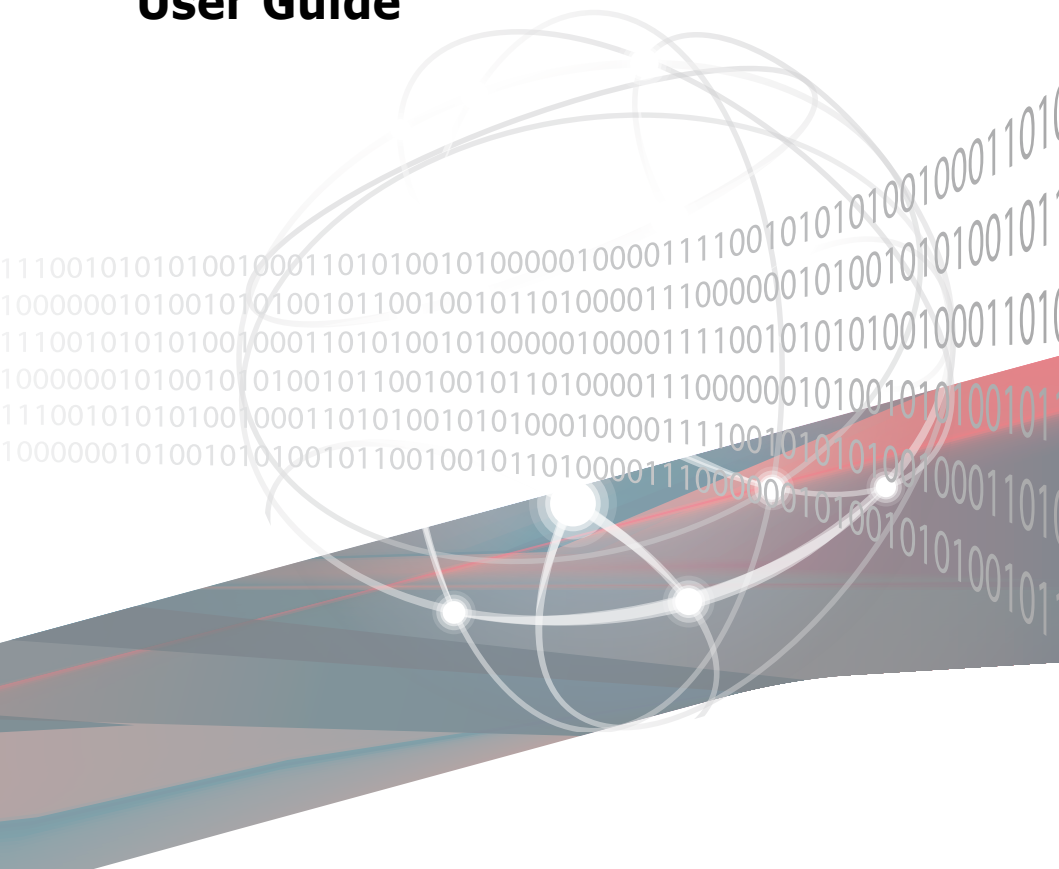


# **PEI-10G/82599-2S**

## **10 Gigabit/s Ethernet SFP+ Dual Port**

### **User Guide**



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## About this guide

This user guide contains the information you need when installing and configuring the server management board.

## How this guide is organized

This guide contains the following parts:

- **Chapter 1: Product introduction**  
This chapter describes the PEI-10G/82599-2S Ethernet card features and the new technologies it supports.
- **Chapter 2: Boot Agent configuration**  
This chapter provides instructions on setting the Intel(R) Boot Agent XE.
- **Chapter 3: Driver installation**  
This chapter provides instructions for installing the Ethernet card drivers on different operating systems.

## Where to find more information

Refer to the following sources for additional information and for product and software updates.

1. **ASUS websites**  
The ASUS website provides updated information on ASUS hardware and software products. Refer to the ASUS contact information.
2. **Optional documentation**  
Your product package may include optional documentation, such as warranty flyers, that may have been added by your dealer. These documents are not part of the standard package.

## Conventions used in this guide

To make sure that you perform certain tasks properly, take note of the following symbols used throughout this manual.



