



Windows 8 70-687 Study Guide

to be used as an internal resource only

Introduction

This *free* study guide is for Microsoft's 70-687 exam, Windows 8, Configuring. This guide is intended to be supplemental to your books and other study materials. If you find any corrections or would like to suggest additions, please contact me at MrNetTek2000@yahoo.com.

Miscellaneous Resources

<http://www.microsoft.com/learning/en/us/exam.aspx?id=70-687>

<http://www.youtube.com/watch?v=Xud6t4qGD00>

<http://www.techexams.net/forums/windows-8-exams/>

70-687 Configuring Windows 8

Install and Upgrade to Windows 8 (14%)

- Evaluate hardware readiness and compatibility.
 - This objective may include but is not limited to: determine whether 32 bit or 64 bit is appropriate; determine screen resolution; choose between an upgrade or a clean installation; determine which SKU to install
 - - [Announcing the Windows 8 Editions](#)
 - <http://www.microsoft.com/en-us/windo...mpatCenter/FAQ>
- Install Windows 8.
 - This objective may include but is not limited to: install as Windows to Go; migrate from Windows XP or Windows Vista; upgrade from Windows 7 to Windows 8 or from one edition of Windows 8 to another edition of Windows 8; install VHD
 - - [Service a Windows Image](#)
 - - [Windows To Go: Scenario Overview](#)
- Migrate and configure user data.



- This objective may include but is not limited to: migrate user profiles; configure folder redirection; configure profiles
- - [User State Migration Tool \(USMT\) Technical Reference](#)
- - [Folder Redirection, Offline Files, and Roaming User Profiles overview](#)

Configure Hardware and Applications (16%)

- Configure devices and device drivers.
 - This objective may include but is not limited to: install, update, disable, and roll back drivers; resolve driver issues; configure driver settings
- Install and configure desktop applications.
 - This objective may include but is not limited to: set compatibility mode; install and repair applications by using Windows Installer; configure default program settings; modify file associations; manage App-V applications
 - - [Overview of Application Virtualization](#)
- Install and configure Windows Store applications.
 - This objective may include but is not limited to: install, reinstall, and update Metro applications; restrict Windows Store content; add internal content (side loading); disable Windows Store
 - - [Managing Client Access to the Windows Store](#)
- Control access to local hardware and applications.
 - This objective may include but is not limited to: configure AppLocker; configure access through Group Policy or local security policy; manage installation of removable devices
 - - [AppLocker Overview](#)
- Configure Internet Explorer.
 - This objective may include but is not limited to: configure compatibility view; configure security settings; manage add-ons; configure websockets; configure Download Manager
 - - [Internet Explorer 10 - Overview for IT Pros](#)
 - - [Internet Explorer 10 FAQ for IT Pros](#)



- Configure Hyper-V.
 - This objective may include but is not limited to: create and configure virtual machines; create and manage snapshots; create and configure virtual switches; create and configure virtual disks
 - - **Client Hyper-V**

Configure Network Connectivity (15%)

- Configure IP settings.
 - This objective may include but is not limited to: configure name resolution; connect to a network; configure network locations; resolve connectivity issues
- Configure networking settings.
 - This objective may include but is not limited to: connect to a wireless network; manage preferred wireless networks; configure network adapters; configure location-aware printing
- Configure and maintain network security.
 - This objective may include but is not limited to: configure Windows Firewall; configure Windows Firewall with Advanced Security; configure connection security rules (IPSec); configure authenticated exceptions; configure network discovery; manage wireless security
 - - **Windows Firewall with Advanced Security Overview**
- Configure remote management.
 - This objective may include but is not limited to: choose the appropriate remote management tools; configure remote management settings; modify settings remotely by using MMCs or Windows PowerShell
 - - **Windows PowerShell Support for Windows 8 Release Preview**

Configure Access to Resources (14%)

- Configure shared resources.



- This objective may include but is not limited to: configure shared folder permissions; configure HomeGroup settings; configure file libraries; configure shared printers; set up and configure SkyDrive; configure Near Field Communication (NFC)
- - [Making personal cloud storage for Windows available anywhere, with the new SkyDrive - Building Windows 8 - Site Home - MSDN Blogs](#)
- Configure file and folder access.
 - This objective may include but is not limited to: encrypt files and folders by using EFS; configure NTFS permissions; configure disk quotas; configure object access auditing
- Configure local security settings.
 - This objective may include but is not limited to: configure local security policy; configure User Account Control (UAC) behavior; configure Secure Boot; configure SmartScreen filter
 - - [Secure Boot Overview](#)
- Configure authentication and authorization.
 - This objective may include but is not limited to: configure rights; manage credentials; manage certificates; configure smart cards; configure biometrics; configure picture password; configure PIN; set up and configure Windows Live ID
 - - [Windows Authentication Overview](#)

Configure Remote Access and Mobility (14%)

- Configure remote connections.
 - This objective may include but is not limited to: configure remote authentication; configure Remote Desktop settings; establish VPN connections and authentication; enable VPN reconnect; manage broadband connections
- Configure mobility options.
 - This objective may include but is not limited to: configure offline file policies; configure power policies; configure Windows to Go; configure sync options; configure WiFi direct
 - - [Windows To Go: Scenario Overview](#)



- Configure security for mobile devices.
 - This objective may include but is not limited to: configure BitLocker and BitLocker To Go policies; configure startup key storage; configure remote wipe; configure location settings (GPS)
 - - [What's New in BitLocker](#)

Monitor and Maintain Windows Clients (13%)

- Configure and manage updates.
 - This objective may include but is not limited to: configure update settings; configure Windows Update policies; manage update history; roll back updates; update Metro applications
- Manage local storage.
 - This objective may include but is not limited to: manage disk volumes; manage file system fragmentation; manage storage spaces
- Monitor system performance.
 - This objective may include but is not limited to: configure and analyze event logs; configure event subscriptions; configure Task Manager; monitor system resources; optimize networking performance; optimize the desktop environment; configure indexing options

Configure Backup and Recovery Options (14%)

- Configure backup.
 - This objective may include but is not limited to: create a system recovery disk; back up files, folders, and full system; schedule backups
- Configure system recovery options.
 - This objective may include but is not limited to: configure system restore; determine when to choose last known good configuration; perform a complete restore; perform a driver rollback; perform a push button refresh or reset; configure startup settings



- - [Windows Recovery Environment \(Windows RE\) Technical Reference](#)
- Configure file recovery options.
 - This objective may include but is not limited to: configure file restore points; restore previous versions of files and folders; configure File History

MISC. Links:

[Windows 8 Release Preview ISO formats](#)

[Windows 8 Release Preview: frequently asked questions](#)

ELITE SOLUTIONS



Announcing the Windows 8 Editions

Posted on: Apr 16, 2012

by **Brandon LeBlanc**



Today I would like to share information with you on the editions that will be available for "Windows 8" when it is released to market. We have talked about Windows 8 as Windows reimagined, from the chipset to the user experience. This also applies to the editions available – we have worked to make it easier for customers to know what edition will work best for them when they purchase a new Windows 8 PC or upgrade their existing PC.

Windows 8 has the flexibility you need - whether you're on an x86/64 or a WOA PC. You can use a touch screen or a keyboard and mouse – and switch anytime. It's beautiful, fast, and fluid design is perfect for a wide range of hardware. And you'll love browsing through the Windows Store and downloading all the apps you want. And those apps can work together too so you can share photos, maps, contacts, links and whatever else you want faster and easier. **All editions** of Windows 8 offer a no-compromise experience.

First, **Windows 8** is the official product name for the next x86/64 editions of Windows.

For PCs and tablets powered by x86 processors (both 32 and 64 bit), we will have two editions: **Windows 8** and **Windows 8 Pro**. For many consumers, Windows 8 will be the right choice. It will include all the features above plus an **updated Windows Explorer, Task Manager, better multi-monitor support** and the ability to switch languages on the fly (more details on this feature can be found in [this blog post](#)), which was previously only available in Enterprise/Ultimate editions of Windows. For China and a small set of select emerging markets, we will offer a local language-only edition of Windows 8.

Windows 8 Pro is designed to help tech enthusiasts and business/technical professionals obtain a broader set of Windows 8 technologies. It includes all the features in Windows 8 plus features for encryption, virtualization, PC management and domain connectivity. Windows Media Center will be available as an economical "media pack" add-on to Windows 8 Pro. If you are an enthusiast or you want to use your PC in a business environment, you will want Windows 8 Pro.

Windows RT is the newest member of the Windows family – also known as Windows on ARM or WOA, as we've referred to it [previously](#). This single edition will only be available pre-installed on PCs and tablets powered by ARM processors and will help enable new thin and lightweight form factors with impressive battery life. Windows RT will include touch-optimized desktop versions of the new Microsoft Word, Excel, PowerPoint, and OneNote. For new apps, the focus for Windows RT is development on the new Windows runtime, or WinRT, which





we unveiled in September and forms the foundation of a new generation of cloud-enabled, touch-enabled, web-connected apps of all kinds. For more details on WOA, we suggest reading [this blog post](#) which shares more detail on how we have been building Windows 8 to run on the ARM architecture.

The below chart breaks down key features by edition (this list should not be considered an exhaustive list of features):

Feature name	Windows 8	Windows 8 Pro	Windows RT
Upgrades from Windows 7 Starter, Home Basic, Home Premium	x	x	
Upgrades from Windows 7 Professional, Ultimate		x	
Start screen, Semantic Zoom, Live Tiles	x	x	x
Windows Store	x	x	x
Apps (Mail, Calendar, People, Messaging, Photos, SkyDrive, Reader, Music, Video)	x	x	x
Microsoft Office (Word, Excel, PowerPoint, OneNote)			x
Internet Explorer 10	x	x	x
Device encryption			x
Connected standby	x	x	x
Microsoft account	x	x	x
Desktop	x	x	x
Installation of x86/64 and desktop software	x	x	
Updated Windows Explorer	x	x	x
Windows Defender	x	x	x
SmartScreen	x	x	x
Windows Update	x	x	x
Enhanced Task Manager	x	x	x
Switch languages on the fly (Language Packs)	x	x	x
Better multiple monitor support	x	x	x
Storage Spaces	x	x	



Windows Media Player	x	x	
Exchange ActiveSync	x	x	x
File history	x	x	x
ISO / VHD mount	x	x	x
Mobile broadband features	x	x	x
Picture password	x	x	x
Play To	x	x	x
Remote Desktop (client)	x	x	x
Reset and refresh your PC	x	x	x
Snap	x	x	x
Touch and Thumb keyboard	x	x	x
Trusted boot	x	x	x
VPN client	x	x	x
BitLocker and BitLocker To Go		x	
Boot from VHD		x	
Client Hyper-V		x	
Domain Join		x	
Encrypting File System		x	
Group Policy		x	
Remote Desktop (host)		x	

In the coming months, we plan to share much more information about Windows 8, including details on pricing and limited-time programs and promotions that we will make available to customers. Today, you can check out [a preview of Windows 8](#) for yourself (if you haven't already done so!).

NOTE: As with previous versions of Windows, we will also have an edition of Windows 8 specifically for those enterprise customers with Software Assurance agreements. Windows 8 Enterprise includes all the features of Windows 8 Pro plus features for IT organization that enable PC management and deployment, advanced security, virtualization, new mobility scenarios, and much more.



Service a Windows Image

This topic has not yet been rated - [Rate this topic](#)

Published: February 29, 2012

Updated: May 31, 2012

Applies To: Windows 8, Windows Server 2008 R2, Windows Server 2012

The Deployment Image Servicing and Management (DISM) tool lets users enumerate drivers and packages, modify configuration settings, add and remove drivers without using an unattended answer file, and more. You can use DISM offline on a WIM or VHD file, or online on a running operating system.

Offline servicing allows you to modify or service a Windows® image entirely offline, without booting it first. This can reduce deployment costs because you can customize images to a degree before the operating system is deployed to the computer. In addition, if you have a stored master image that you want to make sure is always up to date, you can maintain it without booting the image.

You can also use DISM to service an image online. If you have to boot the operating system to install an application or test and validate the installation, you can boot to audit mode and add drivers and packages, or enable features and international settings.



In This Section

[How to Add and Remove Drivers Offline](#)

[How to Enable or Disable Windows Features](#)

[How to Add or Remove Packages Offline](#)

[How to Add and Remove Language Packs Offline](#)

[How to Add and Remove Apps](#)

[How to Customize the Start Screen](#)

[How to Change the Windows Image to a Higher Edition](#)

[How to Export or Import Default Application Associations](#)

[Walkthrough: Service a Mounted Windows Image](#)

[Walkthrough: Service an Applied Windows Image](#)

See Also

Tasks

[How to Take Inventory of an Image or Component](#)

Concepts

[Understanding Servicing Strategies](#)

Add or remove drivers from an offline image using either DISM or an unattended answer file.

Enable or disable features in a Windows image using DISM. You can also remove a feature to install on-demand, and restore a previously removed feature.

Add or remove packages from an offline image using either DISM or an unattended answer file.

Add or remove language packs and configure international settings in an offline image using DISM.

Install line-of-business (LOB) Windows® Store apps to a Windows image by using Windows PowerShell® or the Deployment Image Servicing and Management (DISM) platform.

Customize the Start screen to include Windows Store apps and desktop apps that you use in your business.

Query an image to determine which edition of Windows the image is, and how to change the image to a higher edition of Windows.

Change the default programs associated with a file name extension or protocol in a Windows image.

Use DISM to mount an image and modify it.

Use DISM to apply an image and then modify it.



Windows To Go: Feature Overview

454 out of 560 rated this helpful - [Rate this topic](#)

Published: February 29, 2012

Updated: November 15, 2012

Applies To: Windows 8

Windows To Go is an enterprise feature of Windows® 8 that enables the creation of a Windows To Go workspace that can be booted from a USB-connected external drive on PCs that meet the Windows 7 or Windows 8 [certification requirements](#), regardless of the operating system running on the PC. Windows To Go workspaces can use the same image enterprises use for their desktops and laptops and can be managed the same way. Windows To Go is not intended to replace desktops, laptops or supplant other mobility offerings. Rather, it provides support for efficient use of resources for alternative workplace scenarios. There are some additional considerations that you should keep in mind before you start to use Windows To Go:

- [Differences between Windows To Go and a typical installation of Windows](#)
- [Roaming with Windows To Go](#)
- [Preparing for Windows To Go](#)
- [Hardware considerations for Windows To Go](#)

Note

Windows To Go is not supported on Windows RT.

[Differences between Windows To Go and a typical installation of Windows](#)

Windows To Go workspace operates just like any other installation of Windows with a few exceptions. These exceptions are:



- **Internal disks are offline.** To ensure data isn't accidentally disclosed, internal hard disks on the host computer are offline by default when booted into a Windows To Go workspace. Similarly if a Windows To Go drive is inserted into a running system the Windows To Go drive will not be listed in Windows Explorer.
- **Trusted Platform Module (TPM) isn't used.** When using BitLocker Drive Encryption a pre-operating system boot password will be used for security rather than the TPM since the TPM is tied to a specific computer and Windows To Go drives will move between computers.
- **Hibernate is disabled by default.** To ensure that the Windows To Go workspace is able to move between computers easily, hibernation is disabled by default. Hibernation can be re-enabled by using Group Policy settings.
- **Windows Recovery Environment isn't available.** In the rare case that you need to recover your Windows To Go drive, you should re-image it with a fresh image of Windows.
- **Refreshing or resetting a Windows To Go workspace is not supported.** Resetting to the manufacturer's standard for the computer doesn't apply when running a Windows To Go workspace, so the feature was disabled.
- **Store is disabled by default.** Apps licensed through the store are linked to hardware for licensing. Since Windows To Go is designed to roam to different host PCs access to the store is disabled. You can enable the store if your Windows To Go workspaces won't be roaming to multiple PC hosts.

[Roaming with Windows To Go](#)

Windows To Go drives can be booted on multiple computers. When a Windows To Go workspace is first booted on a host computer it will detect all hardware on the computer and install any needed drivers. When the Windows To Go workspace is subsequently booted on that host computer it will be able to identify the host computer and load the correct set of drivers automatically.

The applications that you want to use from the Windows To Go workspace should be tested to make sure they also support roaming. Some applications bind to the computer hardware which will cause difficulties if the workspace is being used with multiple host computers.

[Preparing for Windows To Go](#)



Enterprises install Windows on a large group of computers either by using configuration management software (such as System Center Configuration Manager), or by using standard Windows 8 deployment tools such as DiskPart, ImageX, and the Deployment Image Servicing and Management (DISM) tool.

These same tools can be used to provision Windows To Go drive, just as you would if you were planning for provisioning a new class of mobile PCs. You can use the [Windows Assessment and Deployment Kit](#) to review deployment tools available.

Important

Make sure you use the versions of the deployment tools provided for Windows 8. There have been many enhancements made to support Windows To Go. Using one of the previous versions of the deployment tools to provision a Windows To Go drive is not supported.

As you are deciding what to include in your Windows To Go image, be sure to consider the following questions:

- Are there any drivers that you need to inject into the image?
- How will data be stored and synchronized to appropriate locations from the USB device?
- Are there any applications that are incompatible with Windows To Go roaming that should not be included in the image?
- What should be the architecture of the image - 32bit/64bit?
- What remote connectivity solution should be supported in the image if Windows To Go is used outside the corporate network?

For more information about designing and planning your Windows To Go deployment, see [Prepare Your Organization for Windows To Go](#)

[Hardware considerations for Windows To Go](#)

For USB drives

The devices listed in this section have been specially optimized and certified for Windows To Go and meet the necessary requirements for booting and running a full version of Windows 8 from a USB drive. The optimizations for Windows To Go include the following:



- Windows To Go certified flash drives are built for high random read/write speeds and support the thousands of random access I/O operations per second required for running normal Windows workloads smoothly.
- Windows To Go certified drives have been tuned to ensure they boot and run on hardware certified for use with either Windows 7 or Windows 8.
- Windows To Go certified drives are built to last. Certified drives are backed with manufacturer warranties and should continue operating under normal usage. Refer to the manufacturer websites for warranty details.

As of the date of publication, the following are the USB drives currently certified for use as Windows To Go drives; as more drives are certified for use with Windows To Go this list will be updated:

⚠Warning

Using a USB drive that has not been certified is not supported

- Kingston DataTraveler Workspace for Windows To Go (<http://www.kingston.com/wtg/>)
- Spyrus Portable Workplace (<http://www.spyruswtg.com/>)

We recommend that you run the Spyrus Deployment Suite for Windows To Go to provision the Spyrus Portable Workplace.

- Spyrus Secure Portable Workplace (<http://www.spyruswtg.com/>)

Important

You must use the Spyrus Deployment Suite for Windows To Go to provision the Spyrus Secure Portable Workplace. For more information about the Spyrus Deployment Suite for Windows To Go please refer to <http://www.spyruswtg.com/>.

- Super Talent Express RC8 for Windows To Go (<http://www.supertalent.com/wtg/>)
- Western Digital My Passport Enterprise (<http://www.wd.com/wtg>)

We recommend that you run the WD Compass utility to prepare the Western Digital My Passport Enterprise drive for provisioning with Windows To Go. For more information about the WD Compass utility please refer to <http://www.wd.com/wtg>



For host computers

When assessing the use of a PC as a host for a Windows To Go workspace you should consider the following criteria:

- Hardware that has been certified for use with either Windows 7 or Windows 8 operating systems will work well with Windows To Go.
- Running a Windows To Go workspace from a computer that is running Windows RT is not a supported scenario.
- Running a Windows To Go workspace on a Mac computer is not a supported scenario.

The following table details the characteristics that the host computer must have to be used with Windows To Go:

Item	Requirement
Boot process	Capable of USB boot
Firmware	USB boot enabled. (PCs certified for use with Windows 7 or Windows 8 can be configured to boot directly from USB, check with the hardware manufacturer if you are unsure of the ability of your PC to boot from USB)
Processor architecture	Must support the image on the Windows To Go drive
External USB Hubs	Not supported; connect the Windows To Go drive directly to the host machine.
Processor	1 Ghz or faster
RAM	2 GB or greater
Graphics	DirectX 9 graphics device with WDDM 1.2 or greater driver.
USB port	USB 2.0 port or greater

Checking for architectural compatibility between the host PC and the Windows To Go drive

In addition to the USB boot support in the BIOS, the Windows 8 image on your Windows To Go drive must be compatible with the processor architecture and the firmware of the host PC as shown in the table below.

Host PC Firmware Type Host PC Processor Architecture Compatible Windows To Go Image Architecture



Legacy BIOS	32-bit	32-bit only
Legacy BIOS	64-bit	32-bit and 64-bit
UEFI BIOS	32-bit	32-bit only
UEFI BIOS	64-bit	64-bit only

[Additional resources](#)

- [Windows 8 Forum](#)
- [Windows To Go Step by Step Wiki](#)
- [Tips for configuring your BIOS settings to work with Windows To Go](#)

[Related topics](#)

- [Deploy Windows To Go in Your Organization](#)
- [Windows To Go: Frequently Asked Questions](#)
- [Prepare Your Organization for Windows To Go](#)
- [Deployment Considerations for Windows To Go](#)
- [Security and Data Protection Considerations for Windows To Go](#)
- [Best Practice Recommendations for Windows To Go](#)



User State Migration Tool (USMT) Technical Reference

5 out of 5 rated this helpful - [Rate this topic](#)

Published: February 29, 2012

Updated: May 31, 2012

Applies To: Windows 8

The User State Migration Tool (USMT) 5.0 is included with the Windows® Assessment and Deployment Kit (Windows ADK) for Windows® 8. USMT provides a highly customizable user-profile migration experience for IT professionals.

Download the Windows ADK [from this website](#).

USMT 5.0 includes three command-line tools:

- ScanState.exe version 6.2
- LoadState.exe version 6.2
- UsmtUtils.exe version 6.2

USMT 5.0 also includes a set of three modifiable .xml files:

- MigApp.xml
- MigDocs.xml
- MigUser.xml

Additionally, you can create custom .xml files to support your migration needs. You can also create a Config.xml file to specify files or settings to exclude from the migration.



USMT 5.0 tools can be used on several versions of Windows operating systems, for more information, see [USMT Requirements](#). For more information about previous releases of the USMT tools, see [User State Migration Tool \(USMT\) 4.0 User's Guide](#).

In This Section

[User State Migration Tool \(USMT\) Overview Topics](#)

Describes what's new in USMT, how to get started with USMT, and the benefits and limitations of using USMT.

[User State Migration Tool \(USMT\) How-to topics](#)

Includes step-by-step instructions for using USMT, as well as how-to topics for conducting tasks in USMT.

[User State Migration Tool \(USMT\) Troubleshooting](#)

Provides answers to frequently asked questions and common issues in USMT, as well as a reference for return codes used in USMT.

[User State Migration Toolkit \(USMT\) Reference](#)

Includes reference information for migration planning, migration best practices, command-line syntax, using XML, and requirements for using USMT.

See Also

Other Resources

[Assessment and Deployment Kit Technical Reference](#)



Folder Redirection, Offline Files, and Roaming User Profiles overview

4 out of 6 rated this helpful - [Rate this topic](#)

Published: February 29, 2012

Updated: September 12, 2012

Applies To: Windows 8, Windows Server 2012

This topic discusses the Folder Redirection, Offline Files (client-side caching or CSC), and Roaming User Profiles (sometimes known as RUP) technologies, including what's new in Windows 8 and Windows Server 2012 and where to find additional information.

[Did you mean...](#)

- [Offline Files and Folder Redirection](#) (Windows 7 and Windows Server 2008 R2)
- [BranchCache Overview](#)

[Technology description](#)

Folder Redirection and Offline Files are used together to redirect the path of local folders (such as the Documents folder) to a network location, while caching the contents locally for increased speed and availability. Roaming User Profiles is used to redirect a user profile to a network location. These features used to be referred to as Intellimirror.

- **Folder Redirection** enables users and administrators to redirect the path of a known folder to a new location, manually or by using Group Policy. The new location can be a folder on the local computer or a directory on a file share. Users interact with files in the redirected folder as if it still existed on the local drive. For example, you can redirect the Documents folder, which is usually stored on a local drive, to a network location. The files in the folder are then available to the user from any computer on the network.



- **Offline Files** makes network files available to a user, even if the network connection to the server is unavailable or slow. When working online, file access performance is at the speed of the network and server. When working offline, files are retrieved from the Offline Files folder at local access speeds. A computer switches to Offline Mode when:
 - The new *Always Offline* mode has been enabled
 - The server is unavailable
 - The network connection is slower than a configurable threshold
 - The user manually switches to Offline Mode by using the **Work offline** button in Windows Explorer
- **Roaming User Profiles** redirects user profiles to a file share so that users receive the same operating system and application settings on multiple computers. When a user signs in to a computer by using an account that is set up with a file share as the profile path, the user's profile is downloaded to the local computer and merged with the local profile (if present). When the user signs out of the computer, the local copy of their profile, including any changes, is merged with the server copy of the profile. Roaming User Profiles is typically enabled on domain accounts by a network administrator.

