## **RAID Configurator**

Lenovo ThinkStation P3 Tower Gen 2, P3 Ultra SFF Gen 2, and P3 Tiny Gen 2









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### Overview

The purpose of this document is to provide guidelines for users on how to optimally configure RAID in the ThinkStation P3 Gen 2 series platforms to ensure proper compatibility and functionality.

Below is a high-level review of the drive type support of each system in the P3 Gen 2 series:

System	M.2 NVMe	SATA	Notes
P3 Tower	Supported,	Supported,	3.5" SATA or 2.5" SATA with adapter
Gen 2	Max QTY: 4*	Max QTY: 4*	
P3 Ultra SFF	Supported,	Supported,	3.5" SATA or 2.5" SATA with adapter
Gen 2	Max QTY: 4*	Max QTY: 1*	
P3 Tiny Gen 2	Supported, Max QTY: 3	Not Supported	

Table 1 - P3 Series Gen 2 Storage Support

\*Max quantity varies by configuration.

More storage information can be found in the ThinkStation P3 Gen 2 Storage Configurator, located on Lenovo's Support Site.

## Section 1 – RAID Levels

This section will detail the RAID capabilities of each system in the P3 Gen 2 family. The table below shows various RAID levels supported on each platform:

System	Max # of RAIDable M.2 NVMe Drives	M.2 NVMe RAID Levels	Max # of RAIDable SATA Drives	SATA RAID Levels
P3 Tower Gen 2	3*	0,1,5	4*	0,1,5,10
P3 Ultra SFF Gen 2	3*	0,1,5	0	N/A
P3 Tiny Gen 2	3	0,1,5	0	N/A

Table 2 -	P3 Gen	2 Series	RAID	Canabilities
	1 0 001	2 001100		Cupusinues

\*RAID across onboard and the PCIe M.2 Add-In Card is not supported. RAID only supported across onboard drives.

\*\*A fourth SATA drive bay will prevent M.2 2280 sized drives from being installed in the two onboard Gen 4 M.2 slots, reducing max number of RAIDable M.2 NVMe drives to one (Gen 5 onboard Slot 1).

#### **General RAID Notes:**

- Before creating or altering a RAID config, always backup important data to an external location to prevent accidental data loss.
- A given array should not mix drive types or logical sizes. It is recommended to only use drives officially supported by Lenovo for the given platform.
- Each RAID level requires a certain minimum and or maximum number of drives. If altering the system storage devices after purchase or a previous configuration, it will be necessary to verify the proper types and number of devices for a desired RAID configuration have been installed. Altering or creating an array may require any existing OS to be reinstalled.
- P3 Tower Gen 2, Ultra SFF Gen 2, and Tiny Gen 2 utilize Intel Rapid Storage Technology (RST) for configuring RAID.

 RAID arrays can be monitored in Windows using the Intel Optane Memory and Storage Management tool. At the time of this writing, it can be downloaded from the Microsoft Store or installed using the Hardware Support Application (HSA) software package, available from <u>Lenovo</u> <u>Support</u>, for either P3 Tower Gen 2, Ultra SFF Gen 2, or Tiny Gen 2.

ىر	Manage	Status			
0	Create RAID Volume	Your storage system is functioning no	rmally.		
<i>(</i> )	Intel® Optane™ Memory	Storage System View     Click on any component below to manage	its properties.		
~	Performance	PCIe_Array_0000		PCIe_Array_0000	
¢	Settings	PCIe SSD (954 GB)	test Type: RAID 0 1908 GB	test Size: 1908 GB Available space: 3 MB	
0	About	PCIe SSD (954 GB)	.300 00	Data disk cache: Enabled	
		Internal empty port 4			
		O Internal empty port 5			
		O Internal empty port 6			
		Internal empty port 7			
			Rescan		

#### Figure 1 – Intel Optane Memory and Storage Management application

#### P3 Tower Gen 2 RAID Notes:

- At the time of writing there are no add-in RAID controllers certified on this platform.
- RAID configurations utilizing both onboard and AIC M.2 drives are <u>not</u> supported.
- P3 Tower Gen 2 supports mixed M.2 RAID between the onboard Gen 5 and Gen 4 M.2 slots (Levels 0,1,5) or just between the two Gen 4 M.2 slots (Levels 0,1).
- The table below lists the supported quantities of SATA drives for the respective RAID levels:

s

RAID Level (SATA)	Possible QTY of SATA Drives Supported
RAID 0	2,3,4*
RAID 1	2
RAID 5	3,4*
RAID 10	4*

