PeripheralVision®

User Manual

Version 1.6

Contents

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Introduction to PeripheralVision®

PeripheralVision® is a network management tool developed to enable comprehensive monitoring, organisation and graphical design of your office network, WAN (Wide Area Network) and the Internet beyond. Its key features include:

Discovery facilities to find the hardware attached to your network
The discovery facilities can be configured to query your network in a number of ways to find the attached hardware. Once a device (agent) is found, it will be identified by PeripheralVision® and an icon representing the device will be displayed, complete with a title, on the PeripheralVision® map.

Detailed property pages enabling remote management of devices
Extensive property pages are available for each discovered device. These can be interrogated for device information, status etc. and can be used to remotely manage the device (for instance, a printer could be set on/off line, reset, paper trays can be changed - all remotely from the PC on which PeripheralVision® is installed). The level of remote configuration available will vary depending on the printer model.

Comprehensive monitoring facilities
Extensive device monitoring capabilities enable PeripheralVision® to configure sound and email alerts to notify of problems with the hardware on the network. Logging and graph abilities are available to record hardware performance.

Design graphical representations of your network
The PeripheralVision® map enables you to design graphical representations of your network. Peripherals recognised to be on the same part of the network will be automatically cabled together, use the facilities to tailor the map to arrange a screen layout to represent your office/s.

This manual will guide you through the installation of your **PeripheralVision**® software and enable you to use its potential to the full.

Chapter 1

Installation ———————————————

TCP/IP

Check that you are running TCP/IP and have a valid IP address assigned to your workstation. If you do not have a valid TCP/IP address assigned to your workstation, refer to the Installation Notes as described in Appendix B of this manual.

CD Installation on Windows 95/98 and NT 4.0

Important: Before installing PeripheralVision® ensure that you exit all Windows programs.

1   Insert the PeripheralVision® CD-ROM in your drive and wait a few moments.

2   You will be presented with a message window telling you that you are installing PeripheralVision®.

3   Click **Yes** to continue. After a few moments a window appears.

4   Click on **Cancel** if you have any Windows programs open. Close them down and restart the procedure.

5   Click on **Next** to continue. The following window will tell you that the default directory for PeripheralVision® is:

   C:\Program Files\Ringdale\PeripheralVision

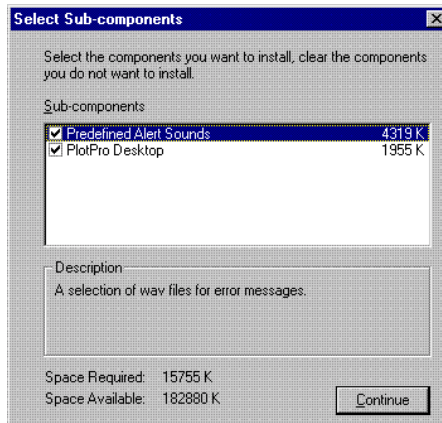   and will give you the opportunity to change this if you wish.

6   Click on **Next** to continue.

The following window will look similar to this:
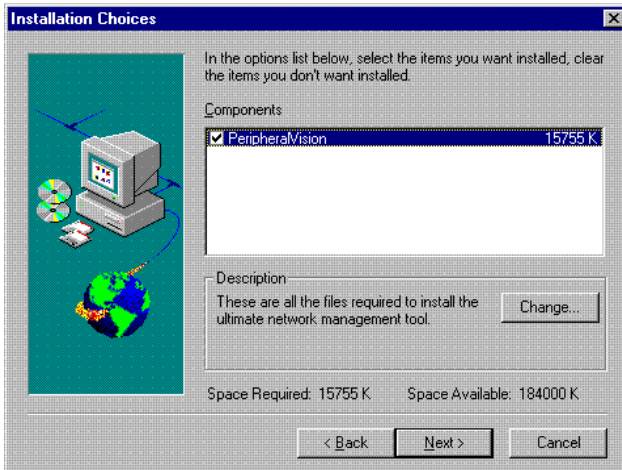
7   Clicking on the **Change** button will present you with the following
    dialog box which contains installation options:

The options are:

Pre-defined Alert Sounds (for further information about the sound facilities see Chapter 4). This will install sound files for use in PeripheralVision®. *If your PC doesn't have a sound card, or you wish to assign alert sounds of your own, you probably will not require this option.*

PlotPro Desktop is a program that allows viewing and printing of Raster, AutoCAD DWG and DXF files to plotters.

Software Licence Drivers is an option for Windows NT4 only, and is automatically installed with PeripheralVision® whether this option is selected or not. Use this option only if the drivers need to be reloaded separately at a later date.

8   If any items are selected that you do *not* want to install, click in the box next to them to *deselect* them.

Both of these dialog boxes will display the space required to install the software as well as the space available. You can leave these screens without installing software by choosing **Cancel** or **Back** (or **Continue** then **Cancel** or **Back** from the Changes dialog box).

9   Once you have selected the options you require, click on **Continue** then **Next** to continue. Follow the simple instructions to complete the installation. The program will load and the program installer will automatically place an icon in your **Start** directory.

10 The final window gives you the option of restarting your computer without running through the close down procedure. Remove the CD from the drive, check that **Restart my computer now** is selected and click on **Finish**. After the re-boot is finished the installation will be complete.

Installing the SNMP Agent (optional)

This installation is an option which enables your workstation to increase the functionality of its relationship with a large range of other machines, but is not necessary to ensure the operation of PeripheralVision® itself. SNMP (Simple Network Management Protocol) is the accepted standard protocol for LANs (Local Area Networks). You must install the SNMP agent on your workstation and on the other machines in your office to get the full benefits of the protocol .

Microsoft's SNMP agent can be found on the Windows 95 and Windows NT installation CDs.

To Install SNMP on Windows 95/98:

1 From the **Start** menu select **Settings** and then **Control Panel**.

2 Select **Network**.

3 Press the **Add** button.

4 Select **Service** from the list and then press **Add** again.

5 Now press the **HaveDisk** button.

6 At the prompt supply the path **D:\ADMIN\NETTOOLS\SNMP** (assuming D is your CD drive) for Windows **95**.

   or **D:\TOOLS\RESKIT\NETADMIN\SNMP** (assuming D is your CD drive) for Windows **98**.

7 Press **OK.**

8 Select the **Microsoft SNMP agent** option.

9 Click on the **OK** button for all windows including the **Network** configuration screen.

You will see a progress bar with a title **Building Driver Database**. An error may occur here on Windows 95 and it will ask for the Installation CD again, even though it is already in the CD Drive. This error occurs because the program is looking in the wrong area of the disk (this is a Windows 95 error and not a PeripheralVision® error). If this happens, change the directory to **D:\WIN95** (the normal install path).

10 Press **OK** and the SNMP installation will be complete after a re-boot.

To Install the SNMP Agent on Windows NT:

1   From the **Start** menu select **Settings** and then **Control Panel**.

2   Select **Network**.

3   Select **Services** property page by clicking on the tab.

4   Select the **Add** button.

5   Scroll down the list and find **SNMP Service**. Click on it to select it.

6   Click **OK**. The following window will appear:
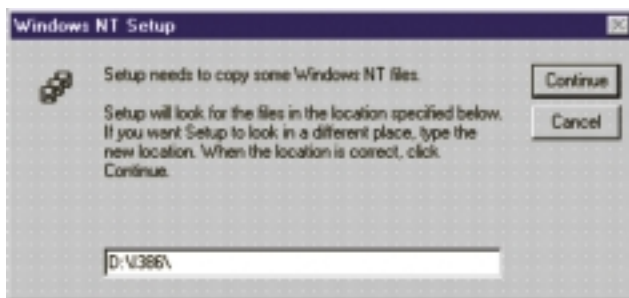
7   Click on **Continue** (assuming D is your CD drive). The SNMP agent will be loaded from the CD.

8 After the SNMP agent has been loaded, ensure that **SNMP Service** is still highlighted, and then click on the **Properties** button.

9 If **Agent** is not the default page, select it.

l0 Click **OK** to exit. The procedure will be complete after a re-boot.

Uninstalling PeripheralVision®

1 To uninstall PeripheralVision®, select **Programs** from the **Start** menu, then **PeripheralVision®**. Click on **Uninstall PeripheralVision®**. You will see the following message box:
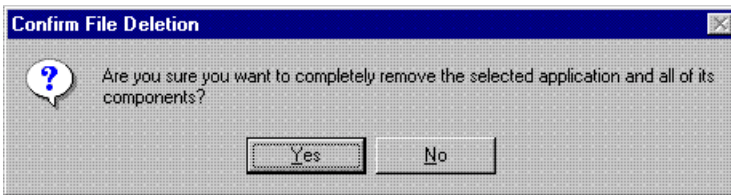
2 To completely remove PeripheralVision® and all of its components, select **Yes.** The Uninstall Shield application will begin automatically uninstalling PeripheralVision®. Alternately, select **No** to retain your installed version of PeripheralVision®.

Chapter 2

Operating PeripheralVision®: Discovery ⎯⎯⎯⎯

To start PeripheralVision®:

Select **Start** > **Programs** > **PeripheralVision®** > **PeripheralVision® 1.6**.

Wait a few moments. You will then be presented with the following empty
Map Screen:
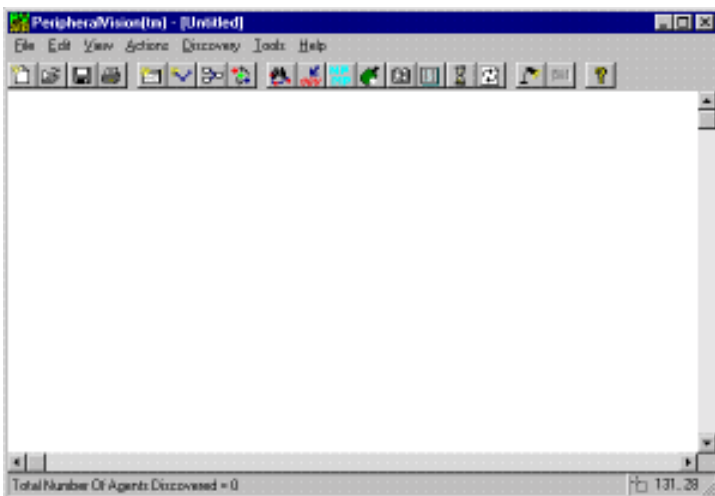
Discovery and Related Functions

Discovering your LAN (Local Area Network)
If the program is left to start up on its own, then it will automatically send
out a NPMP™ (Network Peripheral Management Protocol) broadcast on
your LAN after 30 seconds. Any devices discovered will appear on the
map screen as icons.

An example of how the screen will appear is shown below:
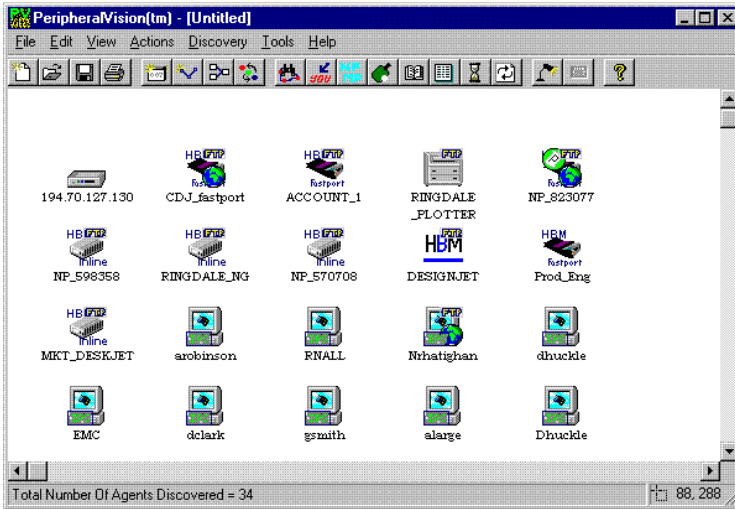

Each icon denotes a network device (agent). PeripheralVision® identifies the type of device it is (for example a printer, a PC, a hub or router) and then chooses an icon to represent it. Most makes of printer will be specifically identified (for example Kyocera, Epson, and Hewlett Packard printers will be recognised and each will have its own icon).

In addition, symbols appearing on the icons provide information regarding the functionality and the status of the machine. The NPMP™ probe updates the status of the NPMP™ devices on the network every 30 seconds automatically (this feature is adjustable. For further details see the section *Expanding Your Discovery Abilities*, which is found later in this chapter).

Explanations for these symbols are as follows:

 FTP superimposed on agent
Agent has File Transfer Protocol (FTP) accessibility enabling use of a FTP probe (for further details see section *FTP Access* later in this chapter).

Globe icon superimposed on agent
Agent has HTML abilities, enabling it to be interrogated using a web browser (for further details see section *Web Browser* later in this chapter).

Large red cross superimposed on agent
Agent currently not responding.
When the machine comes back on to the network the red cross will disappear.

Large question mark superimposed on agent
Agent hardware type cannot be identified.
User can choose type from property pages.

Thumbs down icon superimposed on agent
Invalid NPMP™ IP address detection.
IP address is incorrectly configured, use property page to change this (see Chapter 3).

Round, green P icon superimposed on agent
Agent is currently printing.

Exclamation mark superimposed on agent
Agent currently has an error e.g. out of paper.
To find out more specific details of the problem see agents property pages or hold cursor over agent and study the Cursor Bar at the bottom of the screen.

T N superimposed on agent
Agent has TELNET accessibility, enabling use of a TELNET utility (for further details see section *TELNET* later in this chapter).

IPS superimposed on agent
Agent has Ringdale Internet Printing System™ software installed and running.

Each of these symbols can be turned off if required, see section *Configure Machine Display Page* in chapter 4.

PeripheralVision® Toolbar

PeripheralVision® functions can be accessed by clicking on the toolbar icons. The drop-down menus also give access to all functions.

Locate this PC
This function will enable you to locate your own workstation. When you select **OK** from the dialogue box, your PC will appear as an icon on the map screen, along with other machines from your LAN that you have communicated with recently.

Expanding your discovery abilities

Locate NPMP™
This is a toolbar function that discovers NPMP™ compatible devices. Clicking on the button will bring up the dialog box below.

Local Network, which appears by default, enables the local network devices to appear automatically at start-up. If you do not require this facility, click on **Don't interrogate network using NPMP**.

To discover a NPMP™ compatible device using the NPMP IP Network(s) dialog box:

1 Enter an IP address into the upper text box on the left side of the dialog box (if you need more information on IP addresses see Appendix B).

2 Click on the **Add** button. The IP address will be loaded into PeripheralVision® and will appear in the lower, larger box .

3 Click **OK** to close the page. The discovered device will appear on your network map.

Alternatively, by running a sub-net search you can locate other agents. Repeat the procedure above, but enter an IP address ending in * to query a whole subnet, i.e. 199.2.21.*, or 199.2.21.21-50 for a range of addresses. This will find machines running TCP/IP on that sub-network. For further information on TCP/IP addresses, see **Appendix B**.

The box marked **Poll Rate** enables you to vary the time the NPMP™ probe updates the status of the NPMP™ devices on the network. The default is 30 seconds but can be adjusted both up and down.

Ping Locater
This toolbar button is used for discovering agents with a valid IP address on the selected network(s). It operates in the same way as the Locate NPMP™ function above but can discover a greater diversity of agents.

DNS Agent Discovery
This is an agent search facility that will retrieve IP address and host name pairs from a DNS (Domain Name Server). When this option is selected, a dialog box will appear as shown at the top of the next page.

The IP address and host name pair for your own network appear in the boxes by default, allowing you to discover other agents on your network.

To discover a greater number of agents:

1 Enter another DNS IP address in the **IP Address of Domain Name Server** text box.

2 Type domain to be searched for in the **Domain Name** text box.

3 If you want to discover more than 150 agents from a DNS, select the specific amount from the **Number of agents to discover** scroll box.

4 Click **OK**.

Configure Discovery
A toolbar function that provides an alternative access to the four previously described functions. Pressing **Configure Discovery** produces a menu of the previous named discovery buttons. Select the one required by clicking on its name and proceed as previously described.

Further Discovery Functions - DNS Lookup

Using **DNS Lookup,** you can discover the IP address and/or aliases associated with either an IP address or host/domain name. *This is not the same function as **DNS Agent Discovery**.* To access DNS Lookup:

1 Click on an agent on the map screen with the right mouse button. You will see the following menu:

2 Select **DNS Lookup.** You will see the window shown below:
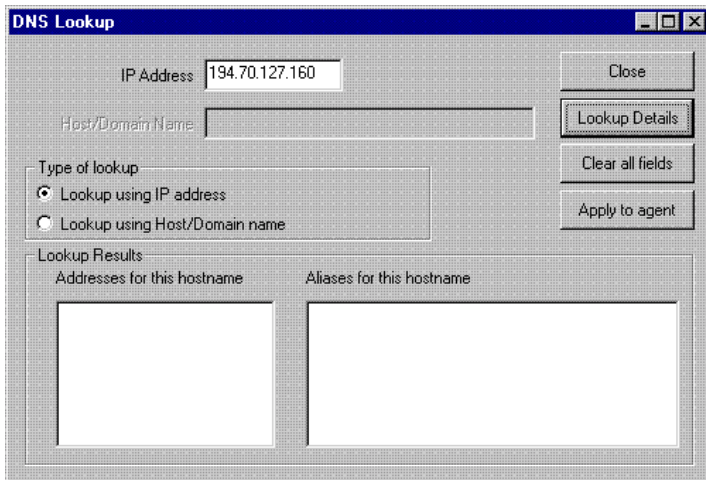
3 Enter an **IP Address** or **Host/Domain Name** into the designated box. Examples of host/domain names are *www.ringdale.com* or *www.nptf.org*.

