Windows 3.1*x*

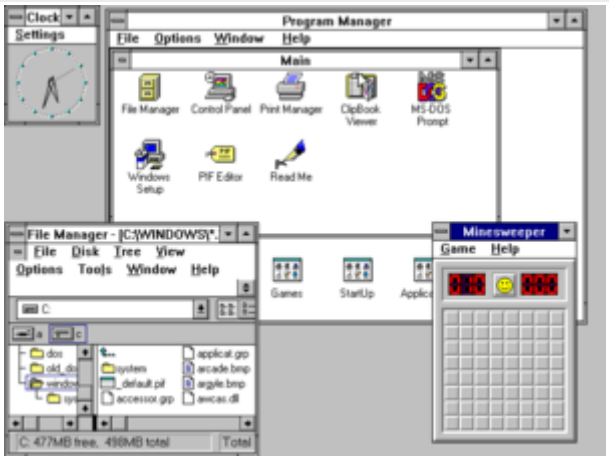
Windows 3.1 is a series of 16-bit operating environments produced by Microsoft for use on personal computers, released on April 6, 1992. The series began with Windows 3.1, which was first sold during April 1992 as a successor to Windows 3.0. Subsequent versions were released between 1992 and 1993, notably *Windows 3.11*,[2][3] until the series was superseded by the Windows 9x series starting in 1995 with *Windows 95*. During its lifespan, Windows 3.1 introduced several enhancements to the still MS-DOS-based platform, including improved system stability, expanded support for multimedia, TrueType fonts, and workgroup networking.

On December 31, 2001, Microsoft declared Windows 3.1 obsolete and stopped providing support and updates for the system. However, OEM licensing for Windows for Workgroups 3.11 on embedded systems continued to be available (despite the OS no longer being officially supported) until November 1, 2008.[4]

Contents

Windows 3.1*x*

A version of the Microsoft Windows operating system



Screenshot of Windows for Workgroups 3.11

Developer	Microsoft
Source model	Closed source
Released to manufacturing	April 6, 1992
Latest release	3.11 / December 31, 1993[1]
License	Commercial software
Preceded by	Windows 3.0 (1990)
Succeeded by	Windows 95 (1995) Windows NT 3.1 (1993)
Support status	
Unsupported as of December 31, 2001	

Editions

Windows 3.1

Windows 3.1, released on April 6, 1992, introduced a TrueType font system[5] (and a set of highly legible fonts), which effectively made Windows a viable desktop publishing platform for the first time. Similar functionality was available for Windows 3.0 through Adobe Type Manager (ATM) font system from Adobe.

Windows 3.1 was designed to have backward compatibility with older Windows platforms. As with Windows 3.0, version 3.1 had File Manager and Program Manager, but unlike all previous versions, Windows 3.1 cannot run in real mode. It included Minesweeper as a replacement for Reversi (though Reversi was still included in some copies).

Improvements over Windows 3.0

Windows 3.1, showing some of the personalization options available

Windows 3.1 dropped real mode support and required a minimum of a 286 PC with 1 MB of RAM to run. The effect of this was to increase system stability over the crash-prone Windows 3.0. Some older features were removed, like CGA graphics support (although Windows 3.0's CGA driver still worked on 3.1) and compatibility with real-mode Windows 2.x applications. Windows 3.1 can run in Standard mode if installed with the VGA display driver. When installed with high resolution/high color driver, it only operates in 386 Enhanced Mode.

Truetype font support was added,[5] providing scalable fonts to Windows applications, without having to resort to using a third-party font technology such as Adobe Type Manager. Windows 3.1 included the following fonts: Arial, Courier New, and Times New Roman, in regular, bold, italic, and bold-italic versions, as well as Symbol (a collection of scalable symbols). Truetype fonts could be scaled to any size and rotated, depending on the calling application.[6]

In 386 Enhanced Mode, windowed DOS applications gained the ability for users to manipulate menus and other objects in the program using the Windows mouse pointer, provided that a DOS application supported mice. A few DOS applications, such as late releases of Microsoft Word, could access Windows Clipboard. Windows' own drivers could not work directly with DOS applications; hardware such as mice required a DOS driver to be loaded before starting Windows.

Icons could be dragged and dropped for the first time, in addition to having a more detailed appearance. A file could be dragged onto the Print Manager icon and the file would be printed by the current printer, assuming it was associated with an application capable of printing, such as a word processor. Alternatively, the file could be dragged out of File Manager and dropped onto an application icon or window for processing.[7]

While Windows 3.0 was limited to 16 MB maximum memory, Windows 3.1 can access a theoretical 4 GB in 386 Enhanced Mode. The actual practical ceiling is 256 MB.[8] However, no single process can use more than 16 MB. File Manager was significantly improved over Windows 3.0. Multimedia support was enhanced over what was available in Windows 3.0 with Multimedia Extensions and available to all Windows 3.1 users.

Windows 3.1 was available via 720 KB, 1.2 MB, and 1.44 MB floppy distributions. It was also the first version of Windows to be distributed on CD-ROM – although this was more common for Windows for Workgroups 3.11. Installed size on the hard disk was between 10 MB and 15 MB.

