NVIDIA BlueField Reset and Reboot Procedures

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BlueField System Reboot

This section describes the necessary operations to load new NIC firmware, following NVIDIA® BlueField® NIC firmware update. This procedure deprecates the need for full server power cycle.

The following steps are executed in the BlueField OS:

1. Issue a query command to ascertain whether BlueField system reboot is supported by your environment:

   ```
   mlxfwreset -d 03:00.0 q
   ```

   If the output includes the following lines, proceed to step 2:

   ```
   3: Driver restart and PCI reset          -Supported (default)
   ...
   1: Driver is the owner                   -Supported (default)
   ```

   > **ℹ Note**
   >
   > If it says Not Supported instead, then proceed to the instructions under section "BlueField System-level Reset".

2. Issue a BlueField system reboot:

   ```
   mlxfwreset -d 03:00.0 -y -l 3 --sync 1 r
   ```

BlueField System-level Reset

This section describes the way to perform system-level reset (SLR) which is necessary for firmware configuration changes to take effect.

- [SLR for BlueField running in DPU mode](#)

- [SLR for BlueField running in NIC mode](#)

- [SLR for BlueField running in DPU mode on hosts with separate power control](#) (special use case)

System-level Reset for BlueField in DPU Mode

The following is the high-level flow of the procedure:

1. Graceful shutdown of BlueField Arm cores.

2. Query BlueField state to affirm shutdown reached.

> ⓘ **Info**
>
> In systems with multiple BlueField networking platforms, repeat steps 1 and 2 for all devices before proceeding.

3. Warm reboot the server.

Step by step process:

> ⓘ **Info**
>
> Some of the following steps can be performed using different methods, depending on resource availability and support in the user's environment.

1. Graceful shutdown of BlueField Arm cores.

> **ⓘ Info**
>
> This operation is expected to finish within 15 seconds.

Possible methods:

- From the BlueField OS:

  ```
  shutdown -h now
  ```

  Or:

  ```
  mlxfwreset -d /dev/mst/mt*pciconf0 -l 1 -t 4 --sync 0 r
  ```

- From the host OS:

  > **ⓘ Info**
  >
  > Not relevant when the BlueField is operating in Zero-Trust Mode.

  ```
  mlxfwreset -d <mst-device> -l 1 -t 4 r
  ```

- Using the BlueField BMC:

```
ipmitool -C 17 -I lanplus -H <bmc_ip> -U root -P <password> power soft
```

Or using Redfish (BlueField-3 and above):

```
curl -k -u root:<password> -H "Content-Type: application/json" -X POST
https://<bmc_ip>/redfish/v1/Systems/Bluefield/Actions/ComputerSystem.Reset -d
'{"ResetType": "GracefulShutdown"}'
```

2. Query BlueField state.

Possible methods:

- From the host OS:

> **(i) Info**
>
> Not relevant when the BlueField is operating in Zero-Trust Mode.

```
echo DISPLAY_LEVEL 2 > /dev/rshim0/misc
cat /dev/rshim0/misc
```

Expected output:

```
INFO[BL31]: System Off
```

- Utilizing the BlueField BMC:

```
ipmitool -C 17 -I lanplus -H <bmc_ip> -U root -P <password> raw 0x32 0xA3
```

Expected output: 06.

3. Warm reboot the server f rom the host OS:

```
mlxfwreset -d <mst-device> -l 4 r
```

> **ⓘ Note**
>
> If multiple BlueField devices are present in the host, this command must run only once. In this case, the MST device can be of any of the BlueFields for which the reset is necessary and participated in step 1.

Or:

```
reboot
```

> **ⓘ Note**
>
> For external hosts which do not toggle PERST# in their standard reboot command, use the mlxfwreset option.

System-level Reset for BlueField in NIC Mode

Perform warm reboot of the host OS:

```
mlxfwreset -d <mst-device> -l 4 r
```

Or:

```
reboot
```

> **ⓘ Note**
>
> For external hosts which do not toggle PERST# in their standard reboot command, use the `mlxfwreset` option.

System-level Reset for Host with Separate Power Control

This procedure is a special use case relevant only to host platforms with separate power control for the PCIe slot and CPUs, in which the BlueField (running in DPU mode) is provided power while host OS/CPUs may be in shutdown or similar standby state (this allows the BlueField device to be operational while the host CPU is in shutdown/standby state).

The following is the high-level flow of the procedure:

1. Graceful shutdown of host OS or similar CPU standby.

2. Graceful shutdown of BlueField Arm cores.

3. Query BlueField state to affirm shutdown reached.

4. Full BlueField Reset

5. Query BlueField state to affirm operational state reached

> **ⓘ Info**
>
> In systems with multiple BlueField networking platforms, repeat steps 1 through 5 for all devices before proceeding.

6. Power on the server.

Step by step process:

> **ⓘ Info**
>
> Some of the following steps can be performed using different methods, depending on resource availability and support in the user's environment.

1. Graceful shutdown of host OS by any means preferable.

2. Graceful shutdown of BlueField Arm cores.

> **ⓘ Info**
>
> This step normally takes up to 15 seconds to complete.

- From the BlueField OS:

    ```
    shutdown -h now
    ```

- Utilizing the BlueField BMC:

  - Using IPMI:

    ```
    ipmitool -C 17 -I lanplus -H <bmc_ip> -U root -P <password> power soft
    ```

  - Using Redfish (for BlueField-3 and above):

    ```
    curl -k -u root:<password> -H "Content-Type: application/json" -X POST
    https://<bmc_ip>/redfish/v1/Systems/Bluefield/Actions/ComputerSystem.Reset -d
    '{"ResetType": "GracefulShutdown"}'
    ```

3. Query the BlueField's state utilizing the BlueField BMC:

```
ipmitool -C 17 -I lanplus -H <bmc_ip> -U root -P <password> raw 0x32 0xA3
```

Expected output: 06.

4. Perform BlueField hard reset utilizing the BlueField BMC:

> (i) **Info**
>
> This step takes up to 2 minutes to complete .

- Using IPMI:

  ```
  ipmitool -C 17 -I lanplus -H <bmc_ip> -U root -P <password> power cycle
  ```

- Using Redfish (for BlueField-3 and above):

```
curl -k -u root:<password> -H "Content-Type: application/json" -X POST
https://<bmc_ip>/redfish/v1/Systems/Bluefield/Actions/ComputerSystem.Reset -d
'{"ResetType" : "PowerCycle"}'
```

5. Query BlueField operational state u tilizing the BlueField BMC :

> **ⓘ Info**
>
> At this point, the BlueField is expected to b e operational .

```
ipmitool -C 17 -I lanplus -H <bmc_ip> -U root -P <password> raw 0x32 0xA3
```

Expected output: 05.

6. Power on/boot up the host OS.