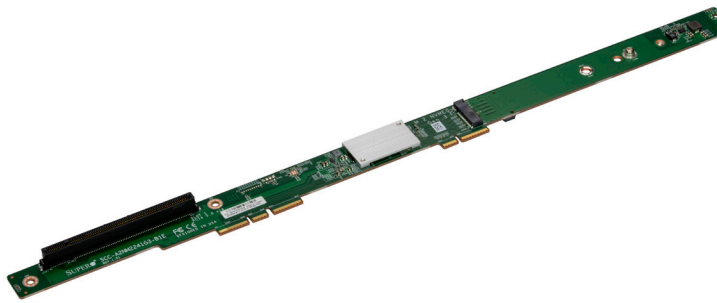
SCC-A2NM2241G3-B1E



User's Guide

Revision 1.0

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Manual Revision 1.0

Release Date: October 15, 2024

Preface

About this User's Guide

This user's guide is written for system integrators, IT technicians, and knowledgeable end users. It provides information for the installation and use of the SCC-A2NM2241G3-B1E expansion card.

About this Expansion Card

The SCC-A2NM2241G3-B1E is an M.2 SSD carrier card that connects up to two M.2 solid state drives (SSDs), and is built for use in BigTwin™ systems. It supports NVMe and two form factors: 22x80mm on the top or bottom side, or 110mm on the bottom side with OEM SKU support. It can be pre-installed on a server, or can be ordered and added separately. M.2 solid-state technology is an optimized, high-performance scalable storage solution, effectively streamlined for enterprise and client systems that leverage the cutting-edge capabilities of PCI Express.

An Important Note to the User

All images and layouts shown in this user's guide are based upon the latest PCB revision available at the time of publishing. The card you have received may or may not look exactly the same as the graphics shown in this user's guide.

Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning the SCC-A2NM2241G3-B1E card to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and the shipping package is mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete. For faster service, you can also request a RMA authorization online http://www.supermicro.com/RmaForm/.

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alteration, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.

Conventions Used in the User's Guide

Pay special attention to the following symbols for proper system installation and for safety instructions to prevent damage to the system or injury to yourself.

Note: Additional information given for proper system setup.

Contacting Supermicro

Headquarters

Address:	Super Micro Computer, Inc. 980 Rock Ave. San Jose, CA 95131 U.S.A.
Tel:	+1 (408) 503-8000
Fax:	+1 (408) 503-8008
Email:	marketing@supermicro.com (General Information) support@supermicro.com (Technical Support)
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Email:	sales@supermicro.nl (General Information) support@supermicro.nl (Technical Support) rma@supermicro.nl (Customer Support)
Website:	www.supermicro.nl

Asia-Pacific

Address:	Super Micro Computer, Inc. 3F, No. 150, Jian 1st Rd. Zhonghe Dist., New Taipei City 235 Taiwan (R.O.C)
Tel:	+886-(2) 8226-3990
Fax:	+886-(2) 8226-3992
Email:	support@supermicro.com.tw
Website:	www.supermicro.com.tw

Table of Contents

Chapter 5 Controller Firmware Update

Chapter 1

Overview

1-1 Overview

Congratulations on purchasing your expansion card from an acknowledged leader in the industry. Supermicro products are designed with the utmost attention to detail to provide you with the highest standards in quality and performance. For product support and updates, please refer to our website at http://www.supermicro.com.

1-2 Technical Specifications

General

NVMe RAID Controller M.2 carrier riser card for X14 BigTwin

Supports four M.2 M-key connectors for the following lengths: 80 mm, 110 mm (There is limited support for M.2 22x80mm options. Please contact your Supermicro Sales representative for more information.)

Two NVMe M.2 SSD links support PCIe Gen 3

Supports RAID 0, 1

Supports activity/fail/rebuild LED onboard for each M.2 SSD

Gen 5 x16 PCIe slot riser card function

OS Support

The following operating systems and their later versions are supported:

Windows

Linux

VMware

Contact Supermicro tech support at www.supermicro.com for assistance with any hardware limitations associated with your motherboard. (Note: For proper system configuration and setup, please refer to the product page at www.supermicro.com for any limitations associated with your motherboard.)

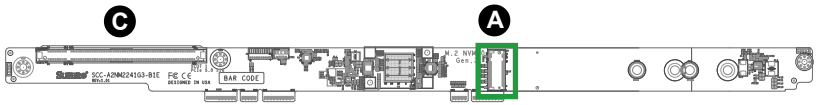
Physical Dimensions

Card PCB dimensions: 1.25" x 18.05" (H x L)

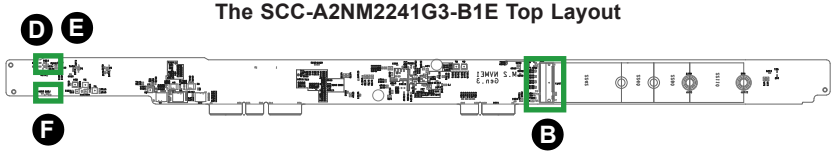
Chapter 2

Hardware Components

2-1 Expansion Card Layout and Components



The SCC-A2NM2241G3-B1E Top Layout



The SCC-A2NM2241G3-B1E Bottom Layout

2-2 Major Components

The following major components are on the SCC-A2NM2241G3-B1E:

A. M.2 Socket 1, designated CN1

B. M.2 Socket 2, designated CN2

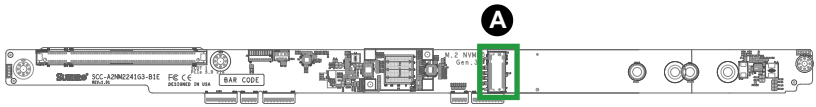
C. Slot1, PCIe 5.0 x16 Slot

D. M.2 Fault LED, designated LED5

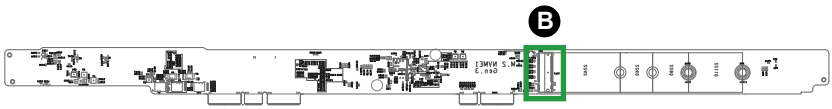
E. M.2 Activity LED, designated LED2

F. 1.8V Indicator LED, designated LED1

2-3 Connectors and LEDs



The SCC-A2NM2241G3-B1E Top NVMe Connector



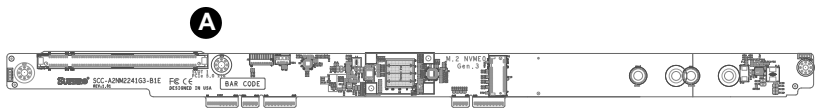
The SCC-A2NM2241G3-B1E Bottom NVMe Connector

A. M.2 Socket 1, designated CN1

B. M.2 Socket 2, designated CN2

M.2 Sockets

There are two M.2 sockets on the expansion card, designated CN1 and CN2.

