



BMC Monitoring

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BMC FRUs

During the initialization process, the BMC scans all supported interfaces to locate available FRU devices. Each FRU device identified by the BMC is parsed and subsequently added to the BMC's list of FRU devices.

Info

Currently, the BMC is expected to detect the system FRU located at ID 0, as well as the BMC FRU.

The BMC FRU is available in several different revisions, each specific to the board based on its manufacturing date and type. These revisions are mainly identified by the unique product name given to each board.

| FRU Field | Rev-1 | Rev-2 | Rev-3 |
|--------------------------|-------------------------|--------------------------|-----------------------------|
| FRU device description | Nvidia-BMCMezz (ID 169) | BlueField-3 DPU (ID 243) | BlueField SuperNIC (ID TBD) |
| Board manufacturing date | <Board-mfg-date> | <Board-mfg-date> | <Board-mfg-date> |
| Board manufacturer | Nvidia | Nvidia | Nvidia |
| Board product | Nvidia-BMCMezz | BlueField-3 DPU | BlueField SuperNIC |
| Board serial | <Board-serial> | <Board-serial> | <Board-serial> |
| Board part number | <Board-part-number> | <Board-part-number> | <Board-part-number> |

BMC FRU Reading IPMI Commands

To retrieve FRU info, run:

```
ipmitool -C 17 -I lanplus -H <bmc_ip> -U ADMIN -P ADMIN fru print
```

Example output:

```
FRU Device Description : Nvidia-BMCMezz (ID 169)
Board Mfg Date         : Wed Nov  8 01:41:00 2023 UTC
Board Mfg              : Nvidia
Board Product          : Nvidia-BMCMezz
Board Serial           : MT2345300006
Board Part Number      : 900-9D3B6-00CV-AAA
Board Area Checksum    : OK
```

To print a specific FRU:

```
ipmitool -C 17 -I lanplus -H <bmc_ip> -U ADMIN -P ADMIN fru print
<fru_id>
```

FRU ID of the BMC FRU EEPROM is optional and can be found using the `fru print` command.

Product Instance Identifier

It is possible to set a unique name for the BMC. This name may be retrieve from Redfish without a password.

Setting Product Identifier

```
curl -k -u root:'<password>' -H 'Content-Type: application/json'
-X PATCH https://<bmc_ip>/redfish/v1/Managers/Bluefield_BMC -d
'{"ServiceIdentification": "<system_name>"}'
```

Retrieving Product Identifier

- To get the system name without a password:

```
curl -k -X GET https://<bmc_ip>/redfish/v1 | jq
'.ServiceIdentification'
```

- To get the system name with a password:

```
curl -k -u root:'<password>' -H 'Content-Type:
application/json' -X GET
https://<bmc_ip>/redfish/v1/Managers/Bluefield_BMC | jq
'.ServiceIdentification'
```

Software Versioning

There is a software version for each of the BMC software components. You may retrieve this information by running the following for each component:

- Linux version – `uname -a` command from the Linux prompt
- OpenBMC version – `cat /etc/os-release` from the Linux prompt

Retrieving BMC Version Using Redfish

```
curl -k -u root:'<password>' -H 'Content-Type: application/json'
-X GET
https://<bmc_ip>/redfish/v1/UpdateService/FirmwareInventory/BMC_Fi
{
  "@odata.id":
"/redfish/v1/UpdateService/FirmwareInventory/BMC_Firmware",
  "@odata.type": "#SoftwareInventory.v1_4_0.SoftwareInventory",
  "Description": "BMC image",
  "Id": "BMC_Firmware",
  "Name": "Software Inventory",
  "RelatedItem": [],
  "RelatedItem@odata.count": 0,
  "SoftwareId": "",
  "Status": {
    "Conditions": [],
    "Health": "OK",
    "HealthRollup": "OK",
    "State": "Enabled"
  },
  "Updateable": true,
  "Version": "BF-23.09-1",
  "WriteProtected": false
```

```
}
```

