I/O8+ Serial Adaptors

User Guide

Part number: 5500031-17
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Navigating around this manual

Using this on-line manual. See page 5.
Fast contents. See page 7.
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Quick reference. See page 111.
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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 I/O8+ ISA and 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 I/O8+ ISA and 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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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 Perle I/O8+ serial adaptor cards, driver software and utilities.

This chapter provides introductory information about the Perle I/O8+ ISA and PCI serial adaptor cards, driver software and configuration utilities.

This chapter includes the following sections:

- About the I/O8+ serial adaptor card on page 16
About the I/O8+ serial adaptor card

The I/O8+ is a serial adaptor card which allows you to connect up to eight serial devices. This type of adaptor card is available in both ISA and PCI formats.

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 I/O8+ when you want a robust entry level solution for the small office or point of sale applications. Typically you use I/O8+ because you want to add extra serial ports to an existing computer system rather than replacing it with the considerable cost that entails.

To use the I/O8+ serial adaptor cards you must first install the drivers supplied with the card for your operating system. You then configure each card as required prior to mechanical installation.

---

**Note**

The procedure for installing and configuring I/O8+ serial adaptor cards 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 I/O8+ serial adaptor cards and associated software.

This chapter provides information about installing and configuring I/O8+ serial adaptor cards in both ISA and PCI formats.

Note
The procedure for installing and configuring I/O8+ 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
• Downloading I/O8+ drivers from the Perle web site on page 18
• Installing I/O8+ under Windows 95 and 98 on page 19
• Installing under Windows NT on page 33
• Installing I/O8+ under SCO OpenServer on page 34
• Installing I/O8+ under SCO UnixWare on page 57
• Installing an I/O8+ PCI host card under Windows 2000/XP/Server 2003/Vista/Server 2008 on page 80
• Installing an I/O8+ ISA host card under Windows 2000 on page 88
• Installing a PCI host card on page 100
• Installing an ISA host card on page 101
• Removing host cards on page 103.
Before you start

Before you install your I/O8+ host cards and software, note that the procedure for installing and configuring I/O8+ 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 I/O8+ under Windows 95 and 98 on page 19
• Installing under Windows NT on page 33
• Installing I/O8+ under SCO OpenServer on page 34
• Installing I/O8+ under SCO UnixWare on page 57
• Installing an I/O8+ PCI host card under Windows 2000/XP/Server 2003/Vista/Server 2008 on page 80

Downloading I/O8+ drivers from the Perle web site

You can install the I/O8+ driver and utility software from the Perle web site. To do this proceed as follows;

1. On your PC, start the Internet browser you want to use (for example, Netscape).
2. Within your Internet browser window, select the software directory using the following URL;
   http://www.perle.com/downloads

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

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.
Installing I/O8+ under Windows 95 and 98

This section tells you how to install I/O8+ 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 19
- Installing device drivers and utilities on page 20
- Adding ISA host cards to the system on page 22
- Configuring I/O8+ serial ports on page 28
- Removing I/O8+ hardware from your system on page 31

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 I/O8+ driver files into your PC from the CDROM or the Perle website. See Downloading I/O8+ drivers from the Perle web site on page 18.
2. Install the I/O8+ Windows 95 and 98 drivers and utilities onto your system using the procedures described in Installing device drivers and utilities on page 20.
3. Select and assign addresses for any additional ISA host cards you want to install from the free addresses available. See Adding ISA host cards to the system on page 22.
4. Repeat step 3, until you have assigned addresses to all the ISA host cards you want to install.
5. Install any PCI host cards you require into your system. See Installing a PCI host card on page 100.
6. If required, remove any host cards you want from your system. See Removing host cards on page 103.
7. Re-start your system

Your system now detects any ports automatically, no configuration is required by the user. Your system can now use the serial adaptor cards you have installed. If required, you can reconfigure serial ports following initial installation. See Configuring I/O8+ serial ports on page 28.

Note
To remove the I/O8+ hardware from your system configuration, see Removing I/O8+ hardware from your system on page 31.
Installing device drivers and utilities

To install the I/O8+ 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 (the browser application depends on your system).

2. From the `drivers\io8plus\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 Perle 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.
Adding ISA host cards to the system

To add an I/O8+ ISA host card to the system configuration, proceed as follows:

1. In the Windows desktop, click on the **Start** button and select **Settings > Control Panel** to display the Control panel window.
2. In the Control panel window, double click on the Add New Hardware icon.

The Add New Hardware Wizard is now displayed.
3. In the Add New Hardware Wizard click on the **Next >** button.
   The page shown in the next picture is now displayed.

4. In the Add New Hardware Wizard, click on the **Next >** button.
   The prompt page shown in the next picture is now displayed.
5. In the prompt page, select the **No, I want the hardware from a list option** and then click on the **Next >** button to confirm your selection.

The hardware selection page is now displayed as shown in the next picture.

6. In the hardware selection page, scroll down the **Hardware types** list and single click on the **Multi-function adapters** option to select it. Now click on the **Next >** button

The select manufacturer and model page is now displayed.

7. In the select manufacturer and model page, scroll down the **Manufacturers** list and select **Specialix International Ltd**. Now scroll down the **Models** list and select the **Specialix I/O8+ ISA Adapter** option.
8. In the select manufacturer and model page, click on the Next > button.

The system now tries to add the ISA card at its default address and IRQ level. If the system can use the factory default address and IRQ settings the following screen is now displayed.

Click on the Details button to display the factory defaults in use.
If the system has resources free but cannot use the factory defaults, the screen shown in the next picture is now displayed which shows values suggested by the system.

If the system cannot use the factory default or allocate free resources you now need to try and resolve the resource conflict using the procedures given in Resource conflicts on page 132 in Appendix D Troubleshooting.

Note

9. In the Add New Hardware Wizard, click on the Next > button.
   The final page of the wizard is now displayed as shown in the next picture.
10. In the Add New Hardware Wizard, click on the **Finish** button to complete the setup.

The System Settings Change window is now displayed asking you if you are ready to shut down your computer and install the hardware.

11. In the System Settings Change window, click on the **Yes** button to complete the installation.

You can now install your ISA host card. See **Installing an ISA host card** on page 101.
Configuring I/O8+ serial ports

To configure I/O8+ serial ports 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.

   ![Control Panel Window](image)

   Note
   
   I/O8+ ports are normally configured as part of the installation process described in **Installing device drivers and utilities** on page 20. The procedures described in this section are provided for information only.
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.

   ![System Properties Tabbed Window](image)

   **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 **Port Settings** tab.

   The Settings page is now displayed.

   ![Port Settings Tab](image)

6. In the Settings page, select the configuration values you want and either click on the **OK** button.

   Re-configuration of ports is now complete.
Removing I/O8+ hardware from your system

To remove I/O8+ hardware from your system configuration proceed as follows:

Note
This process does not remove the I/O8+ device drivers and utilities from your system.

1. In the windows desktop, click on the Start button and select Settings > Control panel.
   The control panel window is now displayed.

   ![Control Panel window](image)

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 as shown in the next picture.

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 100
2. Install any ISA host cards you require into your system. See Installing an ISA host card on page 101
3. If required, remove any host cards you want from your system. See Removing host cards on page 103.
4. 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.
Installing I/O8+ under SCO OpenServer

This section tells you how to install host cards, software drivers and utilities under the SCO OpenServer operating system (SCO OpenServer 5 and SCO OpenServer 6) and includes the following:

- General installation procedure for SCO OpenServer on page 34
- Upgrading from existing device drivers on page 36
- Installing device drivers and utilities on page 37
- Assigning ISA host card addresses and IRQ levels (SCO OpenServer 5 Only) on page 43
- Configuring I/O8+ serial ports on page 51
- Removing I/O8+ drivers and utilities from your system on page 55.

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. If required, install any PCI host cards you require into your system. See Installing a PCI host card on page 100

   Note
   SCO OpenServer 5 device drivers are displayed as Specialix I/O8+. SCO OpenServer 6 device drivers are displayed as Perle I/O8+.

   Note
   SCO OpenServer 6 supports only the PCI version of the I/O8+ card.

   Note (SCO OpenServer 5 only)
   If you are installing a PCI card after having installed your driver, you will need to run the iddhcfg utility to create the relevant device nodes. See Assigning ISA host card addresses and IRQ levels (SCO OpenServer 5 Only) on page 43 and Appendix A Serial port device names.

   Note
   If your system has an EISA bus, you need to run the EISA configuration utility now. See your System Administrator or product user documentation for further details.
2. If required, install the I/O8+ SCO OpenServer drivers and utilities onto your system using the procedures described in Installing device drivers and utilities on page 37.

3. (SCO OpenServer 5 only) If required, using the Host Card Configuration tool, select and assign addresses for any additional ISA host cards you want to install from the free addresses available. See Assigning ISA host card addresses and IRQ levels (SCO OpenServer 5 Only) on page 43.

4. (SCO OpenServer 5 only) Repeat step 3, until you have assigned addresses to all the ISA host cards you want to install.

5. (SCO OpenServer 5 only) If required, install any ISA host cards you require into your system. See Installing an ISA host card on page 101.

6. If required, remove any host cards you want from your system. See Removing host cards on page 103.

7. Using the Port Configuration tool, configure the serial ports you have added to the system. See Configuring I/O8+ serial ports on page 51.

