SSD7000 Data RAID Linux Installation Guide

Contents

Overview

This guide includes important hardware/software requirements, installation & upgrade procedures, and troubleshooting tips for using SSD7202, SSD7103,SSD7505,SSD7540, SSD7101A,SSD7204,SSD7104,SSD7120,SSD6540,SSD6540M,SSD7180,SSD7184,SSD7140,SSD7502 or SSD7580 NVMe RAID controllers with a Linux operating system.

Prerequisites

This section describes the base hardware and software requirements for the SSD7202/7103/ 7101A/7204/7104/7120/6540/6540M/7180/7184/7140 PCIe 3.0 NVMe RAID controllers and SSD7505/7540/7502/7580 PCIe4.0 NVMe RAID Controllers.

UEFI BIOS settings

This section describes how to configure your motherboard UEFI settings for use with SSD7202, SSD7103, SSD7505, SSD7502, SSD7540 and SSD7580 NVMe RAID controllers.

Driver Installation

This section covers driver installation, driver upgrade and driver uninstallation procedures for SSD7202, SSD7103, SSD7505, SSD7540, SSD7101A, SSD7204, SSD7104, SSD7120, SSD6540, SSD6540M, SSD7180, SSD7184, SSD7140, SSD7502 and SSD7580 NVMe RAID controllers in a Linux environment.

Management Software Installation

This section explains how to download and install the SSD7202, SSD7103, SSD7505, SSD7540, SSD7101A, SSD7204, SSD7104, SSD7120, SSD6540, SSD6540M, SSD7180, SSD7184, SSD7140, SSD7502 and SSD7580 RAID Management Software Suite for Linux distributions. The download includes both the Web RAID Management Interface (WebGUI), and the CLI (Command Line Interface).

Troubleshooting

Please consult this section if you encounter any difficulties installing or using the SSD7202, SSD7103, SSD7505, SSD7540, SSD7101A, SSD7204, SSD7104, SSD7120, SSD6540, SSD6540M, SSD7180, SSD7184, SSD7140, SSD7502 and SSD7580 NVMe RAID controllers. It includes solutions and description for commonly reported technical issues.

Appendix

This section describes how to collect troubleshooting information for support cases you have submitted via our Online Support Portal.

Prerequisites for a Data-RAID Configuration

Though primarily designed to support bootable NVMe RAID volumes, the SSD7202, SSD7103, SSD7505, SSD7540, SSD7101A, SSD7204, SSD7104, SSD7120, SSD6540, SSD6540M, SSD7180, SSD7184, SSD7140, SSD7502 and SSD7580 controllers can be used to support data-only NVMe storage configurations. In order to configure a non-bootable NVMe RAID array, you will need the following:

1. **An NVMe SSD must be installed.** You must have at least one NVMe SSD installed into the SSD7202, SSD7103, SSD7505, SSD7540, SSD7101A, SSD7204, SSD7104, SSD7120, SSD6540, SSD6540M, SSD7180, SSD7184, SSD7502, SSD7140 or SSD7580 RAID controller.

2. **A PCIe 4.0 slot or PCIe3.0 with x8 or x16 lanes.** The SSD7202/7103/7505/7101A/ 7204/7104/7120/6540/6540M/7180/7184/7140/7502/7540/7580 must be installed into a PCIe 4.0 slot or PCIe3.0 with x8 or x16 lanes.

3. **Your motherboard must have a UEFI BIOS with option ROM settings** for third party devices (such as the SSD7202/SSD7103/SSD7505/SSD7540/SSD7502/SSD7580, optical drives and USB flash drives). If this is not configured correctly, the system will fail to load the SSD7000 RAID controller. Please check the [SSD7202](#) , [SSD7103](#) , [SSD7505](#) [SSD7540](#) , [SSD7502](#) and [SSD7580](#)compatibility lists for recommended motherboards.

4. **Secure Boot must be disabled.** The SSD7202/7103/7505/7502/7540/7580 UEFI capability has not been signed and certified. If Secure Boot is enabled, the motherboard will not recognize the SSD7000 controller, and you will be unable to proceed with installation.

5. **Make sure any non-HighPoint drivers are uninstalled for any SSD's hosted by the SSD7000 series RAID controllers.** Drivers provided by 3rd party software and manufacturer may prevent the SSD7000 from functioning properly

Warnings:

1) **Failing to remove the controller and SSD's when uninstalling the driver may result in data loss.**
2) **Always make sure the SSD7000 driver is installed before moving a SSD7000 series NVMe RAID controller & RAID array to another Linux system.**

Linux distributions will always load the default NVMe support after the SSD7000 driver has been uninstalled, or if it detects the present of a card when no driver has been loaded – this driver will only recognize the NVMe SSD's as separate disks.

If the SSD's are recognized separately, any data they contain may be lost – including RAID configuration data.

UEFI BIOS Settings

Note：Only SSD7103/7202/7502/7505/7540/7580 needs to be set

Different motherboards will provide different UEFI-related BIOS settings. Please consult your motherboard's user manual for more information. This section provides examples using a SuperMicro X11DAi-N motherboard.

1. Boot the system and access the motherboard BIOS menu.
2. Under "**Advanced->PCIe/PCI/PnP Configuration->**, change **"CPUx Slot x PCI-E OPROM"** to "**EFI**". "**x**" represents the PCIE slot assignment. For this example, the SSD7103 is installed into "CPU1 Slot 1".
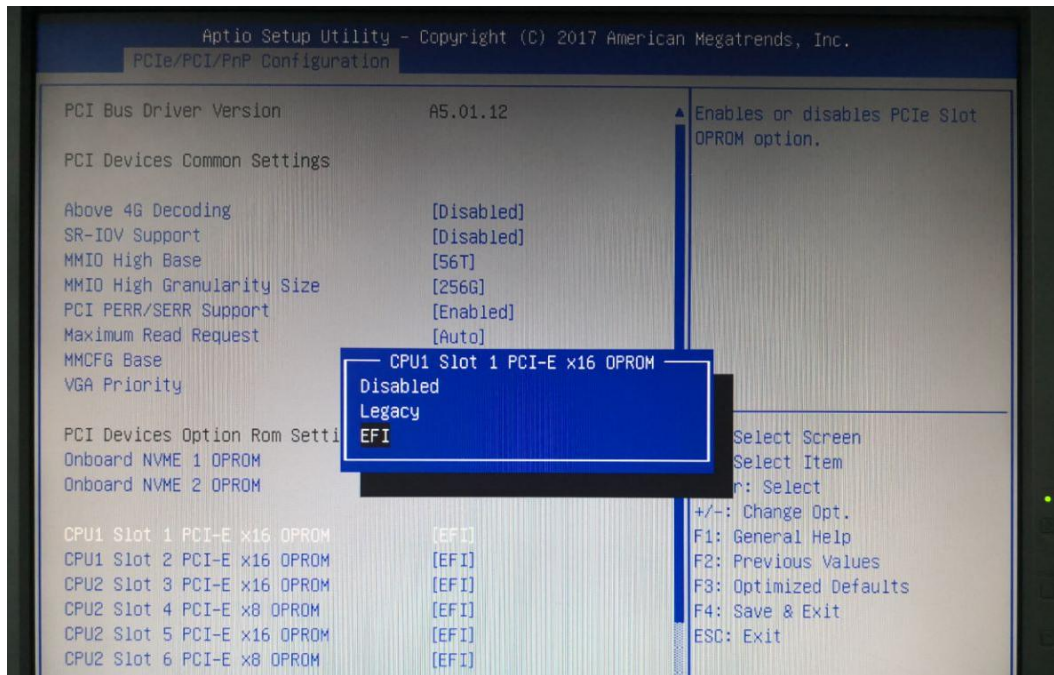
3. Disable "**Secure Boot**", and set "**Attempt Secure Boot**" to "**Disabled**".
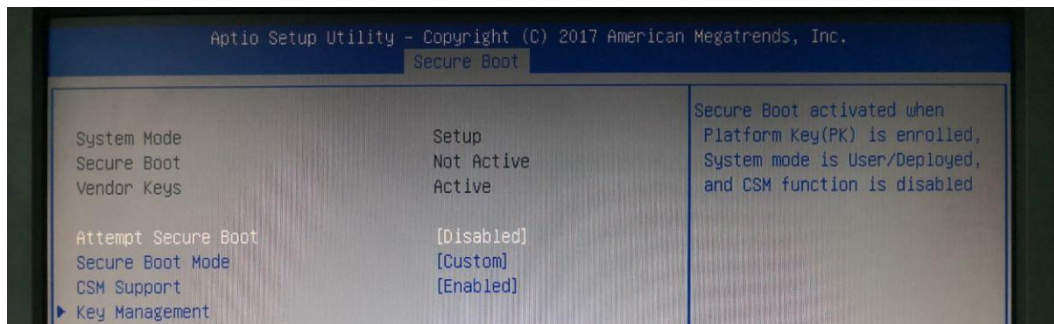
Driver Installation