4 Select either **Lookup using IP address** or **Lookup using host/domain name** from the **Type of Lookup** box.

5 **Lookup Details:** When you have typed in the information for the DNS Lookup, select this button and PeripheralVision® will attempt to discover additional information for you.

6 **Apply to Agent:** Select this button to apply your discovery to the currently selected agent.

7 **Clear All Fields:** To clear all the data ready for a new lookup, click on this button.

Lookup Results

Addresses for this hostname: IP addresses for the given hostname will appear here. This address can then be entered into a Ping, Search DNS, or NPMP™ autodiscovery dialog box.

Aliases for this hostname: Aliases for the given hostname appear here.

Web Browser

This feature launches an Internet web browser, if one is installed. *You must provide the web browser application.* PeripheralVision® can start a web browser but does not come with a browser application.

Before you first use this feature, it is necessary to set up the browser:

1 Click on the **Tools** menu, then select **Options**.

2 Click on the tab for the **Configuration** page.

3 Select the browser used on your PC (or use **Browse** to locate it).

4 Click on **Apply**, then click on **OK**. The default web browser setup is now complete.

Agents with HTML abilities will be displayed on the map screen superimposed with a **Globe** icon. These agents can be interrogated using the web-browser, as follows:

1   Select the agent by clicking on the right mouse button. The popup menu that appears has an extra option, **Browser**, as shown here:

2   Select the **Browser** button.
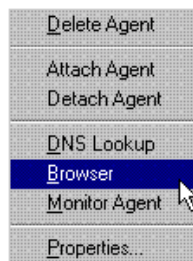
TELNET

You can use a TELNET utility to access different machines (i.e. from a Novell network to a UNIX network) by following these instructions:

1   If an agent icon has a **T N** icon superimposed on it, click on the right mouse button to see the popup menu shown below:
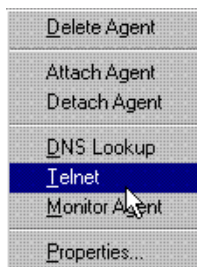
2   Select **Telnet** to access the TELNET window.

By default, PeripheralVision® will automatically discover TELNET compatible devices. To switch off this auto-discover function:

1   Select **Options** from the **Tools** menu, then click on the **Configure Page** tab.

2   Click off **Automatically discover Telnet**.

3   Click on **Apply** and then click **OK**. The TELNET utility will now be disabled unless you enable it again.

FTP Access

This feature launches File Transfer Protocol (FTP) access from within PeripheralVision®. To use this feature proceed as follows.

1 If an agent icon has a **FTP** icon superimposed on it, click on the right mouse button to see the popup menu shown below:

Delete Agent

Attach Agent
Detach Agent

DNS Lookup
Monitor Agent
Refresh Agent
Launch FTP
Properties...

2 Select **Launch FTP** to access the FTP window.

By default, PeripheralVision® will automatically discover FTP compatible devices. To switch off this auto-discover function:

1 Select **Options** from the **Tools** menu, then click on the **Configure Page** tab.

2 Click off **Automatically discover FTP**.

3 Click on **Apply** and then click **OK**. The FTP search will now be disabled unless you enable it again.

Chapter 3

Managing the Discovered Devices _____

Chapter 2 outlined the procedures for using PeripheralVision® to discover Local and Wide Area Networks. This chapter explains how to interrogate and remotely manage the agents you have found.

To interrogate an agent, double click on the icon representing the agent to be viewed and managed (for example, this Sales Printer icon):

Alternatively, by clicking on the icon with the right mouse button and selecting **Properties** from the popup menu, the same result can be achieved.

Agent Property Pages

After you follow the steps described above, the agent's **property pages** will appear on your screen. Arrows in the top right corner of each page allow you to scroll through the different page titles. Clicking on a title brings up the corresponding page.

Pages will display agent information ranging from product name and model to comprehensive configuration and network setup data, including parameters for Novell NetWare, TCP/IP, and details of the hardware interface that has been discovered. Explore the pages to see the full extent of the information and functionality available.

Status Symbols

If the agent you are interrogating is a printer, the series of icons on the left side of each page give details of the printer's status (their meanings are detailed below). An icon's appearance changes according to the type of error occurring. For example, in the image below, icon number 2 is red because the printer has run out of paper. Once the paper tray is filled, the icon will change green

1. **Traffic Lights:** Red - not functioning: Amber - minor problem: Green - ready and all clear
2. Out of paper
3. Paper jam
4. Low toner
5. Unidentified problem
6. Cover Open
7. Service error: engineer required
8. Printer warming up
9. Printing
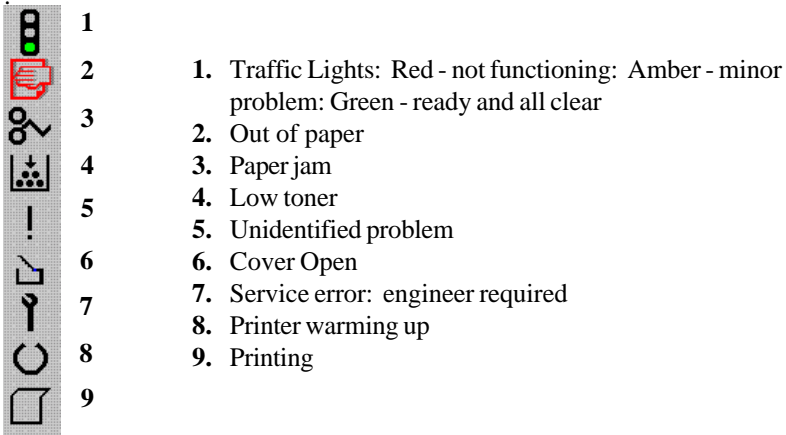
An example of a property page is shown opposite. This is the **Names Page** (the default page). It shows a picture of the agent (a Kyocera printer), with its model name and beneath this the status box which displays error messages for the **Front Panel** (in this example, the printer is out of paper). *These features appear on all pages*, though the information will change as the status of the agent changes. Beneath the status box is the **Refresh Status** button, which can be selected for instant page status updating.

On the right side of the page is the information that is specific to the Names Page. Information contained here will be different for every page. *If you make any changes to a Page, select the **Apply** button to save changes without exiting the properties pages, or press the **OK** button to save changes and exit.*

Following are examples of commonly available pages. The exact page combination will vary depending on the agent's type and make.

Names Page

Hardware Type: The type of printserver hardware is displayed in this field; select a new hardware type from the drop down list.

Icon Title: The agent icon title can be changed here.

Host Name: The name from the DNS is entered here.

Description: Any additional information can be entered here including printer location, department, etc.

Present: This field refers to protocols and services found on the device. These can include: SNMP, NPMP, IPS, FTP, Telnet or http (this information can also be found in the Status bar of the Map Screen when you hold the cursor over a device icon).

Below the **Present** field is textual information on the last time PeripheralVision® contacted this device for a status update.

Address Page
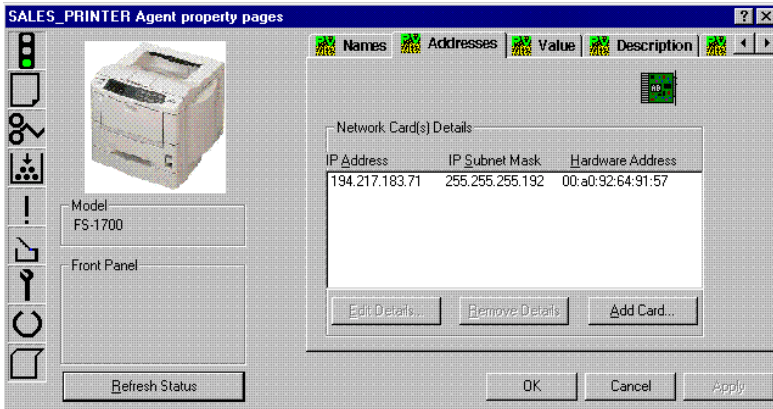
Network Card(s) Details: This option displays the agent's IP address, IP subnet mask and hardware address. Click on **Edit Details** to change this data or click **Remove Details** to delete it.

Add Card

If you select the **Add Card** button the following dialog box will be displayed:
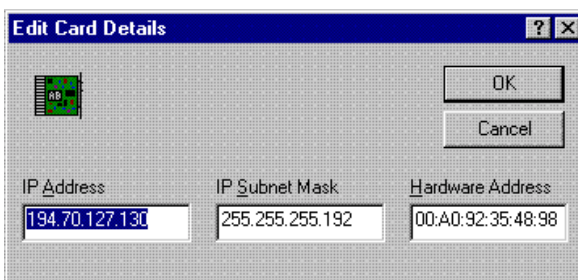
When PeripheralVision® discovers devices on a network it will attempt to interrogate the devices to determine the number of network cards installed and their IP address(es) and hardware address(es). However, occasionally

this information will not be fully available via the network. It may be difficult to obtain the hardware address or find information about second and third address cards. The **Add Card** option allows you to edit the database manually in the **Edit Card Details** dialog box. If, for example, you know a device has multiple network cards, but PeripheralVision® discovers only one card, you can correct the information here.
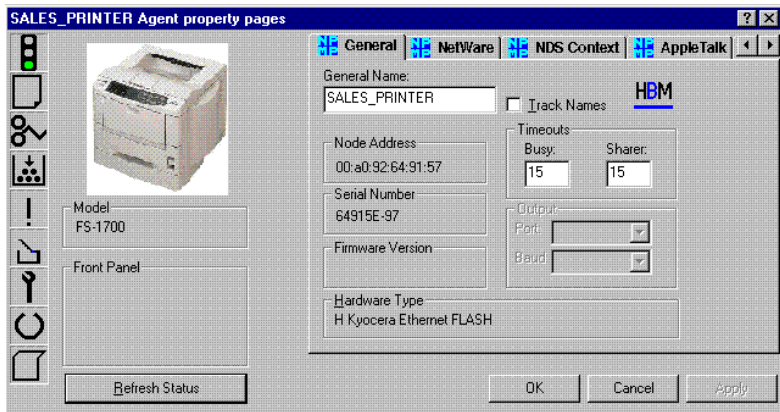
NPMP™ Device Properties

NPMP™ properties can exist for printers, printservers, routers, and even hubs.

NPMP™ General Page

General Name: This is the general printserver name used for DEC LAT and LANManager systems.

Track Name: This option allows the general printserver name to be linked to the Novell NetWare and Apple printserver names (as they can be different). If the box is selected, the NetWare and Apple names will automatically update to the General Name.

Node Address: This is the Ethernet/Mac address of the printserver.

Serial Number: The printserver has a unique serial number which appears in this field.

Firmware Version: The printserver's firmware level is displayed here.

Hardware Type: The printserver's hardware type, e.g. Ethernet Inline, will be displayed in this field

Busy Timeout: When the printer is busy, set the time (in seconds) before printer busy signal notifies that the printer is *offline*.

Sharer Timeout: If the sharer port is inactive, printserver will switch to the network port (where applicable) after the Sharer Timeout period has passed.

Output: Either serial or parallel (default) printer ports can be selected for external boxes. If neither is selected, this option is greyed out.

Baud Rate: The serial port baud rate (input or output) can be adjusted here, if applicable.

NPMP™ NetWare Page
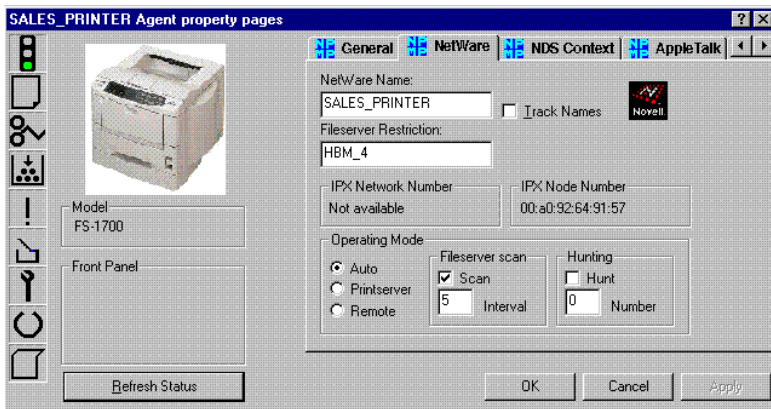
NetWare Name: This is the current Novell printserver name which can be replaced by any name up to 48 characters, and will be used to update the printserver.

Track Name: This option links the Novell NetWare name with the general name (NPMP™ Name Page) and Apple printserver name (NPMP AppleTalk Page).

Fileserver Restriction: This limits to one the number of fileservers that the printserver can log on to - useful if there are more than fifty fileservers.

IPX Network/Node Number: For information only.

Operating Mode:

> **Auto:** Auto switches between printserver mode and remote printserver mode when a printserver of the same name is already present.

> **Printserver:** Printserver only.

> **Remote:** Powers up as remote printer only.

Fileserver Scan:

> **Scan:** This enables/disables a regular search of fileserver binderies for the presence of the printserver, allowing automatic log on as soon as a change is made.

> **Interval:** This sets an interval in minutes for fileserver scans.

Hunting:

> **Hunt:** When on, finds next free printer if specified remote printer number is not available. When off, only logs onto specified printer number.

> **Number:** This is an IPX address a printer can be logged on to.

NPMP™ NDS Context Page
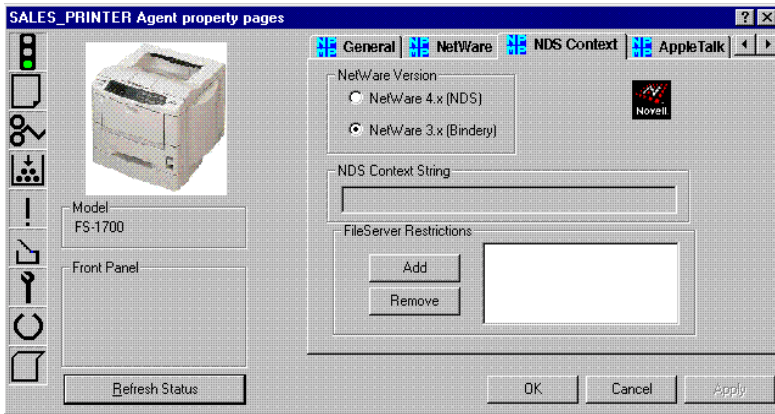
This page will appear for printservers that are NPMP™ compliant and carrying the NetWare NDS packet (NDS is a component of NetWare 4.x). It can be used to give the printserver a Valid NetWare NDS Context.

NetWare Version: Select the version of Novell NetWare you are currently using.

NDS Context String: This field is activated only if NetWare 4.x (NDS) is selected for NetWare Version (above).

Fileserver Restrictions: This facility will only be available when NetWare 3.x (Bindery) option is selected. Use the **Add** and **Remove** buttons to enter any fileserver restrictions.

NPMP™ AppleTalk Page
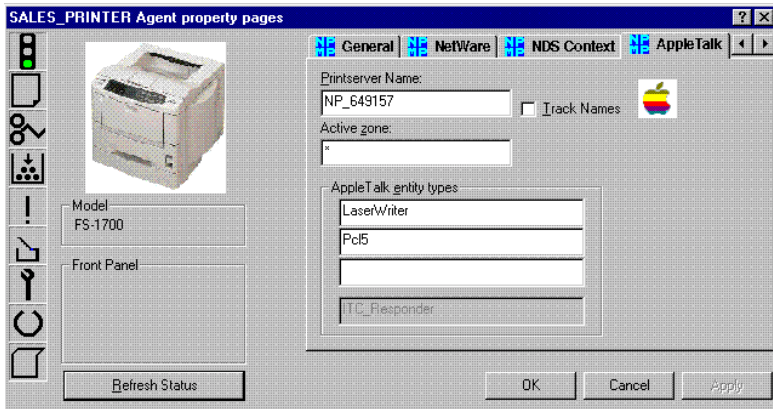
Printserver name: The Apple printserver name shown here may be different from the Novell and General printserver name (for more information and an explanation of the **Track Names** check box, see the NPMP™ General Page).

Active Zone: This field shows the specific zone that the printserver operates in.

AppleTalk Entity Types: The entity types Laserwriter and ITC Responder are fixed entities and appear by default. The Laser Shared entity can be added for Apple share printserver support.

NPMP™ TCP/IP Page
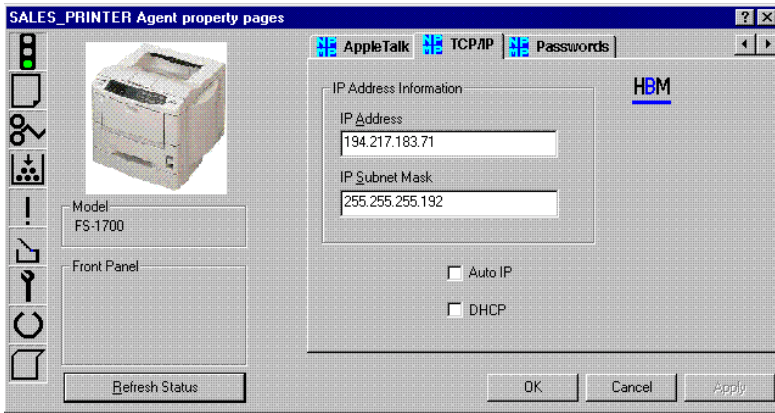
IP Address: Enter a new **IP Address** in this field.

