Installing Operating Systems (VMware, Windows) with M.2 SSD's on UCS B200 M5

Contents

Introduction

This document describes the installation of Operating Systems (VMware, Windows) with M.2 SSD's on UCS B200 M5

The Cisco UCS B200 M5 blade server has a mini-storage module option that plugs into a motherboard socket to provide additional internal storage. The mini-storage module can be one of the following types:

- An SD card module that supports up to two SD cards. (Uses UCS-MSTOR-SD catridge)
- An M.2 SSD module that supports up to two SATA M.2 SSDs. (Uses UCS-MSTOR-M2 catridge)

Contributed by Brian Morrissey and Mohammed Majid Hussain, Cisco TAC Engineers.

Prerequisites

Requirements

- Understanding of UCS, policies and profiles

Components Used

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

UCSM 3.2.2b or higher

UCS B200 M5 (Server firwmare 3.2.2b or higher)

Capability Catalog 3.2.3i or higher

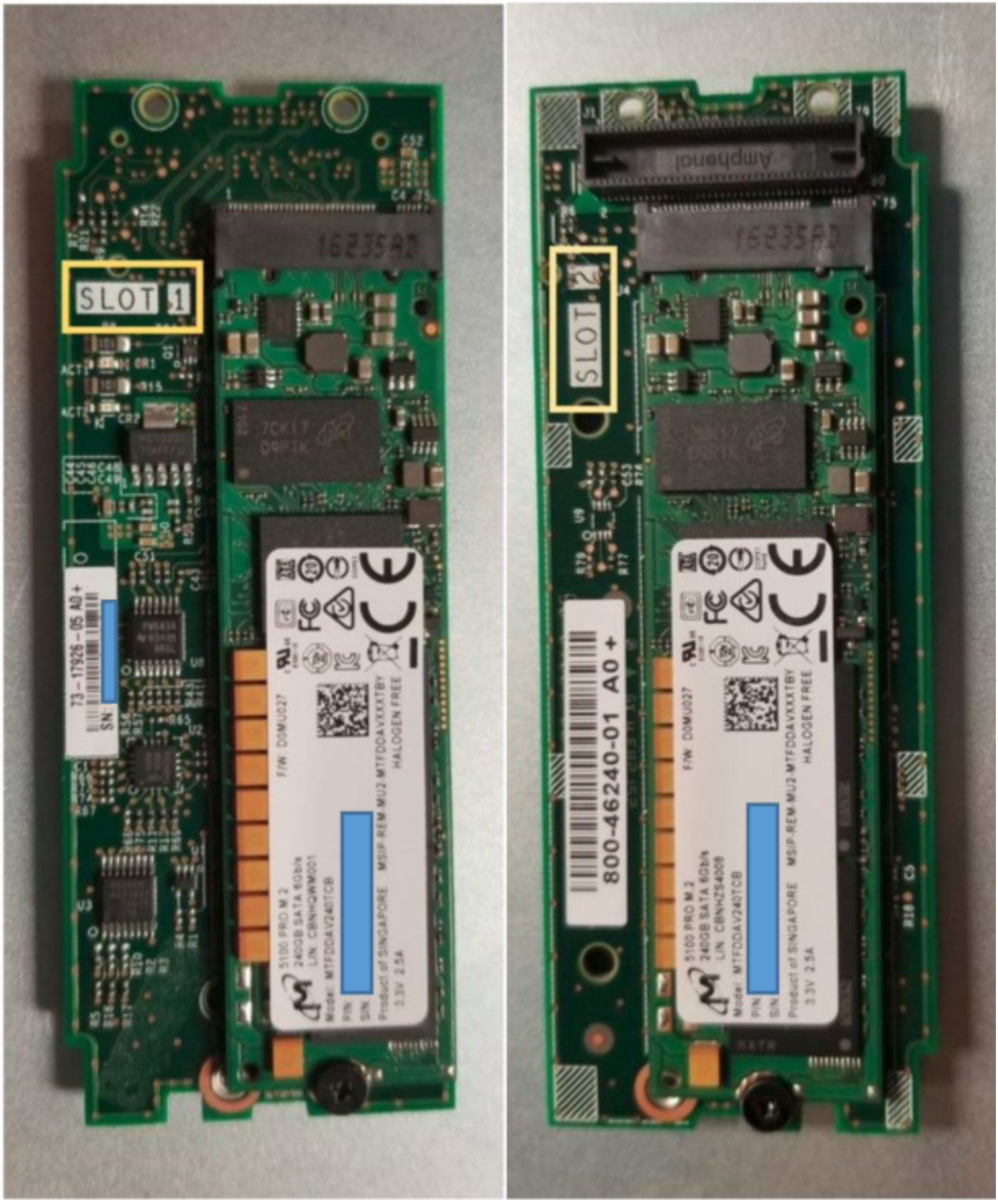
Background Information

The M.2 cartridge consists of the UCS-MSTOR-M2 carrier holding the UCS-M2-XXXGB SATA drives

You can use one or two M.2 SSDs in the carrier.

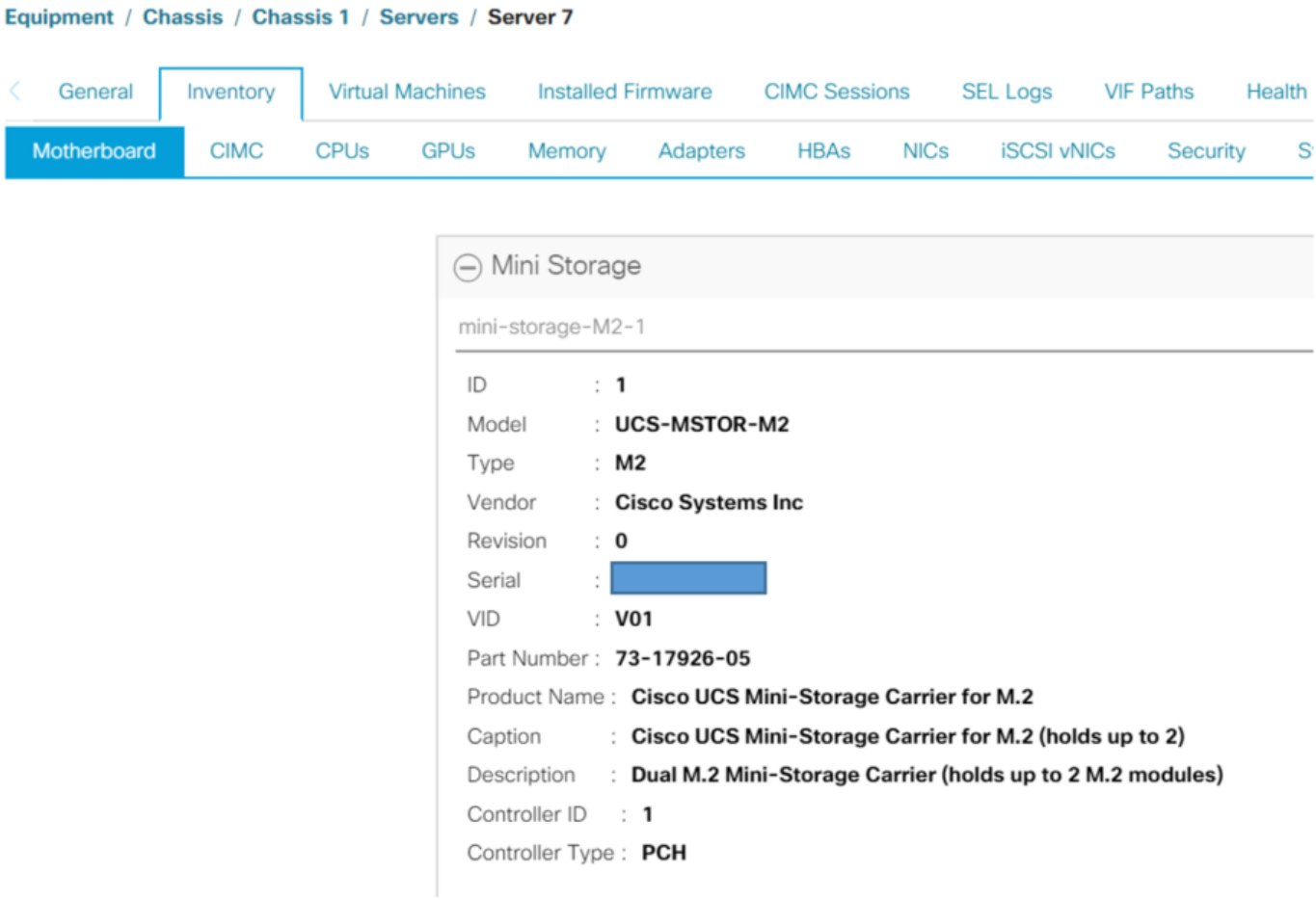
M.2 socket 1 is on the top side of the carrier; M.2 socket 2 is on the underside of the carrier (the same side as the carrier's connector to the server board socket)

This is depicted in the pictures (both slots have been populated with M.2 SSD drives)



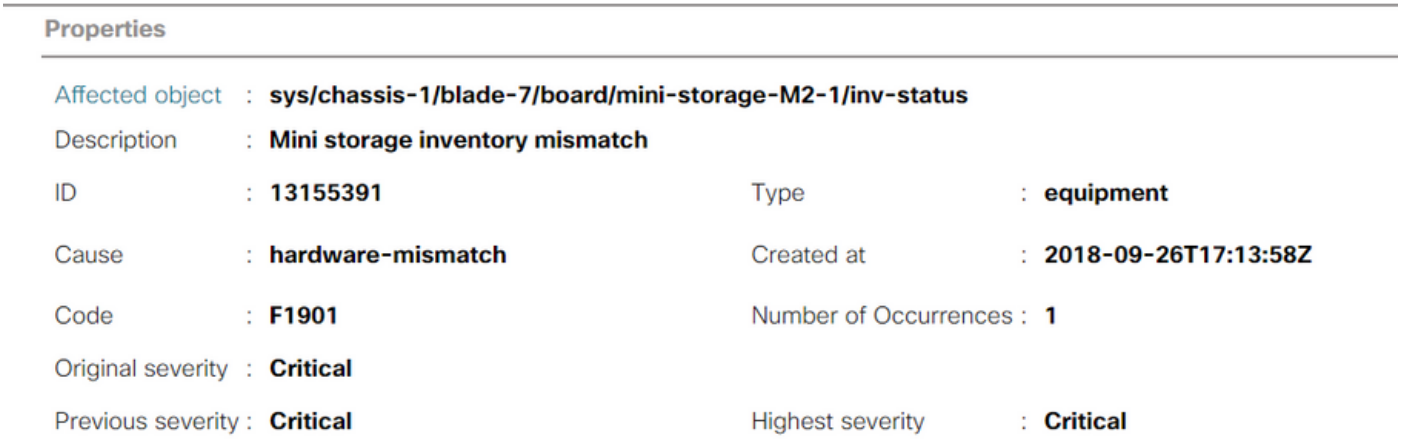
Top side (slot 1) **Underside (slot 2)**

M.2 UCS-MSTOR-M2 inventory in UCSM



Any addition or removal of the disks will be updated to UCSM inventory only after a re-acknowledgement of the server as there is no CIMC sensor for the PCH controller and the M.2 Sata drives.

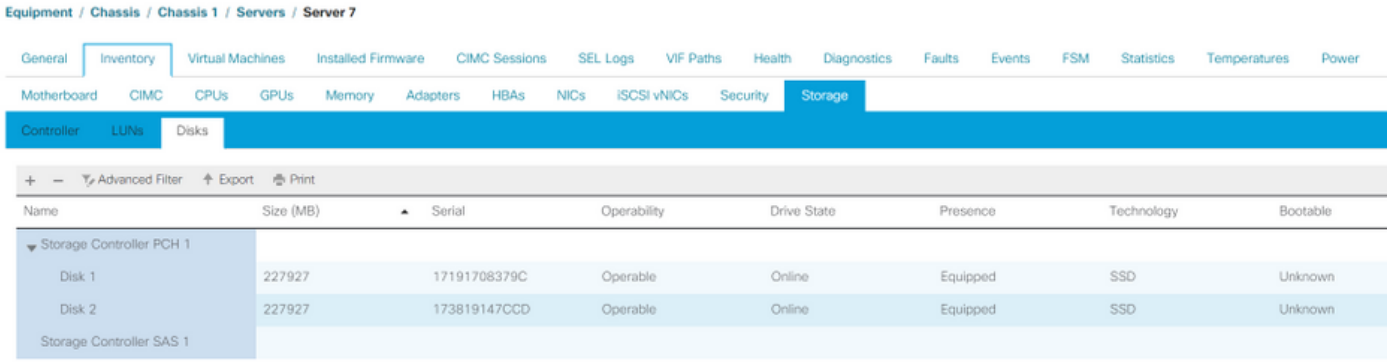
The UCSM will warn you about any hardware changes to the mini storage and will also request that you re-acknowledge the server.



Properties

Affected object	: **sys/chassis-1/blade-7**		
Description	: **Server 1/7 hardware inventory mismatch. Acknowledge the server to clear the fault**		
ID	: **13155390**	Type	: **equipment**
Cause	: **hardware-inventory-mismatch**	Created at	: **2018-09-26T17:13:58Z**
Code	: **F1913**	Number of Occurrences	: **1**
Original severity	: **Critical**		
Previous severity	: **Critical**	Highest severity	: **Critical**

After the server has been re-acknowledged the storage inventory should update (In this case, a M.2 ssd was added in slot 2).



Configure

The onboard Lewisburg sSATA controller is used to manage both types of M.2 cartridges but does not manage any front panel drives.

