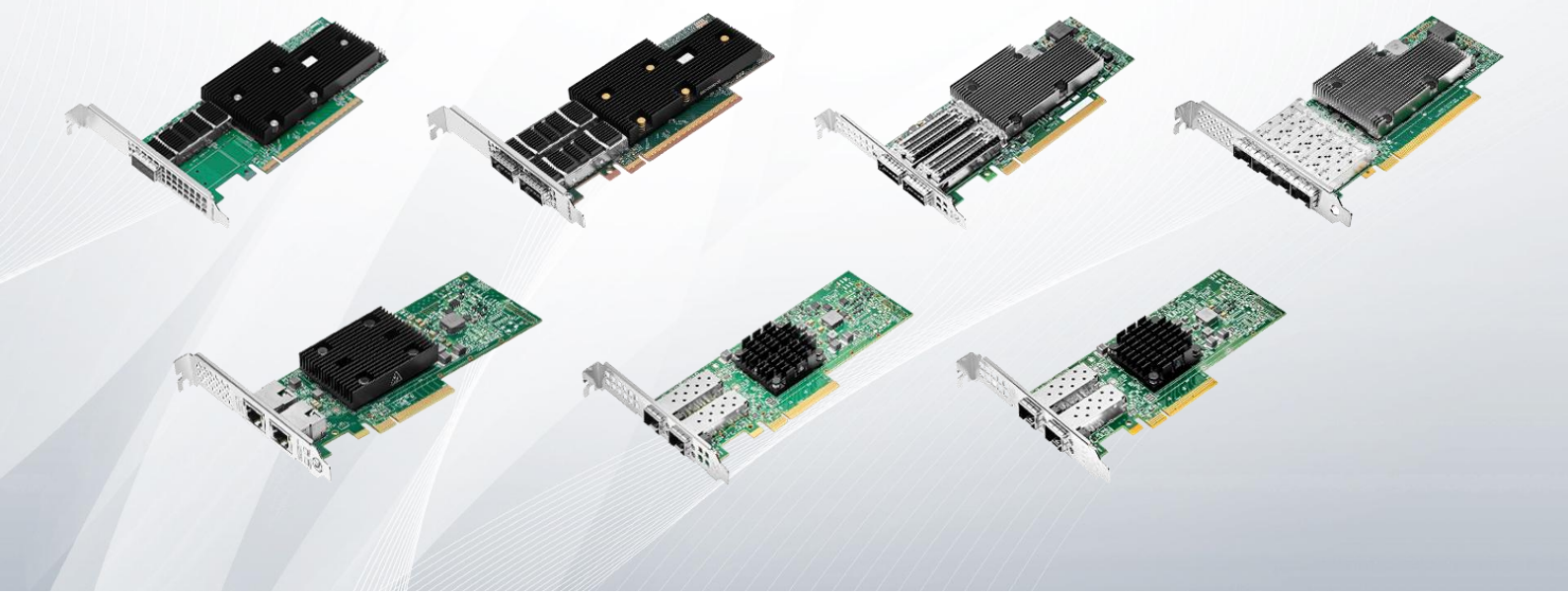
Broadcom® Ethernet Adapters

Broadcom® Ethernet Adapters are designed for data center, and provide flexible and scalable I/O solutions.



Overview

FS offers Broadcom® PCIe NIC 3.0 Ethernet portfolio supporting the full range of speeds and feeds, from 1G to 400G in the standard half-height half-length form factor. This portfolio leverages Broadcom's comprehensive family of low-power Ethernet controller ASICs.

Broadcom's Ethernet network controller delivers best-in-class performance and hardware acceleration and offload capabilities that result in higher throughput, higher CPU efficiency, and lower workload latency for TCP/IP as well as RoCE traffic.

Broadcom PCIe Ethernet NIC adapters utilize market-leading 50/100G PAM-4, 10/25G NRZ, and PCIe 5.0/4.0 SerDes technology, ensuring seamless interoperability with Broadcom's market-leading Top-of-Rack switch and PCIe Express switch solutions which also use the same SerDes technology.

Broadcom Ethernet adapters support SPDM-compliant attestation. Attestation enables data center operators to securely verify the authenticity and conformity of the hardware and software deployed in their data centers.

Key Features

- Line-rate throughput from 1 Gb/s to 400 Gb/s
- 1-port, 2-port, and 4-port support
- DAC, copper, and fiber connectivity
- PCIe 3.0/4.0 and 5.0 host interface
- 50/100G PAM-4 and 10/25G NRZ SerDes
- TruFlow™-configurable packet processor for virtual switch acceleration
- Broadcom security technology provides Silicon Root of Trust, secure boot and SPDM attestation
- On-chip tunneling protocol processing for Geneve, VXLAN, and NVGRE
- Hardware-based low-latency RoCE v2
- SR-IOV up to 1K VFs
- GPU Direct acceleration

Technical Specification

BCM957416A4160C

Dual-Port 10GBASE-T Ethernet PCI Express 3.0 x8 Network Interface Card

The Broadcom® BCM957416A4160C is a dual-port 10GBASE-T, PCI-Express 3.0 x8 Network Interface Card that supports a dual-port 10GBASE-T media interface that is fully compliant with the IEEE 802.3an standard. The card uses the Broadcom BCM57416 Ethernet controller with the integrated dual channel 10GBASE-T transceiver.

