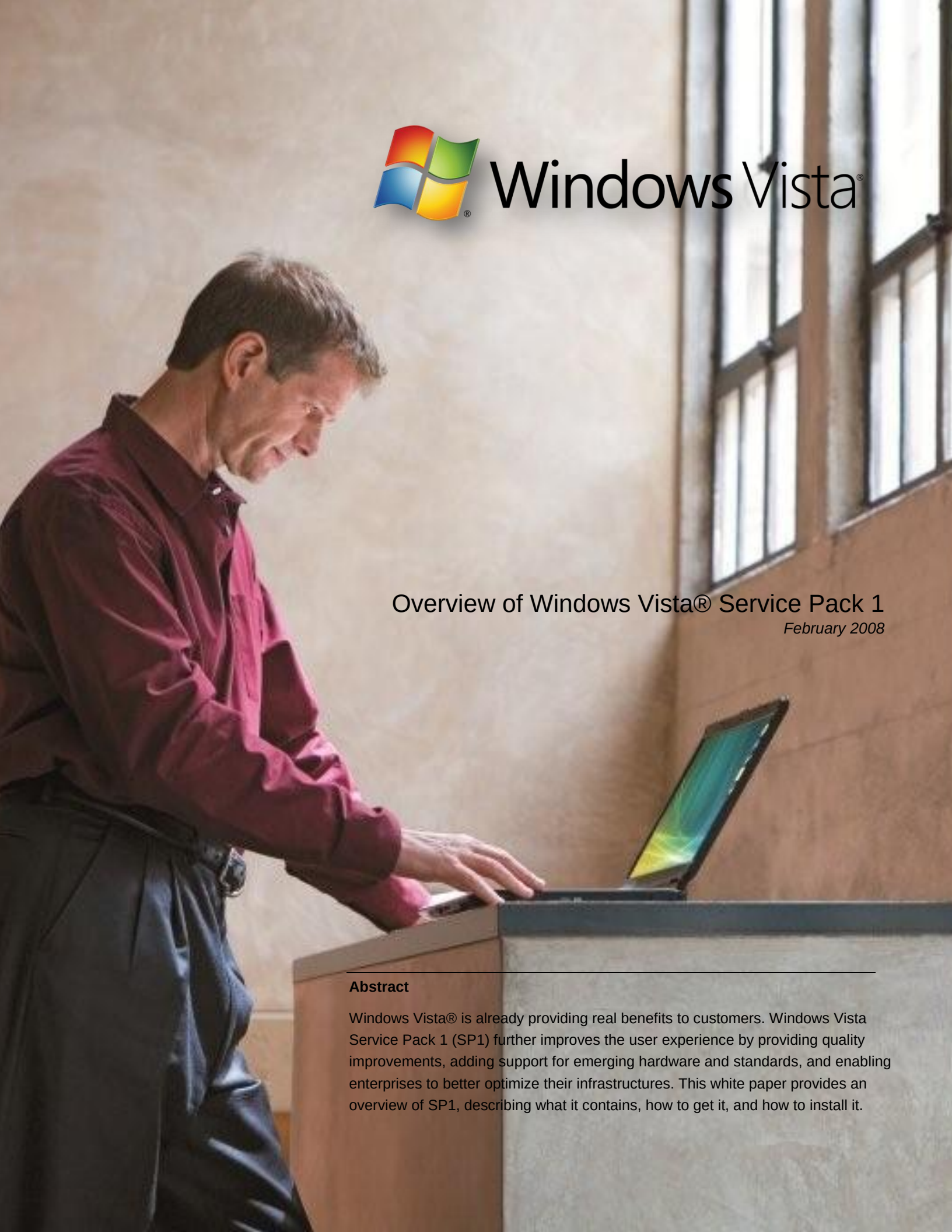


# Overview of Windows Vista® Service Pack 1

*February 2008*

**Abstract**

Windows Vista® is already providing real benefits to customers. Windows Vista Service Pack 1 (SP1) further improves the user experience by providing quality improvements, adding support for emerging hardware and standards, and enabling enterprises to better optimize their infrastructures. This white paper provides an overview of SP1, describing what it contains, how to get it, and how to install it.

