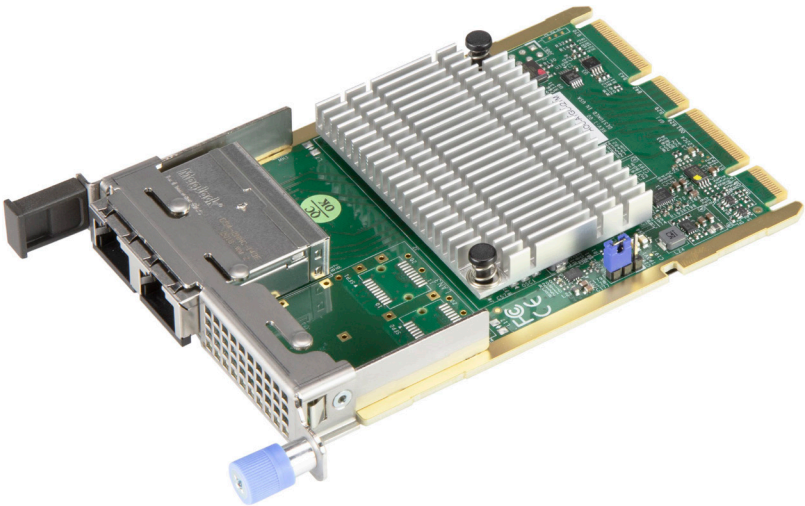




AOC-ATGC-i2™



User's Guide

Revision 1.0

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User's Guide Revision 1.0

Release Date: May 11, 2022

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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-ATGC-i2TM add-on card.

About this Add-on Card

Supermicro® Advanced I/O Modules (AIOM) is the latest form factor designed to provide a wide range of networking options and other I/O technologies. The AOC-ATGC-i2TM is one of the most flexible and scalable 2-port 10Gb network solutions in the market. Based on the Intel® X710-AT2 network controller with performance-enhancing features and power management technologies, the AOC-ATGC-i2TM provides a quality networking choice for data centers while reducing CPU utilization and power consumption. With the added NC-SI feature, this adapter also can function as a secure networking port for remote server management.

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:



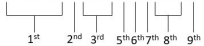
Warning: Important information given to ensure proper system installation or to prevent damage to the components or injury to yourself.



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

Naming Convention

AOC-ATG-i2T2SM



| Character | Representation | Options |
|-----------|--|---|
| 1st | Product Family | AOC: Add On Card |
| 2nd | Form Factor | S: Standard, P: Proprietary, C: MicroLP, M: Super IO Module (SIOM), MH: SIOM Hybrid A: Advanced IO Module (AIOM), AH: AIOM Hybrid |
| 3rd | 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 |
| 4th | Chipset Model (Optional) | N: Niantec (82599), P: Powerville (I350), S: Sageville (X550), F: Fortville (XL710/X710), L: Lewisburg (PCH) |
| 5th | Chipset Manufacturer | i: Intel, m: Mellanox, b: Broadcom |
| 6th | Number of Ports | 1: 1 port, 2: 2 ports, 4: 4 ports, 8: 8 ports |
| 7th | Connector Type (Optional) | S: SFP/SFP+/SFP28, T: 10GBase-T, Q: QSFP+, C: QSFP28 |
| 8th | 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+ |
| 9th | 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. |

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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 Key Features

The key features of this add-on card include the following:

- Advanced I/O Module (AIOM) Form Factor
- Intel® X710-AT2 Ethernet Controller
- Dual 10GBase-T ports with RJ45 connectors
- Network Virtualization: VXLAN and NVGRE
- Energy Efficient Ethernet (EEE)
- Intel® Ethernet Flow Director
- Data Plane Developer Kit for efficient packet processing (DPDK)
- Asset Management Features
- NC-SI for Remote Management
- Supports RJ-45 Category 6 and 6A cables
- Supports both Direct Attach Copper and Fiber Cables
- RoHS compliant 6/6 

