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Microsoft

Windows 11 Inside OUT

Second Edition

Ed Bott

FREE SAMPLE CHAPTER

Microsoft

Windows 11 Inside Out, Second Edition

Ed Bott

Windows 11 Inside Out, Second Edition
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Dedication

To the many loyal readers who've followed me through the years. Thank you for your support.



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About the author

Ed Bott is an award-winning author and technology journalist who has been researching and writing about Microsoft Windows and technology in general, in print and on the Internet, for more than three decades. Much of that work has appeared in thousands of posts on ZDNet (*https://w11-io.com/edbott-zdnet*), where his signature hands-on advice columns and buying recommendations have been a fixture through at least a half-dozen Windows versions. Ed has written more than 30 books, all on Windows and Microsoft Office, which have been translated into dozens of languages and read worldwide.

You can catch up with Ed's latest news at *https://edbott.com*. You can also connect with him on social media: Bluesky (*https://bsky.app/profile/edbott.com*) and Mastodon (*https://mastodon.social/@edbott*). Ed and his wife, Judy, live in Raleigh, North Carolina. They are currently between dogs.

Introduction

I've spent most of my professional career helping human beings make sense of the fabulous features, weird idiosyncrasies, and occasional frustrations of Microsoft Windows.

This is, by my reckoning, the seventeenth edition in the *Windows Inside Out* series, and it arrives almost 25 years to the day since we kicked off the franchise in 2001 with a volume covering what was then the newest member of the Windows family, Windows XP.

After going through those many revisions, you'd think another Windows release would be a routine event, but the job never goes exactly as expected.

Over the six months I spent researching Windows 11 and writing the updated chapters for this edition, I learned a surprising amount. I set up a dozen test PCs—physical and virtual—so I could explain the differences you experience on different hardware platforms, running different Windows editions, using every major account type. All of that testing forced me to take a fresh look at the features I've used every day for decades and to dive deep into important features that aren't part of my normal workflow but that matter to readers.

I also had the help of a gifted technical editor, Carl Siechert, who read every page and routinely sent me back to the lab for additional testing, to ensure that the guidance in these pages is as accurate as possible. Together, we verified every feature and procedure using the public release of Windows 11, version 25H2, as well as Release Preview builds of version 26H2.

To make things even more challenging, Microsoft keeps tweaking the Windows 11 user interface and fine-tuning fundamental features. They've been extra busy in recent years, reworking the very idea of a personal computer. You still have local accounts that run on hardware you can see and touch, but many of those physical elements are rapidly being replaced by identity services and storage platforms that run in the cloud. Along the way, Microsoft introduced a modern app platform, overhauled the way hardware and drivers interact with Windows, and more recently began incorporating AI capabilities throughout the operating system.

It's a lot to keep track of.

Not everything is new. Many of the core technologies that power a Windows PC have evolved slowly and methodically over many decades. The Windows NT kernel architecture, NTFS security, and the registry, for example, have remained remarkably consistent throughout many generations of Windows. Those and other bedrock features have been extensively modified, of course. Many have acquired layers of security hardening, virtualization, encryption, and cloud integration. Documenting those changes is a key part of what you'll find in this edition.

For those early *Windows Inside Out* editions, we had the reassurance of knowing that each new release from Microsoft would have a lifespan of at least three years. That's no longer the case.

Windows 11 gets a new feature update every year, and Microsoft now routinely reworks features as part of its monthly updates. While I was working on this edition, for example, Microsoft shipped major changes to the Start menu, Windows Update, and the taskbar as part of its "continuous improvement" philosophy.

Back then, technical details about the inner workings of Windows were often hard to come by; today, we're overwhelmed with information. The real challenge is finding reliable, up-to-date details, especially when it comes to an ever-evolving product like Windows.

In combination, those two factors have dramatically influenced how this book is organized. There's no longer any need to devote several pages to a table listing command-line switches for an essential utility, for example; I now have the luxury of posting a link to the complete, authoritative, and up-to-date online documentation. Those pages are better spent explaining how that feature works and how to integrate it into your personal workflow.

The pace of change in Windows shows no signs of slowing. After 25 years of working on this series, the most important thing I've learned is that anyone can adapt to change if they understand the fundamentals.

New features will arrive, and menus will continue to move around, but the underlying principles of security, identity, storage, networking, management, and troubleshooting change far more slowly. My goal throughout this book is to explain not just where the switches and checkboxes for those features are today, but how they work and why they matter.

I hope this book helps you.

—Ed Bott, September 2026

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 core features in Windows 11 work. If you are an aspiring Windows expert, if you have a day job that involves IT responsibilities, or if you're the designated computer specialist for your family, home office, or small business, you'll discover many sections that were written with your needs in mind. And if you consider yourself a Windows enthusiast—well, I hope you'll find enough fun and interesting tidbits to hold your attention. I'm in this business, after all, because I'm an unabashed Windows enthusiast myself.

This book is not for beginners. It was written for people who have experience with Windows and are comfortable with and even curious about the technical details of what makes Windows work. It touches only briefly on basic material that is already extensively covered in online resources and introductory guides.

Whether you've been working with Windows for a few years or for decades, I 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. I don't assume that you're a hardware enthusiast, gamer, developer, or IT professional, although if you have experience in any of those areas, you'll find it useful here.

How this book is organized

Part I, "Windows essentials," introduces the key features of Windows 11 and explains what has changed since the operating system's debut in 2021. It covers how to install, update, configure, and personalize Windows, and how to take advantage of Copilot and other AI-powered features. The content in these chapters will also help you understand the security, privacy, and account-management tools that form the foundation of every Windows PC.

Part II, "Windows 11 and productivity," focuses on the applications and services you use every day. The chapters in this section explain how to organize information with File Explorer and OneDrive, install and manage apps from a wide variety of sources, and work effectively with the apps that are included by default in every Windows installation. Microsoft Edge, the default browser in Windows 11, gets its own detailed chapter, reflecting the importance of web-based services in modern computing.

Part III, "Managing a Windows 11 PC," covers the skills needed to keep a Windows PC running smoothly. These chapters cover networking, storage, hardware configuration, performance tuning, troubleshooting, backup, and recovery. Whether you're responsible for one PC or many, the content in these pages will help you keep your Windows installation and the underlying hardware secure and reliable, so you can be productive.

Part IV, "For IT professionals and developers," explores the advanced tools and technologies built into Windows 11. It covers how to use Windows Terminal and PowerShell without being intimidated and how to automate routine tasks. These chapters also cover how to work with the Windows Subsystem for Linux and how to create and manage virtual machines. It closes with a high-level overview of the tools that large organizations use to deploy, secure, and manage Windows devices at scale.

The book concludes with two appendixes that provide reference information about Windows editions and licensing as well as practical guidance for participating in the Windows Insider Program.

Errata, updates, and 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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CHAPTER 7

Using File Explorer and OneDrive to organize information

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The primary tool for managing files in Windows 11 is File Explorer. Over more than three decades, this app has changed its appearance many times while retaining its familiar three-pane layout, with menus and toolbars at the top, a navigation pane on the left, and a contents pane on the right. In Windows 11, the File Explorer user interface is significantly streamlined, removing the Office-style ribbon from the Windows 10 version and replacing it with a single command bar. Beginning with version 22H2, File Explorer includes a tabbed interface that allows you to open folders in multiple tabs, in a way that resembles how a modern web browser works.

A much more important architectural change in modern versions of File Explorer is how it consolidates local files and cloud-based resources into a single view. Microsoft's cloud storage service, OneDrive, offers a generous allotment of online space with every free Microsoft account and much more with a Microsoft 365 subscription. Its sync engine, built into Windows 11, allows you to browse through your cloud storage in File Explorer without first having to download those files to local storage.

That integration with the cloud is powerful and potentially confusing, especially for anyone who learned how to manage files when local storage was the only option and running out of space was a constant source of worry. This chapter explains how to configure Windows and OneDrive so that your most important files are available when you need them, even if you're not connected to the internet.

But before I get to those details, we need to have a slightly technical discussion of how the Windows file system works. Trust me: This is important.

How (and where) Windows organizes your data

In the beginning, there was the C: drive. All of your files were on that drive, unless you had a big desktop PC with additional hard drives labeled D: and E: and so on. When you wanted to browse through your saved documents, you opened the C: drive in File Explorer and clicked through folders and subfolders until you got to C:\Users\<*username*>\Documents.

Over the past two decades, that disk-centric system for organizing files has been methodically replaced by a Windows namespace that is mostly virtual and is centered on the current user, not on a drive letter. This namespace consists of *known folders* and *shell objects* whose actual location might be on a local drive or in the cloud. Some locations in File Explorer's navigation pane are virtual containers—like the Home and Gallery nodes, which have no location in the file system and whose contents are drawn from multiple sources in local, network, and cloud storage.

To see that namespace in action, look at the default arrangement of the File Explorer navigation pane in Windows 11, as shown in Figure 7-1.

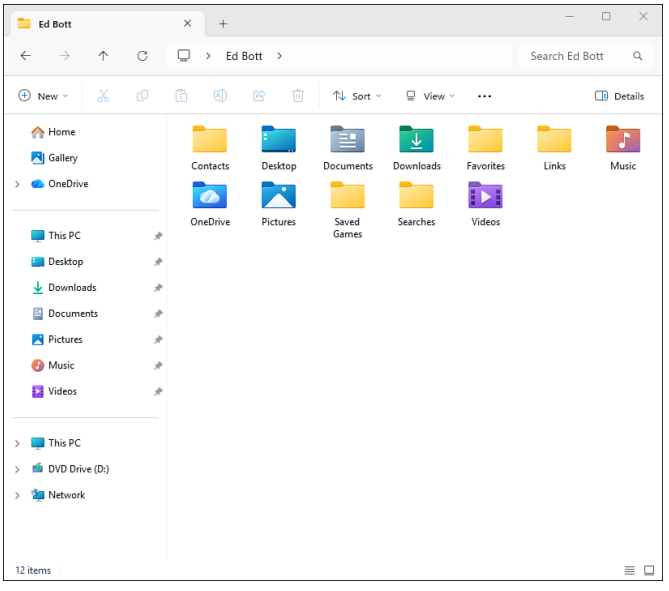


Figure 7-1 File Explorer's default navigation pane includes a mix of virtual containers as well as some known folders whose actual path can be redirected.

The navigation pane on the left is arranged into three zones, containing icons and some nodes that expand and collapse on demand. Those zones contain the following content:

- The top zone contains three icons representing virtual folders that aggregate information from different locations:
  - **Home** is the top-level entry point for File Explorer, containing shortcuts to your favorite (pinned) files and folders, as well as links to recent and recommended items.
  - **Gallery** collects pictures (and some videos) from multiple folders and displays them in a visual grid with a timeline.

- **OneDrive** contains a combined view of files that have been synced from Microsoft's cloud storage service, as well as placeholders for files that are available online but not locally.

- The middle zone, formally known as **Quick Access**, displays shortcuts to pinned folders as well as folders you've recently opened. On a clean install, the default folders from your user profile are pinned here.

- The bottom zone shows **This PC**, which expands to show all local drives; it can also contain separate nodes for any additional local drives, removable drives, the local network, and third-party cloud service providers.

Each icon in the navigation pane offers a starting point for browsing through files in its associated location. Note that you can right-click any empty space in the navigation pane to display a menu that allows you to customize the navigation pane—by showing or hiding the nodes for This PC and Network, for example.

That menu also includes a Show All Folders option, which changes the navigation pane to a flat hierarchy, as shown in Figure 7-2.

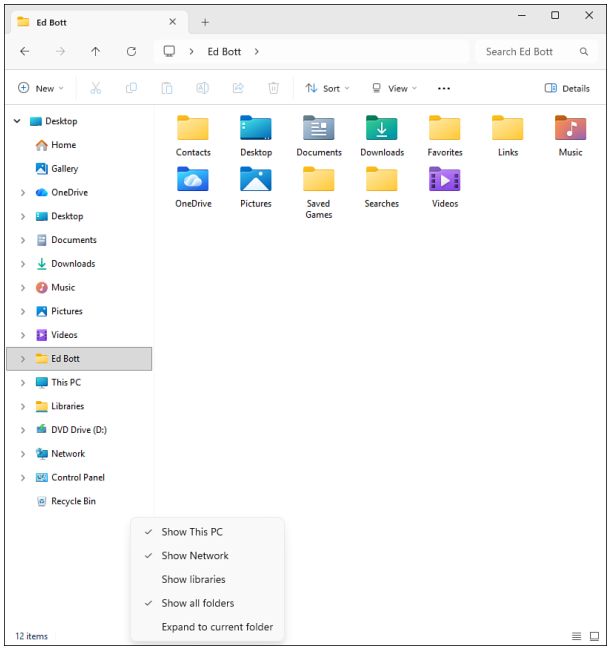


Figure 7-2 The Show All Folders option doesn't materially change the layout of the navigation pane.

If you choose the Show All Folders option because you're hoping to restore the old, disk-centric view of the navigation pane, you'll probably be disappointed. That hierarchy, which has a Desktop icon as the top-level node, includes the same items in the same order as in the default view, arranged in a single list, without the option to pin or unpin folders; it adds a few more virtual containers that aren't particularly useful in Windows 11—Control Panel, Recycle Bin, and Libraries (which are covered later in this chapter).

Inside OUT

How to create a disk-centric navigation pane in File Explorer

Are you a traditionalist who likes the idea of seeing a directory tree in the navigation pane, so you know exactly where each subfolder fits in the Windows file system? You can create that look with a few small adjustments. The most important tweak is to right-click in the empty space at the bottom of the navigation pane and choose Expand To Current Folder from the menu. That option ensures that the full drive tree opens to show you the path of whatever folder is open in the contents pane.

Next, right-click each of the folders and drives you use most often and choose Pin To Quick Access; if you have no use for the default pinned folders, right-click and choose Remove From Quick Access to sweep them away.

That layout won't make File Explorer work exactly like it did in the good old days, but it's a good starting point for further customizations.

If you simply want to see the files in a folder without being distracted by the navigation pane, you can make it disappear with ease: Click View > Show and clear the checkbox to the left of the Navigation Pane menu entry. You might choose this option if you're comparing the contents of two folders in side-by-side windows and don't need the distraction of the navigation pane.

What's in your user profile?

Your personal files and settings are stored by default in your *user profile*, which is created by copying the contents of the Default profile to a new folder when you sign in to a user account for the first time on a device. On a clean installation of Windows 11 using a local account, the resulting directory structure looks like the listing shown in Figure 7-3, where <*username*> is the account name you signed in with.

