SPEED Serial Adaptors

User guide

Navigating around this manual

Using this on-line manual. See page 5.

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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 Perle SPEED PCI serial adaptor cards, associated drivers and utilities.

Who this manual is for

This manual is aimed at users who want to add extra serial ports to their system using SPEED PCI serial adaptor cards. This manual requires a working knowledge of using personal computers and associated operating systems, as well as experience in installing host cards.

Warning

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

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<tr>
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<th>Description</th>
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<tr>
<td>October 1999</td>
<td>5500034-10</td>
<td>First issue of new SPEED user manual. Includes details of drivers, utilities and installation under the SCO OpenServer and Windows NT operating systems.</td>
</tr>
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</tr>
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</tr>
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</tr>
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<tr>
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<th>Page</th>
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Chapter 1  Introduction

You need to read this chapter if you want an introduction to the Perle SPEED serial adaptor cards, driver software and utilities.

This chapter provides introductory information about the Perle SPEED PCI serial adaptor cards, driver software and configuration utilities.

This chapter includes the following sections:
• About the SPEED serial adaptor card on page 15
About the SPEED serial adaptor card

The SPEED product range are high performance, serial adaptor cards for PCI based host machines. Each card features four RJ45 ports, removing the need for spider or octopus cables. You can use up to four cards per host thus providing 16 ports per host.

The SPEED4 variant supports a full compliment of eight signal lines per port. The SPEED4+ includes enhanced modem support and significantly higher maximum port speeds.

Each serial port has three device nodes associated with it. Each node takes the form of a special file which you can access in the normal manner from operating system utilities and user applications. See also Appendix A Serial Port Device Names and your operating system manual for details of special files.

You use the SPEED when you want a robust entry level solution for the small office or point of sale applications. Typically you use SPEED because you want to add extra serial ports to an existing computer system rather than replacing it with the considerable cost that entails. Higher data rates and ESD protection in the SPEED4+ make it suitable for any modem or ISDN TA application.

Note
To use the SPEED serial adaptor cards you must first install the drivers supplied with the card and then configure each card as required prior to mechanical installation. The installation procedure varies for different operating systems. Please read Before you start on page 18 in Chapter 2 Installing drivers and host cards before commencing installation.
Chapter 2 Installing drivers and host cards

You need to read this chapter if you want to install SPEED serial adaptor cards and associated software.

This chapter provides information about installing and configuring SPEED serial adaptor cards in PCI format.

Note
The procedure for installing and configuring SPEED serial adaptor cards varies for different operating systems. Please read Before you start on page 18 before commencing installation.

This chapter includes the following sections:

• Before you start on page 18
• Down loading SPEED drivers from the Perle web site on page 19
• Installing under SCO OpenServer on page 20
• Installing under SCO UnixWare on page 35
• Installing under Windows 95 and 98 on page 47
• Installing under Windows NT on page 57
• Installing under Windows 2000/XP/Server 2003/Vista/Server 2008 on page 58
• Installing under Linux on page 64
• Installing a PCI host card on page 69
• Removing host cards on page 70.
Before you start

Before you install your SPEED host cards and software, note that the procedure for installing and configuring SPEED serial adaptor 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 under SCO OpenServer on page 20.
- Installing under SCO UnixWare on page 35
- Installing under Windows 95 and 98 on page 47
- Installing under Windows NT on page 57
- Installing under Linux on page 64.
You can install the SPEED driver and utility software from the Perle web site. To do this proceed as follows:

1. On your PC, start the Internet browser or FTP Client you want to use (for example, Netscape).
2. Within your Internet browser window or FTP client, select the software directory using the following URL:
   http://www.perle.com/downloads
   The software directory is now displayed.
3. Change to the software directory.
   The software directory is now displayed.
4. Download the zip files in this directory to a suitable location on your PC for example, /tmp.
5. Uncompress the files using a suitable utility.
6. You can now install the driver software using the correct procedure for your operating system. See Before you start on page 18.

Note
In the event of any problems contact your System Administrator or Internet Service provider for assistance.
Installing under SCO OpenServer

This section tells you how to install host cards, software drivers and utilities under the SCO OpenServer operating system and includes the following:

• General installation procedure for SCO OpenServer on page 21
• Installing device drivers and utilities on page 22
• Configuring SPEED serial ports on page 28
• Removing SPEED drivers and utilities from your system on page 33.
**General installation procedure for SCO OpenServer**

The general procedure for installing and configuring host cards, drivers software and associated utilities for the SCO OpenServer operating system is as follows:

1. Install any PCI host cards you require into your system. See [Installing a PCI host card](#) on page 69.
2. Install the SPEED SCO OpenServer drivers and utilities onto your system using the procedures described in [Installing device drivers and utilities](#) on page 22.
3. If required, remove any host cards you want from your system. See [Removing host cards](#) on page 70.
4. Using the [Port Configuration tool](#), configure the serial ports you have added to the system. See [Configuring SPEED serial ports](#) on page 28.

Your system can now use the serial adaptor cards you have installed. If required, you can reconfigure serial ports following initial installation.
Installing device drivers and utilities

To install the SPEED 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/speed/openserver` (SCO OpenServer 5)
- `/cdrom/drivers/speed/openserver6` (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.

13. In the pop-up window, click on the Continue button to continue the installation process.

The following progress message is now displayed.

```
<table>
<thead>
<tr>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installing</td>
<td>Perle Speed Driver (ver 1.0.0)</td>
</tr>
<tr>
<td>Installation Phase</td>
<td>Configuring the component parameters</td>
</tr>
<tr>
<td>Installation Status</td>
<td>Executing ccs script /opt/K/Perle/SPD_Drive</td>
</tr>
</tbody>
</table>
```

The Speed Installation Options window is now displayed.

14. 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.

15. (SCO OpenServer 5 only) If you wish to retain the existing configuration from a previous device driver installation, in the Speed Installation Options window, select Retain Configuration Data.
16. In the Speed Window Installation menu, click on **Options > Close** 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.

   ![Information Message](image)

   During this installation, the kernel was relinked. You must reboot your system to make this kernel effective.

   ![OK Button](image)

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

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

   ![Message](image)

   Installation complete

   ![OK Button](image)

18. 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.

   ![Software Manager](image)

   Host Software View Options

   All software on scosys

   SCO OpenServer Release 6.00 (ver 6.0.0+)
   OSS702C pkgadd Supplement (ver 1.0.0)
   SCO OpenServer Release 6.00 Maintenance Pack 1 (ver 1.0.0+)

   View All Total 4 Selected 1

   The selected software is fully installed.
19. In the Software Manager window, click on the **Host > Exit** menu option to close the window.

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

You can now continue with the rest of the installation process see **General installation procedure for SCO OpenServer** on page 21.

**Serial port naming conventions**

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

<table>
<thead>
<tr>
<th>Device name</th>
<th>Function</th>
<th>Description</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>ttyZ1</td>
<td>Normal communications port for local &quot;tty&quot; devices.</td>
<td>Indicates normal communications port behaviour.</td>
<td>/dev</td>
</tr>
<tr>
<td>ttyZ1</td>
<td>Modem port.</td>
<td>Indicates that a port open will not complete unless DCD is present.</td>
<td>/dev</td>
</tr>
<tr>
<td>ttyZ1p</td>
<td>Transparent print port.</td>
<td>Indicates that device should only be used for transparent print.</td>
<td>/dev</td>
</tr>
</tbody>
</table>
Configuring SPEED serial ports

The Port Configuration utility allows you to configure the extra SPEED serial ports you have added to your system. To do this proceed as follows:

Note

If you want to perform transparent printing from any of the terminals attached to your system, you need to check the contents of the printcap.spd file to see if the terminal type you are using is supported. To do this proceed as follows,

1. Using a text editor, go to the /etc directory and open the file called printcap.spd

2. Check the contents of the printcap.spd file to see if the terminal type you are using is supported. See page 94 in Appendix B Transparent Printing for the syntax of the entries in this file.

3. If the terminal type you are using is not supported, add an entry for the new terminal type (including the type, transparent print ON and transparent print OFF strings) to the printcap.spd file (page 94). See the user guide for your terminal for details of the entries required.

You can now configure the ports you want using the Port Configuration utility.

Starting the Port Configuration utility

1. In the command prompt, type spdpcfg and press the Enter key. Alternatively use the SCO OpenServer desktop as follows;
   a. In the SCO OpenServer desktop, open the System Administration folder.
   b. In the System Administration window, click on the Speed folder in SCO OpenServer 5 or the Perle-Serial folder in SCO OpenServer 6 to open it.
   c. In the Speed window, click on the Speed Port Configuration Icon.
The Port Configuration window is now displayed as shown in the next picture.

