Microsoft Windows XP Operating System

Summary

Windows XP’s client operating system provides substantial improvements in the areas of stability, performance, multimedia, security and usability over previous Windows desktops.

Note

Microsoft issued Windows XP Service Pack 1 (SP1) in September 2002. It offers improved interoperability and security features, as well as Microsoft’s implementation of the Java Virtual machine (JVM). It also adds updates in the form of bug fixes, device drivers and software compatibility adjustments.

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Microsoft Windows XP Operating System

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Overview
Released in October 2001, Windows XP is Microsoft’s primary operating system for the desktop. Available in business (XP Professional) and consumer (XP Home) editions, the product combines some of Windows 2000 Professional’s strengths — including manageability, reliability, and standards-based security — with some of the most popular features of Windows 98 and Windows Millennium, such as an intuitive user interface and Plug-and-Play. Windows XP also represents the unification of the Windows’ code base — Microsoft eliminated the antiquated, DOS-based Windows 9.x code and standardized on the more stable Windows NT/2000 foundation.

Both the XP Professional and XP Home versions benefit from a major interface redesign, the first since Windows 95. The new interface, called “Luna,” has a streamlined look, with different icons and button textures. The interface was designed to make it easy to accomplish such tasks as adding audio, digital photography and video elements to documents. The taskbar still exists, but the Start menu is somewhat different. To give XP its uncluttered look, Luna displays on the Start menu only the programs that have been recently used, although users can still place programs there permanently. For enterprises that will be running multiple versions of Windows or want to avoid retraining issues, Windows XP offers an option to use the “classic” environment.

Windows XP also offers improvements in reliability. Microsoft claims that reliability was its No. 1 design goal. The software offers a protected kernel mode architecture (so that applications don’t have access to the operating system code kernel), process separation (where each application is kept in a separate, protected memory space; errant applications do not cause the entire system to crash), Windows File Protection (which prevents you or your applications from mistakenly changing core operating system files), and side-by-side dynamic link libraries (which prevent applications that run concurrently from impacting one another in a negative manner).

Both Windows XP Professional and XP Home provide multimedia and Internet integration. Windows Media Player for Windows XP includes such features as native CD burning, DVD playback, and the capability to send video to portable devices. It offers much in the way of digital photography support, including the capability to publish pictures to the Internet, to compress photographs for e-mail distribution, and to integrate scanning and camera equipment.

Windows XP provides Windows Messenger, an instant messaging system that allows users to communicate through the Internet in real-time. Windows Messenger facilitates the exchange of applications, files, video and voice with a personalized contact list. Windows XP Home Edition offers the ability to establish home networks, with wizards for guiding through the connection of printers and fax machines. It helps in establishing a single Internet connection with all home-based PCs on the same network. The product also provides an Internet Connection Firewall, a built-in firewall protector that records security intrusions in a log file.

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The business version of Windows XP offers all of the same features of the home edition, but adds more in the way of networking, security, system management and power user features. For example, while Windows XP Home allows the user to set up five concurrent file-sharing connections, the Professional version allows 10 connections.

Windows XP Professional’s security features include support for computer system lockdowns, digital signatures, file and folder backups, file encryption, password authentication, Passport (Microsoft’s authentication service), and smart cards. When used with Windows 2000 Server, it supports Kerberos authentication and the public key infrastructure. Group policy administration is improved through components that are easy to define and manage. The operating system includes over 200 more group policies than Windows 2000 for establishing rules for such tasks as desktop lockdown, security parameters, and user definition.

Microsoft issued Windows XP SP1 in September 2002. More than a typical service pack with a bevy of bug fixes, device driver additions and patches, SP1 delivers some changes that were demanded by the U.S. Department of Justice in Microsoft’s settlement. From the Control Panel, Microsoft now offers the option to use non-Microsoft software from within the operating system. This means that non-Microsoft e-mail clients, instant messengers, media players, and Web browsers can now be recognized and accessed. And Microsoft’s bundled Outlook Express, Windows Media Player, Windows Messenger and Internet Explorer can be hidden. Before it was issued, Microsoft reports that Windows SP1 was tested by 10,000 beta testers.


