

Key Features

- Dual-port 50GbE connectivity
- PCIe NIC in half-height, three-quarter-length form factor
- PCIe 3.0 x8 Host Interface
- Stingray data center SoC: eight 64-bit ARM Cortex-A72 cores at 3.0 GHz with 16 MB cache
- Integrated NetXtreme 100GbE NIC
- TruFlow configurable flow accelerator
- RoCE v1/v2 support
- SR-IOV support
- 16 GB DDR4 memory
- 100 Gb/s cryptography engine with single-pass hashing and encryption/decryption
- 100 Gb/s RAID5, RAID6, and erasure engine
- Deduplication (De-Dup) including Rabin Fingerprint, SHA, and MD5
- Secure boot
- Secure key storage
- ARM TrustZone
- Public Key Acceleration (PKA) engine

Stingray™ PS250

2×50-Gb High-Performance Data Center SmartNIC

Overview

The Broadcom® Stingray™ PS250 SmartNIC is purpose-built to enable solutions in the evolving data center. The board integrates powerful networking and processing subsystems for SmartNIC applications including dataplane acceleration and software-defined storage (SDS) including NVMe-over-Fabrics (NVMe-oF). The PS250 is designed in a low-profile, half-height, and three-quarter-length that readily fits in most servers. This is the first intelligent network adapter of its kind designed for 50-Gb networks.

The PS250 SmartNIC features the Stingray high-performance data center SoC, which incorporates a 100G NetXtreme® E-Series advanced network controller, a high-performance ARM CPU block, PCI Express (PCIe) 3.0 x8 interface, key accelerators for compute offload, and a high-speed memory subsystem including L3 cache and DDR4 interfaces—all interconnected by a coherent Network-on-Chip (NoC) fabric.

The network interface is powered by the latest generation of NetXtreme controller technology, delivering a high packet rate and low latency. Support for the NVMe-oF standard is enabled over RoCE (RDMA over Converged Ethernet) v1 and v2 as well as over TCP and other transports. The powerful TruFlow™ configurable flow accelerator adds a powerful packet inspection and processing capability in the hardware, moving common flow-processing workloads into hardware and freeing CPUs for application workloads. The ARM CPU subsystem features eight ARMv8 Cortex-A72 CPUs at 3.0 GHz, arranged in a multi-cluster configuration.

The PS250 Ethernet interface uses a multirate SerDes PHY common to Broadcom switch silicon connected to two QSFP56 connectors to provide dual-port 50-Gb connectivity. The connectors support several PAM-4 and NRZ operating modes:

- Dual-port 50G-NRZ, each connector using two lanes each at 25 Gb/s NRZ (50-Gb MSA)
- Quad-port 25G-NRZ, each connector using two lanes at 25 Gb/s NRZ
- Dual-port 50G-NRZ, each connector using one lane at 50 Gb/s PAM-4 (IEEE 802.3cd)
- Dual-port 50G-mixed, one connector using one lane at 50 Gb/s PAM-4 and the other connector using two lanes at 25 Gb/s NRZ

The Stingray family of products is supported by a comprehensive Software Development Kit providing a complete turn-key Linux distribution, and the open programming model enables application porting and development with minimal effort. The platform uses standard Linux and standard GNU tools and libraries. All drivers for the Stingray SoC are upstreamed to kernel.org and all peripheral interfaces use standard device drivers.

