Using HighPoint NVMe RAID AICs with the Dell Precision 3660 Tower Workstations

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1. Dell Precision 3660 Tower introduction

This document provides guidelines and procedures for installing HighPoint NVMe AICs into the Dell Precision 3660 Tower Workstation platform. The guide examines the performance capabilities of each PCIe slot, and provides recommended hardware configurations that can be used to optimize NVMe storage configurations for maximum throughput and capacity.

1.1 Chipset

Dell Precision 3660 Tower Chipset: Intel W680

1.2 Processor Types

Dell Precision 3660 Tower processor types:
● 13th Generation Intel Core i3/i5/i7/i9
● 12th Generation Intel Core i3/i5/i7/i9

1.3 Memory

Memory type: DDR5
Memory speed:
    ● 4400 MHz : 1 DIMM-1R/2R
    ● 4000 MHz : 2 DIMM-1R
    ● 3600 MHz : 2 DIMM-2R
Memory size per slot: 8GB, 16GB, 32GB
Memory slot: 4 DIMM slots

1.4 PCIe slots

Dell Precision 3660 Tower PCIe slots list:

Slot	Type	Volatile supported	Max Height (in,mm)	Max Length (in,mm)	Max wattage
1	PCIe x4 Gen3	3.30V/12V	4.37 in. (111.15 mm)	6.60 in. (167.65 mm)	75 W/300 W PSU 225 W/500 W PSU 350 W/750 W PSU 450 W/1000 W PSU
2	PCIe x16 Gen5	3.30V/12V	4.37 in. (111.15 mm)	12.28 in. (312 mm) (without an extender) 12.36 in. (314 mm) (with an	10 W for 300 W/500 W/750 W/1000 W PSU

				extender)	
4	PCIe x4 Gen4	3.30V/12V	4.37 in. (111.15 mm)	12.28 in. (312 mm) (without an extender) 12.36 in. (314 mm) (with an extender)	25 W/300 W PSU 25 W*/500 W PSU (up to 125 W if total slots <=250 W) 25 W** /750 W PSU (up to 125 W if total slots <=385 W) 25 W***/1000 W PSU (up to 125 W if total slots <=485 W)

2. HighPoint NVMe RAID AIC compatibility in Dell Precision 3660 Tower

| HighPoint NVMe RAID AICs	Slot1 PCIe x4 Gen3	Slot2 PCIe x16 Gen5	Slot4 PCIe x4 Gen4
Gen3 AICs			
SSD7101A	N/A	√	N/A
SSD7104	N/A	√	N/A
SSD7105	N/A	√	N/A
SSD7202	N/A	√	N/A
SSD7204	N/A	√	N/A
SSD7140A	N/A	√	N/A
Gen4 AICs			
SSD7502	N/A	√	N/A
SSD7505	N/A	√	N/A
SSD7540	N/A	√	N/A

Note1: √ *means that the HighPoint NVMe RAID AIC can be used normally in this slot.*
Note2: *N/A means that it is an untested slot and HighPoint NVMe RAID AIC using this slot will not get optimal performance.*

3. Installing HighPoint NVMe RAID AIC into Dell Precision 3660 Tower Workstations

3.1 Install hardware

a. Loosen the single captive screw that secures the side cover to the computer.
b. Pull the release latch to release the cover from the computer.
c. Open the side cover towards the side of the computer and lift the cover away from the chassis.
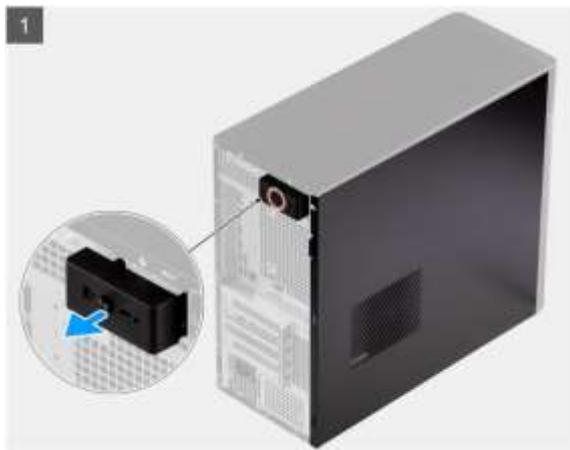
d. Install HighPoint NVMe RAID AIC in PCIe slot.
e. Connect the power cable to the 6-pin power supply for HighPoint NVMe RAID AICs (Required for the SSD7140/7540).

