

PCI-RAS

User Guide

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FCC Note

The products described in this manual have been found to comply with the limits for a Class A 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 in this Guide, 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/her own expense.

EN 55022: 1998, Class A Note

Warning: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.



Caution: The products described in this manual are approved for commercial use only.

About this manual

Purpose of this manual

This manual tells you how to install, configure and use the PCI-RAS product.

Who this manual is for

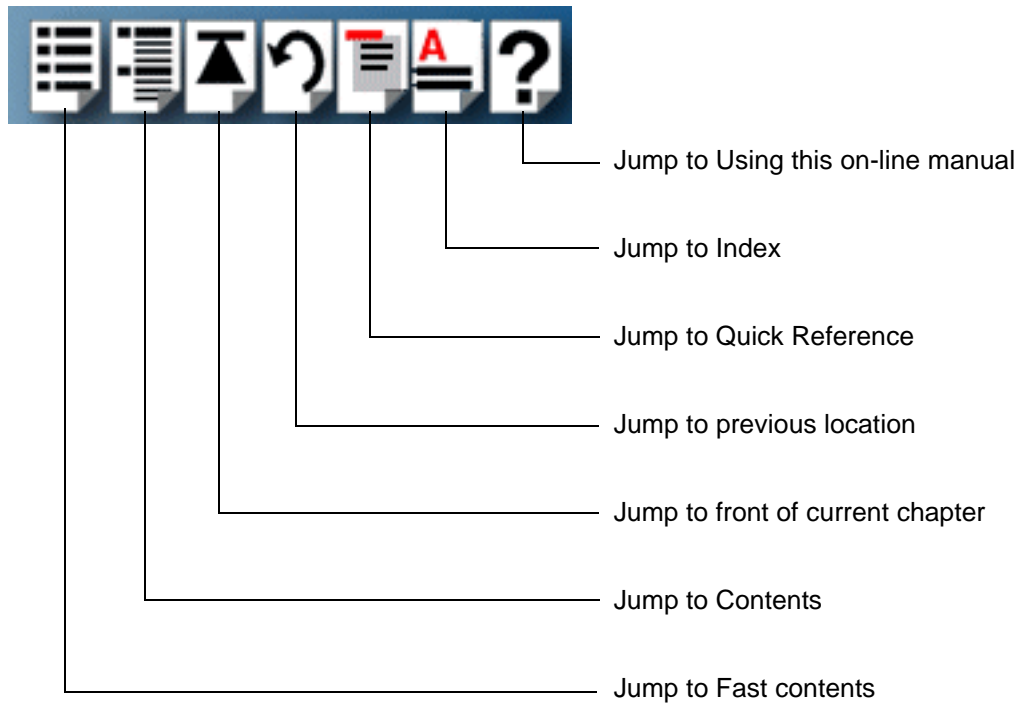
This manual is aimed at users of communications servers who need a multi modem solution. This manual requires a working knowledge of using personal computers and associated operating systems.

Using this on-line manual

The following is a brief guide to using this manual on-line.

Document navigation

This manual features document navigation hypertext buttons in the header area as shown in the next picture;



Hypertext jumps

You can also navigate around this manual by clicking on any cross reference or text in blue for example, [Hypertext jumps](#).

Note

The **Fast Contents**, **Contents** and **Index** entries are all hypertext jumps into this manual.

Revision history

Date	Part number	Description
November 2001	5500091-10	Initial release of manual.
February 2004	5500091-11	Support for the V.92 and V.34 protocol support
March 2004	5500091-12	Content for Remote Configuration, Updated section Installing for Windows NT4.0
October 2005	5500091-13	Added support information for SCO OpenServer 6.
March 2007	5500091-14	Added instructions for a new Windows 2000/XP/Server 2003/Vista installation process. There are now three Windows drivers to support 32-bit, 64-bit x64, and 64-bit Itanium operating systems/processors.
September 2008	5500091-15	Added support for Windows Server 2008.

Fast Contents

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Chapter 1 Introduction

You need to read this chapter if you want to...

You need to read this chapter if you want an introduction to the PCI-RAS multi-modem card.

This chapter provides an introduction to the PCI-RAS multi-modem card and its main features.

This chapter includes the following sections;

- [About the PCI-RAS card](#) on page **12**
- [Cables](#) on page **12**
- [Getting support](#) on page **12**
- [PCI-RAS features](#) on page **13**.

About the PCI-RAS card

PCI-RAS is a 4 or 8 port, 56K V.92 multi-modem solution. This unique card is ideal for building communications servers on Window and UNIX systems. Applications include:

- Dial-in access for remote workers and sales staff
- Dial-out capabilities to branch or retail locations for data collection
- Creating ISP servers for Internet/Intranet capabilities

We've combined a decade of serial I/O design with the PCI-RAS software to give our customers a unique server solution for:

- Windows NT, Microsoft Terminal Server
- Windows 98 and Windows 95
- UNIX variants (Linux, SCO).

Cables

Each PCI-RAS product is shipped with cables, the type depending on the country being supplied as follows;

Country	Product	Cable type supplied
USA	PCI-RAS4	RJ11 to RJ11
	PCI-RAS8	RJ11 to RJ11
Europe	PCI-RAS4	RJ11 to RJ11
	PCI-RAS8	RJ11 to RJ11
UK	PCI-RAS4	1.5m RJ11 to BT Plug cables
	PCI-RAS8	1.5m RJ11 to BT Plug cables

Getting support

See [Appendix B Contacting Perle](#) for details of technical support.

PCI-RAS features

The PCI-RAS multi-modem card is designed to integrate multiple 56K V.92 modem ports into small business servers - simply, securely and cost effectively. This product is ideal for remote access, Internet and messaging applications in Windows NT and UNIX server environments.

The PCI-RAS hardware specification includes:

- 4 or 8 port V.92 modems
- V.34 fax protocol support
- 32 Bit PCI Bus, full PCI plug and play compliant
- 64 Byte transmit and receive FIFOs on each port
- Full hardware flow control
- Single interrupt required per card
- Software controlled hardware reset for each modem
- Full data, fax and voice support on all modem ports
- Windows based diagnostic and management software
- Modem hardware based on industry standard Multitechmodem chipset
- I/O ports using TI TL16C754BPN enhanced UARTs
- 230.4 Kbps data-modem interface
- 4 port Dimensions 202mm x 114mm
- 8 port dimensions 315mm x 114mm

The PCI-RAS operating spec includes:

- Data Compatibility: V.92, V.34 enhanced, V.32bis, V.32, V.22bis, V.22; Bell 212A and 103/113, V.21 & V.23
- Fax Compatibility: ITU-T "Super" Group 3; Class 1.0, 2.0, 3,1; Group 3, Class 1 and 2, T.4, T.30, V.21, V.27ter, V.29, V.34, V.17 and TIA/EIA TR29.2
- Error correction V.42 LAPM, MNP 3-4
- Data Compression: ITU-T V.44 (6:1 throughput); V.42bis (4:1 throughput); MNP 5 (2:1 throughput)
- Drivers supplied for Windows NT, Windows 95, SCO IFS, SCO OSV, Linux
- Support for up to 8 cards per server
- Operating temperature: 50 °F to 110 °F (10 °C to 45 °C)
- Storage -20 °C to 65 °C (4 °F to 149 °F)
- Relative humidity: 5% to 90% non-condensing
- Altitude: 0-12 000ft (0 to 3660m)
- FCC Part 15 Class B

Chapter 2 Installation

You need to read this chapter if you want to...

You need to read this chapter if you want to install the PCI-RAS onto your system.

This chapter tells you how to install your PCI-RAS hardware and also describes associated software procedures.

Note

The procedure for installing and configuring PCI-RAS cards varies for different operating systems. Please read **Before you start** on page 16 before commencing installation.

This chapter includes the following sections;

- **Before you start** on page 16
- **Installing your PCI-RAS card** on page 17
- **Installing PCI-RAS under Windows NT 4.0** on page 18
- **Installing PCI-RAS under Windows 2000/XP/Server 2003/Vista/Server 2008** on page 21
- **Installing PCI-RAS under Windows 95/98/ME** on page 26
- **Installing PCI-RAS under SCO OpenServer** on page 30
- **Installing PCI-RAS under SCO UnixWare** on page 39
- **Installing PCI-RAS under Linux** on page 47
- **Installing PCI-RAS under Solaris** on page 50
- **Remote Configuration** on page 56

Before you start

Before you install your PCI-RAS cards and software, note that the procedure for installing and configuring PCI-RAS cards varies for different operating systems.

To install under a particular operating system, please refer to one of the operating system specific installation procedures listed below;

- [Installing PCI-RAS under Windows NT 4.0](#) on page [18](#)
- [Installing PCI-RAS under Windows 2000/XP/Server 2003/Vista/Server 2008](#) on page [21](#)
- [Installing PCI-RAS under Windows 95/98/ME](#) on page [26](#)
- [Installing PCI-RAS under SCO OpenServer](#) on page [30](#)
- [Installing PCI-RAS under SCO UnixWare](#) on page [39](#)
- [Installing PCI-RAS under Linux](#) on page [47](#)
- [Installing PCI-RAS under Solaris](#) on page [50](#)

The following NOTE applies to all installations of PCI-RAS cards within the above listed Operating Systems.

Note:

Remote modems connecting to PCI-RAS cards that are made by US Robotics require a &b1 to initialize the speed correctly.

Installing your PCI-RAS card

To install a PCI-RAS host card proceed as follows;



Warning

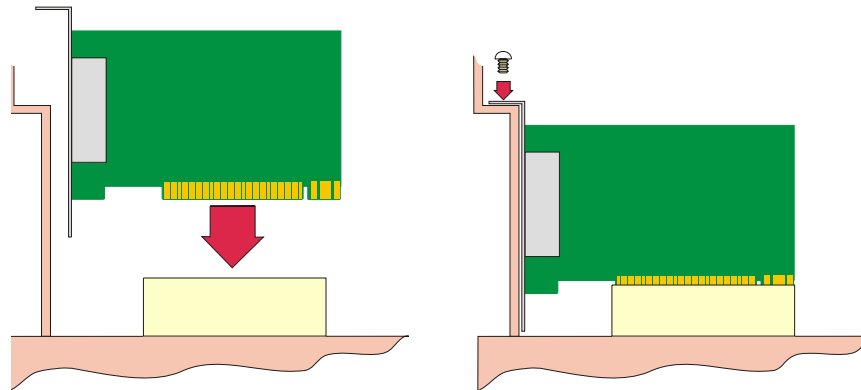
Dangerous voltages exist inside computer systems. Before installing host cards in your system, turn off the power supply and disconnect the mains lead.

1. Turn off the power to your system and disconnect the mains supply.
2. Remove the system cover to expose the inside of the connector panel for host cards.
3. Insert the PCI card you want to install into a vacant host card slot and secure in place as shown in the next picture (pciras4 shown).

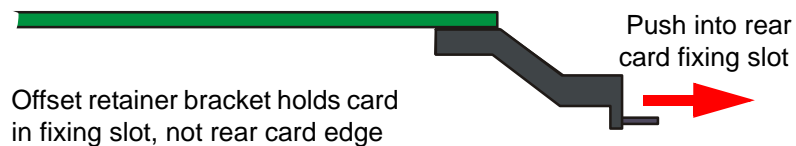


Caution

Full anti-static precautions should be taken when handling host cards.



For PCIRAS8 cards the rear of the card is fixed in place using an offset plastic retainer.



4. Repeat step 3. until you have installed all the PCI cards you want.
5. Replace and secure the system cover.

Installation of PCI host cards is now complete.

