DEC SoftWindows

User's Guide for the OpenVMS AXP Operating System

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This User's Guide provides the information needed to set up DEC SoftWindows and to run PC applications on an OpenVMS AXP workstation.

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Preface

About This Guide

This guide explains how to use DEC SoftWindows on your Digital workstation. It consists of the following chapters:

- Chapter 1 - Introduction

  Describes the main features of DEC SoftWindows, and explains how it enables you to run PC applications on your Digital workstation.

- Chapter 2 - Using DEC SoftWindows

  Explains how to run DEC SoftWindows, describes the key features of the DEC SoftWindows window, and explains how to use floppy disks and the keyboard with DEC SoftWindows.

- Chapter 3 - Setting up DEC Softwindows

  Describes how to set up DEC SoftWindows emulation of PC memory, disk drives, and display.

- Chapter 4 - Printing, input, and output

  Describes how to set up and use the DEC SoftWindows serial and output parallel ports for printing, and for serial communications.

- Chapter 5 - Networking

  Describes how to set up and use the DEC SoftWindows networking support.

- Chapter 6 - Setting up Windows

  Explains how to set up Microsoft Windows, and run Windows applications on your Digital workstation.

- Chapter 7 - Using MS–DOS

  Explains how to give MS–DOS commands, use the MS–DOS Editor, and install and run MS–DOS applications.

- Chapter 8 - DEC SoftWindows configuration

  Gives information about the DEC SoftWindows system and user configuration files, and describes the MS–DOS configuration files used by DEC SoftWindows.

- Chapter 9- Displaying Remotely

  Provides information for about setting up a DEC SoftWindows to run on a remote workstation or X terminal.

- Chapter 10 - Troubleshooting

  Suggests solutions to problems that you may encounter when running PC applications on your Digital workstation, and explains the DEC SoftWindows and MS–DOS error messages.

- Glossary

  Describes the technical terms used in the guide.

Conventions

This guide uses the following conventions:

This style	Refers to this
`COMPUTER`	Anything you type, exactly as it appears.
bold	Names of menus, menu commands, buttons, dialog boxes, and windows that appear on the screen.
Ctrl	Special keys on the keyboard.
Return	The Return key, also sometimes labeled Enter.
italics	Variables in command lines and system messages; references to other sections of this guide.

Abbreviations

This guide uses the following abbreviations:

This abbreviation	Refers to this
DEC SoftWindows	DEC SoftWindows for Digital workstations
Insignia	Insignia Solutions.
MS–DOS	Microsoft Disk Operating System for the IBM PC, or any compatible DOS.
PC	An Intel-based computer.
Windows	Microsoft Windows 3.1.

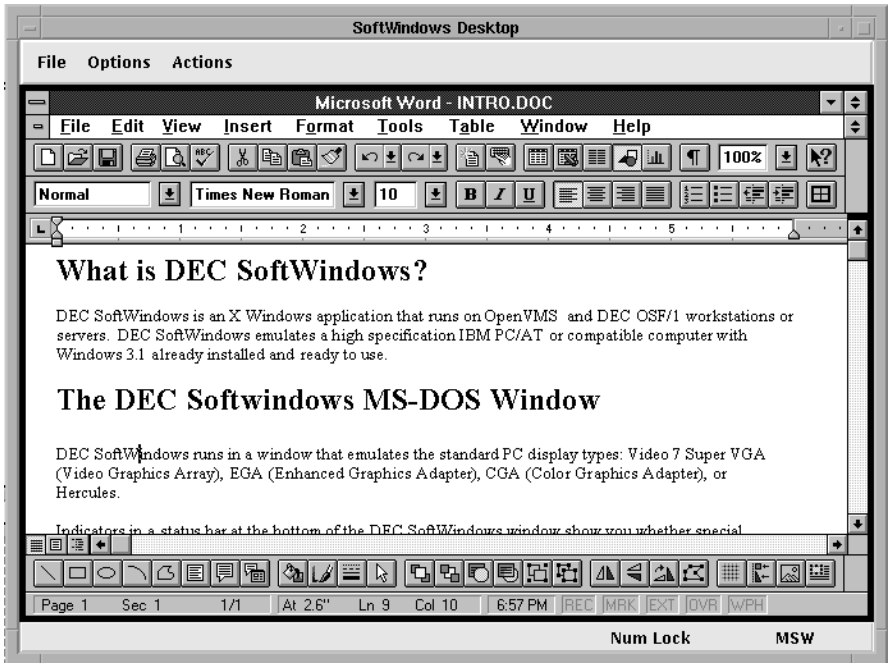
1
Introduction

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

DEC SoftWindows for OpenVMS AXP Systems

DEC SoftWindows is an X Windows application that runs on OpenVMS and DEC OSF/1 AXP workstations or servers. This chapter describes how DEC SoftWindows enables you to run MS–DOS and Windows applications on your OpenVMS workstation. Figure 1–1 shows Microsoft Word for Windows running under Motif using DEC SoftWindows.

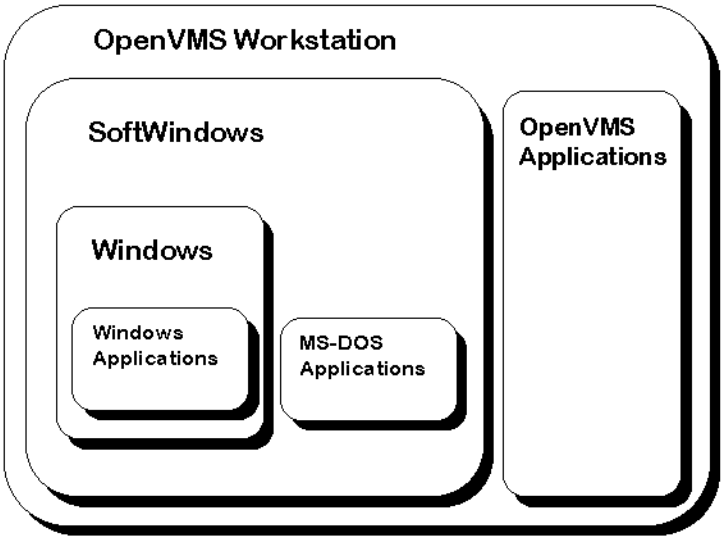
Figure 1–1 DEC SoftWindows running Microsoft Word for Windows



DEC SoftWindows emulates a high specification IBM PC/AT or compatible computer with Windows 3.1 already installed and ready for use. As Figure 1–2 illustrates, you can run

most Windows or MS–DOS PC applications on your OpenVMS workstation alongside your other OpenVMS applications.

Figure 1–2 Simultaneous Windows, MS–DOS, and OpenVMS Applications on Your Workstation



The DEC SoftWindows MS–DOS Window

DEC SoftWindows runs in a window that emulates the standard PC display types: Video 7 Super VGA (Video Graphics Array), EGA (Enhanced Graphics Adapter), CGA (Color Graphics Adapter), or Hercules.

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

The Windows Desktop

DEC SoftWindows also includes color and monochrome Windows display drivers to optimize the performance of Windows and to allow it to run in a window of any size on either color or monochrome displays.

You can switch between your PC application and an OpenVMS application at any time and copy and paste text between PC and OpenVMS applications. DEC SoftWindows automatically converts text cut or copied from Windows applications into the correct format for pasting into an OpenVMS application.

The DEC SoftWindows Menus

The DEC SoftWindows menus provide functions that enable you to configure DEC SoftWindows to suit your PC applications. You can do many operations that would require hardware or board changes on a real PC by choosing the appropriate function from DEC SoftWindows menus.

Terminal Support

DEC SoftWindows also supports most standard terminals that can be used with your OpenVMS workstation. You can run MDA (Monochrome Display Adapter) PC applications in text mode from a VT220 or compatible terminal.

Interfacing DEC SoftWindows

Hard Disks

Most PCs have either one or two hard disk drives. These drives have the fixed names C: and D: under the MS–DOS filing system. DEC SoftWindows emulates each PC hard disk using a file in the OpenVMS file system. You can create hard disks of up to 300 Mbyte, subject to the amount of disk space on your workstation.

FSA Drives

Using the DEC SoftWindows File Sharing Architecture (FSA), DEC SoftWindows also lets you access individual files in the OpenVMS file system as if they were on an MS–DOS drive. FSA allows you to access the same files from both OpenVMS programs and PC applications.

Floppy Disk Drives

Most PCs have 3 1/2-inch floppy disk drives labeled A: and B:. Standard PC software installations use these drives. DEC SoftWindows can use the computer's 3 1/2-inch floppy disk drives as drive A: or B: to read, write, and format either low density (720 Kbyte), high density (1.4 Mbyte) or extended density (2.88Mbyte) MS–DOS disks.

CD-ROM

DEC SoftWindows includes the Microsoft CD-ROM extensions to allow PC programs to read PC-format CD-ROMs.

Mouse

For PC applications that allow you to use a mouse, DEC SoftWindows can use an OpenVMS workstation mouse to emulate the standard PC Microsoft Bus Mouse. When you are running Windows, the DEC SoftWindows mouse driver automatically emulates the PC mouse when the mouse pointer is within the DEC SoftWindows window.

When using MS–DOS applications, you can either choose to emulate the Microsoft Bus Mouse, or use the mouse for choosing menu functions and working with other OpenVMS applications.

Keyboard

DEC SoftWindows uses the OpenVMS workstation keyboard to emulate a standard IBM PC/AT keyboard and supports most US, UK, French, and German keyboards.

Serial and Parallel Ports

DEC SoftWindows emulates PC/AT serial ports that MS–DOS refers to as COM1: to COM4:, and the parallel printer ports LPT1: to LPT3:.

If your PC application generates output for a printer and you have a printer available to your OpenVMS workstation, you can logically attach the appropriate PC port to the OpenVMS print spooler.

Output from a PC application to any PC port can also be saved in a file in the OpenVMS file system or sent to the serial ports on the OpenVMS workstation.

In addition, the serial ports COM1: to COM4: can be attached to the OpenVMS workstation's serial ports for full two-way communication, with selectable baud rate, parity, and word format.

Networking Support

Networking support is available for most industry-standard file servers.

Extended and Expanded Memory

You can configure the amount of PC memory using either the PC Extended memory or Expanded memory system.

DEC SoftWindows Specifications

Table 1–1 summarizes the DEC SoftWindows specifications.

Table 1–1 DEC SoftWindows Specifications

Feature	Specification
Processor	80286 Real and Protected mode
Math co-processor	80287
ROM BIOS	PC/AT-compatible
RAM	640 Kbyte
Expanded memory	0 to 32 Mbyte of LIM
Extended memory	1 to 16 Mbyte of XMS
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:
NetWare	Support for Novell NetWare file servers on drives L: to Z:
Video	Super Video Graphics Array (Video 7), Enhanced Graphics Adapter (EGA), Color Graphics Adapter (CGA), or Hercules. Super VGA modes supported: 40h to 45h, and 60h to 69h excluding 63h and 64h.
Parallel ports	Three ports, LPT1: to LPT3:
Serial ports	Four ports, COM1: to COM4:
Keyboard	PC/AT 101/2-key keyboard
Mouse	Microsoft Bus Mouse compatible
MS–DOS	Version 6.21
Microsoft Windows	Version 3.1, runs in standard mode
DEC SoftWindows driver	Color and monochrome display, and mouse

Hardware and Software Requirements for Running DEC SoftWindows

Table 1–2 summarizes the requirements for running DEC SoftWindows on the OpenVMS AXP operating system.

Table 1–2 Requirements for Running DEC SoftWindows

Feature	Specification
System software	OpenVMS V6.1 or later. Motif Window System Version 1.2-2 or later
Memory	32 Mbytes minimum.
Disk space	About 40 Mbyte is required to install DEC SoftWindows. If applications are installed on the default supplied hard disk, you may need additional capacity to allow for maximum expansion of the hard disk up to 300 Mbyte.
Swap space	The swap space should be at least three times the physical memory size for 32 Mbyte systems, or twice the physical memory size for larger memory systems.
Floppy disk drives	The standard internal and external 3 1/2-inch Digital disk drives are supported.
Keyboards	Digital series LK401 (US/UK, French, and German), and series PCXAL (US, UK, French, and German). LK201 series keyboards can be used by specifying the LK401 keyboard support.
Terminals	VT220 or higher.

2

Using DEC SoftWindows

This chapter describes how to run DEC SoftWindows, the features of the DEC SoftWindows window, and how to use floppy disks and CD-ROMs with DEC SoftWindows.

Using Windows

To Run DEC SoftWindows and Display the Windows Desktop

To run DEC SoftWindows and display the Windows desktop, type the following command in a terminal window:

```
SOFTWINDOWS Return
```

A standard looking MS–DOS window appears. At the MS–DOS prompt you can choose either to run MS–DOS applications or to run MS-Windows by entering the following:

```
WIN Return
```

The following dialog box appears after the Windows welcome screen to allow you to specify the size and position of the window to use for Windows:

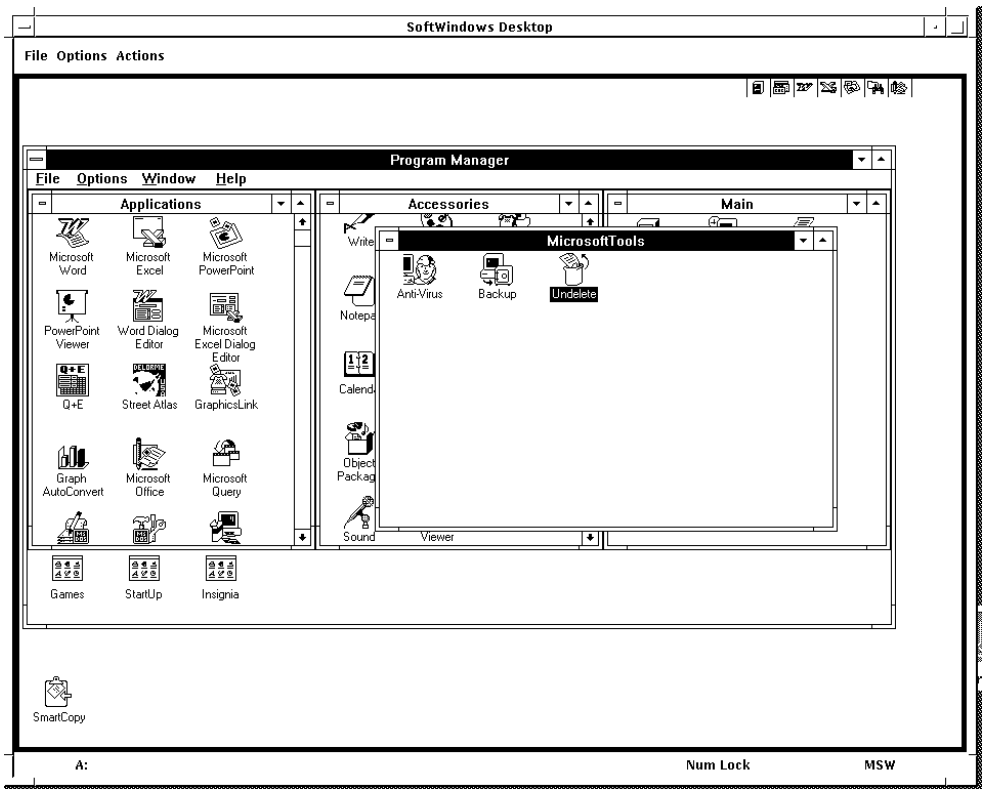
Resize the window by dragging any of the resize corners, then click **OK** to run Windows.

Note

Increasing the size of the window requires more memory and may reduce performance.

DEC SoftWindows initially runs in a separate Motif window so you can run Windows and PC applications at the same time as OpenVMS applications. Figure 2–1 shows a Windows desktop in a Motif window with many installed applications, most of which are not provided by DEC SoftWindows.

Figure 2–1 SoftWindows Desktop with Installed Applications



To Run DEC SoftWindows from the Session Manager

To run DEC SoftWindows from the session manager, you must first add it to the session manager's **Applications** menu:

1. Select **Options** from the session manager menu bar.
2. Select **Applications Definitions**.
3. Using the resulting dialog box, in the **Menu Item** field, enter the name you want to appear in the **Applications** menu; for example, SoftWindows.
4. In the **Menu Command** field, enter the command:

   ```
   SoftWindows
   ```

5. Click **Add, Apply**, and **OK**.
6. Select **Options** from the session manager menu bar.
7. Select **Applications menu**.
8. In the **Select item to add** column, select **SoftWindows**.
9. Click **Apply** and then **OK**.

The next time you display the session manager's **Applications** pull-down menu, DEC SoftWindows appears as an option.

To Exit from Windows

Follow these steps to exit from MS Windows:

- If necessary, double-click the **Program Manager** icon, to display the **Program Manager** window.
- From the **Program Manager File** menu, choose **Exit Windows**.

  The following dialog box appears:

- Choose **OK** to exit from Windows to the DEC SoftWindows MS–DOS window.