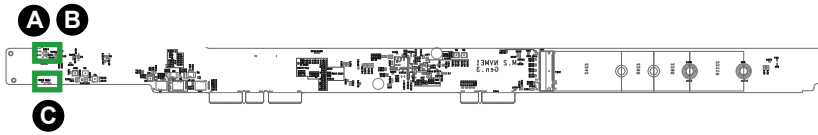


The SCC-A2NM2241G3-B1E PCIe 5.0 x16 Slot

A. Slot1, PCIe 5.0 x16 Slot

PCIe 5.0 x16 Slot

There is a PCIe 5.0 x16 slot on the top of the expansion card.



The SCC-A2NM2241G3-B1E Bottom LEDs

A. M.2 Fault LED, designated LED5

B. M.2 Activity LED, designated LED2

C. 1.8V Indicator LED, designated LED1

Activity and Fail LEDs

There is one Activity LED on the SCC-A2NM2241G3-B1E, designated LED2 and one Fault LED, designated LED5. See the table below for information.

Activity & Fault LED Status		
LED	**Color**	**Status**
LED2	Green	Blinks whenever there is read or write activity on M.2 Socket 1 and 2
LED5	Red	Turns on whenever there is a drive failure on M.2 Socket 1 and 2

1.8V Indicator LED

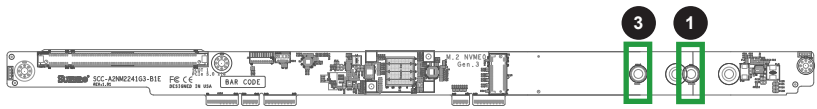
There is one 1.8V Indicator LED on the SCC-A2NM2241G3-B1E, designated LED1.

1.8V Indicator LED Status		
LED	**Color**	**Status**
LED1	Green	Turns on whenever 1.8V power is ready

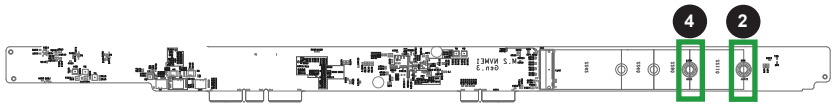
2-4 Standoffs

The SCC-A2NM2241G3-B1E standoffs support M.2 SSDs of 22x110 mm length on the top and bottom side. There is also limited support for M.2 22x80 mm options. Please contact your Supermicro Sales representative for more information. Place the standoffs as indicated below:

M.2 Standoff Options	
M.2 Length	**Standoff Positions**
22 mm x 110 mm	1
22 mm x 110 mm	2
22 mm x 80 mm	3
22 mm x 80 mm	4



The SCC-A2NM2241G3-B1E Top Standoff Positions



The SCC-A2NM2241G3-B1E Bottom Standoff Positions

Chapter 3

Installation

3-1 Static-Sensitive Devices

Electrostatic Discharge (ESD) can damage electronic components. To avoid damaging your expansion card, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing the expansion card from the antistatic bag.
- Handle the expansion card by its edges only; do not touch its components or peripheral chips.
- Put the expansion card back into the antistatic bags when not in use.
- For grounding purposes, make sure that your system chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the expansion card.

Unpacking

The expansion card is shipped in antistatic packaging to avoid static damage. When unpacking your component, make sure you are static protected.

Note: To avoid damaging your components and to ensure proper installation, be sure to always connect the power cord last, and always remove it before adding, removing, or changing any hardware components.

3-2 Installing Expansion Cards

The SCC-A2NM2241G3-B1E supports up to two M.2 SSDs of 110 mm length. Visit the Supermicro website for a current list of supported M.2 SSDs.

Installing Expansion Cards

1. Power down the system and remove the power cord from the rear of the power supply.

2. Use industry-standard anti-static equipment (such as gloves or wrist strap) and follow the precautions on page 3-1 to avoid damage caused by ESD.

3. For the first SSD, unscrew the metal standoff from the 110 mm hole on the top side of the carrier card.

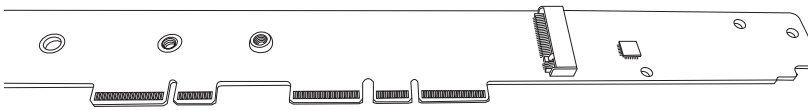


Figure 1. Selecting the Standoff Hole

4. Insert the SSD into the slot on the top side of the carrier card.

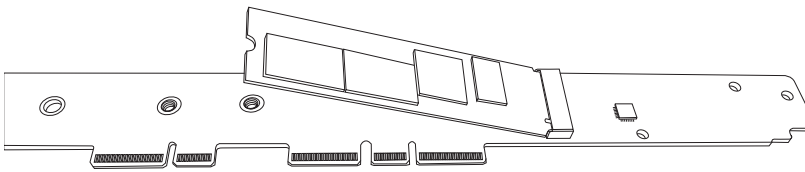


Figure 2. Inserting the First SSD

5. Flatten the SSD against the base of the metal standoff.

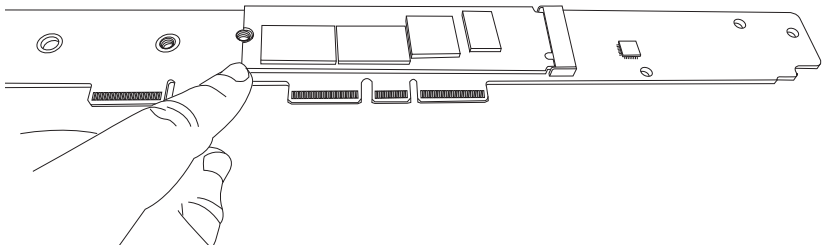


Figure 3. Inserting the Standoff

6. Secure the SSD in place by screwing in the metal standoff.

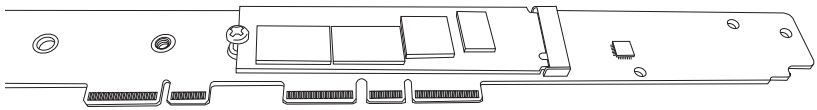


Figure 4. Inserting the Second SSD

7. If installing a second SSD, repeat steps 3-6 on the bottom side of the carrier card using either the 80 mm or 110 mm hole and the bottom side M.2 slot.

