

Steve Sinchak  
Microsoft MVP

# Windows® 8 Tweaks

SEIZE EVERY BIT  
OF PERFORMANCE  
WINDOWS 8 CAN  
OFFER



- Unlock hidden settings
- Rev up your network
- Disable features you hate, for good
- Boost boot and logon speed

8

Lock down security in brand-new ways

Blast bottlenecks that drag down  
performance

Wipe out history data that can leave  
you vulnerable

Customize  
Windows Media  
Center



- + Take control of Windows 8
- + Fine-tune User Account control
- + Turbocharge online speed
- + Master the taskbar and Start screen



Lock down security  
in brand-new ways

Customize the way  
your system looks

WILEY



# Windows<sup>®</sup> 8 Tweaks





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Steve Sinchak

WILEY

## Windows 8® Tweaks

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*This book is dedicated to Julia, Oliver, and my wife Stephanie.*



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Steve has been working with computers from an early age. Starting with an IBM AT with an Intel 80286 processor, 1 MB of RAM, and Windows 3.1, he taught himself how to make Windows run faster on his slow hardware. Driven by a strong curiosity to understand how it works, he spent countless hours researching and experimenting with the inner workings and features of Windows. Over the years, he has worked closely with all versions of Windows. Steve has received nine Microsoft Most Valuable Professional (MVP) awards for his contributions to the Windows community.



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# Introduction

Building off the success of Windows 7, Microsoft embarked upon the boldest redesign of Windows since the introduction of the Start menu in Windows 95. The goal was to modernize the operating system. The result has been the most controversial release of Windows, primarily because of the new user interface. Called the “Metro” interface during development, the new Start screen replaces the classic Start menu and Start button. Some love it, some hate it with a passion. But one thing was certain: Microsoft had to make dramatic changes or Windows would become irrelevant.

About six months after the release of Windows 7, Apple released the first iPad. From that moment forward, tablet usage exploded and Apple and Google took over the market. iOS and Android were built specifically for the new world of mobile touch-computing, but Windows 7 was primarily designed to be operated with a mouse and keyboard. Without a competitive product, Microsoft was unable to participate in the new tablet market. Making matters worse, the desktop and laptop market was shrinking, with tablets expected to eventually overtake the entire PC market. Microsoft could not afford to make Windows 8 just another minor upgrade, so instead, it started re-imagining Windows from the ground up.

Finally understanding that touch is not just an input feature but is also an element of design, Microsoft created the new “Metro” style interface. This new interface works great with touch while still working with a keyboard and mouse. Understanding that applications also need to be redesigned to be effective with touch, Microsoft created the Windows App Store, which provides applications written for the new touch-friendly application framework called WinRT. Microsoft did not want to alienate the traditional Windows users, so the traditional desktop of Windows 8 remains and also was refreshed and refined.

Throughout development, Microsoft leveraged its monitoring platform to monitor various metrics on the preview builds released to the public. This allowed the quality of code to be monitored and also the performance of the OS to be tightly controlled. Trouble spots were automatically reported, so Microsoft knew exactly what components needed to be optimized. The underlying systems that power Windows 8, such as the kernel and the core system services that run on top, have all been optimized even beyond the dramatic improvements seen in Windows 7. The amount of RAM required to run a new version of Windows has decreased yet again and the CPU is used even more efficiently, especially when trying to conserve battery on mobile devices such as laptops and tablets.

Although the new interface and performance increases are a great addition, there is more to tweak in Windows 8 than any recent release. While some love the new interface, others want to change it or disable it completely. People have different preferences and want their operating system to run their way. This book helps you customize the controversial aspects of Windows 8 as well as the traditional desktop. I show you ways to further improve the performance of Windows 8 with various settings and even some quick-and-easy hardware upgrades. The book wraps up with a topic that is very important to every user: Windows security.

Are you ready to customize, speed up, and secure your Windows 8 computer? Let's get started!

## Who Should Read This Book

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This book is intended for all Windows 8 users who are interested in customizing, improving the performance of, and using the latest security features and tools to secure Windows 8. Previous Windows experience is highly recommended for this book. Most of the topics are geared toward an advanced Windows user, but every section is written in a way that even beginner Windows users can understand and complete.

## What You Need to Use This Book

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Windows 8 Enterprise is required to perform all tweaks and hacks mentioned in this book. You can use other editions of Windows 8, but you may find a few sections do not work because that particular feature is not in your edition.

## Conventions Used in This Book

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This book uses two notification icons—Tip and Caution—that point out important information. Here’s what the two types of icons look like:

**TIP** Tips provide small, helpful hints and related tweaks.

**CAUTION** Cautions alert you to possible hazards that can result from the tweak.

Code, commands, and executables within the text appear in a monospace font, whereas content you type appears in **bold**.

## The Book’s Companion Website

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For links and updates, please visit this book’s companion website at <http://Tweaks.com/books/win8tweaks/>.



**Part**

# **Getting Started with Windows 8**

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## **In This Part**

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**Chapter 1:** Selecting the Right Edition

**Chapter 2:** Installing Windows 8

**Chapter 3:** Windows 8 Basics

**Chapter 4:** Safe Tweaking



# Selecting the Right Edition

Microsoft offers Windows 8 in a number of editions for different markets and users: Windows 8, Windows 8 Pro, and Windows 8 Enterprise. Of the three editions, only Windows 8 and Windows 8 Pro are available for retail purchase. The Enterprise edition requires a software assurance agreement with Microsoft. Microsoft also released Windows RT, which looks like Windows 8 but is not Windows 8. Sorting out which edition you need can be confusing—significant differences exist among all editions, so selecting the correct edition is critical to your Windows experience.

In this chapter, I explain the various editions of Windows 8 so you can make an informed decision and purchase the edition you need. I also cover where Windows RT fits in. Then I show you how to upgrade Windows 8 to a higher edition with Add Features.

## Edition Comparison

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Why are there so many editions of Windows 8? I have asked that question many times in earlier editions of this book, and I am happy to say that, for the first time, Microsoft has actually decreased the number of editions released. We are down to three primary editions, only two of which can be purchased by consumers, and one quasi clone called Windows RT that only Original

Equipment Manufacturers (OEMs) can buy. This is a significant improvement over Windows Vista and Windows 7, which gave users six editions to contend with.

Some argue that any number of editions greater than one is too many. They say it creates too much confusion in the marketplace. Unless you do your homework, it is easy to buy an edition that is missing the features you need or to waste money on features you can live without. That is a fair point.

However, it is important to recognize that Microsoft Windows serves more than a billion PCs around the world. In addition, Microsoft sells to just about every market type—consumers, small businesses, and large enterprises. With such a diverse group of users, it is understandable that Microsoft must offer different feature sets and price points to keep everyone happy.

Before I dive into the edition feature comparison, I want clear up any confusion about Windows RT and the three versions of Windows 8.

## **Consumer and Business Editions**

Microsoft offers two editions of Windows 8 and one edition of Windows RT for consumers and small businesses:

- Windows 8
- Windows 8 Pro
- Windows RT

### ***Windows 8 and Windows 8 Pro***

If you walk into any computer store you will see these two editions on the shelf. Offered in both Upgrade and Full Version packages, any consumer can purchase a copy.

The Upgrade package is offered at the lowest price and is specifically for upgrading an existing Windows PC to Windows 8. The terms on Microsoft's website state that your PC must have Windows XP or newer installed to qualify.

The Full Version package, also called the System Builder and sometimes the OEM version, is for a new PC that never had a previous version of Windows installed.

### ***Windows RT***

Windows RT is a brand new version and edition of Windows that looks almost identical to Windows 8, but has a limited feature set. Intended to run only on tablet devices that have an ARM-based processor, consumers cannot purchase a copy of Windows RT. In fact, only device OEMs can purchase a copy and distribute it with their devices. For example, the Microsoft Surface RT includes Windows RT.

Unlike Windows 8, RT was designed for the low-power ARM-based processors and primarily for apps found in the Windows App Store, originally called Metro style apps. You cannot run any legacy desktop apps from earlier versions of Windows. They all need to be recompiled for the different instruction set of the ARM processor. If that was possible, Microsoft would still block it because Windows RT is a closed platform. That means the only software that runs on the device is software approved by Microsoft and distributed through the Windows App Store, which is similar the Apple App Store model.

The classic desktop in Windows RT is not particularly usable. It exists so that you can run the bundled version of Microsoft Office that comes with every Windows RT device and browse the filesystem. Why Microsoft did not write a Metro version of Office and File Explorer is beyond me. I guess we will have to wait for Windows RT 2 for that. Don't be surprised if the desktop goes away in that version. Using touch input for applications never designed for touch is always a bad idea.

## Enterprise Edition

The Enterprise edition of Windows 8 is available only to software assurance customers, which are typically large enterprises. Software assurance is a volume licensing program where companies pay an annual fee for the right to use Windows and receive upgrade rights as long as they are part of the program.

This edition is the top-of-the-line edition that has all features of both consumer editions of Windows 8 and a special set of features just for enterprises. Manual configuration of thousands of PCs is simply not feasible, so centralized and automated management features are a significant component of this edition. Security and compliance features are also very important to enterprise customers, because they are often subject to additional security requirements to protect sensitive data.

## Edition Matrix

Now that I have explained the different editions and what is available, it is important to understand the technical differences between the editions. Why should you buy Windows 8 over Windows 8 Pro? Do you really need Enterprise? You can find the answers to these questions by looking at what features are offered in each in Table 1-1.

**Table 1-1:** Windows 8 Edition Matrix

| FEATURES                | WINDOWS RT | WINDOWS 8 | WINDOWS 8 PRO | WINDOWS 8 ENTERPRISE |
|-------------------------|------------|-----------|---------------|----------------------|
| Max Processors          | 1          | 1         | 2             | 2                    |
| Max Cores               | Unlimited  | Unlimited | Unlimited     | Unlimited            |
| Max Ram 32-Bit Version  | 4 GB       | 4 GB      | 4 GB          | 4 GB                 |
| Max Ram 64-Bit Version  | N/A        | 128 GB    | 512 GB        | 512 GB               |
| Max Running Application | Unlimited  | Unlimited | Unlimited     | Unlimited            |
| Desktop                 | X          | X         | X             | X                    |
| Exchange ActiveSync     | X          | X         | X             | X                    |
| Family Safety           | X          | X         | X             | X                    |
| File Explorer           | X          | X         | X             | X                    |
| File History            | X          | X         | X             | X                    |
| HomeGroup Join          | X          | X         | X             | X                    |
| Internet Explorer       | X          | X         | X             | X                    |
| Live Tiles              | X          | X         | X             | X                    |
| Mobile Broadband        | X          | X         | X             | X                    |
| Multi-Monitor Support   | X          | X         | X             | X                    |
| Multiple Language Packs | X          | X         | X             | X                    |
| New Task Manager        | X          | X         | X             | X                    |
| Play To                 | X          | X         | X             | X                    |
| Remote Desktop Client   | X          | X         | X             | X                    |
| Smart Screen            | X          | X         | X             | X                    |

| FEATURES                     | WINDOWS RT | WINDOWS 8 | WINDOWS 8 PRO | WINDOWS 8 ENTERPRISE |
|------------------------------|------------|-----------|---------------|----------------------|
| Start Screen                 | X          | X         | X             | X                    |
| Touch Support                | X          | X         | X             | X                    |
| Windows Defender             | X          | X         | X             | X                    |
| Windows Store Apps           | X          | X         | X             | X                    |
| Windows Update               | X          | X         | X             | X                    |
| HomeGroup Create             |            | X         | X             | X                    |
| Internet Connection Sharing  |            | X         | X             | X                    |
| Storage Spaces               |            | X         | X             | X                    |
| Traditional Desktop Software |            | X         | X             | X                    |
| Windows Media Player         |            | X         | X             | X                    |
| Wireless Adhoc Networking    |            | X         | X             | X                    |
| Boot from VHD                |            |           | X             | X                    |
| Domain Join                  |            |           | X             | X                    |
| File System Encryption       |            |           | X             | X                    |
| Group Policy                 |            |           | X             | X                    |
| Hyper-V                      |            |           | X             | X                    |
| Remote Desktop Host          |            |           | X             | X                    |
| AppLocker                    |            |           |               | X                    |

*Continued*

Table 1-1 (continued)

| FEATURES                   | WINDOWS RT | WINDOWS 8 | WINDOWS 8 PRO | WINDOWS 8 ENTERPRISE |
|----------------------------|------------|-----------|---------------|----------------------|
| BitLocker Drive Encryption |            |           |               | X                    |
| BitLocker To Go            |            |           |               | X                    |
| BranchCache                |            |           |               | X                    |
| DirectAccess               |            |           |               | X                    |
| Enterprise Search Scopes   |            |           |               | X                    |
| Bundled Microsoft Office   | X          |           |               |                      |
| Device Encryption          | X          |           |               |                      |
| \$ Upgrade to Win 8 Pro    |            | X         |               |                      |
| \$ Upgrade to Media Center |            |           | X             |                      |

\$ indicates paid upgrade.

## Add Features to Windows 8

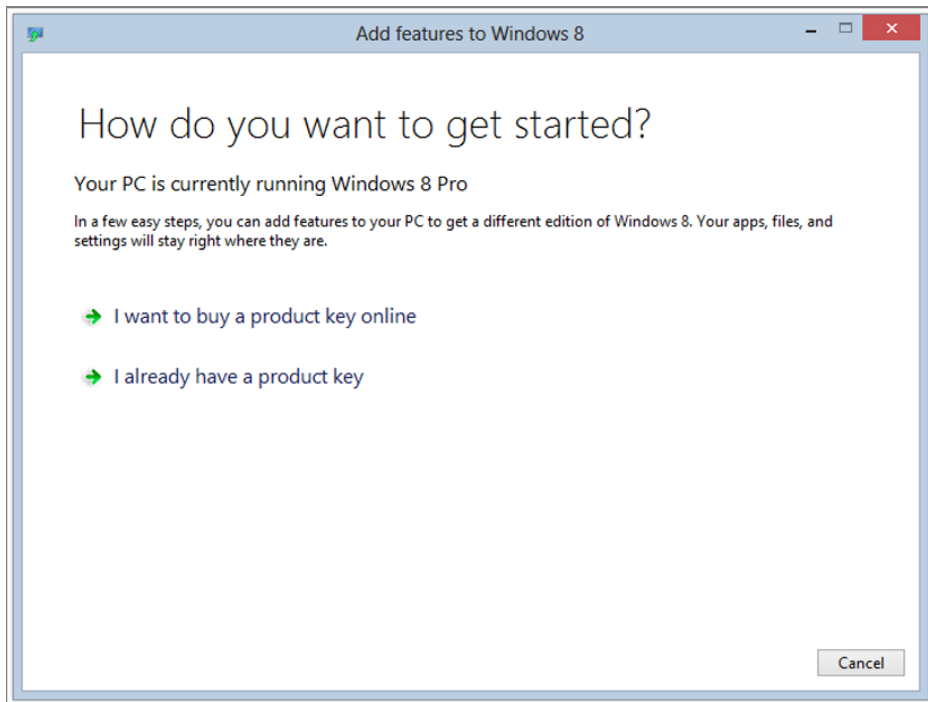
Formerly known as Anytime Upgrade in Windows 7, the Add Features to Windows 8 utility enables you to upgrade the Windows 8 edition and add new features via a paid upgrade. Currently, two upgrade packs are available for purchase:

- Windows 8 Pro Pack
- Windows 8 Media Center Pack

The Windows 8 Pro Pack allows anyone with a Windows 8 PC to pay a small fee and upgrade to the Windows 8 Pro edition. Simply enter the product key you purchased into the Add Features utility and Windows automatically downloads the required files over the Internet and installs the upgrade. Your existing applications and files remain untouched as the edition upgrade is installed.

The Windows 8 Media Center Pack is available only to users who have the Windows 8 Pro edition installed. This pack installs Media Center, which is almost identical to Media Center in Windows 7, along with all of the required codecs for DVD playback and TV recording. Just enter the product key you purchased into the Add Features utility and Windows automatically downloads and installs Media Center.

If you decide to purchase either upgrade pack, you can find the Add Features to Windows 8 utility by opening the Start Screen and typing **Add Features to Windows 8**, selecting the Settings category, and then clicking the shortcut. Once the utility is loaded you have the option to buy an upgrade or enter a product key you already purchased, as shown in Figure 1-1.



**Figure 1-1:** You can add features to Windows 8.

## Summary

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This chapter clarified Windows RT and the various editions of Windows 8. As I mentioned in the preface, this book covers many features in each edition of Windows 8, some of which are available only in the Enterprise edition. If a specific topic or feature covered in this book is not in your version, you can potentially upgrade to that feature using the Add Features to Windows 8 utility. In Chapter 2, I show you how to install Windows 8 in a number of ways, including complex installations such as dual booting with a virtual hard drive file (VHD).

# Installing Windows 8

Now that you know about the various editions of Windows 8, you are almost ready to install Windows 8 on your computer. First, it is important to understand the differences between 32-bit and 64-bit Windows 8 because both versions are provided by Microsoft when you buy a retail box. In this chapter, I show you how to pick the right version for your computer hardware. Then I walk you through the installation steps and even show you some install tricks to get Windows 8 installed on computers without using an optical drive. In the end, I show you how to use advanced configurations such as dual-booting Windows 7 and Windows 8 on the same computer with virtual hard drive files, and also how to create a Windows To Go workspace with the Enterprise edition of Windows 8.

## Understanding the Install Media

---

Every Windows 8 retail box includes 32-bit and 64-bit media for two versions of Windows 8. The most common version used is the 64-bit version for a number of reasons that I'll get to shortly, but the 32-bit version that has been around for ages is still in use for specific cases.

## 32-Bit or 64-Bit?

Making its debut in April 2005, the first version of 64-bit Windows was released as Windows XP Professional x64 Edition. Although the 64-bit edition was a true 64-bit operating system (OS), it was plagued by spotty driver support that limited its adoption. This was caused by the fact that the new 64-bit kernel required 64-bit drivers for all hardware devices. This vastly cut down on the number of compatible hardware devices. Hardware manufacturers had little incentive to rewrite drivers for the niche operating system. That all started to change with the release of Windows Vista, which was the first Microsoft Windows release to come out in both 32-bit and 64-bit versions at the same time. Hardware manufacturers responded, and 64-bit drivers are now available for almost all modern mainstream hardware.

The 64-bit Windows has become the standard choice for most users, and is typically the version preinstalled on a new Windows 8 PC. But what is the real difference between 32-bit and 64-bit Windows 8?

Aside from the obvious fact that you need a 64-bit CPU to run Windows 8 64-bit (which just about any new CPU you buy today supports), other differences exist, such as the ability to use more RAM, additional processing power, and extra security features.

The primary advantage of a 64-bit operating system is the ability to utilize the larger 64-bit registers that are a feature of the 64-bit CPU. This allows larger calculations to be performed with one cycle and also addresses and accesses significantly more RAM. With 32-bit Windows 8 the maximum number of memory addresses available is  $2^{32}$ , which equals 4 GB of RAM that can be used. The 64-bit Windows 8 can use up to 512 GB of RAM with the Pro and Enterprise editions.

Also, some features are included only in the 64-bit version of Windows 8, such as PatchGuard. This is a helpful piece of technology that attempts to protect the kernel of the operating system from being patched by malicious or legitimate software. In my opinion, anything that tampers with the kernel is bad, because it can affect the stability of your system. Microsoft is trying to put a stop to this by implementing the PatchGuard feature and creating an API for legitimate software to interact with the kernel in a safer way.

Some mathematics-intensive applications, such as rendering a 3D scene, also perform better on 64-bit Windows 8 when used with a 64-bit version of the rendering application. Encryption programs also seem to run faster on 64-bit Windows.

Now that you know the benefits of the 64-bit version of Windows 8, it is important to decide which is better for your hardware. For me, RAM and driver support are the main decision factors. I tend to use 32-bit Windows 8 only on virtual machines for testing and compatibility of very old applications. I use 64-bit Windows 8 on all of my hardware, so I can take advantage of more than 4 GB of RAM and the enhanced performance.

## Installing from USB

The Windows 8 retail versions include installation software on a DVD. That works fine for the majority of users, but it is a big problem for those who own laptops, tablets, or other computers without optical drives. If you don't have an optical drive on your computer, you need to take some extra steps to install Windows 8.

A few solutions to this problem exist, such as PXE (Preboot Execution Environment) network booting to a Windows Deployment Server (a feature of Windows Server 2008 and newer). However, the most popular and easiest to configure is a bootable USB flash drive. This is my personal preference as well, because installing Windows 8 from a USB flash drive is actually much faster than installing from a DVD.

You need a 4 GB USB flash drive to have enough space to fit the entire Windows 8 installation code on the drive. I found that the 4 GB SanDisk Cruzer works well for booting the Windows 8 installation code and seems to be compatible with a wide range of computers. However, just about any 4 GB USB flash drive should work these days.

If you have physical media rather than a digital download ISO file, the instructions for creating boot media are slightly different. Follow the instructions relevant for your situation.

### *Creating the USB Boot Media from a Physical DVD*

This section is pertinent if you have access to a Windows PC, XP or newer, because you need DiskPart to be able to create the USB boot media.

Before you begin it is important to understand that any data on your USB flash drive used to create the boot media will be permanently deleted because the process reformats the drive. Save any important documents to another location before proceeding to the next section.

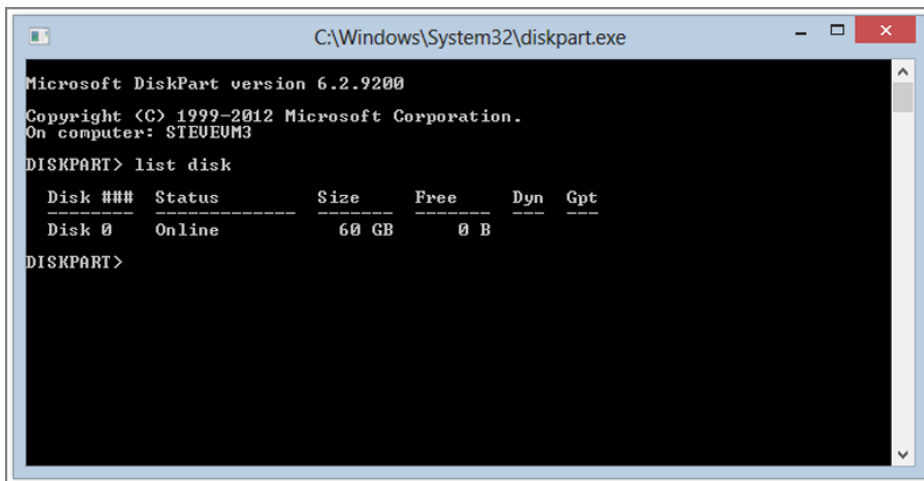
### **Preparing the USB Flash Drive**

The partitioning and filesystem on the USB flash drive are important for booting. Only one partition can be on the device, it must be set to active, and the filesystem must be FAT32. Many computers with the new UEFI BIOS replacement have problems booting USB flash devices with any filesystem other than FAT32.

Insert the drive into a Windows computer and follow these steps:

1. After the drive has been recognized and installed on the computer, click the Start button, type **DiskPart**, and hit Enter.
2. In the DiskPart window, type **list disk** and hit Enter as shown in Figure 2-1.
3. Locate the Disk # of your USB flash drive. You can easily find it by looking at the size column. Once you have the ID, type **select disk #** and hit Enter. (Replace # with the actual disk ID, such as 1.)

4. Type **clean** and hit Enter to destroy any partitions, filesystems, and data that may currently be on the device.
5. Now it is time to create the partition. Type **create partition primary** and hit Enter.
6. For booting it is important to set the partition as active. Type **active** and hit Enter.
7. As I mentioned earlier, the filesystem must be FAT32. Type **format fs=fat32 label=win8boot quick** and hit Enter. This performs a quick format and labels the drive in one step.
8. Type **exit** to close DiskPart. Your USB flash drive is now prepared for the next phase.



The screenshot shows a Windows command prompt window titled "C:\Windows\System32\diskpart.exe". The text inside the window is as follows:

```

Microsoft DiskPart version 6.2.9200
Copyright (C) 1999-2012 Microsoft Corporation.
On computer: STEVEUM3
DISKPART> list disk

   Disk ###  Status         Size           Free           Dyn  Gpt
   -----  -
   Disk 0    Online         60 GB          0 B

DISKPART>

```

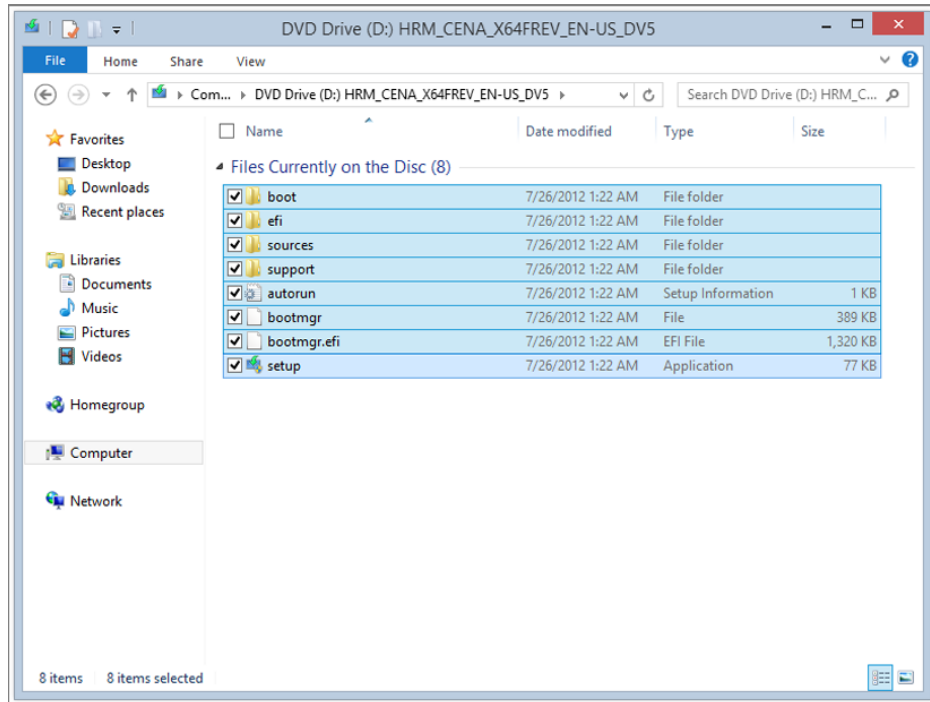
**Figure 2-1:** Using DiskPart to prepare the USB flash drive

### Copying the Installation Software

The final step, now that you have your USB flash drive prepared, is to copy the code. If you are a super geek you can use some fancy `xcopy` or `robocopy` commands for this step, but this simple copy-and-paste procedure works just fine.

Insert the DVD media into your PC and navigate to the drive on your computer that has the Windows 8 installation files. Select all the files, as shown in Figure 2-2, and then right-click and select Copy.

Navigate to the root of the USB flash drive, right-click and click Paste. The file copy can take a number of minutes, but after it is finished you can install Windows 8 quickly and on machines that don't have an optical drive.



**Figure 2-2:** Copying all Windows 8 installation source files

### *Creating the USB Boot Media from a DVD Image*

Different from a physical DVD, a DVD image or ISO file is what you get when you buy Windows 8 directly from Microsoft and digitally download your purchase. You can also get an ISO file for Windows 8 if you are an MSDN or TechNet subscriber or are a volume license enterprise customer.

You could follow an altered version of the instructions for a physical DVD, but there is a much better method using a free utility provided by the Microsoft Store. The utility is called the Windows 7 USB/DVD Download Tool, but it works fine with Windows 8 ISO images as well.

Simply download and install the free utility from the Microsoft Store by visiting <http://tweaks.com/935795>. Once installed, launch the utility from the Start menu:

1. Plug your USB flash drive into your computer.
2. Click Browse and select your Windows 8 ISO file. Then click Next as shown in Figure 2-3.

3. On the Choose Media Type screen, choose USB device.
4. Select your USB device from the list and click Begin Copying, as shown in Figure 2-4.

When this completes, you have a fully functional Windows 8 USB flash drive that you can use to install Windows on just about any device much more quickly than you can when using a DVD.

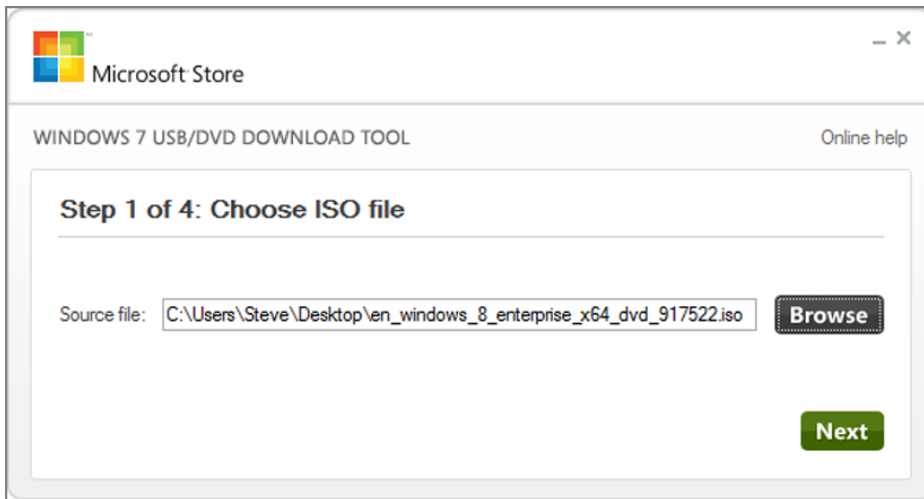


Figure 2-3: Select the ISO file.

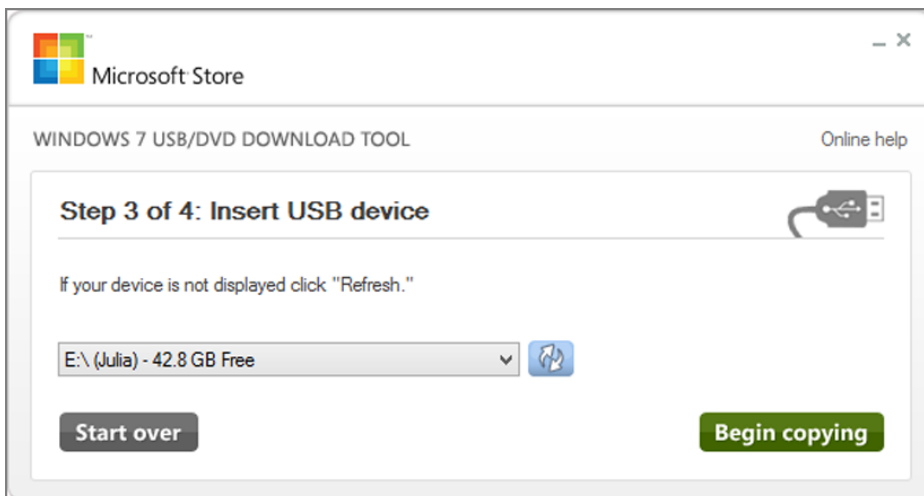


Figure 2-4: Select the target USB device.

## Understanding the Install Process

---

You have two primary options for installing any edition of Windows 8 on a PC that already has a version of Windows installed:

- Upgrading your install
- Using a clean install

The upgrade install has come a long way since the XP days. These days it essentially performs a clean install, but then applies your configuration and personalized settings from the old operating system. Applications transfer over only if you upgrade from Windows 7. All earlier versions require you to reinstall your applications.

The clean install is the purest method of installing Windows 8. Users are advised to back up their important data to an external hard drive and then delete the contents of the operating system drive. This allows the installer to install Windows 8 without any legacy settings, applications, or files getting pulled along for the ride.

Each install method has many pros and cons, and I cover those in the next two sections.

## Using the Upgrade Install Process

Upgrade installs are easier to implement than clean installs are, but many negative aspects to them will haunt you in the long run. The process works as follows: You launch the installer on a machine that has a previous version of Windows installed. The installer lets you know which of your apps are compatible. You will then have the option to stop the upgrade and remain on your current version of Windows or continue the upgrade and a while later you have Windows 8 PC. Most of the same settings and applications that were on the previous version of Windows will have transferred over flawlessly.

That is how the process works in a perfect world. In reality, it rarely goes that well. I have seen a significant number of technical issues on Windows 8 attributed to users who upgraded from a previous version of Windows. What is most impressive is that most issues went away when users did a clean install.

Microsoft has some smart people working on the upgrade process, and they have been working on this for decades. But the process rarely works well because the idea is flawed. Why would you ever want to carry over all of your Windows settings, applications, and junk that has accumulated on your old PC to a brand new PC? This is like buying a new car and then bolting on parts from your old car.

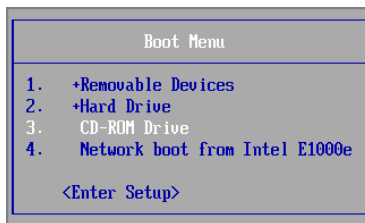
The underlying system has changed. Take the time to reinstall your applications and settings after a clean install. You will be rewarded with a Windows 8 PC that runs at top speed and suffers from far fewer issues over time.

## Using the Clean Install Process

The best way to install Windows 8 is with a clean install. This wipes your computer of all installed applications and data, but is worth it in the long run. Additionally, many applications have been updated to work better on Windows 8 and take advantage of the new features, so it is best to update and install new versions, anyway.

To get started with the clean install process, follow these steps:

1. Insert the installation DVD or USB flash drive you created into your computer. Then reboot and select the boot menu key for your computer. On mine, I press F12 and then select the device I want to boot to, as shown in Figure 2-5. If you are using a DVD, make sure to hit any key after you see the message “Press any key to boot from CD or DVD” on your screen.



**Figure 2-5:** Select the device to boot to from the PC Boot menu.

2. A progress bar displays at the bottom of the screen followed by the Windows logo. On the next screen, make sure that the language, time and currency format, and keyboard are set properly. Hit Next when ready, as shown in Figure 2-6.
3. On the next screen, click Install Now.
4. If you are using Windows 8 or Windows 8 Pro edition media, you must enter a product key as shown in Figure 2-7 and then click Next. The product key that you provide determines whether Windows 8 or Windows 8 Pro is installed. If you are using Windows 8 Enterprise edition media, you aren't prompted for a product key and can skip this step.



Figure 2-6: Check the Windows 8 Install regional settings.

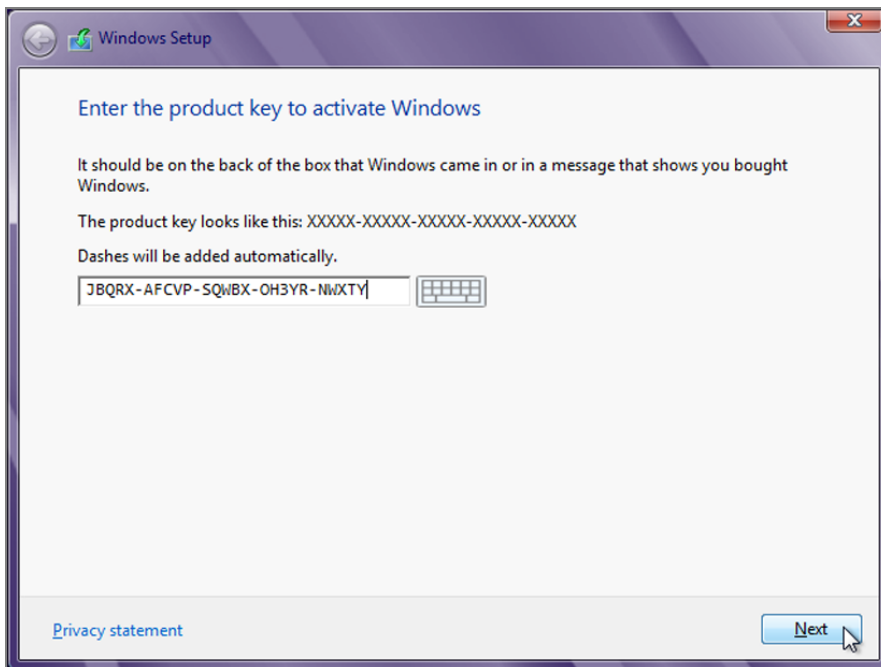
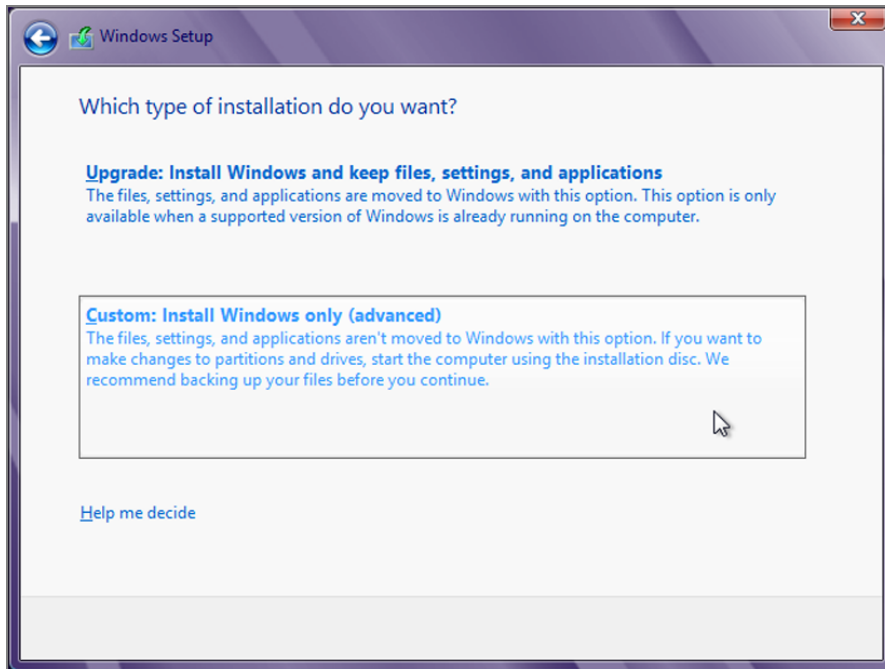


Figure 2-7: Insert the product key.

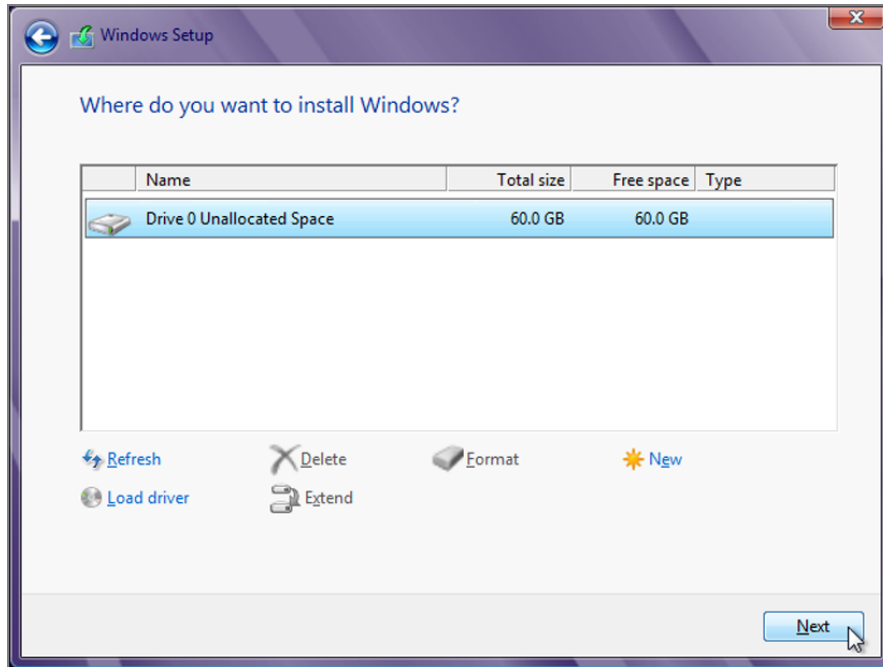
5. Click I Accept The License Terms and then click Next.
6. On the next screen you can select either the Upgrade or Custom install. Don't even think about it; click Custom to perform a clean install as shown in Figure 2-8.



**Figure 2-8:** Choose Custom for a clean install.

7. The last manual step of the install is to select the drive to which you want to install. After I copy my data to a backup drive, I like to delete all the partitions on the drive on which I will be installing Windows 8. You can do this by selecting the partition and then clicking Drive Options. Then just click Delete. Repeat for the other partitions on the drive, select the Unallocated Space, and then click Next, as shown in Figure 2-9. This partitions and formats the drive automatically, and Windows begins to install.

Setup is now fully automated. Files are copied to the destination drive and the computer reboots a few times. When the install is finished the computer restarts, and after booting up asks you for your username, computer name, password, and other first-run information. Congratulations, Windows 8 is now installed and ready for tweaking.



**Figure 2-9:** Select where to install Windows 8.

## Dual-Booting Windows

With virtualization becoming more popular, the need to run multiple operating systems on a physical computer has significantly decreased. Application compatibility was the main reason in the past that users installed multiple operating systems. Your old Windows XP applications will not function in Windows 8? Just restart and boot into Windows XP. Virtual machine applications such as VMware Workstation, Sun VirtualBox, and Microsoft Hyper-V enable you to boot the second operating system on top of your main OS, eliminating the need and hassle of rebooting into another OS. This solves the compatibility problem for most apps, but a virtual machine is not always perfect.

Gaming is one area where problems may arise for virtual machines because 3-D support has gotten a lot better, but it's not yet at bare metal performance. If you are a gamer or just want a cool way to try out Windows 8 with bare metal performance, I show you how you can dual-boot Windows 7 and Windows 8 on the same PC with a geeky twist.

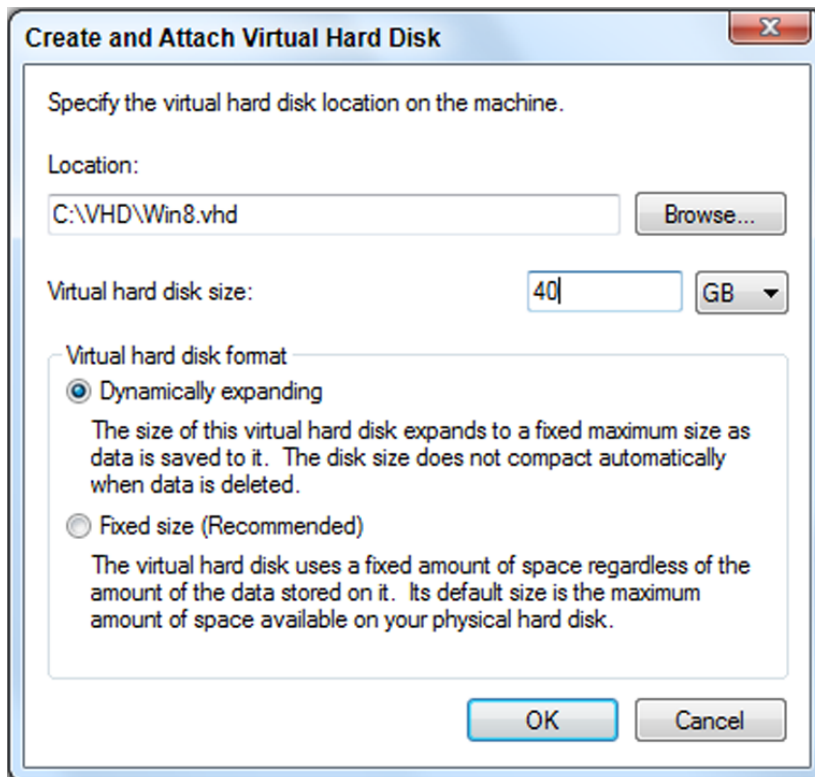
You can achieve a dual-boot system with Windows 7 and Windows 8 in a number of ways, but the easiest and least destructive method is to have Windows 7 installed first. Then, using a little-known feature in Windows 7 called boot to VHD (virtual hard drive file), you can install Windows 8 in a VHD file, which

is very safe because you don't need to alter your Windows 7 partition or install. When you are finished, the Windows 8 drive will be virtualized into a single file on your Windows 7 partition and will show up in the boot menu just as if it was installed on raw disk.

## Creating the VHD File on Windows 7

The first step to dual-booting Windows 8 and Windows 7 is to create the VHD file to hold the Windows 8 installation. Open up Disk Management on Windows 7 to create the file:

1. Click the Start button in Windows 7, type in **diskmgmt.msc**, and hit Enter. The Disk Management utility should load.
2. Click the Action menu and select Create VHD.
3. Enter a location, such as C:\VHD\Win8.vhd. Set the size—I suggest 40 GB—and select the Dynamically expanding format to save your disk space. Dynamic VHD files start out small and only grow with data written to the virtual disk. When your screen looks like Figure 2-10, click OK and the file is created.



**Figure 2-10:** Create a VHD file in Windows 7.

## Installing Windows 8 to a VHD

Proceed to install Windows 8 using the clean install process covered earlier, but stop at the screen that asks “Where do you want to install Windows?” as shown in Figure 2-9. You need to attach the VHD file to the installer so that it recognizes it as a valid location to install Windows 8.

1. Hit Shift + F10 on your keyboard to bring up a Command Prompt window.
2. Type **diskpart** and hit Enter.
3. Now it is time to select the VHD file you created earlier. You need to know the full path to the VHD file. Keep in mind that a properly installed Windows 7 machine has two primary partitions: one hidden partition for the boot and recovery tools and a separate partition for the operating system. When Windows is running, it hides the hidden boot partition and gives the second OS partition the C drive letter. When the installer is running, the boot partition is not hidden, and therefore is given the C drive letter and the second OS partition is given the D drive letter. If the VHD file was created in C:\VHD\Win8.vhd while Windows 7 was running, you need to use D:\VHD\Win8.vhd as the full path to the VHD file while the installer is running. Run the following command with the adjusted path to the VHD file and then hit Enter:

```
select vdisk file=d:\vhd\win8.vhd
```

4. Type **attach vdisk** and hit Enter.
5. Close the Command Prompt window and click the Refresh button on the Where Do You Want To Install Windows? screen.
6. Select the new 40 GB VHD drive now listed as Drive 1 and click Next as shown in Figure 2-11. Ignore any warnings saying Windows can't be installed on that drive. They are incorrect, as the installer is not aware of this advanced method of installing Windows 8.
7. Now just continue to install Windows 8 as usual. The next time your PC reboots, you see a new boot menu that enables you to select between Windows 7 and Window 8, as shown in Figure 2-12.

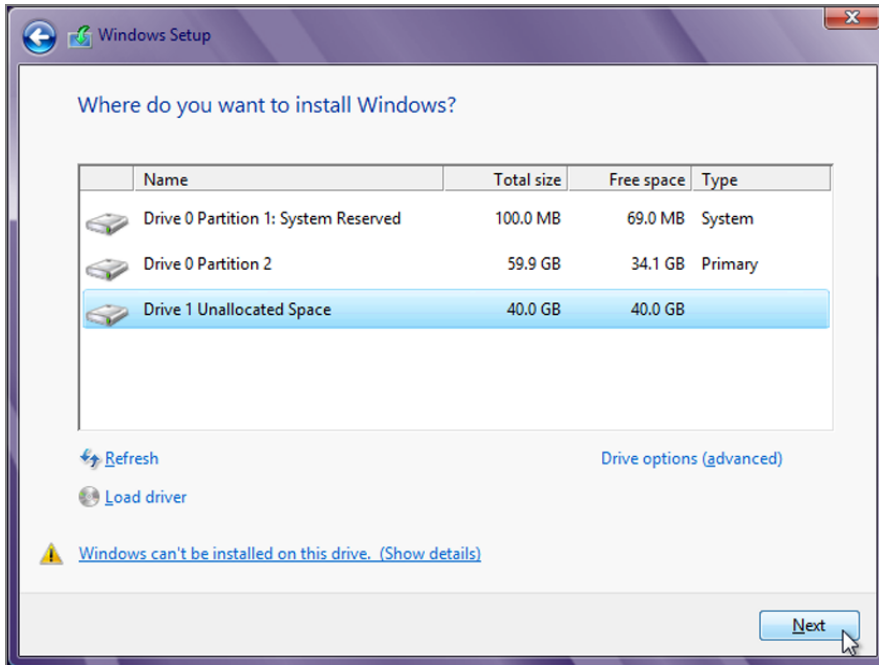


Figure 2-11: You can install Windows 8 to a virtual hard drive.

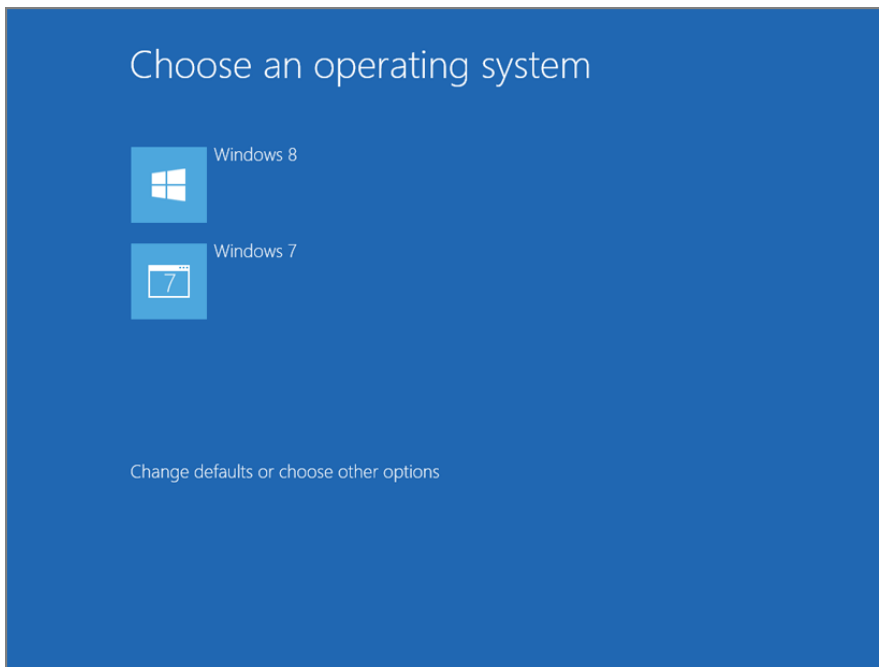


Figure 2-12: Choose between Windows 7 and 8 in the Windows 8 boot menu.

## Using Windows To Go

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New to Windows is a feature called the Windows To Go workspace, which is found only in the Enterprise edition of Windows 8. Instead of providing employees a desktop or laptop, let them use their own hardware and provide them with a bootable USB flash drive that contains their corporate desktop. They can take the Windows To Go workspace anywhere and can use it on just about any computer. Just plug it in and boot up the workspace.

As you can imagine, running Windows from a USB flash drive can be very slow if you don't have a fast device. In my testing, all USB 2.0 flash drives are completely useless, unless you don't mind a 20-minute boot time. In fact, Microsoft recommends using only USB 3.0 flash drives that are certified for Windows To Go. Microsoft specifically recommends three devices:

- Kingston DataTraveler Workspace
- Super Talent Express RC8
- Western Digital My Passport Enterprise

The Western Digital option is actually an external USB 3.0 hard drive, so in theory you can also use USB hard drives.

Beyond the performance of the device Microsoft also requires the ability to create multiple partitions on it. That requires a special controller that is rarely found on USB flash drives these days. Your best bet is to stick with USB 3.0 drives that are certified for Windows To Go.

## Why Enterprises Only?

I mentioned earlier that Windows To Go is found only in the Enterprise edition of Windows 8. The reason for that is all about product activation. By now you should know that every version of Windows made in the past decade requires Internet activation of some kind. The activation of Windows is based on the unique hardware makeup of your PC. If you rip out your hard drive and install it in another PC, Windows 8 boots up but you need to reactivate it.

The same thing happens to you if you're using Windows To Go. Every different machine you boot up on requires activation. Even if you go back to a machine you used in the past, it still requires reactivation. Because consumer product keys can be activated only a few times before they stop working, reactivating all the time is just not feasible.

Enterprise customers of Windows 8 typically use a different type of product activation. This activation uses what is called a *Key Management Service* (KMS) that is installed on a Windows server inside the corporate network. You can

think of this as a private activation server just for the company, and it works a little differently than the public activation servers run by Microsoft.

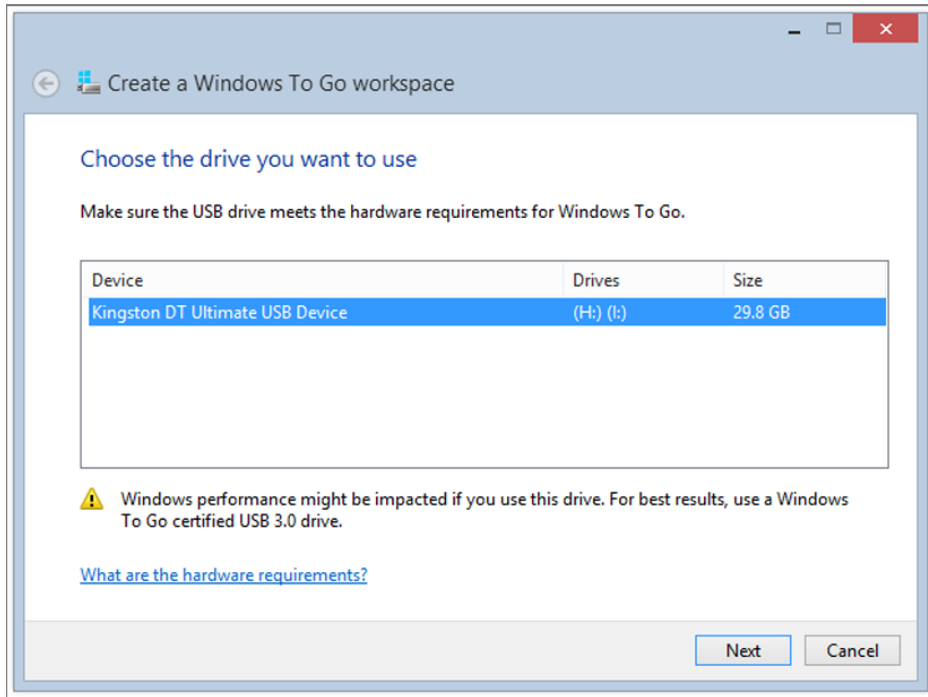
Instead of validating product keys supplied by the client, it activates anything that communicates with it. The Windows 8 Enterprise clients simply make a request to the KMS servers. Because the KMS server activates anything that can talk to it, protecting it is very important, which is why it is always behind firewalls, away from the public Internet. After all, the KMS server keeps track of how many PCs are currently activated and the enterprise is legally obligated to pay Microsoft a fee for each client.

Windows To Go workspaces use this type of activation because it is the only feasible method of handling the activation of a Windows 8 install that could potentially need to be reactivated every time it boots up. Because this activation method is available only to enterprise customers with a volume license agreement with Microsoft, Windows To Go is available only to the enterprise.

## Building the Windows To Go Workspace

Assuming that you have purchased a USB 3.0 flash drive that is certified for Windows To Go, follow these steps to create a Windows To Go workspace:

1. Open the Start Screen and type **Windows To Go**.
2. Change the search scope to settings by clicking Settings on the side, and you should be able to run the Windows To Go utility.
3. After it loads, you see the Create a Windows To Go workspace screen listing compatible drives that are plugged into your PC. Select your drive and click Next, as shown in Figure 2-13.
4. Next, insert a Windows 8 Enterprise DVD into an optical drive or mount a Windows 8 Enterprise ISO file by double-clicking it.
5. In the Create a Windows To Go Workspace utility, click Add Search Location and select the drive with the Windows 8 Enterprise files.
6. When the utility finds the files, select the name and click Next.
7. Windows To Go supports BitLocker drive encryption, so the contents of the USB device are encrypted. This is a good idea considering how easy it is to lose a small USB flash drive. Check the box and enter a password if you are interested in the feature; otherwise, just click Skip.
8. Finally, click Create and the USB flash drive is reformatted and has Windows 8 Enterprise installed on it.



**Figure 2-13:** Create a Windows To Go workspace.

Boot up your new USB 3.0 flash drive with the Windows To Go workspace on any PC just as if you were installing Windows. Hit the keyboard combo to bring up the Boot menu on your PC and select Boot To Your USB device.

## Summary

In this chapter I described the differences and the benefits of the 32-bit and 64-bit versions of Windows 8. I showed you how to install Windows 8 using a clean install from the DVD and how to install from a USB flash drive—a very useful trick. Then I jumped over to the world of dual-booting and demonstrated how to install both Windows 7 and Windows 8 on the same physical computer, but with a virtual twist with a VHD file. Finally, I covered the Windows To Go workspace feature found in the Enterprise edition of Windows 8.

In the next chapter I review the basic operation of the new interface in Windows 8 because so much has changed. Getting around can be confusing, and has created a lot of tweaking opportunities to make it better.



# Windows 8 Basics

For the first time since Windows 95, Microsoft has taken bold steps in overhauling the interface of Windows by creating the new “Metro” design style interface. Best described as a full-screen, immersive environment, the new interface is home to the Windows Store apps and the new tile-based Start screen. This chapter covers the new elements of the interface and helps you get up to speed quickly so you can fly through the new interface as fast as you could using the classic desktop interface.

## Using the New Interface

---

The new interface can be very confusing and annoying for people who have been using Windows for years. Getting used to a new interface is not easy—dealing with change never is. But once you get used to it, you will find that some tasks are much easier than before.

Many people claim the new interface is designed just for touch users with tablets. Though it is true that the interface works great on touch devices, it is wrong to say it is only for tablets and not for traditional PC users with desktops and laptops. Everything that touch users can do is also possible with a keyboard and a mouse. The next few sections cover how you can use the new interface with the good, old-fashioned keyboard and mouse.

## Using the Start Screen

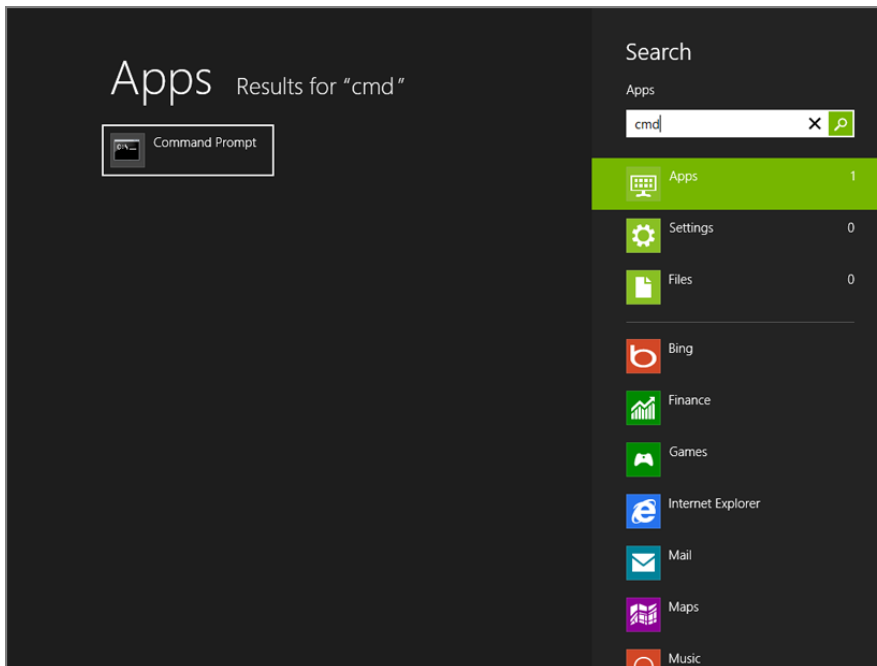
When you first boot up Windows 8, you see the new Start screen instead of the classic desktop. Replacing the Start menu, the Start screen is where everything begins. Instead of a list of app names and static icons, Microsoft opted for a new tile-based layout called *Live Tiles*.

Live Tiles are like dynamic icons that provide access to live information such as weather conditions, sports scores, or even alerts. Unfortunately, due to the live nature of the tiles they are limited to only those apps you download from the Windows Store. Classic desktop apps get a tile with a boring static icon.

### *Navigating the Start Screen*

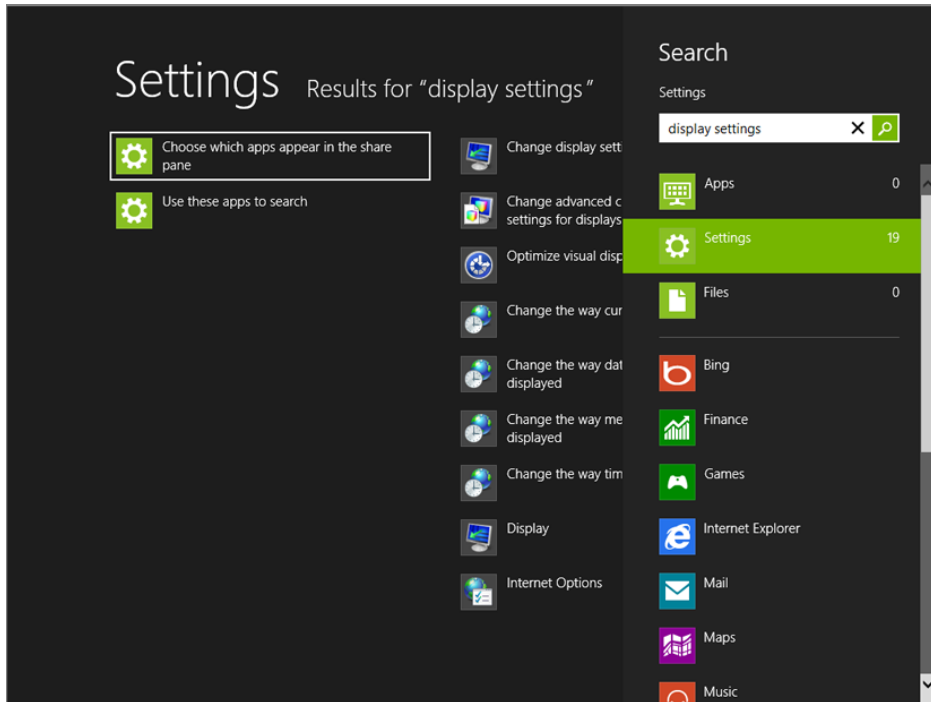
Navigating the Start screen is best accomplished with a scroll wheel mouse if you don't have a touch device. Simply scroll the wheel to slide to the right. You can also use arrow keys, but that is often slow. When you find what you want, just click it.

If you know what you want, the classic Start menu search still exists. Just type in the name and hit Enter. You can also run commands just like in Windows Vista and Windows 7. Type in **CMD** and hit Enter to open up a command prompt, as shown in Figure 3-1.



**Figure 3-1:** Search for apps on the Start screen.

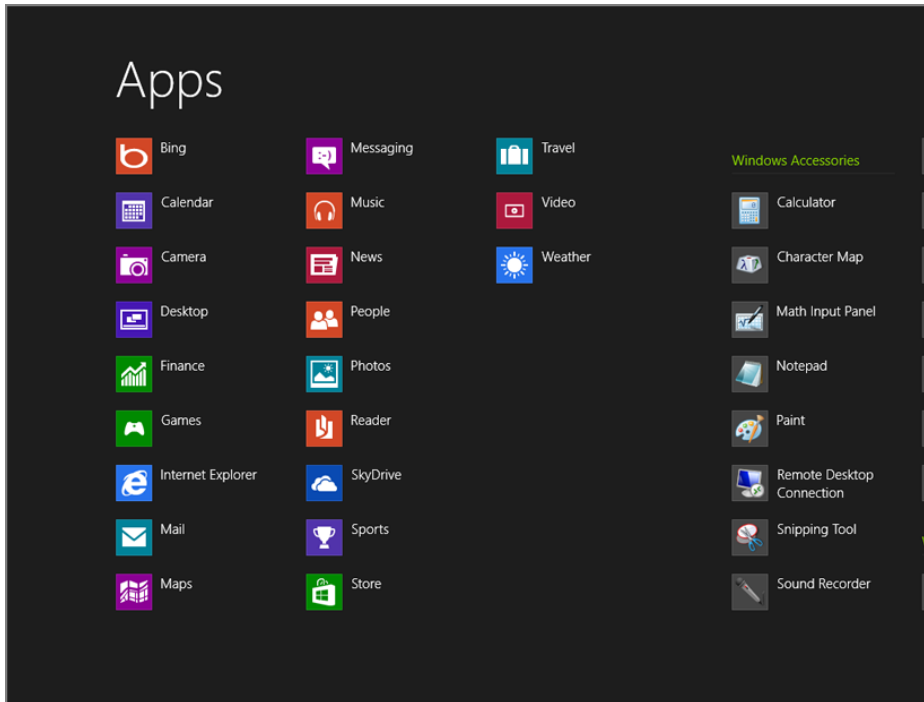
Depending on what you are searching for you may need to change the search scope. Unlike in Windows 7 and Vista, in Windows 8 Microsoft separated the application search from the settings or control panel search. If you are looking for a Windows setting, such as display settings, you need to click the Settings option on the right side of the screen, as shown in Figure 3-2, after you type in what you want.



**Figure 3-2:** Change your search settings.

### *Start Screen Views*

In addition to the default, two other Start screen views are available, but they require some work to display. The first is a list of all applications installed on your PC. This view is similar to clicking All Programs in previous versions of Windows, but provides a full-screen display, as shown in Figure 3-3.



**Figure 3-3:** This Start screen view displays apps like the All Programs menu item did in previous versions of Windows.

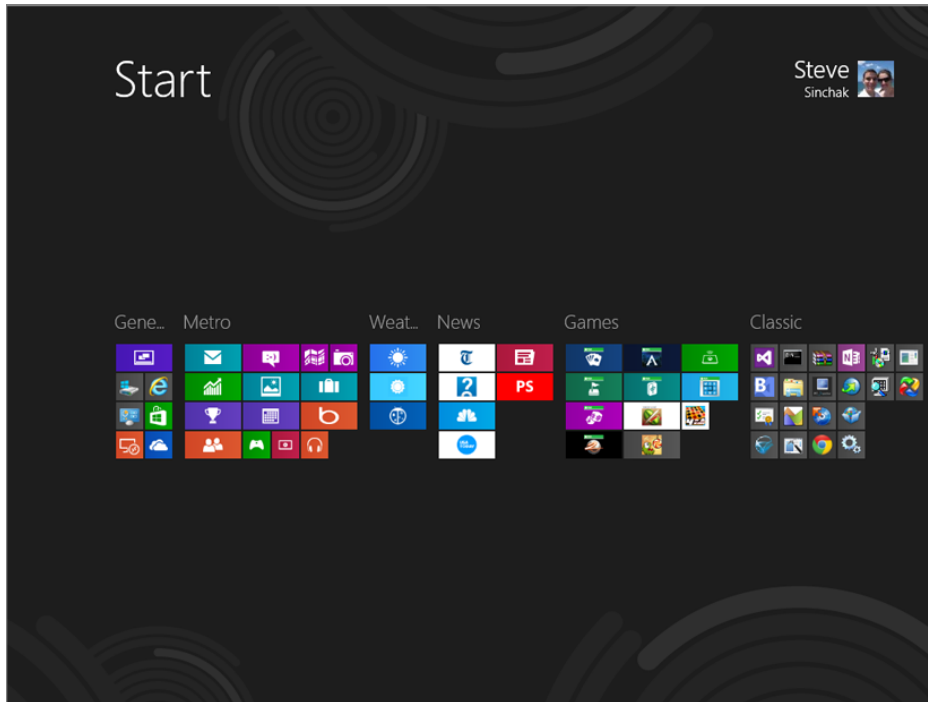
You can bring up the application list view by hitting the following keyboard combination: Windows Key+Q.

The next view I call “group view” because it enables you to see all the tile groups on your Start screen. This is perfect for selecting apps quickly instead of scrolling when you have a lot of tiles on your screen (see Figure 3-4). To activate this view, bring up the Start screen and then hold down the Ctrl key and hit the minus key (-). Alternatively, you can hold down the Ctrl key and scroll down with your mouse wheel or click the tiny minus button in the bottom right corner of the screen.

To get the most out of this view you need to organize your Start screen tiles into named groups. I cover that and much more in Chapter 5, which is all about customizing the Start screen.

## Using Charms

Charms are another major part of the new interface and a big part of Windows 8. I like to think of charms as the right-click menu for the full-screen app world. Traditional right-click context menus do not fit well in the world of full-screen, immersive applications. Charms offer a new method of presenting the user with relevant options that are hidden until needed.



**Figure 3-4:** Choose apps from the Start screen group view.

Docked in bars that appear on all sides of the screen, the most commonly used charms are the system charms, as shown in Figure 3-5. The system charms are universal to any application you have open and even exist on the classic desktop. If you have a touch device, just slide your finger inward from the right side of the screen. Desktop and laptop users must put the mouse cursor in the top-right corner of their screen and then move down as the charms show up. Alternatively, you can hit Windows Key+C to bring up the system charms.

The system charms bar enables you to open the Start screen, search everything or just the app you currently have open, and open the Settings panel, where you can shut down your PC. Why Microsoft buried the ability to turn off and reboot your computer in the settings charm is beyond me, but at least now you know how to turn your PC off properly.

Within Windows Store apps or on the Start screen are additional charms in application bars on the top and bottom of the screen. Drag your finger from the top of the screen down or from the bottom of the screen up, or if you have a mouse just right-click. These are the new application-specific context menus that are docked to edges of the screen. They enable you to perform tasks, such as opening a new tab in Internet Explorer, or access tile settings for a selected tile on the Start screen as shown in Figure 3-6.

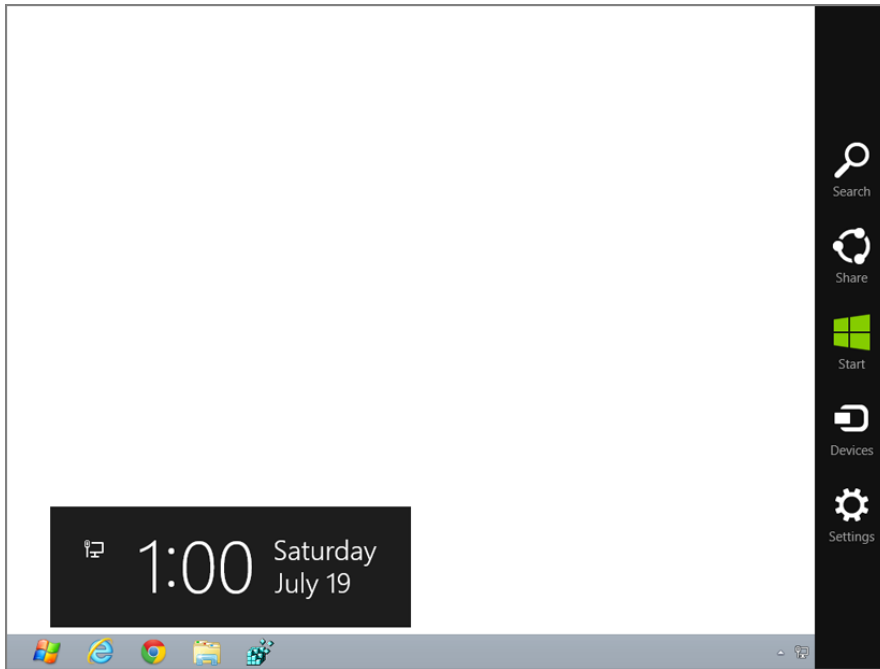


Figure 3-5: System charms display information when you need it.



Figure 3-6: The Start screen has Tile Settings charms.

The last type of charm is located on the left side of the screen and helps you switch between apps. Think of this as the taskbar of the new interface. Drag your finger inward from the left side of the screen or place your mouse cursor in the top-left corner of your screen and then move the cursor down. Alternatively, on a keyboard you can hit Windows Key+Tab. This charm provides a thumbnail view of all your open Metro style applications and a screenshot of your desktop.

## Using Keyboard Shortcuts in Windows Store Apps and the Start Screen

I already covered a few of the keyboard shortcuts that help you fly around the new interface if you don't have a touch device, but you can use a lot more. The keyboard shortcuts in Table 3-1 will save you a few clicks and get to items that are ordinarily buried within the interface.

**Table 3-1:** Windows Store Apps and Start Screen Keyboard Shortcuts

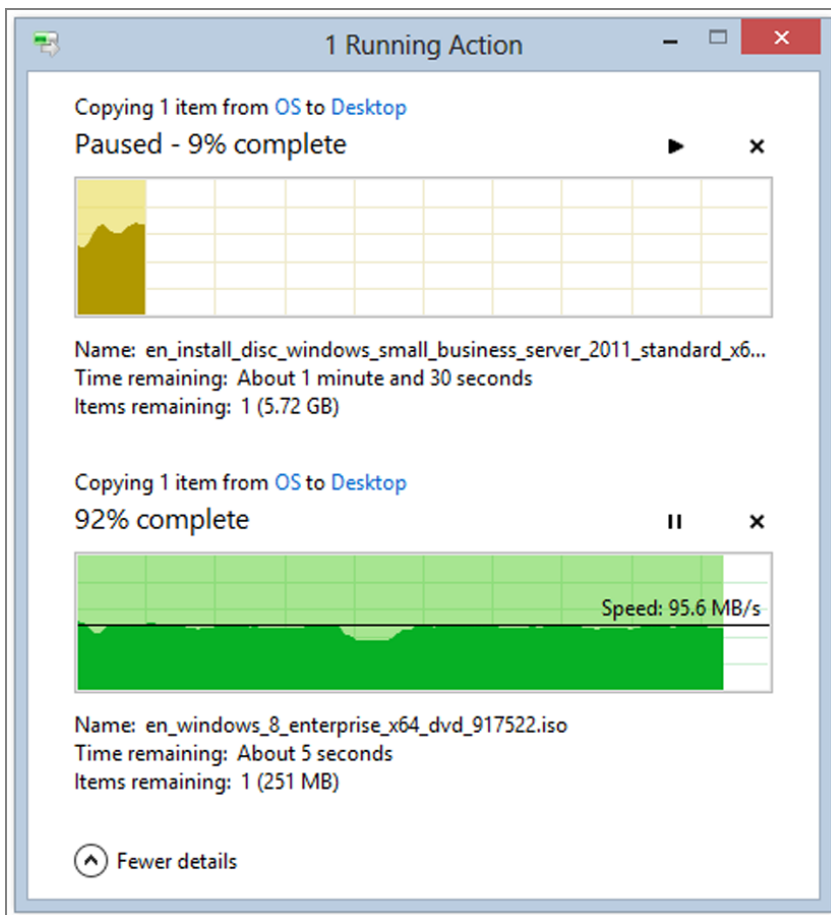
| KEY COMBINATION              | FUNCTION   |
|------------------------------|--|
| Windows Key                  | Opens the Start screen   |
| Windows Key+Tab              | Metro app switcher   |
| Windows Key+C                | System charms  |
| Windows Key+Z                | Application charms   |
| Windows Key+I                | Settings menu  |
| Windows Key+K                | Devices menu   |
| Windows Key+H                | Share menu   |
| Windows Key+F                | Search files on Start screen   |
| Windows Key+Q                | Application search on Start screen   |
| Windows Key+W                | Settings search on Start screen  |
| Windows Key+. (period)       | Snap Metro app to the right side of the screen                                     |
| Windows Key+Shift+. (period) | Snap Metro app to the left side of the screen (only works on wide-screen monitors) |

## Using the Classic Desktop

Although the new Metro interface gets most of the attention when talking about Windows 8, the classic desktop also received some minor refinements. Almost all of the changes are cosmetic because the underlying system components are almost identical to Windows 7, just optimized.

### What's New?

The new desktop features are centered on Windows taskbar and the File Explorer interface. Users will instantly recognize the familiar ribbon interface from Microsoft Office that has been integrated within File Explorer. Love it or hate it, many new options are just a click away. The file copy/move dialog box also got a big update with a pretty graph and the ability to pause file transfers, which can be very helpful, as shown in Figure 3-7.



**Figure 3-7:** The new Windows Copy dialog box offers a pause option.

The Windows taskbar finally received multi-monitor support, which allows users to extend it to all monitors. Users can also customize the behavior of application icons so that open windows on a single monitor show up on all monitor taskbars or just on the taskbar the window is actually on.

Under the covers, Windows continued the Vista diet. According to Microsoft, Windows 8 uses less RAM than Windows 7 and has fewer processes running in the background. I have actually used Windows 8 on a machine with just 2 GB of RAM and performance was acceptable.

## Using Desktop Keyboard Shortcuts

Navigating the classic desktop in Windows 8 has not changed significantly other than how you get to it. The keyboard shortcuts in Table 3-2 are not all brand new, but they will help you quickly navigate the interface like a true power user.

**Table 3-2:** Classic Desktop Keyboard Shortcuts

| KEY COMBINATION          | FUNCTION                     |
|--------------------------|------------------------------|
| Windows Key+D            | Show desktop                 |
| Windows Key+Comma        | Peek at desktop              |
| Windows Key+M            | Minimize window              |
| Windows Key+Up Arrow     | Maximize window              |
| Windows Key+Right Arrow  | Snap window right            |
| Windows Key+Left Arrow   | Snap window left             |
| Windows Key+X            | Admin tools menu             |
| Windows Key+Pause/Break  | System Information           |
| Ctrl+Shift+Escape        | Task Manager                 |
| Windows Key+Enter        | Windows Narrator             |
| Windows Key+L            | Lock PC                      |
| Windows Key+P            | Projector options            |
| Windows Key+Print Screen | Saves screenshot to pictures |
| Windows Key+Space        | Switch language packs        |
| Windows Key+R            | Run dialog                   |
| Windows Key+E            | File Explorer                |
| Windows Key+Number       | Launch pinned taskbar app    |
| Windows Key+Plus         | Screen zoom in               |
| Windows Key+Minus        | Screen zoom out              |

## Summary

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This chapter covered the basics of what is new in Windows 8 and how to use it like a power user. The new interface takes some time to get used to, and in the chapters to come I cover customizing it if you are a fan. If not, I show you how to avoid it as much as possible.

In the next chapter I cover how to safely tweak your computer. Starting very soon you will be modifying the system, which always involves the risk of something going wrong, so it is important to know how to make changes safely.

## Safe Tweaking

If your computer came with Windows 8 preinstalled, or you have finished installing Windows 8, you are almost ready to begin tweaking. But first, this chapter talks about the safe way to tweak and customize your computer. Many tweaks, tips, and secrets can create severe problems if you accidentally miss a step. That is why this is a good time to discuss some of the ways you should protect your computer, so you can easily undo any tweak that causes problems.

To get started, you create Restore Points that enable you to take a configuration snapshot so you can easily jump back to a prior state. Then this chapter covers Windows Backup to protect your data, and Startup Repair to automatically fix issues that may prevent Windows 8 from starting up. Additionally, I cover the new one-click refresh and reset features that automatically restore Windows to a working state.

### Using System Restore

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System Restore has matured into something very valuable for any power user who tweaks his computer. Every time you make a change, there is a risk that something could go wrong. Wouldn't it be nice if you could easily undo any change with just a few clicks? System Restore provides the solution to that problem by enabling you to jump back in time to an earlier state.

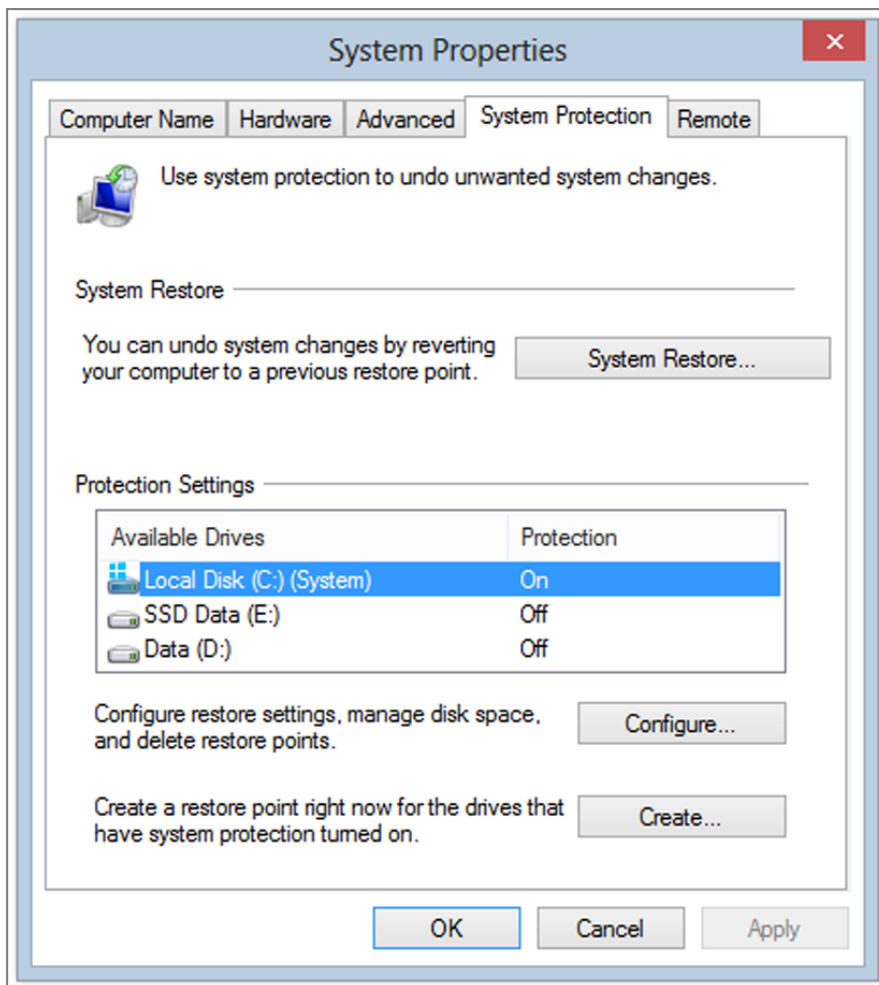
In the next sections I show you how to create Restore Points before you tweak and then how to restore to a previous state if something goes wrong.

## Creating Restore Points

You can create Restore Points in Windows in a number of ways. Every time you install new software, Windows automatically creates a new Restore Point. You can also manually create Restore Points in Windows. This chapter starts with the normal way and then shows you how to create a desktop shortcut that enables you to jump directly to the Create Restore Point screen. To get started, do the following:

1. Open the Start screen, type **Create a Restore Point**, switch to Settings filter, and then hit Enter.

The System Properties System Protection tab, shown in Figure 4-1, opens. This enables you to view your System Restore settings and create Restore Points.



**Figure 4-1:** Access your System Restore settings.

2. Click the Create button near the bottom of the window.
3. On the next screen, type in a name for your Restore Point and click Create.

After you click the Create button, the Restore Point immediately begins taking a snapshot of your system. A progress screen displays and notifies you when the snapshot is complete. In my experience it takes only a few minutes at most to create a Restore Point. Sometimes it takes less than a minute.

Next, I show you how to use the Restore Point to revert to an earlier point.

## Reverting to a Previous State

The second half of using System Restore is using the Restore functionality to return your computer to a previous state.

Before proceeding, it is important to understand that System Restore doesn't delete any of your personal documents such as photos, music, and Microsoft Word documents when you revert to a previous state. However, all system changes made between points, such as installing new drivers and new software, are wiped out. It is advisable to close all open applications before restoring your computer.

Now that you know what to watch out for, follow these steps to restore your computer to a previous Restore Point:

1. Open the Start screen, type in **rstrui.exe**, and hit Enter.
2. After the System Restore utility has loaded, click Next on the first screen.
3. You will now see a list with the date, time, and a description of each Restore Point. There is also a Show More Restore Points checkbox on the screen that I advise checking, so you can see all available System Restore Points.
4. Find the Restore Point that you want to revert to, select it, and click Next.
5. Check the confirmation page, and then click Finish.
6. Click Yes on the final confirmation screen.

Your computer will now log you off and start the System Restore process. When it finishes, your computer restarts.

One of the best parts of System Restore is that you can always undo the recent restore if restoring your computer did not solve your problem or created new problems. You can undo the recent restore by starting up System Restore again. After you complete any restore, the Undo option is displayed on the opening screen of the System Restore utility.

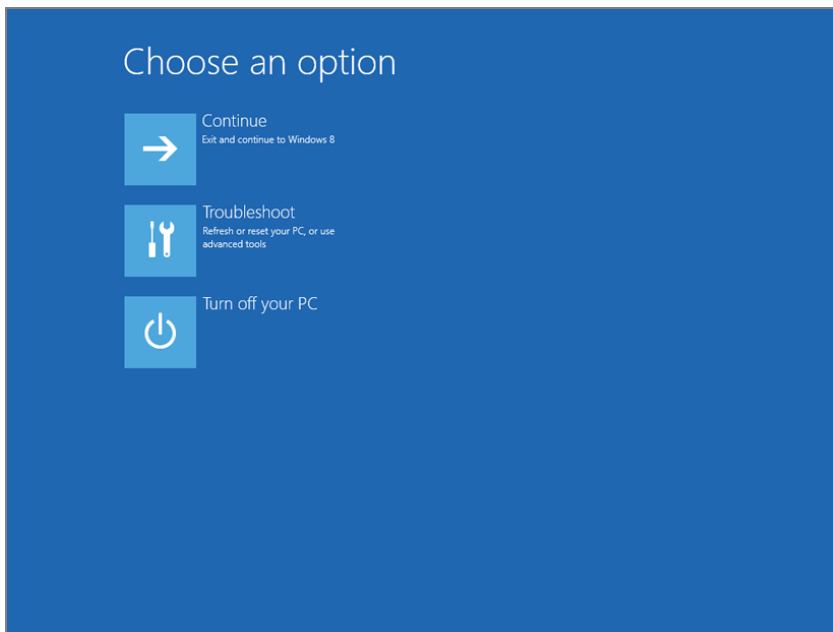
## System Recovery Console

The System Recovery Console in Windows 8 is a great feature that enables you to fix your computer if it ever gets stuck in a state in which it will not boot properly. A number of tools are included, such as Automatic Repair, System Restore, Refresh Your PC, System Image Recovery, and Memory Diagnostics, along with a way for you to access the command prompt. I go into more detail about the tools available in the System Recovery Console shortly, but first, you learn how to access the console.

### Accessing the System Recovery Console

You can access the System Recovery Console in two ways. The most popular is to boot the hidden recovery partition that was set up when Windows 8 was installed on your computer. To do this, press F8 on your keyboard right after you turn on your computer while the manufacturer logo is displayed, known as the POST or power on self-test. If you hit F8 at the right time, a special boot menu is displayed with the option to repair your computer. On my computer, I start hitting F8 repeatedly as soon as POST is finished, to make sure I catch the short window in which the F8 key works before the computer loads Windows normally.

After you select the Repair Your Computer option, a progress bar displays as the System Recovery Console is loaded. When the loading completes, you see the System Recovery Console main screen, as shown in Figure 4-2.



**Figure 4-2:** From the Windows 8 System Recovery Console you can fix a lot of problems.

This method works on the majority of Windows 8 installations, but it is dependent on the special hidden partition. If something happens to that partition, or Windows 8 installed without creating that partition, you need to access the System Recovery Console with the System Recovery Console Boot CD or flash drive.

If you have a Windows 8 installation DVD, you can boot your computer with that and then select Repair My Computer. However, if your computer came with Windows 8 preloaded, or if you lost your installation DVD, you can create your own System Recovery Console Boot CD/DVD within Windows 8.

On a Windows 8 computer with a CD/DVD burner, follow these steps to create a System Recovery Console CD/DVD:

1. Put a blank CDR/CDRW/DVDR/DVDRW disc in your CD/DVD burner drive.
2. Open the Start screen, type in **recdisc.exe**, and then hit Enter.
3. Make sure the correct drive is selected and then click Create Disc.

Alternatively, if your computer does not have a CD/DVD drive you can use a USB flash drive that is 256 MB or larger. Follow these steps to create a System Recovery USB drive on a Windows 8 computer:

1. Insert a USB flash drive.
2. Open the Start screen, type in **recoverydrive.exe**, and then hit Enter.
3. On the Recovery Drive window, click Next.
4. Select the USB flash drive and click Next.
5. Click Create to verify that everything will be erased on the USB flash drive.

Now you can use your custom-made System Recovery Console CD/DVD/flash drive to access the same screen shown in Figure 4-2. Put the media in when you turn on your computer and use the correct boot menu options for your computer to boot to the disc or USB drive.

## Using the System Recovery Console Tools

Now that you know how to access the System Recovery Console, I go over the various tools available to fix your computer:

- **Refresh Your PC**—This refreshes the Windows 8 install but leaves your settings and files in place. Windows Store apps remain, but traditional desktop apps are removed.
- **Reset Your PC**—Everything including your personal settings and files are reset to brand-new condition. This action is similar to reinstalling Windows 8 and blowing everything away.

More tools are hidden under the Advanced Options section:

- **System Restore**—This tool provides another way to restore to a previous Restore Point. If a tweak caused serious Windows problems, you can revert to an earlier Restore Point even if Windows will not load.
- **System Image Recovery**—Here you can apply a backup image to your computer to restore everything, including personal documents and files, from a system image. I show you how to create a system image in the next section.
- **Automatic Repair**—Windows attempts to find problems that prevent Windows 8 from loading. Similar to Startup Repair in previous versions of Windows.
- **Command Prompt**—This is the ultimate tool in any power user’s toolbox.

As you can see, the System Recovery Console offers a wide array of valuable tools that can help you fix Windows in the event it doesn’t start up. Next, I show you how to create a full system backup image.

## Creating a Backup Image

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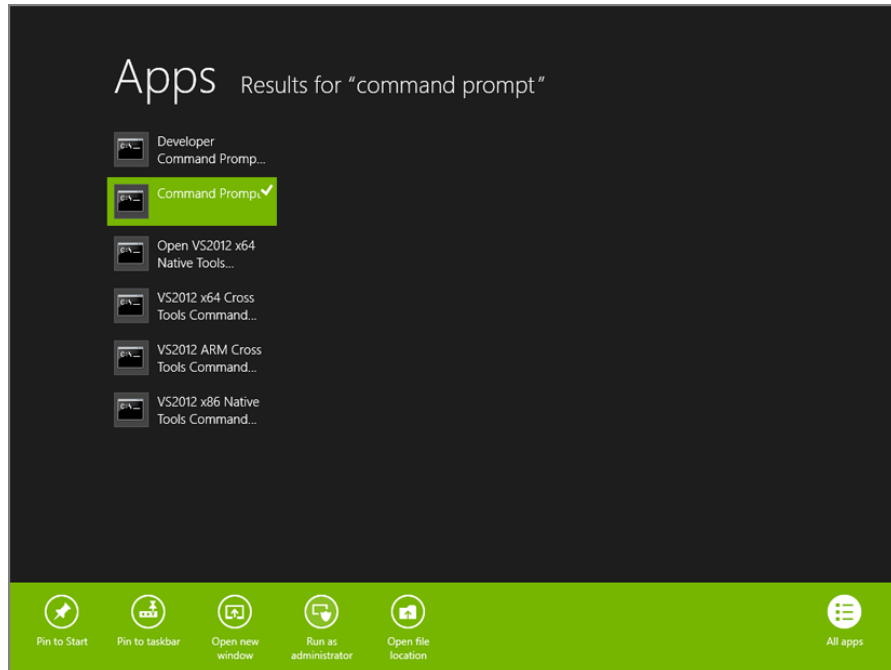
Every computer user should create regular backup copies of the important data on their computer. Power users, including you, should create backup images of your computer so you can easily restore your entire computer to a perfect state from an image. Creating an image of your computer enables you to restore all your programs, personal data, and Windows settings without reinstalling Windows manually, reinstalling every application, and then copying your personal data back over.

When something bad happens, such as a hard drive failure or Windows being broken beyond repair, it is better to restore your computer from an image. That is why I suggest you follow the next section to create a backup image of your computer at least once a year.

## Creating the Image

Windows 8 includes tools that will help create an image of your entire hard drive and save it to a network share or on another hard drive. I have a Windows Home Server in my home so I save backup images to that. If you don’t have a network server available, you can always use an external USB hard drive to store your backup. To get started, you will need an administrative-level command prompt:

1. Open the Start screen and type **command prompt**.
2. Right-click the Command Prompt icon and then select Run As Administrator, as shown in Figure 4-3.



**Figure 4-3:** Run the command prompt as the administrator.

- When the command prompt loads, run the following command to create a backup of your entire Windows 8 install:

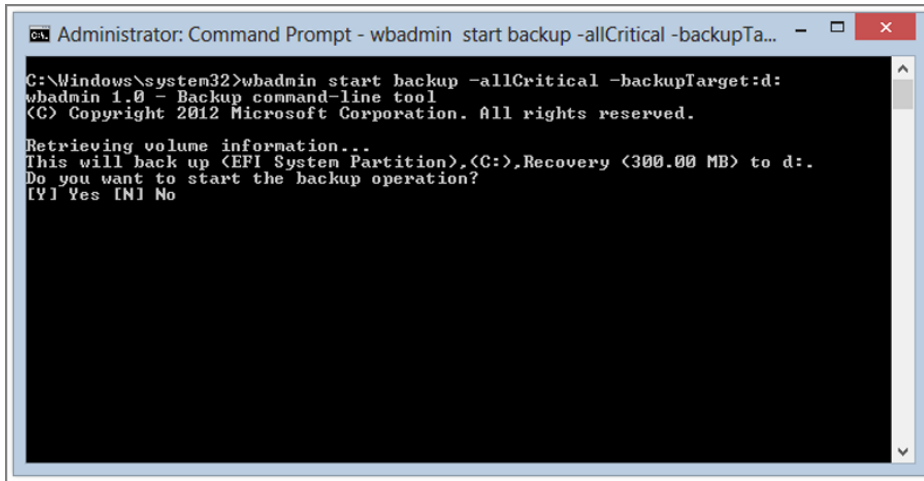
```
wbadmin start backup -allCritical -backupTarget:d:
```

Replace `d:` with the drive letter where you want your backup to be stored. It can be the drive letter of any drive in your PC or connected via USB, but cannot be the drive that you are backing up.

You can also replace `d:` with a UNC network path. For example: `wbadmin start backup -allCritical -backupTarget:\\servername\sharename\`.

- If the command was entered properly, you receive a confirmation screen asking you if you want to start the backup operation, as shown in Figure 4-4. Type **Y** and your backup will begin.

When finished, store your backup data in a safe place.



**Figure 4-4:** Create a system image.

## Restoring a System Image

In the event you ever need to restore your backup system image, you need to boot up into the System Recovery Console I covered earlier in this chapter. You can do that by pressing the F8 key right after the POST and after you turn on your computer, and selecting Repair My Computer. Alternatively, you can use the custom-made System Recovery Console Boot CD/DVD/USB that I showed you how to make.

After you load the System Recovery Console, follow these steps:

1. Attach the external hard drive on which you stored the backup image.
2. Boot to the recovery media.
3. Select your keyboard layout if asked.
4. Click Troubleshoot.
5. Click Advanced Options.
6. Select System Image Recovery. The Re-image Your Computer utility loads and searches for your backup files.
7. Pick the Select A System Image option and click Next. All backup locations discovered display, so you can connect to a network location as well.
8. Select a backup location to restore from and click Next. Alternatively, if you want to restore from a backup on a network location, click Advanced and then Search For A System Image on the network. Connect to your

network and enter the full UNC path to the backup files. Once your files are found, your backup location shows up on the list just like files on an attached hard drive.

9. Choose the specific system image from all available images on the backup target and click Next.
10. On the Restore Options screen do not check the box that says Format And Repartition Disks. I have not had any success restoring backups with that option set. Simply click Next to move to the next screen.
11. Click Finish and then Yes on the confirmation screen.