Select one or more ports from this list.

Select a getty definition here. See page 30.

Menus see page 86.

Enables or disables login. See page 31.

Select a terminal type here. See page 31.

Enables or disables flow control. See page 31.

Transparent print flow control:

Login Session: [Enable] [Disable]
2. In the Port Configuration window, select the ports you want to configure by clicking on one or more items in the list of ports (example in next picture).

**Hint**
To select multiple items which follow each other in the list, hold down the **Shift** key and click on all the items you want.
To select multiple items from anywhere in the list, hold down the **Ctrl** key and click on all the items you want.

3. In the Port Configuration window, select the getty definition you want by double clicking on an item in the **Available gettydefs** list. Alternatively, click on the **Set** button.

The list of currently selected ports is now updated to show the new getty definition.
Selecting terminal type

4. In the Terminal type list, double click on the terminal type you want for the currently selected ports. Alternatively, single click on the item you want in the Terminal type list and press the Set button.

   The list of ports is now updated to show the new terminal type.

Enabling and disabling flow control

5. If required, in the Port Configuration window, click on the IOC button to enable flow control for Transparent printing.

   Note
   For information about transparent printing, see Appendix B Transparent Printing.

6. If required, in the Port Configuration window, click on the Ixany button to enable sending of data on receipt of the next character (when flow control is enabled on the transparent print port).

Setting up a port login

7. In the Port Configuration window, click on one of the menu options shown in the next table to display the ports with the login status you want to change. For example, ports without logins enabled.

   These options allow you to filter on the type of ports you are looking for. This facility is helpful when you have a large number of ports installed.

<table>
<thead>
<tr>
<th>To Display</th>
<th>Click menu option</th>
</tr>
</thead>
<tbody>
<tr>
<td>All ports with logins enabled</td>
<td>Ports &gt; Logins</td>
</tr>
<tr>
<td>All ports without logins enabled</td>
<td>Ports &gt; Unconfigured</td>
</tr>
<tr>
<td>Display all ports</td>
<td>Ports &gt; All</td>
</tr>
</tbody>
</table>
8. If required, in the Port Configuration window, select the ports whose logins status you want to change, then click on one of the following to change the login status:

<table>
<thead>
<tr>
<th>To</th>
<th>Click on...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable logins for a port</td>
<td>Enable button</td>
</tr>
<tr>
<td>Disable logins for a port</td>
<td>Disable button</td>
</tr>
</tbody>
</table>

The selected ports in the list now are updated show their new login status. For example if you enable the login for a port, a tick is displayed along side the port as shown in the next picture.

9. Repeat steps 2. to 8. until you have configured all the ports you want.

10. In the Port Configuration menu, click on **Ports > Save & Exit**.

**Exiting the Port Configuration tool**

To quit the Port Configuration tool without saving changes,
- In the Port Configuration menu, click on **Ports > Quit**.

The Port Configuration tool now closes and saves any changes you have made.
Removing SPEED 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.

   ![Kernel re-link message](image)

   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 under SCO UnixWare

This section tells you how to install host cards, software drivers and utilities under the SCO UnixWare operating system and includes the following:

• General installation procedure for SCO UnixWare on page 36
• Installing drivers and utilities onto your system on page 37
• Configuring serial ports on page 40
• Configuring serial ports under SCO UnixWare 2 on page 45
• Removing SPEED drivers and utilities from your system on page 46.
General installation procedure for SCO UnixWare

The general procedure for installing and configuring host cards, drivers software and associated utilities for the SCO UnixWare operating system is as follows:

1. Install any PCI host cards you require into your system. See Installing a PCI host card on page 69

2. If required, install the SPEED SCO UnixWare drivers and utilities onto your system using the procedures described in Installing drivers and utilities onto your system on page 37.

3. If required, remove any host cards you want from your system. See Removing host cards on page 70.

4. Using the Serial Manager utility, configure the serial ports you have added to the system. See Configuring serial ports on page 40.

Your system can now use the serial adaptor cards you have installed. If required, you can reconfigure serial ports following initial installation.

Note

Once you have installed the SPEED drivers, if you add or remove any host cards the operating system will update the kernel accordingly using the spdconf program.

spdconf is run automatically during boot up and checks to see if any host cards have been added or removed since the last time the system was powered up. If anything has changed the files which identify the ports, terminals and transparent printing are updated.

Note

If you are running version 2 of the SCO UnixWare operating system you need to use the procedures described in Configuring serial ports under SCO UnixWare 2 on page 45 to configure your serial ports.
Installing drivers and utilities onto your system

To install the SPEED device drivers and utilities for the SCO UnixWare 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, type `scoadmin`.
   The System Administration window is now displayed.
4. In the System Administration window, double click on the Filesystem Manager folder.
   The Filesystem Manager window is now displayed.
5. In the Filesystem Manager menu, click on **Mount > Add Mount Configuration >Local**.
   The Add Local Mount Configuration window is now displayed.

![Add Local Mount Configuration window](image)

6. In the Add Local Mount Configuration window, set only the options detailed in the next table:

<table>
<thead>
<tr>
<th>Option</th>
<th>Set to or enter:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device File</td>
<td><code>select cdrom</code> or string containing cdrom</td>
</tr>
<tr>
<td>Mount Point</td>
<td><code>/cdrom</code></td>
</tr>
<tr>
<td>Access Mode</td>
<td><code>Read-only</code></td>
</tr>
<tr>
<td>When to Mount</td>
<td><code>Now</code>, <code>At System Startup</code></td>
</tr>
</tbody>
</table>

**SPEED Serial Adaptors User guide**

Installing under SCO UnixWare

Chapter 2 Installing drivers and host cards

Page 38
7. In the Add Local Mount Configuration window, click on OK to accept the settings and close the window. The Filesystem Manager window is now updated to show the new mount as shown in the next picture.

![Filesystem Manager on hp.netserve.jpg](image)

<table>
<thead>
<tr>
<th>Mount Status of Filesystems on hp.netserve49.specialic.co.uk</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Filesystem</td>
<td>Mount Point</td>
</tr>
<tr>
<td>/processorsfs</td>
<td>/system/processor</td>
</tr>
<tr>
<td>/tmp</td>
<td>/tmp</td>
</tr>
<tr>
<td>patch.specialic.co.uk</td>
<td>/u</td>
</tr>
<tr>
<td>/var</td>
<td>/var</td>
</tr>
<tr>
<td>/dev/cdrive/c10025</td>
<td>/cdrom</td>
</tr>
<tr>
<td>Total: 12 Items</td>
<td></td>
</tr>
</tbody>
</table>

8. Filesystem Manager menu, click on Host > Exit to close the window.

9. At the command prompt, type:

```
pkgadd -d /cdrom/drivers/speed/unixware/spd.pkg spd
```

10. 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 SPEED cards are ready to use.

Note

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

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
If you are running version 2 of the SCO UnixWare operating system you need to use the procedures described in Configuring serial ports under SCO UnixWare 2 on page 45 to configure your serial ports.

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;

Note
If you want to perform transparent printing from any of the terminals attached to your system, you need to check the contents of the printcap.spd file to see if the terminal type you are using is supported. To do this proceed as follows;
1. Using a text editor, go to the /etc directory and open the file called printcap.spd
2. Check the contents of the printcap.spd file to see if the terminal type you are using is supported. See page 94 in Appendix B Transparent Printing for the syntax of the entries in this file.
3. If the terminal type you are using is not supported, add an entry for the new terminal type (including the type, transparent print ON and transparent print OFF strings) to the printcap.spd file (page 94). See the user guide for your terminal for details of the entries required.
4. If you have made any changes then type spdconf in order to re-configure the print port settings.

You can now configure the ports you want using the Serial Manager utility.
1. At the command prompt, type `scoadmin`
   
The System Administration window is now displayed as shown in the next picture.

![System Administration window](image1)

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.

![Serial Manager window](image2)
3. 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:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Set to</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port Type</td>
<td>No change, should already be set to software flow control</td>
</tr>
<tr>
<td>Configure port</td>
<td>incoming only</td>
</tr>
<tr>
<td>Speed</td>
<td>the speed value you require</td>
</tr>
</tbody>
</table>
6. In the Modify Serial Port window, click on the **Port settings** button. The Port settings window is now displayed.