**DANGER/WARNING:** Information to prevent injury to yourself when trying to complete a task.



**CAUTION:** Information to prevent damage to the components when trying to complete a task.



**IMPORTANT:** Instructions that you **MUST** follow to complete a task.



**NOTE:** Tips and additional information to help you complete a task.

## Typography

### **Bold text**

Indicates a menu or an item to select.

### *Italics*

Used to emphasize a word or a phrase.

### <Key>

Keys enclosed in the less-than and greater-than sign means that you must press the enclosed key.

Example: <Enter> means that you must press the Enter or Return key.

### <Key1>+<Key2>+<Key3>

If you must press two or more keys simultaneously, the key names are linked with a plus sign (+).

Example: <Ctrl>+<Alt>+<Del>

### **Command**

Means that you must type the command exactly as shown, then supply the required item or value enclosed in brackets.

Example: At the DOS prompt, type the command line:  
**format a:**

# PEI-10G/82599-2S Specifications Summary

PEI-10G/82599-2S	
Speed & Ports	10 Gigabit/s Ethernet SFP+ ; Dual Port
Controller	Intel® 82599 10 Gigabit Ethernet Controller
Connector & Module Type	LC Fiber Optic Supports SFP+ SR Optical Module, SFP+ LR Optical Module, Direct Attached Copper*
Host Interface	PCI-E Gen2 x8
Form Factor	4.72 in. x 1.77 in. (Lower Than Standard Low-profile)
Support Cable Type	SMF up to 10km (LR) MMF 62.5/50um up to 300m (SR) Passive Twin-AX up to 10m (SFP+ Direct Attach)

\* Please refer to ASUS website for Approved Vendor List (AVL).

\*\* Specifications are subject to change without notice.

# Product introduction

# 1

This chapter offers the PEI-10G/82599-2S Ethernet card features and the new technologies it supports.

## 1.1 Welcome!

Thank you for buying an ASUS® PEI-10G/82599-2S 10 Gigabit/s Ethernet card!

Before you start installing the Ethernet card, check the items in your package with the list below.

## 1.2 Package contents

Check your package for the following items.

	Standard Gift Box Pack	Standard Bulk Pack
Support DVD	1	1 (per carton)
Low-Profile Bracket	1	1
Small Bracket for Node*	1	1
Screws	4	4
Packing Quantity	1 pc per carton	5 pcs per carton



If any of the above items is damaged or missing, contact your retailer.



\* The bundled small bracket for node is a proprietry bracket that supports ASUS Z10PH-D16 series, ESC4000 G3 series, and RS720Q-E8 series models, etc. The supported list of models are subject to change without prior notice.

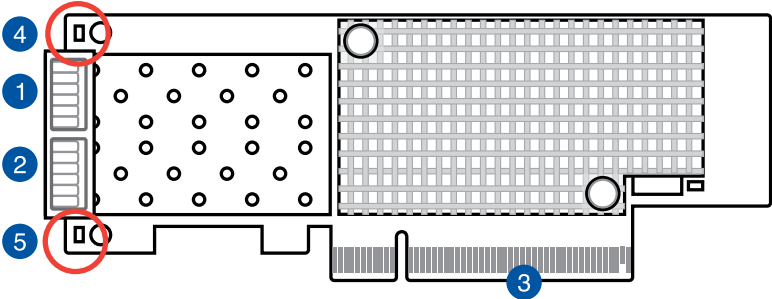
## 1.3 System requirements

Before you install the PEI-10G/82599-2S Ethernet card, check if the system meets the following requirements:

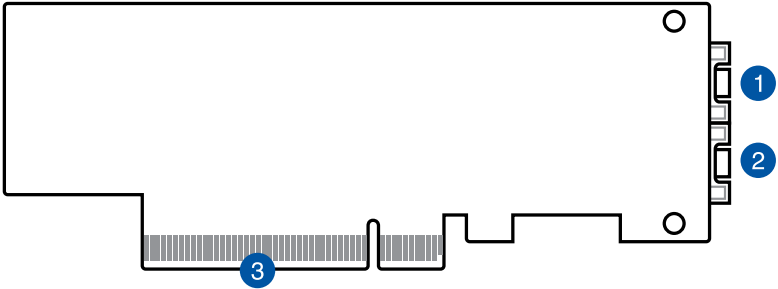
- Thermal requirement:  
With inlet temperature of 50°C, the airflow through the heatsink requires 180 LFM or above.
- Server or workstation motherboard with a PCI Express x8 or x16 card slot
- Supported operating system:  
Windows® and Linux operating systems (refer to the specification table or the ASUS website for the latest updates).