*The information contained in this document represents the current view of Microsoft Corporation on the issues discussed as of the date of publication. Because Microsoft must respond to changing market conditions, it should not be interpreted to be a commitment on the part of Microsoft, and Microsoft cannot guarantee the accuracy of any information presented after the date of publication.*

*This white paper is for informational purposes only. MICROSOFT MAKES NO WARRANTIES, EXPRESS OR IMPLIED, IN THIS DOCUMENT.*

*Complying with all applicable copyright laws is the responsibility of the user. Without limiting the rights under copyright, no part of this document may be reproduced, stored in or introduced into a retrieval system, or transmitted in any form or by any means (electronic, mechanical, photocopying, recording, or otherwise), or for any purpose, without the express written permission of Microsoft Corporation.*

*Microsoft may have patents, patent applications, trademarks, copyrights, or other intellectual property rights covering subject matter in this document. Except as expressly provided in any written license agreement from Microsoft, the furnishing of this document does not give you any license to these patents, trademarks, copyrights, or other intellectual property.*

*© 2008 Microsoft Corporation. All rights reserved. Microsoft, BitLocker, MSDN, RemoteApp, Windows, Windows Live, the Windows logo, Windows Server, and Windows Vista are trademarks of the Microsoft group of companies.*

*The names of actual companies and products mentioned herein may be the trademarks of their respective owners. Microsoft Corporation • One Microsoft Way • Redmond, WA 98052-6399 • USA*

## Contents

## Overview

Windows Vista® has become the fastest-selling operating system in history, with more than 100 million licenses sold—and counting. If you haven't tried Windows Vista yet, it's time to give the operating system a look for yourself.

Windows Vista is already delivering tangible benefits to customers. For example, it can help enterprises better control costs and optimize their desktop infrastructures and help mid-sized businesses improve their security, mobility, and productivity. Windows Vista can also help small businesses spend less time managing their information technology (IT) infrastructures. IT professionals already benefit from Windows Vista by more effectively managing computers, and consumers are better able to open their digital lives.

Windows Vista is also more secure than earlier versions of the Windows® operating system. For example, Windows Vista had fewer security vulnerabilities in its first 12 months than Windows XP in its first 12 months. In the first half of 2007, Windows Defender detected 60 percent fewer malware and spyware infections on Windows Vista than on computers running Windows XP with Service Pack 2 (SP2)[1].

Windows Vista and Windows Live™ made major advancements in the way people interact with technology, connect with each other, and maintain a more secure and safe computing environment. From the new security model to support for new kinds of devices to a new generation of rich Web services and applications, business and consumers find it easier and safer to use Windows and can be more productive than ever before. People are communicating, sharing, and experiencing Windows to its full extent and are delighted with the enhanced features of Windows Vista combined with Windows Live.

Windows Vista introduced major progress but also some challenges. While Microsoft knows that may Windows Vista users are having positive experience with Windows Vista, the experience was not smooth for everyone using it. For some, the applications and devices they used with Windows XP no longer worked with Windows Vista, frustrating them. In the year that followed, Microsoft listened to its customers and along with its partners has made great progress in addressing Windows Vista compatibility issues.

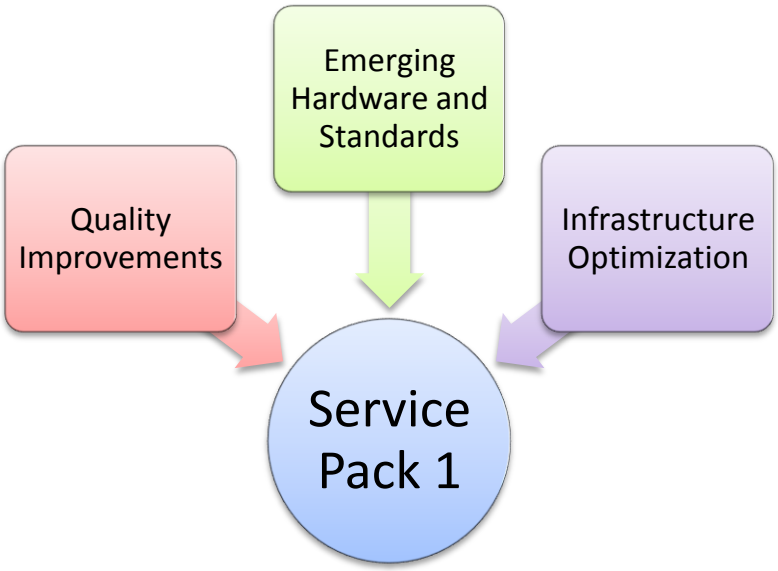
Now, with Windows Vista Service Pack 1 (SP1), the Windows Vista experience gets even better. SP1 improves the reliability, performance, and security of Windows Vista. For example, SP1 provides faster file copying, large file handling, and file decompression. SP1 also adds support for emerging technologies and standards and helps enterprises better optimize their IT infrastructures.

