Change Log History

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Changes and New Features in 25.07

- **BMC Inventory Enhancement**: Added Redfish system/processor schema support for BlueField-3 to provide comprehensive hardware inventory information through standard Redfish interfaces (System Processor)

- **Power Event Logging**: Implemented ATX power loss SEL event reporting to BMC during AC power cycles for BlueField-3 systems to improve power state monitoring and diagnostics (ATX Power Error)

- **Boot Device Command Timeout**: Enhanced ipmitool bootdev commands with automatic 60-second invalidation when no reboot or power reset execution occurs on host (BlueField Arm) (Boot Source Override Config Using IPMI)

- **Live Firmware Upgrade**: Support live firmware upgrades, enabling firmware updates without hots (BlueField Arm) downtime (section "BFB Live Firmware Update" in Installation for DPU Mode)

Changes and New Features in 25.04

- Extended Arm-UEFI support to ensure seamless operation until BlueField BMC initialization completes

- Added RTC battery voltage monitoring to the SDR list for enhanced system diagnostics

- Implemented Redfish mutual authentication support for BlueField-3 platforms

- Updated BMC FRU content to enhance backward compatibility

- Introduced a unified, time-synchronized logging system for BlueField-3 BMC to ensure consistent event order and accurate timestamps across IPMI and Redfish interfaces. The system will begin assigning new SEL IDs starting from 1. If existing SEL entries have overlapping IDs, they will be overwritten by new entries. After upgrading to the new version, it is advised to clear all SEL entries to prevent potential ID conflicts and ensure optimal log integrity.

- Added BMC Redfish support for remote attestation over Redfish specifically for SPDM:

    - BlueField NIC

    - CEC1736 (BMC ERoT)

- Security Hardening: Implemented several Linux kernel configuration changes to improve system security and activated kernel module signature. The following table summarizes key modifications:

Parameter	Old Value	New Value	Reason
`CONFIG_KEXEC`	`yes`	Not set	Enables replacement of running kernel using `kexec` command.
`CONFIG_SLAB_MERGE_DEFAULT`	`yes`	Not set	Prevents merging similar-sized slab caches, mitigating cross-slab heap attacks
`CONFIG_SHUFFLE_PAGE_ALLOCATOR`	Not set	`yes`	Enables randomization of the high-order page allocation freelist
`CONFIG_SECURITY_DMESG_RESTRICT`	Not set	`yes`	Prevents kernel memory address leakage through `dmesg`
`CONFIG_DEBUG_FS`	`yes`	Not set	Disables `debugfs`, reducing the kernel's attack surface
`CONFIG_BPF_SYSCALL`	`yes`	Not set	Disables the `bpf()` syscall, restricting manipulation of BPF programs and maps
`CONFIG_USER_NS`	`yes`	Not set	Disables user namespaces to prevent privilege escalation via namespace exploits
`CONFIG_BUG_ON_DATA_CORRUPTION`	Not set	`yes`	Enables kernel validation checks for detecting data corruption
`CONFIG_STATIC_USERMODEHELPER`	Not set	`yes`	Forces all usermode helper calls to a single,

Parameter	Old Value	New Value	Reason
			fixed executable to prevent manipulation
`CONFIG_DEFAULT_MMAP_MIN_ADDR`	4096	32768	Increases the minimum mmap address to mitigate kernel NULL pointer dereference exploits
`CONFIG_DEBUG_KMEMLEAK`	yes	Not set	Disabled due to its dependency on `CONFIG_DEBUG_FS`, which is also now disabled This parameter changed only in BlueField-2 (already not set in BlueField-3).
`CONFIG_MODULE_SIG`	Not set	yes	Kernel module signature
`CONFIG_MODULE_SIG_ALL`	Not set	yes	
`CONFIG_MODULE_SIG_FORCE`	Not set	yes	
`CONFIG_MODULE_SIG_SHA512`	Not set	yes	

> (i) **Info**
>
> Changes to the kernel configuration parameters were made in accordance with recommended security hardening practices from the Linux Kernel Self-Protection Project (KSPP), grsecurity and CLIP OS.

Changes and New Features in 24.10 LTSU2

- System now logs comprehensive power events (CPER and SEL) in the DPU BMC if ATX power is disconnected from the BlueField-3 card during card operation.

- Added a dedicated sensor to the DPU BMC sensor suite that provides real-time visibility into SoC power consumption.

- Added support for capturing BlueField-3 PCIe errors and presenting them in the DPU BMC's CPER and SEL logs, improving troubleshooting and diagnostics.