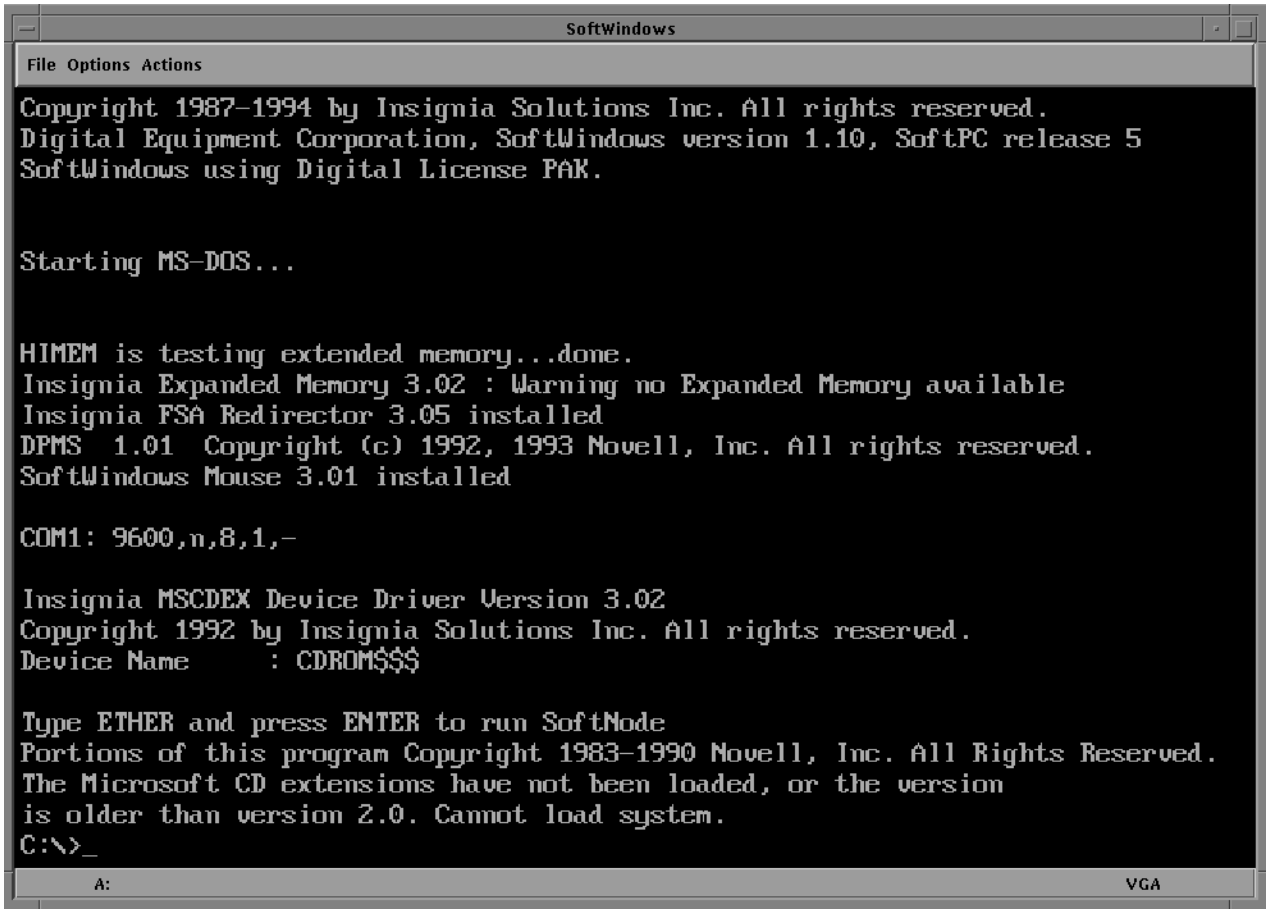
Using MS–DOS

To Display the DEC SoftWindows MS–DOS Window

To display the MS–DOS window (Figure 2–2):

- Either double-click the **MS–DOS Prompt** icon in the **Main** program group or exit from Windows

Figure 2–2 DEC SoftWindows MS–DOS Window



To Resize the DEC SoftWindows MS–DOS Window

To resize the DEC SoftWindows MS–DOS window:

- Drag the window by any of its resize corners.

When you release the mouse button the window jumps to the closest fixed size.

You can resize the DEC SoftWindows window to one of three alternative fixed sizes: 1.0x, 1.5x, and 2.0x, up to the size of your workstation screen (or larger).

Status Bar

The status bar, located at the bottom of the window, shows the status of DEC SoftWindows using the indicators described in the following table:

Indicator	What it means
A:	Floppy disk drive A: is in use
B:	Floppy disk drive B: is in use
Caps Lock	Caps Lock mode is selected
Scroll Lock	Scroll Lock mode is selected
Num Lock	Num Lock mode is selected
VGA, EGA, or CGA	The display type
MSW	DEC SoftWindows graphics driver

Note that there is no status bar on the text terminal version of DEC SoftWindows.

Restarting and Quitting from DEC SoftWindows

To Restart DEC SoftWindows

To restart DEC SoftWindows:

- From the **Actions** menu, choose **Restart**, which is equivalent to holding down Ctrl Alt Del together on a real PC.

  The following dialog box then warns you that you can lose work if you have not exited from PC applications or saved files before restarting:

- Click **Cancel** to cancel the command, or **OK** to restart.

Note

Holding down Ctrl Alt Del together produces an immediate restart without the warning dialog box.

LK201 or LK401 Keyboards

On LK201 or LK401 keyboards, use the decimal point key to the right of the 0 key on the numeric keypad for the PC key Del.

To Freeze DEC SoftWindows

Freezing DEC SoftWindows stops it running without affecting the DEC SoftWindows window. You can use one of two methods to freeze DEC SoftWindows:

- To freeze whenever you choose, from the **Actions** menu, select **Freeze**. A button appears next to the menu function. To restart DEC SoftWindows, select **Freeze** again.
- To automatically freeze DEC SoftWindows whenever you select another window, from the **Options** menu, choose **Auto Freeze**.

Note

If you select **Freeze** while running networking software, network connections may time out.

To Exit from DEC SoftWindows

To exit from DEC SoftWindows:

- From the **File** menu, choose **Exit**.

  The following dialog box then appears to warn you that you can lose work if you quit without exiting from PC applications or saving files.

  The default is **Save Configuration Changes**, which saves any changes you have made to the DEC SoftWindows configuration file, SWINCONFIG.INI. For more information, refer to *DEC SoftWindows Configuration*, Chapter 8.

- Choose **OK** to exit from DEC SoftWindows or **Cancel** to cancel the exit.

To Quit Immediately

To quit immediately from DEC SoftWindows, type the following command in the MS–DOS window:

```
C:\> EXITSWIN Return
```

DEC SoftWindows exits immediately without saving any changes to your DEC SoftWindows configuration.

Using the Mouse

If you have a mouse attached to your computer, you can use it with MS–DOS programs that support a Microsoft Bus mouse.

To Use the Mouse Under MS–DOS

To use the mouse under MS–DOS, either:

- From the **Actions** menu, choose **Attach Mouse**, or
- Hold down Ctrl and Alt and click the middle mouse button.

  The following dialog box then appears the first time you choose **Attach Mouse**:

When you click OK, the workstation mouse disappears, and other windows and menus become inaccessible.

When you are running Windows, the mouse is automatically attached and the **Attach Mouse** menu function is grayed out.

To Restore the Normal Workstation Mouse

To restore the normal workstation mouse, hold down Ctrl and Alt and click the middle mouse button.

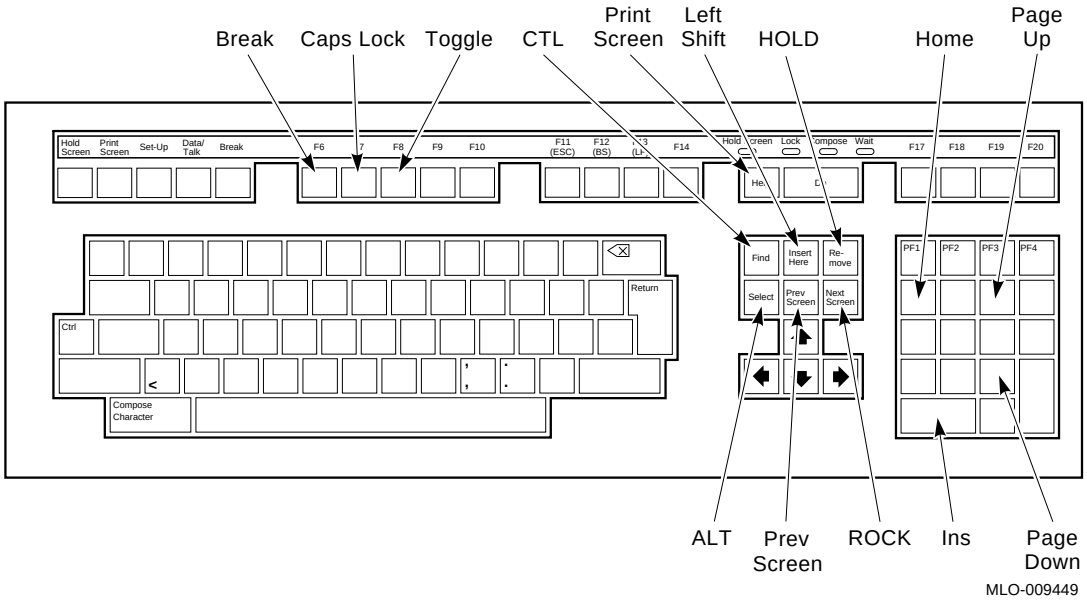
Using the Keyboard

This section describes the differences in key mapping between your Digital workstation or VT220 terminal keyboard and a PC keyboard.

The Keyboard

When you use DEC SoftWindows, you must use the Digital terminal keyboard (Figure 2–3) or workstation keyboards (Figure 2–4 [1] and Figure 2–5) as though they were a PC keyboard. This section describes which Digital keys change functions to emulate PC key functions.

Figure 2–3 Digital VT220 Terminal Keyboard



[1] The LK201 diagram, Figure 2–4, includes two errors. (1) Both the left and right LK201 shift keys map to PC Left Shift. Use the F20 key for PC Right Shift. (2) The diagram incorrectly shows two keys to the left of the space bar instead of the single Compose Character key.

Figure 2–4 Digital LK201 Workstation Keyboard

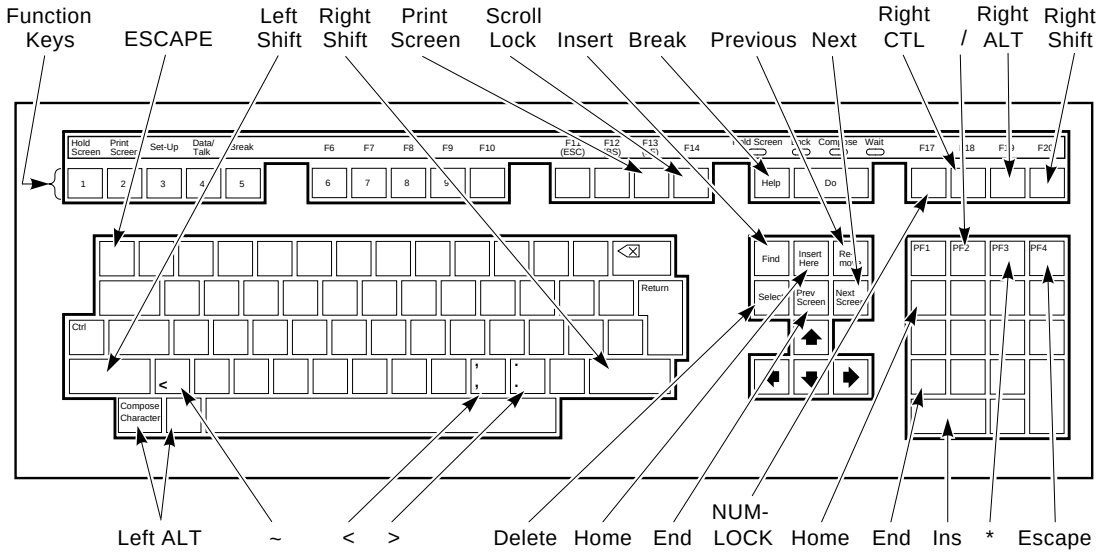
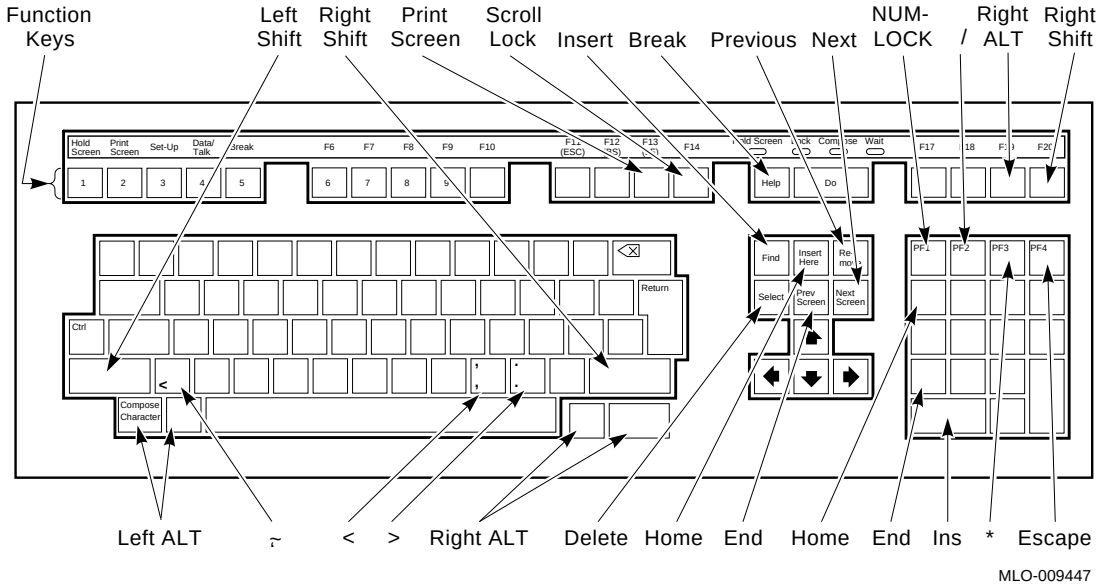


Figure 2–5 Digital LK401 Workstation Keyboard



Motif Retains Control of the Left ALT Key

Motif retains control of the left ALT key on the LK201 and LK401 keyboards. Windows uses the left ALT key in key sequences such as ALT + F5 and ALT + F7, The following solutions enable you to use the Windows ALT key functions on these keyboards:

- **LK201 keyboard**—Use the Motif Window Manager to disable Motif so that all keystrokes go directly to DEC SoftWindows.
- **LK401 keyboard**—Use the left Compose Character key for left ALT functions or use the Motif Window Manager to disable Motif so that all keystrokes go directly to DEC SoftWindows.

Keyboard Mapping—PC to a Digital Workstation or Terminal

Table 2–1 compares the Digital workstation keys and terminal keyboard keys that function differently with DEC SoftWindows.

Table 2–1 Key Assignments

PC Keyboard	Digital Workstation	Digital VT220 Terminal
Break	Help	F6
Down arrow	2 (keypad)	2 (keypad)
End	1 (keypad)	1 (keypad)
Escape	PF4	PF4
F1	F1	F11
F2	F2	F12
F3	F3	F13
F4	F4	F14
F5	F5	F17
F6	F6	F18
F7	F7	F19
F8	F8	F20
F9	F9	F9
F10	F10	F10
Greater than(>)	Shifted period	Shifted less than(<)
Home	7 (keypad)	7 (keypad)
Insert	0 (keypad)	0 (keypad)
Left arrow	4 (keypad)	4 (keypad)
Less than (<)	Shifted comma	less than(<)
Left shift	Shift	Insert here
Num lock	PF1	PF1
Page down	3 (keypad)	3 (keypad)
Page up	9 (keypad)	9 (keypad)
Print screen	F13	Help
Right arrow	6 (keypad)	6 (keypad)
Right shift	F20	Prev screen
Scroll lock	F14	Do
Slash (/)	PF2	PF2

Keyboard Mapping—Digital Workstation to PC

Table 2–2 shows the Digital workstation keyboard keys mapped to the PC keyboard in increasing Digital scan code order.

Table 2–2 Key Assignments for Digital Workstations

Digital Workstation	PC Keyboard
F1	F1
F2	F2
F3	F3
F4	F4
F5	F5
F6	F6
F7	F7
F8	F8
F9	F9
F10	F10
F11	F11
F12	F12
F13	Print Screen
F14	Scroll Lock
Help	Break
F17	F17
F18	Right Control
F19	Right Alt
F20	Right Shift
Find	Insert
Insert	Home
Remove	Page Up
Select	Delete
Prev	End
Next	Page Down

(continued on next page)

Table 2–2 (Cont.) Key Assignments for Digital Workstations

Digital Workstation	PC Keyboard
Numeric Keypad	
0	Insert
.(period)	Delete
Enter	Enter
1	End
2	Down Arrow
3	Page Down
4	Left Arrow
5	5
6	Right Arrow
,(comma)	+
7	Home
8	Up Arrow
9	Page Up
–	-
PF1	Num Lock
PF2	/
PF3	*
PF4	escape
Cursor Keys	
Left Arrow	Left Arrow
Right Arrow	Right Arrow
Down Arrow	Down Arrow
Up Arrow	Up Arrow
Special Control Keys	
Shift	Left Shift
Control	Left Control
Lock	Caps Lock
Compose	Left Alt
Del	Erase

The remaining keys on the Digital workstation and PC keyboard are identical.

Copying and Pasting Text

When DEC SoftWindows is in text mode, you can copy text from and paste text into the DEC SoftWindows window using the procedures described in this section.

- **Pasting text into the DEC SoftWindows MS–DOS window**

  1. Select the text you want to copy by holding down the Select button (left mouse button), and dragging over the text.
  2. Move the mouse pointer over the DEC SoftWindows MS–DOS window.
  3. Click the middle mouse button.

  Result—The text is typed into the DEC SoftWindows window at the current cursor position.

- **Copying text from the DEC SoftWindows MS–DOS window**

  1. Select the text you want to copy by holding down the left-hand mouse button and dragging over the text.
  2. Move the mouse pointer over the window you want to paste into.
  3. Click the middle mouse button.

  Result—The text is typed into the window at the current cursor position.

- **Copying text between Windows and DECterm**

  DEC SoftWindows includes a utility called SmartCopy to copy text between MS Windows and a DECterm window. SmartCopy converts text between the Windows and Motif clipboards so that you can copy or cut and paste freely between X Windows and MS Windows applications.

  The **SmartCopy** icon changes to show when the text is ready to paste as follows:

  + When you move the mouse pointer out of the DEC SoftWindows window, the icon shows when text is ready to paste into a Motif application.
  + When you move the mouse pointer into the DEC SoftWindows window, the icon shows when text is ready to paste from a Motif application.

  Note

  Do **not** select **Copy** or **Paste** from the DECterm pull-down menu.

Using Floppy Disks

DEC SoftWindows lets you work with 3 1/2-inch MS–DOS format floppy disks using the floppy disk drives on your OpenVMS workstation.

Before using floppy disk drive A: or B:, you need to assign it to the internal 3 1/2-inch floppy disk drive on your workstation. From the **Options** menu, select **Disk Drives** and then select the **Open Drive** function (see *Setting Up Floppy Disk Drives*, Chapter 3.)

