## LENOVO THINKSTATION P330 TOWER, SMALL FORM-FACTOR (SFF), TINY **NVME RAID SUPPORT**

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#### Contents

SECTION 1 – INSTALLING NVME DEVICES TO SETUP RAID SECTION 2 – CONFIGURING NVME RAID FOR P330 TOWER & SFF SECTION 3 – CONFIGURING NVME RAID FOR P330 TINY SECTION 4 – REVISION HISTORY

### Section 1 – Installing NVMe Devices to Setup RAID

Please make sure the NVMe devices are installed into the following PCIe slot locations on the ThinkStation P330 Tower and Small-Form Factor (SFF) motherboard.



**Note**: The highlighted slots above are the only available slots that will allow the user to configure an NVMe RAID array on the ThinkStation P330 platform.

## Section 2 – Configuring NVMe RAID for P330 Tower & SFF

Please see the following steps to configure NVMe RAID.

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



Main Devices Advanced	Lenovo B 1 Power Security	IOS Setup Utility Startup Exit	
<ul> <li>System Summary</li> <li>System Time &amp; Date</li> <li>Machine Type and Model System Brand ID System Serial Number Asset Tag System UUID Ethernet MAC Address Embedded Controller Vers BIOS Revision Level BOOT Block Revision Level BIOS Date (MM/DD/YYYY) Preinstalled OS License OA3 License Key ID OA2.1 Marker Language</li> </ul>	P330- Think 12345 6 14++ Enter/Left Click ENT Enter/Left Click ESC/Right Click F1 F9 F10	SFF Station P330 SFF 67 eneral Help : Move : Select : Value : Exit : General Help : Optimized Defaults : Save & Exit Setup IN	6000
ESC Exit ↔ Se	lect Item +/- lect Menu Enter	Change Values F9 Select⊦Sub-Menu F10	Setup Defaults Save and Exit

2. Select "System Summary" to verify BIOS is recognizing the NVMe drives.

			Le	novo BIO	S Setup	Utility			
Main I	evices Adva	anced P	ower Sec	urity S	tartup	Exit			
<ul> <li>System S</li> <li>System 1</li> <li>Machine</li> </ul>	ummary ime & Date Tung and Mos	lol		0330-SE	F				
System I Sustem S	rand ID erial Number	с.		ThinkStation P330 SFF 1234567					
System Serial Number Asset Tag System UUID Ethernet MAC Address Embedded Controller Version BIOS Revision Level Boot Block Revision Level BIOS Date (MM/DD/YYYY) Preinstalled OS License OA3 License Key ID OA2.1 Marker Language				97FC9A8 30-9C-2 M1UCT17 M1UKT24 1.24 12/12/2 Not Def NO DPK Y CEnglis	0-E8E1-: 3-C0-63: A A 018 'ined h]	11E8-B555-4 -D4	4EA2DCD360	00	
F1 Hel ESC Exi	p †↓ t ↔	Select Select	Item Menu	+/- Enter	Change Select	Values Sub-Menu	F9 F10	Setup Defaults Save and Exit	

Lenovo BIOS Setup Utility					
Main					
	Sustem Summaru				
СРИ Туре	Intel(R) Xeon(R) E-21746 CPU @ 3.806Hz				
CPU Speed	3.80 GHz				
CPU Core Count	4				
Installed Memory	8192 MB				
Memory Bus Speed	2666 MHz				
Active Video	PEG				
Onboard Audio	Enabled				
Onboard Ethernet	Enabled				
CPU Fan	Operating				
System Fan	Not Operating				
Aux Fan	Not Operating				
Aux Fan 7	Not Uperating				
M.2 Drive 1	SAMSUNG MZVKWITOHMLH-000L7				
PCIe4X_1 Drive	SAMSUNG MZVKWITUHMLH-000L7				
PCIelbX_1 Drive	None				
SHIH Drive I					
SHIH Drive Z	CNA DAD KOU KTD2 DADKOU DHODE2U				
SATA Drive J	None				
SHIH DITOR 4	nuile				
F1 Help 11 Select Item	+/- Change Values F9 Setup Defaults				
ESC Exit $\leftrightarrow$ Select Menu	Enter Select Sub-Menu F10 Save and Exit				