Installing PCI-RAS under Windows NT 4.0

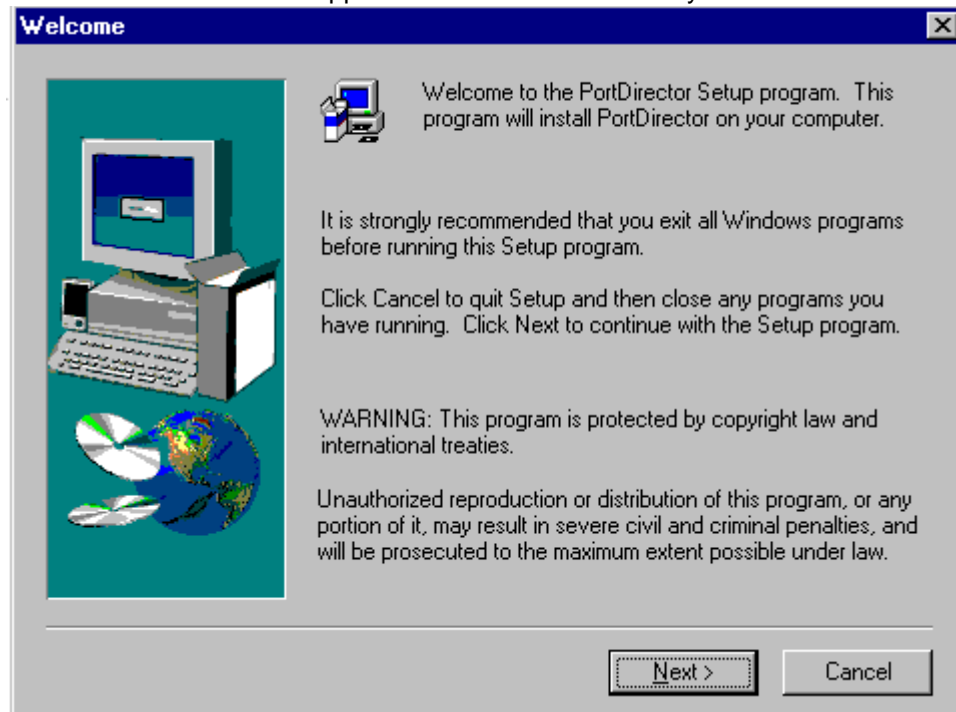
Installing the driver

The PCI-RAS hardware has no switches or jumpers to configure. To install the card;

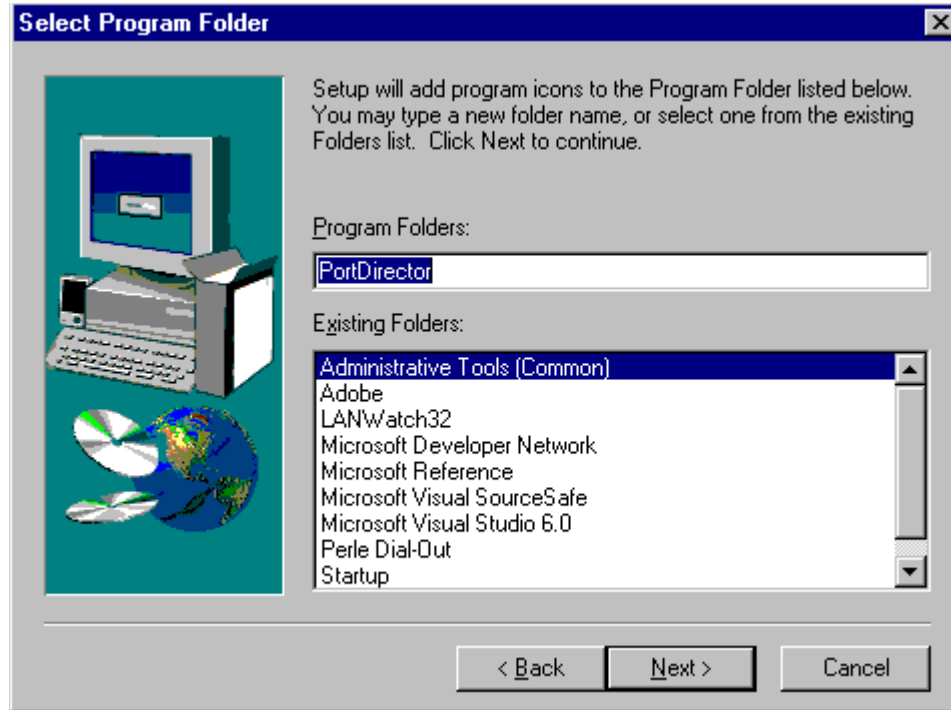
1. Turn off the power to your computer.
2. Remove the computers cover.
3. Plug the PCI-RAS card into any free PCI slot of your PC server and fix it securely.
4. Reassemble the PC enclosure and restart the PC.
5. Connect the telephone cables.

Once the PCI-RAS card has been installed, you can install the support software supplied with it.

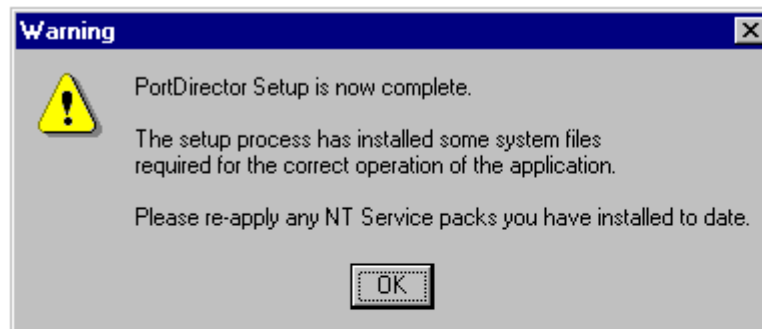
6. Run the setup.exe program in the directory: \drivers\pci-ras\nt4\port director\x.y.z, where x.y.z is the version, on the CDROM supplied with this product.
7. A welcome screen now appears. Continue installation by click the **Next** button.



- The Select Destination Directory menu will appear. It is suggested you use the default directory supplied (c:\Program files\PCI RAS).

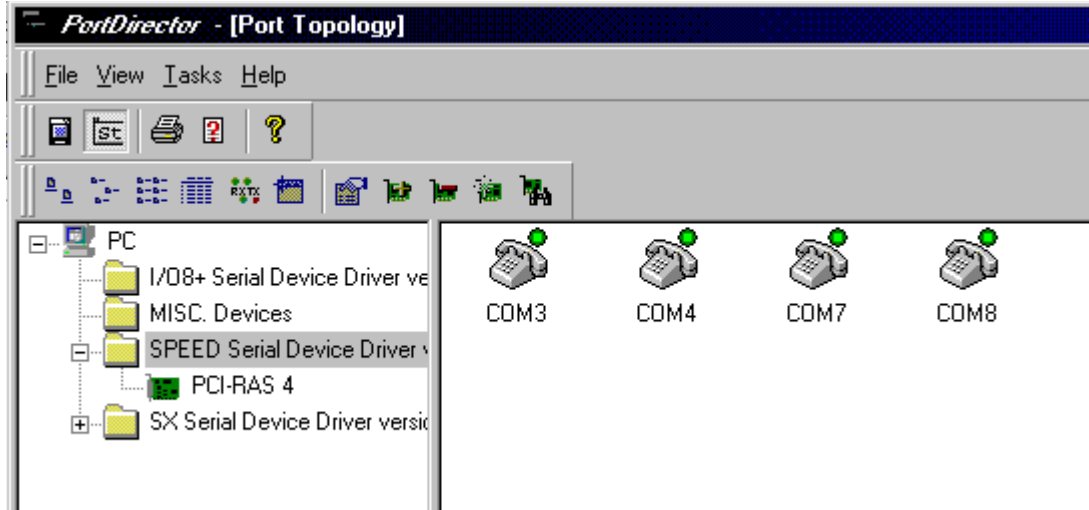


- Port Director Setup is now complete.

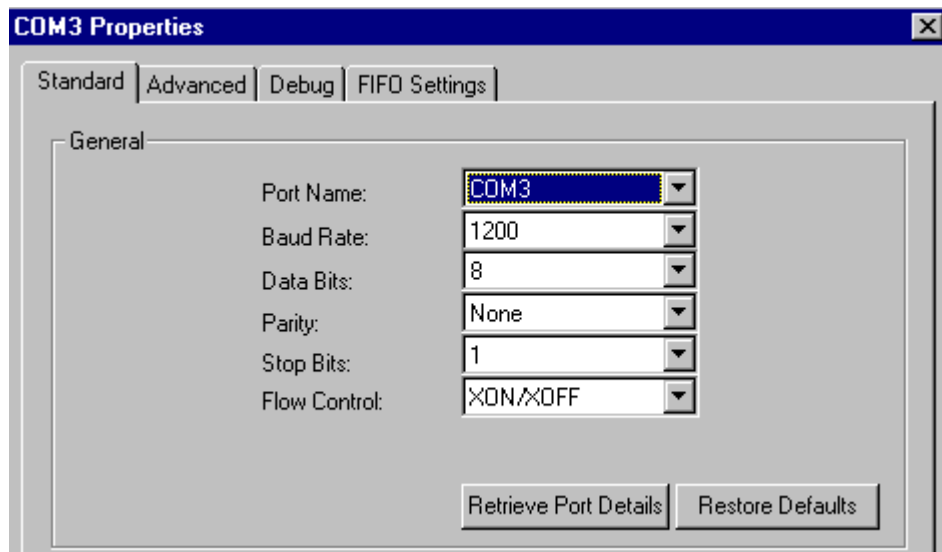


Using modems

1. Click on the Port Director icon to start the Port Director configurator.
2. Click on the SPEED Serial Device Driver to display the available com ports.



3. Click on each individual com port to view and change the communication parameters



Your PCI-RAS card should be ready to operate with your communications software.

Installing PCI-RAS under Windows 2000/XP/Server 2003/ Vista/Server 2008

Installation Overview

When you install the PCI-RAS Windows device drivers, you are actually installing three different components:

- PCI-RAS COM ports
- Multitech Systems Modems
- Unimodem Half-Duplex Audio Devices

To install all three components, do the following:

1. Install the driver. See [Installing the driver](#) on page 18.
2. Using the Hardware Found wizard, install modem and audio device drivers by pointing to the directory where you unzipped the installation files.

Installing the driver

Windows 2000/XP/Server 2003/Vista/Server 2008 supports any mixture of PCI-RAS 4 or 8 modem cards. The PCI-RAS Windows 2000/XP/Server 2003/Vista/Server 2008 setup files are located on the Perle CD and can be downloaded from the Perle website. With the new card(s) installed correctly, power-up the PC and Windows will automatically detect the new card(s).

To install the Windows 2000/XP/Server 2003/Vista/Server 2008 PCI-RAS driver, do the following:

1. Turn off the power to your computer.
2. Remove the computers cover.
3. Plug the PCI-RAS card into any free PCI slot of your PC server and fix it securely.
4. Reassemble the PC enclosure and restart the PC.
5. Click "Cancel" when the Found New Hardware wizard appears.
6. Connect the telephone cables.

Once the PCI-RAS card has been installed, you can install the support software supplied with it.