Installing the Open Source Driver

1. Power on the system and boot the Linux distribution.
2. Open a system terminal with root privileges, and verify that the SSD7202,SSD7103,SSD7505,SSD7540,SSD7101A,SSD7204,SSD7104,SSD7120, SSD6540, SSD6540M, SSD7180, SSD7184, SSD7140, SSD7502 or SSD7580 controller is detected by using the following command:

   lspci

   Example screenshot (SSD7101A/7104/7120/6540/6540M):

```
[root@localhost test]# lspci
00:00.0 Host bridge: Intel Corporation 8th Gen Core Processor Host Bridge/DRAM Registers (rev 0a)
00:01.0 PCI bridge: Intel Corporation Xeon E3-1200 v5/E3-1500 v5/6th Gen Core Processor PCIe Controller (x16) (rev 0a)
00:02.0 VGA compatible controller: Intel Corporation UHD Graphics 630 (Desktop 9 Series)
00:12.0 Signal processing controller: Intel Corporation Cannon Lake PCH Thermal Controller (rev 10)
00:14.0 USB controller: Intel Corporation Cannon Lake PCH USB 3.1 xHCI Host Controller (rev 10)
00:14.2 RAM memory: Intel Corporation Cannon Lake PCH Shared SRAM (rev 10)
00:14.3 Network controller: Intel Corporation Wireless-AC 9560 [Jefferson Peak] (rev 10)
00:16.0 Communication controller: Intel Corporation Cannon Lake PCH HECI Controller (rev 10)
00:17.0 SATA controller: Intel Corporation Cannon Lake PCH SATA AHCI Controller (rev 10)
00:1b.0 PCI bridge: Intel Corporation Cannon Lake PCH PCI Express Root Port #17 (rev f0)
00:1c.0 PCI bridge: Intel Corporation Cannon Lake PCH PCI Express Root Port #1 (rev f0)
00:1c.4 PCI bridge: Intel Corporation Cannon Lake PCH PCI Express Root Port #5 (rev f0)
00:1c.6 PCI bridge: Intel Corporation Cannon Lake PCH PCI Express Root Port #7 (rev f0)
00:1d.0 PCI bridge: Intel Corporation Cannon Lake PCH PCI Express Root Port #9 (rev f0)
00:1f.0 ISA bridge: Intel Corporation Z390 Chipset LPC/eSPI Controller (rev 10)
00:1f.3 Audio device: Intel Corporation Cannon Lake PCH cAVS (rev 10)
00:1f.4 SMBus: Intel Corporation Cannon Lake PCH SMBus Controller (rev 10)
00:1f.5 Serial bus controller [0c80]: Intel Corporation Cannon Lake PCH SPI Controller (rev 10)
00:1f.6 Ethernet controller: Intel Corporation Ethernet Connection (7) I219-V (rev 10)
01:00.0 PCI bridge: PLX Technology, Inc. PEX 8747 48-Lane, 5-Port PCI Express Gen 3 (8.0 GT/s) Switch (rev ca)
02:08.0 PCI bridge: PLX Technology, Inc. PEX 8747 48-Lane, 5-Port PCI Express Gen 3 (8.0 GT/s) Switch (rev ca)
02:09.0 PCI bridge: PLX Technology, Inc. PEX 8747 48-Lane, 5-Port PCI Express Gen 3 (8.0 GT/s) Switch (rev ca)
02:10.0 PCI bridge: PLX Technology, Inc. PEX 8747 48-Lane, 5-Port PCI Express Gen 3 (8.0 GT/s) Switch (rev ca)
02:11.0 PCI bridge: PLX Technology, Inc. PEX 8747 48-Lane, 5-Port PCI Express Gen 3 (8.0 GT/s) Switch (rev ca)
03:00.0 Non-Volatile memory controller: Samsung Electronics Co Ltd NVMe SSD Controller SM981/PM981
04:00.0 Non-Volatile memory controller: Samsung Electronics Co Ltd NVMe SSD Controller SM981/PM981
05:00.0 Non-Volatile memory controller: Samsung Electronics Co Ltd NVMe SSD Controller SM981/PM981
06:00.0 Non-Volatile memory controller: Samsung Electronics Co Ltd NVMe SSD Controller SM981/PM981
73:00.0 Ethernet controller: Aquantia Corp. AQC107 NBase-T/IEEE 802.3bz Ethernet Controller [AQtion] (rev 02)
74:00.0 PCI bridge: ASMedia Technology Inc. ASM1184e PCIe Switch Port
75:01.0 PCI bridge: ASMedia Technology Inc. ASM1184e PCIe Switch Port
75:03.0 PCI bridge: ASMedia Technology Inc. ASM1184e PCIe Switch Port
75:05.0 PCI bridge: ASMedia Technology Inc. ASM1184e PCIe Switch Port
75:07.0 PCI bridge: ASMedia Technology Inc. ASM1184e PCIe Switch Port
```