The PCH controller operates in AHCI mode or SWRAID mode.

AHCI Mode: Disks are presented as JBOD disks.

SWRAID Mode: Disks can either be in RAID0 or RAID1 based on user configuraiton in policy.

Desired Raid	BIOS P-SATA Setting	Storage Profile Controller Definition Setting	Notes
RAID0, RAID1	SWRAID	RAID0 OR RAID 1	Only UEFI boot supported. OS requir megasr driver.
JBOD	Disabled	NORAID	Legacy or UEFI boot

VMware ESX/ESXi operating system is not supported with the embedded SATA MegaRAID controller in SW RAID mode, as VMWare does not have a software raid driver. You can use VMWare in AHCI mode.

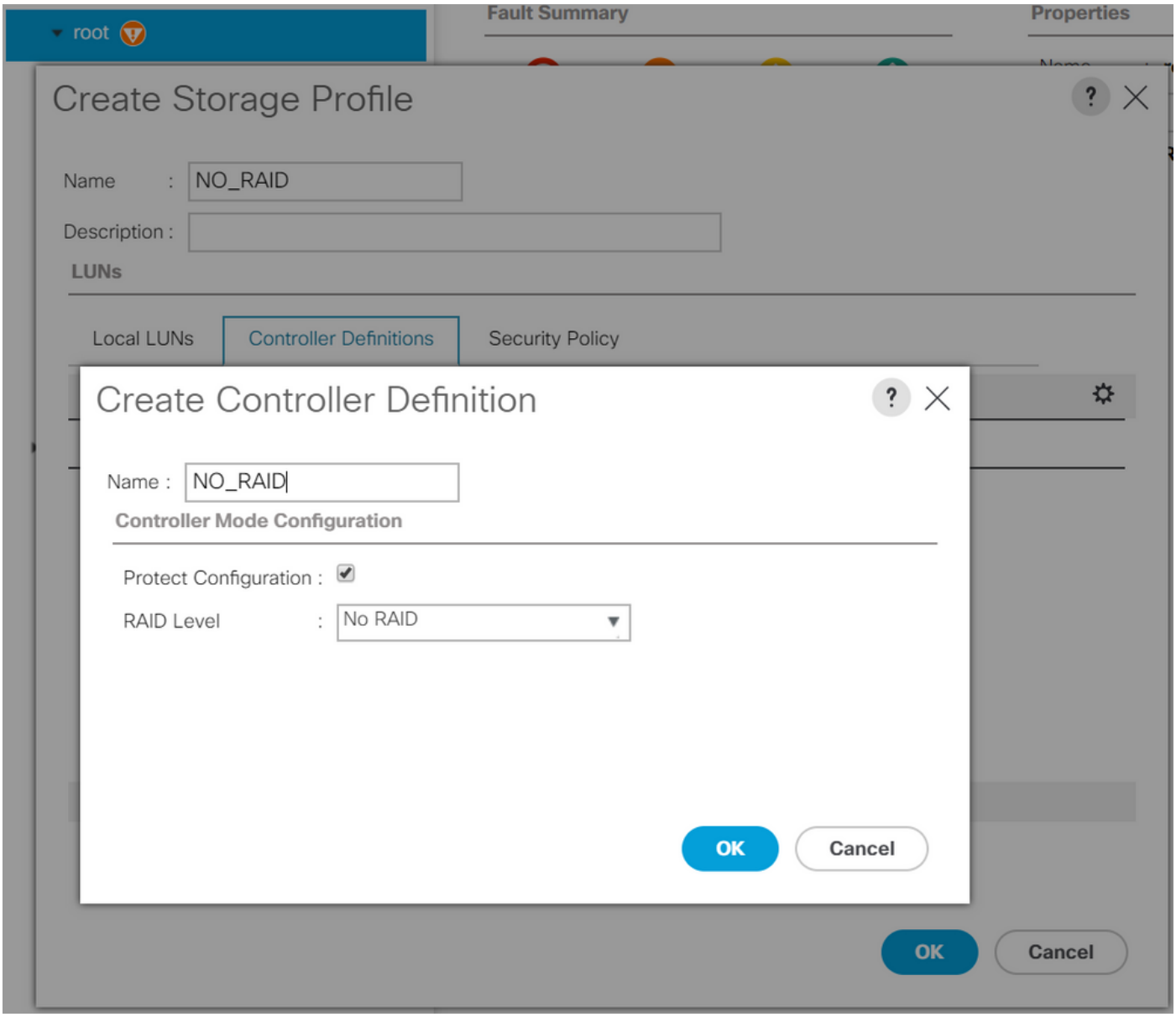
Microsoft Windows Server 2016 Hyper-V hypervisor is supported for use with the embedded MegaRAID controller in SW RAID mode, but all other hyperviors are not supported.

All Hypervisors are supported in AHCI mode.

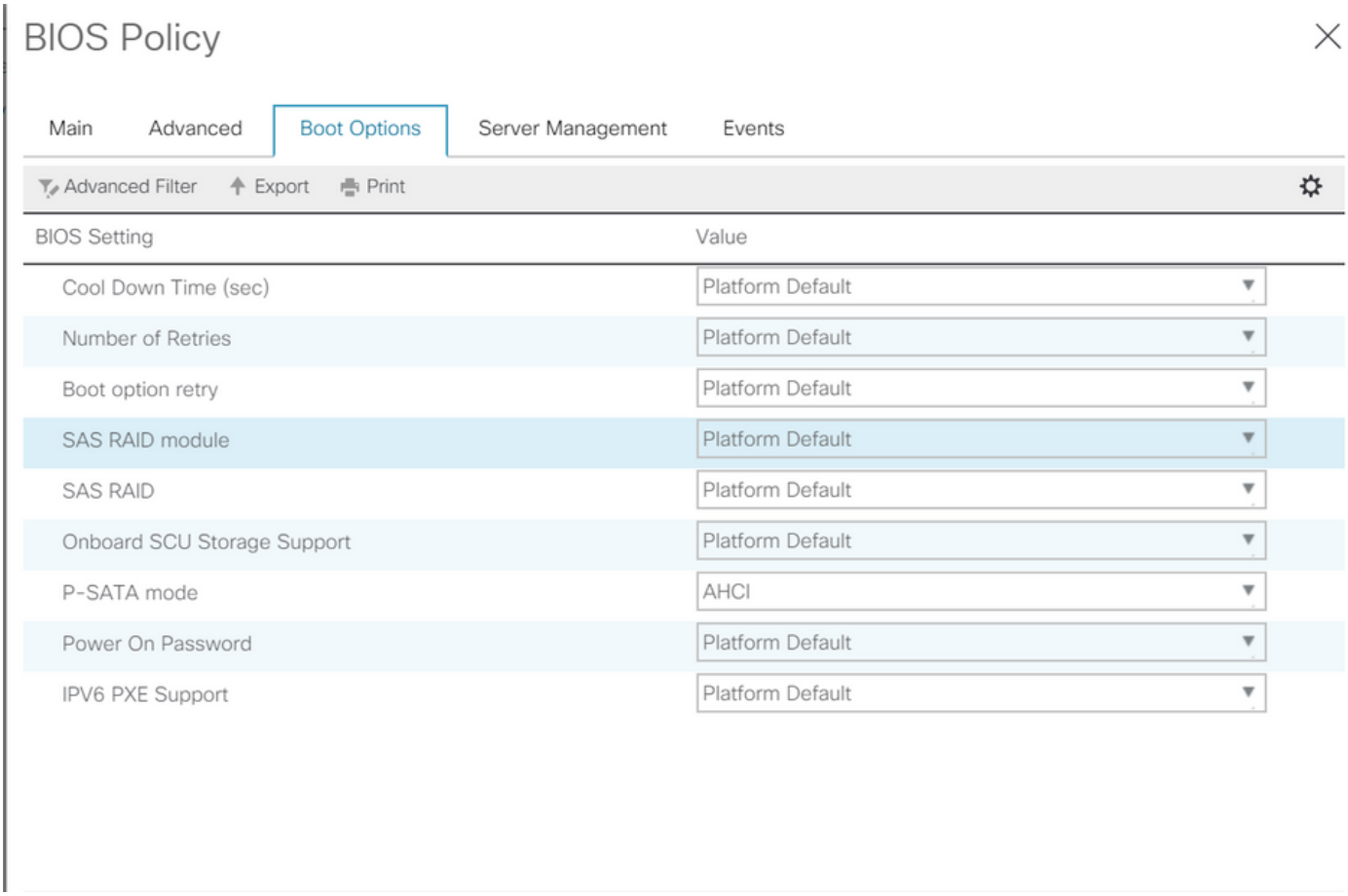
AHCI Mode

This is an example of installing VMware ESXi with the PCH controller in AHCI Mode.

Create a Strorage Profile with RAID Level set to No RAID.