This white paper provides an overview of SP1 and the improvements it delivers. It also provides an overview of how to get SP1 and how to install it.

[1] Microsoft Security Intelligence Report Volume 4 at http://www.microsoft.com/security/portal/SIR.aspx

## Introducing Service Pack 1

The release of Windows Vista SP1 enables customers to take advantage of improvements that Microsoft and its partners developed. It's a continuation of Microsoft's and its partners' drive to provide the best experience possible. The goal is to address key feedback that Microsoft has received from customers without regressing application compatibility. SP1 delivers improvements and enhancements to existing features that significantly affect customers, but it does not deliver substantial new operating system features. For example, the service pack improves file-copy performance but does not include a new version of Windows Explorer.




The updates in SP1 fall into three categories, which the following sections describe in more detail:

- Quality improvements, including all previously released updates, which address reliability, security, and performance (SP1 doesn't include updates released in the two months prior to the SP1 release, reducing the number of last-minute changes in the critical time just prior to release.)
- Support for emerging hardware and standards, such as an Extensible Firmware Interface (EFI) and flash-based devices formatted using the Extended File Allocation Table (exFAT) file format
- Improvements that help businesses better optimize their IT infrastructures

The following sections describe a sample of changes. For a comprehensive list of changes, see the Windows Vista SP1 section of Microsoft® TechNet at http://technet.microsoft.com/en-us/windowsvista/bb738089.aspx.

### Quality Improvements

Quality improvements have the broadest impact on all customers. It is the foundation of Windows Vista SP1 and is about improving the overall Windows Vista experience.

SP1 includes all previously released updates for Windows Vista, except for updates released in the two months prior to the release of SP1 (as already noted). It also includes security, reliability, and performance improvements. These improvements target some of the issues Microsoft has identified as the most common causes of operating system failures, giving customers a more reliable experience. Microsoft analyzed a large set of system crashes and application crashes reported by Windows Vista customers and released numerous reliability updates through Windows Update that address almost half of the application and operating system failures initiated in Microsoft code from that set. SP1 also includes new improvements that further address a total of about two-thirds to three-quarters of the failures traced back to Microsoft code in the same set, helping to make Windows Vista easier to use and users more productive.

The following sections describe many of the compatibility, reliability, performance, and security improvements that Windows Vista SP1 delivers.

### Application and Device Compatibility

In the past year, the ecosystem has made dramatic progress in addressing Windows Vista compatibility issues. More than 2,500 applications and 15,000 components and devices have earned either the "Works with Windows Vista" or "Certified for Windows Vista" logos. As of December 2007, 93% of the 200 top-selling applications[2] and 46 of the top 50 downloaded applications on Download.com are Windows Vista compatible.

Microsoft learned a lot about our customers' experience with Windows Vista, too. Microsoft has great information about their experiences, because Windows Vista creates a symbiotic feedback loop with customers. It allows Microsoft to pinpoint issues, and then deliver resolutions quickly and efficiently. For example, when you insert a device into a computer running Windows Vista, the operating system automatically searches for the right driver for that device on Windows Update. If a driver isn't on Windows Update, that's something Microsoft wants to know about so it can be fixed.

Microsoft looks at the most commonly requested drivers and constantly works with hardware partners to make more and more drivers available on Windows Update so that when you install a new device, everything just works. The ecosystem has made great strides. A year ago, when Windows Vista launched, there were 13,000 additional components and devices supported by Windows Update; now, there is support for more than 54,000 components and devices. For computers running Windows Vista, drivers are available on Windows Update for every device on nearly all of today's computers. Device drivers are also available through hardware vendors' Web sites.

**Note** Most applications that were not compatible with the initial release of Windows Vista release because of intentional architectural changes (for example, Windows Vista User Account Control [UAC]) will still not work in Windows Vista with SP1. Windows Vista with SP1 carries forward those same architectural changes, because they were intentional and made for important reasons, such as security and reliability.