7. From the Perle CD browse to the PCI-RAS Windows 2000/XP/Server2003/Vista/Server 2008 drivers page or download the zip file from the Perle website for your operating system:
pserial-x86.zip for 32-bit Windows operating systems.
pserial-amd64.zip for 64-bit Windows operating systems.
pserial-ia64.zip for 64-bit Windows Itanium operating systems.
8. Unzip the driver zip file to a local directory. We recommend that you use the **pserial-setup-<arch>.exe** file, which will launch the installation wizard, to install the PCI-RAS driver.
Double-click the **pserial-setup-<arch>.exe** installation executable and follow the installation wizard steps.
9. Continue the installation process through the Perle-Serial <version> Setup Wizard.
Note: During the installation, you may get a Windows Logo message. Click “Continue Anyway” when these appear.
Note: If you are installing an unsigned driver, you may have to click through the Found New Hardware wizard for every PCI-RAS modem on your system.
10. Restart the computer.

Adding additional modem cards and/or updating drivers

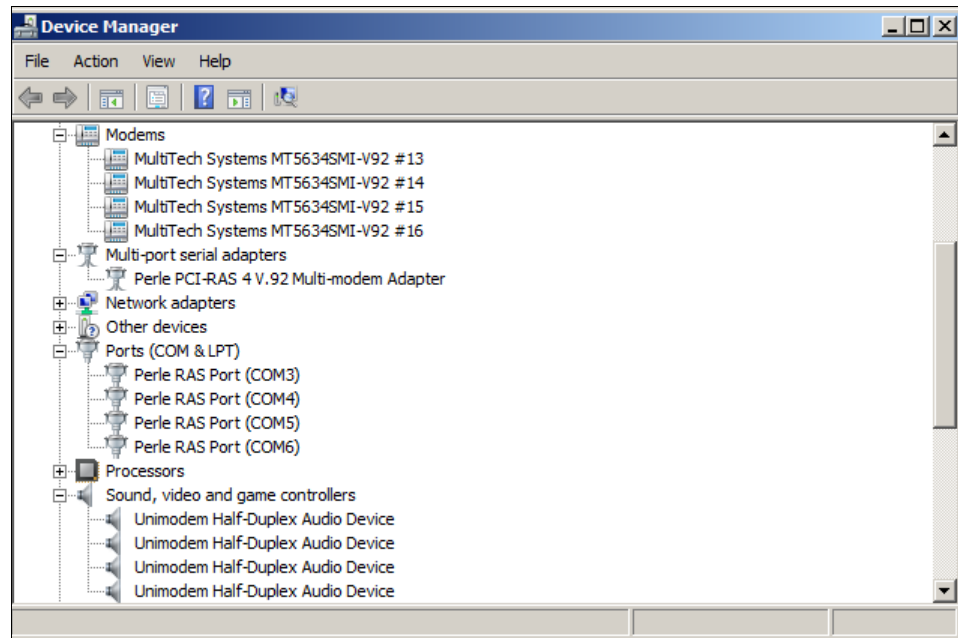
Whenever you add any additional PCI-RAS hardware to your system, Windows might install the latest digitally signed driver in its database (depending on your Windows operating system and settings). To ensure you have the latest driver installed after you add new hardware, you can either:

- Click **Start > All Programs > Perle > Perle-Serial > Update Driver**
or
- Reinstall the drivers as described in [Installing the driver](#) on page 21.

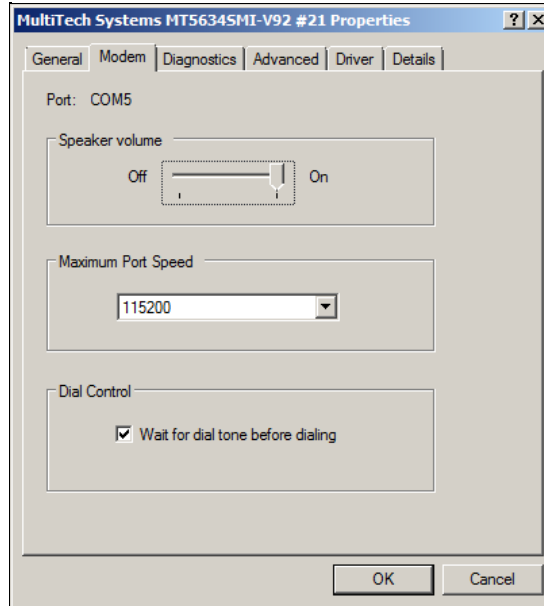
Configuring Modems

After all of the PCI-RAS components have been installed, you can configure the modems by:

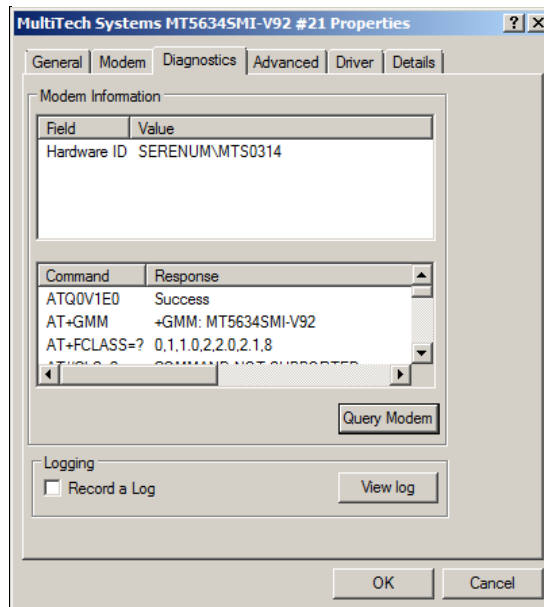
1. Clicking on the **System** icon in the Control Panel.
2. On the **Hardware** tab, click the **Device Manager** button.
3. Expand the **Modems** entry.



- Right click on the **MultiTech Systems** modem entry and select **Properties**. Click on the Modem tab to change the speaker volume, baud rate, or dial control.



- Click on the **Diagnostics** tab and click the Query Modem button to help determine how to fix any modem issues you are experiencing.



Using modems

1. Bring up the *Control Panel* and select the "Network" icon.
2. If "Remote Access Service" is not in the *Installed Network Software* list, click on "Add Software..." to install it.
3. Highlight "Remote Access Service" and click on "Configure..." to get "Remote Access Setup".
4. Click on "Add..." to get the "Add Port" menu, and select a COM port from the drop-down menu. Manually select your modem.
5. When you're finished adding, click on "Continue..." and "OK"

After installing your modems, you will need to reboot Windows environment

Installing PCI-RAS under Windows 95/98/ME

Installing the driver

PCI-RAS works with Windows 95/98 installations. It is important to make sure you are using the "Plus" version of Windows (which includes Remote Access Server software).

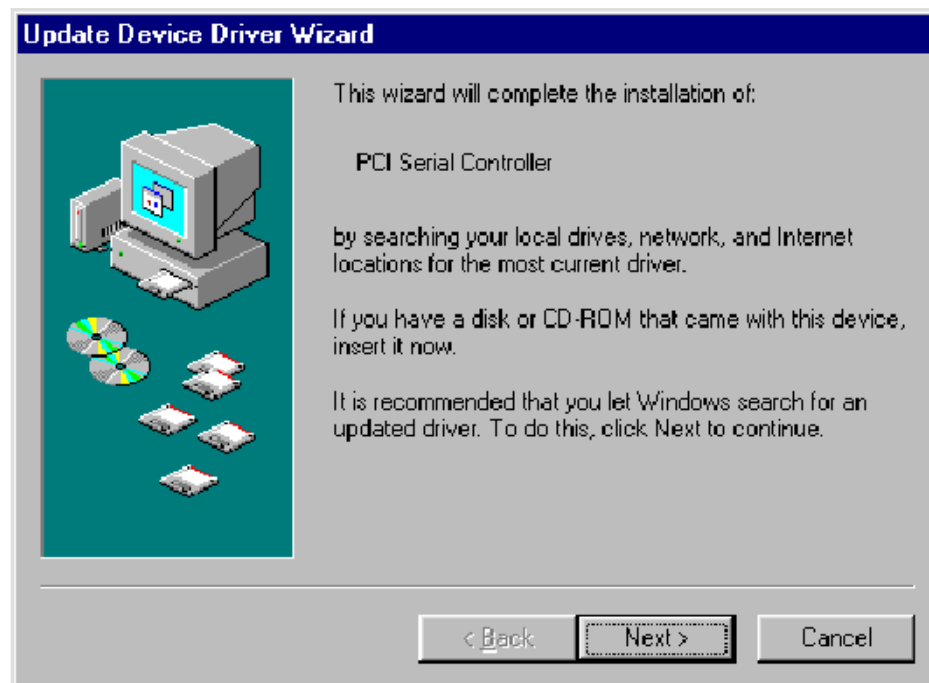
To install the PCI-RAS card,

1. Shut down your system and install the card in an available PCI slot.
2. Reboot the system.

Windows 95 detects that the card is installed in the system.

3. When prompted for the source of the driver files, browse to directory \pci-ras\drivers\win_9x\x.y.z, where x.y.z is the version, on the CD and click OK.

The following screen will appear:



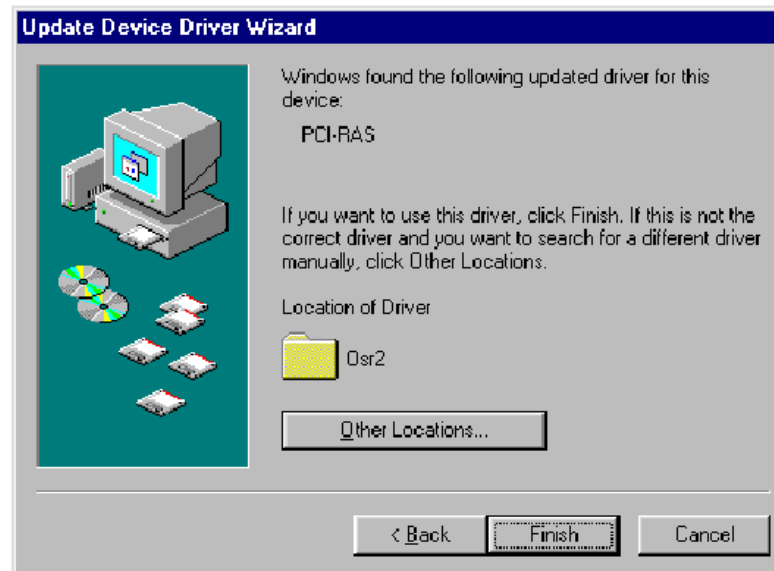
4. Proceed with Next.