At this point the restore begins. It can take a few hours depending how big your backup data is. When it is finished, your PC reboots and is ready for use.

## Using One-Click Recovery

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New to Windows 8 are two new recovery features that make it very easy for anyone, even those without computer knowledge, to start over with a clean slate and restore their computer to brand-new, clean install condition. These features are called Refresh Your PC and Reset Your PC. Both operate very similarly but have very different results.

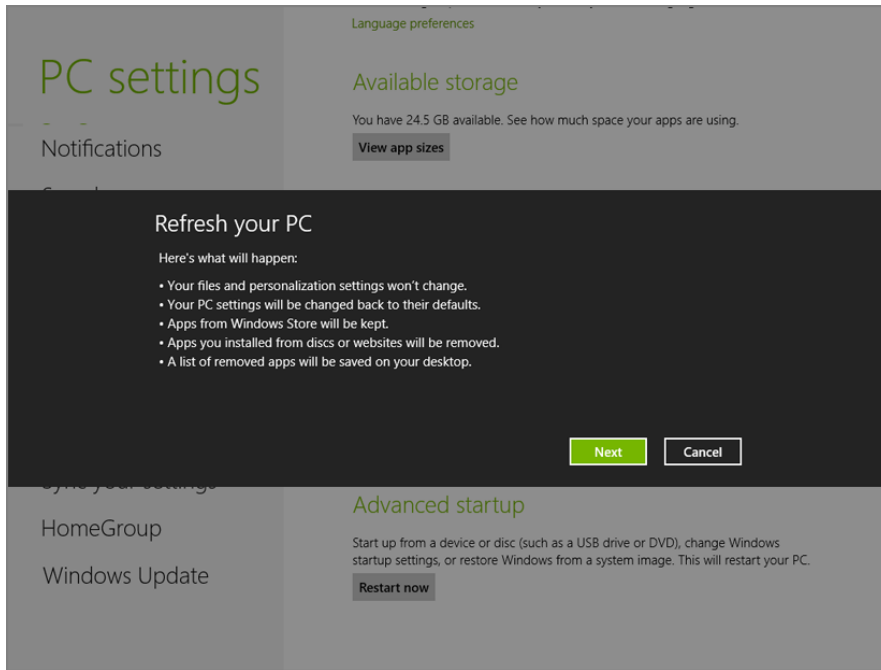
Using Reset Your PC is similar to a clean install of Windows 8. All of your applications, settings, and files are removed and everything is changed back to the default settings. The difference is that with Reset Your PC, you can just click a few buttons and everything is fully automated.

Refresh Your PC is similar to Reset Your PC but it preserves your Windows Store apps from the Windows Store, settings, and personal files. However, traditional Windows desktop apps are removed.

## Using Refresh Your PC

Refresh Your PC is the less destructive of the two new recovery features because it refreshes your system files and trashes only your traditional desktop applications.

1. Open the Start screen, type **Refresh your PC**, and change the search filter to Settings.
2. Select the Refresh Your PC option.
3. Click Next on the Refresh Your PC screen, as shown in Figure 4-5.



**Figure 4-5:** Choose Refresh Your PC to refresh your system files.

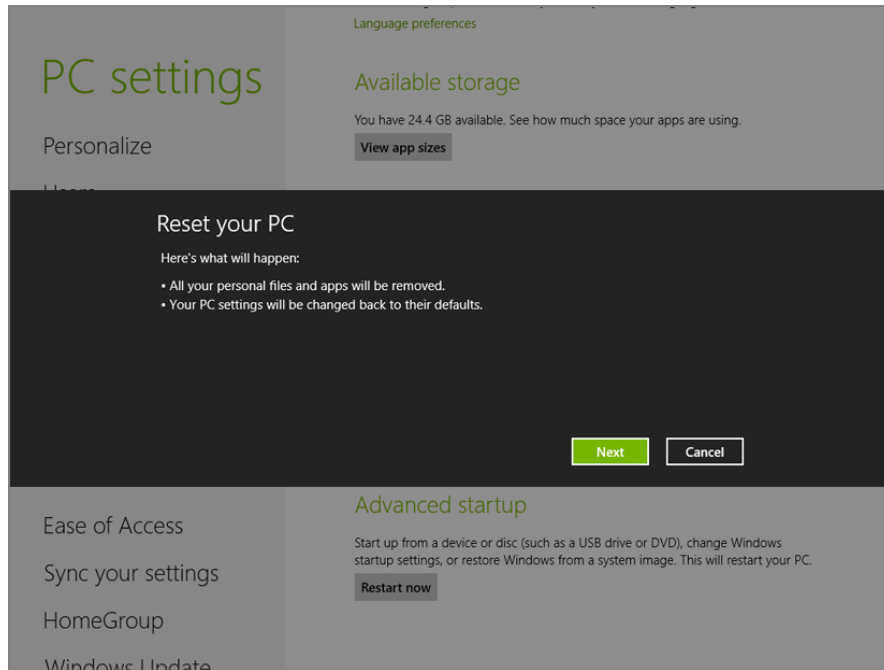
4. You may be asked to provide the Windows install DVD or recovery media provided by your manufacturer. When you insert the media, it is automatically detected and moves you to the next step if it is the correct media.
5. Click Refresh on the confirmation screen, and the refresh begins.

Your computer restarts a few times and then displays your logon screen when the refresh is completed. After you log in, all of your Windows Store apps are reinstalled automatically. A file called `Removed Apps.html` is placed on your desktop, listing all of the traditional desktop apps that were removed.

## Using Reset Your PC

Reset Your PC is the more destructive of the two new recovery features because it blows away all of your personal files, apps, and settings. Using Reset Your PC is equivalent to a clean DVD install that restores everything on your PC to default factory condition.

1. Open the Start screen, type **Remove Everything**, and change the search filter to Settings.
2. Select the Remove Everything And Reinstall Windows option.
3. Click Next on the Reset Your PC screen, as shown in Figure 4-6.



**Figure 4-6:** Resetting your PC lets you start with a fresh install as though the PC just came from the factory.

4. You may be asked to provide the Windows install DVD or recovery media provided by your manufacturer. When you insert the media, it is automatically detected and moves you to the next step if it is the correct media.
5. On the Do You Want To Fully Clean Your Drive screen, select Just Remove My Files. The Fully Clean The Drive option is only for situations when you want to securely wipe your data off the PC. That is helpful if you want to sell your PC and ensure all your private data is removed securely. Securely erasing files is much more time-consuming than just replacing files, so the first option is sufficient for resolving issues.
6. Click Reset on the confirmation screen.

Your computer restarts a few times and then presents you with the Windows 8 license terms when the reset is completed. You need to set up your user accounts, settings, and apps again just like the first time you started using Windows 8.

## Summary

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This chapter covered how to tweak your computer safely by protecting it with System Restore. It showed you how you can recover your computer with the System Recovery Console and explained all about creating and restoring a full system image. The chapter ended with a review of the new one-click refresh and reset settings that will easily restore your install to brand-new condition.

You are now ready to begin tweaking the interface, performance, and security of Windows 8.



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# Customizing Windows 8

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## In This Part

- Chapter 5:** Customizing the Startup
- Chapter 6:** Customizing User Navigation
- Chapter 7:** Personalizing the Desktop
- Chapter 8:** Customizing the Appearance of the Windows Interface
- Chapter 9:** Fine-Tuning File Explorer
- Chapter 10:** Personalizing Internet Explorer
- Chapter 11:** Customizing Windows Media



# Customizing the Startup

Windows 8 has a great new look, but after a while, the new look can get old. With the help of some cool tools and tricks, you can customize many components of Windows 8.

This chapter guides you through customizing the lock screen.

You can customize this screen in several ways. For example, you can change the user picture and various settings that enable you to increase your privacy and the behavior of the lock screen. I even show you how to change the default lock screen and tweak the color scheme.

## Customizing the Lock Screen

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Windows 8 includes a very different logon screen, now called the lock screen per Microsoft terminology. The new lock screen replaces the previously revamped screen in Windows Vista and the classic NT-style logon screen that many domain users are familiar with (because it was included in the last several releases of Windows up to XP).

Windows 8 continues to use the secure logon system that first appeared in Windows Vista that requires all logon components to be digitally signed by Microsoft. If any of the logon files are modified, the digital signature is destroyed and you will no longer be able to log on. This prevents malicious software from hijacking the logon process, but it also makes it next to impossible for people

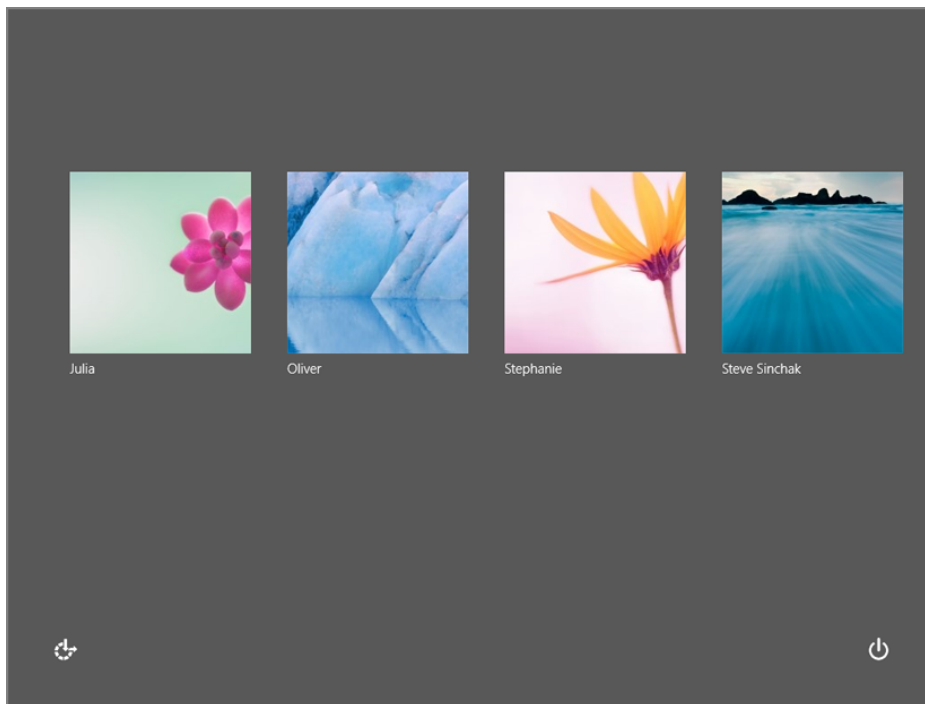
like us who want to customize the logon screen; you can no longer just hack a system file and replace some resources in it.

The days of customizing every single element on the logon screen are over until someone writes an application that extends the logon screen or someone releases a patch that disables the digital signature requirement.

Is this the end of customizing the logon screen? Not at all! You can still make a lot of useful tweaks to the logon screen to give it a personal touch, such as changing user pictures, hiding users, customizing the logon screen colors, and more.

## Changing User Pictures

Each user set up on your computer can associate an image that appears next to his or her name on the lock screen, as shown in Figure 5-1. By default, you have the option to select a picture for your account when you install Windows. However, the screen that enables you to pick an image offers only a small selection of the pictures available to you. In addition, if you do not like the images that Windows has to offer, you can select any image file.



**Figure 5-1:** The logon screen displays an image next to the user's name.

The process of changing a user's image is simple. Just perform the following steps to change it in no time:

1. Open the Start screen and click your user picture, as shown in Figure 5-2.



**Figure 5-2:** Click your user picture to access your account settings.

2. Click Change Account Picture.
3. Click the Browse button.
4. Navigate the browser until you find an image you want to use and click it.
5. Select Choose Image.

Your user image on the logon screen is now changed; you have also updated the image used on the Start screen.

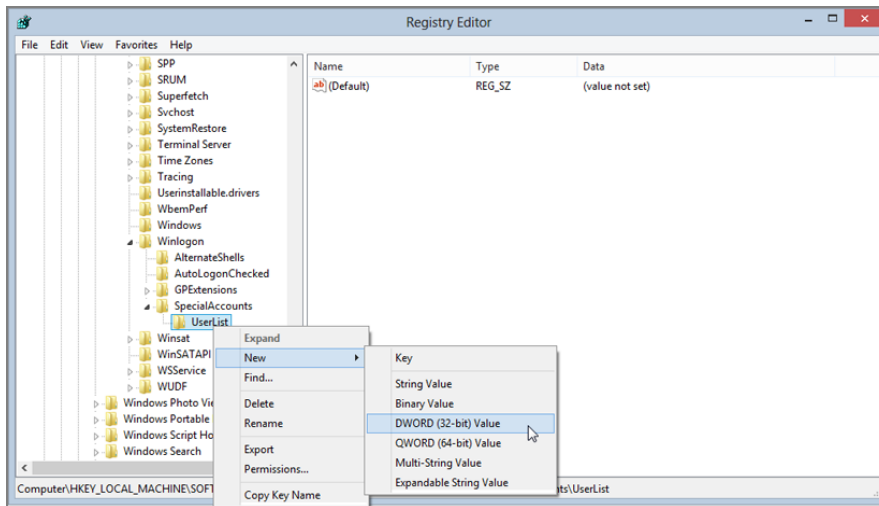
## Hiding Users on the Lock Screen

One of the features of the new lock screen is the list of all the user accounts on the computer. What if you created an account for running services? You do not want other users of your computer to have the option to log on to that account, because you designated it to be used only by applications running as a service.

Maybe you have a secret user account that you don't want anyone to see. With the help of a simple registry tweak, it is possible to hide any account on the lock screen so no one will know it exists.

Hidden away in the registry is the feature that Microsoft used in the past to hide system accounts from the lock screen. In the next few steps, I show you how to re-create the missing registry code so that you can use this feature again to hide your accounts:

1. Open the Start screen, type **regedit** in the Search box, and then press Enter.
2. When the Registry Editor loads, navigate through HKEY\_LOCAL\_MACHINE, SOFTWARE, Microsoft, Windows NT, CurrentVersion, and Winlogon.
3. You must now create a new key. Right-click the Winlogon folder, select New, and then select Key. Name this new key **SpecialAccounts**.
4. Right-click the new SpecialAccounts key, select New, and then select Key. Call this new key **UserList**.
5. Now you are ready to add the name of the account that you want to hide. To add a name, right-click and select a new DWORD (32-bit) value, as shown in Figure 5-3.



**Figure 5-3:** Use the Registry Editor to add another DWORD value for the name of the account that will be hidden on the lock screen.

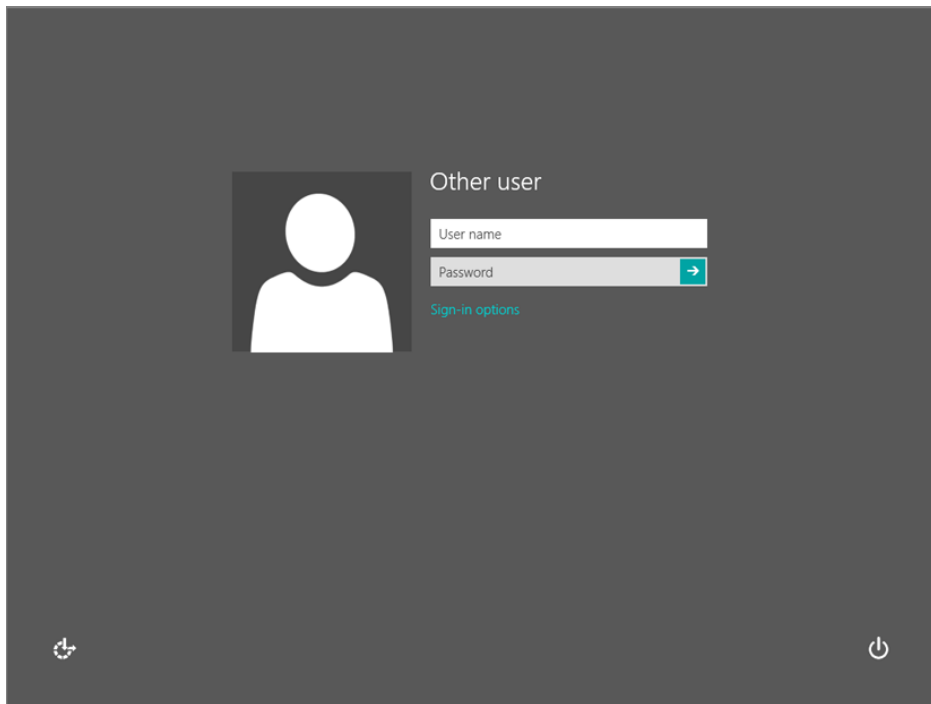
6. When the new DWORD is created, enter the name of the user's account as the name of the DWORD. After you have done this, you can close the Registry Editor.

After you log off, the user will no longer be displayed on the lock screen. If you want to hide all accounts and just have User Name and Password boxes, the next section is for you. If you opt for that method, you can hide all accounts and still log on to them. You just need to remember the username and the password because no accounts will be listed anymore.

If you ever change your mind and want the account to display on the lock screen again, just delete the DWORD that you made in the system registry, and everything will be back to the way it once was.

## Clearing the Last User Logon

Every time you boot up your PC, all computer accounts and users who have logged on to it display on the lock screen. This can be a big security risk because it shows the usernames of all accounts that someone can try to use to break into the computer. In addition, the lock screen can become cluttered with many user accounts. Therefore, it might be a good idea to enable the Do Not Display Last User Name policy. This policy removes the account list from the lock screen and turns on the basic User Name and Password boxes, as shown in Figure 5-4.



**Figure 5-4:** Basic User Name and Password boxes appear on the lock screen.

Using the policy is easy. To enable it, follow these steps:

1. Open the Start screen, type **secpol.msc**, and press Enter.
2. When the Local Security Policy editor loads, navigate through Local Policies and then Security Options.
3. Locate the Interactive Logon: Do Not Display Last User Name policy. Right-click it and select Properties.
4. On the Local Security Settings tab, select Enabled, and then click OK.
5. Close the Local Security Policy editor and you are finished.

If you don't have SecPol.msc in your version of Windows (only Professional and higher versions do) you have to set the registry key manually:

1. From the Start screen, type **Regedit**, and hit Enter.
2. Navigate through HKEY\_LOCAL\_MACHINE, SOFTWARE, Microsoft, Windows, CurrentVersion, Policies, and then System.
3. Right-click `dontdisplaylastusername` and select Modify.
4. Set the value to 1 and click OK.

As soon as you log off, the new lock screen settings appear.

## Changing the Lock Screen Screensaver

If you turn on your computer and let it sit at the lock screen long enough, eventually the screensaver appears. You can tweak this setting so that the screensaver that you want to see instead replaces the boring Windows default. Unlike changing your screensaver for your account when you are logged on, it is possible to change the logon screen screensaver setting only by using the registry. With the help of a few quick registry hacks, you can fine-tune the screensaver that is displayed and other settings, such as the screensaver time-out value that determines how long the computer is inactive before the screensaver is activated.

Follow these simple steps to customize your logon screensaver:

1. Start the Registry Editor. Open the Start screen, type **regedit** and hit Enter.
2. When the Registry Editor starts up, navigate through HKEY\_USERS, .DEFAULT, Control Panel, and Desktop.
3. First, you need to tell Windows the logon screensaver is active. Right-click the Desktop key and select New and then String Value. Name the value **ScreenSaveActive**. Next, set the value to 1 by right-clicking it and selecting Modify. Enter **1** and click OK.
4. Set the amount of time the system should wait after the last activity is detected before starting the screensaver. To do this, right-click the

Desktop key and select New and then String Value. Name the new entry **ScreenSaveTimeOut**. Then, set the value to the number of seconds you want to wait before the screensaver starts by right-clicking the new value and selecting Modify. I like to set mine to 300 seconds for 5 minutes.

5. Now you need to set the screensaver you want to display. To do this, right-click the Desktop key again and select New and then String Value. Name this value SCRNSAVE.EXE and set its value to the full path to the .scr file such as `C:\savers\screen.scr`.
6. Close Registry Editor. You are now finished. After a reboot, you see your new screensaver.

The most difficult part of this tweak is finding a compatible screensaver that runs properly on the lock screen. All of the screensavers included with Windows 8 require Direct3D graphics support. Unfortunately, Direct3D is not yet running on the lock screen. One that I have personally tested is the old 3-D maze screensaver in Windows 98. You can download a copy at [tweaks.com/208418](http://tweaks.com/208418). Other old screensavers that do not need Direct3D or DirectDraw should also work.

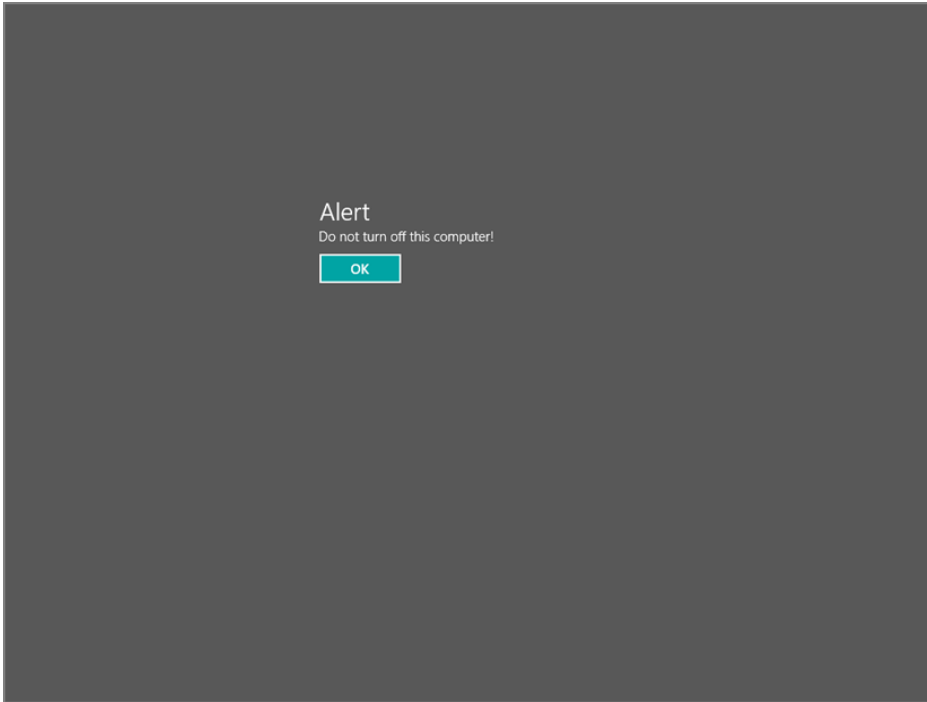
## Displaying a Security Message

Would you like to display a message to your users before they can log on? Are any instructions necessary for users of your computers, such as “Do not shut down this computer!” or do you need to display a security warning informing unauthorized users that they are breaking the law if they try to log on to your laptop? All of these are possible with the help of Group Policy. With just a few clicks, you can easily display a message to your visitors, as shown in Figure 5-5.

Using the Local Security Policy editor, you can turn this feature on. Follow these steps to activate it on your PC:

1. Open the Start screen, type **secpol.msc**, and press Enter.
2. When the Local Security Policy editor loads, navigate through Local Policies and then Security Options.
3. Locate the Interactive Logon: Message Title For Users Attempting To Log On policy. Right-click it and select Properties.
4. On the Local Security Setting tab, type a title that you would like to use for your message, and click OK.
5. Locate the Interactive Logon: Message Text For Users Attempting To Log On policy. Right-click it and select Properties.
6. On the Local Security Setting tab, type your message and click OK.
7. Close the Local Security Policy editor; you are finished.

As soon as you log off or reboot, the security message settings are activated.



**Figure 5-5:** You can display a security message on your Windows 8 lock screen.

## Enabling Num Lock by Default

If you have a password that has both numbers and letters and you frequently use the number pad to enter part of your password, this hack is for you. I cannot count the number of times that I started to type my password and was then presented with a logon error telling me that my password was incorrect. I would sit there staring at the screen for a second before I realized that Num Lock on my keyboard was not on.

This is a great hack for every desktop computer with a full-size keyboard and a separate number pad. Turning on Num Lock by default on a laptop is not a good idea because most laptops do not have a separate number pad. The result of enabling this feature on a laptop is that almost half your keyboard functions act as the number pad. To get started, follow these steps:

1. Open the Start screen, type **regedit**, and press Enter.
2. When the Registry Editor loads, navigate through HKEY\_USERS, .DEFAULT, Control Panel, and Keyboard.

3. Locate the `InitialKeyboardIndicators` entry, right-click it, and select `Modify`. To enable Num Lock, enter `2` into the box. If you want to disable it, enter `2147483648`, which is the system default value.
4. Click `OK` to save the changes. That's it!

If you are on a laptop and you attempted to enable Num Lock—even though I told you not to—and need to fix your system, repeat the preceding directions but replace the value of `InitialKeyboardIndicators` with `2147483648` to disable the feature.

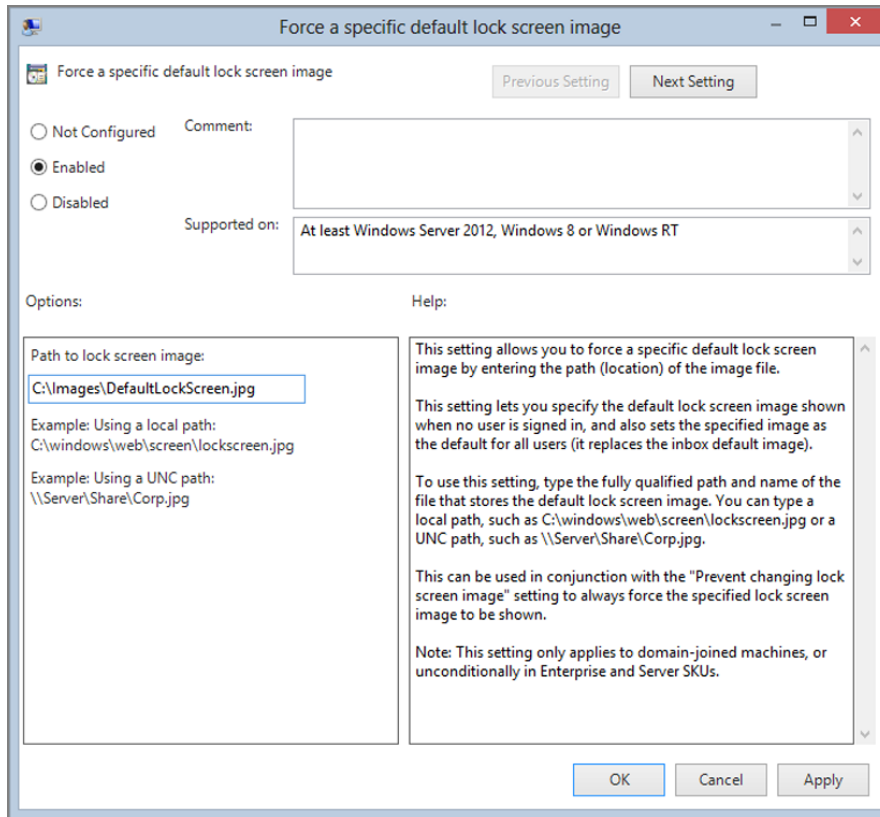
## Changing the Lock Screen Image

Windows 8 actually has two different types of lock screen images: one for all users, also called the default lock screen, and one for each user account. The default logon screen displays when multiple user accounts are on the machine but no users are logged in. This is most common in business environments with domain-joined PCs that hide the last user logged in. It also displays on a multi-user home PC when a user logs off.

### *Setting the Default Lock Screen*

Configuring the default lock screen was not a feature of the RTM build of Windows 8. It was introduced based on feedback from enterprise customers and was enabled in the November 2012 cumulative patch for Windows 8 (KB2770917). You must have that patch installed to proceed with this section. See [tweaks.com/983858](http://tweaks.com/983858) for more details about the patch. Customizing the default lock screen uses group policies which can be controlled globally with domain group policy or locally with local group policy. That is good news for any business that wants to make this change apply globally without having to touch every machine but it also means that this will work only on Windows 8 Pro and Windows 8 Enterprise editions.

1. To get started, open the Start screen, type `gpedit.msc`, and hit `Enter`.
2. When the Local Group Policy Editor loads, navigate through `Local Computer Policy`, `Computer Configuration`, `Administrative Templates`, `Control Panel`, and then `Personalization`.
3. Right-click `Force A Specific Default Local Screen Image` and select `Edit`.
4. Select the `Enable` option.
5. Enter a path to a JPG image file you want to use as your lock screen image. For example, `C:\Images\DefaultLockScreen.jpg`, as shown in Figure 5-6.



**Figure 5-6:** Configure the lock screen image path.

6. Click OK.
7. Close the Local Group Policy Editor and log out to view the new default lock screen.

### *Customizing the User Lock Screen*

The user lock screen is what most users of Windows 8 see on a daily basis. By default, Windows 8 automatically logs in the last person to use the PC, which is why you see this lock screen the most often. Customizing the lock screen is very simple; the most difficult part is finding a good picture:

1. Open the Start screen and type **Lock Screen**.
2. Click the Settings filter.
3. Click Lock Screen.

4. Click a new image from the default options or click Browse and select a custom image.

Your new lock screen is active immediately.

## Tweaking Default Color Scheme

If you are tired of the default color scheme on the logon and logoff screens you can change it just like you can change the rest of the new interface. The Windows logon process determines which color scheme to display by reading a value in the registry. Microsoft did not write a GUI to make it easy for you to change the settings, but you can do it within Registry Editor.

To make this change, you set the value of the Accent setting. The value corresponds to a predetermined color scheme set by Microsoft. You have 25 options to choose from, as shown in Figure 5-7. Because this book is in black and white and picking colors in black and white is difficult if not impossible, I have hosted a color copy of the graphic online at [tweaks.com/552494](http://tweaks.com/552494).



**Figure 5-7:** Windows 8 provides color choices.

1. Open the Start screen, type in **regedit**, and hit Enter.
2. When the Registry Editor loads, navigate through HKEY\_LOCAL\_MACHINE, SOFTWARE, Microsoft, Windows, CurrentVersion, Explorer, and then Accent.  
If Accent does not exist on your system, create it by right clicking Explorer, and then select New and Key.
3. Create a new DWORD by right-clicking Accent and then DWORD (32-bit) Value.
4. Name the new DWORD DefaultColorSet.
5. Right-click the new DefaultColorSet entry and select Modify.
6. Switch the Base to Decimal by selecting Decimal on the Edit DWORD (32-bit) Value window.
7. Enter the corresponding value between 0 and 24 for the color scheme you want and click OK.
8. Reboot your PC to see the new color scheme.

## Customize Lock Screen Apps

The new lock screen displays a picture but has the capability to do much more. In fact, many popular Windows Store apps can display information on the lock screen. Notification of new messages or the current weather conditions are some of the neat options you have. As the Windows Store continues to grow, there will be even more options in the future.

Microsoft allows one spot on the lock screen to display detailed information next to the current time, and seven spots for notifications. Follow these steps to modify the apps on your lock screen:

1. Open the Start screen and type **Lock screen**.
2. Click the Settings filter.
3. Click Lock Screen.
4. Scroll to the bottom to view the Lock Screen Apps section.
5. To change an option, just select one of the boxes. The Choose An App menu pops up displaying all available apps for that spot. If you don't want to show any, select Don't Show Quick Status Here.

## Using a Picture Password

New to Windows 8 is the capability to set touch points on a photo as your account password. This is an innovative method for logging on to your computer without using a keyboard. Instead of typing in a password, you touch or click a person's face, hand, and some object in the background of a picture. You can choose which picture you want to use and determine where you touch or click.

Picture passwords are perfect for touch devices but they also work on traditional PCs with a simple mouse.

Setting a picture password is easy and fun, so let's get started:

1. Open the Start screen and type **picture password**.
2. Click the Settings filter.
3. Click Create Or Change Picture Password.
4. Under Sign-In Options, click the Create A Picture Password button.
5. Enter your current password when asked.
6. Click Choose Picture and select a picture on your PC.
7. On the confirmation screen, select Use This Picture.
8. Then touch or click three parts of the picture per the on-screen directions.
9. Repeat where you touched or clicked to confirm your picture password.
10. Click Finish.

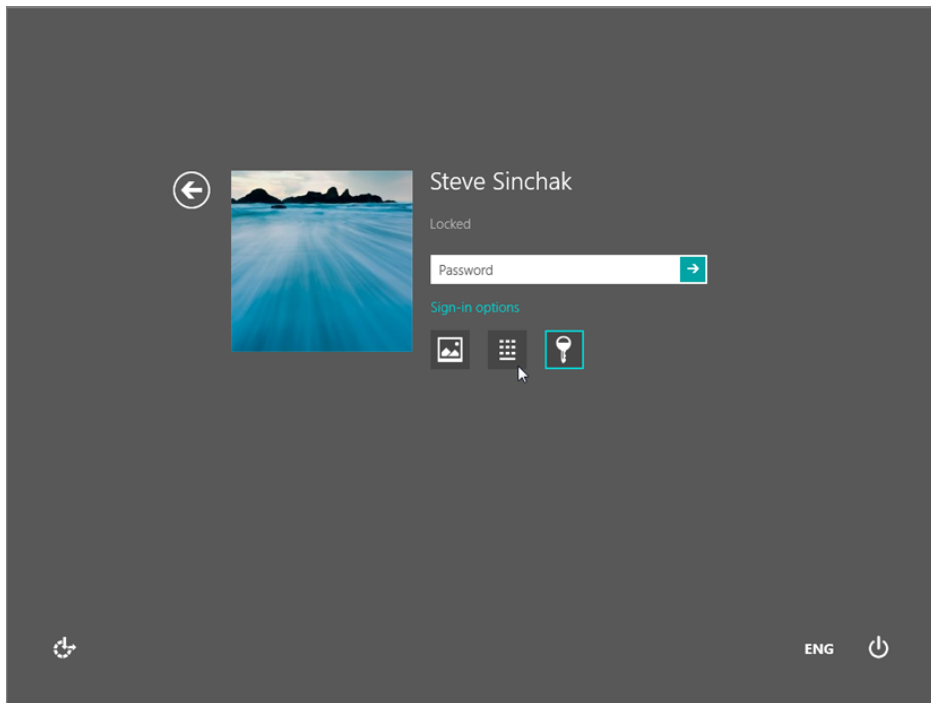
Your picture password has now been set up. Hit Windows Key+L to lock your computer to test it out.

## Enable PIN Logon

If a picture password is not for you, the PIN logon most likely is. I use this as the logon method on all my devices because it is quick and easy. Instead of typing in a password, just key in a four-digit PIN and you will be logged in immediately.

1. Open the Start screen and type **PIN**.
2. Click the Settings filter.
3. Click Create Or Change PIN.
4. Under Sign-In Options, click the Create A PIN button.
5. Enter your current password when asked.
6. Next, enter your PIN twice and click Finish.

The new PIN is active immediately. You can switch between using a password or a PIN on the logon screen by clicking Sign-In Options and then selecting the icon for the sign-in method you want to use, as shown in Figure 5-8.



**Figure 5-8:** The lock screen offers sign-in options.

## Boot To Desktop

One of the more controversial changes in Windows 8 is the behavior after you log in. Instead of viewing the desktop, users are shown the new Start screen. If you want to view the desktop you must select the Desktop tile. Microsoft is trying hard to promote the new windowless immersive environment and that has rubbed some users the wrong way.

Adding fuel to the fire, Microsoft blocked the easy methods to change this behavior and go directly to the desktop after logon in the final builds of Windows 8. The only method that remains requires third-party software to work around the limitations imposed by Microsoft.

I spent a lot of time investigating how to solve this problem and ended up writing a free utility called Tweaks.com Boot to Desktop. My utility has two main components. The first part is a tiny service that runs in the background and monitors for when the logon event happens. When that is detected, it launches a second component under the user context that does the leg work of showing the desktop. The solution is rather complex, but was necessary to get around the limitations imposed by Microsoft.

Using my utility is very simple. Just download it from [tweaks.com/414700](http://tweaks.com/414700) and install it. After a reboot you will boot directly to the desktop.

If you change your mind, you can uninstall the utility just like any application and you will revert to the Start screen behavior.

## Summary

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You can think of this first customizing chapter as the first step in the complete customization of every possible aspect of your Windows 8 install. You started with tweaking the way the logon screen behaves and then made some major changes to the look by changing the lock screen.

The next chapter helps you customize the user navigation components of Windows 8. First, you learn all about customizing the Start screen. Then you learn how to customize the next most used component of Windows—the taskbar.

# Customizing User Navigation

Customizing user navigation is the next stop on the Windows 8 customizing road trip. In the previous chapter, with the help of some cool tweaks, you were able to change and improve the logon experience. This chapter picks up where Chapter 5 left off and shows you how to customize and improve the visual navigation elements of Windows 8.

This chapter starts with customizing the look and the content of the cool new Start screen, formally the Start menu. The improved Start screen in Windows 8 has many useful features, and I show how you can use them best. Then, I show you how you can customize almost everything you see on the Start screen. If you don't like the new Start screen, I show you how to get the old classic Start menu back.

You also learn how to customize the taskbar on the bottom of your screen. The taskbar is an essential part of navigating your computer. I show you how to customize and improve its features and give you some new ideas about how you can use it to dramatically improve your experiences with Windows 8.

## Customizing the Start Screen

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Completely revamped for Windows 8, the Start screen enables you to search your programs and jump directly to various components of Windows. Additionally, you can launch commands much as you could in the traditional Run box by just typing them in.

After you finish reading these next few sections, you will have transformed your Start screen into something that works better for you and is much more useful for your everyday tasks.

### Changing the Background and Colors

Changing the background is one of the easiest customizations, but it makes a big impact on personalizing your Windows 8 PC. You can use two methods to customize the Start screen background: one using native functionality that limits you to designs created by Microsoft, and another using third-party utilities to use any image as the background image.

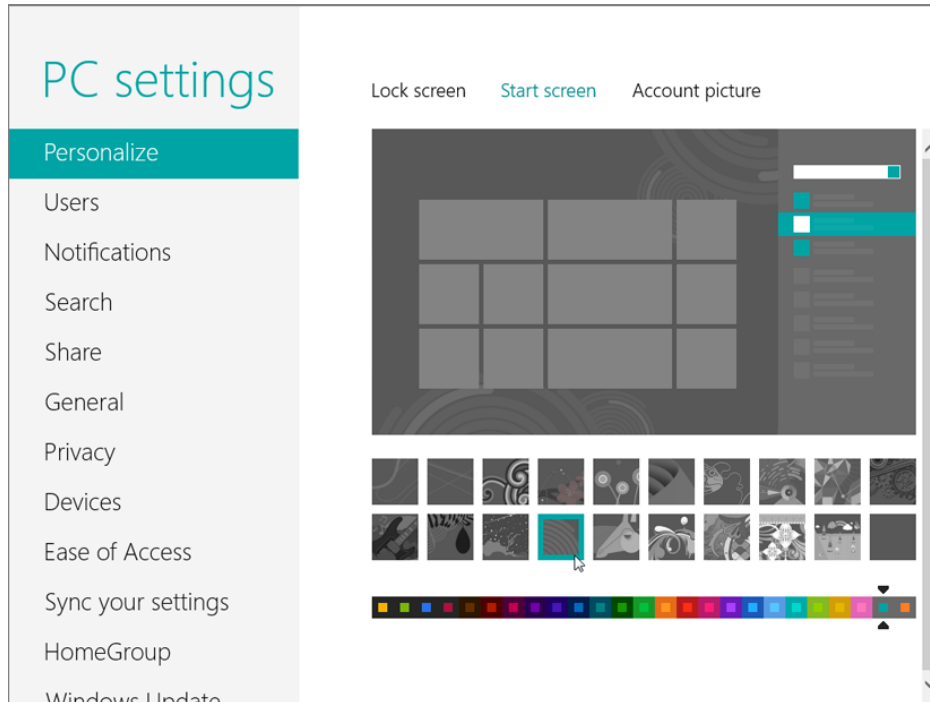
#### *Native Background Personalization*

Microsoft provides 20 different background images along with 25 different color schemes. That means 625 possible combinations of each background and color scheme are available. With that many combinations, the odds are in your favor to find something that you like using the native personalization options.

Selecting your background image and color scheme is very easy in Windows 8:

1. Open the Start screen and type **customize**.
2. Click the Settings filter.
3. Click Customize Your Start screen.
4. Pick the background image you want to use, as shown in Figure 6-1.
5. Pick the color scheme you want to use.

As soon as you make the change, your settings are saved. The preview window gives a nice simulated view, but I always like hitting the Windows Key to check out the real deal.



**Figure 6-1:** Select your Start screen background image.

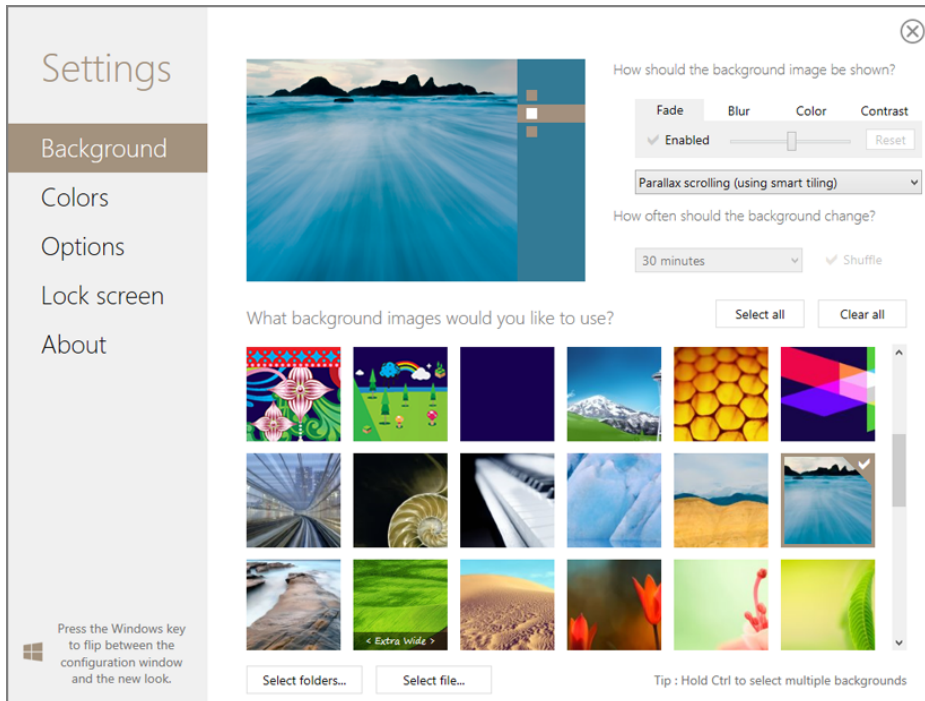
### *Background Customization with Utilities*

If you are not happy with the images and colors Microsoft included in Windows 8, you must use third-party utilities for more options. The following are two utilities that I have used with Windows 8 to customize the Start screen image and colors further.

#### **Stardock Decor8**

Decor8 is by far the best Start screen customizing application. You can set any image as your background, customize the colors of your tiles, and tweak the visual effects. The interface is easy to use and it even includes advanced features that enable you to automatically change the background image on a timer. The only downside to this app is that you must pay \$4.99 to use it.

Head over to [tweaks.com/157844](http://tweaks.com/157844) and download a free 30-day trial. After Decor8 is installed, you see the main customization screen as shown in Figure 6-2.



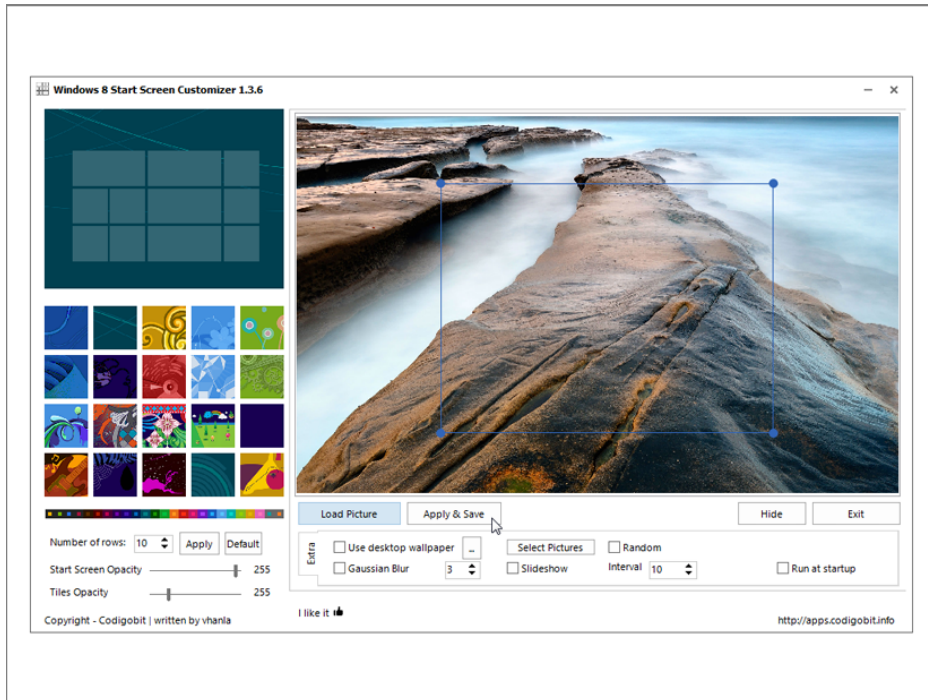
**Figure 6-2:** Stardock Decor8 offers this customization screen.

Select one of the background images or click Select File to use your own. Click the Colors option on the left menu to select from the standard Windows color schemes or create your own.

### Windows 8 Start Screen Customizer

The Windows 8 Start Screen Customizer is a free utility written by vhanla, who is known for creating a number of free Windows customization utilities. Although it does not have all of the bells and whistles of Decor8, it gets the job done in enabling you to replace the Start screen background image. Unique to the Windows 8 Start Screen Customizer, you can also adjust the transparency of the entire Start screen.

You can download a free copy at [tweaks.com/161004](http://tweaks.com/161004). Just extract the file and rename the extension from .ex\_ to .exe and then run. Once you have it up and running, select one of the default backgrounds or click Load Picture to select your own. Then just drag the border box around the section of the picture you want to use, click the Apply & Save button as shown in Figure 6-3, and your new Start screen will be active.



**Figure 6-3:** Windows 8 offers a Start Screen Customizer.

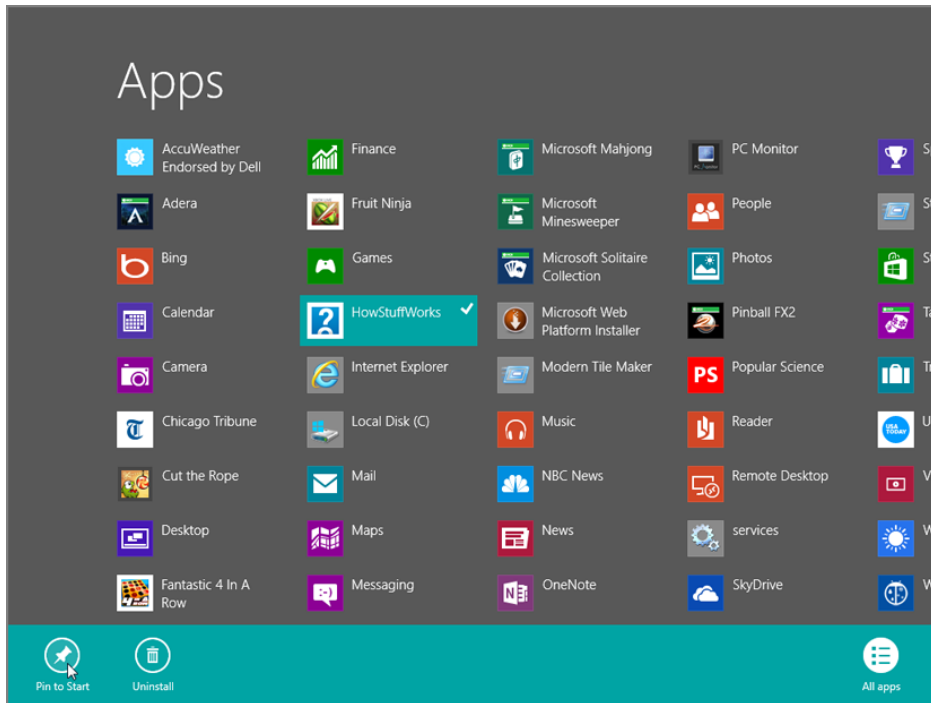
## Working with Live Tiles

Tiles make up all the content on the new Start screen in Windows 8. Knowing how to customize them will help you personalize your Windows 8 experience. Over time as you install more and more apps, the Start screen can become cluttered. Finding what you want becomes difficult and the result is a visual mess. Windows 8 has some very useful organization tools built in, but they are not always intuitive because Windows 8 puts a lot of options in hidden menus.

### *Adding or Removing Tiles*

Anything that shows up in the Start screen application search can be pinned to the main Start screen. An easy method to view all apps on your computer, similar to the old All Programs menu in the old Start menu, is to open the Start screen, right-click, and then select All Apps on the pop-up charms bar.

At that point just scroll until you find the application you want to pin and right-click it. Then Select Pin To Start as shown in Figure 6-4.



**Figure 6-4:** Pin an application to your Start screen.

Removing tiles is even easier. Simply right-click a tile on your Start screen and select Unpin From Start.

### *Moving Tiles*

Customizing the location of the tiles is one thing that Microsoft made easy in Windows 8. With a mouse, just click and hold a tile and you can drag it anywhere you want on the Start screen. With a keyboard, select a tile with the tab key, then hold down Shift+Alt and use the arrow keys to move tiles around.

### *Grouping Tiles*

After you install a lot of apps on your PC your Start screen will become cluttered. Sorting your tiles into groups is absolutely necessary to keep your Start screen organized and under control. You can arrange tiles in any number of groups and you can label the groups. The process of creating groups is fairly straightforward.

Create a group by dragging a tile in one of the default groups to the left or right of the current group. As you drag the tile out of a group, a new group indicator displays as shown in Figure 6-5. Drop the tile on the vertical indicator and it is placed in a new group. Next, just drop additional tiles into the group as necessary.

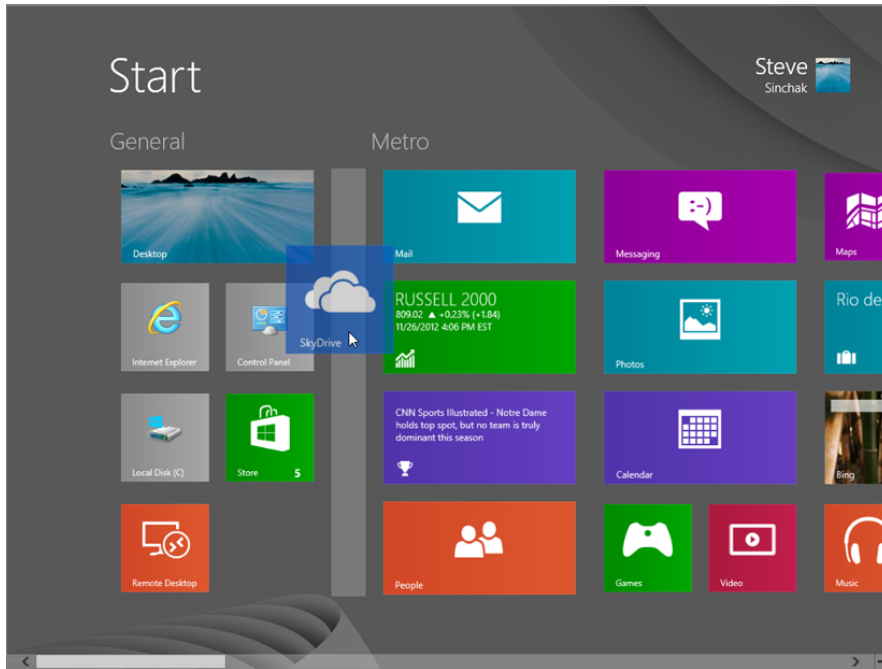


Figure 6-5: Use the new group indicator to add tiles to a group.



Figure 6-6: Enter the zoomed-out group view.

You can name groups, which makes finding the app tile you want much easier and makes the entire Start screen look much more organized. Naming a group requires the Start screen to be in the zoomed-out group view. You can enter that view by clicking the minus button in the lower-right corner of the screen, as shown in Figure 6-6.

Once you are in the group view, just right-click any group, select Name Group, enter a name, and hit Enter.

### *Resizing Tiles*

Windows Store apps have two tile sizes, whereas classic Windows apps come in only one size. The metro-style apps can be single width or double width. Tweaking the size of the tile is as simple as right-clicking it. Have a double-wide and want to make it single? Just right-click it and select Smaller on the charms bar that pops up. Click Larger on the charms bar to make it bigger.

## Creating Custom Tiles

You can extend the Start screen further in Windows 8 by adding custom tiles. With the right tools, you can pin just about anything to the Start screen: folders, websites, scripts, and even commands. In the next two sections I show you how you can create custom tiles that will make your Windows 8 experience better.

### *Native Support*

Only applications can be pinned to the Start screen natively and are typically customized by pinning an application shortcut. To demonstrate how, I show you how to create a tile on the Start screen that will shut down your computer.

Switch to the desktop interface and then follow these steps:

1. Right-click the desktop and select New and then Shortcut.
2. Type the command you want to run in the location box. For this shutdown tile example, type **shutdown.exe /s /t 0** and then click Next.
3. Type in a name for your shortcut, such as Shutdown, and click Finish.
4. Now it is time to customize the look of the shortcut. Right-click your new shortcut and select Properties.
5. On the Shortcut tab, click Change Icon.
6. Select a new icon and click OK.
7. Click OK on the shutdown.exe Properties window.
8. Right-click your shortcut again and this time select Pin To Start.

Your new custom tile appears at the far right of your Start screen. Drag it to where you want it and you are finished.

### *Third-Party Apps*

I recommend two third-party tile creating apps that enable you to create more customized tiles. Instead of just picking an icon to display on the tile, the apps listed here let you select images and the colors of the tile:

- **OlbyTile**—[tweaks.com/936219](http://tweaks.com/936219)
- **Modern Tile Maker**—[tweaks.com/475926](http://tweaks.com/475926)

Both tile creators are free utilities and are very simple to use. Just download the utilities from the links, fill out the simple form, and your tiles are created. There have been reports of the two apps conflicting with each other, so pick just one and go with it.

### **Administrative Tools**

The classic administrative tools that have been in every version of Windows in the past decade are also part of Windows 8, but they are hidden by default. You can display these utilities on the Start screen, but before I show you how, here is a full list of what this tweak will enable on the Start screen:

- Component Services
- Computer Management
- Defragment and Optimize Drives
- Disk Cleanup
- Event Viewer
- iSCSI Initiator
- Local Security Policy
- ODBC Data Sources (32-bit)
- ODBC Data Sources (64-bit)
- Performance Monitor
- Print Management
- Resource Monitor
- System Configuration
- System Information
- Task Schedule

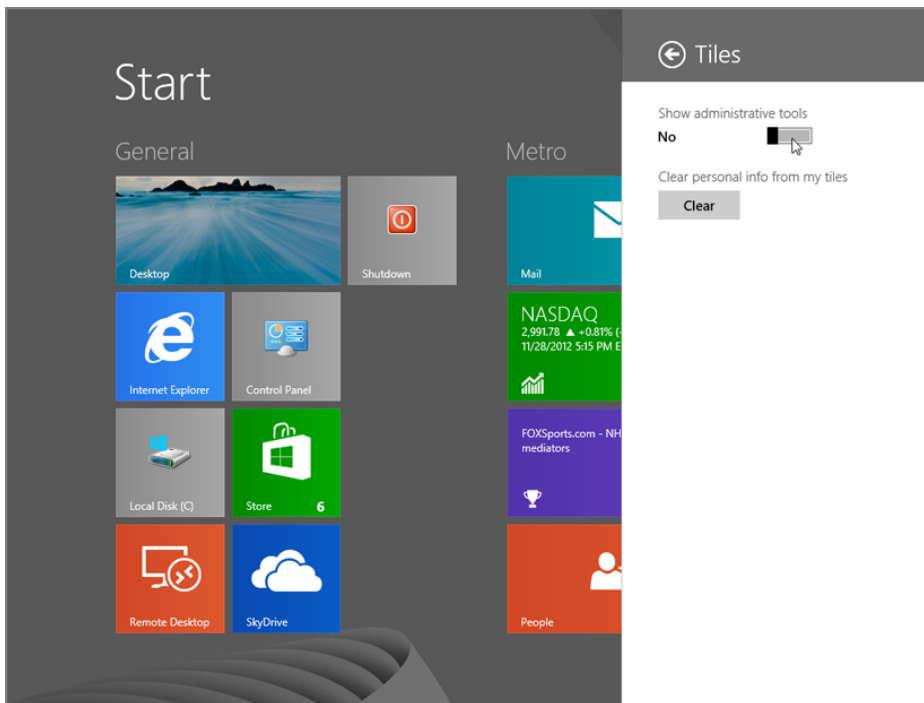
- Windows Firewall
- Windows Memory Diagnostic
- Windows PowerShell (x86)
- Windows PowerShell ISE
- Windows PowerShell ISE (x86)

After the tiles are added you have the option of manually hiding any specific tile using the instructions covered earlier.

To get started displaying the administrative tools on your Start screen, follow these steps:

1. Open the Start screen.
2. Hit Windows Key+C to bring up the charms bar.
3. Click Settings on the right charms bar.
4. Click Tiles.
5. Click the Show Administrative Tools switch as shown in Figure 6-7.

All of the administrative tools listed previously will appear shortly.



**Figure 6-7:** Enable Administrative Tools on the Start screen.

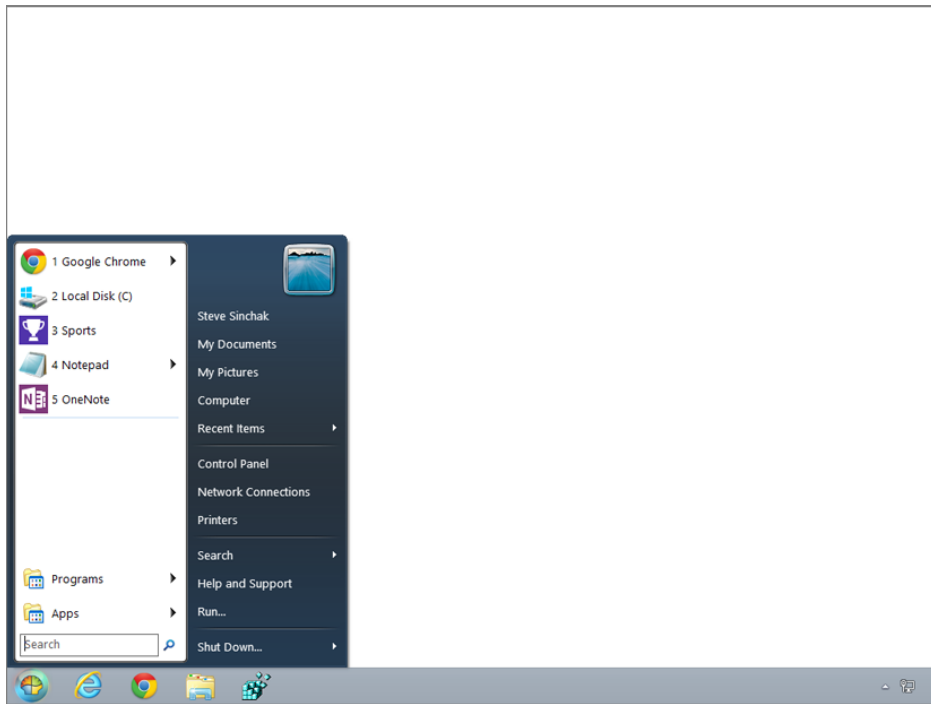
## Restoring the Classic Start Menu

The classic Start menu has been completely ripped out of Windows 8. Microsoft wanted to make sure the Start screen was the only native option users had, and it accomplished that goal. The verdict is still out on the new Start screen, but one thing is very apparent: lots of people are fans of the traditional Start menu and they want to restore the functionality.

Two utilities replicate the behavior and appearance of the traditional Start menu Windows users are familiar with.

### *Classic Shell*

Classic Shell is a free Start menu alternative that restores a Start button and a pop-up menu interface similar to the traditional Start menu as shown in Figure 6-8.



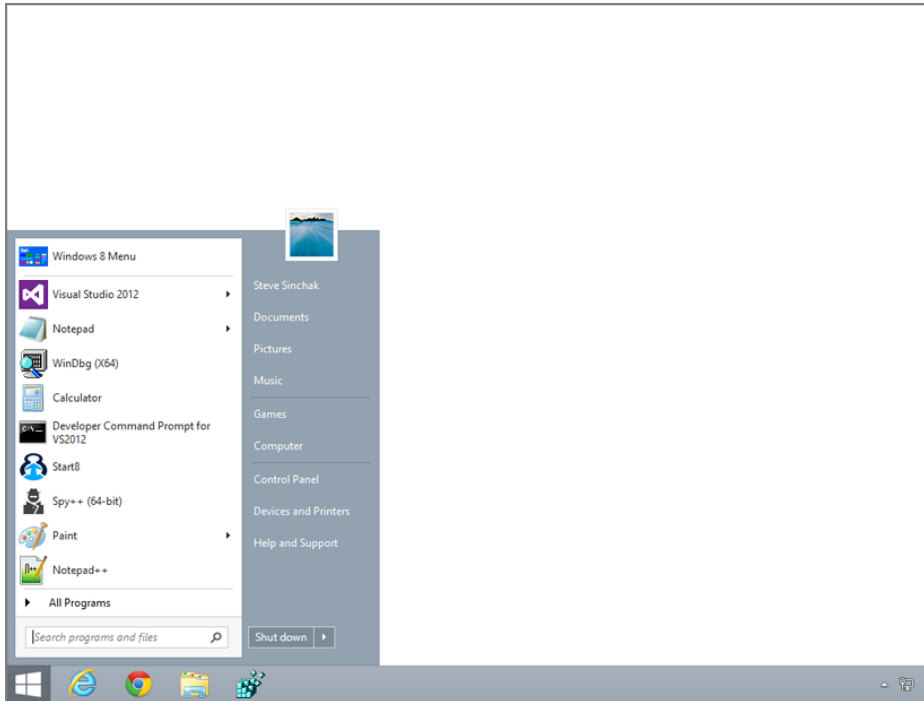
**Figure 6-8:** Classic Shell offers a Start screen replacement.

Almost all of the functionality of the traditional Start menu has been replicated with Classic Shell. Best of all, Classic Shell can be heavily customized. Skins are available to change the look and dozens of settings let you change which items are displayed, and even the graphic for the Start button.

Classic Shell is easy to set up. Just head over to [tweaks.com/963778](http://tweaks.com/963778) and download the latest version.

## Stardock Start8

Start8 by Stardock is a polished Start menu replacement that has all the features you expect from a traditional Start menu with a refined modern look, as shown in Figure 6-9. Customizable in a manner similar to Classic Shell, it lets users pick which options are shown and even tweak the Start button images.



**Figure 6-9:** Stardock Start8 offers a Start menu replacement.

Start8 also has some unique features. For example, you can control it from a Group Policy or disable the Metro “hot spots” that bring up the charms. That feature is very helpful if you dread the new Metro world and just want to work in the Desktop interface. Overall, Start8 is the gold standard for Start menu replacements.

Start8 costs \$4.99, but a free trial is available. Head over to [tweaks.com/559130](http://tweaks.com/559130) to download the latest version.

## Customizing the Taskbar

Windows 8 includes a refined taskbar that was designed to give you more control and more flexibility when working on your computer. The taskbar, which can be described as a giant Quick Launch bar, enables you to move applications around

and pin applications so they remain on the taskbar even when it is closed. The first thing you will notice is the absence of labels by default on program listings. That creates a very clean look and allows Windows to cram a lot of open applications in a small amount of space.

On top of the visual changes, the taskbar includes functionality such as Jump Lists, Peek, and an improved notification area. This section shows you how to customize these new features and to personalize your taskbar.

## Pinning Applications

The Quick Launch bar on the taskbar in previous versions of Windows was my favorite component to customize. I spent hours organizing and ordering shortcuts to numerous applications aiming to create the perfect setup. In Windows 8, Microsoft turned my world upside down by removing the Quick Launch toolbar from the taskbar. Thankfully, Microsoft realized the value of Quick Launch and built the same functionality into the taskbar.

The taskbar is no longer just a place to view open applications; you can start applications from it too by pinning application shortcuts to the taskbar. Pinning creates a shortcut that permanently stays on your taskbar, just like an old Quick Launch shortcut. Different from previous versions of Windows is the way the shortcuts appear. Open but not active applications have a border around them. Active, open applications have a border around them and a glass highlight effect. Closed, pinned applications just show up as an icon. All three types of applications are shown in Figure 6-10.



**Figure 6-10:** The Windows 8 taskbar shows applications that are running surrounded by a border.

You can pin an application in two ways:

- Drag any shortcut from your desktop or Start menu onto the taskbar.
- Right-click any open taskbar application and click Pin This Program To Taskbar.

Folders and drives that you attempt to pin show up in the Explorer Jump List instead of as individual icons on the taskbar. This was a design decision made by Microsoft to clean up the taskbar and keep it organized.

Removing a pinned application is as simple as right-clicking the pinned application on the taskbar and selecting Unpin This Program From Taskbar.

## Modifying Icon Locations

The taskbar in Windows 8 was designed with *you* in mind. For the first time you can determine the location of each program—even the location of programs you open yourself or that are currently open.

Moving your programs is simple: just left-click and hold any icon and drag it where you want it to be. Applications that are not pinned by default always appear at the end of the list, but you can move them again as soon as they load.

## Tweaking Jump Lists

Jump Lists are a major component of the new taskbar. When you right-click an application, you are presented with a number of new options relevant to that application. Depending on the application, you are shown recent items, common tasks, and more. Most applications will show recently opened items, such as Word documents when you right-click Microsoft Word. Other applications such as Windows Messenger and Windows Media Player have enhanced Jump Lists that enable you to perform common tasks, as shown in Figure 6-11. If you want to sign off temporarily on Windows Messenger, just right-click the taskbar shortcut and you can quickly change your setting.

Overall, Jump Lists are a great addition to the new taskbar because they enable you to jump to tasks faster than before. To make Jump Lists work better for you, there is a tweak that will help you customize the feature.

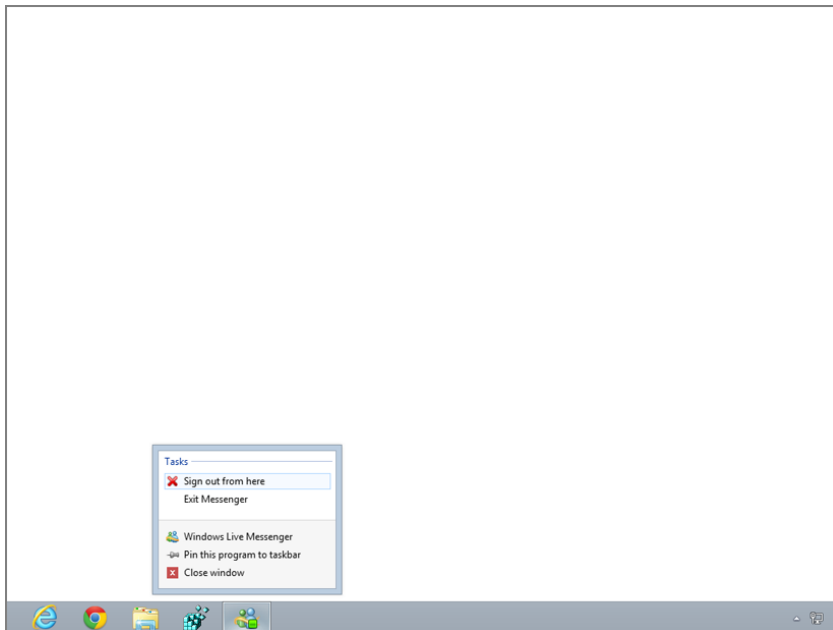


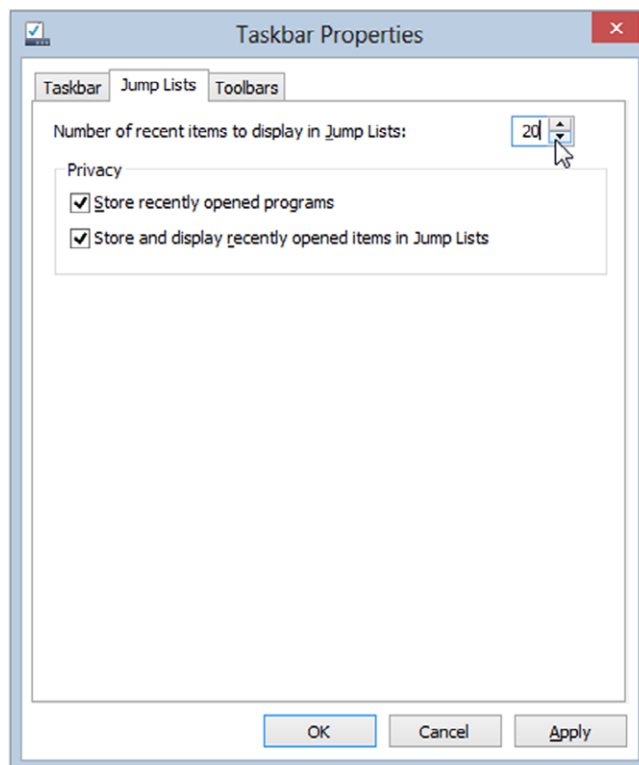
Figure 6-11: Windows 8 offers Jump Lists.

## Adjusting the Recent List

All applications that participate in the Windows MRU (most recently used) list automatically have a recent items component on their Jump List. Microsoft Word shows recent documents; Internet Explorer shows recent websites; and Microsoft Paint shows recently opened pictures on their Jump Lists. By default, Windows shows the ten most recent used items. If you think that is too much or too little, I'm going to show you how to tweak that setting.

Windows sets a maximum of 60 recent items possible to show in the Jump List, although I never see that many even when I have it set to the max. I recommend that you set the value between 5 and 20 to keep the recent list useful. The setting to change the value is a little hard to find because it is not where you would expect it. Follow these steps to customize how many items are displayed in your recent lists:

1. Right-click the taskbar and select Properties.
2. Click the Jump Lists tab.
3. Set the Number Of Recent Items To Display In Jump Lists as shown in Figure 6-12.
4. Click OK and you are finished.



**Figure 6-12:** Adjust the number of recent items you want to display.

## Enable Classic Taskbar Look and Behavior

The Windows 8 taskbar has a clean appearance with just the icons of opened and pinned applications grouped together by program. Microsoft realized that not all users would like the new look and grouping, so it built in the capability to turn labels back on. The result is what I call the classic taskbar look and behavior, as shown in Figure 6-13.



**Figure 6-13:** Windows 8 taskbar with labels turned on

Similar to previous versions of Windows, the program label look and lack of application grouping is helpful for users who dislike the new taskbar and want a familiar look. Windows 8 offers three settings that enable you to configure the taskbar's appearance and behavior:

- **Always Combine, Hide Labels**—Default taskbar behavior
- **Combine When Taskbar Is Full**—Labels are enabled
- **Never Combine**—Labels are enabled

I don't recommend using the Never Combine setting because it makes finding programs very difficult when you have a lot of windows and applications open. Instead, I would use Combine When Taskbar Is Full to achieve the classic look and behavior.

To make the changes, follow these steps:

1. Right-click the taskbar and click Properties.
2. On the Taskbar tab, locate the Taskbar Buttons drop-down list, and make your selection.
3. Click OK or Apply to see the new setting in action.

If you want the true classic look of small icons combined with the classic look and behavior, the next section is for you.

## Customize Taskbar Icon Sizes

I always like to customize the taskbar icon size on my laptop because it has a small screen. The large taskbar icons look great on my desktop LCD monitors that run at high resolutions, but they take up too much space on the small screen of my laptop. Customizing this setting also enables you to fit many more pinned and open applications on the taskbar. As you can see in Figure 6-14, there is a big difference between small and large icons on the taskbar.



**Figure 6-14:** Choose the size of your taskbar icons.

You enable small icons in the Taskbar properties:

1. Right-click the taskbar and select Properties.
2. On the Taskbar tab, check Use Small Taskbar Buttons.
3. Click OK or Apply to see the result.

## Tweaking Taskbar Preview Delay

Taskbar previews have been improved in Windows 8, enabling you to take a quick peek at a window by hovering over its taskbar icon. My biggest complaint is the delay before the taskbar previews are shown. I want to use the new features but the amount of time I have to hover over a taskbar application is too long.

You can tweak this with a simple registry hack:

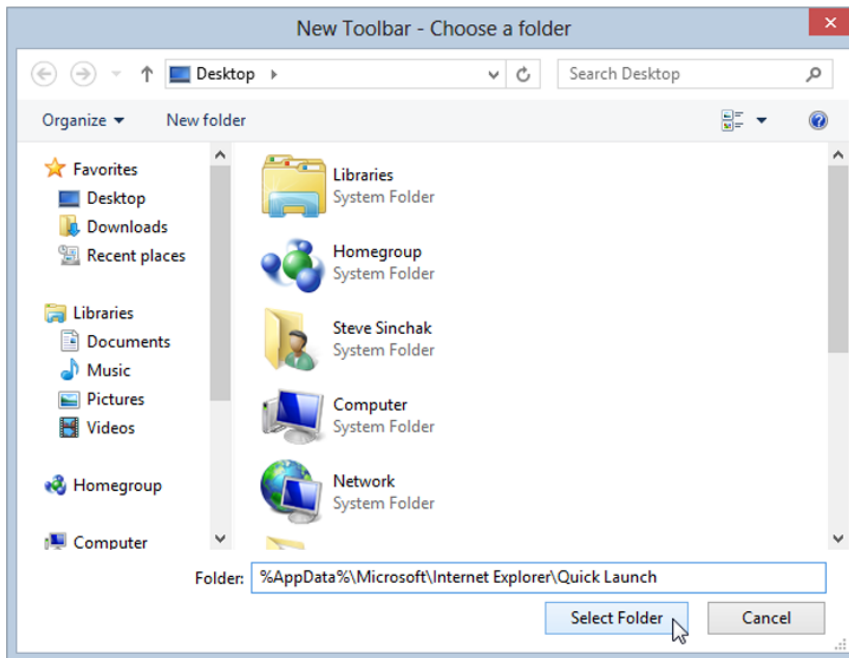
1. Open the Start screen, type **regedit**, and hit Enter.
2. When the Registry Editor is started, navigate through HKEY\_CURRENT\_USER, Software, Microsoft, Windows, CurrentVersion, Explorer, and Advanced.
3. Right-click Advanced, click New, and then click DWORD (32-bit) Value. Name the new value **ExtendedUIHoverTime**.
4. Right-click the new ExtendedUIHoverTime value you just created and select Modify.
5. Change the Base to Decimal and enter the new value in milliseconds and click OK. The default value is 400 in the decimal base, which is 400 milliseconds. I like to set mine to 100.
6. Reboot and test your new setting.

## Restore Classic Quick Launch Bar

The classic Quick Launch bar was a great way to start your programs in previous versions of Windows. With the new taskbar in Windows 8, the Quick Launch bar was removed and replaced with the application pinning feature. The ability to pin an application to the taskbar is nice, but it does not exactly replicate the old behavior of the Quick Launch bar.

Although the Quick Launch bar was removed in Windows 8, Microsoft left the capability to add more toolbars on the taskbar as in previous versions of Windows. You can exploit the toolbar feature to create a new toolbar pointing to the old Quick Launch location. Follow these steps to resurrect the Quick Launch bar:

1. Right-click the taskbar and click Toolbars and then New Toolbar.
2. On the new toolbar, choose a folder screen, type `%AppData%\Microsoft\Internet Explorer\Quick Launch`, and click Select Folder, as shown in Figure 6-15.



**Figure 6-15:** You can restore the classic Quick Launch toolbar.

3. The Quick Launch toolbar is displayed on the far right of the taskbar, but you are not finished yet. Next, make sure that the taskbar is not locked so you can customize the toolbar that you just created. You can do that by right-clicking the taskbar and making sure Lock The Taskbar is not checked.
4. After you verify that the taskbar is unlocked or have unlocked the taskbar, you can remove the Quick Launch toolbar label. Right-click the Quick Launch label and select Show Title to disable that feature.
5. Right-click the new toolbar again and select Show Text to disable that feature as well.
6. The toolbar should begin to look familiar now. The last step is to position and size the Quick Launch bar to the location you want on the taskbar. You

can resize it by left-clicking and holding on to the gripper bar on the left of the toolbar. Then, just drag left or right to resize. If you want to move it back to where it normally is, on the far left of the taskbar, right-click the gripper bar on the left of the normal taskbar and drag it right. That will make the new taskbar icons and the toolbar you just created switch locations.

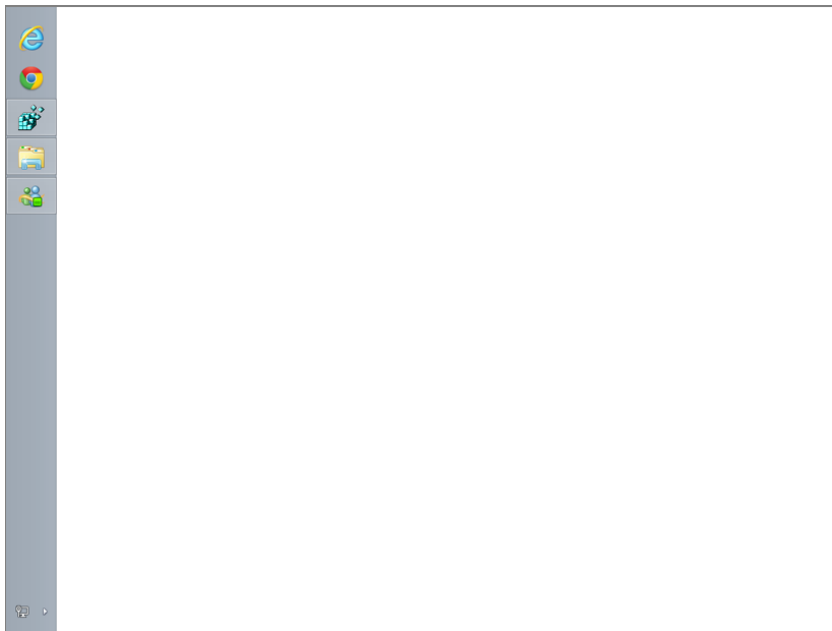
If you want to replicate the full classic Windows taskbar look, I suggest you also follow the Customize Taskbar Icon Sizes tweak and Enable Classic Taskbar Look and Behavior tweak I mentioned earlier in this chapter. The combination of all three tweaks is a great help to users who like the old behavior and look of the Windows taskbar.

## Modifying the Taskbar Location

The Windows taskbar always appears on the bottom of the screen, but did you know that you can move it to any side you want? It is possible to move the taskbar and create a very different look in Windows 8. Figure 6-16 shows what your screen might look like if you move your taskbar to the left side of the screen.

Moving the taskbar is simple. Just follow three basic steps:

1. Right-click the taskbar and select Properties.
2. On the Taskbar tab, find the Taskbar Location On Screen drop-down box and select the position you want to use.
3. Click OK or Apply and view your new location.



**Figure 6-16:** You can move the taskbar. Here it appears on the left side of the screen.

## Customizing the Notification Area

Over the years the notification area, previously known as the system tray, has become more and more cluttered. It seems as though just about every application you install wants to create a notification area icon when it is running. In Windows 8, Microsoft decided enough is enough and cleaned up the notification area by creating a new overflow container. Now when any application creates a notification area icon, it does not show up by default. Instead, you have to click the arrow on the end of the notification area to view the overflow container. Then if you decide that the notification area icon actually is useful, you can drag it from the overflow container to the main notification area. Now you are in full control of your notification area and can keep it nice and neat or cluttered depending on how you like it.

In the next few sections I show you how you can fine-tune your notification area by customizing the appearance and behavior.

### *Hiding Icons*

As I mentioned earlier, the only additional icons that appear in your notification area are icons that you personally drag into it. If you want to hide any of those icons, including the default system icons, you can simply drag them off it and they will fall in the overflow container. This works great most of the time, but there is another way to get more control:

1. Click the arrow to the left of the notification area and then select **Customize**.
2. This loads the Notification Area Icons Control Panel screen where you can fine-tune each icon that ever attempted to load in the notification area. Scroll through the list and select the behavior you want to use for each icon. You can choose from **Show Icons And Notifications**, **Hide Icons And Notifications**, and **Only Show Notifications**.
3. After you have adjusted all your icons, click **OK**.

### *Removing System Icons and the Clock*

Tweaking the system icons such as the Volume, Network, and Clock icons requires an additional step. Follow these instructions to hide any of the default system icons:

1. Click the arrow to the left of the notification area and select **Customize**.
2. When the Notification Area Icons Control Panel screen loads, click **Turn System Icons On Or Off**.

3. For each system icon, toggle the drop-down list to turn each item on or off.
4. Click OK when you are finished.

## Restoring the Start Button

The removal of the Start button was one the boldest changes to Windows in years. After training users that is where you click to start any application for more than fifteen years, Microsoft decided to throw away that longtime behavior and introduce the “hot corner” to display the Start screen. We can speculate on their intentions, but the fact remains that many people liked having a button to click to display the Start menu.

In some situations the new “hot corner” makes using Windows more difficult. I am a big user of virtual machines that display the running OS in a window on my desktop. When I run a Windows 8 virtual machine, it is very difficult to move the mouse into the lower-left corner to bring up the Start screen. Often I move the mouse too far outside of the window of the virtual machine.

Driven by my own annoyance with the lack of a Start button, I set out to create a Start button replacement. The result of that effort was the Tweaks.com Start utility. It is a simple application that you pin to your taskbar but has a lot of useful features. Clicking it shows the Start screen, but that is just the beginning. You can select which view of the Start screen you want to see. The application view as shown in Figure 6-17 and the zoomed-out group view as shown in Figure 6-18 are available in addition to the default Start screen view. My personal favorite is the Start screen groups view because as the number of apps on the Start screen grows, you can easily jump to a group by just clicking it instead of scrolling to the right forever.

I also created a useful right-click Jump List for my Start button replacement that put the most common tasks that are tucked away in Windows 8 within a click. You will find that basic commands such as shutting down your PC and administrative utilities are easy to access.

The best part is that customizing the Start button icon is very simple. Just open up the Configuration window found on the top of the Jump List and change the icon to any icon in a DLL or ICO file.

Tweaks.com Start is a free utility that you can download from [tweaks.com/655582](http://tweaks.com/655582). Just install and follow the on-screen instructions to configure.

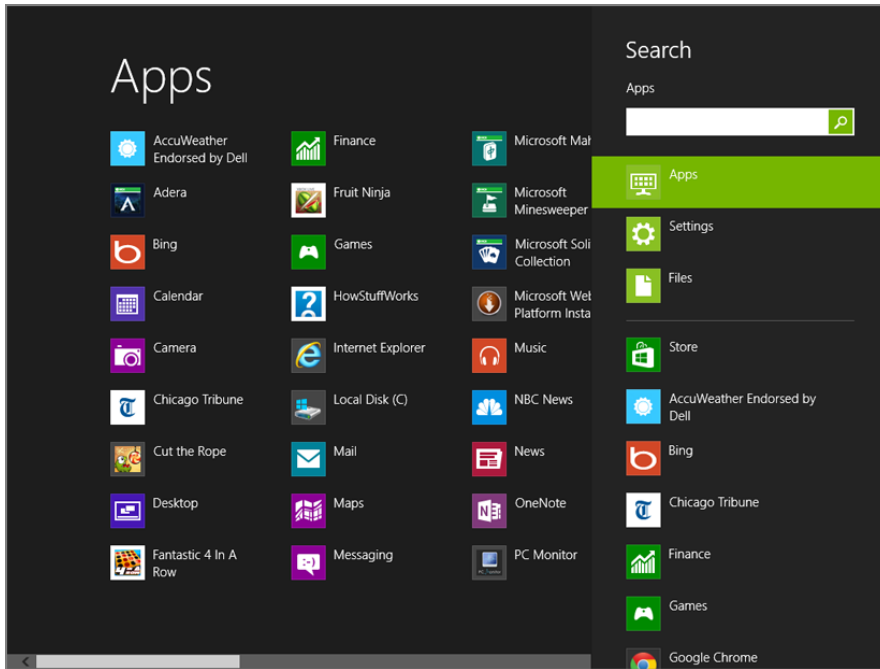


Figure 6-17: Create this Start screen Application list view.

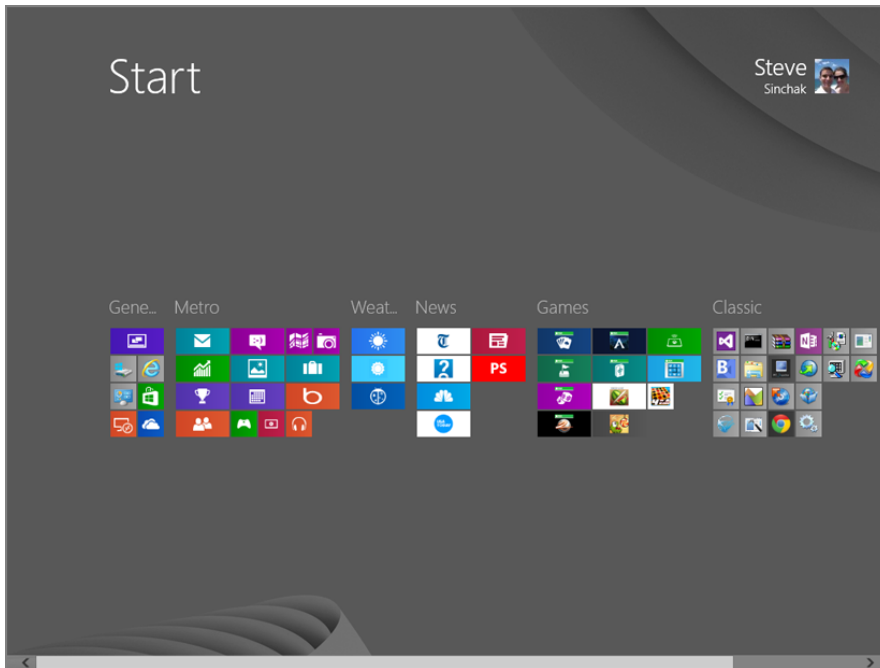


Figure 6-18: Use this Start screen group view.

## Using Group Policy Editor to Customize the Start Screen and Taskbar

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The Group Policy Editor is a great component of Windows that enables you to make dozens of advanced setting changes that are hidden from normal users. The Group Policy Editor works by enabling you to define various rules, called the *policies*, which tell Windows how to behave.

The collection of policies is known as Group Policy, of which there are two types: local and domain based. Local is when the policy resides in and is controlled on the local computer. A domain-based policy is a policy that resides on an Active Directory domain controller to which multiple computers are connected. Domain policy is primarily used only in businesses that need a way to control multiple computers from a central location. In this book, some tweaks use local Group Policy to configure the Start menu because most of you are customizing your home computers and do not have them connected to a Windows domain. The actual policies and way you set them are the same for both types of group policies, so you can apply these same techniques to a domain policy if desired.

The policies are set and modified using the, you guessed it, Group Policy Editor. This is the tool that you will be using to set the policies to help you customize the Start menu. First, you learn how to use the policy editor, and then all the policies relevant to customizing the Start menu.

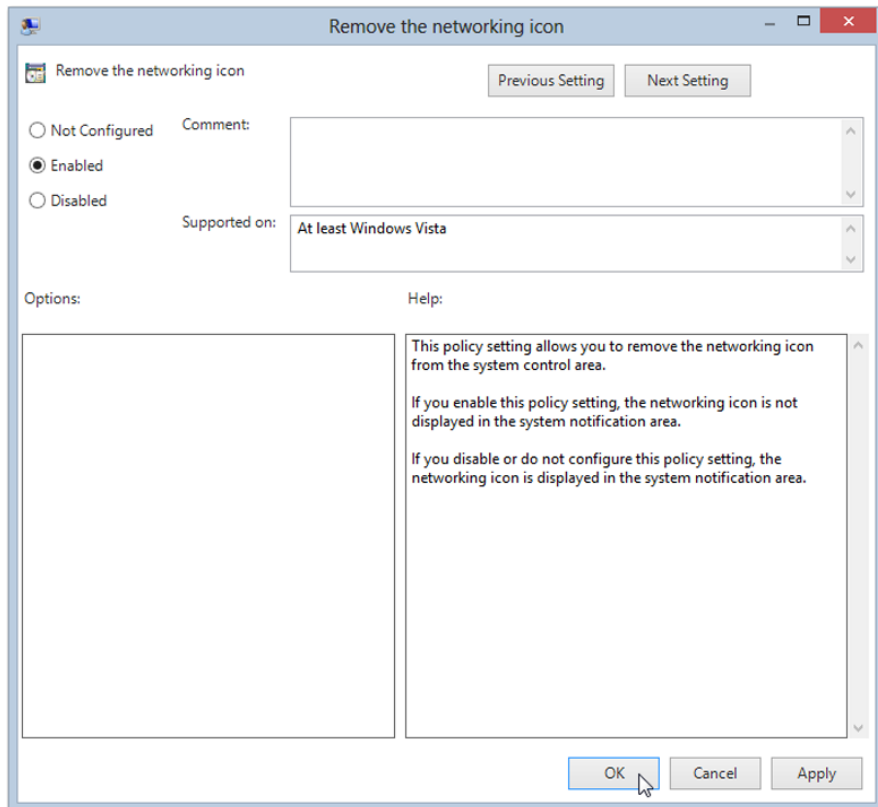
### Setting Policies with the Group Policy Editor

Using the Group Policy Editor is a lot like using the Registry Editor. It is based on a hierarchical structure of sections that all policies are organized within. All policies are divided into two sections: Computer Policies and User Policies. Computer Policies are settings that apply to components of Windows such as hardware and global feature settings. User Policies are settings that can vary between users on a computer. This is where most of the policies that you will use to customize the look of your interface are located.

Now that you know the basics of the Group Policy Editor, dive in and start using the policy editor:

1. Open the Start screen, enter **gpedit.msc** in the Search box, and press Enter.
2. After the Group Policy Editor has loaded, you see the hierarchical structure and Computer and User policies sections mentioned previously.
3. Navigate through User Configuration, Administrative Template, and then select Start Menu and Taskbar.
4. You see a list of all policies that you can configure. Right-click a policy that you want to configure and select Edit.

5. On the policy screen, select the option to turn on the policy or set the policy value, and then click OK, as shown in Figure 6-19.
6. Exit the policy editor and log off and back on. Some policy changes may require a reboot.



**Figure 6-19:** Configure a policy in the Group Policy Editor.

Now that you know how to use the Group Policy Editor, the next section shows you all the policies and briefly describes what they do.

## Changing Start Screen and Taskbar Policies

A lot of policies listed under the Start Menu and Taskbar section are not relevant to Windows 8. Consider those junk that Microsoft forgot to remove because they will have no effect on Windows 8. Or maybe Microsoft wanted to make it easy to create policies for older versions of Windows. Table 6-1 shows a list of some useful group policies for Windows 8 that will help you customize the Start screen and the taskbar.

**Table 6-1:** Group Policy Settings to Configure the Start Screen and Taskbar

| POLICY  | DESCRIPTION   |
|---|---|
| Lock the taskbar  | Controls the locking state of the taskbar. A locked taskbar does not allow any changes to be made to it.              |
| Add “Run in Separate Memory Space” checkbox to Run dialog box     | Adds an additional setting for running programs with the Run box. I recommend enabling this setting.                  |
| Prevent changes to taskbar and Start menu settings                | Locks taskbar and Start menu settings.  |
| Remove Clock from system notification area                        | Hides the clock.  |
| Prevent grouping of taskbar items                                 | Disables application grouping on the taskbar.   |
| Do not display any custom toolbars in the taskbar                 | Disables third-party taskbars or user-made toolbars.  |
| Remove access to the context menus for the taskbar                | Disables capacity to right-click the toolbars in the taskbar.   |
| Hide the notification area  | Disables the entire notification area (system tray).  |
| Remove the Action Center icon                                     | Hides the Action Center icon in the notification area.  |
| Remove the networking icon  | Hides networking icon in the notification area.   |
| Remove the battery meter  | Hides power icon in the notification area.  |
| Remove volume control icon  | Hides volume icon in the notification area.   |
| Turn off feature advertisement balloon notifications              | Disables pop-up help about features.  |
| Do not allow pinning items in Jump Lists                          | Disables adding items to Jump Lists.  |
| Do not allow pinning programs to the taskbar                      | Disables adding applications to the taskbar.  |
| Do not display or track items in Jump Lists from remote locations | Prevents recent documents from network shares from showing up in Jump Lists.  |
| Turn off automatic promotion of notification icons to taskbar     | Disables temporarily adding new notification area icons to the notification area before moving to overflow container. |
| Lock all taskbar settings   | Locks the taskbar.  |
| Prevent users from adding or removing toolbars                    | Disables the ability to add toolbars.   |

*Continued*

Table 6-1 (continued)

| POLICY  | DESCRIPTION  |
|---|--|
| Prevent users from rearranging toolbars                           | Locks in the position of your toolbars (similar to locking the taskbar).   |
| Turn off all balloon notifications                                | Disables pop-up help.  |
| Remove pinned programs from the taskbar                           | Disables and removes pinned applications on the taskbar.   |
| Prevent users from moving taskbar to another screen dock location | Locks the position of your taskbar.  |
| Prevent users from resizing the taskbar                           | Locks the size of your taskbar.  |
| Turn off taskbar thumbnails                                       | Disables the application thumbnails that are shown when you move your cursor over taskbar items when running Aero Glass. |
| Clear history of tile notifications on exit                       | Clears history of tile notifications.  |
| Prevent users from uninstalling applications from the Start       | Stops users from uninstalling applications on the Start screen.  |
| Show “Run as different user” command on Start                     | Allows apps to be run as a different user by enabling button on right-click charms bar.                                  |
| Do not allow taskbars on more than one display                    | Disables multi-monitor taskbars.   |

As you can see, dozens of useful group policies can help you customize your desktop more than any other method. Additionally, these policies can be used in a domain policy that governs all Windows 8 computers connected to the domain.

## Summary

This chapter walked you through the process of customizing the Start screen and then moved on to the taskbar. You customized your Start screen for the way you work and got rid of the extra clutter. Then you were shown how you can customize and improve the way the taskbar works, followed by advanced tweaking via Group Policy.

The next chapter concentrates on customizing the desktop. You find out how you can completely change the look of the interface and use other third-party applications to make the interface even better.

# Personalizing the Desktop

This chapter demonstrates cool tricks and tools to make your desktop look and work much better so that you can also benefit from a customized desktop. I show you how to remove icons, customize the size of icons, and replace icons on your desktop. Then I show you how you can customize your desktop way beyond changing your wallpaper. In the second half of this chapter, I show you how you can customize the desktop background and extend it with Rainmeter skins.

## Customizing the Desktop Icons

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Building on the icon improvements in Windows Vista, Microsoft has continued to refine the high-quality icons in Windows 8. These new high-resolution icons include various sizes, all the way up to 256 x 256 pixels. This allows the icons to look great at many different sizes and really shows off the quality and time that was spent creating the hundreds of new icons.

The next few sections show you how to take advantage of the new icons, as well as how to trim down icons to use in other areas where they are considered more clutter than eye candy.