3. Select the "Devices" menu at the BIOS main screen setup utility and "ATA Drive Setup".

	D. I			Lenovo	BIOS Setup	Utility		
Main	Devices	Advanc	ed Powe	r Security	Startup	Exit		
Seria	al Port Set	tup						Help Message
► ATA I ► Video	Drive Setur Drive Setur						Select configu	this option to re your system's ATA
<ul> <li>Audio</li> <li>Netwo</li> <li>PCT 1</li> </ul>	o Setup ork Setup Symposic Cor	figurat	ion				drive.	
▶ Intel	l (R) Thunde	erbolt	1011					
						r.		
						2		
F1 ESC	Help 1 Exit 4	tt S ⊶ S	elect It elect Me	em +/- nu Ente	Change r Select	∙ Values ÞSub-Menu	F9 F10	Setup Defaults Save and Exit

4. In the "ATA Drive Setup" menu, select "Configure SATA as" and change the option to "Intel ® RST with Intel ® Optane".

Devices			
ATA D	rive Setup		Help Message
SATA Controller SATA Drive 1 SATA Drive 2 SATA Drive 3 SATA Drive 4 SATA Drive 4 Hot-Plug Suppo Configure SATA as Hard Disk Pre-delay	IEnabl IE	ed] ed] ed] ed] led] gure SATA as with Intel(R) Optane	Select AHCI/RAID/Intel(R) RST with Intel(R) Optane Mode. NOTE: Device driver support is required for AHCI or RAID or Intel(R) RST with Intel(R) Optane. Depending on how the hard disk mage was installed, changing his setting may prevent the ystem from booting.
F1Help1↓SelectESCExit↔Select	Item +/- Menu Enter	Change Values Select⊳Sub-Menu	F9 Setup Defaults F10 Save and Exit

<u>Note</u>: In order to secure erase NVMe drives, the 'Configure SATA as' option must be set to 'AHCI' mode.

5. Press F10 to Save and Exit BIOS setup.

	Lenovo BIOS Setup Utility			
Devices				
ATA Driv	e Setup	Help Message		
SATA Controller SATA Drive 1 SATA Drive 2 SATA Drive 3 SATA Drive 4 SATA Drive 4 SATA Drive 4 Hot-Plug Support	[Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [Disabled]	Select AHCI/RAID/Intel(R) RST with Intel(R) Optane Mode. NOTE: Device driver support is required for AHCI or RAID or Intel(R) RST with Intel(R) Optane.		
Loni igure SHIH as Hard Disk Pre-delay	Save & reset Save configuration and reset? Yes No	Depending on how the hard disk image was installed, changing this setting may prevent the system from booting.		
F1 Help 14 SelectIt ESC Exit ↔ SelectMe	em •∕- Change Values nu Enter Select⊳Sub-Menu	F9 Setup Defaults F10 Save and Exit		

6. As the system reboots, press the function F1 key to go back into BIOS setup. Select the "Devices" menu at the BIOS main screen setup utility and "ATA Drive Setup".

Main Deuices Adu	Lanced Power	Lenovo BIOS Set	up Utility n Exit	
<ul> <li>Serial Port Setup</li> <li>USB Setup</li> <li>ATA Drive Setup</li> <li>Video Setup</li> <li>Audio Setup</li> <li>Network Setup</li> <li>PCI Express Configu</li> <li>Intel(R) Thunderbo</li> </ul>	uration			Help Message Select this option to configure your system's ATA drive.
			R	
F1 Help ↑↓ ESC Exit ↔	Select Item Select Menu	•/- Chan Enter Sele	ge Values ct⊳Sub-Menu	F9 Setup Defaults F10 Save and Exit

7. Select the "Intel ® Rapid Storage Technology" option.

Dev ices	Lemovo BIOS Setup Utility	
ATA Drive S	etup	Help Message
SATA Controller SATA Drive 1 SATA Drive 2 SATA Drive 3 SATA Drive 4 SATA Drive 4 Hot-Plug Support Configure SATA as Intel(R) Rapid Storage Technology Hard Disk Pre-delay	Enabled] Enabled] Enabled] Enabled] Enabled] Disabled] Intel(R) RST with Intel(R) Optane] Disabled]	This formset allows the user to manage RAID volumes on the Intel(R) RAID Controller
1 Help 14 SelectItem SC Exit ↔ SelectMenu	+/- Change Values Enter Select⊁Sub-Menu	F9 Setup Defaults F10 Save and Exit

