

DNCP Solutions, LLC

*- A Platinum Equity Company*

# **U522 Ethernet PCI Card Installation Guide**

Part Number: MAN0063-00

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Manual Name: *U522 Ethernet PCI Card Installation Guide*

Part Number: MAN0063

Revision Number: 00

Printing Date: September 2002

DNCP Solutions, LLC  
55 Fairbanks Boulevard  
Marlboro, MA 01752-9899

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# About This Guide

## Purpose

This guide provides an overview of the U522 PCI (peripheral component interconnect) card. It also describes how to install or replace the card in a DNCP (*Distributed Network Control Platform*) Series 400/400-CO system. The abbreviation CO indicates a Central Office system.

## Audience

This guide is intended for DNCP Solutions customers who are installing or maintaining a U522 Ethernet PCI card in a DNCP Series 400/400-CO system.

## Revision Information

This is the first edition of this document.

## Software Information

The U522 PCI card is supported on DNCP Series 400/400-CO systems that run the HP-UX Operating System. For operating systems prior to HP-UX version 11.00.61, the U522 card may require that software patches be installed on the operating system. See the *DNCP Patches for U522, U405, U406, D843, and D844* (R300066) document for the operating system versions and patches required to support the U522 Ethernet PCI card.

## How to Use This Guide

Read...	To Learn About...
<b>Chapter 1</b>	The U522 PCI Card, the location of the cards in the DNCP Series 400/400-CO system, how to handle the cards, cabling specifications, and hardware and software requirements.
<b>Chapter 2</b>	How to install and replace a U522 PCI Card.
<b>Chapter 3</b>	How to get help and how to interpret PCI Card and Ethernet network status lights.

## Notation and Terminology Conventions

Convention	Indicates	Example
<i>Italics</i>	Introduces or defines terms	This chapter provides an overview of the U522 PCI card and <i>peripheral component interconnect</i> cards in general.
<b>Boldface</b>	Emphasis	<b>Always</b> store the PCI card in its static-protective envelope if it is not installed in the system.
Monospace	Commands, functions, code fragments, filenames, directories	As long as your system has power, you can initiate a reboot through the <code>shutdown</code> or <code>init</code> commands.
CO	Central Office	DNCP Series 400/400-CO systems provide continuously available hardware for central office environments.

## Product Documentation

The DNCP Series 400 and 400-CO system documentation is shipped on a *DNCP Series 400/400-CO Documentation* CD-ROM containing the following documentation:

- *DNCP Series 400 and 400-CO: Site Planning Guide* (MAN0050)
- *DNCP Series 400 and 400-CO: Attaching and Removing the Caster Plates* (MAN0051)
- *DNCP Series 400 and 400-CO: D859 CD-ROM Drive: Installation and Operation Guide* (MAN0052)
- *DNCP Series 400 and 400-CO: T807/T808 Tape Drive Release Notes* (MAN0053)
- *DNCP Series 400 and 400-CO: D84X Disk Drive Release Notes* (MAN0054)
- *DNCP Series 400 and 400-CO: Tape Drive Installation and Operation Guide* (MAN0055)
- *DNCP Series 400 and 400-CO: Operation and Maintenance Guide* (MAN0056)
- *DNCP Series 400 and 400-CO: PA-8600 Suitcase Replacement and Upgrade Guide* (MAN0057)
- *U406 Synchronous PCI Card Installation Guide* (MAN0058)
- *U450 Asynchronous PCI Card Installation Guide* (MAN0059)
- *U501 SCSI PCI Card Installation Guide* (MAN0060)
- *U512 Ethernet PCI Card Installation Guide* (MAN0061)
- *U522 Ethernet PCI Card Installation Guide* (MAN0063)
- *U916 T1/E1 PCI Card Installation Guide* (MAN0064)

## Related Books

In addition to this document, the following documentation contains information related to the DNCP fault-tolerant platforms and supported operating systems:

### Software

- *DNCP Patches for U522, U405, U406, D843, and D844* (R300066)
- *HP-UX Operating System: Fault Tolerant System Administration* (MAN0004)
- *HP-UX Operating System: Read Me Before Installing* (MAN0003)
- *HP-UX Operating System: LAN Configuration Guide* (MAN0005)
- *HP-UX Operating System: Redundant Network Interface* (MAN0006)
- *HP-UX Operating System: Peripherals Configuration* (MAN0001)
- *HP-UX Operating System: Installation and Update* (MAN0002)
- *HP-UX Operating System: Remote STREAMS Release Notes and Installation Instructions* (R1013H)

### Hardware

- *DNCP Series 400 and 400-CO: Site Planning Guide* (MAN0050)
- *DNCP Series 400 and 400-CO: Operation and Maintenance Guide* (MAN0056)
- *U450 Asynchronous PCI Card Installation Guide* (MAN0059)
- *U501 SCSI PCI Card Installation Guide* (MAN0060)
- *U512 Ethernet PCI Card Installation Guide* (MAN0061)
- *U513 Ethernet PCI-Card Installation Guide* (MAN0062)
- *U916 T1/E1 PCI Card Installation Guide* (MAN0064)

## A Note on the Contents of DNCP Books

DNCP books document all of the subroutines and commands of the user interface. Any other commands and subroutines contained in the operating system are intended solely for use by DNCP Solutions personnel and are subject to change without warning.

## Ordering Documentation

You can order additional manuals or documentation CD-ROMs in either of the following ways:

- If your system is connected to the Remote Service Network (RSN), add a call using the Site Call System (SCS). See the `scsac(1)` man page for more information.
- Call the Customer Assistance Center (see “Customer Assistance Center”). Your order will be forwarded to Order Administration.

You can also download manuals from the DNCP Solutions Patch Manager web site at <http://pman3.com/pman>. You will need your Site ID and password to access this site.

## How to Send Comments About This Document

If you have comments about this document, you can fill out and mail the postage-paid response card at the back of this document.

We welcome any corrections and suggestions for improving this document.

## Customer Assistance Center

You may contact the DNCP Solutions *Customer Assistance Center (CAC)*, 24 hours a day, 7 days a week by calling one of the phone numbers listed below.

<b>Service Area</b>	<b>CAC Location</b>	<b>Phone Number</b>
North and South America	Scottsdale, Arizona USA	800-404-1561 (within North America) 480-391-8561 (outside North America)
EMEA (Europe, Middle East and Africa)	Sophia Antipolis, France	+33-492-386-208
Greater China	Hong Kong, China	+852-8202-2562
Asia / Pacific	Tokyo, Japan	0120-787287 (within Japan) 81-3-3589-6034 (outside Japan)

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# Chapter 1

## Overview

This chapter provides an overview of the U522 PCI card and peripheral component interconnect (PCI) cards in general. This chapter includes:

- Locating the PCI Cards
- Handling PCI Cards
- Cabling Specifications
- Hardware Requirements
- Software Requirements

## U522 4-Port Ethernet PCI Card

The U522 PCI card is a high-performance 4-Port Ethernet adapter that enables you to connect a DNCP Series 400/400-CO system to a local area network (LAN). The U522 PCI card is based on a 32-bit bus architecture that optimizes data flow between the system and the network, resulting in the highest possible throughput with low CPU utilization.

The U522 PCI card provides both 10 megabits-per-second (Mbps) Regular Ethernet and 100-Mbps Fast Ethernet communication. The card automatically senses the speed of the port to which it is attached, and configures itself accordingly.

Each DNCP Series 400/400-CO system can support up to four U522 PCI cards (16 LAN ports). These cards can be paired, using the Redundant Network Interface (RNI), to provide backup fail-over protection. Figure 1-1 shows the U522 PCI card.



**Figure 1-1. U522 Ethernet PCI Card**



## Locating the PCI Cards

The PCI cards in a DNCP Series 400/400-CO system are installed in one of two PCI card cages, located at the rear of the cabinet (Figure 1-2).

