

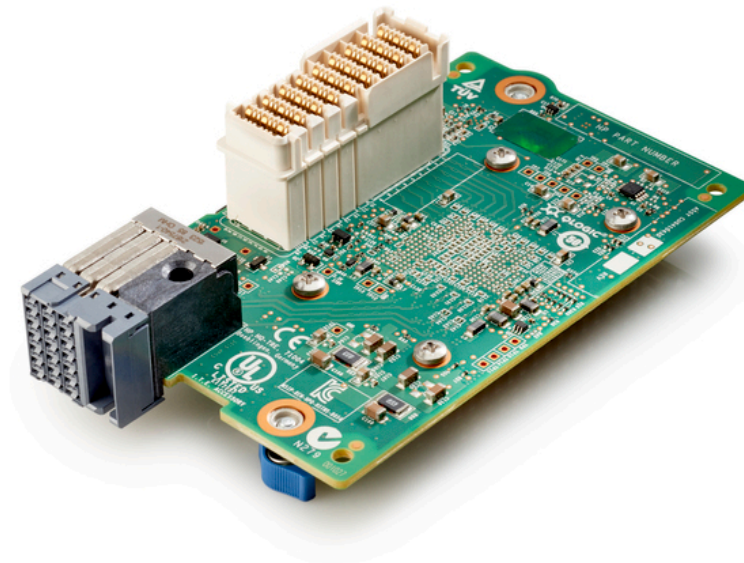
Overview

HPE Synergy 3520C 10/20Gb Converged Network Adapter (CNA)

The HPE Synergy 3520C 10/20G Converged Network Adapter is designed for traditional IT, private/public cloud, and Telco customers and provides easy-to-manage, flexible, with one of the highest-performing converged 10 or 20Gb Ethernet connectivity within the HPE Synergy Composable Infrastructure. It is a key element in Hewlett Packard Enterprise composable fabric connecting pools of compute resources to networks.

HPE Synergy 3520C also offers a rich set of offload technologies such as overlay network tunneling and storage offload to improve virtualization performance and host efficiency. With Flex-20 Technology, it converges Ethernet and FCoE onto a single connection simplifying I/O hardware by 50% and reducing costs up to 60%.

Provisioning and updating Synergy 3520C are simple, reliable and fast using the HPE Synergy software-defined template-driven, frictionless operation. The HPE Synergy Composer automatically coordinates proper firmware and driver including staging updates to execute and avoid workload disruption.



HPE Synergy 3520C 10/20Gb Converged Network Adapter

Models

HPE Synergy 3520C 10/20Gb Converged Network Adapter

777434-B21

NOTE: The HPE Synergy 3520C requires a minimum of 2 GB of server memory

NOTE: The HPE Synergy 3520C supports linking at 10Gbps when not connected to a Flex-20 device.

Overview

Kit Contents

- HPE Synergy 3520C 10/20Gb CNA
- Quick install card
- Product warranty statement
- Drivers, user guide, and utilities via: <http://www.hpe.com>

Compatibility

- HPE Synergy Compute Module Support**
- HPE Synergy 480 Gen9 Configure-to-order Compute Module
 - HPE Synergy 480 Gen9 Configure-to-order w/o Drive Bays Compute Module
 - HPE Synergy 480 Gen9 Configure-to-order Expanded Storage Compute Module

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- Supported Interconnect Modules**
- HPE Virtual Connect SE 40Gb F8 Module for HPE Synergy
 - HPE Synergy 40Gb F8 Switch Module
 - HPE Synergy 20Gb Interconnect Link Module

Standard Features

- Product Features**
- Converge both LAN and SAN on a single Ethernet wire
 - Dual 20Gb ports provide up to 80Gb bi-directional per adapter.
 - Flex-20 Technology allows fine tuning bandwidth for up to eight partitioned FlexNICs and FlexHBAs to optimize connectivity for different application needs. From 100Mb/s to 20Gb/s on up to four "Physical Function" NICs per port, in increments of 100Mb/s for NIC. The combined bandwidth of NICs cannot exceed port bandwidth i.e. 20 Gb.
 - Provisions and updates all adapters quickly and consistently using the HPE Synergy template-driven server profiles.
 - Orchestrates reliable adapter firmware updates with an entire HPE Synergy infrastructure from a single tool, HPE Synergy Composer.
 - Multi-speed adapter operates at either 20GbE or 10GbE.
 - Tunnel Offload support for VXLAN and NVGRE. Overlay networking reduces server CPU utilization and increases throughput in private/hybrid cloud networks.
 - Advanced FCoE and iSCSI offload processing frees up valuable CPU cycles.
 - Supports UEFI and legacy boot options.
 - Greater bandwidth with PCIe 3.0 .
 - Jumbo Frames support.
 - Support for Preboot eXecution Environment (PXE).
 - Optimized host virtualization density with SR-IOV support.