8. Select "Create RAID volume".

Le	novo BIOS Setup Ut	ility	
Devices			
Intel(R) Rapid Storage	Technology		Help Message
Intel(R) RST 16.7.0.3513 RAID Driver ► Create RAID Volume		This pag a RAID o	ge allows you to create polume
Non-RAID Physical Disks: > PCIe 1.0, SAMSUNG MZVKWIT0HMLH-000L7 > PCIe 2.0, SAMSUNG MZVKWIT0HMLH-000L7	S3DPNYAH700168, 9 S3DPNYAH700176, 9	953 - 868 953 - 868	
F1 Help 14 Select Item	•/- Change Va	lues F9	Setup Defaults
ESC Exit ↔ Select Menu	Enter Select⊳Su	ıb-Menu F10	Save and Exit

9. At the "Create RAID Volume" menu, select "Name:" and enter a unique RAID array name. *Note*: *In this example, the RAID array is named "test".* 

Devices		
Create J	AID Volume	Help Message
Create RAID Volume		Enter a unique volume name that has no special characters
RAID Level:	IRAIDO (Stripe)]	and is 16 characters or less.
Select Disks: PCIe 1.0, SAMSUNG MZUKW1T0HMLH-000L7 S3DPNYAH700168, 953.8GB	E 1	
PCIe 2.0, SAMSUNG MZUKWITOHMLH-000L7 S3DPNYAH700176, 953.86B	test_ Name:	
Strip Size: Capacity (MB):	[64KB] 0	
▶ Create Volume		
Select at least two disks		
F1Help1↓Select IESCExit↔Select I	tem +/- Change Values Ienu <mark>Enter</mark> Select⊁Sub-Menu	F9 Setup Defaults F10 Save and Exit

10. At the "Create RAID Volume" menu, select "RAID Level" and choose one of the options listed.

Devices							
Creat	Create RAID Volume						
Create RAID Volume			Select RAID	Level			
Name: RAID Level:	<mark>test</mark> [RAID0	(Stripe)]					
Select Disks: PCIe 1.0, SAMSUNG M2UKW1T0HMLH-000L7 S3DPNYAH700168, 953.86B PCIe 2.0, SAMSUNG M2UKW1T0HMLH-000L7 S3DPNYAH700176, 953.86B Strip Size: Capacity (MB):	E ] RAIDO RAIDI RECOVE I64KBI O	(D Level: (Stripe) (Hirror) ery					
▶ Create Volume		R					
Select at least two disks							
F1Help1↓SelectionESCExit↔Selection	et Item +/- et Menu Enter	Change Values Select⊳Sub-Menu	F9 Set F10 Sau	up Defaults e and Exit			

11. At the "Create RAID Volume" menu, highlight each drive individually and press the keyboard space bar to "select" the drive. The brackets to the right of the drive option should go from [] to [X].

Devices	Lenovo BIOS Setup Utility							
Create RAID	Help Message							
Create RAID Volume	Create RAID Volume							
Name: RAID Level:	test IRAID0 (Stripe)]							
Select Disks: PCLe 1.0, SAMSUNG MZUKW1TOHMLH-000L7	IXI							
S3DPNYAH700168, 953.8GB PCIe 2.0, SAMSUNG MZUKU1T0HMLH-000L7 S3DPNYAH700176, 953.8GB	C1							
Strip Size: Capacity (MB):	[16KB] 0							
► Create Volume	R							
Select at least two disks								
F1Helpf4Select ItemESCExit↔Select Menu	+/- Change Values Enter Select⊁Sub-Menu	F9 Setup Defaults F10 Save and Exit						

Devices		
Create RAID U	Help Message	
Create RAID Volume		X - to Select Disk
Name: RAID Level:	test [RAID0 (Stripe)]	
Select Disks: PCIe 1.0, SAMSUNG MZUKW1T0HMLH-000L7 S3DPNY0H700168 953 8CB	IXI	
PCTe 2.0, SAMSUNG MZUKWITOHMLH-000L7 S3DPNYAH700176, 953.8GB	DKI	
Strip Size: Capacity (MB):	[64KB] 1953520	
▶ Create Volume	R	
E1 Helm the Select Item	the Change IIs luce	EQ Setus Defaulte
ESC Exit $\leftrightarrow$ Select Item	Therefore Select≻Sub-Menu	FIO Save and Exit