![Port settings window](image)

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.
**Configuring serial ports under SCO UnixWare 2**

**spxadmport**  
SCO UnixWare 2 does not include the graphical user interface based Serial Manager utility. If you are running SCO UnixWare 2 on your computer, you need to run the `spxadmport` script from the command line to configure SPEED serial ports. You use this by typing a single line command which contains the information required for a given configuration task using the following syntax:

**Syntax**  
```
/etc/spxadmport command svctag [label] [owner]
```

where:

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>command</td>
<td>add, enable, disable, remove or list.</td>
<td>remove</td>
</tr>
<tr>
<td>svctag</td>
<td>device number from /dev/term.</td>
<td>z1</td>
</tr>
<tr>
<td>label</td>
<td>/etc/ttydefs entry (optional).</td>
<td>9600</td>
</tr>
<tr>
<td>owner</td>
<td>user ID assigned to the port (optional).</td>
<td>root</td>
</tr>
</tbody>
</table>

**Procedure**  
To use the `spxadmport` script to configure your SPEED serial ports proceed as follows:

1. At the command prompt, type one of the commands detailed in the next table using the following syntax:

```
/etc/spxadmport [command] [svctag] [label] [owner]
```

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Example command</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add</td>
<td>Adds a serial port to the service monitor (spdmon) and enables the port for monitoring logins.</td>
<td><code>/etc/spxadmport add z1 9600 root</code></td>
</tr>
<tr>
<td>Enable</td>
<td>Enables a previously disabled port for monitoring.</td>
<td><code>/etc/spxadmport enable</code></td>
</tr>
<tr>
<td>Disable</td>
<td>Disables a port. Has the effect of disabling all further logins on this port.</td>
<td><code>/etc/spxadmport disable z1</code></td>
</tr>
<tr>
<td>Remove</td>
<td>Removes the selected serial port from the service monitor (spdmon).</td>
<td><code>/etc/spxadmport remove z1</code></td>
</tr>
<tr>
<td>List</td>
<td>Lists the currently defined services and/or port monitors.</td>
<td><code>/etc/spxadmport list</code></td>
</tr>
<tr>
<td>List p</td>
<td>Lists all logins configured.</td>
<td><code>/etc/spxadmport list p</code></td>
</tr>
<tr>
<td>List s</td>
<td>Lists all port services configured.</td>
<td><code>/etc/spxadmport list s</code></td>
</tr>
</tbody>
</table>
2. Press the Enter key.

The revised SPEED port configuration is now adopted by the system.

Removing SPEED drivers and utilities from your system

To remove the软件 drivers from your system under the SCO UnixWare operating system proceed as follows:

1. At the command prompt, type `pkg rm spd` and press Enter

The SPEED driver and associated utilities are now removed from your system.
Installing under Windows 95 and 98

This section tells you how to install host cards, software drivers and utilities under the Windows 95 and Windows 98 operating systems and includes the following:

- General installation procedure for Windows 95 and 98 on page 48
- Installing device drivers and utilities on page 49
- Configuring SPEED serial ports on page 51
- Removing SPEED drivers and utilities from your system on page 55.
General installation procedure for Windows 95 and 98

The general procedure for installing and configuring host cards, drivers software and associated utilities for the Windows 95 and 98 operating systems is as follows:

1. Download the SPEED driver files into your PC from the CDROM or the Perle website. See Down loading SPEED drivers from the Perle web site on page 19.
2. Install any PCI host cards you require into your system. See Installing a PCI host card on page 69.
3. Install the SPEED Windows 95 and 98 drivers and utilities onto your system using the procedures described in Installing device drivers and utilities on page 49.
4. If required, remove any host cards you want from your system. See Removing host cards on page 70.

Your system can now use the serial adaptor cards you have installed. If required, you can reconfigure serial ports following initial installation. See Configuring SPEED serial ports on page 51.

Note
To remove the SPEED Windows 95 and 98 drivers and utilities from your system, see page 55.
Installing device drivers and utilities

To install the SPEED device drivers and utilities for the Windows 95 or 98 operating systems proceed as follows:

1. Load the CDROM into your PC.
   The web browser window is now displayed automatically showing a virtual website for your Perle product (the browser application depend on your system).

2. From the `drivers\speed\win9x` directory, run the `setup.exe` file.
   A welcome window is now displayed

3. In the Welcome window, click on the **Next >** button.
   A progress message is displayed while installed devices are upgraded to use the new drivers, followed by the Setup Complete window as shown in the next pictures.
4. In the Setup Complete window click select the **Yes, I want to restart my computer now** option then click on **Finish** button to confirm your selection.

**Hint**

After the machine restarts, if windows cannot find a file whilst trying to install a device, a pop-up window is displayed asking you for the location of missing file. To remedy this;

- In the popup window, select the windows system directory for example, `c:\windows\system`.

Device installation should then be able to continue.

Installation of device drivers and utilities is now complete.
Configuring SPEED serial ports

1. In the windows desktop, click on the Start button and select Settings > Control panel.
   The control panel window is now displayed.
2. In the control panel window, double click on the **System** icon. The System Properties tabbed window is now displayed as shown in the next picture.

**Hint**
You can also display the **System Properties** tabbed window by right clicking on the **My Computer** icon on your desktop and selecting the **Properties** menu option.

3. In the System Properties tabbed window, click on the **Device Manager** tab. The Device Manager page is now displayed.

4. In the Device Manager page, double click on the device whose properties you wish to view. The properties tabbed window for the selected device is now displayed.
5. In the properties window, click on the **Settings** tab. The Settings page is now displayed.

![Settings Page](image)

6. In the Settings page, select the configuration values you want and either click on the **OK** button or click on the **Advanced** tab to display details of the device driver.
7. The Advanced page is now displayed as shown in the next picture:

Selects the port name for a given device.

Allows you to select the default port name or change it to any unused port name.

Default display is the currently assigned port name.

---

Caution

It is strongly recommended that you do not make changes to the FIFO trigger levels or com port name unless you have a valid reason to do so.

Re-configuration of ports is now complete.
Removing SPEED drivers and utilities from your system

To remove SPEED drivers and utilities from your system proceed as follows;

1. In the windows desktop, click on the Start button and select Settings > Control panel.
   The control panel window is now displayed.
2. In the control panel window, double click on the **System** icon.
   The System Properties tabbed window is now displayed as shown in the next picture.

3. In the System Properties tabbed window, click on the **Device Manager** tab.
   The Device Manager page is now displayed.

4. In the Device Manager page, click on the **View devices by type** button.
   The display is now updated to show installed devices by type.

5. In the Device Manager page, click on the device you wish to remove, highlighting it then
   press the **Remove** button.
   The selected device is now removed from the system.

**Warning**
If you remove the devices but do not remove the hardware, the devices will be re-installed when you next re-boot the machine or run the Hardware Wizard.
Installing under Windows NT

The procedure for installing and configuring host cards, drivers software and associated utilities for the Windows NT operating system is as follows:

1. Install any PCI host cards you require into your system. See Installing a PCI host card on page 69.
2. If required, remove any host cards you want from your system. See Removing host cards on page 70.
3. Use the PortDirector software to update your system with the revised number and type of host cards. See The PortDirector user guide part number 5500028 for further details.

Your system can now use the serial adaptor cards you have installed.

This section describes how to install the SPEED device driver software under Microsoft Windows 2000/XP/Server 2003/Vista/Server 2008.

This section includes the following:
- Installing device drivers and utilities onto your system on page 60
- Adding additional cards and/or updating drivers on page 62
- Configuring serial ports on page 62.

The general procedure for installing SPEED cards under the Windows 2000, XP, Server 2003, Vista, or Server 2008 operating systems is as follows;

1. Install or remove any PCI host cards you require on your system. See Installing a PCI host card on page 69 and Removing host cards on page 70.
2. Install the SPEED device driver software. See Installing device drivers and utilities onto your system on page 60.
3. If you add new SPEED cards, you should run Update Driver to make sure the new cards have the latest driver. See Adding additional cards and/or updating drivers on page 62.
4. If required, remove any host cards you want from your system. See Removing host cards on page 70.
5. Using the Windows 2000 Device Manager, configure the serial ports you have added to the system. See Configuring serial ports on page 62.
Installing device drivers and utilities onto your system

To install or enable the SPEED device drivers on your system proceed as follows;

1. Turn on your PC and if required, log in.
   If you have installed any new host cards a Found New Hardware message is briefly shown followed by the Found New Hardware wizard as shown in the pictures.

