

Chapter 3

A question that technical people often ask about Microsoft Windows is: What does this file do? This chapter describes the purpose for each file in the WINDOWS directory and the SYSTEM subdirectory.

For information about how to add to the list of files that are installed automatically with Windows, see “Modifying .INF Files for Custom Installations” in Chapter 2, “The Windows Setup Information Files.”

Related information

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Files”; Chapter 4, “The Windows Initialization Files”; Appendix C, “Windows 3.1 Disks and Files”

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About the Windows Files

When Microsoft Windows runs, it performs all operating system duties except file system management, which MS-DOS still performs. Windows calls functions that are stored in a variety of executable files, driver files, and other dynamic-link libraries to manage the display, keyboard, and other devices, and to manage memory and execute programs.

The kinds of files that make up Windows 3.1 include:

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-
- contain the code and data for the Windows functions.
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- printers, networks, multimedia, and other devices.
-
-
- and accessories.

Flowchart 1.7

Expanding Files from the Windows Disks

For instructions on how to expand any files from the Windows installation disks, see Flowchart 1.7 on page 16. For technical information about the Windows 3.1 files, see the manuals for the Microsoft Windows Software Development Kit and Driver Development Kit.

WIN.COM

WIN.COM is the loader for Windows. It checks the machine type, memory configuration, and device drivers to determine which mode is appropriate to start Windows. To start Windows, there needs to be sufficient memory, an XMS driver present (such as HIMEM.SYS), and processor support for standard mode (80286 or higher) or 386 enhanced mode (80386 or higher).

After WIN.COM determines the appropriate operating mode, it uses the MS-DOS exec command to execute one of the following files, which in turn loads Windows:

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-

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To build Windows, WIN.COM brings together a number of files:

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- .
- .
- .
- .

The Core Files

Three files make up the Windows core components: Kernel, User, and GDI.

- .

all the machine resources to manage memory, load applications, and schedule program execution and other tasks.

- .

requests to create, move, size, or destroy a window. User also handles requests regarding the icons and other components of the user interface. User directs input to the appropriate application from the keyboard, mouse, and other input sources.

- .

graphics operations that create images on the system display and other devices.

Drivers, Fonts, and International Support Files

Driver Files

Drivers make device independence possible for Windows applications, providing the hardware-specific interface between the physical devices and Windows. Setup can install several kinds of drivers for Windows, such as:

Comm drivers
Mouse drivers
Printer drivers

Display drivers
Multimedia drivers
Keyboard drivers
Network drivers
System drivers

The network, multimedia, and printer drivers are optional. Also, drivers can be installed to support virtual machines in 386 enhanced mode, as described in “Files for 386 Enhanced Mode” later in this chapter.

System Driver Files

The system driver provides support for the system timer, information about system disks, and access to OEM-defined system hooks. There are two system drivers shipped with Windows:

- .
- .

Keyboard Driver Files

The keyboard drivers shipped with Windows support keyboard input:

- .
- .
- .

The keyboard driver is a standard driver for all systems worldwide. Windows can also handle international keyboards, including foreign symbols, by using the keyboard tables to refer to a language library.

Keyboard table

KBDBE.DLL
KBDCA.DLL
KBDDA.DLL

KBDDV.DLL
KBDFC.DLL
KBDFI.DLL

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KBDFR.DLL
KBDGR.DLL
KBDIC.DLL

KBDIT.DLL
KBDLA.DLL
KBDNE.DLL

KBDNO.DLL
KBDPO.DLL
KBDSF.DLL
KBDSG.DLL
KBDSP.DLL

KBDSW.DLL
KBDUK.DLL
KBDUS.DLL
KBDUSX.DLL

The .DLL filename extension indicates that the file is a dynamic-link library.

Mouse Driver Files

The mouse drivers shipped with Windows support pointing devices for use with Windows and Windows applications.

Driver

HPMOUSE.DRV
KBDMOUSE.DRV
LMOUSE.DRV

MSC3BC2.DRV
MSCMOUSE.DRV
MOUSE.DRV
NOMOUSE.DRV

For information about the related MS-DOS mouse drivers, see “MS-DOS Support Components of Windows” later in this chapter.

Display Driver Files

The display drivers shipped with Windows support the system display and the cursor for the pointing device. The display driver, however, does not support non-Windows applications running in full screen, because such applications write directly to video.

Driver

8514.DR
EGA.DRV
EGAHIBW.DRV
EGAMONO.DRV

HERCULES.DRV
OLIBW.DRV
PLASMA.DRV
SUPERVGA.DRV

TIGA.DRV
VGA.DRV
VGAMONO.DRV
V7VGA

XGA.DRV

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Other Driver Files

The communications driver, COMM.DRV, supports serial and parallel device communications.