8. Power down the node and remove it from the chassis.

9. Remove the expansion card screw and set it aside. Remove the PCI slot shield.

10. Attach brackets onto the M.2 carrier-and-riser card, if necessary.

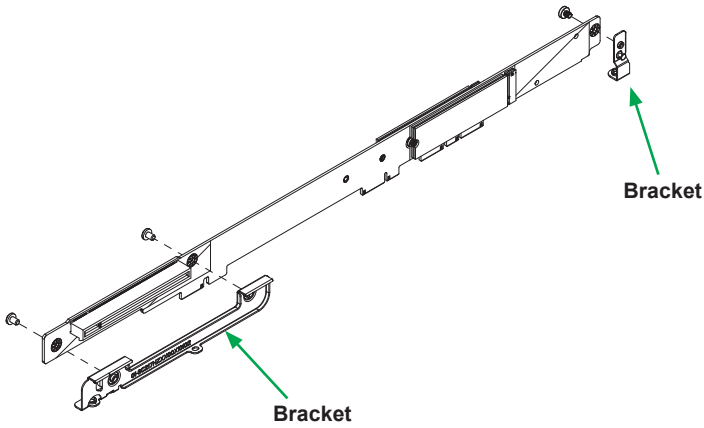


Figure 5. Installing Brackets

11. Insert an expansion card into the riser slot of the M.2 carrier-and-riser card to create an assembly (not shown).

12. Install the M.2 SSD, if necessary.

13. Align the assembly with SLOT1 on the motherboard and the PCI slot shield at the node rear and insert the assembly into the motherboard.

14. Reinstall the expansion card screw, reinsert the node into the chassis, and power up the system.

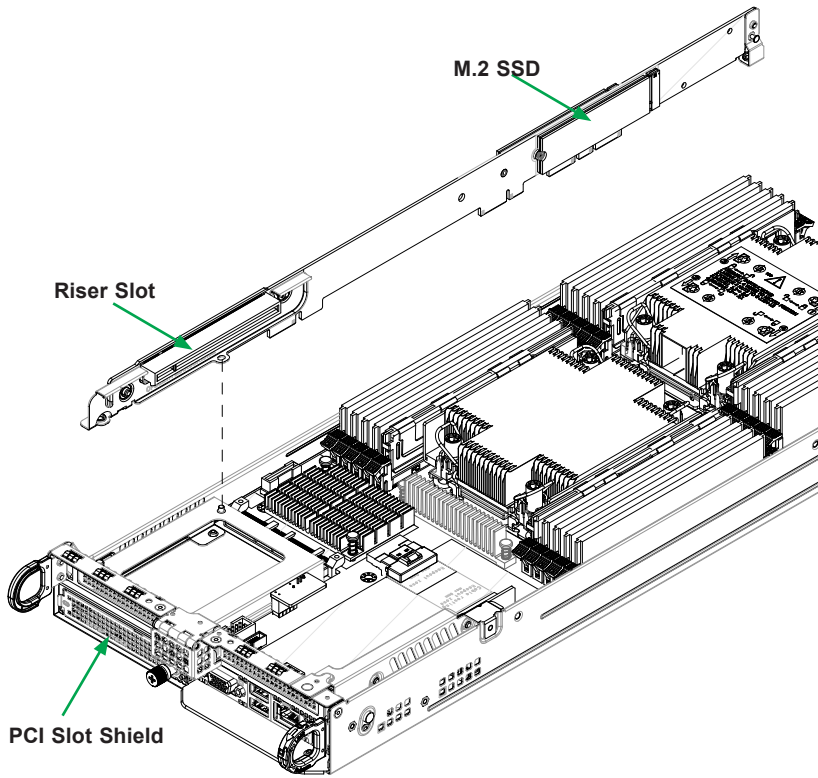


Figure 6. Installing Expansion Card onto M.2 Carrier-and-Riser Card

Removing the M.2 Carrier Card

If an M.2 carrier card is installed in your server, remove it to add M.2 solid state devices (SSDs).

To Remove the M.2 Carrier Card

1. Power down the node and remove it from the chassis.

2. Remove any DIMMs obstructing access to the carrier card.

3. Remove the two screws from the left side (viewed from the chassis front) of the node chassis that secure the carrier card to the node chassis. (See Figure 7.)

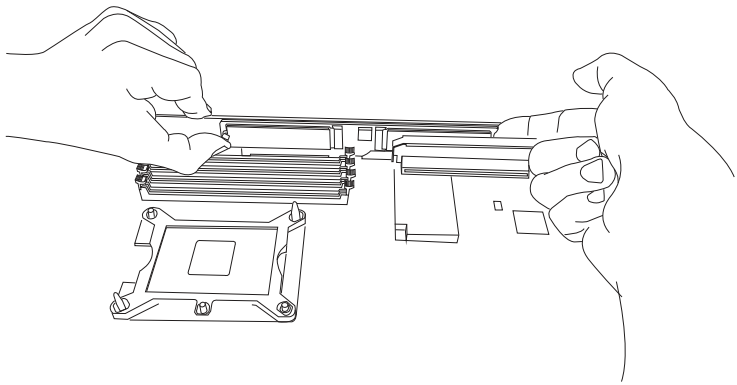


Figure 7. Removing the Carrier Card

4. Pull the card out of the socket by both notched edges (front and back) of the card. Be careful not to exert any force on any M.2 SSDs already installed on the card.

