



## BlueField<sup>®</sup>-2



# BlueField<sup>®</sup>-2 Reference Platform

Powerful & Flexible Reference Platform for a Wide Range of Applications Including Storage, Networking and Machine Learning

Today's network technologies drive OEMs to seek innovative, scalable and cost effective designs for dealing with the exponential growth of data. The Mellanox BlueField-2 Reference Platform provides a multi-purpose fully-programmable hardware environment for evaluation, development and running of software solutions, reducing time-to-market, and increasing product development and runtime efficiency.

The platform delivers all the features of the BlueField-2 I/O Processing Unit (IPU) in a convenient form factor, making it ideal for a range of software solutions in the most demanding markets. Features include two 100Gb/s Ethernet or InfiniBand interfaces, eight Arm cores, BlueField-2 storage controller with 32GB DDR4 memory, a PCIe x16 slot, and an NVMe-ready midplane for SSD connectivity.

## BlueField-2 Platform for Storage Appliances

Today's fast storage technologies drive storage OEMs to seek innovative, scalable and cost effective designs for their applications. Powered by the BlueField-2 IPU, the platform offers a unique combination of on-board capabilities and NVMe-readiness, creating an ideal environment for storage appliance development.

### Platform Highlights

- Leverages the processing power of Arm<sup>®</sup> cores for storage applications such as All-Flash Arrays using NVMe-oF, Ceph, Lustre, iSCSI/TCP offload, Flash Translation Layer, RAID/Erasure coding, data compression/decompression, and deduplication.
- In high-performance storage arrays, BlueField-2 serves as the system's main CPU, handling storage controller tasks and traffic termination.
- The integration of cryptography engines, including AES-XTS data-at-rest encryption and public key acceleration, simplify the implementation of security applications.
- Supports up to 8 front-mounted 2.5" disk drives in bays that are routed to an NVMe-ready midplane within the enclosure. The system can be configured as a storage JBOF with 8 drives using PCIe Gen 4.0 x2 lanes, or with 4 drives with PCIe Gen 4.0 x4 lanes.

## BlueField-2 Platform for Machine Learning

The platform supports connectivity of a GPU via its PCIe x16 Gen 4.0 interface, providing a cost effective and integrative solution for Machine Learning appliances. By utilizing RDMA and RoCE technology, the BlueField-2 network controller data path hardware delivers low latency and high throughput with near-zero CPU cycles.

## BENEFITS

- Powerful reference platform in a convenient 2U 19" box
  - NVMe-ready for storage applications
  - Supports up to eight 2.5" SSD bays
  - Option to add a GPU card for Machine Learning programmability
- Enables evaluation, development and running of software solutions in real-world environments
- Integrated cryptography engines
- Easy to use

## FEATURES

- BlueField-2 IPU:
  - 8 Arm cores on-board
  - 16-lane PCIe switch
- Dual QSFP56 ports supporting:
  - Ethernet: 10/25/40/50/100 GbE
  - InfiniBand: EDR
- PCIe Gen 3.0/4.0 support
- Integrated BMC
- 32GB eMMC flash memory for software

The platform offers GPUDirect® RDMA technology, enabling the most efficient data exchange between GPUs and with the Mellanox high speed interconnect, optimizing real-time analytics and data insights.

### NVMe-Ready Midplane

The modular chassis midplane supports up to eight hot-swappable 2.5" SSDs. The midplane also supports an I2C switch to enable connectivity of the SMBUS from the platform's Baseboard Management Controller (BMC) to each SSD, and an on-board clock generator/buffer.

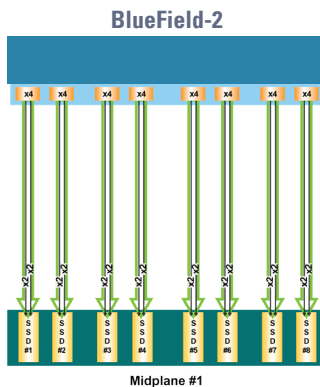


Figure 1. 8 x SSD Configuration

### Software Support

BlueField-2 reference platform is shipped with Ubuntu – a Linux commercial operating system – which includes the Mellanox OFED stack, and is capable of running all customer-based Linux applications seamlessly. The platform also supports CentOS and Yocto Linux Distribution. The platform provides a BMC running OpenBMC to manage the entire system.

Reference platform customers can run the Linux distribution of their choice.



Figure 2: BlueField-2 Reference Platform †

### Features

- 2U 19" enclosure
- ATX form factor motherboard
- BlueField-2 IPU with 8 Armv8 A72 cores (64-bit)
- PCIe Gen 3.0/4.0 x16 expansion connector
- Dual QSFP56 ports supporting:
  - Ethernet: 40/50/100 GbE
  - InfiniBand: EDR
  - 10/25 Gb/s supported with QSA56 port adapter
- PCIe riser enabling 2.5" NVMe SSD disk support:
  - 4 x PCIe Gen 4.0 x4 lanes
  - 8 x PCIe Gen 4.0 x2 lanes
- Single 875W hot-plug power supply
- Integrated BMC
- 32GB eMMC flash memory for software
- Up to 32GB DDR4
- 3 x 80mm fan cartridges

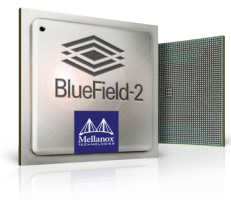


Table 1 - Part Numbers and Descriptions

OPN	Description
MBE2200B-BD1	2U BlueField®-2 Reference Platform. Supports option for 1 Controller, up to 8 SSDs or 1 GPU
MBE2201B-BE1	2U BlueField®-2 Reference Platform including 2 x 100Gb/s VPI Controller with 16GB DDR4, Crypto Enabled. Supports option for up to 8 SSDs or 1 GPU

### Support

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