

10GBase-T/NBASE-T PCI Express Adapter

User Guide

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Warning! This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CE-Mark Warning

This equipment complies with the requirements relating to the EMC Directive 2014/30/EU, and the RoHS Directive 2011/65/EU.

Company has an on-going policy of upgrading its products and it may be possible that information in this document is not up-to-date. Please check with your local distributors for the latest information. No part of this document can be copied or reproduced in any form without written consent from the company.

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1. Introduction

Thanks for the purchasing of your new 5-Speed 10Gb Ethernet PCIe adapter. This document describes the Installation of network adapter. This adapter supports 10GBASE-T and NBASE-T Ethernet copper interface. Moreover, the PCIe interface on the Multi-Gigabit Ethernet NIC complies with PCIe Local Bus, is compatible with 32-bit PCIe bus. As a bus master, the NIC requests access to the PCIe bus, instead of waiting to be polled.

1.1 Features

The 10Gb Ethernet PCIe adapter is a cost effective, high-performance network interface card. It operates in NBASE-T and 10GBASE-T modes and integrates easily with Fast Ethernet Switch, Gigabit Ethernet switch and 10Gb Ethernet Switch

- Complies with IEEE 802.3an 10GBASE-T standard
- Complies with IEEE 802.3u 100BASE-T standard
- Complies with IEEE 802.3ab 1000BASE-T standard
- Complies with PCI Express specification, revision 2.0
- PCI Express ×4 Lane host interface
- Supports 10Gb, 5Gb, 2.5Gb, 1Gb and 100Mb Auto-Negotiation
- Supports NBase-T of 2.5 and 5 Gb over Cat 5e cable
- Supports IEEE 802.1Q tagged VLAN
- Jumbo Frame sizes 16K bytes
- Up to 64KB large send
- Low Profile PCIe Form Factor
- Supports full duplex operation
- Rich diagnostic LED mounted on bracket for easily viewing and troubleshooting (Link/Act Green/Blinking Green).
- Plug and Play Installation.
- Supports driver for Windows Server 2012, 2012 R2, 2008 R2, Hyper-V, 64 bit Windows Win10 Pro Insider Preview, 32/64 bit Win8.1, 32/64 bit Win7; Linux 2.6.x, Linux 3.x, VMware ESXi 5.x, ESXi 6.0
- FCC, VCCI and CE class B certification

1.2 Package contents

Caution:

Under ordinary circumstances, this adapter card will not be affected by static charge as may be received through your body during handling of the unit. In special circumstances where you may carry an extraordinarily high static charge, it had better reduce the charge by touching a ground before handling the adapter card.

Open the shipping gift box and carefully remove all items. Please check the following items:

- One 10Gb Ethernet PCIe Adapter
- One low profile bracket
- One drive CD
- One quick install guide

Note:

If any of the listed items are missing, please contact your distributor or reseller

2. Installation

To use the adapter, you need the following components:

- One 32 or 64 bit PCIe master mode expansion slot that is compliant with PCIe bus specifications
- One CD-ROM drive
- The following cables:

Port Type	Media	Max. Distance
100BASE-T	Cat. 5, 5e, 6, 6a or 7 UTP	100 meter
10GBASE-T	Cat. 6a or 7 UTP	100 meter
NBASE-T	Cat. 6, 6a or 7 UTP	100 meter

2.1 Hardware Installation

1. Turn off the computer.
2. Remove the computer's cover, in accordance to its manual.
3. Insert the contact edge of the adapter card into the connector of any available PCIe Bus master expansion slot. Press the card firmly into the connector to PCIe slot. Please make sure that the card's contacts are fully seated in the PCIe slot.
4. Install the bracket screw that secures the card to the Computer chassis.
5. Replace the computer's cover.
6. Connect the network cable to the RJ-45 connector.
7. Remove driver CD from the PC's CD-ROM drive.
8. Turn on the computer.
9. If the BIOS section of your computer's boot program is Plug and Play compliant, then at power up the BIOS will configure any newly installed adapter automatically.