5. If you want to remove an installed SSD, remove the plug from the standoff and allow the M.2 SSD to lift up at an angle before removing it from the M.2 slot.

3-3 Additional Settings

Depending on the system, motherboard, and BIOS version, the following BIOS settings may be necessary for the proper operation of M.2 NVMe drives:

- Having the CPU IOU settings set to x4x4x4x4 PCIe bifurcation. This option may be found under **BIOS Setup -> Advanced -> Chipset Configuration -> North Bridge -> IIO Configuration -> CPU Configuration -> IOU Setting -> x4x4x4x4**.

- Having the NVMe Firmware Source set to AMI Native Support. This option may be found under **BIOS Setup -> Advanced -> PCIe/PCI/PnP Configuration -> NVMe Firmware Source -> AMI Native Support**.

Refer to the applicable system or motherboard User Manual.

Chapter 4

Optional RAID Configuration

This chapter provides instructions on how to configure RAID.

4-1 RAID Minimum Drive Requirements

The SCC-A2NM2241G3-B1E carrier card supports up to two M.2 SSDs with RAID 0 and RAID 1.

RAID	Minimum Hard Drives
RAID 0	2
RAID 1	2

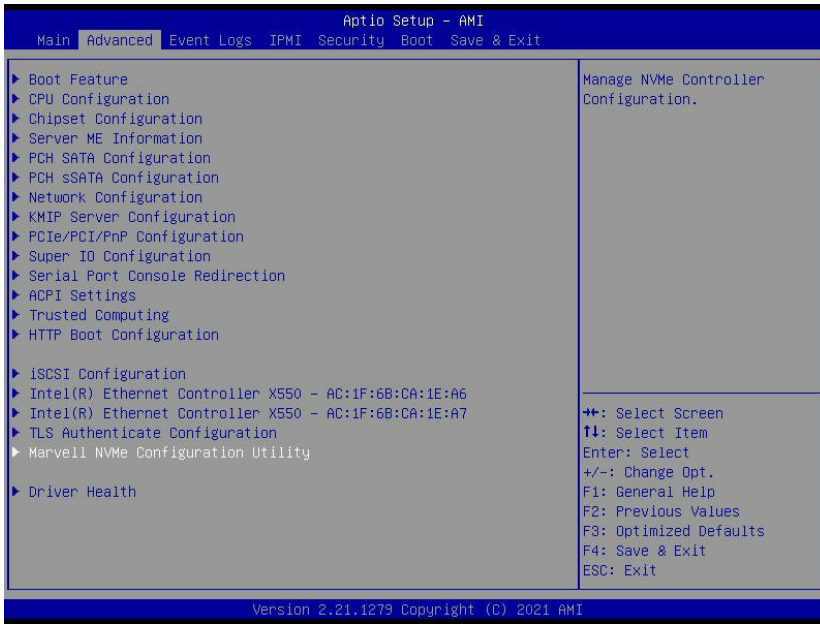
4-2 RAID Configuration Using the Marvell NVMe Configuration Utility

Follow the steps below to use the Marvell NVMe Configuration Utility.

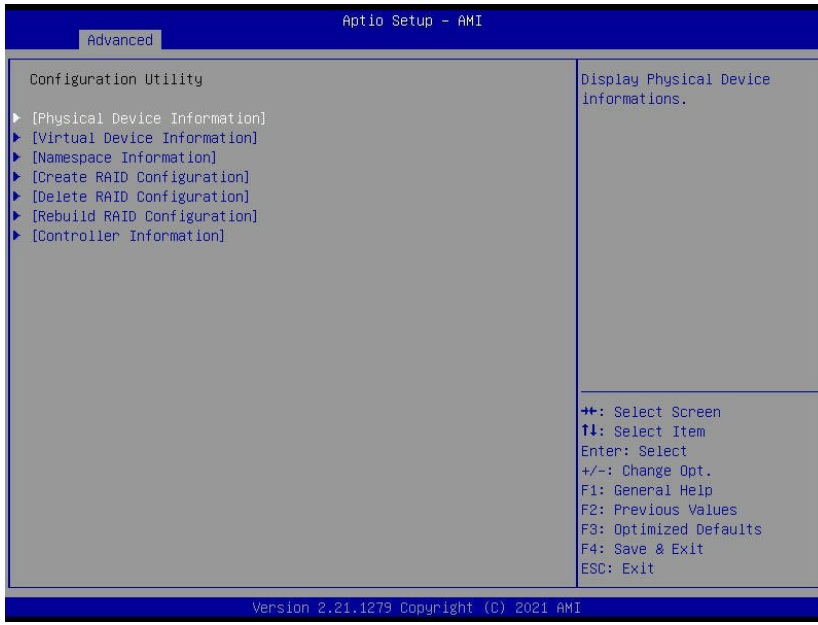
1. Reset the system.

2. Press <DEL> to enter the BIOS Setup Utility under UEFI mode.

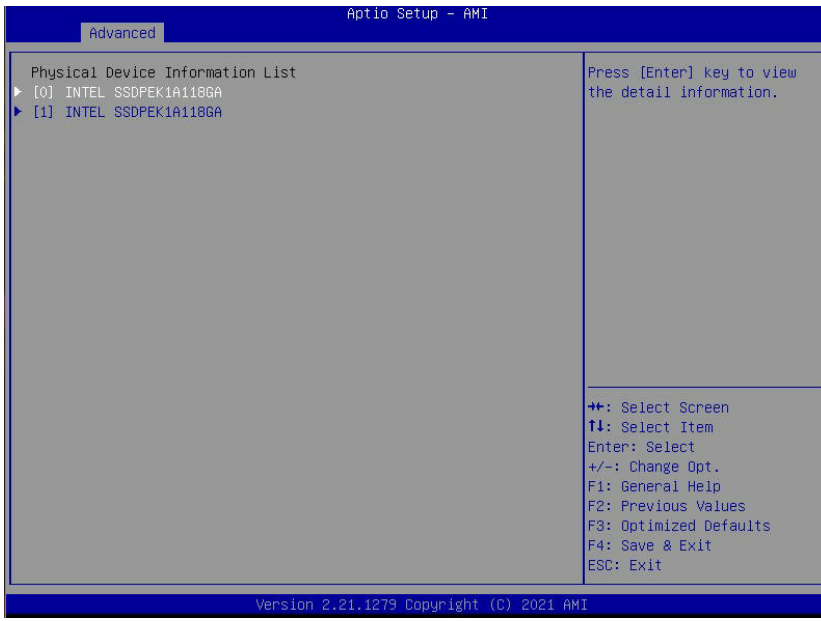
3. When the below screen appears, select Marvell NVMe Configuration Utility.



