



Using HighPoint NVMe RAID AICs with the Dell Precision 5820 Tower Workstation

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1. Dell Precision 5820 Tower Workstation introduction

This document provides guidelines and procedures for installing HighPoint NVMe AICs into the Dell Precision 5820 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 5820 Tower Workstation Chipset:

- Intel C422 (Skylake/Cascade Lake W)
- Intel X299 (Skylake/Cascade Lake X)

1.2 Chassis

- Dell Precision 5820 Workstation chassis: 4U

1.3 Processor Types

Dell Precision 5820 Tower Workstation processor types:

Processors	Wattage	Core count	Thread count	Speed	Cache
Intel Xeon W-2275	165 W	14	28	3.30 GHz to 4.60 GHz	19.25 MB
Intel Core i9-9820X	165 W	10	20	3.30 GHz to 4.10 GHz	16.5 MB
Intel Xeon W-2245	155 W	8	16	3.90 GHz to 4.50 GHz	16.5 MB
Intel Core i7-9800X	165 W	8	16	3.80 GHz to 4.40 GHz	16.5 MB
Intel Xeon W-2295	165 W	18	36	3.00 GHz to 4.60 GHz	24.75 MB
Intel Core i7-7800X	165 W	6	12	3.50 GHz to 4.00 GHz	8.25 MB
Intel Xeon W-2135	140 W	6	12	3.70 GHz to 4.50 GHz	8.25 MB
Intel Xeon W-2125	120 W	4	8	4.00 GHz to 4.50 GHz	8.25 MB
Intel Xeon W-2223	120 W	4	8	3.60 GHz to 3.90 GHz	8.25 MB
Intel Xeon W-2145	140 W	8	16	3.70 GHz to 4.50 GHz	11 MB
Intel Xeon W-2133	140 W	6	12	3.60 GHz to 3.90 GHz	8.25 MB
Intel Core i9-9960X	165 W	16	32	3.10 GHz to 4.40 GHz	22 MB
Intel Xeon W-2175	140 W	14	28	2.50 GHz to 4.30 GHz	19 MB
Intel Xeon W-2155	140 W	10	20	3.30 GHz to 4.50 GHz	13.75 MB
Intel Core i9-9900X	165 W	10	20	3.50 GHz to 4.40 GHz	19.25 MB
Intel Xeon W-2225	105 W	4	8	4.10 GHz to 4.60 GHz	8.25 MB

Intel Xeon W-2235	130 W	6	12	3.80 GHz to 4.60 GHz	8.25 MB
Intel Xeon W-2255	165 W	10	20	3.70 GHz to 4.50 GHz	19.25 MB
Intel Xeon W-2123	120 W	4	8	3.60 GHz to 3.90 GHz	8.25 MB
Intel Core i9-9980X	165 W	18	36	3.00 GHz to 4.40 GHz	24.75 MB
Intel Core i9-9940X	165 W	14	28	3.30 GHz to 4.40 GHz	19.25 MB
Intel Core i9-7900X	140 W	10	20	3.30 GHz to 4.30 GHz	13.75 MB
Intel Xeon W-2102	120 W	4	4	2.90 GHz	8.25 MB
Intel Xeon W-2195	140 W	18	36	2.30 GHz to 4.30 GHz	24.75 MB
Intel Xeon W-2104	140 W	4	4	3.20 GHz	8.25 MB
Intel Xeon W-2265	165 W	12	24	3.50 GHz to 4.60 GHz	19.25 MB
Intel Core i9-9920X	165 W	12	24	3.50 GHz to 4.40 GHz	19.25 MB

1.4 Memory

Memory type: DDR4 ECC RDIMMs - Supported only with Xeon W Series CPUs

DDR4 Non-ECC UDIMMs supported with Core X Series CPUs

Memory speed: 2666MHz / 2933MHz / 3200 MHz

DIMM capacities: 32 GB per slot 2666 MHz DDR4

64 GB per slot 2933 MHz DDR4

64 GB per slot 3200 MHz DDR4

Memory connector: 8 DIMM slots

Minimum memory: 8 GB (1x8 GB)

Maximum memory: 256 GB for Sky Lake Series CPUs

512 GB for Cascade Lake Series CPUs

1.5 PCIe slots

Dell Precision 5820 Tower Workstation PCIe Slots list:

	Core i9-79xx/ Xeon	Core i7-78xx
Slot 1	PCIe x8 50W	Nonfunctional
Slot 2	PCIe x16 300W*	PClex16 300W
Slot 3	PClex1 25W-PCH	PClex1 25W-PCH
Slot 4	PCIe x16 300W*	PClex8 150W
Slot 5	PClex4 25W-PCH	PClex4 25W-PCH
Slot 6	PCI 32bit 25W	PCI 32bit 25W

Notes:

*Slots are 300 W capable.

Core i7-78xx has a limit of 28 lanes. This results in a reduced PCIe lane count to the slots 1 and 4.

1.6 GPU

Dell Precision 5820 Workstation support GPU list:

GPU Type	Slot priority
GPU (double width)	2, 4, 1
GPU (single width)	2, 4, 1

Note: Depending on the type of GPU installed into the Dell Precision 5820 Workstation platform, one or more PCIe slots may be unavailable for use with HighPoint NVMe AICs.

1.7 Other PCIe devices

The Dell Precision 5820 Workstation is available with optional PCIe devices.

The following table provides a list of PCIe device accessories available for the Dell Precision 5820 Workstation platform and which expansion slot (or slots) they are typically associated with.

PCIe devices type	Slot priority
Qualcomm WCN6856-DBS, 2x2, 802.11ax, Bluetooth® wireless card	5

Note: Dell platforms are typically shipped with an array of pre-installed PCIe devices. Please note, one or more PCIe slots may be unavailable for use with HighPoint NVMe AICs.