\*4<sup>th</sup> SATA support is configuration dependent

#### P3 Ultra SFF Gen 2 RAID Notes:

- RAID configurations utilizing both onboard and an AIC M.2 drive are <u>not</u> supported.
- P3 Ultra SFF Gen 2 supports mixed M.2 RAID between the onboard Gen 5 and Gen 4 M.2 slots (Levels 0,1,5) or just between the two Gen 4 M.2 slots (Levels 0,1).
- Ubuntu OS not supported on RAID.

#### P3 Tiny Gen 2 RAID Notes:

- P3 Tiny Gen 2 supports mixed M.2 RAID between the onboard Gen 5 and Gen 4 M.2 slots (Levels 0,1,5) or just between the two Gen 4 M.2 slots (Levels 0,1).
  - Drive capacity over 1TB recommended for RAID 0 & 5.
- Ubuntu OS not supported on RAID.

## Section 2 – Configuring RAID

Please refer to the following steps to configure RAID for both NVMe and SATA drives. Examples may show configurations that are not possible on all systems. **Backup any important data before editing RAID configurations!** 

1. Boot into the BIOS by pressing the function F1 key at the "Lenovo" splash screen.



I IIIIIKƏLƏLIUII.				
Start Menu				
C Main	Machine Type a	and Model	ThinkStation P	23
A Devices	System Br. System Se	General He	elp	
₩ Advanced	Asset Tag	Arrows	: Move Between Options	
Dewer	System UL	Enter +/-	: Select>Sub-Menu : Change Value	)-B0D0-3B7316DA5300
🔒 Security	Ethernet N	ESC F1	: Exit : Help	
Startup	ME Firmwa	F9 F10	: Setup Defaults	
—	Embeddec	110		
	BIOS Revi:		OK	
	Boot Block Rev	ision Level	0.05	
	BIOS Date (MM	/DD/YYYY)	12/30/2022	
Lenovo.	Preinstalled OS	License	Not Defined	
	OA3 License Ke	y ID	NO DPK	
	↑↓ Select Ite		+/- Change Values	F9 Setup Defaults