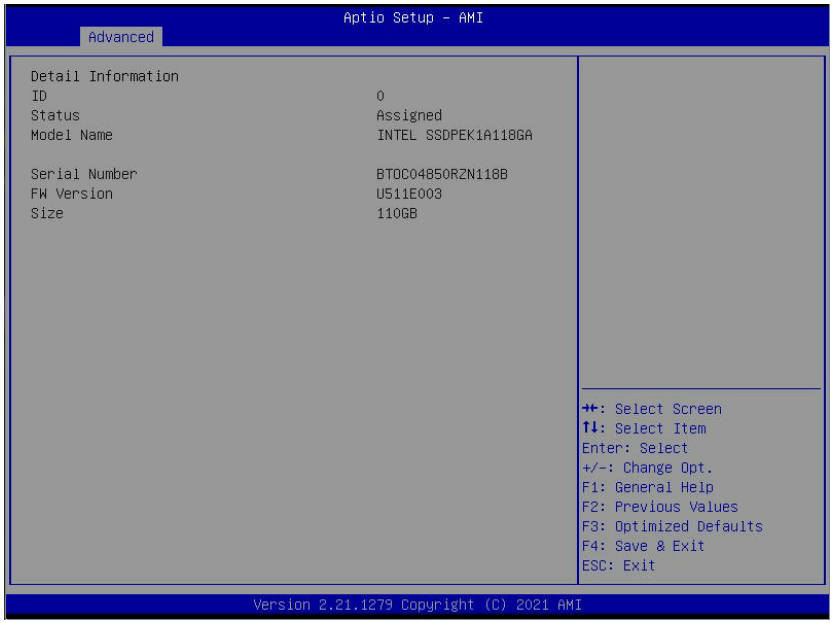
4. On the Configuration Utility main menu, select Physical Device Information.



