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Windows 11 from Beginner to Advanced

Master Microsoft's new
operating system



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Dedication

For my wife Julia without your support this book would never have seen a release.

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Introduction

Most Windows books offer a broad overview of the operating system or a very narrow but focused view on specific topics of interest such as security, productivity, use in Enterprise environments or privacy.

Windows 11 From Beginner to Advanced is not like those books. Its goal is to provide all users, regardless of whether they are beginners or experts, with information that they can put to good use immediately.

Windows 11 is not that different from Windows 10, and users who have worked on Windows 10 devices before will notice that most options are identical or only slightly changed in the new operating system.

The new version of Windows does come with a number of changes that alters usability in some areas and also how certain things are done. A basic example is the new Taskbar and Start Menu, which cannot be displayed to the sides or at the top anymore. Some changes can be reverted, others can't.

Windows 11 From Beginner to Advanced provides users and system administrators with actionable information divided into Beginner, Intermediate, and Expert sections. Even users with expert knowledge of Windows 10 may find useful tips in the beginner and intermediate sections because of the changes that Microsoft introduced in Windows 11.

The Beginners section offers instructions for all users, but especially new ones: from installing new languages over customizing the appearance of the operating system to using and configuring Windows Search. Windows 11's appearance has changed quite a bit in some areas, including the highly visible areas taskbar and Start.

The section for Intermediate users builds on that foundation. It teaches you how to configure Windows Defender to work with accounts, and to set up a backup solution among other things.

The Expert section finally covers advanced topics, but still in a language that is understood by everyone. Topics include troubleshooting issues that you may run into, or managing Windows Updates.

A Quick Comparison To Windows 10

Windows 11 looks, behaves, and feels in many regards like Windows 10. In fact, Microsoft could have released Windows 11 as a feature update for Windows 10, and barely anyone would have noticed a difference.

Windows 11 includes changes and new features, but this is also true for feature updates that Microsoft releases for its Windows 10 operating system. Besides the changed system requirements, which prevent older systems that run Windows 10 fine from upgrading to Windows 11 for the most part, Windows 11 includes major new features and changes.

The first change that users will notice when they run Windows 11 is that the Start Menu is now centered. It is still possible to place it on the leftmost side, but Microsoft did remove several other options, such as placing the Start Menu and taskbar on the sides or the top of the screen. auto-updating tiles that retrieve information from the local system, network, or Internet, have been removed. All tiles placed on the Start Menu are static in Windows 11. The Start menu has a different design, as some options are no longer available or were moved.

Microsoft improved productivity in the new operating system. The snap feature that allowed Windows 10 users to snap Windows side-by-side supports more layouts, and Windows 11 may remember these Snap Groups.

Several new icons are pinned to the taskbar. Search is displayed as an icon on the taskbar, and there are new icons that power the features Task View, virtual desktops, and Chat, which is powered by Microsoft Teams.

Other new features that are visible right away are Widgets, which display weather, news, and other information similarly to Windows 10's News and Interests feature, and Microsoft Teams, which Microsoft has integrated in Windows 11.

The built-in store, still called the Microsoft Store, has been updated as well. Besides the new look, Microsoft lifted submission restrictions. Developers may upload Win32 executable files to the Store now, which paves the way for apps such as Adobe Creative Cloud, Zoom, Disney+, or Visual Studio. Android application support, courtesy of the Amazon App Store, and another subsystem, looks to come at a later time.

File Explorer, the default file manager, has received a visual update in Windows 11. It displays items in a single toolbar instead of Windows 10's ribbon and tabs interface. Several options are found in sub-menus in Windows 11, and it has two context menus now instead of just one. Cortana plays less of a role on Windows 11 than it did in Windows 10. Users may still enable Cortana and use what is left of the service's functionality.

Windows 11 will receive one feature update per year. Microsoft decided to switch from the two feature updates per year cycle to a single feature update release cycle.

Microsoft introduces several features in Windows 11 that are not part of Windows 10:

Auto HDR – may enable HDR in games that are not specifically supporting HDR.

While some game studios develop for HDR gaming PCs by mastering their game natively for HDR, Auto HDR for PC will take DirectX 11 or DirectX 12 SDR-only games and intelligently expand the color/brightness range up to HDR. It's a seamless platform feature that will give you an amazing new gaming experience that takes full advantage of your HDR monitor's capabilities. The Auto in the title implies how easy it is for you to enable the feature; a simple settings toggle flip will let you turn the feature on and off. ¹

DirectStorage – another improvement for PC gamers. DirectStorage requires a capable PC and a game that supports the feature. The requirements are an NVMe SSD and a DirectX 12 GPU with Shader Model 6.0 support. Games load significantly faster with DirectStorage enabled.

The DirectStorage API is architected in a way that takes all this into account and maximizes performance throughout the entire pipeline from NVMe drive all the way to the GPU. ²

Seamless Redocking – continue where you stopped when you plug or unplug devices from external monitors.

System Requirements

Microsoft changed the system requirements of its Windows 11 operating system, not all devices running Windows 10 are compatible with the new version of Windows. Windows 10 will be supported by Microsoft until 2025.

The minimum system requirements are as follows:

- A 1-GHz 4-bit dual-core processor.
- 4 Gigabytes of RAM
- 4 Gigabytes of hard drive space.
- Support for UEFI Secure Boot and TPM 2.0
- Direct 12 compatible graphics card
- 9-inch display with a 1 resolution

Processors are further restricted to certain generations of processor families by Intel AMD and Qualcomm. Generally speaking th and higher generation processors should be compatible. Some th generation Intel processors are also compatible but not all.

- Windows 11 supported Intel processors-
- Windows 11 supported AMD processors⁴
- Windows 11 supported Qualcomm processors-

Windows 11 Home vs. Windows 11 Pro comparison

Home users have access to two main versions of Windows 11: Home and Pro. Home is the cheaper but less functional version and it is installed on most PCs and laptops that are sold by manufacturers such as Dell HP Asus or Acer.

Most Pro-exclusive features are focused on business-use but some are useful in home environments as well.

The following features are not supported in Windows 11 Home but useful in home environments:

- Bitlocker Device Encryption – may be used to encrypt data on the storage devices to protect it against unauthorized access e.g. after a device was stolen. Device Encryption on the other hand is supported by all editions of Windows 11.
- Group Policy – policies may be used to modify settings preferences and other aspects of Windows 11. The Group Policy offers more configuration options than the Settings application.

Enterprise and Business-specific

- Windows Information Protection
- Assigned Access
- Dynamic Provisioning
- Enterprise State Roaming with Azure
- Kiosk mode setup
- Microsoft Store for Business
- Mobile device management
- Support for Active Directory
- Support for Azure Active Directory
- Windows Update for Business

First Steps

Once a user has booted into the operating system for the first time and completed the initial setup they will notice some of the differences to previous versions of Windows right away.

The centered taskbar is probably the biggest difference that users will notice on first glance provided that the user worked on devices powered by previous versions of Windows.

Many Windows users who upgraded from previous versions of Windows or used devices that were powered by previous Windows versions may want to align the taskbar to the left because that is what they are used to. Another reason for doing so is to make sure that the Start button and pinned icons are always in the same location. Icons are moved dynamically as they are always centered which means that icon positions change as new items are added or removed.

To align the Start menu and icons to the left right-click on a blank location on the Taskbar and select Taskbar Settings. Expand Taskbar behaviors on the page that opens and switch the Taskbar alignment setting from center to left.

It is a good idea to go through to certain sections of the operating system's Settings first to make sure everything is set up correctly.

Starting locations include the following suggestions:

Settings Privacy Security – to limit the data that is submitted via Telemetry to Microsoft

Settings Accounts Your Info – to use a local account instead of a Microsoft account.

Settings Accounts Sign-in Options – disable the PIN in favor of a password.

Settings Personalization – to change the theme backgrounds and colors.

All of these are explained in detail in the following chapters of the book.

Users who upgraded from a previous version of Windows may want to check the installed software to make sure that everything is working as before. New users may want to install software e.g. a different web browser media player privacy software image editor and more.

A list of suggested software programs is provided in a later chapter of this book.

Beginners

The main part of the book begins with a section for Beginners users new to Windows 11 and users new to Windows. While written specifically for beginners it may offer something to intermediate and experienced Windows users as well especially if Windows 11 has not been used before.

Customize Windows 11's appearance

The following chapters offer information on changing the look and feel of the operating system. Users may customize various areas of Windows 11 including the operating system's Start menu Taskbar and File Explorer.

Customize the Start Menu

Microsoft made several changes to the Windows 11 Start Menu. The center-left position of the Start button on the taskbar may be noticed first but it is not the only change.

The Start menu has been streamlined. It displays a search field at the top then up to 11 icons that link to programs and settings six recently added apps or recently opened files a link to the account and power options.

All of the default items pinned to the Start menu can be removed by right-clicking on them and selecting the "unpin from Start" option of the context menu.

Adding Programs to Start

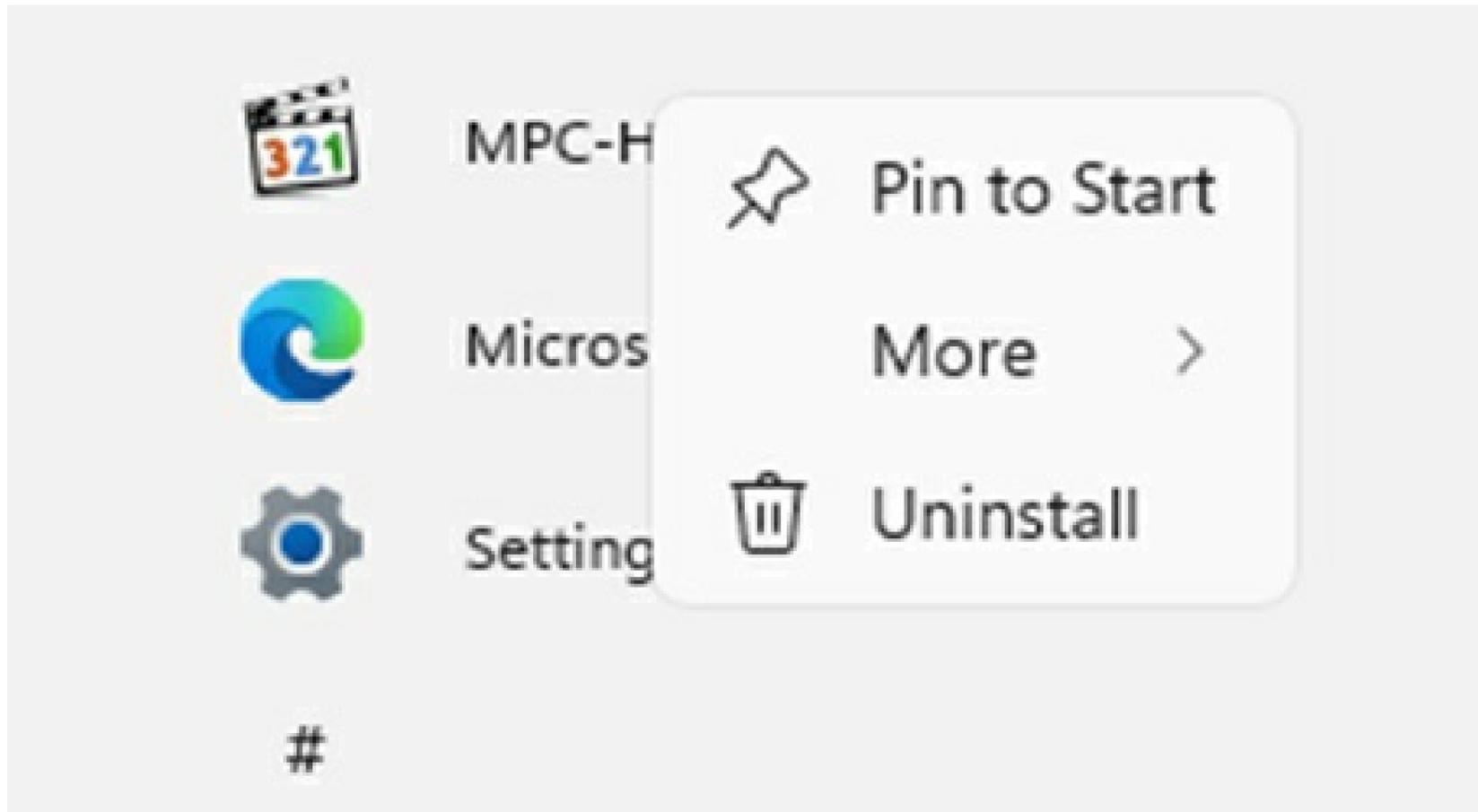


Figure 1: Start Menu add items

Items can't be dragged and dropped on the Start menu to pin them there. Programs can be added in a number of ways including:

- Selecting the “all apps” button of the Start menu to display the list of installed applications. Right-click on a program of the list and select the “Pin to Start” option to add it to the Start menu.
- Right-click on desktop shortcuts or program executable files in program folders and select “Pin to Start”.

Note: users may add more than 1 items to the list of pinned items. Windows indicates this with a small dot that it displays to the right of the listing. Use the mouse wheel to scroll to the next batch of 1 items or tap on the dots to jump to the next or previous listing.

Adding Folders to Start

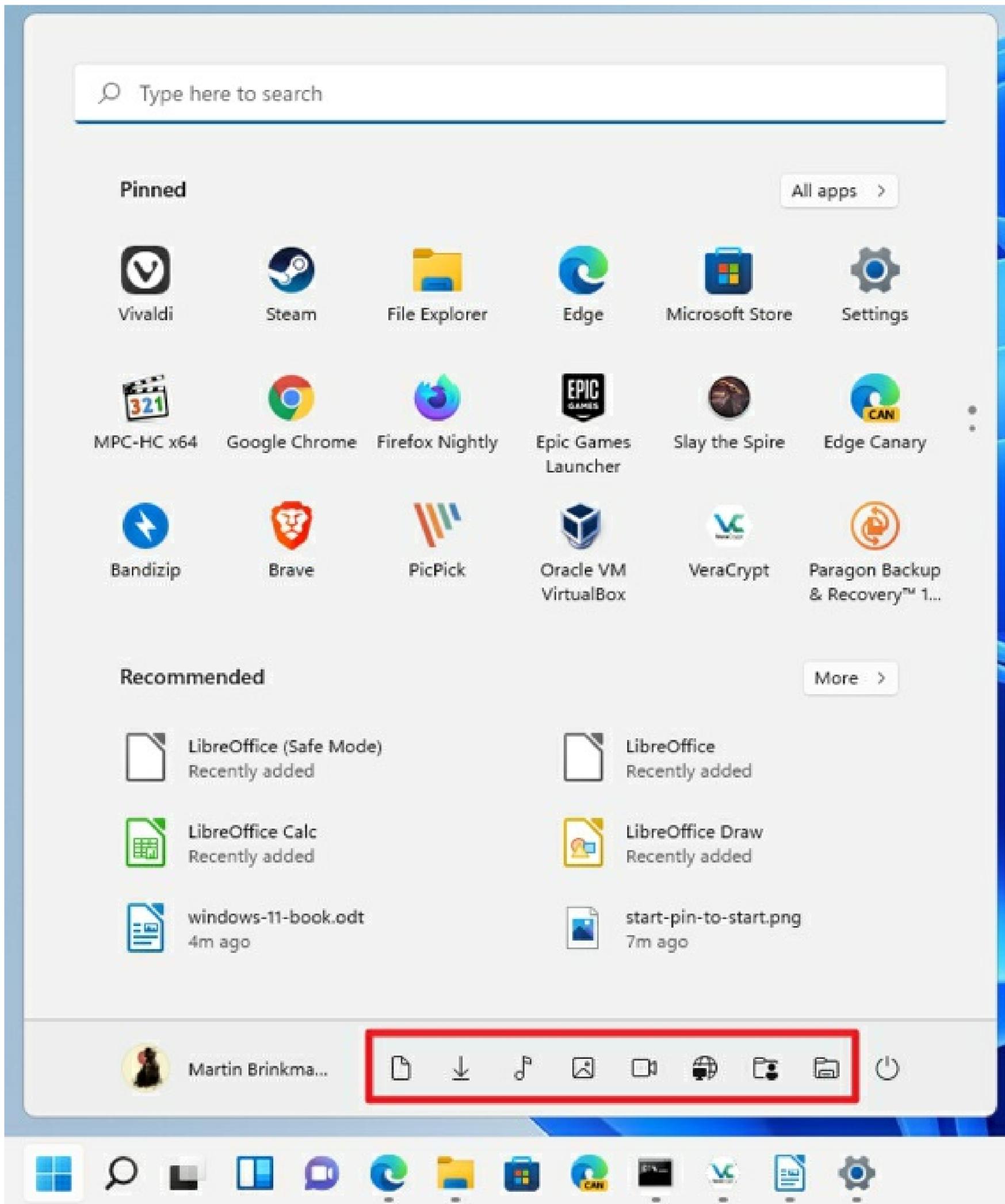


Figure 2: Start Folders Added

Windows 11 supports adding a limited number of preset folders to the Start menu. Not all of the items are folders: Settings File Explorer Documents Downloads Music Pictures Video Network and Personal Folder.

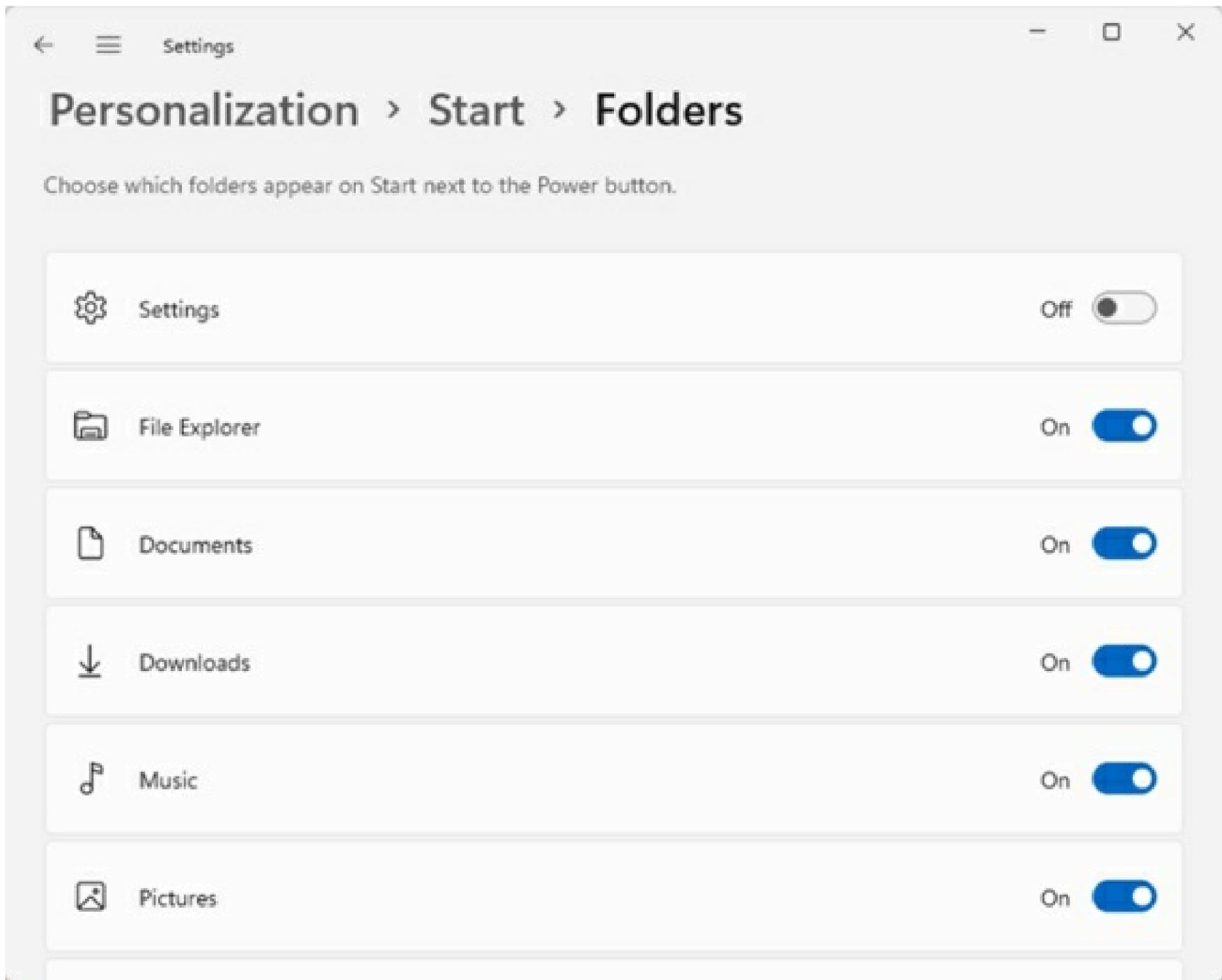


Figure 3: Start add new folders

1. Open the Settings application either by using the keyboard shortcut Windows-I or by selecting Start Settings.
2. Navigate to Personalization > Start Folders.
 - . Toggle one or multiple of the folders that should be displayed on the Start menu.

The change is visible immediately and the linked applications and folders may be opened with a click or tap on touch-based devices from that moment on. There is no option to customize the available personal folders.

Add links to specific Settings pages to Start

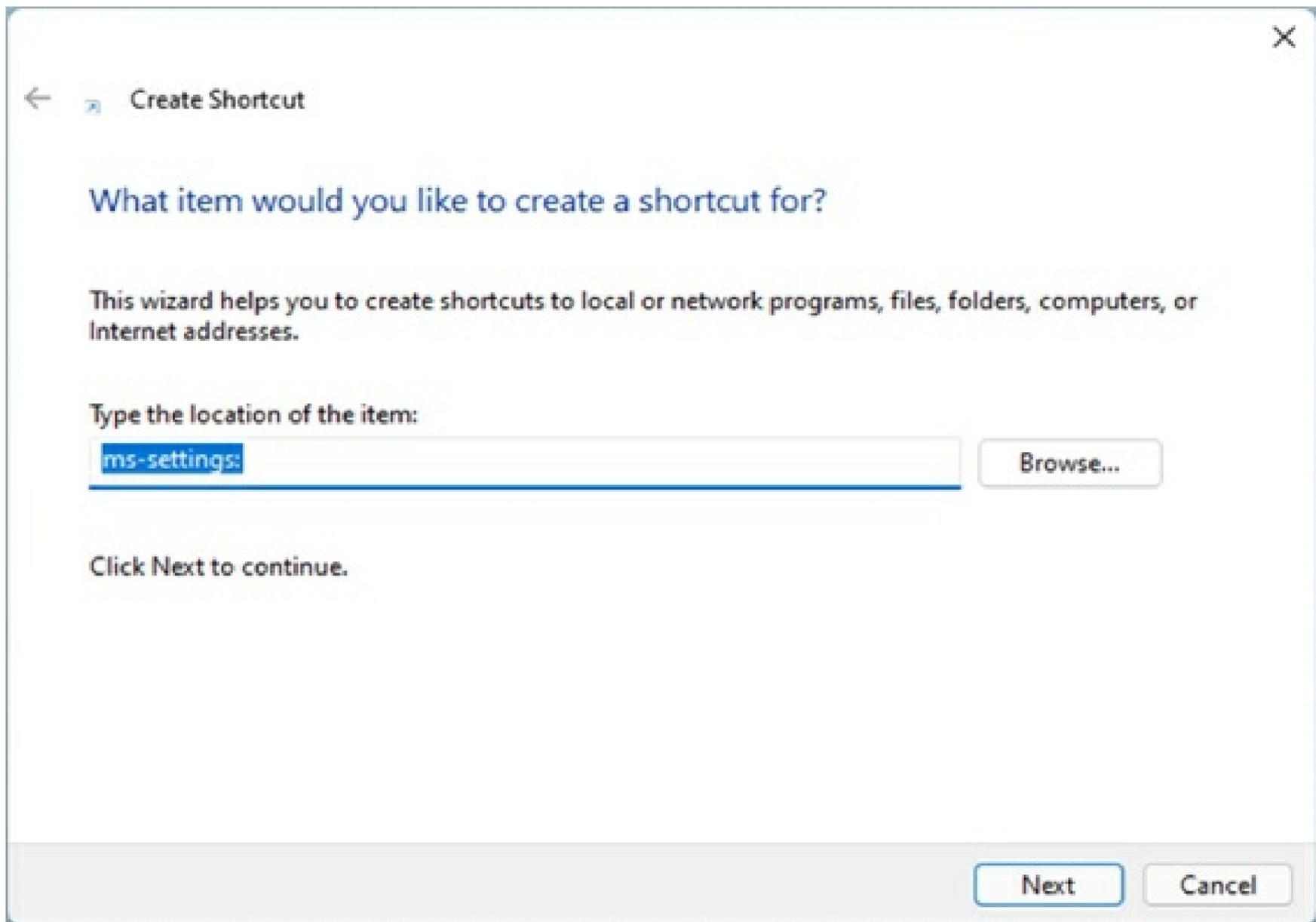


Figure 4: Windows 11 Shortcuts

Settings that are used regularly may be pinned to the Windows 11 Start menu for quick access. The commands may also be used in the Run box to open a particular Settings page directly. To do that press Windows-R to open the Run box type the command and hit the Enter-key.

Creating a shortcut:

1. Right-click on a blank spot on the desktop and select New → Shortcut from the context menu.
2. Type the name of the Settings shortcut under “Type the location of the item”. Example: ms-settings: to open the main Settings page or ms-settings:privacy to open the Privacy Settings page.
 - . Select Next.
4. Type a name for the new shortcut.
 - . Select finish to save the new shortcut to the desktop.

Right-click on the newly created shortcut and select Properties. An option to change the icon is displayed on the page that opens. Activate it and pick another icon to customize the icon.

To add it to the Start Menu of Windows 11 copy and paste the shortcut to the following location:
%APPDATA%\Microsoft\Windows\Start Menu\Programs

It is listed under “All Apps” in the Windows 11 Start Menu after the next sign-in to the system. Once it is there right-click on the item and select “pin to Start” to display it on the main Start screen as well for easier access.

Here is a list of Settings shortcuts:

- Settings home – ms-settings:
- About – ms-settings:about
- Access work or school – ms-settings:workplace
- Activation – ms-settings:activation
- Apps features – ms-settings:appsfeatures
- Autoplay – ms-settings:autoplay

- Background – ms-settings:personalization-background
- Backup – ms-settings:backup
- Battery – ms-settings:batterysaver
- Bluetooth – ms-settings:bluetooth
- Broadcasting – ms-settings:gaming-broadcasting
- Captures – ms-settings:gaming-gamedvr
- Cellular Sim – ms-settings:network-cellular
- Clipboard – ms-settings:clipboard
- Colors – ms-settings:colors
- Data Usage – ms-settings:datausage
- Date and Time – ms-settings:dateandtime
- Default Apps – ms-settings:defaultapps
- Device Encryption – ms-settings:deviceencryption
- Dial-Up – ms-settings:network-dialup
- Direct Access – ms-settings:network-directaccess
- Display – ms-settings:display
- Ease of Access Audio – ms-settings:easeofaccess-audio
- Ease of Access Closed Captions – ms-settings:easeofaccess-closedcaptioning
- Ease of Access Color Filters – ms-settings:easeofaccess-colorfilter
- Ease of Access Display – ms-settings:easeofaccess-display
- Ease of Access Eye Control – Ease of Access Keyboard – ms-settings:easeofaccess-keyboardeyecontrol
- Ease of Access High Contrast – ms-settings:easeofaccess-highcontrast
- Ease of Access Keyboard – ms-settings:easeofaccess-keyboard
- Ease of Access Magnifier – ms-settings:easeofaccess-magnifier
- Ease of Access Mouse – ms-settings:easeofaccess-mouse
- Ease of Access Narrator – ms-settings:easeofaccess-narrator
- Ease of Access Speech – ms-settings:easeofaccess-speechrecognition
- Ease of Access Text Cursor – ms-settings:easeofaccess-cursor
- Email accounts – ms-settings:emailandaccounts
- Ethernet – ms-settings:network-ethernet
- Family Other Users – ms-settings:otherusers
- Find My Device – ms-settings:findmydevice
- Focus Assist – ms-settings:quiethours
- Fonts – ms-settings:fonts
- For Developers – ms-settings:developers
- Game Bar – ms-settings:gaming-gamebar
- Game Mode – ms-settings:gaming-gamemode
- Language – ms-settings:regionlanguage
- Lock Screen – ms-settings:lockscreen
- Mixed Reality – ms-settings:holographic
- Mobile Hotspot – ms-settings:network-mobilehotspot
- Mouse – ms-settings:mousetouchpad
- Multitasking – ms-settings:multitasking
- Network Internet – ms-settings:network
- Network Status – ms-settings:network-status
- NFC – ms-settings:nfctransactions
- Notifications – ms-settings:notifications
- PC Projecting – ms-settings:project
- Pen Windows Ink – ms-settings:pen
- Personalization – ms-settings:personalization
- Phone – ms-settings:mobile-devices
- Power – ms-settings:powersleep
- Printers and Scanners – ms-settings:printers
- Privacy General – ms-settings:privacy
- Privacy Account Info – ms-settings:privacy-accountinfo
- Privacy Activity History – ms-settings:privacy-activityhistory
- Privacy App Diagnostics – ms-settings:privacy-appdiagnostics

- Privacy Automatic File Downloads – ms-settings:privacy-automaticfiledownloads
- Privacy Background Apps – ms-settings:privacy-backgroundapps
- Privacy Calendar – ms-settings:privacy-calendar
- Privacy Call History – ms-settings:privacy-callhistory
- Privacy Camera – ms-settings:privacy-camera
- Privacy Contacts – ms-settings:privacy-contacts
- Privacy Diagnostics Feedback – ms-settings:privacy-feedback
- Privacy Documents – ms-settings:privacy-documents
- Privacy Email – ms-settings:privacy-email
- Privacy Eye Tracker – ms-settings:privacy-eyetracker
- Privacy file System – ms-settings:privacy-broadfilesystemaccess
- Privacy Inking Typing – ms-settings:privacy-speechtyping
- Privacy Location – ms-settings:privacy-location
- Privacy Messaging – ms-settings:privacy-messaging
- Privacy Microphone – ms-settings:privacy-microphone
- Privacy Notifications – ms-settings:privacy-notifications
- Privacy Other Devices – ms-settings:privacy-customdevices
- Privacy Pictures – ms-settings:privacy-pictures
- Privacy Radios – ms-settings:privacy-radios
- Privacy Speech – ms-settings:privacy-speech
- Privacy Tasks – ms-settings:privacy-tasks
- Privacy Videos – ms-settings:privacy-videos
- Privacy Voice Activation – ms-settings:privacy-voiceactivation
- Proxy – ms-settings:network-proxy
- Recovery – ms-settings:recovery
- Region – ms-settings:regionformatting
- Remote Desktop – ms-settings:remotedesktop
- Search Permissions and History – ms-settings:search-permissions
- Searching Windows – ms-settings:cortana-windowssearch
- Shared Experiences – ms-settings:crossdevice
- Sign-In Options – ms-settings:signinoptions
- Sound – ms-settings:sound
- Speech – ms-settings:speech
- Start – ms-settings:personalization-start
- Startup – ms-settings:startupapps
- Storage – ms-settings:storagesense
- Sync – ms-settings:sync
- Tablet Mode – ms-settings:tabletmode
- Taskbar – ms-settings:taskbar
- Themes – ms-settings:themes
- Touchpad – ms-settings:devices-touchpad
- Troubleshoot – ms-settings:troubleshoot
- Typing – ms-settings:typing
- USB – ms-settings:usb
- VPN – ms-settings:network-vpn
- Wheel – ms-settings:wheel
- Wi-Fi – ms-settings:network-wifi
- Windows Insider Program – ms-settings:windowsinsider
- Windows Security – ms-settings:windowsdefender
- Windows Update – ms-settings:windowsupdate
- our Info – ms-settings:yourinfo

Managing the Recommended section

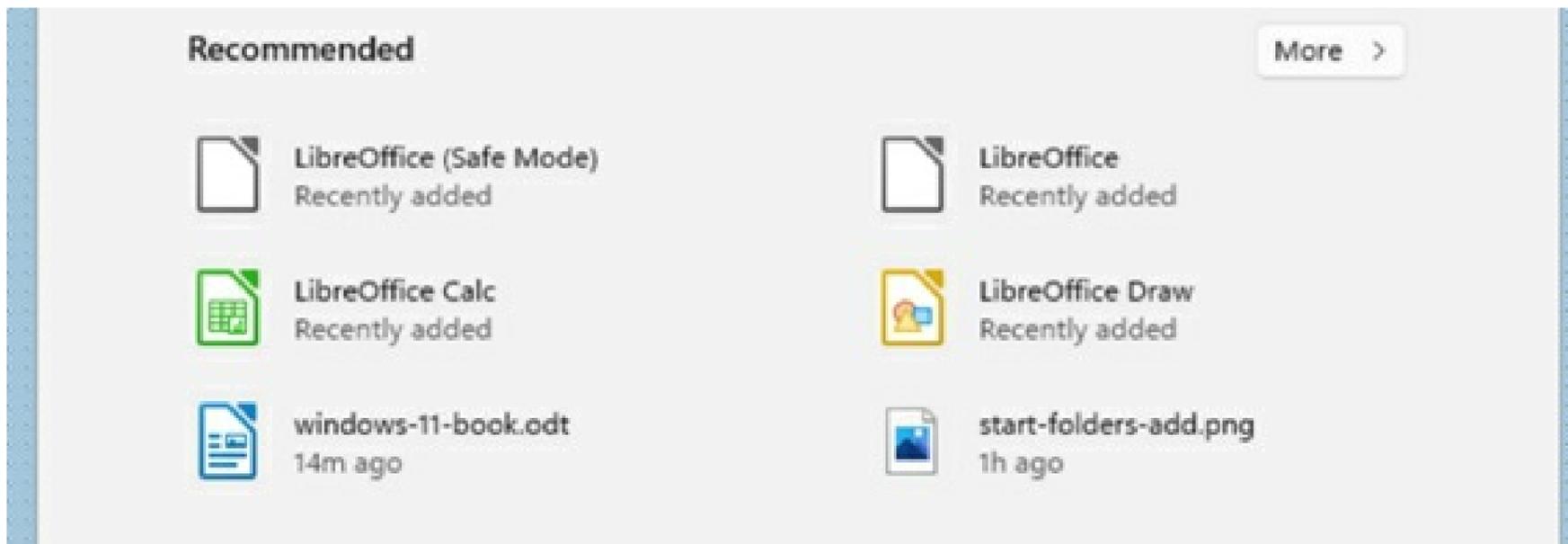


Figure 5: Start Recommended Section

Windows 11 displays recently added apps, most used apps, and recently opened items when users open the Start menu by default.

The list is limited to six items in total. A more button is displayed if there are more than six items in total available. It opens a chronological list of recent application installations, most used applications, and recently opened items in File Explorer.

Remove individual recommended items

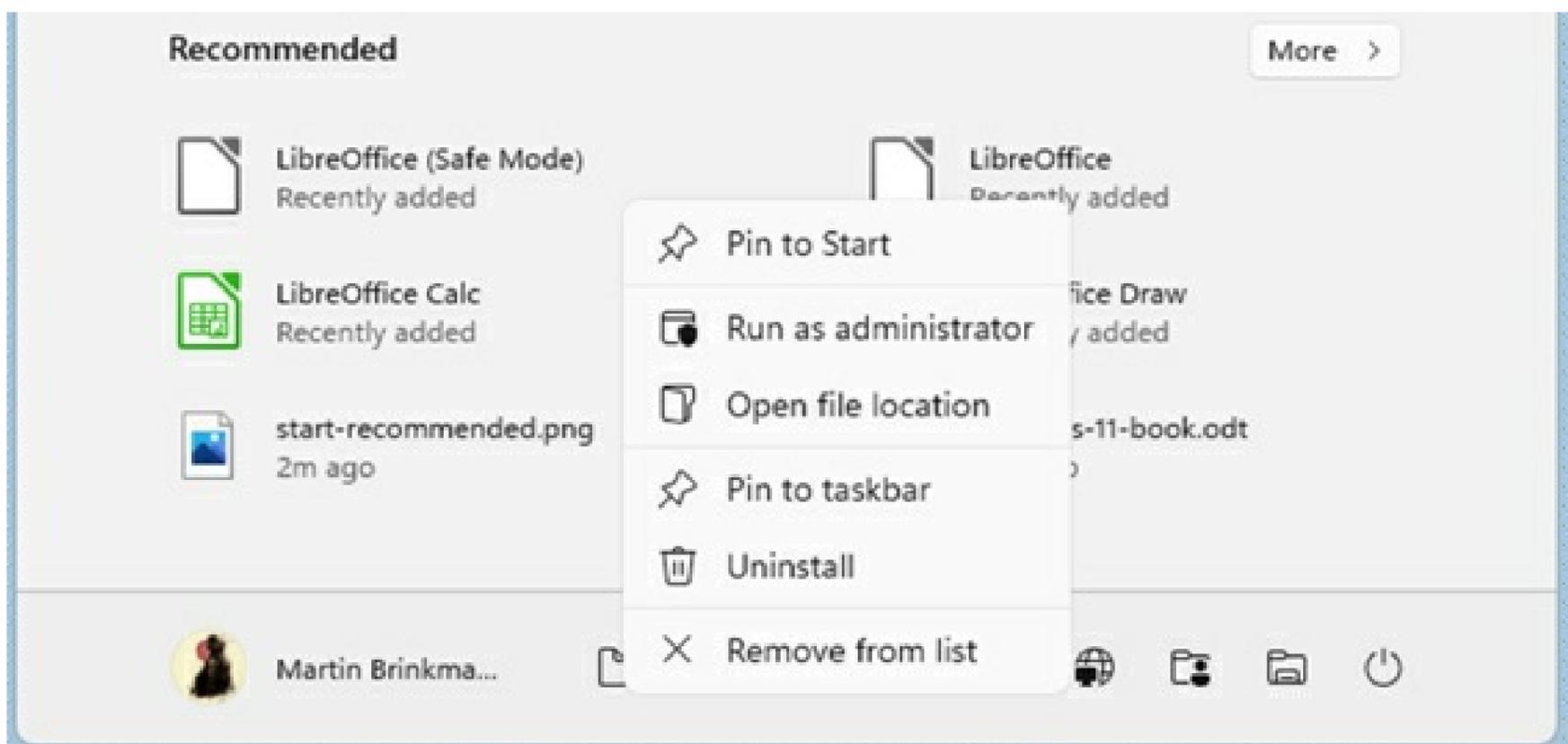


Figure 6: Start remove individual recommended items

Individual items can be removed from the recommended listing. Right-click on the item that should be removed from the listing and select the “remove from list” option. The item is removed immediately and replaced by another, if available. The same right-click option is available on the “more” page as well.

Hide recommended items in Start

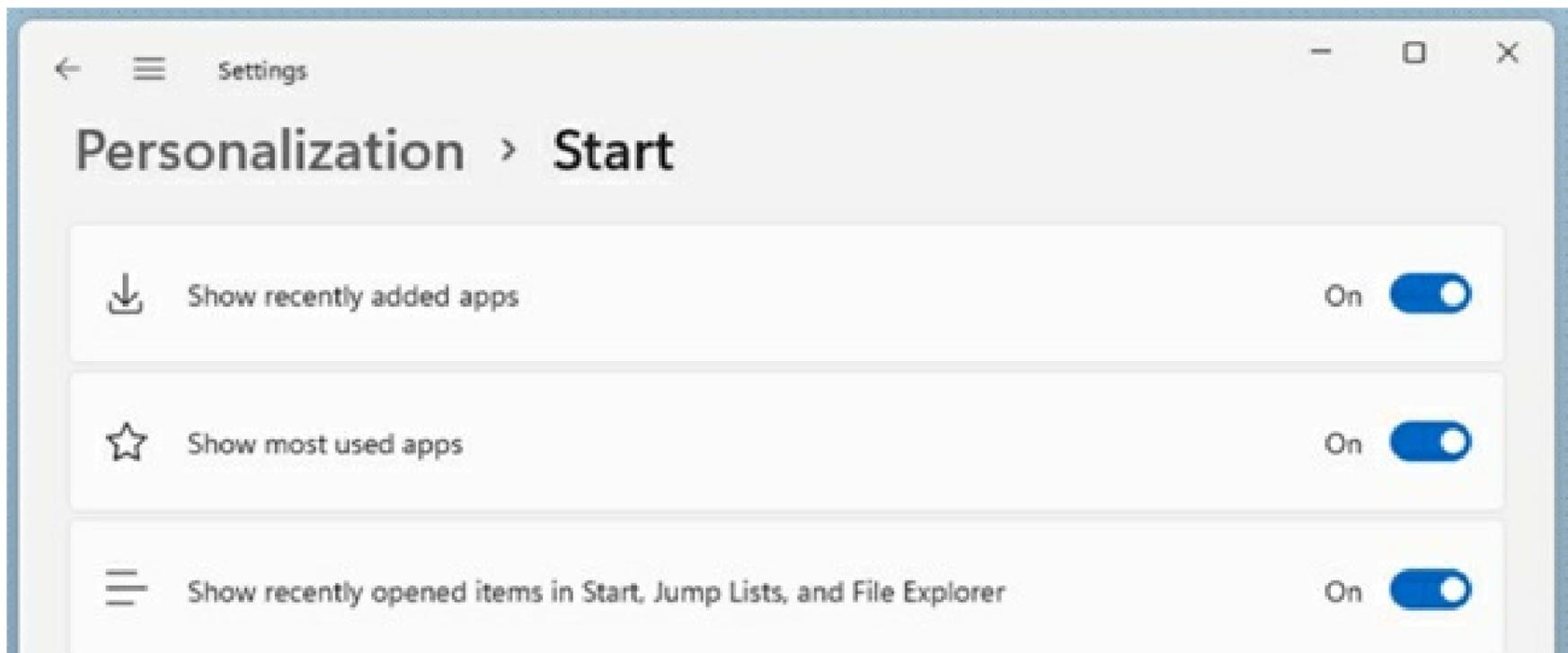


Figure 7: Start configure recommended items

Windows 11 supports settings that will remove some or even all of the recommendations in the Start menu. The recommended section continues to be displayed but it does not list any items if all of the recent items options are disabled.

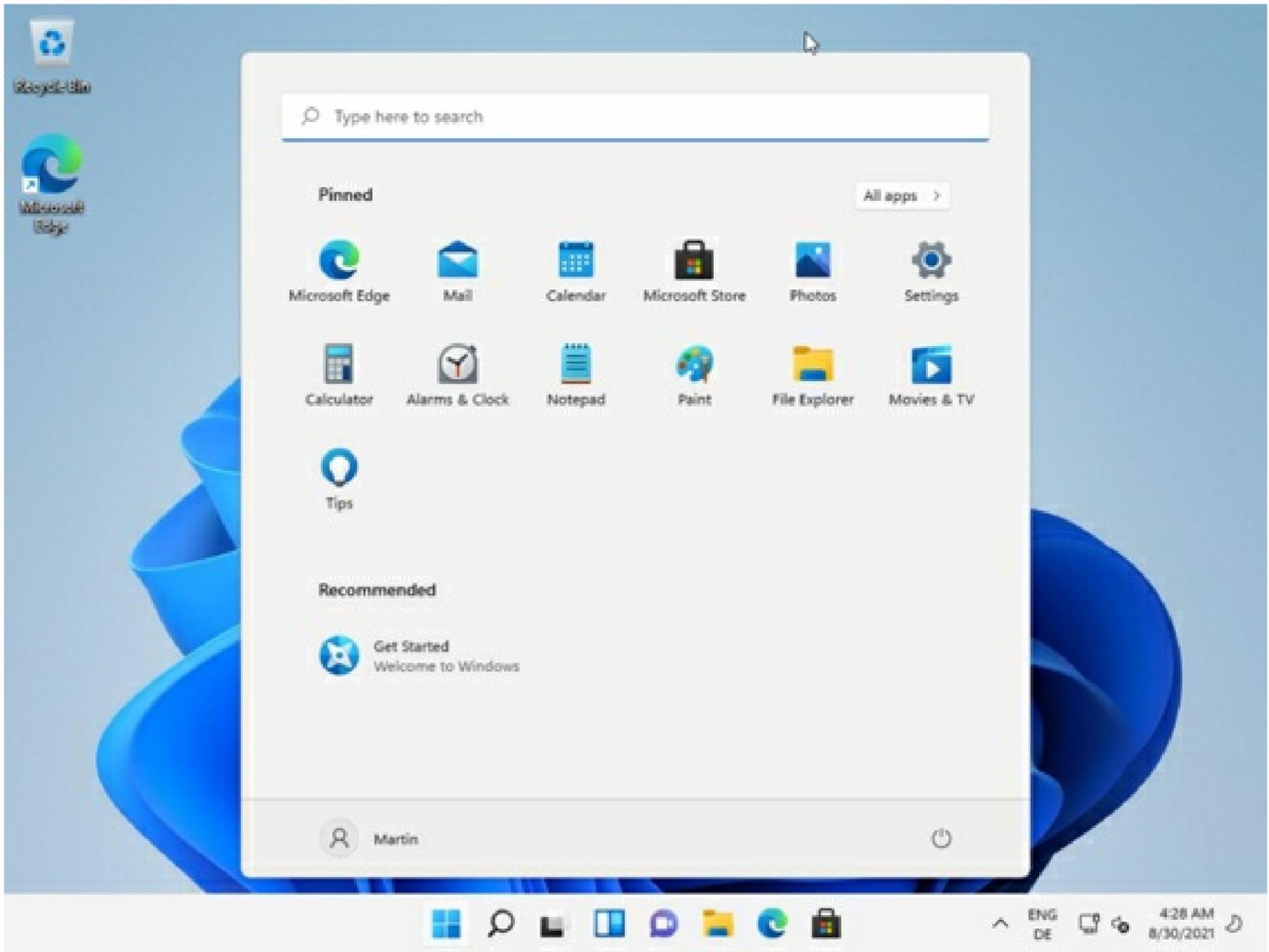
1. Open the Settings application with the keyboard shortcut Windows-I or go to Start Settings.
2. Select Personalization > Start.
 - . The following three options can be turned off individually:
4. Show recently added apps – Displays new programs that were installed recently on the system if enabled.
 - . Show most used apps – Displays applications that are used often on the system.
 - . Show recently opened items in Start > Jump Lists and File Explorer – Displays items usually files that were opened recently.

The third option affects other parts of the operating system as it will hide recent items in Jump Lists and in File Explorer when disabled.

Customize the new Windows 11 Taskbar

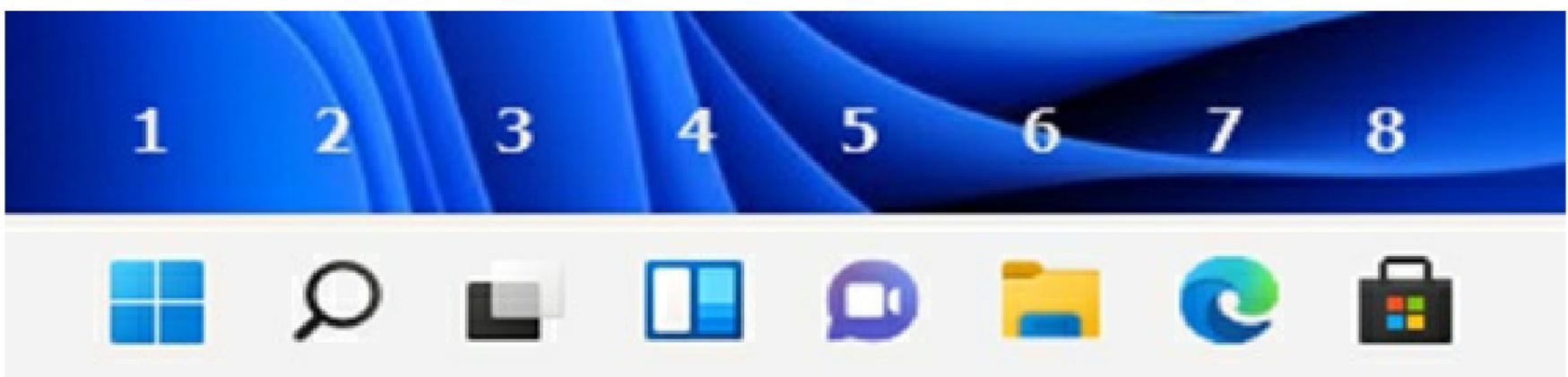
Windows 11's taskbar can best be described as a limited version of previous taskbars as its functionality has been reduced by Microsoft. The default taskbar layout displays all icons and the Start button centered on the taskbar. The layout is dynamic and icon positions change when icons get added or removed from the taskbar.

There is an option to align the taskbar to the left but the option to place it at the top or the sides is no longer available. Dragging & dropping shortcuts or files on the taskbar is not supported either anymore.



The Start button is displayed as the leftmost icon on the taskbar. Next to it are the pinned icons and next to those the icons of programs that are open but not pinned.

The right side is reserved for the system tray and notification area.

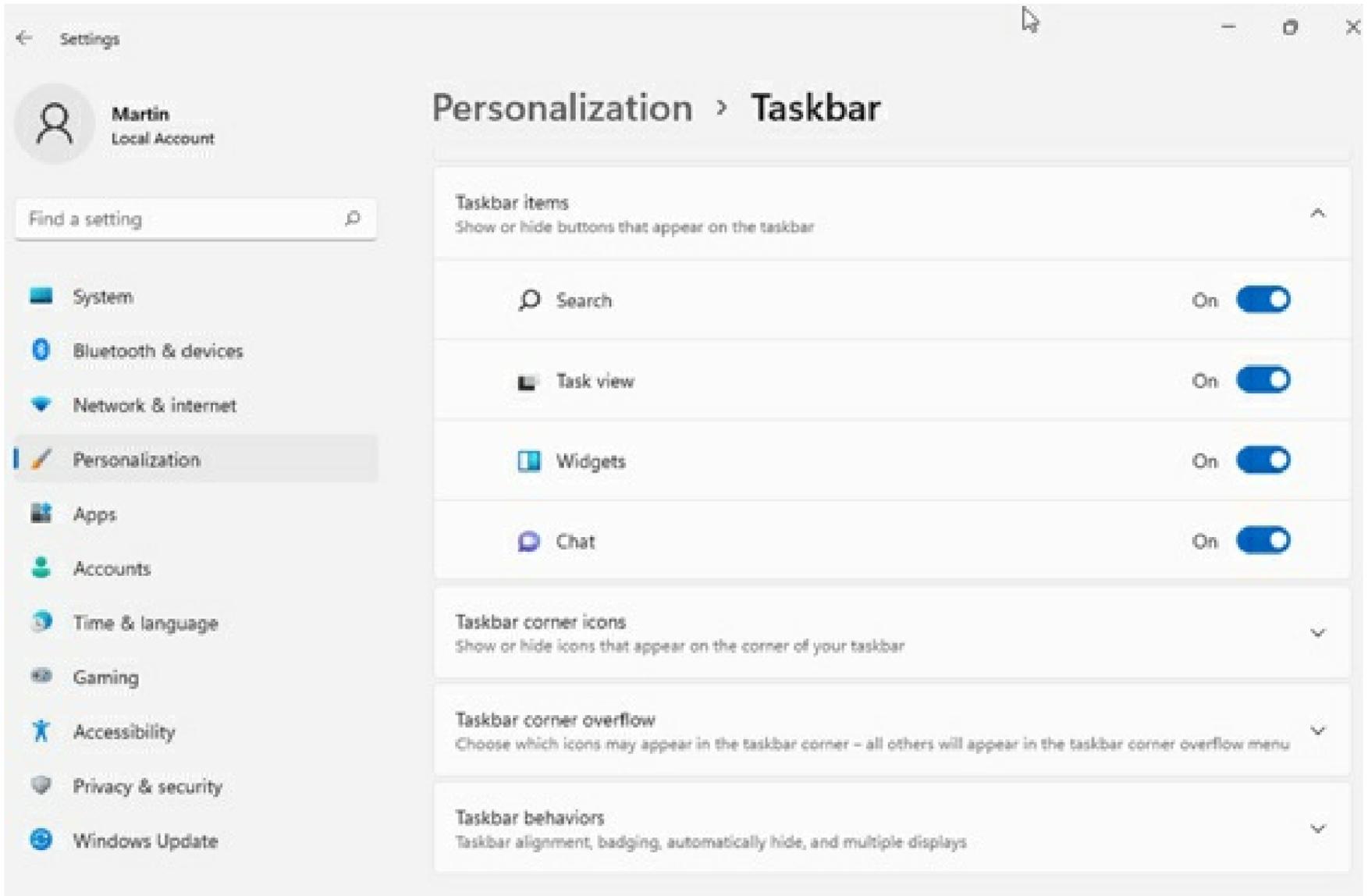


From left to right:

1. Start Menu button.
2. Search button.
- . Virtual Desktops button.
4. Widgets.
 - . Chat.
 - . File Explorer.
 - . Microsoft Edge
 - . Microsoft Store.

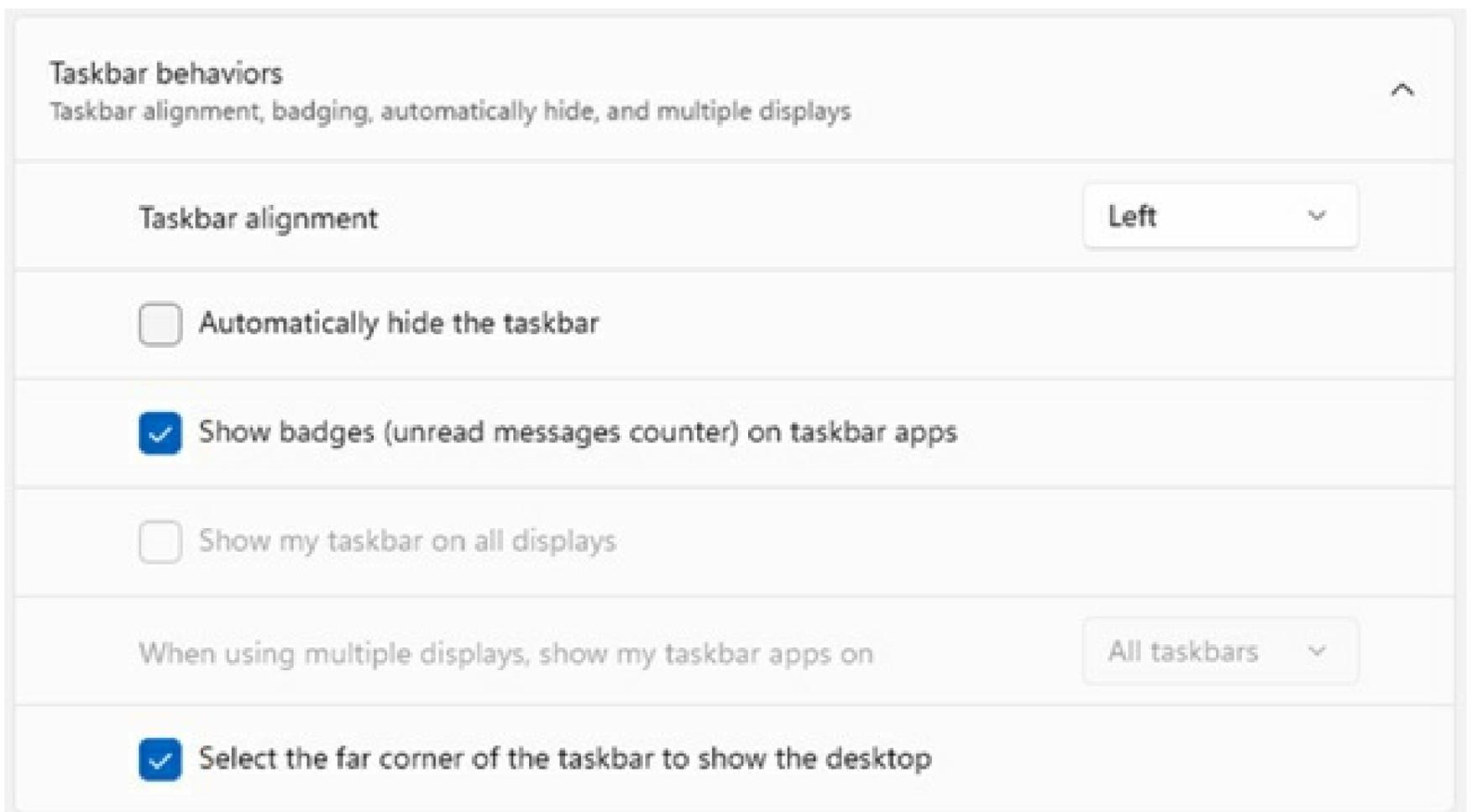
All icons but the Start Menu button can be removed from the taskbar.

Align taskbar icons to the left

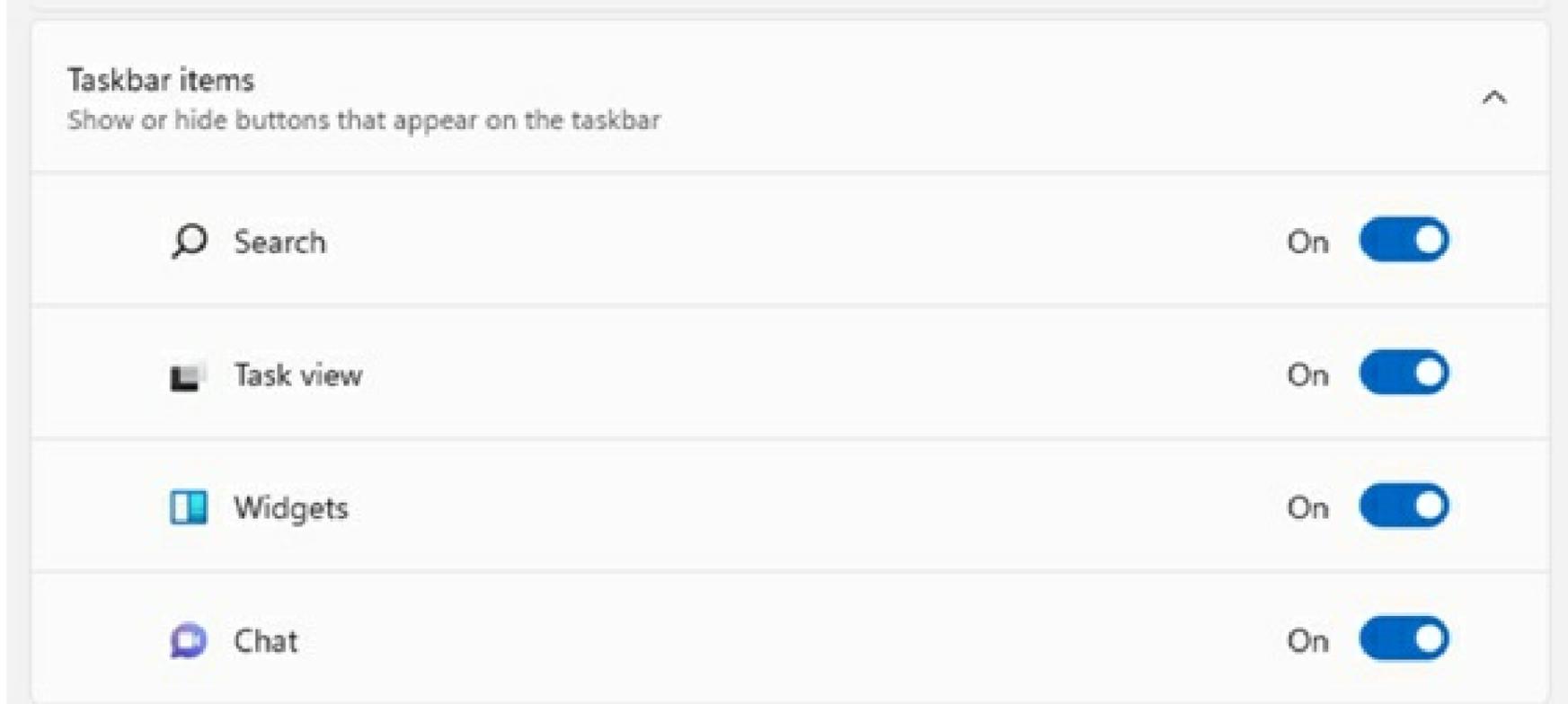


Microsoft added an option to display all taskbar icons in the default position of previous versions of Windows. Instead of displaying them centered icons are displayed on the left side of the taskbar in that case. One advantage of that is that the Start Menu Search and all pinned icons are in the same position all the time.

To change the layout right-click on a blank space on the taskbar and select Taskbar Settings. Users may also select Start Settings Personalization Taskbar to display available options.



Personalization > Taskbar

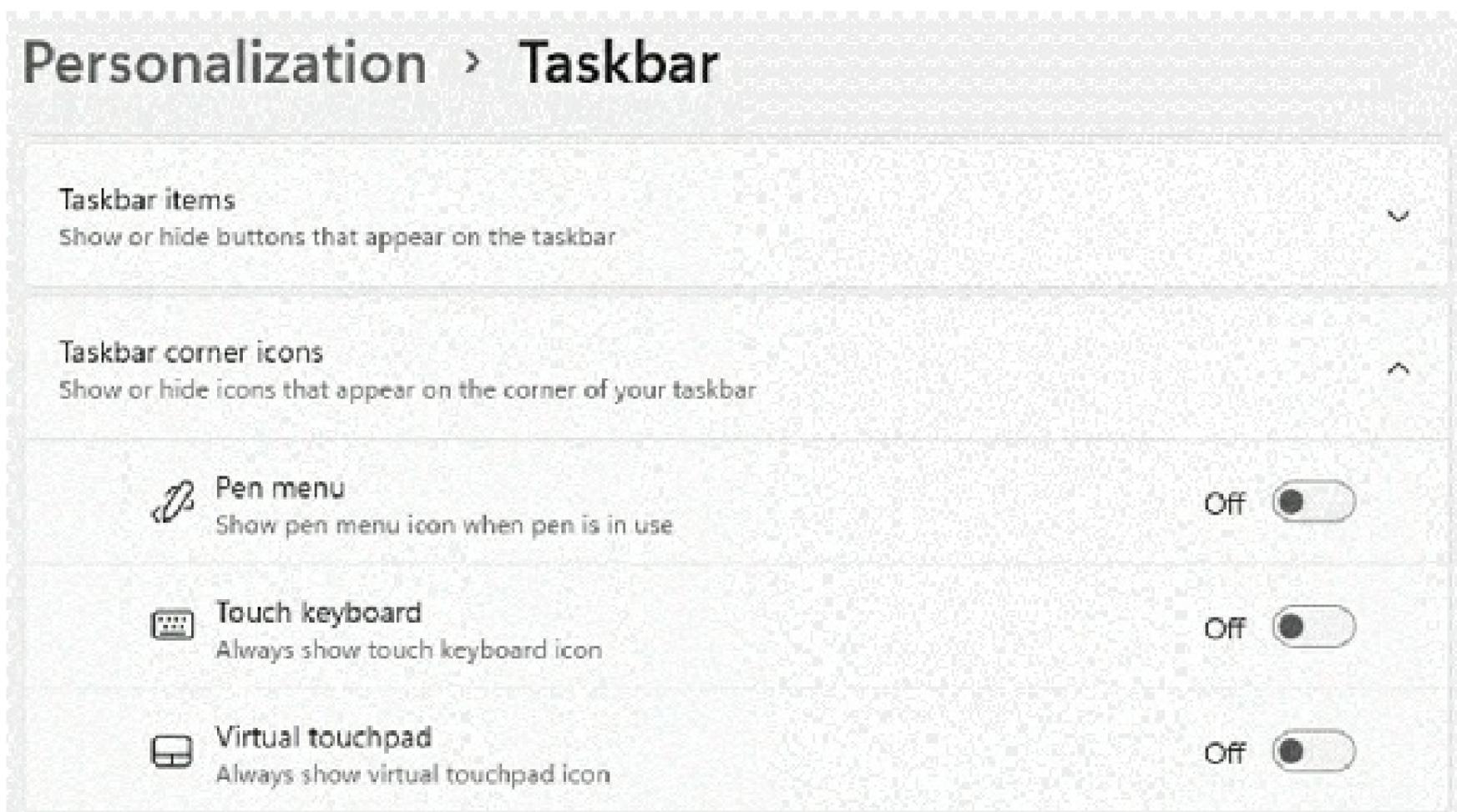


The Taskbar items group provides toggles to display or hide certain items on the taskbar:

1. Search.
2. Task View.
3. Widgets.
4. Chat.

All of these can be removed from the taskbar as well by right-clicking on them and selecting the hide or remove option that is displayed.

