

# HP NC150T PCI 4-port Gigabit Combo Switch Adapter User Guide



June 2007 (Third Edition)  
Part Number 367256-00C

© Copyright 2004 - 2007 Hewlett-Packard Development Company, L.P.

The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Microsoft®, MS Windows®, Windows®, and Windows NT® are U.S. registered marks of Microsoft Corporation. Intel®, Pentium®, Intel Inside®, and the Intel Inside logo are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. UNIX® is a trademark of The Open Group.

Printed in the US

HP NC150T PCI 4-port Gigabit Combo Switch Adapter User Guide

June 2007 (Third Edition)  
Part Number 367256-00C

---

# Contents

## About This Guide

Technician Notes .....	v
Where to Go for Additional Help .....	vi
Telephone Numbers .....	vi

## Chapter 1

### Introduction

Adapter Overview .....	1-1
Hardware Overview .....	1-1
LED Indicators .....	1-1
Unshielded Twisted Pair Category 5 Cable .....	1-2

## Chapter 2

### Installing the Adapter

Overview .....	2-1
Electrostatic Discharge Precautions .....	2-1
Installing the Adapter in a Server .....	2-2
Connecting the Network Cable .....	2-3

## Appendix A

### Regulatory Compliance Notices

Federal Communications Commissions Notice .....	A-1
Modifications .....	A-1
Declaration of Conformity for Products Marked with the FCC Logo - United States Only .....	A-1
Canadian Notice .....	A-2
Avis Canadien .....	A-2
European Union Notice .....	A-3
Japanese Notice .....	A-3
Korean Notice .....	A-3

## Appendix B

### Electrostatic Discharge

Overview .....	B-1
Grounding Methods .....	B-1

## Appendix C

### Specifications

NC150T PCI 4-port Gigabit Combo Switch Adapter Specifications .....	C-1
---	-----

UTP Cable Specifications ..... C-2  
    Using UTP Category 5 Cable in Gigabit over Copper Installations..... C-2

---

## About This Guide

Use this guide for installing the HP ProLiant NC 150T PCI 4-port Gigabit Combo Switch Adapter.



**WARNING:** To reduce the risk of personal injury from electric shock and hazardous energy levels, only authorized service technicians should attempt to repair this equipment. Improper repairs can create conditions that are hazardous.

---

## Technician Notes



**WARNING:** Only authorized technicians trained by HP should attempt to repair this equipment. All troubleshooting and repair procedures are detailed to allow only subassembly/module-level repair. Because of the complexity of the individual boards and subassemblies, no one should attempt to make repairs at the component level or to make modifications to any printed wiring board. Improper repairs can create a safety hazard.

---



**WARNING:** To reduce the risk of personal injury from electric shock and hazardous energy levels, do not exceed the level of repairs specified in these procedures. Because of the complexity of the individual boards and subassemblies, do not attempt to make repairs at the component level or to make modifications to any printed wiring board. Improper repairs can create conditions that are hazardous.

---



**WARNING:** To reduce the risk of electric shock or damage to the equipment:

- Disconnect power from the system by unplugging all power cords from the power supplies.
  - Do not disable the power cord grounding plug. The grounding plug is an important safety feature.
  - Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.
- 



**CAUTION:** The computer is designed to be electrically grounded (earthed). To ensure proper operation, plug the AC power cord into a properly grounded AC outlet only.

---

**NOTE:** Any indications of component replacement or printed wiring board modifications may void any warranty.

## Where to Go for Additional Help

HP updates networking software frequently to include new functionality and features. Complete the following steps to get the latest drivers, firmware, and documentation.

1. Go to the HP website (<http://www.hp.com>).
2. Click **Support and Troubleshooting Information** from the left menu bar.
3. Type the product name in the **for product** box and press **Enter**. For example, type NC370T.
4. Download the drivers, firmware, or documentation as needed.

## Telephone Numbers

For the name of your nearest HP authorized reseller:

- In the United States, call 1-800-345-1518.
- In Canada, call 1-800-263-5868.