32-bit disk access (386 Enhanced Mode only) brought improved performance by using a 32-bit protected mode driver instead of the 16-bit BIOS functions (which necessitate Windows temporarily dropping out of protected mode).

Windows 3.1's calendar uses the .cal filename extension.[9]

Windows 3.1 also introduced the Windows Registry, a centralized database that can store configuration information and settings for various operating systems components and applications.

Windows 3.1 was the first version that could also launch Windows programs via Command.com.

Windows 3.1 for Central and Eastern Europe

A special version named *Windows 3.1 for Central and Eastern Europe* was released that allowed use of Cyrillic and had fonts with diacritical marks characteristic of Central and Eastern European languages. Microsoft introduced its own code page (Windows-1250) and supported its use in violation of many countries' ISO standards (*e.g.*, the official Polish codepage is ISO-8859-2, which was ignored by Microsoft but is supported by contemporary Internet Explorer versions). Similarly, Microsoft also released *Windows 3.1J* with support for Japanese, which shipped 1.46 million copies in its first year on the market (1993) in Japan.[10]

Modular Windows

Modular Windows is a special version of *Windows 3.1*, designed to run on Tandy Video Information System.

Windows 3.11

Windows 3.11 was released on November 8, 1993. It did not add many feature improvements over Windows 3.1; it primarily contained bug fixes, but was considered a significant improvement because of those fixes, contributing to the operating system's popularity. Microsoft replaced all retail versions of Windows 3.1 with Windows 3.11 and provided a free upgrade to anyone who currently owned Windows 3.1.[11]

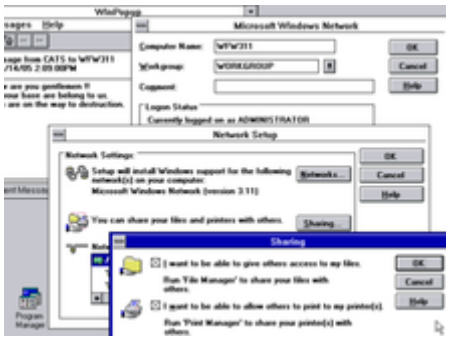
Windows 3.2

On November 22, 1993, Microsoft released a Simplified Chinese version of Windows for the Chinese market. A year later, an update was released, which identified itself as *Windows 3.2*. Thus, Windows 3.2 is an updated version of the Chinese version of Windows 3.1.[12] The update was limited to this language version, as it only fixed issues related to the complex input system for the Chinese language.[12]

Windows 3.2 was generally sold by computer manufacturers with a ten-disk version of MS-DOS that also had Simplified Chinese characters in basic output and some translated utilities.

Windows for Workgroups

Windows for Workgroups is an extension that allowed users to share their resources and to request those of others without a centralized authentication server. It used SMB protocol over NetBIOS.



Network capabilities of Windows for Workgroups 3.11

Windows for Workgroups 3.1

Windows for Workgroups 3.1 (originally codenamed *Winball* and later *Sparta*), released in October 1992,[13] is an extended version of Windows 3.1 that features native networking support. It comes with SMB file sharing support via NetBIOS-based NBF and IPX network transport protocols and introduces the Hearts card game and VSHARE.386, a VxD version of SHARE.EXE (a terminate-and-stay-resident program).

Windows for Workgroups 3.11

Windows for Workgroups 3.11[14] (originally codenamed *Snowball*) was released on August 11, 1993,[15] and shipped in November 1993,[16] by Microsoft. It supported 32-bit file access, full 32-bit network redirectors, and VCACHE.386 file cache, shared between them. WFW 3.11 dropped standard mode support and requires a 386 machine to run.

A Winsock package was required to support TCP/IP networking in Windows 3.x. Usually third-party packages were used, but in August 1994, Microsoft released an add-on package (codenamed *Wolverine*) that provided TCP/IP support in Windows for Workgroups 3.11.[17] Wolverine was a 32-bit stack (accessible from 16-bit Windows applications via WinSock Thunk), which gave it superior performance to most of the third-party TCP/IP Windows stacks available. However, it was only compatible with Windows for Workgroups 3.11, and lacked support for dial-up. Wolverine stack was an early version of the TCP/IP stack that would later ship with Windows 95, and provided an early testbed for the 16-to-32-bit compatibility layer that was crucial to Windows 95's success.

Following the release of MS-DOS 6.22 in 1994, WFW 3.11 largely replaced Windows 3.1 for OEM installations on new PCs due to its improved capabilities and greater stability.

Windows 95

A successor to Windows 3.1, the MS-DOS-based **Windows 95**[18] was released to manufacturing on August 15, 1995, and generally to retail on August 24, 1995. Windows 95 merged Microsoft's formerly separate MS-DOS and Microsoft Windows products, and featured significant improvements over its predecessor, most notably in the graphical user interface (GUI) and in its simplified "plug-and-play" features. There were also major changes made to the core components of the operating system, such as moving from a mainly cooperatively multitasked 16-bit architecture to a 32-bit preemptive multitasking architecture, at least when running only 32-bit protected mode applications. OEM Service Release 2.5 (4.0.950 C) of Windows 95 was released on November 26, 1997.

