



AOC-MTG-b2T AOC-MTG-b2TM



USER'S MANUAL

Revision 1.0b

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Preface

About This Manual

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-MTG-b2T and AOC-MTG-b2TM add-on cards.

About This Add-On Card

The Supermicro® AOC-MTG-b2T/-b2TM features the latest Broadcom® NetXtreme® BCM57416 Ethernet controller that is designed for today's rapidly growing data center and cloud-scale applications. In small form factor SIOM, it features VXLAN NVGRE, and Geneve along with Broadcom® Truflow® technology that enables users to reduce CPU loads and increase VM densities. In addition, NPAR (NIC Partitioning) technology provides flexible connectivity for different networking requirements. The Supermicro AOC-MTG-b2T/-b2TM is a truly exceptional 10GbE Ethernet Adapter for your continuously growing cloud application and data centers.

An Important Note to the User

All graphic images and layout drawings shown in this user's guide are based upon the latest PCB revision available at the time of publishing this user's guide. The add-on 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 to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton and 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, RMA authorizations may be requested online (<http://www.supermicro.com/support/rma/>).

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 Manual

Special attention should be given to the following symbols for proper installation and to prevent damage done to the components or injury.



Warning! Indicates important information given to prevent equipment/property damage or personal injury.



Warning! Indicates high voltage may be encountered while performing a procedure.



Important: Important information given to ensure proper system installation or to relay safety precautions.



Note: Additional information given to differentiate various models or to provide information for proper system setup.

Important Links

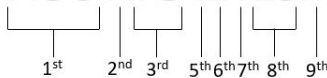
For your system to work properly, please follow the links below to download all necessary drivers/utilities and the user's manual for your server.

- Supermicro product manuals: <http://www.supermicro.com/support/manuals/>
- Product drivers and utilities: <ftp://ftp.supermicro.com>
- Product safety info: http://www.supermicro.com/about/policies/safety_information.cfm
- If you have any questions, please contact our support team at: support@supermicro.com

This manual may be periodically updated without notice. Please check the Supermicro website for possible updates to the manual revision level.

Naming Convention

AOC-ATG-i2T2SM



Character	Representation	Options
1 st	Product Family	AOC: Add On Card
2 nd	Form Factor	S: Standard, P: Proprietary, C: MicroLP, M: Super IO Module (SIOM), MH: SIOM Hybrid A: Advanced IO Module (AIOM), AH: AIOM Hybrid
3 rd	Product Type/Speed	G: GbE (1Gb/s), TG: 10GbE (10Gb/s), 25G: 25GbE (25Gb/s), 40G: 40GbE (40Gb/s), 50G: 50GbE (50Gb/s), 100G: 100GbE (100Gb/s), IBE: EDR IB (100Gb/s), HFI: Host Fabric Interface
4 th	Chipset Model (Optional)	N: Niantec (82599), P: Powerville (i350), S: Sageville (X550), F: Fortville (XL710/X710), L: Lewisburg (PCH)
5 th	Chipset Manufacturer	i: Intel, m: Mellanox, b: Broadcom
6 th	Number of Ports	1: 1 port, 2: 2 ports, 4: 4 ports, 8: 8 ports
7 th	Connector Type (Optional)	S: SFP/SFP+/SFP28, T: 10GBase-T, Q: QSFP+, C: QSFP28
8 th	2 nd Controller/Connector Type (Optional)	G: 1x GbE RJ45, 2G: GbE 2x RJ45, S: 1x 10G SFP+, T: 10GBase-T, 2T: 2x 10GBase-T, 2S: 2x SFP+
9 th	Bracket	For SIOM – Non-M: swappable bracket for Storage systems, M: Internal bracket for Twin systems. For AIOM – Non-M: 1U height bracket for Edge systems, M: 0.5U height bracket for all other systems.