2. In the Found New Hardware wizard click on the Cancel button.

3. Download the latest SPEED driver 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.

4. 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 SPEED driver.
5. Double-click the `pserial-setup-<arch>.exe` installation executable and follow the installation wizard steps.

6. 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 SPEED port on your system.

Your SPEED driver installation is now finished.
Adding additional cards and/or updating drivers

Whenever you add any additional SPEED 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 device drivers and utilities onto your system on page 60.

Configuring serial ports

To configure SPEED serial ports under Windows 2000/XP/Server 2003/Vista/Server 2008, proceed as follows:

1. In the Windows desktop, click on the **Start** button and select **Settings > Control Panel**
   The control panel window is now displayed.
2. In the Control Panel window, click on the **System** icon.
   The System Properties tabbed window is now displayed.
3. In the System Properties window, click on the **Hardware** tab.
   The hardware page is now displayed.
4. In the Hardware page, click on the **Device Manager** button.
   The Device Manager window is now displayed.
5. In the Device Manager window, click on the Multiport serial adapters icon to display the currently installed devices.
6. In the Device Manager window, double click on the device whose properties you want to view or change
   The device Properties tabbed window is now displayed.
7. In the device Properties window, click on the **Port Settings** tab to display the Port Settings page.

![Port Settings window](image)

8. In the Port Settings page, set the **Port Number**, **Baud Rate** and other configuration parameters you require and then click on the **OK** button to save changes and close the window.

   The configuration process is now complete.
Installing under Linux

This section tells you how to install host cards, software drivers and utilities under the Linux operating system and includes the following:

- General installation procedure for Linux on page 65
- Installing drivers onto your system on page 66
- Creating devices for the attached ports on page 67.

Note
As of version 2.4.x of Linux, support for the SPEED driver is built into the operating system and does not require download of the patch file from our FTP site.
General installation procedure for Linux

The general procedure for installing and configuring host cards, drivers software and associated utilities for the Linux operating system is as follows:

1. Install any PCI host cards you require into your system. See Installing a PCI host card on page 69.
2. Install the SPEED Linux drivers onto your system using the procedures described in Installing drivers onto your system on page 66.
3. Create devices for the required ports using the procedures detailed in Creating devices for the attached ports on page 67.

Your system can now use the SPEED serial adaptor cards you have installed.
Installing drivers onto your system

To install the device driver proceed as follows:

<table>
<thead>
<tr>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>When installing SPEED drivers under Linux versions 2.2.x, you will need to apply a patch file to the kernel before enabling the drivers (step 6. of this procedure). You can find a kernel patch file on either of the following:</td>
</tr>
<tr>
<td>• The CDROM (in the /drivers/speed/linux directory) supplied with your Perle product.</td>
</tr>
<tr>
<td>As of Linux version 2.4.x, you do not need to apply a patch on this or later kernels, you can proceed straight to enabling the driver using step 6. of this procedure.</td>
</tr>
</tbody>
</table>

Using the kernel patch file

1. Make sure you have an up to date Linux kernel source directory installed. This can be obtained from ftp://ftp.linux.org or other major Linux web sites, along with instructions on how to install and build.
2. Copy the driver patch file onto your system in a temporary directory. For example, /tmp.
   The patch file will be named speed.patch-<driver vers>-<kernel vers>.gz
   For example, speed.patch-6-2.2.13.gz
3. At the command prompt, uncompress the driver patch file by typing gunzip /tmp speed.patch-6-2.2.13.gz and pressing the Enter key.
4. At the command prompt, change directory to the kernel source directory by typing cd /usr/src/linux and pressing the Enter key.
5. At the command prompt, apply the kernel patch by typing patch -p1 </tmp/speed.patch-6-2.2.13.gz and pressing the Enter key.

Enabling the driver

6. Enable the driver using the make config or make xconfig kernel utility. The SPEED driver appears in the Character devices section and is labelled SPEED system support. Set this to m for modules.
7. Within either the make config or the make xconfig kernel utility, set the Support more than 4 serial ports and Support special multport boards options to Y and enable Support for sharing serial interrupts.
8. Now rebuild and install the kernel and modules. See your Linux distribution documentation on how to rebuild and install a new kernel and modules. We recommend reading the Kernel-HOWTO available in /usr/doc/HOWTO.
Creating devices for the attached ports

After you have installed the new kernel & hardware, and have rebooted the machine, you need to create devices for the added ports. To do this proceed as follows:

1. At the command prompt, type `grep ttyS /var/log/messages` and press the Enter key to determine how many on board devices are present.

   The devices present on the system are now displayed as shown in the next example.

   ![Example of devices](example.png)

   This example shows 2 tty devices already present in the machine.

   ```
   Nov 12 09:41:43 pro800x2 kernel: ttyS00 at 0x03f8 (irq = 4) is a 16550A
   Nov 12 09:41:43 pro800x2 kernel: ttyS01 at 0x02f8 (irq = 3) is a 16550A
   ```

   First 2 nodes relate to the two tty devices already present in the machine, /dev/ttyS0 and /dev/ttyS1.

   You now need to create four more nodes to support of the SPEED4 card, ttyS2, ttyS3, ttyS4, and ttyS5. To do this proceed as follows:

2. At the command prompt, type `ls -l /dev/ttyS[0-9]*` and press the Enter key to determine the major and minor node numbers.

   The major and minor node numbers are now displayed as shown in the next example.

   ```
   crw-rw-rw- 1 root tty 4, 64 May 5 1998 /dev/ttyS0
   crw------- 1 root tty 4, 65 Nov 12 14:12 /dev/ttyS1
   ```

3. At the command prompt, enter the following commands (pressing the Enter key after each one) to create the next 4 nodes which must follow on from the ones already defined.

   For example, if S0 and S1 are already defined, then the next available serial port will be S2 (Note that the major node number will be the same as any existing device, but the minor node must be the next available).

   ```
   mknod /dev/ttyS2 c 4 66
   mknod /dev/ttyS3 c 4 67
   mknod /dev/ttyS4 c 4 68
   mknod /dev/ttyS5 c 4 69
   ```

   Same as that for /dev/ttyS0

   Uses next available number
4. If you require callout devices as well as tty devices, at the command prompt, type `ls -l /dev/cua[0-9]*` and press the Enter key to determine the major and minor node numbers for callout devices.

The major and minor node numbers are now displayed as shown in the next example.

```
crw-rw-rw- 1 root tty 4, 64 May 5 1998 /dev/cua0
crw------- 1 root tty 4, 65 Nov 12 14:12 /dev/cua1
```

5. At the command prompt, type the following (pressing the Enter key after each one):

```
mknod /dev/cua2 c 5 66
mknod /dev/cua3 c 5 67
mknod /dev/cua4 c 5 68
mknod /dev/cua5 c 5 69
```

Your system can now use the SPEED serial adaptor cards you have installed.
Installing a PCI host card

To install a PCI host card proceed as follows;

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.

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. For further details about installing host cards including other types, see Before you start on page 18.
Removing host cards

To remove a host card from your system proceed as follows;

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. Remove all cables plugged into the host card.
4. Undo the securing screw for the host card you want to remove then lift the card out of its slot as shown in the next picture.
5. Repeat step 4 until you have removed all the host cards you want.
6. Replace and secure the system cover.
7. Plug in the mains lead and turn on the power.

Removal of host cards is now complete. For further details about installation of host cards including other types, see Before you start on page 18.

**Note**
The exact location of host card slots varies for different systems, for exact mechanical details of your system, refer to your system documentation.

**Warning**
Dangerous voltages exist inside computer systems. Before removing host cards from your system, turn off the power supply and disconnect the mains lead.

**Caution**
Full anti-static precautions should be taken when handling host cards.
Chapter 3 SPEED Cabling Information

You need to read this chapter if you want cabling information for the Perle SPEED serial adaptor cards.

This chapter provides cabling and connector pinout information for the Perle SPEED serial adaptor cards. Included are details of standard cables for use with SPEED products available from Perle.

This chapter includes the following sections:
- SPEED cabling guide on page 73
- RJ45 socket pinouts on SPEED host cards on page 74
- SPEED cables available from Perle on page 76.
The type of cable and edge connectors used by the SPEED product range is shown in the next table.