| Table 1: Features and Functions: Microsoft Windows XP Operating System |
|-------------------------|------------------------------------------------------------------------------------------------------------------|
| Overview                | Windows XP is the latest Microsoft client operating system for Intel-based PCs. The 32-bit operating system is built on the code base of Windows NT and Windows 2000. It provides a fully protected memory model with preemptive multitasking. Windows XP is available in Home (consumer) and Professional (business) editions. |
| System Requirements     | Intel Pentium/Celeron 300MHz processor or higher; or AMD K6/Athlon/Duron family or compatible processor Minimum 64MB of RAM or higher (256MB RAM recommended) Minimum 1.5GB free hard-disk space CD-ROM or DVD drive Internet connection and network adapter Minimum Video Graphics Array (VGA) resolution; Super Video Graphics Array (SVGA) (800 × 600) or higher resolution video adapter recommended |
| Scalability             | Supports up to 4GB of RAM and two symmetric multiprocessors (SMPS). |
| User Interface          | The desktop has a visual design with a cleaner environment over past Windows desktops and improved help facilities. Includes common task consolidation, visual clues, and enhanced menu navigation techniques. Also offers Microsoft ClearType display technology that triples the horizontal resolution for text rendering. The Dualview feature allows one computer desktop to be displayed on two monitors off of a single display adapter. |

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### Table 1: Features and Functions: Microsoft Windows XP Operating System

<table>
<thead>
<tr>
<th>Hardware Interfaces</th>
<th>Advanced Configuration and Power Interface (ACPI), DirectX 8 API, high-speed bus Institute of Electric and Electronics Engineers (IEEE) 1394 Infrared Data Association (IrDA) specification, UDF 2.01, Universal Serial Bus (USB), and others.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In September 2002, Microsoft announced plans to incorporate Bluetooth, a leading wireless technology.</td>
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<tr>
<td>Reliability/System Integrity</td>
<td>Windows XP is based on Windows NT and Windows 2000 code, and includes numerous features that improve overall system reliability: automated application installer (configure, install, remove, upgrade), improved code protection, core Windows system file protection, enhanced device driver verifier, policy-driven software operation, preemptive multitasking, side-by-side Dynamic Link Library (DLL), and significantly reduced reboot scenarios.</td>
</tr>
<tr>
<td>Security</td>
<td>Encrypting File System (EFS) with multiuser support (encryption and decryption processes are transparent to the user), IP Security (IPSec), Kerberos, smart card capabilities.</td>
</tr>
<tr>
<td>Multimedia</td>
<td>Internet Explorer 6, MediaPlayer 7 audio and video facility, DVD viewing, integrated CD burning, Web document publishing through WebDAV protocol, access to 3,000 Internet radio stations, and Windows Instant Messenger.</td>
</tr>
<tr>
<td>System Management</td>
<td>Automatic system restore to identifiable points, automatic OS updates through Internet connection, command line recovery console, device driver rollback, group policy settings, Microsoft Management Console (MMC), Network Setup Wizard, network bridge configuration and setup, and remote OS installation. Windows XP also provides resultant set of policy (RSoP), Safe Mode startup options, Setup Manager for installation scripts, System Preparation (SysPrep) cloning tool, user data and operating system migration tool, and Windows Management Instrumentation (WMI) for monitoring and managing system resources.</td>
</tr>
<tr>
<td>Networking</td>
<td>Configuration Wizards for networks and virtual private networks (VPNs), Internet connection firewall, Internet Connection Sharing (ICS), peer-to-peer networking, network location awareness, secured access to wireless networks.</td>
</tr>
<tr>
<td>Remote Computing</td>
<td>Access to offline files and folders; Advanced Configuration and Power Interface (ACPI); Credential Manager for secured password information; hibernate mode; hot docking of notebook computers; offline Web-page viewing Remote Desktop Protocol (RDP), which allows users to access their data/applications that reside on remote computers; power management through intelligent CPU monitoring; and synchronization manager for comparing and updating offline files and folders.</td>
</tr>
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</table>

### Analysis

The “XP” in the Windows XP moniker refers to experience — the ability to experience digital music and video, the Internet, mobile computing, and real-time communications — all through, of course, Microsoft’s newest desktop operating system. After a relatively slow start (by Microsoft standards), which was tempered by a downturn in IT spending, the vendor now reports healthy sales of Windows XP.

The vendor indicates that client software revenue increased by 33 percent for first quarter 2003 (ended 30 September 2002), compared to the same period last year. And Windows XP Professional accounted for 63 percent of all its operating systems sales. Since its October 2001 release, more than 67 million copies of Windows XP have been sold through original equipment manufacturers (OEMs) and retailers. However, since PCs bought with WinXP preloaded include downgrade rights to run older operating systems, Gartner believes fewer copies are actually in use.
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Windows XP is the desktop component to the upcoming Windows Server 2003, the upgrade to Windows 2000 Server, which is in beta testing and due to be released in April 2003. Windows Server 2003 is a server operating system that supports a range of Microsoft .Net servers, including Exchange, SQL Server and SharePoint. It also includes an XML development framework that incorporates a new Common Runtime Library for rapid application development in a variety of languages. These include C, C++, Java and Visual Basic.