In addition to predefined folders for personal documents and digital media files, this new profile also includes the details that define the desktop environment: the user's own registry settings (HKEY_CURRENT_USER), as well as user data and settings for installed apps and desktop programs.

```
C:\
 ├─ Program Files\
 ├─ Program Files (x86)\
 ├─ Windows\
 ├─ ProgramData\
 └─ Users\
      ├─ Default\
      ├─ Public\
      └─ <username>\
           ├─ Desktop\
           ├─ Documents\
           ├─ Downloads\
           ├─ Pictures\
           ├─ Videos\
           ├─ Music\
           ├─ OneDrive\
           └─ AppData\
                ├─ Local\
                ├─ LocalLow\
                └─ Roaming\
```

Figure 7-3 By default, Windows creates a group of subfolders in your user profile, each one intended to hold specific types of data.

NOTE

Although you can customize the Default profile, doing so requires the use of enterprise deployment tools and is impractical for home and small business installations.

Local user profiles are stored in %SystemDrive%\Users. (On Windows 11 PCs, this address is equivalent to C:\Users.) Each user's profile is stored in a subfolder whose name is based on the user account name (for example, C:\Users\Katy). The entire path for the current user's profile is accessible via another commonly used environment variable, %UserProfile%.

TROUBLESHOOTING

Your user account name and your user profile folder name don't match

Windows creates your user profile folder when you first sign in to a device. If you do so with a local account, the name of the profile folder matches the username (unless there's already a folder with that name from a previous installation, in which case Windows appends a dot and the name of the PC to the folder name). If you sign in with a Microsoft Entra ID account, the name of the profile folder matches the username, with .AzureAD appended to it.

This naming convention breaks down if you sign in for the first time using a Microsoft account. In that case, Windows creates a folder name using the first five characters of the username associated with the Microsoft account. If your username is more than

five characters long, the folder name (which is also shown in File Explorer as the profile name) is truncated. So the profile folder for edbott@example.com becomes C:\Users\edbot.

If that folder name bothers you, I have some bad news: There's no supported way to change the user profile folder name after that first sign-in. But you can make sure it doesn't happen again. The trick is to create a local user account with the same name as what you want to use for your user profile folder. (Follow the instructions in "Adding and managing user accounts," in Chapter 5, "Managing and securing user accounts and passwords.") Then, after signing in for the first time using that local account, you can connect your Microsoft account.

In early 2026, Microsoft announced that it plans to change the setup process so that you can specify your preferred profile folder name when you first sign in. But until that change makes it to a public release of Windows 11, this workaround is your best alternative.

To see the folders included in your user profile, open its folder directly from C:\Users or from the dropdown menu at the left of the address bar. As you can see from Figure 7-1 earlier, the list includes some familiar destinations.

The personal data folders (Documents, Music, Pictures, and Videos) serve as the default location for applications that use those file types. The Downloads folder is the default location for any file you retrieve from the web. The Searches folder is still the default location for saving ms-search: shortcuts in File Explorer, although that option is rarely used. Many apps create shortcuts in the Desktop folder (sometimes asking your permission first); that folder is also a popular storage destination for some users. When you sync OneDrive or SharePoint to Windows 11, the folders containing the synced data stores appear here as well.

Inside OUT

Clean up the clutter in your user profile

A few of the folders included in a default user profile are vestigial elements from a bygone era, maintained only for compatibility purposes. The Contacts folder, for example, was used by the Windows Mail program in Windows Vista. The Saved Games folder dates back to the same era. Favorites and Links are holdovers from Internet Explorer days. None of those folders are relevant for Windows 11; if the clutter bothers you, it's safe to delete them.

How known folders work

Each subfolder in your Windows 11 profile is a *known folder*, which makes it a key part of the Windows namespace. A typical installation of Windows 11 Pro has more than 130 *known folders*,

each with its own Globally Unique ID (GUID) and an entry in the Windows registry at HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Explorer\FolderDescriptions.

Those per-user known folders can be redirected to locations other than the default path. Windows 11 does this automatically when you turn on the option to back up the Documents, Desktop, and Pictures folders to OneDrive to sync those folders to the cloud. (This feature is called OneDrive Known Folder Move. Details about that feature are in the next section.)

When a Windows app goes to open or save a file, it doesn't look for a hard-coded path. Instead, it looks in the registry to find the current location of that known folder.

Many known folders can be opened in the File Explorer address bar or from the Run box using a shell command— an address that begins with **shell:**. Type **shell:personal**, for example, to open the Documents folder; you'll be able to browse its contents regardless of its current location, because the shell: command knows to look in the registry for the correct destination.

NOTE

I've assembled a list of known folders and their accompanying shell command shortcuts for Windows 11, along with the PowerShell scripts to create and update those lists. You'll find them at *https://w11-io.com/Known-Folders*.

One distinguishing feature of each known folder in your user profile is that its Properties dialog contains a Location tab, which tells you the *target location* for that folder. Figure 7-4 shows an example of the Downloads folder, which is stored in its default location in my user profile.

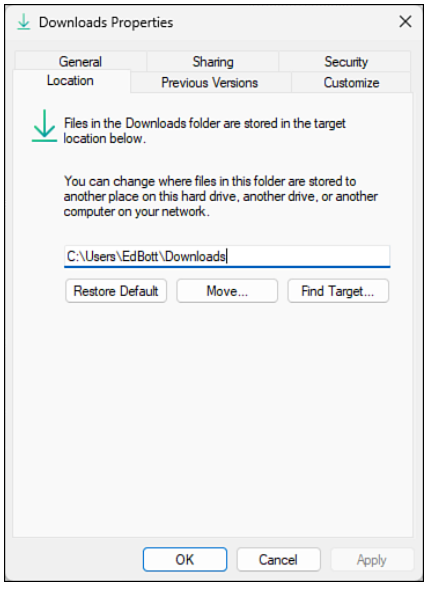


Figure 7-4 Known folders in your user profile include a Location tab that specifies the folder they're currently configured to use.

On PCs that include options for multiple storage devices, some people prefer to store documents and other personal data on a volume other than the one that contains system files. With this configuration, it's easier to organize large collections of data; that's especially true if you have a large collection of digital media files and prefer to manage them locally rather than in the cloud.

You can relocate some or all of your profile subfolders in Windows 11, just as you could in earlier versions. Follow these steps:

1. Open the folder you want to relocate, click the three dots at the end of the command bar, and choose Properties from the menu. (Or right-click the folder in the navigation bar and then click Properties on the shortcut menu.)

2. On the Location tab, click Move and browse to the folder you want to use as the location for that known folder. (You might need to create a new folder on the destination drive.) Click Select Folder to add that location to the Properties dialog.

3. Click OK to display a Move Folder dialog similar to the one shown in Figure 7-5.

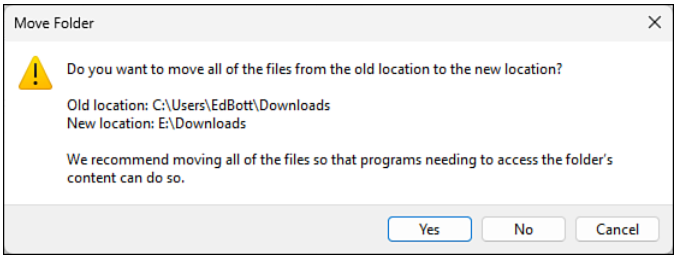


Figure 7-5 When moving the default location for a user profile folder to a new drive, it's wise to move its files as well.

4. Unless you have some good reason not to move the existing files from the original location to the new one, click Yes.

It's really not a good idea to click No in this dialog. If you want to keep your existing files separate from those you save in the future, move the old files to a subfolder in the new location instead of leaving them in the old location.

Using OneDrive and File Explorer together

OneDrive, Microsoft's cloud-based file-storage service, is a crucial part of the Windows experience.

When you use a Microsoft account to sign in for the first time on a new installation of Windows 11, the initial setup for the user profile connects your device to OneDrive using that account. (If

you sign in with a local account or a Microsoft Entra ID account, your PC is not automatically linked to OneDrive; you have to make that connection manually.)

Although you can use OneDrive on the web and on mobile devices, it is most useful when synced with a PC running Windows, especially in combination with the Office desktop apps in Microsoft 365. Windows 11 uses OneDrive to synchronize settings and save recovery keys for encrypted storage. By default, OneDrive cloud storage is tightly integrated with File Explorer. Configuring that integration properly is key to making effective use of OneDrive, and those settings are even more important if you prefer to work with an alternative cloud storage provider or with only local storage.

Inside OUT

OneDrive versus OneDrive for Business: What's the difference?

When you sign up for a free Microsoft account, it includes 5 gigabytes (GB) of OneDrive file storage. (Older accounts might have more generous free allowances.) You're the manager of that account. You can expand its capacity with paid upgrades to OneDrive storage or get a terabyte of cloud storage (1024 GB) with a Microsoft 365 Personal or Family subscription.

A Microsoft 365 Family subscription allows you to share your benefits with up to five Microsoft accounts, each of whom gets their own 1024 GB storage allotment, as well as the right to install the Office desktop apps on up to five computers. Each additional user manages their own OneDrive account. You have no access to their files and no additional management tools beyond the ability to remove them from the subscription.

Microsoft 365 Business and Enterprise subscriptions offer advanced management capabilities and at least 1024 GB of OneDrive for Business storage for each account, which you access using Microsoft Entra ID. These accounts are managed by an organization, which means that an administrator might place limits on your ability to share files and folders or to access OneDrive for Business files from a device that isn't registered with your organization.

OneDrive and OneDrive for Business use a common sync client, which is available for every major desktop and mobile operating system. In Windows 11, this sync client is built in and is updated automatically.

NOTE

You can connect one and only one Microsoft account to Windows to access the consumer version of OneDrive in File Explorer. You can connect multiple Microsoft Entra ID accounts for access to multiple OneDrive for Business storage allocations. Each connected account gets its own icon at the top of the File Explorer navigation pane.

If you didn't connect to OneDrive during Windows Setup, clicking the OneDrive icon in File Explorer's navigation pane opens a dialog where you can specify which account you want to use and, optionally, specify the local folder where you want the synced files stored. (The default location is a new folder in your user profile, with OneDrive's distinctive cloud icon and a folder name that identifies the account you used and whether it's personal or business.)

Inside OUT

Move your local storage folder after setup is complete

Unlike many other data folders in your user profile, the OneDrive sync folders don't include a Location tab as part of the properties dialog. That's why I recommend that you make this configuration decision wisely when you first link your OneDrive account to your PC.

But if you realize after the fact (and after syncing lots of files) that you want to move the OneDrive folder, there's a relatively simple workaround.

Right-click the OneDrive icon in the system tray and then click Settings (or click the OneDrive badge in the File Explorer address bar and then click the gear icon). On the Account tab of the OneDrive Settings dialog, click Unlink This PC—don't worry, your local files and those in the cloud are unaffected. After OneDrive confirms that your account is unlinked, move the (now unsynced) local folder, and then go through OneDrive setup again. When you get to the step that asks you to confirm where your synced files will be stored, click Choose Location and select the folder that contains your relocated data folder as the sync location. (You're asked to confirm that you want to merge the local files into your cloud storage.)

When setup is complete, OneDrive confirms that the files in the cloud match those in the new location. The process should go swiftly, with no loss of data.

Note that the Microsoft account you link in OneDrive does not have to be the same one you use to sign in to Windows, although that's the most common (and logical) configuration. If you decide, for whatever reason, that you want to use a different OneDrive personal account than the one you sign in with, you first have to unlink the default account; click the OneDrive badge in the File Explorer address bar and then click the gear icon to open OneDrive Settings and, on the Account tab, click Unlink This PC.

To add a OneDrive for Business account, open OneDrive Settings, switch to the Account tab, and click Add An Account. After entering your credentials, go through the OneDrive setup wizard, which creates a local folder to hold your synced files. Repeat this process if you want to set up additional OneDrive for Business accounts.

After that setup and an initial sync are complete, clicking that icon in File Explorer's navigation pane displays the contents of that cloud storage account. Click the OneDrive icon at the left of the address bar to open a dialog like the one in Figure 7-6, which displays crucial details about the account's status and shows off OneDrive's most impressive feature.

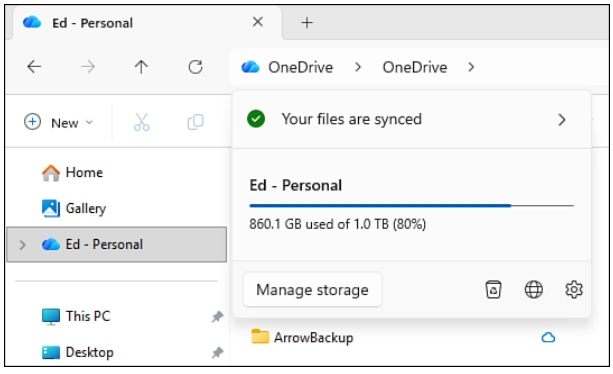


Figure 7-6 Even though this computer has only 128 GB of local storage available, it can allow access to a much larger collection of online files thanks to the Files On-Demand feature

The example in that figure is from a computer with a 128 GB system drive. The connected OneDrive account contains more than 860 GB worth of files and folders, and any one of them can be opened by double-clicking its listing in the contents pane. How is that possible?

The secret is a feature called Files On-Demand. File Explorer shows a full listing of the files and their contents, but they're not actually downloaded until they're needed. Depending on the size of the file, that might cause a brief delay between the time you double-click a file and when it opens in the associated app. That trade-off is worth it, though, knowing you can have ready access to hundreds of gigabytes of cloud-based files even on a device that has only a fraction of that space available for data storage.

With Files On-Demand enabled, a green badge alongside each file or folder displays its availability status. Figure 7-7 shows the three status icons available, as depicted during the OneDrive setup process.

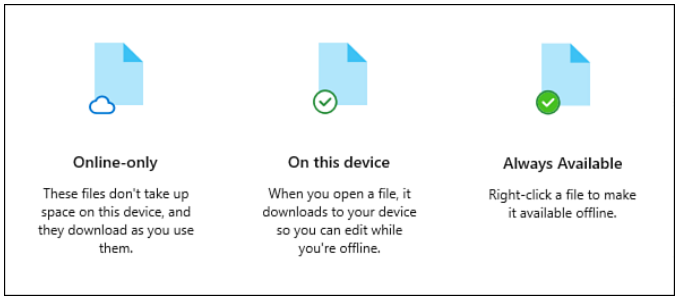


Figure 7-7 These badges, alongside each file and folder, indicate its current status. Online-only files take up virtually no local disk space but can be downloaded on demand.

A cloud icon means that the file is available only when you're online. A check mark in a white circle means the file has been downloaded and is available on the device. A check mark in a green circle means the file is always available. Items that are currently being synced (or are pending sync, because you have them open) are denoted by rotating arrows.

To see exactly how much local disk space OneDrive is currently using, right-click its icon in the navigation pane and choose Properties. On the General tab, the Size value shows how much of the total OneDrive storage space is in use; the Size On Disk value shows how much space is being used by files that have been downloaded for offline use.