# 1.4 Card layout

Front view



Back view



- 1. LC Fiber Optic Connector 1
- 2. LC Fiber Optic Connector 2
- 3. PCI Express Gen2 x8 Interface
- 4. SFP2SLED1 LED
- 5. SFP2SLED2 LED

### LED indications

	Speed/Link	
	Status	Description
SFP2SLED1 / SFP2SLED2	Green	10 Gbps link
	Amber	1 Gbps link
	Blinking	Data Activity

## 1.5 Replacing the card bracket

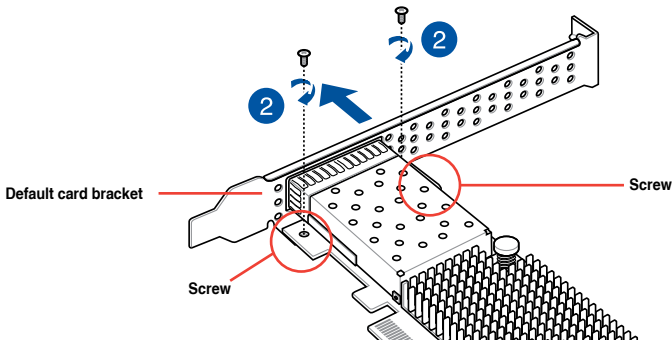
The PEI-10G/82599-2S Ethernet card is bundled with a full-length bracket, a low-profile bracket, and an ASUS proprietary bracket. By default, the card is pre-installed with a full-length bracket.



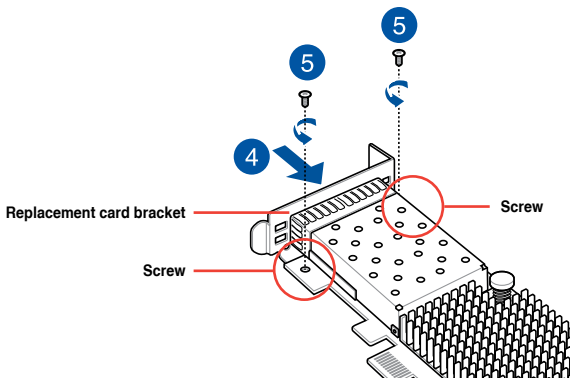
The proprietry bracket supports ASUS Z10PH-D16 series, ESC4000 G3 series, and RS720Q-E8 series models, etc. The supported list of models are subject to change without prior notice.

To replace the card bracket:

1. Get the PEI-10G/82599-2S Ethernet card and place it on a stable and flat surface. Ensure that the printed circuit board (PCB) is facing down.
2. Remove the two screws that secures the PEI-10G/82599-2S Ethernet card to the card bracket then remove the card bracket.



3. Get the replacement card bracket.
4. Align and insert the PEI-10G/82599-2S Ethernet card into the mounting hole of the card bracket. Ensure that the screw holes on the PEI-10G/82599-2S Ethernet card matches the screw holes of the card bracket.
5. Replace the screws that you removed earlier in step 2.



# **Boot Agent Configuration**

This chapter provides instructions on setting the Intel(R) Boot Agent XE.

2

## 2.1 Intel(R) Boot Agent XE

The Intel(R) Boot Agent XE provides hardware-based Ethernet card configurations.