Create a BIOS Policy with P-SATA mode set to AHCI

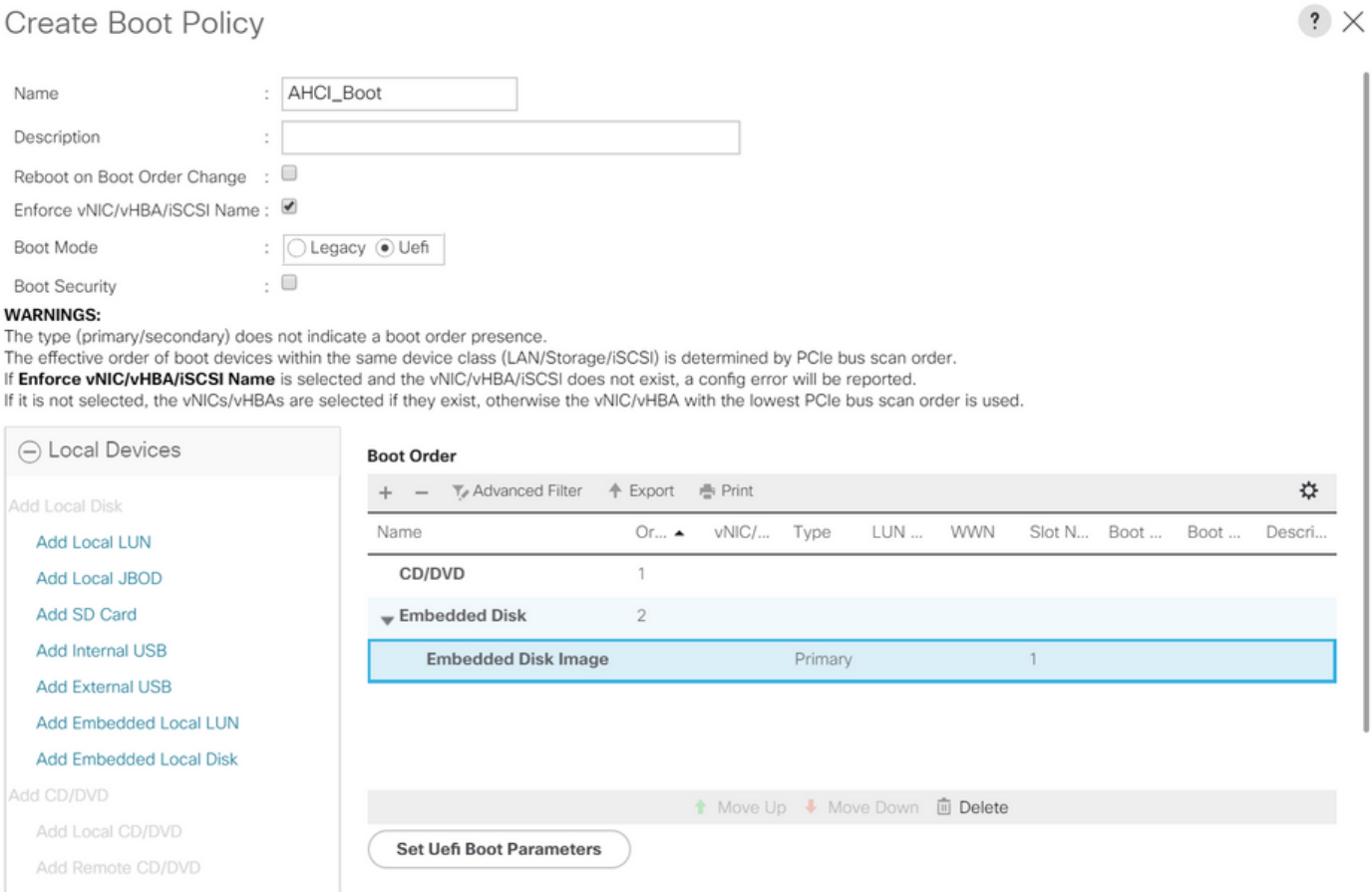


Create a Boot Policy

Set the Boot Mode to UEFI

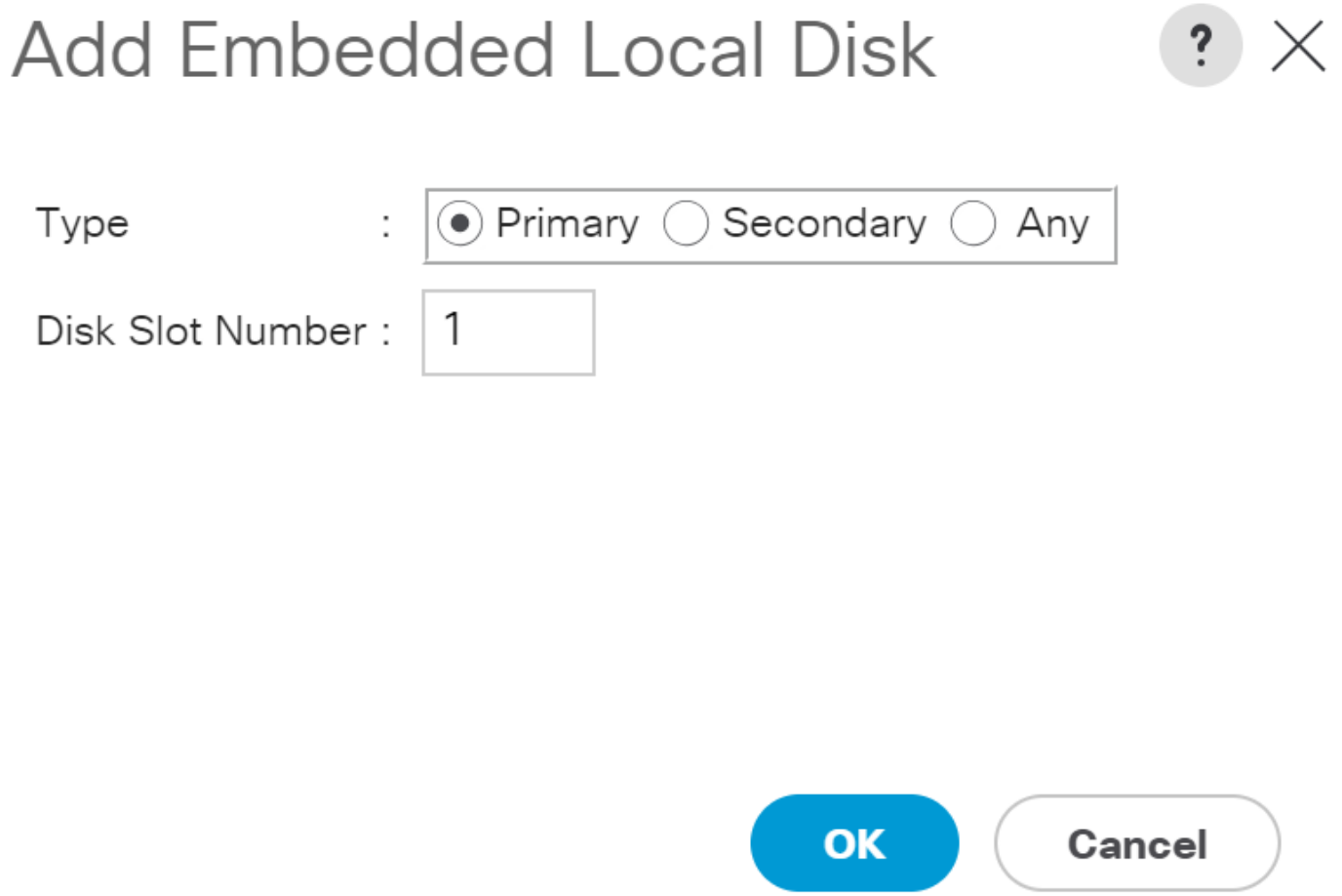
Select "Add CD/DVD"

Select "Add Embedded Local Disk"

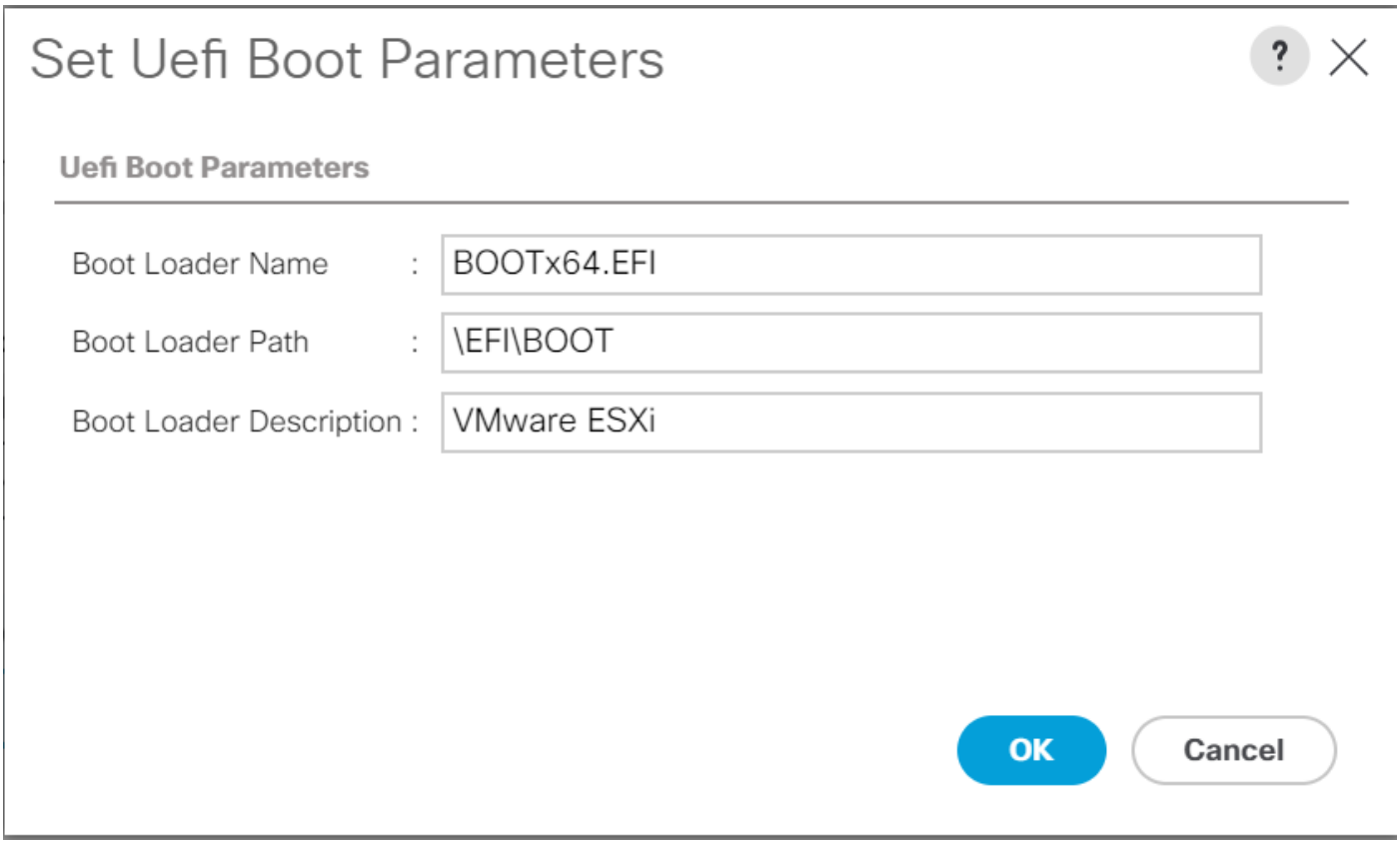


Select the appropriate options from the "Add Embedded Local Disk" section

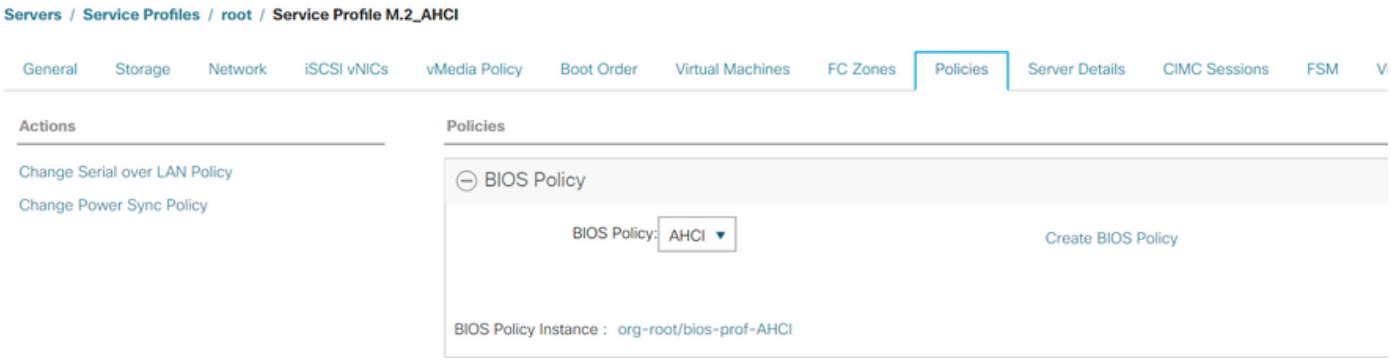
If "Any" is chosen, then the default order is Disk1, Disk2



