**WINDOWS 95**

**History**

Windows 95 (codenamed Chicago) is a consumer-oriented operating system developed by Microsoft. It was released on August 24, 1995, and was a significant improvement over the company's previous DOS-based Windows products.

Windows 95 merged Microsoft's formerly separate MS-DOS and Windows products. It featured significant improvements over its predecessor, Windows 3.1, 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 co-operatively multitasked 16-bit architecture to a preemptively multitasked 32-bit architecture.

Accompanied by an extensive marketing campaign, Windows 95 introduced numerous functions and features that were featured in later Windows versions, such as the taskbar, the "Start" button and the way the user navigates. It was also suggested that Windows 95 had an effect of driving other major players (including OS/2) out of business, something which would later be used in court against Microsoft.

Three years after its introduction, Windows 95 was succeeded by Windows 98. Microsoft ended support for Windows 95 on December 31, 2001.

**Function and features**

1. A complete operating system rather than a graphical user interface running on top of MS-DOS.

o After boot up, the system completely run without MS-DOS environment.

2. Improved windows control and appearance of windows

o Windows 95 has a new system control that located on the upper left corner of each window as an icon. In the upper right of each window, it has a new designed system box. Usually, it displays "Minimize", "Maximize/Restore" and new added "Close" buttons.

3. New introduced Desktop

o Not only to store minimized icons, Windows desktop in Windows 95 can store files, shortcuts and system icons such as "My Computer" and "Recycle Bin".

4. Right button menu

o Right click an object in system usually can bring a pop-up menu with some items like "edit", "copy", "paste", "properties" and "help".

5. New help system

o The help window can resize and jump to anywhere in the screen. It splits to two areas in which left side is the index or keyword window and the right side is the content window.

6. Task bar and start menu

o Similar to the concept of reserved area in Windows 1.x, Windows 95 began to have a task bar to store the links that can active or inactive an running program and display some system information in the tray area. A start menu was include in the task bar can let user access the shortcuts to all programs in a tree structure menu system.

7. Build-in network support with dial-up for different protocols

o The build-in dial-up with support of TCP/IP protocol made user easier to access Internet. In OSR2 version of Windows 95, Microsoft began to integrate Microsoft Internet Explorer in Windows 95.

8. Folder view of all kinds of files and resources

o In Windows 95, files, drives, shortcuts and network resources can all be displayed in a folder view in the new Windows Explorer which replaced Program Manager in pervious version of Windows.

9. Support of 32 bit application, pre-emptive multitasking and thread

o These functions made Windows 95 to have the ability to run more complex tasks and programs.

**User interfaces**

Windows 95 introduced a redesigned shell based around a desktop metaphor; the desktop was re-purposed to hold shortcuts to applications, files and folders. By contrast, Windows 3.1's desktop was used to display icons of running applications. In Windows 95, they were now displayed as buttons on a taskbar across the bottom of the screen, which also contained a notification area used to display icons for background applications, a volume control and the current time. The Start menu, invoked by clicking the "Start" button on the taskbar, was introduced as an additional means of launching applications or opening documents. While maintaining the program groups used by its predecessor Program Manager, it now displayed applications within cascading sub-menus. The previous File Manager program was also replaced by Windows Explorer.

In 1994, Microsoft designers Mark Malamud and Erik Gavriluk approached Brian Eno to compose music for the Windows 95 project. The result was the six-second start-up music-sound of the Windows 95 operating system, The Microsoft Sound.

When released for Windows 95 and NT4, Internet Explorer 4 came with an optional Windows Desktop Update, which modified the shell to provide new features integrated with Internet Explorer, such as Active Desktop (which allowed Internet content to be displayed directly on the desktop) and additional updates to Windows Explorer.

Some of the user interface elements introduced in Windows 95, such as the desktop, taskbar, Start menu and Windows Explorer file manager, remained fundamentally unchanged on future versions of Windows.

**System requirements**

Official system requirements were an Intel 80386DX CPU of any speed, 4 MB of system RAM and 50–55 MB of hard disk space depending on features selected. These minimal claims were made in order to maximize the available market of Windows 3.1 migrations. This configuration would rely heavily on virtual memory and was only optimal for productive use on single-tasking dedicated workstations. It was possible to run Windows 95 on a 386 SX, but this led to even less acceptable performance due to its 16-bit external data bus. To achieve optimal performance, Microsoft recommends an Intel 80486 or compatible CPU with at least 8 MB of RAM. Windows 95 may fail to boot on computers with more than approximately 480 MB of memory. In such case, reducing the file cache size or the size of video memory can help. The theoretical maximum according to Microsoft is 2 GB.

Windows 95 was superseded by Windows 98 and could still be directly upgraded by either Windows 2000 Professional or Windows ME. On December 31, 2001, Microsoft ended its support for Windows 95, making it an "obsolete" product per the Microsoft Lifecycle Policy. Even though support for Windows 95 has ended, the software has occasionally remained in use on legacy systems for various purposes. In addition, some video game enthusiasts choose to use Windows 95 for their legacy system to play old DOS games, although some other versions of Windows such as Windows 98 can also be used for this purpose.

Most copies of Windows 95 were on CD-ROM, but a floppy version could also be had for older machines. The retail floppy disk version of Windows 95 came on 13 DMF formatted floppy disks, while OSR 2.1 doubled the floppy count to 26. Both versions exclude additional software that the CD-ROM version might have featured. Microsoft Plus! for Windows 95 was also available on floppy disks. DMF was a special 21-sector format that Microsoft used to store 1.68 MB on floppy disks rather than the usual 1.44 MB.

**Advantages**

Provide better system responsiveness and smoother background processing since it is a 32-bit protected mode operating system. It allows pre-emptive multitasking and multithreading support for Win32 applications.

Protect the user's current investments. Other than Win32 applications, most Windows 3.x applications and DOS applications run on it with faster speed and improved system stability.

Provide a newly redesigned graphical interface that is not only easier to learn and use, but more efficient and more customizable.

Improve user friendliness as it allows longer filename support (up to 255 characters). MS-DOS 8.3 filenames are still maintained and tracked by Windows 95 for compatibility with existing Win16 and MS-DOS based applications.

Provide more efficient file and print support with faster disk/file access and printing.

Simplify the switching among multiple programs by means of the task bar and lets the user launch applications and open documents more easily.

Enhance multimedia support with built-in support for sound, midi, fast CD-ROMs and digital video playback.

Support better network connectivity with simpler and enhanced network support for NetWare, Windows NT Server, Internet and most major network standards.

Reduce time spent on technical problems and simplify systems management since Windows 95 renders Plug and Play support. Plug and Play-compatible devices can be detected and configured automatically. Users are free from the trouble of manual hardware setup and there is no need to worry about IRQs, DMAs and I/O port addresses when a new component is added to the system.

**Disadvantages**

Items dragging and dropping works on most folders except the Control Panel, Printers, or Dial-Up Networking folders. This inconsistency in the interface may confuse some users.

Cannot pre-emptively multitask Win16 applications because it uses the same System Virtual Machine (VM) model as in Windows 3.1 to run Win16 applications. Thus, Windows 95 will revert to a cooperative multitasking environment when running Win16 applications and give them exclusive control of the CPU for as long as the applications are executing.

System protection against buggy applications is weak as compared to other 32-bit OS such as Windows NT and OS/2 Warp. Due to the reason stated above, if a Win16 program hangs, it can tie up critical 16-bit code modules located in the System VM and halt all other processes. To recover from this kind of system crash, the user has to reboot the PC.

There is a security hole with File and Printer sharing for NetWare networks which may affect data security for corporate users. If a Windows 95 user configures his machine to share files and printers with other users on the network using File and Printer Sharing for NetWare networks, and he enables remote administration or install Microsoft Remote Registry Services, it is possible for another user on the network to gain read-only access to his machine.

Windows 95 uses an easily cracked 32-bit key to store the passwords in the PWL file. Again, while the evaluation was under way, Microsoft has released an updated and enhanced security component which uses a 128-bit key and includes enhancements to the way passwords are stored in the PWL file.

**WINDOWS 98**

**History**

The version number is 4.1 and the code name is Menphis. Windows 98 has integrated the Internet standard comprehensively. It unifies and simplifies desktop with Internet technology and allows the users to find and browse the information on the computer or on the internet more simply and faster. It has a faster speed and greater stability. With the brand new self-maintenance and updating function, users can have more spare time to concentrate on work or games instead of system management.

**Function and features**

This new system is edited on the base of Windows95. It improves the hardware standard, such as MMX, and AGP. It has other features like supporting FAT32 file system, multi-display, Web TV and the Internet Explorer integrated to the Windows GUI. That is called Active Desktop.

Besides, in the internal memory management, it improved the problem that when the 16 bit and 32 bit source code are saved to one same storage space, one program error will cause the whole system downtime. From Windows98, the reformation of memory management is to put 16 bit and 32-bit source code to different memory spaces. Once there is a program error, you can just stop that program and the system will not be affected.

*Web-Aware UI*

Using the Web-aware UI included in Windows98, Internet has become one part of UI. The users needn't learn multi-applications - one for the local information, one for browsing network, and of course one for Internet or Intranet. With this interface, Windows98 makes the process a tool for browsing local, network, Intranet, and Internet data. Therefore, you can get information’s you want in a faster and easier way.

*Tools for Internet Communication*

Windows98 also provides abundant tools for on-line communication:

Out Look TM Express: a full-function E-mail and News reader client-side.

Microsoft Net Meeting TM: a solution that provides sound, data, images, meeting function for the Internet meetings.

Personal Web Sewer (and Web Publishing Wizard): it provides a simple way to publish a webpage on the Intranet or Internet.

Microsoft Front Pad: a HTML editor that WYSIWYG (what you see is what you get). It is developed on the base of the edit tool which is the prize winner, full-function webpage creator and management tool of Microsoft FrontPage97.

*Updating*

Windows Update website is the expansion of Windows98.

*Improvement of dial-up network*

The dial-up network has been updated, and it provides: dial-up script (it can connect to the call-board and online service); the UI of dial-up network has been improved for simplifying settings and dial-up connecting; supporting Multilink Channel Aggregaction enables the users to combine all the dial-up lines for higher transmission rate.

*Support for VPN users*

Virtual Private Networking is the new network support for the remote users that enter into their company's network through security association.

*Online help of HTML*

For helping users to find "help" information, Windows98 provides a HTML online help system.

*Setup Enhancements*

The setup of Windows98 has been enhanced for reducing the time cost and increasing the reliability of setup.

*FAT 32 file system*

FAT 32 is the improved version of FAT file system. It allows formatting a 2G hardware to a single driver. That makes the space of disc more effective.

*FAT32 Conversion Utility*

Improvement of power source management

Windows98 supports built-in Advanced Configuration and Power Interface port. That allows you to turn on or off your PC as TV.

*Windows script host*

Windows98 supports direct script from UI or command line (one script is only a command line that can be carried out automatically).

*New accessory tools*

Windows98 provides two new tools: Accessibility Configuration Wizard and a screen magnifying glass.

*Win32 Driver Model*

Win32 Driver Model is a brand new and unified driver model for Windows95 and Wndows NT.

*Windows Maintenance Wizard*

Windows Maintenance Wizard is designed to enhance the self-maintainability of PC.

*Scan Disk*

When the operating system is turned off improperly or heavy mistake of hardware, Windows98 can run the Scan Disk automatically.

*Disk Clean Up*

Disk Clean Up is a tool that cleans up the useless files from the disc automatically. It can increase the effective space.

*System File Checker Utility*

System File Checker Utility follows the key files of your computer. If these files are moved or changed, SFCU can restore them in an easy way. Once the file changes are sensed by SFCU, it will provide you a few kinds of solutions.

*Registry Checker*

Registry Checker is a program that finds and solves registry problems, and back-up registry in time, and also provides experiential support.

*System Configuration Utility*

System Configuration Utility replaces Sysedit with imaging way.

*Version Conflict Manager*

Version Conflict Manager checks the conflict of different versions of installed programs.

*New backups Utility*

This new program supports SCSI tape device and makes backing up faster and easier.

*Remote access server*

Windows98 included all the parts of making the desktop a dial-up server.

*Display Setting Enhancements*

Display Setting Enhancements supports dynamic alteration of screen resolution and color depth.

*Active Movie TM*

Active Movie is a new media transmission system for Windows. It provides high quality video playing; at the same time providing a group of ports that support multimedia applications and tools.

*Support for MMX CPU of Intel*

Support the third applications developed on the base of next generation Intel Pentium Multimedia Extensions (MMX) server for faster audio and video support.

*Multiple Display Support*

Multiple Display Support allows users use multiple displays or graphic adaptor on one single PC.

*Support for new generation hardware*

The main purpose of Windows98 is providing support for the innovation of hardwares recent years.

**Improvements to hardware support**

*Windows Driver Model*

Windows 98 was the first operating system to use the Windows Driver Model (WDM). This fact was not well publicized when Windows 98 was released, and most hardware producers continued to develop drivers for the older VxD driver standard, which Windows 98 supported for compatibility's sake. The WDM standard only achieved widespread adoption years later, mostly through Windows 2000 and Windows XP, as they were not compatible with the older VxD standard Windows Driver Model was introduced largely so that developers would write drivers that were source compatible with future versions of Windows. Device driver access in WDM is actually implemented through a VxD device driver, NTKERN.VXD which implements several Windows NT-specific kernel support functions. NTKERN creates IRPs and sends them to WDM drivers.

Windows Driver Model also includes Broadcast Driver Architecture, the backbone for TV technologies support in Windows. WebTV for Windows utilized BDA to allow viewing television on the computer if a compatible TV tuner card is installed. TV listings could be updated from the Internet and WaveTop Data Broadcasting allowed extra data about broadcasts to be received via regular television signals using an antenna or cable, by embedding data streams into the vertical blanking interval (VBI) portion of existing broadcast television signals.

*USB*

Windows 98 had more robust USB support (e.g. support for USB composite devices) than Windows 95 which only had support in OEM versions (OSR2.1 or later). Windows 98 supports USB hubs, USB scanners and imaging class devices. Windows 98 also introduces built-in support for some USB Human Interface Device class (USB HID) and PID class devices such as USB mice, keyboards, force feedback joysticks etc. including additional keyboard functions through a certain number of Consumer Page HID controls.

USB audio device class support is present from Windows 98 SE onwards. Windows 98 Second Edition improved WDM support in general for all devices, and it introduced support for WDM for modems (and therefore USB modems and virtual COM ports). Microsoft driver support for both USB printers, and for USB mass-storage device class is not available for Windows 98; support for both was introduced in Windows 2000; however generic third party free drivers are available today for USB MSC devices.

*ACPI*

Windows 98 introduced ACPI 1.0 support which enabled Standby (ACPI S3) and Hibernate (ACPI S4) states. However, hibernation support was extremely limited, and vendor-specific. Hibernation was only available if compatible (PnP) hardware and BIOS are present, and the hardware manufacturer or OEM supplied compatible WDM drivers, non-VxD drivers. However, there are hibernation issues with the FAT32 file system, making hibernation problematic and unreliable.

*Other device support improvements*

Windows 98, in general, provides improved—and a broader range of—support for IDE and SCSI drives and drive controllers, floppy drive controllers and all other classes of hardware than Windows 95. There is integrated Accelerated Graphics Port (AGP) support (although the USB Supplement to Windows 95 OSR2 and later releases of Windows 95 did have AGP support). Windows 98 has built-in DVD support and UDF 1.02 read support. The Still imaging architecture (STI) with TWAIN support was introduced for scanners and cameras and Image Color Management 2.0 for devices to perform color space transformations. Multiple monitor support allows using up to 8 multiple monitors and/or multiple graphics adapters on a single PC. Windows 98 shipped with DirectX 5.2 which notably included DirectShow. Windows 98 Second Edition shipped with DirectX 6.1.

**Accessories**

Windows 98 includes Microsoft Magnifier, Accessibility Wizard and Microsoft Active Accessibility 1.1 API upgradeable to MSAA 2.0. A new HTML Help system with 15 Troubleshooting Wizards was introduced to replace WinHelp. A utility to convert FAT16 file systems to FAT32 is provided.

Users can configure the font in Notepad. Microsoft Paint supports GIF transparency. HyperTerminal supports a TCP/IP connection method allowing it to be used as a Telnet client. Imaging for Windows is updated. System Monitor supports output to a log file.

**Windows 98 second edition**

Windows 98 Second Edition (often shortened to SE) is an updated release of Windows 98, released on May 5, 1999. It includes fixes for many minor issues, improved WDM audio and modem support, improved USB support, the replacement of Internet Explorer 4.0 with Internet Explorer 5.0, Web Folders (WebDAV namespace extension for Windows Explorer), and related shell updates. Also included is basic OHCI-compliant FireWire (IEEE 1394a) DV camcorder support (MSDV class driver) and SBP-2 support for mass storage class devices, Wake-On-LAN support (if ACPI compatible NDIS drivers are present) and Internet Connection Sharing, which allows multiple computers on a LAN to share a single Internet connection through Network Address Translation. Other features in the update include DirectX 6.1 which introduced major improvements to DirectSound and the introduction of DirectMusic, improvements to Asynchronous Transfer Mode support (IP/ATM, PPP/ATM and WinSock 2/ATM support), Windows Media Player 6.2 replacing the older Media Player, Microsoft NetMeeting 3.0, MDAC 2.1 and WMI. A memory overflow issue was resolved which in the older version of Windows 98 would crash most systems if left running for 49.7 days (equal to 232 milliseconds). Windows 98 SE could be obtained as retail upgrade and full version packages, as well as OEM and a Second Edition Updates Disc for existing Windows 98 users. Windows 98 Second Edition did not ship with the WinG API or RealPlayer 4.0 unlike the original release of Windows 98, both of these being superseded by DirectX and Windows Media Player.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Version** | **Release date** | **Internet Explorer version** |
| **Windows 98** | 4.10.1998 | June 25, 1998 | [4.01](https://en.wikipedia.org/wiki/Internet_Explorer_4) |
| **Windows 98 Second Edition** | 4.10.2222 | May 5, 1999 | [5.0](https://en.wikipedia.org/wiki/Internet_Explorer_5) |

**System requirements**

System requirements include:

• Intel 80486DX2 66 MHz or a compatible CPU with a math coprocessor (Pentium processor recommended)

• 16 MB of RAM (24 MB recommended, it is possible to run on 8 MB machines with /nm option used during the installation process)

• At least 500 MB of disk space. The amount of space required depends on the installation method and the components selected, but virtual memory and system utilities as well as drivers should be taken into consideration.

• Upgrading from Windows 95 (FAT16) or 3.1 (FAT): 140–400 MB (typically 205 MB).

• New installation (FAT32): 140–255 MB (typically 175 MB).

• VGA or higher resolution monitor (640x480)

• CD-ROM or DVD-ROM drive (floppy install is possible but slow)

• Microsoft Mouse or compatible pointing device (optional).

Users can bypass hardware requirement checks with the undocumented /NM setup switch. This allows installation on computers with processors as old as the 80386.

Windows 98 is not designed to handle more than 1.0 GB of RAM without changes. Workarounds and third-party patches are available to fix this shortcoming.

Both Windows 98 and Windows 98 SE have problems running on hard drives bigger than 32 GB and certain Phoenix BIOS settings. A software update fixed this shortcoming. In addition, until Windows XP with Service Pack 1, Windows was unable to handle hard drives that are over 137 GB in size with the default drivers, because of missing 48-bit Logical Block Addressing support. While Microsoft never officially fixed this issue, unofficial patches are available to fix this shortcoming in Windows 9x, although the author stated that data corruption is possible and didn't guarantee that it would work as expected.

**Advantages**

1. Convenient to install: when installing Windows98, system will lead you to complete the installation, and examine all the common hardwares such as modem, CD-ROM driver, audio card, and printer, etc.

2. More coordinating with the present soft and hard wares: Windows98 provides internal support for more than 1900 present hardware devices, and has passed the test of compatibility with more than 3500 popular softwares. The internal support includes the 32-bit device driver program. That means the hardware being supported will run faster and more effectively under Windows98 environment.

3. Plug and play function: when you are using the "plug and play" device on the computer Windows98 will set it automatically.

4. Improved UI: the desktop of Windows98 makes you concentrate more on your own task. There are only a few graphic objects on the desktop, and that is simpler than before. The "start" button leads you to start the daily work with the computer. If you want to quickly start a frequently-used program or document, you can just pull it to the "start" button. It will be listed with other functions (like set-up procedure, open a document, get help, change system settings, and find files) together in the "start" menu. "My computer" makes browsing the content (all kinds of files, folders, and procedures) of computer more convenient. "Network neighborhood" makes examine and using network simpler. "Recycle bin" provides you a temporary space for placing deleted files. You can choose to shift delete or get back to use.

5. Provide better support for MS-DOS without MS-DOS: different from Windows3.1, Windows98 will not run on the MS-DOS operating system. Windows98 is a tightly integrated system. It enters into the GUI directly instead of command line. But Windows98 still supports MS-DOS.

6. Support long file name: in Windows98, the longest file name can be 255 characters. That makes finding files very easy.

7. The function of mouse stands out: in Windows98, point to any object with the mouse pointer and click the right button, you will see a pop-up menu that lists out all the orders related to the object. With this menu, you can copy, delete, rename, create shortcut, and view the file and folder's attributes.

8. Play CD automatically: if you put a CD that supports automatically playing, Windows98 will play the CD automatically instead of tedious operation procedure to choose play tool.

9. Added and improved the tools of accessories: Windows98 provides a group of tools that adapts to the new interface. "Tablet" is the 32-bit editor. It replaces the "Write" and "Notebook" of Windows3.1. "Picture" is the 32-bit tool that replaces "Brush". As "Picture" is the OLE software, its images can be connected or inset to other documents. The backup of 32 bit makes the backup from computer or disk, magcard easier.

10. Connection with Internet: after the installation of IE4.0 in Windows98, there is an option to open active desktop. That makes IE4.0 one integrated part of Windows98 desktop. Through choosing active desktop, users can set the wallpaper as the HTML page that can directly get information from Internet. Besides, changing the traditional explorer to the Internet Explorer makes different Windows interfaces. "Start" menu includes address bar and interlinkage, collection, and so on, making net play more convenient.

**Disadvantages**

1. Windows 98 does not support and cannot be installed on the new device. The support has been withdrawn by Microsoft. It is hard to find drivers because hardware manufacturers withdraw support for Windows 98.
2. Windows 98 cannot detect large memory (1GB is still stable, forced 2GB-yield blue screen). The utility is very limited especially the network tool. It is easy to the viruses and is easy to hack.
3. Windows 98 is too risky conduct banking transactions from the browser Windows 98 because of its minimal network. The display is too simple and it does not support the latest applications.
4. Windows 98 is soon to be discontinued from Microsoft Support. For modern usage, Windows 98 has only one real practical. Windows 98 has had no bug fixes or security updates since 2006. Most hardware manufacturers no longer supply drivers for Windows 98.
5. Most software developers no longer work to ensure compatibility of their programs with Windows 98. Windows 98 has limited memory protection and no resource tracking, making it prone to the crashes.
6. Windows 98 cannot boot on a computer with more than 512 MB of RAM without unofficial patches and it does not support more than one processor core. The ability to multi-tasking very bad. The ability to multi thread a very bad, handling a bad device. DMA is often conflict and CPU resource management turmoil.

**WINDOWS ME**

**History**

In 1998, Microsoft stated that there would be no version of Windows 9x after Windows 98. In May 1999, however, Microsoft released Windows 98 Second Edition, and then announced a new version of Windows 9x which was later revealed to be codenamed Millennium. In 2000, this was released as Windows Millennium Edition (Windows ME).

At least three beta versions of Windows ME were available during its development phase. On September 24, 1999, Microsoft announced that Windows Millennium Beta 1 was released. Windows Millennium Beta 2 was released on November 24, 1999, and added a couple of new features such as System File Protection and Game Options Control Panel. Several interim builds were released between Beta 1 and 2, and added features such as automatic updates and personalized menus. Beta 3 was released on April 11, 2000, and this version marked the first appearance of its final version startup and shutdown sounds (derived from Windows 2000), as the previous betas used Windows 98 SE's startup and shutdown sounds. The final version boot screen was first featured in Beta 3 build 2513. The general availability date of Windows Millennium Edition was December 31, 2000. Microsoft ended mainstream support for Windows Millennium Edition on December 31, 2003, and extended support ended on July 11, 2006. Windows 98 and Windows 98 SE Extended support ended the same day. Windows ME also contained the Microsoft Java Virtual Machine, which caused it as well as Windows 98 and Windows 98 SE to be pulled from the Microsoft Developer Network at the end of 2003. At launch time, Microsoft announced a time-limited promotion from September 2000–January 2001 which entitled Windows 95 or Windows 98 users to upgrade to Windows ME for $59.95 instead of the regular retail upgrade price of $109.

**Function and features**

*User interface*

Windows ME featured the shell enhancements inherited from Windows 2000 such as personalized menus, customizable Windows Explorer toolbars, auto-complete in Windows Explorer address bar and Run box, Windows 2000 advanced file type association features, displaying comments in shortcuts as tooltips, extensible columns in Details view (I Column Provider interface), icon overlays, integrated search pane in Windows Explorer, sort by name function for menus, Places bar in common dialogs for Open and Save, cascading Start menu special folders, some Plus! 95 and Plus! 98 themes, and updated graphics. The notification area in Windows ME and later supported 16-bit high color icons. The Multimedia control panel was also updated from Windows 98 SE. Taskbar and Start Menu options allowed disabling of the drag and drop feature and could prevent moving or resizing the taskbar, which was easier for new users.

*Hardware support improvements*

• Faster boot times: Windows ME features numerous improvements for improving cold boot time, pre and post-logon boot times and time required for resuming from hibernation. Processing of real mode configuration files, CONFIG.SYS and AUTOEXEC.BAT, is bypassed at startup and essential real mode drivers like HIMEM.SYS and SMARTDRV.EXE are embedded into IO.SYS. The registry is loaded only once; for efficient loading, the registry is split into three files instead of two (SYSTEM.DAT and USER.DAT), with the new file CLASSES.DAT containing the contents of the hive HKEY\_CLASSES\_ROOT required for boot loaded initially. Plug and Play device enumeration is more parallelized than in Windows 98 SE. Boot time is not affected due to unavailability of a DHCP server or other network components. There are also optimizations to prevent boot slowdown due to BIOS POST operations.

• USB Human Interface Device Class: Generic support for 5-button mice is also included as standard and installing IntelliPoint allows reassigning the programmable buttons.

• Windows Image Acquisition: Windows ME introduced the Windows Image Acquisition API for a standardized method of allowing Windows applications to transparently and more easily communicate with image acquisition devices, such as digital cameras and scanners. WIA intended to improve the configuration and the user interface for interacting with scanners and such devices, (which were previously supported by the TWAIN standard) and simplify writing device drivers for developers. WIA also includes support for USB still image capture device classes such as scanners and cameras through the Picture Transfer Protocol.