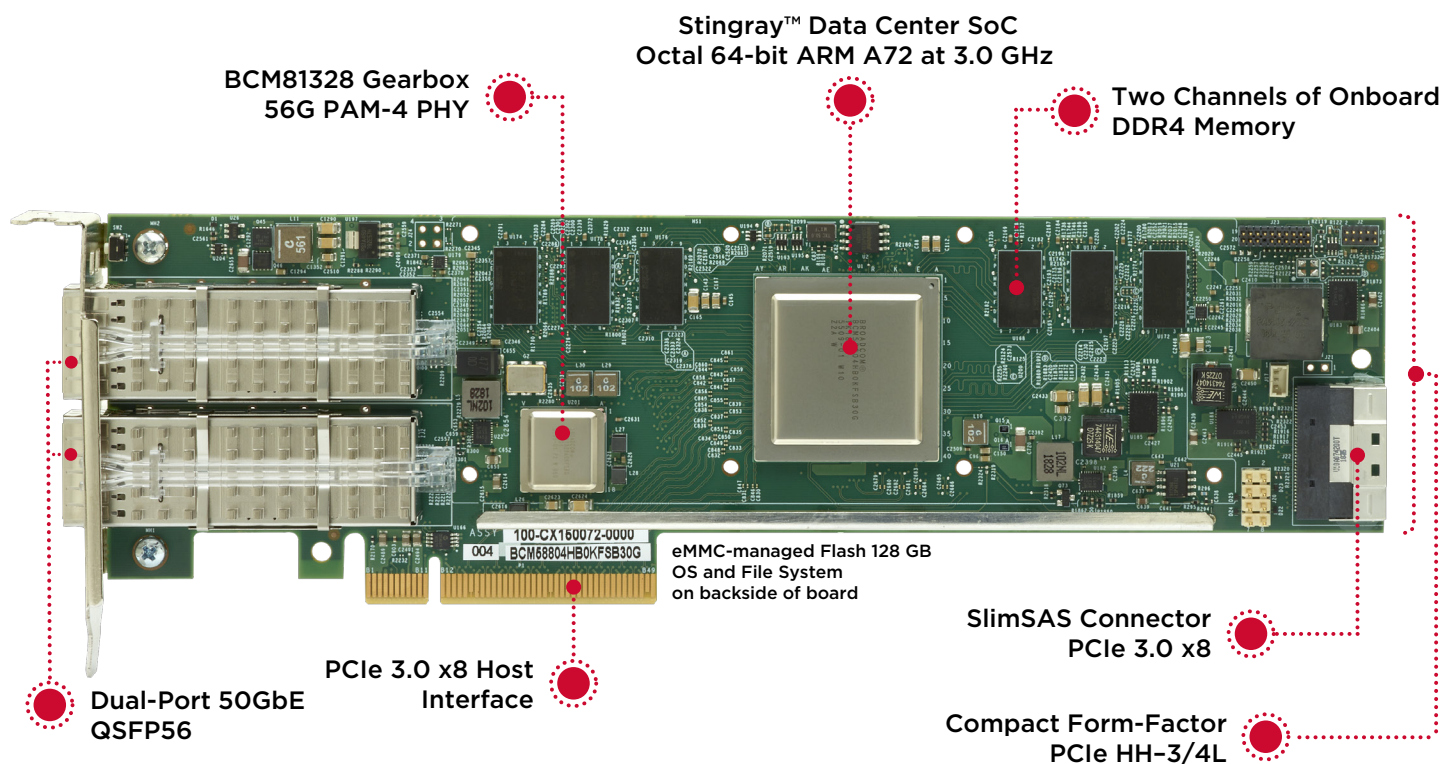
Applications

- SmartNIC for Bare Metal and Virtualized servers
- SmartNIC for Storage Servers
- Network Function Virtualization (NFV)

Benefits

- The industry's first 2x50G SmartNIC with high-performance 3 GHz ARMv8 processors featuring an integrated 100G NetXtreme Ethernet controller with TruFlow packet processing engine, congestion control, multi-host capability, and RoCEv2.
- Offloads CPU-intensive services from the host such as virtual switching and block storage.
- Integrates encryption/decryption offload engines.
- Incorporates RoCEv2 and SR-IOV enhancing network data transfers and I/O performance.
- Compact PCIe half-height, three-quarter-length, high-performance 50G and 100G data center SmartNIC.
- The industry's lowest power data center SmartNIC, enabling integration into industry standard server platforms.
- Optimal power efficiency and performance enabled by a 16-nm FinFET+ process.

Stingray PS250 Board



Ordering Information

BCM958804A8042C

PS250-H16 dual-port 50 Gb/s Smart NIC adapter with 16 GB DDR4 memory and 128 GB eMMC