On a device with sufficient storage, you can sync your entire cloud file collection; just make sure there's enough disk space to handle all the photos, music files, video clips, and documents stored there. On devices that have limited local storage, you can selectively sync folders in the cloud to the local device so that those files are available even when you're offline.

By default, all files and folders are marked initially as Available When Online. Their status changes to Available On This Device after you double-click an item to download it. If you want one or more individual files or folders to be available at all times, right-click the item and choose Always Keep On This Device. Note that if you choose this option for a folder, any new files you save in that folder are automatically marked as Always Available On This Device.

With Files On-Demand enabled, you can selectively show or hide files and folders in File Explorer. This strategy is useful if you have some files archived in OneDrive that you don't need to access on an everyday basis. Click the OneDrive badge in the File Explorer address bar, then click the gear icon to open the OneDrive Settings dialog for that account. Click the Account tab, and then click Choose Folders. By default, all folders and all files are selected. From the list of folders, as shown in Figure 7-8, clear the checkbox for any you want to keep online without displaying them in File Explorer.

You can recover all the space used by the Files On-Demand feature if necessary; doing so removes everything that you downloaded on a temporary basis from OneDrive. To make this happen, open OneDrive Settings, click the Sync And Backup tab, open the Advanced Settings section, scroll down to the Files On-Demand section, and then click Free Up Disk Space.

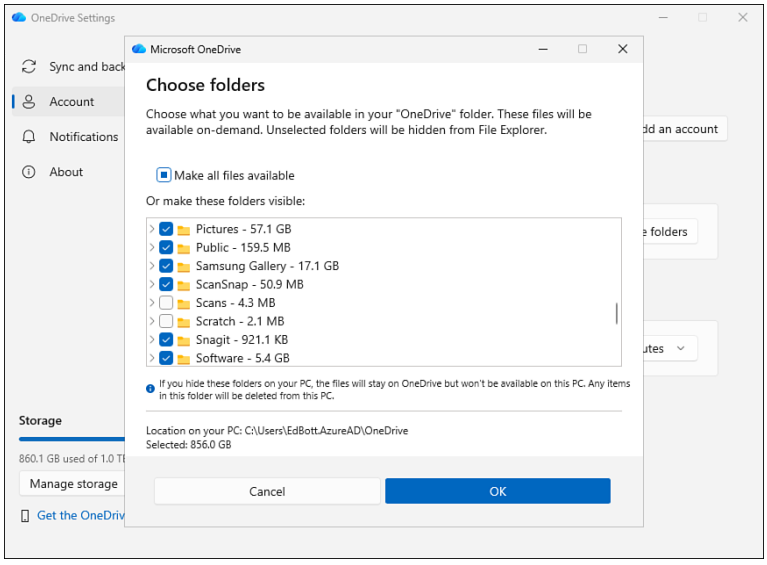


Figure 7-8 Clear the checkbox next to any OneDrive folders you prefer not to see in File Explorer.

Setting up and managing OneDrive folder backup

When you set up a new PC using a Microsoft account and choose the default options, Windows Setup enables a feature that automatically backs up your Desktop, Documents, and Pictures folders to OneDrive. In Windows 11 version 25H2 and later, you have the option to store files locally instead of turning on OneDrive folder backup, as shown in Figure 7-9.

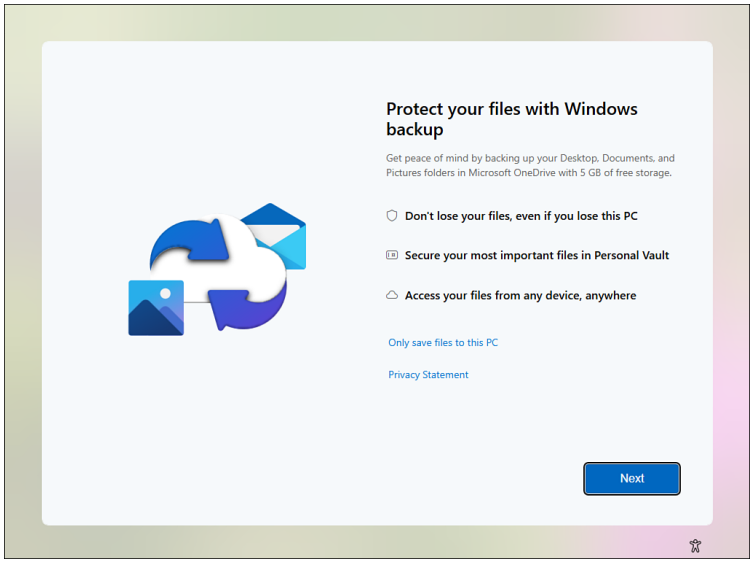


Figure 7-9 If you click Next in this dialog when setting up a new profile, Windows turns on One-Drive backup; click Only Save Files To This PC if you'd prefer not to use this feature.

To specify that you don't want to use OneDrive backup, click the small Only Save Files To This PC link in the middle of the page. If you miss that option and simply click Next, Windows Setup enables this backup feature. The result can be an unpleasant surprise if you're not prepared for it. This section explains how OneDrive backup works and how you can manage it—including how to turn it off.

By default, OneDrive backup is available for three folders in your user profile: Desktop, Documents, and Pictures. When you turn on the option to back up your folders, Windows checks your OneDrive account to see if you already have folders with those names and, if necessary, creates those folders. Next, Windows moves all files from those three local folders to the equivalent local folders in your OneDrive data store and sets them to Always Available. Finally, Windows changes the location assigned to the known folders in your user profile so that when you click on Documents, you open the synced folder.

With OneDrive backup on, the directory structure looks like the listing shown in Figure 7-10.


```
C:\
 ├─ Program Files\
 ├─ Program Files (x86)\
 ├─ Windows\
 ├─ ProgramData\
 └─ Users\
      ├─ Default\
      ├─ Public\
      └─ <username>\
           ├─ OneDrive\
           │    ├─ Desktop   ← redirected known folder
           │    ├─ Documents ← redirected known folder
           │    ├─ Pictures  ← redirected known folder
           │    └─ Other OneDrive content
           ├─ Downloads      ← still local
           ├─ Videos         ← still local (unless manually redirected)
           ├─ Music          ← still local (unless manually redirected)
           └─ AppData\
                ├─ Local\
                ├─ LocalLow\
                └─ Roaming\
```

Figure 7-10 With OneDrive backup on, these three folders are moved from their original locations into the OneDrive folder and sync with the cloud.

Compare that arrangement of folders with the default structure shown in Figure 7-3 earlier to see exactly what's changed.

To confirm whether OneDrive backup is set up, open File Explorer and click the Desktop, Documents, or Pictures folders in Quick Access. If you see a Status column with cloud icons, that icon has been redirected to OneDrive.

To check the status of those known folders manually, enter their respective shell commands in the File Explorer address bar— **shell:Desktop**, **shell:Personal**, or **shell:My Pictures**. If the address bar shows a location in the OneDrive folder, then backup is on.

The benefits of OneDrive backup are significant, especially if you have a Microsoft 365 subscription with 1 TB of storage available. You don't have to worry that you'll lose important files if your system drive fails, and the versioning control means you can recover earlier drafts of documents, spreadsheets, and presentations you created and saved using Office apps. The files are available on any PC or mobile device where you sign in using that account.

If you don't have a Microsoft 365 subscription, the drawbacks are obvious. The free 5 GB allocation might seem like a lot at first, but it can fill up quickly, especially if you have more than one device backing up those folders to OneDrive. You're also likely to encounter problems with third-party programs that store configuration and data files in the Documents folder and have their own sync capabilities.

To manage OneDrive Backup or turn it off completely, go to OneDrive Settings, select the Sync And Backup page, and click Manage Backup. (If you're signed in using a personal Microsoft account, an easier way to reach that dialog is by going to Settings > Accounts > Windows Backup. In the OneDrive Folder Syncing section, click Manage Sync Settings.) That opens a dialog like the one shown in Figure 7-11.

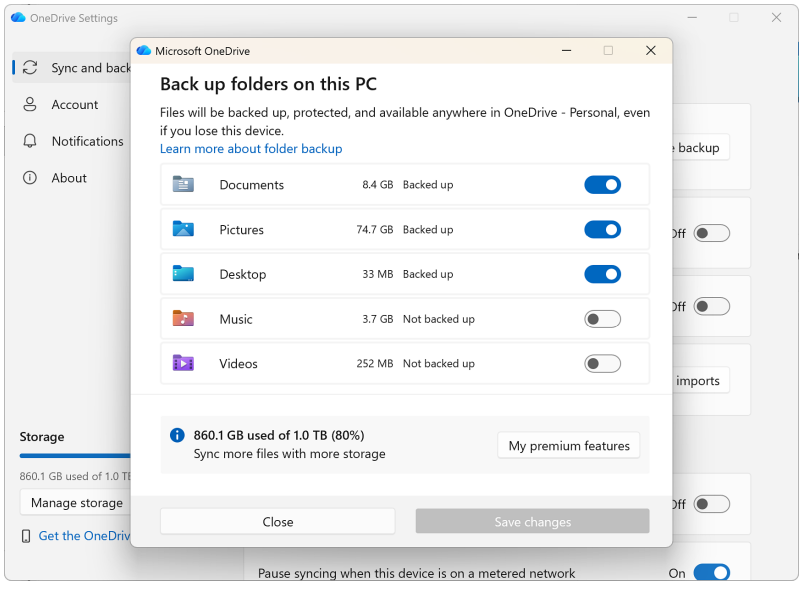


Figure 7-11 To stop backing up one of these folders to OneDrive, slide its switch to the Off position.

In Windows 11 version 25H2 and later, turning off OneDrive backup for any folder opens a dialog like the one shown in Figure 7-12, where you have the option to specify where you want the previously backed-up files to be stored. If you're turning this feature off because you've run out of OneDrive space, choose the Only On My PC option to move the files back to a local folder.

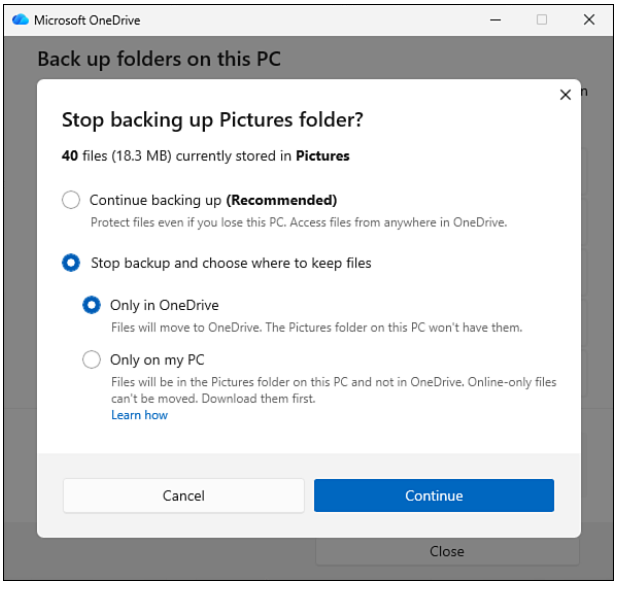


Figure 7-12 When you turn off OneDrive backup, choose where you want to save the previously backed-up files.

You must repeat this process for each folder where you want to stop OneDrive backup.

Inside OUT

Disable OneDrive integration with Windows 11

Maybe you're philosophically opposed to storing files in the cloud. Maybe you prefer a cloud service from another provider. Or maybe you just don't see the need for OneDrive. Regardless of the reason, if you don't want to use OneDrive, you're free to disconnect it. If you haven't yet signed in to OneDrive, click Cancel when you see the prompt to sign in to the sync client; all your files will remain on your local drive or your network. If OneDrive is connected to your Windows account, open OneDrive Settings and, on the Account tab, click Unlink This PC.

After unlinking the account, open OneDrive Settings, go to the Sync & Backup tab, and clear the Start OneDrive When I Sign In To Windows check box. Doing so tells Windows not to load the sync client at startup, making it even easier to steer clear of the cloud.

That option does, however, leave the OneDrive icon in the navigation pane of File Explorer. To make it disappear, you need to make a simple registry edit.

In Windows 11 Pro or Enterprise, you can use Group Policy to make this change. Open Local Group Policy Editor (Gpedit.msc) and go to Computer Configuration >

Administrative Templates > Windows Components > OneDrive. Double-click the policy Prevent The Usage Of OneDrive For File Storage and set it to Enabled. After you restart your PC, the OneDrive icon is no longer in the navigation pane, and the sync client no longer runs.

On devices running Windows 11 Home, where Group Policy isn't available, you must edit the registry manually. Using Registry Editor, navigate to HKLM\Software\Policies\Microsoft\Windows\OneDrive. (If that key doesn't exist, you need to create it.) Add a new DWORD value, DisableFileSyncNGSC, and set it to 1. Restart the PC to make the policy setting effective.

Note that this change applies to every user of the selected device. Any previously synced files stored in the local OneDrive folder are still available but are no longer linked to their cloud counterparts.

What happened to libraries?

Nearly two decades ago, with the release of Windows 7, Microsoft introduced a new way of organizing files. A *library* is a virtual folder that aggregates the contents of multiple folders stored on your computer, on your network, or in the cloud. You can sort, filter, group, search, arrange, and share the data in a library as if it were in a single location.

The feature still exists in Windows 11, but libraries are hidden by default, and for most people, it's probably a good idea to leave them that way. Libraries were designed to organize files in an era when Windows PCs were a hub for digital media and when cloud storage was slow and expensive. Today, you're much more likely to stream music from an online service like Spotify or Apple Music, and your digital photos are probably being saved in OneDrive, Google Photos, or Apple's iCloud.

Libraries are still useful for photographers and other creative professionals who need to manage large collections of digital media files, with working files on a local drive and archives scattered across multiple locations, including network folders and external drives. The Gallery node in File Explorer's navigation pane serves the same function, with a more modern management interface, as described in "Managing digital photos and videos in the Gallery," later in this chapter.

Researchers might also find libraries valuable for keeping projects organized—creating a separate library for each project that includes your local project folder and the shared folders where coworkers store templates, graphics, and submissions from outside contributors.

To make the Libraries node in File Explorer visible, right-click any empty space in the navigation pane and click Show Libraries. Figure 7-13 shows an example, with Windows 11's four default libraries—Documents, Music, Pictures, and Videos—visible. You can create additional libraries to suit your storage needs, and you can customize any library by changing or adding to the physical folders that make up that library.