To Use a Floppy Disk

To use a floppy disk:

- Insert the disk into the computer's internal floppy disk drive.
- To see the contents of the disk from an MS–DOS windows, enter one of the following commands:

  ```
  C:\> DIR A:
  ```
  Return

  or

  ```
  C:\> DIR B:
  ```
  Return
- To see the contents of the disk from Windows, use the File Manager.

To Eject a Floppy Disk

To eject a floppy disk:

- Press the eject button on the floppy disk drive.

To Format a Floppy Disk

Before using the MS–DOS command FORMAT, you must first use the OpenVMS command INITIALIZE to format a floppy disk. (See *Using MS–DOS*, Chapter 7.) In the following example, the floppy device name is DKA300. Your device name may be different. For example:

```
$INIT DKA300:/DENSITY=density
```

where *density* is one of the following values:

Density	Description	Size
DD	double density	720 Kb
HD	high density	1.44 Mbyte
ED	extended density	2.88 Mbyte

Use the OpenVMS command SHOW DEVICE/FULL for a complete description of the disks on your system.

For detailed information on floppy device names, see *Setting Up Floppy Disk Drives*, Chapter 3.

Using CD-ROMs

You can work with MS–DOS format CD-ROMs using a CD-ROM drive attached to the OpenVMS workstation. DEC SoftWindows uses drive F: as the CD-ROM drive. *Setting Up CD-ROM Drives*, Chapter 3, describes how to set up drive F:.

To Use a CD-ROM

To use a CD-ROM:

- Enter the USECD command at the MS–DOS prompt:

  ```
  C:\> USECD Return
  ```

  This command sets up the CD-ROM drive as drive F:. It becomes available like any other drive except that it is read only.

  For example, enter this command at the C:\> prompt in an MS–DOS window to see the contents of the CD-ROM:

  ```
  C:\> DIR F:  Return
  ```

To Eject a CD-ROM

To eject a CD-ROM:

- Press and hold the eject button on the front of the CD-ROM drive.

Using Sound

To alternately enable and disable the OpenVMS workstation's sound facilities:

- From the **Options** menu, click on **Sound** to turn sound on or off.

  When sound is enabled, a button appears next to the **Sound** menu option as shown below:

Note

DEC SoftWindows cannot emulate complex sounds, such as digitized voices or music. Attempting to run a PC application with sound substantially slows down your PC application. To avoid this problem, turn the sound off in the PC application. Using the **Sound** function will not solve the performance problem since the PC application continues to do the sound processing.

Using FPU Emulation

To alternately enable and disable the **FPU Emulation** function:

- From the **Options** menu, click on **FPU Emulation** to turn the function on or off.

  When FPU emulation is enabled, a button appears next to the **FPU Emulation** menu option as shown below:

Note

MS–DOS applications written to use the 80287 chip must have FPU emulation enabled as shown in the figure above.

Activating and Deactivating Drives and Ports

Use the **Activate** function to control which of the PC drives or PC ports are reserved for use by DEC SoftWindows. The possible PC drives are A: to D:. The possible PC ports are LPT1: to LPT3: or COM1: to COM4:.

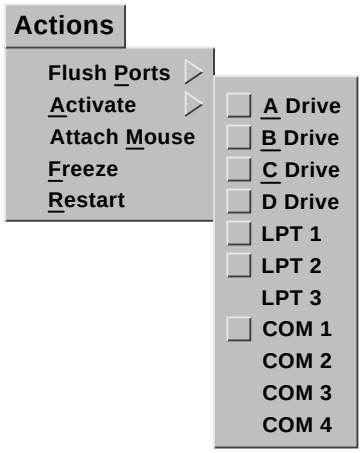
DEC SoftWindows tries to activate a drive or port when it is first selected, according to the settings in the **Open Disk Drives**, **Comms Ports**, and **Printer Ports** dialog boxes; refer to *Setting Up Drives*, Chapter 3 and *Printing, Input, and Output*, Chapter 4.

To See Which Services Are in Use by DEC SoftWindows

To see which services are in use by DEC SoftWindows:

- From the **Actions** menu, choose **Activate**.

  The following cascade menu then appears:



MLO-007287

The buttons next to device names in the cascade menu indicate devices in use by DEC SoftWindows. Entries with no device assigned to them are shown grayed out in the menu.

To Free a Device for Use by OpenVMS Applications

To free a device for use by OpenVMS applications:

- From the **Actions** menu, choose **Activate**.
- From the **Activate** cascade menu, choose the corresponding drive or port.

To Set Read-only Access on Hard Disk Drives

To set read-only access on hard disk drives:

- From the **Actions** menu, choose **Activate**.
- From the **Activate** cascade menu, choose **C Drive** or **D Drive**.

Any number of users can have read access to a hard disk file, but only one can have write access at a time. A button shown beside a drive name indicates that you have read and write access; other users have read access only. If no button appears beside a drive name, you have read access only, which allows another user to write to the drive.

3

Setting up DEC SoftWindows

This chapter describes how to configure a PC to your specifications using selections from the DEC SoftWindows **Options** menu to emulate PC memory, disks, and displays:

- **Memory**—Use this function to set up the amount of Extended or Expanded memory you need.
- **Disk Drives**—Use this function to specify how the PC hard disk drives are emulated on the workstation.
- **Display**— Use this function to choose DEC SoftWindows emulation of a PC display adapter.

Restarting DEC SoftWindows

After changing any of these preferences, which correspond to a hardware change on a real PC, you must restart DEC SoftWindows.

The following dialog box appears to warn you and give you the option of canceling the change:

Setting Up Memory

The standard amount of memory available on a PC is 640 Kbyte. DEC SoftWindows supports two methods to increase this memory: Extended memory and Expanded memory. The method you choose depends on your PC application. The following table describes the differences between Extended memory and Expanded memory:

Type of PC memory	Description
Main (Extended) memory	Also referred to as XMS memory (Extended Memory Specification). Used by more recent applications, including Windows. Requires a protected-mode 80286.
Expanded memory	Also referred to as LIM or EMS (Lotus, Intel, Microsoft Expanded memory specification). Used by earlier real-mode PC applications.

Memory Performance Hints

The following performance hints may help you decide how to set up the PC memory:

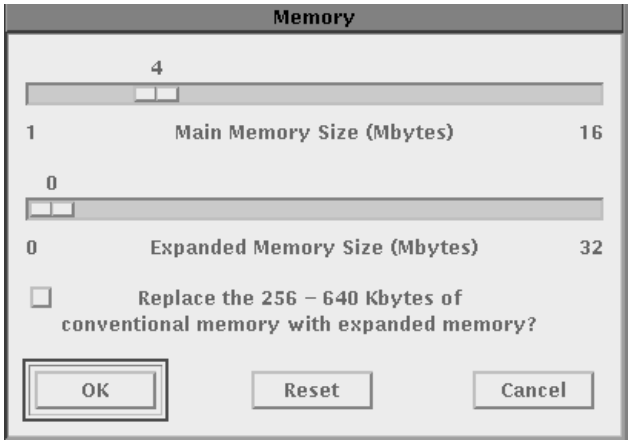
- Set only the amount of memory your application needs. Choosing too much memory may reduce performance.
- If your application can use either type of memory, Digital recommends Main (Extended) memory, which is accessed faster than Expanded memory.
- Replace conventional memory with Expanded memory only if your MS–DOS application specifies backfilling.
- Selecting between 4 and 8 Mbytes of Main Memory and 0 Mbytes of Expanded Memory gives the best performance for most applications.

To Specify the PC Memory

To specify the PC memory, use the following procedure:

- From the **Options** menu, choose **Memory**.

  The following dialog box shows the amount of Main (Extended) memory and Expanded memory and allows you to change it:



- Select the amount of Main memory by dragging the top slider, labeled **Main Memory Size**, until the value you want is shown above the slider.
- Select the amount of Expanded memory by dragging the bottom slider, until the value you want is shown above the slider then click **OK** to restart DEC SoftWindows with the memory configuration.

Setting Up Drives

PCs use the drive letters A: to Z: to identify individual disk drives.

You can set up the floppy disk drives A: and B:, the hard disk drives C: and D:, the FSA drive E:, and the CD-ROM drive F:. From the **Options** menu, select **Disk Drives**, then **Open Drive**. You can use the NET USE command in the AUTOEXEC.BAT file to set up the FSA drives G: and H:.

The following table shows the meaning of each drive letter and how each is set up when you first install DEC SoftWindows:

Drive	Default	Description
A:	Empty	The floppy disk drive.
B:	Empty	Additional floppy disk drive
C:	MS-WIN-31.HDF	The startup, or boot, hard disk drive
D:	Empty	Additional hard disk drive
E:	SYS$LOGIN	Your home directory
F:	Empty	The CD-ROM drive
G:	SWIN$HOME:[windows]	The Windows data directory
H:	SYS$LOGIN	Your home directory

Using Hard Disk Files

DEC SoftWindows emulates PC hard disks using single files in the OpenVMS file system with the extension .HDF. The individual MS–DOS files within DEC SoftWindows hard disk files are accessible only from within DEC SoftWindows and cannot be listed using OpenVMS commands.

DEC SoftWindows hard disk files can be attached to and detached from either of the PC drives C: and D: without affecting the information stored within the hard disk file.

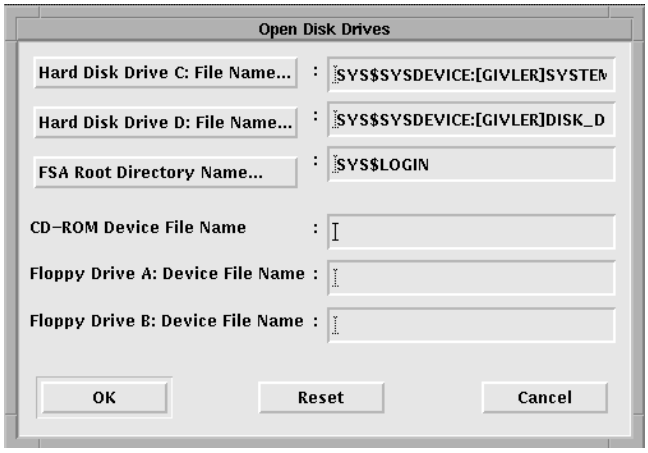
DEC SoftWindows always uses drive C: to start up unless a floppy disk is in an attached A: disk drive. This means you must always have a bootable DEC SoftWindows hard disk file attached to drive C:. This hard disk file must include the MS–DOS start-up files, which must be installed when the hard disk file is created. DEC SoftWindows is supplied with a drive C: container file called MS-WIN-31.HDF.

To Choose the Hard Disk File for C: or D:

To choose the hard disk file for C: or D:, use the following procedure:

- From the **Options** menu, choose **Disk Drives**, then **Open Drive**.

  The following dialog box appears to show the hard disk files assigned to drives C: and D:.



- Either type the name you require in the text box or click **Hard Disk Drive C: File Name** or **Hard Disk Drive D: File Name** to change the hard disk file used for drive C: or D:, respectively.

  The following dialog box lets you select the hard disk file to use:

- Choose the name of the file you want to use and click **OK** to restart DEC SoftWindows with the drive configuration you have specified.

To Set Up a New D: Drive File

To set up a new file to contain the D: drive, use the following procedure:

- Make sure that you have enough OpenVMS disk space for the file you are creating; you can use the OpenVMS SHOW DEVICE command to check the available disk space.
- From the **Options** menu, choose **Disk Drives**, then **New Drive**.

  The following dialog box appears:

- Enter a name for the new hard disk file. It is recommended you give the file a .HDF extension.
- Choose the size by dragging the slider until the size you want is shown above the slider.
- Click **OK** to set up the hard disk file you have specified.

Creating a New Hard Disk

To create a new hard disk within the file set up as described above, you must:

- Select the size for your new disk
- Partition the disk
- Choose to create the disk as either a bootable or nonbootable

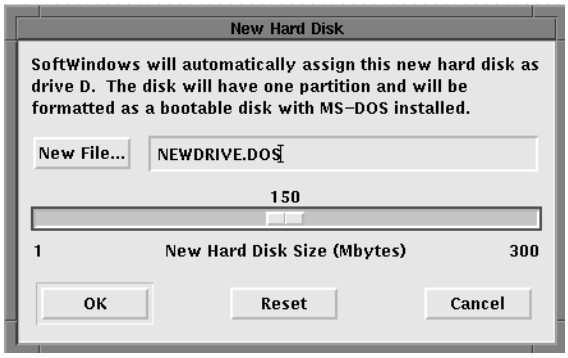
The following sections describe how to do each of these steps.

Selecting the Disk Size

To select the disk size, use the following procedure:

- From the **Options** menu, select **Disk Drives**, then **New Drive**.

  The following dialog box appears:



- Enter the name of the disk. If you omit directory information, DEC SoftWindows places the file in the directory that was current when you invoked DEC SoftWindows. Enter a complete file specification to place the file in a different directory.
- Place your cursor on the slide bar and move the marker to the desired size. Click on **OK**.

  The example shown creates a 150-Mbyte container file named NEWDRIVE.DOS.

  The file is created and DEC SoftWindows restarts with NEWDRIVE.DOS installed as your D: drive.

Partitioning the Disk

To partition the disk, run the MS–DOS program FDISK and use the following procedure:

- To run the FDISK program, enter the following command at the MS–DOS prompt:

  ```
  C:\> FDISK Return
  ```

- Enter option 5 from the FDISK menu for your second hard disk:

  ```
  Enter choice [5] Return
  ```

- FDISK displays the disks on your system, Now enter the disk number that shows 0% usage and press Return
- Enter Option 1 to create an MS–DOS partition.
- From the next menu, enter Option 1 for a primary partition.
- Enter Y to use the whole disk as a standard MS–DOS partition unless you have special requirements.
- Press Esc to return to FDISK options
- Press Esc again to exit FDISK
- Press any key to reboot DEC SoftWindows.

Choosing to Create a Bootable or Nonbootable Disk

Hard disks can be bootable or nonbootable. You determine which type you need:

- A bootable disk contains the MS–DOS operating system and other files. It is known as drive C:.
- A nonbootable disk contains application programs. It is known as drive D:.

Do not make a new C: drive using system files from a C: drive that contained a previous version of DEC SoftWindows.

For the following instructions, the C: drive must be either the C: hard disk drive that came with DEC SoftWindows or a copy of it.

To create a bootable drive, issue the following commands:

```
C:\> FORMAT D:/S Return
```

Enter `Y` Return

```
C:\> XCOPY C: D:/S Return
C:\> MAKEBOOT 1 Return
```

To create a nonbootable drive, issue the following commands:

```
C:\> FORMAT D: Return
```

Enter `Y` Return

Optional Method to Create a Bootable Disk

The XCOPY command shown in the above procedures copies all files from your existing DEC SoftWindows C: drive to your newly-created D: drive. If you do not need to copy the entire disk, you may copy only essential files from the C: disk to the D: disk.

To create a bootable disk containing only essential files, issue the following commands:

```
C:\> FORMAT D:/S Return
```

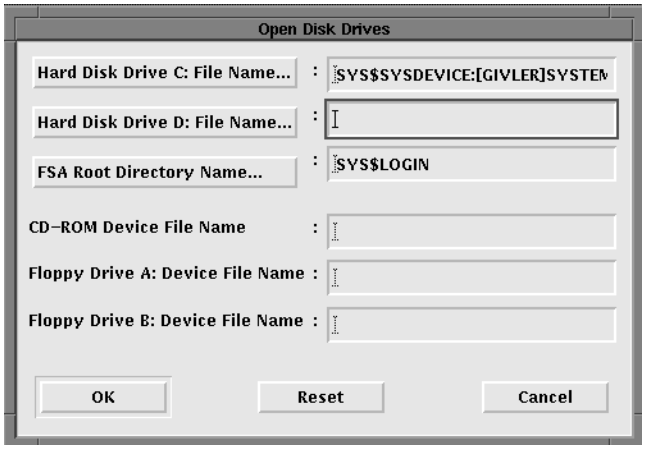
Enter `Y` Return

```
C:\> MKDIR D:\DOS Return
C:\> MKDIR D:\INSIGNIA Return
C:\> COPY C:\DOS\*.* D:\DOS\*.* Return
C:\> COPY C:\INSIGNIA\*.* D:\INSIGNIA\*.* Return
C:\> COPY C:CONFIG.SYS D: *.* Return
C:\> COPY C:AUTOEXEC.BAT D: *.* Return
C:\> MAKEBOOT 1 Return
```

To Remove the Hard Disk File

To remove the hard disk file, use the following procedure:

- From the **Options** menu, choose **Disk Drives**, then **Open Drive** to show the hard disk files attached to C: and D:.
- Delete the name of the hard disk file in the **Hard Disk Drive D: File Name** text box.



- Click **OK** to restart DEC SoftWindows with the drive configuration you have specified.

To Install Windows

To install Windows on a new hard disk file, you need to run the Windows Setup program, using the files provided in the Windows data directory.

To install Windows, use the following procedure:

- Create a new hard disk file on drive D:. Refer to *To Create a New D: Drive* earlier in this chapter.

  The size of the new disk should be not less than 11Mbyte to provide space for Windows, but at least 20 Mbyte is recommended.
- Remove the hard disk file from the D: drive and assign it as the C: drive.
- Run the Windows Setup program in the Windows data directory (attached as the FSA drive G: by default) by typing:

  ```
  C:\> G:\SETUP Return
  ```
- When the installation is complete, exit from DEC SoftWindows to ensure that all the files close correctly.
- Run DEC SoftWindows and then run Windows on the new drive in the usual way. Refer to *Using Windows*, Chapter 2.

Note that the Windows setup procedure automatically installs a program called Smartdrive, which reduces performance when used with DEC SoftWindows. Digital recommends that you remove the line

```
C:\WINDOWS\SMARTDRV.EXE
```

from the AUTOEXEC.BAT file after installing Windows on a hard disk file.

If you are going to print PostScript files from Windows, follow the instructions in the file PRINTERS.WRI to insert a statement CtrlD=0 in the WIN.INI file.

Setting Up File Sharing Architecture (FSA) Drives

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

In the case of a real PC, an FSA drive would be on another computer and MS–DOS would access it through a software driver. DEC SoftWindows uses this attribute of MS–DOS to access a specified OpenVMS directory, which can be on your workstation's hard disk or mounted from a remote file server, according to your needs.

The MS–DOS files in an FSA drive are individual OpenVMS files and can be used by OpenVMS programs that can work with MS–DOS files.

