SSD6202 VMware vSphere Hypervisor (ESXi) 7.0b

Installation Guide

Version 1.00

Last updated on July 22, 2021

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1. Overview

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

For VMware vSphere (ESXi) 7.0b

Mirror link: https://my.vmware.com/en/web/vmware/downloads/#all_products

2. Installing VMware vSphere Hypervisor (ESXi) 7.0b 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 VMware is up and running.

Note: VMware7.0b only supports UEFI 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.

Step 2 Create an Array

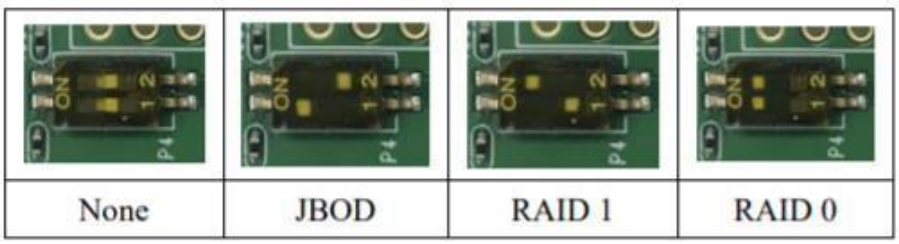
If you would like to configure a RAID array using NVMe SSD's hosted by the SSD6202, please select 1 of the following 5 Methods.

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.

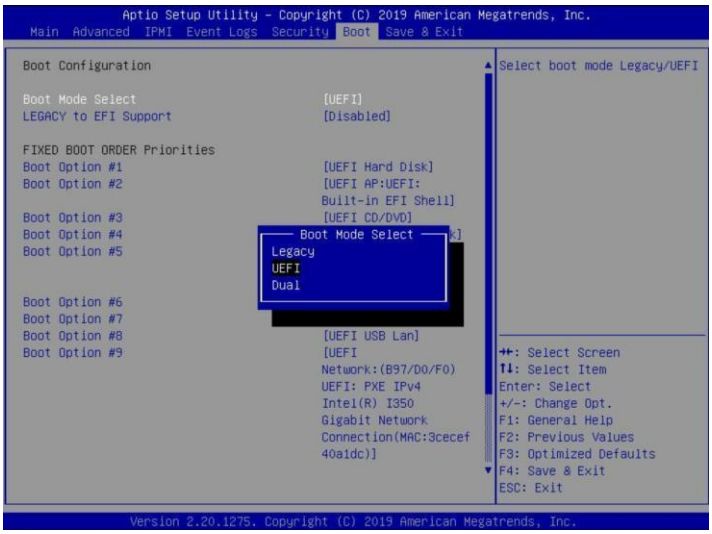


Note: If you don't want to use RAID Switch to create RAID, please make sure the switch setting is 'None'.

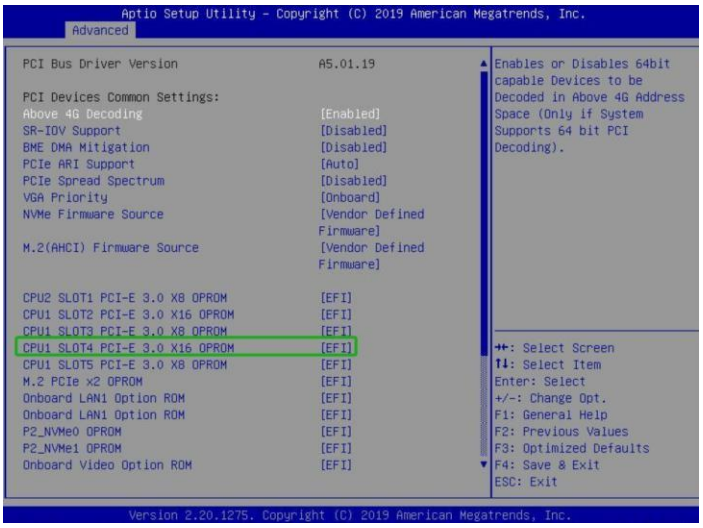
Method 2：Create a RAID array using the Motherboard BIOS

Using the SuperMicro H11DSi motherboard as an example:

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

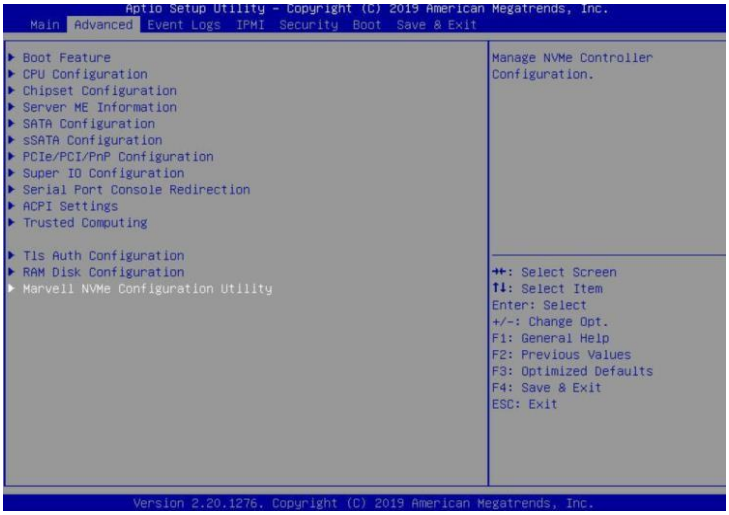


2. Next, under "**Advanced->PCIe/PCI/PnP Configuration**, change **"CPU Slot x PCI-E OPROM**" to "**EFI**". "**x**" refers to the slot number (slot 4 was used when the screenshot was taken). Please consult the motherboard manual for more information.