The Advanced Power Management device driver, POWER.DRV, supports the power management features of laptop and notebook PCs.

Printer Driver Files

Printer drivers support output to the printer device. Some of the printer drivers shipped with Windows have a soft font installation utility. The related files also include help files for the printer drivers and soft font installers. In Windows 3.1, many of the dot-matrix drivers have been replaced by a universal printer driver. Other drivers have been updated for performance and to support TrueType fonts.

Printer driver

CANON10E.DRV
CANON130.DRV
CANON330.DRV

CIT24US.DRV
CIT9US.DRV
CITOH.DRV

DICONIX.DRV
DM309.DRV
DMCOLOR.DLL

EPSON24.DRV
EPSON9.DRV
ESCP2.DRV

EXECJET.DRV
FUJI24.DRV
FUJI9.DRV

GENDRV.DLL
HPDSKJET.DRV
HPPCL.DRV
HPPCL5A.DRV

HPLOT.DRV
IBM4019.DRV
IBM5204.DRV

Printer driver
(continued)

IBMCOLOR.DRV
LBPII.DRV
LBPIII.DRV

NEC24PIN.DRV
OKI24.DRV
OKI9.DRV

OKI9IBM.DRV
PAINTJET.DRV
PANSON24.DRV

PANSON9.DRV
PG306.DRV
PROPRINT.DRV

PROPRN24.DRV
PS1.DRV
PSCRIPT.DRV

QWIII.DRV
THINKJET.DRV
TI850.DRV

TOSHIBA.DRV
TTY.DRV
UNIDRV.DLL

The following files are soft font installers for specific printers.

Soft font installer

CAN_ADF.EXE
SF4019.EXE

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SFINST.EXE
FINSTALL.DLL

The following files provide additional PostScript description information for specific printers.

PostScript description

40291730.WPD
40293930.WPD
EPL75523.WPD

HERMES_1.WPD
HERMES_2.WPD
HPELI523.WPD

HPIID522.WPD
HPIII522.WPD
HPIIP522.WPD

PostScript description
(continued)

HP_3D522.WPD
HP_3P522.WPD
IBM17521.WPD

IBM39521.WPD
MT_TI101.WPD
N2090522.WPD

N2290520.WPD
N2990523.WPD
OL840518.WPD

Q2200510.WPD
Q820_517.WPD
SEIKO_04.WPD

OLIVETI1.WPD
P4455514.WPD
TRIUMPH1.WPD

N890X505.WPD
N890_470.WPD
O5241503.WPD

O5242503.WPD
OLIVETI2.WPD
PHIIPX.WPD

SEIKO_14.WPD
TIM17521.WPD
TRIUMPH2.WPD

U9415470.WPD
TIM35521.WPD
TKPHZR21.WPD

TKPHZR31.WPD
DEC1150.WPD
DEC2150.WPD

DEC2250.WPD
DEC3250.WPD
DECCOLOR.WPD

DECLPS20.WPD
NCM40519.WPD
NCM80519.WPD

L200230&.WPD
L330_52&.WPD
L530_52&.WPD
L630_52&.WPD

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Network Driver Files

The network drivers provide a network interface to the Windows File Manager, Control Panel, Print Manager, and system utilities.

Driver
Supported network

LANMAN.DRV
Microsoft LAN Manager 2.0 Extended

(and 100% compatible)

Microsoft LAN Manager 2.0 driver help

Microsoft LAN Manager API library

Microsoft LAN Manager printer API library

MSNET.DRV
Generic network driver*

PCSA.DRV
DEC Pathworks network driver

NETWARE.DRV
Novell NetWare 2.10 or above; Novell NetWare386

Supports pop-up messages

Workstation shell

Workstation comm driver (dedicated)

Workstation comm driver (ODI model)

Workstation link support layer (ODI)

Workstation task switch support (IPX/SPX)

* MSNET.DRV supports 3Com 3+Share, 3Com 3+Open LAN Manager (XMS only), Banyan VINES 4.0, Microsoft LAN Manager 1.x (and compatibles),

Microsoft LAN Manager 2.0 Basic (and compatibles), Microsoft Network (and compatibles), and IBM PC LAN Program.

For a list of the supporting virtual device files, see “Files for 386 Enhanced Mode” later in this chapter. For information about networks, see Chapter 12, “Networks and Windows 3.1.”

Multimedia Driver Files

W

3.1.