Taskbar corner items



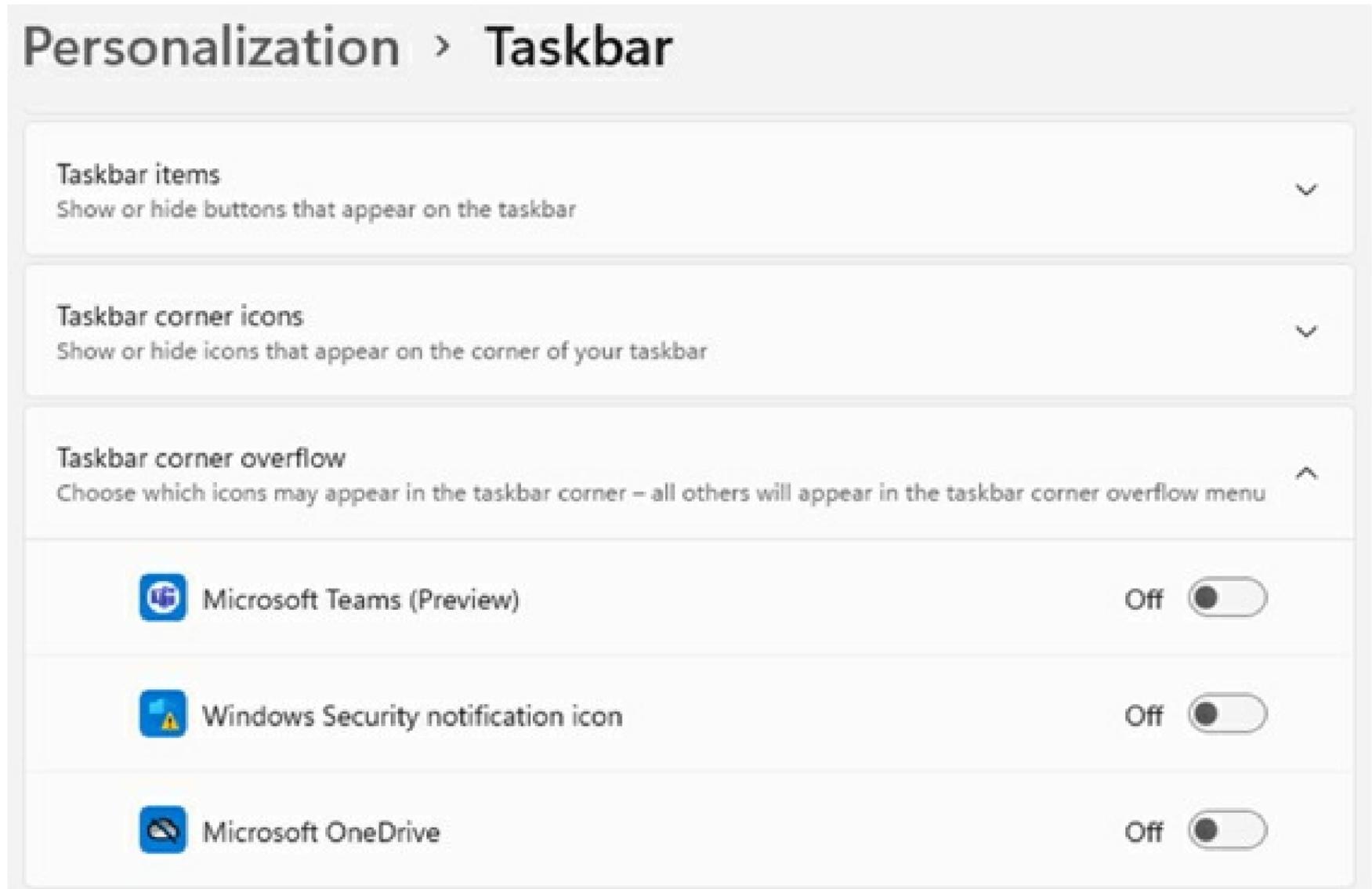
Taskbar corner icons are displayed in the system tray area more precisely in the corner of the taskbar. Options may be disabled by default depending on the system that is being used.

The following items may be enabled or disabled using the settings group:

1. Pen menu.
2. Touch keyboard.
 - . Virtual keyboard.

Some of these become only available if certain hardware is supported e.g. a touch device for the touch keyboard.

Taskbar Corner Overflow



Icons that you want to display in the system tray area may either be displayed directly or in the corner overflow menu. Use the configuration group to select items that you want to be visible directly on the taskbar and not in the overflow menu (which you display when you move the mouse over the up arrow icon).

Items displayed here may differ depending on the programs that are installed on the device.

Taskbar behavior

Personalization > Taskbar

Taskbar items

Show or hide buttons that appear on the taskbar



Taskbar corner icons

Show or hide icons that appear on the corner of your taskbar



Taskbar corner overflow

Choose which icons may appear in the taskbar corner – all others will appear in the taskbar corner overflow menu



Taskbar behaviors

Taskbar alignment, badging, automatically hide, and multiple displays



Taskbar alignment

Left



Automatically hide the taskbar

Show badges (unread messages counter) on taskbar apps

Show my taskbar on all displays

When using multiple displays, show my taskbar apps on

All taskbars



Select the far corner of the taskbar to show the desktop

Besides the option to change the alignment from center to left the following options are provided:

1. Automatically hide the taskbar.
2. Show badges (unread message counter) on taskbar apps.
 - . Show my taskbar on all displays.
4. When using multiple displays show my taskbar apps on.
 - . Select the far corner of the taskbar to show the desktop.

The first option hides the taskbar automatically when the mouse is not over it the second enables or disables badges on icons e.g. that may display the unread email account of an email program the third whether the taskbar is displayed on all displays connected to the PC.

The fourth option defines whether apps are displayed on all taskbars or only on the active one and the final option whether the “show desktop” option is displayed when you move the mouse cursor to the rightmost location on the taskbar.

How to pin programs to the taskbar

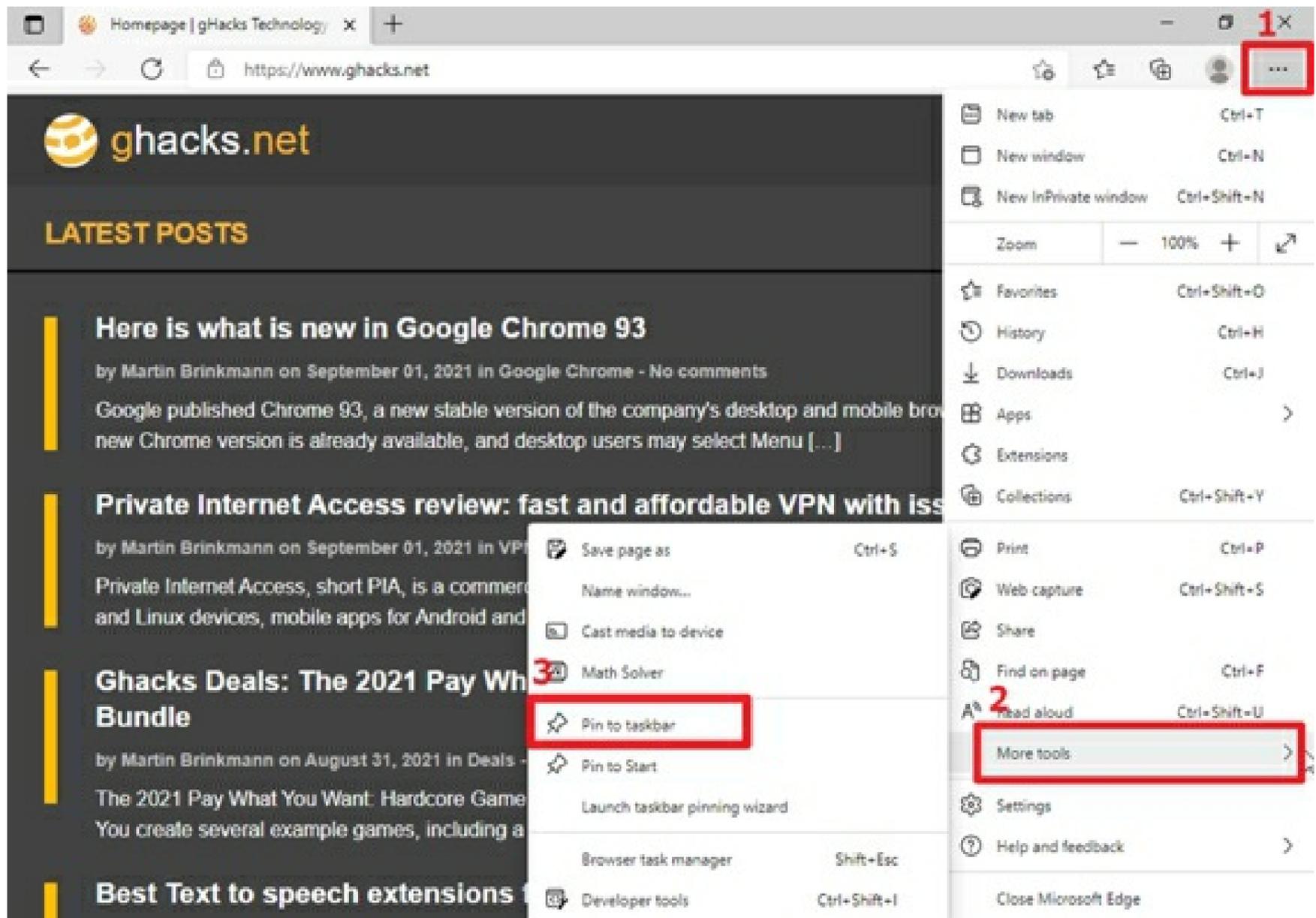
Windows 11 displays icons of most programs that you open on the taskbar this is temporary as the icon is removed once the application is closed. Right-click on an icon and select the “pin to taskbar” option of its context menu to pin the application permanently to the taskbar.

The same option is provided in the Start menu. Right-click on a program icon on the main dashboard and you get an option to pin it to the taskbar for quick access.

The pinning works differently for programs that are not pinned on the main dashboard. Select the All Apps button to display a list of all installed programs. Right-click on a program there move the mouse cursor over more and select the pin to taskbar option from the submenu.

Apps can be pinned from Explorer as well. Open File Explorer and navigate to the program folder. Right-click on the file name and select "show more options" and then in the new menu the pin to taskbar option.

How to pin websites to the taskbar



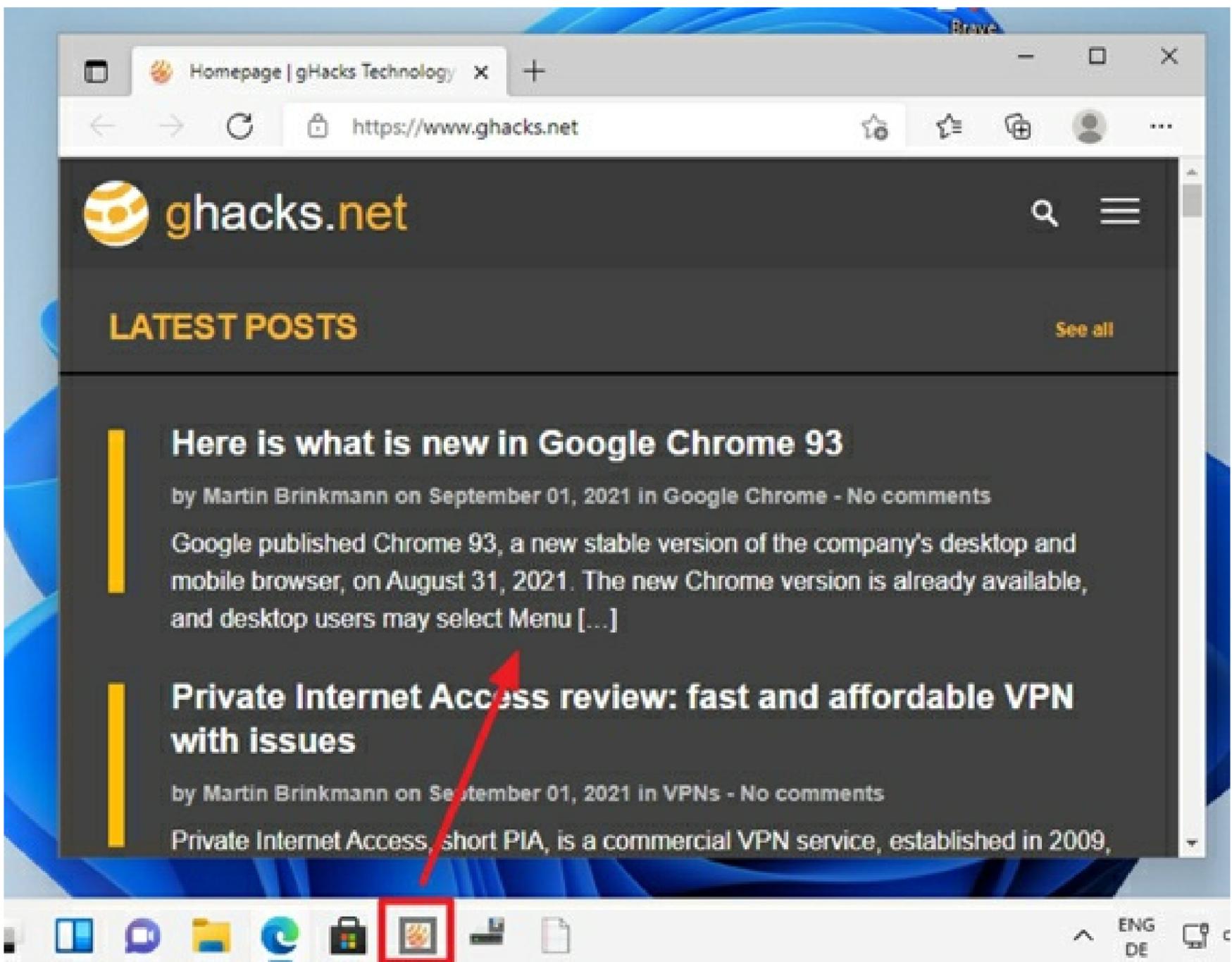
Websites can be pinned to the taskbar to open pinned sites with a click or tap. The feature requires Microsoft Edge as the functionality is exclusive to the browser.

Open Microsoft Edge and load the site that you want to pin to the taskbar. Once it is fully loaded select Menu More Tools Pin to taskbar. Change the default name if you want and select pin to complete the process.

Pin to taskbar



Pinned sites open in Microsoft Edge even if it is not the default web browser of the system.

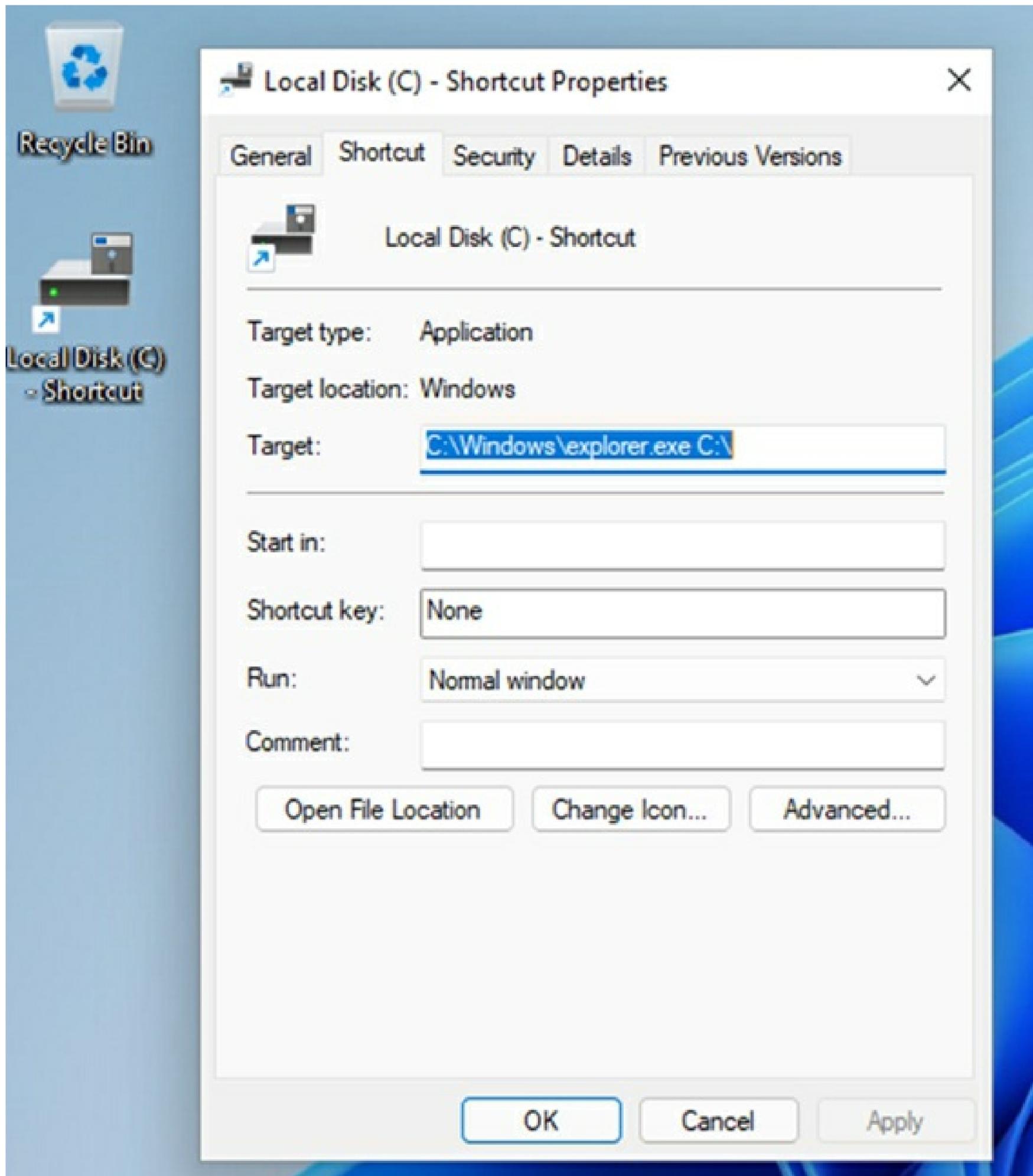


Pin other items to the taskbar

Microsoft's Windows 11 operating system does not display options to pin files folders or drives to the taskbar when you right-click on them.

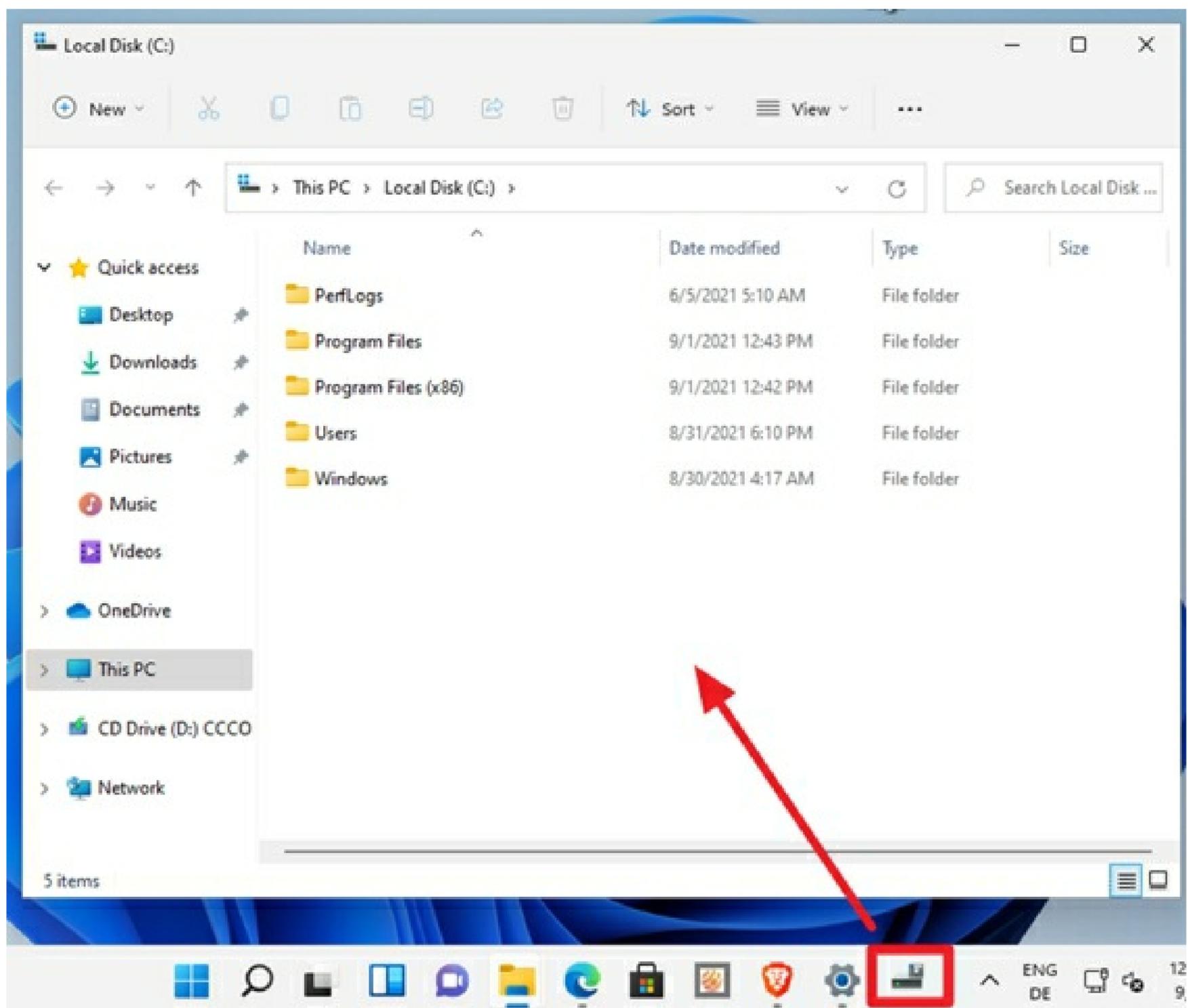
There is a workaround for that but it requires several manual steps.

Pin Drives



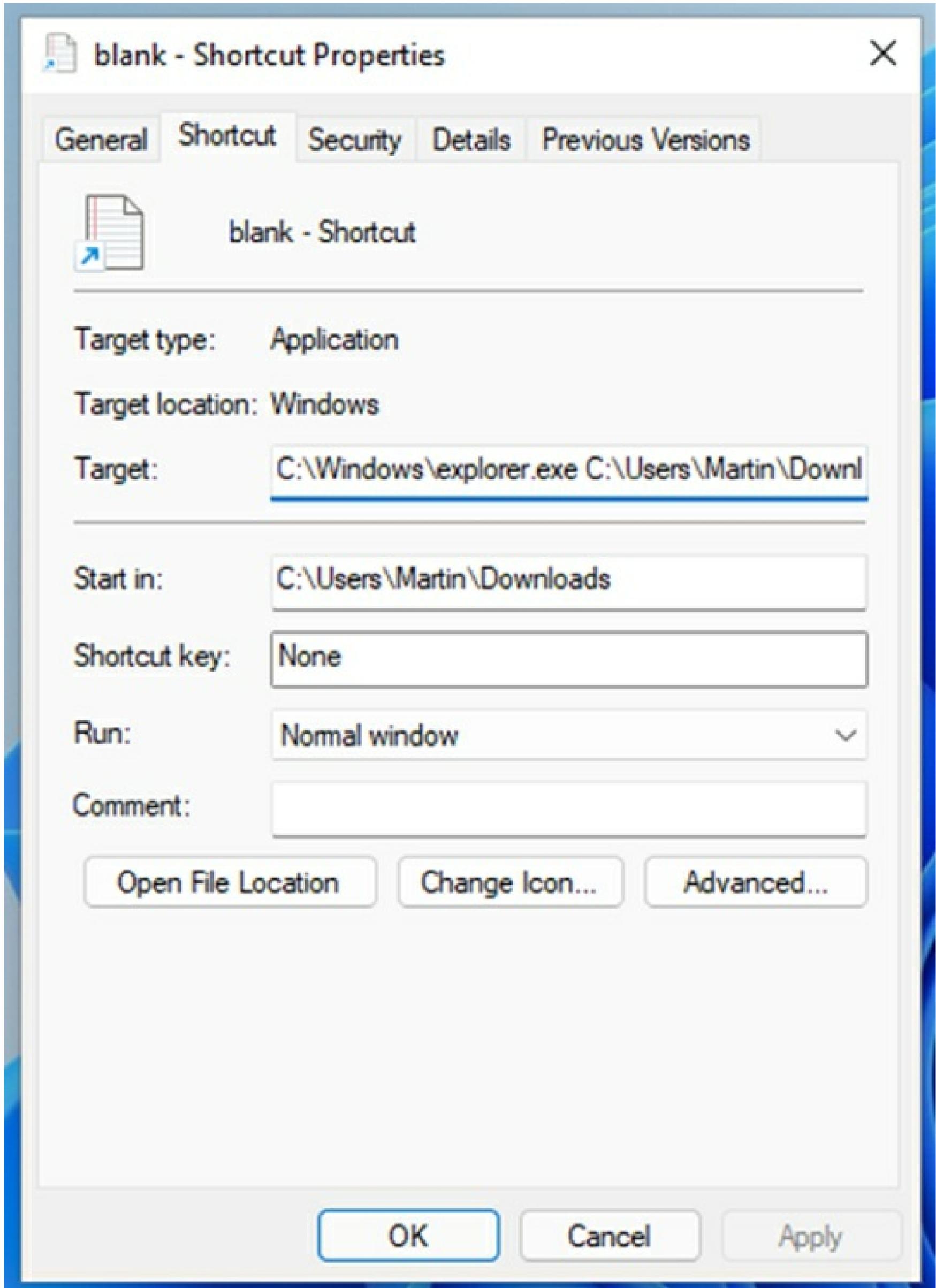
1. Right-click on the drive in Explorer that you want to pin to the taskbar.
2. Select "Show more options" from the right-click context menu and on the page that opens "Create shortcut"
 - . Select "yes" when reminded that the shortcut can't be placed in the location and to place it on the desktop instead.
4. Right-click on the newly created shortcut on the desktop and select properties from the context menu.
 - . Make sure the Shortcut tab is selected. Add c:\windows\explorer.exe in front of the drive letter under Target. For drive C:\ you'd add c:\windows\explorer.exe c:\
 - . Select Apply.
 - . Select "Change Icon" in the same window.
 - . Type imageres.dll in the "look for icons in this file" field to load icons.

9. Pick an icon from the selection.
10. Select OK.
11. Select Apply in the Properties window.
12. Right-click on the drive shortcut on the desktop again.
- 1 . Select "Show more options" and then "Pin to taskbar" to place the drive shortcut on the Windows 11 taskbar.



Activation of the icon on the taskbar opens its root in File Explorer.

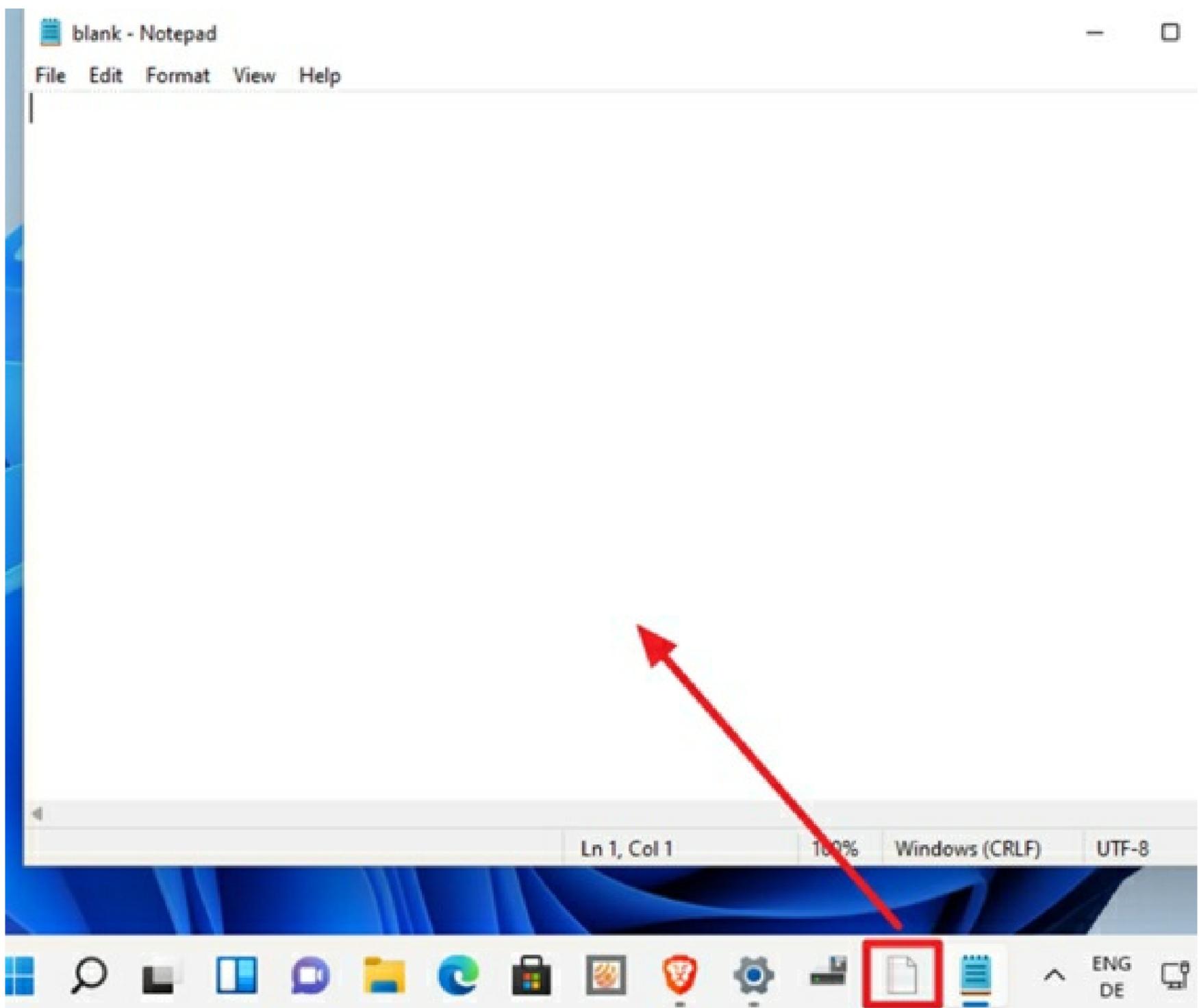
Pin Files or Folders to the taskbar



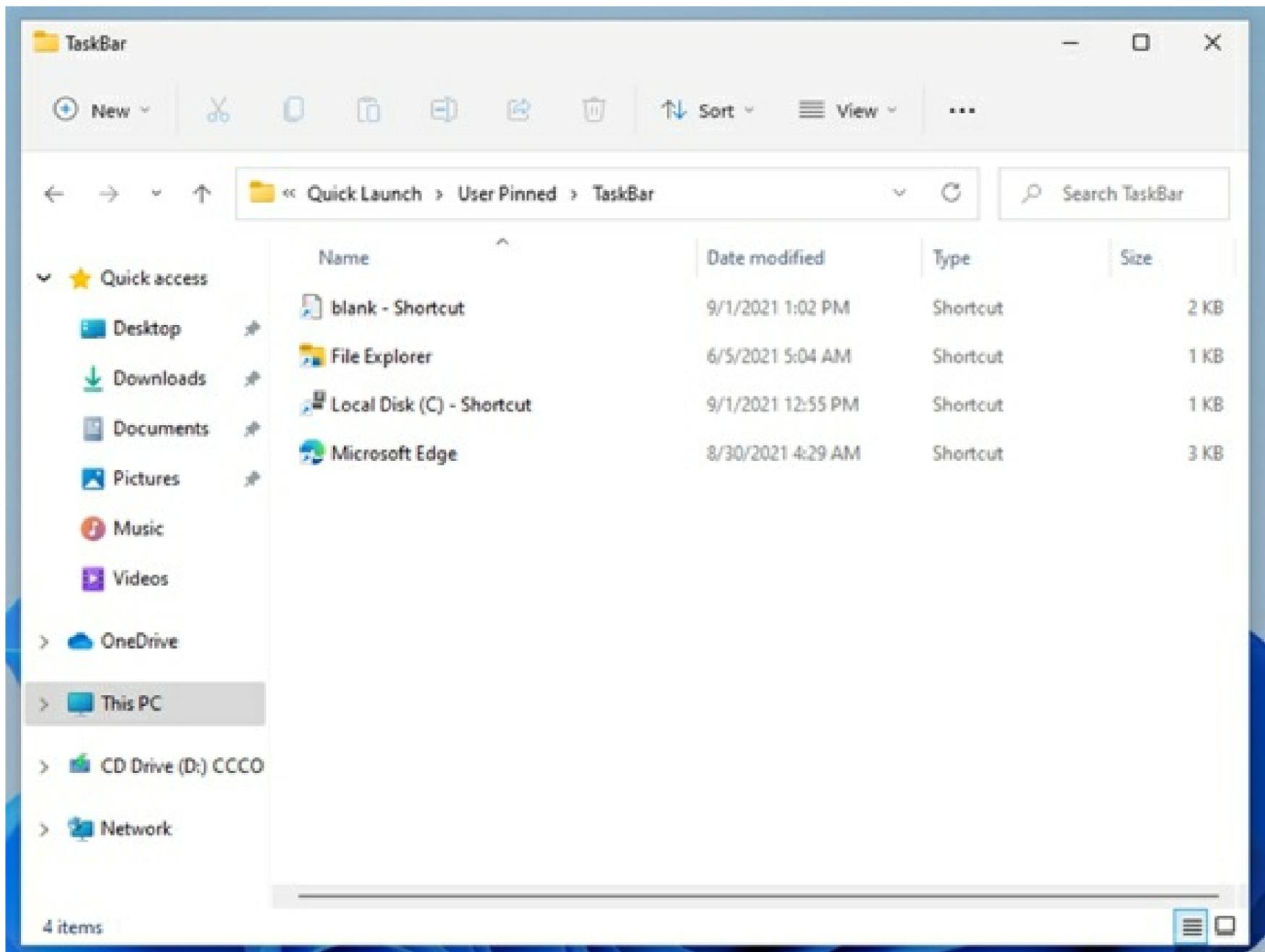
The pinning of files and folders works similarly to the pinning of drives. There is just a small difference in the way files and folders are pinned to the taskbar.

1. Right-click on the file/folder in Explorer that you want to pin to the taskbar.
2. Select "Show more options" from the right-click context menu and on the page that opens Send To Desktop (create shortcut).
 - . Right-click on the newly created shortcut on the desktop and select properties from the context menu.
4. Make sure the Shortcut tab is selected. Add c:\windows\explorer.exe in front of the file/folder path e.g. c:\windows\explorer.exe c:\Users\Martin\Downloads\blank.txt
 - . Select Apply.
 - . Select "Change Icon" in the same window.
 - . Type imageres.dll in the "look for icons in this file" field to load icons.
 - . Pick an icon from the selection.
9. Select OK.
10. Select Apply in the Properties window.
11. Right-click on the drive shortcut on the desktop again.
12. Select "Show more options" and then "Pin to taskbar" to place the drive shortcut on the Windows 11 taskbar.

A click on a pinned file opens it in the default file handler e.g. Word if it is a Docx file or Paint.net if it is an image if these programs are the default file handlers on the system. A click on a pinned folder opens the folder in File Explorer.



Advanced Information



Windows 11 stores pinned icon information in two locations on the system:

1. Registry: HKE _CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Explorer\Taskband
2. Folder: %AppData%\Microsoft\Internet Explorer\Quick Launch\User Pinned\TaskBar

Note that the “User Pinned” folder is hidden by default. Select View Show Hidden Items to display it in File Explorer. The folder displays all custom icons that you have pinned to the taskbar. Website shortcuts are displayed as “Microsoft Edge” in the location.

Other icons on the taskbar

Windows 11 displays a number of icons on the taskbar and in the System Tray area of the operating system. Not all of these icons may be needed by the user of the operating system.

While it is relatively simple to remove icons from the taskbar the same can't necessarily be said for system tray icons.

Adding or removing Widgets

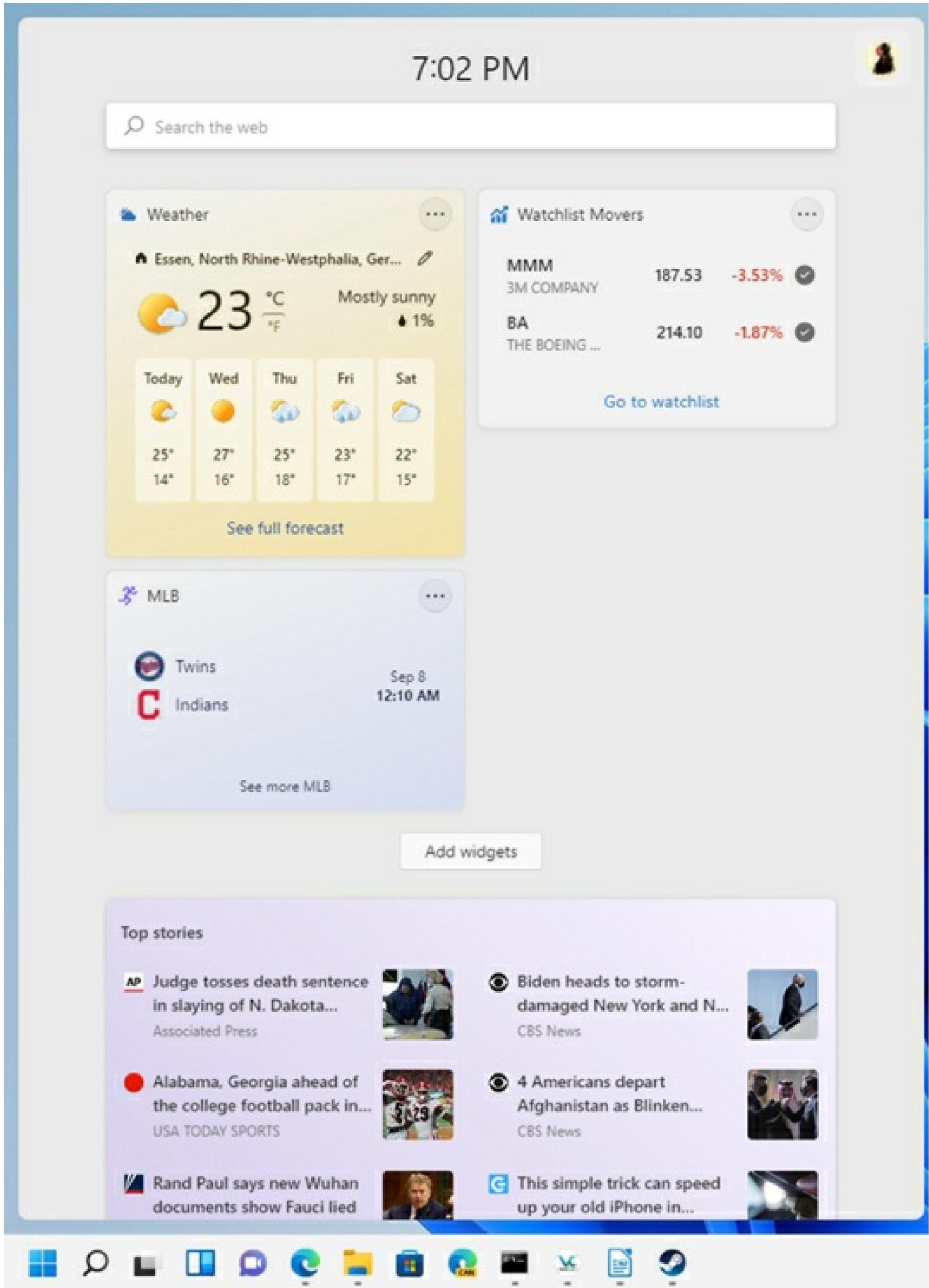


Figure 8: Windows Widgets

Widgets is a new feature that Microsoft introduces in Windows 11. It is an advanced version of Windows 10's News

and Interests feature that Microsoft released in 2021.

Windows 11 comes with a widget icon on the taskbar by default. A click or tap displays the entire widgets window. The keyboard shortcut Windows+W displays the Widget as well.

The area displays weather information news sports scores and depending on how Windows was set up also some personal information such as photos.

Windows 11 users may remove the widget icon from the Windows taskbar in the Taskbar settings.

Widgets can be customized as well it is possible to remove some or add new widgets.

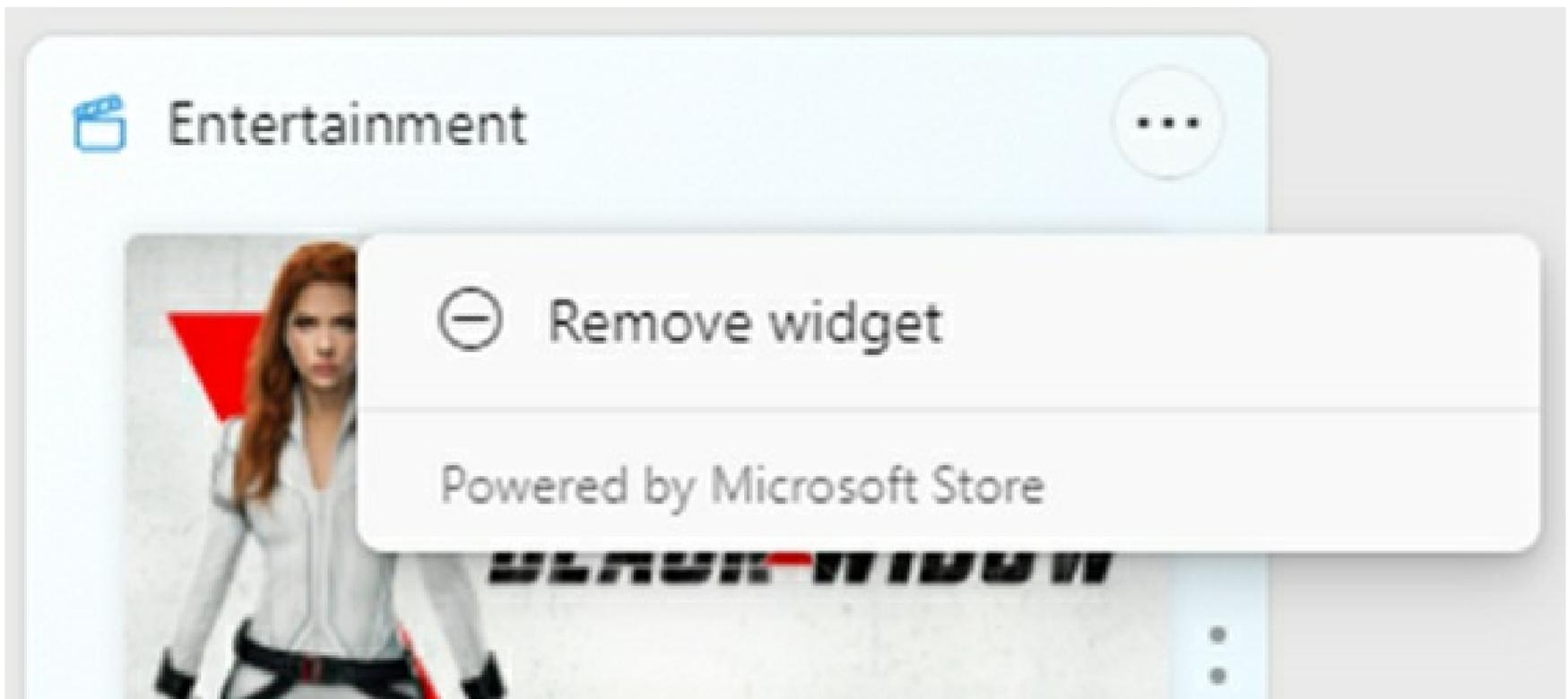


Figure 9: Remove a Widget

Widgets can be removed from the main window directly. Select the three dots menu next to the widget and then the "remove widget" option to remove it from the widgets area.

To add widgets that are not displayed yet select the "add widgets" option. Windows 11 displays the list of available widgets in an overlay.

All available widgets are displayed there. First the widgets that are not displayed currently in the Widgets area and below those the active widgets.

Select one or multiple with a click and the widgets are added to the main page.

Windows Widgets users may customize the news feed. Common news topics such as World US Politics or Sports are selected by default.

Select the "Personalize your News Feed" link in Widget settings to customize the news feed. A page on MSN is loaded. It includes options to select topics of interests e.g. news sports entertainment or money and subcategories such as soccer markets or celebrities.

Check and uncheck options on the page to customize the news feed. Topics of interests may also be added using the search field at the top. MSN displays suggestions based on the input and these may be added to the newsfeed.

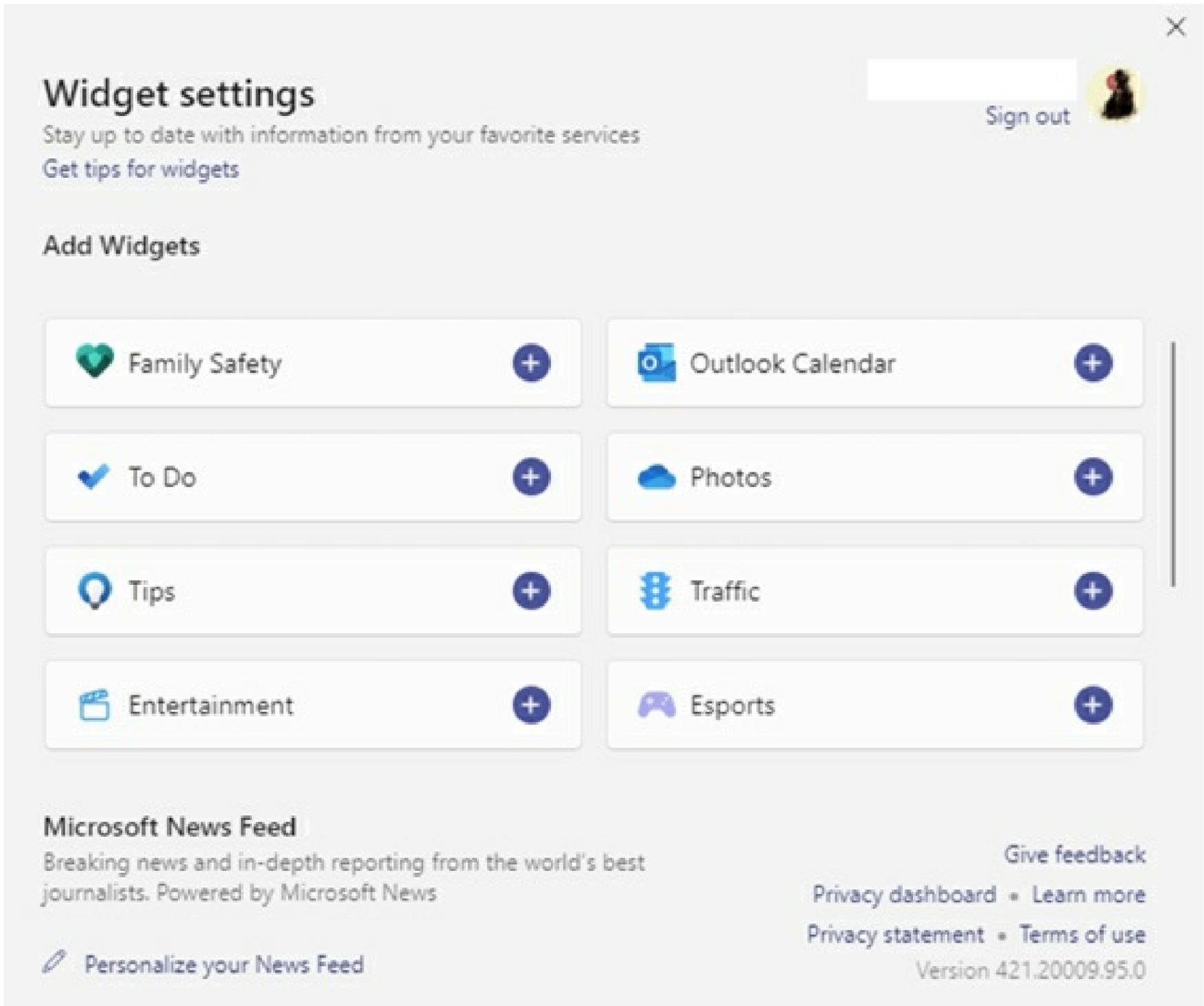


Figure 10: Widgets settings

Manage the Language icon

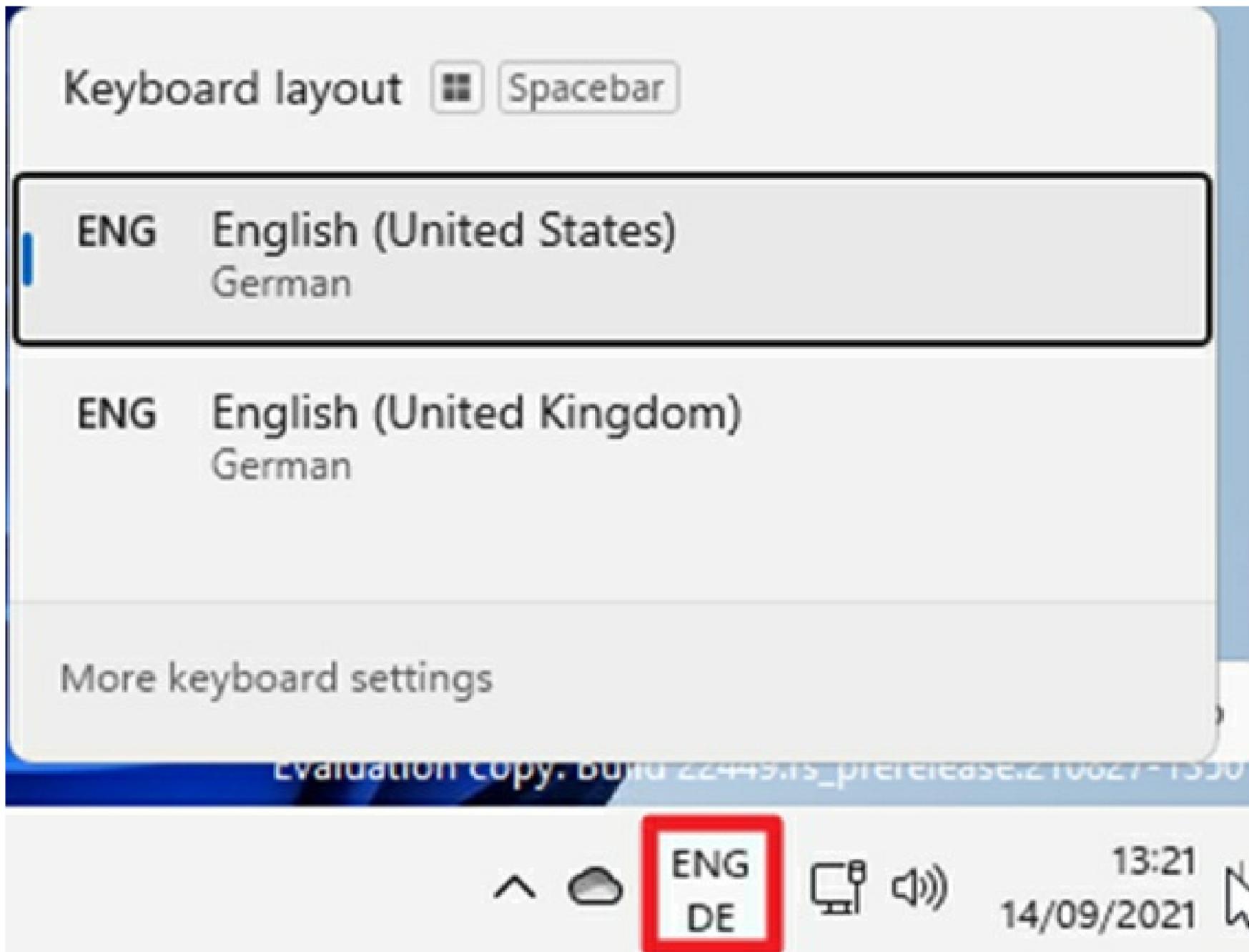


Figure 11: Taskbar Language icon

Windows 11 displays a language icon in the System Tray area if multiple languages are installed on the system. A click on the icon displays all installed languages and keyboard layouts another on one of the languages activates that language on the system.

Tip: the keyboard shortcut Windows-Space opens the language menu directly. Hold down the Shift-key and tap on the Space-key to navigate the language listing. The selected language is activated when the Shift-key is released.

The language icon is not displayed on the taskbar if only a single language and keyboard layout is installed on the device. If no other languages are needed uninstalling all but one language will remove the icon from the taskbar.

Sometimes multiple language and keyboard layouts are required. Windows 11 includes an option to hide the language icon on the taskbar for users who don't require it.

1. Open the Settings application either with the keyboard shortcut Windows-I or by selecting Start Settings.
2. Open Time > language > Typing > Advanced keyboard settings.
 - . Check the preference "Use the desktop language bar when it's available" to hide the language icon on the taskbar. Uncheck it to display it on the taskbar.

Note: Windows 11 displays a language bar when the preference is checked. Right-click on the bar and select "close the language bar" to hide it.

Date and Time

Changing the Time Zone

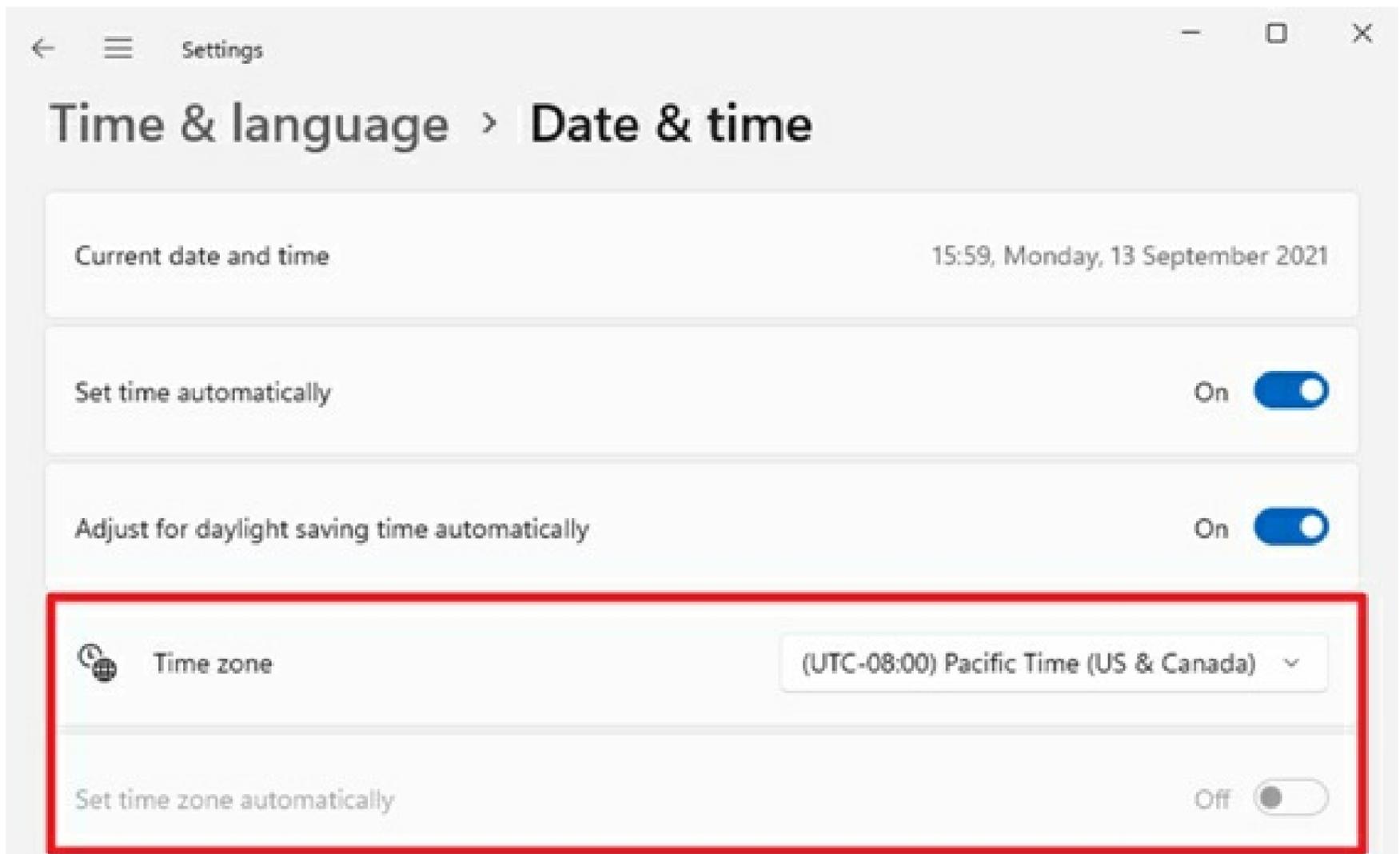


Figure 12: Change the Time Zone

Windows 11 sets the time zone automatically by default but it may be set manually by users of the system. The most obvious reason for changing the time zone is to correct it if it has been set incorrectly by Windows.

An incorrect time zone may display the wrong time and date and that may interfere with the execution of programs or functions on the operating system.

1. Open the Settings application either by selecting Start > Settings or by using the shortcut Windows-I.
2. Go to Time > language.
 - . Select Date > time on the page that opens.
4. Turn off the “Set time zone automatically” option this needs to be done as Windows won’t unlock the option to change the timezone manually otherwise.
 - . The Time Zone menu becomes available. Select the desired time zone from the menu to make it the new default on the Windows PC.

Changing the Date and Time format

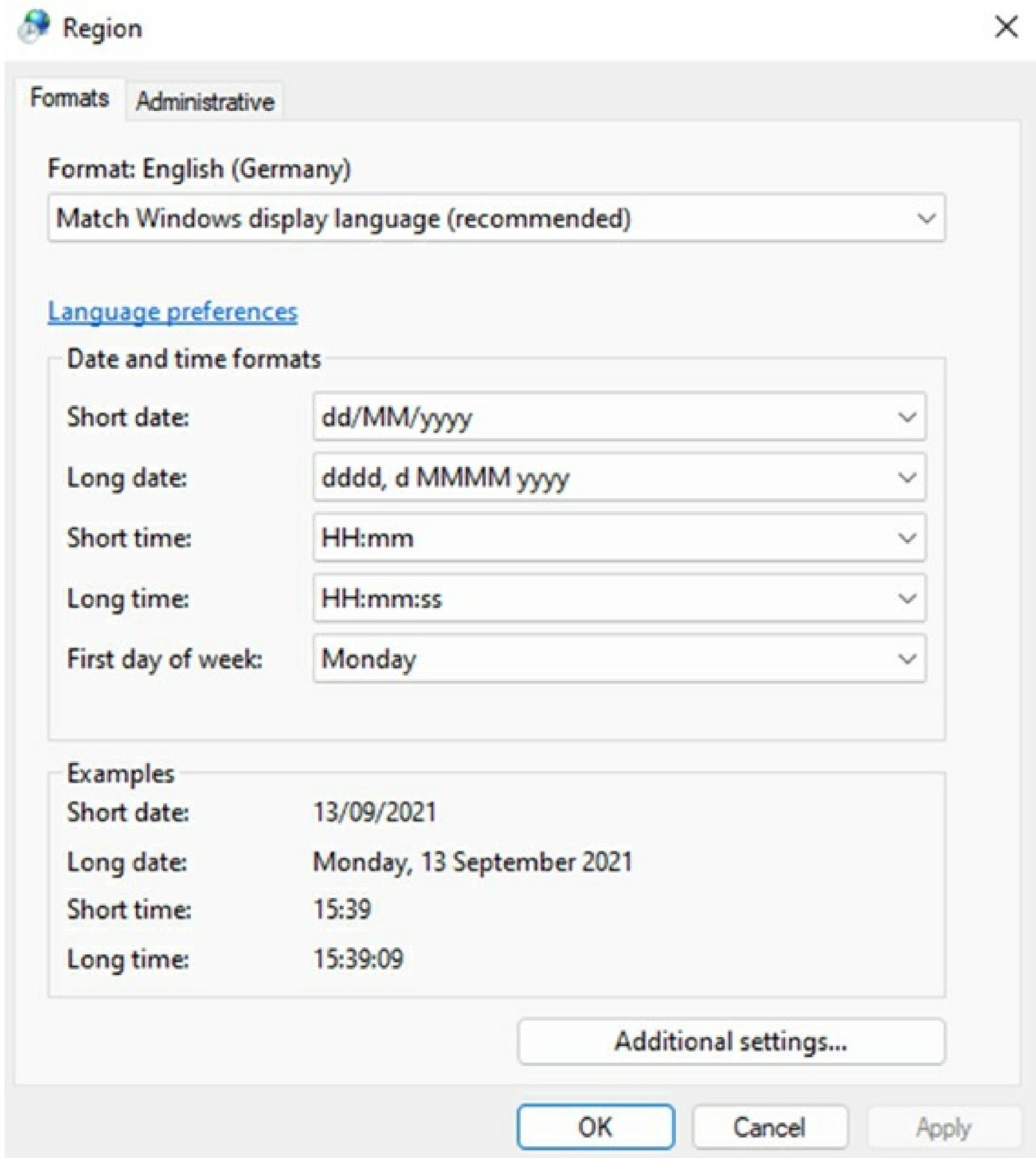


Figure 13: Change time and date formats

Windows displays the date and time on the taskbar. Date and time is displayed based on the selections during setup. Windows 11 users may change how date and time is displayed on the taskbar.

1. Open the Settings application either with the keyboard shortcut Windows-I or by selecting Start Settings.
2. Go to Time > language.
 - . Select Language > region on the page that opens.
4. Activate Administrative language settings under related settings.
 - . Switch to the Formats tab in the window that opens.

The following changes can be made on the page:

- Set formats for short and long date.
- Set formats for short and long time.
- Set the first day of the week.

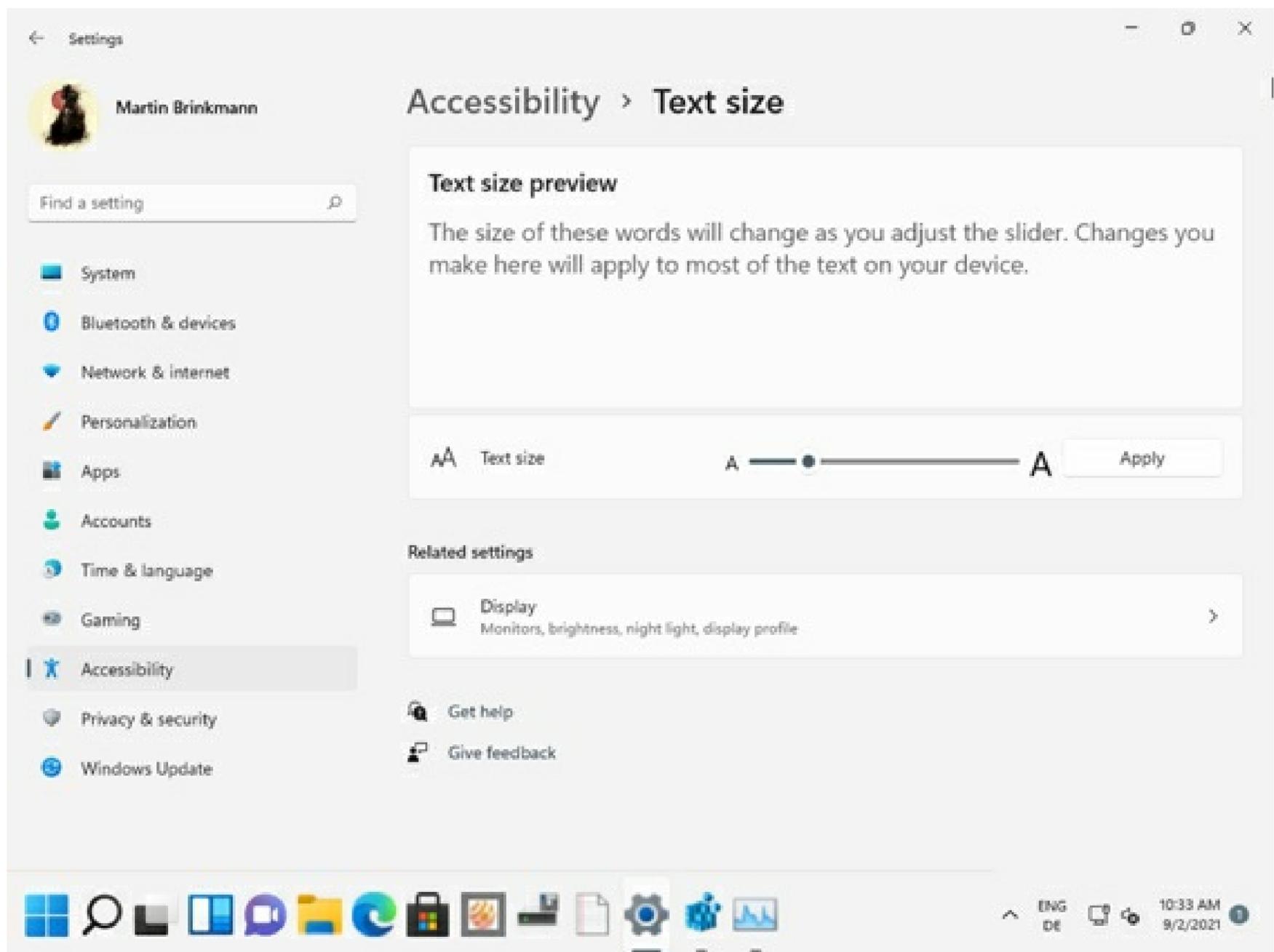
Windows 11 displays previews of the formats on the same page.

To modify the date and time displayed on the taskbar do the following:

1. Select additional settings on the page.
2. Switch to Time.
 - . Change the Short time format e.g. by using the menu to select a preset or by setting a custom format.
4. Switch to Date.
 - . Change the Short date format again by either using one of Windows' presets or by using a custom date format.
 - . Select the apply button once the changes have been made.

Windows changes the display of date and time immediately on its taskbar.

Change the text size in Windows 11



Windows 11 includes a setting that allows you to change the size of text displayed by the operating system and by (some) applications.