Dual-port 20 Gigabit Ethernet Throughput (theoretical bandwidth)

The HPE Synergy 3520C adapter delivers 40,000 Mbps bi-directional Ethernet transfer rate per port (80 Gbps aggregate bi-directional), providing the network performance needed to improve response times and alleviate bottlenecks that impact the performance of next generation data centers. 20Gb Ethernet bandwidth is ideal for high performance computing, database clusters and virtualization.

20G Ethernet Module for HPE Synergy Composable Fabric

When paired with the HPE Virtual Connect 20Gb Module you can take advantage of eight FlexNICs, which are PCI Physical Function devices that are OS/ Hypervisor independent. In addition, take advantage of new storage I/O functionality making it a full-Converged Network Adapter (CNA)

- Server ROM recognizes them as individual NICs
- Speeds can be set per NIC from 100Mbps to 20Gbps in 100Mbps increments
- Threefold increase in number of network connections per port
- Up to eight physical function NICs per adapter
- Ideal for virtualized server environments, especially for dedicated bandwidth application like virtual machine migration from one physical server to another

Jumbo Frames

The HPE Synergy 3520C adapter supports Jumbo Frames, permitting up to a 9,200 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 lower CPU utilization. These attributes are particularly useful for storage, database transfer and tape backup operations.

MSI-X

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

Standard Features

802.1p QoS Tagging	IEEE quality of service (QoS) 802.1p tagging allows the adapter to mark or tag frames with a priority level across a QoS-aware network for improved traffic flow.
802.1Q VLANs	IEEE 802.1Q virtual local area network (VLAN) protocol allows each physical port of the HPE Synergy 3520C 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.
TCP/IP Stateless Offloading	TCP/ IP, UDP checksum offload, Large Send Offload (LSO), TCP Segmentation Offload (TSO) are all features which optimize host efficiency, leaving the CPU available for other duties.
Tunnel Offload	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. Tunnel Offload supports VMware's VXLAN and Microsoft's NVGRE solutions.
Single-Root I/O Virtualization	Single-Root I/O Virtualization (SR-IOV) provides a mechanism to bypass the host system hypervisor in virtual environments providing near metal I/O performance and increasing server efficiency. SR-IOV provides a mechanism to create multiple Virtual Functions (VFs) to share single PCIe resources. The device is capable of SR-IOV, and requires Server BIOS support, controller firmware, and OS support.
Optimized for Virtualization	I/O Virtualization support for VMware NetQueue and Microsoft Dynamic VMQ help meet the performance demands of consolidated virtual workloads.
HPE Sea of Sensors 3D	Support for The Hewlett Packard Enterprise Sea of Sensors which is a collection of 32 sensors that automatically track thermal activity - heat - across the server. When temperatures get too high, sensors can kick on fans and make other adjustments to reduce energy usage. What makes it better is the upgrade from all six fans kicking on at one time to a new system where only one kicks on - the one in proximity of the area that started heating up - thus reducing the amount of energy used for cooling.
FCoE Boot	The HPE Synergy 3520C supports FCoE boot from SAN.

Ease of Deployment and Management

PXE Boot Support	The HPE Synergy 3520C adapter supports the Preboot eXecution Environment (PXE) which allows the server to boot over the network and download software residing in the network.
Compatible with Type C and D	The HPE Synergy 3520C adapter is compatible with Type C and D mezzanine slots for greater deployment versatility

Standard Features

Mezzanine Slots

Network Adapter Teaming The HPE Synergy 3520C adapter's support for NIC teaming helps IT administrators increase network fault tolerance and improve workload balance. These capabilities optimize availability, improve performance and help reduce costs.

