

# **SSD6202 Proxmox VE 6.3 Installation Guide**

Version 1.00

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# 1 Overview

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

Proxmox6.3 - Mirror link: <https://www.proxmox.com/en/downloads>

## 2 Installing Proxmox VE 6.3 on 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 Proxmox is up and running.

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**Note: Proxmox VE 6.3 only supports Legacy Boot 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.

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### Step 2 Create an Array

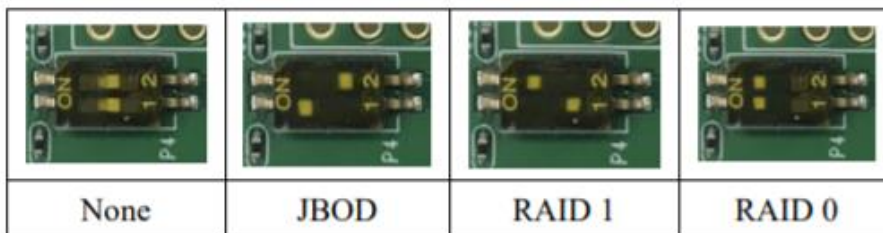
If you would like to configure a RAID array using NVMe SSD's hosted by the SSD6202, please select 1 of the following 5 Methods.

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

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.

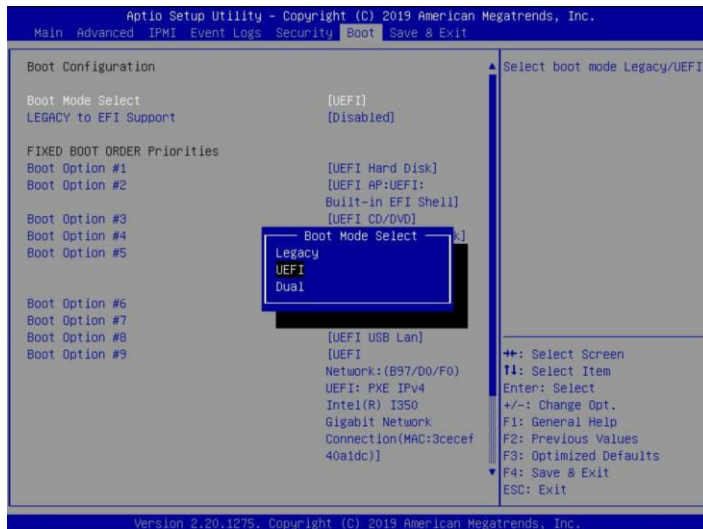


*Note: If you don't want to use RAID Switch to create RAID, please make sure the switch setting is None.*

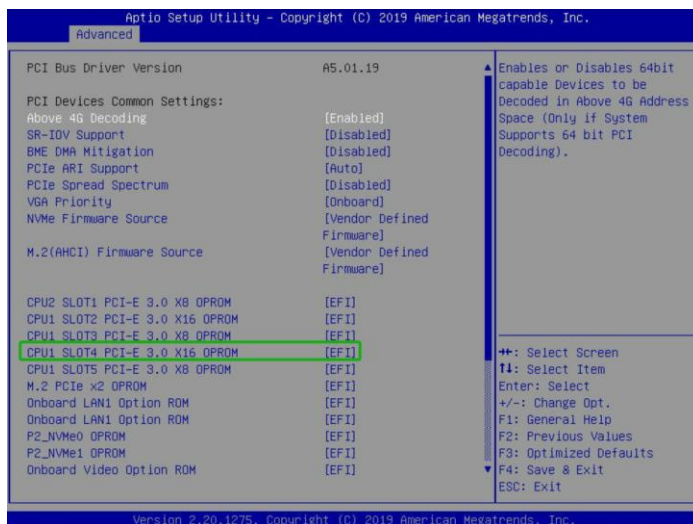
#### Method 2: Create a RAID array using the Motherboard BIOS

