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# SP1 for Windows® 7 and Windows Server 2008 R2: What's New?

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## Introduction

Are you from the "Old School" of IT administrators who always wait for the release of the first service pack before you deploy a new Windows version? Then your time has come. No more waiting or, as it sometimes called, procrastinating.

February 22, 2011 was not your typical "Patch Tuesday." It was the day that Microsoft released both the Service Pack 1 (SP1) for Windows 7 and SP1 for Windows Server 2008 R2 to the public at the same time. These two service packs complement each other by helping keep your PCs and servers on the latest support level.

I have divided this white paper into two parts to discuss these two service packs. In Part One, I will cover and expand on what's new in Windows 7 SP1. In Part Two, I will cover and expand on what's new in Windows Server 2008 R2 SP1. Although the two service packs are mostly independent of each other in updates and features, they do have components that compliment each other.

SP1 provides ongoing improvements to the Windows operating system, including previous updates delivered over Windows Update, and incremental updates to the Windows 7 and Windows Server 2008 R2 platforms, based on customer and partner feedback. If you have not updated your operation systems yet, you can download or purchased a DVD version of SP1; it's easy for organizations to deploy a single set of updates in one easy step by deploying SP1.

For organizations that have kept a steady diet of updates and patches, the rollout of this SP1 will have minimal impact or downtime devoted to testing before deployment scenarios.

On the Microsoft Downloads Center website there is a fantastic home page titled: Documentation for Windows 7 and Windows Server 2008 R2 SP1 (KB976932) (<http://www.microsoft.com/downloads/en/details.aspx?FamilyID=61924cea-83fe-46e9-96d8-027ae59ddc11>). This website has a complete list of all the updates. You can download a detailed spreadsheet list of what is included in this service pack, deployment guide, and release notes available as separate downloads.

Below is a bulleted list of how the service pack for the Client and Server Windows Operating Systems parallel each other in features:

- Includes previously released updates
- Update for Remote Desktop Services
- Enhanced HDMI audio performance

- Correct printing of mixed-orientation XPS files
- 6to4 and ISATAP support for Direct Access
- Support for the WS-Federation protocol
- AVX Instruction Set Support
- Restore Previous Folders at Logon
- Additional Identities for IKEv2

## PART ONE

### Windows 7 SP1

Windows 7 Service Pack 1 (SP1) is an important update that includes previously released security, performance, and stability updates for Windows 7. SP1 also includes new improvements to features and services in Windows 7, such as improved reliability when connecting to HDMI audio devices, printing using the XPS Viewer, and restoring previous folders in Windows Explorer after restarting. All this is combined into one single installable update. A typical installation can take an average of 30 minutes, and on this writer's underpowered laptop it took 45 minutes. You will have to restart your computer halfway through the process to complete the update.

Your Build Number will change from the old 7600 number to the new 7601 build number on both products. The following list is a short explanation of the New Features and Fixes keeping in mind that all the previously released updates with their fixes are included in the Service Pack as well.

### New Features of Windows 7 SP1

#### Facts from the street

Windows 7 SP1 is a rollup of prior security patches and minor bug fixes along with a few tweaks that improve features that were already present when Windows 7 was released to manufacturing. There are no new features added to the operating system. Nearly all these updates had been made previously available as individual hot fixes and patches. Thus, organizations that have been routinely updating Windows 7 user systems will have only minor functionality testing to perform.

This reduced impact on time to test a Service Pack Rollout will prove significant to the reduced Total Cost of Ownership (TCO) of the product.

It can be said that unless there is a specific need for the new federation feature, or the corrected HDMI or XPS printing fixes, organizations that have routinely applied security patches to Windows 7 have a choice of not rolling out SP1 to the desktops. A main consideration for not doing so is that Windows 7 SP1 is big, and it takes a while to install. Because of network utilization and lost productivity time while the service pack installs, IT desktop managers might prefer to choose the Windows 7 SP1 slipstream version as the base image for new systems and keep previously installed Windows 7 systems on a regular diet of security and feature patches as provided by Microsoft.

Among the enhancements in Windows 7 SP1 is new support for Identity and Authentication, and minor bug fixes that correct audio and printing problems. For Identity and Authentication, Windows 7 SP1 adds support

for passive profile protocol for use with third-party federation services. The feature adds support for the WS-Federation protocol and enables passive identity requesters such as Web browsers to more easily handle identity tokens such as cookies or custom identification mechanisms.

