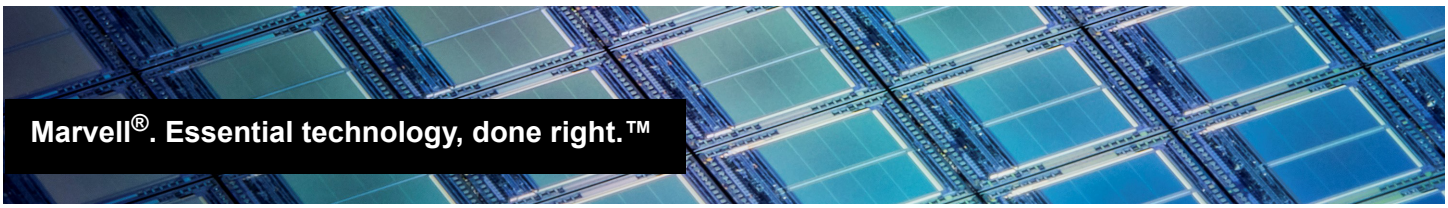

FCoE Driver Tuning for VMware® ESXi, Linux®, and Windows®

Products Affected

HPE®-branded Marvell® QLogic Converged Network Adapters
HPE FlexFabric® 533/534/536/630 Series
HPE StoreFabric® CN1100R/CN1100R-T
HPE Synergy 2820C and 3820C CNA

1 Introduction

This application note provides instructions to tune Marvell Fibre Channel over Ethernet (FCoE) drivers for VMware® ESXi, Linux®, and Windows® for the following functions:

- VMware ESXi:
  - `bnx2fc_devloss_tmo` (device loss time-out)
  - `bnx2fc_max_luns` (maximum LUNs)
  - `bnx2fc_queue_depth` (per-LUN queue depth)
- Linux:
  - `devloss_tmo` (device loss time-out)
  - `max_luns` (maximum LUNs)
  - `queue_depth` (per-LUN queue depth)
- Windows:
  - `PortDownTimeout`
  - `MaxPendingTasksPerLU` (per-LUN queue depth)

While the Marvell FCoE drivers use default values that have been tuned for optimal performance over a wide range of deployments, these parameters are provided for customers to adjust for specific environments and deployments.

Doc. No. SN0451407-00 Rev. C

2 Prerequisites

Before you begin, make sure you have:

- A Marvell Converged Network Adapter (CNA) with FCoE capability
- The following provided driver versions for VMware ESXi:
  - ESXi 5.5: bnx2fc version 1.713.20.v55.4 (or later); Marvell driver package version 2.713.10.v55.4 (or later)
  - ESXi 6.0: bnx2fc version 1.713.20.v60.4 (or later); Marvell driver package version 2.713.10.v60.4 (or later)
- The following driver version for Linux:
  - bnx2fc version 2.10.5.1; Supported in RHEL 6/7 and SLES 11/12 driver packages on HPE.com: 7.13.65-1(26 Sep 2016)
- The most recently released Windows driver (available since v0.3.3.0)

3 Tuning VMware ESXi FCoE Driver Settings

This section provides the commands and parameters to tune Marvell FCoE adapter drivers within ESXi, using:

- `bnx2fc_devloss_tmo` (device loss time-out), Section 3.1
- `bnx2fc_max_luns` (maximum LUNs), Section 3.2
- `bnx2fc_queue_depth` (per LUN queue depth), Section 3.3

Values may be passed in decimal or hex. Hex values must be prefixed with `0x`.

3.1 `bnx2fc_devloss_tmo` (Device Loss Time-out)

The `bnx2fc_devloss_tmo` (device loss time-out) command adjusts the Fibre Channel (FC) transport value (in seconds) for targets that disappear from the fabric, which triggers failover attempts. Adjusting the transport value affects the amount of time until a failover occurs. (If the transport value is zero, the driver does not set a device time-out.)