Your system can now use the serial adaptor cards you have installed. If required, you can reconfigure serial ports following initial installation. See Assigning ISA host card addresses and IRQ levels (SCO OpenServer 5 Only) on page 43 and Configuring I/O8+ serial ports on page 51 for details.
Upgrading from existing device drivers

If your system already has an existing Perle device driver installed, you cannot install a new device driver unless you follow the correct upgrade procedure. The procedure required depends on the device driver type currently installed as follows;

- **Upgrading from Specialix combined driver 2.0.2 for SCO Unix 3.2.4 (SCO OpenServer 5 Only)** on page 36

  **Note**
  SCO OpenServer 6 does not support the upgrade feature. If you are using SCO OpenServer 6, remove the existing driver using the procedure described in Removing I/O8+ drivers and utilities from your system on page 55. After the old device driver is removed, install the new device driver using the procedures described in Installing device drivers and utilities on page 37.

Upgrading from Specialix combined driver 2.0.2 for SCO Unix 3.2.4 (SCO OpenServer 5 Only)

You cannot upgrade the Specialix combined driver 2.0.2 for SCO Unix 3.2.4. You need to remove the old driver, then install its replacement as follows;

1. Remove the existing device driver using the procedure described in Removing I/O8+ drivers and utilities from your system on page 55.

2. Install the new device driver using the procedures described in Installing device drivers and utilities on page 37.

3. Continue with your installation as required using the steps listed under General installation procedure for SCO OpenServer on page 34.

Upgrading your current I/O8+ device driver (SCO OpenServer 5 Only)

To upgrade your current I/O8+ device driver, proceed as follows;

- Follow the procedure for installing device drivers detailed in Installing device drivers and utilities on page 37 using the upgrade options when prompted by the software.
Installing device drivers and utilities

To install the I/O8+ 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:
   
   \texttt{mkdir /cdrom}

4. Mount the CDROM file system using the following commands:
   
   \texttt{mount -f ISO9660 -r /dev/cd0 /cdrom}

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.

\begin{figure}
\centering
\includegraphics[width=\textwidth]{software_manager.png}
\caption{Software Manager window showing installed software on an OpenServer system.}
\end{figure}
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:
   SCO OpenServer 5: /cdrom/drivers/io8plus/ose5
   SCO OpenServer 6: /cdrom/drivers/io8plus/ose6

   **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.

   If you are upgrading your current Perle I/O8+ SCO OpenServer 5 device driver, the following pop-up window is now displayed.

   ![Upgrading Components Warning](image)

   **These components selected for installation will be upgraded:**

   Specialix I/O8+ Driver (ver 1.0.0)

   Upgrading the above components will cause them to be removed and replaced with upgraded components.

   ![Continue](image)

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

      The following progress message is now displayed.

      ![Installation Progress on scoServer](image)

      The Specialix I/O8+ installation Options window is now displayed.

      ![Specialix I/O8+ Installation Options](image)

      Only available if you are performing an upgrade
14. If required, in the Specialix I/O8+ Installation Options window, select the Re-Link kernel option. (SCO OpenServer 6 users skip to step 18.)

**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. If you wish to retain the existing configuration from a previous device driver installation, in the Specialix I/O8+ Installation Options window, select Retain Configuration Data.

16. In the Specialix I/O8+ Window Installation menu, click on Options > Exit to close the window and continue the installation process.

The host card configuration window is now displayed.

17. Using the Host Card Configuration utility, add any cards you want to the system then exit the utility using the Card > Save and exit menu option. See Assigning ISA host card addresses and IRQ levels (SCO OpenServer 5 Only) on page 43.

If you have re-linked the kernel earlier in this procedure, a message window is now displayed prompting you to re-boot the system.
18. In the message window click on **OK** to continue the installation process.

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

   ![Installation complete message

19. 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.

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

21. 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 34.
Assigning ISA host card addresses and IRQ levels (SCO OpenServer 5 Only)

The Host Card Configuration Utility allows you to define and edit addresses and IRQ levels for I/O8+ host cards you add to the system. In addition, this utility automatically creates and removes serial port device nodes.

This section includes the following:

• Starting the Host Card Configuration utility on page 44
• Adding a new host card address on page 45
• Editing a host card address on page 47
• Removing a host card address on page 49
• Exiting the Host Card Configuration utility on page 50

Note
If you make any changes to the host card addresses on the system, you will need to restart the software kernel. See Re-building the kernel on page 50 for details.
Starting the Host Card Configuration utility

You can start the Host Card Configuration utility in one of two ways:

- Using the command line. See page 44.
- Using the SCO OpenServer 5 desktop. See page 44.

Using the command line

To start the Host Card Configuration Utility from the command line proceed as follows:

1. At the command prompt, type `io8hcfg` and press the Enter key.
   The Host Card Configuration window is now displayed.

   ![Host Card Configuration window]

Using the SCO OpenServer 5 desktop

You can now use the utility to add, remove or edit host card parameters.

To start the Host Card Configuration Utility from the SCO OpenServer 5 desktop proceed as follows:

1. In the SCO OpenServer 5 desktop, open the System Administration folder.
   The System Administration window is now displayed.

2. In the System Administration window, click on the Specialix I/O8+ folder to open it.
   The Specialix I/O8+ window is now displayed.
3. In the Specialix I/O8+ window, click on the I/O8+ Host Configuration icon.

   The Host Card Configuration window is now displayed.

   ![Host Card Configuration Window]

   You can now use the utility to add, remove or edit host card parameters.

   **Adding a new host card address**

   In order to function, each ISA host card must be allocated an available I/O address and IRQ level. The Host Card Configuration utility allows you to determine the available addresses and IRQ levels, then allocate them to a particular host card. To do this, proceed as follows:

   1. In the Host Card Configuration menu, click on Card > Add.

      The Set Address and IRQ window is now displayed which shows the next available host card address and IRQ level by default.

      ![Set Address and IRQ Window]

      **Selecting non-default address and IRQ level**

      2. If you want to allocate an address and IRQ level other than the default proceed as follows:

         a. In the Set Address and IRQ window, click in the Address (hex) field and enter the address you want in hexadecimal.

         b. In the Set Address and IRQ window, click on the IRQ (Interrupt level ReQuest level) selector and select a free IRQ level.
3. In the Set Address and IRQ window, click on the **Check** button to verify the values you have entered.

The Resource Check Result pop-up is now displayed telling you whether or not the selected address and IRQ level are valid. An example is shown in the next picture.

![Resource Check Result](image)

4. In the pop-up, click on **OK** to close the window.

5. In the Host Card Configuration window click on **OK** to confirm your selection and close the window.

If your selection is invalid, the Resource Check Result pop-up message is now displayed. Otherwise, the address is now set and the host card configuration window updated to show the new card and address.
Editing a host card address

To edit an existing host card address on the system proceed as follows:

1. In the host card Configuration window, select the host card whose address you want to edit.

2. In the Host Card Configuration menu, click on Card > Edit.
   
   The Set Address and IRQ window is now displayed showing the current address and IRQ level for the selected host card.

3. In the Set Address and IRQ window click in the Address (hex) field and enter the address you want in hexadecimal.

4. In the Set Address and IRQ window, click on the IRQ (Interrupt Request level) selector and choose the IRQ level you want.
5. If required, in the Set Address and IRQ window, click on the **Check** button. The Resource Check result pop-up is now displayed telling you if the selected address and IRQ level are valid. An example is shown in the next picture.

![Resource Check Result](image)

6. In the pop-up, click on **OK** to close the window.

7. In the Host Card Configuration window, click on **OK** to confirm any changes and close the window.

   If your selection is invalid, the Resource Check Result pop-up message is now displayed. Otherwise, the new address is now set and the host card configuration window updated to show the changes.
Removing a host card address

To remove a host card address from the system, proceed as follows:

1. In the host card configuration window, click on one or more of the host cards listed in the Current Host Card Configuration field highlighting them.

2. In the Host Card Configuration menu, click on Card > Remove.
   The Host Card Configuration window is now updated to show the remaining host cards only.
Exiting the Host Card Configuration utility

Quitting and saving

To exit the Host Card Configuration utility and save any changes you have made, proceed as follows:

1. In the Host Card Configuration menu, click on **Card > Save and exit**.

Re-building the kernel

If you have made any changes a pop-up now appears prompting you to re-build the operating system kernel, otherwise the utility closes.

![Pop-up for Kernel re-link required](image)

2. In the pop-up, click on the **Yes** button to re-link the operating system kernel.
   
   The Kernel now re-links and a busy message is displayed during this process, followed by a confirmation pop-up.

![Busy message and confirmation pop-up](image)

3. In the confirmation pop-up, click on **OK** to close the window.
   
   The Host Card Configuration utility now closes and saves any changes you have made.

Note

To quit the Host Card Configuration utility without saving any changes:
- In the In the Host Card Configuration menu, click on **Card > Quit**.
Configuring I/O8+ serial ports

The Port Configuration utility allows you to configure the extra I/O8+ serial ports you have added to your system. To do this proceed as follows;

Starting the Port Configuration utility

1. In the command prompt, type io8pcfg and press the Enter key.
   Or use the SCO OpenServer 5 desktop as follows;
   a. In the SCO OpenServer 5 desktop, open the System Administration folder.
      The System Administration window is now displayed.
   b. In the System Administration window, click on the Specialix I/O8+ folder to open it.
      The Specialix I/O8+ window is now displayed
   c. In the Specialix I/O8+ window, click on the I/O8+ Port Configuration Icon.
   Or use the SCO OpenServer 6 desktop as follows;
   a. In the SCO OpenServer 6 desktop, open the System Administration folder.
      The System Administration window is now displayed.
   b. In the System Administration window, click on the Perle-Serial folder to open it.
      The Perle-Serial window is now displayed
   c. In the Perle-Serial window, click on the I/O8+ Port Configuration Icon.