## Removing All Icons from the Desktop

No matter how hard I try, I always end up with a lot of junk on my desktop. There is never an end to the war I fight with my desktop to keep it clutter-free—this is evident from the programs I download, documents that I am too lazy to save elsewhere, and new program links that seem to pop up from nowhere. I like to see my desktop wallpaper and not have my view of the wallpaper blocked by useless icons. One cool way to win the never-ending desktop war is to disable the desktop's ability to show the icons and instead pin the most common desktop icons—such as the Recycle Bin and other shortcuts—to the taskbar.

Disabling the icons on the desktop is actually a very simple task. Most people never learn about this feature because it was placed where you would never expect it in previous versions of Windows. In Windows 8, just right-click your desktop, select View, and then select Show Desktop Icons. Almost instantly, the icons disappear.

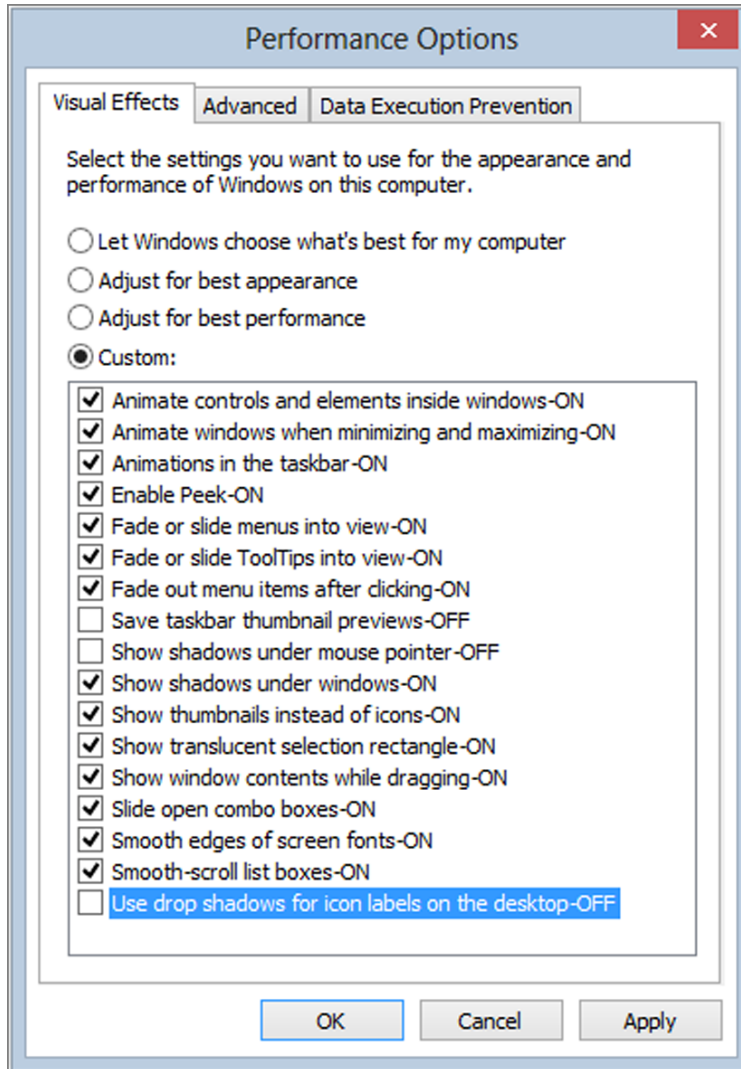
Don't worry because the icons and folders on your desktop were not deleted. If you ever want to turn the icons back on, just repeat the preceding steps again.

This is a very simple way to clean up the desktop quickly. It's sort of like sweeping dirt under a rug. The desktop clutter is still there, but you can't see it.

## Customizing the Icon Drop Shadow Effect

The drop shadow effect makes the icons stand out from your wallpaper and makes them much easier to read when you are using a background such as a photo that has both light and dark spots. Depending on the wallpaper that you are using, you may or may not like the feature. I really like the new effect, but if you are using a bright wallpaper, I recommend disabling it. Perform the following steps to turn the feature on or off:

1. Open the Start screen, type **sysdm.cpl**, and then press Enter to launch the System Properties window.
2. Click the Advanced tab, and then click the Settings button under the Performance section.
3. While on the Visual Effects tab, scroll to the bottom of the box.
4. Locate the Use Drop Shadows For Icon Labels On The Desktop option shown in Figure 7-1, and check or uncheck the value, depending on what you would like to do.
5. Click OK to save your changes.
6. Click OK again to close the System Properties window.
7. You may need to reboot your computer to view the change.



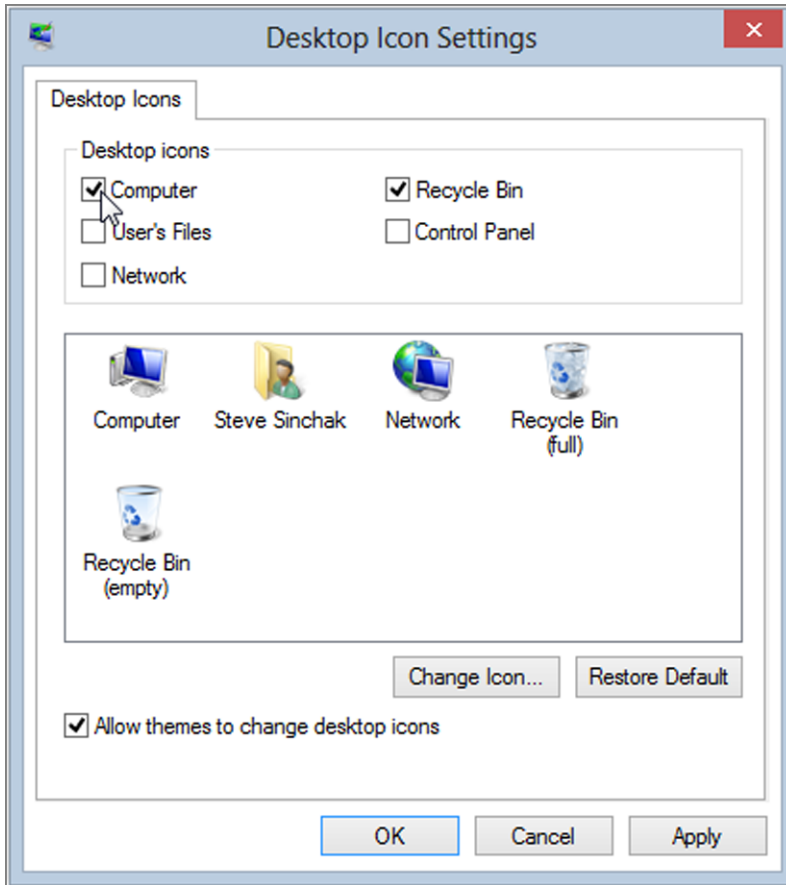
**Figure 7-1:** Turn the Drop Shadow effect on or off for icons on the desktop.

## Displaying Windows System and User Icons on the Desktop

In Windows 8, only one icon, the Recycle Bin, is on the desktop by default. Microsoft is trying to keep the number of icons on the desktop to a minimum for a cleaner look. Nevertheless, if you like having the system and user icons on the desktop, such as Computer, Documents, Network, and others for convenience, it is possible to add those icons back to the desktop. Just follow these steps:

1. Right-click the desktop and click Personalize.
2. Click Change Desktop Icons on the left menu.
3. In the Desktop Icon Settings window, check the boxes next to the icons you want to display, as shown in Figure 7-2.
4. Click OK when you are finished.

You will see the icons on your desktop immediately after you complete the steps.



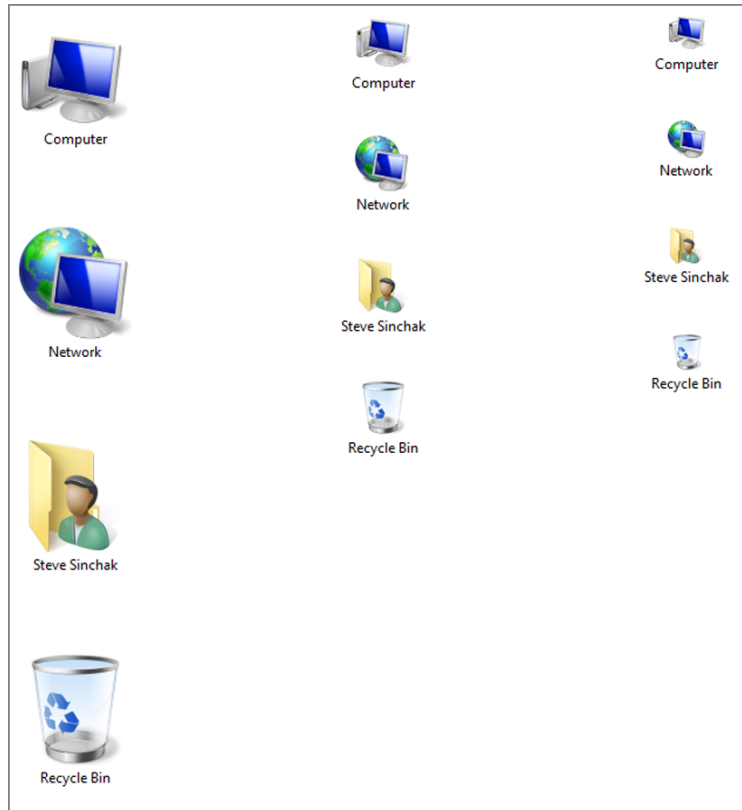
**Figure 7-2:** You can add the Computer icon to your desktop.

## Adjusting the Size of Desktop Icons

Windows 8 uses a new desktop icon size that is slightly larger than in previous versions of Windows. This is one of the things that I disliked immediately after installing Windows 7 or Windows 8 on my computer. Why are the icons so

large now? Well, everything seems to be bigger in Windows 8, but thankfully, as with other new features, it is very easy to adjust the size of the desktop icons.

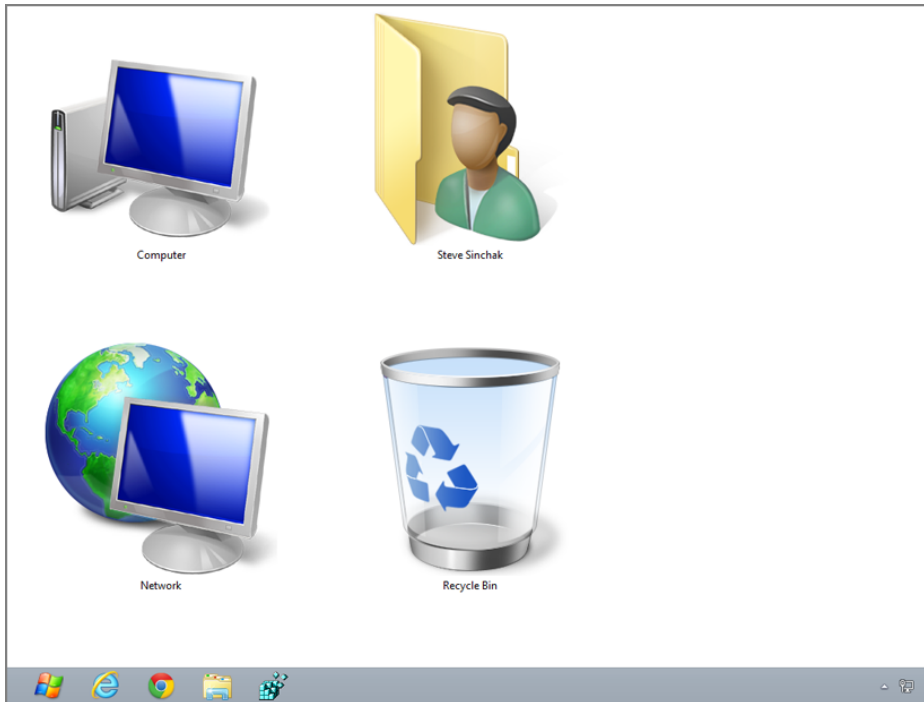
You now have a choice between three different standard icon sizes on the desktop. Figure 7-3 shows the three icon sizes: small (classic), medium, and large.



**Figure 7-3:** Desktop icons come in a variety of sizes.

You can change the icon size by simply right-clicking the desktop, clicking View, and then clicking the icon size you prefer.

If you are a power user, there is a secret way to shrink or enlarge the icons with a much wider range of sizes, but you must have an external mouse with a scroll wheel. Just hold down the Ctrl key on your keyboard and scroll up or down while on the desktop. You can create ridiculously large icons with this method, as shown in Figure 7-4.



**Figure 7-4:** Create very large icons with the mouse scroll wheel trick.

## Renaming the Recycle Bin

To give my desktop a personalized touch, I like to rename my Recycle Bin to something different. In previous versions of Windows, this was possible only through editing the registry. In Windows 8, it is much easier. Just perform the following steps to rename your Recycle Bin:

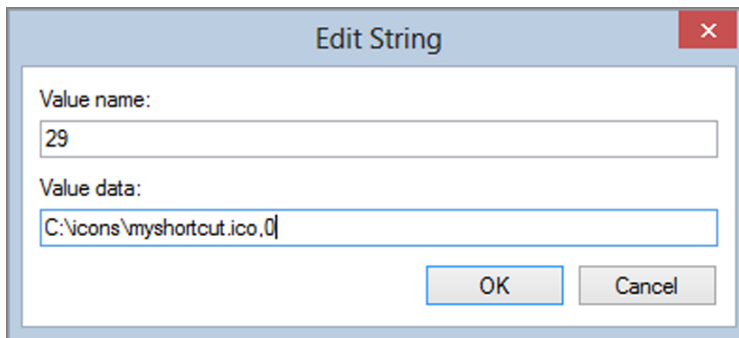
1. Right-click the Recycle Bin on the desktop and click Rename.
2. Type a new name, such as Trash Compactor, and press Enter.

## Customizing the Shortcut Arrow

One thing that I always hate about Windows is the shortcut arrow. Sure, it is good to be able to tell if a shortcut is actually a shortcut, but I already know that the applications I put on my desktop are shortcuts. Also, the shortcut indicator that Windows uses does not look appealing, in my opinion. With a simple registry hack, it is possible to replace that shortcut icon overlay with any icon. This enables you to create your own icon using any popular icon editor and use it as an overlay on any shortcut.

I created a green arrow that I like to use as my shortcut icon overlay. You can grab it from the Windows 8 Tweaks website at [tweaks.com/340859](http://tweaks.com/340859). Use the following steps to change the icon shortcut overlay:

1. Open the Start screen, type **regedit**, and then press Enter to start Registry Editor.
2. After Registry Editor has started, navigate through `HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Explorer`.
3. Right-click the Explorer folder, expand New, and select Key. Type **Shell Icons** as the name of the new key.
4. Right-click the new Shell Icons key, expand New, and select String Value. Type **29** as the name of the new string value.
5. Right-click the new string you just created and select Modify. Set the value to the icon path, a comma, and the icon index number that starts at 0. For example, I use `C:\icons\myshortcut.ico,0` as shown in Figure 7-5. The icon index number specifies which icon you want to use in the file. (Some files can contain multiple icons, such as the `shell32.dll` file.) Click OK when you are finished.
6. Log off and back on, and you should see your new shortcut overlay.



**Figure 7-5:** Set the shell icon path and index.

## Customizing the Icons

Are you starting to get tired of the default icons in Windows 8? After a while they can get old and dull. If you are a hardcore desktop customizer, which you probably are if you have this book, then it is time to customize the Windows icons on the desktop.

To get started, you first need to find some great-looking replacement icons. Check out my favorite websites and download icons for your desktop:

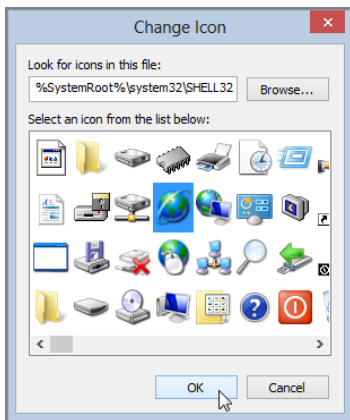
- **InterfaceLIFT**—[tweaks.com/899844](http://tweaks.com/899844)
- **VistaIcons**—[tweaks.com/701266](http://tweaks.com/701266)
- **IconArchive**—[tweaks.com/855045](http://tweaks.com/855045)
- **IconFinder**—[tweaks.com/767865](http://tweaks.com/767865)

Alternatively, you can use the library of Windows icons located in `%SystemRoot%\system32\SHELL32.dll`.

Now, you can get started replacing icons on your desktop. Changing application shortcut icons is easier than system icons such as the Recycle Bin or Computer. Changing system icons requires the help of an icon utility. First, I show you how to change application icons and then how to change system icons. Perform the following steps to change any application icons:

1. Right-click the item for which you want to change the icon and select Properties.
2. On the Shortcut tab, click Change Icon.
3. While on the Change Icon screen, click the Browse button and navigate to your new icon.
4. Select your new icon on the screen, as shown in Figure 7-6, and click OK.
5. Click OK again to exit and save your changes on the Properties screen.

Now that you know how to change application shortcut icons, you can change system icons, such as the Computer shortcut or the Recycle Bin. It is best to use an icon utility to make these changes. My favorite utility for this is called Microangelo On Display, developed by Impact Software.



**Figure 7-6:** Select a new app icon.

To get started, head over to [tweaks.com/647410](http://tweaks.com/647410) to get a free evaluation copy. After it is installed, follow these steps to customize your system icons:

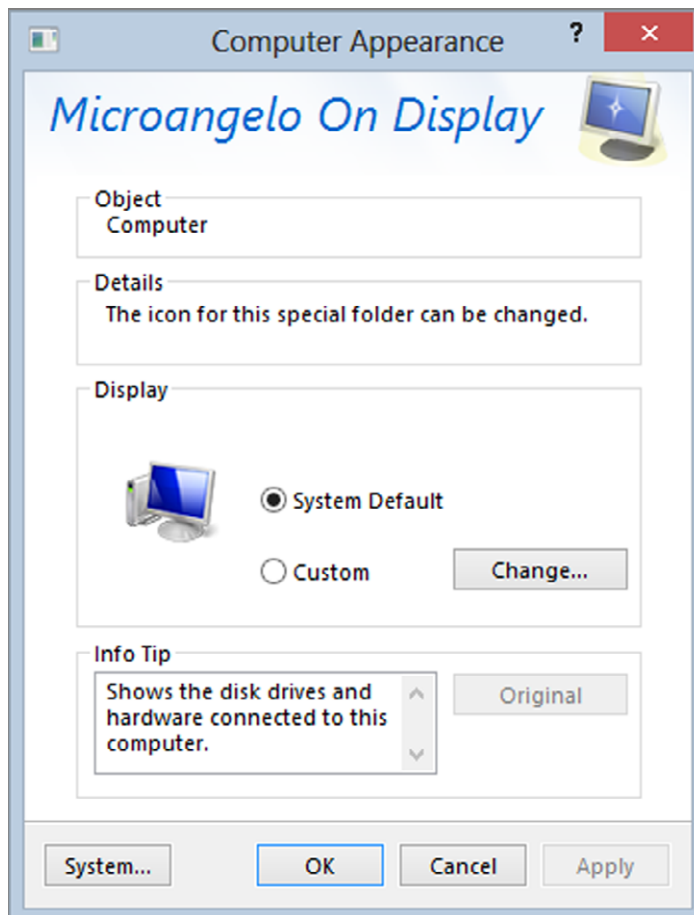
1. After you have installed Microangelo On Display, right-click any system icon, such as the hard drive icon in Computer, and click Appearance.

This brings up the Appearance window shown in Figure 7-7.

2. Under the Display section, switch the option to Custom.
3. Browse and select your replacement icon and click OK.
4. Click Apply to save and see your changes and then click OK.

If you do not like your new icon and want to change it back to the default, right-click the icon again and this time select System Default under the Display section and click OK.

Now that you've finished customizing the look of your desktop and system icons, you can customize the desktop.



**Figure 7-7:** Change an icon with Microangelo On Display.

## Customizing the Desktop Background

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The desktop is a pretty simple part of Windows. Normally you can't do much to customize it besides changing the wallpaper. This section shows you how you can go further by utilizing some new wallpaper features in Windows 8—such as automatic wallpaper changing and desktop gadgets.

### Automatically Rotate Your Wallpaper

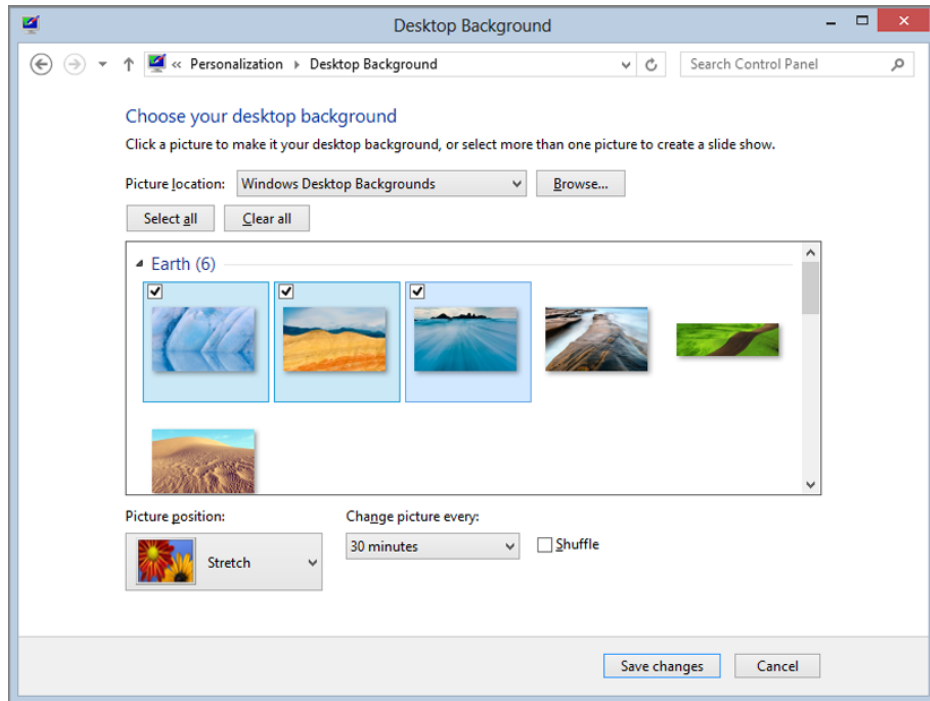
It seems as though this feature should have been in Windows many releases ago, but Microsoft has finally integrated an automatic wallpaper switcher into Windows. You can select a number of background images to use and an interval between changing the images. After the interval is hit you will see a smooth fade effect as the desktop background changes.

Configure multiple background images in the same place as you normally change your background. To get started, follow these steps:

1. Right-click your desktop background and select Personalize.
2. Click Desktop Background near the bottom of the window.
3. By default you will see solid colors that you can pick from. Change the Picture Location box to Windows Desktop Backgrounds or click Browse to select a custom image.
4. After you identify the images you want to use, hover over each one and click the checkbox as shown in Figure 7-8. Repeat this for every other image you want to use.
5. When you have two or more images checked, the Change Picture Every drop-down list becomes activated. There you can set the change picture interval between 10 seconds and once a day.
6. Click Save Changes.

### Desktop Gadgets

The Windows Sidebar gadgets that first appeared in Windows Vista and then became sidebar-less in Windows 7 have been completely removed from Windows 8. I was a big fan of desktop gadgets because I felt they provided power users an easy method to customize their desktop and surface interesting information. CPU utilization, memory utilization, and bandwidth utilization were just some of the gadgets on my desktop.



**Figure 7-8:** Personalize your desktop background.

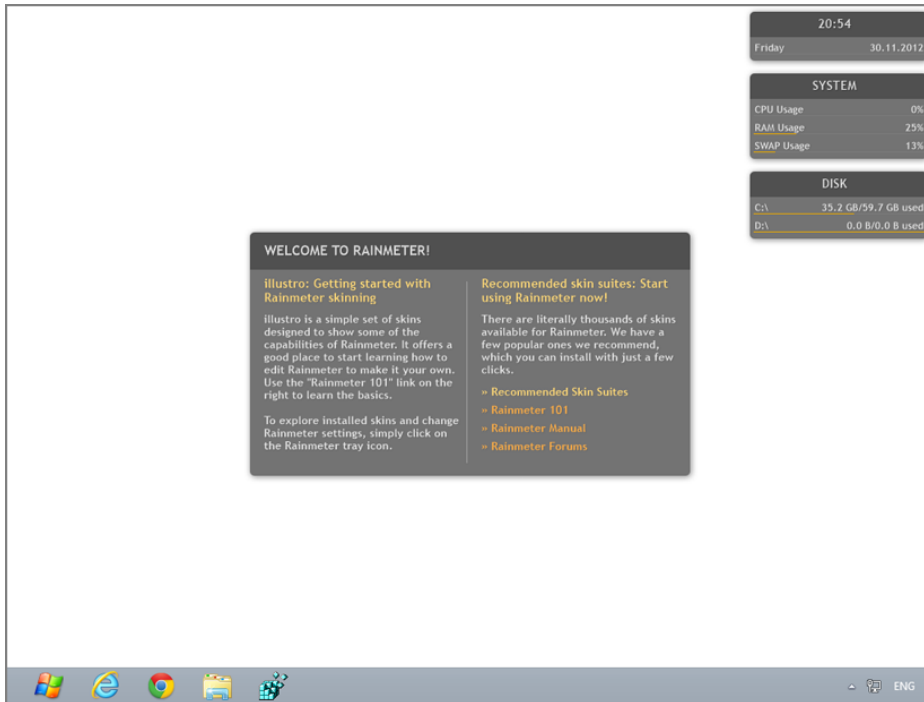
For Windows 8 you have to turn to third-party utilities to provide the same functionality. I have found a popular utility called Rainmeter to be the perfect replacement for the Windows Sidebar gadgets, and, in fact, it is much more powerful than the previous Windows native platform.

In the Rainmeter world gadgets are called skins. Anyone can write skins, but it is much easier to download any of the thousands of premade skins. The Rainmeter ecosystem is much larger than that of the old desktop gadgets. It is easy to find a gadget with the function and look that you want.

To get started, head over to Rainmeter's website at [tweaks.com/559693](http://tweaks.com/559693) and download and install the latest copy of Rainmeter. For this section I am going to assume that you selected the standard install option. I do not recommend using the portable install option.

### *Working with Skins*

After Rainmeter is installed you will see the default skin layout called *illustro*, as shown in Figure 7-9. You can customize each skin object by dragging it around on the screen and also by right-clicking it. If you want to close an object, right-click it and select *Unload Skin*.

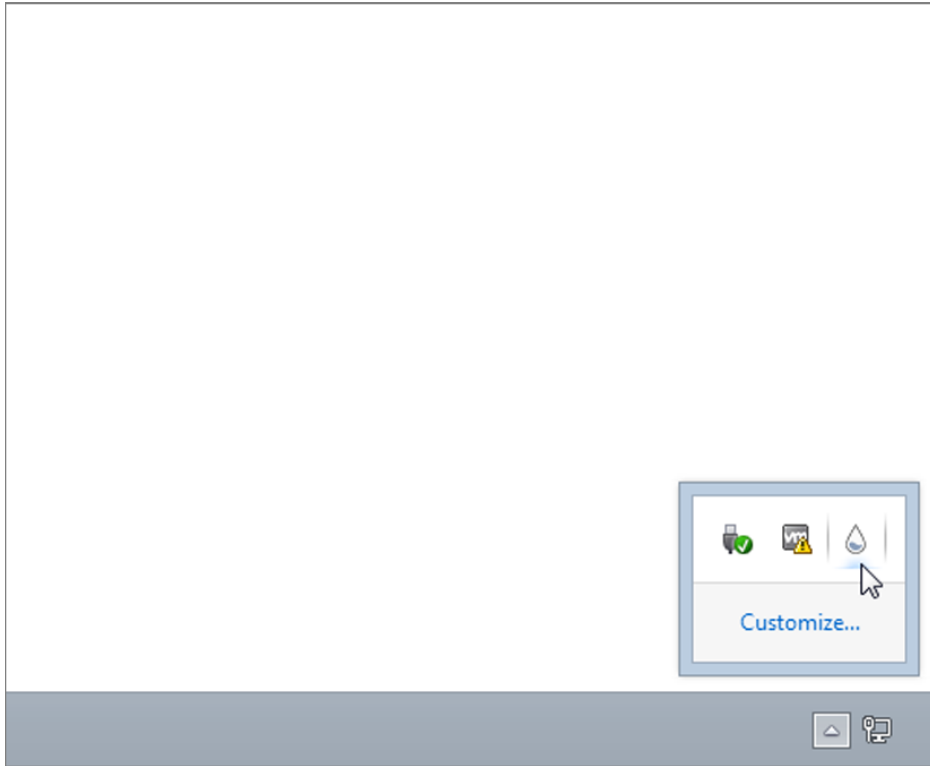


**Figure 7-9:** Use this default Rainmeter skin layout to learn about customization options.

Some objects have more than one view setting. You can right-click an object and navigate the Variants menu to switch among them. You can also tweak the other settings on the right-click Settings menu option.

The illustro skin set includes more skins, or gadgets, than are displayed by default. That is common for any skins that you download as well. To display additional available skin objects, right-click the Rainmeter icon in the notification tray by the clock. Follow these steps to add additional skins that have already been installed on your computer:

1. Locate the Rainmeter icon in the notification tray near the system clock. The icon looks like a drop of water and may be hidden in the overflow section as shown in Figure 7-10.
2. Right-click the Rainmeter icon and expand the Skins menu.
3. Navigate through your installed skins; by default, only illustro will be listed.
4. Select the skin item you want to add and then the specific .ini file; for example illustro, Network, and then Network.ini.
5. Your new skin will be displayed and you can move and tweak it as indicated previously.



**Figure 7-10:** The Rainmeter icon displays in the notification area.

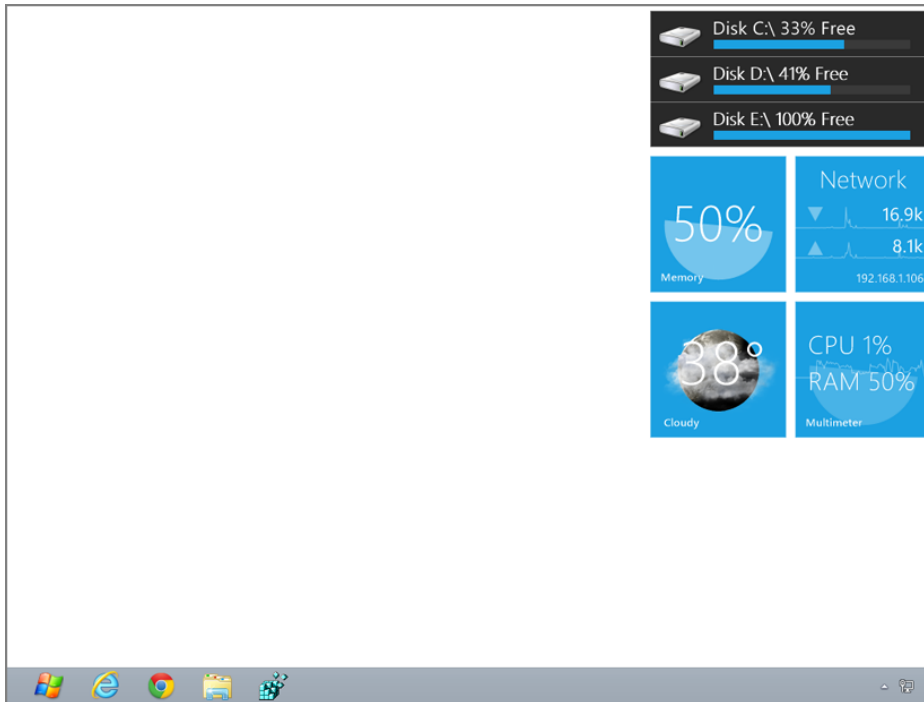
### *Downloading More Skins*

Rainmeter has thousands of custom skins and layout sets that will help you dramatically customize the look of your desktop. The default illustro skin has a nice look, but you are not taking full advantage of Rainmeter if you don't check out the other skins available. I personally use the Omnimo 5.0 skin on my PC; it has a modern look to it that fits in well with Windows 8, as shown in Figure 7-11. You can download the Omnimo 5.0 skin at [tweaks.com/765252](http://tweaks.com/765252).

You can find additional skins, layout sets, and add-ons on a number of sites. The following list is a collection of the best places to download more Rainmeter skins:

- **DeviantArt**—[tweaks.com/574891](http://tweaks.com/574891)
- **Customize.org**—[tweaks.com/766833](http://tweaks.com/766833)
- **Rainmeter Discover**—[tweaks.com/303767](http://tweaks.com/303767)

After you download a skin or layout set, just double-click the `.rmskin` file and Rainmeter will enable you to install the skin.



**Figure 7-11:** The Omnimo 5.0 skin for Rainmeter has a clean uncluttered appearance.

## Summary

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Throughout this chapter you have learned how to customize the icons on your desktop in many different ways to make the desktop much more personalized. I have even walked you through the steps of adding Rainmeter skins to make your desktop more informative and customized.

The next chapter is one of the most important of the customization chapters. I show you how to change the look of the entire Windows 8 window interface, so Chapter 8 is a must for anyone who wants to customize the most visible part of Windows.

# Customizing the Appearance of the Windows Interface

In the past few chapters, you customized various parts of the operating system, starting with the logon screen. After customizing the Start screen and the taskbar, you spent some time customizing the desktop, too. This chapter shows you how to customize what the entire user interface looks like by changing the theme or visual style and fine-tuning the settings of both.

In the sections that follow, you learn how to make major alterations in the way your computer looks (much more than you've learned so far). First, I explain the differences between a theme and a visual style, to clear up any possible confusion you might have. Then you learn how to create an advanced theme. Next, I show you how to make the legacy desktop easier to use on touch devices. This chapter ends by introducing an easy way to give Windows 8 a completely different look with a third-party skinning utility called WindowBlinds.

## Working with Themes

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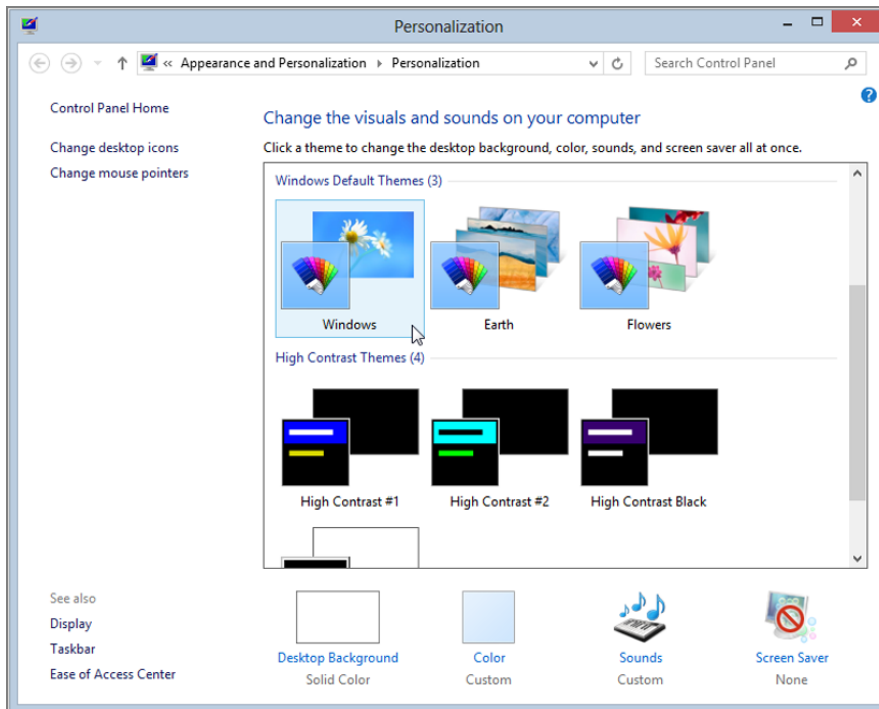
Themes have been a part of Windows for a long time. Ever since Windows 95 was released, themes made it possible to save the configuration of the fonts, colors, visual style, wallpaper, mouse cursors, and even the sounds that are used. Throughout the years, not a lot has changed in the theme world. Originally, you had to buy Microsoft Plus to use themes, but now the ability to use themes is included in all the latest Microsoft operating systems.

Why are themes still important to talk about even though they have been around so long? Because they provide a unique way to save all your computer's visual settings and audio settings so that you can easily change all of them simultaneously. Additionally, Microsoft implemented some new secret features in themes that I will cover.

## Changing the Current Theme

When you install Windows 8, Microsoft includes a number of themes with different styles. Changing themes is very simple, so I'm not going to spend much time on it. Just follow these steps:

1. Right-click the desktop and click Personalize.
2. Scroll through the list and click the theme you want to apply, as shown in Figure 8-1. The theme will be active immediately.
3. When you have selected the theme that you want to use, just close the Personalization window.



**Figure 8-1:** Changing the active theme is simple.

After you select the theme, the new theme is automatically applied. This process may take a few seconds if you select a theme with a different visual style such as Windows Classic or Windows 8 Basic.

Now that you know how to change a theme, it's time to make your own.

## Downloading More Themes

A number of sites will help you download more premade themes for Windows 8, complete with background images and sounds. Take a look at the following sites to find some more great themes:

- **Microsoft**—[tweaks.com/245527](http://tweaks.com/245527)
- **Tweaks.com**—[tweaks.com/484131](http://tweaks.com/484131)

When you find a theme you like online, just download the .themepack file and double-click the file to install it. After it is installed it shows up below the included system themes in a new Installed Themes section.

## Making Your Own Theme

Making your own theme enables you to back up your visual changes to Windows 8 easily so that you can distribute your settings to other computers or on the Internet. The most difficult part of the process is customizing all the little aspects of the visual elements that make up the user interface. The next few sections walk you through the process of fine-tuning the user interface and then show how you can save your changes and make your own theme file.

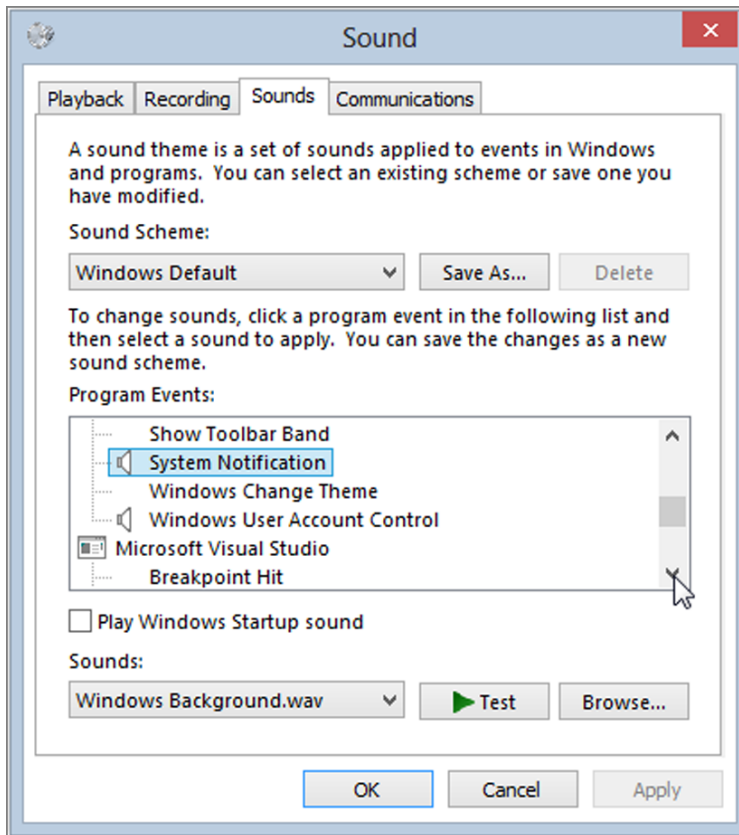
### *Modifying System Sounds*

Sounds can be assigned to many events in Windows, such as logging on, logging off, minimizing a window, and maximizing a window. Themes can also include sound scheme settings, so I recommend customizing your system sounds for any custom theme.

Changing the event sounds is simple. Just follow these steps to launch and configure the Sound properties:

1. Open the Start screen, type **mmsys.cpl**, and press Enter to launch the system Sound properties.
2. After the Sound properties load, click the Sounds tab.
3. To adjust the sound clip for a specific event, click the event that you want to modify by navigating through the Program Events list, as shown in Figure 8-2.

4. When you have an event selected, the Sounds drop-down list becomes enabled, and you can select the sound clip that you want to use. You can select (None) from the top of the list if you do not want to use a sound for a specific program event. If you cannot find a sound that you like on the list, you can use the Browse button to pick a specific sound file on your computer to use.
5. Here you can also enable or disable the Windows startup sound by checking the Play Windows Startup sound checkbox.
6. When you have finished with your changes, just click OK to save your work.



**Figure 8-2:** Modify the sound for the System Notification event.

You have now finished customizing the sound events on your computer.

### *Customizing Mouse Cursors*

The mouse cursors are yet another item saved in the theme file. Many different pointer schemes are included with Windows 8. Although not all of them are the nicest-looking cursors, they can really help out in some situations. In

addition, Windows 8 includes special large mouse cursors so that the cursors will be easier on the eyes.

To get your cursors set perfectly for your theme file, follow these steps:

1. Open the Start screen, type **main.cpl**, and press Enter to open Mouse Properties.
2. Click the Pointers tab.
3. You have two options to customize the cursors. You can use the drop-down Scheme box to change all the pointers simultaneously to different styles by selecting a different cursor scheme from the list, as shown in Figure 8-3. When you select the different schemes, all the cursors change automatically. Alternatively, if you do not like the cursor schemes, you can individually select a cursor from the Customize list by scrolling through the list and selecting the cursor you want to change. Then click the Browse button to change it.
4. When you have finished customizing your cursors, just click OK, and you are finished.

Now you are ready to move on to customizing the visual style that the theme will use.

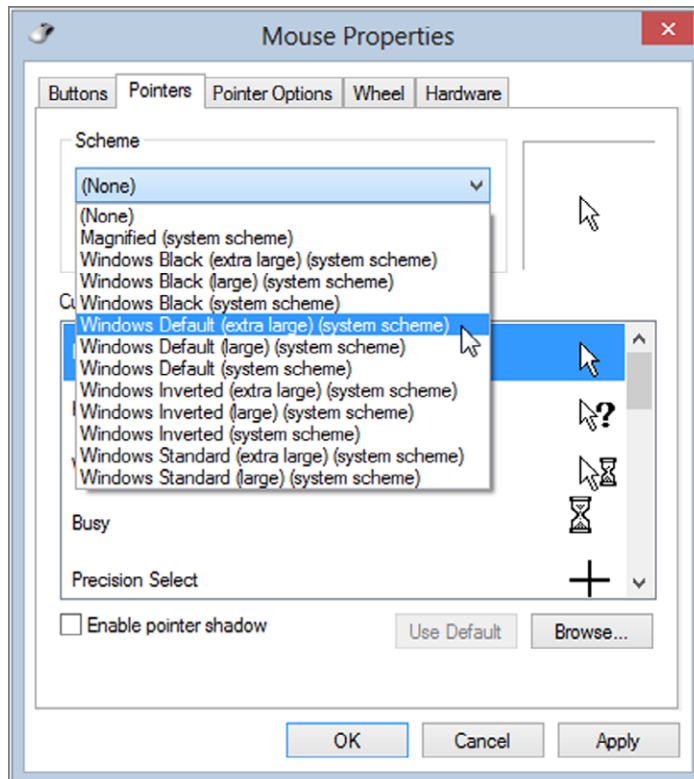
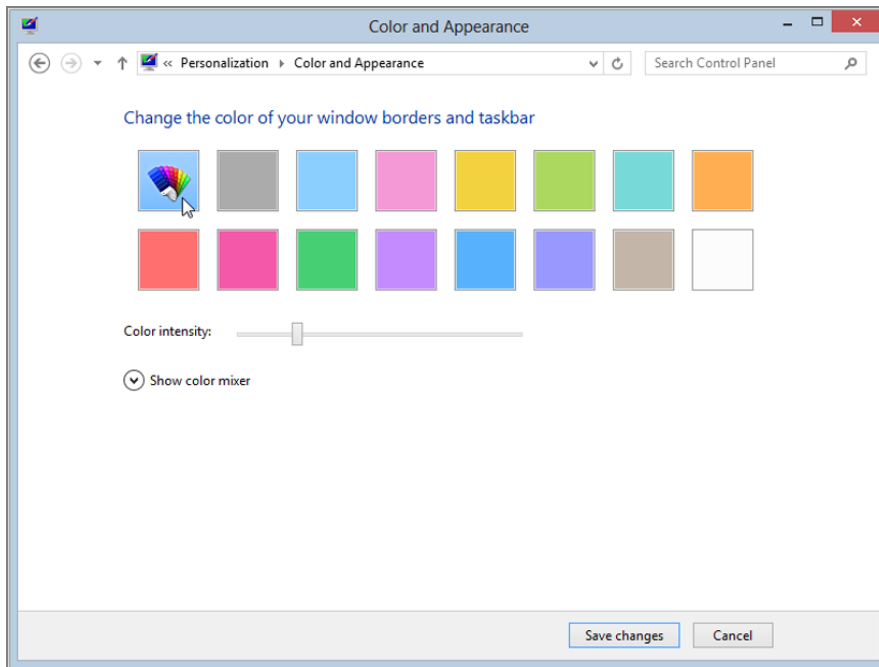


Figure 8-3: Change the pointer scheme.

### Configuring Interface Color Settings

On Windows 8 you can also customize the color and intensity of the interface. These settings are also saved in your theme file, so it is a good idea to customize them as well. Just follow these steps to customize the user interface colors:

1. Right-click the desktop and select Personalize.
2. On the Personalization screen, click Color on the bottom of the screen.
3. Pick the color you want to use from the 16 on-screen options or click Show Color Mixer to set a custom color. Optionally, you can select the first item, as shown in Figure 8-4, which automatically sets the color of the interface to match your background wallpaper.
4. Set the color intensity value that looks good to you.
5. Click Save Changes.



**Figure 8-4:** Adjust interface color settings.

### Setting the Background Images

Windows 8 includes the capability to set multiple background images that are automatically rotated at a user-set interval. This enables you to select any number of background images and they will automatically be changed with

a nice fade effect. You enable this feature on the normal change-background screen. Follow these steps to change the background image on your computer and enable a background slideshow:

1. Right-click the desktop and click Personalize.
2. Click Desktop Background on the bottom of the screen.
3. Set the Picture Location box to Solid Colors or another image location.
4. Next, click any image to set it as your background. If you want to set up multiple background images, simply hover over each image and check the box that appears.
5. After all images are selected, configure the picture position and the change picture frequency settings. Click Save Changes when you are finished.

### *Saving Your Theme to a File*

You have now customized all the aspects of themes and are ready to create your own theme file into a theme pack file that includes all the resources your theme uses:

1. Right-click the desktop and click Personalize.
2. On the Personalization screen you will see a My Themes section on the top with one called Unsaved Theme. Right-click that theme and select Save Theme For Sharing.
3. Type a name, select a location to which to save your .themepack file, and click Save.

You have now created a theme pack for your theme so that you can easily change back to it when you customize the user interface in the future. Additionally, you can copy your theme pack to other computers or share it online. All the files used in your theme, including background images, are included in the .themepack file.

### **Automatic RSS Background Themes**

Now that you created your own theme, I'm going to show you how to enable a secret feature by editing your newly created theme file. This will allow your theme to automatically download and display new background images referenced from an RSS feed. As the RSS feed is updated with new backgrounds, your computer will automatically download and display them.

Activating this feature requires manually editing your theme file inside a theme pack you created in the preceding section. You also need an RSS feed

from a website that adheres to the RSS enclosures standard and includes images as enclosures in the feed.

You can identify compatible feeds by looking for the enclosure tag in the source of the feed for each `<item>`. For example, look for `<enclosure url="http://www.site.com/image.jpg" type="image/jpeg" />`. To learn more about the RSS enclosures standard, check out the Wikipedia entry at [http://en.wikipedia.org/wiki/RSS\\_Enclosures](http://en.wikipedia.org/wiki/RSS_Enclosures).

Now that you know of some sample feeds and how to identify other feeds, you can get started:

1. First, you need to get to the `.theme` file packed inside the `.themepack` or `.deskthemepack` file you created earlier or from a file you downloaded online. In order to do that, you must enable viewing file extensions in File Explorer. When File Explorer is open, click on the View tab and then check File name extensions in the show/hide section near the right.
2. Navigate to the directory where you saved your `.themepack` or `.deskthemepack` file and rename the file `.cab`. A theme pack file is nothing more than a compressed cabinet file.
3. After you've renamed it to a cab file, open the file with any compatible compression utility such as WinRAR ([www.rarlabs.com](http://www.rarlabs.com)) or even with the native Windows Explorer shell and extract the `.theme` file within.
4. After extracting the `.theme` file, right-click it and select Open With. Deselect the Use this app for all `.theme` files and then click More options and click Notepad.
5. Now you will be able to edit the theme file manually. Scroll through the file and look for the [Slideshow] section. If this section already exists, delete it.
6. Create a new [Slideshow] section by entering the following code at the bottom of the file in Notepad:

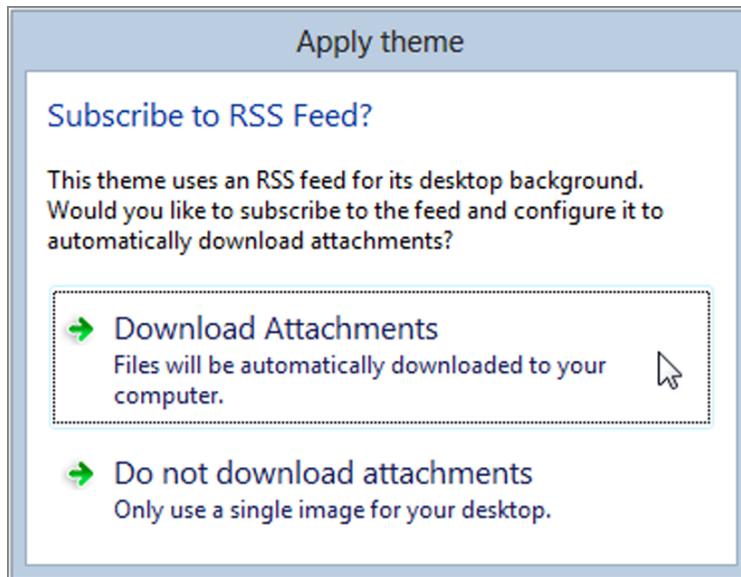
```
[Slideshow]
Interval=600000
Shuffle=1
RssFeed= http://feeds.feedburner.com/bingimages
```

The value of `Interval` is listed in milliseconds, so 600000 means the wallpaper will change every 10 minutes. Feel free to change this value. When `Shuffle` equals 1, shuffle is enabled (0 is disabled). Replace the value of `RssFeed` with the URL of a compatible RSS enclosure feed.

7. Save the changes you made to the new `.theme` file and close Notepad. Make sure you change the Save As Type on the Save As dialog box to All Files (\*.\*) before saving so the `.txt` extension is not appended to the filename.

8. Navigate to the new file you saved, right-click, and select Open With and then Personalization CPL. This loads the file with the theme browser on the Personalization screen.
9. If your edits were successful, you should get an Apply Theme message asking you to Subscribe to RSS Feed. Click Download Attachments to process all images on the feed as shown in Figure 8-5.
10. The images in the feed will be downloaded in a few minutes and applied as your background. The RSS background feed is now set up and should update once a day.

If several minutes pass after the interval you set and the background still does not change, chances are there is a problem with your RSS feed.



**Figure 8-5:** RSS feed background image download

## Making the Desktop Interface Touch Friendly

The new Metro style side of Windows 8 works perfectly with touch because it was designed with touch in mind from the start. Using the desktop interface on a touch device is often frustrating and slow. Desktop apps were designed for a keyboard and mouse, and using touch is much less accurate and can result in you selecting or clicking on the wrong item.

The majority of the usability problems of the desktop are caused by the size of the items you need to work with. They are just too small. An easy way to

make the desktop interface more touch friendly is to make the most common elements you interact with on the desktop larger.

## Supersize the Interface

The best method to increase the size of the interface in Windows 8 is to increase the size of the fonts. That will make all of the touch targets larger as the fluid interface adjusts to fit the larger font size. Changing the font size is a little different in Windows 8. Follow these steps:

1. Right-click the desktop and select Screen Resolution.
2. Select Make Text And Other Items Smaller Or Larger near the bottom of the screen.
3. Select Medium or Larger to change the size of all items. Alternatively, you can tweak the font size of specific items using the setting on the bottom of the screen as shown in Figure 8-6.
4. Click Apply.

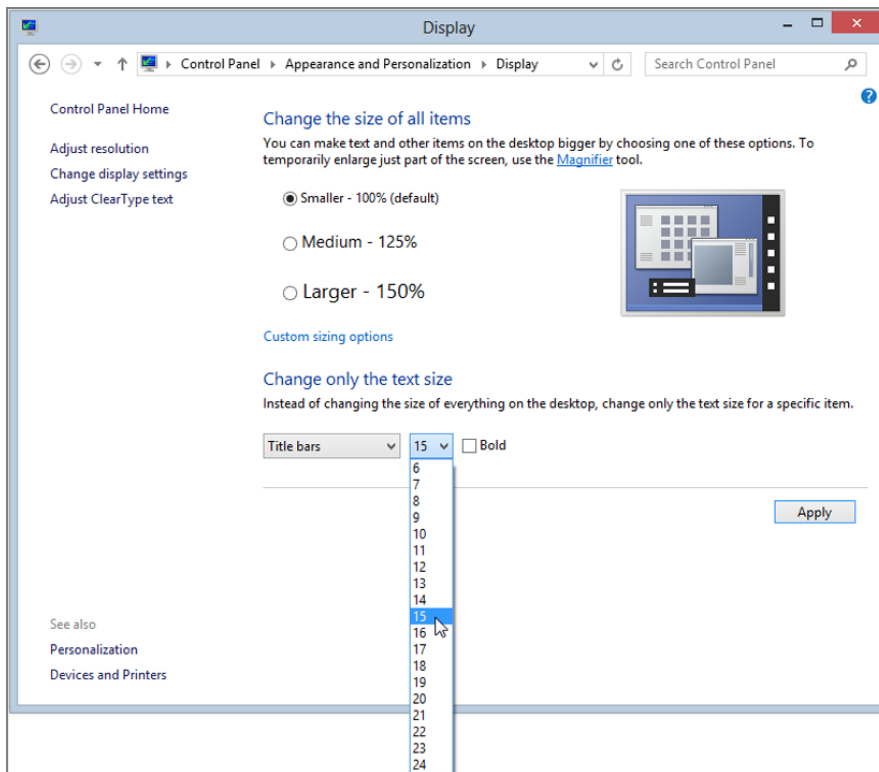


Figure 8-6: Adjusting interface font sizes

## Enable Large Icons

Application or file icons are a very common touch target, so making them larger and easier to hit will go a long way toward improving the user experience. Enlarging them requires just a few clicks, but is slightly different depending on where the icons are located.

### *Desktop Interface*

Desktop icons are the easiest to change and I already covered this once, so I'm just going to quickly review. Right-click the desktop, select View, and then select Large, Medium, or Small Icons. If you have a scroll mouse you can hold down Ctrl on your keyboard and scroll the wheel on your mouse up for even more control.

### *File Explorer*

File Explorer natively has a number of views available that are great for touch, but they are not enabled by default. On my tablet devices, I like to set the default view to Large Icons, which provides helpful large touch targets that make selecting what I want very easy. Follow these steps to set Large Icons as your default view for all drives, files, and folders:

1. Open File Explorer and navigate to any drive or folder.
2. Click the View ribbon tab.
3. In the Layout section, select Large Icons.
4. Also on the View ribbon tab, click Options on the far right.
5. Click the View tab of the Folder Options window.
6. Click Apply To All Folders.
7. Click Yes on the confirmation window.
8. Click OK to close Folder Options and your change is active.

## Skinning Windows 8

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Skinning Windows 8 is all about changing the look of the entire user interface with the help of third-party utilities and visual styles that enable you to make massive alterations to the look of Windows 8. By skinning Windows, it is possible to change the appearance completely and make it look like a different operating system, such as OS X, or something even more exotic. In the next sections, I show how you can use hacked visual styles as well as the lead skinning utility,

WindowBlinds, to customize the look of your computer. This will help you take customization to the next level.

## Using Hacked Visual Styles

Windows 8 uses an enhanced skinning engine based off the engine found in Windows XP to display the non-glass interface as well as the new glass DWM interface. In Windows XP, the visual style engine used bitmaps stored in a resource file. The visual style's resource file contains all visual elements, such as images of buttons and window components as well as some configuration files. In Windows 8, the resource file has been modernized to include PNG images instead of bitmaps and is updated for the new interface design.

You create visual styles for Windows 8 the same way you do for Windows XP, Vista, and Windows 7. You start with an existing visual style, such as the default visual style that is included in Windows 8, and use a resource hacking tool to replace the images within the file. After you have replaced all the resources in the file with PNG replacements and created a new visual style file, you are almost ready to use the hacked visual style.

The last step before you can use any visual style that you downloaded or made yourself is patching the skinning engine files. The skinning engine in Windows 8 will use only visual styles that have a Microsoft digital signature on the file. Visual styles that you make yourself by editing the resources or other visual styles that you download from the Internet no longer have a valid Microsoft digital signature because the file content has changed. To use hacked visual styles in Windows 8 you need to patch the system files that impose this digital signature requirement on visual style files.

Thankfully, a number of users have released utilities that patch the digital signature requirement. One that I'm going to show you is called UxStyle Core written by Rafael Rivera. This utility patches the digital signature requirement in memory so it does not modify any files on your computer. The only catch is that UxStyle for Windows 8 supports only 64-bit systems.

Before you get started using UxStyle Core, you need to download some Windows 8 visual styles to skin the interface. The following are some sites that I recommend to find compatible visual styles:

- **DeviantArt Visual Styles**—[tweaks.com/925782](http://tweaks.com/925782)
- **DeskModder**—[tweaks.com/167845](http://tweaks.com/167845)
- **Windows 8 Themes**—[tweaks.com/351086](http://tweaks.com/351086)

Make sure you download only visual styles created for Windows 8. Windows Vista and Windows XP visual styles are not compatible. After you

have a few visual styles downloaded, you are ready to configure your computer to use them:

1. Visit [tweaks.com/841568](http://tweaks.com/841568) and download the latest version of UxStyle for Windows 8.
2. After you have the utility installed, it is best to reboot your computer and then check your list of services (run `services.msc`) for the Unsigned Themes and ensure it is started.
3. Next, you are ready to install a visual style that you downloaded earlier. Copy the `.theme` and corresponding files or folder to `c:\Windows\Resources\Themes`.
4. Right-click your desktop and select Personalize.
5. Scroll down to the Installed Themes section and select the theme that you just copied to the Themes folder. After a few seconds, your theme should be applied.

Now I'm going to show you another way to change the look without using hacked visual styles.

## Changing the Look of Windows 8 Via WindowBlinds

Before visual styles were a part of Windows, the only method to change the way Windows looked was to use a utility from Stardock called WindowBlinds. When it first came out, it transformed the boring gray interface of Windows into an attractive and colorful experience. Now that Windows includes its own skinning engine, products like WindowBlinds seem less necessary. So, why am I even mentioning this app? Because the Microsoft engine will run only skins digitally signed from Microsoft unless you use a utility to get around the limitation. Additionally, the quality of visual styles available for WindowBlinds is typically higher than the hacked visual styles available.

Using WindowBlinds is much easier than using hacked visual styles. Just download and install a copy from [tweaks.com/514620](http://tweaks.com/514620).

Then just select the style you want to use when running.

You can always change your skin back to the default Windows 8 look if you do not like any of the skins offered by WindowBlinds. If you want more skins, the next section is for you!

## Adding More Skins for WindowBlinds

WindowBlinds has a strong skin base of thousands of skins that are easy to install. You can find them at the Stardock-operated site called WinCustomize. To get started, visit [tweaks.com/797293](http://tweaks.com/797293) for a list of all skins available.

From the list of available skins, you can install a skin by clicking the Download link. It should automatically start to download. When the skin has finished downloading, WindowBlinds automatically loads it and prompts you by asking whether you want to apply it. After the skin has been installed, you can go back into the WindowBlinds Configuration screen to browse through the different versions and colors of the skin (assuming, of course, that the skin *has* multiple versions).

## Summary

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This chapter focused on the most important part of customizing your computer: the user interface. The visual interface is by far the part of the operating system that has the most impact when it is customized. Using the tools and techniques presented in this chapter, you can completely change the way Windows 8 looks.

The next chapter is all about customizing Windows Explorer, which is the program that you use to browse through all the files on your computer. I show you how you can customize the way it looks and works so that you can maximize its functionality to meet your needs.

# Fine-Tuning File Explorer

You can customize many of the components and features of the updated File Explorer to make your Windows experience even better. This chapter shows you how you can customize Explorer and how to take advantage of some of the lesser-known features. It begins by showing you how you can customize the layout of the new Explorer interface. By the end of this chapter, you will have completely customized the Explorer features that enable you to browse through and create files on your computer.

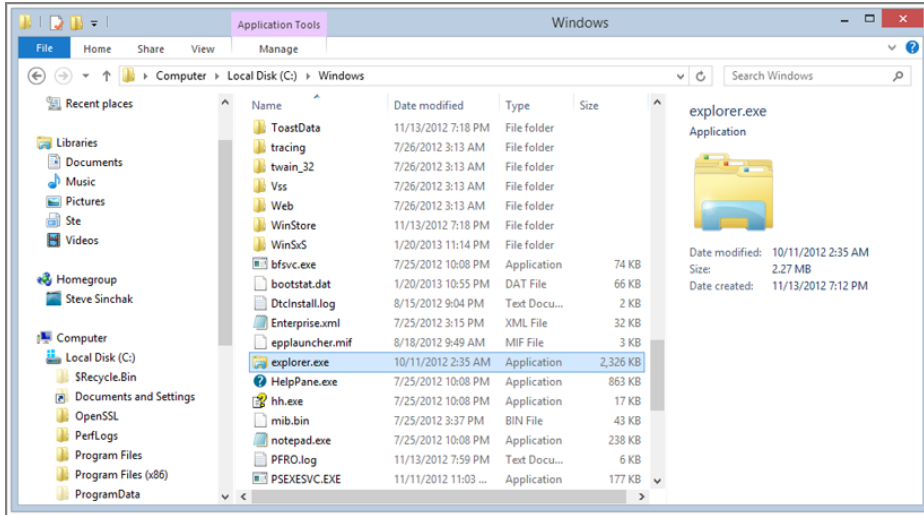
## Customizing Windows Layout

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Explorer in Windows 8 includes various new ribbons and panes, such as Details, Preview, and Navigation, that provide a wealth of information that might change the way you use File Explorer. By default, most panels are turned on, which gives a cluttered feeling to the Explorer interface. Personally, I like to get rid of the panes that I don't use to speed up and streamline my File Explorer windows. In addition to the new panels, Explorer includes many other new features, such as the Favorites section, Libraries, Search, and of course, the ribbon. These next few sections show you how you can customize all of these.

## Customizing Panes

The panes on the Explorer window are located on all sides of the window. Figure 9-1 shows a typical Explorer window with all panes visible.



**Figure 9-1:** Windows Explorer's panes are all visible.

As shown in Figure 9-1, the Navigation pane is on the left, and Preview is on the right. Each pane offers a different array of features that can either help your Explorer experience or clutter it up. Dive into customizing each of the different panes, and hack up Explorer to make it work the way you want.

### The Navigation Pane

The Navigation pane in Windows Explorer is divided into five key areas of information: Favorites, Libraries, Homegroup, Computer, and Network. You can think of the Favorite Links section as a sticky dock onto which you can drag any folder to create a shortcut for accessing it in the future. This enables you to access your common folders quickly and easily.

You can think of libraries as a combined view of the contents of multiple folders that come predefined or are manually set up. Libraries are discussed in detail shortly.

The remaining sections, which are collapsed by default, offer a tree-driven interface that resembles the classic Windows Explorer from previous versions of Windows. Now that you know the basics, you can customize everything on the Navigation pane.

### **Adding and Removing Favorite Links**

You can manage your Favorite Links section in two different ways. The easiest is simply to drag and drop folders and save searches onto the Favorites section to add them to the list. You can then remove items by right-clicking them in the list and selecting Remove. Alternatively, you can navigate to the Favorite Links folder that is located at C:\Users\Username\Links. There, you can easily copy and paste multiple folders or shortcuts at once to be added to the Favorite Links section.

I like to drag my hard drives into the Favorites section so I can quickly jump to them when needed.

### **Removing the Navigation Pane**

If you want to have a super clean interface and have no use for the Favorite Links and Folders sections, you can easily remove the entire pane from view. Follow these steps to disable this view:

1. While a folder is open and showing the Navigation pane, click the View tab to open the View ribbon.
2. Click the Navigation Pane button and then Navigation Pane on the menu to remove the entire left-hand pane.

When you close the active window, the changes are saved to the Registry.

### **Enabling Automatic Tree Expansion**

As you navigate through folders on your PC, you can configure the Navigation pane to automatically display the current location in tree view. This helps you understand where the folder is located and also enables you to easily jump to a parent folder a few levels up.

Follow these steps to enable this feature:

1. Click the View tab.
2. Click the Navigation Pane button.
3. Click Expand To Open Folder.

### ***The Details Pane***

The Details pane, located at the right of the Explorer window, provides information on any file or folder that you select. Similar to the classic status bar in Explorer, the Details pane displays common information (such as the size of a file), but goes beyond that by also showing many other file settings. If you select an image, it displays a thumbnail preview as well as the date it was taken, tags, your star rating, dimensions, file size, title, author, and even the camera model.

The Details pane has proven to be a valuable source of information that can really help you tag and rate your personal documents, images, and music. Without the Details pane, setting all these values would be much more difficult.

Now that you know what the Details pane offers, you can enable or disable it on the View tab. Just click the Details Pane button to display or hide it.

### *The Preview Pane*

The Preview pane is the one pane that is turned off by default in most folders but can be very useful for browsing through an image collection or screening your MP3 files. When you are browsing through your music collection and select an MP3 file, the Preview pane shows a picture of the song's album and mini-audio controls to play and sample the song. When you select an image file, a large thumbnail of the photo is displayed.

Some files even display their contents in the Preview pane. Select a text file or a Word document to view a sample of what is inside the file. Make sure that you have Microsoft Office installed to enable previews of Office documents.

Unfortunately, you can't customize much on this pane. You can adjust the width by clicking and dragging the left border left or right when the Preview pane is turned on. Turn it on and off by clicking the View tab and then click the Preview Pane button.

Microsoft hopes that, over time, more companies will write preview filters that work with Explorer so that you can see their file content previewed on the Preview pane.

## **Tweaking Search**

One of the most useful new features in Windows 8 is the Search box that is in every Explorer window and many other applications. This Search box enables you to sort through your files like never before. Looking for all text files in a folder? Just type `*.txt` into the Search box and press Enter. Almost instantly you begin to see a list of all text files in the directory you are viewing.

Looking for all Word documents that refer to a specific company or person? Just go to your Documents folder and search for the name and press Enter. Windows Search can look at the filenames, but it also searches the contents of your files. This is possible because Windows Search has built-in readers for many of the most popular file types.

As you can see, Windows Search is a comprehensive search solution compared to the prior search options in Windows. With the addition of this new search system comes the ability to customize searches even more than ever before. Various search settings are hidden deep in various windows and help you customize the way searching works for you.

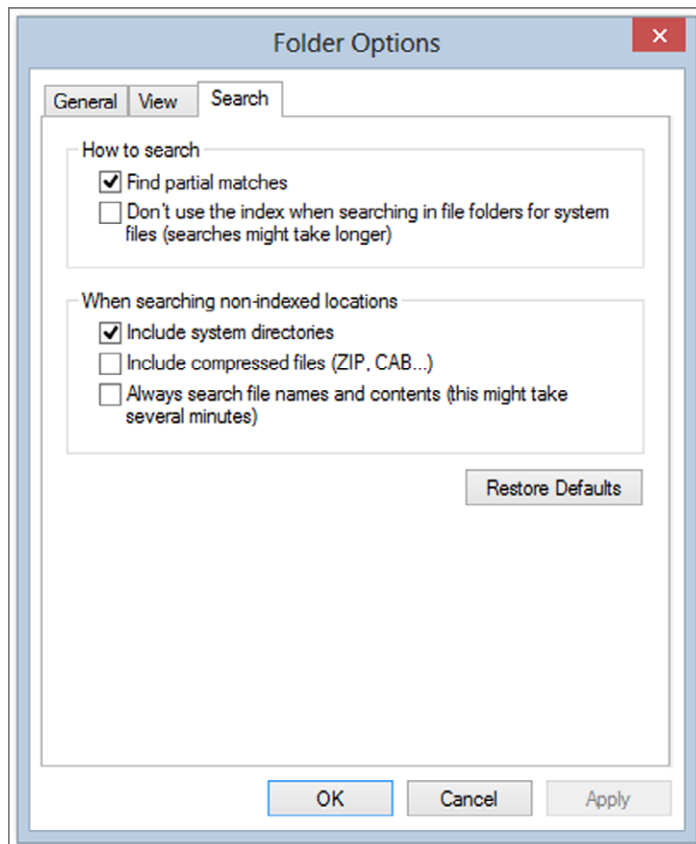
## Adjusting Scope

Every time you perform a search, the results are based on the scope, the folders, and types of files in which the search software looks. Depending on the scope settings you have enabled, the results of your search can be drastically different. These next two settings help you fine-tune what and how the search software searches, and then you fine-tune the indexing service to index the files you want to be indexed for speedy searches.

### Customizing What and How to Search

You can find all the Where To Look settings for Windows Search on the Folder And Search Options window in Windows Explorer. Follow these steps to customize where Windows Search looks:

1. Open File Explorer and click the View tab.
2. Click the Options button.
3. Click the Search tab, as shown in Figure 9-2.



**Figure 9-2:** Windows Explorer offers new search options.

4. The Search tab has two separate sections. In the How To Search section, you can choose from two different settings: Find Partial Matches and an option to disable searching from the index.

The two settings here that you really want to pay attention to are the sub-folder search and natural language search options. The default settings are good for most users.

5. The final section—When Searching Non-indexed Locations—specifies what to do with compressed files and system folders that are not indexed or when index search is turned off. I leave these blank to speed up searches, but I strongly suggest that you do not turn on the compressed file option; it causes your searches to take forever and makes your hard drive go crazy with activity. Unless you have an SSD hard drive, stay away from these options.
6. When you are finished tweaking the search options, click OK to save your changes. You might have to reboot for all settings to start working.

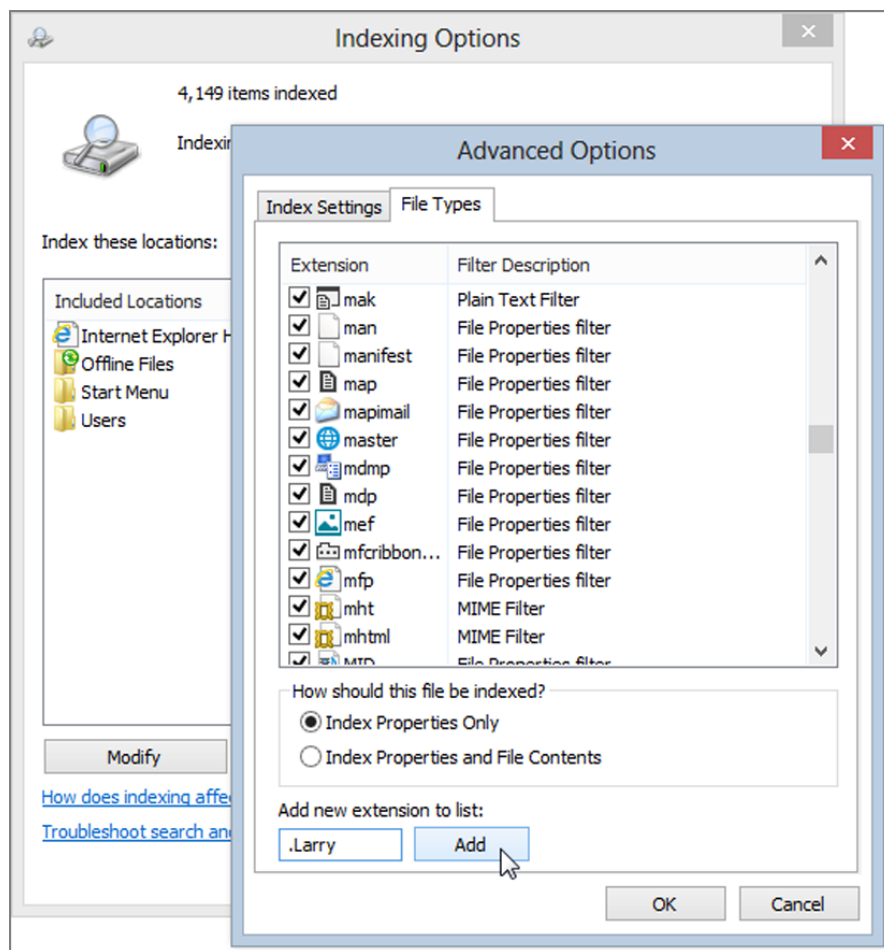
### Customizing the Indexing Service

The indexing service runs in the background and reads and indexes your files when your computer is idle to speed up searches. This works by reading all the files and storing search keywords and other information in a single database that can be easily read instead of having to read all the file information again every time you perform a search.

In Windows 8, the scope of the indexing service is limited to the user folders by default. If you use search a lot, you might want to tweak the folders and types of files that are indexed. The following steps help you customize which folders are indexed as well as the file types so that you can control what is indexed and what is not:

1. Open the Start screen, type **Performance Information**, and then select the Settings filter. Run Performance Information and Tools.
2. After Performance Information and Tools loads, click Adjust Indexing Options on the left menu. When Indexing Options load, all the locations the indexing service is currently monitoring are displayed.
3. The Indexing Options window opens. First, tweak where the indexer looks. Click Modify and then click Show All Locations on the Indexed Locations window. Next, navigate through the list of your drives and folders, and simply check the boxes for the folders you want to be indexed. When you are finished, click OK and the indexer goes to work indexing the new locations.

4. Modify the file types that the indexer indexes. You can do this back on the Indexing Options window. This time, click the Advanced button and then click the File Types tab.
5. Scroll through the list of file extensions and select the file type that you would like to modify. Then, check the box and pick how the file should be indexed in the following section. If your file type is not listed, type the file extension in the box at the bottom of the window, as shown in Figure 9-3, and click Add to add a new extension.
6. When you are finished, click OK and then Close to exit the indexing options.



**Figure 9-3:** Add file extensions you want to be indexed.

Because the indexing service runs only when the computer is idle, it may take up to a few hours before your new files, folders, and file types are added to the index and show up in the search results.

## Customizing the Ribbon

The ribbon interface in File Explorer provides a new way to navigate the interface. First appearing in Microsoft Office, the ribbon was intended to make it easier for users to access hard-to-find features. A similar version of the ribbon was included in File Explorer for the same reason, to make it easier to use. The next two sections will help you customize how the ribbon appears and the quick access menu.

### *Visibility*

Show the ribbon or collapse it and hide it from view. This is one of the more difficult preference questions. Even the folks at Microsoft took some time to make up their minds. For most of the preview builds of Windows 8, the ribbon was displayed by default but was hidden in the final release builds.

If you like minimalist user interfaces without distractions, hide that ribbon right away. But if you like having all of your options easily visible, the ribbon may be for you. Either way, changing the default behavior is very simple—just click the up or down arrow on the far right of the window next to the help icon. Your setting is automatically saved for the next time you open File Explorer.

### *Quick Access Toolbar*

Every Microsoft ribbon includes a quick access toolbar in the title bar of the application window. This toolbar provides you with easy access to your most popular items. In Windows 8 File Explorer you can add the following items to the toolbar:

- Undo
- Redo
- Delete
- Properties
- New Folder
- Rename

You can also select an option to display the quick access toolbar below the ribbon instead of on top.

You can access all of these options by clicking the down arrow to the right of the quick access toolbar on the title bar of any open File Explorer window. Then, check the item you want to display by selecting it.

## Modifying File Associations

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Every time you click a file, Windows checks the registry to find the default program to open the file. Then, Windows loads that application and tells the application which file to open. This is something that you encounter almost all the time when you are using your computer. Often, when you install many programs on your computer, programs start to compete over which is going to be the default program to open a file.

One of the most common situations for this is when you install a bunch of similar applications. For example, I primarily use WinAmp for playing my music. When Apple releases a new version of iTunes, however, I usually install it to check out the new features. The next time that I try to play a CD or listen to an MP3, the music always opens in iTunes. My file association for my music has been stolen by iTunes. How do I take control of my file associations again? The following two sections show you how you can customize the default launch application for any file type on your computer, as well as how your file types look.

Windows Explorer uses information stored in the registry to find out what application is used to open a specific file type. This information is stored in the `HKEY_CLASSES_ROOT` section. With the Registry Editor, it is possible to browse to that key and find the file type that you want to change and edit some keys. However, there is a better way to do this in Windows 8.

Windows 8's Default Programs utility enables you to change file association information without having to deal with the registry class ID. Just follow these steps to change the default launch app for any file type:

1. Open the Start screen, type **Default Programs**, and hit Enter.
2. When the Default Programs utility loads, select **Associate A File Type Or Protocol With A Program**.
3. Scroll through the list and select the file type you want to change, as shown in Figure 9-4.
4. Click **Change Program**.
5. The program to which you want to change may be on the default **Open With** list. If not, just click **More Options**, scroll down, and then select **Look For Another App On This PC**.
6. Click **Close**.

Your changes to file launch apps are activated immediately after you click Close to save your changes. Now you know how to fix your file associations when apps attempt to hijack them.

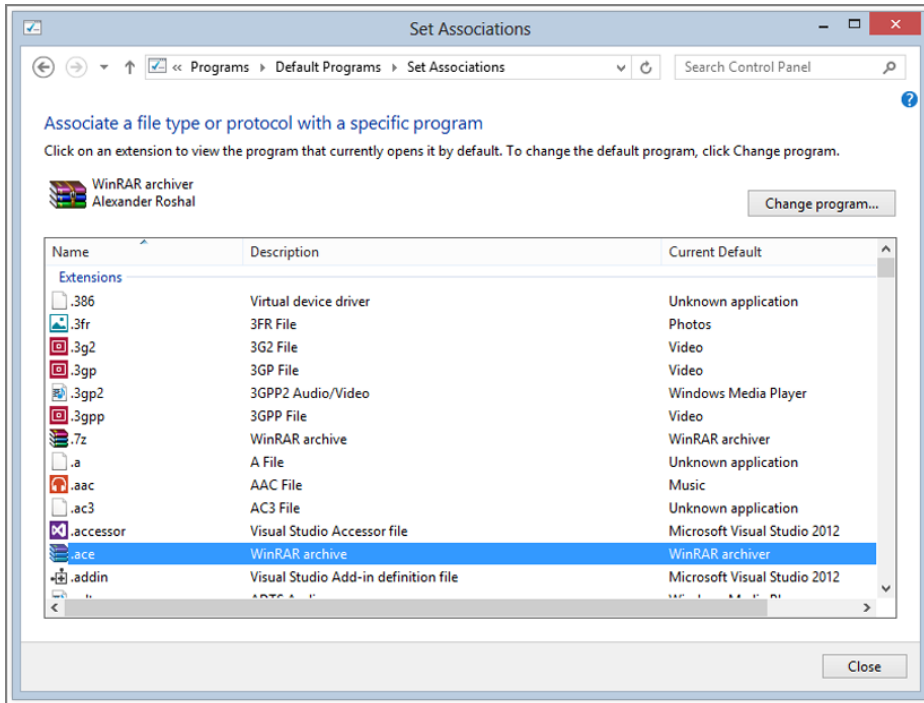


Figure 9-4: Change your file associations.

## Customizing the Context Menu

What is the context menu? It's the menu that pops up when you right-click anywhere on your computer. Over the years, these menus have become more and more useful. However, with the extra entries in the context menu, they can become cluttered with options and features that you just don't need. These next few sections show you how to get your menus back under control as well as how you can take advantage of the new features to make your own context menu entries.

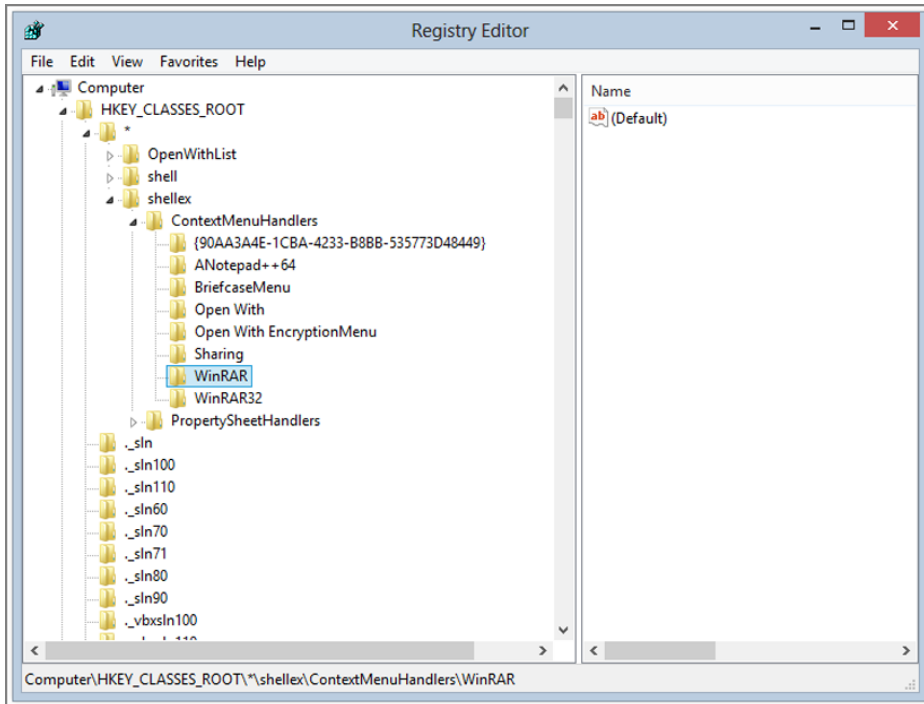
I start off by teaching you how to remove items from the context menus and then cover how to add and customize the menu components.

## Removing Items from the Context Menu

Over time, your context menus can become cluttered with program entries from old programs that you may not use anymore. You might experience programs that take over all your context menus. Compression apps such as WinZip, WinRAR, or Picozip always end up adding program entries to all the context menus. I have Picozip installed on my computer and every time I right-click any file or folder, I see five entries from Picozip giving me different compression options. This can be a convenient feature, but if you don't compress and extract zip files very often, you might not need the added convenience. Instead, you could remove these entries from your context menu, which will give your system a cleaner interface as well as a small performance boost if you have a lot of extra entries in your context menu.

Removing these programs from your context menus can be a little tricky because they can be spread in different places in the registry. The only way to remove these types of entries is to edit the registry directly. Follow these steps:

1. Open the Start screen, type **regedit** and then press Enter.
2. When the Registry Editor appears, expand the `HKEY_CLASSES_ROOT` folder. A list of the file types set up on your computer displays.
3. If the entry that you want to remove from the context menu appears in all context menus, such as the preceding Picozip example, you have to expand the `*` folder. Otherwise, expand the folder with the file extension you want to modify.
4. After expanding the correct folder, expand the `ShellEx` and `ContextMenuHandlers` folders. Your registry path should be `HKEY_CLASSES_ROOT\*\ShellEx\ContextMenuHandlers`.
5. Look through the list until you find the entry that you want to remove. Right-click the entry and select Delete. Identifying some of the programs is easy. For example, WinRAR is labeled WinRAR, as shown in Figure 9-5. However, you may run into some items that are listed using their application/class ID or a vague name. For those, do a registry search of the class ID (Ctrl+F), which is formatted as `{XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXXXX}`, to find other references that give you clues to what the ID belongs to. If that does not work, try doing a search on Google to see whether that turns up anything.
6. After you are finished removing all the entries from your context menus, close Registry Editor and you are finished. Your changes will be in effect immediately.



**Figure 9-5:** WinRAR’s context menu entry in the registry is clearly labeled.

## Modifying the Send To Menu

The Send To menu is one of the features of my context menus that I use the most. The ability to right-click any file and have a shortcut of it sent to the desktop is invaluable. How would you like to make it even more useful? It is very easy to add your own items to the Send To menu, such as folders to which you can send files. Do you have a folder in which you store all your music? How about a folder in which you store all your digital photos? Just follow these quick steps to add anything you want to your Send To context menu entry.

**TIP** If you do not see any of the folders that are required in this section, you might have Hidden Files turned on. Because these folders are hidden by default, you have to tell Windows to show all files. To do this, refer to the section on working with hidden files toward the end of this chapter.

1. Open File Explorer.
2. Click your Windows drive and browse through Users\*Username*\AppData\Roaming\Microsoft\Windows\SendTo.
3. You will see all the files that appear in the Send To menu. If you want to add an entry to the menu, just copy a shortcut to this folder.

Perhaps you want to add your Digital Photos folder to your Send To menu. Navigate to your Digital Photos folder, right-click it, and then select Send To Desktop. This creates a shortcut to the folder and saves it on your desktop. Next, cut and paste the shortcut that was created from your desktop into the SendTo folder.

If you ever want to remove items from the Send To menu, just delete them from the Send To folder.

It is that simple. You are now finished customizing your Send To menu.

## Working with Libraries

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Users often have similar data stored all over their computer and across multiple network shares. I have photos stored locally on my computer, some on one server and more on another server. Libraries in Windows 8 enable me to view all of my photos consolidated into just one folder where I can easily search and find the photo I am looking for. Although the actual photo files are still located in various folders on my computer and on two different network shares, I have one place to go to find all my photos.

Libraries can be thought of as a consolidated view of many folders. Best of all, these folders don't have to be on your local computer as mentioned earlier.

Windows 8 includes a number of libraries that are set up by default for the user folders on your computer such as Documents, Pictures, Videos, and more. When you click the Documents library you see a consolidated view of all the documents in your Documents and All Users folders on your computer. If you expand the Library folder you see a list of all the folders that make up the library. Creating your own libraries is not only possible, but also very easy to do.

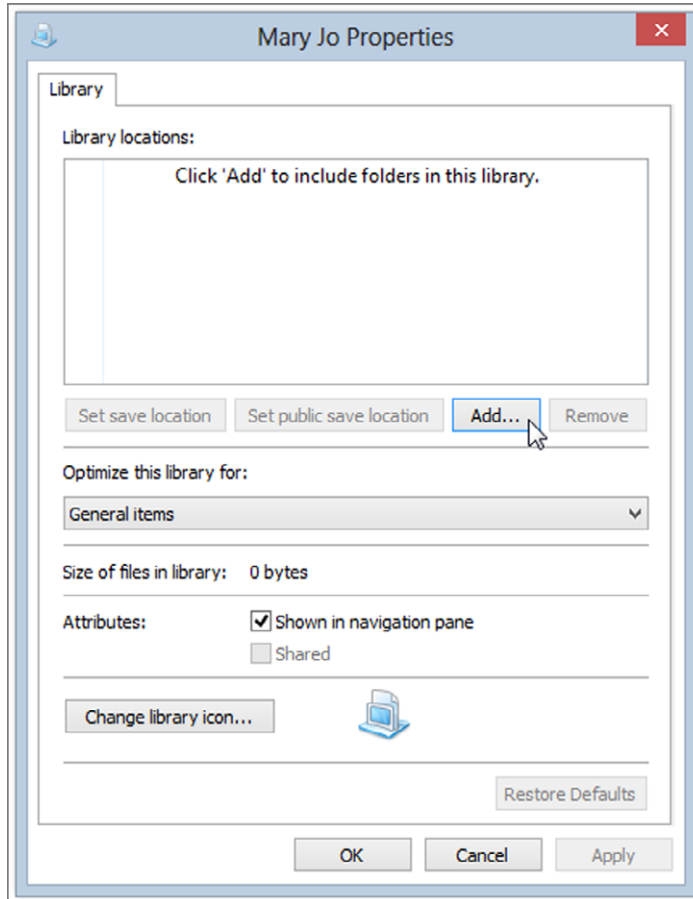
## Creating Your Own Libraries

Creating a library is very intuitive. Just follow these steps:

1. Open File Explorer.  
On the Navigation pane you should see the available libraries listed right below the Favorites section. Right-click the Libraries heading and select New and then Library.
2. Type in the name of your new library and hit Enter.
3. Right-click the library you just created and select Properties.
4. Click Add as shown in Figure 9-6 and select the folder to include. Repeat this step for all the folders you want to add to the library.
5. After you have all the folder locations added, you can change the default save-to folder by selecting a folder and then clicking Set Save Location.

This specifies which folder will actually hold files if you copied and pasted files into your library.

6. Click OK and your library is ready for use.



**Figure 9-6:** Create a library.

If you want to delete a library, just right-click it and select Delete.

## Customizing Your Folders

You can easily change the icon of the folder as well as the way the folder behaves after you open it in Windows. These next few sections show you how you can take advantage of the folder customization features of Windows 8.

## Changing a Folder Icon and Picture

Changing the icon that is displayed for a folder is one of the easiest ways to customize the way a folder looks and make it stand out from the rest. This section shows you how to change the way your files and folders look as you browse through them by taking advantage of the high-resolution icons.

You can change the folder icon and picture within the folder properties window. To see what you can do with these settings, create a new folder named Downloads on one of your hard drives. You can use this folder for all downloads so that they do not clutter your desktop. Follow these steps to change the way this folder looks:

1. Right-click the new folder that you just created or right-click any folder that you want to customize, and select Properties.
2. Click the Customize tab to reveal all your customizing options.
3. First, customize the icon, because that is the most popular way to customize the look of the folder. To do that, click the Change Icon button on the bottom of the window.

Now you will be able to browse through the list of available system icons or you can specify your own by clicking the Browse button.

4. After you have selected the icon that you want to use, just click OK to return to the Customize screen. Then click Apply to finalize your changes.
5. Instead of changing the icon, you can show an image if you are using one of the larger icon views. This will display your image as if it were inside the folder—a cool-looking effect. To do that, just click the Choose File button under the Folder Pictures section and specify an image.
6. After selecting the image, click OK to select your change. Then click Apply on the Customize screen to see your changes. Remember that you will see your new image only if you are using medium icons or larger. You can change to Thumbnail view by clicking the Views menu item.

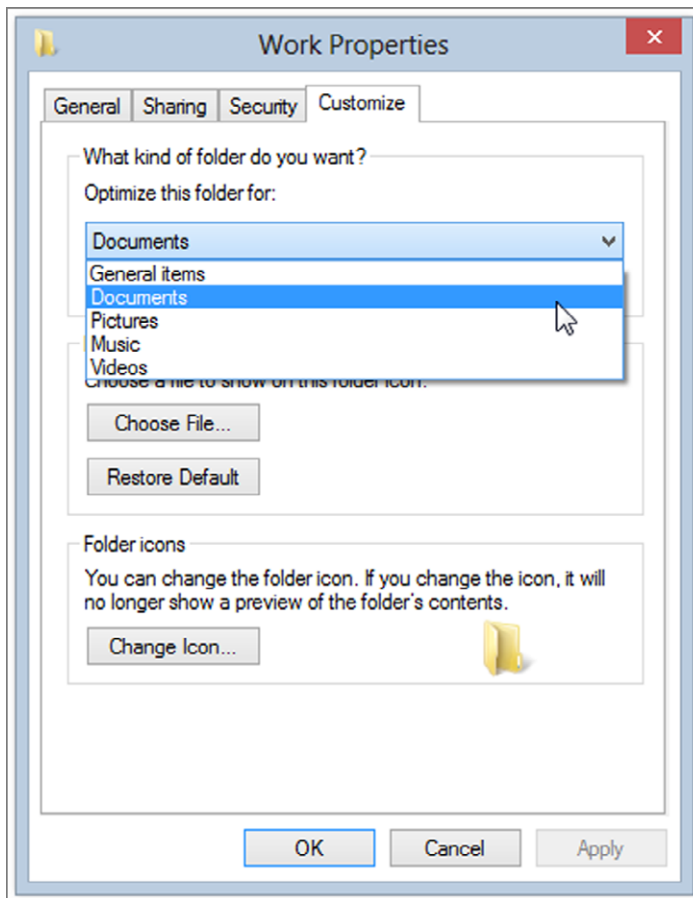
When you are finished changing the way your folder looks, just click OK to save your changes and exit the folder properties window.

## Changing the Template of a Folder

Windows 8 uses a few different premade templates, depending on the type of content inside a folder. For example, it has separate templates for general items, documents, pictures, videos, and music that show relevant file properties. Each template automatically customizes the folder view so that it looks best for the type of content that is in it.

You can customize the template that any folder uses so that you can take advantage of the features in Windows 8's File Explorer. You do this by using the Customize tab in folder properties. Follow these steps to specify the template that should be used for a folder:

1. Navigate to the folder that you want to modify, right-click it, and select Properties.
2. Click the Customize tab.
3. Select the template that you want to use by expanding the drop-down box, as shown in Figure 9-7.



**Figure 9-7:** Change the folder template.

4. If you have a lot of folders within this folder with the same type of content, click the Also Apply This Template To All Subfolders box so that your changes are propagated to all subfolders as well.

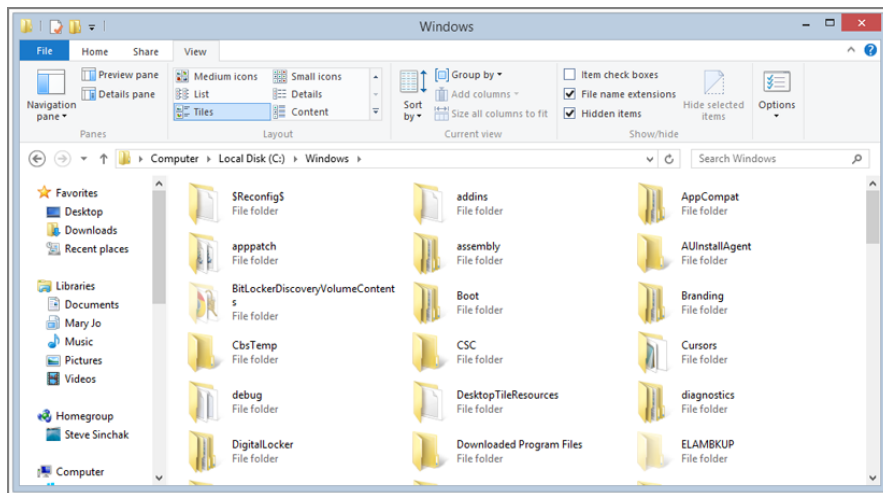
You have now customized the template of the folder and are ready to customize the view.