12. Select "Create Volume".

Lenovo BIOS Setup Utility							
Devices							
Ci	Create RAID Volume						
Create RAID Volume				Create a	a volume with the		
Name: RAID Level:		test [RAIDO	(Stripe)]	Secting.	s spectrica above		
Select Disks: PCIe 1.0, SAMSUNG MZVKWITOHMLH-000L7 SEDDWW0420168 952 951	n	נאז					
PCIe 2.0, SAMSUNG MZUKWITOHMLH-000L7 S3DPNYAH700176, 953.86J	B	DXI					
Strip Size: Capacity (MB):		[64KB] 1953520					
▶ Create Volume			₽				
F1 Help †↓ Se ESC Exit ↔ Se	elect Item elect Menu	+/- Enter	Change Values Select⊧Sub-Menu	F9 F10	Setup Defaults Save and Exit		

13. Verify the RAID volume created at the very next screen.

			Le	enovo BI	DS Setup Utility		
Dev	ices						
	Intel (	R) Rapid		Help Message			
Intel(R) R	ST 16.7.0	.3513 RAI	[D Driver			Select † about tl	to see more information he RAID Volume
RAID Volum ▶ test, RAID	es: 0 (Stripe	), 1.8TB	Normal				
					R		
F1 Help ESC Exit	†↓ ↔	Select Select	Item Menu	+/- Enter	Change Values Select⊳Sub-Menu	F9 F10	Setup Defaults Save and Exit

14. To view information about the RAID array, select the RAID array on the previous step.

Le	novo BIOS Setup Utility	
Devices		
RAID VOLUME IN	FO	Help Message
RAID VOLUME INFO		
Volume Actions ▶ Delete		
Name: RAID Level: Strip Size: Size: Status: Bootable:	test RAIDO (Stripe) 64KB 1.8TB Normal Yes	
<ul> <li>PCIe 1.0, SAMSUNG MZUKWIT0HMLH-000L7</li> <li>PCIe 2.0, SAMSUNG MZUKWIT0HMLH-000L7</li> </ul>	S3DPNYAH700168, 953.868 S3DPNYAH700176, 953.868	
F1 Help ↑↓ Select Item ESC Exit ↔ Select Menu	•/- Change Values Enter Select⊁Sub-Menu	F9 Setup Defaults F10 Save and Exit

15. To delete the RAID array, select "Delete" from the "RAID VOLUME INFO" from the previous step and confirm by selecting "Yes" at the very next menu option.

	Le	novo BIO	S Setup Utility		
Devices					
	Delete				Help Message
Delete Delete the RAID volume? ALL DATA ON VOLUME WILL ≻ Yes ▶ No	BE LOST †			Deletin the dis	g a volume will reset ks to non-RAID.
			R		
F1Help1↓SelESCExit↔Sel	lect Item lect Menu	+/- Enter	Change Values Select⊧Sub-Menu	F9 F10	Setup Defaults Save and Exit

**<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 RAID array.

# Lenovo

## Section 3 – Configuring NVMe RAID for P330 Tiny

Please see the following steps to configure NVMe RAID.

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



Main Devices Advanced	Lenovo BIOS Setup Utili Power Security Startup Exit	ty
<ul> <li>System Summary</li> <li>System Time &amp; Date</li> <li>Machine Type and Model System Brand ID System Serial Number Asset Tag System UUID Ethernet MAC Address Embedded Controller Vers BIOS Revision Level Boot Block Revision Leve BIOS Date (MM/DD/YYYY) Preinstalled OS License DA3 License Key ID DA2.1 Marker Language</li> </ul>	30CF000EUS ThinkStation P330 Tin MJ07EBCW fl+++ : Move Enter/Left Click : Select +/-/Double Click : Value ESC/Right Click : Exit F1 : General He F9 : Optimized F10 : Save & Ex IX	ny 1B00 Pefaults it Setup
F1Help↑↓SelESCExit↔Sel	ect Item •/- Change Values ect Menu <u>Enter</u> Select⊳Sub-Me	s F9 Setup Defaults enu F10 Save and Exit

