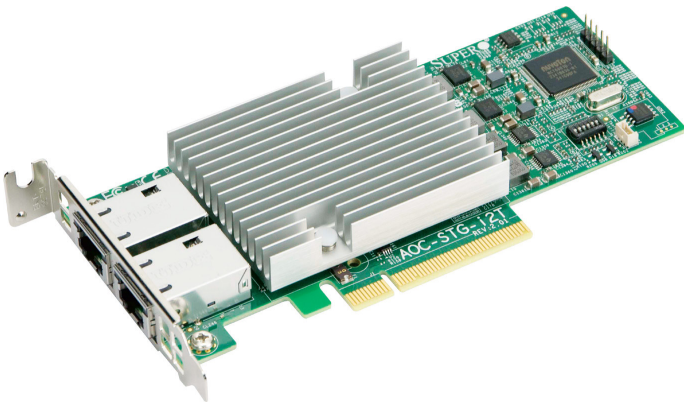


SUPER[®]

AOC-STG-i2T



User's Guide

Revision 1.0c

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User's Guide Revision 1.0c

Release Date: September 23, 2015

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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 AOC-STG-i2T add-on card.

About this Add-on Card

The Supermicro AOC-STG-i2T is the most energy-efficient and cost-effective 10GbE adapter solution for data centers in today's market. The AOC-STG-i2T offers auto-negotiation between 1GbE and 10GbE, supporting backward compatibility for smooth transition from 1GbE to 10GbE. It addresses the demands of bandwidth-intensive applications at a fraction of the cost of a traditional 10GbE adapter by utilizing RJ-45 connections for a longer cabling distance. The Supermicro AOC-STG-i2T 10GbE adapter is truly a best-in-class solution for advanced data centers. This add-on card is intended to be used with Supermicro's servers or motherboards as an integrated solution package. For more information regarding product support or updates, please refer to our website at <http://www.supermicro.com/products/nfo/networking.cfm#adapter>.

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 motherboard 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 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:

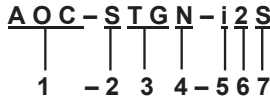


Warning: Important information given to ensure proper system installation or to prevent damage to the components or injury to yourself.



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	Form Factor	S: Standard, P: Proprietary, C: MicroLP, U: UIO
3rd	Product Type/Speed	G: GbE (1Gb/s), TG: 10GbE (10Gb/s), 40G: 40GbE (40Gb/s), IBF: FDR IB (56Gb/s), IBQ: QDR IB (40Gb/s)
4th	Chipset Model (Optional)	N: Niantec (82599), P: Powerville (i350), S: Sageville (X550)
5th	Chipset Manufacturer	i: Intel, m: Mellanox, b: Broadcom
6th	Number of Ports	1: 1 port, 2: 2 ports, 4: 4 ports
7th	Connector Type (Optional)	S: SFP+, T: 10GBase-T, Q: QSFP+