Note:

Due to some Plug-n-Play BIOS programs' problem, it happens occasionally that a newly installed adapter is assigned an interrupt number that is already used by another device adapter. In such a case, the conflict of interrupt number will cause faults in the behavior of both devices. Then it is necessary to run the CMOS Setup utility, and manually assign a non-conflict Interrupt Number.

2.2 Software Installation

Microsoft Windows

1. Insert the CD into computer.
2. In the Start icon, click the "setting" icon, then click the "Devices" icon.
3. In the "Devices" icon group, click the "Devices manager" icon.
4. In the "Devices manager", double click "Network adapters" icon and choose the "TN9510 10GBase-T/NBASE-T Ethernet Adapter".
5. Click mouse right key, choose the "update Driver Software"
6. In "Browse for driver software on your computer" screen, choose DVD RW Drive (E:) 10G NIC\Windows server and clients\W7.
7. Follow the screen instructions and finish the rest of installation procedures.

Linux

1. Ubuntu PC power off. Plug in Network adapter.
2. PC power on. Copy driver source code to hard disk and decompress.
\$ tar-zxvftn40xx-0.3.6.12.2.tgz
3. Check system detects Network adapter
Under source code folder,
\$ sudo lspci-d 1fc9: -vvv
(ex. 01:00.0 Ethernet Controller: Tehuti Networks Ltd. Device 4025)
P.S. If Device '4010' then the network adapter had not yet written Device ID and MAC address.

```
promate@promate: ~/Desktop/tn40xx-0.3.6.12.1
./tn40xx_dev.h
./tn40xx.o
./tn40xx.o.cmd
./tn40.o.cmd
./tn40xx.mod.c
./tn40xx.mod.o
./tn40.o
./tn40_fw.h
promate@promate:~/Desktop/tn40xx-0.3.6.12.1$ ls
AQ2104_phy.c  CX4.c  makefile.inc  MV88X3120_phy.c  QT2025_phy.c  Readme  TLK10232_phy.h  tn40_fw.h  tn40xx_dev.h  tn40xx.mod.o
AQ2104_phy.h  CX4.o  modules.order  MV88X3120_phy.o  QT2025_phy.h  release_notes  TLK10232_phy.o  tn40.h  tn40xx.ko  tn40xx.o
AQ2104_phy.o  Makefile  Module.symvers  MV88X3140_phy.h  QT2025_phy.o  TLK10232_phy.c  tn40.c  tn40.o  tn40xx.mod.c
promate@promate:~/Desktop/tn40xx-0.3.6.12.1$ sudo lspci -d 1fc9: -vvv
01:00.0 Ethernet controller: Tehuti Networks Ltd. Device 4010
Subsystem: Tehuti Networks Ltd. Device 4010
Control: I/O- Mem+ BusMaster+ SpecCycle- MemWINV- VCASnoop- ParErr- Stepping- SERR- FastB2B- DisINTx+
Status: cap+ 60MHz- UDF- FastB2B- ParErr- DEVSEL=fast >Abort- <Abort- <Abort- >SERR- <PERR- INTx-
Latency: 0, Cache Line Size: 64 bytes
Interrupt: pin A routed to IRQ 45
Region 0: Memory at f0000000 (64-bit, prefetchable) [size=64K]
Capabilities: [50] MSI: Enable+ Count=1/1 Maskable- 64bit+
Address: 00000000fee00338 Data: 0000
Capabilities: [78] Power Management version 3
Flags: PMEClk- DSI- D1- D2+ AuxCurrent=0mA PME(D0+,D1+,D2+,D3hot+,D3cold+)
Status: D0 NoSoftRst+ PME Enable- Dsfl=0 DScale=0 PME-
Capabilities: [80] Express (v2) Endpoint, MSI 00
DevCap: MaxPayload 512 bytes, PhantFunc 0, Latency L0s <64ns, L1 <2us
ExtTag- AttnBtm- AttnInd- PwrInd- RBE+ FLReset-
DevCtl: Report errors: Correctable- Non-Fatal- Fatal- Unsupported-
RxdOrd- ExtTag- PhantFunc- AuxPwr- NoSnoop+
MaxPayload 256 bytes, MaxReadReq 512 bytes
DevSta: CorrErr- UncorrErr- FatalErr- UnsuppReq- AuxPwr+ TransPend-
LnkCap: Port #1, Speed 5GT/s, Width x4, ASPM L0s L1, Latency L0 <512ns, L1 #2us
ClockPM- Surprise- LLActRep- BwNot-
LnkCtl: ASPM Disabled; RCB 64 bytes Disabled- Retrain- CommClk+
ExtSynch- ClockPM- AutwIDDis- BWMgmt- ABWMgmt-
LnkSta: Speed 5GT/s, Width x4, TrErr- Train- SlotClk- DLActive- BWMgmt- ABWMgmt-
DevCap2: Completion Timeout: Range A, TimeoutDis+
DevCtl2: Completion Timeout: 50us to 50ms, TimeoutDis-
LnkCtl2: Target Link Speed: 5GT/s, EnterCompliance- SpeedDis-, Selectable De-emphasis: -6dB
Transmit Margin: Normal Operating Range, EnterModifiedCompliance- ComplianceSOS-
Compliance De-emphasis: -6dB
LnkSta2: Current De-emphasis Level: -6dB
Capabilities: [100 v1] Virtual Channel
Caps: LPEVC=0 RefClk=100ns PATEntryBits=1
Arb: FxEd- WRR32- WRR64- WRR128-
Ctrl: ArbSelect=Fixed
Status: InProgress-
VC0:
Caps: PATOffset=00 MaxTimeSlots=1 RejSnoopTrans-
Arb: FxEd- WRR32- WRR64- WRR128- TMRR128- WRR256-
Ctrl: Enable+ ID=0 ArbSelect=Fixed TC/VC=01
Status: NegoPending- InProgress-
Kernel driver in use: tn40xx
Kernel modules: tn4022
promate@promate:~/Desktop/tn40xx-0.3.6.12.1$
```