To start the Intel(R) Boot Agent XE and access the main screen:

1. Turn on the system.
2. During POST, press <Ctrl+S> when the following screen appears.

```
Initializing Intel(R) Boot Agent XE v2.3.27
PXE 2.1 Build 092 (WEM 2.02)

Press Ctrl-S to enter Configuration Menu
```

3. From the **Setup Menu** screen, use the Up/Down arrow key to select an item and press <Space> to change the value.

```
Intel(R) Boot Agent XE v2.3.27
Setup Menu

Network Boot Protocol  PXE (Preboot eXecution Enviroment)
Boot Order              Use BIOS Setup Boot Order
Show Setup Prompt      Enabled
Setup Menu Wait Time   2 seconds

Diagnostic Support Information
MAC Address 00E018122209 PBA Number FFFFFFFF-0FF
Memory DE180000 I/O E0000 IRQ 0A UMB C9000
PCI ID 8086/10FB/1043/8685/01 Slot 0101
Flags 01810:4000:0000:0000:1103:L

Select remote boot protocol.

<Esc>      <Space>      <Enter>      <F4>
Cancel Changes  Change Value  Next Option  Save Configuration
```

### Network Boot Protocol [PXE (Preboot eXecution Enviroment)]

Configuration options: [PXE (Preboot eXecution Enviroment)]

### Boot Order [Use BIOS Setup Boot Order]

Configuration options: [Use BIOS Setup Boot Order]

### Show Setup Prompt [Enabled]

Configuration options: [Disabled] [Enabled]

### Setup Menu Wait Time [2 seconds]

Configuration options: [0 seconds] [2 seconds] [3 seconds] [5 seconds]

## 2.2 Intel(R) iSCSI Remote Boot

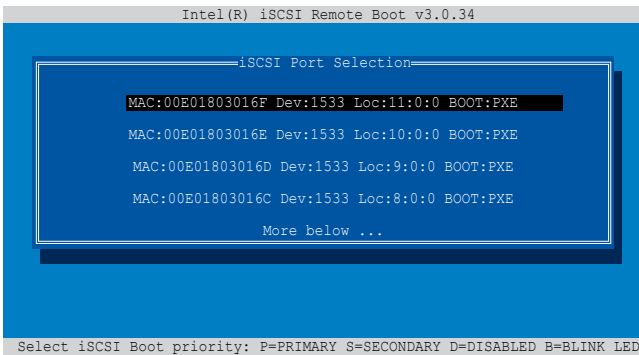
The Intel(R) iSCSI Remote Boot provides hardware-based Ethernet card configurations.

To start the Intel(R) iSCSI Remote Boot and access the main screen:

1. Turn on the system.
2. During POST, press <Ctrl+D> when the following screen appears.

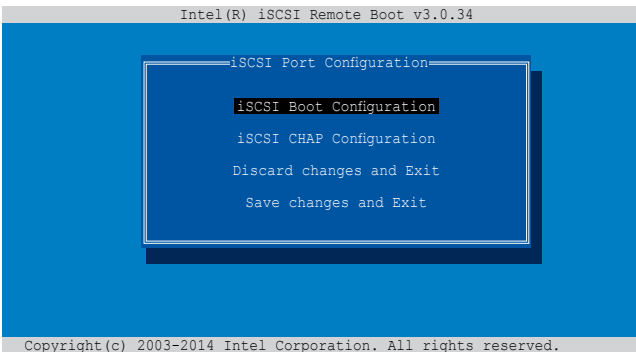
```
Intel(R) iSCSI Remote Boot version 3.0.34
Copyright(c) 2003-2014 Intel Corporation. All rights reserved.
Press ESC key to skip iSCSI boot initialization.
Press <Ctrl-D> to run setup...
```

3. From the **iSCSI Port Selection** screen, use the Up/Down arrow key to select an Ethernet device to configure and press <Enter>.

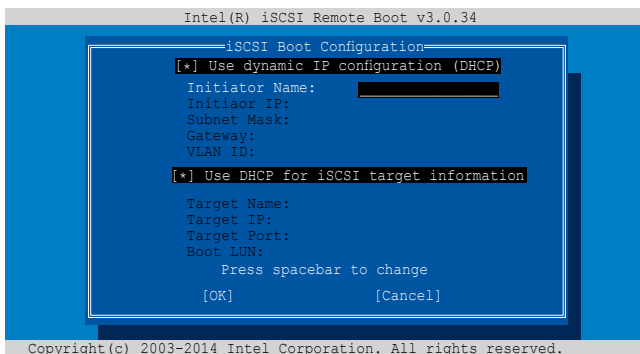


- Press <P> to set the selected item as the primary boot priority, press <S> to set the selected item as the secondary boot priority, or press <D> to disable the selected item.
- Press <B> to blink the LED of the selected item.

