

SoftWindows™ 95 User's Guide

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Document Overview

About this documentation

The documentation for SoftWindows for Unix is provided in two guides:

- This *SoftWindows for Unix User's Guide* provides the information you need to use SoftWindows on your Unix workstation.
- A separate *SoftWindows for Unix Administrator's Guide* describes how to install SoftWindows, and configure it to take advantage of specific features of your Unix installation. It is designed for use by advanced users, and assumes familiarity with Unix.

There are two ways to access the SoftWindows Guides:

- You can find both of these guides online. To access them:
 1. Choose Online Books from the Help toolchest.
 2. In the InfoSearch browser, click SGI_EndUser.
 3. Click the title of the book you want to view.
- For quick access to online help, use the Help pull-down menu from the SoftWindows application window. The Help menu does not represent the full SoftWindows Guide contents, but is a convenient way to get help on many commonly sought-for topics.

About this guide

The *SoftWindows 95 User's Guide* consists of the following chapters. Click on the Chapter Title to go there.

- Chapter 1, "Introduction"—Describes the main features of SoftWindows and explains how it enables you to run PC applications on your Unix workstation.

- Chapter 2, “Using SoftWindows”—Explains how to run SoftWindows, describes the key features of the SoftWindows window, and explains how to use floppy disks and the keyboard with SoftWindows.
- Chapter 3, “Using Windows 95”—Explains how to run Windows 95, and gives a brief introduction to its features with a simple tutorial to help you become familiar with using it.
- Chapter 4, “Using MS-DOS”—Explains how to run MS-DOS, use MS-DOS commands, use the MS-DOS editor, and install and run MS-DOS applications.
- Chapter 5, “Troubleshooting”—Provides answers to commonly asked questions and suggests solutions to the problems that you may encounter while running PC applications on your Unix workstation. It also gives explanations of the SoftWindows, MS-DOS, and Windows errors.
- Glossary—Describes the technical terms used in the guide.

Conventions

For clarity, this guide uses the following conventions:

- Linked references to other sections in the book are colored blue.
- Steps in a procedure are numbered.

Abbreviations

This guide uses the following abbreviations:

- "SoftWindows" refers to SoftWindows95 for Unix workstations
- "Insignia" refers to Insignia Solutions
- "MS-DOS" refers to Microsoft Disk Operating System for the IBM PC
- "PC" refers to an Intel-based computer
- "Windows" refers to Microsoft Windows95

Introduction

This chapter describes the main features of SoftWindows, and explains how it enables you to run PC applications on your Unix workstation.

What is SoftWindows?

SoftWindows is a complete IBM-compatible PC in software. It allows you to run Windows 95 and MS-DOS applications on your Unix workstation as if they were running on a PC.

It combines full PC compatibility with fast performance and built-in networking, so, for example, you can receive electronic mail, read PC-formatted CD-ROMs, and print PC files to a network printer, all from your Unix workstation.

SoftWindows: a cross-platform solution

SoftWindows is available for the leading RISC-based Unix workstations from Hewlett-Packard, Sun/SPARC, IBM, Silicon Graphics, and Digital, as well as Apple's Power Macintosh and Macintosh computers.

SoftWindows provides integrated access to information throughout an organization by letting PC users and Unix users share the same data and applications. From one workstation users can run native Unix applications, Windows and MS-DOS applications, and also use PC-based networked systems.

SoftWindows allows you to standardize on today's popular productivity applications, such as Microsoft Office and Lotus SmartSuite on PC, Unix, and Macintosh platforms, throughout the organization.

80486 processor emulation

SoftWindows 95 provides full emulation of the Intel 80486 processor, enabling you to exploit the full functionality of current PC software.

Among the features provided by this emulation are:

- The ability to run Windows 95
- Continued support for OLE 2.0
- Multiple MS-DOS sessions
- 32-bit memory addressing
- Support for virtual device drivers

The Windows 95 desktop

SoftWindows includes color and monochrome Windows display drivers to optimize the performance of Windows 95 and allow it to be run in a window of any size on either color or monochrome displays. The Windows desktop can be resized dynamically, without restarting.

You can switch between a PC application and another Unix application at any time. You can copy and paste text or graphics between PC and Unix applications. Text or graphics can be cut or copied from Windows applications, and is automatically converted into the appropriate format when you paste it into a Unix application.

Windows 95 TurboStart

A unique Insignia TurboStart™ feature lets you quit from SoftWindows without exiting Windows 95. Windows loads instantly the next time you run SoftWindows, and you can resume where you left off.

The SoftWindows MS-DOS window

When running MS-DOS, SoftWindows emulates the main color and monochrome PC display types: SVGA and Hercules.

Indicators in a status bar at the bottom of the SoftWindows window show you whether special keyboard modes or certain configuration options are selected.

The SoftWindows menus

The SoftWindows menus allow you to configure SoftWindows to suit your PC applications. Many operations that would require hardware or board changes on a real PC can be carried out simply by choosing the appropriate function from one of the SoftWindows menus.

Product specification

SoftWindows 95 emulates a PC to provide the following features:

Processor

Emulated 80486 (real, protected, and virtual-8086 mode). Emulated 80487 math co-processor using the host computer's math co-processor.

Memory

PC memory up to 32 Mbytes.

Video

In Windows 95 applications, a SoftWindows display driver is used to pass graphics calls directly to X Windows. This takes full advantage of the host graphics speed and display resolution, up to and beyond resolutions achievable with SVGA graphics. In MS-DOS applications SoftWindows provides SVGA graphics.

Keyboard

The host keyboard is used. SoftWindows 95 provides an emulated IBM 101-key keyboard that maps to the host keyboard, as well as optional support for additional keyboards.

Mouse

The host mouse is used. SoftWindows' own mouse driver allows the mouse to move between the PC and host windows acting as expected in both environments.

Hard disks

SoftWindows uses two Unix files as the PC's C: and (optionally) D: drives. Each drive can be configured to be up to 300 Mbytes.

FSA and VFSA

In DOS, Unix directories can be used for network drives E: through Z: using the SoftWindows File Sharing Architecture (FSA). FSA allows PC software to access Unix files and vice versa.

In Windows95 and at the DOS prompt, FSA is referred to as VFSA because it contains long file name support.

Floppy Disk Drives

Drives A: and B: are supported using the host's 3.5-inch drive.

Sound and video

SoftWindows 95 includes drivers to allow wav sound files and avi video files to be played from Windows, using the workstation hardware. SoftWindows 95 also supports MIDI input and output.

Serial Port

Four communications ports are supported (COM1, COM2, COM3, and COM4) with selectable baud rate, parity, and word format. The serial port on the host is used as a communications port.

Parallel Ports

Three standard PC printer ports are supported: LPT1, LPT2, and LPT3.

CD-ROM

A CD-ROM driver allows PC-format CD-ROMs to be read from within SoftWindows. The Microsoft CD-ROM extensions are included.

Networking support

SoftWindows includes a set of ODI-compliant network drivers and can take advantage of your Unix Ethernet connection to access other PCs on your network.

SoftWindows includes Novell NetWare and LAN Manager client software. In addition, it supports most other network packages including Windows for Workgroups, Winsock (Mosaic and Netscape), Banyan VINES, DEC PATHWORKS, LANtastic, and TCP/IP packages such as Novell's LAN WorkPlace. You can also access Windows NT servers using standard LAN Manager software.

Technical specification

The following table details the SoftWindows 95 specification.

Table 1-1 SoftWindows95 Specification

Feature	Specification
Processor	80486 CPU – Protected, Real, and Virtual-8086 modes
Math processor	487 Floating Point Unit
ROM BIOS	PC/AT-compatible
Memory	1 Mbyte to 32 Mbytes
Floppy disk drives	Two drives, A: and B:
Hard disk drives	Two drives, C: and D:
FSA drives	E: to Z:
CD-ROM	Data on drive F:
Networking	Ethernet drivers
Video	Super Video Graphics Array (Video 7) or Hercules. SVGA modes supported: 40h to 45h, and 60h to 69h except 63h and 64h
Parallel ports	Three ports, LPT1:, LPT2:, and LPT3:
Serial ports	Four ports, COM1:, COM2:, COM3:, and COM4:
Keyboard	PC/AT 101/2-key keyboard
Mouse	Microsoft Bus Mouse compatible
Microsoft Windows	Windows 95
SoftWindows driver	Color and monochrome displays, and mouse

Using SoftWindows

This chapter describes how to run SoftWindows, and how to use it to run Windows & MS-DOS applications on your Unix workstation.

SoftWindows initially runs in a separate X Windows window, and you can run PC applications at the same time as your Unix applications.

SoftWindows is set up to launch Windows 95 automatically. Run MS-DOS in a window, or exit Windows 95 to MS-DOS.

Running Windows

There are two ways to run Windows 95:

- Type `SoftWindows95` or `swin` in a Unix shell.
- Double-click the SoftWindows 95 icon.

The first time you run SoftWindows a dialog box will be displayed to allow you to choose the size of the Windows desktop. Select the size you want, then choose *OK* to run Windows.

Note: Increasing the size of the window will require more memory and may reduce performance.

The Windows 95 desktop will then be displayed. For more information about the Windows desktop refer to Chapter 3, "Using Windows 95".

Restarting and quitting SoftWindows

To restart SoftWindows

1. Choose *Restart...* from the *Actions* menu.
A dialog box warns you that work can be lost if you have not saved files before restarting.
2. Click *OK* to restart.

Note: Holding down the *Ctrl-Alt-Delete* keys produces an immediate restart without the warning.

To freeze SoftWindows

If you are switching between SoftWindows and Unix applications, you can either manually freeze SoftWindows or set SoftWindows to automatically freeze when it loses window focus. This lets you optimize your use of the available CPU resources on your system.

- Choose *Freeze* from the *Actions* menu.
- A checkmark appears next to the *Freeze* menu item to let you know *Freeze* is selected.