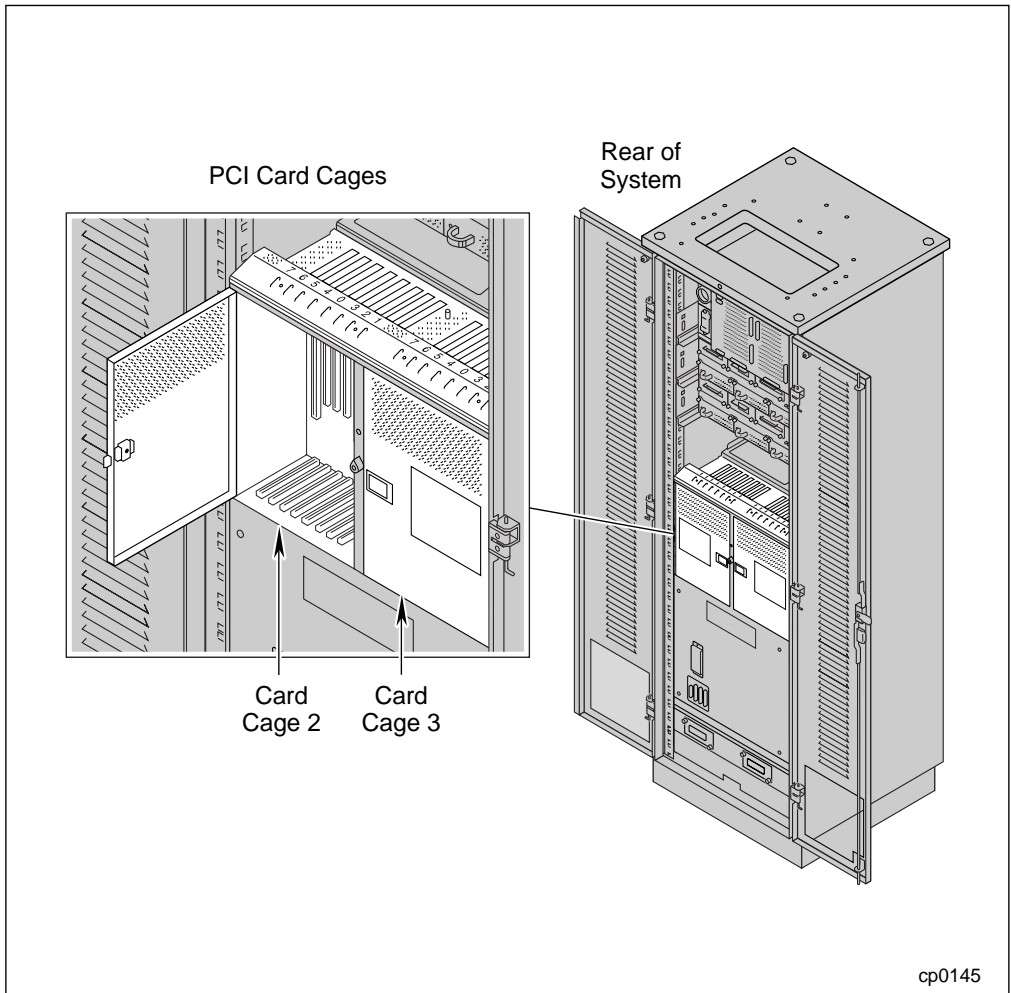


Figure 1-2. PCI Card Cages

Figure 1-3 shows the location of the PCI cards in the PCI card cages. The U522 card can be installed in any of the “optional PCI card” slots.

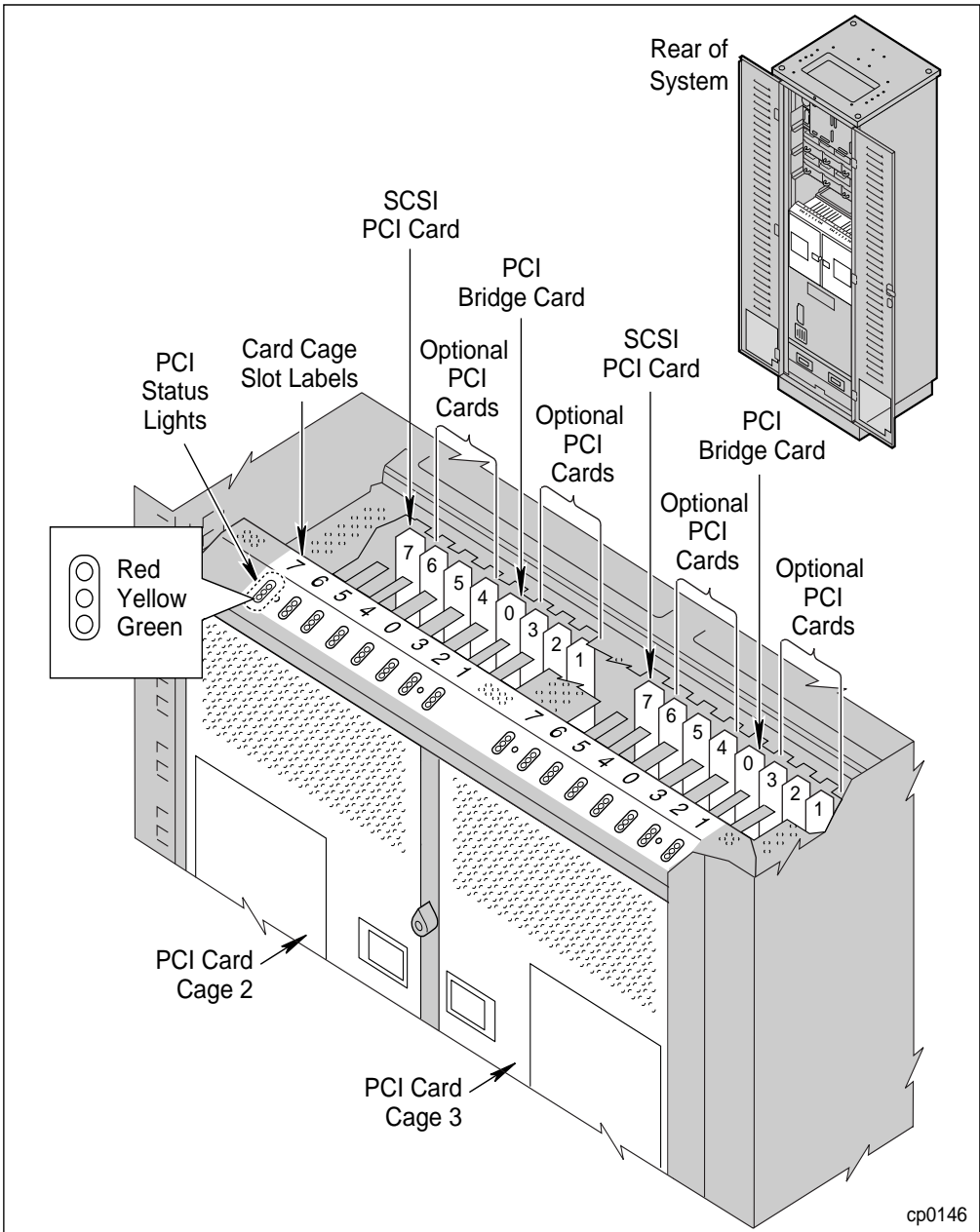


Figure 1-3. Location of PCI Cards

## Handling PCI Cards

PCI cards are extremely sensitive to electrostatic discharge. To avoid damaging a PCI card during handling, take the following precautions.



