Marvell® FastLinQ® BCM57800S

Dual-Port 1GbE and Dual Port 10GbE Converged Network Controller

- Delivers full line-rate 10GbE performance across all 10G ports
- Provides 1GbE and 10GbE connectivity options for greater deployment flexibility
- Consolidates network storage traffic over converged 10GbE connections
- Enables provisioning of 10GbE ports for greater deployment flexibility through Marvell® switch-independent NIC Partitioning (NPAR)
- Boosts host CPU efficiency with hardware offload for storage (FCoE and iSCSI) data traffic
- Streamlines administrative tasks with Marvell integrated management utilities
- Interoperable with 100Mbps, 1000Mbps, and 10Gbps

Marvell offers a quad-port converged network controller that provides two 1-gigabit Ethernet (GbE) and two 10GbE connectivity ports for servers. The Marvell FastLinQ® BCM57800S Controller leverages Marvell's longstanding industry leadership in Ethernet, providing the highest levels of performance, efficiency, and scalability for the enterprise data center.

For more effective use of the 10GbE bandwidth, the FastLinQ BCM57800S Controller offers Marvell switch-independent NPAR, which enables the segmentation of a single 10GbE port into two virtual ports with flexible allocation of bandwidth to each port. The segmentation allows IT organizations to improve resource efficiency while lowering infrastructure and operational costs.

Virtualization, cloud computing, high-performance computing (HPC), convergence, and clustering initiatives are increasing workload demands. The FastLinQ BCM57800S Controller is the solution of choice for workload intensive computing environments, providing a reliable, high-performance 10GbE connectivity solution.

Features

- Quad-port connectivity (two 1GbE and two 10GbE) for servers
- x8 PCI Express® (PCIe®) v2.0 (5 GT/s) support
- Full line-rate performance across all ports
- Broad OS and hypervisor support
- Full iSCSI and Fibre Channel over Ethernet (FCoE) hardware offload
- Lossless iSCSI-Offload-TLV over data center bridging (DCB)
- Network boot support:
  - iSCSI remote boot
  - FCoE boot from SAN
  - Pre-execution environment (PXE) 2.0
- MSI and MSI-X support
- IPv4 and IPv6 offloads
- PCI-SIG single root input/output virtualization (SR-IOV)
- Comprehensive stateless offloads
- On-chip TCP/IP offload engine (TOE)
- Multi-tenant tunnel offloads
- RX/TX multiqueue
- Receive side scaling (RSS)
- Transmit side scaling (TSS)
- Support for jumbo frames up to 9,600 bytes
- Network teaming, failover, and load balancing:
  - Smart load balancing (SLB)
  - Link aggregation control protocol (LACP) and generic trunking

- DCB
- FCoE converged network controller features provide support for:
  - FCoE initialization protocol (FIP) and FCoE Ethertypes
  - Fabric-provided MAC address (FPMA)
  - Boot from SAN
  - Large, concurrent port logins and exchanges (4,096 each)
  - Native OS storage failover and load balancing
  - N_Port ID virtualization (NPIV)
  - Virtual Fibre Channel (vFC) on Windows Server 2012, 2012 R2, and 2016 Hyper-V

Benefits

Accelerates Server Performance

- Boosts network performance with full line-rate 10GbE performance across all ports
- Increases server performance with full hardware offload for storage traffic
- Maximizes server processing performance by reducing CPU overhead and lowering interrupt latency through the use of the MSI-X standard
- Boosts performance in Windows® and Linux® environments by directing interrupts to the server's CPU cores, leveraging TSS and RSS

Includes Robust Virtualization Capabilities

- Enhances server CPU scaling through full support of virtualization technologies, such as VMware® NetQueue and Microsoft® virtual machine queue (VMQ)
- Enhances network management and efficiency with support for virtual LAN (VLAN) and VLAN tagging

Streamlines Deployment and Management

- Increases network flexibility, scalability, and capacity with Marvell switch-independent NPAR, segmenting 10GbE ports, and reallocating their bandwidth and resources to address the application's performance requirements
- Unifies the NIC and storage management using management applications, such as the integrated Comprehensive Configuration Management (CCM)
- Provides dual-port 10GbE and dual-port 1GbE connectivity for deployment flexibility

Host Bus Interface Specifications

Bus Interface

- PCIe Gen2 x8 (x8 physical connector)

Host Interrupts

- MSI-X supports independent queues

I/O Virtualization

- SR-IOV
  - Maximum virtual functions per device: 128
- Marvell switch-independent NPAR
- Network virtualization using generic routing encapsulation (NVGRE) packet task offloads
- Generic routing encapsulation (GRE) packet task offloads
- Generic network virtualization encapsulation (GENEVE) packet task offloads
- Virtual extensible LAN (VXLAN) packet task offloads