The Port Configuration window for SCO OpenServer 5 is shown in the next picture (SCO OpenServer 6 would have the Perle I/O8+ Port Configuration window title).

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.io8 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.io8
2. Check the contents of the printcap.io8 file to see if the terminal type you are using is supported. See page 124 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.io8 file (page 124). 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.
Selecting ports

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.

![Available gettydefs](image)

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

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.

![Terminal Type](image)

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

5. If required, in the Port Configuration window, click on the i on 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 i any button to enable sending of data on receipt of the next character (when flow control is enabled on the transparent print port).
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 Display</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**

**Note**

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 I/O8+ drivers and utilities from your system

To remove the I/O8+ 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.

   ![Software Manager window](image)

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.

Note

SCO OpenServer 5 device drivers are displayed as Specialix I/O8+. SCO
OpenServer 6 device drivers are displayed as Perle I/O8+.
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 window](image)

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

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 I/O8+ 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 58
• Upgrading from existing device drivers on page 60
• Installing drivers and utilities onto your system on page 61
• Assigning ISA host card addresses and IRQ levels on page 64
• Configuring serial ports on page 73
• Configuring serial ports under SCO UnixWare 2 on page 78
• Removing I/O8+ drivers and utilities from your system on page 79.
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 100

   Note
   Once you have installed the I/O8+ drivers, if you add or remove any host cards the operating system will update the kernel accordingly using the spxnodesctp script.

   The spxnodesctp script 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 spxnodesctp script recreates the files which identify the ports, terminals and transparent printing and applies the changes.

   Note
   If your system already has Specialix IO8 Svr4 driver v1.0.2 for SVR4 operating systems, you need to remove them before you can install new device drivers. See Upgrading from existing device drivers on page 60.

2. If required, install the I/O8+ SCO UnixWare drivers and utilities onto your system using the procedures described in Installing drivers and utilities onto your system on page 61.

3. If required, using the UnixWare Device Configuration Utility, select and assign addresses for any additional ISA host cards you want to install from the free addresses available. See Assigning ISA host card addresses and IRQ levels on page 64.

4. Repeat step 3. until you have assigned addresses to all the ISA host cards you want to install.

5. If required, install any ISA host cards you require into your system. See Installing an ISA host card on page 101

6. If required, remove any host cards you want from your system. See Removing host cards on page 103.

7. Using the Serial Manager utility, configure the serial ports you have added to the system. See Configuring serial ports on page 73.

   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 78 to configure your serial ports.

Your system can now use the serial adaptor cards you have installed. If required, you can reconfigure serial ports following initial installation. See Assigning ISA host card
addresses and IRQ levels on page 64 and Configuring serial ports on page 73 for details.
Upgrading from existing device drivers

If your system already has an existing Perle device driver installed, you cannot install a new device driver unless you follow the correct upgrade procedure. The procedure required depends on the device driver type currently installed as follows;

- **Upgrading from Specialix I/O8+ Svr4 driver v1.0.2** on page 60

**Upgrading from Specialix I/O8+ Svr4 driver v1.0.2**

You cannot upgrade the Specialix I/O8+ Svr4 driver v1.0.2. You need to remove the old driver, then install its replacement as follows;

1. Remove the existing device driver using the procedure described in **Removing I/O8+ drivers and utilities from your system** on page 79.
2. Install the new device driver using the procedures described in **Installing drivers and utilities onto your system** on page 61.
3. Continue with your installation as required using the steps listed under **General installation procedure for SCO UnixWare** on page 58.
Installing drivers and utilities onto your system

To install the I/O8+ 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.

5a. The Add Local Mount Configuration window is displayed.

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>Select cdrom or string containing cdrom</td>
</tr>
<tr>
<td>Mount Point</td>
<td>cdrom</td>
</tr>
<tr>
<td>Description (optional)</td>
<td></td>
</tr>
<tr>
<td>Filesystem Type</td>
<td>CDFS</td>
</tr>
<tr>
<td>Access Mode</td>
<td>Read-only</td>
</tr>
<tr>
<td>When to Mount</td>
<td>Enable Now, Disable At System Startup</td>
</tr>
<tr>
<td>Advanced Options</td>
<td>Set More Options...</td>
</tr>
</tbody>
</table>
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.

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

9. At the command prompt, type:
   ```
   pkgadd -d /cdrom/drivers/io8plus/unixware/io8.pkg.dd io8
   ```

10. Press the **Enter** key.

    The system now installs the driver and displays a series of messages ending with the prompt shown in the next picture.

    >>>> Installation of I/O8+ Driver (io8) was successful.

11. At the prompt type **q** and press the **Enter** key.

12. At the command prompt, type **shutdown -y -i6** and press the **Enter** key to shutdown and re-boot your system.

    Upon completion of the system re-boot the I/O8+ drivers you have installed are ready to use.
Assigning ISA host card addresses and IRQ levels

The Unixware Device Configuration Utility allows you to define and edit addresses and IRQ levels for I/Ob+ host cards you add to the system.

This section includes the following:
- Starting the Unixware Device Configuration Utility on page 65
- Adding a new host card address on page 67
- Editing a host card address on page 47
- De-activating a host card on page 70
- Exiting the Device Configuration Utility on page 72

Note
If you make any changes to the host card addresses on the system, you will need to rebuild the UNIX kernel. See Re-building the kernel on page 50 for details.
Starting the UnixWare Device Configuration Utility

UnixWare provides a mechanism for adding and removing device hardware with the Device Configuration Utility. You will need to use this utility in order to add any ISA cards to your configuration.

Note
I/O8+ PCI cards are automatically detected by the operating system. You do not need to add them manually.

You can start the Device Configuration Utility using either the command prompt or the SCO UnixWare System Administration tool. See the following;

- Command prompt method on page 65
- System Administration tool method on page 66.

Command prompt method
To start the Device Configuration Utility from the command prompt, proceed as follows;

- At the command prompt, type `dcu` and press the Enter key.

The Unixware Device Configuration Utility window is now displayed.

You can now use the Device Configuration Utility to configure or display host card addresses and IRQ levels. See Adding a new host card address on page 67.
To start the Device Configuration Utility from the SCO UnixWare System Administration tool, proceed as follows:

1. At the command prompt, type `scoadmin`
   The System Administration window is now displayed

2. In the System Administration tool window, click on the Hardware folder and then select Device Configuration Utility (DCU)
   The Unixware Device Configuration Utility window is now displayed.

You can now use the Device Configuration Utility to configure or display host card addresses and IRQ levels. See Adding a new host card address on page 67.
Adding a new host card address

In order to function, each ISA host card must be allocated an available I/O address and IRQ level. The Device Configuration Utility allows you to determine the available addresses and IRQ levels, then allocate them to a particular host card. To do this proceed as follows:


2. In the Device Configuration Utility Main Menu, click on Software Device Drivers.

   The Software Device Driver Selections window is now displayed.

3. In the Software Device Driver Selections window, select Communications cards using the up and down arrow keys and press the Enter key to confirm your selection.

   The Software Device Drivers window is now displayed as shown in the next picture.
4. In the Software Device Drivers window, select the host card you want using the up and
down arrow keys and then press the space bar to activate the card (denoted by a star
symbol).

5. Press the F5 key.
The New Hardware Configuration window is now displayed.

6. In the New Hardware Configuration window, select IRQ using the up and down arrow
keys and type in the new IRQ value you want to assign for the selected host card.

7. Repeat step 6, to set the upper and lower address values IOStart and IOEnd. Use the
same procedure to set MemStart and MemEnd to 0 so they are not used.

Note
The Host card address values you enter must be in hexadecimal and match the
 corresponding settings on the host cards. To obtain the correct hexadecimal address from
the binary value set on ISA host cards, see Appendix C ISA host card address
settings.

8. Repeat steps 4, to 7, until you have set all the IRQ levels and addresses for all the host
cards you require.

9. Press the F10 key to accept the new values and close the window.
Editing a host card address

Note
You can only edit ISA card properties. PCI card properties are set by the operating system and cannot be changed by the user.

The Device Configuration Utility allows you to edit existing host card addresses and IRQ levels. To do this proceed as follows:


2. In the Device Configuration Utility Main Menu, click on Hardware Device Configuration. The Hardware Device Configuration window is now displayed.

3. In the Hardware Device Configuration window, use the tab key move the cursor to the host card IRQ or address you wish to change.

4. At the selected location, type in the new IRQ or address value you want to assign for the selected host card.

5. Repeat steps 3. to 4. until you have set all the IRQ levels and addresses you require.

Note
The Host Card address values you enter must be in hexadecimal. To obtain the correct hexadecimal address from the binary value set on ISA host cards, see Appendix C ISA host card address settings.
6. Press the **F10** key to confirm your changes and close the window.

### De-activating a host card

To deactivate an installed host card proceed as follows:

1. Start the Unixware Device Configuration Utility. See **Starting the Unixware Device Configuration Utility** on page **65**.