1-3 Specifications

General

- Advanced I/O Module (AIOM) Form Factor
- Intel® X710-AT2 controller
- Dual RJ45 connectors with speed up to 10Gbps per port
- PCIe Gen3 X8

Networking Features

- IEEE 802.3ad, 802.1AX Link Aggregation
- IEEE 802.1Q VLAN
- MSI and MSI-X support
- Intel® Flow Director
- Jumbo Frames (up to 9.5KB)
- IEEE 802.3x Flow Control
- Teaming support
- Checksum Offload (IPv4/IPv6, SCTP, TCP, UDP, Tx/Rx)

Virtualization Features

- Virtual Machine Devices queues (VMDq)
- Single-Root I/O Virtualization (SR-IOV)
- VLAN
- VXLAN and NVGRE
- GENEVE

Management Features

- Asset Management support with thermal sensor
- NC-SI for remote management
- Preboot eXecution Environment (PXE)
- iSCSI remote boot
- PLDM

Power Savings

- ACPI compliant power management
- Energy Efficient Ethernet (IEEE 802.3az)

OS Support

- Windows®
- Linux RHEL
- Linux SLES
- Linux Ubuntu
- Linux CentOS
- FreeBSD
- VMware

Power Consumption

- Maximum power consumption: 9.5W

Operating Conditions

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

Physical Dimensions

- PCB dimensions: 76mm x 115mm (W x D)

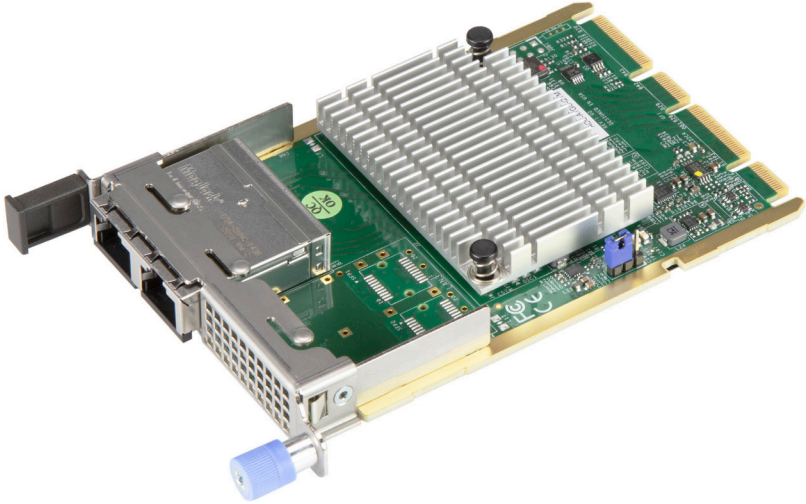
Available SKUs

| SKUs | Bracket Included | Description |
|---------------|------------------|--|
| AOC-ATGC-i2TM | BKT-0185L | 2-port 10 Gigabit Ethernet Adapter with a 0.5U height bracket. |