[Practical applications](#)

Administrators can use Folder Redirection, Offline Files, and Roaming User Profiles to centralize storage for user data and settings and to provide users with the ability to access their data while offline or in the event of a network or server outage. Some specific applications include:

- Centralize data from client computers for administrative tasks, such as using a server-based backup tool to back up user folders and settings.
- Enable users to continue accessing network files, even if there is a network or server outage.
- Optimize bandwidth usage and enhance the experience of users in branch offices who access files and folders that are hosted by corporate servers located offsite.
- Enable mobile users to access network files while working offline or over slow networks.



[New and changed functionality](#)

The following table describes some of the major changes in Folder Redirection, Offline Files, and Roaming User Profiles that are available in this release.

Feature/functionality	New or updated?	Description
Always Offline mode	New	Provides faster access to files and lower bandwidth usage by always working offline, even when connected through a high-speed network connection.
Cost-aware synchronization	New	Helps users avoid high data usage costs from synchronization while using metered connections that have usage limits, or while roaming on another provider's network.
Primary Computer support	New	Enables you to limit the use of Folder Redirection, Roaming User Profiles, or both to only a user's primary computers.

[Always Offline mode](#)

In Windows 8 and Windows Server 2012, administrators can configure the experience for users of Offline Files to always work offline, even when they are connected through a high-speed network connection. Windows updates files in the Offline Files cache by synchronizing hourly in the background, by default.

What value does this change add?

The Always Offline mode provides the following benefits:

- Users experience faster access to files in redirected folders, such as the Documents folder.
- Network bandwidth is reduced, decreasing costs on expensive WAN connections or metered connections such as a 4G mobile network.



What works differently?

Prior to Windows 8 and Windows Server 2012, users would transition between the Online and Offline modes, depending on network availability and conditions, even when the Slow-Link mode (also known as the Slow Connection mode) was enabled and set to a 1 millisecond latency threshold.

With Always Offline mode, computers running Windows 8 and Windows Server 2012 never transition to Online mode when the **Configure slow-link mode** Group Policy setting is configured and the **Latency** threshold parameter is set to 1 millisecond. Changes are synced in the background every 120 minutes, by default, but synchronization is configurable by using the **Configure Background Sync** Group Policy setting.

For more information, see [Enable the Always Offline Mode to Provide Faster Access to Files](#).

[Cost-aware synchronization](#)

With cost-aware synchronization, Windows disables background synchronization when the user is using a metered network connection, such as a 4G mobile network, and the subscriber is near or over their bandwidth limit, or roaming on another provider's network.

Note

Metered network connections usually have round-trip network latencies that are slower than the default 35 millisecond latency value for transitioning to Offline (Slow Connection) mode in Windows 8 and Windows Server 2012. Therefore, these connections usually transition to Offline (Slow Connection) mode automatically.

What value does this change add?

Cost-aware synchronization helps users avoid unexpectedly high data usage costs while using metered connections that have usage limits, or while roaming on another provider's network.



What works differently?

Prior to Windows 8 and Windows Server 2012, users who wanted to minimize fees while using Offline Files on metered network connections had to track their data usage by using tools from the mobile network provider. The users could then manually switch to Offline mode when they were roaming, near their bandwidth limit, or over their limit.

In Windows 8 and Windows Server 2012, Windows automatically tracks roaming and bandwidth usage limits while on metered connections. When the user is roaming, near their bandwidth limit, or over their limit, Windows switches to Offline mode and prevents all synchronization. Users can still manually initiate synchronization, and administrators can override cost-aware synchronization for specific users, such as executives.

For more information, see [Enable Background File Synchronization on Metered Networks](#).

[Primary computers for Folder Redirection and Roaming User Profiles](#)

In Windows Server 2012, you can designate a set of computers, known as primary computers, for each domain user, which enables you to control which computers use Folder Redirection, Roaming User Profiles, or both. Designating primary computers is a simple and powerful method to associate user data and settings with particular computers or devices, simplify administrator oversight, improve data security, and help protect user profiles from corruption.

What value does this change add?

There are four major benefits to designating primary computers for users:

- The administrator can specify which computers users can use to access their redirected data and settings. For example, the administrator can choose to roam user data and settings between a user's desktop and laptop, and to not roam the information when that user logs on to any other computer, such as a conference room computer.
- Designating primary computers reduces the security and privacy risk of leaving residual personal or corporate data on computers where the user has logged on. For example, a general manager who logs on to an employee's computer for temporary access does not leave behind any personal or corporate data.



- Primary computers enable the administrator to mitigate the risk of an improperly configured or otherwise corrupt profile, which could result from roaming between differently configured systems, such as between x86-based and x64-based computers.
- The amount of time required for a user's first sign-in on a non-primary computer, such as a server, is faster because the user's roaming user profile and/or redirected folders are not downloaded. Sign-out times are also reduced, because changes to the user profile do not need to be uploaded to the file share.

What works differently?

To limit downloading private user data to primary computers, the Folder Redirection and Roaming User Profiles technologies perform the following logic checks when a user signs in to a computer:

1. The Windows operating system checks the new Group Policy settings (**Download roaming profiles on primary computers only** and **Redirect folders on primary computers only**) to determine if the **msDS-Primary-Computer** attribute in Active Directory Domain Services (AD DS) should influence the decision to roam the user's profile or apply Folder Redirection.
2. If the policy setting enables primary computer support, Windows verifies that the AD DS schema supports the **msDS-Primary-Computer** attribute. If it does, Windows determines if the computer that the user is logging on to is designated as a primary computer for the user as follows:
 1. If the computer is one of the user's primary computers, Windows applies the Roaming User Profiles and Folder Redirection settings.
 2. If the computer is not one of the user's primary computers, Windows loads the user's cached local profile, if present, or it creates a new local profile. Windows also removes any existing redirected folders according to the removal action that was specified by the previously applied Group Policy setting, which is retained in the local Folder Redirection configuration.

For more information, see [Deploy Primary Computers for Folder Redirection and Roaming User Profiles](#)

[Hardware requirements](#)

Folder Redirection, Offline Files, and Roaming User Profiles require an x64-based or x86-based computer, and they are not supported by Windows on ARM (WOA)-based computers.



[Software requirements](#)

To designate primary computers, your environment must meet the following requirements:

- The Active Directory Domain Services (AD DS) schema must be updated to include Windows Server 2012 schema additions (installing a Windows Server 2012 domain controller automatically updated the schema). For information about updating the AD DS schema, see [What's new for Adprep.exe?](#) and [Running Adprep.exe](#).
- Client computers must run Windows 8 or Windows Server 2012 and be joined to the Active Directory domain that you are managing.

[See also](#)

For additional related information, see the following resources.

Content type	References
Product evaluation	Supporting Information Workers with Reliable File Services and Storage What's New in Offline Files (Windows 7 and Windows Server 2008 R2) What's New in Offline Files for Windows Vista Changes to Offline Files in Windows Vista (TechNet Magazine)
Deployment	Deploy Folder Redirection, Offline Files, and Roaming User Profiles Implementing an End-User Data Centralization Solution: Folder Redirection and Offline Files Technology Validation and Deployment Managing Roaming User Data Deployment Guide Configuring New Offline Files Features for Windows 7 Computers Step-by-Step Guide Using Folder Redirection Implementing Folder Redirection (Windows Server 2003)
Tools and settings	Primary Computer Windows PowerShell cmdlets Offline Files on MSDN Offline Files Group Policy Reference (Windows 2000)
Community resources	Hey, Scripting Guy! How Can I Work with the Offline Files Feature in Windows? Hey, Scripting Guy! How Can I Enable and Disable Offline Files?
Related technologies	Active Directory Domain Services Overview File and Storage Services Overview Remote Desktop Services Overview



Overview of Application Virtualization

42 out of 50 rated this helpful - [Rate this topic](#)

Updated: January 11, 2010

Applies To: Application Virtualization

Microsoft Application Virtualization (App-V) can make applications available to end user computers without having to install the applications directly on those computers. This is made possible through a process known as *sequencing the application*, which enables each application to run in its own self-contained virtual environment on the client computer. The sequenced applications are isolated from each other. This eliminates application conflicts, but the applications can still interact with the client computer.

The App-V client is the feature that lets the end user interact with the applications after they have been published to the computer. The client manages the virtual environment in which the virtualized applications run on each computer. After the client has been installed on a computer, the applications must be made available to the computer through a process known as *publishing*, which enables the end user to run the virtual applications. The publishing process copies the virtual application icons and shortcuts to the computer—typically on the Windows desktop or on the **Start** menu—and also copies the package definition and file type association information to the computer. Publishing also makes the application package content available to the end user's computer.

The virtual application package content can be copied onto one or more Application Virtualization servers so that it can be streamed down to the clients on demand and cached locally. File servers and Web servers can also be used as streaming servers, or the content can be copied directly to the end user's computer—for example, if you are using an electronic software distribution system, such as Microsoft System Center Configuration Manager 2007. In a multi-server implementation, maintaining the package content and keeping it up to date on all the streaming servers requires a comprehensive package management solution. Depending on the size of your organization, you might need to have many virtual applications available to end users located all over the world. Managing the packages to ensure that the appropriate applications are available to all users where and when they need access to them is therefore an important requirement.



Microsoft Application Virtualization System Features

The following table describes the primary features of the Microsoft Application Virtualization Management System.

Feature	Function	Additional Information
Microsoft Application Virtualization Management Server	Responsible for streaming the package content and publishing the shortcuts and file type associations to the Application Virtualization client.	The Application Virtualization Management Server supports active upgrade, License Management, and a database that can be used for reporting.
Content folder	Indicates the location of the Application Virtualization packages for streaming.	This folder can be located on a share on or off the Application Virtualization Management Server.
Microsoft Application Virtualization Management Console	This console is an MMC 3.0 snap-in management tool used for Microsoft Application Virtualization Server administration.	This tool can be installed on the Microsoft Application Virtualization server or located on a separate workstation that has Microsoft Management Console (MMC) 3.0 and Microsoft .NET Framework 2.0 installed.
Microsoft Application Virtualization Management Web Service	Responsible for communicating any read and write requests to the Application Virtualization data store.	The Management Web Service can be installed on the Microsoft Application Virtualization Management server or on a separate computer that has Microsoft Internet Information Services (IIS) installed.
Microsoft Application Virtualization Data Store	The App-V SQL Server database responsible for storing all information related to the Application Virtualization infrastructure.	This information includes all application records, application assignments, and which groups have responsibility for managing the Application Virtualization environment.
Microsoft Application Virtualization Streaming Server	Responsible for hosting the Application Virtualization packages for streaming to clients in a branch office, where the link back to the Application Virtualization Management Server is considered a wide area networks (WAN) connection.	This server contains streaming functionality only and provides neither the Application Virtualization Management Console nor the Application Virtualization Management Web Service.



Microsoft Application
Virtualization
Sequencer

The sequencer is used to monitor and capture the installation of applications to create virtual application packages.

Microsoft Application
Virtualization Client

The Application Virtualization Desktop Client and the Application Virtualization Client for Remote Desktop Services provide and manage the virtual environment for the virtualized applications.

The output consists of the application's icons, an .osd file that contains package definition information, a package manifest file, and the .sft file that contains the application program's content files.

The Microsoft Application Virtualization client manages the package streaming into cache, publishing refresh, transport, and all interaction with the Application Virtualization servers.

ELITE SOLUTIONS



Managing Client Access to the Windows Store

127 out of 165 rated this helpful - [Rate this topic](#)

Published: February 29, 2012

Updated: August 22, 2012

Applies To: Windows 8

Windows Store is available in Windows® 8. IT Administrators can control the availability and functionality of Windows Store to client computers based on the business policies of their enterprise environment. The following covers frequently asked questions by IT Pros about managing aspects of client access to the Windows Store in an enterprise environment.

[Overview](#)

- [What is a Windows app?](#)
- [What is LOB?](#)
- [What is sideloading? Does the Windows Store allow it?](#)
- [Can I use Group Policy to control the Windows Store in my enterprise environment?](#)
- [Are there any special considerations while configuring access permissions on system resources through Group Policy?](#)
- [Are any Windows Store privacy settings controlled by Group Policy?](#)

[Windows Store Availability](#)

- [Can I turn access to the Windows Store on or off?](#)



- [Am I required to go through the Windows Store to deploy Windows apps?](#)
- [What about devices that move between work and home? Is it possible to manage availability of the Windows Store on these devices?](#)

[Managing Apps](#)

- [How much control does an IT Administrator have over the Windows apps that can be installed in their environment?](#)
- [Do I have any control over which third-party apps can be installed from the Windows Store?](#)
- [What about devices that move between work and home? Is it possible to manage apps and updates available from the Windows Store on these devices?](#)

[Managing Updates](#)

- [Can I control which third-party app updates are available from the Windows Store?](#)
- [Is it possible to configure the Windows Store to perform automatic updates?](#)
- [Can I control the auto download of updates that are available from the Windows Store?](#)

[Overview](#)

[What is a Windows app?](#)

Windows apps are designed to be sleek, quick, and modern with groups of common tasks consolidated to speed up usage. The core concepts of a Windows app include good typography, large, eye-catching text, where the content is the main focus.

For more information about the concept of Windows apps, see [What are Windows apps?](#) on MSDN.



[What is LOB?](#)

LOB stands for line-of-business. Line-of-business apps require users to authenticate using corporate credentials, access internal information, or are designed specifically for internal use. For example, an expense report app provided by the IT department for employees.

[What is sideloading? Does the Windows Store allow it?](#)

Sideloading, which is available in both Windows 8 and Windows Server 2012, refers to installing apps directly to a device without going through the Windows Store. LOB apps do not need to be certified by Microsoft and cannot be installed through the Windows Store, but they must be signed with a certificate chained to a trusted root certificate. We recommend that IT administrators use the same technical certification that is done by the Windows Store on LOB apps.

For more information about sideloading, see [How to Add and Remove Apps](#).

For more information about running the technical certification tests, see [How to test your app with the Windows App Certification Kit](#).

[Can I use Group Policy to control the Windows Store in my enterprise environment?](#)

Yes. IT Administrators can use group policy to allow or prohibit their users from accessing the Windows Store, affect the auto download of updates of apps acquired from the Windows Store, and manage the abilities of sideloading app installations.

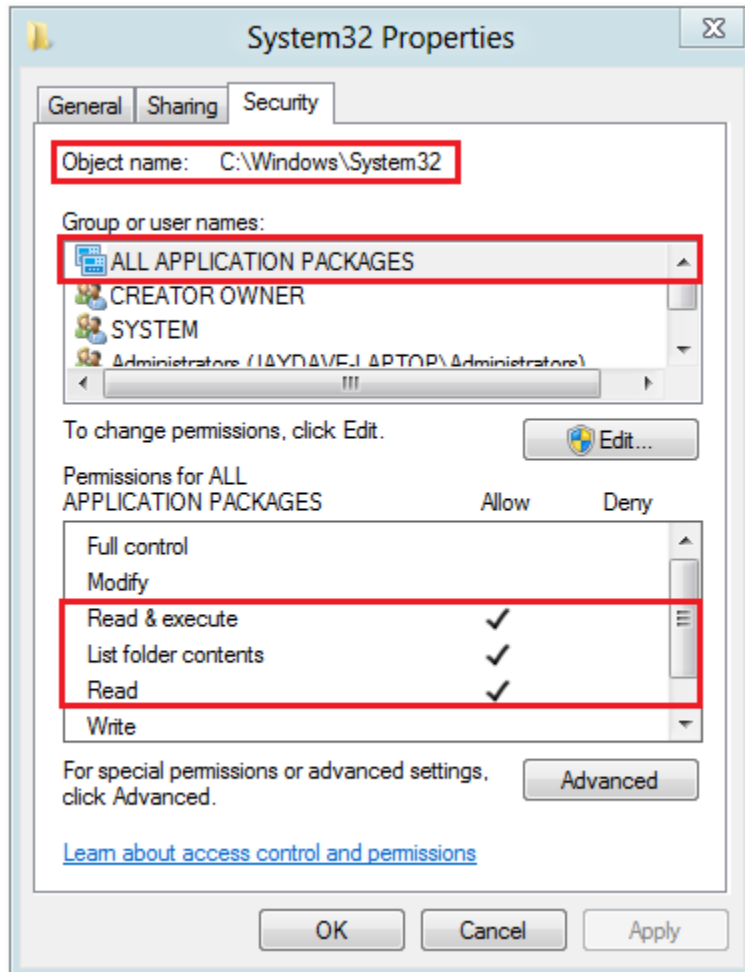
[Are there any special considerations while configuring access permissions on system resources through Group Policy?](#)

Yes. Windows apps run with very limited user rights compared to their non-Windows 8 counterparts that run with standard user rights by default. Windows apps can access only those resources (files, folders, registry keys, and DCOM interfaces) to which they have been explicitly granted access. For example, if a new folder is created in **C:\Personal Docs** and files are copied into that folder, none



of the Windows apps can access those files because the apps have not been granted explicit access. However, the access permissions (ACLs) on critical system resources such as the **Windows\System32** folder contain a special rule (ACE) that grants all Windows apps the permissions necessary for any app to run.

The figure below highlights the default permissions on the **Windows\System32** folder that grant read and execute permissions to all Windows apps:





The default permissions (ACLs) on system resources can be modified using different methods. For example:

- The access and launch permissions on DCOM interfaces can be modified through the following Group Policy setting: **Local Policies, Security Options, DCOM: Machine Access/Launch Restrictions in SDDL Syntax**.

For more information, see DCOM: Machine Launch Restrictions in Security Descriptor Definition Language (SDDL) syntax on TechNet.

- Access permissions on file system and registry objects can be changed through Security Templates.

For more information, see Administer Security Policy Settings on TechNet.

While configuring the access permissions on any of these resources, it is important to identify which of these resources grants access to all Windows apps and ensure that the new effective permissions do not remove that access. When supplying the permissions in SDDL form, the security identifier (SID) for **ALL APPLICATION PACKAGES** is **S-1-15-2-1**.

Warning

Incorrectly configured access permissions will cause all Windows apps to fail.

An example of an SDDL representation of an ACE that grants generic read and run permissions all Windows apps is: **(A;OICIO;GXGR;;;AC);**, where **AC** refers to **ALL APPLICATION PACKAGES**.

[Are any Windows Store privacy settings controlled by Group Policy?](#)

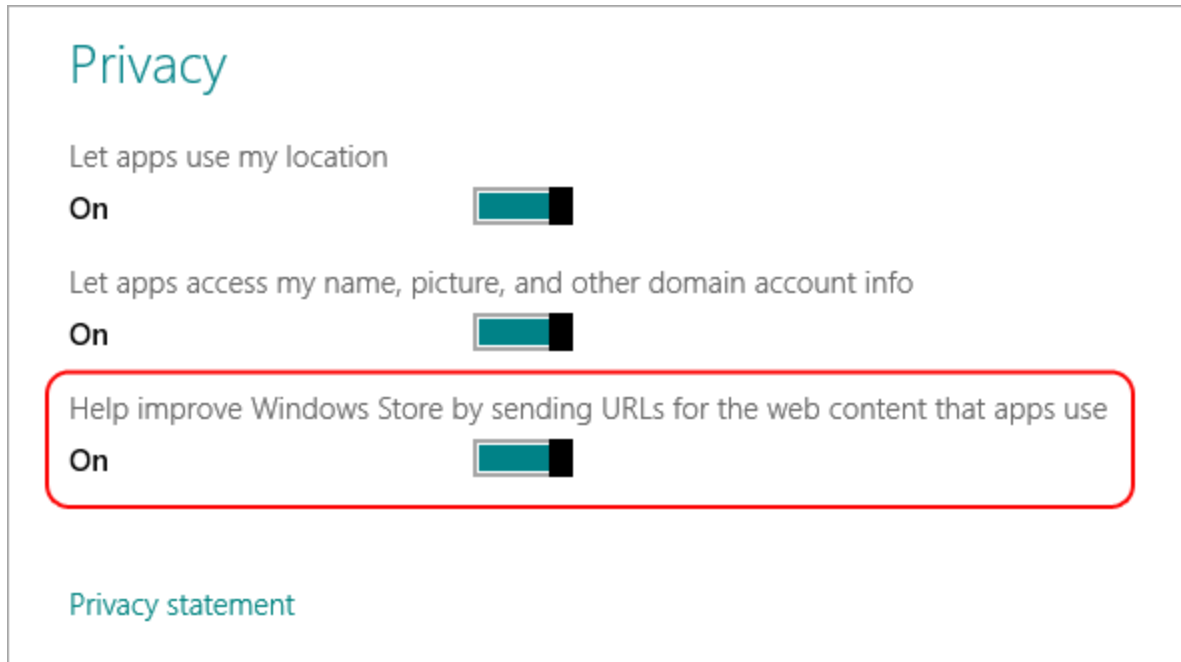
Yes. The following registry key controls Windows Store privacy settings:

Copy

```
<registryKey keyName="HKLM\Software\Policies\Microsoft\Windows\CurrentVersion\AppHost">  
  <registryValue
```



```
name="EnableWebContentEvaluation"  
value="0x00000001"  
valueType="REG_DWORD"  
</pre>
```



A value of **1** indicates that telemetry is enabled, and a value of **0** indicates that it is disabled.

[Windows Store Availability](#)

[Can I turn access to the Windows Store on or off?](#)

Yes. IT Administrators can turn access to the Windows Store on or off in the following ways:

- For specific machines



- For specific users and groups

[Am I required to go through the Windows Store to deploy Windows apps?](#)

We offer support for enterprises that want direct control over the deployment of LOB apps. Enterprises can choose to deploy LOB apps directly to the computers they manage without going through the Windows Store infrastructure.

[What about devices that move between work and home? Is it possible to manage availability of the Windows Store on these devices?](#)

No, an IT Administrator can only manage access to the Windows Store by using Group Policy settings deployed to a domain joined device.

[Managing Apps](#)

[How much control does an IT Administrator have over the Windows apps that can be installed in their environment?](#)

By default, the only Windows apps that can be installed on Windows 8 are ones that are installed from the Windows Store.

An IT Administrator can control access to which Windows apps can be installed by using App Locker. These policies can be enabled on apps from the Windows Store or LOB apps that have been sideloaded by the IT Administrator.

For more information about using App Locker to manage Windows apps, see the [AppLocker Overview](#).

[Do I have any control over which third-party apps can be installed from the Windows Store?](#)

Yes. Using AppLocker, IT Administrators have complete control of which, if any, third-party apps can be installed from the Windows Store.

[What about devices that move between work and home? Is it possible to manage apps and updates available from the Windows Store on these devices?](#)



No, AppLocker is only available for managing domain joined machines.

[Managing Updates](#)

[Can I control which third-party app updates are available from the Windows Store?](#)

No, app updates from the Windows Store cannot be managed by the IT Administrator.

[Is it possible to configure the Windows Store to perform automatic updates?](#)

No. All updates to apps that come from the Windows Store must be initiated by the user.

[Can I control the auto download of updates that are available from the Windows Store?](#)

Yes, IT administrator can configure the ability of the Windows Store to auto download (but not install) available updates by using Group Policy.



AppLocker Overview

5 out of 6 rated this helpful - [Rate this topic](#)

Published: February 29, 2012

Updated: August 8, 2012

Applies To: Windows 8, Windows Server 2012

This topic lists AppLocker documentation resources for the IT professional that include product evaluation, getting started guides, procedures, design and deployment guides, technical references, and command references for Windows Server 2012 and Windows 8.

You can use AppLocker as part of your overall security strategy for the following scenarios:

- Help prevent malicious software (malware) and unsupported applications from affecting computers in your environment.
- Prevent users from installing and using unauthorized applications.
- Implement application control policy to satisfy portions of your security policy or compliance requirements in your organization.

For more information, see [AppLocker Technical Overview](#).

[What's New](#)

To see what's new in AppLocker for Windows Server 2012 and Windows 8, see the [AppLocker Technical Overview](#).

[Explore](#)



- [Frequently Asked Questions](#)

This FAQ provides answers to common questions about AppLocker for both Windows Server 2008 R2 and Windows Server 2012.

- [AppLocker Demo](#)

This screencast demonstrates the main features of AppLocker introduced in Windows 7.

[Plan](#)

- [AppLocker Step-by-Step Guide](#)

This guide for the IT professional provides step-by-step procedures for using AppLocker and PowerShell commands to restrict the use of applications in a test environment by using Windows Server 2012, Windows Server 2008 R2, Windows 8 and Windows 7.

- [AppLocker Policies Design Guide](#)

This guide introduces the design and planning steps required to deploy application control policies by using AppLocker in Windows Server 2012, Windows Server 2008 R2, Windows 8 and Windows 7.

- [AppLocker Policies Deployment Guide](#)

This guide provides steps based on your design and planning investigation for deploying application control policies by using AppLocker. It is intended for security architects, security administrators, and system administrators using Windows Server 2012, Windows Server 2008 R2, Windows 8 and Windows 7.

- [AppLocker Technical Reference](#)

This technical reference describes AppLocker, how it works, security considerations, tools, and settings. It also contains links to the AppLocker cmdlets in the Windows PowerShell command reference. Information about specific security issues you need to consider when planning for an AppLocker deployment or administering AppLocker is contained in the Security Considerations for AppLocker topic of this technical reference. This reference applies to Windows Server 2012, Windows Server 2008 R2, Windows 8 and Windows 7.