[2] NPD Group Data

**Reliability**

Microsoft doesn't measure improvement solely by the number of devices that Windows Update supports—Microsoft also measures the stability of the Windows Vista experience. The information that Microsoft collects (by using tools like the Customer Experience Improvement Program (CEIP)—an anonymous, opt-in service—as well as Microsoft Online Crash Analysis (OCA) and Windows Error Reporting (WER)—both of which are opt-in services) helps Microsoft learn which devices and applications fail and why.

Microsoft understands that failures affect customers' experiences, so we spent a lot of time and energy working to improve Windows Vista stability. First, Microsoft analyzed a large set of system crashes and application crashes reported by Windows Vista customers and released numerous reliability updates through Windows Update that address almost half of the application and operating system failures initiated in Microsoft code from that set.

Sometimes, the failures occur in 3rd party software and sometime in Microsoft software. In many cases, when Microsoft learns about a frequently occurring failure, Microsoft analysts investigate the problem and share their findings with the software vendor. In many cases, they work together to fix the issue.

Windows Vista SP1 includes improvements that target some of the most common causes of operating system failure, giving users a more consistent experience. Additionally, SP1 offers the following improvements:

- Helps prevent data loss while ejecting NTFS file system–formatted removable media
- Improves the reliability of networking in Windows Vista:
    - Improves the reliability of Internet Protocol Security (IPsec) connections over TCP/IP version 6 (IPv6) by helping ensure that all Neighbor Discovery Request for Comments (RFC) traffic is exempted from IPsec
    - Improves scenarios in which a driver goes to sleep with incomplete packet transmissions by helping ensure that the driver is given enough time to transmit or discard any outstanding packets before going to sleep
    - Improves wireless ad hoc connection (that is, a computer-to-computer wireless connection) success rate
    - Improves the success of peer-to-peer connections, such as Windows Meeting Space or Remote Assistance applications, when both computers are behind symmetric firewalls
- Improves the built-in backup solution to include Encrypting File System (EFS)–encrypted files

**Performance**

Windows Vista SP1 includes many performance enhancements. For example, SP1:

- Addresses an issue in the current version of Windows Vista that makes browsing network file shares consume significant bandwidth and not perform as quickly as expected.
- Improves the performance of copying files. In internal tests, copying files from one folder to another on the same local disk was 25 percent faster. Copying files from a remote computer that was not running Windows Vista SP1 was 45 percent faster. Because of networking

improvements in SP1, copying files from a remote computer that was also running Windows Vista SP1 was as much as 50 percent faster.[3]

- Improves the progress estimation when copying files by using Windows Explorer so that the time estimate in the progress window appears within two seconds.
- Improves the speed of adding files to and extracting files from compressed folders.
- Improves the performance of power transitions (for example, resuming from hibernation and standby mode).
- Improves the performance of domain-joined computers when operating off the domain. Before Windows Vista SP1, users would experience long delays when opening the **File** dialog box.
- Improves battery life on some computers by reducing CPU use and redrawing the screen less frequently.
- Improves the logon experience by removing the occasional 10-second delay between pressing CTRL-ALT-DELETE and the password prompt appearing.
- Reduces the time to return to a user's session when using the Photo screensaver.
- Improves overall media performance by reducing many glitches.
- In internal testing, reduces by approximately 75 percent the time to start Event Viewer.

Over the past year, Microsoft hardware and software partners have provided additional updates that improve the Windows Vista experience in very tangible ways. Compatibility isn't the only improvement, either. These updates improved quality and performance, as battery life illustrates. Compare the battery life of a computer at the time Microsoft released Windows Vista with the battery life of the same computer after updating device drivers from Windows Update, and you'll see improvements, depending on your computer. After measuring 16 computers internally, the median improvement was 7 percent, and five computers gained more than 10 percent of battery life.

### Security

Windows Vista SP1 also includes many security improvements. For example, Windows Vista SP1 includes:

- Improvements to Windows BitLocker™ Drive Encryption, such as:
    - Encryption of extra local volumes. For example, instead of encrypting only drive C, customers can also encrypt drive D, E, and so on.
    - An additional multifactor authentication method that combines a Trusted Platform Module (TPM)–protected key with a startup key stored on a USB storage device and a user-generated Personal Identification Number (PIN).