SMC Networking Add-on Cards

Model	Type	Form Factor	Interface	Controller	Connection	Dimension (w/o Brackets) (L x H)	Power (W)
SGP-i2	GbE	Standard LP	PCI-E x4	Intel® i350 AM2	2 RJ45 (1Gb/port)	3.9" (9.9cm) x 2.73" (6.9cm)	3.5
SGP-i4	GbE	Standard LP	PCI-E x4	Intel® i350 AM4	4 RJ45 (1Gb/port)	3.9" (9.9cm) x 2.73" (6.9cm)	5
STG-b4S	10GbE	Standard LP	PCI-E x8	Broadcom® BCM57840S	4 SFP+ (10Gb/port)	5.4" (13.7cm) x 2.73" (6.9cm)	14
STG-i2T	10GbE	Standard LP	PCI-E x8	Intel® X540	2 RJ45 (10Gb/port)	5.9" (14.9cm) x 2.73" (6.9cm)	13
STGN-i2S	10GbE	Standard LP	PCI-E x8	Intel® 82599ES	2 SFP+ (10Gb/port)	4.0" (10.2cm) x 2.73" (6.9cm)	11.2
STGN-i1S	10GbE	Standard LP	PCI-E x8	Intel® 82598EN	1 SFP+ (10Gb/port)	4.0" (10.2cm) x 2.73" (6.9cm)	10
STG-i4S	10GbE	Standard LP	PCI-E x8	Intel® XL710-AM1	4 SFP+ (10Gb/port)	5.9" (14.9cm) x 2.73" (6.9cm)	8
S40G-i2Q	40GbE	Standard LP	PCI-E x8	Intel® XL710 AM2	2 QSFP+ (40Gb/port)	5.9" (14.9cm) x 2.73" (6.9cm)	7
PTG-i1S	10GbE	Proprietary	PCI-E x8	Intel® 82599EN	1 SFP+ (10Gb/port)	10.04" (25.5cm) x .78" (2.0cm)	7.5
UG-i4	GbE	UIO FH	PCI-E x8	Intel® 82571EB	4 RJ45 (1Gb/port)	6.6" (16.7cm) x 3.9" (9.8cm)	10
UIBF-m1	FDR IB	UIO LP	PCI-E x8	Mellanox® ConnectX-3	1 QSFP (56Gb/port)	5.63" (14.3cm) x 2.73" (6.9cm)	7
UIBQ-m1	QDR IB	UIO LP	PCI-E x8	Mellanox® ConnectX-2	1 QSFP (40Gb/port)	5.63" (14.3cm) x 2.73" (6.9cm)	7
UIBQ-m2	QDR IB	UIO LP	PCI-E x8	Mellanox® ConnectX-2	2 QSFP (40Gb/port)	5.63" (14.3cm) x 2.73" (6.9cm)	8
CGP-i2	GbE	MicroLP	PCI-E x4	Intel® i350 AM2	2 RJ45 (1Gb/port)	4.45" (11.3cm) x 1.54" (3.9cm)	4
CG-i2	GbE	MicroLP	PCI-E x4	Intel® 82580	2 RJ45 (1Gb/port)	4.45" (11.3cm) x 1.3" (3.4cm)	4
CIBF-m1	FDR IB	MicroLP	PCI-E x8	Mellanox® ConnectX-3	1 QSFP (56Gb/port)	4.85" (12.3cm) x 1.54" (3.9cm)	7
CIBQ-m1	QDR IB	MicroLP	PCI-E x8	Mellanox® ConnectX-3	1 QSFP (40Gb/port)	4.85" (12.3cm) x 1.54" (3.9cm)	7
CTG-i1S	10GbE	MicroLP	PCI-E x8	Intel® 82599EN	1 SFP+ (10Gb/port)	4.85" (12.3cm) x 1.54" (3.9cm)	10
CTG-i2S	10GbE	MicroLP	PCI-E x8	Intel® 82599ES	2 SFP+ (10Gb/port)	4.85" (12.3cm) x 1.54" (3.9cm)	11
CTG-i2T	10GbE	MicroLP	PCI-E x8	Intel® X540	2 RJ45 (10Gb/port)	4.8" (12.3cm) x 2.75" (7.7cm)	13
CTGS-i2T	10GbE	MicroLP	PCI-E x4	Intel® X550	2 RJ45 (10Gb/port)	4.45" (11.3cm) x 1.54" (3.9cm)	12

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)

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@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

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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/info/networking.cfm#adapter>.

1-2 Product Highlights

The product highlights of this add-on card include the following:

- Dual RJ45 Connectors
- Low-Profile, Short Length Standard Form Factor
- PCI Express 2.1 (2.5GT/s or 5GT/s)
- Asset Management Features (SMC systems only) (Rev. 2.00 and 2.01)
- Intel® QuickData Technology
- VMDq, Next-Generation VMDq, and PC-SIG SR-IOV for Virtualized Environments
- Jumbo Frame Support up to 15.5KB
- Load Balancing on Multiple CPUs
- iSCSI Remote Boot Support

1-3 Technical Specifications

General

- Intel® X540 10GbE controller with integrated 10GBase-T copper PHYs

- Compact size low-profile standard form factor
- PCI-E x8 2.1 (2.5GT/s or 5GT/s) interface
- Dual RJ-45 connectors with speed up to 10Gb/port
- Load balancing on multiple CPUs
- Intel® PROSet Utility for Windows® Device Manager
- Maximum power consumption: about 13W