- **Packaged Apps and Packaged App Installer Rules in AppLocker**

This topic explains the AppLocker rule collection for Packaged app installers and Packaged apps introduced in Windows Server 2012 and Windows 8.

Operate

- **Administering AppLocker**

This guide contains the procedures and steps necessary to implement application control policies by using AppLocker and is intended for system administrators or security administrators who are responsible for restricting application usage within organizational units or business groups.

- **Monitoring Application Usage with AppLocker**

This topic shows you how to evaluate how the AppLocker policy is currently implemented for documentation for audit purposes, or before you modify the policy.

- **Optimizing AppLocker Performance**

This topic describes how to optimize AppLocker policy enforcement in Windows Server 2012 and Windows 8.

- **Use AppLocker and Software Restriction Policies in the same domain**

This topic describes concepts and procedures to help you manage your application control strategy using Software Restriction Policies and AppLocker in Windows Server 2012 and Windows 8.

- **AppLocker PowerShell Command Reference**

This reference overview topic introduces the five Windows PowerShell cmdlets that can be used to help manage AppLocker policies.

- **Windows PowerShell Blog: Getting Started with AppLocker management using PowerShell**

The Windows PowerShell Blog provides information about using Windows PowerShell cmdlets for AppLocker.



Internet Explorer 10 - Overview for IT Pros

83 out of 98 rated this helpful - [Rate this topic](#)

[This content is pre-release and subject to change.]

This document provides an overview of Internet Explorer 10 for IT pros. It explains Internet Explorer naming, describes new features in Internet Explorer 10, and describes new Group Policy settings.

Internet Explorer 10 for Windows 8 is designed with business needs in mind. Internet Explorer 10 allows enterprises to continue using existing line-of-business applications, while providing a new browsing experience for the corporate workforce with Windows touch devices.

Internet Explorer 10 naming

Internet Explorer 10 offers two browsing experiences in Windows 8. The following table outlines how we are referring to these experiences in Windows 8.

Name	Description
Internet Explorer 10	The whole browser, which provides two browsing experiences: Internet Explorer and Internet Explorer for the desktop.
Internet Explorer	The touch-centric, immersive browsing experience introduced with the new Windows 8 user interface.
Internet Explorer for the desktop	Similar to Internet Explorer 9, this browsing experience is available on the desktop, and uses a traditional tab layout.

Internet Explorer 10 continues to provide key security and performance features from earlier versions of the browser. For example, tools like the SmartScreen filter help protect corporate customers from socially engineered malware. Hardware acceleration ensures that web apps are fast, and Internet Explorer 10 supports Internet Explorer 9, Internet Explorer 8, Internet Explorer 7, and Quirks compatibility modes.

In addition, Internet Explorer 10 supports modern standards like HTML5, CSS3, and SVG to give corporate developers the ability to build more powerful web apps. The underlying platform is fully interoperable across both Internet Explorer and Internet Explorer for



the desktop, enabling developers to write the same markup for both experiences. Internet Explorer is also plug-in free. Line-of-business applications that require legacy ActiveX controls can use Internet Explorer for the desktop.

IT pros continue to enjoy extensive management and configuration support in Internet Explorer 10, with over 1500 group policies available.

See Also

Concepts

[Exploring Internet Explorer 10 and Windows 8](#)

[Features in Internet Explorer 10](#)

[Group Policy Settings in Internet Explorer 10](#)

[Tools in Internet Explorer 10](#)

[Internet Explorer 10 FAQ for IT Pros](#)

ELITE SOLUTIONS



Internet Explorer 10 FAQ for IT Pros

79 out of 109 rated this helpful - [Rate this topic](#)

This topic provides a set of frequently asked questions about Internet Explorer 10. Topics addressed include Internet Explorer 10 features for IT pros, how Internet Explorer 10 integrates with Windows 8, and what operating systems Internet Explorer 10 runs on. We also answer questions about Group Policy settings and other configuration matters.

How do I install Internet Explorer 10 on Windows 8?

Internet Explorer 10 is installed with Windows 8. No additional action is required.

How does Internet Explorer 10 integrate with Windows 8?

Internet Explorer 10 is the default handler for the HTTP and HTTPS protocols, and the default browser for Windows 8. There are two experiences in Windows 8: Internet Explorer and Internet Explorer for the desktop. Internet Explorer is the default browser for touch-first, immersive experiences. Internet Explorer for the desktop provides a more traditional window and tab management experience. The underlying platform of Internet Explorer 10 is fully interoperable across both Internet Explorer and the familiar Internet Explorer for the desktop, enabling developers to write the same markup for both experiences.

What operating systems does Internet Explorer 10 run on?

Internet Explorer 10 is supported on the following operating systems and platforms:

- Windows 8
- Windows Server 2012

Internet Explorer 10 is expected for Windows® 7 and Windows Server® 2008 R2, but is not currently available for these versions of Windows.



Which security features are new or improved in Internet Explorer 10?

Internet Explorer 10 supports enhanced memory protection and the HTML5 sandbox attribute, as well as Enhanced Protected Mode.

The sandbox attribute enables security restrictions for iframe elements that contain untrusted content. These restrictions enhance security by preventing untrusted content from performing potentially malicious actions. For more information, see [HTML5 sandbox attribute](#) on the Internet Explorer Developer Center.

Enhanced Protected Mode provides additional security. It's enabled by default in Internet Explorer, and can be enabled for Internet Explorer for the desktop via Group Policy and Internet Options on the Tools menu.

What privacy features are new or improved in Internet Explorer 10?

The industry-leading privacy features in Internet Explorer 9 persist in Internet Explorer 10. These features include Tracking Protection functionality, which helps protect users from being tracked online, and InPrivate browsing mode.

What improvements does Internet Explorer 10 provide in supporting modern web standards such as HTML5?

Internet Explorer 10 demonstrates our commitment to an interoperable web by supporting modern web standards. Doing so enables developers to use the same markup across web browsers, helping to reduce development and support costs. Modern web standards that Internet Explorer 10 supports include:

- HTML5 (Asynchronous script execution, AppCache API, channel messaging, drag-and-drop APIs, history, parsing, Sandbox, Spellcheck, video, Web Workers, WebSockets).
- Cascading Style Sheets, Level 3 (Advanced Layout, Visual Effects, Panning and Zooming, Removal of Style Sheet limits).
- Document Object Model (advanced hit-testing APIs, media query listeners, XMLHttpRequest enhancements, and pointer and gesture events).
- Indexed Database API.



- Scalable Vector Graphics (SVG, filters).

For more information about specific changes and additions, see the [Internet Explorer Guide for Developers](#).

Are there any test tools to accurately test for application compatibility with Internet Explorer 10?

Yes. The [Internet Explorer Compatibility Inspector](#) tool supports Internet Explorer 9, and Internet Explorer 10. See [IE10 Compat Inspector](#) on IE Blog for more information.

Is there a compatibility list for Internet Explorer 10?

Yes. See the [compatibility list](#).

Are browser plugins, such as Silverlight, supported in Internet Explorer 10?

Internet Explorer provides an add-on-free experience, so browser plugins don't load and any dependent content isn't displayed. However, Internet Explorer for the desktop does support browser plugins, including ActiveX controls such as Adobe Flash and Microsoft Silverlight. For more information, see [Browsing Without Plug-ins](#) on IEBlog.

Is Adobe Flash supported on Internet Explorer 10?

Internet Explorer 10 includes Adobe Flash as a platform feature. Flash will be available, out of the box for Windows 8, on both Internet Explorer, and Internet Explorer for the desktop. Users can turn it on or off on the Manage Add-ons dialog box. Administrators can use the following Group Policy setting to control Flash usage in their environments: "Turn off Adobe Flash in Internet Explorer and prevent applications from using Internet Explorer technology to instantiate Flash objects".

Can I replace Internet Explorer 10 on Windows 8 with an earlier version of Internet Explorer?

No. Windows 8 supports Internet Explorer 10. Windows 8 does not support earlier versions of Internet Explorer.



Does Internet Explorer 10 add any new Group Policy settings?

Internet Explorer 10 includes the nearly 1,500 Group Policy settings from Internet Explorer 9 that IT pros can use to manage and control the web browser configuration. It also provides new Group Policy settings to support its new features. These include:

- Do not allow ActiveX controls to run in Protected Mode when Enhanced Protected Mode is enabled
- Turn on Enhanced Protected Mode
- Allow websites to store application caches on client computers
- Allow websites to store indexed databases on client computers
- Set application cache storage limits for individual domains
- Set application caches expiration time limit for individual domains
- Set default storage limits for websites
- Set indexed database storage limits for individual domains
- Set maximum application cache individual resource size
- Set maximum application caches storage limit for all domains
- Set maximum indexed database storage limit for all domains
- Start Internet Explorer with tabs from last browsing session
- Prevent Internet Explorer from sending shared links to an online service
- Turn off URL Suggestions
- Open Internet Explorer tiles on the desktop



- Set how links are opened in Internet Explorer
- Set the maximum number of WebSocket connections per server
- Turn off the WebSocket Object
- Do not display the reveal password button
- Install new versions of Internet Explorer automatically
- Enable dragging of content from different domains across windows
- Enable dragging of content from different domains within a window
- Always send Do Not Track header
- Notify users if Internet Explorer is not the default web browser
- Turn off Adobe Flash in Internet Explorer and prevent applications from using Internet Explorer technology to instantiate Flash objects
- Turn off flip ahead feature

For more information, see [Group Policy Settings in Internet Explorer 10](#).

Is there a version of Internet Explorer Administration Kit (IEAK) to support Internet Explorer 10?

Internet Explorer Administration Kit 10 (IEAK 10) is currently available. You can download IEAK 10, create a customized version of Internet Explorer 10, and test it in a non-production environment. For more information, see the following resources:

- [Internet Explorer Administration Kit Information and Downloads](#) on the Internet Explorer TechCenter
- [Internet Explorer Administration Kit 10 Frequently Asked Questions](#) on the Internet Explorer TechCenter
- [Internet Explorer Administration Kit 10 Product documentation](#) in the Internet Explorer Library



Is there a version of the Blocker Toolkit to prevent automatic installations of Internet Explorer 10?

Blocker Toolkit for Internet Explorer 10 isn't currently available.

Where can I access more information about Internet Explorer 10 for IT pros?

Visit the [Springboard Series](#) for Internet Explorer 10 on TechNet.

Can I customize settings for Internet Explorer on Windows 8?

You can configure the Internet Explorer 10 settings that are available on the Settings charm. Also, administrators can use Group Policy to configure Group Policy settings for Internet Explorer 10. Some default settings, such as the homepage and search providers, are shared by both browsing experiences and can be customized using IEAK 10.

Can Internet Explorer for the desktop be my default browsing experience?

You can set specific entry points to open in either Internet Explorer or Internet Explorer for the desktop as the default launch experience, but you can't associate a specific file type or protocol to a particular experience.

How do I configure Internet Explorer 10 to use Internet Explorer or Internet Explorer for the desktop for specific entry points?

Admins can use Group Policy settings to configure how links and tiles are opened. Individual users can configure their own settings (**Tools > Internet options > Programs > Choose how you open links**). The following table shows the settings and results:

Setting	Result
Let Internet Explorer decide	Links open in the type of experience where they're launched. For example, if you click a link from a Windows Store app, Internet Explorer displays the resulting page. If you click a link from a desktop app, the link opens in Internet Explorer for the desktop.
Always in Internet Explorer	Links open in Internet Explorer.
Always in Internet Explorer for the desktop	Links open in Internet Explorer for the desktop.



Explorer on the desktop

For more information, see [Launch Options for Internet Explorer 10 on Windows 8](#).

ELITE SOLUTIONS



Revision history

The following table summarizes changes to this published document.

Milestone	Change
Windows 8 Consumer Preview	New
Windows 8 Release Preview.	<ul style="list-style-type: none">• Updates to questions for Windows 8 Release Preview.• Added new question about Adobe Flash availability.
Windows 8	Updating version information.
Internet Explorer Administration Kit 10 Pre-Release	Adding information about IEAK 10 Pre-Release.

ELITE SOLUTIONS



Client Hyper-V

47 out of 55 rated this helpful - [Rate this topic](#)

Published: February 29, 2012

Updated: April 23, 2012

Applies To: Windows 8

This overview explains the hardware requirements, usage scenarios, and installation procedures for Client Hyper-V. Client Hyper-V is the name for the Hyper-V technology available in Windows® 8 Pro. For more information about Client Hyper-V, see [Bringing Hyper-V to Windows 8](#).

Did you mean...

- Hyper-V in Windows Server® 2012? See [What's New in Hyper-V](#).
- Microsoft Hyper-V Server “8” Beta or Microsoft Hyper-V Server 2008 R2 (stand-alone products)? See [What's New in Microsoft Hyper-V Server "8" Beta](#) and [Download Microsoft Hyper-V Server 2008 R2 with Service Pack 1 \(SP1\)](#).
- Windows Server 2012? Go to the [download](#).
- Windows XP Mode with Virtual PC in Windows 7? Go to the [download](#).
- Microsoft Enterprise Desktop Virtualization (MED-V) 2.0 and Microsoft Application Virtualization (App-V) 4.6 SP1? See [Agility and compatibility with Microsoft App-V and MED-V](#).

[Feature description](#)

Client Hyper-V is the same computer virtualization technology that was previously available in Windows Server. In Windows 8 Pro, the technology is now built into the non-server version of Windows, often called the “desktop” version because it does not run on server-class hardware. Client Hyper-V provides the same virtualization capabilities as Hyper-V in Windows Server 2012. A similar



functionality in Windows 7 is called Windows XP Mode. To download this feature, see [Download Windows XP Mode with Virtual PC](#).

For more information, see this video: [Developing and testing on Windows 8 with Hyper-V](#).

To understand the architecture of Hyper-V, see the [Windows Server 2008 R2: Hyper-V Component Architecture poster](#).

[Practical applications](#)

Because Client Hyper-V is the same technology as in Windows Server 2012, IT pros and developers do not need to learn any new tools or commands. You can move virtual machines from Client Hyper-V to Hyper-V in Windows Server 2012. For example, you can build a “test lab” infrastructure hosted entirely on your laptop or desktop computer, and export the virtual machines you create and test from your laptop into production. As another example, assume you have an application that you must test on the Windows 8 Consumer Preview, Windows 7, and Windows XP operating systems. You can create three virtual machines with these operating systems versions easily and complete your tests (except for scale/performance tests) on the computer running Client Hyper-V, instead of on the production computer or in a dedicated testing lab. You can also use virtual hard disks (VHDs) that are readily available, such as the [Datacenter Virtualization & Management Try It .vhd files](#) (available for free).

With Client Hyper-V, you can use Hyper-V virtualization with both wireless network adapters and sleep states on your desktop computer. For example, if you are running Client Hyper-V on a laptop and close the lid, the virtual machines that are running will be put into a saved state, and resumed when the machine wakes. Virtual machine management and other tools created for Hyper-V in Windows Server, such as VMM P2V or Sysinternals DisktoVHD tools, will also work in Client Hyper-V. To download this utility, see [Disk2vhd v1.63](#). Hyper-V virtual switch extensions and Windows PowerShell scripts for managing virtual machines that you develop and test on Client Hyper-V can be moved to Hyper-V in Windows Server 2012. You can also export a virtual machine from your production environment, open it on your desktop with Client Hyper-V, perform your required troubleshooting, and then export it back into the production environment. Using virtual machine networking, you can create a multi-machine environment for test/development/demonstration that is secure from affecting the production network. You can also mount and boot a Windows operating system using Windows to Go VHDs from a USB storage drive as a virtual machine using Client Hyper-V.

Windows PowerShell scripts for managing virtual machines that you create using Client Hyper-V are fully compatible with Hyper-V in Windows Server 2012. For example, assuming you had the .xml files for these virtual machines already available on your computer, network share, or USB storage, the following example Windows PowerShell command would start them all for you on your computer with Client Hyper-V.



Copy

```
Dir *.xml | import-vm | start-vm
```

For more information about Hyper-V Windows PowerShell commands, see [Windows PowerShell Support for Windows Server "8" Beta](#).

There are some features included in Hyper-V in Windows Server 2012 that are not included in Client Hyper-V. These include the following: the remote FX capability to virtualize GPUs (software GPU in RDP 8), live migration of virtual machines, Hyper-V Replica, SR-IOV networking, and virtual Fibre Channel. For more information, see [What's New in Hyper-V](#).

[Hardware requirements](#)

Hyper-V requires a 64-bit system that has Second Level Address Translation (SLAT). For information about checking and changing the virtualization support settings of your system BIOS, consult your system manufacturer.

Hyper-V supports the creation of both 32-bit and 64-bit operating systems in virtual machines.

Note

You must license each of the virtual machine operating systems according to their requirements.

4 GB of RAM is required. The RAM on your computer running Client Hyper-V is allocated and deallocated dynamically as required by the virtual machines. You can run several virtual machines on a computer running Client Hyper-V (also called a "host") that has the minimum 4 GB of RAM, but you will need additional RAM for 5 or more virtual machines, depending on the RAM requirements for each virtual machine.

Client Hyper-V supports the same storage migration capability that is included in Hyper-V in Windows Server 2012. This means you can have your virtual machines fairly independent of the underlying storage. You can move a virtual machine's storage to and from one local drive to another, to a USB drive, or to a remote file share without needing to stop the virtual machine.

[Software requirements](#)



To use Client Hyper-V, you must first enable the feature.

Important

Because Hyper-V is an optional feature in Windows 8 Pro, the files required for installation may or may not be present on your computer, depending on your organization's IT policy. If you are connected to the Internet, enabling the feature will automatically download the required files. If you are not connected to the Internet, you can download the required files and manually copy them to your computer, or otherwise provide the installation media.

[To enable Client Hyper-V](#)

1. On the Control Panel, click **Programs**, and then click **Programs and Features**.
2. Click **Turn Windows features on or off**.
3. Click **Hyper-V**, click **OK**, and then click **Close**.

[To enable Client Hyper-V using Windows PowerShell](#)

- On the Windows PowerShell command line, type the following:

Copy

```
Enable-WindowsOptionalFeature -FeatureName Microsoft-Hyper-V -All
```

Important

You must restart your computer (not just reboot) to complete installation. Depending on your manufacturer, you may have to pause a few seconds with the computer off before restarting for the required changes to take effect. If you are using a laptop, you may have to remove the battery before restarting. After restarting the computer, you can use Hyper-V Manager or Windows PowerShell to create and manage virtual machines. You can also use Virtual Machine Connection to connect to virtual machines remotely.

For more information about configuring Hyper-V, see [Install the Hyper-V role and Configure a Virtual Machine](#). For a library of Windows PowerShell cmdlets for virtual machine management, see [Hyper-V Module for Windows PowerShell](#).

[Hyper-V Manager](#)



Turning on the Hyper-V feature in Windows 8 also installs Hyper-V Manager. You can use Hyper-V Manager to create and manage your virtual machines.

For more information about Hyper-V Manager, see [User Interface: Hyper-V Manager](#).

[See also](#)

- [Client Hyper-V Survival Guide](#)

ELITE SOLUTIONS



Windows Firewall with Advanced Security Overview

20 out of 43 rated this helpful - [Rate this topic](#)

Published: March 8, 2012

Updated: October 9, 2012

Applies To: Windows 8, Windows Server 2012

This is an overview of the Windows Firewall with Advanced Security (WFAS) and Internet Protocol security (IPsec) features in Windows Server 2012.

Did you mean...

- [Windows Firewall with Advanced Security in Windows Server 2008 R2](#)

[Feature description](#)

Windows Firewall with Advanced Security is an important part of a layered security model. By providing host-based, two-way network traffic filtering for a computer, Windows Firewall with Advanced Security blocks unauthorized network traffic flowing into or out of the local computer. Windows Firewall with Advanced Security also works with Network Awareness so that it can apply security settings appropriate to the types of networks to which the computer is connected. Windows Firewall and Internet Protocol Security (IPsec) configuration settings are integrated into a single Microsoft Management Console (MMC) named Windows Firewall with Advanced Security, so Windows Firewall is also an important part of your network's isolation strategy.

[Practical applications](#)

To help address your organizational network security challenges, Windows Firewall with Advanced Security offers the following benefits:



- **Reduces the risk of network security threats.** Windows Firewall with Advanced Security reduces the attack surface of a computer, providing an additional layer to the defense-in-depth model. Reducing the attack surface of a computer increases manageability and decreases the likelihood of a successful attack. Network Access Protection (NAP), a feature of Windows Server 2012, also helps ensure client computers comply with policies that define the required software and system configurations for computers that connect to your network. The integration of NAP helps prevent communications between compliant and noncompliant computers.
- **Safeguards sensitive data and intellectual property.** With its integration with IPsec, Windows Firewall with Advanced Security provides a simple way to enforce authenticated, end-to-end network communications. It provides scalable, tiered access to trusted network resources, helping to enforce integrity of the data, and optionally helping to protect the confidentiality of the data.
- **Extends the value of existing investments.** Because Windows Firewall with Advanced Security is a host-based firewall that is included with Windows Server 2012, and prior Windows operating systems and because it is tightly integrated with Active Directory® Domain Services (AD DS) and Group Policy, there is no additional hardware or software required. Windows Firewall with Advanced Security is also designed to complement existing non-Microsoft network security solutions through a documented application programming interface (API).

[New and changed functionality](#)

The following table lists some of the new features for Windows Firewall with Advanced Security in Windows Server 2012.

Feature/functionality	Windows Server 2008 R2	Windows Server 2012
Internet Key Exchange version 2 (IKEv2) for IPsec transport mode		X
Windows Store app network isolation		X
Windows PowerShell cmdlets for Windows Firewall		X

[IKEv2 for IPsec transport mode](#)

In Windows Server 2012, IKEv2 supports additional scenarios including IPsec end-to-end transport mode connections.



What value does this change add?

Windows Server 2012 IKEv2 support provides interoperability for Windows with other operating systems using IKEv2 for end-to-end security, and Supports Suite B (RFC 4869) requirements.

What works differently?

In Windows Server 2008 R2, IKEv2 is available as a virtual private network (VPN) tunneling protocol that supports automatic VPN reconnection. IKEv2 allows the security association to remain unchanged despite changes in the underlying connection.

In Windows Server 2012, IKEv2 support has been expanded.

[Windows Store app network isolation](#)

Administrators can custom configure Windows Firewall to fine tune network access if they desire more control of their Windows Store apps.

What value does this change add?

The feature adds the ability to set and enforce network boundaries ensure that apps that get compromised can only access networks where they have been explicitly granted access. This significantly reduces the scope of their impact to other apps, the system, and the network. In addition, apps can be isolated and protected from malicious access from the network.

What works differently?

In addition to firewall rules that you can create for program and services, you can also create firewall rules for Windows Store apps and their various capabilities.

[Windows PowerShell cmdlets for Windows Firewall](#)

Windows PowerShell has extensive cmdlets to allow Windows Firewall configuration and management.



What value does this change add?

You can now fully configure and manage Windows Firewall, IPsec, and related features using the very powerful and scriptable Windows PowerShell.

What works differently?

In previous Windows versions, you could use Netsh to perform many configuration and management functions. This capability has been greatly expanded using the more powerful Windows PowerShell scripting language.

[See also](#)

See the following topics for more information about Windows Firewall with Advanced Security in Windows Server 2012.

Content type

Deployment

Troubleshooting

References

[Securing End to End IPsec Connections Using IKEv2 in Windows 8](#) | [Isolating Windows Store Apps on Your Network](#) | [Windows Firewall with Advanced Security Administration with Windows PowerShell](#)

[Troubleshooting Windows Firewall with Advanced Security in Windows Server 2012](#)



Windows PowerShell Support for Windows 8

0 out of 3 rated this helpful - [Rate this topic](#)

Published: February 29, 2012

Updated: May 25, 2012

Applies To: Windows 8

This topic lists the Windows PowerShell® modules included with Windows® 8. The Windows PowerShell modules in the list support automating the features of those operating systems and provide links to the cmdlet references for each module. These modules enable you to use Windows PowerShell to administer, maintain, configure, and develop new features for Windows 8.

For information about the core features common to all versions of Windows PowerShell, see [Windows PowerShell Core](#).

[Windows PowerShell features](#)

Note that the following links are to topics located in the Windows Server® 2012 Technical Library.