4. From the **iSCSI Port Configuration** screen, use the Up/Down arrow key to select an item and press <Enter>.



## 2.2.1 iSCSI Boot Configuration



Use the Up/Down arrow key to select an item and press <spacebar> to change between Enabled [\*] or Disabled [ ].

### **[\*] Use dynamic IP configuration (DHCP)**

When Enabled [\*], the iSCSI boot host software acquires the IP address from the DHCP server.

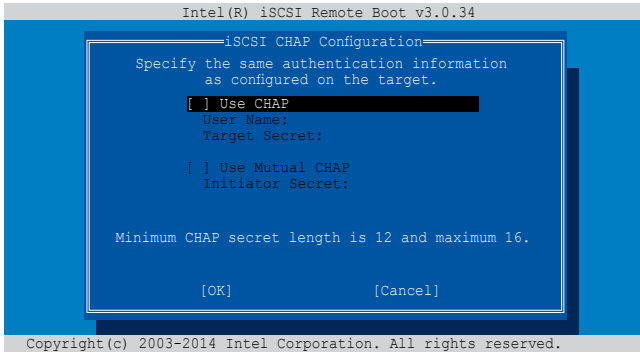
When Disabled [ ], the iSCSI boot host software acquires the static IP address. Key in the necessary parameters.

### **[\*] Use DHCP for iSCSI target information**

When Enabled [\*], the iSCSI boot host software acquires its iSCSI target parameters from the DHCP server.

When Disabled [ ], the iSCSI boot host software acquires its iSCSI target parameters via the static IP address. Key in the necessary parameters.

## 2.2.2 iSCSI CHAP Configuration



Use the Up/Down arrow key to select an item and press <spacebar> to change between Enabled [\*] or Disabled [ ].

### [\*] Use CHAP

When Enabled [\*], the iSCSI boot host software uses CHAP authentication when connecting to the iSCSI target. Key in the necessary parameters.

When Disabled [ ], the iSCSI boot host software does not attempt to boot from the iSCSI target after successfully connecting to it. The control will then return to the system BIOS so that the next boot device may be used.

### [ ] Use Mutual CHAP

When Enabled [\*], the iSCSI boot host software uses a Mutual CHAP authentication when connecting to the iSCSI target. Key in the necessary parameters.

When Disabled [ ], the iSCSI boot host software does not use a Mutual CHAP authentication when connecting to the iSCSI target.

## 2.3 Intel(R) Ethernet Flash Firmware Utility

The Intel(R) Ethernet Flash Firmware Utility allows you to switch between PXE option ROM and iSCSI option ROM. Note that only one option ROM can be used at a time.

To start the Intel(R) Ethernet Flash Firmware Utility:

1. Turn on the system.
2. Enter DOS environment.



The utility must run under pure DOS environment. It cannot run in a DOS box on Windows system. You should boot from a DOS floppy without any device drivers

3. Within the DOS environment, enter the directory with the **bootutil** file.
4. Check the MAC address of the corresponding LAN card:

**bootutil -E**

```
C:\>bootutil -E

Intel(R) Ethernet Flash Firmware Utility
BootUtil version 1.5.22.2
Copyright (c) 2003-2014 Intel Corporation

NIC= 1 MACAddress=00E018122208
NIC= 2 MACAddress=00E018122209
NIC= 3 MACAddress=00E01803016C
NIC= 4 MACAddress=00E01803016D
NIC= 5 MACAddress=00E01803016E
NIC= 6 MACAddress=00E01803016F

Port Network Address Location Series WOL Flash Firmware Version
==== =====
1 00E018122208 1:00.0 10GbE N/A PXE 2.3.27
2 00E018122209 1:00.1 10GbE N/A PXE 2.3.27
3 00E01803016C 8:00.0 Gigabit YES FLASH Not Present
4 00E01803016D 9:00.0 Gigabit YES FLASH Not Present
5 00E01803016E 10:00.0 Gigabit YES FLASH Not Present
6 00E01803016F 11:00.0 Gigabit YES FLASH Not Present

C:\>
```

5. Install the PXE option ROM:

```
bootutil -nic=1 -up=pxe+efi -quiet
```

or

Install the iSCSI option ROM:

```
bootutil -nic=1 -up=iscsi -quiet
```



Port 1 and Port 2 share the same flash.