• Improved power management and suspend/resume operations: The OEM version of Windows ME supports OS-controlled ACPI S4 sleep state (hibernation) and other power management features without manufacturer-supplied drivers.

• USB and FireWire support improvements: Windows ME is the only operating system in the Windows 9x series that includes generic drivers for USB mass storage devices and USB printers. Support for FireWire SBP-2 scanners and storage devices is also improved.

• The wave Out, DirectSound, and DirectShow APIs support non-PCM formats such as AC-3 or WMA over S/PDIF.

*Digital media*

• Windows Movie Maker: This utility is based on DirectShow and Windows Media technologies to provide Microsoft Windows computer systems with basic video capture and edit capabilities. It provides users with the ability to capture, edit, and re-encode media content into the Windows Media format, a tightly compressed format which requires a minimal amount of storage space on the computer's hard disk, when compared to many other media formats.

• Windows Media Player 7: The new version of the Windows multimedia player software introduces jukebox functionality featuring the Media Library, support for CD burning, an integrated media encoder, and the ability to transfer music directly to portable devices. Another new feature is its radio tuner that can be used to search for and connect to radio stations over the internet. Users can also customize the look and feel of the user interface through interactive skins.

• Windows DVD Player: The software DVD player in Windows ME is a redesigned version of the one featured in Windows 98 SE which, unlike its predecessor, does not require a dedicated decoder card for DVD playback. Instead, it supports software decoding through a third-party decoder.

• Image Preview: In Windows ME, images can be viewed by using the Image Preview utility. It allows users to rotate an image, print or zoom in/out an image. Image Preview supports images with .BMP, .DIB, .EMF, .GIF, .JPEG, .PNG, .TIF and .WMF file formats. The My Pictures folder also integrates previewing images.

• Games: Windows ME includes version 7.1 of the DirectX API which introduced DirectPlay Voice, and also offers several new games: Internet Backgammon, Internet Checkers, Internet Hearts, Internet Reversi, Internet Spades. It also includes Spider Solitaire from Plus! 98 and Pinball from Plus! for Windows 95. The final version of DirectX available for Windows ME is DirectX 9.0c, which was released on 7 April 2006.

*Networking technologies*

• Net Crawler: Windows ME introduced a net crawling feature which automatically searches out and creates shortcuts to network shares and printers in My Network Places. This can be controlled using the Automatically search for network folders and printers option. Shortcuts that are added by the net crawler but not detected again on the network in a reasonable time period are aged out and deleted.

• New TCP/IP Stack: Windows ME includes the Windows 2000 networking stack and architecture which was known to be more reliable, full-featured, stable and offered better performance. Support for networking over FireWire, improved infrared support, a network diagnostic troubleshooter and a new Home Networking wizard are also included.

• The Home Networking Wizard is designed to help users to set up a computer that is running Windows ME for use on a small home network. This includes setting up Internet Connection Sharing (ICS) on a computer running Windows ME so the computer can share a connection to the Internet with other computers on the home network.

• Dial-up Networking component was updated in Windows ME, and provides several enhancements while maintaining the desired features of prior releases of the operating system. The user interface had been reworked to provide all configurable parameters in one convenient location. The user interface now included three new tabs: Networking, Security and Dialing. To improve dial-up networking, Windows ME includes built-in support for the Connection Manager dial-up client. Using the Connection Manager Administration Kit (an optional networking component in Windows 2000 Server), network administrators can pre-configure and deploy dial-up networking connections, by means of a Connection Manager service profile, to Windows ME–based client machines.

• Network Driver Interface Specification (NDIS) version 5.0 for Windows ME was enhanced to provide programming interface parity with NDIS version 5.0 in Windows 2000. This means that the programming interfaces that the author of a network device driver uses are the same for both of these Windows platforms.

• Universal Plug and Play: Windows ME introduced support for Universal Plug and Play (UPnP). Universal Plug and Play and NAT traversal APIs can also be installed on Windows 98 and Windows 98 SE by installing the Windows XP Network Setup Wizard.

*System utilities*

• System Restore: Windows ME introduced the "System Restore" logging and reversion system, which was meant to simplify troubleshooting and solve problems. It was intended to work as a rollback and recovery feature so that if the installation of an application or a driver adversely affected the system, the user could undo the installation and return the system to a previously working state. It does this by monitoring changes to Windows system files and the registry. System Restore protects only the operating system files, not documents, and therefore is not a substitute for a backup program.

• System File Protection: First introduced with Windows 2000 (as Windows File Protection), and expanding on the capabilities introduced with System File Checker in Windows 98, System File Protection aimed to protect system files from modification and corruption silently and automatically. When the file protection is in effect, replacing or deleting a system file causes Windows ME to silently restore the original copy. The original is taken from a hard drive backup folder (%WinDir%\Options\Install) or from the Windows ME installation CD, if the cached copy of files on the hard disk has been deleted. If no installation CD is in the drive, a dialog box alerts the user about the problem and requests that the CD be inserted. System File Protection is a different technology from System Restore and should not be confused with the latter. System Restore maintains a broad set of changed files including added applications and user configuration data stored repeatedly at specific points in time restored by the user, whereas System File Protection protects operating system files with no user input.

• System Configuration Utility allows users to manually extract and restore individual system files from the Windows ME setup files. It has also been updated with three new tabs called "Static VxDs", "Environment" and "International". The Static VxDs tab allows users to enable or disable static virtual device drivers to be loaded at startup, the Environment tab allows users to enable or disable environment variables, and the International tab allows users to set international language keyboard layout settings that were formerly set via the real mode MS-DOS configuration files. A Cleanup button on the Startup tab allows cleaning up invalid or deleted startup entries.

• System Monitor has been updated with a Dial-Up Adapter section. Users can now monitor items such as Connection Speeds, Bytes Received or Transmitted / Second.

• SCANDISK runs from within Windows upon an improper shutdown before the Windows Shell loads.

• Automatic Updates: The Automatic Updates utility automatically downloads and installs critical updates from the Windows Update Web site with little user interaction. It is set up to check Windows Update once every 24 hours by default. Users can choose to download which update they want, although high-priority updates must be downloaded and installed.

• Compressed Folders: Windows ME includes support for ZIP files through a shell extension known as Compressed Folders. Originally introduced in the Plus! 98 pack for Windows 98, this feature allows users to create, access and extract files from ZIP archives similar to a regular folder in Windows. The user can also restrict access to files with a password.

• A new Help and Support program has also been added, replacing the HTML Help-based documentation in Windows 2000 and Windows 98. The Help and Support Center is entirely HTML-based and takes advantage of a technology called Support Automation Framework (SAF), that can show support information from the internet, allows collecting data for troubleshooting via WMI and scripting and for third parties to plug into Windows Help and Support. Several other support tools also shipped with Windows ME.

• Windows ME also includes Internet Explorer 5.5 which supports a new Print Preview feature. It also shipped with the MSN Messenger Service.

*Accessibility features*

• On-Screen Keyboard: Originally introduced with Windows 2000, a program called On-Screen Keyboard has been added, which makes it possible to input characters using the mouse instead of the keyboard. This feature is useful for computers that use a tablet as the primary pointing device or for accessibility purposes.

• The Mouse Control Panel incorporates IntelliPoint features, namely ClickLock (selecting or dragging without continuously holding down the mouse button), hiding the pointer while typing and showing it by pressing Ctrl.

• The cursor (system caret) can be set to a thicker width.

• Increased Active Accessibility support in utilities such as Calculator and Magnifier.

**System Requirements**

|  |  |  |
| --- | --- | --- |
|  | **Minimum** | **Recommended** |
| **x86** | | |
| **CPU** | [Pentium](https://en.wikipedia.org/wiki/Pentium), 150 [MHz](https://en.wikipedia.org/wiki/MHz) | [Pentium II](https://en.wikipedia.org/wiki/Pentium_II), 300 [MHz](https://en.wikipedia.org/wiki/MHz) |
| **Memory** | 32 [MB](https://en.wikipedia.org/wiki/Megabyte) | 64 [MB](https://en.wikipedia.org/wiki/Megabyte) |
| **Hard drive** | 320 [MB](https://en.wikipedia.org/wiki/Megabyte) | 2 [GB](https://en.wikipedia.org/wiki/Gigabyte) |
| **Media** | * [CD or DVD drive](https://en.wikipedia.org/wiki/Optical_disc_drive) [3.5" inch floppy drive](https://en.wikipedia.org/wiki/3.5%22_inch_floppy_drive) | |
| **Display** | [VGA](https://en.wikipedia.org/wiki/VGA) | * [SVGA](https://en.wikipedia.org/wiki/SVGA) * Video capture device for [Windows Movie Maker](https://en.wikipedia.org/wiki/Windows_Movie_Maker) |
| **Sound hardware** | * Sound card * Speakers or headphones | Microphone for [Windows Movie Maker](https://en.wikipedia.org/wiki/Windows_Movie_Maker) |
| **Network** | None | 56.6 [Kbps](https://en.wikipedia.org/wiki/Kilobit_per_second) modem or faster with current Internet connection |
| **Input device(s)** | [Mouse](https://en.wikipedia.org/wiki/Mouse_(computing)) or compatible pointing device | |

**Advantages**

Windows ME features numerous improvements for improving cold boot time, pre and post-logon boot times and time required for resuming from hibernation.

Improved power management and suspend/resume operations: The OEM version of Windows ME supports OS-controlled ACPI S4 sleep state (hibernation) and other power management features without manufacturer-supplied drivers.

USB and FireWire support improvements: Windows ME is the only operating system in the Windows 9x series that includes generic drivers for USB mass storage devices and USB printers.

Windows ME introduced the "System Restore" logging and reversion system, which was meant to simplify troubleshooting and solve problems.

Dial-up Networking component was updated in Windows ME, and provides several enhancements while maintaining the desired features of prior releases of the operating system.

**Disadvantages**

Unlike past versions of Windows, Windows ME was aimed primarily at home users, and removed certain enterprise-oriented features. Several features of its predecessors did not work or were officially unsupported by Microsoft on Windows ME, including Automated Installation, Active Directory client services, System Policy Editor, Personal Web Server and ASP. These features were supported on its predecessors, Windows 98 and Windows 95. A Resource Kit publication, targeted towards system administrators, was never published for Windows ME.

**WINDOWS XP BLACK EDITION**

**History**

Windows XP SP3 Black Edition ISO has trusted windows in lots of around the world that are worldwide it is numerous installed and windows which can be set up. Or windows 7 black editions that are colored are colored be the modified and version that advanced of XP show. Microsoft itself releases the variation that is black colored of Windows 7. It may be the choice that is much better to put together the version that is black colored your laptop computer.

It may be the choice that is much better to put together the version that is black colored your notebook computer. It gives all previously released updates for the operating system. It updates lots that are tiny of functionalities. Management console3.0 has arranged in this series that is black of Wi-Fi access to create suffering that is cordless It included a health program that is checking managing protection features.

**Function and features**

**•** Course and simplicity will be the major top features of the or Windows 7 version that is black colored.

• Or Windows 7 variation that is black colored of a volume that is genuine of full programs being practical.

• No item guidelines are required while other windows required some product tips for establishing the Windows all on your laptop in other words.

• Windows 8, Windows 8.1 and Windows 10 etc. to set this variation up that is black.

• It’s mostly used and set up due to all motorists such as LAN, WAN, SATA and chipset drivers, etc. already build in this edition that is black colored.

• Antivirus often packed in this variation, so no antivirus is needed to install in the laptop computer.

• It is extremely a task which not installed that is hard also acutely active to start the files being hefty.

• WGA removed in this variation that is black colored.

• Windows media player established in this version that is black colored.

• Motorists have updated when it is on this internet.

• ISO booted may also be a choice that is extra this version that is black colored

• Unneeded and files and this can be harmful removed in this variation that is black

• Furthermore, comprises of, i.e., eight which have currently packed in this edition that is black

• Booting speed is relatively fast

• It is set up on all as a type of laptops, computers, etc. that’s the justification it is numerous downloaded or windows that arranged

**Advantages**

It improves the security in the Internet.

There will be no problem or conflict between the software and the hardware and installing the software was easy compared to the installation on other operating systems.

It can protect your email address more securely especially through Microsoft Outlook which helps to avoid the spammers getting your email address.

Windows XP helps in downloads before downloading an attachment, you will now be alerted to unsafe attachments that might contain harmful viruses which is specifically applicable to those using Internet Explorer.

**Disadvantages**

Windows XP is expensive to buy. It cannot be installed onto multiple computers because it only has a single user license. It is prone to crashing therefore making it unstable and it cannot be run on old hardware.

This operating system would appeal to most businesses and users that need an easier operating system to control. Microsoft party severely limit the use of comfort to Windows XP operating system in which each user must activate the Microsoft on certain period.

Windows XP cannot be installed on multiple computers as the product activation is limited to just one computer. If you want to install Windows XP on another computer, you will have to purchase a new license and a key code which can prove to be very costly.

**WINDOWS XP HOME EDITION**

**History**

Microsoft Windows XP Home Edition is the new operating system for home users who currently use Microsoft Windows 95, Microsoft Windows 98, or Microsoft Windows Millennium Edition (ME).

**Function and features**

Windows XP Home Edition is designed specifically for home users. It provides them with the reliability and security of Windows XP Professional and the efficient simplicity of Windows Me. Windows XP Home Edition offers enhanced support for computer games, storage of digital media (such as the My Movies and My Music folders), and wizards for connecting to the Internet.

The hardware requirements for installing Windows XP Home Edition and Windows XP Professional are similar; however, Windows XP Home Edition supports only one CPU.

Users can upgrade to Windows XP Home Edition from Windows 98 or Windows Me-but not from Windows 95, Microsoft Windows NT Workstation, or Windows 2000 Professional. You can upgrade to Windows XP Professional from any of those operating systems, except Windows 95.

Windows XP Home Edition offers security features that are important for home users, especially those using cable modems or other Internet connection methods that do not require dialing into an ISP to browse the Web or read e-mail. Windows XP Service Pack 2 enhances the security of Windows XP Home Edition by prompting the user to enable Automatic Updates after the Service Pack is installed and by enabling the new Windows Firewall feature by default.

Users of Windows XP Home Edition might need to remotely access resources on corporate local area networks (LANs). Stored User Names and Passwords allow users to authenticate to remote networks and to access shares on domains. Domain-based credentials cannot be stored on a computer running Windows XP Home Edition. However, when connecting to a domain by using Remote Access or virtual private networking (VPN), the user’s remote access credentials are stored during that session to allow user access to domain resources.

In addition, you cannot control access to local shares on a computer running Windows XP Home Edition from the domain’s user-level security.

Windows XP Home Edition supports the FAT, FAT32, and NTFS file systems. To take advantage of large disk and file support, performance increases, and file security in Windows XP, use NTFS as your file system. However, Windows XP Home Edition does not support EFS, and it allows only limited control over Access Control Lists (ACLS) to allow simple file sharing. Simplified file sharing in Windows XP allows for three states: Me Only, Local Users, and The World (either the user’s network or the Internet). File sharing is implemented by using the Guest account.

**Advantages**

It is vital that the company is liable and offers the best customer service and advice to the users to keep up the good name.

Microsoft Windows XP is one of the most widely used operating systems in the world even with the release of Windows Vista and Windows 7. There will be no problem or conflict between the software and the hardware and installing the software was easy compared to the installation on other operating systems.

Windows XP can protect your email address more securely especially through Microsoft Outlook which helps to avoid the spammers getting your email address. Windows XP helps in downloads before downloading an attachment, you will now be alerted to unsafe attachments that might contain harmful viruses which is specifically applicable to those using Internet Explorer.

**Disadvantages**

Windows XP is expensive to buy. It cannot be installed onto multiple computers because it only has a single user license. It is prone to crashing therefore making it unstable and it cannot be run on old hardware.

This operating system would appeal to most businesses and users that need an easier operating system to control. Microsoft party severely limit the use of comfort to Windows XP operating system in which each user must activate the Microsoft on certain period.

Windows XP is a prime target for the malware creators when you surf the Internet without anti-virus software. It will be very dangerous because viruses made for Windows XP can collect your personal information or they cause irreparable damage to the operating system.

Windows XP cannot be installed on multiple computers as the product activation is limited to just one computer. If you want to install Windows XP on another computer, you will have to purchase a new license and a key code which can prove to be very costly.

The main disadvantage of the operating system is security. Microsoft has discontinued security updates for XP, rendering it vulnerable to the new virus and the spyware attacks.

**WINDOWS XP PROFESSIONAL x64 EDITION**

**History**

Microsoft Windows XP Professional x64 Edition released on April 25, 2005 is an edition of Windows XP for x86-64 personal computers. It is designed to use the expanded 64-bit memory address space provided by the x86-64 architecture.

The primary benefit of moving to 64-bit is the increase in the maximum allowable random access memory (RAM). Windows XP 32-bit is limited to a total of 4 gigabytes. Although the theoretical memory limit of a 64-bit computer is about 16 Exabyte (17.1 billion gigabytes), Windows XP x64 is limited to 128 GB of physical memory and 16 terabytes of virtual memory.

Windows XP Professional x64 Edition uses the same kernel and code tree as Windows Server 2003 and is serviced by the same service pack. However, it includes client features of Windows XP such as System Restore, Windows Messenger, Fast User Switching, Welcome Screen, Security Center and games, which Windows Server 2003 does not have.

Windows XP Professional x64 Edition is not to be confused with Windows XP 64-bit Edition, as the latter was designed for Itanium architecture. During the initial development phases, Windows XP Professional x64 Edition was named Windows XP 64-Bit Edition for 64-Bit Extended Systems.

**Function and features**

Windows XP Professional x64 Edition uses a technology named Windows-on-Windows 64-bit (WoW64), which permits the execution of 32-bit software. It was first used in Windows XP 64-bit Edition (for Itanium architecture). Later, it was adopted for x64 editions of Windows XP and Windows Server 2003.

Since the x86-64 architecture includes hardware-level support for 32-bit instructions, WoW64 simply switches the process between 32- and 64-bit modes. As a result, x86-64 architecture microprocessors suffer no performance loss when executing 32-bit Windows applications. On the Itanium architecture, WoW64 was required to translate 32-bit x86 instructions into their 64-bit Itanium equivalents—which in some cases were implemented in quite different ways—so that the processor could execute them. All 32-bit processes are shown with \*32 in the task manager, while 64-bit processes have no extra text present.

Although 32-bit applications can be run transparently, the mixing of the two types of code within the same process is not allowed. A 64-bit program cannot use a 32-bit dynamic-link library (DLL) and similarly a 32-bit program cannot use a 64-bit DLL. This may lead to the need for library developers to provide both 32- and 64-bit binary versions of their libraries. Specifically, 32-bit shell extensions for Windows Explorer fail to work with 64-bit Windows Explorer. Windows XP x64 Edition ships with both 32-bit and 64-bit versions of Windows Explorer. The 32-bit version can become the default Windows Shell. Windows XP x64 Edition also includes both 32-bit and 64-bit versions of Internet Explorer 6, so that user can still use browser extensions or ActiveX controls that are not available in 64-bit versions.

Only 64-bit drivers are supported in Windows XP x64 Edition, but 32-bit codecs are supported as long as the media player that uses them is 32-bit.

**Advantages**

• Supports up to 128 GB of RAM.

• Supports up to two physical CPUs (in separate physical sockets) and up to 64 logical processors (i.e. cores or threads on a single CPU). As such, as of 2014, the OS supports all commercially available multicore CPUs, including Intel Core series, or AMD FX series.

• Uses the Windows Server 2003 kernel which is newer than 32-bit Windows XP and has improvements to enhance scalability. Windows XP Professional x64 Edition also introduces Kernel Patch Protection (also known as PatchGuard) which can help improve security by helping to eliminate rootkits.

• Supports GPT-partitioned disks for data volumes (but not bootable volumes) after SP1, which allows using disks greater than 2 TB to be used as a single GPT partition for storing data.

• Allows faster encoding of audio or video, higher performance video gaming and faster 3D rendering in software optimized for 64-bit hardware.

• Ships with Internet Information Services (IIS) version 6.0. All other 32-bit editions of Windows XP have IIS v5.1.

• Ships with Windows Media Player (WMP) version 10. Windows XP Professional shipped with WMP 8 (with WMP 9 shipping with Service Pack 2 and later), although WMP 11 is available for Windows XP Service Pack 2 or later.

• Benefits from IPsec features and improvements made in Windows Server 2003.

• Benefits from Shadow Copy features introduced in Windows Server 2003.

• Remote Desktop Services supports Unicode keyboard input, client-side time-zone redirection, GDI+ rendering primitives for improved performance, FIPS encryption, fallback printer driver, auto-reconnect and new Group Policy settings.

• Files and Settings Transfer Wizard supports migrating settings from both 32-bit and 64-bit Windows XP PCs.

**Disadvantages**

• Does not include NTVDM or Windows on Windows, so 16-bit Windows applications or native MS-DOS applications cannot run. Some old 32-bit programs use 16-bit installers which do not run; however, replacements for 16-bit installers such as ACME Setup versions 2.6, 3.0, 3.01, 3.1 and InstallShield 5.x are hardcoded into WoW64 to mitigate this issue.

• Only 64-bit drivers are supported.

• Any 32-bit Windows Explorer shell extensions fail to work with 64-bit Windows Explorer. However, Windows XP x64 Edition also ships with a 32-bit Windows Explorer. It is possible to make it the default Windows Shell.

• Windows Command Prompt does not load in full-screen.

• No native support for Type 1 fonts.

• Does not contain a Web Extender Client component for Web Folders (WebDAV).

• Spell checking is not available in Outlook Express.

• IEEE 1394 (FireWire) audio is not supported.

• Does not support hibernation if PC's RAM is greater than 4 GB.

**WINDOWS XP PROFESSIONAL EDITION**

**History**

The features in the table below illustrate why the Microsoft Windows XP Professional operating system is the best choice for businesses of all sizes. Windows XP Professional integrates the strengths of Windows 2000 Professional—standards-based security, manageability, and reliability—with the best business features of Windows 98 and Windows Me—Plug and Play, simplified user interface, and innovative support services—to create the best desktop operating system for business. Whether your business deploys Windows XP Professional on a single computer or throughout a worldwide network, this new operating system increases your computing power while lowering the total cost of ownership for desktop computers.

**Function and features**

*The New Standard for Efficient and Dependable Computing*

|  |  |  |
| --- | --- | --- |
| **Feature** | **Description** | **Benefit** |
| **Reliable** |  |  |
| **Built on the Windows Engine** | Windows XP Professional is built on the proven code base of Windows NT® and Windows 2000, which features a 32-bit computing architecture and a fully protected memory model. | Windows XP Professional will provide a dependable computing experience for all business users. |
| **Enhanced Device Driver Verifier** | Building on the device driver verifier found with Windows 2000, the Windows XP Professional version will provide even greater stress tests for device drivers. | Device drivers that pass these tests will be the most robust drivers available, which will ensure maximum system stability. |
| **Dramatically Reduced Reboot Scenarios** | Eliminates most scenarios that forced end users to reboot in Windows NT 4.0 and Windows 95/98/Me. Also, many software installations will not require reboots. | Users will experience higher levels of system uptime. |
| **Improved Code Protection** | Critical kernel data structures are read-only, so that drivers and applications cannot corrupt them. All device driver code is read-only and page protected. | Rogue applications cannot adversely affect core operating system areas. |
| **Side-by-Side DLL Support** | Provides a mechanism for multiple versions of individual Windows components to be installed and run "side by side." | This helps to address the "DLL hell" problem by allowing an application written and tested with one version of a system component to continue to use that version even if an application that uses a newer version of the same component is installed. |
| **Windows File Protection** | Protects core system files from being overwritten by application installations. If a file is overwritten, Windows File Protection will restore the correct version. | By safeguarding system files, Windows XP Professional mitigates many of the most common system failures encountered in earlier versions of Windows. |
| **Windows Installer** | A system service that helps users install, configure, track, upgrade, and remove software programs correctly. | Will help minimize user downtime and increase system stability. |
| **Enhanced Software Restriction Policies** | Provide administrators a policy-driven mechanism to identify software running in their environment and control its ability to execute. This facility can be used in virus and trojan horse prevention and software lockdown. | Can contribute to improved system integrity, manageability, and, ultimately, lower cost of ownership of the PC. |
| **Performance** |  |  |
| **Preemptive Multitasking Architecture** | Designed to allow multiple applications to run simultaneously, while ensuring great system response and stability. | Run your most demanding applications while still experiencing impressive system response time. |
| **Scalable Memory and Processor Support** | Supports up to 4 gigabytes (GB) of RAM and up to two symmetric multiprocessors. | Users who need the highest level of performance will be able to work with the latest hardware. |
| **Secure** |  |  |
| **Encrypting File System (EFS) with Multi-user Support** | Encrypts each file with a randomly generated key. The encryption and decryption processes are transparent to the user. In Windows XP Professional, EFS can allow multiple users acccess to an encrypted document. | The highest level of protection from hackers and data theft. |
| **IP Security (IPSec)** | Helps protect data transmitted across a network. IPSec is an important part of providing security for virtual private networks (VPNs), which allow organizations to transmit data securely over the Internet. | IT administrators will be able to build secure virtual private networks quickly and easily. |
| **Smart Card Support** | Smart card capabilities are integrated into the operating system, including support for smart card login to terminal server sessions hosted on Windows Server 2003-based (the next-generation server platform) terminal servers. | Smart cards enhance software-only solutions such as client authentication, interactive log-on, code signing, and secure e-mail. |
| **Easy to Use** |  |  |
| **Fresh Visual Design** | While maintaining the core of Windows 2000, Windows XP Professional has a fresh visual design. Common tasks have been consolidated and simplified, and new visual cues have been added to help users navigate their computers more easily. Administrators or end users can choose this updated user interface or the classic Windows 2000 interface with the click of a button. | Allows the most common tasks to be exposed easily, helping users get the most of out of Windows XP Professional. |
| **Adaptive User Environment** | Adapts to the way an individual user works. With a redesigned Start menu, the most frequently used applications are shown first. When you open multiple files in the same application, (such as multiple e-mail messages in the Outlook® messaging and collaboration client) the open windows will be consolidated under a single task bar button. To remove some of the clutter from the notification area, items that are not being used will be hidden. All of these features can be set via Group Policy. | A cleaner work environment allows the user to be more efficient. Users can find the crucial data and applications they need quickly and easily. All of these settings can be controlled via policy, so IT administrators can decide what features are most appropriate for their environments. |
| **Work with Rich Media** | Windows Media™ Player makes it easy for you to:   * View rich media information, for example, virtual company meetings or "just-in-time" learning * Receive the best possible audio and video quality, because the player adapts to network conditions * Tune in to nearly 3,000 Internet radio stations * Create custom CDs up to 700 percent faster than other solutions * View DVD movies | Windows Media™ Player is the first player to combine all of your common digital media activities into a single, easy-to-use place. |
| **Context-Sensitive Task Menus** | When a file is selected in Windows Explorer, a dynamic menu appears. This menu lists tasks that are appropriate for the type of file selected. | Common tasks that were hard to find in previous versions of Windows are exposed for easy access. |
| **Integrated CD Burning** | Support for burning CDs on CD-R and CD-RW drives is integrated into Windows Explorer. | Archiving data onto CD is now as easy as saving to a floppy disk, and does not require an expensive third-party solution. |
| **Easily Publish Information to the Web** | Files and folders can be easily published to any Web service that uses the WebDAV protocol. | Users will be able to publish important information to Web servers on the company's intranet. |
| **DualView** | A single computer desktop can be displayed on two monitors driven off of a single display adapter. With a laptop computer, a user could run the internal LCD display as well as an external monitor. A variety of high-end display adapters will support this functionality for desktops. | Users will be able to maximize their productivity by working on multiple screens, while removing the need for multiple CPUs. |
| **Troubleshooters** | Help users and administrators configure, optimize, and troubleshoot numerous Windows XP Professional functions. | Enable users to be more self-sufficient, resulting in greater productivity, fewer help desk calls, and better customer service. |