*Using the SuperMicro H11DSi motherboard as an example:*

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

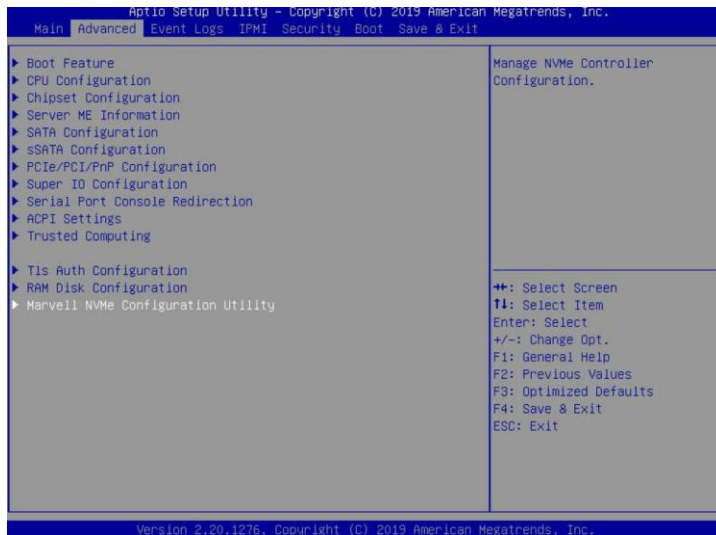


2. Next, under "Advanced->PCIe/PCI/PnP Configuration, change “CPU Slot x PCI-E OPROM” to "EFI". “x” refers to the slot number (slot 2 was used when the screenshot was taken). Please consult the motherboard manual for more information.



### 3. Creating the RAID array:

- a. Select “Advanced→Marvell NVMe Configuration Utility” ;

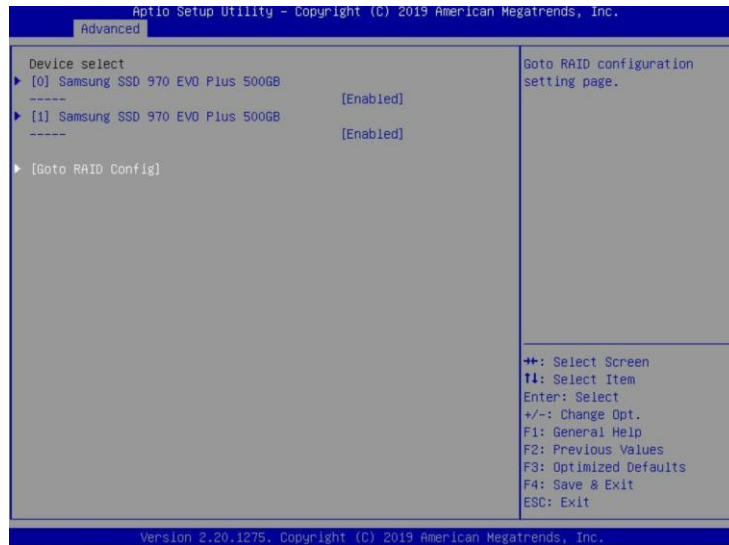


**Note:** If you cannot find “**Marvell NVMe Configuration Utility**” in the motherboard BIOS under “**advanced**” interface, you will need to create the array using one of the other three methods.

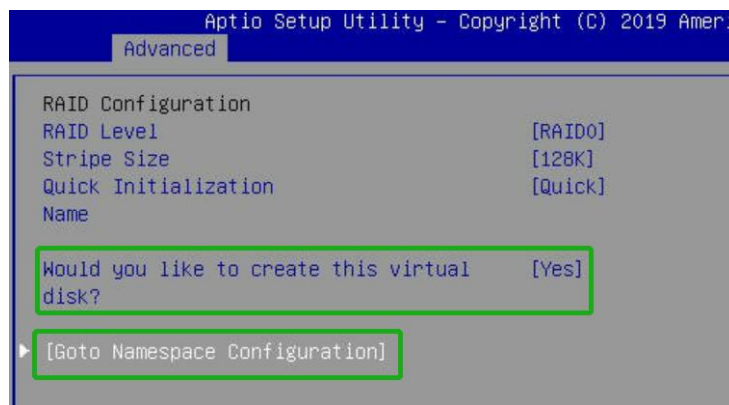
- b. Next, select “**Create RAID Configuration**”. Press “**Enter**” to open the Configuration Utility.