6. Restart the system.

# Driver installation

# 3

This chapter provides instructions for installing the Ethernet card drivers on different operating systems.

### 3.1 Windows® Server OS Driver Installation

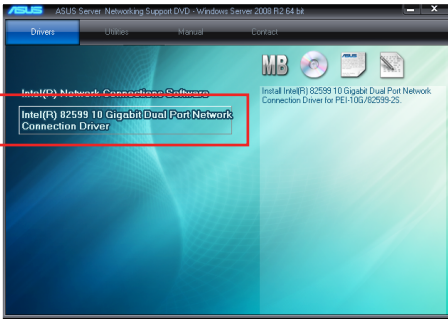
To update the Ethernet card driver for Windows® Server OS:

1. Restart the computer, and then log on with **Administrator** privileges.
2. Insert the Support CD to the optical drive. The Support CD automatically displays the **Drivers** menu if Autorun is enabled in your computer.

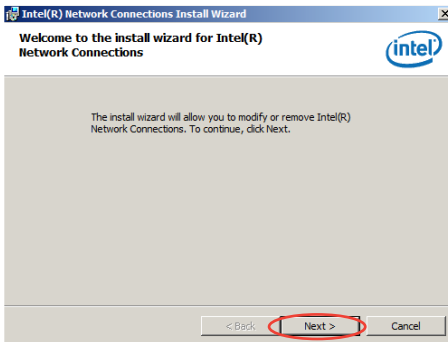


- If Windows® automatically detects the LAN controllers and displays a New Hardware Found window, click **Cancel** to close this window.
- If Autorun is NOT enabled in your computer, browse the contents of the Support CD to locate the file **Setup.exe**. Double-click **Setup.exe** to run the CD.

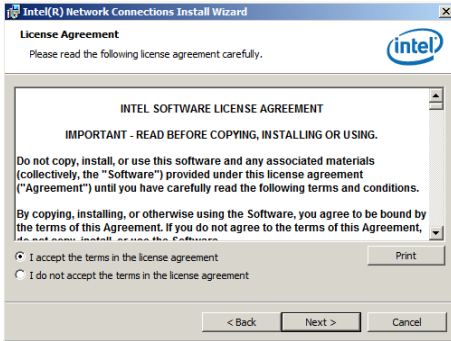
3. Click **Intel(R) 82599 10 Gigabit Dual Port Network Connection Driver**.



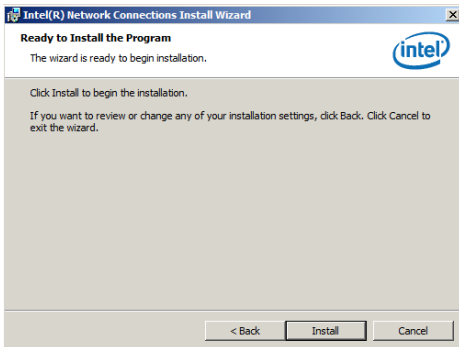
4. Click **Next** when the **Intel(R) Network Connections Install Wizard** window appears.



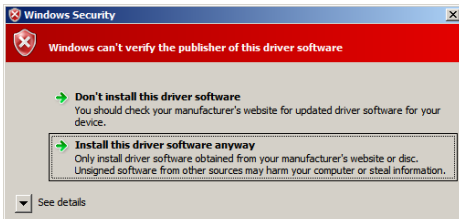
5. Toggle **I accept the terms in the license agreement** and click **Next** to continue.