5. The Physical Device Information list will appear.

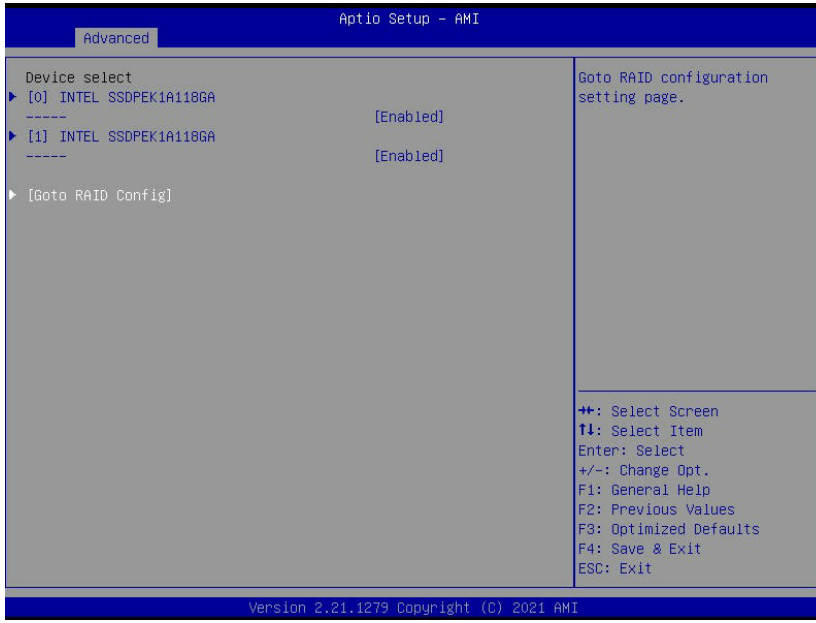


6. Select each physical device to view its details.

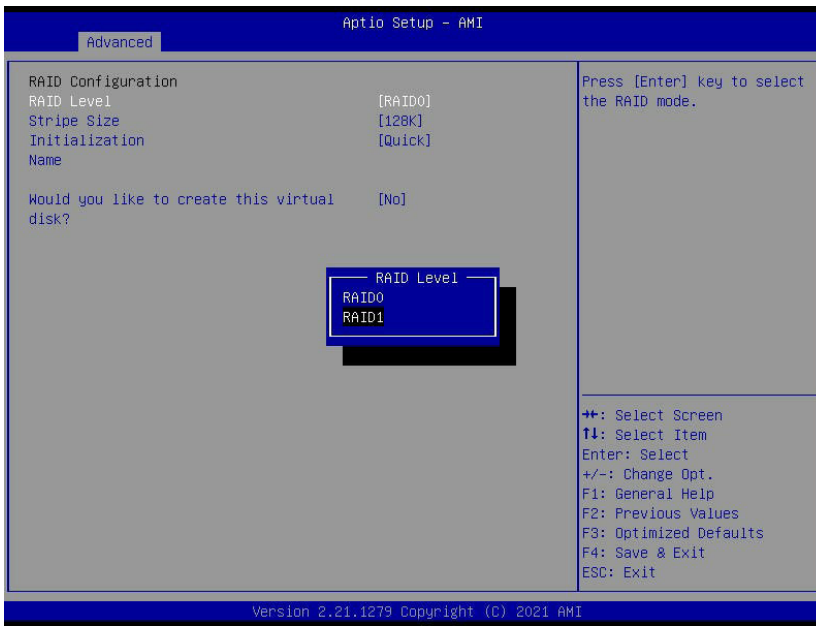


7. Configuration Utility main menu, enter Create RAID Configuration.

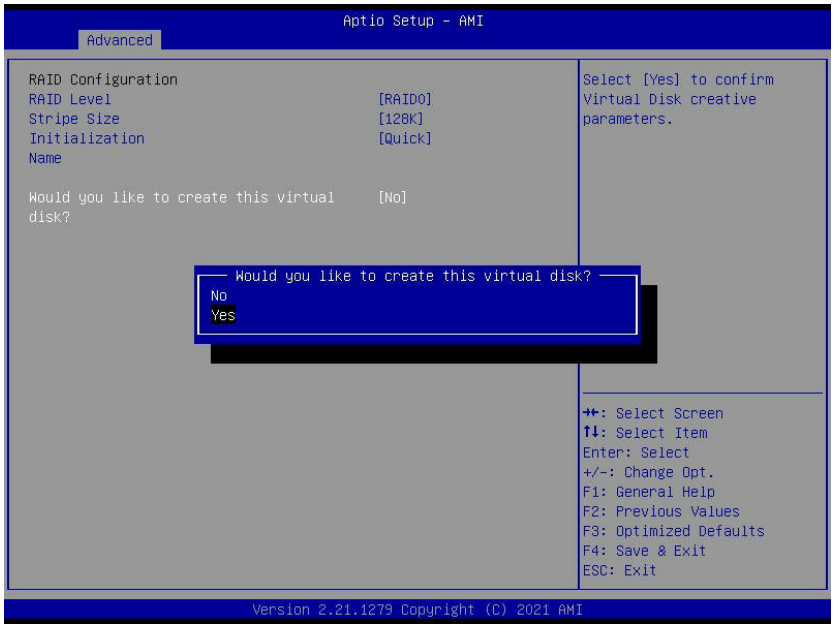
8. After enabling a selected device, select Goto RAID Config.



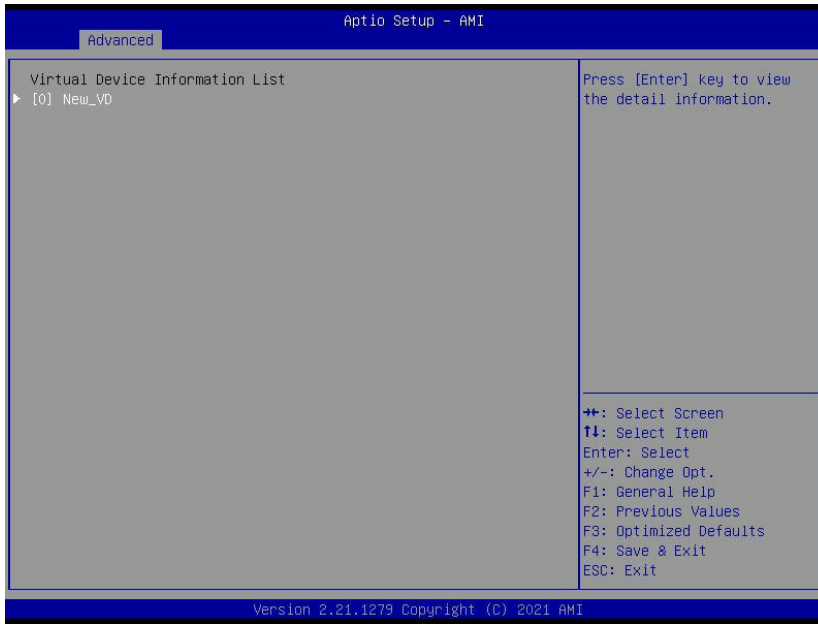
9. Select a RAID Level.

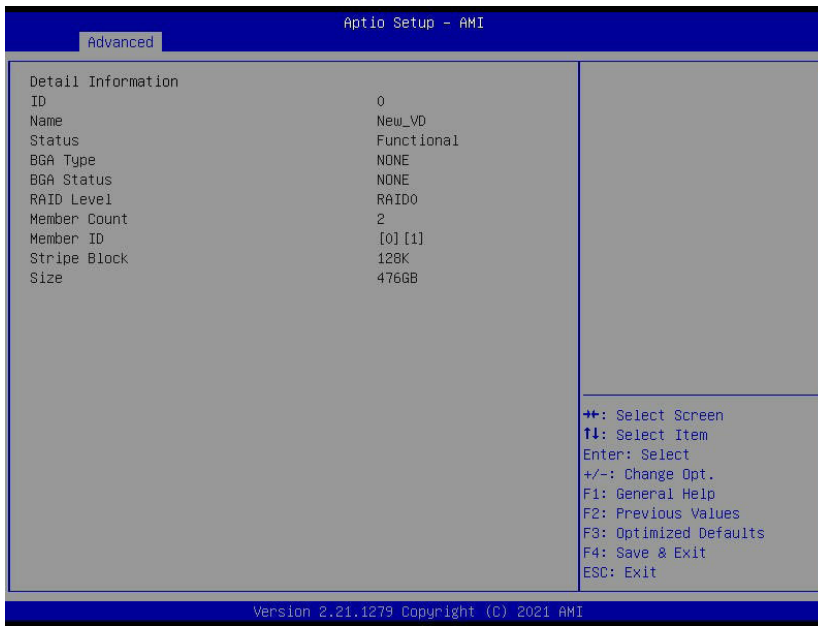


10. Create a virtual disk by selecting Yes on the prompt shown below.



11. Navigate to and enter Virtual Device Information to view the details for a virtual device.


Aptio Setup – AMI
Advanced
Virtual Device Information List
[0] New_VD
Press [Enter] key to view the detail information.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.21.1279 Copyright (C) 2021 AMI