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)
Sales-USA@supermicro.com (Sales Inquiries)
Government_Sales-USA@supermicro.com (Gov. Sales Inquiries)
support@supermicro.com (Technical Support)
RMA@supermicro.com (RMA Support)
Webmaster@supermicro.com (Webmaster)

Website: www.supermicro.com

Europe

Address: Super Micro Computer B.V.
Het Sterrenbeeld 28, 5215 ML
's-Hertogenbosch, The Netherlands

Tel: +31 (0) 73-6400390

Fax: +31 (0) 73-6416525

Email: Sales_Europe@supermicro.com (Sales Inquiries)
Support_Europe@supermicro.com (Technical Support)
RMA_Europe@supermicro.com (RMA 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

Asia-Pacific

Email: Sales-Asia@supermicro.com.tw (Sales Inquiries)
 Support@supermicro.com.tw (Technical Support)
 RMA@supermicro.com.tw (RMA Support)

Website: www.supermicro.com.tw

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Chapter 1


Introduction

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 of 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 the following.

- Super I/O Module (SIOM) form factor
- Broadcom® BCM57416 10GbE controller
- Dual RJ45 Connectors
- TruFlow®
- NPAR (NIC Partitioning)
- VXLAN and NVGRE
- Asset Management Features with thermal sensor
- RoHS compliant 6/6 

1.3 Specifications

General

- Super I/O Module (SIOM) form factor
- Broadcom® BCM57416 dual-port 10Gbps controller
- Dual RJ45 connectors
- TruFlow® Technology

Host Interface

- PCI-E 3.0 (8 GT/s)
- MCTP over SMBus
- Function Level Rest (FLR) support
- Message Signal Interrupt (MSI-X)

Networking Features

- Jumbo Frames (up to 9600-byte)
- 802.3x flow control
- Link Aggregation (802.3ad)
- Virtual LANs 802.1q VLAN tagging
- Configurable Flow Acceleration
- IEEE 1588 and Time Sync
- vSAN/RDMA

Stateless Offload Features

- TCP, UDP, IPv4, IPv6 checksum offload
- Large Send Offload (LSO)

- Receive Segment Coalescing (RSC)
- TCP Segmentation Offload (TSO)
- Large Receive Offload (LRO)
- Receive Side Scaling (RSS)
- Transmit Side Scaling (TSS)

NIC Partitioning (NPAR)

- 16 Physical Functions
- QoS per partition
- Partitioning control via sideband communication
- Up to 64 MAC/VLAN filters per partition
- Stateless offload configuration per partition
- VEB/VEPA support

Virtualization Features

- NetQueue, VMQueue, and Multiqueue
- Support for 128 Virtual Functions
- VXLAN
- NVGRE
- Geneve
- Edge Virtual Bridging (EVB)

Manageability

- Network Controller Sideband Interface (NC-SI)
- PXE and iSCSI boot
- Asset Management with thermal sensors

Flow Processing

- Exact/Wildcard Match Flow Lookup
- VLAN insertion/deletion
- NAT/NAPT
- Mirroring

Data Center Bridging

- Priority-based Flow Control (PFC; IEEE 802.1Qbb)
- Enhanced Transmission Selection (ETS; IEEE802.1Qau)
- Quantized Congestion Notification (QCN; IEEE802.1Qau)
- Data Center Bridging Capability eXchange (DCBX; IEEE802.1Qaz)
- 8 traffic classes per port, fully DCB compliant per 802.1Qbb

Power Savings

- ACPI compliant power management
- PCI Express Active State Power Management (ASPM)
- Ultra low-power mode
- Pass-through Energy Efficient Ethernet (IEEE802.3az-2010)

Power Consumption

- Maximum 11W

Physical Dimensions

- Card PCB dimensions: 14.224 cm x 6.89 cm (5.6 in x 2.71 in) (L x W)
- Height of end brackets: standard – 12 cm (4.725 in), low-profile – 8 cm (3.15 in)

Operating Condition


- 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



Note: Please note that this product is sold only as part of an integrated solution with Supermicro server systems.