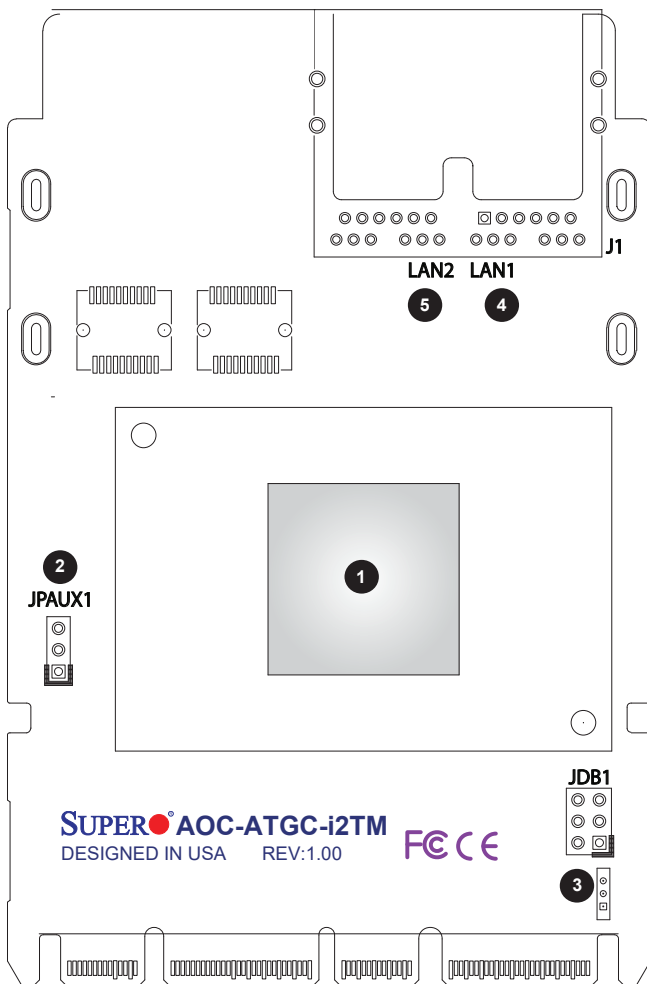
Chapter 2

Hardware Components

2-1 Add-On Card Image and Layout



AOC-ATGC-i2TM Image



AOC-ATGC-i2TM Layout

2-2 Major Components

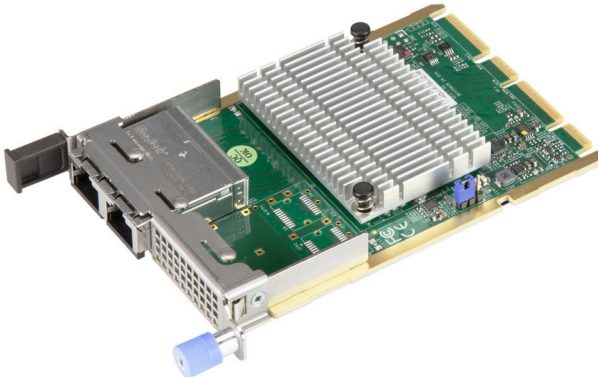
The following major components are installed on the AOC-ATGC-i2TM.

| AOC-ATGC-i2TM Major Components | | |
|---------------------------------------|-----------------------|------------------------------|
| No | Component Name | Definition |
| 1 | Intel® X710-AT2 | Ethernet LAN Controller |
| 2 | JPAUX1 | 1-2: Enable AUX Power in S5 |
| | | 2-3: Disable AUX Power in S5 |
| 3 | JDB1 | Debug Header |
| 4 | LAN1 | RJ45 Port 1 |
| 5 | LAN2 | RJ45 Port 2 |

2-3 LAN Ports and LAN LED Indicators

LAN Ports

There are two LAN ports on the AOC-ATGC-i2TM. These LAN ports support connection speeds of 10Gbps. Use a direct-attach RJ45 type LAN cable.



AOC-ATGC-i2TM Image

Each LAN has one bi-colored LED per port (RJ45) at the bottom of PCB. Please refer to the table below for LED color definition.

| Port Link LED State | |
|---------------------|------------|
| LED Color | Definition |
| Green | 10 Gbps |
| Amber | <10 Gbps |

2-4 Jumpers and Connectors

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 2-2 for the jumper locations.



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

| JPAUX1 for Standby Power | IPMI Support | FailOver Support | WoL Support |
|---------------------------------------|--------------|------------------|-------------|
| Disable = No standby power to AOC NIC | Yes | Yes | No |
| Enable = Standby power to AOC NIC | Yes | Yes | Yes |

| JPAUX1 for Standby Power | Function | Notes |
|---------------------------------------|---|--|
| Disable = No standby power to AOC NIC | Disable jumper to disconnect the standby power | Default |
| Enable = Standby power to AOC NIC | Enable jumper to connect standby power to AOC NIC | WoL is supported but limited to platforms with sufficient airflow when it is in standby mode (S5 state). Please consult Supermicro before enabling it. |

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.