*Advanced Management, Deployment, and Support Tools to Make your Job Easier*

|  |  |  |
| --- | --- | --- |
| **Feature** | **Description** | **Benefit** |
| **Management & Deployment** |  |  |
| **Application Compatibility** | We've provided fixes to hundreds of applications that didn't run on Windows 2000 Professional to run on Windows XP Professional. As new application fixes are published, we will make them available via the Windows Update service. In addition to the application fixes, Windows XP Professional has a mechanism that allows the user or IT administrator to specify if an application needs to run in either Windows NT 4.0 or Windows 95/98 or Windows Me compatibility mode. In this mode, Windows XP Professional system DLLs provide appropriate responses to the running application, allowing it to execute appropriately without a noticeable loss of performance. | Users will experience increased application compatibility when compared with Windows 2000 Professional, and as more application fixes are roled out, they'll be automatically available. Application compatibility modes will potentially allow thousands of applications to run that don't have applications fixes on Windows XP Professional. |
| **UserState Migration Tool** | Helps administrators to migrate a user's data and application/operating system settings from an old computer to a new Windows XP Professional desktop computer. | IT administrators can reduce the number of help desk calls after a migration, and end users will have less downtime because they will retain their familiar operating environment. |
| **Automatic Updates** | With the user's permission, Windows XP Professional automatically downloads critical and security updates in the background when the user is connected to the Internet. These downloads are designed to minimize the impact on Internet browsing, and the update automatically resumes upon reconnection if the computer is disconnected before the download is complete. Once the update has been downloaded, the user can choose to install it. | Users will automatically receive critical updates without impacting their ability to use network connections. |
| **Windows Update Improvements** | As application compatibility updates, new device drivers, and other updates are released for Windows XP Professional, they become available on the Windows Update Web site. (Users can also find critical and security updates here, if they choose not to use automatic updating.) Administrators can disable user access to Windows Update. The Windows Update Catalog is provided for administrators to download updates and deploy them as appropriate in their organizations. | The operating system updates will always be available to ensure the most reliable and full-featured computing experience. |
| **Support for Latest Hardware Standards** | Windows XP Professional supports the latest hardware standards. It supports UDF 2.01, the latest standard for reading DVD discs. It also supports the formatting of DVD-RAM drives with the FAT32 file system. DirectX® 8 API support will be included, and Windows XP Professional fully supports standards for Infrared Data Association (IrDA), Universal Serial Bus (USB), and the high-speed bus known as IEEE 1394. | Will support the latest hardware standards, and be optimized for the latest applications. |
| **Internet Explorer 6 Administration Kit** | Internet Explorer 6 is more customizable via the Internet Explorer Administration Kit (IEAK 6), so it's easier to deploy and maintain the browser. Version 6 of the IEAK adds control over new features such as the Media bar, Auto Image Resize, and the Personal bar. | Administrators have a greater degree of flexibility in deploying Internet Explorer 6. |
| **System Preparation Tool (SysPrep)** | SysPrep helps administrators clone computer configurations, systems, and applications. A single image, which includes the operating system and business applications, can be restored to multiple different machine configurations. | SysPrep will allow administrators to reduce the number of operating system images they maintain, while reducing the time it takes to deploy a typical desktop system. |
| **Setup Manager** | A graphical wizard that guides administrators in designing installation scripts. | It's now easier to create answer files for unattended installations. |
| **Remote OS Installation** | Windows XP Professional can be installed across the network (including SysPrep images). **Note** This feature requires the Active Directory™ service. | Saves time and reduces deployment costs by allowing administrators to standardize desktop environments to match organizational requirements. |
| **Multilingual Support** | Allows users to easily create, read, and edit documents in many languages with the English version of Windows XP Professional. The Multilanguage User Interface version lets you change the user interface language for each user. | IT administrators will no longer need to deploy multiple localized versions of the operating system. This will speed deployments, reduce operating system images, and lower the total cost of ownership. |
| **Safe Mode Startup Options** | Allows Windows XP Professional to boot the system at the most basic level, using default settings and minimum device drivers. | Provides a means to boot the system into the GUI so that IT professionals can repair the operating system. |
| **Group Policy** | Group Policy settings simplify the administration of users and objects by letting administrators organize them into logical units, such as departments or locations and then assign the same settings, including security, appearance, and management options, to all employees in that group. There are hundreds of new policies available for Windows XP Professional, in addition to those provided for Windows 2000 Professional. | As users move from location to location, they still have access to critical data, and they maintain their own customized work environment. |
| **Resultant Set of Policy (RSoP)** | Allows administrators to see the effect of Group Policy on a targeted user or computer. With RSoP, administrators have a powerful and flexible base-level tool to plan, monitor, and troubleshoot Group Policy. | Administrators can more easily implement and manage Group Policy using the new RSoP tool. |
| **Microsoft Management Console (MMC)** | Provides a centralized and consistent environment for management tools. | IT administrators will be able to create customized application consoles. |

**Advantages**

It is vital that the company is liable and offers the best customer service and advice to the users to keep up the good name.

Microsoft Windows XP is one of the most widely used operating systems in the world even with the release of Windows Vista and Windows 7. There will be no problem or conflict between the software and the hardware and installing the software was easy compared to the installation on other operating systems.

Windows XP can protect your email address more securely especially through Microsoft Outlook which helps to avoid the spammers getting your email address. Windows XP helps in downloads before downloading an attachment, you will now be alerted to unsafe attachments that might contain harmful viruses which is specifically applicable to those using Internet Explorer.

**Disadvantages**

Windows XP is expensive to buy. It cannot be installed onto multiple computers because it only has a single user license. It is prone to crashing therefore making it unstable and it cannot be run on old hardware.

This operating system would appeal to most businesses and users that need an easier operating system to control. Microsoft party severely limit the use of comfort to Windows XP operating system in which each user must activate the Microsoft on certain period.

Windows XP is a prime target for the malware creators when you surf the Internet without anti-virus software. It will be very dangerous because viruses made for Windows XP can collect your personal information or they cause irreparable damage to the operating system.

Windows XP cannot be installed on multiple computers as the product activation is limited to just one computer. If you want to install Windows XP on another computer, you will have to purchase a new license and a key code which can prove to be very costly.

The main disadvantage of the operating system is security. Microsoft has discontinued security updates for XP, rendering it vulnerable to the new virus and the spyware attacks.

**WINDOWS XP STARTER EDITION**

**History**

This edition, which was code-named "Freestyle" during its development, was first released in September 2002. The initial release was available solely in conjunction with computers that included media center capabilities, and could not be purchased separately. The first major update was released in 2004 and distributed by Tier 1 OEMs who had previously sold Windows XP Media Center Edition PC, and then updated again in 2005, which was the first edition available for System Builders. Many of the features of Windows XP Media Center Edition 2005 (including screen dancers, auto playlist DJ, and high end visual screen savers) were taken from the Windows XP Plus! packages. These were originally shipped as add-ons to Windows XP to enhance the users experience of their Windows XP machine.

Microsoft Windows XP Starter Edition is designed to offer an affordable and easy-to-use entry point to the Windows family of products that is tailored to local markets, in local languages, and is compatible with a wide range of Windows-based applications and devices. Windows XP Starter Edition local language versions will be available initially in Thailand, Malaysia, Indonesia, Russia and India.

In line with Microsoft's other initiatives to enable digital skills training and access to technology, including the Local Language Program, Partners in Learning, and Unlimited Potential, the Microsoft Windows XP Starter Edition Pilot Program supports the company's long-term vision for the global marketplace, empowering even more people to achieve their fullest potential.

**Function and features**

Windows XP Starter Edition balances the needs of first-time PC users in developing technology markets by delivering proven Microsoft technology at a more affordable price. Windows XP Starter Edition features include the following:

• Localized and tailored support. Windows XP Starter Edition features a

redesigned help system, called My Support, which includes a built-in, detailed

Getting Started Guide. In addition, Windows XP Starter Edition comes with a

supplemental CD that contains local language instructional videos designed

specifically for first-time PC users.

• Localized customization. With Windows XP Starter Edition, users can choose from country-specific wallpapers and screensavers with familiar landscapes, flags and geography-specific traditional designs.

• Preconfigured settings. Windows XP Starter Edition will help reduce confusion regarding setup options for entry-level users by preconfiguring advanced settings and enabling the Windows Firewall by default.

• Simplified task management. With Windows XP Starter Edition, first-time

home PC users can have up to three programs and three windows per program running concurrently. Further simplification of the operating system includes the display resolution set to 800x600 maximum and no support for PC-to-PC home networking, sharing printers across a network or more advanced features such as the ability to establish multiple user accounts on a single PC.

**System requirements**

Windows XP Starter Edition is designed for low-cost, entry-level desktop PCs running value-based processors such as Intel's Celeron®; AMD's Duron (TM), Geode (TM) and Sempron (TM); and similar processors from other manufacturers. Windows XP Starter Edition has the following system requirements for the Pilot Program:

• Desktop PC with a Celeron, Duron, Geode, Sempron or similar processor; 233

MHz processor clock speed required and 300 MHz or higher recommended

• 64 MB of RAM; 128 MB of RAM maximum

• 1.5 GB of available hard disk space, 40 GB maximum hard disk space

• CD-ROM or DVD drive

• Super VGA 800x600 resolution video adaptor and monitor

• Microsoft Mouse or compatible pointing device

**Advantages**

Windows XP Starter Edition includes basic Windows XP features that allow users to take advantage of computing experiences popular with most first-time desktop PC users, such as the following:

• Internet connectivity. Windows XP Starter Edition makes it simple to connect to the Internet and browse the Web.

• Software and hardware compatibility. Windows XP Starter Edition will be

compatible with a wide range of Windows-based software applications and

hardware devices, including printers, speakers and cameras.

• Windows user interface. The intuitive Windows user interface makes it easy for users to get up to speed quickly.

• Security. Windows XP Starter Edition users will be able to stay up to date and

more secure with the latest security updates delivered in Windows XP Service

Pack 2 with Advanced Security Technologies.

• Communication. Windows Messenger will help make it fun and easy to

communicate with friends and family through real-time text messaging.

• Digital photography. Users simply plug in a digital camera, and easy-to-use

tools help them store photos, share photos with family and friends, post photos to a website, or even make their own prints with one of the many printers currently supported by Windows XP.

• Digital music and video. Windows XP Starter Edition includes Windows

Media® Player 9 Series, which allows users to listen to music and watch videos.

**Disadvantages**

Windows XP is expensive to buy. It cannot be installed onto multiple computers because it only has a single user license. It is prone to crashing therefore making it unstable and it cannot be run on old hardware.

This operating system would appeal to most businesses and users that need an easier operating system to control. Microsoft party severely limit the use of comfort to Windows XP operating system in which each user must activate the Microsoft on certain period.

Windows XP is a prime target for the malware creators when you surf the Internet without anti-virus software. It will be very dangerous because viruses made for Windows XP can collect your personal information or they cause irreparable damage to the operating system.

Windows XP cannot be installed on multiple computers as the product activation is limited to just one computer. If you want to install Windows XP on another computer, you will have to purchase a new license and a key code which can prove to be very costly.

The main disadvantage of the operating system is security. Microsoft has discontinued security updates for XP, rendering it vulnerable to the new virus and the spyware attacks.

**WINDOWS 98 SE**

**History**

Virtually any computer you buy today will have Windows 98, Second Edition installed as the operating system. Windows 98, Second Edition (usually referred to as Windows 98 SE) is the current version of Microsoft’s consumer operating system, and incorporates all the hardware support and usability features that Microsoft has worked on to date. The Second Edition version represents an update to the original version of Windows 98, and includes numerous bug fixes, along with a few new features. However, most, if not all, of the bug fixes are available for free on the Microsoft Windows Update site. The bottom line is: if you don’t need the new features that Windows 98, Second Edition offers, stick with the original Windows 98. That version offered substantial new features that made upgrading from Windows 95 worth considering.

**Function and features**

*Hardware support*

No operating system currently available has better support for hardware than Windows 98 SE. Because it’s so popular, all hardware manufacturers take special pains to write Windows 98 SE drivers. The Second Edition added support for a whopping 1200 new hardware devices, and expanded its support of the Universal Serial Bus (USB). It also added support for the super-fast IEEE 1394 connection, also known as FireWire, which is used to connect digital video cameras, and is the official connector for high definition television. It’s nice to see that external FireWire devices, including hard drives and tape backups are starting to appear. FireWire is where USB was two years ago.

SE also adds native support for DVD drives. Previously, DVD drive makers had to write proprietary drivers to make their DVD drives work with Windows 98. Windows 98 also supports the FAT32 file system, which lets you set up partitions on your hard drive larger than 2 GB. Since you can’t even buy a drive that small today, that feature is really useful. FAT32 provides more efficient storage than Windows 95 and previous versions of Windows, which gives you up to 40% more usable disk space. Actually, later versions of Windows 95 introduced FAT32, but Windows 98 provides a conversion utility that lets you convert older FAT16 files to FAT32.

SE also supports the newest technology, including AGP graphics, MMX extensions, and DirectX.

*Internet support*

Microsoft made a special effort to make the Internet an integral part of Windows 98. Windows 98 SE adds Internet Connection Sharing to make it easier to share a single Internet service among several networked computers. That’s especially useful for high-speed Internet services, like DSL or cable modem, which can accommodate several users without bogging down.

An absolutely invaluable feature of Windows 98 is the Windows Update web site. Microsoft uses this site to make available all the bug fixes, security updates, and new features that are developed for Windows 98. And all these updates to the operating system are free. One update feature automatically sends you a notice that there is a Critical Update to Windows 98, and offers to connect you to the web so you can download it. Critical Updates are those that fix serious bugs and security weaknesses, and it’s a very good idea to install them. You can select the updates from a list, and download the files to your computer, where Windows 98 is automatically updated. It’s about as easy as you could imagine. A recent example of a Critical Update was a patch to Outlook Express to eliminate the weakness that allowed the LoveBug virus to operate.

In addition to Critical Updates, there are Recommended Updates and Optional Updates. You may not want these features, which have recently included a beta copy of Internet Explorer 5.5. A hardware device driver update section is also included, but does not appear to be used. I have never found anything at all there; visit your hardware company’s site for real driver updates.

*Software support*

Virtually every piece of software for the PC runs on Windows 98. Many run only on Windows 98. That means you can find Windows 98 programs that do almost anything you want to do.

*Interface*

Windows 98’s interface is very similar to Windows 95, but it has been polished to make it easier to perform routine chores. For example, you can now supplement the Taskbar with several toolbars. A Quick Launch Toolbar lets you place icons and shortcuts there, rather than the Desktop, so they are not covered by open windows. And you can now drag icons around the Start menu, and on/off the Start menu to the Desktop or the Quick Launch Toolbar. If the Quick Launch Toolbar takes up all the space on the bottom of the screen so you can’t see the Taskbar, click on the top of the Taskbar and drag it up and you’ll have a two-level Taskbar, with one level being the Quick Launch Toolbar and the other the actual Taskbar.

*Maintenance Tools*

For me, the best part of Windows 98 is the highly functional maintenance tools (programs) that let you maintain the health of your computer. You can either run these programs when you need them, or use the Maintenance Wizard to schedule them to run when you aren’t using the computer, like at night. Of course, your computer must be on, or at least in standby, to use such a schedule. Fifteen troubleshooting Wizards built into the Help section (just search for help on troubleshooters) help you analyze problems that you may experience. Maintenance tools are accessed mostly from the System Tools folder (Start/Programs/Accessories/System Tools-that’s worth making a shortcut for your desktop or the Quick Launch toolbar).

The most useful maintenance programs are ScanDisk and Disk Defragmenter. The former scans all the files on your drive to find and fix problems, and if you ask it to, scans the entire surface of the drive to see if it finds any problems. Disk Defragmenter finds pieces of files that have been scattered around the drive as you return to a document and add to or edit it. Disk Defragmenter has a new feature under Windows 98: it now places the program files you use most near the inside of the drive where they will load faster, reducing your bootup time.

Other maintenance features are accessible from the System Information icon. The basic System Information window provides a treasure trove of valuable information about your computer, which puts most third-party utility programs to shame. But hidden under the Tools selection in the menu bar are ten more tools. All are useful, but in the interest of space, I’ll comment on only two. System File Checker scans the system (Windows) files and identifies those which appear to be incorrect, or corrupted. This can happen if some new program decides to overwrite one of the system files with its own version. If System File Checker finds a file that looks like it’s corrupt, it offers to reinstall the file from the CD.

**Advantages**

Windows 98 SE includes fixes for many minor issues, improved WDM audio and modem support, improved USB support, the replacement of Internet Explorer

4.0 with Internet Explorer 5.0, Web Folders (WebDAV namespace extension for Windows Explorer), and related shell updates. Also included is basic OHCI compliant FireWire (IEEE 1394a) DV camcorder support (MSDV class driver) and

SBP-2 support for mass storage class devices, Wake-On-LAN support (if ACPI

compatible NDIS drivers are present) and Internet Connection Sharing, which allows multiple computers on a LAN to share a single Internet connection through Network Address Translation. Other features in the update include DirectX 6.1 which introduced major improvements to DirectSound and the introduction of DirectMusic, improvements to Asynchronous Transfer Mode support (IP/ATM, PPP/ATM and WinSock 2/ATM support), Windows Media Player 6.2 replacing the older Media Player, Microsoft NetMeeting 3.0, MDAC 2.1 and WMI. A memory overflow issue was resolved which in the older version of Windows 98 would crash most systems if left running for 49.7 days (equal to 232milliseconds). Windows 98 SE could be obtained as retail upgrade and full version packages, as well as OEM and a Second Edition Updates Disc for existing Windows 98 users. Windows 98 Second Edition did not ship with the WinG API or RealPlayer 4.0 unlike the original release of Windows 98, both of these being .

**Disadvantages**

Plug and Play in Windows 98 still had some problems. You’d plug stuff in, find a conflict, and mess around for a few hours trying to eliminate the conflict. I never had that happen in Windows 2000 or Windows XP. Never. In 12 years of using Windows 2000 and XP, the only trouble I ever had was with a Firewire card, which I resolved by installing drivers for a different brand of Firewire card. Then it recognized the card with the correct drivers. I have no idea why that worked. But that’s the only problem I’ve had. In Windows 98, I had weird problems like that all the time.

And in Windows 98, USB just never completely worked right. Usually it did. But when it didn’t, it was hard to figure out why. In Windows 2000 and XP, USB devices just work. They may need a driver, but they’ll find the driver and then go.

A lot of newer software just doesn’t run on Windows 98 anymore. None of the new web browsers will–Firefox 2.00.20 is the newest browser that will run on it, and that’s 2006 technology. The current generation of web browsers is much faster, much more secure, and has more and more features that web designers are relying on. As time goes on, fewer and fewer web pages will display properly on Firefox 2 on Windows 98.

Most antivirus software won’t run anymore either. And you need antivirus software, because most viruses do run just fine on Windows 98. Needing protection and not being able to get it is a bad thing.

If that’s not bad enough, Microsoft hasn’t released security updates for Windows 98 or 98SE in many, many years. So old viruses and exploits that no longer have any effect on newer versions of Windows still work on Windows 98 and SE.

**WINDOWS SERVER 2003**

**History**

Windows Server 2003 (sometimes informally referred to as Win2K3, or just 2K3) is a server operating system produced by Microsoft and released on April 24, 2003. It was a successor of Windows 2000 Server and incorporated some of Windows XP's features. An updated version, Windows Server 2003 R2, was released to manufacturing on December 6, 2005. Its successor, Windows Server 2008, was released on February 4, 2008. Windows Server 2003's kernel was later adopted in the development of Windows Vista.

Windows Server 2003 was the follow-up to Windows 2000 Server, incorporating compatibility and other features from Windows XP. Unlike Windows 2000 Server, Windows Server 2003's default installation has none of the server components enabled, to reduce the attack surface of new machines. Windows Server 2003 includes compatibility modes to allow older applications to run with greater stability. It was made more compatible with Windows NT 4.0 domain-based networking. Incorporating and upgrading a Windows NT 4.0 domain to Windows 2000 was considered difficult and time-consuming, and generally was considered an all-or-nothing upgrade, particularly when dealing with Active Directory. Windows Server 2003 brought in enhanced Active Directory compatibility, and better deployment support, to ease the transition from Windows NT 4.0 to Windows Server 2003 and Windows XP Professional.

The product went through several name changes during the course of development. When first announced in 2000, it was known by its codename, "Whistler Server"; it was named "Windows 2002 Server" for a brief time in mid-2001, followed by "Windows .NET Server" and "Windows .NET Server 2003". After Microsoft chose to focus the ".NET" branding on the .NET Framework, the OS was finally released as "Windows Server 2003".

**Function and features**

*•* Distributed File System (DFS): DFS allows multiple network shares to be aggregated as a virtual file system.

• Support for SAN and iSCSI: Computers can connect to a Storage Server over the LAN, and there is no need for a separate fibre channel network. Thus a Storage Area Network can be created over the LAN itself. iSCSI uses the SCSI protocol to transfer data as a block of bytes, rather than as a file. This increases performance of the Storage network in some scenarios, such as using a database server.

• Virtual Disc Service: It allows NAS devices, RAID devices and SAN shares to be exposed and managed as if they were normal hard drives.

• JBOD systems: JBOD (Just a bunch of discs) systems, by using VDS, can manage a group of individual storage devices as a single unit. There is no need for the storage units to be of the same maker and model.

• Software and Hardware RAID: Windows Storage Server 2003 has intrinsic support for hardware implementation of RAID. In case hardware support is not available, it can use software enabled RAID. In that case, all processing is done by the OS.

• Multi Path IO (MPIO): It provides an alternate connection to IO devices in case the primary path is down.

**Updates**

*Service Pack 1*

On March 30, 2005, Microsoft released Service Pack 1 for Windows Server 2003. Among the improvements are many of the same updates that were provided to Windows XP users with Service Pack 2. Features that are added with Service Pack 1 include:

• Security Configuration Wizard: A tool that allows administrators to more easily research, and make changes to, security policies.

• Hot Patching: This feature is set to extend Windows Server 2003's ability to take DLL, Driver, and non-kernel patches without a reboot.

• IIS 6.0 Metabase Auditing: Allowing the tracking of metabase edits.

• Windows Firewall: Brings many of the improvements from Windows XP Service Pack 2 to Windows Server 2003; also with the Security Configuration Wizard, it allows administrators to more easily manage the incoming open ports, as it will automatically detect and select default roles.

• Other networking improvements include support for Wireless Provisioning Services, better IPv6 support, and new protections against SYN flood TCP attacks.

• Post-Setup Security Updates: A default mode that is turned on when a Service Pack 1 server is first booted up after installation. It configures the firewall to block all incoming connections, and directs the user to install updates.

• Data Execution Prevention (DEP): Support for the No Execute (NX) bit which helps to prevent buffer overflow exploits that are often the attack vector of Windows Server exploits.

• Windows Media Player version 10

• Internet Explorer 6 SV1 (e.g. 'IE6 SP2')

• Support for fixed disks bearing data organized using the GUID Partition Table system

A full list of updates is available in the Microsoft Knowledge Base.

*Service Pack 2*

Service Pack 2 for Windows Server 2003 was released on March 13, 2007. The release date was originally scheduled for the first half of 2006. On June 13, 2006, Microsoft made an initial test version of Service Pack 2 available to Microsoft Connect users, with a build number of 2721. This was followed by build 2805, known as Beta 2 Refresh. The final build is 3790.

Microsoft has described Service Pack 2 as a "standard" service pack release containing previously released security updates, hotfixes, and reliability and performance improvements. In addition, Service Pack 2 contains Microsoft Management Console 3.0, Windows Deployment Services (which replaces Remote Installation Services), support for WPA2, and improvements to IPsec and MSConfig. Service Pack 2 also adds Windows Server 2003 Scalable Networking Pack (SNP), which allows hardware acceleration for processing network packets, thereby enabling faster throughput. SNP was previously available as an out-of-band update for Windows Server 2003 Service Pack 1.

**Advantages**

*Applications*

In the Microsoft universe, many companies provide hardware and software support. The number of applications that are available to run in the Server 2003 environment are numerous. There are financial apps, database programs, and e-mail exchange operations as well as web server and Internet programs.

*Security*

Domain operations are an important resource available on the network through Server 2003. Making Server 2003 a domain controller adds security and the ability to add local and group policies to the network. If Server 2003 is not promoted to the status of a domain controller, then it can run simple network operations using peer-to-peer structures. These are workgroups, and they can only block or allow access but do not provide control features for the network.

Windows Server 2003 local policies have the ability to perform certain operational commands. For example, some of the operations available are rebooting a remote server, using remote desktop operations, or adding and removing other users and computers. These are operations available to the domain controller network system. This means that Server 2003 can centralize user and computer access. Only one machine needs to be configured as the Domain Controller rather than all machines on the network.

*Reliability and Downtime*

As for reliability, Server 2003 is very reliable. The uptime on Windows 2003 Servers is about 99.993%. On a yearly basis, that means that the server is roughly down about 40 minutes per year. And this downtime is only that much because the reboots may take 6 minutes or so to fully restart the system.

**Disadvantages**

*Additional Hardware Resources*

One disadvantage to using Windows Server 2003 is that it requires more resources for the machine to operate properly. Usually purchasing software will also involve upgrading the hardware. For instance, many software products require more internal memory and a faster, more powerful processor. It also requires several updates and security patches, usually referred to as service packs. Sometimes, after the installation of these service packs, problems can occur with the operating system, rendering the server unusable until the problem is resolved.

*Support Costs*

There are high support costs. The administration of Server 2003 involves having trained support staff. The staff must be well trained to take advantage of the the system, which can be costly. There are licensing costs for using the software that are not only related to the server itself but also to the client workstations.

