# SSD6202 Debian 10.8 Installation Guide

Version 1.00

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# **1 Overview**

This guide explains how to install Debian to an NVMe SSD or array hosted by the SSD6202 controller.

For Debian 10.8

Mirror link: https://www.debian.org/distrib/

# 2 Installing Debian 10.8 to the SSD6202 controller

### **Step 1 Prepare Your Hardware for Installation**

After installing the NVMe SSDs into the SSD6202 controller, you can configure the SSD's as a RAID array, or use them as separate, single disks.

Before installation, you must temporarily remove all the NVMe SSD, which are not physically attached to SSD6202 controller, from your system. These can be reinstalled after Debian is up and running.

**Note: Debian 10.8 requires UEFI Boot support when used with the SSD6202.** If you have other SCSI-class adapters installed, you must make sure the SSD6202 controller UEFI support is loaded first; otherwise the system may be unable to boot. If the SSD6202 is not loading first, try moving it to another PCIe slot.

### **Step 2 Create an Array**

If you would like to configure a RAID array using NVMe SSD's hosted by the SSD6202, please select 1 of the following 5 Methods.

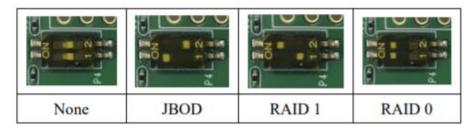
#### Method 1: Create a RAID array via RAID Switch settings

#### Method 1: Create a RAID array via RAID Switch settings

1. Connect two NVMe SSD's to the SSD6202.

Note: make sure that there is no RAID or residual partitions in the two NVMe SSD's.

2. Create RAID arrays via RAID Switch settings.



Note: If you don't want to use RAID Switch to create RAID, please make sure the switch setting is None.

#### Method 2: Create a RAID array using the Motherboard BIOS

Using the SuperMicro H11DSi motherboard as an example:

1. Set 'Boot mode select' to 'UEFI'.

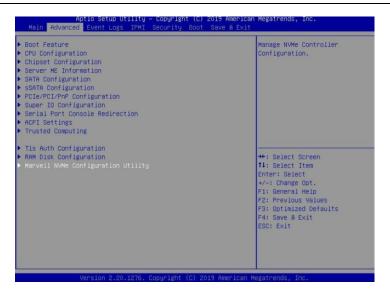
	lity – Copyright (C) 2019 American H Logs Security Boot Save & Exit	Megatrends, Inc.
Boot Configuration		Select boot mode Legacy/UEFI
Boot Mode Select LEGACY to EFI Support	[UEFI] [Disabled]	
FIXED BOOT ORDER Priorities Boot Option #1 Boot Option #2 Boot Option #3	[UEFI Hard Disk] [UEFI AP:UEFI: Built-in EFI Shell]	
Boot Option #4 Boot Option #5	[UEFI CD/DVD] Boot Mode Select k] Legacy UEFI Dual	
Boot Option #6 Boot Option #7 Boot Option #8	(UEFI USB Lan)	
Boot Option #3	(UEFI Network:(B97/D0/FO) UEFI: PXE IPv4 Intel(R) I350 Gigabit Network Connection(MAC:3cecef 40aidc)]	++: Select Screen 11: Select Item Enter: Select +/-: Change Oot. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

2. Next, under "Advanced->PCIe/PCI/PnP Configuration, change "CPU Slot x PCI-E OPROM" to "EFI". "x" refers to the slot number (slot 2 was used when the screenshot was taken). Please consult the motherboard manual for more information.

PCI Bus Driver Version	A5.01.19	Enables or Disables 64bit capable Devices to be
PCI Devices Common Settings:		Decoded in Above 4G Addres
Above 4G Decoding		Space (Only if System
SR-IOV Support	[Disabled]	Supports 64 bit PCI
BME DMA Mitigation	[Disabled]	Decoding).
PCIe ARI Support	[Auto]	
PCIe Spread Spectrum	[Disabled]	
VGA Priority	(Onboard)	
NVMe Firmware Source	[Vendor Defined	
	Firmware]	
M.2(AHCI) Firmware Source	[Vendor Defined	
	Firmware]	
CPU2 SLOT1 PCI-E 3.0 X8 OPROM	[EFI]	
CPU1 SLOT2 PCI-E 3.0 X16 OPROM	[EFI]	
CPU1 SLOT3 PCI-E 3.0 X8 OPROM	[EFI]	
CPU1 SLOT4 PCI-E 3.0 X16 OPROM	[EFI]	++: Select Screen
CPU1 SLOTS PCI-E 3.0 X8 OPROM	[EFI]	14: Select Item
M.2 PCIe x2 OPROM	(EFI)	Enter: Select
Onboard LAN1 Option ROM	(EFI)	+/-: Change Opt.
Onboard LAN1 Option ROM	[EFI]	F1: General Help
P2_NVMe0 OPROM	[EFI]	F2: Previous Values
P2_NVMe1 OPROM	[EFI]	F3: Optimized Defaults
Onboard Video Option ROM	[EFI]	<ul> <li>F4: Save &amp; Exit ESC: Exit</li> </ul>