Windows Server 2003 will provide native support for such protocols as XML; Simple Object Access Protocol (SOAP); Web Services Description Language (WSDL); and Universal Description, Discovery, and Integration (UDDI). Support for these protocols will allow Windows Server 2003 to become an active participant in the Web services market.

In November 2002, Microsoft announced that it abandoned its practice of keeping client and server operating system releases synchronized. The company also said that the next version of Windows, code-named “Longhorn,” will be a desktop only release. Gartner does not expect Blackcomb, the successor to Longhorn, to be released until late 2004 or early 2005. With this announcement, Microsoft indicated a willingness to appease its customers with a more realistic release cycle. In the past, Microsoft has been criticized for releasing its operating systems too close together. Under new guidelines, Windows desktop operating system licenses will be available for purchase for a minimum of four years and assisted support offerings available for up to seven years after general availability. During these periods, Windows desktop product assisted support will move through a modified set of Product Life-Cycle Phases.

Windows XP’s Role in the Digital Decade

Microsoft is touting its vision of the Digital Decade, a 10-year span from 2001 to 2010 that Microsoft hopes will mark the transformation of the PC from a business tool to an indispensable personal tool.

Microsoft is collaborating with partners on a range of technologies that are designed to extend the reach of personal computing to make life more convenient and enjoyable. Aside from the specialized versions of Windows XP, Microsoft is working on new versions of Microsoft Network and Windows Media, as well as preparing .NET technologies to make computing and Web services all the more accessible. Windows XP is the underlying operating system that drives most of these intelligent systems.

Each of these specialized XP operating systems rely on hardware-specific products and are geared toward niche audiences. The XP Media Center, for example, is designed for home users with extensive multimedia and digital interests. Hewlett-Packard is the first OEM to offer a media center PC that can be controlled remotely and allows users to watch television, view digital images and organize digital media.

Windows Powered Smart Displays is also designed for home users. It is a remote display technology that uses Windows CE .NET’s 802.11b (Wireless Fidelity [Wi-Fi]) wireless capabilities and XP’s Remote Desktop feature to create a smart display that can be carried around the home. In November 2002, Microsoft announced the availability of Tablet PC technology, which allows customers to use a digital pen to supplement a mouse and a keyboard. The intended audience is mobile business users such as field personnel and insurance adjusters.

Pricing


GSA Pricing
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Yes.

Competitors

There is little question that Microsoft's operating systems dominate the desktop landscape. The company’s client/desktop operating systems — including Windows XP, Windows 2000 Professional, NTW4 and Windows 98 — compose the majority of the client operating environments. The innovative Apple Mac OS X has received attention, but it has only a small share of the desktop market.

Linux is growing by leaps and bounds in the server market, but has not emerged very far in the market as a desktop operating system. Nonetheless, vendors are sprucing up their graphical interfaces (GUIs) with evolving versions of the K Desktop Environment (KDE) and the GNU Network Object Model Environment (GNOME) desktop platforms, which are both starting to look and act a lot more like Windows.

Although there is no denying Microsoft's desktop dominance, there is rumbling in the industry about Microsoft's new licensing terms. There is a growing tide of resentment toward Microsoft's control of the market, and Linux vendors are looking to exploit this discontentment. With its settlement with the U.S. Department of Justice behind it, Microsoft has agreed to comply with some interoperability edicts and to act as a more considerate and compliant industry leader.

Still, a few long-time customers are considering Linux and other open source software as a replacement for Windows and Office on their desktop systems. It is gaining popularity in many world regions, including some countries in Asia and Europe, and is likely to gain market share there. Realistically, however, Microsoft's grip is too tight for a serious technology shift worldwide. Between operating systems and business applications, Microsoft's brand name is intertwined in all aspects of corporate desktop computing.

Strengths

Stability

Windows XP is a stable Windows operating system; this is its greatest asset, especially for users accustomed to frequent crashes in older Windows versions. Microsoft adds numerous features to make Windows XP stable. Compared to Windows 95 and 98, customers indicate a substantial decrease in downtime associated with memory leaks, process behavior, and system crashes.

In designing Windows XP, Microsoft says it has worked to reduce the scenarios that forced system reboots. Its preemptive multitasking architecture allows multiple applications to run concurrently with new features, like improved code protection, side-by-side DLLs, and Windows File Protection. The higher levels of reliability really show when used with Internet applications. For example, with Windows XP, streaming media and TCP/IP communications — such as browser, e-mail, and multimedia traffic — do not need to access kernel address space. Windows XP also fully supports hyperthreading on the latest P4 running at 3.06GHz, which can further boost performance. Subsequently, with less demand placed on the kernel, the entire system runs more efficiently.