Connect 6 pin PCIe power cable
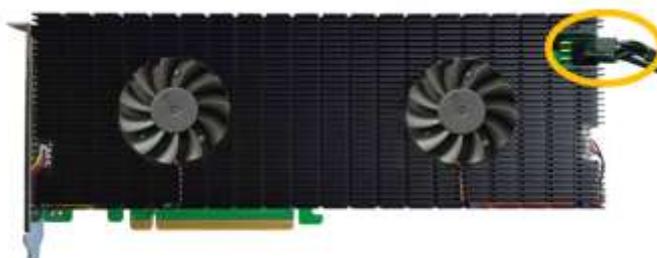
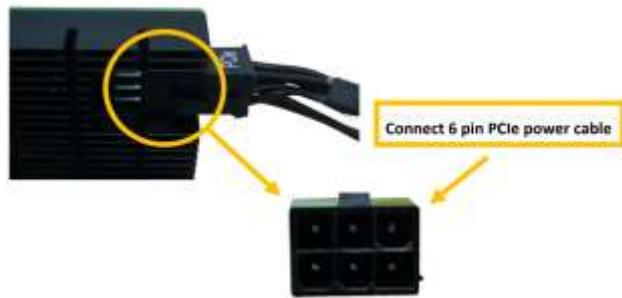f. Align the tabs on the side cover with the slots on the chassis.
g. Press the side cover towards the side of the computer to install it.
h. The release latch automatically locks the side cover to the computer.
i. Tighten the single captive screw to secure the side cover to the computer.

3.2 System BIOS Setting

3.2.1 Disable Secure boot

Note: Secure Boot must be disabled. The HPT Linux software or unsigned UEFI utility of the HighPoint NVMe RAID AIC has not been signed and certified. If Secure Boot is enabled, the Dell Precision 3660 Rack will not recognize the HighPoint NVMe RAID AIC.

a. Start up system.
b. Press **F2** to enter **BIOS**.
c. Find **Secure Boot→ Enable Secure Boot**, select **Disabled**.
d. Save configuration and restart system.

3.3 Install software

3.3.1 Installing HighPoint NVMe RAID AICs into the Dell Precision 3660 Tower (Data RAID configurations)

The following section discusses HighPoint NVMe RAID AIC driver installation for a non-bootable NVMe configuration.

3.3.1.1 Installing the Windows Driver & Management Software

Please refer to the [Data RAID Installation Guide (Windows)](#) to install the Windows Device Driver and Management Software.

3.3.1.2 Installing the Linux Driver & Management Software

Please refer to the [Data RAID Installation Guide (Linux)](#) to install the Linux Device Driver and Management Software.

3.3.2 Installing HighPoint NVMe RAID AICs into the Dell Precision 3660 Tower (Boot RAID configurations)

The following section discusses HighPoint NVMe RAID AIC driver installation for a bootable NVMe configuration.

3.3.2.1 Installing a Windows OS to a bootable RAID configuration

Windows BootRAID:
Please refer to [HighPoint Windows Boot RAID Windows installation Guide](#).

3.3.2.2 Installing Linux to a bootable RAID configuration

Debian BootRAID:
Please refer to [Linux_Debian_On_HighPoint_NVMe_RAID_Controller_Installation_Guide](#).

RHEL BootRAID:
Please refer to [Linux_RHEL_On_HighPoint_NVMe_RAID_Controller_Installation_Guide](#).

Ubuntu BootRAID:
Please refer to [Linux_Ubuntu_On_HighPoint_NVMe_RAID_Controller_Installation_Guide](#).

Rocky Linux BootRAID:
Please refer to [Linux Rocky Linux On HighPoint NVMe RAID Controller Installation Guide](#)

4. Uninstalling a HighPoint NVMe RAID AIC from the Dell Precision 3660 Tower

4.1 Uninstall hardware

4.1.1 Uninstall the HighPoint NVMe RAID AIC

a. Loosen the single captive screw that secures the side cover to the computer.
b. Pull the release latch to release the cover from the computer.
c. Open the side cover towards the side of the computer and lift the cover away from the chassis.
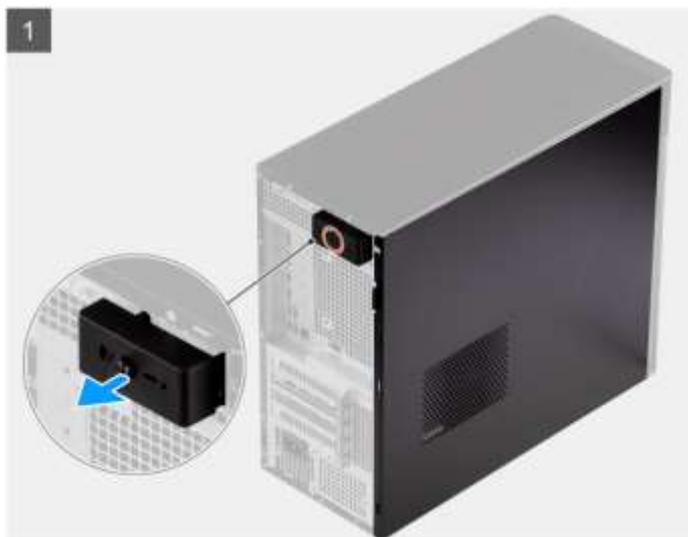
d. Disconnect the power cable from the 6-pin power supply ot the HighPoint NVMe RAID AIC (only applies to the SSD7140/7540).