Do the following to modify the text size:

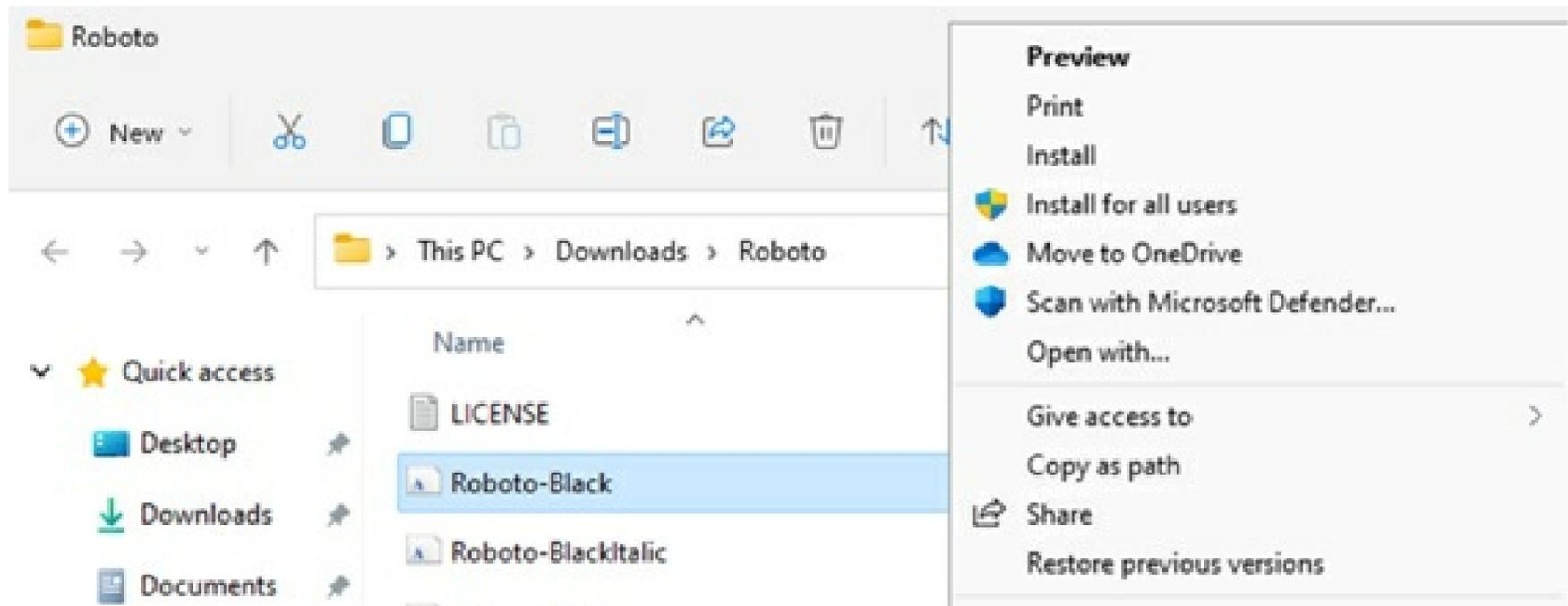
1. Select Start Settings Accessibility Text Size
2. Use the slider to change the text size. A preview of the new size is displayed on the screen.
 - . Select Apply to set the text size.

Installing fonts

Windows 11 includes a large number of fonts by default. Some of these are used by the operating system others may be used by applications or in programs that support font selections.

You have two main options when it comes to the installation of new fonts on Windows 11.

Install fonts in File Explorer

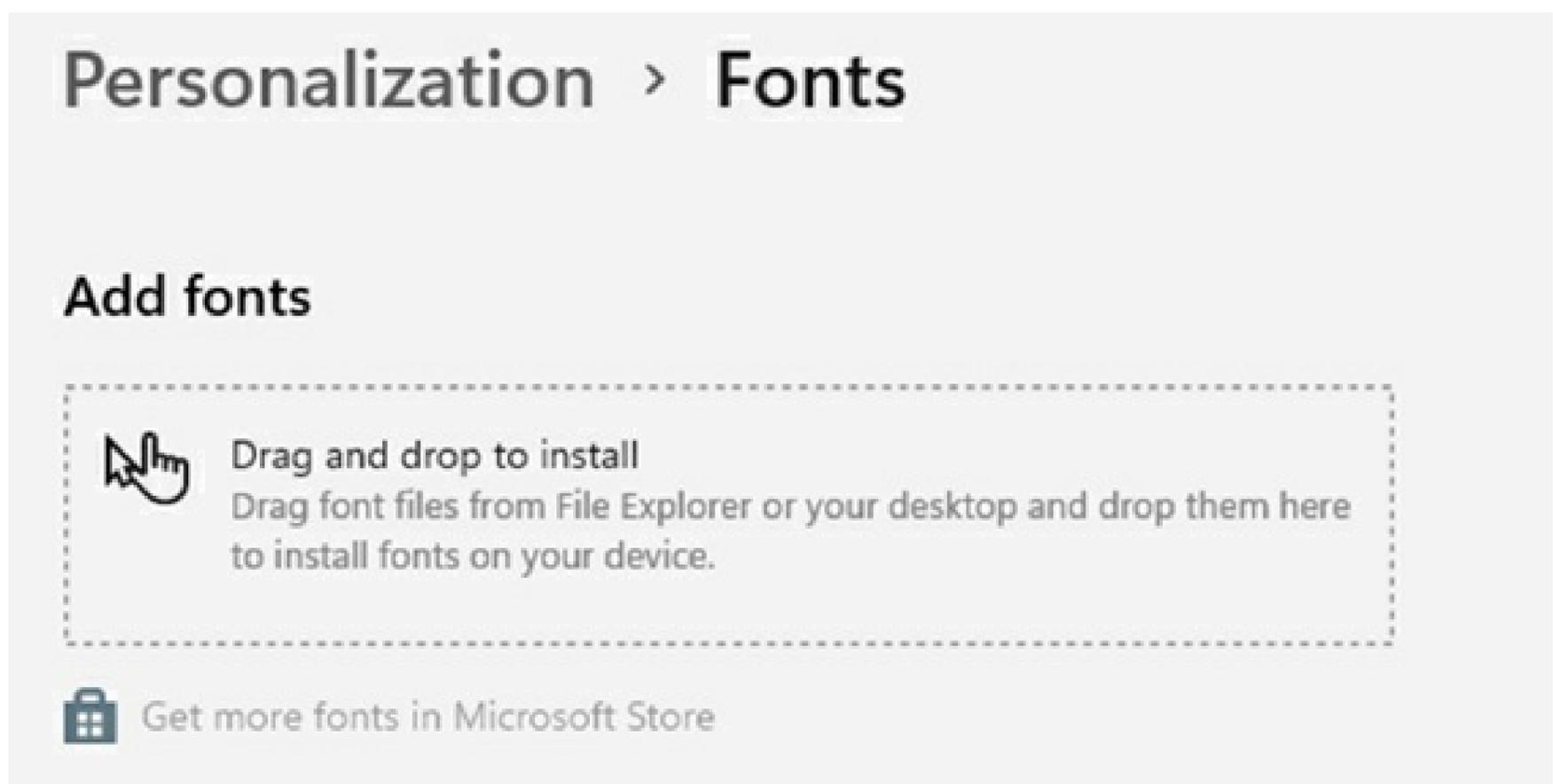


The first, and often easier option, is the following one:

1. Open File Explorer and navigate to the directory the font is stored in.
2. Right-click on the font or a selection and select “more options”.
 - . In the window that opens select “install” to install it for the current user or “install for all users” to install the font system-wide.
4. The single-user installation process completes without further interaction the all user installation process requires an UAC confirmation.

The font is installed and ready for use from that moment on.

Install fonts in Settings



Fonts can be installed in the Settings application as well.

1. Open the Settings application for instance by using the shortcut Ctrl-I or by selecting Start Settings.
2. Go to Personalization > Fonts.
 - . Drag & Drop fonts from the desktop or from File Explorer onto the “Drag and drop to install field on the page.

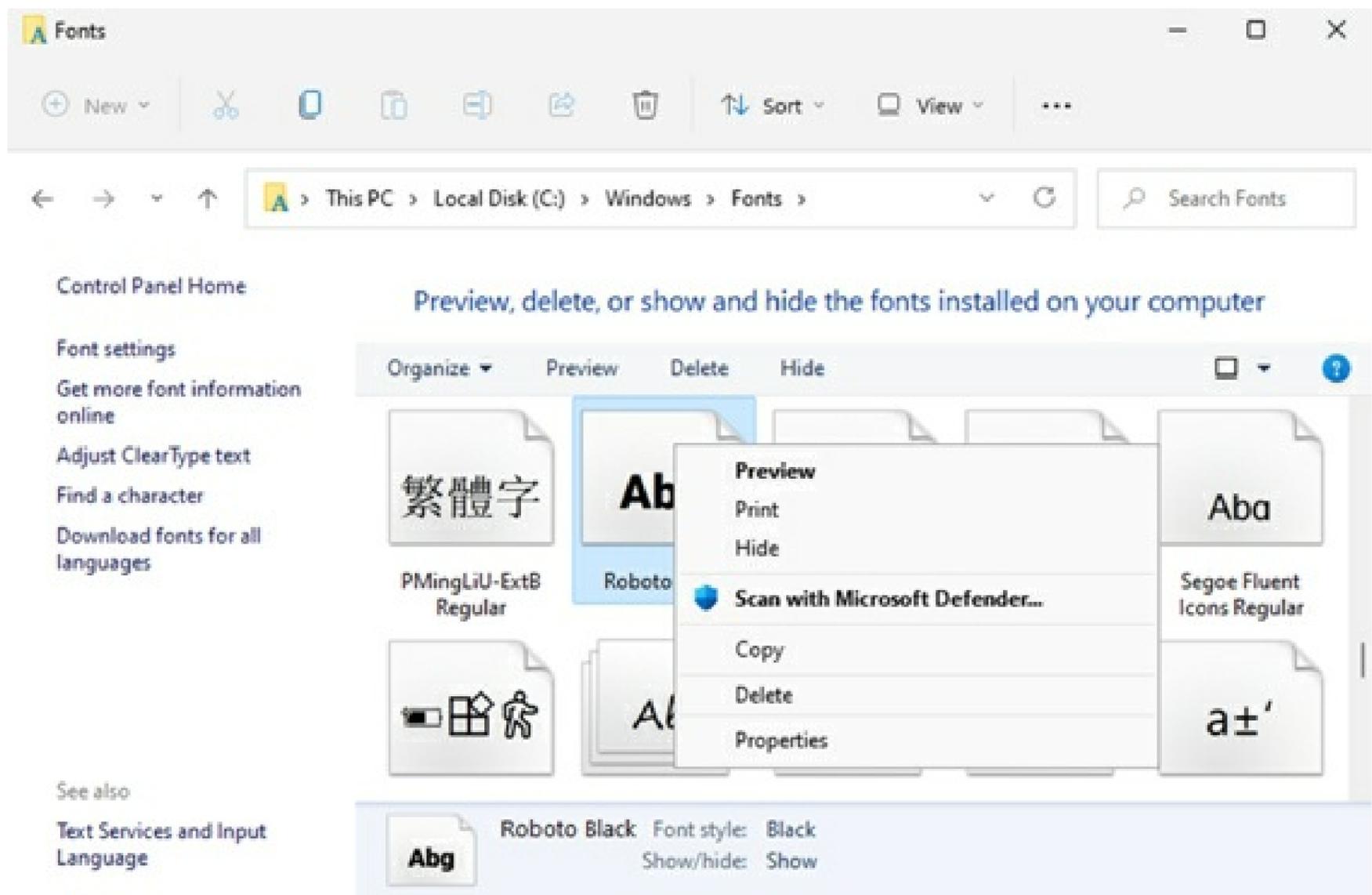
Removing Fonts

Windows 11’s Settings app includes options to manage fonts. A better option is to open C:\Windows\Fonts to manage fonts in File Explorer.

You may use the interface to preview fonts, hide them, or delete them.

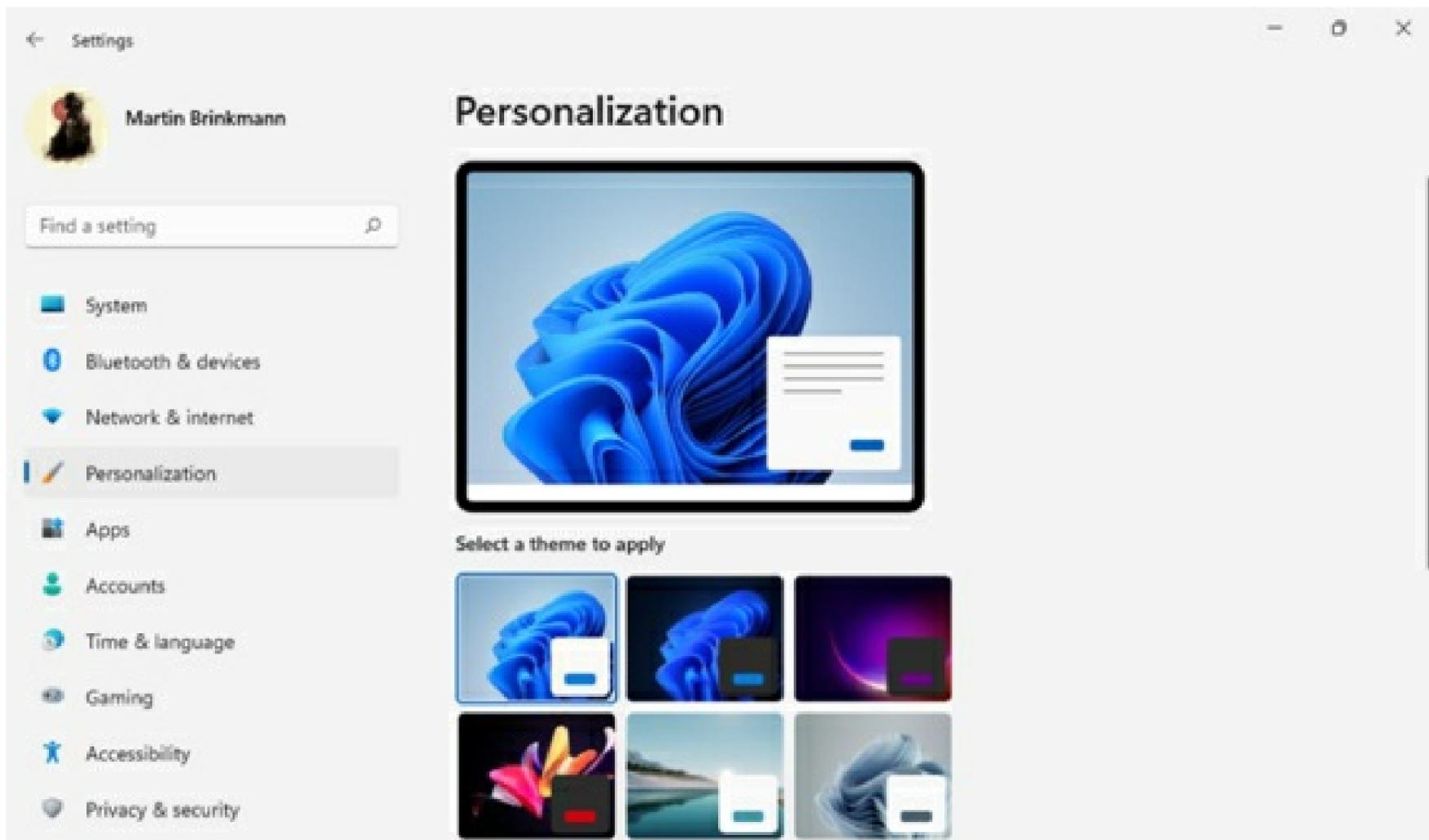
Note: it is not advised to delete fonts that are pre-installed with Windows.

Change the theme, backgrounds and colors



Windows 11 needs to be activated before certain personalization options become available. You can change the default theme of the operating system, customize backgrounds and the color scheme in the Settings application.

Changing the theme



Windows 11 ships with several themes that users may activate. To see what is available go to Start Settings Personalization or right-click on a blank location on the desktop and select the Personalize option from the context menu.

The active theme and the available themes are displayed on the page. To switch to a different theme click on it to activate it. Windows 11 switches to the new theme and displays it in the preview area at the top of the page.

Themes may use different backgrounds and color schemes which can be customized further using the preferences that are provided.

High-contrast themes

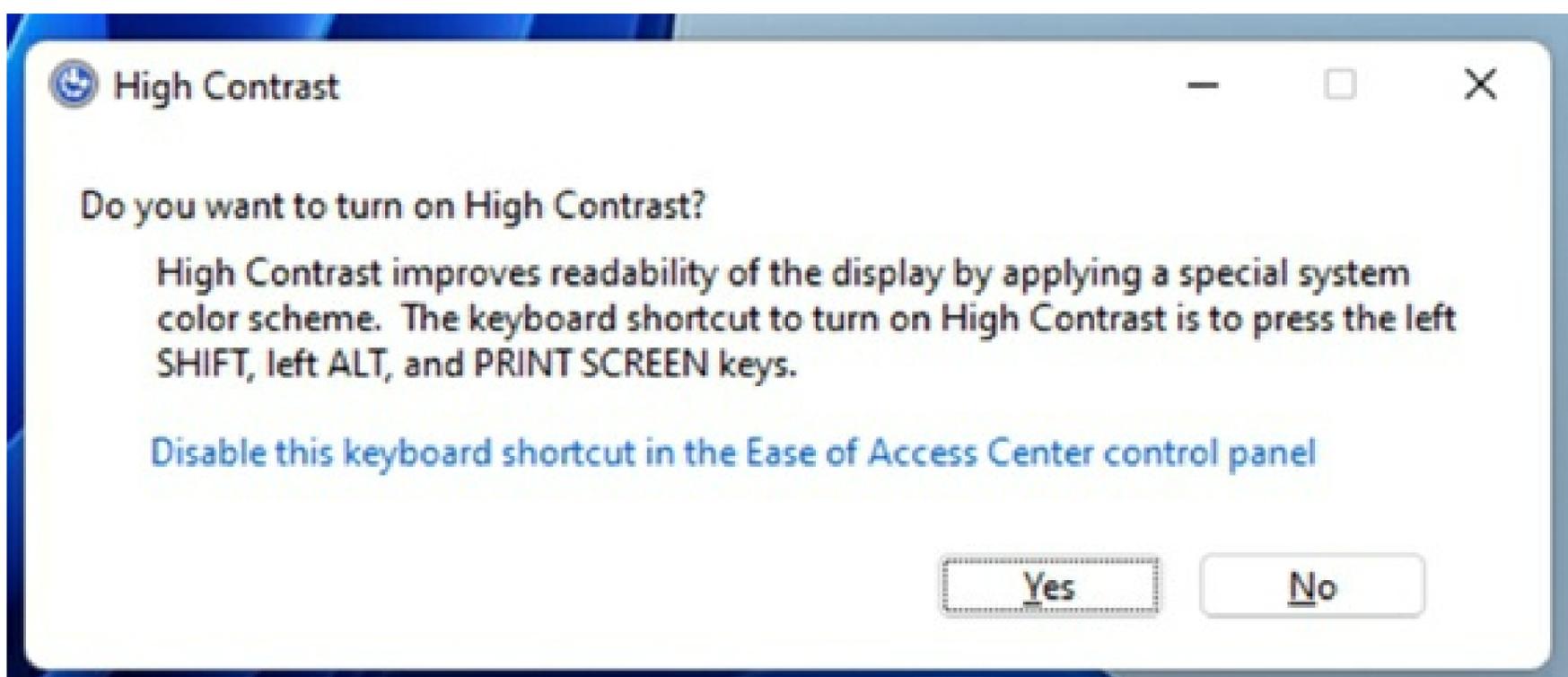


Figure 14: Themes enable high contrast

High-contrast themes are designed to improve recognition and the usability of the operating system for users with visual impairments.

Windows 11 users may enable high contrast themes in a number of ways. One of the easiest options is to use the

keyboard shortcut Left-Shift Left-Alt Print to display the High Contrast prompt. Select es and the High Contrast theme will be enabled.

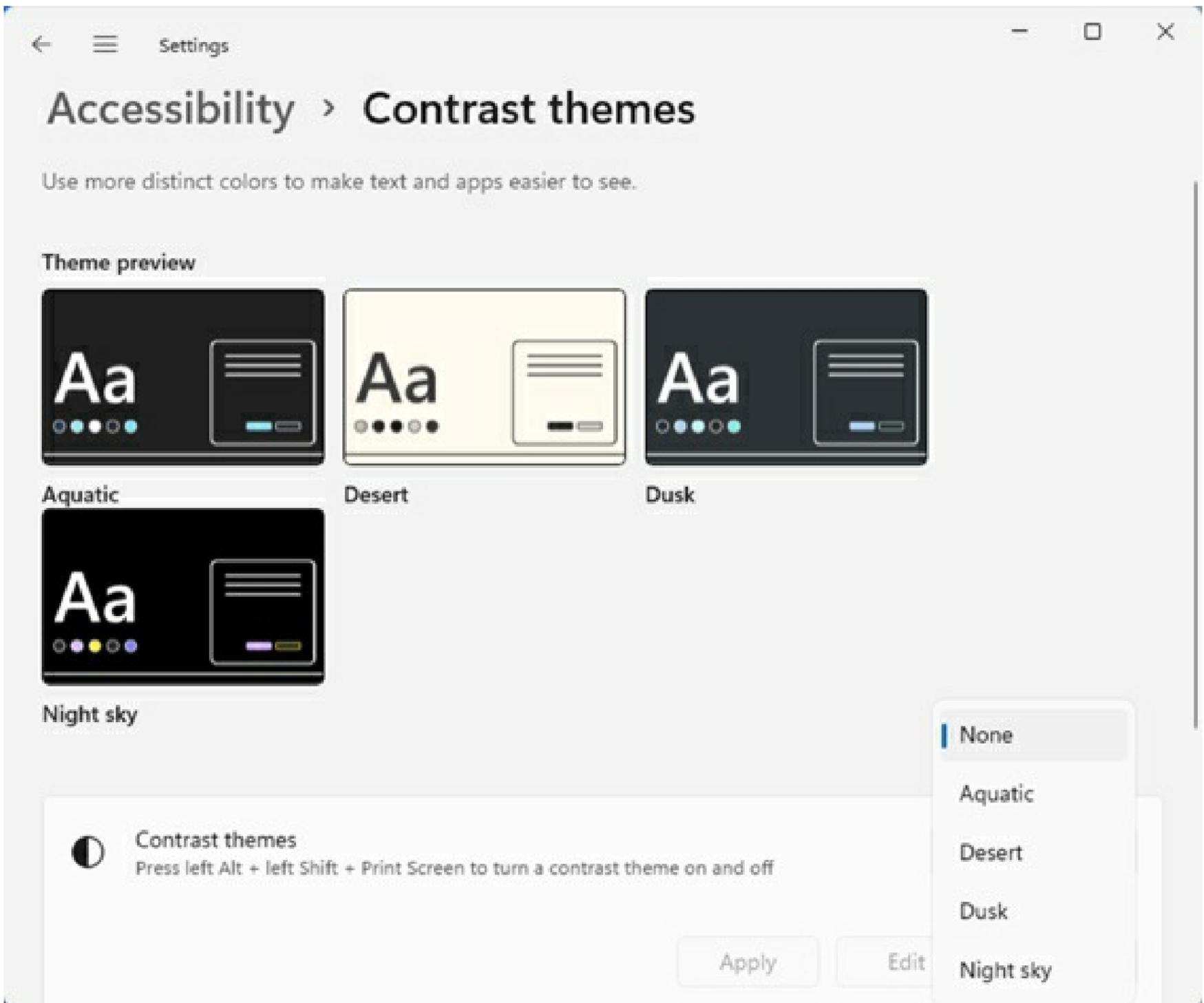


Figure 15: Accessibility enable high contrast themes

Another option is found in the Settings application.

1. Select Start Settings Accessibility.
2. Open Contrast themes on the page that opens.
 - . Select one of the available themes next to the Contrast themes entry.
4. Select the apply button to enable it.

All themes are displayed as a preview on the page. It takes a moment before the selected high contrast theme is enabled. Options to switch to another of the available themes and to edit the active theme are provided.

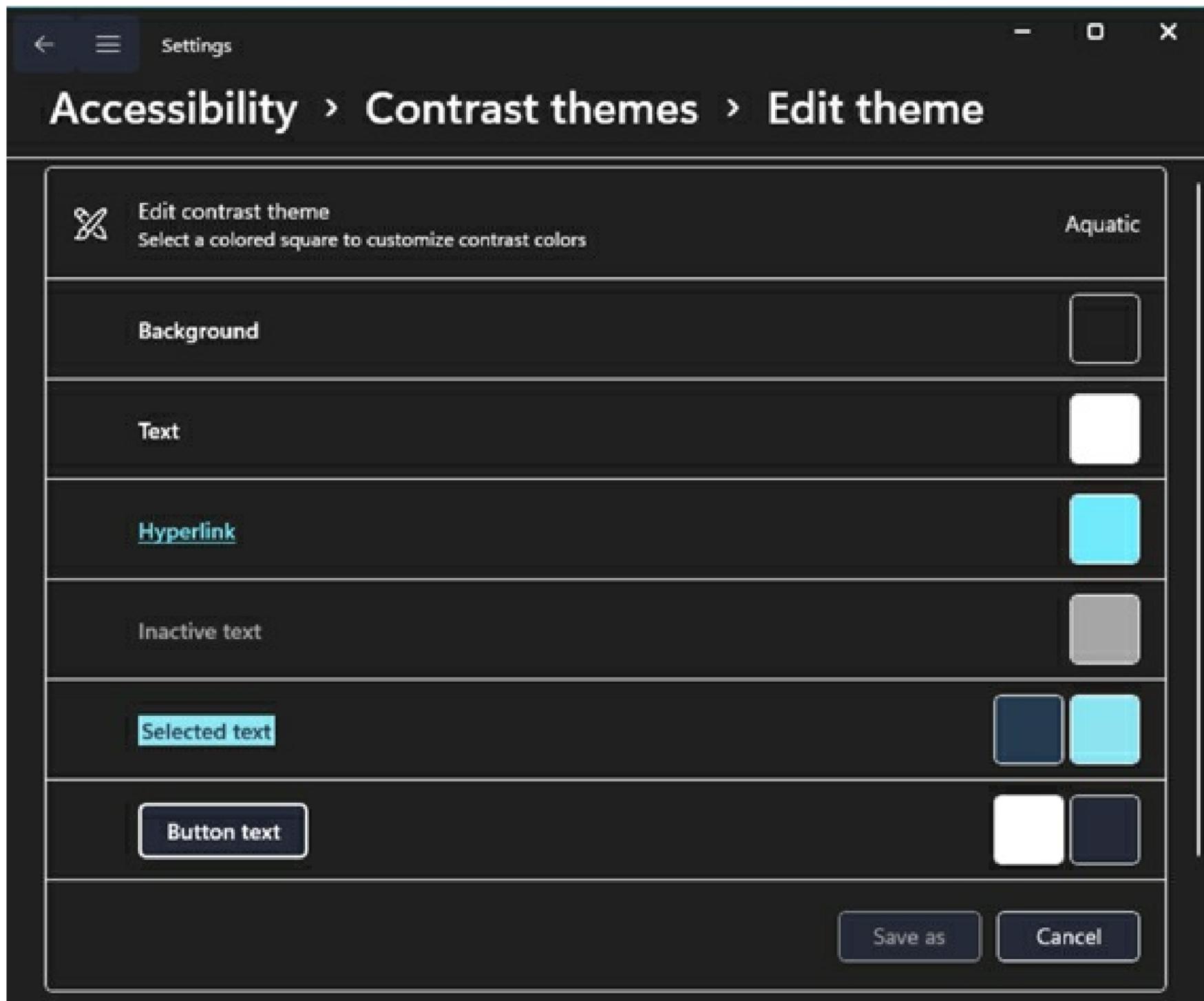


Figure 16: Edit high contrast themes

Editing which you activate with a click on the edit button offers the following options:

- Background – change the background color.
- Text – change the text color.
- Hyperlink – change the link color.
- Inactive text – change the color of inactive text.
- Selected text – change the text color and the highlight color of selected text.
- Button text – change the button text color and background color.

Changing background settings

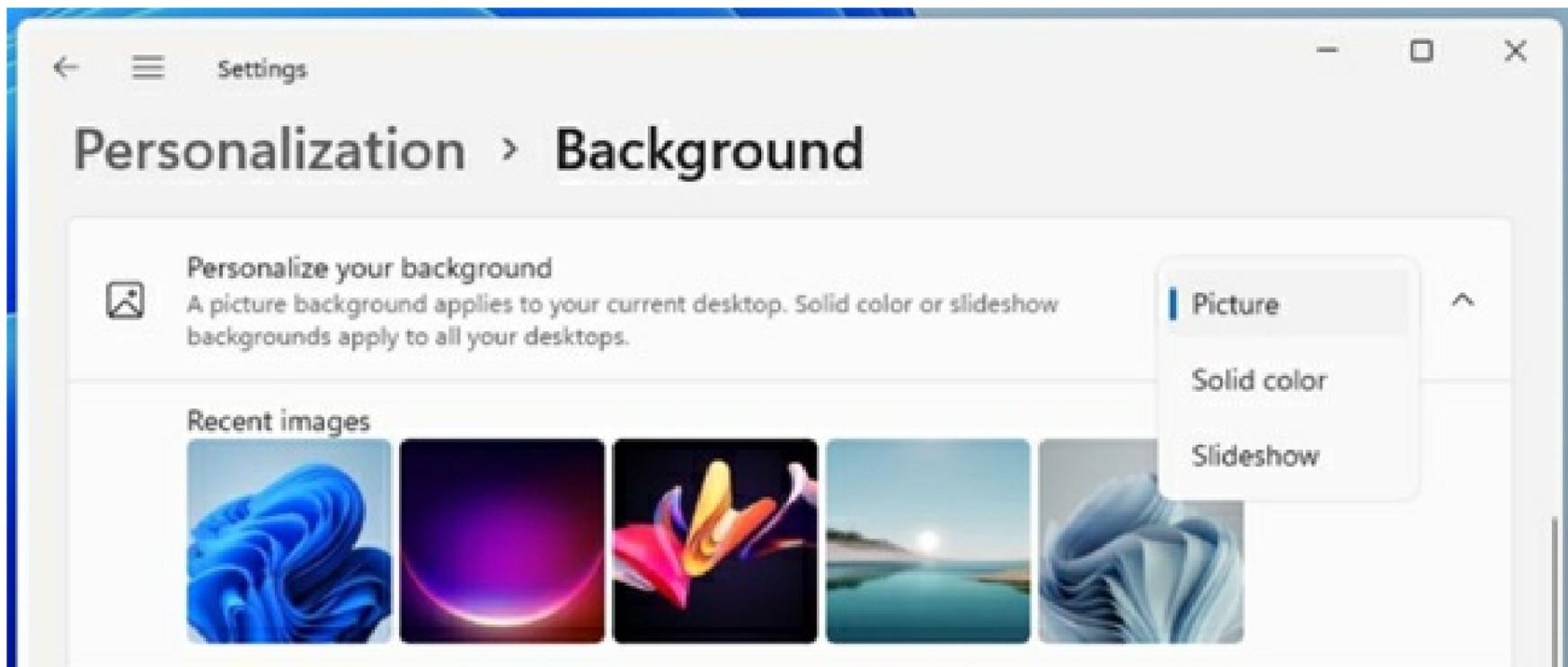


Figure 17: Background Settings

Windows 11 supports several options when it comes to background images (wallpapers). The three main options are to display a solid color a picture or a slideshow. The main difference between picture and slideshow is that the former displays a single picture while the latter switches between different background images set during setup automatically.

Windows 11 includes several background images by default. Images may also be loaded from the local system. The process depends on the type of background that is selected.

- Picture – opens the file browser to select a single image from the system to make it the new wallpaper of the system.
- Slideshow – opens the browser to select a folder that contains one or multiple images. These will all be used by the slideshow functionality.

Picture background

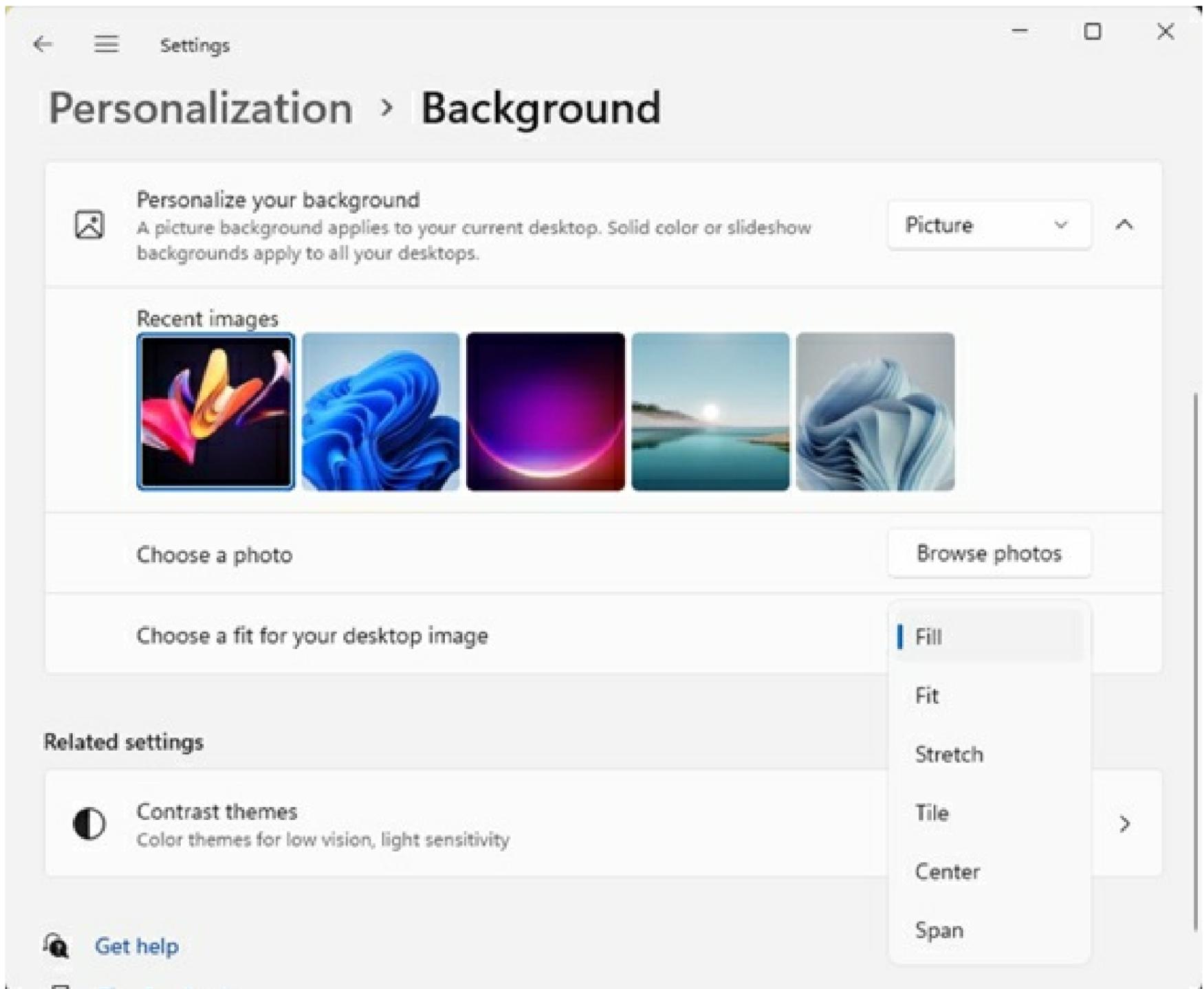
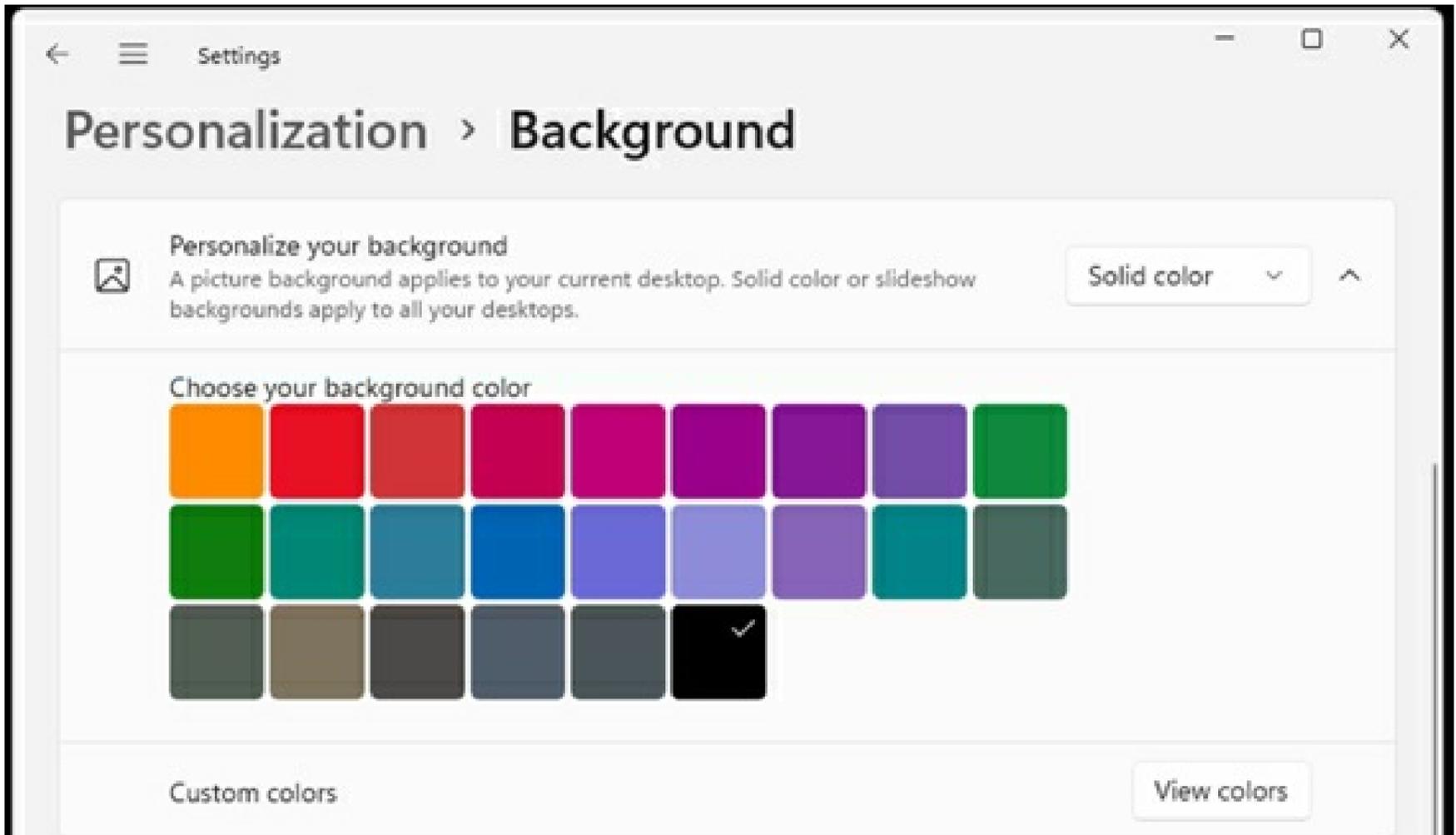


Figure 18: Personalization Set Picture as Background

Setting a picture e.g. an image or photo as the desktop background is straightforward. Select it from the list of recent images in the Personalization settings or use the browse photos button on the page to pick a new image from the local system.

The image is set as the desktop background immediately. The default “fit” for the image is set to fill. Other fit options include “fit” “stretch” “tile” “center” and “span”. Changes are applied immediately.

Solid Color Background



Windows 11 displays several preset colors to choose from when you select the Solid color background option under Personalization.

A click or tap on a color activates it immediately and the desktop is painted in the color.

Select "view colors" to pick a color that is not available as a preset color. The "pick a background color" window displays all colors available.

Slideshow Background

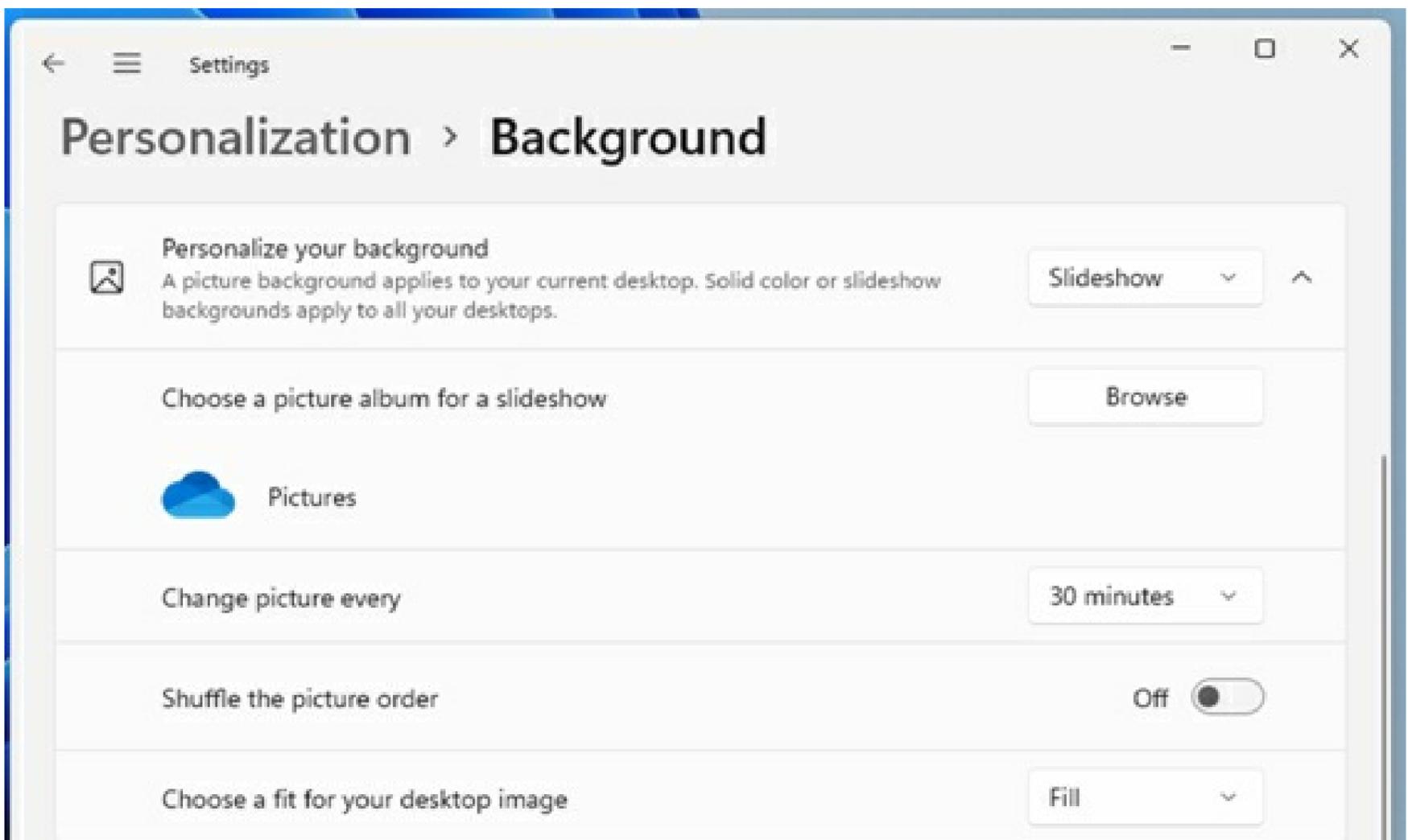


Figure 19: Personalization Slideshow

Slideshows add a dynamic component to the Windows background. Windows loads a new picture from the

slideshow folder every 0 minutes by default. Several settings can be modified in the options.

Slideshows use a single folder that contains one or multiple images. Creating a new folder for a slideshow may improve manageability.

Options are provided to change the picture changing interval enable shuffling of pictures to randomize the picking and to select the fit mode for the images.

Changing Colors

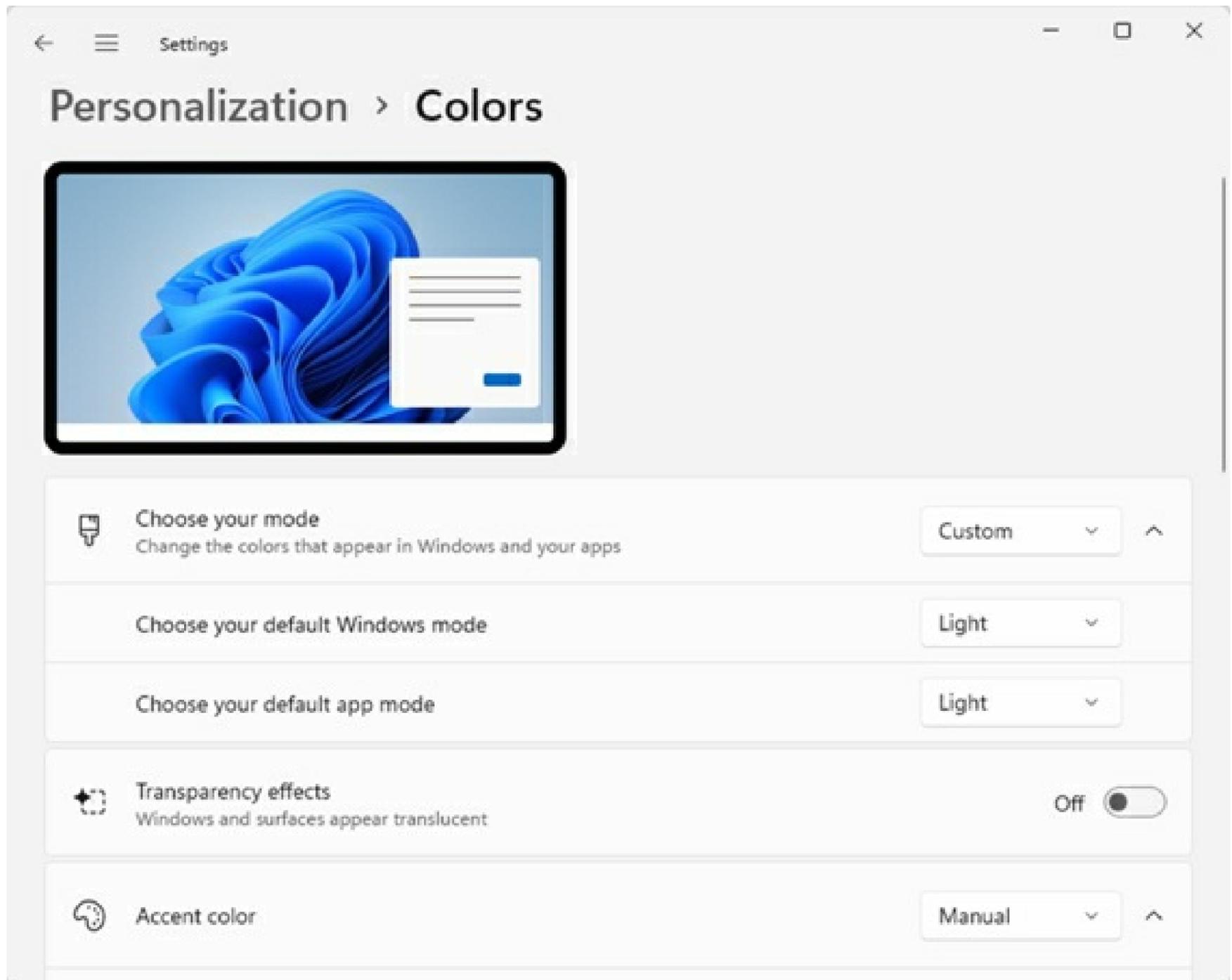


Figure 20: Personalization Colors options

Windows 11 supports the three main color modes dark and custom. and dark modes offer fixed color schemes for the operating system. Some users prefer to use the mode during daylight and the dark mode after dawn.

Custom gives users a bit of flexibility as it supports using different modes (or dark) for Windows and applications.

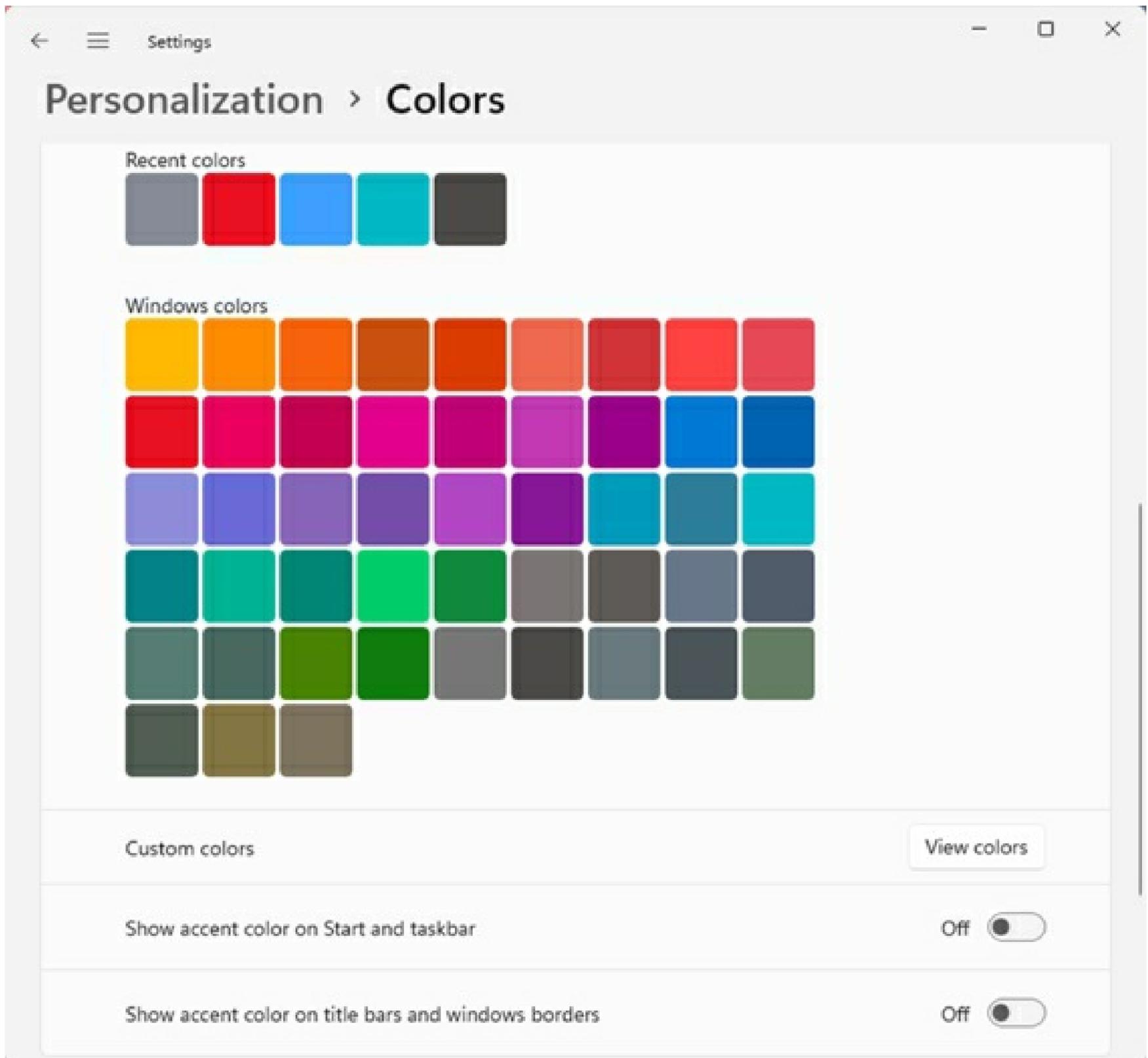


Figure 21: Personalization Accent Colors configuration

All color modes can be customized to a degree. Accent color may be set manually or automatically. If set to automatic it is set to a color that complements either the Windows background image or the color.

The main options are:

- Enable transparency effects.
- Automatic or manual use of the Accent color feature.
- Enable the Accent color feature on Start and the taskbar.
- Enable the accent color feature on title bars and windows borders.

Note: the option to show the accent color on Start and the taskbar is only available if Dark mode is selected or if Custom mode is selected and “Choose your default Windows mode” is set to Dark.

All options can be enabled individually.



Modern operating systems desktop and mobile alike all support a feature that reduces blue emitting from displays. On Windows that feature is called .

is designed to reduce the effect that blue has on a computer user's sleep. Long work hours in front of a computer especially late at night may impact the ability to sleep negatively. The color filter reduces eye fatigue and may improve sleep cycles when it is used.

is not enabled by default but it can be activated on all Windows 11 editions and systems for instance when the sun sets or hours specified by the user of the system.

1. Open the Settings application either with the keyboard shortcut Windows-I or by opening Start and selecting Settings from the Start menu.
2. Navigate to System > Display.
 - . is the first option that is displayed under Brightness & color at the top.
4. Toggle the feature to On to activate or to off to disable it.
 - . Select the arrow icon on the right side of the setting to display its options.
 - . The two extra options displayed on the page let you:
 1. Change the strength of the feature. Windows 11 does not display a preview right away and it is necessary to experiment with different strength settings to find the right one over time. Drag it to the right to increase the filtering and to the left to reduce it.
 2. Schedule to have it enabled automatically at sunset or a specified period of time. The sunset option requires that the Location Services is enabled the hours option is available without it.

Disable Content Adaptive Brightness

Content Adaptive Brightness is a feature for mobile computer systems designed to improve battery life by changing the screen brightness and contrast automatically. Content Adaptive Brightness changes the values based on the content that is displayed on the screen. Brightness may be reduced if a bright app or video plays on the screen or it may be increased if dark content is identified by the application.

Some Windows users dislike the dynamic nature of the feature as it can be distracting or outright annoying.

1. Open the Settings application either with the keyboard shortcut Windows-I or by selecting Start Settings.
2. Navigate to System > Display.
 - . A click on the Brightness option under Brightness & color expands it. Note that Brightness is only displayed if it is supported.
4. Remove the checkmark from the option "Help improve battery by optimizing the content shown and brightness".

Customize the Lock Screen

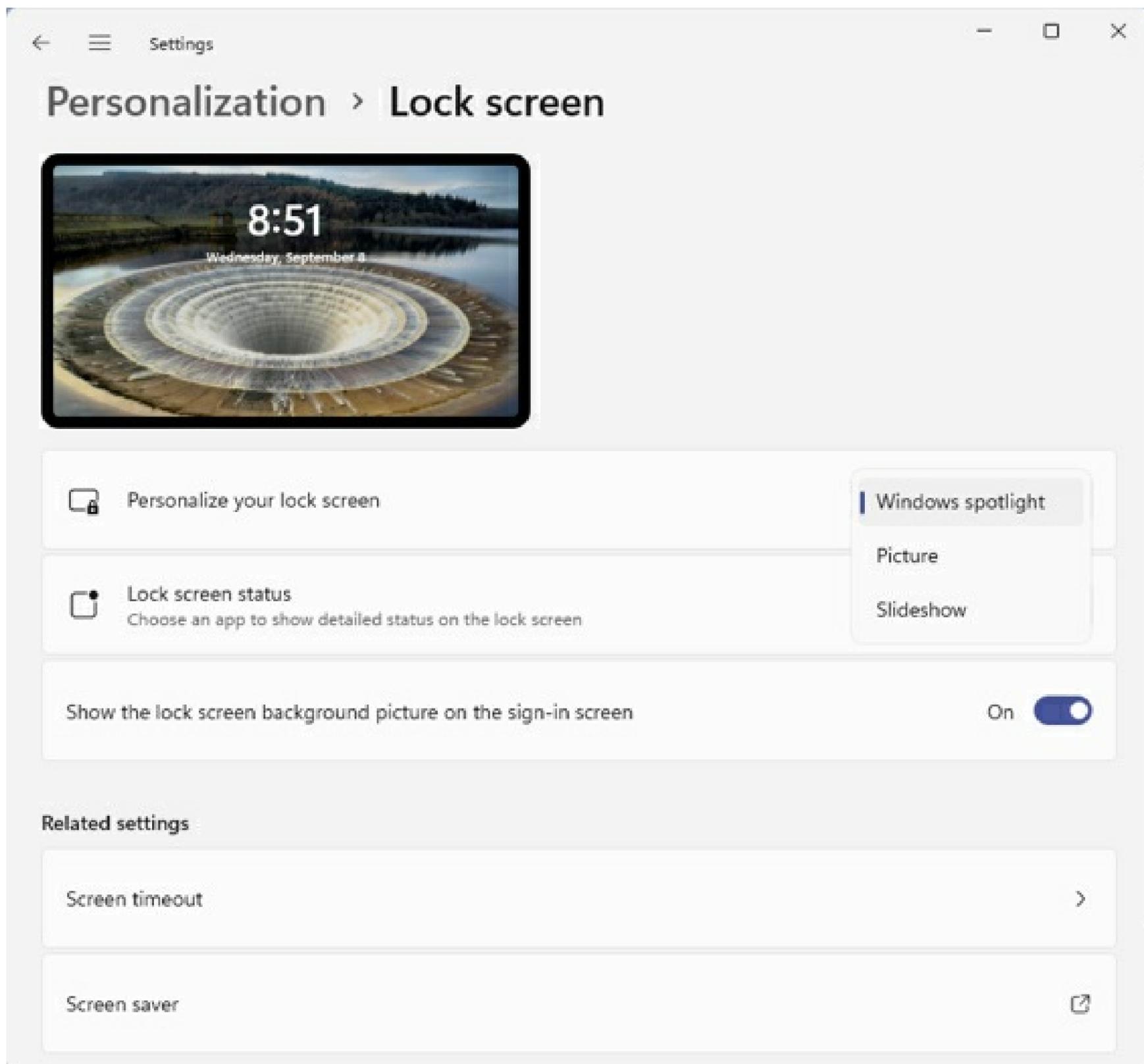


Figure 22: Personalization Lock Screen

The Lock screen is displayed for most Windows 11 users on system start and also when the system is locked using the Windows-L keyboard shortcut.

Windows 11 may display new background images on the Lock Screen automatically which it retrieves using the Windows Spotlight feature.

Other bits of information notifications or reminders but also promotions may also be displayed on the Lock Screen.

A new wallpaper image is displayed by default for most users on the Lock Screen this and several other options can be changed in the preferences of the operating system.

1. Open the Settings application either with the shortcut Windows-I or by selecting Start Settings.
2. Go to Personalization Lock screen.

Background images may be picked manually instead. For that change the "Personalize your lock screen" setting and switch it from "Windows spotlight" to either Picture or Slideshow. Picture displays a single image all the time whereas slideshow images from the selected folder.

There is no option to set the Lock Screen background to a solid color. You could create an image using Paint or another image editor that is made up of a custom color and load it as the Windows Lock Screen background.

Personalization > Lock screen

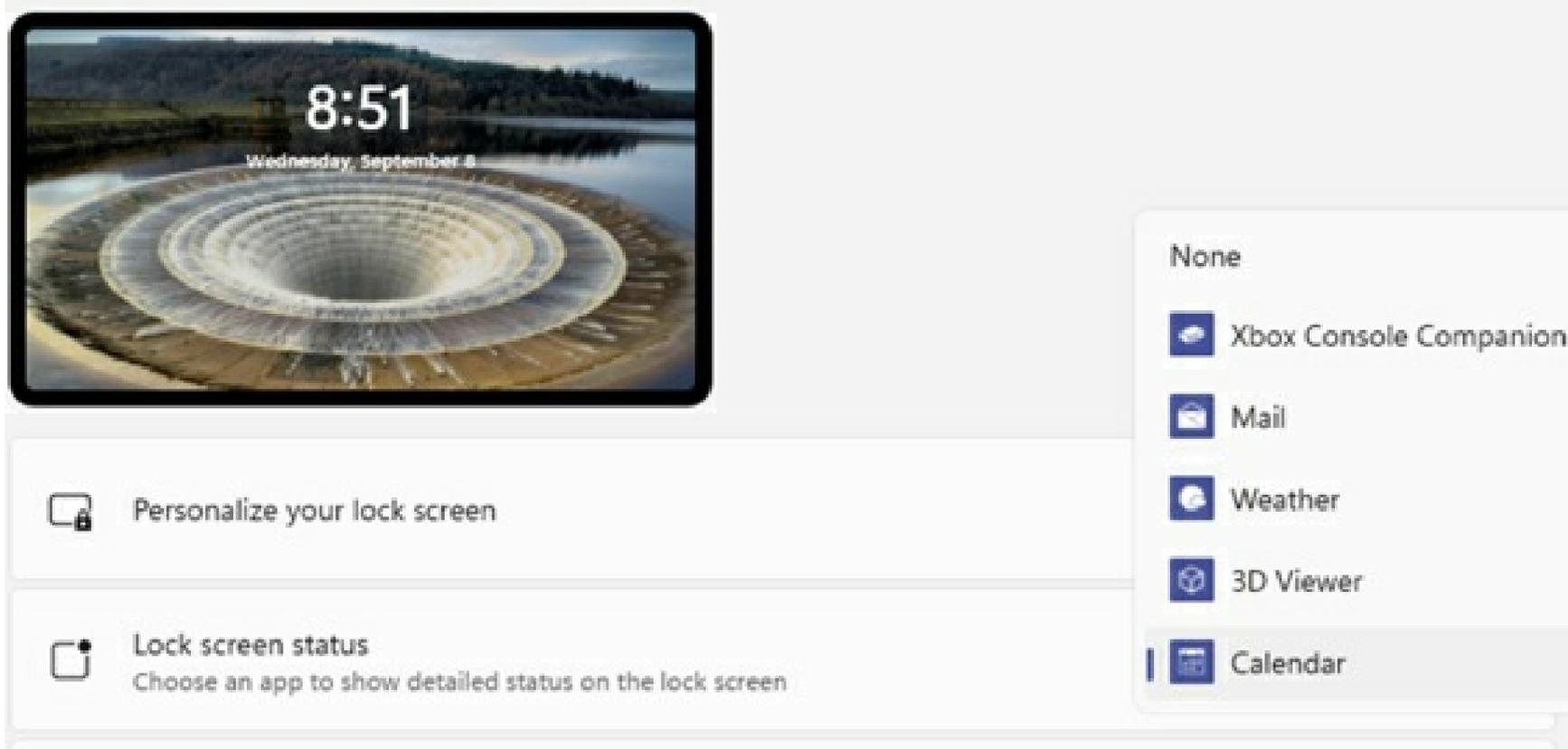


Figure 23: Personalization Lock Screen status

Windows 11 displays events from the Calendar application on the Lock Screen by default. Select the menu next to “Lock screen status” to change that to another app that supports Lock Screen status information or no app at all.

On a default installation Xbox Console Companion Mail Weather 3D Viewer and Calendar are available next to the None option.

Windows 11 users may disable the lock screen background picture on the sign-in screen. All that is required for that is to set the preference “Show the lock screen background picture on the sign-in screen” to off in the settings.

Windows 11 won’t show the picture on the sign-in page anymore but still when a user locks the system.

Microsoft Edge

Change the number of Edge Tabs shown when using Alt-Tab

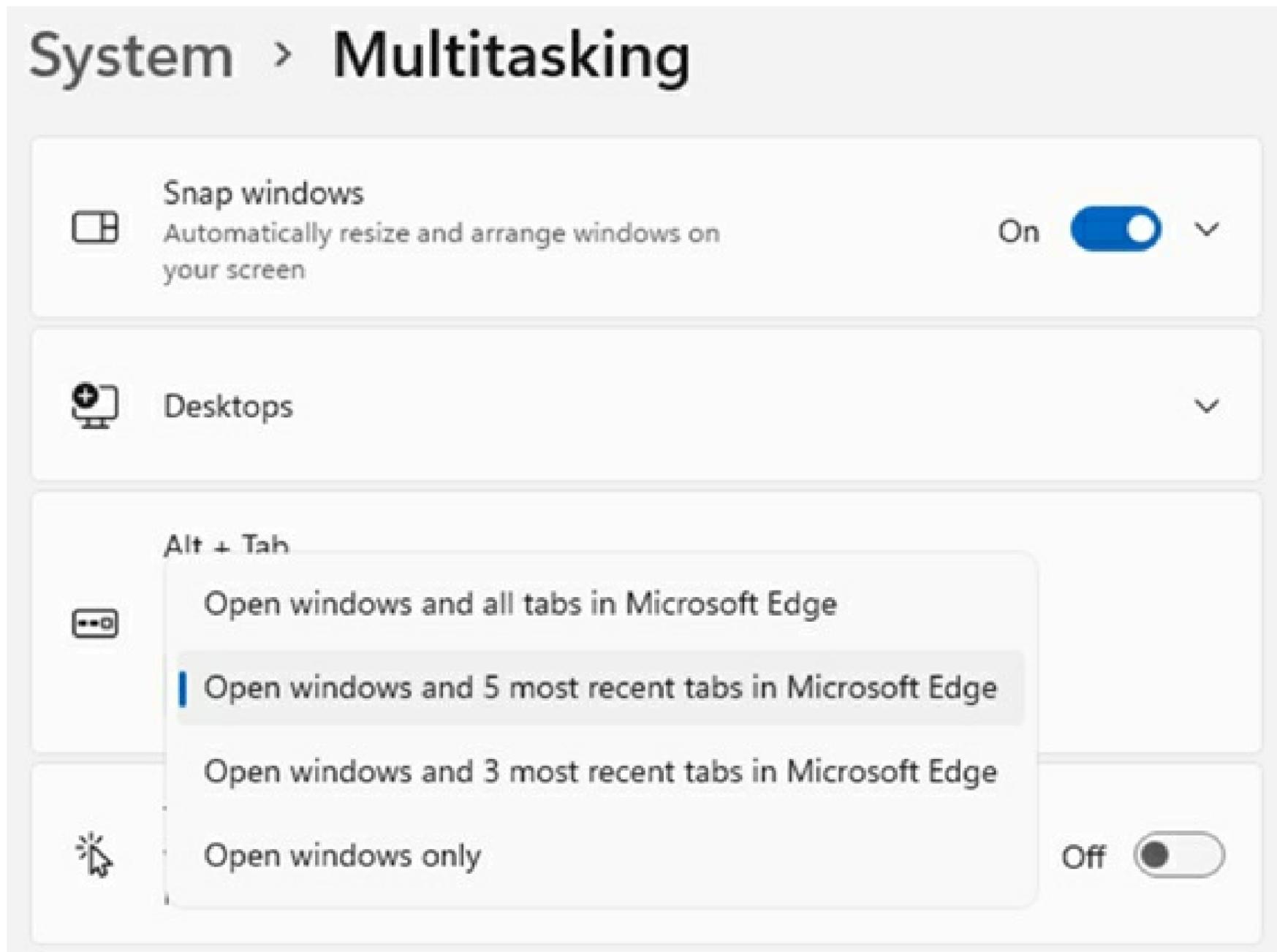


Figure 24: Microsoft Edge Alt-Tab behavior

The keyboard shortcut Alt-Tab displays open windows and also open tabs in the Microsoft Edge web browser. The most recent tabs in Microsoft Edge are displayed next to open program windows by default. Windows 11 users may change the default behavior either by blocking Microsoft Edge tabs from being shown at all when the keyboard shortcut is used or by changing the number of recent tabs in Microsoft Edge.

1. Open the Settings application either with the keyboard shortcut Windows-I or by selecting Start Settings.
2. Go to System > Multitasking.
 - . Alt-Tab on the page defines the behavior of the keyboard shortcut. Select the option to set it to one of the following settings:
 - Open windows and all tabs in Microsoft Edge.
 - Open windows and 5 most recent tabs in Microsoft Edge.
 - Open windows and 3 most recent tabs in Microsoft Edge.
 - Open windows only.