<table>
<thead>
<tr>
<th>Product</th>
<th>Card edge connector</th>
<th>Cabling information</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPEED4</td>
<td>RJ45 8pin female. See page 74</td>
<td>RJ45 (8 pin) to DB9 male cable on page 77. RJ45 (8 pin) to DB25 male cable on page 78. RJ45 (8 pin) to DB25 female cable on page 79.</td>
</tr>
<tr>
<td>SPEED4+</td>
<td>RJ45 10 pin female. See page 75</td>
<td>RJ45 (10 pin) to DB9 male cable on page 80. RJ45 (10 pin) to DB25 male cable on page 81. RJ45 (10 pin) to DB25 female cable on page 82.</td>
</tr>
</tbody>
</table>
RJ45 socket pinouts on SPEED host cards

SPEED4 cards

The connector pinout for each RJ45 socket fitted to the SPEED4 PCI host card is as follows:

<table>
<thead>
<tr>
<th>RJ45 pin</th>
<th>Signal</th>
<th>Direction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DCD</td>
<td>In</td>
<td>Data Carrier Detect</td>
</tr>
<tr>
<td>2</td>
<td>DTR</td>
<td>Out</td>
<td>Data Terminal Ready</td>
</tr>
<tr>
<td>3</td>
<td>DSR</td>
<td>In</td>
<td>Data Set Ready</td>
</tr>
<tr>
<td>4</td>
<td>GND</td>
<td></td>
<td>Ground</td>
</tr>
<tr>
<td>5</td>
<td>TXD</td>
<td>Out</td>
<td>Transmit Data</td>
</tr>
<tr>
<td>6</td>
<td>RXD</td>
<td>In</td>
<td>Receive Data</td>
</tr>
<tr>
<td>7</td>
<td>RTS</td>
<td>Out</td>
<td>Request to send</td>
</tr>
<tr>
<td>8</td>
<td>CTS</td>
<td>In</td>
<td>Clear to Send</td>
</tr>
</tbody>
</table>
The connector pinout for each RJ45 socket fitted to the SPEED4+ PCI host card is as follows:

<table>
<thead>
<tr>
<th>RJ45 pin</th>
<th>Signal</th>
<th>Direction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RI</td>
<td>In</td>
<td>Ring Indicator</td>
</tr>
<tr>
<td>2</td>
<td>DCD</td>
<td>In</td>
<td>Data Carrier Detect</td>
</tr>
<tr>
<td>3</td>
<td>DTR</td>
<td>Out</td>
<td>Data Terminal Ready</td>
</tr>
<tr>
<td>4</td>
<td>DSR</td>
<td>In</td>
<td>Data Set Ready</td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
<td>-</td>
<td>Ground</td>
</tr>
<tr>
<td>6</td>
<td>TXD</td>
<td>Out</td>
<td>Transmit Data</td>
</tr>
<tr>
<td>7</td>
<td>RXD</td>
<td>In</td>
<td>Receive Data</td>
</tr>
<tr>
<td>8</td>
<td>RTS</td>
<td>Out</td>
<td>Request To Send</td>
</tr>
<tr>
<td>9</td>
<td>CTS</td>
<td>In</td>
<td>Clear To Send</td>
</tr>
<tr>
<td>10</td>
<td>N/C</td>
<td>-</td>
<td>Not connected</td>
</tr>
</tbody>
</table>
SPEED cables available from Perle

This section provides connector pinout information for the following standard cables available from Perle:

- RJ45 (8 pin) to DB9 male cable on page 77
- RJ45 (8 pin) to DB25 male cable on page 78
- RJ45 (8 pin) to DB25 female cable on page 79
- RJ45 (10 pin) to DB9 male cable on page 80
- RJ45 (10 pin) to DB25 male cable on page 81
- RJ45 (10 pin) to DB25 male cable on page 81

Hint
To see which cables are used by a given SPEED product, see SPEED cabling guide on page 73.
**RJ45 (8 pin) to DB9 male cable**

**Cable diagram**

![Cable Diagram]

**Connector pinout table**

<table>
<thead>
<tr>
<th>RJ45 pin</th>
<th>DB9 Pin</th>
<th>Signal</th>
<th>Direction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>DCD</td>
<td>In</td>
<td>Data Carrier Detect</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>DTR</td>
<td>Out</td>
<td>Data Terminal Ready</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>DSR</td>
<td>In</td>
<td>Data Set Ready</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>GND</td>
<td></td>
<td>Ground</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>TXD</td>
<td>Out</td>
<td>Transmit Data</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>RXD</td>
<td>In</td>
<td>Receive Data</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td>RTS</td>
<td>Out</td>
<td>Request to send</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
<td>CTS</td>
<td>In</td>
<td>Clear to Send</td>
</tr>
<tr>
<td>Shell</td>
<td>Shell</td>
<td>Chassis</td>
<td></td>
<td>Chassis ground.</td>
</tr>
</tbody>
</table>
RJ45 (8pin) to DB25 male cable

Cable diagram

Connector pinout table

<table>
<thead>
<tr>
<th>RJ45 pin</th>
<th>DB25 Pin</th>
<th>Signal</th>
<th>Direction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8</td>
<td>DCD</td>
<td>In</td>
<td>Data Carrier Detect</td>
</tr>
<tr>
<td>2</td>
<td>20</td>
<td>DTR</td>
<td>Out</td>
<td>Data Terminal Ready</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>DSR</td>
<td>In</td>
<td>Data Set Ready</td>
</tr>
<tr>
<td>4</td>
<td>7</td>
<td>GND</td>
<td></td>
<td>Ground</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>TXD</td>
<td>Out</td>
<td>Transmit Data</td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td>RXD</td>
<td>In</td>
<td>Receive Data</td>
</tr>
<tr>
<td>7</td>
<td>4</td>
<td>RTS</td>
<td>Out</td>
<td>Request to send</td>
</tr>
<tr>
<td>8</td>
<td>5</td>
<td>CTS</td>
<td>In</td>
<td>Clear to Send</td>
</tr>
<tr>
<td>Shell</td>
<td>Shell</td>
<td>Chassis</td>
<td></td>
<td>Chassis ground</td>
</tr>
</tbody>
</table>
RJ45 (8pin) to DB25 female cable

Cable diagram

Connector pinout table

<table>
<thead>
<tr>
<th>RJ45 pin</th>
<th>DB25 Pin</th>
<th>Signal</th>
<th>Direction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8</td>
<td>DCD</td>
<td>In</td>
<td>Data Carrier Detect</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
<td>DTR</td>
<td>Out</td>
<td>Data Terminal Ready</td>
</tr>
<tr>
<td>3</td>
<td>20</td>
<td>DSR</td>
<td>In</td>
<td>Data Set Ready</td>
</tr>
<tr>
<td>4</td>
<td>7</td>
<td>GND</td>
<td></td>
<td>Ground</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>TXD</td>
<td>Out</td>
<td>Transmit Data</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>RXD</td>
<td>In</td>
<td>Receive Data</td>
</tr>
<tr>
<td>7</td>
<td>5</td>
<td>RTS</td>
<td>Out</td>
<td>Request to send</td>
</tr>
<tr>
<td>8</td>
<td>4</td>
<td>CTS</td>
<td>In</td>
<td>Clear to Send</td>
</tr>
<tr>
<td>Shell</td>
<td>Shell</td>
<td>Chassis</td>
<td></td>
<td>Chassis ground</td>
</tr>
</tbody>
</table>
RJ45 (10 pin) to DB9 male cable

Cable diagram

Pin numbers looking into connector

Connector pinout table

<table>
<thead>
<tr>
<th>RJ45 pin</th>
<th>DB9 pin</th>
<th>Signal</th>
<th>Direction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9</td>
<td>RI</td>
<td>In</td>
<td>Ring Indicator</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>DCD</td>
<td>In</td>
<td>Data Carrier Detect</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>DTR</td>
<td>Out</td>
<td>Data Terminal Ready</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>DSR</td>
<td>In</td>
<td>Data Set Ready</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>GND</td>
<td>In</td>
<td>Ground</td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td>TXD</td>
<td>Out</td>
<td>Transmit Data</td>
</tr>
<tr>
<td>7</td>
<td>2</td>
<td>RXD</td>
<td>In</td>
<td>Receive Data</td>
</tr>
<tr>
<td>8</td>
<td>7</td>
<td>RTS</td>
<td>Out</td>
<td>Request To Send</td>
</tr>
<tr>
<td>9</td>
<td>8</td>
<td>CTS</td>
<td>In</td>
<td>Clear To Send</td>
</tr>
<tr>
<td>10</td>
<td>N/C</td>
<td>N/C</td>
<td>-</td>
<td>Not connected</td>
</tr>
<tr>
<td>Shell</td>
<td>Shell</td>
<td>Chassis</td>
<td>-</td>
<td>Chassis</td>
</tr>
</tbody>
</table>
RJ45 (10pin) to DB25 male cable