## Customizing the Folder View

Now that you have a specific template selected for your folder, you have a more advanced feature list to work with so that you can display a lot of useful information about the files in your folder. You can change the current view of a folder on the View tab within the Layout section. Just click one of the following views listed in the Layout box:

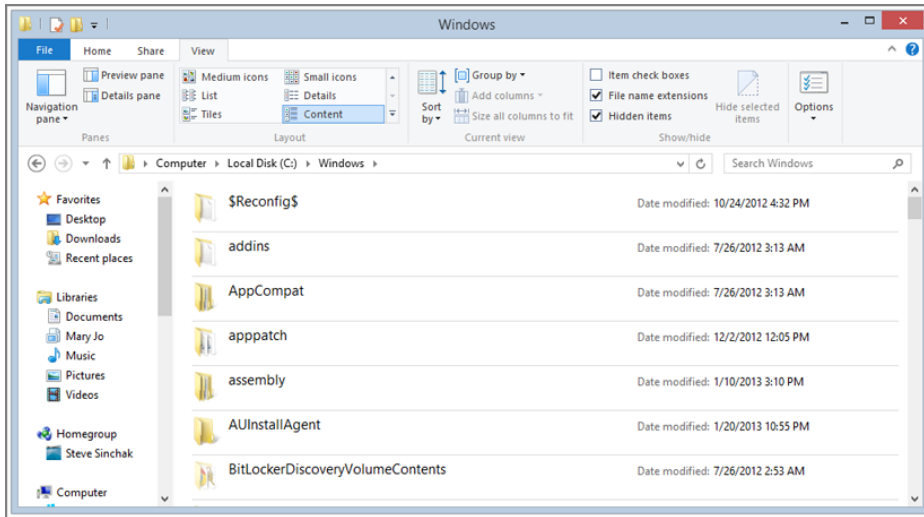
- Extra Large Icons
- Large Icons
- Medium Icons
- Small Icons
- List
- Details
- Tiles
- Content

The icon size views are self-explanatory, but the remaining views are different. List view fills the window with small icons and labels in multiple rows and columns. Details view arranges the folders and files in one long column with additional file properties. Tiles is similar to the List view but with larger icons, as shown in Figure 9-8.



**Figure 9-8:** This is how your screen looks when you display folders in the Tiles view.

Content view first appeared in Windows 7 and arranges the folders and files in one long column, but with two rows for each file that display additional file and folder information, as shown in Figure 9-9.

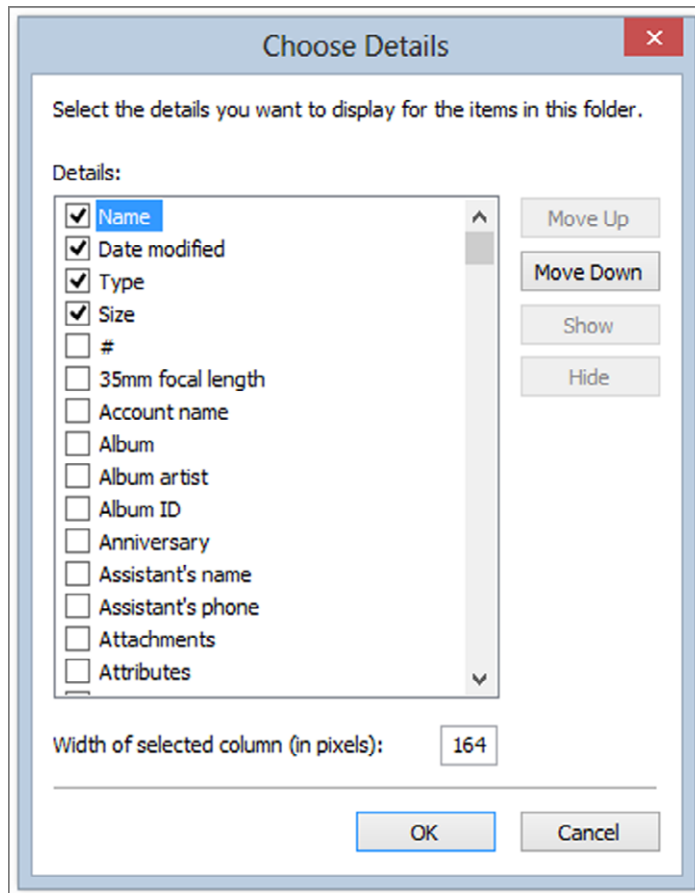


**Figure 9-9:** In the Content view, your files and folders appear in a long list.

Details view can be customized as no other view can be. All the columns that are displayed can be resized, removed, or rearranged, and more can be added. This can all be accomplished by using some of the lesser-known tricks of the interface. To start off, customize a folder that contains a bunch of MP3 files. By now, you should have already changed the template for this folder to one of the music templates so that you can use the advanced, music-specific features. If you have not already done that, go back to the previous section to find out how. When you are ready, follow these steps to customize all the different parts of Details view:

1. Start by resizing the columns. To do so, just place the mouse on the vertical line that is displayed between the columns and click and hold the left mouse button while you drag the mouse back and forth.
2. Add some of the new columns that display song information from the ID3 metadata tag embedded in the MP3 files. Right-click the column heading and select one of the many new options, such as Bitrate. You can even select More from the bottom of the pop-up menu to see a list of even more items that you can add, as shown in Figure 9-10. Repeat this step until you have added all the new columns that you want.

3. Most likely, there will be some columns that you just don't need. To remove these columns from Details view, just right-click the column heading and select the item again to uncheck it. This instantly removes the column from the view.
4. The last part of customizing the view is to set the order of the columns in a way that you like the best. To change the order of a column, just grab the column header and drag it around by holding down the left mouse button and moving the mouse.



**Figure 9-10:** You can add new columns to Details view.

If you want to customize the Details view of a folder that contains other multimedia files such as videos or photos, just repeat the previous steps to see additional column features with which you will be able to customize your Details view.

## Applying Your Settings to All Folders

When you first use Windows 8, all the folders are configured the way Microsoft wanted them. Personally, I don't always like Microsoft's decisions and prefer to customize them so they are the way I want and then apply that new folder setting to all the folders on my computer.

To do this, you could change the settings of every folder, but there is a much easier way. Instead, just customize one folder on your computer using the previous sections so that you can get it looking great, and then follow these steps to apply the same configuration to all the other folders on your computer:

1. While the folder that you customized is still open, click the View ribbon tab and then the Options button on the far right.
2. Click the View tab.
3. Click the Apply To Folders button and click Yes on the confirmation screen.
4. Click OK to close the Folder Options window and you are finished.

If for some reason you don't like what you did and want to restore all the folders to the original look, simply click the Reset All Folders button that was next to the Apply To Folders button to revert back to the Microsoft defaults.

## Working with Hidden Files

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Just like every other Windows version, Windows 8 likes to hide files. When you are tweaking and customizing your computer, hidden files can become annoying because many of the system files with which you want to work are hidden. The following two sections show you how to make Windows 8 display all hidden and system files as well as the super hidden files.

### Showing Hidden Files

When tweaking your computer, you often need to edit different configuration files for different applications. This can cause a problem because those configuration files are often hidden. The only way to edit them would be if you knew the exact filename and typed it in the Browse box. Otherwise, you would be out of luck.

Telling Explorer to show hidden files and folders is the only solution to this problem. Making Explorer show hidden files is just a matter of getting to the right place. Follow these steps to show all hidden files:

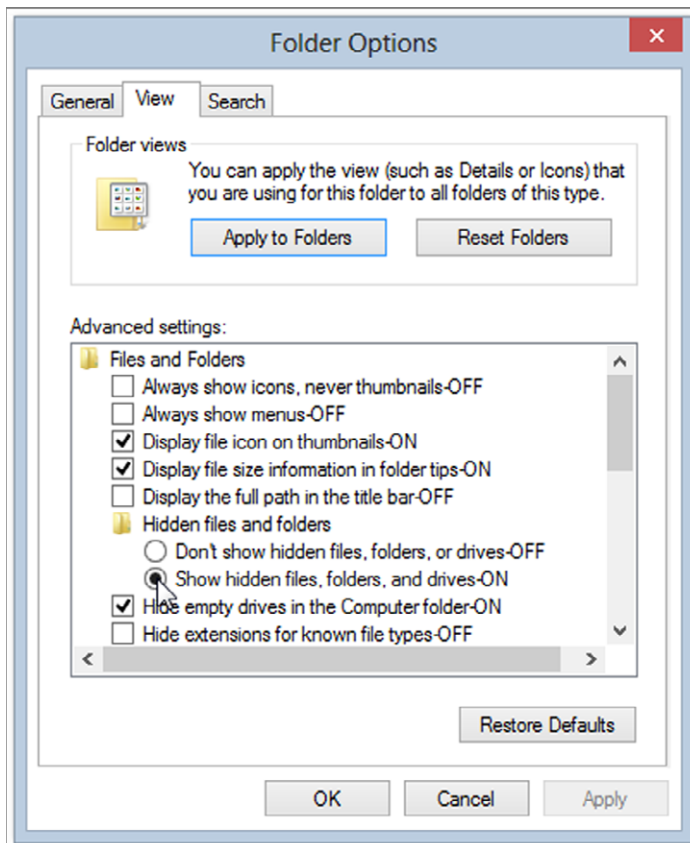
1. Open any folder in File Explorer.
2. Click the View tab and then click the Options button.
3. Click the View tab of the Folder Options window.

- Under the Advanced Settings section, scroll down the list until you see the entries for Hidden Files And Folders. Click Show Hidden Files, Folders, And Drives, as shown in Figure 9-11.

**TIP** While you are in the Folder Options Advanced settings list of settings, I recommend disabling the Hide Extensions For Known File Types and Hide Protected Operating System Files settings. This is always one of the first things I do right after installing Windows 8.

- When you are finished, click OK to save your changes and exit the configuration window.

You should now see all the files on your computer that are hidden. However, you may notice that some files are still not showing up. These are the system files. To show these files, continue to the next section.



**Figure 9-11:** You can reveal hidden files.

## Revealing the Super Hidden Files

Microsoft has added many features to Windows to protect the critical files of the operating system. The super hidden files feature allows Windows to protect itself even further by hiding some of its most critical files from users. If users can't get to it, they can't hurt it, right?

Revealing the super hidden system files is not very difficult. You can uncheck the box on the list on the View tab of Folder Options that says Hide Protected System Files, but where is the fun in that? Use the Registry Editor to turn this feature off:

1. Open the Start screen, type **regedit**, and then hit Enter.
2. After the Registry Editor loads, navigate through HKEY\_CURRENT\_USER\Software\Microsoft\Windows\CurrentVersion\Explorer\Advanced.
3. Right-click ShowSuperHidden and select Modify.
4. Change the value to 1 and click OK to save your changes.

Now you will be able to see all the files on your computer, including the super hidden system files.

## Summary

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This chapter has shown you many different ways that you can customize how File Explorer looks and works. You discovered how to change file associations as well as how certain file types look when viewed in Explorer. Then, you found out how to customize the context menu as well as how to clean it up. The last part of this chapter showed you how you can customize the different views of Windows 8 and control how and if hidden files are displayed.

The next chapter is all about customizing the next most frequently used program in Windows 8—Internet Explorer. I show you how you can customize the new features of the latest overhaul of Internet Explorer.

# Personalizing Internet Explorer

Aside from the performance improvements that benefit everyone, Microsoft also tweaked the interface, and improved tabs and security in Internet Explorer 10. In this chapter, I show you how to customize these features and many more so you can get the most out of Internet Explorer 10.

## Customizing Search

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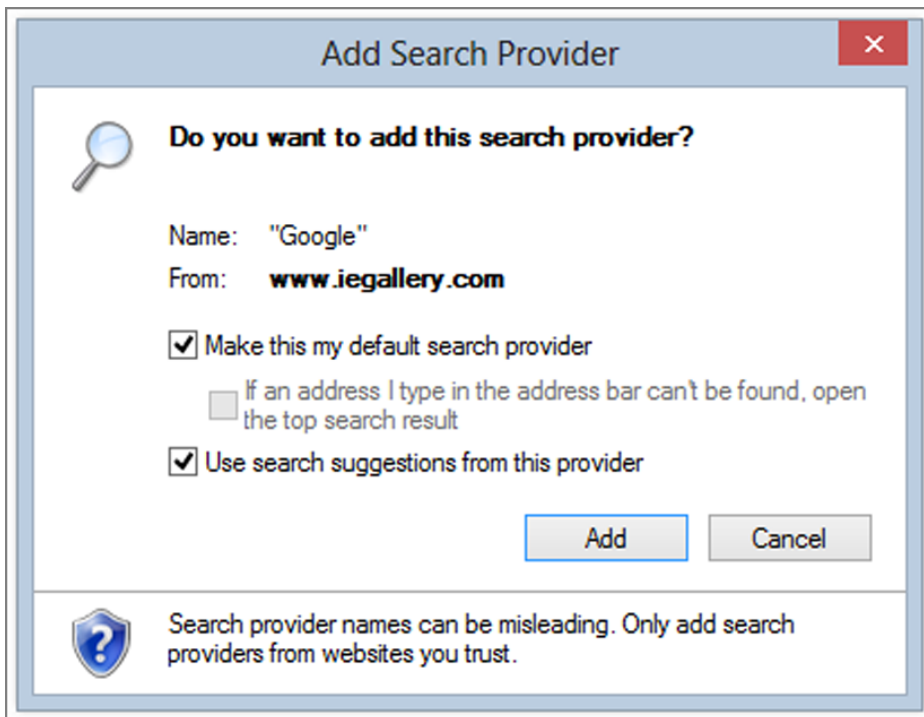
The search box, first introduced in Internet Explorer 7, is improved and consolidated in IE10 to provide a better search experience. This enables you to search from the address bar instead of a separate search box. I show you how you can customize the new combo address/search box to work with your favorite search engines (instead of the Microsoft default). First, I cover the basics of this new feature, and then I show you how you can create custom search entries to search just about any website on the Internet that has a search box.

## Adding Popular Search Engines

Before you get started customizing your search engines and developing custom entries, it is useful to go over the basics of adding and changing the default search engines that Internet Explorer uses. Doing so is easy. Just complete the

following steps to find out how to add the major search engines through the Microsoft search site so that you have more choices aside from Microsoft's Bing:

1. Open the desktop version of Internet Explorer if it is not already open.
2. Browse to [tweaks.com/731133](http://tweaks.com/731133).
3. When you find a provider you want to add, click the logo.
4. On the details screen, click the Add To Internet Explorer button.
5. When the Add Search Provider box is shown, make sure to check the Make This My Default Search Provider box if you want to make it the default to replace Bing. Then click Add and you are finished, as shown in Figure 10-1.



**Figure 10-1:** You can add search engines to Internet Explorer 10.

The new search engine is configured. You can switch among active search engines by using the down arrow, next to the search box in Internet Explorer. If you already have your search engines set up and want to remove or change the default search engine, the next section is for you.

## Managing Your Configured Search Engines

After you have all the search engines added to Internet Explorer, over time you might want to remove some or adjust the default search engine that IE uses. To do so, go to the advanced search settings found in Internet Options. Follow these steps to change the default search engine or remove a site:

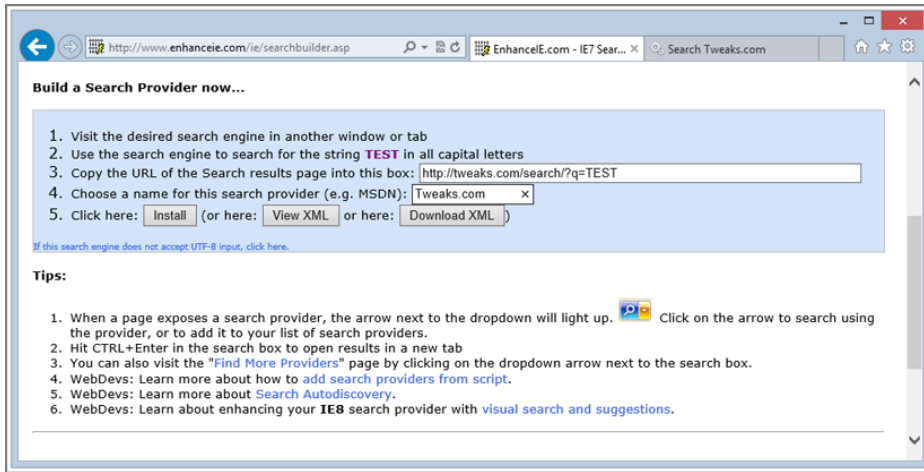
1. Open Internet Explorer.
2. Click the gear icon and click Manage Add-ons.
3. Click the Search Providers section.
4. You see a list of the search engines that you have added to Internet Explorer. Select an entry from the list and click either the Remove or Set As Default button to make changes to the search configuration.

Now that you understand the basics of search in Internet Explorer, you are ready to move on to the next section about creating custom search entries.

## Adding Custom Search Entries

Don't like the search engines listed on the IE Add-ons site? This section shows you how to add any website that has a search box to Internet Explorer search box. You can do so in two ways. Website owners can add special HTML to their pages that link to an Open Search XML file that allows users to add their site to be searched. Because few websites actually support that feature, you can always add a site manually with a few tweaks. To add your own site, just follow these steps:

1. Open Internet Explorer and navigate to [tweaks.com/546288](http://tweaks.com/546288).
2. Open another tab or browser and go to the site for which you want to add a custom search entry. On that site, use the site's search function to search for **TEST** in all capital letters.
3. When the search result page is shown, copy the URL from the browser address window. Then switch back to the IE Add-ons page you opened earlier.
4. Paste the URL you copied in the previous step into the URL box on the IE Add-ons Create Your Own Search Provider page, as shown in Figure 10-2.
5. Type in a name for the search provider.
6. Click Install.
7. Click Add on the Add Search Provider dialog box.



**Figure 10-2:** Paste the URL for the search results page in the Search Provider Creator.

If everything worked properly, the site you added displays as a new option in the Internet Explorer Search Provider list.

## Creating Registry Files to Import Sites to Search

Another way to add sites to search in Internet Explorer is to write a registry file that can be imported into the registry. This enables you to add a site to search to multiple computers without your having to go through the manual step of using the IE Add-ons Search Provider Creator for each computer. The following example adds Tweaks.com to your search providers in Internet Explorer. Just follow these steps:

1. Open the Start screen, type **notepad** and press Enter.
2. Type the following registry code into Notepad:

```
Windows Registry Editor Version 5.00
[HKEY_CURRENT_USER\Software\Microsoft\Internet Explorer\SearchScopes\
Tweaks]
"DisplayName"= "Tweaks.com"
"URL"="http://tweaks.com/search/?q={searchTerms}"
```

3. Click File, and then click Save As.
4. Change the Save As type to All Files (\*.\*) .
5. Type **Tweaks.reg** as the filename and click Save.

You have now created a custom search registry file that you can import into any computer's registry by double-clicking the file. Keep in mind that this setting is a per-user registry setting, so every user on your computer who wants to use this must import it under that user's account.

## Tweaking the Tabs

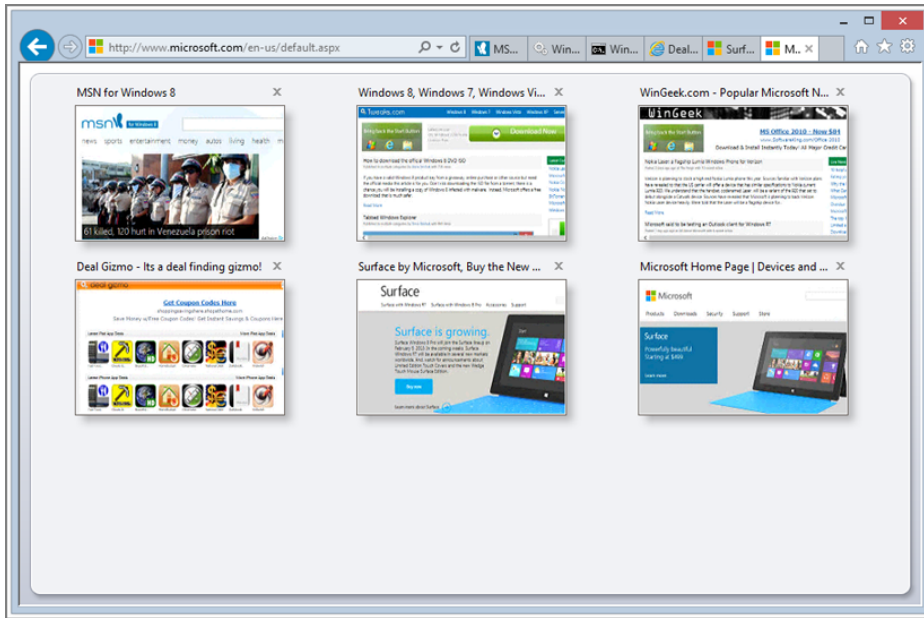
Tabbed browsing has been improved in Internet Explorer to make it easier to identify and group related tabs together. This section shows you how to get the most out of tabs in Internet Explorer. Specifically, I show you how to use keyboard shortcuts and multitar homepages and how to customize the tabs to fit your needs.

### Tab Keyboard Shortcuts

Keyboard shortcuts allow you to get the most out of the new Internet Explorer tab interface by enabling you to do various lesser-known activities that can save time. These keyboard shortcuts require no setup; they are already active on your computer. Table 10-1 lists all the keyboard shortcuts that help you take control of tabs, and explains how to start the Quick Tabs feature.

**Table 10-1:** Internet Explorer 10 Tab Keyboard Shortcuts

| SHORTCUT KEYS          | FUNCTION  |
|------------------------|---|
| Ctrl+T                 | Opens a new tab.  |
| Ctrl+Click             | Holding Ctrl while clicking a link opens the link in a new tab but does not switch to the tab.  |
| Ctrl+Shift+Click       | Holding these keys while clicking a link opens the link in a new tab and immediately switches to and displays the web page on the new tab.                            |
| Ctrl+Shift+Wheel Click | Holding these keys while clicking the mouse wheel over a link opens the link in a new tab behind the current tab.   |
| Ctrl+W                 | Closes the current tab.   |
| Ctrl+Shift+T           | Recovers last closed tab.   |
| Ctrl+Alt+F4            | Closes all background tabs.   |
| Ctrl+Tab               | Moves to the next tab on right.   |
| Ctrl+Shift+Tab         | Moves to the next tab on left.  |
| Ctrl+Q                 | Brings up Quick Tabs view, shown in Figure 10-3. This is disabled by default, but you learn how to enable it in the "Customizing Tabs" section later in this chapter. |



**Figure 10-3:** Use the Quick Tabs view in Internet Explorer 10.

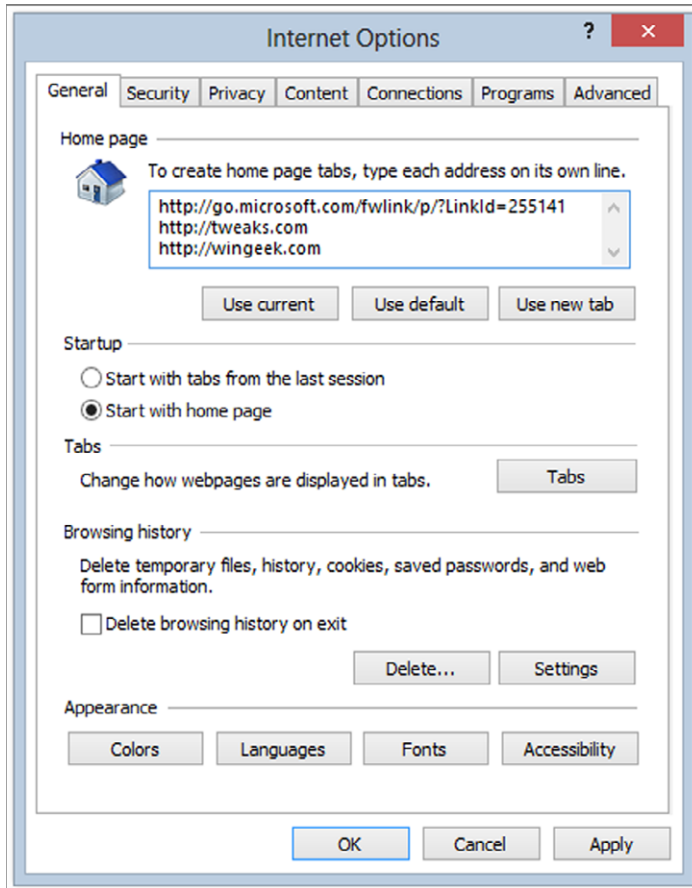
## Multitab Homepages

From older versions of Internet Explorer, you are familiar with the concept of having a homepage—a website that is displayed when the web browser is loaded. In Windows 8, that classic browser feature has been mixed in with tabs. Now you can specify multiple websites to open by default when you load Internet Explorer, and you can display them in different tabs. Although this is not exactly a groundbreaking feature, it is a nice hidden feature that helps you customize your browser.

Using a multitab homepage is easy when you know the secret. Just follow these steps to set up your own multitab homepage:

1. Start Internet Explorer.
2. Click the gear icon and then select Internet Options.
3. When Internet Options loads, click the General tab. You see the Home Page section at the top of the screen. To use multiple sites as your homepages, just enter each URL on a separate line, as shown in Figure 10-4. When you have finished, click OK to save your changes.

Click the Home button to see your changes.



**Figure 10-4:** You can set multiple homepages for Internet Explorer in Internet Options.

## Customizing Tabs

Now that you have customized your homepages, you learn to fine-tune the tab settings to make them work the way you work. Back in Internet Options, you can change the way the tabs behave. You can alter the order in which new tabs open, specify how pop-ups are handled, and even customize what happens for various common actions. Follow these steps to get the Tabbed Browsing Settings, and refer to Table 10-2 for setting details and my recommendations:

1. Open Internet Explorer.
2. Click the gear icon and then click Internet Options.
3. Locate the Tabs section on the General tab and click Settings. This loads the Tabbed Browsing Settings window, where you can toggle more than a dozen IE tab settings (refer to Table 10-2 for setting details).
4. Click OK to save your changes.

**Table 10-2:** Internet Explorer 10 Tab Settings

| SETTING   | FUNCTION  |
|---|---|
| Enable Tabbed Browsing                                      | Enables support for tabbed browsing. Disable to remove tab support.   |
| Warn Me When Closing Multiple Tabs                          | Displays a confirmation box when closing IE with multiple tabs open. I like to have this one disabled.  |
| Always Switch To New Tabs When They Are Created             | Changes focus to the last tab created.  |
| Show Previews For Individual Tabs In The Taskbar            | Displays each tab as its own thumbnail on the new Windows 8 taskbar.  |
| Enable Quick Tabs   | Allows the Quick Tabs feature shown in Figure 10-3 to operate. Keep this one enabled.   |
| Enable Tab Groups   | Enables support for similar tab-grouping with colors.   |
| Open Only The First Home Page When Internet Explorer Starts | Instead of opening all your multitab homepages, it just loads the first one listed.   |
| When A New Tab Is Opened, Open One Of These Options         | You can choose between a blank page, new tab page, or your homepage.  |
| Let Internet Explorer Decide How Pop-Ups Should Open        | Allows IE to make pop-up decisions. I recommend picking either of the following two options instead.  |
| Always Open Pop-Ups In A New Window                         | Opens pop-ups in new browser windows.   |
| Always Open Pop-Ups In A New Tab                            | Opens pop-ups in the same browser window but creates a new tab. This works well for most websites, but I have found some pop-up windows that contain calendars do not properly close the tab when a date is selected. |
| Open Links For Other Programs In A New Window               | This setting opens a link that you clicked in any Windows application, such as your mail client, in a new IE browser window.  |
| Open Links For Other Programs In The Current Window         | This setting opens a link that you clicked in any Windows application in a new tab. I recommend enabling this one.  |
| Open Links For Other Programs In The Current Tab Or Window  | This setting opens a link that you clicked in any Windows application in the currently active tab.  |

The following settings require a complete PC restart before they are active:

- Show previews for individual tabs in the taskbar
- Enable Quick Tabs
- Enable Tab Groups

## Fun with RSS

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In recent years, Really Simple Syndication (RSS) has been taking over the Internet. It is not uncommon to see websites offering various RSS feeds for their visitors that help them keep up to date with what is going on. With RSS, you can be notified when your favorite website posts a new article or when there is breaking news from a major news outlet.

RSS is powered by a simple XML file hosted on websites that follow the RSS standards. The RSS reader software interprets the XML file and displays it for your viewing. Internet Explorer 10 has a new RSS reader that enables you to view your feeds on a nicely formatted display.

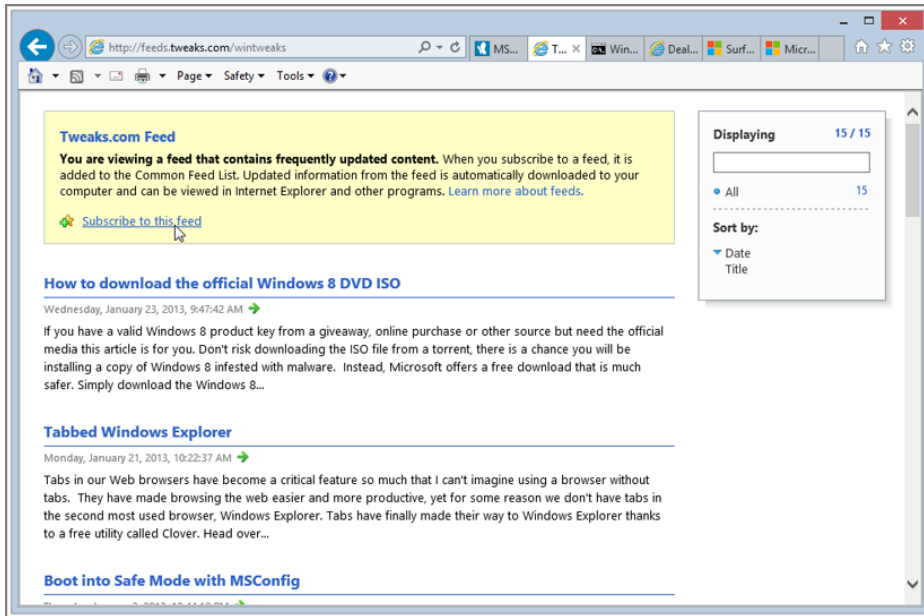
Adding RSS feeds to Internet Explorer is a great way to personalize your setup, just like adding websites to your Favorites list. In this section, I show you how to subscribe to and configure RSS feeds in Internet Explorer. Then you fine-tune your RSS settings so that you always have the most up-to-date RSS content.

### Subscribing to Feeds

Adding feeds, or *subscribing* as it is commonly known, is an easy task when you know the URL of the RSS feed you want to read. Identifying an RSS feed has become easier in recent years because many sites have adopted standard RSS image buttons. Others have simply provided RSS text links that point to their XML file rather than a button.

For this section, you need to find an RSS feed to use. Follow these steps to subscribe to an RSS feed in Internet Explorer 10:

1. Open Internet Explorer.
2. Right-click the gear icon and click Command Bar.
3. Browse to one of your favorite websites, such as Tweaks.com, and click the RSS icon on the command bar.
4. This causes Internet Explorer to launch into RSS feed reader mode. On this screen, click the Subscribe To This Feed link, as shown in Figure 10-5.
5. The Feed Subscription box pops up on your screen. Type a name for the feed and click the Subscribe button.



**Figure 10-5:** Subscribe to an RSS feed with Internet Explorer.

You have now successfully subscribed to an RSS feed in Internet Explorer. Now that you have the feed set up in IE, you are ready to configure the RSS reader gadget that is part of the Desktop Gadgets.

## Customizing Feed Settings

Now that you have your feeds set up in Internet Explorer, it is possible to fine-tune the feed settings (for instance, how often the source is checked for updates, which is a valuable setting because it determines how fresh your data is from the feed). You can modify feed settings by using Internet Explorer again, in much the same way that you subscribed to the feed. Get started by opening Internet Explorer:

1. After Internet Explorer has loaded, click the Favorites star button and then click the Feeds tab.
2. Right-click the feed you want to edit and click Properties.
3. When the Feed Properties window loads, I recommend that you go to the Update Schedule section and select Use Custom Schedule.
4. Select a shorter update, such as 30 minutes, from the drop-down list.
5. When you have finished adjusting all the feed properties, including the archiving settings that specify how many articles of a feed to hold on to, click OK to save your changes.

## Using Add-ons in Internet Explorer

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Internet Explorer has a lot of new features, but is still behind in some of the features that other third-party web browsers offer. For one, Internet Explorer still does not have a spell checker built in to the application. Every time I post a message in a forum or to a website, I have to write it in Microsoft Word and then copy and paste the text into Internet Explorer because I'm not the best speller. This can be a hassle; after all, I don't always want to have to complete this bulky process to ensure my spelling is correct. Instead, I can use an Internet Explorer add-on that adds spell-check capability within the web browser. In this case, I can forget about loading up Microsoft Word. I can just initiate a spell-check in the browser and let the add-on check my spelling in all text fields.

This section is all about showing you some must-have add-ons for Internet Explorer, such as a spell-check component just mentioned. First, I show you how to use the ieSpell add-on to save your web posting from misspelled words. Second, I show you how to use an add-on that remembers all your usernames and passwords and other registration information for you.

### Using ieSpell

Internet Explorer 10 finally includes an integrated Spell Checker but it is limited only to text area tags instead of normal text boxes. This leaves a big gap in the coverage, which is why I recommend using ieSpell instead. ieSpell is a great add-on for Internet Explorer. I have been using it for years. This useful add-on is available free for personal use and for a small fee if used in a commercial environment. Installing ieSpell and using it in IE is easy. Just visit [www.iespell.com](http://www.iespell.com) and install it just like any other application.

After you have ieSpell installed, restart any open Internet Explorer instances you previously had open; ieSpell is ready for action. When you need to use it, just right-click any text box on a web page and select Check Spelling from the context menu. That is all you need to do to initiate a spell-check. Immediately after selecting Check Spelling, you see a familiar spell-check interface that helps you ensure you make no spelling mistakes.

### Using RoboForm

Another great add-on for Internet Explorer is called RoboForm. It is a great little utility that memorizes all your usernames and passwords and other registration information. RoboForm fills in the forms for you so that you don't have to type your personal information when you need to register for a website or buy something online. This will save you time and help you remember all your accounts and passwords. Visit [www.roboform.com](http://www.roboform.com) to download and install the add-on.

After you have RoboForm installed, restart IE, and the new toolbar appears. To get started using it, go to a website that you normally sign in to and fill out the fields. When you click the Submit or Login button, you are given the option to save the logon information. The next time you visit that site, you see a prompt on the toolbar that shows you the button to press so that the form fields are automatically filled in.

## Advanced Internet Explorer 10 Features

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Developers, performance, and security are the main focuses of Internet Explorer 10, but two major new features are for everyone. Accelerators are a new type of browser plug-in that accelerate your web browsing when you select and right-click text. Instead of copying and pasting text into a Search box or an address into a map site, you have the option to jump directly to a search for the selected text or a map of the selected address. Pinned Sites is another useful feature of Internet Explorer 10 that allows users to pin websites to their taskbar similar to normal desktop applications. Support for native taskbar features such as jump lists is included and is very helpful for websites that take advantage of the new feature and allow you to jump directly to specific functions or pages on their site such as posting an update for Facebook.com.

In the next two sections I go into more detail about how these new features work and how you can take advantage of them in Internet Explorer 10.

### Using Accelerators

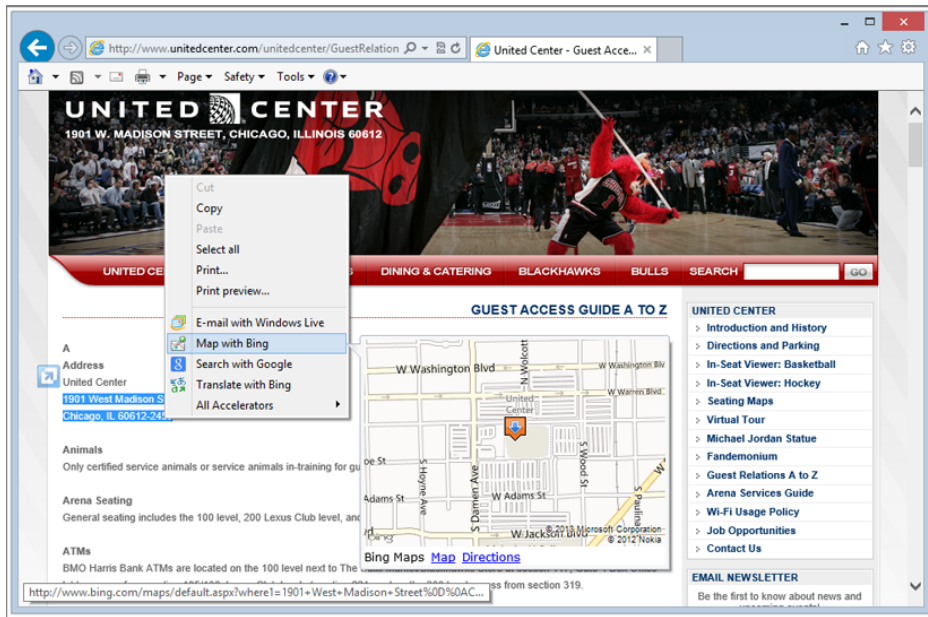
According to Microsoft, accelerators help you get everyday browsing tasks done without having to navigate manually to another website. For example, you are looking for a place to go to dinner and find the website of a good restaurant. You don't know where the restaurant is so you need to get directions. Typically you would copy and paste the address into a mapping website to get directions. Accelerators in IE10 allow you to select the address, right-click, and see a map of the address in a small pop-up window, as shown in Figure 10-6.

The best part of accelerators is the plug-in platform. You can easily customize your browser to add or remove accelerators.

The IE Add-ons Gallery has hundreds of accelerators available. Some of the most popular accelerators enable you to do the following:

- Map the selected address.
- Search Google, Yahoo!, or Bing for the selected term.
- Post the selected content to Facebook.
- E-mail the selected content.
- Search for a selected product on eBay.

- Translate the selected text.
- Get the weather for a selected address or ZIP code.



**Figure 10-6:** Use IE10 accelerators to map an address.

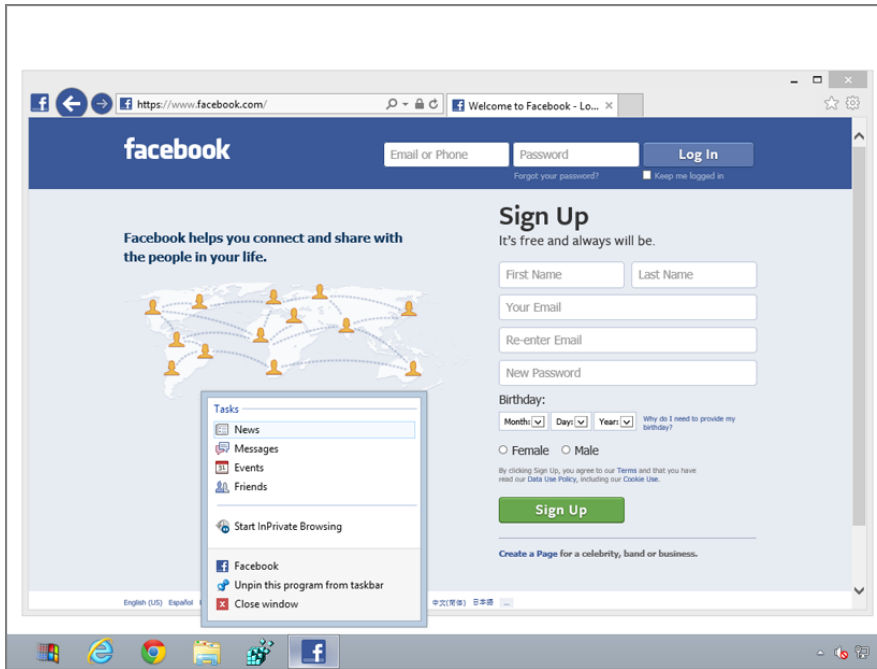
Adding an accelerator to your computer is similar to adding more search engines to your Search box in Internet Explorer 10. Just follow these steps:

1. Open up Internet Explorer and navigate to [tweaks.com/610469](http://tweaks.com/610469).
2. Navigate through the available accelerators and click the logo. Then click the Add To Internet Explorer button.
3. On the Add Accelerator screen, click Add.

After you have customized your accelerators you can remove and change the default by clicking the gear icon and then clicking Manage Add-ons within Internet Explorer.

## Using Pinned Sites

Some websites have embraced a new feature in Internet Explorer called Pinned Sites that enable you to pin a website to your taskbar just like a normal application. Not only do you get easy access to your favorite web apps, but they are also displayed and behave differently from normal websites. The browser frame is customized to the colors of the website and even the taskbar Jump List is present, as shown in Figure 10-7.



**Figure 10-7:** Pinned Sites display the taskbar Jump List.

Pinning a website is simple; just drag the website icon in the address bar down to the taskbar. You will know you have the right website if you see the Drag To Taskbar To Pin Site icon when you hover over it.

Not all websites take advantage of the advanced features of Pinned Sites that Microsoft makes available for developers to use. Microsoft maintains a list of the most popular “enhanced” websites in the IE Gallery. Head over to [tweaks.com/404889](http://tweaks.com/404889) to take a look and find some great sites to pin to your taskbar.

## Summary

This chapter has been all about customizing one of the most used applications on your computer, the web browser. Internet Explorer has been greatly improved in Windows 8, and I hope you now understand how you can customize it to fit your specific needs. Earlier in this chapter, I showed you how to customize the search and tab features. Then I covered the new RSS features and how to subscribe to feeds. This chapter came to an end with some cool IE add-ons that will help you add more functionality, such as accelerators and pinned sites.

The next chapter is all about customizing everything related to media in Windows 8. I show you how to tweak Windows Media Player and how to build your own media center PC using the upgraded Media Center software included in the pro version of Windows 8.

# Customizing Windows Media

This chapter shows you how to customize your experience by taking advantage of some of the Windows Media features and fine-tuning how they work. To get started, you use some great new audio enhancements to tweak how all types of media sound on your computer.

## Adjusting Your Audio Experience

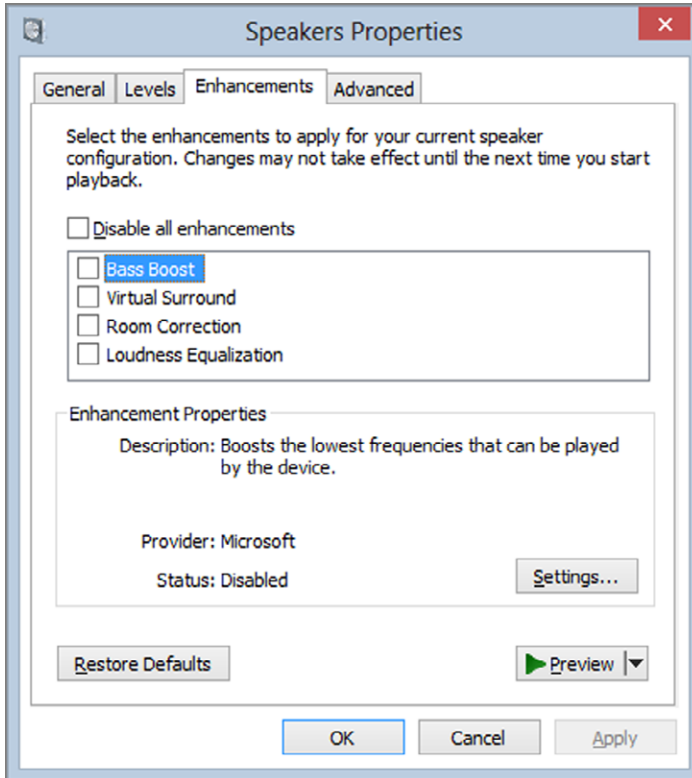
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The audio system has gone through a major upgrade in the kernel that is at the heart of Windows 8. Countless new features have been added, such as the ability to control the volume per application, as well as many others that are unnoticed by the end user and hidden away. This section talks about those lesser-known features and shows you how to take your audio experience to the next level. To do this, you enable and tweak the new sound enhancements available on all newer high-definition audio cards.

The new audio enhancements are a collection of effects that enable you to do everything from boost the bass to optimize your surround sound using a microphone to get the perfect setup. These audio effects are located on your output device properties. Follow these steps to get to the Enhancements Settings tab:

1. Open the Start Screen, type **Control Panel**, and hit Enter.
2. Click Hardware and Sound.

3. Click Sound.
4. The Sound Properties screen loads. Click the Speakers playback device and click Properties.
5. After the Speakers Properties window loads, click the Enhancements tab. All the enhancement effects are displayed, as shown in Figure 11-1.
6. Simply check the enhancement that you would like to enable. When selected, click the Settings button to fine-tune the operation.



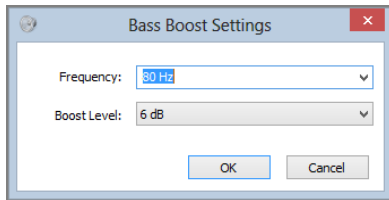
**Figure 11-1:** Windows audio enhancements are located in the Speakers Properties dialog box.

As you can see, enabling and configuring the settings is easy to do, but before you start using these new enhancements, take a look at the next few sections that describe the enhancements in detail.

## Bass Boost

Bass Boost enables you to pump up the bass on your speakers. You can fine-tune the frequency and the level of the boost in dB, as shown in Figure 11-2.

Experiment with what is best for your speakers, but I don't recommend setting it higher than 6 dB with most speakers. Otherwise, you might notice a loss of high notes in your sound.



**Figure 11-2:** Windows 8 offers Bass Boost.

## Virtual Surround

Virtual Surround enables you to output surround audio over stereo outputs to a receiver that supports Dolby Pro Logic or another matrix decoder technology to convert the signal into an analog surround sound system. This feature is useful only if you have a receiver that does not have a digital input and are forced to use an analog stereo input. Microsoft really should have called this feature something else. It really got my hopes up that it would simulate surround sound using my two stereo speakers the way those old Winamp plug-ins did several years ago.

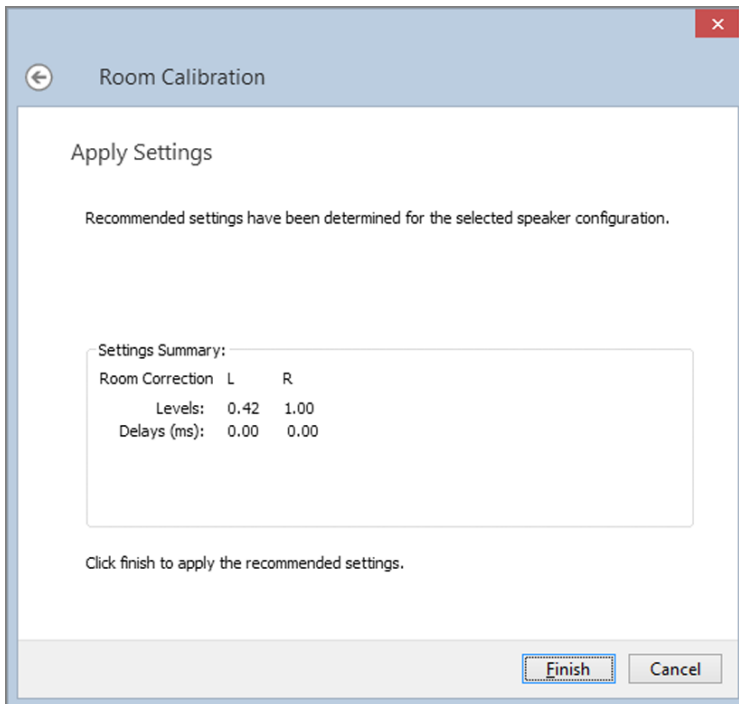
## Room Correction

The placement of your speakers and the size of the room greatly affect the sound quality when you are listening to music and watching movies. The Room Correction enhancement automatically calibrates the volume and delay for each speaker for the best possible sound quality. This cool enhancement works by playing various test sounds on all your speakers and using your microphone to record the result. Next, analysis of the results is preformed and you are presented with optimal settings for each speaker. Simply OK the calculated settings and your sound is automatically optimized for all applications that run on your computer, including Media Center.

In my opinion, Room Correction is one of the best enhancements because it enables you to optimize your speaker system by just clicking a few buttons. I remember doing this with my surround sound receiver manually when I got a home theater system. This feature would have saved me a lot of time, and the end result produces better sound than the human ear could ever match.

Using Room Correction is simple. While on the Enhancements tab, check the option to enable it, click the Settings button, and follow these steps:

1. When the Room Calibration Wizard has loaded, click the Next button on the opening screen.
2. Select the microphone input you would like to use for the test. Make sure that you have a microphone plugged in to that input on your sound card. You can use any microphone for the calibration. If you have a studio-quality, omnidirectional microphone, check This Is A Flat-Rate, Professional Studio Microphone. Click Next to proceed.
3. Position your microphone where you sit in your room. Make sure you elevate the microphone to roughly the height of your ears. For example, it is better to place your microphone on the armrest of a chair instead of the seat. Also make sure that your microphone is pointing straight up. When you are ready for the calibration test, click Next. It is best to leave the room when the test is running.
4. When the test is finished, click Next to view the results.
5. The results of the test for each channel are displayed, as shown in Figure 11-3. When you are ready to apply the settings, click Finish.



**Figure 11-3:** Room Calibration adjusts sound depending on the acoustics in the room.

After the Calibration Wizard is finished, the Room Correction enhancement setup is finished and becomes active immediately.

## Loudness Equalization

Many different sources of audio exist on your computer and among all these sources, the volume can vary drastically. Even within the sources, the volume can vary. For example, if you are watching a movie in Media Center, at times you can barely hear people talking but the background music in other scenes is very loud. The Loudness Equalization enhancement helps solve these problems by dynamically adjusting the volume on all the inputs so they all sound constant.

The Loudness Equalization enhancement has only one setting, which enables you to fine-tune the sample period. Click the Settings button to adjust it.

## Headphone Virtualization

Available only on headphone devices listed on the Playback tab, Headphone Virtualization enables you to simulate a surround sound system when using headphones. Say you are watching a DVD on your laptop on a trip; using this enhancement, you can enable special audio effects that simulate a five-speaker surround sound system using only two speakers. If you use headphones often, definitely give this enhancement a try.

## Customizing Windows Media Player

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Windows Media Player has not seen significant changes in Windows 8 but the major improvements from Windows 7 remain. The interface includes the popular mini player known as Now Playing mode, and a streamlined interface browses through your collection of music, movies, and videos with cover art. As with Windows Explorer, you can customize almost the entire user interface to your liking. The next few sections show you how you can visually tweak Windows Media Player as well as customize the operation using some lesser-known features. I start by showing you how to tweak the look.

### Tweaking the User Interface

The user interface can be divided into two separate areas to tweak: how you navigate and how the information is displayed. Depending on your personal taste, Windows Media Player may be too busy for you, so you might want to cut down on the navigation options that are displayed to make a more slim

and streamlined interface. The next two sections show you how to adjust the navigation and how the information is displayed.

### Adjusting Navigation

Navigation in Windows Media Player 12 was updated to provide a cleaner and easier-to-use interface. The list on the left side can be fully customized to your liking. You can remove any of the items and display additional details. Just follow these steps:

1. While in Windows Media Player 12, click Organize and then Customize Navigation Pane.
2. Scroll through the list and check each item you want to display. Remove the check to hide an item, as shown in Figure 11-4.
3. To clean up the interface, you can also hide the Music Services that show up on the bottom of the Navigation pane by removing the check next to Show Music Services.
4. Click OK to save your changes.

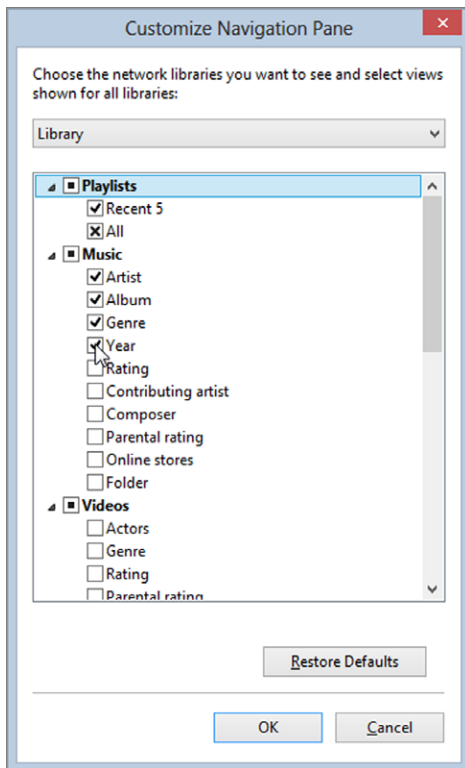
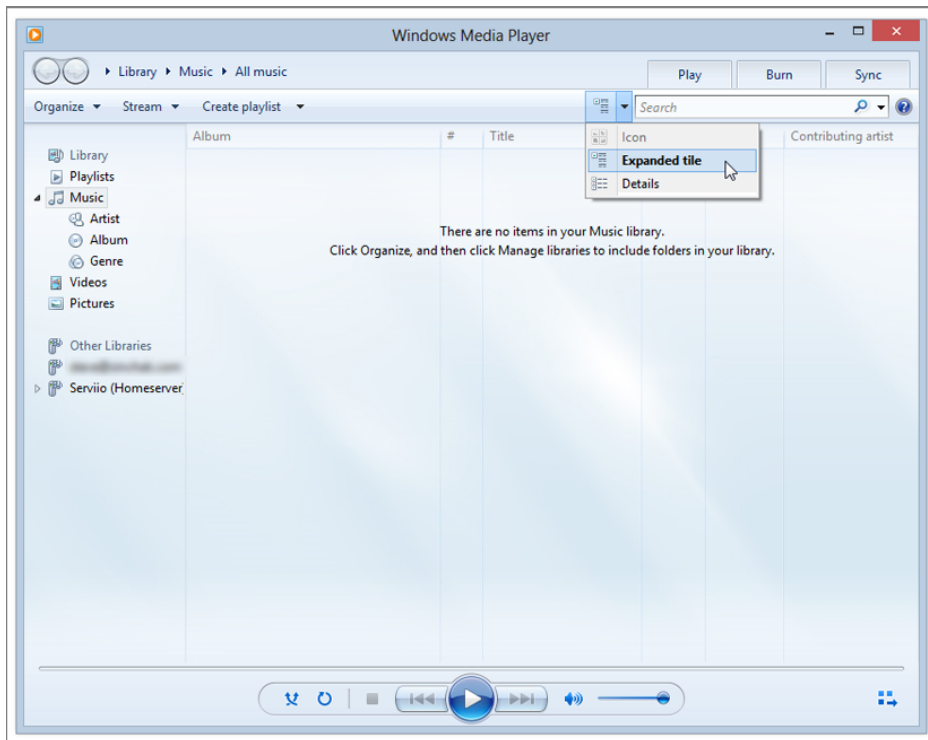


Figure 11-4: Adjust Media Player navigation.

## Adjusting Views

After you have the layout of the panels set up the way you want, you can also modify the way the information is displayed in the main pane that lists your media. By default, the Icon view is activated. This is a basic view that shows the album cover, title, and artist name. A Tile view is also available that adds the year and your star rating to the screen in addition to what is shown with the Icon view. The Details view provides the classic list view of the media.

You can modify the active view for the main panel by clicking the View Options icon, as shown in Figure 11-5, and selecting the view.



**Figure 11-5:** Choose a Media Player view option.

## Sharing Your Library

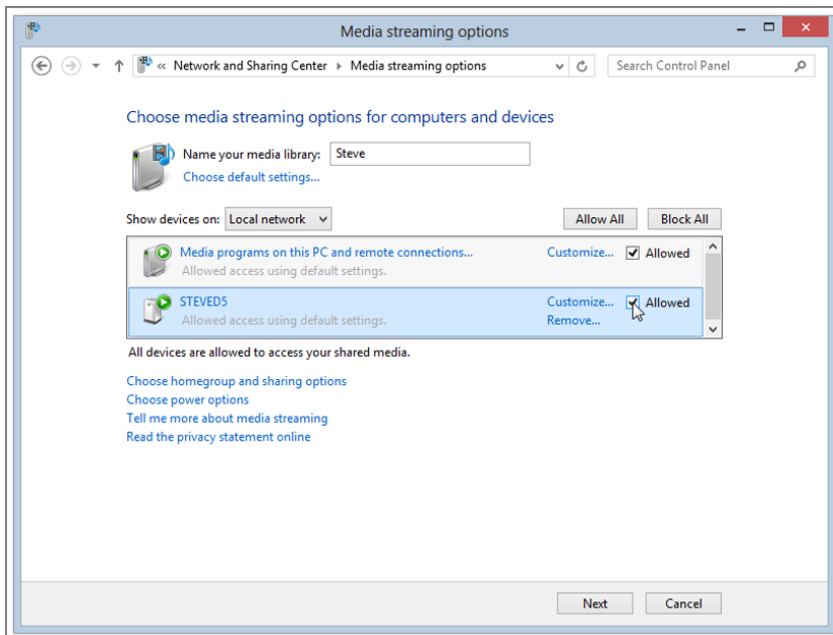
One of the lesser known but very useful features that I always enable when customizing Windows Media Player is the ability to share my music library with other computers in my home. I have a few different computers and laptops at home that I use for development for my websites and other purposes. Instead of loading my personal music collection onto each computer, it is much easier to set

it up on just one and then share that music library. Then, on any of my computers also running Windows Media Player, the library is automatically discovered and I can connect to it and listen to my music no matter what device I am on.

You have two different ways to share your music locally: through a Homegroup that also shares files other than media, or through the Network and Sharing Center. Homegroups are great for beginner users, but I like to do it the old way that provides more control. I show you how to configure sharing with the Network and Sharing Center to show that you don't need to use a Homegroup to share your library.

Although this feature is easy to use, it is not as simple to set up as a Homegroup. Follow these steps to enable it on your computer:

1. Open the Start screen, type **Control Panel**, and hit Enter.
2. Type **Media Streaming Options** in the Control Panel Search box.
3. Click Media Streaming Options, listed under Network and Sharing Center.
4. Click the Turn On Media Streaming button if visible.
5. Type in the name of your media library and select which devices on your local network you want to have access to your library, as shown in Figure 11-6. By default, Allow All Devices is selected, so any new devices that come online after you configure the sharing automatically have access.
6. Click OK and you are finished.

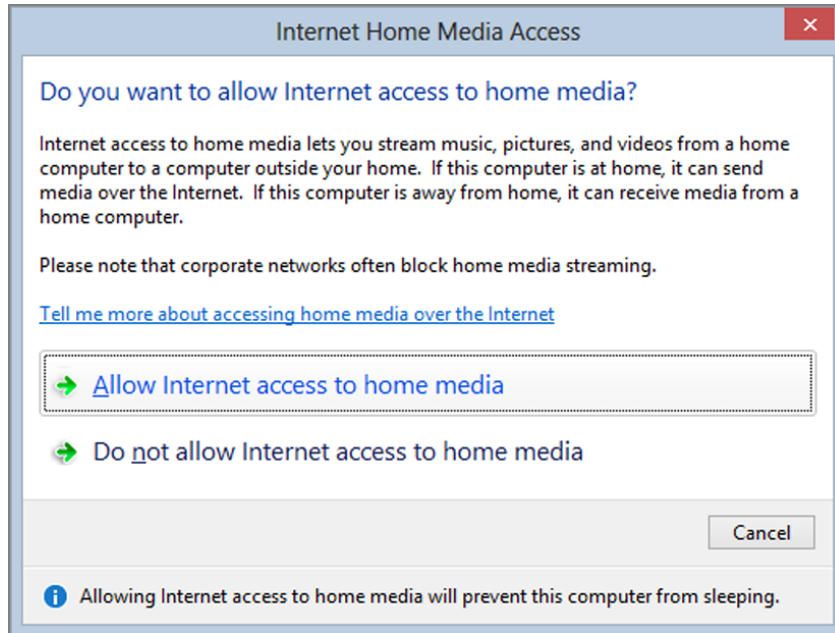


**Figure 11-6:** Configure your media streaming options.

## Sharing Your Library over the Internet

New to Windows 8 is the ability to access your library at home over the Internet. Known as Internet Home Media Access, it is very helpful when you want to listen to a song or play a video clip from your home library when away from home. Using a Windows Live ID, you can link Windows Media Player on your laptop to Windows Media Player on your desktop at home. The process of setting everything up is rather complex:

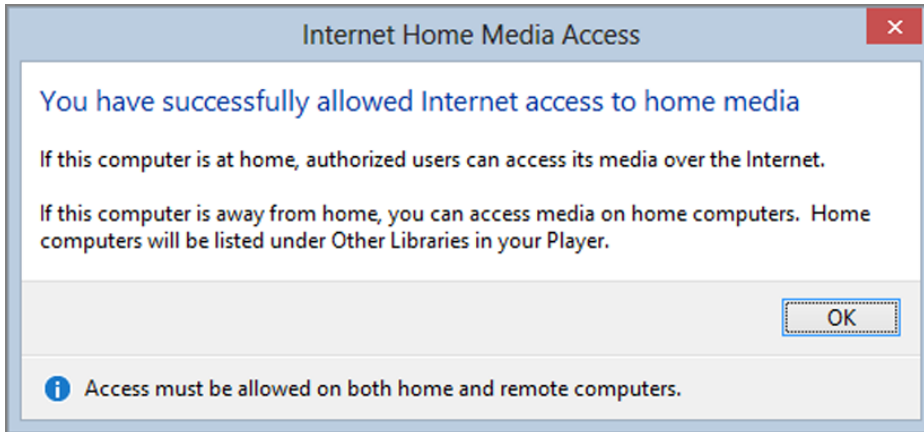
1. Start Windows Media Player if it is not already started. Then click Stream on the menu bar and Allow Internet Access To Home Media.
2. Select Allow Internet Access To Home Media on the confirmation screen as shown in Figure 11-7.
3. Internet Home Media Access is set up as shown in Figure 11-8.



**Figure 11-7:** Enable home media access.

You have finished configuring your computer to share its library. Now you need to set up your laptop, tablet, or another home device to access your home library.

If you ever want to disable Internet access to home media, just click Stream on the menu bar and select Allow Internet Access To Home Media. Then click Do Not Allow Internet Access To Home Media.



**Figure 11-8:** Click OK on the Internet Home Media Access confirmation screen.

## Using Audio Effects

Windows Media Player has a long history of supporting various third-party audio and video plug-in effects, as well as a collection of built-in effects and features that are often hidden to the normal user. In this section, I show you how to turn on a few of the best built-in effects to help you customize and improve your Windows Media experience.

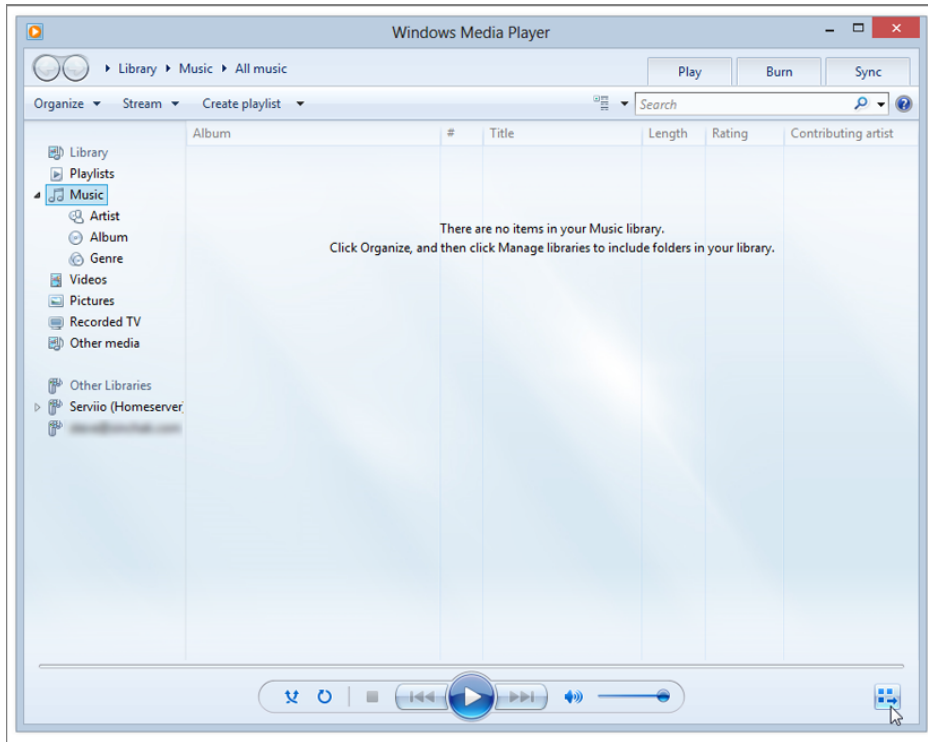
### *Accessing Hidden Effects*

The simplified user interface of Windows Media Player has limited the access to some of the more powerful features, such as audio effects. Accessing these effects is not as easy as it was in earlier versions, but it is not a huge annoyance, either, after I show you the tricks.

In Windows Media Player 12 the audio effects can only be found in the Now Playing mode. Click the icon in the lower right of the window to switch to Now Playing mode, as shown in Figure 11-9.

When in the mini player mode known as Now Playing mode, right-click the application and expand Enhancements. Then select the effect you want to use.

Using the various enhancements is very simple after you have them displayed. Take a look at the few new sections for a quick overview of some of the more useful effects to use and customize.



**Figure 11-9:** Switch to Now Playing mode in Windows Media Player to find the audio effects.

### Crossfading and Auto Volume Leveling

Ever wish that Windows Media Player would gradually fade out of one song and into the next as other popular media players do? Windows Media Player has had this feature for quite some time, but it was buried in a horrible UI so many people never even knew it was there. Using this feature enables you to set a custom period where the end of one song fades in with the beginning of the new song, creating a smooth transition between songs without any dead air.

When Crossfading is selected, click the Turn On Crossfading link and drag the slider toward the right to adjust the time the two songs will be faded together, to a maximum of 10 seconds.

Additionally, you can turn on auto volume leveling to make sure that the loudness of each song is relatively the same. This prevents you from having to adjust your volume manually between songs that were recorded at different volumes.

**Graphic Equalizer**

The graphic equalizer enables you to play around with the levels of different frequencies to help you make the song or video sound perfect on your specific speaker setup. Different types of music often require unique levels of values on the equalizer. Experiment with the different sliders or select one of the preset equalizer settings by clicking Custom.

**Play Speed Settings**

Play speed settings are more of a fun feature than a customization. Still, I figure it is worth mentioning because it can provide hours of fun for the right person or help you fast forward through a long file. When a song is playing, slide the slider to the right to speed up play or to the left to slow it down.

**Quiet Mode**

Think of this as auto volume leveling for just one song. It minimizes the differences between the loud and soft parts within a song.

**SRS WOW Effects**

The WOW effect provides a 3-D sound effect that gives more depth to your audio. This effect also offers a True Bass filter that increases bass.

**Video Settings**

Customize your standard video color setting here. You can modify Hue, Saturation, Contrast, and Brightness.

## Customizing Media Center

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Windows Media Center is an optional component that can be installed on Windows 8 Pro edition. The refined interface and support for many new technologies such as Internet TV, where you can watch full-length TV shows for free, is identical to Windows 7. Over the years, Windows Media Center has matured into a valuable component of Windows, providing users a high-quality and polished interface to explore all types of media from an interface that you can control with a remote control. Additionally, Media Center in Windows 8 includes support for Clear QAM channels (unprotected channels on digital cable) so you can pick up your local channels for free in HD from your cable provider (local channels on digital cable are typically unencrypted).

In this section, I show you how to customize and extend the functionality of your Media Center. I start by showing how to turn your PC that has Media Center but no TV tuner into a DVR by adding a TV tuner. Then, I dive into

customizing the operation, followed by cool Media Center add-ons that will enhance your experience.

## Installing Windows Media Center

Windows Media Center is more difficult to install on Windows 8 than in previous editions of Windows. First, you must have Windows 8 Pro edition. No other edition, including Enterprise, will work. Next, you must actually purchase the Windows 8 Media Center Pack for \$9.99 to be able to run Media Center.

You have two methods to install Windows Media Center. The correct method depends on your situation. Follow the relevant steps in the following sections to install Media Center on your PC.

### *Purchase the Windows 8 Media Center Pack*

If you have not yet purchased the Media Center add-on, it is very easy to do within the new Add Feature utility that is part of Windows 8. Just follow these steps:

1. Open the Start screen and type **Add Features**.
2. Click Settings to change the search scope.
3. Select Add Features To Windows 8.
4. Click I Want To Buy A Product Key Online.
5. Click the Choose button under Windows 8 Media Pack.
6. Enter in your billing information and follow the rest of the wizard.

After you restart your PC, Windows Media Center is installed and ready to use.

### *Using a Media Center Pack Product Key*

If you already have a Media Center add-on product key from a promotion or other source, you can skip a few steps and jump right into installing Media Center. Follow these steps when you have a product key available:

1. Open the Start screen and type **Add Features**.
2. Click Settings to change the search scope.
3. Select Add Features To Windows 8.
4. Select I Already Have A Product Key.
5. Enter your product key and follow the rest of the wizard.

After you restart your PC, Windows Media Center is installed and ready to use.

## Turning Your PC into a DVR

So now you have Windows 8 with Media Center, but no TV tuner card installed. You are missing out on the main Media Center experience. With the help of this section and an inexpensive TV tuner card, I show you how to turn your PC into a fully functional DVR that will give any TiVo set-top box big competition.

Before you can get started, I must go over some minimum system requirements so that you will be able to watch TV on your computer. Your computer must have a video card with at least 128MB of RAM.

The most important aspect of adding a tuner to your PC is picking one that is compatible with Windows 8 Media Center. Several tuner cards are on the market, but not all are compatible with Windows 8 Media Center. One way to find a tuner that Microsoft has certified compatible is to use the Windows Logo product search page located at [tweaks.com/798380](http://tweaks.com/798380) and search for compatible products.

Select your OS and then set the product type box to TV Tuner. You may have better luck selecting Windows 7 Client instead of Windows 8 Client for the OS because not very many TV tuner cards are made specifically for Windows 8. All the Windows 7 TV tuner cards should work with Windows 8.

As you can see, you can add internal PCI cards and external USB devices to your computer. The following are a few more models that are known to work well on Windows 8:

- **Internal PCI-E:** WinTV-HVR-1250
- **Internal PCI-E:** WinTV-HVR-2250
- **External USB:** Diamond ATI TV Wonder HD 750 (TVW750USB)

**TIP** Use the forum at [tweaks.com/245689](http://tweaks.com/245689) to find even more compatible TV tuners and tips to make them function properly if you have any compatibility problems.

Installing the TV tuner is also easy, especially if you purchased an external USB tuner. Simply plug it in and install the drivers that came with the device. If you purchased an internal PCI or PCI-E card, just turn off your computer, unplug the power, open the case, and pop the card in an open PCI or PCI-E slot. Make sure to install the drivers after you power your PC back on, although in some cases Windows 8 installs the drivers automatically as it did with my PCI-E TV tuner card.

After installing your TV tuner card, you are ready to get started configuring it in Windows Media Center. Make sure you have your antenna or cable feed

connected to the card. Follow these steps to get your Windows Media Center up and running:

1. Open the Start screen, type **Media Center**, and then press Enter.
2. If you are prompted with a setup wizard, select the Express option. You are going to configure your card a different way. After you are on the main Media Center screen, use the arrow keys to navigate down to the Tasks section. Then navigate to Settings and press Enter, as shown in Figure 11-10.
3. On the Settings screen, select TV and press Enter.
4. Select Set Up TV Signal and press Enter. At this point, you get a Tuner Not Found error if your TV tuner hardware is not installed properly. If this happens, make sure that you have the latest drivers for Windows 8 installed.
5. Confirm your region by selecting Yes, Use This Region To Configure TV Services, and click Next.



**Figure 11-10:** Configure Windows 8 Media Center to watch TV.

6. Type in your ZIP code and click Next.
7. Click I Agree on the Program Guide Terms of Service screen and then click Next.
8. If applicable, click I Agree on the Microsoft PlayReady PC Runtime EULA and then click Next. Microsoft PlayReady is downloaded and installed.

9. After the TV signal detection has completed, Windows Media Center presents a list of its findings. On my PC it said it detected Digital Cable (ClearQAM) and Analog Cable. If your results are correct, click Yes, Configure TV With These Results. Otherwise, click No, Let Me Configure My TV Signal Manually and specify your setup. When ready, click Next.
10. You are guided through setting up each of your sources, where you pick the provider so Windows Media Center knows what program guide to provide you with. Click through the guide for each source and select your TV signal provider. When you are finished, click Next on the TV Signal Configuration confirmation screen.
11. Microsoft PlayReady updates are downloaded along with the TV program guide. The TV channel scan starts automatically, and this process takes several minutes. When it completes, click Next on the Results screen.
12. The TV signal should now be configured. Click Finish to exit and start using your new DVR.

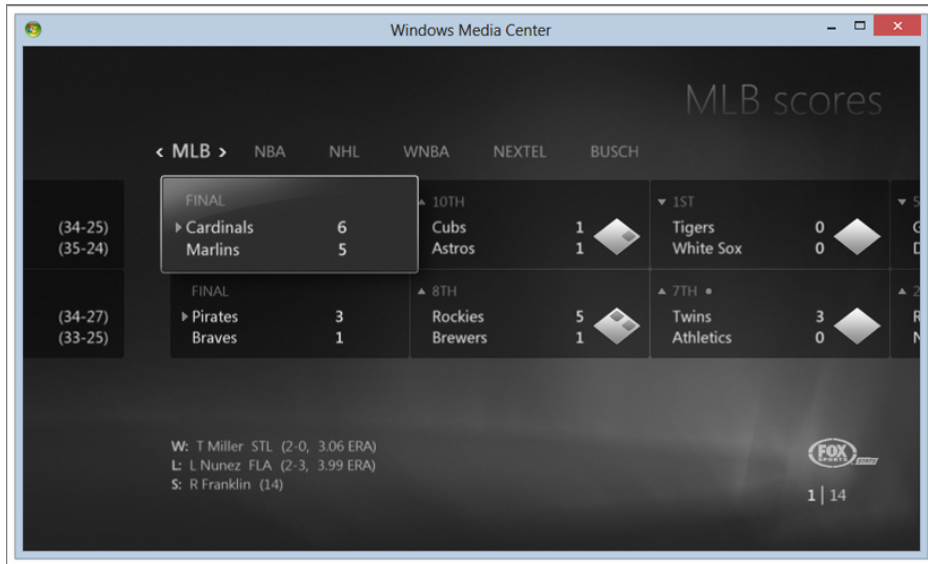
Your Windows Media Center is now set up. You can begin to watch TV and set up shows to record in the guide. Now you are ready to further customize your Windows Media Center.

### *Creating Shortcuts for Windows Media Center*

Windows already includes shortcuts to start Windows Media Center on the Start screen. Next, you create advanced shortcuts that enable you to jump directly to different sections of Media Center; for example, how to make a shortcut that, when clicked, opens Windows Media Center and goes directly to the TV Guide. It is also possible to go directly to other sections, such as Live TV, Recorded TV, Pictures, Music, and even Sports Scores, as shown in Figure 11-11.

This is all possible with a special `/homepage` command-line argument that the Windows Media Center executable uses. First, right-click your desktop, select New, and then click Shortcut. Next, enter one of the locations shown in the following options, depending on what you want to happen.

- Start Windows Media Center and Go Directly to TV Guide: `%SystemRoot%\ehome\ehshell.exe /homepage:videoguide.xml`
- Start Windows Media Center and Go Directly to Live TV: `%SystemRoot%\ehome\ehshell.exe /homepage:videofullscreen.xml`
- Start Windows Media Center and Go Directly to Recorded TV: `%SystemRoot%\ehome\ehshell.exe /homepage:videorecordedprograms.xml`
- Start Windows Media Center and Go Directly to Music: `%SystemRoot%\ehome\ehshell.exe /homepage:audio.home.xml`



**Figure 11-11:** Go directly to sports scores in Windows Media Center.

- Start Windows Media Center and Go Directly to Photos: %SystemRoot%\home\ehshell.exe /homepage:photos.xml
- Start Windows Media Center and Go Directly to Radio: %SystemRoot%\home\ehshell.exe /homepage:radio.xml
- Start Windows Media Center and Go Directly to Movies: %SystemRoot%\home\ehshell.exe /homepage:movies.library.browsepage.xml
- Start Windows Media Center and Go Directly to Slideshow: %SystemRoot%\home\ehshell.exe /homepage:Slideshow.xml
- Start Windows Media Center and Go Directly to Sports Scores: %SystemRoot%\home\ehshell.exe /homepage:SportsScoresPage.xml

After you make your selection, click Next, name the shortcut, and you are finished.

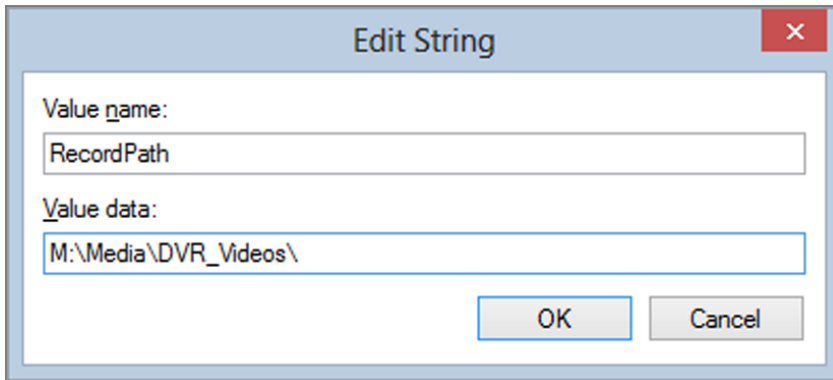
### ***Setting Where Recorded Shows Are Stored***

Inside Windows Media Center you can choose the drive in which you want to record shows; however, you cannot choose the exact folder. With the help of a simple registry hack, you can specify exactly where and on what drive recorded shows are stored. Follow these steps to customize where your shows are stored:

1. Open the Start screen, type **regedit** and then press Enter.

2. Navigate through `HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Media Center\Service\Recording`.
3. Right-click `RecordPath` and select `Modify`.
4. Enter the full path followed by a backslash (`\`), as shown in Figure 11-12, and then click `OK`. Reboot for the settings to take effect.

The next time you record a show, the new location will be used.



**Figure 11-12:** Modify the location where recorded shows are stored.

### *Configuring Media Center to Look for Recorded Shows on a Network Share*

Personal network attached storage devices are becoming more and more common in the home environment. I recently purchased a 1TB NAS (Network Attached Storage) that I use to back up all my personal documents as well as store recorded TV shows. I have my Media Center recording shows all the time, so the hard drive on my desktop fills up very quickly. For the shows that I want to keep, I move the file from my record folder to a special folder on my NAS that I have configured Windows Media Center to watch and play files from. This is possible with a few setting changes within Media Center.

Follow these steps to configure Windows Media Center to watch for recorded shows in locations other than the main record folder:

1. Open the Start screen, type **Media Center**, and hit `Enter` to start up Media Center.
2. After it has started, navigate to `Tasks` with arrow keys and then select `Settings` and hit `Enter`.
3. Click `Media Libraries`.

4. Select the Recorded TV media library and click Next.
5. Select Add Folders To The Library and click Next.
6. Select Let Me Manually Add A Shared Folder and click Next.
7. Type in the shared folder path, such as `\\Server123\SharedFolder`, and also a username and password that has access to the shared folder. Click Next when ready to connect to the share.
8. Click Yes, Use These Locations on the confirmation screen and then click Finish.

After you have added the new network share to your library, you can click the green button in the top right of the Media Center window to return to the main menu. You are now able to watch recorded shows that are stored on another computer.

### *Using Third-Party Windows Media Center Add-Ons*

Many very useful and cool third-party add-ons are available for Windows Media Center that really help you get even more out of it. As Windows Media Center is becoming increasingly popular, even more add-ons are being developed and released. The following is a list of some of the best add-ons available now for Windows 8 Media Center:

- **TwitterMCE** (<http://tweaks.com/318798>): Tweet directly from Windows Media Center while watching or listening to your favorite media.
- **Hulu Desktop** (<http://tweaks.com/997439>): Integrate Hulu Desktop into Media Center with this helpful add-on.
- **MCEBrowser** (<http://tweaks.com/467327>): Remember Microsoft's WebTV? Make your own WebTV and browse the Web on your television with this add-on and Windows Media Center.

Most of the Windows Media Center 2005 add-ons also seem to work well in Windows 8 Media Center. Visit <http://tweaks.com/455938> for even more Media Center add-ons that will work in Windows 8 Media Center.

## Summary

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This chapter covered almost every aspect of Windows Media. You started with tweaking your audio settings with the cool new features such as Virtual Surround sound and Room Correction. Then you moved on to customizing Windows Media Player 12 and taking advantage of its new features. Finally, I

showed you how easy it is to add a TV tuner to your computer and turn it into a full-blown DVR that you can customize in many ways.

This is the last chapter of the second part of *Windows 8 Tweaks*. In the next part, I change the topic a bit—to increasing the performance of Windows 8. You begin by analyzing your system to get a good understanding of your computer hardware capabilities.

Part



# Increasing Your System's Performance

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## In This Part

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- Chapter 12:** Analyzing Your System
- Chapter 13:** Speeding Up the System Boot
- Chapter 14:** Speeding Up the Logon Process
- Chapter 15:** Speeding Up Windows Explorer
- Chapter 16:** Optimizing Core Windows Components
- Chapter 17:** Optimizing Your Network



# Analyzing Your System

Have you ever wondered how fast your computer is? Sure, you may have an Intel 2.6 GHz dual core in your box, but the CPU is not the only factor in determining the speed of your computer. The true speed is defined by the combined speed of all your hardware, such as the read and write speed of your hard drive, front-side bus speed, RAM speed, and even your graphics card GPU. Microsoft has attempted to provide users with a clearer picture of their computer's performance in Windows 8 with the Windows Experience Index benchmarking tool. This chapter helps you understand your Windows Experience Index and how to perform a more detailed analysis of the capabilities of your computer so you can make your computer faster.

Before you can jump into improving the speed of your computer, it is important to understand the limitations of your hardware and to identify potential bottlenecks in your system. Using the tools discussed in this chapter, you can run different tests that help you decide which tweaks in upcoming chapters work best for your computer.

## Monitoring Your System Hardware

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Monitoring the status of your system with various tools helps you understand what is going on behind the scenes, much the way the instrument panel of a car gives you information about the speed you are travelling and the way your

engine is performing. If you are driving home and you notice that the temperature gauge is maxed out and the instrument panel is flashing with all sorts of warning icons, you know your car is not performing at its best. Monitoring your system, for example, reveals whether you are running low on memory, whether your CPU is overloaded, or whether your system has too many programs running at the same time. These are all useful and important things to know, and having that information available enables you to change settings to get optimal performance.

A variety of performance monitoring software is available. Get started by using the Resource Monitor.

## Using the Resource Monitor

Windows has a great diagnostic tool that's built right in, called the Resource Monitor. This cool utility can give you stats on just about every aspect of Windows. Similar to other system-monitoring tools, its purpose is to help you diagnose problems and improve the performance of your computer.

To start the application, simply open the Start screen, type **resmon.exe**, and then press Enter.

After the Resource Monitor loads, you see the Overview tab, which is filled with the most common system stats, as shown in Figure 12-1.

By default, you are presented with a moving graph of the CPU, Disk, Network, and Memory usage. On the left are detailed breakout sections that you can expand to see exactly how much each process is using the CPU, Network, and Memory, as well as which processes and files are using the disk.

New to Windows 8 are dedicated tabs for CPU, Disk, Memory, and Network. Each dedicated tab has a wealth of useful information.

### *Using the Detailed CPU Section*

The detailed CPU section shown in Figure 12-2 lists all the processes running on your machine, similar to the Processes tab of Task Manager.

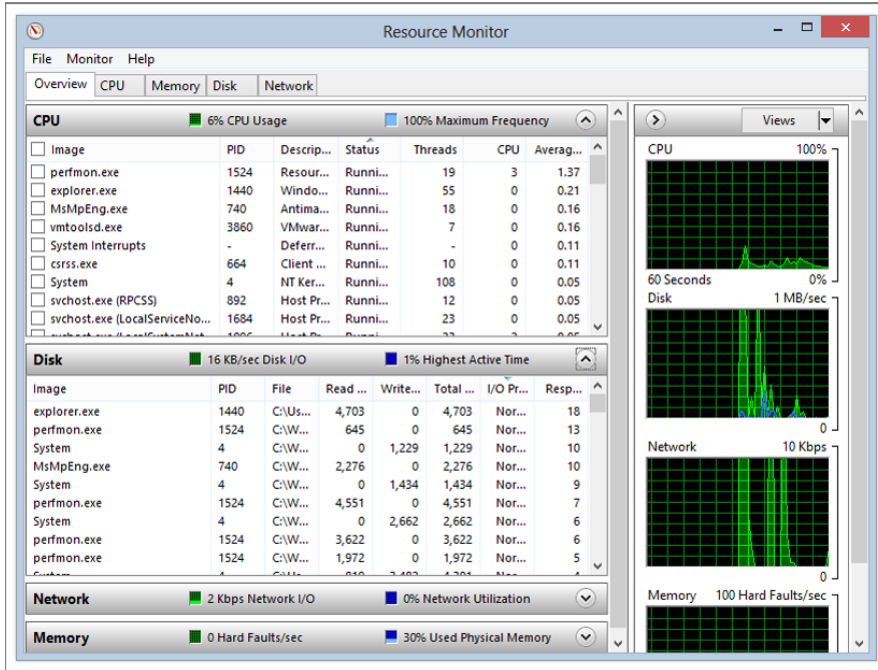


Figure 12-1: The Resource Monitor Overview screen shows you system stats.

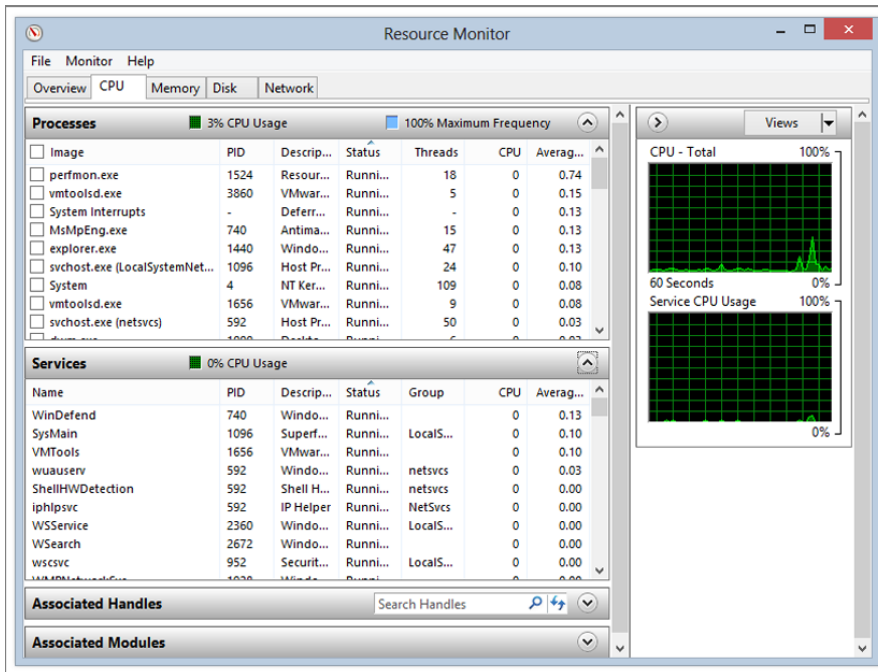


Figure 12-2: The detailed CPU section provides more information.

Your current CPU usage and a maximum usage rate are at the top of the bar. The list of processes is below that, sorted by average CPU usage. Unlike the active process list in Task Manager, this list shows you only the average usage rate. This is very helpful when you're looking for an application that has an overall meaningful impact on your CPU usage, such as one using 100 percent of your CPU. Additionally, this screen shows the number of threads and CPU cycles the process is currently using.

Just below the processes is a list of all the services running on your computer and the corresponding CPU utilization.

When you select a process by checking the box next to the image name, the service list, handle list, and module list display only services, handles, and modules a specific process is using. This is very helpful and is something I wish had been built into Windows years ago.

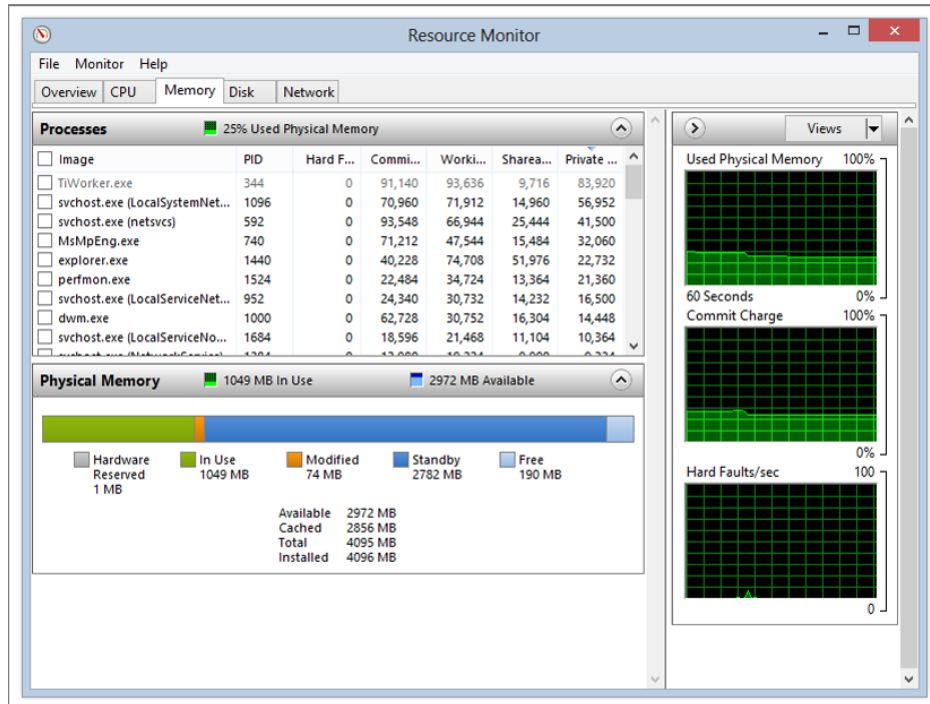
The information you gain about your computer from the detailed CPU section can help you identify applications you run that have a big impact on the performance of your computer. If a process listed has a very high average CPU time, try to identify what the process is by using the Description column or even a search engine if necessary. You might find that a simple application such as a desktop weather application that runs in the background is using a big portion of your CPU. With this information, you may decide to uninstall or disable the application to speed up your system. I talk more about that in later chapters.

### *Using the Detailed Memory Section*

The detailed Memory section shows you how much of the various types of memory each running process is using, as shown in Figure 12-3. The processes show the number of hard memory faults per second and the percentage of total physical memory that is in use. The memory overview is one of the most useful overviews in the Resource Monitor.

Take a look at the number of hard memory faults and total percentage of physical memory that is in use. If you are getting any more than a few hard memory faults per second, you might need more memory for your computer. A memory fault occurs when something a program needs is not in memory and the memory manager has to get it from disk and put it in memory. Usually it has to make room for the new data to be placed in memory by kicking some of the other processes' data out of physical memory and into the paging file on your hard drive. This can be a slow operation.

Also consider the amount of private memory a process is using. A process that is using a huge amount of private memory can steal your system resources from other processes, which results in more memory faults and a slow-down of your computer.



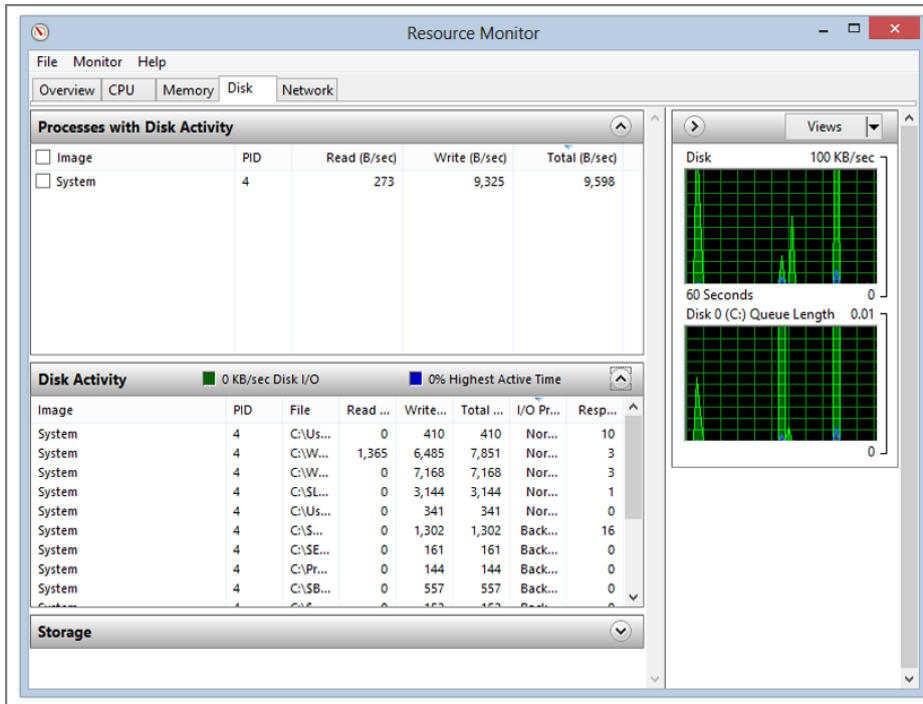
**Figure 12-3:** The detailed Memory section shows you how much of your memory is in use.

A useful chart at the bottom of the Memory section shows how your physical RAM is allocated. The chart includes hardware reserved, in use, modified, standby, and free.

### Using the Detailed Disk Section

The detailed Disk section shows the read and write speeds of the various processes running in bytes per minute, as shown in Figure 12-4. The list of read and write speeds for each process also shows the file that is in use. The Disk bar shows the total speed of all the disk operations as well as the percent of the time the disk is active.

These numbers enable you to see whether an application is hogging your disk and slowing down all the other processes on your computer because it is reading and writing so much data. This is especially useful when you are trying to identify what your hard drive is doing when you hear it going crazy and the hard drive read/write light seems as though it is constantly on.



**Figure 12-4:** The detailed Disk section displays information about the speed of various processes.

### Using the Detailed Network Section

The detailed Network section shows which processes on your system are using the network, as shown in Figure 12-5. The Network Activity bar shows you the current network speed and the percent your network connections are utilized. Each open network connection is listed below with the name of the process using the connection. Additionally, you will find the network address the process has connected to as well as the amount of data sent and received in bytes per minute.

Have a slow Internet connection? Are the lights on your cable or DSL modem going crazy? These network usage stats help you diagnose a process that is bogging down your network connection, such as a free peer-to-peer VoIP (Voice over IP) application. These applications can use your network connection even if you are not on a call. Other users' calls may be routed through your computer, resulting in your network connection slowing down. Using the information in the detailed Network overview, you can easily identify how much data is transferring both ways for every process on your computer.

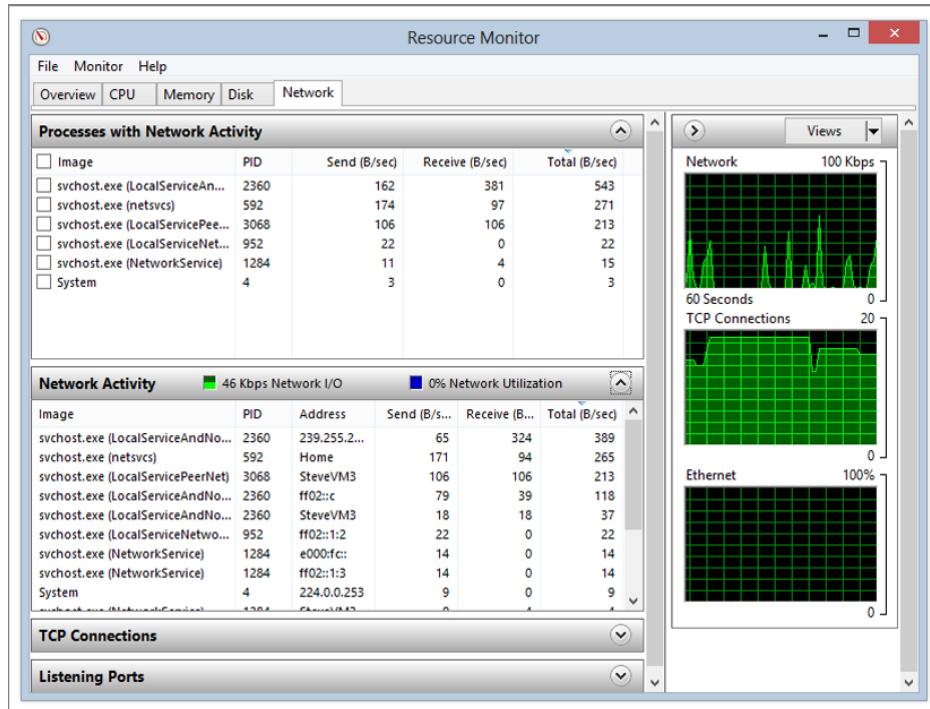


Figure 12-5: The detailed Network section provides information about networks in use.