2. Select "System Summary" and scroll down to verify BIOS is recognizing all the drives installed in the system.

	<ul> <li>&gt; System Time &amp; Date</li> </ul>		
	> BIOS Event log		
Start Menu			
🔂 Main	Machine Type and Model	ThinkStation P3	
49 Devices	System Brand ID	ThinkStation P3	
Advanced	System Serial Number	AB123456	
* Advanced	Asset Tag		
O Power	System UUID	33DC3900-9221-11ED-B0D0-3B7316DA5300	
음 Security	Ethernet MAC Address		
📩 Startup	ME Firmware Version	16.1.25.2091	
🔁 Exit	Embedded Controller Version	SOICTOBA	
	BIOS Revision Level	S0IKT05A	
	Boot Block Revision Level	0.05	
	BIOS Date (MM/DD/YYYY)	12/30/2022	
Lenovo"	Preinstalled OS License	Not Defined	
	OA3 License Key ID	NO DPK	
F1 Help	1 Select Item	+/- Change Values F9 Setup Defaults	
	VEDOTALLA	552. Cepyright (C) 2022 AMI	
		52. Copyright (۲) 2022 AH1	
ThinkStation	Installed Memory	652. Copyright (C) 2022 AM1 24 8192 MB	
[hinkStation	Installed Memory Memory Bus Speed	2-2 Copyright (1) 2022 AH1 2-4 8192 MB 4400 MHz	
hinkStation	Installed Memory Memory Bus Speed Active Video	24 8192 MB 4400 MHz PEG	
ThinkStation	I. Installed Memory Memory Bus Speed Active Video Onboard Audio	24 8192 MB 4400 MHz PEG Enabled	
T <b>hinkStatio</b>	I. Installed Memory Memory Bus Speed Active Video Onboard Audio Onboard Ethernet	52. Copyright (1) 2022 AH1 24 8192 MB 4400 MHz PEG Enabled Enabled	
ThinkStation	I. Installed Memory Memory Bus Speed Active Video Onboard Audio Onboard Ethernet CPU Fan	52. Copyright (1) 2022 AH1 24 8192 MB 4400 MHz PEG Enabled Enabled Doperating	
ThinkStation tart Menu Main S Devices	I. Installed Memory Memory Bus Speed Active Video Onboard Audio Onboard Ethernet CPU Fan System Fan	24 8192 MB 4400 MHz PEG Enabled Enabled Operating Operating	
ThinkStation tart Menu Main P Devices Advanced	I. Installed Memory Memory Bus Speed Active Video Onboard Audio Onboard Ethernet CPU Fan System Fan Aux Fan	24 8192 MB 4400 MHz PEG Enabled Enabled Operating Operating Operating Operating	
ThinkStation tart Menu 에 Main 안 Devices 왕 Advanced 만 Power	I. Installed Memory Memory Bus Speed Active Video Onboard Audio Onboard Ethernet CPU Fan System Fan Aux Fan Aux Fan	24 8192 MB 4400 MHz PEG Enabled Enabled Operating Operating Operating Operating Operating	
ThinkStation tart Menu 원 Devices 관 Advanced D Power Security	I. Installed Memory Memory Bus Speed Active Video Onboard Audio Onboard Ethernet CPU Fan System Fan Aux Fan Aux Fan 2 M.2 Drive 1	2-4 8192 MB 4400 MHz PEG Enabled Enabled Operating Operating Operating Operating Operating SAMSUNG MZVLB256HBHQ-000L7	
Image: Constraint of the second se	I. Installed Memory Memory Bus Speed Active Video Onboard Audio Onboard Ethernet CPU Fan System Fan Aux Fan Aux Fan 2 M.2 Drive 1 M.2 Drive 2	2-4 8192 MB 4400 MHz PEG Enabled Enabled Dperating Operating Operating Operating Operating SAMSUNG MZVLB256HBHQ-000L7 SAMSUNG MZVLB256HBHQ-000L7	
tart Menu A Main Povices Advanced Power Security Atartup	Leto Core Count         Installed Memory         Memory Bus Speed         Active Video         Onboard Audio         Onboard Ethernet         CPU Fan         System Fan         Aux Fan 2         M.2 Drive 1         M.2 Drive 1         PCIE Drive 1	52. Copyright (C) 2022 AHI 2-4 8192 MB 4400 MHz PEG Enabled Enabled Dperating Operating Operating Operating Operating SAMSUNG MZVLB256HBHQ-000L7 SAMSUNG MZVLB256HBHQ-000L7 None	
Main	Leo Core count         Installed Memory         Memory Bus Speed         Active Video         Onboard Audio         Onboard Ethernet         CPU Fan         System Fan         Aux Fan         Aux Fan 2         M.2 Drive 1         M.2 Drive 1         PCIE Drive 1         PCIE Drive 2	52. Copyright (1) 2022 AHI 24 8192 MB 4400 MHz PEG Enabled Enabled Operating Operating Operating Operating Operating SAMSUNG MZVLB256HBHQ-000L7 SAMSUNG MZVLB256HBHQ-000L7 None None	
Main	Leto Core count         Installed Memory         Memory Bus Speed         Active Video         Onboard Audio         Onboard Ethernet         CPU Fan         System Fan         Aux Fan 2         M.2 Drive 1         M.2 Drive 2         PCIE Drive 1         PCIE Drive 1         PCIE Drive 1         PCIE Drive 1         PCIE Drive 1	52. Copyright (1) 2022 AHI 2-4 8192 MB 4400 MHz PEG Enabled Enabled Operating Operating Operating Operating Operating SAMSUNG MZVLB256HBHQ-000L7 SAMSUNG MZVLB256HBHQ-000L7 None None None	
Main         Main         Povices         Advanced         O       Power         G       Security         Saturup       Saturup         Exit       Saturation	L       Installed Memory         Memory Bus Speed         Active Video         Onboard Audio         Onboard Ethernet         CPU Fan         System Fan         Aux Fan         Aux Fan         M.2 Drive 1         M.2 Drive 2         PCIE Drive 1         PCIE Drive 1         SATA Drive 2	224 8192 MB 4400 MHz PEG Enabled Enabled Operating Operating Operating Operating SAMSUNG MZVLB256HBHQ-000L7 SAMSUNG MZVLB256HBHQ-000L7 None None None None None None	
ThinkStation tart Menu Main Povices Advanced Power Gecurity Security Startup Exit Lenovo.	Let o core count         Installed Memory         Memory Bus Speed         Active Video         Onboard Audio         Onboard Ethernet         CPU Fan         System Fan         Aux Fan         Aux Fan         M.2 Drive 1         M.2 Drive 2         PCIe Drive 2         SATA Drive 3	224 8192 MB 4400 MHz PEG Enabled Enabled Dperating Operating Operating Operating SAMSUNG MZVLB256HBHQ-000L7 SAMSUNG MZVLB256HBHQ-000L7 None None None None None None None None	
Main            Main            Main            Main            Povices            Advanced            Power            Security            Startup            Exit	Installed Memory         Memory Bus Speed         Active Video         Onboard Audio         Onboard Ethernet         CPU Fan         System Fan         Aux Fan         Aux Fan         M.2 Drive 1         M.2 Drive 2         PCIE Drive 2         SATA Drive 1         SATA Drive 3         SATA Drive 4	52. Copyright (1) 2022 AHI          2.4         8.192 MB         4400 MHz         PEG         Enabled         Operating         Operating         Operating         Operating         Operating         None         None </td <td></td>	