2. HighPoint NVMe RAID AIC compatibility with the Dell Precision 5820 Tower Workstation

2.1 Compatibility table (Intel Core i9-79xx/ Xeon processors)

HighPoint NVMe RAID AICs	Slot1 PCIe x8 Gen3	Slot2 PCIe x16 Gen3	Slot3 PCIe x1 Gen3	Slot4 PCIe x16 Gen3	Slot5 PCIe x4 Gen3
Gen3 AICs					
SSD6202	√ ¹	√ ¹	N/A	√ ¹	N/A
SSD6202A	√ ¹	√ ¹	N/A	√ ¹	N/A
SSD6204	√ ¹	√ ¹	N/A	√ ¹	N/A
SSD6204A	√ ¹	√ ¹	N/A	√ ¹	N/A
SSD7101A-1	N/A	√ ¹	N/A	√ ¹	N/A
SSD7104	N/A	√ ¹	N/A	√ ¹	N/A
SSD7105	N/A	√ ¹	N/A	√ ¹	N/A
SSD7202	√ ¹	√ ¹	N/A	√ ¹	N/A
SSD7204	√ ¹	√ ¹	N/A	√ ¹	N/A
SSD7140A	N/A	√ ¹	N/A	√ ¹	N/A
RocketAIC 7105HW	N/A	√ ¹	N/A	√ ¹	N/A
RocketAIC 7140AW	N/A	√ ¹	N/A	√ ¹	N/A
Gen4 AICs					
SSD7502	N/A	√ ¹	N/A	√ ¹	N/A
SSD7505	N/A	√ ¹	N/A	√ ¹	N/A
SSD7540	N/A	√ ¹	N/A	√ ¹	N/A
RocketAIC 7502HW	N/A	√ ¹	N/A	√ ¹	N/A
RocketAIC 7505HW	N/A	√ ¹	N/A	√ ¹	N/A
RocketAIC 7540HW	N/A	√ ¹	N/A	√ ¹	N/A

Notes:

√¹ means that the HighPoint NVMe RAID AIC can be used normally in this slot if you do not have the GPU or other PCIe devices installed in this slot.

N/A means that this slot is not recommended. This slot does not have enough electrical channels to work properly with the HighPoint NVMe RAID AIC.

2.2 Compatibility table (Intel Core i7-78xx processors)

HighPoint NVMe RAID AICs	Slot2 PCIe x16 Gen3	Slot3 PCIe x1 Gen3	Slot4 PCIe x8 Gen3	Slot5 PCIe x4 Gen3
Gen3 AICs				
SSD6202	√ ¹	N/A	√ ¹	N/A
SSD6202A	√ ¹	N/A	√ ¹	N/A
SSD6204	√ ¹	N/A	√ ¹	N/A
SSD6204A	√ ¹	N/A	√ ¹	N/A
SSD7101A-1	√ ¹	N/A	N/A	N/A
SSD7104	√ ¹	N/A	N/A	N/A
SSD7105	√ ¹	N/A	N/A	N/A
SSD7202	√ ¹	N/A	√ ¹	N/A
SSD7204	√ ¹	N/A	√ ¹	N/A
SSD7140A	√ ¹	N/A	N/A	N/A
RocketAIC 7105HW	√ ¹	N/A	N/A	N/A
RocketAIC 7140AW	√ ¹	N/A	N/A	N/A
Gen4 AICs				
SSD7502	√ ¹	N/A	N/A	N/A
SSD7505	√ ¹	N/A	N/A	N/A
SSD7540	√ ¹	N/A	N/A	N/A
RocketAIC 7502HW	√ ¹	N/A	N/A	N/A
RocketAIC 7505HW	√ ¹	N/A	N/A	N/A
RocketAIC 7540HW	√ ¹	N/A	N/A	N/A

Notes:

√¹ means that the HighPoint NVMe RAID AIC can be used normally in this slot if you do not have the GPU or other PCIe devices installed in this slot.

N/A means that this slot is not recommended. This slot does not have enough electrical channels to work properly with the HighPoint NVMe RAID AIC.

3. Installing HighPoint NVMe RAID AIC into Dell Precision 5820 Tower Workstation

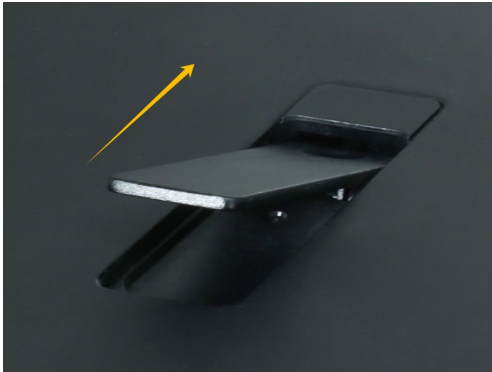
3.1 Install hardware

3.1.1 Recommended tools

- a. Screwdriver (system cover require a screwdriver to open)
- b. Wired ESD wrist strap (to prevent electrostatic accidents)

3.1.2 Installing hardware

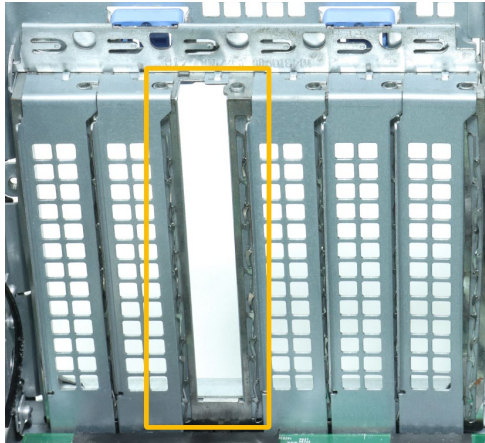
- a. Use a wired ESD wrist strap that is properly grounded.
- b. Shut down the system.
- c. Press and pull the latch upwards to release the side cover from the system.



