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Windows 10

3

THIRD EDITION

Ed Bott and Craig Stinson

Microsoft

Windows 10 Inside Out

3rd Edition

Ed Bott
Craig Stinson

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To Mackie. He was a good dog.

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About the authors

Ed Bott is an award-winning author and technology journalist who has been researching and writing about Windows and PC technology, in print and on the internet, for more than two decades. He has written more than 30 books, all on Windows and Microsoft Office, which in turn have been translated into dozens of languages and been read worldwide. You can catch up with Ed's latest opinions and get hands-on advice at *The Ed Bott Report* on ZDNet (*zdnet.com/blog/bott*). You can also follow his lively and occasionally irreverent Twitter feed (@edbott). Ed and his wife, Judy, live in northern New Mexico with an adorable English Springer spaniel, Lucy, who was adopted with the help of English Springer Rescue America (*springerrescue.org*). She makes several cameo appearances in this book.

Craig Stinson, an industry journalist since 1981, was editor of *Softalk for the IBM Personal Computer*, one of the earliest IBM-PC magazines. He is the author or coauthor of numerous books about Windows and Microsoft Excel. Craig is an amateur musician and reformed music critic, having reviewed classical music for various newspapers and trade publications, including *Billboard*, the *Boston Globe,* the *Christian Science Monitor,* and *Musical America*. He lives in Bloomington, Indiana.

Introduction

Microsoft Windows has been around for more than three decades. During that time, it has grown to become a mainstay of business and personal computing, running on some 1.5 billion devices worldwide.

The authors of this book began working together in 2001 with the very first title in the Inside Out series, covering Windows XP. Like many of you, we took a break a few years ago, watching from the sidelines as Microsoft released Windows 8 and Windows 8.1. We returned for Windows 10 because, quite frankly, we were excited by the possibilities of "Windows as a service." As we predicted in the first edition of this book, published shortly after the initial release of Windows 10 in 2015, Windows 10 is evolving rapidly.

That evolution has been a key part of our experience over the past three years, as we researched and wrote what turned out to be a very significant revision to the original edition and then did a series of ebook-only updates. This third edition incorporates all that learning and covers the two editions of Windows 10 released in 2018.

One bedrock fact we've discovered over the past three years is that the core features of Windows 10 are familiar and change very slowly. The fundamentals of NTFS security and the registry, for example, have remained reassuringly consistent throughout many generations of Windows. But there's also plenty that's new in Windows 10, some of it obvious (the new Start experience) and some not so obvious (Windows Hello).

The challenge of writing a book like this one is that Microsoft keeps updating Windows 10, releasing new features twice each year instead of every few years, as in the past. To our great relief, we've found that most of the changes in these semi-annual Windows 10 feature updates are evolutionary, not revolutionary. You might notice small changes in a dialog box or in the appearance of a feature, but its fundamental workings remain the same as before. Our goal in this edition is to help you accomplish those familiar tasks using a new set of tools.

Who this book is for

This book offers a well-rounded look at the features most people use in Windows. It serves as an excellent starting point for anyone who wants a better understanding of how the central features in Windows 10 work. If you're a Windows expert-in-training, or if your day job involves IT responsibilities, or if you're the designated computer specialist managing computers and networks in a home or small business, you'll discover many sections we wrote just for you. And if you consider yourself a Windows enthusiast—well, we hope you'll find enough fun and interesting tidbits to hold your attention because, after all, we're unabashed enthusiasts ourselves.

Assumptions about you

This book was written for people who have some experience with Windows and are comfortable with and even curious about the technical details of what makes Windows work. It touches only briefly on some of the basic topics that you'll find covered in more detail elsewhere. (For people who require a more basic introduction, we recommend other Microsoft Press titles, such as *Windows 10 Step by Step* or *Windows 10 Plain & Simple*.)

Whether you've been working with Windows for a few years or a quarter-century, we expect that you're comfortable finding your way around the desktop, launching programs, using copy and paste operations, and finding information in a web browser. We don't assume that you're a hardware tinkerer, hacker, hardcore gamer, or developer.

How this book is organized

Part I, "Windows 10 essentials," offers an overview of what's new in this version, along with details on installing, configuring, and personalizing Windows 10. For this edition, we've added a brand-new chapter covering the tools and techniques for managing Windows security and feature updates.

Part II, "Productivity," covers the essentials of using and managing Universal Windows Platform (UWP) apps and desktop programs, with details on built-in productivity tools (including Mail) and entertainment apps. This section also introduces Microsoft Edge, the new default web browser. In this section, we explain how to organize your personal data using local drives and the built-in OneDrive cloud storage service. Finally, we explain how to find those files as well as answers from the internet, when you need them, using Cortana and Windows 10's powerful search tools.