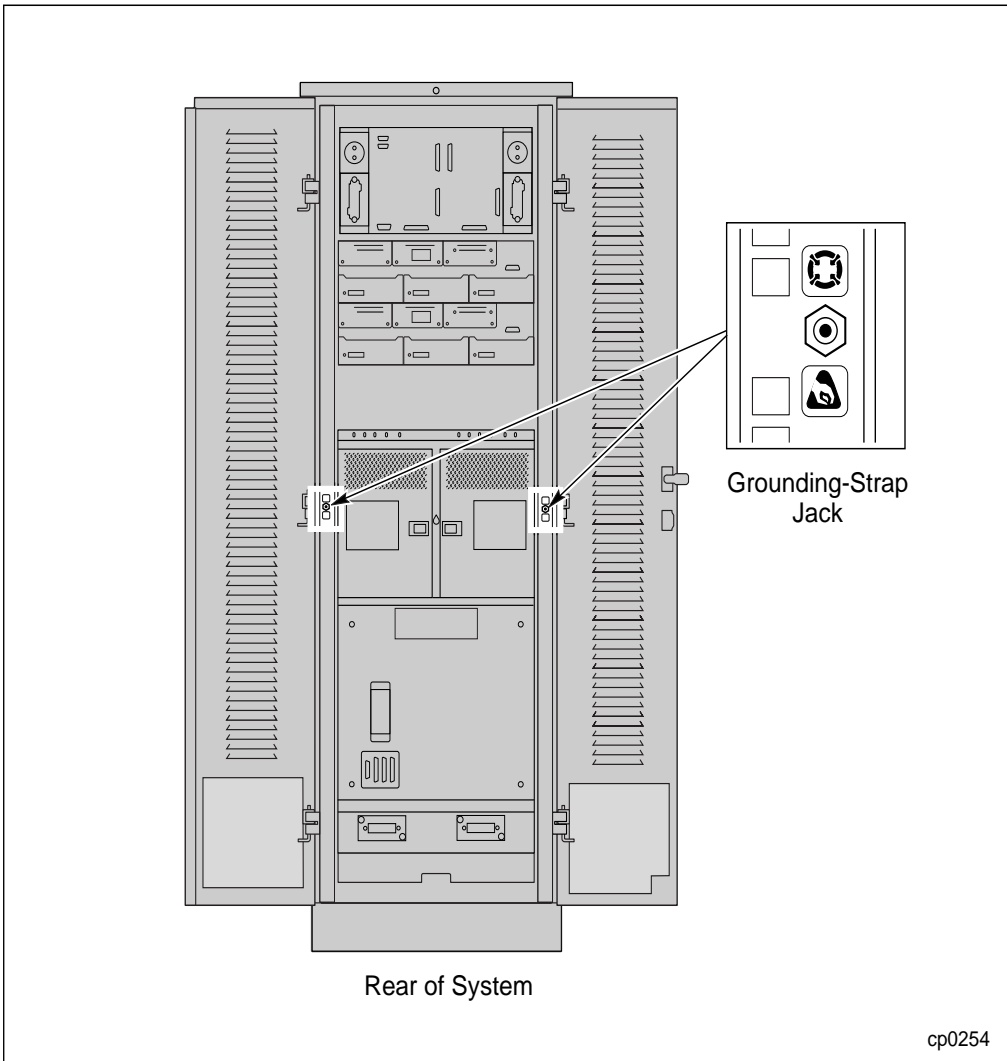
### CAUTION

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Do **not** walk around carrying a PCI card that is not in its static-protective envelope, as it can damage the card.

- **Always** store the PCI card in its static-protective envelope if it is not installed in the system.
- **Always** hold a PCI card by its edges.
- Always ground yourself before handling a PCI card. To ground yourself, touch the inside of the PCI card cage to discharge any static electricity, or wear a grounding strap. If you have a grounding strap, attach one end to the rear of the system, and place the other around your wrist (Figure 1-4).

Figure 1-4 shows the location of the grounding-strap jacks on the 400-CO system.



**Figure 1-4. Grounding-Strap Jacks**

## Cabling Specifications

The U522 PCI card uses unshielded twisted-pair (UTP) Category 5 Data Grade cable with an RJ-45 connector. The maximum length of the cable from the U522 PCI card to the concentrator or switch cannot exceed 100 meters.

Figure 1-5 shows the UTP cable with the RJ-45 connector.

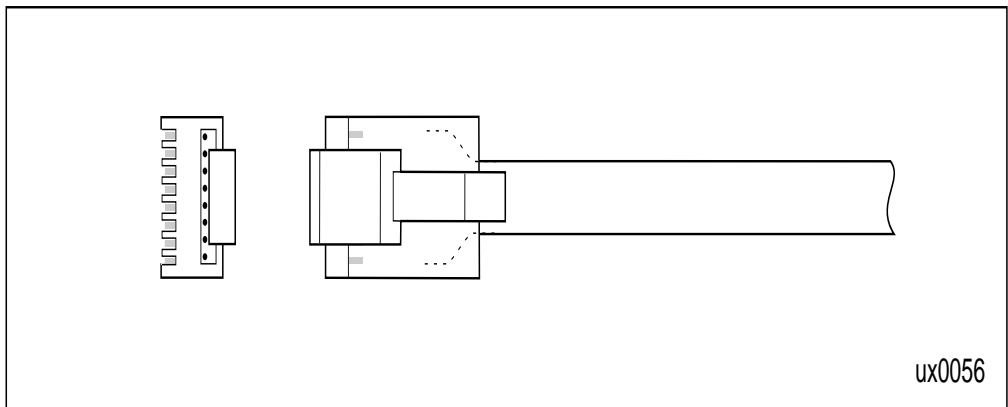


Figure 1-5. UTP Cable with the RJ-45 Connector

## Hardware Requirements

Depending on how the card will be used, one or more of the following must be installed or available at your site.

- DNCP Series 400/400-CO system
- RJ-45 Connector
- UTP Category 5 Data Grade cable

## Software Requirements

For operating systems prior to HP-UX version 11.00.61, the U522 card may require that software patches be installed on the operating system. See the *DNCP Patches for U522, U405, U406, D843, and D844* (R300066) document for the HP-UX operating systems and software patches needed to support the U522 PCI card on the DNCP platform.

Also, the required Ethernet communications software must be installed before you can use the U522 card. For information about installing and configuring the communications software to be used with the U522 card, refer to the following:

- *HP-UX Operating System: LAN Configuration Guide* (MAN0005)
- *HP-UX Operating System: Redundant Network Interface* (MAN0006)



### CAUTION

Do **not** use the RNI to pair two cards in the same card cage. If you pair two cards in the same card cage, loss of power to that card cage (including opening the card cage door) will terminate the network link.



### CAUTION

Do **not** use the RNI to pair two LAN ports on a single U522 PCI card.

## Chapter 2

# Installing or Replacing a U522 PCI Card

### Installing a U522 PCI Card

Before installing and using a U522 card, make sure the appropriate communications software is installed and configured at your site.



#### **CAUTION**

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Opening a card cage door stops the data communications associated with any simplex cards in that card cage. Before you open the card cage door, determine what resources will be affected.

1. Open the door of the PCI card cage (Figure 2-1). When you open the door, the power to that card cage is suspended.
2. Identify the slot into which you intend to install the PCI card.