- [App Installation Cmdlets](#)
- [AppLocker Cmdlets](#)
- [BranchCache Cmdlets](#)
- [Direct Access Client Cmdlets](#)
- [DISM Cmdlets](#)
- [Hyper-V Cmdlets](#)
- [International Settings Cmdlets](#)



- **iSCSI Cmdlets**
- **iSCSI Target Cmdlets**
- **Microsoft Online Backup Cmdlets**
- **MultiPath I/O (MPIO) Cmdlets**
- **Network Connectivity Status Cmdlets**
- **Network Quality of Service (QoS) Cmdlets**
- **Net TCP/IP Cmdlets**
- **PKI Client Cmdlets**
- **Print Management Cmdlets**
- **Remote Access Cmdlets**
- **Storage Cmdlets**
- **VAMT Cmdlets**
- **Windows Data Access Components (WDAC) Cmdlets**
- **Web Server (IIS) Administration Cmdlets Cmdlets**
- **WHEA Cmdlets**
- **Windows Assessment Services Cmdlets**
- **Windows PowerShell Web Access Cmdlets**



Building Windows 8

Making personal cloud storage for Windows available anywhere, with the new SkyDrive



Steven Sinofsky

Steven Sinofsky

Microsoft Corporation

173,429 Points⁵³⁴

Recent Achievements

First Forums ReplyBlogs All-StarBlog Commentator III

[View Profile](#)

Monday, April 23, 2012 11:57 AM

- Comments **303**

*In February, we told you about our goals for **connecting your apps, files, PCs, and devices to the cloud with SkyDrive and Windows 8**. Since then, we have provided the App Preview of a Windows 8 app to access SkyDrive, and we've updated the SkyDrive web experience. Today, we are delivering new capabilities for SkyDrive across the Windows platform.*

Mike Torres, and Omar Shahine, group program managers for SkyDrive, co-wrote this post.

--Steven

Over the last year we've been hard at work building SkyDrive alongside Windows 8, setting out **a unique approach** to designing personal cloud storage for billions of people by bringing together the best aspects of file, app, and device clouds. Meanwhile, we've made our file cloud more



accessible with [HTML5](#) and [mobile apps](#), improved integration with [Office](#) and [3rd party](#) apps, and built a device cloud for [Windows](#) and [Windows Phone](#).

Today, we're excited to take another big step towards our vision by making SkyDrive far more powerful. There are new storage options, apps that connect your devices to SkyDrive, and a more powerful device cloud that lets you "fetch" any file from a Windows PC. Taken together with access from popular mobile phones and a browser, you can now take your SkyDrive with you anywhere, connect it to any app that works with files and folders, and get all the storage you need—making SkyDrive the **most powerful** personal cloud storage service available.

Here's what's available for use, starting now:

- **SkyDrive for the Windows desktop (preview available now).** View and manage your personal SkyDrive directly from Windows Explorer on Windows 8, Windows 7, and Windows Vista with this new preview app available in 106 languages worldwide.
- **Fetching files through SkyDrive.com.** Easily access, browse, and stream files from a remote PC running the preview app to just about anywhere by simply fetching them via SkyDrive.com.
- **SkyDrive storage updates.** A new, more flexible approach to personal cloud storage that allows power users to get additional paid storage as their needs grow.
- **SkyDrive for other devices.** We've updated the SkyDrive apps on Windows Phone and iOS devices, bringing better management features and sharing options to those devices. We're also releasing a new preview client for Mac OS X Lion, letting you manage your SkyDrive right from the Finder.

You can [download the new SkyDrive apps](#) now, but you might want to take a look at this video first, which gives you a glimpse of all the things you can do with the new SkyDrive.

Your browser doesn't support HTML5 video.

Download this video to view it in your favorite media player:

[High quality MP4](#) | [Lower quality MP4](#)

SkyDrive for Windows

In February, we [announced a SkyDrive Metro style app](#) for Windows 8, SkyDrive for the Windows desktop, and a feature called “fetch” that allows you to remotely access files or stream videos from a connected PC. When you combine all of these features, you can seamlessly access any file on your Windows 8 PC from anywhere. The SkyDrive Metro style app was first made available with the [Windows 8 Consumer Preview](#), and today we’re releasing a preview of SkyDrive for the Windows desktop including “fetch” support. But first, here’s a little background.

Over the years, we’ve consistently heard from our most loyal customers that having SkyDrive accessible from Windows Explorer is important, and we’re happy to announce that, as of today, when you download the preview of SkyDrive for the Windows desktop, you’ll be able to **access your SkyDrive from Windows Explorer on Windows 8, Windows 7, and Windows Vista**. The benefits of SkyDrive integration with Windows are clear: you can now drag-and-drop to and from SkyDrive with files up to 2GB, access all of your files offline, and have the full power of Windows Explorer available to manage your SkyDrive files and folders. Files stored in your SkyDrive are in a plain folder on your PC, which means any app that works with local folders and files can now work with SkyDrive.

As we set upon the path to bring SkyDrive closer to Windows, we had a few goals that drove our plan. First, we wanted you to be able to **“get up and running”** as quickly as possible, with very few steps. Secondly, we wanted to **“be quiet”** on the system and make sure that all processing was entirely in the background, with your needs and your apps as the first priority. And third, we really wanted it all to **“just work”** as you’d expect it to, staying up-to-date automatically, and humming along without confusing dialogs or pop-ups. Here’s a bit more about where we’re at for each of those.

Downloading the preview of SkyDrive for Windows takes just **a few seconds** on most connections (the installer is under 5MB) and installs on most PCs in less than 10 seconds. There are just three simple setup screens and you’re finished.



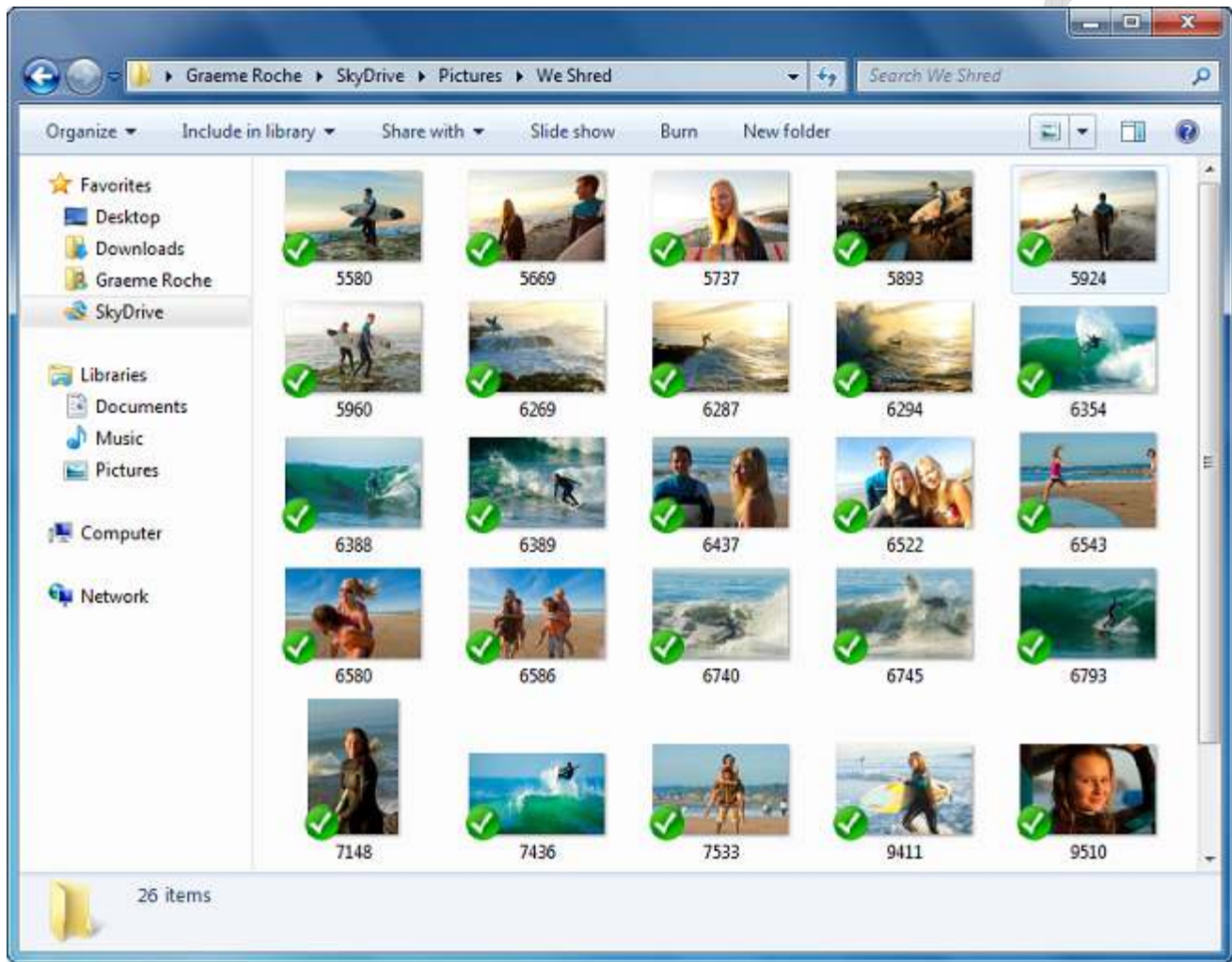


Once it's running, it's **out of the way** in the system tray. A folder is created automatically for you in a default location or one you choose during setup, and your SkyDrive files immediately start to appear.



Once your SkyDrive is available on your PC, this **special folder stays in sync** with your SkyDrive. If you rename a file on your phone, it appears immediately in this folder on your PC. If you delete a file from SkyDrive.com, it is deleted immediately here as well. Or if you create a folder and move files from another PC, Mac, or iPad, those changes immediately sync, too.

ELITE SOLUTIONS



ELITE



Power users can have fun with the SkyDrive folder too

In Windows Live Mesh, which some of you have come to rely on, we allowed arbitrary folders to be synchronized. Our experience has been that this introduced too many unresolvable complexities across different PCs, with the path on one PC synchronizing to entirely different paths on other PCs and the cloud. In order to maintain our goal of "it just works," we designed SkyDrive to be the same everywhere, and to work well with libraries in Windows.

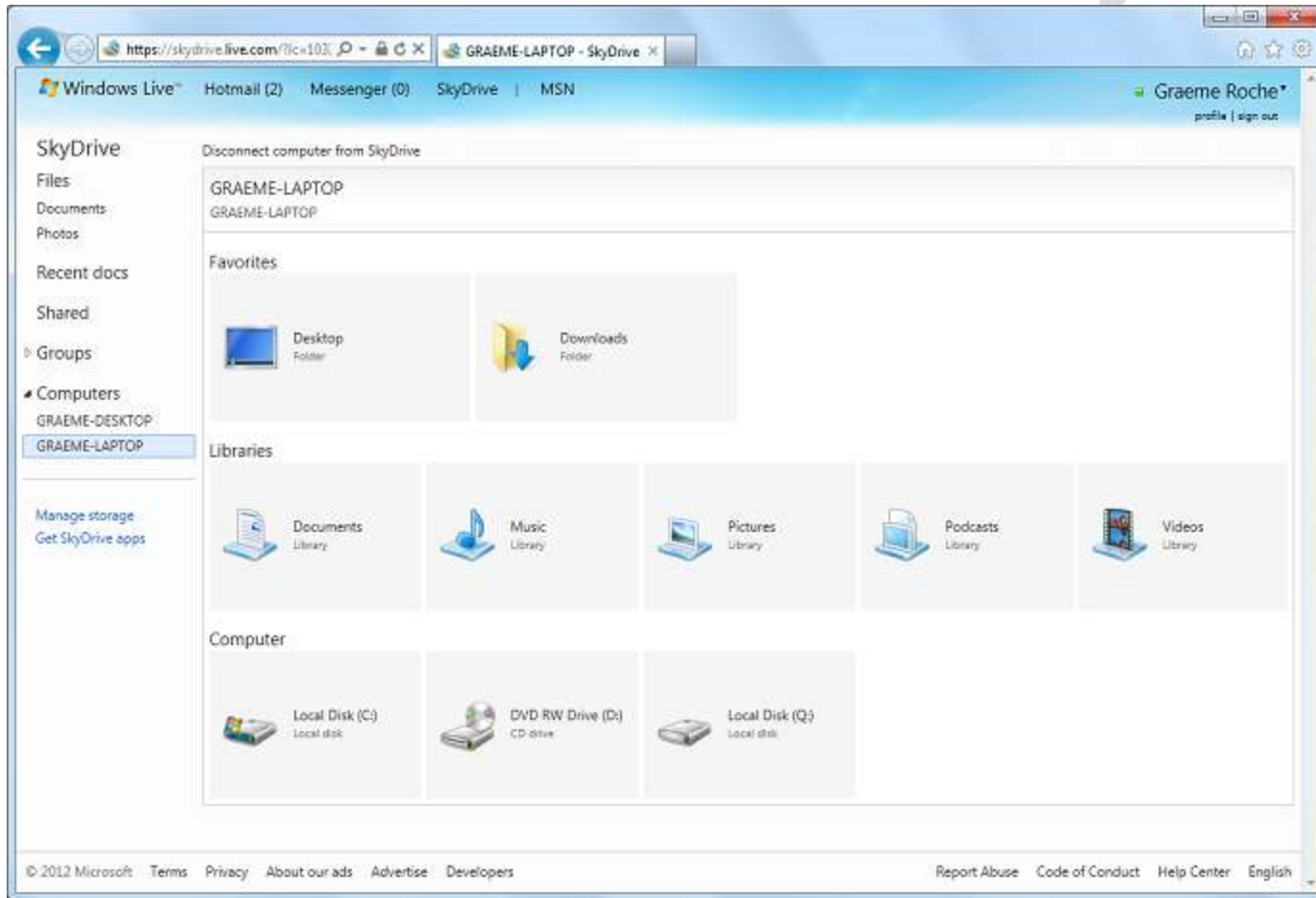
If you'd like your SkyDrive folders to feel less like separate folders, you can add your SkyDrive Documents and Pictures folders to your Documents and Pictures Libraries in Windows 8 and Windows 7.

Alternatively, you could change the target location for special folders like Documents or Pictures (or others) to folders in your SkyDrive, basically treating your SkyDrive as your primary drive (right-click the Documents folder, click Properties, and then Location). You can also customize the default root of the synchronized folder (to use a different drive, for example), and this option is available during setup of the SkyDrive app.

So, as you can see, the simple and straightforward model of having a single folder for your SkyDrive still leaves lots of creative options for personalization.

Fetching files through SkyDrive.com

As we [discussed and demonstrated](#) back in February, with SkyDrive running on a Windows PC, you can also turn that PC into your own private cloud to browse your files and stream videos from anywhere through SkyDrive.com. This feature is great if you forgot something on your home PC and need to fetch it or just copy it quickly to SkyDrive.



Note that, in order to access a remote PC you will have to provide a second factor of authentication beyond your account password. You'll need to enter a code that we send to your mobile phone or alternate email address even if you're already signed in to your SkyDrive account (if you're already on a **trusted PC**, you won't have to do this every time, and it is easy to do this one-time setup). This means that anyone wanting access to your remote PC would have to have access not only to your account, but also to either an alternate email or your phone (which they would need to physically possess).



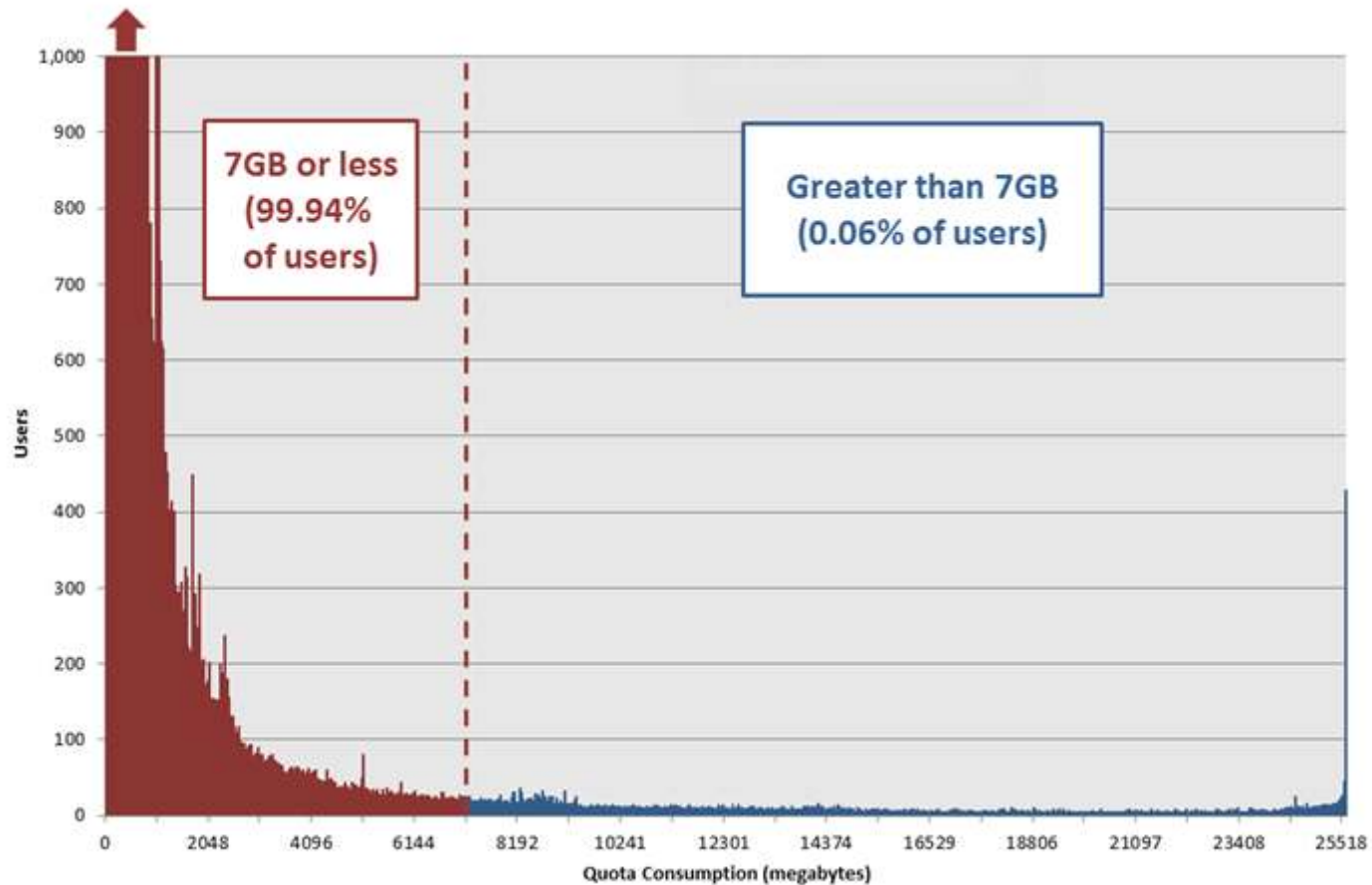
New, more flexible approach to storage

One of the challenges in building personal cloud storage for billions of people is scaling capacity and managing costs, while also meeting the needs of both enthusiasts and mainstream users. Different cloud providers take different approaches. Many promise unlimited storage or big referral incentives to attract enthusiasts – but then have lots of strings attached, which can make the service more confusing and less accessible to mainstream users. Do I really have to **read multiple pages** to understand my storage limits? Why do other people's files **count against my storage limit**? Why does my upload speed **slow down**? Why do I get gobs of free storage but have to **pay to sync** my desktop files?

Our model for SkyDrive is friendly and accessible to all, and just as importantly, provides a gimmick-free service that strikes the right balance of being free for the vast majority of customers, and low-priced for those who want more.

Starting today, we are now offering:

- **7GB free for all new SkyDrive users.** We chose 7GB as it provides enough space for over 99% of people to store their entire Office document library and share photos for several years, along with room for growth. To put things in perspective, 99.94% of SkyDrive customers today use 7GB or less – and 7GB is enough for over 20,000 Office documents or 7,000 photos. Since the current base of customers using SkyDrive tilts towards enthusiasts, we are confident that, as we expand the range of people using SkyDrive, this 7GB free limit will prove to be more than enough for even more people.



- **Ability to upload large files – up to 2GB – and folders** using SkyDrive for the Windows desktop or SkyDrive for OS X Lion.
- **Paid storage plans (+20GB, +50GB, +100GB)** so that power users who need more storage can easily add more at competitive prices (US\$10/year, US\$25/year, US\$50/year). Please note that paid-for storage requires the ability to pay by credit card (or via PayPal, in some markets) and a Windows Live ID that can be associated with that credit card or PayPal account.

We know that many of you signed up for a service that offered 25GB, and some are already using more than 7GB of storage. So, starting today, for a limited time, **any registered SkyDrive user *who has uploaded files to SkyDrive* as of April 22nd can opt in to keep 25GB of free storage**

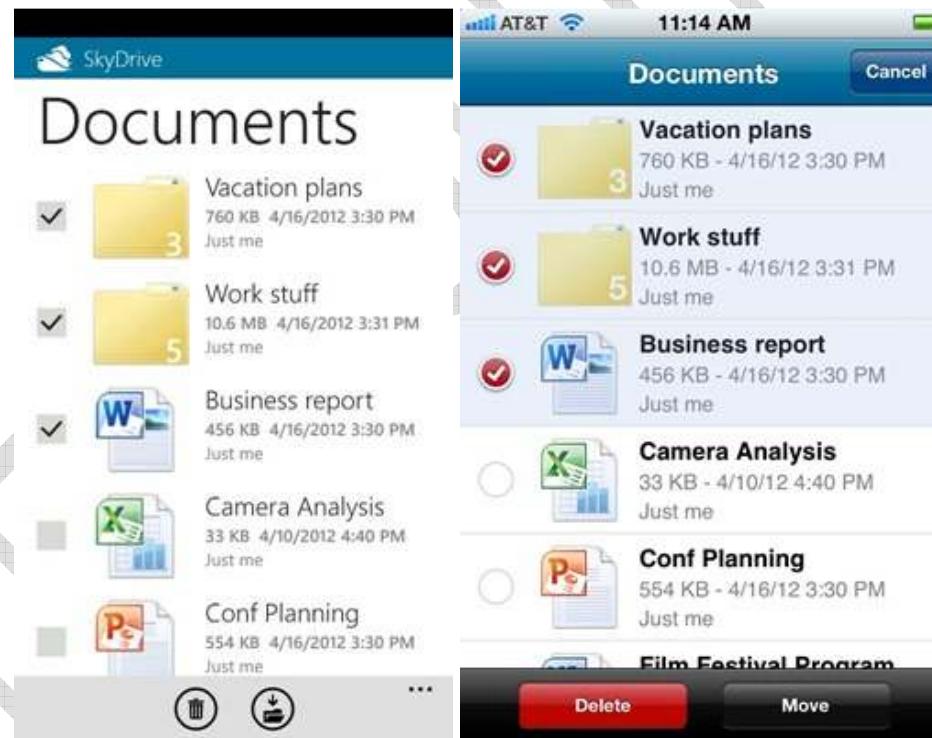


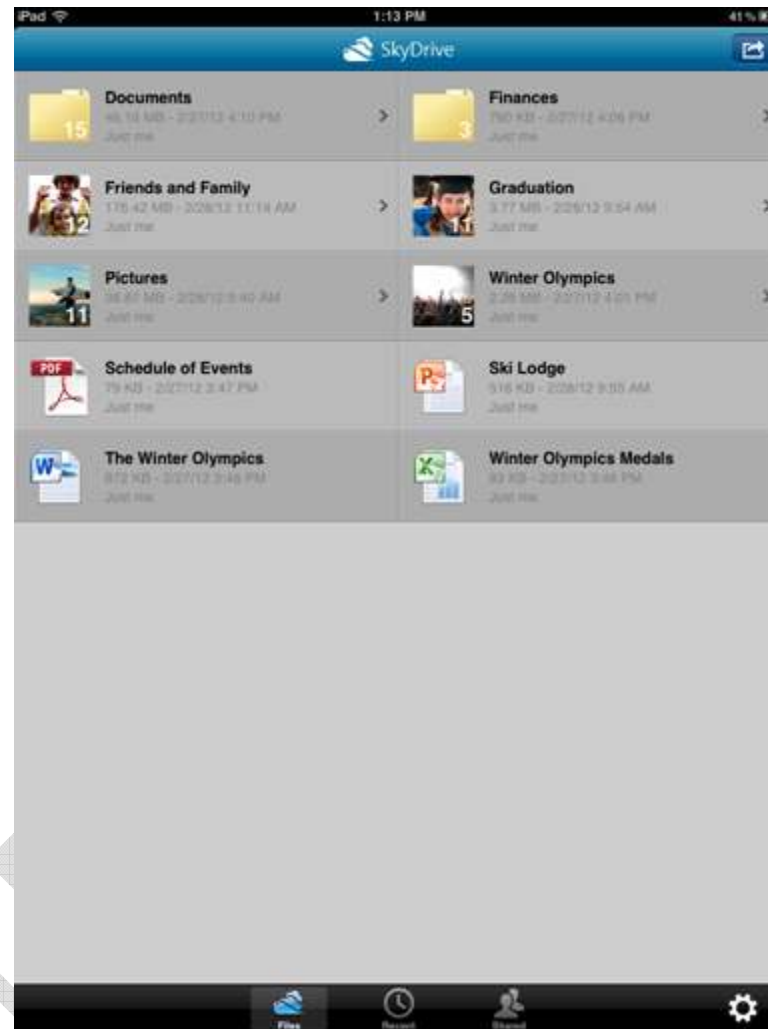
while still getting all of the benefits of the new service. (For users who are already using more than 4GB as of April 1, we've automatically opted you in to 25GB of free storage to avoid any issues.) Just [sign in here](#) or [view our FAQ](#).