Filenames in MS–DOS

Not all OpenVMS filenames are valid as MS–DOS names. You should adhere to the MS–DOS filename conventions when creating files in the OpenVMS file system that you want to access from DEC SoftWindows.

MS–DOS filenames have the form:

name.ext

where *name* is eight characters or less, and *ext* is an optional three character or less extension.

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 OpenVMS, so you should avoid them in filenames.

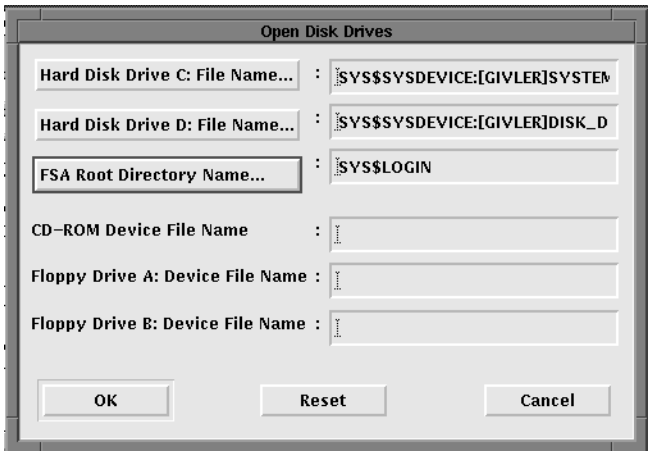
When accessing OpenVMS files using an FSA drive, an illegal MS–DOS filename that does not adhere to the above restrictions is converted to a legal name, although it may not be accessible to MS–DOS if another file of the same name already exists.

To Set up an OpenVMS Directory as PC Drive E:

To set up an OpenVMS directory as PC drive E:, use the following procedure:

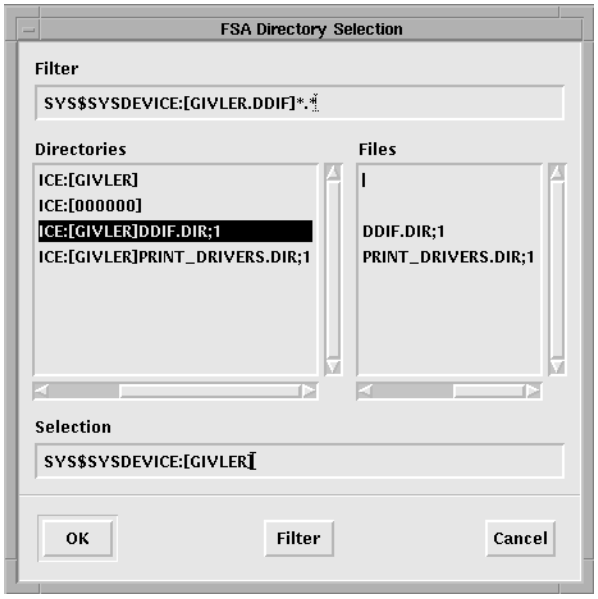
- From the **Options** menu, choose **Disk Drives**, then **Open Drive**.

  The following dialog box shows the OpenVMS directory assigned to drive E:.



- Type the directory you want to use into the text box, or click **FSA Root Directory Name**.

  The following dialog box allows you to select the OpenVMS directory to use as drive E:.



- Locate the directory you want to use, and choose **OK**.
- Choose **OK** to exit from the **Open Disk Drives** dialog box with the drive configuration you have specified.

To Set Up OpenVMS Directories as Drives E: to Z:

To set up OpenVMS directories as drives E: to Z:, use the following procedure:

- Type the following command at the MS–DOS C:\> prompt:

  `C:\> NET USE` *x*`:` *dir* Return

  where *x*: is the letter of the drive you want to assign to the directory, and *dir* is the full OpenVMS pathname of the directory.

For example, in the following example, a user named Smith assigns J: to the subdirectory DOS in his home directory:

```
NET USE J: [SMITH.DOS] Return
```

The drive can be any letter from E: to Z: (subject to the setting of LASTDRIVE). Drives A: to D: are predefined by MS–DOS. The CONFIG.SYS file on the hard disk supplied with DEC SoftWindows sets LASTDRIVE to K:.

Equally, if you set up a hard disk with more than one partition and assign the first partition as drive D:, MS–DOS uses drive E: for the second partition, drive F: for the third, and so on. In this case, you need to use subsequent letters for any FSA drives you set up.

You can include the appropriate NET USE command in your AUTOEXEC.BAT file if you want the drives to be set up each time you run DEC SoftWindows.

When attaching to a NetWare file server, the login drive uses the letter that follows the letter assigned to LASTDRIVE in the CONFIG.SYS file; by default the login drive is L:. All drives not included with the LASTDRIVE command are available to NetWare and can be assigned with the NetWare MAP command.

To Remove an OpenVMS Directory from a Drive

To remove an OpenVMS directory from a drive, use the following procedure:

- Type the following command at the C:\> prompt:

  ```
  C:\> NET USE x: /D Return
  ```

  where *x*: is the letter of the drive you want to remove. This does not delete the directory but removes the pointer to it.

To List the OpenVMS Directories Attached to Drives

To list the OpenVMS directories attached to drives, use the following procedure:

- Type the following command:

  ```
  C:\> NET USE  Return
  ```

  This command lists the drive letter of each FSA drive, and the pathname of the directory to which it has been attached. If the command is given with a drive letter, it shows the current selection for that drive.

Sharing and Using Text Files in OpenVMS and MS–DOS

OpenVMS and MS–DOS store text files in slightly different formats. If you create a text file under OpenVMS and want to edit it from MS–DOS, or vice versa, you may find that the format is wrong. On the OpenVMS system, use SOFTWINDOWS command qualifiers /DOS_TO_VMS and /VMS_TO_DOS to convert files.

- The qualifier /DOS_TO_VMS converts MS–DOS files to OpenVMS format. For example,

```
$SOFTWINDOWS/DOS_TO_VMS DOSFILE.DAT VMSFILE.DAT
```

converts the file DOSFILE.DAT to an OpenVMS formatted file called VMSFILE.DAT.

- The qualifier VMS_TO_DOS converts OpenVMS files to MS–DOS format. For example,

```
$SOFTWINDOWS/VMS_TO_DOS VMSFILE.DAT DOSFILE.DAT
```

converts the file VMSFILE.DAT to an MS–DOS formatted file called DOSFILE.DAT.

The following table shows when to convert files:

	Created by OpenVMS	**Created by DOS**
Used by VMS	OK	Convert using DOSTOVMS command
Used by DOS	Convert using VMSTODOS command	OK

Setting Up Floppy Disk Drives

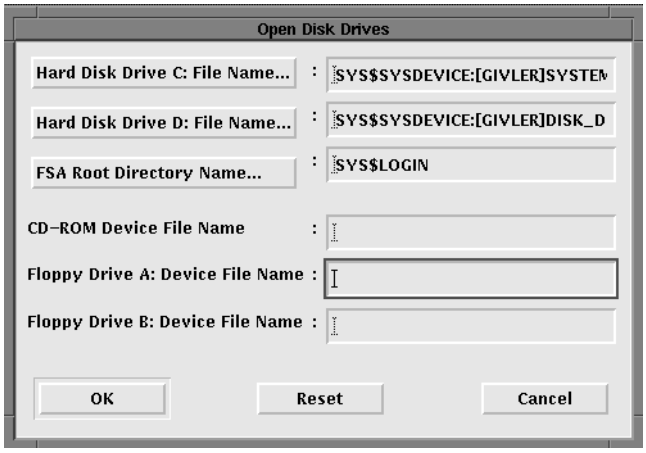
You can set up DEC SoftWindows to use the internal or external 3 1/2-inch floppy disk drives on your workstation as the PC drives A: and/or B: to work with MS–DOS format 3 1/2-inch floppy disks.

To Set Up the Floppy Disk Drives A: and B:

To set up the floppy disk drives A: and B:, use the following procedure:

- From the **Options** menu, choose **Disk Drives**, then **Open Drive**.

  The following dialog box shows the devices assigned to the floppy disk drives A: and B:.



- Type the floppy disk drive device name into the appropriate text box labeled **Floppy Drive A: Device File Name** or **Floppy Drive B: Device File Name**.

  Use a device name such as DKA300: or, for the AXP 150, DVA0:.

- Choose **OK** to reset DEC SoftWindows with the drive configuration you have specified.

To Deassign a Floppy Disk Drive

To deassign a floppy disk drive, use the following procedure:

- Delete the device name from the text box labeled **Floppy Drive A: Device File Name** or **Floppy Drive B: Device File Name**, as appropriate. You might need system privileges.

Setting Up CD-ROM Drives

DEC SoftWindows allows you to read data CD-ROMs that are compatible with the Microsoft CD-ROM Extensions (MSCDEX) as MS–DOS drives.

The CD-ROMs can be read by MS–DOS commands, if appropriate, or by executing the relevant application programs (which are often on the CD-ROM itself).

To Set Up the CD-ROM Drive

To set up the CD-ROM drive, use the following procedure:

- From the **Options** menu, choose **Disk Drives**, then **Open Drive**.

  The **Open Disk Drives** dialog box shows the device assigned to the CD-ROM drive.

- Type the CD-ROM drive device name (DKA400:, for example) into the text box labeled **CD-ROM Device File Name**.

You can now use the CD-ROM with DEC SoftWindows. Refer to *Using CD-ROMs*, Chapter 2.

MS–DOS Configuration

The MS–DOS program USECD executes the following command to assign the CD-ROM to drive F:.

```
MSCDEX /D:CDROM$$$ /L:F
```

Include this line in your AUTOEXEC.BAT file if you want to use CD-ROMs each time you run DEC SoftWindows.

MSCDEX Options

The MSCDEX command accepts the following parameters:

Parameter	Function
/D: *device*	Specifies the device driver to be used. For DEC SoftWindows, it is CDROM$$$.
/M: *buffers*	Sets the number of buffers. The *buffers* parameter should be at least 5, but a larger value, such as 20, improves performance.
/E:	Uses Expanded memory if it is installed and available.
/V:	Displays additional information about memory usage during initialization.
/L: *drive*	Assigns the drive at the drive letter given, rather than the next available.

Setting Up the Display

DEC SoftWindows provides emulation of all the main PC display adapter types. The following table shows, in order of precedence, which display option to choose for your PC application, and which DEC SoftWindows display option to use:

For this PC option	Choose this setting
Super VGA, Video 7, VGA	VGA
EGA	EGA
CGA	CGA
Hercules	Hercules
Other	Try VGA first, then CGA.

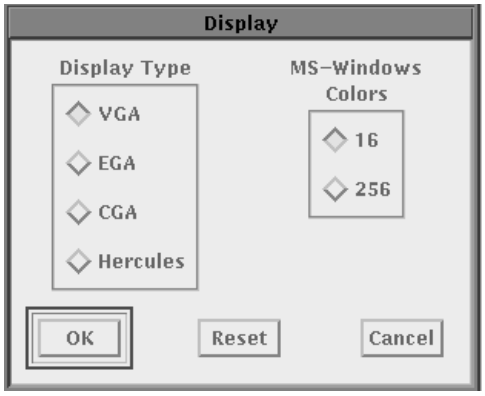
Digital recommends that you use the Hercules option if you have a monochrome display.

To Specify the Display Adapter

To specify the display adapter, use the following procedure:

- From the **Options** menu, choose **Display**.

  The following dialog box shows the display adapter currently selected:



- Choose the **Display Type** you want to use by clicking the appropriate button.
- Choose **OK** to reset DEC SoftWindows with the display settings you have chosen.

To Specify the Number of Colors for Windows

To specify the number of colors for windows, use the following procedure:

- Choose 16 or 256 in the **Display** dialog box.

  Selecting 16 leaves more colors free for your other applications. If only 16 colors are available, the 256 option is grayed out.

Windows Change Color

If you choose 256 colors, then all your OpenVMS windows will change color when you are using DEC SoftWindows. This is normal and is caused by the PC emulator loading the OpenVMS color map with a PC color map. Normal colors appear when you click back into the OpenVMS windows.

4

Printing, Input, and Output

PC applications use the COM1: to COM4: serial ports and the LPT1: to LPT3: parallel ports to communicate with external devices such as printers, modems, and data loggers. This chapter describes how to assign these ports to take advantage of the equivalent capabilities of the OpenVMS AXP workstation.

COM and LPT Port Options

When you install DEC SoftWindows, all the COM and LPT port options are undefined. Before you can perform any operations to these ports, you must explicitly define them using device and queue specifications that are valid for your site. This chapter explains how to use the DEC SoftWindows menus and dialog boxes to define the ports.

The COM and LPT port options are:

Port	Description
File	for output redirected to a specified file
Print Queue	for output sent to an OpenVMS print queue
DataComm	for input/output to the workstation serial port
Printer	for output connected to the workstation serial port
Plotter	for output to a plotter connected to the workstation serial port
None	for no device assigned

Flushing Output to a File

The PC print environment differs from the OpenVMS print environment. PCs do not always print an entire file—sometimes a portion of the file remains in a buffer. So after sending date from

a DEC SoftWindows COM or LPT port out to a file, you need to flush the output to ensure that the last partial buffer of data has been sent.

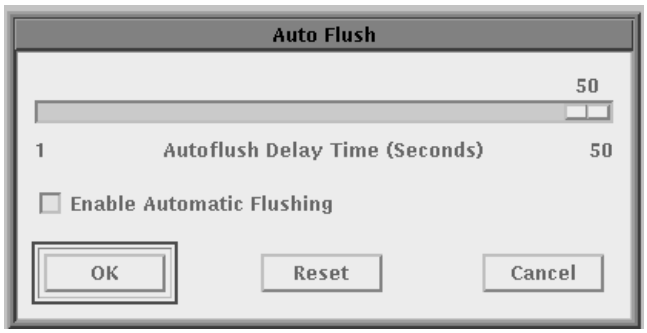
DEC SoftWindows allows you to flush output either automatically or manually. The Auto Flush option flushes the buffer automatically a specified time after the last activity on the port. Alternatively, you can flush output from a port manually when you know that output has finished.

To Flush Output Automatically

To flush output automatically, use the following procedure:

- From the **Options** menu, choose **Auto Flush.**

  The following dialog box then appears:



- Check that the **Enable Automatic Flushing** box is selected.
- Set the required delay either by moving the **Autoflush Delay** slider until the field shows the value you want or by typing the value into the box. You can set any autoflush delay from 1 to 50 seconds.

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

To Flush Output Manually

To flush output manually, use the following procedure:

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

  A cascade menu then appears, allowing you to select which ports to flush.
- Either choose **All** to flush all ports or choose the specific port you want to flush.
- Choose **Flush** after sending data out with the Pipe option to a COM or LPT port.

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

Printing from PC Applications

DEC SoftWindows provides two printing options:

- DEC SoftWindows can use the standard print spooler to print to a local or a network printer.
- DEC SoftWindows can drive a PC printer directly connected to a serial port so that your application can print directly to it.

The best option to select depends on your printer and the printers supported by the PC application.

You then need to:

- Set up the PC application to print to the type of printer you are going to use.
- Set up DEC SoftWindows to provide the appropriate printer emulation.

How you configure MS–DOS applications depends on the application. For Windows applications use the Print Manager.

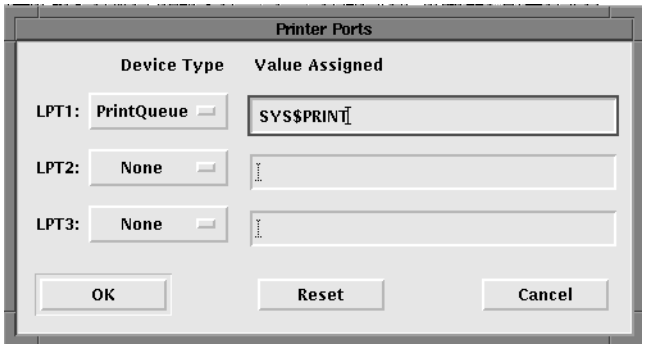
Note that additional information about printing from Windows is provided in the file C:\WINDOWS\PRINTERS.WRI.

To Print to the OpenVMS Printer

To print to the OpenVMS printer, use the following procedure:

- From the **Options** menu, choose **COM/LPT Ports**.
- From the **COM/LPT Ports** cascade menu, choose **Printer Ports**.

  The **Printer Ports** dialog box then appears:



- Choose **Print Queue** from the **LPT1:** popup menu. Note that **SYS$PRINT** is the default setting, which sends output to the local print spooler.
- Check that **Enable Automatic Flushing** is set in the **Auto Flush** dialog box.

To Print to a Serial Printer with Default Settings

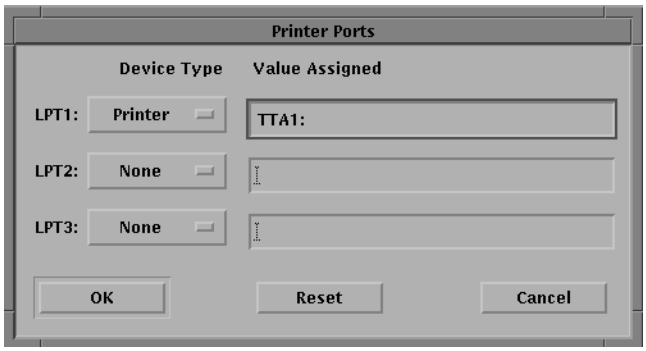
You can print from an LPT port to a serial printer with the following fixed communications settings:

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

To print to a serial printer with default settings, use the following procedure:

- Connect the printer to the serial port.
- From the **Options** menu, select **COM/LPT Ports**.
- From the **COM/LPT Ports** cascade menu, select **Printer Ports**.

  The **Printer Ports** dialog box then appears.



- Select the **Printer** option from the LPT1: popup menu. By default this selection sends output to one of the serial ports. Depending on which port you are using, you may need to change this selection.