Cable diagram

Connector pinout table

<table>
<thead>
<tr>
<th>RJ45 pin</th>
<th>DB25 pin</th>
<th>Signal</th>
<th>Direction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>22</td>
<td>RI</td>
<td>In</td>
<td>Ring Indicator</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td>DCD</td>
<td>In</td>
<td>Data Carrier Detect</td>
</tr>
<tr>
<td>3</td>
<td>20</td>
<td>DTR</td>
<td>Out</td>
<td>Data Terminal Ready</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>DSR</td>
<td>In</td>
<td>Data Set Ready</td>
</tr>
<tr>
<td>5</td>
<td>7</td>
<td>GND</td>
<td></td>
<td>Ground</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>TXD</td>
<td>Out</td>
<td>Transmit Data</td>
</tr>
<tr>
<td>7</td>
<td>3</td>
<td>RXD</td>
<td>In</td>
<td>Receive Data</td>
</tr>
<tr>
<td>8</td>
<td>4</td>
<td>RTS</td>
<td>Out</td>
<td>Request To Send</td>
</tr>
<tr>
<td>9</td>
<td>5</td>
<td>CTS</td>
<td>In</td>
<td>Clear To Send</td>
</tr>
<tr>
<td>10</td>
<td>N/C</td>
<td>N/C</td>
<td></td>
<td>Not connected</td>
</tr>
<tr>
<td>Shell</td>
<td>Shell</td>
<td>Chassis</td>
<td></td>
<td>Chassis</td>
</tr>
</tbody>
</table>
RJ45 (10pin) to DB25 female cable

Cable diagram

<table>
<thead>
<tr>
<th>RJ45 pin</th>
<th>DB25 pin</th>
<th>Signal</th>
<th>Direction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>22</td>
<td>RI</td>
<td>In</td>
<td>Ring Indicator</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td>DCD</td>
<td>In</td>
<td>Data Carrier Detect</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>DTR</td>
<td>Out</td>
<td>Data Terminal Ready</td>
</tr>
<tr>
<td>4</td>
<td>20</td>
<td>DSR</td>
<td>In</td>
<td>Data Set Ready</td>
</tr>
<tr>
<td>5</td>
<td>7</td>
<td>GND</td>
<td></td>
<td>Ground</td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td>TXD</td>
<td>Out</td>
<td>Transmit Data</td>
</tr>
<tr>
<td>7</td>
<td>2</td>
<td>RXD</td>
<td>In</td>
<td>Receive Data</td>
</tr>
<tr>
<td>8</td>
<td>5</td>
<td>RTS</td>
<td>Out</td>
<td>Request To Send</td>
</tr>
<tr>
<td>9</td>
<td>4</td>
<td>CTS</td>
<td>In</td>
<td>Clear To Send</td>
</tr>
<tr>
<td>10</td>
<td>N/C</td>
<td>N/C</td>
<td></td>
<td>Not connected</td>
</tr>
<tr>
<td>Shell</td>
<td>Shell</td>
<td>Chassis</td>
<td></td>
<td>Chassis</td>
</tr>
</tbody>
</table>
Chapter 4  Quick Reference

You need to read this chapter if you want information in quick reference form about the utilities provided with the SPEED Serial adaptor cards.

This chapter provides a quick reference guide to the software utilities provided with the SPEED Serial adaptor cards. The utilities are grouped under operating system and include main windows and menus. In addition, cross references are provided for further information about each area.

This chapter includes the following sections:

- SCO OpenServer utilities on page 85
- SCO UnixWare utilities on page 87
The following utilities are provided for use with the SCO OpenServer operating system.

- **Port Configuration utility** on page 85

### Port Configuration utility

**Main window**

The main window for the Port Configuration table is shown in the next picture. See [Menu map](#) on page 86 for details of menus.
Menu map

The Port Configuration tool menu is as follows:

<table>
<thead>
<tr>
<th>Menu option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ports &gt; Quit</td>
<td>Quit Port Configuration tool without saving changes. See page 32</td>
</tr>
<tr>
<td>Logins</td>
<td>Display all ports with logins enabled. See page 31</td>
</tr>
<tr>
<td>Unconfigured</td>
<td>Display all ports without logins enabled. See page 31</td>
</tr>
<tr>
<td>All</td>
<td>Display all ports. See page 31</td>
</tr>
<tr>
<td>Save &amp; Exit</td>
<td>Exit the Port Configuration tool and save changes. See page 32</td>
</tr>
</tbody>
</table>
SCO UnixWare utilities

Serial Manager

Main window
The main window for the Serial Manager is shown in the next picture. You can display this window in one of two views, Board view and Ports view. See page 88 for menu maps.

Boards view
Displays the host cards present on the system. To obtain this view, click on the View > Boards menu option.

Ports view
Displays the serial ports present on the system. To obtain this view, click on the View > Ports menu option.
The Serial Manager menu is as follows:

<table>
<thead>
<tr>
<th>Menu option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host &gt; Open Host</td>
<td>Selects a host machine. See your SCO UnixWare documentation for further details.</td>
</tr>
<tr>
<td>Exit</td>
<td>Exit Serial Manager.</td>
</tr>
<tr>
<td>Port &gt; Modify</td>
<td>Modifies serial port settings. See page 40.</td>
</tr>
<tr>
<td>View &gt; Ports</td>
<td>Show serial ports available for the currently selected host card. See page 40.</td>
</tr>
<tr>
<td>Boards</td>
<td>Show host cards present on the system. See page 40.</td>
</tr>
</tbody>
</table>
Appendix A Serial Port Device Names

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

You need to read this appendix if you want information about device names for the Perle SPEED serial adaptor cards.

This appendix provides information about the device nodes associated with each serial port for the Perle SPEED serial adaptor cards. Included are naming conventions, functions, file locations and some additional information about the Data terminal ready and Ready to send signals.

This chapter includes the following sections;

• Under SCO UnixWare on page 90
• Under SCO UnixWare on page 91
• Linux Device node details on page 91.
Each serial port has three device nodes associated with it. Each node takes the form of a file which you can access from operating system utilities and user applications. Details of these nodes are shown in the next table.

<table>
<thead>
<tr>
<th>Device name</th>
<th>Function</th>
<th>Description</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>ttyz1</td>
<td>Normal communications port for local &quot;tty&quot; devices.</td>
<td>Indicates normal communications port behaviour.</td>
<td>/dev</td>
</tr>
<tr>
<td>ttyZ1</td>
<td>Modern port</td>
<td>Indicates that a port open will not complete unless DCD is present</td>
<td>/dev</td>
</tr>
<tr>
<td>ttyz1p</td>
<td>Transparent print port.</td>
<td>Indicates that device should only be used for transparent print.</td>
<td>/dev</td>
</tr>
</tbody>
</table>
Under SCO UnixWare

Device node details

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

<table>
<thead>
<tr>
<th>Device name</th>
<th>Function</th>
<th>Description</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>z1</td>
<td>Normal communications port for local &quot;tty&quot; devices.</td>
<td>Indicates normal communications port behaviour.</td>
<td>/dev/term</td>
</tr>
<tr>
<td>Z1</td>
<td>Modern port</td>
<td>Indicates that a port open will not complete unless DCD is present</td>
<td>/dev/term</td>
</tr>
<tr>
<td>z1p</td>
<td>Transparent print port.</td>
<td>Indicates that device should only be used for transparent print.</td>
<td>/dev/term</td>
</tr>
</tbody>
</table>

Linux Device node details

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

<table>
<thead>
<tr>
<th>Device name</th>
<th>Function</th>
<th>Description</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>ttyS0</td>
<td>Normal communications port</td>
<td>Indicates normal communications port behaviour.</td>
<td>/dev</td>
</tr>
<tr>
<td>cua0</td>
<td>Modern communications port wait for DCD on open</td>
<td>This device is used when connecting modems to the serial port.</td>
<td>/dev</td>
</tr>
</tbody>
</table>
Appendix B Transparent Printing

You need to read this appendix if you want background information on transparent printing.

This appendix gives an overview of the transparent printing feature offered for the SCO OpenServer operating systems and includes details of configuration files associated with transparent printing.

This appendix includes the following sections;
- What is transparent printing? on page 93
- Problems with printer output on page 94
- The printcap spd configuration file on page 94
- The print spd configuration file on page 95
What is transparent printing?

