE LC to LC Multi-mode OM3 2-Fiber 30.0m 1-Pack Fiber Optic Cable	AJ838A
HPE LC to LC Multi-mode OM3 2-Fiber 50.0m 1-Pack Fiber Optic Cable	AJ839A

Models

10 G BASE-T Cable Connectivity	
Connector	RJ-45 (Two)
Wiring	CAT6A UTP or better twisted-pair
Cable distance	Maximum distances for CAT6A unshielded cable are 30 meters (98 feet) Maximum distances for CAT6A shielded (or better) are 100 meters (328 feet)

NOTE: The HPE adapter can use existing UTP CAT6A (or better) cable to deliver Gigabit Ethernet over copper, according to the IEEE 802.3an specifications. For new installations, CAT6A shielded cable is recommended. Cabling details:

- CAT6A UTP or better twisted-pair
- 22-26 AWG, 100 @ 1 MHz
- EIA/TIA 568-B.2-10b

Service and Support

HPE Support Services and Warranty Information
Protect your business beyond warranty with HPE Support Services
HPE Technology Services delivers confidence, reduces risk and helps customers realize agility and stability. Our integrated portfolio of Services for storage help customers reduce costs, optimize data, streamline storage management, and improve backup and recovery. HPE Support Services enable you to choose the right service level, length of coverage and response time as you purchase your new storage solution, giving you full entitlement for the support for need for your IT and business.

Recommended Services
Support for this adapter is at the level of server it is a part of. Please check the quickspecs of the server.

Learn More:
To learn more on HPE Storage Services, please contact your Hewlett Packard Enterprise sales representative or HPE Authorized Channel Partner
HPE Support Services are sold by Hewlett Packard Enterprise and Hewlett Packard Enterprise Authorized Service Partners.
http://www.hpe.com/services

Warranty
3-0-0 Three-year parts exchange warranty. Additional warranty protection can be purchased. HPE Global Services provides a three-year, limited warranty, fully supported by a worldwide network of resellers and service providers and toll-free 7 x 24 hardware technical phone support for the duration of the warranty. In addition, available service offerings include a full range of HPE Pointnext operational packaged hardware and software services**.**

NOTE: Certain restrictions and exclusions apply. Consult the HPE Customer Support Center for details.

Parts and Materials
Hewlett Packard Enterprise will provide HPE-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements.

Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product quick-specs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by Hewlett Packard Enterprise due to malfunction.

Technical Specifications

	CN1300R	CN1200R-T	CN1100R-T	CN1100R
Number of channels	Dual	Dual	Dual	Dual
Port Speed	10GbE	10GbE	10GbE	10GbE
Slot type supported	x8 PCIe 3.0 or 2.0	x8 PCIe 3.0 or 2.0	x8 PCIe 2.0	x8 PCIe 2.0
Type	Optical	Copper – Cat6A or better	Copper – Cat6A or better	Optical
OS Supported	Windows Server 2016/2012/2012 R2 & Hyper V	x64	x64	x64	x86, x64
	VMware 6.7,6.5,6.0,5.5	x64	x64	x64	x86, x64
	RHEL 7.x, 6.x	x64	x64	x64	x86, x64
	SLES 12.x, 11.x	x64	x64	x64	x86, x64
SPOCK	Refer to **http://www.hpe.com/storage/spock** for information on Operating System			
Servers Supported	Select HPE ProLiant Gen 10 – See Server QuickSpecs		Select HPE ProLiant Gen 8,9 & 10 – See Server QuickSpecs	
Array Platforms Supported	Refer to **http://www.hpe.com/storage/spock** for specific product support information			
Switch support	Please refer to **HPE Switch Selector tool** for information on the switches supported			
Protocol Supported	FCoE, Ethernet, iSCSI			
What's Included in the Box?	CNA, low-profile bracket			
Compliance	IEEE802.3x, IEEE802.3ad, IEEE802.1p, IEEE802.1q, IEEE802.3az, IEEE802.3ae, IEEE802.3ap, IEEE802.1qau, P802.1Qaz(ETS), P802.1Qbb(PFC), P802.1Qaz(DCBX)			
Environmental - Operating Temperature	41° to 140° F (5° to 60° C)		32° to 113° F (0° to 45° C)	
Environmental - Storage Temperature	-40° F to 158° F (-40° to 70° C)		-40°F to 149°F (-40°C to 65°C)	
Environmental - Relative Humidity - Operating	5% to 95% noncondensing PCIe Low Profile	15% to 80% (relative, non-condensing)	5% to 95% noncondensing PCIe Low Profile	
Product Dimensions (W x D x H)	Box Dimension: 240mm x 155mm x 42mm Card Dimension: 182mm x 120mm x 21.8mm			
Media	Cat6a cables, 10Gb SFP+ Ethernet Optical Modules (SR) or SFP+ direct attach active and passive copper cable			
PCIe Connector	PCIe x8 Gen3		PCIe x8 Gen2	