The change is applied immediately. Open windows only blocks Edge tabs from being shown when Alt-Tab is being used.

Display

Changing the Display Resolution and Scale

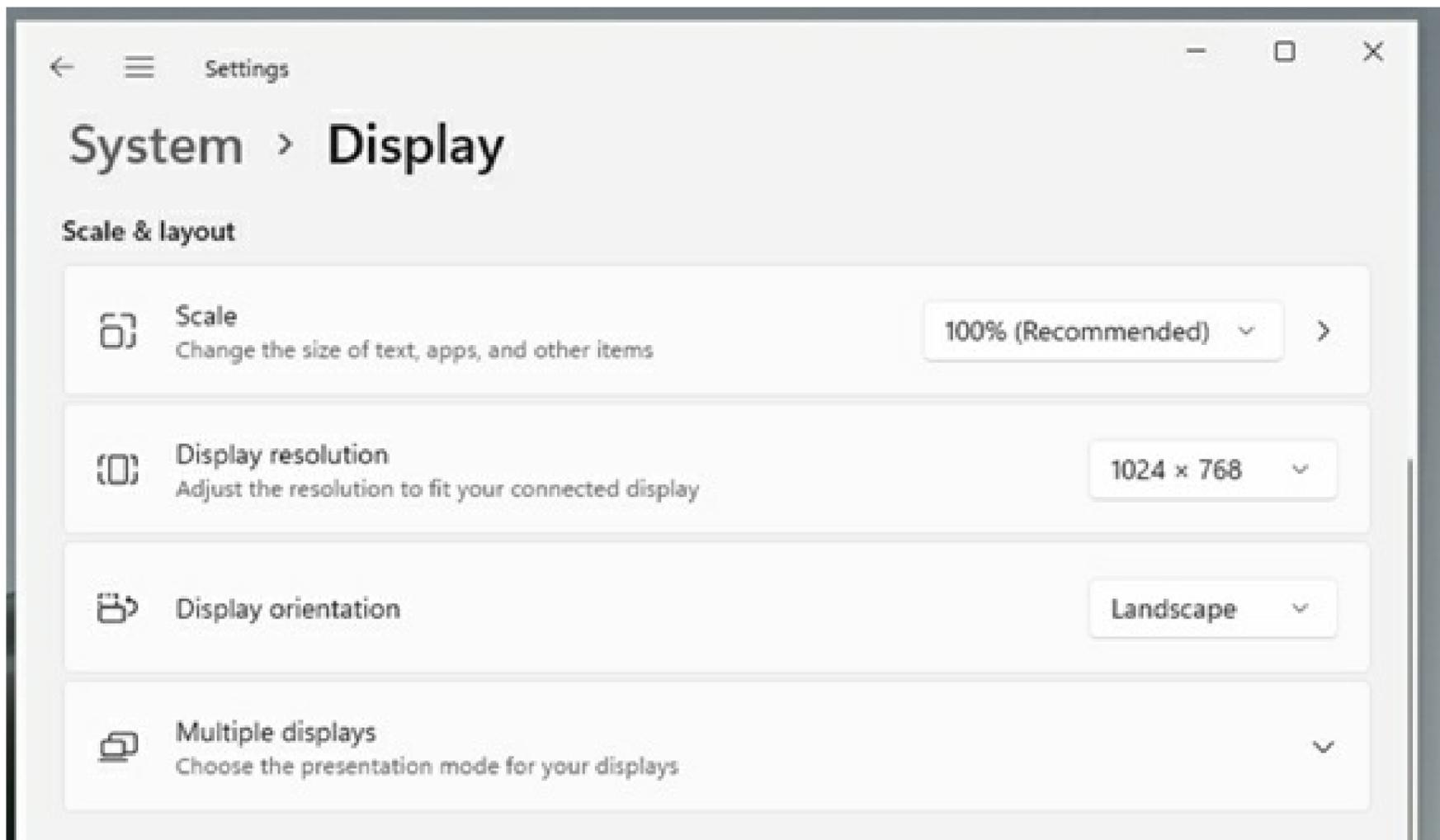


Figure 25: Settings Display Scale and Layout

Windows 11 configures the scale resolution and orientation of the display automatically by default. The settings depend on the display video card of the system installed driver and device type.

Windows 11 users may change display settings in the Settings application or if installed using third-party software such as Nvidia's AMD's or Intel's display applications that get installed when drivers are installed.

1. Right-click on the desktop and select Display settings from the context menu that opens. You may also go to Start > Settings > System > Display manually.
2. Scroll down to the Scale layout section. There you find the following options:
 - Change the scale – this impacts the size of text apps and other items. The default is set to 100%. Increase the percentage value to make everything larger or decrease it to make everything smaller on the screen.
 - Display resolution – Change the default display resolution to another resolution that is supported by the display and the video card.
 - Display orientation – Switch between landscape portrait landscape (flipped) and portrait (flipped) display modes. Usually only of interest for portable devices such as tablets.

Multiple displays – Select the presentation mode for displays:

- Remember window locations based on monitor connection
- Minimize windows when a monitor is disconnected.
- Detect other displays (default: detect).

Graphics Adapter information

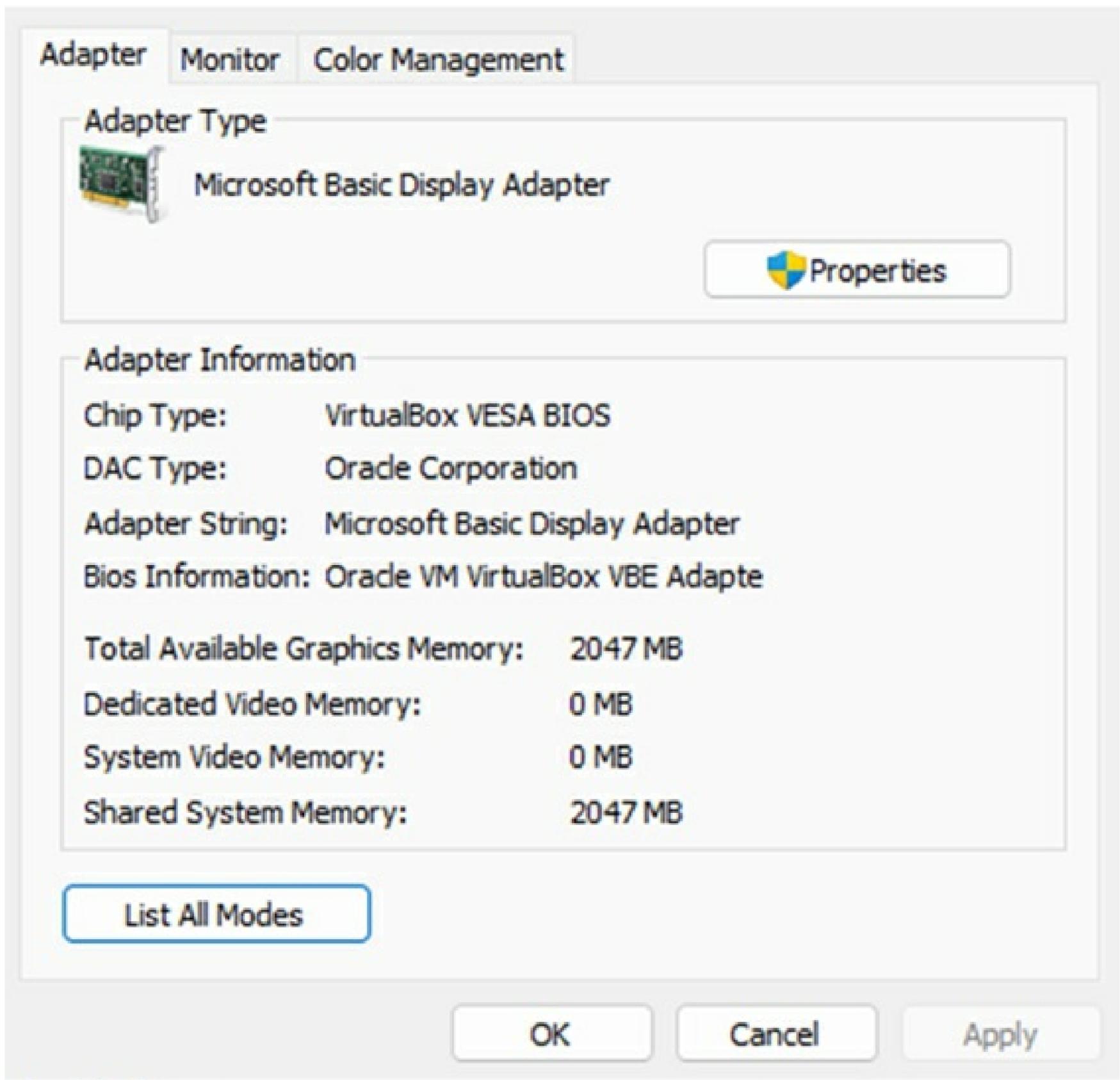


Figure 26: Display Adapter Properties

Windows 11 provides several options to look up graphics adapter information. One of the main locations is found in the Settings application of the operating system.

1. Open the Settings application with the keyboard shortcut Windows-I or by selecting Start Settings.
2. Open System Display. You find various display related settings there for instance to change the display resolution or scale.
 - . Select Advanced display on the page. Windows 11 displays a few display related information on the page already.
4. Select “display adapter properties for Display 1” on the page.
 - . A new window opens with display adapter information such as the Adapter Type Chip Type available graphics memory shared system memory or a link to display the support display resolutions.

A second option that Windows 11 users have is to open the System Information application:

1. Select Start.
2. Type msinfo 2.
 - . Load the System Information result that is displayed in the search results.
4. Go to Components Display in the System Information window to get display related information.

The listing is more extensive as it lists installed drivers and the driver version among other things.

Tip: third-party software such as GPU-Z provide more information. Consult the Software listing at the end of the book for recommendations.

Input

Changing the mouse pointer and size

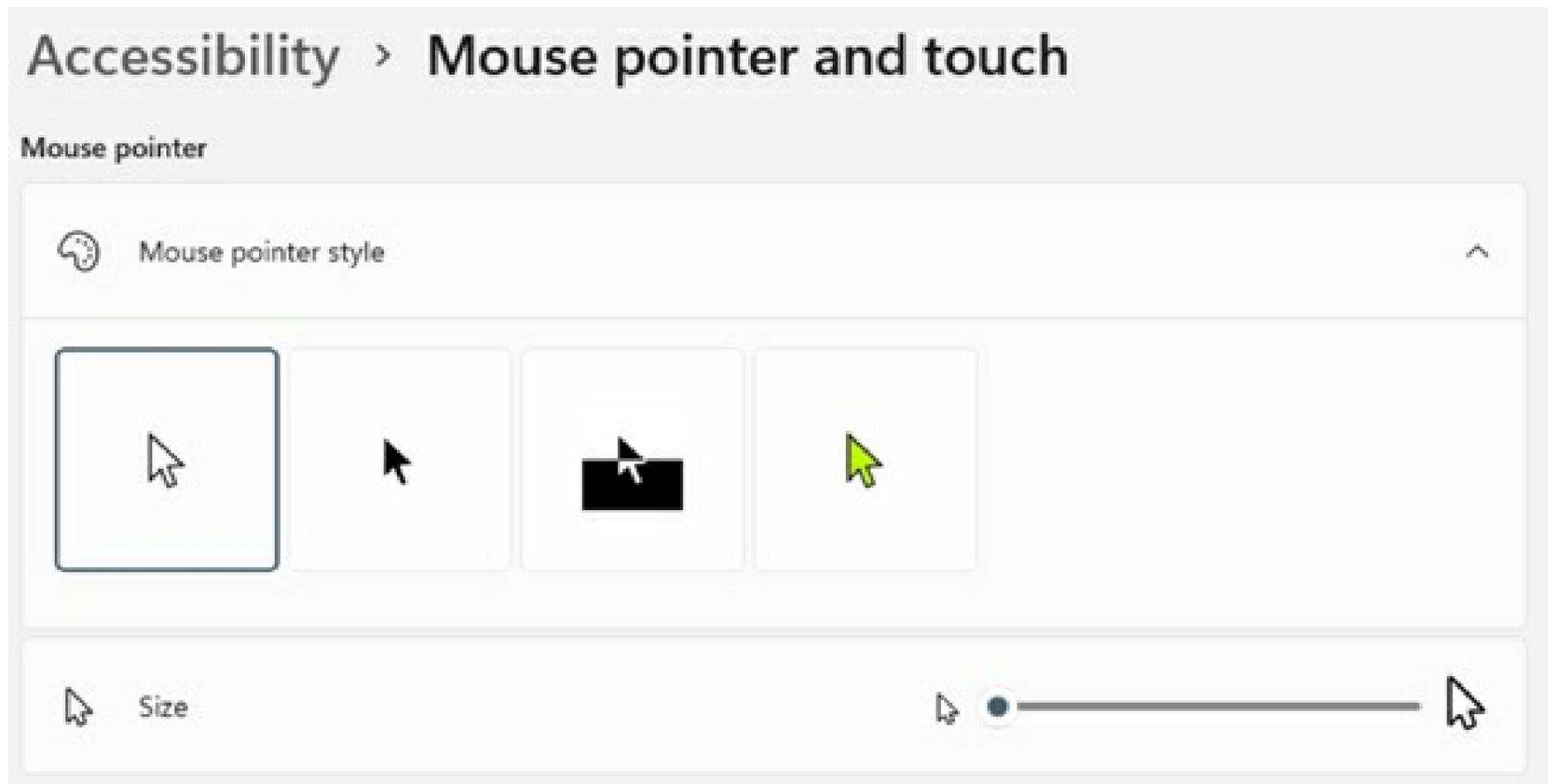


Figure 27: Accessibility Mouse Pointer and Touch settings

Just like it is possible to modify the size of text on Windows 11 it is possible to change the mouse pointer and touch options.

Windows 11 users may change the size of the cursor or switch to a different mouse cursor design.

1. Open the Settings application for instance by using the shortcut Ctrl-I or by selecting Start Settings.
2. Go to Accessibility Mouse pointer and touch.

The Mouse Pointer Style section displays the available cursors that you can activate. Just click on a new cursor or tap on it using touch displays to activate it. Activation is immediate and you may switch back to any of the other designs at any time.

The Size section defines the size of the mouse cursor on the screen. Use the slider that is provided to increase or decrease the size. The change is immediate as well and you will notice that the size of the cursor is increased or decreased depending on your selection.

File Explorer

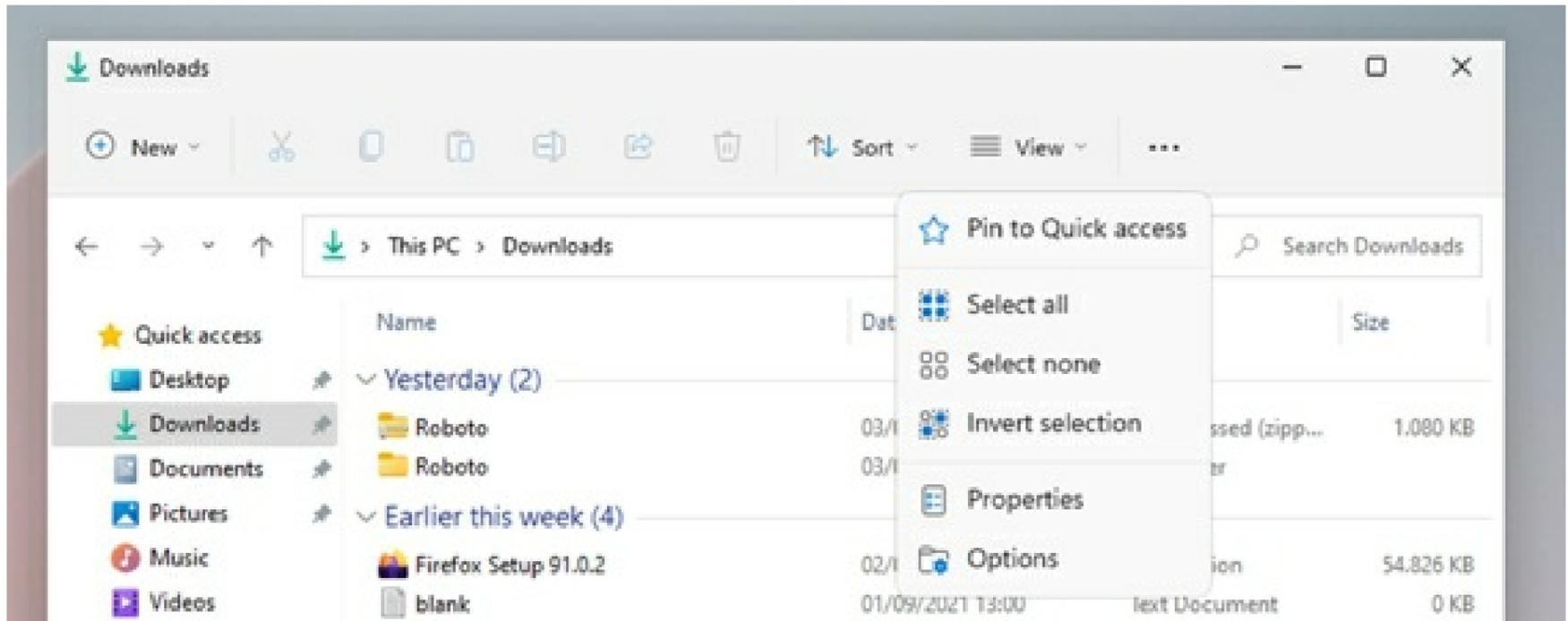


Figure 28: File Explorer new toolbar

Microsoft modified File Explorer’s design significantly in Windows 11. Company designers removed the ribbon toolbar and tabs from Explorer and replaced it with a single toolbar that displays often-used items only.

Most actions and options displayed on toolbars in Windows 10’s File Explorer are still present albeit in different locations.

The main toolbar displays options to create new files, folders and shortcuts, use common actions such as cut, copy or paste, to change how files and folders are sorted, and to change the view of files or folders.

Missing actions may be found under the three-dots menu. There you find selection options, a link to the folder options, pinning and properties.

Actions may change depending on the item that is displayed. If you select a DVD drive, you will get an eject option next to all the other options in File Explorer. On This PC, you will see options to add, map and disconnect network locations.

The right-click menu displays only a few options as well by default.

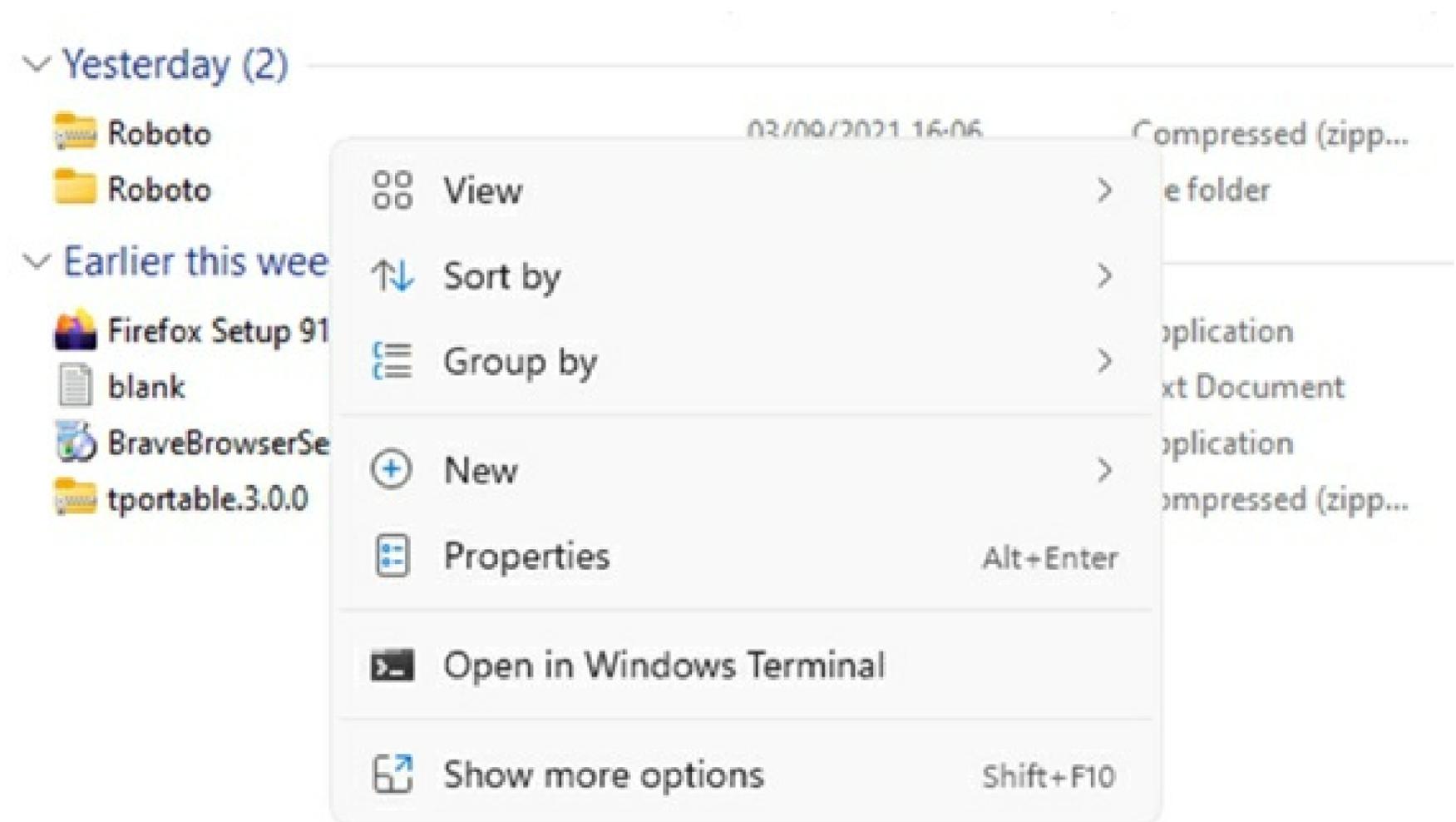


Figure 29: File Explorer Default Right-click Menu

Earlier this week (4)

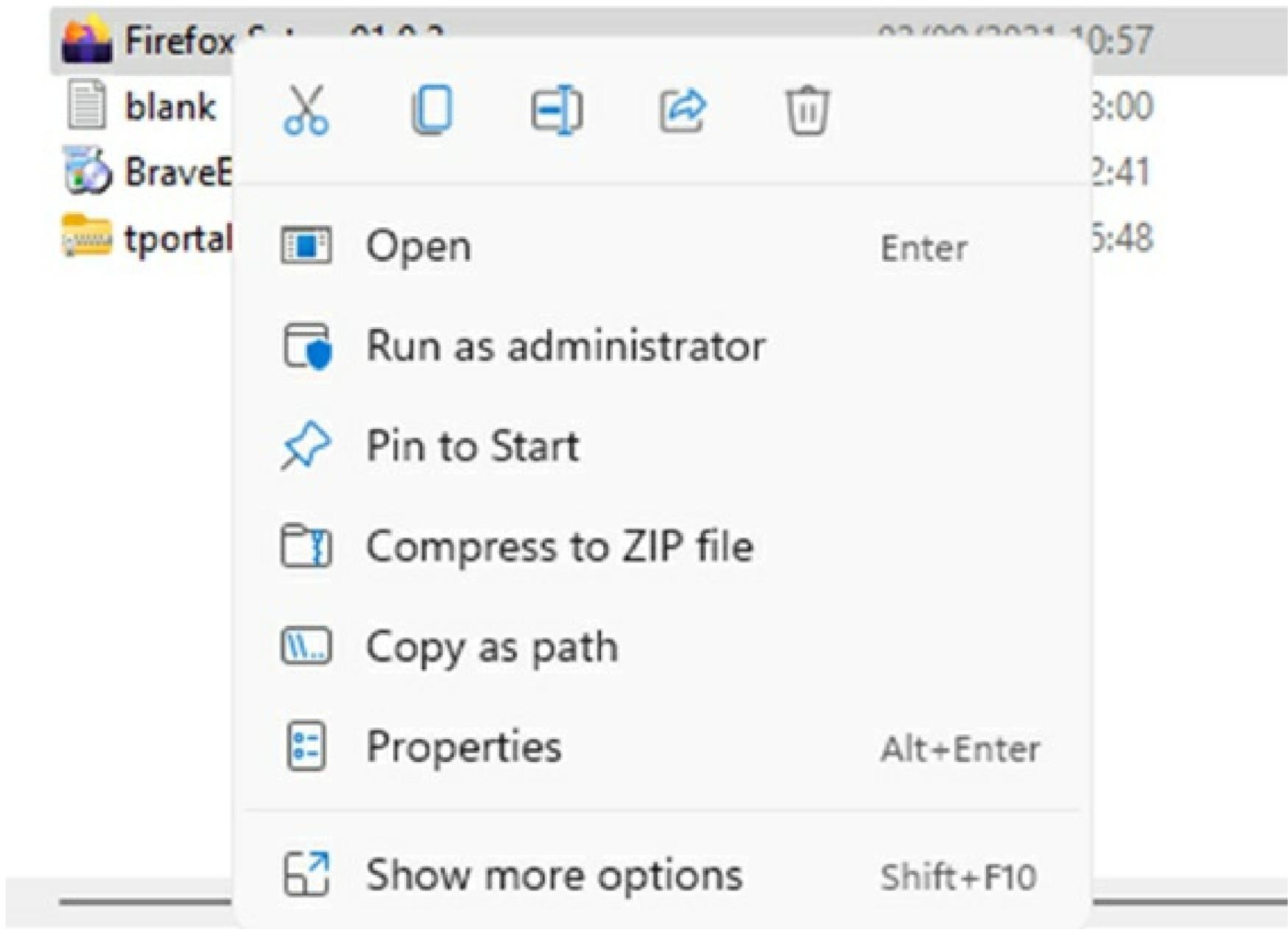


Figure 30: File Explorer Files Right-click Menu

The menu displays different items that depend on the item e.g. a right-click on a file displays a “run as administrator” option a right-click on a folder does not.

Many options are not available anymore in the menu. Microsoft added an option to display the old context menu by clicking on the “show more options” link.

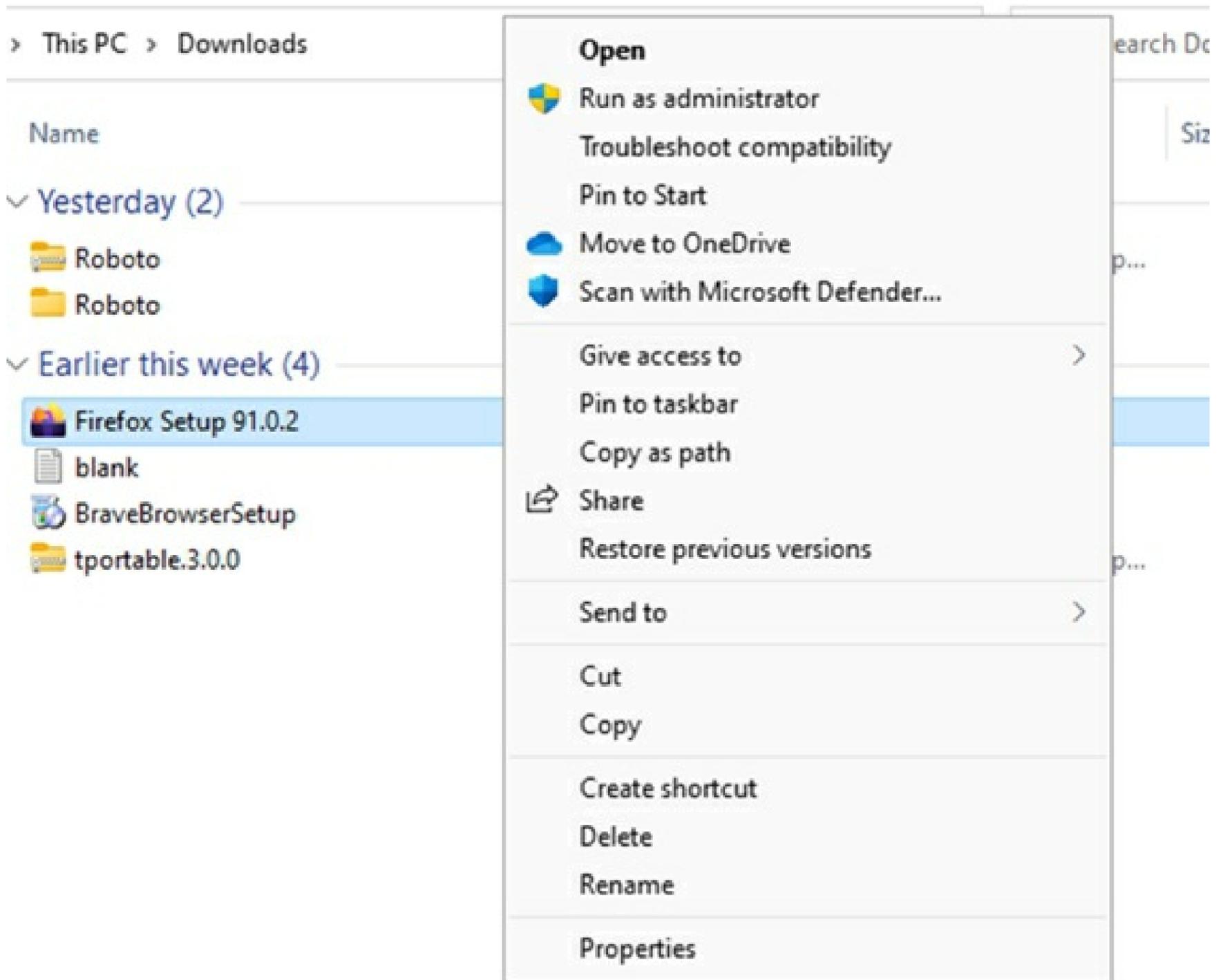


Figure 31: File Explorer Show More Options

Windows 11 users can open the classic context menu with the keyboard shortcut Shift-F10. It is not the most comfortable of options as you need to select items first before you invoke the shortcut.

Enable Compact View

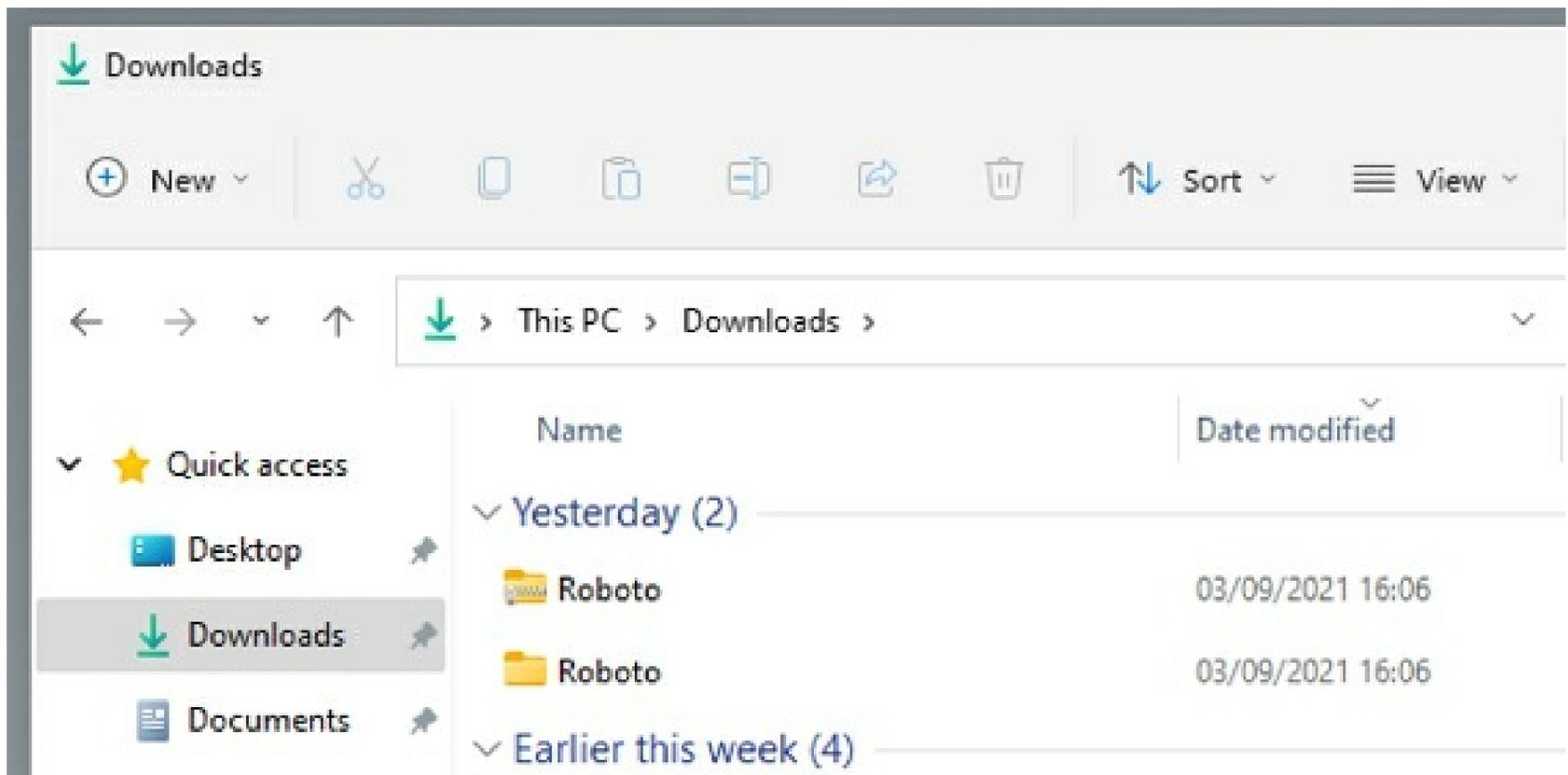


Figure 32: File Explorer Standard View

Microsoft changed the design and functionality of File Explorer the default file management tool and browser significantly.

One of the changes increased the whitespace between entries in File Explorer. While it may improve the selection of items in File Explorer on touch devices it does reduce the number of items that are displayed at the same time without scrolling. Windows 11 users who don't use touch devices may prefer compact view mode as it may make file management easier.

Microsoft implemented an option to change that. Compact View is a new display option that users may enable to reduce the whitespace between File Explorer entries.

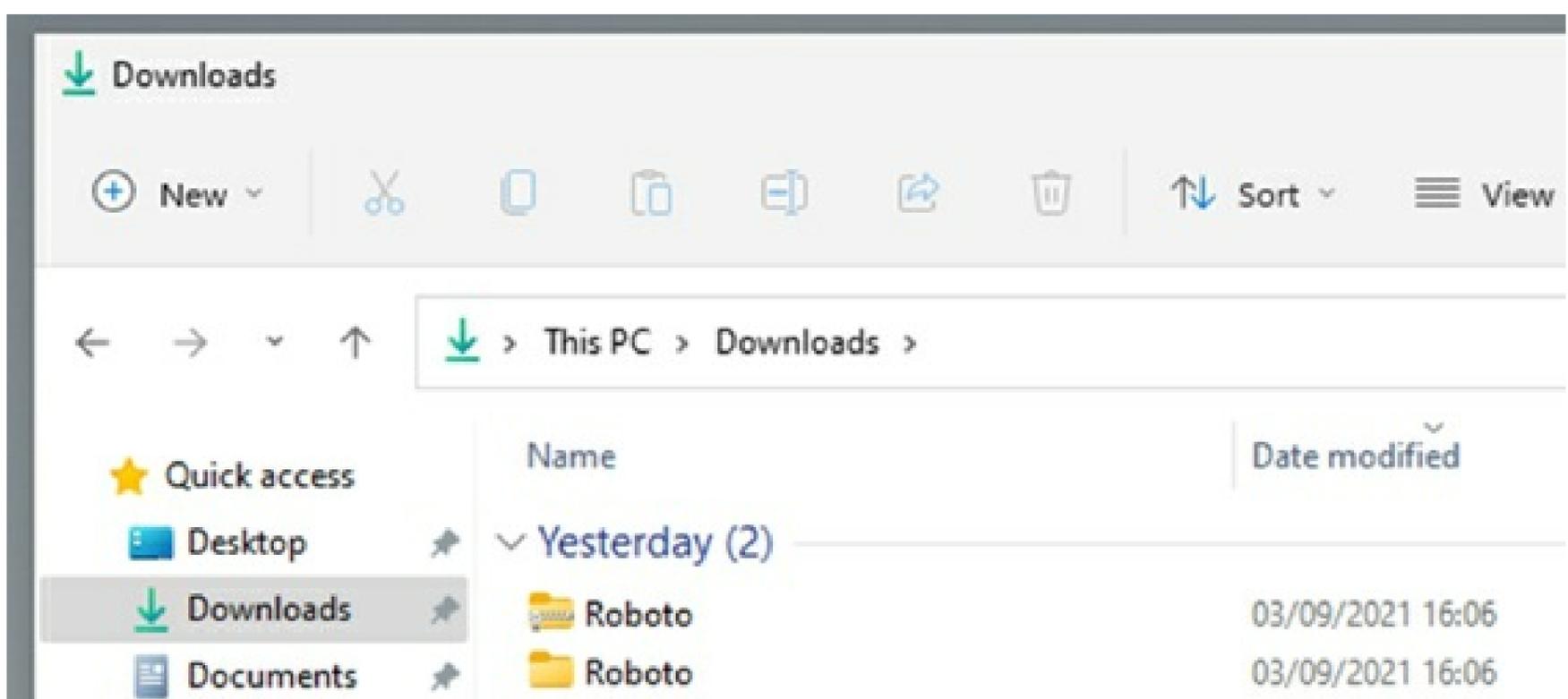


Figure 33: File Explorer Compact View

To enable Compact View mode do the following:

1. Open File Explorer.
2. Select View in the main toolbar and then Compact View.

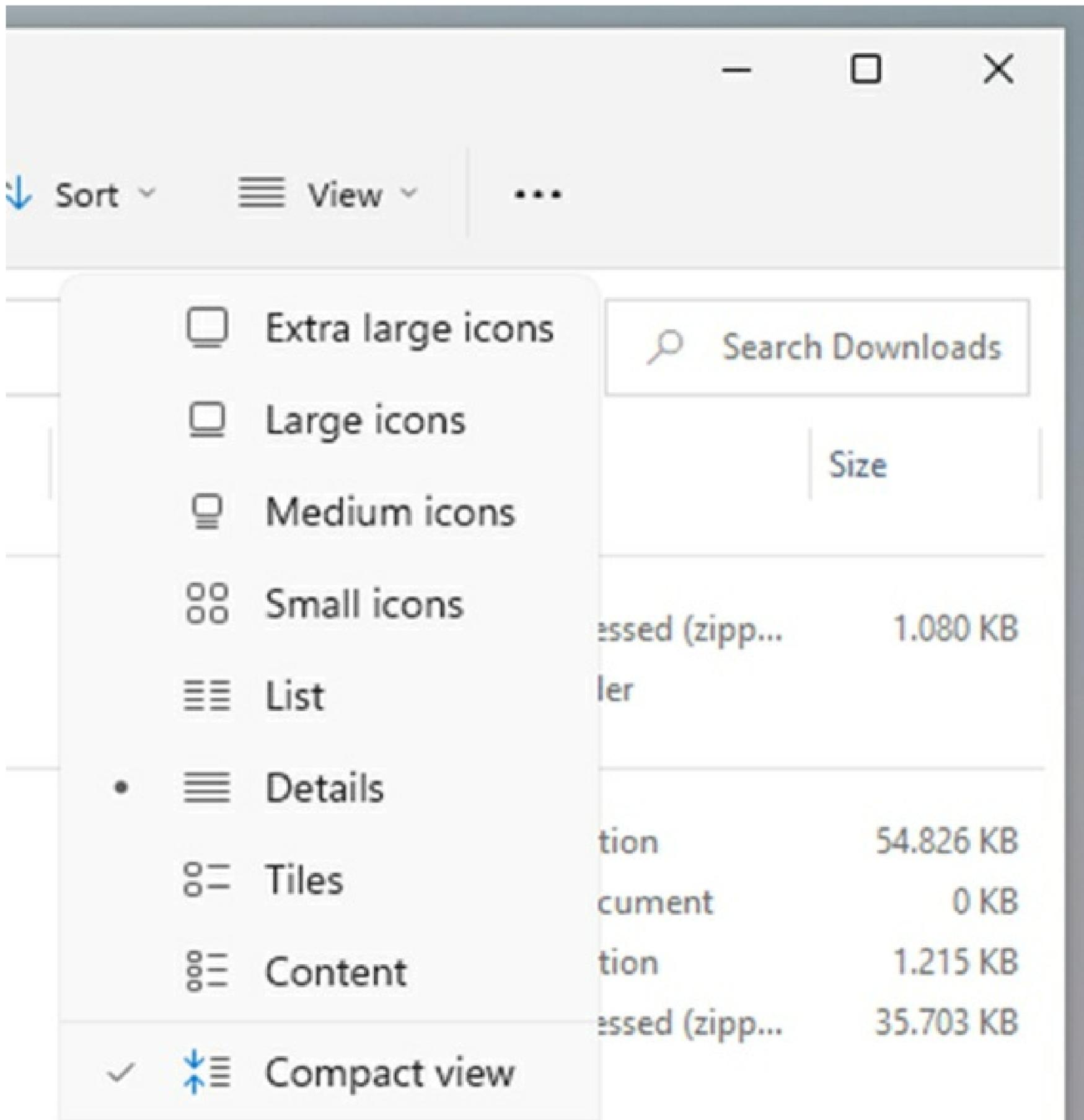


Figure 34: File Explorer Compact View

The change is visible immediately. Toggle the option at any time to switch between the two display modes.

Reset the View setting

Windows 11's File Explorer application comes with options to change the view settings of folders.

View settings include the following:

- Column width
- Folder templates
- Groups
- Layout
- Sort options

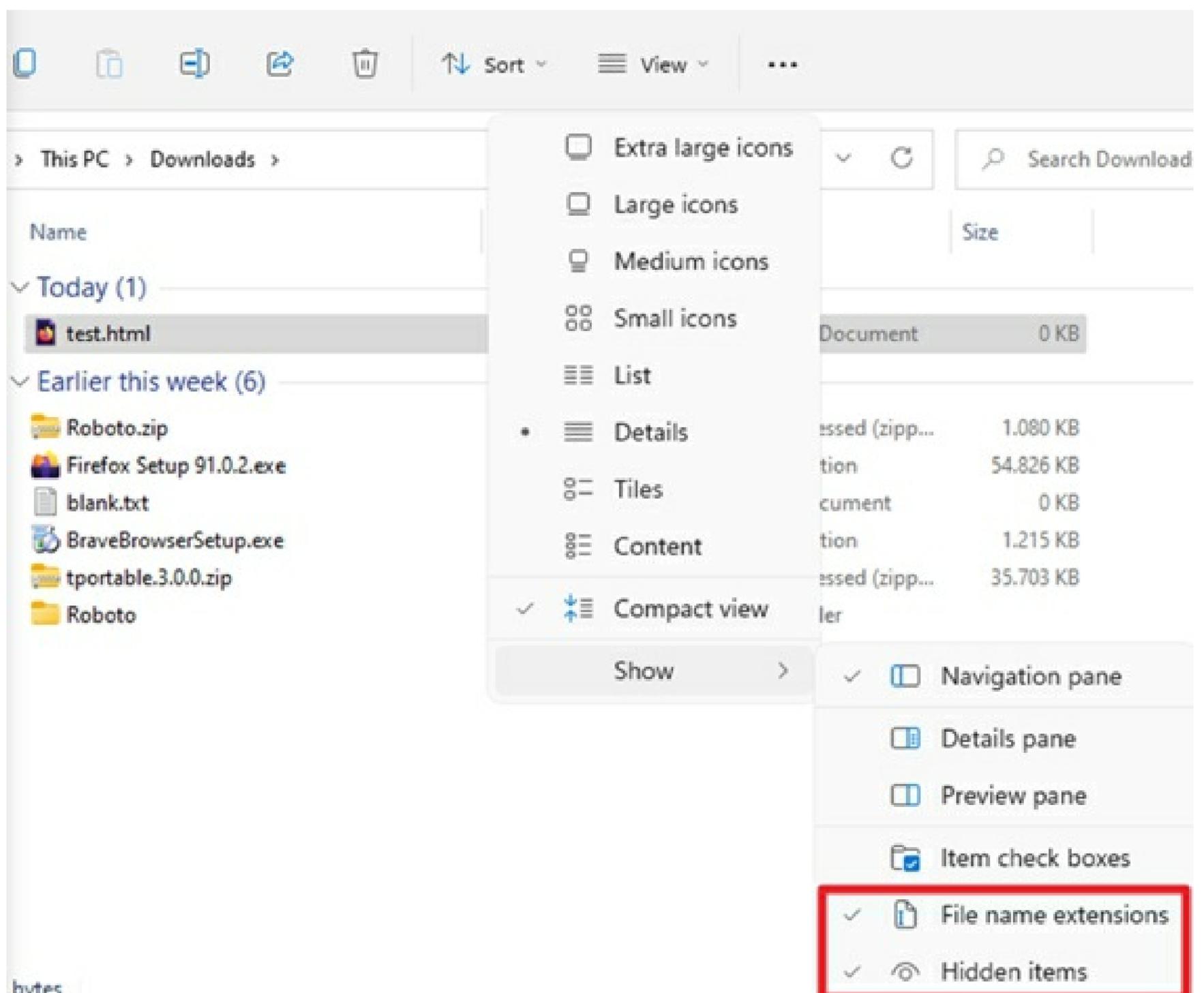
It makes sense for view settings to be different. A folder full of videos or photos displays a thumbnail view by default whereas the downloads folder has a different type of view.

Views can be reset but in File Explorer only for folders that use the same template type.

1. Open File Explorer either from its shortcut on the Taskbar from Start or by using the shortcut Windows-E.
2. Open a folder that uses the template that you want to reset for all folders e.g. the Pictures folder to reset all folders that use the Pictures template.
 - . Select the three-dots icon in the main toolbar while the folder is activated and activate the Options item in the menu that opens.
4. Switch to the View tab.
 - . Activate the “Reset Folders” button on the page that opens.
 - . Confirm the prompt “do you want to reset all folders of this type to the default view settings?” to reset all folders that use the same template to the default.
 - . Click the Ok button to complete the operation.

Repeat the operation for other folder templates that you want to reset e.g. for documents or videos.

Display hidden files, folders and file extensions



Windows 11 just like Windows 10 hides certain information in File Explorer by default. File Explorer does not display the extension for common file types and hidden files and folders are not displayed either.

It is usually a good idea to display all file types all the time. It gives reassurance about the type and makes operations such as changing the file extension more comfortable.

Here is what you need to do to display the file extension for all files in File Explorer:

1. Open File Explorer.
2. Select View > Show > File Name Extensions.

Explorer displays extensions for all files from that moment on.

To display hidden files and folders do the following:

1. Open File Explorer.
2. Select View > Show > Hidden Items.

Hidden folders and files are displayed immediately in File Explorer.

You may toggle both options to hide file name extensions for common file types and hidden files or folders again.

Change Views in File Explorer

File Explorer lists files, folders and drives in different views. Some views list all icons alphabetically, the details view displays items in a table-like structure that can be customized.

The following Views are supported by Windows 11's File Explorer (and their keyboard shortcuts)

1. Extra Large Icons (Ctrl-Shift-1)
2. Large Icons (Ctrl-Shift-2)
 - . Medium Icons (Ctrl-Shift-)
4. Small Icons (Ctrl-Shift-4)
 - . List (Ctrl-Shift-)
 - . Details (Ctrl-Shift-)
 - . Tiles (Ctrl-Shift-)
 - . Content (Ctrl-Shift-)

The four icon-based views display icons or thumbnails when enabled. The view is used by image and video folders as image and video thumbnails are displayed in that case.

Details offers the most information and is customizable.

Select View and then one of the available views to change the View in Windows 11's File Explorer application.

Details View: adding or removing columns

Details View lists all items in columns that can be sorted. A click on a column header sorts all files and folders accordingly. Columns may be removed or added to hide or add information.

1. Open File Explorer and navigate to the folder that you want to add or remove columns from.
2. Right-click on the column header, e.g. on the name column header.
 - . File Explorer displays the columns that are displayed currently and common columns that are not displayed. Select or unselect one of these or "more" to display the full list of available columns.
4. Check or uncheck columns in the "choose details" window.
 - . The order of columns can be changed by moving them up or down using the provided buttons.
 - . Select Ok to apply the changes.

Not all columns list data necessarily, as some data types require specific types of files. Album artist, for example, requires a music file that is tagged properly.

Sorting and grouping options

Files and folders in File Explorer support different sorting and grouping options. Sorting refers to the sort order in which files are displayed in, grouping, and whether files should be displayed as groups based on the selected specification.

All sorting and grouping options are located under the Sort menu in the main toolbar of File Explorer. Activate the menu to display the available options:

- Sort by: name, date modified or type directly.
- More: lists additional sort options (all available column types).

- Sort order: Ascending or Descending.
- Group by: Name Date modified Type Size Date created Authors Tags Title None.

Select one of the sort options to change the sorting of the active folder based on the selection. Grouping works the same way: select the “group by” option and then one of the available grouping options to apply the change to the active folder.

Tip: click on a column header while Details view is active to toggle the sort order between ascending and descending.

Manage Quick access in the Sidebar

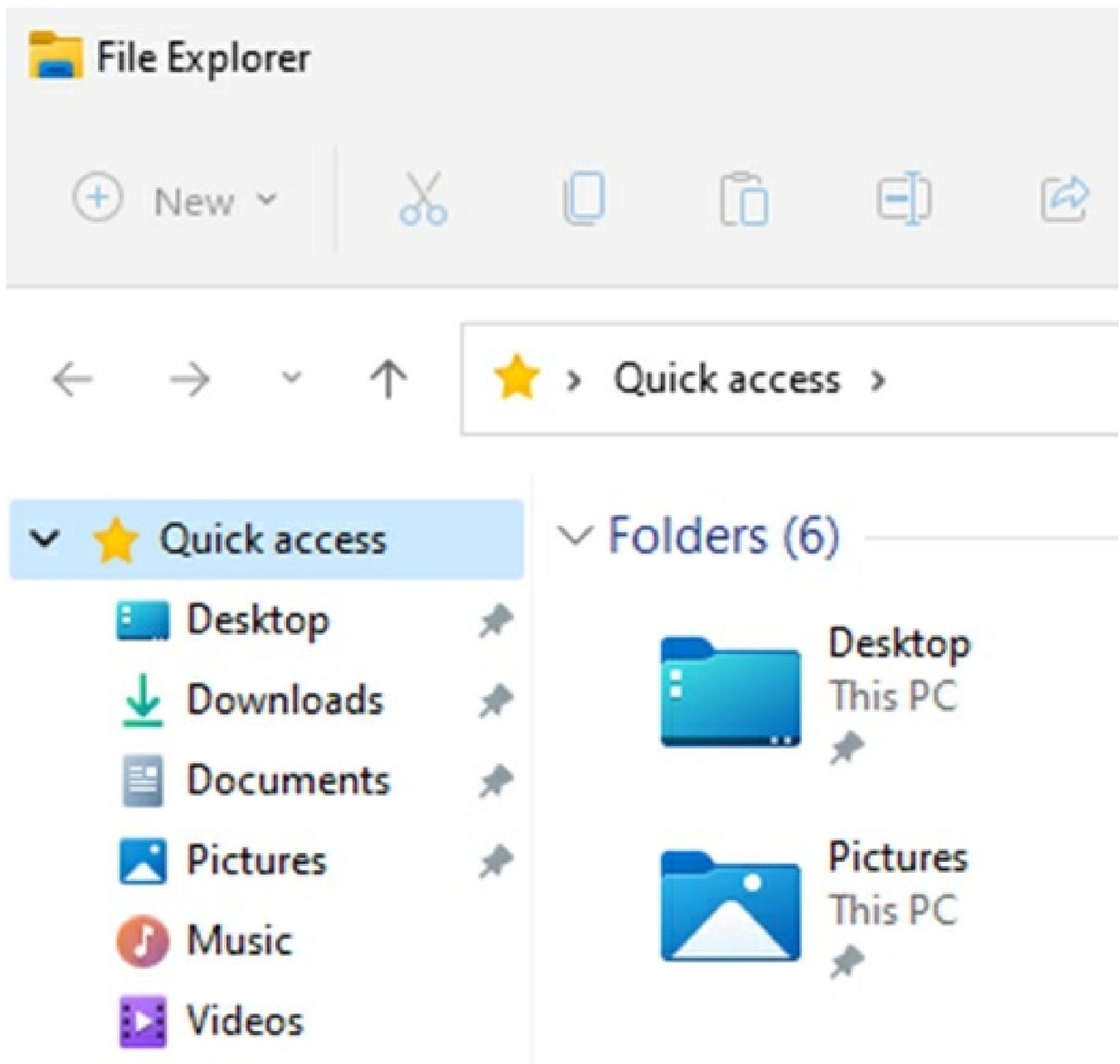


Figure 35: File Explorer Quick access menu

Quick access is a menu in the File Explorer sidebar that displays pinned and often used folders and files by default. Windows 11 users find the folders Desktop Downloads Documents and Pictures pinned to the Quick access menu with Music and Videos available as well but not pinned. Pinned items are displayed permanently in Quick access.

Folder access is improved with Quick access. A click opens the desired folder similarly to how bookmarks work.

Windows 11 users may customize the selection of folders that are listed in the Quick access menu. Links could point to a project folder games media or any other folder that is often used.

All of the default items can be removed from the Quick Access menu. All that it takes for that is to right-click on an entry and select the “Remove from Quick Access” option of the context menu that opens.

The pinning of existing Quick access items works similarly. Right-click on an entry and select the “Pin to Quick access” option to pin it to the menu. Pinned items can be unpinned by right-clicking on them and selecting the “Unpin from Quick access” option from the menu.

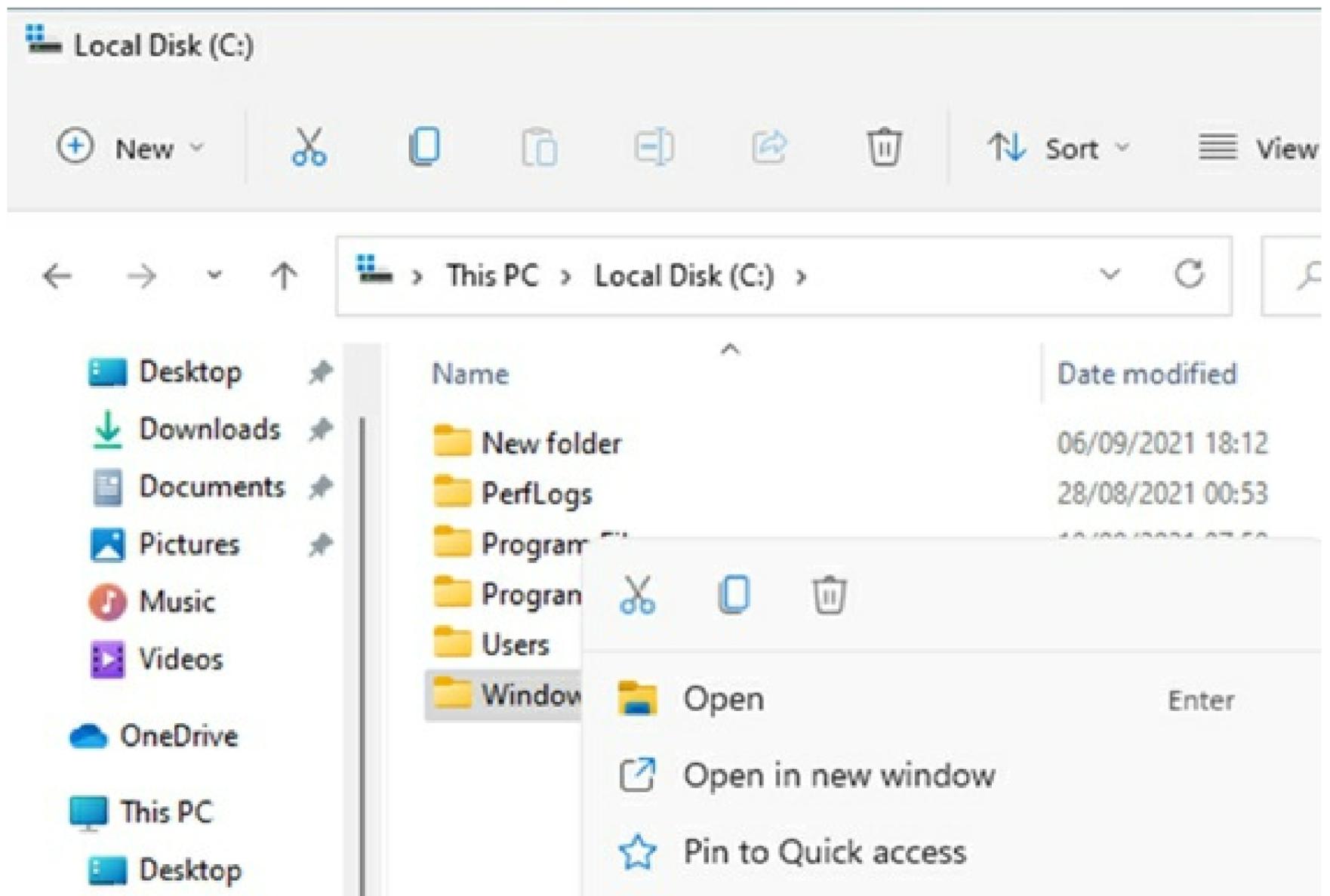


Figure 36: File Explorer Pin to Quick access

Any other folder that is available on the system can be pinned to the Quick access menu as well.

1. Right-click on the desired folder in File Explorer.
2. Select the “Pin to Quick access” option from the context menu.

The folder is pinned to Quick access and accessible from that location from that moment on.

Disable recently and frequently used files and folders in Quick Access

Folder Options

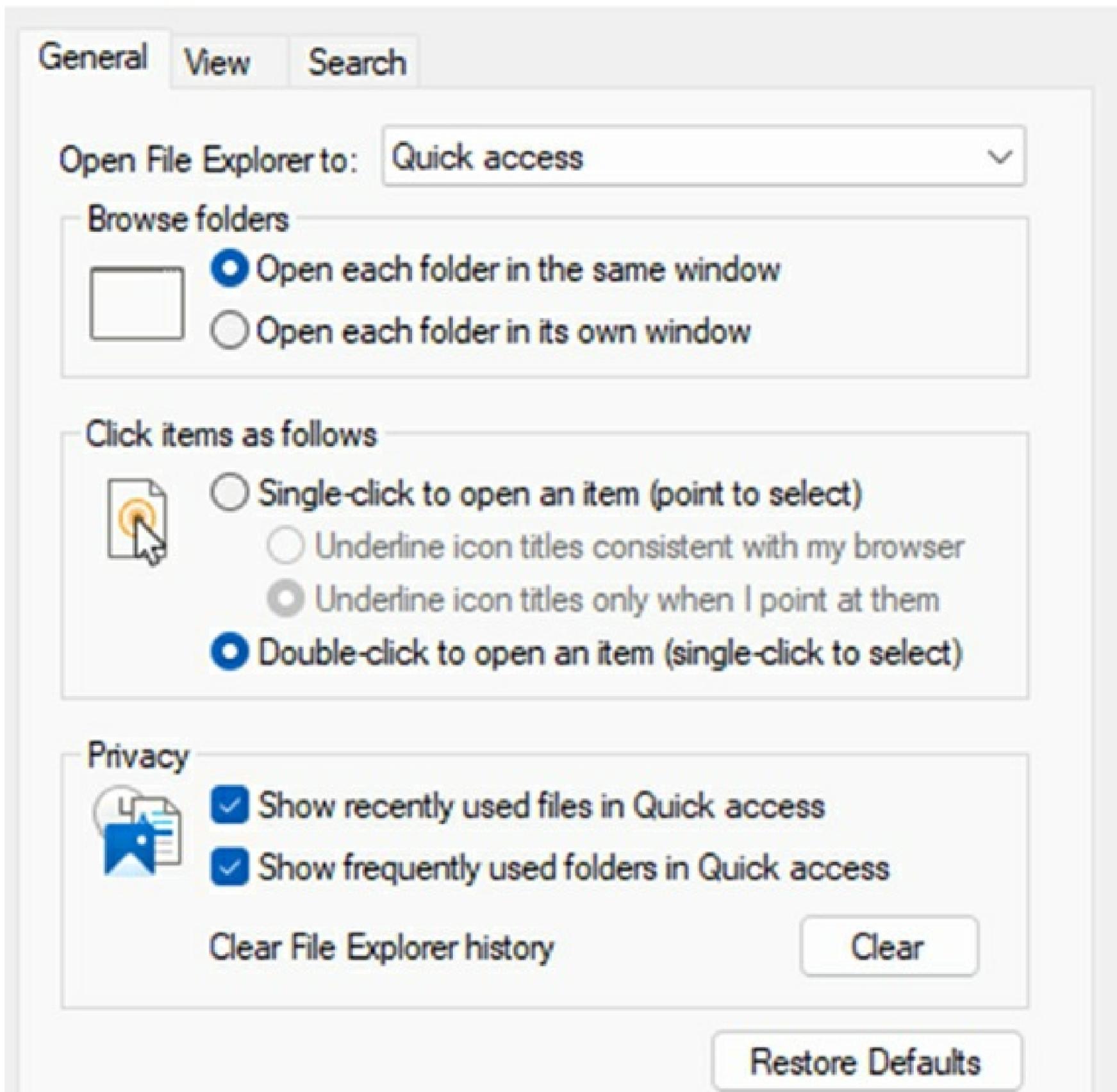


Figure 37: File Explorer Quick access Privacy

Quick access may display recently used files and frequently used folders under the pinned folders. Windows 11 users may disable one or both to limit the display to pinned folders.

1. Open File Explorer on the system.
2. Select the three-dots menu and when it opens the Options item.
 - . Both options are listed under privacy in the General tab:
 - Show recently used files in Quick access.
 - Show frequently used folders in Quick access.

Disable one or both of the options to hide recently and frequently used items. An option to clear the File Explorer history is provided on the same page.

Add Libraries to File Explorer

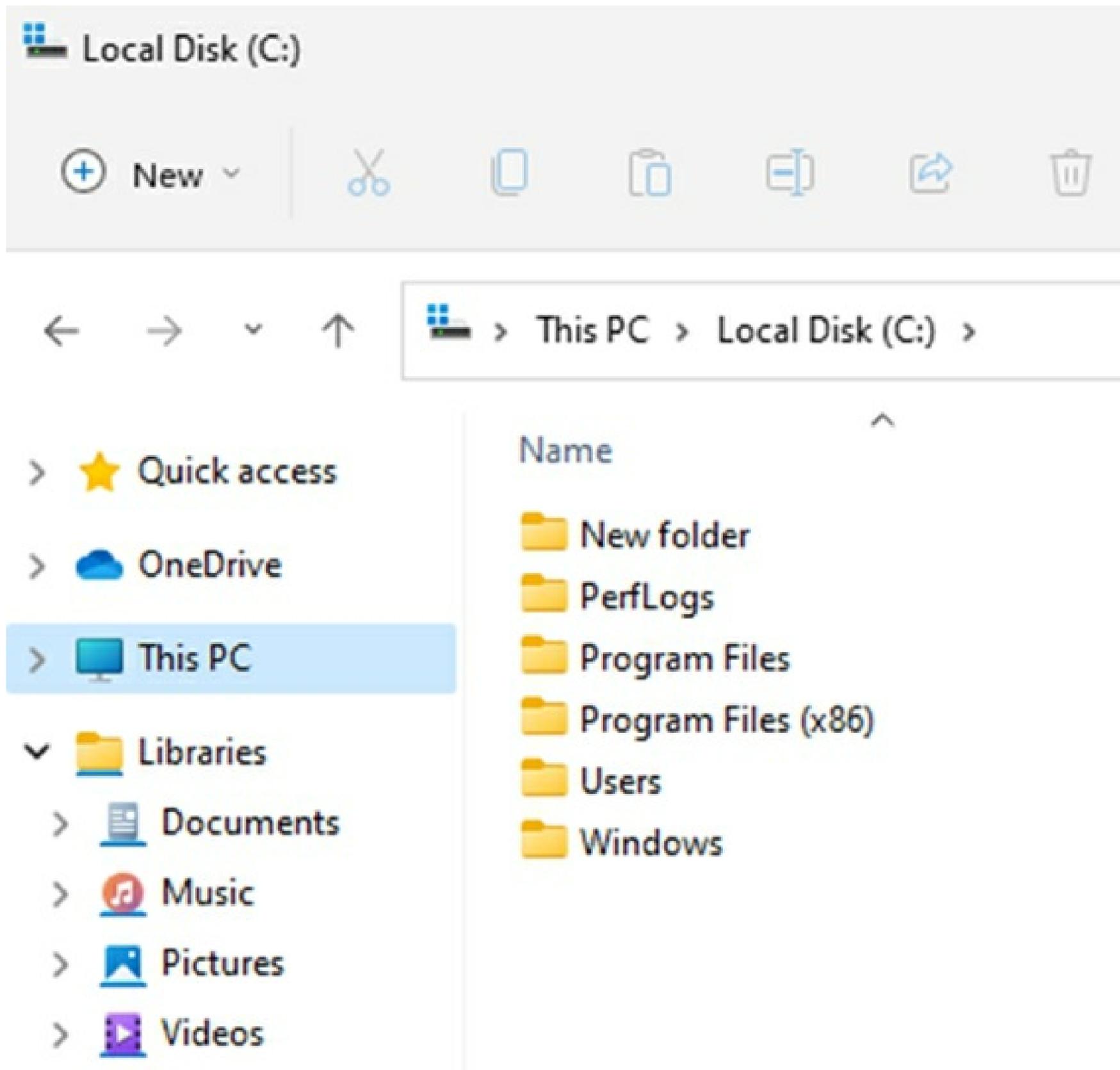


Figure 38: File Explorer Libraries

Libraries group folders together virtually. A library may contain files and folders of several folders e.g. all music files that are on the system even if stored in different folders and on different drives.