**NOTE** With the detailed Network overview, it is easy to find out if your network connection has a high utilization rate by looking at the header bar. Keep in mind that the network card in your computer usually has a greater capacity and is capable of higher speeds than your Internet connection. If you have a 100 MB network card in your computer and it is connected to a 10 MB broadband Internet connection, then when your network card utilization is at 10 percent, your Internet connection is at 100 percent utilization.

## Using Performance Monitor to Get More System Stats

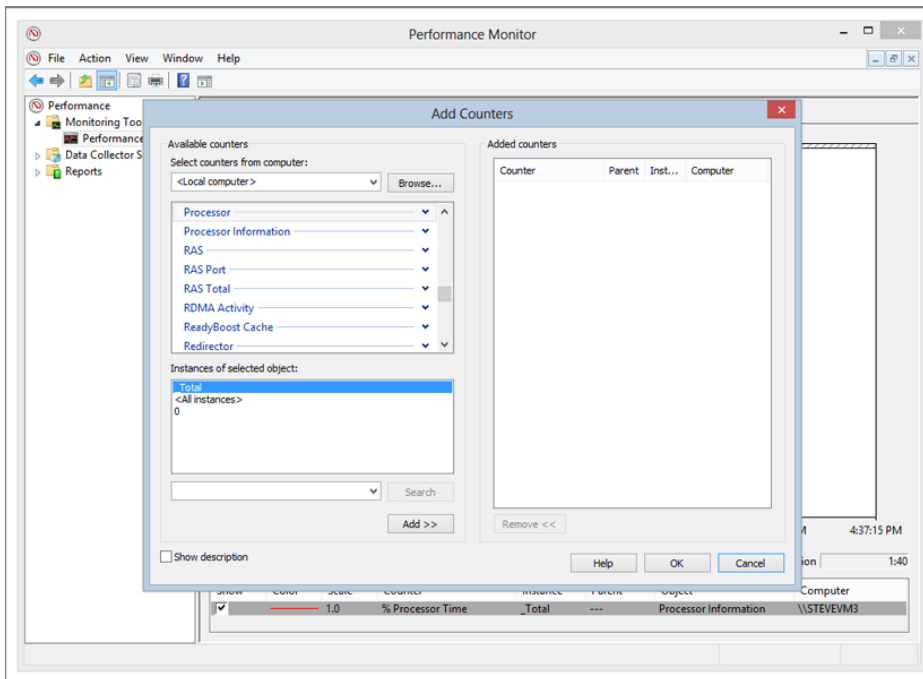
Performance Monitor is one of the classic features of the Performance Diagnostic Console that has been around since Windows NT. Over the years, Performance Monitor has been refined and is now a very comprehensive tool. In Windows 8, hundreds of built-in monitors enable you to monitor just about every aspect of the operating system and your hardware. If you want, you can even view information about how fast your laptop's battery is charging or discharging.

Similar to other system monitoring tools, the Performance Monitor is provided to help you detect problems and improve your system performance.

Open the Start screen, type in **perfmon.msc**, and hit Enter. When the Performance Monitor loads, select Performance Monitor under Monitoring Tools. You should now see a graph of the processor utilization percentage. This is a rather useless chart because you already have this information in the Resource Monitor or Task Manager. The real power of the Performance Monitor is in the performance counters.

**TIP** Performance Monitor gets the data for the counter from the system registry by default. A special flag for **perfmon.msc** enables you to change the data source to get the data directly from the Windows Management Interface instead. This is useful if you are getting some strange results and would like to get a second opinion on what is really going on. Simply open the Start screen, type **perfmon.msc /sysmon\_wmi**, and hit Enter.

To add more performance counters, click the icon with the + symbol on it or press Ctrl+I, and the Add Counters window appears, as shown in Figure 12-6.



**Figure 12-6:** You can add a performance counter.

When the Add Counters window appears, the counters are organized in different component categories. Navigate through the list box and click the down

arrow to see the individual counters available for the selected subject. Because some of the counter names are vague, you can turn on the bottom description pane to find out more details about a specific counter by checking the Show Description box in the lower-left corner of the window.

Say that you want to monitor remote desktop connections made to your computer. You can easily accomplish this with the right performance counter:

1. With the Add Counters window open, navigate through the list of subjects and expand Terminal Services.
2. You see three counters: Active Sessions, Inactive Sessions, and Total Sessions. Select Active Sessions.
3. Depending on the counter, you may be required to select which instance of the object you want to track. If your computer has a multi-core CPU chip and you are using a CPU utilization counter, the Instances Of Selected Object list box displays and enables you to choose what core of the CPU you want to track. The selected Active Sessions counter has no instance options, so that box remains grayed out.
4. After you select the counter, click the Add button.
5. When a new counter has been added, you can always add more counters on the same screen. Select the Total Sessions counter and click Add again.
6. Click OK to close the Add Counters window and return to the Performance Monitor screen.

**TIP** When selecting performance counters, you can hold the Ctrl key and select multiple counters at once instead of having to click each counter individually and then hitting Add. Then click the Add button and all the selected counters are added. Additionally, if you want to add all the counters in a category, select the category name and click Add.

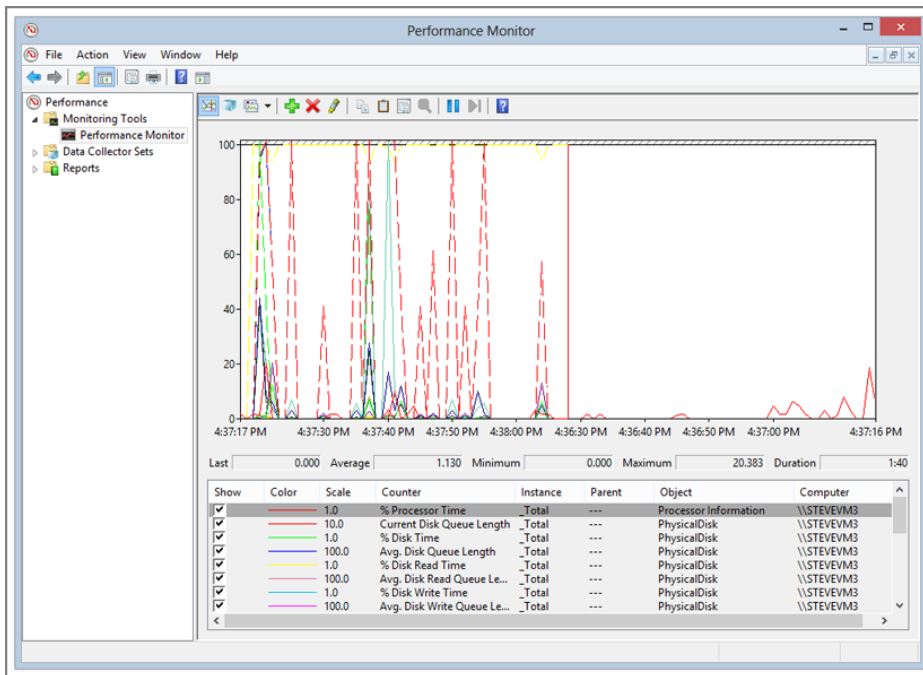
**TIP** When adding performance counters to the Performance Monitor, it is possible to add counters from a remote computer. If your computer is on a corporate domain and you have administrative rights, or if you have an administrative account on another home computer, you can easily monitor the performance remotely. When the Add Counters window is open, simply type the name of the computer in the Select Counters From Computer box. Alternatively, you can click the Browse button and select the computer if the remote computer's name is broadcast across your network. After entering the computer name, press Enter to connect. If you get an error in a home or non-domain environment, make sure that you have permissions on your domain to use this feature and that your username and password for the account you are currently logged on to is the same on both computers.

You see the Terminal Services Active Sessions and Total Sessions counters listed on the graph, in addition to the CPU Utilization performance counter. However, the line graph makes it hard to read these performance counters. The next section shows you how to customize the performance counter data display.

### Viewing the Data

The Performance Monitor enables you to view the data in many different ways. The default screen is the line graph, as shown in Figure 12-7. This display method is adequate for a few performance counters, but when you have more than three or four, figuring out what line is for which counter starts to become a little confusing. Additionally, for certain counters such as Memory Cache Faults/sec and Cache Bytes Peak, the line graph doesn't make it easy to understand the data. Fortunately, Microsoft provides two other methods for viewing the data.

Another method of viewing the data is to use the Histogram display, as shown in Figure 12-8. To change to this display method, select Histogram Bar on the View drop-down list that currently shows Line selected. This method of displaying the data is not much better than the default, but because it relies on one scale, the counters that report large numbers dwarf counters that report small numbers. This limitation makes it almost impossible to read some of the performance counters.



**Figure 12-7:** It is hard to determine what the lines in the default screen of Performance Monitor mean.

To make everyone happy, there is also a Report viewing method, which simply lists the counter numbers in text, as shown in Figure 12-9. You can activate this viewing method by choosing Select Report from the View drop-down list.

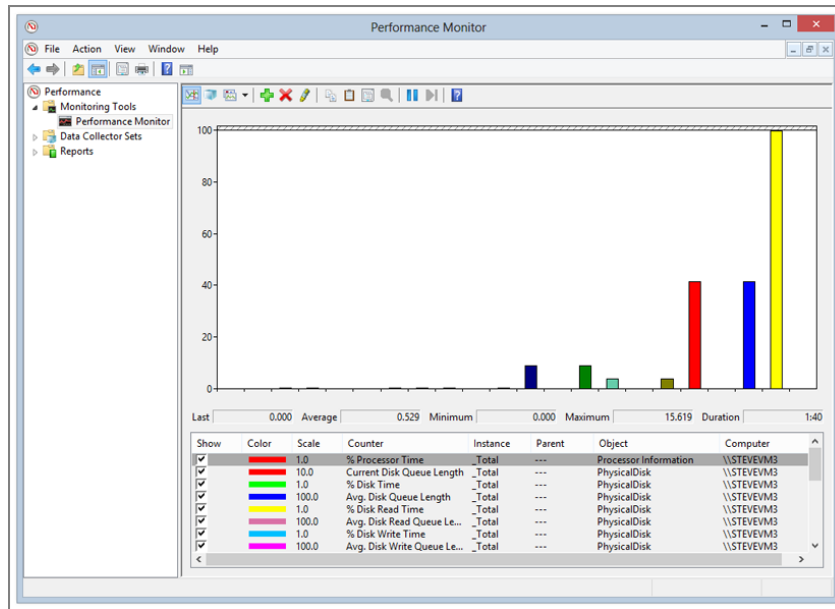


Figure 12-8: Performance Monitor's Histogram bar view is also hard to read.

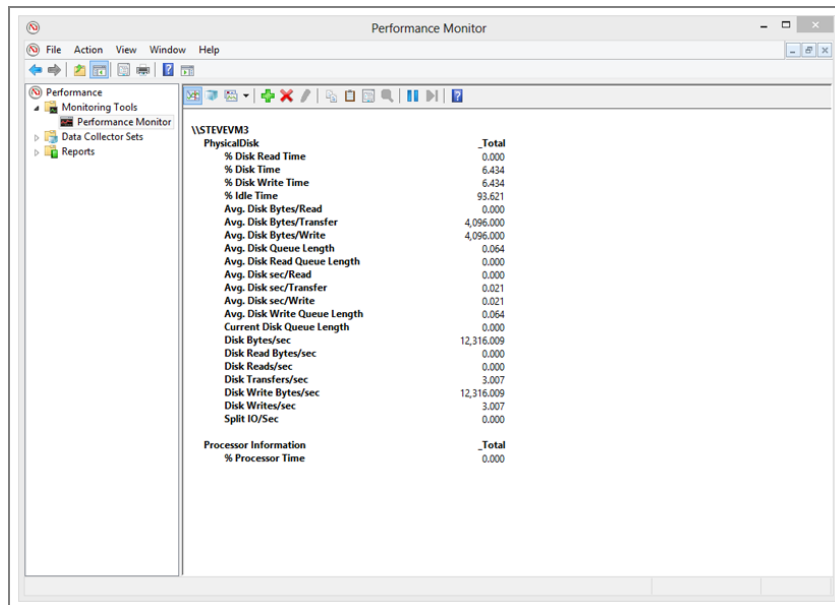


Figure 12-9: Performance Monitor's Report view presents information in an easy-to-read list.

### Setting the Update Interval

Now that you have all your performance counters set up and displaying data, you need to select the interval time of how often the data will be updated. How often the counters should be updated depends on your reasons for monitoring your hardware. For example, if you are trying to track how much data your computer is sending through your network adapter every day or hour, it is not necessary to have that counter update every second. You are just wasting CPU cycles because you are making the computer constantly update the performance counter. However, if you are interested in current memory or CPU utilization, you want a much faster update time.

To change the update interval, perform the following steps:

1. While in the Performance Monitor, right-click the graph and select Properties. Alternatively, you can press Ctrl+Q.
2. After the Performance Monitor Properties window loads, click the General tab.
3. Locate the Graph Elements section and update the Sample Every text box. This number is in seconds.
4. Click OK to close the window and save your changes.

Now Performance Monitor polls the data sources at your specified interval.

### Analyzing and Detecting Problems

The Performance Monitor and the various performance counters make it possible to detect many problems and shed light on how to make your system run faster. You should familiarize yourself with a handful of tips that deal with the specific performance counters listed next; these prove to be invaluable in your analysis and decision-making. The following are some of the things to look out for when monitoring your system:

- **Physical Disk: Disk Read Bytes/sec and Disk Write Bytes/sec**—These two performance counters tell you whether your physical disk is set up and functioning correctly. To determine this, consult the website or the manual of the manufacturer of your hard drive. Look up the range of read/write speeds. If the readings that you are getting are far below what you should be getting, your hard disk could be damaged or set up incorrectly. Run diagnostic software on the disk and make sure that it is set up properly in Device Manager with the correct transfer mode. Remember that most hard drives read at different speeds when they are reading from different parts of the disk. This is why there may be some discrepancies between your readings.
- **Paging File: % Usage and % Usage Peak**—These two performance counters can tell you how well your system is using the page file. If you set the size of the page file manually, these counters are critical to deciding what size

the page file should be. As a rule, if the page file % Usage is more than 95 percent or if the Usage Peak is near 100 percent, consider increasing the size of the page file if you have set the size manually.

- **Memory: Available MBytes and Paging File, % Usage**—These two performance counters help you decide whether you should put more RAM in your computer. If the number of your available megabytes is low and your paging file usage percentage is very high, you should consider purchasing more RAM for your computer.
- **Processor: % Processor Time**—This performance counter monitors the activity and work your processor is doing. If your CPU is consistently working at or more than 50 percent, and you are not running any computation-intensive applications in the background, you should consider upgrading your CPU. The CPU is having a hard time keeping up with all your programs. You can also try closing open applications that are running in the background to make your computer more responsive and faster.

### Saving Your Performance Counter Setup

After you have spent some time adding all the performance counters that you would like to use, it is possible to save this configuration so that every time you start and use the Performance Monitor, your performance counters are automatically loaded.

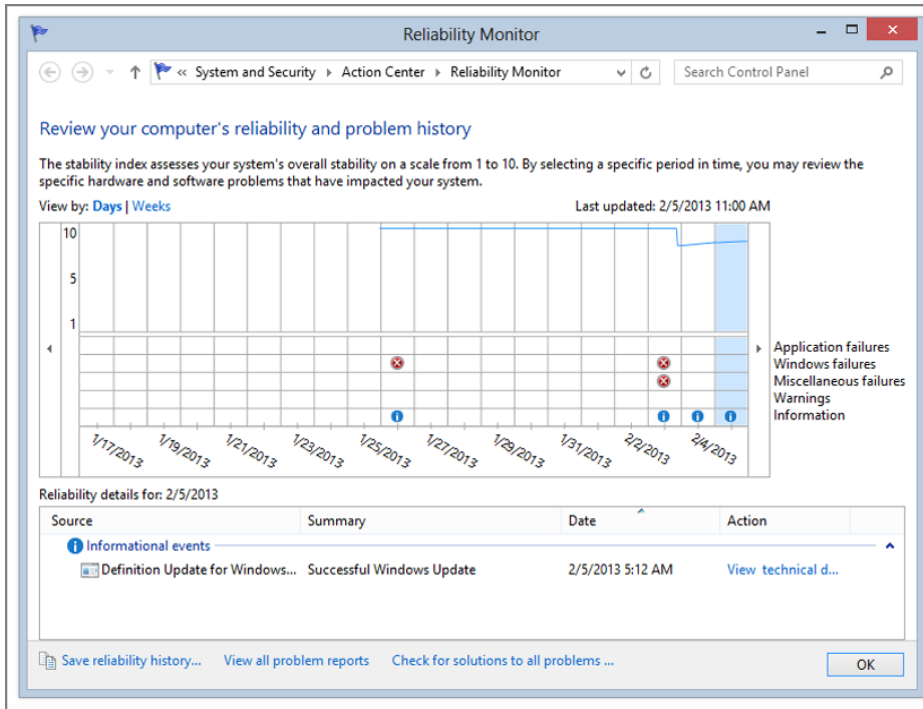
To save the performance counters you selected, do the following:

1. Right-click the graph and select Save Settings As.
2. Type a filename, specify a location, and click Save.

When you want to use your performance counters again, just navigate to the location where you saved the file and double-click it. If you changed your default web browser, make sure that it loads in Internet Explorer. The Performance Monitor tool will load as a web page in Internet Explorer. Just click the green play button to begin monitoring.

### Using the Reliability Monitor

As with the Performance Monitor, the Reliability Monitor is a system monitoring tool that is designed to help you diagnose problems and improve the performance of your computer. To start the Reliability Monitor, open the Start screen, type **view reliability**, change the search filter to Settings, and run View Reliability History. The Reliability Monitor is especially geared to helping you solve various types of system failures that can lead to poor performance in all areas. It works by tracking all the software installs, uninstalls, application failures, hardware failures, Windows failures, and general miscellaneous failures to compile a System Stability Chart and System Stability Report, as shown in Figure 12-10.



**Figure 12-10:** Reliability Monitor offers a reliability chart and report.

You can select any of the icons on the System Stability Chart to move the scope of the System Stability Report to a specific time period. This is very useful because it enables you to see what happened the same day or just before some kind of failure occurred. Depending on this information, you have a clue as to the cause of the failure.

### Reading the System Stability Report

Every day your computer is given a System Stability Index rating based on the system activities of the day. The score is out of a possible 10 points. Depending on what has happened in the past, this score goes up or down. For example, if you have a Windows failure, your score goes down. As days pass, if you do not have any more failures, your score gradually goes back up again. However, if another failure occurs, it drops even more.

I recently had an issue with installing new video drivers for my laptop. I was trying to get some better graphical performance by installing some enhanced drivers that were not exactly made for my laptop model. After I installed the new drivers, I had to reboot and was welcomed by the blue screen error. I rebooted again and the same thing happened. These system failures killed my System Stability Index. Before I had these problems I had a rating of 9.44; after

my driver fiasco, I had an index of 4.711. As you can see, your reliability rating can drop very quickly if you have multiple major errors, such as a blue screen.

When you notice that your System Stability Index goes down, you are going to want to know why, so that you can fix the problem and get the performance of your system back in line. The System Stability Report is perfect for understanding exactly what happened.

With your mouse, select a time period on the System Stability Chart in which your score dropped significantly. Depending on the information, warning, or error icons in the grid for the specific day, you will know what sections of the report you should expand to see the details of what happened. Figure 12-10 shows a red error icon in the Application Failures grid item on the selected day. This tells you to expand the Application Failures section of the report to see the details. After expanding the section, you see which application failed and how it failed. Similarly, if this were a hardware failure, you would see the component type, device name, and why it failed. If it were a Windows or miscellaneous failure, you would see the failure type and details of what happened.

Reading the System Stability Report is a quick and easy way to see what exactly is going on. Next, you use the new Event Viewer in Windows 8 to get even more detailed information about the state of the computer.

## Using Event Viewer

Event Viewer in Windows 8 is a centralized source for reading all the system's various log files. When a component such as the Windows Firewall service has an error, notification, or a warning, you can view it in Event Viewer. When a third-party application causes your computer to crash, you can also find details about the event in Event Viewer. Even when any user logs on to your computer, you can find the details of the event in Event Viewer. As you can see, Event Viewer is the ultimate source to find out what is happening and what has happened to your computer.

How can Event Viewer help with increasing the performance of your computer? Event Viewer enables you to identify hardware and software failures that you may not even know have been occurring. If you want to increase the performance of your computer, you need to fix any problems first. Skipping ahead without fixing the problems is similar to tweaking your car engine for speed but not fixing the flat tires. Even if you increase the performance of other components of your computer, any errors or failures can offset any improvements in speed.

Using Event Viewer is very easy, but requires an account with administrative privileges to run. To start Event Viewer, open the Start screen, type **Eventvwr.msc**, and then press Enter.

After Event Viewer shows up on-screen, you see the Overview and Summary screen, as shown in Figure 12-11. The Summary Of Administrative Events section

provides an aggregated view of all your events. This groups them together from all your system logs and also gives you time-period stats on the different types of events. Expand the different event types, such as Critical, Error, and Warning, to see a more detailed view of all events that match that event type. You can also double-click the event types and events to view more details. Doing so creates a custom view for you automatically. I get into those in more detail shortly. First, I lay the groundwork for using Event Viewer.

### *Reading Logs and Events*

The various system logs are organized in two grouping folders:

- **Windows Logs**—Windows Logs enable you to find events covering Windows core applications, security, setup, and the system.
- **Application And Services Logs**—You can find events such as hardware and specific software applications under Applications And Service Logs.

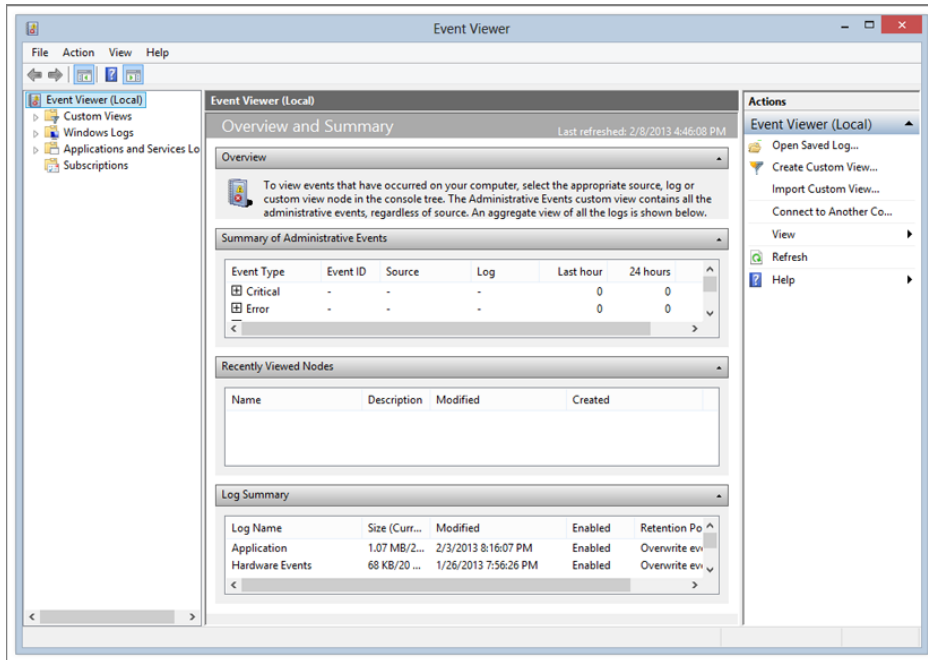
When you expand the top-level grouping folders and select a sub-event topic, you are presented with a list of all the events sorted by date by default. Simply select an event to view the details.

Reading the event log is very easy to do. After you select an event, the event details appear in the bottom pane. The most important pieces of information for each event are the Source, ID, and Description. If you do not see the description of the event on your screen, expand the Details pane up to review the description. Alternatively, you can double-click the event to bring up the Details pane in a new window.

If you identify any events that signal an error or warning, it is a good idea to research the event to find out whether it is important to fix. The most popular way to investigate an event is to do a search on Google, Yahoo!, or Bing with the event ID. With the new version of Event Viewer in Windows 8, you can also click the More Information link on the General tab of an event. This shows you whether Microsoft has any information on the specific event.

### *Creating Custom Views*

Using Event Viewer can be overwhelming because of the massive amount of data to which you have access. Custom views are Microsoft's answer to data overload. Instead of looking through multiple log files, you can create a custom view in which you specify parameters for specific types of events. You can use the view to find all events that you specified no matter what log they are in. You first encountered a custom view on the Event Logs Summary screen. All the information in the Summary Of Administrative Events section is populated by a custom view.



**Figure 12-11:** Select an event in Windows 8's Event Viewer.

Creating your own custom view is easier than manually navigating through all the different log sources, and custom views are more flexible than the Event Logs Summary screen. Follow these steps to create your own custom view:

1. With Event Viewer open, right-click Custom Views and select Create Custom View.
2. The Create Custom View window loads, showing all the parameters of the view. Two tabs appear: Filter and XML. You use the Filter tab because it automatically produces the XML for you.
3. Select the Time Period for your view. I like to use Last 7 Days for this option.
4. Check the boxes for the Event Levels you want to view, such as Critical, Error, and Warning.
5. Expand the Event Logs drop-down box and then select the log sources that you want to search in.
6. You have the option to set a specific object to view events for, such as a specific application or device. Alternatively, you can just leave this setting as <All Event Sources>.
7. To find all the events with a certain ID, enter in the Event ID. You can also exclude a specific event from the view by adding a minus sign in front of the ID (for example, -2030).

8. The last few settings are used less frequently. Here you can also specify the Task Category, Keywords for the event, and a specific computer user the event occurred with.
9. After finalizing the settings, click OK.
10. The Save Filter To Custom View screen pops up. Type a Name and click OK.

After your new custom view has been generated, you can open it by expanding Custom Views and selecting it from the list.

## Understanding Blue Screens

Problems with Windows 8 do not get any more severe than when you experience a complete operating system crash resulting in the classic Windows blue screen. Typically caused by a device driver or hardware failure, blue screens contain very little useful information. Windows 8 includes a redesigned blue screen that displays even less information. However, that is not a bad thing because all of the valuable information is located in a special dump file that you can use to figure out exactly what happened.

Every time a blue screen happens, Windows can dump the contents of memory to a file so that you can analyze it using various tools or even Microsoft support. In this section I show you an easy way to analyze the crash dump file to identify the source of your problem. First, make sure your system is configured to save a dump file.

### *Adjusting Recovery Settings*

Before you can analyze blue screen dump files, you need to verify your PC is configured to create them when a blue screen event occurs. These settings are hidden away in the Startup And Recovery section in System Properties. Follow these steps to validate your PC is properly configured:

1. Open the Start screen, type **sysdm.cpl**, and hit Enter.
2. When the System Properties window opens, click the Advanced tab.
3. Under the Startup And Recovery section, click the Settings button.
4. On the Startup And Recovery window in the Write Debugging Information section, ensure the drop-down box is set to anything except for (none). I recommend using Automatic Memory Dump, or if you are having problems where a memory dump file is not getting created, try the Small Memory Dump option.
5. Click OK and you are set.

## Analyzing Blue Screens

You can use a number of methods to analyze a memory crash dump file ranging from incredibly easy to insanely complex. Microsoft Support typically uses the Windows debugging tool called Windbg to analyze crash dumps. Windbg is a very powerful utility, but it is not exactly easy to use unless you have experience debugging Windows applications and have a good understanding of how Windows works under the covers.

For the rest of us, the best option is to use an automated crash analysis tool that looks at the crash dump file and identifies what driver or system component caused the crash condition. For this I like using a free tool called Who Crashed. Follow these steps to identify the true source of your blue screen:

1. Head over to [tweaks.com/864162](http://tweaks.com/864162) and download the latest version of Who Crashed. Click the Download Free Home Edition button.
2. Once downloaded, install and launch the utility.
3. When Who Crashed is loaded, simply click the Analyze button.
4. Scroll down on the Report tab to view the Crash Dump Analysis.

There is a section for each crash dump file the utility finds. The section shows you what file caused the crash and even what product the file belongs to if it is a driver.

The vast majority of Windows blue screens are caused by poorly written device drivers that experience a condition they were not expecting, such as a hardware failure or a programming mistake. Blue screens that appear to be from the kernel of the operating system, such as `ntoskrnl.exe`, are typically wrong. The kernel very rarely crashes on its own. Crashes typically have an environmental cause such as failing hardware or possibly a corrupt system file.

## Using Task Manager

The Windows Task Manager is a critical part of Windows that makes it possible for users to have full control over what their system is doing. Providing the capability to monitor individual programs and control any program or process, Task Manager is useful. No special software must be installed to use Task Manager; just press `Ctrl+Alt+Del` and then click Start Task Manager. You can also press `Ctrl+Shift+Esc` or open the Start screen, type **taskmgr** in the Search box, and then press Enter.

After Windows Task Manager has started, you see the new simplified process view. This is nice for new users but not for anyone that is reading this book.

Click More Details to view the full version of Task Manager. Tabs list processes, CPU performance, Windows Store app history, startup applications, active users, process details, and services. As you can tell, the new Task Manager in Windows 8 includes a significant amount of content and graphical updates.

### *Monitoring Processes*

Of all the applications on the computer that are running under your account, you can find those that are hidden and those that are not on the list on the Processes tab. On this list, you can see how much memory, CPU, Disk, and Network each process is using. Click the column headings to sort the rows numerically or alphabetically.

The Processes tab has many useful columns:

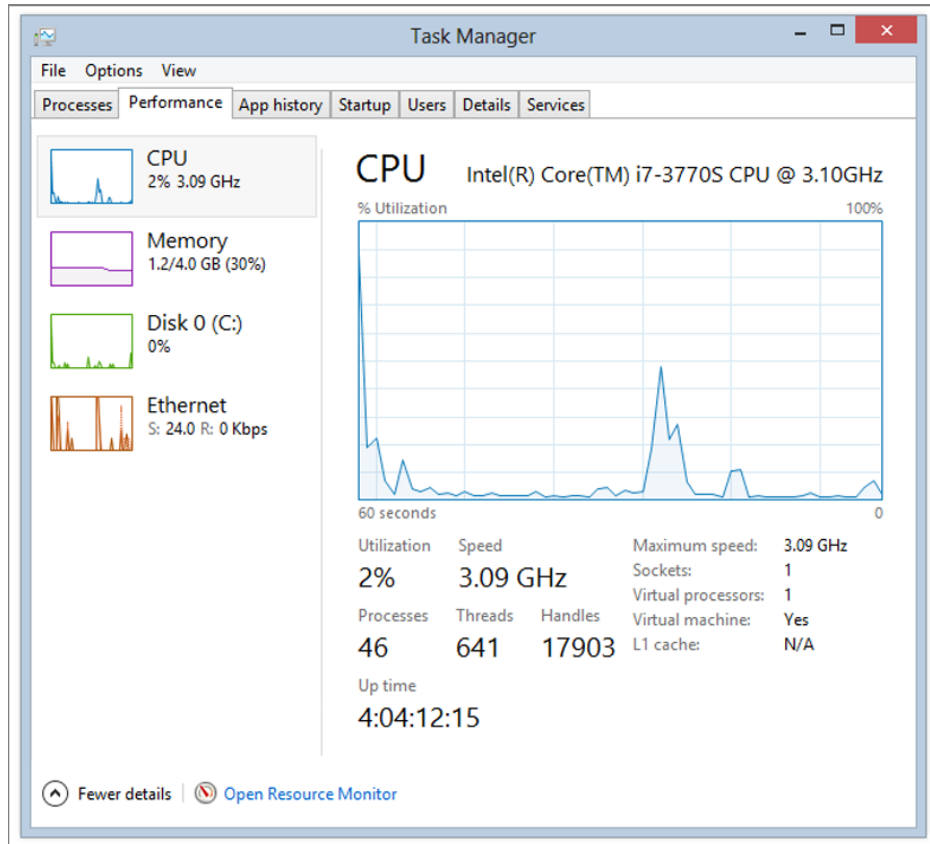
- The Name column shows the name of the process.
- Status shows if a Windows Store app is suspended.
- CPU shows what percentage of the CPU the process is using.
- Memory shows the total amount of reserved memory a process is using.
- Disk displays how fast the process is reading and writing to disks.
- Network displays how fast the process is sending and receiving data over your network devices.

If you find a process that is taking up a lot of your memory or eating up a big portion of your CPU, you might want to consider ending the process if it is not a critical one. Ending a process is very easy. Just select the row of the process you want to end, and click the End Process button.

### *Viewing Performance Data*

The Performance tab, shown in Figure 12-12, provides a lot of the same information that the Resource Monitor application shows. This tab is another place to view memory, CPU, disk, and network information, but in a cumulative and more detailed manner.

You can see total utilization and some historical data for your CPU, Memory, and each disk and network adapter.



**Figure 12-12:** Windows Task Manager's offers detailed performance information.

### *Configuring Task Manager to Display CPU Utilization*

When Windows Task Manager is started, a small histogram detailing the CPU utilization displays in the system tray. This little feature can be very useful if you always like to keep an eye on your CPU utilization but do not want Task Manager on top of all your windows. With a little bit of work, it is possible to start up the Windows Task Manager automatically on every start and run it minimized and hidden from the taskbar except for the system tray:

1. Open File Explorer and browse to `C:\Users\USERNAME\AppData\Roaming\Microsoft\Windows\Start Menu\Programs\Startup`. Replace `USERNAME` with your user name. Any shortcuts that you place in this folder load automatically when Windows starts.
2. Right-click in the open white space of the startup folder, select **New**, and then navigate to **Shortcut**.

3. When the New Shortcut Wizard loads, type **taskmgr.exe** in the text box asking for the location of the file, and then click Next.
4. Type a name for the shortcut and click Finish.
5. The startup folder displays again with a new icon for Task Manager. To start Task Manager minimized, right-click the new icon and select Properties.
6. Change the Run type where it says Normal Window to Minimized, and then click OK.
7. The shortcut is set up. However, there is one last change to make, and you need to open up Task Manager to make it. After Windows Task Manager is open, click the Options menu bar item and select Hide When Minimized so that when the program starts, only the CPU histogram is displayed; the program doesn't appear on the taskbar.

Your system is now configured to start the CPU meter on every boot in the system tray. Should you change your mind at a later time and no longer want the Task Manager CPU meter to show up, simply delete the shortcut from the startup folder.

You may need to drag the Task Manager chart icon out of the system tray overflow area onto the main system tray area near the clock to be able to view it.

## Benchmarking Your System

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The term *benchmarking* refers to testing your computer and assigning some sort of score to your computer's performance. The score can be an amount of time, such as the amount of time it takes your computer to solve a complex math problem. The score can also be a calculated point value that is determined by running a variety of tests, such as hard drive transfer speeds. The test can read and write files to your hard drive and then calculate a weighted score depending on how each test goes. The amount of time or calculated point value has very little value on its own; it is when the time or point value is compared to other results of the same test that it becomes valuable.

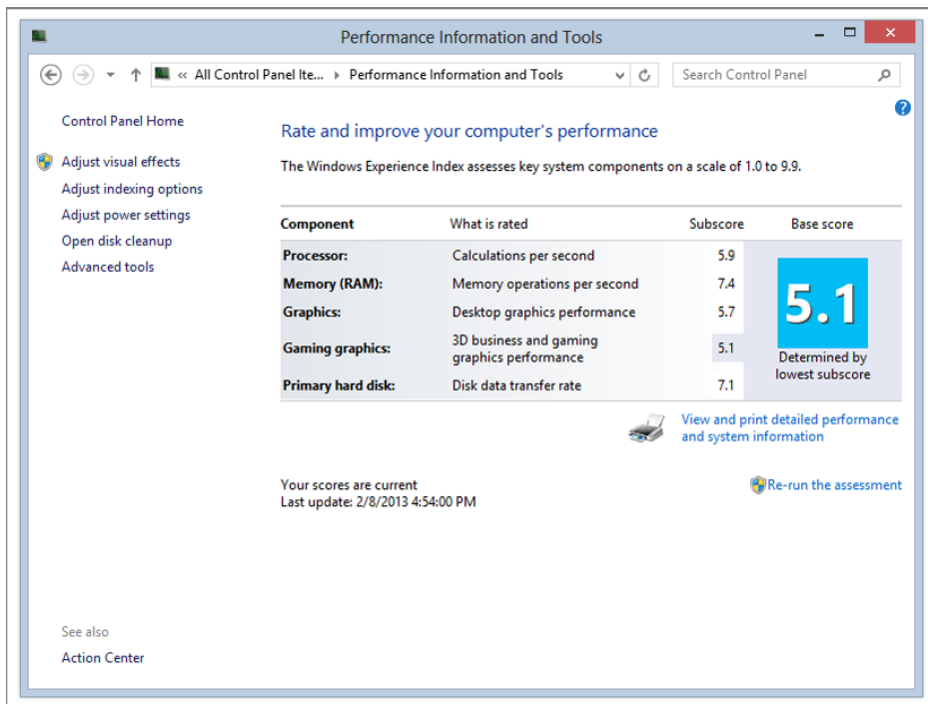
It is important to get an initial benchmark score for your computer so that you can compare your computer's initial performance to benchmark scores from tests that you may run later. It is nice to know how much of a difference some of the tweaks in this book actually made in your system. Or, if you upgraded the amount of RAM it would be helpful to see how it affected your system performance. Running an initial benchmark gives you a score that you can compare all your benchmark scores to after you make changes to your computer.

To benchmark your system, you need the help of a benchmarking application. A wide variety of different software programs can benchmark just about every part of your system. If you are interested in benchmarking the abilities of your

3-D video card, for example, there is software for that. If you are interested in benchmarking your hard disk speeds, there is special software for that task as well. Next, I go over three popular benchmarking applications. I start with the built-in Windows Experience Index.

## Windows Experience Index

Microsoft included this feature in Windows 8 to make it easier for consumers to understand how powerful the combination of their hardware components actually is. The performance rating application generates an overall score based on the performance and features of your CPU, RAM, hard drive, and graphics card. For example, my computer has been given a score of 5.1 (see Figure 12-13). In addition to the overall score, you are also provided with individual component scores called the Sub Rating. These scores give you a quick idea of the overall performance of your computer compared to other configurations.



**Figure 12-13:** Windows Experience Index gives you a performance overview.

The exact method of scoring different hardware components is unknown, but is based on support of different levels of features and the performance of your hardware. For example, to get a score of 7.9, your hardware component must support a specific set of features, and perform between certain levels.

### Using and Understanding Your Windows Experience Index

Your computer's overall score is useful for determining how your hardware compares to other configurations. However, the main purpose of the rating is to determine how well Windows 8 will run on your specific hardware configuration. The Sub Ratings are the most useful for the purpose of identifying possible bottlenecks and areas that you should investigate further. To get started, bring up the System window for your computer:

1. Open the Start screen and type **Performance Information**.
2. Change the search filter to Settings.
3. Run Performance Information And Tools.
4. You now see your computer's performance rating as shown in Figure 12-13. If your computer does not yet have a rating assigned to it, click Rate This Computer or Re-Run The Assessment. This starts the rating tool. Wait a few minutes while it generates scores based on performance tests and hardware specifications. It is best not to use your computer until the tests have completed to ensure accurate readings.

**TIP** If you ever change or upgrade the hardware in your computer, you should refresh your ratings after every change. The score will not refresh automatically.

Now that the Performance Information And Tools window is loaded and populated, you can analyze the results. I like to see whether any of the numbers may be holding back the overall score. For example, if all of my Sub Ratings are between 5.7 and 7.4, except for my Gaming graphics rating, which is a much lower 5.1, then it becomes very clear that I should concentrate on determining whether I should buy a new graphics card. The lowest score in any Sub Rating determines the overall score for your computer.

Depending on your results, if you get a low score in the CPU, RAM, Hard Drive, or Graphics ratings, you should be able to determine what areas to focus on as you explore other more detailed monitoring tools in the next section.

## Benchmarking with PCMark 7

PCMark 7 Basic Edition, from Futuremark Corporation, is one of the most popular benchmarking programs for power users. PCMark 7 has a cool online component that enables you to view your benchmark data and compare it to other users' computers. Additionally, the application generates an overall score that you can use to compare your system to other systems. The comprehensive score that is assigned to your system is the result of numerous test results testing various parts of your computer.

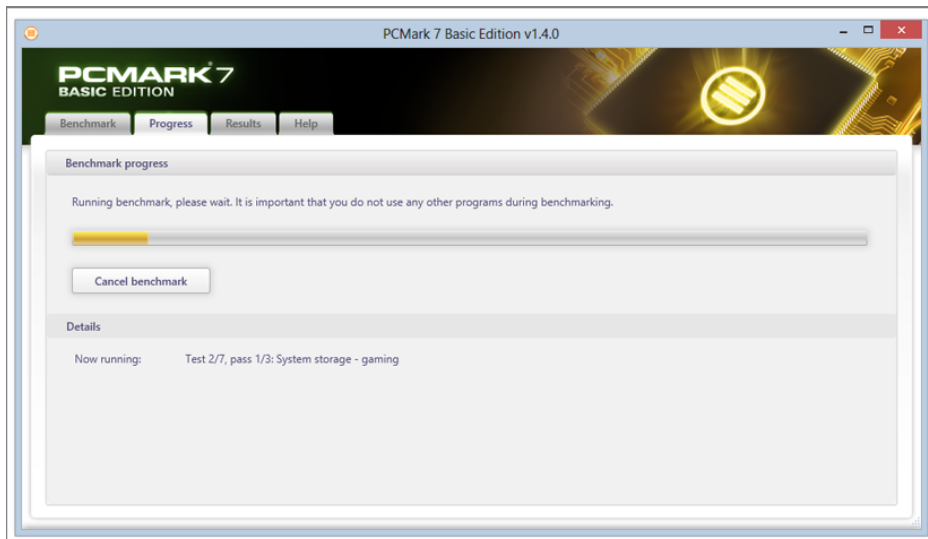
You can download a copy of PCMark 7 from [tweaks.com/630110](http://tweaks.com/630110).

The user interface of PCMark 7 is very simple and easy to use. Simply click the Run Benchmark button to start the tests. The free version includes only basic tests that simulate various computer usages to come up with your overall score. The basic system tests include the following:

- Video Playback and Transcoding
- Image Manipulation
- Web Browsing and Decrypting
- Graphics – DirectX 9
- System Storage – Windows Defender
- System Storage – Importing Pictures
- System Storage – Gaming

After you click the Run Benchmark button, the system tests begin, as shown in Figure 12-14.

After the benchmark tests are completed, you are shown your system's overall score. To view the detailed scores of the different tests, you have to register on Futuremark's website via the link on your results window. You can find out what hardware really performs and what hardware you should avoid. Overall, the PCMark 7 website adds a great amount of value to the application.



**Figure 12-14:** PCMark 7 running the benchmark test

## Summary

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This chapter offered an introduction to the world of performance monitoring and benchmarking. Before you can make your computer faster, it is very helpful to know what your computer doesn't perform well with. This chapter showed you how to discover bottlenecks using applications such as the Resource Monitor, Performance Monitor, Event Viewer, Task Manager, Windows Experience Index, and PCMark 7. Use the information that you gained in this chapter in the upcoming chapters. For example, if you have a lot of applications that are using a ton of memory, pay close attention to recommended applications and services to disable in the upcoming chapters.

The next chapter shows you how to optimize the speed of your computer from the very beginning—at the system boot.

# Speeding Up the System Boot

With the exception of Windows Vista, the boot speed has improved with every version of Windows. With modern hardware and the right configuration, your Windows 8 PC can boot up within seconds.

This chapter shows you some tips and tweaks you can use to improve the boot performance further. It also shows you how to focus on reducing the workload put on your hardware and ways to improve the reading of data from your storage device.

## Working with the BIOS

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Every personal computer has a system *BIOS* (basic input/output system), which is what takes control of your computer the moment you turn it on. The screen that you first see when you turn on your computer is called the *power on self-test*, better known as the *POST screen*. If you purchased your computer from one of the major computer manufacturers, this screen is often hidden by the manufacturer's logo. To get rid of this logo from the screen, just press the Esc button on your keyboard; you'll then see what is going on in the background. At this stage in the system boot, the BIOS is probing the hardware to test the system memory and other device connections. After the POST has completed, the BIOS proceeds to look for a device to boot from. When it finds your boot drive, it begins to load Windows.

The BIOS also acts as a main hardware component control panel, where low-level settings for all your hardware devices are made. The device boot order, port addresses, and feature settings such as plug and play are all located in the BIOS setup screens. For example, if you want to change the order of the drives that your computer checks to boot from, you want to modify the device boot order. I have to modify this setting almost every time I install Windows, because I want my computer to boot off the CD-ROM to launch the install DVD instead of booting off the operating system on my hard drive.

BIOSes typically are unique for each PC model and vendor. Some PCs come with a newer version of BIOS called UEFI that is more efficient but managed the same way. Accessing the BIOS on a PC is also unique to each PC vendor. Nevertheless, the most common way to access the setup screen is to press F1, F2, or the Delete key when the POST screen is displayed. Some computers even tell you which key to press to access the setup screen, as my notebook does. If your PC doesn't allow you to access the setup screen in this way, consult your computer documentation or contact your computer manufacturer for instructions.

**NOTE** While you are making changes in the system BIOS, make sure you do not accidentally change any other settings. If you accidentally change the value of a setting and do not know what to change it back to, just exit the BIOS setup screen as the on-screen directions indicate and select Do Not Save Changes. Then just reboot and re-enter the setup screen and continue hacking away at your system.

## Changing the Boot Order of Your Drives

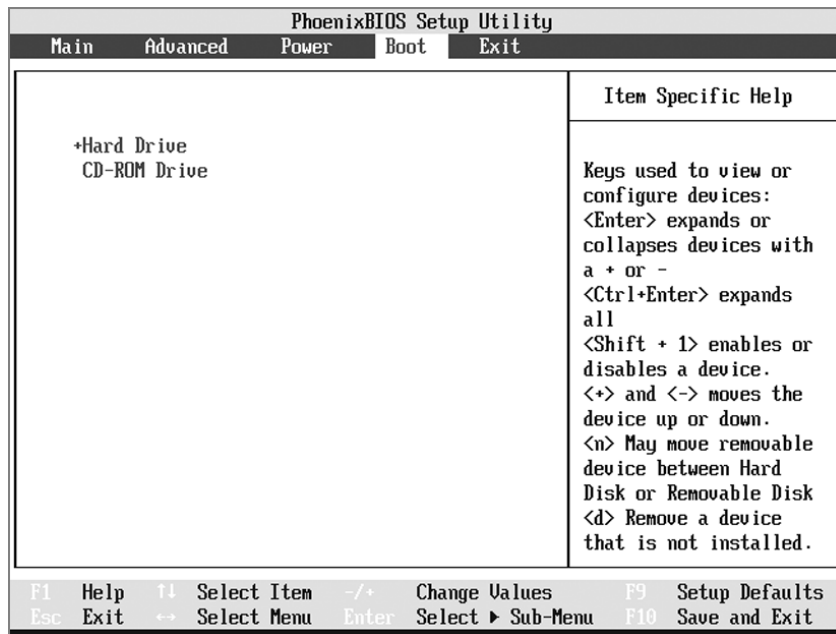
Most computers are set up so that when you first turn them on, they check to see whether to boot from drives other than your hard drive. The BIOS automatically checks to see whether you have a bootable disc in your CD/DVD drive. Then, after it has checked all possible locations for a boot disk, the system defaults to your hard drive set in the BIOS and starts booting Windows.

What is the benefit of changing the boot order of your system devices? If you modify the order of the boot devices so that the hard disk with Windows installed is searched first by the BIOS, the system does not have to waste time checking other devices for boot records. Just by changing the order of the devices, you can shave anywhere from one to several seconds off your boot time, depending on the speed of your hardware and number of drives your system has installed.

To change the boot order (or sequence, as some call it), you have to enter the system BIOS setup screen that was mentioned previously:

1. Press F1, F2, F8, Delete, or the correct key for your specific system on the POST screen (or the screen that displays the computer manufacturer's logo) to enter the BIOS setup screen.
2. Look for where it says Boot, and open the submenu.

3. Select Boot Sequence, and press Enter. Figure 13-1 shows an example of the Boot Sequence Setup screen.



**Figure 13-1:** The Boot Sequence Setup screen shows what boots up first.

4. If your screen looks similar to Figure 13-1, you are in the right place. Navigate to First Device and cycle through the list to Hard Disk Drive or, on some computers, the port your hard drive is connected to, such as IDE0 or "SATA0." If your setup screen does not specifically offer First Device, but instead lists all the devices, simply select the hard disk and move it to the top of the list by using the Change Values keys (which for my BIOS is made by Phoenix—the spacebar moves an item up and the minus symbol key moves an item down). The specific keys differ on almost every system, but the basic concepts are the same. You want to get your hard disk to the top of the list or listed as the first device from which to try to boot. If you do not know the keys for your BIOS, instructions are usually located on either the bottom or right side of the screen where you will be able to find the correct keys for your system.
5. After you have made the changes, exit the system BIOS by pressing the Escape (Esc) key, and make sure that you select to save your changes upon exit. After you reboot, the new settings will be in effect.

What are the consequences of changing the boot order? Changing the boot order won't hurt your system in any way if you do it correctly. If, by accident, you remove your hard drive from the list and save the BIOS settings, you get

an unpleasant surprise when your computer reboots and tells you that it cannot find any operating system. If you happen to get that message, don't worry; you did not just erase your operating system. Just reboot by pressing Ctrl+Alt+Delete at the same time, go back into the BIOS settings, and make sure that you select your hard drive as a boot device. After you have done that, your system will be back to normal.

Another possible issue that you might encounter is just a matter of inconvenience. After you change the boot order of the system devices so that the hard drive is listed first, you can no longer use system restore boot discs. If something has happened to your computer and you need to boot off of those drives to restore your system or run diagnostics, just go back to the system BIOS and lower or remove the hard disk from the first boot device and replace it with a CD as needed.

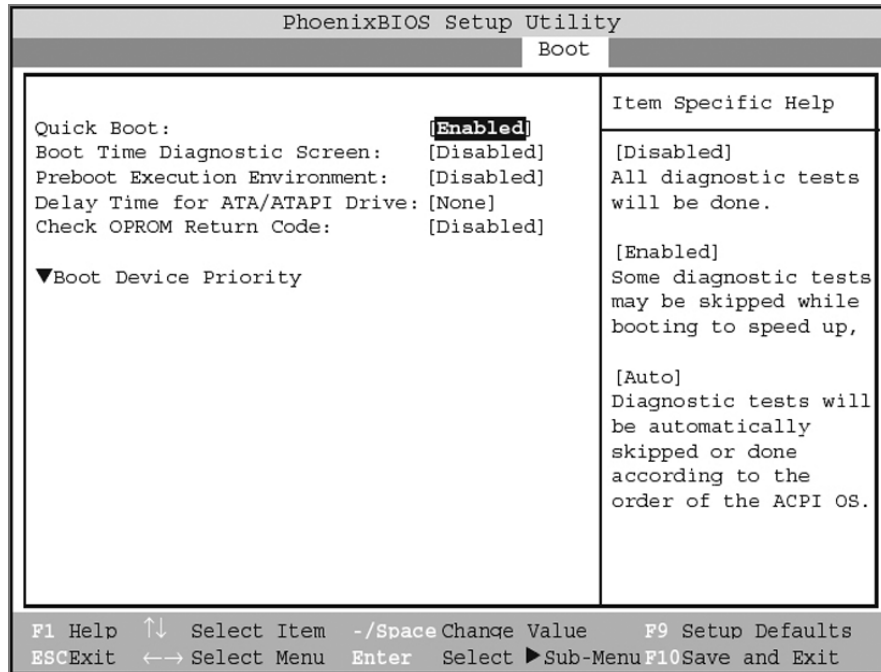
## Using the Quick Boot Feature of the BIOS

All systems initialize in more or less the same way. During the POST mentioned earlier, the BIOS checks the hardware devices and counts the system memory. Out of all the different types of system memory, the *random access memory*, better known as *RAM*, takes the longest to check. On a machine that has large amounts of RAM, this calculation can take several seconds. For example, a machine that has 4 GB of RAM may take up to three seconds just to check the memory. On top of the RAM counting, your computer needs to perform a few other tests to make sure that all the hardware is working properly.

The complete version of these tests is not needed every time you boot, and you can turn them off to save time. Most system BIOSs offer a feature called *Quick Boot*. This feature enables the user to turn off the full version of the test and sometimes enables you to run a shorter quick-check test instead. Other BIOSs allow you to turn off the Memory Check only, which still saves a lot of time.

To turn on the Quick Boot feature or to turn off the Memory Check, do the following:

1. Enter the system BIOS by pressing F1, F2, Delete, the Enter key, or the correct system setup key on the POST screen for your system.
2. After you are in the BIOS setup, locate the Quick Boot or Memory Check option, as shown in Figure 13-2. Navigate with the arrow keys until the option is highlighted.



**Figure 13-2:** The BIOS Setup screen displays the Quick Boot feature.

3. Use the Change Value keys to cycle through the options and select Enable for the Quick Boot feature or Disable if your system's BIOS has the Memory Check feature.
4. After you have made the change to the setting, exit the system BIOS by pressing the Escape key. Make sure you save the changes upon exit.

Using the Quick Boot feature or disabling the Memory Check won't do any harm to your system. In fact, some computer manufacturers even ship their computers with these settings already optimized for performance. The only downside to disabling the tests is in the rare situation in which your RAM self-destructs; the BIOS won't catch it, and you might receive errors from the operating system or your system could become unstable. If you notice that your system becomes unstable and crashes frequently or won't boot, go back into the BIOS and re-enable the tests to find out whether your system's memory is causing the problems.

## Modifying the Operating System Boot

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You can use several different tricks to shave a few more seconds off the boot time. For example, you can reduce Timeout values and slim down the system to get rid of all the extra features and services that you do not use or need. Check out the following ways to do so.

### Windows Boot Manager

If you have more than one operating system installed on your computer, you have to deal with the Windows Boot Manager installed by Windows 8. By default, the Windows Boot Manager gives you 30 seconds to select an operating system before it reverts to the default operating system. The only way not to wait 30 seconds is to select the operating system you want to use right away. If you use one operating system the majority of the time, you will definitely save time if you set that operating system as the default and lower the Timeout value to 1 or 2 seconds. That way, you won't have to select an operating system every time you turn on your system or wait 30 seconds before your computer actually starts to load the operating system.

**TIP** Before you make any changes to the Windows Boot Manager (WBM), it is a good idea to back it up using the Boot Configuration Data Editor (bcdedit.exe) so that you can easily revert to an earlier version should you have any problems. At a command prompt run as the Administrator account, type `bcdedit /export "C:\Backup File"`. This saves the WBM to a file that you can use to import using the `/import` flag.

### *Lowering OS Timeout Values*

If you have multiple operating systems installed on your computer and the Windows Boot Manager is installed, the default selection timeout is often way too high. It is much better to set a lower timeout so that if you do not make a selection, it quickly reverts to the default OS, making your boot time much faster.

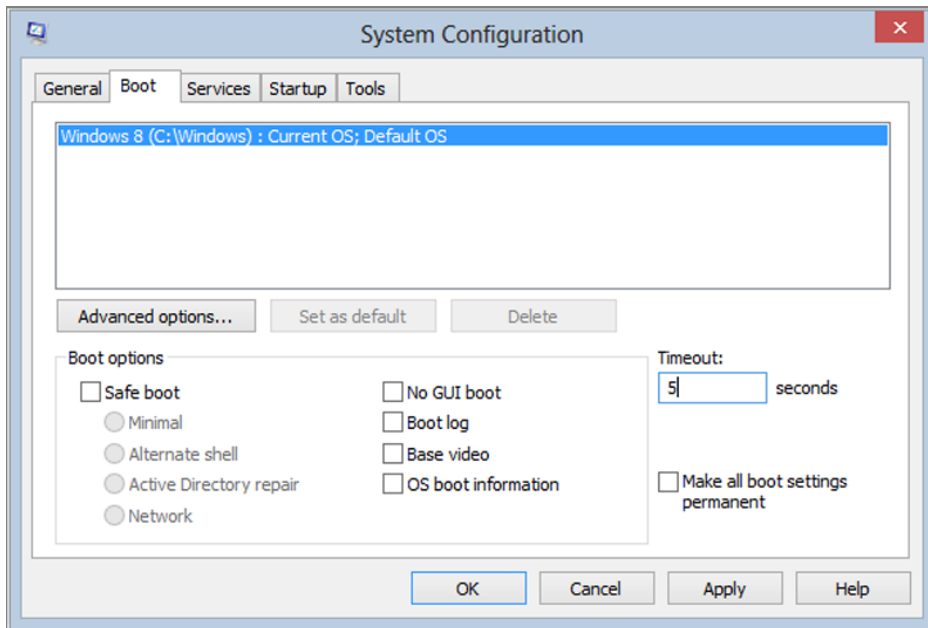
Changing the Timeout value is simple with the System Configuration utility. Follow the steps here to use the System Configuration utility to lower the OS Timeout value:

1. Open the Start screen, type `msconfig`, and press Enter.
2. When the System Configuration utility loads, click the Boot tab.
3. Locate the Timeout box and replace 30 with a much lower value, as shown in Figure 13-3.

I recommend you use between 2 and 5. I use 2 because that gives me just the right amount of time to hit a key on my keyboard when the Windows Boot Manager is displayed on the screen.

4. After the value has been updated, click OK to exit.

Now that the Timeout value has been updated, the boot menu no longer increases your system startup time. Even though this is a simple tip, it really helps a lot on systems that have multiple operating systems installed. The default operating system on the Windows Boot Manager can be set in the next section.



**Figure 13-3:** Use the System Configuration utility to set the Boot menu Timeout value.

### Setting the Default OS

In the preceding section, you learned to set a new Timeout value that cuts down on the amount of time that is wasted before the operating system starts to load. That works great when your primary operating system is the default; but if it is not, you must remember to hit a key at the right moment every single boot. There is a much better way to handle the situation. Just make your primary operating system the default operating system in the Windows Boot Manager. This allows you to benefit from the lower Timeout value and speed up the overall boot time.

You can set the default operating system using the System Configuration utility or the command-line Boot Configuration Editor, `bcdedit.exe`. Follow these steps to use the System Configuration utility:

1. Open the Start screen, type **msconfig**, and hit Enter.
2. Click the Boot tab.
3. Select the operating system from the list you want to make the default and then click the Set As Default button.
4. When you are finished, click OK.

Using the System Configuration utility is the easiest way to set the default operating system, but you can also set it with the `bcdedit.exe` utility. Follow the next steps to use the Boot Configuration Editor to set the default operating system:

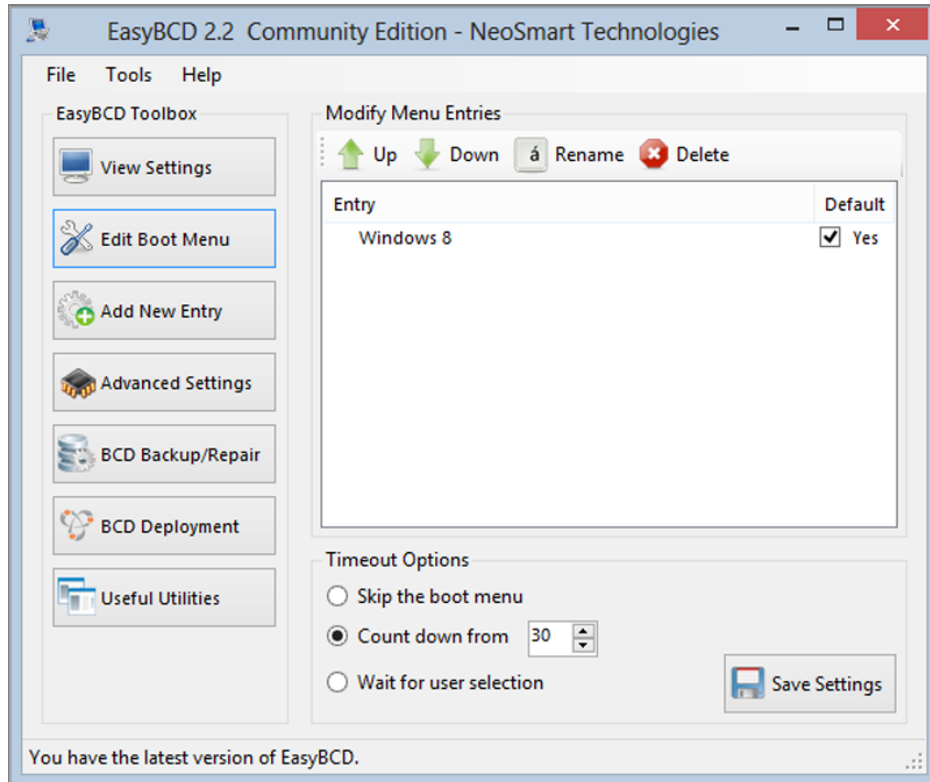
1. Open the Start screen, and type **Command Prompt**.
2. Right-click on the Command Prompt shortcut at the top right.
3. Select Run As Administrator from the charm application bar on the bottom of the screen.
4. When the command prompt has loaded, you are ready to use the `bcdedit.exe` command. First, you need to get the ID of the operating system that you want to set as the default. To do this, type **`bcdedit /enum all`** in the open Command Prompt window. Scroll through the list of entries and look for Windows 8.
5. After you have found the correct entry, note its identifier. You use this in the next step.
6. At the command prompt, type **`bcdedit /default (entry identifier)`**. For example, I ran `bcdedit /default {b2721d73-1db4-4c62-bf78-c548a880142d}`.

The default operating system on the Windows Boot Manager is now set. The next time you reboot, your changes will be applied.

**TIP** The Boot Configuration Editor is a powerful utility that you can also use to change many other settings of the Windows Boot Manager. Experiment with `bcdedit.exe` by running **`bcdedit /?`** from the command prompt. This shows you all the other available options and flags that you can use with the Boot Configuration Editor.

## USING EASYBCD TO EDIT THE WINDOWS BOOT MANAGER

EasyBCD is a cool and easy-to-use front end to the Boot Configuration Editor. Instead of using the command-line interface, you can use this free utility by NeoSmart Technologies. With EasyBCD, you can change the Timeout value, default selection, description, and even the boot order, as shown in Figure 13-4. Download a free copy of EasyBCD at <http://tweaks.com/887200>.



**Figure 13-4:** Use EasyBCD to edit the Windows Boot Manager.

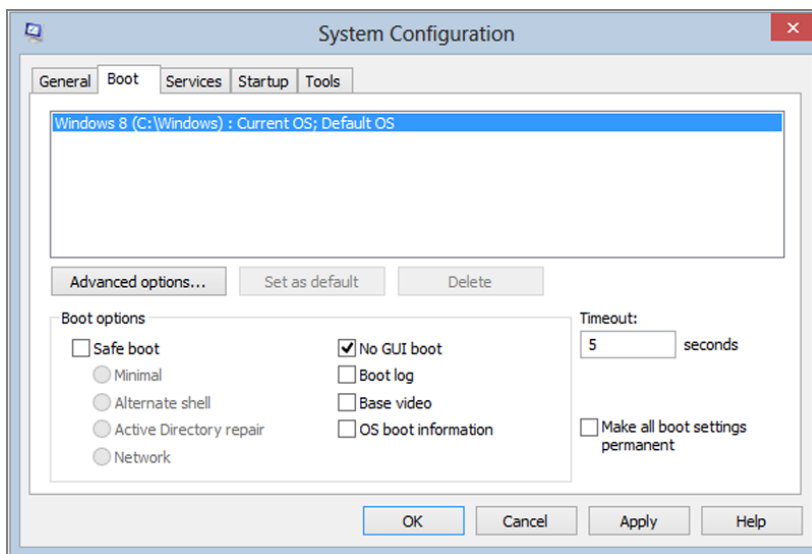
## Disabling the System Boot Screen

Windows 8 has a new high-resolution animated boot screen that looks much better than the previous Windows boot screens. The flag animation sure is a nice loading screen, but is it really worth an extra fraction of a second when your computer is loading? Disabling the boot screen can cut down on your boot time. Keep in mind that every fraction of a second counts.

This performance improvement works on a simple principle. It takes time for the computer to do anything. Taking away some work the hardware has to do, such as loading the boot screen, frees up time that it can spend loading your system files instead.

The process for disabling the system boot screen is similar to the process for modifying the default operating system timeout. For this change, you need to start up the System Configuration tool:

1. Open the Start screen, type **msconfig**, and press Enter.
2. When the System Configuration tool loads, click the Boot tab.
3. Locate the No GUI boot check box and check it, as shown in Figure 13-5.
4. Click OK to close the System Configuration tool.
5. A small window pops up and asks you whether you would like to reboot your computer now or later. Make sure you have any open documents closed, and click Restart.



**Figure 13-5:** Disable the boot screen with the System Configuration tool.

6. After your computer has restarted, the System Configuration tool may load automatically, notifying you of the change. Check the box that says Don't Show This Message Or Start System Configuration When Windows Starts and click OK.

After you close the System Configuration tool and reboot, the boot screen is gone. You have saved your computer from doing extra work while loading Windows 8 on your computer.

## Disabling Unneeded Hardware Devices

One of the most time-consuming portions of the boot is loading all the hardware drivers for your specific system setup. Every driver for each installed hardware device must be loaded and then initialized by the operating system while the system is starting up. Keep in mind that your computer has a lot of devices that you do not always use. When Windows has to load all the extra hardware on your computer, its performance is slowed down.

Although Windows 8 is more intelligent than previous versions about how it loads drivers and devices, loading and initializing those devices still takes time. In previous versions of Windows, the system would load one hardware device driver and then load another device driver in a series. The problem with loading the hardware this way was that it could slow down the boot dramatically if one hardware device was taking a long time to initialize.

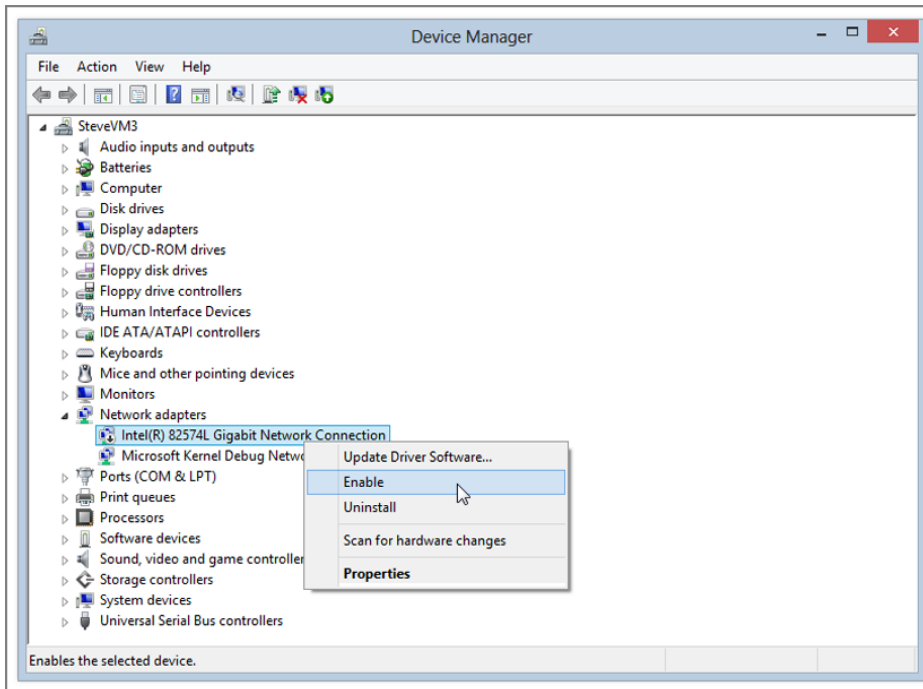
Windows 8 is similar to Windows Vista in the way it loads device drivers and initializes the devices. Instead of loading the hardware device drivers in a series, it now loads some of them in parallel. This allows the boot to be much faster. Although the hardware devices are loaded in parallel instead of in a series, the addition of more devices that the system has to load drivers for has the potential to, and most likely still, slows down the boot.

### *Using Device Manager to Disable Hardware*

Getting rid of extra hardware with Device Manager is an easy way to speed up your boot. Follow these steps to disable your extra hardware devices:

1. Open the Start screen, type `devmgmt.msc`, and press Enter.
2. After the Device Manager loads, you can browse through devices connected and currently running or disabled by browsing through the device type sections. To disable a device, right-click the device name and click Disable.
3. To re-enable a device, right-click the device name and click Enable, as shown in Figure 13-6. This removes the check mark from the menu and re-enables the device.

**TIP** To determine the status of a device, check out the icon next to its name. All devices that are disabled have a down arrow over the icon. All devices that have a question mark or an explanation point on them are not set up correctly or are having problems. All devices with none of these additions to the icon are running—and doing so without any problems.



**Figure 13-6:** You can re-enable hardware previously disabled with Device Manager.

### *Which Hardware Devices Should I Disable?*

Each person uses (or doesn't use) devices differently depending on the system setup. Nonetheless, some classes of devices are more commonly disabled than others. Knowing which ones will help you make your decision as to which devices you should disable. The following classes of devices are frequently disabled:

- **Network adapters**—Especially on notebook computers, there is often more than one network device. Disabling the network devices that you do not use will definitely save you some booting time.
- **FireWire**—If you have 1394 connections, otherwise known as FireWire, you might consider disabling them. Unless you are using your FireWire port to connect your digital video recorder to your computer, or have other external FireWire devices, you have no need to have this device enabled.
- **Biometrics**—Some of the latest computer hardware includes biometric sensor equipment such as a fingerprint scanner. If you do not use these security features, you can save time by disabling these devices, too.
- **Modems**—Do you have a broadband connection? If so, consider disabling your modem. If you rarely use it, why not disable it? If you ever need to use it again, just re-enable it.

- **TPM security chips**—Does your computer have a Trusted Platform Module (TPM)? These chips are typically used as a secure place to store an encryption key that would be used for something such as hard drive encryption. If you are not using any of these advanced security features of Windows 8, disable these devices, too.
- **Multimedia devices**—Your computer has lots of multimedia devices. Take a look at the Sound, Video, and Game Controllers section in Device Manager. You will find a lot of device drivers that are loaded during your boot. Some are used by all users, but you will find a few that you do not use. For example, I do not use my game port or my MIDI device, so I disabled both of them.

**CAUTION** Do not disable any hardware devices located under the Disk Drives, Computer, Display Adapters, IDE Disk Controllers, and the System sections (except for the system speaker). These hardware devices are critical to the operation of your system.

## Removing Extra Fonts for Speed

Windows 8 has about 140 fonts and variations that it loads for use when the system boots up. Of these fonts, only a handful are used on a regular basis. Every single font that Windows loads increases the amount of time the operating system takes to boot. If you are like me and have installed one of those font CDs that add hundreds of additional fonts to your system, your computer won't boot up as fast as it once did. Simply put, systems with a lot of fonts take more time to load because the system has to load and index each font. Thankfully, there is a very simple solution to this: just remove the fonts that you do not use from your font directory.

You can go about removing the unneeded fonts from your font directory in a number of ways. The best way is to move the unused fonts to a separate folder on your system so that if you ever want to use one of those fonts, you just have to copy it to the Fonts folder.

**CAUTION** When you remove fonts from your computer, you will no longer be able to use them in any software application, including Adobe Photoshop, Microsoft Word, and Excel.

Before you start removing fonts, take a look at Table 13-1. These fonts are commonly used, for reasons that the table explains. Be careful not to remove any fonts on which the system normally depends.

**Table 13-1:** Commonly Used Windows Fonts

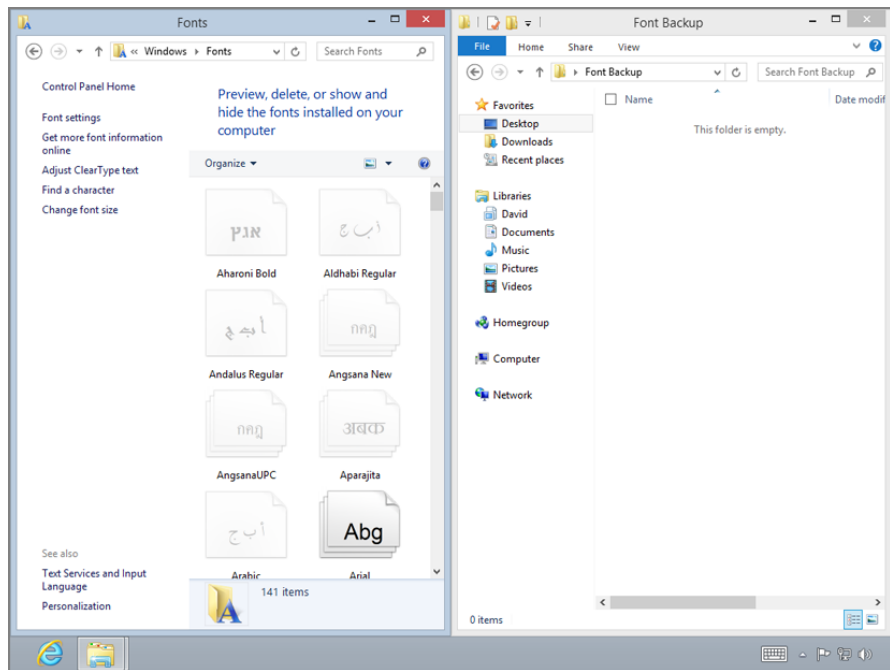
| FONT NAME       | REASON  |
|-----------------|---|
| Segoe           | The variations of this font can be found in elements of the Windows interface.                                    |
| Calibri         | Common font used in Microsoft Office applications and documents.  |
| Verdana         | This font is often used on web pages and applications.  |
| Arial           | Another common web page font that is also used in applications.   |
| Trebuchet       | Common application font and used in some web pages back in XP days. Some older applications may still require it. |
| Tahoma          | Common Windows font that you may want to hold onto for application and web page compatibility.                    |
| Times New Roman | Default font for web pages and word processing applications such as Microsoft Word.                               |
| MS Sans Serif   | Default font for Visual Studio applications that is now required for a lot of legacy and newer applications.      |

Now that you know which fonts you should not remove, you also need to be aware of one more thing before starting your adventure in the Fonts folder. Inside the Fonts folder are several fonts with similar names. The fonts are broken up not only by font name, but also by the type style. For example, there is an Arial Bold, Arial Bold Italic, Arial Italic, and so on. When sorting through the fonts to delete, you also can choose to delete only specific types of fonts.

Permanently deleting fonts is fairly easy, but moving the fonts to a backup folder is a little trickier because the Fonts folder is not like a normal folder. To remove the fonts, you need to start by creating a folder to put the old fonts in:

1. Open the Start screen and then run File Explorer. Navigate to the Local Disk (C:) or where you have installed Windows.
2. Navigate to the Windows folder and create a folder to store the fonts that you are going to remove from the Fonts folder. Right-click the whitespace that lists the folder and files, select New, and then select Folder. Call your folder **Fonts Backup** or some other name so that you can identify it as the place that your old fonts are.
3. After you have created the new folder, open it.

4. Without closing the new folder you just opened, Open the Start screen again and then run File Explorer. Navigate to the Local Disk (C:) drive again and to the Windows folder, and then to the Fonts folder.
5. Now that you have both the Fonts folder and your backup folder open, arrange the two windows on your screen so that they look like the two windows in Figure 13-7.



**Figure 13-7:** Arrange the Windows Fonts folder and a backup folder side by side on the screen.

6. Now that the two font folders are side by side, drag the fonts you want to back up to your backup folder.
7. After you have backed up the fonts you want to delete, right-click the font files in the Fonts folder and click Delete.

In the event that you want to reinstall a font, all you have to do is drag the font file from the backup folder back to the Fonts folder. An Installation dialog box flashes on the screen as it adds the font back to the library. After you drag the file back to the Fonts folder, the file remains in the backup directory because it just copies it there. After you have confirmed that it was actually installed, feel free to delete the font file from the backup folder.

## Disabling Unneeded Services

A *service* is a software application that runs continuously in the background while your computer is on. The Windows operating system has numerous services that run in the background that provide basic functions to the system. Network connectivity, visual support, and external device connectivity such as printer services are all examples of the types of services that the Windows services provide. Each service that is running in the background takes up system resources, such as memory and CPU time. Also, during the booting of the operating system, the service has to be loaded. On most computers, nearly 20 services are loaded upon startup. Of these 20 services, only a handful are system critical services; all the others can be disabled.

Disabling a service can disable a feature that you or applications installed on your PC depend on so it is important to know what the services in Windows 8 do. Table 13-2 will help you understand what the most common services are, what they do, and whether they can be disabled.

**Table 13-2:** Common Windows Services in Use

| NAME                            | USE  |
|---------------------------------|--|
| ActiveX Installer               | Provides UAC validations for Internet-based ActiveX installs. This only runs when needed.  |
| Application Experience          | Provides a compatibility cache for older applications that caches requests when they are run. This service can be disabled, but I recommend leaving it started for application compatibility with the new architecture of Windows 8.   |
| Application Identity            | Verifies the identity of an application. Used by AppLocker. Does not run unless AppLocker is in use.   |
| Application Information         | Allows you to run applications with all administrative rights. Keep this service running.  |
| Application Layer Gateway       | Provides support for additional protocols for the Internet Connection Sharing service. You can safely disable this service.  |
| Application Management          | Used for software deployment and management through Group Policy. If you do not use Group Policy for software, you can safely disable this service.  |
| Background Intelligent Transfer | Transfers data in the background when the connection is not in use. One use of this service is to download updates automatically in the background. This service is not system critical, but disabling it can impair other services such as Windows Update. I would keep this service enabled. |

Table 13-2

| NAME                               | USE  |
|------------------------------------|--|
| Base Filtering Engine              | Provides support for the firewall, IPsec, and filtering. I recommend keeping this service running.   |
| BitLocker Drive Encryption Service | Provides critical support for BitLocker drive encryption. Only disable if you are not using BitLocker.   |
| Block Level Backup Engine Service  | Used by Windows Backup. Disabling would disable the backup and recovery operations of Windows Backup.  |
| Bluetooth Support Service          | Provides support for Bluetooth wireless devices. Disable this service if you do not use Bluetooth devices with your computer.  |
| BranchCache                        | Provides a local cache of a remote file share in a branch office. Disable if you are a home user and have not configured BranchCache.  |
| Certificate Propagation            | Utilizes certificates from smart cards. Most home users have no use for this service.  |
| CNG Key Isolation                  | Isolates cryptographic operations to protect the cryptographic key. I recommend leaving this service as is because it runs only when needed.   |
| COM+ Event System                  | Provides event notification to COM objects. Some applications depend on this service. I recommend experimenting with your applications to see whether you can disable it.                                      |
| COM+ System Application            | Used to configure and monitor COM object components. Leave as manual because it is started only when needed.   |
| Computer Browser                   | Responsible for keeping the list of computers on your network and updating the list. If you have no need for this information, you can safely disable it if started.   |
| Credential Manager                 | Provides secure storage and retrieval of passwords. This service runs only when needed and I would not disable it.   |
| Cryptographic Services             | The main provider of all encryption and decryption operations for all types of applications. It manages private keys, certificates, and other encryption operations. I recommend leaving this service running. |

*Continued*

Table 13-2 (continued)

| NAME                                | USE  |
|-------------------------------------|--|
| DCOM Server Process Launcher        | Starts DCOM processes. Several other system-critical services use this service to start, so I do not recommend disabling.  |
| Device Association Service          | Provides the functionality to pair with various wired and wireless devices. I recommend leaving this service enabled.  |
| Device Install Service              | Allows your computer to detect and install detected hardware. I do not recommend disabling.  |
| Device Setup Manager                | Provides the ability to download and install device-related software upon detection. I do not recommend disabling.   |
| DHCP Client                         | Provides automatic network address configuration. If you set a static IP address, gateway, and DNS servers, disable this service.  |
| Diagnostic Policy                   | Provides automatic problem monitoring and troubleshooting of components. If this service is disabled, automatic diagnostics and searching for resolutions will be stopped. If you are an advanced user, you might be able to get away with disabling this service.           |
| Diagnostic Service Host             | Assists Diagnostic Policy service listed above.  |
| Diagnostic System Host              | Assists Diagnostic Policy service listed above.  |
| Distributed Link Tracking Client    | Used with NTFS file links across networks. If you have no need for this service, and not many do, you can safely disable it.   |
| Distributed Transaction Coordinator | Provides support for managing transactions generated by applications. Some applications use this service, but it is not running unless it is in use.   |
| DNS Client                          | Enables the computer to resolve a DNS address such as <code>Tweaks.com</code> to an IP address as needed by web browsers and other Internet tools. Unless your computer is not connected to the Internet or any other type of network, you should keep this service enabled. |
| Encrypting File System (EFS)        | Provides filesystem encryption support. If disabled, you will not be able to enable or access any NTFS encrypted files.  |

Table 13-2

| NAME                                    | USE  |
|---|--|
| Extensible Authentication Protocol      | Provides authentication support to the Wired AutoConfig and WLAN AutoConfig services. Unless you use all manual network configurations, leave this service enabled.                  |
| Family Safety                           | Windows Parental Control functionality from Windows Vista. If you never used those features, disable it.   |
| Fax                                     | Provides support to send and receive faxes. No need for faxes? Disable this service.   |
| File History Service                    | Protects your personal files from accidental deletion or changes by allowing you to go back in time. I do not recommend disabling this service.                                      |
| Function Discovery Provider Host        | Hosts other services that search the network for other devices such as the Media Center Extender service. If you have no need for these services, disable it.                        |
| Function Discovery Resource Publication | Allows this computer and devices connected to it to be published over the network so that other computers on your LAN can share them. This can be disabled but may affect usability. |
| Group Policy Client                     | Responsible for applying local and domain-based Group Policy settings and restrictions. This service cannot be disabled in Windows 8.  |
| Health Key and Certificate Management   | Manages the keys used by Network Access Protection. Disable this if your network is not using any sort of authentication-based access.   |
| HomeGroup Listener                      | Provides basic HomeGroup client services. Disable if you do not use HomeGroups.  |
| HomeGroup Provider                      | Provides basic HomeGroup server services. Disable if you do not use HomeGroups.  |
| Human Interface Device Access           | Supports Human Interface Devices (HID) expanded functionality such as additional buttons on a keyboard, remote controls, and more. Do not disable.                                   |
| IKE and AuthIP IPsec Keying Modules     | Manages the keys used by IP Security (IPsec) network access. Disable this if your network is not using any sort of authentication-based network access.                              |
| Interactive Services Detection          | Provides notification and access to interactive dialog boxes. Do not disable this service.   |

*Continued*

Table 13-2 (continued)

| NAME  | USE  |
|---|--|
| Internet Connection Sharing (ICS)             | When started, this service allows you to share your Internet connection among other computers with Network Address Translation (NAT).  |
| IP Helper                                     | Provides Internet Protocol version 6 (IPv6) connectivity over an IPv4 network. Disable this service if you have no use for IPv6 network connections.   |
| IPsec Policy Agent                            | Provides agent support for IPsec policies and remote firewall management. This can be safely disabled in most home environments but can break any applications that use IPsec.   |
| KtmRM for Distributed Transaction Coordinator | This helper service aids in the communication between the Distributed Transaction Coordinator and the Kernel Transaction Manager. Only starts when needed so no need to disable.   |
| Link-Layer Topology Discover Mapper           | Provides a generated network map of all computers and other connected devices. Can be safely disabled if you can live without a network map.   |
| Local Session Manager                         | Manages your session. Windows prevents you from even touching this one.  |
| Media Center Extender Service                 | Allows Media Center Extender hardware and software devices, such as an Xbox 360, to connect to your computer and share the Media Center features if installed. Disable this service if you have no use for this scenario.  |
| Microsoft Account Sign-in Assistant           | Enables you to log in to your computer with a Microsoft Account and other integration. I do not recommend disabling it as the Microsoft Account has become deeply integrated within Windows 8.                             |
| Microsoft iSCSI Initiator                     | Manages connections to iSCSI-connected network devices. Disabling will remove iSCSI connection support. This can be safely disabled for home users and even most enterprise users. Typically this is only used on servers. |
| Microsoft Software Shadow Copy Provider       | Provides Shadow Copy file operations when needed by applications such as Explorer. Do not disable.   |
| Multimedia Class Scheduler                    | Helps multimedia applications by prioritizing CPU loads of various system-wide processes and tasks.  |

Table 13-2

| NAME                                 | USE  |
|--------------------------------------|--|
| Net.Tcp Port Sharing Service         | Allows the sharing of TCP ports when the net.tcp protocol is being used.   |
| Netlogon                             | Responsible for the connection between the domain controller and your computer if your computer is on a domain. Disable this service if your computer is not on a domain.  |
| Network Access Protection Agent      | Primary service for supporting the Network Access Protection (NAP) services.   |
| Network Connected Devices Auto-Setup | Automatic discovery and setup of specific network devices found on your network. Devices can still be manually added if disabled.  |
| Network Connections                  | Provides you with the graphics interface to manage all network connections. If this service is disabled, Network & Sharing Center will not work. I recommend against disabling this service.                                   |
| Network Connectivity Assistant       | DirectAccess status notification. Disable this service unless you use Microsoft DirectAccess to access corporate network resources. DirectAccess is Microsoft's variation of a SSL VPN.  |
| Network List Service                 | Manages a list of networks the computer has connected to and their individual settings and properties. I do not recommend disabling.   |
| Network Location Awareness           | Manages a list of networks the computer has connected to and their individual settings and properties. This can be disabled but doing so can harm for applications that require this, such as wireless network configurations. |
| Network Store Interface Service      | Provides notification of network interface changes. This service is critical to network operation, but you can disable it if you do not use a network.   |
| Offline Files                        | Provides file operations for the offline files feature of Windows Explorer. Feel free to disable this service if you do not use it.  |
| Optimize Drives                      | Increases disk efficiency by defragmenting files on the drives. Do not disable. Disabling will slow down your PC.  |
| Peer Name Resolution Protocol        | Allows your computer to resolve names using peer-to-peer connections. This is required by applications such as Windows Collaboration.  |

*Continued*

Table 13-2 (continued)

| NAME  | USE   |
|---|---|
| Peer Networking Grouping                            | Provides peer-to-peer networking services. Depends on Peer Name Resolution Protocol Service. Can be disabled.   |
| Peer Networking Identity Manager                    | Provides peer-to-peer identification services for application and Windows peer-to-peer applications. This service also depends on the Peer Name Resolution Protocol.  |
| Performance Counter DLL Host                        | Enables 64-bit processes to query performance counters from 32-bit DLLs.  |
| Performance Logs & Alerts                           | Collects performance data for use in Windows Diagnostics and other troubleshooting utilities.   |
| Plug and Play                                       | Allows the computer to detect and configure computer hardware automatically. Several other services depend on this service to be running to operate.  |
| PNRP Machine Name Publication                       | Broadcasts the computer name using the Peer Name Resolution Protocol. Can be disabled.  |
| Portable Device Enumerator Service                  | Provides support for portable storage devices, such as USB devices and MP3 players, to communicate with other Windows components such as Windows Media Player. You can safely disable this service if you do not use any such devices with WMP. |
| Power   | Manages power policy and notification delivery. Do not disable.   |
| Print Spooler                                       | Enables you to save your print services to memory to allow for faster printing within your Windows applications. You can disable this service, but doing so may impair printing in some situations.   |
| Printer Extensions and Notifications                | Processes notifications from a remote printer and custom dialog boxes. Only runs when needed.   |
| Problem Reports and Solutions Control Panel Support | Provides support in Control Panel to view and delete problem reports generated by the Diagnostic services. Only runs when needed.   |
| Program Compatibility Assistant Service             | Aids in application compatibility. When this service is disabled, you can no longer run applications properly in Compatibility mode. This service is not system critical.   |

Table 13-2

| NAME   | USE   |
|--|---|
| Quality Windows Audio Video Experience           | Provides support for audio and video streaming over home networks with traffic prioritization. This service runs only when it is needed by an application.                                    |
| Remote Access Auto Connection Manager            | Automates the creation of connections when applications attempt to access remote computers.   |
| Remote Access Connection Manager                 | Provides support for modem dial-up connections and VPN connections made through the Windows Networking features.  |
| Remote Desktop Configuration                     | Provides all remote desktop services and session management activities. Disable only if you never need to remotely control your PC.   |
| Remote Desktop Services                          | Provides remote desktop services a way to connect to a remote computer and host incoming connections. Disable only if you never need to remotely control your PC.                             |
| Remote Desktop Services UserMode Port Redirector | Provides the support for redirecting posts/drives/printers across RDP connections.  |
| Remote Procedure Call (RPC)                      | Responsible for communication between COM components. It is not system critical but is used by dozens of other Windows services. I do not recommend disabling this one.                       |
| Remote Procedure Call (RPC) Locator              | A helper service for the Remote Procedure Call service that manages connections and the lookup of components in its database.   |
| Remote Registry                                  | Provides remote access to your computer's registry when running. It is safe to disable this service.  |
| Routing and Remote Access                        | Provides network traffic routing to incoming and outgoing traffic. This service is disabled by default.   |
| RPC Endpoint Mapper                              | Resolves RPC interface identifiers to transport endpoints. If disabled, any RPC services will fail. Do not disable.   |
| Secondary Logon                                  | Allows you to run applications using a different account. This is often used when it is necessary to start a program with an administrator account. I recommend leaving this service running. |
| Secure Socket Tunneling Protocol Service         | Provides SSTP support to connect to remote computers over a VPN.  |

*Continued*

Table 13-2 (continued)

| NAME                           | USE   |
|--------------------------------|---|
| Security Accounts Manager      | Acts as a database of account information that is used for authentication and validation. This is a system-critical service that should not be disabled.  |
| Security Center                | Monitors all of your security applications such as antivirus and malware protection. This service is also responsible for notification messages that can drive advanced Windows users crazy. Feel free to disable this service, but you will not receive warnings if protection software such as antivirus utilities and your firewall is turned off. |
| Sensor Monitoring Service      | Monitors environment sensors that allow your computer to adjust to different brightness levels and other conditions.  |
| Server                         | Allows you to share files, printers, and other devices over your network. This is not a system-critical service, but is often useful in a home network environment and in the enterprise.   |
| Shell Hardware Detection       | Provides notification for AutoPlay hardware events.   |
| Smart Card                     | Keeps track of smart cards that your computer has used. Can be disabled if Smart Cards are not used.  |
| Smart Card Removal Policy      | Monitors your smart card and locks your computer when your smart card is removed.   |
| SNMP Trap                      | Processes messages received by the Simple Network Management Protocol.  |
| Software Protection            | Provides support for digital licenses for software that are downloaded. Do not disable.   |
| Spot Verifier                  | Checks for potential filesystem corruption.   |
| SSDP Discovery                 | Looks on your network using the SSDP protocol to detect other compatible networked devices such as game consoles and extender devices. You can disable this service, but doing so affects Media Center Extenders in addition to other PnP network devices.  |
| Still Image Acquisition Events | Starts related applications when you attach a camera to your PC.  |
| Storage Service                | Provides support for storage-related group policies.  |

Table 13-2

| NAME   | USE  |
|--|--|
| Superfetch                                   | Provides caching of application information to speed up application loading. You can disable this service, but its benefits outweigh the initial performance decrease of loading the service.                        |
| System Event Notification Service            | Monitors system events and reports back to other COM components.   |
| System Events Broker                         | Background task support for WinRT application framework used by all apps in the Windows Store. Do not disable.   |
| Task Scheduler                               | Enables you to schedule processes to run at specified intervals. Windows 8 uses this service for all background maintenance, which will stop if this service is disabled. I do not recommend disabling this service. |
| TCP/IP NetBIOS Helper                        | Provides NetBIOS protocol support over a TCP/IP connection. This is primarily used for machine name resolutions over a LAN. Do not disable if you share files between Windows PCs.                                   |
| Telephony                                    | Provides support for applications to interact with the modem. Can be disabled as modems are rarely used these days.  |
| Themes                                       | Provides support for visual styles that enable the non-classic Windows look. Disabling this service results in the entire interface reverting to the classic Windows look.   |
| Thread Ordering Server                       | Provides thread management and prioritization for Windows applications and components. Disabling this service may break applications and will disable the Windows Audio service.                                     |
| Time Broker                                  | Provides time- and event-related services for WinRT application framework used by all Windows Store apps. Do not disable.  |
| Touch Keyboard and Handwriting Panel Service | Enables touch keyboard and pen functionality. Only starts if needed.   |
| UPnP Device Host                             | Provides the ability to host UPnP devices on your computer for use on your local network. This service is required for Windows Media Player library sharing.   |
| User Profile Service                         | This is a system-critical service that loads your user profile when you sign on.   |

*Continued*

Table 13-2 (continued)

| NAME   | USE  |
|--|--|
| Virtual Disk   | Responsible for managing your drives and file systems. Do not disable this service; it is required for many operating system requests. In addition, it does not run when it is not needed.                                   |
| Volume Shadow Copy                                     | Provides support for Shadow Copy hard drive data used by backup applications.  |
| WebClient  | Provides support for the WebDAV protocol for accessing remote servers over the Internet through Explorer. If you have no need for this protocol, you can safely disable this service.  |
| Windows All-User Install Agent                         | Part of AppX install package support for Windows Store applications.   |
| Windows Audio  | Provides audio to Windows 8. I do not recommend disabling this unless you do not like audio. But who doesn't like audio?   |
| Windows Audio Endpoint Builder                         | A helper service for Windows Audio that manages various audio-related hardware devices in your computer.   |
| Windows Backup   | Part of the backup application in Windows 8 that enables you to back up your documents and other important data.   |
| Windows Biometric Service                              | Provides applications the ability to capture, compare, manipulate, and store biometric data.   |
| Windows Color System                                   | Allows other applications to configure your monitor color settings in Windows 8.   |
| Windows Connect Now - Config Registrar                 | Part of the Windows Connect Now feature that lets you automate the addition of other computers on your wireless network by saving the configuration of one machine to a USB flash drive and then using it to set up new PCs. |
| Windows Connection Manager                             | Provides intelligent network connection decisions based on available connections and Group Policy settings. I do not recommend disabling this service.   |
| Windows Defender Service                               | The spyware protection application in Windows 8. If you use a different anti-spyware utility, feel free to disable this service.   |
| Windows Driver Foundation - User-mode Driver Framework | Supports drivers in User mode. Do not disable.   |

Table 13-2

| NAME                                   | USE   |
|--|---|
| Windows Error Reporting Service        | When things go bad, this service lets you check with Microsoft to see whether it has a solution for you and to notify Microsoft of what is happening to your computer. Don't feel like notifying Microsoft about your error messages? You can safely disable this service.                |
| Window Event Collector                 | Provides the ability to subscribe to remote event sources to monitor activity and store data. Do not disable.   |
| Windows Event Log                      | This is the primary source of all local event management and collection. This service can be stopped, but is used by a lot of the performance enhancements in Windows 8. Stopping it would result in a negative performance benefit.  |
| Windows Firewall                       | Provides network security by blocking inbound and outbound network access based on the firewall rules applied. Unless you use a third-party firewall application, do not disable this service; the benefits outweigh any performance decrease.  |
| Windows Font Cache Service             | Optimizes applications by caching commonly used font data.  |
| Windows Image Acquisition (WIA)        | Provides an interface used by applications to work with various types of scanners and cameras. This service is run only when needed.  |
| Windows Installer                      | Allows applications packaged into MSI files to be installed and uninstalled from your computer. Do not disable this service unless you do not want any software to be installed, uninstalled, or modified.  |
| Windows Management Instrumentation     | Provides an interface for scripts and other applications to control various components of Windows 8. Disabling this service results in the Internet Connection Sharing, IP Helper, and Security Center services stopping, too. If you do not use these services, feel free to disable it. |
| Windows Media Center Receiver Service  | Provides the Media Center application with TV and radio reception.  |
| Windows Media Center Scheduler Service | Provides the Media Center application with notification of when to start and stop recording an application.   |

*Continued*

Table 13-2 (continued)

| NAME                                      | USE  |
|---|--|
| Windows Media Player Network Sharing      | Enables you to share your music collection with other computers running Windows Media Player. This service requires the UPnP Device Host service to be running to function.  |
| Windows Modules Installer                 | Allows Windows components and security updates to be installed and uninstalled.  |
| Windows Remote Management (WS-Management) | Provides support for the WS-Management protocol to remotely manage your computer.  |
| Windows Search                            | Enables you to index various files on your computer. You can disable this service, but doing so slows down any searches in your computer because the entire drive must be searched every time instead of just the index.   |
| Windows Store Service (WSService)         | Infrastructure support for the Windows Store and all apps purchased through it. Disabling can cause issues with all applications purchased through the Windows Store.  |
| Windows Time                              | Responsible for syncing the time on your computer. You can safely disable it.  |
| Windows Update                            | Provides the ability to detect and download new updates for your copy of Windows 8. Disabling this service stops both automatic updates and the ability to manually update Windows. Because security patches and automatic updates have been so critical to Windows in the past, I suggest keeping this service started. |
| WinHTTP Web Proxy Auto-Discovery Service  | Provides an API for applications to make HTTP connections and to auto-detect connection settings. This service is not system critical and you can safely disable it if you do not use the auto-detect connection feature in Internet Explorer and none of your applications use its API.                                 |
| Wired AutoConfig                          | Manages your wired NIC connections, including support for 802.1X authentication. The Network and Sharing Center in Windows 8 may malfunction if this service is disabled.  |
| WLAN AutoConfig                           | Manages your wireless network connections and settings. The Networking Center in Windows 8 may malfunction if this service is disabled.  |

Table 13-2

| NAME                    | USE   |
|-------------------------|---|
| WMI Performance Adapter | A helper service for the Windows Management Instrumentation service that runs only when requested.  |
| Workstation             | Provides support for creating network connections using the SMB network protocol (a.k.a. Lanman). Disabling this service disables Windows File Sharing. |
| WWAN AutoConfig         | Manages mobile broadband such as GSM and CDM connections.   |

### *Disabling Services with the Services Utility*

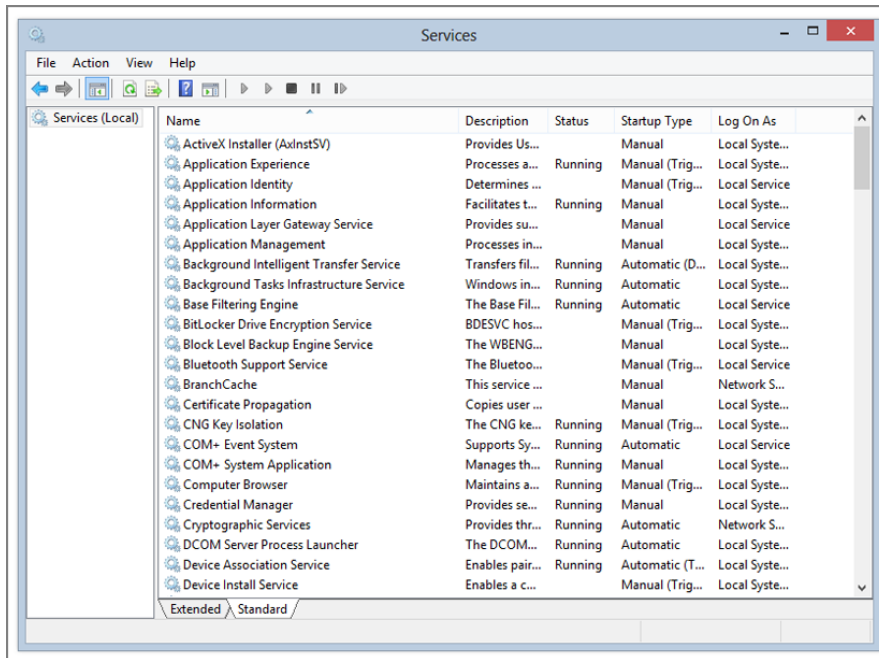
Now that you have an understanding of the dozens of services in Windows 8, you can start disabling the unnecessary services that are slowing down your computer boot process and consuming unnecessary resources. To do this, you use the Services utility that enables you to start, stop, and configure Windows 8 services.