[3] Microsoft internal testing

- Application programming interfaces (APIs) by which non-Microsoft security and malicious software–detection applications can work alongside Kernel Patch Protection on 64-bit versions of Windows Vista. These APIs help software partners develop applications that extend the functionality of the kernel on 64-bit computers without disabling or weakening the protection that Kernel Patch Protection offers.
- Adds support for important new security standards:
    - A new Federal Information Processing Standard (FIPS)–compliant mode in the wireless client
    - A new smart card framework that enables compliance with European Union Digital Signature Directive and National ID (eID)
    - A new Suite B–compliant cryptographic algorithm used in Windows Firewall and IPsec
- Strengthens the cryptography platform with a redesigned random number generator (RNG) that leverages the TPM, when present, for entropy and complies with the latest standards. By default, the redesigned RNG uses the Advanced Encryption Standard (AES)–based pseudo-random number generator (PRNG) from National Institute of Standards and Technology (NIST) Special Publication 800-90. The Dual Elliptical Curve (Dual EC) PRNG from SP 800-90 is also available for customers who prefer to use it.
- Improves security in smart card scenarios. First, SP1 introduces a new PIN channel to more securely collect smart card PINs through a computer. This mitigates several attacks that otherwise require an external PIN reader to prevent. Second, SP1 enables smart cards that use biometric authentication instead of a PIN.
- Provides security software vendors a more secure way to communicate with Windows Security Center.

## Emerging Hardware and Standards

The technology industry is fast-paced and constantly changing. Throughout the life cycle of any version of the Windows operating system, the industry creates new hardware innovations and defines new standards. Windows Vista SP1 includes support for some of these new hardware innovations and standards, because Microsoft expects them to become increasingly important in the near future. The following sections describe these emerging innovations and standards.

### New Hardware

Between each Windows release, the industry introduces new hardware innovations. To support current hardware innovations and anticipate future innovations, Windows Vista SP1:

- Enhances support for 64-bit computers:
    - SP1 adds support for 64-bit Extensible Firmware Interface (EFI) network boot. It also adds support for new Unified Extensible Firmware Interface (UEFI) industry-standard computer firmware for 64-bit systems with functional parity with legacy basic input/output system (BIOS) firmware. This allows Windows Vista SP1 to install to GUID Partition Table (GPT)–format disks and to start and resume from hibernation using UEFI firmware.

    - Adds support for the 64-bit version of the Microsoft OLEDB provider for ODBC Drivers (MSDASQL), which acts as a bridge from OLEDB to a variety of Open Database Connectivity (ODBC) drivers and that simplifies application migration from 32-bit platforms to 64-bit versions of Windows Vista.

- Includes support for new storage technologies:
    - Adds support for exFAT, a new file system that supports larger overall capacity and larger files and that Flash memory-storage and consumer devices will use.
    - Adds support for Secure Digital (SD) Advanced Direct Memory Access (ADMA) on compliant SD standard host controllers. This new transfer mechanism, expected to be supported in SD controllers soon, improves transfer performance and decreases CPU utilization.
    - Adds support for creating a single DVD medium that starts up on computers with either BIOS or EFI.
    - Enhances support for high-definition (HD) drives by adding new icons and labels that identify HD-DVD and Blu-ray drives as HD drives.
- Adds support for Direct3D® 10.1, an update to Direct3D 10 that extends the API to support new hardware features and enables 3D-application and 3D-game developers to make more complete and efficient use of upcoming generations of graphics hardware.
- Enhances the Windows Network Projector to temporarily resize the desktop to accommodate custom projector resolutions.
- Adds new capabilities to Windows Media Center:
    - Adds support to enable new types of Windows Media Center Extenders, such as digital televisions and networked DVD players, to connect to Windows Media Center systems.
    - Enhances the MPEG-2 decoder to support content protection across a user-accessible bus on Windows Media Center computers configured with Digital Cable Tuner hardware. This enables higher levels of hardware-decoder acceleration for commercial DVD playback on some computers.

**New Standards**

As with hardware innovations, the industry defines new, innovative standards and technologies between Windows releases. To take advantage of these innovations, Windows Vista SP1:

- Includes support for new cryptographic algorithms:
    - SP1 adds support for new strong cryptographic algorithms used in IPsec: Secure Hash Algorithm (SHA)-256, Advanced Encryption Standard–Galois/Counter Mode (AES-GCM), and AES–Galois Message Authentication Code (AES-GMAC) for Encapsulating Security Payload (ESP).
    - SP1 adds support for Authentication Header (AH), Elliptic Curve Digital Signature Algorithm (ECDSA), SHA-256, and SHA-384 for Internet Key Exchange (IKE) and Authenticated Internet Protocol (AuthIP).

