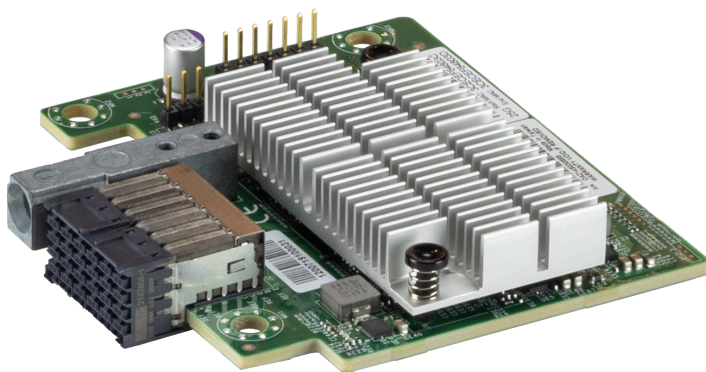




AOC-B25G-6CVL



User's Guide

Revision 1.0

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Manual Revision 1.0

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Preface

About this User's Guide

This user's guide is written for system integrators, PC technicians, and knowledgeable PC users. It provides information for the installation and use of the AOC-B25G-6CVL add-on card.

About this Add-on Card

The Supermicro® AOC-B25G-6CVL is one of the most feature-rich 25GbE controllers in the market. With built-in 25GbE connectivity, it provides unparalleled density, performance, and functionality. Based on the Intel® Ethernet Controller E810-XXVAM2 with features such as VXLAN, NVGRE, and RoCE, it provides flexible connectivity to meet different networking requirements. It is also compatible with 10GbE networks and provides cost-effective upgrade from 10GbE to 25GbE in data centers and cloud deployments.

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 add-on-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>).

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alternation, 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 to prevent damage to the system or injury to yourself:



Note: Additional information given to differentiate between various models or provides information for correct system setup.

Naming Convention



Character	Representation	Options
1st	Product Family	AOC: Add On Card
2nd	Product Type/Speed	GEH: GbE (1Gb/s) XEH: 10GbE (10Gb/s) B25G: 25GbE (25Gb/s) IBH: Infiniband OPH: Omni-Path
3rd	Chipset	X4D/6X4D: Mellanox ConnectX-4 Lx EN X4ES: Mellanox ConnectX-4 VPI 6CVL: Intel Ethernet Controller E810-XXVAM2 I2M: Intel Ethernet Controller X710-BM2 I4M: Intel Ethernet Controller I350-AM4 IN2: Intel Ethernet Controller 82599 WFR: Intel Omni-Path Wolfriver

SMC Blade Networking Add-on Cards

Model	Type	Form Factor	Controller	Connection	Dimension (mm)	Power (W)	Where used
AOC-XEH-I2M	10GbE	Proprietary	Intel Ethernet Controller X710-BM2	2x 10GbE	76.58 x 46.56	3.04W typical, 5.63W max	Microblade 3U/6U
AOC-GEH-I4M	1GbE	Proprietary	Intel Ethernet Controller I350-AM4	4x 1GbE	76.58 x 46.56	2.1W typical, 2.6W max	Microblade 3U/6U
AOC-IBH-X4ES	EDR IB	Proprietary	Mellanox ConnectX-4 VPI	1x 100Gb/s InfiniBand port	75.1 x 133.5	12.5W typical, 14.6W max	SuperBlade 8U (SBE-820C)
AOC-XEH-IN2	10GbE	Proprietary	Intel Ethernet Controller 82599	2x 10GbE	71.35 x 59.5	6.25W max	SuperBlade 7U
AOC-OPH-WFR	Omni-Path	Proprietary	Intel Omni-Path Wolfriver	1x 100Gb/s	75.1 x 133.5	13.12W typical, 16.65W max	SuperBlade 8U (SBE-820C)
AOC-B25G-X4D	25GbE	Proprietary	Mellanox ConnectX-4 Lx EN	2x 25GbE or 10GbE	75.1 x 133.5	12.5W typical, 14.6W max	SuperBlade 8U (SBE-820J)
AOC-B25G-6X4D	25GbE	Proprietary	Mellanox ConnectX-4 Lx EN	2x 25GbE or 10GbE	73.5 x 87	12.5W typical, 14.6W max	SuperBlade 6U (SBE-610J)
AOC-B25G-6CVL	25GbE	Proprietary	Intel Ethernet Controller E810-XXVAM2	2x 25GbE or 10GbE	86.98 x 73.45	10.9W typical, 11.5W max	SuperBlade 6U (SBE-610J)

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Chapter 1


Overview

1-1 Overview

Congratulations on purchasing your add-on 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/products/nfo/networking.cfm#adapter>.