SSD7204：

```
16:1e.6 System peripheral: Intel Corporation Sky Lake-E PCU Registers (rev 04)
17:00.0 PCI bridge: PLX Technology, Inc. PEX 8747 48-Lane, 5-Port PCI Express Gen 3 (8.0 GT/s) Switch (rev ca)
18:08.0 PCI bridge: PLX Technology, Inc. PEX 8747 48-Lane, 5-Port PCI Express Gen 3 (8.0 GT/s) Switch (rev ca)
18:10.0 PCI bridge: PLX Technology, Inc. PEX 8747 48-Lane, 5-Port PCI Express Gen 3 (8.0 GT/s) Switch (rev ca)
1a:00.0 PCI bridge: PLX Technology, Inc. PEX 8747 48-Lane, 5-Port PCI Express Gen 3 (8.0 GT/s) Switch (rev ca)
1b:08.0 PCI bridge: PLX Technology, Inc. PEX 8747 48-Lane, 5-Port PCI Express Gen 3 (8.0 GT/s) Switch (rev ca)
1b:09.0 PCI bridge: PLX Technology, Inc. PEX 8747 48-Lane, 5-Port PCI Express Gen 3 (8.0 GT/s) Switch (rev ca)
1b:10.0 PCI bridge: PLX Technology, Inc. PEX 8747 48-Lane, 5-Port PCI Express Gen 3 (8.0 GT/s) Switch (rev ca)
1b:11.0 PCI bridge: PLX Technology, Inc. PEX 8747 48-Lane, 5-Port PCI Express Gen 3 (8.0 GT/s) Switch (rev ca)
1c:00.0 Non-Volatile memory controller: Samsung Electronics Co Ltd NVMe SSD Controller SM961/PM961
1d:00.0 Non-Volatile memory controller: Samsung Electronics Co Ltd NVMe SSD Controller SM961/PM961
1e:00.0 Non-Volatile memory controller: Samsung Electronics Co Ltd NVMe SSD Controller SM961/PM961
1f:00.0 Non-Volatile memory controller: Samsung Electronics Co Ltd NVMe SSD Controller SM961/PM961
64:00.0 PCI bridge: Intel Corporation Sky Lake-E PCI Express Root Port A (rev 04)
64:05.0 System peripheral: Intel Corporation Sky Lake-E VT-d (rev 04)
64:05.2 System peripheral: Intel Corporation Sky Lake-E RAS Configuration Registers (rev 04)
64:05.4 PIC: Intel Corporation Sky Lake-E IOxAPIC Configuration Registers (rev 04)
64:08.0 System peripheral: Intel Corporation Sky Lake-E Integrated Memory Controller (rev 04)
64:09.0 System peripheral: Intel Corporation Sky Lake-E Integrated Memory Controller (rev 04)
64:0a.0 System peripheral: Intel Corporation Sky Lake-E Integrated Memory Controller (rev 04)
64:0a.1 System peripheral: Intel Corporation Sky Lake-E Integrated Memory Controller (rev 04)
64:0a.2 System peripheral: Intel Corporation Sky Lake-E Integrated Memory Controller (rev 04)
64:0a.3 System peripheral: Intel Corporation Sky Lake-E Integrated Memory Controller (rev 04)
64:0a.4 System peripheral: Intel Corporation Sky Lake-E Integrated Memory Controller (rev 04)
64:0a.5 System peripheral: Intel Corporation Sky Lake-E LM Channel 1 (rev 04)
64:0a.6 System peripheral: Intel Corporation Sky Lake-E LMS Channel 1 (rev 04)
64:0a.7 System peripheral: Intel Corporation Sky Lake-E LMDP Channel 1 (rev 04)
64:0b.0 System peripheral: Intel Corporation Sky Lake-E DECS Channel 2 (rev 04)
64:0b.1 System peripheral: Intel Corporation Sky Lake-E LM Channel 2 (rev 04)
64:0b.2 System peripheral: Intel Corporation Sky Lake-E LMS Channel 2 (rev 04)
64:0b.3 System peripheral: Intel Corporation Sky Lake-E LMDP Channel 2 (rev 04)
64:0c.0 System peripheral: Intel Corporation Sky Lake-E Integrated Memory Controller (rev 04)
64:0c.1 System peripheral: Intel Corporation Sky Lake-E Integrated Memory Controller (rev 04)
64:0c.2 System peripheral: Intel Corporation Sky Lake-E Integrated Memory Controller (rev 04)
64:0c.3 System peripheral: Intel Corporation Sky Lake-E Integrated Memory Controller (rev 04)
64:0c.4 System peripheral: Intel Corporation Sky Lake-E Integrated Memory Controller (rev 04)
64:0c.5 System peripheral: Intel Corporation Sky Lake-E LMS Channel 1 (rev 04)
64:0c.6 System peripheral: Intel Corporation Sky Lake-E LM Channel 1 (rev 04)
64:0c.7 System peripheral: Intel Corporation Sky Lake-E LMDP Channel 1 (rev 04)
64:0d.0 System peripheral: Intel Corporation Sky Lake-E DECS Channel 2 (rev 04)
64:0d.1 System peripheral: Intel Corporation Sky Lake-E LM Channel 2 (rev 04)
64:0d.2 System peripheral: Intel Corporation Sky Lake-E LMS Channel 2 (rev 04)
64:0d.3 System peripheral: Intel Corporation Sky Lake-E LMDP Channel 2 (rev 04)
65:00.0 PCI bridge: PLX Technology, Inc. PEX 8747 48-Lane, 5-Port PCI Express Gen 3 (8.0 GT/s) Switch (rev ca)
66:08.0 PCI bridge: PLX Technology, Inc. PEX 8747 48-Lane, 5-Port PCI Express Gen 3 (8.0 GT/s) Switch (rev ca)
66:10.0 PCI bridge: PLX Technology, Inc. PEX 8747 48-Lane, 5-Port PCI Express Gen 3 (8.0 GT/s) Switch (rev ca)
68:00.0 VGA compatible controller: NVIDIA Corporation GK208B [GeForce GT 710] (rev a1)
68:00.1 Audio device: NVIDIA Corporation GK208 HDMI/DP Audio Controller (rev a1)
b2:05.0 System peripheral: Intel Corporation Sky Lake-E VT-d (rev 04)
```

SSD7184/7180:

SSD7140:

SSD7103：

SSD7202:

```
16:1e.4 System peripheral: Intel Corporation Sky Lake-E PCU Registers (rev 04)
16:1e.5 System peripheral: Intel Corporation Sky Lake-E PCU Registers (rev 04)
16:1e.6 System peripheral: Intel Corporation Sky Lake-E PCU Registers (rev 04)
17:00.0 PCI bridge: PLX Technology, Inc. PEX 8747 48-Lane, 5-Port PCI Express Gen 3 (8.0 GT/s) Switch (rev ca)
18:08.0 PCI bridge: PLX Technology, Inc. PEX 8747 48-Lane, 5-Port PCI Express Gen 3 (8.0 GT/s) Switch (rev ca)
18:10.0 PCI bridge: PLX Technology, Inc. PEX 8747 48-Lane, 5-Port PCI Express Gen 3 (8.0 GT/s) Switch (rev ca)
1a:00.0 PCI bridge: PLX Technology, Inc. PEX 8747 48-Lane, 5-Port PCI Express Gen 3 (8.0 GT/s) Switch (rev ca)
1b:08.0 PCI bridge: PLX Technology, Inc. PEX 8747 48-Lane, 5-Port PCI Express Gen 3 (8.0 GT/s) Switch (rev ca)
1b:09.0 PCI bridge: PLX Technology, Inc. PEX 8747 48-Lane, 5-Port PCI Express Gen 3 (8.0 GT/s) Switch (rev ca)
1b:10.0 PCI bridge: PLX Technology, Inc. PEX 8747 48-Lane, 5-Port PCI Express Gen 3 (8.0 GT/s) Switch (rev ca)
1b:11.0 PCI bridge: PLX Technology, Inc. PEX 8747 48-Lane, 5-Port PCI Express Gen 3 (8.0 GT/s) Switch (rev ca)
1d:00.0 Non-Volatile memory controller: Samsung Electronics Co Ltd NVMe SSD Controller SM961/PM961
1e:00.0 RAID bus controller: HighPoint Technologies, Inc. Device 7202 (rev 01)
1f:00.0 Non-Volatile memory controller: Samsung Electronics Co Ltd NVMe SSD Controller SM961/PM961
64:00.0 PCI bridge: Intel Corporation Sky Lake-E PCI Express Root Port A (rev 04)
64:05.0 System peripheral: Intel Corporation Sky Lake-E VT-d (rev 04)
64:05.2 System peripheral: Intel Corporation Sky Lake-E RAS Configuration Registers (rev 04)
64:05.4 PIC: Intel Corporation Sky Lake-E IOxAPIC Configuration Registers (rev 04)
64:08.0 System peripheral: Intel Corporation Sky Lake-E Integrated Memory Controller (rev 04)
64:09.0 System peripheral: Intel Corporation Sky Lake-E Integrated Memory Controller (rev 04)
64:0a.0 System peripheral: Intel Corporation Sky Lake-E Integrated Memory Controller (rev 04)
64:0a.1 System peripheral: Intel Corporation Sky Lake-E Integrated Memory Controller (rev 04)
64:0a.2 System peripheral: Intel Corporation Sky Lake-E Integrated Memory Controller (rev 04)
64:0a.3 System peripheral: Intel Corporation Sky Lake-E Integrated Memory Controller (rev 04)
64:0a.4 System peripheral: Intel Corporation Sky Lake-E Integrated Memory Controller (rev 04)
64:0a.5 System peripheral: Intel Corporation Sky Lake-E LM Channel 1 (rev 04)
64:0a.6 System peripheral: Intel Corporation Sky Lake-E LMS Channel 1 (rev 04)
64:0a.7 System peripheral: Intel Corporation Sky Lake-E LMDP Channel 1 (rev 04)
64:0b.0 System peripheral: Intel Corporation Sky Lake-E DECS Channel 2 (rev 04)
64:0b.1 System peripheral: Intel Corporation Sky Lake-E LM Channel 2 (rev 04)
64:0b.2 System peripheral: Intel Corporation Sky Lake-E LMS Channel 2 (rev 04)
64:0b.3 System peripheral: Intel Corporation Sky Lake-E LMDP Channel 2 (rev 04)
64:0c.0 System peripheral: Intel Corporation Sky Lake-E Integrated Memory Controller (rev 04)
64:0c.1 System peripheral: Intel Corporation Sky Lake-E Integrated Memory Controller (rev 04)
64:0c.2 System peripheral: Intel Corporation Sky Lake-E Integrated Memory Controller (rev 04)
64:0c.3 System peripheral: Intel Corporation Sky Lake-E Integrated Memory Controller (rev 04)
64:0c.4 System peripheral: Intel Corporation Sky Lake-E Integrated Memory Controller (rev 04)
64:0c.5 System peripheral: Intel Corporation Sky Lake-E LM Channel 1 (rev 04)
64:0c.6 System peripheral: Intel Corporation Sky Lake-E LMS Channel 1 (rev 04)
64:0c.7 System peripheral: Intel Corporation Sky Lake-E LMDP Channel 1 (rev 04)
64:0d.0 System peripheral: Intel Corporation Sky Lake-E DECS Channel 2 (rev 04)
64:0d.1 System peripheral: Intel Corporation Sky Lake-E LM Channel 2 (rev 04)
64:0d.2 System peripheral: Intel Corporation Sky Lake-E LMS Channel 2 (rev 04)
64:0d.3 System peripheral: Intel Corporation Sky Lake-E LMDP Channel 2 (rev 04)
65:00.0 PCI bridge: PLX Technology, Inc. PEX 8747 48-Lane, 5-Port PCI Express Gen 3 (8.0 GT/s) Switch (rev ca)
66:08.0 PCI bridge: PLX Technology, Inc. PEX 8747 48-Lane, 5-Port PCI Express Gen 3 (8.0 GT/s) Switch (rev ca)
66:10.0 PCI bridge: PLX Technology, Inc. PEX 8747 48-Lane, 5-Port PCI Express Gen 3 (8.0 GT/s) Switch (rev ca)
68:00.0 VGA compatible controller: NVIDIA Corporation GK208B [GeForce GT 710] (rev a1)
68:00.1 Audio device: NVIDIA Corporation GK208 HDMI/DP Audio Controller (rev a1)
b2:05.0 System peripheral: Intel Corporation Sky Lake-E VT-d (rev 04)
b2:05.2 System peripheral: Intel Corporation Sky Lake-E RAS Configuration Registers (rev 04)
b2:05.4 PIC: Intel Corporation Sky Lake-E IOxAPIC Configuration Registers (rev 04)
```

SSD7505:

```
07:00.3 USB controller: Advanced Micro Devices, Inc. [AMD] Matisse USB 3.0 Host Controller
08:00.0 SATA controller: Advanced Micro Devices, Inc. [AMD] FCH SATA Controller [AHCI mode] (rev 51)
09:00.0 SATA controller: Advanced Micro Devices, Inc. [AMD] FCH SATA Controller [AHCI mode] (rev 51)
0a:00.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
0b:00.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
0b:0c.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
0b:1c.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
0c:00.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
0d:10.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
0d:14.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
0d:18.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
0d:1c.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
0e:00.0 Non-Volatile memory controller: Seagate Technology PLC Device 5016 (rev 01)
0f:00.0 Non-Volatile memory controller: Seagate Technology PLC Device 5016 (rev 01)
10:00.0 Non-Volatile memory controller: Seagate Technology PLC Device 5016 (rev 01)
11:00.0 Non-Volatile memory controller: Seagate Technology PLC Device 5016 (rev 01)
12:00.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
13:14.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
13:15.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
14:00.0 RAID bus controller: HighPoint Technologies, Inc. Device 7505 (rev 01)
16:00.0 Mass storage controller: Broadcom / LSI Device c010 (rev b0)
```