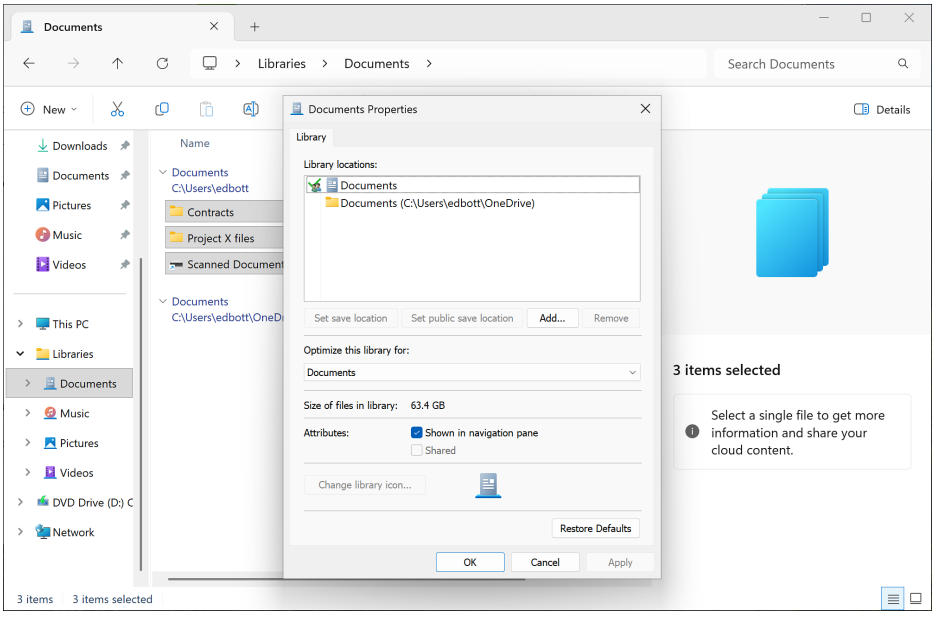


Figure 7-13 Libraries are hidden by default in Windows 11. If you choose to make them visible, you can customize the default libraries and add your own.

The most important limitation of libraries is that their unified search capability requires that all folders in the library be compatible with the Windows Indexing Protocol. If you add a shared folder to a library that's located on a network-attached storage device that doesn't support Windows indexing, the entire library defaults to basic searches that don't support any metadata except Name, Date Modified, and Size.

To learn more about this feature, see the Microsoft Learn article "Windows Libraries," at *https://w11-io.com/Windows-Libraries*.

Managing disk space

Two long-term trends have converged in recent years to change the way PC makers approach data storage. Solid-state drives (SSDs) have become commodities and provide fast, reliable storage for devices at all price points. In addition, dramatic increases in internet speeds have made cloud storage more practical; as a result, system drives don't need to be enormous to be useful.

On a desktop PC, you have the option to expand storage by replacing the primary drive with one that's faster, larger, or both; on most full-size desktop PCs, you can also install additional drives to make room for extra data files. Many laptops and tablets, on the other hand, provide built-in primary storage that is soldered to the system board and can't be replaced. (Some models in Microsoft's Surface line use SSDs in a compact M.2 2230 form factor, which are accessible via a small external door. That design makes the device more repairable, and it also allows for easy DIY storage upgrades.)

NOTE

For some portable devices, the option to expand storage using inexpensive removable media is available. Some PCs, for example, include a slot that accepts removable storage in the form of an SD or MicroSD card. The primary use case for that slot is to transfer files from devices like digital cameras, but it's possible to add a card and treat it as dedicated storage. That option is slow but can be useful for backups or temporary file storage.

Managing storage on a Windows 11 device involves two separate challenges:

- Setting default file locations to make the best use of available storage
- Performing occasional maintenance to ensure that useful space (especially on the system drive) isn't being wasted with unnecessary files

For an overview of how much total storage is available and what's in use on a Windows 11 device, open Settings > System > Storage to see a page like the one shown in Figure 7-14. This example shows a laptop PC with a system drive (C:), on which 460 GB of a total capacity of 703 GB is currently in use.

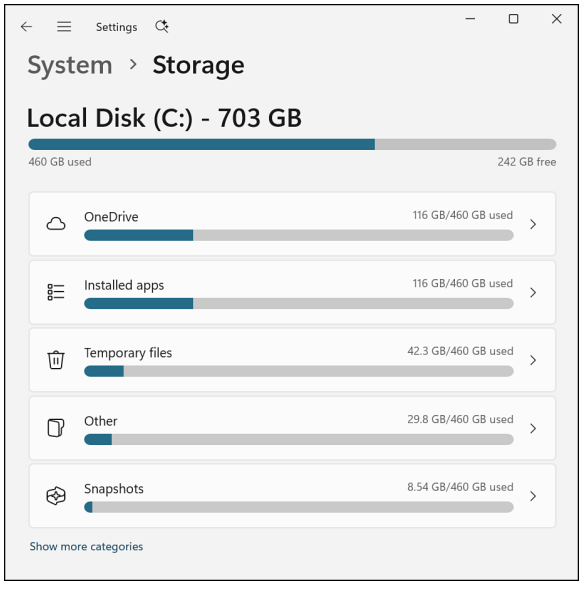


Figure 7-14 The Storage page in Settings shows how much storage is in use on each drive in the current system.

Inside OUT

Why is the actual storage capacity lower than the advertised disk sizes?

When you use Microsoft's built-in disk utilities to view the storage capacity of a disk, the capacity is reported by using the binary system (base 2) of measurement: 1 KB is 1,024 bytes; 1 MB is 1,024 KB; 1 GB is 1,024 MB; and so on. Thus, measured in binary terms, 1 GB is calculated as 1,073,741,824 bytes. But the makers of storage devices and the PC makers who build SSDs and hard disks into their products typically advertise storage using the convenient metric that 1 GB is equal to 1 billion bytes. That difference is why a system advertised with 1 TB of storage displays only about 951 GB when detailed in Disk Management and other Windows tools. Fortunately, those same tools are also capable of reporting the number of bytes of storage, which allows more accurate comparisons with the advertised space.

The initial view on this page shows only the top five categories, which in this example represent about two-thirds of the total storage in use. To see the full list, click the Show More Categories link below this list. For more details about space consumption in a particular category, click the category name.

For most categories, the detailed breakdown is purely informational, with no direct management options, although some include buttons that take you to the associated app or folder. The one noteworthy exception is Temporary Files, shown in Figure 7-15, which displays a detailed list of files that can be safely removed, with a checkbox next to each subcategory. After making your selection, click Remove Files to delete the selection and reclaim the disk space those files are using.

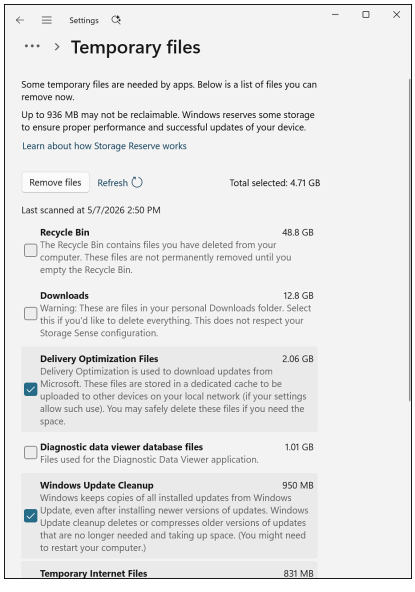


Figure 7-15 As you dig deeper into the details of storage usage, you get a clearer picture of which features and apps are using the most disk space.

Here are some examples of what's in various top-level categories:

- **System & Reserved** This category is typically large and includes files that are essential to the operation of the system. The actual amounts of storage in use depend on the type of device and how much memory it contains. More memory means a bigger paging file, for example, which is reflected in the Virtual Memory subcategory.
- **Temporary Files** The total shown here includes files that are managed by Windows but are not typically necessary for the operation of a Windows 11 device.
- **Installed Apps** This category includes default apps as well as legacy desktop apps and those you downloaded from the Microsoft Store.
- **Documents, Pictures, Music, Videos** These separate categories show how much space is in use in each of the default save locations for the respective file types. Note that this value is not the total found in the libraries of the same name. If any of those folders have been relocated to OneDrive, this value shows the local disk space in use.
- **Mail** This value measures the space used by local copies of messages saved using the default mail app. Clicking or tapping the Manage Mail button takes you to the default email app.
- **OneDrive** Check this category to see the total amount of space used by local copies of files synced from OneDrive.
- **Desktop** This total should be small unless you use the desktop as a dumping ground for downloads and other potentially large files.
- **Maps** Windows 11 no longer includes a Maps app and no longer uses offline maps. Any data in this category can safely be deleted.
- **Other People** This category displays the total amount of space in use for data files from other user accounts, not broken down by file types.
- **Other** If you have large collections of files that don't slot into the standard categories, you might see a very large Other category. The types of large files that might show up in this category include Hyper-V virtual machines and associated VHD files, as well as ISO files.

If you have multiple storage devices available, click Advanced Storage Settings > Storage Used On Other Drives. The resulting display includes USB disks, flash disks, and other media. Click any drive to display a categorized list that you can navigate in the same way as the one available for the system drive.

Changing default save locations

On systems with multiple drives (including removable media), you can change the default location for specific file types. This feature made sense in a bygone era, when some desktop PCs had multiple hard drives storing large media collections. It also made sense on small tablets with tiny system drives, where the option to store apps on a removable SD card was available. It's much less useful with modern PCs that have adequate local storage and additional storage available in the cloud.

You can find this option in Settings > Storage > Advanced Storage Settings > Where New Content Is Saved. That page contains a total of six categories, including several data types that Windows 11 no longer supports—movies, TV shows, and offline maps.

NOTE

Changing the default location for a file type affects the storage of new items. It does not move current items.

When you set the default save location for any of these categories to a secondary drive, Windows 11 creates folders on that drive, with subfolders that correspond to the category name for each file type within a folder named after your user account name. This has the potential to create a confusing mess, which is why I don't recommend using this feature.

Cleaning up unneeded files

A feature called Storage Sense is designed to free up disk space automatically by deleting files that Windows determines you no longer need. In Windows 11 version 25H2 and later, it is turned on by default. To fine-tune its capabilities, go to Settings > System > Storage and click the the Storage Sense pane to open a page like the one shown in Figure 7-16.

Normally, Storage Sense runs only when you're low on disk space. If you prefer to run a more aggressive cleaning routine, change the Run Storage Sense option to one of its alternatives: Every Day, Every Week, or Every Month.

In its default settings, Storage Sense empties the Recycle Bin every 30 days. You can change this value to 1, 14, or 60 days. Alternatively, if you have ample disk space and you would rather preserve the option to recover files from the Recycle Bin for as long as possible, you can set it to Never.

The Downloads folder has the potential to swell to gargantuan size if left unchecked. The Delete Files In My Downloads Folder If They Haven't Been Opened For More Than option allows you to automatically purge those old files to make room for a new batch of downloads. (This setting works best if you're diligent about moving downloads that need to be kept for long-term storage to an alternate folder.)

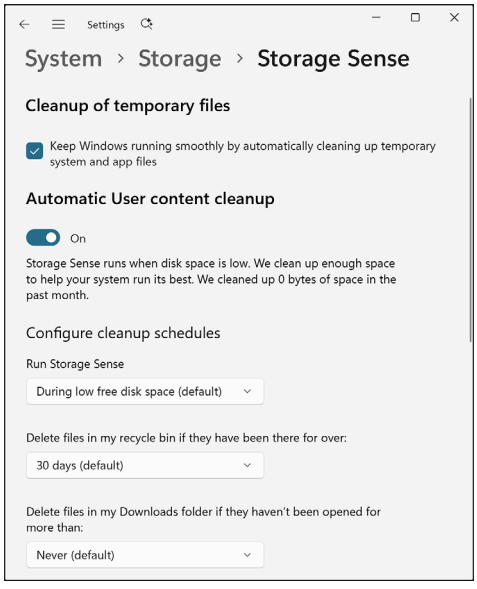


Figure 7-16 The Storage Sense option automatically deletes files that Windows determines are unnecessary, based on the preferences you choose here.

Storage Sense also offers the option to purge locally available copies of files from OneDrive, OneDrive for Business, and SharePoint accounts. For each such category, you can specify an age for files: 1 Day, 14 Days, 30 Days, to 60 Days or Never.

At any time, you can perform ad-hoc deletions of temporary or download files. Scroll to the bottom of the Settings page and click Run Storage Sense Now to carry out the specified deletions.

NOTE

The legacy Disk Cleanup utility (Cleanmgr.exe) is still included with Windows 11, but most of its functions have been moved to the modern Settings app, and there's little reason to use it these days. If you prefer its decidedly old-school interface, be sure to run it as an administrator so that it can access the full range of cleanup options.

CAUTION

You might be tempted to obsess over disk space usage and use every trick to create as much free space as possible. That strategy might come back to haunt you, however. If you remove previous Windows installations, for example, you lose the ability to roll back to a previous version to recover from compatibility problems. As a general rule, I recommend keeping at least 20 percent of total disk capacity free. That allows enough room to process temporary files properly without affecting performance dramatically. Beyond that baseline, think carefully before deleting what might be important files.

How to use File Explorer like an expert

You can't become a Windows expert without learning how to move quickly and confidently through File Explorer. This general-purpose tool is used throughout Windows for all sorts of file-management tasks, for opening and saving files in Windows apps, and even in parts of the Windows shell. The more you understand about how File Explorer works, the more effective you'll be at speeding through tasks without unnecessary delays.

Inside OUT

Zoom through File Explorer with keyboard shortcuts

You can find File Explorer in various places in Windows 11, but if you're handy with the keyboard, don't bother hunting for it. Press Windows key+E to open a new instance of File Explorer directly. If you want to jump to an open instance of File Explorer, use the taskbar keyboard shortcut, Windows key+*number*, where *number* marks the position of the File Explorer button on the taskbar. On a clean install of Windows 11 version 25H2, for example, the File Explorer button is in the second position, just to the right of the Copilot button, so unless you've changed the layout, Windows key+2 should switch between open File Explorer windows.

In the transition from Windows 10 to Windows 11, File Explorer received a serious makeover. The navigation pane has been reworked, as you saw at the beginning of this chapter. In Windows 11 version 22H2, File Explorer added the option to display the contents of folders in separate tabs within a single window. The Office-style ribbon, which had been a signature feature of File Explorer in Windows 10, is replaced by a simpler command bar that puts most features just a click or two away.

At the far left, the command bar contains a New button, which you can use to create a new folder, shortcut, or blank document in any of several file formats; that's followed by the Cut, Copy, Paste, Rename, Share, and Delete buttons, which are available only if the current selection supports them. The Sort menu allows you to change the sort order of whatever's currently displayed in the contents pane; it includes a Group By option that we'll get to later in this section.

Options on the View menu change how items in the contents pane appear—Details or Large Icons, for example. Options at the bottom of that menu allow you to choose which button appears at the far right of the command bar, Details or Preview. At the very bottom of the View menu, click Show to find options to display item checkboxes (which make it easier to select multiple items without holding down shortcut keys), to display file name extensions, and to show hidden files.