IP Subnet Mask: This option allows you to set the Interface's subnet mask to match that of the network it is located in (this is particularly important if the 'local' part of the mask is not 0).

Auto IP Address: When this facility is selected, you can automatically change the IP Address utilising the **Ping** and **arp** facility in **MS-DOS.**.

DHCP: When the DHCP check box is selected, information on this page cannot be altered. When this option is deselected, TCP/IP facilities are available.

SNMP Pages

Additional pages with increased management control can be accessed if the device has embedded SNMP attributes. SNMP offers advanced functionality, including: selection/deselection of the printer's on and off line status, paper tray selection, and access to control panel status information. PeripheralVision® will automatically detect the device's installed SNMP functionality and will present the additional information.

The following pictures are examples of supplementary pages. In this first example, the SNMP attributes of the previously discovered Kyocera printer result in three extra pages (the page types and the configuration abilities offered will vary with the make of the printer).

Front Panel Page
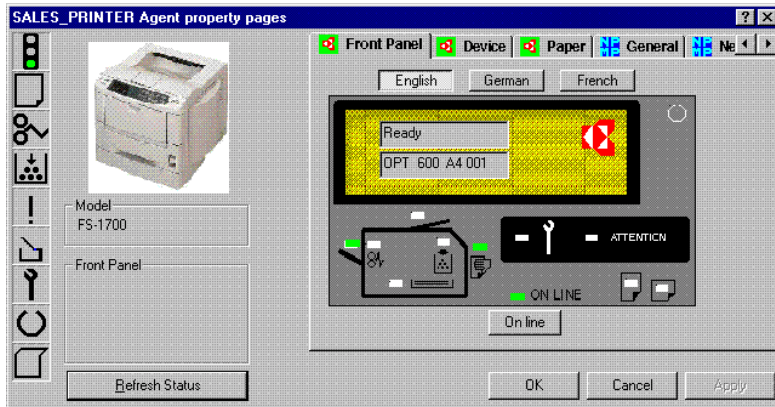
This page displays the exact information found on the front panel of the printer, enabling you to remotely monitor and operate the front panel from your workstation. For this Kyocera printer there are complete status details of the machine's functionality. It can be seen that the printer's status is **Ready,** it is set on the **Optional** port with a resolution of **600** dpi for **A4** paper, and it will print **1** copy.

The buttons at the top of the page enable you to choose the language used in the status window.

The warning lights for problems including **paper out**, **toner out**, **paper misfeed**, **cover open** etc. are displayed. There are also warning lights for more serious problems requiring attention from maintenance personnel.

You can put the printer in on line mode from this page by clicking on the **On Line** button.

Device Page
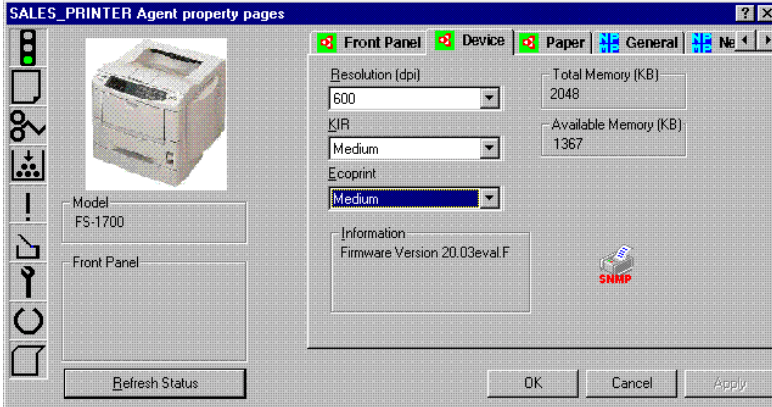
Resolution: This option allows you to adjust the DPI (Dots Per Inch) density of the printer resolution.

Total Memory and **Available Memory:** Status data displays automatically.

KIR and **Ecoprint:** Use these options to alter the density of the print.

Paper Page
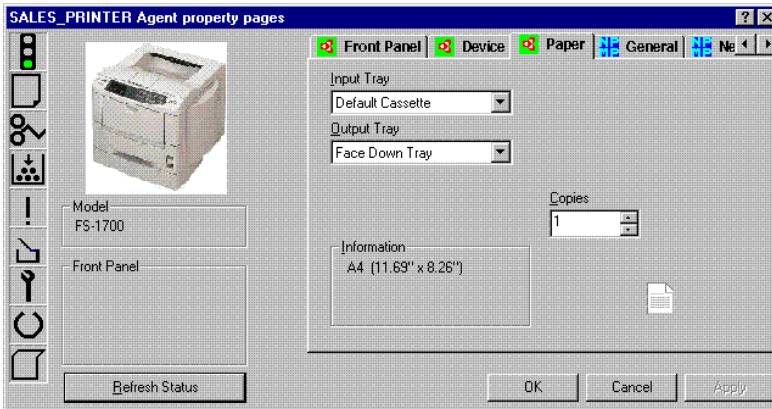
This page allows you to change **Paper Trays** and select the number of **Copies** to be printed.

The page type and functionality will vary according to the manufacturer of the agent and the type of device discovered. A selection of SNMP pages (shown below) from a discovered printer of a different make (in this case a Canon) illustrates the similarities and differences between printers. The Canon has an additional page and the detailing is different, but the operation and concepts are essentially the same.

Front Panel Page
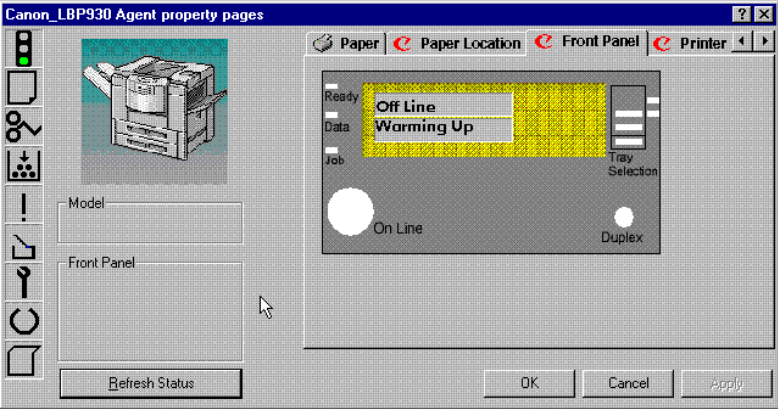
Printer Page
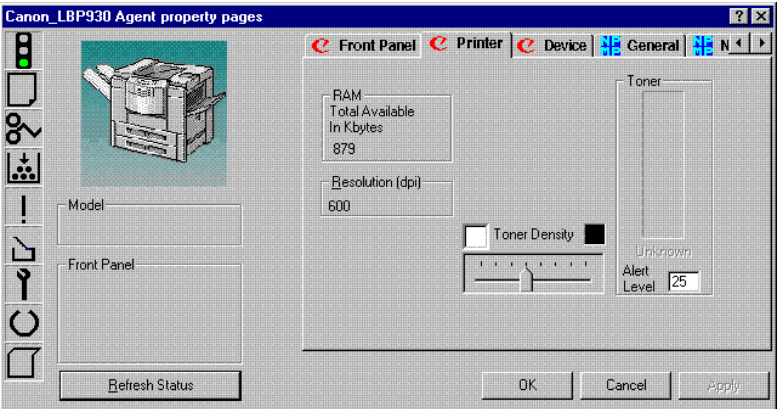
This page allows you to change the **Toner Density**.

Device Page
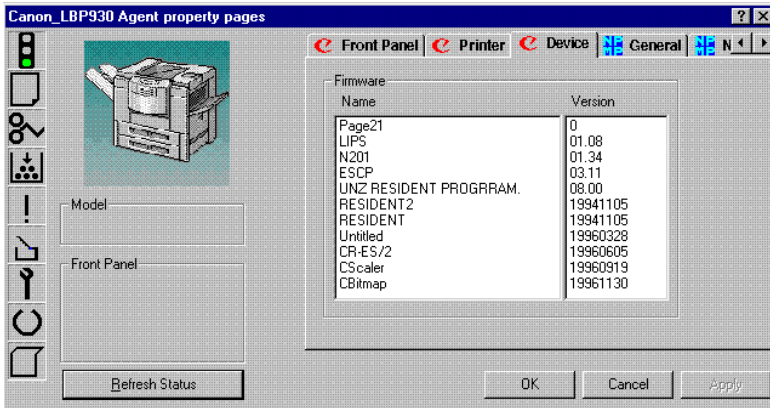
This page lists the **Firmware** modules available to the printer.

This printer also has a **Paper Location Page** which allows you to select **Paper Tray** options.

Other Types of Agents

Chapter 3 has concentrated on describing only those pages associated with discovered printers. In addition to printers, PeripheralVision® can discover *all* devices connected to a network, from PCs and hubs to routers and other network peripherals. The type of pages encountered for each agent will vary considerably. The best way to appreciate the scope of PeripheralVision® is to explore the agents on the PeripheralVision® map screen for yourself.

As an example, following is the **Managed Hub** page for a hub selected from a PeripheralVision® map.

The information supplied lets you monitor the status of the hub. For example, in the bottom right corner of the page is the **Hub Information** option. Using the **Test** and **Reset** buttons, you can run a test to determine if the hub is working correctly.

Managed Hub Page
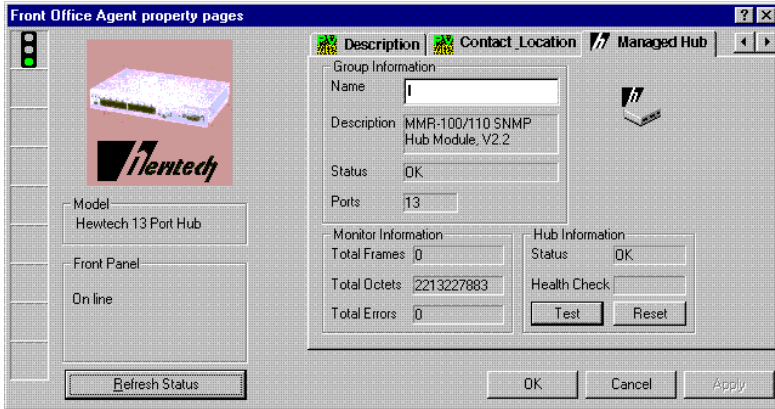
The following example is a page from a **Ringdale ISDN OverLAN Router**:

ISDN Setup Page
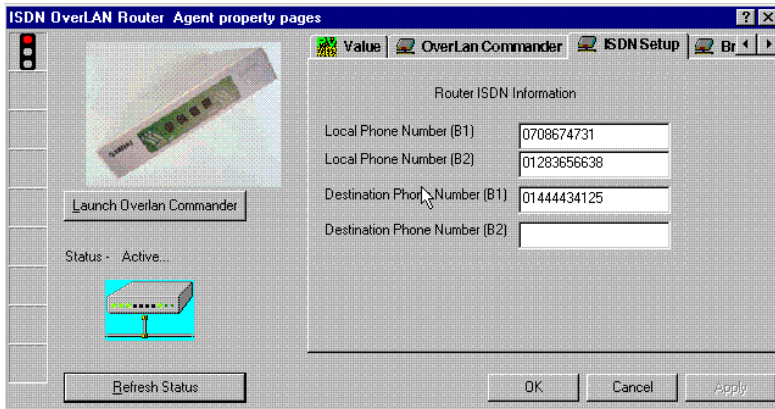
This page lets you to set ISDN phone numbers. Additional pages allow viewing and configuration of other aspects of the router.

Selecting the **Launch Overlan Commander** tab at the top of the page opens the *OverLAN Commander* router management program. This program gives

access to comprehensive and sophisticated monitoring and configuration procedures for the router (clicking the right mouse button on the router on the map page and selecting **Launch Overlan Commander** is another quick way to access the program).

Important Note: It is strongly recommended that you set passwords for accessing all router pages in PeripheralVision® because of the sensitive nature of the information that can be configured.

The Ringdale ISDN OverLAN Router has a Password property page to enable you to set the password.

PlotPro Access

PlotPro is a program allowing print jobs to be sent directly to plotters with a high level of control over the job's configuration. It is ideal for printing sophisticated graphics etc. You can access the PlotPro program directly from JRL and Ringdale plotter property pages discovered in PeripheralVision®. The access procedures are similar to those described above for the OverLAN Commander.

Chapter 4

Agent Monitoring Facilities ───────

PeripheralVision® has sound, email and logging facilities which enable you to set up a comprehensive monitoring system for your network. To access the agent monitoring facilities:

1 Right-click on an agent icon on the map screen.

2 From the popup menu, select **Monitor Agent**. This will bring up the Monitor Agent screen.

3 Click on the **Status Logging** tab to see the following page:
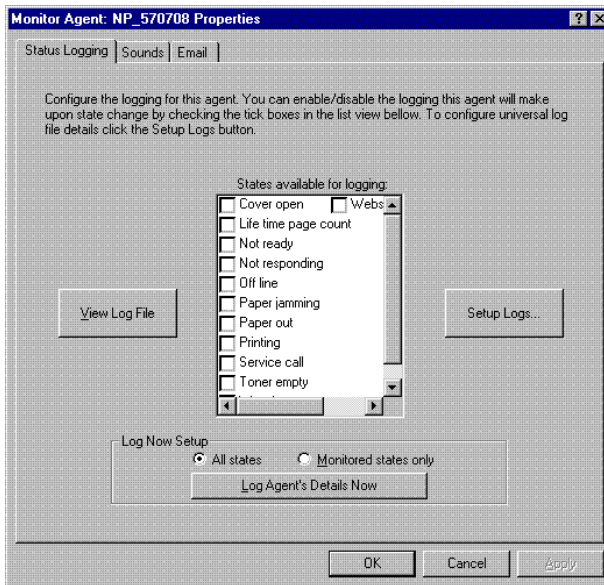
The Status Logging page allows you to configure the logging for the selected agent. The log file you create will keep a record of the status of the agent.

States Available for Logging: Select a check box in the list to enable or disable logging performed by the selected agent when a state change occurs.

View Log File: Selecting this button allows you to instantly view the log file. The log file window will open, displaying the record of the agent's function statuses that you have chosen to monitor.

Setup Logs: Select this button to configure universal log file details.

Log Now Setup: In the Log Now Setup frame, you can choose whether logging will occur for **All states** or for **Monitored states only**. Once a choice is made, select the **Log Agent's Details Now** button for instant logging.

Agent Monitoring: Sounds

Note: To utilize the sound facilities it is necessary to have a sound card installed on your PC.

PeripheralVision® comes with a full compliment of default sound settings. The Sounds page gives you the option of overriding the sound defaults and setting up your own customized sounds.

Note: Details of further sound configuration facilities can be found in the section **Setup Sounds Page** later in the chapter.

Clicking on the **Sounds** tab in the same **Monitor Agent** screen will bring up the Sounds page shown on the next page, *providing you have a sound card installed.*
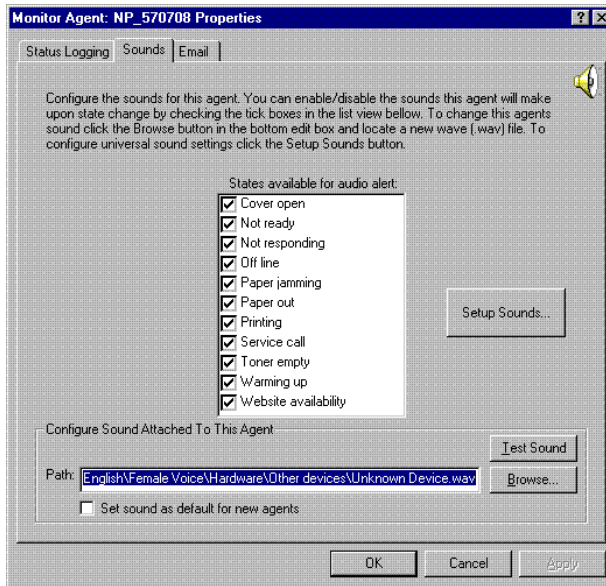
States Available for Audio Alert: You can enable/disable the sounds made by the device when a state change occurs by checking the boxes found in this list.

Setup Sounds: Click this button to configure *universal* sound settings.

Configure Sound Attached to this Agent: To set a sound of your own choice to this particular agent:

1 Click on the **Browse** button. The file path shown in the **Path** field represents the currently selected wave file.

2 Scroll through file paths list to locate a new wave (.wav) file.

3 To test the sound before configuration is complete, select the **Test Sound** button.

4 Once a sound is chosen, check the **Set sound as default for new agents** box to have this sound automatically assigned to all new devices.