2. In the Device Configuration Utility Main Menu, click on **Hardware Device Configuration**. The Hardware Device Configuration window is now displayed.

3. In the Hardware Device Configuration window, use the tab key to move the cursor to the activate-deactivate field for the host card you want as shown in the next picture.

4. At the selected field type **N** to de-activate the host card (to re-activate type **Y**).

5. Repeat steps 3. to 4. until you have set all the IRQ levels and addresses you require.

6. Press the **F10** key to accept the new values and close the window.
Displaying software device driver details

To display details of the software device drivers present on your system proceed as follows:


2. In the Device Configuration Utility Main Menu, click on Hardware Device Configuration.
   The Hardware Device Configuration window is now displayed showing details of the software device drivers present on your system.

3. Press the F10 key to confirm your changes and close the window.
Exiting the Device Configuration Utility

Quitting and saving To exit the Device Configuration Utility and save any changes you have made, proceed as follows:

1. In the Device Configuration Utility Main Menu, click on **Apply Changes & Exit DCU**.

   The Device Configuration Utility now closes and saves any changes you have made.

   **Note**

   To quit the Host Card Configuration Utility without saving any changes:
   - In the Host Card Configuration menu, click on **Exit DCU and Cancel Changes**.

   **Note**

   In most cases the kernel will need to be rebuilt in order for the changes to take effect to do this proceed as follows;

   1. Login to your system as super user.
   2. At the command prompt, type `#/etc/conf/bin/idbuild` and press the Enter key.
      You are now prompted to re-boot the system.
   3. At the command prompt, type `Shutdown -i6 -y` to re-boot the system.

   The system now re-boots displaying messages as it does so.
Configuring serial ports

The software provided with the I/O8+ for the SCO UnixWare operating system includes a utility called Serial Manager which allows you to configure the extra I/O8+ 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 78 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.io8 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.io8
2. Check the contents of the printcap.io8 file to see if the terminal type you are using is supported. See page 124 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.io8 file (page 124). See the user guide for your terminal for details of the entries required.
4. If you have made any changes then either re-boot using by typing Shutdown -i6 -y or type io8cfg 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.

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 I/O8+) currently present on the system.
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 Port > 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 (bps):</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 I/O8+ 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>i01</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 I/O8+ 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 (io8mon) and enables the port for monitoring logins.</td>
<td>/etc/spxadmport add i01 9600 root</td>
</tr>
<tr>
<td>Enable</td>
<td>Enables a previously disabled port for monitoring.</td>
<td>/etc/spxadmport enable</td>
</tr>
<tr>
<td>Disable</td>
<td>Disables a port. Has the effect of disabling all further logins on this port.</td>
<td>/etc/spxadmport disable i01</td>
</tr>
<tr>
<td>Remove</td>
<td>Removes the selected serial port from the service monitor (io8mon).</td>
<td>/etc/spxadmport remove i01</td>
</tr>
<tr>
<td>List</td>
<td>Lists the currently defined services and/or port monitors.</td>
<td>/etc/spxadmport list</td>
</tr>
<tr>
<td>List p</td>
<td>Lists all logins configured.</td>
<td>/etc/spxadmport list p</td>
</tr>
<tr>
<td>List s</td>
<td>Lists all port services configured.</td>
<td>/etc/spxadmport list s</td>
</tr>
</tbody>
</table>
2. Press the Enter key.

The revised I/O8+ port configuration is now adopted by the system.

**Removing I/O8+ drivers and utilities from your system**

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

<table>
<thead>
<tr>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before removing a software driver you should first de-activate all I/O8+ host cards present on the system. See De-activating a host card on page 70.</td>
</tr>
</tbody>
</table>

1. At the command prompt, type `pkgrm io8` and press Enter

The I/O8+ driver and associated utilities are now removed from your system.

This section describes how to install the PCI host card I/O8+ device driver software under Microsoft Windows 2000/XP/Server 2003/Vista/Server 2008.

This section includes the following:

• Installing PCI host card device drivers and utilities onto your system on page 81
• Updating I/O8+ PCI host card device drivers with update.exe on page 83
• Configuring PCI host card serial ports on page 85.


The general procedure for installing an I/O8+ PCI host card under the Windows 2000/XP/Server 2003/Vista/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 100 and Removing host cards on page 103.
2. Using the I/O8+ installation wizard, install the I/O8+ device driver software. See Installing PCI host card device drivers and utilities onto your system on page 81.
3. Using the Windows Device Manager, configure the serial ports you have added to the system. See Configuring PCI host card serial ports on page 85.
To install or enable the I/O8+ 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 I/O8+ driver zip file from the Perle website for your operating system:
   - io8-x86.zip for 32-bit Windows operating systems.
   - io8-amd64.zip for 64-bit Windows operating systems.
   - io8-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 io8-setup-<arch>.exe file when installing the drivers for a I/O8+ PCI card, which will launch the installation wizard, to install the I/O8+ driver.
5. Double-click the `io8-setup-<arch>.exe` installation executable and follow the installation wizard steps:

![Image](image1.png)

6. During the installation, you may get a Windows Logo message. Click **Continue Anyway** when these appear.

![Image](image2.png)

7. Your I/O8+ driver installation is now finished.

**Note**
If you are installing an unsigned driver, you may have to click through the Found New Hardware wizard for every I/O8+ card on your system.
**Updating I/O8+ PCI host card device drivers with update.exe**

Whenever you add any SX, I/O8+ or SI/XIO hardware to your system, by default Windows will use its latest digitally signed driver in its driver database. To ensure you install the latest driver you must now run the `update.exe` program. This ensures that every device currently installed in the system is updated to use the driver on the CDROM.

To run `update.exe`, proceed as follows:

1. In the Windows desktop, click on the **Start** button and select the **Run** option.
   The Run window is now displayed.

2. In the run window enter the path and program name (`update.exe`), then click on the **OK** button.
   The Device Driver Updater Wizard is now displayed as shown in the next picture.
3. In the Perle Device Driver Updater Wizard, click on the **Next >** button.

   A progress message is now displayed while the drivers are updated. This is then followed by the closing message window.

4. In the closing page, click on the **FINISH** button to complete driver installation.
Configuring PCI host card serial ports

To configure I/O8+ serial ports under Windows 2000/XP/Server 2003/Vista/Server 2008, proceed as follows:

1. In the Windows 2000 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.

![Device Manager Window](image.png)

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]

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 an I/O8+ ISA host card under Windows 2000

This section describes how to install the I/O8+ device driver software for the ISA host card under Microsoft Windows 2000.

This section includes the following:
• General ISA host card installation procedure for Windows 2000 on page 88
• Adding ISA host cards to the system on page 22
• Viewing and changing the ISA host card resources for a device on page 93
• Updating I/O8+ ISA host card device drivers with update.exe on page 97
• Configuring ISA host card serial ports on page 98.

General ISA host card installation procedure for Windows 2000

The general procedure for installing I/O8+ under the Windows 2000 operating system is as follows:

1. If required, install any ISA host cards you require into your system. See Installing an ISA host card on page 101.
2. If required, using the Windows 2000 Add/Remove Hardware wizard, add any additional ISA host cards to the list of installed devices on the system using the free addresses available. See Adding ISA host cards to the system on page 89.
3. Repeat step 2, until you have added all the ISA host cards you want to install.

Note
The drivers for I/O8+ are included on your Windows 2000 CDROM.
Whenever you add any SX, I/O8+, or SI/XIO hardware to your system, by default Windows 2000 will use its latest digitally signed driver in its driver database. To ensure you install the latest driver you must now run the update.exe program. This ensures that every device currently installed in the system is updated to use the driver on the CDROM (version 8 or later). See Updating I/O8+ ISA host card device drivers with update.exe on page 97.

4. Using the Windows 2000 Device Manager, configure the serial ports you have added to the system. See Configuring PCI host card serial ports on page 85.
5. If required, remove any host cards you want from your system. See Removing host cards on page 103.
Adding ISA host cards to the system

When you physically install an ISA host card in your system you also need to add the card to the list of installed devices in the system.

To add ISA host cards to 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 Add/Remove Hardware Wizard is now displayed.

3. Using the instructions given in the next table, use the Add/Remove Hardware Wizard to assign the host card addresses and IRQ levels you require.
<table>
<thead>
<tr>
<th>In this Wizard page</th>
<th>Do the following...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Install/Remove Hardware Wizard</td>
<td>4. In the Install/Remove Hardware Wizard, select Add/Troubleshoot a device and press the Next &gt; button. The Choose a Hardware Device page is now displayed.</td>
</tr>
<tr>
<td>Install/Remove Hardware Wizard</td>
<td>5. In the Choose a Hardware Device page, scroll up the list of devices and click on Add a new device, then click on the Next &gt; button. The Find New Hardware page is now displayed.</td>
</tr>
<tr>
<td>Find New Hardware</td>
<td>6. In the Find New Hardware page, select No, I want to select the hardware from a list and click on the Next &gt; button. The Hardware Type page is now displayed.</td>
</tr>
<tr>
<td>Hardware Type</td>
<td>7. In the Hardware Type page, select Multi-port serial adaptors and click on the Next &gt; button.</td>
</tr>
</tbody>
</table>
Installing an I/O8+ ISA host card under Windows 2000

Chapter 2 Installing drivers and host cards

Page 91

In this Wizard page

Do the following...

