

BCM57708 Ethernet NIC Adapters

800Gb/s Ethernet NIC with Gen6 PCIe and 100G PAM-4 SerDes

Key Features

- Single port 800-Gb/s aggregate throughput
- 50-Gb/s to 800-Gb/s throughput
- 8x SerDes (25G, 50G, or 100G)
- PCIe Gen 6.0 x16 host interface
- Multihost up to two hosts
- Advanced RoCE
- PSP inline encryption
- Transmit pacing
- TruFlow™ 800G flow offload
- Secure boot and attestation
- Silicon root of trust
- Peer memory direct
- Standards-based system management

Applications

- Large-scale AI/ML: back end and front end
- High-performance computing
- Public cloud infrastructure
- Private cloud infrastructure
- Storage

Overview

Based on the Broadcom® scalable 800G Ethernet controller architecture, the BCM57708 Ethernet NIC adapters are designed to build large-scale, feature-rich networking solutions in servers for back-end and front-end AI/ML use cases, high-performance public and private cloud computing, and storage applications.

The BCM57708 NIC adapters build upon the success of the widely deployed Broadcom architecture by combining a high-bandwidth Ethernet controller with a unique set of highly optimized hardware acceleration engines to enhance network performance and improve server efficiency.

AI workloads are highly parallel, and demand optimized network fabric with minimal tail latency. XPU's run these AI workloads and communicate results using the RDMA over Converged Ethernet (RoCE) protocol. The BCM57708 Ethernet NIC adapter enhances RoCE with additional features, including packet-level multipathing, out-of-order packet delivery, hardware-based selective retransmissions for reliable delivery, sender and receiver programmable congestion control, and advanced telemetry.

The BCM57708 800G NIC adapters provide high throughput, low latency, and advanced flow processing offloads to address both backend and frontend requirements of modern mega-scale data center networks. The adapter supports technology-leading security, enabling the industry's most secure server platform with secure boot and attestation anchored in the Broadcom silicon root of trust (RoT).

Benefits

The BCM57708 800G NIC adapters provide the following benefits:

- Significant reduction in job completion times for AI workloads with advanced RoCE features:
 - Packet-level multipathing: achieves efficient load balancing in network fabric by choosing the least-congested path per packet
 - Out-of-order packet delivery: maximize Ethernet and PCIe fabric utilization with out-of-order packet delivery directly into XPU memory
 - Selective retransmissions: hardware-based selective retransmission of packets for efficient data transfer
 - Programmable congestion control: choice of receiver-based or sender-based congestion control
 - Advanced telemetry: Packet trimming and congestion signaling with the Tomahawk 6 or any UEC-compliant switch
- 800Gb/s of effective throughput, with 16 lanes of PCIe Gen6 for modern AI servers
- Best-in-class, 100G SerDes increases direct-attach cable (DAC) cable reach to 5 meters and reduces optics power with linear pluggable optics (LPO) support
- Inline encryption support to offload CPU and improve system and application performance
- Industry-standard management interface and protocol support

Features

- **Network Interface**
 - 8 network SerDes
 - 100/50G PAM-4 and 25G NRZ
 - Single port
 - 800/400/200/100/50G
 - 800-Gb/s total bandwidth
 - Autonegotiation with autodetection
- **Host Interface**
 - 16 lanes of PCI Express 6.0
 - Link rates: 64, 32, 16, 8, 5, 2.5 GT/s
 - Lane configuration: x16, x8, x4, x2, and x1
 - MSI-X support
- **Platform Security**
 - HW secure boot (RoT)
 - Attestation (SPDM)
 - OCP secure recovery
 - Secure wipe and restore
 - OCP Silver security badge (certification pending)
 - PSP for RoCE and non-RoCE traffic
- **Design Specification**
 - Conforms to PCI-SIG CEM/OCP 3.0
- **RoCEv2**
 - Advanced RoCE support
 - Packet-level multipathing
 - Out-of-order packet delivery
 - Selective retransmissions
 - Receiver-based and sender-based congestion control
 - Adaptive routing/dynamic load balancing
 - Advanced telemetry
 - Peer Memory Direct
 - Automated configuration
- **Network Boot**
 - UEFI PXE boot
 - UEFI L2 iSCSI boot
 - UEFI support for x86
- **Networking Virtualization and Acceleration**
 - Multi-Queue, NetQueue, and VMQ
 - Single root I/O virtualization
 - VF isolation and protection
 - Tunnel-aware stateless off-loads
 - Stateless TCP offloads: IP/TCP/UDP checksum, LSO, LRO, GRO, TSS, RSS, aRFS, interrupt coalescing
- **TruFlow Flow Processing**
 - Flexible matching key
 - NAT and NAPT
 - Tunnel encapsulation/decapsulation
 - Custom tunnel processing
 - Sampling and mirroring
 - Rate-limiting and metering
 - Flow-based statistics and aging
 - Sampling and mirroring
- **Manageability**
 - Network Controller Sideband Interface (NC-SI)
 - Management Component Transport Protocol (MCTP)
 - MCTP over SMBus/I²C
 - MCTP over PCIe VDM
 - NC-SI over MCTP
 - Platform Level Data Model (PLDM): base, monitoring/control, and FW update
 - PLDM over MCTP
 - I²C support for device control and configuration

Ordering Information

Part Number	Description
BCM957708-P1800GOL02	800GbE OSFP-RHS PCIe Gen 6 x16 PCIe Ethernet network interface card, low-profile bracket
BCM957708-P1800GOF02	800GbE OSFP-RHS PCIe Gen 6 x16 PCIe Ethernet network interface card, full-height bracket
BCM957708-N1800GOE02	800GbE OSFP-RHS OCP 3.0 Gen 6 x16 PCI Ethernet network interface card, ejector latch
BCM957708-N1800GOE12	800GbE OSFP-RHS OCP 3.0 Gen 6 x16 PCI Ethernet network interface card, ejector latch, with PTP
BCM957708-N1800GOP02	800GbE OSFP-RHS OCP 3.0 Gen 6 x16 PCI Ethernet network interface card, pull tab



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