#### **3.** Creating the RAID array:

a. Select "Advanced→Marvell NVMe Configuration Utility";



**Note:** If you cannot find "**Marvell NVMe Configuration Utility**" in the motherboard BIOS under "**advanced**" interface, you will need to create the array using one of the other four methods.

b. Next, select "Create RAID Configuration". Press"Enter"to open the Configuration Utility.



c. Set "RAID Configuration Menu" to "Enabled", and then select "Goto RAID Config".

Device select [0] Samsung SSD 970 EV0 Plus 500GB	[Enabled]	Goto RAID configuration setting page.
[1] Samsung SSD 970 EVO Plus 500GB	[Enabled]	
		++: Select Screen
		++: Select Screen 14: Select Item Enter: Select
		t↓: Select Item Enter: Select +/-: Change Opt.
		<pre>tl: Select Item Enter: Select</pre>

d. For "Would you like to create this virtual disk?" select "Yes", then select "Goto Namespace Configuration".

Aptio Setup Utility — Cop Advanced	oyright (C)	2019	Ameri
RAID Configuration RAID Level Stripe Size Quick Initialization Name	[RAIDO] [128K] [Quick]		
Would you like to create this virtual disk?	[Yes]		
▶ [Goto Namespace Configuration]			

e. For "Would you like to create those namespace on the virtual disk? " select "Yes", then select "Accept" to create the RAID0 array.

Aptio Setup Utility - Advanced	Copyright (C) 2019
Namespace Configuration	
Namespace Count	1
Maximum VD Size	931GB
Utilized Size	OMB
Remainding Size	931GB
Namespace_1 Size	0
Would you like to create those namespace on the virtual disk?	[Yes]
▶ [Accept]	

f. When the page displays "Successful!" select OK, to exit the menu;

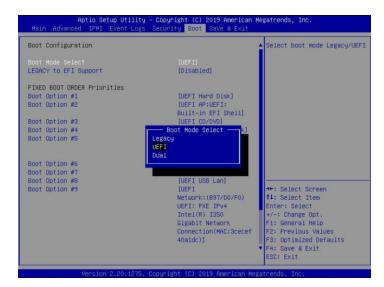
Messages Successful! ≻ OK	
	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1276. Copyright	(C) 2019 American Megatrends, Inc.

#### Method 3: Create RAID in UEFI

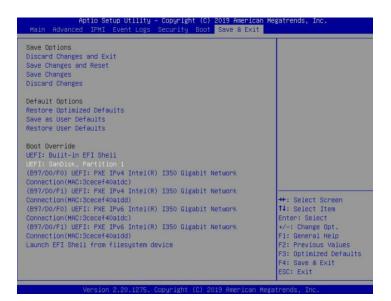
1. First, prepare the UEFI Tool. This file should be copied to the root of a bootable USB flash drive.

Using the SuperMicro H11DSi motherboard as an example:

2. Set 'Boot mode select' to 'UEFI';



3. Choose to boot from the USB flash drive (shown as "**UEFI: SanDisk, Partition 1**" for the example below):

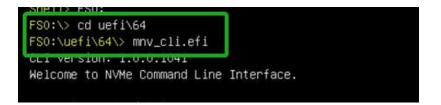


4. After entering the UEFI Shell, select "FS0:" to access the USB flash drive:.

Note: "FS0" is the name of the USB flash drive used for this example



5. Next, locate the "mnv\_cli.efi" program and run it:



*Note*: *if the CLI reports that "No NVMe Controller is found", please see Appendix – Troubleshooting.* 

6. To create a RAID0 array using two NVMe SSD's, enter the following command:

create -r 0 -d 0,1



For more CLI commands, please download the CLI manual from the product page of the official website.