I/O Features

- Intel® QuickData Technology: DMA engine that enhances data acceleration and lowers CPU usage
- Support for jumbo frames of up to 15.5KB
- 802.1q VLAN support
- Two integrated independent 10GBase-T interfaces operate at 10GBase-T (10Gb/s) and 1000Base-T (1Gb/s) modes
- Direct Cache Access (DCA) to avoid cache misses
- MSI-X support to minimize interrupt overhead and to allow load-balancing between multiple cores/CPU's
- Receives and Transmits Side Scaling for Windows environment and Scalable I/O for Linux environments

Performance

- TCP/UDP Segmentation Offload
- IPv6 Support for IP/TCP and IP/UDP Receive Checksum Offload
- Supports Fibre Channel over Ethernet (FCoE)
- Low latency interrupts
- DCA support

Virtualization

- Support for Virtual Machine Device Queues (VMDq and Next-generation VMDq)
- L2 Ethernet MAC address and VLAN filters
- PC-SIG SR-IOV implementation
- Advanced Packet Filtering
- VLAN support to allow creation of multiple VLAN segments\
- VXLAN through Software

Manageability

- Asset Management Features (SMC systems only) (Rev. 2.00 and 2.01)
- Preboot eXecution Environment (PXE) support
- Simple Network Management Protocol (SNMP) and Remote Network Monitoring (RMON) statistics counters
- iSCSI remote boot

Required Cables

- RJ-45 Category-6 up to 55m; Category-6A up to 100m.

OS Support

The AOC-STG-i2T add-on card supports the following operating systems (OS):

- Windows® Server 2008 R2 SP1, 7 SP1, Server 2008 SP2, Vista SP2, Server 2003 R2, 2003 SP2, 2008 SP2.
- Linux Kernel version 3.1.x & 2.6.X
- FreeBSD

Dimensions

The AOC-STG-i2T add-on card supports both full-height and low-profile brackets. The dimensions of the card is listed below:

- Rev. 1.01: 5.4 in. (13.7 cm) x 2.73 in (6.93 cm) (L x H)
- Rev. 2.00: 6.4 in (16.26 cm) x 2.73 in (6.93 cm) (L x H)
- Rev. 2.01: 5.9 in. (14.99 cm) x 2.73 in (6.93 cm) (L x H)

Platform Support

The following platforms are supported by the AOC-STG-i2T add-on card:

- Motherboards with minimum PCI-E x8 slot support
- Server systems with low-profile or full-height PCI-E x8 expansion slots



Note: This product is intended to be used with Supermicro server systems or motherboards as an integrated solution package.

1-4 Compliance/Operating Environment

The AOC-STG-i2T add-on card is compliant with the following environmental regulations:

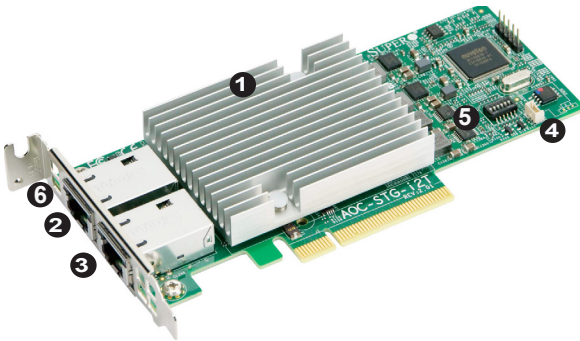
- RoHS Compliant 6/6, Pb Free



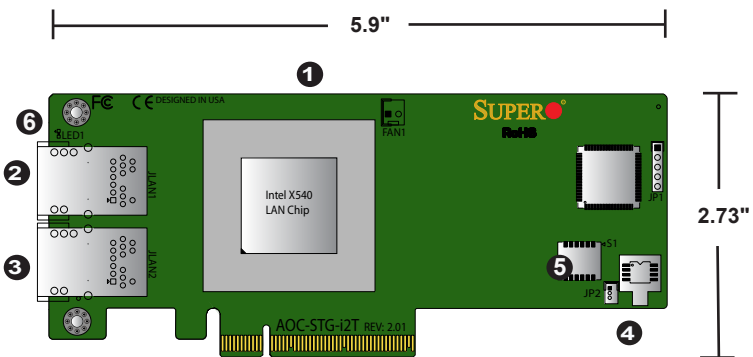
Chapter 2

Hardware Components

2-1 Add-On Card Image and Layout



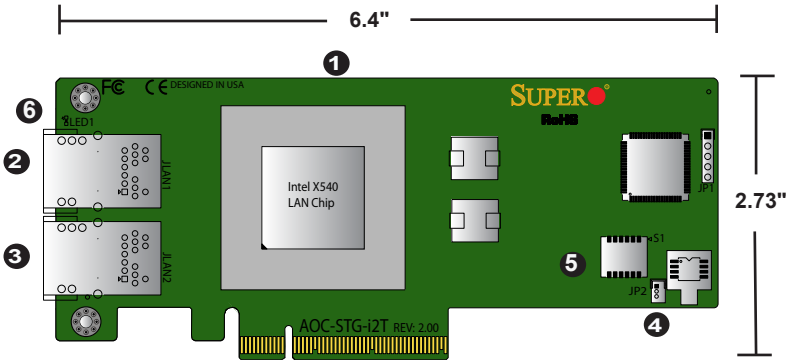
The AOC-STG-i2T R2.01 Image



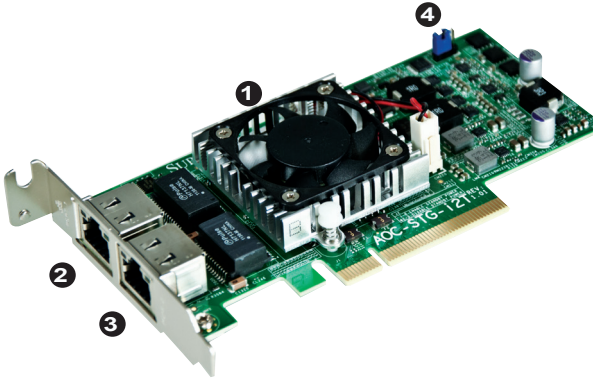
The AOC-STG-i2T R2.01 Layout



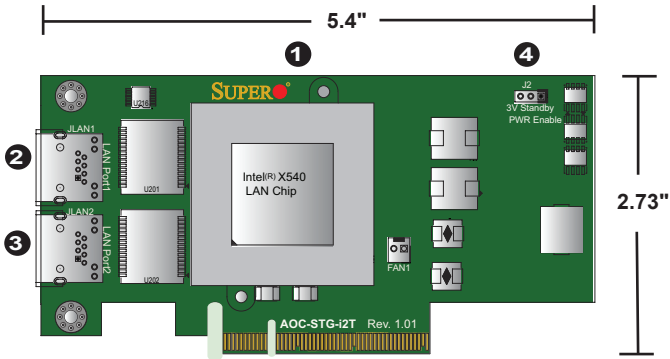
The AOC-STG-i2T R2.00 Image



The AOC-STG-i2T R2.00 Layout



The AOC-STG-i2T R1.01 Image



The AOC-STG-i2T R1.01 Layout

2-2 Major Components

The following major components are installed on the AOC-STG-i2T R1.01:

1. Intel® X540 10Gb LAN Controller
2. (RJ45 Ethernet) LAN Port 1 & LAN1 LED Indicator
3. (RJ45 Ethernet) LAN Port 2 & LAN2 LED Indicator
4. 3.3V Standby Power Enable (Jumper)

The following major components are installed on the AOC-STG-i2T R2.00 and R2.01:

1. Intel® X540 10Gb LAN Controller
2. (RJ45 Ethernet) LAN Port 1 & LAN1 LED Indicator
3. (RJ45 Ethernet) LAN Port 2 & LAN2 LED Indicator
4. Thermal Alert Connector (JP2)
5. DIP Switch (S1)
6. LED1 (Thermal Alert LED Status)

2-3 Differences between Rev. 2.01, Rev. 2.00 and Rev. 1.01


Refer to the table below for the differences between the two revisions.