**<u>Note</u>:** From this point forward, the examples will utilize the M.2 NVMe drives. The process is the same for both drive types.

3. Select the "Devices" menu at the BIOS main screen setup utility and then select "Storage Setup".

hinkStation	Select this option to configure your system's USB port. Storage Setup	
	Select this option to configure your system's storage.	
tart Menu	> Video Setup	
A Main	Select this option to configure your system's video.	
2 Devices	> Audio Setup	
	Select this option to configure your system's audio.	
	> Network Setup	
D Power	Select this option to configure your system's network.	
🕂 Security	> PCI Express Setup	
💪 Startup		
→ Exit	Card Reader	Enabled 🗸
	[Enabled] Enables use of Card Reader. [Disabled] Disables use of Card Reader. Card reader will not be available in OS.	
	Bluetooth	Enabled 🗸
Lenovo	[Enabled] Enables use of Bluetooth. [Disabled] Disables use of Bluetooth. Bluetooth will not be available in OS.	
F1 Help	t↓ Select Item +/- Change Values	F9 Setup Defaults
C Evit	€ Select Menu Enter Select > Sub-Menu	F10 Save and Exit

4. In the "Storage Setup" menu, select "Configure Storage as" and change or verify the option is set to "RAID".

Thinl/Ctation 📗	Select whether to enable or disable SATA drive 2.	LIIADICU	~
I IIIIKƏLALIVII.	SATA Drive 3 Select whether to enable or disable SATA drive 3.	Enabled	~
Start Menu	SATA Drive 4 Select whether to enable or disable SATA drive 4.	Enabled	~
☆ Main	SATA Drive 4 Hot-Plug Support Select whether to enable or disable hot-plug for this port.	Disabled	~
Devices	M.2 Drive 1 Select whether to enable or disable M.2 Drive 1.	Enabled	~
Advanced Dewer	M.2 Drive 2 Select whether to enable or disable M.2 Drive 2.	Enabled	~
🕂 Security			
â Startup ⊖ Exit	Configure Storage as Select AHCI/RAID. NOTE: Device driver support is required for AHCI or RAID. Depending on how the hard disk image was installed, changing this setting may prevent the system from booting.	AHCI AHCI RAID	~
Lenovo.	Hard Disk Pre-delay Adds a delay before the first access of a hard disk by the system software. Some hard disks hang if accessed before they have initialized themselves. This delay ensures the hard disk has initialized after power up, prior to being accessed.	Disabled	~
F1 Help FSC Evit	Select Item +/- Change Values     Select Menu Enter Select > Sub-Menu	F9 Setup Defaults F10 Save and Exit	

**Notes:** In order to Secure Erase any drives, the 'Configure Storage as' option must be set to 'AHCI' mode. Changing storage modes may cause issues with boot OS and data on existing drives.

5. When selecting to enable RAID the system will prompt a warning that changing the setting may result in the failure of the system to boot. Select "Yes" to continue.