e. Remove the HighPoint NVMe RAID AIC from the PCIe slot.
j. Align the tabs on the side cover with the slots on the chassis.
k. Press the side cover towards the side of the computer to install it.
l. The release latch automatically locks the side cover to the computer.
m. Tighten the single captive screw to secure the side cover to the computer.

4.2 Uninstalling the HighPoint Software

## 4.2.1 Uninstall the HighPoint NVMe RAID AIC for Windows

4.2.1.1 Uninstall the driver

a. Power down the system and remove the HighPoint NVMe RAID AIC from the motherboard.
    Note1: Failing to remove the HighPoint NVMe RAID AIC from the motherboard during the uninstall process may result in data loss.
    Note2: Whenever the driver is uninstalled, Windows will attempt to install the default NVMe support, which may corrupt the RAID configurations and any data stored on SSD's hosted by the HighPoint NVMe RAID AIC.

b. Power on the system and boot Windows.
c. Access **Control Panel** and select **Programs→ Programs and Features,** and click on the **HighPoint NVMe RAID Controller Driver** entry**.**
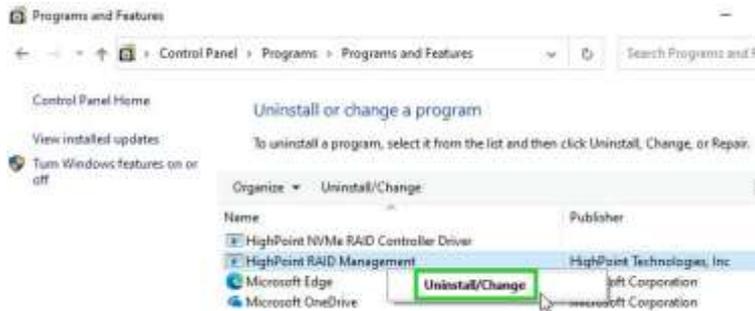d. Click **Uninstall/Change.**
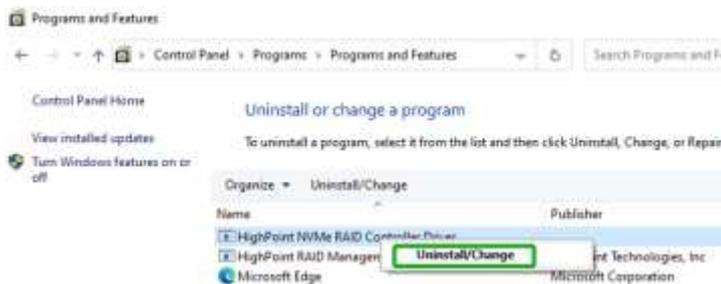
e. After uninstalling the driver, click Finish.

f. Reboot Windows to complete the uninstall procedure.

4.2.1.2 Uninstall the RAID Management Software

a. Access **Control Panel and select Programs→ Programs and Features**.
b. Click on the **HighPoint RAID Management** entry.
c. Click **Uninstall/Change**.

d. After uninstalling the HighPoint RAID Management, click Finish.

4.2.2 Uninstall the HighPoint NVMe RAID AIC for Linux

4.2.2.1 Uninstall Driver

a. Open the system terminal with root privileges.
b. 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 system 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.

4.2.2.2 Uninstall the RAID Management Software

a.   Open the system terminal with root privileges.
b.   Enter the following commands to uninstall the RAID Management.
      # **dpkg -r hptsvr (or rpm -e hptsvr-https)**

```
root@testlu-Super-Server:/home/testlu/Desktop# dpkg -r hptsvr
(Reading database ... 183888 files and directories currently installed.)
Removing hptsvr (3.1.12) ...
```

c.   Enter the following command to check if the RAID Management has been removed successfully.
      #hptraidconf
      After uninstall:

```
root@testlu-Super-Server:/home/testlu/Desktop# hptraidconf
bash: /usr/bin/hptraidconf: No such file or directory
```