8. If your host card type isn’t shown, in the Select a Device Driver page click on the Have Disk button.

A message window is now displayed which prompts you for the driver and location you want to use.

9. In the message window, enter or select the driver you want and click on the OK button to accept settings and close the window.

The Select a Device Driver page is now updated to show the new driver you have selected.

10. In the Select a Device Driver page, select the Specialix or Perle I/O8+ ISA Adapter option, then click on the Next > button.

The Start Hardware Installation page is now displayed.

11. In the Start Hardware Installation page, click on the Next > button to accept your choice.

A completion message page is now displayed as shown in the next picture.

Note

Windows 2000 will try to load the I/O8+ drivers using the default resources. If the card you are loading is not configured to use the defaults or the resources are not freely available in the system, the driver will fail to start.

If resources are not free you will have to change the resource configuration using the procedures described on page 97.
12. In the completion message page click on the Finish button to complete the new configuration.

After the you have finished adding cards to the system all connected port devices will now be detected. Windows 2000 will try to install the latest driver for the ports from its database or will prompt you for one if one cannot be found.
Viewing and changing the ISA host card resources for a device

To view or change the resources for a device proceed as follows:

1. In the Add/Remove Hardware Wizard go to the last page and click on the Resources button.

The Add New Hardware Wizard properties window is now displayed.
2. In the Add New Hardware Wizard properties window, select the Resources page and click on the Set Configuration Manually button.

   The resources page is now updated to show the settings for the current installed I/O8+ device.
3. In the Add New Hardware Wizard properties window, select the **Input/Output Range** you require and click on the **Change Setting** button.
   The Edit Input/Output Range window is now displayed.

![Edit Input/Output Range Window]

4. In the Edit Input/Output Range window, enter the memory range you want and click on the **OK** button.
   If values you have selected are not acceptable to the system, the Device Manager will display a problem icon as shown in the next picture.

5. If the I/O address you have selected are not acceptable to the system, check your configuration settings and adjust memory address as required. Otherwise ring Technical support.
6. In the Add New Hardware Wizard properties window, select **Interrupt Request** you require and click on the **Change Setting** button.

The Edit Interrupt Request window is now displayed.

![Edit Interrupt Request window](image)

7. In the Edit Interrupt Request window, select the IRQ level you want using the **Value** field and click on the **OK** button.

If value you have selected is not acceptable to the system, then the Device Manager will display a problem icon as shown in the next picture.

![Device Manager problem icon](image)

8. If the IRQ level you have selected are not acceptable to the system, check your configuration settings and adjust the IRQ value as required. Otherwise ring Technical support. See **Contacting Perle** on page 108 in **Appendix D Contacting Perle**.
Updating I/O8+ ISA host card device drivers with update.exe

Whenever you add any SX, I/O8+ or SI/XIO hardware to your system, by default Windows 2000 will use its latest digitally signed driver in its driver database. To ensure you install the latest driver you must now run the update.exe program. This ensures that every device currently installed in the system is updated to use the driver on the CDROM.

To run update.exe, proceed as follows:

1. In the Windows desktop, click on the Start button and select the Run option.
   The Run window is now displayed.

2. In the run window enter the path and program name (update.exe), then click on the OK button.
   The Device Driver Updater Wizard is now displayed as shown in the next picture.

3. In the Perle Device Driver Updater Wizard, click on the Next > button.
   A progress message is now displayed while the drivers are updated. This is then followed by the closing message window.

4. In the closing page, click on the FINISH button to complete driver installation.
Configuring ISA host card serial ports

To configure I/O8+ serial ports under Windows 2000, proceed as follows:

1. In the Windows 2000 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]

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 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.
Installing an ISA host card

Setting the address on an ISA host card

Before you install an ISA card in your system you need to physically set the address for the card using the DIL switch provided (shown in the next picture).

To set the address for an ISA host card proceed as follows;

1. Convert the address you want to use into a binary value. See Appendix C ISA host card address settings.
2. On the host card set the DIL switch on the host card to the selected binary address you want. The next picture shows an example DIL switch set to an address of 100 Hex which corresponds to 01000000.

Caution
Full anti-static precautions should be taken when handling host cards.
You can now install the ISA host card in your system. To do this proceed as follows;

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

6. Repeat step 3. until you have installed all the ISA cards you want.
7. Replace and secure the system cover.
8. Plug in the mains lead and turn on the power.

Installation of ISA host cards is now complete. For further details about installing 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 installing host cards in your system, turn off the power supply and disconnect the mains lead.

Caution
Full anti-static precautions should be taken when handling host cards.
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 (ISA card shown).
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  I/O8+ Cabling information

You need to read this chapter if you want cabling information for the Perle I/O8+ serial adaptor cards.

This chapter provides cabling and connector pinout information for the Perle I/O8+ serial adaptor cards. Included are details of standard cables for use with I/O8+ products available from Perle.

This chapter includes the following sections:
- RJ12 socket pinouts on I/O8+ host cards on page 106
- I/O8+ cables available from Perle on page 107
RJ12 socket pinouts on I/O8+ host cards

The connector pinout for each RS232 RJ12 socket fitted to either I/O8+ ISA or PCI host cards is as follows:

<table>
<thead>
<tr>
<th>RJ12 pin</th>
<th>Direction</th>
<th>Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Input</td>
<td>DCD</td>
<td>Data Carrier Detect.</td>
</tr>
<tr>
<td>2</td>
<td>Input</td>
<td>RXD</td>
<td>Receive Data.</td>
</tr>
<tr>
<td>3</td>
<td>Output</td>
<td>DTR/RTS</td>
<td>Data Terminal Ready/Request To Send. Data Terminal Ready/Request To Send. Function depends on the way you open the serial port see page 120.</td>
</tr>
<tr>
<td>4</td>
<td>-</td>
<td>GND</td>
<td>Ground.</td>
</tr>
<tr>
<td>5</td>
<td>Output</td>
<td>TXD</td>
<td>Transmit Data.</td>
</tr>
<tr>
<td>6</td>
<td>Input</td>
<td>CTS</td>
<td>Clear to send.</td>
</tr>
</tbody>
</table>
I/O8+ cables available from Perle

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

• RJ12 to DB9 male cable on page 108
• RJ12 to DB25 male cable on page 109
• RJ12 to DB25 female cable on page 110.
**RJ12 to DB9 male cable**

**Cable diagram**

- Pin 1 (looking into socket)
- Pin 6
- Pin 1
- Pin 5
- Pin 9

**Perle part number CIO8+DB9**

**Pin numbers looking into connector**

**Connector pinout table**

<table>
<thead>
<tr>
<th>RJ12 pin</th>
<th>DB9 Pin</th>
<th>Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>DCD</td>
<td>Data Carrier Detect.</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>RXD</td>
<td>Receive Data.</td>
</tr>
<tr>
<td>3</td>
<td>4 and 7</td>
<td>DTR/RTS</td>
<td>Data Terminal Ready/Request To Send. Function depends on the way you open the serial port see page 129.</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>GND</td>
<td>Ground.</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>TXD</td>
<td>Transmit Data.</td>
</tr>
<tr>
<td>6</td>
<td>8</td>
<td>CTS</td>
<td>Clear to send.</td>
</tr>
<tr>
<td>Shell</td>
<td>Shield</td>
<td>Chassis</td>
<td>Chassis ground.</td>
</tr>
</tbody>
</table>
RJ12 to DB25 male cable

Cable diagram

Pin 1 (looking into socket)

Perle part number CIO8+M

Connector pinout table

<table>
<thead>
<tr>
<th>RJ12</th>
<th>DB25</th>
<th>Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8</td>
<td>DCD</td>
<td>Data Carrier Detect.</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>RXD</td>
<td>Receive Data.</td>
</tr>
<tr>
<td>3</td>
<td>4 and 20</td>
<td>DTR/RTS</td>
<td>Data Terminal Ready/Request To Send. Function depends on the way you open the serial port see page 120.</td>
</tr>
<tr>
<td>4</td>
<td>7</td>
<td>GND</td>
<td>Ground.</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>TXD</td>
<td>Transmit Data.</td>
</tr>
<tr>
<td>6</td>
<td>5</td>
<td>CTS</td>
<td>Clear to send.</td>
</tr>
<tr>
<td>Shield</td>
<td>1 and Shell</td>
<td>Chassis</td>
<td>Chassis ground.</td>
</tr>
</tbody>
</table>
## RJ12 to DB25 female cable

### Cable diagram

![Cable diagram](image)

### Connector pinout table

<table>
<thead>
<tr>
<th>RJ12</th>
<th>DB25</th>
<th>Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8</td>
<td>DCD</td>
<td>Data Carrier Detect.</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>RXD</td>
<td>Receive Data.</td>
</tr>
<tr>
<td>3</td>
<td>5 and 6</td>
<td>DTR/RTS</td>
<td>Data Terminal Ready/Request To Send. Function depends on the way you open the serial port see page 120.</td>
</tr>
<tr>
<td>4</td>
<td>7</td>
<td>GND</td>
<td>Ground.</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>TXD</td>
<td>Transmit Data.</td>
</tr>
<tr>
<td>6</td>
<td>4</td>
<td>CTS</td>
<td>Clear to send.</td>
</tr>
<tr>
<td>Shield</td>
<td>1 and shell</td>
<td>Chassis</td>
<td>Chassis ground.</td>
</tr>
</tbody>
</table>
You need to read this chapter if you want information in quick reference form about the utilities provided with the I/O8+ Serial adaptor cards.