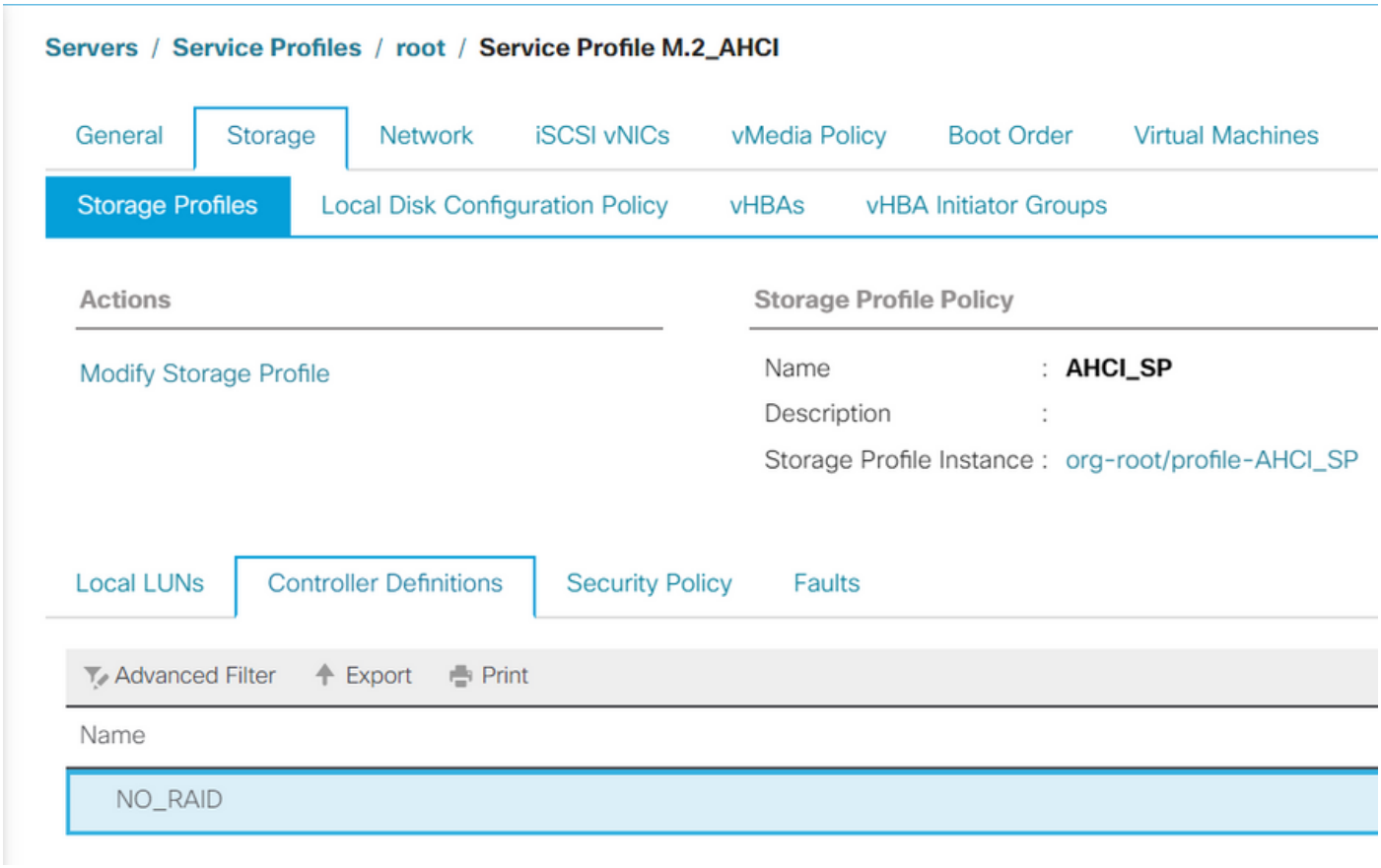
Specify the Uefi Boot Paramters



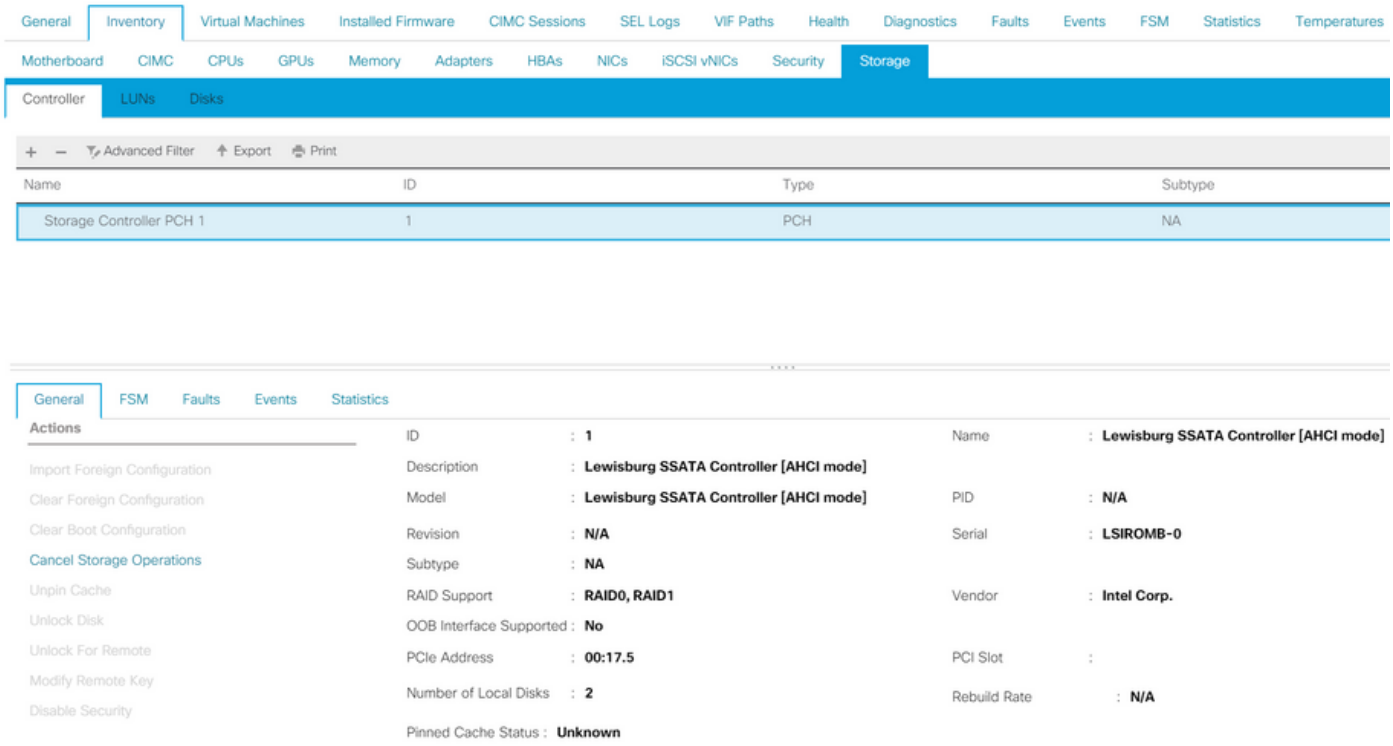
Assign the BIOS Policy you created earlier to the Service Profile



Assign the Storage Profile you created earlier to the Service Profile

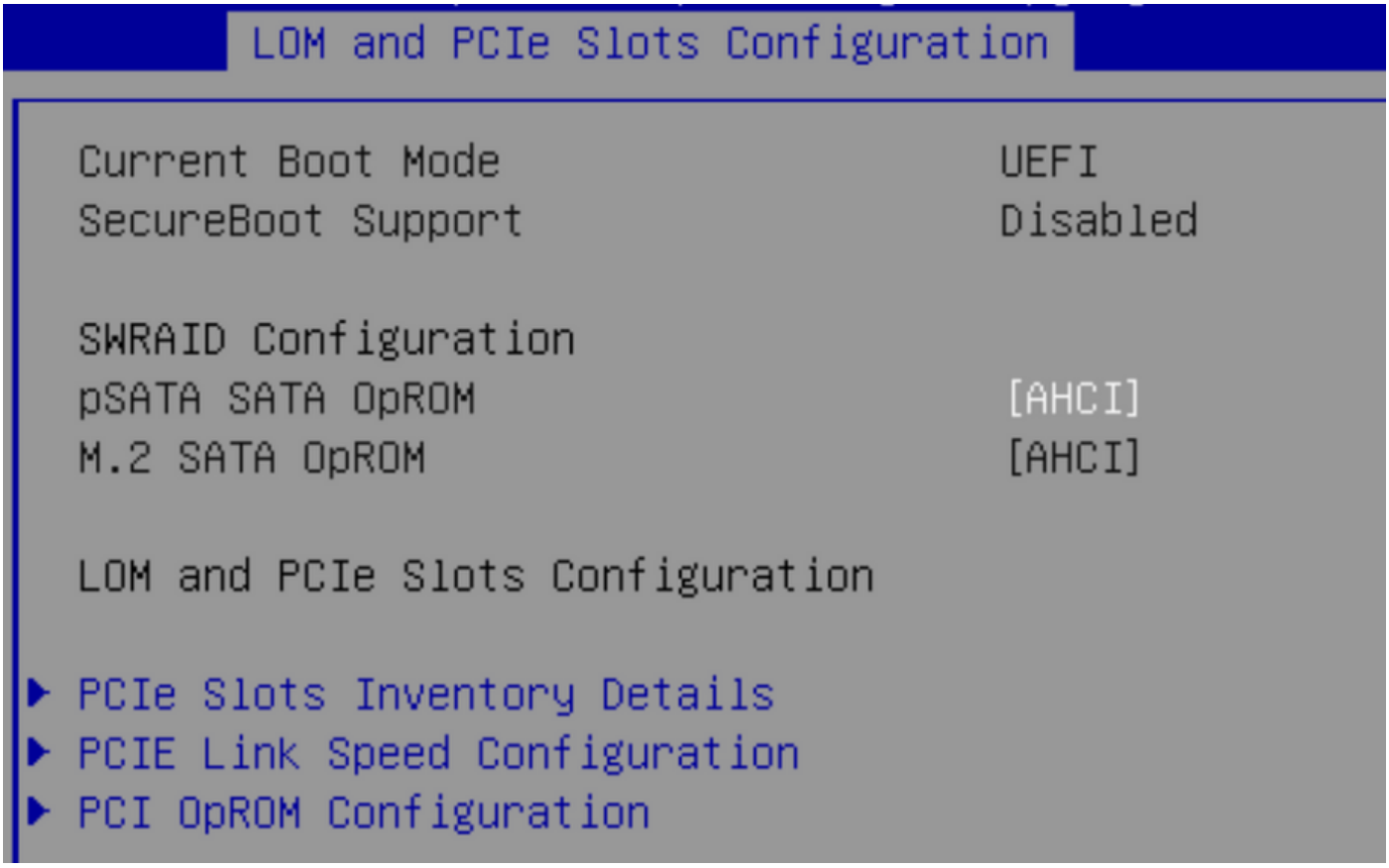


UCSM view of embedded PCH controller in AHCI mode

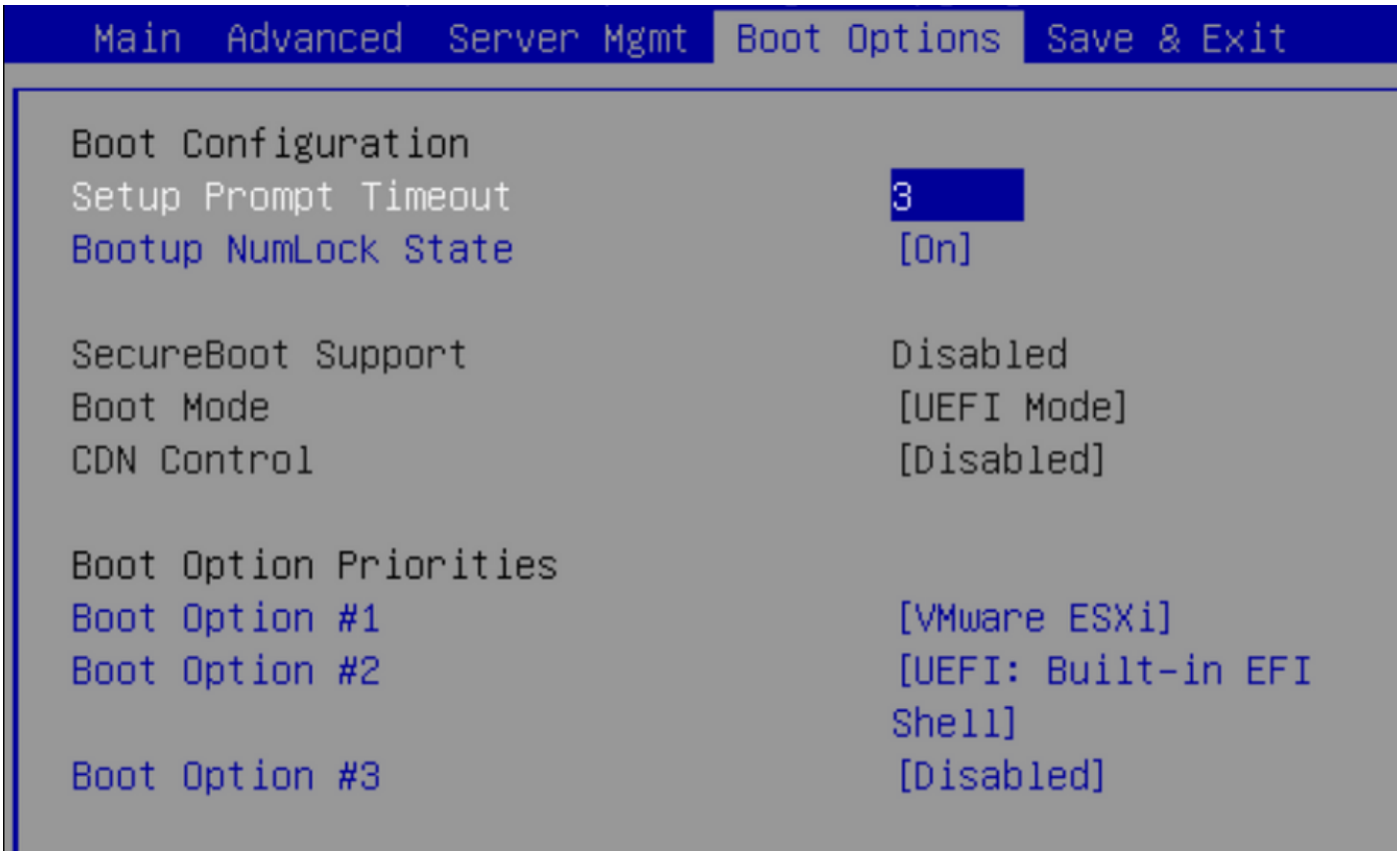


This is the view from F2 BIOS menu

Notice the pSATA is set to AHCI



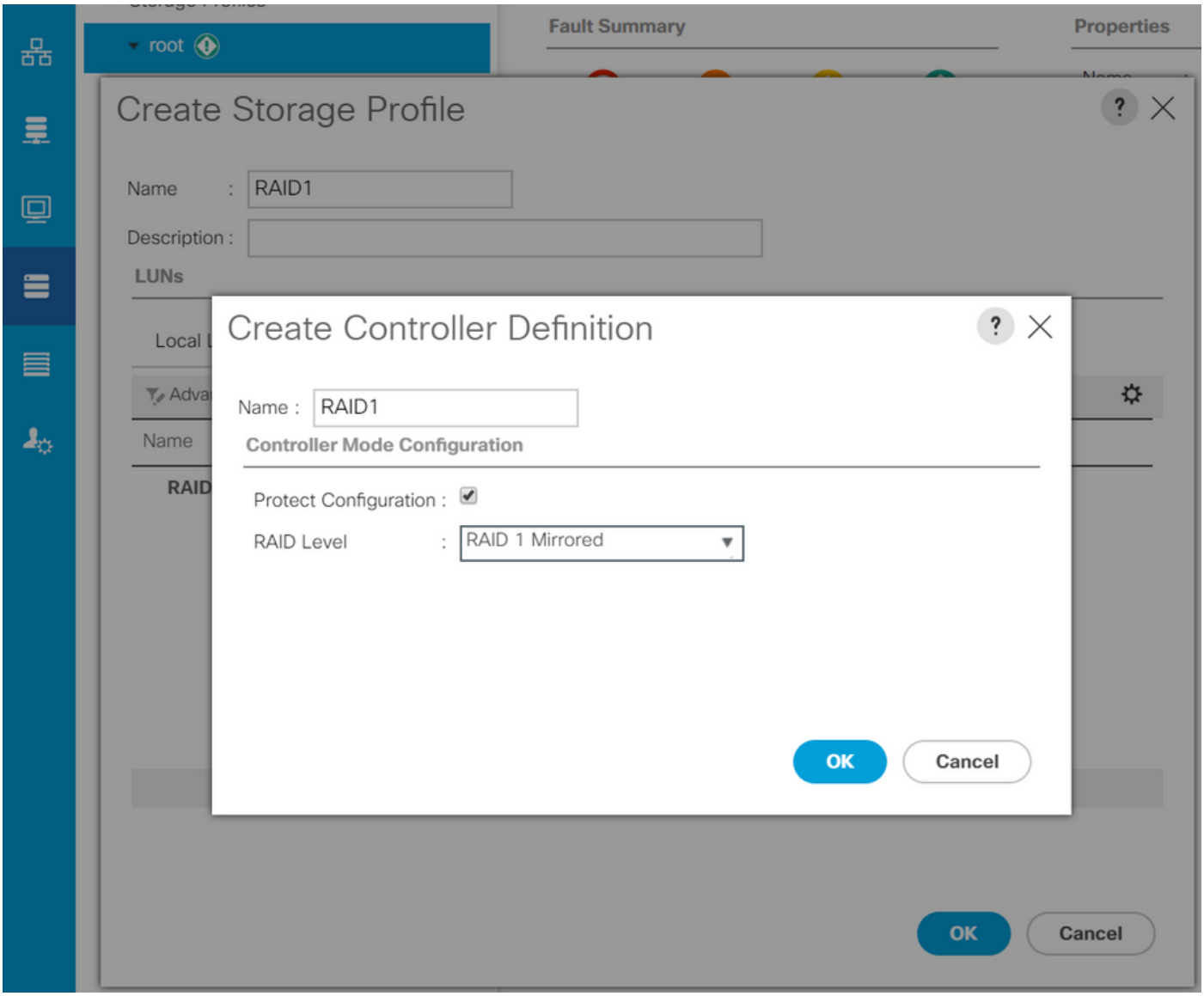
Notice the UEFI policy is named VMware ESXi (specified in our boot policy earlier)