The See More menu, represented by the ellipsis at the right side of the command bar, contains some useful menu options: Select All, Select None, and Invert Selection, for example. (That last option is a great way to select a large number of files while leaving only a few unselected. Control+click to select the files you want to leave unselected, then click the Invert Selection option to select all the remaining files and clear the ones you previously selected.) When a file or folder is selected, you can use the Copy Path menu item to paste the location of that object into a Command Prompt or PowerShell window.

As is the case elsewhere in Windows, right-clicking any object (or a blank space in a window) is often the most effective way to get things done. In Windows 11, right-clicking in File Explorer reveals a simplified shortcut menu that usually, but not always, has the option you're looking for on it. If you need access to an option that isn't on this short menu, click Show More Options to see the full, old-style menu. Figure 7-17 shows the short menu (left) and the corresponding full menu (right) for an image file.

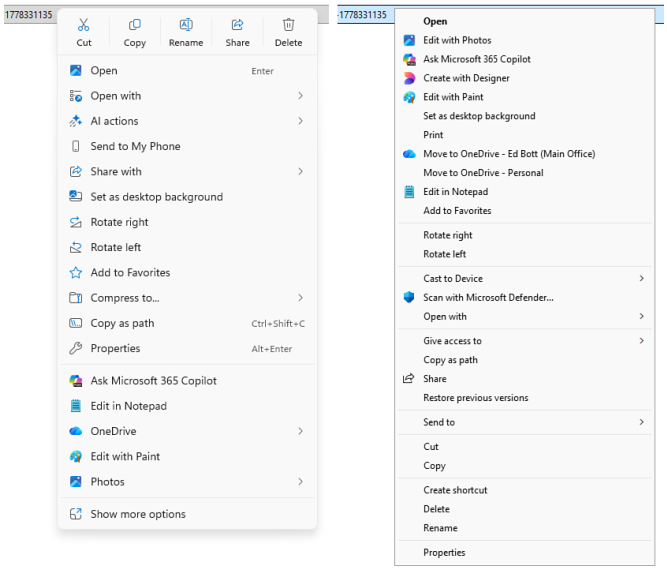


Figure 7-17 By default, right-clicking menus in File Explorer shows a simplified selection of commands (left). Click Show More Options to see the full menu (right).

If you'd rather bypass the short menu and go straight to the full menu, hold down Shift as you right-click. As I was preparing the final version of this chapter, Microsoft was testing a change to File Explorer that will allow you to customize the short menu. Look for a Customize Menu option at the bottom of the shortcut menu, which leads to a new Context Menu page in Settings > Personalization.

Inside OUT

Switch back to full right-click menus in File Explorer

If you've given the simplified menus a proper trial and you just can't get used to them, it's easy enough to tweak Windows so that it always shows the full menus. Right-click Start and choose Terminal (Admin). In the resulting PowerShell or Command Prompt window, enter the following command:

```
Reg.exe add "HKCU\Software\Classes\CLSID\{86CA1AA0-34AA-4E8B-A509-
50C905BAE2A2}\InprocServer32" /f /ve
```

(Note the use of curly braces around that long GUID,and be sure there are no spaces in the registry key defined between quotation marks.)

After issuing this command, restart your PC or open Task Manager, select Windows Explorer, and click Restart Task. To restore the Windows 11 simplified menus, use this command to delete the key you added previously:

```
Reg.exe delete "HKCU\Software\Classes\CLSID\
{86CA1AA0-34AA-4E8B-A509- 50C905BAE2A2}"
```

After making that change, the default (short) menus return immediately.

After File Explorer is open, you have a wide assortment of keyboard shortcuts to choose from. Pressing Ctrl+N opens a new window for the current folder. Ctrl+T opens a new tab displaying the File Explorer Home. Ctrl+W closes the current tab. The following additional keyboard shortcuts work in File Explorer:

- **Alt+Up Arrow** Go up one level.
- **Alt+Left Arrow** Go to the previous folder in history.
- **Alt+Right Arrow** Go to the next folder in history.
- **Alt+D** Move the focus to the address bar and select the current path.
- **Ctrl+Tab** Move to the next tab.
- **Ctrl+Shift+Tab** Move to the previous tab.
- **F4** Move the insertion point to the address bar and display the dropdown menu of previous addresses.
- **Alt+Enter** Show properties of the selected file, folder, or drive.

- **Tab** Cycle through the following elements: tabs, navigation controls, address bar, search box, command bar, navigation pane, contents pane. After reaching any of those destinations, use the arrow keys to move through the controls or contents and press Enter to make a selection.
- **F11** Switch in and out of full-screen mode.
- **Ctrl+Shift+N** Create a new subfolder in the current folder.
- **Ctrl+Shift+E** Expand the navigation pane to the current folder.

Customizing File Explorer Home

Over the first five years of Windows 11's existence, Microsoft has tinkered repeatedly with the basic layout of File Explorer's Home page. As of version 25H2, it consists of two sections, arranged horizontally, as shown in Figure 7-18.

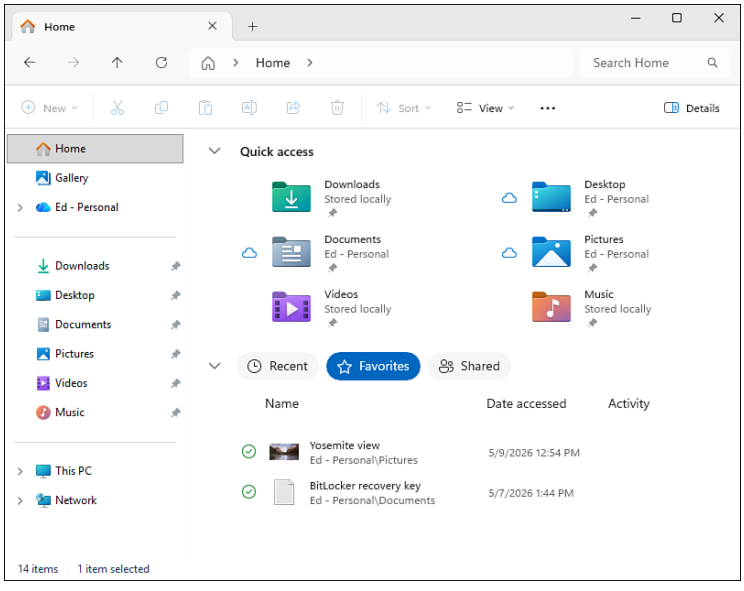


Figure 7-18 File Explorer Home offers only minimal customization options.

In this default layout, the top section duplicates the Quick Access section from the navigation pane. Windows automatically pins the Desktop, Downloads, Documents, and Pictures folders to Quick Access. To add to that selection, right-click any folder and choose Pin To Quick Access. You can unpin a pinned folder by right-clicking it and then clicking Unpin From Quick Access.

In addition to pinned folders, Quick Access includes folders you've worked with recently, in a lineup that shifts depending on your work habits.

If you have a Microsoft 365 account, you might prefer to replace that section with the Recommended section, which shows individual files from your recent activity that you might want to keep working with. To adjust this option, click the See More menu at the end of the command bar, then click Options. On the General tab, in the Privacy section, select the Show Recommended Section checkbox to show it instead of Quick Access.

NOTE

In early 2026, Microsoft announced plans to change these settings to give you more control over the layout of File Explorer Home, with more granular options to configure which types of files and which sections are visible. The description here applies to public releases of version 25H2 in September 2026.

The section immediately below Quick Access offers similar access to individual files, with three headings to choose from: Recent, Favorites, and Shared.

The Recent section contains files you've opened, sorted with the most recently used file at the top. Right-click any file name and then click Open File Location to go directly to the folder in which that file is stored. If you find that you no longer need to see a particular file in this list and want to make room for another, you can right-click that file and then click Remove From List.

The Favorites section includes any files you tag as Favorites in Office apps (Word, Excel, and so on). You can also right-click any file in File Explorer and choose Add To Favorites to pin it to this list. (Note that, unlike the folders in Quick Access, pinned files in Favorites do not include a pin icon.) If you no longer need to see a file in that list, right-click the file name and click Remove From Favorites to clear its entry.

The Shared section shows files that other people have chosen to share with you from OneDrive. It also includes file attachments in Office-compatible formats that you've received in email messages.

File Explorer's Home page is an extremely handy navigational tool, because it gathers together the stuff you're most likely to be concerned with, regardless of where that stuff is actually stored. But if you don't need it, or you're not keen on having other people see what you've been working on when they peer over your shoulder, you can tell Windows not to display activity from your Microsoft 365 account or show recent files or folders unless you specifically add them as Favorites. To do this, click See More > Options. On the General tab of the Folder Options dialog, the checkboxes you need are in the Privacy section, as shown in Figure 7-19.

(If you just want to cover your immediate tracks without changing the overall behavior of File Explorer, it's probably simpler to click Clear in the Privacy section.)

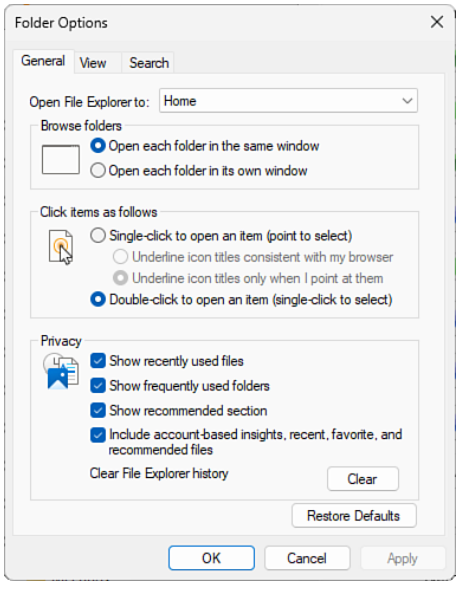


Figure 7-19 Use the checkboxes under the Privacy heading to tell Windows not to automatically show certain types of content on the File Explorer Home page.

Layouts, views, and other ways to arrange files

You can adjust the display of any individual folder's contents in File Explorer using options on the View menu. For folders containing documents, your choices are numerous: Icons (in four sizes), List, Details, Tiles, and Content. Display options are folder-specific and persistent.

The range of options for the various icon layouts is larger than it looks. Although there are four discrete choices available at the top of the View menu—Extra Large Icons, Large Icons, Medium Icons, and Small Icons—the actual number of sizes is 76. You can cycle smoothly through all 76 sizes by choosing one of the four preset sizes (View > Large Icons, for example) and then holding down the Ctrl key as you turn the wheel on your mouse or use the zoom/shrink motion with two fingers on a trackpad. With each step, you see the icons grow or shrink (although at some of the smaller sizes, the change is barely perceptible).

The remaining four options work as follows:

- **List** This view is extremely efficient, displaying file names only, arranged in columns.
- **Details** This view is one of the most important alternatives, offering a multicolumn tabulation of your files that unlocks a wide range of sorting, filtering, and grouping options, which I'll get to later in this chapter.

- **Tiles** Choose this view to display each file and folder in a single rectangle that displays a thumbnail (or icon, for files that don't support thumbnails) with the file name, type, and size in three lines of text to the right of the thumbnail.
- **Content** In this view, listings are arranged in multiline bands that take up the full width of the window.

One additional option on the Show menu, Compact View, shrinks the spacing between items in the navigation pane and, in List and Details views only, between items in the contents pane.

The folder type determines the default arrangement of column headings in Details view, but you can tailor this arrangement in any folder. To add or remove a column heading, right-click anywhere in the row of column headings. If the list of column headings that appears doesn't include the one you want, click the More option at the bottom of the list. As Figure 7-20 shows, the Choose Details dialog that appears next provides you with a wealth of choices—more than 300 if you scroll through the entire list.

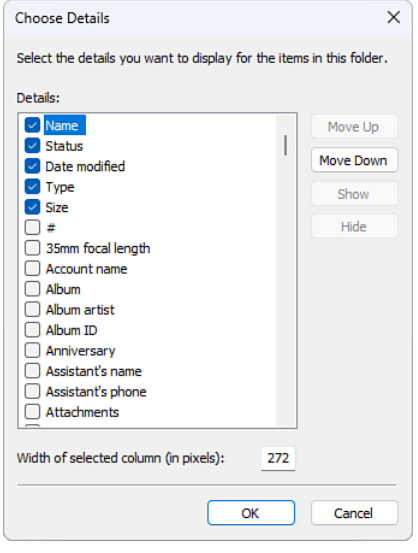


Figure 7-20 Use this exhaustive list to customize which headings are displayed in Details view. The presence of the Status heading indicates this is a synced OneDrive folder.

In the Choose Details dialog, column headings that are currently visible appear at the top of the list. Use the Move Up and Move Down buttons to change the order in which headings appear. (You can also change the column order in File Explorer by dragging headings with the mouse.)

Inside OUT

Use keyboard shortcuts to change views

Each of the eight options on the View menu has an easy-to-remember keyboard shortcut: Ctrl+Shift+*number*, where *number* corresponds to the position on the View menu. If you don't feel like memorizing the entire menu, it's worth noting that Ctrl+Shift+6 corresponds to Details view and Ctrl+Shift+2 is Large Icons. For those two views, you can also use the unobtrusive buttons in the lower-right corner of the File Explorer window. Allow the mouse pointer to hover over either of those buttons for a quick reminder of their function and the keyboard shortcut.

Initially, all folders intended for the storage of user data (including those you create) are assigned one of five folder templates that define the default headings File Explorer considers appropriate for the content type. The logic is straightforward: You probably want to sort a folder full of MP3 tracks by track number, and the Date Taken column is extremely useful for filtering digital photos, but neither column would be particularly useful in a folder full of Microsoft Word documents.

The final option on the View menu, Show, leads to a submenu with five additional elements of the File Explorer interface that you can show or hide. Every item on the Show menu is a toggle, allowing you to quickly show or hide file name extensions and item checkboxes, for example.

Using the details and preview panes

The listing for each file and folder in the contents pane gives you a limited amount of information—name, last modified date, size, type, and so on. Sometimes those basics are sufficient, but there are times when you need more details, and you'd rather not open the file in its associated app to get them. That's the purpose of the details and preview panes, which share a space to the right of the contents pane, showing either an expanded view of information about the currently selected file or a preview of its contents.

The button at the far right of the command bar shows which pane is currently available. Click once to make the pane visible; click again to hide the pane. To switch between Details and Preview, use the options near the bottom of the View menu.

NOTE

If you use the Details and Preview panes regularly, it's worth memorizing their keyboard shortcuts: Alt+P for Preview, Alt+Shift+P for Details.

Using the preview pane

What's in that file? The preview pane often provides enough information to answer that question quickly, but sometimes the filename is a puzzle all its own. Do you have any idea what's in the file named 844933387647401984.jpg?? Click the file name, open the preview pane, and see for yourself, as I've done in Figure 7-21.