SkyDrive for Windows Phone and other devices

SkyDrive has been available since 2007 from anywhere in the world through SkyDrive.com, but it wasn't until the initial release of Windows Phone and our **dedicated Windows Phone and iPhone apps** in December 2011 that people had top-notch SkyDrive experiences from modern smartphones. These apps have been installed on over 2 million phones already by people taking SkyDrive with them wherever they go.

As a Windows Phone or iPhone user, with today's release, you can now delete, rename, and move files in your SkyDrive, and access a full set of sharing options for all files and folders. We're also bringing SkyDrive to the iPad, with all the same capabilities you now have available through the iPhone, plus support for the new iPad retina display.



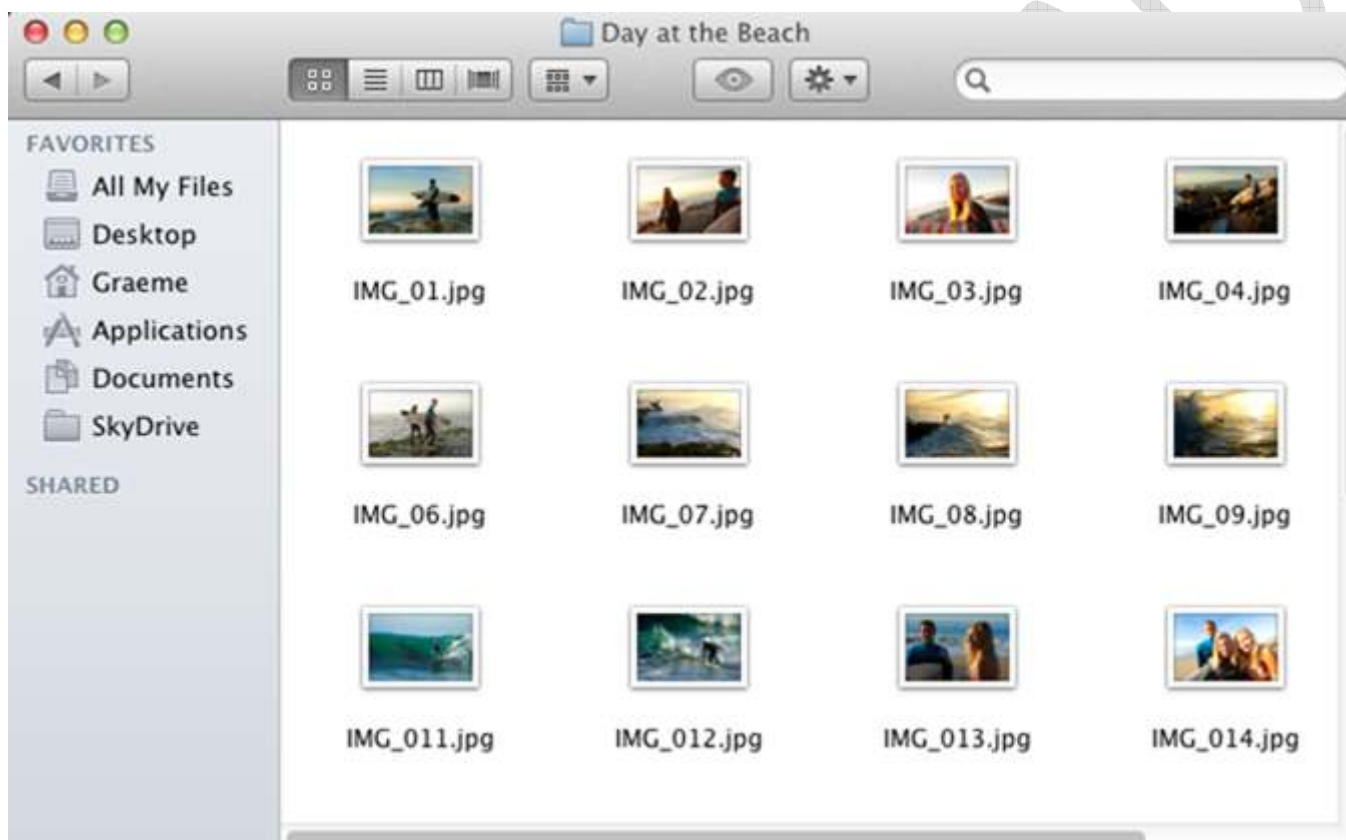


All of these apps also have dozens of small improvements, including the ability to see your remaining storage space, landscape support, and various performance enhancements and bug fixes.

Almost 70% of Mac users also regularly use a Windows PC. Since we want every customer to be able to rely on SkyDrive to access files anywhere, it's important for SkyDrive be wherever they are. Office for Mac 2011 already [supports SkyDrive](#) files, but starting today, you'll also be able to



manage your entire SkyDrive offline using Finder on the Mac. The integration with Finder means that any Mac app that opens from or saves to the file system will be able to take advantage of SkyDrive files as well.



Here's where you go to try SkyDrive today:

- [Get SkyDrive for Windows \(preview\)](#)
- [Get SkyDrive for Windows Phone](#)
- [Get SkyDrive for iPhone and iPad](#)
- [Get SkyDrive for OS X Lion \(preview\)](#)



If you currently use Mesh, we have a few tips for trying [SkyDrive for Windows or Mac \(preview\) side-by-side with Mesh](#). We think you'll find SkyDrive to be increasingly useful over time.

Thanks for supporting SkyDrive and we look forward to your feedback!

Mike (SkyDrive apps)
and
Omar (SkyDrive.com)

Note: Apps and the ability to purchase extra storage are rolling out now, and may take up to a few days to be available in all markets.

*Correction 4/23/12, 11:15 AM PST: Revised wording to clarify that loyalty offer is only for existing users who have uploaded files to SkyDrive before April 22, 2012.

ELITE SOLUTIONS



Secure Boot Overview

6 out of 13 rated this helpful - [Rate this topic](#)

Published: February 29, 2012

Updated: May 31, 2012

Applies To: Windows 8, Windows Server 2012

Secure Boot is a feature that helps prevent unauthorized firmware, operating systems, or UEFI drivers (also known as Option ROMs) from running at boot time. Secure Boot does this by maintaining databases of software signers and software images that are pre-approved to run on the individual computer.

[Signature Databases and Keys](#)

The firmware maintains two databases. One database lists the signers or image hashes of UEFI applications, operating system loaders, and UEFI drivers that can be loaded on the individual computer. The other database lists the revoked images for items that are no longer trusted and may not be loaded. These databases are known as the *signature database (db)* and the *revoked signatures database (dbx)*.

Microsoft® signs the Microsoft Operating System Loader (called Boot Manager) with a signer that must be included in the database when systems are manufactured.

The *Key Enrollment Key database (KEK)* is a separate database of signing keys that can be used to update the signature database and revoked signatures database. Microsoft requires a specified key to be included in the KEK database so that in the future Microsoft can add new operating systems to the signature database or add known bad images to the revoked signatures database.

The OEM stores the signature database, revoked signatures database, and KEK signature databases on the firmware nonvolatile RAM (NV-RAM) at manufacturing time. These signature databases must be included to boot Windows by using Secure Boot.



After these databases have been added, and after final firmware validation and testing, the OEM locks the firmware from editing, except for updates that are signed with the correct key or updates by a physically present user who is using firmware menus, and then generates a platform key (PK). The PK can be used to sign updates to the KEK or to turn off Secure Boot.

[Boot Sequence](#)

After the computer is turned on, the signature databases are each checked against the platform key.

If the firmware is not trusted, the UEFI firmware must initiate OEM-specific recovery to restore trusted firmware.

If there is a problem with Windows Boot Manager, the firmware will attempt to boot a backup copy of Windows Boot Manager. If this also fails, the firmware must initiate OEM-specific remediation.

After Windows Boot Manager has started running, if there is a problem with the drivers or NTOS kernel, Windows Recovery Environment (Windows RE) is loaded so that these drivers or the kernel image can be recovered.

After this, Windows loads antimalware software.

Finally, Windows loads other kernel drivers and initializes the user mode processes.

[Requirements](#)

Secure Boot requires a computer that meets the UEFI 2.3.1 Specifications.

Secure Boot is supported for UEFI Class 2 and Class 3 computers. For UEFI Class 2 computers, the compatibility support module (CSM) must be disabled so that the computer can only boot UEFI-based operating systems.

Note

Secure Boot does not require a Trusted Platform Module (TPM).



See Also

Concepts

[Deploying Windows to UEFI Firmware Overview](#)

ELITE SOLUTIONS



Windows Authentication Overview

3 out of 3 rated this helpful - [Rate this topic](#)

Published: February 29, 2012

Updated: August 8, 2012

Applies To: Windows 8, Windows Server 2012

This navigation topic for the IT professional lists documentation resources for Windows authentication and logon technologies that include product evaluation, getting started guides, procedures, design and deployment guides, technical references, and command references for Windows Server 2012 and Windows 8.

[Feature description](#)

Authentication is a process for verifying the identity of an object, service or person. When you authenticate an object, the goal is to verify that the object is genuine. When you authenticate a service or person, the goal is to verify that the credentials presented are authentic.

In a networking context, authentication is the act of proving identity to a network application or resource. Typically, identity is proven by a cryptographic operation that uses either a key only the user knows — as with public key cryptography — or a shared key. The server side of the authentication exchange compares the signed data with a known cryptographic key to validate the authentication attempt.

Storing the cryptographic keys in a secure central location makes the authentication process scalable and maintainable. Active Directory Domain Services is the recommended and default technology for storing identity information (including the cryptographic keys that are the user's credentials). Active Directory is required for default NTLM and Kerberos implementations.

Authentication techniques range from a simple logon, which identifies users based on something that only the user knows — like a password, to more powerful security mechanisms that use something that the user has — like tokens, public key certificates, and biometrics. In a business environment, services or users might access multiple applications or resources on many types of servers



within a single location or across multiple locations. For these reasons, authentication must support environments for other platforms and for other Windows operating systems.

The Windows operating system implements a default set of authentication protocols, including Kerberos, NTLM, Transport Layer Security/Secure Sockets Layer (TLS/SSL), and Digest, as part of an extensible architecture. In addition, some protocols are combined into authentication packages such as Negotiate and the Credential Security Support Provider. These protocols and packages enable authentication of users, computers, and services; the authentication process, in turn, enables authorized users and services to access resources in a secure manner.

[Practical applications](#)

Windows Authentication is used to verify that the information comes from a trusted source, whether from a person or computer object, such as another computer. Windows provides many different methods to achieve this goal as described below.

To...	Feature	Description
Authenticate within an Active Directory domain	Kerberos	<p>The Microsoft Windows Server operating systems implement the Kerberos version 5 authentication protocol and extensions for public key authentication. The Kerberos authentication client is implemented as a security support provider (SSP) and can be accessed through the Security Support Provider Interface (SSPI). Initial user authentication is integrated with the Winlogon single sign-on architecture. The Kerberos Key Distribution Center (KDC) is integrated with other Windows Server security services running on the domain controller. The KDC uses the domain's Active Directory directory service database as its security account database. Active Directory is required for default Kerberos implementations.</p> <p>For additional resources, see Kerberos Authentication Overview.</p>
Secure authentication on the web	TLS/SSL as implemented in the Schannel Security Support Provider	<p>The Transport Layer Security (TLS) protocol versions 1.0, 1.1, and 1.2, Secure Sockets Layer (SSL) protocol, versions 2.0 and 3.0, and the Private Communications Transport (PCT) protocol, version 1.0, are based on public key cryptography. The Secure Channel (Schannel) provider authentication protocol suite provides these protocols. All Schannel protocols use a client and server</p>



Authenticate to a web service or application

- Integrated Windows Authentication
- Digest Authentication

Authenticate to legacy applications

- NTLM

Leverage multifactor authentication

- Smart card support
- Biometric support

Provide local management, storage and reuse of credentials

- Credentials management
- Local Security Authority
- Passwords

Extend modern

- Extended Protection for

model.

For additional resources, see [TLS/SSL \(Schannel SSP\) Overview](#).

For additional resources, see [Integrated Windows Authentication](#) and [Digest Authentication](#), and [Advanced Digest Authentication](#).

NTLM is a challenge-response style authentication protocol. In addition to authentication, the NTLM protocol optionally provides for session security—specifically message integrity and confidentiality through signing and sealing functions in NTLM.

For additional resources, see [NTLM Overview](#).

Smart cards are a tamper-resistant and portable way to provide security solutions for tasks such as client authentication, logging on to domains, code signing, and securing e-mail.

Biometrics relies on measuring an unchanging physical characteristic of a person to uniquely identify that person. Fingerprints are one of the most frequently used biometric characteristics, with millions of fingerprint biometric devices that are embedded in personal computers and peripherals.

For additional resources, see [Smart Card Overview](#) and [Windows Biometric Framework Overview](#).

Credential management in Windows ensures that credentials are stored securely. Credentials are collected on the Secure Desktop (for local or domain access), through apps or through websites so that the correct credentials are presented every time a resource is accessed.

For additional resources, see [Credential Locker Overview](#) and [Passwords Overview](#).

This feature enhances the protection and handling of credentials when



authentication protection to legacy systems

Authentication

authenticating network connections by using Integrated Windows Authentication (IWA).

For additional resources, see [Extended Protection for Authentication](#).

[New and changed functionality](#)

Feature	Change summary	Resources
Kerberos	Intraforest cross-domain Constrained Delegation	What's New in Kerberos Authentication
	Troubleshooting improvements (log and tracing, integration with DirectAccess)	
	Support for compound ID using FAST	
TLS/SSL as implemented in the Schannel Security Support Provider	Support for Claims authorization data	What's New in TLS/SSL (Schannel SSP)
	TLS support for Server Name Indicator (SNI) Extensions	
Integrated Windows Authentication and NTLM	Datagram Transport Layer Security (DTLS)	Included by default in Windows Server 2012 and Windows 8.
Smart card support	No changes in functionality	
Biometric support	Virtual smart cards closely mimic the functionality of physical smart cards. The virtual smart card is essentially a smart card that is always available on the computer.	What's New in Smart Cards
Credentials management	Improvements to fast user switching for biometric devices and credentials provider support	New and changed functionality
Managed Service Accounts	Architecture changes to the former Windows Vault which now is called Credential Locker	New and changed functionality
	Administering standalone Managed Service Accounts is now easier with the addition of group Managed Service Accounts that extends the functionality to groups of servers.	Group Managed Service Accounts Overview

[Removed or deprecated functionality](#)



For a list of deprecated features in Windows Server 2012, see [Features Removed or Deprecated in Windows Server 2012](#).

[Software requirements](#)

Windows Authentication is designed to be compatible with previous versions of the Windows operating system. However, improvements with each release are not necessarily applicable to previous versions. Refer to documentation about specific features for more information.

[Server Manager information](#)

Many authentication features can be configured using Group Policy, which can be installed using Server Manager. The Windows Biometric Framework feature is installed using Server Manager. Other server roles which are dependent upon authentication methods, such as Web Server (IIS) and Active Directory Domain Services, can also be installed using Server Manager.

Windows To Go: Feature Overview

454 out of 560 rated this helpful - [Rate this topic](#)

Published: February 29, 2012

Updated: November 15, 2012

Applies To: Windows 8

Windows To Go is an enterprise feature of Windows® 8 that enables the creation of a Windows To Go workspace that can be booted from a USB-connected external drive on PCs that meet the Windows 7 or Windows 8 [certification requirements](#), regardless of the operating system running on the PC. Windows To Go workspaces can use the same image enterprises use for their desktops and laptops and can be managed the same way. Windows To Go is not intended to replace desktops, laptops or supplant other mobility



offerings. Rather, it provides support for efficient use of resources for alternative workplace scenarios. There are some additional considerations that you should keep in mind before you start to use Windows To Go:

- [Differences between Windows To Go and a typical installation of Windows](#)
- [Roaming with Windows To Go](#)
- [Preparing for Windows To Go](#)
- [Hardware considerations for Windows To Go](#)

Note

Windows To Go is not supported on Windows RT.

[Differences between Windows To Go and a typical installation of Windows](#)

Windows To Go workspace operates just like any other installation of Windows with a few exceptions. These exceptions are:

- **Internal disks are offline.** To ensure data isn't accidentally disclosed, internal hard disks on the host computer are offline by default when booted into a Windows To Go workspace. Similarly if a Windows To Go drive is inserted into a running system the Windows To Go drive will not be listed in Windows Explorer.
- **Trusted Platform Module (TPM) isn't used.** When using BitLocker Drive Encryption a pre-operating system boot password will be used for security rather than the TPM since the TPM is tied to a specific computer and Windows To Go drives will move between computers.
- **Hibernate is disabled by default.** To ensure that the Windows To Go workspace is able to move between computers easily, hibernation is disabled by default. Hibernation can be re-enabled by using Group Policy settings.
- **Windows Recovery Environment isn't available.** In the rare case that you need to recover your Windows To Go drive, you should re-image it with a fresh image of Windows.
- **Refreshing or resetting a Windows To Go workspace is not supported.** Resetting to the manufacturer's standard for the computer doesn't apply when running a Windows To Go workspace, so the feature was disabled.



- **Store is disabled by default.** Apps licensed through the store are linked to hardware for licensing. Since Windows To Go is designed to roam to different host PCs access to the store is disabled. You can enable the store if your Windows To Go workspaces won't be roaming to multiple PC hosts.

[Roaming with Windows To Go](#)

Windows To Go drives can be booted on multiple computers. When a Windows To Go workspace is first booted on a host computer it will detect all hardware on the computer and install any needed drivers. When the Windows To Go workspace is subsequently booted on that host computer it will be able to identify the host computer and load the correct set of drivers automatically.

The applications that you want to use from the Windows To Go workspace should be tested to make sure they also support roaming. Some applications bind to the computer hardware which will cause difficulties if the workspace is being used with multiple host computers.

[Preparing for Windows To Go](#)

Enterprises install Windows on a large group of computers either by using configuration management software (such as System Center Configuration Manager), or by using standard Windows 8 deployment tools such as DiskPart, ImageX, and the Deployment Image Servicing and Management (DISM) tool.

These same tools can be used to provision Windows To Go drive, just as you would if you were planning for provisioning a new class of mobile PCs. You can use the [Windows Assessment and Deployment Kit](#) to review deployment tools available.

Important

Make sure you use the versions of the deployment tools provided for Windows 8. There have been many enhancements made to support Windows To Go. Using one of the previous versions of the deployment tools to provision a Windows To Go drive is not supported.

As you are deciding what to include in your Windows To Go image, be sure to consider the following questions:

- Are there any drivers that you need to inject into the image?
- How will data be stored and synchronized to appropriate locations from the USB device?



- Are there any applications that are incompatible with Windows To Go roaming that should not be included in the image?
- What should be the architecture of the image - 32bit/64bit?
- What remote connectivity solution should be supported in the image if Windows To Go is used outside the corporate network?

For more information about designing and planning your Windows To Go deployment, see [Prepare Your Organization for](#)

ELITE SOLUTIONS



Windows To Go

[Hardware considerations for Windows To Go](#)

For USB drives

The devices listed in this section have been specially optimized and certified for Windows To Go and meet the necessary requirements for booting and running a full version of Windows 8 from a USB drive. The optimizations for Windows To Go include the following:

- Windows To Go certified flash drives are built for high random read/write speeds and support the thousands of random access I/O operations per second required for running normal Windows workloads smoothly.
- Windows To Go certified drives have been tuned to ensure they boot and run on hardware certified for use with either Windows 7 or Windows 8.
- Windows To Go certified drives are built to last. Certified drives are backed with manufacturer warranties and should continue operating under normal usage. Refer to the manufacturer websites for warranty details.

As of the date of publication, the following are the USB drives currently certified for use as Windows To Go drives; as more drives are certified for use with Windows To Go this list will be updated:

Warning

Using a USB drive that has not been certified is not supported

- Kingston DataTraveler Workspace for Windows To Go (<http://www.kingston.com/wtg/>)
- Spyrus Portable Workplace (<http://www.spyruswtg.com/>)

We recommend that you run the Spyrus Deployment Suite for Windows To Go to provision the Spyrus Portable Workplace.

- Spyrus Secure Portable Workplace (<http://www.spyruswtg.com/>)



Important

You must use the Spyrus Deployment Suite for Windows To Go to provision the Spyrus Secure Portable Workplace. For more information about the Spyrus Deployment Suite for Windows To Go please refer to <http://www.spyruswtg.com/>.

- Super Talent Express RC8 for Windows To Go (<http://www.supertalent.com/wtg/>)
- Western Digital My Passport Enterprise (<http://www.wd.com/wtg>)

We recommend that you run the WD Compass utility to prepare the Western Digital My Passport Enterprise drive for provisioning with Windows To Go. For more information about the WD Compass utility please refer to <http://www.wd.com/wtg>

For host computers

When assessing the use of a PC as a host for a Windows To Go workspace you should consider the following criteria:

- Hardware that has been certified for use with either Windows 7 or Windows 8 operating systems will work well with Windows To Go.
- Running a Windows To Go workspace from a computer that is running Windows RT is not a supported scenario.
- Running a Windows To Go workspace on a Mac computer is not a supported scenario.

The following table details the characteristics that the host computer must have to be used with Windows To Go:

Item	Requirement
Boot process	Capable of USB boot
Firmware	USB boot enabled. (PCs certified for use with Windows 7 or Windows 8 can be configured to boot directly from USB, check with the hardware manufacturer if you are unsure of the ability of your PC to boot from USB)
Processor architecture	Must support the image on the Windows To Go drive
External USB Hubs	Not supported; connect the Windows To Go drive directly to the host machine.
Processor	1 Ghz or faster



RAM	2 GB or greater
Graphics	DirectX 9 graphics device with WDDM 1.2 or greater driver.
USB port	USB 2.0 port or greater

Checking for architectural compatibility between the host PC and the Windows To Go drive

In addition to the USB boot support in the BIOS, the Windows 8 image on your Windows To Go drive must be compatible with the processor architecture and the firmware of the host PC as shown in the table below.

Host PC Firmware Type	Host PC Processor Architecture	Compatible Windows To Go Image Architecture
-----------------------	--------------------------------	---

Legacy BIOS	32-bit	32-bit only
Legacy BIOS	64-bit	32-bit and 64-bit
UEFI BIOS	32-bit	32-bit only
UEFI BIOS	64-bit	64-bit only

[Additional resources](#)

- [Windows 8 Forum](#)
- [Windows To Go Step by Step Wiki](#)
- [Tips for configuring your BIOS settings to work with Windows To Go](#)

[Related topics](#)

- [Deploy Windows To Go in Your Organization](#)
- [Windows To Go: Frequently Asked Questions](#)
- [Prepare Your Organization for Windows To Go](#)
- [Deployment Considerations for Windows To Go](#)



- [Security and Data Protection Considerations for Windows To Go](#)
- [Best Practice Recommendations for Windows To Go](#)

ELITE SOLUTIONS



What's New in BitLocker

32 out of 36 rated this helpful - [Rate this topic](#)

Published: February 15, 2012

Updated: February 15, 2012

Applies To: Windows 8, Windows Server 2012

The following is a list of new functionality in BitLocker for Windows 8 and Windows Server 2012:

- **BitLocker provisioning**

Windows 8 is now deployable to an encrypted state during installation prior to calling setup.

- **Used Disk Space Only encryption**

BitLocker now offers two encryption methods, Used Disk Space Only and Full volume encryption. Used Disk Space Only allows for a much quicker encryption experience by only encrypting used blocks on the targeted volume.

- **Standard User PIN and password change**

Allows a standard user to change the BitLocker PIN or password on operating system volumes and the BitLocker password on data volumes, reducing internal help desk call volume.

- **Network Unlock**

Enables a BitLocker system on a wired network to automatically unlock the system volume during boot (on capable Windows Server 2012 networks), reducing internal help desk call volumes for lost PINs.

- **Support for Encrypted Hard Drives for Windows**

Windows 8 includes BitLocker support for Encrypted Hard Drives.



[BitLocker provisioning](#)

In Windows Vista and Windows 7, BitLocker is provisioned post installation for system and data volumes through either the manage-bde command line interface or the Control Panel user interface. In Windows 8, BitLocker can also be easily provisioned before the operating system is installed.

In Windows 8, administrators can enable BitLocker prior to operating system deployment, from the Windows Preinstallation Environment (WinPE). This is done with a randomly generated clear protector applied to the formatted volume and encrypting the volume prior to running the Windows setup process. If the encryption uses the Used Disk Space Only option described in the next section, this step takes only a few seconds and so incorporates well into regular deployment processes.