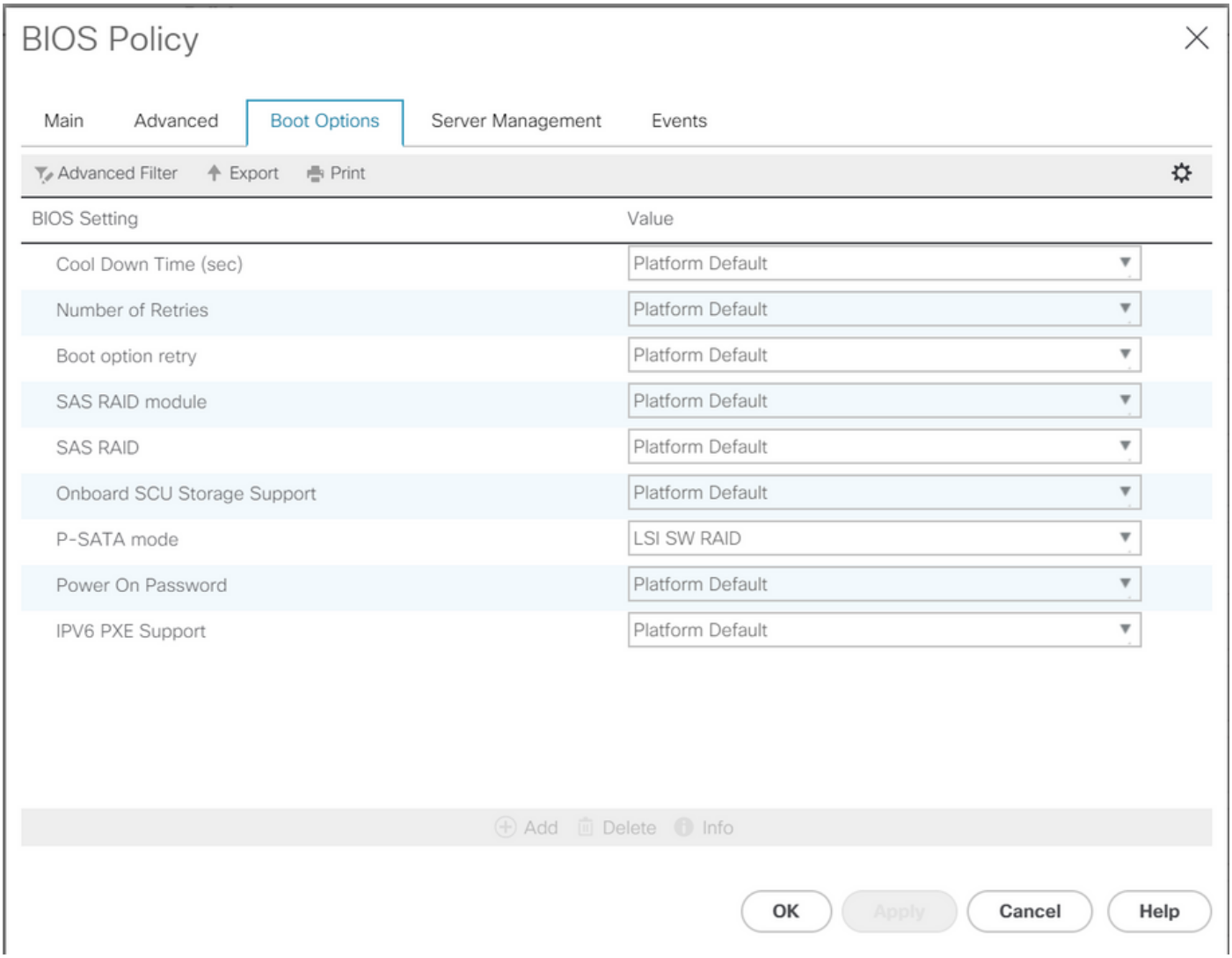
SWRAID Mode

This is an example of installing Microsoft Windows Server 2016 with the PCH controller in SWRAID Mode

Create a Strorage Profile with RAID Level set to RAID1 for redundancy.



Create a BIOS Policy with P-SATA mode set to SWRAID

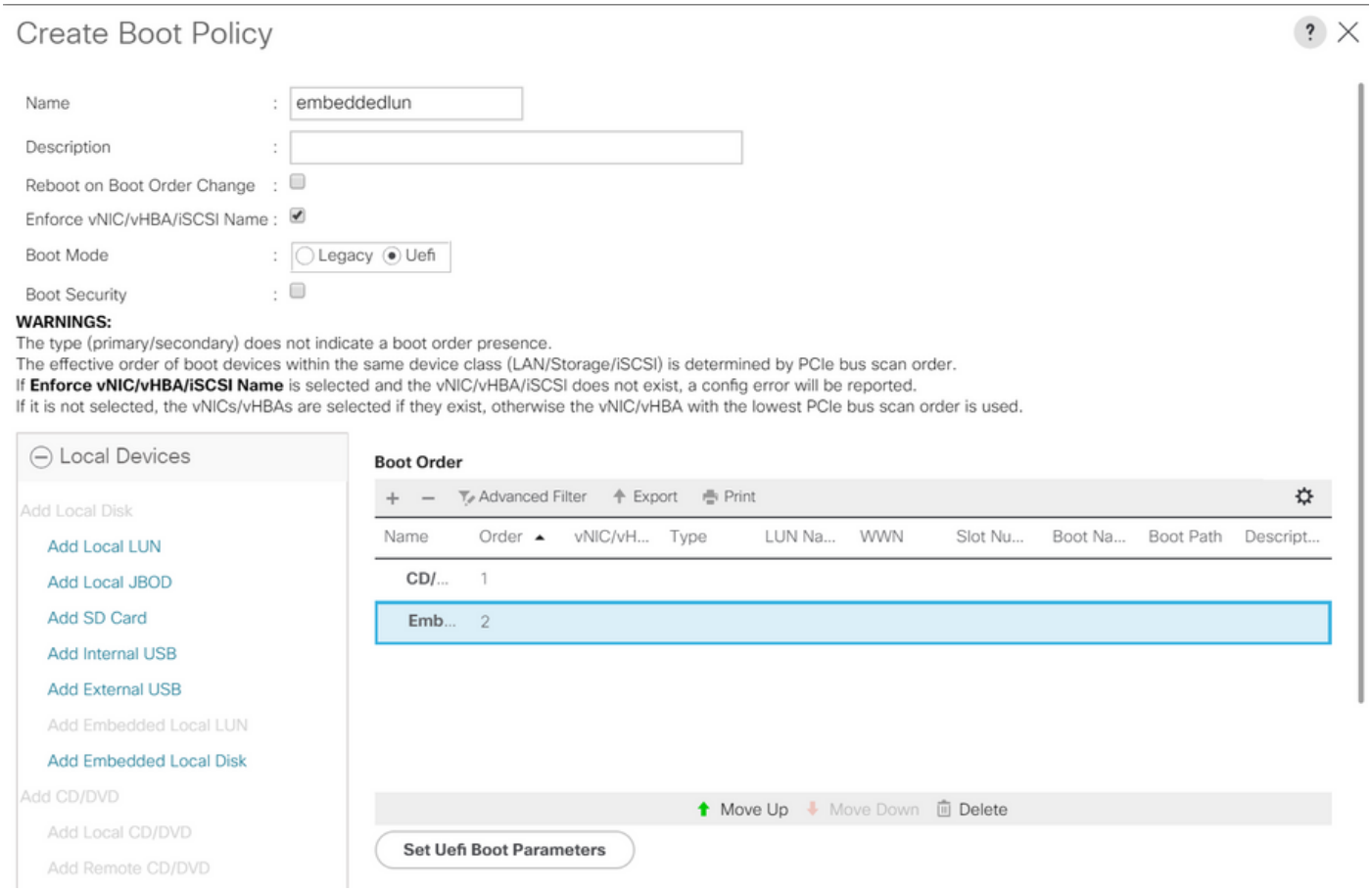


Create a Boot Policy

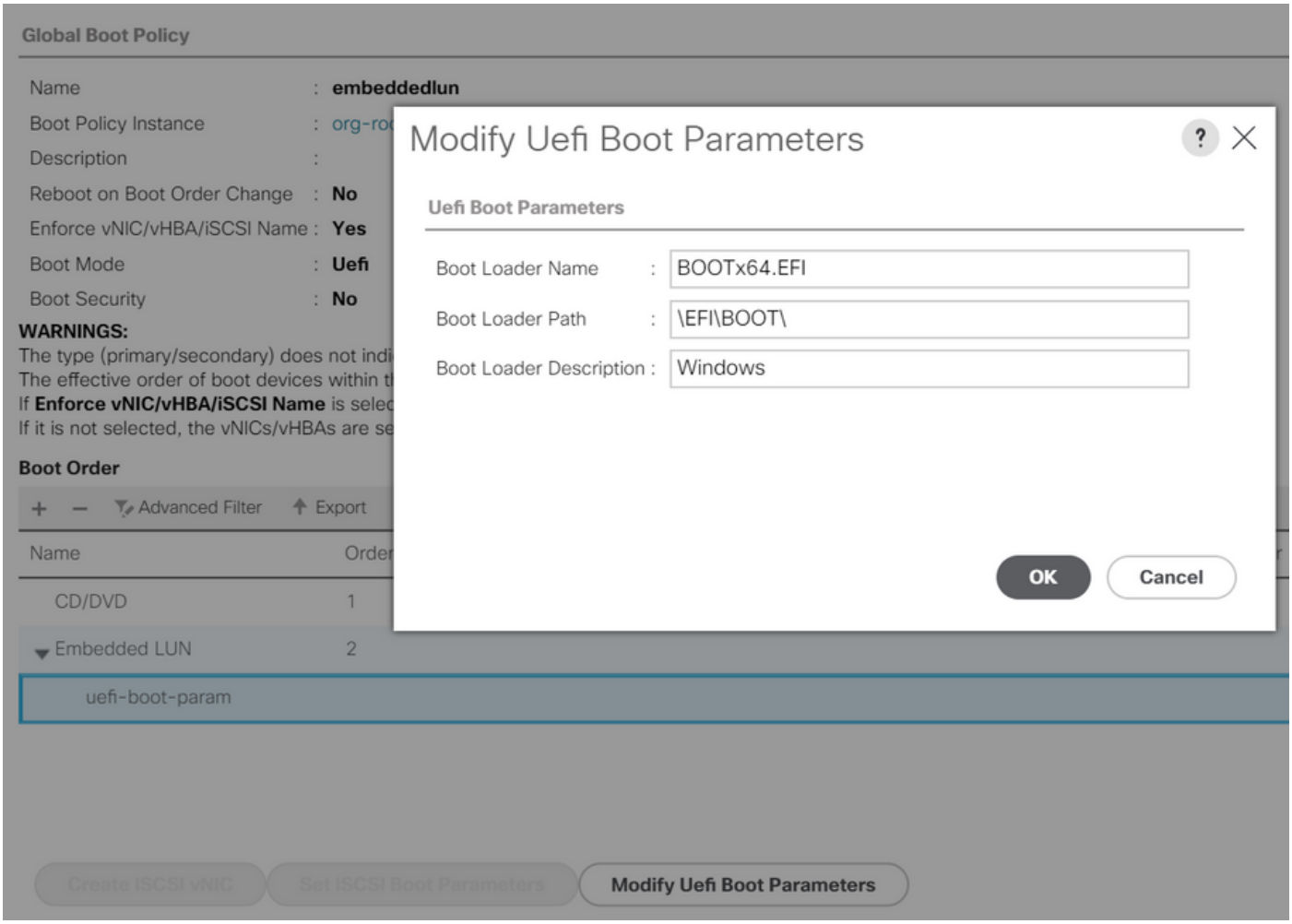
Set the Boot Mode to UEFI

Select "Add CD/DVD"

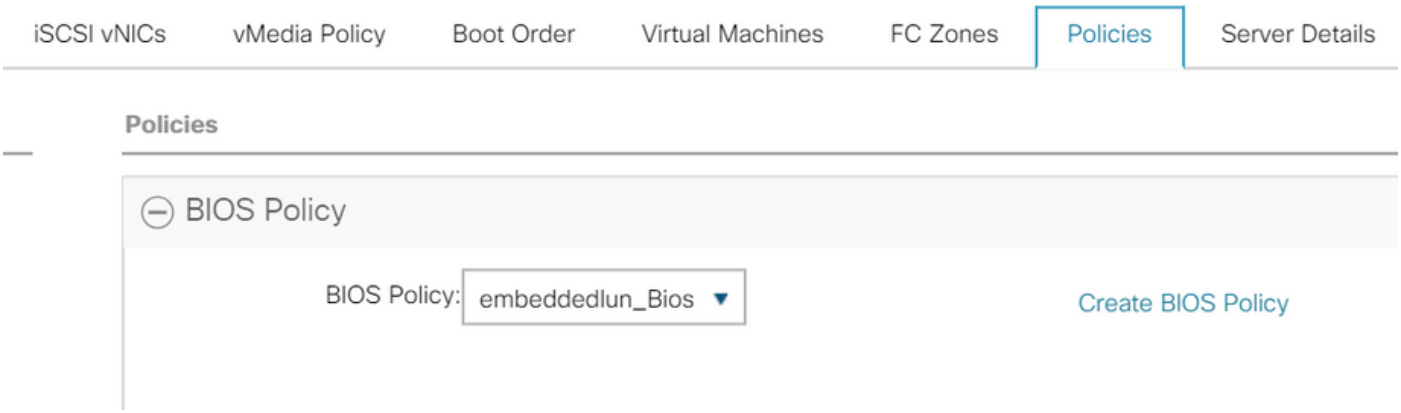
Select "Add Embedded Local LUN"