2. Select "System Summary" to verify BIOS is recognizing the NVMe drives.

	Main Devices Advanced Power	Lenovo BIOS Setup Utility Security Startup Exit
	System Summary System Time & Date	30/20002118
	System Brand ID Sustem Serial Number	ThinkStation P330 Tiny MI07FBCU
	Asset Tag System JUID Ethernet MAC Address Embedded Controller Version BIOS Revision Level Boot Block Revision Level BIOS Date (MM/DD/YYYY) Preinstalled OS License OA3 License Key ID OA2.1 Marker Language	3E852C00-B138-11E8-8BCA-B046AA2C1B00 8C-16-45-BE-55-15 M1UCT17A M1UKT26A 1.26 01/12/2019 SDK0J40697 WIN 3305144840997 Y LEnglish
L		
F	1 Help 1↓ SelectItem SC Exit ↔ SelectMenu	+/- Change Values F9 Setup Defaults Enter Select⊁Sub-Menu F10 Save and Exit

L	enovo BIOS Setup Utility
	System Summary
CPU Type CPU Speed CPU Core Count Installed Memory Memory Bus Speed Active Video Onboard Audio Onboard Ethernet CPU Fan M.2 Drive 1 M.2 Drive 2 H.2 SHIH Drive SATA Drive 1	Intel(R) Core(TM) i7-8700T CPU e 2.40GHz 2.40 GHz 6 32768 MB 2666 MHz PEG Enabled Derating SAMSUNG MZUKW512HMJP-000L7 SAMSUNG MZUKW512HMJP-000L7 Mone None
F1 Help 14 Select Item	•/- Change Values F9 Setup Defaults

3. Select the "Devices" menu at the BIOS main screen setup utility and "ATA Drive Setup".

				Lenovo B	IOS Setup	Utility		
Main	Dev ices	Advanced	Power	Security	Startup	Exit		
► USB Se	etup Satur							Help Message
<ul> <li>Video</li> <li>Audio</li> <li>Networ</li> <li>PCI E&gt;</li> </ul>	Setup Setup K Setup press Con	figuration					Select configu drive.	this option to re your system's ATA
▶ Intel	(R) Thunde	rbolt						
					R			
F1 H ESC H	lelp 1 Xit ←	↓ Sele → Sele	ct Item ct Menu	+/- Enter	Change Select	Values ▶Sub-Menu	F9 F10	Setup Defaults Save and Exit

4. In the "ATA Drive Setup" menu, select "Configure SATA as" and change the option to "RAID".

	Na secondaria de la companya de la c	Ler	novo BIOS	3 Setup Utility		
Devices						
ATA Drive Setup						Help Message
SATA Controller SATA Drive 1 Configure SATA a Hard Disk Pre-de	A Controller [Enabled] A Drive 1 [Enabled] figure SATA as [AHCI] d Disk Pre-delay [Disabled] AHCI					AHCI/RAID/Intel(R) RST tel(R) Optane Mode. driver support is d for AHCI or RAID or ) RST with Intel(R) ng on how the hard disk as installed, changing tting may prevent the
		Intel G RAID	0 RST wi	ith Intel (R) Optane	ystem :	from booting.
F1 Help 1	Select	Item	+/-	Change Values	F9	Setup Defaults
LOC LXIT -	Select	nenu	Enter	select sub-nenu	L 10	Save and Exit

**<u>Note</u>**: In order to secure erase NVMe drives, the 'Configure SATA as' option must be set to 'AHCI' mode.

5. Press F10 to Save and Exit BIOS setup.

Douisos		1	Lenovo BII	DS Setup Utility				
Deorces	ATA Dr	ive Se	tup			Help Message		
SATA Controller SATA Drive 1 Configure SATA as Hard Disk Pre-delay			Enabled] [Enabled] [RAID] [Disabled]			Select AHCI/RAID/Intel(R) RST with Intel(R) Optane Mode. NOTE: Device driver support is required for AHCI or RAID or Intel(R) RST with Intel(R) Optane.		
		Sau	Save & reset Save configuration and reset? Yes No			ng on how the hard disk as installed, changing tting may prevent the from booting.		
F1 Help †↓ ESC Exit ↔	Select Select	Item Menu	+/- Enter	Change Values Select⊦Sub-Menu	F9 F10	Setup Defaults Save and Exit		

6. As the system reboots, press the function F1 key to go back into BIOS setup. Select the "Devices" menu at the BIOS main screen setup utility and "ATA Drive Setup".