Management Support Provisioning and updating HPE 3520C adapter are quick and consistent using the HPE Synergy template-driven server profiles. Orchestrates reliable adapter firmware updates with an entire HPE Synergy infrastructure from a single tool, HPE Synergy Composer.

Warranty Hewlett Packard Enterprise branded hardware options qualified for HPE Synergy Compute Modules are covered by a global limited warranty and supported by HPE Services and a worldwide network of Hewlett Packard Enterprise Authorized Channel Partners. The Hewlett Packard Enterprise branded hardware option diagnostic support and repair is available for one year from date of purchase, or the length of the server they are attached to, whichever is greater. Support for software and initial setup is available for 90 days from date of purchase. Additional support may be covered under the warranty or available for an additional fee. Enhancements to warranty services are available through HPE Support Services or customized service agreements.

Additional information regarding worldwide limited warranty and technical support is available at:
[**http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html**](http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html)

Service and Support

Service and Support HPE Support Service(s) need to be purchased.

HPE Technology Services offers you a rich portfolio of consulting and support services designed to add value to our core products and solutions. We have the know-how and experience to put technology to work for you. We work closely with you, as your strategic partner, leveraging our full services portfolio to make sure that everything works to help optimize your enterprise.

Choose from services aligned to our product offerings and lifecycle. From proactive onsite services to innovative support when your products are connected to Hewlett Packard Enterprise, you choose the precise level of attention and support your business demands.

HPE Technology Services for HPE Synergy

HPE Technology Services delivers confidence, reduces risk and helps customers realize agility and stability. Connect to Hewlett Packard Enterprise to help prevent problems and solve issues faster. Our support technology lets you to tap into the knowledge of millions of devices and thousands of experts to stay informed and in control, anywhere, any time.

Protect your business beyond warranty with HPE Support Services

HPE support services offer complete care and support expertise with committed response choices that are designed to meet your IT and business needs.

HPE Foundation Care services offer scalable reactive support-packages for HPE Synergy and software. You choose the type and level of service that is most suitable for your IT and business needs.

HPE Proactive Care keeps your system stable and reliable helping to prevent problems and reduce outages through proactive service management and enhanced technical response.

NOTE: This option is covered under the HPE Support Service(s) applied to the main product. No separate

Advise, transform, integrate, support, automate, and flex **HPE Technology Services** helps you get the most out of what you have today and transition to HPE Synergy, a composable infrastructure, at your pace and from wherever you are on the journey.

Start with the HPE Transformation Workshop to ensure that your business and IT organizations collaborate, define the topline strategy for composable, software-defined, cloud-ready infrastructure and kick-start your projects confidently. This workshop clarifies your business requirements and the issues that IT and operations teams must resolve in order to meet these requirements. A detailed executive briefing or high-level report summarizes the strategies, high-level plan and functional requirements.

HPE Modernization and Migration Services helps you choose the right platform for the right workload at the right cost and evolve your IT infrastructure, processes and organization taking advantage of “on-hybrid infrastructure” innovations such as composable, converged, software-defined, technologies. Hewlett Packard Enterprise experts advise, transform, integrate and implement for platform refresh, datacenter consolidation virtualization, migration and automation projects.

HPE Flexible Capacity is a pay per use model for on premise infrastructure. This offers needed HPE Synergy capacity in the datacenter, plus a buffer of additional capacity. As HPE Synergy will be a dynamic environment, this provides enough room to grow your environment, but only pay for actual metered use. Technology transitions and refresh can be built in, infrastructure and services are billed monthly, enabling you to align

Service and Support

costs to business use.

HPE Datacenter Care-Infrastructure Automation (DC-IA) is an extension to HPE Datacenter Care and delivers enterprise-grade support, advice, guidance and best practices for infrastructure automation. The service also includes Enterprise editions of automation tools including Enterprise Chef and selected others. The DC-IA Center of Excellence (CoE) is staffed with highly trained experts who have specific expertise on integrating Chef with HPE OneView.

Choose the right support to maximize uptime, free up your resources, and achieve improved value—as you get the most out of the existing IT assets while accelerating time-to-revenue.

