

PCI 10/100Base-TX and 100Base-FX/9000 Release Notes

One-Port Cards

Versions B.10.20.05 and B.11.00.02 (Workstations)

Versions B.10.20.01 and B.11.00.02 (Servers)

and

Four-Port Cards

Versions B.10.20.01 and B.11.00.01



J4254-90005

E1200



U.S.A.

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1 Announcements — HP-UX 10.20 and 11.0

This document contains information on the PCI 10/100Base-TX/9000 LAN cards for use with the HP-UX 10.20 and 11.0 operating systems.

Procedures and comments apply to both the one-port cards (B5509AA and A5230A) and the four-port card (A5506A) unless specifically excepted.

Known Problem with the September 2000 Release

The PCI 4 Port 100Base-T software delivered as part of the September 2000 Application Release has a potential defect. This includes products J4254AA, A5506A, and A5506B. In certain corner case situations, there is a potential hang on the 4 Port 100BT cards (A5506A and A5506B). So far this problem has not been exhibited on customers' systems with 4 port cards; however, it has occurred with other PCI 100BT cards. HP has determined that this defect has the potential to show up on systems with PCI 4 port cards as well. This hang can happen intermittently and can be corrected by issuing a lanadmin reset to the interface or by disconnecting and reconnecting the cable to the card. HP is in the process of coming up with a fix for this problem and will release a patch as soon as possible.

Compatibility and Installation Requirements

Following are the limits of the current PCI 10/100Base-TX/9000:

- When used on A-class servers, the four-port PCI 10/100Base-TX/9000 card does not support Hewlett-Packard's MC Service Guard.
- The PCI 10/100Base-TX/9000 card supports autonegotiation and autosensing. You should not normally need to manually configure the speed, autonegotiation, or duplex mode of the card. If your switch does not support autonegotiation but is set to full-duplex mode, there may be a mismatch between the card and the switch, because the card defaults to half-duplex for switches that do not support autonegotiation. You can determine what the card is set to using `lanadmin -x` and reset it if necessary using `lanadmin -X`. See "Manual Speed and Duplex Mode Configuration" on page 7 for details.

If you manually set the speed and duplex mode of the Base-TX card, autonegotiation will be turned off.

- Both full- and half-duplex modes are supported. If your hub or switch does not support autonegotiation, ensure that your hub or switch is set to the desired duplex mode.
- The PCI 0/100Base-TX/9000 LAN software is for use with only the following protocols: TCP/IP, ARPA, and NFS.
- When using the `ioscan -f` command to verify installation, the last digit of the H/W Path (hardware path) will show the port number of the card. The other fields of the output will show the driver as `btlan`, and the Hardware Type Description will be `PCI (10110009)`.

Required and Optional Patches

The following patches are required in order to use 4-port PCI Fast Ethernet cards on HP-UX 11.0-based systems. To see if a patch is already installed, run the `swlist` command as root. Patches are available free to anyone. You can check to see if these patches are superseded and download patches at the following URL:
<http://us-support.external.hp.com/>

The patch numbers listed are current as of this release note.

HP-UX 11.0 Required Patches

Server

- PHNE_17113—a patch for lanadmin changes on HP-UX 11.x versions.
- PHCO_17631—a SAM patch for HP-UX 11.0-based servers. Note: this patch is for the four-port PCI card only.

Workstation

PHNE_17113—a patch for lanadmin changes on HP-UX 11.x versions.

HP-UX 10.20 Required Patches

The following patches are required in order to use 4-port PCI Fast Ethernet cards on HP-UX 10.20-based systems.

Servers

- PHNE_17000—a patch for lanadmin changes on HP-UX 10.20 versions.
- PHCO_17871—a SAM patch for HP-UX 10.20-based servers. Note: this patch is for the four-port PCI card only.

Workstations

- PHNE_16999—a patch for lanadmin changes on HP-UX 10.20 versions
- PHCO_17871—a patch for SAM to support HP-UX 10.20 workstation-based versions of PCI 10/100Base-TX.

What Manuals are Available

The following documents summarize installation, configuration, verification and troubleshooting of the PCI 10/100Base-TX/9000 LAN link:

PCI 10/100Base-TX/9000 Quick Installation Guide

Using PCI 10/100Base-TX/9000. Available on Instant Information CDROM.

Software Availability in Native Languages

The commands used with this product are the ones supported by the Native Language Support Catalog of HP-UX.

Manual Speed and Duplex Mode Configuration

Because this PCI 10/100Base-TX/9000 LAN card supports autonegotiation, you should not normally need to manually set the duplex mode. Sometimes you may need to manually set the duplex mode of the card—for example, if the switch is operating at full-duplex but does not autonegotiate. Because the card defaults to half-duplex when autonegotiation is turned off, this could cause a mismatch between the card and switch (at either 10 or 100 Mbits/s). To fix this, use the `lanadmin -X` command as described later in this section.

The CSMA/CD media access method used in IEEE 802.3u-1995 is inherently a half-duplex mechanism. That is, at any one time, there can be only one sender of data on the link segment. It is not possible for devices on either end of the link segment to transmit simultaneously.

Since Category 5 UTP contains multiple pairs of wires, it is possible to

have devices on both ends of a link segment sending data to each other simultaneously. This is known as full-duplex operation. While the details of full-duplex operation are not currently defined by IEEE 802.3u-1995 (full-duplex mode essentially involves “turning off” the CSMA/CD access method which is the foundation of IEEE 802.3), the autonegotiation mechanism defined in IEEE 802.3u-1995 allows devices to advertise and configure themselves to operate in a full-duplex mode which is essentially vendor-specific. Devices that do not support autonegotiation can sometimes be manually configured to operate in full-duplex mode.