Agent Monitoring: Email

Clicking on the **Email** tab in the same **Monitor Agent** screen will bring up
the following Email page:
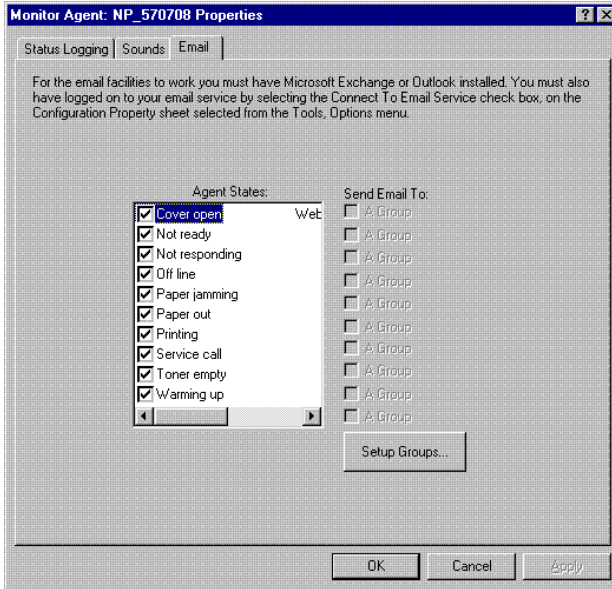
Note: Before using the email facilities, you must have Microsoft Exchange
or Outlook installed. PeripheralVision® automatically connects to the email
service when it is started.

Agent States: This list shows the various states existing for a particular
agent.

Send Email To: The email recipient groups which you configure in Setup
Groups (see below) are listed here. To have email sent to a group, check the
box next to its name.

Setup Groups: Select this option to setup and configure groups of email
recipients. The group names will appear listed under **Send Email to** on the
Email page.

PeripheralVision® Graph Wizard

PeripheralVision® has the ability to create Page Count Graphs to enable you to monitor the number of pages printed by each of your network printers.

Note: To use this facility it is first necessary to create a Page Count Status log file which will provide the information for the graph (for details on how to do this see the start of the chapter).

To create a page count graph:

1   Select **Graphs** from the **View** menu at the top of the map screen. This will launch the Graph Wizard.

2   Click **Next**, then **Next** again. In the displayed dialog box enter the path to the log file to be used for the graph and click the **Add** button, or use the **Browse** button to find the file and click on **Open**. The file will be added to the list in the bottom half of the box. You can enter as many files as you require.

3   Click on the required file in the list to highlight it and click on **Next**. The following dialog box will be displayed:
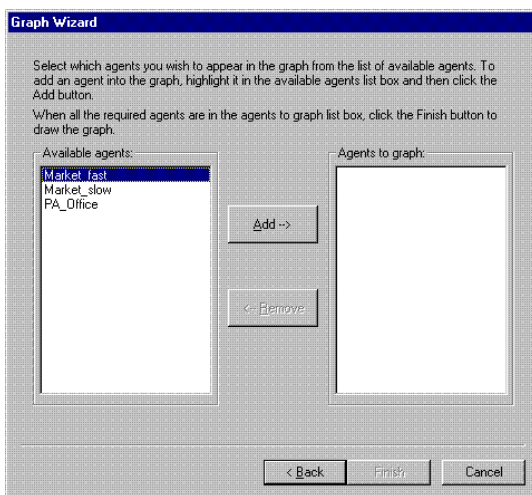
4   In the left hand box are listed the agents available on the log file. Select the agents you want to appear in your graph and click on the **Add** button. Your selection/s will appear in the right hand **Agents to Graph** box.

5   Click on the **Finish** button and **OK** the following message box. The graph will be displayed. An example is shown below, with the page count history of 3 printers:
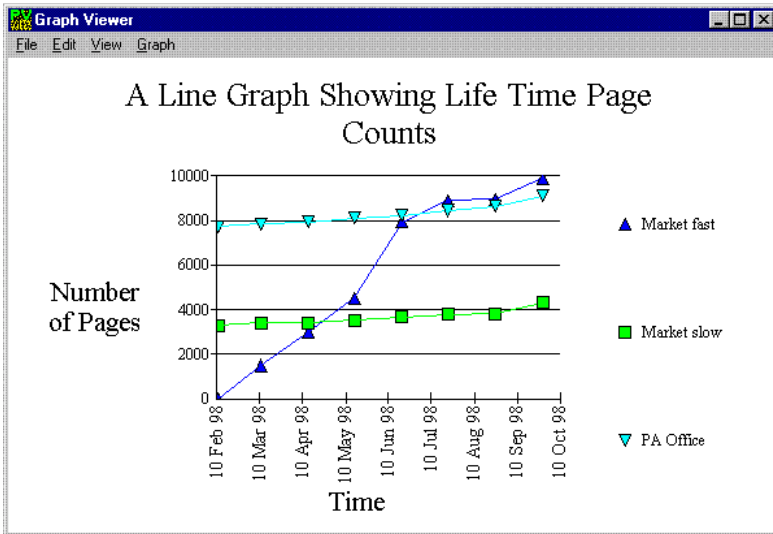
At the top of the Graph Viewer screen is a menu bar which gives access to the following options:

File
Save As: Use this option to save your graph as a windows bitmap.

Print: Use this option to print out your graph.

Edit
Copy: Using this option, the graph can be copied and pasted into other applications

Graph

Axis and Scale Settings: Selecting this option will display the following dialog box:

Edit Graph Axis And Scale Settings

To change the scale settings on your graph, restrict the Graph Limits to include only the data you would like in the graph. Then, edit the tick Every Parameters to produce labels at the required intervals.

Configure Graph Limits

Graph Start Date\Time

Year	Month	Day	Hours	Minutes	Seconds
1998	2	10	0	0	0

Graph End Date\Time

Year	Month	Day	Hours	Minutes	Seconds
1998	9	10	16	0	46

Configure Graph Ticks For The X axis

Tick every:

Year	Month	Day	Hours	Minutes	Seconds
0	1	0	0	0	0

OK   Cancel

This option enables you to tailor the graph to your requirements by changing the default scale settings to include only the data you would like in the Graph.

Configure Graph Limits

Graph Start Date\Time: Enter here the date you want the graph to start from.

Graph End Date\Time: Enter here the date you want the graph to end on.

Configure Graph Ticks For The X Axis

This enables you to set the configuration of the Time axis to your requirements.

Options Property Pages

To access additional monitoring facilities:

1 Click on an agent on the map screen to select it.

2 Click on **Options** from the **Tools** menu at the top of the map screen. You will see a dialog box titled **Options Properties** with seven tab options.

3 Clicking on each tab will access a different property page enabling you to view and configure the information. The function of each property page is explained below.

Configuration Page
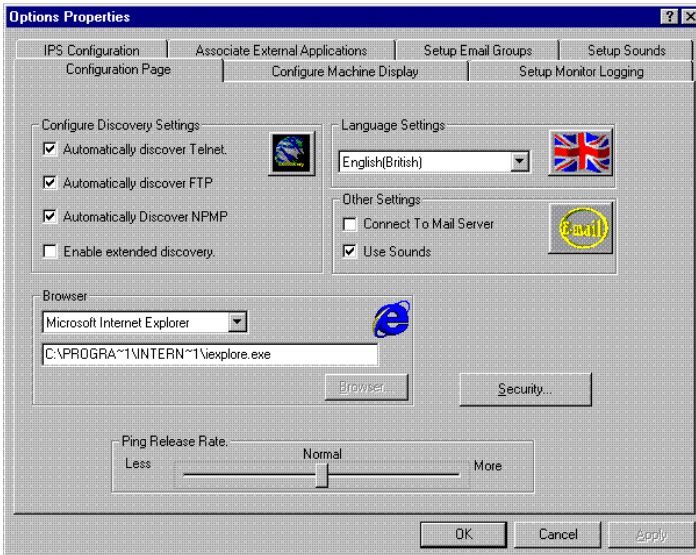
Configure Discovery Settings: The first three of these settings allow you to designate which of the three available options - **Telnet**, **FTP** or **NPMP** - you want PeripheralVision® to automatically discover. They can be set in any combination you require.

Enable Extended Discovery: This fourth option can be useful if you are trying to discover an entire network. When this option is selected, for each new agent with SNMP that PeripheralVision® discovers, that agent's ARP Table is interrogated to find further addresses to discover. This will often result in extra agents being displayed on the Map Screen, including devices that were not actually requested in the original search criteria.

Language Settings: This drop-down list allows you to change the language used in PeripheralVision®. Select from English, French, German, Spanish, Italian, or Japanese.

Other Settings:

Use Sounds: Select this option if you want a sound to alert you when error conditions occur.

Connect to Mail Server: PeripheralVision® automatically connects to the email service when it is started. To deselect this option click on the tick box to remove the tick. *See the Options Property page Setup Email Groups for more information on configuring this option.*

Browser: Choose the browser you want to use, for example Netscape Navigator or Microsoft Internet Explorer, from the drop-down list. You can manually change the file path for the type of browser you have selected by typing in the datafield. The **Browse** button allows you to manually find the web browser that is installed on the machine.

Ping Release Rate: This sliding bar controls the release speed of the discovery probes. If, for example, you have a slow modem, you should move this bar closer to the "Less" end of the scale, otherwise most discovery packets will be discarded. Due to the nature of ICMP and UDP packets, when a network gets busy, these are discarded first. Therefore, if you are trying to discover over a slow connection, you will miss most of the replies coming back. Moving the bar closer to "Less" allows questions to be asked more slowly, therefore giving PeripheralVision® a greater chance for successful discovery.

Security: Selecting this button will display the Security dialog box:
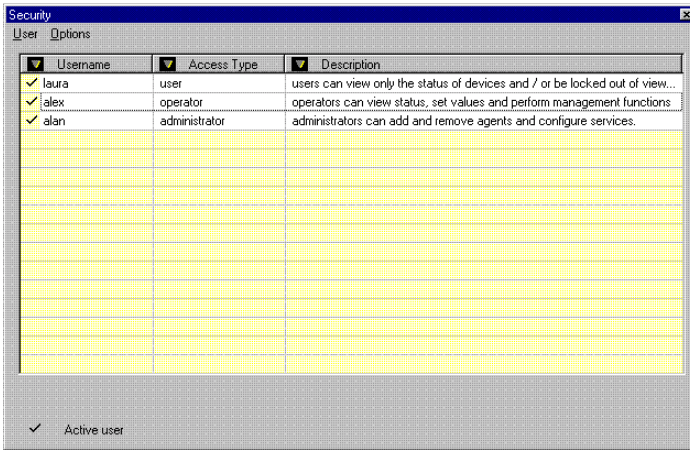
PeripheralVision® has a three level security system that is expandable and fully configurable. An administrator can use the Security dialog box to create and customise new security levels and configure the access rights of existing levels. Some users, for example, could be allowed to view a map but not save any devices to it. The three security levels are **User**, **Operator** and **Administrator**.

The Security dialog box contains two menus - **User** and **Options** - and a list view, as shown above. The list view shows the **Username**, **Access Type** (access rights to the program) and a **Description field** for all users in the database. Each active user has a tick next to it. The user currently logged on has a star next to their name. The list view can be sorted into either ascending or descending alphabetical order by clicking on the column headers.

To set access rights:

1   Click on the **User** menu.

2   Select the **New User** option. The dialog box shown on the next page will appear.
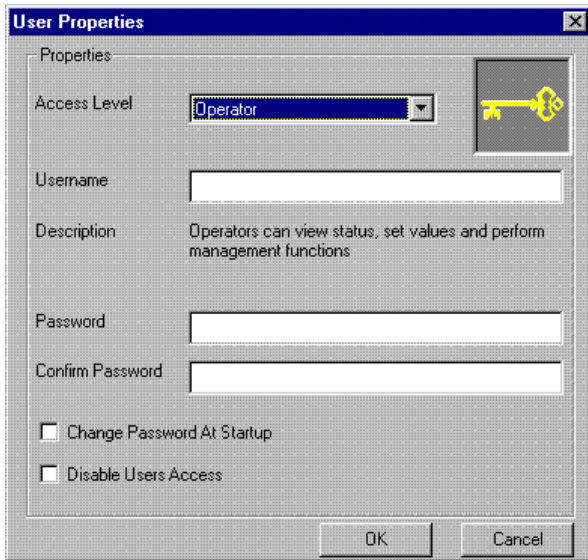
The **User Properties** dialog box allows you to add security access and perform management functions.

Access Level: Choose an **Access Level** from the drop-down list. *If you are creating the first user, access level **must** be administrator. Initially, only administrators have access to Security options. You cannot configure any security options until you have created an administrator.*

Username and Password: Use these fields to add new user names and their passwords at the selected **Access Level**. Each user will need to enter their own password every time they want to access PeripheralVision®. In the **Description** field you will see a description of the user's access rights.

If you want to prompt the user to change their password at first login, select the **Change Password at Startup** box.

Select the **Disable Users Access** box to disable this users access.

To go back to the Security dialog box, choose **OK**. You will see the user names you have entered are now listed on the page.

Other facilities under the User drop-down menu enable you to delete or rename each user.

User Logon

If security has been configured for your copy of PeripheralVision®, you will need to log on when you start the application. If the program is already running and another user is logged on, you can log on by choosing **User Logon** from the **User Access** menu on the PeripheralVision® main screen. The **PeripheralVision® Security** dialog box will appear for you to enter your password.

User Logoff

When you exit the program you are automatically logged off. If you want to leave the program up and running, select **User Logoff** from the **User Access** menu on the PeripheralVision® main screen. You will be logged off immediately; no dialog box will appear. *Choosing this logoff method causes all operations to be restricted until a user logs on.*

Security access levels can be further expanded and configured by clicking on the **Options** menu in the **Security** dialog box and selecting the **Configure Access Levels** menu option. The following dialog box will appear:
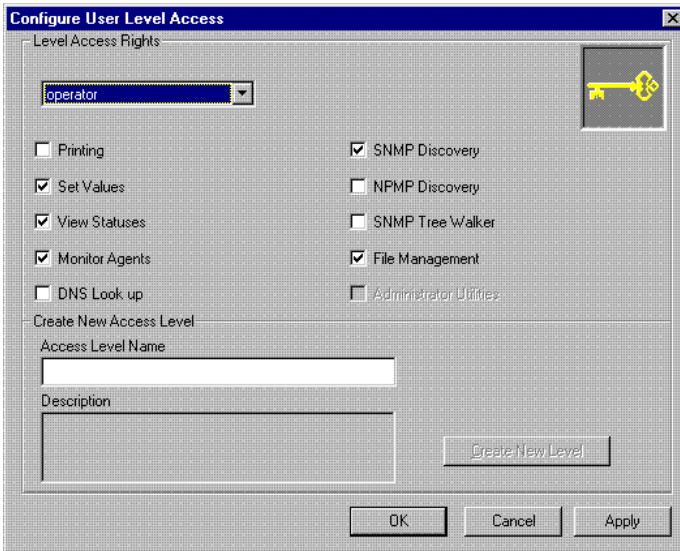
The **Configure User Level Access** dialog box enables you to define access rights for the various levels and create new access levels if required.

Level Access Rights: This section of the dialog box shows existing Access Levels and their corresponding Access Rights. The current Access Level appears in the drop-down list. The selected check boxes indicate which options can be accessed by users from this level. Scroll through the drop-down list to view access rights available for the various Access Levels.

Select the level you want to configure from the drop down list. The default check boxes will be automatically selected to show the level's current access rights. Select and/or deselect the appropriate check boxes for the user level. When user configuration is complete, click on **Apply** or **OK** or click on **Cancel** to discard any changes.

Create New Access Level: To create a new Access Level:

1 Type a unique name in the **Access Level Name** text box.

2 Type a brief description of the new level in the **Description** box, which is automatically activated.

3 Select the **Create New Level** button to insert and highlight the new level in the drop-down list.

4 The default check boxes will be automatically selected. Select and/or deselect as required.

5 Click on the **Apply** button for immediate application of all chosen settings. Click on **OK** to return to the Security dialog box.

Also under the **Options** drop-down menu, you can select **Remove All Security** if you do not require user access rights any longer.

This option will completely destroy all security configured for the application. When all security is removed, PeripheralVision® will be fully accessible by any user.

Configure Machine Display Page
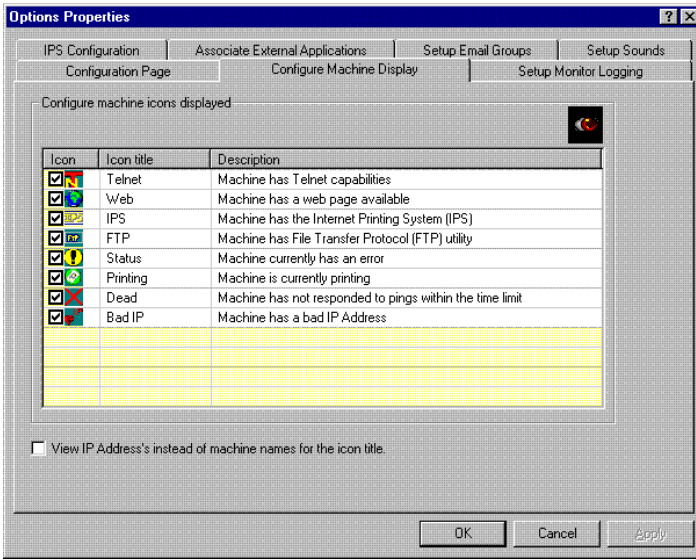
Configure Machine Icons Displayed: This table displays the icons that can appear over a device on the Map Screen and explains the purpose of each. Choose which icons to activate by clicking in the check box next to each icon.

View IP Addresses: Selecting this check box will allow you to view an IP address instead of a machine name for each icon title.