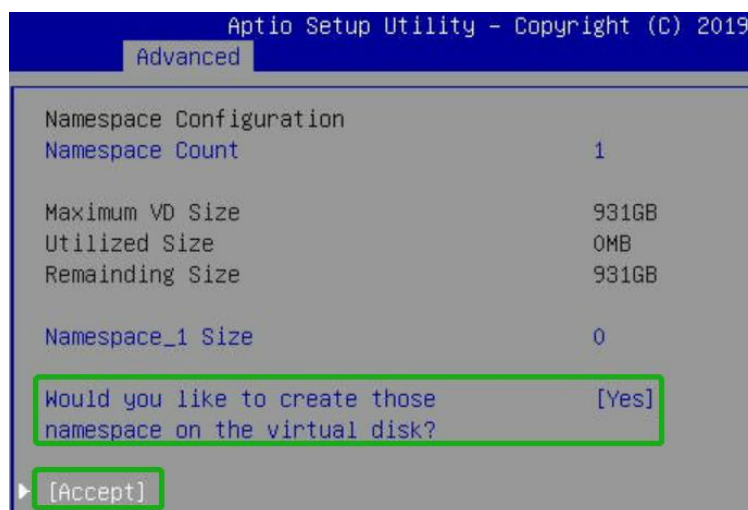
- c. Set “**RAID Configuration Menu**” to “**Enabled**”, and then select “**Goto RAID Config**”.



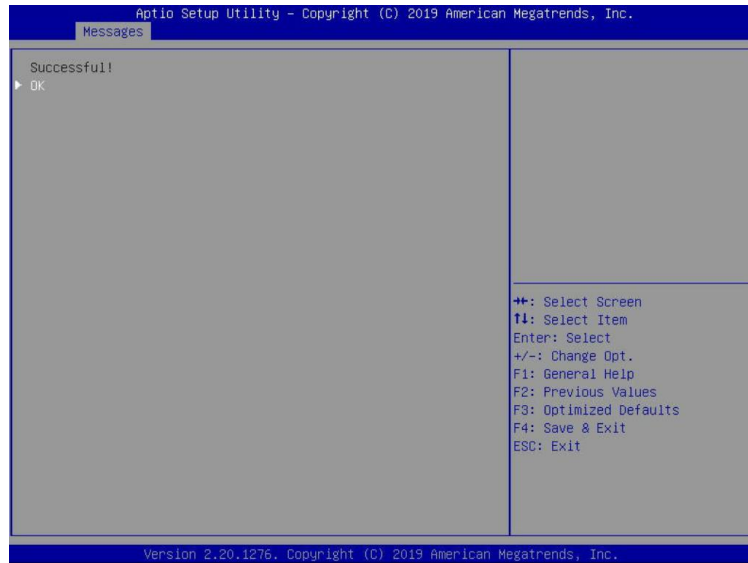
- d. For “**Would you like to create this virtual disk?**” select “**Yes**”, then select “**Goto Namespace Configuration**”.



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



- f. When the page displays “**Successful!**” select **OK**, to exit the menu;