SSD7540:

```
d7:12.2 System peripheral: Intel Corporation Sky Lake-E M3KTI Registers (rev 07)
d7:15.0 System peripheral: Intel Corporation Sky Lake-E M2PCI Registers (rev 07)
d7:15.1 Performance counters: Intel Corporation Sky Lake-E DDRIO Registers (rev 07)
d7:16.0 System peripheral: Intel Corporation Sky Lake-E M2PCI Registers (rev 07)
d7:16.1 Performance counters: Intel Corporation Sky Lake-E DDRIO Registers (rev 07)
d7:16.4 System peripheral: Intel Corporation Sky Lake-E M2PCI Registers (rev 07)
d7:16.5 Performance counters: Intel Corporation Sky Lake-E DDRIO Registers (rev 07)
8:00.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
9:00.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
9:04.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
9:0c.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
9:1c.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
a:00.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
b:10.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
b:14.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
b:18.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
b:1c.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
c:00.0 Non-Volatile memory controller: Sandisk Corp WD Black 2018/PC SN520 NVMe SSD (rev 01)
d:00.0 Non-Volatile memory controller: Samsung Electronics Co Ltd NVMe SSD Controller SM981/PM981/PM983
0:00.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
1:00.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
1:04.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
1:08.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
1:0c.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
4:00.0 Non-Volatile memory controller: Sandisk Corp WD Black 2018/PC SN520 NVMe SSD (rev 01)
5:00.0 Non-Volatile memory controller: Sandisk Corp WD Black 2018/PC SN520 NVMe SSD (rev 01)
6:00.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
7:14.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
7:15.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
8:00.0 RAID bus controller: HighPoint Technologies, Inc. Device 7540 (rev 01)
ea:00.0 Mass storage controller: Broadcom / LSI Device c010 (rev b0)
[root@localhost csl]#
```

SSD7502:

SSD7580:

Additionally, you can verify that the NVMe drivers are detected by using the following command:

fdisk -l

Example screenshot (SSD7101A-1):

```
Disk /dev/mapper/centos-swap: 8388 MB, 8388608000 bytes, 16384000 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/nvme3n1: 512.1 GB, 512110190592 bytes, 1000215216 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/nvme2n1: 512.1 GB, 512110190592 bytes, 1000215216 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/nvme0n1: 512.1 GB, 512110190592 bytes, 1000215216 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/nvme1n1: 2000.4 GB, 2000398934016 bytes, 3907029168 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/mapper/centos-home: 192.9 GB, 192904429568 bytes, 376766464 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
```

3. Download the appropriate driver from the Software Downloads web page：
   SSD7202：

   https://highpoint-tech.com/USA_new/series-ssd7202-download.htm

   SSD7103：

   https://highpoint-tech.com/USA_new/series-ssd7103-download.htm

   SSD7505:

   https://highpoint-tech.com/USA_new/series-ssd7500-download.htm

   SSD7101A-1:

   https://highpoint-tech.com/USA_new/series-ssd7101a-1-download.htm

   SSD7104:

   https://highpoint-tech.com/USA_new/series-ssd7104-download.htm

   SSD7204:

   https://highpoint-tech.com/USA_new/series-ssd7204-download.htm

   SSD7120:

   https://highpoint-tech.com/USA_new/series-ssd7120-download.htm

   SSD6540:

   https://highpoint-tech.com/USA_new/series-ssd6540-download.htm

   SSD6540M:

   https://highpoint-tech.com/USA_new/series-ssd6540m-download.htm

   SSD7180:

   https://highpoint-tech.com/USA_new/series-hpc-download.htm

   SSD7184:

https://highpoint-tech.com/USA_new/series-hpc-download.htm

SSD7140:

https://highpoint-tech.com/USA_new/series-ssd7140-download.htm

SSD7540:

https://highpoint-tech.com/USA_new/series-ssd7500-download.htm

SSD7502:

https://www.highpoint-tech.com/USA_new/series-ssd7502-overview.html

SSD7580:

https://www.highpoint-tech.com/USA_new/series-ssd7580-download.htm

4. Using the system terminal with root privileges, browse to the directory where the driver download, and enter the following commands to extract the Linux Open Source Driver software package:

    tar zxvf HighPoint_NVMe_G5_Linux_Src_vx.x.xx_xx_xx_xx.tar.gz

    ```
    [root@localhost Downloads]# tar zxvf HighPoint_NVMe_G5_Linux_Src_v1.2.13_20_03_17.tar.gz
    hptnvme_g5_linux_src_v1.2.13_20_03_17.bin
    README
    ```

    Note: The driver revision shown in the screenshots may not correspond with current software releases. Please make sure to download the latest driver updates from the product's Software Updates page.

5. Install the Open Source Driver using the following command
    sh hptnvme_g5_linux_src_vx.x.xx_xx_xx_xx.bin   or
    ./hptnvme_g5_linux_src_vx.x.xx_xx_xx_xx.bin

    ```
    [root@localhost Downloads]# sh hptnvme_g5_linux_src_v1.2.13_20_03_17.bin
    Verifying archive integrity... All good.
    Uncompressing HighPoint NVMe RAID Controller Linux Open Source package installer.......................................................
    Checking and installing required toolchain and utility ...
    Found program make (/usr/bin/make)
    Found program gcc (/usr/bin/gcc)
    Found program perl (/usr/bin/perl)
    Found program wget (/usr/bin/wget)
    Created symlink from /etc/systemd/system/default.target.wants/hptdrv-monitor.service to /usr/lib/systemd/system/hptdrv-monitor.service.

    Please run hptuninhptnvme to uninstall the driver files.

    Please restart the system for the driver to take effect.
    [root@localhost Downloads]#
    ```

```
[root@localhost Downloads]# ./hptnvme_g5_linux_src_v1.2.20_2020_09_28.bin
Verifying archive integrity... All good.
Uncompressing HighPoint NVMe RAID Controller Linux Open Source package installer............................
..........................
Checking and installing required toolchain and utility ...
Found program make (/usr/bin/make)
Found program gcc (/usr/bin/gcc)
Found program perl (/usr/bin/perl)
Found program wget (/usr/bin/wget)
old crashkernel=auto resume=/dev/mapper/cl-swap rd.lvm.lv=cl/root rd.lvm.lv=cl/swap rhgb quiet
new crashkernel=auto
resume=/dev/mapper/cl-swap
rd.lvm.lv=cl/root
rd.lvm.lv=cl/swap
rhgb
quiet pcie_aspm=off
Generating grub configuration file ...
Adding boot menu entry for EFI firmware configuration
done
Synchronizing state of hptdrv-monitor.service with SysV service script with /usr/lib/systemd/systemd-sysv-inst
all.
Executing: /usr/lib/systemd/systemd-sysv-install enable hptdrv-monitor
Created symlink /etc/systemd/system/default.target.wants/hptdrv-monitor.service → /usr/lib/systemd/system/hptd
rv-monitor.service.

Please run hptuninhptnvme to uninstall the driver files.

Please restart the system for the driver to take effect.
[root@localhost Downloads]#
```

6. After the driver installation is complete, the system will prompt you to restart to make the driver take effect. **Manually restart the system.**

7. After the distribution as rebooted, open the system terminal with root privileges and check the driver status using the following command:

    dmesg | grep hptnvme

    The following screenshot shows driver v1.2.13.

```
[root@localhost Downloads]# dmesg | grep hptnvme
[    4.431322] hptnvme: loading out-of-tree module taints kernel.
[    4.431325] hptnvme: module license 'Proprietary' taints kernel.
[    4.431706] hptnvme: module verification failed: signature and/or required key missing - tainting kernel
[    5.381222] hptnvme: HighPoint NVMe RAID controller driver (G5) v1.2.13 block major fc
[    5.382480] scsi host6: hptnvme
[    5.382617] hptnvme 0000:03:00.0: irq 145 for MSI/MSI-X
[    5.382622] hptnvme 0000:03:00.0: irq 146 for MSI/MSI-X
[    5.382625] hptnvme 0000:03:00.0: irq 147 for MSI/MSI-X
[    5.382630] hptnvme 0000:03:00.0: irq 148 for MSI/MSI-X
[    5.382633] hptnvme 0000:03:00.0: irq 149 for MSI/MSI-X
[    5.382637] hptnvme 0000:03:00.0: irq 150 for MSI/MSI-X
```