When you choose *Freeze*, you will not be able to use MS-DOS or Windows. You can still reposition the SoftWindows window on your desktop, and the SoftWindows menu items *File*, and *Actions* are still available.

- Select *Freeze* again from the *Actions* menu to resume your MS-DOS or Windows session.
- The checkmark disappears next to the *Freeze* menu item when *Freeze* is not active.

If you want SoftWindows to freeze automatically whenever its window does not have focus, choose *Auto Freeze* from the *Options* menu. SoftWindows will unfreeze as soon as focus is returned to its window.

Note: You should not use *Freeze* or *Auto Freeze* if you are using network resources or are connected to a LAN server, as any network connections could time out.

To exit from SoftWindows

When you use the following method to exit SoftWindows, you are effectively putting SoftWindows to sleep; this means that any Windows applications you may be running won't be exited. If you want to shutdown SoftWindows completely (and exit any currently running Windows applications), follow the steps in "To shutdown SoftWindows."

1. Choose *Exit* from the *File* menu.

A dialog box appears.

2. Make sure the *Create TurboStart™ data file* option is selected (check should appear in the box) and then click *OK*.

This saves your work so that Windows 95 loads instantly the next time you run SoftWindows, and you can resume where you left off.

Caution: If you don't select the *Create Turbostart data file* option and you have Windows applications running, you may damage your Windows application files.

Save Configuration Changes is selected by default. This saves any changes you have made to the configuration of SoftWindows in your *.swinconfig* file.

If you do not want to save any changes, click *Save Configuration Changes* to deselect it before clicking *OK*. For more information refer to "SoftWindows configuration" in the *SoftWindows95 for Unix Administrator's Guide*.

To shutdown SoftWindows

Follow these steps to shutdown SoftWindows, exiting any open Windows applications.

1. Click the *Start* button and choose *Shut Down*.

A dialog box appears with several options, presented as questions:

- "Shutdown the computer?" quits SoftWindows; it does *not* shutdown your workstation.
- "Restart the computer?" restarts SoftWindows; it does *not* restart your workstation.
- "Restart the computer in MS-DOS mode?" restarts SoftWindows and displays a window with an MS-DOS prompt.

The SoftWindows graphical user interface is not available in the MS-DOS mode; see "To exit from MS-DOS" for instructions about exiting from this mode.

- "Close all programs and log on as a different user?" exits your current SoftWindows session and lets you log on to SoftWindows as another user.
2. Select an option and click *Yes*.

To exit from MS-DOS

Type `EXITSWIN` at the MS-DOS prompt.

This exits from SoftWindows immediately, without saving any changes to your SoftWindows configuration.

Using the keyboard

The illustration provided below shows the layout and keycap engravings of the US PC/AT keyboard. This is SoftWindows's default keyboard emulation.

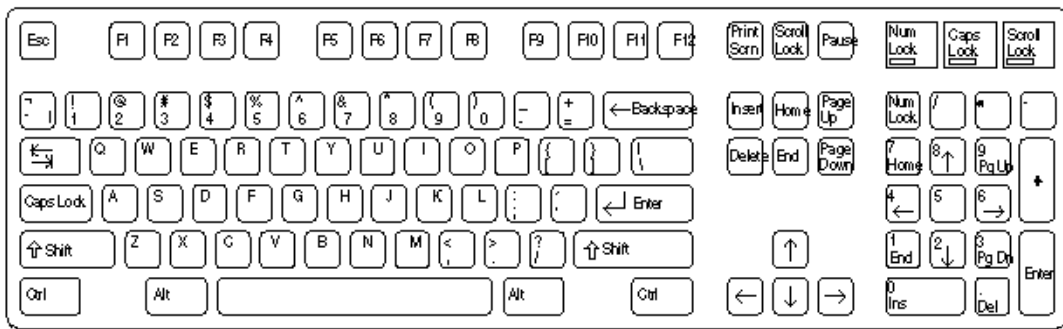


Figure 2-1 SoftWindows Default Keyboard Layout

Using floppy disks

SoftWindows lets you work with 3.5-inch MS-DOS format floppy disks using the floppy disk drives on your Unix workstation. While the application is running, the A: drive is dedicated to SoftWindows. If you want to use the diskette drive from IRIX, simply deactivate the A: drive from the SoftWindows Activate menu.

To use a floppy disk

1. Insert the disk into the workstation's floppy disk drive.
2. Attach the disk by choosing *Attach Floppy A* (or *Attach Floppy B*) from the Actions menu, depending on whether you have assigned drive A: or B: to the floppy disk drive.

A: (or B:) appears in the SoftWindows status bar indicating that the drive is attached and that you can now access the disk from SoftWindows.

For example, to see the contents of the disk, type `DIR A:` or `DIR B:` at the MS-DOS prompt.

To show the files on a floppy disk from Windows 95

Double-click the `[A:]` floppy disk icon in the *My Computer* folder.

To show the files on a floppy disk from MS-DOS

Type `DIR A:` at the MS-DOS prompt.

To eject a floppy disk

Choose *Eject Floppy A:* or *Eject Floppy B:* from the *Actions* menu.

To format a floppy disk

Use the `FORMAT` command. See "FORMAT" in Chapter 4.

Using CD-ROMs

SoftWindows automatically configures itself to recognize your CD-ROM drive, if any; no additional setup is required. To access the drive, double-click the My Computer icon. Double-click the CD-ROM icon (labeled drive D: or E:).

To eject a CD-ROM

To eject a CD-ROM, double-click the My Computer icon. Click on the CD-ROM icon using the right-mouse button and choose Eject from the menu.

Using PC files stored in Unix

SoftWindows includes software called the File Sharing Architecture (FSA) that allows PC files to be stored in the Unix file system and still be accessed by MS-DOS and Windows applications as though they were on a PC disk.

If you were using a PC, the FSA drive would be on another computer and the PC would be able to access it through a network driver. SoftWindows uses this attribute of Windows 95 to access a specified Unix directory, which can either be on your workstation's hard disk or on an NFS-mounted file system from a remote server.

The PC files in an FSA drive reside as individual Unix files and can be used by Unix programs that can work with PC files.

In addition to FSA, SoftWindows provides VFSA, which supports FSA in Windows95 (although net use will not work in DOS box). VFSA contains long filename (in other words, not 8.3) support.

PC Filenames

Not all Unix filenames are valid as PC filenames. You should adhere to the PC filename conventions when creating files in the Unix file system that you will want to access from SoftWindows.

- PC filenames have the form:

name.ext

- Filenames can include the letters A–Z, the digits 0–9, and the following symbols:
_ ! # \$ % & @ ^ ~
However, all of these characters except _ (underscore) are special characters in Unix, so it is recommended that you avoid them in filenames.
- Upper and lower case letters are considered equivalent. Unix filenames should usually use all lower case, because the files named with lowercase letters are given priority when a conflict occurs. You can configure SoftWindows so that the priority is given to upper case; refer to the *SoftWindows95 for Unix Administrator's Guide*.
- When accessing Unix files using an FSA drive, a Unix filename that does not adhere to the above restrictions is converted to a legal name, although it may not be accessible to Windows and MS-DOS if another file of the same name already exists.
For example, if you list the files in your Unix home directory, the file *.profile* will be given the name *PROFILE.5AV*.

To save a PC file to Unix

In SoftWindows, copy the file to a drive which has been set up as an FSA drive.

For example, if you have set up your home directory as drive E:, save the file to the E: drive. You will then see the file in your home directory.

To copy a Unix file to SoftWindows

Put the file in a directory you have set up as an FSA drive.

For example, if you have set up your home directory as drive E:, you can make a file available on the PC drive E: by putting it in that directory.

To list the Unix directories setup as PC drives

Type `NET USE` at the MS-DOS prompt.

This will list the drive letter of each FSA drive followed by the Unix pathname of the directory to which it is attached.

Note: The `not sharing` message is normal, and refers to MS-DOS `SHARE`.

When SoftWindows is first installed, the following drives are set up for you:

Table 2-1 Automatically Installed Drives

Drive	Unix directory
E:	Your home directory
H:	Your home directory

Connecting to a PC network

SoftWindows includes Insignia’s SoftNode networking software to enable you to access PC network file servers from SoftWindows running on a Unix workstation.

You, or your system administrator must set up networking access. After network access is set up, you have the same access to a PC file server as a PC user, including the ability to run multi-user PC applications.

For more information on setting up network access using SoftNode, refer to the *SoftWindows95 Administrator’s Guide*.

Using sound

The Sound panel lets you make changes to the sound settings in SoftWindows. To open the Sound panel, choose Sound from the Options menu. See the following sections for information about setting specific options in the Sound panel.

Using MIDI

SoftWindows 95 supports both MIDI input and output. You can use any external MIDI device, such as a keyboard, for MIDI input and output in SoftWindows.

Before being able to use a MIDI device with SoftWindows, you must first configure the device for your SGI workstation. You can use the “Add a Serial Device” interactive guide, available in the System Manager, to configure a MIDI device. See “Setting Up Serial Peripherals” in the *Personal System Administration Guide* for more information.

Use the Device Type pop-up menu in the Sound panel to choose a MIDI device for SoftWindows. You have three choices:

- *Internal* specifies the SGI Software Synth program.
- *External* specifies an external MIDI device connected to a serial port on your workstation. By default, Serial Port 1 is specified.

You can specify a different serial port in the Value Assigned field, depending on where your MIDI device is connected. To view the MIDI devices available on your system, including the serial ports they're connected to, open the Serial Device Manager, available in the System Manager.

- *None* specifies that no MIDI device be selected; this "silences" MIDI and avoids using the CPU unnecessarily.

An error message appears if you select a MIDI device that isn't available on your workstation. For example, an error message appears if you select the Internal MIDI device and the *midisynth* program isn't running. You can view a list of the MIDI devices configured for your workstation by opening the Serial Device Manager (available in the System Manager) or by entering `startmidi` at a command prompt in a Unix shell window. See the `startmidi` reference page for more information.