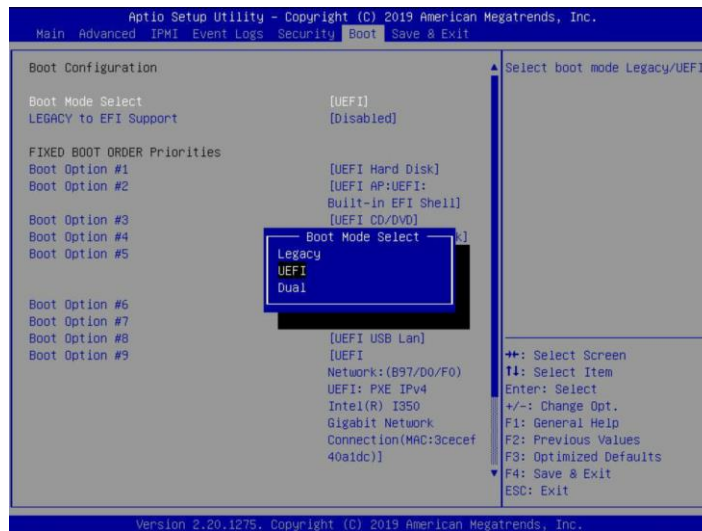


### Method 3: Create RAID in UEFI

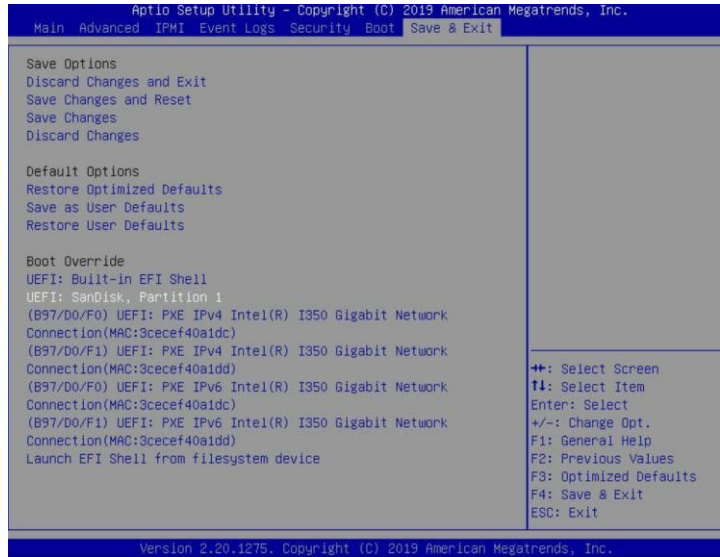
1. First, prepare the UEFI Tool. This file should be copied to the root of a bootable USB flash drive.

*Using the SuperMicro H11DSi motherboard as an example:*

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

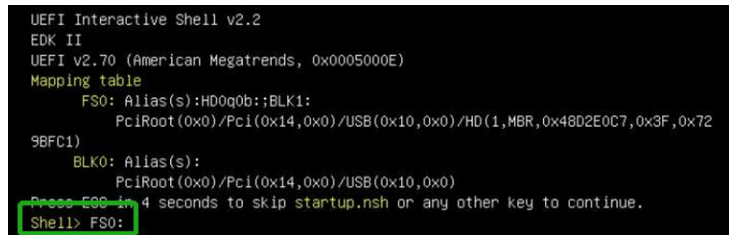


3. Choose to boot from the USB flash drive (shown as "UEFI: SanDisk, Partition 1" for the example below):

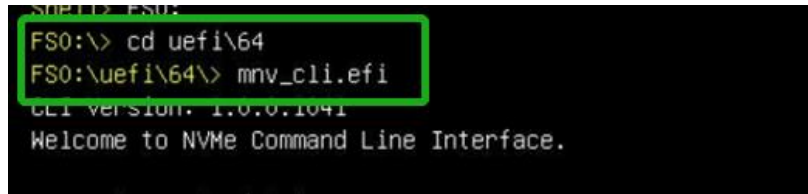


4. After entering the UEFI Shell, select "FS0:" to access the USB flash drive:.

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



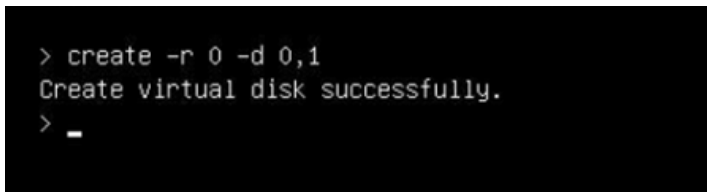
5. Next, locate the "mnv\_cli.efi" program and run it:



*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.
2. 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).

The screenshot shows the 'Create Array' configuration interface in the Proxmox WebGUI. The 'Logical' tab is selected. The configuration includes:

- Array Type: RAID 0
- Array Name: Default
- Initialization Method: Quick Init
- Cache Policy: (empty)
- Block Size: 128K
- Available Disks: Two Samsung SSD 970 EVO Plus 500GB disks are selected (Location 1/1 and 1/2).
- Capacity: Maximum (MB)

A 'Create' button is visible at the bottom right of the configuration area.

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

The screenshot shows the 'Logical Device Information' page in the Proxmox WebGUI. The 'Logical' tab is selected. The page displays the following information:

Logical Device Information							
Name	Type	Capacity	BlockSize	SectorSize	OS Name	Status	
VD_0	RAID 0	1.00 TB	128k	512B	HighPoint SSD6202	Normal	<a href="#">Maintenance</a>

Physical Device Information				
Location	Model	Capacity	Max Free	
1/1	Samsung SSD 970 EVO Plus 500GB	500.10 GB	0.00 GB	
1/2	Samsung SSD 970 EVO Plus 500GB	500.10 GB	0.00 GB	

#### Method 5: Create a RAID array in Proxmox VE 6.3 using the CLI Tool

1. This method assumes that you have already prepared a Proxmox VE 6.3 system.
2. Boot the system, and enter the username and password to start Proxmox VE 6.3.

```
Welcome to the Proxmox Virtual Environment. Please use your web browser to
configure this server - connect to:

https://192.168.108.200:8006/

-----
shaonian login: root
password:
Linux shaonian 5.4.73-1-pve #1 SMP PVE 5.4.73-1 (Mon, 16 Nov 2020 10:52:16 +0100) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
root@shaonian:~#
```