To Print to a Serial Printer With Selectable Settings

If you need to use communications settings other than the defaults, set a COM port to **Printer** and use the MODE command to set the communications parameters. For example, the command

```
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 DEC SoftWindows.

Redirecting to a File

You can redirect all output from a specified port to a file in the OpenVMS file system. Redirecting output from DEC SoftWindows to a file is a useful way of debugging problems with printing. The file can then be printed externally to DEC SoftWindows.

Note

Your VMS editor will not be able to read the print file if it is in DOS format. In this case, you need to use the SOFTWINDOWS/DOS_TO_VMS command to convert the file and adjust the carriage returns and line feeds. For details, see *Sharing and Using Text Files in OpenVMS and MS–DOS*, Chapter 3, or type

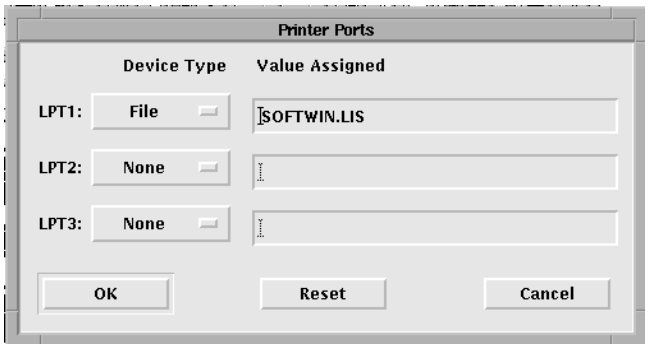
```
$ HELP SOFTWINDOWS
```

To Redirect Output to a File

To redirect output to a file, use the following procedure:

- From the **Options** menu, choose **COM/LPT Ports**.
- From the **COM/LPT Ports** cascade menu, choose **Printer Ports** or **Comm Ports**, depending on whether you want to redirect an LPT or COM port.

  Either the **Printer Ports** or **Comm Ports** dialog box then appears:



- Choose **File** from the popup menu corresponding to the port you want to redirect.
- Either use the default, the filename SOFTWIN.LIS in your home directory or enter the filename you want to use. If the file already exists the output will be appended to it.
- Check that **Enable Automatic Flushing** is set in the **Auto Flush** dialog box to flush output to the file; refer to *Flushing output to a file*, earlier in this chapter.

Serial Input and Output

Using the **DataComm** option, you can attach a COM port with selectable serial parameters to either of the serial ports for input and output. This option is intended to be used for communications packages that provide their own handshaking.

The following serial baud rate parameters are supported:

50	75
110	134.5
150	300
600	1200
1800	2400
4800	9600

The following combinations are supported:

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 AUTOEXEC.BAT file:

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

This command gives the following communications settings: 9600 baud, no parity, 8 data bits, and 1 stop bit.

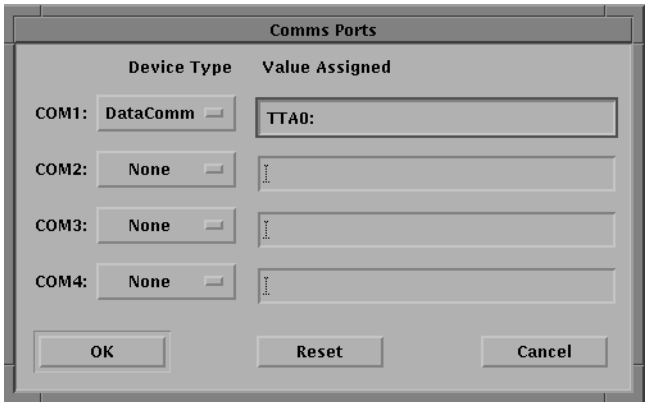
Issue another MODE command to change these settings.

To Use Serial Input and Output

To use serial input and output, use the following procedure:

- Connect the serial device to the workstation's serial port.
- From the **Options** menu, select **COM/LPT Ports**.
- From the **COM/LPT Ports** cascade menu, choose **Comm Ports**.

  The **Comms Ports** dialog box then appears:



- Choose **DataComm** from the **COM1:** popup menu, then enter the appropriate device name for the port you want to use. If necessary, ask your system administrator for the name of that device.

Serial Port Emulation

DEC SoftWindows uses facilities provided by the OpenVMS terminal device drivers to determine the state of the serial port. This means that the PC/AT serial port cannot be fully emulated, although most devices and packages designed to operate with it work equally well on DEC SoftWindows.

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

- **DSR (Data Set Ready)**—The DSR signal 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 DEC SoftWindows. Therefore DEC SoftWindows cannot support hardware handshaking; you should use XON/XOFF software handshaking instead.
- **RI (Ring Indicator)**— The RI modem input signal cannot be detected; the software forces it off.
- **Input Errors**— The occurrence of input overrun and framing errors in the hardware or an input break condition cannot be detected.

Recommendations for Using Serial Ports

The following recommendations apply if you are either choosing a package to run under DEC SoftWindows on the OpenVMS workstation or developing software that uses the serial ports for communication.

- You should normally use 4800 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, rather than polled data transfer is preferable. When DEC SoftWindows receives data from an external source with XON/XOFF data flow control, the program running on DEC SoftWindows may have problems. This is due to host buffering of input data preventing the program from responding quickly enough to XOFF signals.

5
Networking

This chapter describes the SoftNode networking features built into DEC SoftWindows and describes how to install the following network packages:

- Novell Netware
- Microsoft LAN Manager
- Banyan Vines
- Novell LAN Manager for DOS

The chapter also discusses using TCP/IP and Ethernet frame types.

What is SoftNode?

SoftNode is the name given to the portion of DEC SoftWindows that implements networking functionality. This module makes it possible to run standard PC networking software such as Novell NetWare and Microsoft LAN Manager on DEC SoftWindows.

In technical terms, SoftNode is an ODI-compliant network driver. This means that it effectively emulates a network card, the interface to which is Novell's ODI standard.

Compatibility

Since SoftNode is an ODI driver, it is theoretically compatible with any ODI-compliant network software. It is also compatible with any NDIS-compliant software, using Novell's NDIS-to-ODI converter program, ODINSUP. However, due to the limitations of some manufacturers' network facilities, it is impossible to provide identical functionality on all ports.

TCP/IP Connectivity

SoftNode attempts to handle TCP/IP packets exactly like other packets. Where possible, SoftNode is compatible with any ODI or NDIS-based TCP/IP package, such as Novell LAN Workplace for DOS or Sun PCNFS. Unfortunately, not all versions of Unix can deal with TCP/IP packets at a low enough level. To provide some TCP/IP connectivity for these ports, Insignia produced a TSR program called ISTCPIP, which implements the API for Novell LAN Workplace for DOS applications.

Supported Network Software

Table 5–1 lists the network software packages with which SoftNode has been tested successfully. Note that the table does not include a complete list of ODI- and NDIS-compliant applications.

Table 5–1 Supported Network Software

Ports		Network Software Packages
All Ports	support	Novell NetWare 3.x and 4.x Banyan Vines
OpenVMS Alpha AXP, Sun (SunOS and Solaris), and SGI(Irix)	support	Microsoft LAN manager Novell LAN Workplace for DOS Sun PCNFS FTP PC/TCP Wollongong Pathway
IBM RS/6000 (AIX)	supports	Microsoft LAN manager 2.x Novell LAN Workplace for DOS[1]
HP PA-RISC (HP-UX)	supports	Novell LAN Workplace for DOS[1]

[1]The relevant operating system cannot support TCP/IP directly. Novell LAN Workplace TCP/IP support is provided by the Insignia ISTCPIP program.

Configuring SoftNode

SoftNode is an ODI driver, so its configuration is driven entirely from the file ENET.CFG, which is normally located in the root directory of the boot drive. This file is the master configuration file for the ODI system and contains sections which relate to different parts of the system.

For example, the Link Support section contains configuration information for the Link Support Layer, which handles communication between the component parts of the system. The Link Driver section contains configuration information pertaining to the driver itself, specifying the frame types and protocols which are to be used. A sample Link Driver section follows:

```
Link Driver ETHERSPC
 Frame Ethernet_II
 Frame Ethernet_802.3
 Frame Ethernet_802.2
 Frame Ethernet_SNAP
 Protocol IPX 8137 Ethernet_II
```

The Frame lines in this Link Driver section allow all four Ethernet frame types to be used with the driver. This means that the driver can transmit and receive frames of the four most common hardware packets. Note that the order of the lines is significant. Insignia recommends that all SoftNode Link Driver sections include these four lines. A configuration like this prevents Frame and Protocol mismatches from occurring and makes configuring for both ODI and NDIS identical.

A Link Driver section set up to transmit and receive Banyan Vines packets would resemble the following:

```
Link Driver ETHERSPC
 Frame Ethernet_II
 Frame Ethernet_802.3
 Frame Ethernet_802.2
 Frame Ethernet_SNAP
 Protocol Vines BAD Ethernet_II
```

The Protocol line in this Link Driver section enables the driver to transmit and receive Ethernet II format frames with a protocol IDF of 8137 hex. This protocol ID is the one assigned for the IPX protocol; the IPX in the Protocol line is merely descriptive. The IPX protocol is unique because it can be configured to run over any frame type, most other protocols run only over a single static frame type.

Table 5–2 lists protocols used by the currently tested applications, their protocol IDs, and the frame types over which they can run:

Table 5–2 Protocols Used by Applications

Application	Protocol	Protocol ID	Frame Type
NetWare	IPX	0	Ethernet_802.3
NetWare	IPX	E0	Ethernet_802.2
NetWare	IPX	8137	Ethernet_SNAP
NetWare	IPX	8137	Ethernet_II
TCP/IP	IP	800	Ethernet_II
TCP/IP	ARP	806	Ethernet_II
Vines	Vines	BAD	Ethernet_II
LAN Manager	SMB	FO	Ethernet_802.2

Table 5–3 lists the network packages that run on the OSF/1 and OpenVMS AXP operating systems.

Table 5–3 Network Packages on OSF/1 and OpenVMS Systems

DOS	OSF/1	OpenVMS
DECnet[1]	Yes[2]	Yes[2]
IPX	Yes	Yes
TCP/IP	Yes	Yes, if not using UCX.
NETBIOS	Yes	Yes
LANMAN	Yes	Yes
Vines	Yes	Yes
Winsockets	Yes	Yes, if not using UCX.

[1]You cannot run Pathworks under DOS over DECnet if you are running DECnet with either OSF/1 or OpenVMS. You can, however, run Pathworks over NetBEUEI or TCP.

[2]Unless DECnet is already in use on that system. This is likely with OpenVMS.

Using Novell NetWare

A NetWare 3.11 client is standard on every hard disk file created by DEC SoftWindows. Therefore, since NetWare runs over the IPX protocol, installation first involves matching IPX frame types with those configured on the server and then loading the appropriate software.

To Load the NetWare Client Software

To load the NetWare Client software and connect to the NetWare server, type the following commands:

```
C:\> LSL Return
C:\> ETHERSPC Return
C:\> IPXODI Return
C:\> NETX Return
```

The server's login directory should appear on the drive letter immediately following that specified in the LASTDRIVE line in your CONFIG.SYS file (usually L:).

Then type the following commands:

```
C:\> L Return
C:\> LOGIN Return
```

After entering your login name and password correctly, you have full access to the server.

Example:

The following example compiles the kernel using the packet filter option. The frame type used is ETHERNET_II.

Sample net.cfg:

```
; Lines beginning with a ; are comments.
;
Link Support
 MemPool 4096

Link Driver EtherSPC
;       Default frame type.     Don't need to set protocol number.
;       Frame ETHERNET_802.3
;       Protocol IPX 0 ETHERNET_802.3
```

```
;       Frame used by NetWare 286 after running ECONFIG
 Frame ETHERNET_II
 Protocol IPX 8137 ETHERNET_II
;
;       Netware386 packet type 3
;       Frame ETHERNET_SNAP
;       Protocol IPX 8137 ETHERNET_SNAP
;
;       Netware386 packet type 4
;       Frame ETHERNET_802.2
;       Protocol IPX e0 ETHERNET_802.2
;
;       TCPIP configuration
;       Frame ETHERNET_II
 Protocol ARP 806 ETHERNET_II
 Protocol IP 800 ETHERNET_II
```

Using Microsoft LAN Manager

LAN Manager client software must be installed from the standard distribution floppy disks. This section describes how to install the LAN Manager. The description takes into account that LAN Manager runs over NDIS.

Step 1: Editing the CONFIG.SYS File

You need to edit the CONFIG.SYS file created by the DEC SoftWindows hard disk creation facility to enable the hard disk to communicate properly with LAN Manager:

- Because the LAN Manager MS–DOS redirector, PROTMAN.DOS, conflicts with the DEC SoftWindows FSA redirector, HOST.SYS, you must remove the line that loads the HOST.SYS file before installing LAN manager. Remove or comment out the following line in the CONFIG.SYS file:

  ```
  DEVICE=C:\INSIGNIA\HOST.SYS
  ```

  Then restore FSA functionality by adding the following line to the AUTOEXEC.BAT file:

  ```
  DEVLOD C:\INSIGNIA\HOST.SYS
  ```

- To give LAN Manager more space to assign drive letters, you must alter the LASTDRIVE value by changing the value assigned to LASTDRIVE in the CONFIG.SYS file, for example:

  ```
  LASTDRIVE=Z
  ```

Step 2: Installing LAN Manager

Install LAN Manager from the distribution floppies. When the installation procedure asks for the name of an Ethernet driver, pick any on the list. The driver you select will be replaced by the DEC SoftWindows ODI driver. Insignia recommends that you do not allow the procedure to modify your AUTOEXEC.BAT and CONFIG.SYS files, which would cause errors during the next boot.

Step 3: Configuring the Protocol Manager

To correctly configure the Protocol Manager, ensure that the CONFIG.SYS file includes the following line :

```
DEVICE=C:\LANMAN.DOS\DRIVERS\PROTMAN.DOS
/I:C:\LANMAN.DOS
```

The directory LANMAN.DOS is the default installation directory for LAN manager files. If you ask the installation procedure to install to a different directory, you must replace LANMAN.DOS with the name of this directory as shown in the example above.

To inform LAN Manager that you will use the DEC SoftWindows network driver rather than the one specified in the installation procedure, change the BINDINGS line in the [NETBEUI_XIF] section of the PROTOCOL.INI file in the installation directory to:

```
BINDINGS = ETHERSPC
```

Note that the name of the of this section may change if you intend to run LAN Manager over a protocol other than NetBEUI.

Step 4: Rebooting DEC SoftWindows

At this point, reboot DEC SoftWindows to implement the changes to the CONFIG.SYS file that you have just made.

Step 5: Configuring SoftNode

Normally LAN Manager runs over the NetBEUI protocol. This in turn runs over the lower level SMB protocol, which is based on Ethernet 802.2 frames with a protocol ID of F0 (hex). Thus, using the information given earlier, the LinkDriver section of the NET.CFG file should be:

```
Link Driver EtherSPC
 Frame Ethernet_II
 Frame Ethernet_802.3
 Frame Ethernet_802.2
 Frame Ethernet_SNAP
 Protocol SMB F0 Ethernet_802.2
```

If you wish to run LAN Manager over a different protocol, for example, TCP/IP, refer to *Configuring SoftNode*, earlier in this chapter, for appropriate frame types and protocol IDs.

Step 6: Loading the ODI System

To load the component parts of the ODI system, including the Link Support Layer, ODI driver, and NDIS-to-ODI converter, type the following lines.

```
LSL Return
ETHERSPC Return
ODINSUP Return
```

Step 7: Loading LAN Manager Client

The loading order of the various programs that comprise the LAN Manager client can change between different versions of the client. Insignia recommends that you consult the LAN Manager documentation, or the modified AUTOEXEC.BAT file that was kept aside after the installation, for exact details.

For LAN Manager client V2.1, the command sequence follows:

```
NET START WORKSTATION
LOAD NETBEUI
```

Step 8: Accessing the Network

Log on to the network and access LAN Manager volumes using the following standard commands:

```
NET LOGON user
NET USE drive letter: \\server\volume
```

Using Banyan Vines

Load Banyan Vines from the floppy disks onto the C drive in directory BAN50. Like LAN Manager, Banyan Vines runs over NDIS. This section describes the procedures for installing Banyan Vines.

Step 1: Changing NET.CFG

Change \ novell \ net.cfg to include the following lines:

```
Link Driver ETHERSPC
        Frame ETHERNET_802.3
        Frame ETHERNET_802.2
        Frame ETHERNET_II
        Frame ETHERNET_SNAP
        Protocol BANYAN BAD ETHERNET_II
Protocol ODINSUP
        Bind ETHERSPC
```

Step 2: Changing CONFIG.SYS

If necessary change the CONFIG.SYS file to ensure that the following line is included:

```
device=c:\ban50\protman.dos /i:c:\ban50
```

Step 3: Creating a PROTOCOL.INI File

Create a PROTOCOL.INI file in the directory BAN50 as follows:

```
[protocol manager]
    drivername=PROTMAN$
[VINES_XIF]
    DRIVERNAME=NDISBAN$
    BINDINGS=ETHERSPC
```

Step 4: Loading the ODI System

Start NOVEL using the following commands:

```
LSL Return
ETHERSPC Return
ODINSUP Return
```

Step 5: Running the PCCONFIG Utility

Run PCCONFIG in BAN50 to configure the interface as follows:

- Select "Network Card Settings".
- Choose "NDIS Ethernet".
- Set the INTERRUPT to 10 and BINDING to ETHERSPC.
- Press F10 twice to return to the main menu.
- Choose option 2, "Login Environment Settings".
- Choose "NDIS Ethernet".
- Press F10 until PCCONFIG saves the changes and returns to DOS.

Now restart DEC SoftWindows.

Step 6: Starting Vines

At the C:\> prompt, enter the following commands to start Banyan Vines:

```
C:\> LSL Return
C:\> ETHERSPC Return
C:\> ODINSUP Return
C:\> CD \BAN50 Return
C:\> BAN /NC Return
```

(Ignore the "no network interface enabled".)