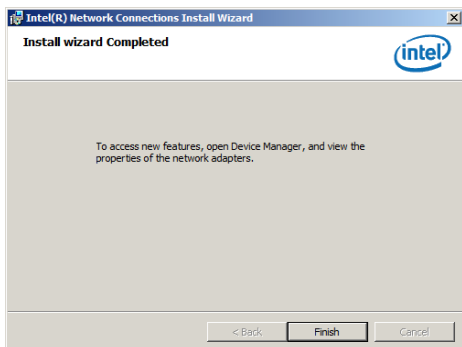
6. Follow the onscreen instructions to complete the installation.



7. If the **Windows Security** window appears during the driver installation, click **Install this driver software anyway** to continue.



8. Click **Finish** to exit the installation wizard.



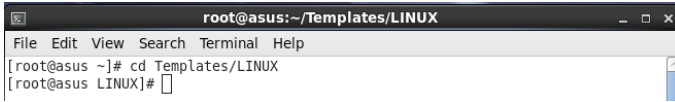
9. Restart the system.

## 3.2 Linux OS Driver Installation

To install the Ethernet card driver for Linux OS:

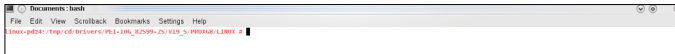
1. Within the Linux Terminal, place the driver in `root/tmp`:

For Red Hat Enterprise Linux 6.5 (Red Hat Enterprise Linux 5.11):



```
root@asus:~/Templates/LINUX
File Edit View Search Terminal Help
[root@asus ~]# cd Templates/LINUX
[root@asus LINUX]#
```

For SUSE Linux Enterprise Server 11.3:



```
Documents: bash
File Edit View Scrollback Bookmarks Settings Help
root@asus:~/Templates/LINUX #
```

2. Unzip the driver:

```
tar xzf <Version>.tar.gz
```

For Red Hat Enterprise Linux 6.5 (Red Hat Enterprise Linux 5.11):



```
root@asus:~/Templates/LINUX
File Edit View Search Terminal Help
[root@asus ~]# cd Templates
[root@asus Templates]# cd LINUX
[root@asus LINUX]# tar xzf ixgbe-3.21.2.tar.gz
[root@asus LINUX]#
```

For SUSE Linux Enterprise Server 11.3:

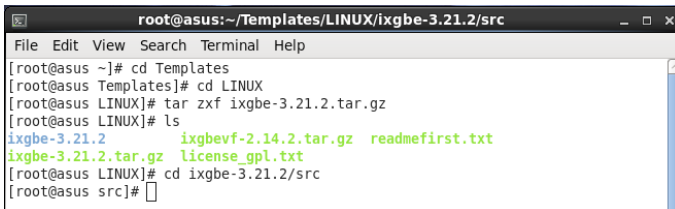


```
Documents: bash
File Edit View Scrollback Bookmarks Settings Help
root@asus:~/Templates/LINUX #
tar xzf ixgbe-3.21.2.tar.gz
root@asus:~/Templates/LINUX #
```

3. Enter the folder:

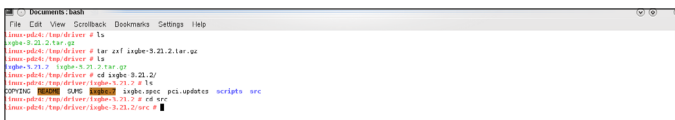
```
cd src
```

For Red Hat Enterprise Linux 6.5 (Red Hat Enterprise Linux 5.11):



```
root@asus:~/Templates/LINUX/ixgbe-3.21.2/src
File Edit View Search Terminal Help
[root@asus ~]# cd Templates
[root@asus Templates]# cd LINUX
[root@asus LINUX]# tar xzf ixgbe-3.21.2.tar.gz
[root@asus LINUX]# ls
ixgbe-3.21.2      ixgbevfv-2.14.2.tar.gz  readmefirst.txt
ixgbe-3.21.2.tar.gz  license_gpl.txt
[root@asus LINUX]# cd ixgbe-3.21.2/src
[root@asus src]#
```

For SUSE Linux Enterprise Server 11.3:



```
Documents: bash
File Edit View Scrollback Bookmarks Settings Help
root@asus:~/Templates/LINUX/ixgbe-3.21.2/src #
ls
ixgbe-3.21.2
ixgbe-3.21.2.tar.gz
ixgbevfv-2.14.2.tar.gz
license_gpl.txt
readmefirst.txt
[root@asus:~/Templates/LINUX/ixgbe-3.21.2/src #
```