**WINDOWS VISTA**

**History**

Windows Vista (codenamed Longhorn) is an operating system by Microsoft for use on personal computers, including home and business desktops, laptops, tablet PCs and media center PCs. Development was completed on 8 November 2006, and over the following three months, it was released in stages to computer hardware and software manufacturers, business customers and retail channels. On 30 January 2007, it was released worldwide and was made available for purchase and download from the Windows Marketplace. The release of Windows Vista came more than five years after the introduction of its predecessor, Windows XP, the longest time span between successive releases of Microsoft Windows desktop operating systems. It was succeeded by Windows 7, which was released to manufacturing on 22 July 2009 and released worldwide for retail on 22 October 2009.

New features of Windows Vista include an updated graphical user interface and visual style dubbed Aero, a new search component called Windows Search, redesigned networking, audio, print and display sub-systems, and new multimedia tools such as Windows DVD Maker. Vista aimed to increase the level of communication between machines on a home network, using peer-to-peer technology to simplify sharing files and media between computers and devices. Windows Vista included version 3.0 of the .NET Framework, allowing software developers to write applications without traditional Windows APIs.

Microsoft's primary stated objective with Windows Vista was to improve the state of security in the Windows operating system. One common criticism of Windows XP and its predecessors was their commonly exploited security vulnerabilities and overall susceptibility to malware, viruses and buffer overflows. In light of this, Microsoft chairman Bill Gates announced in early 2002 a company-wide "Trustworthy Computing initiative", which aimed to incorporate security into every aspect of software development at the company. Microsoft stated that it prioritized improving the security of Windows XP and Windows Server 2003 above finishing Windows Vista, thus delaying its completion.

**Function and features**

End-user

• Windows Aero: The new graphical user interface is named Windows Aero, which Jim Allchin stated is an acronym for Authentic, Energetic, Reflective, and Open. Microsoft intended the new interface to be cleaner and more aesthetically pleasing than those of previous Windows versions, featuring new transparencies, live thumbnails, live icons, and animations, thus providing a new level of eye candy.

• Windows shell: The new Windows shell offers a new range of organization, navigation, and search capabilities: Task panes in Windows Explorer are removed, integrating the relevant task options into the toolbar. A "Favorite links" pane has been added, enabling one-click access to common directories. A search box appears in every Explorer window. The address bar has been replaced with a breadcrumb navigation bar. Icons of certain file types in Windows Explorer are "live" and can be scaled in size up to 256 × 256 pixels.

• Windows Search: A new search component of Windows Vista, it features instant search (also known as search as you type), which provides instant search results, thus finding files more quickly than the search features found in previous versions of Windows and can search the contents of recognized file types.

• Windows Sidebar: A transparent panel, anchored to the right side of the screen, wherein a user can place Desktop Gadgets, which are small applets designed for a specialized purpose (such as displaying the weather or sports scores). Gadgets can also be placed on the desktop.

• Windows Internet Explorer 7: New user interface, tabbed browsing, RSS, a search box, improved printing, Page Zoom, Quick Tabs (thumbnails of all open tabs), Anti-Phishing filter, a number of new security protection features, Internationalized Domain Name support (IDN), and improved web standards support.

• Windows Media Player 11, a major revamp of Microsoft's program for playing and organizing music and video. New features in this version include word wheeling (incremental search or "search as you type"), a new GUI for the media library, photo display and organization, the ability to share music libraries over a network with other Windows Vista machines, Xbox 360 integration, and support for other Media Center Extenders.

• Windows Defender: An antispyware program with several real-time protection agents. It includes a software explorer feature, which provides access to startup programs, and allows one to view currently running software, network connected applications, and Winsock providers (Winsock LSPs).

• Backup and Restore Center: Includes a backup and restore application that gives users the ability to schedule periodic backups of files on their computer, as well as recovery from previous backups. Backups are incremental, storing only the changes made each time, minimizing disk usage. It also features Complete PC Backup (available only in the Ultimate, Business, and Enterprise versions), which backs up an entire computer as an image onto a hard disk or DVD.

• Windows Mail: A replacement for Outlook Express that includes a new mail store that improves stability, and features integrated instant search. It has the Phishing Filter like Internet Explorer 7 and Junk mail filtering that is enhanced through regular updates via Windows Update.

• Windows Calendar is a new calendar and task application which integrates with Windows Contacts and Windows Mail. It is compatible with various calendar file types, such as the popular iCalendar.

• Windows Photo Gallery, a photo and movie library management application. It can import from digital cameras, tag and rate individual items, adjust colors and exposure, create and display slideshows (with pan and fade effects) through Direct3D and burn slideshows to a DVD.

• Windows DVD Maker, a companion program to Windows Movie Maker that provides the ability to create video DVDs based on a user's content. Users can design a DVD with title, menus, video, soundtrack, pan and zoom motion effects on pictures or slides.

• Windows Media Center, which was previously exclusively bundled in a separate version of Windows XP, known as Windows XP Media Center Edition, has been incorporated into the Home Premium and Ultimate editions of Windows Vista.

• Games: Most of the standard computer games included in previous versions of Windows have been redesigned to showcase Vista's new graphical capabilities. New games available in Windows Vista are Chess Titans (3D Chess game), Mahjong Titans (3D Mahjong game), and Purble Place (A small collection of games, oriented towards younger children. Including: A matching game, a cake-creator game, and a dress-up puzzle game). Purble Place is the only one of the new games available in the Windows Vista Home Basic edition.

• Games Explorer: A new special folder called "Games" exposes installed video games and information about them. These metadata may be updated from the Internet.

• Windows Mobility Center is a control panel that centralizes the most relevant information related to mobile computing (brightness, sound, battery level / power scheme selection, wireless network, screen orientation, presentation settings, etc.).

• Windows Fax and Scan Allows computers with fax modems to send and receive fax documents, as well as scan documents. It is not available in the Home versions of Windows Vista, but is available in the Business, Enterprise and Ultimate editions.

• Windows Meeting Space replaces NetMeeting. Users can share applications (or their entire desktop) with other users on the local network, or over the Internet using peer-to-peer technology (higher versions than Starter and Home Basic can take advantage of hosting capabilities, Starter and Home Basic editions are limited to "join" mode only)

• Windows Update: Software and security updates have been simplified, now operating solely via a control panel instead of as a web application. Windows Mail's spam filter and Windows Defender's definitions are updated automatically via Windows Update. Users who choose the recommended setting for Automatic Updates will have the latest drivers installed and available when they add a new device.

• Parental controls: Allows administrators to monitor and restrict user activity, as well as control which websites, programs and games each Standard user can use and install. This feature is not included in the Business or Enterprise editions of Vista.

• Windows SideShow: Enables the auxiliary displays on newer laptops or on supported Windows Mobile devices. It is meant to be used to display device gadgets while the computer is on or off.

• Speech recognition is integrated into Vista. It features a redesigned user interface and configurable command-and-control commands. Unlike the Office 2003 version, which works only in Office and WordPad, Speech Recognition in Windows Vista works for any accessible application.

• Improved audio controls allow the system-wide volume or volume of individual audio devices and even individual applications to be controlled separately. New audio functionalities such as room correction, bass management, speaker fill, and headphone virtualization have also been incorporated.

• Problem Reports and Solutions, a feature that allows users to check for solutions to problems or view previously sent problems for any solutions or additional information, if available.

• Windows System Assessment Tool is a tool used to benchmark system performance. Software such as games can retrieve this rating and modify its own behavior at runtime to improve performance. The benchmark tests CPU, RAM, 2-D and 3-D graphics acceleration, graphics memory and hard disk space.

• Windows Ultimate Extras: The Ultimate edition of Windows Vista provides, via Windows Update, access to some additional features. These are a collection of additional MUI language packs, Texas Hold 'Em (a Poker game) and Microsoft Tinker (a strategy game where the character is a robot), BitLocker and EFS enhancements that allow users to back up their encryption key online in a Digital Locker, and Windows Dreamscene, which enables the use of videos in MPEG and WMV formats as the desktop background. On 21 April 2008, Microsoft launched two more Ultimate Extras; three new Windows sound schemes, and a content pack for Dreamscene. Various DreamScene Content Packs have been released since the final version of DreamScene was released.

• Reliability and Performance Monitor includes various tools for tuning and monitoring system performance and resources activities of CPU, disks, network, memory and other resources. It shows the operations on files, the opened connections, etc.

• Disk Management: The Logical Disk Manager in Windows Vista supports shrinking and expanding volumes on-the-fly.

• Windows Anytime Upgrade: is a program that allows a user to upgrade their computer running Vista to a higher edition. For example, a computer running Windows Vista Home Basic can be upgraded to Home Premium or better. Anytime Upgrade permits users to upgrade without having their programs and data erased, and is cheaper than replacing the existing installation of Windows. Anytime Upgrade is no longer available for Vista.

• Digital Locker Assistant: A program that facilitated access to downloads and purchases from the Windows Marketplace digital distribution platform. Apps purchased from Windows Marketplace are managed by Microsoft Account credentials, which are used to access a user's digital locker that stores the app and its associated information (e.g., licenses) off-site.

*Core*

Vista includes technologies such as ReadyBoost and ReadyDrive, which employ fast flash memory (located on USB flash drives and hybrid hard disk drives) to improve system performance by caching commonly used programs and data. This manifests itself in improved battery life on notebook computers as well, since a hybrid drive can be spun down when not in use. Another new technology called SuperFetch utilizes machine learning techniques to analyze usage patterns to allow Windows Vista to make intelligent decisions about what content should be present in system memory at any given time. It uses almost all the extra RAM as disk cache. In conjunction with SuperFetch, an automatic built-in Windows Disk Defragmenter makes sure that those applications are strategically positioned on the hard disk where they can be loaded into memory very quickly with the least amount of physical movement of the hard disk's read-write heads.

For graphics, Vista introduces a new Windows Display Driver Model and a major revision to Direct3D. The new driver model facilitates the new Desktop Window Manager, which provides the tearing-free desktop and special effects that are the cornerstones of Windows Aero. Direct3D 10, developed in conjunction with major graphics card manufacturers, is a new architecture with more advanced shader support, and allows the graphics processing unit to render more complex scenes without assistance from the CPU. It features improved load balancing between CPU and GPU and also optimizes data transfer between them. WDDM also provides video content playback that rivals typical consumer electronics devices. It does this by making it easy to connect to external monitors, providing for protected HD video playback and increasing overall video playback quality. For the first time in Windows, graphics processing unit (GPU) multitasking is possible, enabling users to run more than one GPU-intensive application simultaneously.

At the core of the operating system, many improvements have been made to the memory manager, process scheduler and I/O scheduler. The Heap Manager implements additional features such as integrity checking in order to improve robustness and defend against buffer overflow security exploits, although this comes at the price of breaking backward compatibility with some legacy applications. A Kernel Transaction Manager has been implemented that enables applications to work with the file system and Registry using atomic transaction operations.

*Security-related*

Improved security was a primary design goal for Vista. Microsoft's Trustworthy Computing initiative, which aims to improve public trust in its products, has had a direct effect on its development. This effort has resulted in a number of new security and safety features and an Evaluation Assurance Level rating of 4+.

User Account Control, or UAC is perhaps the most significant and visible of these changes. UAC is a security technology that makes it possible for users to use their computer with fewer privileges by default, with a view to stopping malware from making unauthorized changes to the system. This was often difficult in previous versions of Windows, as the previous "limited" user accounts proved too restrictive and incompatible with a large proportion of application software, and even prevented some basic operations such as looking at the calendar from the notification tray. In Windows Vista, when an action is performed that requires administrative rights (such as installing/uninstalling software or making system-wide configuration changes), the user is first prompted for an administrator name and password; in cases where the user is already an administrator, the user is still prompted to confirm the pending privileged action.

Testing by Symantec Corporation has proven the effectiveness of UAC. Symantec used over 2,000 active malware samples, consisting of backdoors, keyloggers, rootkits, mass mailers, trojan horses, spyware, adware, and various other samples. Each was executed on a default Windows Vista installation within a standard user account. UAC effectively blocked over 50 percent of each threat, excluding rootkits. 5 percent or less of the malware that evaded UAC survived a reboot.

Internet Explorer 7's new security and safety features include a phishing filter, IDN with anti-spoofing capabilities, and integration with system-wide parental controls. For added security, ActiveX controls are disabled by default. Also, Internet Explorer operates in a protected mode, which operates with lower permissions than the user and runs in isolation from other applications in the operating system, preventing it from accessing or modifying anything besides the Temporary Internet Files directory. Microsoft's anti-spyware product, Windows Defender, has been incorporated into Windows, providing protection against malware and other threats. Changes to various system configuration settings (such as new auto-starting applications) are blocked unless the user gives consent.

As part of the redesign of the network stack, Windows Firewall has been upgraded, with new support for filtering both incoming and outgoing traffic. Advanced packet filter rules can be created that can grant or deny communications to specific services.

*System management*

While much of the focus of Vista's new capabilities highlighted the new user-interface, security technologies, and improvements to the core operating system, Microsoft also adding new deployment and maintenance features:

• The Windows Imaging Format (WIM) provides the cornerstone of Microsoft's new deployment and packaging system. WIM files, which contain a HAL-independent image of Windows Vista, can be maintained and patched without having to rebuild new images. Windows Images can be delivered via Systems Management Server or Business Desktop Deployment technologies. Images can be customized and configured with applications then deployed to corporate client personal computers using little to no touch by a system administrator. ImageX is the Microsoft tool used to create and customize images.

• Windows Deployment Services replaces Remote Installation Services for deploying Vista and prior versions of Windows.

• Approximately 700 new Group Policy settings have been added, covering most aspects of the new features in the operating system, as well as significantly expanding the configurability of wireless networks, removable storage devices, and user desktop experience. Vista also introduced an XML-based format (ADMX) to display registry-based policy settings, making it easier to manage networks that span geographic locations and different languages.

• Services for UNIX, renamed as "Subsystem for UNIX-based Applications", comes with the Enterprise and Ultimate editions of Vista. Network File System (NFS) client support is also included.

• Multilingual User Interface–Unlike previous versions of Windows (which required the loading of language packs to provide local-language support), Windows Vista Ultimate and Enterprise editions support the ability to dynamically change languages based on the logged-on user's preference.

• Wireless Projector support

**System requirements**

|  |  |  |
| --- | --- | --- |
| **Windows Vista system requirements** | | |
| **Component of PC** | **Minimum required** | **Recommended** |
| [**Processor**](https://en.wikipedia.org/wiki/Central_processing_unit) | 800 MHz | 1 GHz |
| [**Memory**](https://en.wikipedia.org/wiki/Random_Access_Memory) | 512 MB | 1 GB |
| **Graphics card** | [Super VGA](https://en.wikipedia.org/wiki/Super_VGA) | [WDDM 1.0](https://en.wikipedia.org/wiki/Windows_Display_Driver_Model)-compliant [32 bits per pixel](https://en.wikipedia.org/wiki/RGBA_color_space) [DirectX](https://en.wikipedia.org/wiki/DirectX) 9.0 support [Pixel Shader 2.0](https://en.wikipedia.org/wiki/Pixel_Shader_2.0) support |
| **Graphics memory** | N/A | 128 MB |
| **Total**[**HDD**](https://en.wikipedia.org/wiki/Hard_disk_drive)**capacity** | 20 GB | 40 GB |
| **Free HDD space** | 15 GB | 15 GB |
| **Optical drives** | [CD-ROM](https://en.wikipedia.org/wiki/CD-ROM) drive | [DVD-ROM](https://en.wikipedia.org/wiki/DVD-ROM) drive |
| **Others** | N/A | [TV tuner card](https://en.wikipedia.org/wiki/TV_tuner_card) (Premium, Ultimate) [Touchscreen](https://en.wikipedia.org/wiki/Touchscreen) (Premium, Business, Ultimate) [USB flash drive](https://en.wikipedia.org/wiki/USB_flash_drive) (Ultimate) [Trusted Platform Module](https://en.wikipedia.org/wiki/Trusted_Platform_Module) (Ultimate) |

*Physical memory limits*

Maximum amount of RAM that Windows Vista can support varies, depending on the both its edition and its processor architecture, as shown in the table.

|  |  |  |
| --- | --- | --- |
| **Edition** | **Processor architecture** | |
| [**IA-32**](https://en.wikipedia.org/wiki/IA-32) | [**x64**](https://en.wikipedia.org/wiki/X64) |
| Ultimate | 4 GB | 128 GB |
| Enterprise |
| Business |
| Home Premium | 16 GB |
| Home Basic | 8 GB |
| Starter | 1 GB | N/A |

**Updates**

*Service Pack 1*

Windows Vista Service Pack 1 (SP1) was released on 4 February 2008, alongside Windows Server 2008 to OEM partners, after a five-month beta test period. The initial deployment of the service pack caused a number of machines to continually reboot, rendering the machines unusable. This temporarily caused Microsoft to suspend automatic deployment of the service pack until the problem was resolved. The synchronized release date of the two operating systems reflected the merging of the workstation and server kernels back into a single code base for the first time since Windows 2000. MSDN subscribers were able to download SP1 on 15 February 2008. SP1 became available to current Windows Vista users on Windows Update and the Download Center on 18 March 2008.

A white paper, published by Microsoft on 29 August 2007, outlined the scope and intent of the service pack, identifying three major areas of improvement: reliability and performance, administration experience, and support for newer hardware and standards.

Service Pack 1 introduced support for some new hardware and software standards, notably the exFAT file system,[126] 802.11n wireless networking, IPv6 over VPN connections, and the Secure Socket Tunneling Protocol.

Booting a system using Extensible Firmware Interface on x64 systems was also introduced; this feature had originally been slated for the initial release of Vista but was delayed due to a lack of compatible hardware at the time. Booting from a GUID Partition Table–based hard drive greater than 2.19 TB is supported (x64 only).

*Service Pack 2*

Service Pack 2 for Windows Vista was released to manufacturing on 28 April 2009, and released to Microsoft Download Center and Windows Update on 26 May 2009. In addition to a number of security and other fixes, a number of new features have been added. However, it did not include Internet Explorer 8. Windows Vista Service Pack 2 build number is 6002.18005.090410-1830.

• Windows Search 4 (available for SP1 systems as a standalone update)

• Feature Pack for Wireless adds support for Bluetooth 2.1

• Windows Feature Pack for Storage enables the data recording onto Blu-ray media

• Windows Connect Now (WCN) to simplify Wi-Fi configuration

• Improved support for resuming with active Wi-Fi connections

• Improved support for eSATA drives

• The limit of 10 half open, outgoing TCP connections introduced in Windows XP SP2 was removed

• Enables the exFAT file system to support UTC timestamps, which allows correct file synchronization across time zones

• Support for ICCD/CCID smart cards

• Support for VIA 64-bit CPUs

• Improved performance and responsiveness with the RSS feeds sidebar

• Improves audio and video performance for streaming high-definition content

• Improves Windows Media Center (WMC) in content protection for TV

• Provides an improved power management policy that is approximately 10% more efficient than the original with the default policies

Windows Vista and Windows Server 2008 share a single service pack binary, reflecting the fact that their code bases were joined with the release of Server 2008. Service Pack 2 is not a cumulative update meaning that Service Pack 1 must be installed first.

*Platform Update*

Platform Update for Windows Vista was released on 27 October 2009. It includes major new components that shipped with Windows 7, as well as updated runtime libraries. It requires Service Pack 2 of Windows Vista or Windows Server 2008 and is listed on Windows Update as a Recommended download.

The Platform Update allows application developers to target both Windows Vista and Windows 7. It consists of the following components:

• Windows Graphics runtime: Direct2D, DirectWrite, Direct3D 11, DXGI 1.1, and WARP;

• Updates to Windows Imaging Component;

• Updates to XPS Print API, XPS Document API and XPS Rasterization Service;

• Windows Automation API (updates to MSAA and UI Automation);

• Windows Portable Devices Platform; (adds support for MTP over Bluetooth and MTP Device Services)

• Windows Ribbon API;

• Windows Animation Manager library.

Some updates are available as separate releases for both Windows XP and Windows Vista:

• Windows Management Framework: Windows PowerShell 2.0, Windows Remote Management 2.0, BITS 4.0

• Remote Desktop Connection 7.0 (RDP7) client

**Advantages**

• Aero- by using this feature you can make windows appear translucent, as well as a 3D mode

• Simple graphical features have been changed as well to provide a new look for Windows

• Internet Security- Windows has come out with the latest version of Internet Explorer to help ensure security when using the internet.

• phishing filter- provides heightened security while surfing the internet

• advanced firewall

• Windows defender

• encryption/decryption of data

• auto-backup

• Parental Controls- parents can deny access to certain content available on websites as well as creating a specific child's account will enable parents to track their child's use of the computer.

• Latest Media Player- Windows Media Player 11 - enhances the quality of videos and audio

• Photo Gallery- allows you to manage your digital photos as well as transfer them to mobile devices and other computers.

**Disadvantages**

• Requirements- since Windows Vista is all the latest technology a fairly new up to computer is necessary for installation

• Cost- the price of the latest technology is certainly what you would expect, quite costly.

• Compatibility- unless you have a new operating system you may run into a few problems. Windows Vista is not compatible with too many old systems, which means you may want to double check your systems compatibility before you invest in Vista.

• Support- only a few manufacturers actually provide support for Windows Vista

• Appearance- now similar to Mac configuration, one main change is the size of the minimize, maximize, and close buttons causing some difficulty for those with sight problems

**WINDOWS VISTA ENTERPRISE EDITION**

**History**

Vista Enterprise is designed to help global organizations and enterprises with complex IT infrastructures lower IT costs, reduce risk, and stay connected. Building on the features in Windows Vista Business, Windows Vista Enterprise provides higher levels of data protection using hardware-based encryption technology. It also includes tools to improve application compatibility and enables organizations to standardize by using a single worldwide deployment image. Available only to Volume License customers who have PCs covered by Microsoft Software Assurance. These customers are also eligible to acquire an optional subscription license for the Microsoft Desktop Optimization Pack for Software Assurance. This software extends the value of Windows Vista Enterprise by reducing application deployment costs, enabling delivery of applications as services, and allowing for better management and control of enterprise desktop environments. Together these technologies deliver the most cost-effective and flexible Windows desktop management solution.

**Function and features**

Enterprise is designed to significantly lower IT costs and risk. In addition to all the features available in Windows Vista Business, Windows Vista Enterprise is designed to provide higher levels of data protection using hardware-based encryption technology. It also includes tools to improve application compatibility and will enable organizations to standardize on a single worldwide deployment image with the inclusion of all Windows user-interface languages.

Windows Vista Enterprise is available only to customers who have PCs covered by Microsoft Software Assurance or a Microsoft Enterprise Agreement. These are some of the specific Windows Vista Enterprise features:

Windows BitLocker™ Drive Encryption helps prevent sensitive data and intellectual property from falling into the wrong hands if a computer is lost or stolen.

Virtual PC Express is one of several built-in tools that improve application compatibility with previous versions of Microsoft operating systems. Virtual PC Express enables a legacy application to run unchanged on a legacy Windows operating system in a virtual environment on top of Windows Vista Enterprise.

Subsystem for UNIX-based Applications enables users to run UNIX applications unchanged on a Windows Vista Enterprise-based PC.

The new user interface Windows Aero is also available in this edition of Windows Vista.

**System requirements**

* 1GHz 32-bit (x86) processor or 1GHz 64-bit (x64) processor
* 1 GB system memory
* Windows Aero-capable graphics card
* 128 MB of graphics memory (minimum)
* 40 GB hard disk that has 15 GB free hard disk space (provides for temporary file storage during the install or update)
* Internal or external DVD drive
* Internet access capability
* Audio output capability

**Advantages**

• Aero- by using this feature you can make windows appear translucent, as well as a 3D mode

• Simple graphical features have been changed as well to provide a new look for Windows

• Internet Security- Windows has come out with the latest version of Internet Explorer to help ensure security when using the internet.

• phishing filter- provides heightened security while surfing the internet

• advanced firewall

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• Parental Controls- parents can deny access to certain content available on websites as well as creating a specific child's account will enable parents to track their child's use of the computer.

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• Photo Gallery- allows you to manage your digital photos as well as transfer them to mobile devices and other computers.

**Disadvantages**

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• Cost- the price of the latest technology is certainly what you would expect, quite costly.

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• Support- only a few manufacturers actually provide support for Windows Vista

• Appearance- now similar to Mac configuration, one main change is the size of the minimize, maximize, and close buttons causing some difficulty for those with sight problems

**WINDOWS VISTA STARTER EDITION**

**History**

The Microsoft Windows operating system remains at the center of the ongoing evolution of the personal computer, enabling users to do more than they ever imagined. Despite the many advances, millions of individuals still have not experienced even the most basic benefits of the PC or accessed the world of social and economic benefits that computing technology can make possible.

In an effort to provide a more affordable and simple introduction to personal computing, and as a result of ongoing collaborations with international governments to improve citizens’ access to technology, Microsoft Corp. developed Windows Starter, an operating system designed for first-time PC owners in emerging technology markets. Windows XP Starter Edition was first released in Thailand in 2004 and has been subsequently released for use in 139 countries and in 24 languages. Since the release, more than 2 million families have experienced a PC for the first time with a Windows Starter-based PC.

With the global release of the Windows Vista operating system, Microsoft introduced Windows Vista Starter, the next generation of the Windows Starter family. Windows Vista Starter is also designed for first-time PC owners in developing markets, but it improves the user experience through the technological advances of Windows Vista.

**Function and features**

Windows Vista Starter provides individuals in developing technology markets and their families with the basic computing benefits they want with security and reliability features at an affordable price. Windows Vista Starter includes tools and tutorials to make it easier for those less familiar with computers to learn to use a PC, and runs on affordable entry-level hardware. Benefits of Windows Vista Starter include the following:

• Easier to use. Windows Vista Starter features improved help and support tools, including instructional videos and step-by-step tutorials. With Windows Vista Starter, first-time home computer users can run up to three programs concurrently with no limit to the number of windows open.

• More reliable. Users gain peace of mind with access to product updates and new updates available only to Windows Genuine Advantage users.

• More affordable. Windows Vista Starter offers all the basic features of Windows Vista at a more affordable price.

Windows Vista Starter includes basic Windows Vista features that allow users to take advantage of computing experiences popular with first-time computer users, such as the following:

• Internet connectivity. Windows Vista Starter makes it simple to connect to the Internet and browse the Web.

• Software and hardware compatibility. Windows Vista Starter will be compatible with a wide range of Windows-based software applications and hardware devices, including printers, speakers and cameras.

• Windows user interface. The intuitive Windows user interface makes it easy for users to get up to speed quickly.

• Security. Windows Vista Starter users will be able to stay up to date and more secure with the latest security updates delivered in Windows Vista. Parents can also use new parental controls features to help ensure safer use of the computer by their kids.

• Communication. Windows Mail and Windows Live Messenger will help make it fun and easy to communicate with friends and family using e-mail and instant messaging.

• Digital photography. When users plug in a digital camera to a Windows Vista Starter-based PC, easy-to-use tools help them transfer and store their photos, share photos with family and friends, post photos to a Web site, or even make their own prints with one of the many printers that Windows Vista Starter supports. Windows Vista Starter allows users to access even those pictures located in a shared folder on a separate computer that is not running Windows Vista Starter.