1.4 Compliance Operating Environment

The AOC-MTG-b2T/-b2TM add-on card is compliant with the following environmental regulations:

- RoHS Compliant 6/6, Pb Free 
- AOC-MTG-b2T for Storage Systems, AOC-MTG-b2TM for Twin Systems.
- Please check SIOM Compatibility Matrix online http://www.supermicro.com/support/resources/AOC/AOC_Compatibility_SIOM.cfm.

1.5 Available SKUs

SKUs	Bracket Included	Description
AOC-MTG-b2T	AOC-MTG-b2T	2-port 10 Gigabit Ethernet Adapter
	BKT-0086L	Swappable bracket for 2U+ chassis
AOC-MTG-b2TM	AOC-MTG-b2TM	2-port 10 Gigabit Ethernet Adapter
	BKT-0085L	Internal bracket

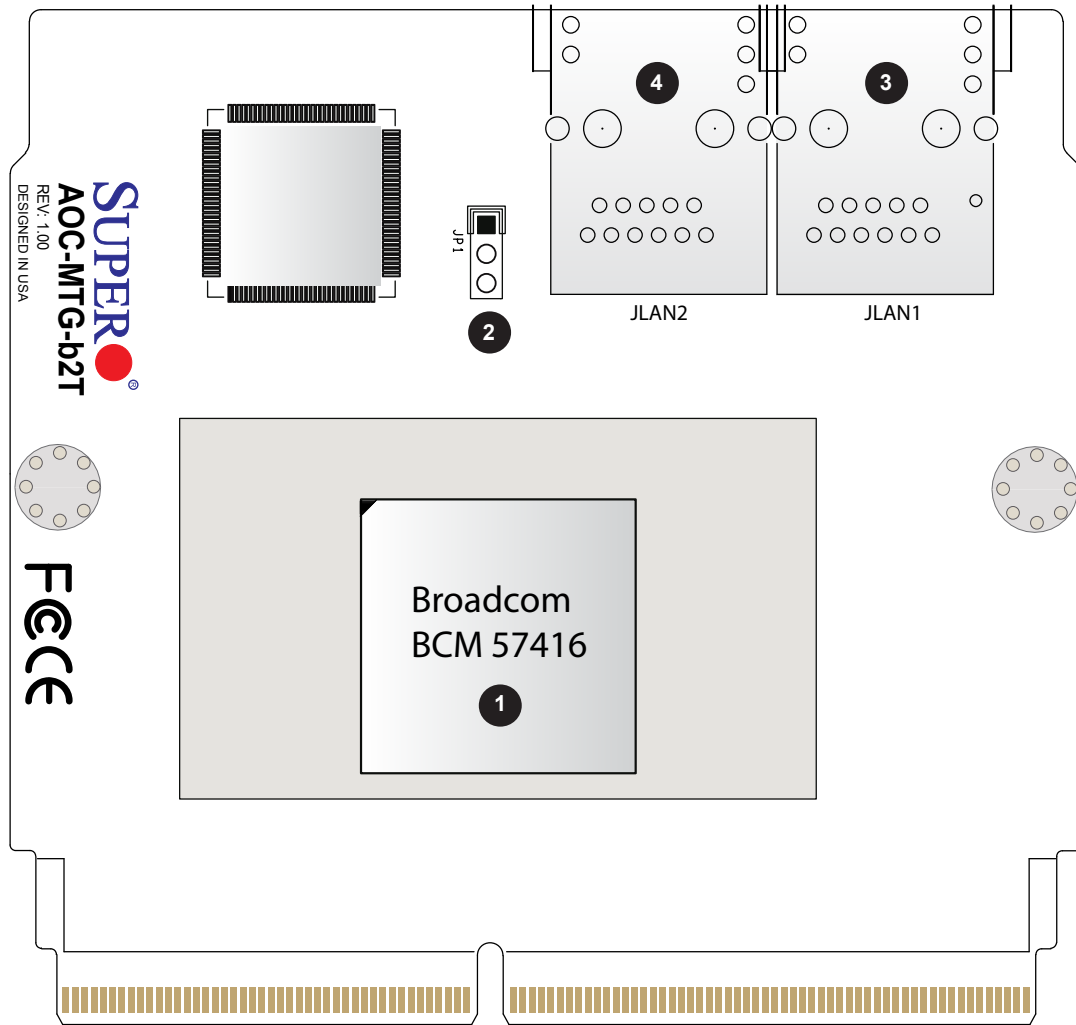
Chapter 2

Hardware Components

2.1 Add-On Card Image and Layout



AOC-MTG-b2T/-b2TM View



AOC-MTG-b2T/-b2TM Layout

2.2 Major Components

The following major components are installed on AOC-MTG-b2T and AOC-MTG-b2TM:

AOC-MTG-b2T/-b2TM Major Components		
No	Component Name	Definition
1	Broadcom® BCM57416	10GbE LAN controller