Filename

MCICDA.DRV
MCISEQ.DRV
MCIWAVE.DRV

MIDIMAP.DRV
MPU401.DRV
MMSOUND.DRV
MSADLIB.DRV

SNDBLST.DRV
SNDBLST2.DRV
TIMER.DRV

Font Files

Windows has several fonts for supporting the Windows system and Windows applications, and for non-Windows applications running in Windows and data copied to the Clipboard from those applications. For details about Windows fonts, see Chapter 9, “Fonts.”

Font files usually have a .TTF, .FON, or .FOT filename extension.

System Font Files

Three basic types of fonts are installed to support display and output devices:

.

controls, and other text in Windows 3.x.

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.
the system font (for menus and dialog boxes).

.
text in the Windows Clipboard Viewer. The OEM font also provides an OEM character set used by some Windows applications.

The system, fixed, and OEM fonts that are shipped with Windows 3.1 are listed in the following tables.

System font file

8514SYS.FON
EGASYS.FON
VGASYS.FON

Fixed font file

8514FIX.FON
EGAFIX.FON
EGAFIX.FON
VGAFIX.FON

OEM font file

8514OEM.FON
 EGAOEM.FON
 EGAOEM.FON
 VGAOEM.FON

Raster Font Files

Six resolutions of raster screen fonts are shipped with Windows. If used for printing, raster fonts print text and graphics as bitmaps or raster lines. The resolutions are identified by a letter appended to the filename of the font as described in the following table.

Letter
 Resolution
 y size*

A**
 2:1
 48
 B
 1.33:1
 72
 C**
 1:1.2
 72
 D**
 1.66:1
 72
 E
 1:1
 96
 F
 1:1
 120

* x,y indicates the height/width aspect ratio, in pixels per inch.

** These fonts are not included on the Windows 3.1 installation disks.

By appending the letter that identifies the resolution to the raster font filenames in the following table, you can see the files that Windows installs

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for a given display or printer. For example, the files for the 8514 raster fonts are COURF.FON, SSERIFF.FON, SERIFF.FON, SMALLF.FON, and SYMBOLF.FON.

Font
Character set

Courier
ANSI
MS Sans Serif
ANSI
MS Serif
ANSI
Small
ANSI
Symbol
Symbol

Vector Font Files

Windows provides these vector font files: ROMAN.FON, SCRIPT.FON, and MODERN.FON. For vector fonts, characters are stored as sets of relative coordinate pair points with connecting lines. Vector fonts are fully scalable fonts, so the font can be created in any size desired, although applications or printing devices might have limits on the font sizes they support.

TrueType Font Files

W
the Arial, Courier, Symbol, and Times New Roman font families. Each family requires two files, a .TTF file and an .FOT file.

TrueType filenames

ARIAL.FOT, ARIAL.TTF
ARIALBD.FOT, ARIALBD.TTF
ARIALBI.FOT, ARIALBI.TTF
ARIALI.FOT, ARIALI.TTF

COUR.FOT, COUR.TTF
COURBD.FOT, COURBD.TTF

COURBI.FOT, COURBI.TTF
COURI.FOT, COURI.TTF

TIMES.FOT, TIMES.TTF
TIMESBD.FOT, TIMESBD.TTF
TIMESBI.FOT, TIMESBI.TTF
TIMESI.FOT, TIMESI.TTF

SYMBOL.FOT, SYMBOL.TTF
WINGDING.FOT, WINGDING.TTF

Font Files for Non-Windows Applications

Some fonts are installed for displaying non-Windows applications in a window when Windows is running in 386 enhanced mode. By default, code page 437 (U.S.) fonts are installed. Other font files are included for international language support. These are identified by the code page number appended to the filename.

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The following font files are provided with the associated code page translation table files.

Code
Font file
page

APP850.FON
850
DOSAPP.FON
437

CGA40850.FON
850
CGA40WOA.FON
437
CGA80850.FON
850
CGA80WOA.FON
437

EGA40850.FON
850
EGA40WOA.FON
437
EGA80850.FON
850
EGA80WOA.FON
437

HERC850.FON
850
HERCWOA.FON
437

VGA850.FON
850
VGA860.FON
860
VGA861.FON
861
VGA863.FON

154

863
VGA865.FON
865

International Support Files

Windows provides language libraries to support a number of languages.

Filename

LANGDUT.DLL
LANGENG.DLL
LANGFRN.DLL
LANGGER.DLL
LANGSCA.DLL
LANGSPA.DLL

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MS-DOS Support Components of Windows

Two kinds of files provide MS-DOS support for Windows: MS-DOS drivers and the grabber files that support data exchange between Windows and non-Windows applications.