```
C:\> NDISBAN Return
C:\> NETBIND Return
C:\> ARSWAIT Return
C:\> REDIRALL Return
```

Step 7: Accessing the Network

Login to the server using the following command:

```
Z:LOGIN Return
```

Using Novell LAN Workplace for DOS

Novell LAN Workplace is an industry standard PC implementation of TCP/IP based on ODI. Therefore, the default installation procedure should suffice to set up DEC SoftWindows.

Step 1: Install LAN Workplace

The LAN Workplace installation procedure asks several questions to correctly configure the workstation. Make sure that you have the following information before you begin the installation. Ask your system administrator for information about your network.

- A unique IP number (not the IP number of the host workstation)
- Your network's subnet mask
- The IP number of your DNS server(s)
- The IP numbers of your IP gateways and routers
- Whether or not your network uses the ARP protocol to resolve names
- Whether or not your workstation will remote boot from another machine

Step 2: Configure SoftNode

After installation, verify that the correct Frame and Protocol lines for the IP and ARP protocols are present in the Link Driver section of the NET.CFG file.

The following section should contain at least the following:

```
Link Driver ETHERSPC
 Frame Ethernet_II
 Protocol IP 800 Ethernet_II
 Protocol ARP 806 Ethernet_II
```

Step 3: Load the ODI System

Load the ODI system, including the Link Support Layer and the ODI driver, by typing:

```
LSL Return
ETHERSPC Return
```

Step 4: Load the TCP/IP Stack

Load the LAN Workplace TCP/IP module by typing:

```
TCPIP Return
```

When loaded successfully, this program displays its configuration, which it reads from the NET.CFG file. Check that the details are correct and that the protocol is registered to run over the Ethernet II frame type.

Step 5: Use TCP/IP Applications

You should be able to use the MS–DOS and Windows applications provided with the LAN Workplace package. For example, type:

```
PING hostname Return
FTP hostname Return
TNVT220 hostname Return
```

Additional Information

Using Other Versions of TCP/IP

There are several other implementations of TCP/IP for the PC, most of which have been tested successfully with DEC SoftWindows. Although these packages have different installation procedures, basically they all send and receive the same packets. Since the actual SoftNode Configuration of these packages is identical, IP and ARP protocols over the Ethernet II frame type should be enabled.

Some packages require that an IRQ number be set for the driver. If an installation procedure asks for this information, use IRQ number 10 (decimal).

Ethernet Frame Types

Ethernet II

This is the frame type normally used for TCP/IP packets. It can also be configured for IPX packets.

You can distinguish this frame type from the 802.2 and 802.3 frame types because the the 2 byte field following the hardware addresses must be greater than the maximum Ethernet packet size (1514 decimal). The format follows:

- Destination Ethernet Hardware Address
- Source Ethernet Hardware Address
- Protocol Number (for example, 8137 for IPX)

Ethernet 802.2

This is also known as the Ethernet 802.3 with 802.2 envelope frame type. It is the usual format used by SMB packets, however it can be used to transport IPX packets. With the advent of NetWare 4.X, this is the new default frame type for ODI drivers.

You can distinguish this frame type from the Ethernet II frame type because the 2 byte field following the hardware addresses must be less than or equal to the maximum Ethernet packet size (1514 decimal). The format follows:

- Destination Ethernet Hardware Address
- Source Ethernet Hardware Address
- Packet Length (0-1514 bytes)

- Destination SAP (such as E0 for IPX)
- Source SAP (such as E0 for IPX)
- Control Byte

Ethernet 802.3

This is the original frame type for IPX, developed by Novell but not recognized as an official frame type by the IEEE. This frame type requires the IPX checksum field be hardwired to ff:ff hex to be recognized so it cannot be used with IPX checksumming enabled. Therefore, it is being phased out by Novell. The format follows:

- Destination Ethernet Hardware Address
- Source Ethernet Hardware Address
- Packet Length (0-1514 bytes)
- Checksum of IPX Packet Header (ff:ff hex)

Ethernet SNAP

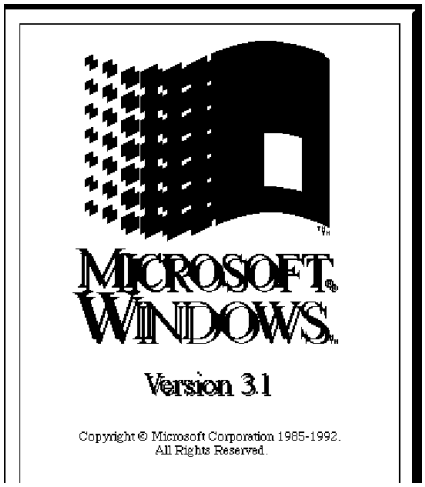
This is the frame type normally used by AppleTalk packets, however it can be used to transport IPX packets. You can distinguish this frame type from the Ethernet 802.2 frame type by the distinctive SSAP, DSAP and Control values in its 802.2 headers. The format follows:

- Destination Ethernet Hardware Address
- Source Ethernet Hardware Address
- Packet Length (0-1514 bytes)
- Destination SAP of AA hex
- Source SAP of AA hex
- Contrtol Byte of 03 hex
- Protocol Number (such as 0:0:0:81:37 hex for IPX)

6

Setting up Windows

This chapter describes how to set up the Windows screen, how to install and use Windows applications, and how to install printer drivers, keyboard drivers, and fonts.



For more detailed information about Microsoft Windows refer to the *Microsoft Windows User's Guide and User's Reference.*

Setting Up Memory

To run Windows you need at least 2 Mbyte of Main memory. The performance of Windows improves with additional Extended memory up to a certain point. Windows does not benefit from Expanded memory, however, so Digital recommends that you set it to 0 Mbyte.

Note

Do not allocate excessive memory. Excessive memory reduces the performance of your workstation and other OpenVMS programs. The default amount of memory, 4 Mbyte, is the recommended setting, but you may wish to experiment with different settings for better results.

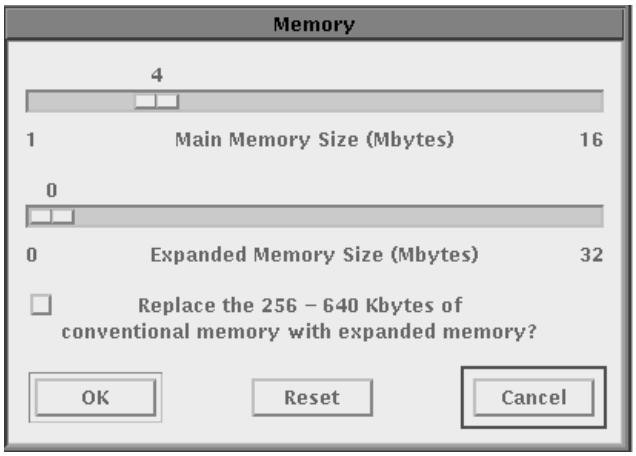
For more information about PC memory, refer to *Setting Up Memory*, Chapter 4.

To Change the PC Memory

To change the PC memory, use the following procedure:

- On the **Options** menu choose **Memory**.

  The dialog box shows the current size set for each type of PC memory, **Main** (Extended), and **Expanded**, and allows you to change it.



- Select the amount of Extended memory to allocate using the **Main** slider.
- Click **OK** to confirm the changes.

If you have changed the memory settings, a dialog box will be displayed to allow you to restart DEC SoftWindows.

Installing Printer Drivers, Keyboard Drivers, and Fonts

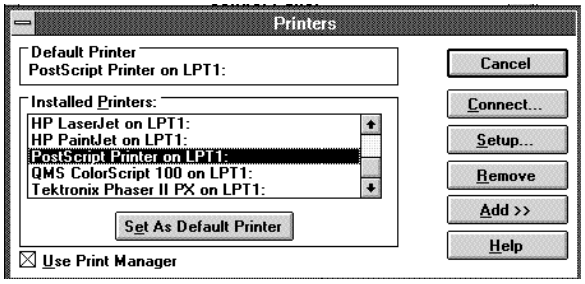
This section describes how to use the Windows Control Panel to select a different printer driver, how to install additional printer drivers or fonts, and how to change the keyboard layout. DEC SoftWindows comes with a selection of printer drivers, all the standard Windows fonts already installed, and the keyboard set up to use a US keyboard layout.

To Select a Printer Driver

To select a printer driver, use the following procedure:

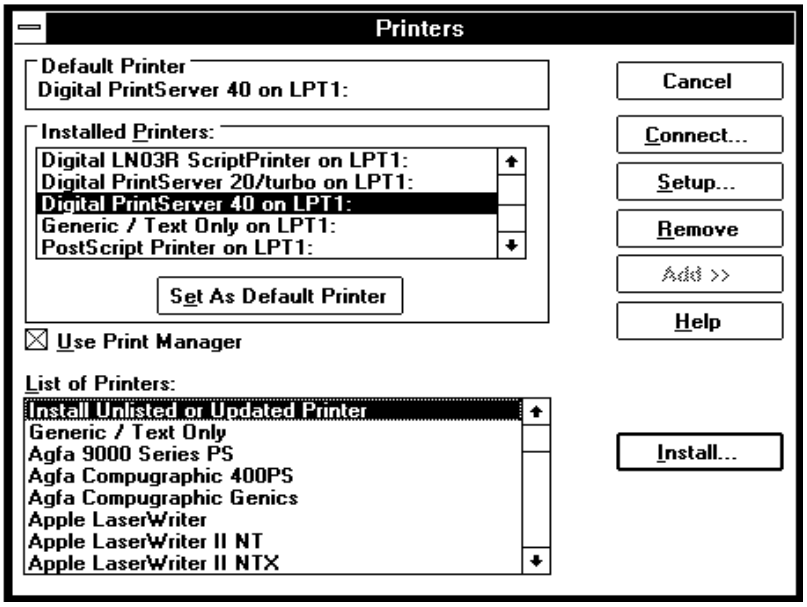
- Double-click on the **Control Panel Icon** in the **Main Window**.
- Double-click on **Printers** in the **Control Panel** window.

  The **Printers** dialog box appears, showing the currently selected default printer, and the list of installed printers.



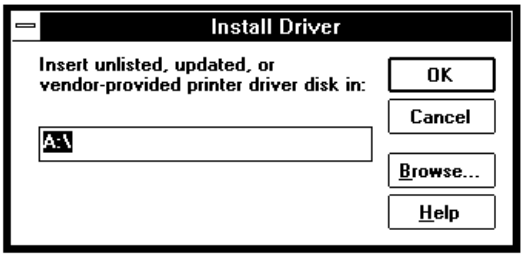
- Choose the printer you want to use in the **Installed Printers** list, and choose **Set As Default Printer**.

  DEC SoftWindows has several printer drivers that you can install.
- If the printer you want to use is not installed, choose **Add** to list the available printer drivers in the following dialog box:



- If your printer driver is on the list, select the printer driver you want to add and choose **Install.**

  If necessary, the following dialog box appears to allow you to locate the printer driver:



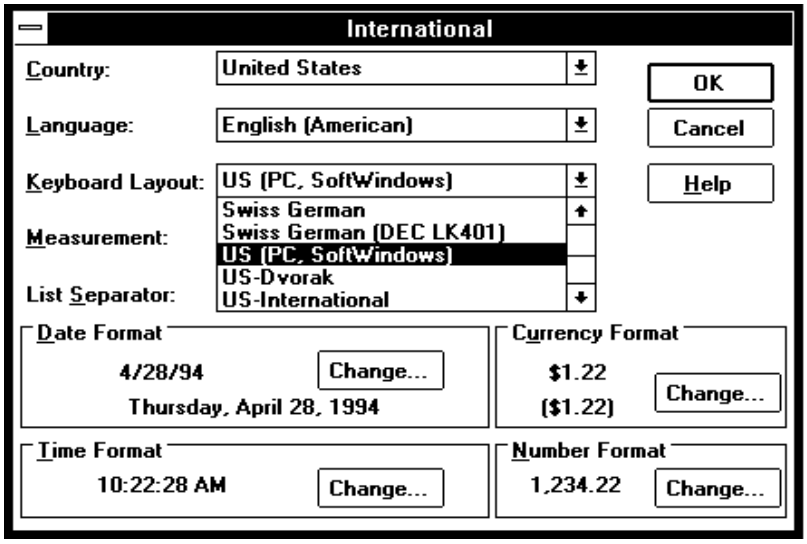
- Enter G:\ and choose **OK.** Note that MS-Windows is supplied on the G: drive.
- Choose **Close** to close the **Printers** dialog box.

To Change the Keyboard

To change the keyboard layout, use the following procedure:

- Double-click **International** in the **Control Panel** window.

  The **International** dialog box appears.
- Choose the down arrow to open the **Keyboard Layout** drop-down list box, and select the layout you require.



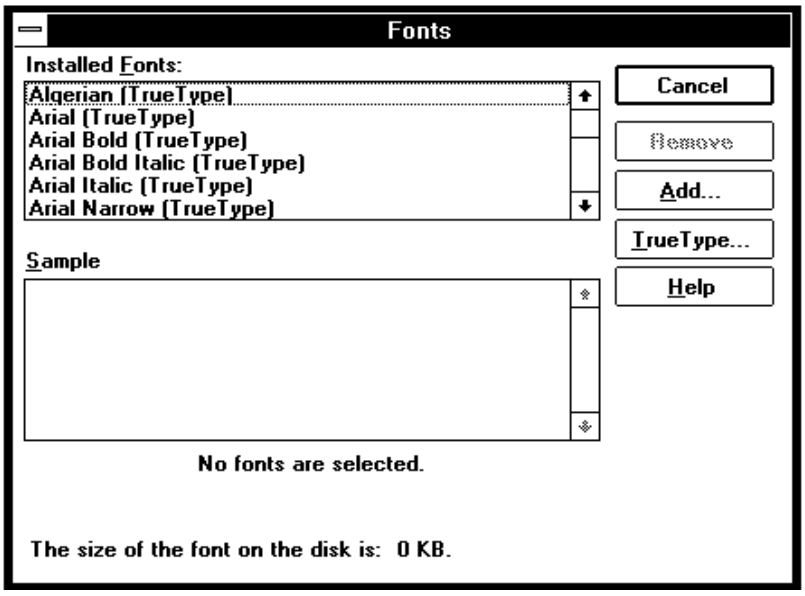
- Choose **OK** to use the new layout.

To Add Fonts

To add fonts, use the following procedure:

- Double-click **Fonts** in the **Control Panel** window:

  The **Fonts** dialog box lists the fonts installed for use by Windows.



- Choose **Add** to install additional fonts.

  The **Add Fonts** dialog box appears.
- Open the **Drives** list, and select the G: drive.

  The List of Fonts box shows the available fonts.
- Select the fonts you want to add, and choose **OK.**
- Choose **Close** to exit from the **Fonts** dialog box.

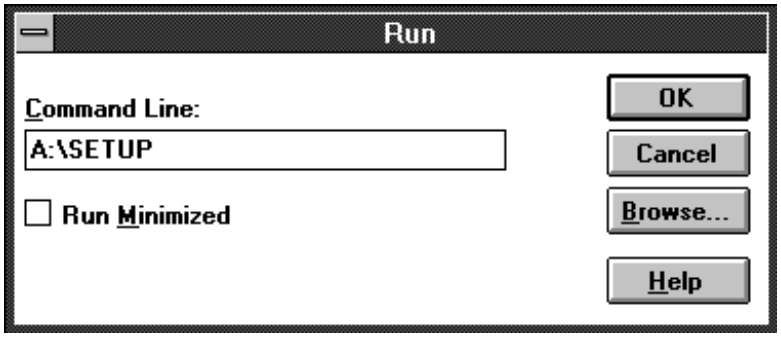
Installing and Running Windows Applications

Most Windows applications are installed using an installer program typically called SETUP or INSTALL. With DEC SoftWindows you can install Windows applications just as you would on a PC.

To Install a Windows Application

To install a Windows application, use the following procedure:

- Check that the floppy disk drive is set up as A:. Refer to *Using Floppy Disks*, Chapter 4.
- From the Program Manager **File** menu, choose **Run**.
- Follow the instructions for your application. A typical example follows:
- Type A:\SETUP, for example, and choose **OK**.



As the installation proceeds, a series of dialog boxes similar to the one shown below prompts you for information needed for the installation.

To Run a Windows Application

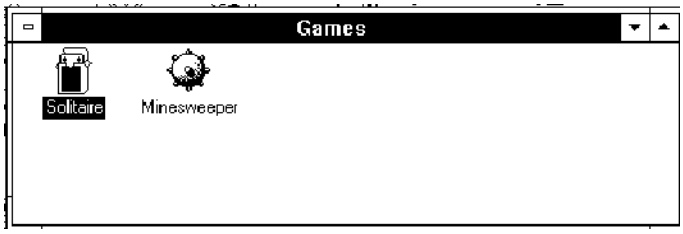
To run a Windows application, use the following procedure:

- Double-click the application icon in the appropriate program group.

  For example, to run Solitaire, supplied with Windows, proceed as follows:

- Double-click the Games program group icon, to open it:

- Double-click the Solitaire icon, to run Solitaire.



7

Using MS–DOS

This chapter describes the MS–DOS operating system and explains how to take advantage of the most useful MS–DOS features.

About MS–DOS

DEC SoftWindows includes MS–DOS version 6.21. As with earlier versions of MS–DOS, you give commands to the computer by typing instructions at the MS–DOS C:\> prompt.

Using the MS–DOS Editor

MS–DOS 6.21 includes the MS–DOS Editor, a simple screen editor with which you create, edit, and print plain text files. The editor includes menu commands and you can also edit text using the mouse. The editor is particularly useful for editing MS–DOS batch programs and files such as AUTOEXEC.BAT and CONFIG.SYS.

MS–DOS 6.21 also includes EDLIN, the less powerful line editor provided with earlier versions of MS–DOS.

To Run the MS–DOS Editor from the MS–DOS Prompt

To run the MS–DOS Editor:

- Type:

  `EDIT` *`filename`* Return

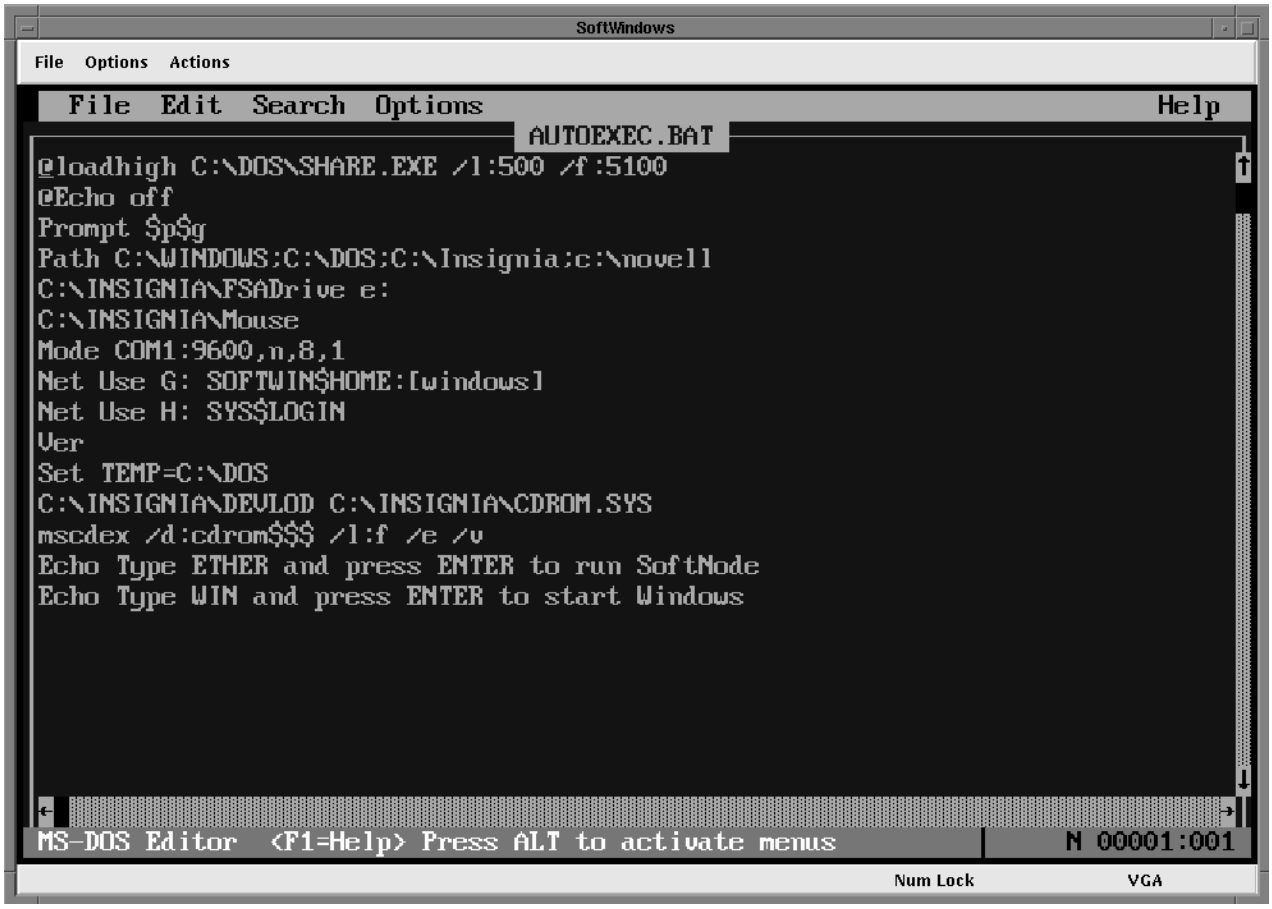
  where *filename* is the name of the file you want to edit. Omit the filename to create a new file.

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