3. 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`**

```
[root@localhost 64]# ls
mnv_cli
[root@localhost 64]# cp mnv_cli /home/
```

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

**`./mnv_cli`**

```
[root@localhost 64]# cd /home/
[root@localhost home]# ./mnv_cli
CLI Version: 1.0.0.1041
Welcome to NVM Command Line Interface.
>
```

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

**`create -r 0 -d 0,1`**

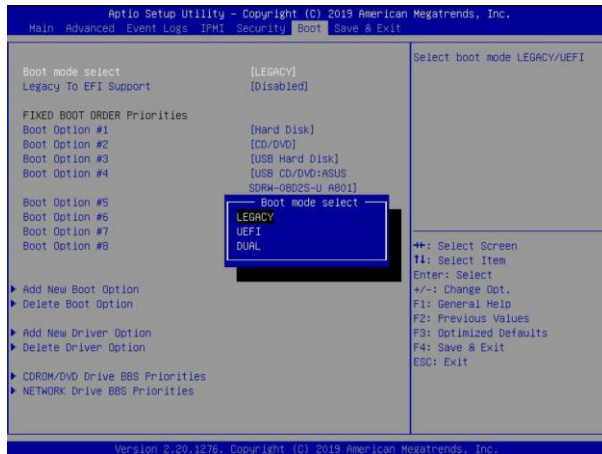
```
> create -r 0 -d 0,1
Create virtual disk successfully.
> -
```

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

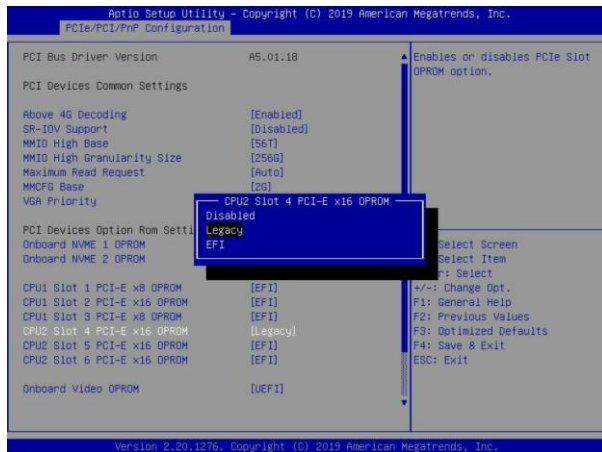
## Step 3 Adjust the Motherboard BIOS Legacy Settings

*Using the SuperMicro H11DSi motherboard as an example:*

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



- Next, under ‘**Advanced->PCIe/PCI/PnP Configuration**’ change the setting for “**CPU Slot x PCI-E OPRM**” to ‘**Legacy**’. “**x**” refers to the slot number (slot 4 was used when the screenshot was taken). Please consult the motherboard manual for more information.



- Disable ‘**Secure Boot**’, set ‘**Secure Boot**’ to ‘**Disabled**’;



## Step 4 Install Proxmox VE 6.3

- Boot from the Installation DVD (Leagcy mode).
- When the Installation screen appears, please select “**Install Proxmox VE**” to install.

Proxmox VE 6.3 (iso release 1) - <https://www.proxmox.com/>



Welcome to Proxmox Virtual Environment

- Install Proxmox VE
- Install Proxmox VE (Debug mode)
- Rescue Boot
- Test memory (Legacy BIOS)

3. When the EULA is displayed select "**I Agree**" to continue:

The image shows a screenshot of the Proxmox VE Installer's End User License Agreement (EULA) screen. At the top, there is a dark banner with the Proxmox logo and the text 'Proxmox VE Installer'. Below this, the title 'END USER LICENSE AGREEMENT (EULA)' is displayed in orange. The main content area contains the full text of the EULA, which is a legal document detailing the terms of use for the Proxmox Virtual Environment software. At the bottom of the screen, there are three buttons: 'Abort' on the left, 'Previous' in the middle, and 'I agree' on the right. The 'I agree' button is highlighted, indicating it is the selected option.