To check the BitLocker status of a particular volume, administrators can look at the status of the drive in the BitLocker control panel applet or Windows Explorer. When a drive is pre-provisioned for BitLocker, a status of "Waiting For Activation" is displayed with a yellow exclamation icon in the BitLocker Control Panel. This status means that there was only a clear protector used when encrypting the volume. In this case, the volume is not protected and needs to have a secure key added to the volume before the drive is considered fully protected. You can use the control panel, manage-bde tool or WMI APIs to add an appropriate key protector and the volume status will be updated. The following table shows the appropriate key protectors that can be added to drives that have been pre-provisioned with BitLocker protection:

Drive Type	Key protector
Operating System	TPM
	TPM+PIN
	Startup Key (for systems without a TPM)
	Password (for systems without a TPM)
Fixed data drive	Automatic unlock
	Password
	Smart card



Password

Removable data drive

Smart card

[Used Disk Space Only encryption](#)

In Windows 7, BitLocker requires that all data and free space on the drive are encrypted. The encryption process can take a very long time on larger volumes. In Windows 8, administrators can choose to encrypt the entire volume or the used space only. When you choose the Used Disk Space Only encryption option, only the portion of the drive that has data will be encrypted. Free disk space will not be encrypted. Used Disk Space Only encryption allows encryption to complete much faster on empty or partly empty drives than previous implementations of BitLocker. When provisioning BitLocker during Windows deployments, Used Disk Space Only encryption allows BitLocker to encrypt a drive in a short amount of time before installing the operating system. Full Encryption encrypts both data and free space on the volume, similar to the way BitLocker works in Windows 7 and Windows Vista.

New Group Policy settings for encryption type

You can use Group Policy settings to enforce that either Used Disk Space Only or Full Encryption is used when BitLocker is enabled on a drive. Group Policy settings for BitLocker Drive Encryption are located under the **\Computer Configuration\Administrative Templates\Windows Components\BitLocker Drive Encryption** path of Local Computer Policy and Domain Computer Policy.

The following new Group Policies are available:

- Fixed Data Drives\Enforce drive encryption type on fixed data drives
- Operating System Drives\Enforce drive encryption type on operating system drives
- Removable Data Drives\Enforce drive encryption type on removable data drives

For each of these policies, once they are enabled you can then specify which type of encryption is required to be used on which drive type. If the policy is not configured the user will be able to choose the encryption method when they turn on BitLocker.

[Standard User PIN and password change](#)



Administrative privileges are required to configure BitLocker for operating system drives. In an organization where computers are managed by IT professionals and users are not normally granted administrative privileges, deploying the TPM + PIN protection option to large numbers of computers can be challenging. In Windows 8, administrative privileges are still required to configure BitLocker, however standard users are allowed to change the BitLocker PIN or password for the operating system volume or the BitLocker password for fixed data volumes by default. This gives users the ability to choose PINs and passwords that correspond to a personal mnemonic instead of requiring the user remember a randomly generated character set and allows IT professionals to use the same initial PIN or password setting for all computer images. This also presents the opportunity for users to choose passwords and PINs that are more susceptible to password guessing, dictionary attacks, and social engineering attacks and gives users the ability unlock any computer that still uses the original PIN or password assignment. Requiring password complexity and PIN complexity by Group Policy is recommended to help ensure that users take appropriate care when setting passwords and PINs.

Standard users are required to enter the current PIN or password for the drive to change the BitLocker PIN or BitLocker password. If a user enters an incorrect current PIN or password, the default tolerance for retry attempts is set to 5. Once the retry limit is reached, a standard user will not be able to change the BitLocker PIN or BitLocker password. The retry counter is set to zero when the computer is restarted or when an administrator resets the BitLocker PIN or BitLocker password.

You can disable the option to allow standard users to change PINs and passwords using the Group Policy setting **Disallow standard users from changing the PIN** located in the **\Computer Configuration\Administrative Templates\Windows Components\BitLocker Drive Encryption\Operating System Drives** section of Group Policy Editor.

[Network Unlock](#)

Windows Server 2012 has added a new BitLocker protector option for Operating System Volumes called Network Unlock. Network Unlock will enable easier management for BitLocker enabled desktops and servers in a domain environment by providing automatic unlock of operating system volumes at system reboot when connected to a trusted wired corporate network. This feature requires the client hardware to have a DHCP driver implemented in its UEFI firmware.

Operating system volumes protected by TPM+PIN protectors require a PIN to be entered when a machine reboots or resumes from hibernation (for example, when configured for Wake on LAN). The requirement to enter a PIN can make it difficult for enterprises to install software patches to unattended desktops and servers. Network Unlock provides a method by which computers that are configured to use a TPM+PIN key protector can start Windows without user intervention. Network Unlock works in a similar fashion to the TPM+StartupKey. Rather than needing to read the StartupKey from USB media, however, the key for Network Unlock is composed from a key stored in the TPM and an encrypted network key that is sent to the server, decrypted and returned to the client in



a secure session. The network key is stored on the system drive along with an AES 256 session key, and encrypted with the 2048-bit RSA public key of the unlock server's certificate. The network key is decrypted with the help of a provider on a Windows Server 2012 WDS server and returned encrypted with its corresponding session key. In instances where the Network Unlock provider is unavailable, the standard TPM+PIN unlock screen is presented to unlock the drive. The server side configuration to enable Network Unlock also requires provisioning a 2048 bit RSA public/private key pair in the form of an X.509 certificate, and for the public key certificate to be distributed to the clients. This certificate must be managed and deployed through the Group Policy editor directly on Windows Server 2012 Domain Controller. More information about how to configure BitLocker Network Unlock is available in the [BitLocker Understanding and Troubleshooting Guide](#).

[Support for Encrypted Hard Drives for Windows](#)

BitLocker provides Full Volume Encryption (FVE) of Windows operating system and data volumes using software-based encryption. In Windows 8 BitLocker also provide support for a new enhanced storage device type, the Encrypted Hard Drive, that is becoming a more common option in new servers and computers. Encrypted Hard Drives offer Full Disk Encryption (FDE), which means encryption occurs on each block of the physical drive. Encryption operations are more efficient on Encrypted Hard Drives because the encryption process is offloaded to the storage controller on the drive (also known as hardware-based encryption).

Windows 8 supports Encrypted Hard Drives natively in the operating system through the following mechanisms:

- Identification: Windows 8 will be able to identify that the drive is a Encrypted Hard Drive device type
- Activation: Windows 8 disk management will activate, create and map volumes to ranges/bands as appropriate
- Configuration: Windows 8 will create and map volumes to ranges/bands as appropriate
- API: Windows 8 provides API support for applications to manage Encrypted Hard Drives independently of BitLocker Drive Encryption
- BitLocker: BitLocker Control Panel will enable users to manage Encrypted Hard Drives in the same manner as full volume encrypted drives.

More information about the system requirements and usage of Encrypted Hard Drives is available in the [BitLocker Understanding and Troubleshooting Guide](#).



Windows Recovery Environment (Windows RE) Technical Reference

This topic has not yet been rated - [Rate this topic](#)

Published: February 29, 2012

Updated: May 31, 2012

Applies To: Windows 8, Windows Server 2012

Windows® Recovery Environment (Windows RE) is a recovery environment that can repair common causes of unbootable operating systems automatically.

In This Section

[Windows Recovery Environment \(Windows RE\) Overview](#)

[Push-Button Reset Overview](#)

[Windows Recovery Environment \(Windows RE\) How-to Topics](#)

[Windows Recovery Environment \(Windows RE\) Reference](#)

See Also

Other Resources

[Windows Preinstallation Environment \(Windows PE\) Technical Reference](#)

Overview of Windows RE, its menus, its entry points, and security considerations.

Overview of push-button reset features, which are available in Windows 8 client editions.

Configure Windows RE and push-button reset settings on a Windows system and deploy your customized recovery solution.

Use REAgentC.exe command-line options and other Windows RE tools to customize Windows RE features and settings during installation.



Windows Recovery Environment (Windows RE) Overview

This topic has not yet been rated - [Rate this topic](#)

Published: February 29, 2012

Updated: May 31, 2012

Applies To: Windows 8, Windows Server 2012

Windows® Recovery Environment (Windows RE) is a recovery environment that can repair common causes of unbootable operating systems. Windows RE is based on Windows Preinstallation Environment (Windows PE), and can be customized with additional drivers, languages, Windows PE optional components, and other troubleshooting and diagnostic tools. By default, Windows RE is preloaded into the Windows® 8 and Windows Server® 2012 installations.

[Tools](#)

Windows RE includes the following tools:

- **Push-button reset** (Windows 8 only). This tool enables your users to repair their own PCs quickly while preserving their data and important customizations, without having to back up data in advance. For more information, see [Push-Button Reset Overview](#).
- **Automated repair, system image recovery, and other troubleshooting tools**. For more information, see [Windows RE Troubleshooting Features](#).

In addition, in Windows Server® 2012, you can create your own custom recovery solution by using the [Windows Imaging API](#), or by using the [Deployment Image Servicing and Management \(DISM\) API](#).

Note

We no longer support building the default Windows RE boot image using the Windows PE from the ADK. Because of this change, the Windows PE optional components required to build the default Windows RE image are no longer included in the ADK.



[Entry Points into Windows RE](#)

Your users can access Windows RE features through the **Boot Options** menu which can be launched from Windows in the following ways:

- In Windows, open the **Settings** charm > **More PC settings** > **General**. In **Advanced startup**, click **Restart now**.
- or-
- In Windows, open the **Settings** charm, and then hold the Shift key while clicking **Restart**.
- or-
- From a command prompt, run the **Shutdown /r /o** command.
- or-
- Boot the computer by using recovery media. For more information, see [How to Create Recovery Media to Run Push-Button Reset Features](#).

After selecting any of these options, all user sessions are signed off, and the **Boot Options** menu is displayed. If your users select a Windows RE feature from this menu, the computer restarts into Windows RE and the selected feature is launched.

In some scenarios, Windows RE automatically tries to repair the system. In addition, the following scenarios automatically trigger failover to Windows RE:

- Two successive failed attempts to start Windows.
- Two successive unexpected shutdowns that occur within two minutes of boot completion.
- A Secure Boot error (except for issues related to Bootmgr.efi).
- A BitLocker error on touch-only devices.



You can also configure a hardware recovery button (or button combination) to run a secondary boot path that includes Windows RE. This can help users get to the Windows RE menus more easily, and can help users recover their PCs in events where some early boot components, such as the boot configuration data, are corrupted. For more information, see [How to Add a Hardware Recovery Button to Start Windows RE](#).

[Boot Options Menu](#)

The **Boot Options** menu enables your user to perform the following actions:

- Start recovery, troubleshooting, or diagnostic tools.
- Boot from a device (UEFI only).
- Access the **Firmware** menu (UEFI only).
- Choose which operating system to boot, if multiple operating systems are installed on the same computer.

Note

You can add one custom tool to the **Boot Options** menu. Otherwise, these menus can't be further customized. For more information, see [How to Add a Custom Tool to the Windows RE Boot Options Menu](#).

[Security Considerations](#)

When working with Windows RE, be aware of the following security considerations:

- If your user opens the **Boot Options** menu from Windows and selects a Windows RE tool, they must provide the user name and password of a local user account with administrator rights. This consideration doesn't apply to the **Reset your PC** feature.
- By default, networking is disabled in Windows RE. You can turn on networking dynamically if you need it. However, we recommend that you disable networking when you don't need connectivity.

[Customizing Windows RE](#)



You can customize Windows RE by adding packages (Windows PE optional components), languages, drivers, and custom diagnostic or troubleshooting tools. By default, Windows RE includes the following Windows PE optional components:

- Microsoft-Windows-Foundation-Package
- WinPE-EnhancedStorage
- WinPE-Rejuv
- WinPE-Scripting
- WinPE-SecureStartup
- WinPE-Setup
- WinPE-SRT
- WinPE-WDS-Tools
- WinPE-WMI
- Microsoft-Windows-Foundation-Package

Note

The number of languages, drivers, and optional components is limited to the amount of memory available on the computer. However, for performance reasons, we recommend that you minimize the number of additional languages, drivers, and tools you add to the image. In addition, we recommend that you include only the preloaded Windows image languages, instead of injecting as many languages as possible.

[Hard Drive Partitions](#)

When you install Windows with Windows Setup, Windows RE is configured as follows:

- During Windows Setup, Windows prepares the hard drive partitions to support Windows RE.



- Windows initially places the Windows RE image file (winre.wim) to the Windows partition, in the \Windows\System32\Recovery folder.

At this point, you can modify or replace the Windows RE image file to include additional languages, drivers, or Windows PE optional components.
- At the start of the Out of Box Experience (OOBE), the Windows RE image file is copied into a separate partition, so that the computer can boot to the recovery tools even if there is a problem with the Windows partition. On UEFI-based computers, the image is copied to the Windows RE Tools partition. On BIOS-based computers, the image is copied to the System partition.

When you deploy Windows by applying images, you must manually configure the hard drive partitions. When Windows RE is installed on a hard drive, the partition must be formatted as NTFS.

When Windows RE is installed on a hard drive, the partition must be formatted as NTFS.

Add the baseline Windows RE tools image (winre.wim) to a separate partition from the Windows and data partitions. This enables your users to use Windows RE even if the Windows partition is encrypted with Windows® BitLocker® Drive Encryption. In addition, it prevents your users from accidentally modifying or removing these files.

For UEFI-based systems, we recommend that you store the tools image in a dedicated partition. For BIOS-based systems, we recommend that the tools are included in the system partition.

For more information about configuring hard drive partitions, see [How to Configure UEFI/GPT-Based Hard Drive Partitions](#) or [How to Configure BIOS/MBR-Based Hard Drive Partitions](#).

See Also

Tasks

[How to Customize Windows RE](#)

[How to Add a Custom Tool to the Windows RE Boot Options Menu](#)

[How to Deploy Windows RE](#)

Concepts

[Push-Button Reset Overview](#)



Other Resources

[Windows Recovery Environment \(Windows RE\) Technical Reference](#)

ELITE SOLUTIONS



Push-Button Reset Overview

0 out of 1 rated this helpful - [Rate this topic](#)

Updated: May 31, 2012

Applies To: Windows 8

On Windows 8 editions, Windows RE includes push-button reset features that enable your users to repair their PCs quickly while preserving their data and important customizations. This can help you satisfy support obligations with faster average resolution times and fewer resources.

You can customize the push-button reset features by inserting custom scripts that can install applications or preserve additional data. This can help you eliminate or lower the development costs of custom recovery solutions.

The following recovery functions are available in push-button reset:

- **Refresh your PC** fixes software problems by reinstalling the factory image, while preserving user accounts, data, and Windows® Store apps.
- **Reset your PC** prepares the PC for recycling or transfers of ownership by removing all user data and reinstalling the factory image.

Push-button reset features can be run from a hard drive partition with Windows RE, or from external media such as a USB flash drive or DVD that includes Windows RE.

You can also prepare the PC to enable your users to create their own external recovery media, and provide the option to optionally reclaim the hard drive space for their own use. For more information, see [How to Configure Bare-Metal Restore/Recovery Media](#).

[Refresh your PC](#)

The **Refresh your PC** preserves user data, important settings, and previously installed Windows Store apps.



Note

The **Refresh your PC** functionality requires that the Windows partition has enough free drive space to install the expanded recovery image, plus an additional 20 percent buffer. We recommend keeping the image size as small as possible.

This functionality performs the following processes:

1. The PC boots into Windows RE.
2. Push-button reset gathers user accounts, settings, data, and Windows Store apps.
3. **Extensibility point:** You can add a custom script here by adding its location to ResetConfig.xml in <BasicReset_BeforeImageApply>. For more information, see [How to Add a Script to Push-Button Reset Features](#).
4. Push-button reset expands the factory image file in the recovery partition to a new, temporary operating system folder.
5. Push-button reset applies system-critical settings to the new operating system.
6. Push-button reset moves the old operating system to the Windows.old folder.
7. Push-button reset moves the new operating system from the temporary folder to the root of the current installation.
8. **Extensibility point:** You can add a custom script here by adding its location to ResetConfig.xml in <BasicReset_AfterImageApply>. For more information, see [How to Add a Script to Push-Button Reset Features](#).
9. Push-button reset reboots the PC into the new operating system.
10. At first boot, push-button reset configures the factory image and reapplies preserved user data and settings.
11. The end user logs into their account.
12. Push-button reset reinstalls Windows Store apps from the Windows Store.
13. Push-button reset adds a list of desktop applications that were not able to be restored to the PC, and stores the list in a file on the Windows desktop.



[User Data](#)

The following table shows which data folders are preserved, and which are refreshed to their factory-original state.

Preserved	Refreshed
<p>These folders are copied from the old Windows installation to the new Windows installation:</p> <ol style="list-style-type: none">1. \Users\<i><profile></i>: All files and folders (except \Users\<i><profile></i>\AppData).2. All folders at the root of the Windows partition added by your user. For example, C:\MyData\.3. All file history versioning data.4. All folders on non-operating system partitions.	<p>These folders are refreshed to the original state from the recovery image. User data in these folders is not kept.</p> <ul style="list-style-type: none">• \ProgramData• \Program Files• \Program Files (x86)• \Users\<i><profile></i>\AppData• OEM folders. Any folders you added to the recovery image.• \Windows

Note

After the **Refresh your PC** process is complete, users can retrieve their files that are not preserved for a limited amount of time from the C:\Windows.old folder. For example, the C:\ProgramData folder is moved to the C:\Windows.old\ProgramData folder. Although the Windows Task Scheduler deletes most of the C:\Windows.old directory during automatic maintenance, the C:\Windows.old\Users\ folder is kept until your user manually deletes the folder.

[Applications](#)

The following table shows which applications are preserved, which are refreshed to their factory-original state, and which must be reinstalled by the user.

Preserved

Refreshed

Not kept



Windows Store apps . These apps are copied from the old installation to the new Windows installation. This includes preinstalled apps and apps purchased from the Windows Store. Internet connectivity isn't required to preserve these apps.

Preloaded desktop applications. The applications in the recovery image are returned to factory condition, even if your users previously uninstalled these applications.

You can configure scripts in push-button reset to save, and later restore, specific application settings and data. For more information, see [How to Add a Script to Push-Button Reset Features](#).

Desktop applications installed by your users.

After the **Refresh your PC** process is complete, users can see a list of applications that on the PC that were not kept. This list is stored on a file on the Desktop.

[Settings](#)

The **Refresh your PC** functionality preserves many system and user settings required to keep the system running and to minimize the need for your user to reconfigure the PC. The following table details the preserved settings.

Setting	Description
User accounts and credentials	Per-user operating system and application settings.
Domain-join settings	The domain membership of a PC. You don't have to rejoin a domain.
Local group memberships for local and domain user accounts	The level of access by local and domain users.
Windows Update settings and Automatic Update opt-in settings	Settings for how recommended updates appear and which users can install updates. If the Automatic Updates feature is enabled, its settings remain unchanged.
Data Protection API (DPAPI) store	Cached user secrets, such as saved passwords in browsers.
Library settings	Library settings, stored as .library-ms files in \Roaming\Microsoft\Windows\Libraries under the per-user AppData folders. These library settings enable your users to have a consistent view of their custom library data.
Encrypting File System (EFS) certificates and keys	EFS-encrypted files.
Drive letter assignments and mount	A consistent view of disk partitions and mount points.



points

Classic desktop personalization

Telemetry client IDs and opt-in settings

Microsoft® Software License Terms acceptance status, product ID, and activation state

Connected accounts

Windows® BitLocker® Drive Encryption and BitLocker To Go® automatic-unlock settings

International settings

Home Group settings

Settings for Shell

Default programs and file type associations

Wireless network profiles

Event logs (Application, Security, System)

Settings configured in out-of-box experience (OOBE)

[Reset your PC](#)

Desktop themes and other related personalization settings.

Telemetry systems such as Windows Error Reporting (WER), Software Quality Metrics (SQM), and Reliability Analysis Component (RAC). Telemetry systems retain a continuous view of systems, even if the operating system has been reset.

License terms, product key, and activation information. For more information, see [Activation state](#) later in this topic.

Accounts that are connected to Microsoft Online Services such as Windows Live®. API is required to preserve connected accounts.

BitLocker-enabled data volumes. These are available immediately after basic reset. Your user doesn't have to manually unlock the volumes again.

Per-user UI language, locale, and keyboard/input method settings.

The ability to join a PC to a Home Group.

Some personalization settings remain unchanged.

Changes to default programs and file type associations.

Wireless network passwords remain unchanged.

Event logs.

All settings that your user configured during OOBE.

The **Reset your PC** functionality reinstalls the factory image; removes all user data, settings, and applications; and returns the PC to the default factory state. This function performs the following processes:

1. The PC boots into Windows RE.



2. If there is more than one user-accessible partition, then your user chooses whether to format the entire hard drive or just the Windows partition. For more information, see [How to Configure Bare-Metal Restore/Recovery Media](#).
3. Your user chooses whether to simply format their hard drive partition (**Quick** option), or to clean the hard drive by attempting to overwrite all existing user data (**Thorough** option).

Note

Neither option is certified to meet government or industry data erasure standards.

4. **Extensibility point:** You can add a custom script here by adding its location to ResetConfig.xml in <FactoryReset_AfterDiskFormat>. For more information, see [How to Add a Script to Push-Button Reset Features](#).
5. Push-button reset formats the data partitions (optional).
6. Push-button reset applies the factory image from the recovery partition to the Windows partition.
7. Push-button reset recreates the boot configuration data (BCD) store on the system partition.
8. **Extensibility point:** You can add a custom script here by adding its location to ResetConfig.xml in <FactoryReset_AfterImageApply>. For more information, see [How to Add a Script to Push-Button Reset Features](#).
9. Push-button reset reboots the PC into the new operating system.
10. Windows starts the Out of Box Experience (OOBE).

[Bare Metal Recovery](#)

If the user needs to replace their hard drive, or completely wipe it, they can use bootable recovery media, This function performs the following processes:

1. The PC boots into Windows RE.
2. Push-button reset identifies the system drive.



3. Push-button reset recreates and formats each of the partitions specified in the diskpart script.
4. Push-button reset applies the factory image file to the Windows partition.
5. Push-button configures Windows RE and the recovery image on the disk.
6. Windows restarts into the OOBE.

For more information, see [How to Configure Bare-Metal Restore/Recovery Media](#).

[Hard Drive Partitions](#)

To configure push-button reset features, you must deploy Windows by creating partitions and capturing and applying images. Windows Setup does not configure a push-button reset recovery image, nor does it prepare a recovery image partition.

We recommend adding the push-button reset recovery image into a dedicated partition at the end of the hard drive. By following this recommendation, your users can delete the partition to reclaim several gigabytes of drive space if needed without affecting the Windows RE tools, which can still function to repair common boot problems.

To prevent your users from accessing and formatting your recovery image partitions, set the following attributes:

- **Unified Extensible Firmware Interface (UEFI)** : Set the partition type as **PARTITION_MSFT_RECOVERY_GUID**. In addition, set the partition attributes as **GPT_ATTRIBUTE_PLATFORM_REQUIRED** and **GPT_BASIC_DATA_ATTRIBUTE_NO_DRIVE_LETTER**. For more information, see [PARTITION_INFORMATION_GPT structure](#).
- **BIOS**: Set the type to any value other than **0x7**, **0x0c**, **0x0b**, **0x0e**, **0x06**, or **0x42**.

For more information, see [How to Deploy Push-Button Reset Features](#).

For more information about configuring hard drive partitions, see [How to Configure UEFI/GPT-Based Hard Drive Partitions](#) or [How to Configure BIOS/MBR-Based Hard Drive Partitions](#).

[Using Recovery Image Files](#)



The recovery image must be stored in a folder named Recovery, for example, R:\Recovery\install.wim.

The recovery image may be either a single Windows image file named `install.wim`, or a set of split Windows image files that meet the following criteria:

- The leading file must be named `install.swm`.
- Subsequent files must appear in the `Install<image_index>.swm` format, where `<image_index>` is the selected image in the collection. For example, `Install12.swm`, `Install13.swm`.
- Each `.swm` file must be smaller than 4GB.
- All `.swm` files must be located in the same folder as your recovery image, for example, R:\RecoveryImage\ (`install.swm`, `install12.swm`, and `install13.swm`). For more information about splitting a Windows image file, see [How to Split a Windows Image \(.swm\) File to Span Across Multiple DVDs or CDs](#).

For more information about deploying Push-button reset, see [How to Deploy Push-Button Reset Features](#).

[Activation state](#)

Push-button reset features attempt to preserve the activation status and store, and migrate these settings in both a refresh and reset. If the migration succeeds, the system will remain in an activated state after the refresh operation.

Note

The activation status may not be able to be migrated for a few reasons:

- For both the refresh and reset scenarios, if no activation store or activation status information is available, or if the activation store is unreadable, the activation status will not be preserved. The user will have to activate again once the operation completes.
- In the reset scenario only, if the user has upgraded the edition using the Windows Anytime Upgrade, none of the activation data is migrated. The user will be reset back to the edition included in the OEM image after the reset operation. The user will then have to



activate, and go through the Windows Anytime Upgrade process again to get back to the upgraded edition.

See Also

Tasks

[How to Add a Script to Push-Button Reset Features](#)

[How to Configure Bare-Metal Restore/Recovery Media](#)

[How to Deploy Push-Button Reset Features](#)

ELITE SOLUTIONS



Windows Recovery Environment (Windows RE) How-to Topics

This topic has not yet been rated - [Rate this topic](#)

Published: February 29, 2012

Updated: May 31, 2012

Applies To: Windows 8, Windows Server 2008 R2, Windows Server 2012

Windows® Recovery Environment (Windows RE) is a recovery environment that can repair common causes of unbootable operating systems, in addition to including push-button reset features that enable your users to repair their PCs quickly while preserving their data and important customizations.

This section describes how to customize Windows RE and push-button reset recovery images on a Windows system.