• Digital music and video. Windows Vista Starter includes Windows Media Player 11, which allows users to listen to music, watch videos, and burn CDs and DVDs. Windows Vista Starter also includes Windows Movie Maker, which lets users create their own movies.

**System requirements**

Windows Vista Starter is designed for low-cost, entry-level PCs running value-based processors only.

Windows Vista Starter has the following system requirements:

• 800MHz processor (1GHz or higher processor recommended)

• A minimum of 384 MB and a maximum of 1 GB of RAM (512 MB recommended)

• 15 GB of hard disk space (250 GB maximum)

• Super VGA 800 x 600 resolution video adapter

Recommended system requirements:

• CD-ROM or DVD drive

• Monitor, keyboard and Microsoft mouse or compatible pointing device

• Support for DirectX 9 graphics and 32 MB of graphics memory

• Internet access (fees may apply)

• Audio output capability

**Advantages**

• Aero- by using this feature you can make windows appear translucent, as well as a 3D mode

• Simple graphical features have been changed as well to provide a new look for Windows

• Internet Security- Windows has come out with the latest version of Internet Explorer to help ensure security when using the internet.

• phishing filter- provides heightened security while surfing the internet

• advanced firewall

• Windows defender

• encryption/decryption of data

• auto-backup

• Parental Controls- parents can deny access to certain content available on websites as well as creating a specific child's account will enable parents to track their child's use of the computer.

• Latest Media Player- Windows Media Player 11 - enhances the quality of videos and audio

• Photo Gallery- allows you to manage your digital photos as well as transfer them to mobile devices and other computers.

**Disadvantages**

Some notable Windows XP features and components have been replaced or removed in Windows Vista, including several shell and Windows Explorer features, multimedia features, networking related functionality, Windows Messenger, NTBackup, the network Windows Messenger service, HyperTerminal, MSN Explorer, Active Desktop, and the replacement of NetMeeting with Windows Meeting Space. Windows Vista also does not include the Windows XP "Luna" visual theme, or most of the classic color schemes that have been part of Windows since the Windows 3.x era. The "Hardware profiles" startup feature has also been removed, along with support for older motherboard technologies like the EISA bus, APM and Game port support (though on the 32-bit version game port support can be enabled by applying an older driver). IP over FireWire (TCP/IP over IEEE 1394) has been removed as well. The IPX/SPX protocol has also been removed, although it can be enabled by a third-party plugin.

**WINDOWS VISTA BUSINESS EDITION**

**History**

The Windows Vista Business operating system is designed to meet the needs of business organizations of all sizes. For small businesses, Windows Vista Business will help keep PCs running smoothly and more securely so you will be less reliant on dedicated IT support. For larger organizations, Windows Vista Business provides dramatic new infrastructure improvements, enabling your IT staff to spend less time focused on the day-to-day maintenance of PCs and more time adding strategic value to your organization. Windows Vista Business also offers powerful new ways to organize, find, and share information while staying better connected whether you are in the office or on the road. This helps your business to run more efficiently than ever before.

**Features**

*More manageable, reliable, and secure*

For small businesses, Windows Vista Business includes new technology and tools to ensure your PCs are always up-to-date, more secure, and running smoothly. For instance, Windows Vista Business will make your PCs safer with built-in protection against malicious software, or malware. You will be warned of impending hardware failures long before you risk losing any important business data. An array of sophisticated new backup technologies helps protect your information even in the event of a catastrophic hardware failure.

For larger organizations, Windows Vista Business has been designed from the ground up to improve the deployment and management of the operating system. For instance, image-based installation is now the default method for installing the Windows Vista operating system, and the images are no longer hardware-dependent. These two key design principles enable your organization to dramatically reduce the number of images you are required to manage and streamline the process of deploying new PCs and updating existing PCs.

For businesses of any size, Windows Vista Business is designed to allow your IT department to configure users' systems so that they can log onto their PCs as standard users instead of as administrators. Windows Vista Business enables the use of standard user accounts without the compatibility and usability issues that could occur in previous versions of Windows. This new capability significantly reduces the likelihood of a malicious attack causing damage to your organization's PCs.

*Easier, faster access to information*

Windows Vista Business has a new user interface, named Windows Aero™, which is designed to deliver new levels of efficiency for any business user. This new interface makes it easy to navigate through the operating system and from application to application. For instance, Windows Aero helps you juggle multiple tasks at once by providing a three-dimensional, real-time, animated view of all your open applications and documents.

In addition to these navigation improvements, Windows Vista Business makes it easier than ever to manage huge volumes of business documents. By integrating search throughout the operating system and providing new ways to organize files, Windows Vista Business helps you quickly find exactly what you are looking for.

For those who are not full-time IT professionals but have roles that require them to support their organizations' PCs, Windows Vista Business includes Small Business Resources. This built-in how-to guide leads you through everyday tasks and troubleshooting in easy-to-follow, non-technical language.

**More mobile and better connected**

Windows Vista Business is designed to help you easily and quickly connect with your organization, your customers, and your partners, whether you are in the office or on the road. Windows Vista Business includes all of the essential infrastructure required to more securely connect you to your business information whether you are sitting at your desk, working at home, connected to a WiFi hotspot, or even if you are using your cell phone to connect to the Internet.

To help you be more productive when you're away from your desk, Windows Vista Business includes Windows Tablet and Touch Technology, so you can interact with your Tablet PC by using a digital pen or your fingertip in addition to a keyboard. The new Windows Tablet and Touch Technology in Windows Vista Business includes improved handwriting recognition and easier ways to browse documents and programs without using a keyboard.

Computers that include Windows Vista Business and an auxiliary Windows SideShow™ display will also allow you to access critical business information even when your computer is turned off. Windows Vista Business also makes it easy for you to share documents and collaborate with colleagues, partners, and customers—even if a network is not available. Additionally, Windows Vista Business helps you get the most out of your portable PC by making it quick and easy to manage key mobility settings.

Regardless of whether your organization is big or small, Windows Vista Business will help you lower your PC management costs, improve your security, enhance your productivity, and stay better connected than ever before.

**System requirements**

• Processor 1 GHz 32-bit (x86) or 64-bit (x64) processor

• System Memory 1 GB

• GPU Windows Aero Capable

• Graphics Memory 128 MB

• HDD Free Space 15 GB

• Optical Drive DVD-ROM Drive

• Audio Audio output capability

• Internet Internet access capability

**Advantages**

• Aero- by using this feature you can make windows appear translucent, as well as a 3D mode

• Simple graphical features have been changed as well to provide a new look for Windows

• Internet Security- Windows has come out with the latest version of Internet Explorer to help ensure security when using the internet.

• phishing filter- provides heightened security while surfing the internet

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• Parental Controls- parents can deny access to certain content available on websites as well as creating a specific child's account will enable parents to track their child's use of the computer.

• Latest Media Player- Windows Media Player 11 - enhances the quality of videos and audio

• Photo Gallery- allows you to manage your digital photos as well as transfer them to mobile devices and other computers.

**Disadvantages**

• Requirements- since Windows Vista is all the latest technology a fairly new up to computer is necessary for installation

• Cost- the price of the latest technology is certainly what you would expect, quite costly.

• Compatibility- unless you have a new operating system you may run into a few problems. Windows Vista is not compatible with too many old systems, which means you may want to double check your systems compatibility before you invest in Vista.

• Support- only a few manufacturers actually provide support for Windows Vista

• Appearance- now similar to Mac configuration, one main change is the size of the minimize, maximize, and close buttons causing some difficulty for those with sight problems

**WINDOWS VISTA HOME PREMIUM EDITION**

**History**

Windows Vista Home Premium is the operating system for homes with advanced computer needs. It will help you use your laptop or desktop PC more effectively as well as enable you to enjoy new, exciting digital entertainment experiences—all with the benefit of added security and reliability.

The software also includes the Windows Aero desktop with Flip 3D navigation, support for portable tablet PCs and the Windows Meeting Space for document sharing and group collaboration. Vista Home Premium also ships with the popular Windows Media Center. This module turns your computer into a digital hub that can interact with your Xbox 360 and other compatible home theater devices. Vista Home Premium is an excellent operating system for home users who require advanced multimedia functionality.

**Features**

*New user interface*

Windows Vista Home Premium has a new user interface named Windows Aero™, which is both efficient and beautiful. This new interface makes it easier than ever before to find your way around the operating system. It even makes it easier to accomplish multiple tasks at once by providing a three-dimensional, real-time, animated view of all of your open applications and documents. Additionally, Windows Vista Home Premium helps you quickly find and organize large collections of documents, pictures, movies, videos, and music. By integrating search throughout the operating system, Windows Vista Home Premium helps you quickly find exactly what you are looking for.

*Improved mobility*

Windows Vista Home Premium makes it easy to take your home computing experience with you wherever you go. For example, Windows Vista Home Premium includes Windows Tablet and Touch Technology that enables you to interact with your Tablet PC-compatible computer with a digital pen or with your fingertip instead of having to use a keyboard. Computers that include Windows Vista Home Premium and an auxiliary Windows SideShow™ display will also allow you to access key data even when your computer is off. It is also easier than ever to share files between other PCs in your household and to manage your laptop computer settings to more securely connect to your favorite WiFi hotspot.

*More entertaining*

Windows Vista Home Premium will improve every aspect of your digital entertainment experiences including viewing and sharing photos, video, TV, movies, music, games, and more. For example, Windows Vista Home Premium enables you to create your own DVDs and edit your own high-definition movies. Most significantly, Windows Vista Home Premium includes all of the Windows Media Center capabilities for turning your PC into an all-in-one home entertainment center. Windows Media Center in Windows Vista provides new ways for you to enjoy your music, photos, and DVD movies. You can also use Windows Media Center to record and watch your favorite TV shows (even HDTV) and to access new kinds of online entertainment content. You will also be able to connect Windows Vista Home Premium to your Microsoft Xbox 360 to extend your Media Center experience to multiple rooms in your home.

Whatever you choose to do with your home PC, Windows Vista Home Premium will deliver a more complete and satisfying computing experience.

**System requirements**

• Processor 1 GHz 32-bit (x86) or 64-bit (x64) processor

• System Memory 1 GB

• GPU Windows Aero Capable

• Graphics Memory 128 MB

• HDD Free Space 40 GB

• Optical Drive DVD-ROM Drive

• Audio Audio output capability

• Internet Internet access capability

**Advantages**

• Aero- by using this feature you can make windows appear translucent, as well as a 3D mode

• Simple graphical features have been changed as well to provide a new look for Windows

• Internet Security- Windows has come out with the latest version of Internet Explorer to help ensure security when using the internet.

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• Requirements- since Windows Vista is all the latest technology a fairly new up to computer is necessary for installation

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• Compatibility- unless you have a new operating system you may run into a few problems. Windows Vista is not compatible with too many old systems, which means you may want to double check your systems compatibility before you invest in Vista.

• Support- only a few manufacturers actually provide support for Windows Vista

• Appearance- now similar to Mac configuration, one main change is the size of the minimize, maximize, and close buttons causing some difficulty for those with sight problems

**WINDOWS VISTA ULTIMATE EDITION**

**History**

Windows Vista Ultimate is the most comprehensive edition of Windows Vista. It is the first operating system that combines all of the advanced infrastructure features of a business-focused operating system, all of the management and efficiency features of a mobility-focused operating system, and all of the digital entertainment features of a consumer-focused operating system. For the person who wants one operating system that is great for working from home, working on the road, and for entertainment, Windows Vista Ultimate is the operating system that lets you have it all.

**Features**

*Work from home*

Windows Vista Ultimate includes all of the features that make it easy to remotely connect to business networks. So when you're working from home, you'll have advanced networking capabilities, such as the ability to join a domain, support for Group Policy, and features such as Remote Desktop. Windows Vista Ultimate also includes Windows BitLocker™ Drive Encryption that provides new levels of protection against theft for your important business data whether you are at home, on the road, or in the office.

*The latest in entertainment*

Windows Vista Ultimate delivers all of the entertainment features available in Windows Vista Home Premium. It includes everything you need to enjoy the latest in digital photography, music, movies, analog TV, or even HDTV. Windows Vista Ultimate has great tools such as Windows Photo Gallery and Windows Movie Maker to ensure that you have everything you need to collect, manage, and edit your digital content. It also includes Windows Media Center for turning your PC into an all-in-one home entertainment center.

*No compromises*

Windows Vista Ultimate delivers all of the features available to both business users and home users. It is the ideal solution for a small-business owner who wants a single PC that he or she can use at the office, on the road, and at home. It is also the ideal solution for someone who wants a home PC that will be used primarily for entertainment purposes but that can also be used for business purposes such as connecting to a corporate network.

If you want all of the best business features, all of the best mobility features, and all of the best home entertainment features, Windows Vista Ultimate is the solution for you. With Windows Vista Ultimate, you don't have to compromise.

**System requirements**

• Processor1 GHz 32-bit (x86) or 64-bit (x64) processor

• System Memory 1 GB

• GPU Windows Aero Capable

• Graphics Memory 128 MB

• HDD Free Space 15 GB

• Optical Drive DVD-ROM Drive

• Audio Audio output capability

• Internet Internet access capability

**Advantages**

• Aero- by using this feature you can make windows appear translucent, as well as a 3D mode

• Simple graphical features have been changed as well to provide a new look for Windows

• Internet Security- Windows has come out with the latest version of Internet Explorer to help ensure security when using the internet.

• phishing filter- provides heightened security while surfing the internet

• advanced firewall

• Windows defender

• encryption/decryption of data

• auto-backup

• Parental Controls- parents can deny access to certain content available on websites as well as creating a specific child's account will enable parents to track their child's use of the computer.

• Latest Media Player- Windows Media Player 11 - enhances the quality of videos and audio

• Photo Gallery- allows you to manage your digital photos as well as transfer them to mobile devices and other computers.

**Disadvantages**

• Requirements- since Windows Vista is all the latest technology a fairly new up to computer is necessary for installation

• Cost- the price of the latest technology is certainly what you would expect, quite costly.

• Compatibility- unless you have a new operating system you may run into a few problems. Windows Vista is not compatible with too many old systems, which means you may want to double check your systems compatibility before you invest in Vista.

• Support- only a few manufacturers actually provide support for Windows Vista

• Appearance- now similar to Mac configuration, one main change is the size of the minimize, maximize, and close buttons causing some difficulty for those with sight problems

**WINDOWS 7**

**History**

Windows 7 (codenamed Vienna, formerly Blackcomb) is a personal computer operating system developed by Microsoft. It is a part of the Windows NT family of operating systems. Windows 7 was released to manufacturing on July 22, 2009, and became generally available on October 22, 2009, less than three years after the release of its predecessor, Windows Vista. Windows 7's server counterpart, Windows Server 2008 R2, was released at the same time.

Windows 7 was primarily intended to be an incremental upgrade to the operating system intending to address Windows Vista's poor critical reception while maintaining hardware and software compatibility. Windows 7 continued improvements on Windows Aero (the user interface introduced in Windows Vista) with the addition of a redesigned taskbar that allows applications to be "pinned" to it, and new window management features. Other new features were added to the operating system, including libraries, the new file sharing system HomeGroup, and support for multitouch input. A new "Action Center" interface was also added to provide an overview of system security and maintenance information, and tweaks were made to the User Account Control system to make it less intrusive. Windows 7 also shipped with updated versions of several stock applications, including Internet Explorer 8, Windows Media Player, and Windows Media Center.

In contrast to Windows Vista, Windows 7 was generally praised by critics, who considered the operating system to be a major improvement over its predecessor due to its increased performance, its more intuitive interface (with particular praise devoted to the new taskbar), fewer User Account Control popups, and other improvements made across the platform. Windows 7 was a major success for Microsoft; even prior to its official release, pre-order sales for 7 on the online retailer Amazon.com had surpassed previous records. In just six months, over 100 million copies had been sold worldwide, increasing to over 630 million licenses by July 2012, and a market share of 47.17% of "desktop operating systems" as of November 2016 according to Net Applications, making it the most widely used version of Windows.

**Function and features**

Among Windows 7's new features are advances in touch and handwriting recognition, support for virtual hard disks, improved performance on multi-core processors, improved boot performance, DirectAccess, and kernel improvements. Windows 7 adds support for systems using multiple heterogeneous graphics cards from different vendors (Heterogeneous Multi-adapter), a new version of Windows Media Center, a Gadget for Windows Media Center, improved media features, XPS Essentials Pack and Windows PowerShell being included, and a redesigned Calculator with multiline capabilities including Programmer and Statistics modes along with unit conversion for length, weight, temperature, and several others. Many new items have been added to the Control Panel, including ClearType Text Tuner Display Color Calibration Wizard, Gadgets, Recovery, Troubleshooting, Workspaces Center, Location and Other Sensors, Credential Manager, Biometric Devices, System Icons, and Display. Windows Security Center has been renamed to Windows Action Center (Windows Health Center and Windows Solution Center in earlier builds), which encompasses both security and maintenance of the computer. ReadyBoost on 32-bit editions now supports up to 256 gigabytes of extra allocation. Windows 7 also supports images in RAW image format through the addition of Windows Imaging Component-enabled image decoders, which enables raw image thumbnails, previewing and metadata display in Windows Explorer, plus full-size viewing and slideshows in Windows Photo Viewer and Windows Media Center. Windows 7 also has a native TFTP client with the ability to transfer files to or from a TFTP server.

The taskbar has seen the biggest visual changes, where the old Quick Launch toolbar has been replaced with the ability to pin applications to taskbar. Buttons for pinned applications are integrated with the task buttons. These buttons also enable Jump Lists to allow easy access to common tasks. The revamped taskbar also allows the reordering of taskbar buttons. To the far right of the system clock is a small rectangular button that serves as the Show desktop icon. By default, hovering over this button makes all visible windows transparent for a quick look at the desktop. In touch-enabled displays such as touch screens, tablet PCs, etc., this button is slightly (8 pixels) wider in order to accommodate being pressed by a finger. Clicking this button minimizes all windows, and clicking it a second time restores them.

Window management in Windows 7 has several new features: Snap maximizes a window when it is dragged to the top of the screen. Dragging windows to the left or right edges of the screen allows users to snap software windows to either side of the screen, such that the windows take up half the screen. When a user moves windows that were snapped or maximized using Snap, the system restores their previous state. Snap functions can also be triggered with keyboard shortcuts. Shake hides all inactive windows when the active window's title bar is dragged back and forth rapidly (metaphorically shaken).

Windows 7 includes 13 additional sound schemes, titled Afternoon, Calligraphy, Characters, Cityscape, Delta, Festival, Garden, Heritage, Landscape, Quirky, Raga, Savanna, and Sonata. Internet Spades, Internet Backgammon and Internet Checkers, which were removed from Windows Vista, were restored in Windows 7. Users are able to disable or customize many more Windows components than was possible in Windows Vista. New additions to this list of components include Internet Explorer 8, Windows Media Player 12, Windows Media Center, Windows Search, and Windows Gadget Platform. A new version of Microsoft Virtual PC, newly renamed as Windows Virtual PC was made available for Windows 7 Professional, Enterprise, and Ultimate editions. It allows multiple Windows environments, including Windows XP Mode, to run on the same machine. Windows XP Mode runs Windows XP in a virtual machine, and displays applications within separate windows on the Windows 7 desktop. Furthermore, Windows 7 supports the mounting of a virtual hard disk (VHD) as a normal data storage, and the bootloader delivered with Windows 7 can boot the Windows system from a VHD; however, this ability is only available in the Enterprise and Ultimate editions. The Remote Desktop Protocol (RDP) of Windows 7 is also enhanced to support real-time multimedia application including video playback and 3D games, thus allowing use of DirectX 10 in remote desktop environments.[67]The three application limit, previously present in the Windows Vista and Windows XP Starter Editions, has been removed from Windows 7.[68] All editions include some new and improved features, such as Windows Search, Security features, and some features new to Windows 7, that originated within Vista. Optional BitLocker Drive Encryption is included with Windows 7 Ultimate and Enterprise. Windows Defender is included; Microsoft Security Essentials antivirus software is a free download. All editions include Shadow Copy, which—every day or so—System Restore uses to take an automatic "previous version" snapshot of user files that have changed. Backup and restore have also been improved, and the Windows Recovery Environment—installed by default—replaces the optional Recovery Console of Windows XP.

A new system known as "Libraries" was added for file management; users can aggregate files from multiple folders into a "Library". By default, libraries for categories such as Documents, Pictures, Music, and Video are created, consisting of the user's personal folder and the Public folder for each. The system is also used as part of a new home networking system known as HomeGroup; devices are added to the network with a password, and files and folders can be shared with all other devices in the HomeGroup, or with specific users. The default libraries, along with printers, are shared by default, but the personal folder is set to read-only access by other users, and the Public folder can be accessed by anyone.

Windows 7 includes improved globalization support through a new Extended Linguistic Services AP to provide multilingual support (particularly in Ultimate and Enterprise editions). Microsoft has also implemented better support for solid-state drives, including the new TRIM command, and Windows 7 is able to identify a solid-state drive uniquely. Native support for USB 3.0 is not included due to delays in the finalization of the standard. At WinHEC 2008 Microsoft announced that color depths of 30-bit and 48-bit would be supported in Windows 7 along with the wide color gamut scRGB (which for HDMI 1.3 can be converted and output as xvYCC). The video modes supported in Windows 7 are 16-bit sRGB, 24-bit sRGB, 30-bit sRGB, 30-bit with extended color gamut sRGB, and 48-bit scRGB.

For developers, Windows 7 includes a new networking API with support for building SOAP-based web services in native code (as opposed to .NET-based WCF web services), new features to simplify development of installation packages and shorten application install times. Windows 7, by default, generates fewer User Account Control (UAC) prompts because it allows digitally signed Windows components to gain elevated privileges without a prompt. Additionally, users can now adjust the level at which UAC operates using a sliding scale.

**Editions**

Windows 7 is available in six different editions, of which the Home Premium, Professional, and Ultimate were available at retail in most countries, and as pre-loaded software on new computers. Home Premium and Professional were aimed at home users and small businesses respectively, while Ultimate was aimed at enthusiasts. Each edition of Windows 7 includes all of the capabilities and features of the edition below it, and adds additional features oriented towards their market segments; for example, Professional adds additional networking and security features such as Encrypting File System and the ability to join a domain. Ultimate contained a superset of the features from Home Premium and Professional, along with other advanced features oriented towards power users, such as BitLocker drive encryption; unlike Windows Vista, there were no "Ultimate Extras" add-ons created for Windows 7 Ultimate. Retail copies were available in "upgrade" and higher-cost "full" version licenses; "upgrade" licenses require an existing version of Windows to install, while "full" licenses can be installed on computers with no existing operating system.

The remaining three editions were not available at retail, of which two were available exclusively through OEM channels as pre-loaded software. The Starter edition is a stripped-down version of Windows 7 meant for low-cost devices such as netbooks. In comparison to Home Premium, Starter has reduced multimedia functionality, does not allow users to change their desktop wallpaper or theme, disables the "Aero Glass" theme, does not have support for multiple monitors, and can only address 2GB of RAM. Home Basic was sold only in emerging markets, and was positioned in between Home Premium and Starter. The highest edition, Enterprise, is functionally similar to Ultimate, but is only sold through volume licensing via Microsoft's Software Assurance program.

All editions aside from Starter support both IA-32 and x86-64 architectures; Starter only supports 32-bit systems. Retail copies of Windows 7 are distributed on two DVDs: one for the IA-32 version and the other for x86-64. OEM copies include one DVD, depending on the processor architecture licensed. The installation media for consumer versions of Windows 7 are identical; the product key and corresponding license determines the edition that is installed. The Windows Anytime Upgrade service can be used to purchase an upgrade that unlocks the functionality of a higher edition, such as going from Starter to Home Premium, and Home Premium to Ultimate. Most copies of Windows 7 only contained one license; in certain markets, a "Family Pack" version of Windows 7 Home Premium was also released for a limited time, which allowed upgrades on up to three computers. In certain regions, copies of Windows 7 were only sold in, and could only be activated in a designated region.

**Support lifecycle**

Microsoft ended the sale of new retail copies of Windows 7 in October 2014, and the sale of new OEM licenses for Windows 7 Home Basic, Home Premium, and Ultimate ended on October 31, 2014. Professional currently remains available to OEMs, primarily as part of downgrade rights for Windows 8 licenses. OEM sales of PCs with Windows 7 Professional preinstalled ended on October 31, 2016. The sale of non-Professional OEM licenses was stopped on October 31, 2014. Mainstream support for 7 ended on January 13, 2015. Extended support will end on January 14, 2020.

**System requirements**

|  |  |  |
| --- | --- | --- |
| **Minimum hardware requirements for Windows 7** | | |
| **Component** | **Operating system architecture** | |
| **32-bit** | **64-bit** |
| [**Processor**](https://en.wikipedia.org/wiki/Central_processing_unit) | 1 GHz [IA-32](https://en.wikipedia.org/wiki/IA-32) processor | 1 GHz [x86-64](https://en.wikipedia.org/wiki/X86-64) processor |
| [**Memory (RAM)**](https://en.wikipedia.org/wiki/Random_Access_Memory) | 1 GB | 2 GB |
| [**Graphics card**](https://en.wikipedia.org/wiki/Graphics_card) | [DirectX 9](https://en.wikipedia.org/wiki/DirectX_9) graphics processor with [WDDM](https://en.wikipedia.org/wiki/Windows_Display_Driver_Model) driver model 1.0 | |
| **Free**[**hard drive**](https://en.wikipedia.org/wiki/Hard_Disk_Drive)**space** | 16 GB | 20 GB |
| [**Optical drive**](https://en.wikipedia.org/wiki/Optical_drive) | DVD-ROM drive[[99]](https://en.wikipedia.org/wiki/Windows_7#cite_note-99) (Only to install from DVD-ROM media) | |

Additional requirements to use certain features:

• Windows XP Mode (Professional, Ultimate and Enterprise): Requires an additional 1 GB of RAM and additional 15 GB of available hard disk space. The requirement for a processor capable of hardware virtualization has been lifted.

• Windows Media Center (included in Home Premium, Professional, Ultimate and Enterprise), requires a TV tuner to receive and record TV.

**Extent of hardware support**

*Physical memory*

The maximum amount of RAM that Windows 7 supports varies depending on the product edition and on the processor architecture, as shown in the following table.

|  |  |  |
| --- | --- | --- |
| **Physical memory limits of Windows 7** | | |
| **Edition** | **Processor architecture** | |
| [**IA-32**](https://en.wikipedia.org/wiki/IA-32)**(32-bit)** | [**x64**](https://en.wikipedia.org/wiki/X64)**(64-bit)** |
| [Ultimate](https://en.wikipedia.org/wiki/Windows_7_Ultimate) | 4 GB | 192 GB |
| [Enterprise](https://en.wikipedia.org/wiki/Windows_7_Enterprise) |
| [Professional](https://en.wikipedia.org/wiki/Windows_7_Professional) |
| [Home Premium](https://en.wikipedia.org/wiki/Windows_7_Home_Premium) | 16 GB |
| [Home Basic](https://en.wikipedia.org/wiki/Windows_7_Home_Basic) | 8 GB |
| [Starter](https://en.wikipedia.org/wiki/Windows_7_Starter) | 2 GB | N/A |

*Processor limits*

Windows 7 Professional and up support up to 2 physical processors (CPU sockets), whereas Windows 7 Starter, Home Basic, and Home Premium editions support only 1. Physical processors with either multiple cores, or hyper-threading, or both, implement more than one logical processor per physical processor. The x86 editions of Windows 7 support up to 32 logical processors; x64 editions support up to 256 (4 x 64).