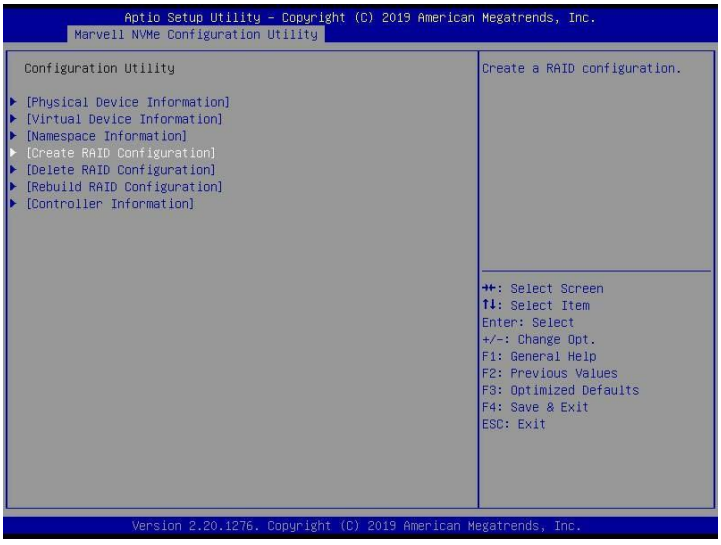
3. **Creating the RAID array:**

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

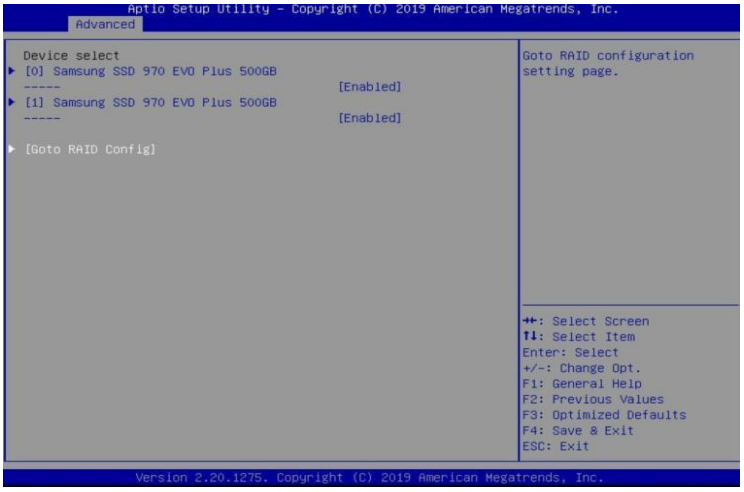


Note: If you cannot find "**Marvell NVMe Configuration Utility**" in the motherboard BIOS under "**advanced**" interface, you will need to create the array using one of the other four methods.

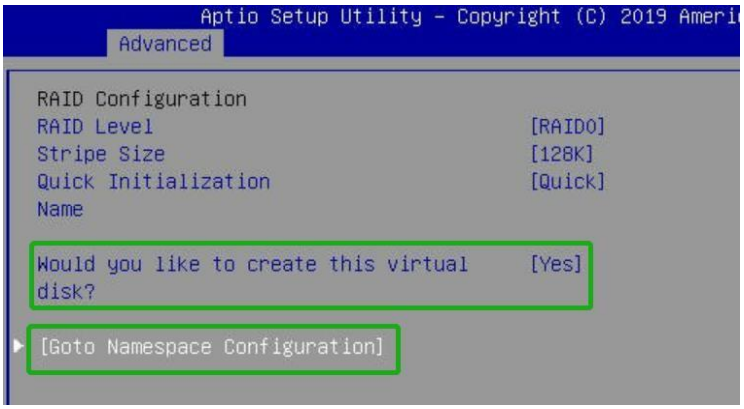
b. Next, select "Create RAID Configuration". Press "Enter" to open the Configuration Utility.



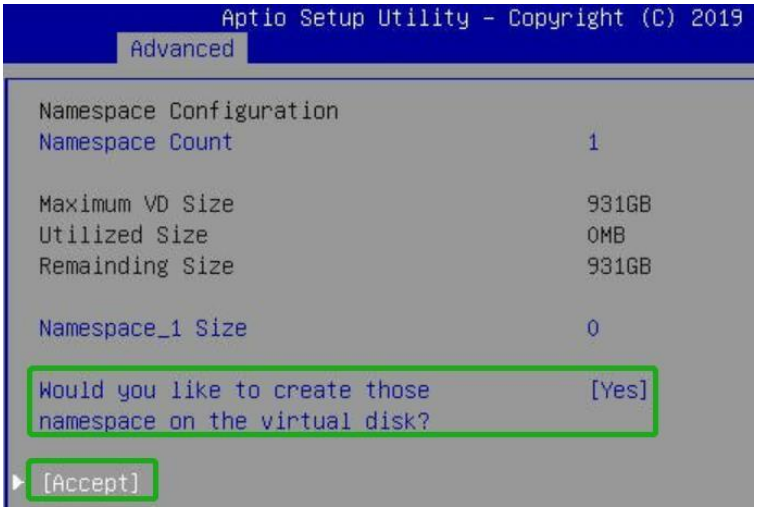
c. Set "**RAID Configuration Menu**" to "**Enabled**", and then select "**Goto RAID Config**".