Deploy and integrate

HPE Synergy First Frame Installation and Startup - Provides for hardware installation (HPE Synergy compute modules, Storage Modules, Virtual Connect modules, Interconnect Link Modules, Frame Link Modules, and HPE Synergy D3940 Storage Modules) and software startup for the first frame of your HPE Synergy deployment. Additional frames can be added using the HPE Synergy Additional Frame Installation and Startup Service.

HPE Synergy Additional Frame Installation and Startup Service - Add additional frames to your HPE Synergy First Frame Startup service or expand your existing HPE Synergy Infrastructure.

HPE Education Services

Training your IT staff is critical to help drive the value of HPE Synergy with increased efficiencies and better business outcomes. Training is key to the transformation and management of HPE Synergy.

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 QuickSpecs, 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.

Related Options

Additional HPE Synergy Adapters	Converged Network Adapters	
	HPE Synergy 3820C 10/20Gb Converged Network Adapter	777430-B21
	HPE Synergy 2820C 10Gb Converged Network Adapter	794538-B21
	Fibre Channel Host Bus Adapters	
	HPE Synergy 3830C 16Gb Fibre Channel Host Bus Adapter	777452-B21

Technical Specifications

General Specifications

Network processor	Emulex XE-100 series
Data rate	Two ports, each at 40 Gbps bi-directional; 80 Gbps aggregate bi-directional theoretical bandwidth.
Onboard memory	900MB (distributed memory)
Bus type	PCI Express v3.0 (Gen 3) x8
Form factor	The HPE 3520C is a Type C mezzanine adapter
IEEE Compliance	802.3ae, 802.1Q, 802.3x, 802.1p, 802.3ad/LACP, 802.1AB(LLDP), 802.1Qbg, 802.1Qbb, 802.1Qaz, 802.3ap

Power and Environmental Specifications

Operating Temperature	0°C to 55°C / 32°F to 131°F
Humidity	15% to 80% non-condensing
Power requirement	7.5W typical, 8.6W maximum
Emissions classification	FCC Class A
Agency approvals	USA: FCC (CFR Title 47 Part 15) and UL 60950-1:2007 Canada: ICES-003:2012 Japan: VCCI:2012 Korea: MSIP - KN22, KN24 Australia: AS/NZS EN55022:2010 / CISPR22:2009+A1, EN55024:2010 / CISPR24:2010 European Union: EN55022:2010 (CISPR 22), EN55024:2010, and IEC60950-1:2007 2nd Edition Taiwan: BSMI - CNS 13438:2006
RoHS Compliance	6 of 6
Safety	UL Mark (USA and Canada) CE Mark EN 60590-1

Operating System Support

Microsoft:
Microsoft Windows Server 2012 and 2012 R2
Microsoft Hyper-V Server 2012 and 2012 R2

Linux:
Red Hat Enterprise Linux x64 6.7, 6.8
Red Hat Enterprise Linux x64 7.2
SUSE Linux Enterprise Server 11SP4 x64
SUSE Linux Enterprise Server 12 & 12SP1 x64

Virtualization:

VMware ESXi 5.5 U3, 6.0 U2

NOTE: vSphere 6.0 U2 is the minimum version of VMware for UEFI FCoE Boot from SAN support. Boot from SAN via the iSCSI offload path is not supported for VMware.

NOTE: For more operating system support & certification information, please visit:

Technical Specifications

<http://h10018.www1.hp.com/wwsolutions/index.html>.

**Environment-
friendly Products
and Approach****End-of-life
Management and
Recycling**

Hewlett Packard Enterprise offers end-of-life Hewlett Packard Enterprise product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: <http://www.hp.com/go/green>. To recycle your product, please go to: <http://www.hp.com/go/green> or contact your nearest Hewlett Packard Enterprise sales office. Products returned to Hewlett Packard Enterprise will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard Enterprise web site at: <http://www.hp.com/go/green>. These instructions may be used by recyclers and other WEEE treatment facilities as well as Hewlett Packard Enterprise OEM customers who integrate and re-sell Hewlett Packard Enterprise equipment.

Summary of Changes

Date	Version History	Action	Description of Change
31-Mar-2016	From Version 1 to 2	Changed	Overview, Compatibility, Standard Features, Related Options and Technical Specifications sections were updated.
		Added:	SKUs added in Overview and Related Options section: 777434-B21, 777430-B21, 794538-B21, 777452-B21.
1-Dec-2015	Version 1	Created	New QuickSpecs



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