- d. Pull the PCIe latch to open the PCIe door.



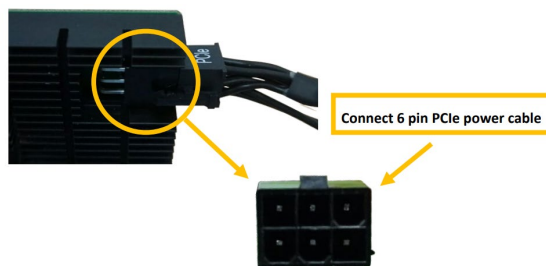
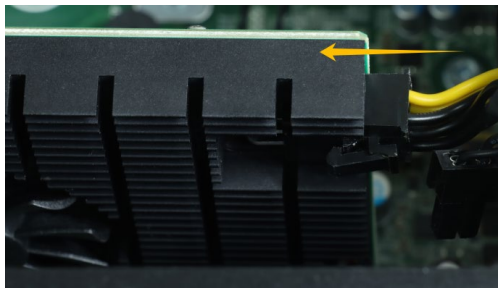
- e. Remove the filler bracket from the system.



- f. Holding the edge of the HighPoint NVMe RAID AIC, align the HighPoint NVMe RAID AIC connector with the PCIe slot and insert it downward.



- g. If you are using the SSD7140A, SSD7540, RocketAIC 7140AW, or RocketAIC 7540HW, you will need to connect the power cable to the 6-pin power connector on the system and to the 6-pin power connector on the side of the HighPoint NVMe RAID AICs.



Note: If you are not using SSD7140A, SSD7540, RocketAIC 7140AW, or RocketAIC 7540HW, you can safely move to the next step.

- h. Close the PCIe latch to secure the HighPoint NVMe RAID AIC bracket.



- i. Align the system cover with the system board and then push down on the system cover latch.



3.2 System BIOS Setting

The following is a list of Dell Precision 5820 Tower Workstation system BIOS settings required for each NVMe RAID AIC.

Please refer to the following sections for system BIOS settings setup procedures.

[3.2.1 Disable Secure boot](#)

[3.2.2 Disable Intel VMD Technology](#)

HighPoint NVMe RAID AICs	System BIOS setting (Boot RAID configurations)	
	Secure Boot	
SSD6202	✓	
SSD6202A	✓	
SSD6204	✓	
SSD6204A	✓	
SSD7105	✓ ¹	
SSD7202	✓ ¹	
SSD7502	✓ ¹	
SSD7505	✓ ¹	
SSD7540	✓ ¹	
RocketAIC 7105HW	✓ ¹	
RocketAIC 7502HW	✓ ¹	
RocketAIC 7505HW	✓ ¹	
RocketAIC 7540HW	✓ ¹	
HighPoint NVMe RAID AICs	System BIOS Settings (Data RAID configurations)	
	Secure Boot	Intel VMD Technology
SSD6202	✓	✗
SSD6202A	✓	✗
SSD6204	✓	✗
SSD6204A	✓	✗
SSD7101A-1	✓ ¹	✓
SSD7104	✓ ¹	✓
SSD7105	✓ ¹	✓
SSD7140A	✓ ¹	✓
SSD7202	✓ ¹	✓
SSD7204	✓ ¹	✓
SSD7502	✓ ¹	✓
SSD7505	✓ ¹	✓
SSD7540	✓ ¹	✓
RocketAIC 7105HW	✓ ¹	✓
RocketAIC 7140AW	✓ ¹	✓

RocketAIC 7502HW	✓ ¹	✓
RocketAIC 7505HW	✓ ¹	✓
RocketAIC 7540HW	✓ ¹	✓

Notes:

✓ means that the HighPoint NVMe RAID AIC support this BIOS setting

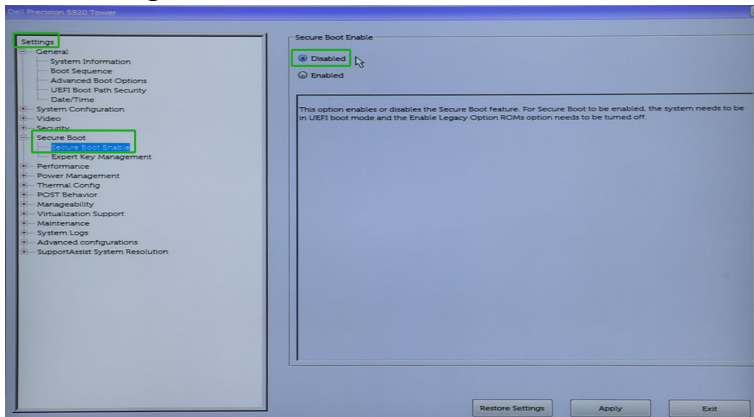
✓¹ If you are using the Linux or the unsigned UEFI utility, Secure Boot must be disabled.

✗ means that the HighPoint NVMe RAID AIC do not support this BIOS setting.

3.2.1 Disable Secure boot

Note: If you are using the SSD7000/7500 series NVMe RAID AICs or RocketAIC series NVMe drives in Linux or the unsigned UEFI utility, Secure Boot must be disabled.

- a. Power up the system.
- b. Press **F2** to enter **BIOS**.
- c. Find **Settings**→**Secure Boot**→**Secure Boot Enable**, select **Disabled**.