1-2 Key Features

The key features of this add-on card include:

- Supermicro Blade Mezzanine Card
- Intel Ethernet Controller E810-XXVAM2 25GbE controller, supporting two 25G or 10G ports
- Hardware offloads for NVGRE, VXLAN, and Geneve encapsulated traffic
- SR-IOV for virtualization
- Low latency RDMA over Converged Ethernet (RoCE)
- Jumbo frames support
- Asset Management features with thermal sensor
- RoHS compliant 6/6 

1-3 Specifications

General

- Supermicro Blade Mezzanine Card
- Intel E810-XXVAM2 25GbE Controller
- PCIe 4.0/3.0 x8
- 25GBASE-KR
- 2 ports

Ethernet

- 25GbE/10GbE
- IEEE 802.3ad, 802.1AX Link Aggregation
- IEEE 802.1Q, 802.1P VLAN tags, and priority
- Jumbo frames support

Enhanced Features

- Hardware-based reliable transport
- Vector collective operations offloads
- Dynamically Connected Transport (DCT)
- Enhanced atomic operations
- Support for MSI-X mechanisms
- Support for both iWARP and RoCEv2 RDMA, selectable via software per port
- Optimized Tx-Scheduler

Storage Networking

- Data Center Bridging (DCB)
- Stateless L3/L4 offloads for iSCSI, NAS, and NFS
- Server Message Block (SMB)

Network Virtualization Overlay

- Dynamic Device Personalization (DDP) with programmable pipeline for flexible frame format support
- Intelligent Flow Direction: Receiver Side Scaling (RSS), Intel Ethernet Flow Director, and Application Device Queues (ADQ)
- Comprehensive Network Virtualization Overlay protocols support
- vSwitch Assist
- QoS: Priority-based Flow Control (802.1Qbb), Enhanced Transmission Selection (802.1Qaz), and Differentiated Services Code Point (DSCP)

Virtualization

- SR-IOV: Up to 256 virtual functions, up to 8 physical functions per port, 256 Queues per physical function, 2K queue pairs total, 768 VSIs
- Adaptive virtual function driver
- Scalable IO Virtualization (768 VDEVs)
- Programmable Virtual Ethernet Bridging (VEB) with ACL
- Virtual Machine Device Queue (VMDq); Virtual Machine QoS (VMQoS)

CPU Offloads

- RDMA over Converged Ethernet (RoCE)
- TCP/UDP/IP stateless offload
- LSO, checksum offload
- RSS (can be done on encapsulated packet), VLAN insertion/stripping, receive flow steering

Management Features

- Remote boot over iSCSI
- PXE and UEFI
- PLDM over MCTP over SMBUS
- PLDM over MCTP over PCIe

Security

- Hardware-based Root of Trust
- Authentication on Read and Power On; Whitelist approach on NVM update
- Built-in detection of firmware/critical setting corruption with automated device recovery

Power Consumption

- 10.9W typical/11.5W max

Operating Conditions

- Operating temperature: 0°C to 55°C (32°F to 131°F)
- Storage temperature: -40°C to 70°C (-40°F to 158°F)
- Storage humidity: 90% non-condensing relative humidity at 35°C

Physical Dimensions

- AOC-B25G-6CVL Card PCB dimensions: 86.98mm (3.42in) x 73.45mm (2.89in) (W x D)

Supported Platforms

- B11DPE, B12DPE, and B12SPE



Note: This product is sold only as part of an integrated solution with Supermicro SuperBlade systems.

1-4 Available SKUs

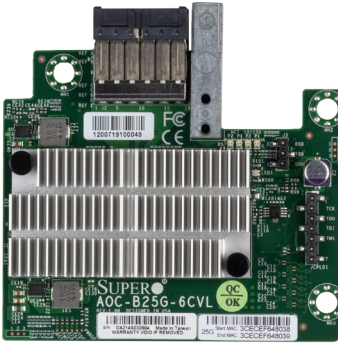
SKUs	Part Number	Description
AOC-B25G-6CVL	AOC-B25G-6CVL	2-port 25 Gigabit Ethernet Adapter in SuperBlade 6U chassis