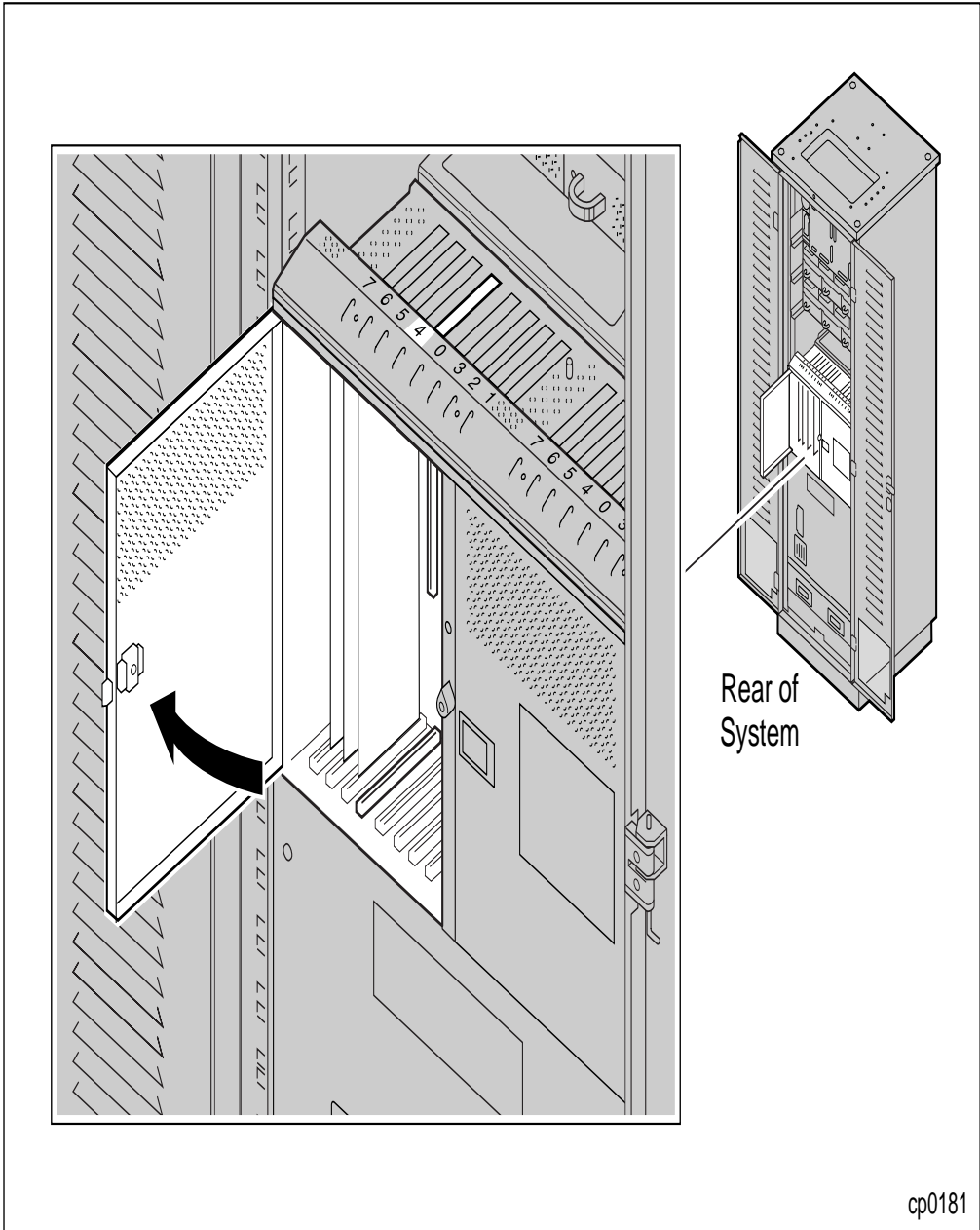
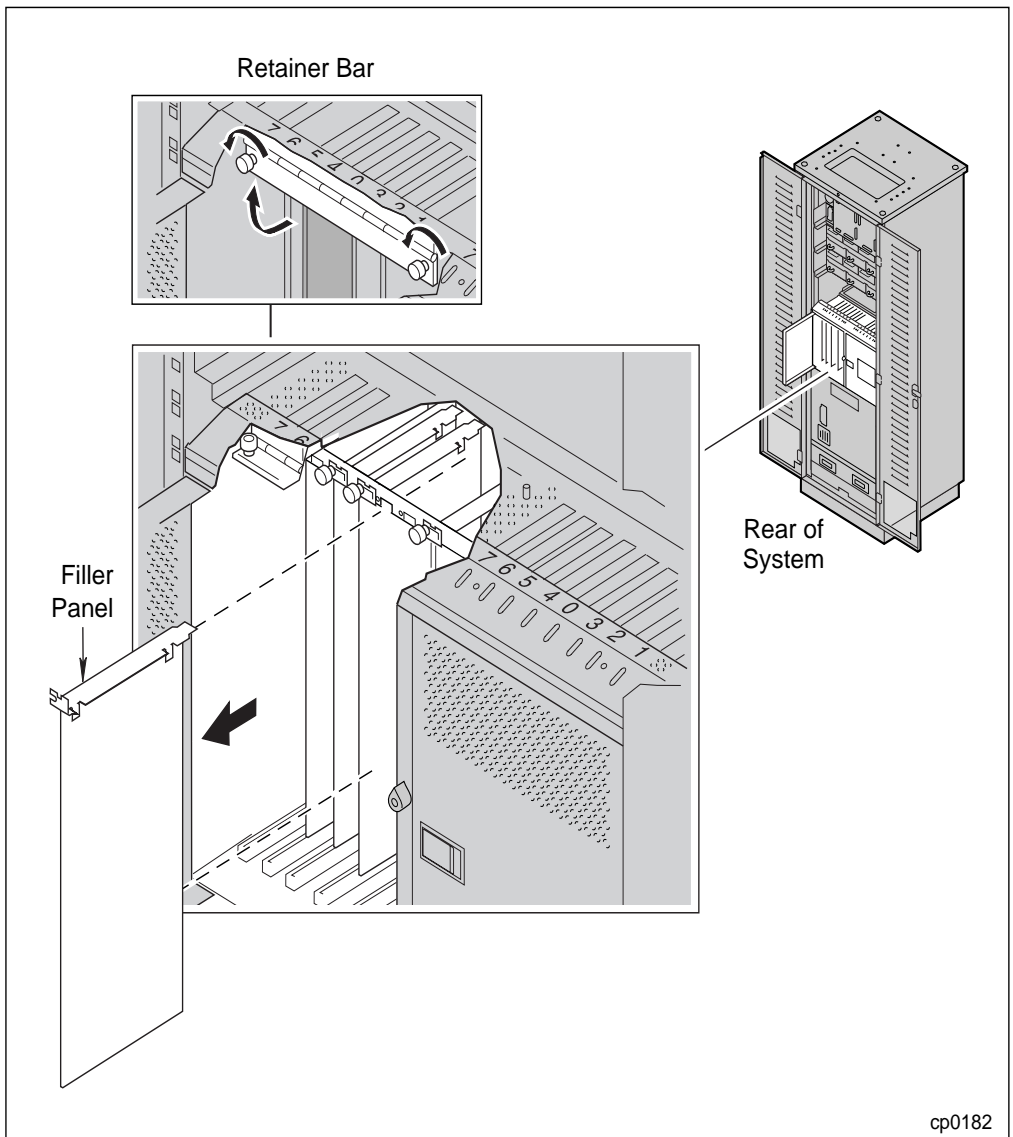


Figure 2-1. Installing a U522 Card: Step 1



3. Loosen the thumbscrews and open the retainer bar that secures the filler panel to the card cage frame for this slot. Then remove the filler panel (Figure 2-2).



**Figure 2-2. Installing a U522 Card: Step 3**

4. Touch the side of the PCI card cage to discharge any static electricity.



**CAUTION** \_\_\_\_\_

To avoid damaging the PCI card, leave the card in its static-protective envelope until you are ready to install it. When you remove the card, hold it by its edges.

5. Remove the U522 card from its static-protective envelope.
6. Align the PCI card with the appropriate slot in the card cage frame and with the backplane connector (Figure 2-3).
7. Press the PCI card gently but firmly into the backplane connector.
8. Close the retainer bar that secures the PCI card to the card cage frame and tighten the thumbscrews.