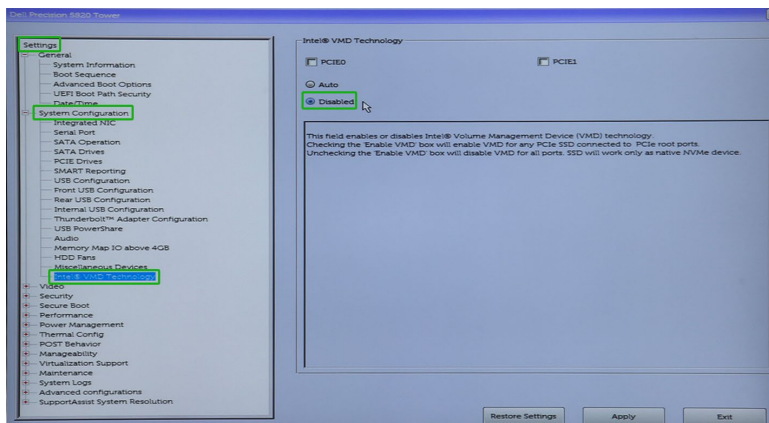


- d. Save the configuration and reboot the system.

3.2.2 Disable Intel VMD Technology

Note: SSD6200 series NVMe RAID AICs don't support Intel VMD Technology, need to turn off Intel VMD Technology.

- a. Power up the system.
- b. Press **F12** to enter BIOS.
- c. Find **Settings** → **System Configuration** → **Intel VMD Technology**, select **Disabled**.



- d. Save the configuration and reboot the system.

3.3 Install software

3.3.1 Installing HighPoint NVMe RAID AICs into the Dell Precision 5820

Tower Workstation (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 5820

Tower Workstation (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](#).

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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. Benchmarking HighPoint NVMe RAID AICs

4.1 Performance Testing

4.1.1 Recommended Hardware Configuration

- **Dell Precision 5820 Tower Workstation:**

CPU: Intel Xeon W-2123

Memory: 16 GB

PCIe Slot: SLOT1/ SLOT4

- **HighPoint NVMe RAID AICs:**

Gen3 HighPoint NVMe RAID AICs	SSD6202 SSD6202A SSD6204 SSD6204A SSD7101A-1 SSD7104 SSD7105 SSD7140A SSD7202 SSD7204
Gen4 HighPoint NVMe RAID AICs	SSD7502 SSD7505 SSD7540

- **Disk:**

Samsung 990 PRO 1TB

Note: Samsung 990 PRO 1TB Disk spec.

Performance	SEQUENTIAL READ	SEQUENTIAL WRITE	RANDOM READ (4KB, QD32)
	1TB: Up to 7,450 MB/s 2TB: Up to 7,450 MB/s 4TB: Up to 7,450 MB/s	1TB: Up to 6,900 MB/s 2TB: Up to 6,900 MB/s 4TB: Up to 6,900 MB/s	1TB: Up to 1,200,000 IOPS 2TB: Up to 1,400,000 IOPS 4TB: Up to 1,600,000 IOPS
	RANDOM WRITE (4KB, QD32)	RANDOM READ (4KB, QD1)	RANDOM WRITE (4KB, QD1)
	1TB: Up to 1,550,000 IOPS 2TB: Up to 1,550,000 IOPS 4TB: Up to 1,550,000 IOPS	1TB: Up to 22,000 IOPS 2TB: Up to 22,000 IOPS 4TB: Up to 22,000 IOPS	1TB: Up to 80,000 IOPS 2TB: Up to 80,000 IOPS 4TB: Up to 80,000 IOPS

4.1.2 Test tool

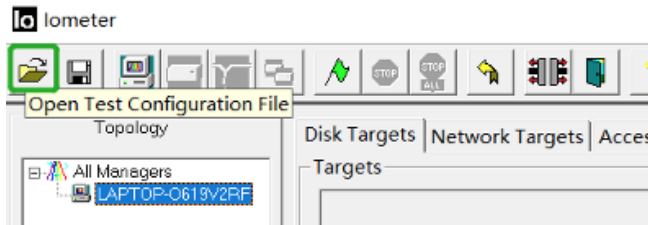
Benchmark Tool: Iometer/ CrystalDiskMark

- **Iometer script setting:**

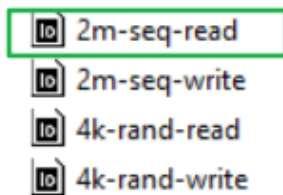
The Iometer script can be downloaded [here](#).

Note: If you use the SSD6200 series NVMe RAID AICs, you will need to download another [Iometer script](#).

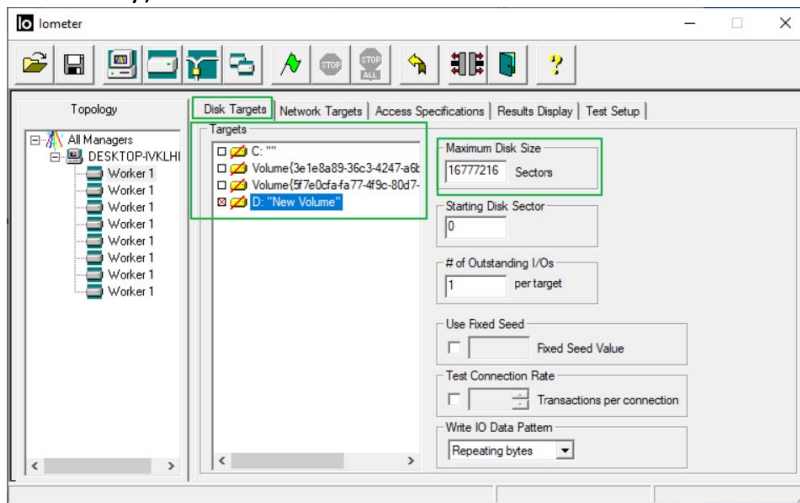
- The “**2m-seq-read.icf**” script tests the Sequential read performance of 2M large data blocks.
 - The “**2m-seq-write.icf**” script tests the Sequential write performance of 2M large data blocks.
 - The “**4k-rand-read.icf**” script tests the Random read performance of 4k small data blocks.
 - The “**4k-rand-write.icf**” script tests the Random write performance of 4k small data blocks.
- a. Open Iometer with administrator rights.
 - b. Click the folder icon to open the script, then select the script to be configured.