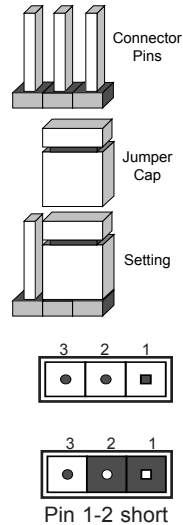
Rev. 2.01	Rev. 2.00	Rev. 1.01
1. LAN connectors updated	1. Passive heatsink (no fan)	1. Active heatsink (with fan)
2. FH/LP brackets updated	2. Asset Management	2. No Asset Management
3. PCB shortened: 5.9 in. (14.99 cm) x 2.73 in (6.93 cm) (L x H)	3. Both FH and LP brackets are perforated for better air cooling	3. Non-perforated brackets
	4. Card dimension: 6.4 in (16.26 cm) x 2.73 in (6.93 cm) (L x H)	4. Card dimension: 5.4 in (13.72 cm) x 2.73 in (6.93 cm) (L x H)

2-4 Jumpers and Indicators for Rev. 1.01

Explanation of Jumpers


To modify the operation of the add-on card, a jumper can be used to choose between optional settings. A jumper creates shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the add-on card layout on Page 2-1 for the jumper location.

 **Note:** On two-pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.



3.3V Standby Power Enable

The 3.3V Standby Power Enable jumper is located at J2 on the add-on card. Refer to the layout on Page 2-1 for the location of the jumper. Close Pins 1 & 2 to enable 3.3V Standby Power for Wake-on-LAN support. The default setting is **Disabled**.

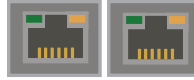
 **Note:** If this jumper is set to "Enabled", LAN chip overheat may occur. Be sure to provide adequate system cooling when the jumper is enabled.

3.3V Standby PWR Enable Jumper Settings	
Jumper setting	Definition
1-2	Enabled (See the note below)
2-3	Disabled (default)

GLAN Port LEDs

Two LAN ports (LAN 1/LAN 2) are located on the add-on card. Each Ethernet LAN port has two LEDs. The green LED on the left indicates activity; while the other LED on the right may be green, amber or Off to indicate the speeds of the connections. See the tables on the right for more information.

Activity LED



Link LED

LAN 1/LAN 2 Activity LED (Left) LED State		
Color	Status	Definition
Green	Flashing	Active

LAN 1/LAN 2 Link LED (Right) LED State	
LED Color	Definition
Green	10 Gbps
Amber	1 Gbps
Off	100 Mbps or No Connection

LAN Ports Pin Definition			
Pin#	Definition		
1	M_MDIO_P0		
2	M_MDIO_N0		
3	M_MDIO_P1	9	LINK0_10G
6	M_MDIO_N1	10	LINK0_1G
4	M_MDIO_P2	11	LINK0_LINKUP
5	M_MDIO_N2	12	LINK0_ACT_N
7	M_MDIO_P3	13	GND
8	M_MDIO_N3	14	GND

2-5 Jumpers and Indicators for Rev. 2.00 and Rev. 2.01

JP1 5-Pin Connector

This jumper is for debug purposes and is not for general use.

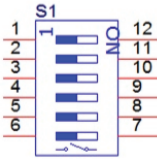
JP2 Thermal Alert Connector

Connect an external cable (not included) to this jumper to monitor the chipset die temperature. Refer to the table on the right for pin definition.

JP2 Pin Definition	
Pin	Definition
Pin 1	GND
Pin 2	Thermal_Alert_N
Pin 3	GND

S1 DIP Switch

This DIP Switch provides SMBUS address selection. You can configure the card with static SMBUS address. Refer to the tables below for address selections.