Setup Monitor Logging Page
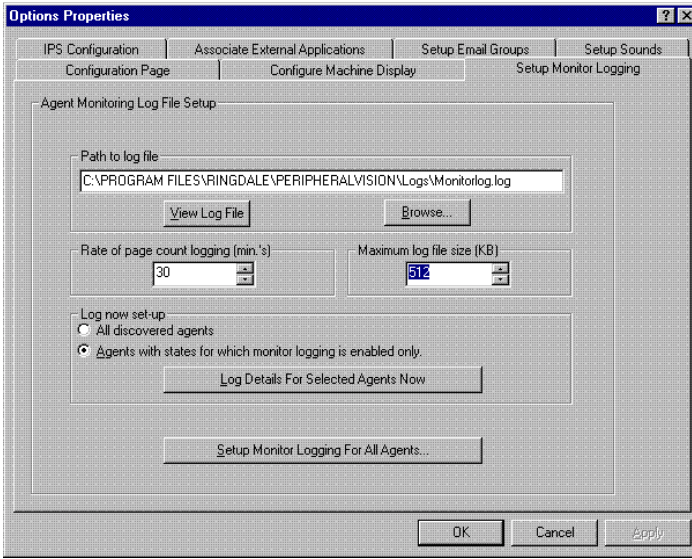
Path to Log File: This is the directory or file path to be used by PeripheralVision® for maintaining a log file for agent monitoring. You can change this file path by either retyping the path in the data field or by selecting the **Browse** button.

Rate of Page Count Logging: This is the frequency at which the log file will be updated. More frequent logins help to ensure that the log is up-to-date.

Maximum Log File Size: This is the maximum space allowed for the log file. Select the **View Log File** button to view the Page Count log file from Windows Notepad. If the log file reaches the maximum size, it is automatically placed in a backup file with the same file name but ending with _backup.xxx, where xxx represents the version number of the log file with the highest number being most recent. The backup files will be the same size as the maximum size that was allowed when they were created.

Log Now Setup: This option allows you to choose whether you want a log file setup for all discovered agents or only agents with states for which monitor logging is enabled. If you select the **Log Details For Selected Agents Now** button, you will force immediate logging to occur *only* for the agents for which monitoring is configured.

Setup Monitor Logging for All Agents: If you select this button, monitor logging will be setup for *all* devices. This option can save you time when you are setting up several devices for the same type of monitoring.

IPS™ Configuration Page
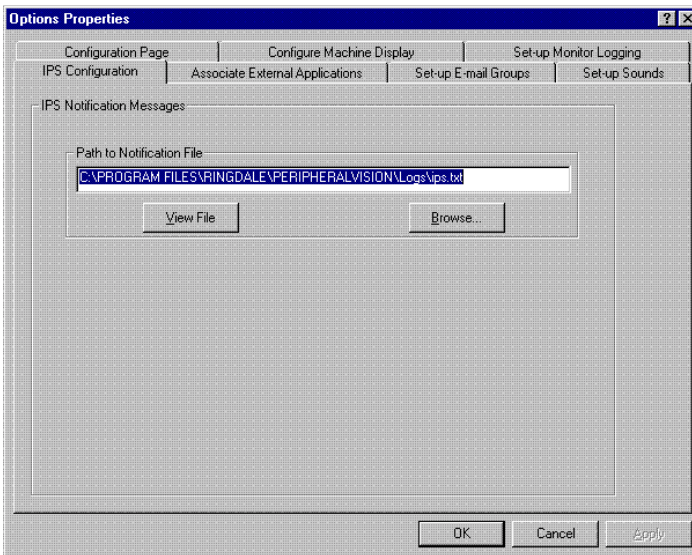
This page can only be accessed if IPS™ is installed on your PC and it is set to communicate with PeripheralVision®. The Ringdale Internet Printing System™ (IPS™) is software that enables you to print from any application on Windows 95/98 or Windows NT 4 to any network connected printer that has a valid IP address.

Path to Notification File: Use this directory or file path to maintain a notification file for IPS. This will create a record of detailed information of all print jobs sent from your PC using IPS™. Change the path by retyping its name or by selecting the **Browse** button.

View File
Select the **View File** button to view the contents of the file listed in the **Path to Notification File** box.

Associate External Applications Page
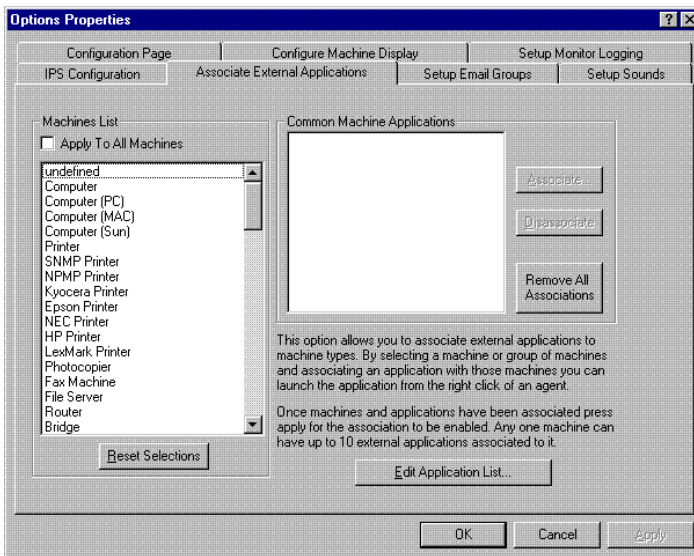
This option allows you to associate specific external applications with chosen machine types and then launch the application by right clicking on a device. Initially, you will need to select a machine or group of machines and then associate application(s) with these. Any one machine can have up to 10 external applications associated with it.

The Associate External Applications Process
To begin the association process:

1 Select specific machines by highlighting their names in the **Machines List** or check **Apply To All Machines** (you can redo your choices by selecting the **Reset Selections** button).

2 To associate or disassociate the chosen machines with applications shown in the **Common Machine Applications** list, highlight an application from the list

3 Press one of the following three buttons:

> **Associate Button:** Selecting this button will associate the type of device with the selected application, creating a link between the two.

> **Disassociate Button:** Selecting this button will disassociate the type of device from the selected application, removing a link between the two.

> **Remove All Associations Button:** Selecting this button causes a global disassociation to occur.

4 Once machines and applications have been associated, press **Apply** for the association to be enabled.

5 (Optional) Select the **Edit Applications List** button to display the **Locate Application to Associate** dialog box that is shown on the next page.

You can use this dialog box to configure a list of applications associated with specific machine types. Applications can be selected for addition to the list using the Browse button, Browse for New Application field, or the drag-and-drop method. Applications can also be deleted or edited. After association is complete, you will be able to launch the applications by right clicking on an agent or by choosing **External Applications** from the **Tools** menu.

Note: The two default applications installed with PeripheralVision® are OVERCOM and PLOTPRO. You **cannot** edit or delete these applications while they appear in the **Current External Application List** in this dialog box.
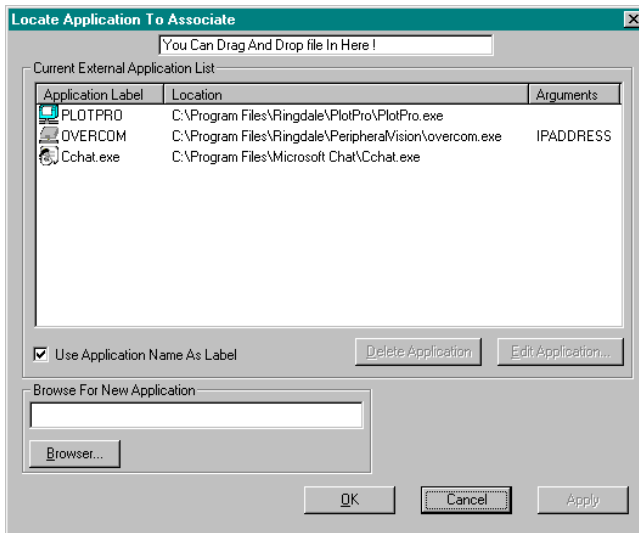
The dialog box operates as follows:

You Can Drag and Drop File in Here ! Box: Click on a file (for example from your desktop) hold down the mouse, and drag it to the **You Can Drag and Drop File in Here !** box. The file is automatically added to the **Current External Application** list.

Application Label Field: The **Application Label field** contains either the file name of the application *or* the name you type in the **Label** field of the Label Application dialog box. An application's **Label** will display on any menus that refer to the application.

Location: This is the drive and file path for the application shown in the **Application Label** field.

Use Application Name as Label: When this is selected, the file name of an application added or edited *automatically* appears in the **Application Label** field. If the box is not selected, the name you type in the **Label** field of the Label Application dialog box appears.

Browse for New Application: In this field, type a file path for the application you want to add and/or edit.

Browse Button: Select the **Browse** button to browse the Windows directories and folders.

Delete Application Button: Select an application from the **Application Label** field and then click on **Delete Application** to remove it from the **Current External Application List**. *You cannot edit or delete OVERCOM and PLOTPRO while they appear in the Current External Application List*.

Arguments: If you add a new application to the list without selecting the **Use Application Name As Label** check box, you can assign an argument to the application in the **Label Application** dialog box. Arguments are specific to different programs. For example, when OVERCOM is launched, it takes an IP address as an argument. In this case, because each agent has a different IP address, you can type the word IPADDRESS as the argument. When you launch the application from an agent it will execute the application as, for example, C:\overcom\overcom.exe 194.217.180.180, where 194.217.180.180 is the IP Address of the agent.

Other applications use words or series of keystrokes as arguments, for example: /s/t/y(slashes). For this type of application, enter the argument exactly as it appears. Should any application take both an IP address *and* slashes, replace the actual IP address with the word IPADDRESS.

If the application is launched from the **External Applications** option in the **Tools** menu, there is no IP address, and this part of the argument is ignored.

Edit Application Button: To edit an application in the **Locate Application to Associate** dialog box:

1   Click on an application in the **Application Label** field.

2   Click on the **Edit Application** button. The **Label Application** dialog box will appear as shown below:
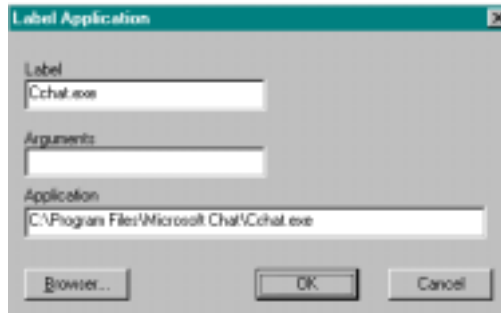
3   Edit the Label and Arguments fields as you require. Any changes made will appear in the **Locate Application to Associate** dialog box (you can click on the **Browse** button to locate additional files for editing).

4   Click on **OK** to save changes, or click on **Cancel** to exit the dialog box without saving changes.

Setup Email Groups Page
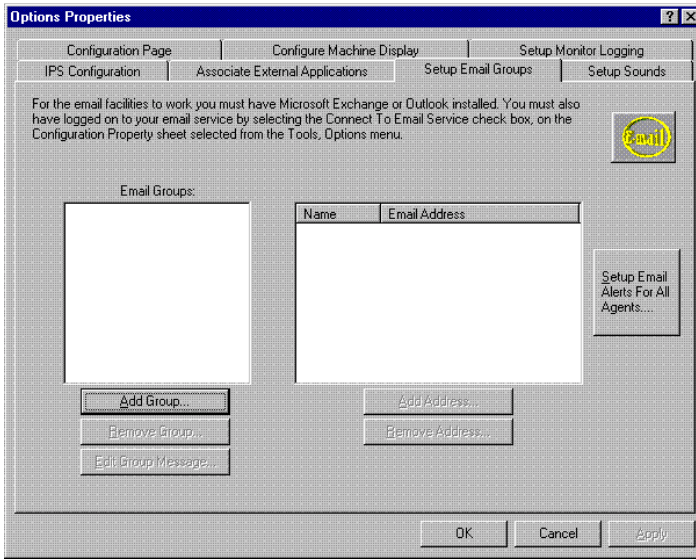
Email Groups: This option allows you to define groups of email recipients and send group messages. Select which printer states you want alerts for (for example 'out of paper') and then set PeripheralVision® to email notification of the problem as soon as it occurs. Before configuring the PeripheralVision® email group options, you must have installed either Microsoft Exchange or Outlook. In addition, you must log on to your email service under **Tools menu > Options > Configuration Page > Other Settings >Connect to Mail Server**.

Add Group: When you click on the **Add Group** button, you will see a dialog box that allows you to add new groups to your list of group email recipients. You must assign a unique name to each group before associating names, addresses, and group messages with it. The group's name will appear in the **Email Groups** list.

Remove Group: When you click on the **Remove Group** button, you will see a dialog box that allows you to remove existing groups from your list of group email recipients.

Edit Group Message: Selecting this button allows you to edit the messages you have previously set up for specific groups listed in the **Email Groups:** list.

Name and Email Address: This list shows the names and email addresses of the individual members belonging to your email groups. When you select a group name from the **Email Groups** list, the member names and addresses will automatically appear here.

Add Address: Select this button to add a new address to the group currently selected in the **Email Groups:** list.

Remove Address: Select this button to remove an existing address from the group currently selected in the **Email Groups:** list.

Setup Email Alerts for All Agents: This button allows you to setup alerts for *all* agents (devices) that indicate when email has been sent or received. If you press this button you will see a dialog box prompting you for the necessary data to setup email alerts.

Setup Sounds Page
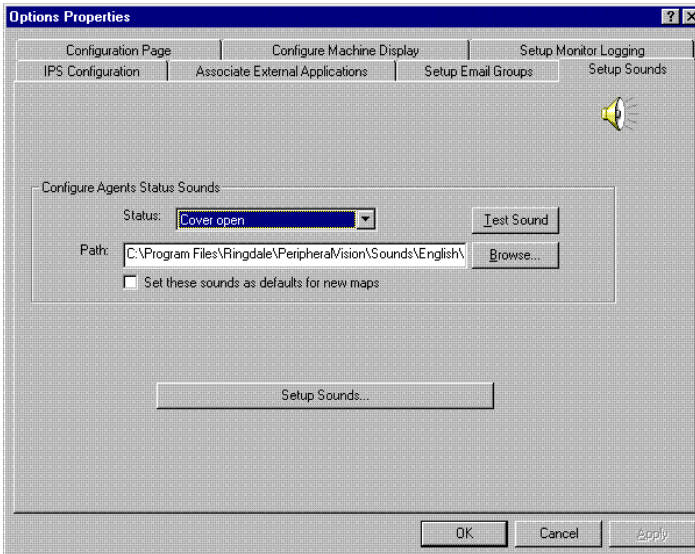
Configure Agents Status Sounds: You can associate specific error conditions with sound files (first, check the **Use Sounds** option under **Other Settings** on the **Configuration page** of **Options Properties**). The error condition shown in the **Status** field is associated with the sound file in the **Path** field.

Test Sound: Test a sound by pressing this button.

Browse: Use this button to find a sound file of your choice. After associating an error condition with a sound, click on the **Set these sounds as defaults for new maps** box to have the association apply to all new maps.

Setup Audio Alerts for All Agents
Select this button if you want to setup audio alerts for *all* agents discovered by PeripheralVision®.

Chapter 5

Operating PeripheralVision®: The Network Map

Creating and Editing Your Network Map

Having discovered all agents you can now create a network map. A set of icons on the tool bar at the top of your screen will enable you to design your screen layout and explore the cabling facilities.

New Agent
The New Agent toolbar button allows you to add agents that have not been autodiscovered. When this option is selected, the cursor will change to a cross cursor for positioning. A single click will locate the agent on the map and display an empty property page (shown below) for specifying the agent's details.
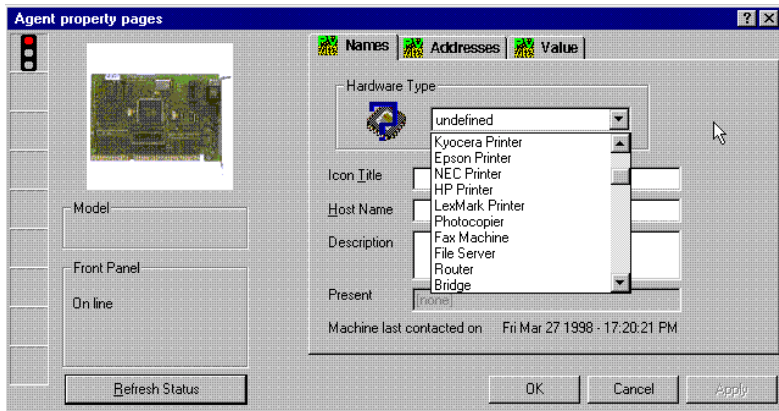
The type of machine can be selected from the **Hardware Type** drop down box. Clicking on the tabs at the top of the page allows you to enter both **Names** and **Addresses** for the machine.