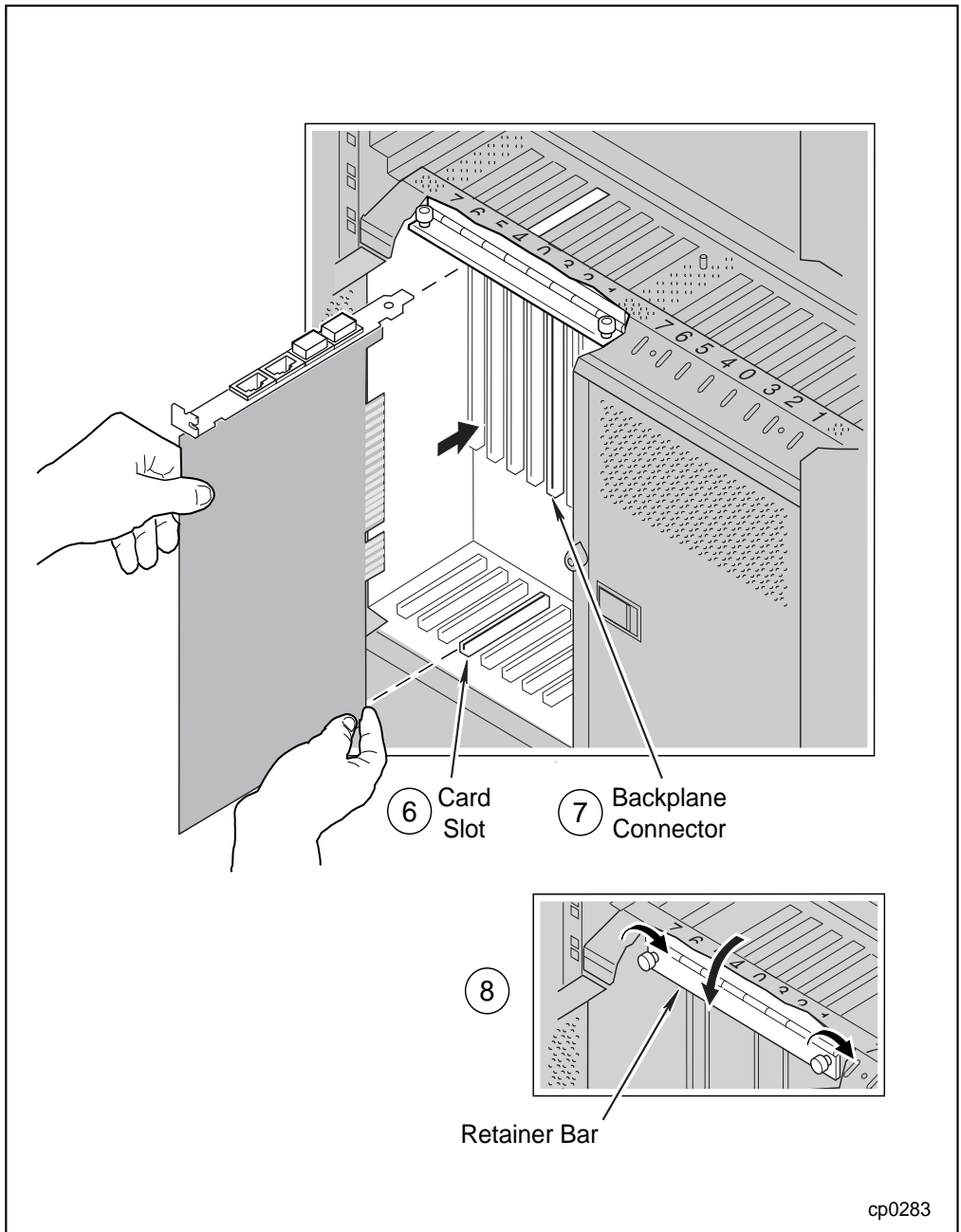


Figure 2-3. Installing a U522 Card: Steps 6–8

## **Connecting Cables and Configuring the Card**

After installing the U522 card in the PCI card cage, you must connect the UTP cables to the card and, if necessary, configure the card.

1. Connect the UTP cables to the card connectors on the top of the PCI card cage (Figure 2-4).
2. Close the card cage door. When you close the door, power is restored to the card cage.
3. If you replaced a U522 card that had been previously installed in the same slot, the card performs a self-test, during which the yellow status light on the card cage is illuminated. The yellow light then flashes while the system configures the card. When the card is online, both the green and the yellow lights are illuminated, indicating the card is running simplexed.

If this is a first-time installation, the red status light is illuminated, indicating that you must install the communications software and configure it for use with the U522 card. Refer to the appropriate manual from those listed in the “Software Requirements” in Chapter 1 for information on these procedures.

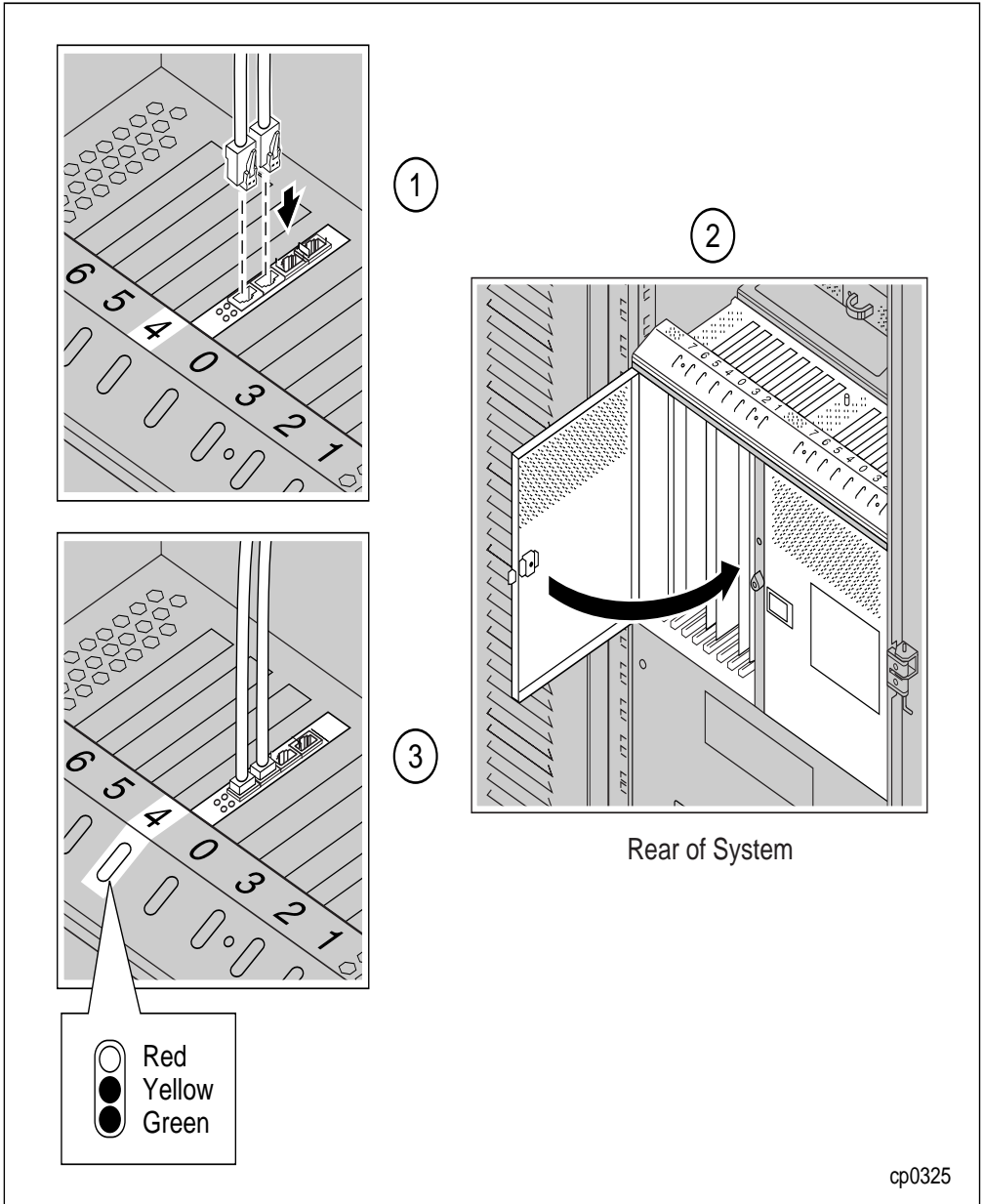


Figure 2-4. Connecting Cables and Closing the Card Cage

## Removing a U522 PCI Card



### CAUTION

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When handling a PCI card, always ground yourself to prevent electrostatic discharge from damaging the card. In addition, always hold the card by its edges; never touch the components on the card.

1. Check to see whether the red indicator light is illuminated. If it is, do not remove the card from service without consulting your local DNCP Solutions Customer Assistance Center. See “Getting Help” in Chapter 3. Otherwise, proceed to the step.
2. Stop any processes or software that are using the U522 PCI card. If remote users are connected through the card, ask them to log off, as disconnecting the card will remove the system from the network.
3. Disconnect the cable or cables from the PCI card by squeezing the side of the cable connector and gently pulling it out of the PCI card (Figure 2-5).
4. Disable the PCI card. Refer to *HP-UX Operating System: Fault Tolerant System Administration* (MAN0004) for disabling instructions.



### CAUTION

---

Opening a card cage door stops the communications associated with any simplex cards in that card cage. Before you open the card cage door, determine what resources will be affected.