Most terminals have an auxiliary (AUX) port which can be connected to a serial printer. Data can then be output to the terminal or the printer via the same serial line. This is called transparent print (or xprint) and is designed for printing simple ASCII text. A separate xprint device node (ttyin where \( n \) is device number) is created for each port. This device is enabled automatically if either the local or modem device is enabled for the port.

When a host card receives data addressed to the transparent print device it prefixes it with the transparent print mode ON string and appends it with the transparent mode OFF string. The ON and OFF strings for each terminal type available are defined by the `printcap.spd` file. See The printcap.spd configuration file on page 94 for more details.

When the host card receives data addressed to the transparent print device, it prefixes it with the Transparent Print Mode ON string and appends it with the Transparent Print Mode OFF string. Terminal I/O has absolute priority over printer output. Transparent print data will only be sent when there is a break in output to the terminal (for more than a tenth of a second).

For each port, the transparent printing parameters are controlled by an entry in the `printspd` file found in the `/etc` directory on your system. The entry for each port includes definitions of the terminal type, transparent print throughput rate and device name. See The print spd configuration file on page 95 for further details.
Problems with printer output

When you use transparent printing you may obtain incorrect printer output due to the following reasons:

Graphics printers may misinterpret some characters output through transparent print. This problem is more likely if the terminal is in 7-bit mode, because 8-bit characters will not be printed.

Some terminals suppress the output of certain characters to their printer or AUX ports. Such terminals can prevent essential control characters from reaching the printer thus generating incorrect printer output. This occurrence is extremely unpredictable because of the large number of potential hardware configurations.

The printcap.spd configuration file

The printcap.spd file defines the transparent print ON and OFF strings for each terminal type available. When a host card receives data addressed to the transparent print device it prefixes it with the transparent print mode ON string and appends it with the transparent mode OFF string.

Terminal type

ansi ^X ^T

Transparent print ON string

Transparent print OFF

If you don’t configure a specific terminal type printcap.spd will use the default type which is “unknown”
The print.spd configuration file

For each port, transparent printing is controlled by an entry in the print.spd file. The print.spd file is found in the /etc/ directory on your system. The entry for each port includes definitions of the terminal type, transparent print throughput rate, device name. The content of the print.spd file is normally controlled automatically by either the Port Configuration utility (SCO OpenServer). A sample entry from a typical print.spd file is shown in the next example.

```
100 unknown ttyz1 -ixany -ixon
```

- **Terminal type of terminal to which your printer is attached defined in the printcap.spd file.**
- **Device name**
- **Enables flow control for Transparent printing.**
- **Enables sending of data on receipt of the next character (when flow control is enabled on the transparent print port).**

**Maximum number of characters per second throughput for transparent printing**
Appendix C Troubleshooting

You need to read this appendix if you want information on troubleshooting problems with SPEED serial adaptor cards.

This appendix provides examples of normal boot up messages and a table of error messages, their meaning and corrective action required for the all the currently supported operating systems.

This appendix includes the following sections;
• SCO OpenServer 5 on page 97.
• SCO UnixWare/SCO OpenServer 6 on page 100
• Windows 95 and 98 on page 104
• Windows NT on page 104
This example shows one SPEED4+ and one SPEED4 successfully detected and initialised by the driver.

Driver message - always displayed if installed and configured

Driver software version

Total number of SPEED ports

IRQ level

Host card base address in hexadecimal

Host card type

Host card ID number

unit:0 - Speed4+ card @0xFDFF9000 - OK
unit:1 - Speed4 card @0xFDFFC000 - OK
Total Speed Ports : 8
Additional card warning messages

If you install more than one SPEED host card, or install additional cards at a later date, the following warning messages will be displayed (they appear immediately following the driver initialisation messages shown on page 97).

**Note**
Display of these messages and update of Speed Node and Init files only occurs once after installation of additional cards. This takes place during system start-up.

<table>
<thead>
<tr>
<th>Message</th>
<th>This message tells you that...</th>
</tr>
</thead>
<tbody>
<tr>
<td>WARNING: Speed Node file updated - old file moved to /etc/conf/node.d/spd_8888888888</td>
<td>The speed node file has been updated to include the revised number of ports.</td>
</tr>
<tr>
<td></td>
<td>Your old Speed node file is retained with the file name shown in the message. '88888888'</td>
</tr>
<tr>
<td></td>
<td>is a unique number so that previous Speed node files are not lost on updating.</td>
</tr>
<tr>
<td>WARNING: New Speed ports detected - /etc/conf/node.d/spd being updated</td>
<td>You now have additional entries in the Speed init file, existing entries are retained unchanged.</td>
</tr>
<tr>
<td></td>
<td>The automatic init file update is necessary to make any additional nodes available in the Speed Port Configuration tool.</td>
</tr>
</tbody>
</table>

**Hint**
If you have modified your Speed node file, (for example you may have changed the default permission for security reasons), you may wish to re-instate the previous node set-up for existing Speed ports.
If you have not modified your Speed node file or do not require to retain the old settings you may safely delete the file shown in the first message.
### SCO OpenServer 5 error messages

<table>
<thead>
<tr>
<th>Error message</th>
<th>Reason</th>
<th>Action required</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERROR: unit @0xnnnnnnnn has bad resource(s)</td>
<td>Incorrectly installed or faulty card. Incorrect BIOS settings.</td>
<td>1. Ensure that you have followed the installation procedure correctly. See page 21. 2. Check BIOS settings. 3. If the problem persists try another card. See page 21 and page 69.</td>
</tr>
<tr>
<td>ERROR: unit @0xnnnnnnnn not mapped</td>
<td>Insufficient memory available to kernel.</td>
<td>Reconfigure system/kernel memory parameters.</td>
</tr>
<tr>
<td>ERROR: unit @0xnnnnnnnn not initialised</td>
<td>Incorrectly installed or faulty card.</td>
<td>1. Ensure that you have followed the installation procedure correctly. See page 21. 2. If the problem persists try another card. See page 21 and page 69.</td>
</tr>
<tr>
<td>WARNING: unit @0xnnnnnnnn not configured</td>
<td>System error.</td>
<td>1. Uninstall the driver and remove all Speed cards from the system. See page 33. 2. Re-install the driver and cards taking care to follow the correct procedure. See page 21 and page 69.</td>
</tr>
<tr>
<td>WARNING: No Speed ports configured</td>
<td>No cards installed. Installed cards suffer from one or more of above symptoms.</td>
<td>1. Install cards. See page 69. 2. Resolve any above listed faults.</td>
</tr>
</tbody>
</table>
There are no messages displayed on the system at startup. Messages from the SPEED driver are sent to the `/var/adm` directory. Each entry in the `syslog` file is date and time stamped. You can review the content of the `syslog` file using a suitable text editor. Each time the driver is loaded, entries similar to those shown below indicate successful SPEED card detection.

```
Apr 26 16:05:15 pwredge3 unix:  Speed Unixware Driver v1.0.0 Apr 26 2000 15:56:35
Apr 26 16:05:15 pwredge3 unix: Copyright (c) 2000 Perle Systems Ltd
Apr 26 16:05:15 pwredge3 unix: unit:0 - Speed4 card @0xFDFF9000 using IRQ:10 - OK
Apr 26 16:05:15 pwredge3 unix: unit:1 - Speed4+ card @0xFDFFD000 using IRQ:15 - OK
Apr 26 16:05:15 pwredge3 unix: Total Speed Ports : 8
Apr 26 16:05:15 pwredge3 unix: unit:1 - Speed4+ card @0xFDFFD000 using IRQ:15 - OK
```
### Additional card warning messages

If you install more than one SPEED host card, or install additional cards at a later date, the following warning messages will be displayed during system start-up.

**Note**
Display of these messages and update of Speed Node and init files only occurs once after installation of additional cards. This takes place during system start-up.