This chapter provides a quick reference guide to the software utilities provided with the I/O8+ 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 112
• SCO UnixWare utilities on page 116
**SCO OpenServer utilities**

A number of utilities are provided for use with the SCO OpenServer operating system. See the following sections for information about main windows and menus;

- Host Card Configuration utility (SCO OpenServer 5 Only) on page 113
- Port Configuration utility on page 114
Host Card Configuration utility (SCO OpenServer 5 Only)

The main window for the Host Card Configuration tool is shown in the next picture. See Menu map on page 113 for details of menus.

For menu, see page

Menu map

The Host Card Configuration tool menu is as follows;

<table>
<thead>
<tr>
<th>Menu option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Card &gt; Quit</td>
<td>Quit the Host Card Configuration tool without saving. See page 50.</td>
</tr>
<tr>
<td>Add</td>
<td>Add a new host card address. See page 45.</td>
</tr>
<tr>
<td>Remove</td>
<td>Remove a host card address. See page 49.</td>
</tr>
<tr>
<td>Edit</td>
<td>Edit an existing host card address. See page 47.</td>
</tr>
<tr>
<td>Save and exit</td>
<td>Exit the Host Card Configuration tool and save any changes. See page 50.</td>
</tr>
</tbody>
</table>
Port Configuration utility

The main window for the Port Configuration table is shown in the next picture. See Menu map on page 115 for details of menus.

Menus see page 115.
Select one or more ports from this list.
Select a getty definition here. See page 53.
Enables or disables login. See page 54.

Select a terminal type here. See page 53.
Enables or disables flow control. See page 53.
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;</td>
<td></td>
</tr>
<tr>
<td>Quit</td>
<td>Quit Port Configuration tool without saving changes. See page 54</td>
</tr>
<tr>
<td>Logins</td>
<td>Display all ports with logins enabled. See page 54</td>
</tr>
<tr>
<td>Unconfigured</td>
<td>Display all ports without logins enabled. See page 54</td>
</tr>
<tr>
<td>All</td>
<td>Display all ports. See page 54</td>
</tr>
<tr>
<td>Save &amp; Exit</td>
<td>Exit the Port Configuration tool and save changes. See page 54</td>
</tr>
</tbody>
</table>
SCO UnixWare utilities

Device configuration utility

The main window for the Device Configuration Utility is shown in the next picture.

Menu map

The menu is as follows:

<table>
<thead>
<tr>
<th>Menu option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware Device Configuration</td>
<td>Displays the Hardware Device Configuration window which allows you to set host card addresses and IRQ levels. See page 64.</td>
</tr>
<tr>
<td>Software Device Drivers</td>
<td>Displays the Software Device Drivers selection window which allows you to select a software device driver type to display. See page 71.</td>
</tr>
<tr>
<td>Apply Changes &amp; Exit DCU</td>
<td>Apply configuration changes and exit the Hardware Device Configuration Utility. See page 72.</td>
</tr>
<tr>
<td>Exit DCU and Cancel Changes</td>
<td>Exit the Hardware Device Configuration utility and cancel any changes. See page 72.</td>
</tr>
</tbody>
</table>
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 118 for menu maps.

<table>
<thead>
<tr>
<th>Host</th>
<th>Port</th>
<th>View</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Boards view

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

<table>
<thead>
<tr>
<th>Port</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Ports view

Displays the serial ports present on the system. To obtain this view, click on the View > Ports menu option.

<table>
<thead>
<tr>
<th>Port</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The Serial Manager menu is as follows:

<table>
<thead>
<tr>
<th>Menu option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host</td>
<td>Open Host</td>
</tr>
<tr>
<td></td>
<td>Selects a host machine. See your SCO UnixWare documentation for further details.</td>
</tr>
<tr>
<td></td>
<td>Exit</td>
</tr>
<tr>
<td></td>
<td>Exit Serial Manager.</td>
</tr>
<tr>
<td>Port</td>
<td>Modify</td>
</tr>
<tr>
<td></td>
<td>Modifies serial port settings. See page 73.</td>
</tr>
<tr>
<td>View</td>
<td>Ports</td>
</tr>
<tr>
<td></td>
<td>Show serial ports available for the currently selected host card. See page 73.</td>
</tr>
<tr>
<td></td>
<td>Boards</td>
</tr>
<tr>
<td></td>
<td>Show host cards present on the system. See page 73.</td>
</tr>
</tbody>
</table>
Appendix A Serial port device names

You need to read this appendix if you want information about device names for the Perle I/O8+ serial adaptor cards.

This appendix provides information about the device nodes associated with each serial port for the Perle I/O8+ 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 OpenServer on page 120
• Under SCO UnixWare on page 121
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>ttyi1</td>
<td>Normal communications port</td>
<td>Indicates normal communications port behaviour.</td>
<td>/dev</td>
</tr>
<tr>
<td>ttyi1</td>
<td>Normal communications port wait</td>
<td>Indicates a port open will not complete unless the DCD signal is present.</td>
<td>/dev</td>
</tr>
<tr>
<td>tty1p</td>
<td>Print device</td>
<td>Indicates that device should only be used for transparent print.</td>
<td>/dev</td>
</tr>
</tbody>
</table>

DTR and RTS signal information

The serial ports on I/O8+ serial adaptor cards use the same pin (pin3 on the RJ12 connector see Chapter 3 I/O8+ Cabling Information) for the Data Terminal Ready and Ready To Send signals. The function of the pin depends on the way you open the port as shown in the next table.

<table>
<thead>
<tr>
<th>Device name</th>
<th>Function</th>
<th>Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ttyi1</td>
<td>Normal communications port</td>
<td>RTS</td>
<td>Ready To Send. Used for hardware flow control.</td>
</tr>
<tr>
<td>ttyi1</td>
<td>Normal communications port wait</td>
<td>DTR</td>
<td>Data Terminal Ready. This pin cannot be used for hardware flow control when this type of device is opened.</td>
</tr>
</tbody>
</table>
### 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>ix</td>
<td>Normal communications port</td>
<td>Indicates normal communications port behaviour.</td>
<td>/dev/term</td>
</tr>
<tr>
<td>ix</td>
<td>Modem port</td>
<td>Indicates a port open will not complete unless the DCD signal is present.</td>
<td>/dev/term</td>
</tr>
<tr>
<td>ixp</td>
<td>Transparent print ports</td>
<td>Indicates that device should only be used for transparent print.</td>
<td>/dev/term</td>
</tr>
</tbody>
</table>

**Note**

x denotes a physical port on a host card.
When x is between 1 and 9, it is written as 0x.
You can only open the transparent print port can when the corresponding normal port is open.
Appendix B Transparent printing

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

This appendix includes the following sections:

• What is transparent printing? on page 123
• Problems with printer output on page 124
• The printcap.io8 configuration file on page 124
• The print.io8 configuration file on page 125
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 (tty~n 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.io8 file. See The printcap.io8 configuration file on page 124 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 print.io8 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.io8 configuration file on page 125 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.io8 configuration file

The printcap.io8 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.

If you don’t configure a specific terminal type printcap.io8 will use the default type which is "unknown"
The print.io8 configuration file

For each port, transparent printing is controlled by an entry in the print.io8 file. The print.io8 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.io8 file is normally controlled automatically by either the Port Configuration utility (SCO OpenServer) or the Serial Manager (SCO UnixWare). A sample entry from a typical print.io8 file is shown in the next example.

```
100 unknown tty1 -ixany -ixon
```

- **Terminal type:** terminal to which your printer is attached defined in the printcap.io8 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:**

For each port, transparent printing is controlled by an entry in the print.io8 file.
Appendix C ISA host card address settings

You need to read this appendix if you want information on converting hexadecimal addresses into binary for I/O8+ ISA serial adaptor cards.

This appendix provides a table for converting hexadecimal addresses into binary for I/O8+ ISA serial adaptor cards. See also Installing an ISA host card on page 101 in Chapter 2 Installing drivers and host cards.

This appendix includes the following sections:
• DIL switch location on page 127
• Hexadecimal to binary conversion table on page 128.
**DIL switch location**

You assign host card addresses for an ISA host card using the on board configuration DIL switch on an I/O8+ ISA host card (shown in the next picture). To convert I/O8+ hexadecimal address into binary see *Hexidecimal to binary conversion table* on page 128.

See also *Installing an ISA host card* on page 101 in Chapter 2 Installing drivers and host cards.
**Hexadecimal to binary conversion table**

This table tells you how to convert hexadecimal addresses into binary for I/O8+ ISA host cards. You use the resulting values to assign host card addresses using the on board configuration DIL switch on an I/O8+ ISA host card (see DIL switch location on page 127).