- SP1 adds the NIST SP 800-90 Elliptic Curve Cryptography (ECC) PRNG to the list of available PRNG in Windows Vista.

- Includes support for new wired and wireless networking standards:
  - Full support for the most recent Institute of Electrical and Electronics Engineers (IEEE) draft of 802.11n wireless networking
  - Support for Secure Sockets Tunnel Protocol (SSTP), a remote-access virtual private network (VPN) tunneling protocol that will be part of the Microsoft Routing and Remote Access Service (RRAS) platform (SSTP simplifies certain kinds of VPN connections by allowing VPN traffic to flow more securely through firewalls configured to block other types of VPN traffic, which is frequently the case in hotels, coffee shops, and other public hotspots.)
  - Support for obtaining identity and invoking an identity user interface (UI) from an inner method by means of a new EAPHost runtime API and a configuration UI for tunnel methods (supplicants) (These APIs are useful for developers working on tunneling and multi-phased Extensible Authentication Protocol [EAP] authentication methods as well as those who implement networking supplicants that consume EAP authentications.)
  - Enhances TCP Chimney network card support so that a TCP Chimney network card can also support Compound TCP.

- Adds support for the Parental Controls Games Restrictions ratings from the Korean Game Rating Board (GRB).

## Infrastructure Optimization

Many changes in Windows Vista SP1 improve the deployment, management, and support experience for Windows Vista customers. The following sections provide overviews of these improvements.

### Deployment

Microsoft identified numerous deployment issues and has improved the reliability of operating system servicing in Windows Vista. As a result, Windows Vista SP1 makes several changes that address identified issues and improve the Windows Vista deployment experience. For example, Windows Vista SP1:

- Helps organizations better deploy Windows Vista updates:
  - Adds support for hotpatching, a restart-reduction servicing technology that maximizes uptime (Hotpatching works by allowing Windows components to be updated while they are still in use by a running process. Update packages that support hotpatching are installed through the same methods as traditional update packages but will not trigger a restart.)
  - Improves update deployment by retrying failed updates when multiple updates are pending and the failure of one update causes other updates to also fail, as well
  - Improves robustness during update installation by improving resilience to transient errors

(for example, sharing violations, access violations) and unexpected interruptions (for example, power failure)

  - Improves the uninstallation experience for updates by improving the uninstallation routines in custom operating system installation code

  - Enables more-reliable operating system installation by optimizing operating system installers so that they are run only as required during update installation (The result of fewer installers running is fewer points of failure, leading to a more robust and reliable installation.)

- Improves using Windows Preinstallation Environment (Windows PE) as a deployment platform for Windows Vista:

  - Improves Windows Vista deployment by enabling customers to install 64-bit versions of Windows Vista from a 32-bit operating system (This allows IT pros to maintain a single Windows PE image.)

  - Improves deployment by supporting the installation of offline boot-critical storage drivers (With SP1, Windows PE automatically looks to a hidden partition for drivers. It will search that partition recursively, and if boot-critical drivers are present, Windows PE will load them.)

**Management**

Windows Vista has many new and improved management and troubleshooting features designed to diagnose problems more efficiently, reducing the cost and complexity of desktop support and configuration. Here is a sample of the improvements that SP1 includes:

- The Network Diagnostics tool helps customers solve the most common file-sharing problems in addition to the basic problems that it already diagnoses.

- Administrators can control the volumes on which to run Disk Defragmenter.

- Network Access Protection (NAP) is a policy-enforcement platform built in to Windows Vista and Windows Server® 2008. After installing SP1, administrators can configure NAP clients to:

  - Allow the help desk to establish IPsec connections from healthy computers to unhealthy computers, improving the supportability of NAP by allowing help desk technicians with health-compliant computers to establish connections to help resolve issues.

  - Allow administrators to configure Windows Vista NAP to receive updates from Windows Update or Microsoft Update, define the time that a client computer has to retrieve and submit statements of health, and use Domain Name System (DNS) server records to discover Health Registration Authority (HRA) servers when no HRAs are configured locally or through Group Policy.

- A Windows Management Instrumentation (WMI) interface replaces the MoveUser.exe tool, which was removed from Windows Vista. This interface allows customers to remap an existing workgroup or domain user account profile to a new domain user account profile.