Chinl/Ctation	Select whether to enable or disable SATA drive 2.	
IIIINƏLALIUII.	SATA Drive 3 Select whether to enable or disable SATA drive 3.	Enabled 🗸
tart Menu	SATA Drive 4 Select whether to enable or disable SATA drive 4.	Enabled 🗸
n Main	SATA Drive 4 Hot-Plug Support Select whet	Disabled 🗸
A Devices	M.2 Drive Attention!	Enabled
<ul> <li>ℛ Advanced</li> <li>Power</li> <li>Security</li> <li>A Startup</li> <li>Exit</li> </ul>	M.2 Drive Select whet Select whet Select whet Select Airce Select Airc	Enabled V
Lenovo.	Hard Disk Pre-delay Adds a delay before the first access of a hard disk by the system software. Some hard disks hang if accessed before they have initialized themselves. This delay ensures the hard disk has initialized after power up, prior to being accessed.	Disabled 🗸
F1 Help	↑↓         Select Item         +/-         Change Values           ♦↓         Select Menu         Enter         Select > Sub-Menu	F9 Setup Defaults F10 Save and Exit

6. Press F10 to save and Exit BIOS setup.

ThinkStation	$\leftarrow$	
i iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii	Storage Setup	
Start Menu	SATA Controller Select whether to enable or disable SATA controller.	Enabled 🗸
Main	SATA Drive 1	Enabled 🗸
4 Devices	SATA Driv Save & Restart	Enabled
X Advanced	Select whete SATA Driv Select whete	Enabled 🗸
Security	SATA Drive Select wheth	Enabled
E→ Exit	SATA Driv Select whet Yes No	Disabled 🗸
	M.2 Drive	Enabled
Lenovo.	M.2 Drive 2 Select whether to enable or disable M.2 Drive 2.	Enabled 🗸
F1 Help ESC Exit	AL Select Item +/- Change Values     ↔ Select Menu Enter Select > Sub-Menu	F9 Setup Defaults F10 Save and Exit

7. As the system reboots, press the function F1 key at the Lenovo splash screen to enter the BIOS setup. Select the "Devices" menu at the BIOS main screen setup utility and then "Intel(R) Rapid Storage Technology".

Chink@tation	Select whether to enable or disable SATA drive 3.	L
IIIIIK9LALIUII	SATA Drive 4 Select whether to enable or disable SATA drive 4.	Enabled 🗸
the set Difference	SATA Drive 4 Hot-Plug Support Select whether to enable or disable hot-plug for this port.	Disabled 🗸
A Main	M.2 Drive 1 Select whether to enable or disable M.2 Drive 1.	Enabled 🗸
<b>伀</b> Devices	M.2 Drive 2 Select whether to enable or disable M.2 Drive 2.	Enabled 🗸
<ul> <li>Advanced</li> <li>Power</li> <li>Security</li> <li>Atatup</li> </ul>	Configure Storage as Select AHCI/RAID. NOTE: Device driver support is required for AHCI or RAID. Depending on how the hard disk image was installed, changing this setting may prevent the system from booting.	RAID
E→ Exit	> Intel(R) Rapid Storage Technology Select to see more information about the disk.	
Lenovo.	Hard Disk Pre-delay Adds a delay before the first access of a hard disk by the system software. Some hard disk hang if accessed before they have initialized themselves. This delay ensures the hard disk has initialized after power up, prior to being accessed.	Disabled 🗸
F1 Help ESC Exit	♣         Select Item         +/-         Change Values           ♣         Select Menu         Enter         Select > Sub-Menu	F9 Setup Defaults F10 Save and Exit

8. Verify all the desired drives are available.

ThinkStatio	Intel(R) Rapid Storage Technology Intel(R) RST 19.5.0.5676 RST VMD Driver	
Start Menu		
🛱 Main	Create RAID Volume This page allows you to create a RAID volume	
Devices		
<b>∦</b> Advanced		
D Power		
음 Security		
📩 Startup	Non-PATD Physical Dicks	
Exit Exit	List of physical disks on the system that are not part of a recognized RAID Volume	
	> PCIe 1.0, SAMSUNG MZVLB256HBHQ-000L7 S4ELNF4M929926, 238.4GB Select to see more information about the disk	
Lenovo	> PCIe 2.0, SAMSUNG MZVLB256HBHQ-000L7 S4ELNF4M929640, 238.4GB Select to see more information about the disk	
F1 Help ESC Exit	↑↓     Select Item     +/-     Change Values     F9     Setup D       ←>     Select Menu     Enter     Select > Sub-Menu     F10     Save and	efaults d Exit
	Version 2.21.0052. Copyright (C) 2022 AMI	

9. If all the disks installed are not shown as available, it may be necessary to clear any previous data from the disks. If no arrays have been created previously but there is an existing volume shown, it will be necessary to delete any previous arrays. Advance to step 15 to complete the process to delete any arrays. Return and proceed to step 10 once the desired drives are available.