Compliance

- *PCI Express Base Specification, rev. 2.0*
- *PCI Bus Power Management Interface Specification, rev 1.2*
- *Advanced Configuration and Power Interface (ACPI), v2.0*
- *SMBus 2.0*

Ethernet Specifications

Throughput

- 10Gbps full-duplex line rate per port

Ethernet Frame

- Standard MTU sizes; jumbo frame up to 9,600 bytes

Stateless Offload

- TCP segmentation offload (TSO)
- Large send offload (LSO)
- Large receive offload (LRO)
- Giant send offload (GSO)
- TCP and user datagram protocol (UDP) checksum offloads
- Receive segment coalescing (RSC)
- Hardware transparent packet aggregation (TPA)
- Interrupt coalescing
- RSS and TSS
  - Maximum of 16 queues per any (1GbE or 10GbE) physical function (PF) in single function (SF) and Marvell switch independent NPAR modes
- VMware NetQueue and Microsoft dynamic VMQ

Ethernet Specifications

Compliance

- *IEEE 802.3ae (10Gb Ethernet)*
- *IEEE 802.1q (VLAN)*
- *IEEE 802.3ad (Link Aggregation)*
- *IEEE 802.3-2015 (Flow Control)*
- *IPv4 (RFC 791)*
- *IPv6 (RFC 2460)*
- *IEEE 802.1Qbb (Priority-Based Flow Control)*
- *IEEE 802.1Qaz (DCBX and Enhanced Transmission Selection)*
- *IEEE 802.1AS/1588-2002 PTPv1 (Hardware Precision Time Protocol)*
- *IEEE 1588-2008 PTPv2*
- *IEEE 802.3-2015 Clause 52 (10Gb Ethernet optical on SFP ports)*
- *SFF8431 Annex E (10Gb Direct Attach Copper on SFP ports)*
- *IEEE 802.3an-12 Clause 55 10GBASE-T (on 10GBASE-T ports)*
- *IEEE 802.3ab-2012 Clause 39 1000BASE-T (on BASE-T ports)*
- *IEEE 802.3-2012 Clause 25 100BASE-TX (on BASE-T ports)*
- *IEEE 802.3i 10BASE-TX (on 1000BASE-T ports)*
- *IEEE 802.3az (Energy Efficient Ethernet on BASE-T ports)*
- *SFF8431 (enhanced Small Form Factor Pluggable modules)*

Tools and Utilities

Management Tools and Device Utilities

- QLogic® Control Suite command line management utility (CLI) for Linux and Windows
- QConvergeConsole® (QCC) integrated network management utility (GUI) for Linux and Windows
- QCC Plug-ins for vSphere® (GUI) and ESXCLI plug-in for VMware
- QCC PowerKit (Windows PowerShell®) cmdlets for Linux and Windows
- Pre-boot unified extensible firmware interface (UEFI) Device Configuration pages in system BIOS)
- Marvell Comprehensive Configuration Management (CCM)
- Native OS management tools for networking

Boot Support

- iSCSI remote boot
- FCoE boot from SAN
- PXE 2.0

Tools and Utilities

Operating System Support

- For the latest applicable operating system information, see www.marvell.com, **Downloads.**

Controller Specifications

Ports

- Dual 1Gbps Ethernet and dual 10Gbps Ethernet

Connectors

- 10GbE
  - Two SFP+ ports (supporting 1G/10G) or;
  - Ttwo RJ-45 ports (with external 10GBASE-T PHY supporting 100M/1G/10G)
- 1GbE: two RJ-45 ports (with external 1GBASE-T PHY supporting 10M/100M/1G)

Certifications

- FCC A, UL, CE, VCCI, BSMI, C-Tick, KCC, TUV, and ICES-003

Temperature

- Storage: less than 86°F (less than 30°C)

Packaging

- 23mm×23mm, 484-ball, flip-chip ball grid array with heat spreader (FCBGA-H); 1.0mm ball pitch

Environmental/Equipment

Compliance

- RoHS 6 compliant
- Halogen free

Ordering Information

Marvell FastLinQ BCM57800S, part number B57800SB0KFSBR

- Ships with a minimum order of 420 devices (60 devices per tray × 7 trays)

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To deliver the data infrastructure technology that connects the world, we're building solutions on the most powerful foundation: our partnerships with our customers. Trusted by the world's leading technology companies for 25 years, we move, store, process and secure the world's data with semiconductor solutions designed for our customers' current needs and future ambitions. Through a process of deep collaboration and transparency, we're ultimately changing the way tomorrow's enterprise, cloud, automotive, and carrier architectures transform—for the better.