5. Open the door of the PCI card cage (Figure 2-5). When you open the door, the power to that card cage is suspended.

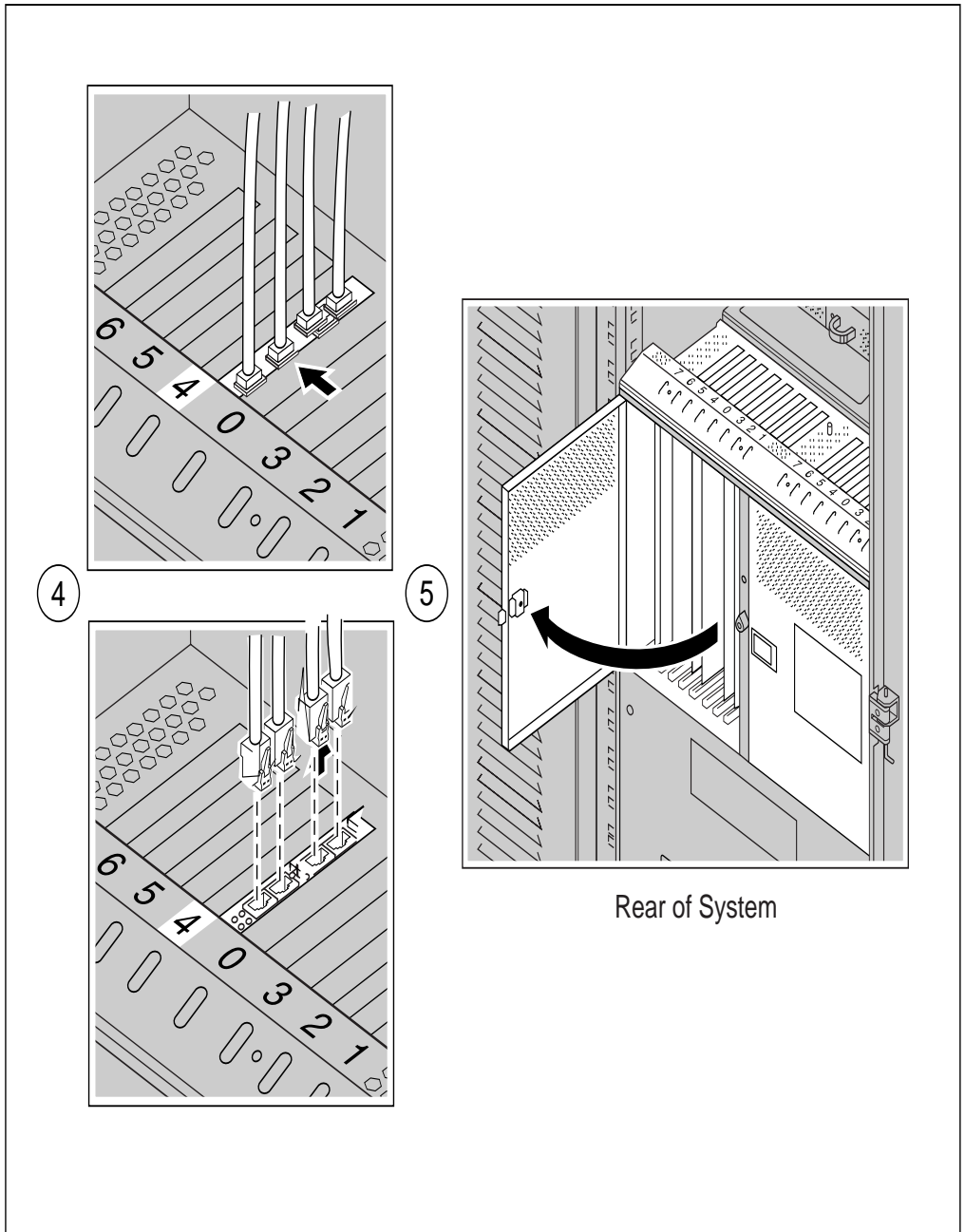


Figure 2-5. Removing a U522 PCI Card: Steps 2 and 3

6. Identify the slot from which you intend to remove the PCI card.

NOTE \_\_\_\_\_

Due to the heat generated when the system is running, a PCI card may feel warm when you remove it. The PCI card will cool if you wait for two minutes after opening the card cage door before you remove the card.

7. Loosen the thumbscrews and open the retainer bar that secures the card to the frame of the PCI card cage (Figure 2-6).
8. Grasp the top of the card with both hands (remember not to touch the components on the card). Pull one end of the card outward to loosen it from the backplane connector, then pull the other end outward to remove the card from the connector. When the card is free, gently pull it out of the card cage.



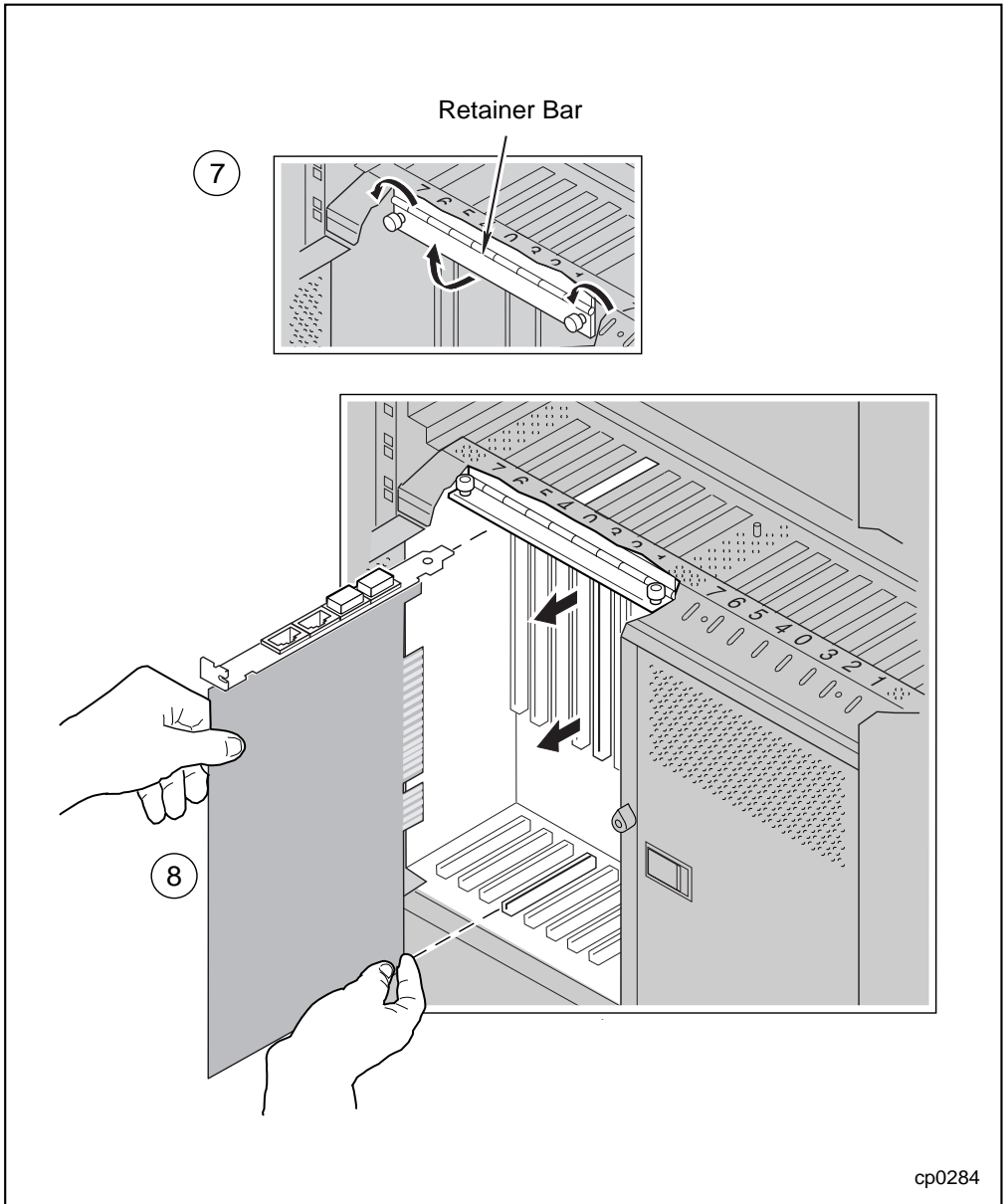


Figure 2-6. Removing a U522 Card: Steps 5 and 6



**CAUTION**

To avoid damaging the PCI card, store it in a static-protective envelope.

9. Store the PCI card in a static-protective envelope. If you are replacing the PCI card with a new card, see the “Installing a U522 PCI Card” section in this chapter now. If not, see step 8.
10. Install the filler panel that covers the opening in the rear of the card cage frame. Then, close the retainer bar that secures the PCI card to the card cage frame and tighten the thumbscrews (Figure 2-7).
11. Enable the PCI card. See *HP-UX Operating System: Fault Tolerant System Administration* (MAN0004) for more information.
12. Close the card cage door. When you close the door, power is restored to the card cage.