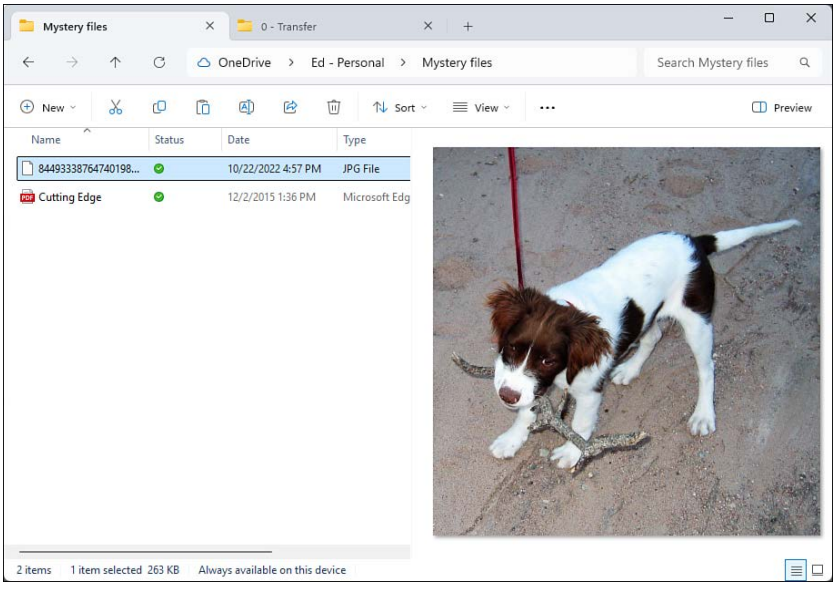


Figure 7-21 If the filename doesn't offer any information about what's in an image file, use the preview pane.

File formats supported in the preview pane include most image files, Microsoft Office documents, and PDF files.

Inside OUT

Customize folder templates

Not sure what folder "type" you're in? Right-click a blank space in the folder and then click Show More Options > Customize This Folder. On the Customize tab of the Properties dialog for the selected folder, look at the selection in the Optimize This Folder For dropdown, which shows the folder type that's currently in effect.

Using the details pane

Every file you view in File Explorer has a handful of properties that describe the file itself: the file name and file name extension (which is associated with the app that opens that type of file), the file's size, the date and time it was created and last modified, and any file system attributes. These properties are stored in the file system and are central to displaying the contents of a folder and performing simple searches.

In addition to these basic file properties, many data file formats can store custom metadata. These additional properties can be added by a device or by software; in some cases, the user can modify them. When you take a digital picture, your camera or smartphone adds the date and time the photo was taken, along with its dimensions and perhaps a geotag. Microsoft Word and other Office apps automatically add your name to the Author field in documents you create; you can fill in additional properties, such as keywords and comments, and save them with the file.

And when you use your Microsoft 365 subscription to collaborate with others on files stored in OneDrive, the cloud-based Microsoft Graph feature keeps track of that activity.

All of this information is available for your review in a consolidated fashion when you select the file and click the Details button in the upper-right corner of the File Explorer window. (If the Preview button is occupying that space, swap it out by choosing View > Details Pane from the command bar.) Figure 7-22 shows the details pane for a picture taken with an iPhone.

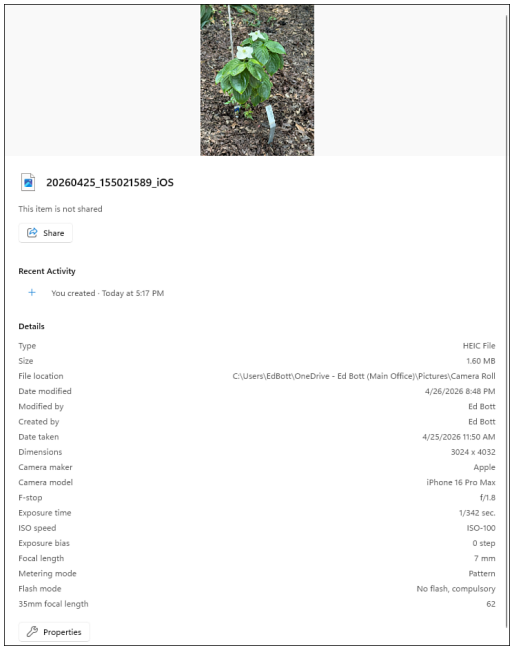


Figure 7-22 The details pane provides essential information about a file. If you need more, click the Properties button to view additional metadata in a dialog.

The properties displayed in the details pane are an excellent starting point, but they might not represent every detail available for the selected file. To see the complete list, click the Properties button at the bottom of the details pane (or select the item and press Alt+Enter). Then click the Details tab in the Properties dialog. Note that details for files stored in OneDrive that have not been synced to the local store will not display additional metadata. You must download the file to see its full details.

The details pane is read-only. In the Properties dialog, you can edit many (but not all) of an item's properties. Some properties, such as file size, photo dimensions, and MP3 bitrate, are calculated by the file system or are otherwise fixed and cannot be directly modified. But you can edit custom metadata if the format of the underlying file allows you to do so. In general, you should do so using an app created for that purpose.

Metadata is saved within the file itself, using industry-standard data storage formats. As a result, the properties are fully portable. This opens some useful possibilities:

- You can move files to other computers, even those running other operating systems, without losing the files' tags and other metadata.
- You can edit a file in an app other than the one in which it was created without losing any of the file's properties (assuming the other app properly adheres to the file format's standard for reading and writing metadata).
- A file's properties are visible to anyone who has read access to the file.

Inside OUT

Remove personal metadata for privacy's sake

Metadata within a file can tell a lot about you. Cameras record data about when (and, with some cameras, precisely where) a picture was taken and what camera or smartphone was used. Microsoft Office automatically adds author and company information to documents and spreadsheets. With user-created tags, you can add personal and business details that might be useful on a local copy but are probably unwise to disclose to the wider world.

To scrub a file of unwanted metadata, select one or more files in File Explorer, press Alt+Enter to open the Properties dialog, select the Details tab, and then click Remove Properties And Personal Information. This opens the Remove Properties dialog, an example of which is shown in Figure 7-23.

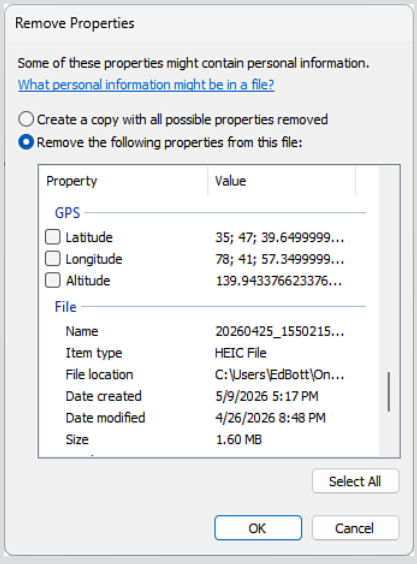


Figure 7-23 Use this dialog to remove saved metadata, such as the date a photo was taken or the GPS location where it was shot.

At this point, you have two choices. The default option creates a copy of your file (using the original file name with the word *Copy* appended to it) and removes all properties that can be changed, based on the file type. With the second option, Remove The Following Properties From This File, you select the checkboxes next to individual properties and permanently remove those properties from the file when you click OK. (If no checkbox is visible, that property is not editable.)

Of course, common sense should prevail when it comes to issues of privacy. This option zeroes out metadata, but it does nothing with the contents of the file itself. You need to be vigilant to ensure that a digital photo doesn't contain potentially revealing information in the image itself or that sensitive personal or business details aren't saved within a document's contents.

Sorting, filtering, and grouping in File Explorer

Regardless of the view settings you've chosen for a folder, you can adjust the way its contents are displayed at any time by changing the sort order, filtering the contents by one or more properties to include only selected items, and grouping and arranging the contents by a particular heading. In any view, the sort and group options are available using the Sort menu on the command bar, or by right-clicking anywhere in the contents pane and choosing a Sort By or

Group By option. In most cases, however, these actions are easier to accomplish by switching to Details view and using the column headings; that's also the preferred way to filter.

Note that all these techniques also work with virtual folders, such as search results and libraries.

Sorting a folder's contents

To sort a folder in Details view, click the heading you want to use as a sort key. For example, to sort by Date Modified, click the Date Modified heading. Click again on the same heading to reverse the sort order. An up arrow or down arrow above the heading indicates whether the folder is sorted in ascending or descending order by that field.

In all other views, click the Sort menu on the command bar. A bullet next to Ascending or Descending indicates the current sort order; choose the other option to reverse the sort order.

Filtering folder contents

In Details view only, you can use headings to filter the contents of a folder. If you rest your pointer on a heading, a dropdown arrow appears at the right. Clicking the arrow reveals a set of filter checkboxes appropriate for that heading. In most cases, the filter list is built on the fly from the contents of the current file list. If you're looking for a particular type of file—a Word or PDF document, for example, or an executable file—you can filter by type to show only those files. Figure 7-24 shows the filter list for the Type field in the Downloads folder, with the contents filtered to show only files whose type matches Application.

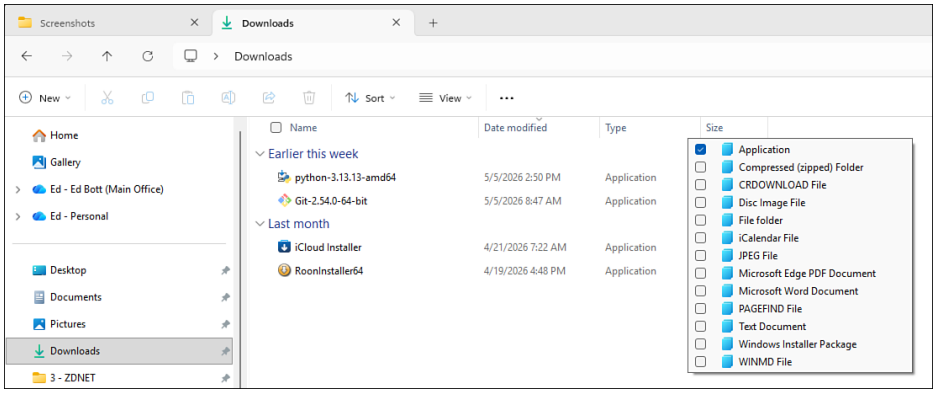


Figure 7-24 When you click the dropdown arrow to the right of a column heading, a set of filtering options appropriate for the current folder's contents appears.

Select the checkbox next to any item to add it to the filter list; clear the checkbox to remove a previously selected item from the filter. After you filter the list in Details view, you can switch to any other view, and the filter persists. Use the Back button to the left of the address bar to remove all filtering without switching back to Details view.

If you filter by Name or Size, you get a much more limited set of choices that includes ranges rather than discrete values.

A single filter can include multiple items from each heading's filter list, which are treated as a logical OR—in other words, File Explorer displays items that match any of the selected checkboxes. A filter can also include multiple headings, which together function as a logical AND, with File Explorer displaying only items that satisfy the criteria applied to each heading. So, for example, you can filter the Documents folder to show only Microsoft Word documents where the Date Modified field is this month, resulting in a list that can help you review exactly what you've been working on lately.

When a folder is filtered, a check mark appears to the right of each heading used for filtering. You can perform the most common file-management tasks on the items in the results list, including renaming individual files or using the clipboard to copy or move files from their current location to a new folder.

Grouping folder contents

If sorting and filtering don't give you enough ways to organize or locate files, try grouping. When you group items, File Explorer collects all the items that have some common property, displaying each group under a heading that can be expanded or collapsed in most views.

List view offers a particularly interesting perspective, with each group of results appearing under a column heading. The grouped arrangement is saved as part of the custom view settings for that folder; the next time you open the folder, it will still be grouped.

To group items in a File Explorer window, click Sort > Group By, and then click the property you want to use. File Explorer displays a bullet before the selected property. You can remove the grouping by returning to Group By and choosing (None).

Inside OUT

Use checkboxes to simplify file selection

File Explorer offers two modes of file and folder selection—with and without checkboxes. You can switch between them by clicking View > Show and selecting or clearing Item Check Boxes.

With checkboxes on, you can select multiple items that are not adjacent to one another by clicking or tapping the checkbox for each one in turn; to remove an item from the selection, clear its checkbox. In either case, there's no need to hold down the Ctrl key. (This option is especially useful when you're trying to select files using a touchscreen.) In any case, though, Ctrl-selecting and Shift-selecting work as they always have, with or without checkboxes.

Managing digital photos and videos in the Gallery

The Gallery node, which gets a place of honor at the top of the File Explorer navigation pane, is an all-in-one virtual folder that consolidates digital photos and some videos from multiple folders into a single view. It consolidates images from your local profile, OneDrive, and other indexed picture locations into a unified chronological view.

Gallery's number-one job is to integrate with the Photos app, so that you can import, edit, and tag photos with ease.

If you prefer an alternative image editor, as most people do, you can probably ignore the Gallery node. If you're a fan of the Windows 11 Photos app, you'll find more details on how to make the most of this space in Chapter 9, "Using and managing built-in Windows apps."

Compressing files to save space

Depending on the file type, you can dramatically reduce the amount of disk space used by one or more files by compressing those files into a single archive file that File Explorer can treat as a folder. You can also combine files from multiple folders into an archive file while preserving the folder hierarchy of that group of files, making it easier to store multiple files or send them to another person as an email attachment.

In previous Windows versions, this feature was restricted to the Zip format, and the archive files thus created were called Zipped folders and saved with the .zip file name extension. Windows 11 adds support for more cross-platform compression standards, including the widely used 7zip and tar formats.

Any version of Windows can open an archive file saved in any of these formats, as can other modern operating systems. To create a new archive, select one or more files and folders, then right-click the selection and choose Compress To. Select a compression format, and Windows copies your selection into a new compressed archive file, using the name of the first file in your selection. Find that file and rename it if necessary. That's it. You're done.

To add and remove files in an archive file, you must be using the .zip format. Compressed files saved in other formats are read-only in File Explorer.

To extract individual files or folders from a compressed archive file, open it in File Explorer and then drag the items you want to extract to a new location, or use the clipboard to copy and paste. To extract all items from a compressed archive file to a specific location, right-click the compressed archive icon and then click Extract All, or open the compressed archive file in File Explorer and click Extract All on the command bar.

Recovering deleted files and folders from the Recycle Bin

It takes only a fraction of a second to wipe out a week's worth of work. You might accidentally delete a folder full of files or, worse, overwrite an entire group of files with changes that can't be undone. If a file is simply lost, try searching for it. (See "Finding files and folders with Windows Search" later in this chapter.) For accidental deletions, your first stop should be the Recycle Bin, a Windows institution since 1995.

> NOTE
>
> **In Windows 11, the preferred method for protecting important data files is syncing them to OneDrive, which offers a Recycle Bin of its own, along with robust version history features that make it possible to recover from a simple accidental deletion or even from a ransomware attack.**

The Recycle Bin provides protection against accidental erasure of files and also offers a way to recover if you decide days or even weeks later that you really needed that file or folder after all. In most cases, when you delete one or more files or folders using File Explorer, the deleted items go to the Recycle Bin rather than being completely wiped from storage.