**TIP** Before you begin changing your service setup, set a system restore point—a configuration where you can easily restore your system. However, be careful when you restore from restore points. Any applications or files that were created after the system restore point will be deleted when reverting back to an earlier restore point.

The Services utility is included in all versions of Windows 8, but is hidden away. Disabling a service with the Services utility is easy. Just complete the following steps:

1. Open the Start screen, type **services.msc**, and press Enter. This starts the Services utility, shown in Figure 13-8.
2. The Services utility displays a list of all the services available on your computer and the ones that are started. Before you can disable a service from starting up, it is best to stop it first. Scroll through the list of services until you find the name of the one you want to disable. Right-click the service name and click Stop.

- When the service is stopped, right-click the service again and select Properties. On the General tab, look for the Startup Type drop-down box. Click the arrow on the drop-down box and select Disabled.
- Click OK. From now on, the system will not start the service during boot, which should speed up your system start.



**Figure 13-8:** Use the Services utility to disable unnecessary services.

If you experience unusual behavior or issues with applications on your PC after disabling services, all changes made in this section can be easily reversed. Use the Services utility again and re-enable any service that you disabled. Alternatively, you can restore a system restore point from an earlier time period.

### Bare-Bones Service Configuration

To get the maximum performance out of your system, you have the option of disabling all the services on your computer that are not critical to the system. This will take away a lot of the core features and conveniences of Windows, but you will have a much faster machine if you can live without them. The following is a list of all services that started by default in Windows 8 and can be safely disabled:

- Application Experience
- Application Information

- Background Intelligent Transfer
- Base Filtering Engine
- Bluetooth Support
- DHCP Client
- Diagnostic Policy Service
- Diagnostic System Host
- Distributed Link Tracking Client
- Function Discovery Provider Host
- Function Discovery Resource Publication
- Group Policy Client
- HomeGroup Listener
- HomeGroup Provider
- Multimedia Class Scheduler
- Network Connected Devices Auto-Setup
- Network List Service
- Network Location Awareness
- Network Store Interface Service
- Peer Name Resolution Protocol
- Peer Networking Grouping
- Peer Networking Identity Manager
- Portable Device Enumerator
- Program Compatibility Assistant
- Print Spooler
- Security Center
- Server
- SSDP Discovery
- Superfetch
- TCP/IP NetBIOS Helper
- Terminal Services
- Themes
- Touch Keyboard and Handwriting Panel Service
- Windows Audio
- Windows Audio Endpoint Builder

- Windows Defender
- Windows Error Reporting Service
- Windows Firewall
- Windows Management Instrumentation
- Windows Search
- Workstation

### **Recommended Service Configuration**

The bare-bones system service setup is great for optimal performance, but you are eliminating a lot of the helpful features that make Windows 8 cool and new. Check out my list of recommended services to disable:

- Bluetooth Support
- DHCP Client
- Function Discovery Provider Host
- Function Discovery Resource Publication
- Group Policy Client
- HomeGroup Listener
- HomeGroup Provider
- Network Connected Devices Auto-Setup
- Peer Name Resolution Protocol
- Peer Networking Grouping
- Peer Networking Identity Manager
- Portable Device Enumerator
- Terminal Services
- Touch Keyboard and Handwriting Panel Service
- Windows Error Reporting Service

Disabling these least commonly used services provides a good balance between saving boot time and keeping the cool new Windows 8 features and application compatibility.

### **Optimizing the Location of the Boot Files**

The speed at which your files are read depends on your physical hard drive access speed and where the files are located in your hard drive. To increase the speed of your boot, you want to have the files used to boot your computer in a location that will allow the fastest read speed possible.

For example, I installed Windows 8 to an SSD drive that has very fast read speed. The result is a Windows 8 boot that takes just a few seconds. If you don't own an SSD, I highly recommend getting one because the cost has come down significantly. I cover selecting an SSD drive and show you how to transfer your entire Windows 8 install in Chapter 16, which is about improving overall system performance.

If you are stuck with a traditional hard drive you can still optimize the placement of the files. Although, in Windows 8, what is commonly known as a boot defragment is done automatically. I show you how to use third-party defragment utilities that optimize your boot speed and more in Chapter 16 as well.

## Summary

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This chapter showed you many ways to reduce the amount of time it takes your computer to boot. First, you worked on changing some of the BIOS settings that optimize your computer to achieve maximum boot speed. Then, you learned how to remove your boot screen to shave off some more time. After that, you disabled other parts of Windows, such as hardware, fonts, and services that you may never use, but which all take up time when your computer starts up. To wrap up this chapter, I touched on optimizing the location of the Windows 8 boot files.

This chapter showed you how to speed up the first half of your computer's startup. The next chapter picks up on the second half—the system logon. I show you some cool tips on how you can speed it up, too.



## Speeding Up the Logon Process

Ever wonder why it takes your computer so long to start up after you log on? After all, the system already loaded the majority of the operating system components. Does your computer take longer to load after you sign on than it used to take when you first brought it home? These are some of the questions this chapter answers. You can make your system load faster by using a number of cool tweaks and hacks. The previous chapter touched on how to make the system boot faster. This chapter concentrates on how to make the system load faster after the operating system has loaded and you are presented with the welcome sign-on screen.

After you turn on your computer, it goes through the boot-up process, which loads the main system components and drivers. When those are finished loading, the Windows shell is started and the lock screen is displayed. After the lock screen is displayed and you sign on, the system begins to load your user profile settings and the rest of the Windows shell. When that is finished loading, the system runs the applications that are in the startup folder as well as other sneaky registry startup programs. After these applications are finished loading, the busy icon no longer represents your cursor, and you are set to do whatever you want with your computer.

This chapter begins by examining ways to speed up the logon process. Then it discusses how to get rid of all those extra applications that run at startup that further slow down your computer. When you use the tips you learn in this chapter, your system will have a much faster loading time.

## Speeding Up the Logon

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As I just mentioned, a lot occurs when you log on to your computer. Windows has to validate your password, load your profile settings, apply the settings, and then launch any additional applications that are registered to start automatically. Those are a lot of areas to fine-tune to allow for a faster logon. To get started, take a look at PIN logon.

### Using a PIN Instead of a Password

I always use a long password to protect my user accounts and data on my Windows 8 PC. Although this provides great security for my account, it is time-consuming every time I turn on my PC. The new account PIN feature in Windows 8 provides an alternative logon method. Instead of typing in your password, key in your four-digit PIN and you are logged in immediately. I found this feature to be a compromise that speeds up the logon of my PC, but still allows me to keep a strong password for remote access.

Setting a PIN for your account was discussed in Chapter 5. For your convenience, below is a recap of the steps to enable a PIN for your account:

1. Open the Start screen, type in **PIN**, click the Settings filter, and hit Enter.
2. Under Sign-in Options click on the Create A PIN button.
3. Enter your current password when asked.
4. Enter your PIN twice and click Finish.

### Enabling Automatic Logon

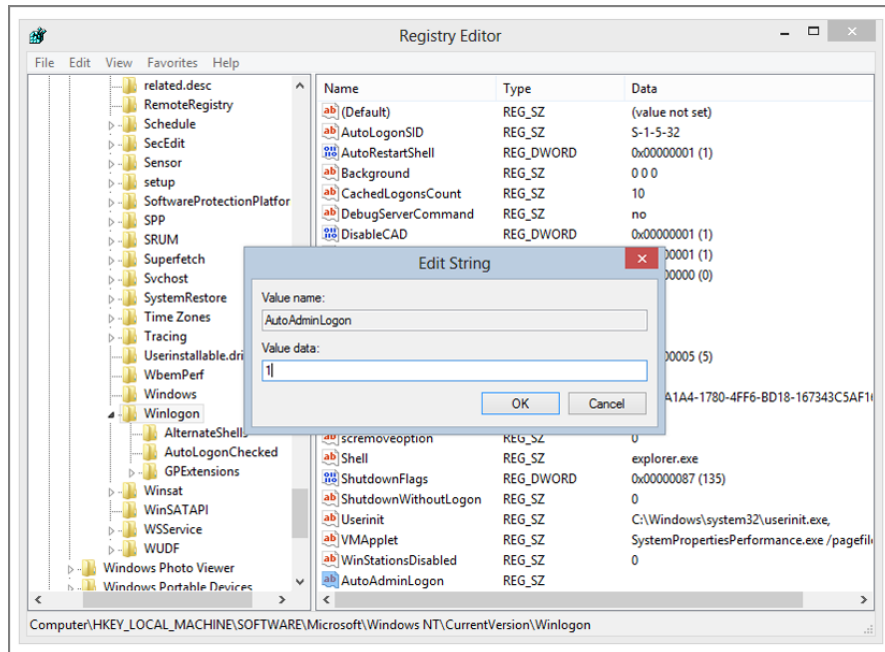
If you are the primary user of your computer and you do not have any other users, or if everyone in your household uses the same username, you are the perfect candidate for enabling automatic logon. Automatic logon is a great technique that saves you time by canceling the need for your computer to wait while you type your password. Even if you do not have a password assigned to your account, you are still required by the logon welcome screen to click your name to sign in. Having to do these tasks manually is an unnecessary waste of time when you can use automatic logon instead.

Enabling automatic logon is a quick and easy registry hack. Follow these steps to speed up your sign-on with automatic logon:

1. Open the Start screen, type **regedit**, and press Enter.
2. After Registry Editor has started, navigate through `HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion\Winlogon`.
3. Locate the AutoAdminLogon entry. If the key does not exist, create it by right-clicking the Winlogon folder and clicking New, and then String Value.

- Right-click the AutoAdminLogon entry and click Modify. Set the Value to 1, as shown in Figure 14-1. Then click OK to save the new value.

**CAUTION** Automatic logon can be a great feature, but it can also create a security problem for your computer. If you use your computer for business, if you have data you prefer to keep safe from others, or both, I strongly recommend that you do not enable this feature. If you happen to step out of your office or if your laptop is stolen, you have left the door to your computer wide open. By enabling automatic logon, you are trading convenience for physical access security. However, you are not changing your network security, so your data is still safe from network attackers. The risk of someone remotely connecting to your computer is the same as if you did not have automatic logon enabled.



**Figure 14-1:** Set AutoAdminLogon to 1 to activate automatic logon.

- Locate the DefaultUserName entry or create a string value if it does not exist.
- Right-click DefaultUserName and select Modify. Set the value to the username that you primarily use to sign in to Windows. Click OK.
- Locate the DefaultPassword entry or create a string value if it does not exist.
- Right-click the DefaultPassword entry and set the value to your password.
- Close Registry Editor and restart your computer.

After you reboot your computer, Windows 8 should automatically sign on to your account. Your computer should now get to the desktop more quickly than before. If you ever want to disable automatic logon, go back into Registry Editor and set the `AutoAdminLogon` entry to 0. It's also a good idea to delete the `DefaultPassword` string value so your password is not stored in plain text in the registry.

## Adjust the Startup Programs

After you sign on, the system loads your profile, finishes loading the Explorer shell, and then begins to load the startup programs. If you have ever purchased a computer, either online or from a retail store, I am sure that you have noticed all the annoying software programs that load automatically right after you sign on. Some computer manufacturers go so far overboard with startup applications that Windows has to hide them so that your taskbar has enough space to show open windows. If you are like me and have built your own computer, you do not have to deal with all the preloaded junk that comes from the big computer manufacturers. Nevertheless, you are still vulnerable to auto-start programs that are installed by many of the popular applications you use. Over time, as you install more applications, the automatic startup applications can get out of control and definitely slow down your logon.

Popular applications such as Adobe Photoshop, Skype, Java, iTunes, and many more install auto-start components. Consider all the extra auto-start components these applications add on top of the auto-start applications already installed on your computer, such as antivirus and anti-spyware applications. Your logon can slow to a crawl because of the dozens of applications that load after you sign on. This section helps you discover what programs are starting automatically and then shows you some great tricks to stop them all from starting up.

### *Identifying and Disabling Auto-Start Applications*

The first step in stopping the auto-start applications is to identify exactly what is starting up and whether it is needed. You can use two different utilities to find this information. The first is the enhanced Task Manager utility that comes with Windows 8. Task Manager now enables you to see which applications start on logon. Another great utility is called Autoruns by Microsoft Sysinternals. Autoruns is a more comprehensive utility that enables you to see all applications that run on logon, as well as other types of auto-starts such as browser or shell plug-ins.

First, I cover using Windows 8's Task Manager to identify and disable unneeded auto-start applications. Then I dive into using Microsoft Sysinternal's Autoruns to disable auto-start applications as well as other auto-start components.

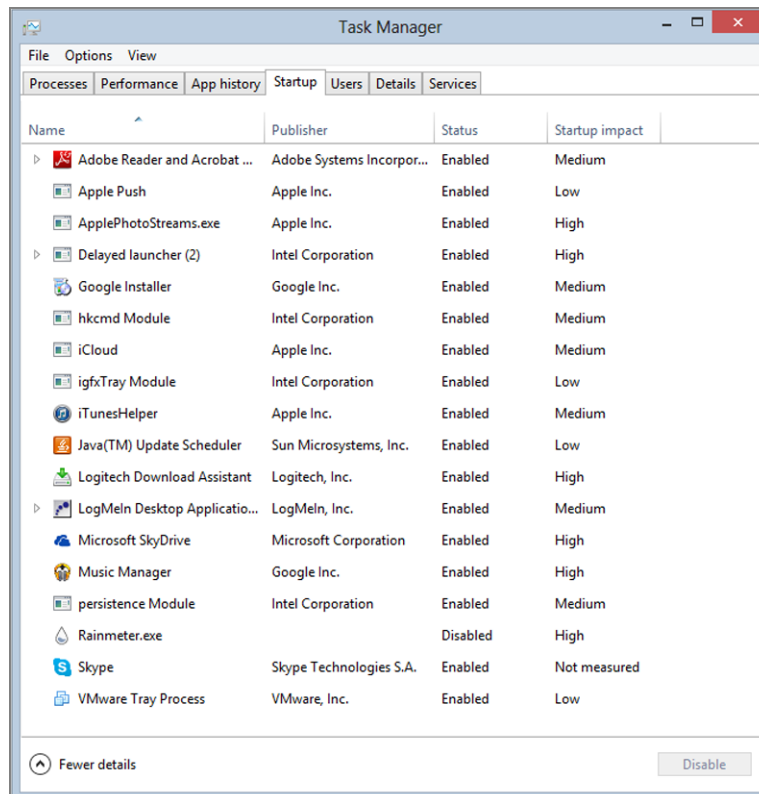
### Using Task Manager to Identify and Disable Unneeded Startup Applications

The enhanced Task Manager utility included in Windows 8 is very easy to use. Additionally, it shows you which applications have a big impact on your system startup. First, you need to get a list of all the applications and components that start up automatically when you sign in. To do so, follow these steps:

1. Open the Start screen, type **taskmgr**, and press Enter.
2. After Task Manager has loaded, click the Startup tab, as shown in Figure 14-2.

Now that the list of the active startup programs is visible, you need to research what programs should be removed.

3. Because almost every computer has different programs starting up after logon, it is best to search the Web with the executable filename to find out if the application can be safely removed from startup. One useful site to visit is a database of common startup programs called AnswersThatWork, located at <http://tweaks.com/614125>. This site provides a recommendation for each of the programs listed. If you cannot find one of your programs listed, do a quick search on Google and most likely you will find several websites showing what the program does and how removing it will affect your system.



**Figure 14-2:** Task Manager's Startup tab shows which programs load at startup.

It's easy to remove the automatic startup applications. When you have Task Manager open, navigate to the Startup tab and follow these steps:

1. Locate the item you would like to disable from starting up.
2. Right-click it and click Disable.

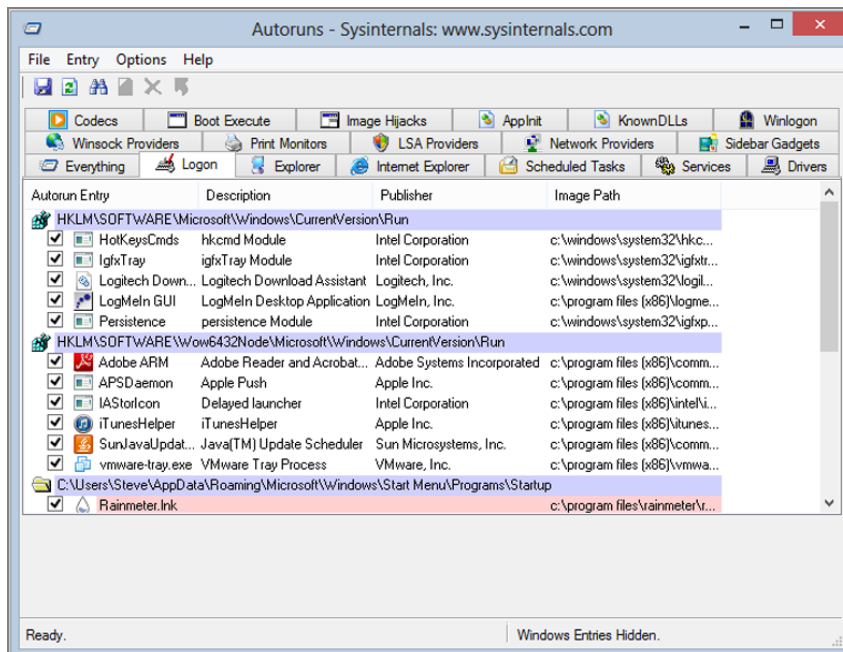
After you remove some of the automatic startup applications, you can sign on much faster. If you have any problems after disabling a startup application component, you can always enable it again by right-clicking on it in Task Manager on the Startup tab and clicking Enable.

### Using Autoruns to Identify and Disable Auto-Start Components

Autoruns by Microsoft Sysinternals is a comprehensive tool for identifying and disabling unneeded auto-start applications, components, and plug-ins. Similar to the System Configuration tool, Autoruns operates in the same way but shows the auto-start components of other items, such as browsers and the system shell.

Autoruns is easy to use. To get started, you need to download a free copy of the Autoruns software from <http://tweaks.com/812786>. After you have Autoruns downloaded and extracted to a folder, follow these steps to get started:

1. Go to the directory where you have extracted Autoruns and run autoruns.exe.
2. When Autoruns starts, click the Logon tab, as shown in Figure 14-3.



**Figure 14-3:** Use Autoruns to control which apps run automatically when you start up your computer.

The auto-start applications display, similar to Task Manager. Identifying an unneeded service is even easier in Autoruns because of the right-click search feature. Right-click any entry and select Search Online. This opens your web browser automatically and searches Google for the process name. Simply selecting the entry also provides more information about what it is.

3. Disabling a process is similar to using the System Configuration tool. Just clear the box to the left of the process name and it no longer starts after a reboot.

The power of the Autoruns software lies in its ability to control other auto-start components, such as browser add-ons and Explorer shell plug-ins. Check out the following list of useful tabs available in Autoruns:

- **Logon**—This tab lists everything that runs when you log on.
- **Explorer**—This tab helps you get your shell extensions under control and view all the applications that tap into Windows Explorer with DLL files.
- **Internet Explorer**—This tab enables you find applications that hook themselves into IE.
- **Boot Execute**—This tab enables you to find applications that have integrated themselves into the system boot.
- **Print Monitors**—Use this tab to get rid of extra print monitors for features that you don't use.
- **Drivers**—This tab provides another way to disable drivers for your hardware devices.
- **Winlogon**—This tab enables you find all the applications that run on your logon screen.

After you uncheck options, simply restart your computer for the change to take effect.

### *Controlling Auto-Start Applications That Keep Coming Back*

Some applications that you disable may begin to start up automatically again. Software developers often use various techniques to check that their application is registered to auto-start when you log on. If you disable an application's automatic startup, some applications will re-enable themselves the next time they are run. The software developers may be trying to make sure you use their application by making it difficult to disable auto-start. In other cases, developers are just trying to make sure that other programs are not disabling their application.

Software applications can often conflict and compete with each other for your computer's resources. This occurred when I installed several media players

on my PC. After installing the programs Winamp, iTunes, RealPlayer, and Windows Media Player, I noticed that they would fight for my music file associations (that is, which application would open the file). Every time I ran RealPlayer, it changed all my music files over to be played in its player by default. The same thing happened when I tried to play my music files in other players. From this experience, I found that it was not uncommon for an application to install a program to be run at system startup that would check and take over (or preserve itself, as the developers call it) from other applications.

Getting rid of these applications from your startup is much trickier than disabling them with Task Manager or Autoruns. It involves digging into the preferences of each application and changing several options. If you have an application that falls in this category, try a quick web search to find the steps specific to the application, or post a request for help on one of the various computer support websites, such as Tweaks.com's forum at [Tweaks.com/forum](http://Tweaks.com/forum).

## Customizing Auto-Start Programs for Other Users

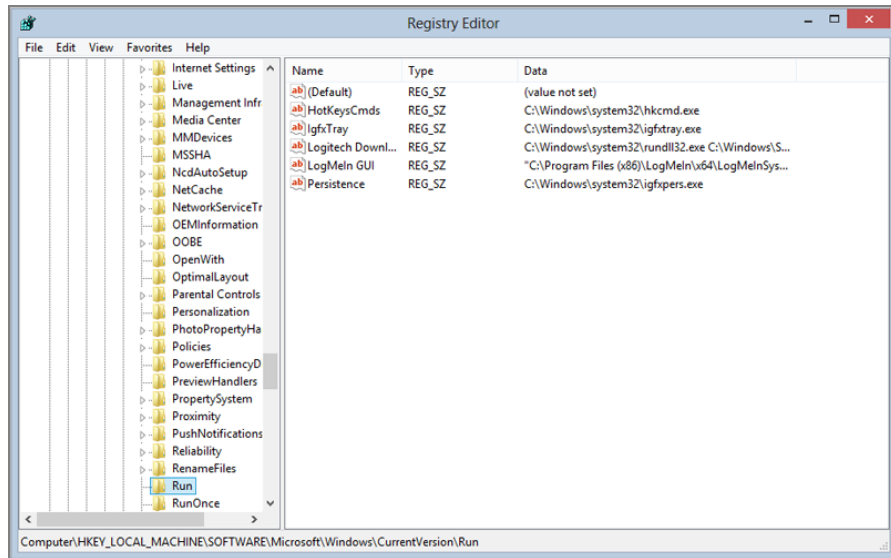
Each user account on your computer can have different auto-start applications associated with it. Certain programs may start up for one user but not for another. All these settings are stored in the system registry. With the help of the Registry Editor utility, you can change these entries manually.

First, go to the registry where Windows 8 stores the auto-start information. Windows stores auto-start information in two places for every user. It stores which programs start for a specific user under the user's registry hive/location. It also stores a list of programs that start automatically in the local machine hive. Registry entries in the local machine hive start up for all users of the computer, so removing these entries removes them for all users of the computer.

Now that you know the two different types of startup items—user-specific and all-user entries—you can begin hacking the registry to change the startup programs. First, you learn to modify the startup programs for all users, and then you learn how to modify the startup programs for individual users.

To modify the startup programs for all users, follow these steps:

1. If you have not already done so, start Registry Editor by opening the Start screen, typing **regedit**, and pressing Enter.
2. After Registry Editor has loaded, expand and navigate through `HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Run`. You see a list of all the auto-start applications in the local machine context, as shown in Figure 14-4.



**Figure 14-4:** Registry Editor shows the auto-start programs for all users.

- To remove a startup program, right-click the name and select Delete. Alternatively, to add a new entry, right-click the white space and select New and then String Value. Right-click your new entry and select Modify so that you can edit it and set the value to the path of the executable you want to run.

That is it. You now know how to add and remove programs that start up for all users on the computer. The steps for modifying the startup programs for individual users are very similar. The only difference is that you have to go to a different place in the registry.

Instead of navigating in the registry under `HKEY_Local_Machine`, you have two options. You can log on to an individual's account and then go to `HKEY_CURRENT_USER` followed by the same navigation path used earlier. Alternatively, you can go to `HKEY_USERS`, expand the account SID (Security Identifier) key, and then follow the path used earlier.

**TIP** When navigating through `HKEY_USERS` it can be hard to identify whether a SID belongs to a specific account. I wrote a handy utility available for free at [WingEEK.com/Software](http://WingEEK.com/Software) called SID Resolver that translates the account SID to the actual account name.

Both methods result in the same outcome. However, if you don't have access to a user's account, you can still modify his or her auto-start applications by going to `HKEY_USERS`.

## Other Time-Saving Tips

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The preceding sections covered the largest contributors to a slow logon, but a few other tips can save you additional time. These tips do not save a lot of time individually, but when you apply them in combination, they can really add up. Furthermore, if you are running Windows 8 on older hardware, these tips help you significantly decrease your logon time even further.

### Turning Off the Logon Sound

The music that Windows 8 plays every time the logon screen displays (and then again when you log on) is something that you can do without. Hearing the tunes was really cool back when most people didn't have sound cards in their computers. Nowadays everyone has a sound card, and the cool new Windows 8 logon sound is starting to get old. Less is more, and when your computer has to load a 500 KB media file to play, it slows things down. I recommend that you disable the logon sound. To do so, follow these steps:

1. Open the Start screen, type **Control Panel**, and hit Enter.
2. Click Hardware & Sound and then click Change System Sounds listed under Sound.
3. Locate the Program Events box, scroll through the list, and click Windows Logon. Remove the assigned sound by setting it to (None) in the Sounds drop-down list.
4. Below the Program Events list, remove the check next to Play Windows Startup Sound as shown in Figure 14-5.
5. Click OK and you are finished.

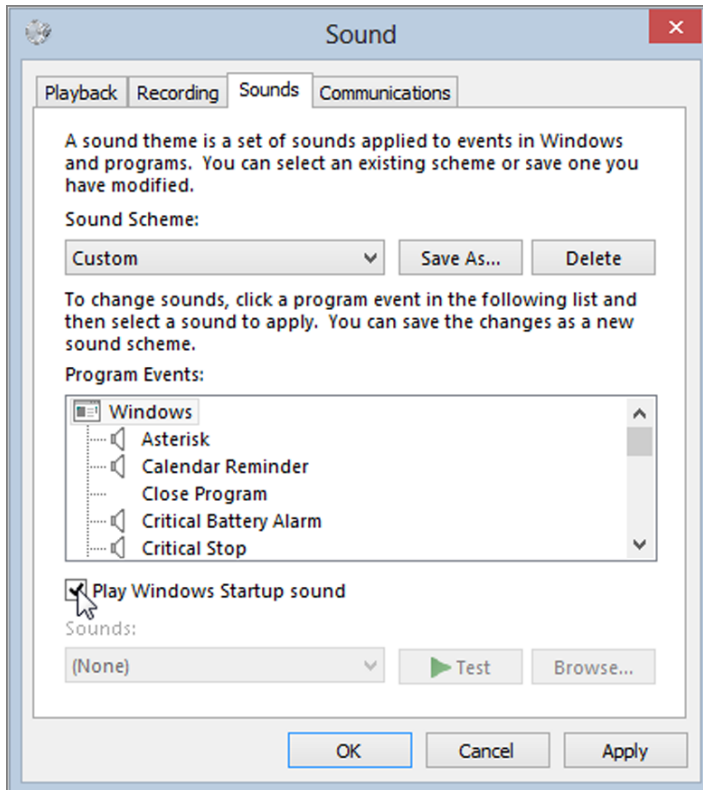
Now that wasn't too bad. Plus, you just shaved another second off your loading time. If you want to save even more time in Windows, you can experiment with turning off all sounds by changing the Sound Scheme on the Audio Devices and Sound Themes screen from Windows Default to No Sounds.

## Summary

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Throughout this chapter, you found out how to remove unnecessary steps from your logon to cut the fat from the system load and make your computer load faster. You learned how to remove auto-start programs as well as how to master the tricky programs that are hard to disable. This chapter also covered other ways to get that loading time down.

The next step on your performance makeover is speeding up Windows Explorer. I go over a few cool ways to speed up the most popular program in Windows: the shell.



**Figure 14-5:** Change sounds that play on startup in the Audio Devices and Sound Themes screen.



# Speeding Up Windows Explorer

Now that you have optimized the boot startup and your logon, it makes sense to speed up the most-used application in Windows 8: Explorer. Windows Explorer is responsible for almost the entire GUI with which you normally interact in Windows 8. The Start menu, taskbar, and file exploring windows are all part of the Explorer shell. As you can see, Explorer is an expansive application that is a major part of the operating system.

This chapter shows you how you can use some cool hacks to increase the performance of Explorer. First, you improve the speed of browsing and accessing files on your computer. Then you adjust the visual effects of Windows 8 so that it performs better on your computer hardware. You finish this chapter by tweaking Windows Search for optimal performance.

## Speeding Up File Browsing and Access

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The most basic operations your computer performs are reading and writing files to disk. All other functions build on these common tasks. For example, when you launch an application or play a game, your computer must read the files from disk. The same is true when you are simply browsing through lists of files in File Explorer. By optimizing these basic operations you will improve the performance of almost everything on your PC.

How can you do this? Because the processes of browsing, reading, and writing files all interact with the filesystem. Using various tweaks and utilities, it is possible to optimize the speed of the filesystem.

Before you go any further, be aware that the following speed tips for the filesystem work only for NTFS. If you do not know what filesystem your computer is using, you can go to Computer in the Start menu, right-click your hard drive, and select Properties. This brings up the Local Disk (C:) Properties window, which tells you the type of filesystem your hard drive is running. If your hard drive is running FAT32, these tips will not work for you.

In my opinion, NTFS is the best filesystem for Windows 8. It has many advanced security features and also performs better on many machines. If you are still running FAT32, or for some odd reason your computer came preinstalled with FAT32, consider converting your hard drive to NTFS.

#### QUICK TIP

Converting your drive to NTFS is a snap. Open the Start screen, type **Command Prompt**. Then, right-click the Command Prompt shortcut and select **Run As Administrator**. Command Prompt will now load with the administrator access that you need to run the convert tool. Next, at the prompt, type **convert c: /fs:ntfs** and press Enter to start. If you want to convert a different drive letter, just replace the C: with the drive letter that you want. For example, if you want to convert your D: drive, type **convert d: /fs:ntfs**. The actual conversion process takes a little while, especially on large drives. Keep in mind that after you convert to NTFS, you cannot convert back to FAT32 without reformatting the drive.

Now that the requirements are cleared up, you are ready to get started.

## Disabling Legacy Filename Creation

Legacy filename creation is a feature of NTFS that is included in Windows for backward compatibility with older applications. Over the years, the filesystem in Windows has changed dramatically. Among the first things that changed were the limitations of the old MS-DOS 8.3 file naming standard. The old MS-DOS filesystem limited filenames to a maximum length of eight characters plus a three-character extension. As Windows became more advanced, this needed to change to allow for greater flexibility. Eventually, these limitations were expanded with the release of Windows 95, which bumped up the maximum filename limit to 255 characters. However, there was a hidden price to pay that affects Windows 8, too.

Microsoft has always believed that backward compatibility contributes to the success of Windows, because it enables users to upgrade to a new version while

allowing their older applications to continue to work. However, that mentality often results in performance reductions caused by code that has to be tweaked to allow for new functionality while preserving existing functionality. The legacy filename creation is a perfect example of this scenario. For Windows 8 to support older Windows applications, the NTFS has to support both the old MS-DOS file naming standard as well as the new standard that allows for longer filenames. How does Microsoft do it? It's rather simple. When you create a file, the file system creates two names for it: one in the MS-DOS 8.3 standard and another in the latest filename standard.

Creating two filenames for every file is not the kind of buy-one-get-one-free situation that is good. Creating the second filename takes more time and slows down the performance of the filesystem. Although this legacy feature has good intentions, it causes the performance of file creation to decrease by 200 percent. Disabling this feature will help you get that lost performance back.

Disabling legacy filename creation kills any application you have that needs the 8.3 filename standard. If you try to run an application that requires 8.3 filenames, you will get various error messages. Even though this technology is more than 15 years old, some major software developers still write code that requires the ancient 8.3 standard. Unfortunately, in the software world, some companies don't bother to fix things simply to increase the performance of the user's computer. For the most part, they do not have to worry about it because Microsoft supports the lazy programmers by leaving these old, inefficient features in the operating system.

Even though some applications will fail when this feature is disabled, I highly recommend trying to disable it on your computer. In the worst-case scenario, you would have to turn the feature back on again. However, almost all your programs will work just fine. For those that don't, try to download a new version from the company's website, or perhaps use this as an excuse to buy a version of the product from this century.

One type of program that has the most problems when the 8.3 standard is disabled is the installer application that many software developers use to get their programs up and running on your computer. For some reason, a few installers are still programmed using the old 16-bit technology that depends on the short filename compatibility feature to function.

Users frequently run into this error with Symantec's anti-virus software. According to Symantec, users may receive a 1639. `Invalid command line argument` error when they install certain versions of Symantec's software. For users of Symantec software who want to disable the old support for greater performance, the company recommends enabling the 8.3-standard filename compatibility support when the software is being installed and then disabling it after the software is installed. The software should then work fine.

You can apply that basic Symantec approach to any situation in which you receive errors when installing applications. Just enable the 8.3-standard filename compatibility support during the install, and then disable it again after the install is complete.

Now that you are aware of the possible problems that disabling the legacy filename standard can cause and know what to do if you experience any, you are ready to disable the feature. Follow these steps:

1. Open the Start screen, type **Command Prompt**.
2. Command Prompt appears at the top of the list in your Start screen. Right-click the shortcut and click **Run As Administrator**, as shown in Figure 15-1.
3. After Command Prompt has loaded in the Administrator context, you can access the NTFS configuration utility. At the prompt, type **fsutil behavior set disable8dot3 1** as shown in Figure 15-2, and press Enter.
4. Close Command Prompt and restart your computer to activate the change.

Enabling the legacy filename feature is also very easy. Just repeat the preceding instructions, but run **fsutil behavior set disable8dot3 0** instead, and then restart.

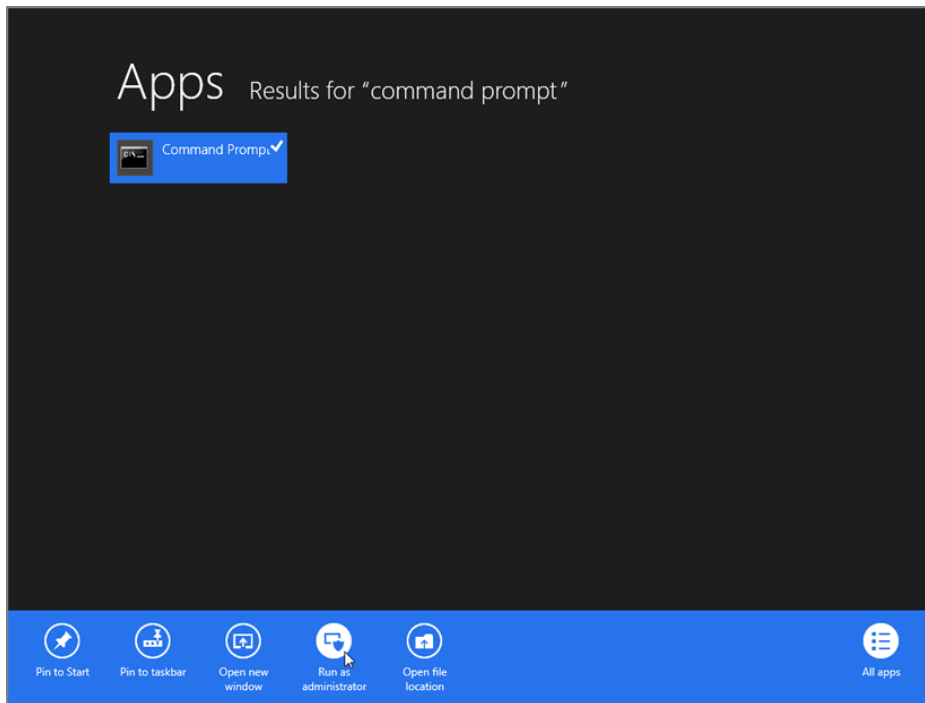
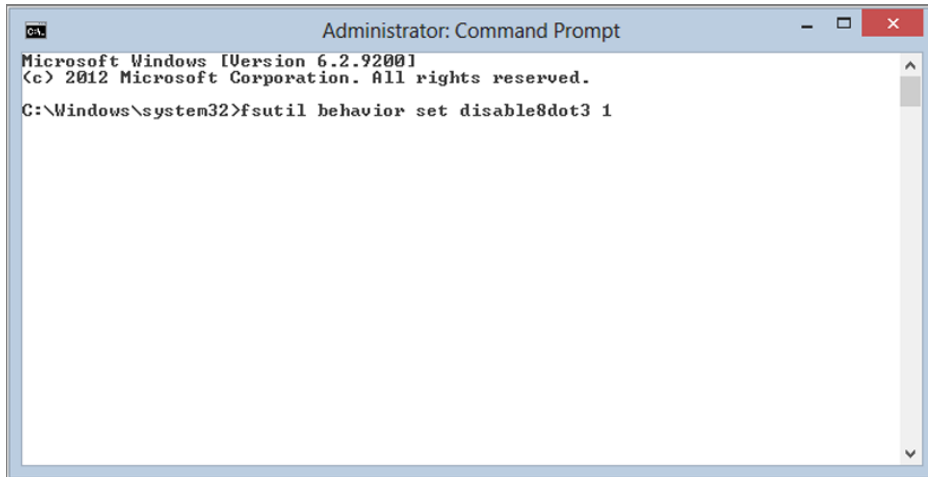


Figure 15-1: Run Command Prompt as administrator.



**Figure 15-2:** Disable legacy filename creation with the filesystem utility.

## Disabling the File Access Timestamp

Every time you or an application accesses a file on your computer, the filesystem records the date and time and stores the timestamp in two locations. Simply accessing a file requires the system to write to the master file table (MFT) and the directory in which the file is located, which results in two writes for every file read. Windows Explorer is one of the most read-intensive applications on your computer. Nothing requires more reads to your filesystem than browsing through your files. In Windows 8, Explorer has a number of new file previews that require even more file reads. All these file reads add up to extra timestamp writes, resulting in slower performance.

The Microsoft NTFS engineers were smart enough to realize that all this timestamp logging can get out of control very quickly, resulting in an even greater performance slowdown. Applications usually open only a small chunk of a file at a time, and then repeat the small chunk reads until the entire file is open. This can generate hundreds and maybe even thousands of file reads, depending on the file size and application. As you can imagine, many file reads in a short amount of time can put a lot of extra load on the filesystem. To handle this problem, Microsoft designed NTFS to update only the last access timestamp about every hour, which breaks down to just one, two-step timestamp update for each file per hour. This solves the preceding problem, but it still has to do two writes for every file; it just limits the need to update the same file over and over again.

Disabling the file access timestamp is a great way to speed up Windows Explorer, but it is not without side effects. Often, backup applications utilize the file access

timestamp to determine which files to back up when performing a sequential backup operation (a backup operation that copies only the files that have newer timestamps since the last backup date). Check with your backup application's website to find out if it will be affected. If it is, consider doing full backups instead of sequential backups. Full backups are not affected by the lack of a last access timestamp.

The process for disabling the file access timestamp is very similar to disabling MS-DOS filename support. Just follow these steps:

1. Open the Start screen and type **Command Prompt**.
2. Command Prompt appears at the top of the list in your Start screen. Right-click the shortcut and click Run As Administrator.
3. After Command Prompt has loaded in the Administrator context, you can access the NTFS configuration utility. At the prompt, type **fsutil behavior set disablelastaccess 1**.
4. Close Command Prompt and restart your computer for the change to take effect.

If you run into any problems with this change to your backup application or any other applications, you can easily undo the tweak. Just type **fsutil behavior set disablelastaccess 0** at the Command Prompt instead.

## Adjusting NTFS Memory Allocation

NTFS likes to cache files that are open in physical memory for the fastest possible access to the raw data. It does this by first reading the data from the hard drive and then transferring it to physical memory. Depending on the amount of RAM in your computer, portions of the open files may be paged to disk in the paging file because the entire file cannot fit in the available physical memory. This results in slower overall performance because for an application to read the entire file, existing data in the physical memory cache has to be paged back to the hard disk to make room, and then other unread portions have to be pulled back from the hard drive into physical memory. This carefully orchestrated memory swap requires a lot of CPU, memory, and hard-drive processing time. Whenever memory paging occurs, it slows down the overall performance of your computer.

If you use your computer for anything that requires fast reads of hundreds of files, such as indexing your MP3 collection, you might notice that it takes your computer a while to read these files. This is because the filesystem is allocated only a certain amount of physical and paging file space, which results in increased paging activity. Depending on the amount of physical memory in your computer, you might be able to get away with increasing the memory

allocated to NTFS on your computer. This will increase the performance of high disk read operations if you have enough free RAM in your PC.

Follow these steps to increase the memory available to the filesystem:

1. Open the Start screen and type **Command Prompt**.
2. Command Prompt appears at the top of the list on your Start screen. Right-click the shortcut and click Run As Administrator.
3. After Command Prompt has loaded in the Administrator context, you can access the NTFS configuration utility. At the prompt, type **fsutil behavior set memoryusage 2**.
4. Close Command Prompt and restart your computer to activate the change.

If you notice any decrease in performance or have bad results from this tweak, undoing the change is very simple. Just type **fsutil behavior set memoryusage 1** at the prompt instead and reboot.

## Speeding Up the User Interface

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Windows 8 is all about the new visual experience. Unfortunately, the visual features that contribute to the experience can put a heavy load on your hardware. Unless you have a newer PC with a recent graphics card and a fast CPU, you may see a slowdown in performance caused by the visual effects and features. This is most noticeable when you are navigating between windows and closing them. These effects can sometimes give the impression that your computer is slower than it actually is because the animation is not running as fast as it was designed to run.

In Windows 8, you can fine-tune the settings of the entire user interface for maximum performance. You don't want to disable all the settings, however; instead, find a balance between a good-looking interface and what you are willing to compromise for speed. The following paragraphs show you how to do this.

## Fine-Tuning Performance Options

I do not have the latest graphics card or a fast multi-core CPU—although my hardware does meet the minimum requirements, so the new visual effects do run. Unfortunately, they do not always run very well, and even appear to slow down my system at times. The animation effects often appear rough, and when I drag windows around there is a slight lag. The poor performance occurs because the value ATI video card that I have can barely keep up with the work it has to do. Because my video card meets the bare minimum requirements, I need to fine-tune the visual effects so the visual effects run better on my system.

## Adjusting Animations

You can adjust the visual effects of Windows 8 very easily, enabling you to fine-tune the performance of Windows Explorer to work well with your hardware configuration. You can make these adjustments using the Windows Performance Options settings. Open the Start screen, type **SystemPropertiesPerformance** (no spaces between words), and then press Enter. This starts Performance Options, as shown in Figure 15-3.

When Performance Options is started, you will notice three preset options and one custom option:

- **Let Windows Choose What's Best For My Computer:** Windows uses your Windows Experience Index to pick the settings it thinks will result in the best balance of appearance and performance for you.
- **Adjust For Best Appearance:** Turns all settings on.
- **Adjust For Best Performance:** Turns all settings off.
- **Custom:** Enables you to select the individual settings manually.

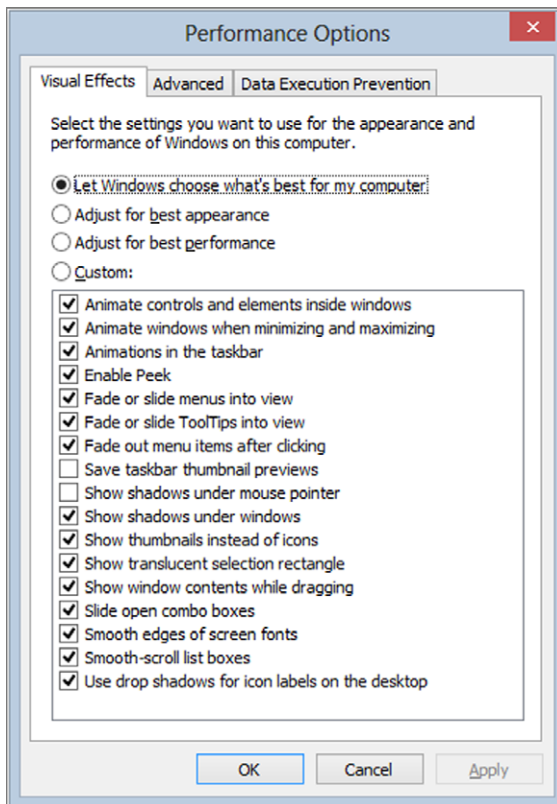
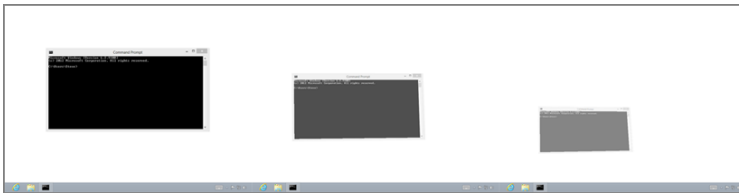


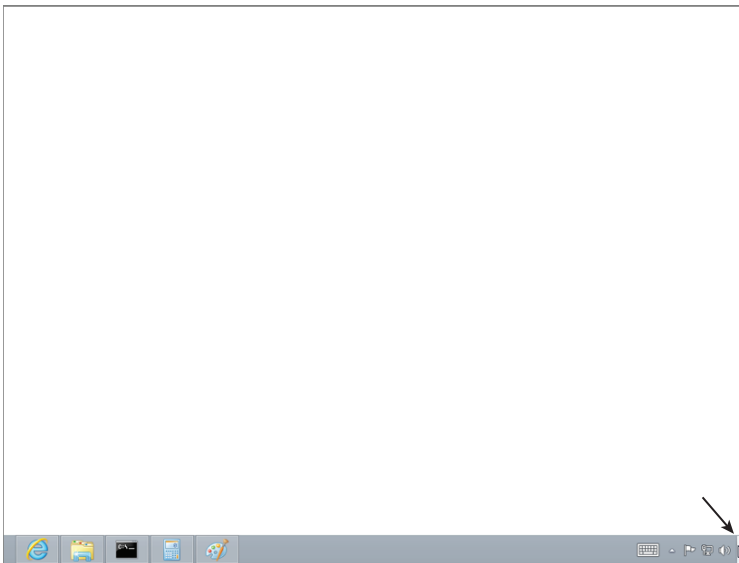
Figure 15-3: Windows 8 offers performance options.

Select the Custom option so that you have total control over which settings to enable and disable. Now you can pick the individual settings that work best for your hardware. Take a look at the following list of visual effects settings:

- **Animate Controls And Elements Inside Windows**—This setting animates controls inside windows, although it does not affect most applications.
- **Animate Windows When Minimizing And Maximizing**—This effect animates the window when it is minimized to the taskbar, as shown in Figure 15-4. It is a cool-looking effect, but it is graphics intensive and can slow down the performance of the GUI. I recommend disabling this effect to gain some extra speed.
- **Animations In The Taskbar**—Application taskbar icons fade in and out along with a nice slide effect when this is enabled.
- **Enable Peek**—Enables you to peek at the desktop by moving your mouse to the bottom-right corner of the taskbar as shown in Figure 15-5. All open windows will fade away so you can view the desktop.

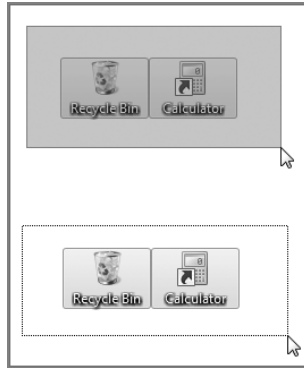


**Figure 15-4:** Windows 8 animates minimizing or maximizing folders.



**Figure 15-5:** Desktop Peek lets you see your desktop without closing open files and apps.

- **Fade Or Slide Menus Into View**—This effect allows the menus that pop up throughout the system to fade in. You will experience this when you navigate through a menu bar or when you right-click something. This effect does not affect the performance of the system. Some users who have older computers and slower video cards can experience better performance by disabling this effect.
- **Fade Or Slide ToolTips Into View**—This effect allows the ToolTips in various parts of the system to fade in when an event occurs or when you hold your mouse over an object. This effect doesn't affect performance of the system of most users, but once again, those with older systems should disable this effect for better performance.
- **Fade Out Menu Items After Clicking**—This effect, just like the other fade effects, is slower on older systems and should be disabled for best performance.
- **Save Taskbar Thumbnail Previews**—This setting allows the system to cache thumbnail previews so you always have a thumbnail to display when you hover the mouse over an open application on the taskbar.
- **Show Shadows Under Mouse Pointer**—This effect gives the mouse a 3-D appearance. I have not found this feature to affect performance.
- **Show Shadows Under Windows**—Toggle between enabling or disabling shadows. Disabling the shadows creates a very flat look for the interface.
- **Show Thumbnails Instead Of Icons**—This feature enables you to view thumbnails of your images instead of the associated file icons. Unless you have problems with a slow hard drive on your computer and a low amount of RAM, or have directories with thousands of pictures in them, I feel this feature provides more value and is worth the performance decrease. However, if you don't like thumbnail views of your images, disable this to gain speed while browsing your image files.
- **Show Translucent Selection Rectangle**—With this effect enabled, when you drag the mouse to select items you see a nice-looking blue border with a semi-transparent blue interior instead of the old dotted-line box we have all seen in older versions of Windows. Figure 15-6 shows the two different types of selection rectangles. On older machines, this effect may work very slowly and interfere with the selection of items because it uses up a lot of the CPU. On the average computer, this effect presents no problems at all. If you have a slow machine, disable this effect; otherwise, keep it enabled and enjoy the nicer look.
- **Show Window Contents While Dragging**—If you are using the Aero Glass interface and experience a lag when you move windows around, disabling this option will help because you will see a box outline instead of the entire window image when moving it. If you only have to deal with a tiny lag, keep this effect enabled because it definitely looks nice.



**Figure 15-6:** Selection rectangle comparison. A translucent selection rectangle appears on top.

- **Slide Open Combo Boxes**—This effect has no noticeable effect on performance.
- **Smooth Edges Of Screen Fonts**—This feature depends more on your video card and monitor than your system. Use of any type of font smoothing requires your video card to do more work. On older machines, I would disable this effect. Also, if you have a cathode ray tube type (CRT) monitor, you will not benefit all that much by having this enabled. The font smoothing effects, especially ClearType, work best on flat-panel LCD monitors.
- **Smooth-Scroll List Boxes**—This has no effect on performance based on my tests. You would have to be crazy to disable this effect because it is just so cool.
- **Use Drop Shadows For Icon Labels On The Desktop**—Unless you do not like the look of this feature, I do not recommend disabling it. The performance benefit of disabling it is insignificant.

Now that you know what all the settings do, just uncheck any of the options that you would like to disable and click OK to save your selections. Your computer will pause for up to 15 seconds while it adjusts all the settings.

If you ever change your mind and want an effect back, just go back to the Performance Options tool and recheck any options you disabled.

## Adjusting Explorer's Search

You can search files and folders throughout the user interface in Windows 8. Almost every window has a search box that enables you to find documents, images, applications, and other files almost instantly. Accelerated by the Windows indexing

service, Windows Search can quickly search through a file index that is continuously updated by the indexing service running in the background. For a search in Windows to be successful, there needs to be a good balance between the amount of time it takes to get results and the overall system performance decrease caused by the background indexing service.

You can use some cool tricks to increase the success of a search while also increasing overall system performance by reducing the amount of work the indexing service has to do. First, I show you how to adjust where Explorer searches for an item when browsing through folders. Then I show you how to adjust some settings on the indexing service, as well as how to use Windows Search without an index. All these hacks help you increase the performance of Windows Explorer and your overall system performance.

## Adjusting Search Settings

Typically when you use a search box when browsing through folders, you are looking for a specific file. In Windows, you can configure search to look for partial matches, the content of files, and within compressed files such as zip and cab files. By limiting what it is searching through, you can increase the speed with which your results are returned.

Adjusting the search settings is very easy to do. Follow these steps to adjust the search scope for any folder:

1. Open File Explorer.
2. Navigate to a folder for which you would like to change the search scope. Click the View tab and then click Options on the far right.
3. When Folder Options loads, click the Search tab.
5. Under How To Search, remove the check next to Find Partial Matches.
6. Under Searching Non-indexed Locations, you can configure whether you want to search system directories, within compressed files, and within the contents of files.
7. After you have made your changes, click OK to save them.

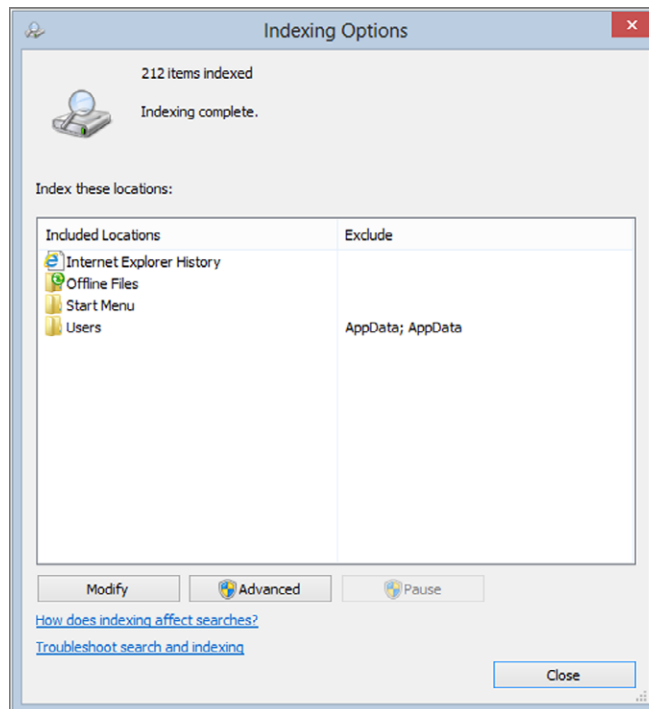
## Adjusting Windows Indexing Service

The search settings are just one part of the search feature in Windows. The real brains—the feature that enables you to search quickly through the various types of files on your computer—are in the indexing service. This service runs in the background and monitors only folders and file types it is configured to monitor. The content of any files located in folders the indexing service monitors are read by the service and indexed. That indexing data is then stored in a centralized database.

The indexing service enables you to search through the Start screen and find all files, documents, and images that match the search term in both the filename and within the document. If the file indexed is a common file format such as a Microsoft Word document, most likely there is a reader for it within the indexing service. In theory, you could search for the word “the” and find all documents and e-mails on your computer that contain that word. This is all controlled by the settings for the indexing service.

You can adjust the settings that the indexing service uses to index only the types of files and locations you care about, which will reduce the amount of work the indexing service has to do. This increases the overall performance of your computer, giving it more free resources because they are not wasted indexing files you don’t care about. Adjusting these settings is easy when you know where to do it. Just follow these steps to get started:

1. Open the Start screen, type **Indexing Options**, change the filter to Settings, and then press Enter.
2. When Indexing Options loads, you see all the locations the indexing service is currently monitoring, as shown in Figure 15-7.



**Figure 15-7:** Indexing Options for Windows Search shows what locations are monitored.

3. Click Modify followed by Show All Locations.

This is where you can fine-tune where the indexing service looks. You can even navigate between locations while on the Modify screen by using the summary list at the bottom of the window.

4. Navigate through the list of drives and folders and uncheck any locations you do not want the indexing service to monitor. When finished, click OK.
5. When you are back on the Indexing Options window, you can adjust the file types that the indexing service reads by clicking the Advanced button and then the File Types tab.
6. Scroll through the list and uncheck any file types that you do not want the indexing service to keep track of.  
By default, hundreds of files are checked. Reducing the number of files that the indexer has to monitor will greatly improve performance. Click OK when you are finished.
7. Now is a good time to rebuild the index. Click the Advanced button again on the Indexing Options window.
8. Then click Rebuild on the Index Settings tab.

You are now finished adjusting the Windows indexing service for maximum performance while preserving the ability for fast searches in Windows Explorer.

## Using Windows Search without an Index

The indexing service plays a key role in accelerating searches within Windows 8. Although this service provides a lot of value by enabling you to search thousands of files quickly, it is not a requirement of Windows Search. It is possible to disable the indexing service completely; however, searches with Windows Search will require much more time to complete and can cause your hard drive to do a lot of work while Windows Search iterates through folders and files instead of just accessing a search index.

Disabling the indexing service saves computer memory and reduces the CPU time required to run the application in the background. Depending on how often you use the Windows Search feature, you can decide whether it is worth sacrificing fast searches for a little extra performance from Windows Explorer. Follow these steps if you decide to disable the indexing service:

1. Open the Start screen, type **services.msc**, and then press Enter.  
This loads the Services utility.
2. After Services has loaded, scroll through the list and locate the Windows Search service. This is the indexing service. Right-click this service and select Stop.

3. When the service is stopped, make sure that it does not start again. Right-click the service again and select Properties.
4. Locate the Startup Type drop-down box and change the startup type from Automatic to Disabled.
5. Click OK to close the window.

You have now successfully disabled the indexing service that is used by Windows Search. Although your searches are now slower, you have freed up processing power that can be used by other processes such as Windows Explorer.

## Summary

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You have now finished optimizing Windows Explorer. The things that you have done in this chapter may seem to make only minor differences in the performance of your computer, but these hacks have a big impact on the performance of Windows Explorer as well as other applications on your system. Tweaking the filesystem settings, fine-tuning the visual settings, and adjusting Windows Search are all valuable skills to have when you want your computer to run at top performance.

You are now ready to optimize the core Windows components. In the next chapter, you learn tricks to add more RAM to your computer and fine-tune the paging file, and other hacks that will take your computer's performance to the next level.



# Optimizing Core Windows Components

You can think of the core Windows components as the steel structure of a skyscraper. This basic structure of the building provides support for all the other components. Likewise, the many levels of Windows 8 support each other, and the lowest level interacts directly with the hardware. This chapter helps you tweak the core components of Windows to improve the overall performance of your computer. Instead of a steel beam structure, Windows 8's core components are short-term memory (RAM, aka volatile memory), long-term storage (your hard drive, aka non-volatile memory), and the CPU. All the programs that run on Windows, including Windows itself, eventually break down to these three core components.

To get started, you tweak your system's short-term memory using some techniques and features of Windows 8 to increase the speed of memory operations. Then you tweak another critical component—the paging system—and finally, speed up your hard drive and adjust how your CPU works.

## Windows Loves RAM

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Microsoft made a lot of improvements in Windows 8 to reduce the memory utilization compared to the notorious memory hogs Windows Vista and Windows 7. This has helped significantly, but Windows still performs best when the computer has sufficient memory. I already covered trimming the fat from Windows 8 by

showing you how to disable components and services that you do not need to use. This helps, but on some computers it is not enough.

According to Microsoft, the minimum amount of RAM required to run the basic version of Windows 8 is 1 GB for 32-bit and 2 GB for 64-bit. I'm not sure how that is determined exactly, but I feel sorry for you if you are running Windows 8 on just 1 GB. That may be enough for the core operating system and one or two running applications, but if you are doing anything more, I highly suggest adding more physical RAM. Before I continue, here are the basics of RAM.

RAM is the fastest type of memory on your computer outside the CPU cache. No matter how you use your computer, RAM is always in use. Your computer uses RAM as a high-speed temporary storage location to store data and applications with which the CPU is currently working. Every time you launch an application, Windows has to load it from your hard drive into RAM so that the CPU can execute the code. Depending on the available memory, Windows may have to kick out some other data that is currently in memory. That is called *paging*, which is covered in greater detail later in this chapter. Paging is a slow process because it saves current memory back to the slow hard disk. It is best to avoid paging as much as possible so the computer doesn't waste time trying to make room for your applications or data to fit in memory. When you consider all the memory that Windows 8 uses on top of your normal applications, you will see why it is so important to have the right amount of high-speed memory available.

## Adding RAM to Your Computer

Sometimes your only option to add more speed to your computer is to give it more of what it likes most—RAM. If you have a low amount of RAM on your computer—say you are right at the bare minimum requirements according to Microsoft to run Windows 8 and you have already tried all the performance enhancements in this book—I recommend upgrading your RAM as a final move. I have never seen any hardware upgrade that increases the speed of a computer more than upgrading the RAM does. Upgrading the amount of RAM you have on your computer is an easy and low-cost method to jump-start the speed of your computer. Unsure whether you have the skills to do it yourself? No problem—just follow the recommendations here for help in buying and installing your new RAM.

### *Buying RAM for Your Hardware*

Picking out RAM can be very confusing because so many different types exist. The following two main points take the complexity out of buying RAM:

- **Type of RAM your hardware requires**—These days you typically need DDR2 or DDR3 memory, and if you have a laptop you need the smaller

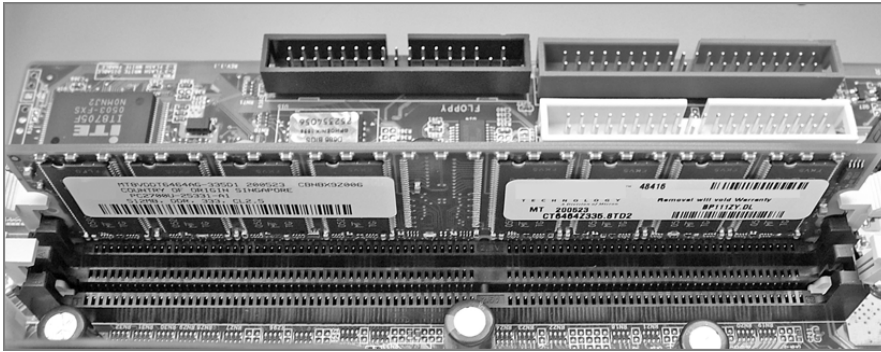
DIMM size of DDR memory called a SODIMM. You can usually go to the website of your computer manufacturer, type in your model number, and find the exact type of memory that will work with your hardware. Alternatively, use Kingston's Memory Search tool at <http://tweaks.com/633323> to find the kind of memory you need. I recommend shopping around; buying directly from computer manufacturers is typically more expensive.

- **Number of open RAM expansion slots**—To add additional memory to your computer, you need to consider the number of open RAM expansion slots you have on your motherboard. Most computers have either two or four slots and, depending on your manufacturer or whether you built it yourself, you may be using up all the slots. If your slots are all in use, don't worry—you can still upgrade your RAM if you are not already at the max your machine supports. Pieces of RAM usually come in combinations of 256 MB, 512 MB, 1 GB, 2 GB, 4 GB, and now 8 GB of memory per stick. Say you have two RAM slots and they are both currently filled with 256 MB RAM chips; you can still buy two 512 MB chips to replace them, which doubles the amount of RAM you have. Ideally, if you have a lot of slots free it is a good idea to buy DDR memory in pairs so you can take advantage of the dual-channel architecture. You will notice two different colored DIMM slots on your motherboard if your system supports dual channels.

### *Installing Your New RAM*

After you have ordered or picked up your new RAM, it is really easy to install it yourself. Keep in mind that opening your case may void your warranty. Having fun yet? Follow these steps to pop in your new memory:

1. Unplug all the cables on the back of your computer, including the power cable. Detach the battery if working on a laptop.
2. Use a Phillips screwdriver or push the case release button to remove your case or memory hatch.
3. When you have access to your motherboard, locate the memory expansion slots, as shown in Figure 16-1. Attach your antistatic wristband at this time. Don't have one? No big deal. Just touch any part of the metal case frame with your hand to discharge yourself.
4. Removing any existing pieces of RAM is very simple. Push the plastic or metal clips away from the sides of the stick of RAM. This will usually cause the RAM to pop out.



**Figure 16-1:** Open your computer to find the RAM expansion slots.

5. Putting a new stick of RAM in is just as easy. While the plastic clips are open (pushed away from the sides of the slot), align the chip the correct way so it fits in the slot properly and gently push down. As the stick of RAM goes down, it causes the plastic clips on the sides to snap in place.

Put your case back on, hook up your cables, and you are finished. If you have any errors on your BIOS screen when you reboot or if your computer does not recognize the new RAM you put in, make sure you got the right kind of memory and that it is seated properly in the slot.

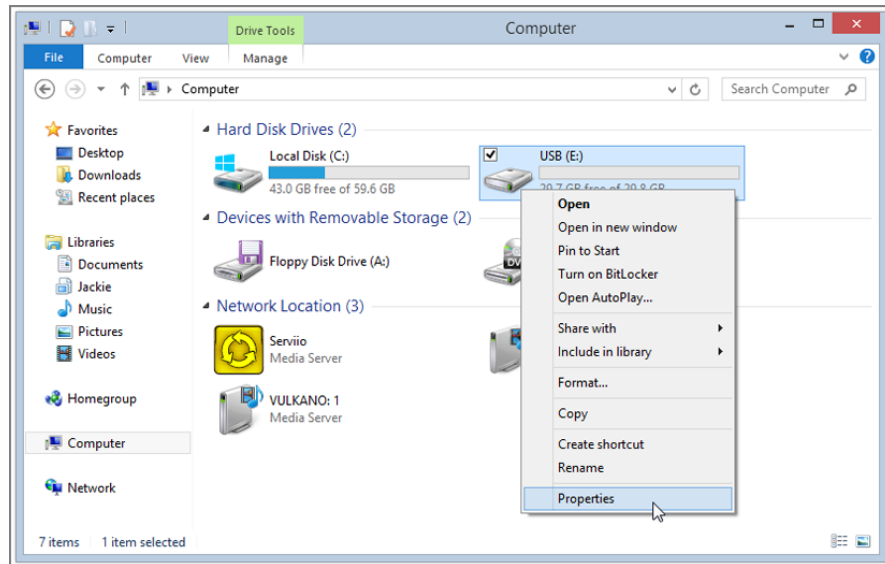
## Using a USB Storage Device to Add Memory

Although upgrading the amount of RAM you have in your computer is a good last resort if you are having performance issues, Windows 8 includes a cool trick to assist the amount of RAM you currently have. As I mentioned earlier, any time your computer has to kick applications and data out of RAM because there is not enough room, it slows down your computer because it has to store that data on the slow hard drive. In Windows 8, a feature called Windows ReadyBoost enables you to use faster solid state memory devices, such as a USB memory device, to store this data instead of your slow mechanical hard drive. This provides an instant boost to system performance without even opening your case.

How does it work? The concept is simple. Solid state flash USB 2.0-based storage devices have a faster read and write speed than some hard drives on the market. Windows ReadyBoost, with the assistance of Windows SuperFetch (another caching technology), works with a memory management system to redirect cached data to the high-speed device. At any time, you can remove the device if you need to use it for normal data transfers. To protect the data that is cached on your removable USB device, Windows encrypts it so that if the device is removed, your data is safe.

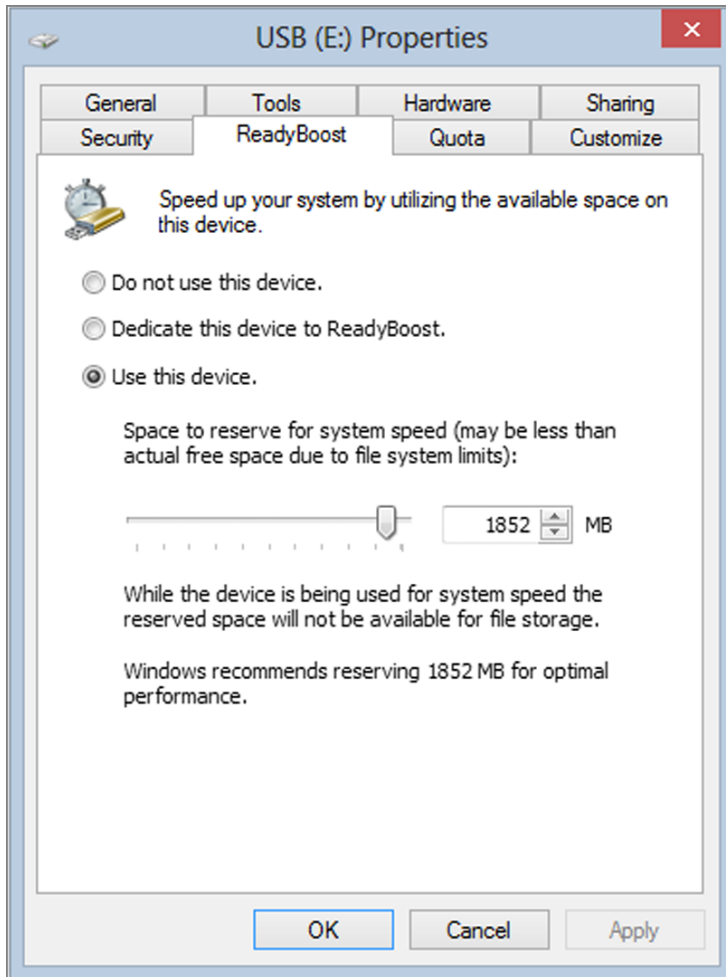
Setting up Windows 8 to use your USB drive to increase performance is very easy. To get started, you need a 256 MB or larger USB 2.0 flash drive. Then follow these steps:

1. Plug your USB drive into one of your available USB ports.
2. After your computer recognizes the new device and it shows up in Computer, make sure that you have at least 235 MB of free space on the drive. Right-click the drive and select Properties, as shown in Figure 16-2.



**Figure 16-2:** Open the Properties for your USB drive.

3. When you see the Properties window, click the ReadyBoost tab.
4. ReadyBoost is smart enough in Windows 8 to recognize whether it will actually help your performance. On some PCs with a lot of RAM, you see a message that says ReadyBoost is not available, “because this computer is fast enough that ReadyBoost is unlikely to provide additional benefit.” If ReadyBoost is available on your PC, select Use This Device and adjust the slider to set the amount of space to use for it, as shown in Figure 16-3.
5. Click OK when you are ready and Windows ReadyBoost is set up on your computer.



**Figure 16-3:** Use Windows ReadyBoost to increase performance.

After you set up Windows ReadyBoost on one of your USB devices, you can disable it at any time. Disable it by selecting *Don't Use This Device* on the ReadyBoost tab you worked with earlier. After you enable Windows ReadyBoost on your USB device, the same USB device cannot be used for Windows ReadyBoost on another Windows 8 computer. ReadyBoost must be disabled on the computer it was enabled on before ReadyBoost can be used on another PC. Alternatively, you can repartition and reformat the device using `diskpart` or other partition tools.

## Tweaking the Paging File

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The Windows paging file, also known as the swap file or virtual memory, is very important to the operation of Windows. The operating system uses the paging file as a place to store data that was once in physical memory but was kicked out because Windows needed the space for other purposes.

The method that Windows uses to decide what programs will stay in physical RAM is very complex and impossible to alter. However, several tweaks help you optimize your computer's use of the paging file. It is possible to prevent certain system files from being pushed into the paging or you can completely disable the paging file to prevent the entire system from using it.

The next section guides you through optimizing the paging file for your computer.

### Disabling the Paging File

If you have a large amount of RAM in your box, you have the ability to stop the operating system from pushing any data out into the paging file. This causes faster memory management and memory access than is physically possible for your RAM. Reading and writing directly to the RAM is always significantly faster than having to use the paging file, because reading and writing to the paging file requires multiple steps and that takes time. First, the data has to be copied out of physical RAM to the hard drive, and then the new data must be loaded from the hard drive into RAM and then executed. The hard drive is a big bottleneck in this situation.

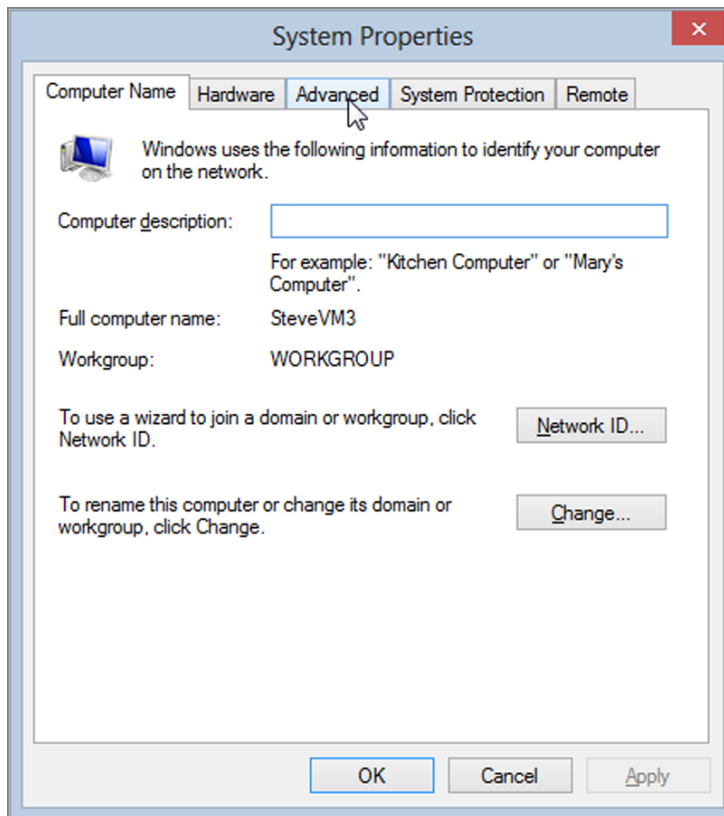
If you have 16 GB or more of RAM in your computer, you most likely can disable the paging file. If you have less than 16 GB of RAM, do not even consider disabling the paging file or you will run into problems. There is no one-size-fits-all rule because it ultimately depends on what applications you run. If you use memory intensive applications such as Adobe Photoshop or a professional video editing software, disabling your page file may be a bad idea.

What can happen if you disable your paging file? If you have enough RAM, nothing; but if you do not have enough RAM, applications may refuse to load or may even crash. For example, if you run Photoshop and are working on a large image, you will run into "out of memory" errors and the application will crash, causing you to lose all your work. This is a pretty extreme example, but it *can* happen to you if you don't have enough RAM and disable your paging file.

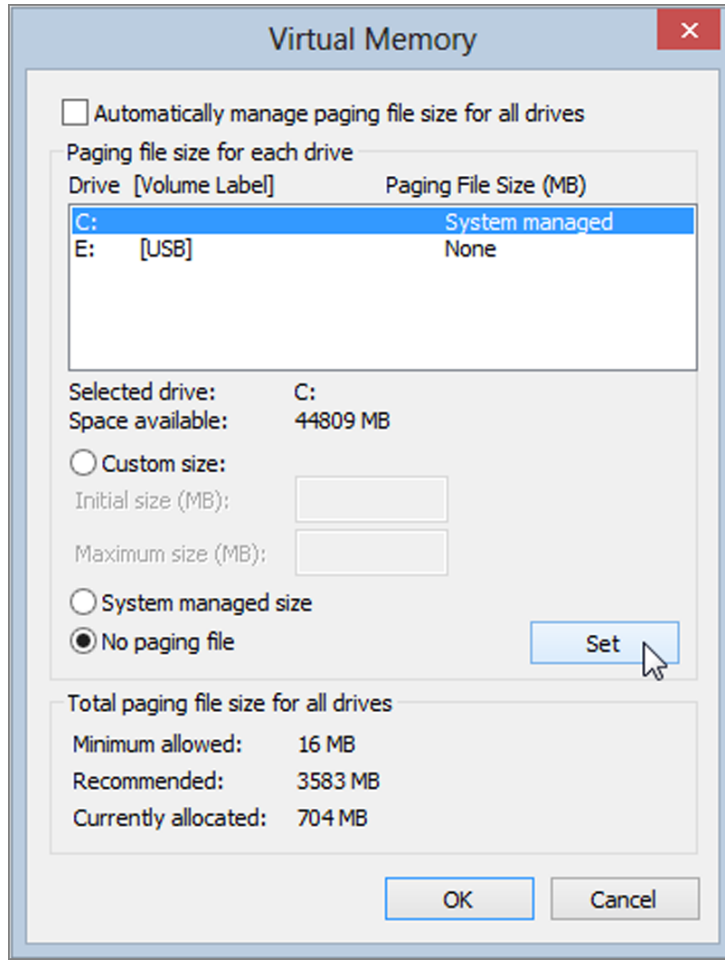
If you stick to the 8 GB minimum you will have no problems in most cases, but be aware that if you ever choose to run some memory-intensive applications, such as rendering a two-hour movie, or if you just like to run dozens of programs at once, you can run out of memory easily.

So, now that you know the concerns, you are ready to follow these steps to disable the paging file:

1. Open the Start screen, type in `sysdm.cpl`, and hit Enter.
2. When System Properties loads, click the Advanced tab, as shown in Figure 16-4.
3. Under the Performance section, click Settings.
4. Click the Advanced tab and then click Change under Virtual Memory. This loads the Virtual Memory screen.
5. Uncheck the Automatically Manage Paging File Size For All Drives box.
6. For each drive listed in the box that has a paging file configured on it, select the No Paging File option and click Set, as shown in Figure 16-5.



**Figure 16-4:** Select the Advanced system settings.



**Figure 16-5:** Set the No Paging File option in Windows 8.

- After you have gone through the list and verified that you no longer have any paging files configured on your drives, click OK to exit.

Your paging file is disabled after a reboot. Feel free to delete the `pagefile.sys` file from your hard drive after your reboot to gain a chunk of space back. You have to disable Hide Protected Operating System Files on the View tab of Folder Options to see the `pagefile.sys` file.

If you do not have enough RAM to disable the paging file completely, follow the directions in the next section to adjust the size of the paging file for best performance.

## Adjusting the Size of the Paging File

The size of the paging file can be set automatically by the system or you can set it. In some situations, letting the system manage the paging file is a good idea, but in others, it is better to manage the paging file yourself.

The biggest argument for setting the paging file size and limit manually is to keep the file from growing. When the system is managing the size of the paging file, it monitors the size and automatically makes it larger when needed. This causes two problems. First, it causes a noticeable delay for all applications running on your computer because the computer has to expand the paging file, and this is a hard disk-intensive operation. Second, allowing the system to grow and shrink the paging file causes fragmentation errors.

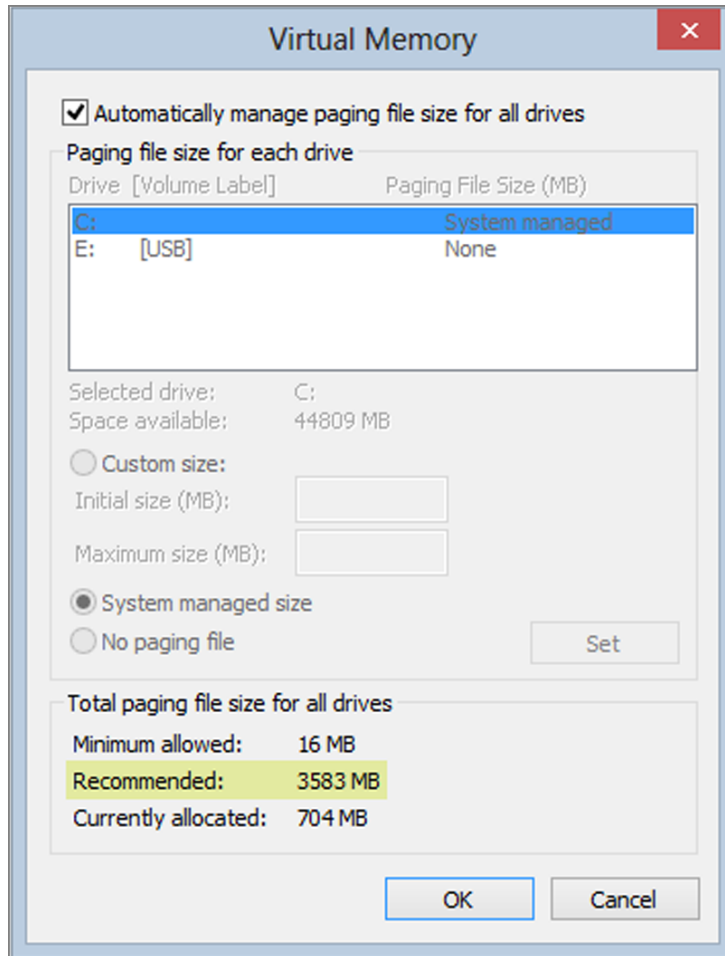
To ensure that your system has enough speed, your paging file should not have any file fragments. The following section on defragmenting shows you exactly how to fix this. Before the defragmentation can be successful, however, the paging file needs to have a constant size. If the paging file will be growing frequently, the defrag utility is unable to place the file in an optimal location on the hard disk so that it will never get fragmented. Only when the page file is set to a constant size can the defrag utility ensure it will never become fragmented again.

Setting the paging file to a constant size has some disadvantages. For example, the lost disk space taken up by the paging file can be as high as several gigabytes. Additionally, when you set the maximum paging file size manually, you are setting a limit that your computer can never go above. If you run an extremely memory-intensive application and your limit is too low, your paging file will fill up and you will be out of luck in much the same way as when you completely disable your paging file.

The previous example illustrates why setting the correct paging file size is so important. An easy way to calculate the maximum size of your paging file is to take the recommended size from the Virtual Memory Settings window, as shown in Figure 16-6, and multiply it by two. If you are having problems finding where your computer states the recommended size, perform the following steps to change the paging file to a constant size (this value is on the same screen as the one on which you will be working).

Now that you are ready to optimize the paging file to a constant size, follow these steps:

1. Open the Start screen, type **sysdm.cpl**, and hit Enter.
2. When System Properties loads, click the Advanced tab.
3. Under the Performance section, click Settings.
4. Click the Advanced tab and then click Change under the Virtual Memory section.



**Figure 16-6:** Virtual Memory settings show the recommended paging file size.

5. This brings up all the page file settings. Modify the custom values so that the initial and maximum sizes are the same. To do this, you first need to enable the option to set a custom size, so select the Custom Size option.
6. Enter the value that you calculated in these two boxes, as shown in Figure 16-7.
7. Click the Set button and then click OK to exit.

After you restart your computer, you will be using the new constant size paging file. You are now ready to run your defragmenter to defragment the paging file to ensure optimal performance.

**CAUTION** The method that I use to calculate the size of the constant paging file is a very conservative and effective approach. However, if you feel you need more free disk space, play around with the calculation—multiply the recommended amount by only 1.75 or maybe even 1.5. If you do that, keep in mind that you will be increasing your chances of maxing out your paging file.

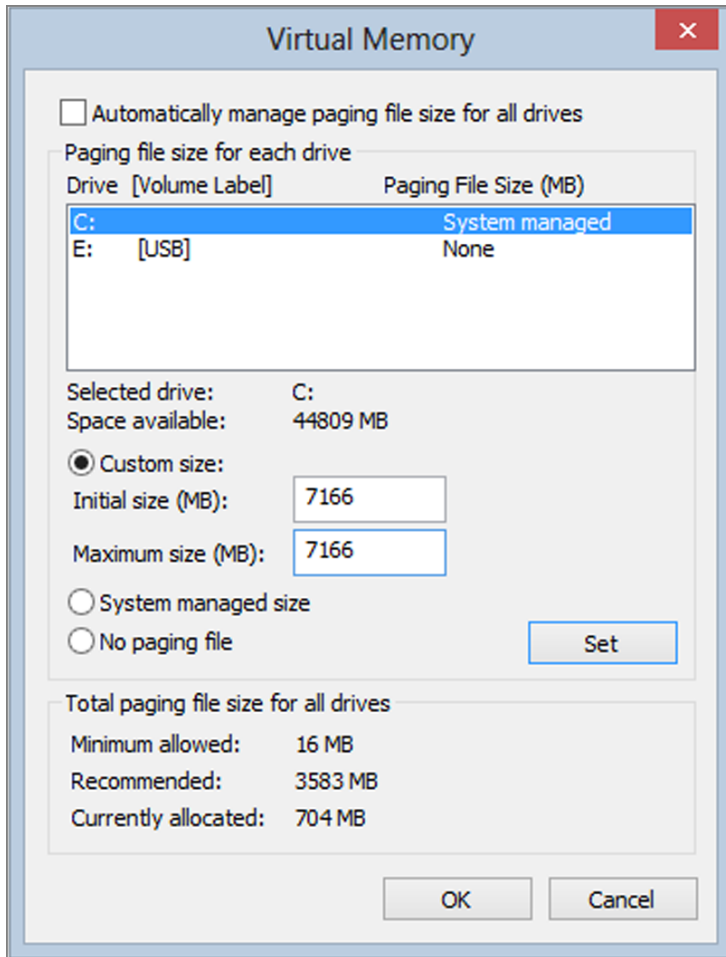


Figure 16-7: Set the paging file to a custom size.

## Changing the Location of the Paging File

You can place the paging file on any storage device in your computer. If you really want to, you can even move the paging file to an external hard drive connected over USB (although this would probably slow down your system because

an external hard drive is often slower than a hard drive connected inside your case). However, if you have multiple hard drives in your system, and I am not talking about multiple partitions on the same drive, you may see a performance increase if you move your paging file off the main system drive.

Moving the paging file off your main drive allows it to be accessed faster when your primary hard drive is busy. When users add hard drives to their computers, these new hard drives are typically faster than the ones that the computers came with because of advances in technology over time. Moving your paging file to the faster hard drive will also help performance.

Changing the location of the paging file is very easy. Just follow these steps and you will have it done in no time:

1. Open the Start screen, type **sysdm.cpl**, and hit Enter.
2. When System Properties loads, click the Advanced tab.
3. Under the Performance section, click Settings.
4. Click the Advanced tab and then click Change under the Virtual Memory section.
5. Now that you have the Virtual Memory settings displayed, select the drive on which your current paging file is located.
6. Before you make any changes, write down what the initial and maximum size text boxes contain. Then click the No Paging File option and click the Set button.
7. Select the hard drive on which you want your new paging file to be placed.
8. When the new hard drive is highlighted, select the Custom Size option and enter the numbers that you wrote down before. If you are not using the Custom Size mode, click the System Managed Size mode but keep in mind the negative aspects of the system managed paging file size such as fragmentation mentioned in the previous section.
9. Click the Set button, and click OK to finish.

After a reboot, your system uses the paging file on the new hard drive. Feel free to delete `pagefile.sys` from your old hard drive location; it no longer is needed there.

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## Defragmenting Your Hard Drive

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Fragmentation is everything when it comes to maintaining a traditional mechanical hard drive. Over time, as your hard drive fills up and you install and uninstall programs and games, the files on your hard drive can become fragmented, because Windows has to find open spots on your hard drive to place the file.

Often the file is broken up into hundreds of little pieces and scattered all over the hard drive. This can cause a noticeable slowdown that can be easily cured by running a software program known as a *defragmenter*.

Disk defragmenting software moves bits of the files around on the hard drives so that they are all placed together. This arrangement allows the hard drive to load a file faster because the head, which is the arm that reads the data off the plates inside the drive, does not have to scatter all over the place to read the data.

Before I go any further, it is important to point out that solid state hard drives (SSD) that are often included in high-end laptops, desktops, and some Netbooks do not need to be defragmented. Solid state disks don't have any moving parts and as a result, they have very low random read times. It makes no difference if parts of a file are spread all over the drive because there is no mechanical head that has to move to different parts of the drive to read data. Because of the elimination of that delay, using defrag utilities that were not designed for solid state drives on an SSD will have very little effect on its performance. In fact, you can prematurely wear out your SSD drive if you use the wrong utilities, so read the following sections carefully.

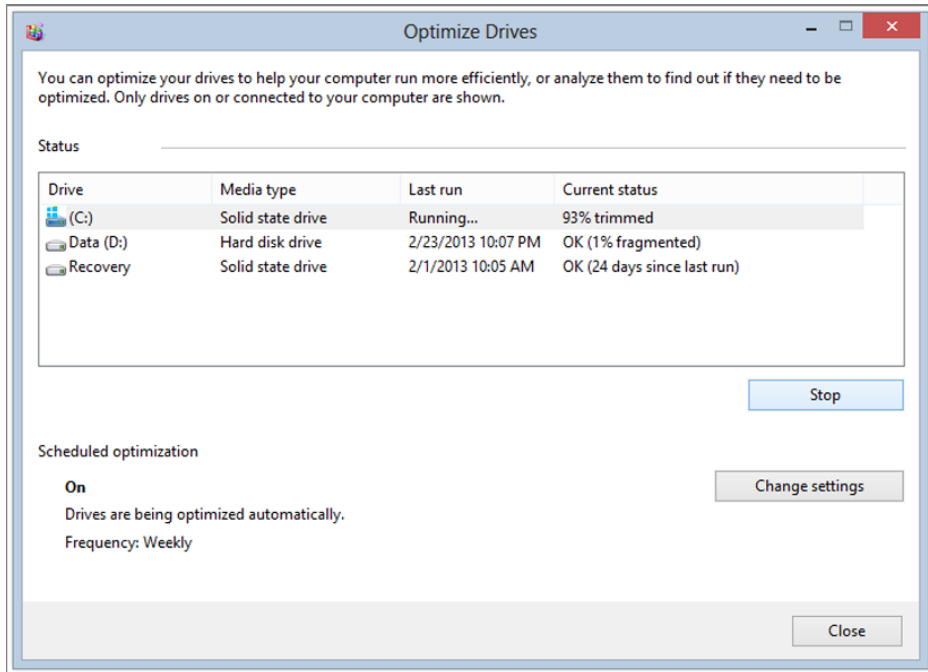
## Using the Windows Defrag Utility

The defrag utility in Windows 8 has been updated to do much more than just disk defragmentation. If you have a traditional hard drive, it does a good job of defragmenting your files using a basic optimization algorithm. Although it does not have all the bells and whistles of the third-party utilities, it is good enough for users who don't want to pay for slightly better performance. If you have a solid state disk, the Windows defrag utility in Windows 8 is smart enough to apply specific optimizations that clear unused cells. This prepares the cells to be written to again using a feature most modern SSDs have called trim.

The Windows defrag utility is called the Disk Defragmenter. You can access it in two ways: either on the Start screen or by right-clicking a drive in Computer and then selecting Properties. The utility is on the Tools tab of the drive properties. Follow these steps to use the Start screen shortcut:

1. Open the Start screen, type **Disk Defrag**, change the scope to Settings, and hit Enter.
2. Select the drive you want to defrag and then click Analyze.  
Analyze is not available for solid state drives.
3. If the report shows your drive is fragmented, click Optimize.

The utility begins to defragment your drive with multiple passes, as shown in Figure 16-8. If you have a solid state drive, a different process will run that trims the unused flash cells so they can be written to faster when they are needed.