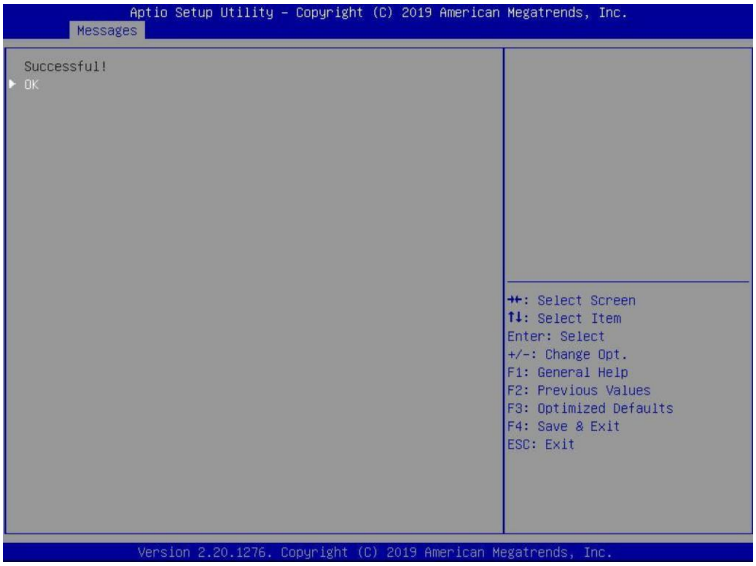
d. For "**Would you like to create this virtual disk？**" select "**Yes**", then select "**Goto Namespace Configuration**".



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;

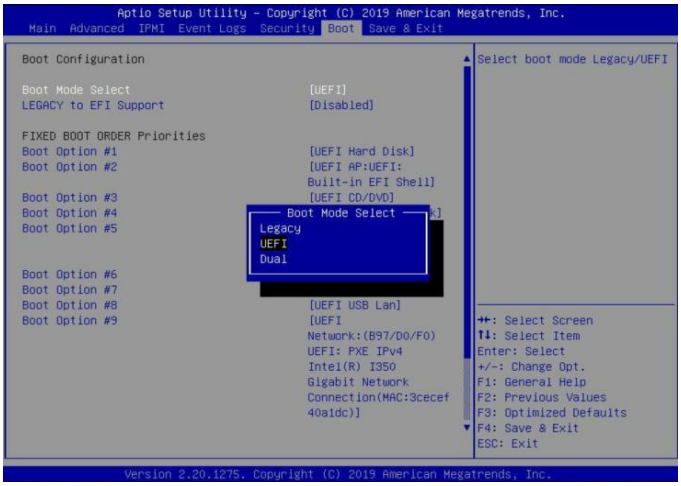


Method 3：Create RAID in UEFI

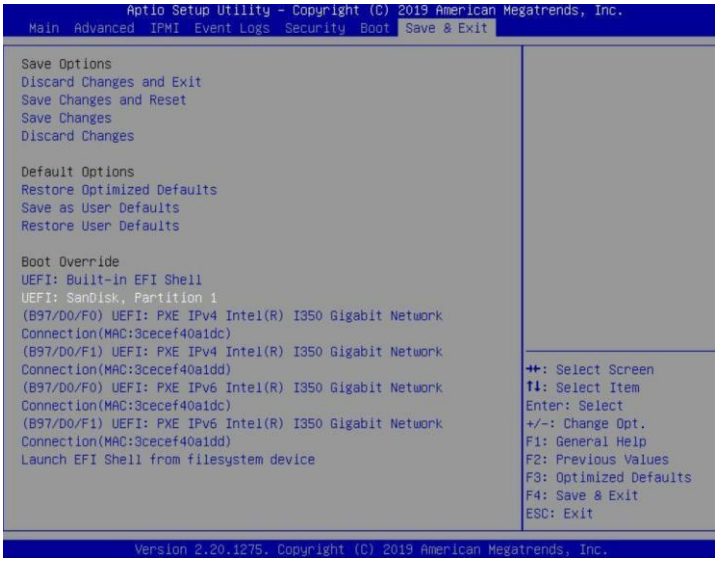
1. First, prepare the UEFI Tool. This file should be copied to the root of a bootable USB flash drive.

   Using the SuperMicro H11DSi motherboard as an example:

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

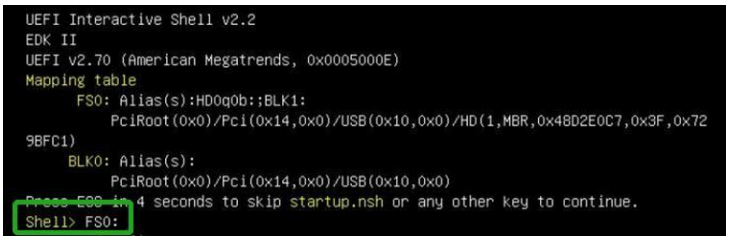


3. Choose to boot from the USB flash drive (shown as "**UEFI：SanDisk，Partition 1**" for the example below):



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:

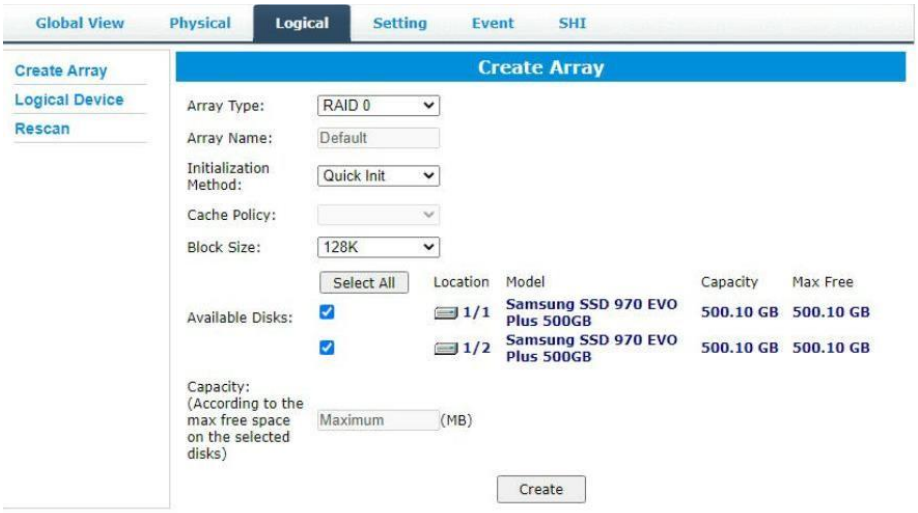
   create -r 0 -d 0,1

   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).



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

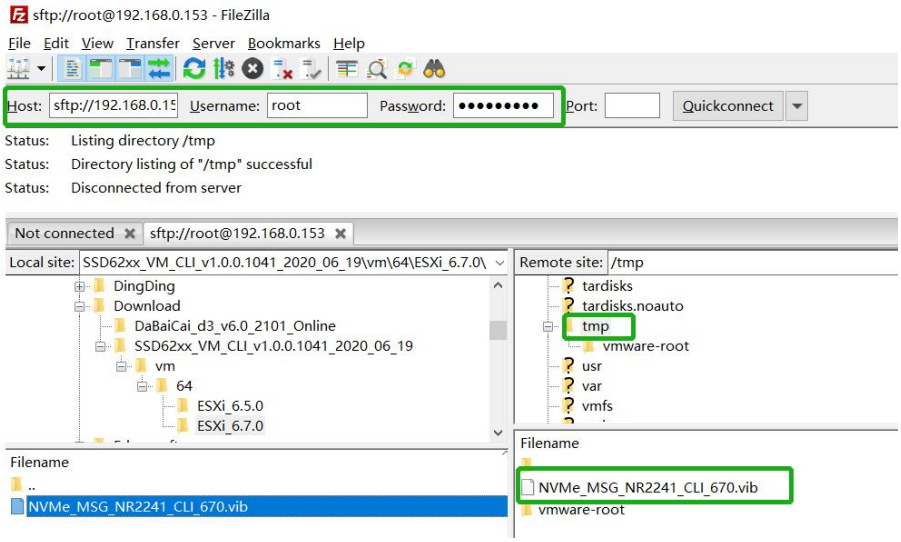
Method 5：Create a RAID array using VMware vSphere (ESXi) 7.0b via CLI

1. This method requires you to prepare the VMware vSphere system and download the SSD6200 VMware CLI software package from the HighPoint official website.

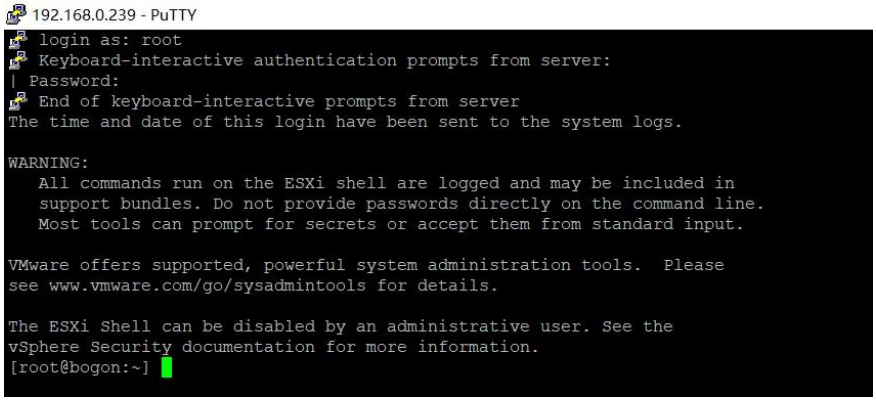
2. Boot the system, and enter the username and password to start VMware.

3. Please download the file transfer tool and upload the SSD6200 VMware CLI to the tmp directory under VMware;

   Take FileZilla as an example, output the IP address and password of the virtual machine, and upload the file to the tmp directory of the virtual machine.