For HP technical support:

- In the United States and Canada, call 1-800-HP-INVENT (1-800-474-6836).
- Outside the United States and Canada, refer to  
[www.hp.com](http://www.hp.com)

## Adapter Overview

The HP NC150T PCI 4-port Gigabit Combo Switch Adapter is a 32-bit/66MHz, PCI, Ethernet adapter and a 4-port Gigabit Layer 2 Unmanaged Ethernet Switch. This device provides an on-board connection between the Ethernet controller and the Gigabit switch.

The Ethernet controller delivers up to 1000 Mb/s Ethernet to the server uplink port of the Gigabit switch and is capable of auto-negotiating this link at 10, 100, or 1000 Mb/s. The Gigabit switch provides four external network connections over twisted-pair (copper) Category 5 or better cabling. Each of the four external ports is capable of auto-negotiating a link at 10, 100, or 1000 Mb/s. LED indicators on each of these ports show the network link and activity information. The NC150T PCI 4-port Gigabit Combo Switch Adapter is a supported option for selected HP ProLiant 100 and 300 servers. For best overall system performance, install the adapter in a 32-bit/66 MHz, PCI slot.

**NOTE:** The Microsoft© Windows© Hardware Qualification Lab (WHQL) will not certify switch components. As a result, the NC150T PCI 4-port Gigabit Combo Switch Adapter hardware cannot be certified. However, the NC150T PCI 4-port Gigabit Combo Switch Adapter driver is supported with a digital signature for Windows 2000 Server and Windows Server 2003.

For the latest functionality, features, and operating system support for this switch adapter, see the HP website

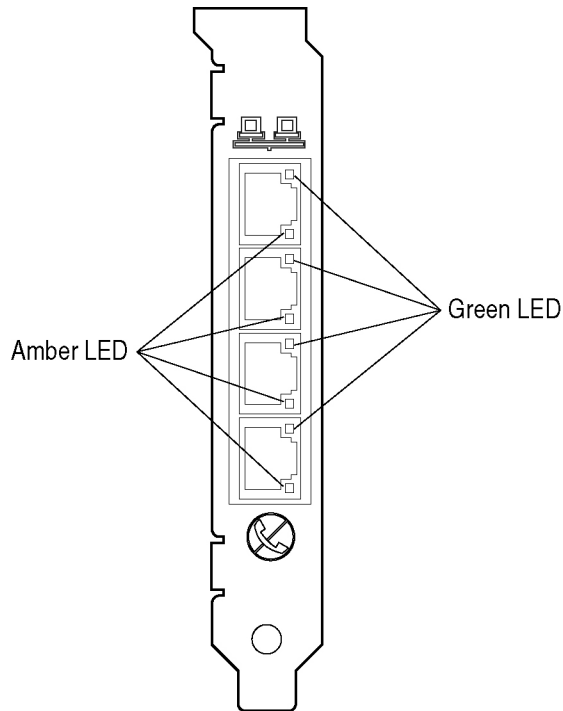
(<http://h18004.www1.hp.com/products/servers/networking/index-nic.html>).

## Hardware Overview

The NC150T PCI 4-port Gigabit Combo Switch Adapter has four auto-negotiating 10/100/1000 RJ-45 ports. These RJ-45 ports support Auto-MDI/MDI-X crossover, which eliminates the need for crossover cables. LED indicators on each port show link and activity. Refer to Table 1-1 for descriptions of LED operations.

## LED Indicators

The following table describes the LED indicators located on the front panel of the NC150T PCI 4-port Gigabit Combo Switch Adapter.



**Figure 1-1: RJ-45 port and LED locations**

**Table 1-1: 10/100/1000 LED Operations for the NC150T PCI 4-port Gigabit Combo Switch Adapter**

LED	Display	Description
Green	On	10/100 Mb link to the network is established.
	Off	No 10/100 Mb link to network is established.
	Blinking	The adapter is sending or receiving network data at 10 or 100 Mb/s.
Amber	On	1000 Mb link to the network is established.
	Off	No 1000 Mb link to network is established.
	Blinking	The adapter is sending or receiving network data at 1000 Mb/s.