**Figure 16-8:** Use Windows defrag utility to speed up your computer.

## Using Third-Party Defrag Utilities

A number of third-party defrag utilities offer advanced features that may do a better job than Microsoft's utility. If you have a traditional mechanical hard drive, third-party utilities may offer you better performance. However, if you have a solid state disk, the built-in Microsoft utility is sufficient.

All the utilities that offer advanced features, such as automatic background defragmentation and boot time system defrag, cost around \$29 for home versions and \$59 to \$79 for professional versions. The major difference between the home and professional versions are additional value-added features. I go into more detail about these with each following utility.

### *Using PerfectDisk 12*

PerfectDisk is a popular defrag utility that has its own unique file placement and optimization strategy. In addition to the standard features such as automatic background defrag and boot time system file defrag, it also has the capability to consolidate your free space. The professional version includes space management utilities that help you manage what is on your disk and free disk space.

PerfectDisk also includes special boot defrag features that will run before Windows is loaded so critical system files such as the page file and the master file table can be defragmented.

If you have not already done so, visit <http://tweaks.com/498175> to download and install the trial version. After you have it installed, follow these steps to run a defrag:

1. Open the Start screen, type **PerfectDisk**, and hit Enter.
2. When it's loaded, switch on Boot Time Defrag by clicking the switch as shown in Figure 16-9 for each drive.
3. Click the green Start button to begin.

Alternatively, you can select different defrag methods by clicking the Start text below the green Start button. You can choose from SMARTPlacement, Defrag Only, Consolidate Free Space, Prep For Shrink, and SSD Optimize. I suggest the default, SMARTPlacement.

4. Restart your computer to complete the boot time defrag.

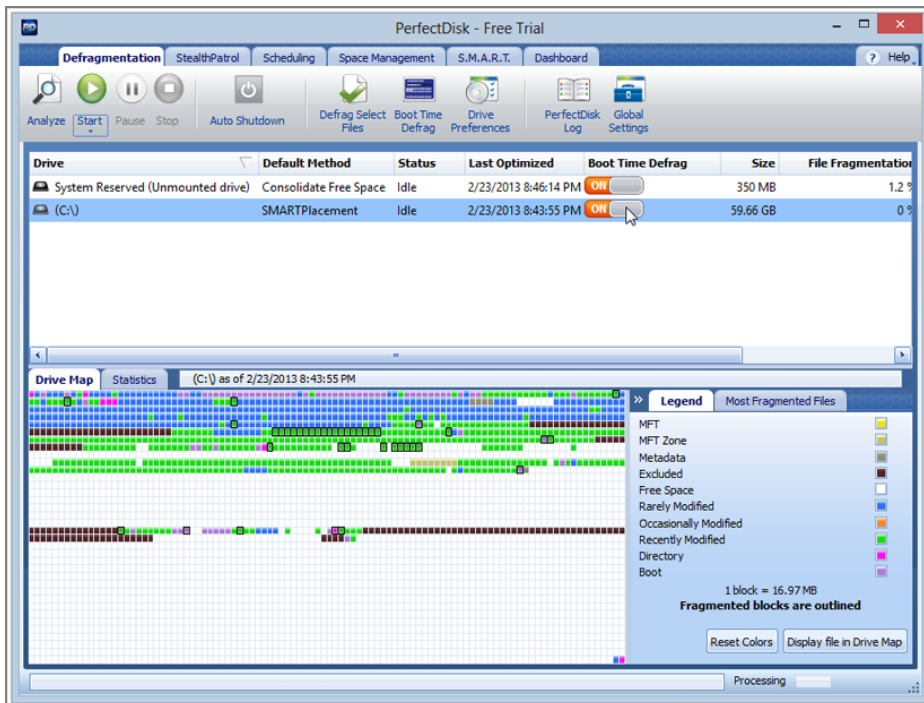


Figure 16-9: Use PerfectDisk 12 to defragment your hard drive.

## Using Diskeeper 12

Diskeeper is another popular defrag utility that has a proprietary algorithm to optimize the location of files on your disk. Home and professional versions are available, with the professional version offering an improved file optimization feature called I-FAAST and a feature called Frag Shield that helps protect critical system files from becoming fragmented.

There is no separate mode for optimizing boot files; just download a free trial from <http://tweaks.com/314120>. Upon install, automatic background defragmentation starts immediately. Follow these steps to see Diskeeper at work:

1. Open the Start screen, type **diskeeper**, and hit Enter.
2. Scroll down and click Available Resources Used By Diskeeper.

Available Resources Used By Diskeeper expands to display a graph showing Diskeeper activity.

## Upgrading to an SSD

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Solid state disks have a huge impact on the performance of your system. Priced at around \$110 for a 120 GB drive, they are becoming more affordable but are still more expensive than a traditional one. However, the performance of solid state disks is amazing.

I set up a simple test to show how fast a solid state disk is compared to the average high-capacity traditional spindle hard drive. For this test I used a popular disk benchmark utility called Crystal Disk Mark 3. If you want to play along at home, head over to <http://tweaks.com/700105> and download a copy. I ran the performance utility with 1000 MB test sizes that were repeated five times to create an average for each test criteria.

- **Sequential read and write**—Reads and writes data to the disk sequentially, meaning sectors or cells right next to each other, in 1024 KB blocks. For example, the first part of the file goes in sector 1, the second part goes in sector 2, the third part goes in sector 3, and so on.
- **512 K random read and write**—Blocks of 512 K in size are written and read from all over the drive in a random order. For example, the first part of the file is written to sector 423, the second part of the file is written to 882, the third part of the file is written to sector 102, and so on.
- **4 K random read and write**—Same as the 512 K test but with a smaller block size of 4 K. The smaller the reads and writes, the slower the operation is because the drive must do much more work to write a 1 GB file in 4 K blocks instead of something much larger.

- **4 K random Queue Depth 32 read and write**—Similar to the other random tests, although this benchmark uses enhanced features of newer drives such as NCQ and the AHCI protocol that provide a queue that can help performance.

I ran the test on a traditional hard drive, an entry-level SSD, and a high-performance SATA Rev 3 (6 Gbps) SSD. Table 16-1 shows the read-performance comparison and Table 16-2 shows the write-performance.

**Table 16-1:** Drive Read Performance Comparison

| DRIVE           | SEQUENTIAL | RANDOM 512K | RANDOM 4K  | RANDOM 4K QD32 |
|-----------------|------------|-------------|------------|----------------|
| Traditional HDD | 67 MB/s    | 7.7 MB/s    | 0.39 MB/s  | 0.44 MB/s      |
| Entry Level SSD | 124 MB/s   | 120 MB/s    | 18 MB/s    | 16 MB/s        |
| High-End SSD    | 467 MB/s   | 457 MB/s    | 26.97 MB/s | 222 MB/s       |

**Table 16.2:** Drive Write Performance Comparison

| DRIVE           | SEQUENTIAL | RANDOM 512K | RANDOM 4K | RANDOM 4K QD32 |
|-----------------|------------|-------------|-----------|----------------|
| Traditional HDD | 67 MB/s    | 13 MB/s     | 0.76 MB/s | 0.74 MB/s      |
| Entry Level SSD | 127 MB/s   | 108 MB/s    | 10 MB/s   | 14 MB/s        |
| High-End SSD    | 251 MB/s   | 239 MB/s    | 54 MB/s   | 205 MB/s       |

The results of the test show how the solid state drives destroy the traditional hard drive on sequential and random IO. The actual results from running this test will vary depending on the model of SSD that you purchase and on your hardware. Keep in mind the results on the performance tables will be outdated by the time this book is published because faster solid state disks are released very frequently. However, the tables are still useful for showing you the big difference between traditional and solid state disks. By the time you read this, the difference will just be greater.

## Selecting an SSD

All of the consumer solid state drives on the market use a type of flash memory called NAND that retains data even when the power is off. When SSDs first became popular, they were primarily made up of single-level cell or SLC NAND memory chips. SLC NAND stores one bit per cell, such as a 0 or 1. Performance and wear durability was great but the technology was very expensive.

A new type of NAND memory was introduced called multi-level cell or MLC NAND where two bits are stored in each cell. This allows MLC NAND chips to offer higher capacities and lower costs compared to SLC NAND chips. Today, all consumer SSDs use multi-level cell chips and even enterprise SSDs are beginning to use a variation of MLC.

Wear durability or endurance is one item that is very important to consider when selecting solid state drives. Each memory cell in NAND memory can be written to a specific number of times before it wears out. How often the SSD is written to determines the life of the drive. Reading from the drive does not affect its life. For most consumer applications, even entry-level SSDs can sustain writes of up to 10–20 GB per day and will last for many years before they need to be replaced. The higher-end drives, usually in workstations or servers, can sustain writes of several hundred gigabytes every day for up to five years. Because consumers rarely write that much per day, higher-end SSDs will last much longer.

Solid state disks depend on advanced disk controllers to manage the life of the NAND cells with special wear-leveling algorithms. When the operating system needs to write something to disk, the OS talks to the storage controller on the motherboard, which then talks to the SSD drive controller. The SSD controller keeps track of the wear level of each block of cells and writes data to the best location to maximize the life of the drive. Fragmentation is not a concern because it has no moving parts that cause the mechanical latency on traditional hard drives.

Because wear tolerance is very important when selecting an SSD for your system, keep an eye on the endurance specifications when shopping. For example, Kingston specifies total bytes written (TBW) for its SSDs to show you how many terabytes can be written to each of its drives. Other manufacturers simply refer to wear tolerance as drive endurance, but also give a number of terabytes or gigabytes that can be written over some period. Remember that as the capacity of the drive goes up, the endurance number should also increase.

For greater performance, many SSD controllers spread your data across multiple chips, similar to striping on traditional hard drives. Additionally, some SSD controllers incorporate RAID-like recovery features, where the controller can recover your data even if one of the chips in the SSD fails.

Another part of selecting an SSD is finding one that will work well with your hardware. Specifically, choose one that matches the speed of your storage interface on your motherboard where the SSD will be connected. Right now all the consumer solid state disks support two storage interfaces:

- SATA Rev 2.0, which has a theoretical maximum performance of 3 gigabits per second.
- SATA Rev 3.0, which has a theoretical maximum performance of 6 gigabits per second. It is also backward compatible with SATA Rev 2, but runs at the slower speed.

Unless you like to waste money, don't buy a SATA Rev 3.0 drive if your computer has a SATA Rev 2.0 interface. It will technically still work, but you will never see the performance you paid extra for unless you upgrade your PC. It is kind of like buying an expensive sports car and never driving above 25 mph.

The final part of selecting an SSD is finding one that will physically fit in your PC. Three sizes of SSD drives are available:

- 2.5" form factor with 9.5 mm height
- 2.5" form factor with 7 mm height
- mSATA chip

The most common size on the market is the 2.5" form factor with 9.5 mm height. This can be used in all desktops, although sometimes a 3.5" drive adapter bracket is necessary for proper mounting. Some older laptops also use the 9.5 mm height. Most new laptops are designed for the 7 mm height. Some of the new super-slim laptops, often called ultrabooks, and tablets use a special drive called mSATA that looks similar to a RAM memory module. The best way to find out what you need is to Google the drive model you have currently installed or check with your PC manufacturer.

**CAUTION** If an SSD is not used for a long period of time, the data stored on it can be lost. SSDs are rated to safely retain data when powered off for up to one year. This applies to SD or USB flash drives with your pictures or music too. For long-term backup, a traditional hard drive or online backup service is the best archiving solution.

**TIP** You can determine the remaining life of an SSD using any hard drive utility that can read SMART attributes. I recommend using CrystalDiskInfo 5.4.0 (<http://tweaks.com/922029>) or any SMART utility that comes with your SSD drive. Take a look at the value of the "SSD Life Left" attribute. The value starts at 100 and goes down to 0. It is recommended that you replace the drive when the value hits 10.

## Replacing Your Traditional HDD with an SSD

If you have a desktop or laptop it may be possible to install an SSD without having to reload Windows 8. Unfortunately, this only works well with older computers that do not have an EFI or UEFI type BIOS. But if you have a computer with a traditional BIOS, you can easily clone your existing drive to the SSD and then swap out the drive. Windows 8 and all of your applications and settings will remain, as cloning the drive will simply copy everything on your old disk over.

Before you can get started there are a few items that you will need to clone your drive:

- PC without EFI or UEFI
- Solid state disk
- External USB hard drive enclosure for your old hard drive
- EaseUS Disk Copy Home Edition (Free) <http://tweaks.com/989332>

Once you have the required items, follow these steps to swap out your traditional hard drive for an SSD:

1. Run the EaseUS Disk Copy Home Edition utility to generate the bootable media necessary to clone your drive. Select USB or insert a blank CD-R into a CD burner and select CD/DVD and then click the Proceed button. After your media is created, we are ready to begin the cloning. Leave the new boot media in your CD/DVD drive or attached to your USB port.
2. Shut down your PC.
3. Install the new SSD into your PC and put the traditional hard drive you are replacing into the external USB drive enclosure.
4. Make sure the USB hard drive enclosure is plugged into your PC.
5. Turn on your PC and the EaseUS Disk Copy software should begin to boot up. If it does not load, you may need to hit a special key when your PC turns on to display the boot menu so you can select the USB or CD/DVD device that contains the utility.
6. Select Start Disk Copy from the menu.
7. Click Next on the Welcome screen.
8. On the Select Copy Mode screen select Disk Copy and click Next.
9. Choose the correct source disk, which should be your old hard drive in the external USB hard drive enclosure. And then click Next.
10. Select your new SSD and click Next.
11. Verify the correct disks are set as the source and destination and then click Proceed as shown in Figure 16-10.
12. Click Yes on the confirmation screen and all of the data on the traditional hard drive will be copied to the SSD.
13. After the copy is completed, disconnect the external USB hard drive enclosure and remove the EaseUS Disk Copy boot media and restart your computer. If everything was successful, Windows 8 should boot right up very quick. If Windows 8 does not boot up properly or if your computer has a newer EFI or UEFI type BIOS your best option is to simply reinstall Windows 8.

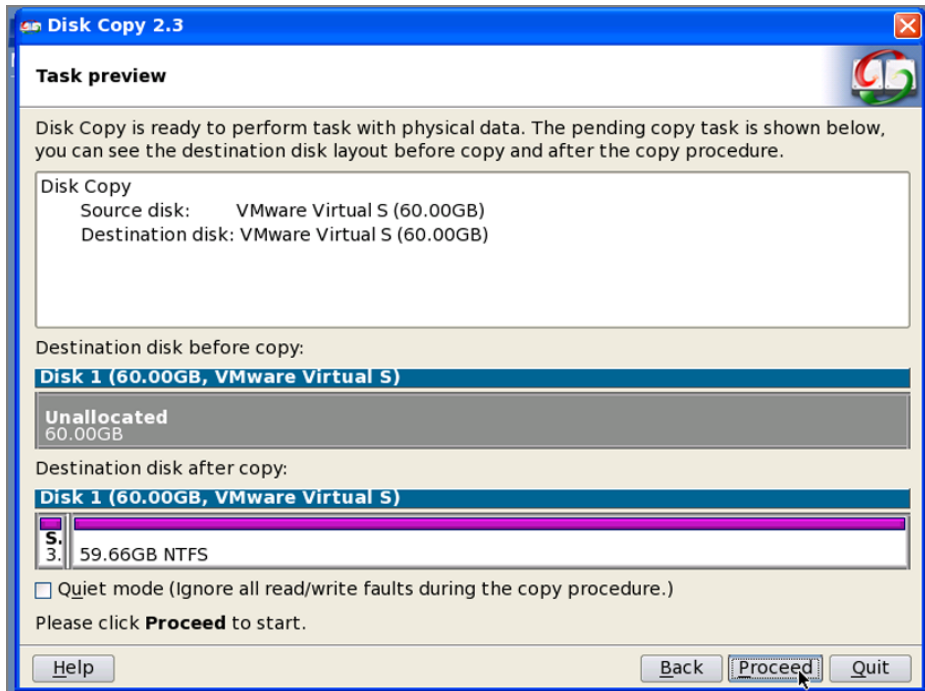


Figure 16-10: Clone your old hard drive to the SSD.

## Adjusting Your Application Priorities

Since the introduction of the multitasking processor, operating systems have been able to run multiple programs at once using the new task switching and segmentation features provided by the CPU. These new technologies made it possible for operating systems such as Windows to be created. Even though PCs today are able to multitask, they still really can do only one thing at a time per CPU core. For the operating system to support running dozens of applications at once, it has to slice up all the available processing time and give each application a turn. Although this is starting to change for consumers with the introduction of multi-core processors, each core can still do only one thing at a time. Previously this was possible only on expensive multiprocessor configurations typically found in servers.

Operating systems use a variety of techniques to determine which application gets the next available time slot to use the CPU. One of the factors that determines this for Windows 8 is the priority level at which the application is running.

Every application that runs on your computer has a priority level attached to its runtime information. By default, the operating system starts each application

at normal priority, which is right in the middle of the priority spectrum. You can run applications and assign six different priority levels, ranked from highest to lowest: Realtime, High, Above Normal, Normal, Below Normal, and Low. Because the CPU can do only one thing at a time, the different priority levels allow the operating system to decide which application gets the next CPU time slot. If an application is running at the High or Above Normal priority levels, it gets more CPU time than an application running at Normal level.

As you can see, the priority you give an application can affect how fast the program runs.

## Using Task Manager to Adjust Priorities

Windows Task Manager is something that everyone experiences when they have problems with a frozen program, and you learned that it is a very useful utility. In Task Manager you can change the priority at which an application is running. This capability can be very useful when you have a lot of programs running on your computer.

**CAUTION** Setting any application to Realtime can be dangerous because doing so allows the application to hog all the CPU time. Exiting a program that is running at this high priority is next to impossible if for some reason it crashes or is stuck in a loop. It takes a very long time to load Task Manager to end the application because the program is hogging all the CPU time.

If you have an application that has a high need for CPU operations, such as rendering a video clip or a game, you can adjust the priority of the application by following these steps:

1. Open the Start screen, type **taskmgr**, and press Enter.
2. After Task Manager loads, click the Details tab. Be sure to click More Details to see the full Task Manager.
3. Right-click the name of the process for which you would like to adjust the priority, select Set Priority, and then select the level, as shown in Figure 16-11. Your change is now complete.

**TIP** Having problems identifying which process belongs to an application? While on the Applications tab of Task Manager, right-click any application and select Go To Processes. All processes that belong to the application will be selected on the Processes tab.

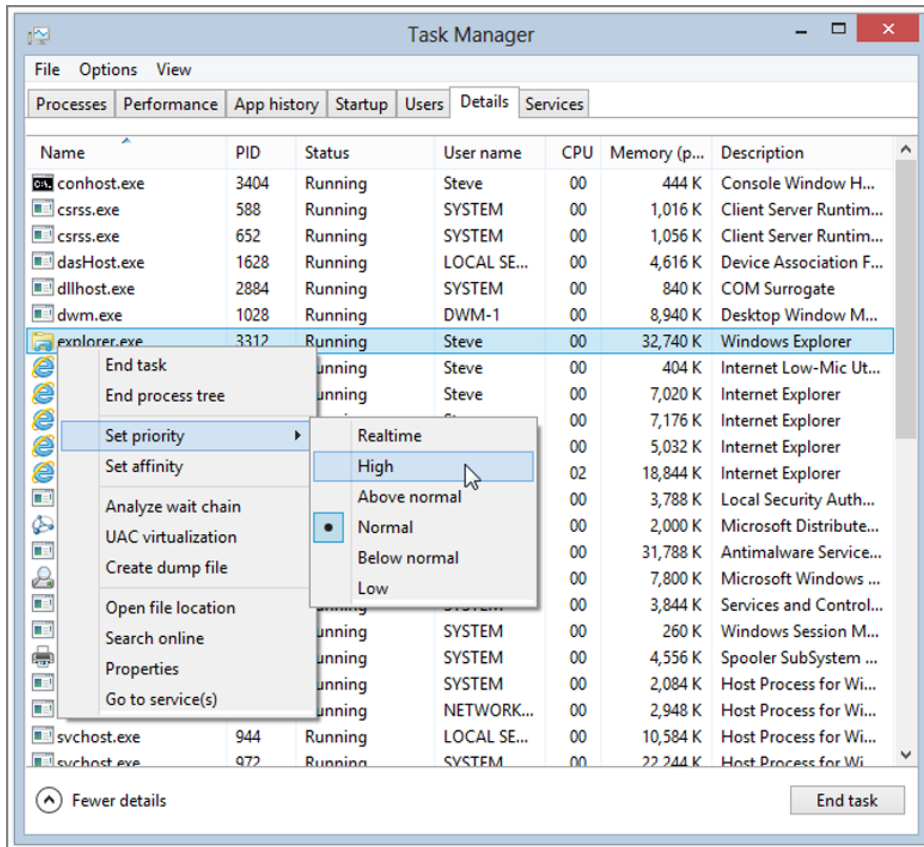


Figure 16-11: Use Task Manager to adjust application priorities.

**TIP** If your computer has multiple processors or cores, or supports hyper-threading, you will notice an extra option called Set Affinity when you right-click a process. This option enables you to specify on which CPU core the application will run (or which virtual CPU, in the case of hyperthreading users).

Using Task Manager to change the priority levels is great. However, there is one downside. When you close an application on which you have altered the priority level, the priority level it was running at will be lost. The next time you start the program, it will run at the default level. This downside can be a pain in the neck for some users; however, a cool trick to fix this problem is discussed in the next section.

## Starting Applications with a User Set Priority

A wonderful command built into Windows enables you to start any program and specify its priority. This cool utility is called the Start command. Using the Start command with priority flags followed by the executable enables you to start any program at a priority level of your choice.

For the sake of demonstrating how to use the command, assume that the Calculator is set at high CPU priority. Follow these steps to set the command:

1. Open Notepad to type the command so that it can be turned into a batch script file.
2. After Notepad opens, type **start /high calc.exe**.

If you want to start the Calculator at a different priority, you can replace /high with /low, /normal, /realtime, /abovenormal, and /belownormal.

3. After keying in the priority level, click the File menu bar item in Notepad and select Save As. Change the file Save As Type to All Files and type **launchcalc.cmd** in the Filename box.

You can call the file anything you want, but make sure that it has the .cmd file extension so that Windows knows to execute the commands in the file.

4. Specify a location on your hard drive to save it, such as your desktop, and click the Save button. You are now finished and can exit Notepad.

Now that you have created the batch command file, you are ready to start your new shortcut.

You can apply the same technique to any program on your computer. Instead of typing calc.exe at the end of the command, type the name of the executable of the program that you want to start.

Additionally, you can use this command on nonexecutable files such as documents. For example, you can type **start/high mydocument.doc** to start Microsoft Word in the High priority level with your document opened.

## Summary

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You have now finished optimizing the core components of Windows 8. First you learned how to add more memory to your computer and about the new ReadyBoost feature of Windows 8 that allows you to gain some of the benefits of adding RAM without even opening your case to speed up memory access. Then you learned how to adjust your paging file to speed up your hard drive access and adjust application priorities.

Next, I show you a way to speed up your network connection. I start with browsing the network and your network card and work outward to speeding up your Internet connection.



# Optimizing Your Network

Your browser and network subsystem play a major role in the use of your computer. People are spending more and more time using their web browsers and the Internet, making the web browser the most-used application on many users' computers. Now that you have optimized almost every major component of the operating system, this chapter covers the most-used application and components on which it is dependent—the web browser and the network that connects you to the Internet.

First, I show you how to optimize Internet Explorer, Chrome, and Firefox by tweaking the number of active downloads. Then I show you some great utilities that will increase the speed of downloads, and tweaks that will speed up your network.

## Optimizing Your Web Browser

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As I mentioned, the web browser has become the most-used application on most computers. Considering that you have already optimized, tweaked, and hacked almost every other component of the operating system for speed, it's important to cover the most-used application as well. Using the following tweaks, you can make your web browser work faster than ever before. How is this possible? Web browsers originally followed the HTTP/1.1 RFC standards that stated web browsers can make only two connections per server at the same time. Over

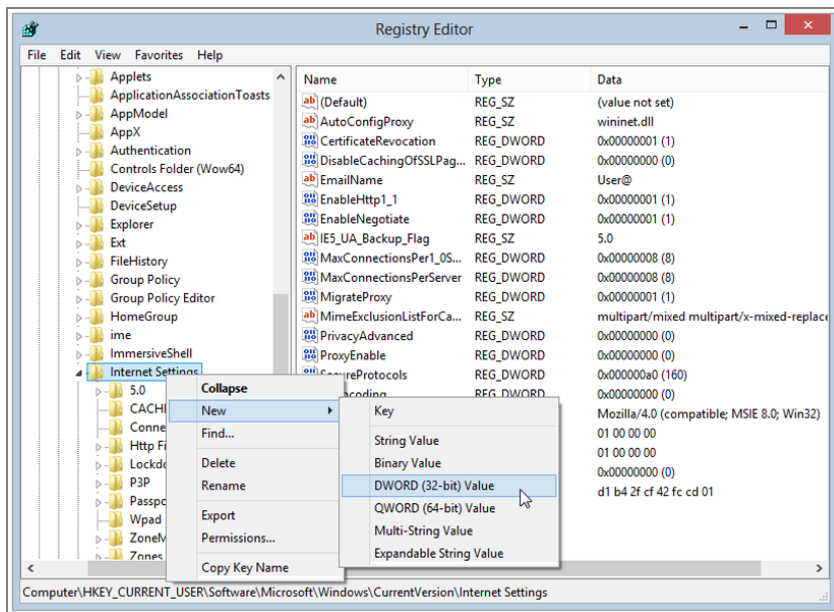
time, all the browser developers started cheating and increased the connection limit because they realized how big of an impact that had on performance. The following tweaks show you how to improve the performance of your browser by increasing the connection limit further and also using other enhancements.

## Speeding Up Internet Explorer

Internet Explorer cheats a little more in IE10 by bumping the concurrent connection limit to eight for both HTTP 1.1 and HTTP 1.0 connections. If you visit a web page with a lot of images and required files, such as CSS styles and JavaScript, you can easily end up with a scenario in which your web browser has to make more than 40 requests to the web server to download all the files and then assemble the web page. Requesting only 8 of these 40 files at a time is going to be a lot slower than downloading, say, 15 of them at a time.

By tweaking hidden registry values, you can direct Internet Explorer to break Internet standards and download more than just two files at a time. Modifying this setting is simple to do, but be careful; the standards police will be after you. Follow these steps to speed up IE:

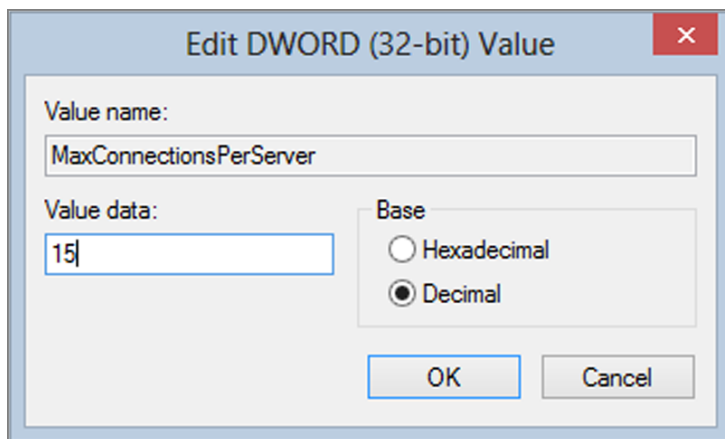
1. Open the Start screen, type **regedit**, and press Enter.
2. After Registry Editor loads, navigate through `HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Internet Settings`.
3. Right-click in open space and create a new DWORD (32-bit) Value, as shown in Figure 17-1.



**Figure 17-1:** Create a new registry DWORD value to speed up your browser.

4. Type **MaxConnectionsPerServer** as the name of the new DWORD value.
5. Right-click this value and select Modify.
6. Set the base to Decimal and enter a value greater than 6, as shown in Figure 17-2.

I like to use 15 as my value here. Click OK when you are done.

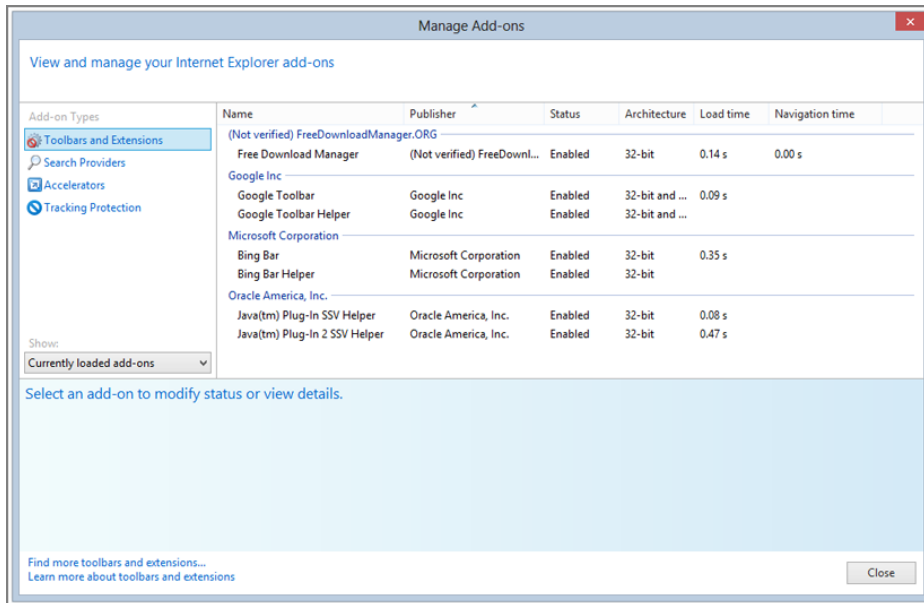


**Figure 17-2:** Set a value for MaxConnectionsPerServer.

7. Create a new DWORD value and type **MaxConnectionsPer1\_0Server** as the name.
8. Right-click this value and click Modify.
9. Set the base to Decimal and enter in the new value. Use the same value you used in step 6. Click OK when you are finished.
10. Exit Registry Editor and reboot your computer.

After your computer has rebooted, your new Internet Explorer settings are active. If you ever feel like undoing this tweak, just go back into the registry and delete the `MaxConnectionsPerServer` and `MaxConnectionsPer1_0Server` values that you created and reboot.

Another method to speed up Internet Explorer is to disable add-ons that may have a big impact on browser performance. In the last few releases, Internet Explorer started keeping track of how third-party add-ons and plug-ins affect performance. You can find this information in the Load Time and Navigation Time columns of the Manage Add-ons screen shown in Figure 17-3.



**Figure 17-3:** View the performance impact of the add-ons you use.

For a performance boost, simply disable add-ons that affect your performance by following these steps:

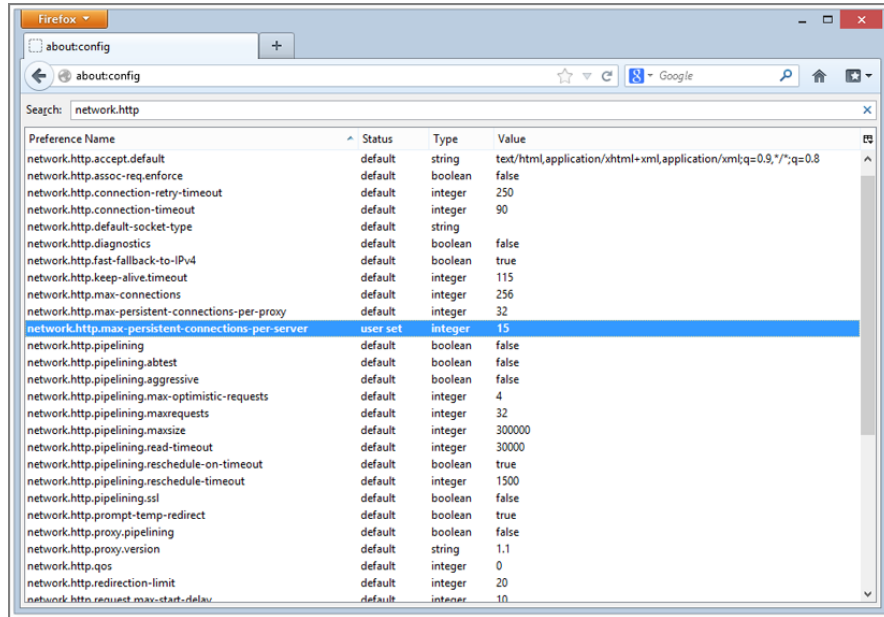
1. Open Internet Explorer, click the gear in the top right of the window, and click Manage Add-ons.
2. Click Toolbars And Extensions on the side Add-on Type menu.
3. Select the add-on you want to disable and click the Disable button.
4. Hit the Close button and restart Internet Explorer.

## Speeding Up Firefox

Firefox suffers from the same limitation on file downloads as Internet Explorer. Thankfully, there is an easy way to modify the number of simultaneous downloads in Firefox as well. Additionally, you can do a few other things to speed up Firefox, such as reduce delays and enable parallel downloads (which Firefox calls *pipelining*). Instead of editing the registry, you can use a cool hidden feature in Firefox to hack the raw configuration settings built into the browser. Follow these steps to speed up browsing with Firefox:

1. Open a copy of Firefox if you do not already have it open.
2. Type **about:config** in the address bar and press Enter.
3. Click the I'll Be Careful, I Promise! button to view the settings.

4. Type `network.http` in the Search box and hit Enter.
5. Scroll down the list and locate `network.http.max-persistent-connections-per-server`, as shown in Figure 17-4.



**Figure 17-4:** Modify the configuration of Firefox.

6. Right-click this setting and click Modify. Enter a higher value, such as 15, and click OK.
7. Enable parallel downloads, which is known as pipelining in Firefox. Scroll further down the list and locate `network.http.pipelining`.
8. Right-click this setting and click Toggle to set it to true.
9. Scroll down and modify `network.http.pipelining.maxrequests`. Set this to a value of at least 15 and click OK.

**TIP** If you use a proxy server to connect to the Internet, you will also want to toggle `network.http.proxy.pipelining`.

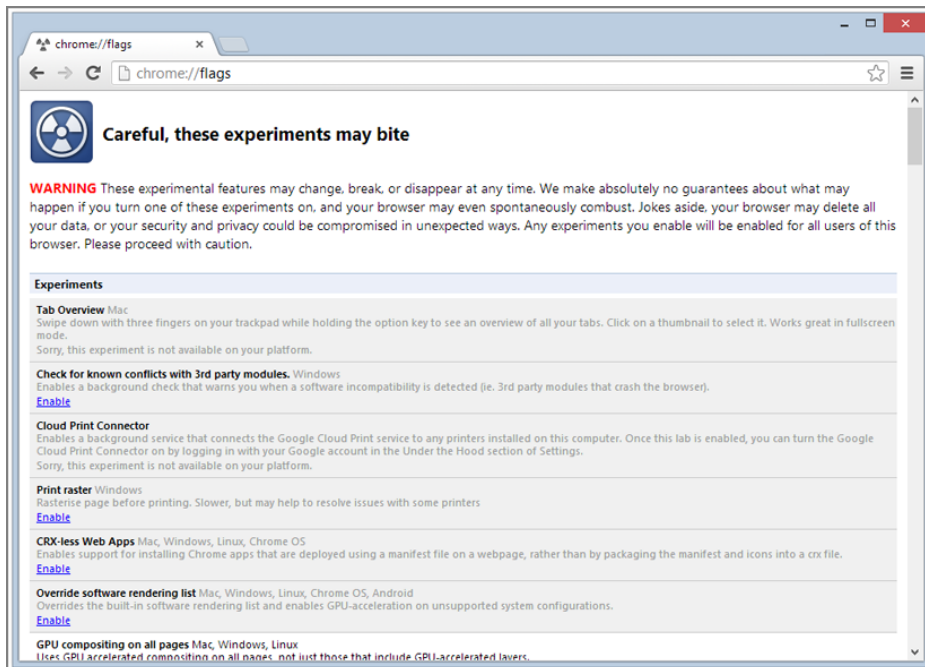
10. Now increase the max number of total connections. Locate `network.http.max-connections`.
11. Right-click and click Modify.

12. Finally, locate `network.http.max-persistent-connections-per-server` and click Modify.  
I set this value to 15.
13. Close and restart Firefox to activate your new optimized settings.

## Speeding Up Chrome

Google's Chrome browser has become very popular, overtaking Internet Explorer in market share according to some reports. The interface is very different from IE and Firefox but it also suffers from the same connection limitations. However, unlike Internet Explorer and Firefox, the max connection limit of six is hard-coded so users can't change it. The developers of Chromium, the open source browser project behind Chrome, have so far refused to implement this functionality claiming user configuration is unnecessary despite users' complaints. For more details, check out the issue page <http://tweaks.com/293110>.

Despite the fact there is a hard limit of concurrent downloads for users of Chrome, other methods exist to increase the performance by enabling experimental features. Open up Chrome, type `chrome://flags` in the address bar, and hit Enter. A list of experimental features that you can enable or disable displays, as shown in Figure 17-5.



**Figure 17-5:** Google Chrome offers experimental features that you can control to increase browser speed.

To get the best performance out of Chrome, I suggest you enable the following features by clicking Enable:

- GPU Compositing On All Pages
- Threaded Compositioning
- GPU Accelerated SVG Filters
- HTTP Pipelining

After you have enabled the features, restart Chrome to activate them.

## Accelerating Your Downloads

The most popular web browsers do not currently include advanced download managers that can speed up downloads. Have you ever noticed that when you download a file from a server, it almost seems that the server is setting a maximum speed on the file you are trying to get? I run into situations like this all the time. I am downloading a file and it seems to be stuck at some slow speed for my broadband connection. While that file is downloading, I start downloading another file from the server and this one also is downloading at nearly the same speed. No matter how many additional files I download at the same time, they all seem to be stuck at the same speed, as if there is a maximum speed set for downloads.

Some web servers set a maximum download speed for file downloads, whereas other servers use various technologies to share their bandwidth among the other visitors, and others just seem to be inconsistent. A download accelerator application can help in all these situations. Download accelerators work in much the same way as if you were downloading multiple files from the same server at once, only they download multiple chunks of the same file from the server at once. For example, in the scenario outlined previously, using a download accelerator divides the file I am trying to download into four equal chunks. I am able to download the file almost four times faster than if I were to download it in one big chunk. There is no magic going on here; the download accelerator is just breaking up the file, which results in more actual connections. If a web server has a set maximum download connection speed, when you have four connections downloading at once versus just one, the combined speed of four is always going to be much faster, which means your download finishes more quickly.

Some of the more advanced download accelerators do more than just split up your files. They search the web for other servers that also have the same file you are downloading and then determine the speed at which the files can be downloaded from the alternative sources. If the other sources are faster, the accelerator switches and downloads the file from the faster server.

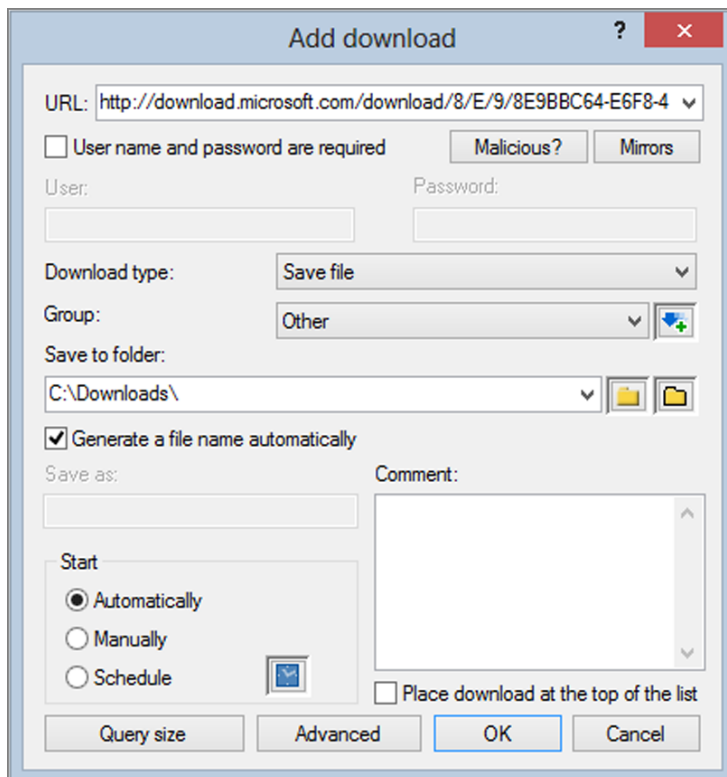
Various download accelerators are available. Some are free and others are shareware. Take a look at Table 17-1 for a list of popular download accelerators. For this section, I use the Free Download Manager to speed up downloads.

**Table 17-1:** Popular Download Accelerators

| APPLICATION NAME          | URL   | PRICE                     |
|---------------------------|---|---------------------------|
| GetRight                  | <a href="http://tweaks.com/455102">http://tweaks.com/455102</a> | \$19.95 for basic version |
| Free Download Manager     | <a href="http://tweaks.com/571975">http://tweaks.com/571975</a> | Free                      |
| FlashGet Classic          | <a href="http://tweaks.com/657377">http://tweaks.com/657377</a> | Free                      |
| Download Accelerator Plus | <a href="http://tweaks.com/629632">http://tweaks.com/629632</a> | Free; ad supported        |

### *Using the Free Download Manager to Speed Up Your Downloads*

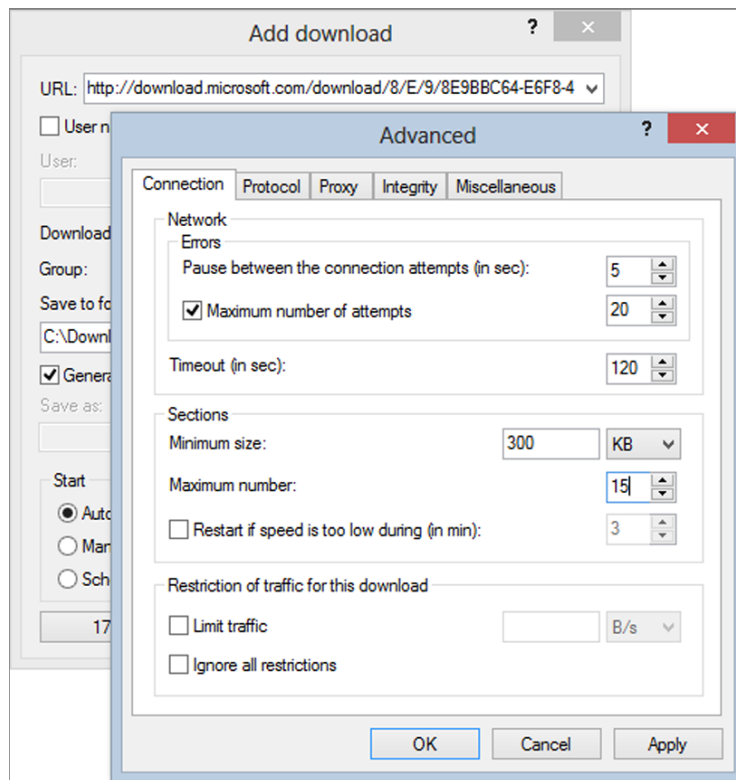
The Free Download Manager is a very comprehensive download accelerator that includes many features that help you manage your connection and find files on top of downloading them. All you are interested in right now is finding ways to speed up downloads, so I am going to get right to the point. If you have not already done so, visit <http://tweaks.com/571975> now and download the latest version of the Free Download Manager.



**Figure 17-6:** Free Download Manager prompts you with the Add Download window.

Open a copy of Internet Explorer and browse to a website from which you frequently download a lot of files. Free Download Manager integrates with your web browser so that when you click a file to download, it automatically takes over. Follow these steps to download files with the Free Download Manager:

1. When you click a link to download a file, the Free Download Manager takes over and prompts you, as shown in Figure 17-6. This is where you select where you want the file to be downloaded and other advanced settings. Locate the Advanced button on the bottom of the window and click it. This brings up the Advanced Properties window.
2. You can adjust the number of chunks into which the download accelerator splits the file. Locate the Sections group on the Connection tab and increase the maximum number, as shown in Figure 17-7. I like to set my maximum number to 15. When you are finished, click OK to return to the Add Download window.
3. After you specify the Save To folder, make sure the Start property is set to Automatically and click OK.



**Figure 17-7:** Set the number of chunks the download accelerator splits the file into.

Your file download begins. When the Free Download Manager is open and your file is downloading, click the Progress tab to see a graphical view of what parts of the file have already been downloaded.

## Speeding Up Your Network Connection

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The speed of your network connection does not depend on only the speed of your hardware. Windows is an operating system that is designed to work on a variety of different hardware and network setups. Because of the abstract nature of the operating system, it cannot be optimized for user-specific hardware setups.

Depending on the type of network connection you have, you might be able to tweak your connection so that the speed of your Internet connection as well as your local area network will be faster. These tweaks can help the auto-tuning network settings included in Windows 8 narrow in on a smaller range to find the optimal value.

### Tweaking Auto Tuning

The network stack in Windows 8 is very intelligent compared to previous versions of Windows, such as XP. Instead of using static transmission and receiving settings, it adjusts to optimal values for the current network condition. Some of these values have a wide range of possible settings so it can help to narrow the range. Also, depending on what your hardware supports, you may be able to increase the performance of your network significantly by disabling auto tuning completely.

You can configure all the auto-tuning settings with the `netsh` command in conjunction with the auto-tuning level you want to use. By default, your system will run in Normal mode, but a number of options are available:

- **Highly restricted**—Allows the receive window to grow but is the most conservative.
- **Restricted**—Allows the receive window to grow but is less conservative.
- **Normal**—Allows the receive window to grow at the normal rate.
- **Disable**—Completely disables the auto-tuning feature.

Open up an administrative-level command prompt to change the setting:

1. Open the Start screen, type in `cmd`.
2. When you see the shortcut appear, right-click it and click Run As Administrator.

3. Type **netsh interface tcp set global autotuninglevel=<level>** and hit Enter. Replace <level> with either `highlyrestricted`, `restricted`, `normal`, or `disable`.

For example, a complete command would look like `netsh interface tcp set global autotuninglevel=disable`.

I find it best to experiment with all the different levels to see which one works best in your environment. If you want to revert back to the default settings, set **autotuninglevel=normal**.

## Disabling Unneeded Protocols

Every computer comes with programs installed that you do not need. As with extra programs taking up space, extra protocols are just wasting your network connection and can actually slow it down. How is this possible? By default, a few different protocols are installed on your computer to allow for maximum compatibility with other computers on a network; these protocols each require bandwidth to operate. Most users don't use many protocols, and their computers use up a portion of their connection as they respond and transmit information for these protocols.

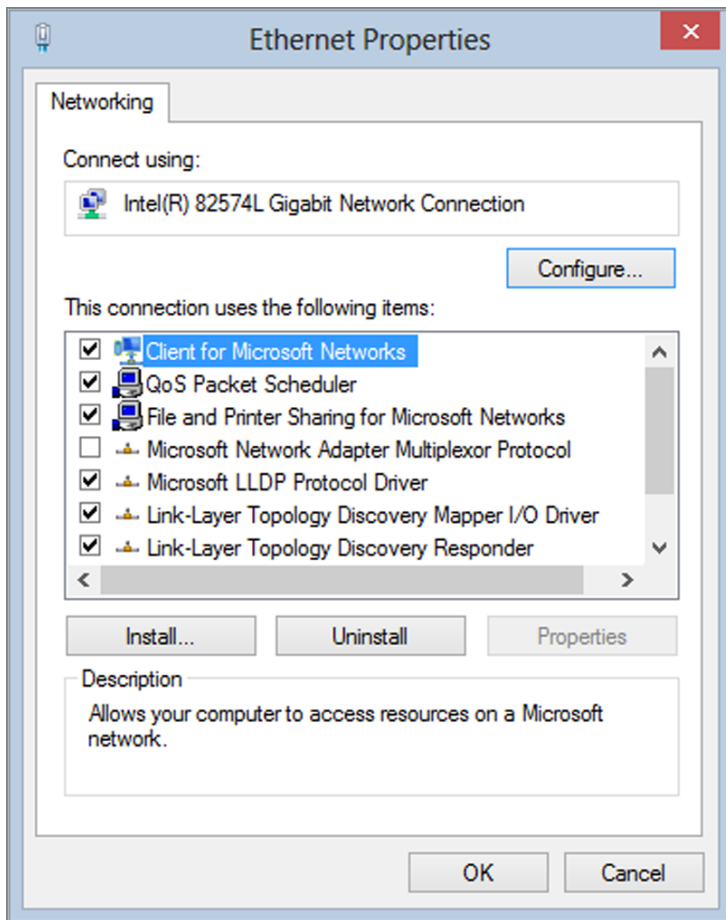
Additionally, with extra protocols installed on your network adapter connected to the Internet, you increase the risk of having security-related problems. One of the most common risks for broadband users is having the Client for Microsoft Networks networking protocol enabled on their connections and no firewall to block the public from their computers. This protocol allows everyone on the users' networks, or local neighborhoods if they have a cable connection without a firewall or router, to connect to their computers and view any files that they may be sharing. This fact alone should be a good enough reason for you to turn off the extra protocols, but with them disabled, you save a little bandwidth as well.

### *Viewing Protocols on Your Network Adapters*

Viewing the protocols installed and active on your various network adapters is easy. Just follow these quick steps and you will be viewing them in no time:

1. Open the Start screen, type **Network and Sharing Center**, change the filter to Settings, and hit Enter.
2. On the side menu, click Change Adapter Settings.  
This shows a list of all the network adapters installed on your computer.
3. Right-click any of the adapters and select Properties.

This brings up a list of the protocols that are installed and active on your adapter (see Figure 17-8). The protocols that are installed but are not active are indicated by the absence of a check in the box.



**Figure 17-8:** The Network adapter protocol list lets you see which protocols are running on your computer.

### *Disabling a Specific Protocol*

Now that you have the list of installed and active protocols on your screen, you are ready to disable a protocol. To do so, just click the checkbox to remove the check. Then click OK and the protocol will no longer be active on the network adapter. Take a look at Table 17-2 for help with the default Windows protocols. If you see any other protocols that are not listed in this table, you should research online before you disable them.

**Table 17-2:** Windows 8 Networking Protocols

| PROTOCOL NAME                                   | FUNCTION   |
|---|--|
| Client for Microsoft Networks                   | Used to access other shared resources on your local network running the File and Printer Sharing for Microsoft Networks protocol.                                      |
| QOS Packet Scheduler                            | Used to provide traffic management on your network for applications that support the protocol.   |
| File and Printer Sharing for Microsoft Networks | Used to share your printer and files on your computer with other computers on your local network.  |
| Microsoft Network Adapter Multiplexor Protocol  | Provides the ability to load balance between two or more network cards.  |
| Microsoft LLDP Protocol Driver                  | Used to create the network map used in the Network browser and Networking and Sharing Center.  |
| Link Layer Topology Discovery Mapper I/O Driver | Used to discover other computers connected to your local network.  |
| Link Layer Topology Responder                   | Used to identify your computer to other computers connected to your local network.   |
| Internet Protocol Version 6 (TCP/IPv6)          | New version of the IPv4 protocol that is not very widespread. Unless you are connected to an IPv6 network (most of you are not), you can safely disable this protocol. |
| Internet Protocol Version 4 (TCP/IPv4)          | Primary network communication protocol. Do not disable this protocol.  |

For optimal speed configuration, disable all protocols except for Internet Protocol Version 4. Note, however, that by doing so you will no longer be able to share or access shared files and resources, and certain programs and features that rely on other protocols may not work.

Also keep in mind that if you have multiple network adapters in your computer—such as a wireless adapter, a wired network adapter, and a dial-up modem—you have to repeat the preceding instructions for each device.

## Summary

This completes the final chapter in Part III, “Increasing Your System’s Performance.” I have covered speeding up every aspect of Windows 8, from the moment you press the power button to using your most frequent applications. In this chapter,

I went over how to speed up your web browser and download files faster. Then, I showed you how to optimize the system components that you need to browse the web and the network.

The next part of *Windows 8 Tweaks* covers securing your computer. Windows 8 has a lot of new security features that help protect your computer better than ever before. The next few chapters show you how to use those new features as well as many additional security tweaks that will help make spyware, adware, and hackers a distant memory.

**Part**

**IV**

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# Securing Windows

## In This Part

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**Chapter 18:** Windows Security

**Chapter 19:** Internet Security

**Chapter 20:** Protecting Your Privacy



# Windows Security

Security is one of the most important issues in the Windows computer world. Over the years, as Windows gained popularity and as it became the dominant operating system on the market, it became the primary target for hackers and other individuals who want to compromise your system. Additionally, you use your computer for more and more activities, which results in a massive amount of highly valuable and confidential information stored inside. Today it is not uncommon to have personal financial information, hundreds of personal documents, and thousands of priceless digital photos all stored on your computer. As the amount of personal data stored on your computer increases, the reward to compromise your system increases as well. This creates an enormous need for a secure operating system that will keep your data safe.

According to Microsoft, Windows 8 is the most secure version of Windows released in history. Building off the major security changes introduced in Windows Vista and 7, Windows 8 is technically superior but it is far from perfect. Security patches are still released to protect users from new attacks, and a lack of education on the new security features results in many users not using them.

This chapter helps you get the most out of security features and shows you how to lock down your computer using common industry best practices to protect your computer from getting compromised.

## Actively Protecting Your Computer

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The days when running an antivirus program on your computer was enough to protect it are long over. Now you need to play an active role in the process of protecting your computer. The types of threats are changing very quickly. Currently, the most effective way to compromise a computer is by taking advantage of the human factor—that is, tricking you into running some code that installs a malicious program to help someone steal your data or take over your machine. Another effective method to compromise a computer is to exploit a known vulnerability in the operating system. In this situation, a user is not up to date on his security patches and is basically leaving the door unlocked so that anyone with limited computer knowledge can step right in and install and steal anything they want.

Taking an active role in securing your computer involves keeping up to date on the latest security news so that you know about new vulnerabilities and the methods hackers are using to compromise your computer. Additionally, you need to know what to look out for so you don't fall for any undocumented hacks or tricks, as well as make sure the known vulnerabilities are fixed on your computer.

This section helps you with all the aspects of actively protecting your computer. First, I show you some great ways to keep up to date on the latest security news. Then I show you how to make sure that Automatic Updates in Windows 8 is working properly and that your computer has all known vulnerabilities fixed. Finally, I give you some pointers to help protect you from falling for most undocumented and unknown hacks and tricks.

### Staying Up to Date

One of the largest parts of taking an active role in protecting your computer's security is keeping up to date with the latest trends and news on active vulnerabilities. Various websites and newsletters can help you stay on top of the latest Windows security news. Take a look at the following sites and sign up for some of the newsletters to stay on top of the latest security threats:

- **Microsoft's Security at Home Newsletter**—This newsletter is targeted to less-technical home users and has a lot of information about good techniques for better “human” security, as I mentioned earlier. The newsletter is free and you can sign up at <http://tweaks.com/127594>.
- **TechNet's Microsoft Security Newsletter**—This newsletter, which targets advanced computer users, goes into more depth concerning the latest security patches released, in addition to general security news. This newsletter is also free and you can sign up at <http://tweaks.com/633433>.

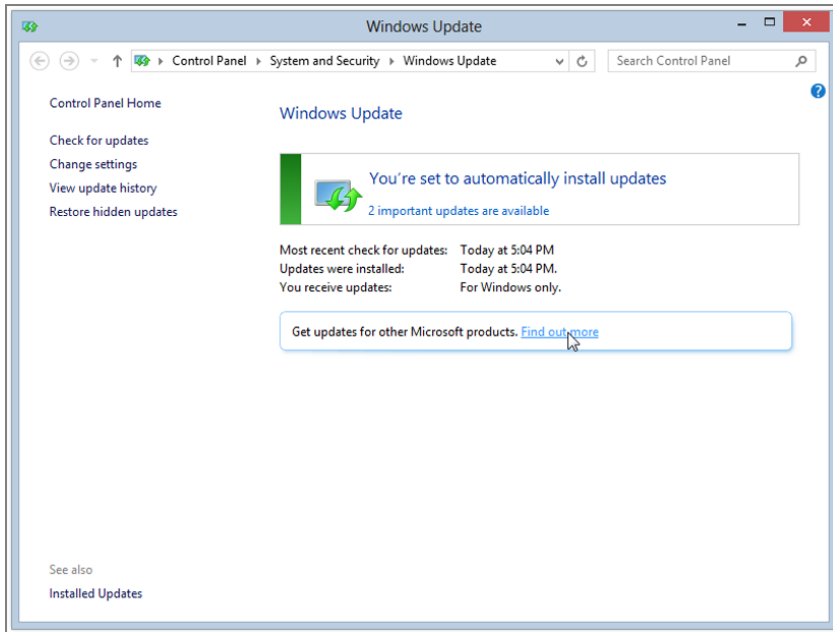
- **TrendMicro's Threat Encyclopedia**—This is a security website that helps you find out about the latest viruses, malware, and vulnerabilities for Windows 8 and popular applications that run on it. Visit <http://tweaks.com/927691> to get the latest news.
- **US-CERT**—This is the federally funded Computer Emergency Readiness Team website, which provides information on the latest security news and vulnerabilities for Windows 8 and every other computer software product, including applications that run on Windows. US-CERT is a very comprehensive website that has several RSS feeds that you can subscribe to with your favorite RSS reader or with Internet Explorer. Visit <http://tweaks.com/428545> to use this massive resource.

### *Using Microsoft Update*

Every month, Microsoft releases new security patches for all its products that fix security holes and increase the security of Windows. It is very important to make sure that your computer is working properly and is set up to download these new security patches automatically. Additionally, Microsoft includes an expanded version of Windows Update called Microsoft Update that patches Microsoft products beyond Windows. Microsoft Office, Visual Studio, and other popular Microsoft applications can also be patched automatically, but this feature is disabled by default.

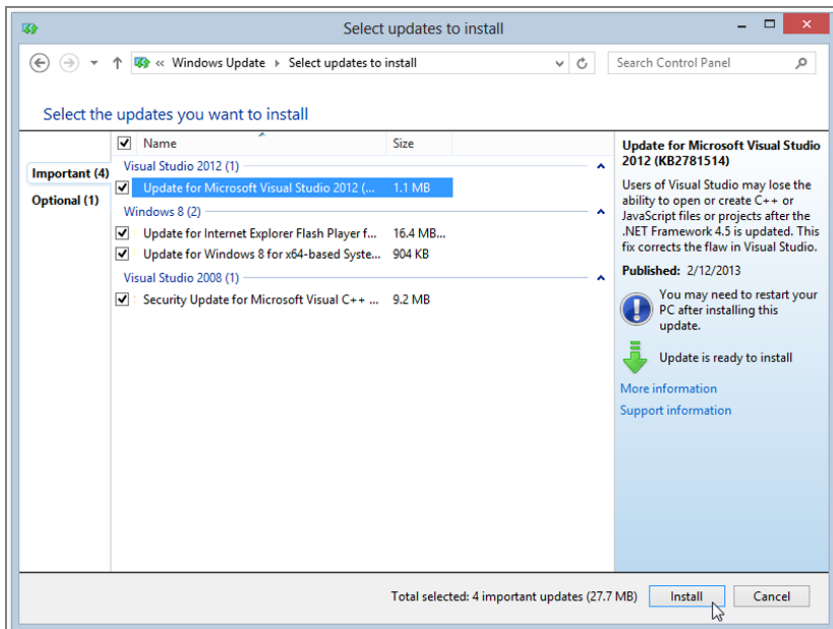
Follow these steps to enable Microsoft Update and scan your PC for updates:

1. Open the Start screen, type **Install Optional Updates**, change the search filter to Settings, and hit Enter.
2. Click the Find Out More link on the Windows Update screen as shown in Figure 18-1.
3. Internet Explorer launches a web page describing Microsoft Update and a legal agreement you must acknowledge. Check the I Agree box and click the Install button.
4. After the Microsoft Update component is installed, close IE and Windows Update should scan for updates for Windows other Microsoft products automatically.
5. When the scan is completed you can click important or optional update links and view available updates. Only critical updates are installed automatically.
6. Check the box next to any update you want to install and click Install, as shown in Figure 18-2.



**Figure 18-1:** Enable Microsoft Update to keep your computer secure.

Windows is now up to date and will remain up to date when Microsoft releases new security patches for Windows 8.



**Figure 18-2:** Select Windows and Microsoft app updates for installation.

## *Secunia Personal Software Inspector (PSI)*

Secunia Personal Software Inspector, also known as Secunia PSI, is a unique and powerful tool that is like Microsoft Update but for applications by all vendors. It scans the contents for any known program with a vulnerability that can be exploited and informs you that it needs to be updated. For some apps, it can even install a newer patched version automatically. Best of all, Secunia PSI is free for personal use.

I install Secunia PSI on all of my personal machines and virtual machines because an active approach to computer security requires protecting all aspects. As Microsoft has made Windows more and more secure over the years, attackers focus more on exploiting third-party apps that don't always follow the strict security guidelines Microsoft recommends.

Head over to <http://tweaks.com/142726> and download the latest version of Secunia PSI. When you are installing, I recommend selecting the Update Programs Automatically settings so old versions of third-party apps that contain vulnerabilities are updated without any effort. Once you have Secunia PSI installed, follow these steps to scan and remediate your PC:

1. Open the Start screen, type **Secunia PSI**, and hit Enter.
2. A scan should start automatically but if it doesn't, click the Scan Now button that displays when Secunia PSI starts up.

Alternatively, you can click Scan Again in the lower-right corner of the window if you already ran a scan previously.

If everything is up to date and no vulnerabilities are found, you should have a Secunia System Score of 100% and have a nice big green checkbox as shown in Figure 18-3. Otherwise, a list of programs that need to be updated is displayed as shown in Figure 18-4.

3. If you have a program that needs to be updated, simply click the Click To Update link under the application icon.

Typically, your web browser launches immediately and downloads the new version for you to install manually. However, in some cases, the download page on the vendor's site opens. For applications such as Java, a new version is downloaded and installed automatically.

Secunia PSI also offers a more detailed view when you click the Settings button near the bottom-center of the window. You can also configure scanning of other hard drives in your PC other than the default (C: drive).

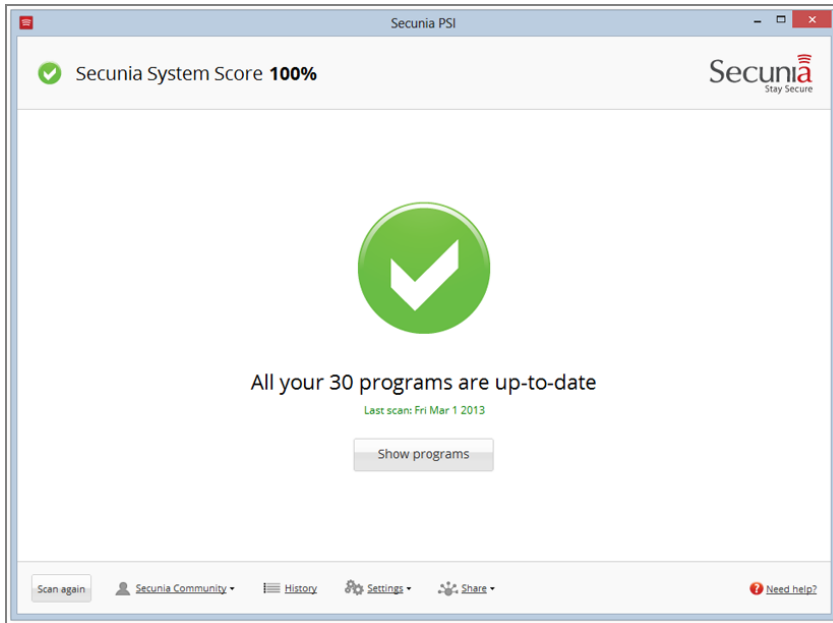


Figure 18-3: Secunia PSI shows that this is a secure computer.

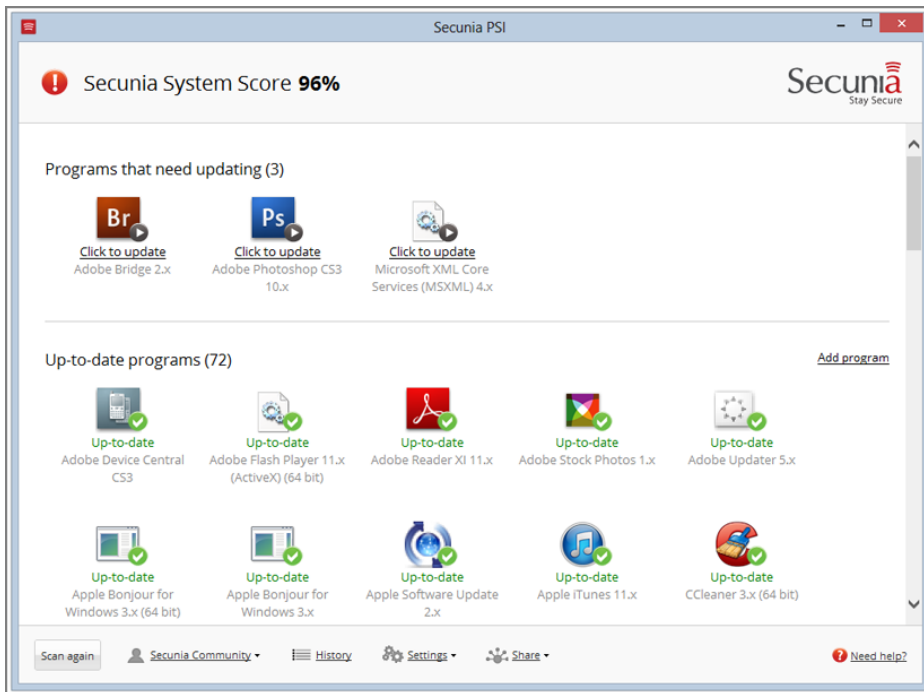


Figure 18-4: Secunia PSI shows what is vulnerable on this computer.

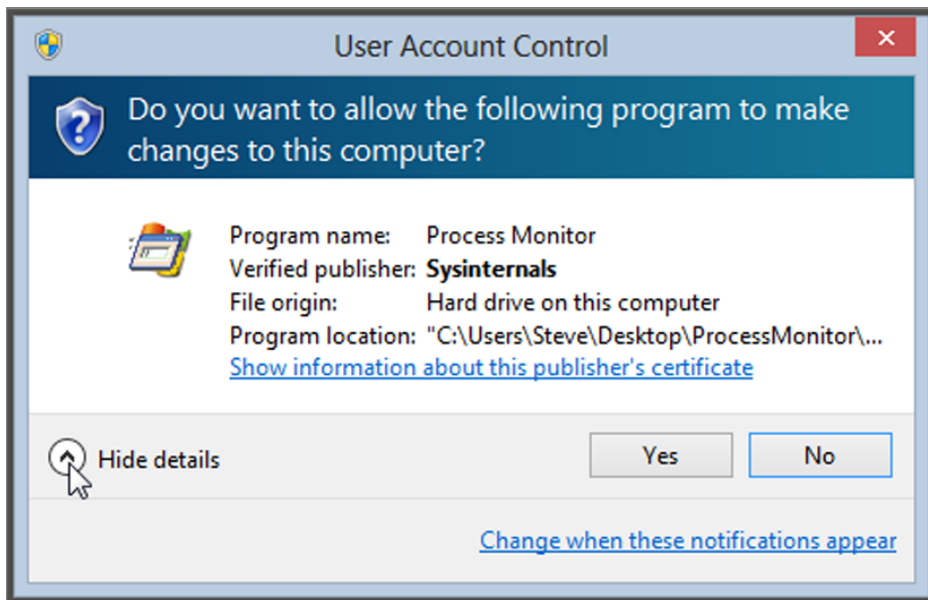
## Active Security Tips

One of the easiest ways to break into a computer to install malware or steal data is by exploiting the human factor. Attackers take advantage of the fact that we don't usually read the fine print for an application that you download or are just click-happy and click Yes on any dialog box that pops up. If you exercise a little caution and follow the recommendations covered in the following sections, you can take the human element completely out of the picture.

### *Don't Get in the Habit of Clicking Yes/Continue/Allow*

In Windows 8, User Account Control (UAC) provides more control over what applications get installed automatically on your computer. The days of visiting a website and getting junk automatically installed on your computer are over. When configured properly in Windows 8, User Account Control requires you to authorize almost all changes to your computer, including system configuration changes and installing new programs. To some, these prompts can become overwhelming and result in the habit of just clicking Continue on all of them that pop up. Such behavior completely bypasses the new security features in Windows 8, allowing almost anything to take over your system.

The next time you get a User Account Control pop-up, click the Details arrow, as shown in Figure 18-5, to find out exactly what you are allowing.



**Figure 18-5:** View details when you are presented with a User Account Control pop-up.

### *Watch Out for the Internet Explorer Plug-Ins You Install*

Internet Explorer plug-ins are notorious for bundling all sorts of extra junk along with the application, especially those by websites that offer some free application. There is usually a reason why the application is free. Companies are in business to make money and when they give away software, they often get paid for bundling additional software with their offering. This is how you can end up with a bunch of new applications popping up on your computer when you thought you installed only one.

Most of the more popular websites are a little more forthcoming about what extra junk they are going to install on your computer. You can find out if they are going to install any other applications by reading the user agreement and by paying attention to the installation options. Checkboxes usually enable you to prevent other applications from being installed. If you are visiting a lesser-known website or a website that may have illegal or adult content, I highly recommend not installing any plug-ins unless you do research and can verify it is a legitimate plug-in.

### *If You Didn't Start It, Be Cautious*

If you are using your computer and you are hit with a surprise User Account Control pop-up, be very cautious about clicking Continue and allowing the request to be granted. For example, say you are typing a document and all of a sudden User Account Control wants you to approve a system change. This may be a big indication that your computer is infected with some sort of malware or virus that is trying to change your system settings. I recommend doing a full system virus and malware scan immediately to make sure that your computer is clean.

### *Secure Your Network Connection*

One of the best ways to secure your computer is to place it behind a firewall or a router device that protects it from malicious Internet traffic. By blocking the public access to your internal network or wide open access to your computer, you can kill the potential for certain types of direct attacks.

In the next chapter I show in greater detail how you can use firewalls to protect your computer.

### *Protect Your Accounts*

Your account is safe only as long as no one has or can guess your password. Make sure that you have a password on all your accounts and never write it down. The next section helps you secure your computer accounts and pick

complex passwords that will be hard for anyone to guess and hack with brute force techniques.

## Controlling Your Computer Accounts

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Your computer's physical security, as well as online security, depends on how easy it is to access your accounts. This book shows you many ways that you can protect your computer, but almost all of them can be defeated by an account on your computer that has a poor password or no password at all. This is why it is critical to ensure that your computer is protected by accounts with strong passwords. Anything less will weaken your entire security defense.

This section shows you how you can manage your user accounts in Windows 8 to make sure they are all well protected.

### Using Complex Passwords on All Your Computer Accounts

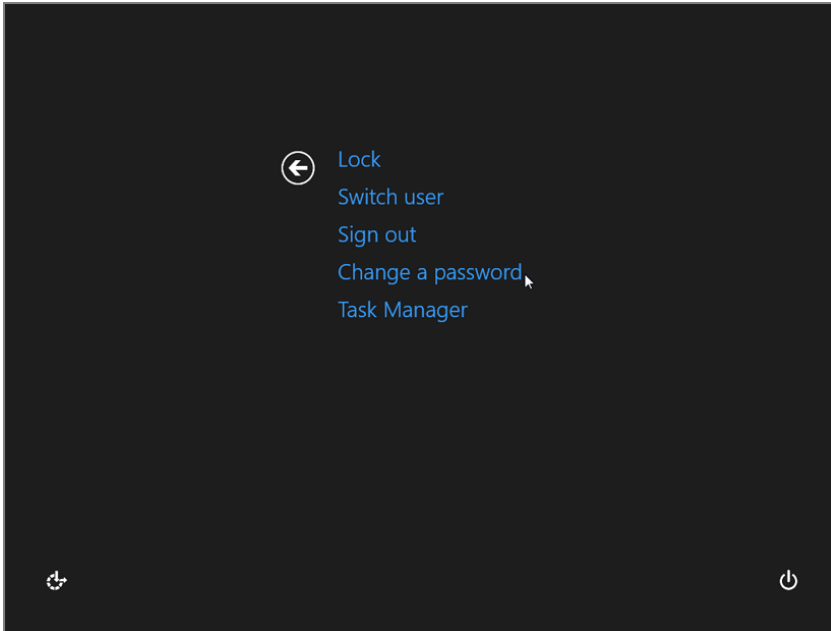
All the accounts on your computer should have a complex password associated with them in case your computer is ever exposed to the Internet. Passwords such as easy-to-remember words and predictable key combinations, such as "asdf," just don't cut it. These types of passwords are vulnerable to brute force dictionary attacks where an intruder can use special software to try hundreds of combinations to hack into your account.

A complex password is a password that has at least eight characters and consists of uppercase and lowercase letters, as well as numbers or other symbols. Ftm3D8&- is an example of a complex password. Something such as this is very difficult to guess and will take quite some time for a brute force technique to crack it.

Using complex passwords on all your accounts might not be easy at first, but after a while they will grow on you and you will have no problem remembering them. To prevent losing access to any encrypted files, it is best to log on to each account that does not already have a complex password and change them. If you use the Set Password function in Computer Manager, you risk losing access to any files that were encrypted under the user's account.

Follow these steps to safely change a user's account password:

1. Log on to the user's account that needs a password change.
2. Press and hold Ctrl+Alt+Delete so that the secure desktop is shown (see Figure 18-6).
3. Click the Change Password button.
4. Type the old password once and then the new password for the user twice, and click the blue arrow button.



**Figure 18-6:** Windows 8's secure desktop offers you a safe way to change user passwords.

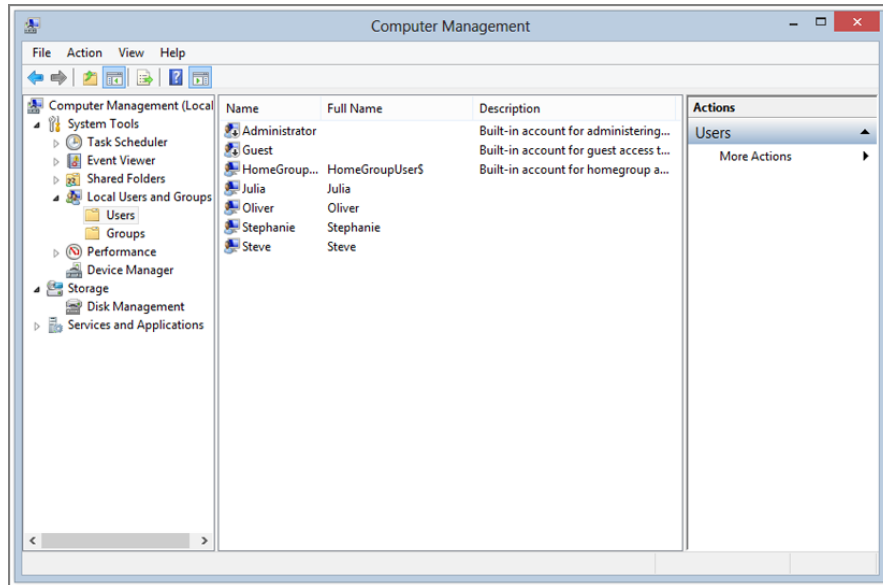
The password for the account has now been changed.

## Assigning a Password and Renaming the Guest Account

One of the default accounts set up in Windows 8 is the Guest account. This account can be useful if your computer is in a public place such as a library and a low-rights account is needed. However, for most of us, this account is just another possible security hole because it cannot be deleted. It is disabled by default, but it could be enabled again by a virus or malware if your computer ever gets infected. The best way to neutralize this account is to give it a random password and rename it to eliminate the chances that some script will be able to use it.

Follow these steps to protect this account:

1. Open the Start screen, type **compmgmt.msc**, and hit Enter.
2. After Computer Management loads, expand Local Users And Groups and click the Users folder. All the local computer accounts are listed, as shown in Figure 18-7.
3. Right-click the Guest account on the list and click Set Password.  
A warning screen appears telling you what may happen if you proceed.
4. Disregard the warning message and click Proceed.
5. When the Set Password window appears, type a completely random, complex password in both boxes, and click OK. The new password will now be set.  
I suggest using a password that is at least 20 characters long.



**Figure 18-7:** Computer Management lists local computer accounts.

6. Rename the account to confuse any malicious scripts that might be looking for it. Right-click the Guest account again and click Rename.
7. Type a new account name that has some random letters and numbers in it.  
You just want to make it different from Guest.
8. When you are done renaming it, click Enter and you are finished.  
Your Guest account is now more secure than ever.

## Secure the Administrator Account

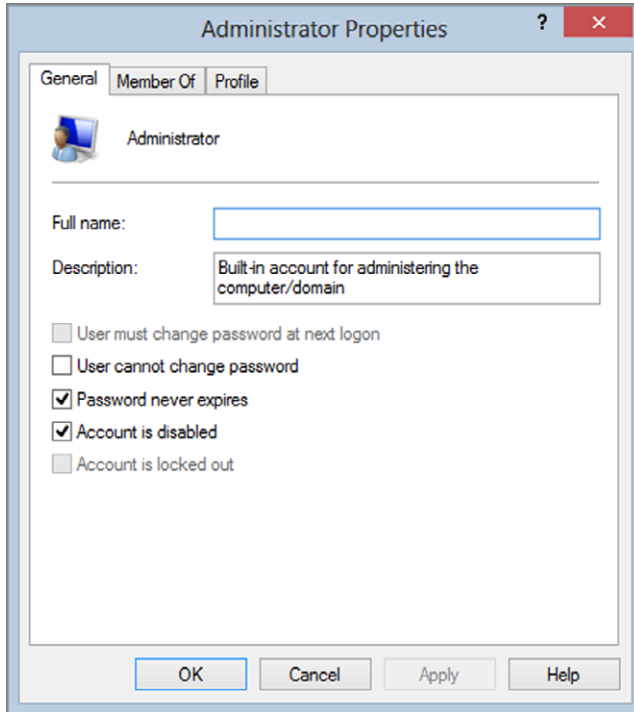
The Administrator account is the most important account on the computer because it has the highest permissions and can do anything it wants to the configuration and settings of your computer. Securing this valuable account is critical to the overall security of your computer.

You secure it by ensuring the account is disabled, setting a strong password, and renaming it so that it is harder for malicious scripts and viruses to try to use. Doing this is very similar to securing the Guest account as you just did in the previous section.

Follow these steps to protect your Administrator account:

1. Open the Start screen, type **compmgmt.msc**, and hit Enter.
2. After Computer Management loads, expand Local Users And Groups and click the Users folder.

3. Right-click the Administrator account and click Properties.
4. Check the Account Is Disabled option if it is not already selected, as shown in Figure 18-8. Then click OK to save the changes.



**Figure 18-8:** Disabling the Administrator account is the first step toward securing it.

5. Right-click the Administrator account and click Set Password.  
A warning screen appears telling you what might happen if you proceed.
6. Disregard this message and hit Proceed.
7. When the Set Password window appears, type a completely random, complex password in both boxes that I suggest is at least 20 characters long and click OK.  
The new password will now be set.
8. Rename the account to confuse any malicious scripts that might be looking for it. Right-click the Administrator account again and select Rename.
9. Type a new name for the account that has some random letters and numbers in it. I like to use AdminDisabled [random numbers] as a new name.
10. Press Enter and you are finished.

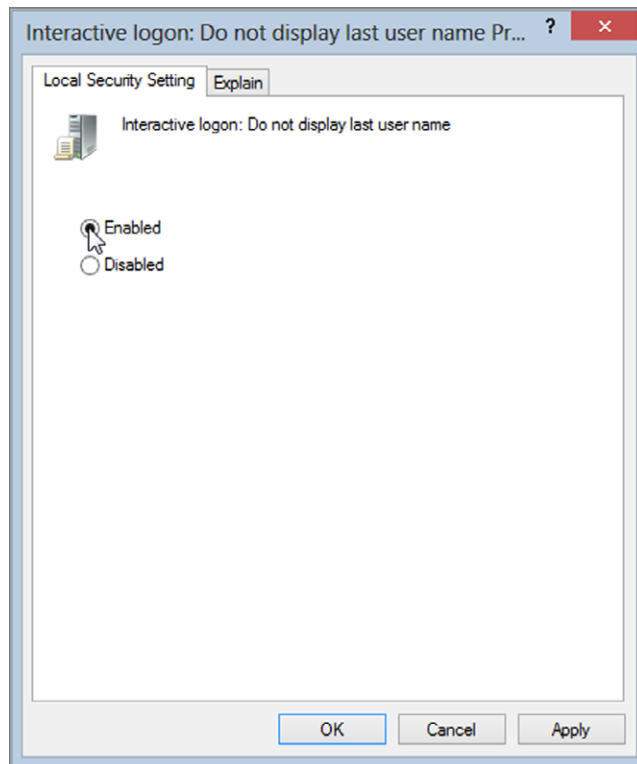
Now both of the built-in Windows 8 accounts are secured.

## Hiding Usernames on the Logon Screen

If you use your computer in a high-security environment, it is very important to hide your username from the logon screen so that potential intruders are not able to figure out your username—before they even try to break your password. Using the Local Security Policy to your advantage, you can configure a setting that will automatically clear the username of the last person who logged in. This adds another layer of protection to your account by putting it in stealth mode.

Follow these instructions to turn on this setting:

1. Open the Start screen, type **secpol.msc**, and hit Enter.
2. After the Local Security Policy editor has loaded, expand Local Policies and click Security Options.
3. Scroll through the list and right-click Interactive Logon: Do Not Display Last User Name, and then click Properties.
4. Select the Enabled box, as shown in Figure 18-9, and click OK.



**Figure 18-9:** Hide your username with the Local Security Policy editor.

5. Close the Local Security Policy editor and you are finished.  
The next time you reboot, your username will be hidden.

## Setting the Account Lockout Policy

To complement the new complex password that your accounts now have, I recommend configuring the Account Lockout Policy to add even more security to your accounts. The Account Lockout Policy enables you to protect your account from an intruder trying dozens or even thousands of possible password combinations while attempting to guess your password. When configured, after the intruder has entered the wrong password a set number of times, the account will then be locked for a set amount of time. After that time interval has passed, the account is unlocked and the whole process is reset.

This provides valuable additional security for your accounts that will eliminate the effectiveness of certain brute force tools that will try every possible combination to hack into your account. By using the Account Lockout Policy, you can increase the amount of time a malicious user has to wait to try every possible combination to something unfeasible.

Setting the Account Lockout Policy is very similar to configuring your computer not to show the last username that was used to log in with. Follow these steps to configure the lockout policy for your computer:

1. Open the Start screen, type **secpol.msc**, and hit Enter.
2. After the Local Security Policy editor loads, expand Account Policies and then click Account Lockout Policy.
3. Right-click Account Lockout Threshold and click Properties.
4. Increase the number of invalid logon attempts from 0 to a higher value to enable the feature.

I like to use 5 as my number of invalid logon attempts before my account is locked out.

5. Click OK to save the setting. A Suggested Value Settings window pops up that automatically populates the two other settings: Account Lockout Duration and Reset Account Lockout Counter After. Click OK here as well to use the default values.
6. If the 30-minute duration of the account lockout is too long for you, just right-click each setting, select Properties, and modify the value.

I typically use 10 minutes for both of these settings because I think it is a nice balance between added security and inconvenience when I may be using my computer half asleep and type in the wrong password more than five times.

Your Account Lockout Policy is now set up and will begin protecting your computer immediately.

## Tweaking User Account Control

---

User Account Control (UAC) made its debut in Windows Vista and has been annoying and protecting users ever since. According to Microsoft, User Account Control decreased malware infection rates significantly in Windows Vista compared to Windows XP. On paper, UAC has been a great success, but in practice it annoyed users a little too much. In Windows 7, UAC was fine-tuned to minimize interruptions and is significantly less annoying. That work continued with Windows 8.

For the majority of you who skipped Windows Vista and some of you who even skipped Windows 7, User Account Control provides total control over all changes to your system. If you try to install a program, install a plug-in, or access any application that has the capability to change critical system settings, UAC goes into action and makes sure that you really want to do what an application is trying to do on your computer. In terms of the security of your computer, UAC is great because it catches when applications, scripts, and even websites try to do things to your computer that cause a critical change. However, if you initiate the change, such as trying to install a program or modify a Windows setting, you also have to deal with the pop-ups because of the way UAC is designed.

User Account Control works by monitoring the Windows application programming interface (API), system components, and application configuration files, to find out whether an action needs higher privileges. If an action is found, it prompts a UAC box for your authorization.

## Controlling User Account Control

The User Account Control in Windows 8 plays a big role in the overall security of the operating system. No longer do you have to worry about software secretly getting installed or scripts running that change critical system data without your knowledge. Instead, you have to worry about getting bombarded with UAC pop-ups that require you to authorize almost every change this book asks you to do. Thankfully, Microsoft did not implement this feature without adding the ability for power users to tweak it to make their lives easier while still benefiting from some of the protections of UAC.

### *User Account Control Levels*

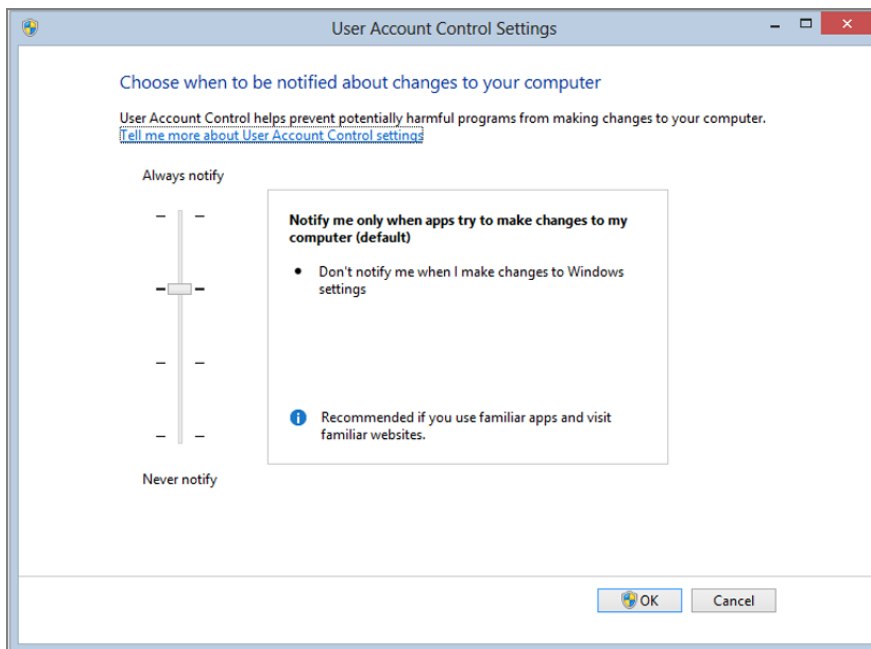
In Windows 8, Microsoft included a User Account Control Settings feature that enables you to modify the level of protection UAC provides. For the first time you can choose between four different levels of UAC protection, as shown here:

- Always Notify When Programs Or A User Attempts To Make Changes To The Computer.

- (Default) Notify Only When Programs Attempt To Make Changes To The Computer.
- Notify Only When Programs Attempt To Make Changes To The Computer And Do Not Use Secure Desktop.
- Never Notify.

The new feature enables you to define the balance between security and annoyance that is right for you. You can modify the setting with just a few clicks:

1. Open the Start screen, type **User Account Control Settings**, change the filter to Settings, and hit Enter.
2. When the Settings screen displays, drag the slider to the settings you want to use, as shown in Figure 18-10.



**Figure 18-10:** Adjust the User Account Control slider to choose a notification level.

3. Click OK to save your settings.

### *Fine-Tune User Account Control with Local Security Policy*

Although I prefer using the User Account Control Settings window to tweak UAC, you can also configure it through your Local Security Policy. There, you can tweak 10 different settings for the UAC, as described in Table 18-1.

**Table 18-1:** User Account Control Settings

| SETTING NAME   | FUNCTION   |
|--|--|
| User Account Control: Admin Approval Mode for the built-in Administrator account.                            | This determines whether an Administrator who is logged on and working will get UAC prompts. This account is usually disabled, so this setting is useless.  |
| User Account Control: Allows UIAccess applications to prompt for elevation without using the secure desktop. | This setting allows remote control applications such as Remote Assistance to receive UAC prompts without switching to the secure desktop.  |
| User Account Control: Behavior of the elevation prompts for Administrators in Admin Approval Mode.           | This determines which type of prompt an Administrator receives. You can choose between prompting for consent, prompting for the admin password, or disabling the prompting altogether.   |
| User Account Control: Behavior of the elevation prompt for standard users.                                   | This determines the type of UAC prompt standard users receive. By default, this is set to prompt for credentials, but it can be set to disable prompting.  |
| User Account Control: Detects application installations and prompts for elevation.                           | This allows you to disable UAC prompts for installing new applications.  |
| User Account Control: Only elevates executables that are signed and validated.                               | This setting is disabled by default, but if you want a super-secure system that can run only applications that are signed with a certificate, you can enable this.   |
| User Account Control: Only elevates UIAccess applications that are installed in secure locations.            | This allows UAC to elevate only those applications that are in secure locations such as your local hard drive. An unsecured location may not be a trusted network drive.   |
| User Account Control: Runs all administrators in Admin Approval Mode.  | Similar to the Admin Approval Mode for the built-in Administrator account, this setting applies to all accounts that are members of the Administrator security group.  |
| User Account Control: Switches to the secure desktop when prompting for elevation.                           | Enables you to specify whether you want to switch to a secure desktop—one where other applications and scripts do not have access—to protect the UAC prompts from being manipulated by scripts and applications instead of end users.                            |
| User Account Control: Virtualizes file and registry write failures to per-user locations.                    | Enables users running as standard users to run applications that might previously have required administrative rights. This redirects system registry entries that are protected by admin permissions to local user locations so the application will still run. |

Changing the UAC settings is easy to do with the Local Security Policy editor. Just follow these steps to modify the settings:

1. Open the Start screen, type **secpol.msc**, and hit Enter.
2. After the Local Security Policy editor loads, expand Local Policies and click Security Options.
3. Scroll to the bottom of the list to see all the UAC security policies. Right-click a policy and click Properties to modify it.
4. When finished, click OK to save the changes.

As you can see, editing the User Account Control's settings is very simple. If you are fed up with the UAC and want to disable it completely, all you need to do is set the User Account Control: Behavior Of The Elevation Prompt For Administrators In Admin Approval Mode and User Account Control: Behavior Of The Elevation Prompt For Standard Users policies to No Prompt and you will no longer have any annoying prompts. However, you will have just killed one of the best security features in Windows 8. That is why I believe that it is still possible to use User Account Control while decreasing some of the annoying prompts. The next section shows you how to configure UAC settings for a good balance.

### *Compromising Between User Account Control and Security*

Although many people want to disable UAC completely, I am against this because of the added security it provides to Windows 8. Instead, I like to configure my computer in a way that I can get the best of both worlds—being able to install applications and freely configure Windows settings without getting bombarded with UAC prompts, while still getting the security of UAC. How is this possible? Use two accounts!

All too often people use their computer logged on with a user that is a member of the Administrator group. They do this accidentally or without even knowing it because when an account is created as part of the end of the Windows 8 setup, it automatically adds it to the local Administrator security group. The end result is a situation in which you have to be treated as a standard user and authorize every single change to secure the system. I offer a better solution to secure the system that greatly reduces the number of prompts you see. This set up is very simple and easy to use after you get the hang of it.

This is how it works: You have two accounts on your machine. One for day-to-day use that is a low-rights, standard user account with UAC running, and another account that has full admin rights with UAC disabled so that you can easily install and change system settings with it when needed.

To do this, you need to convert your Administrator-level account to a standard user account. Next, create a new Administrator account for the sole purpose of installing and managing applications and changing system settings. You then configure UAC not to prompt for authorizations on that special admin account so that you can be free of the UAC annoyances when using it.

After creating your two accounts, you have a standard user-level account that you use 99% of the time for your day-to-day work. This account is protected with UAC, ensuring your computer is secure. Then, when you need to make a bunch of system changes or install applications, you can use fast user switching to switch into the system configuration admin account you created to make your changes without having to worry about UAC.

Follow these detailed steps to get the best of both worlds:

1. First, create a dedicated administrator account. Open the Start screen, type **Give other user access**, change the filter to Settings, and hit Enter.
2. Under Other Users, click the Add A User button.
3. Because this account is only for administrating your PC, select Sign In Without A Microsoft Account on the bottom of the screen.
4. Click Local Account.
5. Enter the username and password for your new admin account and click Next.
6. Click Finish.
7. Open the Start screen, type **Make changes to accounts**, change the filter to Settings, and hit Enter.
8. Click the new admin account you just created.
9. Under Make Changes To Your User Account, click Change The Account Type.
10. Select Administrator and click Change Account Type.
11. Now that your new admin account is created, convert your primary account to a standard user. Click Manage Another Account under the Make Changes section.
12. Click your primary account.
13. Select Change The Account Type.
14. Select Standard and click the Change Account Type button.
15. The final change will disable UAC for the administrator account. Go back into the Local Security Policy editor by opening the Start screen, typing **secpol.msc**, and hitting Enter.

16. Navigate through Local Policies and Security Options and locate User Account Control: Run All Administrators In Admin Approval Mode. Right-click this policy and select Properties.

17. Select Disable and click OK to save the changes.

You are now finished setting up UAC to not run for your system configuration account.

After you are finished with these steps, you can easily switch to the configuration account with higher rights by pressing and holding Ctrl+Alt+Delete. Then click Switch User and select the configuration account. When you are finished doing work that requires higher rights, press Ctrl+Alt+Delete again and switch back to your low-rights session.

## Using File Encryption

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Do you have important documents on your computer that you don't want anyone else to see? Sure, you can set file permissions on files so that only your account can read them. Is that enough? Unfortunately, it is not, because file permissions can be manipulated in many ways and your account password replaced if someone has physical access to your computer. If your computer is stolen or if someone breaks into your office or home, the only way truly to protect important data is to encrypt it.

Windows 8 includes two different levels of encryption: file level and hard-drive level. The file-based encryption is a feature of NTFS, whereas the drive-level method is a feature in Windows 8 called *BitLocker Drive Encryption*. The main difference between the two is that BitLocker Drive Encryption can encrypt your entire drive or partition so that even the filesystem is protected. Everything on the drive, including the operating system, is encrypted so that no one will even be able to see a list of files. The security of BitLocker Drive Encryption comes at the price of performance and requires certain hardware, which is why file-level encryption is often preferred. Therefore, I am going to cover that first.

## Encrypting Your Files

File-level encryption in Windows 8 is very easy to do. However, some steps are required before you start encrypting files to make sure that you can always decrypt your files at a later time no matter what happens. This next section shows you why it is important to set up a Recovery Agent in Windows 8.

## Setting Up a Recovery Agent

What happens to your data if some day you forget your password and someone has to set you a new one, or if you are forced to reload Windows 8 because of a major Windows or hardware failure? In all these events you end up losing access to any files you encrypted earlier because of the way the encryption system is safeguarded. If you encrypt files on your computer, you want to make sure that they are safe and no one but you can read them. Windows needs to make sure that your encrypted files can be decrypted only by the account that protected them.

If someone else has an Administrator account on your computer, he is capable of setting a new password for your account and logging on using your username and password. Typically, anyone logging on to your account has full access to all your encrypted files; however, in the preceding scenario, to protect your files Windows removes access to them so that even your account can no longer access the files. This feature has both good and bad effects. It is very good because it is smart enough to protect your data from an untrusted administrator; however, you can also lose access to your own documents. There is a solution to this dilemma. By using local group policy, you can specify a Recovery Agent that will always give you the ability to decrypt your own files.