In January 2016, Microsoft announced that it would no longer support Windows platforms older than Windows 10 on any future Intel-compatible processor lines, citing difficulties in reliably allowing the operating system to operate on newer hardware. Microsoft stated that effective July 17, 2017, devices with Intel Skylake CPUs were only to receive the "most critical" updates for Windows 7 and 8.1, and only if they have been judged not to affect the reliability of Windows 7 on older hardware. For enterprise customers, Microsoft issued a list of Skylake-based devices "certified" for Windows 7 and 8.1 in addition to Windows 10, to assist them in migrating to newer hardware that can eventually be upgraded to 10 once they are ready to transition. Microsoft and their hardware partners will provide special testing and support for these devices on 7 and 8.1 until the July 2017 date.

On March 18, 2016, in response to criticism over the move, primarily from enterprise customers, Microsoft delayed the end of support and non-critical updates for Skylake systems to July 17, 2018, but stated that they would also continue to receive security updates through the end of extended support.

**Updates**

*Service Pack 1*

Windows 7 Service Pack 1 (SP1) was announced on March 18, 2010. A beta was released on July 12, 2010. The final version was released to the public on February 22, 2011. At the time of release, it was not made mandatory. It was available via Windows Update, direct download, or by ordering the Windows 7 SP1 DVD. The service pack is on a much smaller scale than those released for previous versions of Windows, particularly Windows Vista.

Windows 7 Service Pack 1 adds support for Advanced Vector Extensions (AVX), a 256-bit instruction set extension for processors, and improves IKEv2 by adding additional identification fields such as E-mail ID to it. In addition, it adds support for Advanced Format 512e as well as additional Identity Federation Services. Windows 7 Service Pack 1 also resolves a bug related to HDMI audio and another related to printing XPS documents.

In Europe, the automatic nature of the BrowserChoice.eu feature was dropped in Windows 7 Service Pack 1 in February 2011 and remained absent for 14 months despite Microsoft reporting that it was still present, subsequently described by Microsoft as a "technical error". As a result, in March 2013 the European Commission fined Microsoft €561 million to deter companies from reneging on settlement promises.

*Windows Management Framework 5.0*

Windows Management Framework 5.0 includes updates to Windows PowerShell, Windows PowerShell Desired State Configuration (DSC), Windows Remote Management (WinRM), Windows Management Instrumentation (WMI). It was released on February 24, 2016.

*Platform Update*

Platform Update for Windows 7 SP1 and Windows Server 2008 R2 SP1 was released on February 26, 2013 after a pre-release version had been released on November 5, 2012. It is also included with Internet Explorer 10 for Windows 7.

It includes enhancements to Direct2D, DirectWrite, Direct3D, Windows Imaging Component (WIC), Windows Advanced Rasterization Platform (WARP), Windows Animation Manager (WAM), XPS Document API, H.264 Video Decoder and JPEG XR decoder. However support for Direct3D 11.1 is limited as the update does not include DXGI/WDDM 1.2 from Windows 8, making unavailable many related APIs and significant features such as stereoscopic frame buffer, feature level 11\_1 and optional features for levels 10\_0, 10\_1 and 11\_0.

*Disk Cleanup update*

In October 2013, a Disk Cleanup Wizard addon was released that lets users delete outdated Windows updates on Windows 7 SP1, thus reducing the size of the WinSxS directory. This update backports some features found in Windows 8.

*Convenience rollup*

In May 2016, Microsoft released a "Convenience rollup update for Windows 7 SP1 and Windows Server 2008 R2 SP1", which contains all patches released between the release of SP1 and April 2016. The rollup is not available via Windows Update, and must be downloaded manually. This package can also be integrated into a Windows 7 installation image.

Since October 2016, all security and reliability updates are cumulative. Downloading and installing updates that address individual problems is no longer possible, but the number of updates that must be downloaded to fully update the OS is significantly reduced.

**Advantages**

Windows 7 has a lot of new and nice features that are not in the other versions. It looks nice and it is designed for touchscreen interaction. It is faster than Vista and windows XP. It is faster than its predecessors, both in terms of installation and boot up time.

Windows Defender was proved to be the best in giving the protection to the system. It has fast start up and shut down. Windows 7 update the feature for all the software and the components.

Windows 7 supports Virtual Hard Disks with the support of enhanced performances of multi core processors which helps to overcome the clutter in the desktop by introducing three new features which are Aero Peek, Aero shake, and snap.

Windows 7 has been made much easier than its previous operating systems and it is probably safe from the hackers. It also supports the advanced touch and the handwriting recognition.

You can download some eye-catching themes and background pictures from its personal Microsoft site or from RSS feed and you can customize each and every part of the themes and save for your future use or send for the other Windows 7 customers.

Windows Media Player has got much enhanced features in Windows 7 and drag and drop option has been added which were not there in the previous versions.

Windows 7 helps you to make the best use of graphic cards from the different vendors. It has included a new concept jump lists which organize the recently used files as well as the web pages.

The bitlocker is a feature which provides the encryption for the internal drives in Vista, but it is extended to the external drives in Windows 7 which makes backup and restore much easier.

WordPad in Windows 7 has improved and it looks similar to the Microsoft Office Word. It can be used to open, edit the file names which was earlier introduced with MS-Office 2007. Word prediction is the new feature in WordPad and realistic brush has been added in Paint.

The calculator has been enhanced with some new features like the unit conversion, the calculations like the fuel economy and the auto lease payment and default settings of user account have been eliminated to protect from the unauthorized software to be installed.

You will find fewer crashes on Windows 7 Because Windows 7 is more stable than Windows Vista and Windows Media Player has got a lot enhanced attributes inside Windows 7 and drag and drop alternative has been added which had been not there inside the earlier versions.

**Disadvantages**

Windows 7 needs RAM capacity of at least 1 GB and it cannot be easily upgraded from windows XP. It has the drawbacks in upgrading the operating system in the easy manner.

Many applications have failed to run in Windows 7 and they are asking for online support. Some of the users are not satisfied with the new features because they need to buy out the additional resources such as RAM to make use of them.

It is expensive than the previous Microsoft operating systems. Some of the users have problems such as their system hangs after installing Windows 7. Only the advanced users are convenient with Windows 7. New users find it difficult to use windows 7 and they switch back to windows XP itself.

When the user has got an HP multifunction printer and its driver getting upgraded for Windows 7, then the printer doesn’t response for the print commands. The user wants to go to the new HP remedy Center to resolve this difficulty.

Many old softwares will not work in the Windows 7 operating system and it will be a great problem to search for the Windows 7 compatible versions for the particular software. The driver support is not providing for the old systems and the old version of motherboard and this disables some of the features in Windows 7.

Only the high end computers can install the Windows 7 and it can be used only in highly configures systems. Many users have encountered the problem of BSOD with windows 7 and have reported. It occurs often because of the software and the hardware changes in the system.

**WINDOWS 7 STARTER EDITION**

**History**

Windows 7 Starter is the edition of Windows 7 that contains the fewest features. It is only available in a 32-bit version and does not include the Windows Aero theme. The desktop wallpaper and visual styles (Windows 7 Basic) are not user-changeable. Microsoft originally intended to restrict users of this edition to running three simultaneous applications but this limitation was dropped.

This edition was available pre-installed on computers, especially netbooks or Windows Tablets, through system integrators or computer manufacturers using OEM licenses.

The Starter edition of Windows is designed for entry level PCs and available only in certain regions. We first introduced a “Starter edition” with Windows XP, and did again with Windows Vista. Starter comes with limitations, such as being able to run only 3 concurrent applications on a PC at a time (this excludes background processes such as anti-virus applications, wireless and Bluetooth, and system tools like Explorer and Control Panel).

**Function and features**

There of course will also be Windows 7 Starter edition, but based on the feedback we’ve received from partners and customers asking us to enable a richer small notebook PC experience with Windows 7 Starter, we’ve decided to make some changes compared to previous Starter editions.

For the first time, we will be making Windows 7 Starter available worldwide on small notebook PCs. We are also going to enable Windows 7 Starter customers the ability to run as many applications simultaneously as they would like, instead of being constricted to the 3 application limit that the previous Starter editions included.

We believe these changes will make Windows 7 Starter an even more attractive option for customers who want a small notebook PC for very basic tasks, like browsing the web, checking email and personal productivity.

As previously mentioned, Windows 7 Starter Edition is only offered as x86 (32-bit) version. If you decide to go to x64 because the system hardware you're running supports x64 you cannot upgrade to Windows 7 Home Premium, Professional, or Ultimate Edition using the x64 software; you would need to perform a Custom (advanced) install of the x64 version you wanted to go to.

**System requirements**

The hardware requirements for the Windows 7 basic experience are:

* Current processor running at least 800 MHz
* 512 MB of system memory
* A graphics processor that is DirectX 9 capable

The hardware requirements for the Windows 7 premium experience are:

* 1 GHz or faster 32-bit (x86) or 64-bit (x64) processor
* 1GB RAM (32-bit) or 2 GB RAM (64-bit)
* Support for DirectX 9 graphics with a Windows Display Driver Model (WDDM) driver, 128 MB of graphics memory (minimum), Pixel Shader 2.0, and 32 bits per pixel
* 40 GB of hard drive capacity with 16 GB available hard disk space (32-bit) or 20 GB (64-bit)
* DVD-ROM drive
* Audio output capability
* Internet access capability

**Advantages**

The only good news is that, after announcing that Starter would only allow three applications to run at the same time, Microsoft has since gone back on this and sensibly lifted the restriction.

Although Starter Edition is a perfectly respectable operating system, there's a good chance many people will find it frustrating to use on a regular basis.

If you're buying a netbook and are given the choice at a reasonable price, we recommend you opt for Home Premium; if you don’t, you'll still get the benefits of Windows 7's core improvements, but there's much you'll be missing out on.

**Disadvantages**

It is important to note that Windows 7 Starter still includes only a subset of the features offered in the higher editions of Windows 7 such as Windows 7 Home Premium, Windows 7 Professional and above. Windows 7 Starter does not include:

* Aero Glass, meaning you can only use the “Windows Basic” or other opaque themes. It also means you do not get Taskbar Previews or Aero Peek.
* Personalization features for changing desktop backgrounds, window colors, or sound schemes.
* The ability to switch between users without having to log off.
* Multi-monitor support.
* DVD playback.
* Windows Media Center for watching recorded TV or other media.
* Remote Media Streaming for streaming your music, videos, and recorded TV from your home computer.
* Domain support for business customers.
* XP Mode for those that want the ability to run older Windows XP programs on Windows 7.

**WINDOWS 7 HOME BASIC EDITION**

**History**

Windows 7 Home Basic was available in "emerging markets", in 141 different countries. Some Windows Aero options are excluded along with several new features. Home Basic, along with other editions sold in emerging markets, include geographical activation restriction, which requires users to activate Windows within a certain region or country.

**Features**

*User Interface Enhancements*

An improved taskbar allows you to launch programs and switch between them when they're open. You can pin any program to the taskbar, making it just a click away. Rearrange icons via clicking and dragging, Icons are bigger than in previous versions, making them easier to identify. Hover over an icon and view thumbnails of every file or window that is currently open in that program; hover over the thumbnail and see a full-screen preview of that window. Move the cursor away, and the preview disappears.

There are numerous Desktop enhancements present in Windows 7. Snaps allows you to quickly grab a window and pull it to either edge of your screen, automatically resizing the window to occupy half of your screen

Windows Search has been improved since its introduction in Windows Vista. You'll be able to find files, e-mail messages, and applications via the search box, conveniently located at the bottom of the Start menu. Simply enter a word or a string of letters from the file name: you'll receive an organized list of results.

Accelerators allow you to highlight any part of a web page, and feed it into a frequently-used service as a search. See an address on a web page? Highlight it, and use an Accelerator to immediately display a map. You'll have access to Accelerators for e-mail, eBay, Facebook, blogging, mapping, search, translation, and more.

Windows 7 is optimized so that PCs start up, shut down, and resume from standby faster than previous versions. Added features, including the aforementioned Taskbar and Jump Lists, allow you to complete common tasks. You'll be able to use the Action Center to control how the OS notifies you of systems changes. Windows 7 helps you recover from problems when they occur, walking you through the steps necessary to address common issues.

In past versions, Windows would notify you via a pop-up or other message if there was something that needed attention on your computer. Instead of using intrusive pop-up messages, Windows 7 simply adds an icon to the Action Center.

*Entertainment Features*

Windows Media Center allows you to watch TV, movies, and other types of video on your computer. When used with TV tuner hardware, it allows you to record television programming. It features a streamlined programming guide, which contains both standard and digital HD program lists.

With more and more media becoming available in digital formats, it is often desirable to stream media from your PC to your home theater. Windows 7 simplifies streaming, making it much easier to send media to compatible networked media devices.

Windows Media Player features a "Play To" feature, which allows you to push media to a compatible network device, while maintaining playback control from your computer. Typing away on the laptop and in the mood to listen to some music, but not through a pair of tinny computer speakers? Play To can send music to a networked stereo, Xbox 360, or other compatible device. You'll have full control over playback from the familiar Windows Media Player interface.

Windows Live Essentials, a free download for Windows 7 users, adds several features that were present in Windows Vista, but have been omitted from Windows 7. It adds supports for multiple e-mail accounts, digital photo editing, instant messaging, and online security.

Windows 7 adds support for touch-screen computers, including those that support multi-touch gestures. Larger, touch-friendly icons are present throughout the OS. Interact directly with the OS and applications via touch: control media playback, scroll through documents and web pages, resize windows, and pan and zoom across large photos.

**System requirements**

|  |  |  |
| --- | --- | --- |
| **Minimum hardware requirements for Windows 7** | | |
| **Component** | **Operating system architecture** | |
| **32-bit** | **64-bit** |
| [**Processor**](https://en.wikipedia.org/wiki/Central_processing_unit) | 1 GHz [IA-32](https://en.wikipedia.org/wiki/IA-32) processor | 1 GHz [x86-64](https://en.wikipedia.org/wiki/X86-64) processor |
| [**Memory (RAM)**](https://en.wikipedia.org/wiki/Random_Access_Memory) | 1 GB | 2 GB |
| [**Graphics card**](https://en.wikipedia.org/wiki/Graphics_card) | [DirectX 9](https://en.wikipedia.org/wiki/DirectX_9) graphics processor with [WDDM](https://en.wikipedia.org/wiki/Windows_Display_Driver_Model) driver model 1.0 | |
| **Free**[**hard drive**](https://en.wikipedia.org/wiki/Hard_Disk_Drive)**space** | 16 GB | 20 GB |
| [**Optical drive**](https://en.wikipedia.org/wiki/Optical_drive) | DVD-ROM drive (Only to install from DVD-ROM media) | |

**Advantages**

* Windows 7 has a lot of new and nice features that are not in the other versions. It looks nice and it is designed for touchscreen interaction. It is faster than Vista and windows XP. It is faster than its predecessors, both in terms of installation and boot up time.
* Windows Defender was proved to be the best in giving the protection to the system. It has fast start up and shut down. Windows 7 update the feature for all the software and the components.
* Windows 7 supports Virtual Hard Disks with the support of enhanced performances of multi core processors which helps to overcome the clutter in the desktop by introducing three new features which are Aero Peek, Aero shake, and snap.
* Windows 7 has been made much easier than its previous operating systems and it is probably safe from the hackers. It also supports the advanced touch and the handwriting recognition.
* You can download some eye-catching themes and background pictures from its personal Microsoft site or from RSS feed and you can customize each and every part of the themes and save for your future use or send for the other Windows 7 customers.
* Windows Media Player has got much enhanced features in Windows 7 and drag and drop option has been added which were not there in the previous versions.
* Windows 7 helps you to make the best use of graphic cards from the different vendors. It has included a new concept jump lists which organize the recently used files as well as the web pages.
* The bitlocker is a feature which provides the encryption for the internal drives in Vista, but it is extended to the external drives in Windows 7 which makes backup and restore much easier.
* WordPad in Windows 7 has improved and it looks similar to the Microsoft Office Word. It can be used to open, edit the file names which was earlier introduced with MS-Office 2007. Word prediction is the new feature in WordPad and realistic brush has been added in Paint.

**Disadvantages**

* Windows 7 needs RAM capacity of at least 1 GB and it cannot be easily upgraded from windows XP. It has the drawbacks in upgrading the operating system in the easy manner.
* Many applications have failed to run in Windows 7 and they are asking for online support. Some of the users are not satisfied with the new features because they need to buy out the additional resources such as RAM to make use of them.
* It is expensive than the previous Microsoft operating systems. Some of the users have problems such as their system hangs after installing Windows 7. Only the advanced users are convenient with Windows 7. New users find it difficult to use windows 7 and they switch back to windows XP itself.
* Many old softwares will not work in the Windows 7 operating system and it will be a great problem to search for the Windows 7 compatible versions for the particular software. The driver support is not providing for the old systems and the old version of motherboard and this disables some of the features in Windows 7.
* Only the high end computers can install the Windows 7 and it can be used only in highly configures systems. Many users have encountered the problem of BSOD with windows 7 and have reported. It occurs often because of the software and the hardware changes in the system.

**WINDOWS 7 HOME PREMIUM EDITION**

**History**

Windows 7 Home Premium is the operating system for homes with advanced computer needs. It will help you use your laptop or desktop PC more effectively as well as enable you to enjoy new, exciting digital entertainment experiences—all with the benefit of added security and reliability.

**Features**

*User Interface Enhancements*

An improved taskbar allows you to launch programs and switch between them when they're open. You can pin any program to the taskbar, making it just a click away. Rearrange icons via clicking and dragging, Icons are bigger than in previous versions, making them easier to identify. Hover over an icon and view thumbnails of every file or window that is currently open in that program; hover over the thumbnail and see a full-screen preview of that window. Move the cursor away, and the preview disappears.

There are numerous Desktop enhancements present in Windows 7. Snaps allows you to quickly grab a window and pull it to either edge of your screen, automatically resizing the window to occupy half of your screen.

Windows Search has been improved since its introduction in Windows Vista. You'll be able to find files, e-mail messages, and applications via the search box, conveniently located at the bottom of the Start menu. Simply enter a word or a string of letters from the file name: you'll receive an organized list of results.

Accelerators allow you to highlight any part of a web page, and feed it into a frequently-used service as a search. See an address on a web page? Highlight it, and use an Accelerator to immediately display a map. You'll have access to Accelerators for e-mail, eBay, Facebook, blogging, mapping, search, translation, and more.

Windows 7 is optimized so that PCs start up, shut down, and resume from standby faster than previous versions. Added features, including the aforementioned Taskbar and Jump Lists, allow you to complete common tasks. You'll be able to use the Action Center to control how the OS notifies you of systems changes. Windows 7 helps you recover from problems when they occur, walking you through the steps necessary to address common issues.

In past versions, Windows would notify you via a pop-up or other message if there was something that needed attention on your computer. Instead of using intrusive pop-up messages, Windows 7 simply adds an icon to the Action Center.

*Entertainment Features*

Windows Media Center allows you to watch TV, movies, and other types of video on your computer. When used with TV tuner hardware, it allows you to record television programming. It features a streamlined programming guide, which contains both standard and digital HD program lists.

With more and more media becoming available in digital formats, it is often desirable to stream media from your PC to your home theater. Windows 7 simplifies streaming, making it much easier to send media to compatible networked media devices.

Windows Media Player features a "Play To" feature, which allows you to push media to a compatible network device, while maintaining playback control from your computer. Typing away on the laptop and in the mood to listen to some music, but not through a pair of tinny computer speakers? Play To can send music to a networked stereo, Xbox 360, or other compatible device. You'll have full control over playback from the familiar Windows Media Player interface.

Windows Live Essentials, a free download for Windows 7 users, adds several features that were present in Windows Vista, but have been omitted from Windows 7. It adds supports for multiple e-mail accounts, digital photo editing, instant messaging, and online security.

Windows 7 adds support for touch-screen computers, including those that support multi-touch gestures. Larger, touch-friendly icons are present throughout the OS. Interact directly with the OS and applications via touch: control media playback, scroll through documents and web pages, resize windows, and pan and zoom across large photos.

**System requirements**

|  |  |  |
| --- | --- | --- |
| **Minimum hardware requirements for Windows 7** | | |
| **Component** | **Operating system architecture** | |
| **32-bit** | **64-bit** |
| [**Processor**](https://en.wikipedia.org/wiki/Central_processing_unit) | 1 GHz [IA-32](https://en.wikipedia.org/wiki/IA-32) processor | 1 GHz [x86-64](https://en.wikipedia.org/wiki/X86-64) processor |
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**Advantages**

* Improved performance
* Pinned icons
* Live thumbnails
* Jump lists
* Libraries are fantastic
* Improved backup
* Fewer interruptions
* Sensible features for home users

**Disadvantages**

* No XP Mode in this edition
* Can't add NAS drives to libraries
* Anytime Upgrades are pricey

**WINDOWS 7 PROFESSIONAL EDITION**

**History**

This edition is targeted towards enthusiasts, small-business users and schools. It includes all the features of Windows 7 Home Premium, and adds the ability to participate in a Windows Server domain. Additional features include support for up to 192 GB of random-access memory (increased from 16 GB), operating as a Remote Desktop server, location aware printing, backup to a network location, Encrypting File System, Presentation Mode, Software Restriction Policies (but not the extra management features of AppLocker) and Windows XP Mode. It, too, was available in both 32-bit and 64-bit versions.

**Function and features**

*User Interface Enhancements*

An improved taskbar allows you to launch programs and switch between them when they're open. You can pin any program to the taskbar, making it just a click away. Rearrange icons via clicking and dragging, Icons are bigger than in previous versions, making them easier to identify.

Jump Lists allow you to quickly reach files with which you've been working. Simply right-click an application icon to see which files it has recently opened. You can even pin files to a Jump List, ensuring they always appear on it, allowing you to access frequently-used files with only a few clicks.

Certain programs, including Windows Media Player, can pre-populate their Jump Lists with common tasks. You can play all of your music or resume the most recently played playlist via the Media Player Jump List. In Internet Explorer, frequently-visited and recently-visited websites will appear.

There are numerous Desktop enhancements present in Windows 7. Snaps allows you to quickly grab a window and pull it to either edge of your screen, automatically resizing the window to occupy half of your screen.

Windows Search has been improved since its introduction in Windows Vista. You'll be able to find files, e-mail messages, and applications via the search box, conveniently located at the bottom of the Start menu. Simply enter a word or a string of letters from the file name: you'll receive an organized list of results.

Search results are organized by file type. Programs, items in your control panel, documents, music, and photos that match your search will be grouped together by file type. You can further customize search results via filters: filter by creation date, document author, and more.

Device management has been greatly enhanced in Windows 7. Rather than spreading devices across several different screens, as had been done in previous versions of Windows, you'll be able to access all of your devices from one screen. The Devices and Printers screen will allow you to manage all of your printers, phones, peripherals, MP3 players, and other devices.

Windows 7 also features Device Stage technology. Use Device Stage to interact with any compatible device that is connected to your computer. You'll be able to view device status, and run common tasks from a single window. Device icons reflect the type of peripheral, allowing you to easily see what is connected.

While most folks with multiple computers already have a home network setup for Internet sharing, it is often difficult to share other files between computers. Enter HomeGroup. You'll be able to use this function to more easily setup a home network, allowing you to share printers and files among all of the computers in your home.

Joining networks can often cause a headache, especially for users who have access to different networks in different locations. Whether it be a corporate network, a VPN, your home Wi-Fi, mobile broadband, or dial-up, all of your networks are visible in the View Available Networks (VAN) window. You'll have one-click access to any available network, and you can configure automatic connection to frequently-used networks.

*Performance and Compatibility*

Windows 7 is optimized so that PCs start up, shut down, and resume from standby faster than previous versions. Added features, including the aforementioned Taskbar and Jump Lists, allow you to complete common tasks. You'll be able to use the Action Center to control how the OS notifies you of systems changes. Windows 7 helps you recover from problems when they occur, walking you through the steps necessary to address common issues.

Mobile computers rely on an all-too-often anemic battery for power. Windows 7 features a number of power-saving enhancements, designed to prolong battery life. Adaptive display brightness dims a display when you've been away from your PC, and playing DVD movies requires less power than in previous versions of Windows.

In past versions, Windows would notify you via a pop-up or other message if there was something that needed attention on your computer. Instead of using intrusive pop-up messages, Windows 7 simply adds an icon to the Action Center.

*Entertainment Features*

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**Advantages**

Windows 7 has a lot of new and nice features that are not in the other versions. It looks nice and it is designed for touchscreen interaction. It is faster than Vista and windows XP. It is faster than its predecessors, both in terms of installation and boot up time.

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**Disadvantages**

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**WINDOWS 7 ENTERPRISE EDITION**

**History**

This edition targeted the enterprise segment of the market and was sold through volume licensing to companies which have a Software Assurance contract with Microsoft. Additional features include support for Multilingual User Interface (MUI) packages, BitLocker Drive Encryption, and UNIX application support. Not available through retail or OEM channels, this edition is distributed through Microsoft Software Assurance (SA). As a result, it includes several SA-only benefits, including a license allowing the operating of diskless nodes (diskless PCs) and activation via VLK.

Windows 7 Enterprise is another example of Microsoft’s commitment to delivering continual innovation to enterprise customers through Software Assurance. While we expect these features will be of greatest interest to our enterprise customers, any Windows client Software Assurance customer will have the rights to deploy the Enterprise edition. We look forward to sharing more information about Windows 7 Enterprise and what it has to offer our business customers.

**Function and features**

* DirectAccess: Windows 7, along with the network technologies in Windows Server 2008 R2, provides this network technology that enables the user to seamlessly access corporate network resources when on the Internet, without having to create a VPN connection.
* BranchCache: Windows 7 together with Windows Server 2008 R2 offers an alternative to alleviate the problems of slow connectivity, delivering increased network responsiveness of applications and giving users in remote offices an experience more like working in the head office. When BranchCache is enabled, a copy of data accessed from an intranet web site or a file server is cached locally within a branch office.
* Enterprise Search Scopes: allows IT administrators to populate links to the commonly used internal sites — for example, SharePoint sites – to the Windows Explorer UI or to the Start menu or in Windows 7, using Group Policy. These links simplify access to the target internal data sources on the network for business users.
* BitLocker & BitLocker To Go: protect data on PCs and removable drives, with manageability to enforce encryption and backup of recovery keys. Windows 7 extends BitLocker protection to USB storage devices while making the original functionality even easier to use. Note: BitLocker for PCs and BitLocker To Go for removal hard drives such as external USB drives.
* AppLocker: is a flexible, easy-to-use mechanism that enables IT professionals to specify exactly what is allowed to run on user desktops. It restricts unauthorized software while allowing applications, installation programs, and scripts that users need.
* Virtual Desktop Infrastructure (VDI) Optimizations: delivers desktop functionality in Windows 7 using virtual machines hosted on servers—a solution known as Virtual Desktop Infrastructure (VDI). VDI enables users to access their desktops remotely as well as the ability to reuse virtual machine (VHD) images to boot a physical PC. Windows 7 provides for better user experience in VDI scenarios, with better graphics, audio and local device support.
* Multi Lingual User Interface: the Language Packs in Windows 7 Enterprise enable you to support up to 36 different languages using a single Windows master image, rather than creating a separate image for each language used in the organization.