MS-DOS Driver Files

Several MS-DOS driver files are included with Windows. The following drivers are the recommended versions to use with Windows 3.1.

Driver

EGA.SYS
EMM386.EXE
HIMEM.SYS

RAMDRIVE.SYS
SMARTDRV.EXE
utility
LMOUSE.COM

MOUSE.COM
MOUSE.SYS
MOUSEHP.COM
MOUSEHP.SYS

WinOldAp and the Grabber Files

Two primary parts of Windows support non-Windows applications under standard mode Windows: WinOldAp and the grabber. When Windows runs in 386 enhanced mode, the limited resources on the machine are virtualized to provide virtual memory, virtual displays, and virtual communications along with a number of other services. The related files are discussed in “Files for 386 Enhanced Mode” later in this chapter.

WinOldAp and the grabber files support data exchange between non-Windows applications and Windows. The support for non-Windows applications varies, depending on the capabilities of the system CPU and the mode in which Windows is running.

WinOldAp comes in two versions for the two Windows operating modes:

-
-

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The grabber for your system is specific to the display driver.

The 286 grabbers used for standard mode only support PrintScreen and copying and pasting text between Windows applications and non-Windows applications. The 386 grabbers that support Windows 386 enhanced mode provide the following capabilities:

- .
- .
- .
- .
- .

The files that provide font support for the grabbers are listed below, with descriptions of the kinds of display drivers that the grabbers support.

286 grabber
support file

CGA.2GR
EGACOLOR.2GR
EGAMONO.2GR

HERCULES.2GR
OLIGRAB.2GR
VGACOLOR.2GR
VGAMONO.2GR

386 grabber
support file

EGA.3GR
HERC.3GR
PLASMA.3GR

V7VGA.3GR
VGA.3GR
VGA30.3GR

VGADIB.3GR

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Files for Standard Mode

When Windows is running in standard mode, the processor is switched into 80286 protected mode, allowing access to extended memory through XMS support. The DOSX.EXE file, required for standard mode, is the MS-DOS Extender for Windows. When Windows runs in standard mode, WIN.COM executes DOSX.EXE. Then the Kernel file is loaded (KRNL286.EXE for 80286 machines, or KRNL386.EXE for 80386 machines), which in turn loads the other parts of Windows. Two more files support task swapping for standard mode:

.

.

Files for 386 Enhanced Mode

In 386 enhanced mode, Windows can use virtual memory. Much of the virtual support is provided by WIN386.EXE, which is executed by WIN.COM. When WIN386.EXE begins to load, it looks for the files identified in the [386enh] section of SYSTEM.INI. Some of the standard files are built into WIN386.EXE (designated with the “*” symbol in SYSTEM.INI entries). The other files that WIN386.EXE loads to support virtual devices are listed in the following table.

Filename

BANINST.386
DECNB.386
DECNET.386
LANMAN10.386
HPEBIOS.386
LVMD.386

MSCVMD.386
V7VDD.386
VADLIBD.386
VDD8514.386
VDDCGA.386
VDDCT441.386

VDDEGA.386

VDDHERC.386
VDDTIGA.386
VDDVGA30.386
VDDXGA.386
VIPX.386

VNETWARE.386
VPOWERD.386
VSBD.386
VTDAPI.386
WIN386.PS2

Windows Applications, Setup, and Other Files

Files for Windows Applications

The Windows files also include applications, shells, utilities, accessories, and games. The following table lists the applications and associated files, with a brief description of each application.

Application Filename name and description

CALC.EXE Calculator (general/scientific)

CALENDAR.EXE Calendar

CARDFILE.EXE Cardfile (desktop Rolodex)
--

CHARMAP.EXE Character Map

CLIPBRD.EXE Clipboard Viewer

CLOCK.EXE Clock (analog/digital)

CONTROL.EXE Control Panel Windows Resource Kit
--

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Initialization file

386 enhanced mode extension for Control Panel

Installable drivers extension for Control Panel

File expansion utility for Control Panel

Main Control Panel extension

MIDI Mapper extension file for Control Panel

Sound extension for Control Panel

DRWATSON.EXE

Windows fault detection utility

MPLAYER.EXE

Media Player

Multimedia system library

Multimedia background task

MSD.EXE

Microsoft Diagnostics utility and initialization file

NOTEPAD.EXE

Notepad (desktop text editor)