2	JP1	1-2: I2 Address Mode ARP Mode
		2-3: I2 Address Mode Fixed, 0x30
3	LAN1	RJ45 Port 1
4	LAN2	RJ45 Port 2

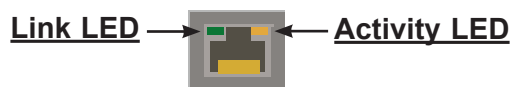
2.3 LAN Ports and LAN LED Indicators

LAN Ports

There are two LAN ports on the AOC-MTG-b2T and AOC-MTG-b2TM. These LAN ports support connection speeds of 10 Gbps. Please use RJ45 type LAN cables.

LAN Port LED Indicators

Each LAN port has two LEDs to indicate speed and data activity. Refer to the tables below for LED colors and definitions.



RJ45 LAN Port Link LED (Left) LED State	
LED Color	Definition
Green	10 Gbps
Amber	1 Gbps
Amber	100 Mbps

RJ45 LAN Port Activity LED (Right) LED State		
LED Color	Status	Definition
Off/None	Off	No Connection
Green	Solid	Link
Green	Flashing	Active

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 or peripheral chips.
- 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

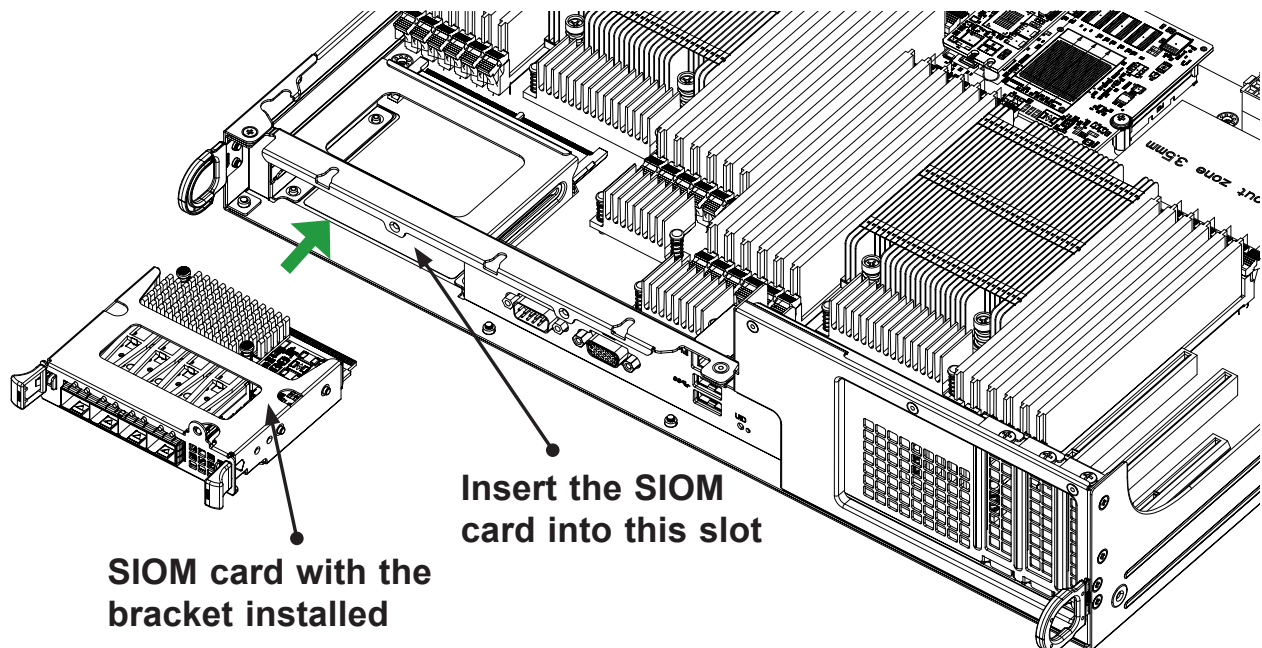
To install the add-on card properly, be sure to follow the instructions below.