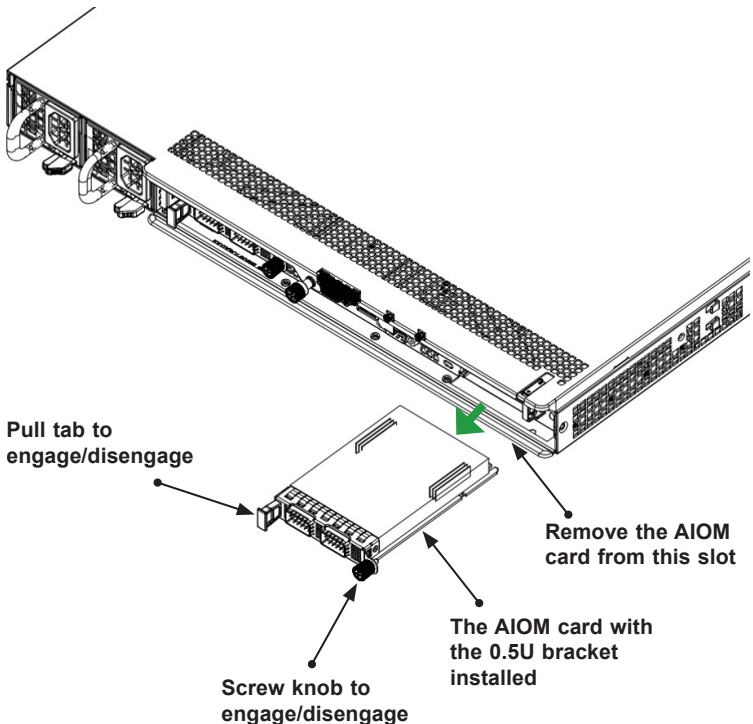
1. Power down the system.
2. Unplug the power cord.
3. Use industry-standard anti-static equipment such as gloves or a wrist strap and follow the precautions on page 3-1 to avoid damage caused by ESD.
4. Familiarize yourself with the server, motherboard, and/or chassis documentation.
5. Confirm that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

3-3 Installing the Add-on Card AOC-ATGC-i2TM (with 0.5U bracket)

Follow the steps below to install an add-on card into your system. (If the system is fixed onto a rack, the removal of 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)

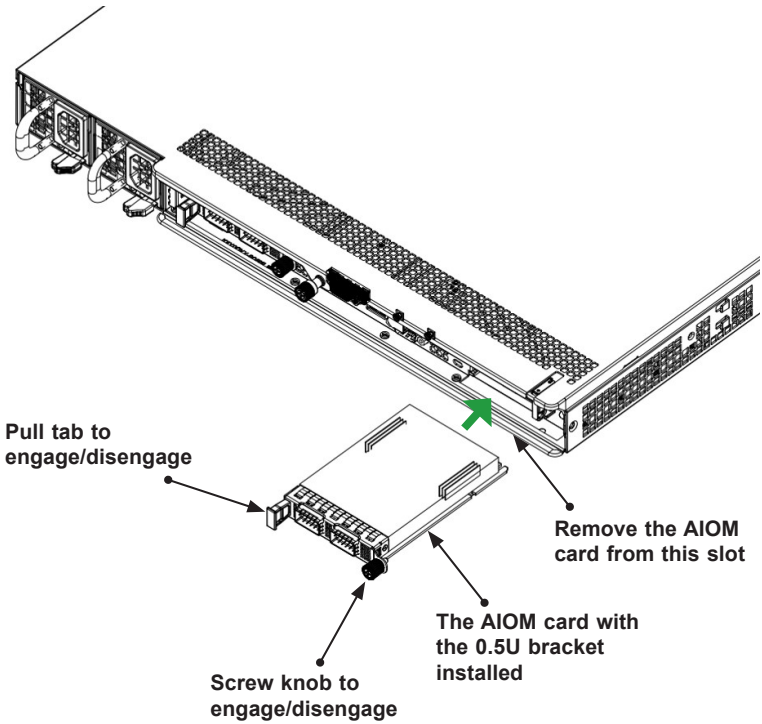
A. Uninstalling an AIOM module

1. Unscrew the blue knob from the system.
2. Pull on the tab and a knob evenly on both sides of the card to disengage the AIOM module from the motherboard connector.
3. Gently slide the AIOM module out.



