



NVIDIA MELLANOX BF2500 100G CONTROLLER CARD FOR ETHERNET



NVIDIA® Mellanox® BF2500 BlueField®-2 dual-port 100 GbE controller card is the perfect solution for managing backend NVMe storage, All Flash Arrays (AFA), compute and storage disaggregation, and hyperconverged systems. The BF2500 controller card delivers the highest NVMe-oF target performance, reducing TCO, and increasing ROI.

By deploying 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 combined with high performance I/O acceleration and networking.

At the heart of the BF2500 is the BlueField-2 Data Processing Unit (DPU), a highly integrated and efficient controller, optimized for NVMe storage systems, Network Functions Virtualization (NFV), Cloud, and Machine Learning workloads.

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

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, and signature handover T10-DIF.

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.

Key Benefits

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

Key Features

- > Single or dual QSFP56 ports supporting 10/25/50/100/200 GbE
- > Integrated BlueField-2 DPU
- > 16 GB DDR4 SODIMM
- > 8 GB eMMC flash memory for software
- > FHHL standard PCIe Gen 4.0 x16
- > 1 GbE out-of-band management port

FEATURES*

BF2500 Controller Card

- > FHHL form factor
- > BlueField-2 DPU with 8 Armv8 A72 cores (64 bit)
- > PCIe Gen 4.0 x16 golden finger connector (root complex)
- > Single or dual port QSFP56 interfaces supporting 10/25/50/100/200 GbE
- > 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

- > SHA 256 bit hardware acceleration
- > Titan IC regular expression (Titan 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)

DRAM DIMM Support

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

Storage

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

Hardware Accelerations

Security

- > IPsec/TLS data-in-motion encryption
 - > AES-GCM 128/256 bit key
- > AES-XTS 256/512 bit data-at-rest encryption

ORDERING INFORMATION

OPN	Max. Speed	Ports	PCIe Support	Crypto Support ⁽¹⁾	DDR Memory	1 GbE OOB	Form Factor
MBF2H516B-CENOT	100 GbE	2x QSFP56	Gen 4.0 x16	Crypto disabled	16 GB on-board	Yes	FHHL Tall Bracket
MBF2H516B-CEEOT ⁽²⁾				Crypto enabled			
MBF2H515B-VENOT	200 GbE	1x QSFP56	Gen 4.0 x16	Crypto disabled	16 GB on-board	Yes	
MBF2H515B-VEEOT ⁽²⁾				Crypto enabled			

¹ Hardware Root of Trust (RoT) or secure boot is not supported on these models, please contact Mellanox for additional information.

² Please contact Mellanox for additional information.

* This section describes hardware features and capabilities.

Please refer to the driver and firmware release notes for feature availability.

Support:

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

Learn more at www.mellanox.com/products/bluefield2-overview

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