Part III, "Managing Windows 10," starts with a detailed guide to keeping your user accounts and devices secure. Additional chapters cover routine maintenance tasks and explore tools and techniques for measuring and improving your computer's performance, keeping your network connections fast and secure, and configuring hardware. The section closes with advice on how to back up your important files, how to recover quickly from problems, and how to troubleshoot issues when they arise.

Part IV, "For IT professionals and Windows experts," leads off with a chapter about Hyper-V, a powerful virtualization platform built into Windows 10 Pro and Enterprise editions. Additional chapters cover advanced tools for managing business networks and the Windows 10 devices connected to those networks. Windows 10 security gets its own in-depth chapter, and we close with a look at the unique features available for mobile computing.,

Finally, we provide three appendixes of reference information: a concise look at the differences between Windows 10 editions, a hands-on guide to the Windows Insider Program, and an overview of help and support resources.

Acknowledgments

For this edition we're once again fortunate to have an expert production team led by Loretta Yates. Proofreader Karen Davis, compositor Tricia Bronkella, and indexer Cheryl Lenser were invaluable additions to our team, asking the right questions and offering excellent suggestions to help smooth away our rough edges. And, as usual, they made it all happen quickly and efficiently, despite all the curveballs that the crazy fast "Windows as a service" development pace threw our way.

They were joined by a very special team member, Carl Siechert, who was our co-author on every previous edition but put on the technical editor's hat for this revision. It was a perfect fit.

And we've saved a special tip of the hat to our longtime colleagues Rick and Charlotte Kughen. This book would never have gotten into your hands without their production magic.

Errata, updates, & book support

We've made every effort to ensure the accuracy of this book and its companion content. You can access updates to this book—in the form of a list of submitted errata and their related corrections—at:

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PART I

Windows 10 essentials

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CHAPTER 1

What you need to know about Windows 10

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What kind of people use Windows 10? The list is long and surprisingly diverse.

If you work in a modern office, you probably spend the better part of every workday staring at a display—creating, communicating, researching, analyzing, sharing, and collaborating with co-workers. Yes, you can do some of those tasks on a mobile phone, but when you need to see the big picture, there's nothing that works as well as a PC.

At home, you (and a few hundred million people just like you) use Windows 10 PCs for checking the news, making travel plans, shopping, and staying in touch over social media networks. You probably also play a few games and occasionally edit family photos and videos using that PC.

You might be a developer, in which case you spend a lot of time writing, testing, and debugging code. In the process, you use advanced features (like the Windows Subsystem for Linux) that mere mortals will never touch.

Or perhaps you actually manage PCs in business settings, in which case, you have probably forgotten more about Windows deployment tools and techniques than most people will learn in a lifetime.

The one thing all of you have in common is that you're probably not a newcomer to Microsoft Windows. Regardless of your productivity needs and your level of technical expertise, you've undoubtedly mastered little shortcuts that make you more productive in everyday computing activities.

For decades, one of the defining characteristics of Microsoft Windows—indeed, one of its greatest strengths—has been its respect for backward compatibility. That means most of those old tricks still work, and we don't need to spend a lot of time dwelling on the familiar.

Instead, our goal in this book is to help you become more productive by helping you discover and master some of the big changes in Windows 10. For this, the third edition of *Windows 10 Inside Out*, we've substantially reorganized both the structure and the content based on more

than three years of hands-on experience with Windows 10 and lots of feedback from readers like you.

In this introductory chapter, we introduce the most important improvements in Windows 10 and supply some reasons to dig deeper into this powerful operating system.

Windows core features

As we finished writing and editing this edition in late 2018, Microsoft's official tally of devices running Windows 10 had crossed 700 million. That's an enormous number, but it represents only about half of the worldwide population of PCs. The other half are still running older Windows versions, primarily Windows 7.

If you're among the substantial population that has stuck with Windows 7 for the past few years, avoiding Windows 8 and waiting for Windows 10 to mature, you missed some interesting and deep-seated changes to core features in Windows. This section introduces some of those essential changes in the most important parts of the operating system.

The image-based setup process makes upgrading to Windows 10 faster and more reliable. It also powers the recovery tools, shown in Figure 1-1; the Reset This PC option allows you to reinstall Windows without having to search for installation media or product keys, with the option to keep your personal files or wipe the system clean. For more details, see Chapter 15, "Troubleshooting, backup, and recovery."