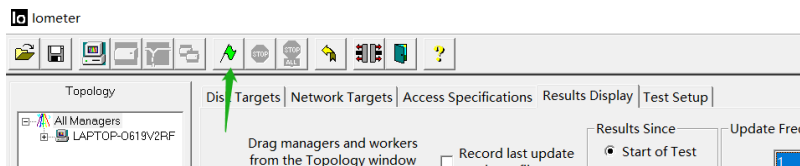
- c. Select **2M-seq-read**.



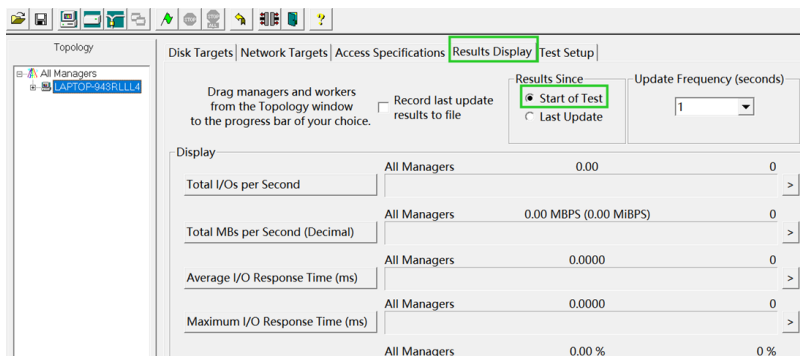
- d. The **Disk Targets** page will change, the **Target** should be the test disk (the RAID array). The **Maximum Disk Size** should be set to **16777216** Sectors.



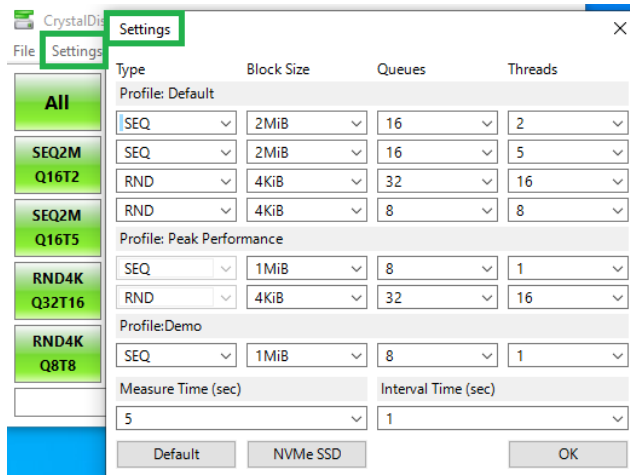
- e. After confirming the settings, click the green mark to start the performance test.



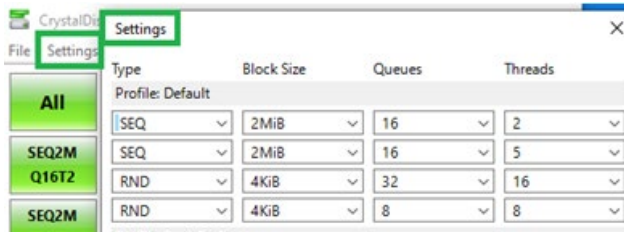
- f. **Result Display** will be automatically configured as **Start of Test**.



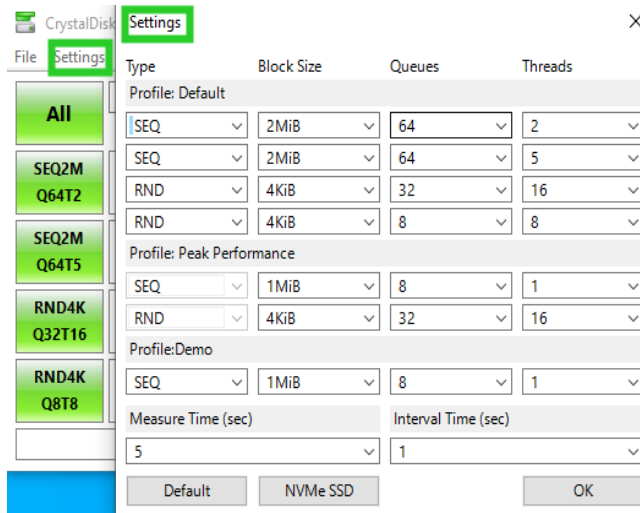
● **CrystalDiskMark script setting:**



- Open CrystalDiskMark with administrator rights.
- Click **Settings**.

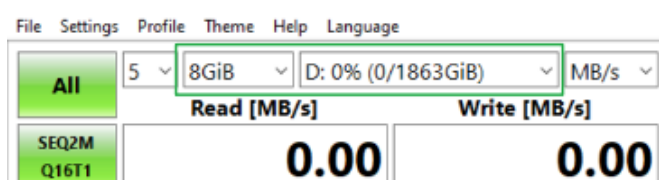


Note1: Please refer to the following Screenshot for recommended settings.