    Additionally, you can check the NVMe driver using the following command:
    fdisk –l

```
Disk /dev/hptblock0n0p: 465.78 GiB, 500107862016 bytes, 976773168 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes


Disk /dev/hptblock0n1p: 465.78 GiB, 500107862016 bytes, 976773168 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes


Disk /dev/hptblock0n2p: 465.78 GiB, 500107862016 bytes, 976773168 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes


Disk /dev/hptblock0n3p: 465.78 GiB, 500107862016 bytes, 976773168 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
```

Updating the Driver

As of May 2020, current open source driver releases include our Auto-Compile feature – auto compile checks the kernel version each time the system is booted to ensure compatibility. If a new kernel is detected, Auto Compile will check our online database for required updates and automatically compile a new driver.

The latest Open Source driver is available from the SSD7202, SSD7103, SSD7505,SSD7204, SSD7101A, SSD7104, SSD7120, SSD6540, SSD6540M, SSD7180, SSD7184, SSD7140, SSD7540, SSD7502 and SSD7580 Software Downloads web pages. If you want to manually update using this download, please follow the procedure below.

1. **Prerequisites**

    a. Ensure that SSD7202/SSD7103/SSD7505/SSD7101A/SSD7204/SSD7104/SSD7120/ SSD6540/SSD6540M/SSD7180/SSD7184/SSD7140/SSD7540/SSD7502/SSD7580 is installed into the motherboard.

    b. Open the system terminal with root privileges to check the current driver version by using the following command:

       dmesg | grep hptnvme.

       The screenshot below shows driver version v1.2.13 is installed:

```
[root@localhost Downloads]# dmesg | grep hptnvme
[    4.431322] hptnvme: loading out-of-tree module taints kernel.
[    4.431325] hptnvme: module license 'Proprietary' taints kernel.
[    4.431706] hptnvme: module verification failed: signature and/or required key missing - tainting kernel
[    5.381222] hptnvme: HighPoint NVMe RAID controller driver (G5) v1.2.13 block major fc
[    5.382480] scsi host6: hptnvme
[    5.382617] hptnvme 0000:03:00.0: irq 145 for MSI/MSI-X
[    5.382622] hptnvme 0000:03:00.0: irq 146 for MSI/MSI-X
[    5.382625] hptnvme 0000:03:00.0: irq 147 for MSI/MSI-X
[    5.382630] hptnvme 0000:03:00.0: irq 148 for MSI/MSI-X
[    5.382633] hptnvme 0000:03:00.0: irq 149 for MSI/MSI-X
[    5.382637] hptnvme 0000:03:00.0: irq 150 for MSI/MSI-X
```

2. **Updating the driver**

    a. Open the directory where the latest driver version is located and open the system terminal with root privileges. Execute the following commands to complete the installation. The illustrated driver version is v1.2.14.

    b. Extract the Linux Open Source Driver software package using the following command:

       tar zxvf HighPoint_NVMe_G5_Linux_Src_vx.x.xx_xx_xx_xx.tar.gz

```
[root@localhost Downloads]# tar zxvf HighPoint_NVMe_G5_Linux_Src_v1.2.14_20_04_10.tar.gz
hptnvme_g5_linux_src_v1.2.14_20_04_10.bin
README
```

    c. Make sure the system has an active internet connection. To manually install the latest Open Source Driver, open the system terminal with root privileges and enter the following command:

       ./hptnvme_g5_linux_src_vx.x.xx_xx_xx_xx.bin

```
[root@localhost Downloads]# ./hptnvme_g5_linux_src_v1.2.14_20_04_10.bin
Verifying archive integrity... All good.
Uncompressing installing HighPoint NVMe RAID Controller Linux Open Source package installer.....................................................
Checking and installing required toolchain and utility ...
Found program make (/usr/bin/make)
Found program gcc (/usr/bin/gcc)
Found program perl (/usr/bin/perl)
Found program wget (/usr/bin/wget)
old crashkernel=auto rd.lvm.lv=centos/root rd.lvm.lv=centos/swap rhgb quiet intel_iommu=off amd_iommu=off
new crashkernel=auto
rd.lvm.lv=centos/root
rd.lvm.lv=centos/swap
rhgb
quiet intel_iommu=off amd_iommu=off
Generating grub configuration file ...
Found linux image: /boot/vmlinuz-3.10.0-1062.18.1.el7.x86_64
Found initrd image: /boot/initramfs-3.10.0-1062.18.1.el7.x86_64.img
Found linux image: /boot/vmlinuz-3.10.0-1062.el7.x86_64
Found initrd image: /boot/initramfs-3.10.0-1062.el7.x86_64.img
Found linux image: /boot/vmlinuz-0-rescue-cd0401dc0d1649da9932eac9f5546670
Found initrd image: /boot/initramfs-0-rescue-cd0401dc0d1649da9932eac9f5546670.img
done

Please run hptuninhptnvme to uninstall the driver files.

Please restart the system for the driver to take effect.
[root@localhost Downloads]# 
```

d.   After the driver installation is complete, the system will prompt you to restart to allow the new driver to take effect. Please manually restart the system.

Note: for more information about this procedure, please consult the readme file included with each Open Source download.

e.   Once the distribution has rebooted, open the system terminal with root privileges and check the current driver version using the following command

dmesg | grep hptnvme.

The screenshot below shows driver v1.2.14 is installed:

```
[root@localhost test]# dmesg | grep hptnvme
[    4.267125] hptnvme: loading out-of-tree module taints kernel.
[    4.267128] hptnvme: module license 'Proprietary' taints kernel.
[    4.267485] hptnvme: module verification failed: signature and/or required key missing - tainting kernel
[    5.216390] hptnvme: HighPoint NVMe RAID controller driver (G5) v1.2.14 block major fc
[    5.217073] scsi host0: hptnvme
[    5.217813] hptnvme 0000:03:00.0: irq 145 for MSI/MSI-X
[    5.217817] hptnvme 0000:03:00.0: irq 146 for MSI/MSI-X
[    5.217820] hptnvme 0000:03:00.0: irq 147 for MSI/MSI-X
[    5.217823] hptnvme 0000:03:00.0: irq 148 for MSI/MSI-X
[    5.217827] hptnvme 0000:03:00.0: irq 149 for MSI/MSI-X
```

f.   Open the WebGUI to make sure it can connect to the controller and recognize the NVMe SSD's/RAID array.