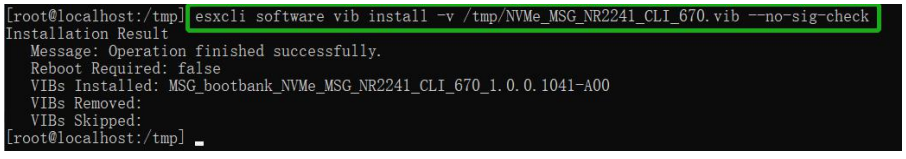


4. Open VMware vSphere (ESXi) 7.0b Shell (Alt+F1) locally or log in via SSH.



5. Install SSD6200 series CLI software package using the following command: Take NVMe_MSG_NR2241_CLI_670 as an example.

   esxcli software vib install -v /tmp/NVMe_MSG_NR2241_CLI_670. vib --no-sig-check



6. Restart the system and use the following command to verify that NVMe_MSG_NR2241_CLI_670 was installed (as shown below)： **esxcli software vib list**

```
[root@localhost:/tmp] esxcli software vib list
Name                           Version                                   Vendor  Acceptance Level  Install Date
-----------------------------  ----------------------------------------  ------  ----------------  ------------
NVMe_MSG_NR2241_CLI_670        1.0.0.1041-A00                            MSG     PartnerSupported  2021-07-22
atlantic                       1.0.3.0-8vmw.702.0.0.17867351             VMW     VMwareCertified   2021-07-22
bnxtnet                        216.0.50.0-34vmw.702.0.0.17867351         VMW     VMwareCertified   2021-07-22
bnxtroce                       216.0.58.0-19vmw.702.0.0.17867351         VMW     VMwareCertified   2021-07-22
brcmfcoe                       12.0.1500.1-2vmw.702.0.0.17867351         VMW     VMwareCertified   2021-07-22
brcmnvmefc                     12.8.298.1-1vmw.702.0.0.17867351          VMW     VMwareCertified   2021-07-22
elxiscsi                       12.0.1200.0-8vmw.702.0.0.17867351         VMW     VMwareCertified   2021-07-22
elxnet                         12.0.1250.0-5vmw.702.0.0.17867351         VMW     VMwareCertified   2021-07-22
i40enu                         1.8.1.136-1vmw.702.0.0.17867351           VMW     VMwareCertified   2021-07-22
iavmd                          2.0.0.1152-1vmw.702.0.0.17867351          VMW     VMwareCertified   2021-07-22
icen                           1.0.0.10-1vmw.702.0.0.17867351            VMW     VMwareCertified   2021-07-22
igbn                           1.4.11.2-1vmw.702.0.0.17867351            VMW     VMwareCertified   2021-07-22
irdman                         1.3.1.19-1vmw.702.0.0.17867351            VMW     VMwareCertified   2021-07-22
```

7. Next, enter the following command to check whether the SSSD6204 is recognized. If it displays the phrase “Marvell Technology Group Ltd”, the SSD6204 is recognized by VMware. **esxcfg-scsidevs -a**

```
(0000:00:17.0) Intel Corporation Union Point-H AHCI Controller
(0000:b3:00.0) Marvell Technology Group Ltd. <class> Non-Volatile memory controller
```

8. Enter the**/opt/marvell/nvme** directory.

```
[root@localhost:~] cd /opt/marvell/nvme/
[root@localhost:/opt/marvell/nvme] ls
mnv_cli
[root@localhost:/opt/marvell/nvme]
```

9. enter the following command to run cli: **./mnv_cli**

```
[root@DESKTOP-7FT8SGF:/opt/marvell/nvme] ./mnv_cli
CLI Version: 1.0.0.1039
Welcome to NVMe Command Line Interface.

>
```

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

    vd -a create -r 0 -d 0,1

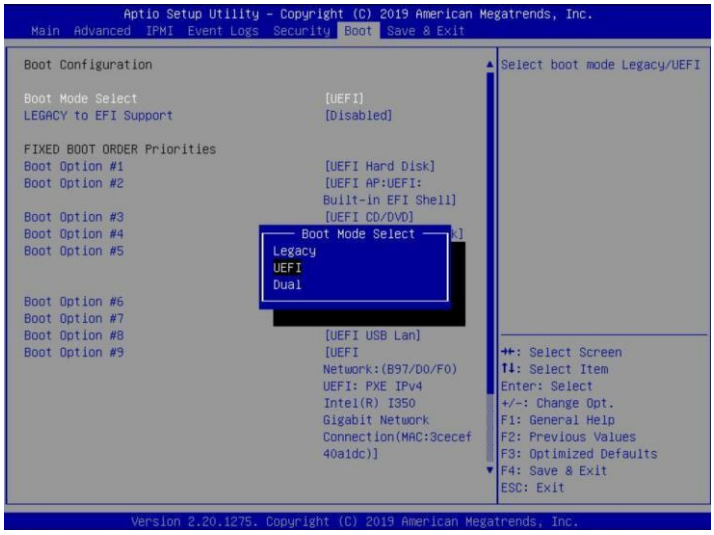
```
> vd -a create -r 0 -d 0,1
cmd success
>
```

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

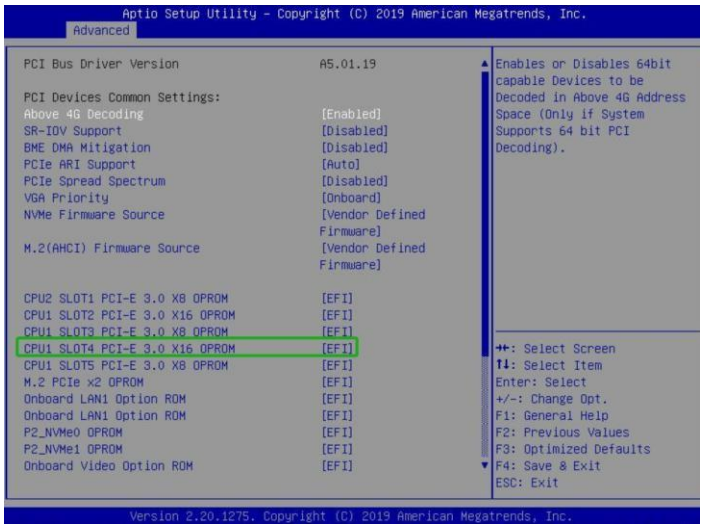
Step 3 Adjust the Motherboard BIOS Settings