		Lenovo B	IOS Setup Uti	lity	
Main Devices Advanc	ed Power	Security	Startup Exi	t	
<ul> <li>USB Setup</li> <li>ATA Drive Setup</li> <li>Video Setup</li> <li>Audio Setup</li> <li>Network Setup</li> </ul>					Help Message Select this option to configure your system's ATA drive.
<ul> <li>PCI Express Configurat</li> <li>Intel(R) Thunderbolt</li> </ul>	ion				
			R		
FI Help T↓ S ESC Exit ↔ S	elect Item elect Menu	+/- Enter	Change Val Select⊳Sub	ues -Menu	F9 Setup Defaults F10 Save and Exit

7. Select the "Intel ® Rapid Storage Technology" option.

Devices	enovo BIOS Setup Utility	
ATA Drive Set	սթ	Help Message
SATA Controller SATA Drive 1	[Enabled] [Enabled]	This formset allows the user to manage RAID volumes on the Intel(R) RAID Controller
Configure SATA as ▶ Intel(R) Rapid Storage Technology Hard Disk Pre-delay	[RAID] [Disabled]	
	ß	
F1 Help 1↓ SelectItem ESC Exit ↔ SelectMenu	•/- Change Values Enter Select►Sub-Mem	F9 Setup Defaults u F10 Save and Exit

8. Select "Create RAID volume".

Devices	IOS Setup Utility	
Intel(R) Rapid Storage Techno	logy	Help Message
Intel(R) RST 16.0.2.3402 RAID Driver ▶ Create RAID Volume		This page allows you to create a RAID volume
Non-RAID Physical Disks: > PCIe 1.0, SAMSUNG MZUKW512HMJP-000L7 S35BN > PCIe 2.0, SAMSUNG MZUKW512HMJP-000L7 S35BN	A0J700117, 476.9GB A0J700116, 476.9GB	
F1         Help         T4         Select Item         +/-           ESC         Exit         ↔         Select Menu         Enter	Change Values Select⊳Sub-Menu	F9 Setup Defaults F10 Save and Exit

9. At the "Create RAID Volume" menu, select "Name:" and enter a unique RAID array name. *Note*: *In this example, the RAID array is named "test".* 

Deutoe	Lenovo BIO	S Setup Utility		
Create	RAID Volume			Help Message
Create RAID Volume Name:	test		Enter a that has and is	unique volume name s no special characters 16 characters or less.
RAID Level: Select Disks:	[RAID0	(Stripe)]		
PCIe 1.0, SAMSUNG M2UKU512HMJP-000L7 S35BNA0J700117, 476.9GB PCIe 2.0, SAMSUNG	[]	Nana		
MZUKU512HMJP-000L7 S35BNA0J700116, 476.9GB	test_			
Strip Size: Capacity (MB):	164KBJ 0			
<ul> <li>Create Volume</li> <li>Select at least two disks</li> </ul>				
bereet at reast two aroas				
F1Help↑↓SelectESCExit↔Select	Item +/- Menu Enter	Change Values Select⊳Sub-Menu	F9 F10	Setup Defaults Save and Exit

10. At the "Create RAID Volume" menu, select "RAID Level" and choose one of the options listed.

	Lenovo BIOS Setup Utility	
Devices		
Create RAID V	lolume	Help Message
Create RAID Volume		Select RAID Level
Name: RAID Level: Select Disks:	test [RAIDO (Stripe)]	
PCIe 1.0, SAMSUNG MZUKW512HMJP-000L7 S35BNA0J700117, 476.9GB PCIe 2.0, SAMSUNG MZUKW512HMJP-000L7 S35BNA0J700116, 476.9GB Strip Size:	[ ] RAID Level: RAIDO (Stripe) RAID1 (Mirror) Recovery [64KB]	
Capacity (MB): ▶ Create Volume Select at least two disks	0	
F1 Help ↑↓ Select Item ESC Exit ↔ Select Menu	<ul> <li>+/- Change Values</li> <li>Enter Select⊁Sub-Menu</li> </ul>	F9 Setup Defaults F10 Save and Exit

11. At the "Create RAID Volume" menu, highlight each drive individually and press the keyboard space bar to "select" the drive. The brackets to the right of the drive option should go from [] to [X].