Chapter 2

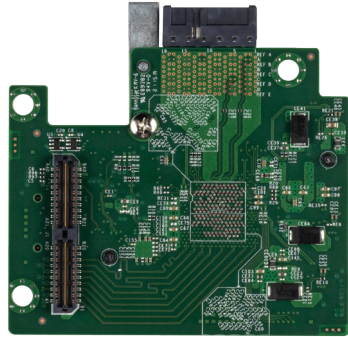
Hardware Components

2-1 Add-On Card Image and Layout

Image of AOC-B25G-6CVL

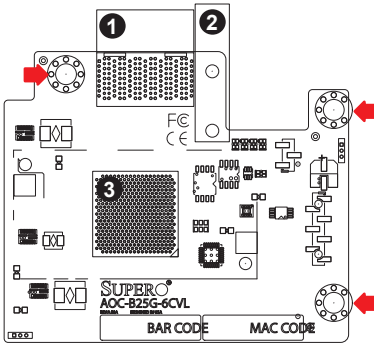


Top View

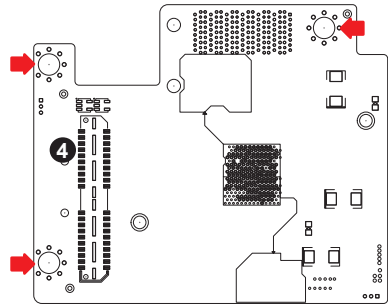


Bottom View

Layout of AOC-B25G-6CVL



Top View



Bottom View

1. Board to Board Connector	4. Q Strip® Connector
2. Guide Pin	➡ Mounting Holes
3. Intel E810 (Columbiaville)	

2-2 Major Components

The following major components are built-in on the AOC-B25G-6CVL:

1. One (1) Intel E810
2. One (1) Q Strip Connector
3. One (1) Board to Board Connector

Chapter 3

Installation

3-1 Static-Sensitive Devices

Electrostatic Discharge (ESD) can damage electronic components. To avoid damaging your add-on 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 add-on card from the antistatic bag.
- Handle the add-on card by its edges only; do not touch its components.
- Put the add-on 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 add-on card.

Unpacking

The add-on card is shipped in antistatic packaging to avoid static damage. When unpacking your component or system, make sure you are static protected.



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

3-2 Before Installation

Before you install the add-on card, follow the instructions below.

1. Use industry-standard anti-static equipment such as gloves or a wrist strap and follow the precautions on [page 3-1](#) to avoid damage caused by ESD.
2. Familiarize yourself with the server, motherboard, and/or chassis documentation.
3. Confirm that your operating system includes the latest updates and hotfixes.

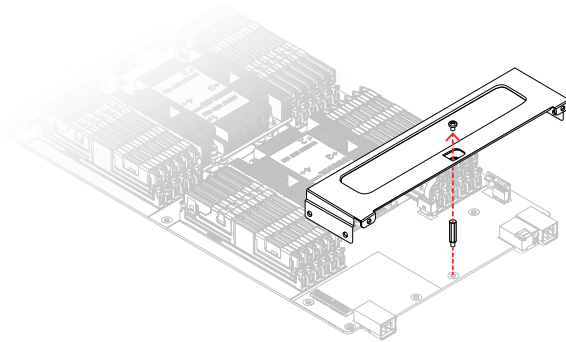
3-3 Add-on Card Installation

Follow the steps below to install the add-on card into your system.

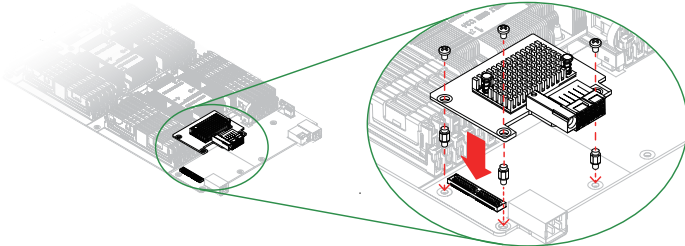



Note 1: This add-on card does not support hot plug.

1. Remove the CPU Blade from the enclosure.
2. Remove the add-on card slot cover from the chassis, and place the screws aside for later use.

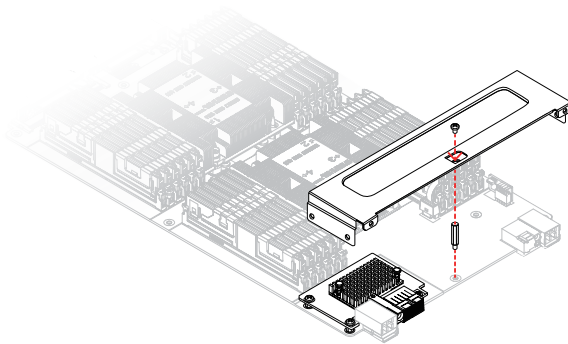


3. Insert the standoffs into the motherboard's mounting holes. Place the add-on card upper of the motherboard, align the mounting holes and add-on card slot. Gently push the add-on card slot to the corresponding slot on the motherboard, and then secure it.