Note: Any Windows application that supports recording from a MIDI device will work with the SoftWindows MIDI input driver. Make sure that you select "SoftWindows MIDI" as the input source for recording in the Windows application.

Enabling/disabling sound

To enable or disable sound, click the box labeled "Enable Sound" in the Sound panel. (Choose Sound from the Options menu to open the Sound panel.) A checkmark appears in the box when the sound is enabled.

Note: Enabling or disabling sound using the Sound panel does not affect other sounds produced by Windows applications. To disable sound completely in SoftWindows, you can either turn down the volume or select "Mute" in the Master Volume panel. (To display the panel, click the Sound icon in the bottom right-hand corner of the SoftWindows window, click the right mouse button, and choose Volume Controls from the menu that appears.)

Enabling/disabling FPU emulation

Use the FPU Emulation function to select the SoftWindows emulation of the PC Floating Point Unit. By default, FPU Emulation comes enabled.

- Choose *FPU Emulation* from the *Options* menu.
When FPU emulation is enabled, a checkmark is shown beside the menu function.
- Choose *FPU Emulation* again to disable it.

When you attempt to enable or disable FPU Emulation, a dialog box appears and tells you that you need to restart SoftWindows. Click *OK* to implement your changes and restart SoftWindows.

Note: Due to the different precisions of the PC FPU and the emulated FPU, some programs may run differently than a PC when FPU emulation is enabled. For example, the rounding of decimal numbers may be incorrect. In such cases the FPU emulation should be disabled.

Activating and deactivating drives and ports

Use the Activate function to control which of the PC drives, A: to D:, or the PC ports, LPT1: to LPT3, or COM1: to COM4, are reserved for use by SoftWindows. When you deactivate a drive, it returns the control to the IRIX desktop.

SoftWindows will always try to activate a drive or port when it is first selected, according to the settings in the Open Disk Drives, Comms Ports, and Printer Ports dialog boxes; refer to the *SoftWindows95 for Unix Administrator's Guide*, and "Printing, input, and output" on page 17.

To see which devices are in use by SoftWindows

Choose *Activate* from the *Actions* menu.

- Devices in use by SoftWindows are shown with checkmarks next to their names in the rollover or "cascade" menu.
- Entries with no device assigned to them are shown grayed out in the menu.

To free a device so that another Unix application can use it

Choose the corresponding drive or port from the *Activate* rollover menu.

To set read-only access on hard disk drives

Choose *C Drive* or *D Drive* from the *Activate* rollover menu.

- When a button is shown beside the drive name, you have read and write access, and other users only have read access.
- When there is no button beside the drive name, you only have read access, allowing another user to write to the drive.
- Any number of users can have read access to a hard disk file, but only one can have write access at any time.

Printing, input, and output

On a PC, applications communicate with external devices such as printers, modems, and data loggers via the COM1: to COM4: serial ports and the LPT1: to LPT3: parallel ports.

You can assign these ports to take advantage of the equivalent capabilities of the Unix workstation.

The following table summarizes the default options for the COM and LPT ports:

Table 2-2 Default Options for the COM and LPT Ports

Option	Description
File	Output redirected to a specified Unix file*
Pipe	Output directed to the print spooler for network printing*
Device	Input/output to a device connected to the workstation's serial port
None	No device assigned

*Output must be flushed.

After outputting from a SoftWindows COM or LPT port to a file or pipe, you need to flush the output to ensure that the last partial buffer of data is sent to the file or pipe.

SoftWindows provides an Auto Flush option, which flushes the buffer automatically at specified interval after the last activity on the port.

Alternatively, you can flush output from a port manually when you know that output has finished.

To flush output automatically

1. Choose *Auto Flush...* from the *Options* menu.

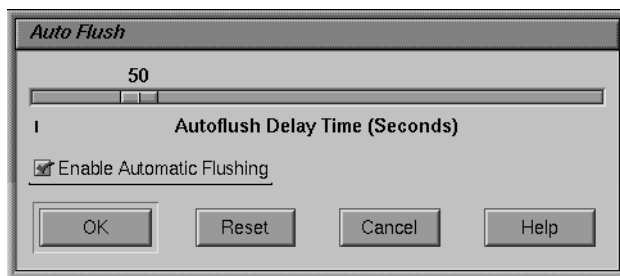


Figure 2-2 The Auto Flush Dialog Box

2. Check that the *Enable Automatic Flushing* box is selected.
3. Set the required delay by moving the *Autoflush Delay* slider until the field shows the value you want. You can set any autoflush delay from 1 to 300 seconds.
4. Click *OK* to save your setting for Auto Flush.

The ideal autoflush delay depends on how quickly the PC application outputs data. You may need to experiment by starting with a high value, and then reduce it to find the best setting.

You can set flushing for an individual file or pipe by setting the *Enable Windows PostScript flushing* option in the *Printer Ports* or *Comms Ports* dialog box.

To flush output manually

1. Choose *Flush Ports* from the *Actions* menu.

A rollover menu appears and lets you select which ports to flush.

2. Choose *All* to flush all ports, or choose the port you want to flush.

The port should be flushed after outputting to a COM or LPT port from SoftWindows with the *Pipe* option.

The buffers are also flushed automatically when you quit from SoftWindows.

Redirecting to a file and piping to a process

You can redirect all output from a specified port to a file in the Unix file system.

To redirect output to a file

Redirecting output from SoftWindows to a file is a useful way of debugging problems with printing. The file can then be printed externally to SoftWindows.

1. Choose *Printer Ports...* or *Comms Ports...* from the *COM/LPT Ports* rollover menu on the *Options* menu, depending on whether you want to redirect an LPT or COM port.
2. Choose *File* from the popup menu next to the port you want to redirect.

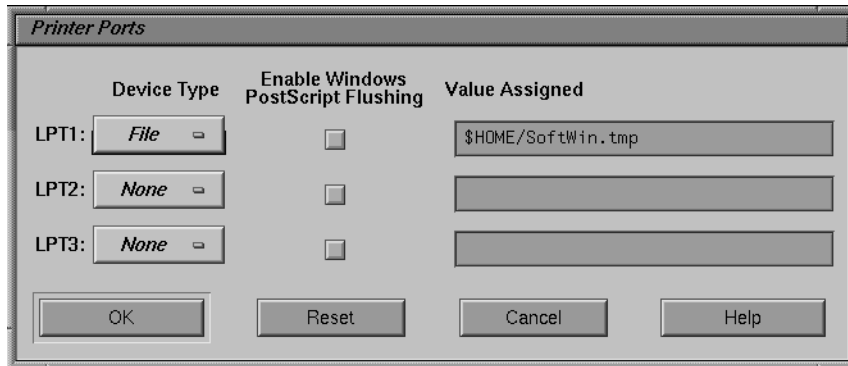


Figure 2-3 The Printer Ports Dialog Box with Redirect File Setting

The filename defaults to *SoftWin.tmp* in your home directory. Alternatively, enter the filename you want to use. If the file already exists, the output will be appended to it.

3. Check that *Enable Automatic Flushing* is set in the *Auto Flush* dialog box, so that output is flushed to the file; refer to the section “To flush output automatically.”

To pipe to a Unix process

You can pipe the output from a port to a Unix process that will accept text input. One use for this is to print a file which is not PostScript.

1. Choose *Printer Ports...* or *Comms Ports...* from the *COM/LPT Ports* rollover menu on the *Options* menu, depending on whether you want to pipe the output from an LPT or COM port.
2. Choose *Pipe* from the popup menu next to the port whose output you want to pipe.
3. Enter the name of the UNIX process in the *Value Assigned* field.

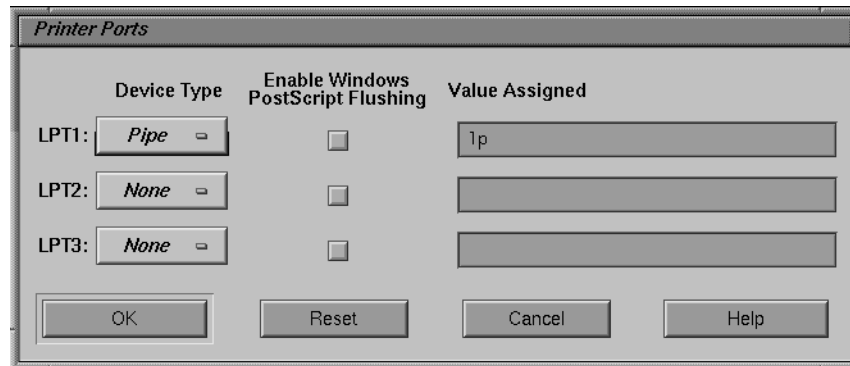


Figure 2-4 The Printer Ports Dialog Box with Pipe to a Unix Process Setting

Do not include the leading pipe symbol, |, as this is assumed. By default, output is piped to lp, the Unix print spooler.

4. Check that *Enable Automatic Flushing* is set in the *Auto Flush* dialog box, so that output is flushed to the pipe; refer to “To flush output automatically.”

Serial input and output

A COM port can be attached to either of the serial ports for input and output, with selectable serial parameters, using the Device option.

This option is intended for use by communications packages that provide their own handshaking.

The following serial parameters are supported:

Baud rate: 50, 75, 110, 134.5, 150, 300, 600, 1200, 1800, 2400, 4800, and 9600.

The following combinations are supported:

Table 2-3 Combinations for Serial Input and Output

Data bits	Parity	Stop bits
8	None	1
7	Even	1
7	None	2
7	Odd	1

By default, COM1: is set up by the following MODE command in the AUTOEXECBAT file:

```
MODE COM1:9600,N,8,1
```

This gives the following communications settings:

9600 baud, no parity, 8 data bits, and 1 stop bit.

This setting can be changed with the MODE command.

To use serial input and output

1. Connect the serial device to the workstation's serial port.
2. Choose *Comms Ports...* from the *COM/LPT Ports* rollover menu on the *Options* menu.

The Comms Ports dialog box appears.