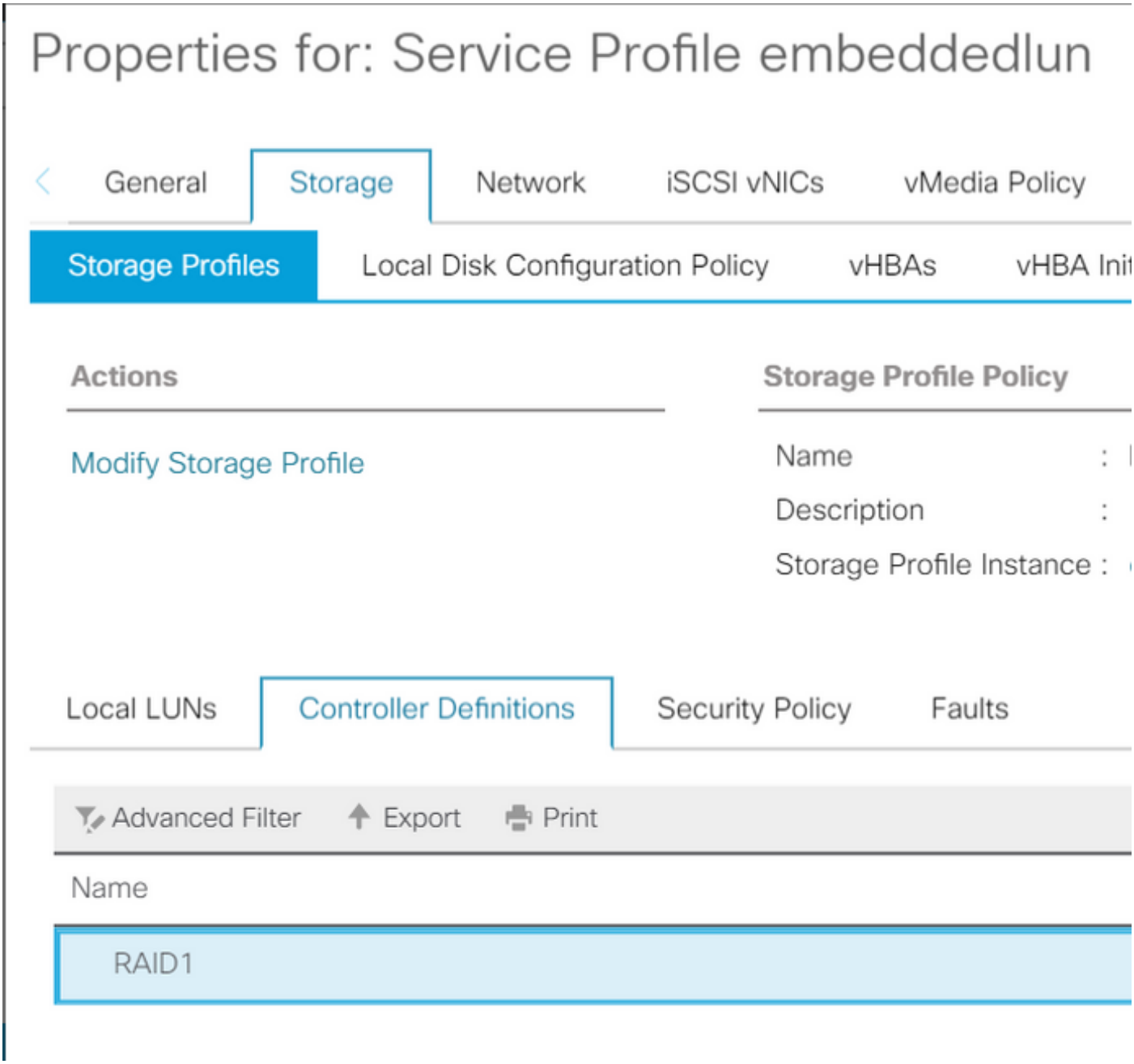
Specify the UEFI Boot Paramaters



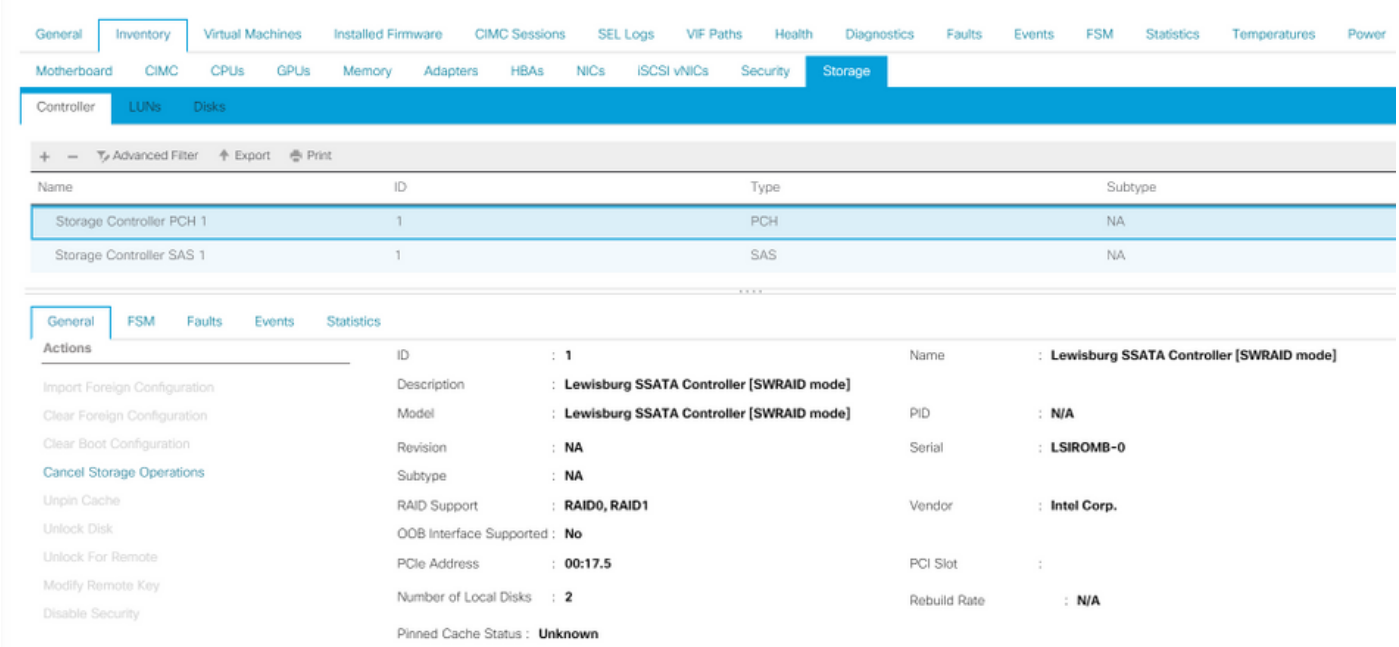
Assign the BIOS Policy you created earlier to the Service Profile



