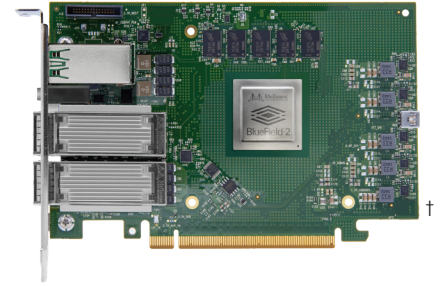




BF2500

BlueField[®]-2 Dual Port 100Gb/s Controller Card for InfiniBand & Ethernet



Industry-leading application acceleration for the most demanding storage and cloud platform workloads

Mellanox BF2500 BlueField-2 Dual Port 100Gb/s Controller Card is the perfect solution for managing backend NVMe storage, All Flash Arrays (AFA), compute and storage disaggregation, and hyperconverged systems. The BlueField-2 Dual Port 100Gb/s Controller Card delivers the highest NVMe-oF target performance, reducing TCO and increasing ROI.

Leading the Next Generation of NVMe-oF

Mellanox is at the forefront of the NVMe-oF revolution. As a leading provider of NVMe-oF network adapters, Mellanox was first to market with 25, 40, 50, and 100 Gb/s adapters, and is leading the next generation of Remote Direct Memory Access (RDMA) products, which are at the base of NVMe-oF technology. By deploying Mellanox BF2500 Controller Cards, customers gain the best of all worlds: the advantage of Mellanox's vast and proven success in RoCE and NVMe-oF deployments with high performance I/O acceleration and networking.

Ideal Solution for JBOF and JBOD System

Mellanox BlueField-2 I/O Processing Unit (IPU) is a highly integrated and efficient controller, optimized for NVMe storage systems, Network Functions Virtualization (NFV), Cloud and Machine Learning workloads.

BlueField-2 integrates all the discrete components of a storage system appliance into a single chip, including Arm core CPUs, PCIe switch and a network controller, making it the premier solution for building Just-a-Bunch-Of-Flash (JBOF) systems, All-Flash-Array and storage appliances for NVMe over Fabrics.

With an integrated NVMe-oF offload accelerator, the BF2500 Controller Card has a superior performance advantage over existing JBOF systems, significantly reducing storage transaction latency, while increasing IOPs (I/O operations per second).

Best-in-Class Storage Performance

The BF2500 Controller Card is a standard PCIe card that can transform existing JBOF systems into NVMe-oF compliant solutions, simply by plugging the card into the PCIe slot. It supports up to 16 PCIe Gen 4.0 lanes and can enable connectivity for up to 8 SSD drives without the need for an external PCIe switch. The card's compact form factor allows customers to install multiple BlueField-2 controller cards in a single system to support a larger number of SSDs as well as high-availability storage architecture.

The BF2500 storage controller delivers industry-leading NVMe-oF performance, coupled with advanced built-in hardware storage offloads, including compression/decompression, data deduplication, signature handover T10-DIF, distributed RAID and erasure coding offloads.

BENEFITS

- Increases ROI by leveraging the NVMe-oF accelerator to maximize performance
- Supports up to 8 NVMe SSDs without requiring an external PCIe switch
- Can be employed as a GPU controller card for Machine Learning systems
- Leading NVMe-oF performance
- Advanced storage accelerations

FEATURES

- Single or dual QSFP56 port(s) supporting:
 - Ethernet: 10/25/40/50/100/200 GbE
 - InfiniBand: HDR/EDR speeds
- Integrated BlueField-2 IPU
- 16GB DDR4 SODIMM
- 8GB eMMC flash memory for software
- FHH standard PCIe Gen 4.0 x16
- 1GbE out-of-band management port



The integration of cryptography engines like AES-XTS data-at-rest encryption and public key acceleration simplify the implementation of security applications. These enhanced security capabilities reduce the threat of exposure and minimize risk, while enabling real-time prevention, detection and responses to potential storage threats.

Software Support

The BF2500 Controller Card is shipped with Yocto – a Linux distribution operating system (OS) – which includes the Mellanox OFED stack, and is capable of running all customer-based Linux applications seamlessly.

BF2500 also supports CentOS and Ubuntu Linux distribution, and has an out-of-band 1GbE management interface.

Features

BF2500 Controller Card

- FHHL form factor
- BlueField-2 IPU with 8 Armv8 A72 cores (64 bit)
- PCIe Gen 4.0 x16 golden finger connector (root complex)
- Single or dual port VPI QSFP56 interface(s)
 - Ethernet: 10/25/40/50/100/200 GbE
 - InfiniBand: EDR/HDR
- NC-SI RBT
- External PCIe power connector
- CPLD for SSD control signals expansion
- 8GB eMMC memory for BIOS and OS
- SPI flash for NIC firmware

DRAM DIMM Support

- 1 channel DDR4, 64bit + 8bit ECC
- 8/16GB 3200MT/s DDR4 soldered-down memory

Hardware Accelerations

Security

- IPsec/TLS data-in-motion encryption
 - AES-GCM 128/256 bit key
- AES-XTS 256/512 bit data-at-rest encryption
- SHA 256 bit hardware acceleration
- Titan IC regular expression (RXP) acceleration engine
- Arm A64, A32 & T32 cryptography instructions for:
 - AES, SHA-1, SHA-224, and SHA-256
 - Finite field arithmetic

- Hardware Public Key Accelerator
 - RSA, Diffie-Hellman, DSA, ECC, EC-DSA, EC-DH
- True Random Number Generator (TRNG)

Storage

- NVMe over Fabric offloads for target
- Erasure coding and RAID offloads
- T10-DIF signature handover
- Dedup accelerations
- DMA accelerations
- Compression and decompression acceleration

Table 1 - Part Numbers and Feature Set Breakdown

OPN	Max. Speed	No. of Ports	PCIe Support	Crypto Support*	DDR Memory	1GbE OOB	Form Factor
MBF2H516B-EENOT	EDR / 100GbE	2x QSFP56	Gen 4.0 x16	Crypto disabled	16GB on-board	Yes	FHHL Tall Bracket
MBF2H516B-EEEOT**				Crypto enabled			
MBF2H515B-HENOT	HDR / 200GbE	1x QSFP56	Gen 4.0 x16	Crypto disabled	16GB on-board	Yes	FHHL Tall Bracket
MBF2H515B-HEEOT**				Crypto enabled			

Notes: * Hardware Root of Trust (RoT) or secure boot is not supported on these models, please contact Mellanox for additional information.

** Please contact Mellanox for additional information.

Support

For information about Mellanox support packages, please contact your Mellanox Technologies sales representative or visit our [Support page](#).



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