Libraries provide access to all of these files in one central location but the data is not stored in the library folder.

The library stores references to all files and folders that were added to it and users may interact with these files as if they would be stored in that location. Files can be opened edited deleted or moved.

Libraries main benefits

- One location to access files that are stored in different locations.
- Quick access in the sidebar of File Explorer.
- Libraries can be selected when using Save As.
- Libraries are indexed by Windows Search for faster searches.

Windows libraries are not enabled by default in Windows 11. Introduced in Windows Microsoft disabled the feature in all major versions of Windows that it released since then.

While it is unclear why Microsoft decided against displaying libraries by default it is possible that this was done to avoid user confusion as the default selection of libraries look exactly like the special system folders such as

Documents or Music.

Windows 11 creates four standard libraries by default that it displays when the feature is enabled. These are Documents Music Pictures and Videos.

Libraries can be expanded to display all folders that they contain or collapsed to only display the library name in the Explorer sidebar.

Enable Libraries

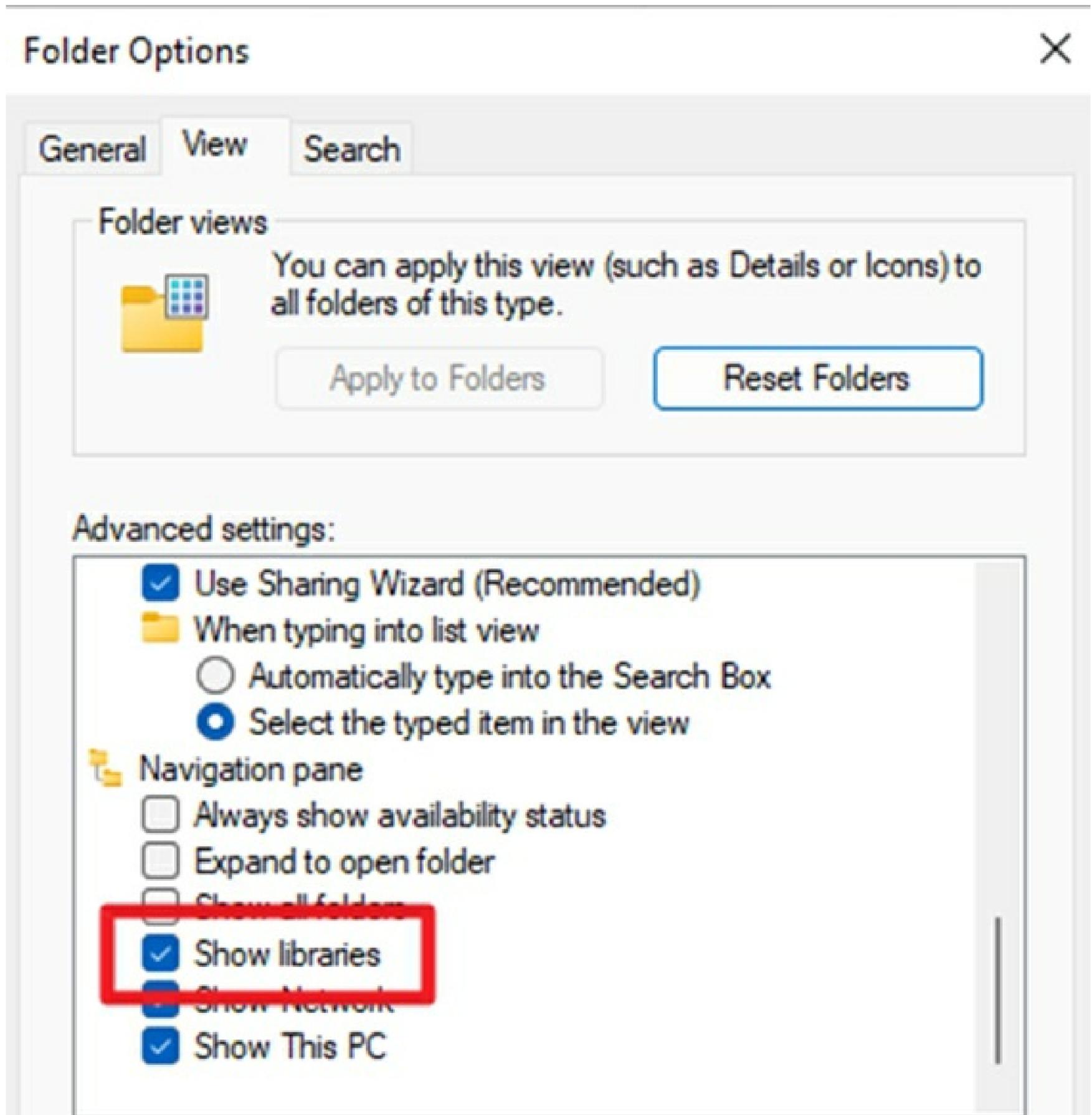


Figure 39: File Explorer Show Libraries

- Open File Explorer.
- Select the three-dots menu and pick Options from the context menu.
- Switch to the View tab in the Folder Options window that is opened.
- Scroll down to the Navigation pane section under Advanced settings.
- Check the “Show libraries” option there.

The default libraries are added to the system and ready for use immediately.

Manage Libraries

All library folders are displayed in the sidebar under Libraries. Windows 11 users may add or remove folders from libraries delete entire libraries or add custom libraries.

Add new libraries

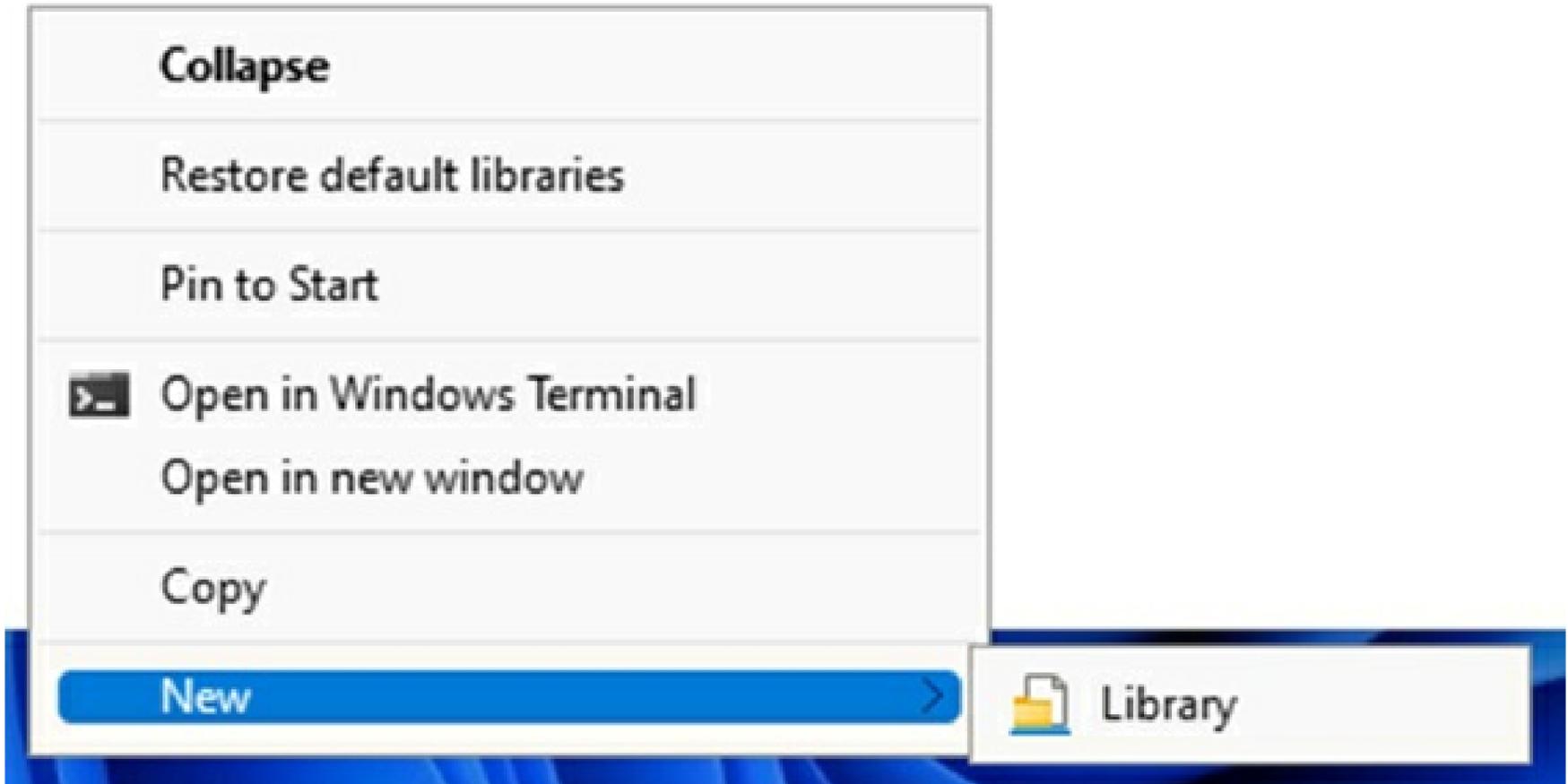


Figure 40: File Explorer Create new library

1. Right-click on the root Libraries listing in the sidebar and select Show more options from the context menu.
2. Select New Library from the context menu that opens.
 - . Add a name for the new library.

Remove a library

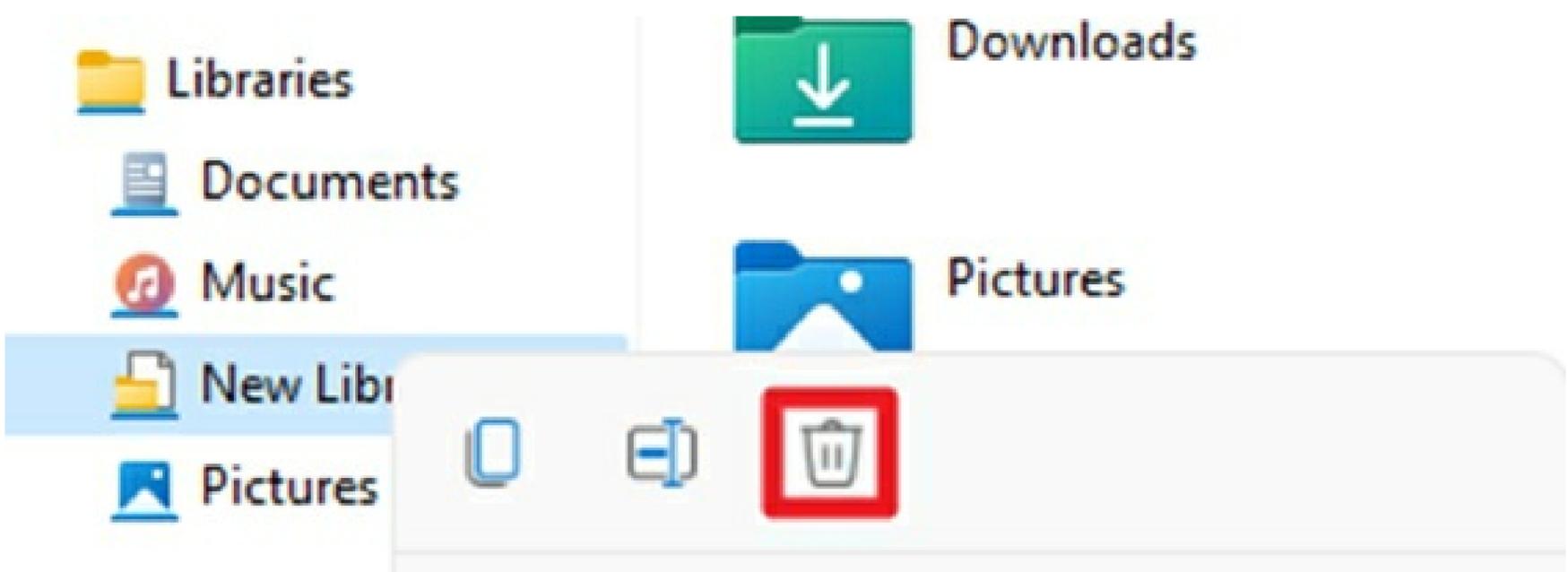


Figure 41: File Explorer Delete Library

1. Right-click on the library that you want to remove.
2. Select the “trashcan” icon in the context menu that opens to delete the library.

Add folders to an existing Library and remove folders

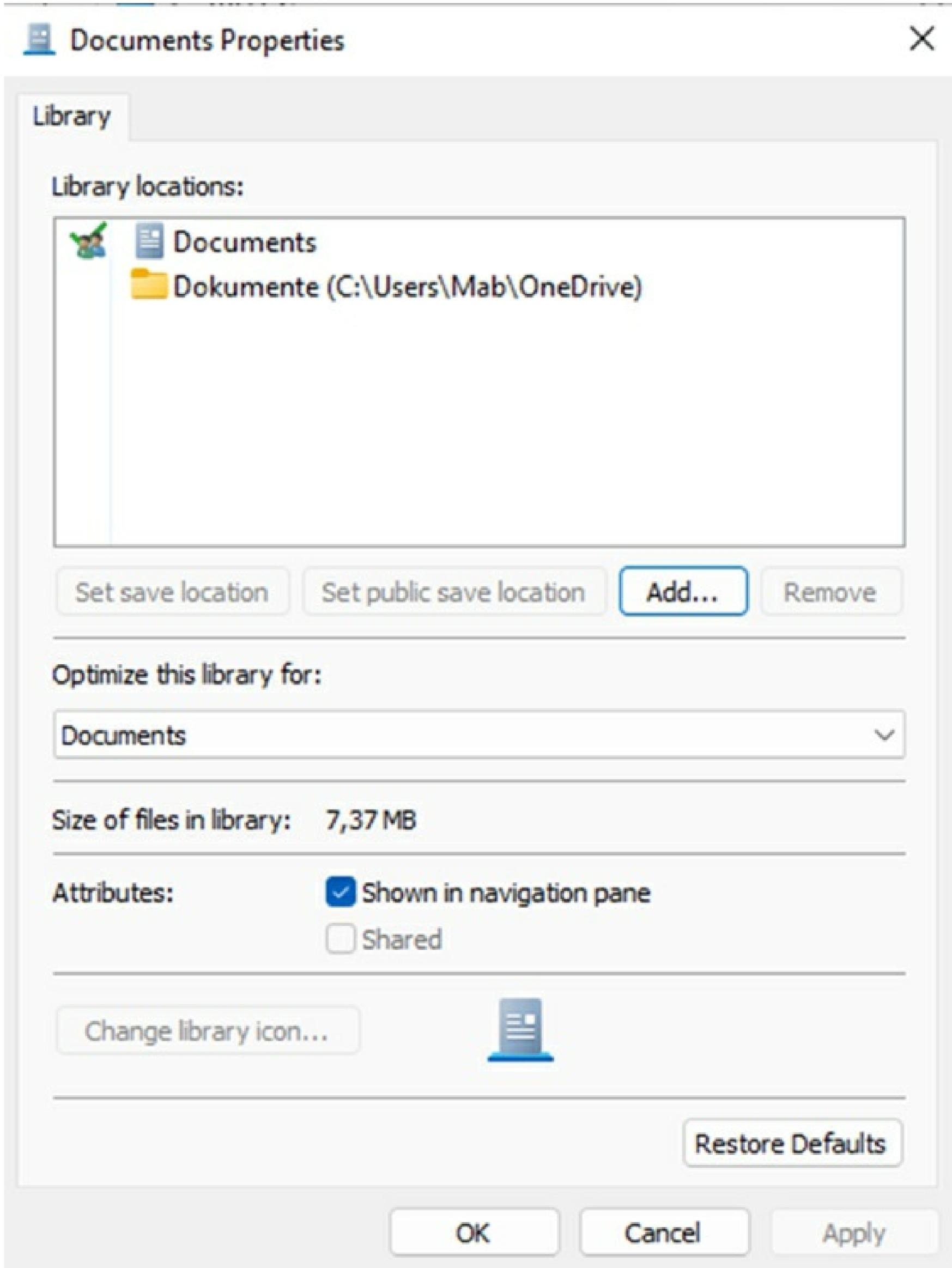


Figure 42: File Explorer add folder to library

1. Right-click on the library that you want to add a folder to and select Properties from the context menu.
2. Select the "add" button when the properties window of the selected library opens.

- . Browse to the folder and select “include folder” to add it.
4. Select Ok to save the changes.

You may change the sort order of items by using drag and drop. Just left-click on an item and drag it to the new location to change the order in which files are displayed in the library.

Another option that is provided is to set the save location for the entire library. If files are saved to a library they will be stored in the selected folder.

The “Optimize this library for” menu determines the folder preset for the selected library.

Select a folder in the library locations listing and select the remove button to delete it from the library. The actual folder won’t be deleted just the reference to it in the library.

Change the location of the Downloads, Documents, Pictures, Music, and Videos folders

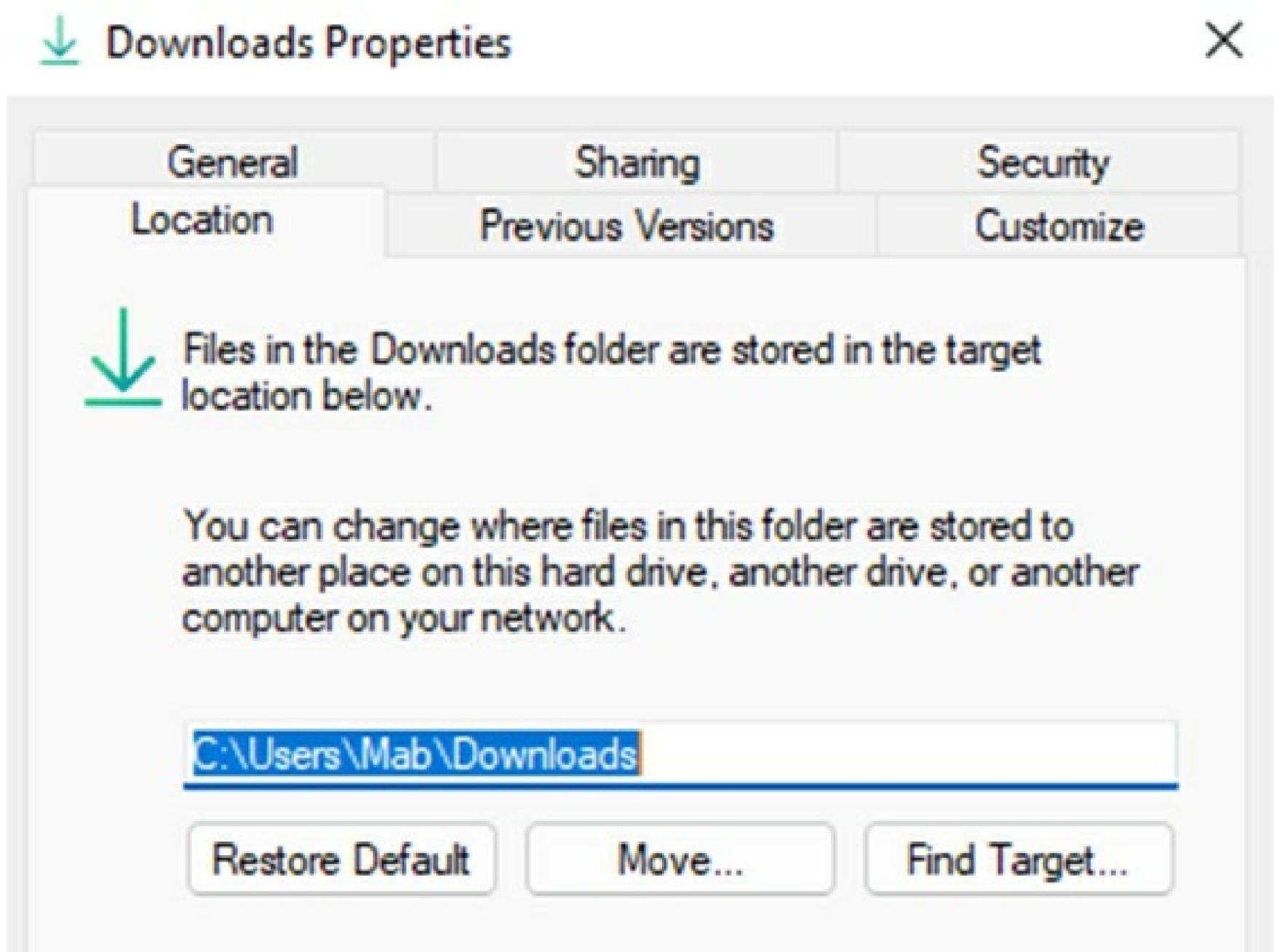


Figure 43: Change Location of Downloads folder

Windows 11 creates special folders in the user directory by default. The Downloads Documents Pictures Music and Videos folders are all stored in the user folder by default on the system drive.

Microsoft created these folders as standard locations for the file types. Downloads for instance are placed in the downloads folder by default.

Windows 11 users may change the locations of these folders for example to move them to another drive or partition to free up space on the system drive or to make sure that enough free storage is available for the folder.

The locations of all folders are changed in the same way.

1. Open File Explorer.
2. Locate one of the folders under Quick Access and right-click on it.

- . Select Properties from the menu.
4. Switch to the Location tab in the properties window.

Three options are available:

1. Change the path of the folder directly by pasting or typing a new path. Windows prompts if the new folder does not exist and may create it. Files that reside in the previous folder are not moved to the new location.
2. Use the Move option to move the content of the folder to another location and make that new location the default.
 - . Restore the default folder location.

Configure Windows 11's Snap Windows feature

Microsoft introduced options to snap windows in its Windows operating system. The functionality which is still available in Windows 11 enables users to display two windows next to each other on the desktop.

You can use drag and drop for that by dragging the first window to the left or right border of the screen or by using the keyboard shortcuts Windows-Left or Windows-Right.

Windows displays all other open windows after you have snapped the first window and a click or tap selects one of them and snaps it next to the first window.

Snap Windows has been updated in Windows 11. While you can still snap windows to the side to display two next to each other you may now use so-called Snap Layouts to display more windows on the desktop.

Snap Windows is enabled by default. All you have to do is hover the mouse cursor over the maximize window button of a window to display available layouts. The selection depends on the screen size.

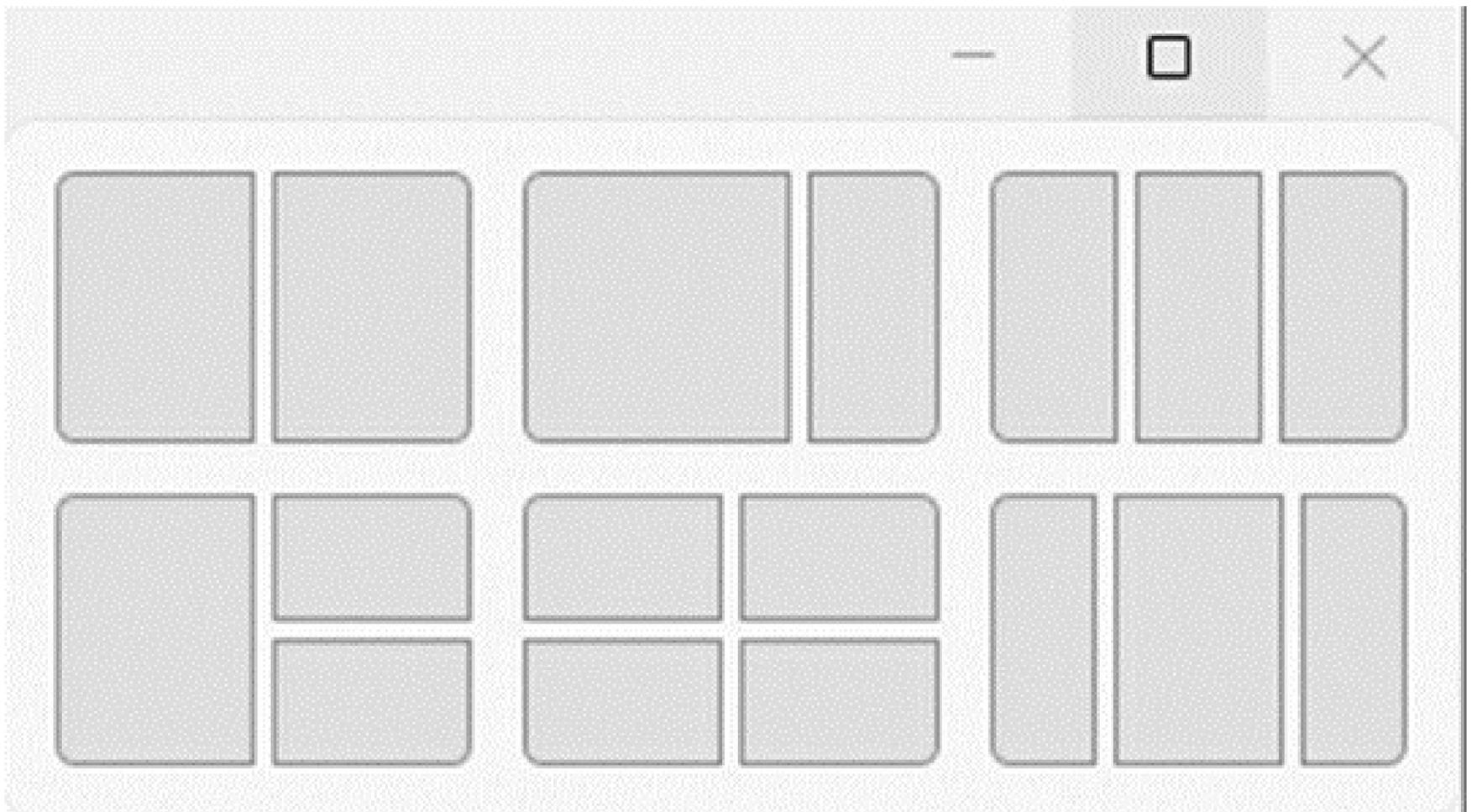


Figure 44: Snap Windows Layout

The screenshot above shows six different layouts to choose from. The side-by-side layout is available but you may also choose to display three windows side-by-side in various ratios or four windows so that each takes up a quarter of the screen.

Move the mouse over one of the slots of the layout that you have selected to snap the active window there. Windows displays all other open windows and you select them until all slots are filled with windows.

Snapped layouts are displayed on the taskbar by default. Hover over an icon to display a preview of all windows that

are part of the layout.

Configuration Options

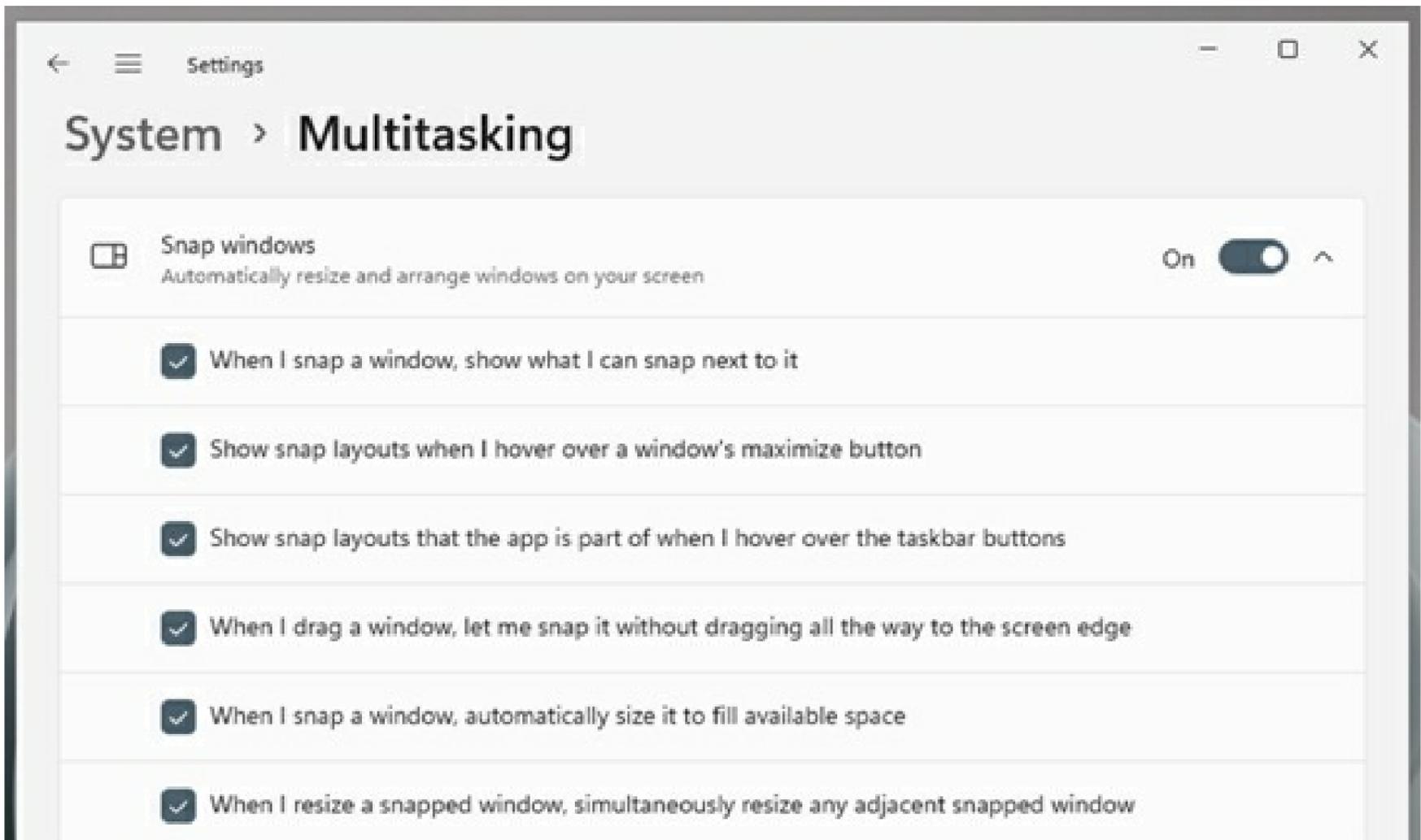


Figure 45: Settings > Snap Windows Configuration

Go to Start > Settings > System > Multitasking and expand the Snap Windows section there.

You can turn the feature off completely or configure it using the following options:

- When I snap a window show what I can snap next to it – This option displays all open windows when a window is snapped to fill the other spots comfortably.
- Show snap layouts when I hover over a window's maximize button – Toggle the showing of snap layouts when hovering over the maximize button.
- Show snap layouts that the app is part of when I hover over the taskbar buttons – Displays all other program windows that form a snap layout with the active taskbar app.
- When I drag a window let me snap it without dragging all the way to the screen edge – Extends the snapping range.
- When I snap a window automatically size it to fill available space – Defines whether program windows are resized automatically when they get snapped.
- When I resize a snapped window simultaneously resize any adjacent snapped windows – Defines whether adjacent windows are also resized when a snapped window is resized.

Search

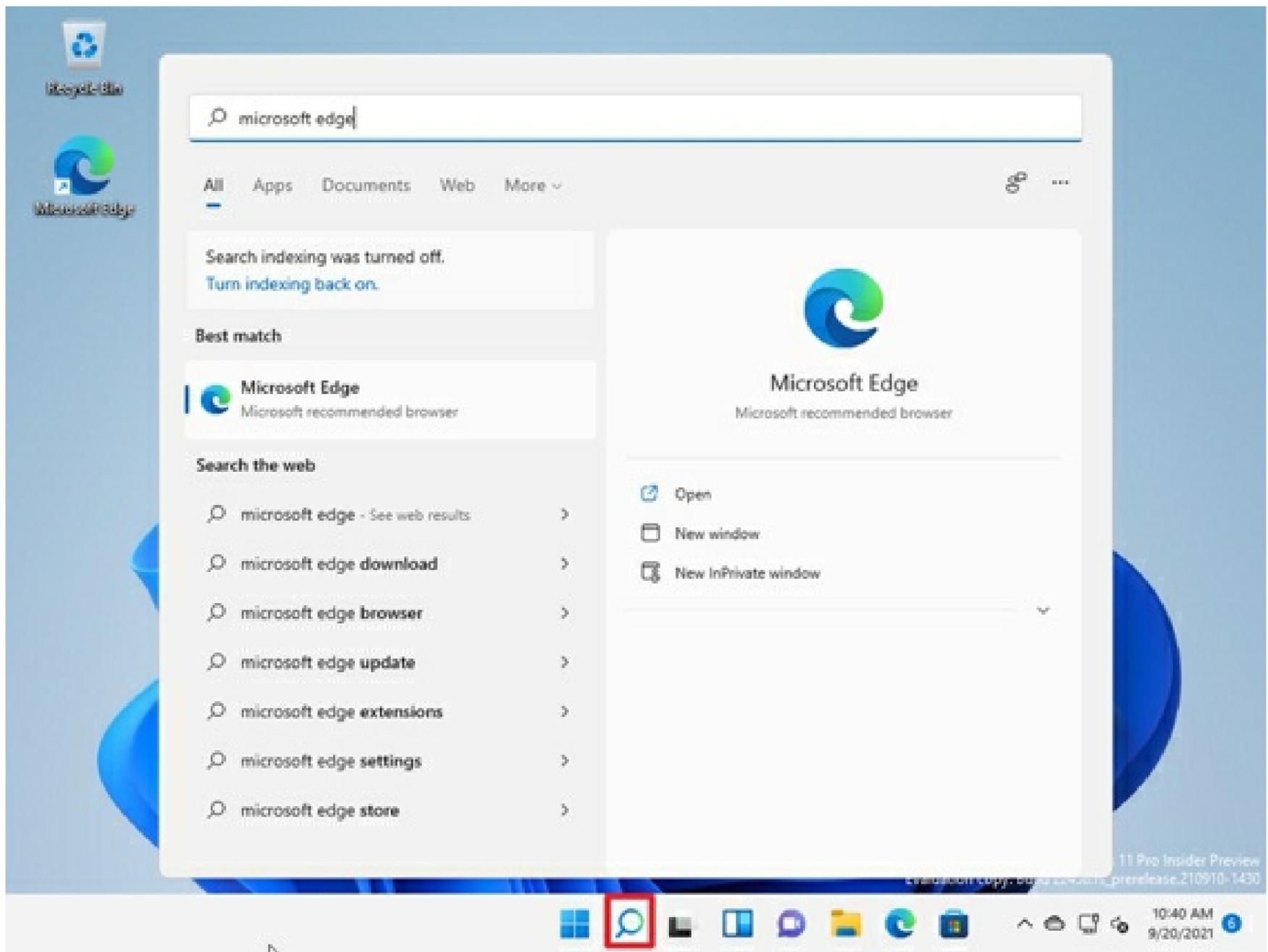


Figure 46: Windows Search Example

Search is an essential function of the Windows operating systems. Windows 11 users may select the search icon that is displayed on the taskbar by default or open the Start menu to initiate searches that way.

Microsoft introduced web-based search functionality powered by the company's Bing search engine in Windows 10. The same feature is also supported in Windows 11.

Windows Search displays results of all types by default but users may select filters to display only apps documents web results or other types of results using the filter options at the top of the interface. Web results are listed under "search the web" which separates them from local results.

Indexing

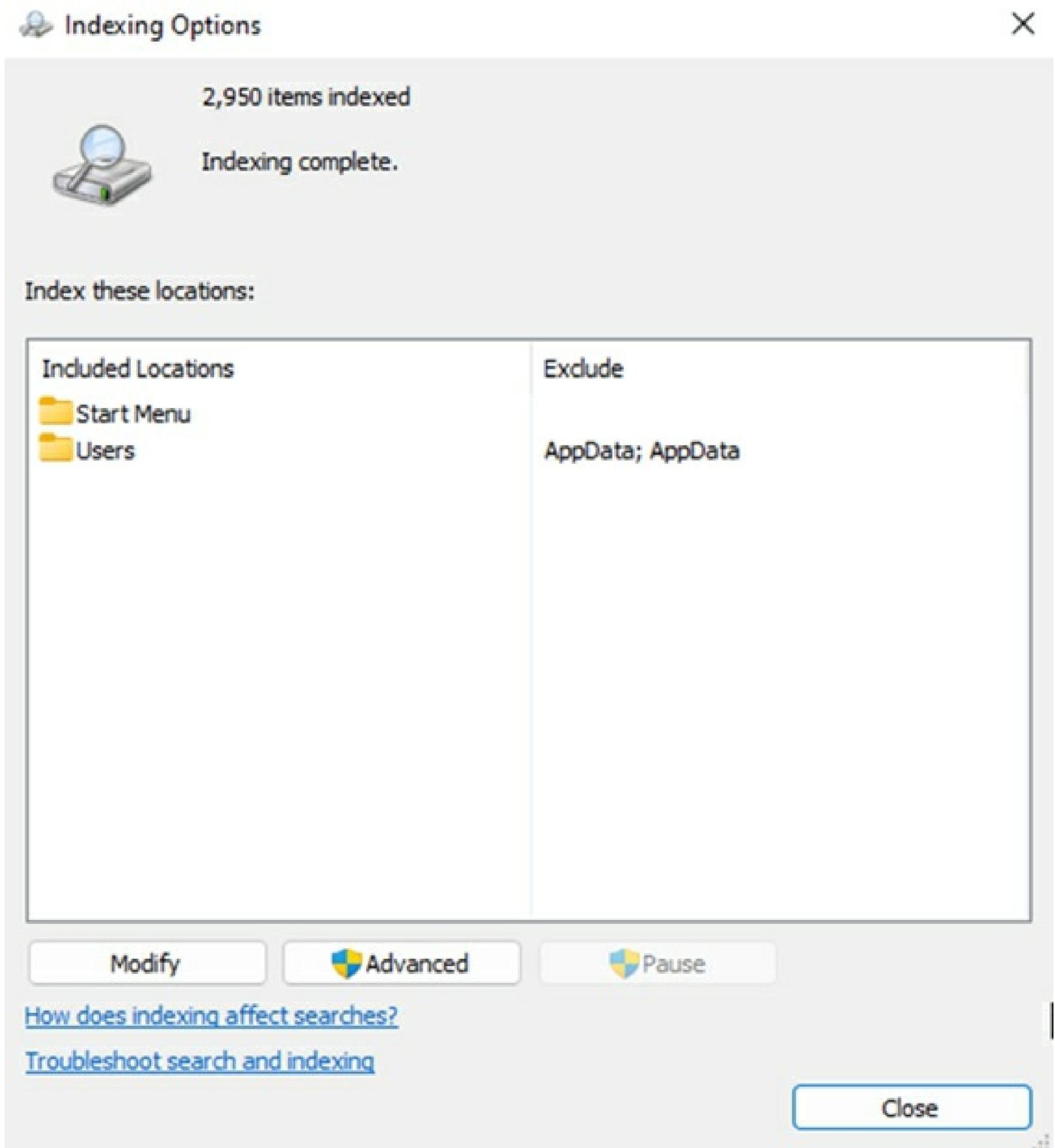


Figure 47: Search Indexing Options

Windows 11 indexes files in specific locations such as the Start Menu by default to improve the quality of the search results and provide faster results.

Indexing is the process of looking at files, email messages, and other content on your PC and cataloging their information, such as the words and metadata in them. When you search your PC after indexing, it looks at an index of terms to find results faster.⁶

Windows Search indexes the properties of a file including its file name and file path. Some file types for example plain text files may have their content indexed to include them in the results if the content matches the user's search term.

Some programs may add information of their own to the search index. Microsoft's Outlook email program adds synced emails to the index by default these are then included in matching searches.

Applications may use the search index as well.

File Explorer, Photos, and Groove all use it to access and track changes to your files. Microsoft Edge uses it to provide browser history results in the address bar. Outlook uses it to search your email. Cortana uses it to provide faster search results from across your PC.⁷

The index is stored locally on the PC. Indexing runs constantly to track changes and update the index with new information.

Indexing locations and parameters can be modified by the user of the operating system:

1. Open Start.
2. Type Indexing Options and select the result from the list of search results.

The Indexing Options window opens. It lists all locations that are indexed and locations that are excluded specifically from indexing.

1. Select the “modify” button to manage these locations and exclusions. The window that opens displays a hierarchical structure of all drives connected to the system.
2. Expand the drives and folders and check the folders that should be included by Windows Search’s indexing. Everything that is not checked will not be indexed.
 - . To exclude a subfolder uncheck it.
4. Select the “ok” button to complete the process.

The “Advanced” button opens preferences. It lists options to:

- Include encrypted files in indexing.
- Treat similar words with diacritics as different words.
- Delete and rebuild the index.
- Change the location the index is stored in (default: c:\ProgramData\Microsoft)
- Configure file extensions that should be indexed.
- Select to index properties and file contents.
- Add new file extensions to the list of supported extensions.

Disable Web Searching

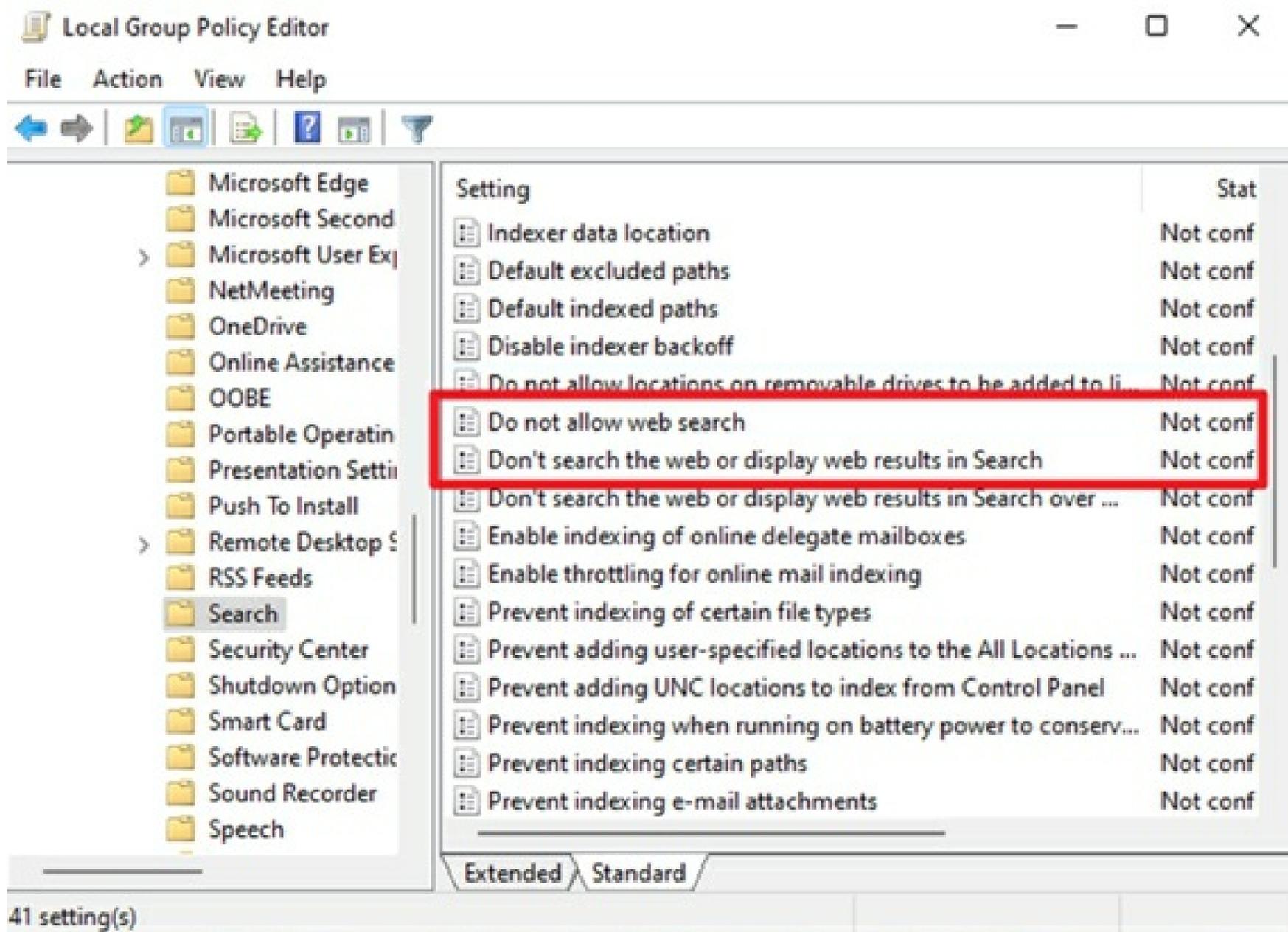


Figure 48: Search Disable Web Search

Web Search results may be disabled on Windows 11. Windows Search does not retrieve search results from Bing anymore when web search is disabled.

Windows 11 administrators may configure the change in the Group Policy Editor.

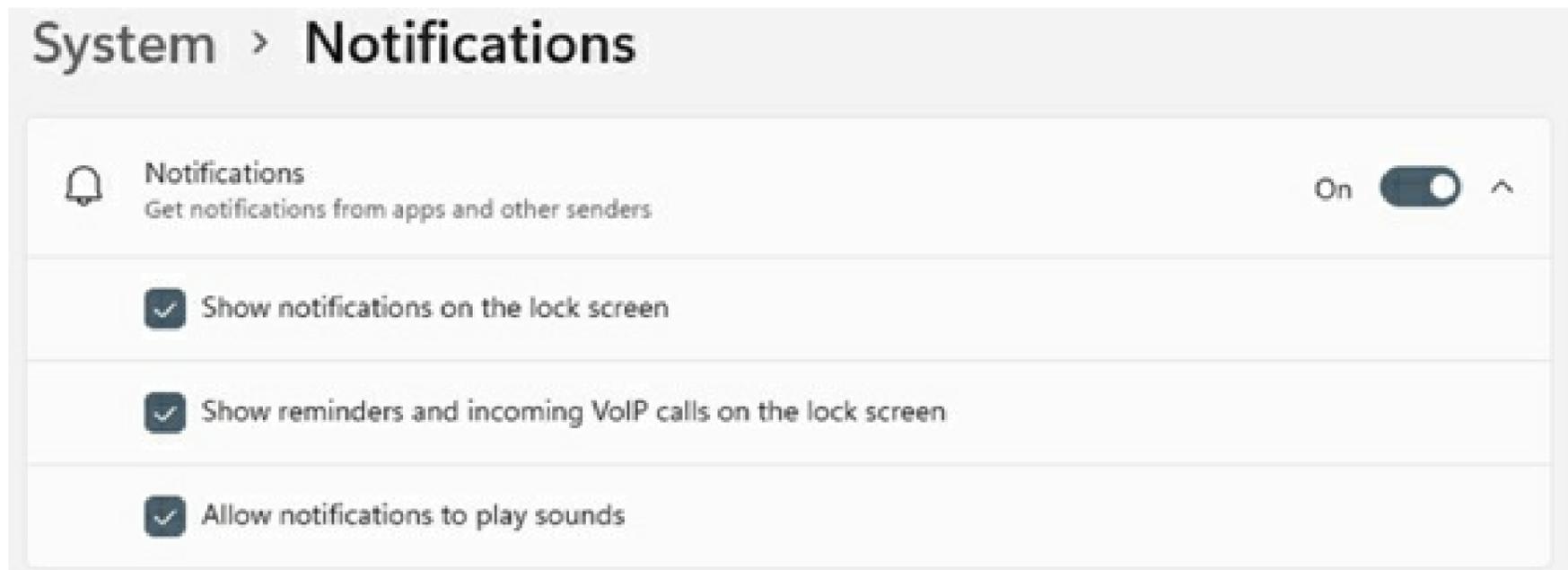
Group Policy:

1. Select Start.
2. Type gpedit.msc and load the result.
 - . Use the sidebar folder structure to go to Computer Configuration Administrative Templates Windows Components Search
4. Double-click on “Do not allow web search”.
 - . Set the policy to Enabled. Enabled prevents web searches.
 - . Select OK to close the window.
 - . Double-click on the preference “Don’t search the web or display web results in Search”.
 - . Set the policy to Enabled.
9. Click ok to close the window.

Notifications

The primary purpose of notifications is to inform users about certain events. Windows Defender may display notifications when it detects a virus and Calendar may display upcoming reminders or appointments.

Manage notifications



Windows 11 includes several notification-related preferences. Users may turn off Notifications entirely or per-application or purpose.

Here is how these are configured:

1. Open the Settings application either with Ctrl-I or by selecting Start Settings.
2. Go to System Notifications.

Here you may turn off notifications entirely by toggling the main preference. Scroll down to “notifications from apps and other senders” to enable or disable notifications individually.



The Notifications Settings page lists the following preferences:

- Show notifications on the lock screen – Whether notifications are displayed on Windows’ lockscreen.
- Show reminders and incoming VOIP calls on the lock screen – Whether reminders and incoming voice over IP calls are displayed on the Lockscreen.
- Allow notifications to play sound – To enable or disable audio cues when notifications are displayed.

Scroll down to get two notification tips.

- Offer suggestions on how I can set up my device
- Get tips and suggestions when I use Windows

These may display application suggestions and other content that may be considered advertisement.

Change for how long notifications are displayed by Windows

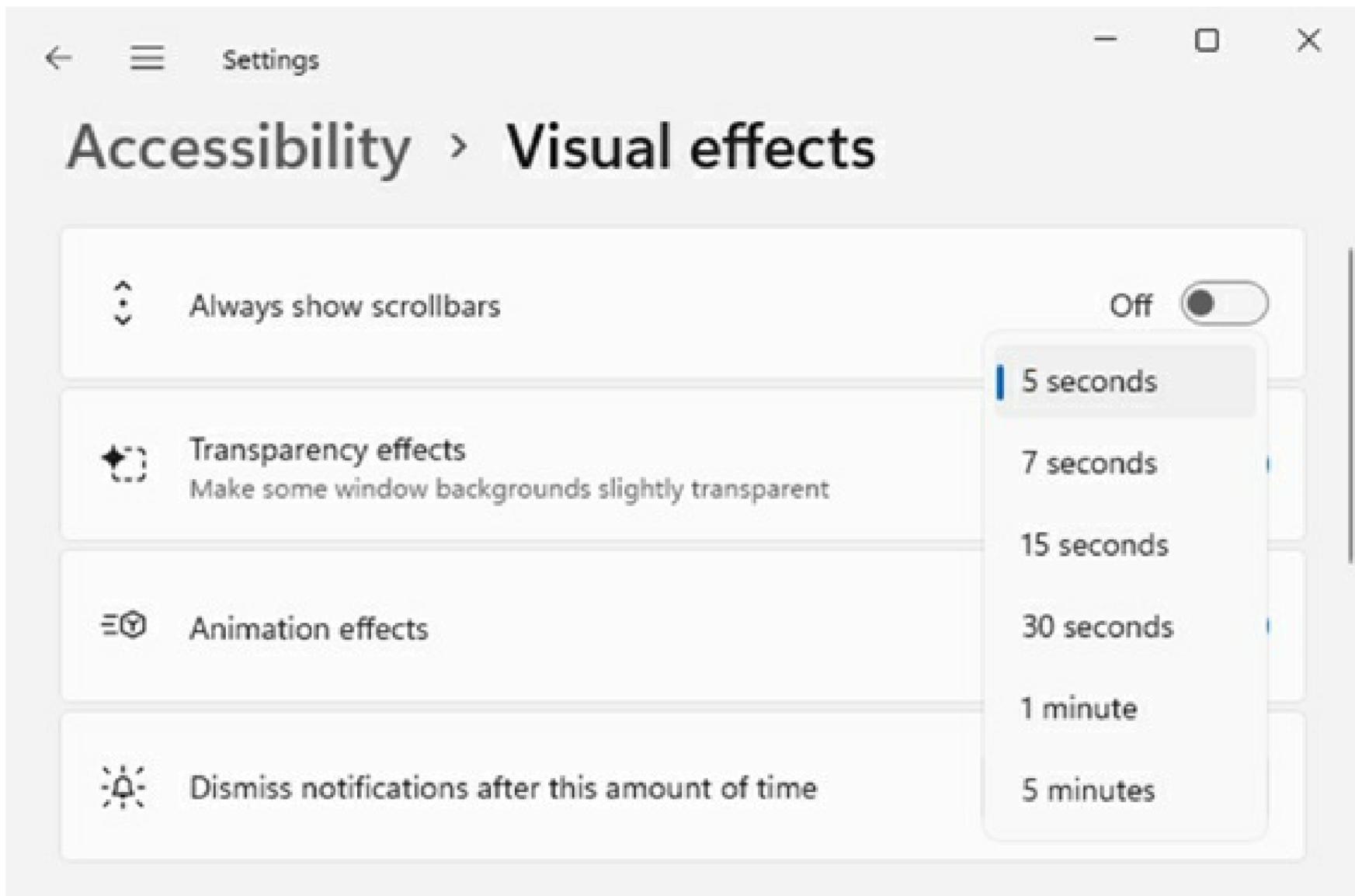


Figure 49: Notifications interval

Windows 11 displays notifications for 5 seconds before they are removed from the screen. The operating system includes an option to change the interval of notifications.

1. Open the Settings application either with the keyboard shortcut Windows-I or by selecting Start Settings.
2. Go to Accessibility > Visual Effects.
 - . Locate the setting “Dismiss notifications after this amount” and change the value to another one (up to 5 minutes).

Drives and Storage

Change Drive Letters

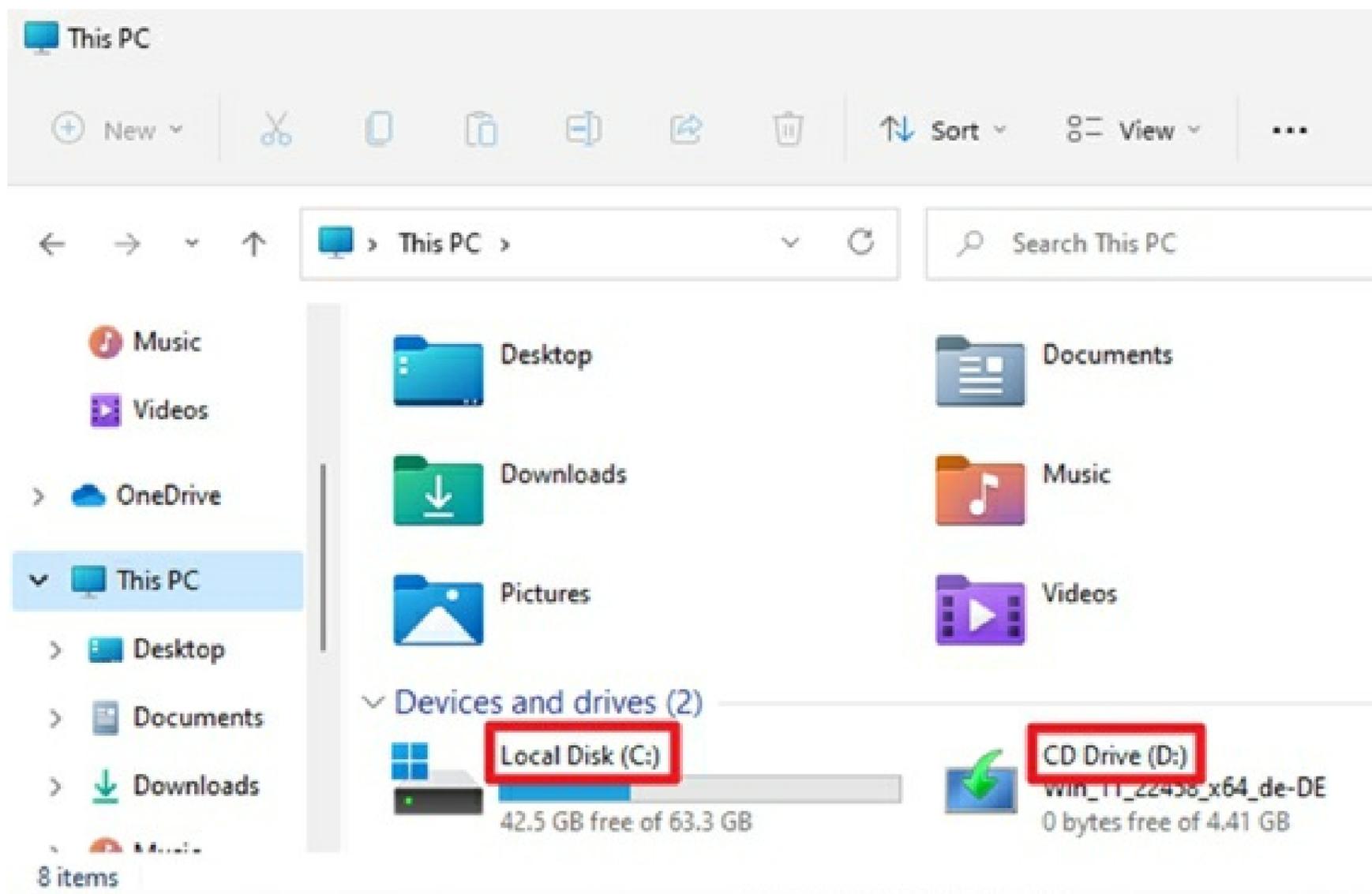


Figure 50: Drive Letters in File Explorer

Windows 11 assigns drive letters automatically to connected internal and external storage devices and other devices such as DVD drives. The drive letter is used to distinguish drives from one another.

Sometimes Windows may assign the wrong drive letter to a drive this can happen if drives are external and the order of connecting them to the Windows PC or mounting them changes.

Drive A and drive B are reserved for floppy drives even though most computer systems don't use floppy drives anymore.

Windows 11 supports the changing of drive letters for most drives. Users should not try and change the drive letter of the main system drive c:.

Note: changing the drive letter of a drive may have consequences on certain features such as the starting of applications loading of content or other features that expect data to be in specific locations.

Windows 11 administrators may change the drive letter using the operating system's Settings application or by using Disk Management. The Settings application is streamlined Disk Manager offers better functionality when it comes to managing disks on the system.

Changing drive letters in the Settings application

- Open the Settings application either with the keyboard shortcut Windows-I or by going to Start Settings.
- Navigate to System > Storage > Advanced Storage settings > Disks > volumes. Windows displays a list of all connected storage devices partitions and the mapped drive letters. Each is listed with its file system system information and size.
- Select the drive with the drive letter that you want to change.
- Click on the Properties button that is displayed when the drive is selected.
- Activate the "change drive letter" button on the page that opens and pick a new drive letter for the device.
- Select ok to complete the process and apply the new drive letter to the selected drive.

Changing drive letters using Disk Management

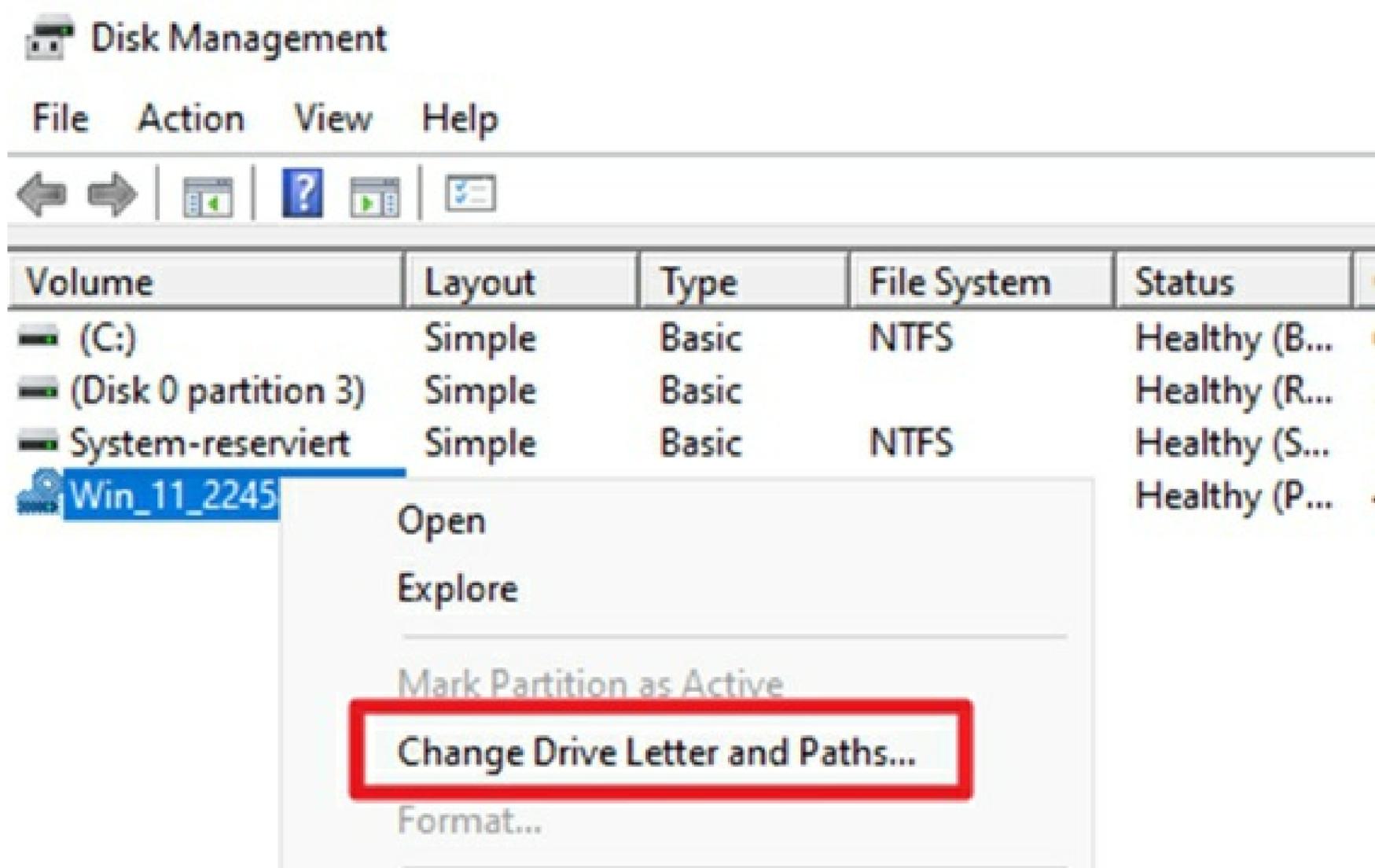


Figure 51: Disk Management: change drive letter

1. Use the keyboard shortcut Windows-**X** to display the special menu.
2. Select Disk Management from the list of items.
 - . Disk Management displays all volumes at the top and a device-based view at the bottom.
4. Right-click on the drive that you want to change the drive letter for.
 - . Select Change Drive Letter and Paths from the context menu that opens.
 - . Select the change button when the “Change Drive Letter and Paths for” window opens.
 - . Use the dropdown next to “Assign the following drive letter:” to pick a new drive letter for the selected drive.
 - . Select OK.
9. Confirm the warning message “Some programs that rely on drive letters might not run correctly. Do you want to continue” by selecting the **Yes** option.

Configure

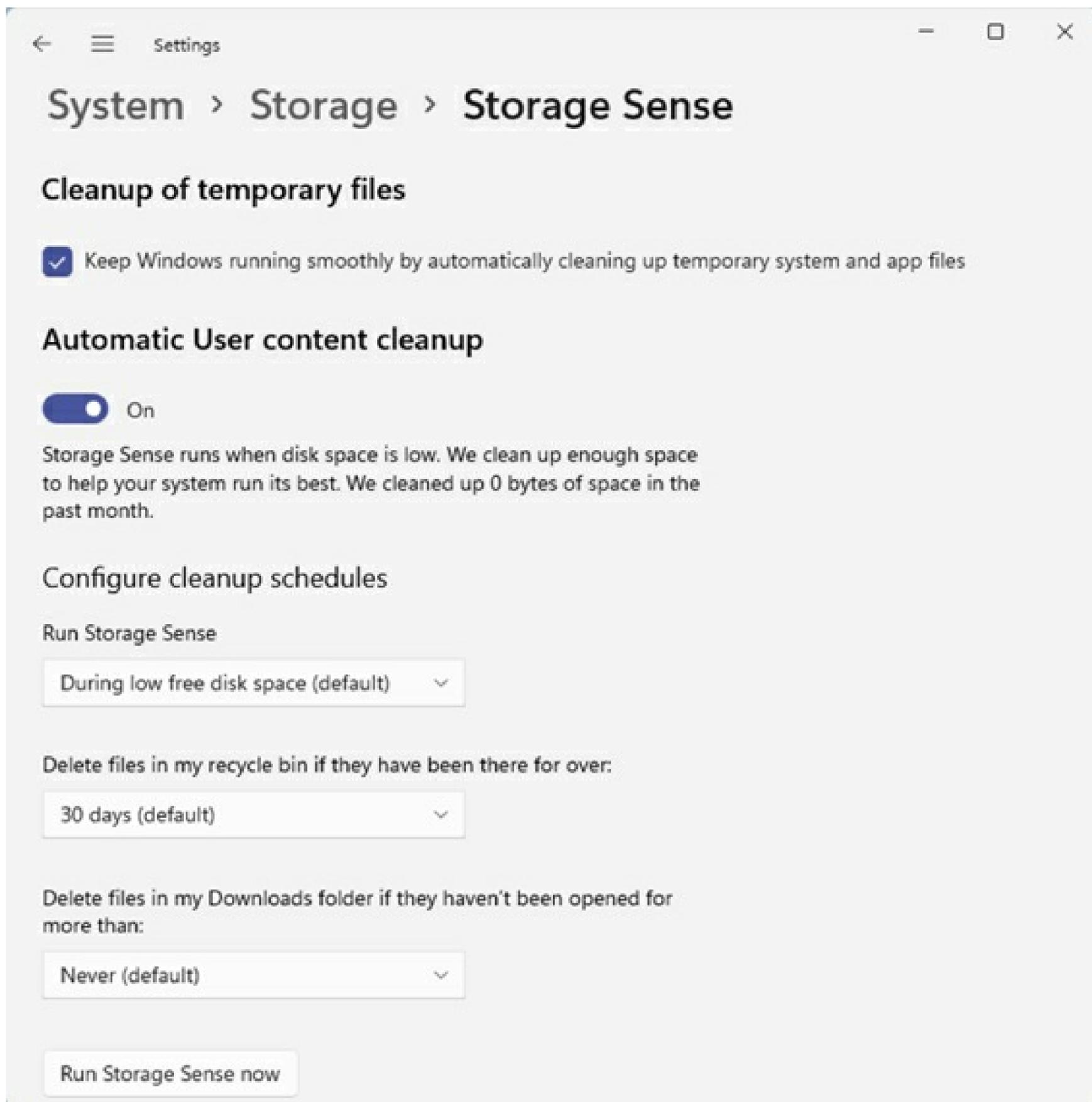


Figure 52: Settings: Storage Sense

is designed to free up disk space automatically by removing temporary items such as temporary files or files in the Recycle Bin.

may be configured to delete temporary files automatically. The full feature can be turned off or on by the user or an administrator through policies.