PACKAGER.EXE

Object Packager

PBRUSH.EXE

Paintbrush

PIFEDIT.EXE

PIF Editor

POWER.HLP

Advanced Power Management supporting files

PRINTMAN.EXE

Print Manager (Windows print spooler)

PROGMAN.EXE

Program Manager (Windows 3.1 shell)

RECORDER.EXE

Recorder (desktop macro recorder)

REGEDIT.EXE

Registration Editor and supporting files

DDE management library

Client library and server

for Object Linking and Embedding

Application

Filename

name and description

SHELL.DLL

Shell library

SOL.EXE

Solitaire (most-tested game)

SMARTDRV.EXE

Disk-caching utility

SOUNDREC.EXE

Sound Recorder

SYSEDIT.EXE

Windows System Editor

TASKMAN.EXE

Task Manager (application switcher)

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TERMINAL.EXE
Terminal (desktop communications)

TOOLHELP.DLL
Windows Tool Helper library

WINFILE.EXE
File Manager (Windows 3.1 shell)

WINHELP.EXE
Help (Windows help engine)

Windows Help glossary

WINMINE.EXE
MineSweeper (game)

WINTUTOR.EXE
Windows Tutorial

WRITE.EXE
Write (desktop word processor)

Control Panel uses LZEXPAND.DLL to decompress files from the Windows installation disks. Because most of the files on the Windows installation disks are compressed (except SETUP.INF, SETUP.EXE, and EXPAND.EXE), Control Panel must decompress the files to install a new printer or to add fonts. LZEXPAND is a Windows library counterpart to EXPAND.EXE.

Setup-Related Files

Setup has a number of files for its exclusive use. For example, the *.LGO files contain the code for displaying the opening screen logo, and the *.RLE files contain the actual logo bitmap (in Run Length Encoded format). Setup combines the .LGO and .RLE files with the WIN.CNF file to create WIN.COM. Setup also uses the files listed in the following table.

Filename

SETUP.SHH
SETUP.EXE

SETUP.HLP

SETUP.INF
SETUP.INI
SETUP.REG

SETUP.TXT
VER.DLL
WINVER

XMSMMGR.EXE
EXPAND.EXE

Filename
(continued)

Startup logo files:
CGALOGO.LGO
CGALOGO.RLE

EGALOGO.LGO
EGALOGO.RLE
EGAMONO.LGO
EGAMONO.RLE

HERCLOGO.LGO
HERCLOGO.RLE

VGALOGO.LGO
VGALOGO.RLE

Initialization and information source files:
APPS.INF
CONTROL.INF
CONTROL.SRC

PRTUPD.INF
SYSTEM.SRC
WIN.CNF
WIN.SRC

Other Files

These files serve a wide range of functions, including support for PS/2
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architectures and README files for general information.

Filename

MORICONS.DLL

Bitmaps files for wallpaper:

256COLOR.BMP

ARCADE.BMP

ARCHES.BMP

ARGYLE.BMP

CARS.BMP

CASTLE.BMP

CHITZ.BMP

EGYPT.BMP

FLOCK.BMP

HONEY.BMP

LEAVES.BMP

MARBLE.BMP

REDBRICK.BMP

RIVETS.BMP

SQUARES.BMP

Filename

(continued)

TARTAN.BMP

THATCH.BMP

WINLOGO.BMP

ZIGZAG.BMP

Screensaver files:

SSSTARS.SCR

SCRNSAVE.SCR

SSMYST.SCR

SSMARQUE.SCR

SSFLYWIN.SCR

MIDI sound file:

CANYON.MID

Wave-form sound files:

CHORD.WAV

DING.WAV

CHIMES.WAV

TADA.WAV

README files:

NETWORKS.WRI

PRINTERS.WRI

README.WRI

SYSINI.WRI

WININI.WRI

Miscellaneous hardware support and other supporting files:

386MAX.VXD

BLUEMAX.VXD

COMMDLG.DLL

TIGAWIN.RLM

WIN87EM.DLL

WINDOWS.LOD

TESTPS.TXT

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Files You Can Delete

Because of the large number of files that come with Windows 3.1, you might want to delete some of the files to free disk space.

Note

exit Windows, then delete the files from the command prompt.

You can delete these files when Windows is not running without degrading Windows performance:

- EMM support for non-Windows applications

-

-

-

You can choose the Windows Setup icon in Control Panel, then choose Add/Remove Components from the Options menu to remove any of these files from your system:

-

Cardfile) with their related .HLP and .DLL files

-

-

-

For a list of the files for a minimum Windows configuration, see “Minimizing the Windows ‘Footprint’” in Appendix C, “Windows 3.1 Disks and Files.”