Using the Super Micro H11DSi motherboard as an example:

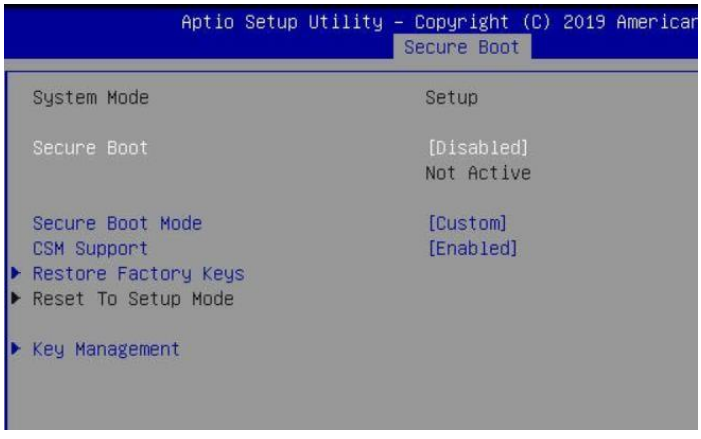
1. In the system BIOS SETUP menu, change ‘**Boot mode select’** to ‘**UEFI**;



2. 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.



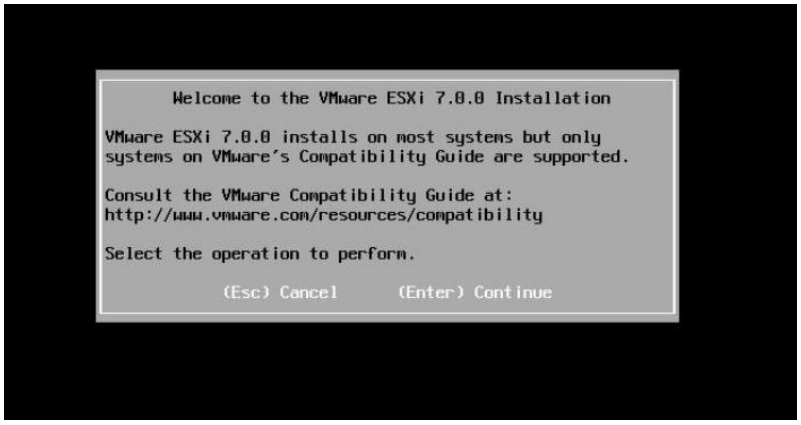
3. Set "**Secure Boot**" to "**Disabled**".



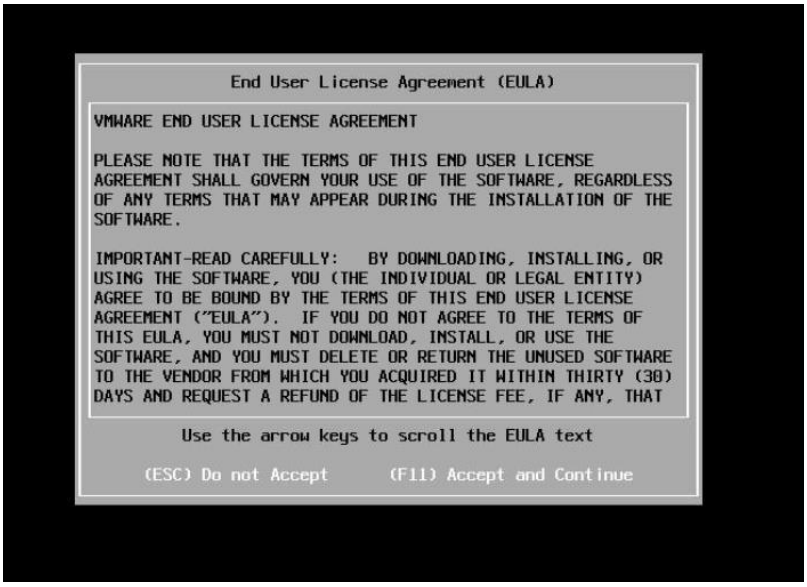
Step 4 Install VMware vSphere Hypervisor (ESXi) 7.0b to the SSD6202

a. Boot from the installation DVD (UEFI mode).

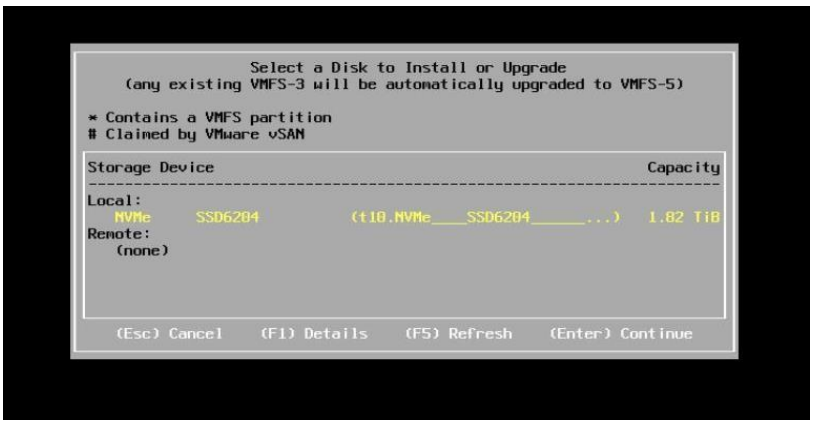
b. When the Installation screen appears, please press "**Enter**" to start installation:



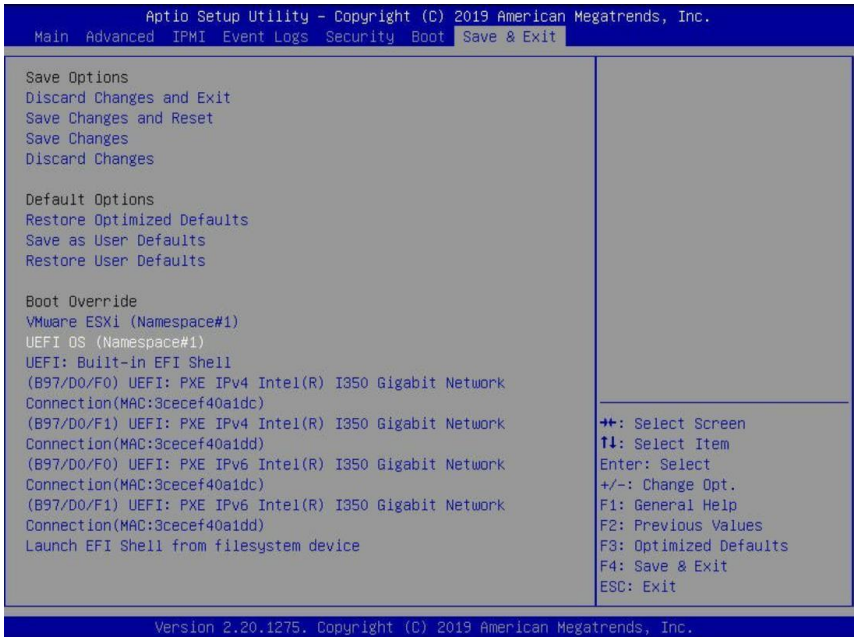
c. When the installation process switches to graphical mode, press "**F11**".



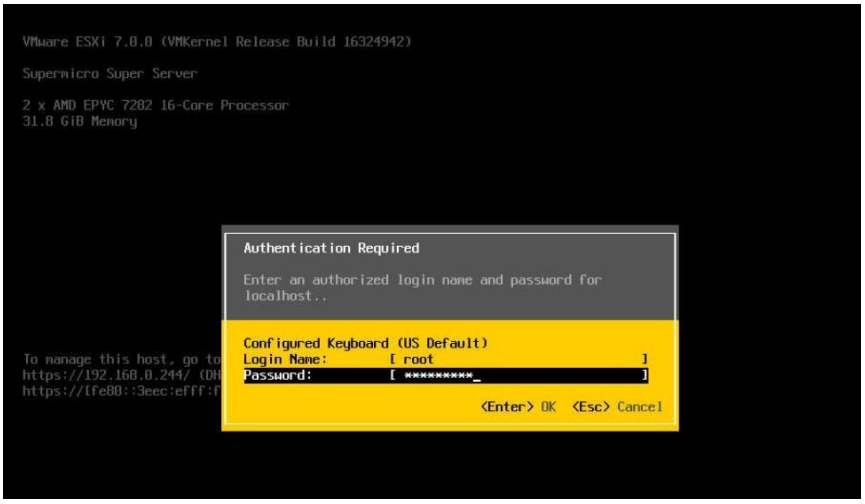
d. When the graphical interface returns, select the previously created RAID0 as the target disk:



e. After installation is complete, select the appropriate startup item to boot the system:



f. Enter the user name and password, to log into VMware vSphere Hypervisor (ESXi) 7.0b.

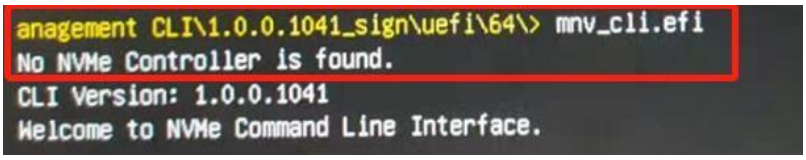


Appendix

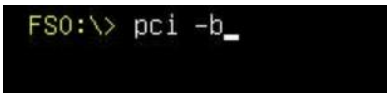
Troubleshooting

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)

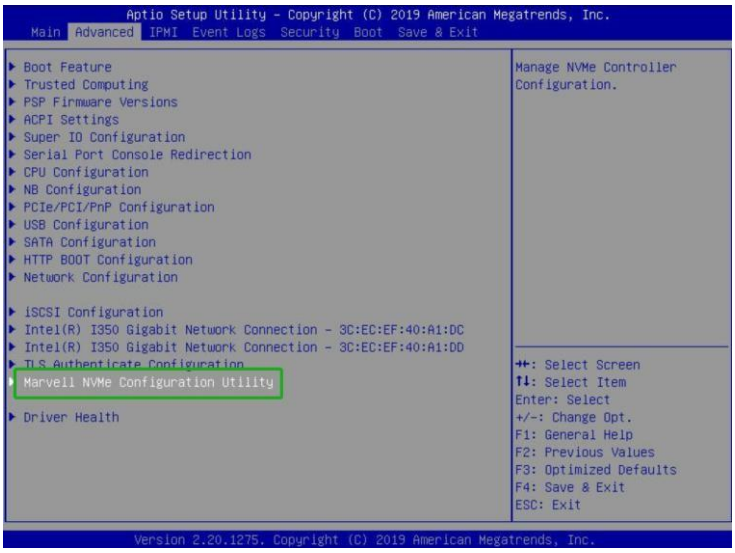
2. Check the RAID create via RAID Switch settings is created or not

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**'.