BCM957416A4160C			
Ports	Dual	**ASIC**	BCM57416
Data Rate Per Port	10/1GbE	**System Interface Type**	PCIe 3.0 x 8
Connector Type	RJ45	**OS Support**	Microsoft Windows, Red Hat Enterprise Linux, and so on
SR-IOV	Yes	**NVGRE**	Yes
RDMA	Yes	**TSO**	Yes
VXLAN	Yes	**DPDK**	Yes
NPAR	Yes	**NVMe-oF**	Yes
Storage Temperature	40 to 70 °C (-40 to 158 °F)	**Operating Temperature**	0 to 55 °C (32 to 131 °F)
Bracket Height	Full Height and Low Profile	**Warranty**	3 Year

BCM957412A4120AC

Dual-Port 10 Gb/s Ethernet PCI Express 3.0 x8 Network Interface Card

The Broadcom® BCM957412A4120AC is a dual-port 10 Gb/s, PCI-Express 3.0 x8 Network Interface Card that supports both SFP+ optical modules and copper direct-attach cable. The card uses the Broadcom BCM57412 10GbE MAC controller with the integrated dual-channel 10GbE SFI transceiver.

BCM957412A4120AC			
Ports	Dual	**ASIC**	BCM57412
Data Rate Per Port	10/1GbE	**System Interface Type**	PCIe 3.0 x 8
Connector Type	SFP+	**OS Support**	Microsoft Windows, Red Hat Enterprise Linux, and so on
SR-IOV	Yes	**NVGRE**	Yes
RDMA	Yes	**TSO**	Yes

BCM957416A4160C			
VXLAN	Yes	**DPDK**	Yes
NPAR	Yes	**NVMe-oF**	Yes
Storage Temperature	40 to 70 °C (-40 to 158 °F)	**Operating Temperature**	0 to 55 °C (32 to 131 °F)
Bracket Height	Full Height and Low Profile	**Warranty**	3 Year

BCM957414A4142CC

Dual-Port 25 Gb/s or 10 Gb/s Ethernet PCI Express 3.0 x8 Network Interface Card

The Broadcom® BCM957414A4142CC is a dual-port 25 Gb/s or 10 Gb/s, PCI-Express 3.0 x8 Network Interface Card that supports both SFP28/ SFP+ optical modules and copper-direct attach cable. The card uses the Broadcom BCM57414 25GbE MAC controller with the integrated dualchannel 25GbE SFI transceiver.

BCM957414A4142CC			
Ports	Dual	**ASIC**	BCM57414
Data Rate Per Port	25/10G/1GbE	**System Interface Type**	PCIe 3.0 x 8
Connector Type	SFP28	**OS Support**	Microsoft Windows, Red Hat Enterprise Linux, and so on
SR-IOV	Yes	**NVGRE**	Yes
RDMA	Yes	**TSO**	Yes
VXLAN	Yes	**DPDK**	Yes
NPAR	Yes	**NVMe-oF**	Yes
Storage Temperature	40 to 70 °C (-40 to 158 °F)	**Operating Temperature**	0 to 55 °C (32 to 131 °F)
Bracket Height	Full Height and Low Profile	**Warranty**	3 Year

BCM957504-P425G

Quad-Port 25 Gb/s SFP28 Ethernet PCI Express 4.0 x16 Network Interface Card

The Broadcom BCM957504-P425G is a quad-port 25 Gb/s PCI Express 4.0 x16 network interface card that supports SFP28/SFP+ optical modules and copper direct-attach cables. The card uses the Broadcom BCM57504 100GbE MAC controller with an integrated quad-channel 25GbE SFI transceiver.

BCM957504-P425G			
Ports	Quad	**ASIC**	BCM57504

BCM957504-P425G			
Data Rate	25/10GbE	**System Interface Type**	PCIe 4.0 x 16
Connector Type	SFP28	**OS Support**	Microsoft Windows, Red Hat Enterprise Linux, and so on
SR-IOV	Yes	**NVGRE**	Yes
RDMA	Yes	**TSO**	Yes
VXLAN	Yes	**DPDK**	Yes
NPAR	Yes	**NVMe-oF**	Yes
Storage Temperature	40 to 70 °C (-40 to 158 °F)	**Operating Temperature**	0 to 55 °C (32 to 131 °F)
Bracket Height	Full Height and Low Profile	**Warranty**	3 Year

BCM957508-P2100G

Dual-Port 100 Gb/s QSFP56 Ethernet PCI Express 4.0 x16 Network Interface Card

The Broadcom BCM957508-P2100G is a dual-port 100 Gb/s PCI Express 4.0 x16 Network Interface Card that supports QSFP56/QSFP28 optical modules and copper direct-attach cables. The card uses the Broadcom BCM57508 200GbE MAC controller with an integrated dual-channel 100GbE SFI transceiver.