I hinkStation	. Intel(R) Rapid Sto Intel(R) RSI 19.5.0.5676 RS	orage Technology			
Start Menu					
슈 Main 谷 Devices	Create RAID Volume This page allows you to create a	RAID volume			
<ul><li>⋪dvanced</li><li>Power</li></ul>					
유 Security 쵸 Startup					
[→ Exit	Non-RAID Physical Disks: List of physical disks on the syst	em that are not part of a recognized RAI	D		
Lenovo	<ul> <li>PCIe 1.0, SAMSUNG MZVLB;</li> <li>Select to see more information a</li> <li>DCIe 2.0, SAMSUNG MZVLP;</li> </ul>	256HBHQ-000L7 S4ELNF4M92992i bout the disk	5, 238.4GB		
F1 Help	↑↓ Select Item	+/- Change Values	F9	Setup Defaults	

10. Select "Create RAID Volume".

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11. Choose a name for the volume.

ThinkStation.	← Create RAID Volume	
Start Menu	Create RAID Volume	
에 Main 俗 Devices	Name: Enter a unique volume name that has no special characters and is 16 characters or less.	Volume 1
<ul><li>✔ Advanced</li><li>⑦ Power</li><li>合 Security</li></ul>	RAID Level: Select RAID Level	RAIDO (Stripe)
📩 Startup [→ Exit	Select Disks: Select Disks:	
	PCIe 1.0, SAMSUNG MZVLB256HBHQ-000L7 S4ELNF4M929926, 238.4GB X - to Select Disk	×
Lenovo.	PCIe 2.0, SAMSUNG MZVLB256HBHQ-000L7 S4ELNF4M929640, 238.4GB X - to Select Disk	×
F1 Help ESC Exit	N         Select Item         +/-         Change Values           ↔         Select Menu         Enter         Select > Sub-Menu	F9 Setup Defaults F10 Save and Exit

12. Select the drop-down box for "RAID Level" and select the desired RAID level. The RAID level options displayed are based on the type and number of drives available in the system.

Think@tation	<del>~</del>	
ΙΠΠΛΟΙΔΙΙΟΠ.	Create RAID Volume	
	Create RAID Volume	
Start Menu		
🛱 Main	Maria	
🖗 Devices	Name: Enter a unique volume name that has no special characters and is 16	Volume1
<b>₩</b> Advanced	Characters or less.	
D Power	Select RAID Level	RAIDO (Stripe)
음 Security		RAID1 (Mirror)
🙆 Startup	Salart Nicks	
⊖ Exit	Select Disks:	
	PCIe 1.0, SAMSUNG MZVLB256HBHQ-000L7 S4ELNF4M929926, 238.4GB	~
	X - to Select Disk	
Lenovo	PCIe 2.0, SAMSUNG MZVLB256HBHQ-000L7 S4ELNF4M929640,	~
	X - to Select Disk	
F1 Help	↑↓ Select Item +/- Change Values	F9 Setup Defaults
ESC Exit	↔ Select Menu Enter Select > Sub-Menu	F10 Save and Exit

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13. On the same page, select the drop-down box for each drive and select "X" to add the drive to the array. Once all the required drives are added, select "Create Volume". Unselected drives will appear in an OS like normal.