S1:DIP switch for user selection

Switch Position	OFF (default)	ON
1	SMBUS ARP mode	Static SMBUS address mode
2-5	Static SMBUS address selection	
6	Thermal Reading Enable	Thermal Reading Disable

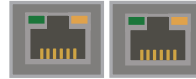
Static SMBUS address selection table by DIP switch S1

SMBUS Address	S1 position #5	S1 position #4	S1 position #3	S1 position #2
30/D0	OFF/ON	OFF	OFF	OFF
32/D2	OFF/ON	OFF	OFF	ON
34/D4	OFF/ON	OFF	ON	OFF
36/D6	OFF/ON	OFF	ON	ON
38/D8	OFF/ON	ON	OFF	OFF
3A/DA	OFF/ON	ON	OFF	ON
3C/DC	OFF/ON	ON	ON	OFF
3E/DE	OFF/ON	ON	ON	ON

GLAN Port LEDs

Two LAN ports (LAN 1/LAN 2) are located on the add-on card. Each Ethernet LAN port has two LEDs. The green LED on the left indicates activity; while the other LED on the right may be green, yellow or Off to indicate the speeds of the connections. See the table on the right for more information.

Activity LED




Link LED

LAN Port LED Definition		
LED	Color	Definition
Link	Solid Green	10 Gb
	Solid Yellow	1 Gb
	Off	100 Mb or no connection
Activity	Solid Green	LINKUP
	Blinking Green	Package In/Out

LED1 Thermal Alert Status LED

When the LAN chipset die temperature exceeds the threshold, this LED will light up. You can also check the actual temperature through Asset Management.

 **Note:** The Standby Power Enable jumper and Wake-on-LAN feature are not available on the AOC-STG-i2T Rev. 2.00 and Rev. 2.01.

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 that 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 Before Installation

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

1. Power down the system.
2. Unplug the power cord.
3. 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.
4. Familiarize yourself with the server, motherboard, and/or chassis documentation.
5. Confirm that your operating system includes the latest updates and hotfixes.

3-3 Installing the Add-on Card

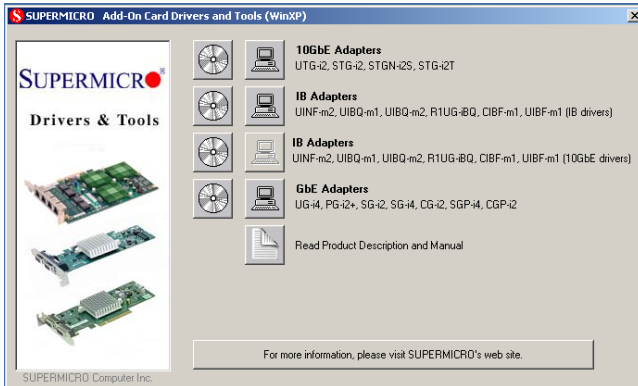
Follow the steps below to install the add-on card into your system.


1. Remove the server cover and, if any, 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 the slot directly over the connector, and gently push down on both sides of the card until it slides into the PCI connector.
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 Drivers on Windows

Follow the steps below to install the drivers for Windows. Download the drivers from the Supermicro FTP site at ftp://ftp.supermicro.com/Networking_Drivers/.

1. Run the CDR-NIC.
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.

3-5 Installing Drivers on Linux

Follow the steps below to install the driver to a Linux system.

Build a Binary RPM Package

1. Run `'rpmbuild -tb <filename.tar.gz>'`
2. Replace `<filename.tar.gz>` with the specific filename of the driver.

 **Note:** For the build to work properly, the current running kernel MUST match the version and configuration of the installed kernel sources. If you have just recompiled the kernel, reboot the system at this time.

Follow the instructions below to build the driver manually.

1. Move the base driver tar file to the directory of your choice. For example,
/home/username/ixgbe

or

/usr/local/src/ixgbe.

2. Untar/unzip archive:

```
tar xzf ixgbe-x.x.x.tar.gz
```

3. Change to the driver src directory:

```
cd ixgbe-x.x.x/src/
```

4. Compile the driver module:

```
make install
```

The binary will be installed as:

```
/lib/modules/[KERNEL_VERSION]/kernel/drivers/net/ixgbe/ixgbe.[k]o
```

The install locations listed above are the default locations. They might not be correct for certain Linux distributions. For more information, see the `ldistrib.txt` file included in the driver tar.