Although some testers and this writer were unable to determine what the HDMI audio problem is, Microsoft must have fixed what we call a “sometimes” issue. In both the original Windows 7 version and machines with Windows 7 SP 1, we were able to connect HDMI TV monitors to the systems reboot and still have a connection to the device.

XPS printing problems might also be one of those “phantom” problems that might come to some users. I travel a lot and often print to the XPS document printer. I have not come across a problem. In any event, the problem addressed is Portrait and Landscape in the some print job. There seemed to be a glitch in the file save or the hard copy print, and it’s fixed.

This SP1 of Windows 7 also provides more control over **Folder** options. It is now possible to change the **Restore previous folders at logon** function that is governed by the Folder Options Explorer dialog. If this check box is selected, all folders are restored to their previous positions.

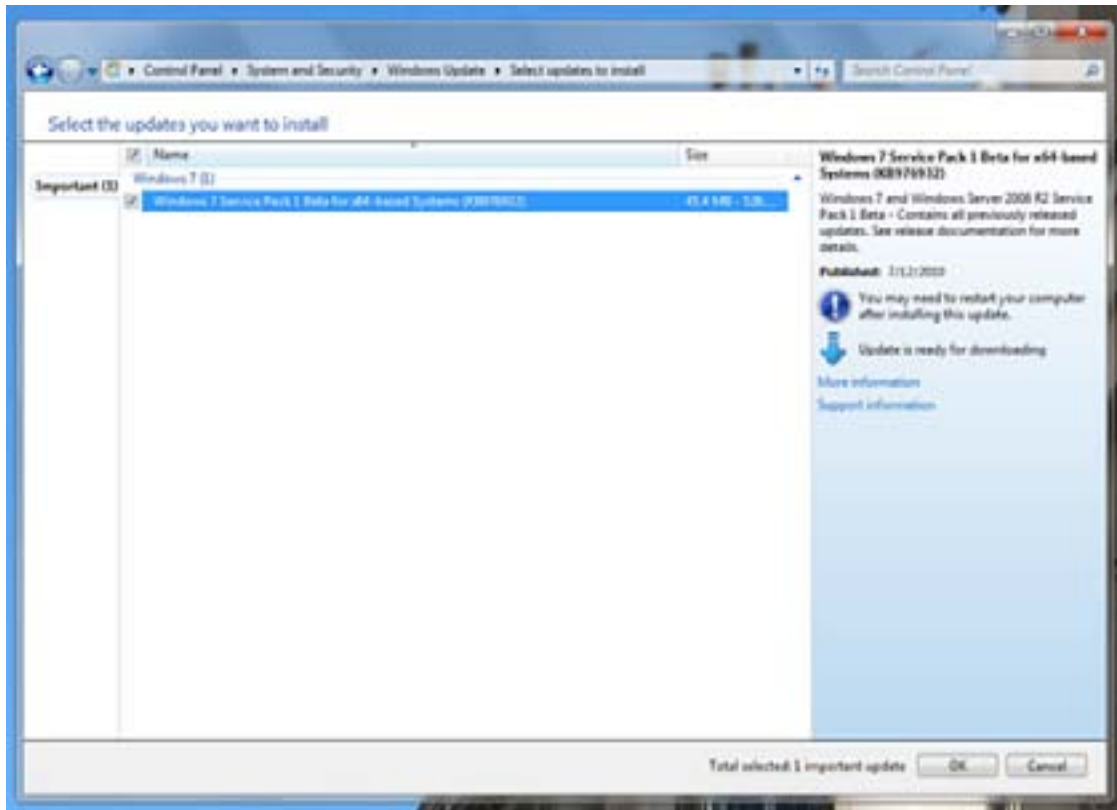
Windows 7 SP1 now supports AVX (Advanced Vector Extensions). AVX is a 256-bit instruction set that can be used by floating point intensive application performance. With AVX support in Windows 7 SP1, applications can now take advantage of the new instruction set and register extensions.

Shops that use IKEv2 authentication protocol should look for the additional identification types that have been added to the identification field. The minor change in this feature will likely aid organizations that have wanted to use e-mail ID or certificate information when performing authentication tasks.