1. Power down the system.
2. Remove the power cord from the wall socket.
3. Use industry-standard anti-static equipment (such as gloves or wrist strap) and follow the instructions listed on page 18 to avoid damage caused by ESD.
4. Familiarize yourself with the server, motherboard, and/or chassis documentation.
5. Confirm that your operating system includes the latest updates and hot fixes.

3.3 Installing the Add-on Card

Follow the steps below to install an add-on card into your system. (If the system is fixed onto a rack, the removal of the server top cover is not required. If the system is not anchored to a fixed structure, it is recommended to remove the system top cover for ease of installation).

1. Remove the server cover and, if necessary, set aside any screws for later use.
2. Remove the add-on card slot cover. If the case requires a screw, place the screw aside for later use.
3. Position the add-on card in front of the SIOM slot and gently push in both sides of the card until it slides into the slot.

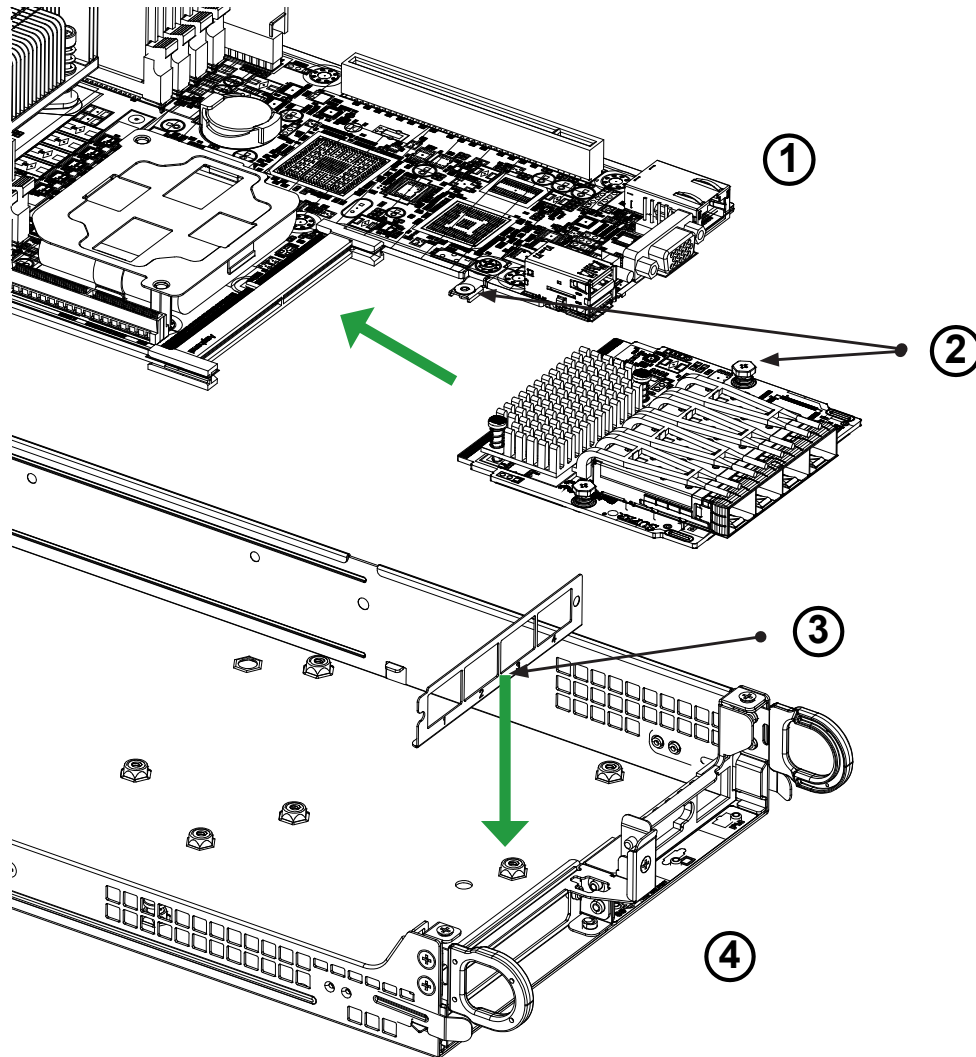


 **Note:** This add-on card does not support hot plug. Please turn off the AC power and remove the power cord from the wall socket before you install or remove the add-on card.


4. Secure the add-on card to the chassis. If required, use the screw that you previously removed.
5. Attach any necessary external cables to the add-on card.
6. Replace the chassis cover.
7. Plug the power cord into the wall socket, and power up the system.

3.4 Installing the Add-on Card without Swappable Bracket

Follow this step to install the add-on card if your system does not support a swappable bracket. Insert the SIOM card in the motherboard and then install the motherboard in the chassis. An internal bracket comes with the SIOM card 1U in the chassis SKU. It needs to be installed onto the chassis.