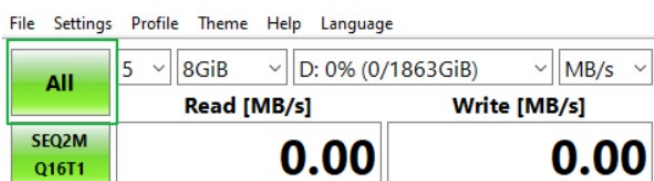


Note2: The above recommended setting will meet the needs of most NVMe RAID AICs and achieve optimal performance in testing. In testing, you can also choose to adjust the settings in the script yourself for optimal performance.

- c. **Test Size:** set to 8GiB; **Test Drive:** set to the RAID Volume.



- d. After confirming the settings, click **ALL** to start the performance test.



4.1.3 Gen3 HighPoint NVMe RAID AIC test results

- **Iometer**

(script setting)	Gen3 RAID AIC	Legacy	RAID0	RAID1	RAID10
2m-Seq-Read (MiB/s)	SSD6202	3,503	6,984	6,767	/
	SSD6202A	3,510	6,982	7,025	/
	SSD6204	1,783	7,094	3,560	/
	SSD6204A	1,781	7,085	3,552	/
	SSD7101A-1	3,572	14,175	7,140	14,173
	SSD7104	3,572	14,160	7,097	14,178
	SSD7105	3,571	14,069	7,115	14,117
	SSD7140A	3,572	14,183	7,115	14,193
	SSD7202	3,571	7,089	7,103	/
	SSD7204	3,572	7,086	7,103	7,096
2m-Seq-Write (MiB/s)	SSD6202	3,424	6,009	3,000	/
	SSD6202A	3,419	6,036	3,009	/
	SSD6204	1,709	6,271	1,696	/
	SSD6204A	1,734	6,273	1,587	/
	SSD7101A-1	3,495	13,410	3,486	6,633
	SSD7104	3,455	13,515	3,454	6,737
	SSD7105	3,498	13,450	3,479	6,630
	SSD7140A	3,498	13,788	3,491	6,863
	SSD7202	3,440	6,630	3,362	/
	SSD7204	3,455	6,822	3,345	3,412
4k-Rand-Read (IOPS)	SSD6202	167,777	165,591	176,559	/
	SSD6202A	168,121	166,373	169,875	/
	SSD6204	167,985	166,531	164,798	/
	SSD6204A	171,533	175,059	171,855	/
	SSD7101A-1	165,327	135,733	138,660	137,806
	SSD7104	158,123	138,855	139,933	139,046
	SSD7105	161,116	153,312	154,759	151,871
	SSD7140A	160,232	133,136	139,909	134,015
	SSD7202	154,578	153,197	152,624	/
	SSD7204	165,175	136,398	139,798	137,572
4k-Rand-Write (IOPS)	SSD6202	122,139	122,168	119,653	/
	SSD6202A	119,397	120,072	121,827	/
	SSD6204	119,312	118,302	122,816	/
	SSD6204A	171,517	123,195	124,102	/
	SSD7101A-1	102,481	107,848	99,209	84,078
	SSD7104	109,269	108,701	98,127	83,733
	SSD7105	85,059	113,924	99,846	99,149

Using HighPoint NVMe RAID AICs with the Dell Precision 5820 Tower Workstation

	SSD7140A	83,488	105,814	98,670	79,162
	SSD7202	112,894	111,251	100,179	/
	SSD7204	114,827	108,598	101,357	86,732

● CrystalDiskMark

(script setting)	Gen3 RAID AIC	RAID0	RAID1	RAID10																																												
2m-Seq (MB/s)	SSD6202	<table border="1"> <tr><td>All</td><td>Read (MB/s)</td><td>Write (MB/s)</td></tr> <tr><td>SEQM Q04T2</td><td>7031.79</td><td>5832.10</td></tr> <tr><td>SEQM Q04T5</td><td>2295.09</td><td>2185.72</td></tr> <tr><td>RND4K Q02T16</td><td>2553.77</td><td>1952.24</td></tr> <tr><td>RND4K Q08T8</td><td>2522.05</td><td>1946.14</td></tr> </table>	All	Read (MB/s)	Write (MB/s)	SEQM Q04T2	7031.79	5832.10	SEQM Q04T5	2295.09	2185.72	RND4K Q02T16	2553.77	1952.24	RND4K Q08T8	2522.05	1946.14	<table border="1"> <tr><td>All</td><td>Read (MB/s)</td><td>Write (MB/s)</td></tr> <tr><td>SEQM Q04T2</td><td>7026.76</td><td>2832.91</td></tr> <tr><td>SEQM Q04T5</td><td>2354.59</td><td>1803.98</td></tr> <tr><td>RND4K Q02T16</td><td>2482.78</td><td>1888.46</td></tr> <tr><td>RND4K Q08T8</td><td>2506.90</td><td>1888.97</td></tr> </table>	All	Read (MB/s)	Write (MB/s)	SEQM Q04T2	7026.76	2832.91	SEQM Q04T5	2354.59	1803.98	RND4K Q02T16	2482.78	1888.46	RND4K Q08T8	2506.90	1888.97	/														
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Note: / means that this AIC does not support the creation of RAID10.