## Unshielded Twisted Pair Category 5 Cable

The NC150T PCI 4-port Gigabit Combo Switch Adapter can use existing Category 5 Unshielded Twisted Pair (UTP) (or better) cable to deliver Gigabit Ethernet over copper, according to the IEEE 802.3ab specifications. For new installations, Category 5e (enhanced Category 5) or better cable is recommended. For troubleshooting and other information about cabling, refer to “UTP Cable Specifications” in Appendix C.



---

## Installing the Adapter

### Overview

This chapter describes installation precautions and explains how to install the adapter. It also describes how to connect the network cable.



**WARNING:** To avoid the risk of personal injury or damage to the equipment, consult the safety information and user documentation provided with the equipment before attempting installation of the adapter.

Many servers are capable of producing energy levels that are considered hazardous. Users should not remove enclosures, nor should they bypass the interlocks provided for removal of these hazardous conditions.

Installation of this adapter should be performed by individuals who are both qualified in the servicing of computer equipment, and trained in the hazards associated with products capable of producing hazardous energy levels.

This server adapter is intended for use with UL Listed ITE equipment having instructions on adding and removing components such as PCI and PCI-X devices.

---

**NOTE:** Before removing the cover of the server, refer to the HP documentation for the proper methods for installing a PCI card and avoiding electric shock hazards.

### Electrostatic Discharge Precautions

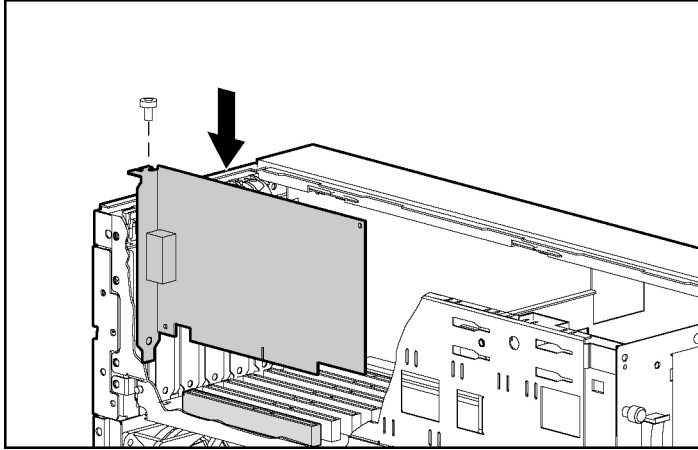
A discharge of static electricity from a finger or other conductor can damage components on the adapter, which can make the adapter inoperable. In addition to the following information, refer to Appendix B for more precautions.

To prevent electrostatic damage, observe the following precautions:

- Always properly ground yourself when touching a static-sensitive component or assembly.
- Avoid hand contact by transporting and storing parts in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free locations.
- Place containers on a grounded surface before removing the contents.
- Avoid touching pins, leads, or circuitry.

## Installing the Adapter in a Server

Refer to the HP ProLiant server documentation for additional information on how to safely install a PCI card in the server.



**Figure 2-1: Installing the adapter in a server**



**CAUTION:** If the server is not PCI Hot Plug compliant, power it down and unplug the power cord from the power outlet before removing the server cover. Failure to do so may damage the adapter or server.

---

1. Power down the server.
  2. Unplug the power cord from the power outlet.
- 



**WARNING:** To reduce the risk of personal injury from hot surfaces, allow the internal system components to cool before touching them.

---

3. Allow the internal system components to cool before touching them.
4. Remove the server cover and cover bracket from a PCI slot.
5. Firmly seat the adapter in the PCI slot and secure the adapter bracket.
6. Replace the server cover and plug in the power cord.

## Connecting the Network Cable

**IMPORTANT:** Do not connect more than one NC150T PCI 4-port Gigabit Combo Switch Adapter port to any single other switch model.

**IMPORTANT:** Do not use the NC150T PCI 4-port Gigabit Combo Switch Adapter as a cable aggregator for servers with iLO and RILOE ports.

To secure the cable, plug the cable connector into the RJ-45 port. Ensure that the tab on the plug clicks into position, indicating that it is properly seated.

For more information, refer to “UTP Cable Specifications” in Appendix C.

---

## Regulatory Compliance Notices

### Federal Communications Commissions Notice

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 in a residential installation. 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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or television technician for help.

### Modifications

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Hewlett-Packard Company may void the user's authority to operate the equipment.