#### Method 4: Create the RAID array using a Windows operating System, and the WebGUI

#### management software:

- 1. This method assumes you have access to a Windows Server 2019 system and have installed the WebGUI software.
- Open the WebGUI, select the Logical tab. Click "Create Array", and configure the array as desired using the drop-down menus and selection boxes. Once configured, click the "Create"button to create the array (the example below shows 2 NVMe SSD's configured as a RAID 0 array).

Create Array			Ci	eate Array		
Logical Device	Array Type:	RAID 0	~			
Rescan	Array Name:	Default				
	Initialization Method:	Quick Init	•			
	Cache Policy:		$\sim$			
	Block Size:	128K	~			
		Select All	Location	Model	Capacity	Max Free
	Available Disks:		<b>1/1</b>	Samsung SSD 970 EVO Plus 500GB	500.10 GB	500.10 GB
			<b>= 1/2</b>	Samsung SSD 970 EVO Plus 500GB	500.10 GB	500.10 GB
	Capacity: (According to the					
	max free space on the selected disks)	Maximum	(MB)			

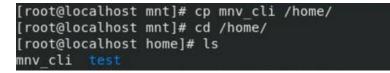
3. Once the array has been created, it will be displayed under Logical Device Information.

Global View	Physical	Logical	Setting	Event	SHI		AL ROUGH
Create Array			Logic	al Devic	e Information		
Logical Device	Name Typ	and the second second		SectorSize	OS Name	Status	
Rescan	VD_0 RA	ID 0 1.00 T	B 128k	512B	HighPoint SSD620	2 Normal	Maintenance
			Physi	cal Devi	e Information		
	Location	Model				Capacity	Max Free
	Location						
	☐ 1/1	Samsung	SSD 970 EV	O Plus 500	GB	500.10 GB	0.00 GB

#### Method 5: Create a RAID array in Redhat 8.3 using the CLI Tool

- a. This method assumes that you have already prepared a Debain system.
- b. Boot the system, and enter the username and password to start Debian.
- c. Copy the CLI package into the root directory of a USB flash drive. Use the following command to copy the mnv\_cli package to home directory:

#### cp mnv\_cli /home



d. Access the home directory and enter the following command to start the CLI:

./mnv\_cli

[root@localhost home]# ./mnv\_cli CLI Version: 1.0.0.1041 Welcome to NVMe Command Line Interface.

e. To create a RAID0 array using Two NVMe SSD's, enter the following command.

create -r 0 -d 0,1



For more CLI commands, please download the CLI manual from the product page of the official website.

## Step 3 Adjust the Motherboard BIOS Settings

Using the Super Micro H11DSi motherboard as an example:

1. In the system BIOS SETUP menu, change 'Boot mode select' to 'UEFI;

	ity – Copyright (C) 2019 American ogs Security <mark>Boot</mark> Save & Exit	Megatrends, Inc.
Boot Configuration		Select boot mode Legacy/UEFI
Boot Mode Select LEGACY to EFI Support	(UEFI) [Disabled]	
FIXED BOOT ORDER Priorities Boot Option #1 Boot Option #2 Boot Option #3 Boot Option #4 Boot Option #5	(UEFI Hard Disk) [UEFI AP:UEFI: Built-in EFI Shell] [UEFI CO/OVO] Boot Mode Select k] Legacy UEFI	
Boot Option #6 Boot Option #7 Boot Option #8 Boot Option #9	Dual (UEFI USB Lan) [UEFI Network:(B97/D0/F0) UEFI: PX4 IPV4	★+: Select Screen 11: Select Item Enter: Select
	Intel(R) 1350 Gigabit Network Connection(MAC:3cecef 40a1dc)]	<ul> <li>+/-: Change Opt.</li> <li>F1: General Help</li> <li>F2: Previous Values</li> <li>F3: Optimized Defaults</li> <li>F4: Save &amp; Exit</li> <li>ESC: Exit</li> </ul>

 Under "Advanced→PCIe/PCI/PnP Configuration, change the setting for "CPU Slot x PCI-E OPROM" to "EFI". "x" refers to the slot number (slot 4 was used when the screenshot was taken). Please consult the motherboard manual for more information.