**END USER LICENSE AGREEMENT (EULA)**

END USER LICENSE AGREEMENT (EULA) FOR PROXMOX VIRTUAL ENVIRONMENT (PROXMOX VE)

By using Proxmox VE software you agree that you accept this EULA, and that you have read and understand the terms and conditions. This also applies for individuals acting on behalf of entities. This EULA does not provide any rights to Support Subscriptions Services as software maintenance, updates and support. Please review the Support Subscriptions Agreements for these terms and conditions. The EULA applies to any version of Proxmox VE and any related update, source code and structure (the Programs), regardless of the the delivery mechanism.

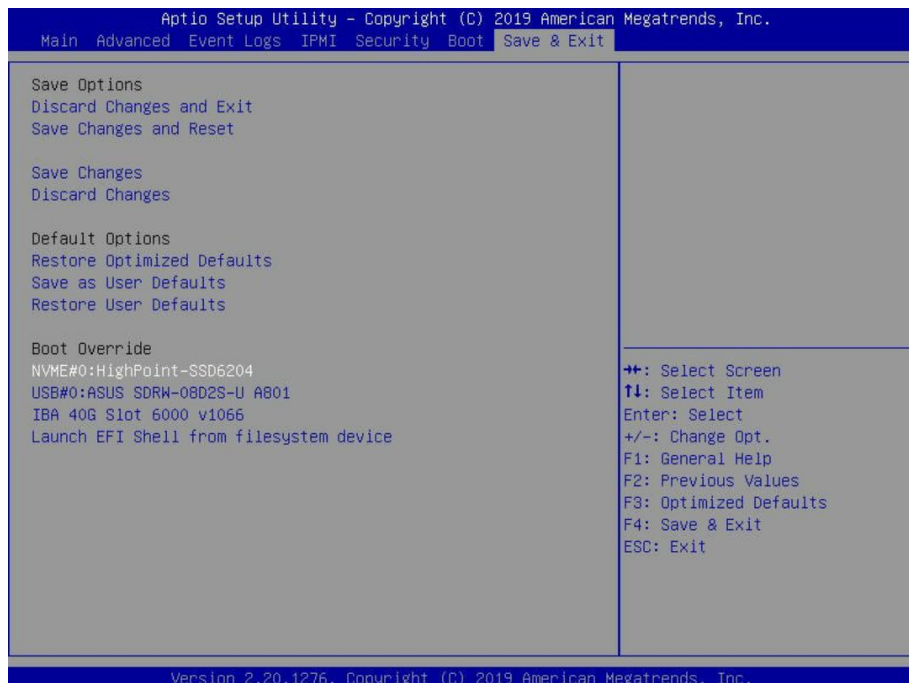
1. License. Proxmox Server Solutions GmbH (Proxmox) grants to you a perpetual, worldwide license to the Programs pursuant to the GNU Affero General Public License V3. The license agreement for each component is located in the software component's source code and permits you to run, copy, modify, and redistribute the software component (certain obligations in some cases), both in source code and binary code forms, with the exception of certain binary only firmware components and the Proxmox images (e.g. Proxmox logo). The license rights for the binary only firmware components are located within the components. This EULA pertains solely to the Programs and does not limit your rights under, or grant you rights that supersede, the license terms of any particular component.
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3. Limitation of Liability. To the maximum extent permitted under applicable law, under no

Abort Previous I agree

- Next, select the **target startdisk**; select the array you configured previously.



- Follow the onscreen prompts to install Proxmox VE 6.3.
- After installation is complete, select the appropriate startup item to boot the system.



7. Enter the username and password, to log into Proxmox.

```
-----  
Welcome to the Proxmox Virtual Environment. Please use your web browser to  
configure this server - connect to:  
  
https://192.168.108.200:8006/  
-----  
  
shaonian login: root  
Password:  
Linux shaonian 5.4.73-1-pve #1 SMP PVE 5.4.73-1 (Mon, 16 Nov 2020 10:52:16 +0100) x86_64  
  
The programs included with the Debian GNU/Linux system are free software;  
the exact distribution terms for each program are described in the  
individual files in /usr/share/doc/*/copyright.  
  
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent  
permitted by applicable law.  
root@shaonian:~#
```

# 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):

```

management CLI\1.0.0.1041_sign\uefi\64\> mnv_cli.efi
No NVMe Controller is found.
CLI Version: 1.0.0.1041
Welcome to NVMe Command Line Interface.