3. Choose *Device* from the *COM1:* popup menu.

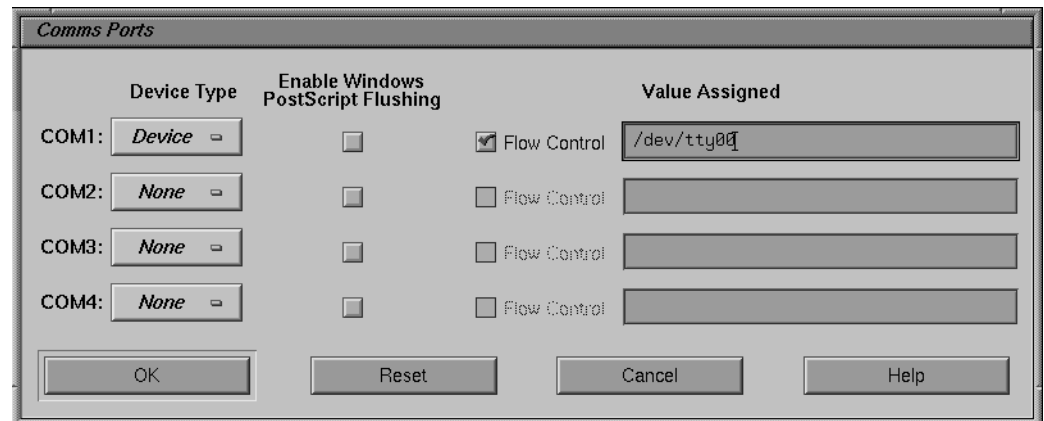


Figure 2-5 The Comms Ports Dialog Box

You should enter the appropriate device name for the port you want to use. If necessary, ask your system administrator.

4. If the serial device needs flow control, select *Flow Control*.

Serial port emulation

SoftWindows uses facilities provided by the Unix terminal device drivers to determine the state of the serial port. As a result, the PC/AT serial port cannot be fully emulated, although most devices and packages designed to operate with it will work equally well on SoftWindows.

The following technical details are provided for users who need specialized help in getting a device or package to work properly or who are developing software which uses the serial ports.

DSR (Data Set Ready)

This line is always held high.

The effect is that devices can detect DTR (Data Terminal Ready), but a response from the device via DSR cannot be detected by SoftWindows. Therefore SoftWindows cannot

support hardware handshaking, and XON/XOFF software handshaking should be used instead.

RI (Ring Indicator)

This modem input signal cannot be detected and is forced off by the software.

Input errors

The occurrence of input overrun and framing errors in the hardware or an input break condition cannot be detected.

Recommendations

The following should be noted if you are choosing a package to run under SoftWindows on the Unix workstation or you are developing software that uses the serial ports for communication.

- You should normally use 9600 baud or lower. Higher speeds are likely to be less reliable.
- The packet size should be kept small: 512 to 1024 bytes is a suitable size.
- Interrupt driven is preferable to polled data transfer. When SoftWindows receives data from an external source with XON/XOFF data flow control, the program running on SoftWindows may have problems. This is due to host buffering of input data preventing the program from responding quickly enough to XOFF signals.

Input errors

Input overrun and framing errors in the hardware, or an input break condition, cannot be detected.

Communications problems

If persistent difficulty is experienced establishing a communications link (either no communication or SoftWindows error dialog boxes), it may be necessary to modify the cables used. At the RS6000 end of the cable, pin 20 (DTR) should be strapped to pin 8 (DCD) and line 8 of the cable should be cut. See your System Administrator for help.

Using Windows 95

This chapter explains how to run Windows 95, and gives information about working with Windows 95 and running Windows applications.

It includes a short tutorial to introduce you to the procedures for working with Windows 95.

Running Windows 95

Windows 95 starts in seconds with TurboStart, and you can resume your work where you left off when you quit.

To use the mouse

As you move the Unix mouse pointer onto the SoftWindows window it automatically changes to the Windows mouse pointer, so that you can switch freely between Windows and Unix applications.

To improve performance the Windows mouse pointer is slightly reduced in size.

If you use DOS in full screen mode, you must attach the mouse in the application if you want to use the mouse to edit.

If you run the application through a DOS prompt in Windows95, the mouse is automatically attached to the application; there is no need to attach manually.

To display the SoftWindows MS-DOS window from Windows 95

Click the *Start* button, choose *Programs*, and then choose *MS-DOS Prompt*.

To exit from Windows 95 to the SoftWindows MS-DOS window

1. Click the *Start* button and choose *Shut Down....*
A dialog box appears.
2. Select *Restart the computer in MS-DOS mode*.
3. Click *Yes* to proceed.

To exit from Windows 95

The recommended way to quit from Windows 95 is to use TurboStart.

However, if you specifically want to exit from Windows 95 proceed as follows:

1. Click the *Start* button, and choose *Shut Down....*
A dialog box appears.
2. Click *Yes* to choose the first option and shut down Windows 95. SoftWindows will then automatically exit.

Tutorial

This tutorial is designed to help you become familiar with using SoftWindows by installing and running a typical Windows application and printing from Windows.

The tutorial is based on the award-winning Windows program WinPost, which is supplied with your SoftWindows package. WinPost lets you create simple reminders which you can leave on your Windows desktop. It is a PC shareware application—if you like WinPost and decide to continue using it, please send the author the registration fee as described in its on-line manual.

Most Windows 95 applications are installed by running a standard Windows setup procedure.

The installer and its associated files are supplied in the C:\WNPST directory.

1. Run Setup

- Click the *Start* button on the taskbar, and choose *Run*.
- In the Run dialog box, type C:\WNPST\SETUP
- Click *OK* to run the Setup program.

2. Specify where to install WinPost

- The dialog box allows you to specify the directory into which WinPost should be installed:
- Click *OK* to install in the WINPOST directory on your SoftWindows hard disk file. The files are then copied to the directory you specified.

3. Finish the installation.

- A dialog box informs you when the installation is complete:
- Click *OK* to return to the Program Manager.

The installation creates a new WinPost group in the Program Manager, containing three icons:

- *WinPost 3.2* is the WinPost application.
- *WinPost Manual* provides documentation for WinPost. Double-click the icon to display the document so that you can read it or print it out.
- *Read Me!* is a document which gives additional information about WinPost.



Figure 3-1 The WinPost Program Group Icons

When you install a Windows application, the installer usually creates icons for the application and for any other programs or documents you might need to use with it. Often these are put in a separate folder.

See “Using Windows” in Chapter 5 for more information about the components of Windows.

4. Run WinPost

- Double-click the WinPost 3.2 icon.

The first time you run WinPost, a shareware registration notice is displayed informing you that you can evaluate WinPost for 21 days.

- Click *OK* to dismiss the notice.

The WinPost program is now running and its icon is displayed at the bottom of the SoftWindows desktop.

5. Display the WinPost menu

Point to the WinPost icon in the taskbar and press the = key on the numeric keypad or click the right mouse button. A pop-up menu appears above the taskbar.

For more information about all the commands, refer to the *WinPost Manual* file.

6. Create a new note

- In the WinPost menu, choose *Create a note*, then *Default*. An empty Note window appears.
- Type in the information you want to remember.

The buttons along the top of the note provide useful functions. For example, the first three are cut, copy, and paste.

Copying and pasting text and graphics in Windows 95

SoftWindows includes an Insignia utility called SmartCopy, which converts text and graphics between the Windows and X Windows clipboards, so that you can copy or cut and paste between X Windows and Windows 95 applications.

When you move the mouse pointer out of the SoftWindows window, the SmartCopy icon changes to show when text or graphics is ready to paste into an X application.

When you move the mouse pointer into the SoftWindows window, the SmartCopy icon changes to show when text or graphics is ready to paste from an X application.

To copy text from X Windows to Windows 95

1. Choose the appropriate command in the X Windows application to copy the text you want to transfer.

2. Move the mouse focus to SoftWindows.

SmartCopy converts the text to Windows 95 format on the Windows clipboard, and you can use the Clipboard Viewer to view it.

3. Move the mouse pointer to position the cursor where you want to paste the text.
4. Choose *Paste* from the *Edit* menu of the Windows 95 application into which you want to paste the text.

To copy graphics from the Unix workstation screen to Microsoft Windows

Choose *From Display* from the *Paste Graphics* cascade menu on the *Actions* menu.

The cursor changes into crosshairs, allowing you to select a portion of the display which will be copied to the Windows 95 clipboard.

To view the graphic:

1. Open the Clipboard Viewer.

Click the *Start* button, choose *Programs*, choose *Access*, and then choose *Clipboard Viewer*.

2. Choose *DIB Bitmap* from the *Display* menu.

To paste the graphic into a Microsoft Windows application, choose *Paste* from the *Edit* menu of the Windows application into which you want to paste the graphic.

To copy graphics from X Windows to Windows 95

1. Choose the appropriate command in the X Windows application to copy the graphic you want to transfer.
2. Switch to SoftWindows.
3. Choose *Paste Graphics* from the *Action* menu, and choose the *From Application* option.

The graphic is converted into Windows format on the Windows clipboard.

4. Choose *Paste* from the *Edit* menu of the Windows application into which you want to paste the graphic.

To copy text or graphics from Windows 95 to X Windows

1. Select the text or graphic you want to copy from the Windows application.
2. Choose *Copy* from the application's *Edit* menu.

The text or graphic is put into the Windows clipboard, and you can use the Windows Clipboard Viewer to view it.

3. Switch to the X Windows application you want to use.

SmartCopy converts the text or graphic to X Windows format in the X clipboard.

4. Choose the appropriate command to paste in the text or graphic you copied.

Printing from Windows applications

If your Unix printer is a PostScript printer, you will get the best results by printing PostScript from Windows.

To print PostScript to the Unix printer

1. Choose *Printer Ports...* from the *COM/LPT Ports* cascade menu on the *Options* menu.
2. The *Printer Ports* dialog box appears.
3. Choose *Pipe* from the *LPT1:* popup menu. Check that this is set to the default setting, which sends output to the local print spooler, *lp*.