BCM957508-P2100G			
Ports	Dual	**ASIC**	BCM57508
Data Rate Per Port	2x/100/50/25/10GbE or 1x200/100/50/25/10GbE	**System Interface Type**	PCIe 4.0 x 16
Connector Type	QSFP56	**OS Support**	Microsoft Windows, Red Hat Enterprise Linux, and so on
SR-IOV	Yes	**NVGRE**	Yes
RDMA	Yes	**TSO**	Yes
VXLAN	Yes	**DPDK**	Yes
NPAR	Yes	**NVMe-oF**	Yes
Storage Temperature	40 to 70 °C (-40 to 158 °F)	**Operating Temperature**	0 to 55 °C (32 to 131 °F)
Bracket Height	Full Height and Low Profile	**Warranty**	3 Year

BCM957608-P2200GQF00

Dual-port 200 Gb/s QSFP112 Ethernet PCI Express 5.0 x16 Network Interface Card

The Broadcom BCM957608-P2200G is a dual-port 200 Gb/s PCI Express 5.0 x16 Network Interface Card that supports QSFP112 optical modules and copper direct-attach cables.

BCM957608-P2200GQF00			
Ports	Dual	**ASIC**	BCM57608
Data Rate Per Port	2x/200/100/50/25GbE or 1x400/200/100/50/25GbE	**System Interface Type**	PCIe 5.0 x 16
Connector Type	QSFP112	**OS Support**	Microsoft Windows, Red Hat Enterprise Linux, SUSE and so on
SR-IOV	Yes	**NVGRE**	Yes
RDMA	Yes	**TSO**	Yes
VXLAN	Yes	**DPDK**	Yes
NPAR	Yes	**NVMe-oF**	Yes
Storage Temperature	40 to 70 °C (-40 to 158 °F)	**Operating Temperature**	0 to 55 °C (32 to 131 °F)
Bracket Height	Full Height and Low Profile	**Warranty**	3 Year

BCM957608-P1400GDF00

Single-Port 400 Gb/s QSFP112-DD Ethernet PCI Express 5.0 x16 Network Interface Card

The Broadcom BCM957608-P1400GD is a single-port 400 Gb/s PCI Express 5.0 x16 Network Interface Card that supports QSFP112-DD optical modules and copper direct-attach cables.

BCM957608-P1400GDF00			
Ports	Single	**ASIC**	BCM57608
Data Rate Per Port	400/200/100/50/25GbE	**System Interface Type**	PCIe 5.0 x 16
Connector Type	QSFP112-DD	**OS Support**	Microsoft Windows, Red Hat Enterprise Linux, SUSE and so on
SR-IOV	Yes	**NVGRE**	Yes
RDMA	Yes	**TSO**	Yes
VXLAN	Yes	**DPDK**	Yes
NPAR	Yes	**NVMe-oF**	Yes
Storage Temperature	40 to 70 °C (-40 to 158 °F)	**Operating Temperature**	0 to 55 °C (32 to 131 °F)
Bracket Height	Full Height and Low Profile	**Warranty**	3 Year

Features

SR-IOV

Single-Root I/O Virtualization (SR-IOV) provides a mechanism to bypass the host system hypervisor in virtual environments providing near metal performance and server efficiency. SR-IOV provides a mechanism to create multiple Virtual Functions (VFs) to share single PCIe resources. The Card is capable of SR-IOV, and requires Server BIOS support, controller firmware, and OS support.

VXLAN

VXLAN (Virtual Extensible LAN) is a network virtualization technology that encapsulates Ethernet frames within UDP packets, enabling the creation of overlay networks over existing Layer 3 infrastructure. By using a 24-bit segment ID called the VXLAN Network Identifier (VNI), VXLAN supports up to 16 million unique logical networks, addressing the limitations of traditional VLANs, which are restricted to 4096 IDs. This encapsulation allows for improved scalability, flexibility, and isolation in multi-tenant data center environments, facilitating seamless virtual machine mobility and better resource allocation across distributed networks.