Assign the Storage Profile you created earlier to the Service Profile

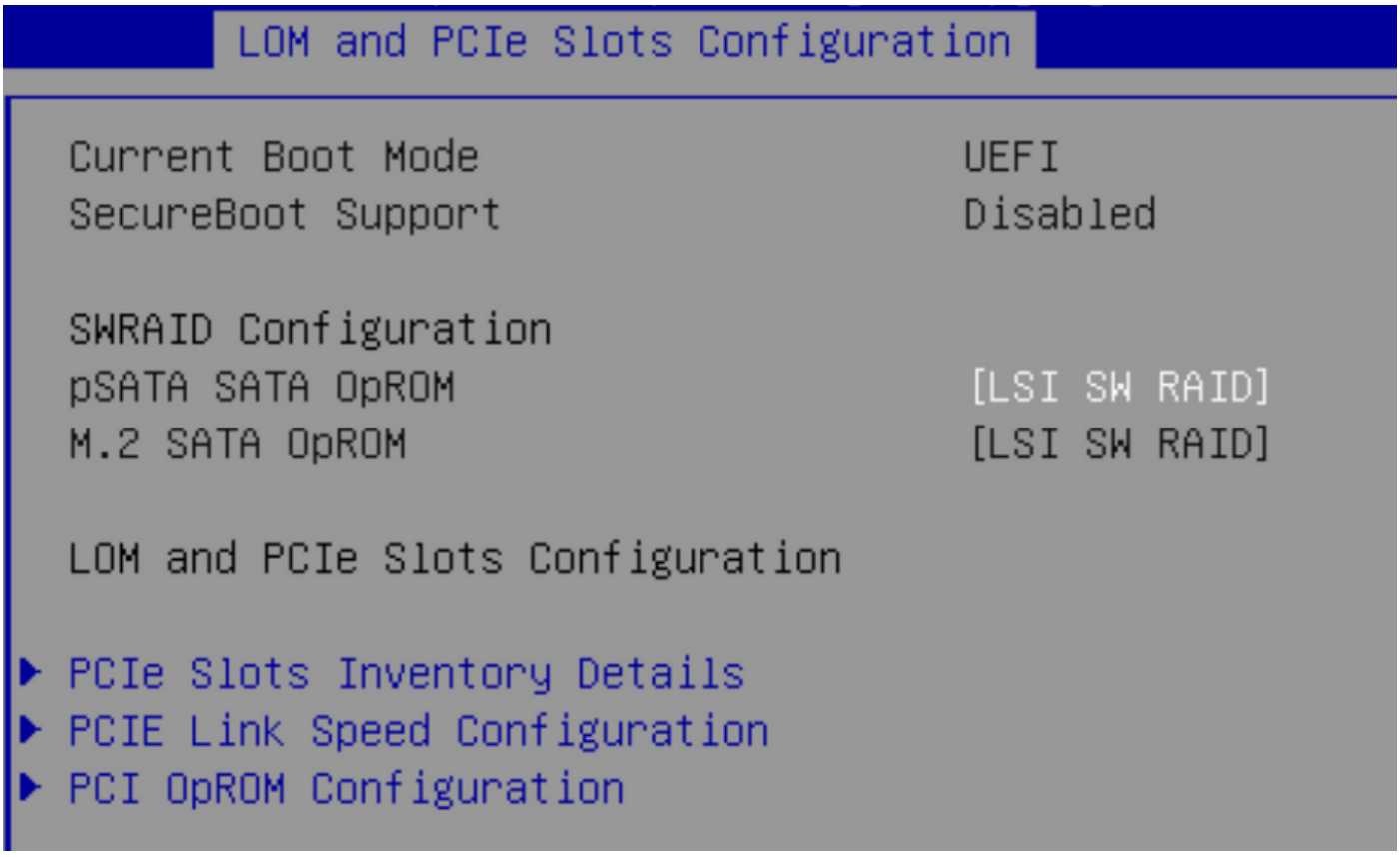


UCSM view of embedded PCH controller in SWRAID mode

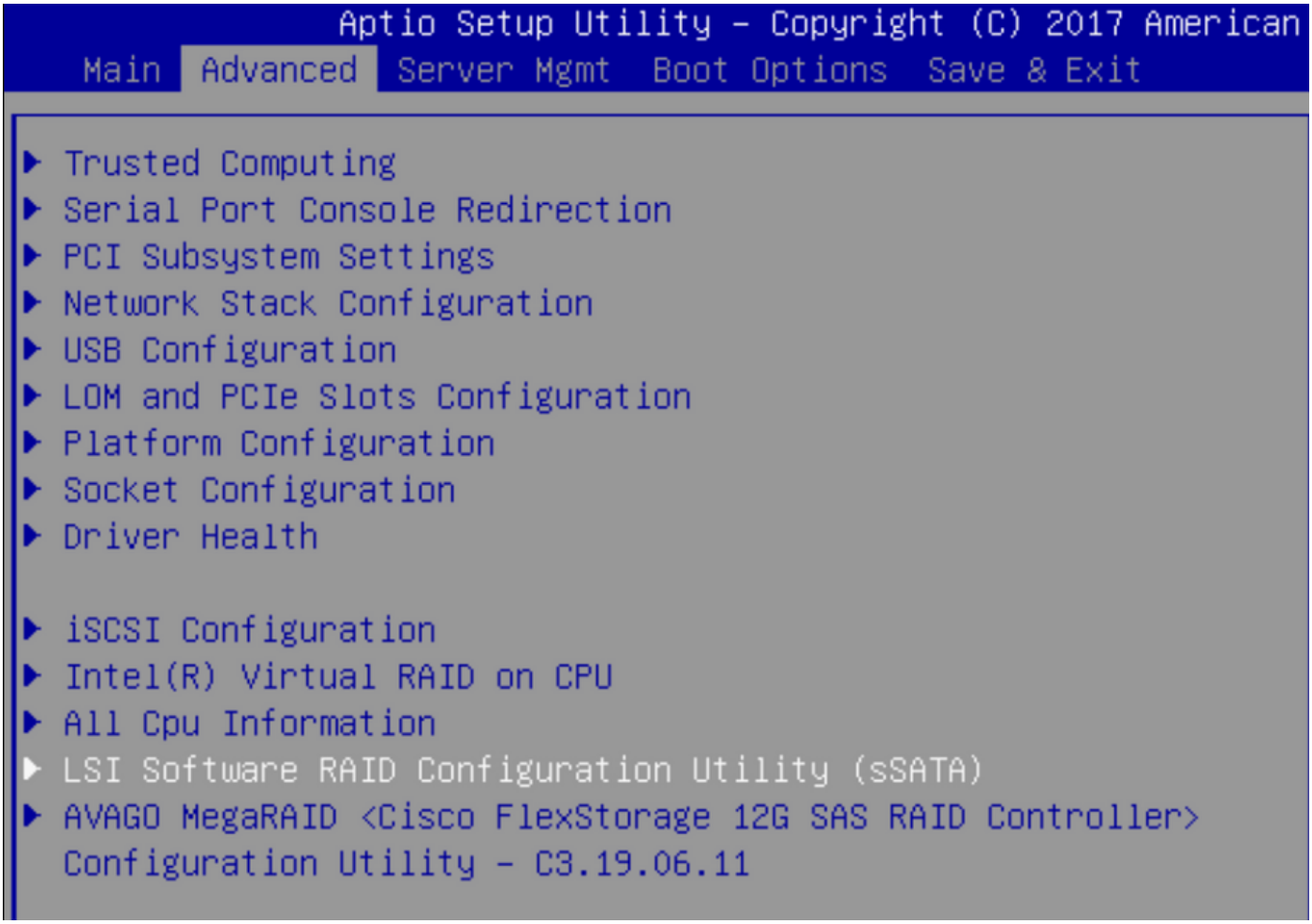


This is the view from F2 BIOS menu

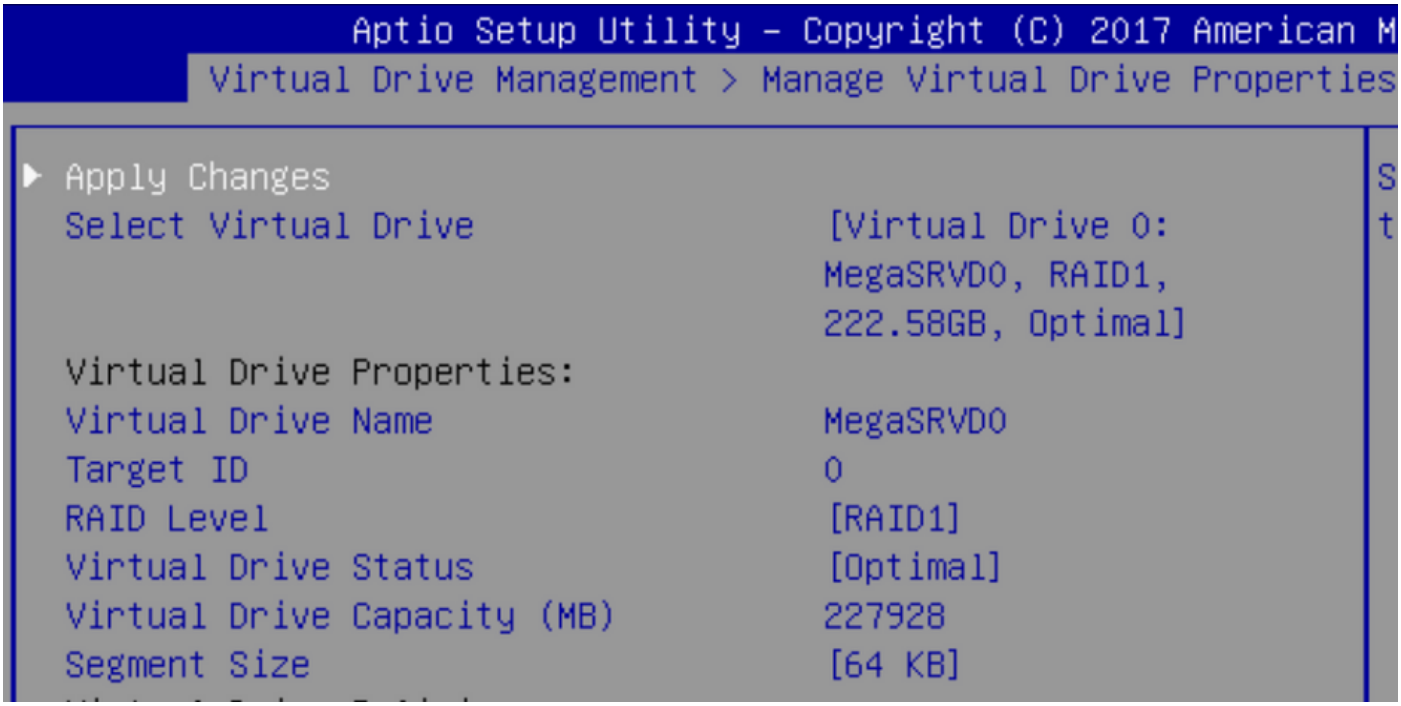
Notice the pSATA is set to AHCI



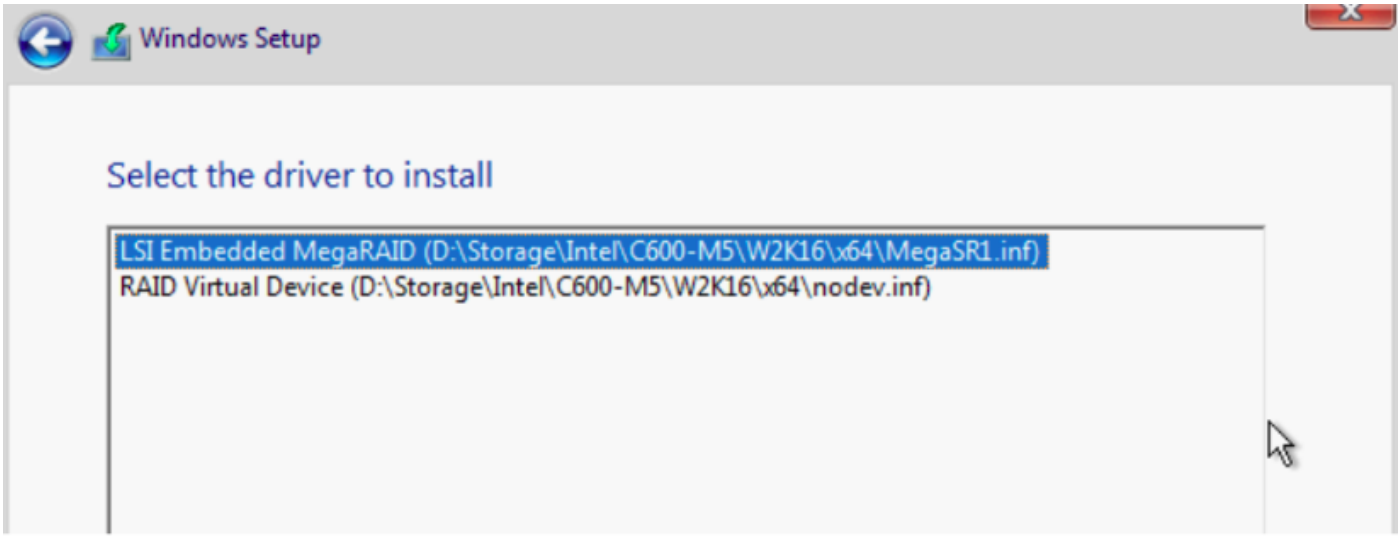
Notice the LSI Software RAID Configuration Utility (sSATA) show up



We can confirm that the Virtual Drive is set to RAID1 in BIOS

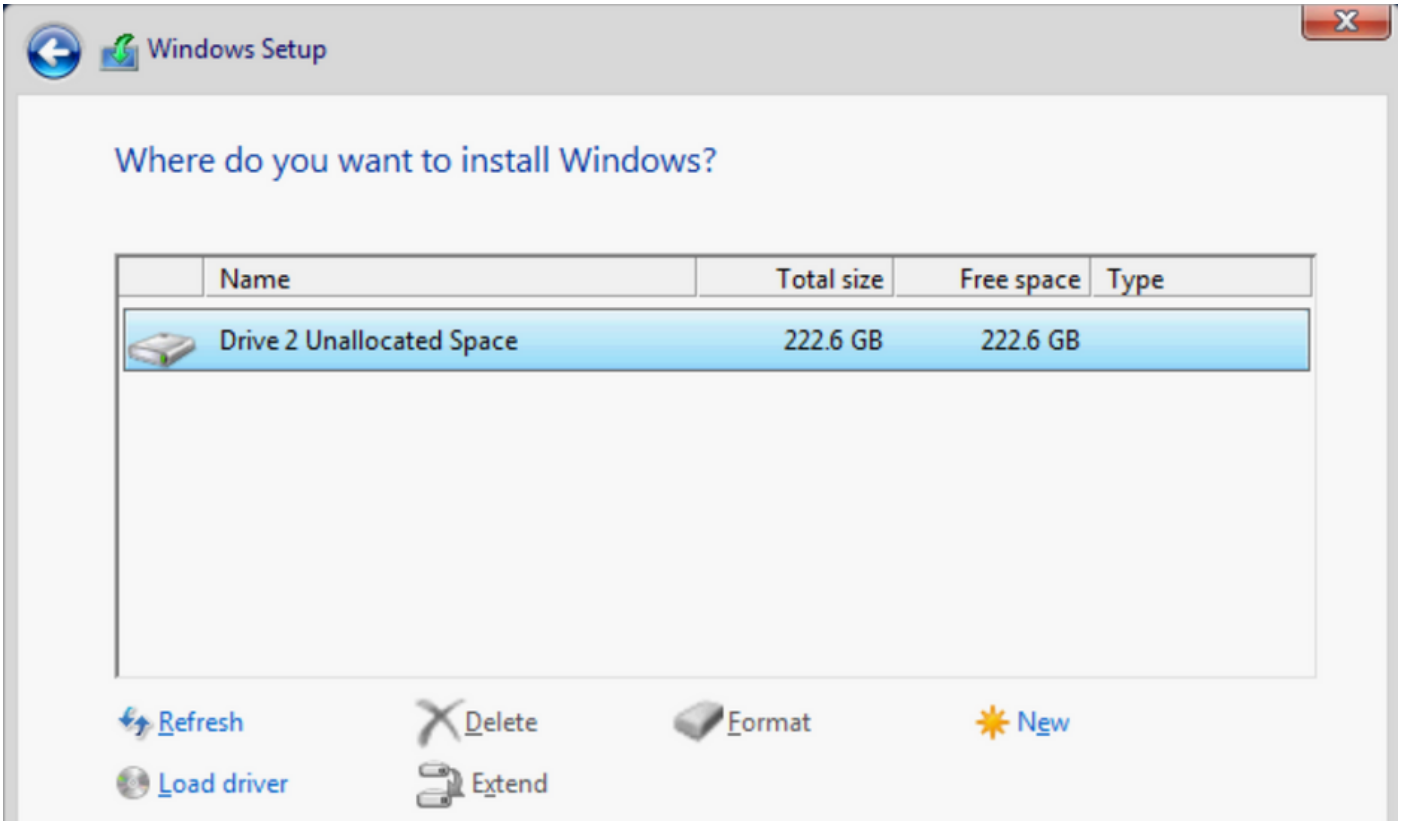


After you map the Windows Operating System, when you reach the section to install the driver, browse the contents of the drivers folders to the location of the embedded MegaRAID drivers: Storage/Intel/C600-M5/<OS>/