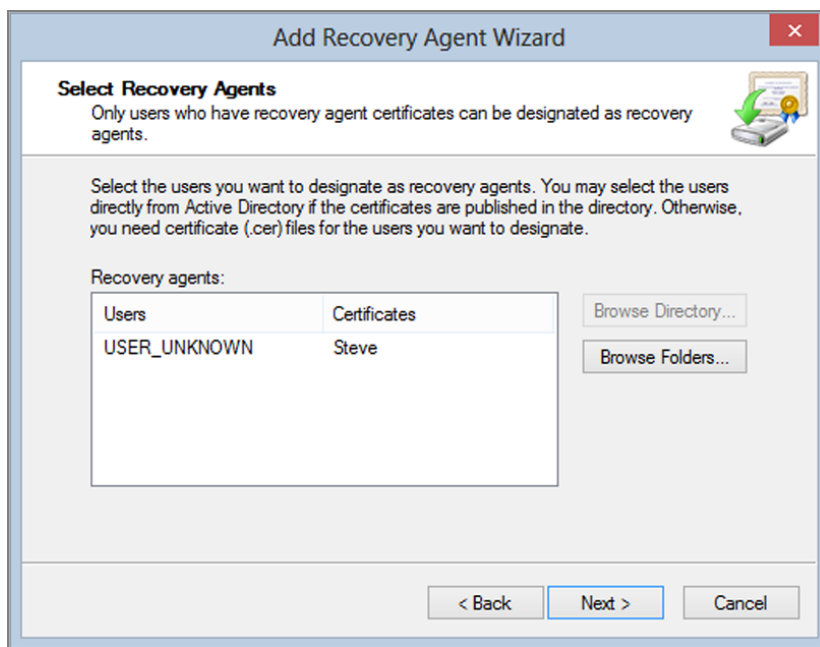
This works by instructing the encryption system to add an extra certificate reference to the file when it is in the process of encrypting. This extra certificate reference belongs to what is commonly called the *Recovery Agent*. Setting up the Recovery Agent is two-fold. First you must generate the certificate assigned to the Recovery Agent. Then you need to set up the encryption system to use it. Follow these steps to get your Recovery Agent up and running:

1. Log on to an account on your computer that is a member of the Administrator group.
2. Open the Start screen, type **cmd**, and hit Enter.
3. Once Command Prompt is shown, type in **mkdir c:\RA** and hit Enter.
4. Then type **cipher /r:c:\RA** and hit Enter.
5. When prompted, type a password to protect the Recovery Agent certificate, and then press Enter. You have to do this a second time to confirm the password was entered correctly.

When the command is finished, it will have generated two files: `recovery.cer` and `recovery.pfx`. I go into more detail on these files later.

6. Open the Start screen, type **secpol.msc**, and press Enter.
7. Expand Public Key Policies, right-click Encrypting File System, and then select Add Data Recovery Agent.

8. Click Next on the wizard welcome screen and then click Browse Folders to specify the location of recovery.cer. It should now be in `c:\ra\` if you followed steps 4 and 5 correctly.
9. Click Yes on the screen informing you that Windows cannot determine if this certificate has been revoked. Your window should now look similar to Figure 18-11.
10. Click Next again, click Finish, and then you are done. The Recovery Agent is now set up.



**Figure 18-11:** Add a Recovery Agent to Windows 8's encrypted filesystem so you can always access encrypted data.

It is very important to remove the other file, `recovery.pfx`, from `C:\RA` and burn it to a CD or store it on a USB thumb drive. Then place the CD or USB thumb drive in a safe or safety deposit box to ensure it does not get into the wrong hands. If you ever need to decrypt your encrypted files, you will use `recovery.pfx`. If anyone gets a hold of that file and can then guess your password, all your files can be decrypted. That is why it is so important to remove that file from your computer and put it in a very safe place.

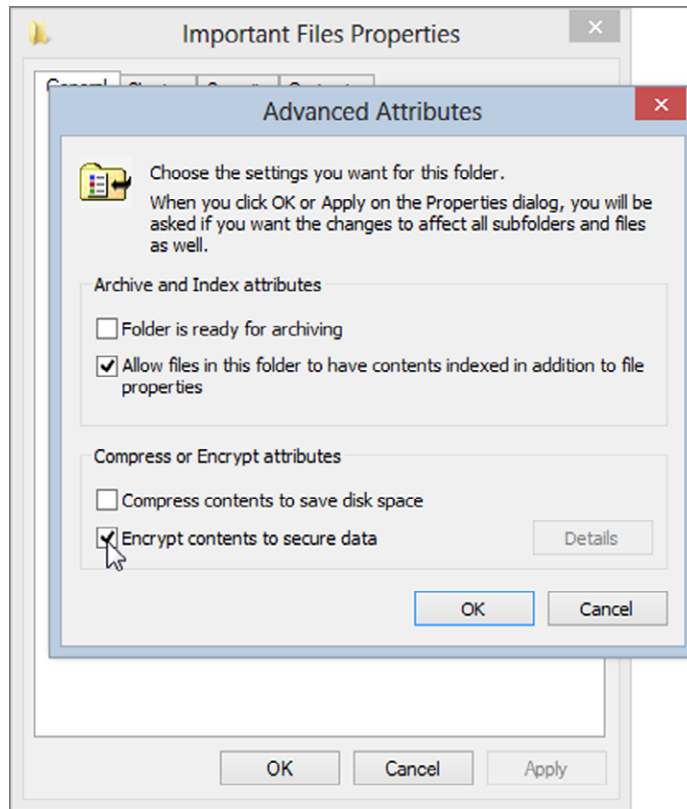
If you ever have a need to decrypt your own files after losing access to them for any reason, copy `recovery.pfx` back to any computer (one that you want to decrypt your files on) and double-click it. Then go through the wizard to import the certificate and enter your password when prompted. You will now be able to access and decrypt any files you need.

## Setting Files to Be Encrypted

Now that you have your Recovery Agent set up and the PFX file removed from the computer and placed in a safe location, you can safely and securely encrypt the files on your computer. To do so, just navigate to a file or folder that you want to encrypt on your machine and follow these steps:

1. Right-click a file or folder and select Properties.
2. On the General tab, click the Advanced button.
3. Check the Encrypt Contents To Secure Data box and click OK, as shown in Figure 18-12.
4. Click OK to exit properties, and you are finished.

If a notification pops up asking you to back up your encryption key, just ignore it; you already backed it up earlier.



**Figure 18-12:** You can encrypt files with the encrypted filesystem.

If you ever want to decrypt a file, just uncheck the Encrypt Contents To Secure Data box that you checked previously and click OK.

## Using BitLocker Drive Encryption

BitLocker Drive Encryption is another improved feature from Windows Vista that allows you to encrypt an entire drive or partition. This drive-layer encryption even encrypts the filesystem and operating system files so everything is secure. BitLocker Drive Encryption is the most secure Windows security option. This feature is ideal for laptop owners who have sensitive data on their drives as well as desktop users who can't risk their information getting into the wrong hands.

BitLocker Drive Encryption works by encrypting the entire partition, including the filesystem, with a 256-bit encryption algorithm. Using a Trusted Platform Module (TPM) chip, USB thumb drive, or a typed-in passkey, BitLocker protects your encrypted partition. When you boot up your computer, BitLocker starts to load from a small unencrypted partition, prompting you to insert your USB key or passcode to begin booting Windows 8. If everything checks out, BitLocker unseals the encrypted partition and starts running the normal boot code. Failure to insert the USB key or correct passcode results in a failure and even an inability to boot Windows.

Using BitLocker Drive Encryption in Windows Vista is very difficult. The user needs to partition the drive in a specific format before Windows is even installed to use the feature. Windows 8 integrated the Windows Vista drive preparation tool so now you don't need to reinstall Windows to enable BitLocker.

### *Hardware Requirements*

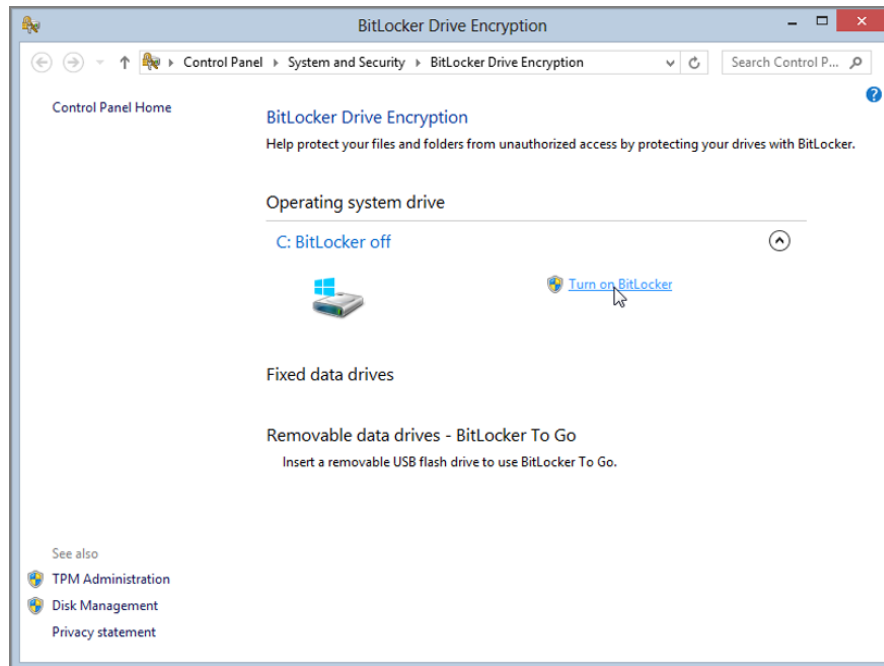
For the most secure setup, BitLocker Drive Encryption requires either a TPM chip version 1.2 or newer built into your computer. It is possible to set up BitLocker Drive Encryption on a computer without using a TPM device or a USB drive, but your only source of protection is a passcode and the physical USB drive.

### *Enabling BitLocker Drive Encryption*

**TIP** If your computer does not have a compatible TPM chip, you can still use BitLocker Drive Encryption with a USB storage device. However, Microsoft has recently decided to hide this option from users. A local group policy change must be made to turn this option back on. Open the Start screen, type `gpedit.msc`, and hit Enter. When the Group Policy editor has loaded, navigate through Computer Configuration, Administrative Templates, Windows Components, BitLocker Drive Encryption, and Operating System Drives. Right-click Require Additional Authentication At Startup and click Edit. Click the Enabled option and hit OK. You can now use a USB storage device with BitLocker Drive Encryption again.

Using BitLocker Drive Encryption is easy when you have your hard drive configured properly and have reinstalled Windows 8. Just follow these steps to get BitLocker up and running:

1. Open the Start screen, type in **Bitlocker**, change the filter to Settings, and hit Enter.
2. If your computer is configured properly, you should see a Turn On BitLocker link, as shown in Figure 18-13, next to your operating system drive. Click that link now. If your computer does not have a TPM device, make sure you follow the instructions in the tip.
3. Select the type of device you will be using to protect your computer and follow the on-screen steps for your method of protection.



**Figure 18-13:** Enable BitLocker Drive Encryption.

After you complete all the steps the wizard guides you through, your computer begins encrypting the hard drive automatically.

Congratulations, your computer is now even more secure. Keep in mind that you need to insert your USB drive every time you want to boot your computer if you choose the non-TPM option. Failure to insert it will result in your computer not booting. Make sure that you keep your emergency recovery passcode and your USB drive stored in a safe place.

If you want to fine-tune the BitLocker settings, you can find dozens of group policy settings by opening the Start screen, typing in **gpedit.msc**, and hitting Enter. Then navigate through Computer Configuration, Administrative Templates, Windows Components, and BitLocker Drive Encryption.

### *Enabling BitLocker To Go Drive Encryption*

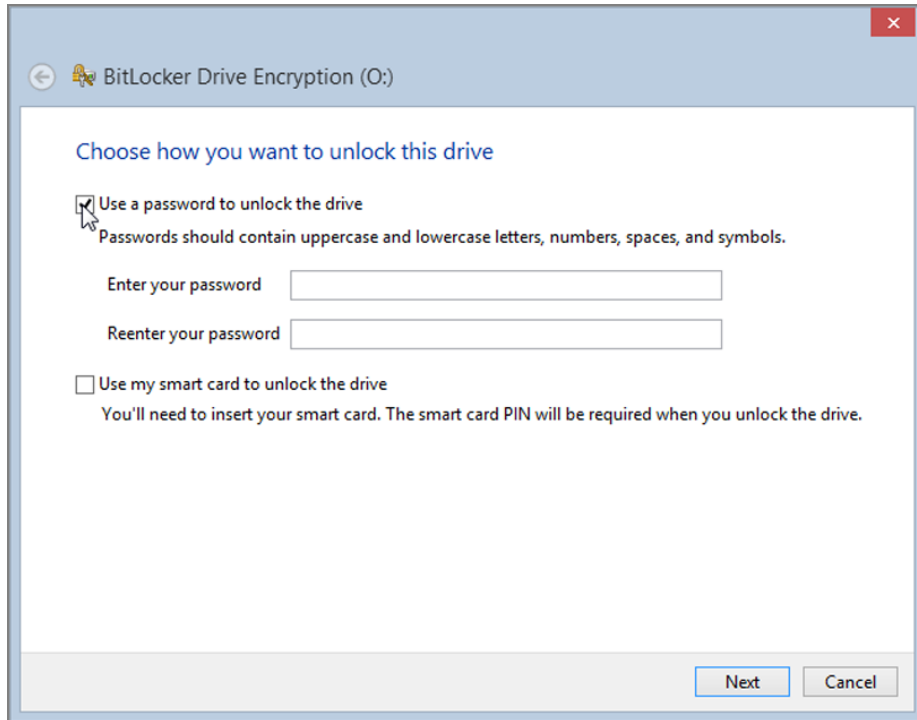
Just about every computer user I know has a number of USB storage devices for moving and sharing files. With the storage size of USB flash devices skyrocketing and the amount of data users store on the small, easy-to-lose devices increasing, the need to protect your data is becoming critical. Many users have all their personal documents stored on a tiny USB storage device. What would happen if you lost one of your drives? Anyone who finds it can plug it into their computer and have full access to all your private data.

Thankfully, Microsoft has addressed this issue in Windows 8 with a new version of BitLocker Drive Encryption designed for USB storage devices called BitLocker To Go. The portable version of BitLocker provides a very simple but effective way to protect your data with encryption.

Best of all, BitLocker To Go is compatible with all versions of Windows. Just take your encrypted USB storage device to any other Windows 8 computer and you will be prompted for the device password. After you enter the password you have full read and write access to your drive. If you use your device on older versions of Windows, a special program launches, asks for your password, and then provides you with read-only access to your files.

Enabling BitLocker To Go is the easiest of all the security features:

1. Open File Explorer to all drives on your PC.
2. Locate and right-click your USB drive and click Turn On BitLocker.
3. Check the box to use a password to unlock the drive as shown in Figure 18-14.
4. Enter your password twice and click Next.
5. Save the recovery key to your Microsoft account, or to a file, or print it. Then click Next.
6. Select Encrypt Used Disk Space Only if the USB drive is brand new. Selecting Encrypt Entire Drive if you ever had previous data on the drive prevents the old deleted data from ever being recovered.
7. Click Next and then click Start Encrypting.



**Figure 18-14:** Configure BitLocker To Go with a password.

## Summary

This chapter is about making what Microsoft is calling “the most secure operating system ever released” even more secure. First, I talked about active ways to protect your computer by keeping up on the latest news and trends and making sure that your computer is up to date on the latest security patches. Then I showed you how to configure User Account Control in a way that balances usability and security by creating a separate configuration administration account while running as a standard user the majority of the time. Finally, I covered the two different types of encryption available in Windows 8: file level and drive level with BitLocker Drive Encryption.

The next chapter builds on the secure foundation this chapter created by showing you how to protect your computer from attackers getting in over the Internet. I show you how you can configure hidden firewall settings to turn on the two-way firewall that is normally turned off. Then I go over the latest tools to fight spyware and viruses.



# Internet Security

The Internet is the primary source for almost all the attacks on your computer. Someone may be trying to break in to steal information, or a worm from another infected computer may be trying to use the latest exploit to infect your box as well. So how do you protect your Internet connection? I show you how you can test your computer and see how vulnerable it actually is. Then you find out how you can use the firewalls to build a “brick wall” around your computer. Additionally, you discover how to protect yourself from other Internet threats such as spyware and what to do to clean up an infection.

## Analyzing Your Security

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The first step in securing your Internet connection is detecting where you are vulnerable. Your specific network setup (for example, if your computer is behind a hardware firewall or router) will affect how exposed your computer is. For example, if you have a high-speed broadband connection and share it with more than one computer in your home using a router, your computers are already better protected than a computer that is just directly connected to the Internet. By default, most routers act as a firewall by blocking all external

Internet traffic from coming into your home network. However, if your laptop is infected and you plug it into your home network, all the machines become vulnerable because the threat is now inside your firewall. I go into more detail about how firewalls work in the next section, but first, test your connection to see how exposed your computers are to attacks from the Internet and from other machines on your internal network.

## Testing Internet Security

Ports are the gateways inside your computer. When a computer program wants to communicate with a remote computer, it makes a connection through a port that it uses to talk with the computer. Each computer has thousands of ports—65,535 to be exact. You can think of the different ports as a bunch of different mailboxes. When a program wants to send data to a remote computer, it sends it to a specific port (mailbox) number. Then, provided that a program on the remote computer is set up to receive data at a particular port (mailbox), the remote computer can work with the data it was sent.

Theoretically, nothing is wrong with this scenario. In the real world, applications don't always work this way. Sometimes, applications are sent data they are not programmed to receive. This can cause errors and unexpected behavior that may execute code a remote attacker is sending it. The result is that a remote attacker can gain access or infect your computer using a flaw in the application. The technical name for data sent to a program that results in bypassing security is an *exploit*.

Now that you know the basics of how attacks work, you can use various utilities to check for open ports that allow other users to connect. In theory, if you have no ports open, it is next to impossible to break into your computer. To detect the ports on your computer that are open to the entire Internet, it is best to use a web-based port scanner. If your computer is on an internal network and is behind a firewall or router, a software-based port scanner will show you what ports are open internally.

First, check your external port exposure, which everyone on the Internet can see. To do this, use a web-based port scanner. Various websites offer such scanners free of charge. I personally like to use GRC.com to do my testing. Follow these steps to test your external connection:

1. Open a copy of either Internet Explorer or Firefox and navigate to `http://tweaks.com/238748`.
2. When the page loads, click the Proceed button.

3. Click All Service Ports to begin the scan.
4. When viewing the results, make sure that everything is in green or blue. You do not want any ports to be open for maximum security, which is indicated with red. Green indicates your computer did not respond at all, giving your computer a stealth look. Blue indicates your computer responded that the tested port was closed.

If your test results show any ports that are open, you can find out how to close those in the “Using a Firewall” section, but first, if you are connected to an internal network, it is a good idea to test your internal vulnerability. As I mentioned earlier, it is best to use a software port scanner for testing your internal vulnerability. For this test, you learn how to use Axence NetTools, a comprehensive network tools suite with a fast port scanner. To get started, visit <http://tweaks.com/570140> and download the latest copy of NetTools. Then follow these steps to scan your computer’s local ports:

1. After you have downloaded and installed Axence NetTools, start it if it is not already running. Open the Start screen, type **nettools**, and press Enter.
2. After NetTools starts, click the Scan Host toolbar option on the icon bar.
3. In the Address box, type **localhost**.

If you want to scan a different computer, you can type the IP address of any computer in this box.

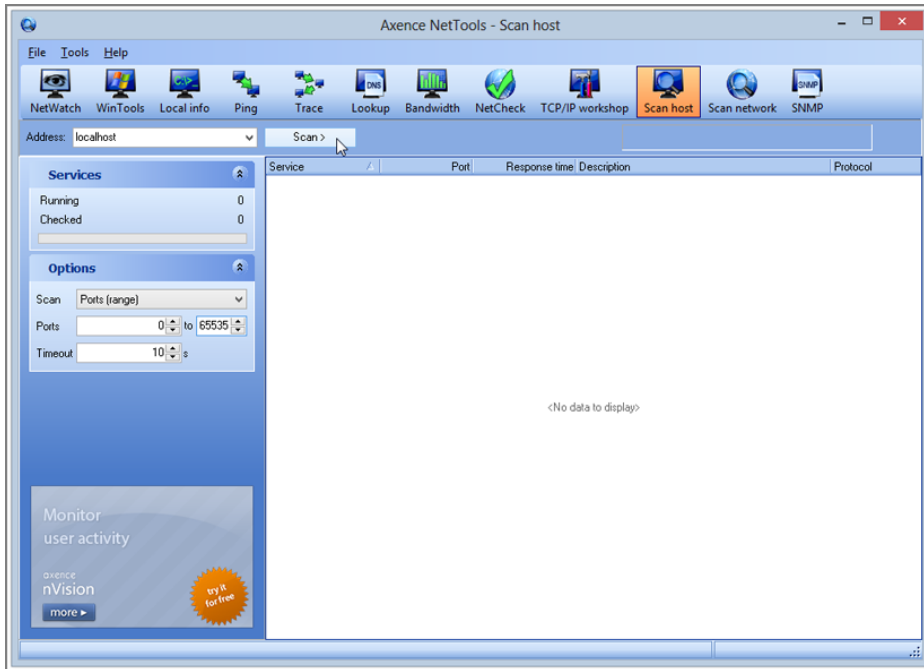
4. Set the port range for it to scan. In NetTools you have four options: Services, Ports (well known), Ports (well known-extended), and Ports (range). For this example use Ports (range) to scan all possible ports.

Enter **65535** in the end Ports box so that it goes through all possible port numbers.

The other selections scan only the more popular ports where known applications are running. If you want a quicker scan, I recommend using Ports (well known-extended). Because you want to do a complete scan here, select Ports (range). The two ports boxes will be enabled.

5. Click Scan next to the Address box and watch the results appear, as shown in Figure 19-1.

It can take more than an hour to scan all 65,353 ports on your computer, depending on your hardware. After it is finished, you have a list of all ports that are open in your computer. You find out how to close these ports later in the “Using a Firewall” section.



**Figure 19-1:** NetTools finds open ports on your PC.

## Monitor the Action Center

The Action Center in Windows 8 is another easy way to find out if all your “essential” protection software is installed and running. It is important to have your firewall, virus software, spyware protection, and other security features set up and turned on at all times to defend your computer against anything that might try to attack it.

Using the Action Center is simple. Just open the Start screen, type **Action Center**, change the filter to Settings, and then press Enter. When Action Center loads, it displays alerts as shown in Figure 19-2. If everything is in the green, you are set. If not, pay attention to the recommendations so that your computer is as secure as possible.

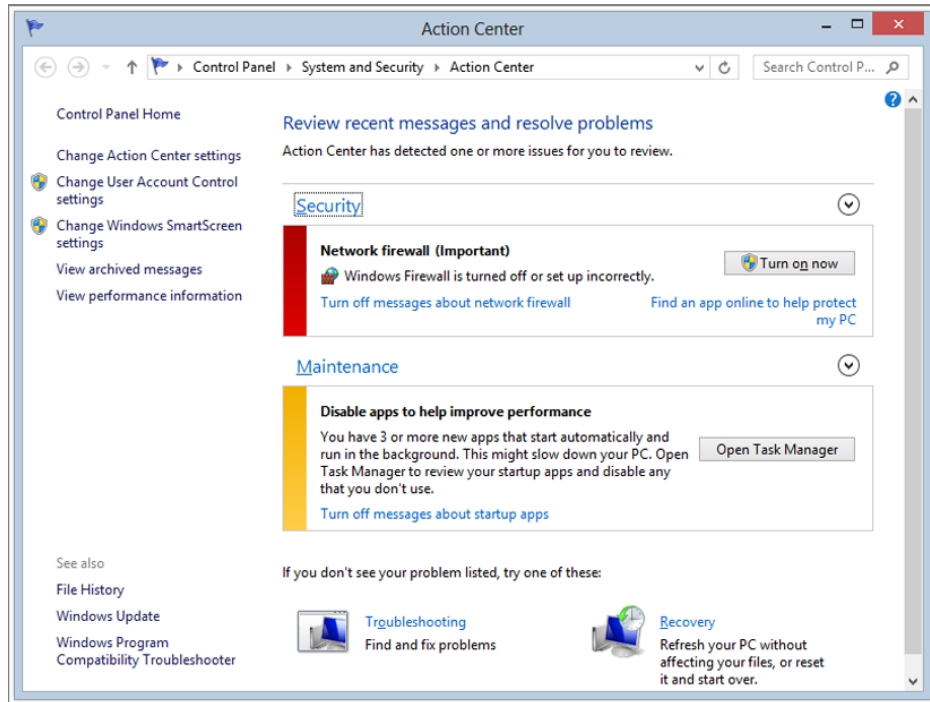


Figure 19-2: Action Center displays security information.

## Using a Firewall

One way to help fight attackers and viruses from the Internet is to block access to your computer on all ports, which can be gateways into your computer. How exactly do you block all the ports? A firewall is a special application that acts as a brick wall that is protecting all the ports on your computer.

When a remote computer attempts to access a computer that is protected by a firewall, it is not able to connect and the data that was sent is ignored and discarded. Depending on the way the firewall is configured, when data is sent to a blocked port on your computer, the firewall responds to where the data was sent from with a message that the port is closed or it does nothing, giving your computer a stealth presence. Most firewall applications are set up by default to run in stealth mode, which provides the maximum amount of protection. Any remote computer trying to connect or send data to your computer with a firewall installed and running in stealth mode will think that your computer has gone offline because it is not getting a response.

So far, I have talked only about firewalls that block incoming attacks from the Internet. Firewalls can also block traffic originating from your computer going out to the Internet. Why would you want to do that? What if someone installed a key logger on your computer that sends all your information to a remote computer for him to use? Or how about a media player that sends a history of everything that you played to a server for tracking purposes? With a two-way firewall, you can block outgoing traffic that you haven't authorized.

Firewalls can be a very powerful security device. In Windows 8, a firewall configured properly can completely eliminate one way an attacker may try to gain access to your computer. The next section shows you how you can use the new and improved firewall in Windows 8 to block incoming attacks and prevent unwanted applications from sending information out.

## Using the Windows 8 Firewall

The firewall included in Windows 8 is much more advanced than previous Windows firewalls. Microsoft actually calls it "Windows Firewall with Advanced Security." Its three different location profiles enable you to customize your firewall rules based on where your computer is. If it is in a public place, you can impose very strict firewall rules, whereas if you are in a corporate domain at work or on a private network at home, you can use less strict security options. In addition to location profiles, the firewall's complex rule structure allows you maximum flexibility to create specific openings in your firewall to permit application or service-related network traffic. Most importantly, Windows Firewall has to block outgoing traffic as well.

The upgrades to Windows Firewall really make it a very powerful security solution that was once provided only by advanced third-party firewall software. The next two sections guide you through the basics of using the advanced firewall configuration tool and enabling the outbound firewall.

### *Configuring Windows Firewall*

The Network and Sharing Center is where you configure all the network-related settings on your Windows 8 PC. You can also access the Windows Firewall from the Network and Sharing Center, but only the basic controls are exposed. Instead, the best way to manage the Windows Firewall is through the Windows Firewall with Advanced Security Management Console. Open the Start screen, type **wf.msc**, and press Enter. When the Windows Firewall with Advanced Security window loads, you will see the complexity and the power of the new firewall. Maybe it was a good idea Microsoft decided to hide this from inexperienced users after all. On the main screen you see a list of the profiles, as shown in Figure 19-3.



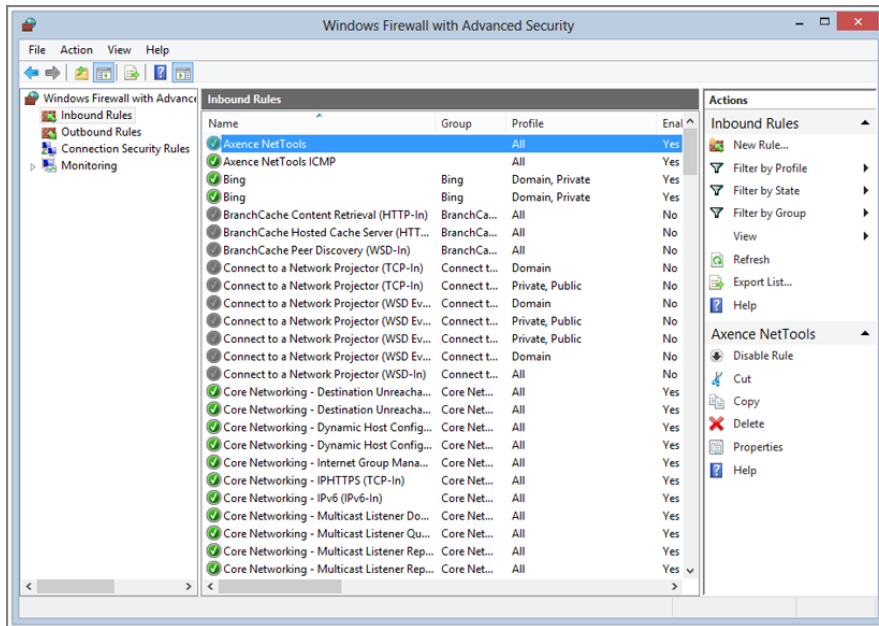
**Figure 19-3:** Use Windows Firewall with Advanced Security.

This main screen is where you can see if the firewall is on and if the Inbound and Outbound Rules are active. The next step is to view the specific rules. You can do that by simply selecting Inbound Rules or Outbound Rules from the list on the left. Go ahead and click Inbound Rules now.

Shortly, you will see all the rules currently set up on your computer. If they are enabled, they will have the green icon. If not, the icon will be gray. You can also see what firewall profiles the rule is used in, as shown in the Profile column in Figure 19-4. If you ever need to enable or disable a rule, just right-click it and select Enable or Disable. You can also edit an individual rule's properties by right-clicking the rule and selecting Properties. Working with the Outbound Rules is exactly the same as working with Inbound Rules; Outbound Rules just control a different direction of traffic.

For the sake of demonstrating how to add a new rule, say that you just installed some type of server on your computer that users will connect to on TCP port 800. Follow these steps to open up a hole so that your users can connect:

1. If the Windows Firewall with Advanced Security window is not already open, open the Start screen, type **wf.msc**, and press Enter.
2. After the management console loads, click Inbound Rules.



**Figure 19-4:** Inbound firewall rules are used in various profiles.

- Under Actions in the right pane, click New Rule.
- The New Inbound Rule Wizard loads and asks you for the type of rule you would like to create. For this scenario, select Port and click Next.
- You are asked to specify what type of port to open. Unless you have an application that specifically requires a UDP port, you'll select TCP almost every time. For this scenario, select TCP. Also on this screen, type 800 in the specific port box because you want to open up only port 800. Click Next when you are done.
- The next screen asks you to define the action of the rule. You can choose to Allow The Connection, Allow The Connection If It Is Secure (on a network with IPSEC), or Block The Connection depending on what you want to do. Select Allow The Connection and click Next.
- Select what profiles this rule will be part of. Profiles allow your rule to only apply to certain situations such as if your PC is actively connected to a corporate network with a Windows Domain, a private network such as at home or connected to a public network such as free WiFi at your local coffee spot. By default, all the profiles are checked; uncheck any profiles you do not want your rule to be part of and click Next.
- The last step is to name your new rule. Type a name and a description if you want and click Finish.

Your new rule appears on the Inbound Rules list. It is enabled automatically when you click Finish.

### *Enabling the Outbound Firewall*

In Windows 8, Microsoft decided it was best to disable the outbound connection filtering because it can cause headaches for many inexperienced computer users. This may have been the right choice, but not filtering your outbound traffic can increase the possibility that an application can steal important personal information and send it to a remote computer. If this application is malicious, it can be used to steal personal information such as passwords and bank account numbers. Turning on the outbound firewall filtering and enabling only the rules that grant your normal applications access to the Internet will greatly increase the security of your computer.

Enabling the outbound firewall rules on your computer is easy to do after you know where Microsoft hid the setting. Follow these steps to turn the outbound firewall back on:

1. If the Windows Firewall with Advanced Security window is not already open, open the Start screen, type **wf.msc**, and press Enter.
2. When the management console loads, click Windows Firewall Properties right in the middle of the opening screen.
3. When the settings window loads, you see a tab for each of the different firewall profiles. Select the tab for the profile on which you would like to enable outbound filtering.
4. Under the State section, locate the Outbound Connections drop-down box and change it to Block.
5. Click OK when you are finished to activate the outbound firewall on the profile you specified.

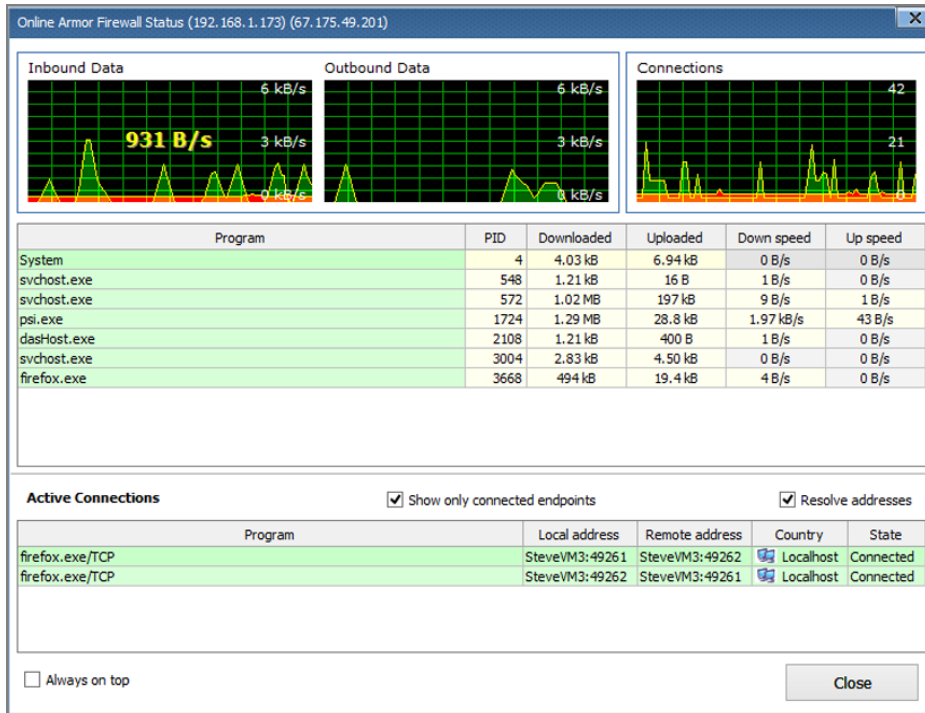
Windows automatically detects any applications that try to access the Internet or other network resources that are blocked with the outbound firewall turned on and prompts you to authorize the application to send information out to the Internet.

### **Using Online Armor Firewall**

Another free firewall that I use in situations where I want more control over specific applications is called Online Armor. It has the basic firewall functionality that blocks all ports except those on an allow list, but it also provides a very comprehensive application-based firewall. Application firewalls allow you to create block or allow rules based on a program running on your PC instead of

just a port number. This provides greater and safer control than just opening a port that remains open even after the application using the port is no longer running.

Another reason I like Online Armor is the graphical status window shown in Figure 19-5. The status window displays the speed of inbound and outbound data, what currently is allowed through, and the total number of connections.



**Figure 19-5:** Online Armor displays your firewall status.

Three editions of Online Armor are available, but I stick with the free edition because I'm not interested in the advanced features. Head over to <http://tweaks.com/834331> and download the free edition located at the bottom of the page. Upon install, select the Limited Freeware Version option and complete the install. After the install is completed, Online Armor should start up automatically. If not, open the Start screen and select the Online Armor icon, which should be at the end of your Start screen.

The first time Online Armor is launched, it runs in learning mode, which monitors what is currently running for two minutes and populates firewall rules so your applications continue to work properly. After learning mode is completed, you can access the main interface and tweak the rules it created. Just click the Firewall menu option and then customize the rules based on program, ports, interfaces, or even computers/network devices.

## Web Browser Security

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Now that you have eliminated one method that attackers use to enter your computer by blocking your ports with a firewall, it is time to secure the other entry point—the web browser. An attacker can also get into your computer by using an exploit in a web browser by tricking you into installing a web component that has malicious code inside. Internet Explorer has many security settings built in that will help you keep safe. However, trade-offs often exist, including ease of use and convenience. For example, you can disable the installation of all web components for maximum security, but when you really need to install one, it can take longer and require more work than normal.

### Securing Internet Explorer 10

Internet Explorer 10 is a refined upgrade that builds on the security features first introduced in Internet Explorer 7, such as Protected Mode. Possible only when using Internet Explorer 10 on Windows 7 or Windows 8, Protected Mode still is the most important security feature that all browsers should have.

In the past, Internet Explorer was prone to various attacks, leaving it one of the weakest parts of the entire operating system. In its release of Service Pack 2 for Windows XP, Microsoft tried to stop automatic downloading and installation and website exploits, but that worked only a little. Flaws are still being discovered in Internet Explorer every once in a while and attackers are trying to find new ways to trick users into installing malicious code. How do you fix this problem? Simple—you isolate Internet Explorer into a secure environment so that if exploits are found in the future, they will not work because IE cannot access resources other than its own. That protection is called *Protected Mode*.

Another major feature Internet Explorer first introduced in IE9 is called the SmartScreen filter. SmartScreen protects users against known bad websites. These are sites that may serve malicious content, such as downloads full of viruses, or other sites that try to trick you into providing your sensitive information. For example, a fake eBay website that you log in to might give your username and password to the bad guys. In these situations, SmartScreen will prevent you from even loading the website.

Protected Mode and SmartScreen combined with other security features in Internet Explorer 10, will help secure the other major point of entry for spyware, malware, and attackers. The next section shows you how to get the most out of these new features.

#### *Fine-Tuning Security Settings*

You can adjust the security settings in Internet Explorer within Internet Options. Follow these steps to adjust the security settings in IE10:

1. Open Internet Explorer 10.

2. Click the gear icon and select Internet Options near the bottom of the menu.
3. After Internet Options loads, click the Security tab. The Security tab enables you to manage the individual settings for what is allowed in each of the browser zone settings—for example, whether ActiveX controls are allowed to be automatically downloaded and installed in the Internet zone. I suggest you drag the setting up so High is selected for each zone. You can fine-tune the zones by selecting the zone and then clicking the Custom Level button, as shown in Figure 19-6.

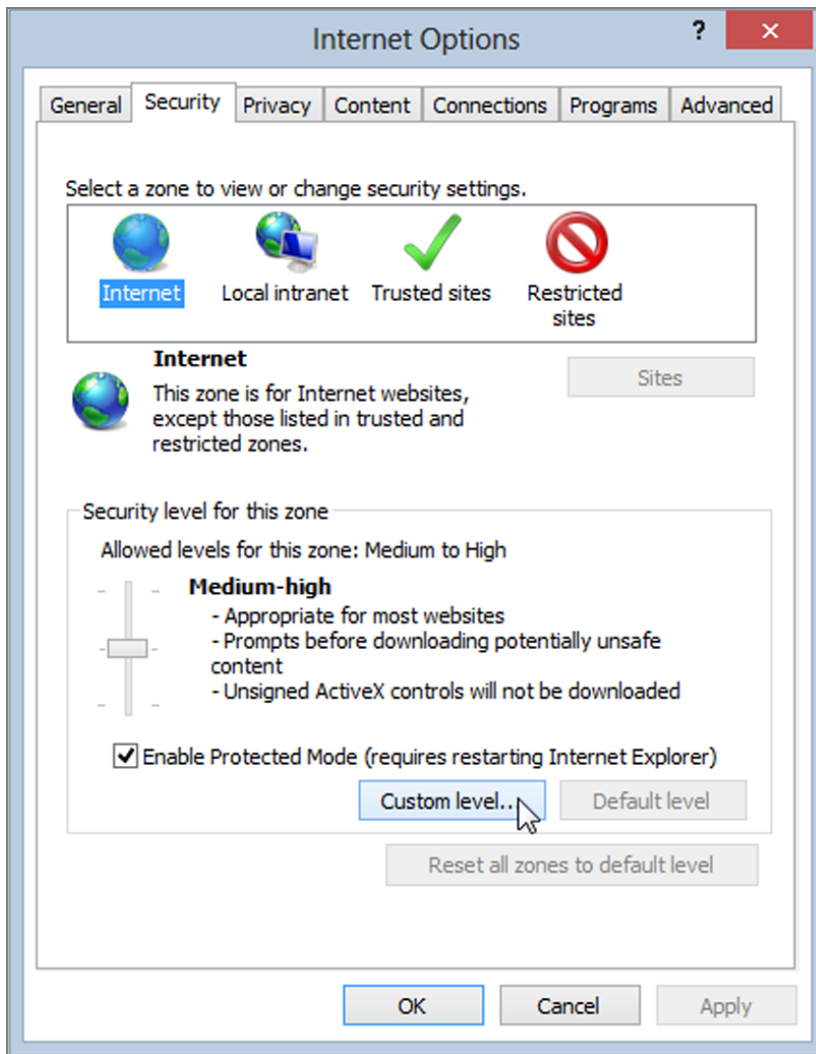
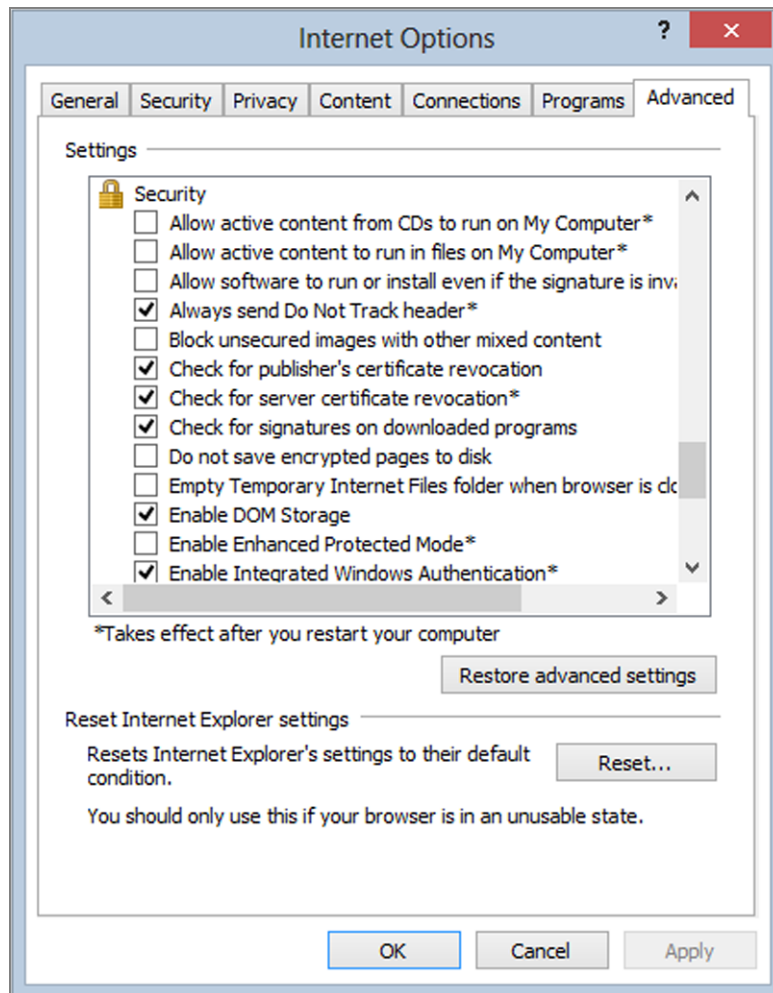


Figure 19-6: Adjust Internet Explorer 10 security zones.

4. After the security settings for the zone load, you can scroll through the list of settings and click Disable, Enable, or Prompt for most settings. For optimal security, I recommend disabling a lot of these features beyond what is normally disabled. Take a look at Table 19-1 for the settings I recommend that you change for best security practices. When you are finished modifying all the settings, click OK to return to Internet Options.
5. After you are back on the Security tab of Internet Options, make sure that the Enable Protected Mode box is checked for each of the zones.  
This is one feature that I believe should be enabled for all zones.
6. Click the Advanced tab and scroll down the list to the Security section, as shown in Figure 19-7.



**Figure 19-7:** Adjust advanced security settings in Internet Explorer 10.

7. In the Security section, I recommend selecting Do Not Save Encrypted Pages To Disk and Empty Temporary Internet Files Folder When Browser Is Closed.

These two settings help protect your privacy as well as keep your important online data, such as banking information, safe.

8. When you are finished, click OK to save your changes.

You are now finished configuring Internet Explorer to run more securely and protect you even better when you are online.

**Table 19-1:** Internet Explorer Security Zone Settings

| SETTINGS NAME   | FUNCTION  |
|---|---|
| Loose XAML  | I like to select Disable for this option because few sites use it and disabling it means one less feature to worry about being exploited.       |
| XAML browser applications                                     | I disable this setting as well because it's not used much either.   |
| XPS documents   | Disable this option for tighter security. If you don't use this document format, you should have no problems disabling it.                      |
| Run components not signed with Authenticode                   | For tighter security, select Disable.   |
| Font download   | Consider yourself very lucky if you ever run across a website that uses this feature. Disable it to be safe.                                    |
| Enable .NET Framework setup                                   | Disable this setting. I do not understand why this option is even listed here.  |
| Include local directory path when uploading files to a server | I like to disable this option for privacy and because it should never be needed.  |
| Launching programs and files in an IFRAME                     | Disable this feature. Really, this should never be done.  |
| Only allow approved domains to use ActiveX without prompt     | I like to disable this because this could be a way to circumvent some control if a domain is added to the approved list without your knowledge. |
| Logon   | I usually set this option to Prompt For Username And Password for maximum security.   |

## Disabling Add-Ons

Internet Explorer, Firefox, and Chrome have become more secure over the years but there is still more to do. The most popular attack vector, meaning how PCs are attacked, is through browser add-ons or plug-ins. In fact, the most common attacks these days spread when popular websites are hacked and users with affected plug-ins visit. Java is the most attacked at the moment, with new patches coming out what seems like every week. One way to protect your PC is to disable plug-ins that you don't absolutely need.

Many applications install a browser add-on even though you may never intend to use it. Java is the perfect example. I use a few desktop applications that were written in Java, but I never use any web applications written in Java.

All web browsers allow you to disable add-ons for performance and security reasons. I highly suggest you disable all browser add-ons that you don't absolutely need to make your PC much more secure. In Chapter 17, I covered how to disable add-ons in Internet Explorer, Firefox, and Chrome to speed up performance. You can use the exact same procedure to disable add-ons for security.

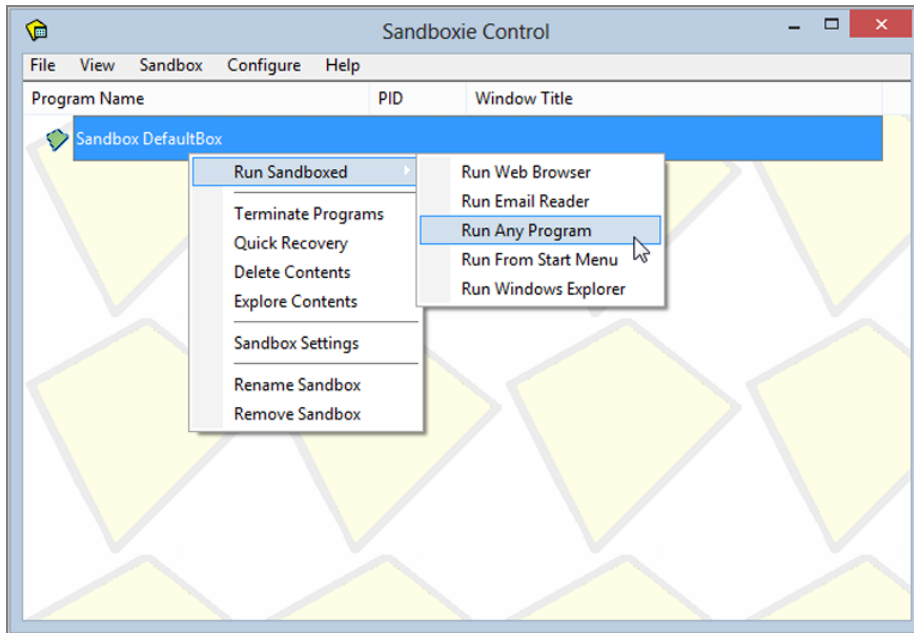
## Sandbox Internet Apps

Sandboxing is a technique used to provide an extra layer of security to any type of application by containing the execution within an isolated environment. Any changes the application makes to your system, such as saving or downloading a file, are virtualized and redirected to keep everything within the sandbox. The application running within the sandbox only has read access outside of the box, so it is impossible for the application to do any permanent harm except destroying itself. In that situation, the sandbox just needs to be reset and you have a fresh environment.

Running your web browser in a sandbox is the safest way to browse the web. It doesn't matter if someone finds an exploit in the browser or an add-on because everything is contained. But just about any application can be run in a sandbox, including your mail client and even an untrusted application you just downloaded to try out.

Sandboxing is provided by a special utility that runs the application in a mode that hooks the changes made to the system so the sandboxing utility can redirect them. The most popular sandboxing utility for Windows is called Sandboxie by Ronen Tzur. Download and Install Sandboxie from <http://tweaks.com/508053>. Ignore the compatibility warnings; the author claims it works on Windows 8 and my tests back that up.

When Sandboxie is started for the first time, it creates a sandboxed Internet Explorer automatically. You can find the shortcut for that on your desktop. You can run additional applications within the sandbox by right-clicking Sandbox DefaultBox, and then clicking Run Sandboxed and Run Any Program, as shown in Figure 19-8.



**Figure 19-8:** Run any application in a sandbox with Sandboxie.

## Defending Against Spyware, Malware, and Viruses

Spyware and other malware have become the largest annoyance on Windows for the past decade. Often hidden in downloads that appear innocent, these programs can spy on your computer activities and report home various information about your computer habits. Adware is another menace that is closely related to spyware. Just as with spyware, it can be secretly installed on your computer and monitor what you do. Then, when the time is right, it displays relevant advertisements. Did you ever visit eBay.com and then notice an advertisement for Ubid.com, one of eBay's competitors, pop up on your screen? If so, then you might be infected.

Your computer can become infected in a number of ways. The most common is by visiting a website and downloading a free game, emoticons for an instant messenger, or a browser utility such as a search toolbar. Often these utilities are spyware themselves and are also bundled with other spyware and adware. Unfortunately, users never seem to read the Terms of Service agreements that are presented when they install these free apps on their computer, and pass right over the notices that this software will display ads and monitor your browsing habits.

Another common method attackers use to infect your computer is through exploits in the applications you use the most, such as your web browser. The browsers are becoming much more secure, but as I discussed earlier, the plug-ins or add-ons that run within them are getting attacked the most.

In Windows 8 it is getting much more difficult for outsiders to install software that you don't want on your computer because of User Account Control for anything that requires administrative rights. If something is installed, it is because you authorized it when you clicked Allow in the UAC authorization box or via an exploit. What do you do if you made a mistake or if your PC was exploited? The next section shows you how to use the updated Windows Defender utility to protect your computer and clean it of any spyware threats.

## Using Windows Defender

Windows Defender in Windows 8 has been completely revamped. It is the result of the combination of the anti-spyware utility, previously called Windows Defender in Windows 7, and Microsoft's antivirus utility called Microsoft Security Essentials. For the first time, Microsoft has built antivirus and anti-malware protection into Windows and it's turned on by default.

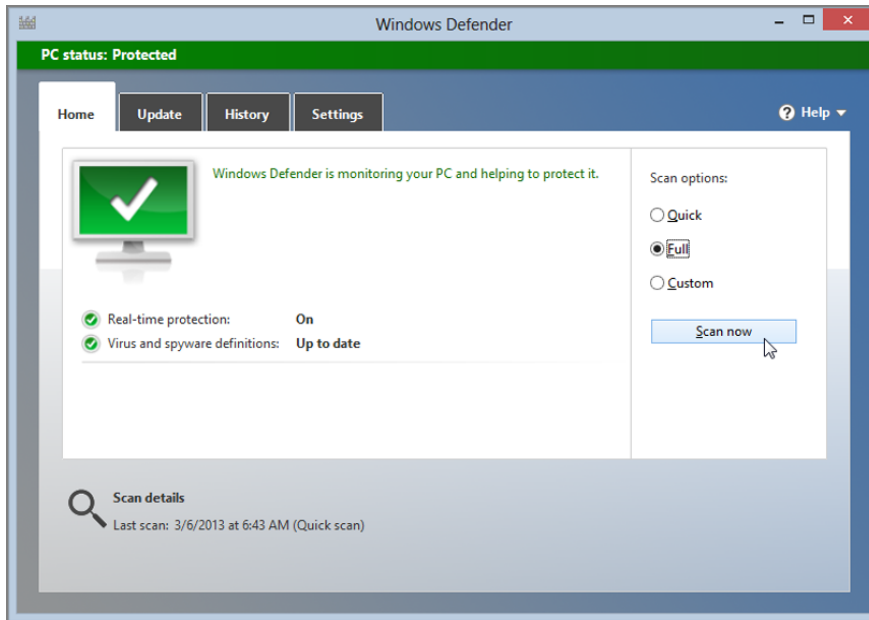
I was a big fan of the Microsoft Security Essentials for Windows 7 antivirus protection, so I'm excited that Microsoft merged its two security utilities into one and included it on every Windows 8 box.

Windows Defender works similarly to any third-party antivirus utility. It runs in the background and scans every file opened and also performs entire system scans. The signature definitions that it uses are updated very often and are also assisted by Microsoft Active Protection Service (MAPS) to find out about new, unknown malware that is not yet widespread. When Windows Defender finds a file that looks suspicious but does not know exactly what it is, it sends that information back to MAPS for tracking.

### *Scanning Your Computer*

Windows Defender is very effective at scanning your computer. By default, Windows Defender is configured to run a quick scan daily. If you ever notice something strange happening to your computer or just want to perform a full system scan, follow these steps:

1. Open the Start screen, type **Windows Defender**, and press Enter.
2. After Windows Defender loads, click Full and then click Scan Now as shown in Figure 19-9.



**Figure 19-9:** Start a full system scan with Windows Defender.

3. When the scan is finished, the results are shown. If any malicious files are found, click Review Items Detected By Scanning to find out exactly what was found.
4. On the Scan Results screen, all malicious software detected by Windows Defender is shown along with details about the malware. Click the Remove All button to clean your PC.

### *Using Other Antivirus/Anti-Spyware Software*

Sometimes Windows Defender just doesn't detect all the malware on your computer. For a second opinion, give these additional protection utilities a try:

- **ESET Online Virus Scan**—<http://tweaks.com/478357>
- **Ad-Aware**—<http://tweaks.com/548237>
- **Spybot — Search & Destroy**—<http://tweaks.com/717292>
- **Avast Antivirus**—<http://tweaks.com/601281>
- **AVG Antivirus**—<http://tweaks.com/377179>
- **Avira Antivirus**—<http://tweaks.com/962614>

## Summary

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This chapter has shown you how you can protect your computer from attacks that arrive via the Internet by using exploits and open ports on your computer and through your web browser. I showed you how you can use Windows Firewall to protect your computer and also defend against attacks and increase the security of Internet Explorer. Then I wrapped up the chapter by showing you how to protect your computer from malicious software such as viruses. The next chapter is all about protecting your privacy in Windows. Windows 8 tracks more information about what you do than any other version of Windows. Sure, that information can be useful, but it also can be embarrassing. Find out how to clean it up in the next chapter.



# Protecting Your Privacy

Windows 8 keeps track of all activities you do on your computer. It records the websites that you visit, the addresses that you type in, the applications that you launch, and even the files that you open. Why does it do this? All the information is used to tailor your computer experience and power features designed to make Windows easier to use, such as the recently opened documents lists. Your browser history is used to suggest websites when you start to type a URL to save you a few keystrokes. These features can be very useful, but they also expose what you do on your computer to anyone who sits down in front of it.

The documents you open, personal letters you write, the websites you visit, and the applications you use equate to an enormous amount of personal data that most users would like to keep private. Maybe you want to keep what you do online secret or just keep financial documents away from the kids—either way, this chapter is for you. I show you how to configure Windows 8 so it is easy to use but mindful of your privacy.

## Internet Explorer Privacy

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Internet Explorer is one of the most difficult parts of Windows to clean because it stores your data in many folders and files across the computer. Every time you want to clean your Internet Explorer history, you need to clear recent addresses, remove history files, erase temporary web files, and remove cookies. The first

part of this section shows you how to clean all the required parts to remove your Internet Explorer history and protect your privacy.

The second part of this section shows you how you can protect your privacy further by configuring and using new Internet Explorer features.

## Removing Address Bar Suggestions

Windows 8, as with past versions of Windows, includes a feature called AutoComplete that is always enabled by default for the address box. This is normally a very convenient feature because it can help you when typing in an address by presenting you with various suggestions based on your browser history. With this convenience comes the danger that it can reveal your online whereabouts. When I start typing “twe” in my address bar, it automatically suggests `tweaks.com` because I previously visited the site. Anyone who uses my computer and starts typing addresses in manually can see sites that I have visited. If they just type in `www.s` or `www.t`, they will be presented with a small list of all the sites I have visited that have URLs that start with `s` or `t`.

How do you stop the suggestions? It depends on whether you want to remove just one entry or clear all.

### *Removing a Single Website from the Address Bar*

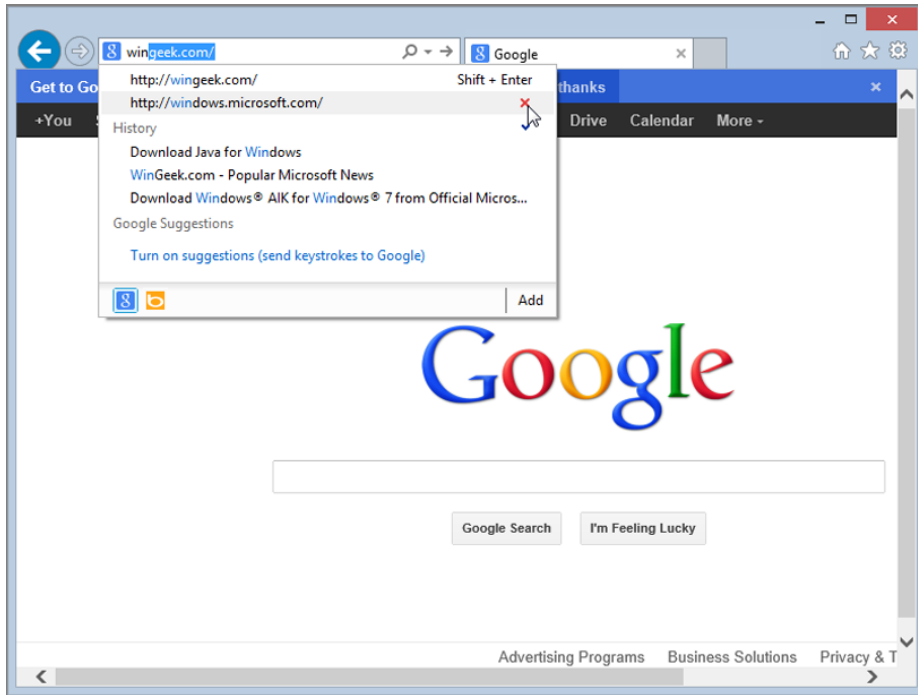
Windows 8 includes a number of great privacy features that give you control of your information. When you come across an address bar suggestion in Internet Explorer 10, hover over the entry displayed in the drop-down list and an X icon appears on the right as shown in Figure 20-1.

Clicking the X button removes that entry for good while preserving the rest of your browser suggestions. This is one of my favorite new features in Windows 8. It really enables you to control your information much better than previous versions of Windows.

### *Clearing All Address Bar Suggestions*

In the past, clearing all the address bar suggestions was a big job in which you had to delete a file that was in use. With Internet Explorer 10, it takes only a few clicks:

1. When Internet Explorer is open, hit `Ctrl+Shift+Delete` to bring up the Delete Browsing History window.
2. On the Delete Browsing History window, uncheck all items except for History.
3. Click Delete, and all your address suggestions are deleted.



**Figure 20-1:** Now you can remove a single entry from the address bar.

Keep in mind that in IE10, the address bar also searches your list of favorite websites. If you want to prevent one of those sites from showing up in the address bar suggestions, it is best to delete the site from favorites list.

## Clearing Temporary Internet Files, History, and Cookies

Every time you visit a website, the files for the web page (such as the HTML and the images) are downloaded and stored in a temporary directory known as Temporary Internet Files. Over time, this directory can become full of images and HTML from various websites you visited. This directory can end up taking a lot of storage space. Additionally, a user can browse your Temporary Internet Files directory and find out exactly what sites you have been visiting just as if he were looking at your browser history. If you are concerned about your privacy, or just concerned about disk space, clearing the temporary Internet files is a must.

The web browsing history is another area that users often like to clear. Internet Explorer, by default, is configured to record all the websites that you visit for a 20-day period. If you are concerned about your privacy, you should frequently clean your browsing history and configure your history settings to protect your privacy. Doing so ensures that anyone using your computer can't easily see what you have been doing.

Cookies are also created on your computer when you visit websites. Contrary to popular belief, cookies are not all bad. Most websites use them to save user data to a browser. An example of this is automatic site logon when you visit a website. A website you visit can detect whether a cookie that has your user ID stored in it already exists from a previous visit to that site. If it finds one, it knows exactly who you are and logs you on automatically. Advertisers also use cookies to store personal data. Instead of showing you the same advertisement 50 times, they use cookies to keep track of how many times an advertisement is displayed on your screen.

However, some advertisers abuse what are called *third-party cookies* to track the websites you visit and then deliver relevant ads based on what you do online. Because of the abusers, it is best to just delete all your cookies on a regular basis because it is hard to separate the good from the bad. I show you more about how to protect against third-party cookies in the next section.

Clearing the temporary Internet files, history, and cookies is a very simple task. Just follow these steps to clear these files:

1. When Internet Explorer is open, hit Ctrl+Shift+Delete.
2. On the Delete Browsing History screen, check all items except Preserve Favorites Website Data, as shown in Figure 20-2.
3. Click Delete and all will be deleted.

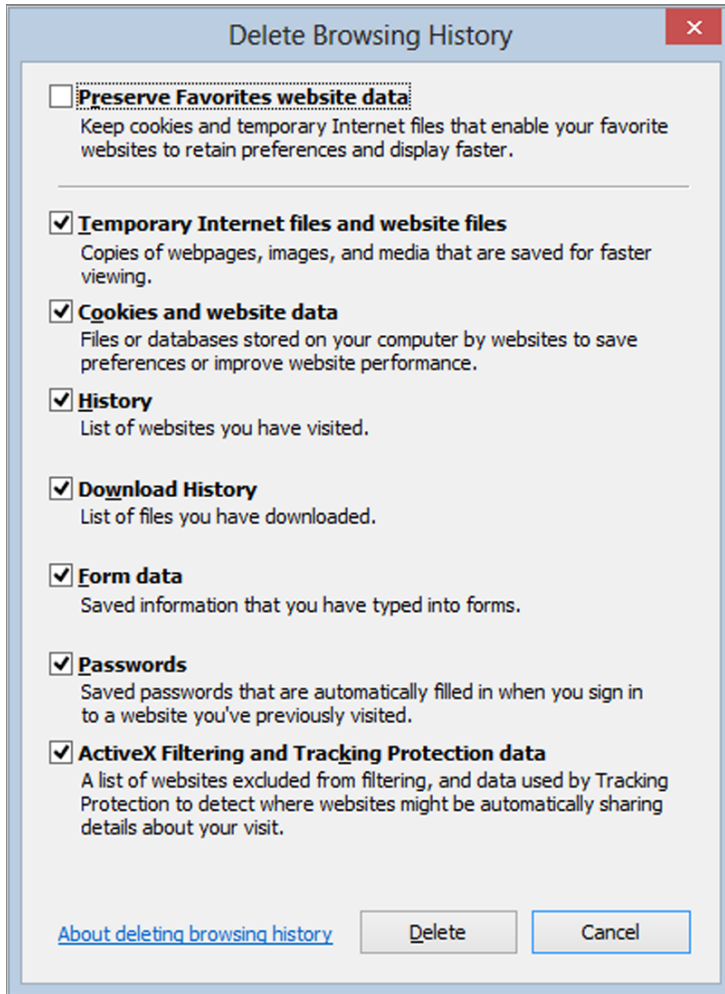
Now users can no longer see which websites you visit from the cookies and temporary Internet files that are stored on your computer. Additionally, you have freed up some disk space by deleting these files.

## Adjusting Your Cookie Security Policy

As mentioned, cookies are not as bad as some people in the computing world would like you to believe. Instead, the only real risk they present is a loss of some privacy. If you allow your browser to accept cookies, your PC will have quite a collection of them over time. Anyone who uses your computer can discover which sites you visited, if they know where the cookie files are located.

The latest version of Internet Explorer includes many new enhancements. One of the enhancements includes a new way of accepting cookies. Now you have the capability to specify whether you would like your browser to block all cookies or just certain types of cookies. To use this new feature, you need to understand the two different types of cookies:

- **First-party cookies**—Placed on your computer by the current site that you are visiting.
- **Third-party cookies**—Placed on your computer by remote sites, such as advertisement servers.



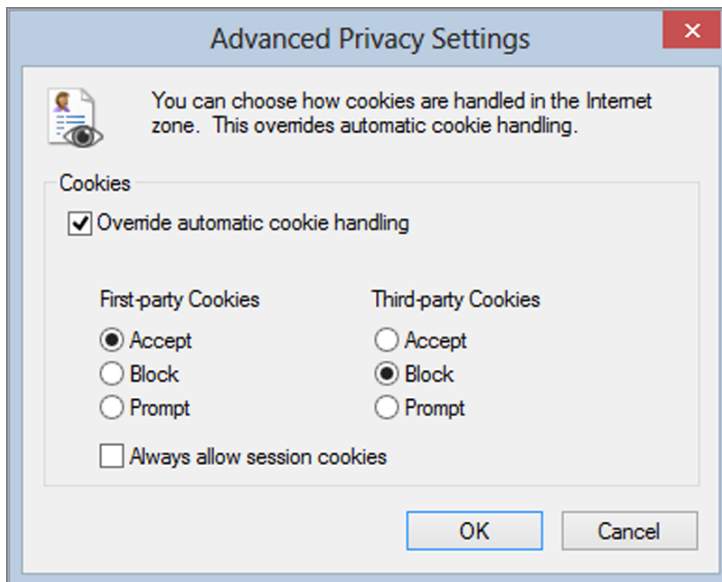
**Figure 20-2:** Clearing browser data in Internet Explorer 10 is easier than ever.

The difference between good and bad cookies is how they are issued. If you go to Tweaks.com, the web server issues your browser a first-party cookie. That cookie contains harmless user session data so the web server knows whether you are logged in. The cookies that have the potential to be abused are called third-party cookies because they are not issued by the web server you are visiting, but rather by a third-party. These cookies are common among online advertising programs such as Google AdSense. The privacy concern that can make them bad cookies depends on what the advertising company does with them. With a third-party cookie, it is technically possible for Google to monitor which websites you visit and then deliver advertisements that are relevant to

what you do on the web. This is possible because Google AdSense is used by about one out of four websites online, which means one out of four websites are making your browser connect to Google's servers to display an advertisement. When that call is made to Google's servers, it can read third-party cookies it placed on your computer from other AdSense-using websites that you visited because they made the same call to Google AdSense servers to get an advertisement to display. Behind the scenes, Google's advertisement-serving software can connect the dots and build a profile of what types of websites you visit. Combine that with what you search for on Google's search site, and Google has a very good picture about who you are and what you need.

If you don't want to be tracked online with the help of third-party cookies, it is possible to tweak your cookie acceptance settings. Just follow these steps:

1. Open Internet Explorer.
2. Click the gear icon and select Internet Options.
3. When Internet Options loads, click the Privacy tab.
4. You can move the up-and-down slider to adjust your level of cookie security, but I recommend that you bypass this and click the Advanced button instead.
5. After you have clicked the Advanced button and see the Advanced Privacy Settings window, select the box that says Override Automatic Cookie Handling.
6. Your settings for first and third-party cookies are available for adjustment, as shown in Figure 20-3.



**Figure 20-3:** Adjust your cookie privacy settings to block third-party cookies.

I recommend that you always accept first-party cookies. You can decide whether you want to block all third-party cookies or be prompted to accept them. If you select the Prompt option, a dialog box notifies you that each cookie's request has been received.

7. Click OK to save your changes and return to Internet Options.
8. Click OK again to close Internet Options.

Now that you have set the cookie privacy setting manually, you can eliminate cookies from being stored on your hard drive in the first place. Doing so allows you to protect your privacy and still be able to use websites that need cookies.

## Protecting Sensitive Online Data

If you manage your finances or shop online, you probably have had experience with using secure web connections, otherwise known as Secure Sockets Layer (SSL). These secure connections encrypt the data that is transferred to and from a web server and your computer. After the data gets to your computer, your browser has a special key that decrypts the information and displays it on your computer. During this process, when the file is decrypted, it is saved in the Temporary Internet Files directory so that the browser can display it.

This default appears to be harmless because the web page is saved on your computer only. If no one has remote access to your computer, the data is safe, right? Not necessarily, because your data is now vulnerable to anyone who has physical local access to your computer. If that person is clever and lucky enough, he or she can sort through your Temporary Internet Files directory and just might find some confidential information such as your online banking information. All this information is saved by default on your hard drive for anyone to see if they know how to get to it. They do not even need to know your password or log on to your account on the bank's website because a snapshot of the web page is stored locally on your computer.

What can you do to protect your computer from this vulnerability besides setting up better security such as complex passwords? Internet Explorer offers a cool feature that you just have to turn on to eliminate this problem completely. Simply called Do Not Save Encrypted Pages To Disk, this feature prevents your computer from storing the encrypted data. To enable it, follow these steps:

1. Open Internet Explorer.
2. Click the gear icon and click Internet Options.
3. Click the Advanced tab.
4. Scroll down through the list toward the bottom of the window until you see the Security section.

5. Check the Do Not Save Encrypted Pages To Disk box.
6. Click OK to save and activate your changes.

Now you no longer have to worry about pages that were encrypted being saved to your drive for anyone who has access to your computer to see.

## Disabling AutoComplete

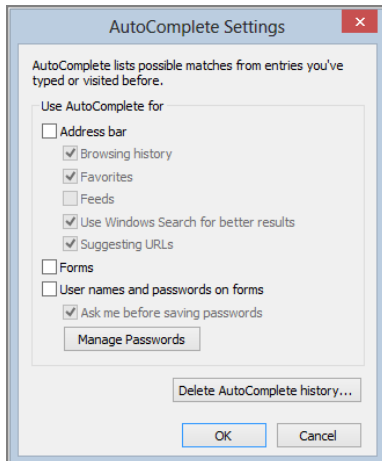
You already know about AutoComplete from the address bar. You have taken care of that privacy problem by clearing the file that stored the information, as shown in the section called, “Removing Address Bar Suggestions.” AutoComplete also tries to give a helping hand when you are filling in text boxes on web pages. In this situation, AutoComplete works exactly the same as it does with the address bar. As you begin to fill in the text box, several suggestions appear based on information that you have already typed in.

To get an idea of how this works in action, visit any site with a text box such as a username or login field and start to type your username. When you do so, words similar to those you have typed in the box on other visits to the site will appear. This capability allows anyone who uses your computer under your account to see your username or anything else you entered into similar text boxes on websites.

Clearly, having this feature enabled would be a big concern if you were concerned about your privacy. Disabling the AutoComplete feature is not very difficult and completely takes care of this privacy concern. Follow these steps to put an end to AutoComplete:

1. Open Internet Explorer.
2. Click the gear icon and click Internet Options.
3. Click the Content tab and then the Settings button under the AutoComplete section.
4. After the AutoComplete Settings window loads, clear all the boxes, as shown in Figure 20-4.
5. Click OK to save your changes.
6. Click OK again to close Internet Options and activate your changes.

AutoComplete is now a thing of the past. You no longer have to worry that people who use your computer can see all the things that you type into your address bar and text boxes.



**Figure 20-4:** Adjust the AutoComplete settings so that no one can access your username.

## Clearing Temporary Internet Files Automatically

Earlier I showed you how to clear your temporary Internet files manually so that they will not be a privacy concern. However, you can use a cool hidden feature that deletes these files automatically every time you close your browser. This way, you don't have to worry about clearing all the files every time you use Internet Explorer. Follow these steps to activate the automatic empty feature:

1. Open Internet Explorer.
2. Click gear icon and click Internet Options.
3. Click the Advanced tab and scroll down almost to the bottom of the list.
4. Check Empty Temporary Internet Files Folder When Browser Is Closed, as shown in Figure 20-5.
5. Click OK to close Internet Options and activate your changes.

Enabling the automatic empty feature is a great way to maintain a clean PC. Keep in mind that this deletes only your temporary Internet files, not your cookies. You still have to delete the cookies the way that I mentioned previously in this chapter.

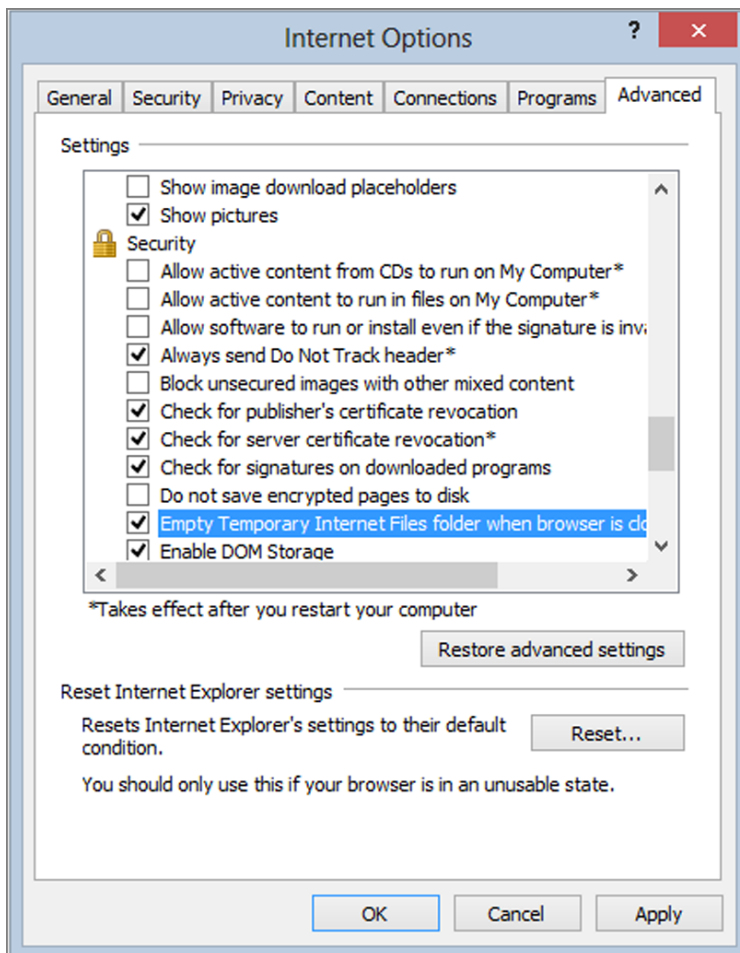


Figure 20-5: Set up IE to automatically clear temporary Internet files.

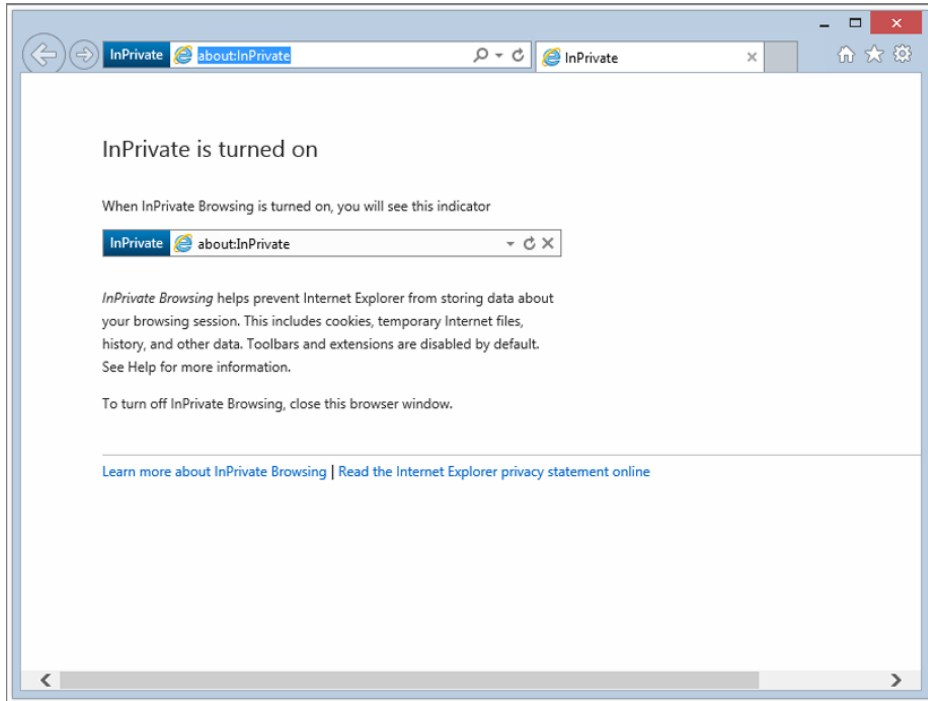
## Running Internet Explorer 10 in Privacy Mode

Internet Explorer 10 includes a new feature named InPrivate Browsing. This privacy feature prevents Internet Explorer from storing any data about your browsing session including cookies, history, and temporary Internet files. As soon as you close the browser, any trace of any websites you visited is gone. Additionally, toolbars, extensions, and third-party cookies are disabled to protect a third-party from spying on what websites you visit.

I personally like to use InPrivate Browsing when I do online banking to add an extra layer of protection. Keep in mind, though, that InPrivate Browsing is not anonymous browsing. Should you do something illegal within InPrivate

Browsing, the browser does nothing to hide your IP address from a remote server. When an IP address of a visitor is captured in a server log, it is easy to subpoena the ISP that owns the IP for the name and address of the user behind the IP.

Using InPrivate Browsing is very simple. While Internet Explorer 10 is running, just hit Ctrl+Shift+P. You can tell InPrivate Browsing is running by the distinct InPrivate logo as shown in Figure 20-6.



**Figure 20-6:** Internet Explorer 10 offers an InPrivate Browsing option.

## Tracking Protection Lists

Internet Explorer 10 enables you to use tracking protection lists that block known companies that track your browsing habits. These lists are provided by a variety of organizations to help users block all web traffic from any address on the list. For example, if a list blocks ads.google.com, then all requests to that page are blocked. A side effect of blocking tracking requests is that normal advertising requests are also blocked because tracking protection lists are also ad blocking lists in most cases.

Using a tracking protection list in IE10 is very simple. Microsoft maintains a list of compatible list providers and allows users to provide ratings. To get

started using tracking protection lists, open up Internet Explorer and browse to <http://tweaks.com/630672>.

Browse through the list and simply click Add next to the list you want to use. Then click Add List on the confirmation screen as shown in Figure 20-7. It is possible to use more than one at a time, so go crazy.

You can remove a list within the Manage Add-ons window. Click the gear icon and click Manage Add-ons. Click Tracking Protection from the side menu, select the list you want to remove, and click Remove. You can also disable the list if you are just testing different lists.

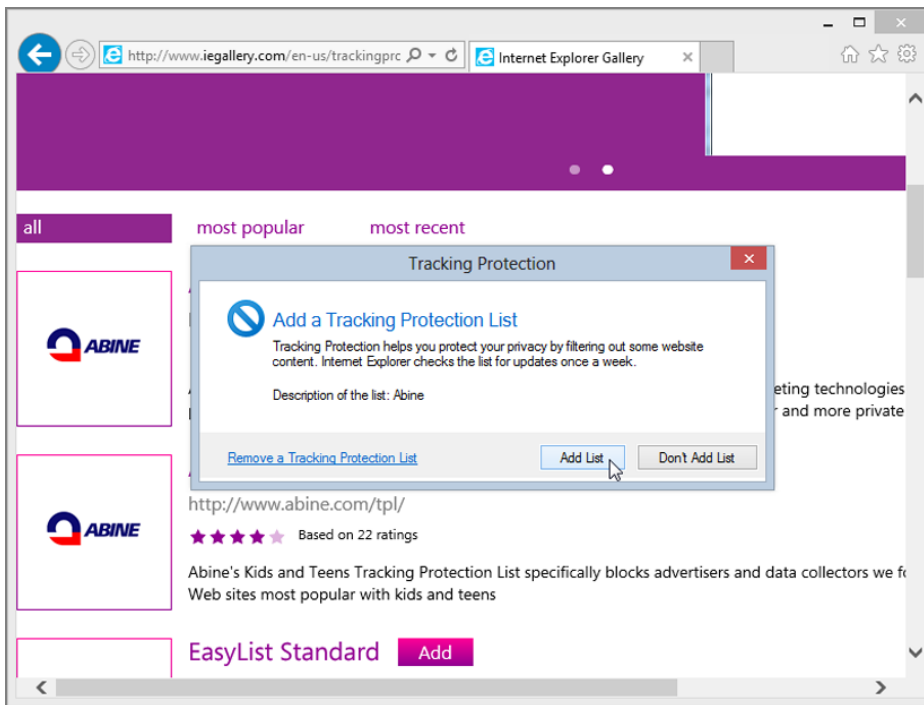


Figure 20-7: Add a tracking protection list to guard your privacy.

## Windows Interface Privacy

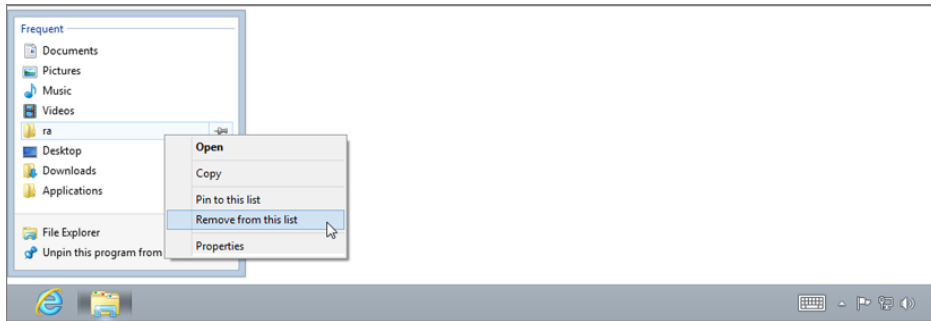
After you have Internet Explorer under control, you can move on to cleaning the rest of the Windows interface. Just as with Internet Explorer, Windows Explorer keeps track of the applications you run and files you open. It does this so that it can tailor your computer to your personal use with features such as the frequently opened items on Jump Lists. Features such as this are designed to speed up the use of your computer. However, the side effect of the convenience is a

loss of privacy. These next few sections show you how to recover your privacy, albeit at the expense of convenience.

## Removing Specific Entries from Taskbar Jump Lists

Similar to Internet Explorer, and following the trend in Windows 8 to give users more control over their privacy, Microsoft included the ability to remove single entries from the recently opened list that appears on many Jump Lists.

Simply right-click an application on your taskbar such as Microsoft Word and you will see a list of recently opened documents. The same is true for Windows File Explorer. To remove a specific entry, just right-click it and select Remove from this list as shown in Figure 20-8.



**Figure 20-8:** Remove a Jump List entry to prevent a program from appearing in the list.

## Removing Temporary Files from Your Hard Drive

Over time, your hard drive can become cluttered with temporary files left behind from applications and the operating system. These files not only take up space, but they can be tracks of activity on your computer. Removing the temporary files is a great way to clean up any garbage information that is left behind, increase your privacy, and free up some disk space.

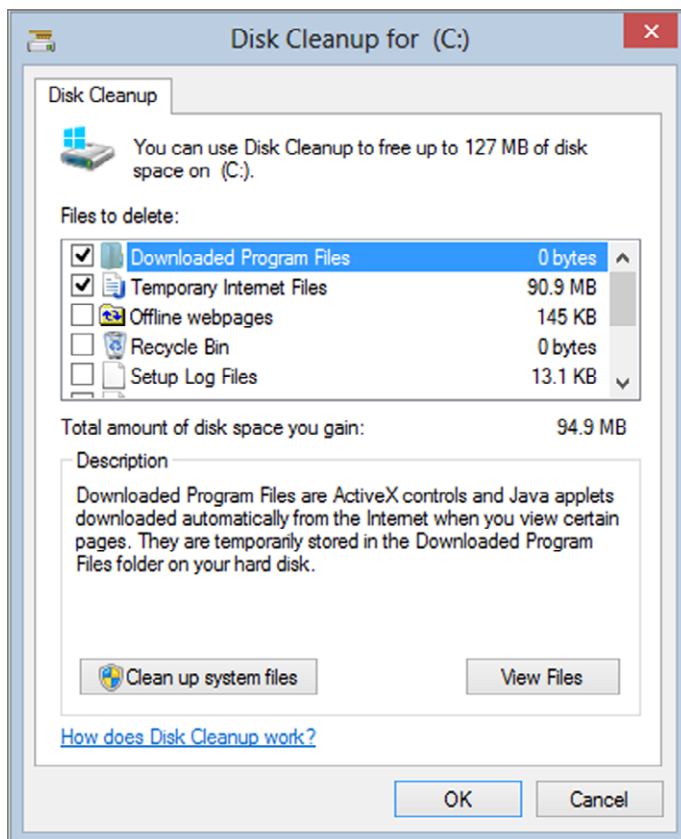
The complexity of Windows has increased over the years. In the early versions of Windows, there was just one temp folder in which all temp files were located. With Windows 8, temp folders are all over the place. To remove the files, you could go to all the different folders and erase the files manually, but there is a better way.

To clear my temporary files from my hard drive, I like to use Disk Cleanup. Disk Cleanup is a utility that comes with Windows 8 that makes it easy to remove your temporary files. It works by automatically checking the known temporary file locations for you and removing the files. With Disk Cleanup, you do not have to worry about where to navigate on your hard drive to delete the files. Instead, just execute the program.

To get started using Disk Cleanup, follow these steps:

1. Open the Start screen, type **cleanmgr**, and press Enter.
2. If your computer has multiple hard drives, you are prompted to select which drive you want to clean. Select the drive you want to clean and click OK.
3. After the utility has analyzed your computer, it gives you a report of various types of files that it can clean, as shown in Figure 20-9. Scroll through the list and make sure that only Temporary Internet Files and Temporary Files are checked.
4. Click OK to run the cleanup.
5. Hit Delete Files on the confirmation screen.

The utility now runs and exits automatically when it is finished cleaning your hard drive.



**Figure 20-9:** Use Disk Cleanup to remove temporary files.

Disk Cleanup is the perfect way to clean up your temporary files. Now that you know how to use it, I recommend that you run it at least once a month to keep your temporary files under control.

After you have cleaned your user files you can also use Disk Cleanup to delete temporary system files. On the main Disk Cleanup screen, just click Clean Up System Files and then follow the previous steps starting with step 2.

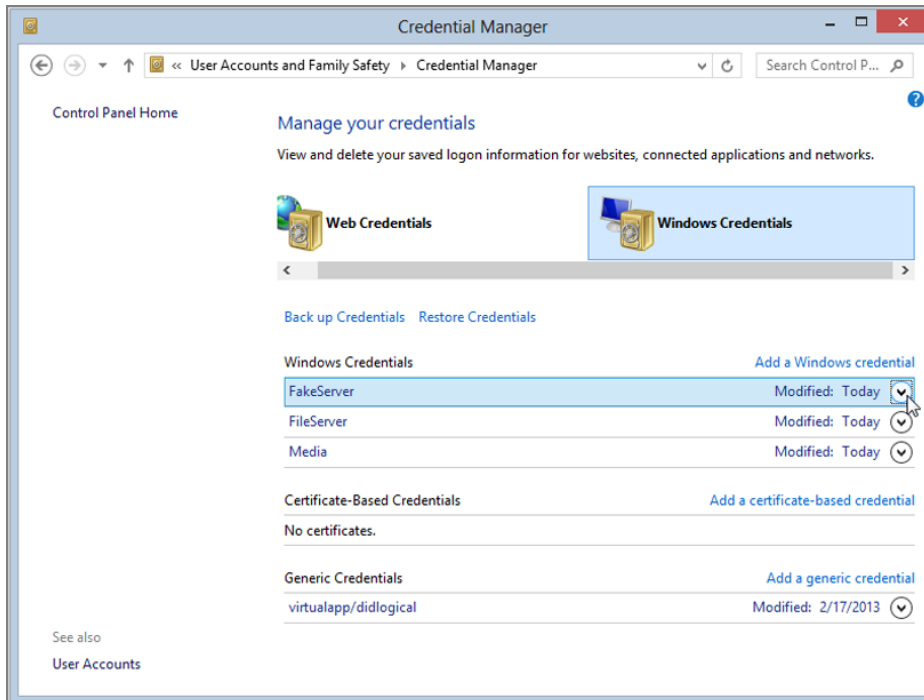
**TIP** Another method to clear temporary files on your computer is to use a third-party utility that is designed to delete files in known temporary folders all over your computer. My favorite utility for this task outside of using Disk Cleanup is called CCleaner by Piriform. CCleaner is a very helpful and free utility that clears temporary files from your computer with just a few clicks. Visit <http://tweaks.com/694343> to learn more.

## Removing Saved Passwords with Credential Manager

When you visit a website that requires authentication or attempt to connect to remote computers, you are given the option to save your password so that the next time you visit the page or attempt to access a remote resource you do not have to re-enter your password. This feature can be a huge convenience, especially if you access a particular website or resource frequently. The downside to this convenience is the potential for horrible security and privacy problems. Essentially, you are taking the password off all the sites and resources for which you saved a password. Anyone who has physical access to your computer can get in using your username and password, even if they do not know your password.

Removing your saved passwords from your computer is a very good idea because doing so protects your accounts. In Windows 8, you can remove saved passwords using the new Credential Manager.

1. Open the Start screen, type **Credential Manager**, click the Settings filter, and hit Enter.
2. All your saved accounts are listed under Web Credentials and Windows Credentials. Next to each listed account, click the down arrow as shown in Figure 20-10.
3. The account details are shown, including the option to delete the account. Click Remove From Vault to delete the account.
4. Click Yes on the verification screen.



**Figure 20-10:** Use Credential Manager to manage your account login information.

## Setting File and Folder Permissions

Windows 8 runs on NTFS, which allows users to set file and folder permissions. These permission settings enable you to specify which users can view a particular file or a whole folder on your computer. In fact, file permissions in Windows 8 are so detailed that you can even give a person the ability to read your files while preventing him or her from saving any changes. For the sake of privacy, file permissions are very helpful because they allow you to prevent other users from even being able to gain access to your private folders.

Setting the permissions on files and folders is easy to do. Just follow these steps:

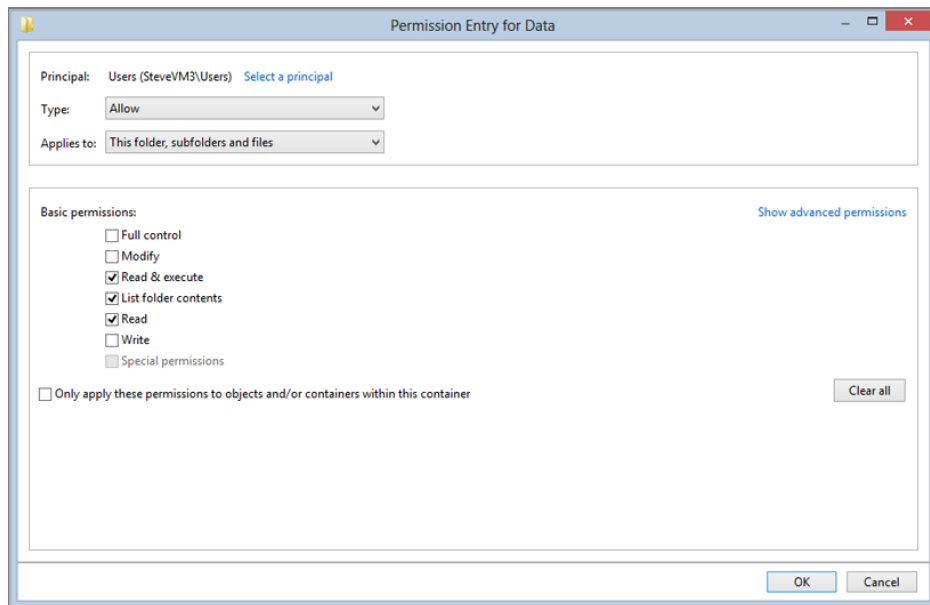
1. Right-click any file or folder for which you want to modify permissions and click Properties.
2. Click the Security tab and click the Advanced button.
3. Disable inheritance by clicking the Disable Inheritance button.

*Inheritance* means the permissions from a parent folder are automatically applied to child folders.

4. Remove all users from the Permission Entries list that you do not want to have access to this file or folder.

It is a good idea to remove the Everyone group because this includes everyone who can access your computer, including guests. Make sure that you do not accidentally remove your username from the list. Also be cautious removing the SYSTEM account. This is one account the operating system uses to access files, but can be safely removed unless you experience problems with a specific application or service.

5. Now that you have the list of users and groups taken care of, set the specific permissions for each user. Select the name of one user that you want to modify, and then hit the Edit button. Check the corresponding boxes in the Basic Permissions list for the activities that you want him to be able to do, as shown in Figure 20-11, and click OK.
6. When you have finished setting the permissions for all the users, click OK to exit the permissions screen.



**Figure 20-11:** Adjust permissions for an individual to let him read files in the folder, but not change them.

After you set the permissions for all sensitive directories, you will have greatly increased your security and privacy. Also keep in mind that file permissions are inherited. Every folder within a folder inherits the permissions of the parent folder unless they are specifically removed. Therefore, if you set the file permissions for a folder, all the subfolders and files are automatically set with the same permissions.

File and folder permissions can be very useful. If you have a program on your computer that you do not want anyone else running, simply set the permissions on that folder so that only you can read and execute the program.

## Summary

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Throughout this chapter you found out how to increase your privacy when using Internet Explorer. The information that Internet Explorer leaves behind can be very sensitive, so I showed you how to clear your history and delete temporary files to protect your privacy. Then, I showed you how to configure Internet Explorer so it cleans up after itself when you close the browser.

The second part of this chapter addressed the privacy concerns of the Windows interface. Just like Internet Explorer, Windows records many of your computer activities. Clearing those records is an essential part of protecting your privacy. First, I showed you how to remove sensitive items that may appear in Jump Lists on the taskbar, and then you learned ways to further protect your privacy with file permissions.

You have now finished reading the last chapter of *Windows 8 Tweaks*. In Part I, I guided you through selecting the right version of Windows 8 and then installing it, along with basic tips to tweak your computer safely. In Part II, I showed you how to customize just about everything that can be customized in Windows 8 to make Windows appear that it was designed just for you. In Part III, the focus turned to performance, and I covered tweaks that can help speed up Windows 8 on any computer by optimizing the various aspects of the operating system. In Part IV, the topic moved on to securing your computer. I showed you how to protect your computer from attackers, defend against spyware and viruses, and protect your privacy.

Now that you have completed the final chapter, your Windows 8 experience has been fully personalized, optimized, and secured.

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