<table>
<thead>
<tr>
<th>Host card address</th>
<th>Switch setting on host card</th>
<th>Host card address</th>
<th>Switch setting on host card</th>
<th>Host card address</th>
<th>Switch setting on host card</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>01000000</td>
<td>170</td>
<td>01011100</td>
<td>1e0</td>
<td>01111000</td>
</tr>
<tr>
<td>104</td>
<td>01000001</td>
<td>174</td>
<td>01011101</td>
<td>1e4</td>
<td>01111010</td>
</tr>
<tr>
<td>108</td>
<td>01000010</td>
<td>178</td>
<td>01011110</td>
<td>1e8</td>
<td>01111010</td>
</tr>
<tr>
<td>10c</td>
<td>01000011</td>
<td>17c</td>
<td>01011111</td>
<td>1ec</td>
<td>01111011</td>
</tr>
<tr>
<td>110</td>
<td>01000100</td>
<td>180</td>
<td>01100000</td>
<td>180</td>
<td>01111000</td>
</tr>
<tr>
<td>114</td>
<td>01000101</td>
<td>184</td>
<td>01100001</td>
<td>184</td>
<td>01111011</td>
</tr>
<tr>
<td>118</td>
<td>01000110</td>
<td>188</td>
<td>01100010</td>
<td>188</td>
<td>01111110</td>
</tr>
<tr>
<td>11c</td>
<td>01000111</td>
<td>18c</td>
<td>01100011</td>
<td>18c</td>
<td>01111111</td>
</tr>
<tr>
<td>120</td>
<td>01001000</td>
<td>190</td>
<td>01100100</td>
<td>200</td>
<td>10000000</td>
</tr>
<tr>
<td>124</td>
<td>01001001</td>
<td>194</td>
<td>01100101</td>
<td>204</td>
<td>10000001</td>
</tr>
<tr>
<td>128</td>
<td>01001010</td>
<td>198</td>
<td>01100100</td>
<td>208</td>
<td>10000010</td>
</tr>
<tr>
<td>12c</td>
<td>01001011</td>
<td>19c</td>
<td>01100111</td>
<td>20c</td>
<td>10000011</td>
</tr>
<tr>
<td>130</td>
<td>01001100</td>
<td>1a0</td>
<td>01101000</td>
<td>210</td>
<td>10001000</td>
</tr>
<tr>
<td>134</td>
<td>01001101</td>
<td>1a4</td>
<td>01101001</td>
<td>214</td>
<td>10001011</td>
</tr>
<tr>
<td>138</td>
<td>01001110</td>
<td>1a8</td>
<td>01101010</td>
<td>218</td>
<td>10001100</td>
</tr>
<tr>
<td>13c</td>
<td>01001111</td>
<td>1ac</td>
<td>01101011</td>
<td>21c</td>
<td>10001110</td>
</tr>
<tr>
<td>140</td>
<td>01010000</td>
<td>1b0</td>
<td>01110000</td>
<td>220</td>
<td>10010000</td>
</tr>
<tr>
<td>144</td>
<td>01010001</td>
<td>1b4</td>
<td>01110010</td>
<td>224</td>
<td>10010011</td>
</tr>
<tr>
<td>148</td>
<td>01010010</td>
<td>1b8</td>
<td>01110110</td>
<td>228</td>
<td>10010101</td>
</tr>
<tr>
<td>14c</td>
<td>01010011</td>
<td>1bc</td>
<td>01110111</td>
<td>22c</td>
<td>10010110</td>
</tr>
<tr>
<td>150</td>
<td>01010100</td>
<td>1c0</td>
<td>01110000</td>
<td>230</td>
<td>10011000</td>
</tr>
<tr>
<td>154</td>
<td>01010101</td>
<td>1c4</td>
<td>01110001</td>
<td>234</td>
<td>10011011</td>
</tr>
<tr>
<td>158</td>
<td>01010110</td>
<td>1c8</td>
<td>01110010</td>
<td>238</td>
<td>10011110</td>
</tr>
<tr>
<td>15c</td>
<td>01010111</td>
<td>1cc</td>
<td>01110011</td>
<td>23c</td>
<td>10011111</td>
</tr>
<tr>
<td>160</td>
<td>01011000</td>
<td>1d0</td>
<td>01110100</td>
<td>240</td>
<td>10010000</td>
</tr>
<tr>
<td>164</td>
<td>01011001</td>
<td>1d4</td>
<td>01110101</td>
<td>244</td>
<td>10010011</td>
</tr>
<tr>
<td>168</td>
<td>01011010</td>
<td>1d8</td>
<td>01110110</td>
<td>248</td>
<td>10010101</td>
</tr>
<tr>
<td>16c</td>
<td>01011011</td>
<td>1dc</td>
<td>01110111</td>
<td>24c</td>
<td>10010111</td>
</tr>
<tr>
<td>Host card address</td>
<td>Switch setting on host card</td>
<td>Host card address</td>
<td>Switch setting on host card</td>
<td>Host card address</td>
<td>Switch setting on host card</td>
</tr>
<tr>
<td>-------------------</td>
<td>-----------------------------</td>
<td>-------------------</td>
<td>-----------------------------</td>
<td>-------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>0x0250</td>
<td>10010100</td>
<td>0x0260</td>
<td>10010100</td>
<td>0x0270</td>
<td>10010100</td>
</tr>
<tr>
<td>0x02c4</td>
<td>10010101</td>
<td>0x0264</td>
<td>10010101</td>
<td>0x0274</td>
<td>10010101</td>
</tr>
<tr>
<td>0x02c8</td>
<td>10010110</td>
<td>0x0268</td>
<td>10010110</td>
<td>0x0278</td>
<td>10010110</td>
</tr>
<tr>
<td>0x02cc</td>
<td>10010111</td>
<td>0x027c</td>
<td>10010111</td>
<td>0x0280</td>
<td>10010111</td>
</tr>
<tr>
<td>0x0280</td>
<td>10011000</td>
<td>0x02c4</td>
<td>10011000</td>
<td>0x0288</td>
<td>10011000</td>
</tr>
<tr>
<td>0x028c</td>
<td>10011010</td>
<td>0x0288</td>
<td>10011010</td>
<td>0x0290</td>
<td>10011010</td>
</tr>
<tr>
<td>0x029c</td>
<td>10011111</td>
<td>0x029c</td>
<td>10011111</td>
<td>0x02a0</td>
<td>10011111</td>
</tr>
<tr>
<td>0x02a4</td>
<td>10011110</td>
<td>0x02a4</td>
<td>10011110</td>
<td>0x02a8</td>
<td>10011110</td>
</tr>
<tr>
<td>0x02ac</td>
<td>10011111</td>
<td>0x02ac</td>
<td>10011111</td>
<td>0x02b0</td>
<td>10011111</td>
</tr>
<tr>
<td>0x02b4</td>
<td>10011110</td>
<td>0x02b4</td>
<td>10011110</td>
<td>0x02b8</td>
<td>10011110</td>
</tr>
<tr>
<td>0x02bc</td>
<td>10011111</td>
<td>0x02bc</td>
<td>10011111</td>
<td>0x02c0</td>
<td>10011111</td>
</tr>
<tr>
<td>0x02c4</td>
<td>10011110</td>
<td>0x02c4</td>
<td>10011110</td>
<td>0x02c8</td>
<td>10011110</td>
</tr>
<tr>
<td>0x02cc</td>
<td>10011111</td>
<td>0x02cc</td>
<td>10011111</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Host card address</td>
<td>Switch setting on host card</td>
<td>Host card address</td>
<td>Switch setting on host card</td>
<td>Host card address</td>
<td>Switch setting on host card</td>
</tr>
<tr>
<td>-------------------</td>
<td>-----------------------------</td>
<td>-------------------</td>
<td>-----------------------------</td>
<td>-------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>3d0</td>
<td>11110100</td>
<td>3e0</td>
<td>11111000</td>
<td>3f0</td>
<td>11111100</td>
</tr>
<tr>
<td>3d4</td>
<td>11110101</td>
<td>3e4</td>
<td>11111001</td>
<td>3f4</td>
<td>11111101</td>
</tr>
<tr>
<td>3d8</td>
<td>11110110</td>
<td>3e8</td>
<td>11111010</td>
<td>3f8</td>
<td>11111110</td>
</tr>
<tr>
<td>3dc</td>
<td>11110111</td>
<td>3ec</td>
<td>11111011</td>
<td>3fc</td>
<td>11111111</td>
</tr>
</tbody>
</table>
Appendix D Troubleshooting

You need to read this appendix if you want information on troubleshooting error messages experienced with I/O8+ 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;
- Windows 95 and 98 on page 132
- Windows NT on page 140
- SCO OpenServer 5 on page 141
- SCO UnixWare/SCO OpenServer 6 on page 143.
Windows 95 and 98

Resource conflicts

If the system cannot use the factory default or allocate free resources when the system tries to add the ISA card at its default address and IRQ level the following message screen is displayed.

If this occurs proceed as follows:
1. In the Add New Hardware Wizard, click on the Next > button to display the following screen.
2. In the Add New Hardware Wizard, click on the Finish button. The Properties tabbed window is now displayed.

3. In the properties tabbed window, click on the Resources tab. The Resources page is now displayed.

![Properties window with resources tab]
4. In the Resources page, click on the **Set Configuration Manually** button.

The lower half of the Resources page is now updated to show the resources currently in use as shown in the next picture.
5. Note the details of the resource conflict down, then in the Resources page, click on Change Setting button, The Edit Interrupt Request window is now displayed.

6. In the Edit Interrupt Request window, Scroll through the different Interrupt Request levels using the Value field selector to establish if there are any Request Levels you can reallocate.

7. Once you have established a device whose resources can be reallocated, try re-allocating system resources using the methods suggested in Re-allocating system resources on page 136.
Having found another IRQ level you can allocate (typically from another ISA card) you can re-allocate resources in one of the following ways:

- **Re-allocating resources from the BIOS** on page 136
- **Re-allocating resources using Device Manager** on page 137

**Re-allocating resources from the BIOS**

To re-allocate resources from with the BIOS proceed as follows:

- Go into the system BIOS and reserve the Interrupt Request Level you want to use.