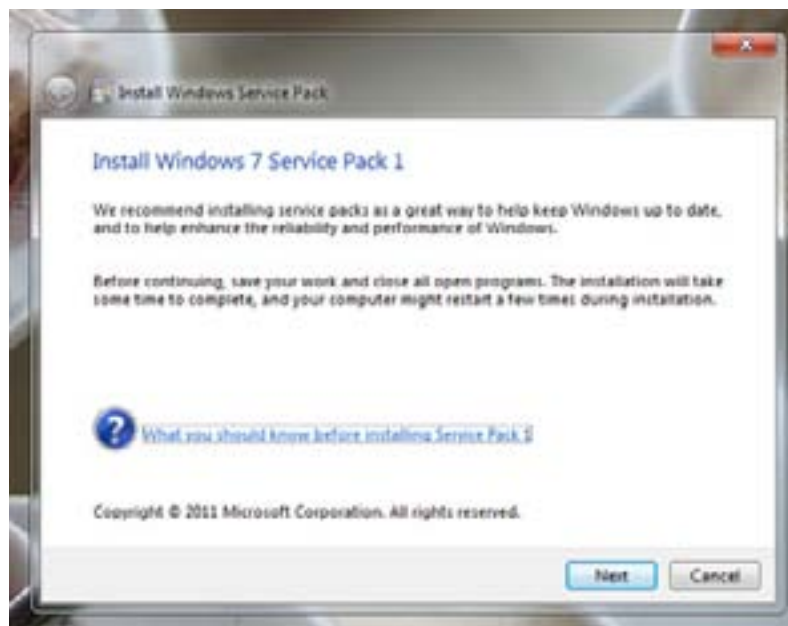
## How To Order the Windows 7 SP1 from Microsoft

The service pack for Windows 7 can be downloaded either from Microsoft’s Download Center or Windows Update. Windows Update is the easier of the deployment choices as the users just need to watch and wait until the update is downloaded and installed. Using this methodology, the initial download size of the Service Pack was only 87.2 megabyte in size but much more is brought down after the setup routine gets going. A reboot is required for the **Configuring Service Pack** stage. Your machine is unusable during this configuration. For those Windows users who have selected Microsoft’s Download Center instead have to download an ISO image of the service pack that they can burn to DVD before it can be used to update the operating system.

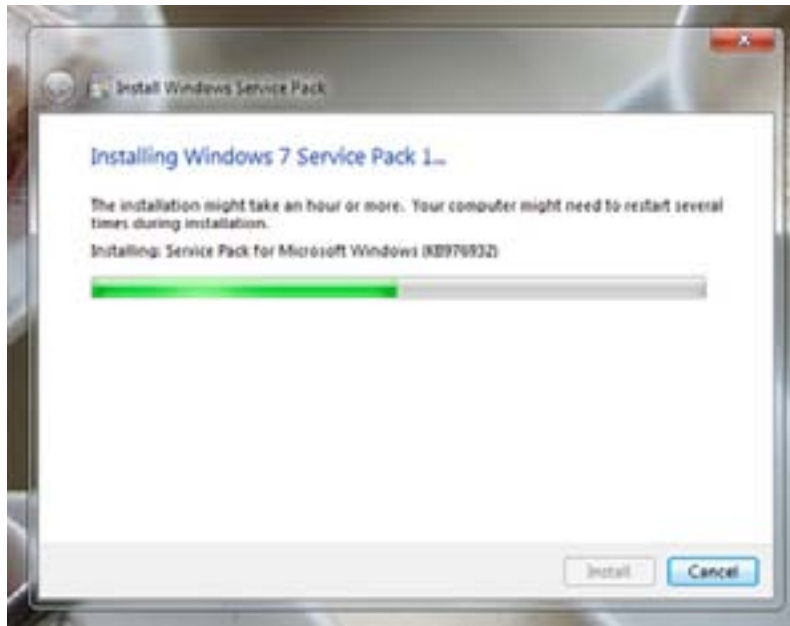
A third possibility, ordering the Windows 7 Service Pack 1 from Microsoft, is now available. This can be handy for users without Internet access on a computer, and no friend nearby who could download the ISO image to the computer. It is also the best option for users who want an official Microsoft DVD that contains the service pack for Windows 7. The product media itself is free of charge, but shipping and handling fees do apply.