Changes and New Features in 25.01

- Bug fixes

Changes and New Features in 24.10 LTSU1

- Added Redfish support to get OOB network 3-port switch port link status

- Added current limitation alarm events to BMC system event log (SEL)

- Integrated UE/CE memory/CPU cache ECC error recording into BMC CPER logger

- Added support for ipmitool commands to configure IPv6 gateway

- Added support for RAS logging

Changes and New Features in v24.10

- To ensure FRU device information is consistent across different system components, NVIDIA Networking is aligning the BlueField BMC FRU board product name with the system product name. This means that there would be two variations of BlueField BMC FRUs in the field. The following are the supported deviations:

FRU Field	Rev-1 (Old)	Rev-2 (New)
FRU Device Description	Nvidia-BMCMezz (ID 169)	BlueField-3 DPU (ID 243)
Board Manufacturing Date	<Board-mfg-date>	<Board-mfg-date>
Board Manufacturer	Nvidia	Nvidia
Board Product	Nvidia-BMCMezz	BlueField-3 DPU
Board Serial	<Board-serial>	<Board-serial>
Board Part Number	<Board-part-number>	<Board-part-number>

- Security enhancements – Introduced a new BIOS option to disable the IPMI channel between the BlueField Arm cores and its BMC. By default, this interface is enabled. However, a new BIOS attribute accessible via Redfish now permits disabling this interface for enhanced security.

- IPMB channel relocation – The IPMB channel used by the BlueField BMC to retrieve data from the BlueField Arm is now utilizing a dedicated I2C interface. This change is aimed at improving the serviceability of the interface.

- Temperature monitoring – Added the BlueField Arm DDR sensor to the BlueField BMC sensor list. This addition enables the monitoring of DDR temperature (ddr_temp), ensuring better performance and reliability.

- Event logging enhancements – Introduced several new event alarms:

    - BlueField data port module over current event (Module Critical Power Consumption)

    - BlueField data port module temperature event (Module Temperature Going High/Low)

    - BlueField Arm frequency change event (Arm Frequency Change)

> (i) **Note**
>
> These alarms are now logged to the BMC System Event Log (SEL) for better event tracking and system diagnostics.

- BIOS Debug Mode – An option has been added to enable BIOS debug mode, facilitating advanced troubleshooting and system analysis

Changes and New Features in v24.07

- Extended DHCP mode setting to provide control for each IP version. In the current version, IPMITool includes a dedicated function to control the mode for both IPv4 and IPv6. For more details, please refer to section "Configuring IPv6 Mode".

- Updated Linux kernel from version 5.15 to 6.1

- Upgraded BlueField BMC Linux packages:

- libpam 1.6 to 1.61

- curl 8.5 to 8.7.1

- bash 3.2.57 to 5.2.21

- DNSmasq 2.9

- glibc 2.39

- ipmitool 1.8.19

- busybox 1.36.1

- rsyslog 8.2402.0

- The DPU BMC no longer supports openbmctool; all APIs are now accessible via Redfish

- The Redfish schema at `/redfish/v1/Cables/` is no longer supported. The data port link state is now accessible through the `Chassis/Card1/NetworkAdapters/NvidiaNetworkAdapter/Ports` schema which includes the link state for the available data ports.

- The size of the BMC dump entry container is no longer limited to only two BMC dump entries. The limit now applies to the total amount of memory stored in the container, thus allowing more BMC dump entries to be stored in it depending on their size (Creating BMC Dump Task).

- Added support for the IPMI OEM command to configure the guest tunnel (Guest Tunnel)

- Extended the BMC log to capture Redfish/IPMI command configurations initiated by the user of the BMC (System Logs)

- RAS record UE/CE faults of MEM into BMC SEL (RAS Errors)

- Enhanced Redfish BFB SimpleUpdate to support HTTP/HTTPS file transfer policy (Installing BFB)

- Introduced rsyslog capability to log BMC SEL entries and Arm console output to a remote server (Rsyslog)

- Network re-provisioning (Bare-metal Reprovisioning):

- Added an option in network re-provisioning for BMC to halt instead of reset after provisioning, allowing users to choose when to reset the DPU after provisioning is complete

- Added support for ATF/UEFI and NIC firmware golden image versioning

- Added support for RShim force ownership request

Changes and New Features in v24.04

- Updated RShim user space driver to version 2.0.27

- Added an additional FRU device to the DPU BMC to reflect DPU Arm FRU information ([System FRU](#))

- Introduced a redfish command to reset the DPU BMC eROT (Glacier) ([Activating New CEC](#))

- Implemented support for sending sysrq controls to the DPU Arm through the SOL interface ([SysRq Support in SOL](#))

- Change the Redfish BFB software update and Redfish system dump to try automatically to acquire the RShim interface

- Added Redfish schema to provide DPU description, base MAC, and base GUID ([DPU Information](#))

- Introduced Redfish schema to support `MultipartHttp UpdateService` for DPU BMC and CEC Firmware update ([BMC and CEC Firmware Operations](#))

- Added Redfish schema for the BlueField Arm network interfaces (OOB and data ports) ([BlueField Host Network Interface](#))

- Included LLDP Redfish schema for the BlueField BMC's 1Gb/s interface (LLDP in Redfish)

- Enhanced Redfish support for the service identification property ([Product Instance Identifier](#))

- Enforced ipmitool user privilege policy

Changes and New Features in v24.01

- Expanded the BMC dump log to incorporate data from the NIC firmware. A new log containing NIC device debug information has been introduced and is now accessible on NVIDIA® BlueField®-3 systems.