![AutoCable icon] **AutoCable**

Once all network agents have been discovered, the AutoCable option allows you to automatically cable up the discovered devices. When you click on the AutoCable button the program connects the agent icons via colour coded lines. Machines that are on the same IP sub-network are tied together and the cables are labelled accordingly. Below is an example of an autocabled network map.
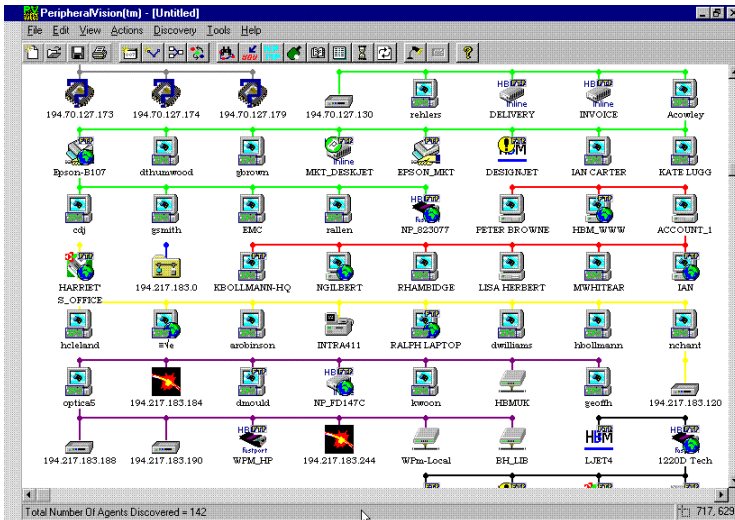
![New Cable icon] **New Cable**

This facility enables you to organize your autocabled map and add new cables by following these steps:

1 Click on the **New Cable** button to open a dialog box for choosing the cable colour and thickness (see next page).
2 Once colour and thickness have been set, press **OK**. The cursor changes to a cross cursor.
3 To choose a starting point for the cable, click the left mouse button on an appropriate point on the map screen.
4 Each subsequent click of the mouse will designate a corner of the cable.
5 Double click to secure the cable end point.
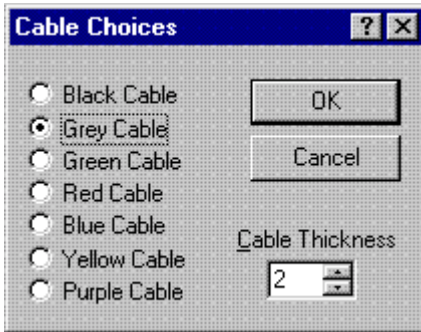
New Cable Dialogue Box

You can use these PeripheralVision® features to design a map of your network, as shown in the example below.

1 Click on and drag each agent icon to move it to a specific position on the network map screen.
2 Use the cabling functions to construct the network.
3 To affix each agent icon to the appropriate cable, right click on the agent. From the displayed menu, select **Attach Agent**.
4 To detach, follow the same procedure, but select **Detach Agent**.
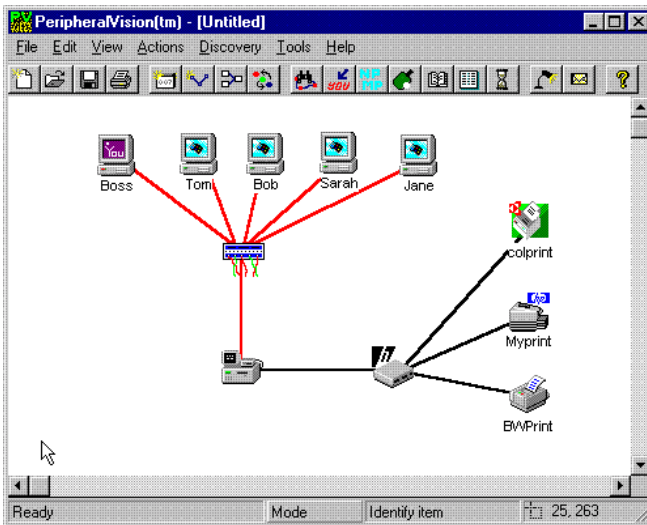
Additional Editorial Facilities

Delete Agent: Select an agent and press **Delete** *or* right click on an agent and from the popup menu, select **Delete Agent**.

Cable Popup Menu
Right clicking the mouse on a cable will
bring up this menu:

| Delete Cable |
| Delete Node |
| Hide Network |
| Properties... |

You can use the popup menu options to delete cables and nodes as required. Select **Hide Network** to reduce the network that includes the selected cable to an icon on the map screen. This can be useful when dealing with large networks.

Print Preview: Select this from the **File** menu to view your newly designed map. You can choose to print your map in either **Landscape** or **Portrait** format.

Additional Toolbar Options

Sort Current Agents
This option sorts agents displayed on the PeripheralVision® map into IP address code order from left-to-right and top-to-bottom. All current cabling will be recabled and the colour of cables may change.

New Map Screen
This tool bar button resets the map screen, deleting and clearing the existing screen.

Save
Once you have discovered your network environment, selecting this toolbar option allows you to save the map to a specified drive.

Open

After you have saved the information to a designated drive and closed your map down, select this option to access the map again.

Print

Choose this option to print the discovered map displayed on the screen.

Set Refresh Rate

Select this option to adjust the rate at which PeripheralVision® updates the status of currently discovered agents. The following box will appear, where you can change the **Refresh Rate**. You can also set the number of times PeripheralVision® will probe an agent before declaring it "dead". If you don't want the currently discovered agents to be updated click off the **Refresh Agents** box.

Set Refresh Rate for All Agents	✕

Set-up Agent Refresh

Configure a time interval for checking if devices are still responding on the discovered network (Refresh rate), and set the number of retries for each check (Number of retries).

☑ Refresh agents

Refresh rate (min.'s)
10

Number of retries
3

Refresh now

OK   Cancel
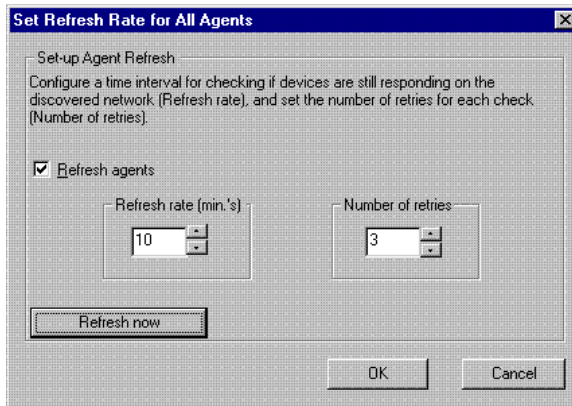
Search Returns

After using the Ping Locater, NPMP™ Locator, or Search DNS functions, select this button to see a window showing the search results. For example, after a multiple Ping, the **Search Returns** window will display a list of the pinged IP addresses. For each Ping, you will be told whether it was successful and whether the device was located.

Refresh All Agents
Click on this button to refresh the status of all the discovered agents on the map.

Send E-Mail
Enables you to call a **Message** box from within PeripheralVision® without the need to change windows (this facility can be turned on and off by selecting **Options** from the **Tools** menu at the top of the map screen and selecting the **Configuration** property page. Under **Other Settings** select **Connect to Mailserver** choosing on/off as required).

Help Topics
This toolbar button provides instant access to help pages and registration information.

Toolbar Settings
To configure the toolbar settings:

1   From the **View** menu at the top of the map screen, click on **Toolbar**.

2   Click on **Small Icons** or **Large Icons** or **No Toolbar**. The last option removes the toolbar from the screen completely (the default setting is **Small Icon**).

Chapter 6

SNMP Tree Walker Function ─────────────

The SNMP Tree Walker is a program that allows you to interrogate the MIB (Management Information Base) tables of a discovered agent (or an agent with an IP address) for more comprehensive SNMP information than is displayed within the PeripheralVision® property pages.

To Use SNMP Tree Walker:

1 To open the program, click on the SNMP Tree Walker toolbar button at the top of the PeripheralVision® map screen:

   or choose the **SNMP Tree Walker** option from the **Tools** menu. The SNMPTREE dialog box will appear on your screen (see the following page for a picture of the dialog box).

2 **Optional**: If you select a discovered agent in PeripheralVision® and then open SNMP Tree Walker, the agent's IP address is passed to the program and appears in the **IP Address** box. However, if the box is empty, you must type in an address.

3 Click on the **Test** button. If the IP address is SNMP configured, the **Found** and **SNMP** lights will flash and the SNMP tree will load into the large box. If there is no response, it is not SNMP configured.

   The **Device at this Address** box will show details of the agent you are interrogating. The **SNMP Object ID** box will show the SNMP system description available from most SNMP capable agents.

The results of a successful test are shown on the screen below:
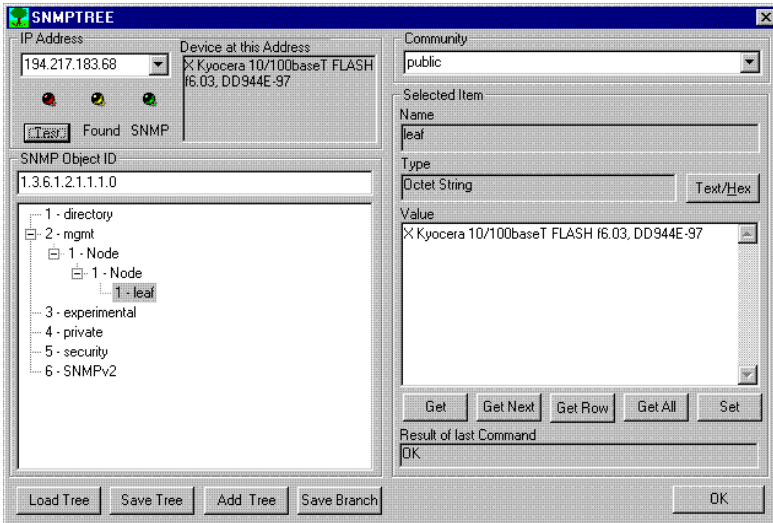
4 **Optional**: Occasionally, the first test will fail. Click on the **Test** button two or three times, if necessary.

Note: At the top right of the window is a box marked **Community** which usually contains the word **public**, the default community name. If an SNMP capable agent flashes as **Found** (yellow light) but does not acknowledge **SNMP** (no green light) it may be set to use a different community name. Locate the community name, enter it, and run a test again (if the SNMP tree program was called from another program, an appropriate community name may automatically appear).

Note: SNMP has been implemented by many manufacturers. Although all manufacturers have been working from the same RFCs, there are differences in interpretation. SNMP works with *almost* every application you are able to connect to, but occasionally you will find odd agents that the program cannot understand.

Walking the Tree

The tree display in the SNMPTREE dialog box is manipulated in the same way as the tree display in Windows Explorer. Branches can be opened and closed by clicking on the plus (+) and minus (-) signs. A particular item can be selected by clicking on it.

If a selected item represents an object which has a value, the value will be fetched and displayed in the **Value** field. If the item does not represent a value but is part of the tree structure, descriptive information is displayed in the fields on the right side of the screen under **Selected Item**.

Selected Item Information:

Name: This is the current object's name (from a MIB and not the agent being tested).

Type: The object type will be in upper case letters if it was obtained from the tree information; it will change to lower case if obtained from the actual value read from an agent.

Text/Hex: Clicking this button switches the **Value** display from text to Hexadecimal display. Some retrieved items are marked as being octets (i.e. bytes); these are often text strings and are displayed as such. Some octets represent quantities such as machine addresses. In these cases, the numerical value of each byte displayed as two hexadecimal digits is more useful.

Value: This is the value retrieved for the current object. The display is scrollable to allow for very large values. It can be switched from text to hex type display as needed.

Result of Last Command: This field holds a message describing the progress of the most recent command. The message is usually either **OK** or an error statement explaining why a requested command failed.

SNMP Object ID: When an object is identified in the tree, its OID will be displayed in this field. An OID can also be directly entered into this box.

OIDs

Individual objects are identified in the SNMP world by a unique code, an Object Identifier - often abbreviated to an OID. An OID consists of a series of positive numbers separated by dots. OIDs are organised as a vast tree. Some branches are defined by the standards organisation and used by many people. Other sub-branches are allocated to a particular manufacturer or type of device and defined by the interested parties.

To make full use of an agent's SNMP information, it is desirable to know what each value represents, including its range, name, etc. This information is normally supplied as a MIB, a "human-readable" document that follows a standard format. A MIB lists the OIDs in a collection of sub-branches and details their relationships and use. The MIB is machine-readable and structured so that information needed to access particular values can be easily extracted.

Often the MIB is not available and you may not know the type, manufacturer, or model of the device you are connected to. The tree program will extract as much information as possible by interrogating the device and build the needed parts of the tree. Individual values and tables may be examined.

To make full use of the SNMP information, fill out the tree structure which contains the data you require. Once the tree structure is filled out, you can select any particular OID and fetch its value by pointing to it in the tree display.

Information for the tree consists of a combination of data from two sources, the data files derived from MIB documents, and the information stored in the device being examined. For example, the value of a selected OID could be the activation of a printer's paper tray. By altering the figure in the Tree Walker's **Value** field, you could select or deselect that particular paper tray. By clicking on the **Set** button, you could then send the data in the Tree Walker's **Value** field to the agent. If the agent is configured to allow this, its value will change accordingly. The Value window allows such values to be edited and entered.

Loading the Tree from an Agent.

Get: This command automatically fetches the value for the OID currently selected in the tree. **Get** is mainly used when looking at a value which changes frequently.

Get Next: Clicking on this button (in the bottom right of the screen) requests the next value from the agent under test. Once the agent has given you the first OID, you can repeatedly click on **Get Next** to get a complete read out of the agent's OID values. The program automatically adds any new OIDs it receives to the tree. Running through all OIDs associated with a particular device will build a copy of the device's SNMP tree segment.

Get Row: The value for an OID is often shown with an extra zero on the end. The tree may show an OID as a table of values with a range of values on the end, one for each value in the table. Clicking on the **Get Row** button will call the entire range of values to be fetched and displayed.

Get All: Clicking on the **Get All** button will repeatedly request the next value until no further values are forthcoming. This is useful when filling in the details of an unknown device's tree structure. The button acts as both a stop and start switch. This is necessary because some devices may contain a very large number of values which take too long to fetch. The auto repeat function stops when it reaches the end of the data, which is signalled when no value is returned after a suitable amount of time, or when an error is returned.

When quizzing a distant device, or when using a noisy connection, it may be necessary to use **Get All** repeatedly to reach the end of the device's data. Errors and long delays caused by a noisy channel may convince the program that the remote device has finished before it really has.

Loading the Tree from Files

Data files are loaded by using the buttons in the bottom left corner of the SNMPTREE dialog box, as follows:

1 Click on the **Load Tree** button. The file selection screen will be displayed on your screen.

2 Click on **Open.** The default file name **default.tre** will be selected and loaded. Default.tre contains information on several basic branches used by many SNMP devices and is supplied with the program.

3 Once the file has loaded, plus (+) signs appear next to tree entries. Click on these + signs to expand the branch and display details of the loaded file.

4 If you wish to load a different set of information, enter the name and path to a data file in the file selection screen. Click on **Open**.

Note: If you want to *merge* file information to the existing tree display rather than *replacing* it, click on the **Add Tree** button instead of the **Load Tree** button before selecting the file.

Saving Tree Information

1 Click on the **Save Tree** button in the lower left corner of the SNMPTREE dialog box.

2 At the prompt displayed, type a file name for saving the current tree information.

Note: Save Branch also saves tree information, but only for those items below and to the right of the currently selected item.

Chapter 7

Product Authorisation and Licence Transfer ___

PeripheralVision® software comes unlicensed for 30 days. At the end of this period the software protection system asserts itself and encrypts parts of the program. In order to reactivate the program and continue using the full facilities of PeripheralVision®, you must obtain a **Sitecode Licence**. Although you can use your CD to install PeripheralVision® on as many machines as you wish, unless you obtain a licence for each machine, they will cease to function fully after 30 days.

Product Authorisation
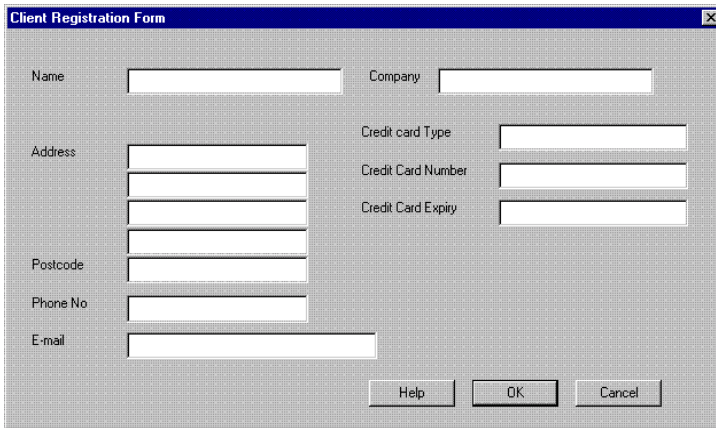
To obtain a Sitecode Licence contact your supplier or the manufacturer with your Sitecode. This can be found by selecting **Register Product** from the **Help** menu . The Registration dialog box will appear as shown below:
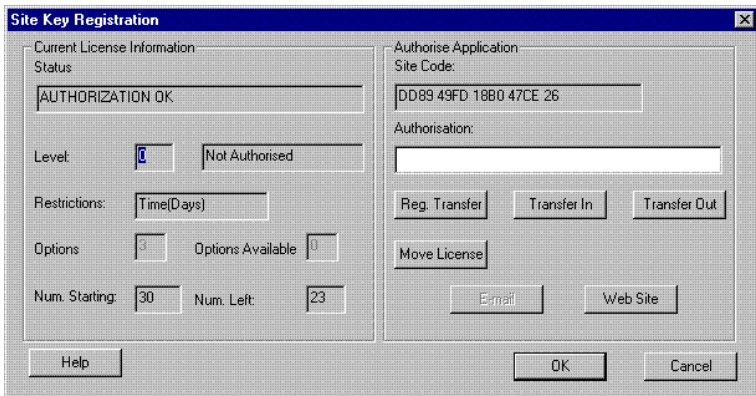
The Site Code is shown at the top right of the dialog box.