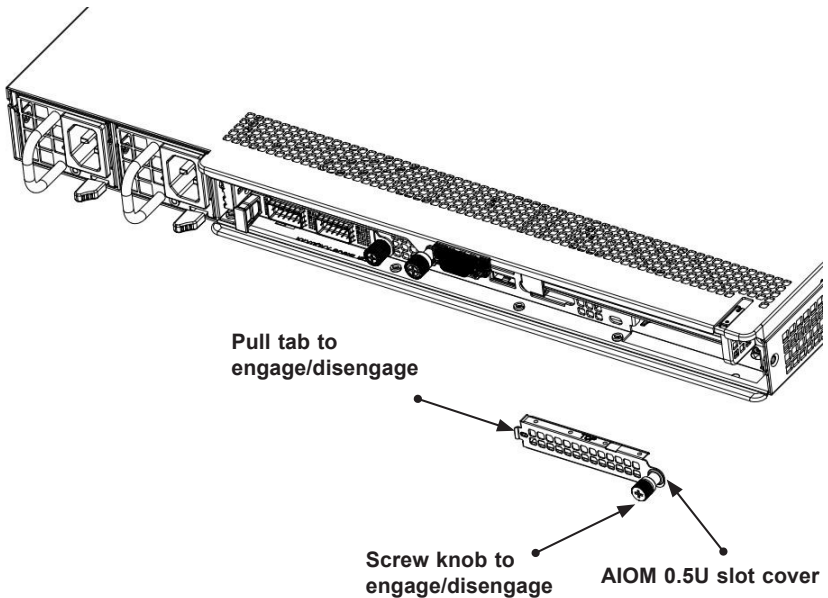
B. Installing an AIOM module


1. Position the AIOM module in front of the empty slot and gently push onto the metal bracket. The AIOM module should slide into the chassis until the card is securely seated in the connector.
2. Press the blue knob and secure it onto the chassis by turning the knob clockwise.



C. Installing an AIOM module (An AIOM slot with an AIOM slot cover)

1. Remove the AIOM slot cover by unscrewing the knob and screw that attaches the bracket to the chassis. Pull the bracket away and set it aside.
2. Position the AIOM module in front of the empty slot and gently push onto the metal bracket. The AIOM module should slide into the chassis until the card is securely seated in the connector.
3. Press the blue knob and secure it onto the chassis by turning the knob clockwise.



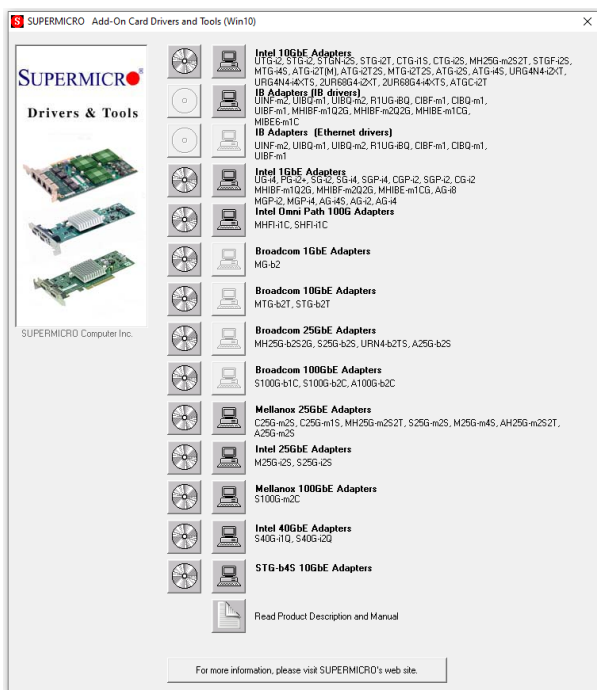
 **Note 1:** This AIOM module does not support hot plug. Please turn off the AC power and remove the power cord from the wall socket before installing or removing an AIOM module.

