



Addressing FCoE and iSCSI Load Failures in Linux

Products Affected

HPE® Model	Part Number
HPE Synergy 4820C 10/20/25Gb Converged Network Adapter	876449-B21
HPE StoreFabric® CN1300R 10/25Gb Converged Network Adapter	Q0F09A
HPE StoreFabric CN1200R-T Converged Network Adapter	Q0F26A
HPE Ethernet 10/25Gb 622FLR-SFP28 Converged Network Adapter	867334-B21

1 Introduction

This application note addresses potential issues in Linux® OSes where FCoE and iSCSI drivers fail to load when using certain HPE adapters based on Marvell 41xxx and 45xxx Ethernet technology. The drivers fail to load because there are not enough MSI-X vectors available to the OS.

2 Issue

On HPE server platforms running Linux OSes with limited MSI-X vectors available, the `qedf` and `qedi` drivers may fail to load with an error message similar to the following:

```
[__qedf_probe:3359]:13: Cannot load a driver due to a lack of MSI-X vectors
```

In boot-from-SAN cases utilizing either the `qedf` or `qedi` driver, this issue can result in one of the following:

- A Kernel panic during OS boot
- The OS was not installed because the installer could not detect the intended boot disk.

This issue occurs because the OS loads the drivers for the HPE adapter in a certain order (`qede`, followed by `qedf` and `qedi`). When the OS tries to load the `qedf` and `qedi` drivers, it may not have enough MSI-X vectors remaining to allocate to the adapter.

3 Workaround

This issue can be solved by using one or both of the techniques described in the following sections.

3.1 Increase the Available MSI-X Vectors

To increase the number of MSI-X vectors available to a PCIe® endpoint in the system, turn on processor X2APIC support in the HPE UEFI System Utilities:

1. During system boot, press **F9** when prompted to enter the system configuration screens.
2. From the System Utilities screen, select **System Configuration** ▶ **BIOS/Platform Configuration (RBSU)** ▶ **System Options** ▶ **Processor Options** ▶ **Processor X2APIC Support**, and then press **Enter**.
3. Select **Enabled**.
4. Press **F10** to save the configuration.

3.2 Decrease the Number of `qede` Driver Vectors Requested



Note

Implementing this workaround may impact RDMA over Converged Ethernet (RoCE) performance of the adapter.

To decrease the number of MSI-X vectors requested by the `qede` driver during system boot, set the `qed` module parameter `limit_msix_vectors` to 16 by adding the following kernel command line parameter to the grub entry for your OS:

```
qed.limit_msix_vectors=16
```

Document Revision History

Revision A, September 18, 2018

Revision B, August 31, 2019

Revision C, January 15, 2021

Changes

Re-branded to Marvell. No technical changes.

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