If contacting Ringdale directly, please have your credit card information ready for immediate registration. Registration can be done over the phone, by fax, by post (for numbers and addresses see the back cover of this manual) or across the Internet.

Note: Two buttons on the registration page enable you to obtain your licence from Ringdale across the Internet. Select the **Web Site** button to connect to the Software Authorisation page of the Ringdale web site, or select the **Email** button to access the following form (before you can register PeripheralVision® by email, you **must** be connected to your Mail Server - see the section **Configuration Page** in Chapter 4):

Fill out the form and click on **OK** to send it to Ringdale as email. You will receive an email reply shortly.

Entering the Sitecode Licence

Once you have obtained the licence authorization key type it into the data field labelled **Authorization**. Then select the **OK** button. Your copy of PeripheralVision® will now be authorised.

The authorisation status will now be changed in the **Current License Information** section. The **Level** box should now say **Full Version**.

Licence Transfer

The Licence Transfer feature allows you to transfer the licence from one computer to another, or from one directory to another.

Important

It is safe to copy or rename the directory that PeripheralVision® is in, but be careful to avoid destructive actions that may delete PeripheralVision® or its surrounding files. If a user needs to reformat or change a hard disk, care must be taken with the software authorisation key. It must be transferred to a safe location by installing PeripheralVision® either on another machine or on a separate directory on the same disk if only deleting that directory.

Use the methods described below to safely transfer the licence from an old to a new copy of PeripheralVision®.

Two methods are described for moving a protected program. These do not actually *copy* the program from one directory to the other. Instead, the licence from one program is *moved* to a *copy* of the same program in a different directory.

Direct Transfer - Windows 95/98

Direct Transfer is used to move a program from one local or networked directory to another, as follows:

1 **Copy** the program into another directory

2 Open the *copied* software to indicate that a transfer is beginning. When trying to open the software you will see the message shown on the top of the next page.

Your 30 Day Demo has now expired !

The 30 day demonstration period has now expired.

To register this product to re-establish a fully working version, click 'Register Now'.

Otherwise, you may continue to use PeripheralVision partially disabled by clicking 'Run Disabled'.

Run Disabled   Register Now

3 After pressing **Register Now** you will be shown the **Sitekey Registration Page** as displayed on the opening page of this chapter.

4 Click on the **Move Licence** button and you will be shown the following window:

License Transfer

To move the license for PeripheralVision to another directory on the same computer, enter the new target pathname here.

Path

C:\PROGRAM FILES\ITC\PERIPHERAL\

Browse...

OK   Cancel
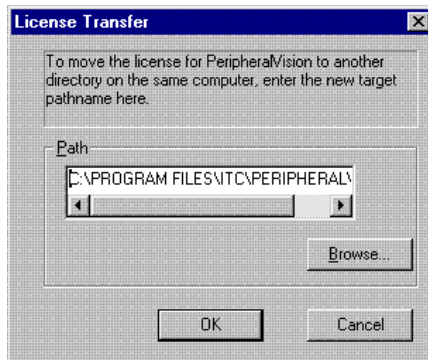
5 In the **Path** text box, type the directory path where the unlicensed version of PeripheralVision® will be located, or use the **Browse** button to locate it.

6 Press the **OK** button and the message **Transfer Complete** will be displayed.

7 Click on the **OK** button to acknowledge this.

The copied program is now authorised and the original copy is unauthorised.

Floppy Transfer - Windows 95/98

Floppy Transfer moves a licence from one computer to another using a floppy disk.

This process involves transferring special *Licence Imprint* files. To transfer a licence from one computer to another, you must have:

1   A copy of the program already installed and authorised on one computer (which shall be known as the source computer).

2   A copy of the program already installed but *not* authorised on another computer (which shall be known as the target computer).

Assuming the transfer is from an already licensed source computer to an unlicensed target computer via floppy disk, the process is as follows:

1   Start the program in the target computer. The unauthorised *30 day demo has expired* window will be displayed if the demo has expired (the program can be licenced before the demo expires if required).

2   Click on the **Register Now** button and you will be shown the **Sitekey Registration Page** as displayed on the opening page of this chapter (or access the page from the **Help** menu).

3   Click on the **Reg. Transfer** button and the following window will appear:
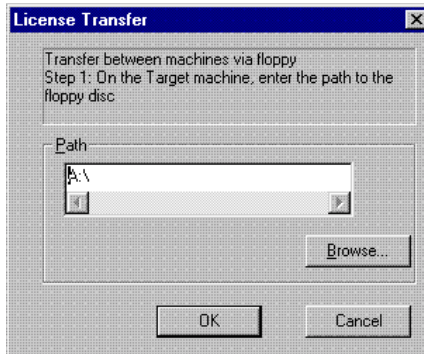
4   Enter the path to your floppy disk drive.

5   Click on the **OK** button. This function will put a registration imprint on a floppy disk and the message **Registration Complete** should appear.

6   Take the floppy disk out of the target computer and place it in the source computer.

7   Start the program on the source computer. From the **Help** menu at the top of the map screen, select **Register Product**. This will display the **Sitekey Registration Page** again.

8   Next, click on the **Transfer Out** button which will display the following window:
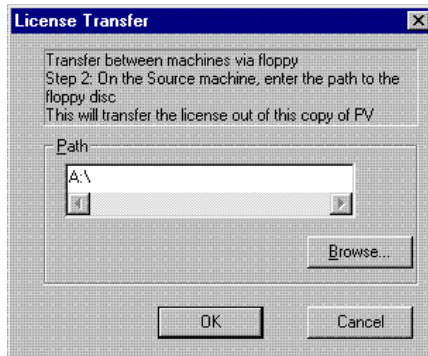
Use the **Browse** button to locate the directory of the program and click **OK**. This will read the registration imprint and write a matching licence imprint to the floppy. It will also discontinue the licence at the source if there was a single copy. If there were multiple copies, it will decrement the licence at the source by one. A message saying **Transfer Complete** is then displayed, indicating that the source program is unauthorised.

9   Take the floppy disk from the source computer and place it in the target computer.

10 Start the program in the target computer. Click on the **Transfer In** button on the **SiteKey Registration Page**. The window shown at the top of the next page will appear.
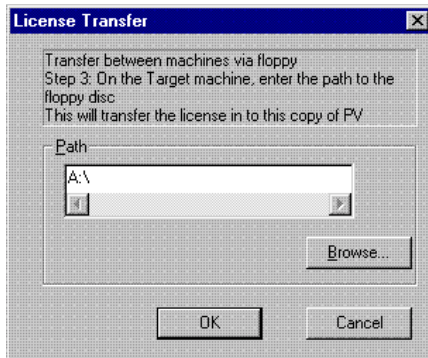
11 In the **Path** text box, enter the path to the floppy disk.

12 Click on the **OK** button. The message **Transfer Complete** should be displayed. The **Sitekey Registration Page** will change to show **Authorisation OK**.

The licence has now been successfully transferred. The source computer is unlicensed and the target machine is licensed.

Direct Transfer - Windows NT

Transferring the licence with Windows NT software follows essentially the same procedure as for Windows 95/98, but includes an extra step. NT has a **CrypKey Licence Service** that supervises its protection systems. This service must be informed that the licence is being moved. Proceed as follows to move the licence from one directory to another on the same machine:

1 Copy all PeripheralVision® files to the new directory, or re-install PeripheralVision® into the new directory.

2 From **Start/Programs/PeripheralVision**, select **CrypKey Server for NT**.

3 Click on the **Add** button and enter the new path to the licence, or use the browse facility to locate the new directory.

4   Click on the **Open** button. You will see that the new location has been added to the screen. Exit the CrypKey window.

5   Open **PeripheralVision**® in the old (licensed) directory (use **Windows Explorer** to locate and open the program as the shortcut will be pointing to the new directory). Follow the instructions as for Windows 95/98 Direct Transfer and transfer the licence to the new directory.

6   When the procedure is complete, manually delete the files in the old directory using **Windows Explorer**.

Floppy Transfer - Windows NT

To transfer a license using a floppy disk for Windows NT, follow the instructions under **Floppy Transfer - Windows 95/98** but with this extra step. After Step 6:

From **Start**/**Programs**/**PeripheralVision**, select **CrypKey Server for NT**.

Click on the **Add** button and enter the new path for the licence (i.e. the floppy drive - usually the A drive), or use the browse facility to find it.

Click on the **Open** button. You will see that the new location has been added to the screen. Exit the CrypKey window and continue with the 95/98 instructions.

When you return to the target computer, it will be necessary to repeat this procedure, this time entering the location of the program you are about to move the licence to into the **CrypKey Server for NT** window.

Note: Because no special "mediatricks" are involved, you do not have to use a floppy to transport these encrypted text files back and forth. You can use either your network or email to transfer a licence electronically around the world.

Appendix A

Menu Options _____

In addition to popup menus and tool bar buttons, PeripheralVision® also has seven pull-down menus which are found at the top of the Map Screen. Click on a menu title to see the options available for each menu.

Note: Some of the menu functions can also be accessed through the toolbar buttons and are described in previous chapters.

File Menu Options

New	Ctrl+N
Open...	Ctrl+O
Save	Ctrl+S
Save As...	
Summary Info...	Ctrl+I
Page Set-up	
Print preview	Ctrl+V
Print...	Ctrl+P
Recent Maps	▶
Exit	
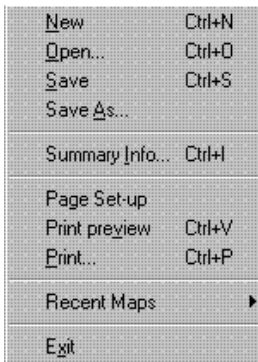
Here is an example of the pull-down **File** Menu. An explanation of the options follows.

New: This option creates a new map screen.

Open: This option opens a previously saved map screen from disk.

Save: This option saves the current map screen to disk (PeripheralVision® saves its map screens as *.mdb Microsoft Access database files).

Save As: This option saves the current map screen to disk under a new filename that you specify.

Summary Info: This option allows you to enter summary information about the selected map. Choosing this option opens the **Summary Information** dialog box as shown below:
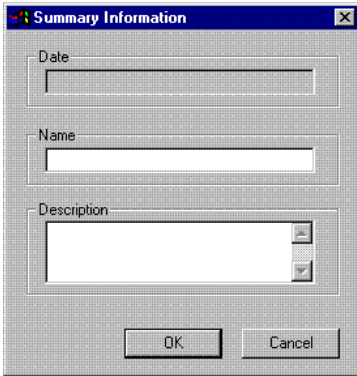
The data fields for **Name** and **Description** can contain any data you decide to enter. However, it is recommended that the contents refer to the networks and devices of the map currently displayed.

Page Setup: This allows you to see and manipulate an onscreen representation of the printed page. Selecting this option opens the dialog box shown below:
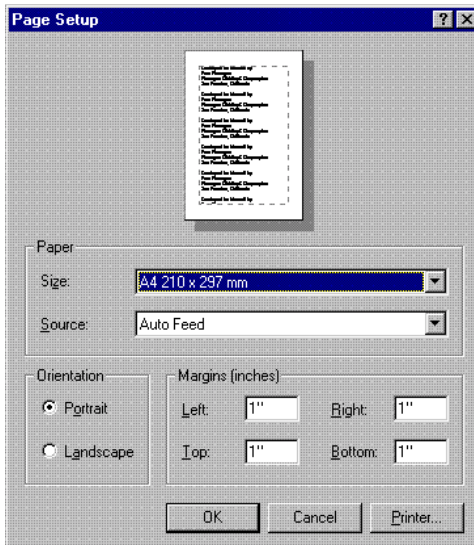
You can set **Paper Size** and **Source**, paper **Orientation**, and **Margins**. Selecting the **Printer** button allows you to review the default printer information.

Print preview: This option displays an onscreen representation of what the printed page will look like.

Print: This option prints the currently displayed map.

Recent Maps: Selecting this option displays a list of the maps you've most recently created in this program. To quickly reopen one of these maps, click on the map name.

Exit: This option ends the current session of PeripheralVision®.

Edit Menu Options

Undo	Ctrl+Z
Cut	Ctrl+X
Copy	Ctrl+C
Paste	Ctrl+V
Delete	Del
Find	Ctrl+F

Here is an example of the pull-down **Edit** Menu. An explanation of the options follows.

Delete: This option deletes the currently selected agent from the PeripheralVision® map screen.

Find: This option activates a search routine that helps you to find desired devices from the map screen. When selected, the **Find Agents** dialog box appears, this is shown on the next page.

Set the parameters for your search as follows:

Search on: Select the data field to search (Icon title, Host name, Hardware address or IP address).

Enter the details of the agent to find: Type in the numbers, letters or special characters of a string to search for.

Clear Existing Highlights: Select this button to remove all highlights from previous searches. Selecting this button will not delete any of the highlighted information - it simply removes the highlighting used to identify information matching the search criteria.

Refresh highlights before search: Select this option to have all highlights from previous searches cleared before beginning a new search.

Case Sensitive: Select this option to search for only the indicated case of letters (capitalized or not).

View Menu Options

Here is an example of the pull-down **View** Menu. An explanation of the options follows.

Graphs: Choosing this option will take you into the **Graph Wizard**. To create a graph, follow the step-by-step instructions as explained in the Graph Wizard (see Chapter 4 for further details).

Log File: When you select this option, the **Log File Viewer** will appear on your screen. This automatically keeps track of network activity and logs "events" that have occurred on the network. To leave the Log File Viewer, select **Close**.

Toolbar: Choosing this option causes a popup menu to appear with a list of options for toolbar appearance. You can choose either **Large** or **Small Icons** for the PeripheralVision® Toolbar. You can also hide the Toolbar by choosing **No Toolbar**.

Actions Menu Options
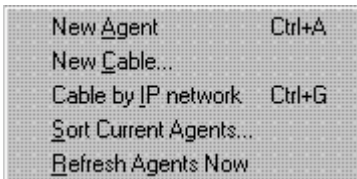
Here is an example of the pull-down **Actions** Menu. An explanation of the options follows.

New Agent: Use his option to create a new agent icon, as follows:

1 Click on **New Agent**. The mouse pointer will appear as a cross when it is positioned over the map screen.

2 Left-click in the map screen to open the **Agent Property Pages** dialog box. Setup the properties for the new agent as you require.

New Cable: Use this option to create a new cable icon (see Chapter 5 for further details).

Cable by IP network: This option activates automatic cabling of agent icons according to the networks they belong to.

Sort Current Agents: Selecting this option opens the **Arrange Icons** dialog box, which has two options for arranging devices on the map screen.

1. **Arrange by IP address:** This option sorts device icons in sequence from left-to-right and top-to-bottom by their IP Addresses. All current cabling will be recabled and the colour of cables may change.

2. **Arrange by cable node:** This option sorts all device icons on the map screen by their network nodes, arranging them from top-to-bottom (following a repeating pattern of left-to-right and then right-to-left). Current cabling will be recabled and the cable colour may change.

Refresh Agents Now: This option allows PeripheralVision® to instantly update the status of all devices on the network. Refresh Agents Now does not discover new devices - it checks devices already discovered to see if they are still "alive" on the network. For more information on refreshing agents, see the topic **Set Refresh Rate** in the **Discovery** menu topic.

Discovery Menu Options

Find this Machine..	Ctrl+U
NPMP...	
Ping...	
Search DNS...	
Set Refresh rate...	
Search Returns Window	
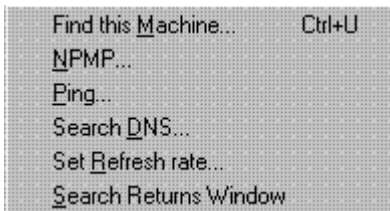
Here is an example of the pull-down **Discovery** Menu. These options allow an alternative access to the toolbar discovery icons which are explained fully in Chapter 2.

Find this Machine: This option autodiscovers your computer, opening the **Locate home PC** dialog box.

NPMP: This option autodiscovers NPMP™ agents on the network, accessing the NPMP™ discovery dialog box.

Ping: This option autodiscovers all agents at the specified IP Address(es). When selected, the **Ping IP Address(es)** dialog box is accessed.

Search DNS: This option autodiscovers all agents using the DNS. When selected, the **DNS Agent Discovery** dialogue box is accessed.

Set Refresh rate: This option sets the frequency for updating the status of all agents on the network. This option does not discover new devices - it simply checks devices already discovered to see if they are still "alive" on the network.

Search Returns Window: This option displays the results and gives feedback on your latest search for agents on a network.

Tools Menu Options

SNMP Tree Walker... Ctrl+Q
Send E-Mail...
Launch Web Browser
DNS Lookup
External Applications   ▶
Options...
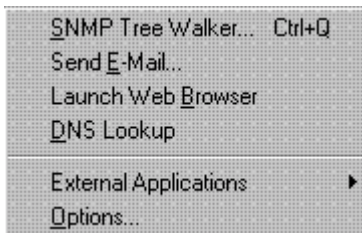
Here is an example of the pull-down **Tools** Menu. An explanation of the options follows.

SNMP Tree Walker: This option starts the SNMP Tree Walker, a separate application that enhances the functionality of PeripheralVision®. Multiple executions of the SNMP Tree Walker can be run simultaneously to monitor different SNMP Trees, or networks (for more information, see Chapter 6).

Send Email: This option launches an email application, if one is installed. You must provide the email application which is not included in PeripheralVision®. PeripheralVision® simply has the ability to start such applications.