Default: 10 seconds

Range: 0 through 65536 seconds

Command line (*X*=seconds):

```
esxcfg-module -s 'bnx2fc_devloss_tmo=X' bnx2fc
```

3.2 `bnx2fc_max_luns` (Maximum LUNs)

The `bnx2fc_max_luns` (maximum LUNs) command adjusts the maximum LUNs supported for each adapter. Adjusting the value globally increases or decreases the maximum LUNs for each adapter port.

Default: 0xFFFF

Range: 0–0xFFFF

Command line (*X*=LUNs):

```
esxcfg-module -s 'bnx2fc_max_luns=X' bnx2fc
```


Doc. No. SN0451407-00 Rev. C

3.3 bnx2fc_queue_depth (Per-LUN Queue Depth)

The bnx2fc_queue_depth (per-LUN queue depth) command adjusts the per-LUN queue depth for each adapter.

Setting the queue depth to 0 indicates that the driver should use the system default. Setting the queue depth to a non-zero value overrides the system default and configures the user-provided queue depth on a per-LUN basis.

Default: 0xFFFF

Range: 0–0xFFFF

Command line (*X*=queue depth):

```
esxcfg-module -s 'bnx2fc_queue_depth=X' bnx2fc
```

4 Tuning Linux FCoE Driver Settings

This section provides the commands and parameters to tune Marvell FCoE adapter drivers within Linux, using:

- devloss_tmo (device loss time-out), Section 4.1
- max_luns (maximum LUNs), Section 4.2
- queue_depth (per-LUN queue depth), Section 4.3

4.1 devloss_tmo (Device Loss Time-out)

The devloss_tmo (device loss time-out) command adjusts the FC transport value (in seconds) for targets that disappear from the fabric, which triggers failover attempts.

If this transport value is set to zero, the driver does not set a device time-out.

Default: 0 (no timeout)

Range: 0 through 0xFFFF seconds

Command line (*x*=seconds):

```
devloss_tmo=x
```

4.2 max_luns (Maximum LUNs)

The max_luns (maximum LUNs) command adjusts the maximum LUNs supported per SCSI host.

Default: 0xFFFF

Range: 0–0xFFFF

Command line (*x*=LUNs):

```
max_luns=x
```

4.3 queue_depth (per-LUN queue depth)

The queue_depth (per-LUN queue depth) command adjusts the queue depth of SCSI devices attached through bnx2fc.

If the queue depth is set to zero, the driver does not set a SCSI device's queue depth.

Default: 0

Range: 0–0xFFFF

Example command line: (*x*=queue depth):

```
queue_depth=x\
```

5 Tuning Windows FCoE Driver Settings

This section provides the registry keys and parameters to tune Marvell FCoE adapter drivers within Windows, using:

- PortDownTimeout, Section 5.1
- MaxPendingTasksPerLU (per LUN queue depth), Section 5.2

For Windows, the parameters must be modified through the Windows registry. A system reboot is required for the modified parameters take effect.

Note

Configuring the maximum LUNs per port is not supported in Marvell Windows FCoE drivers at the time of publication.

5.1 PortDownTimeout

Editing the PortDownTimeout Windows registry key adjusts the port down time-out value (in seconds) for the FCoE driver. This value determines the amount of time the driver waits on a port disconnect event before notifying the OS layers of the removal event.

Default: 30 seconds

Minimum: 5 seconds

Maximum: 300 seconds

Windows Registry Key:

```
HKLM\System\CurrentControlSet\Services\bxfcoe\Parameters\Device\PortDownTimeout
```

5.2 MaxPendingTasksPerLU

Editing the `MaxPendingTasksPerLU` (per-LUN queue depth) Windows registry key adjusts the per-LUN queue depth for all LUNs managed across multiple adapters.

Note

The effective queue depth at an adapter level depends on the Windows OS defined values and can be less than the value set for the driver.

Default: 64

Minimum: 1

Maximum: 254

Windows Registry Key:

```
HKLM\System\CurrentControlSet\Services\bxfcoe\Parameters\Device\
MaxPendingTasksPerLU
```

Document Revision History
Revision A, November 17, 2016
Revision B, July 30, 2019
Revision C, March 24, 2021
Changes
Update to new Marvell logo.