4.1.4 Gen4 HighPoint NVMe RAID AIC test results

- **Iometer**

(script setting)	Gen4 RAID AIC	Legacy	RAID0	RAID1	RAID10
2m-Seq-Read (MiB/s)	SSD7502	7,125	14,113	9,830	/
	SSD7505	7,124	14,140	9,817	14,168
	SSD7540	7,124	14,176	9,830	14,173
2m-Seq-Write (MiB/s)	SSD7502	6,796	13,336	6,599	/
	SSD7505	6,798	13,656	6,509	6,733
	SSD7540	6,725	13,701	6,580	6,803
4k-Rand-Read (IOPS)	SSD7502	156,597	156,701	154,618	/
	SSD7505	154,908	152,675	152,843	150,497
	SSD7540	151,277	153,337	155,739	151,605
4k-Rand-Write (IOPS)	SSD7502	112,146	113,590	99,746	/
	SSD7505	112,856	112,843	152,833	96,731
	SSD7540	109,782	112,426	99,205	97,913

- **CrystalDiskMark**

(script setting)	Gen4 RAID AIC	RAID0	RAID1	RAID10																																																																																									
2m-Seq (MB/s)	SSD7502	<table border="1"> <tr><td>All</td><td>5</td><td>8GiB</td><td>D: 0% (0/1863GiB)</td><td>MB/s</td></tr> <tr><td colspan="2">Read (MB/s)</td><td colspan="2">Write (MB/s)</td><td></td></tr> <tr><td>SEQM Q04T2</td><td>13582.59</td><td>12718.19</td><td></td><td></td></tr> <tr><td>SEQM Q04T3</td><td>11063.62</td><td>12763.17</td><td></td><td></td></tr> <tr><td>RND4K Q03T16</td><td>2266.29</td><td>1832.06</td><td></td><td></td></tr> <tr><td>RND4K Q03T16</td><td>2254.36</td><td>1855.26</td><td></td><td></td></tr> </table>	All	5	8GiB	D: 0% (0/1863GiB)	MB/s	Read (MB/s)		Write (MB/s)			SEQM Q04T2	13582.59	12718.19			SEQM Q04T3	11063.62	12763.17			RND4K Q03T16	2266.29	1832.06			RND4K Q03T16	2254.36	1855.26			<table border="1"> <tr><td>All</td><td>5</td><td>8GiB</td><td>D: 0% (0/931GiB)</td><td>MB/s</td></tr> <tr><td colspan="2">Read (MB/s)</td><td colspan="2">Write (MB/s)</td><td></td></tr> <tr><td>SEQM Q04T2</td><td>13497.06</td><td>6406.47</td><td></td><td></td></tr> <tr><td>SEQM Q04T3</td><td>10386.08</td><td>6406.71</td><td></td><td></td></tr> <tr><td>RND4K Q03T16</td><td>2286.69</td><td>1618.74</td><td></td><td></td></tr> <tr><td>RND4K Q03T16</td><td>2269.55</td><td>1633.43</td><td></td><td></td></tr> </table>	All	5	8GiB	D: 0% (0/931GiB)	MB/s	Read (MB/s)		Write (MB/s)			SEQM Q04T2	13497.06	6406.47			SEQM Q04T3	10386.08	6406.71			RND4K Q03T16	2286.69	1618.74			RND4K Q03T16	2269.55	1633.43			/																													
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Note: / means that this AIC does not support the creation of RAID10.

5. Uninstalling a HighPoint NVMe RAID AIC from the Dell Precision 5820 Tower Workstation

5.1 Uninstall hardware

5.1.1 Recommended tools

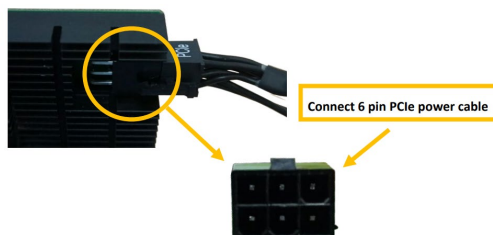
- a. Screwdriver (system cover require a screwdriver to open)
- b. Wired ESD wrist strap (to prevent electrostatic accidents)

5.1.2 Uninstall the HighPoint NVMe RAID AIC

- a. Use a wired ESD wrist strap that is properly grounded.
- b. Shut down the system.
- c. Press and pull the latch upwards to release the side cover from the system.

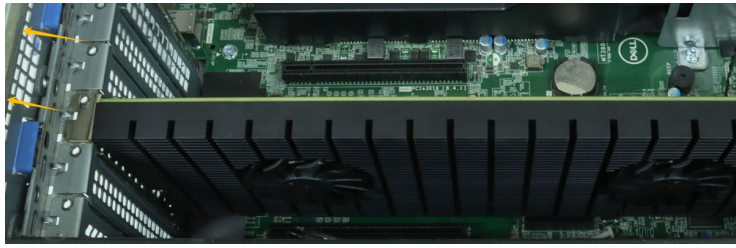


- d. If you are using the SSD7140A, SSD7540, RocketAIC 7140AW, or RocketAIC 7540HW, you will need to disconnect the power cable from the 8-pin power connector on the system and the 6-pin power connector on the HighPoint NVMe RAID AICs.

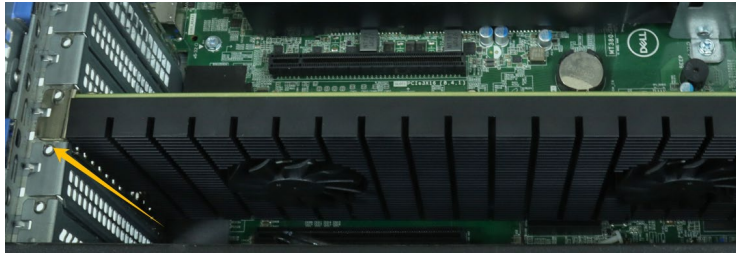


Using HighPoint NVMe RAID AICs with the Dell Precision 5820 Tower Workstation

- e. Pull the PCIe latch to open the PCIe door.



- f. Holding the edge of the HighPoint NVMe RAID AIC, lift up to remove the HighPoint NVMe RAID AIC connector from the PCIe slot.



- g. Install the filler bracket to the system.



- h. Close the PCIe latch to secure the filler bracket.