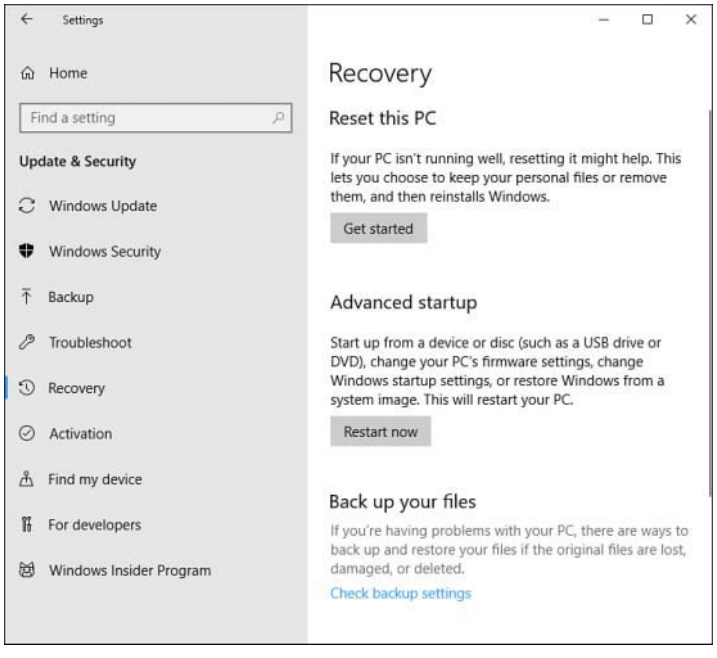

Figure 1-1 The Recovery options in Windows 10 allow you to reset a PC without requiring separate installation media or wiping out your personal files.

NTFS is still the default file system for Windows 10, but the primary file management tool has changed significantly from its Windows 7 predecessor. It's no longer called Windows Explorer; beginning with Windows 8, the name officially changed to File Explorer. The addition of a Microsoft Office–style ribbon, shown in Figure 1-2, makes a number of formerly obscure operations more discoverable and dramatically improves search capabilities by adding a Search Tools tab when you click in the search box. Windows 10 adds a Quick Access region in the navigation pane. We cover File Explorer in exhaustive detail in Chapter 9, "Storage and file management."

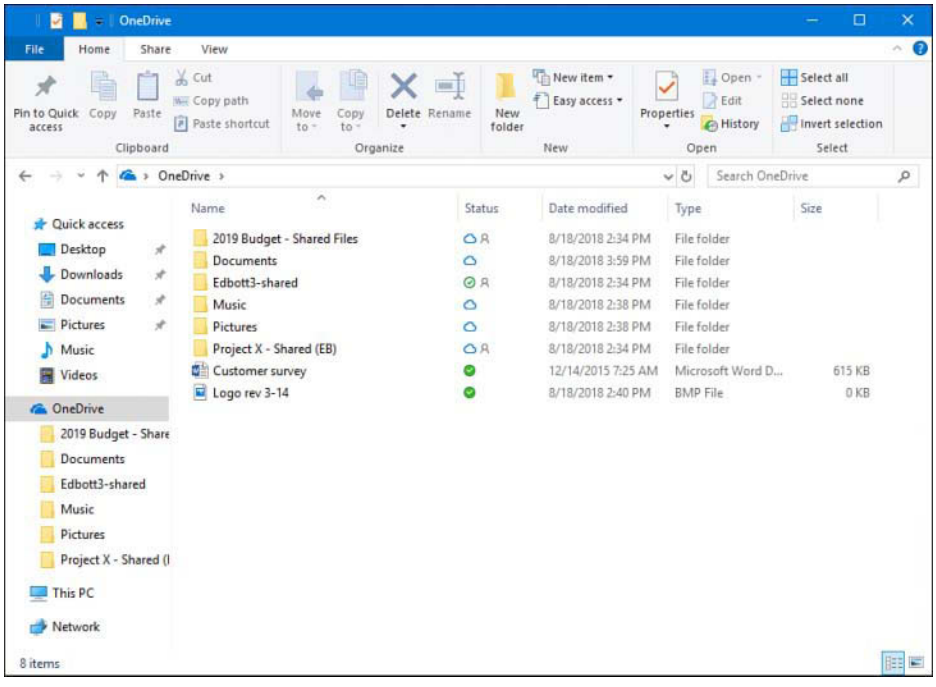

Figure 1-2 For anyone upgrading from Windows 7, File Explorer has a new name, an Office-style ribbon, and a OneDrive node in the navigation pane.

Some of the most important architectural changes in Windows 10 aren't visible, but you can certainly see their impact on performance. Microsoft's engineers have made steady and significant improvements in memory management, for example, which results in faster startups and more efficient management of running processes.