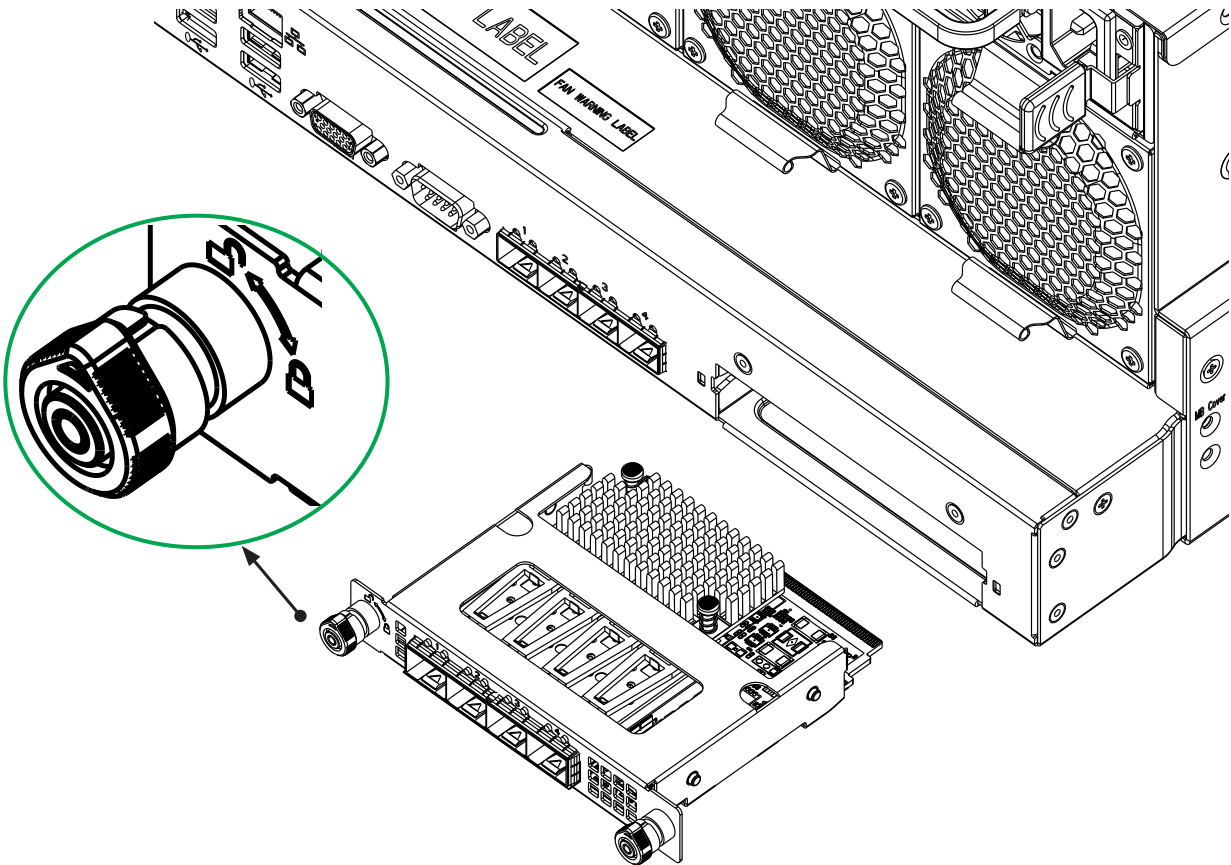


1. Install the SIOM card into the motherboard.
2. Tighten the screw.
3. Install the bracket onto the chassis
4. Install the motherboard in the chassis

 **Note:** Supermicro recommends that this SIOM card be installed by a system integrator or by the manufacturer.

3.5 Installing the Add-on Card with Swappable Bracket

Follow the steps below to install the add-on card into your system that supports a swappable bracket. The add-on card must be installed in the swappable bracket before it can be installed in the system.



1. Install the add-on card into the swappable bracket.
2. Position the add-on card in front of the SIOM slot and gently push in both sides of the card until it slides into the slot.
3. Once the card is in the slot, push both knobs in and turn to the right to lock the card in the system. The left knob has the unlock/lock symbols next to it. To ensure that the add-on is locked, make sure that the knob position indicator is pointing to the lock symbol.

3.6 Installing Drivers on Windows OS

Follow the steps below to install the drivers for Windows OS. The controller comes with a driver on the CD-ROM CDR-NIC. Download the drivers from Intel® Download Center or the Supermicro site at https://www.supermicro.com/wftp/Networking_Drivers.

1. Run CDR-NIC. (If you do not have a product CD-ROM, download drivers from the Supermicro Support Website and then transfer them to your system.)
2. When the SUPERMICRO window appears, click on the computer icon next to the product model.