```
EDIT AUTOEXEC.BAT Return
```

Figure 7–1 shows the file as it appears in the MS–DOS Editor window.

Figure 7–1 MS–DOS Editor Window



To Edit the File

To edit the file:

- Position the cursor either by using the arrow keys or by clicking with the mouse.
- Type to insert text at the cursor.

To Cut, Copy, and Paste Text

To cut, copy, and paste text:

- Drag to select the text you want to cut or copy.
- Use the **Cut, Copy, Paste,** and **Clear** functions from the MS–DOS Editor's **Edit** menu in exactly the same way as you would use the equivalent functions in X Windows applications.

To Delete Text

To delete text:

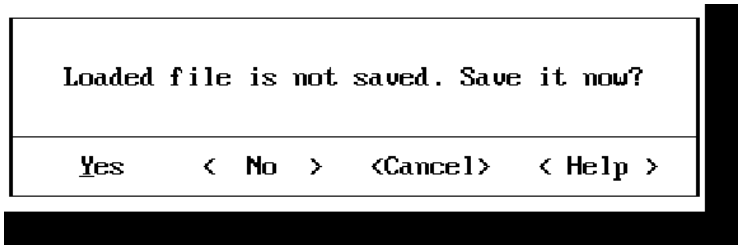
- Drag to select the text you want to delete.
- Either press Delete or type the text you want to replace it.

To Exit from the MS–DOS Editor

To exit from the MS–DOS Editor:

- Choose **Exit** from the Editor's **File** menu.

  The dialog box shown below prompts you to save the file before exiting if you have made any changes to it.
- Either click **Yes** or press Return to save the changes and exit from the MS–DOS Editor.



Using MS–DOS Commands

With DEC SoftWindows, you enter MS–DOS commands at the MS–DOS prompt as you would on a real PC. This section briefly describes the following useful MS–DOS commands:

Getting Help
CD
COPY
DEL
DIR
FORMAT
HELP
MKDIR (MD)
PRINT
RMDIR (RD)
TYPE
XCOPY

Refer to an MS–DOS reference guide for more detailed information.

In the following command descriptions, italics indicate command arguments and square brackets indicate optional arguments.

Note that MS–DOS is not case-sensitive—it treats upper- and lower-case characters in the same way.

Getting Help

To display help about any command, type:

command /?

CD

Changes the current directory.

Syntax

CD [*path*]*directory*

Example

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

CD C:\LOTUS Return

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 Return

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 Return
```

DIR

Lists the files in a directory.

Syntax

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

The /W (keep) 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 Return
```

FORMAT

Formats a disk.

Syntax

FORMAT [*drive:*] [*/option*]

where *option* is either F:720, F:1.44, or F:2.88 as described in the following table:

To format	Give this command
3 1/2" double density	FORMAT A: /F:720 Return
3 1/2" high density	FORMAT A: /F:1.44 Return
3 1/2" extended density	FORMAT A: /F:2.88 Return

Note that you should only format double-density disks in the 720 Kbyte format, high-density disks in the 1.4 Mbyte format and extended-density in the 2.88 Mbyte format.

Note

You must use the VMS command INITIALIZE on a floppy disk before you can use the MS–DOS command to format it. For details, see *To Format a Floppy Disk*, Chapter 2.

A drive set up as a DEC 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 FORMAT command:

```
HELP FORMAT Return
```

MKDIR (MD)

Makes a subdirectory.

Syntax

MKDIR [*drive:*][*path*]*directory*

Example

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

```
MKDIR D:\PCAPPS Return
```

PRINT

Prints a text file to the printer.

Syntax

PRINT [*drive:*][*path*]*file*

Example

To print the file named TEXT.OUT from the WP subdirectory on your D: drive, type:

```
PRINT D:\WP\TEXT.OUT Return
```

Note that after typing in a PRINT command, you may see the message:

```
Enter the name of the list device [prn:]
```

Respond by pressing Return

RMDIR (RD)

Removes an empty directory.

Syntax

RMDIR [*drive:*][*path*]*directory*

Example

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

```
RMDIR D:\TEMP Return
```

TYPE

Displays the contents of a text file on the screen.

Syntax

TYPE [*drive:*][*path*]*file*

Example

To display the contents of the file TEXT.OUT from the WP subdirectory on your D: drive, type:

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

XCOPY

Copies files and directories, including their subdirectories.

Syntax

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

Example

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

```
XCOPY C:\*.* D: \S Return
```

Installing MS–DOS Applications

MS–DOS software is typically supplied on one or more floppy disks. To install the program, copy the files from these disks to your PC hard disk. For specific instructions, refer to the application's manual.

To simplify the installation process, most PC programs provide a batch file which automatically copies the files. This batch file is typically called SETUP.BAT or INSTALL.BAT. Run it by typing SETUP or INSTALL at the MS–DOS prompt.

To Install from 3 1\2" Disks

The simplest way to install PC software (if you have a floppy disk drive available) is to install directly from 3 1\2" installation disks.

A typical sequence follows:

- Set up the workstation's floppy disk drive as drive A: or B:; refer to *Setting Up Floppy Disk Drives*, Chapter 4. **A:** or **B:** appears in the DEC SoftWindows status bar, indicating that the drive is available to DEC SoftWindows. Now you can access the disk from DEC SoftWindows.
- Follow the instructions supplied with the software. For example, you may be instructed to type:

  `A:\SETUP` Return

If at any stage in the installation you need to change disks, refer to *To Eject a Floppy Disk*, Chapter 2. MS–DOS software is typically supplied on one or more floppy disks. To install the program, copy the files from these disks to your PC hard disk.

Installing From an FSA Drive

Instead of installing directly from 3 1\2" disks, you can copy the software from a PC to a directory on your workstation, over a network or a serial connection. Attach the directory to DEC SoftWindows as an FSA drive so that you can access the files from DEC SoftWindows, as described in *Setting Up FSA Drives*, Chapter 4. Then install from the files in this directory.

Note

Some installer programs assume you are installing from floppy disk. The files may not work correctly if you first copy them to a hard disk, then install from the hard disk.

Where to Install

The installation program typically gives you the option of where to install the files it is copying from the installation disks. You have the following options:

Install here	If
Drive C: or D: DEC SoftWindows hard disk file	You are sure that the files you are installing will fit on your DEC SoftWindows hard disk file, and that you do not need to access the files using other OpenVMS programs.
Drive E: to K: DEC SoftWindows FSA drive; refer to *Setting Up FSA Drives*, Chapter 4.	You are not sure how much space the software you are installing needs, and you may need to access the files using other OpenVMS programs.

Note

Some PC application installer programs will only install onto a hard disk. Some programs 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 application manual, and check the available hard disk space. For example, if you are installing to drive C:, type:

```
CHKDSK Return
```

at the C:\> prompt in DEC SoftWindows.

Note that 1048576 bytes = 1 Mbyte.

If you do not have enough space to install the application, refer to *Setting Up Drives*, Chapter 4, for details on how to create a larger hard disk.

The DEC SoftWindows hard disk files cannot be expanded because they emulate real PC hard disks which cannot change in size. To increase the size of the C: or D: drive, create a new and larger D: hard disk file, then copy your information from the old file to the new one using the XCOPY command; refer to the section *XCOPY*, earlier in this chapter, or *Creating a New Hard Disk*, Chapter 2.

8

DEC SoftWindows Configuration

This chapter describes the DEC SoftWindows system configuration file SWINCONFIG.INI and the MS–DOS configuration files CONFIG.SYS and AUTOEXEC.BAT.

SWINCONFIG.INI Configuration File

DEC SoftWindows configuration settings are stored in a configuration file named SWINCONFIG.INI in your home directory. They determine the settings in each of the **Options** menu dialog boxes. Any changes you make in these dialog boxes are saved in the configuration file when you exit from DEC SoftWindows with **Save Configuration Changes** checked.

You can also edit your DEC SoftWindows configuration file using an OpenVMS text editor such as EDT.

The System Defaults

The system configuration file SWINCONFIG.INI determines the initial DEC SoftWindows configuration. The file is installed into the DEC SoftWindows directory specified by the environment variable SOFTWIN$HOME. The system administrator can edit the system configuration file to set up a different initial configuration of DEC SoftWindows.

The system configuration file also contains entries that determine the default values for the LPT and COM port settings, the maximum hard disk drive and memory sizes, and the initial size of the Windows desktop.

Figure 8–1 is a complete listing of the SWINCONFIG.INI system configuration file.

Figure 8–1 SWINCONFIG.INI System Configuration File

```
DRIVE_C_FILE_NAME               SOFTWIN$HOME:MS-WIN-31.hdf
DRIVE_D_FILE_NAME
DRIVE_CDROM_DEVICE_NAME
DRIVE_FSA_ROOT_DIRECTORY        SYS$LOGIN
DRIVE_FLOPPY_A_DEVICE_NAME
DRIVE_FLOPPY_B_DEVICE_NAME
DISPLAY_GRAPHICS_ADAPTOR        VGA
DISPLAY_SIZE                    1.0
DISPLAY_MSWIN_WIDTH             640
DISPLAY_MSWIN_HEIGHT            480
DISPLAY_MSWIN_COLOURS           16
MEMORY_EXTENDED_SIZE            4
MEMORY_EXPANDED_SIZE            0
MEMORY_EXPANDED_BACK_FILL       No
LPT_PORT_1_TYPE
LPT_PORT_2_TYPE
LPT_PORT_3_TYPE
LPT_PORT_1
LPT_PORT_2
LPT_PORT_3
COM_PORT_1_TYPE
COM_PORT_2_TYPE
COM_PORT_3_TYPE
COM_PORT_4_TYPE
COM_PORT_1
COM_PORT_2
COM_PORT_3
COM_PORT_4
SOUND                           No
AUTO_FREEZE                     No
AUTO_FLUSH                      Yes
FPU_EMULATION                   Yes
AUTO_FLUSH_DELAY                50
KEYBOARD_MAP_FILE_NAME          SOFTWIN$HOME:[keyboard]DECus401.kbd
```

MS–DOS Configuration

The contents of the files AUTOEXEC.BAT (Figure 8–2) and CONFIG.SYS (Figure 8–3) determine the MS–DOS configuration.

Figure 8–2 AUTOEXEC.BAT Configuration File

```
@loadhigh C:\DOS\SHARE.EXE /l:500 /f:5100
@Echo off
Prompt $p$g
Path C:\WINDOWS;C:\DOS;C:\Insignia;c:\novell
C:\INSIGNIA\FSADrive e:
C:\INSIGNIA\Mouse
Mode COM1:9600,n,8,1
Net Use G: SOFTWIN$HOME:[windows]
Net Use H: SYS$LOGIN
Ver
Set TEMP=C:\DOS
C:\INSIGNIA\DEVLOD C:\INSIGNIA\CDROM.SYS
mscdex /d:cdrom$$$ /l:f /e /v
Echo Type ETHER and press ENTER to run SoftNode
Echo Type WIN and press ENTER to start Windows
```

Figure 8–3 CONFIG.SYS Configuration File

```
DEVICE=C:\DOS\SETVER.EXE
DEVICE=C:\DOS\HIMEM.SYS
DOS=HIGH,UMB
devicehigh=c:\insignia\cdrom.sys
FILES=30

DEVICE=C:\INSIGNIA\EM_DRVR.SYS
DEVICE=C:\INSIGNIA\HOST.SYS
LASTDRIVE=K

BUFFERS=15
STACKS=9,256
FCBS=20,20
DEVICE=C:\DOS\DISPLAY.SYS CON=(EGA,437,4)
```

9
Displaying Remotely

This chapter provides information about installing and setting up DEC SoftWindows on a second workstation.

To make DEC SoftWindows available to additional workstations, either install DEC SoftWindows on each workstation or set up DEC SoftWindows to display on a remote workstation. In either case, you need a license for each copy of DEC SoftWindows you want to run concurrently.

To Display DEC SoftWindows on a Remote Workstation

The procedure described in this section uses the following terms:

Term	Meaning
Local workstation	The system actually running the DEC SoftWindows software
Remote workstation	The system displaying DEC SoftWindows remotely. It can be either a workstation or some other X Windows device.

To display DEC SoftWindows on a remote workstation, use the following procedure:

- Make sure that the remote workstation has the SoftWindows fonts set up. The procedures for making the fonts available depend on the type of remote workstation or device.
- From the Session Manager **Options** menu on the remote workstation, select **Security**. In the **Security** dialog box, enter the user name, node, and transport (DECnet) of the local workstation from which DEC SoftWindows will run. This gives DEC SoftWindows permission to run on the remote workstation.
- From the remote workstation, use the SET HOST command to log onto the local workstation and account entered in the **Security** dialog box.

- Enter the following command to tell DEC SoftWindows which node to display on:

  ```
  SET DISPLAY/CREATE/NODE=node
  ```

  where *node* is the node name of the remote workstation.

- Enter the command:

  ```
  softwindows
  ```

  DEC SoftWindows starts up on the remote workstation if the preceding steps have been successful. Refer to *Using Windows*, Chapter 2.

- If the remote workstation is different from the local system, you may want to tailor the remote environment by editing the SWINCONFIG.INI configuration file after starting up DEC SoftWindows at least once. (The configuration file for each user doesn't exist until then.) For example, if the keyboard at the remote workstation is different, it may not work properly unless you set up the correct keyboard mapping file. You can tailor all the parameters in the configuration file as necessary (screen size, colors, disk files, and so on.) Otherwise, the remote user can tailor the environment using the DEC SoftWindows **Options** menu.

10
Troubleshooting

This chapter suggests solutions to problems that you may encounter when running PC applications on your workstation with DEC SoftWindows. It also includes details of the DEC SoftWindows and MS–DOS error messages, with explanations and suggested solutions.

Common Problems

The following sections give solutions to the most commonly-encountered problems when using DEC SoftWindows.

Using Floppy Disks

How do I format a floppy disk?

Refer to *To Format a Floppy Disk*, Chapter 2.

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 *Setting Up Drives*, Chapter 3.

How do I make a hard disk file larger?

Create a new hard disk file, and then copy the contents of the old file to the new file; refer to *Disk Space Requirements*, Chapter 7 or the *Release Notes*.

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 terminal window:

```
SET PROTECTION=(w:RE) filename.hdf
```

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

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

You can use the hard disk file from other versions of DEC SoftWindows as D: but do not use them as drive C: because the version of Windows and the configuration files are not compatible.

Using CD-ROM

How do I set up a CD-ROM drive?

Refer to *Setting Up CD-ROM Drives*. Chapter 3.

How do I read an MS–DOS CD-ROM?

Refer to *Using CD-ROMs*, Chapter 2.

Using Memory

How do I change the Extended or Expanded memory settings for PC applications?

Use the **Memory** dialog box; refer to *Setting Up Memory*, Chapter 3.

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 OpenVMS programs. To detach it, refer to *Using the Mouse*, Chapter 2.

Using Keyboards

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

Use the MS–DOS command KEYB.

How do I set up a foreign keyboard in Windows?

Use the Windows International Control Panel; refer to *To Change the Keyboard Layout*, Chapter 6.

Using the Screen

How do I change the size of the DEC 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 DEC Softwindows MS–DOS Window*, Chapter 2.

When you are running Windows you can specify any size, up to the full screen; refer to *Using Windows*, Chapter 2.

Using Printers

How do I set up the COM and LPT ports?
Refer to *Printing, Input and Output*, Chapter 4.

How can I print from a PC application?

Refer to *Printing from PC Applications*, Chapter 4.

Printing is not working properly

If you are using the print spooler, try flushing the port to ensure that all the data has been sent.

Try redirecting print output to a file, then printing the file outside DEC SoftWindows. Refer to *Redirecting to a File and Piping to a Process*, Chapter 4.

How do I set up a printer for Windows?

Use the Windows **Printers** control panel; refer to *To Select a Printer Driver*, Chapter 6.

Unrecognized <04> in file

Use encapsulated postscript to solve this problem or simply edit your file to remove the 04 or try different printer options.

Using Serial Devices

How do I use the serial ports with PC applications?

Refer to *To Use Serial Input and Output*, Chapter 4.

Converting Between MS–DOS and OpenVMS

How do I convert text documents between DOS and OpenVMS?

Use the OpenVMS command SOFTWINDOWS/VMS_TO_DOS or SOFTWINDOWS/DOS_TO_VMS to convert the files. Type