**Downloading SP1 from Windows Update Site**



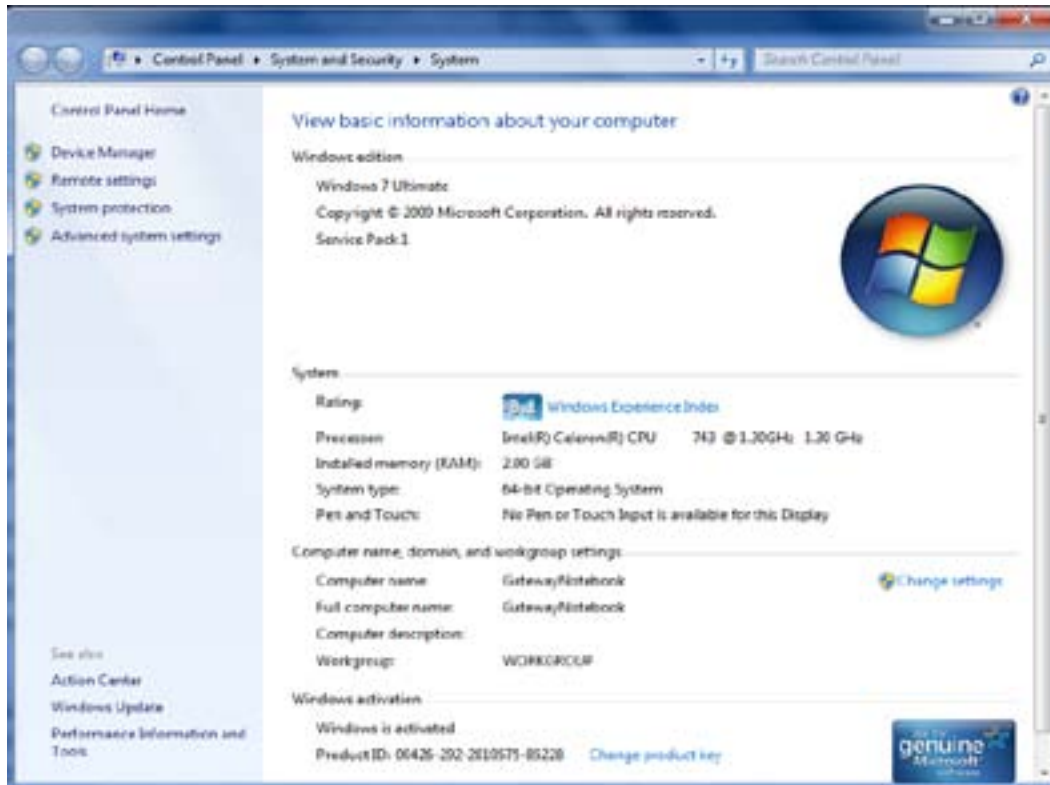
**Windows 7 Service Pack 1 interactive Setup**



**Interactive Setup required ~40 minutes and one reboot.**



**Winver, post-install, indicates both SP1 and a new build number, 7601.**



**System Properties window, post-install, shows at the top that Service Pack 1 is applied .**

## PART TWO

### Windows Server 2008 R2 SP1

For Windows Server 2008 R2 SP1, Microsoft released a comprehensive 26-page PDF that I recommend called The Windows Server R2 SP1 Reviewer's Guide. It discusses the two main features: **RemoteFx** and **Dynamic Memory for Hyper-V**. You can download it at [http://download.microsoft.com/download/9/1/E/91E04C01-8640-44F7-9D98-A798E0282539/Windows\\_Server\\_2008R2\\_SP1\\_Reviewers\\_Guide\\_RC.pdf](http://download.microsoft.com/download/9/1/E/91E04C01-8640-44F7-9D98-A798E0282539/Windows_Server_2008R2_SP1_Reviewers_Guide_RC.pdf).

These two features contain all of the updates since the release of Windows 7 and Windows Server 2008 R2. There have been quite a few "monster patch days" lately, but the number of hotfixes can be found in one place by deploying this Service Pack. The bullet list below lists the features:

- HYPER-V Dynamic Memory
- RemoteFX Resources
- Scalability enhancements for DirectAccess
- Managed Service Accounts support for RODCs
- Improvement in Concurrent Domain Controller Connections
- Improved authentication performance for high-latency networks
- Improved storage sharing in Failover Clustering
- 6to4 and ISATAP support for DirectAccess

- Restore Previous Folders at Logon
- Additional Identities for IKEv2

## New Features of Windows Servers 2008 R2 SP1 Changes

### Improved User Experience with RemoteFX

RemoteFX allows users to run a Windows 7 desktop and applications in a virtualized environment and still have a similar user experience as installing Windows 7 and the applications on a physical computer with a 3D accelerated graphics display adapter. Both the Remote Desktop Virtualization Host (RDVH) role service and the Remote Desktop Session Host (RDSH) role service in Windows Server 2008 R2 SP1 provide support for RemoteFX.