You can monitor system performance in Task Manager, another familiar Windows 7 utility that has received a major makeover in Windows 10. Press Ctrl+Shift+Esc to open Task Manager, and then click the Performance tab to see detailed information about the most important aspects of how the operating system is using available resources, as shown in Figure 1-3.

➤ **For an in-depth look at the new Task Manager, see Chapter 12, "Performance and power management."**

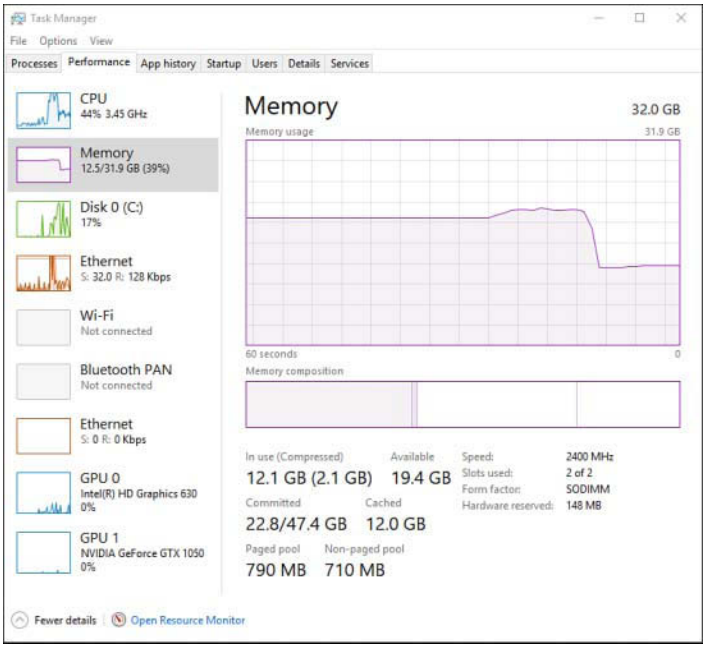

Figure 1-3 The Task Manager Performance tab in Windows 10 offers far more information and is more clearly organized than its Windows 7 predecessor.

Several other major architectural changes in Windows 10 are also on display in the previous figure. The networking stack in Windows 10 continues to improve with each feature update, for example. On modern devices that include multiple graphics processing units (GPUs), you can now assign a specific GPU on a per-app basis to improve performance. Other display-related changes include significant improvements when using multiple displays with different scaling factors.

Not every core feature has survived the relentless parade of semi-annual updates that make up Windows 10, however. HomeGroup, a signature networking feature that debuted in Windows 7 with the goal of making file and printer sharing easier, has been officially removed from Windows 10 beginning with version 1803. We have details of this change in Chapter 13, "Windows networking."

Perhaps the most significant change of all in Windows 10 is the deprecation of a core feature that has been part of Windows for more than two decades. The venerable Internet Explorer is still part of Windows 10, but it has been supplanted as the default browser by Microsoft Edge. The newer browser is built for the modern web, with a new rendering engine in which

interoperability has a much higher priority than backward compatibility. We explain the differences between the two browsers, as well as how to configure each one to match your preferences, in Chapter 8, "Microsoft Edge and Internet Explorer."

Microsoft Edge is touch-friendly, with a minimal list of controls. Among its unique features is a Reading View button that reformats and rearranges the text of a cluttered webpage to make a less distracting reading experience. You can see this feature in action in Figure 1-4, with side-by-side Microsoft Edge windows displaying the same page in its original view (left) and in reading view (right).

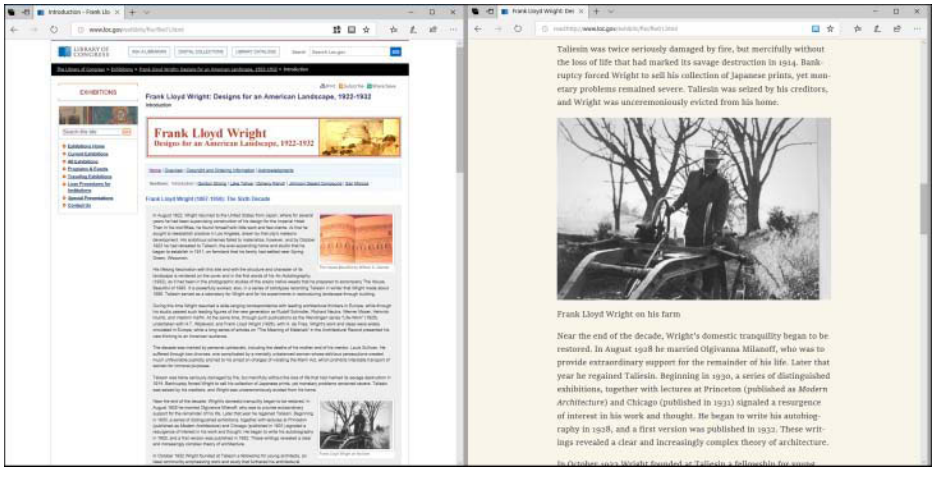

Figure 1-4 The Microsoft Edge web browser has simple controls and a Reading View option that reformats text and removes clutter from webpages.