```
$ HELP SOFTWINDOWS
```

for more information and refer to *Sharing and Using Text Files in OpenVMS and DOS*, Chapter 3.

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

Use the DEC SoftWindows copy and paste facilities; refer to *Copying and Pasting Text*, Chapter 2.

Setting File Access Permissions

What are file access permissions?

File access permissions tell a computer system who has access to files and directories. Each file and directory has a set of permissions that determines 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 might have or need access to its files and directories.

There are four types of permissions that can be applied to 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, and edit a file.
Execute	E	Allows users to run an executable file, such as a program or application, and search a directory.
Delete	D	Allows users to delete a file.

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

User	Symbol	What it means
System	S	The System or a person logged into system.
Owner	O	The creator of the file (or directory)
Group	G	The other users in the owners group.
World	W	All other users.

How do I check file access permissions?

Check file access permissions using the OpenVMS DIRECTORY command. In a terminal window, enter:

```
DIR/PROTECTION filename Return
```

The response will be similar to this:

```
C10.SDML;75          (RWED,RWED,RE,)
```

where the file access permissions are represented by the letters `RWED,RWE,R,R`; R is for read, W is for write, E is for execute and D is for delete. The four sets are for the System, Owner, Group, and Others, respectively.

How do I change file access permissions?

You can change file access permissions using the OpenVMS SET PROTECTION command.

To change the permissions, you must be logged in as the owner or system. If necessary, ask your system administrator to do this. Then give the SET PROTECTION command with an appropriate parameter.

The parameter consists of S: (system), O: (owner), G: (group), or W: (other) followed by the type of access: R (read), W (write), E (execute) or D (delete). For example, to enable the Owner to write to a file, use the command:

```
SET PROTECTION=(O:W) filename
```

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

Using Configuration Files

Where is my DEC SoftWindows configuration stored?

In the SWINCONFIG.INI file in your home directory; refer to *Softwindows Configuration*, Chapter 8.

What determines the configuration of MS–DOS?

The MS–DOS files AUTOEXEC.BAT and CONFIG.SYS. Refer to *MS–DOS Configuration*, Chapter 8.

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 OpenVMS, 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.

Any of 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 OpenVMS. Refer to *Setting File Access Permissions*, earlier in this chapter.

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

Using Networking

The ETHER command does not work

If the following message appears:

```
Bad command or file name
```

the batch file ETHER.BAT is not on the path. Either copy ETHER.BAT into a directory on the path, or amend PATH.

I cannot login

If you try to switch to drive L: to log in, and get the message:

```
Invalid drive specification
```

or you run LOGIN.EXE from your hard disk and get the message:

```
Warning: unexpected error 9(89ff)
The following drive mapping operation could not be completed
```

this means that the system was unable to map drive letters to network drives.

Edit the CONFIG.SYS file. It should have an entry of the form:

```
LASTDRIVE=K
```

Novell uses drive letters after LASTDRIVE, ie starts with L, etc.

Running PC Applications

How do I install PC software with DEC SoftWindows?

Refer to *Installing MS–DOS Applications*, Chapter 7.

How do I give MS–DOS commands?

Type them at the C:\> prompt; refer to *Using MS–DOS commands*, Chapter 7.

How can I edit MS–DOS files?

Use the MS–DOS editor, EDIT; refer to *Using the MS–DOS Editor*, Chapter 7. In Windows you can use the Windows **Notepad** text editor.

No display is visible in the DEC SoftWindows window

An MS–DOS application may have been started with the wrong video mode. Change the display type; refer to *Setting Up the Display*, Chapter 3.

Application fails to run at all or locks up DEC SoftWindows

The application may be copy protected, and installed on an FSA drive. Re-install on drive C: or D:.

Alternatively, the application may require Expanded or Extended memory. Refer to *Setting Up Memory*, Chapter 3.

Using Windows

How do I install new Windows fonts?

Refer to *To Add Fonts*, Chapter 6.

Windows will not run

Windows needs a minimum of 2 Mbyte of Extended memory to run, and 4 Mbyte is recommended. Check that this has been set correctly; refer to *Setting Up Memory*, Chapter 3.

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:
```

I cannot load extra Windows drivers from G:

Check that the FSA drive G: is SOFTWIN$SYSTEM:[windows], where SOFTWIN$SYSTEM is the DEC SoftWindows installation (normally :[SoftWindows]), by typing NET USE at the MS–DOS prompt. Alternatively, before running Windows type:

```
ASSIGN A=G R
```

What are the names of the DEC SoftWindows Windows drivers?

When you run Windows in a window you are not using, one of the emulated display drivers (VGA, EGA, and so on), and the title bar changes to **DEC SoftWindows Desktop** to indicate that you are using the DEC SoftWindows Windows display and mouse drivers. These are called **DEC SoftWindows Display** and **DEC SoftWindows Mouse.**

MS–DOS Errors

These errors may appear in the DEC SoftWindows window:

Error	Explanation	Suggestion
Not ready error reading drive A/B Abort, Retry, Fail	Your floppy disk drive is not attached to DEC 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 DEC SoftWindows hard disk file selected as drive D:.	Select a file as drive D; refer to *Setting Up Drives*, Chapter 3.
	If you are trying to access an FSA drive, the software needed to access FSA drives is not set up correctly.	Check that CONFIG.SYS and AUTOEXEC.BAT are set up correctly; refer to *Setting Up FSA Drives*, Chapter 3.
Non System disk	DEC SoftWindows is attempting to boot from an MS–DOS floppy disk in drive A: which has not been initialized as a startup disk.	Eject the floppy disk from drive A:.
DOS needs ROM BASIC	This means that you have tried to create a new C drive but have forgotton to make it bootable by saying MAKEBOOT 1.	Refer to Chapter 4.

DEC SoftWindows FSA Errors

These errors may appear in the DEC SoftWindows window; they relate to the use of FSA drives:

Error	Explanation	Suggestion
The host filesystem directory cannot be found	The FSA directory cannot be found.	Check that the 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 file.	Only directories can be specified for FSA drives.
The host filesystem must have read access	The FSA directory cannot be read.	Change the 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 against 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 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.

Networking Errors

These errors may appear in the DEC SoftWindows window; they relate to the network support software:

Error	Explanation	Suggestion
WARNING: Error registering Protocol=IPX, Frame=ETHERNET_ 802.3, PID=X	NET.CFG could not be found, so default is used.	Create NET.CFG or make sure the existing one is on the PATH.
WARNING: Error registering Protocol=IPX, Frame=ETHERNET_ 802.3, PID=X	The HP port of SoftNode does not support frame types SNAP or 802.3.	Alter NET.CFG so that either 802.2 or ETHERNET II protocols are specified.
WARNING: Error registering Protocol=IPX, Frame=ETHERNET_ SNAP,PID=X	The HP port of SoftNode does not support frame types SNAP or 802.3.	Alter NET.CFG so that either 802.2 or ETHERNET II protocols are specified.
SHELL-322-21: A network server could not be found.	A network server could not be found.	The frame type specified in NET.CFG is not supported by the network server. Consult your network administrator to find out which types are supported and amend NET.CFG accordingly.

SoftWindows Errors

The following errors, arranged according to the situations in which they can occur, are displayed in a dialog box.

Error	Explanation	Suggestion
Starting DEC SoftWindows		
The configuration file in your home directory has an option with a bad value	There is a problem with your preferences.	Reset your preferences; refer to *DEC SoftWindows Configuration*, Chapter 8.
The system default configuration file has a bad value	The SWINCONFIG.INI file has an entry with an invalid value.	Correct the invalid value; refer to *Configuration File*, Chapter 8.
The system default configuration file has a duplicate or unrecognized entry	There is a problem with the SWINCONFIG.INI file.	Correct the invalid value; refer to *Configuration File*, Chapter 8.
An installation file required by DEC SoftWindows is missing, execution must terminate.	An ancillary file that DEC SoftWindows needs is missing.	Reinstall DEC SoftWindows.
The configuration file entry shown below has an invalid value. You may select Default to replace it with the system default value, or type a correct value and select Continue.	There is a problem with your preferences such as a filename misspelled or nonexistent.	If you cannot correct the problem with **Default** or **Continue**, click **Quit** and reset your preferences; refer to *DEC SoftWindows Configuration*, Chapter 8.
The configuration file entry shown below is empty. You may select Default to use the system default value, or type a correct value and select Continue.	There is a problem with your configuration file.	If you cannot correct the problem with **Default** or **Continue**, click **Quit** or reset your configuration; refer to *DEC SoftWindows Configuration*, Chapter 8.
A configuration file entry is duplicated or there is an unrecognized entry. You may select Default to ignore this entry, or type a correct entry name and value, then select Continue.	There is a problem with your configuration file.	If you cannot correct the problem with **Default** or **Continue**, click **Quit** or reset your configuration; refer to *DEC SoftWindows Configuration*, Chapter 8.

Error	Explanation	Suggestion
Starting DEC SoftWindows		
DEC SoftWindows is not running with system permissions. Continuing will disable floppy and CDROM support.	The DEC SoftWindows permissions have been changed. DEC SoftWindows needs system permission. At root type: `SET PROTECTION =(W:RWE)` `_File: SOFTWIN$SYSTEM:SOFTWINDOWS.EXE` Return	
The DEC SoftWindows executable is a soft link. Please execute the actual DEC SoftWindows.	There is something wrong with the SoftWin directory.	Check the installation.
Either could not find or could not 'stat' the executable below.	DEC SoftWindows cannot locate the correct executable.	Check the installation.
Unable to open the terminal	DEC SoftWindows could not locate the keyboard mapping file.	Check that the keyboard mapping file is present.
DEC SoftWindows could not open the font file	DEC SoftWindows could not access one of the font files.	Check that the files are present on the system where you are displaying. If you are doing a remote display, then you must remotely install and load the SoftWindows fonts.
DEC SoftWindows Licensing		
The license number or authorization code is invalid	DEC SoftWindows is not correctly licensed.	Check the numbers in the **License Manager** dialog box.
All licensed DEC SoftWindows are already running. Please contact your Service Representative.	You need to upgrade your DEC SoftWindows license to cover a larger number of users, or wait until a DEC SoftWindows has shut down.	Try again when a user has finished. Contact Digital for license upgrades.
This copy of DEC SoftWindows is not licensed, and the demo period has expired. You must enter a serial number and authorization code to use this product.	The demo period has expired.	Buy a license. Contact your Digital Sales Representative.

Error	Explanation	Suggestion
Running DEC SoftWindows		
The DEC SoftWindows CPU has encountered an illegal instruction	The MS–DOS program you are running has an illegal instruction in it and DEC SoftWindows cannot process it, or you may be trying to boot from an invalid floppy.	Make sure you do not have a floppy disk in the drive while starting DEC SoftWindows. Try again; if the error recurs, reinstall the program. Try running the program in a slightly different way. For other suggestions, refer to *Installing MS–DOS Applications*, Chapter 7.
Internal error in DEC SoftWindows procedure	This is a rare, but fatal error and there is no way to recover.	Reset your preferences; refer to *DEC SoftWindows Configuration*, Chapter 8. Then restart DEC SoftWindows and retry the operations that produced the error. If the error recurs, call Digital Service.
DEC SoftWindows does not support a ROM BASIC	This message indicates that a program has tried to access ROM BASIC and may be caused by attempting to boot from a non-bootable disk.	Make the disk bootable.
The file named below is not accessible to DEC SoftWindows	DEC SoftWindows cannot find or access one of its ancillary files.	
A continuous RESET state has been entered	The CPU is being continuously rest. A PC/AT would lock up in this state, but DEC SoftWindows will detect it. It has been caused by the application you are running.	If the problem persists, contact Digital Service.
The date has been set forward, or the system frozen for a period. The PC date may be incorrect.	Self-explanatory.	
The date has been set backward. The PC date may be incorrect.	Self-explanatory.	

Error	Explanation	Suggestion
Memory		
Failure to allocate the requested number of Expanded Memory pages	There is not enough memory available to satisfy the requirement specified.	Reduce the DEC SoftWindows Expanded Memory requirement in the **Memory** dialog box or free memory by quitting from other OpenVMS programs.
The memory resources needed by DEC SoftWindows could not be allocated. Select Continue to retry.	DEC SoftWindows has been unable to allocate the amount of memory it requires.	Free memory by quitting from other OpenVMS programs.
Extended memory has not been configured.	An attempt has been made to access Extended memory beyond 1 Mbyte when it is set to 1 Mbyte in the **Memory** dialog box.	Reset the setting in the **Memory** dialog box.
DEC SoftWindows hard disk files		
The hard disk is not writable - check file name and permissions.	The hard disk cannot be written to.	Check the file access permissions; refer to *How Do I Check File Access Permissions?*, earlier in this chapter.
The hard disk file is not a valid hard disk because the disk geometry is incorrect	The hard disk file does not have the correct internal format. Either it is not a hard disk or another application has written into it.	Check the file access permissions; refer to *How Do I Check File Access Permissions?* earlier in this chapter.
The new hard disk file could not be created	The attempt to create a new hard disk file has failed.	Check the file access permissions; refer to *How Do I Check File Access Permissions?* earlier in this chapter.
The hard disk has been mounted read only because you do not have write permission for the file. Check the file permissions if you need to write to the disk.	You do not have the necessary access permissions to write to the disk.	Change the file access permissions; refer to *How Do I Check File Access Permissions?* earlier in this chapter.
Drive C: and Drive D: cannot be the same file.	You have attempted to select the same file for C: and D:.	Choose a different file.

Error	Explanation	Suggestion
Floppy disk drives		
Floppy drive problem. DEC SoftWindows cannot access the floppy device.	DEC SoftWindows cannot open the floppy device.	Check that the floppy disk device name is correct; refer to *Using Floppy Disks*, Chapter 2. Check the privileges and verify that the user has write permission.
The host computer has no floppy drive that DEC SoftWindows can access	DEC SoftWindows cannot access the floppy device driver which has been set up in preferences.	Check that the floppy disk device name is correct; refer to *Using Floppy Disks*, Chapter 2.
The floppy device name is invalid for the type chosen.	The floppy device name is invalid for the floppy device type. Typically no name with a non-null type, or a name when the type is none.	Reset the settings in the **Open Disk Drives** dialog box.
Floppy A: and floppy B: cannot be the same device	You have attempted to select the same device for A: and B:.	Specify a different device.
FSA drives		
The host filesystem directory cannot be found.	The directory specified for an FSA drive cannot be found.	Check that the directory has not been renamed, moved, or deleted.
The host filesystem must be a directory.	An FSA drive has been given the name of an ordinary file.	Specify a directory.
The host filesystem must have read access.	The directory for an FSA drive cannot be read.	Check the file access permissions; refer to *How Do I Check File Access Permissions?* earlier in this chapter.

Error	Explanation	Suggestion
COM/LPT ports		
Output error. DEC SoftWindows was unable to write to the specified queue.	DEC SoftWindows has one of its COM or LPT ports configured to output to a queue but can no longer output to it.	Check that the queued process has not quit.
The communications device name is invalid.	The name of the file, queue, or device selected for a COM or LPT port is not valid.	Check the name in the appropriate dialog box.
Device needed by comms adapter could not be accessed - check permissions.	A device set up for a COM or LPT port cannot be accessed.	Check the file access permissions; refer to *How Do I Check File Access Permissions?* earlier in this chapter.
Process requested in comms adapter could not be found.	The queue set up for a COM or LPT port cannot be found.	Check the name in the appropriate dialog box.
Exiting DEC SoftWindows		
The DEC SoftWindows resource file could not be created.(It will not be updated.)	DEC SoftWindows cannot create one of its ancillary files.	Check the home file permissions; refer to *How Do I Check File Access Permissions?* earlier in this chapter.
The DEC SoftWindows resource file could not be updated. Continuing will attempt to create the file in SYS$LOGIN.	DEC SoftWindows cannot update one of its ancillary files.	Check the home file permissions; refer to *How Do I Check File Access Permissions?* earlier in this chapter.

Glossary

AUTOEXEC.BAT

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

Batch file

A text file containing MS–DOS commands that can be executed to run the commands it contains, as if they were typed in at the keyboard.

Boot

The PC terminology for starting up the computer.

CGA

Color Graphics Adapter, a display standard available for the PC.

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, COM2, COM3, COM4

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

Configuration file

The file that contains the information that determines which printers, disk drives, and other devices will be available to you when you run DEC SoftWindows.

CONFIG.SYS

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

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, eg a printer, that performs a specific task.

Device name

The name used to refer to a device; eg 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; eg A:, B:, C: to Z:.

Emulated hard drive

A file located in your file system which has an MS–DOS file system layout. This allows it to emulate a hard drive and function like a PC hard drive. Drives C: and D: are set up as emulated hard drives.

Expanded memory

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

Extended memory

The XMS (Extended Memory System) standard for increasing the amount of memory available to PC applications using 80286 protected mode.

Extension

The last part of an MS–DOS file name which can be used to specify the type of file. It consists of a period and up to three letters; eg .BAT.

File

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

File permissions

Refer to 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. DEC SoftWindows allows you to set up Unix directories as FSA drives.

Home directory

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

Microsoft mouse

A popular type of a hand-held pointing tool that can be used with MS–DOS applications in a DEC SoftWindows window. DEC SoftWindows provides you with an emulated 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 technique it uses: modulation and demodulation.

MS–DOS

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

NET USE

The command used to create extended drives from DEC SoftWindows to the Unix operating system.

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 and is not directly connected to your computer or workstation.

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; eg the MS–DOS prompt is usually C:\>.

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 DEC 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.

Serial port

The communications port, labeled COM1: or COM2:, to which you can attach devices, such as a modem.

Server

A system on a network that provides resources to other systems, such as disks and printers.

SVGA

Super Video Graphics Array, an extension of VGA.

System administrator

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

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 disk.

Windows

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

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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