### Dynamic Allocation of Virtual Machine Memory

The Dynamic Memory feature in Hyper-V in Windows Server 2008 R2 SP1 allows users to run Windows 7 SP1 and applications in a virtualized environment that can dynamically allocate memory for virtual machines. The Dynamic Memory feature allows IT administrators to specify starting value and a maximum value for virtual machine memory allocation. Because virtual machine memory can be dynamically allocated, the system resources are utilized more efficiently and are automatically adjusted, based on the needs of each virtual machine.

These next few features have some embedded Web Links. Use these to further your education on what they are.

### 6to4 and ISATAP support for DirectAccess

DirectAccess (<http://4sysops.com/archives/windows-7-directaccess-features/>) is a new Windows 7 feature that allows users to establish a VPN connection without manually launching a VPN client. Windows 7 SP1 adds support for 6to4 (<http://en.wikipedia.org/wiki/6to4>) and <http://en.wikipedia.org/wiki/ISATAP> (Intra-Site Automatic Tunnel Addressing Protocol) (<http://en.wikipedia.org/wiki/ISATAP>), both of which are technologies used to transmit IPv6 packets over an IPv4 network.

### Managed Service Accounts (MSAs) support for RODCs

Managed Service Accounts (MSAs) ([http://technet.microsoft.com/en-us/library/dd367859\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/dd367859(WS.10).aspx)) are Active Directory accounts for application services that run under the identity of a user account. Windows can change the passwords of MSAs automatically before they expire. In environments with Read-Only Domain Controllers (RODC) (<http://4sysops.com/archives/windows-server-2008-read-only-domain-controller-rodcl/>), MSAs can cause problems (<http://support.microsoft.com/kb/978836>). Windows Server 2008 R2 SP1 fixes this problem.

### Concurrent connections to a domain controller

According to Microsoft's paper, this Windows Server 2008 R2 SP1 feature "allows for more granular control of the maximum number of possible concurrent connections to a domain controller." It seems that this is an existing feature, because this Technet article ([http://technet.microsoft.com/en-us/library/cc770976\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc770976(WS.10).aspx)) indicates that this is already possible now. The background of this is that cloud-based services require higher thresholds of authentication traffic to domain controllers because of slow Internet connections. The current default limitations are supposed to prevent denial of service attacks.

### Enhancements to failover clustering with storage

Microsoft's paper only says here that "improvements" have been made regarding storage that is shared between a subset of cluster nodes, but it does not specify what exactly has been improved. Very little is written about this; you're on your own for this one.

### Restore previous folders at logon

The folder options of Windows Explorer offer this "Restore previous folders at logon" setting. In Windows 7 SP1, this feature restores Windows Explorer folders at the same positions before you rebooted. In Windows 7 previously the folders were restored in a cascaded position.

### Additional identities for IKEv2

The IKEv2 ([http://en.wikipedia.org/wiki/Internet\\_Key\\_Exchange](http://en.wikipedia.org/wiki/Internet_Key_Exchange)) authentication protocol is used in IPSec and RRAS. Windows 7 SP1 supports additional identification forms (such as E-mail ID or Certificate Subject).

### Support for Advanced Vector Extensions (AVX)

Advanced Vector Extensions (AVX) (<http://software.intel.com/en-us/avx/>) is a future extension for Intel and AMD CPUs that is supposed to improve performance for floating point-intensive applications. Maybe there will be an AVX CPU chip soon; you never know.

## Conclusion

Windows Server 2008 R2 has many features that are designed specifically to work with client computers running Windows 7; and vice versa. This Service Pack Compliments those features and enhances both side of the Client Server Framework. Although there are no overwhelming new additions to the Operating Systems, this service Pack gives some polishing to an operating system that already "shines bright". One Last minute link that I found that says it all can be found at: <http://www.microsoft.com/windowsserver2008/en/us/overview.aspx>. It describes this tight integration of the two Platform updated with Service Pack 1. Enjoy your reading!

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## About the Author

Mark Mizrahi has been a Microsoft Certified Systems Engineer (MCSE) since Windows NT3.51. He holds a CEH Certified Ethical Hacker Security Certification and is a CEI Certified EC-Council Instructor. He is a Microsoft Certified Trainer (MCT) and MCTS and MCITP for Windows Server 2008, Vista, and Windows 7. He currently teaches Microsoft curriculum for Global Knowledge and other training vendors. Mark is president of Standard Computer Services and consults for various Fortune 500 companies. He designs and implements web-based Internet Security and Video Surveillance Systems for a diversified customer base. Keeping up the various hacking methods is part of his daily intake of information, and he loves sharing it with this clients

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