Launch Web Browser: This option launches an Internet Web browser, if one is installed. You must provide the web browser application which is not included in PeripheralVision®. PeripheralVision® simply has the ability to start such applications.

DNS Lookup: This option determines IP Addresses and host names (or text domain names). This is not the same function as **Search DNS** described under the Discovery Menu. You don't have know the IP Address of a network or agent to discover it. This feature allows you to specify either an IP Address or a Host/Domain name to discover networks and agents (for further details see Chapter 2).

External Applications: Select this to see a list of applications for managing specific types of agents available for your use. This list can include applications such as PlotPro or Overcom.

Options: This option opens the PeripheralVision® **Options Properties** pages. For further details see Chapter 4.

Help Menu Options

| Help Topics...   F1 |
| Register Product... |
| About PeripheralVision(tm) |
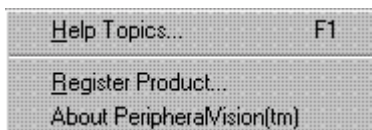
Here is an example of the pull-down **Help** Menu. An explanation of the options follows.

Help Topics: This option displays the Help Contents page for PeripheralVision®.

Register Product: This option displays the Product Authorisation and Licence Transfer dialog box (for more information see Chapter 7).

About PeripheralVision: This option displays the program information for PeripheralVision®.

Appendix B

Installation Notes ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯

TCP/IP Protocol

TCP (Transmission Control Protocol) and IP (Internet Protocol) are terms that have generally become interchangeable. TCP/IP protocol allows for individual computers and computer networks to communicate with each other. The success of TCP/IP is due to three main factors:

1 Because TCP/IP is available on a wide range of computers, it is an attractive option for new products. Manufacturers can guarantee that these products will work with many systems.

2 TCP/IP encompasses a broad range of extremely powerful and flexible protocols, making it suitable for just about any task.

3 IP is the protocol set used by the Internet.

TCP/IP describes two protocols. TCP offers a guaranteed delivery service on top of IP, which is the core datagram service. Improvements in TCP/IP are occurring frequently, with increased functionality constantly being added. This makes TCP/IP a powerful protocol but has also created a negative side effect. Many people incorrectly call TCP/IP simply IP, however, TCP/IP actually comprises a larger range of protocols and functionality than IP alone.

Moreover, because TCP/IP is required for a wide range of environments, some configuration may be needed to get it running on any given network. For example, a server name and network number may be required. For bigger networks, the network configuration required involves ensuring that each network unit has a unique number. With just IP, however, several server processes may be necessary. You may need to tell new workstations about the network configuration or provide translation services between host names and their IP addresses.

The Basics of TCP/IP

The core of TCP/IP is the host address, also known as the *IP address* of a machine. Every machine on your network that is running IP needs a unique host address. There is no distinction between workstations, printers, routers or servers - they are all IP hosts. If you are familiar with local networks, you will know that each workstation and server also has a unique address which is set automatically. With IP you have to set these yourself. Networks also include the concept of the *network number*. There is a similar and equally important concept in IP called the *subnet address*, but this is less obviously identified - rather than typing in a network number, the address of the subnet to which a machine is attached is embedded in its IP address. All IP addresses are 32 bits, i.e. four bytes long. IP addresses are usually written in decimal format, for example:

192.130.159.163

Associated with a particular IP address is the *subnet mask*. This is used to tell you how many of the leading bits in a given IP address denote the subnet address, e.g. the typical subnet mask of

255.255.255.0

means that the first three bytes of an IP address denote the subnet address, and the last byte identifies a particular host on that subnet. So with an IP address of:

192.130.159.163

and a subnet mask of:

255.255.255.0

the subnet address is:

192.130.159

and the host identifier is:

163

Such a subnet address is known as a *Class C* network. This means you can have up to 256 different host addresses on that subnet (using 0 and 255 is a bad idea, however, as these can conflict with other network services. In practice, it is best to use a range of 1 to 254, giving 254 total addresses). *Class B* networks use a subnet mask of:

255.255.0.0

giving two bytes worth of addresses (65,536) for potential use. There are also *Class A* networks with a subnet mask of:

255.0.0.0

giving three bytes worth of addresses.

If your TCP/IP network is never going to be connected elsewhere, you can use whatever subnet mask and IP addressing structure you want. Do not use 0 or 255 for IP addresses as these are used by network services, as is 127.x.x.x. But typically, you will want to attach your network to the Internet via an ISP (Internet Service Provider).

Usually, the ISP will supply you with a unique Class C address. They will give you a three byte address which you can use with a subnet mask of:

255.255.255.0.

You can then use the remaining byte in the address to identify the hosts on your network. If you have more than 255 hosts, you can ask for a Class B address, but these are running out quickly, so you will have to justify your reasons for needing one. You will probably have to settle for two or more Class C addresses. Class A addresses are reserved for organizations such as the US Department of Defense.

Name Servers

If you have used the World Wide Web (WWW), you will know that most sites have a name. Although all you need to know is the host's *name*, the IP stack also needs to know the host's *address*. The translation between the host's name and its IP address (and vice versa) is provided by a DNS (Domain Name Server). The DNS is a software process running on a network machine that provides a lookup service for IP protocol stacks.

There are utilities allowing you to query a DNS directly, but generally this is done "behind the scenes". If your network is completely standalone, you will need to have your own DNS somewhere on your network. However, if you have an Internet connection, your ISP will have at least one DNS on your side of the connection. This adds resiliency and reduces the amount of traffic over the Internet connection. PeripheralVision® has a DNS Lookup facility to enable you to search a DNS.

A single DNS, even one for an ISP, will not have the names and IP addresses of the millions of hosts on the Internet. Therefore, you configure your hosts with a list of several DNS services - your ISP can provide you with a list. If the host cannot find the address it is looking for in the first listed DNS (typically your local one) it tries the next one in the list. If the address cannot be located after the entire list has been searched, you will receive a message stating that it cannot be found.

Appendix C

Glossary

Address - One or more characters specifying the recipient or originator of transmitted data. An address can also denote the position of either data in the computer memory or the data pack itself while it is in transit through a network.

Administrator - The individual responsible for managing the LAN. This person configures the network, maintains the shared resources and security, and assigns passwords and privileges.

Agent - A software-driven process running on a communications or networking device that allows that device to participate in a network management system. For example, an SNMP agent running on a router allows the router to exchange information with an SNMP network management system through the use of SNMP protocol.

AppleTalk - A seven layer protocol stack developed by Apple for communication amongst its Apple Macintosh products.

ARP (Address Resolution Protocol) - The Internet and TCP/IP protocol used to dynamically bind a high level IP address, such as an Internet address, to a low level physical hardware address (12-digit node address assigned to all hardware).

AUI (Attachment Unit Interface) - The IEEE802.3 specified cable and connector used to attach devices to a MAU. Defined in section 7 of the 802.3 standard.

10Base2 - A form of Ethernet and IEEE 802.3 network cabling using thin co-axial. It refers to 10 Mbit/s speed BASEband transmission over 200 metres maximum length - in practice 185m - and is commonly known as Cheapernet.

10Base5 - Ethernet and IEEE 802.3 network cabling using thick co-axial with 10 Mbit/s speed BASEband transmission and 500m maximum length.

10BaseT - Ethernet and IEEE 802.3 network twisted pair cabling with 10 Mbit/s speed BASEband transmission and a maximum length of 100m.

100BaseT - Several Fast Ethernet 100 MBps CSMA/CD standards for twisted pair cables; all are standards (or planned standards) under IEEE 802.3. They including: 100BaseTx (100 Mbps over two-pair Cat5 or better cable), 100BaseT4 (100 Mbps over four-pair Cat3 or better cable), 100BaseT2 (in committee; 100 Mbps over two-pair Cat3 or better cable).

Bindery - A database that contains definitions for entities such as users, groups and workgroups in the Novell NetWare LAN network operating system environment. The bindery supports the design, organisation and secure operation of the NetWare environment.

Datagram - A method of sending data with parts of the message sent in random order. The recipient machine reassembles the parts sequentially.

DNS (Domain Name System/Server) - The on-line distributed database system used by the Internet to map names into IP addresses. Internet DNS servers implement a hierarchical name space which gives sites freedom when assigning machine names and addresses.

Domain - A group of network nodes forming an administrative entity or a number of servers grouped together and named to simplify network administration and security. Every computer on a LAN belongs to at least one domain. However, logging on to one domain does not limit resources in other domains in which the user has access permission.

Duplex - Simultaneous, two-way independent transmission of data.

Electronic mail, Email - The electronic transmission and reception of messages and text-based information without the need for the recipient to be present at the time of the transmission.

Ethernet - The most widely used LAN transmission network. Based on a bus network topology, it runs at a maximum 10 Mbit/s - in practice far less

- and adopts CSMA/CD techniques operating over conventional co-axial cable, thin wire co-axial cable and Unshielded Twisted Pair cabling. A fibre-optic implementation has also been defined. Ethernet has been standardised by the IEEE as the IEEE 802.3 standard.

Fileserver - A computer attached to a LAN running a Network Operating System (NOS). The NOS allows the fileserver to regulate communications among the workstations connected to it on the LAN and to manage the shared resources available on the file server, such as hard disk storage and printers. A fileserver may be dedicated: the computer is used only as a fileserver, or non-dedicated: the underlying computer that the NOS runs on is used for another task simultaneously.

FTP (File Transfer Protocol) - The standard, high level TCP/IP protocol for transferring files from one machine to another across the Internet.

HTML (Hyper Text Mark-up Language) - The language used to create documents on the World Wide Web.

Hub - The centre of a star topology network or cabling system. A multi-node network topology with a central multiplexer and many nodes feeding into it through the multiplexer or hub (other nodes do not usually directly interconnect). LAN hubs are becoming increasingly popular with the growth of structured cabling and the need for LAN management.

IAB (Internet Activities Board) - The technical body that sets policy and standards for TCP/IP and the connected Internet suite of protocols.

IEEE - Institute of Electrical and Electronic Engineers: a US publishing and standards organisation responsible for many LAN standards such as the 802 series.

IEEE 802.2 - The datalink standard for use with IEEE802.3, 802.4 and 802.5 standards. It specifies how the basic data connection should be set up over the cable.

IEEE 802.3 - The IEEE standardisation of Ethernet. A Physical Layer definition that includes specifications for physical cabling plus the

method of transmitting data and controlling access to the cable. It uses the CSMA/CD access method on a bus topology LAN.

IEEE 802.5 - The IEEE standardisation of IBM Token Ring. A LAN Physical Layer standard that uses the Token Ring passing access method on a ring topology LAN.

IEEE 802.6 - The standard that defines MANs. The first installation will be SMDS-based using short packet ATM transmission.

Interface - The place or piece of equipment where interaction occurs between two systems or processes.

Internet - A group of interconnected networks appearing to be one continuous network which can be addressed seamlessly at Network Layer Three of the OSI model. Typical internets are built using routers, either to form a backbone router network or to link together LANs at the Network Layer.

The Internet - A collection of networks and gateways all using the TCP/IP protocol suite. The Internet functions as a single, co-operative virtual network. It provides universal connectivity, three levels of network services, connectionless packet delivery; full duplex stream delivery, and application level services including email.

IP (Internet Protocol) - The TCP/IP standard protocol that defines the IP datagram as the unit of information passed across an internet. TCP/IP provides the basis for connectionless packet delivery service.

IP Address - The 32-bit address assigned to a host allowing it to participate in a TCP/IP internet.

LAN (Local Area Network) - A communication system that links computers together to form a network via (usually) a wire based cabling scheme. LANs connect PCs, workstations and servers together, allowing users to communicate and share resources. Devices linked by a LAN may be on a floor of a building or on a campus.

LANManager - LAN Network Operating System developed by Microsoft which runs on top of OS/2 and Windows NT.

LAT (Local Area Transport protocol) - A DecNet specific protocol for exchanging small packets of data typically between Dec Vax host computers and terminal servers in a LAN.

MIB (Management Information Base) - The set of database variables that a gateway running CMOT, SNMP or CMIP network management protocols maintains. MIB defines variables needed by the SNMP protocol to monitor and control components in a network. Managers fetch from or store in these variables. MIB-11 refers to an extended SNMP management database that contains variables not shared by both CMOT and SNMP. The CMIP and SNMP MIB formats differ in structure and complexity.

Modem - A device named from an amalgam of the words modulator and demodulator. A modem will modulate an outgoing binary bit stream on an analogue carrier and demodulate an incoming binary bit stream from an analogue carrier.

Network interface - The point of interconnection between a telephone network operator's communication facilities, terminal equipment, protective apparatus or writing at a subscriber's premises. This demarcation point is on the subscriber's side of the phone company's protector or its equivalent.

Network Management - The process and techniques of remotely or locally monitoring and configuring networks.

NPMP™ (Network Peripheral Management Protocol) - A transmission protocol for TCP/IP based network management that facilitates access to both configuration and statistical information. NPMP™ also allows alteration of the configuration data stored in an NPMP™ compliant network peripheral device.

Octet - A grouping of eight bits in a packet switched network which is similar, but not identical to, a byte.

OEM (Original Equipment Manufacturer) - The maker of equipment marketed by another vendor, usually under the name of the reseller. The OEM may make only certain components or complete devices, which can then be configured by the reseller with software and/or hardware.

Packet - A collection of bits, including the address, data and control, that are switched and transmitted together. The terms "frame" and "packet" are often used synonymously.

Port - A computer interface capable of attaching to another device, such as a modem for communicating with a remote terminal. If the port is within a hub, it can attach to a workstation.

Printserver - A computer and/or type of software providing access to a central printer for users on a network. The printserver acts as a buffer, holding the information to be printed in memory until the printer is free. The printserver can be programmed to print the jobs in the order received or to give priority to particular users who, in effect, "jump the queue." Printservers promote maximum exploitation of expensive resources such as laser printers and save time by automatically retrying print jobs if the printer is initially busy.

Printer driver - A program that controls printing and sets options such as print quality and paper size for a particular printer. For example, in LANManager, each printer queue has a single printer driver associated with it.

Protocol - A set of rules governing the information flow within a communications infrastructure, often known as "data link control". Protocols control format, timing, error correction, and running order. Their presence is essential when a device interprets incoming information. Suites of protocols are often used in networks, with each protocol responsible for one part of a communications function.

RFC (Request For Comment) - A document series begun in 1969 describing the Internet suite of protocols and related experiments.

Repeater - A device that extends the maximum length of the cable used on a single network. In fibre networks, the repeater is an optoelectrical module that receives an optical signal and converts it into electrical form.

RMON (Remote MONitoring) - A SNMP specification for multivendor statistics gathered by a standards based (de facto SNMP) management station from de facto standard RMON-compliant devices.

RJ45 - The popular name for the 8-pin modular connector in the 10BaseT standard for UPT connections to workstations or smart wiring hubs. The actual connector is described in ISO standard 8877.

Router - A network interconnection device operating at OSI Network Layer (Level Three) that supports a particular Network Layer protocol and related stack, such as TCP/IP, DECnet, XNS, SNA, OSI IP, IPX. Routers usually support multiple protocols by a variety of methods such as Protocol Independent Routing. A router can be used to link LANs together locally or remotely as part of a WAN. A network built using routers is often termed an internetwork.

Simplex - A communications system or link which can carry a signal in only one direction.

SNMP (Simple Network Management Protocol) - A transmission protocol defined by the IAB in RCF1157 for TCP/IP based network management, widely accepted as a de facto standard for LAN network management. SNMP is used to monitor IP gateways and the networks to which they attach. It defines a set of variables that the gateway must keep and specifies that all operations on the gateway are a side-effect of fetching or storing to the data variables. SNMP consists of three parts: Structure of Management Information (SMI), Management Information Base (MIB) and the protocol itself. The SMI and MIB define and store the set of managed entities; SNMP conveys information to and from these entities. The public domain standard is based on the operational experience of TCP/IP internetworks within DARPA/NSFnet.

Sitecode - The registration code unique to each workstation or PC. You give your sitecode to your supplier when you licence software to a machine.

TCP/IP (Transmission Control Protocol/Internet Protocol) - The suite of protocols used and developed by DARPA and the US DoD. The protocols build up to and include Layer Four of the ISO OSI model, but there is no direct correspondence layer for layer. Three main protocols sit above TCP/IP: TELNET, FTP, and SMTP.

TELNET - The TCP/IP standard applications-level protocol for remote terminal connection service. Telnet allows a user at one site to transparently interact with, or pass through to a remote network or time-sharing system at another site, while appearing as a local terminal.

WAN (Wide Area Network) - A network covering a larger geographical area than a LAN where telecommunications links are implemented, and normally leased from the appropriate Public Telecommunications Operator(s). Examples of WANs include packet switched networks, public data networks and Value Added Networks.

WBEM (Web Based Enterprise Management) - WBEM integrates common but disparate standards - including SNMP, the simple network management protocol, DMI , the desktop and server management interface, and HTTP, the hypertext transfer protocol for Internet communication - into an architecture that any web browser can manage.

Windows - The Microsoft standalone operating system with an integral graphical user interface which runs on top of MSDOS.

Windows NT (New Technology) - Microsoft's scalable 32-bit version of Windows aimed at high-end workstation users. Windows NT can be a standalone operating system. It can also be a "network ready" system capable of acting as a small application server for a workgroup of Windows - based PCs. Windows NT incorporates Windows 3.1 and WFWG.