Devices	Lenovo BIOS Setup Utility	
DeoTces		
Create RAI	D Volume	Help Message
Create RAID Volume		X - to Select Disk
Name: RAID Level:	test [RAID0 (Stripe)]	
Select Disks: PCIe 1.0, SAMSUNG MZUKW512HMJP-000L7 S35BNA0J700117, 476.9GB	[X]	
PCLe 2.0, SAMSUNG MZUKW512HMJP-000L7 S35BNA0J700116, 476.9GB	k,	
Strip Size: Capacity (MB):	[16KB] 0	
▶ Create Volume		
Select at least two disks		
F1 Help †↓ SelectIte ESC Exit ↔ SelectMen	em •⁄- Change Values nu <u>Enter</u> Select⊁Sub-Menu	F9 Setup Defaults F10 Save and Exit

	Lenovo BIOS Setup Utility	
Devices		
Create RAI	) Volume	Help Message
Create RAID Volume		X - to Select Disk
Name: RAID Level:	test [RAID0 (Stripe)]	
Select Disks: PCIe 1.0, SAMSUNG M2UKW512HMJP-000L7 SPENDQ 1300113, 435 95P	IXI	
PCIe 2.0, SAMSUNG MZUKW512HMJP-000L7 S35BNA0J700116, 476.9GB	DKI Ng	
Strip Size: Capacity (MB):	[64KB] 976768	
► Create Volume		
F1 Help ↑↓ Select Iter ESC Exit ↔ Select Mem	n +/- Change Values u Enter Select⊁Sub-Menu	F9 Setup Defaults F10 Save and Exit

12. Select "Create Volume".

	Lenovo BIO	S Setup Utility		
Devices				
Create	RAID Volume			Help Message
Create RAID Volume			Create setting	a volume with the s specified above
Name: RAID Level:	test [RAID0	(Stripe)]	Secting	
Select Disks: PCIe 1.0, SAMSUNG MZUKW512HMJP-000L7 SPERNO 1300113, 476 GCP	IXI			
PCLe 2.0, SAMSUNG MZUKW512HMJP-000L7 S35BNA0J700116, 476.96B	DO	P4		
Strip Size: Capacity (MB):	[64KB] 976768			
▶ Create Volume				
F1Help↑↓SelectESCExit↔Select	Item +/- Menu Enter	Change Values Select⊧Sub-Menu	F9 F10	Setup Defaults Save and Exit

13. Verify the RAID volume created at the very next screen.

	Lenc	vo BIOS S	Setup Utility		
Devices					
Intel(R)	Rapid Storage Te	echnology			Help Message
Intel(R) RST 16.0.2.34	402 RAID Driver			Select to about the	o see more information e RAID Volume
RAID Volumes: ▶ test, RAID0 (Stripe),	953.9GB, Normal				
			R		
F1 Help T↓ S ESC Exit ↔ S	Select Item 4 Select Menu 1	eze Cl Enter Sc	hange Values elect⊳Sub-Menu	F9 F10	Setup Defaults Save and Exit

14. To view information about the RAID array, select the RAID array on the previous step.

Le	movo BIOS Setup Utility	
Devices		
RAID VOLUME IN	FO	Help Message
RAID VOLUME INFO		
Volume Actions ▶ Delete		
Name: RAID Level: Strip Size: Size: Status: Bootable:	test RAIDO (Stripe) 64KB 953.9GB Normal Yes	
<ul> <li>▶ PCIe 1.0, SAMSUNG MZUKW512HMJP-000L7</li> <li>▶ PCIe 2.0, SAMSUNG MZUKW512HMJP-000L7</li> </ul>	S35BNA0J700117, 476.9GB S35BNA0J700116, 476.9GB	
F1Help11Select ItemESCExit↔Select Menu	+/- Change Values Enter Select≻Sub-Menu	F9 Setup Defaults F10 Save and Exit

15. To delete the RAID array, select "Delete" from the "RAID VOLUME INFO" from the previous step and confirm by selecting "Yes" at the very next menu option.

	Le	novo BIO	S Setup Utility		
Devices					
	Delete				Help Message
Delete Delete the RAID volume? ALL DATA ON VOLUME WILL ≻ Yes ▶ No	BE LOST †			Deletin the dis	g a volume will reset ks to non-RAID.
			R		
F1Help1↓SelESCExit↔Sel	lect Item lect Menu	+/- Enter	Change Values Select⊧Sub-Menu	F9 F10	Setup Defaults Save and Exit

**<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 RAID array.

## Section 4 – Revision History

Version	Date	Author	Changes/Updates
1.0	1/22/2019	Jason Moebs	Initial launch release