Any PCI devices present on the system should now use a different IRQ level automatically. The resource you have reserved should now be free on re-starting your system.

**Note**

If you want to use the IRQ level from another ISA device, you can't do this from within the BIOS. In this case you will need to use the Device Manager Facility. See **Re-allocating resources using Device Manager** on page 137 for details.
Re-allocating resources using Device Manager

If you are unable to re-allocate resources from the system BIOS, you can try using the Device Manager instead using the following procedure:

1. In the Windows desktop, click on the Start button and select Settings > Control Panel to display the Control panel window.
2. In the Control panel window, double click on the System icon shown in the next picture.
3. In the System Properties tabbed window now displayed, click on the Device Manager tab to display the Device manager page.
4. In the device manager page, double click on the device which is currently using the IRQ level you want.
5. In the properties tabbed window now displayed, click on the **Resources** tab. The **Resources** page is now displayed as shown in the next picture.
6. In the Resources page, click on the **Set Configuration Manually** button

The lower half of the Resources page is now updated to show the resources currently in use as shown in the next picture.

![Resources page](image)

7. In the Resources page, change the resource property of the device to free up the resource you want. Refer to your Windows documentation 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.
The normal messages for satisfactory host card detection and initialisation form part of the normal SCO OpenServer 5 boot up messages and are shown in the next example. This example shows one ISA host card and one PCI host card.

### ISA host card message (one per card installed)

- **Address range used by host card in hexadecimal**: `0x100-0x103`
- **Host card ID number**: `1`
- **Driver software version**: `Driver:v1.0.0`

### PCI host card message (one per card installed)

- **Address range used by host card in hexadecimal**: `0xFC80-0xFC83`
- **Host card ID number**: `9`
- **Driver software version**: `Driver:v1.0.0`

### Total Ports

- **Total Ports**: `16`
## Error messages

<table>
<thead>
<tr>
<th>Error message</th>
<th>Reason</th>
<th>Action required</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ERROR: a PCI host is not initialised</strong></td>
<td>PCI host card faulty.</td>
<td>1. Ensure that you have followed the installation procedure correctly. See page 17</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. If the problem persists try another host card. See page 17.</td>
</tr>
<tr>
<td><strong>ERROR: an ISA host is not initialised</strong></td>
<td>Driver software has been unable to detect an ISA host card at the specified address.</td>
<td>1. Check that DIL switch settings on host cards match those set in Host Card Configuration tool. See page 47.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Ensure that you have followed the installation procedure correctly. See page 17.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. If the problem persists try another host card. See page 17.</td>
</tr>
<tr>
<td><strong>ERROR: a PCI host has bad resource(s)</strong></td>
<td>PCI host card faulty.</td>
<td>1. Ensure that you have followed the installation procedure correctly. See page 17</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. If the problem persists try another host card. See page 17.</td>
</tr>
<tr>
<td><strong>ERROR: an ISA host has bad resource(s)</strong></td>
<td>Duplication of addresses and/or IRQ level for two or more host cards.</td>
<td>1. Check that DIL switch settings on host cards match those set in Host Card Configuration tool. See page 47.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Ensure that you have followed the installation procedure correctly. See page 17.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. If the problem persists try another host card. See page 17.</td>
</tr>
<tr>
<td><strong>WARNING: a PCI host is not configured</strong></td>
<td>System error.</td>
<td>1. Remove the I/O8+ host card and uninstall the drivers from your system. See page 17 and page 55.</td>
</tr>
<tr>
<td><strong>WARNING: an ISA host is not configured</strong></td>
<td></td>
<td>2. Re-install the drivers and host cards onto your system taking care to follow the correct procedure. See page 17.</td>
</tr>
<tr>
<td><strong>Serial port device node related messages</strong></td>
<td>Serial port device nodes not present.</td>
<td>1. Invoke the io8hcfg utility. See page 43.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Ensure all installed host cards are listed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Save and exit the utility to create the device nodes.</td>
</tr>
</tbody>
</table>
Example of normal boot up messages for host cards

The normal messages for satisfactory host card detection and initialisation form part of the normal SCO UnixWare boot up messages and are shown in the next example. This example shows one ISA host card and one PCI host card.

**SCO UnixWare**

- **IO8 UnixWare Driver v1.0.0**
  - I/O8+ Host Card Type ISA Interrupt 11
  - I/O8+ Host Card Type PCI Interrupt 9

**SCO OpenServer 6**

- **Perle I/O8+ OpenServer 6 Driver v1.0.0**
  - Copyright (c) Perle Systems Limited, Jan 25, 2006, 17:57:59
  - I/O8+ PCI Card at Interrupt 9
## Error messages

### I/O8+ host card error messages

<table>
<thead>
<tr>
<th>Error message</th>
<th>Reason</th>
<th>Action required</th>
</tr>
</thead>
<tbody>
<tr>
<td>No I/O 8+ hosts located within system</td>
<td>I/O8+ driver was unable to find any I/O8+ Host Cards.</td>
<td>Ensure that you have inserted each I/O8+ host card into its slot properly. See page 100 and page 100.</td>
</tr>
<tr>
<td>io8_: No Card slot found</td>
<td>I/O8+ driver was unable to determine in which slot the host card is located.</td>
<td>Try installing the host card in a different position. See page 100 and page 100.</td>
</tr>
<tr>
<td>io8_: Address not found</td>
<td>I/O8+ driver failed to Read the address.</td>
<td>For ISA host cards, ensure you have assigned the addresses correctly. See page 64. For PCI host cards, ensure that the Device Configuration Utility displays a valid address for the card. See page 71.</td>
</tr>
<tr>
<td>io8_: Card not ready. GSVR x, wait y</td>
<td>The I/O8+ host card is not responding to commands and may be faulty.</td>
<td>Try installing another host card. See page 57.</td>
</tr>
<tr>
<td>io8_: Wrong IDENT</td>
<td>I/O8+ driver does not recognise a card as an I/O8+ host card. Host card may be faulty.</td>
<td>Try installing another host card. See page 57.</td>
</tr>
<tr>
<td>io8_: No Interrupt number found</td>
<td>The I/O8+ driver was unable to read the interrupt number from the operating system.</td>
<td>For ISA cards, ensure the correct interrupt has been set on the card and that the correct value has been set with the Device Configuration Utility. See page 64 and page 71. For PCI host cards, ensure that the Device Configuration Utility has selected a valid interrupt. See page 71.</td>
</tr>
<tr>
<td>io8_: Fail attach Interrupt</td>
<td>The I/O8+ driver failed to attach an interrupt.</td>
<td>Check that the interrupt set by the Device Configuration Utility is valid for the I/O8+ card and not used by another application. See page 71.</td>
</tr>
</tbody>
</table>
The following messages are caused by applications which use the I/O8+ serial ports such as terminals.

<table>
<thead>
<tr>
<th>Error message</th>
<th>Reason</th>
<th>Action required</th>
</tr>
</thead>
<tbody>
<tr>
<td>io8_ : real port not open</td>
<td>An application has attempted to open a Transparent port without the real port being open.</td>
<td>Ensure your application opens a real port before opening the transparent port.</td>
</tr>
<tr>
<td>io8_ : open fails - modem + local at same time</td>
<td>An application cannot open a particular port as Local and Modem simultaneously.</td>
<td>Ensure your application only uses each port as either a local or a modem but not both.</td>
</tr>
<tr>
<td>io8_ : open fails - exclusive use set</td>
<td>An application cannot open a particular port while it is already open.</td>
<td>Ensure your application closes any ports already in use before starting.</td>
</tr>
<tr>
<td>io8_ : Cannot close : X Print still open</td>
<td>An application cannot close the local port while the transparent print port remains open.</td>
<td>Ensure your application closes the transparent port when appropriate.</td>
</tr>
</tbody>
</table>

This section describes troubleshooting I/O8+ products under the Windows 2000/XP/Server 2003/Vista/Server 2008 operating systems and includes the following sections:


<table>
<thead>
<tr>
<th>Problem</th>
<th>Action required</th>
</tr>
</thead>
</table>
| Machine fails to boot.                                                 | 1. Turn off your machine, remove I/O8+ card(s) and reboot. See page 103.  
|                                                                        | 2. In the BIOS setup, make sure memory and interrupts levels are reserved for any ISA cards fitted.  
|                                                                        | 3. Check the memory address switch settings on any ISA cards fitted. See page 101.  
|                                                                        | 4. Try installing a different host card in case the one currently installed is faulty. See page 101. | |
| 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 I/O8+ cards fitted (page 103) and then reboot your system.  
|                                                                        | 4. Once the machine boots properly, change the configuration settings of the I/O8+ card to match those in the BIOS setup. See page 101. | |
| 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 I/O8+ cards fitted (page 103) and then reboot your system.  
|                                                                        | 5. Once the machine boots properly, change the configuration settings of the I/O8+ card to match those in the BIOS setup. See page 101. | |
| Operating system loads OK, but I/O8+ driver or another driver fails to boot. | 1. Run Windows Device Manager to find available IRQ and memory addresses. |
| I/O8+ ports do not work after installation.                            | 1. Check the Windows Event Log and follow the suggested actions. |
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.

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.
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 O1  
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 O1  
Email: ptac@perle.com |
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