Windows 95 searches for the driver in possible locations (i.e. drive a: on Windows 95, multiple locations on Windows 98). The following screen should appear:



5. Proceed with Finish.

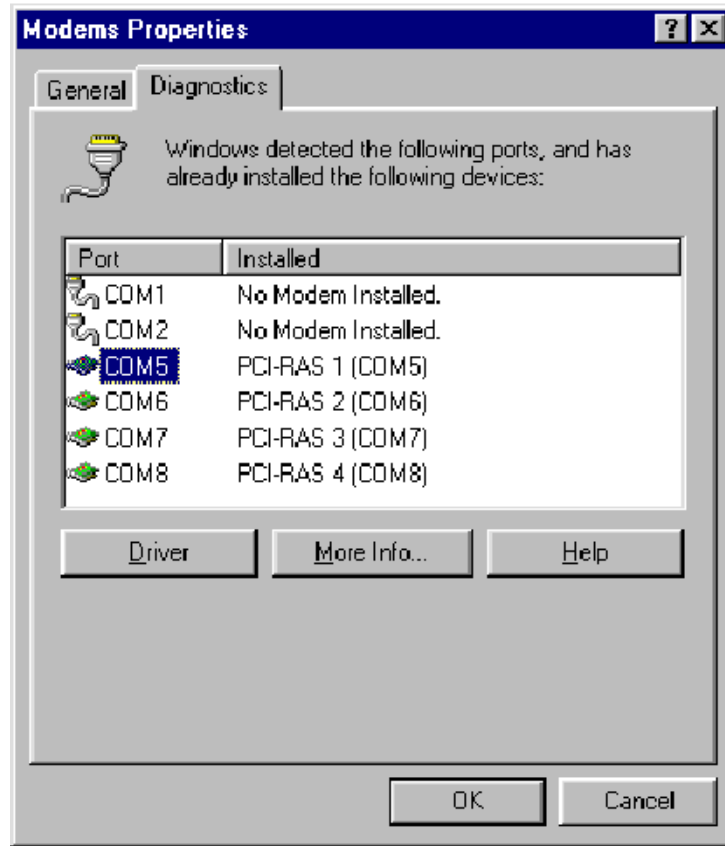
When the install wizard finds the driver the following screen will appear:



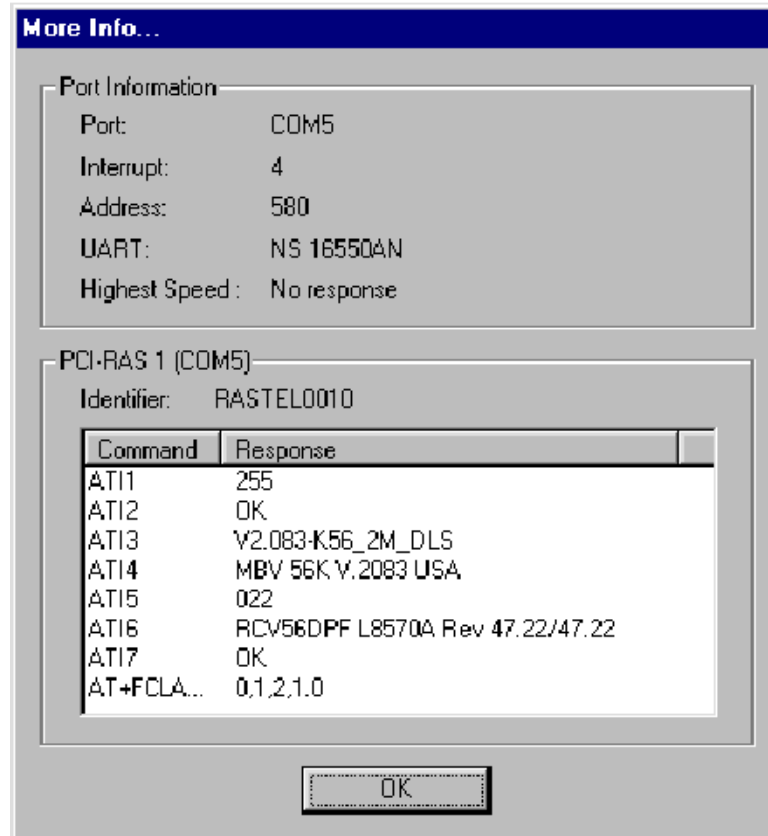
6. Proceed with Finish.

Using modems

After driver installation, the driver should then automatically find all of the ports, and the modems on each of the ports. For example:



To test the installation, double-click one of the COM ports in the modem control panel. The following screen should result (with minor differences):



Your PCI-RAS card should be ready to operate with your communications software.

Uninstalling the driver

To remove a PCI-RAS installation;

1. Go to the Control Panel then to the System icon.
2. Under System, choose the Devices Manager.
3. Then select the Multi-function adapters to look for the PCI-RAS card and select Remove.
4. You should now remove the card itself.

Installing PCI-RAS under SCO OpenServer

Installing the driver

To install the PCI-RAS device drivers and utilities for the SCO OpenServer operating system proceed as follows;

1. Login to your system as super user.
2. Load the CDROM into your system CD drive.
3. At the command prompt, make a directory for your installation by typing:

```
mkdir /cdrom
```

4. Mount the CDROM file system using the following commands:

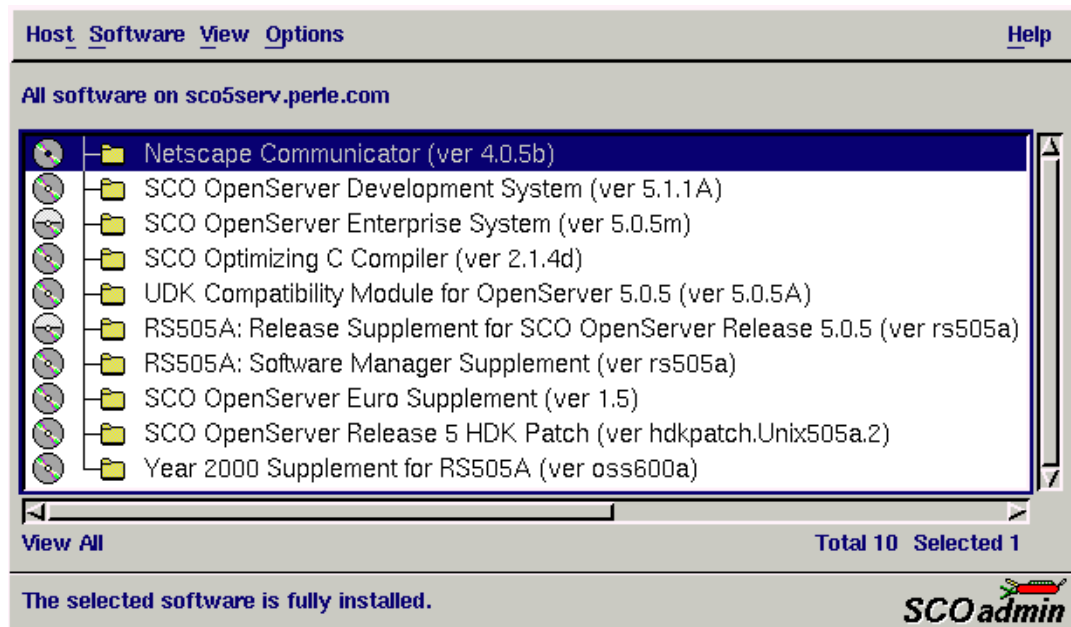
```
mount -f ISO9660 -r/dev/cd0 /cdrom
```

Note

The example above shows the directory name as **/cdrom**, You can either use this name or use another directory name to suit your requirements. For example, **/mnt**.

5. In the SCO OpenServer desktop, double click on the System Administration folder. The System Administration window is now displayed.
6. In the System Administration window, double click on the software manager icon.

The Software Manager window is now displayed.



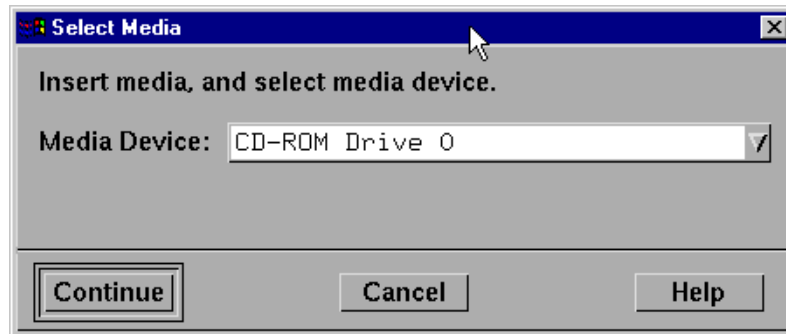
7. In the Software Manager menu, click on **Software > Install New**.

The Begin Installation window is now displayed as shown in the next picture.



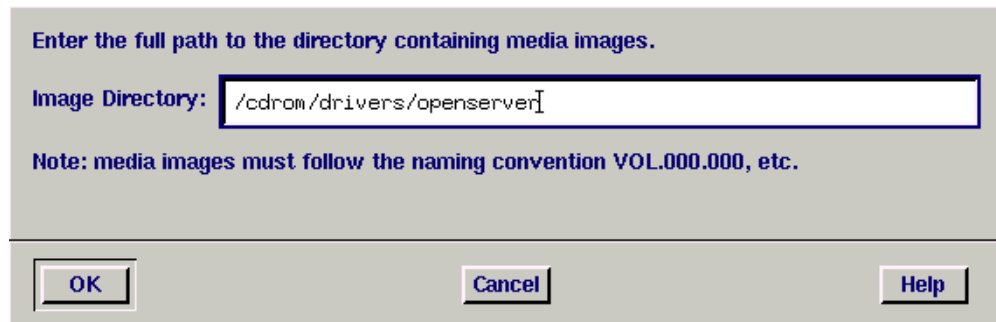
8. In the Begin Installation window, select the local host as the machine to install from by clicking on the **From localhostname** button and then click on **Continue**.

The Select Media window is now displayed.



9. In the Select Media window, using the **Media Device** selector choose the **Media Images** option then click on **Continue**.

The Enter Image Directory window is now displayed.



10. In the Enter Image Directory window, enter the following in the Image directory field;
`/cdrom/drivers/pci-ras/openserver/x.y.z` , where x.y.z is the version number of the driver for SCO OpenServer 5.

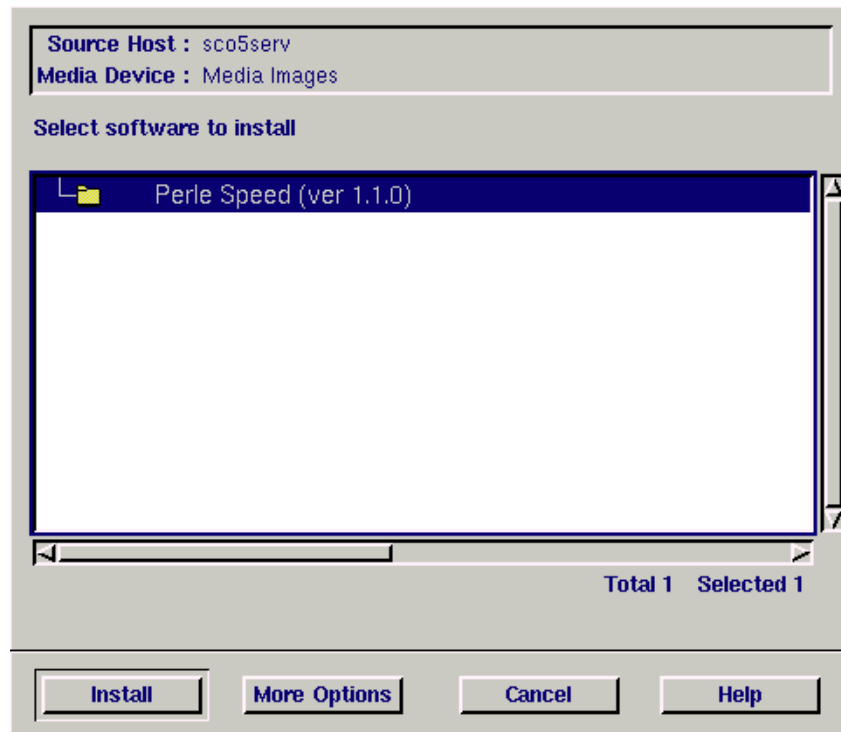
`/cdrom/drivers/pci-ras/openserver6/x.y.z` , where x.y.z is the version number of the driver for SCO OpenServer 6.

Note

The example and picture above show a directory name including **`/cdrom`**, You can either include this name in the path or use another directory name to suit your requirements. For example, **`/mnt`**.

11. In the Enter Image Directory window, click on **OK**.

The Install Selection window is now displayed.