The following kinds of deletions do not go to the Recycle Bin:

- Files stored on removable storage devices, such as USB flash drives
- Files stored on network drives, even when that volume is on a computer that has its own Recycle Bin
- Files deleted from a command prompt
- Files deleted from compressed folders
- Online-only files stored on OneDrive

You can bypass the Recycle Bin yourself, permanently deleting an item, by holding down the Shift key while you delete the item. You might choose to do this if you're trying to reclaim disk space by permanently getting rid of large files and folder subtrees.

The root of each fixed drive on a Windows 11 PC has its own hidden $Recycle.Bin folder, which contains deleted files for all user accounts; its contents are not accessible except through the virtual view afforded by the Recycle Bin shortcut. That shortcut is available on the Windows desktop. If you've chosen to hide desktop icons, you can open the Recycle Bin by typing its name in the File Explorer address bar.

Windows ordinarily allocates up to 10 percent of each drive's free space for use by the Recycle Bin. To see and adjust the amount of space currently allocated to the Recycle Bin for each drive that it protects, right-click the Recycle Bin icon on your desktop and then click Properties. In the

Recycle Bin Properties dialog (shown in Figure 7-25), you can select a drive and enter a different value in the Custom Size box. (When the bin is full, the oldest items give way to the newest.)

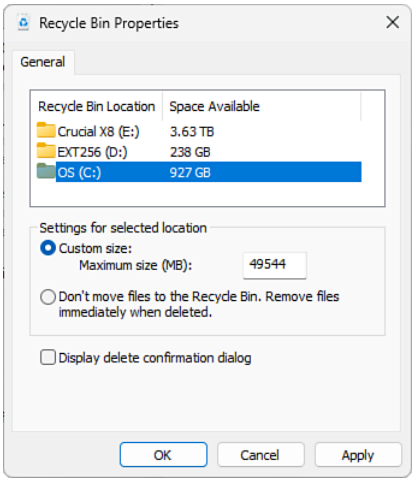


Figure 7-25 Use this dialog to fine-tune the amount of space the Recycle Bin is allowed to use—or to turn the feature off completely for selected drives.

(Note that this dialog doesn't show the amount of space currently being used by the Recycle Bin on a per-drive basis. To find those details, you need to go to Settings > System > Storage, as described in "Managing disk space," earlier in this chapter.)

If you think that amount of space is excessive, enter a lower value. If you're certain you don't need to recover files from a particular drive, select the Don't Move Files To The Recycle Bin setting for that drive.

Windows normally moves files to the Recycle Bin silently when you delete them. If you'd prefer to see a confirmation prompt every time you delete a file or folder, select the Display Delete Confirmation Dialog checkbox. When you later realize that those confirmation prompts are extremely annoying, you can go back and clear that checkbox.

Restoring deleted files and folders

Opening the Recycle Bin in File Explorer displays a virtual view that contains the names and other essential details of all recently deleted items from the current user profile. In Details view, you can see when each item was deleted and which folder it was deleted from. Use the column headings to sort the folder—for example, to display items that have been deleted most recently at the top, with earlier deletions below. Alternatively, you can organize the bin by disk and folder by clicking the Original Location heading. If these methods don't help you find what you're hoping to restore, use the search box.

Note that deleted folders are shown only as folders; you don't see the names of items contained within the folders. If you restore a deleted folder, however, Windows re-creates the folder and its contents.

The Restore commands on the File Explorer command bar (Restore All Items and Restore The Selected Items) put items back in the folders from which they were deleted. If a folder doesn't currently exist, Windows asks your permission to re-create it. Beware: If your Recycle Bin contains hundreds or thousands of deleted files dating back weeks or months, Restore All Items can create chaos. That command is most useful if you recently emptied the Recycle Bin and all of its current contents are visible.

If you want, you can restore a file or folder to a different location. Drag the item out of the Recycle Bin and drop it in the folder where you want to save it. To create a compressed backup copy of one or more items in the Recycle Bin, make a selection, right-click, and then choose Compress To from the shortcut menu.

Purging the Recycle Bin

A deleted file sitting in the Recycle Bin takes up as much space as it did before it was deleted. If you're deleting files to free up space for new programs and documents, transferring them to the Recycle Bin doesn't help. You need to remove them permanently. The safest way to do this is to move the items to another storage medium—a different hard disk or a removable disk, for example.

If you're sure you'll never need a particular file again, however, you can delete it in the normal way, and then purge it from the Recycle Bin. Display the Recycle Bin, select the item, and then press Delete.

To empty the Recycle Bin entirely, click Empty Recycle Bin on the File Explorer menu bar. (You might need to use the See More (ellipsis) menu to see this option.)

OneDrive for power users

Microsoft uses the OneDrive label in File Explorer with two distinctly different cloud-based file-storage services. They share a brand name and a common sync client, but there are some noteworthy differences in how the two services work.

OneDrive, the consumer service, is designed for personal use, with special views that showcase photo libraries and albums. (The OneDrive client on mobile devices offers the option to sync the device's camera roll to OneDrive.) A free OneDrive account allows anyone to create and edit documents using common Office file formats and the online versions of Word, Excel, PowerPoint, and OneNote. Microsoft 365 Family and Personal editions automatically connect to OneDrive accounts, allowing subscribers to create and edit files using the Windows and Mac versions of those Office apps.

Files in OneDrive are organized into folders and subfolders just as they would be on a local drive. To view, edit, and manage them in a web browser, go to *https://onedrive.com* and sign in with the associated account. Figure 7-26 shows the top-level folders in a OneDrive account, as viewed in a web browser. Note the range of options available in the command bar for the selected folder, as well as the additional menu choices available from the See More (ellipsis) menu.

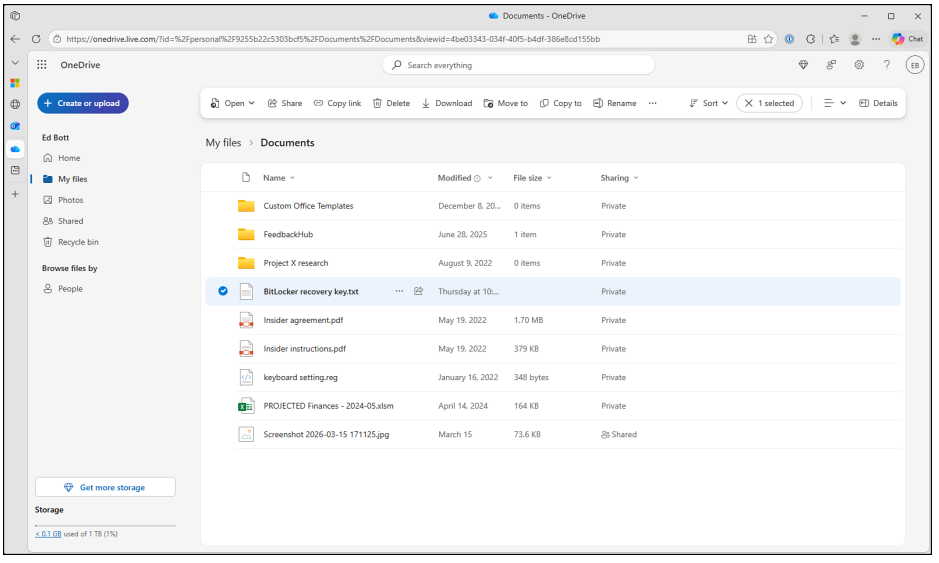


Figure 7-26 When using OneDrive in a web browser, you can perform most file-management tasks and can create, edit, and collaborate on Office documents.

Clicking the link in the usage graph in the lower-left corner opens a page with details about storage for that subscription. (The Get More Storage button opens a separate page with options to choose a different storage plan.)

OneDrive for Business offers a similar web-based view, with one crucial difference: Subscription settings aren't accessible from the navigation pane on the left. That's because a OneDrive for Business subscription is managed by a company administrator, with additional security and collaboration options appropriate for use in an organization.

Both services allow subscribers to share files and folders with other people. The consumer edition of OneDrive allows complete control of sharing: You can choose to make a file, a photo, or an entire folder public. You can also share access by using a link that doesn't require signing in with a Microsoft account.

Sharing options for OneDrive for Business are managed by a company administrator, who might apply restrictions on sharing files with other people, especially in folders that contain confidential company information.

Both OneDrive and OneDrive for Business include built-in versioning, so you can see the history of a document and download an earlier version if you want to recover a portion of an earlier draft. The Recycle Bin for both services makes it possible to retrieve deleted documents for up to 30 days.

Syncing files and folders

Any file or folder you save in your local OneDrive or OneDrive for Business folder is automatically copied to a corresponding location in the cloud. If you have multiple devices (including PCs, Macs, tablets, and mobile phones) using the same OneDrive or OneDrive for Business account, any changes, additions, and deletions you make to files and subfolders on one device are synchronized with all those other devices. So, for example, if you routinely work on the same documents on separate computers at the office and at home, saving to the OneDrive folder on each system ensures that you can retrieve the latest version from anywhere.

If you need to interrupt this normal syncing activity, right-click the OneDrive or OneDrive for Business icon in the system tray, click the gear icon, and choose Pause Syncing. You can pause for two hours, eight hours, or a full day.

You can get a quick overview of OneDrive sync status (as well as how much of your available storage you've used) by clicking the cloud icon in the address bar of the File Explorer window for the OneDrive or OneDrive for Business account. Get detailed information about a sync operation in progress by clicking the OneDrive icon in the system tray, as shown in Figure 7-27.

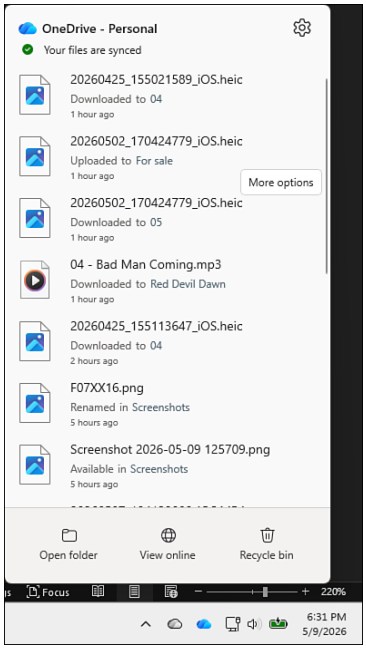


Figure 7-27 Click the cloud icon in the system tray (white for personal, blue for a OneDrive for Business account) to display this sync status window.

The gear icon at the top of the status window opens a menu that includes a link to OneDrive Settings. The three icons in the navigation bar along the bottom of this status display are live. Click Open Folder to open the local sync folder for the corresponding OneDrive or OneDrive for Business account in File Explorer. Click View Online to open the OneDrive account in a browser window. Click Recycle Bin to open a browser window that shows files and folders you've deleted but are available for recovery.

Sharing OneDrive files and folders

To share a file or folder in your personal OneDrive, right-click the item in File Explorer and then click Share. A Share Link dialog like the one in Figure 7-28 appears.

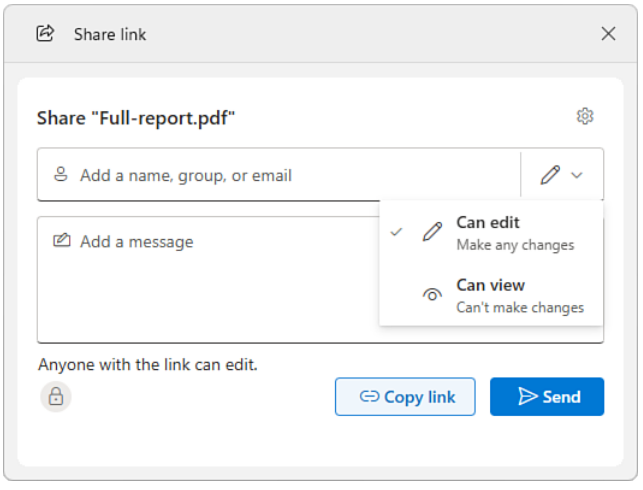


Figure 7-28 You can share any OneDrive file or folder using these controls to send a personal message or create a link that anyone can use.

The share options are initially set to offer full editing privileges to the recipient. If you're using this option to set up a shared folder where you and a friend can add and edit files, this is the appropriate choice. Click the pen icon to reveal a menu where you can choose to make the shared file or folder view-only. Click the gear icon to open an additional set of options that allow you to restrict access, assign a password, or set an expiration date for the share.

Enter an email address and click Send to share the link with a specific person, or click Copy Link, which copies the sharing link to the clipboard so that you can paste it into a message yourself.

Sharing options and procedures are similar in OneDrive for Business. Right-click a OneDrive for Business item in File Explorer and click Share. This opens the same Share Link dialog as in OneDrive Personal, with some additional options such as the ability to restrict access to members of your organization or to view but not download a shared file. Note that options to share outside your organization might be restricted by your administrator.

Inside OUT

Share and sync files between accounts

One of OneDrive's best-kept secrets is the capability for friends and coworkers to work together using shared folders. (Over the years, the authors and editors who worked on this book and its predecessors have made extensive use of shared folders for their collaborative work.) The technique is simple: You mark a folder as shared, giving your colleagues access to it when they sign in with an account that has permission to read and write to that folder.

On the other end, your colleague opens OneDrive on the web and clicks Shared in the navigation pane on the left. They then open the shared folder and click Add To My OneDrive. The folder is now available in their list of folders that are eligible to be synced. Both of you now have full access to the contents of the shared folder.

For this technique to be most effective, you should name the shared folder carefully, using a descriptive name such as "Shared Files for Project X Team," so that everyone who sees it knows immediately that it's a shared folder.

Using Personal Vault

The consumer version of OneDrive (but not OneDrive for Business) offers a feature called Personal Vault, a BitLocker-encrypted virtual folder that requires two-step authentication to access and that locks automatically after a period of inactivity (20 minutes, by default). You can use Personal Vault to store sensitive documents or images—such things as financial or insurance records, scans of driver's licenses and passports, tax and banking forms, and so on. Any time you want to view items in the vault or upload material to it, you'll be prompted for a second form of authentication; if you've set up the Microsoft Authenticator app on a mobile device, you can respond to a push notification to approve the request, or you can ask OneDrive to send a code via text message or email. A shortcut for Personal Vault is in the top-level folder tree for your personal OneDrive account—either in File Explorer or in the corresponding location in the online view of OneDrive.

Finding files and folders with Windows Search

The search box in the upper-right corner of File Explorer offers a powerful way to find a single file or groups of files, based on their names, attributes, or contents. Those searches are fast and accurate, thanks to a local index that's constantly updating itself in the background. You can use simple keyword searches to find files that contain a word (or even part of a word) in the filename or the document contents. After starting a search, you can use the Search Tools menu to refine the results—by date or by file type, for example.