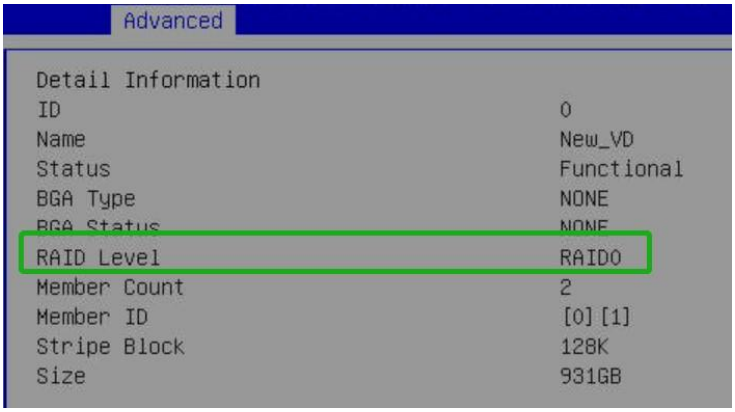
3) From the motherboard BIOS menu, select "**Marvell NVME Configuration Utility**":



4) Select the "**Virtual device information"**

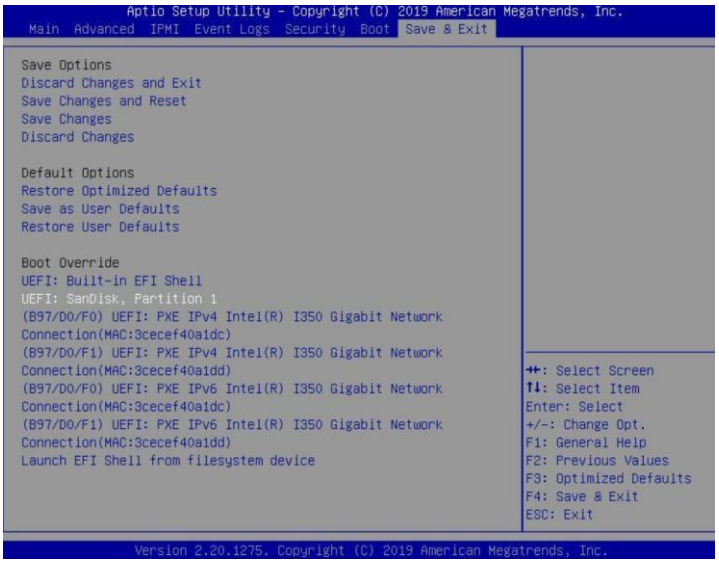
5) Select the "[0] **New_VD**"

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

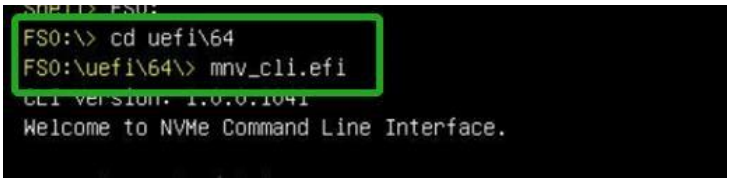


Method 2：Check in UEFI

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

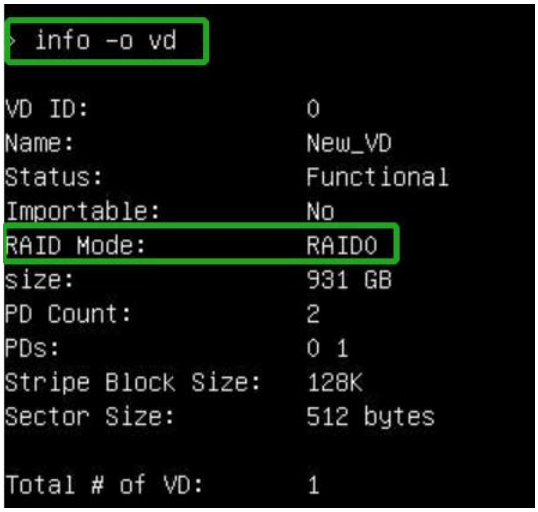


2. Next, locate the "**mnv_cli.efi**" program and run it:



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

info -o vd



Method 3：Check in a windows operating System

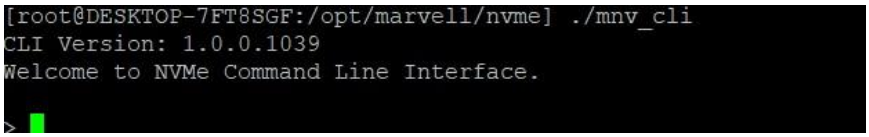
1. This method assumes you have access to a Windows Server 2019 system and have installed the WebGUI software.

2. Open the WebGUI software, it will be displayed under **Logical Device Information**.

Method 4：Check in a CLI

1. This method assumes that you have already prepared a VMware 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