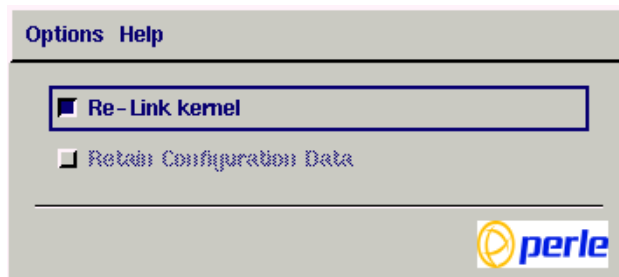
12. In the Install Selection window, click on the **Install** button.

The following progress message is now displayed.

```

Installing      : Selected Software
Installation Phase : Extracting control files
Installation Status : Executing cq5 script /opt/K/Perle/SPD_Drivers/1.1.0/cnt/cq5
    
```

The above window will display various progress messages and then the Speed Installation Options window will be displayed.



13. If required, in the Speed Installation Options window, select the **Re-Link kernel** option.

Hint
 If you are installing more than one driver, you can de-select this option until you have installed all the drivers and utilities you require to save time.

14. In the Speed Window Installation menu, click on **Options > Exit** to close the window and continue the installation process.

If you select **Re-link kernel**, a message window is displayed at the end of the driver installation prompting you to re-boot the system.



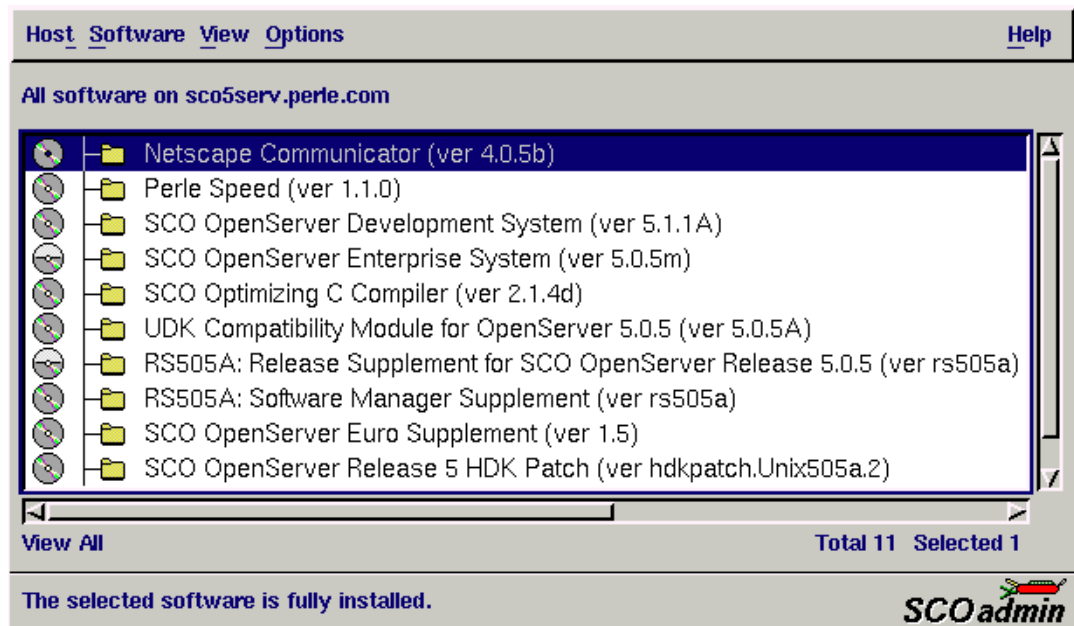
15. In the message window click on **OK** to continue the installation process.

The following message is now displayed upon completion of the installation process.



16. In the message window, click on **OK** to close the window.

The software manager window is now updated to show the driver you have installed as shown in the next picture.



17. In the Software Manager window, click on the **Host > Exit** menu option to close the window.

18. Shut down your system and turn the power off.

Serial port naming conventions

Each serial port has one device node associated with it. Each node takes the form of a file which you can access from operating system utilities and user applications. Details of this node is shown in the next table.

Device name	Function	Description	Location
Z1	Modem port	Indicates that a port open will not complete unless DCD is present	/dev/term

Setting up modems for dial in

To setup the modem under the Openserver environment for dial-in, the following instructions need to be implemented in order to set-up for a "getty" dial in.

1. In the **Perle-Speed** folder for OpenServer 5 or the **Perle-Serial** folder in OpenServer 6, run the application "Speed Port Configuration" and disable the Login Session for all the modems.
2. In the `/etc/initab` file, ensure the line containing the **modem** version of the port is loaded via the **respawn** getty directive. For modem port 1, the line will be similar to the following:

```
Z1:234:respawn:/etc/getty ttyZ1 q
```

NOTE: Keep track of the getty definitions used since the serial port speed is needed for the following directions. Refer to the file `/etc/gettydefs` for the complete list of definitions.

3. Issue a **enable ttyZ1** command (for port 1)
4. In the `/usr/lib/uucp/Devices` file add a line for every dial-in port in order to access the port with the **cu** command. For example, for port 1 the line would be:

Direct ttyZ1 - 115200 direct

NOTE: the 115200 can be substituted with the speed used in your getty definition.

5. Issue the **cu -l ttyZ1** command (for port 1) to individually access each modem. For each modem enter the following init string

```
at&fs0=1$sb115200&d1&w
```

where the 115200 can be substituted with the speed used in your getty definition. Ensure the modem responds with an "OK"

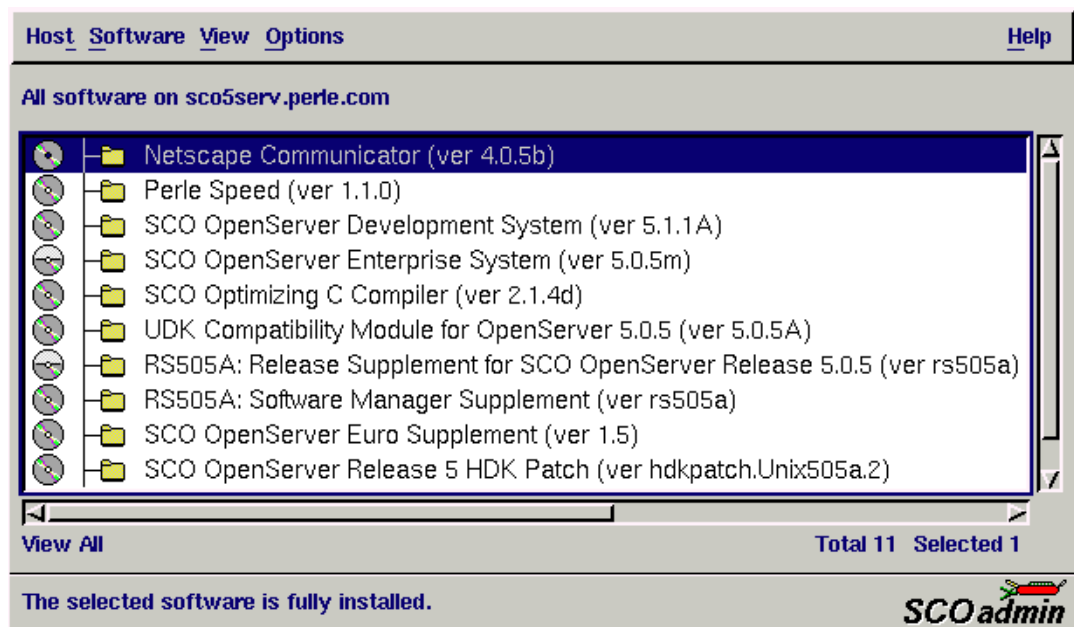
NOTE: For older PCI-RAS multi-modem cards, without V.92 support, you will get an error response from the modem and should use the init string **at&fs0=1&d1&w** instead.

6. Quit the **cu** program with a "~."

Removing drivers and utilities from your system

To remove the SPEED device drivers and utilities for the SCO OpenServer operating system proceed as follows;

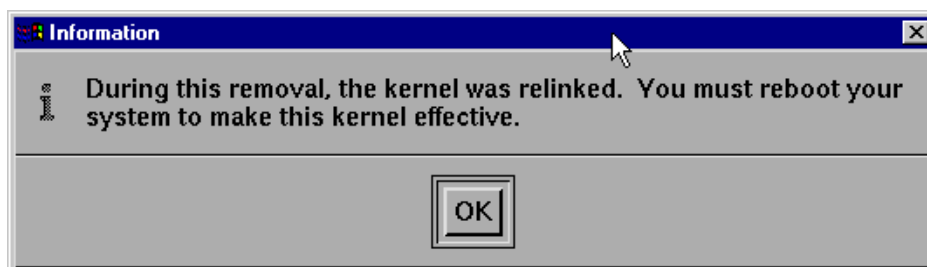
1. In the SCO OpenServer desktop, double click on the System Administration folder.
The System Administration window is now displayed.
2. In the System Administration window, double click on the software manager icon.
The Software Manager window is now displayed.



3. In the Software Manager window select the driver you want to remove.
4. In the Software Manager menu, click on **Software > Remove software**.
A confirmation window is now displayed prompting you to confirm removal

5. In the confirmation window, click on the **Remove** button.

The software is now removed and the following Kernel re-link message is now displayed as shown in the next picture.



The Kernel re-link message window now closes and the removal continues. A message is displayed upon completion.

6. In the message window, click on **OK** to close the window.

The software manager window is now updated to show the remaining software.

Installing PCI-RAS under SCO UnixWare

Installing the driver

To install the PCI-RAS device drivers and utilities for the SCO UnixWare operating system proceed as follows;

1. Login to your system as root.
2. Load the CDROM into your system CD drive.
3. Mount the CDROM to a mount point, for example **/cdrom**.
4. At the command prompt, type:
pkgadd -d /cdrom/drivers/pci-ras/unixware/x.y.z/spd-uw-x.y.z.pkg spd , where x.y.z is the version number of the driver.
5. Press the **Enter** key.

The system now installs the driver and displays a series of messages ending with a successful installation message.

Upon installation of the drivers, your PCI-RAS cards are ready to use.

Note

A re-boot of your system is not necessary as the drivers for your PCI-RAS card are dynamically loadable and will be loaded as soon as any software attempts to access the associated devices.

Serial port naming conventions

Each serial port has one device node associated with it. Each node takes the form of a file which you can access from operating system utilities and user applications. Details of this node is shown in the next table.

Device name	Function	Description	Location
Z1	Modem port	Indicates that a port open will not complete unless DCD is present	/dev/term

Setup for dial-in modems

The software provided with the SCO UnixWare operating system includes a utility called Serial Manager which allows you to configure the extra serial ports you have added to your system.