 **Note:** If the *FOUND NEW HARDWARE WIZARD* screen displays on your system, click CANCEL.

3. Click on INSTALL DRIVERS AND SOFTWARE.
4. Follow the prompts to complete the installation.

3.7 Installing Drivers on Linux (for Broadcom® BCM57416)

Download the drivers from Intel Download Center or the Supermicro site at https://www.supermicro.com/wftp/Networking_Drivers.

Linux Drivers

Use the following procedures to install drivers on the Linux operating system. Download the drivers from ftp://ftp.supermicro/Networking_Drivers/.

Installing InfiniBand Drives for the Linux Operating Systems

1. Installing the following:

```
yum -y install libibverbs* infiniband-diags perftest qperf librd-  
macm-utils
```

```
yum -y install groupinstall "InfiniBand Support"
```

2. From the CDR-NIC LAN driver CD or FTP site, go to the following directory: Broadcom > Linux > Driver.
3. Download the Linux driver package file: `netxtreme-bnxt_en-<ver>.tar.gz`
4. Install the driver by entering the following commands:

```
tar xvzf netxtreme-bnxt_en-<ver>.tar.gz
```

```
cd netxtreme-bnxt_en-<ver>
```

```
make build
```

```
make install
```

Windows Drivers

Use the following procedures to install drivers on the Windows operating system.

Installing Drivers for the Windows Operating System

1. From the FTP site or CDR-NIC LAN driver CD, go to the following directory: Broadcom > Windows.
2. Choose the desired Windows driver package folder.
3. As the drivers are in .inf format, you can install the driver from the Device Manager.

(Disclaimer Continued)

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