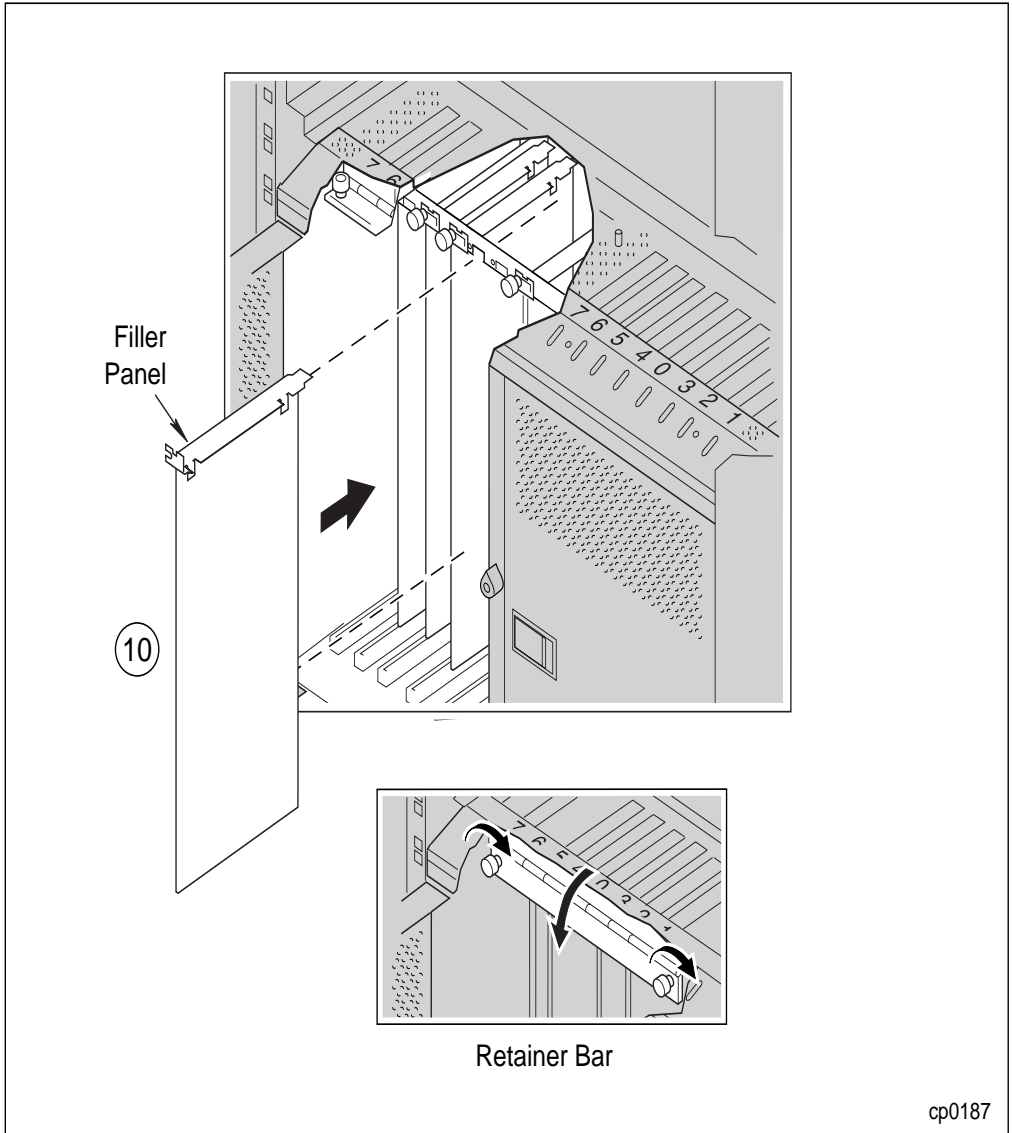


Figure 2-7. Removing a U522 Card: Step 8



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## Chapter 3

# Troubleshooting

DNCP Solutions maintenance software continuously monitors the function of PCI cards. If a PCI card malfunctions, the system determines the severity of the problem. If a malfunction is transient, the PCI card restarts automatically. If a malfunction is permanent, the system takes the card out of service and the red status light on the PCI card cage is illuminated.

In addition, the system records all PCI malfunctions in the online system error log files and displays corresponding error messages on the system console. HP-UX error log files use the path name `/var/adm/syslog/syslog.log`

## Getting Help

DNCP Solutions systems offer a unique failure-reporting and remote diagnosis feature known as the Remote Service Network (RSN). If the RSN is connected to your system, it automatically reports all part failures to the DNCP Solutions Customer Assistance Center (CAC), which then notifies you of the problem and diagnoses its cause. (If you are serviced by a distributor, the remote diagnosis and service process may vary.) If the problem is caused by a failed PCI card, the CAC provides you with a replacement procedure.

You may contact the DNCP Solutions *Customer Assistance Center (CAC)*, 24 hours a day, 7 days a week by calling one of the phone numbers listed below.

Service Area	CAC Location	Phone Number
North and South America	Scottsdale, Arizona USA	800-404-1561 (within North America) 480-391-8561 (outside North America)
EMEA (Europe, Middle East and Africa)	Sophia Antipolis, France	+33-492-386-208
Greater China	Hong Kong, China	+852-8202-2562
Asia / Pacific	Tokyo, Japan	0120-787287 (within Japan) 81-3-3589-6034 (outside Japan)

DNCP Solutions does not expect you to diagnose complex problems or perform major repairs. However, in some cases you may be able to solve a problem without replacing the card or contacting the CAC. When a status light or console message suggests that either a U522 PCI card has failed or there is a network problem, follow these steps.

1. Check the `syslog.log` file, which may provide more detailed information about the problem.
2. If the CAC has not contacted you, notify the CAC of the card failure. The CAC will verify your diagnosis.

NOTE \_\_\_\_\_

By helping you perform online diagnostic tests, the CAC may be able to assist you in fixing a PCI card related problem without replacing the PCI card.

3. If the CAC advises you to replace a PCI card, see “Chapter 2, “Installing or Replacing a U522 PCI Card,” for the replacement procedures.

## Interpreting the PCI Card Status Lights

Each PCI card has three status lights that are arranged in a traffic light configuration directly above the card on the PCI card cage. These status lights indicate the current condition of the card. Figure 3-1 shows the status lights, and Table 3-1 explains their meaning. A status light sticker is attached below the PCI card doors, in the rear of the cabinet, for easy reference.

**Table 3-1. PCI Card Status Lights**

Light	State	Meaning	Action
Red Yellow Green	On Off Off	The PCI card has failed.	Do <b>not</b> remove the card from service without consulting the CAC. See the “Getting Help” section in this chapter.
Red Yellow Green	Off On On	The PCI card is functioning correctly.	No action is required.
Red Yellow Green	On Off On	Ethernet ports are not functioning correctly.	See the “Getting Help” section in this chapter. Do <b>not</b> open the card cage door or remove the cable for this card. Either action will stop the data communications associated with this PCI card.
Red Yellow Green	On On On	One of the PCI card’s Ethernet ports is not functioning correctly.	See the “Getting Help” section in this chapter. Do <b>not</b> open the card cage door or remove the cable for this card. Either action will stop the data communications associated with this PCI card.