Full-duplex mode is most commonly found in, and indeed only makes sense for, switches rather than hubs. It may be found in either 10 Mbit/s or 100 Mbit/s switch devices. Full-duplex mode may provide a throughput advantage under some circumstances, but the degree of the advantage is application-dependent.

The PCI 10/100Base-TX card supports both half- and full-duplex operation.

Ensure that the speed, duplex mode, and autonegotiation of the associated switch are configured the same as on the PCI 10/100Base-TX card. If the switch supports autonegotiation on the ports connected to the cards, this should be enabled as explained in “Autonegotiation and Autosensing” on page 10.

To manually set the duplex mode of the PCI card, first ensure that your computer has the latest applicable patches installed as listed in the Required and Optional Patches section of this release note.

To list the current speed and duplex mode of the PCI 10/100Base-TX/9000 card, use the -x option (NOTE: lowercase x) of the lanadmin command. Determine the speed and duplex mode of your hub or switch before performing manual configuration as follows:

```
lanadmin -x ppa (HP-UX 10.30 or 11.0)
```

```
lanadmin -x nmid (HP-UX 10.20)
```

To manually set the duplex mode of the interface, install one of the patches above and then use the -X (NOTE: uppercase X) option of lanadmin as follows:

```
lanadmin -X mode ppa (on HP-UX 10.30 and 11.0)
```

```
lanadmin -X mode nmid (on HP-UX 10.20)
```

where:

mode can be any one of the following strings (and the fd or hd are case-insensitive):

10fd =10 full-duplex

10hd =10 half-duplex

100fd =100 full-duplex

100hd =100 half-duplex

and

lanadmin -X auto_on ppa (turns autonegotiation on for HP-UX 10.30 and 11.0)

lanadmin -X auto_on nmid (turns autonegotiation on for HP-UX 10.20)

The ppa is the physical point of attachment on HP-UX 10.30 or 11.0. On HP-UX 10.20, use the nmid (Network Management ID) of the card. You can get the ppa (nmid) from the output of the lanscan command.

Example:

If the ppa (nmid on HP-UX 10.20) of the 100Base-TX interface is 5, the command to set the card to 10Mbps/s and full-duplex mode would be:

```
lanadmin -X 10fd 5
```

After issuing the lanadmin -X, you must wait at least 11 seconds before attempting to use the specified network interface.

If you want the Duplex Mode setting to be effective in all subsequent reboots, you must enter the information in the following file:

```
/etc/rc.config.d/hpbtlanconf
```

Manually configuring the speed or duplex setting of a switch port on some switches may disable that switch port from doing autonegotiation. Verify that both the card and the switch port are operating in the same speed and duplex mode as desired.

If you use manual configuration to change the card to a different speed and duplex mode, you may need to turn autonegotiation on first before the manual setting takes place.

NOTE

Mismatches between the speed, autonegotiation, or duplex mode of the card and switch will cause incorrect operation.

Autonegotiation and Autosensing

Autonegotiation is a mechanism defined in the IEEE 802.3u specification whereby devices sharing a link segment can exchange information and automatically configure themselves to operate at the highest capability mode shared between them.

Autonegotiation is like a rotary switch that automatically switches to the correct technology such as 10Base-T or 100Base-TX or between half- and full-duplex modes. Once the highest performance common mode is determined, auto-negotiation passes control of the link to the appropriate technology, sets the appropriate duplex mode, and then becomes transparent until the link is broken.

Following is the IEEE 802.3u-defined hierarchy for resolving multiple common abilities for a 10/100Base-TX card. The PCI 10/100Base-TX/9000 product provides the means for interfacing various types of HP 9000 workstations to either a 10Base-T or 100Base-TX network. 100Base-TX is a subset of 100Base-T networking defined by the IEEE 802.3u-1995 standard. 100Base-TX provides 100 Mbit/s data transmission over category 5 unshielded twisted-pair (UTP) cable. Two pairs of wires in the cable are used—one wire pair is for receiving data, and one wire pair is for transmitting data. The same card port that supports 100Base-TX operation can also support 10Base-T operation.

- 100Base-TX full-duplex
- 100Base-TX half-duplex
- 10Base-T full-duplex
- 10Base-T half-duplex

For example, if both devices on the link support 10Base-T (half-duplex) and 100Base-TX (half-duplex), autonegotiation at both ends will connect the 100Base-TX (half-duplex) instead of the 10Base-T (half-duplex).

Most Fast Ethernet devices on the market today such as hubs and switches do not support autonegotiation. Either the speed and duplex mode of the device are fixed (as is usually the case with hubs), or they are often manually configured at the desired speed and duplex (as is often the case for switches). However, switches that support autonegotiation are starting to be offered.

If the PCI 10/100Base-TX/9000 card is connected to a device, such as a

switch, that is autonegotiating, the PCI card will autonegotiate with the device to mutually determine the highest possible speed and duplex settings between them.

If the PCI 10/100Base-TX/9000 card is connected to a device that does not support autonegotiation or a device that has autonegotiation disabled, the PCI card will autosense the speed of the link and set itself accordingly. The duplex mode of the card will be set to half-duplex in this case. If you want the card to operate in full-duplex mode, you have to set it using the method described in “Manual Speed and Duplex Mode Configuration” on page 7.

The PCI 10/100Base-TX card will sense when the connection between itself and a hub or switch on the other end of a link has been broken. If a connection is made to another (or the same) device, the autonegotiation and autosensing process will be done again automatically. Autonegotiation and autosensing are also done whenever the interface is reset.