Note

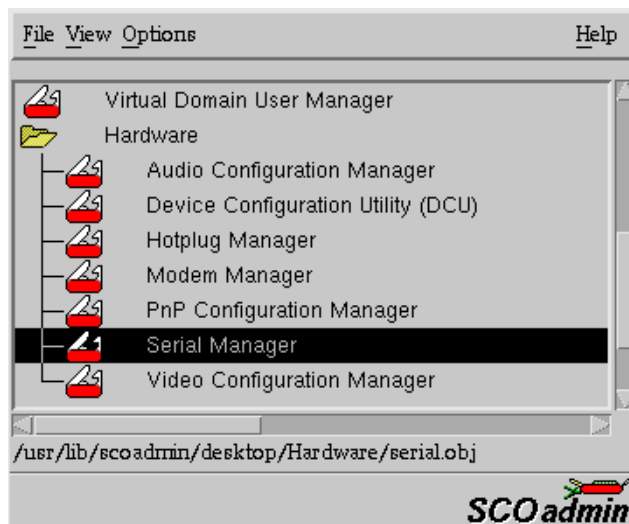
On UnixWare 7.0, you must apply a patch file called **ptf7053** before using the Serial Manager. You can find the patch on the SCO web site at;

<http://www.sco.com>

To configure serial ports with Serial Manager proceed as follows;

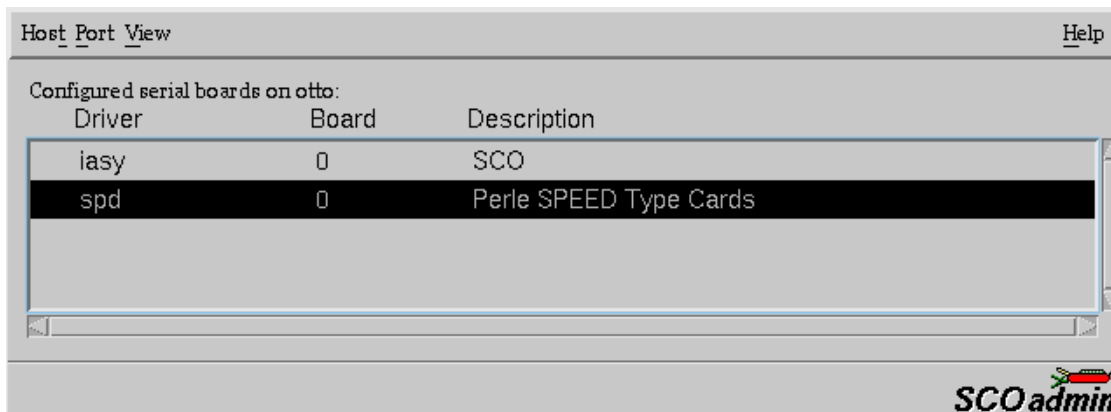
1. At the command prompt, type **scoadmin**

The System Administration window is now displayed as shown in the next picture.



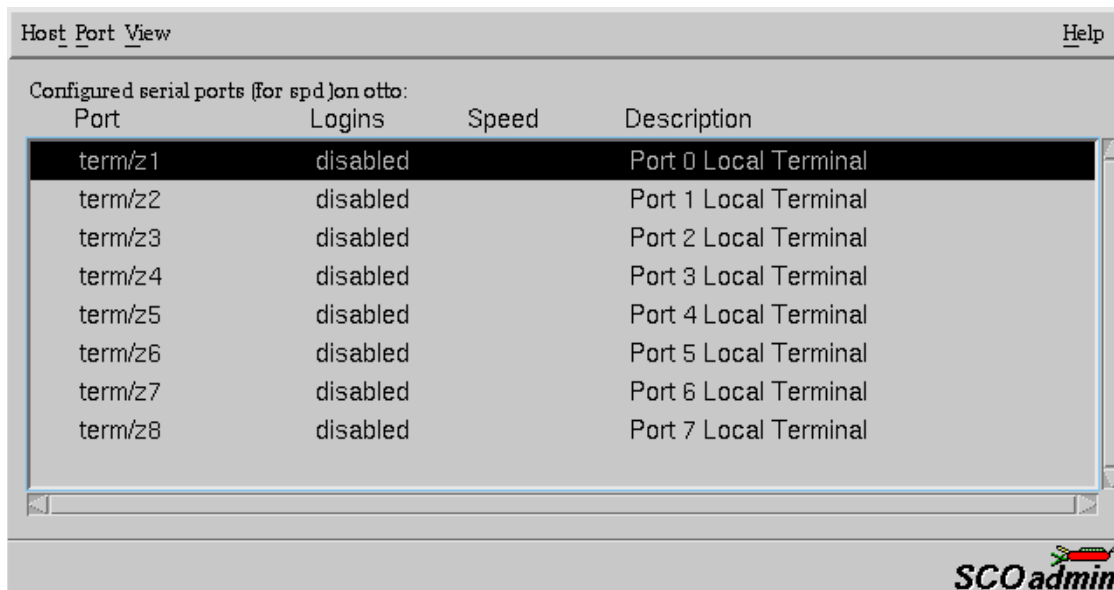
2. In the System Administration tool window, click on the Hardware folder and then select **Serial Manager**

The Serial Manager window is now displayed showing the host cards (including SPEED) currently present on the system.



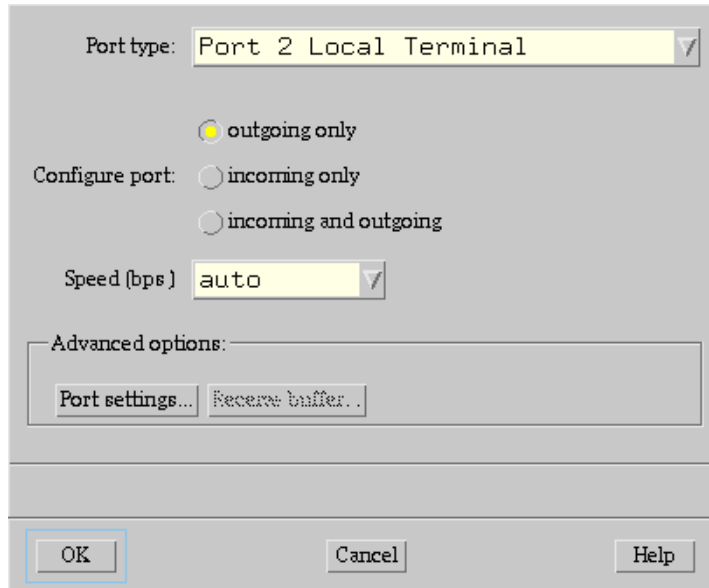
- In the Serial Manager window, select the host card you want. Then in the Serial Manager menu, click on **View > Ports**.

The Serial Manager window now displays the ports available for the selected host card as shown in the next picture.



4. In the Serial Manager menu, click on **Ports > Modify**.

The Modify Serial Port window is now displayed.



5. In the Modify Serial Port window, set the parameters shown in the next table

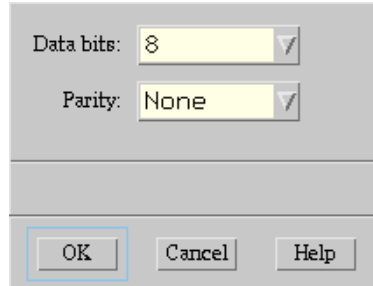
Parameter	Set to
Port Type	Local Terminal
Configure port	incoming and outgoing as applicable
Speed	the speed value you require

Note

Because the system does not support the selection of speeds above 115200 bps, lower baud rates have been permanently remapped to support higher port speeds. Remapped speeds are shown in the next table.

Selected speed (bps)	Actual speed (bps)
50	230400

6. In the Modify Serial Port window, click on the **Port settings** button.
The Port settings window is now displayed.



7. In the Port settings window, select the **Data bits** and **Parity** values you require and click on **OK**.
8. In the Modify Serial Port window, click on OK to accept the changes you have made and close the window.
9. Repeat steps 3. to 8. until you have configured the serial ports for all the host cards you require.
10. In the Serial Manager menu click on **Host > Quit** to quit Serial Manager and close the window.
11. Use the **Serial Manager** ensure all PCI-RAS ports are configured as Terminals with Logins disabled
12. For *each* PCI-RAS port you need to run the **cu** command in order to set the dial-in serial speed. For example, to connect to port 1 at 115200 bps use the following command:
cu -s 115200 -l term/z1
13. Once connected, you will be able to perform AT commands to that modem. Enter the following command to the modem:
AT&FS0=1\$SB115200&D1&W
NOTE: the speed (115200 in the above example) must match the speed parameter used in the *cu* command.
14. Quit the cu program with a ~

NOTE: For older PCI-RAS multi-modem cards, without V.92 support, you will get an error response from the modem and should use the init string **AT&FS0=1&D1&W** instead.

Once all the dial-in ports have been set-up, use the **Serial Manager** to enable Logins and set the speed of the port to the same serial bit rate that was used in the *cu* command.

Removing drivers and utilities from your system

To remove the software drivers from your system under the SCO UnixWare operating system proceed as follows;

1. At the command prompt, type **pkgrm spd** and press **Enter**

The SPEED driver and associated utilities are now removed from your system..

Installing PCI-RAS under Linux

Installing the driver

PCI-RAS cards installed in Linux machine use the perle-serial driver for Linux. This driver is supplied in both source RPM package format and a compressed tar file. The procedure for installation of each format is as follows:

Install from Source RPM

1. Log in to the Linux system as root user.

Notes:

The <packages directory> path name in the following instructions will be different depending on the Linux distribution you have installed. (i.e. Redhat will have a “redhat” directory; Suse will have a “packages” directory)

The <rpm build command> will change depending on the version of the RPM utilities installed. For newer versions (i.e. 4.2) , the <rpm build command> is “rpmbuild”. For older versions use “rpm”.

2. At the Linux prompt, copy the supplied perle-serial-<version>-<release>.src.rpm file onto your system in the **/tmp** directory.
3. Install the source rpm by typing the following command:
rpm -ivh perle-serial-<version>-<release>.src.rpm
4. Build the binary RPM package for your system by entering the following commands:
cd /usr/src/<packages directory>/SPECS
<rpm build command> -bb perle-serial-<version>.spec
5. Install the binary RPM which was just created. Enter the following commands:
cd /usr/src/<packages directory>/RPMS/<arch>
rpm -ivh perle-serial-<version>-<release>.<arch>.rpm

The <arch> value is the architecture of your Linux machine such as “i386” or “alpha”.

Install from Tar File

1. Log in to the Linux system as root user.
2. At the Linux prompt, copy the supplied perle-serial .tgz file onto your system in the **/tmp** directory.
3. Unpack the file using the command:
tar -xzvf perle-serial-<version>.tgz

4. Build and install the perle-serial software by entering the following commands

```
cd /tmp/perle-serial-<version>
./tar_install.sh
```

Serial device naming conventions

Each port you wish to use on the PCI-RAS board must have /dev/ttyPS devices. If these devices do not exist on your system then you will need to create them. First, check if they exist.

For example, to check if ttyPS4 exists do:

```
ls -l /dev/ttyPS4
```

HINT:

Alternatively you can scan for ttyPSx devices, by viewing the file /var/log/messages. This will display any ttyPSx devices found present in the system.

If a device currently exists, then it will be displayed. However, if it does not exist then an error message saying device not found will be reported. To create the devices use ps_addports <0> <# of ports-1>.

For example to create devices for 4 ports:

```
cd /dev
ps_addports 0 3
```

Setup for dial-in modem

To enable a getty login on a modem port, execute the following instructions:

1. Edit the /etc/inittab file and add an entry for each login modem port. For example,
2345:respawn:/sbin/agetty -w -l 'AT&FE0Q1&D2&C1S0=1\$SB19200\015'

where \$SB is the speed you wish to configure on the port

NOTE: For older PCI-RAS multi-modem cards, without V.92 support, you will get an error response from the modem and should use the init string **AT&FS0=1&D1&W** instead.

Setup for dial-out modem

To access a PCI-RAS modem port, you can use standard applications such as `cu`, `tip` and `minicom`.

Removing drivers and utilities from your system

To remove the drivers from your system under the Linux operating system proceed as follows:

1. At the command prompt, type **`rpm -e perle-serial`** and press **Enter**

The driver and associated utilities are now removed from your system

Installing PCI-RAS under Solaris

Installing the driver

To install the device drivers and utilities for the Solaris operating system proceed as follows;

1. Login to your system as root.
2. Load the CDROM into your system CD drive.
3. Mount the CDROM to a mount point, for example `/cdrom`.
4. At the command prompt, type:
pkgadd -d /cdrom/drivers/pci-ras/solaris/x.y.z/fast-sol-x.y.z.pkg comf , where x.y.z is the version number of the driver
5. Press the **Enter** key.