g.   As shown below, the new driver has been successfully installed and loaded at bootup – the WebGUI can connect to the controller and recognize the SSD's and RAID array:
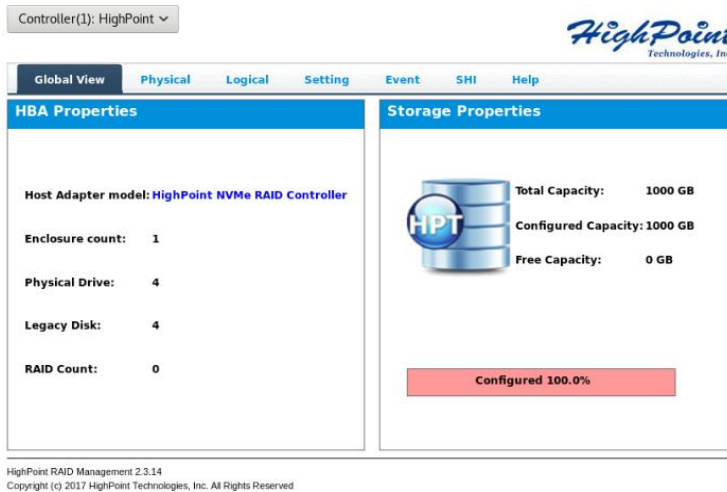
Uninstalling the Driver

1. Prerequisites

   a. Power off the system and remove the SSD7202/SSD7103/SSD7505/SSD7101A/ SSD7204/SSD7104/SSD7120/SSD6540/SSD6540M/SSD7180/SSD7184/SSD7140/ SSD7540/SSD7502/SSD7580 from the motherboard.
   Note: failing to remove the controller and SSD's when uninstalling the driver may result in data loss. The Linux distribution will load the default NVMe support after the SSD7000 driver has been uninstalled – this driver will only recognize the NVMe SSD's as separate disks.

2. To uninstall the driver:

   b. Open the system terminal with root privileges. Enter the following commands to uninstall the driver:

     hptuninhptnvme

   c. Press '**Y**' to confirm.

```
[root@localhost Downloads]# hptuninhptnvme
Are you sure to uninstall the driver hptnvme from system? (Y/n): y
Removed symlink /etc/systemd/system/default.target.wants/hptdrv-monitor.service.
Removed symlink /etc/systemd/system/sysinit.target.wants/systemd-hptdrv.service.
All files installed have been deleted from the system.
[root@localhost Downloads]#
```

   d. After uninstalling the driver, manually reboot the system.

   e. After the distribution has rebooted, open the system terminal with root privileges. And enter the following command to check the driver status:

     lsmod | grep hptnvme

Before uninstalling:
```
[root@localhost test]# lsmod | grep hptnvme
hptnvme                 235401  0
```

After uninstalling:
```
[root@localhost test]# lsmod | grep hptnvme
[root@localhost test]#
```

   f. If the system does not display information about "**hptnvme**", the driver has been successfully uninstalled.

HighPoint RAID Management (WebGUI) Installation / Driver Installation Verification

The HighPoint RAID Management software is used to configure and monitor the SSD7202/SSD7103/SSD7505/SSD7101A/SSD7204/SSD7104/SSD7120/SSD6540/ SSD6540M/SSD7180/SSD7184/SSD7140/SSD7540/SSD7502/SSD7580 driver.

Download the HighPoint RAID Management software package from the HighPoint website:

SSD7202：

https://highpoint-tech.com/USA_new/series-ssd7202-download.htm

SSD7103：

https://highpoint-tech.com/USA_new/series-ssd7103-download.htm

SSD7505:

https://highpoint-tech.com/USA_new/series-ssd7500-download.htm

SSD7101A-1:

https://highpoint-tech.com/USA_new/series-ssd7101a-1-download.htm

SSD7104:

https://highpoint-tech.com/USA_new/series-ssd7104-download.htm

SSD7204:

https://highpoint-tech.com/USA_new/series-ssd7204-download.htm

SSD7120:

https://highpoint-tech.com/USA_new/series-ssd7120-download.htm

SSD6540:

https://highpoint-tech.com/USA_new/series-ssd6540-download.htm

SSD6540M:

https://highpoint-tech.com/USA_new/series-ssd6540m-download.htm

SSD7180:

https://highpoint-tech.com/USA_new/series-hpc-download.htm

SSD7184:

https://highpoint-tech.com/USA_new/series-hpc-download.htm

SSD7140:

https://highpoint-tech.com/USA_new/series-ssd7140-download.htm

SSD7540:

https://highpoint-tech.com/USA_new/series-ssd7500-download.htm

SSD7502:

https://www.highpoint-tech.com/USA_new/series-ssd7502-overview.html

SSD7580:

https://www.highpoint-tech.com/USA_new/series-ssd7580-download.htm

1. Using the system terminal with root privileges, browse to the directory where the software download, and enter the following commands to extract the management software package:

   tar zxvf RAID_Manage_Linux_v2.x.x.x_x_x_x.tgz

   ```
   [root@localhost Downloads]# tar zxvf RAID_Manage_Linux_v2.3.14.1_17_07_26.tgz
   HPT_CLI_Guide.pdf
   README.txt
   RAID_Manage_Linux_v2.3.14_17_07_26.bin
   ```

   Note: The driver revision shown in the screenshots may not correspond with current software releases. Please make sure to download the latest driver updates from the product's Software Updates page.

2. Install the HighPoint RAID management software (WebGUI & CLI) using the following command:

   ./ RAID_Manage_Linux_v2.x.x_x_x_x.bin

   ```
   [root@localhost Downloads]# ./RAID_Manage_Linux_v2.3.14_17_07_26.bin
   --------------------------------------------------------------------
   Install ......
   Package readline6/hptsvr-https-2.3.14-17.0718.x86_64.rpm will be installed!
   Starting hptdaemon (via systemctl):                    [  OK  ]
   Clean ......
   Finish ......
   ```

3. After the software is installed, open the WebGUI to make sure it can connect to the SSD7000 series RAID controller or enclosure.

4. You can also check the controller using the CLI (command line interface).Using the system terminal, enter the following command:

   hptraidconf

   For more information about the CLI, please download the guide: Link.

   ```
   [root@localhost test]# hptraidconf

   HPT CLI>query devices

   ID       Capacity   MaxFree   Flag     Status    ModelNumber
   ------------------------------------------------------------------------
   1/E1/1   250.06     0         SINGLE   LEGACY    Samsung SSD 960 EVO 250GB
   1/E1/2   250.06     0         SINGLE   LEGACY    Samsung SSD 960 EVO 250GB
   1/E1/3   250.06     0         SINGLE   LEGACY    Samsung SSD 960 EVO 250GB
   1/E1/4   250.06     0         SINGLE   LEGACY    Samsung SSD 960 EVO 250GB
   ------------------------------------------------------------------------

   HPT CLI>
   ```

5. If the WebGUI/CLI can connect to the controller and recognized the NVMe SSD's, the driver has been installed and is functioning normally:

   SSD7103/7505/7101A/7204/7104/7120/6540/6540M/7180/7184/7140/7540/7580:

SSD7202/7502：

Troubleshooting

WebGUI

1. **The WebGUI fails to install**

   If you use an Ubuntu system, the system may prompt you about the lack of a **readline5** package when installing the WebGUI – this will interrupt the installation process.
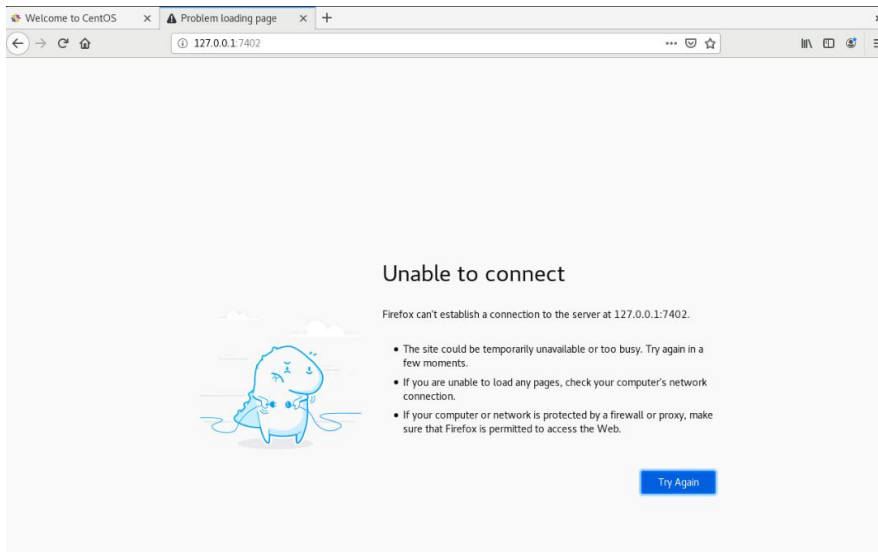

   Solution:

   a. With root permissions enabled, you can use the following command to load readline5 at using a terminal, and will be allowed to install the WebGUI:

      apt-get install libreadline5

   b. Once complete, restart the WebGUI installation procedure.

2. The WebGUI cannot connect to the controller

If you are unable to access the SSD7000 series RAID controller or enclosure using the WebGUI:

a. **WebGUI service did not start successfully**.

   Solution：

   Start the WebGUI by opening the system terminal with root privileges and entering the following command:

   hptsvr

b. **The driver cannot be compiled.**

   Solution：

   1. Make sure at least one NVMe SSD's has been installed into the SSD7000 series RAID controller or enclosure.

   2. Make sure motherboard can recognize the SSD7000 device and display NVMe information during the BIOS post.

   3. If you use a CentOS system, open the system terminal with root privileges and enter the following command to install "elfutils-libelf-devel":

      yum install elfutils-libelf-devel

      Once complete, install the SSD7000 driver once more.

   4. If you use an Ubuntu/Debian system, open the system terminal with root privileges and enter the following command to install "libelf-dev":

      yum install libelf-dev

      Once complete, install the SSD7000 driver once more.

3. **Fail to compile gcc, make and other driver files.**

When installing the driver, due to various factors, driver files such as **gcc** and **make** cannot be compiled, thus interrupting the driver installation process:

```
root@test:/home/test# ./rsnvme_linux_src_v1.2.18.1_2020_03_18.bin
Verifying archive integrity... All good.
Uncompressing RocketNVMe RAID Controller Linux Open Source package installer.....
Checking and installing required toolchain and utility ...
Installing program make ... (failed)
Installing program gcc ... (failed)
Found program perl (/usr/bin/perl)
Found program wget (/usr/bin/wget)
```

This problem can be caused by：

a. **The system is not connected to a network (internet connection)**
   Solution：
   a. Double check the system's internet connection
   b. Once confirmed, reinstall the driver.

b. **System process is occupied/busy**
   Solution：
   Open the system terminal with root privileges and enter the following command:
   apt-get update

   This will prompt the system to release the process and update the download source. Install the driver again after the system process has been released.

4. **If you experience any other WebGUI or CLI related problems,** please submit a support ticket using our Online Support Portal, which includes a description of the problem in as much detail as possible, and upload the following:

Collect the following Log files: pci.log, drivermod.log, hptdrv.log, kernel.log
Please click the following link for more information about locating and collecting these logs. More information is also available in the Appendix section, starting on page 19.

Controller and Drive Detection Issues

If the system is unable to detect the controller or SSD's, make sure to remove all NVMe devices from the system that is not related to the SSD7000 series RAID controller or enclosure during the troubleshooting process. The presence of other NVMe devices may interfere with the detection of the SSD7000 device.

If you experience any other controller related problems, please submit a support ticket using our Online Support Portal, which includes a description of the problem in as much detail as possible.

Please check the **Appendix**, starting on page 22 – providing system logs, screenshots and other information about your system will enable our Support Department resolve your support issue as quickly and efficiently as possible.

Appendix

When submitting s support ticket via our Online Support Portal, the following information will help out Support Department diagnose and resolve your issue as quickly and efficiently as possible.

How to collect Log information in WEBGUI

01. Start the WEBGUI, Diagnostic view will appear when Driver or HPT card does not effect, you can see the system information and HPT Product information in this view;
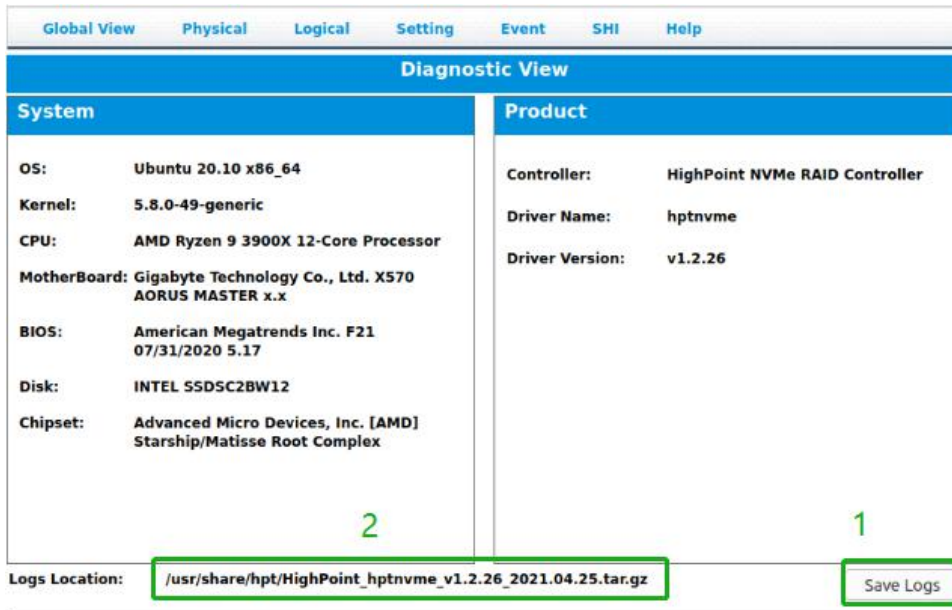
    Click '**Save Logs**', your log information will be collected. '**Logs Location**' will display the location of the saving path.

02. You can also click '**Help**'→'**Diagnostic**' to enter the diagnostic view.

Enter the Diagnostic view, click '**Save Logs**', your log information will be collected. '**Logs Location**' will display the location of the saving path.

How to collect Log information in CLI

01. Execute the command '**hptraidconf**' to enter the CLI ;
02. Execute the command **'diag'** in **CLI**, your log information will be collected.

If you have problems in use, please submit the log to our online service (https://www.highpoint-tech.com/websupport/).