1. Open the Settings application either with the shortcut Windows-I or by opening it from Start.
2. Navigate to System > Storage.
 - . Activate the entry on the page to display the configuration.

The following options are provided on the page:

- Keep Windows running smoothly by automatically cleaning up temporary system and app files.
- Enable Automatic User content cleanup.

- Configure the schedule for the automatic content cleanup.
- Define which Recycle Bin files should be deleted by the automatic cleanup feature.
- Define which files in the Downloads folder should be deleted automatically by the feature.
- Run manually.

may delete files in the Downloads directory this is set to never by default but it may be configured to delete files that have not been opened for more than 1 day 14 days 0 days or 0 days.

Group Policy

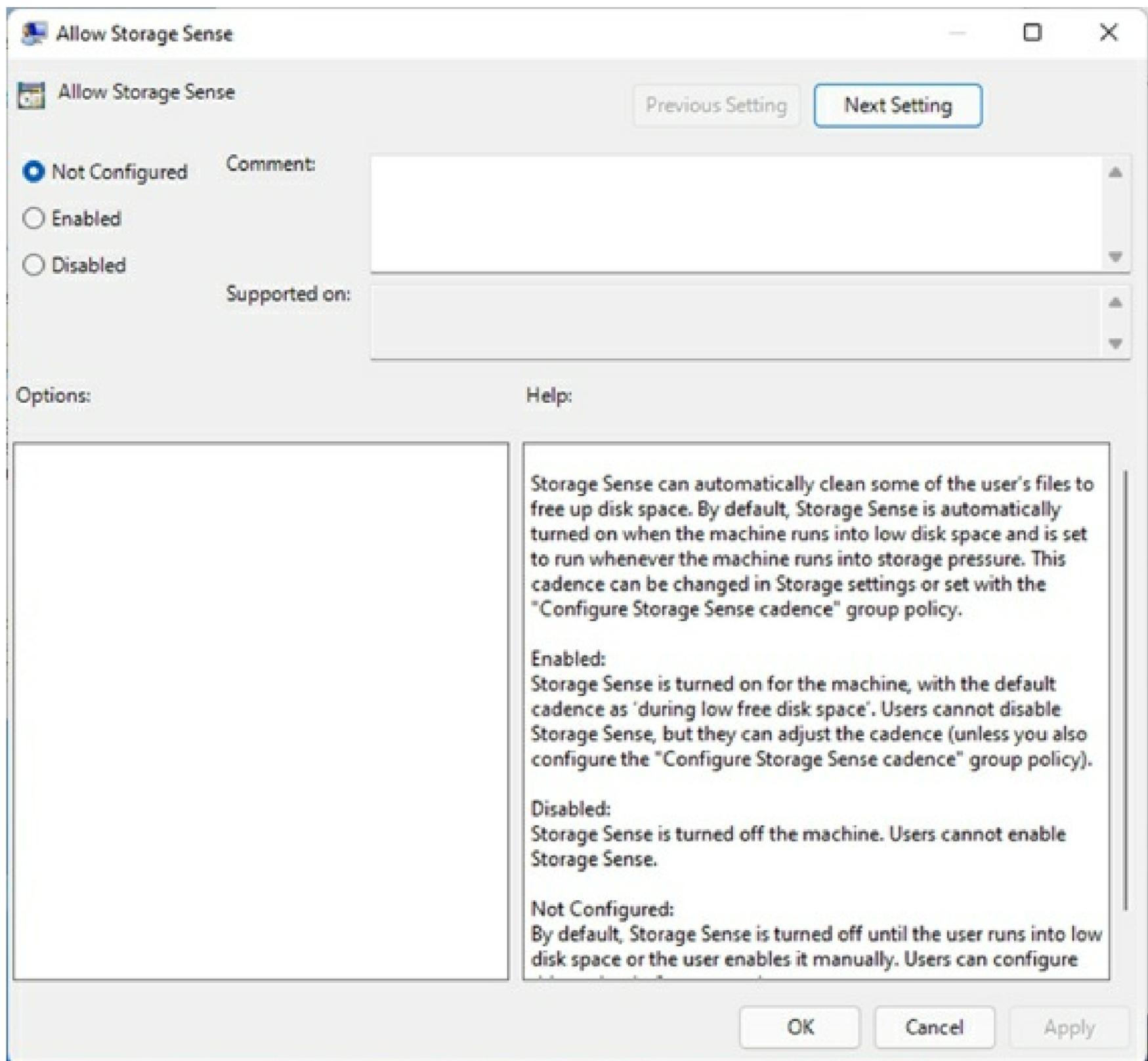


Figure 53: Group Policy: Allow Storage Sense

Administrators may configure behavior using policies:

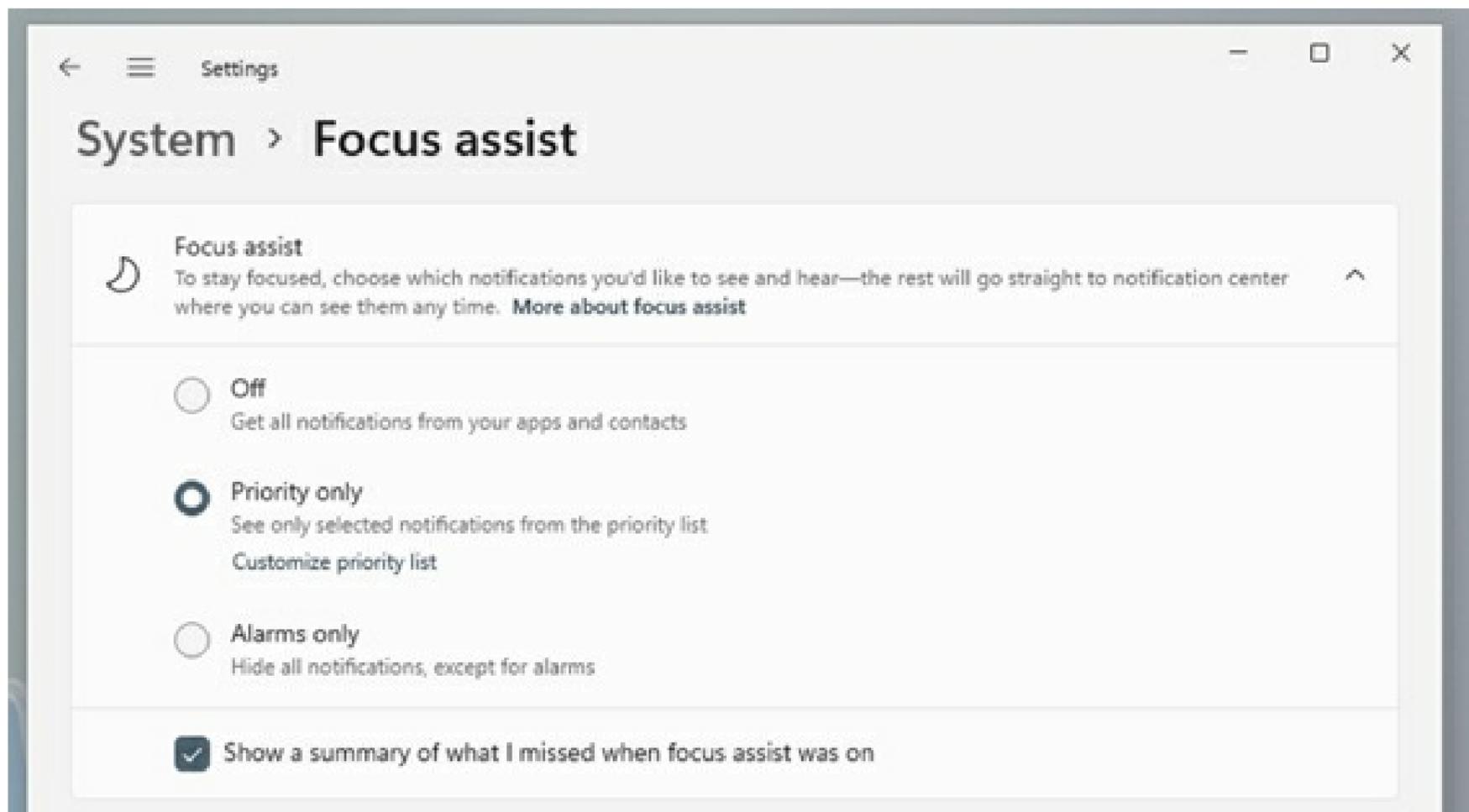
1. Open Start.
2. Type gpedit.msc and hit the Enter-key to load the Group Policy Editor.
 - . With the Group Policy Editor windows open navigate to Computer Configuration Administrative Templates System .
4. Double-click on "Allow " to configure the main policy.

Set the policy to one of the following states:

1. Enabled: is enabled and will perform automated cleanups if disk space is running low. Users can't disable but they may adjust the feature.
2. Disabled: is disabled on the device.
 - . Not Configured: is turned off but it may be enabled automatically if disk space is running low.

Additional policies are available to configure the cadence the Downloads folder cleanup threshold and the Recycle Bin cleanup threshold.

Using Focus Assist



Focus Assist is designed to reduce the number of notifications that users get when the feature is turned on.

Note: The Windows Clock app includes a new feature that is called Focus Sessions. It is not linked to Focus Assist as it is a goal tracking feature.

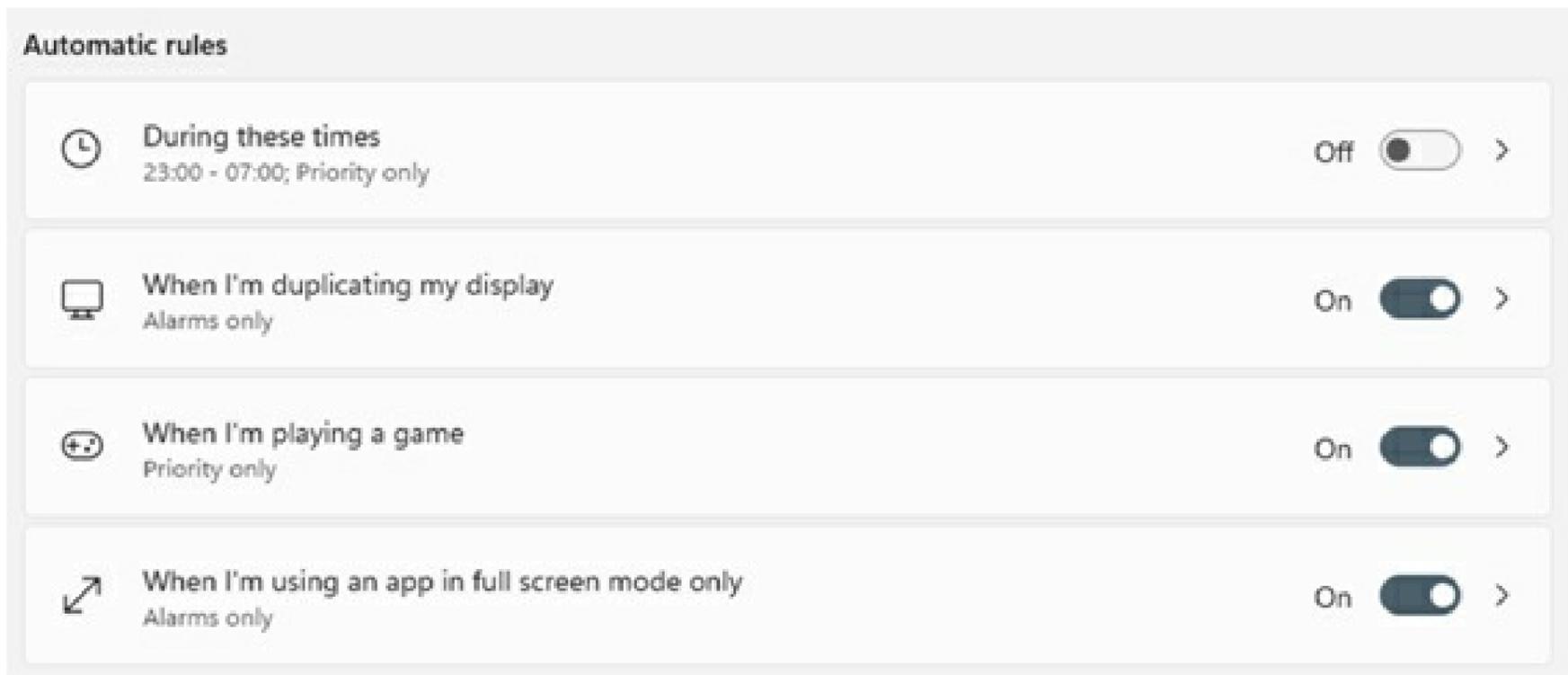
Focus Assist is not enabled by default and it can be configured extensively in the Settings.

1. Open the Settings application either with Ctrl-I or by selecting Start Settings.
2. Go to System Notifications Focus Assist.

Focus Assist supports two main modes of operation:

- Priority Only – Displays only notifications from apps people and events that are on the priority list.
- Alarms Only – Suppresses all notifications except for alarms.

Check the “show a summary of what I missed when focus assist was on” to get a summary of missed notifications.



Focus Assist is turned on by default for certain activities:

- When the display is duplicated – Alarms only.
- When games are played – Priority only.
- When an app is used in fullscreen mode – Alarms only.

It may also be turned on for a time period e.g. between 2 :00 and :00.

Autostart Programs

Manage Autostart programs

Some programs may be loaded automatically on system start. While that is desirable at times because the programs are ready for use immediately it is undesirable at other times because autostart programs may impact the boot time of the operating system.

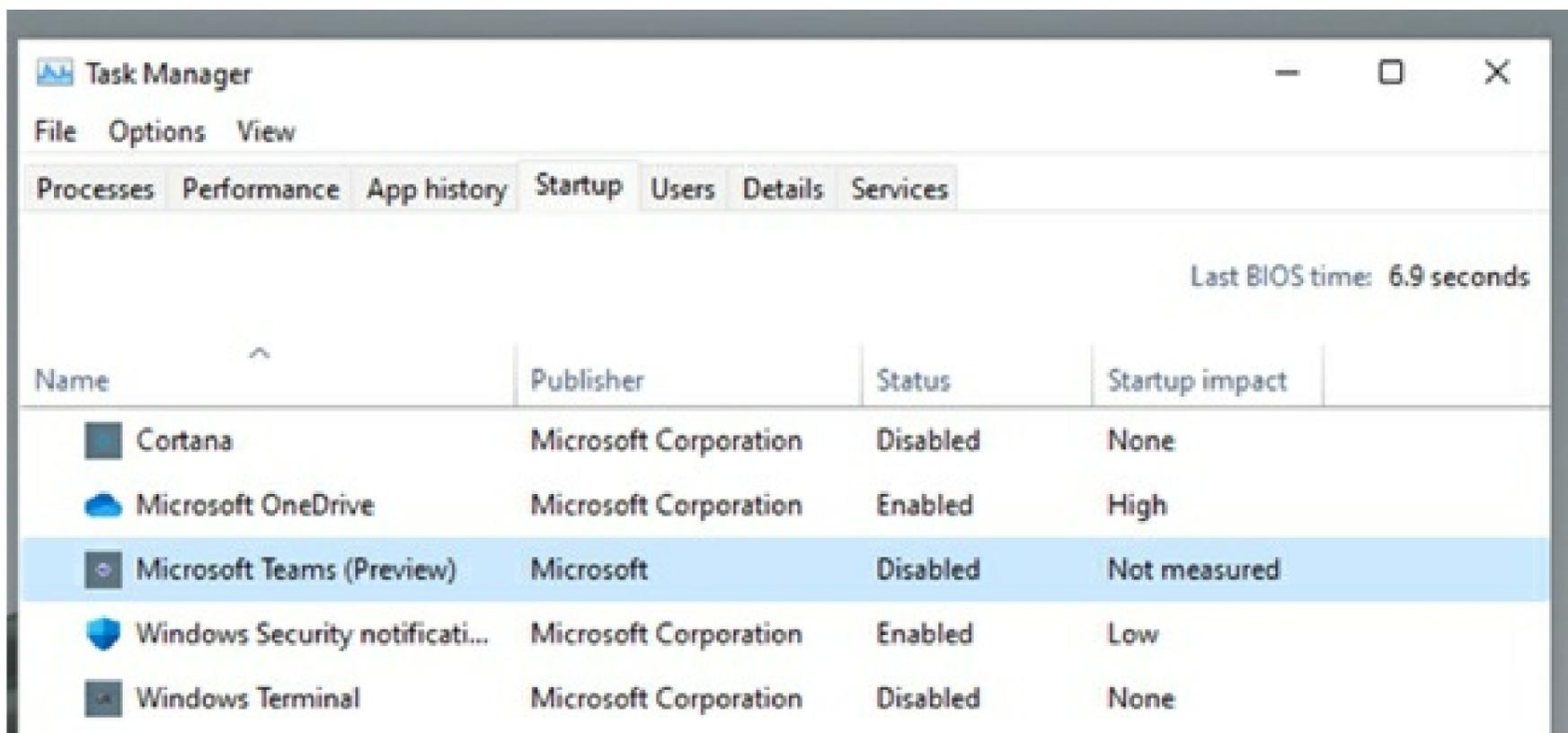


Figure 54: Windows Task Manager Startup tab

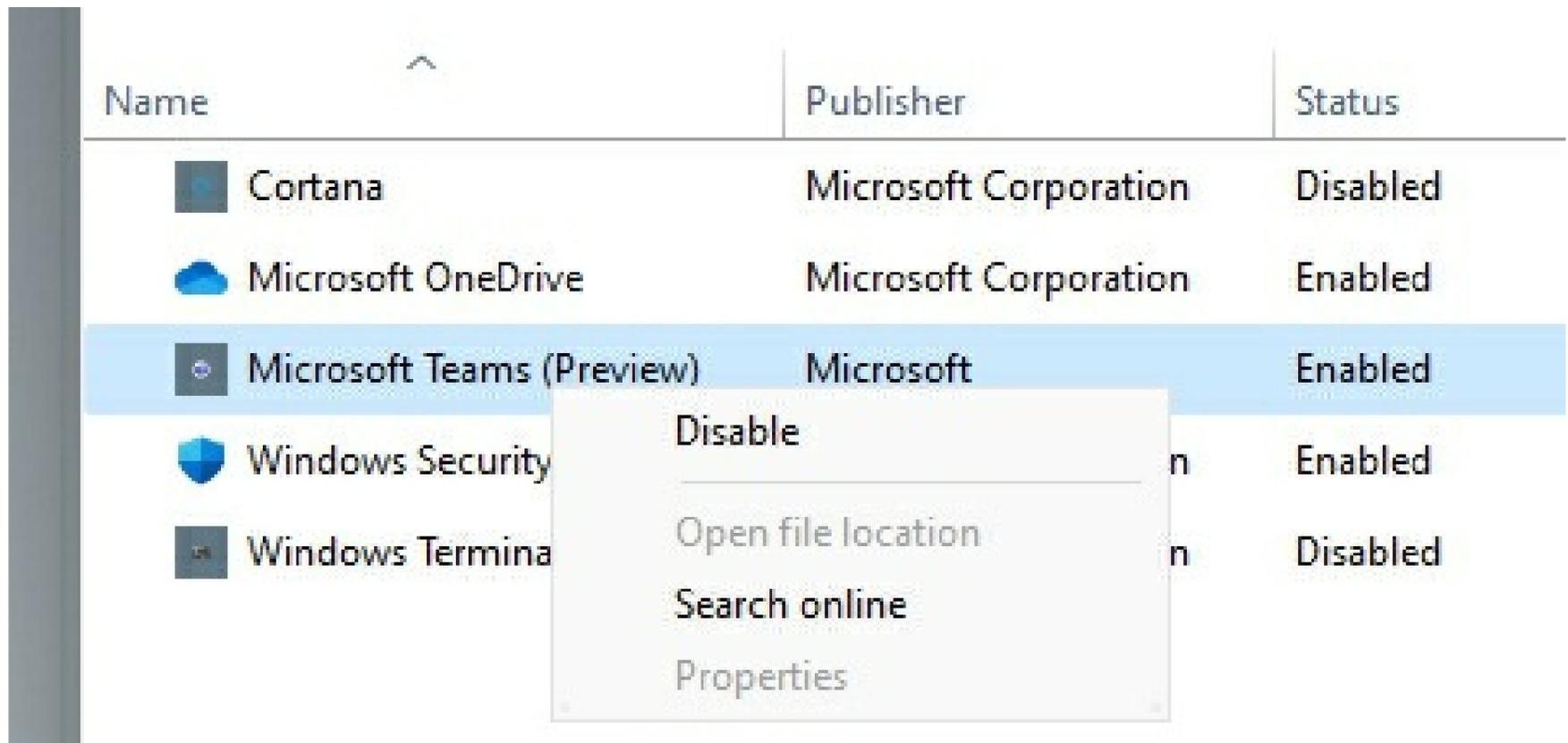
Windows 11 supports the same options to manage startup items as Windows 10. Use the keyboard shortcut Ctrl-Shift-Esc to open the Windows Task Manager. Switch to the Startup tab there and you find a selection of programs that are loaded on system start.

Tip: you may need to select “more details” first to display the full Task Manager. The same programs listing is also

found under Settings > Apps > Startup.

Each startup program is listed with its name and publisher status and startup impact if measured.

The name is often enough to identify a program e.g. Microsoft OneDrive for file syncing and cloud hosting.



Name	Publisher	Status
Cortana	Microsoft Corporation	Disabled
Microsoft OneDrive	Microsoft Corporation	Enabled
Microsoft Teams (Preview)	Microsoft	Enabled
Windows Security	n	Enabled
Windows Termina	n	Disabled

The context menu for 'Microsoft Teams (Preview)' includes the following options: Disable, Open file location, Search online, and Properties.

Figure 55: Autostart context menu with Disable option

Right-click on an item in the list and select the “disable” option to block the program from being autostarted with Windows. These programs may still be loaded for instance from the Start Menu or Search after the system has loaded. The status indicates whether a program is loaded on startup (Enabled) or not (Disabled).

The list of startup programs is not complete. Windows 11 users who need more control over startup items may install Microsoft’s Autoruns application to do so. You find it referenced in the Software section in this book.

Disable the loading of previously open applications on system start

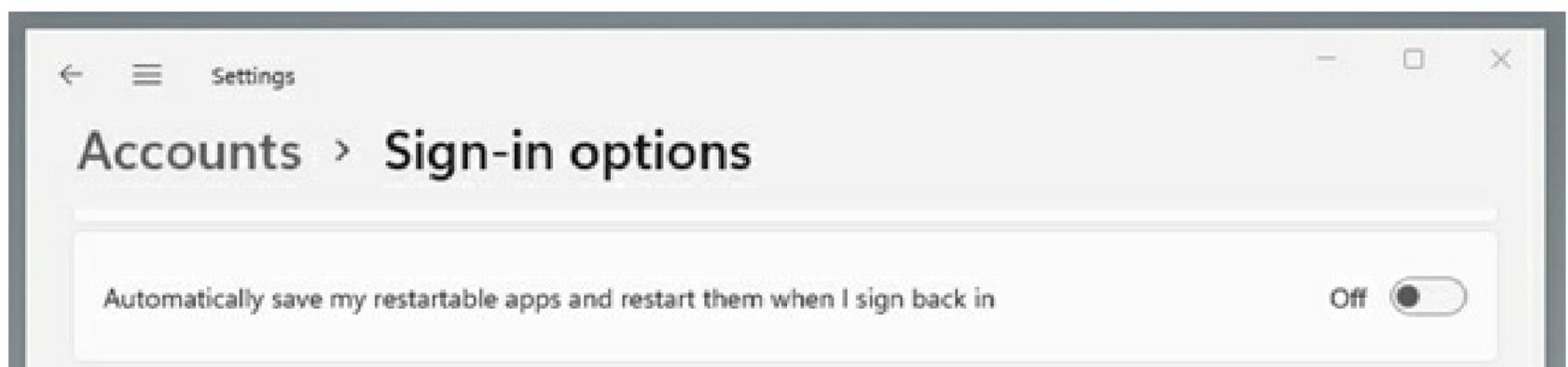


Figure 56: Automatically restart apps of the previous session

Applications that were open during the last session may be reopened automatically by Windows 11 during startup. These programs are not listed under Startup in the Windows Task Manager.

Windows 11 users have full control over the feature and may turn it on or off in the Settings.

1. Open the Settings app either with the keyboard shortcut Windows-I or by selecting Start > Settings.
2. Go to Accounts > Sign-in options.
 - Scroll down to the “Additional settings” group and locate “Automatically save my restartable apps and restart them when I sign back in”.
4. Set the feature to Off to disable it or to On to enable it.

Note: Windows does not reveal which apps are restartable and which are not. You need to use trial and error to

find out about that.

Optional features and components

Install new languages in Windows 11

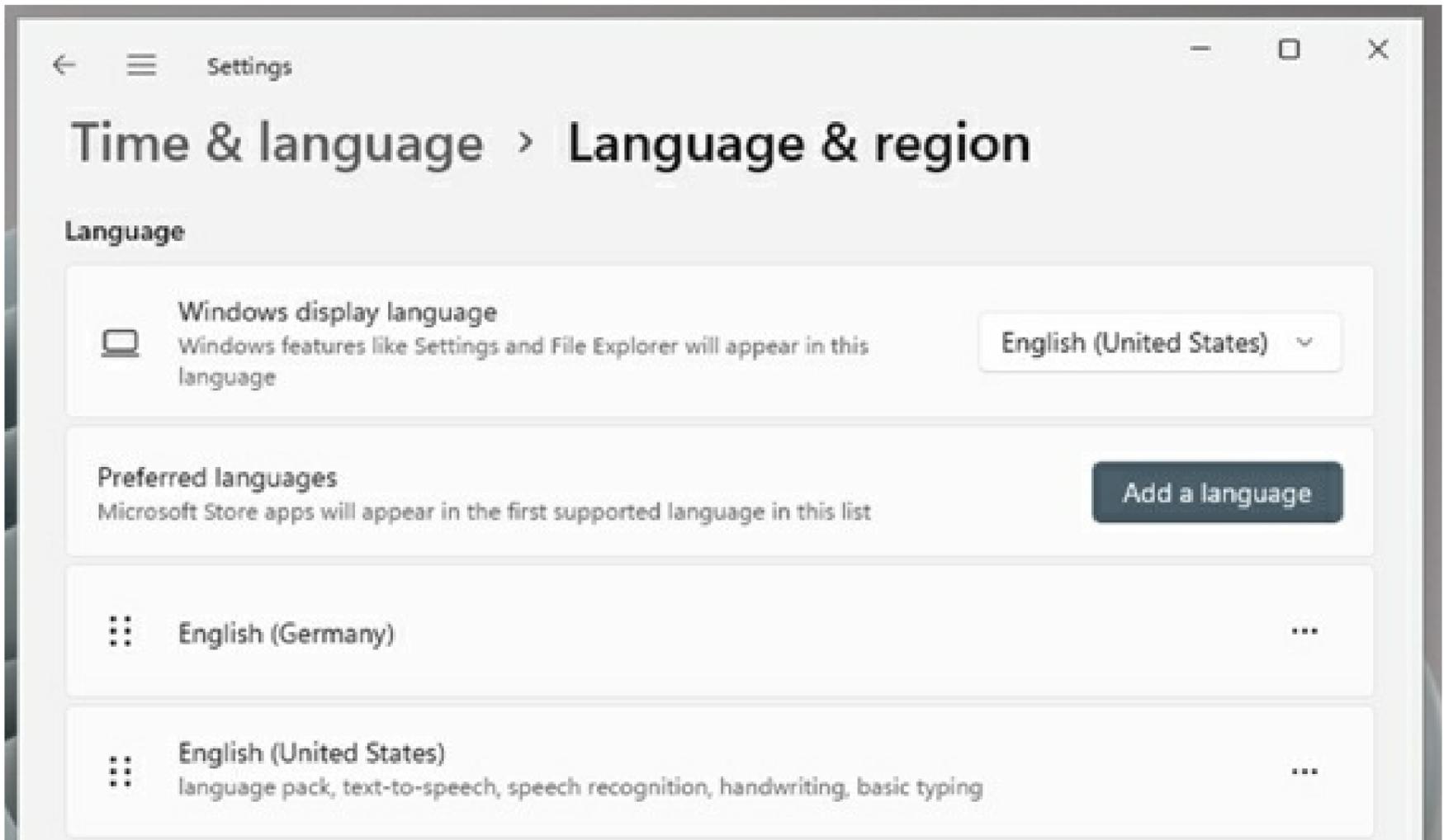


Figure 57: Language Settings

Windows 11 supports multiple keyboard languages and configurations. These may be added during setup but also during use at a later point in time.

Users who speak and communicate in multiple languages may use the feature to switch keyboard layouts dictionaries and other language-specific features.

Changing the display language may also be important if the Windows device was purchased in a different country or on the Internet.

Do the following to manage languages on Windows 11:

1. Go to Start Settings Time Language Language Region. Tip: you may left-click on the language icon in the System Tray area and select “more keyboard settings” to open the configuration menu as well.
2. Windows 11 displays the Windows display language and preferred languages on the page.

Installing new languages

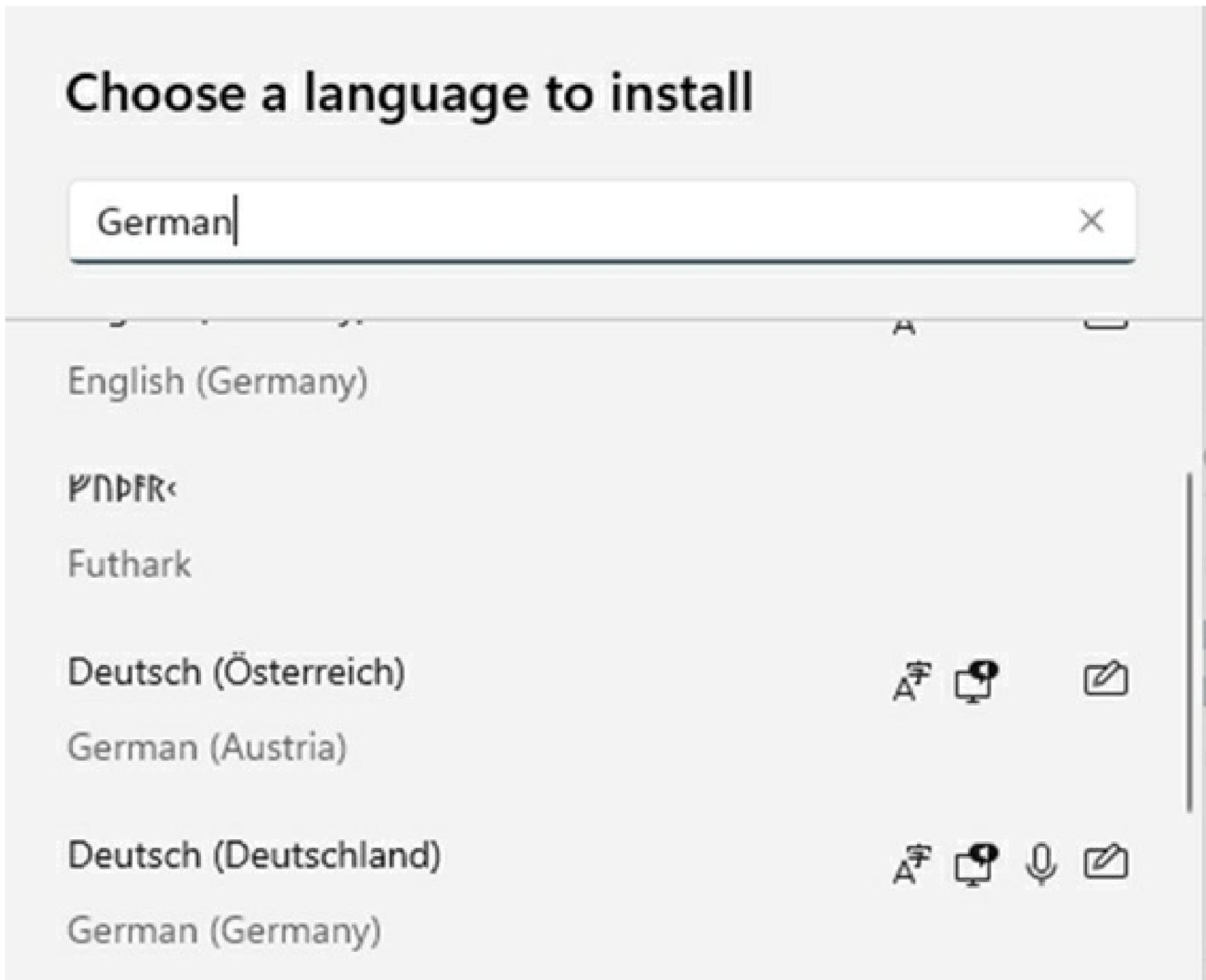


Figure 58: Install new languages

Select the “add a language” button on the page to install a new language. Windows 11 downloads these from Microsoft servers after the selection process.

Use the search field at the top or browse the selection of languages to find the desired language that you want to install.

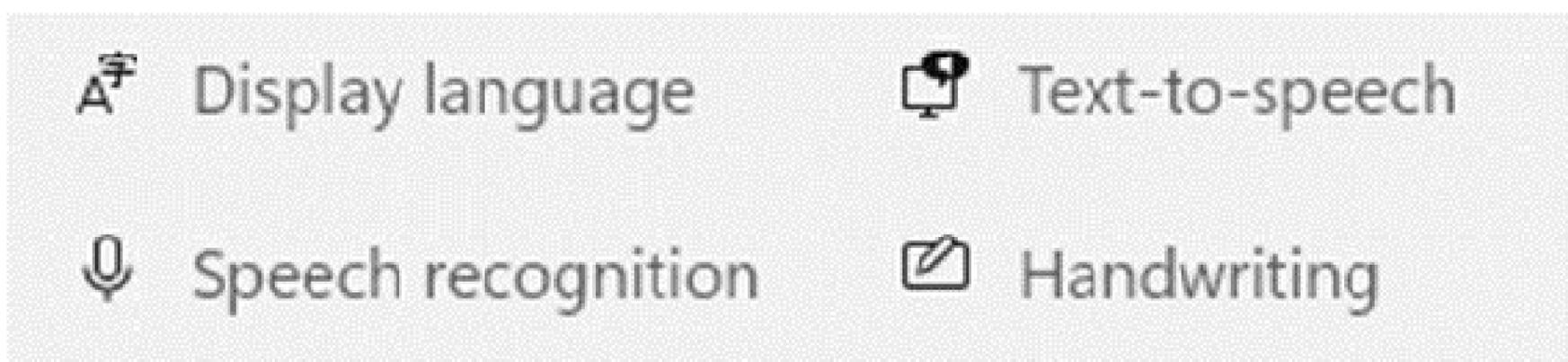


Figure 59: Language features

Icons indicate support for certain features:

- Display language – whether it can be set as the system’s display language.
- Text-to-speech – whether it supports text-to-speech functionality e.g. for accessibility.
- Speech recognition – whether it supports speech recognition e.g. for .
- Handwriting – whether handwriting support is available.

Note: not all languages support all of the four features. There are some that don't support any. Most Arabic variants support only the display language feature while English German or French support all four.

Windows displays a feature selections page during installation. The available options depend on the selected language and the feature that it supports.

Install language features

Preferred language

Deutsch (Deutschland) 

Optional language features

-  Language pack 
-  Text-to-speech (37 MB) 
-  Speech recognition (55 MB) 
-  Handwriting (9 MB) 

Language preferences

- Set as my Windows display language 

Required language features

-  Basic typing (21 MB) 
-  Optical character recognition (1 MB) 

Choose a different language

Install

Cancel

Figure 60: Install language features

Some options are required language features others are optional and may be installed. Languages that may be display languages can be set as such during installation. Check the “Set as my Windows display language” box to do so.

Optional features take up space on the hard drive and disk space is saved if language features that are not needed are not installed.

Changing the Windows Display language

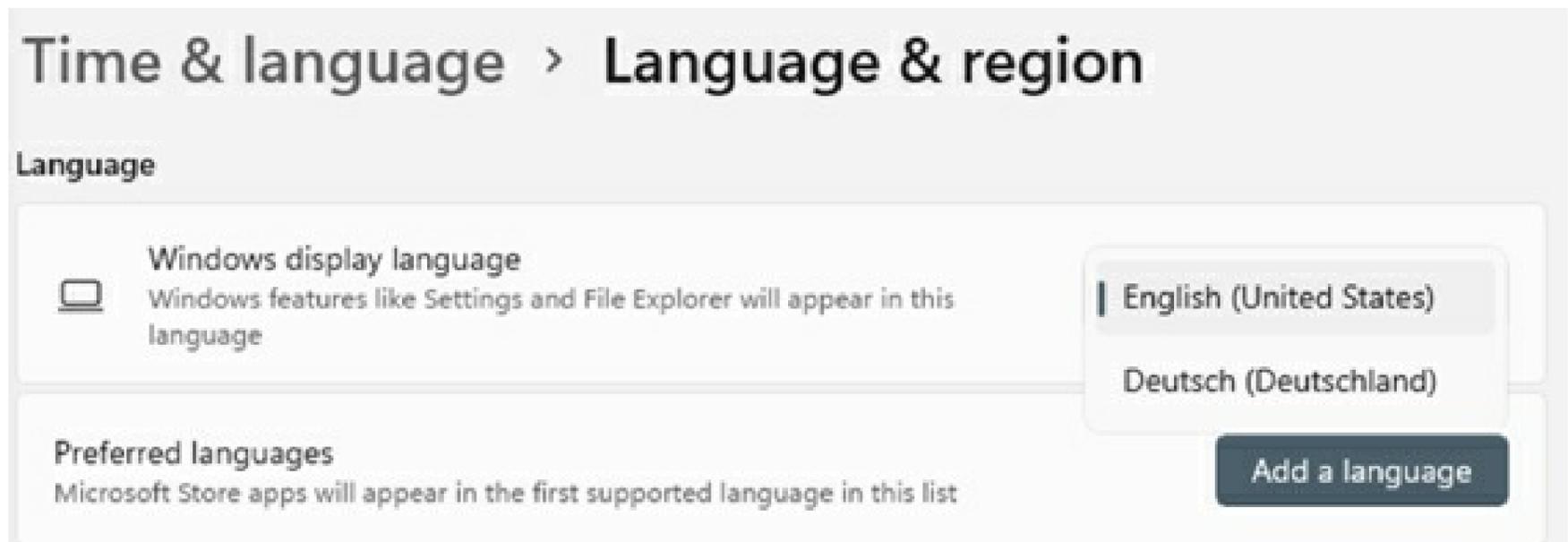


Figure 61: Change System's display language

Windows 11 supports changing the display language at any time. At least two languages that support the display language feature need to be installed for that.

Activate the menu next to “Windows display language” to get a list of all installed languages that may be set as the system’s display language.

Select one of the languages to start the process. A sign-out and sign-on is required before the process is completed.

Note: Only languages that are listed on the main settings page may be picked and only if the language pack for that language is available and installed.

Select the three dots icon next to an installed language and then language options to display download links for the language pack provided that it is available for that language. The language may be selected as the display language once the language pack has been installed.

Managing languages

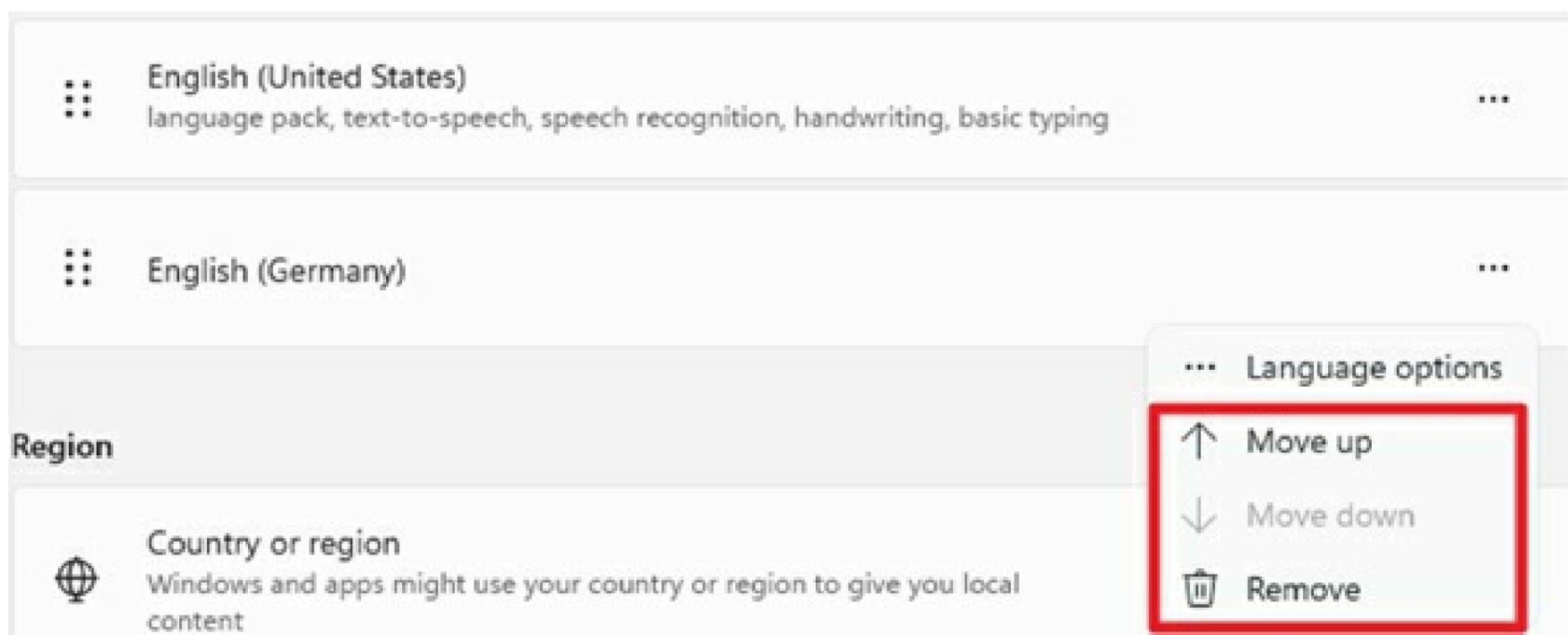


Figure 62: Remove or Move Languages

All languages but one language may be removed from a Windows 11 device. The priority of languages can also be changed.

1. Activate the three-dots icon next to one of the installed languages on the Language & Region Settings page.
2. Select “Remove” to delete the language. It is no longer available at this point. Note that you can’t remove the system’s display language.
 - . To change the priority of languages use drag and drop or activate the three-dots icon and select Move Up or Move Down to change a language’s priority.

Install optional features

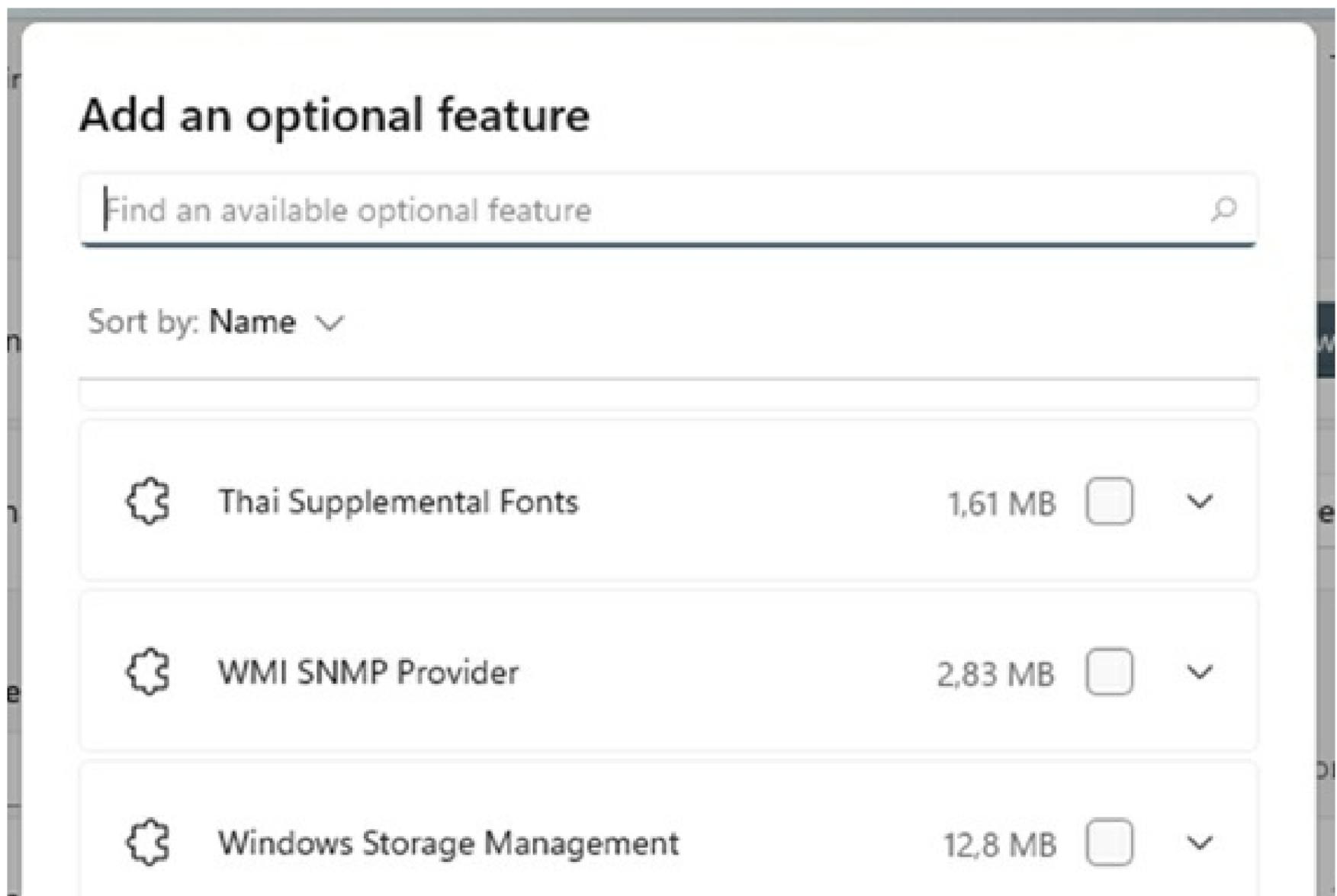


Figure 63: Optional Features

Windows 11 includes a number of components called optional features which are not installed by default. Some of these features may be installed automatically depending on the initial setup of the operating system or user activities.

Optional features may add fonts for specific languages or regions, drivers, specific tools such as servers, or viewers.

Note: Microsoft is using two different installation menus for optional features. One is available in the Settings application, the other is the legacy optional features installation window.

The Settings version lists only some optional features. It does not list classic .NET Framework versions, Containers, Hyper-V, Legacy Components, Windows Sandbox, Windows Subsystem for Linux, and many other components that may be installed using the functionality.

To manage optional features, do the following:

1. Open the Settings app either with the keyboard shortcut Windows-I or by selecting Start > Settings.

2. Go to Apps > Optional features.
 - . The page that opens lists all installed features. Select View features to see which features you may install.
4. Browse the selection of features or use the search to find a feature.
 - . Select one or multiple features that you want to install and then Next to proceed.
 - . Select install on the next page. The optional features that you selected are installed.

To open the legacy optional features window do the following instead:

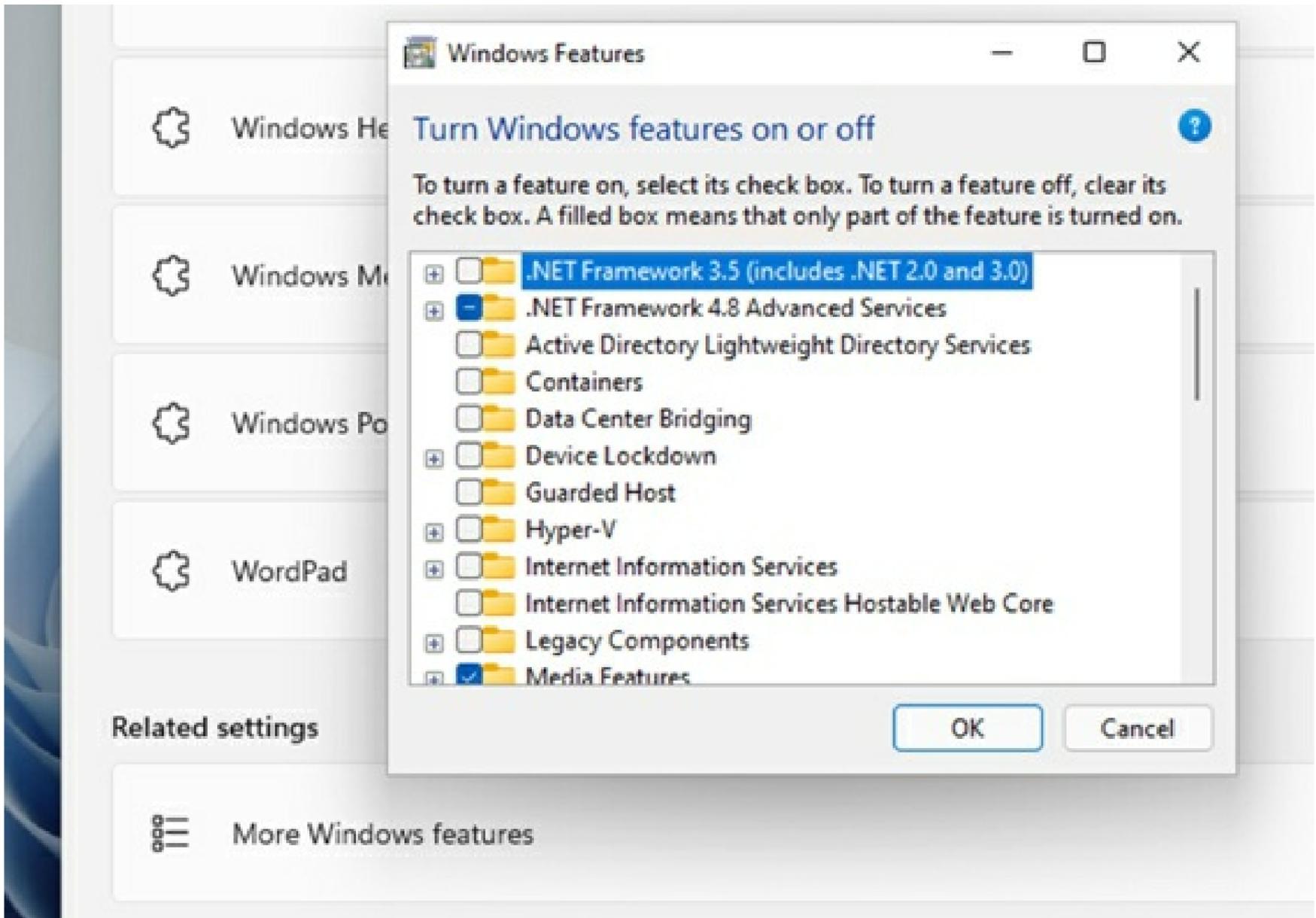


Figure 64: Optional Features Classic Window

1. Open the Settings app either with the keyboard shortcut Windows-I or by selecting Start > Settings.
2. Go to Apps > Optional features.
 - . Scroll all the way down and select “More Windows features”.
4. The legacy Windows Features window opens with options to install or uninstall features using it.

Gaming

Windows 11 includes several new gaming related features and improvements.

- Auto HDR enables HDR modes in games that don’t support it natively provided that the display supports HDR.
- DirectStorage is a new API that game developers may utilize to improve the loading time of games significantly.

Auto HDR

High Dynamic Range (HDR) unlocks a new range of colors on monitors that support it. Microsoft launched the feature in the current box console generation to upgrade backwards compatible games from SDR to HDR to improve the experience for already released games. Games need to support HDR and the display needs to support it as well.

The company announced Auto HDR for PC gaming in March 2021 on the company's Direct development blog. –

HDR is a video/imaging technique where the lights and darks in a digitally reproduced scene can be shown with more detail than before. In video games, the increased range of color and luminance of HDR enables a more immersive, realistic experience.

You'll be able to see the details of haunting movement in dark shadows rather than just black. The bright sun will be a more radiant, warm yellow rather than a flat saturated white, but unless the game is displaying on your monitor with that improved dynamic range, you won't get the benefits of a more immersive experience even if you have an HDR capable monitor.

Auto HDR introduces HDR support in games that don't support it by default. Auto HDR is supported on devices with an HDR monitor.

The feature is enabled or disabled in the following way:

1. Open the Settings application either with the keyboard shortcut Windows-I or by selecting Start Settings.
2. Go to System > Display > HDR.
 - Windows 11 displays all connected monitors at the top and below that the capabilities.
4. Set Use HDR to On to enable the use of HDR on the Windows 11 device or to Off to disable it.
 - Set Auto HDR to On to enable the automated feature or to Off to turn disable it.

DirectStorage

DirectStorage is an API that Microsoft introduced on Xbox originally. The feature is part of Windows 10 and also Windows 11.

The feature requires a PC system with NVMe drive. Game content may be loaded directly from the Solid State Drive by the graphics processing unit for processing skipping the processor effectively and thus speeding up the operation.

The DirectStorage API is architected in a way that takes all this into account and maximizes performance throughout the entire pipeline from NVMe drive all the way to the GPU.

It does this in several ways: by reducing per-request NVMe overhead, enabling batched many-at-a-time parallel IO requests which can be efficiently fed to the GPU, and giving games finer grain control over when they get notified of IO request completion instead of having to react to every tiny IO completion. [9](#)

Game Mode

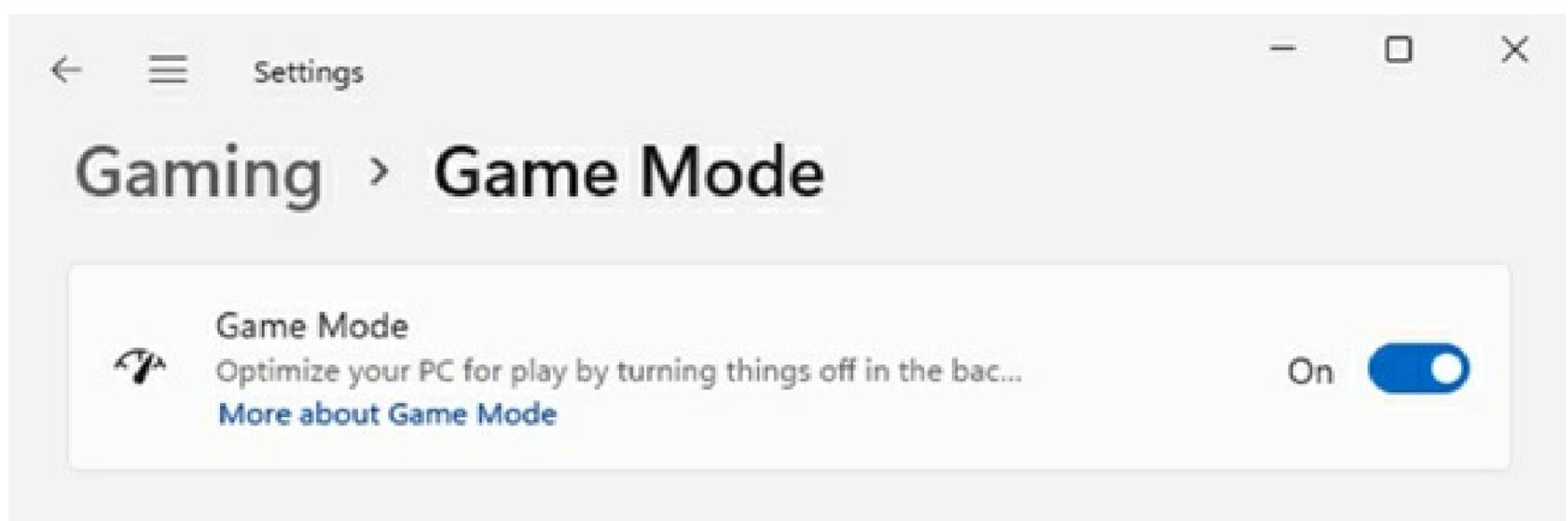


Figure 65: Gaming Game Mode preference

Game Mode is designed to optimize game processes in an attempt to improve performance and reduce issues while playing games.

Game Mode is turned on by default and it will come into effect when Windows 11 detects a running game on the system.

The feature may improve performance on low-end systems slightly but not on systems with powerful hardware and enough resources. Some users reported in the past that Game Mode was causing games to run worse.

Windows 11 users may turn off Game Mode on the system for all games. Some earlier versions of Windows 10

supported disabling Game Mode for individual games but Microsoft did remove the option and it is no longer present.

1. Open the Settings application e.g. with the shortcut Windows-I or by selecting Start and then Settings.
2. Navigate to Gaming > Game Mode.
 - . Set the feature to Off to disable it or to On to enable it.

Repair or Reset Apps

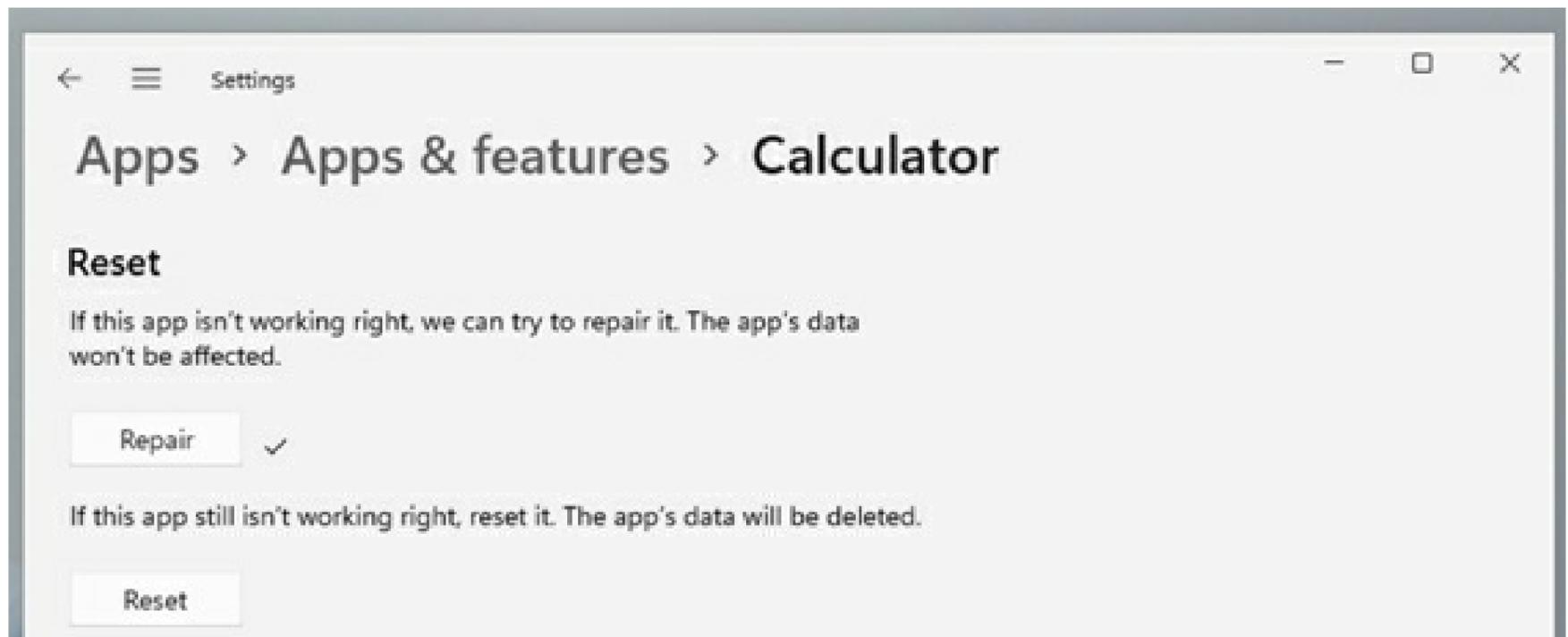


Figure 66: Windows Apps Reset and Repair options

Apps may stop working sometimes regardless of whether they are native apps that are included with Windows 11 by default or user-installed.

All Microsoft Store applications installed by default or by the user feature repair and reset options these recovery options may be useful if an application stops working won't start anymore or behaves differently to before.

Windows 11 supports repair and reset troubleshooting options.

- Repair – Attempts to fix the application without deleting user data.
- Reset – Resets the app to factory defaults deleting user data in the process.

Repair is the first option to try as it will retain user data when it is run. Reset is the last resort as it will remove user data. Users may need to sign-in to apps again after a reset and change configuration options anew.

To reset or repair apps do the following:

1. Open the Settings app either with the keyboard shortcut Windows-I or by selecting Start > Settings.
2. Go to Apps > Apps > features.
 - . Locate the installed application on the page. If you have lots of apps installed use the search to find it quickly. The listing is sorted alphabetically by default.
4. Activate the three-dots menu to the right of the application's entry and select "advanced options".
 - . Scroll down to the Reset section.
 - . Activate the Repair button first then if it did not resolve the issue Reset next.

Power Options

Configure Power and Sleep buttons behavior



Figure 67: Power Buttons behavior

All Windows devices have a physical power button that turns on the system when pressed. It may also shut down a system forcefully when pressed depending on the configuration.

Windows 11 includes options to alter the behavior in the classic Control Panel.

1. Open the Start menu.
2. Type Control Panel and select the result to load the classic Control Panel.
 - . Go to Hardware and Sound Power Options in the window that opens.
4. Select Choose what the power buttons do on the left side of the window.
 - . Select an action for “when I press the power button” and for “when I press the sleep button”. Available actions are shut down turn off the display or do nothing for the Power button and turn off the display or do nothing for the Sleep button.

How to shutdown a Windows 11 PC

Windows 11 offers several options when it comes to shutting down the PC. The most common one is found in the Start Menu but there are other options such as pressing the Power button of the device.

Start Menu

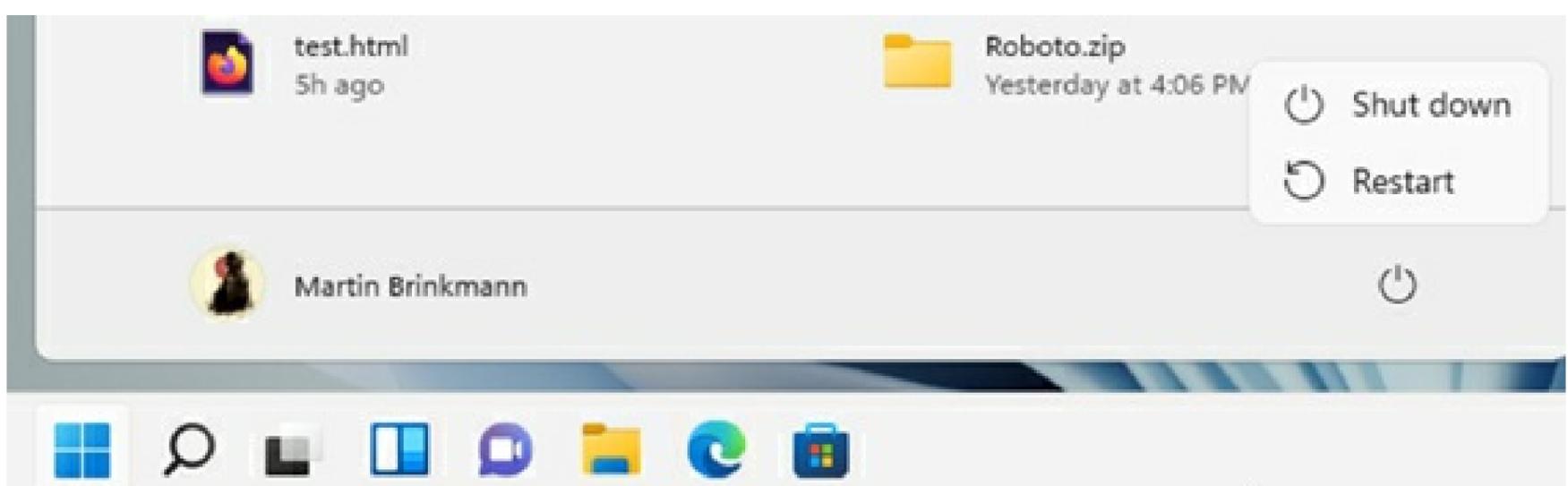


Figure 68: Power Options Start Shutdown

Select Start and then the power button displayed in the lower right corner of the Start Menu that opens. Several options are displayed when the icon is activated including Shut down but also Restart.