### Declaration of Conformity for Products Marked with the FCC Logo - United States Only

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, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For questions regarding your product, contact:

Hewlett-Packard Company  
P. O. Box 692000, Mail Stop 530113  
Houston, Texas 77269-2000

Or, call

1-800- 652-6672

For continuous quality improvement, calls may be recorded or monitored.

For questions regarding this FCC declaration, contact:

Hewlett-Packard Company  
P. O. Box 692000, Mail Stop 510101  
Houston, Texas 77269-2000

Or, call

(281) 514-3333

To identify this product, refer to the Part, Series, or Model number found on the product.

## Canadian Notice

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

## Avis Canadien

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

## European Union Notice



Products bearing the CE marking comply with the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community. Compliance with these directives implies conformity to the following European Norms (in parentheses are the equivalent international standards and regulations):

- EN 55022 (CISPR 22)—Electromagnetic Interference
- EN55024 (IEC61000-4-2, 3, 4, 5, 6, 8, 11)—Electromagnetic Immunity
- EN61000-3-2 (IEC61000-3-2)—Power Line Harmonics
- EN61000-3-3 (IEC61000-3-3)—Power Line Flicker
- EN 60950 (IEC 60950)—Product Safety

## Japanese Notice

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。  
取扱説明書に従って正しい取り扱いをして下さい。

## Korean Notice

### B급 기기 (가정용 정보통신기기)

이 기기는 가정용으로 전자파적합등록을 한 기기로서 주거지역에서는 물론 모든 지역에서 사용할 수 있습니다.

---

## Electrostatic Discharge

### Overview

To prevent damage to the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

To prevent electrostatic damage, observe the following precautions:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place containers on a grounded surface before removing the contents.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly.

### Grounding Methods

There are several methods for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

- Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm  $\pm 10$  percent resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.
- Use heel straps, toe straps, or boot straps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
- Use conductive field service tools.
- Use a portable field service kit with a folding static-dissipating work mat.

If you do not have any of the suggested equipment for proper grounding, have an HP authorized reseller install the part.

**NOTE:** For more information on static electricity or assistance with product installation, contact your HP authorized reseller.

---

## Specifications

### NC150T PCI 4-port Gigabit Combo Switch Adapter Specifications

**Table C-1: NC150T PCI 4-port Gigabit Combo Switch Adapter Specifications**

Specification	Description
Network Controller Chipset	Broadcom® 5705KFB
Bus Type	PCI
Bus Width	32 bits
Bus Speed	33 or 66 MHz
Standards Supported by NIC	IEEE 802.1Q, 802.3ab, 802.3u, 802.3x, 802.3
Data Transfer Method	Bus Master DMA
Switch Chipset	BCM5385KPB and BCM5011KQM
Standards Supported by Switch	IEEE 802.3ab, 802.3u, 802.3x, 802.3
Power Requirement	Operating Voltage: 3.3V +/- 5% Maximum Power Consumption: 7 Watts Maximum: 2.1A @ 3.3V (DC)
Dimensions	14.5 cm x 10.7 cm, 5.7 x 4.20 inches (L x W)
Connector and Distances	Four RJ-45 Connectors, Cable and lengths as follows: 10BASE-T: Category 3, 4, or 5 UTP 100 Meters (328 feet) 100BASE-TX: Category 5 UTP 100 Meters (328 feet) 1000BASE-T: Category 5 UTP 100 Meters (328 feet)
Interrupts Supported	Automatically configured
Temperature Range	Operating: 0°C to 55°C / 32°F to 131°F Storage: -40°C to 65°C / -40°F to 149°F
Relative Humidity	5% to 95%, non-condensing



## UTP Cable Specifications

For 1000BASE-T transmission, the cable must be:

- Category 5 UTP or better
- 22-26 AWG, 100Ω @ 1MHz
- EIA/TIA 568a or EIA/TIA 568b

## Using UTP Category 5 Cable in Gigabit over Copper Installations

For Gigabit over copper installations, Category 5 UTP or better 1000BASE-T cable must comply with the IEEE 802.3ab 1000BASE-T standard. For new installations, Category 5e (enhanced Category 5) or better cable is recommended.