NVGRE

NVGRE (Network Virtualization using Generic Routing Encapsulation) is a tunneling protocol that facilitates the creation of virtualized networks by encapsulating Layer 2 Ethernet frames within Layer 3 IP packets. Designed to support network virtualization in data centers, NVGRE enables the abstraction of physical network resources, allowing multiple virtual networks to coexist over a shared physical infrastructure. By leveraging generic routing encapsulation, NVGRE provides efficient scalability and flexibility, allowing for the seamless migration of virtual machines across heterogeneous environments while maintaining network isolation and improved resource utilization.

DPDK

DPDK with benefit for packet processing acceleration and use in NFV deployments.

RDMA

Remote Direct memory Access (RDMA) is an accelerated I/O delivery mechanism that allows data to be transferred directly from the user memory of the source server to the user memory of the destination server bypassing the operating system (OS) kernel. Because the RDMA data transfer is performed by the DMA engine on the adapter's network processor, the CPU is not used for the data movement, freeing it to perform other tasks such as hosting more virtual workloads (increased VM density).RDMA protocols include RoCEv1, RoCEv2 and iWARP. All of these protocols reduce overall latency to deliver accelerated performance for applications such as Microsoft Hyper-V Live Migration, Microsoft SQL and Microsoft SharePoint with SMB Direct.

NPAR

Offers advanced features, including OS/BIOS independence, allowing partitions to appear as native network interfaces without requiring specialized BIOS or OS support, such as SR-IOV. It enhances NIC functionality without additional switch ports, cabling, or PCIe slots, while enabling traffic shaping for precise bandwidth control per partition. NPAR operates independently of switch configurations and is compatible with technologies like RoCE and SR-IOV. It also supports key stateless offloads, including LSO, TPA, and RSS/TSS, and provides alternative Routing-ID support to exceed eight functions per physical device.

TSO

A network performance optimization technique that allows the TCP/IP stack in a computer's operating system to offload the segmentation of large data packets to the network interface card (NIC). By enabling the NIC to handle the division of large TCP segments into smaller packets, TSO reduces CPU load and enhances throughput by minimizing the number of interrupts and context switches required during data transmission. This leads to improved efficiency in handling high-bandwidth applications, resulting in better overall network performance.

NVMe-oF

Enables faster connectivity between storage and applications, optimizing CPU usage and allowing data center consolidation by shifting apps from DAS to shared networked storage. This approach unifies SAN and DAS infrastructures under a single, efficient storage system. NVMe-oF also offers DAS-like latency for external storage and improves storage I/O efficiency, outperforming iSCSI and enhancing parallelism in modern applications to prevent bottlenecks.

TCP/UDP/IP

For overall improved system response, these adapters supports standard TCP/IP offloading techniques including TCP/IP, UDP checksum offload (TCO) moves the TCP and IP checksum offloading from the CPU to the network adapter. Large send offload (LSO) or TCP segmentation offload (TSO) allows the TCP segmentation to be handled by the adapter rather than the CPU.

Tunnel Offload

Minimize the impact of overlay networking on host performance with tunnel offload support for VXLAN, NVGRE and GENEVE. By offloading packet processing to adapters, customers can use overlay networking to increase VM migration flexibility and virtualized overlay networks with minimal impact to performance. Broadcom Tunnel Offloading increases I/O throughput, reduces CPU utilization, and lowers power consumption. Tunnel Offload supports VMware's VXLAN, Microsoft's NVGRE solutions and Generic Network Virtualization Encapsulation (GENEVE) solutions.

VMware NetQueue and Microsoft Virtual Machine Queue (VMQ)

VMware NetQueue is a technology that significantly improves the performance of Ethernet network adapters in virtualized environments. Windows Hyper-V VMQ (VMQ) is a feature available on servers running Windows Server 2008 R2 with VMQ-enabled Ethernet adapters. VMQ uses hardware packet filtering to deliver packet data from an external virtual machine network directly to virtual machines, which reduces the overhead of routing packets and copying them from the management operating system to the virtual machine.

Order Information

Part No.	Product ID	Product Description
BCM957412A4120AC	238585	Broadcom® BCM57412-P210P Ethernet PCIe Adapter, 10G SFP+, 2-Port
BBCM957416A4160C	238587	Broadcom® BCM57416-P210TP Ethernet PCIe Adapter, 10G RJ45, 2-Port
BCM957414A4142CC	238589	Broadcom® BCM57414-P225P Ethernet PCIe Adapter, 25G SFP28, 2-Port
BCM957504-P425G	238591	Broadcom® BCM957504-P425G Ethernet PCIe Adapter, 25G SFP28, 4-Port
BCM957508-P2100G	238593	Broadcom® BCM957508-P2100G Ethernet PCIe Adapter, 100G QSFP56, 2-Port
BCM957608-P2200GQF00	238557	Broadcom® BCM957608-P2200G Ethernet PCIe Adapter, 200G QSFP112, 2-Port
BCM957608-P1400GDF00	238559	Broadcom® BCM957608-P1400G Ethernet PCIe Adapter, 400G QSFP112-DD, 1-Port