Aptio Setup – AMI
Advanced
Detail Information
ID 0
Name New_VD
Status Functional
BGA Type NONE
BGA Status NONE
RAID Level RAID0
Member Count 2
Member ID [0][1]
Stripe Block 128K
Size 476GB
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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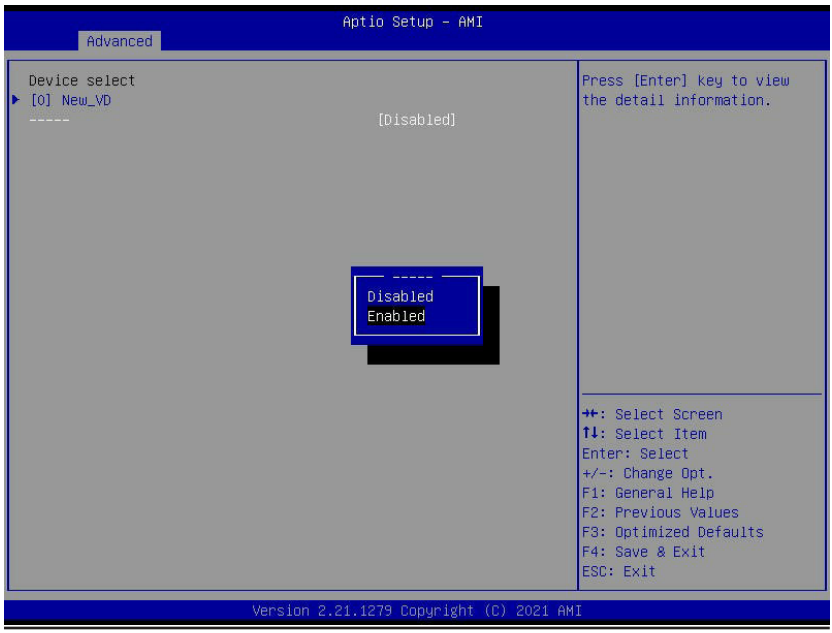
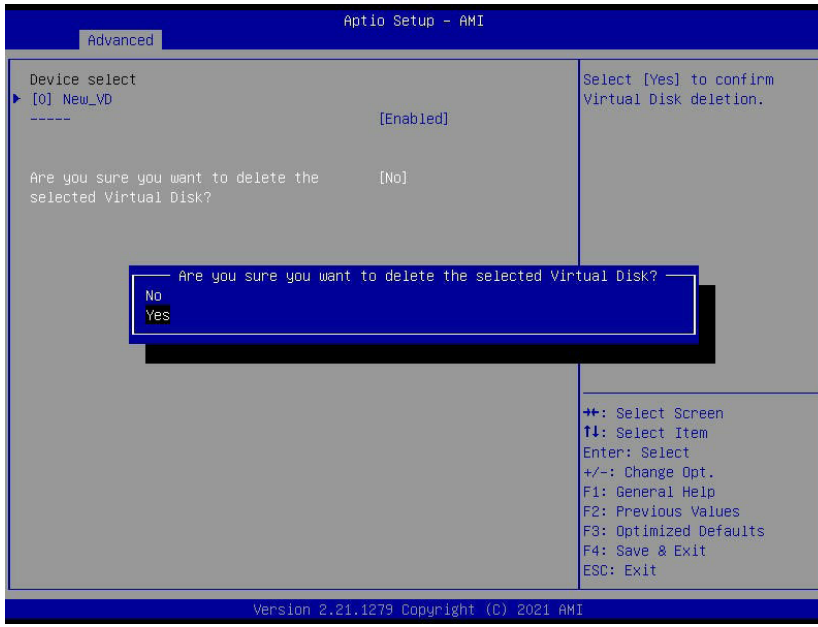
12. On the Configuration Utility main menu, enter the Delete RAID Configuration menu.