**System requirements**

|  |  |  |
| --- | --- | --- |
| **Minimum hardware requirements for Windows 7** | | |
| **Component** | **Operating system architecture** | |
| **32-bit** | **64-bit** |
| [**Processor**](https://en.wikipedia.org/wiki/Central_processing_unit) | 1 GHz [IA-32](https://en.wikipedia.org/wiki/IA-32) processor | 1 GHz [x86-64](https://en.wikipedia.org/wiki/X86-64) processor |
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| **Free**[**hard drive**](https://en.wikipedia.org/wiki/Hard_Disk_Drive)**space** | 16 GB | 20 GB |
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**Advantages**

* Subsystem for UNIX-based Applications (SUA)
* License rights to run up to four additional copies of Windows in virtual machines
* License rights for network booting of Windows
* Because each high edition SKU is a superset of the previous SKU, Windows 7 Enterprise includes all end user features available in Windows 7 Professional, as well as the DVD Playback Codec and Windows Media Center.

**Disadvantages**

Windows 7 needs RAM capacity of at least 1 GB and it cannot be easily upgraded from windows XP.

Many applications have failed to run in Windows 7 and they are asking for online support. Some of the users are not satisfied with the new features because they need to buy out the additional resources such as RAM to make use of them.

It is expensive than the previous Microsoft operating systems. Some of the users have problems such as their system hangs after installing Windows 7. Only the advanced users are convenient with Windows 7. New users find it difficult to use windows 7 and they switch back to windows XP itself.

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**WINDOWS 7 ULTIMATE EDITION**

**History**

Windows 7 Ultimate contains the same features as Windows 7 Enterprise, but unlike the Enterprise edition, it was available to home users on an individual license basis. Windows 7 Home Premium and Windows 7 Professional users are able to upgrade to Windows 7 Ultimate for a fee using Windows Anytime Upgrade if they wish to do so. Unlike Windows Vista Ultimate, the Windows 7 Ultimate edition does not include the Windows Ultimate Extras feature or any exclusive features as Microsoft had stated.

Microsoft Windows 7 Ultimate is the best operating system for professionals and business till now. It is the most versatile and powerful version of Windows 7. Even after its successor Windows 8 was released, Windows 7 is still considered industries best. It combines the entertainment features of Home Premium and the business capabilities of Professional, including the ability to run programs in Windows XP Mode. For security, you can encrypt your data with BitLocker. Flexibility to work in any of 35 languages.

**Function and features**

* HomeGroup: Takes the headache out of sharing files and printers on network.
* Jump Lists: Speedy access to your favorite songs, websites and documents.
* Snap: A quick way to resize and compare windows on your desktop.
* Windows Search: Find virtually anything on your PC, instantly.
* Windows Taskbar: Better thumbnail previews & icons, and more ways to customize.
* Full 64-bit support: Windows 7 makes the most of powerful 64-bit PCs.
* Windows XP Mode: Run older Windows XP business software on Windows 7 desktop.
* More Personal: Redecorate your desktop with fun new themes or handy gadgets.
* Performance Improvements: Quick sleep, resume & USB device detection, less memory needs.
* Aero Desktop experience: Mixes cool graphics with useful ways to manage your desktop.
* BitLocker Drive Encryption: Keep documents safer by encrypting the entire data kisk drive.
* Windows Defender: First line of defense against spyware and unwanted software.
* Windows Firewall: Keep intruders (hackers or malicious software) from getting in.
* Language packs: Windows 7 Ultimate can switch easily btw 35 display languages.

**System requirements**

|  |  |  |
| --- | --- | --- |
| **Minimum hardware requirements for Windows 7** | | |
| **Component** | **Operating system architecture** | |
| **32-bit** | **64-bit** |
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**Advantages**

* Help prevent theft or loss of data: Use BitLocker and BitLocker To Go to better protect your valuable files – even on removable drives such as USB devices.
* Automatically back up your files: Protect your data from user error, hardware failure, and other problems. You can back up your files to an external hard drive, secondary hard drive, writable CD or DVD, or to a network location.
* Find virtually anything on your PC – from documents to photos to e-mail: Just click on the Start button, and enter a word or few letters in the name or file you want into the search box, and you’ll get an organised list of results.
* Save time and money resolving IT issues: Take advantage of the powerful diagnostics and troubleshooters built into Action Center to resolve many computer problems on your own.
* Get remote services with DirectAccess: Access corporate resources seamlessly when you’re on the Internet, without having to initiate a VPN connection. ¹
* Share files across the various PCs in your home: Use HomeGroup to connect your PCs running Windows 7 to a single printer. Specify exactly what you want to share from each PC with all the PCs in the HomeGroup.
* Connect multiple PCs, with or without a server: Use Domain Join to connect PCs quickly and more securely to your wired or wireless domain network.
* Work in the language of your choice: Switch between any of 35 languages as easily as logging off and back on again.

**Disadvantages**

Windows 7 needs RAM capacity of at least 1 GB and it cannot be easily upgraded from windows XP.

Many applications have failed to run in Windows 7 and they are asking for online support. Some of the users are not satisfied with the new features because they need to buy out the additional resources such as RAM to make use of them.

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**WINDOWS 8**

**History**

Windows 8 is a personal computer operating system developed by Microsoft as part of the Windows NT family of operating systems. Development of Windows 8 started before the release of its predecessor, Windows 7, in 2009. It was announced at CES 2011, and followed by the release of three pre-release versions from September 2011 to May 2012. The operating system was released to manufacturing on August 1, 2012, and was released for general availability on October 26, 2012.

Windows 8 introduced major changes to the operating system's platform and user interface to improve its user experience on tablets, where Windows was now competing with mobile operating systems, including Android and iOS.[6] In particular, these changes included a touch-optimized Windows shell based on Microsoft's "Metro" design language, the Start screen (which displays programs and dynamically updated content on a grid of tiles), a new platform for developing "apps" with an emphasis on touchscreen input, integration with online services (including the ability to synchronize apps and settings between devices), and Windows Store, an online store for downloading and purchasing new software. Windows 8 added support for USB 3.0, Advanced Format hard drives, near field communications, and cloud computing. Additional security features were introduced, such as built-in antivirus software, integration with Microsoft SmartScreen phishing filtering service and support for UEFI Secure Boot on supported devices with UEFI firmware, to prevent malware from infecting the boot process.

**Function and features**

New features and functionality in Windows 8 include a faster startup through UEFI integration and the new "Hybrid Boot" mode (which hibernates the Windows kernel on shutdown to speed up the subsequent boot), a new lock screen with a clock and notifications, and the ability for enterprise users to create live USB versions of Windows (known as Windows To Go). Windows 8 also adds native support for USB 3.0 devices, which allow for faster data transfers and improved power management with compatible devices, and hard disk 4KB Advanced Format support, as well as support for near field communication to facilitate sharing and communication between devices.

Windows Explorer, which has been renamed File Explorer, now includes a ribbon in place of the command bar. File operation dialog boxes have been updated to provide more detailed statistics, the ability to pause file transfers, and improvements in the ability to manage conflicts when copying files. A new "File History" function allows incremental revisions of files to be backed up to and restored from a secondary storage device, while Storage Spaces allows users to combine different sized hard disks into virtual drives and specify mirroring, parity, or no redundancy on a folder-by-folder basis.

Task Manager has been redesigned, including a new processes tab with the option to display fewer or more details of running applications and background processes, a heat map using different colors indicating the level of resource usage, network and disk counters, grouping by process type (e.g. applications, background processes and Windows processes), friendly names for processes and a new option which allows users to search the web to find information about obscure processes.

*Safety and security*

New security features in Windows 8 include two new authentication methods tailored towards touchscreens (PINs and picture passwords), the addition of antivirus capabilities to Windows Defender (bringing it in parity with Microsoft Security Essentials). SmartScreen filtering integrated into Windows, Family Safety offers Parental controls, which allows parents to monitor and manage their children's activities on a device with activity reports and safety controls. Windows 8 also provides integrated system recovery through the new "Refresh" and "Reset" functions, including system recovery from USB drive.

*Online services and functionality*

Windows 8 provides heavier integration with online services from Microsoft and others. A user can now log in to Windows with a Microsoft account, which can be used to access services and synchronize applications and settings between devices. Windows 8 also ships with a client app for Microsoft's SkyDrive cloud storage service, which also allows apps to save files directly to SkyDrive. A SkyDrive client for the desktop and File Explorer is not included in Windows 8, and must be downloaded separately. Bundled multimedia apps are provided under the Xbox brand, including Xbox Music, Xbox Video, and the Xbox SmartGlass companion for use with an Xbox 360 console. Games can integrate into an Xbox Live hub app, which also allows users to view their profile and Gamerscore. Other bundled apps provide the ability to link Flickr and Facebook.

Internet Explorer 10 is included as both a desktop program and a touch-optimized app, and includes increased support for HTML5, CSS3, and hardware acceleration. The Internet Explorer app does not support plugins or ActiveX components, but includes a version of Adobe Flash Player that is optimized for touch and low power usage. Initially, Adobe Flash would only work on sites included on a "Compatibility View" whitelist; however, after feedback from users and additional compatibility tests, an update in March 2013 changed this behavior to use a smaller blacklist of sites with known compatibility issues instead, allowing Flash to be used on most sites by default.

Windows 8 also incorporates improved support for mobile broadband; the operating system can now detect the insertion of a SIM card and automatically configure connection settings (including APNs and carrier branding), and reduce its Internet usage in order to conserve bandwidth on metered networks. Windows 8 also adds an integrated airplane mode setting to globally disable all wireless connectivity as well.

*Windows Store apps*

Snap feature: Desktop, along Wikipedia App snapped into a sidebar to the right side of the screen. In Windows 8, desktop and everything on it are treated as one Metro-style app.

Windows 8 introduces a new style of application, Windows Store apps. According to Microsoft developer Jensen Harris, these apps are to be optimized for touchscreen environments and are more specialized than current desktop applications. Apps can run either in a full-screen mode, or be snapped to the side of a screen. Apps can provide toast notifications on screen or animate their tiles on the Start screen with dynamic content. Apps can use "contracts"; a collection of hooks to provide common functionality that can integrate with other apps, including search and sharing. Apps can also provide integration with other services; for example, the People app can connect to a variety of different social networks and services (such as Facebook, Skype, and People service), while the Photos app can aggregate photos from services such as Facebook and Flickr.

**Web browsers**

Exceptions to the restrictions faced by Windows Store apps are given to web browsers. The user's default browser can distribute a Metro-style web browser in same package as the desktop version, which has access to functionality unavailable to other apps, such as being able to permanently run in the background, use multiple background processes, and use Windows API code instead of WinRT (allowing for code to be re-used with the desktop version, while still taking advantage of features available to Windows Store apps, such as charms). Microsoft advertises this exception privilege "New experience enabled" (formerly "Metro-style enabled").

The developers of both Chrome and Firefox committed to developing Metro-style versions of their browsers; while Chrome's "Windows 8 mode" (discontinued on Chrome version 49) uses a full-screen version of the existing desktop interface, Firefox's version (which was first made available on the "Aurora" release channel in September 2013) uses a touch-optimized interface inspired by the Android version of Firefox. In October 2013, Chrome's app was changed to mimic the desktop environment used by Chrome OS. Development of the Firefox app for Windows 8 has since been cancelled, citing a lack of user adoption for the beta versions.

*Interface and desktop*

Windows 8 introduces significant changes to the operating system's user interface, many of which are aimed at improving its experience on tablet computers and other touchscreen devices. The new user interface is based on Microsoft's Metro design language, and uses a Start screen similar to that of Windows Phone 7 as the primary means of launching applications. The Start screen displays a customizable array of tiles linking to various apps and desktop programs, some of which can display constantly updated information and content through "live tiles". As a form of multi-tasking, apps can be snapped to the side of a screen. Alongside the traditional Control Panel, a new simplified and touch-optimized settings app known as "PC Settings" is used for basic configuration and user settings. It does not include many of the advanced options still accessible from the normal Control Panel.

A vertical toolbar known as the charms (accessed by swiping from the right edge of a touchscreen, or pointing the cursor at hotspots in the right corners of a screen) provides access to system and app-related functions, such as search, sharing, device management, settings, and a Start button. The traditional desktop environment for running desktop applications is accessed via a tile on the Start screen. The Start button on the taskbar from previous versions of Windows has been converted into a hotspot in the lower-left corner of the screen, which displays a large tooltip displaying a thumbnail of the Start screen. Aside from the removal of the Start button and the replacement of the Aero Glass theme with a flatter and solid-colored design, the desktop interface on Windows 8 is similar to that of Windows 7.

**Editions**

Windows 8 is available in three different editions, of which the lowest version, branded simply as Windows 8, and Windows 8 Pro, were sold at retail in most countries, and as pre-loaded software on new computers. Each edition of Windows 8 includes all of the capabilities and features of the edition below it, and add additional features oriented towards their market segments. For example, Pro added BitLocker, Hyper-V, the ability to join a domain, and the ability to install Windows Media Center as a paid add-on. Users of Windows 8 can purchase a "Pro Pack" license that upgrades their system to Windows 8 Pro through Add features to Windows. This license also includes Windows Media Center. Windows 8 Enterprise contains additional features aimed towards business environments, and is only available through volume licensing. A port of Windows 8 for ARM architecture, Windows RT, is marketed as an edition of Windows 8, but was only included as pre-loaded software on devices specifically developed for it.

**System requirements**

|  |  |  |
| --- | --- | --- |
| **COMPONENT** | **MINIMUM** | **RECOMMENDED** |
| **Processor** | 1 GHz clock rate  IA-32 or x64 architecture  Support for PAE, NX, and SSE2 | X64 Architecture  Second Level Address Translation (SLAT) support for Hyper-V |
| **Memory (RAM)** | IA-32 edition: 1 GB  X64 edition: 2GB | 4 GB |
| **Graphics Card** | DirectX 9 graphics device  WDDM 1.0 or higher driver | DirectX 10 graphics device |
| **Display Screen** | N/A | 1024x768 pixels |
| **Input Device** | Keyboard and mouse | Multi-touch display screen |
| **Hard disk Space** | IA-32 edition: 16 GB  X64 edition: 20 GB | N/A |
| **Other** | N/A | UEFI v2 3.1 Errata B with Windows Certification Authority in its database  Trusted Platform Module (TPM)  Internet connectivity |

**Advantages**

* It is optimized for the touch devices. Windows 8 uses the ‘Metro’ interface which is improved for touch screen devices featuring a new Windows 8 Advantage and Disadvantage Start screen’.
* It supports the low-power ARM architecture. It has advanced security features such as antivirus capabilities and supports secure boot.
* It has short boot time. Windows 8 boot time takes less than 8 seconds which is much shorter than its earlier version.
* There is no need for the PC upgrade to run Windows 8. Any PC which is able to run Windows 7 on it can run Windows 8 and there is no need to upgrade PC.
* One of the main features of Window 8 is the app platform. Windows Store has a number of apps that are built for Windows 8.
* Windows 8 also supports Near Field Communications (NFC) printing. A technology which can aid in financial transactions digitally.

**Disadvantages**

* The main disadvantage of Windows 8 is overlapping of Metro and Aero User Interface. Switching between Metro applications and desktop applications is not user-friendly and creates confusion for the users and the developers.
* There is no way to turn the home screen tiles into icons. When a number of apps are installed, then the Start screen looks garbled.
* It is very difficult to swap between different screens. The absence of Alt-Tab function makes it difficult when working with many applications as there is no easy way to switch between programs.
* Another disadvantage of Windows 8 is the Metro multitasking. In Windows 8, in the Metro interface for tablets, the screen display two applications are lined.
* Metro interface works well on tablets but the User Interface is not very compatible on the desktop. There is a need of some kill-switch which can turn the Metro UI off.
* Windows 8 doesn’t support any flash content on Tablet PC. Apparently, it has been done in order to save battery of the Tablet. It also protects our privacy and enhance the security of the Tablet.
* These are some advantages and disadvantages of Windows 8 operating system. Windows 8 emphasizes on touch screen technology which is significant for Tablet PC users but is an inconvenience to the desktop users. Some pre-installed apps are lacking functionality while others give entertaining experience.

**WINDOWS 8 PRO EDITION**

**History**

Windows 8 Pro is comparable to Windows 7 Professional and Ultimate and is targeted towards enthusiasts and business users; it includes all the features of Windows 8. Additional features include the ability to receive Remote Desktop connections, the ability to participate in a Windows Server domain, Encrypting File System, Hyper-V, and Virtual Hard Disk Booting, Group Policy as well as BitLocker and BitLocker To Go. Windows Media Center functionality is available only for Windows 8 Pro as a separate software package.

**Function and features**

*BitLocker and BitLocker To Go*

The BitLocker hard-drive encryption feature was introduced in Windows Vista Business editions to protect data on lost or stolen laptops. And in Windows 7 Enterprise and Ultimate editions, the feature was extended and called BitLocker To Go to protect data on portable storage devices such as USB thumb drives.

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While most first-generation cloud companies are unprofitable, TSIA has the research and data insight to prove it’s possible to enjoy both rapid growth AND profits. Let us show you the proven path.

Both features will be available in Windows 8 Pro. BitLocker and BitLocker To Go offer full-disk encryption, and only IT admins can turn the feature on or off.

*Domain Join and Group Policy*

These are both key features in Windows that consumers never think about, but they are essential for IT pros managing Windows machines. Domain Join will allow IT admins using Windows 8 Pro to access Active Directory, where they can set PC management and security policies through the Group Policy feature. Using Active Directory, IT pros can verify passwords and specify whether users are system administrators or normal users.

*Client Hyper-V*

Client Hyper-V is a virtualization technology that allows users to create virtual machines. With Windows 8 Pro, it will be available in a client version of Windows for the first time. The Hyper-V technology was previously only available in Windows Server editions.

Windows 7 Enterprise, Professional and Ultimate versions use a similar virtualization feature called Windows XP Mode, which allows users to run older XP-only applications on Windows 7 through a Microsoft virtual machine.

However, Client Hyper-V is a much more powerful virtualization tool than XP Mode and should serve Windows 8 Pro well.

*Booting from VHD*

The Booting from VHD (virtual hard disk) feature, introduced in Windows 7 business editions and available in Windows 8 Pro, allows IT pros to create virtual drives for testing apps or testing beta versions of an operating system without affecting the performance of the computer's actual OS. A VHD installation is not a virtual machine, which can hinder a PC's overall performance.

*Remote Desktop (Host)*

Remote desktop functionality is nothing new in Windows. Windows 8 and Windows RT both include a Remote Desktop client. But if you want to host that remote desktop session, then you will need Windows 8 Pro or Enterprise.

What's the difference between host and client? Remote Desktop hosting provides the "connect to" capabilities, whereas a Remote Desktop client just provides the ability to be accessed.

**System requirements**

|  |  |  |
| --- | --- | --- |
| **COMPONENT** | **MINIMUM** | **RECOMMENDED** |
| **Processor** | 1 GHz clock rate  IA-32 or x64 architecture  Support for PAE, NX, and SSE2 | X64 Architecture  Second Level Address Translation (SLAT) support for Hyper-V |
| **Memory (RAM)** | IA-32 edition: 1 GB  X64 edition: 2GB | 4 GB |
| **Graphics Card** | DirectX 9 graphics device  WDDM 1.0 or higher driver | DirectX 10 graphics device |
| **Display Screen** | N/A | 1024x768 pixels |
| **Input Device** | Keyboard and mouse | Multi-touch display screen |
| **Hard disk Space** | IA-32 edition: 16 GB  X64 edition: 20 GB | N/A |
| **Other** | N/A | UEFI v2 3.1 Errata B with Windows Certification Authority in its database  Trusted Platform Module (TPM)  Internet connectivity |

**Advantages**

* It is optimized for the touch devices. Windows 8 uses the ‘Metro’ interface which is improved for touch screen devices featuring a new Windows 8 Advantage and Disadvantage Start screen’.
* It supports the low-power ARM architecture. It has advanced security features such as antivirus capabilities and supports secure boot.
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* There is no need for the PC upgrade to run Windows 8. Any PC which is able to run Windows 7 on it can run Windows 8 and there is no need to upgrade PC.
* One of the main features of Window 8 is the app platform. Windows Store has a number of apps that are built for Windows 8.
* Windows 8 also supports Near Field Communications (NFC) printing. A technology which can aid in financial transactions digitally.

**Disadvantages**

* The main disadvantage of Windows 8 is overlapping of Metro and Aero User Interface. Switching between Metro applications and desktop applications is not user-friendly and creates confusion for the users and the developers.
* There is no way to turn the home screen tiles into icons. When a number of apps are installed, then the Start screen looks garbled.
* It is very difficult to swap between different screens. The absence of Alt-Tab function makes it difficult when working with many applications as there is no easy way to switch between programs.
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* Metro interface works well on tablets but the User Interface is not very compatible on the desktop. There is a need of some kill-switch which can turn the Metro UI off.
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* These are some advantages and disadvantages of Windows 8 operating system. Windows 8 emphasizes on touch screen technology which is significant for Tablet PC users but is an inconvenience to the desktop users. Some pre-installed apps are lacking functionality while others give entertaining experience.

**WINDOWS 8 ENTERPRISE EDITION**

**History**

Windows 8 Enterprise provides all the features in Windows 8 Pro (except the ability to install the Windows Media Center add-on), with additional features to assist with IT organization. This edition is available to Software Assurance customers, as well as MSDN and Technet Professional subscribers, and was released on 16 August 2012.

**Function and features**

*DirectAccess—First introduced in Windows Server 2008 and Windows 7,* DirectAccess lets remote users access resources inside your corporate network without having to launch a separate VPN. DirectAccess makes it easier for users to connect to corporate networks and for IT departments to keep remote systems in compliance with the latest policies and software updates. In Windows 8, DirectAccess can be deployed with an IPv4 infrastructure.

BranchCache—BranchCache, introduced with Windows 7, essentially let’s branch office servers or local PCs cache files and other content from remote servers so subsequent file access can come faster from the local copy. The Windows 8 implementation of BranchCache streamlines the deployment process and optimizes bandwidth over WAN connections.

AppLocker—Another Windows 7 enterprise feature that made its way into Windows 8, AppLocker lets you specify which users or groups can run particular applications in your organization based on unique identities of files. When you use AppLocker, you create rules to allow or deny applications from running.

RemoteFX—RemoteFX in Windows 8 and Windows Server 2012 provides support for remote touch and USB devices. RemoteFX provides host-side rendering of graphics-intensive workloads and is important for supporting rich virtual desktop infrastructure (VDI) environments.

Secure Boot—The Windows 8 Secure Boot feature prevents unsecured operating systems from loading during the start-up process. The Secure Boot feature takes advantage of the Unified Extensible Firmware Interface (UEFI) to store certificates that identify secure operating systems that can load during the boot process, preventing malware such as rootkits from loading when the system boots up.

BitLocker—BitLocker was introduced with Windows Vista, but it was restricted to the Enterprise edition and above. With Windows 8, BitLocker support is now in both the Windows 8 Professional and Enterprise editions. The new version can protect system drives and removable drives, as well as Cluster Shared Volumes and SAN storage. You can find more detailed information about the new Windows 8 BitLocker features in "BitLocker Changes in Windows 8."

Windows To Go—All new with Windows 8, the Windows To Go workspaces feature lets you create a bootable and fully manageable Windows 8 desktop on a USB drive. Windows To Go requires the Windows 8 Enterprise edition. When you boot a system with a Windows To Go USB drive, that system's internal hard disks are taken offline—any Trusted Platform Module (TPM) is not used, hibernate is disabled, and the Windows Recovery Environment (Windows RE) is not available.

Scalability—Windows 8 supports maximum memory configurations that were formerly available only in the realm of servers. Windows 8 Core supports up to 128GB of RAM on the x64 platform. Windows 8 Professional and Windows 8 Enterprise both support up to 512GB on the x64 platform. The x86 versions of Windows 8 support a maximum of 4GB of RAM. Windows 8 supports a maximum of two physical CPUs, but the number of logical processors or cores varies based on the processor architecture. A maximum of 32 cores is supported in 32-bit versions of Windows 8, whereas up to 256 cores are supported in the 64-bit versions.

Client Hyper-V—Apart from the UI changes, the most significant enhancement in Windows 8 is its support for Client Hyper-V. The Windows 8 Professional and Enterprise editions provide the same hypervisor technology that's in Server 2012. Client Hyper-V requires a minimum of 4GB of RAM and support for Second Level Address Translation (SLAT). With Client Hyper-V, you can move VMs between Server 2012 and Windows 8 Hyper-V. Windows 8 Client Hyper-V is also laptop-friendly: Closing the lid to your laptop and putting it to sleep causes Client Hyper-V to save the state of all your running VMs. You can get more details about Client Hyper-V from the Microsoft TechNet article "Client Hyper-V."

**System requirements**

|  |  |  |
| --- | --- | --- |
| **COMPONENT** | **MINIMUM** | **RECOMMENDED** |
| **Processor** | 1 GHz clock rate  IA-32 or x64 architecture  Support for PAE, NX, and SSE2 | X64 Architecture  Second Level Address Translation (SLAT) support for Hyper-V |
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**Advantages**

*The all new interface*

Windows 8 sports an all new look and it is an amazing OS to work on. The traditional Start Menu is completely gone. The new design is well known among users as ‘Metro’ (despite the fact that Microsoft no longer identifies it by this name.) This new interface displays all the information using small boxy looking colorful tiles. These tiles provide you with real-time information at a glance. You become aware of the weather report, your incoming tweets and calendar events. Tablets that run on this OS also sport tiles. This interface provides superior support for multiple monitors. This is an added advantage of using this new interface for business.

*Offers unified working experience*

The all new design of Windows 8 offers its business users a great working experience. Firstly, it completely eliminates clutter. Instead, it uses tiles that look good and offers users a unified working experience. Furthermore, the Windows 8 experience can be expanded to tablets, Smartphones and other powerful synchronization tools that allow you manage your apps with ease even while on the go. This helps you keep in touch with your business or professional activity even when you are not physically in the office.

*Faster boot time*

Yet another advantage in using Windows 8 for your business is the boot time of this OS. On various tests this OS recorded a boot time of just 8 seconds. This is one of the reasons why organizations will want to use it.