<table>
<thead>
<tr>
<th>Message</th>
<th>This message tells you that...</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WARNING: Speed Node file updated</strong></td>
<td>The speed node file has been updated to include the revised number of ports.</td>
</tr>
<tr>
<td>- old file moved to /etc/conf/node.d/spd_~nnnnnnnn</td>
<td>Your old Speed node file is retained with the file name shown in the message. ‘~nnnnnnnn’ is a unique number so that previous Speed node files are not lost on updating.</td>
</tr>
<tr>
<td><strong>WARNING: New Speed ports detected</strong></td>
<td>You now have additional entries in the Speed init file, existing entries are retained unchanged. The automatic init file update is necessary to make any additional nodes available in the Speed Port Configuration tool.</td>
</tr>
<tr>
<td>- /etc/conf/node.d/spd being updated</td>
<td></td>
</tr>
</tbody>
</table>

**Hint**
If you have modified your Speed node file, (for example you may have changed the default permission for security reasons), you may wish to re-instate the previous node set-up for existing Speed ports.
If you have not modified your Speed node file or do not require to retain the old settings you may safely delete the file shown in the first message.
### SCO UnixWare error messages

<table>
<thead>
<tr>
<th>Error message</th>
<th>Reason</th>
<th>Action required</th>
</tr>
</thead>
</table>
| ERROR: unit @0xnnnnnnnn has bad resource(s)       | Incorrectly installed or faulty card.       | 1. Ensure that you have followed the installation procedure correctly. See page 36.  
2. Check BIOS settings.                           |
|                                                   | Incorrect BIOS settings.                    | 3. If the problem persists try another card. See page 36 and page 69.          |
| ERROR: unit @0xnnnnnnnn not mapped                | Insufficient memory available to kernel.    | Reconfigure system/kernel memory parameters.                                  |
| ERROR: unit @0xnnnnnnnn not initialised           | Incorrectly installed or faulty card.       | 1. Ensure that you have followed the installation procedure correctly. See page 36.  
2. If the problem persists try another card. See page 36 and page 69.          |
| WARNING: unit @0xnnnnnnnn not configured           | System error.                               | 1. Uninstall the driver and remove all Speed cards from the system. See page 46.  
2. Re-install the driver and cards taking care to follow the correct procedure. See page 36 and page 69. |
| Error: could not register interrupt handler for unit @0xnnnnnnnn | System error                                | 1. Uninstall the driver and remove all Speed cards from the system. See page 46.  
2. Re-install the driver and cards taking care to follow the correct procedure. See page 36 and page 69. |
| WARNING: No Speed ports configured                | No cards installed.                         | 1. Install cards. See page 69.                                                 
2. Resolve any above listed faults.                |
UX: sh (sh): ERROR: telinit: Not found
(Note this error occurs on UnixWare 2 systems only)

- telinit command not found
- None. The installation process takes care of configuring the kernel and ensures that SPEED ports are ready for use when the installation process is complete.

- Unable to open device /dev/spd: No such device
- No SPEED cards installed during driver installation.
- 1. Install cards. See page 69.
  Note that there is no need to uninstall and re-install the driver. When the system is rebooted, your SPEED cards will be detected and configured into the kernel.

### Error message | Reason | Action required
--- | --- | ---
UX: sh (sh): ERROR: telinit: Not found (Note this error occurs on UnixWare 2 systems only) | telinit command not found | None. The installation process takes care of configuring the kernel and ensures that SPEED ports are ready for use when the installation process is complete.
Unable to open device /dev/spd: No such device | No SPEED cards installed during driver installation. | 1. Install cards. See page 69.
Note that there is no need to uninstall and re-install the driver. When the system is rebooted, your SPEED cards will be detected and configured into the kernel.
Windows 95 and 98

Windows 95 and 98 general troubleshooting

In the event of any problems, open the System Properties tabbed window and display the Device Manager page. In the Device Manager page, check for warning icons on the installed hardware. See your Windows 95 or 98 user documentation or help system for further details.

Windows NT

Windows NT general troubleshooting

In the event of any problems, open the Devices window to view the status of any installed hardware. For further details of troubleshooting under Windows NT, see your Windows NT user documentation or help system.
This section describes troubleshooting SPEED products under the Windows 2000/XP/Server 2003/Vista/Server 2008 operating system and includes the following sections:

- Windows error messages on page 107.

Note
To contact Perle for technical support, see Appendix D Contacting Perle.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Action required</th>
</tr>
</thead>
</table>
| Machine fails to boot.                                                 | 1. Turn off your machine, remove SPEED card(s) and reboot. See page 70.  
2. Try installing a different host card in case the one currently installed is faulty. See page 69. |
| Windows operating system fails while loading and the system hangs.     | 1. Reboot machine and then switch to the last known good configuration.  
2. Check for resource conflicts or faulty hardware.  
3. Turn off machine, remove any SPEED cards fitted (page 70) and then reboot your system.  
4. Once the machine boots properly, change the configuration settings of the SPEED card to match those in the BIOS setup. See page 69. |
| Windows operating system fails while loading and displays a blue screen.| 1. Note the five hexadecimal numbers at the top line of the screen  
2. Reboot your machine and then switch to the last known good configuration.  
3. Check for resource conflicts or faulty hardware.  
4. Turn off machine, remove any SPEED cards fitted (page 70) and then reboot your system.  
5. Once the machine boots properly, change the configuration settings of the SPEED card to match those in the BIOS setup. See page 69. |
| Operating system loads OK, but SPEED driver or another driver fails to boot. | 1. Run Windows Device Manager to find available IRQ and memory addresses. |
| SPEED ports do not work after installation.                            | 1. Check the Windows Event Log and follow the suggested actions. |
Windows error messages

In the event of any error messages, check the Windows Event Log. Also open the Windows Device Manager and check for warning icons on the installed hardware. See your Windows user documentation or help system for details.


<table>
<thead>
<tr>
<th>Problem</th>
<th>Action required</th>
</tr>
</thead>
</table>
| SPEED Windows driver fails during normal operation, symptom: blue screen | 1. Note the five hexadecimal numbers displayed at the top line of the screen.  
2. Reboot your machine and then switch to the last known good configuration.  
3. Check for resource conflicts or faulty hardware.  
4. Turn off machine, remove any SPEED cards fitted (page 70) and then reboot your system.  
5. Once the machine boots properly, change the configuration settings of the SPEED card to match those in the BIOS setup. See page 69. |
| SPEED Windows driver fails during normal operation, symptoms either: black screen, machine reboots, or system hangs | 1. Contact Technical Support. See Appendix D Contacting Perle. |
Appendix D Contacting Perle

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 109
• Repair procedure on page 112
• Feedback about this manual on page 112
• Contacting Perle technical support on page 113

Internet access

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

Email

Click here to email Perle at the following address;
Email: ptac@perle.com
**Making a technical Support Query**

This section contains the following information about making a query:

- **Who to contact** on page 109
- **Information needed when making a query** on page 110
- **Making a support query via the Perle web page** on page 111

**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 using the details given in **Contacting Perle technical support** on page 113.
**Information needed when making a query**

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

<table>
<thead>
<tr>
<th>Item</th>
<th>Write details here</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product name and version</td>
<td></td>
</tr>
<tr>
<td>Problem description</td>
<td></td>
</tr>
<tr>
<td>Operating system version</td>
<td></td>
</tr>
<tr>
<td>Driver version</td>
<td></td>
</tr>
<tr>
<td>Details of any other cards installed in your system</td>
<td></td>
</tr>
<tr>
<td>Your name</td>
<td></td>
</tr>
<tr>
<td>Company Name</td>
<td></td>
</tr>
<tr>
<td>Country</td>
<td></td>
</tr>
<tr>
<td>Phone number</td>
<td></td>
</tr>
<tr>
<td>Fax number</td>
<td></td>
</tr>
<tr>
<td>Email address (if available)</td>
<td></td>
</tr>
</tbody>
</table>

Hint
Print out this page and fill in the table provided with the basic information you need.
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 Contacting Perle technical support on page 113 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 Contacting Perle technical support on page 113 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;

Email: ptac@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).
Contacting Perle technical support

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.
If you are unable to find the information you require, please feel free to contact our technical support teams by email using the addresses shown in the next table.

<table>
<thead>
<tr>
<th>Region</th>
<th>Address</th>
<th>Email</th>
</tr>
</thead>
</table>
| North America | Perle Systems Ltd.  
  60 Renfrew Drive  
  Markham  
  Ontario  
  Canada  
  L3R OE1 | Email: ptac@perle.com                                                  |
| Europe    | Perle Systems Europe Ltd.  
  3 Wintersells Road  
  Byfleet  
  Surrey  
  KT14 7LF  
  UK | Email: ptac@perle.com                                                  |
| Asia      | Perle Asia Pacific (Pte) Ltd.  
  190 Middle Road  
  #19-05 Fortune Centre  
  Singapore 189979 | Email: ptac@perle.com                                                  |
| Worldwide | Perle Systems Ltd.  
  60 Renfrew Drive  
  Markham  
  Ontario  
  Canada  
  L3R OE1 | Email: ptac@perle.com                                                  |
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