Nonetheless, while much improved, users still report some unexpected reboots. These can occur during any number of activities, similar to the dreaded blue screens in older versions of Windows. There are many possible causes, including third-party software that is incompatible, or outdated Basic Input/Output System (BIOS) chips or device drivers.

Service Pack Offers Easier Access to Non-Microsoft Applications

To comply with the U.S. Department of Justice’s ruling, Microsoft was required to implement changes to the Windows GUI. These changes with XP SP1 are designed to give OEMs and users the ability to
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remove certain Microsoft “features” so that competitors' products can be more easily accessed from within XP. This means that instead of defaulting to Microsoft Internet Explorer, Instant Messenger, and Media Player, other products like Netscape Communicator and AOL Instant Messenger can be specified as defaults.

For its part, Microsoft reports that users have always had the ability to show non-Microsoft middleware through its operating systems, but now that process has been made more intuitive and obvious.

Despite Microsoft’s willingness to offer options, two things should be noted: First, opting to specify non-Microsoft applications does not mean that Microsoft’s products are removed; they are only hidden. Second, it is the responsibility of third-party companies (for example, AOL, Netscape) to offer hooks to Windows XP. Until then, Microsoft bundles remain the only option.

**Improved User Interface**

Until Windows XP, Microsoft’s interface, although functional, generally remained the same since 1995. A more contemporary look was definitely in order. The Luna interface presents just the solution. It offers a cleaner, more polished and colorful appearance than its predecessors. All in all, the improvements are both aesthetically and functionally appealing. For staunch “classic look” Windows users, Microsoft offers an option to operate the software through that interface as well.

**Multimedia**

Windows XP is designed for Web browsing and multimedia. It is integrated with Microsoft’s Internet Explorer 6, allowing for seamless navigation from the operating system to the Web. Windows Media Player for Windows XP supports the broadcast and organization of multimedia formats, such as streaming audio and video. It provides access to 3,000 Internet radio stations and enables the user to view DVD movies and burn custom CDs. Windows XP also provides Windows Messenger, Microsoft’s instant messaging and video conferencing system. Windows Movie Maker enables users to capture, edit and organize home movies, which can also be published to the Internet.

**Limitations**

**Unpopular Licensing Scheme**

The release of Windows XP brought about a change in Microsoft’s licensing policies. One year later the vendor’s product activation and licensing scheme remain unpopular. Once purchased, Windows XP can be installed on one PC only and must be activated immediately through the Internet. If you do not activate the product, the operating system will cease to operate. You cannot move a single copy of Windows XP to another computer. The software is locked to only one computer. These moves are designed to thwart software piracy.

While one product installation per computer has been the legal software installation rule for years, copy protection has been difficult for vendors to use, and vendors have not enforced it in recent years. Now, however, Microsoft is stringently enforcing it. While the company is within its legal rights to do so, many of Microsoft’s customers perceive this as self-serving. Because of these moves by Microsoft, some companies have decided to remain with their existing Windows operating systems for a longer period of time. Worse yet for Microsoft, a few others have indicated a willingness to look for less expensive and restrictive Linux options.

**Software and Device Support**

Many independent software vendors (ISVs) do not yet support their software on Windows XP, and some hardware manufacturers have not yet updated device drivers, even though the operating system has
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been shipping for over a year. For enterprises that require applications or hardware not yet supported by Windows XP, the alternative is to remain with Windows 2000 or earlier Windows versions until their application is supported. However, life cycles are an issue, as older operating systems face support problems — Windows 95 support ended 31 December 2001, and Windows 98 and NTW v.4 support will be ending on 30 June 2003. Critical users should be off by those dates, and all users should be off within 18 months of those dates. For tactical guidelines on moving to Windows XP, see “Keep Windows 2000 Longer, but Don’t Skip XP,” TG-18-5701.

Recommended Gartner Research

Keep Windows 2000 Longer, but Don't Skip XP, TG-18-5701

Insight

Windows XP offers advances over previous Windows client operating systems in such areas as Internet integration, multimedia, security, usability and stability. Microsoft’s operating systems are notorious for their frustrating system crashes. But Microsoft said that reliability was the top design goal for Windows XP, and it appears its conviction has paid off. Windows XP is a much more stable operating system than its desktop predecessors.

Restraints on corporate IT spending have impeded Windows XP rollouts during its first year. However, Microsoft reports that the operating system is picking up steam, and for first fiscal quarter 2003, it was by far its best selling operating system. Momentum for this platform should continue to build — and justifiably so.