 **Note:** To avoid damaging the motherboard, **DO NOT** overtighten the screws.

4. Secure the add-on card slot cover to the chassis.



5. Re-insert the CPU Blade into the enclosure.

3-4 Installing Drivers (for Intel E810-XXVAM2)

Use the procedures below to install drivers for Linux.

Linux Drivers

Use the following procedure to install Intel Ethernet Controller E810 drivers on the Linux operating system.

1. Go to the Intel download center to download the ICE Linux driver.



Note: To avoid a compatibility issue, be aware of the software version before installing the driver. It's recommended to download the latest version if multiple drivers are available on the website.

2. Move the base driver tar file to the directory of your choice. For example, use '/home/username/ice' or '/usr/local/src/ice'.
3. Enter the following command to untar/unzip the archive, where <x.x.x> is the version number for the driver tar file:

```
# tar xzf ice-<x.x.x>.tar.gz
```

4. Enter the following command to change to the driver src directory, where <x.x.x> is the version number for the driver tar:

```
# cd ice-<x.x.x>/src/
```

5. Compile the driver module using the following command:

```
# make install
```

The binary will be installed with the default location as /lib/modules/<KERNEL VER>/updates/drivers/net/ethernet/intel/ice/ice.ko. This may differ for various Linux distributions.

6. Load the module using the modprobe command. To check the version of the driver and then load it, enter the following commands:

```
# modinfo ice
```

```
# modprobe ice
```

Alternately, make sure that any older ICE drivers are removed from the kernel before loading the new module using the following command:

```
# rmmod ice; modprobe ice
```

7. Assign an IP address to the interface by entering the following, where <ethX> is the interface name that was shown in dmesg after modprobe:

```
# ip address add <IP_address>/<netmask bits> dev <ethX>
```

8. Verify that the interface works. Enter the following, where IP_address is the IP address for another machine on the same subnet as the interface that is being tested:

```
# ping <IP_address>
```

**For more Linux driver installation details or to build a binary RPM package of this driver, please refer to the readme file in the Intel ICE driver download package.

Windows Drivers

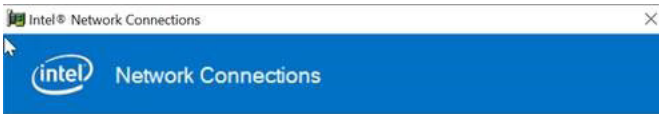
Use the following procedures to install Intel Ethernet Controller E810 drivers on the Windows operating system.

1. Go to the Supermicro website to download the SuperBlade's driver CD. For example, download [CDR-B12-UP_1.00_for_Intel_B12_UP_platform.iso](#) for the B12 platform.



Note: To avoid a compatibility issue, be aware of the software version before installing the driver. It's recommended to download the latest version if multiple drivers are available on the website.

2. Mount the CD.
3. Go to the Intel folder.
4. Open the LAN folder.
5. Run the "Autorun" application to install the Intel Ethernet Controller. The window shown below will pop up to guide the user through driver installation.



Install Drivers and Software

View User Guides

View Release Notes

[Networking at Intel.com](#)