The system now installs the driver and displays a series of messages ending with a successful installation message.

Upon installation of the drivers, your PCI-RAS cards are ready to use.

Note

A re-boot of your system is not necessary as the drivers for your PCI-RAS card are dynamically loadable and will be loaded as soon as any software attempts to access the associated devices.

Serial Port Naming Conventions

By default, each port is associated with three entries under the `/dev` directory.

Two take the form `/dev/comfxy` and `/dev/term/comfxy` where **x** is the card number (1-4) and **y** is a lower case letter in the range a-p. a is port 1, ..., p is port 16. These device names are intended for local devices.

The third device name takes the form `/dev/cua/comfxy` where **x** is the card number and **y** is a lower case letter in the range a-p, as before. These devices are intended for use with modems.

These mappings can be altered by careful modification of the **mkdev** and **startcomf** scripts in `/usr/lib/comf/i86`.

Using modems

The simplest mechanism for setting up ports is to use the system administration tool, selecting the "Serial Ports" section. From here modems can be configured for dial in, dial out or bi-directional.

Setting up modems for dial in

If you set up ports for dial in you will need to disable any echo from the modem devices. The easiest way to do this is to use tip (or cu) and send the appropriate "at" command sequence to the modem. A typical ttymon port setup requires the use of the standard lterm and tcompat modules. These would normally be added into the "Streams Modules" section of ttymon port configuration (this is under the "expert" tab).

- To disable echo from the modem devices - **ATE0Q1V0**
- To enable fixed baud rate on the modem - **AT&FS0=1\$SB9600&D1&W**. For older PCI-RAS card, without V.92 support, the **\$sb<speed>** command is not supported.

NOTE: For older PCI-RAS multi-modem cards, without V.92 support, you will get an error response from the modem and should use the init string **AT&FS0=1&D1&W** instead.

For simple dial out you can use tip or cu commands . A simple connection with tip can be started by typing **tip -<speed> /dev/cua/comf<card #><modem port #>** for example "tip - 9600 /dev/cua/comf1a". Notice that this uses the modem callout device. The dial out device (that is /dev/term/0) would block the open of the modem until carrier (DCD) is asserted.

Note:

Remote modems connecting to PCI-RAS cards that are made by US Robotics require a **&b1** to initialize the speed correctly.

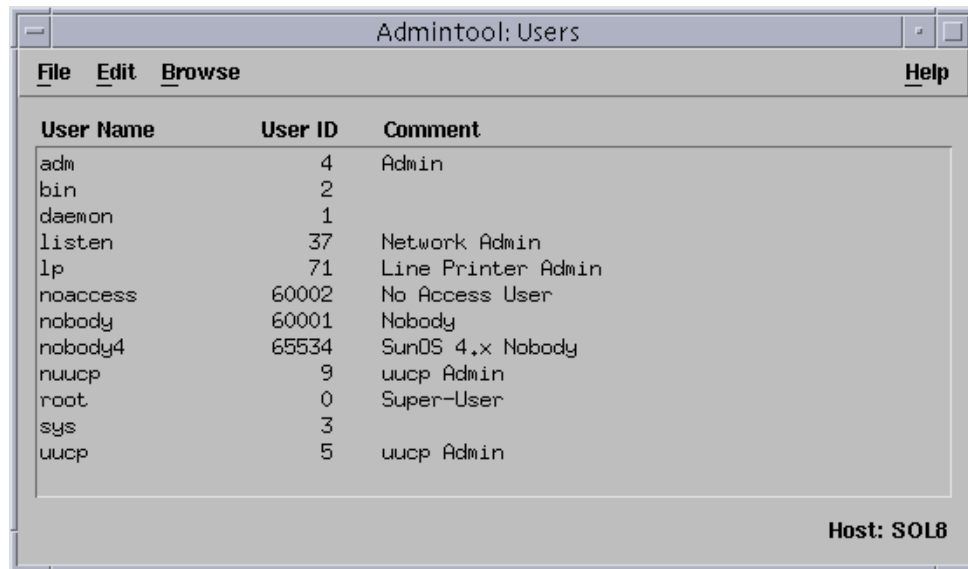
Configure using Admintool

The software provided with the Solaris operating system includes a utility called **admintool** which allows you to configure the extra devices you have added to your system.

To configure devices with **admintool** proceed as follows;

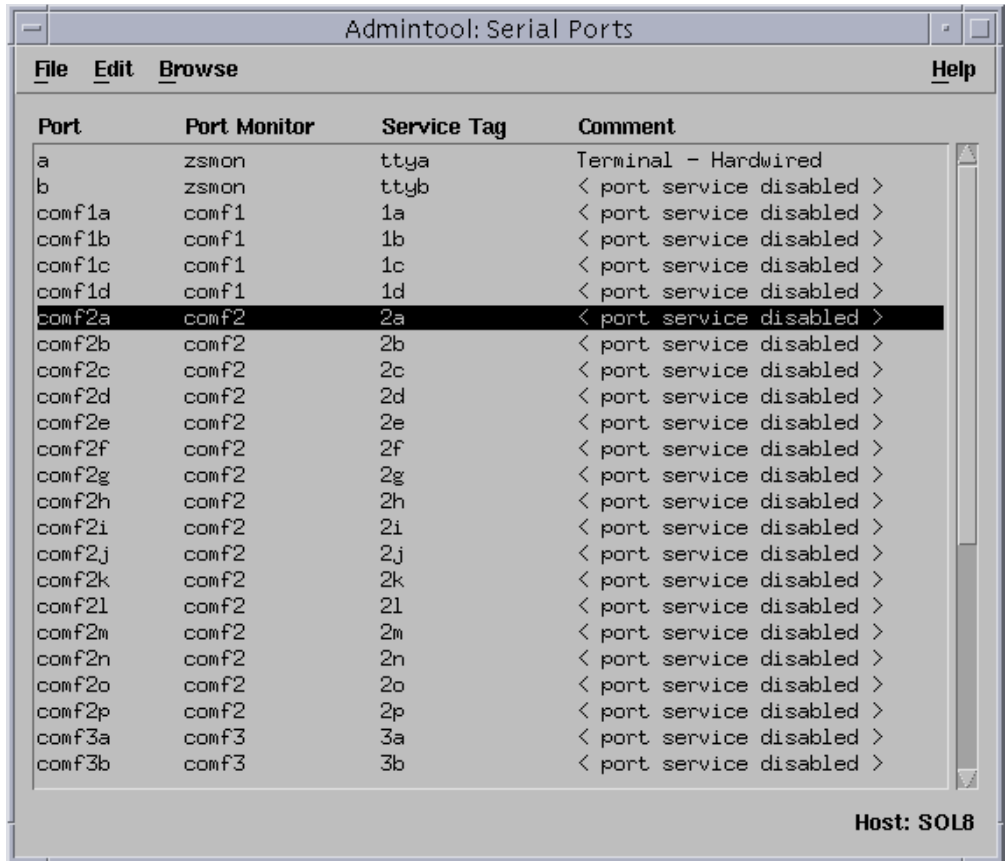
1. At the command prompt, type **admintool**

The **Admintool: Users** window is now displayed as shown in the next picture.



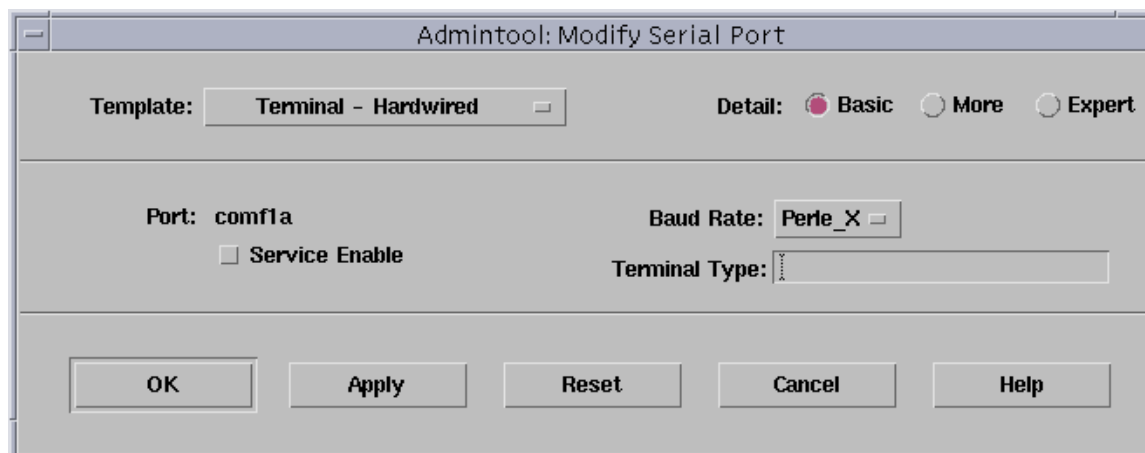
- In the **Admintool: Users** window, click on **Browse > Serial Ports**.

The **Admintool: Serial Ports** window is now displayed showing all serial ports currently present on the system

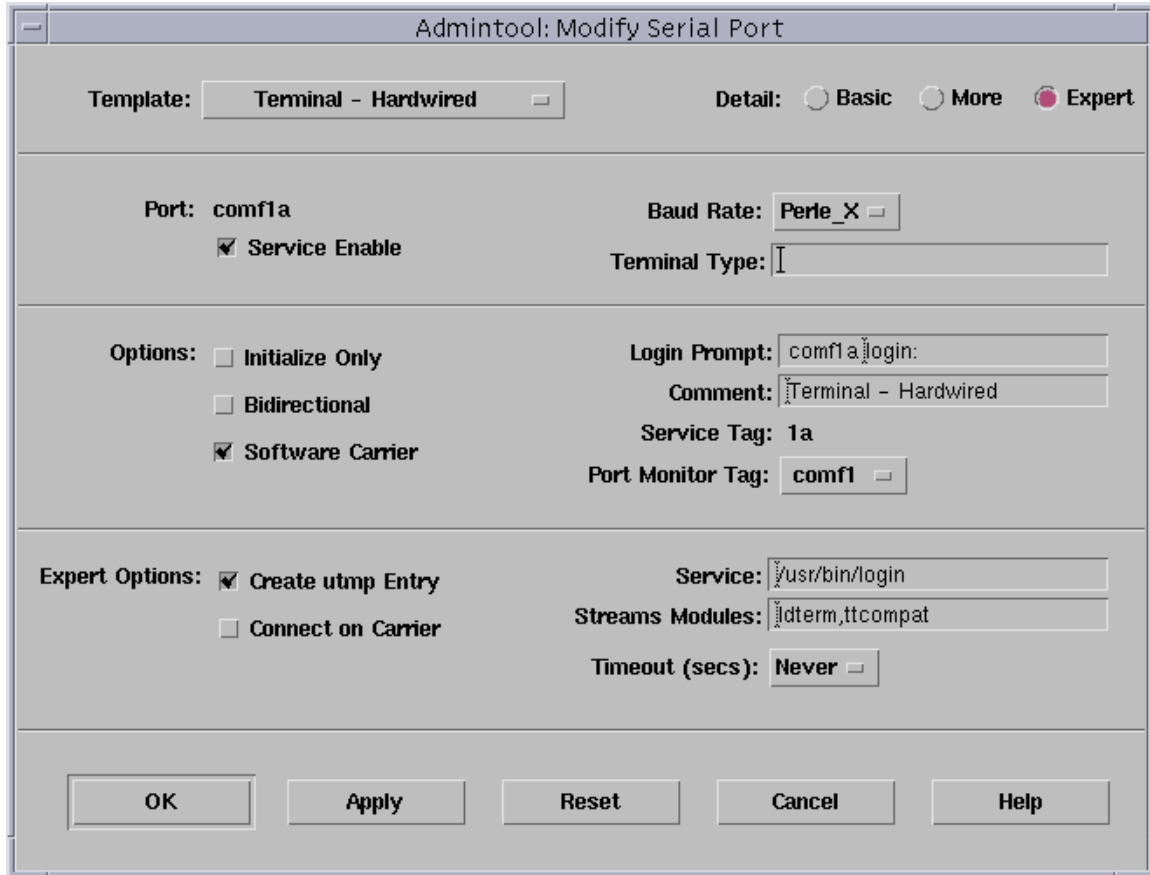


3. In the **Admintool: Serial Ports** window, select the port you want to configure. To configure the port, click on **Edit > Modify**.