4. Check the "Enable Windows PostScript Flushing" box.
5. Make sure you have Windows set up for a PostScript printer.

To set up Windows for a PostScript printer

1. Click the *Start* button, choose *Settings*, and then choose *Printers* to display the Printers folder.
2. Select PostScript Printer, and choose Set As Default from the File menu.

To print from Windows to a non-PostScript printer

If your Unix printer does not support PostScript, you should set up Windows for the printer you are using.

1. Choose *Options*, then *COM/LPT Ports*, then *Printer Ports...*
The Printer Ports dialog box appears.
2. Choose *Pipe* from the *LPT1:* popup menu. Check that this is set to the default setting, which sends output to the local print spooler, *lp*.
3. Set *Enable Windows PostScript Flushing* to flush output to the pipe. See Flushing output to a file or pipe.
4. Click the *Start* button, choose *Settings*, and then choose *Printers* to display the Printers folder.
5. Select the appropriate option for your Unix printer, and choose *Set As Default* from the *File* menu.

Installing and running Windows applications

Most Windows applications are installed using the standard Windows setup procedure. If your Windows application is supplied on CD-ROM or 3.5-inch disks, you can install using your workstation's corresponding drive.

To install a Windows application

1. Insert the application's installation media into the workstation's appropriate drive.
2. Click the *Start* button, choose *Settings*, and then choose *Control Panel*.
3. Double-click the *Add/Remove Programs* icon. A dialog box appears.
4. Click *Install...* to start the installation.
5. The installation program locates the installer on the media you inserted.
6. Click *Finish* to run the installer.
7. As the installation proceeds, dialog boxes will prompt you for any information needed for the installation.

To run a Windows application

1. Click the *Start* button, and then choose *Programs*.
2. Point to the folder containing the program, and double-click it.

Note: For certain installations it may be necessary to have the Windows 95 upgrade CD-ROM loaded.

Using MS-DOS

This chapter describes the original operating system for PCs, called MS-DOS, which is available from within Windows 95. This chapter explains the basics of how MS-DOS works and how to use it.

Running MS-DOS

To display the SoftWindows MS-DOS window

You can exit to MS-DOS from Windows 95 by choosing *Shut Down...*, then *Restart the computer in MS-DOS mode*.

Additionally, you can open an MS-DOS window by clicking the *Start* button, choosing *Programs*, and choosing *MS-DOS Prompt*.

MS-DOS basics

About the MS-DOS prompt

MS-DOS lets you give commands by typing instructions at the MS-DOS `C:\>` prompt.

About the screen editor

MS-DOS includes a simple screen editor which you can use to create, edit, and print plain text files. See "Using the MS-DOS editor" for more information.

You can choose editing commands from menus and edit text using the mouse. The MS-DOS editor is particularly useful for editing MS-DOS batch programs such as *AUTOEXEC.BAT* and other files such as *CONFIG.SYS*.

For more information, refer to a MS-DOS reference book, like *Microsoft MS-DOS User's Guide*.

Using the SoftWindows MS-DOS window

To resize the SoftWindows MS-DOS window

You can resize the SoftWindows MS-DOS window to one of three alternative fixed sizes, 1.0x, 1.5x, and 2.0x, up to the size of your workstation screen. Drag the window by any of its resize corners. When you release the mouse button the window will snap to the closest fixed size.

Using the mouse in MS-DOS

If you have a mouse attached to your computer, it will be automatically attached when you run Windows applications. You can also use it with MS-DOS programs that support a Microsoft Bus mouse by using the SoftWindows *Attach Mouse* command.

To use the mouse in MS-DOS

Choose *Attach Mouse* from the *Actions* menu.

Alternatively, you can attach the mouse from the keyboard as follows. Hold down *Ctrl* and *Alt* and click the middle mouse button (or both buttons on a two-button mouse).

When you attach the mouse, the workstation mouse disappears. The SoftWindows menus will be inaccessible, and you cannot access X Windows windows belonging to other Unix applications. The menu bar displays a message.

To restore the normal workstation mouse

Hold down *Ctrl* and *Alt* and click the middle mouse button (or both buttons on a two-button mouse).

Using the MS-DOS editor

To run the MS-DOS editor, type `EDIT filename` at the prompt, where *filename* is the name of the file you want to edit, or omit the filename to create a new file.

For example, to edit the *AUTOEXEC.BAT* startup file type:

```
EDIT AUTOEXEC.BAT
```

The file will then be displayed in the MS-DOS editor.

To use the mouse

Choose *Attach Mouse* from the *Actions* menu.

To edit the file

1. Position the cursor using the arrow keys or by moving and clicking the mouse.
2. Type to insert text at the cursor.

To cut, copy, and paste text

1. Press and drag the mouse pointer over the text you want to cut or copy.
2. Use the *Cut*, *Copy*, *Paste*, and *Clear* functions from the MS-DOS editor's *Edit* menu.

To delete text

1. Press and drag the mouse pointer over the text you want to delete.
2. Press *Delete* or type the text you want to replace it with.

To exit from the MS-DOS editor

1. Choose *Exit* from the editor's *File* menu.

You can do this from the keyboard by typing *Alt,F,X*.

You will be prompted to save the file before exiting if you have made any changes to it.

2. Click *Yes*, or press *Enter*, to save the changes and exit from the MS-DOS editor.

Using MS-DOS commands

You can type MS-DOS commands at the MS-DOS prompt as you would on a real PC.

The following list gives the most useful MS-DOS commands; refer to an MS-DOS reference guide for more detailed information.

In the syntax for each command, square brackets indicate optional arguments.

Note that MS-DOS is not case-sensitive; that means MS-DOS treats upper and lower case characters as equivalent.

Getting help

You can display help about any command by typing:

```
command /?
```

CD

Changes the current directory.

Syntax

```
CD [path]directory
```

Example

To change your current directory to C:\LOTUS type:

```
CD C:\LOTUS
```

COPY

Copies one or more files between two directories.

Syntax

```
COPY [drive:][path]file [drive:][path]file
```

Example

To copy a file named BUDGET.WK1 from the LOTUS directory on your C: drive to the D: drive type:

```
COPY C:\LOTUS\BUDGET.WK1 D:\BUDGET.WK1
```

DEL

Deletes specified files.

Syntax

```
DEL [drive:][path]file
```

Example

To delete the file named \WP\REPORT.OLD on the D: drive type:

```
DEL D:\WP\REPORT.OLD
```

DELTREE

Deletes a directory and its subdirectories.

Syntax

```
DELTREE [drive:][path]directory
```

DIR

Lists the files in a directory.

Syntax

```
DIR [drive:][path][/W]
```

The */W* (wide) option displays the files in columns.

Example

To list the files on your D: drive in the WP subdirectory in wide format type:

```
DIR D:\WP /W
```

FORMAT

Formats a disk.

Syntax

```
FORMAT [drive:] [/option]
```

The options are shown in the following table:

Table 4-1 Format Options

To format	Give this command
3.5-inch low density	FORMAT A: /F:720
3.5-inch high density	FORMAT A: /F:1.44

You should format only low-density disks in the 720 Kbyte format and only high-density disks in the 1.4 Mbyte format.

A drive set up as a SoftWindows FSA drive cannot be formatted.

HELP

Gives help about using an MS-DOS command.

Syntax

```
HELP [command]
```

where *command* is the long or short form of the command.

Example

To get help about the FORMAT command, type:

```
HELP FORMAT
```

KEYB

Selects a foreign keyboard character set.

Syntax

```
KEYB [xx, , [[drive:][path][file]]]
```

where *xx* is a two-letter keyboard code and *file* is the name of the keyboard definition file; refer to "Setting up keyboards" in the *SoftWindows95 for Unix Administrator's Guide*.

Example

To use a French keyboard with the standard definition file type:

```
KEYB FR
```

For further information on keyboards in SoftWindows, see "SGINDYUS.KBD" in Chapter 12 of the *SoftWindows95 for Unix Administrator's Guide*.

MD (MKDIR)

Makes a subdirectory.

Syntax

```
MD [drive:][path]directory
```

Example

To make a directory named PCAPPS on your D drive, type:

```
MD D:\PCAPPS
```

RD (RMDIR)

Removes an empty directory.

Syntax

```
RD [drive:][path]directory
```

Example

To remove the empty subdirectory named TEMP from your D: drive type:

```
RD D:\TEMP
```

TYPE

Displays the contents of a text file on the screen.

Syntax

```
TYPE [drive:][path]file
```

Example

To display the contents of the file TEXTOUT from the WP subdirectory on your D: drive type:

```
TYPE D:\WP\TEXT.OUT
```

XCOPY

Copies files and directories, including their subdirectories.

Syntax

```
XCOPY [drive:][path]file [drive:][path] /S
```

where the /s switch ensures that all the subdirectories are also copied.

Example

To copy all the files and directories from your C: drive to your D: drive type:

```
3. XCOPY C:\*.* D:\ /S
```

Using the special Unix/MS-DOS commands

There are several commands provided by Insignia that allow you to convert files from Unix to DOS format and back and execute Unix commands from MS-DOS. These commands are describe below.

DOS2UNIX

Converts an MS-DOS text file to Unix format.

Syntax

```
DOS2UNIX dosfile unixfile
```

Example

To convert READMETXT to HELPC type:

```
DOS2UNIX README.TXT HELP.C
```

For more information refer to the *SoftWindows95 for Unix Administrator's Guide*.

RUNIX.COM

Executes a Unix command from MS-DOS.

Syntax

```
RUNIX unixfile
```

Example

With E configured to access the Unix directory \$HOME:

```
RUNIX E:\scripts\my_script
```

For more information refer to the *SoftWindows95 for Unix Administrator's Guide*.

UNIX2DOS

Converts a Unix format text file to MS-DOS format.

Syntax

```
UNIX2DOS unixfile dosfile
```

Example

To convert UNIXC to DOS.TXT type:

```
UNIX2DOS UNIX.C DOS.TXT
```

For more information refer to the *SoftWindows95 for Unix Administrator's Guide*.

