Overview

Table of contents

The BMC node enables remote power cycling, board environment monitoring, NVIDIA® BlueField® SoC temperature monitoring, board power and consumption monitoring, and individual interface resets. The BMC also supports the ability to push a bootstream to the BlueField. It is recommended to manage NVIDIA® BlueField® using Redfish commands. However, IPMI commands and sysfs monitoring infrastructure are available as well .

> ⚠️ **Warning**
>
> Make sure to log into the BMC first and change the global default password to prevent malicious attackers from hacking your system.

The procedures described in this manual assume that you have already installed and powered on your device according to the instructions in BlueField's specific hardware guide.

- Support for IPMI 2.0 (v1.1) Standards

    - Thermal control – access to all relevant temperature sensors, fan control

    - System management – power state control, power on/off, reboot/reset

    - Environmental monitoring – voltage/current/power

    - Serial over LAN (SOL)

    - RMCP/RMCP+

    - Event log management

    - Event alerting

    - VLAN support

- Support for DMTF Standards

    - Redfish specification (DSP0266)

    - Network Controller Sideband Interface (NC-SI) Specification (DMTF DSP0222)

- Support for BMC image update

BlueField DPU

The NVIDIA® BlueField® DPU is a data center infrastructure on a chip that combines a high-speed networking interface with powerful, software-programmable Arm cores, enabling breakthrough networking, storage, and security performance. The BlueField DPU offloads, accelerates, and isolates a broad range of software-defined infrastructure services which traditionally ran on the host's CPU, overcoming performance and scalability bottlenecks, and eliminating security threats in modern data centers.

BlueField DPUs transform traditional computing environments to secure and accelerated data centers, allowing organizations to efficiently run data-driven, cloud-native applications alongside legacy applications. By decoupling the data center infrastructure from business applications, BlueField DPUs enhance data center security, streamline operations, and reduce total cost of ownership.

The BlueField DPU contains a programmable CPU based on Arm cores, a state-of-the-art NVIDIA® ConnectX®, and an enhanced set of security, storage, and networking accelerators that can be configured to perform multiple software-defined, hardware-accelerated functions. With a BlueField DPU, a software-defined network, and/or software-defined storage solution can be deployed and offloaded from the main host CPU in the server. Similarly, other dedicated services (e.g., distributed firewall, deep packet inspection, malware detection) can run on the BlueField DPU and can be accelerated with zero CPU overheads.

The BlueField DPU resembles a server embedded within the server itself, creating a secure environment where an infrastructure stack can operate independently from the primary (i.e., host) CPU, effectively isolating it from the untrusted tenant applications.

This is the recommended mode for utilizing the DPU in which software running on the host CPU has no direct access to the DPU. For instance, in a scenario where a cloud service provider is responsible for managing both networking and storage in a cloud infrastructure stack, it can establish an isolated environment within the DPU.

BlueField SuperNIC

The NVIDIA® BlueField® SuperNIC is the world's most advanced network accelerator, designed for supercharging hyperscale generative AI workloads. It delivers deterministic, isolated performance, with secure cloud multi-tenancy. Featured on the Spectrum-X networking platform, NVIDIA integrates BlueField-3 SuperNICs across its accelerated systems to enable peak AI workload efficiency. Powered by the NVIDIA DOCA software, the SuperNIC offers up to 400Gb/s connectivity between GPU servers, with features like RoCE adaptive routing, direct data placement (DDP), and programmable congestion

control. With its unique HHHL form factor and low-power platform, the BlueField-3 SuperNIC fits most enterprise-class servers.

ⓘ **Info**

To read more about the BlueField-3 features and benefits, refer to this page.

ⓘ **Info**

To read more about the BlueField-2 features and benefits, refer to this page.

---

advance by NVIDIA in writing, reproduced without alteration and in full compliance with all applicable export laws and regulations, and accompanied by all associated conditions, limitations, and notices.

THIS DOCUMENT AND ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS, AND OTHER DOCUMENTS (TOGETHER AND SEPARATELY, "MATERIALS") ARE BEING PROVIDED "AS IS." NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY, OR OTHERWISE WITH RESPECT TO THE MATERIALS, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES OF NONINFRINGEMENT, MERCHANTABILITY, AND FITNESS FOR A PARTICULAR PURPOSE. TO THE EXTENT NOT PROHIBITED BY LAW, IN NO EVENT WILL NVIDIA BE LIABLE FOR ANY DAMAGES, INCLUDING WITHOUT LIMITATION ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, PUNITIVE, OR CONSEQUENTIAL DAMAGES, HOWEVER CAUSED AND REGARDLESS OF THE THEORY OF LIABILITY, ARISING OUT OF ANY USE OF THIS DOCUMENT, EVEN IF NVIDIA HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. Notwithstanding any damages that customer might incur for any reason whatsoever, NVIDIA's aggregate and cumulative liability towards customer for the products described herein shall be limited in accordance with the Terms of Sale for the product.

Trademarks

NVIDIA and the NVIDIA logo are trademarks and/or registered trademarks of NVIDIA Corporation in the U.S. and other countries. Other company and product names may be trademarks of the respective companies with which they are associated.