```

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

**pci -b**

```

FS0:\> 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).

```

00 D8 00 00 ==> Mass Storage Controller - Non-volatile memory subsystem
em
Vendor 1B4B Device 2241 Prog Interface 2
FS0:\> FS0:_

```

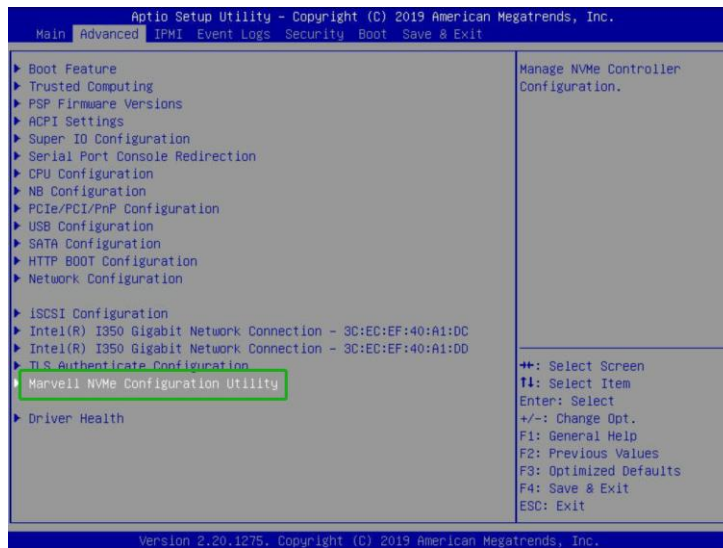
- 4) If the interface does not display “**Vendor 1B4B Device 2241 Prog Interface 2**”, then the motherboard does not recognize the SSD6202.
  - a. Power down the system, and make sure the SSD6202 is securely installed into the PCIe slot
  - b. Boot the system and enter the motherboard BIOS utility. Make 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

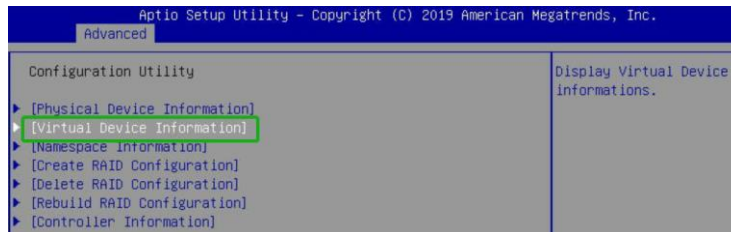
#### Method 1: Check in BIOS Utility

- 1) Set the Slot Storage OPROM of SSD6202 in the motherboard BIOS to **UEFI**.
- 2) Set ‘**Boot mode select**’ to ‘**UEFI**’.

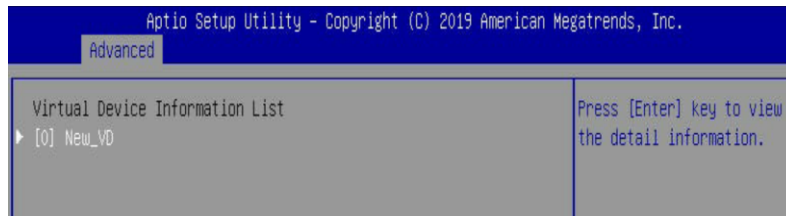
- 3) From the motherboard BIOS menu, select “**Marvell NVME Configuration Utility**”:



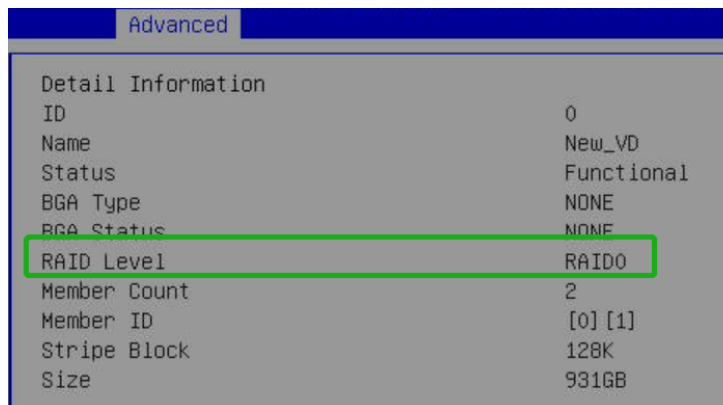
- 4) Select the “**Virtual device information**”



- 5) Select the “[0] **New\_VD**”



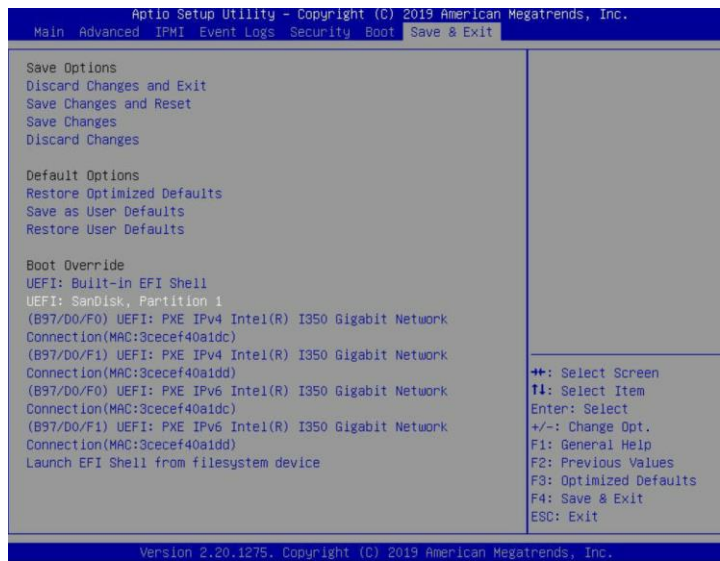
- 6) As shown in the figure below, you can see the RAID0 information:



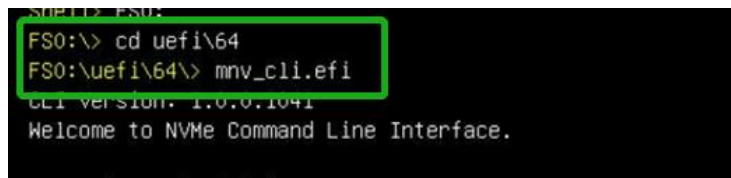
**Method 2: check in UEFI**

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



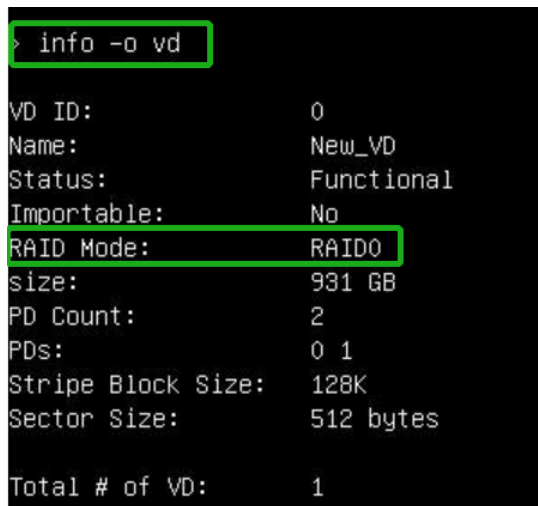


- Next, locate the “**mnv\_cli.efi**” program and run it:



- you can recognized the RAID0 by entering the following command:

**info -o vd**



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

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



The screenshot shows the Proxmox VE interface in the Logical View. The 'Logical Device Information' table lists a RAID 0 array named 'VD\_0' with a capacity of 1.00 TB, block size of 128k, and sector size of 512B. The OS name is 'HighPoint SSD6202' and the status is 'Normal'. Below it, the 'Physical Device Information' table shows two Samsung SSD 970 EVO Plus 500GB drives at locations 1/1 and 1/2, each with a capacity of 500.10 GB and 0.00 GB free.

Logical Device Information							
Name	Type	Capacity	BlockSize	SectorSize	OS Name	Status	
VD_0	RAID 0	1.00 TB	128k	512B	HighPoint SSD6202	Normal	<a href="#">Maintenance</a>

Physical Device Information			
Location	Model	Capacity	Max Free
1/1	Samsung SSD 970 EVO Plus 500GB	500.10 GB	0.00 GB
1/2	Samsung SSD 970 EVO Plus 500GB	500.10 GB	0.00 GB

#### Method 4: check in a CLI

1. This method assumes that you have already prepared a Proxmox 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**

```
[root@localhost home]# ./mnv_cli
CLI Version: 1.0.0.1041
Welcome to NVMe Command Line Interface.
```

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:      RAID0
size:           931 GB
PD Count:      2
PDs:           0 1
Stripe Block Size: 128K
Sector Size:   512 bytes
Total # of VD: 1
```