Technical Specifications

	CN1200E		CN1200E-T
Number of channels	Dual		Dual
Port Speed	10GbE		10GbE
Slot type supported	x8 PCIe 3.0 or 2.0		x8 PCIe 3.0 or 2.0
Type	Optical		Copper – Cat 6A or better
OS Supported	Windows Server 2016/2012/2012 R2 & Hyper V	x64	x64
	VMware 6.7,6.5,6.0,5.5	x64	x64
	RHEL 7.x, 6.x	x64	x64
	SLES 12.x, 11.x	x64	x64
SPOCK	Refer to **http://www.hpe.com/storage/spock** for information on Operating System		
Servers Supported	Select HPE ProLiant Gen8,9 & 10 – See Server QuickSpecs		
Array Platforms Supported	Refer to **http://www.hpe.com/storage/spock** for specific product support information		
Switch support	Please refer to **HPE Switch Selector tool** for information on the switches supported		
Protocol Supported	FCoE, Ethernet, iSCSI		
What's Included in the Box?	CNA, low-profile bracket		
Compliance	IEEE802.3x, IEEE802.3ad, IEEE802.1p, IEEE802.1q, IEEE802.3az, IEEE802.3ae, IEEE802.3ap, IEEE802.1qau, P802.1Qaz(ETS), P802.1Qbb(PFC), P802.1Qaz(DCBX)		
Environmental - Operating Temperature	32° to 113° F (0° to 45° C)		
Environmental - Storage Temperature	-40° F to 158° F (-40° to 70° C)		
Environmental - Relative Humidity - Operating	15% to 80% (relative, non-condensing)		
Product Dimensions (W x D x H)	Box Dimension: 240mm x 155mm x 42mm Card Dimension: 182mm x 120mm x 21.8mm		
Media	Cat6a cables, 10Gb SFP+ Ethernet Optical Modules (SR) or SFP+ direct attach active and passive copper cable		
PCIe Connector	PCIe x8 Gen3		

Summary of Changes

Date	Version History	Action	Description of Change
07-Jan-2019	Version 10	Changed	Edited CN1300R features
15-Oct-2018	Version 9	Changed	Obsolete SKU was removed from Overview section. Added CN1300R features
01-Oct-2018	Version 8	Changed	Overview and Technical Specifications sections were updated SKUs were added
18-Dec-2017	Version 7	Added	Added new part numbers for Copper Cables and SFP+ Ethernet Optical Modules.
07-Aug-2017	Version 6	Changed	Added Gen10 support
17-Feb-2017	Version 5	Changed	Updated features and table of specifications sections
27-May-2016	Version 4	Changed	Changes made to throughout the QuickSpecs
31-Mar-2016	Version 3	Changed	10G BASE-T details added
17-Oct-2014	Version 2	Changed	Name Changed to HPE Converged Network Adapters, SKU´s descriptions updated, Technical Specification table was modified.
09-Sep-2014	Version 1	New	New QuickSpecs

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