The **Admintool: Modify Serial Port** window is now displayed.



In the **Admintool: Modify Serial Port** window you can click on the **Expert** button to show more fields, as shown in the next picture.



4. In the **Admintool: Modify Serial Port** window, set the parameters you require.
5. In the **Admintool: Modify Serial Port** window, click on OK to accept the changes you have made and close the window.
6. Repeat steps 3. to 5. until you have configured the serial ports for all the host cards you require.
7. In the Serial Manager menu click on **Host > Quit** to quit Serial Manager and close the window.

Removing drivers and utilities from your system

To remove the software drivers from your system under the Solaris operating system proceed as follows;

1. At the command prompt, type **pkgrm comf** and press **Enter**

The driver and associated utilities are now removed from your system.

Remote Configuration

Remote configuration is a network management tool that allows you to configure the PCI-RAS modems from anywhere in your network. As if you were on-site you can issue **AT** commands to troubleshoot and maintain your modems. The Remote Configuration feature has password-protection to ensure your configuration remains safe.

Basic Procedure

The following steps are valid regardless of whether the connection is established by the local or remote PCI-RAS modem.

Note:

For this procedure to work, the remote computer must be running a communication program (such as Hyperterminal) and be ready for a data connection.

1. Establish a data connection with a remote PCI-RAS modem.
2. Send three remote configuration escape sequences followed by **AT** and the setup password. Press *Enter*. You have 4 attempts to enter the correct password before you are disconnected. If the password is correct, the remote modem responses with **OK**.

Example: **%%%ATMTSMODEM**
OK

3. Type **AT** commands to configure the remote modem.
4. When you have finished configuring the remote modem, save the new configuration by typing **AT&W0**
5. Type **ATO** and press enter to exit remote configuration. You are now back to where you originally issued the **%%%ATMTSMODEM** command.

To Change the Setup Password

To change the default password (MTSMODEM) for the remote modem, implement the following steps:

1. Open a data communication program such as Hyperterminal and connect to the PCI-RAS modem you wish to change the password for.
2. In the terminal window type **AT#SMTSMODEM** and press *Enter* .

If you have previously changed the password then use your new password to gain access.

Example: **AT#SMTSMODEM**

3. To change the password type **AT#S=xxxxxxx**, where xxxxxxx stands for the password. Press *Enter*. The password can include any keyboard character, and can be up to eight characters long. The modem should respond with OK if you have enter the password correctly.

Note: Passwords are case-sensitive.

4. The new password is saved automatically. You can either enter more AT commands or exit the communication program.

To Change the Remote Escape Character

The user also has the ability to change the remote modem's remote configuration escape character either locally or remotely. The remote configuration escape character is stored in register **S9**. The factory default is **37**, which is represented by the ASCII code % percent character. Setting S9 to **0** (zero) disables remote configuration entirely.

CAUTION: If you do this remotely, you will not be able to change it back remotely.

1. Establish a remote configuration link with the remote mdoem as described in [Basic Procedure](#) on page [56](#).
2. Type **ATS9=n**, where n is the ASCII code for the new remote configuration escape character, and then press *Enter*.
3. Save the new value by typing **AT&W** and pressing *Enter*.
4. Type **ATO** and press *Enter* to exit the remote configuration.

Appendix A Troubleshooting

You need to read this chapter if you want to...

You need to read this Appendix if you require information on troubleshooting PCI-RAS.

This Appendix provides information on troubleshooting your PCI-RAS unit and includes information on common problems as well as some diagnostic tests.

This Appendix includes the following sections;

- [Common problems](#) on page **59**
- [PCI-RAS diagnostic tests](#) on page **60**

Common problems

These are some general troubleshooting tips for common problems. As always, you can contact support using the details in [Appendix B Contacting Perle](#).

- If the modem appears to be functioning, but no characters are being returned, you may have an interrupt conflict. Check the interrupts used by existing hardware against those selected by the PCI-RAS (as well as card slot position which can determine selection of interrupts).
- If you are connecting PCI-RAS to a telephone exchange, ensure the phone connection is configured for tone dialling. PCI-RAS fully supports tone dialling and DTMF detection, however pulse dialling is not supported.
- If your PCI-RAS modem fails to make a particular connection then the problem may be with the telecom line or with the modem at the other end. Retry making the connection (and if possible try making the call with a standard phone connected to see if you can establish a voice call over the line). Also check the modem connection at the other end.
- If the modem at the other end does not have error correction then you will need to disable error correction at the PCI-RAS end by issuing to each PCI-RAS modem port: ATN0
- In some circumstances PCI-RAS may not be able to correctly detect dial tone on the line. This is often indicated by a NO DIALTONE error message. Modify your communications software to disable dial tone detection or directly issue to each PCI-RAS modem port: ATX3&W
- Alternatively you may include the X3 command in your modem initialization string.
- If your PCI-RAS modem will not answer incoming calls first check that your application software has been configured to enable automatic receive. The default for all PCI-RAS modems is to have SO=0 (no auto-answer). To set auto-answer on, issue the command: AT S0=3
- This command will set the modem to answer after three rings. The S0 register can be set to answer anywhere between 2 and 30 rings. Also the S0 register can be set in the initialization string.
- If you can communicate with the PCI-RAS modem ports but some ports are behaving unpredictably it may be that the port's configuration has been altered. To restore the factory default settings, issue the command: AT&F&W
- If you need to reset one of the PCI-RAS modem ports then issue the command: ATZ You may also need to re-initialize any communications software that is active on that modem port.

PCI-RAS diagnostic tests

Your PCI-RAS multiple modem card is able to perform several diagnostic tests to help you identify problems in the communications link. These tests are initiated using AT commands. To issue AT commands to the PCI-RAS modem ports you may need to perform some software function that puts your computer's communications into terminal mode or local mode. A cursor will appear on your screen allowing you to send commands directly to each modem port.

This section includes details of the following tests;

- [Presence test](#) on page [60](#)
- [Local analog loopback test](#) on page [61](#)
- [Remote digital loopback test](#) on page [61](#).

Presence test

Command	Test purpose	Notes
AT E1 Q V1	To see if your computer and the PCI-RAS modem ports are communicating properly.	If the I/O address and interrupt are set correctly then the PCI-RAS modem port will respond OK . Repeat this test for each of the PCI-RAS modem ports. If the PCI-RAS fails to respond OK at all then first check that the I/O address range and interrupt that you configured (with SW1 and jumper J1-5) does correspond to the settings you configured in your software. Then check that the PCI-RAS does not have I/O address or interrupt conflict with existing hardware installed in your system.

Local analog loopback test

Command	Test purpose	Notes
AT&T1	<p>This tests the path that includes the PCI-RAS modem under inspection and the PC host interface.</p> <p>Note All loop back tests must be performed with error correction disabled so first issue the command: ATN0</p>	<p>This will place the modem in normal speed buffered mode. To activate loopback issue the command AT&T1.</p> <p>The modem will respond with the message: CONNECT XXXX. Any data that is sent to the modem will be looped back. To terminate the test, issue the escape sequence: +++. After OK is returned, issue the command ATZ to return the modem to its normal operating state.</p>

Remote digital loopback test

Command	Test purpose	Notes
AT&T6	<p>Remote digital loop-back tests the path that includes the local modem, the remote modem, the telephone circuit and the PC host interface.</p> <p>Note All loop back tests must be performed with error correction disabled, so first you must issue the command ATN0. This will place the modem in normal speed buffered mode.</p>	<p>The digital loop-back test also requires that you have already established communication with a remote modem and that the remote modem has remote digital loop-back enabled AT&T4. Once you have established the connection to the remote modem, issue the escape sequence +++ to return you to the command mode. Issue the loop-back command AT&T6. This causes a loop back to occur at the remote modem. Any data that is sent to the modem will be looped back at the remote modem. To terminate the test, issue the escape sequence +++. After OK is returned, issue the command ATZ to return the modem to its normal operating state.</p>

Appendix B Contacting Perle

You need to read this appendix if you want to... You need to read this appendix if you want to contact Perle for technical support or any other queries about this product.

This appendix includes the following sections:

- [Making a technical support query](#) on page 62
- [Repair procedure](#) on page 64
- [Feedback about this manual](#) on page 64
- [Perle support centres worldwide](#) on page 65

Internet access

[Click here to access the our website at the following URL:](http://www.perle.com)
<http://www.perle.com>

Email

[Click here to email](mailto:support@perle.com) Perle at the following address:
[Email: support@perle.com](mailto:support@perle.com)

Making a technical support query

This section contains the following information about making a query:

- [Who to contact](#) on page 62
- [Information needed when making a query](#) on page 63
- [Making a support query via the Perle web page](#) on page 64

Who to contact

If you bought your product from a registered Perle supplier, you must contact their Technical Support department; they are qualified to deal with your problem.

If you are a registered Perle supplier, and bought your product from Perle, contact Perle Technical Support at the offices listed below.

Information needed when making a query

When you make a technical support enquiry please have the following information ready:

Hint
Print out this page and fill in the table provided with the basic information you need.

Item	Write details here
Product name and version	
Problem description	
Operating system version	
Driver version	
Details of any other cards installed in your system	
Your name	
Company Name	
Country	
Phone number	
Fax number	
Email address (if available)	

Making a support query via the Perle web page

If you have an internet connection, please send details of your problem to Technical Support using the email links provided on the Perle web site in the 'Support' area.

See also [Perle support centres worldwide](#) on page 65 for email links and other contact details for the Perle technical support centres.

Click here to access our website at the following URL:
<http://www.perle.com>

Repair procedure

Before sending a unit for repair, you must contact your Perle supplier. If, however, you bought your product directly from Perle you can contact directly. See [Perle support centres worldwide](#) on page 65 for contact information.

Customers who are In Europe, Africa or Middle East can submit repair details via a website form shown in the next picture. This form is on the Perle website, www.perle.com, in the **Support** area.

Click here to access our web site at the following URL:
http://www.perle.com/support_services/rma_form.asp

In the USA and Asia contact the office shown in the Technical Support section.

Feedback about this manual

If you have any comments or suggestions for improving this manual please email Perle using the following address:

docfeedback@perle.com

Please include the **title**, **part number** and **date** of the manual (you can find these on the title page at the front of this manual).

Perle support centres worldwide

Note

Perle offers free technical support to Perle Authorised Distributors and Registered Perle Resellers.

To access technical support please visit the Perle website at www.perle.com/support_services/index.shtml.

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