ThinkStation	Select RAID Level	· ^
Start Menu	Select Disks: Select Disks: PCIe 1.0, SAMSUNG MZVLB256HBHQ-000L7 S4ELNF4M929926, 238.4GB X - to Select Disk PCIe 2.0, SAMSUNG MZVLB256HBHQ-000L7 S4ELNF4M929640, 238.4GB X - to Select Disk Capacity (MB): Capacity in MB	X         ✓           X         ✓           244196
Lenovo. F1 Help ESC Exit	Create Volume Create a volume with the settings specified above      Create a volume with the settings specified above      the settings	F9 Setup Defaults F10 Save and Exit

14. From the opening page of the "Intel(R) Rapid Storage Technology", verify the volume was created properly.

ThinkStation	← Intel(R) Rapid Storage Technology
Start Menu	Intel(R) RST 19.5.0.5676 RST VMD Driver RAID Volumes: List of recognized RAID Volumes on the system
<ul> <li>▲ Startup</li> <li>→ Exit</li> </ul>	Volume1, RAID1 (Mirror), 238.5GB, Normal Select to see more information about the RAID Volume
F1 Help ESC Exit	↑↓     Select Item     +/-     Change Values     F9     Setup Defaults       ◆>     Select Menu     Enter     Select > Sub-Menu     F10     Save and Exit

15. To delete an array, select a displayed volume to view information about it.

<b>ThinkStation</b>	← Intel(R) Rapid Storage Technology
Start Menu	
🛱 Main	
🕆 Devices	
<b>₩</b> Advanced	
D Power	RAID Volumes:
🕂 Security	List of recognized RAID Volumes on the system
🝰 Startup	> Volume1, RAID1 (Mirror), 238.5GB, Normal
Exit	Select to see more information about the RAID Volume
Lenovo	
F1 Help ESC Exit	↑↓         Select Item         +/-         Change Values         F9         Setup Defaults           ←>         Select Menu         Enter         Select > Sub-Menu         F10         Save and Exit
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#### 16. Select the "Delete" option.

ThinkStation	← RAID VOLUME INFO RAID VOLUME INFO	Î
Start Menu		
<ul> <li>Main</li> <li>Devices</li> <li>Advanced</li> <li>Power</li> <li>Security</li> <li>▲ Startup</li> </ul>	Volume Actions List of actions available for RAID Volume Delete	
→ Exit	Name:     Volume1       Volume name     RAID Level:       RAID Level:     RAID1 (Mirror)       RAID Level (type)     N/A       Strip Size:     N/A       Indicates the strip size of the RAID volume     N/A	v
F1 Help ESC Exit	↑↓     Select Item     +/-     Change Values     F9     Setup       ↔     Select Menu     Enter     Select > Sub-Menu     F10     Save	Defaults ınd Exit

17. Select "Yes" to confirm the deletion of the volume.

Think@tation				
ΙΠΠΛΟΙΔΙΙΟΠ.	Delete			
	Delete			
Start Menu				
Main	Delete the DAID veloce 2			
🕆 Devices	Delete the RAID volume?			
* Advanced	ALL DATA ON VOLUME WILL	. BE LOST!		
D Power				
음 Security				
💑 Startup	> Yes			
→ Exit	Deleting a volume will reset the d	lisks to non-RAID.		
	> No			
Lenovo				
F1 Help	Select Item	+/- Change Values	F9 Setup Defaults	
ESC Exit	Select Menu	Enter Select > Sub-Menu	F10 Save and Exit	

18. To verify the array was deleted, return the opening page of the "Intel(R) Rapid Storage Technology" and verify the drives are once again seen as available for the creation of a new array.

<b>ThinkStation</b>	Intel(R) Rapid Storage Technology Intel(R) RST 19.5.0.5676 RST VMD Driver
Start Menu	
🛱 Main	Create RAID Volume This page allows you to create a RAID volume
🙄 Devices	
<b>₩</b> Advanced	
D Power	
음 Security	
🚵 Startup	Non-DATD Develoal Dickey
<b>⊟</b> Exit	List of physical disks on the system that are not part of a recognized RAID Volume
	> PCIe 1.0, SAMSUNG MZVLB256HBHQ-000L7 S4ELNF4M929926, 238.4GB
	Select to see more information about the disk
Lenovo	> PCIe 2.0, SAMSUNG MZVLB256HBHQ-000L7 54ELNF4M929640, 238.4GB Select to see more information about the disk
F1 Help ESC Exit	Number of the select Item         +/-         Change Values         F9         Setup Defaults           ↔         Select Menu         Enter         Select > Sub-Menu         F10         Save and Exit
	Version 2.21.0052. Copyright (C) 2022 AM1

<u>Note</u>: The user may not see the RAID array show up in the BIOS boot sequence until after a bootable operating system has been installed on the array.

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## Section 3 – Document Revision History

Version	Date	Author	Updates
v1.0	6/23/25	Chris C	Initial Release