- Administrators can configure network properties, such as name, and deploy the changes network-wide by using Group Policy.
- Allows the Key Management Service (KMS) to run within a virtual machine (VM).
- Enables flexible computing models:
    - Addresses problems with printing to local printers from a Windows Server 2008 Terminal Services session.
    - Improves the security of running Terminal Services RemoteApp™ (TS RemoteApp) programs and desktops by allowing Remote Desktop Protocol (RDP) files to be signed. Customers can differentiate experiences based on publisher identity.

When you install Windows Vista SP1, the installer removes the Group Policy Management Console (GPMC) from the computer. You can download an updated version as part of the Remote Server Administration Tools (RSAT) from http://go.microsoft.com/fwlink/?LinkId=108134 shortly after the release of Windows Server 2008. To continue managing Group Policy from a client computer in the meantime, you can use a computer running Windows Vista without SP1 or connect remotely to a computer running GPMC by using Remote Desktop.

## Thinking Beyond Service Pack 1

The hard work doesn't stop after the release Windows Vista SP1. Microsoft plans to continue improving the Windows Vista experience. Microsoft continues to focus on helping software partners identify commonly occurring failures so they can address those problems. Similarly, Microsoft continues to work with hardware partners to help them improve the coverage and quality of their device drivers.

Microsoft is also working closely with many computer manufactures to take what the company learned in the first year of Windows Vista and jointly refine their offerings to optimize performance, reliability, and battery life. In addition, Microsoft continues to build and expand on Windows Vista with Windows Live, adding functionality that extends and enhances scenarios. Microsoft designed Windows Live to enhance the online and Windows Vista experiences with a set of tools that bring the power of the Web right to the computer or mobile device, letting you communicate and share with other people. Windows Vista combined with Windows Live enables you to keep your software and services up to date as Microsoft and the rest of the industry continue to deliver new innovations over time.

## Getting Service Pack 1

The *Deployment Guide for the Release Candidate Version of Windows Vista Service Pack 1* at http://technet2.microsoft.com/windowsvista/en/library/5cf710a1-1414-4d11-97de-0748abdcec651033.mspx?mfr=true describes in detail the deployment scenarios and methods that Windows Vista SP1 supports. The sections that follow describe the installation methods available and the installation requirements for SP1.

Table 1 recommends the best installation method for different types of users. Consumers and small-business users should purchase computers that already have SP1 or use Windows Update to update Windows Vista with SP1. IT pros should deploy the stand-alone package to computers that are already running Windows Vista; they should use the integrated installation method to deploy Windows Vista with SP1 to computers that don't already have an operating system or computers on which they are performing clean installations. For more information about installing SP1 by using Windows Update, stand-alone packages, or integrated installations, see the section, "Installation Methods."

**Table 1. Installation Methods**

| Who are you? | Recommended installation method: |
|---|---|
| **Home user** | **Windows Update** |
| **Small-business user** | **Windows Update** |
| **IT pro** | For computers that are already running Windows Vista, deploy the **stand-alone package** using your existing software-distribution infrastructure.<br><br>For computers that don't have an operating system or on which you're performing clean installations, deploy an **integrated installation** of Windows Vista with SP1.<br><br>**Note** You can deploy the stand-alone SP1 package by using Windows Server Update Services (WSUS). You can also deploy the smaller package that Windows Update delivers by using WSUS. |

### Installation Methods

The following list describes the methods available for installing SP1:

- **Windows Update**

  Windows Update will automatically install SP1 on computers that are configured to receive updates through Automatic Updates. Windows Update downloads the required service pack files to the target computer and installs the service pack. This method requires relatively low bandwidth and minimizes network traffic, because only the changes needed for a specific computer are applied.

**Note** Some customers use Windows Update to manage their organization's computers and do not want Windows Update to install SP1 because they prefer to manage the service pack's installation themselves. For these cases, Microsoft is making the blocker patch available. The blocker patch helps ensure that Automatic Updates will not automatically install Windows Vista SP1. For more information, see **Windows Service Pack Blocker Tool** at http://technet.microsoft.com/en-us/windowsvista/bb927794.aspx.