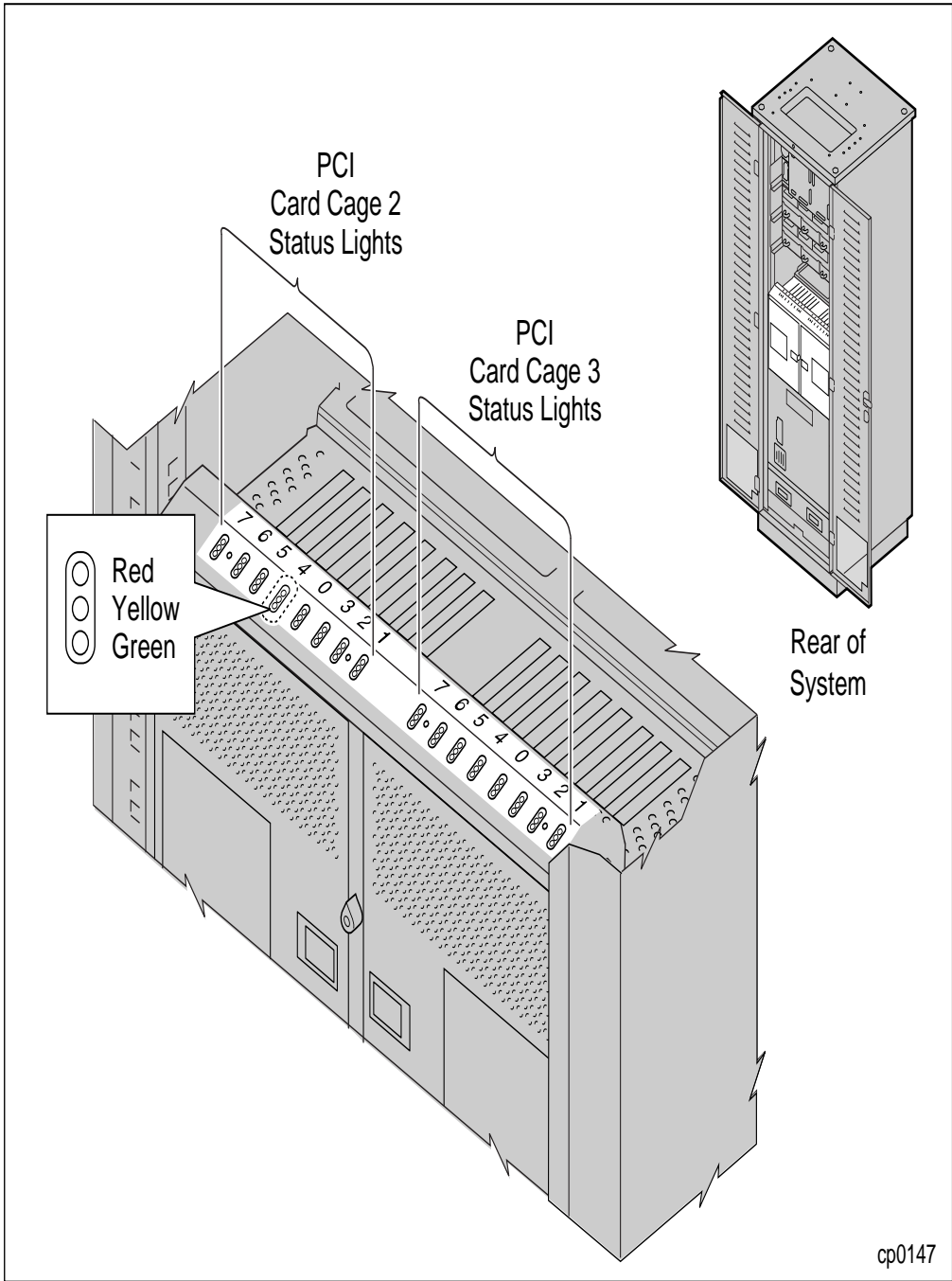


Figure 3-1. PCI Card Status Lights



## Ethernet Network Status Lights

In addition to the status lights on the PCI card cage, there are eight status lights located on the U522 PCI card itself. These status lights show activity on the Ethernet network. There is a pair of green and yellow lights above and below the four RJ-45 cable connectors. The yellow LNK (link) light indicates the card is connected to the network and is receiving link pulses. The green ACT (activity) light indicates activity on the network.

Figure 3-2 shows the Ethernet-network status lights on the U522 PCI card, and Table 3-2 explains their meaning.

**Table 3-2. Ethernet Network Status Lights**

Lights	State	Meaning
Green Yellow	On On	The U522 PCI card is operating normally. The network is operational.
Green Yellow	On Off	The U522 PCI card is operational, but is not transmitting or receiving data. Either the network is idle or the network driver is not loaded.
Green Yellow	Off Off	There is a network failure. Either the power to the card is off, the card has been disconnected from the network, the diagnostics have failed, or the card is a standby.

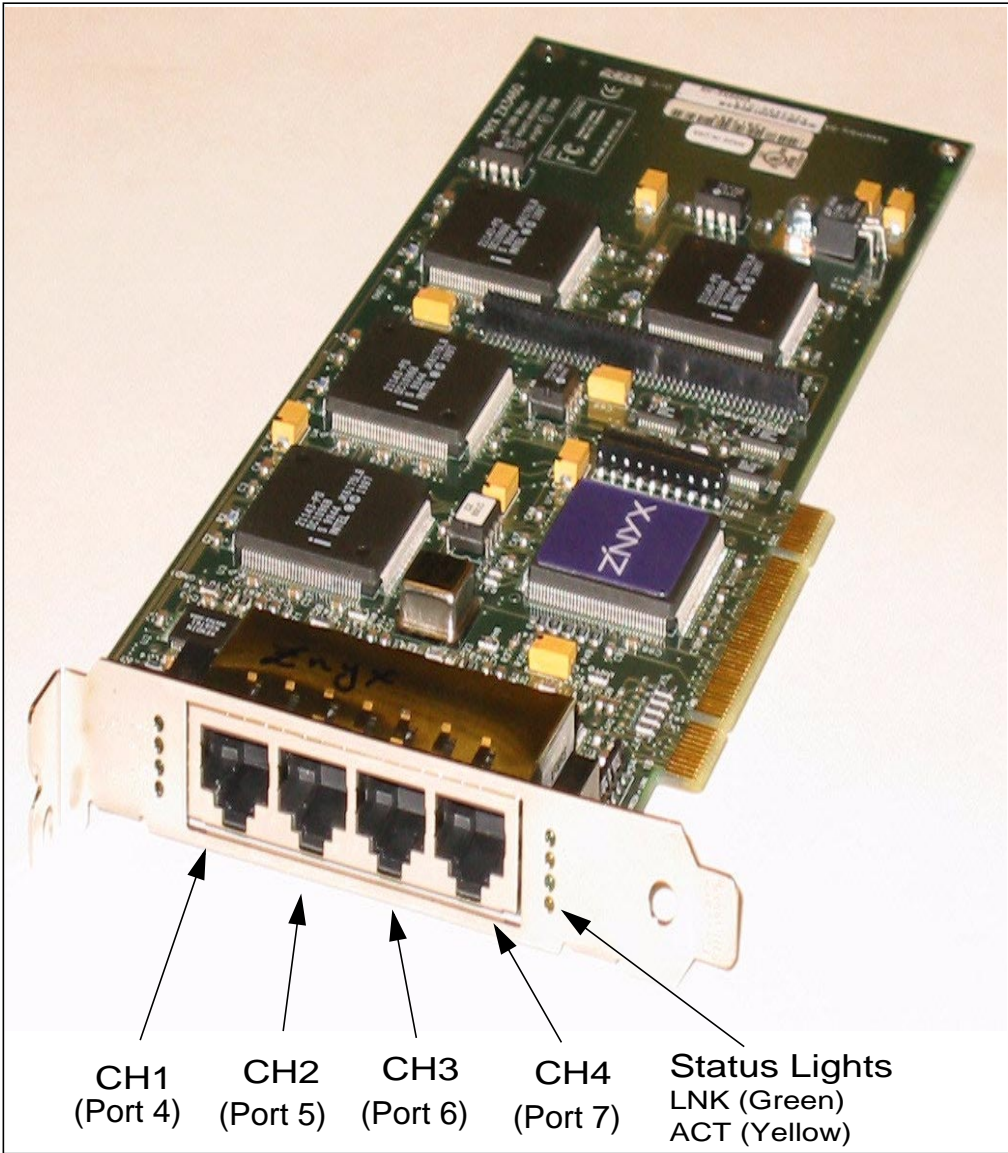


Figure 3-2. Ethernet Network Status Lights

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\_\_\_\_\_

**3** What did you like least about this manual? \_\_\_\_\_  
\_\_\_\_\_

**4** Is there any information that you would like to have added to this manual? If so, where would it be most helpful?

New information that you would like to have added	Location
_____	_____
_____	_____

**5** Would you like to see more examples in this manual? If so, where would they be most helpful?

New examples that you would like to have added	Location
_____	_____
_____	_____

**6** Did you find errors in this manual? If so, please note the problem(s) and the location in the manual.

Any inaccuracies that you found in this manual	Location (page/paragraph)
_____	_____
_____	_____

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# Customer Survey

**7** Do you have any other comments or suggestions? \_\_\_\_\_

\_\_\_\_\_

**8** Would you please complete the following information so that we may better understand who reads our manuals?

**Name:** \_\_\_\_\_ **Title:** \_\_\_\_\_ **Company:** \_\_\_\_\_

**Mailing Address:** \_\_\_\_\_

What is your level of expertise with this product? \_\_\_\_\_

What tasks do you perform using this product? \_\_\_\_\_

**9** Would you be willing to talk to us about your comments? **Yes**  **No**   
If yes, what is your phone number and when is a good time to call you? \_\_\_\_\_

**Thank you for your help.**

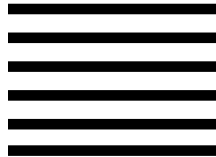
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