Note 2: Graphics shown above are for illustration purposes only. Actual products may vary due to product enhancement.

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 CDR-NIC.
2. When the SUPERMICRO window appears, click on the computer icon next to the product model.
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 drivers for Linux.

1. Download the driver from the Supermicro CDR-NIC LAN driver CD or ftp://ftp.supermicro.com/Networking_Drivers/CDR-NIC_1.62_for_Add-on_NIC_Cards/Intel/LAN/PRO40GB/LINUX. Due to the continuous development of the Linux kernel, the drivers are updated more often than the bundled releases. The latest driver can be found on <http://downloadcenter.intel.com>.
2. Choose the Intel driver package from LAN/PRO40GB/LINUX.
3. Copy the driver to the directory of your choice. For example:

```
/home/username/i40e
```

or

```
/usr/local/src/i40e
```

4. Untar/unzip archive, where <x.x.x> is the version number for the driver tar file:

```
tar xzf i40e-x.x.x.tar.gz
```

5. Change to the driver src directory, where <x.x.x> is the version number for the driver tar:

```
cd i40e-x.x.x/src/
```

```
make install
```

This will install the Linux driver to your system. For more driver installation information, please refer to the Intel Support Website.

3-6 Installing Drivers on FreeBSD

Follow the instructions below to install the drivers to a FreeBSD system, where <x.x.x> is the driver version as indicated in the name of the driver tar file.



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

1. Download the driver from the Supermicro CDR-NIC LAN driver CD or ftp://ftp.supermicro.com/Networking_Drivers/CDR-NIC_1.62_for_Add-on_NIC_Cards/Intel/LAN/PRO40GB/FreeBSD. Due to the continuous development of the Linux kernel, the drivers are updated more often than the bundled releases. The latest driver can be found on <http://downloadcenter.intel.com>.
2. Move the base driver tar file to the directory of your choice. For example, use `home/username/ixl` or `usr/local/src/ixl`.

3. Untar/unzip the archive:

```
tar xzf ixl-x.x.x.tar.gz
```

4. To install man page:

```
cd ixl-x.x.x
```

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

5. To load the driver onto running system:

```
cd ixl-x.x.x/src
```

```
make load
```

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

```
ifconfig ix<interface_num> <IP_address>
```

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>
```

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

```
cd ixl-x.x.x/src
make
make install
```

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

```
ixl_load="YES"
```

or

compile the driver into the kernel (see item 10)

Edit `/etc/rc.conf`, and create the appropriate `ifconfig_ixl<interface_num>` entry:

```
ifconfig_ix<interface_num>
```

Example usage:

```
ifconfig_ix0="inet 192.168.10.1 netmask 255.255.255.0"
```



Note: For assistance, see the `ifconfig` main page.

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

FreeBSD 7 or later:

```
cd ixl-x.x.x/src
cp *.ch /user/src/sys/dev/ixl
cp Makefile.kernel /usr/src/sys/modules/ixl/Makefile
```

Edit the kernel configuration file (i.e., `GENERIC` or `MYKERNEL`) in `/usr/src/sys/i386/conf` (replace "i386" with the appropriate system architecture if necessary), and ensure the following line is present:

```
device ixl
```

Compile and install the kernel. The system must be reboot for the kernel updates to take effect. For additional information on compiling the kernel, consult the FreeBSD operating system documentation.

Notes

(Disclaimer Continued)

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