Copying and pasting between MS-DOS and Unix

When SoftWindows is displaying the MS-DOS window, text can be copied from and pasted into the SoftWindows window using the following procedures.

Note: This functionality is only available for the full screen MS-DOS window; copy/paste does not work for MS-DOS windows within SoftWindows.

To paste text into the SoftWindows MS-DOS window

1. Select the text you want to copy by holding down the Select mouse button (left, by default) and dragging the pointer over the text in the Unix window.
2. Lift your finger off the mouse button.

3. Move the mouse pointer into the SoftWindows MS-DOS window and position the cursor where you want to paste the text.
4. Click the middle mouse button.

To copy text from the SoftWindows MS-DOS window

1. Select the text you want to copy, by holding down the left mouse button and dragging the pointer over the text in the SoftWindows MS-DOS window.
2. Lift your finger off the mouse button.
3. Move the mouse pointer into the Unix window and position the cursor where you want to paste the text.
4. Click the middle mouse button.

The text will be typed into the Unix window at the current cursor position.

Printing from MS-DOS applications

Most MS-DOS applications give good results when set up for dot-matrix, bubble-jet, or PostScript printers.

To print from MS-DOS to a non-PostScript printer

1. Choose *Printer Ports...* from the *COM/LPT Ports* cascade menu on the *Options* menu.
2. The Printer Ports dialog box appears.
3. Choose *Pipe* from the *LPT1:* popup menu. Check that this is set to the default setting, which sends output to the local print spooler, *lp*.

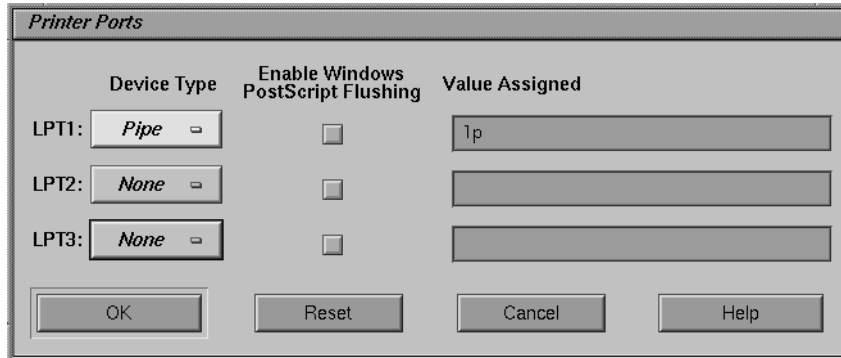


Figure 4-1 The Printer Ports Dialog Box with Non-PostScript Printer Setting

4. Set *Enable Windows PostScript flushing*.
5. Choose the appropriate command to print from your MS-DOS application.

To print to a serial printer with default settings

You can print from an LPT port to a serial printer with the following fixed communications settings:

9600 baud, no parity, 8 data bits, 1 stop bit, XON/XOFF handshaking.

1. Connect the printer to the serial port.
2. Choose *Options, COM/LPT Ports, Printer Ports...*

The Printer Ports dialog box appears.

3. Choose *Device* from the *LPT1:* popup menu. By default this sends output to one of the serial ports. You may need to change this depending on which port you are using.

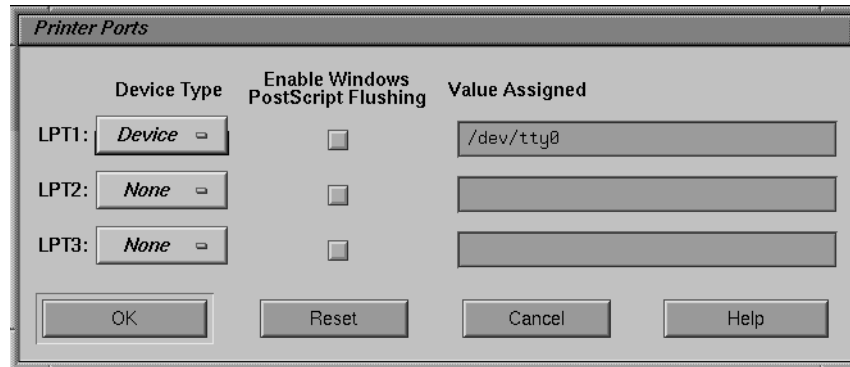


Figure 4-2 The Printer Ports Dialog Box with Serial Printer Settings

To print to a serial printer with selectable settings

If you need to use different communications settings, set a COM port to *Printer* and use the MODE command to set the communications parameters. For example, `MODE COM1:9600,N,8,1` sets 9600 baud, no parity, 8 data bits, and 1 stop bit, the default setting. XON/XOFF handshaking is supported.

If your application can only print to an LPT port, use the MODE command to direct LPT output to the COM port, for example, `MODE LPT1:=COM1:`

Include the MODE commands in your *AUTOEXEC.BAT* file if you want to use these settings every time you run SoftWindows.

Installing MS-DOS applications

To install an MS-DOS application you should follow the installation instructions in the manual supplied with the application.

MS-DOS software is typically supplied on one or more floppy disks, and to install the program you copy the files from these disks to your PC hard disk.

To simplify the installation process, most PC programs provide a batch file which automatically copies the files for you. The batch file is typically called `SETUPBAT` or `INSTALLBAT`, and you run it by typing `SETUP` or `INSTALL` at the MS-DOS prompt.

To install from 3.5-inch disks

The simplest way of installing PC software, if you have a floppy disk drive available, is to install directly from 3.5-inch installation disks.

1. Make sure your floppy drive is set to the A: or B: drives. To do this:
 - Open the SoftWindows menu item Actions, and choose Activate.
 - A red checkmark should appear next to the A: or B: drive. This indicates that the drive is active.
 - If neither the A: drive nor the B: drive is active, see "Setting up floppy disk drives" in the *SoftWindows95 for Unix Administrator's Guide*.
2. Follow the instructions supplied with the software. For example, you may be instructed to type:

```
A:\SETUP
```

If at any stage in the installation you need to change disks, refer to Chapter 2, "To eject a floppy disk".

To install from 5.25-inch disks

If the software is supplied on 5.25-inch disks, in some cases you can use a PC to copy the software onto 3.5-inch MS-DOS format disks, and then install from these. 5.25-inch format is not supported in Silicon Graphics systems.

Installing software from a network server

Instead of installing directly from 3.5-inch disks, you can copy the software from a PC to a directory on your workstation via a network or serial connection. To do this:

1. Make a directory on your workstation to copy the application installer files into (these installation files are usually called SETUP.BAT or INSTALL.BAT).
2. To make this directory available to SoftWindows, you must specify the directory as an FSA drive. To do this, see "Setting up FSA drives" in the *SoftWindows95 for Unix Administrator's Guide*.
3. Now you can install the files from your newly set-up directory.

Note: Some installer programs assume that you are installing from floppy disk. They may not work correctly if you copy all the files to a hard disk first, and then try installing from the hard disk.

Where to install

The installation program will typically give you the option of where to install the files it is copying from the installation disks.

You have the following options:

Table 4-2 Installing Files

Install here	To do this
Drive C: or D: SoftWindows hard disk file.	If you are sure that the SoftWindows files you are installing will fit on your SoftWindows hard disk file, and you do not need to access the files using other Unix programs.
Drive E to Z: SoftWindows FSA drive	If you want to install into the Unix filesystem rather than your SoftWindows hard disk file so that you can share data with other Unix applications or other SoftWindows users.

Note: Some PC application installer programs will only install onto a hard disk file (drives C: or D:). Also, some installers will assume that drives E: to Z: are a PC network, and install additional networking software if you specify these drives.

Disk space requirements

Before installing onto the hard disk, check the disk space requirements specified in the PC application's manual, and verify the available hard disk space. For example, if you are installing to drive C: type:

```
CHKDSK
```

at the MS-DOS prompt.

Note: 1048576 bytes = 1 Mbyte.

If you do not have enough space on your hard disk to install the application, refer to the *"SoftWindows95 for Unix Administrator's Guide"* for details on how to enlarge or create PC drives.

Troubleshooting

About troubleshooting

The SoftWindows troubleshooting information is divided into the following sections:

- “Common questions” discusses commonly asked questions about using SoftWindows
- “Common problems” discusses the most commonly encountered problems when using SoftWindows
- “MS-DOS errors” contains details of the MS-DOS error messages, with explanations and suggested solutions
- “SoftWindows FSA errors” contains details of the SoftWindows FSA (File Sharing Architecture) error messages with explanations and suggested solutions
- “SoftWindows errors” contains details of the SoftWindows FSA (File Sharing Architecture) error messages with explanations and suggested solutions
- “Networking errors” contains suggested solutions to problems that you may encounter when running PC applications on your workstation with SoftWindows

Common questions

The following sections contain answers to the most commonly asked questions about using SoftWindows.

Using floppy disks

How do I format a floppy disk?

Use the FORMAT command at the MS-DOS prompt. See “FORMAT” in Chapter 4.

Using hard disks

How do I create a new hard disk?

Use the *New Drive...* function on the *Disk Drives...* cascade menu on the *Options* menu; refer to Chapter 4, "Setting up hard disk files" in the *SoftWindows95 for Unix Administrator's Guide*.

How do I make a hard disk file larger?

Use the *Modify Drive...* function on the *Disk Drives...* cascade menu on the *Options* menu. If *Modify Drive* returns an error, it is possible that your disk is corrupted. Try running the DOS utility *scandisk* to correct the problem, and try again. Refer to Chapter 4, "Setting up hard disk files" in the *SoftWindows95 for Unix Administrator's Guide*.

How do I share hard disks?

Make the hard disk read-only; more than one user can then read data from it. To do this, enter the following command in a Unix terminal window:

```
chmod 444 filename.hdf
```

where *filename.hdf* is the name of the hard disk file.