- i. Align the system cover with the system board and then push down on the system cover latch.



5.2 Uninstalling the HighPoint Software

5.2.1 Uninstall the HighPoint NVMe RAID AIC for Windows

5.2.1.1 Uninstall the driver

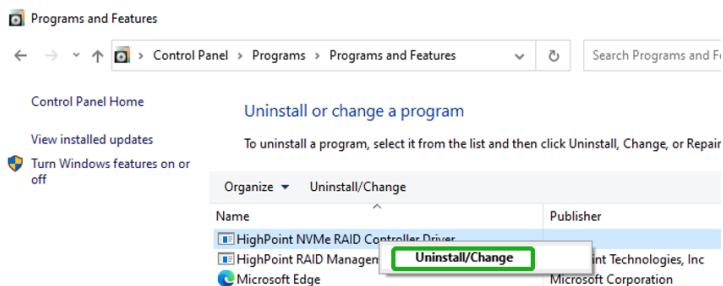
- a. Power down the system and remove the HighPoint NVMe RAID AIC from the system.

Notes:

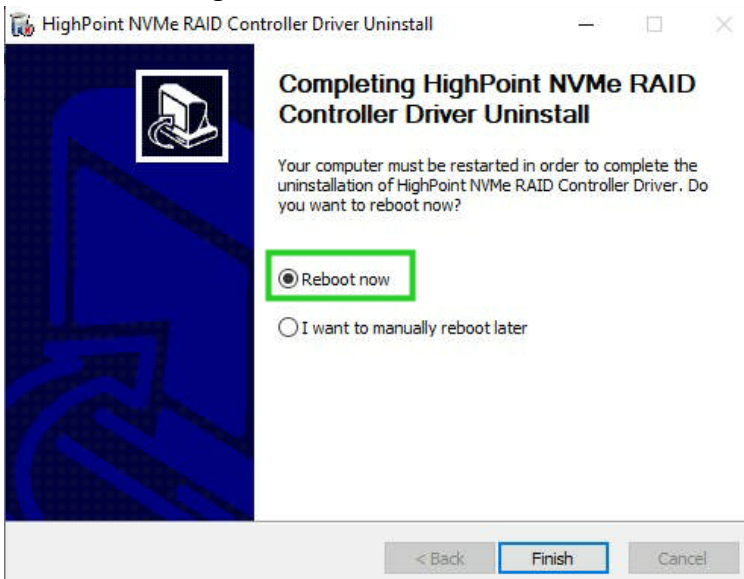
Failing to remove the HighPoint NVMe RAID AIC from the system during the uninstall process may result in data loss.

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 SSDs hosted by the HighPoint NVMe RAID AIC.

- b. Power up 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**.



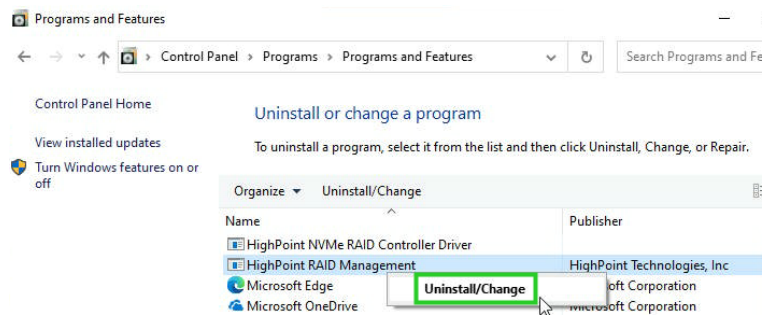
- e. After uninstalling the driver, click Finish.



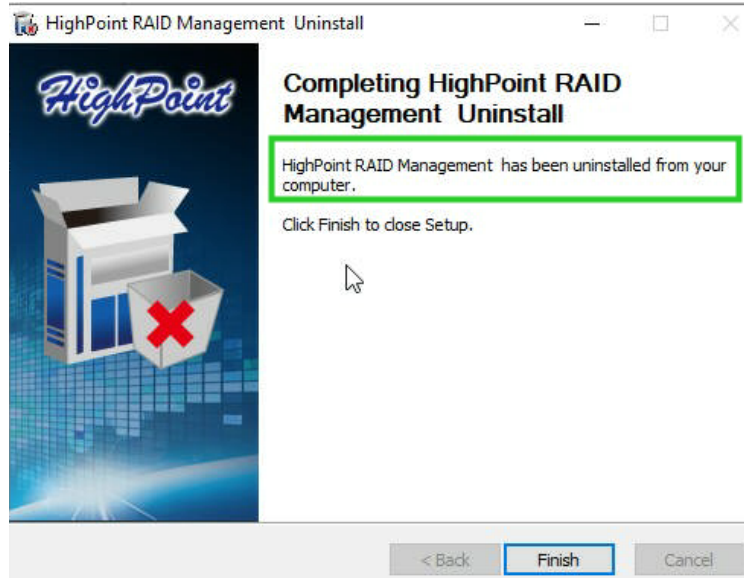
- f. Reboot Windows to complete the uninstall procedure.

5.2.1.2 Uninstall the RAID Management Software

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



- After uninstalling the HighPoint RAID Management, click **Finish**.



5.2.2 Uninstall the HighPoint NVMe RAID AIC for Linux

5.2.2.1 Uninstall Driver

- Open the system terminal with root privileges.
- Enter the following commands to uninstall the driver: **hptuninhptnvme**.
- 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]#
```

- After uninstalling the driver, manually reboot the system.
- 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]#
```

- If the system does not display information about “hptnvme”, the driver has been successfully uninstalled.

5.2.2.2 Uninstall the RAID Management Software

- Open the system terminal with root privileges.
- 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) ...
```

- 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
```