In This Section

[How to Customize Windows RE](#)

Customize Windows® Recovery Environment (Windows RE) by adding packages (Windows Preinstallation Environment (Windows PE optional components), languages, drivers, and custom diagnostic or troubleshooting tools.

[How to Add a Custom Tool to the Windows RE Boot Options Menu](#)

Add a custom troubleshooting or diagnostic tool to your Windows RE image.

[How to Add a Hardware Recovery Button to Start Windows RE](#)

Configure a hardware recovery button (or button combination) to run a secondary boot path that contains Windows RE.

[How to Deploy Windows RE](#)

Deploy a Windows RE tools image, including any built-in custom tools, to a hard drive partition.

[How to Add a Script to Push-Button Reset Features](#)

Customize push-button reset by adding scripts or executable files.

[How to Create Recovery Media to Run Push-Button Reset Features](#)

Customize push-button reset to create recovery media for your users. You can also prepare Windows to enable your users to create their own recovery media.

[How to Deploy Push-Button Reset Features](#)

Create a push-button reset recovery image, and then deploy push-button reset with customizations.

See Also

Concepts

[Windows Recovery Environment \(Windows RE\) Overview](#)

[Push-Button Reset Overview](#)

Other Resources

[Windows Recovery Environment \(Windows RE\) Reference](#)

[Windows Preinstallation Environment \(Windows PE\) Technical Reference](#)



Windows Recovery Environment (Windows RE) Reference

This topic has not yet been rated - [Rate this topic](#)

Published: February 29, 2012

Updated: May 31, 2012

Applies To: Windows 8, Windows Server 2012

Windows® Recovery Environment (Windows RE) is an extensible recovery platform that is based on Windows Preinstallation Environment (Windows PE). Windows RE is installed by default on Windows® 8 for both client and server editions. When a computer cannot start, Windows automatically fails over to this environment. Windows RE is required to enable push-button reset, which is the recommended tool for full system recovery in client editions of Windows 8. Push-button reset features provide end users with more recovery options.

In This Section

[REAgentC Command-Line Options](#)

Use REAgentC.exe command-line syntax to administer Windows RE and push-button reset.

[Windows RE Troubleshooting Features](#)

Learn about automatic failover behavior, manual diagnosis, and the repair process in Windows RE. These tools are available in Windows® 8, but are not recommended.

Related Sections

[Windows Recovery Environment \(Windows RE\) Overview](#)

[Windows Recovery Environment \(Windows RE\) How-to Topics](#)

See Also

Other Resources

[Windows Preinstallation Environment \(Windows PE\) Technical Reference](#)



Windows 8 Release Preview: frequently asked questions

Here are answers to some common questions about Windows 8 Release Preview.



What is Windows 8 Release Preview?

Windows 8 Release Preview is a prerelease version of Windows 8 that focuses on people and apps and gives you powerful new ways to use social technologies to connect with the people who are important to you. It's Windows reimagined. Windows 8 Release Preview is built on the rock-solid foundation of Windows 7 and has the security and reliability features you expect from Windows, but we've made it even better. It's fast, and it's made to work on a variety of form factors—especially the new generation of touch devices.

Here's your chance to be one of the first to try it out. Similar to Consumer Preview, we'll be using information from Release Preview users to make the final product even better.

For detailed product and feature information, download the [Windows 8 Release Preview Guide](#) (available in English only).



Is Windows 8 Release Preview ready for everyone to try?

We strongly recommend that only experienced PC users download Windows 8 Release Preview. Before you download the preview, you should weigh the pros and cons of installing software that's still in development. If you install the preview release, you'll get to try out the many new features, but you might also encounter errors that you wouldn't encounter using a released version of Windows.

You should consider downloading the Windows 8 Release Preview only if all of the following apply to you:

- You like to use the latest software and enjoy experimenting with new technology.
- You're comfortable backing up a PC, formatting a hard drive, and installing an operating system from scratch.
- You feel comfortable troubleshooting PC problems yourself.



- You don't mind updating software frequently.
- You have the installation or recovery media and the knowledge to restore your previous operating system after you're done testing Windows 8 Release Preview.



Are there risks to installing Windows 8 Release Preview?

Yes. Windows 8 Release Preview is stable and has been thoroughly tested, but it's not the finished product. Your PC could crash and you could lose important files. You should back up your data and you shouldn't test Windows 8 Release Preview on your primary home or business PC. You might also encounter problems like:

- Software that doesn't install or work correctly, including antivirus or security programs.
- Printers, video cards, or other hardware that doesn't work.
- Difficulty accessing corporate or home networks.
- Files that might become corrupted.

You should carefully balance the risks and rewards of trying out the Windows 8 Release Preview before you install it.



How do I provide feedback?

The best way to provide feedback is to participate in the [Windows 8 Release Preview forum](#). On this dedicated forum, you'll find thousands of other Windows enthusiasts who are testing our product, posting their experiences, and participating in the Windows 8 Release Preview online community. In particular, if you think you've encountered a problem that you'd like to have addressed in future releases of Windows 8, post a "Bug Report" about your issue on the Windows 8 Release Preview forum. In your post, describe what you encountered, any text or messages that were displayed, and other information that would help us reproduce your issue in our own testing environments. We're monitoring the Windows 8 Release Preview forum and might ask you to post additional information to help us improve the experience.



Where do I go for Windows 8 Release Preview support?

We've created some online forums where you can ask questions and get answers from other Release Preview testers and Microsoft support professionals. (We don't offer technical support for prerelease software, including Windows 8 Release Preview.)

- Visit the [Windows 8 Release Preview forum](#)
- Visit the [Internet Explorer 10 Release Preview forum](#)
- Visit the [developer forums](#) for building apps
- Visit the [IT pro forums](#) for Windows 8 business features

Downloading and installing



What are the system requirements for Windows 8 Release Preview?

Windows 8 Release Preview works great on the same hardware that powers Windows 7:

- **Processor:** 1 gigahertz (GHz) or faster
- **RAM:** 1 gigabyte (GB) (32-bit) or 2 GB (64-bit)
- **Hard disk space:** 16 GB (32-bit) or 20 GB (64-bit)
- **Graphics card:** Microsoft DirectX 9 graphics device with WDDM driver

Additional requirements to use certain features:

- To use touch, you need a tablet or a monitor that supports multitouch.
- To access the Windows Store and to download and run apps, you need an active Internet connection and a screen resolution of at least 1024 x 768.



- To snap apps, you need a screen resolution of at least 1366 x 768.
- Internet access (ISP fees might apply)

What is PAE, NX, and SSE2 and why does my PC need to support them to run Windows 8 Release Preview?

Physical Address Extension (PAE), NX processor bit (NX), and Streaming SIMD Extensions 2 (SSE2) refer to features of the processor. PAE enables 32-bit processors to access more than 4 GB of physical memory on capable versions of Windows and is a prerequisite for NX. NX allows the processor to help guard the PC from attacks by malicious software. SSE2 (a standard on processors for a long time) is an instruction set that is increasingly used by third-party applications and drivers. For Windows 8, we require that your processor support NX for security reasons to ensure that malware defense features work reliably. To enhance the reliability of third-party applications and drivers running in Windows 8, SSE2 is also required. If your PC does not support PAE, NX, and SSE2 you won't be able to install Windows 8 Release Preview.

Where do I download developer tools and samples to build apps?

Free developer tools and samples are available from the [Windows Dev Center downloads page](#).

What languages is the preview available in?

Windows 8 Release Preview is available in Arabic, English, Chinese (Simplified), Chinese (Traditional), French, German, Japanese, Korean, Portuguese (Brazil), Russian, Spanish, Swedish, and Turkish.

Note

- If you install Windows 8 Release Preview in a language that's different from the language currently on your PC, you can only keep your files.



Will my devices and programs work with Windows 8 Release Preview?

Windows 8 Release Preview should work with the same devices and programs that work with Windows 7. In some cases, the device or program might require an update or you might need to uninstall some programs, and then reinstall them after installing Windows 8 Release Preview. The Windows 8 Release Preview Setup program will scan your PC to determine what's compatible and provide a report that you can save or print. Make sure your devices are connected to your PC and turned on before you run the Setup program. If you want compatibility info for a specific device or program, see the [Windows 8 Release Preview Compatibility Center](#).



What is a Microsoft account and do I need one to use Windows 8 Release Preview?

A Microsoft account is an email address and password that you use to sign in to Windows. You can use any email address, but it's best if you choose the one you already use to communicate with friends and sign in to your favorite websites. You don't need a Microsoft account to use Windows 8 Release Preview, but we highly recommend that you use one. When you sign in to your PC with a Microsoft account, you'll connect your PC to the people, files, and devices you care about. (If you need an email address, we can give you one for free.)

When you sign in with a Microsoft account, your PC is connected to the cloud and:

- Your friends' contact info and status automatically stay up to date from places like Hotmail, Facebook, Twitter, and LinkedIn as soon as you connect those services to your Microsoft account.
- You can get to and share your photos, docs, and other files from places like SkyDrive, Facebook, and Flickr.
- Your personal settings are synced to any PC running Windows 8 Release Preview that you sign in to, including your themes, language preferences, browser favorites, and apps.
- You can get apps in the Windows Store and use them on any PC running Windows 8 Release Preview that you sign in to.

If you've already installed Windows 8 Release Preview and didn't sign in with a Microsoft account or you don't have a Microsoft account and want to get one, follow these steps:

1. Swipe in from the right edge of the screen, and then tap **Settings**.
(If you're using a mouse, point to the upper-right corner of the screen, move the mouse pointer down, and then click **Settings**.)



2. Tap or click **Change PC settings**.
3. Tap or click **Users**.
4. Tap or click **Switch to a Microsoft account**.

Upgrading



[Can I upgrade from previous versions of Windows to Windows 8 Release Preview?](#)

Yes, you can upgrade to Windows 8 Release Preview from Windows 8 Consumer Preview, Windows Developer Preview, Windows 7, Windows Vista, or Windows XP, but you might not be able to keep all of your files, programs, and settings. The following table shows what you can keep during an upgrade depending on the current version of Windows running on your PC:

Current operating system

Windows 8 Consumer Preview

Windows Developer Preview

Windows 7

Windows Vista

Windows XP

What you can keep

Nothing (your files will be saved in the Windows.old folder)

Nothing (your files will be saved in the Windows.old folder)

Programs

Windows settings

User accounts and files

Windows settings

User accounts and files

User accounts and files





Warning

- If you create installation media, start your PC from the media, and then install Windows 8 Release Preview, you won't be able to keep your files, programs, or settings. To keep files, programs, or settings you need to install Windows 8 Release Preview by starting your installation from within Windows.



How do I retrieve files from the Windows.old folder?

If you were running Windows 8 Consumer Preview and installed Windows 8 Release Preview and didn't reformat your hard drive during installation, you should be able to retrieve your files from the Windows.old folder.



To automatically retrieve your files

You can run a troubleshooter that will automatically retrieve your personal files from the Windows.old folder and copy them back to their original location. The troubleshooter will work on all languages but the text in the troubleshooter is only in English.

- Run the **Recover personal files** troubleshooter.



To manually retrieve your files

1. Swipe in from the right edge of the screen, tap **Search** (or if you're using a mouse, point to the upper-right corner of the screen, move the mouse pointer down, and then click **Search**), enter **Computer** in the search box, tap or click **Apps**, and then tap or click **Computer**.
2. Double-tap or double-click the drive that Windows is installed on (typically, the C: drive).
3. Double-tap or double-click the **Windows.old** folder.



4. Double-tap or double-click the **Users** folder.
5. Double-tap or double-click your user name.
6. Open the folders that contain the files you want to retrieve. For example, to retrieve files in the Documents library, double-click **Documents**.
7. Copy and paste the files that you want from each folder to a folder in Windows 8 Release Preview.
8. Repeat steps 5-7 for each user account on your computer.

Uninstalling



Can I uninstall Windows 8 Release Preview?

No. To go back to your previous version of Windows, you'll need to reinstall it from the recovery or installation media that came with your PC; typically DVD media. If you don't have recovery media you might be able to create it from a recovery partition on your PC using software provided by your PC manufacturer. Check the support section of your PC manufacturer's website for more information. After you install Windows 8, you won't be able to use the recovery partition on your PC to go back to your previous version of Windows.


For instructions on reinstalling Windows 7, see [Installing and reinstalling Windows 7](#).

Using Windows 8 Release Preview



Where is the Start button or Start menu?

The Start screen replaces the Start menu in Windows 8. You can pin apps, contacts, and websites to Start to easily access what you use most. All of your apps—both apps you install from the Windows Store and desktop apps—are available from the Start screen. You can organize, group, and name categories of apps in whatever way makes sense to you. Tiles and notifications show what's new so you can get important info and updates at a glance.

You can get to the Start screen by swiping in from the right edge of your screen and tapping the Start charm or by pointing your mouse to the upper-right corner of the screen and then clicking the Start charm. You can also use the Windows key  on your keyboard to go to Start.



How do I search?

Whenever you want to search for something, use the Search charm.

Here's how:

1. Open the Search charm one of these ways:
 - With touch, swipe in from the right edge of the screen, and then tap **Search**.
 - With a mouse, move your pointer into the upper-right corner of the screen, move it down, and then click **Search**.
 - With a keyboard, any time you're on Start you can just start typing.
2. Enter your search term.

From here, you can choose to:

- Search the app you're in (for example, find a specific message in the Mail app).
- Search another app (for example, quickly look up something on the web with Internet Explorer).



- Search your entire PC for an app, setting, or file.



What does the Share charm do?

The Share charm lets you share files and info with people you know or send info to another app, without leaving the app you're in. You can email photos to a friend, post an article to Facebook, or send a link to your note-taking app.

Here's how:

1. Swipe in from the right edge of the screen, and then tap **Share**.

(If you're using a mouse, move your pointer into the upper-right corner, move it down, and then click **Share**.)

2. Pick which app to share with, and then follow the on-screen instructions.



How do I print?

Here are some options:

- Press Ctrl+P.
- If an app has a File menu with a Print command, you can still use that.
- For new apps that support printing but do not have a File menu, tap or click the printer you want in the Devices charm.

Note

- Not all apps support printing.

If the printer you want to use isn't listed, here's how to add a printer:

1. Swipe in from the right edge of the screen, and then tap **Settings**.



(If you're using a mouse, move your pointer into the upper-right corner, move it down, and then click **Settings**.)

2. Tap or click **Change PC settings**, and then tap or click **Devices**.
3. Tap or click **Add a device**, and then follow the on-screen instructions.



How do I add an account to an app?

The Mail, Calendar, People, and Messaging apps work great with services you already use, like your email, Facebook, and Twitter accounts.

Here's how you add an account:

1. In the app, open the Settings charm, and then tap or click **Accounts**.
2. Tap or click **Add an account**.
3. Tap or click the type of account you want to add, and then follow the on-screen instructions.



How do I close an app?

In Windows 8, apps you install from the Windows Store don't slow down your computer, so you don't need to close them. When you're not using an app, Windows will leave it running in the background and then close it eventually if you don't use it. But if you really want to close an app, here's how:

If you're using a mouse, click the top of the app and drag it to the bottom of the screen.

If you're using touch, drag the app to the bottom of the screen.

It's still a good idea to close desktop apps when are done using them, particularly before shutting down your PC.



Where is Control Panel?

In Windows 8 there are a few different ways to find and change your settings: Control Panel, PC settings, and Search. Most of the settings that you'll want to change can be found in PC settings.

To open Control Panel

1. Swipe in from the right edge of the screen, and then tap **Search**.
(If you're using a mouse, point to the lower-right corner of the screen, and then click **Search**).
2. Enter **Control Panel** in the search box, tap or click **Apps**, and then tap or click **Control Panel**.

To open PC settings

- Swipe in from the right edge of the screen, tap **Settings**, and then tap **More PC settings**.
(If you're using a mouse, point to the upper-right corner of the screen, click **Settings**, and then click **More PC settings**.)

To use Search

- To find individual tasks or settings quickly, use the Search charm. Swipe in from the right edge of the screen, and then tap **Search**.
(If you're using a mouse, point to the upper-right corner of the screen, move the mouse pointer down, and then click **Search**.) Type a word or phrase into the search box, and then select from the list of results on the left.



Where is Windows Media Center?

Windows Media Center is not preinstalled in Windows 8 Release Preview. If you want to use Windows Media Center, you need to add it by following these steps:

1. Swipe in from the right edge of the screen, and then tap **Search**.
(If you're using a mouse, point to the upper-right corner of the screen, and then click **Search**.)



2. Enter **add features** in the search box, and then tap or click **Add features to Windows 8**.
3. Tap or click **I already have a product key**.
4. Enter this product key: MBFBV-W3DP2-2MVKN-PJCQD-KKTF7 and then click **Next**.
5. Select the checkbox to accept the license terms and then click **Add features**.

Your PC will restart and Windows Media Center will now be on your PC and the tile will be pinned to the Start screen.

How do I play DVDs?

To play DVDs in Windows 8 Release Preview, you might need to either add Windows Media Center or install a third-party app that supports DVD playback.

How do I shut down or turn off my PC?

When you finish using your PC, it's a good idea to turn it off properly—not only to save energy, but also to help keep it secure and make sure your work is saved.

1. Swipe in from the right edge of the screen, and then tap **Settings**.
(If you're using a mouse, point to the upper-right corner of the screen, move the mouse pointer down, and then click **Settings**.)
2. Tap or click **Power**, and then tap or click **Shut down**.

Note

- **Shut down** and **Restart** (or **Update and shut down** and **Update and restart**) appear by default in the **Power** menu. You can also add other options like **Sleep** and **Hibernate** to this menu.

You should close any desktop apps you have open before shutting down your PC. This will prompt you to save any work that you might have open on the desktop.



Where can I get more information about consumer security software providers?

Windows 8 Release Preview comes with Windows Defender, which has been improved in Windows 8 to provide the same level of malware protection as Microsoft Security Essentials. You do not need to install Microsoft Security Essentials and it will not work with Windows 8. Microsoft will continue to provide and improve Microsoft Security Essentials for Windows 7, Windows Vista, and Windows XP. If you're upgrading to Windows 8 Release Preview, you should uninstall Microsoft Security Essentials first. For information on uninstalling Microsoft Security Essentials, see [How to manually uninstall Microsoft Security Essentials](#).

Microsoft is actively working with antimalware app developers to ensure the availability of high-quality antimalware apps on Windows 8. If you prefer to use something other than Windows Defender, visit the [Antimalware apps for Windows 8 Release Preview page](#) to find out what works with Windows 8 Release Preview.

Apps and the Windows Store



Do I need a Microsoft account to use the Windows Store?

Yes. With a Microsoft account, you can see all of the apps you bought from the Store and you can install any of those apps on up to five PCs.

To sign up for a Microsoft account:

1. Open Windows Store, swipe in from the right edge of the screen, and then tap **Settings**.
(If you're using a mouse, point to the upper-right corner of the screen, move the mouse pointer down, and then click **Settings**.)
2. Tap or click **Your account**, tap or click **Sign in**, and then tap or click **Sign up for a Microsoft account**.



I got an app from the Store but can't find it on my PC. Where is it?

After apps are installed, a tile for the app appears on the Start screen. If you don't see the tile for an app, you can try searching for the app on your PC:

1. Swipe in from the right edge of the screen, and then tap **Search**.
(If you're using a mouse, point to the upper-right corner of the screen, and then click **Search**.)
2. Make sure the search is set to search **Apps**, and then enter the name of the app.

If an app doesn't appear in the search results, you can reinstall it on your PC:

1. Open Windows Store, swipe in from the top edge of the screen, and then tap **Your apps**.
(If you're using a mouse, point to the top of the screen, right-click, and then click **Your apps**.)
2. Swipe down on or right-click the app you want to reinstall, and then tap or click **Install**.



How do I use my apps on other PCs?

You can install any of the apps you bought from the Store on up to five PCs. To install one of your apps on another PC:

1. Open Windows Store, swipe in from the top edge of the screen, and then tap **Your apps**.
(If you're using a mouse, point to the top of the screen, right-click, and then click **Your apps**.)
2. Swipe down on or right-click the app you want to install, and then tap or click **Install**.



I'm having trouble with an app. How do I get help for it?

If you're having a technical problem with an app, you can contact the developer of the app for support. To view the developer's support info:

1. Open Windows Store, and go to the app's description page.



2. Tap or click **App support** to see the developer's support website or contact info.

If you have questions about Windows Store, you can get answers from other Windows users and Microsoft technical support in the [Windows 8 Release Preview forum](#).



What's a desktop app?

A desktop app is designed specifically to run on the desktop. You can view description pages for desktop apps in the Windows Store, and you'll need to tap or click the link provided on the desktop app's description page to install the app from the developer's website. After the desktop app is downloaded from the developer's website and installed on your PC, you can run it from the Start screen (which will open the desktop) or pin it to the taskbar to directly run it from the desktop.



How do I get help with Windows Store app purchases and billing info?

If you're using a version of the Windows Store that supports app purchases and you have a problem buying an app from the Windows Store, or if you have questions about the billing info associated with your account, you can [contact customer support to get help](#).

Internet Explorer 10 Release Preview



Why don't toolbars and add-ons work?

Internet Explorer 10 provides an "add-on free" experience. It supports HTML 5 for video content, but you can't install toolbars and add-ons in Internet Explorer 10.



If you are viewing a webpage that requires an add-on, you can view the content by opening the website in Internet Explorer for the desktop. To do this, swipe in from the right edge of the screen (if you're using a mouse, point to the upper-right corner of the screen), tap or click **Settings**, and then tap or click **Use the desktop**.



Where do I find my favorites?

Internet Explorer 10 doesn't use the traditional Favorites from previous versions. Instead, you can pin websites to the Start screen or open a list of pinned sites and frequently visited sites using **New tab**. If you open Internet Explorer for the desktop, you can use the traditional Favorites, but you can't access the pinned sites from the Start screen.



How do I view a website in Compatibility View?

To view a website in Compatibility View, open Internet Explorer for the desktop, and then click the **Compatibility view** button in the address bar.



How do I set my default web browser?

1. On the Start screen, swipe in from the right edge of the screen, and then tap **Search**.
(If you're using a mouse, point to the upper-right corner of the screen, and then click **Search**.)
2. Enter **Default programs**, and then tap or click **Apps**.
3. In the search results, tap or click **Default Programs**.
4. Tap or click **Set your Default Programs**.
5. Choose the browser you want from the list.
6. Select **Set this program as default**, and then tap or click **OK**.



I can't find the Internet Explorer 10 tile on the Start screen. How do I get it back?

Internet Explorer 10 might have accidentally become unpinned. To pin it back to your Start screen, follow these steps:

1. Swipe in from the right edge of the screen, and then tap **Search**.
(If you're using a mouse, point to the upper-right corner of the screen, and then click **Search**.)
2. Enter **Internet Explorer**, and then tap or click **Apps**.
3. In the search results, swipe down on the Internet Explorer icon, and then tap **Pin to Start**.
(If you're using a mouse, right-click **Internet Explorer**, and then click **Pin to Start**.)



Where do I go for more help with Internet Explorer?

If you have questions about or want to provide feedback on Internet Explorer, visit the [Internet Explorer 10 Release Preview forum](#).

ELITE SOLUTIONS



Learn these:

[Storage](#)

[IPv6 link-local addressing](#)

[Picture passwords and PIN passwords for the tablet OS](#)

[Installing Windows Store apps on multiple clients](#)

STORAGE

Windows 8 to get self-healing 'Storage Spaces'

Microsoft's next OS to sport ZFS features

By [Chris Mellor](#) • [Get more from this author](#)

Posted in [Storage](#), [7th January 2012 00:31 GMT](#)

[Free whitepaper – The Definitive Guide to Dispersed Storage](#)

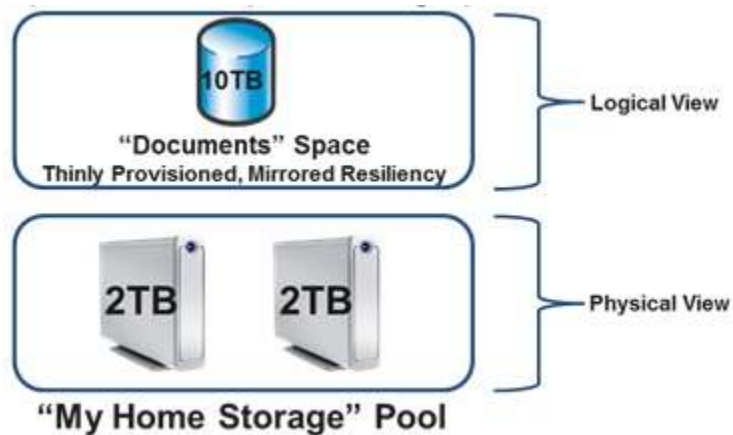
Microsoft will introduce in Windows 8 what it calls Storage Spaces – a method of putting drives into a virtual pool from which self-healing virtual disks can be created, with some resemblance to ZFS features.

Details of these virtual disks – the aforementioned Storage Spaces – were described in a 4,400-word deep-dive [blog post](#) on Thursday, introduced by Microsoft Windows Division head, Steven Sinofsky, and written by a member of Redmond's Storage and File System team, Rajeev Nagar.