13. Select Enabled for a device.



14. Select Yes to delete the virtual disk.



15. On the Configuration Utility main menu, select Namespace Information to view namespace details.


Aptio Setup – AMI
Advanced
Namespace Information List
[1] 238GB
Press [Enter] key to view the detail information.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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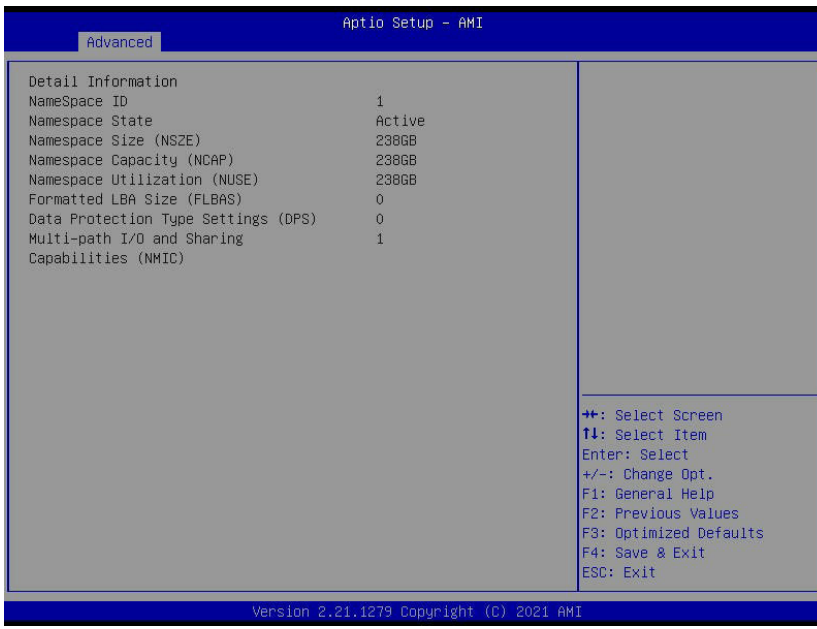
Aptio Setup – AMI
Advanced
Detail Information
NameSpace ID 1
Namespace State Active
Namespace Size (NSZE) 238GB
Namespace Capacity (NCAP) 238GB
Namespace Utilization (NUSE) 238GB
Formatted LBA Size (FLBAS) 0
Data Protection Type Settings (DPS) 0
Multi-path I/O and Sharing Capabilities (NMIC) 1
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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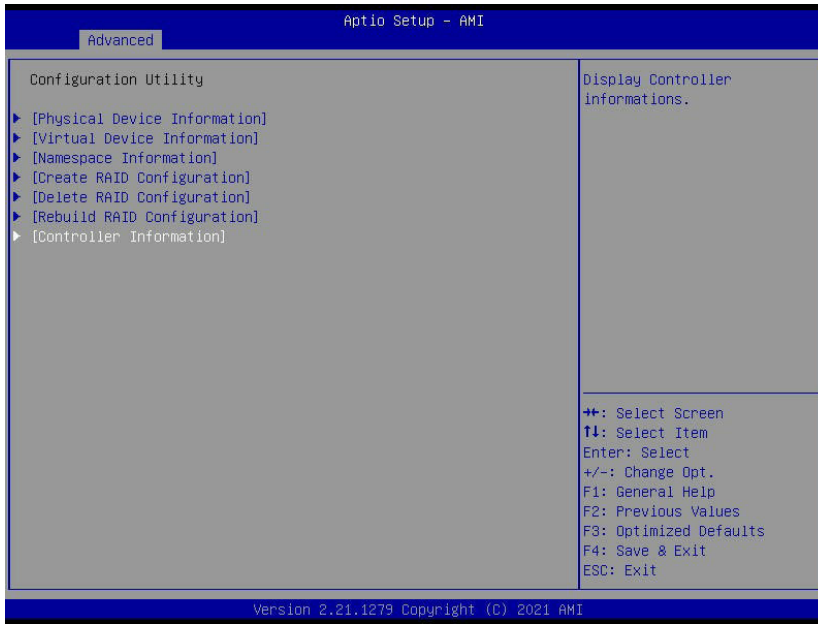
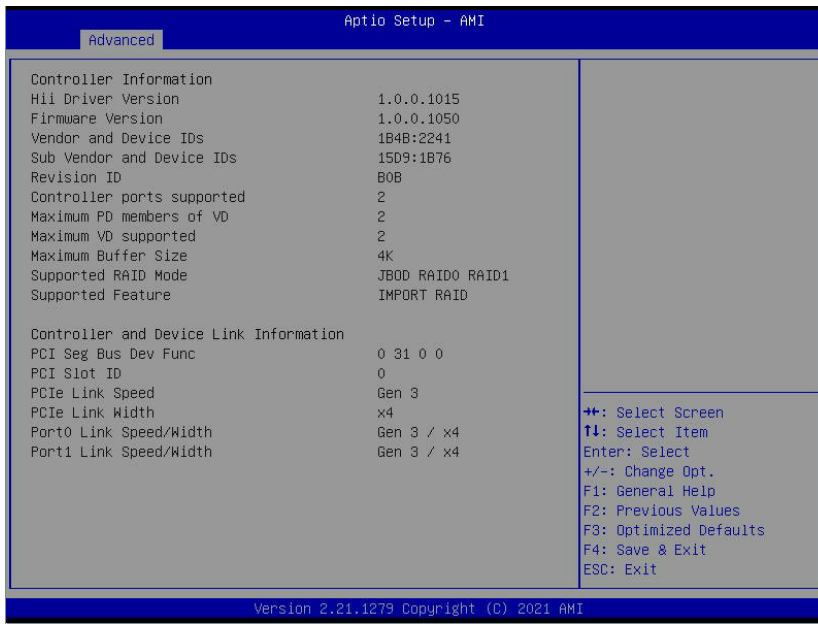
16. On the Configuration Utility main menu, select Controller Information to view details about the controller.





4-3 RAID Configuration in Redfish API

To view the Marvell controller, drive, and volume details:

URI: /BMCIP/redfish/v1/Systems/1/Storage/MRVL.HA-RAID

Method: GET

Response: 200

To create a virtual drive for Marvell:

URI: /BMCIP/redfish/v1/Systems/1/Storage/MRVL.HA-RAID/Actions/Oem/Storage.CreateVD

Method: POST

Body: {

"PD":["MRVL.HA-RAID.0.StorageModule/Drives/Disk.Bay.0","MRVL.HA-RAID.0.StorageModule/Drives/Disk.Bay.1"],

"RaidLevel":"RAID1",

"StripeBlock":"128K",

"VDName":"VD_0",

“Namespace”:1

}

Response: 200

To delete a virtual drive for Marvell:

URI: /BMCIP/redfish/v1/Systems/1/Storage/MRVL.HA-RAID/Volumes/Controller.0.Volume.0/Actions/Oem/Volume.DeleteVD

Method: POST

Body: {}

Response: 200

Chapter 5

Controller Firmware Update

This chapter provides instructions on how to update the controller firmware.

5-1 Firmware Update in a Linux System

To update the controller firmware in a Linux system, copy "RawImage\raw.bin" to the folder "Update_Tool\linux\bin", and then run ./go.

```
[root@localhost linux]# ./go
The adapter count is 1.
ad_id=0
------------------------------------------------------------------------
MARVELL FLASH TOOL
------------------------------------------------------------------------
>>The file name is raw.bin and its size is 7340032.
0. Ven:DevID=1b4b:2241 SubVen:DevID=15d9:1b76 => Bus=31, Dev=0, Fun=0
The checksum of file is good.
Press "Y" to start, other key will skip...

Erase block 006ff000
Write address 006ff000

Write file is successful!!
exit...
[root@localhost linux]#
```

5-2 Firmware Update under UEFI Shell

To update the controller firmware under UEFI shell, follow the steps below.

1. Copy the file "RawImage\raw.bin" to the folder "Update_Tool\uefidos\bin".

2. Run shell.efi first if go.nsh cannot run and the following description appears:

   Syntax after analyzing exist(s)

   Script Error Status: Abouted (Line number 12)

6. Run go.nsh uwholeimage y.

5-3 Firmware Update in Redfish API

Check whether the controller firmware update is supported under /redfish/v1/UpdateService/FirmwareInventory/Marvell<num>. To perform a Marvell firmware update using the image file available on the local system:

URI: /BMCIP/redfish/v1/UpdateService/upload

Method: POST

Response: 202

UpdateParameters: {“Targets”:[“/redfish/v1/Systems/1/Storage/MRVL.HA-RAID#/StorageControllers/<num>”],”@Redfish.OperationApplyTime”:” Immediate”}

UpdateFile:<File>

}