Add-ons

Video for Windows

Video for Windows was first introduced in November 1992 as a reaction to Apple Computer's QuickTime technology which added digital video to Macintosh. Costing around $200,[19] the software included editing and encoding programs for use with video input boards. A runtime version for viewing videos only was also made available. Originally released as a free add-on to Windows 3.1 and Windows 3.11, it then became an integral component of Windows 95 and later. Like QuickTime there were three components in Video for Windows. The technology introduced a file format designed to store digital video, Audio Video Interleave (AVI). The technology provided an application programming interface that allowed Windows software developers to add the ability to play or manipulate digital video to their own applications. Lastly, it included a suite of software for playing and manipulating digital video.

Windows for Pen Computing

Windows for Pen Computing was a series of Microsoft-produced add-ons for Microsoft Windows versions in the mid-1990s with additional tools for tablet PCs. Windows for Pen Computing (also known as *Pen Windows* and *W4PC*) was developed as Microsoft's pen computing response to PenPoint OS by GO Corporation.[20] Windows for Pen Computing was rendered obsolete by Tablet PC support for Windows XP Tablet PC Edition in 2002.

Win32s

Windows 3.1x was given limited compatibility with the then-new 32-bit Windows API used by Windows NT by another add-on package, Win32s. There was a rumor that Microsoft did not want to increase any mainstream Windows 3.1x version to something like "Windows 3.2" because it could be confused with the Win32 API or otherwise distract consumers from upgrading to a "real 32-bit OS", though Windows NT 3.1 and 3.5 were both 32-bit operating systems that looked similar in appearance. A game called FreeCell was included for testing the new Win32s functions.

WinG

To entice game manufacturers to move from DOS to Windows, Microsoft provided a first attempt at high-speed graphics and animation capabilities for Windows 3.1x, introduced in September 1994. Windows' GDI capabilities were originally designed with static images in mind, allowing only for write-only graphics calls. WinG provided a device-independent interface to graphics and printer hardware, and allowed programs to have both read and write capabilities to the WinGDC (WinG device context).[21]

Applications

Windows 3.1x introduced new possibilities for applications, especially multimedia applications. During this era, Microsoft developed a new range of software that was implemented on this operating environment, called Microsoft Home, Microsoft Bob being one of the programs.

As the first versions of Windows to enjoy major commercial success and software support, Windows 3.1 and WFW 3.11 quickly replaced DOS as the platform for application software on PC compatibles. Multimedia software (especially games) proliferated, although many games continued to run on DOS until Windows 95.

Program Manager

Program Manager was included in all versions of Windows from version 3.0 until Windows XP Service Pack 1. A non-operable icon library named progman.exe is included in Windows XP Service Pack 2, and the file was removed entirely from Windows Vista.

Internet Explorer

Internet Explorer 2 through Internet Explorer 5 were released for Windows 3.1.[22]

Promotion and reception

Microsoft began a television advertising campaign for the first time on March 1, 1992. The advertisements, developed by Ogilvy & Mather, were designed to introduce a broader audience to Windows.[23] Windows 3.1 was shipped worldwide on April 6, 1992, and reached three million sales two months later.[24] The year of Windows 3.1's release was successful for Microsoft, which was named the "Most Innovative Company Operating in the U.S." by *Fortune* magazine, while Windows became the most widely used GUI-based operating environment.[25]

DR-DOS compatibility

The installer to the beta release used code that checked whether it was running on Microsoft-licensed DOS or another DOS operating system (such as DR-DOS). The code ran several functional tests that succeeded on MS-DOS and IBM PC DOS, but resulted in a technical support message on competing operating systems. If the system was not MS-DOS, the installer would fail. Digital Research, who owned DR-DOS, released a patch within weeks to allow the installer to continue. Microsoft disabled, but did not remove, this warning message for the final release of Windows 3.1. When Caldera bought DR-DOS from Novell, they brought a lawsuit against Microsoft over the AARD code, which was later settled with Microsoft paying $280 million.[26][27]

Legacy

Windows 3.x was superseded by the release of Windows 95 in August 1995. Microsoft officially dropped support for all 16-bit versions of Windows on November 1, 2008.

Windows 3.1 found a niche market as an embedded operating system after becoming obsolete in the PC world. As of November 2008, both Virgin Atlantic and Qantas employed it for some of the onboard entertainment systems on long-distance jets. It also sees continued use as an embedded OS in retail cash tills.[28]

On July 9, 2008, it was announced that Windows for Workgroups 3.11 for the embedded devices channel would no longer be made available for OEM distribution as of November 1, 2008.[29]

On July 14, 2013, Linux kernel version 3.11 was officially named "Linux For Workgroups" as a tongue-in-cheek reference to "Windows for Workgroups 3.11".[30]

See also

- 32-bit file access
- IFSHLP.SYS

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