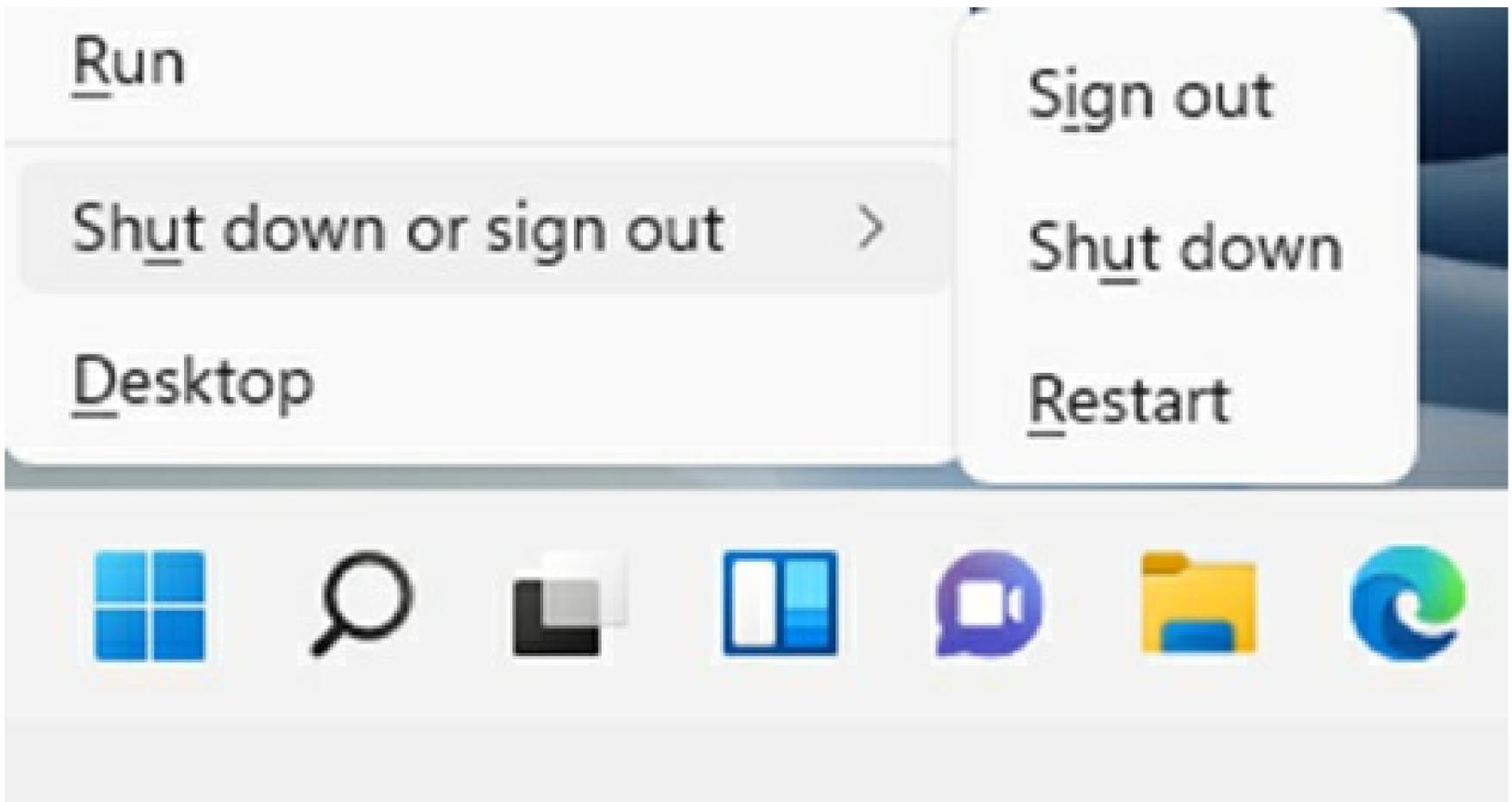


Figure 69: Power Options Start Right-click Shutdown

Microsoft implemented a second option that is linked to the Start Menu. Right-click on the Start icon in the Windows 11 taskbar to display an advanced menu that links to a variety of sections and programs. It may also be opened using the shortcut Windows- .

Select Shutdown or sign out and then Shut down to perform the power state change.

Other Shutdown options



Figure 70: Power Options Alt-F4 Shutdown

Here is a list of other options when it comes to shutting down the system:

- Use the keyboard shortcut Alt-F4 to display the shut down window. Select Shut Down and then OK to shut down the PC.
- Open a command prompt window PowerShell window or Windows Terminal and run the command shutdown /s. A popup appears stating that Windows 11 will shut down in a minute.
- Configure the behavior of the Power button to shut down the system.

Productivity

Default Programs

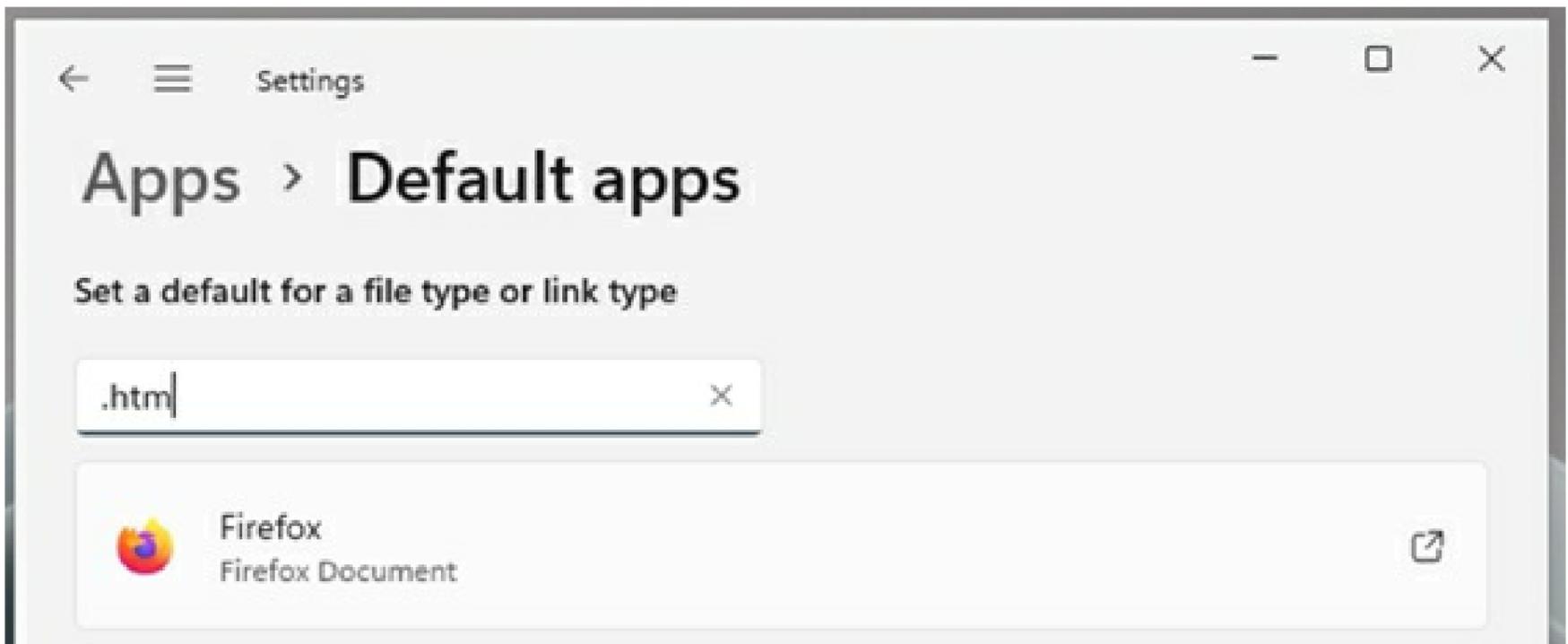


Figure 71: Default Apps Search

Microsoft removed the option to set file associations based on popular apps e.g. for web browsing emails playing videos or music. The option to switch the default app in a single operation has been removed.

It is now necessary to set associations by file type for applications. Since some apps support dozens if not hundreds of file types e.g. a media player may support all video audio and even image file types that exist it is clear that the process of switching defaults from one application to another takes longer in Windows 11 at least for these popular types of applications.

1. Open the Settings application either through the shortcut Ctrl-I or by selecting Start Settings.
2. Go to Apps Default Apps to get started.

The page lists two options to set defaults for individual file extensions and link types. The first is search based. Type the name of a file type or link type e.g. .htm or https and the default program for that file type or link type is displayed if available.

Note: you need to start with the “.” if you want to look up a file type.

Activate the program that is listed with a click or tap on it or select “choose a default” in the case that no default program is set to display the available programs that may be set as the default.

Windows displays available applications highlighting several of its own as featured applications at the top. If you want to set a program to open .htm files Microsoft Edge is listed as the featured application.

Applications that support the file extension or protocol are displayed if they are installed. Options to search for a compatible application in the Microsoft Store and to pick a program manually from the local system (look for another app on this PC) are provided as well.

How do you want to open .htm files from now on?

Featured in Windows 11



Microsoft Edge

Do more online with the new browser from Microsoft.

Other options



Brave



Look for an app in the Microsoft Store



Notepad



Windows Media Player

Look for another app on this PC

Figure 72: Change default application for file type / link type

The second option that users of Windows 11 have when configuring defaults for applications on the system is application-based.

Windows 11 lists all installed applications in a list on the default apps page. A search is provided to find programs quickly but browsing may be faster unless lots of programs are installed.

Select one of the listed programs with a tap or click of the mouse to display all of its file types. Windows 11 does not feature a “select all” option on the page that opens which means that you need to set the default manually for each of the supported file types and link types.

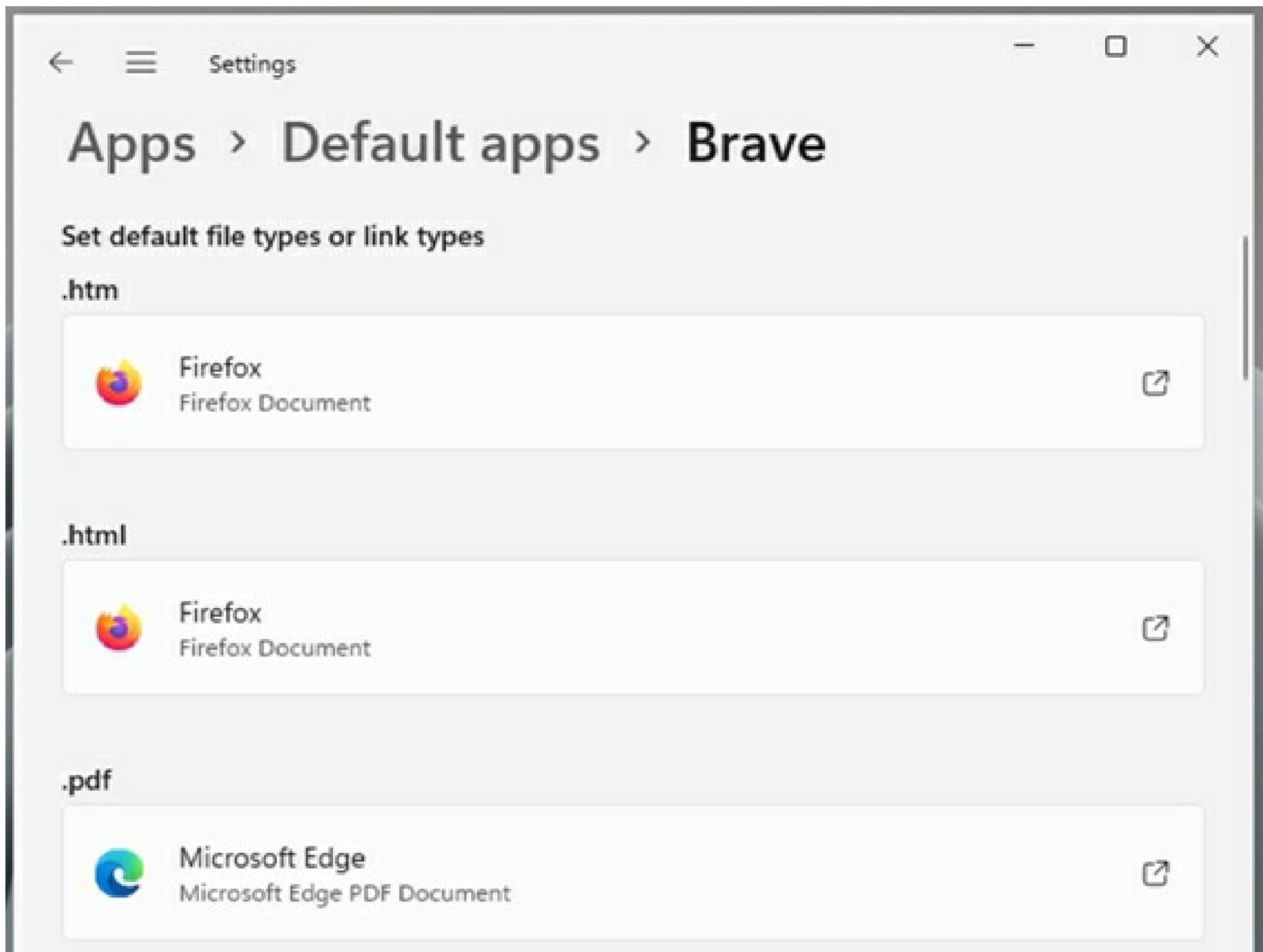


Figure 73: Set default file types or link types per program

A web browser like Firefox, Chrome, or Brave may support a few dozen formats, and things get even more problematic for media players or source code editors, which may support hundreds of formats.

The only provided option is to set the default for each of the file and link types manually, one after the other.

Two additional options are listed at the bottom of the page. File associations can be set by file type or by link type. Both options open a long list of supported types, again without options to set multiple associations at once.

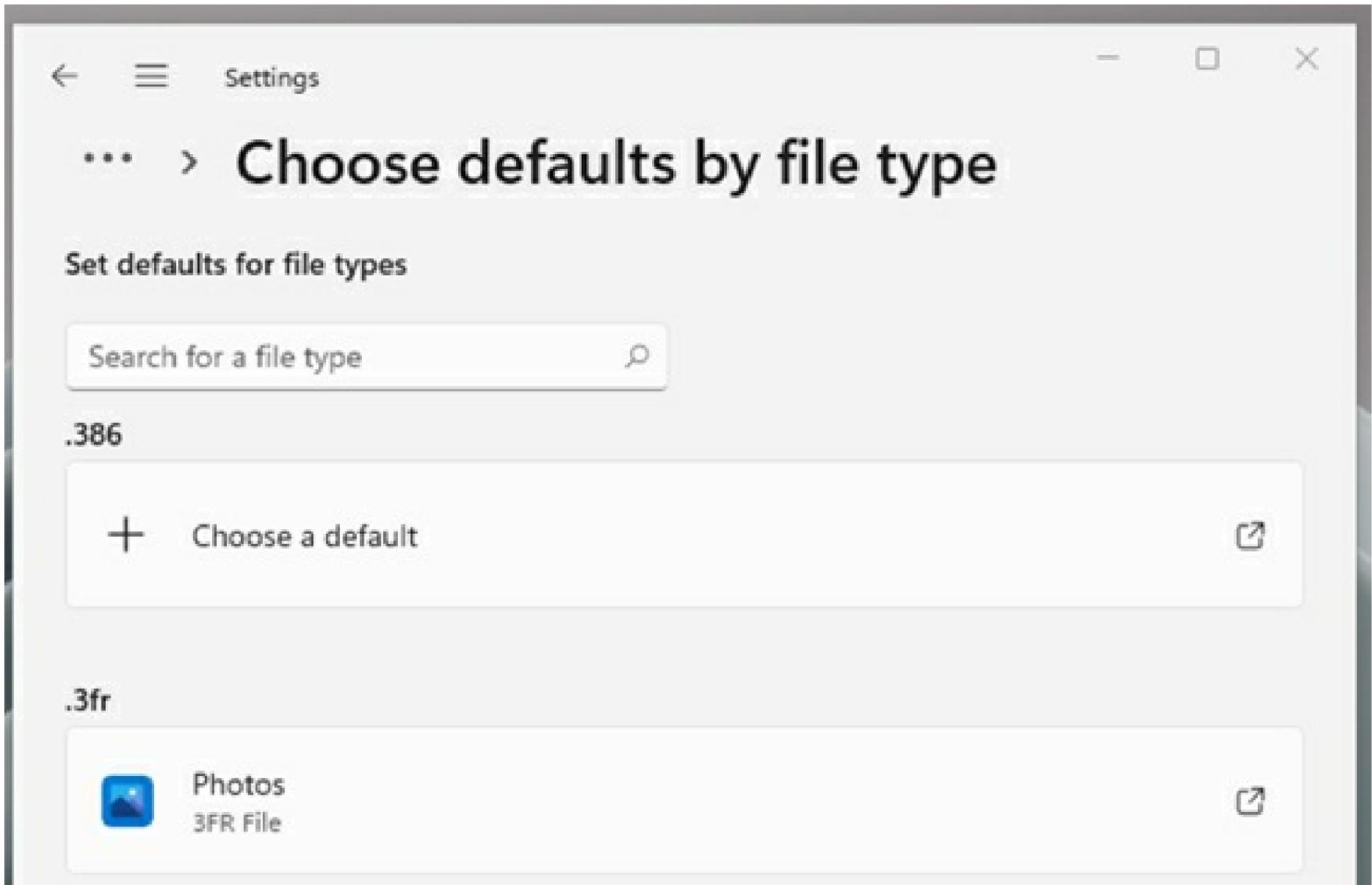


Figure 74: Apps set defaults by file type

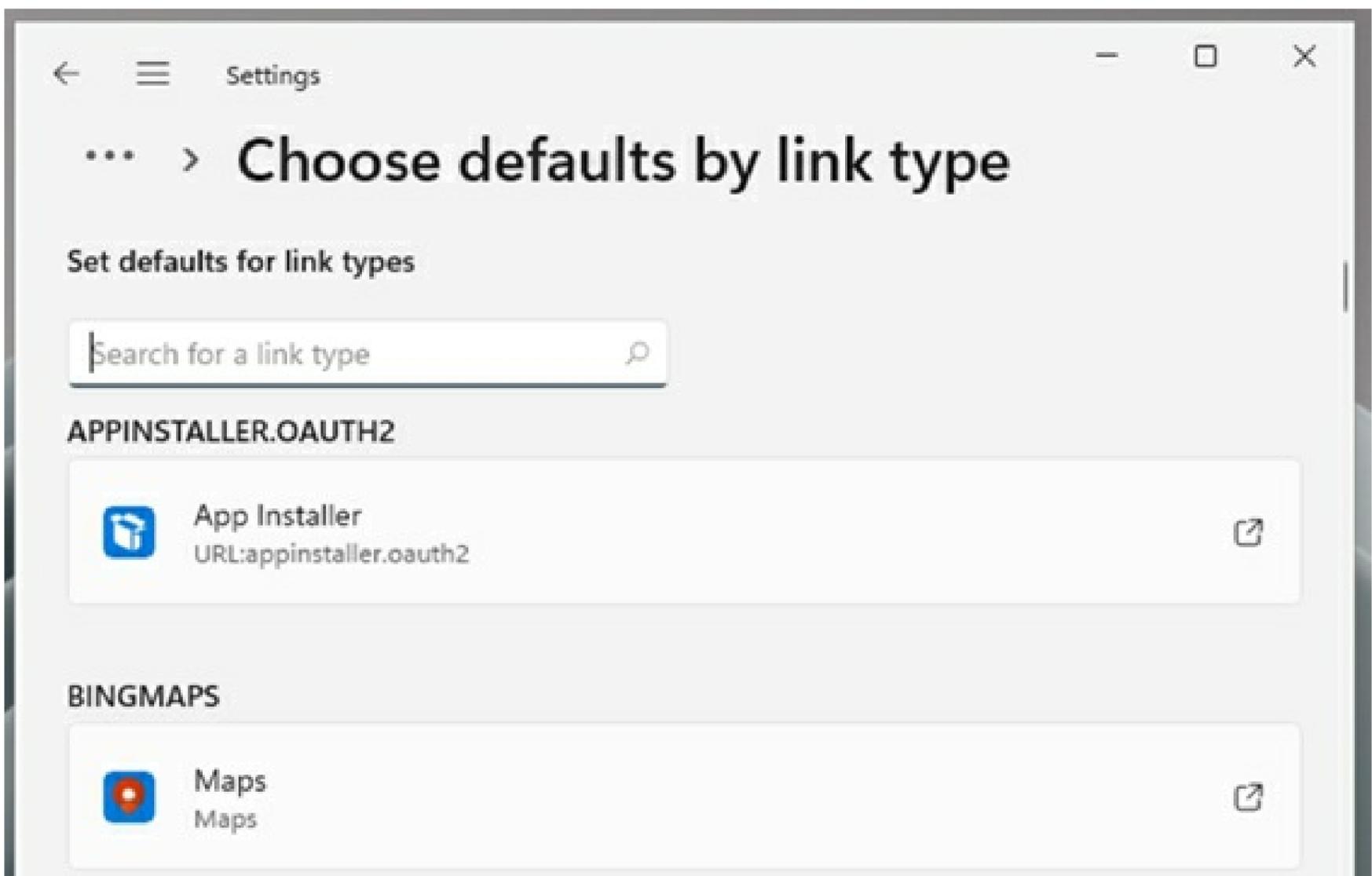


Figure 75: Apps set defaults by link type

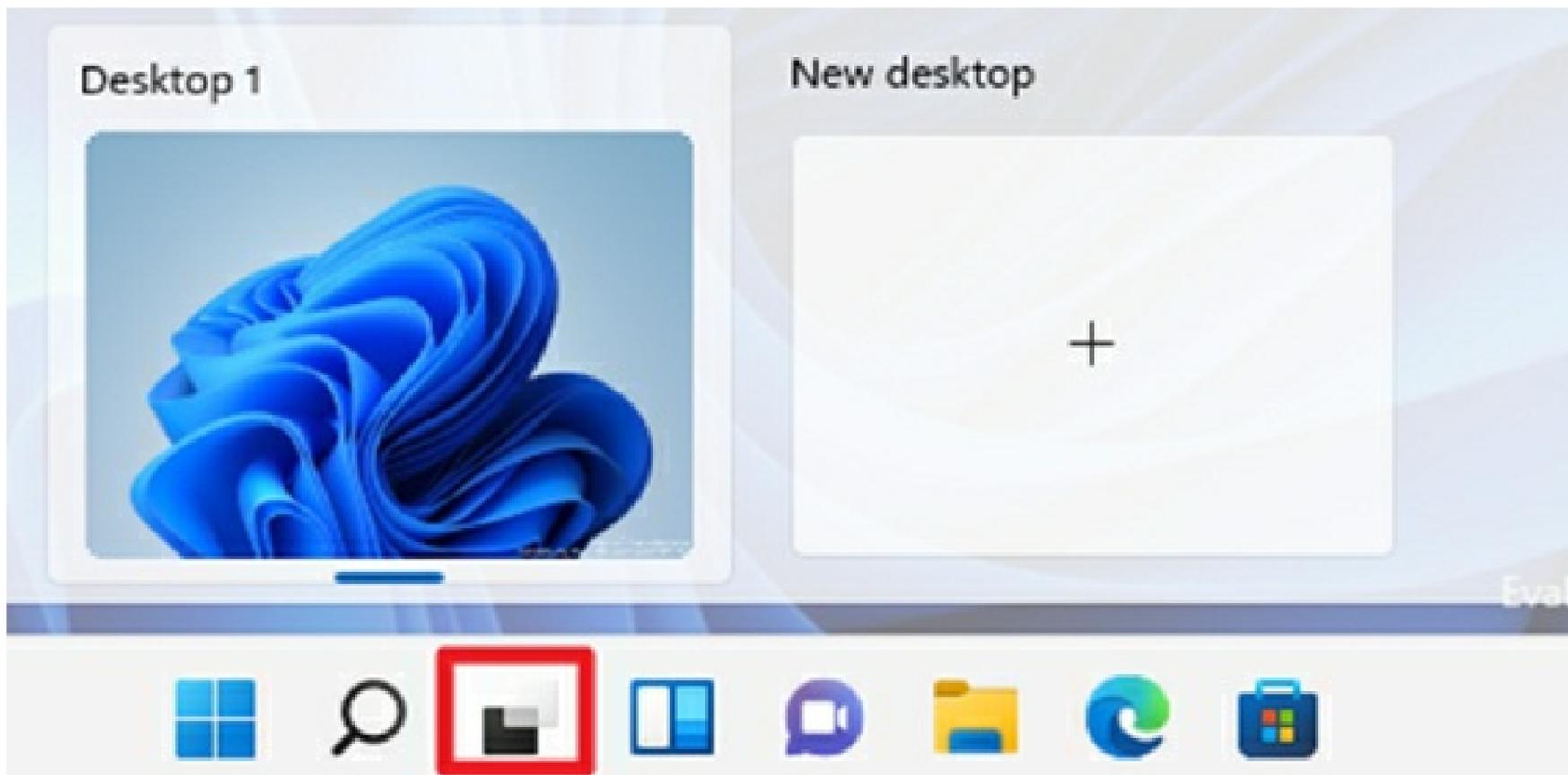


Figure 76: Virtual Desktops

Microsoft integrated native support for virtual desktops in the company's Windows 10 operating system. Windows 11 includes improvements to the core functionality.

Virtual desktops bring the power of multiple displays to every Windows PC. Basically what it allows Windows users to do is create new desktops that they may switch to.

One of the ideas is to use these desktops to display different programs e.g. a development environment on one screen a web browser and chat apps on another and a third on which backup jobs are running.

Virtual desktops may be used to hide information that would otherwise be visible on a single-desktop system.

Windows 11 includes a single desktop by default. A click on the Task View button on the operating system's taskbar displays the available desktops and an option to create a new virtual desktop.

New virtual desktops are created automatically and displayed next to existing desktops.

Right-click on a virtual desktop to display the following options:

1. Rename – The default name is not descriptive (Desktop 1 Desktop 2..) and you may use the rename option to set descriptive names.
2. Move – Move the virtual desktops to another location by changing the order of the desktops.
 - . Choose background – pick another background for a virtual desktop.
4. Close – close the desktop.

Note: Closing and Move are only available if at least two virtual desktops are available. The last desktop can't be removed anymore.

Windows does not display all open program windows on all taskbars by default. Instead program windows are only shown on the taskbar of the virtual desktop that they are open on.

The keyboard shortcuts Alt-Tab Ctrl-Alt-Tab or Windows-Tab display all open programs and give users the option to switch to any which may include switching to another virtual desktop as well.

Windows users may change the default behavior to display programs on all desktops regardless of desktop they are open in.

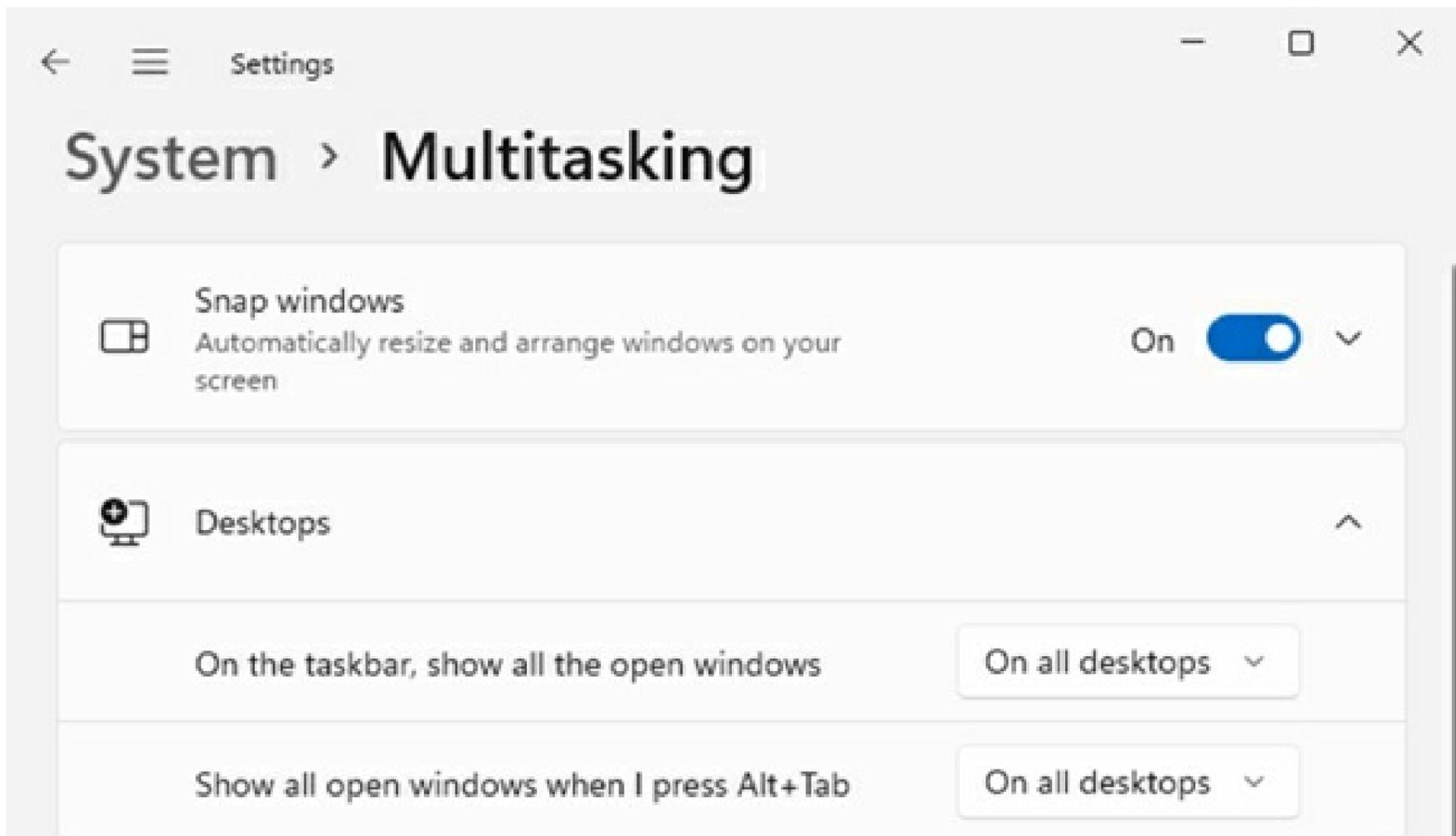


Figure 77: Virtual Desktops Multitasking

1. Open the Settings application either with the keyboard shortcut Windows-I or by selecting Start Settings.
2. Go to System > Multitasking.
 - . Expand the Desktops section on the Multitasking Settings page.
4. The setting “On the taskbar show all the open windows” has two choices:
 1. Only on the desktop I’m using – to display program windows only if they are active on the current desktop.
 2. On all desktops – to display program windows on all desktops regardless of which desktop they are open on.

The setting “Show all open windows when I press Alt-Tab has two choices as well:

1. Only on the desktop I’m using – to display only the program windows of the current desktop when using Alt-Tab.
2. On all desktops – to display all open program windows regardless on which desktop they are open on.

Useful keyboard shortcuts:

- Windows-Ctrl-D to create a new virtual desktop on the system.
- Windows-Ctrl-Left to switch to the next virtual desktop on the left.
- Windows-Ctrl-Right to switch to the next virtual desktop on the right.
- Windows-Ctrl-F4 to close the current virtual desktop (does not work for the last).

Capture Screenshots

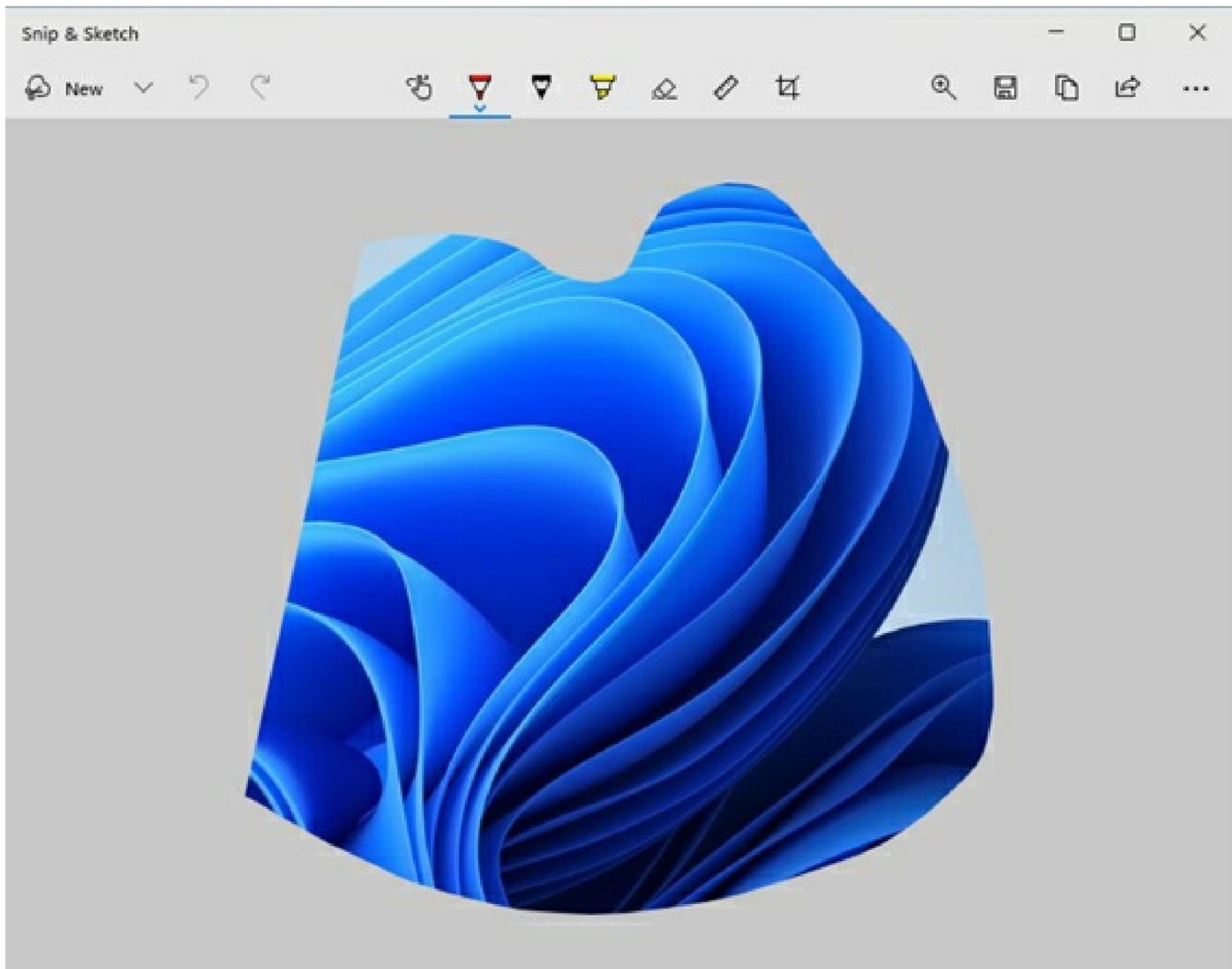


Figure 78: Screenshot tool Snip & Sketch

The default screen capturing tool of Windows 11 is Snip Sketch. It is not an identical copy of Windows 10's Snip Sketch tool as Microsoft decided to merge its functionality with that of the Snipping Tool the original screenshot tool introduced in Windows 10.

While it is still possible to capture screenshots on Windows 11 with a tap on the Print-key it is often not the best choice since the screenshot needs to be saved first as it only resides in the Clipboard.

Snip Sketch can be started from the Start Menu either by searching for it browsing all apps or by pinning its icon to the list of pinned items. Windows 11 users who prefer to use the keyboard can use the shortcut Windows-Shift-S to start a new screen capture without launching the application first.

Snip Sketch supports fullscreen windowed rectangular and freeform captures. Captures can also be delayed by a few seconds before they are activated.

Screen captures are copied to the clipboard automatically by default. Snip Sketch includes a basic image editor to edit the screenshot before it is shared or saved. The editor includes tools to add text highlight parts of the screenshot erase content or crop the image.

The settings available with a click on the three-dots menu and the selection of the settings context menu option include options to change some functionality.

Windows 11 users may disable the automatic copying of screenshots to the Clipboard in the Settings. Other options include enabling a save safeguard to get a prompt if unsaved content is available and to add an outline to captures.

Accessibility > Keyboard

On-screen keyboard

Press the Windows logo key  + Ctrl + O to turn the on-screen keyboard on or off

Off

Underline access keys

Access keys will be underlined even when not holding Alt

Off

Use the Print screen button to open screen snipping

Based on other app settings, you might need to restart your PC to see this change

Off

A link in the Settings opens the Keyboard section of the Settings app. There it is possible to map the Print-key on the computer keyboard to the Snip & Sketch application.

Go to Start > Settings > Accessibility > Keyboard to access the option directly.

Tip: check out the PicPick suggestion in the software recommendations chapter of this book for a third-party alternative that adds powerful options to screen capturing on Windows 11.

Quick Tips

The following section lists tips, shortcuts and such that may make the life of Windows 11 administrators and users easier.

Bypass the Recycle Bin

Recycle Bin Properties

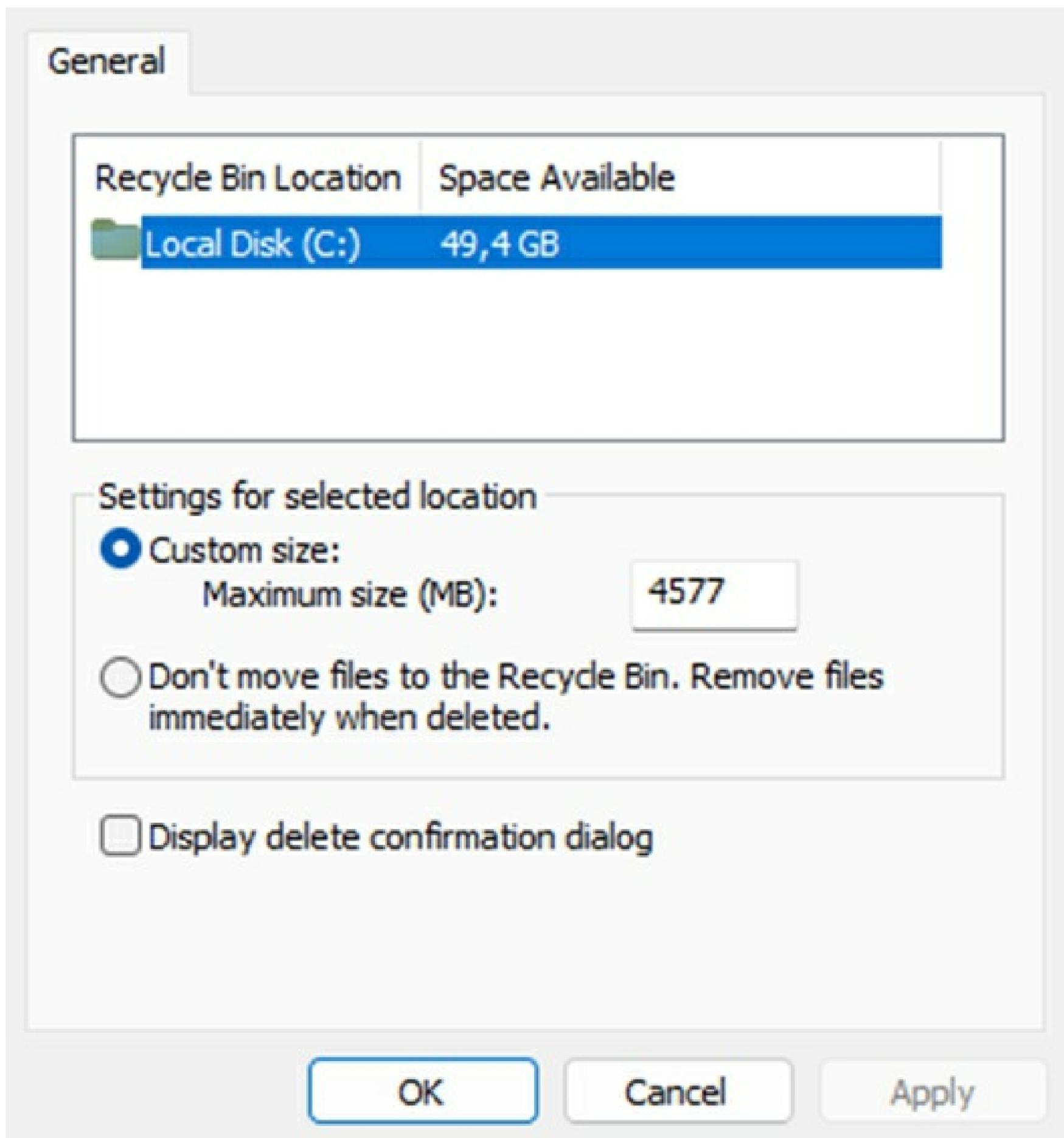


Figure 79: Recycle Bin Properties

The Recycle Bin stores deleted files and folders by default for a period of time. Sometimes users may want to delete files or folders directly without having them moved to the Recycle Bin.

While it is possible to empty the Recycle Bin manually at any time options exist to bypass the Recycle Bin sometimes or all the time.

To temporarily bypass the Recycle Bin on Windows 11 hold down the Shift-key on the keyboard before executing the Delete option. Doing so bypasses the Recycle Bin so that all selected files and folders are not moved into it.

Note: Bypassing the recycle bin does not delete files permanently either. File Recovery software may be able to restore the deleted files.

Administrators may configure the Recycle Bin per volume that is connected to the device. On some volumes the

Recycle Bin may be skipped on others it may be used by default.

1. Right-click on the Recycle Bin icon on the desktop and select the Properties option from the context menu this opens the Recycle Bin properties.
2. All available drives are listed on the page with the available storage space.
 - . For each the following options are available:
 1. Set a custom size for the Recycle Bin.
 2. Bypass the Recycle Bin when deleting files (by selecting “Don’t move files to the Recycle Bin. Remove files immediately when deleted.”)

Open Shortcuts

- Calculator: Press Windows-R type calc hit Enter-key.
- Cast: Use the keyboard shortcut Windows-K.
- Change Language: Use the keyboard shortcut Windows-Space (with at least another language installed).
- Command Prompt: Open Start type cmd.exe select Command Prompt.
- Command Prompt (elevated): type cmd.exe select Run as administrator.
- Command Prompt (elevated): Windows-R type cmd press Ctrl-Shift-Enter.
- Control Panel: Windows-R type control hit Enter.
- File Explorer: Use the keyboard shortcut Windows-E.
- File Explorer specific folders:
 - Documents: Use Windows-R type documents hit Enter.
 - Downloads: Use Windows-R type downloads hit Enter.
 - Pictures: Use Windows-R type pictures hit Enter.
 - Videos: Use Windows-R type videos hit Enter.
- Group Policy Editor: Open Start type gpedit.msc and select the Group Policy Editor.
- Lock the device: Use the keyboard shortcut Windows-L.
- Magnifier: Use Windows-R type magnify hit Enter.
- Narrator: Use Windows-R type narrator hit Enter.
- Notepad: Use Windows-R type notepad hit Enter.
- Notification Center: Use the keyboard shortcut Windows-N to open the Notification Center.
- Quick Settings: Use the keyboard shortcut Windows-A.
- Project a screen: Use the keyboard shortcut Windows-P.
- Registry Editor: Open Start type regedit.exe and select the Registry Editor to launch it.
- Run Box: Use the keyboard shortcut Windows-R to display the run box.
- Search: Use the keyboard shortcut Windows-S.
- Settings: Use the keyboard shortcut Windows-I.
- Share: Use the keyboard shortcut Windows-S. Works only if supported by the application.
- Show Desktops: Use the keyboard shortcut Windows-D.
- Snap Layouts: Use the keyboard shortcut Windows-Z to display the layout options.
- Task Manager: Use the keyboard shortcut Ctrl-Shift-Esc to open the Task Manager.
- Windows Widgets: Use the keyboard shortcut Windows-W to open.
- Xbox Game Bar: Use the keyboard shortcut Windows-G.

Administration

These management files can be launched from the command line Start menu or by using the Run box.

- Authorization Manager – azman.msc
- Certificates Local Computer – certlm.msc
- Certificates – certmgr.msc
- Component Services – comexp.msc
- Computer Management – compmgmt.msc
- Device Manager – devmgmt.msc

- Disk Management – diskmgmt.msc
- Event Viewer – eventvwr.msc
- Shared Folders – fsmgmt.msc
- Group Policy Editor – gpedit.msc
- Local Users and Groups – lusrmgr.msc
- Performance Monitor – perfmon.msc
- Print Management – printmanagement.msc
- Resultant Set of Policies – rsop.msc
- Local Security Policy – secpol.msc
- Services Manager – services.msc
- Task Scheduler – taskschd.msc
- Trusted Platform Module Management – tpm.msc
- Windows Firewall – wf.msc
- WMI Management – wmimgmt.msc

The Secret Menu

Apps and Features

Power Options

Event Viewer

System

Device Manager

Network Connections

Disk Management

Computer Management

Windows Terminal

Windows Terminal (Admin)

Task Manager

Settings

File Explorer

Search

Run

Shut down or sign out >

Desktop



Figure 80: Secret Menu Windows 11

Microsoft introduced a secret admin menu in Windows 10 and it is also available in Windows 11 albeit in a slightly different form.

There are two main options to display it: use the keyboard shortcut Windows+X or right-click on the Start icon that is displayed on the Windows taskbar.

Most of the items displayed are links that point to management pages or tools such as the Device Manager, Computer Management or the Power Options.

Some start programs such as Windows Terminal, others display the run box or let users shut down or sign out.

Using the menu may sometimes be faster than using the Start menu or Search to get somewhere.

Media

Disable the Windows startup sound

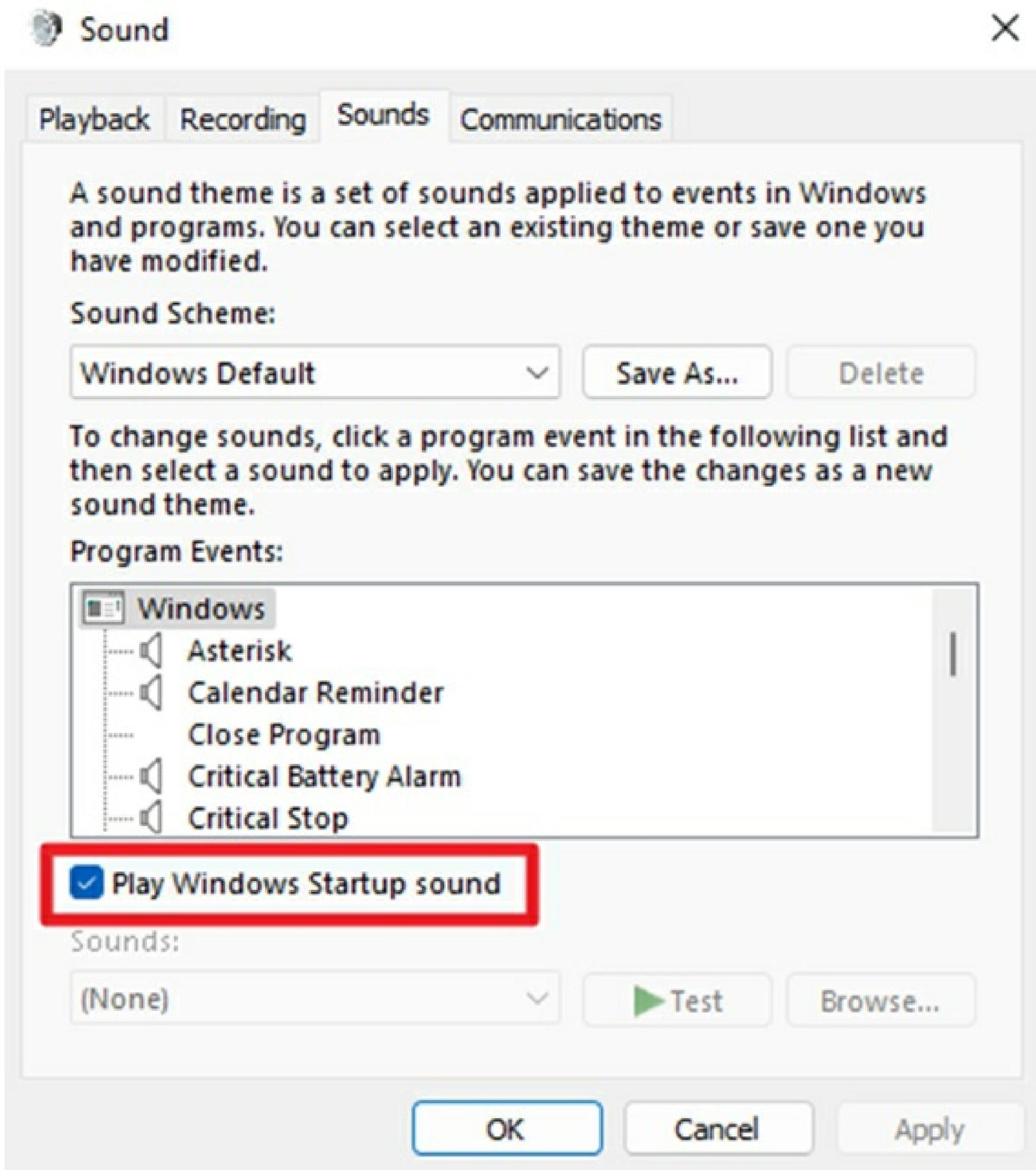
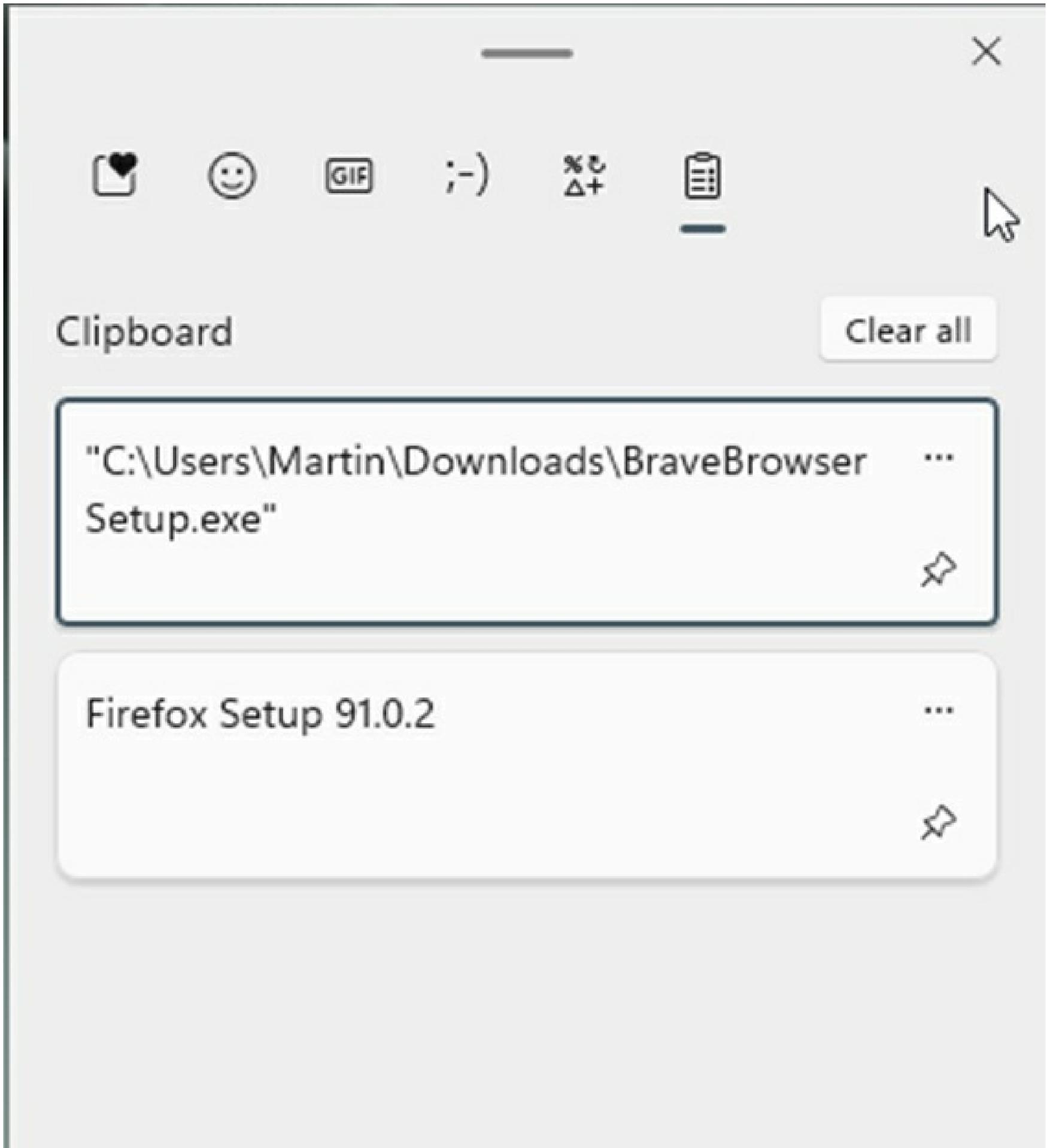


Figure 81: Media: disable windows startup sound

Windows 11 displays a sound during startup of the system. Users may disable that sound in the following way:

1. Open the Settings application either with the keyboard shortcut Windows-I or by selecting Start Settings.
2. Go to Personalizations Themes.
 - . Select Sounds on the page that opens this opens the Sound preferences.
4. Remove the checkmark from "Play Windows Startup sound" to disable the sound during startup.

Using the Clipboard History feature



Most Windows users know that they can copy and paste content using the operating system's Clipboard feature. The keyboard shortcuts Ctrl-C to copy content and Ctrl-V to paste content are known by many but there are also buttons and menu items available to use copy and paste functionality.

The Windows Clipboard stores a single entry by default. When you copy another entry the old one is overwritten automatically.

Clipboard History is a feature that extends the functionality of the Windows Clipboard by adding more storage slots ideal for copying and pasting multiple items as you don't have to switch back and forth anymore for each of the copy/paste operations.

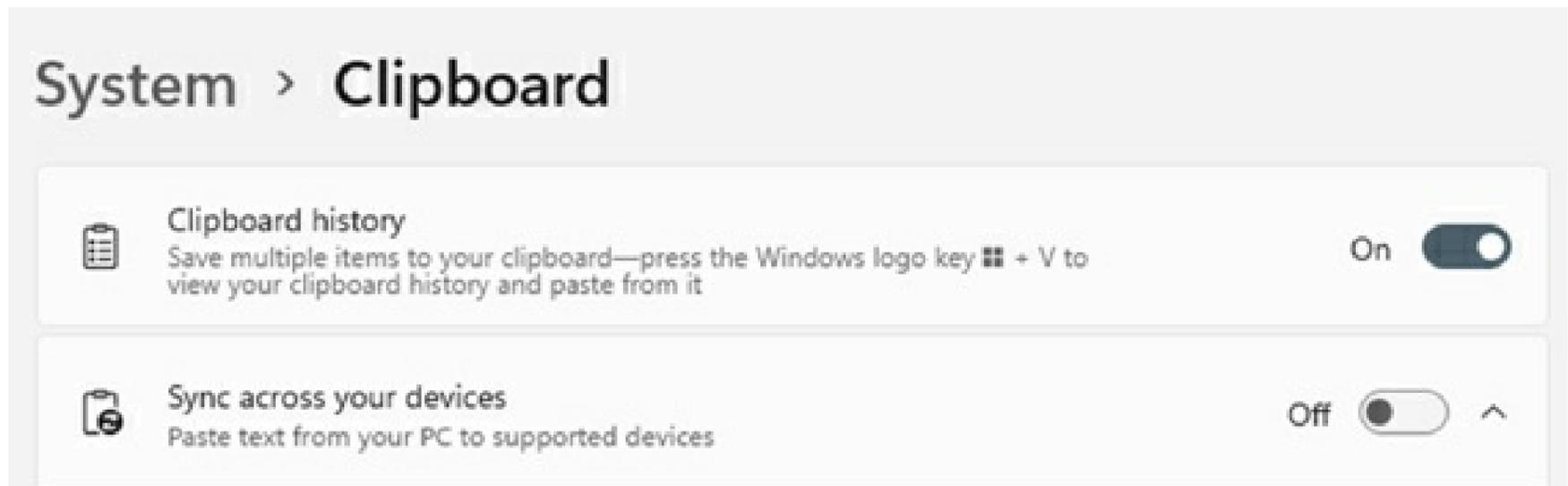
Introduced in Windows 10 Clipboard History is also available in Windows 11.

All you need to do is copy all items before using the Clipboard History option to select the items that you want to paste.

The feature is not enabled by default and needs to be enabled by the user before it can be used.

Windows' Clipboard History feature has a limit of 4 Megabytes per copied item and a limit of 2 stored items in total. Older items do get removed automatically when the 2 entries limit is reached unless they are pinned.

Enable Clipboard History



1. Open the Settings application either through the shortcut Ctrl-I or by selecting Start Settings.
2. Switch to System Clipboard.
 - . Toggle the Clipboard history feature at the top so that it reads “on”.

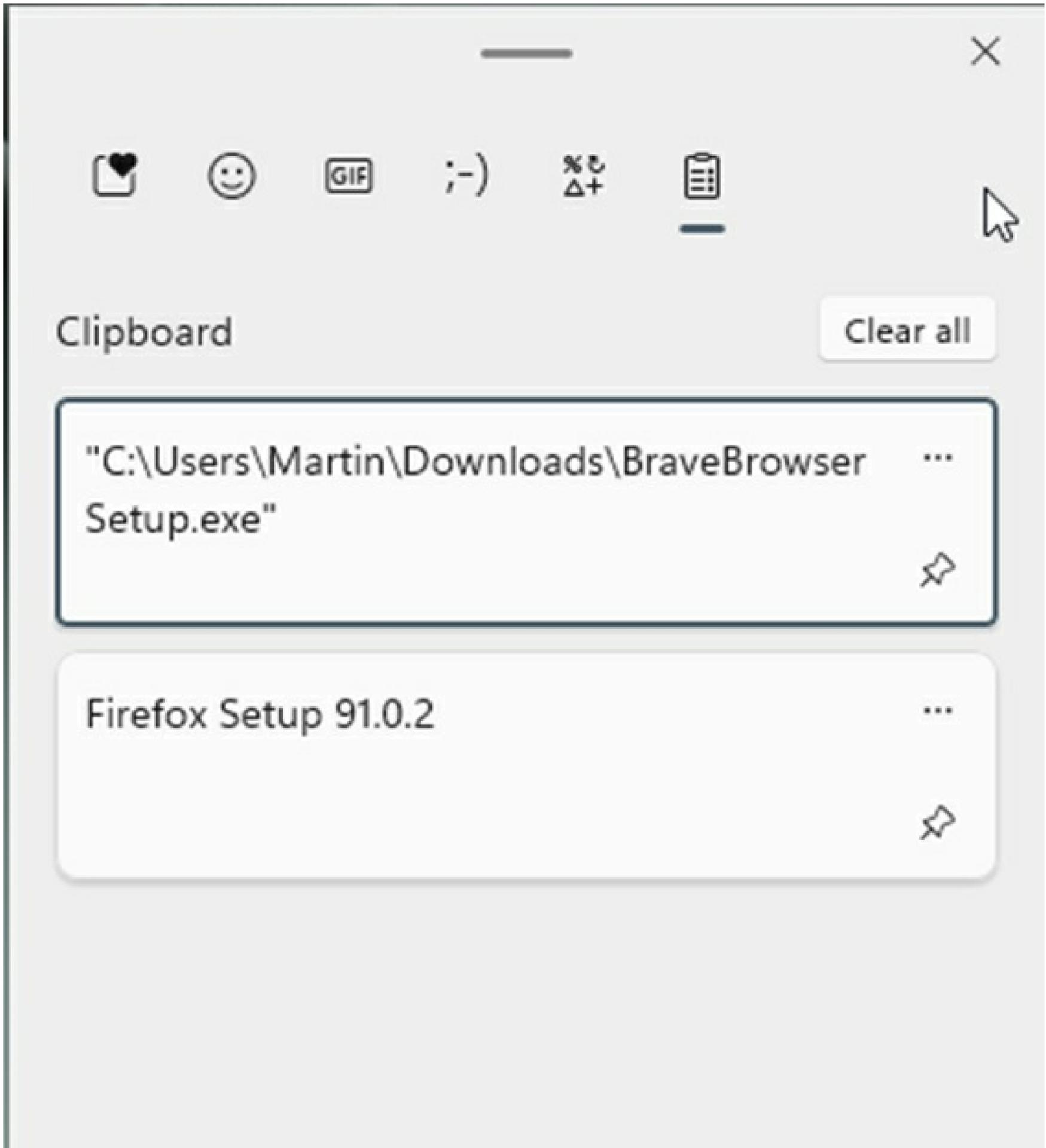
ou may copy multiple items from that moment on which will be stored in the Clipboard.

Tip: set the Clipboard History preference to Off to disable the functionality again.

Using the Clipboard History

Microsoft mapped the shortcut Windows-V to the Clipboard History feature. ou may still use Ctrl-C and Ctrl-V to copy and paste an item but if you want a list of all stored Clipboard items you need to use Windows-V instead.

The interface opens on the screen and you may interact with it. Items are stored chronologically with the most recent one at the top.



To paste an item click on it or tap on the Enter-key. You may navigate items using the mouse or using the Up-arrow and Down-arrow keys on the computer keyboard.

Note that the program window that you want to paste the content into needs to be open and active for it to work properly.

The Clipboard History window offers several other options. Use the “clear all” button to remove all entries at once from the clipboard.

Select the three-dots menu to get options to trash the selected item or to use the “paste as text” option which pastes only the text and not the formatting.

Activate the pin icon to pin a clipboard entry to block it from being deleted when you select the clear all button in the interface. Pinned items remain accessible even after reboots or when signing-in again after having signed-out.

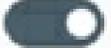
Syncing Clipboard entries

System > Clipboard



Clipboard history

Save multiple items to your clipboard—press the Windows logo key  + V to view your clipboard history and paste from it

On 



Sync across your devices

Paste text from your PC to supported devices

On  ^

Automatically sync text that I copy

Manually sync text that I copy

The Windows Clipboard stores items only on the local system by default. Users who sign-in with a Microsoft Account may enable the syncing of text across devices provided that the same Microsoft Account is used to sign-in to all of them.

Here is how you enable the sync feature:

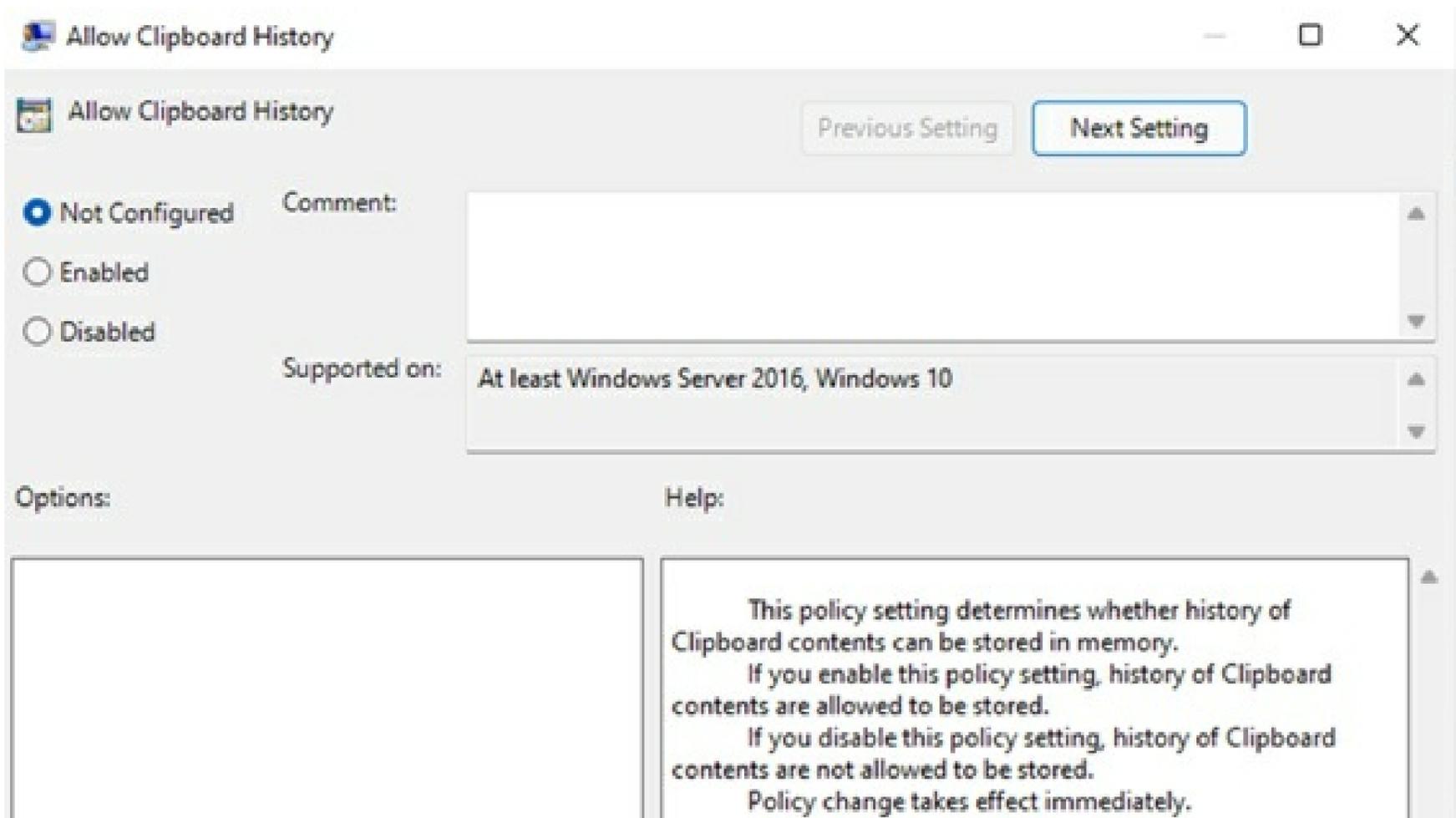
1. Use the keyboard shortcut Windows-I to open the Settings app or select Start Settings.
2. Go to System Clipboard.
 - . Toggle the Sync across your device's preference so that it is set to On.

Windows syncs text automatically that you copy by default. You may switch that to the manually sync mode instead to get more control over the data that is synced.

Advanced Information

System administrators may configure the Clipboard History feature using the Group Policy or Registry.