Note: `IXGBE_NO_LRO` is a compile time flag. The user can enable it at compile time to remove support for LRO from the driver. The flag is used by adding `CFLAGS_EXTRA="-DIXGBE_NO_LRO"` to the make file when it's being compiled.

```
make CFLAGS_EXTRA="-DIXGBE_NO_LRO" install
```

5. Load the module:

For kernel 2.6.x, use the `modprobe` command:

```
modprobe ixgbe <parameter>=<value>
```

For 2.6 kernels, the `insmod` command can be used if the full path to the driver module is specified. For example:

```
insmod /lib/modules/<KERNEL VERSION>/kernel/drivers/net/ixgbe/ixgbe.ko
```

In addition, when using 2.6-based kernels, make sure that older `ixgbe` drivers are removed from the kernel before loading the new module. To do this, use:

```
rmmod ixgbe; modprobe ixgbe
```

6. Assign an IP address to the interface by entering the following, where x is the interface number:

```
ifconfig ethx <IP_address> netmask <netmask>
```

7. 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>
```

3-6 Installing Drivers on FreeBSD

Follow the instructions below to install the drivers in FreeBSD kernel 4.8 or later. In the instructions below, x.x.x is the driver version as indicated in the name of the drive tar file.



Note: You must have kernel sources installed in order to compile the driver module.

1. Move the base driver tar file to the directory of your choice. For example, use /home/username/ixgb or /usr/local/src/ixgb.
2. Untar/unzip the archive:

```
tar xfz ixgb-x.x.x directory
```

3. To install man page:

```
cd ixgb-x.x.x
```

```
gzip -c ixgb.4 > /usr/share/man/man4/ixgb.4.gz
```

4. To load the driver onto a running system, perform the following steps:

```
cd ixgb-x.x.x
```

```
make
```

or

```
cd ixgb-x.x.x/src
```

```
make load
```

5. To assign an IP address to the interface, enter the following:

```
ifconfig ixgb<interface_num> <IP_address>
```

6. 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>
```

7. If you want the driver to load automatically when the system is booted:

```
cd ixgb-x.x.x/src
make load
cp if_ixgb.ko /modules
```

Edit /boot/loader.conf, and add the following line:

```
if_ixgb_load="YES"
```

or

compile the driver into the kernel (see item 8). Edit /etc/rc.conf, and create the appropriate ifconfig_ixgb<interface_num> entry:

```
ifconfig_ixgb<interface_num>="<ifconfig_settings>"
```

Example usage:

```
ifconfig_ixgb0="inet 192.168.10.1 netmask 255.255.255.0"
```

8. If you want to compile the driver into the kernel, enter:

```
cd ixgb-x.x.x/src
mkdir /usr/src/sys/dev/ixgb
cp if_ixgb* /usr/src/sys/dev/ixgb
cp ixgb* /usr/src/sys/dev/ixgb
cp Makefile.kernel /usr/src/sys/modules/ixgb/Makefile
```

Edit the /usr/src/sys/conf/files.i386 file, and add the following line:

```
dev/ixgb/ixgb_hw.c optional ixgb
dev/ixgb/ixgb_ee.c optional ixgb
dev/ixgb/if_ixgb.c optional ixgb
```

Remove the following lines from the /usr/src/sys/conf/files.i386 file, if they exist:

```
/dev/ixgb/if_ixgb_fx_hw.c optional ixgb
/dev/ixgb/if_ixgb_phy.c optional ixgb
```


Edit the kernel configuration file (i.e., GENERIC or MYKERNEL) in `/usr/src/sys/i386/conf`, and ensure the following line is present:

```
device ixgb
```

Compile and install the kernel. Reboot the system for the kernel updates to take affect.

3-7 Asset Management Features

Asset Management is a new feature that allows users to monitor selected Supermicro add-on cards in selected Supermicro X10 generation server systems. Using Supermicro's proprietary management software, users will be able to monitor the following:

1. Model name
2. Revision
3. Serial number
4. Temperature

(Disclaimer Continued)

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