Aptio Setup Utility - Advanced	Copyright (C) 2019 America	an Megatrends, Inc.
PCI Bus Driver Version	A5.01.19	▲ Enables or Disables 64bit
PCI Devices Common Settings:		Decoded in Above 4G Address
Above 4G Decoding		Space (Only if System
SR-IOV Support	[Disabled]	Supports 64 bit PCI
BME DMA Mitigation	[Disabled]	Decoding).
PCIe ARI Support	[Auto]	COORTING? F
PCIe Spread Spectrum	[Disabled]	
VGA Priority	[Onboard]	
NVMe Firmware Source	[Vendor Defined	
	Firmware]	
M.2(AHCI) Firmware Source	[Vendor Defined	
	Firmware]	
CPU2 SLOT1 PCI-E 3.0 X8 OPROM	[EFI]	
CPU1 SLOT2 PCI-E 3.0 X16 OPROM	[EFI]	
CPU1 SLOT3 PCI-E 3.0 X8 OPROM	[EFI]	
CPU1 SLOT4 PCI-E 3.0 X16 OPROM	[EFI]	++: Select Screen
CPU1 SLOTS PCI-E 3.0 X8 OPROM	[EFI]	14: Select Item
M.2 PCIe x2 OPROM	[EFI]	Enter: Select
Onboard LAN1 Option ROM	(EFI)	+/-: Change Opt.
Onboard LAN1 Option ROM	[EFI]	F1: General Help
P2_NVMe0 OPROM	[EFI]	F2: Previous Values
P2_NVMe1 OPROM	[EFI]	F3: Optimized Defaults
Onboard Video Option ROM	[EFI]	▼ F4: Save & Exit
		ESC: Exit
	nunight (P) 2019 American	

3. Set "Secure Boot " to "Disabled".

Aptio Setup Ut	ility – Copyright (C) 2019 Americar Secure Boot
System Mode	Setup
Secure Boot	(Disabled) Not Active
Secure Boot Mode CSM Support ▶ Restore Factory Keys ▶ Reset To Setup Mode ▶ Key Management	[Custom] [Enabled]

### **Step 4 Install Debian 10.8**

- 1. Boot from the Debian 10.8 Installation DVD (UEFI mode).
  - a. When the Installation screen appears, please select " **Graphcal install** " to install Debian 10.8.



2. When the installation switches to the graphical interface, choose "**Guided-use entire disk**" and then click "**continue**" to select the target disk for installation.

Partition disks	
The installer can guide you through partitioning a disk (using different st prefer, you can do it manually. With guided partitioning you will still have customise the results.	
If you choose guided partitioning for an entire disk, you will next be aske Partitioning method:	d which disk should be used.
Guided - use entire disk	
Guided - use entire disk and set up LVM	
Guided - use entire disk and set up encrypted LVM	
Manual	
Screenshot	Go Back Continue

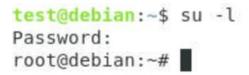
3. Select the RAID array as the target disk to install the Debian 10.8. You can then proceed normally - follow the onscreen prompts to install Debian 10.8 to the array.

eally want to make the chan Select disk to partition:	you select will be erased, but not ges.	before you have confirmed th	at you
dev/nvme0n1 - 2.0 TB gdghf			
	×		
	×		

4. After installation is complete, select the appropriate startup item to enter the system.



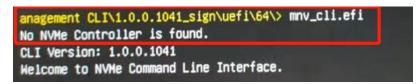
5. Enter the user name and password to log into Debian 10.8.



# Appendix

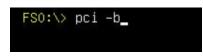
## Troubleshooting

- 1. The CLI reports that "No NVMe Controller is found"
  - 1) After starting "**mnv-cli.efi**", the utility reports "**No NVME Controller is found**" (as shown below):

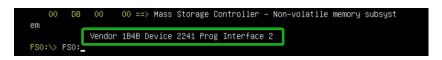


2) You will need check and make sure the system recognizes the SSD6202. First, enter the following command using the UEFI tool:

pci -b



3) If the interface reports "Vendor 1B4B Device 2241 Prog Interface 2", the SSD6202 is recognized by the motherboard, but cannot support the UEFI tool. In this case, you will need to create the array using one of the other methods described in this manual (BIOS, CLI or WebGUI).