NOTE

The basic search capabilities in File Explorer are direct descendants of standalone tools and Windows features that date back to the turn of the 21st century. Those original search tools relied on something called Advanced Query Syntax (AQS), which survives, only slightly modified, in a mostly undocumented form today. Previous editions in the Windows Inside OUT series included detailed instructions for using AQS. Those steps still work in Windows 11, but they're strictly for experts. If you're curious, you can find an archived copy of those original instructions at *https://w11-io.com/AQS-details*.

➤ **On some PCs with advanced AI hardware, File Explorer's *semantic search* allows you to use natural language to find files, pictures, and so on. This feature was still in preview when this chapter was written. For details, see "Notepad, Studio Effects, Recall, and other built-in AI features" in Chapter 4, "Using Copilot and other AI features."**

To use File Explorer's search tools, start by selecting a folder, a library, or a OneDrive account. That defines the *scope* of your search—the set of files from which you want to draw search results. (If you're not sure which folder contains the files you're looking for, choose Home in the navigation pane, which searches every indexed location.)

Next, click in the search box in the upper-right corner of the File Explorer window. Start typing a word or phrase in the search box. As you type, File Explorer displays a results list showing files and folders whose names, properties, or contents match that search term. At the same time, File Explorer adds a Search Options menu to the command bar; click it to display the additional options shown in Figure 7-29.

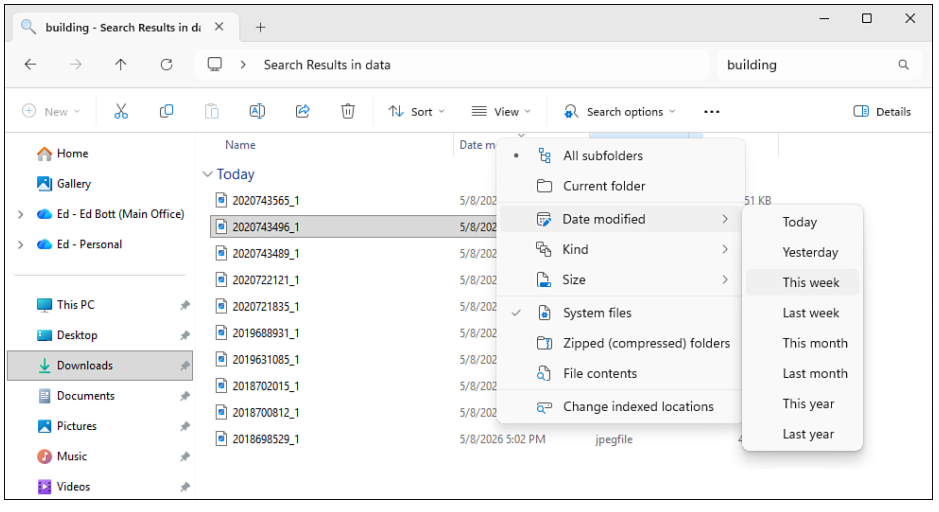


Figure 7-29 Start a search by entering a search term or search operator in the search box; then click the Search Options menu to refine the search.

The following rules govern how searches work:

- Whatever text you type as a search term must appear at the beginning of a word, not in the middle. Thus, entering **des** returns items containing the words *des*ire, *des*tination, and *des*troy but not un*des*irable or sad*des*t. (You can override this behavior by using wildcard characters, as explained in "Advanced search tools and techniques" later in this chapter.)
- Search terms are not case sensitive. Thus, entering *Bott* returns items with *Ed Bott* as a tag or property, but the results also include files containing the words *bott*om and *bott*le.
- By default, searches ignore accents, umlauts, and other diacritical marks. If you routinely need to be able to distinguish, say, Händel from Handel, click Settings > Privacy & Security > Search, and then click Advanced Indexing Options. In the Indexing Options dialog, click Advanced (for which you need administrative credentials), and then select Treat Similar Words With Diacritics As Different Words.
- To search for an exact phrase, enclose the phrase within quotation marks. If you enter two or more words without using quotes, the search results list includes any file that contains any of the words individually.

Search results for indexed folders appear so quickly that you might have a substantial number of results before you type the second or third character in the search string. A complicating factor: If your search term is part of a subfolder name, your results list includes the entire contents of that subfolder.

Inside OUT

See all files in a folder and its subfolders

If you open File Explorer to a particular folder and you want to avoid the tedium of opening subfolders to view their contents, try using the wildcard character that's been around longer than Microsoft has been making operating systems. Entering an asterisk (*) in the search box immediately returns all files and subfolders in the current folder and all its subfolders. Assuming the list is of manageable size, you can then group, filter, sort, or otherwise rearrange the items within the folder to find exactly what you're looking for.

The Search Options menu offers a wealth of options to create and refine a search. The choices you make here return results from the current search scope. By default, All Subfolders is selected on the Search Options menu. Click Current Folder to constrain results so that the contents of subfolders are not included.

Three filters get top billing on the Search Options menu:

- **Date Modified** This property represents the most recent date a file or folder was saved. For a downloaded program file, it shows the date you saved the file locally, not the date the developer created it.
- **Kind** This field shows predefined groups of file types, including those for some items that aren't stored in File Explorer. The most common choice to make here is Document, which includes text files, any file saved in a Microsoft Office format, and PDF files. Try Music, Movie, or Picture if you're looking for digital media files.
- **Size** This list shows a range of sizes. If you're trying to clear space on your system drive, choosing Huge (1 – 4 GB) or Gigantic (>4 GB) is a good way to locate large files that can safely be deleted or archived on an external drive.

Any of those filters can help find a specific file. For example, if you're looking for an invoice that you're certain was created last month, click Search Options > Date Modified and then select Last Month. If the set of results is still too large to scan, you can use additional choices on the Search Options menu to refine the search, or click in the search box and enter a word or phrase that you know was in the file's name or its contents.

Choices you make from the Search Options menu are translated into search syntax that appears in the search box in the upper right of the File Explorer window. To clear a selection, delete that term from the search box. You can enter the same search operators in the search box manually, followed by a colon and a value, to restrict search results. For a folder optimized for General Items, you can use the **type:** operator with a file extension (pdf, xls, or docx, for example) or any part of the description in the Type field in Details view. Enter **type:Excel**, for example, to return Excel workbooks in any format. Use the **name:** operator, followed by a string of text, to show any file or folder that contains that exact string at the beginning of any word in its name.

Managing the Windows search index

Windows search relies on a powerful and well-behaved indexing service that keeps track of files and folders by name, by properties, and (in supported formats) by contents. All those details are kept in the search index. As a rule, when you use the search box in File Explorer, Windows checks the index first and returns whatever results it finds there.

The index is constructed dynamically by the Windows Search service, SearchIndexer.exe. It includes metadata for all files in all locations that are configured to be indexed; for documents in formats that support the indexing of file contents, the indexer extracts the text of the files and stores it alongside the file properties for quick retrieval.

Certain locations are specifically included. These include all user profiles (but not the AppData folder), the contents of the Start menu, and any OneNote and Outlook data. Locally synced files from OneDrive are automatically included in your local index. Any folder that is included in a library is also indexed.

If you understand the potential impact on performance and still want to extend Windows Search to include more folders than the default, go to Settings > Privacy & Security > Search and change the Find My Files option from Classic to Enhanced. This option changes the behavior of search, returning results from across all folders and drives.

The Windows Search service begins running shortly after you start a new Windows session and runs in the background at all times, updating the index as new files are added and existing ones are changed or deleted. The service does its best to minimize the effect of its activities on the performance of your system. The indexing process steps back or stops when the system perceives peak disk usage. In addition, the indexing algorithm in Windows 11 is designed to detect high disk usage and manage the indexer so that it doesn't negatively affect performance.

CAUTION

The search index is stored by default in %ProgramData%\Microsoft\Search\Data. Default permissions for this folder are set to allow access only to the System account and to members of the Administrators group. You can change its location using the Indexing Options dialog (available from Settings > Privacy & Security > Search > Advanced Indexing Options). I can't, however, think of a good reason to do so. This folder contains no user-editable files, and you will be best served to leave it in its default location with its contents undisturbed.

I also recommend against trying to manage locations manually using this dialog. If you need to expand searches beyond the default locations, just switch the search settings from Classic to Enhanced, as described earlier.

The Windows Search service records the file name and properties (size, date modified, and so on) of any file or folder. Files marked as System and Hidden are indexed but are displayed in search results only when you change File Explorer settings to show those file types. Metadata for common music, image, and video file formats is included in the index by default. The indexer also includes the contents of a file and its custom properties if the file format has an associated property handler and filter, as is the case with most popular document formats.

Windows Search does not index the content of files that are saved without a file name extension, nor does it index the contents of files that are protected by Information Rights Management (IRM) or digital rights management (DRM).

A handful of locations are specifically excluded from indexing, including the entire contents of the Windows folder and all its subfolders, the entire contents of the Program Files and Program Files (x86) folders and all their subfolders, and everything in the hidden Recycle Bin folder.

In the past, some websites for performance-obsessed Windows users complained about the performance hit that Windows Search causes; some even recommended disabling the Windows Search service to improve overall system performance. I recommend you leave it running. The Windows Search service uses only a small percentage of available CPU resources even at its busiest. The indexing service is specifically designed to back off when you use your computer for other activities, switching to low-priority input/output (I/O) and allowing foreground I/O tasks, such as opening Start, to execute first. When Windows 11 first builds its index, or if you copy a large number of files to the system at once, indexing can take a long time and cause some spikes in CPU and disk activity, but you shouldn't notice a significant impact on performance. Some unusual indexing activity might be the result of maintenance activities, which the Search service performs automatically every 100,000 files. The operations typically last less than five minutes.

Using wildcards and character-mode searches

File-search wildcards can be traced back to the dawn of Microsoft operating systems, well before the Windows era. In Windows 11, two of these venerable operators are alive and well:

- The asterisk (*****), also known as a star operator, can be placed anywhere in the search string and matches zero, one, or any other number of characters. In indexed searches, which treat your keyword as a prefix, this operator is always implied at the end; thus, a search for **voice** turns up *voice*, *voices*, and *voice-over*. Add an asterisk at the beginning of the search term (***voice**), and your search also turns up any item containing *invoice* or *invoices*. You can put an asterisk in the middle of a search term as well, which is useful for searching through folders full of data files that use a standard naming convention. If all your invoices start with **INV**, followed by an invoice number, followed by the date (**INV-0038-20260227**, for example), you can produce a quick list of all 2026 invoices by searching for **INV*2026***.

- The question mark (**?**) is a more focused wildcard. In index searches, it matches exactly one character in the exact position where it's placed. Using the naming scheme defined in the previous item, you can use the search term **filename:INV-????-2025*** to locate any file in the current location that has a 2025 date stamp and an invoice number (between hyphens) that is exactly four characters long.

To force Windows Search to use strict character matches in an indexed location, type a tilde (**~**) as the first character in the search box, followed immediately by your term. If you open your Documents library and type **~??v** in the search box, you find any document whose file name contains any word that has a *v* in the third position, such as *saved, level,* and, of course, *invoice*. This technique does not match the file contents.

Advanced search tools and techniques

To search for files with a particular file name extension, you can simply enter the extension in the search box, substituting your file name extension for *<ext>*, like this:

.<ext>

(Note that this method of searching does not work for .exe or .msc files.) The results include files that incorporate the extension in their contents as well as in their file names—which might or might not be what you want. You get a more focused search by using the ext: operator, including an asterisk wildcard and a period, like this:

ext:*.txt

You can specify a folder or library location by using **folder:**, **under:**, **in:**, or **path:**. Thus, **folder:documents** restricts the scope of the search to your Documents library, and **path:videos mackie** finds all files in the Videos folder that contain *Mackie* in the file name or any property.

When searching on the basis of dates, you can use long or short forms, as you please. For example, the search values

```
modified:9/29/26
```

and

```
modified:09/29/2026
```

are equivalent. (If you don't mind typing the extra four letters, you can use **datemodified:** and get the same results.)

To search for dates before or after a particular date, use the less-than (<) and greater-than (>) operators. For example,

```
modified:>09/30/2026
```

searches for dates later than September 30, 2026. Use the same two operators to specify file sizes less than and greater than some value.

Use two periods to search for items within a range of dates. To find files modified in September or October 2025, type this search term in the Start menu search box:

```
modified:9/1/2025..10/31/2025
```

You can also use ranges to search by file size. The search filters suggest some common ranges and even group them into neat little buckets, so you can type **size:** and then click Medium to find files in the range 1 MB to 128 MB.

Again, don't be fooled into thinking that this list represents the full selection of available sizes. You can specify an exact size range using operators such as >, >=, <, and <=. Also, you can use

the **..** operator. For example, **size:0 MB..1 MB** is the same as **size:<=1 MB**. You can specify values using bytes, KB, MB, or GB.

You can use the Boolean operators **AND**, **OR**, and **NOT** to combine or negate criteria in the search box. These operators need to be spelled in capital letters (otherwise they're treated as ordinary text). In place of the **AND** operator, you can use a plus sign (**+**), and in place of the **NOT** operator, you can use a minus sign (**–**). You can also use parentheses to group criteria; items in parentheses separated by a space use an implicit **AND** operator. So, **title:("report" NOT draft) AND modified:>1/1/2026** finds every file created in 2026 or later in which the Title property contains the word *report* (without the quote marks, this term would return any item whose title began with that word) and does not contain a word that begins with *draft*.

NOTE

When you use multiple criteria based on different properties, an AND conjunction is assumed unless you specify otherwise. The search value tag:Ed Author:Carl is equivalent to the search value tag:Ed AND Author:Carl.

Saving searches

After you have completed a search and displayed its results in File Explorer, you can save the search parameters for later reuse. For easiest access, click See More (the three dots at the end of the Search command bar) and choose Pin To Quick Access. If you don't want to clutter the Quick Access pane, right-click anywhere in the pane displaying the search results and click Save Search. The saved search is stored, by default, in %UserProfile%\Searches; keep the default name or give it a more descriptive name. You can run the search again at any time, using the then-current contents of the index, by clicking that saved search in the navigation pane or Searches folder.

When you save a search, you're saving its specification (technically, a persistedQuery), not its current results. If you're interested in the XML data that defines the search, right-click the saved search in your Searches folder (this option doesn't work with searches saved in the navigation pane), choose Open With, and choose a text editor like Notepad.

Inside OUT

Make your searches flexible

You don't need to enter a precise date as part of a search term. Instead, Windows Search recognizes "fuzzy" date qualifiers like *today*, *yesterday*, *this week*, and *last month*. This technique lets you create saved searches you can use to quickly open a window showing only the files you've worked on this week or last week, using datemodified:(this week OR last week) to define the search results. A search that uses dates picked from the calendar wouldn't be useful next month for identifying current projects, but one built using these relative dates is useful indefinitely.



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