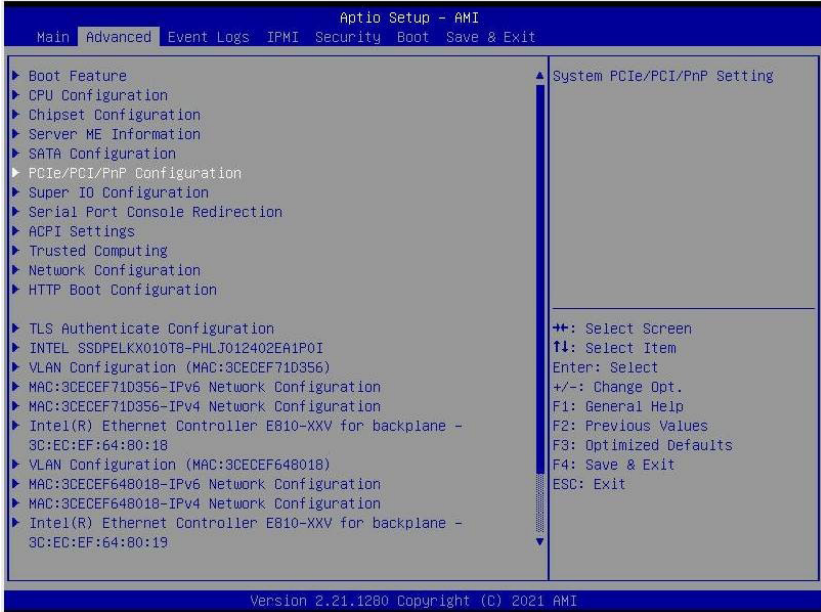
Version: 25.5.0.7

Alternatively, user may go to the Intel download center to download "Intel® Network Adapter Driver for Windows® 10" and refer to the readme file for driver installation details.

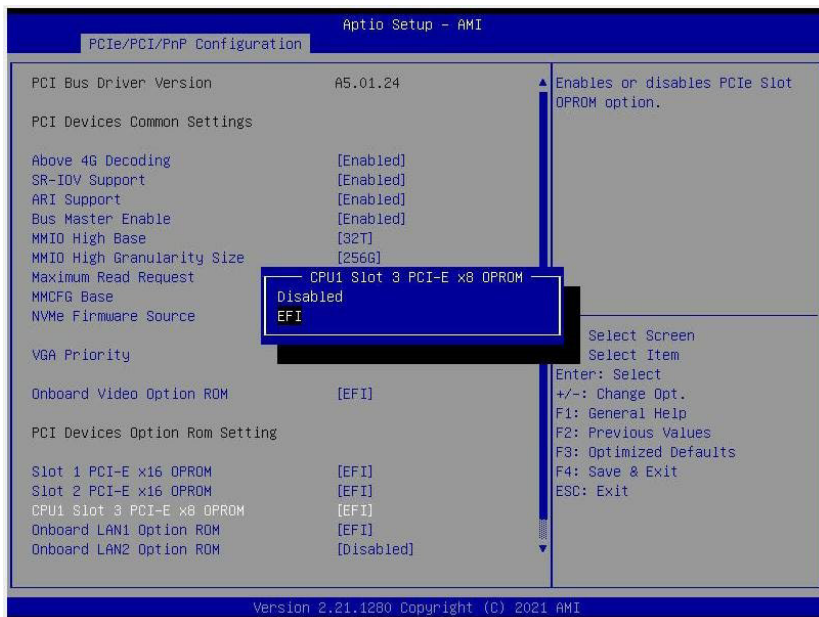
3-5 Configuring EFI mode from System Setup

During the host boot process, EFI mode configuration can be modified through BIOS setup.

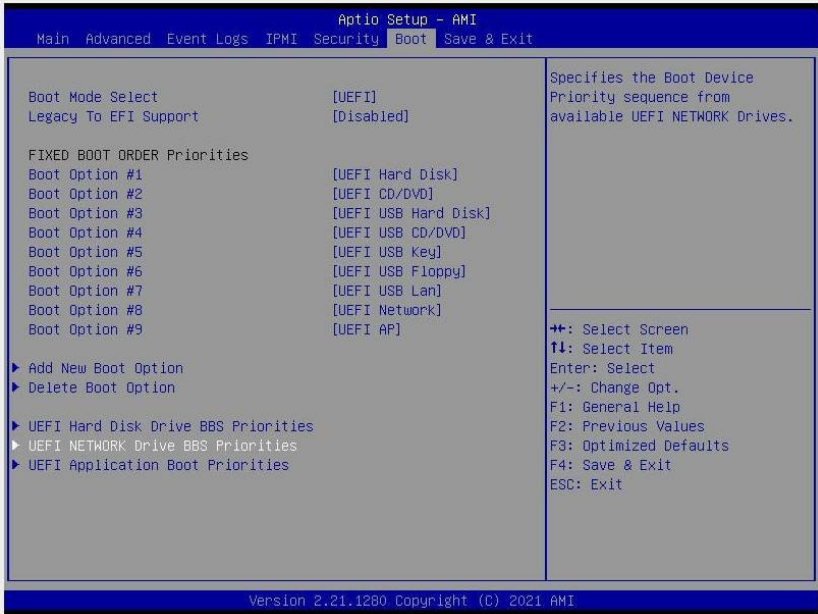
1. From the top of the tool bar, select Advanced to enter the submenu. Choose PCIe/PCI/PnP Configuration and press <Enter> to see the contents of PCI devices settings.