4. Compile source code and modify Network Adapter driver path to driver. Detail help operation refers source code 'Readme'.
Under source code folder,
\$ make clean
\$ make install
5. Check device and driver information by lsmod, dmesg and ifconfig.

```
promate@promate: ~
promate@promate:~$ lsmod | grep tn
tn40xx 36243 0
promate@promate:~$ dmesg | grep tn
[  8.044403] tn40xx: reuuti Network Driver, 0.3.6.12.1
[  8.044441] tn40xx: tn40xx
[  8.044444] tn40xx: srom 0x0 HWver 10 build 0 lane# 4 max_pl 0x1 mrrs 0x2
[  8.044563] tn40xx 0000:91:00:0: irq 45 for MSI/MSI-X
[  8.283583] tn40xx: PHY detected on port 1 ID=3A1B4A3 - AQ2104 10Gbps 10GBase-T
[ 14.692661] tn40xx: eth0, Port A
[ 14.692675] tn40xx: 1 1fc9:4025:1fc9:3015
[ 14.692698] tn40xx: detected 1 cards, 1 loaded
[ 14.815035] tn40xx: fw 0xe
promate@promate:~$ ifconfig
eth2      Link encap:Ethernet  HWaddr 90:2b:34:5d:16:c9
          UP BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)
          Interrupt:18

eth38     Link encap:Ethernet  HWaddr 00:00:00:00:00:30
          UP BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:3000
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)
          Interrupt:45 Memory:f0000000-f0010000

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:656 (656.0 B)  TX bytes:656 (656.0 B)

virbr0    Link encap:Ethernet  HWaddr de:f6:e9:15:dd:2a
          inet addr:192.168.122.1  Bcast:192.168.122.255  Mask:255.255.255.0
          UP BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

promate@promate:~$
```

VMware

1. Copy the VIB file to the VMware server:
scp net-tn40xx-0.3.6.12.2.x86_64.vib root@x.x.x.x:/
2. On the VMware server shell type:
esxcli software acceptance set --level CommunitySupported
esxcli software vib install -v /net-tn40xx-0.3.6.12.2.x86_64.vib
3. Reboot the VMware server