- **Stand-alone Package**

  A stand-alone SP1 package contains all files, including the prerequisites that the previous section described, needed to install SP1 on any computer. You install the stand-alone package to upgrade computers that are already running Windows Vista. Microsoft recommends this method for applying SP1 to computers without (or with limited) Internet connectivity or applying the service pack to more than one computer by using deployment tools such as Microsoft Systems Management Server 2003, WSUS, or Microsoft System Center Configuration Manager 2007. Users can download the stand-alone SP1 package from the Microsoft Download Center at http://go.microsoft.com/fwlink/?LinkId=107075. The download size of the stand-alone package is larger than the package applied with Windows Update.

  To make the improvements that this white paper describes, a large number of individual files and components have been updated for SP1. Also, the language-neutral design of Windows Vista necessitates that the service pack be able to update any possible combination of the basic languages that Windows Vista supports with a single installer, so language files for the 36 basic languages are included in the stand-alone installer. This results in a large stand-alone package, the delivery method that IT professionals typically use.

  However, most consumers and small-business users will receive SP1 through Windows Update, which uses an efficient transfer mechanism to download only the actual bytes changed, resulting in an approximately 65 MB download. This is similar in size to many common software and driver updates delivered by other software vendors over the Internet.

- **Integrated Installation**

  With integrated installations, the service pack is integrated with the operating system. As a result, the operating system and service pack are installed simultaneously. You use the integrated installation to upgrade computers from Windows XP and to perform new installations on computers that do not have an operating system. Volume License customers will receive integrated installation media as part of their media kits. Additionally, MSDN® and Microsoft TechNet subscribers can download integrated installation media.

- **New Computers**

  Consumers can purchase computers with SP1 installed on them. However, if they purchase computers that don't already have SP1 installed on them, they can easily install SP1 from Windows Update.

## Installation Requirements

Table 2 describes the approximate disk space requirements for the system partition. Note that these requirements will increase if there are multiple language packs on your computer. For more information about the requirements for installing SP1, see the Microsoft Help and Support article, "System requirements for Windows Vista," at http://support.microsoft.com/kb/919183. SP1 does not change the hardware requirements for installing or running Windows Vista.

**Table 2. Approximate Disk Space Requirements for SP1**

| Installation method | Approximate free space required |
|---|---|
| Stand-alone installation | x86-based: 2515 MB to 5445 MB<br>x64-based: 4105 MB to 7840 MB |
| Windows Update | x86-based: 1170 MB<br>x64-based: 1505 MB |
| Integrated installation | 15 GB |

Computers running Windows Vista RTM also require two or three updates before installing SP1. These updates are permanent and cannot be uninstalled, because they ensure that the operating system continues to work properly after uninstalling SP1. Windows Update will detect your configuration and offer the prerequisite packages applicable to your system, installing them in sequential order. The following updates are required for installing SP1 (the stand-alone SP1 package already includes these updates):

- **KB935509**

  This update is only required on Windows Vista Enterprise and Windows Vista Ultimate editions (which support BitLocker Drive Encryption). This update is required prior to installing KB938371, the second prerequisite update, and is required to prevent potential loss of data on BitLocker Drive Encryption–encrypted systems during updating.

- **KB938371**

  This update consists of fixes for several components, increases the success rate for installing the service pack, and enables the service pack to be uninstalled successfully.

- **KB937287**

  This is an update to the servicing stack or the component installer technologies built into Windows Vista. This update enables the built-in installer to properly and successfully install the service pack.

---

**Note** If you've installed preview versions Windows Vista SP1, you must uninstall them before installing the final version of SP1. If you don't uninstall preview versions before trying to install the final version of SP1, you'll see an error message that says, "Windows Vista Service Pack 1 is already installed."

---

## Summary

Windows Vista is already delivering tangible benefits to customers but not without challenges. Windows Vista has made significant progress in the past year. And, Windows Vista SP1 further improves the experience by improving the operating system's quality, adding support for new hardware and standards, and helping businesses further optimize their infrastructures. If you haven't seen Windows Vista lately, it's time to take another look.

Consumers don't need to do anything special to get SP1. Simply buy a computer with Windows Vista, whether or not it already has SP1 installed on it. If the computer doesn't have SP1 installed on it, Windows Vista will easily install SP1 by using Windows Update.

Business customers with Windows Vista deployments already underway should continue deploying the current version of Windows Vista as planned. Then, they can deploy SP1 to those computers by using their systems management infrastructure. However, business customers in the early stages of deployment or customers still planning Windows Vista deployment should use SP1 as the basis for future deployment.