Retrieving BMC Version Using IPMI

```
# ipmitool mc info
Device ID                : 1
Device Revision          : 1
Firmware Revision        : 23.09
IPMI Version             : 2.0
Manufacturer ID          : 33049
Manufacturer Name        : NVIDIA
Product ID               : 4 (0x0004)
Product Name             : Bluefield3 BMC
Device Available         : yes
Provides Device SDRs    : yes
Additional Device Support :
    Sensor Device
    SDR Repository Device
    SEL Device
    FRU Inventory Device
    IPMB Event Receiver
    Chassis Device
Aux Firmware Rev Info    :
    0x10
    0x01
    0x00
    0x00
```

Where the BMC version is formatted as `[Firmware Revision]-[Aux Firmware Rev Info 2nd byte]` which is 23.09-1 according to this example.

Storage Health Monitoring

The BMC system provides real-time monitoring of read-write (RW) flash usage. You can query free storage space, receive notifications when usage crosses defined thresholds, and rely on automatic cleanup when limits are exceeded.

Retrieving Free Storage Space

To check the current free RW flash space:

```
curl -k -H "X-Auth-Token: $token" -X GET
https://${bmc}/redfish/v1/Managers/Bluefield_BMC/ManagerDiagnosticData
```

Example output:

```
{
  "@odata.id" :
  "/redfish/v1/Managers/Bluefield_BMC/ManagerDiagnosticData",
  "@odata.type" :
  "#ManagerDiagnosticData.v1_2_0.ManagerDiagnosticData",
  "FreeStorageSpaceKiB" : 1488,
  "Id" : "ManagerDiagnosticData",
  "MemoryStatistics" : {
    "AvailableBytes" : 725983232,
    "BuffersAndCacheBytes" : 170594304,
    "FreeBytes" : 605347840,
    "SharedBytes" : 60747776,
    "TotalBytes" : 917188608
  },
  "Name" : "Manager Diagnostic Data",
  "ProcessorStatistics" : {
```

```
    "KernelPercent": 0.6058,  
    "UserPercent": 0.5048  
  },  
  "ServiceRootUptimeSeconds": 1282378.351  
}
```

Storage Cleanup Notifications

When RW flash usage exceeds 90%, a Redfish event log entry is generated to alert that manual cleanup is required.

For example:

```
{  
  "@odata.id":  
  "/redfish/v1/Systems/Bluefield/LogServices/EventLog/Entries/7",  
  "@odata.type": "#LogEntry.v1_15_0.LogEntry",  
  "Created": "2025-09-15T13:30:43+00:00",  
  "EntryType": "Event",  
  "Id": "7",  
  "Message": "Processes consuming HIGH Resource Storage_RW are  
91%",  
  "MessageArgs": [  
    "Storage_RW",  
    "91%"  
  ],  
  "MessageId": "OpenBMC.0.4.BMCSysResourceInfo",  
  "Name": "System Event Log Entry",  
  "Resolution": "None.",  
  "Resolved": false,  
  "Severity": "OK"  
}
```

Automatic Cleanup

When RW flash usage exceeds 95%, the BMC automatically purges space by deleting:

- All dump files
- All event logs
- Files in temporary directories
- Files in user directories
- Files in system log directories

After automatic cleanup, a Redfish event log entry is generated.

For example:

```
{
  "@odata.id" :
  "/redfish/v1/Systems/Bluefield/LogServices/EventLog/Entries/3",
  "@odata.type" : "#LogEntry.v1_15_0.LogEntry",
  "Created" : "2025-09-24T10:40:34+00:00",
  "EntryType" : "Event",
  "Id" : "3",
  "Message" : "RWFS cleanup completed.",
  "Modified" : "2025-09-22T10:40:34+00:00",
  "Name" : "System Event Log Entry",
  "Resolved" : false,
  "Severity" : "OK"
}
```

Note

Exceeding 99% RW flash usage can make BMC functionality unstable and impede automatic cleanup.

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