Storage Spaces are being added to the coming Windows 8 Beta and can be tried out in the Windows 8 Developer Preview. The basic idea is to provide automated data protection and resiliency against physical drive failures, and a storage volume that is actually larger than individual physical drives.

A group of physical disk drives have their capacity aggregated into a single named *storage pool*. Once allocated to a pool, the individual physical drives are owned by Windows, and are not available or addressable by Windows 8 users as file/folder locations on individual drives.





The Storage Spaces concept in a nutshell

The participating drives, using NTFS, can be connected to the Windows server host via USB, SATA, or SAS links, and can be of varying capacities, speeds, and types, including 2.5-inch and 3.5-inch drives. The blog post is less than clear as to whether SSDs can join the party.

The pool cannot be used as data storage by Windows 8 users or applications – that's the job of a Storage Space, of which one or more can be created within a pool. Virtual drives are created from all or part of a pool and called Storage Spaces, each with its own name and drive letter. You still talk to, for example, a C: drive, only now it is a virtual disk drive or volume, formed from part of a storage pool which itself is an amalgamation of physical disk drives.

You can only use Storage Spaces as long as there is a quorum of disks in the pool; basically enough disks to support the capacity and data recovery operations – which we will come to in a moment.

Thin provisioning

Data - files and folders - are written to the virtual drives.

Storage Spaces can be thinly provisioned with, say, a nominally 50TB storage space actually using only 20TB because that's all the data that has been written. If the space starts getting close to being full – in the sense of filling up the underlying physical drives forming it – then Windows 8 delivers an alert saying that more disk capacity needs to be purchased. When more capacity is added, the new disks can be included in the pool and then get used as needed.



Any capacity used by deleted files is returned to its parent pool and made available for use by spaces.

Slabs and mirror spaces

There are, effectively, three kinds of Storage Spaces: basic spaces, mirror spaces, and parity spaces.

In a mirror space at least two copies are made of the data and stored on two separate physical disks. Optionally, three copies can be made, which means that a two-drive physical disk failure can be tolerated, roughly equivalent to software RAID 6 - but with no parity - with two-copy mirror spaces tolerating a single drive failure, equivalent to software RAID 1.

If a physical drive fails, Storage Spaces automatically regenerates data copies for all the affected spaces as long as sufficient physical disks are available in the pool. Pools, by the way, can be given hot, spare drives for such an eventuality.

In mirror spaces, data is actually stored in constructs called Slabs, which are 256MB in size. Slabs are stored across the range of participating physical drives to provide resiliency against data loss through drive failure - a form of striping.

Windows 8 to get self-healing 'Storage Spaces'

Microsoft's next OS to sport ZFS features

By [Chris Mellor](#) • [Get more from this author](#)

Posted in [Storage](#), [7th January 2012 00:31 GMT](#)

[Free whitepaper – The Definitive Guide to Dispersed Storage](#)

Parity spaces

Spaces can have the attribute of being parity spaces, in which case parity information about data is stored as well to aid in data-regeneration when a physical drive fails. Once again slabs are used as an intermediate storage construct and striped. Parity spaces take up less space than a mirrored copy of the data, but involve more random I/O in their operation.

When a drive fails, there is automatic recovery of the lost data, using parity we suppose, and a regeneration of the parity data, using the same general principles as with a mirror-spaces recovery operation.



You can have parity spaces and mirror spaces carved out from the same storage pool with the slabs intermingled. Parity spaces appear to be roughly equivalent to RAID 5 (single drive failure) and RAID 6 (dual drive failure protection).

Management

Storage spaces can be created using the PowerShell CLI. This is okay for storage admins, but – to this writer's mind – frankly ghastly for small businesses and home users. (Sinofsky and Nagar's blog post provides examples.)

Far better to use the Control Panel and get a GUI approach, which is simpler and cleaner. Again the blog post gives examples. You select the System and Security option, then Storage Spaces.



Storage Spaces and the control panel



So, what do we think about Storage Spaces? First of all, virtualising storage is a good idea, and automating data resilience and recovery from drive failure is very sensible. Perhaps users with Storage Spaces will have less need to rely on backup software or to buy self-protecting external storage arrays such as [Drobos](#).

However, the protection, although RAID-like, is not RAID and not hardware-assisted. We have no information on recovery timings other than that it happens automatically in the background, which is good. Clearly, the larger the capacity of the failed drive, the longer the recovery time will be. Perhaps storage spaces are better carved out from pools made of many small drives than a few large drives.

Also, recovery uses host CPU cycles and this may, in a machine with few spare cycles, affect overall responsiveness.

A third overall point is that users will have to know when to use basic storage spaces, mirror spaces, and parity spaces. Storage user life is simpler in Drobo-land where there are fewer choices. You might feel that Microsoft is trying to cover too many bases with a Storage Spaces concept that covers all the ground and requirements between home users and enterprise data centres.

Storage Spaces is somewhat like [ZFS](#), although it has no deduplication and lacks other ZFS features. However, it is a start – and Microsoft will probably add features such as snapshots, replication, deduplication, and, maybe, compression. *El Reg* also thinks that there could be a Hyper-V virtualisation angle to this – and more is to come. ®

ELITE SOLD

DirectAccess

From Wikipedia, the free encyclopedia

Jump to: [navigation](#), [search](#)



This article **has been nominated to be checked for its neutrality**. Discussion of this nomination can be found on the [talk page](#). *(July 2011)*



This article **needs attention from an expert on the subject**. Please add a *reason* or a *talk* parameter to this template to explain the issue with the article. Consider [associating this request](#) with a [WikiProject](#). *(July 2009)*

DirectAccess, also known as Unified Remote Access, is a VPN-like technology that provides **intranet** connectivity to client computers when they are connected to the Internet. Unlike many traditional **VPN** connections, which must be initiated and terminated by explicit user action, DirectAccess connections are designed to connect automatically as soon as the computer connects to the Internet. DirectAccess was introduced in **Windows Server 2008 R2**, providing this service to **Windows 7** clients (Ultimate and Enterprise editions only). In 2010, **Microsoft Forefront Unified Access Gateway** (UAG) was released, which simplifies^{[1][2]} the deployment of DirectAccess, and includes additional components that make it easier to integrate without the need to deploy **IPv6** on the network, and with a dedicated user interface for the configuration and monitoring. With **Windows Server 2012**, DirectAccess is fully integrated^[3] into the operating system, providing a user interface to configure it without UAG. The new interface is part of **Unified Remote Access** (URA). With URA, the service supports Windows 7 and Windows 8 clients. Some requirements and limitations that were part of the design of DirectAccess with Windows Server 2008 R2 and UAG have been changed (see requirements below). While DirectAccess is based on Microsoft technology, third-party solutions exist for accessing internal **UNIX** and **Linux** servers through DirectAccess.^[4]



Contents

- [1 Technology](#)
- [2 Requirements](#)
- [3 Support for Windows Home Server](#)
- [4 Problems](#)
- [5 References](#)
- [6 External links](#)

Technology

DirectAccess establishes **IPsec** tunnels from the client to the DirectAccess server, and uses **IPv6** to reach intranet resources or other DirectAccess clients. This technology encapsulates the IPv6 traffic over **IPv4** to be able to reach the intranet over the Internet, which still (**mostly**) relies on IPv4 traffic. All traffic to the intranet is encrypted using **IPsec** and encapsulated in **IPv4** packets, which means that in most cases, no configuration of firewalls or proxies should be required.^[5] A DirectAccess client can use one of several tunneling technologies, depending on the configuration of the network the client is connected to. The client can use **6to4**, **Teredo tunneling**, or **IP-HTTPS**, provided the server is configured correctly to be able to use them. For example, a client that is connected to the Internet directly will use 6to4, but if it is inside a **NATed** network, it will use Teredo instead. In addition, Windows Server 2012 provides two backward compatibility services **DNS64** and **NAT64**, which allows DirectAccess clients to communicate with servers inside the corporate network even if those servers are only capable of IPv4 networking. Due to the globally routable nature of IPv6, computers on the corporate network can also initiate a connection to DirectAccess clients, which allows them to remotely-manage (Manage Out) these clients at any time^[6]

Requirements

DirectAccess With Windows Server 2008 R2 or UAG requires:

- One or more DirectAccess servers running **Windows Server 2008 R2** with two network adapters: one that is connected directly to the Internet, and a second that is connected to the intranet.
- On the DirectAccess server, at least two consecutive, public IPv4 addresses assigned to the network adapter that is connected to the Internet.
- DirectAccess clients running **Windows 7** (Ultimate and Enterprise editions only).



- At least one **domain controller** and **Domain Name System** (DNS) server running Windows Server 2008 SP2 or Windows Server 2008 R2.
- **Public key infrastructure** (PKI) to issue computer certificates.

DirectAccess With Windows Server 2012 requires:

- One or more DirectAccess servers running **Windows Server 2012** with one or more network adapters.
- At least one **domain controller** and **Domain Name System** (DNS) server running Windows Server 2008 SP2 or Windows Server 2008 R2.
- DirectAccess clients running **Windows 7** (Ultimate and Enterprise editions only) or **Windows 8** (Enterprise edition only).
- If the service is deployed to Windows 7 clients, it requires **public key infrastructure** (PKI) to issue computer certificates for backward compatibility.

Smart card certificates, and health certificates for **Network Access Protection** may be used along with PKI.

Support for Windows Home Server

The latest version of **Windows Home Server** called **Windows Home Server 2011** is based on the **Windows Server 2008 R2** code base.^[7] Remote access to the users home computers and resources are one of the key features of the **Windows Home Server** edition. Even though **Windows Home Server 2011** is based on **Windows Server 2008 R2** no support for DirectAccess is implemented.

The motivation for this is the steep requirements on the client computers operating systems, as only Windows 7 Ultimate and Enterprise is supported. However in future versions of **Windows Home Server** Microsoft hopes to deliver a simplified version of DirectAccess for home usage.^[8]

Problems

There are problems in the functionality of in Server 2008 DirectAccess. These are listed a follows:

- Forces you to use IPv6. By forcing all clients to use IPv6, this makes it impossible to access anything on IPv4. In order to access a resource that has an IPv4 address, a DNS record needs to be created and it needs to be accessed by that name, which can prove to be inconvenient in many environments.

Server 2012 has rectified this issue and is IPv4 compliant.



References

1. ^ [Microsoft Forefront Unified Access Gateway 2010](#)
2. ^ [Windows Server Division WebLog](#)
3. ^ [Remote Access with Windows Server 2012 Overview](#)
4. ^ [Centrify DirectSecure - Integrating Windows 7 DirectAccess with UNIX and Linux Systems](#)
5. ^ [DirectAccess: Microsoft's Newest VPN Solution - Part 1: Overview of Current Remote Access Solutions](#)
6. ^ [\[Ben-Ari, Erez\] \(2012\). Windows Server 2012 Unified Remote Access Planning and Deployment. London: Packt. p. 189. ISBN 1849688281. http://www.packtpub.com/windows-server-2012-unified-remote-access-planning-and-deployment/book. Retrieved 27 December 2012.](#)
7. ^ [Foley, Mary Jo \(27 January 2010\). "Early version of Windows Home Server 'Vail' leaks to the Web". ZDNet. http://blogs.zdnet.com/microsoft/?p=5063&tag=content;col1. Retrieved 2 February 2010.](#)
8. ^ [Daniel, Sean \(3 May 2010\). "Any chance of a light version of DirectAccess for WHS Vail". Microsoft. http://social.microsoft.com/Forums/en-US/whsvailbeta/thread/fdcaae11-0f3e-4b6f-95ab-53bcd4046fe0. Retrieved 10 April 2011.](#)

External links

- [Windows Server 2012 Unified Remote Access Planning and Deployment](#) Book about Unified Remote Access by Erez Ben-Ari and Bala Natarajan.
- [Microsoft's DirectAccess Getting Started page](#)
- [Microsoft's DirectAccess TechNet page](#)
- [MS-IPHTTPS on MSDN](#): includes PDF with specification.
- [Blogger's posting on DirectAccess](#)

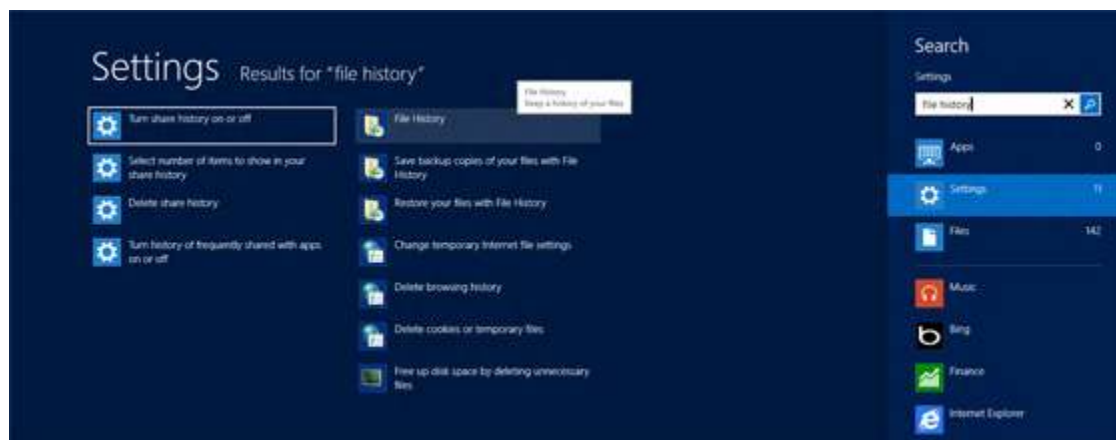
Windows 8 Tip: Enable File History

Jun. 30, 2012 [Paul Thurrott](#) | *Paul Thurrott's Supersite for Windows*

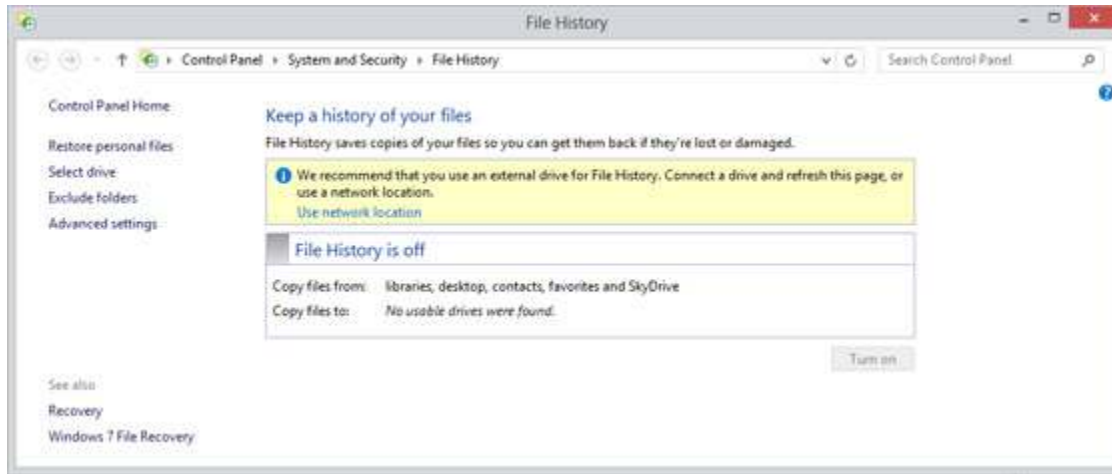
Windows 8 includes a feature called File History that caches, or backs up, different versions of your documents and other data files, so you can “go back in time” and recover previous or deleted versions of those files. It’s a great feature that builds on technology that’s been in Windows since 2003—long before Apple copied it with Time Machine—and it works very well. The trouble is, File History is disabled by default in new installs of Windows 8. So you’ll need to enable first.

I previously wrote about File History in [Windows 8 Feature Focus: File History](#), so please refer to that article for a more comprehensive rundown of how this feature works. But the short version is that, once enabled, File History automatically backs up files in your desktop and libraries, contacts, IE Favorites, and Microsoft SkyDrive. If you delete, damage, or change a file stored in one of these locations, you can use File History to restore it to any stored version. In this sense, File History really does provide you with a “history” of your most important files.

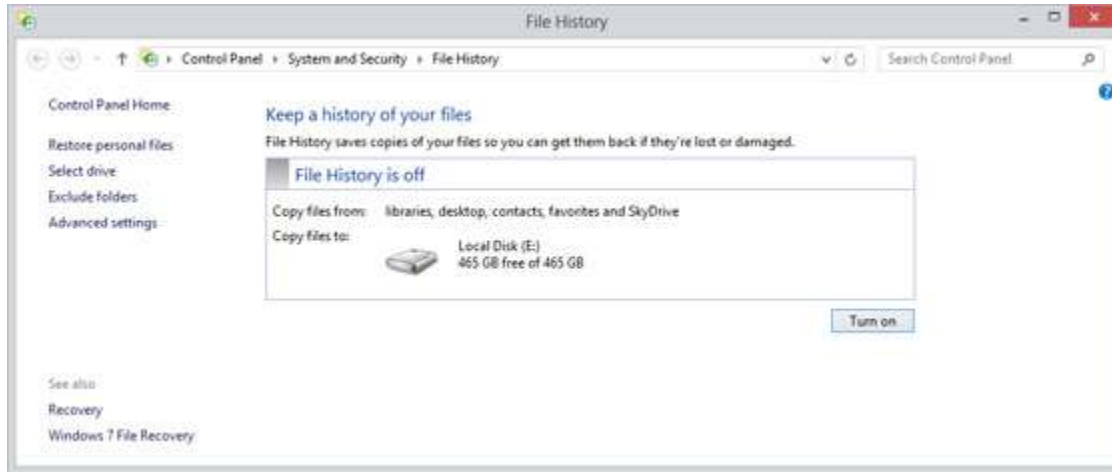
File History is of course most easily found with Start Search. Since it’s implemented as a classic control panel, you’ll need to filter the search to Settings.



Aside from being disabled by default, File History has one semi-onerous requirement: It requires an external drive, like a USB-based hard drive or memory drive, or a network location, such as a share on another PC, a Windows Home Server, or similar. (If you have a second internal drive, that will work as well, though you can’t have mapped any library locations to this disk.)



To use File History, you can plug in an external disk, which will cause the File History control panel to change like so:



Or, tap the Use network location link and then click Add network location to find an acceptable share location on your home network. (I happen to use a location on my Windows Home Server for this purpose, so my instructions will follow this path.)



When you've configured the location you want to use, click the Turn on button and File History will begin backing up your files. It also asks if you'd like to recommend this to other PCs in your homegroup, if configured. This way, if you enable File History on those PCs next, you can more easily configure it for the same location, creating a centralized store of versioned files.



Once File History is up and running, you can pretty much forget about it, as it will operate normally and automatically without any interaction required. That said, if you're using an external drive for File History, you'll want to ensure that the drive is connected to your PC when possible.

I explain how to actually use File History in [Windows 8 Feature Focus: File History](#), of course, including the most crucial piece, file recovery, which occurs through a nice new interface that's vaguely reminiscent of Windows Media Player.

One last note: File History also maintains an offline cache, which replicates some percent of your full file history on the C: drive so you can access backups when disconnected from the home network or external drive. This is useful, in particular, for portable computers, so you won't lose File History functionality when out and about. By default, File History takes 5 percent of the space on your primary disk for this cache, but you can configure this, and a few other options, in Advanced Settings from the File History control panel



10 things you should know about IPv6 addressing

By [Brien Posey](#)

October 22, 2010, 7:55 AM PDT

Takeaway: Although IPv6 adoption seems to be moving at a snail's pace, there's no outrunning it. Brien Posey demystifies some of the addressing issues many admins are still trying to figure out.

[**Editor's note:** This article has been revised to correct a couple of errors noted by TechRepublic members. Thanks to everyone who contributed their input.]

Over the last several years, IPv6 has been inching toward becoming a mainstream technology. Yet many IT pros still don't know where to begin when it comes to IPv6 adoption because IPv6 is so different from IPv4. In this article, I'll share 10 pointers that will help you understand how IPv6 addressing works.

1: IPv6 addresses are 128-bit hexadecimal numbers

The IPv4 addresses we are all used to seeing are made up of four numerical octets that combine to form a 32-bit address. IPv6 addresses look nothing like IPv4 addresses. IPv6 addresses are 128 bits in length and are made up of hexadecimal characters.

In IPv4, each octet consists of a decimal number ranging from 0 to 255. These numbers are typically separated by periods. In IPv6, addresses are expressed as a series of eight 4-character hexadecimal numbers, which represent 16 bits each (for a total of 128 bits). As we'll see in a minute, IPv6 addresses can sometimes be abbreviated in a way that allows them to be expressed with fewer characters.

2: Link local unicast addresses are easy to identify

IPv6 reserves certain headers for different types of addresses. Probably the best known example of this is that link local unicast addresses always begin with FE80. Similarly, multicast addresses always begin with FF0x, where the x is a placeholder representing a number from 1 to 8.



3: Leading zeros are suppressed

Because of their long bit lengths, IPv6 addresses tend to contain a lot of zeros. When a section of an address starts with one or more zeros, those zeros are nothing more than placeholders. So any leading zeros can be suppressed. To get a better idea of what I mean, look at this address:

```
FE80:CD00:0000:0CDE:1257:0000:211E:729C
```

If this were a real address, any leading zero within a section could be suppressed. The result would look like this:

```
FE80:CD00:0:CDE:1257:0:211E:729C
```

As you can see, suppressing leading zeros goes a long way toward shortening the address.

4: Inline zeros can sometimes be suppressed

Real IPv6 addresses tend to contain long sections of nothing but zeros, which can also be suppressed. For example, consider the address shown below:

```
FE80:CD00:0000:0000:0000:0000:211E:729C
```

In this address, there are four sequential sections separated by zeros. Rather than simply suppressing the leading zeros, you can get rid of all of the sequential zeros and replace them with two colons. The two colons tell the operating system that everything in between them is a zero. The address shown above then becomes:

```
FE80:CD00::211E:729C
```

You must remember two things about inline zero suppression. First, you can suppress a section only if it contains nothing but zeros. For example, you will notice that the second part of the address shown above still contains some trailing zeros. Those zeros were retained because there are non-zero characters in the section. Second, you can use the double colon notation only once in any given address.



5: Loopback addresses don't even look like addresses

In IPv4, a designated address known as a loopback address points to the local machine. The loopback address for any IPv4-enabled device is 127.0.0.1.

Like IPv4, there is also a designated loopback address for IPv6:

```
0000:0000:0000:0000:0000:0000:0000:0001
```

Once all of the zeros have been suppressed, however, the IPv6 loopback address doesn't even look like a valid address. The loopback address is usually expressed as ::1.

6: You don't need a traditional subnet mask

In IPv4, every IP address comes with a corresponding subnet mask. IPv6 also uses subnets, but the subnet ID is built into the address.

In an IPv6 address, the first 48 bits are the network prefix. The next 16 bits are the subnet ID and are used for defining subnets. The last 64 bits are the interface identifier (which is also known as the Interface ID or the Device ID).

If necessary, the bits that are normally reserved for the Device ID can be used for additional subnet masking. However, this is normally not necessary, as using a 16-bit subnet and a 64-bit device ID provides for 65,535 subnets with quintillions of possible device IDs per subnet. Still, some organizations are already going beyond 16-bit subnet IDs.

7: DNS is still a valid technology

In IPv4, Host (A) records are used to map an IP address to a host name. DNS is still used in IPv6, but Host (A) records are not used by IPv6 addresses. Instead, IPv6 uses AAAA resource records, which are sometimes referred to as Quad A records. The domain ip6.arpa is used for reverse hostname resolution.

8: IPv6 can tunnel its way across IPv4 networks

One of the things that has caused IPv6 adoption to take so long is that IPv6 is not generally compatible with IPv4 networks. As a result, a number of transition technologies use tunneling to facilitate cross network compatibility. Two such technologies are Teredo



and 6to4. Although these technologies work in different ways, the basic idea is that both encapsulate IPv6 packets inside IPv4 packets. That way, IPv6 traffic can flow across an IPv4 network. Keep in mind, however, that tunnel endpoints are required on both ends to encapsulate and extract the IPv6 packets.

9: You might already be using IPv6

Beginning with Windows Vista, Microsoft began installing and enabling IPv6 by default. Because the Windows implementation of IPv6 is self-configuring, your computers could be broadcasting IPv6 traffic without your even knowing it. Of course, this doesn't necessarily mean that you can abandon IPv4. Not all switches and routers support IPv6, just as some applications contain hard-coded references to IPv4 addresses.

10: Windows doesn't fully support IPv6

It's kind of ironic, but as hard as Microsoft has been pushing IPv6 adoption, Windows does not fully support IPv6 in all the ways you might expect. For example, in Windows, it is possible to include an IP address within a Universal Naming Convention (\\127.0.0.1\C\$, for example). However, you can't do this with IPv6 addresses because when Windows sees a colon, it assumes you're referencing a drive letter.

To work around this issue, Microsoft has established a special domain for IPv6 address translation. If you want to include an IPv6 address within a Universal Naming Convention, you must replace the colons with dashes and append *.ipv6.literal.net* to the end of the address — for example, FE80-AB00-200D-617B.ipv6.literal.net.