- Enabled DPU BMC to facilitate soft shutdown requests to the embedded CPU via both IPMI and Redfish protocols

- Upgraded the Linux Kernel version to 5.15 in the OpenBMC system

- Added IPMI and Redfish commands to disable/enable DPU Arm out-of-band (OOB) access to the management network

- Added new entries to the BMC system event log (SEL) or BMC operation log, enhancing support for BMC operations

- Incorporated a Redfish command for the deployment of BIOS CA certificates

- Updated BMC password policy

- Added support for simple `HttpMultiPart` update for BMC and eROT firmware

Changes and New Features in v23.10

- NVIDIA® BlueField®-3 Redfish enhancements:

    - Included phosphor-logging entry for dumping `/dev/rshim/misc` messages

    - Implemented Redfish-based firmware configuration for switching between BlueField DPU mode and NIC mode for BlueField-3

    - Added an OEM API for enabling/disabling BMC RShim, offering more control over this critical component

- Enhanced debuggability for the DPU BMC which includes the ability to store DPU console/serial logs for troubleshooting and analysis

- Deployment of a more restrictive firewall policy to enhance system security

- Added power-capping control capabilities from the DPU BMC, providing greater power management flexibility

- Added an OEM API for key-based authentication

- Incorporated the `wget` application into the BMC OS

- Enhanced the system with the ability to enable\disable the DPU OOB port using IPMI commands

- Removed DPU BMC SMBus master capabilities

- CEC1736 EC firmware upgrade to version 00.02.0152.0000 – t he boot completion timeout for CEC1736 has been increased from 2 minutes to 8 minutes in this version to ensure that the BMC completes its boot process within the allotted time. If the BMC fails to boot within that period, the CEC1736 initiates a reset of the BMC.

> ⓘ **Note**
>
> This change may lead to undesired system behavior:
>
> - If a new BMC firmware update is in progress during this period, the CEC1736 reverts to the previous version of the BMC firmware
>
> - If the BMC fails to provide six boot complete indications, the CEC1736 interrupts the BMC boot process, necessitating a full reset cycle to recover the DPU BMC

Changes and New Features in v23.09

- The NCSIoMCTPoSMBus interface has been activated to facilitate communication between the DPU BMC and the NIC subsystem. This activation has introduced several enhanced functionalities to the NIC subsystem's firmware, including:

    - Configuring and retrieving the DPU's operational mode

    - Configuring and retrieving the status of the RShim

    - Retrieving the strap values of the NIC subsystem on the DPU

    - Obtaining information about the OS state

- Added the ability to control BIOS secure boot configuration through the Redfish interface

Changes and New Features in v23.07

- Allow programmatic changing of BIOS/UEFI parameters via the Redfish API

- Support UEFI HTTP boot using Redfish

- Allow programmatic mechanism for changing BIOS/UEFI boot order using Redfish

- Implemented the Certificate, CertificateLocations, and CertificateService schema in the NIC BMC, including certificate information

- Implemented Redfish-based firmware update using the SimpleUpdate SCP schema for DPU recovery

- DPU BMC indication of the reset/reboot state

Changes and New Features in v23.04-3

- Added support for BMCs of BlueField-3 DPUs

- Add support for Serial Console Redirection

- Added Redfish service with the underlying schemas:

    - Redfish chassis schema to represent the DPU chassis elements including:

        - `/redfish/v1/Chassis/Card1`

        - `/redfish/v1/Chassis/Bluefield_BMC`

        - `/redfish/v1/Chassis/Bluefield_ERoT`

    - Redfish sensor schema:

        - `/redfish/v1/Chassis/Card1/Sensors/`

    - NetworkAdapter schema representing a physical network adapter capable of connecting to a computer network:

        - `/redfish/v1/Chassis/Card1/NetworkAdapters`

    - NetworkDeviceFunction schema representing a logical interface that a network adapter exposes:

        - `/redfish/v1/Chassis/Card1/NetworkAdapters/{NetworkAdapter`

- Port schema containing properties that describe a port of a switch, controller, chassis, or any other device that could be connected to another entity:

  - `/redfish/v1/Chassis/Card1/NetworkAdapters/{NetworkAdapter`

- Management subsystem schema:

  - `/redfish/v1/Managers/Bluefield_BMC`

- Updated service and the properties that affect the service itself for Redfish implementation:

  - `/redfish/v1/UpdateService`

- Redfish FirmwareInventory schema:

  - `/redfish/v1/UpdateService/FirmwareInventory`

- Redfish log service:

  - `/redfish/v1/Managers/Bluefield_BMC/LogServices`

- Redfish user account for the system manager:

  - `/redfish/v1/AccountService`

  - `/redfish/v1/AccountService/Roles`

  - `/redfish/v1/SessionService/Sessions`

- Redfish session service properties:

  - `/redfish/v1/SessionService`

- Redfish task service:

  - `/redfish/v1/TaskService`

Changes and New Features in 2.8.2-34

- Updated LLDPAD to be enabled by default

Changes and New Features in 2.8.2

- First software GA release

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