It may be useful to use the `RO_DISK_PANEL_DISABLE` configuration option; for more information refer to Chapter 7, "RO_DISK_PANEL_DISABLE" in the *SoftWindows95 for Unix Administrator's Guide*.

Can I use hard disk files from other versions of SoftWindows or SoftPC?

You can use the hard disk file from other versions of *SoftWindows* as *D*, but do not use them as drive *C*: because the version of *Windows* and the configuration files are not compatible. For information on upgrading your old *SoftWindows* hard disks, refer to Chapter 5, "Upgrading a version 1 hard disk file" in the *SoftWindows95 for Unix Administrator's Guide*.

Using CD-ROM

How do I set up a CD-ROM drive?

Refer to Chapter 4, "Setting up the CD-ROM" in the *SoftWindows95 for Unix Administrator's Guide*.

How do I read an MS-DOS CD-ROM?

Refer to "Using CD-ROMs" in Chapter 2.

Using memory

How do I change the memory setting for PC applications?

Use the Memory dialog box; refer to Chapter 4, "Setting up memory" in the *SoftWindows95 for Unix Administrator's Guide*.

Using keyboards

How do I set up a foreign keyboard in MS-DOS?

Use the MS-DOS KEYB command; refer to Chapter 4, "Setting up keyboards" in the *SoftWindows95 for Unix Administrator's Guide*.

How do I set up a foreign keyboard in Windows?

Use the Windows *Keyboard* control panel; refer to Chapter 4, "Setting up keyboards" in the *SoftWindows95 for Unix Administrator's Guide*.

Using the screen

How do I change the size of the SoftWindows screen?

When running MS-DOS, you can select between 1.0x, 1.5x, and 2.0x scales in the Display dialog box; refer to To resize the SoftWindows MS-DOS window...

When you are running Windows, you can specify any size, up to the full screen; refer to the *SoftWindows95 for Unix Administrator's Guide*.

Using printers

How do I set up the COM and LPT ports?

Refer to Chapter 2, "Printing, input, and output".

How can I print from an MS-DOS application?

Refer to Chapter 4, "Printing from MS-DOS applications".

How do I set up a printer for Windows?

Use the Windows Printers control panel; refer to Chapter 4, "Printing from MS-DOS applications".

Using serial devices

How do I use the serial ports with PC applications?

Refer to Chapter 2, "Serial input and output".

Converting between MS-DOS and Unix

How do I convert text documents between DOS and Unix?

If the documents are on a SoftWindows hard disk file, you can use the MS-DOS utilities DOS2UNIX and UNIX2DOS; refer to "DOS2UNIX" in Chapter 4, or "UNIX2DOS" in Chapter 4.

If they are in the Unix file system, you can use the Unix utilities "dostounix" and "unixtodos" supplied in the \$SWINHOME/bin directory. See Chapter 11, "Unix utilities in the *SoftWindows95 for Unix Administrator's Guide*."

How can I copy and paste between PC and X Windows applications?

Use the SoftWindows copy and paste facilities; refer to Chapter 4, "Copying and pasting between MS-DOS and Unix".

Setting Unix file access**What are Unix file access permissions?**

File access permissions are used to tell a computer system who has access to files and directories. Files and directories have a set of permissions to determine which users can read, write, and execute the contents of a file. If a system is shared or is part of a network, other people may need access to its files and directories.

By setting file access permissions you control who is able to read, write, and use your files and directories.

There are four types of permissions for files and directories:

Table 5-1 Permissions for Files and Directories

Permission	Symbol	What it means
Read	r	Allows users to view or copy a file, or list files in a directory.
Write	w	Allows users to create, edit, and delete a file. For a directory, the write permission allows users to create or delete files only.

Table 5-1 (continued) Permissions for Files and Directories

Permission	Symbol	What it means
Execute	x	Allows users to run an executable file, such as a program or application, and search a directory.
SUID	s	Runs a Unix executable as its owner, rather than as the user who launched it. SoftWindows uses this to gain access to network devices normally unavailable to the user.

Any of the permissions can be assigned to three categories of users:

Table 5-2 Users and Symbols for Permissions

User	Symbol	What it means
Owner	u	The creator of the file (or directory)
Group	g	The other users in the owners group
Others	o	All other users

How do I check Unix file access permissions?

You can check file access permissions using the Unix `ls -l` command.

In a Unix terminal window, move to the directory containing the file by typing the command:

```
cd pathname
```

Then type:

```
ls -l filename
```

The output will be of the form:

```
-rwxrwxrwx 1 root 512 jun 9 09:35 filename
```

where the file access permissions are represented by the letters `rwXrwxrwx`; `r` is for read, `w` write, and `x` execute. The three sets are for the Owner, Group, and Others, respectively.

How do I change Unix file access permissions?

You can change file access permissions using the Unix "`chmod`" command.

To change the permissions you need to be logged in as the owner or `root`. If necessary, ask your system administrator to do this. Then issue the `chmod` command with an appropriate parameter.

The parameter consists of `u` (owner), `g` (group), or `o` (other), followed by `+` or `-` to add or remove permissions, respectively, followed by the type of access: `r` (read), `w` (write), or `x` (execute).

For example, to make a file so that the Owner can read it or write to it, and the Group can write to it, give the command:

```
chmod u+w+r g+w filename
```

For more information on file access permissions consult your Unix reference manuals.

Using Configuration

Where is my SoftWindows configuration stored?

In the `.swinconfig` file in your home directory; refer to Chapter 7, "SoftWindows configuration file" in the *SoftWindows95 for Unix Administrator's Guide*.

What determines the configuration of MS-DOS?

The MS-DOS files `AUTOEXEC.BAT` and `CONFIGSYS`; refer to *MS-DOS configuration*, in the *SoftWindows95 for Unix Administrator's Guide*.

Running PC Applications

How do I install PC software with SoftWindows?

Refer to “Installing MS-DOS applications” in Chapter 4.

How do I give MS-DOS commands?

Type them at the C:\> prompt; refer to “Using MS-DOS commands” in Chapter 4.

How can I edit MS-DOS files?

Use the MS-DOS editor, EDIT; refer to “Using the MS-DOS editor” in Chapter 4. In Windows you can use the Windows Notepad text editor.

Using Windows

What Windows drivers does SoftWindows use?

When you run Windows in a window you are not using one of the emulated display drivers (SVGA or Hercules), and the title bar changes to SoftWindows Desktop to indicate that you are using the SoftWindows Windows display and mouse drivers. These are called SoftWindows Display and SoftWindows Mouse.

Common problems

The following sections contain solutions to the most frequently encountered problems when using SoftWindows.

Using the mouse

The workstation mouse pointer has disappeared

While the mouse is attached for use by MS-DOS applications it is not available to Unix programs.

Using printers

Printing is not working properly

If you are using the print spooler, flush the port to ensure that all the data has been sent. Disable autoflush and flush the port manually. See “To flush output manually” in Chapter 2.

Redirect print output to a file, then print the file outside SoftWindows; refer to “Redirecting to a file and piping to a process” in Chapter 2.

Using FSA drives

I get an error message when I try to use an MS-DOS file on an FSA drive

Because MS-DOS was not designed to handle file ownership and permissions like the Unix system, MS-DOS uses an assortment of standard file error messages to indicate that you do not have permission to read, write to, or execute a given file or directory.

The following messages may indicate that you do not have access to a particular file or directory due to the file permissions:

File creation error

File not found

Invalid directory

Invalid path (or file not found)

If one of these messages appears in MS-DOS and you are certain that the file or directory exists, you should check the permissions and ownership using Unix.

Also note that an SUID bit with incorrect ownership will cause permission problems on FSA drives.

Alternatively, copy the files to the hard disk C: or D: and try again.

Using networking

Problems experienced with SoftNode generally tend to be one of two types—problems with the ODI driver loading or configuring itself, or problems with networking applications after the software has been loaded.

ODI driver problems

If the driver completely fails to load, it will display a message which says:

```
Could not find a host network card
```

This means that SoftNode has been unable to make contact with the networking facilities on the host machine. This is normally due to one of two things:

- SoftWindows has lost its SUID bit. The SoftWindows executable `$(SWINHOME)/bin/swin` needs to be installed by `root`, and should be owner `root`, mode `4755`. The exact name of the executable depends on the type of workstation you are using, but is usually `/usr/lib/SoftWindows/bin/SoftWindows95`.
- The network package which SoftWindows requires is not installed on the host workstation. For more information about which software package must be installed on each system refer to *SoftWindows network devices* in the *SoftWindows95 for Unix Administrator's Guide*.

If you are not sure whether these packages are installed on your system, contact your system administrator.

If the driver loads but reports an error registering one or more of the protocols specified in the `NETCFG` file, then SoftNode probably does not support the appropriate frame type or protocol on that version of SoftWindows.

Network software errors

If the ODI system loads successfully but the network software package you wish to use does not function properly, then it may be that either SoftNode or the package has been configured incorrectly. Please refer to Chapter 9, "Networking with SoftWindows" in the *SoftWindows95 for Unix Administrator's Guide* for additional troubleshooting information.

Running PC applications

No display is visible in the SoftWindows window

An MS-DOS application may have been started with the wrong video mode. Change the display type; refer to Chapter 4, "Setting up the display" in the *SoftWindows95 for Unix Administrator's Guide*.

Application fails to run at all or locks up SoftWindows

The application may be copy protected and installed on an FSA drive. Reinstall on the C: or D: drives.

Alternatively, the application may require additional memory; refer to Chapter 4, "Setting up memory" in the *SoftWindows95 for Unix Administrator's Guide*.

Using Windows 95

Windows will not run

Windows needs a minimum of 4 Mbyte of memory to run, and 8 Mbyte is recommended. Check that this has been set correctly; refer to Chapter 4, "Setting up memory" in the *SoftWindows95 for Unix Administrator's Guide*.