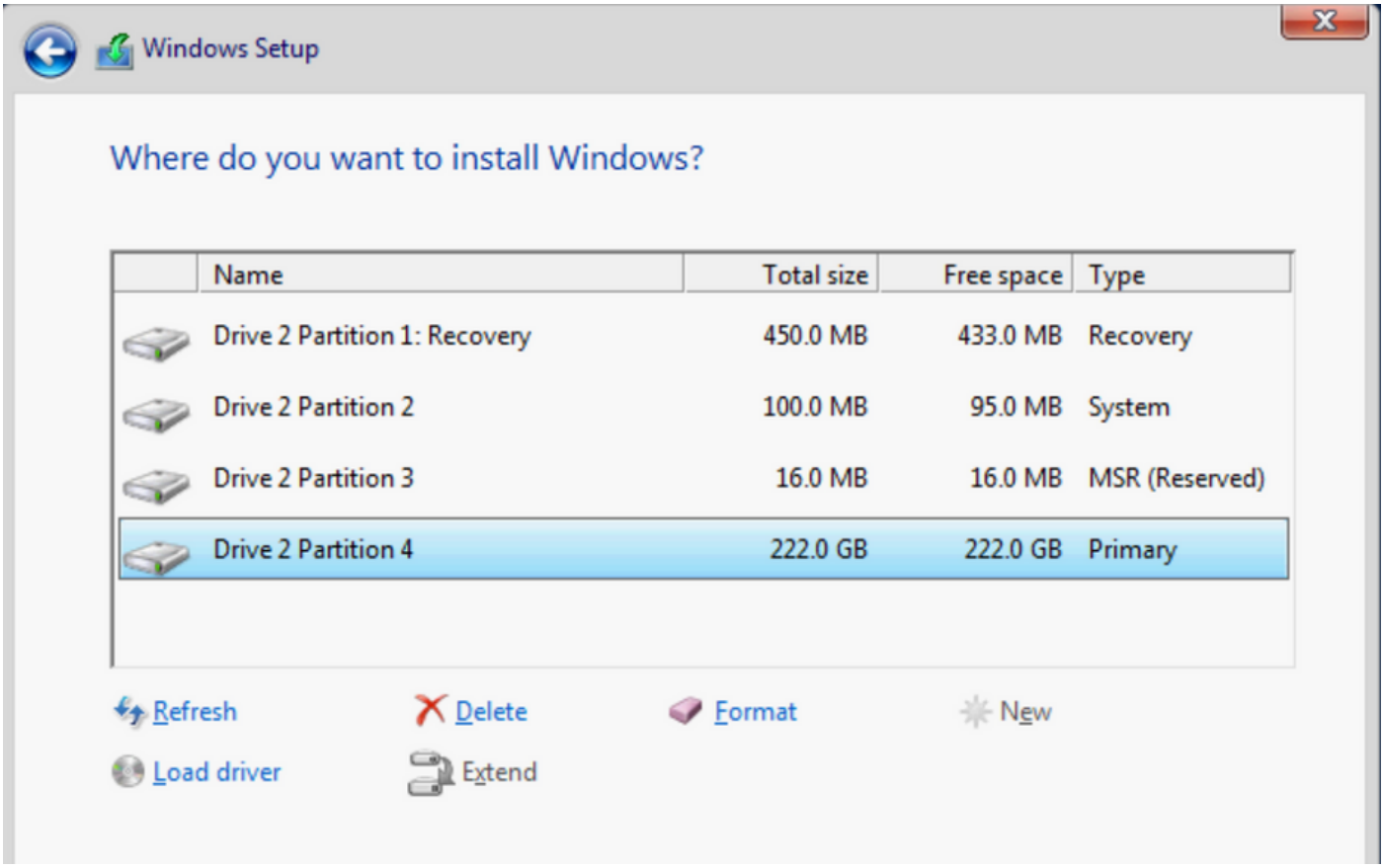


We should be able to detect the Virtual Drive we created

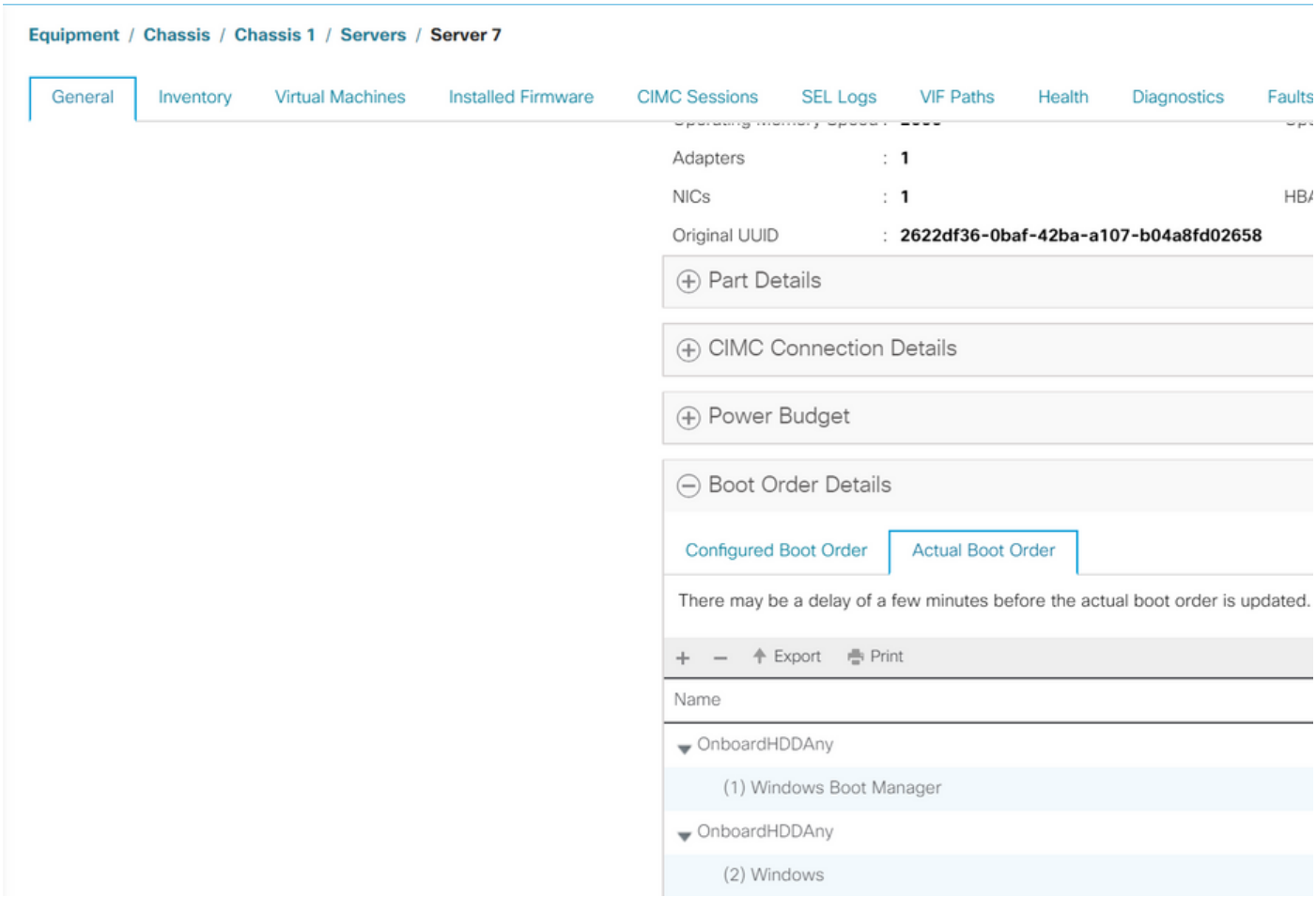
Click "New"



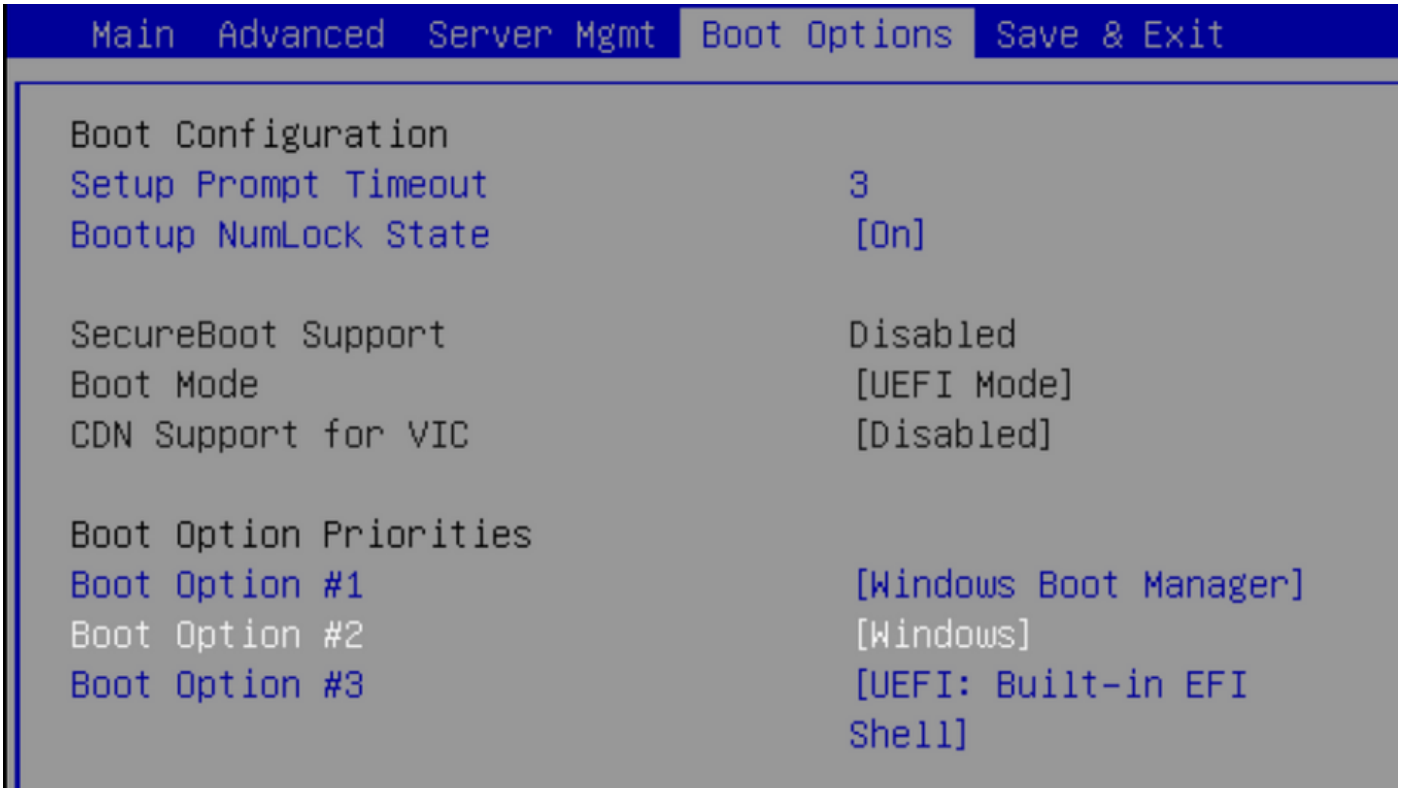
The disk should partition like so and allow you to install windows on the Primary partition.



Once the OS has installed, you can verify the mapping in the Actual Boot order



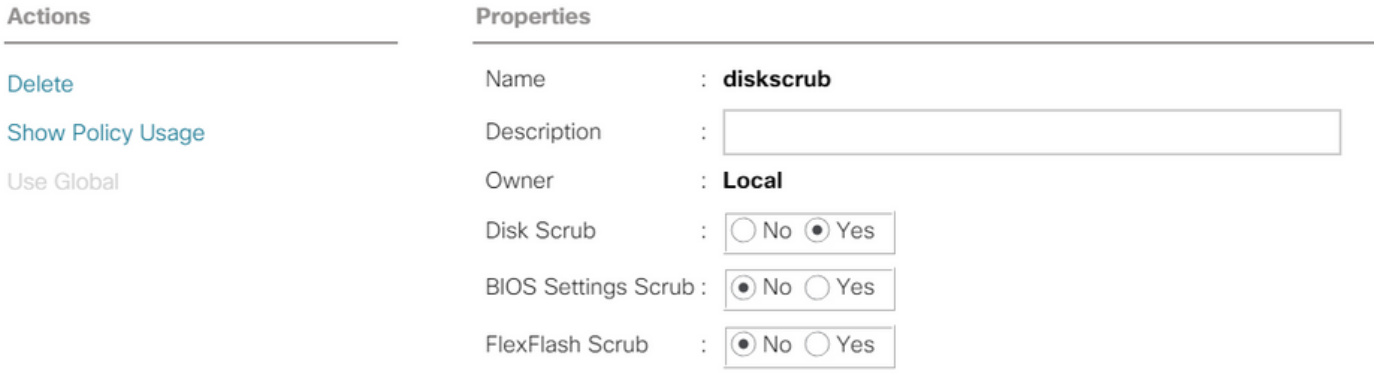
Notice the parameters in Actual Boot Order are identical to parameters in Boot Options in the BIOS



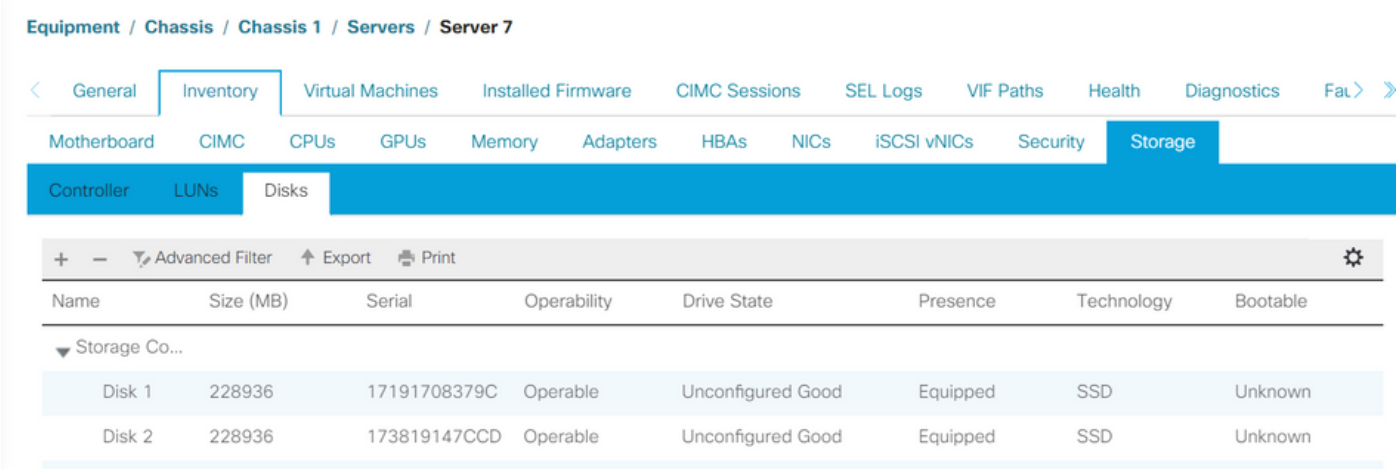
Clean up

If you want to install a different OS or want to shift the controller to AHCI mode, then you would need to scrub the disks.

In order to do so, apply a scrub policy to your Service Profile with Disk Scrub set to yes, then disassociate the Service Profile for srub to take effect.



After the Service Profile has been disassociated, the drive state should move to Unconfigured Good.



The M.2 SSD's can only be scrubbed in SWRAID mode and not in AHCI.

Verify

There is currently no verification procedure available for this configuration.

Troubleshoot

There is currently no specific troubleshooting information available for this configuration