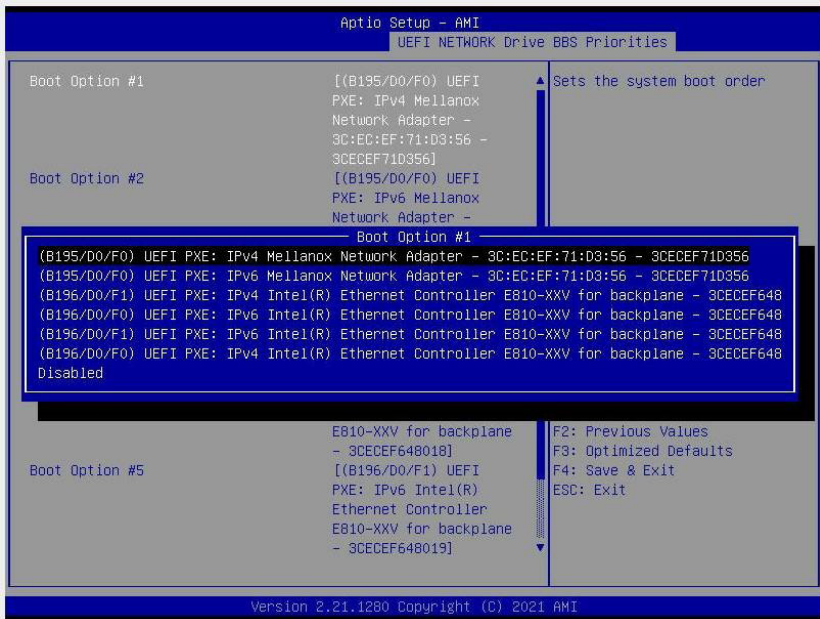
- When the screen as shown below displays, use the arrow keys to select CPU1 PCI-E 3.0 x8 OPRM and press <Enter>. Use this feature to select which firmware type to be loaded for the add-on card in this slot. The options are Disabled and Legacy (if the Boot Mode Select feature under the Boot tab is set to Legacy), Disabled and EFI (if the Boot Mode Select feature under the Boot tab is set to UEFI), or Disabled, Legacy, and EFI (if the Boot Mode Select feature under the Boot tab is set to Dual).



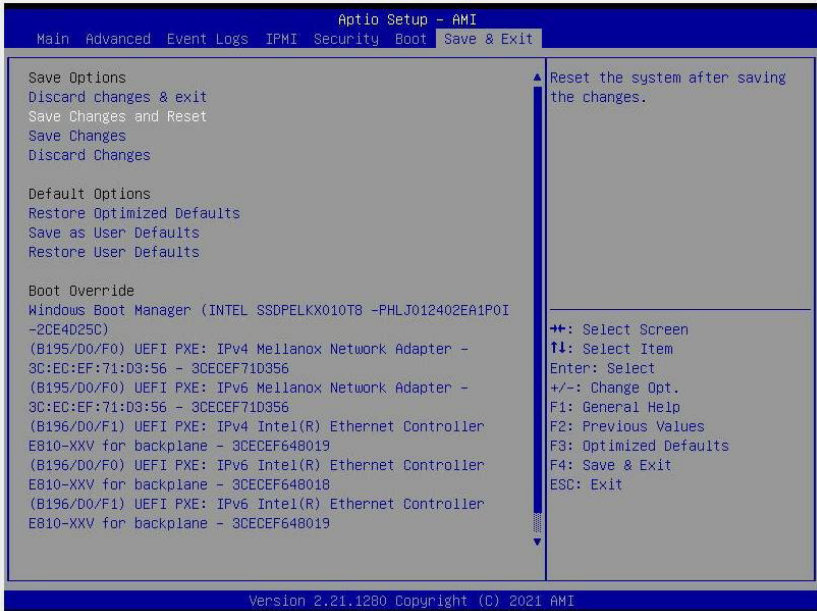
- To see the available boot options of the UEFI Network Drive, select Boot to enter the submenu. When the following screen appears, use the arrow keys to select UEFI NETWORK Drive BBS Priorities and press <Enter>.



- To examine the details of each boot option, select the corresponding numbers of the desired boot options. For example, when Boot Option #1 is selected, the MAC address of the Boot Option #1 page will appear.



- After the system configuration is completed, select Save Changes and Reset from the Save & Exit menu, then press <Enter> to save the changes.



Note: All screenshots shown are for illustration purpose only and may not match the screens that you see on your system.