4. Install the driver:  
**make install**

For Red Hat Enterprise Linux 6.5 (Red Hat Enterprise Linux 5.11):

```

root@asus:~/Templates/LINUX/ixgbe-3.21.2/src
File Edit View Search Terminal Help
[root@asus ~]# cd Templates
[root@asus Templates]# cd LINUX
[root@asus LINUX]# tar xzf ixgbe-3.21.2.tar.gz
[root@asus LINUX]# ls
ixgbe-3.21.2          ixgbevfv-2.14.2.tar.gz  readmefirst.txt
ixgbe-3.21.2.tar.gz  license_gpl.txt
[root@asus LINUX]# cd ixgbe-3.21.2/src
[root@asus src]# make install

```

For SUSE Linux Enterprise Server 11.3:

```

Documents: bash
File Edit View Scrollback Bookmarks Settings Help
linux@old:~$ cd driver # ls
linux@old:~/driver$ cd ..
linux@old:~$ tar xzf ixgbe-3.21.2.tar.gz
linux@old:~$ cd src
linux@old:~/src$ cd ..
linux@old:~$ cd ixgbe-3.21.2
linux@old:~/ixgbe-3.21.2$ cd src
linux@old:~/ixgbe-3.21.2/src$ ls
COPYING  README  README  ixgbe.hsc  pci_updates  scripts  src
linux@old:~/ixgbe-3.21.2/src$ cd src
linux@old:~/ixgbe-3.21.2/src$ make install

```

5. Install complete:

For Red Hat Enterprise Linux 6.5 (Red Hat Enterprise Linux 5.11):

```

root@asus:~/Templates/LINUX/ixgbe-3.21.2/src
File Edit View Search Terminal Help
gzip -c ../ixgbe.7 > ixgbe.7.gz
# remove all old versions of the driver
find /lib/modules/2.6.32-431.el6.x86_64 -name ixgbe.ko -exec rm -f {} \; || true
find /lib/modules/2.6.32-431.el6.x86_64 -name ixgbe.ko.gz -exec rm -f {} \; || true
install -D -m 644 ixgbe.ko /lib/modules/2.6.32-431.el6.x86_64/kernel/drivers/net/ixgbe/ixgbe.ko
/sbin/depmod -a || true
install -D -m 644 ixgbe.7.gz /usr/share/man/man7/ixgbe.7.gz
man -c -P'cat' > /dev/null' ixgbe || true
Formatting page, please wait...
[root@asus src]#

```

For SUSE Linux Enterprise Server 11.3:

```

Documents: bash
File Edit View Scrollback Bookmarks Settings Help
linux@old:~/driver/ixgbevfv-2.14.2/src$ make install
make -C /lib/modules/2.6.30.5-0.1-desktop/build SUBDIRS=/tmp/driver/ixgbevfv-2.14.2/src modules
make[1]: entering directory /usr/src/linux-2.6.30.5-0.1-obj/x86_64/desktop/...
make -C /usr/src/linux-2.6.30.5-0.1-obj/x86_64/desktop/... modules
make[1]: *** No rule to make target `modules'.
make[1]: *** [modules] Error 2
make: *** [modules] Error 2
make[1]: Leaving directory /usr/src/linux-2.6.30.5-0.1-obj/x86_64/desktop/...
# remove all old versions of the driver
find /lib/modules/2.6.30.5-0.1-desktop -name ixgbevfv.ko -exec rm -f {} \; || true
find /lib/modules/2.6.30.5-0.1-desktop -name ixgbevfv.ko.gz -exec rm -f {} \; || true
make[1]: *** No rule to make target `modules'.
make[1]: *** [modules] Error 2
make[1]: Leaving directory /usr/src/linux-2.6.30.5-0.1-obj/x86_64/desktop/...
make -C /dev/null' ixgbevfv || true
make[1]: *** No rule to make target `ixgbevfv'.
make[1]: *** [ixgbevfv] Error 2
linux@old:~/driver/ixgbevfv-2.14.2/src$

```





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