***Disadvantages***

*Windows 7 is not too old*

A majority of people share this view that the predecessor of Windows 8 is not too old. This leaves many enterprises doubtful of replacing this new OS with the latest version. There are a handful of organizations that have just gotten used to working on its predecessor’s platform. So, going in for an OS updating can be a bad idea for them.

*Additional hardware requirements*

While working on Windows 8 OS, connecting to the Active Directory from devices running on AMD chips is not simple and easy. This latest version of Windows 8 is a more sophisticated OS, thus, you might have to upgrade your current business hardware suite. To benefit from the features of Windows 8, your business might have to make an extra investment in purchasing additional hardware.

*Learning curve for many enterprises*

Over the years, Windows has been seen some updates and innovation. The new version of Windows 8 is very different and breaks free from the traditional Windows OS platform. If your enterprise is working with Windows 8 you will have to train your workforce to work on this all new platform.

**WINDOWS 8.1**

**History**

Windows 8.1 (codenamed Blue) is an upgrade for Windows 8, a computer operating system released by Microsoft. First unveiled and released as a public beta in June 2013, it was released to manufacturing on August 27, 2013, and reached general availability on October 17, 2013, almost a year after the retail release of its predecessor. Windows 8.1 is available free of charge for retail copies of Windows 8 and Windows RT users via the Windows Store. Unlike service packs on previous versions of Windows, users who obtained Windows 8 outside of retail copies or pre-loaded installations (i.e., volume licensing) must obtain Windows 8.1 through new installation media from their respective subscription or enterprise channel. Microsoft's support lifecycle policy treats Windows 8.1 similar to previous service packs of Windows: It is part of Windows 8's support lifecycle, and installing Windows 8.1 is required to maintain access to support and Windows updates after January 12, 2016. However, unlike previous service packs, Windows 8.1 cannot be acquired via Windows Update.

Released as part of a shift by Microsoft towards regular yearly major updates for its software platforms and services, Windows 8.1 aims to address complaints of Windows 8 users and reviewers on launch. Visible enhancements include an improved Start screen, additional snap views, additional bundled apps, tighter OneDrive (formerly SkyDrive) integration, Internet Explorer 11, a Bing-powered unified search system, restoration of a visible Start button on the taskbar, and the ability to restore the previous behavior of opening the user's desktop on login instead of the Start screen. Windows 8.1 also added support for such emerging technologies as high-resolution displays, 3D printing, Wi-Fi Direct, and Miracast streaming, as well as the ReFS file system.

Windows 8.1 received mixed reception, although more positive than Windows 8, with critics praising the expanded functionality available to apps in comparison to 8, its OneDrive integration, along with its user interface tweaks and the addition of expanded tutorials for operating the Windows 8 interface. Despite these improvements, Windows 8.1 was still criticized for not addressing all digressions of Windows 8 (such as a poor level of integration between Metro-style apps and the desktop interface), and the potential privacy implications of the expanded use of online services.

**Features**

*User interface and desktop*

The Start screen received several enhancements on Windows 8.1, including an extended "All Apps" view with sort modes (accessed by clicking a new down arrow button or swiping upward), small and extra-large sizes for tiles, and colored tiles for desktop program shortcuts. Additional customization options were also added, such as expanded color options, new backgrounds (some of which incorporate animated elements), and the ability for the Start screen to use the desktop background instead. Applications are no longer added to the Start screen automatically when installed, and all applications now have colored tiles (desktop programs were previously shown in a single color). The app snapping system has also been extended; up to four apps can be snapped onto a single display depending on screen size, apps can be snapped to fill half the screen, and can also be used on any display in a multi-monitor configuration. Apps can also launch other apps in a snapped view to display content; for example, the Mail app can open a photo attachment in a picture viewer snapped to another half of the screen. Improved support is also provided by apps for using devices in a portrait (vertical) orientation. The lock screen offers the ability to use a photo slideshow as its backdrop, and a shortcut to the Camera app by swiping up. The on-screen keyboard has an improved autocomplete mechanism which displays multiple word suggestions, and allows users to select from them by sliding on the spacebar. The autocomplete dictionary is also automatically updated using data from Bing, allowing it to recognize and suggest words relating to current trends and events. Similarly, to Windows Phone, certain apps now display a narrow bar with three dots on it to indicate the presence of a pop-up menu accessible by swiping, clicking on the dots, or right-clicking.

To improve the usability of the desktop interface, a visible Start button was restored to the taskbar for opening the Start screen, and the Quick Links menu (accessed by right-clicking the Start button or pressing ⊞ Win+X) now contains shutdown and sign-out options. Users can also modify certain user interface behaviors, such as disabling the upper hot corners for using the charms and recent apps list, going to the desktop instead of the Start screen on login or after closing all apps on a screen, automatically opening the "All Apps" view on the Start screen when opened, and prioritizing desktop programs on the "Category" sort mode on "All Apps". To assist users in learning the Windows 8 user interface, an interactive tutorial is also offered, along with a new Help + Tips app for additional information. [6In contrast, Windows RT 8.1 downplays the desktop interface further by not displaying the Desktop tile on its default Start screen at all (however, it can still be manually added to the Start screen).

*Apps*

The suite of pre-loaded apps bundled with Windows 8 were changed in Windows 8.1; PC Settings was expanded to include options that were previously exclusive to the desktop Control Panel, Windows Store was updated with an improved interface for browsing apps and automatic updates, the Mail app includes an updated interface and additional features, the Camera app integrates Photosynth for creating panoramas, and additional editing tools were added to the Photos app (while integration with Flickr and Facebook was completely removed). A number of additional stock apps were also added, including Calculator, Food and Drink, Health and Fitness, Sound Recorder, Reading List (which can be used to collect and sync content from apps through OneDrive), Scan, and Help + Tips. For Windows RT users, Windows 8.1 also adds a version of Microsoft Outlook to the included Office 2013 RT suite. However, it does not support data loss protection, Group Policy, Lync integration, or creating emails with information rights management. Windows Store is enabled by default within Windows To Go environments.

*Online services and functionality*

Windows 8.1 adds tighter integration with several Microsoft-owned services. OneDrive (formerly SkyDrive) is integrated at the system level to sync user settings and files. Files are automatically downloaded in the background when they are accessed from the user's OneDrive folder, unless they are marked to be available offline.

A Bing-based unified search system was added; it can analyze a user's search habits to return results featuring relevant local and online content. Full-screen "hero" displays aggregate news articles, Wikipedia entries, multimedia, and other content related to a search query; for instance, searching for a music performer would return photos of the performer, a biography, and their available songs and albums on Xbox Music. The messaging app from Windows 8 has been replaced by Skype, which also allows users to accept calls directly from the lock screen. Windows 8.1 also includes Internet Explorer 11, which adds support for SPDY and WebGL, and expanded developer tools. The Metro-style version of IE 11 also adds tab syncing, the ability to open an unlimited number of tabs, and Reading List integration.

*Security and hardware compatibility*

On compatible hardware, Windows 8.1 also features a transparent "device encryption" system based on BitLocker. Encryption begins as soon as a user begins using the system; the recovery key is stored to either the user's Microsoft account or an Active Directory login, allowing it to be retrieved from any computer. While device encryption is offered on all versions of Windows 8.1 unlike BitLocker (which is exclusive to the Pro and Enterprise editions), device encryption requires that the device meet the Connected Standby specification and have a Trusted Platform Module (TPM) 2.0 chip. Windows 8.1 also introduces improved fingerprint recognition APIs, which allows user login, User Account Control, Windows Store and Windows Store apps to use enrolled fingerprints as an authentication method. A new kiosk mode known as "Assigned Access" was also added, allowing a device to be configured to use a single app in a restricted environment. Additionally, Windows Defender includes an intrusion detection system which can scan network activity for signs of malware. Windows 8.1 also allows third-party VPN clients to automatically trigger connections.

*Hardware functionality*

Windows 8.1 adds support for 3D printing, pairing with printers using NFC tags, Wi-Fi Direct, Miracast media streaming, tethering, and NVMe. In response to the increasing pixel density in displays, Windows 8.1 can scale text and GUI elements up to 200% (whereas Windows 8 supported only 150%) and set scaling settings independently on each display in multi-monitor configurations.

**Advantages**

First, reasons to consider Windows 8.1-

· Modernistic User Interface

· Exceptionally fast Operations System.

· Improved performance to that of windows 8.

· The feature “fast boot”, when enabled can boot up your PC under 4 seconds! Provided your hard disk is not too slow. It works like the hibernation mode only that ir doesn’t use up 4 GB of your hard disk space!

· Microsoft has finally added the start button, though the start menu is not back, considering the wide criticism about Microsoft’s approach to a new OS, Windows 8.

· On right clicking the start button, you can directly go to power options (shut down, restart, sign out etc.), that was not there in Windows 8.

· There are many more useful inbuilt apps than that in Windows 8 (though not certainly as many as android apps!!)

· The Windows media center is also improved and supports a wider range of audio-visual file types.

· Improved firewall and security features.

· Better networking, connectivity and compatibility to different connections like Bluetooth, Wi-Fi etc.

· The all new Directx 11.1 that allows user to render scenes that are larger than their GPU memory.

· Improved “Windows Smartscreen” that works quite fine protecting you from harmful softwares, though it can be quite annoying at times.

· The start screen has been improved with the tiles more organized and you can also easily resize them.

· You can personalize windows even better with new personalization options that includes the start screen. Your desktop wallpaper can also be the background of the start screen.

· Microsoft, probably keeping in mind about its desktop users, have created an option that will directly show the desktop instead of the start screen. This option can be enabled from the navigation tab.

· Windows 8 users can directly upgrade to windows 8.1 from the windows store free of cost!

· New shortcuts that can quite come in handy.

· Minor bugs fixed that were in Windows 8

· New algorithm for copying files so that you will not have to use third party software like teracopy for better file transfer speed.

· Windows 8 comes with a feature that Microsoft calls “Windows to go”. With this, you can install Windows 8 on a Pc via USB thumb drive. It requires the thumb drive to be 32 GB and preferably a USB 3.0 one.

· ISO images can now be mounted without any third-party application in Windows 8 and 8.1

**Disadvantages**

The start screen works better with touch sensitive interface in phones, laptops and desktop monitors. So a common user will find it a bit awkward.

· The new UI will take some time getting used to, especially for those users who still use Windows XP (Microsoft has officially removed support and updates for windows XP, so eldest users will have to move on.) Even Windows 7 users find it difficult getting used to windows 8 and 8.1 mostly due to the missing start menu (though a third-party software

· Some settings have been so well organized, new users waste hours searching for them. In their approach to sleek look, Microsoft have overdone the organizing so new users are at a loss finding them.

· Many pre-installed apps are not used at all and the use up quite some space of your hard disk.

· Those of us having a metered internet connection find windows 8 and 8.1 frustrating. Connect your internet connection for a few minutes and poof!!!! 50 MB of your free usage is gone! And who is the culprit? The useless apps that are rarely used. Even with the firewall, you cannot always block the apps from accessing the internet unless you are a tech guy!

· The system requirements are a bit on the higher side, so low end PCs will have to wait.

· Missing Windows Experience Index in Windows 8.1, for those of us who want to rate our computer and chose component upgrades accordingly. (You can download the WEI though)

**WINDOWS 10**

**History**

Windows 10 is a personal computer operating system developed and released by Microsoft as part of the Windows NT family of operating systems. It was officially unveiled in September 2014 following a brief demo at Build 2014. The first version of the operating system entered a public beta testing process in October, leading up to its consumer release on July 29, 2015.

Windows 10 introduces what Microsoft described as "universal apps"; expanding on Metro-style apps, these apps can be designed to run across multiple Microsoft product families with nearly identical code—including PCs, tablets, smartphones, embedded systems, Xbox One, Surface Hub and Mixed Reality. The Windows user interface was revised to handle transitions between a mouse-oriented interface and a touchscreen-optimized interface based on available input devices—particularly on 2-in-1 PCs; both interfaces include an updated Start menu which incorporates elements of Windows 7's traditional Start menu with the tiles of Windows 8. The first release of Windows 10 also introduces a virtual desktop system, a window and desktop management feature called Task View, the Microsoft Edge web browser, support for fingerprint and face recognition login, new security features for enterprise environments, and DirectX 12 and WDDM 2.0 to improve the operating system's graphics capabilities for games.

Windows 10 received mostly positive reviews upon its original release in

July 2015; critics praised Microsoft's decision to downplay user-interface

mechanics introduced by Windows 8 (including the full screen apps and Start

screen) in non-touch environments to provide a desktop-oriented interface in line

with previous versions of Windows, although Windows 10's touch-oriented user

interface mode was panned for containing regressions upon the touch-oriented

interface of Windows 8. Critics also praised the improvements to Windows 10's

bundled software over Windows 8.1, Xbox Live integration, as well as the

functionality and capabilities of Cortana personal assistant and the replacement

of Internet Explorer with Microsoft Edge.

Critics characterized the initial release of Windows 10 in July 2015, as being rushed, citing the incomplete state of some of the operating system's bundled software (such as the Edge web browser), as well as the stability of the operating system itself on launch. Windows 10 was also criticized for limiting how users can control its operation, including limited controls over the installation of updates on the main consumer-oriented edition in comparison to previous

versions. Privacy concerns were also voiced by critics and advocates, as the operating system's default settings and certain features require the transmission of user data to Microsoft or its partners. Microsoft has also received criticism for how it has distributed Windows 10 to users of existing versions of Windows, which has included the automatic downloads of installation files to computers, the recurring display of pop-ups advertising the upgrade, and allegations of the installation process being scheduled or initiated automatically without expressed user consent.

**Function and features**

Windows 10 harmonizes the user experience and functionality between different classes of device, and addresses shortcomings in the user interface that were introduced in Windows 8. Windows 10 Mobile, the successor to Windows

Phone 8.1, shares some user interface elements and apps with its PC counterpart.

Charms have been removed; their functionality in Windows Store apps is accessed from an App commands menu on their title bar. In its place is Action Center, which displays notifications and settings toggles. It is accessed by clicking an icon in the notification area, or dragging from the right of the screen. Notifications can be synced between multiple devices.

Windows 10 includes DirectX 12 alongside WDDM 2.0. Unveiled March 2014 at GDC, DirectX 12 aims to provide "console-level efficiency" with "closer to

the metal" access to hardware resources, and reduced CPU and graphics driver overhead. Most of the performance improvements are achieved through low-level programming, which can reduce single-threaded CPU bottlenecking caused by abstraction through higher level APIs. The performance gains achieved by allowing developers direct access to GPU resources is similar to other low-level rendering initiatives such as AMD's Mantle, Apple's Metal API or the OpenGL successor, Vulkan. WDDM 2.0 introduces a new virtual memory management and allocation system to reduce workload on the kernel-mode driver.

Windows 10 brings more updates to the Xbox app introduced in Windows 8. Games from the Xbox One can be streamed to any Windows 10 device excluding smartphones. Windows 10 has brought the Cortana assistant from Windows Phone 8.1 to Windows 10. By default, Cortana appears as a search pane on the taskbar, but can be changed into a button, like in tablet mode, and can be activated by voice using the command "Hey Cortana", when a user searches the Start menu, or when a user searches the Cortana search pane. With Cortana, users can ask Cortana questions about the weather, calendar events, and other types of notifications, along with online information. Cortana currently requires a Microsoft Account to function

*Start Menu*

Windows 10 reintroduced the start menu as seen in versions of Windows prior to 8. However, unlike these versions, the new start menu includes live tile features from Windows 8. It is possible to resize the Start menu and view recently added and most used applications. It can also be made full screen for tablet users or users that prefer a Windows 8-like experience. The right hand side of the Start menu can be used to pin tiles. The menu can contain a limited amount of columns, depending on the screen resolution. These columns can be divided in groups that can all have their own title. Every group is divided into 6 or 8 other columns, depending on the user's settings, to allow either 6 or 8 small sized tiles next to each other.

*Microsoft Edge*

Microsoft Edge is the new browser for Windows 10 and is the successor to Internet Explorer, although Internet Explorer will remain for compatibility and legacy purposes. Cortana has been integrated into Edge, accessible by the option "Ask Cortana" in the right click menu, as well as a Reading View and the ability to write notes directly on web pages and save to OneNote. A Reading List feature has also been added, where users can save articles or other content to be accessed and read later.

**Edition**

Windows 10 is available in four main editions for personal computer devices, of which the Home and Pro versions are sold at retail in most countries, and as pre-loaded software on new computers. Home is aimed at home users, while Pro is aimed at small businesses and enthusiasts. Each edition of Windows 10 includes all of the capabilities and features of the edition below it, and add additional features oriented towards their market segments; for example, Pro adds additional networking and security features such as BitLocker, Device Guard, Windows Update for Business, and the ability to join a domain. The remaining editions, Enterprise and Education, contain additional features aimed towards business environments, and are only available through volume licensing.

**System requirements**

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| **Hardware requirements for Windows 10** | | |
| **Component** | **Minimum** | **Recommended** |
| **Processor** | 1 GHz clock rate  IA-32 or x64 architecture with support for PAE, NX, and SSE2  X86-64 CPUs must also support CMPXCHG16B, PrefetchW and LAHF/SAHF instructions | |
| **RAM** | IA-32 edition: 1 GB  X86-64 edition: 2 GB | 4 GB |
| **Graphics Card** | DirectX 9 graphics drive  WDDM 1.0 or higher driver | WDDM 1.3 or higher |
| **Display** | 800x600 pixels | N/A |
| **Input device** | Keyboard or mouse | Multi-touch display |
| **Storage space** | IA-32 edition: 16 GB  X86-64 edition: 20 GB | N/A |

**Advantages**

Windows 10 has new generation design. It is easy to use social media sites like Facebook, Twitter. It is the latest Windows operating system which features many changes and very eye catchy user interface. It delivers new features on free upgrade.

When you run Windows 7, Windows 8.1, and Windows 8.1, you can upgrade to Windows 10 for free. Windows 10 technical preview was recently launched by Microsoft and there are many new features added to the new operating system.

Windows 10 will include extended built-in mobile device management (MDM) capabilities making it easier to manage device from the cloud. Windows 10 interface will adapt via Continuum which will allow the Windows 10 interface to adapt based on the hardware it is running in.

Microsoft has added an Xbox app: you can see what your friends are doing and send them messages, check out achievements, and look at game clips, people have pre-recorded. Microsoft aims to bring the full Xbox Live experience to Windows 10 PCs, including allowing you to stream games from your Xbox One console directly to your PC.

Windows 10 will include universal Office applications. Microsoft is creating universal Office apps that will be touch-friendly and run on all devices. Future Windows Phones and Windows tablets will come with Office apps preinstalled.

Specialized version of Windows 10 will be launched for smartphones, with revamped Office and Outlook applications which resemble their PC counterparts.

Windows 10 will have hologram technology. Microsoft introduced Microsoft Holographic: a set of technologies that will enable 3D imaging and hologram projection for Windows 10 apps.

Microsoft has confirmed Windows 10 will support the Fast Identity Online (FIDO) standard.

Windows 10 improved multitasking. It will introduce a quadrant layout allowing up to four apps to be snapped on the same screen. The OS will even make smart suggestions to fill available screen space.

You will be able to cycle through open apps using the familiar Alt + Tab shortcut but there is also a Task View button on the taskbar. Pressing this will show all open apps, allow you to re-arrange them and switch between virtual desktops. There are no more typos in Command Prompt, the power users rejoice as copy and paste will be enabled in Windows 10’s Command Prompt.

Microsoft will launch a new web browser for Windows 10 which will be called Microsoft Edge after dropping the “Project Spartan” code name. The users will be able to annotate any web page using finger/stylus or keyboard input. Spartan will have a reading mode and the Cortana voice assistant will be integrated into the browser.

**Disadvantages**

Windows 10 cannot upgrade oldest windows versions such as windows 2000, etc. There is more cost for new PCs with Windows 10. There is no update in Windows media player.

Touch friendly features has been removed from Windows 10. You can no longer close apps by swiping them down from top to bottom. Many tablet users are going to face some difficulties in case of the touch control of the operating system.

You cannot resize windows using the handle bars which were present in most of the previous versions of Windows. Grabbing edges of the windows is very difficult if you are using a pen. Windows 10 has removed the functionality to change the volume level using the scroll button present in the task bar.

If you get fed up with testing Windows 10 and want to revert the PC to the OS you were running before, it won’t be easy. The previous Windows OS will have to be reinstalled from the recovery or installation disk—typically a DVD—that came with the PC.

Installing Windows 10 Technical Preview disables the PC’s ability to play DVDs using Windows Media Player, and it removes Windows Media Center from PCs running Windows 8 Pro with Media Center.

**WINDOWS 10 HOME EDITION**

**History**

Windows 10 Home is the consumer-focused desktop edition. It offers a familiar and personal experience for PCs, tablets and 2-in-1s. Windows 10 Home will help people do great things, both big and small. With it, they will be more productive and have more fun thanks to a long list of new innovations: Cortana, the world’s most personal digital assistant; the new Microsoft Edge web browser; Continuum tablet mode for touch-capable devices; Windows Hello face-recognition, iris and fingerprint login; and right out of the box, a broad range of universal Windows apps like Photos, Maps, Mail, Calendar, Music and Video.

We are also bringing the Xbox gaming experience to Windows 10, giving games and gamers access to the Xbox Live gaming community, enabling the capture and share of gameplay and giving Xbox One owners the ability to play their Xbox One games from any Windows 10 PC in their home.

Windows 10 Home is designed for use in PCs, tablets and 2-in-1 PCs. It includes all consumer-directed features

**Function and features**

*Take notes in the new Microsoft Edge web browser*

Draw, highlight, or write directly on a web page via a touchscreen or a mouse, then share your notes with others.

*Customize the Start menu*

Choose to display your most used or recently added apps, specific folders, or system settings.

*Gain access to your device by using your fingerprint, face or iris*

Select Windows 10 devices with Windows Hello will recognize your presence, unlocking without the need for a password. (Requires fingerprint reader, or IR or biometric sensor.)

*Screens adapt to fit your devices*

Onscreen orientation changes shape to allow for easy navigation, and apps scale to different-sized displays.

*Play Xbox One games on Windows 10*

Stream your Xbox One games to a Windows 10 PC, laptop, or tablet. Play games optimized for Windows 10, or record and share gaming moments with the built-in Game DVR. (Broadband Internet required.)

*Easily multitask on one screen*

Snap up to four apps to the screen, or create virtual desktops to get more space to work with the items you need.

*Receive help from a personal digital assistant*

Cortana assists across your Windows 10 devices, setting reminders, helping to write emails, or hosting chats with friends and family members. (Cortana experience may vary by region and device.)

**System requirements**

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| --- | --- | --- |
| **Hardware requirements for Windows 10** | | |
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| **RAM** | IA-32 edition: 1 GB  X86-64 edition: 2 GB | 4 GB |
| **Graphics Card** | DirectX 9 graphics drive  WDDM 1.0 or higher driver | WDDM 1.3 or higher |
| **Display** | 800x600 pixels | N/A |
| **Input device** | Keyboard or mouse | Multi-touch display |
| **Storage space** | IA-32 edition: 16 GB  X86-64 edition: 20 GB | N/A |

**Advantages**

1) It’s the latest and greatest update of all the windows editions. Even critically acclaimed.

2) From gaming perspective, it’s got DirectX 12, which promises high frame rates with future games

3) The UI has been redesigned so the users of windows 7 or earlier can be conformable using it.

4) The metro/modern apps are redesigned to be comfortable using with mouse and keyboard

5) For windows phone users, better integration with the OS, like seeing the missed calls from mobile, sending text from mobile using windows 10 and lots more.

6) Cortana, a virtual personal assistant has made her way to the OS, she can be very useful.

7) General stability and performance has been greatly increased. Windows 7 users would feel like riding Ferrari

8) With windows store, users can access lots of modern/mobile apps like twitter, fb, etc.

9) With windows 10, most of the drivers will automatically updated by the OS itself, gone are the days when we used to search drivers of the hardware manually. But still some drivers have to be updated manually

10) New browser called Microsoft Edge is introduced

11) Virtual desktops is introduced

12) Better snap assist

13) I found significant improvement in gaming, especially the frame rates have improved.

**Disadvantages**

1) With Cortana, your personal information will be shared with Microsoft for better service, some users might be uncomfortable with this.

2) With windows update, users are forced to download the updates.

3) Since its relatively new, so expect bugs around the OS

4) OneDrive integration is somewhat not up to the mark of windows 8.1

**WINDOWS 10 PRO EDITION**

**History**

Windows 10 Pro is a desktop edition for PCs, tablets and 2-in-1s. Building upon both the familiar and innovative features of Windows 10 Home, it has many extra features to meet the diverse needs of small businesses. Windows 10 Pro helps to effectively and efficiently manage their devices and apps, protect their sensitive business data, support remote and mobile productivity scenarios and take advantage of cloud technologies. Windows 10 Pro devices are a great choice for organizations supporting Choose Your Own Device (CYOD) programs and prosumer customers. Windows 10 Pro also lets customers take advantage of the new Windows Update for Business, which will reduce management costs, provide controls over update deployment, offer quicker access to security updates and provide access to the latest innovation from Microsoft on an ongoing basis.

**Function and features**

*Right for business*

Join your Domain. You can connect to your business or school Domain or Azure Active Directory to use network files, servers, printers, and more.

Enhanced encryption. Get additional security with BitLocker to help protect your data with encryption and security management.

Remote log-in. Windows 10 enables you to log in with Remote Desktop to sign in and use your Pro PC while at home or on the road.

Virtual machines. Create and run virtual machines with Hyper-V so you can run more than one operating system at the same time on the same PC.

Your apps in the Store. Windows 10 lets you create your own private app section in the Windows Store for convenient access to company applications

*It just works*

Windows 10 combines the Windows you already know and adds great improvements you’ll love. Technologies like InstantGo1 let you boot up and resume quickly. And Windows 10 has more built-in security features than ever to help protect against malicious software.

*Multi-doing*

Multi-task like a master with the ability to snap four things on the screen at once. Screen getting crowded? Create virtual desktops to get more space and work with just the items you want. Plus, all your notifications and key settings are collected on one easy-to-reach screen.

*Microsoft Edge*

It’s the all-new browser designed to make the web work the way you do. Write or type directly on webpages and share your mark-ups with others. You’ll like the reading view that clears away distractions. There’s also an improved address bar to help you find things faster.

*Continuum*

The best screen is always the one you’re on, because Windows 10 optimizes your experience for your activity and device. Onscreen features adapt for easy navigation and apps scale smoothly from the smallest to the largest displays.

*Uniquely yours*

Your Windows 10 device recognizes you and acknowledges your presence in truly personal ways. With Windows Hello, your device greets you by name and lights up in recognition, waving you through log-in and freeing you from having to remember or type in a password.

*Gaming & Xbox*

Play your Xbox One games on your Windows 10 PC, laptop, or tablet. Use the Game DVR feature to record your greatest hero moves and send to your friends instantly, without leaving your game.

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