Windows will not run with a read-only C: drive

Temporarily make it readable and writable. Then in your AUTOEXEC.BAT file change the line

```
SET TEMP=C:\DOS
```

to specify a writable disk. For example:

```
SET TEMP=H:
```

MS-DOS errors

These errors appear in the SoftWindows window:

Table 5-3 Errors Appearing in the SoftWindows Window

Error	Explanation	Suggestion
Not ready error reading drive A/B Abort, Retry, Fail	Your floppy disk drive is not attached to SoftWindows, or the specified drive is set to Empty in the Open Disk Drives dialog box, or there is no disk in the drive.	Attach or select the floppy disk drive, or insert a disk and retry the command.
Invalid drive specification	If you are trying to access drive D:, there is no SoftWindows hard disk file selected as drive D:.	Select a file as drive D:
Non-System disk or disk error	If you are trying to access an FSA drive, the software needed to access FSA drives is not set up correctly. SoftWindows is attempting to boot from an MS-DOS floppy disk in drive A: which has not been initialized as a startup disk.	Check that CONFIG.SYS and AUTOEXEC.BAT are set up correctly Eject the floppy disk from drive A:

SoftWindows FSA errors

These errors appear in the SoftWindows window and relate to the use of FSA drives

Table 5-4 FSA-Related Errors in the SoftWindows Window

Error	Explanation	Suggestion
The host filesystem directory cannot be found	The FSA directory cannot be found.	Verify that the Unix directory has not been renamed, moved, or deleted.
The host filesystem name must be a directory	An FSA drive has been given the name of a Unix file.	Only Unix directories can be specified for FSA drives.
The host filesystem must have read access	The FSA directory cannot be read.	Change the Unix directory's access permissions.
The x drive is not being used	You are trying to detach a drive with NET USE /D which is not attached.	Check the NET USE command argument for drives currently attached.
The x drive is not a network drive	You are trying to attach a non-network drive which is already in use, for example, drive C:, with a NET USE command.	Retry the NET USE command with the correct drive id.
The x drive is already in use	You are trying to attach a network drive (id of E onwards) with a NET USE command, but the drive is already in use.	Retry the NET USE command with the correct drive id.
Illegal drive specification	The drive letter specified in an FSADrive or NET USE command is not valid.	Check that it is a single letter followed by a colon, in the range E to LASTDRIVE.

Note: The NET USE command does not work in a DOS box.

SoftWindows errors

Errors reported by SoftWindows are numbered, and appear in an error dialog box.

For details of these errors, refer to Chapter 12, "Error messages" in the *SoftWindows95 for Unix Administrator's Guide*.

Networking errors

By default, networking errors are not displayed in an error dialog box.

Please refer to Chapter 9, "Troubleshooting" in the *SoftWindows95 for Unix Administrator's Guide* for details of how to enable network error reporting.

Glossary

Application icon

In Windows, a graphic icon that represents a running application. This icon appears only after you start an application and reduce (minimize) it.

Application window

In Windows, the window containing the work area and menu bar for an application. The name of the application appears at the top of the window.

AUTOEXEC.BAT

A special batch file that is executed each time the PC boots up.

Batch file

A text file, identified by a .BAT extension, containing MS-DOS commands. When the file is run, the commands it contains are executed in sequential order as if they were typed at the keyboard.

Boot

The PC terminology for starting up the computer.

CD-ROM

A read-only form of data storage, using standard Compact Disc media, capable of providing over 600 Mbytes of data.

Client

A system on a network that uses services held on other remote systems.

Communication port

The name given to the interface which can be used to connect a modem. This is also known as the serial communication port.

COM1 to COM4

The names of the serial communication ports supported by MS-DOS.

Configuration file

A file containing information to determine which printers, disk drives, and other devices will be available to you when you run SoftWindows.

CONFIG.SYS

A special MS-DOS text file that contains commands to configure the MS-DOS operating system.

Control menu box

An application running in Windows has a control menu box at the top left of the application window. This allows you to control the characteristics of the window and switch between applications.

Copy protection

A routine embedded in commercial software that prevents users from making unauthorized copies.

Current directory

The directory in which MS-DOS looks for files.

Current drive

The drive on which MS-DOS looks for a directory or a file.

Device

A piece of hardware, such as a printer, that performs a specific task.

Device name

The name used to refer to a device; for example, LPT1 and LPT2 are used to refer to printers.

Directory

A division or level in an hierarchical file storage system that can include files and other directories.

Drive letter

The letter used to identify a drive; such as A, B, C to Z.

Emulated hard drive

A file located in your Unix file system which has an MS-DOS file system layout. This allows the file to emulate and function like a PC hard drive. In SoftWindows, drives C: and D: are emulated hard drives.

Ethernet

A widely used network system and communications method standardized by the IEEE 802.3 committee and by ISO.

Ethernet_802.2, _II, _SNAP, and _802.3

The alternative standards that can be used on an Ethernet cabling system.

Expanded memory

The LIM (Lotus, Intel, Microsoft) standard for increasing the amount of memory available to PC applications beyond their original 640 Kbytes.

Extended memory

The XMS (Extended Memory System) standard for increasing the amount of memory available to PC applications using the protected mode available on 80286, 80386, and 80486 computers.

Extension

The last part of an MS-DOS filename, which can be used to specify the type of file. It consists of a period and up to three letters; such as .BAT.

File

A collection of data stored on a hard disk, floppy disk, tape, or CD-ROM under a single name.

File permissions

See *Permissions*.

FSA

File Sharing Architecture.

FSA drive

A name for a drive that is treated by the PC as being on a different computer. FSA drives cannot be formatted or partitioned. SoftWindows allows you to set up Unix directories

as FSA drives.

Group

A collection of applications, accessories, or documents within the Windows Program Manager.

Home directory

Your default Unix directory; that is, the one you use for storing personal work, files associated with your user account, and other directories.

IPX

One of Novell's communication protocols, Internetwork Packet Exchange. It addresses and routes outgoing data packets across the network. IPX is a connectionless protocol.

ISO 9660 standard

The official term for the High Sierra standard format for CD-ROMs.

Microsoft mouse

A popular type of a hand-held pointing tool that can be used with MS-DOS applications in a SoftWindows window. SoftWindows provides you with emulated support for the Microsoft Mouse.

Modem

A device that enables a machine or terminal to establish a connection and transfer data through telephone lines. The name derives from the techniques it uses: modulation and demodulation.

MS-DOS

Microsoft Disk Operating System; the system software and filing system used on IBM PC or compatible computers.

NDIS

Network Driver Interface Specification, a standard defined by Microsoft and 3Com. It is the media- and protocol-independent driver standard used by network operating systems such as LAN Manager.

NET.CFG

The configuration file used by all ODI drivers and protocols.

NetWare

Novell's operating system that runs on file servers and routers. It controls system resources and information processing on an entire network or internetwork.

NET USE

A command used to set up Unix directories as PC drives in SoftWindows.

ODI

Open Data-link Interface, Novell's network interface specification. ODI-compliant protocols require an ODI driver.

ODINSUP

A Novell converter program which allows the use of NDIS client applications, such as Microsoft LAN Manager, with ODI drivers.

Packet

A unit of information that has been formatted for transmission on a network. A packet contains not only data but also its destination, source, and any routing information it has collected during its transmission over a network.

Path

A sequence of directory names, separated by a backslash in MS-DOS (\) or a forward slash in Unix (/).

PC

An abbreviation for a personal computer such as an IBM Personal Computer or compatible.

Permissions

The name given to settings that are assigned to each file and directory to determine which users have access to read, write, or execute its contents.

Port

The name for a serial or parallel interface on a PC. Referred to as COM or LPT ports, respectively, by MS-DOS.

PostScript

The name of a page-description language designed by Adobe for producing typefaces

and graphics on different printers. Applications use the PostScript language to describe to printers how graphics and type should appear.

Printer

A device that prints data and text on paper. A *local* printer is the printer attached directly to your computer or workstation. A *remote* printer is accessed across the network.

Printer queue

A temporary queue of jobs or files in MS-DOS waiting to be printed on a particular printer.

Prompt

A request, displayed by the computer, that asks you to provide some information or perform an action; for example, the MS-DOS prompt is usually C:\>.

Protocol

A set of procedural rules that permits the orderly exchange of information. These rules govern the content, format, timing, sequencing, and error control of the messages being exchanged.

PROTOCOL.INI

The configuration file used by all NDIS drivers and protocols.

Read permission

A file setting that allows you, members of your group, or other users to read a file.

Reboot

A procedure that restarts a computer or SoftWindows.

Root

The name of the user who can access all files without restriction. The system administrator always has `root` access.

Root directory

The highest level directory in the hierarchical filing system. The `root` directory is represented as `/` in Unix and as `\` in MS-DOS.

Serial port

The communications port, labeled COM1: to COM4:, to which you can attach a device such as a modem.

Server

A system on a network that provides resources such as disks and printers to other systems. See also *Client*.

SPX

One of Novell's communication protocols, standing for Sequential Packet Exchange. It creates, maintains, and terminates the connection between network devices (such as file servers and routers). SPX is a connection-oriented protocol.

SVGA

Super Video Graphics Array, an extension of VGA.

\$SWINHOME

An environment variable that points to the Unix directory containing SoftWindows; for example, */usr/SoftWindows95*.

SYSTEM.INI

A Windows initialization file that provides information about the MS-DOS environment.

System administrator

The person in charge of performing administrative tasks on a system.

TCP/IP

Transmission Control Protocol/Internet Protocol. A widely used industry standard for connecting different types of computers. An internet is an interconnected set of networks.

Text editor

An application used to create or change text files. The standard MS-DOS text editor is referred to as EDIT.

Text file

Data contained in a file that you can read because it contains ordinary letters, numbers, and punctuation marks.

VGA

Video Graphics Array; the most widely accepted standard for PC graphics displays.

Volume

An alternative name for a hard drive.

Windows

A Microsoft user interface for PCs, which provides windows, icons, menus, and mouse control.

WIN.INI

A Windows initialization file that allows you to customize your Windows environment.

Write enabling

A method of allowing data to be written to a disk.

Write protection

A method of preventing new data from being written to a disk and preventing any existing data from being overwritten.

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