- 4) If the interface does not display "**Vendor 1B4B Device 2241 Prog Interface 2**", then the motherboard does not recognize the SSD6202.
  - a. Power down the system, and make sure the SSD6202 is securely installed into the PCIe slot
  - b. Boot the system and enter the motherboard BIOS utility. Make sure the required BIOS settings are still enabled (refer to page 1)

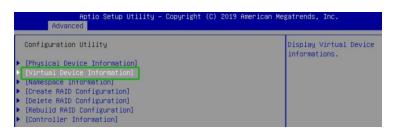
#### 2. Check the RAID create via RAID Switch settings is created or not

#### Method 1: Check in BIOS Utility

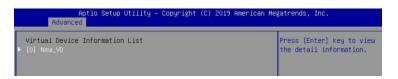
- 1) Set the Slot Storage OPROM of SSD6202 in the motherboard BIOS to UEFI.
- 2) Set 'Boot mode select' to 'UEFI'.
- 3) From the motherboard BIOS menu, select "Marvell NVME Configuration Utility":

Aptio Setup Utility – Copyright (C) 2019 American Main Advanced IPMI Event Logs Security Boot Save & Exit	Megatrends, Inc.
<ul> <li>Boot Feature</li> <li>Trusted Computing</li> <li>PSP Firmware Versions</li> <li>ACPI Settings</li> <li>Super 10 Configuration</li> <li>Serial Port Console Redirection</li> <li>CPU Configuration</li> <li>NB Configuration</li> <li>VBE Configuration</li> <li>USB Configuration</li> <li>HTTP BOOT Configuration</li> <li>Network Configuration</li> <li>Intel(R) 1350 Gigabit Network Connection - 3C:EC:EF:40:A1:DD</li> <li>Driver Health</li> </ul>	Manage NVMe Controller Configuration. ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Vancian 2 20 1275 Convertent (D) 2018 American Me	wateende Tee

4) Select the "Virtual device information"



5) Select the "[0] New\_VD":

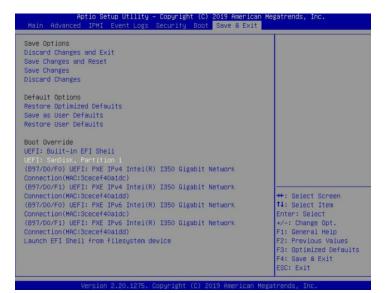


6) As shown in the figure below, you can see the RAID0 information.

Advanced Advanced	
Detail Information	
ID	0
Name	New_VD
Status	Functional
BGA Type	NONE
RGA Status	NONE
RAID Level	RAIDO
Member Count	2
Member ID	[0] [1]
Stripe Block	128K
Size	931GB

#### Method 2: check in UEFI

1. Choose to boot from the USB flash drive (shown as "UEFI: SanDisk, Partition 1" for the example below):



2. Next, locate the "mnv\_cli.efi" program and run it:



3. you can recognized the RAIDO by entering the following command:

VD ID:	0
Name:	New_VD
Status:	Functional
Importable:	No
RAID Mode:	RAIDO
size:	931 GB
PD Count:	2
PDs:	0 1
Stripe Block Size:	128K
Sector Size:	512 bytes
Total # of VD:	1

#### Method 3: check in a windows operating System

- 1. This method assumes you have access to a Windows Server 2019 system and have installed the WebGUI software.
- 2. Open the WebGUI software, it will be displayed under Logical Device Information.

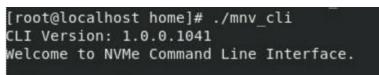
#### info -o vd

Create Array	Logical Device Information						
Logical Device	Name Ty	A CONTRACTOR OF A CONTRACTOR A	BlockSize	SectorSize	OS Name	Status	The second s
Rescan	VD_0 RA	AID 0 1.00 TB	128k	512B	HighPoint SSD620	2 Normal	Maintenance
			Physi	cal Devic	e Information		
	Location	Model				Capacity	Max Free
	<b>1/1</b>	Samsung S	SD 970 EV	O Plus 500	GB	500.10 GB	0.00 GB
	= 1/2	-		O Plus 500		500.10 GB	0.00 GB

#### Method 4: Check in a CLI

- 1. This method assumes that you have already prepared a Debian system.
- 2. Refer to "Step 2 Create an array→Method 5" to install CLI tool in the system.
- 3. Run CLI by the following command:

./mnv\_cli



4. you can recognized the RAID0 by entering the following command:

info -o vd

> info −o vd	
VD ID:	0
Name:	New_VD
Status:	Functional
Importable:	No
RAID Mode:	RAIDO
size:	931 GB
PD Count:	2
PDs:	0 1
Stripe Block Size:	128K
Sector Size:	512 bytes
Total # of VD:	1