The version of Microsoft Edge that was included with the initial release of Windows 10 was functional but lacked features that most experienced Windows users expect in a web browser. After more than three years' worth of development, Microsoft Edge has become more polished and powerful. Each Windows 10 feature update has added significant new features to Microsoft Edge, including support for browser extensions, which are delivered through the Microsoft Store app. Figure 1-5 shows some of those extensions in use.

Subsequent feature updates have expanded the capabilities of Microsoft Edge significantly, turning it into a capable viewer of PDF documents and e-books.

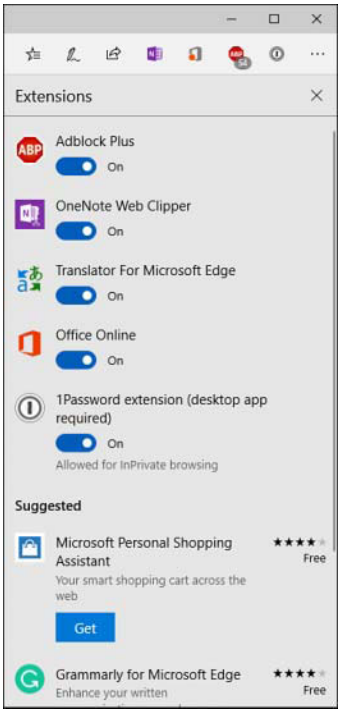

Figure 1-5 Microsoft Edge supports browser extensions like those shown here, which add features and connect to other apps and services.

Windows as a service

For decades, the cadence of Windows went something like this: Roughly every three years, a new version of Windows came out. New PCs included the latest Windows version; owners of existing PCs could choose to pay for an upgrade to the new Windows version or choose not to upgrade. The cycle began anew three years later, with the release of yet another new Windows version.

That's all history now.

Before the initial release of Windows 10, Microsoft declared its intention to treat Windows as a service. In the first three years after that release, Windows 10 customers had a chance to see "Windows as a service" in action, with five feature updates that collectively would have qualified as one of the most feature-packed new Windows versions ever.

ABOUT WINDOWS 10 VERSIONS

The most striking difference between Windows 10 and its predecessors is the way Microsoft has chosen to deliver new features. Instead of assembling a long list of features and working on them as part of a new version—Windows 11, let's call it—Microsoft chose to ship those new features in small, bite-size chunks, as part of regular feature updates that are free for every PC running Windows 10.

In November 2015, just a few months after the public debut of Windows 10, Microsoft released the first feature update, version 1511. It contained a slew of changes, many of them aimed at enterprise customers, including changes to Windows Update that allow administrators to delay installation of updates.

On August 2, 2016, almost one year to the day after Windows 10's launch, Microsoft publicly released the Windows 10 Anniversary Update, more prosaically known as version 1607. It included new security features as well as major improvements to some signature features in Windows 10, including Cortana and the Microsoft Edge browser. The Anniversary Update also marked the debut of the Windows Ink platform for pen-equipped devices.

In 2017, Microsoft formally committed to a twice-yearly schedule for feature updates to Windows 10. The Windows 10 Creators Update, version 1703, began rolling out to customers in April 2017; the Fall Creators Update, version 1709, followed six months later; and the April 2018 Update, version 1803, arrived right on schedule six months after that, at the end of April 2018. As we wrapped up this edition, Microsoft released version 1809. You can expect a similar release schedule in 2019 and beyond.

The Windows 10 versioning system starts with a four-digit release date in the format *yymm*, where the first two digits represent the year, and the last two represent the month. Thus, versions 1703 and 1709 were completed in March 2017 and September 2017, respectively. Beginning in 2019, this numbering system will change slightly, with the last two digits representing which half of the year the release belongs to: 19H1, for example.

A separate build number keeps track of update versions. The initial release of Windows 10, for example, was build 10240, version 1607 was build 14393, and version 1809 is build 17763. A version identifier for each monthly cumulative update is appended to that build number.

To see which Windows 10 version is installed on a device, go to Settings > System > About. The example that follows shows a PC running Windows 10 version 1803 with the August 2018 cumulative update (OS Build 17134.228) installed.