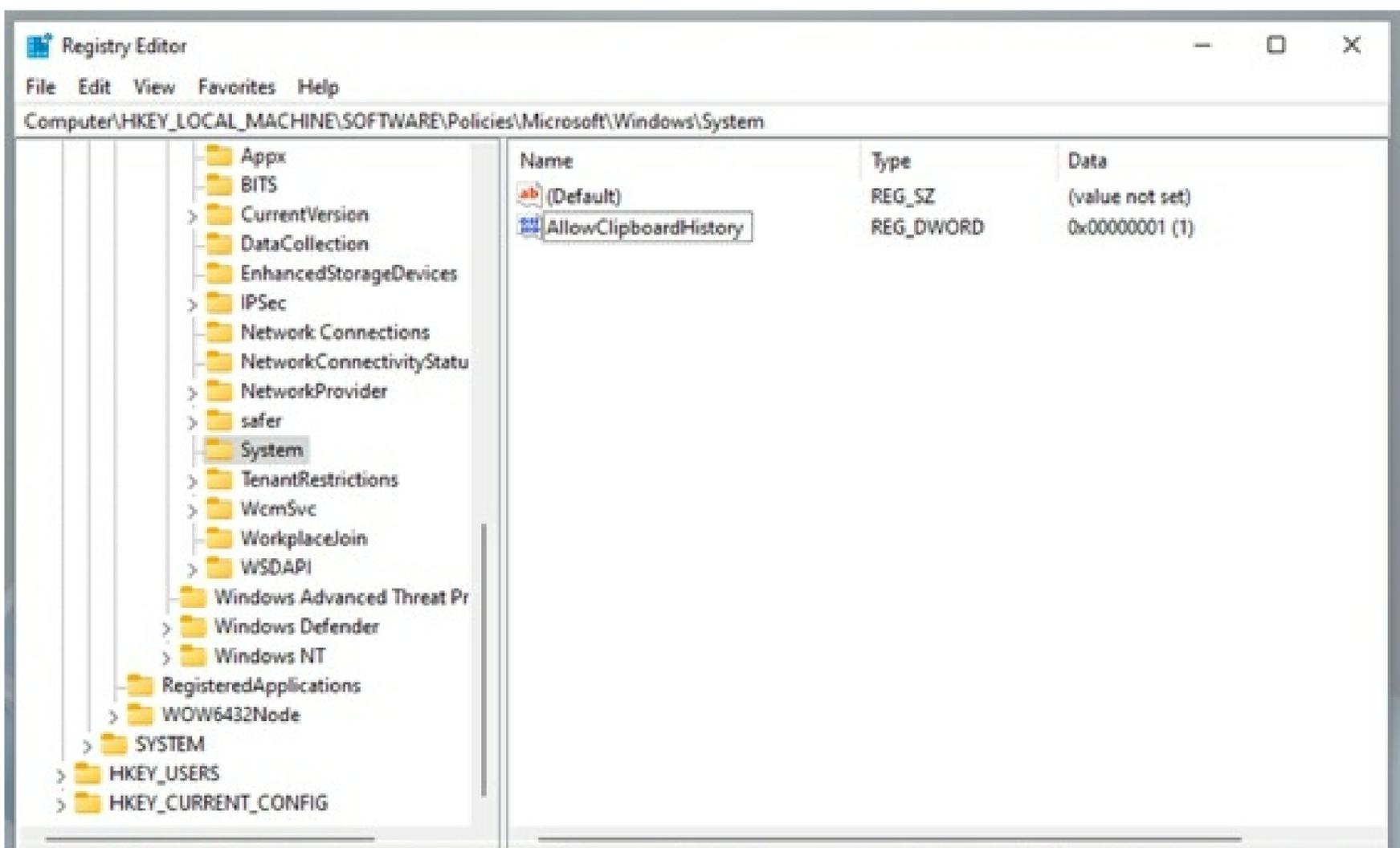
Group Policy:



1. Open the Local Group Policy editor e.g. by selecting Start typing gpedit.msc and loading the result.
2. Go to Computer Configuration\Administrative Templates\System\OS Policies
 - . Double-click on "Allow Clipboard History".

- Set the feature to Enabled to activate the Clipboard History feature.
- Set the feature to Disabled to turn it off.
- Set the feature to Not Configured to let the user decide.

Windows Registry:

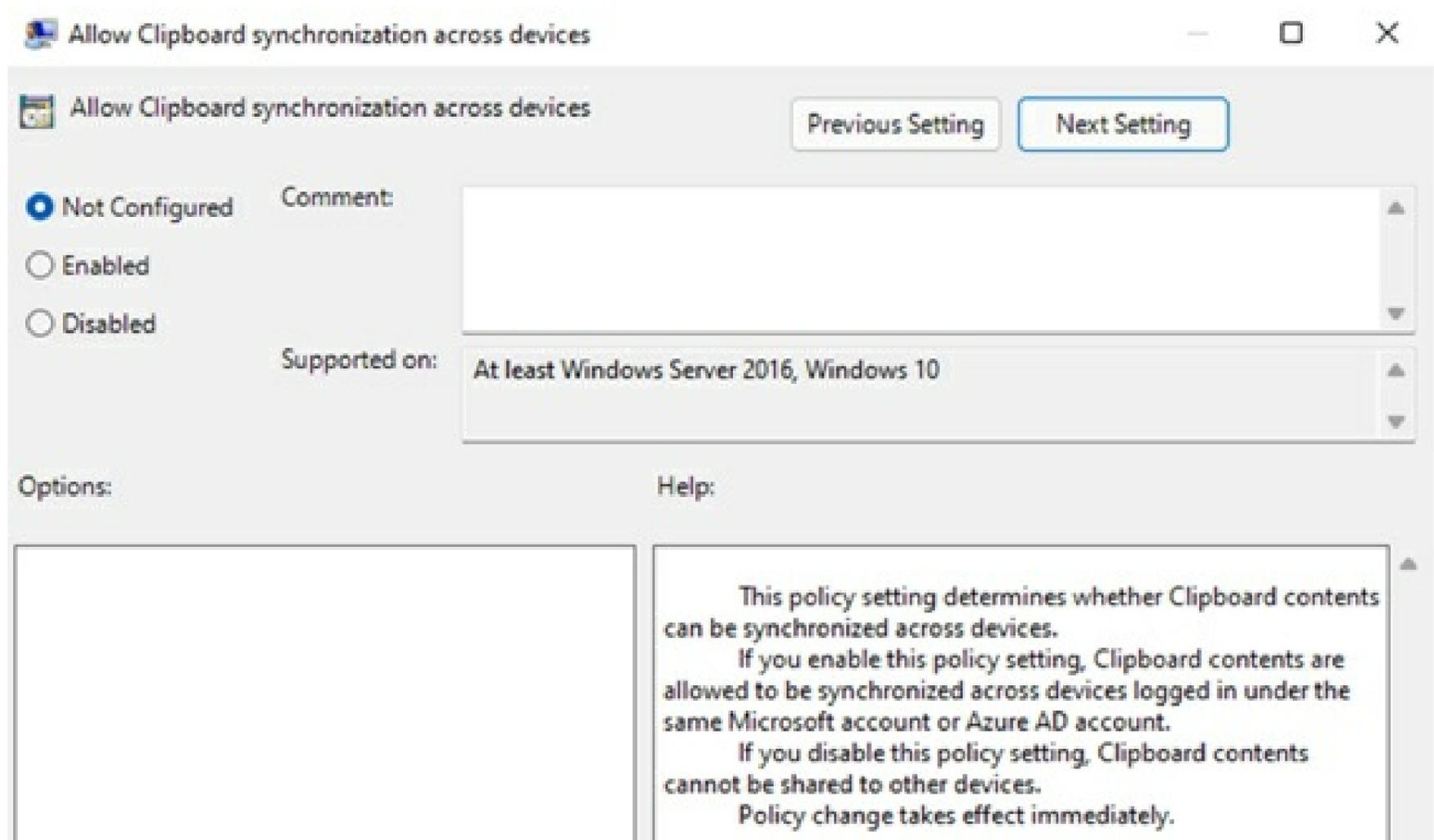


1. Open the Windows Registry Editor e.g. by selecting Start typing regedit.exe and loading the Registry Editor.
2. Confirm the UAC prompt.
 - . Go to HKE _LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\System
4. Double-click on AllowClipboardHistory.

- Set the value to 0 to disable the Clipboard History for all users.
- Set the value to 1 to enable the feature for all users.

System administrators may disable the Clipboard Syncing feature via the Group Policy or the Registry

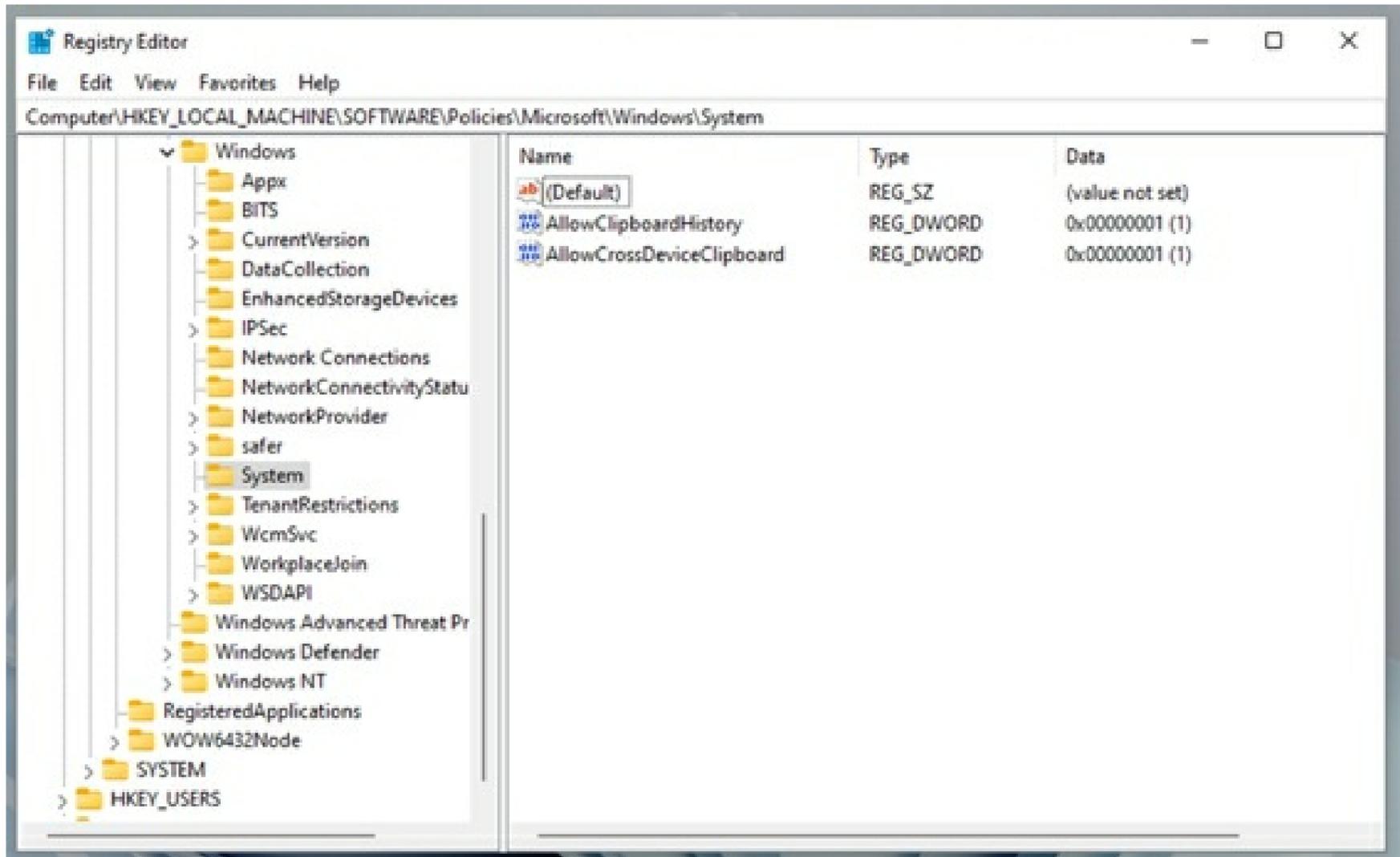
Group Policy:



1. Open the Local Group Policy editor e.g. by selecting Start typing gpedit.msc and loading the result.
2. Go to Computer Configuration\Administrative Templates\System\OS Policies
 - . Double-click on "Allow Clipboard synchronization across devices".

- Set it to Disabled to disable the feature for all users.
- Set it to Enabled to enable the feature for all users.
- The default setting Not Configured gives users control over the feature.

Windows Registry:



1. Open the Windows Registry Editor e.g. by selecting Start typing regedit.exe and loading the Registry Editor.
2. Confirm the UAC prompt.
 - . Go to HKE _LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\System
4. Double-click on AllowCrossDeviceClipboard.
 - . Change its value to 0.

◦
If AllowCrossDeviceClipboard does not exist right-click on System and select New Dword (2-bit Value). Name it accordingly.

Intermediate

Quick Tips

The following section of the guide lists quick options to look up information. Information may be requested by technical support staff to verify certain settings or states of the system or before downloading and installing programs or following guides on the Internet.

Changing the Device Name

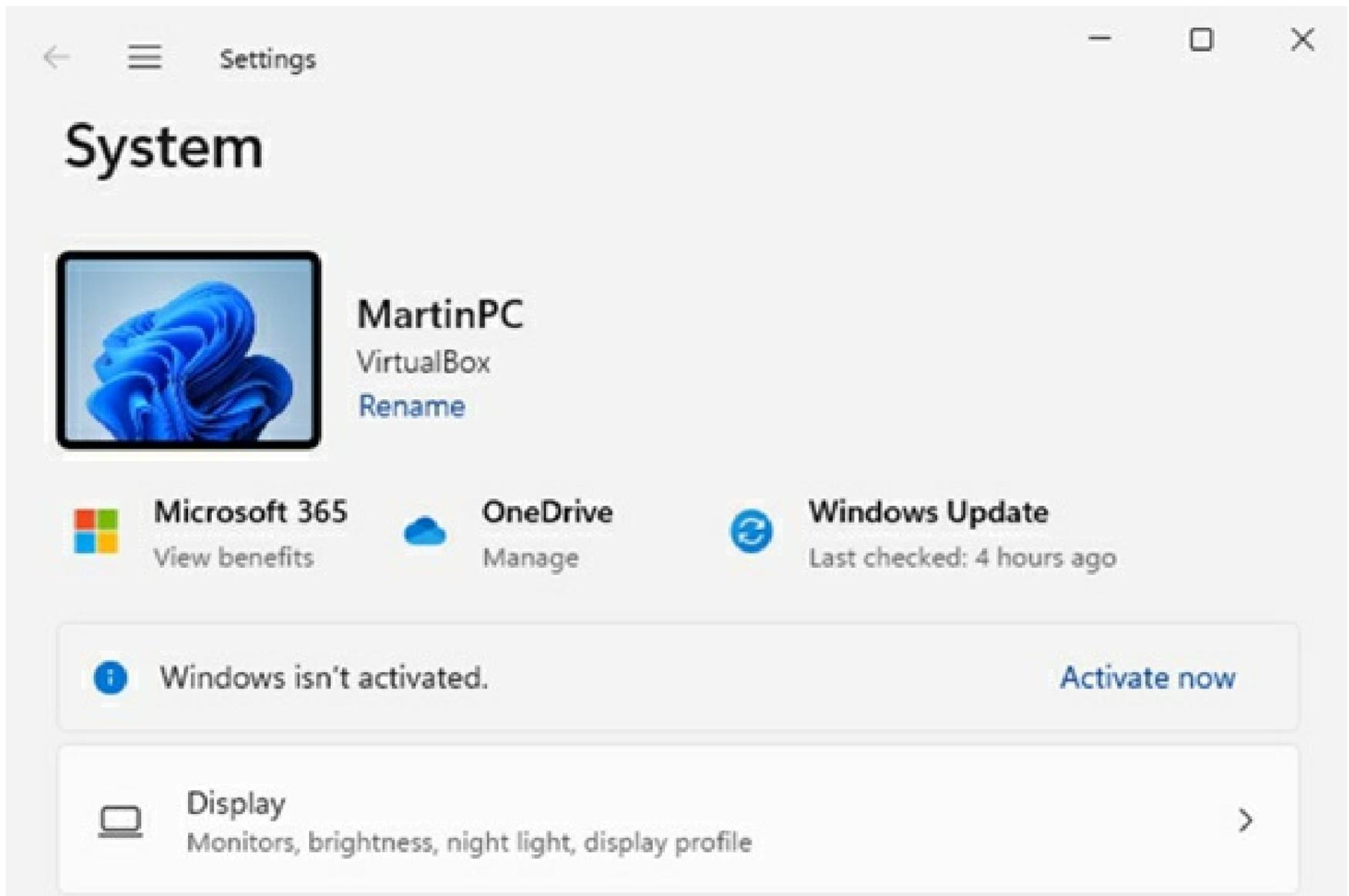


Figure 82: Device Name

Windows 11 prompts to name the device during setup but it is possible to change the name or select a name later on.

The name of the device is displayed in a number of locations including on the main System page of the Settings application (Start Settings System).

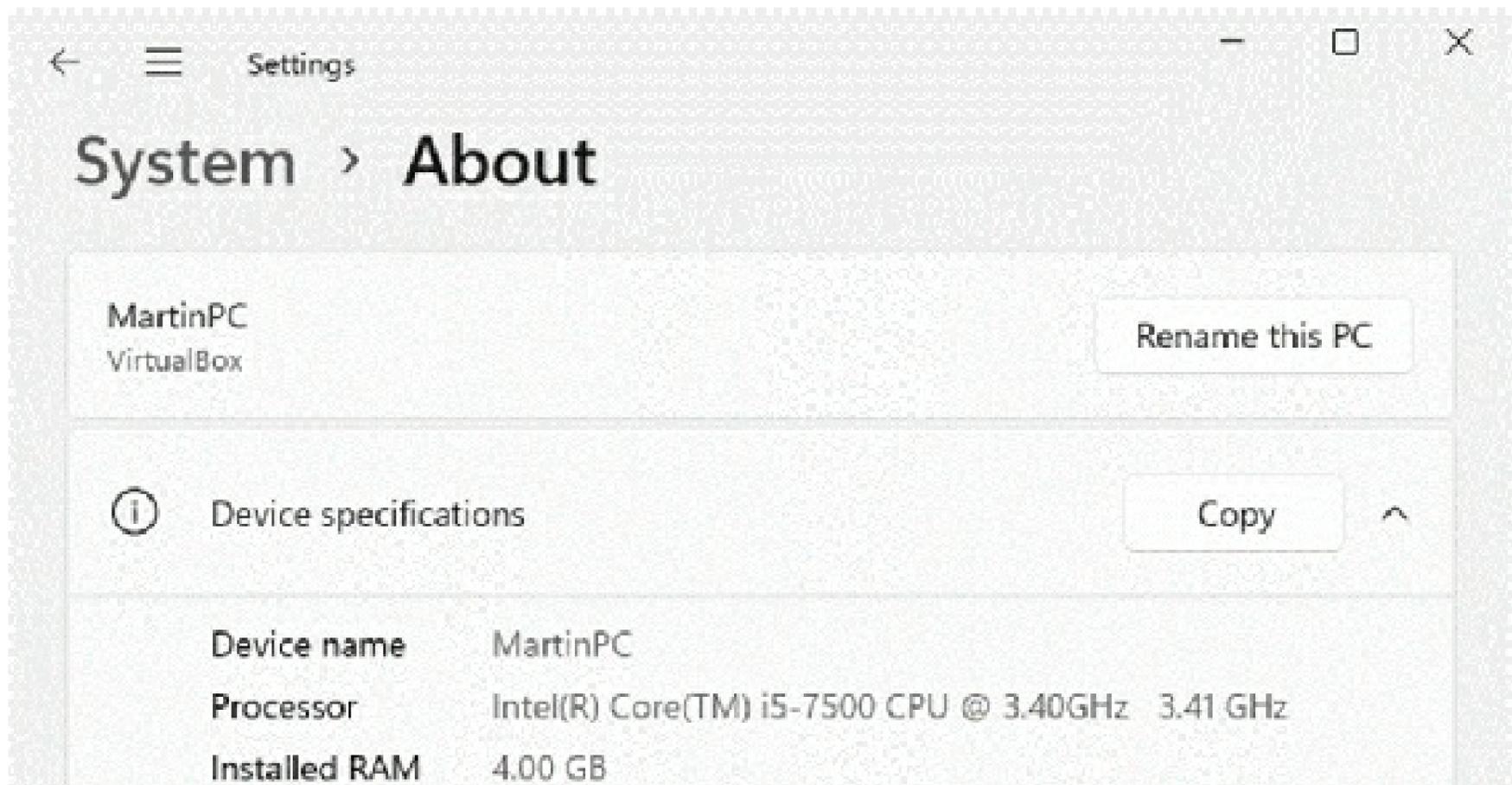


Figure 83: Rename the PC

To rename the PC do the following:

1. Open the Settings application e.g. with the keyboard shortcut Windows-I or by selecting Start Settings.
2. Open System > About.
 - . Select the “Rename this PC” button on the page that opens.
4. Type a new name. Use a combination of letters numbers and hyphens.
 - . Select Next.
 - . Select Restart now to restart and complete the change.

Launch multiple instances of a program on Windows 11

Sometimes it may be required to launch a program multiple times on the system. Maybe to display File Explorer windows side-by-side for moving files two photo viewers web browser instances or video players.

Microsoft changed how multiple program instances are launched on Windows 11. Previous versions of Windows supported holding down the Shift-key before clicking on a program to launch another instance of it.

The shortcut does not work anymore on Windows 11. Holding down the Shift-key launches the same action as a left-click on the program icon does: it displays and hides the program window.

Microsoft changed the shortcut to launch multiple program instances on Windows 11. Windows 11 users need to hold down the Ctrl-key and the Shift-key to launch another instance of a program on the operating system.

Using Windows Terminal, Command Prompt and PowerShell

Some instructions and tips in this book but also on the Internet require that commands are run from a command prompt window or a PowerShell window.

Command prompt and PowerShell windows open can be launched regularly or elevated. Some commands require elevation to be run at all.

Windows 11 displays an UAC prompt when you try to launch one of the command line interfaces with elevated rights.

Microsoft’s main focus is on Windows PowerShell as it is developed actively. The Command Prompt is still available though.

To make things easier Microsoft has integrated Windows Terminal into Windows 11. The application is tab-based and may hold terminal windows of several command line interfaces including Windows PowerShell Command

Prompt and Azure Cloud Shell.

Windows Terminal

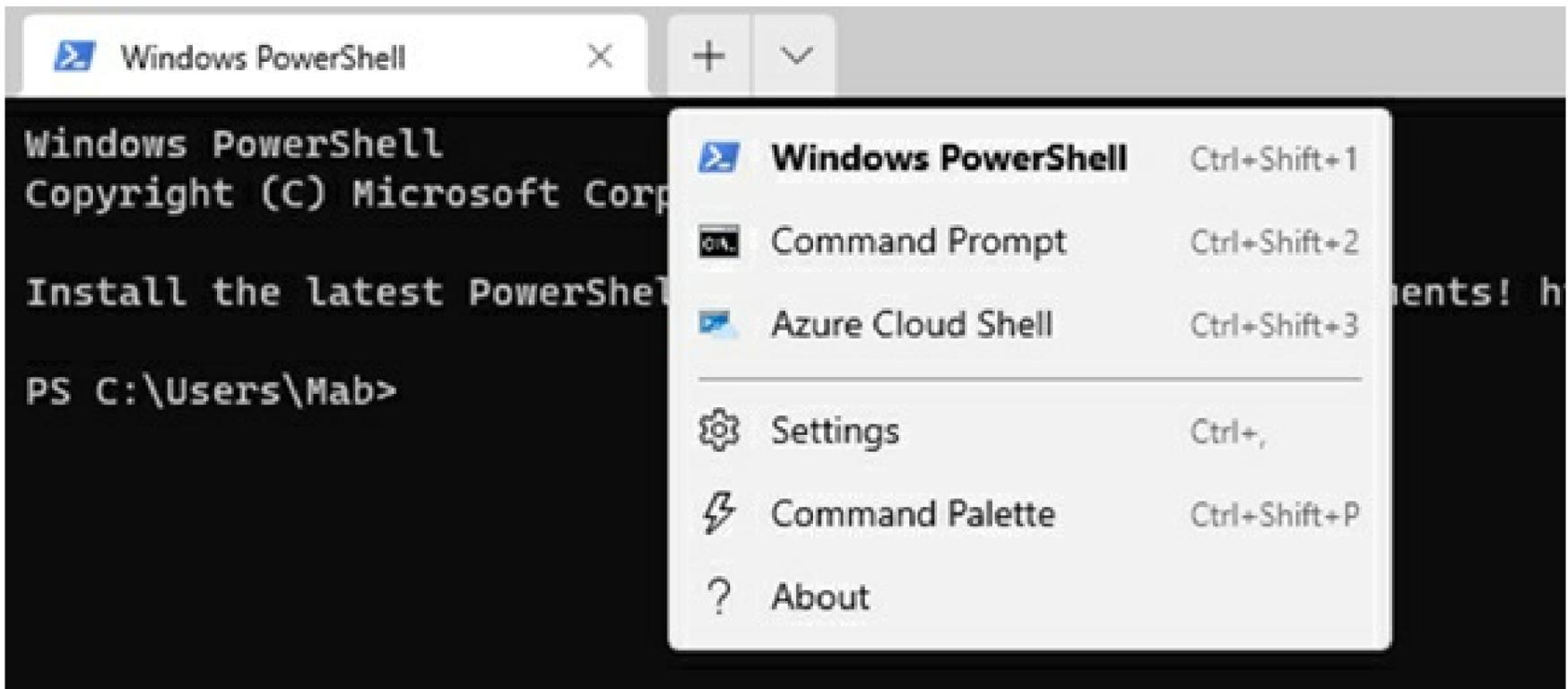


Figure 84: Windows Terminal window

1. Use the keyboard shortcut Windows- to display the power menu.
2. Select Windows Terminal or Windows Terminal (Admin) to open a normal Windows Terminal window or an elevated Windows Terminal window.

The first tab loads Windows PowerShell automatically. Select the down-arrow icon in the tab bar to launch a Command Prompt or Azure Cloud Shell window in a new tab.

Command Prompt

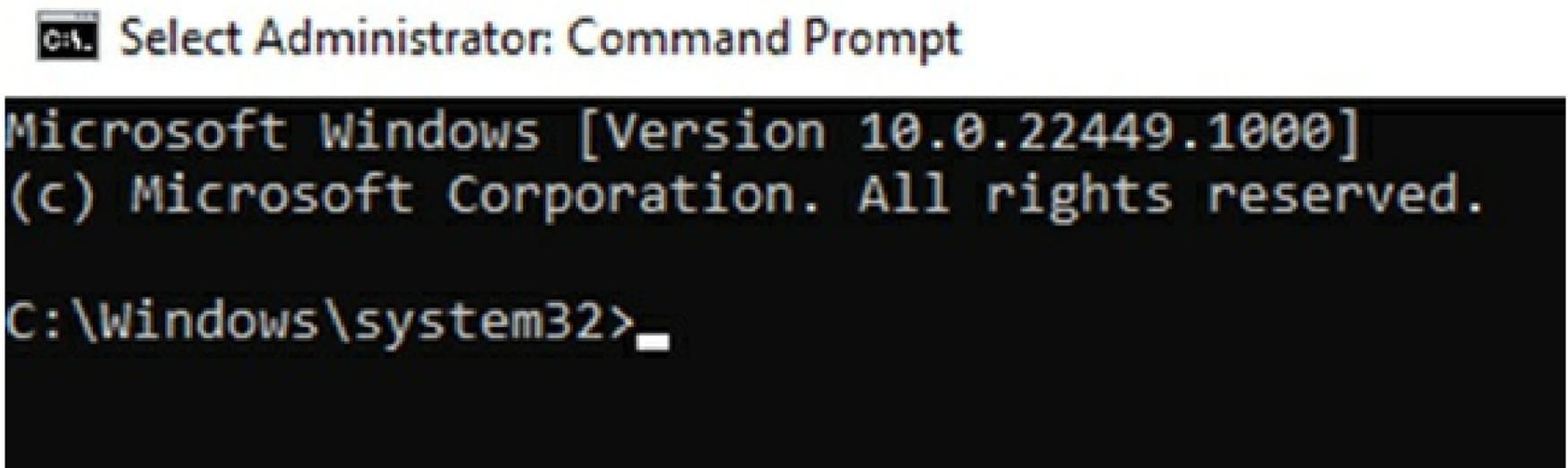


Figure 85: Command Prompt window

1. Open Start and type cmd.exe.
2. Run Command Prompt directly or select run as administrator to launch a normal command prompt window or an elevated window.

The title of the Command Prompt window reveals whether the window is elevated or not.

Windows PowerShell

```
Administrator: Windows PowerShell
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Windows\system32> _
```

1. Open Start and type powershell.
2. Run Windows PowerShell immediately or select run as administrator to launch a normal Windows PowerShell window or an elevated Windows PowerShell window.

Display the version of the operating system



Figure 86: Windows Version

1. Open the Start Menu.
2. Type winver.
 - . Tap on the Enter-key.

The About Windows program window that opens displays the name of the operating system the version and the operating system's build number.

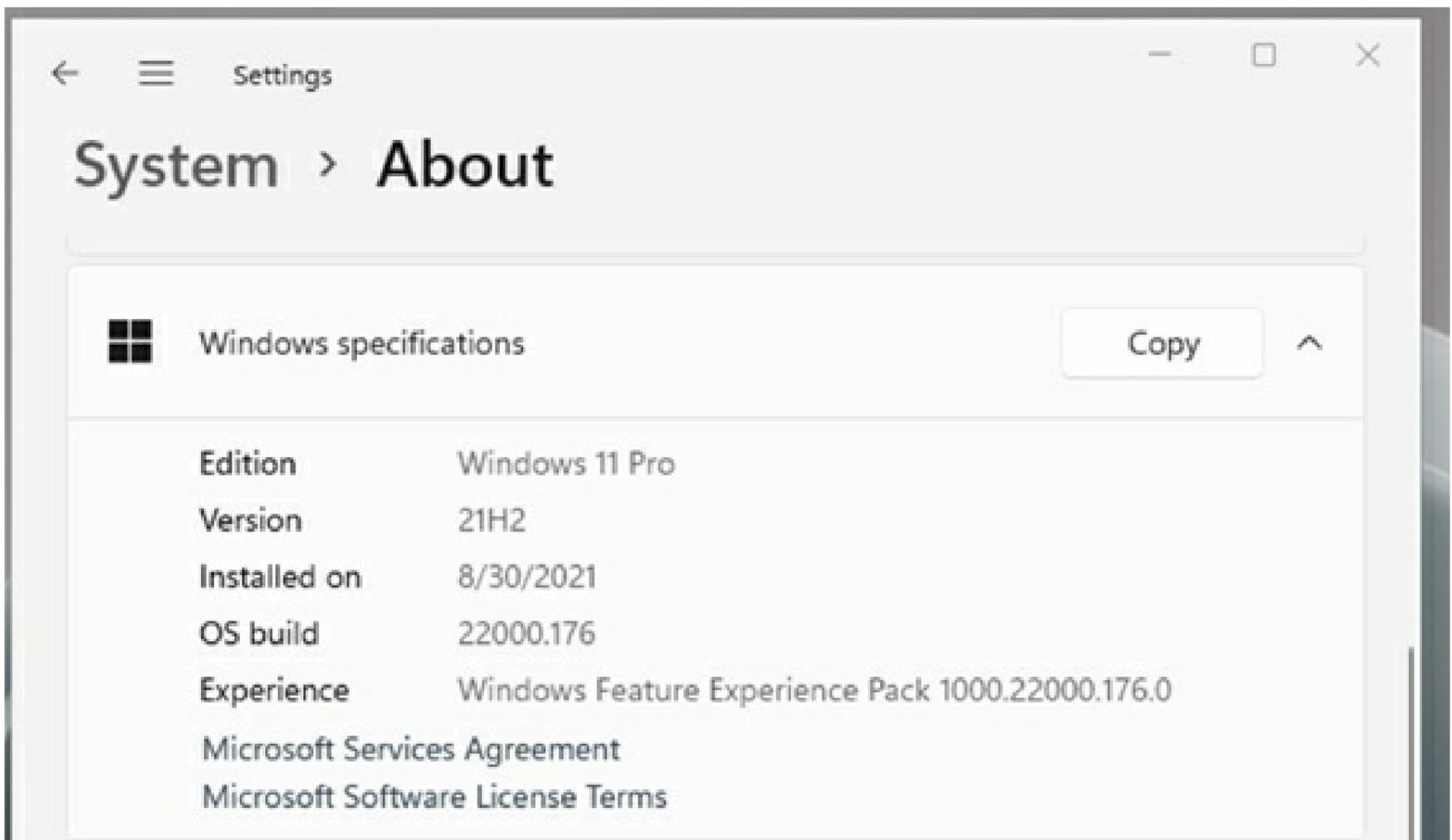


Figure 87: Windows Specifications

Another option which includes the edition of Windows 11 as well as its installation date is the following:

1. Use the keyboard shortcut Windows-I to open the Settings application.
2. Select About.
 - . Scroll down to the Windows specifications section.

Look up the list of supported sleep modes

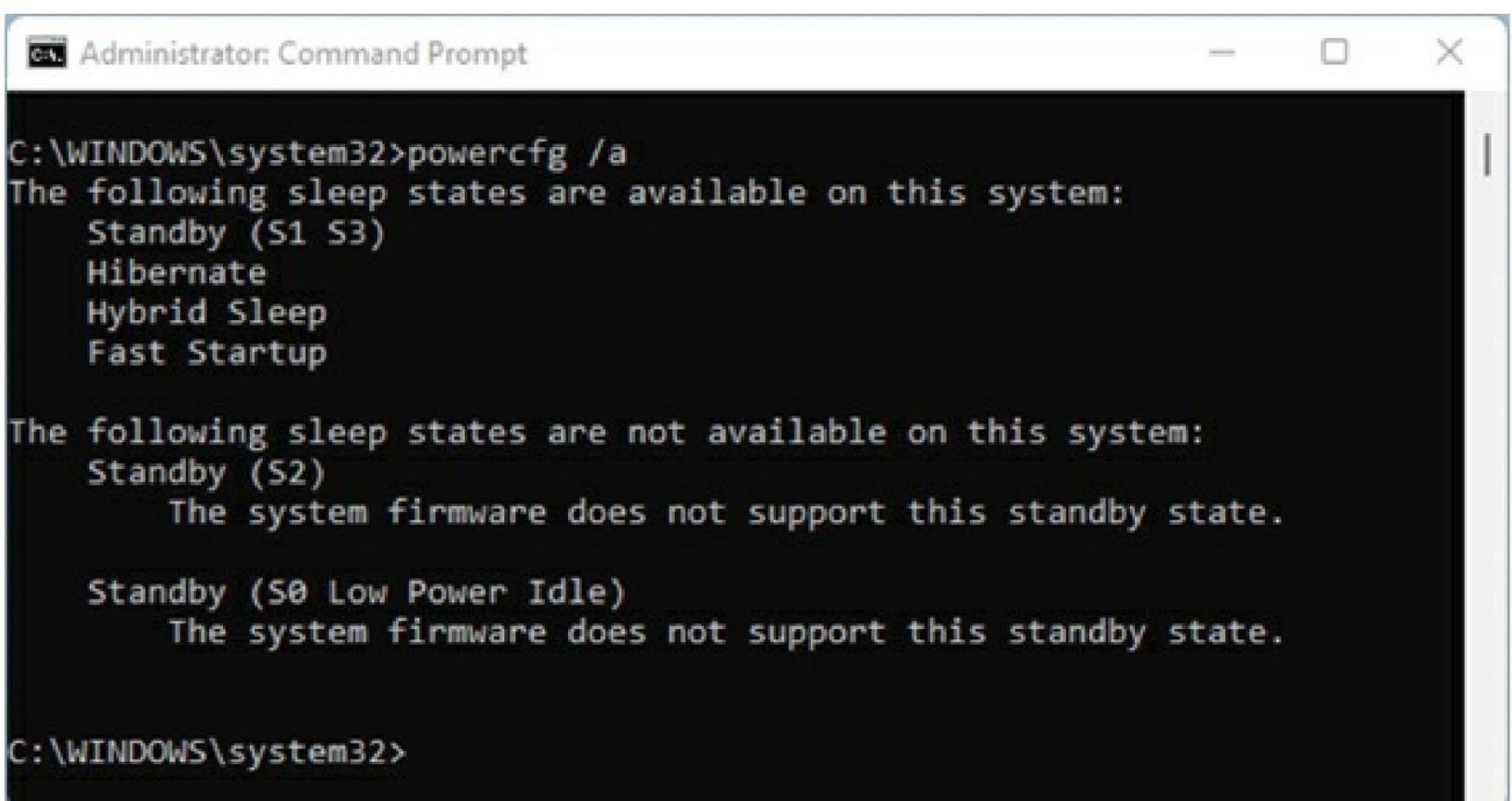


Figure 88: Power States list

Microsoft Windows systems support several sleep states. Systems appear to be off when they are in a sleep state but they are not fully shut down as the memory state is retained so that work can be resumed more quickly when the device is used again.

Windows supports four different sleep states S1 to S4 which shut down more of the system successively.¹⁰ Some features depend on how a manufacturer has designed chips on the motherboard.

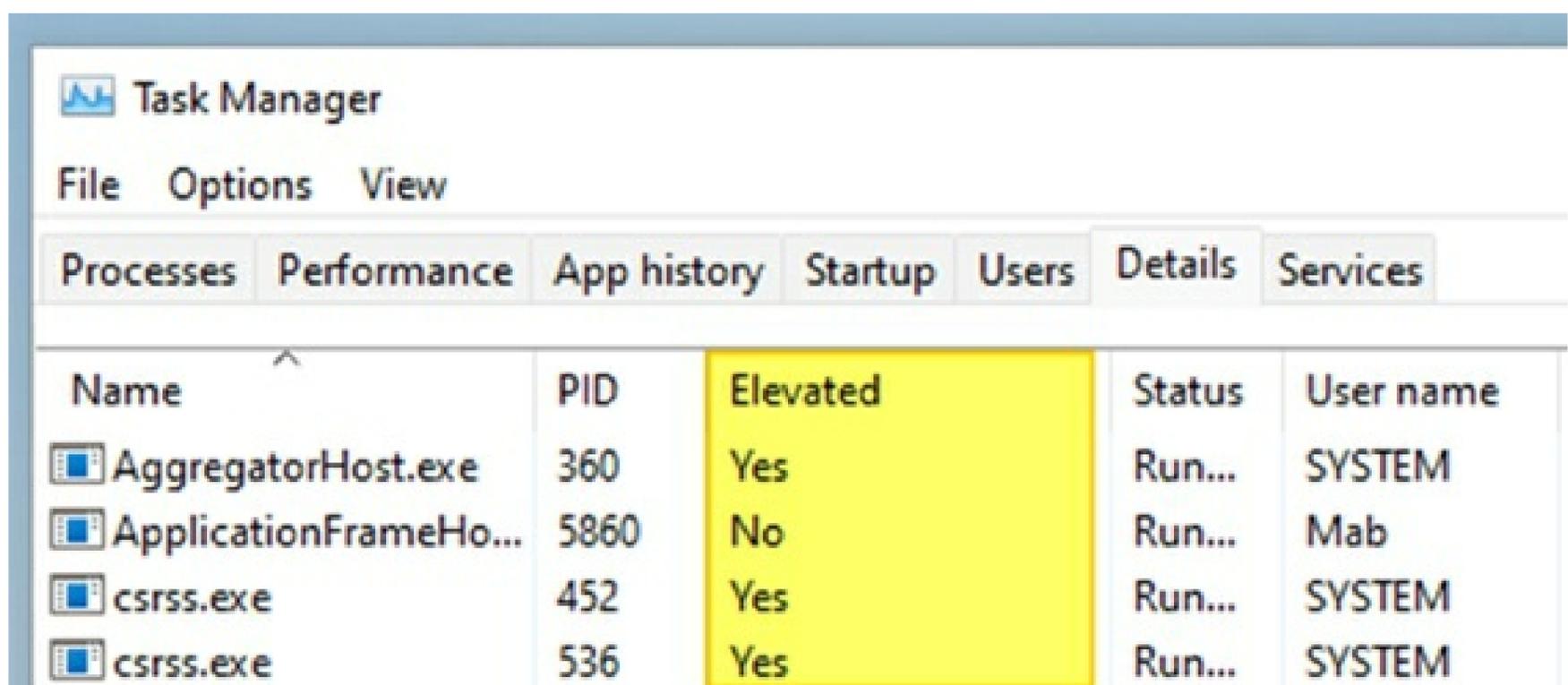
Windows administrators may list the supported sleep states of a device running Windows 11 using the following method:

- Select Start.
- Type CMD.
- Select Run as administrator to start an elevated command prompt window.
- Run the command `powercfg /a`

The output of the command lists the supported Sleep States S1 to S4 and the sleep states that are not supported.

See if a process is elevated (runs with administrative rights)

Sometimes it may be useful to find out if a process is running with user rights or elevated rights. Some programs require administrative rights to function and when these programs are run with user rights they may refuse to open or may not work properly when they do run.



1. Figure 9: Task Manager Elevated Data
2. Open the Windows Task Manager with the keyboard shortcut Ctrl-Shift-Esc.
 - . Select "more details" if the barebones version is displayed.
4. Switch to the Details tab.
 - . Right-click on any of the column headers e.g. Name or PID and select "Select columns" from the context menu.
 - . Check "Elevated" from the list of available columns.

Elevated reveals if a process is elevated (es) or not elevated (No).

Local accounts and non-administrator accounts

Microsoft's Windows 11 operating system supports two main account types: local accounts and Microsoft accounts.

The data of a local account resides on the local system. ou can't use the account name and password to sign-in to other devices unless you set up the same local account on the device as well.

A Microsoft account is a cloud account. It is synced automatically with the cloud and unlocks access to several features that are not available to local accounts (such as syncing of settings).

Microsoft is promoting the Microsoft account option and it may be the only option available during setup. All editions include options to switch to a local account after setup.

Note: you may use a local account and a Microsoft account on the same system but need to add a second user account to do so.

Display the account type

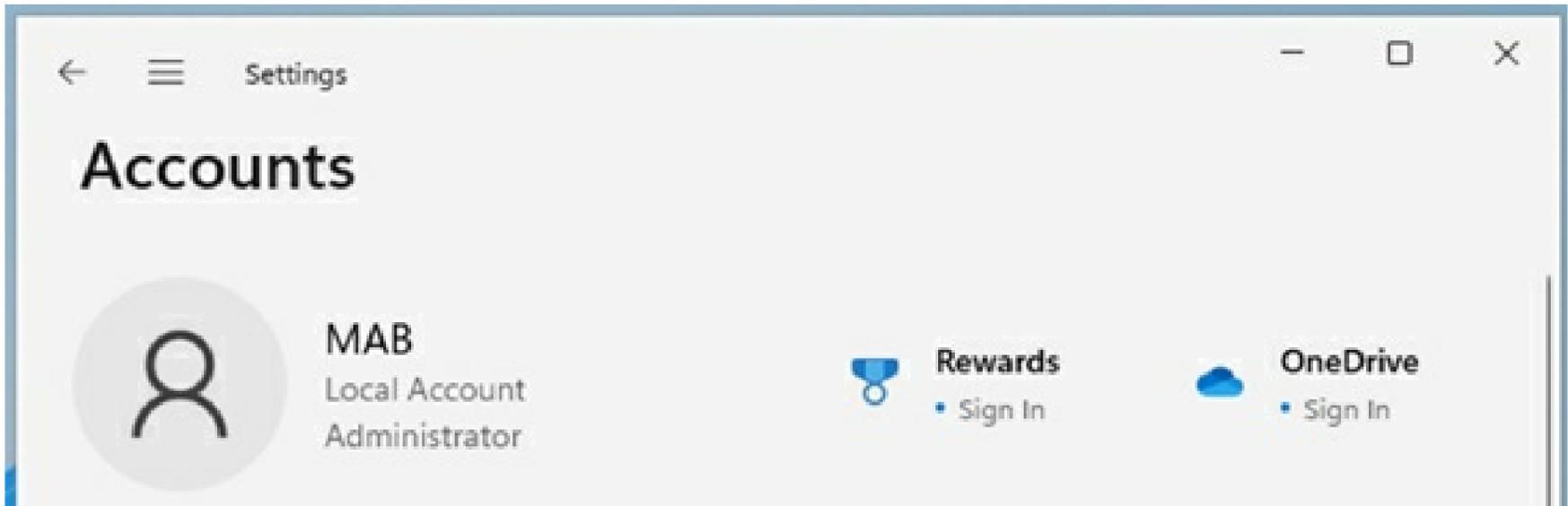


Figure 90: Account type and rights

Windows 11 displays the type of account and the rights of the account in the Settings application. Select Start Settings > Accounts to find out if the account is local or a Microsoft account and whether it has administrative rights.

Add new user accounts to Windows 11

Administrators may add new user accounts to a Windows 11 system. Some may create multiple accounts that they use others may want to create accounts for family members or roommates.

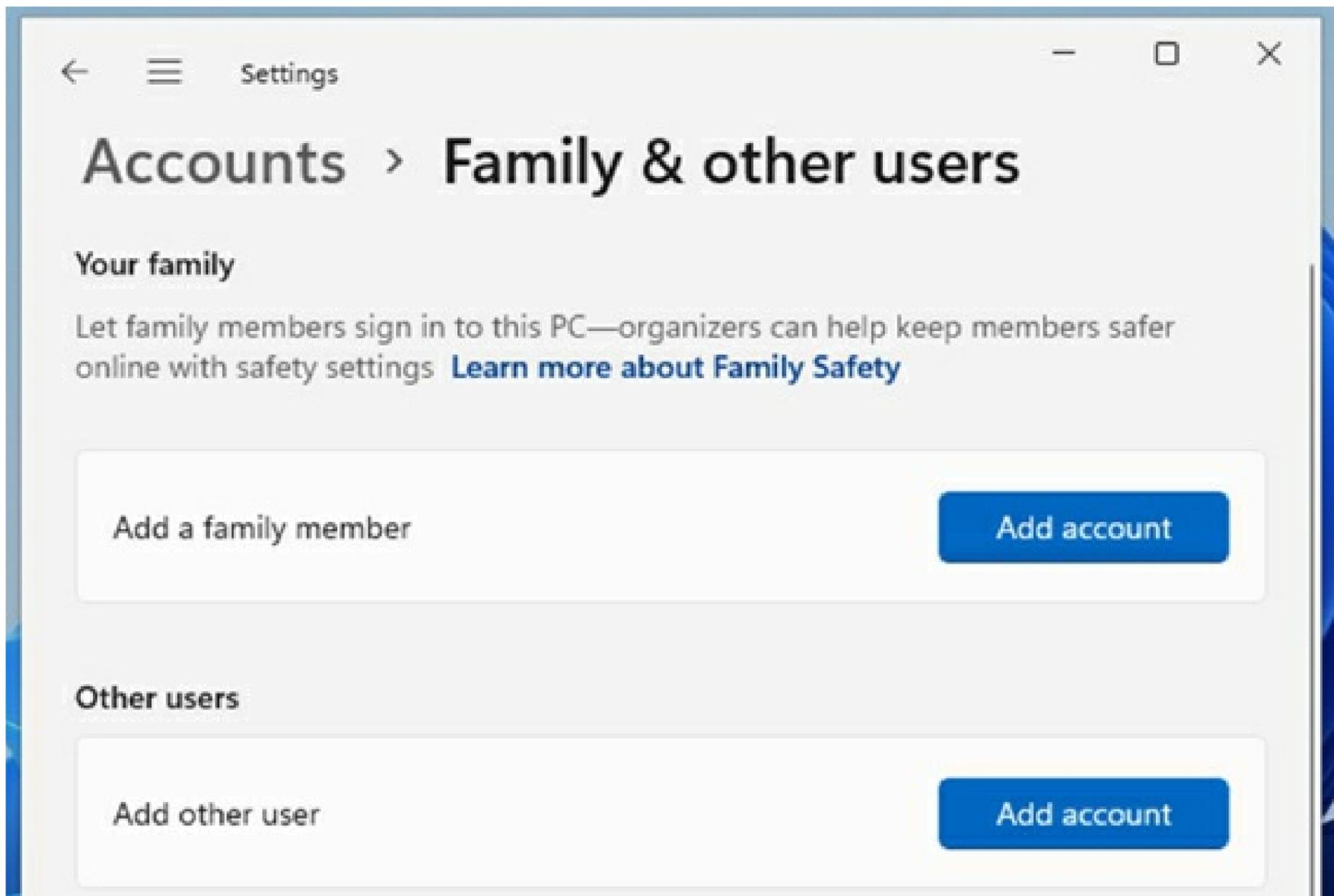


Figure 91: Add new user accounts

Accounts are set up in the following way:

1. Open the Settings application via Start > Settings or with the keyboard shortcut Windows-I.
2. Go to Accounts > Family > other users.
 - . To set up a new family member account select “add account” next to “add a family member”.
4. To set up a non-family account select “add account” next to “add other user”.

Note: family accounts require a Microsoft account user accounts can be a local or a Microsoft account.

The main difference between family and other user accounts is that family accounts may benefit from Microsoft Family Safety¹¹. Microsoft Family Safety enables families to join a group and make use of the following core features:

- Activity reporting – Lists online activities such as visited websites games that were played or apps that were used.
- Screen time limits – To schedule screen time and define for when and how long the device can be accessed by a family member.
- Content filters – Set up application and game filters and configure web and search filters that work in Microsoft Edge.
- Manage spending – Displays the spending of family members may add money to Microsoft accounts and control purchases made in the Microsoft Store for box.
- Locate family member – Save places and receive location alerts when family members leave or arrive at a saved location e.g. at school or home.
- Drive safety (requires Microsoft Family Subscription) – Displays driving information such as top speeds sudden braking and other details.

Set up a new family member account

Select “add account” next to “add a family member” to get started. A Microsoft account is required to continue. Either type the email address of the account or use the “create one for a child” link to create a new account for a

minor.

Select an username for the email address and the domain outlook.com or hotmail.com. Afterwards set a password for the account and decide whether you want to allow Microsoft to send you advertisements related to company services to the email address.

The account is created in the background and the child may start using it immediately by signing-in with the new account credentials.

Set up a new user account (non-family)



Figure 92: Other user account

Select “add account” button next to “add other user”. Microsoft prompts for an email address or phone number by default and you may supply these to add users with Microsoft accounts immediately.

Select “I don’t have this person’s sign-in information” to get an option to create a local account or set up an account for a Microsoft user that you don’t have all login information for. On the page that opens select “add a user without a Microsoft account” to create a local account.

An option to create a new email address is provided as well on the page.

On the next page select a user name for the new account and set a password that is required to sign-in. You may leave the password field empty.

Switch a Microsoft account to a local account

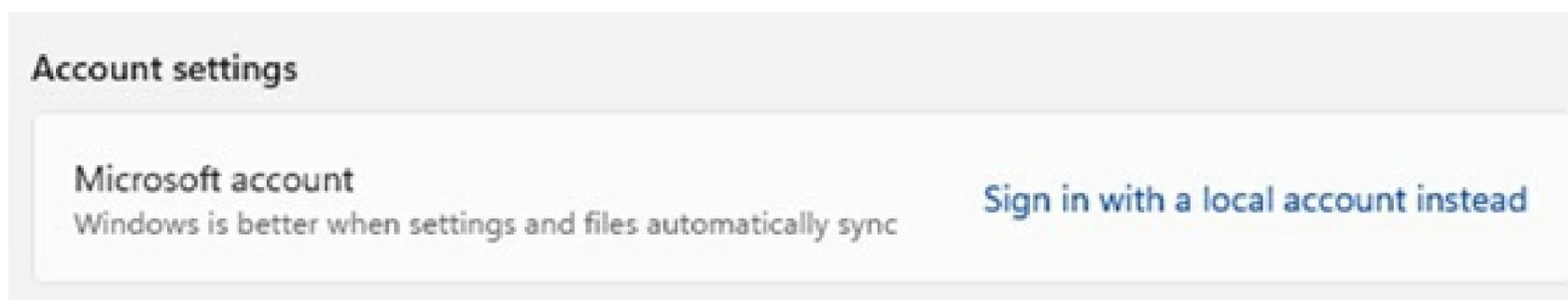


Figure 93: Switch to a local account

You can switch from using a Microsoft account to using a local account.

The following steps are required to switch to a local account.

1. Open the Settings application using Ctrl-I or by selecting Start Settings.
2. Go to Accounts Your Info.
 - . Activate “Sign in with a local account instead” under Account settings.
4. Confirm the “Are you sure you want to switch to a local account” prompt by selecting Next.
 - . Type the Microsoft account password for verification.
 - . Enter the local account information. Only the user name field is mandatory.
 - . Select “sign out and finish” to complete the process.

Next time you sign-in on the device you need to supply the local account password if set to sign-in.

Switch a local account to a Microsoft account

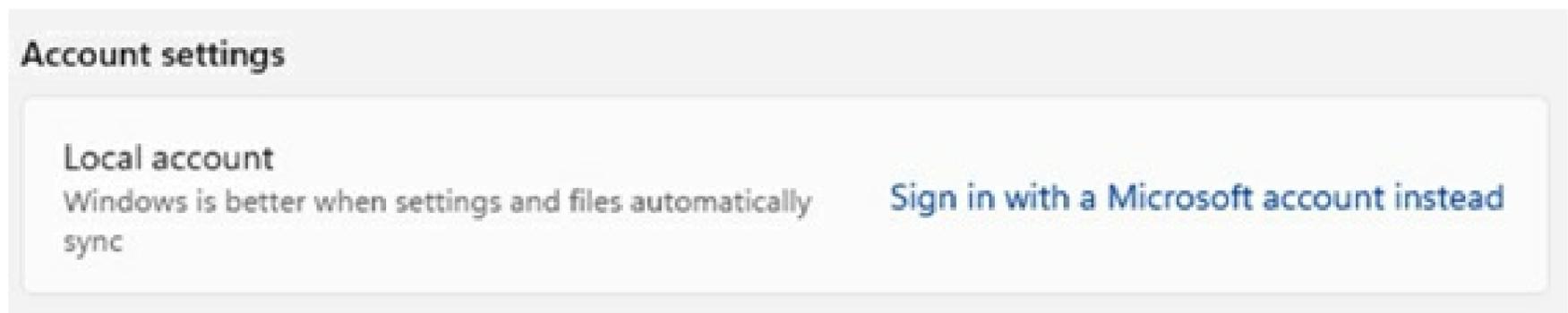


Figure 94: Switch to a Microsoft account

Windows 11 users may switch between local and Microsoft accounts when using a device that is powered by the operating system.

The following steps are required to switch a local account to a Microsoft account:

1. Open the Settings application using Ctrl-I or by selecting Start Settings.
2. Go to Accounts Your Info.
 - . Select "Sign in with a Microsoft account instead" under Account settings on the page that opens.
4. Type the email address phone number or Skype ID in the window that opens and select Next.
 - . If you have set up an authenticator app use it to verify the request.
 - . Type the current account password on the next page.
 - . You may be asked to set up a PIN. You can set it up and remove it later if you don't require it or activate the close-icon of the window to close the setup process.

Next time you sign-in to Windows 11 you are asked to type the password of the Microsoft account.

Guest accounts

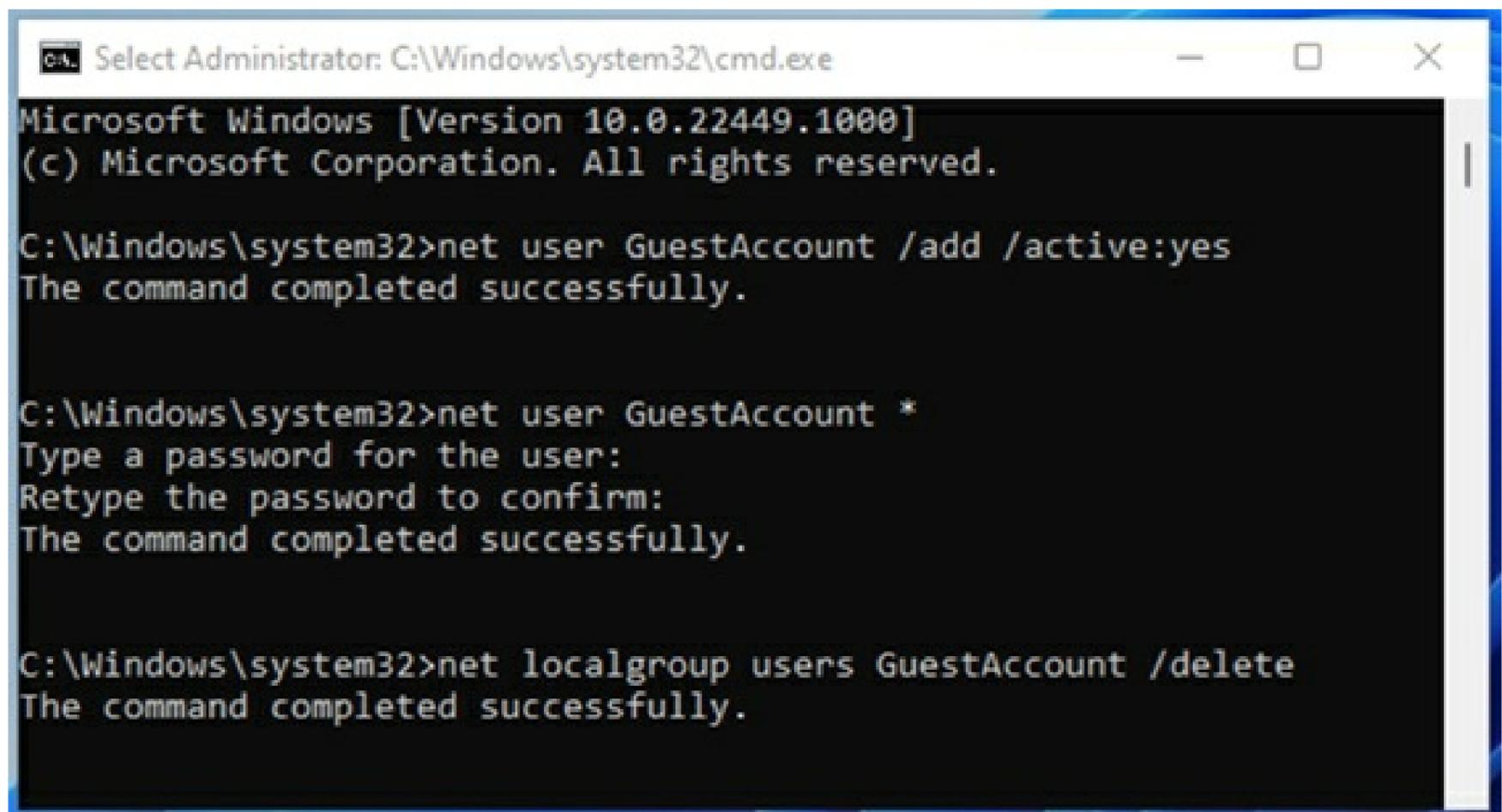


Figure 95: Create a Guest account

Guest accounts are designed for specific use cases. Windows 11 supports different types of accounts with administrator and regular user accounts being the most common account types.

Guest accounts offer temporary access to the operating system. Internet cafes may use guest accounts for users but guest accounts may also be used in other environments usually when an unspecified number of users needs limited access to the device.

Guests have limited user rights and any changes that are made to the profile are only available until the system is shut down or the guest logs off. Guests may access applications and use the Internet but they have no rights to install software or change settings on the system.

The best way to create a guest account is via the command line:

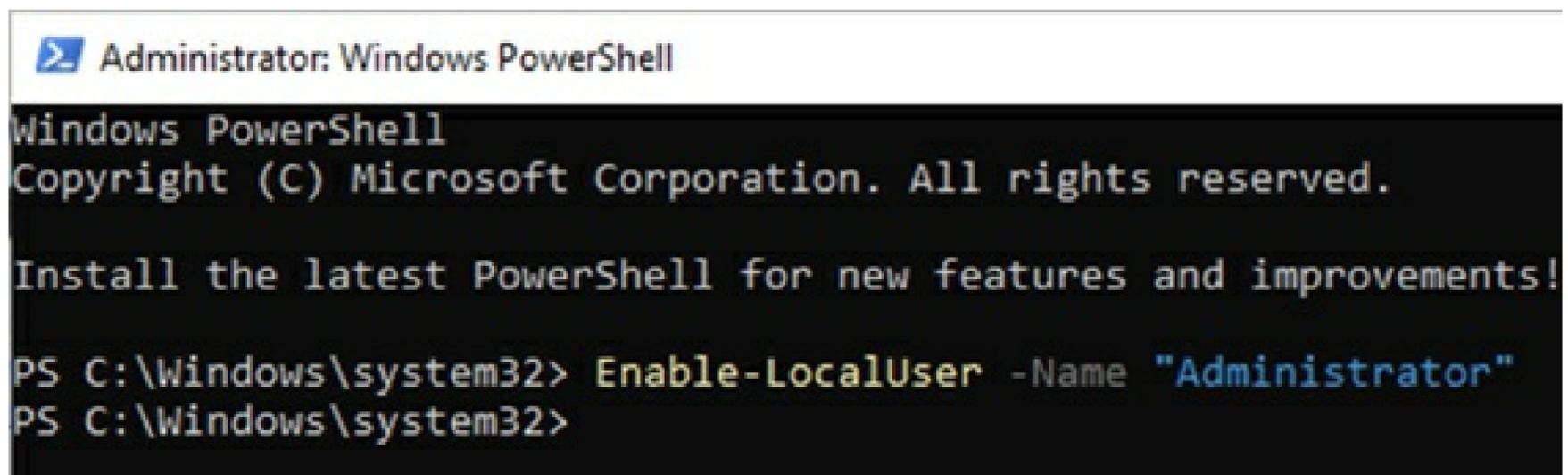
1. Select Start to open the Start interface.
2. Type cmd.exe.
 - . Select “run as administrator” to launch an elevated command prompt window.
4. Run the command `net user GuestAccount /add /active:yes` to create a new standard user account with the name GuestAccount.
 - . Run the command `net user GuestAccount *` to set a new password for the account. Any password can be set even an empty one.

The account is ready for use and users may sign-in using the username GuestAccount and the set password. It is a standard user account at the time but the following commands change that:

1. Run the command `net localgroup users GuestAccount /delete` to remove the user GuestAccount from the users group.
2. Run the command `net localgroup guests GuestAccount /add` to add the GuestAccount user to the guests group.

Sign-out of the current account to test the new account. Select GuestAccount during sign-in or type the username and the password to do so.

Enable the built-in administrator account



```
Administrator: Windows PowerShell
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements!

PS C:\Windows\system32> Enable-LocalUser -Name "Administrator"
PS C:\Windows\system32>
```

Figure 96: Enable Built-in Administrator account in PowerShell

Windows 11 comes with a built-in administrator account by default. It is disabled on most systems by default but users with administrative rights may enable it. The account cannot be deleted but it can be disabled.

Several methods exist to enable the built-in administrator account. Here are two options:

Using the Command Prompt

1. Select Start type cmd.exe and load the Command Prompt using “run as administrator”.
2. Run the command `net user Administrator /active:yes` to enable the built-in administrator account.

Using PowerShell

1. Select Start type powershell and load Windows PowerShell using “run as administrator”.
2. Run the command `Enable-LocalUser -Name Administrator` to enable the administrator account.

The built-in administrator account has no password by default. You may want to change that as a security precaution to avoid unauthorized access to the PC system. To change the command using an elevated Command Prompt window run `NET USER Administrator password`. Replace `password` with the actual password that you want to set.

Using non-administrator accounts

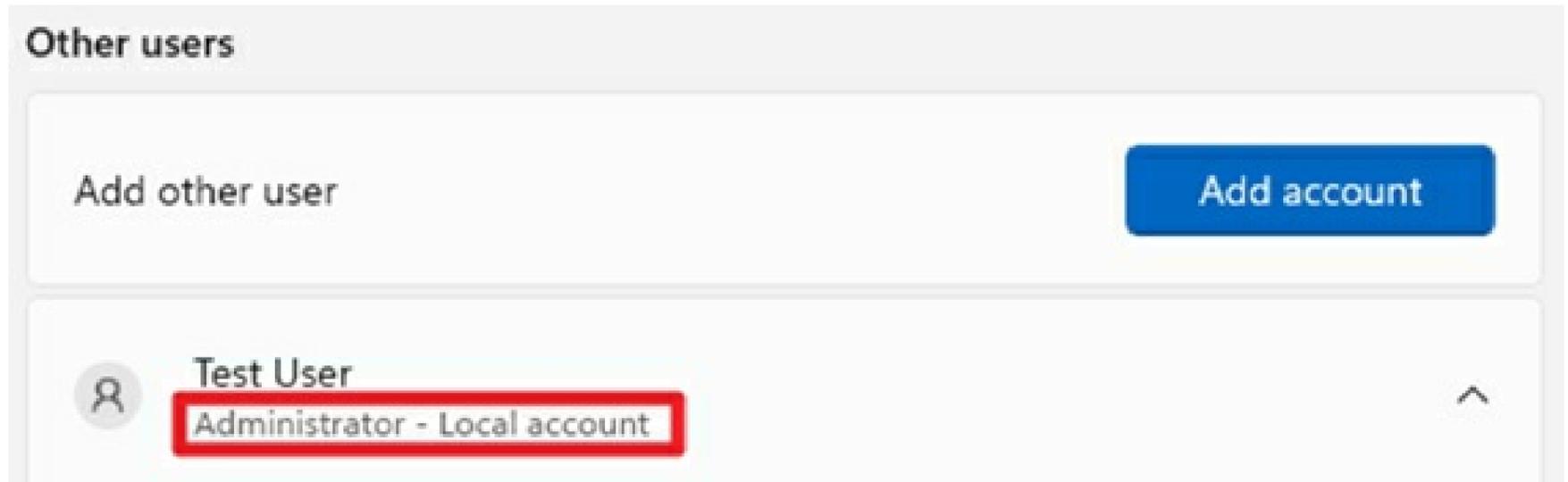


Figure 97: Windows 11 account info

The use of non-administrator accounts improves day-to-day security significantly on Windows devices. The first account which is created during setup is always an administrator account by default on Home systems.

Many experienced users create a second account often a local one that has normal user rights and not administrative rights.

Malware including viruses trojans or worms may be limited in what harm they can do if the user account does not have administrative rights.

Some operations are less comfortable for the user this includes installing or running programs that require elevation changing certain system settings using the Group Policy and others. There are workarounds for all of these in place and the benefit of improved security outweighs the disadvantages in most cases.

Account creation has already been covered in previous sections of this chapter. Each user's account type is displayed underneath the user name. Whether it is a local account or Microsoft account is displayed there as well.

Change the account type

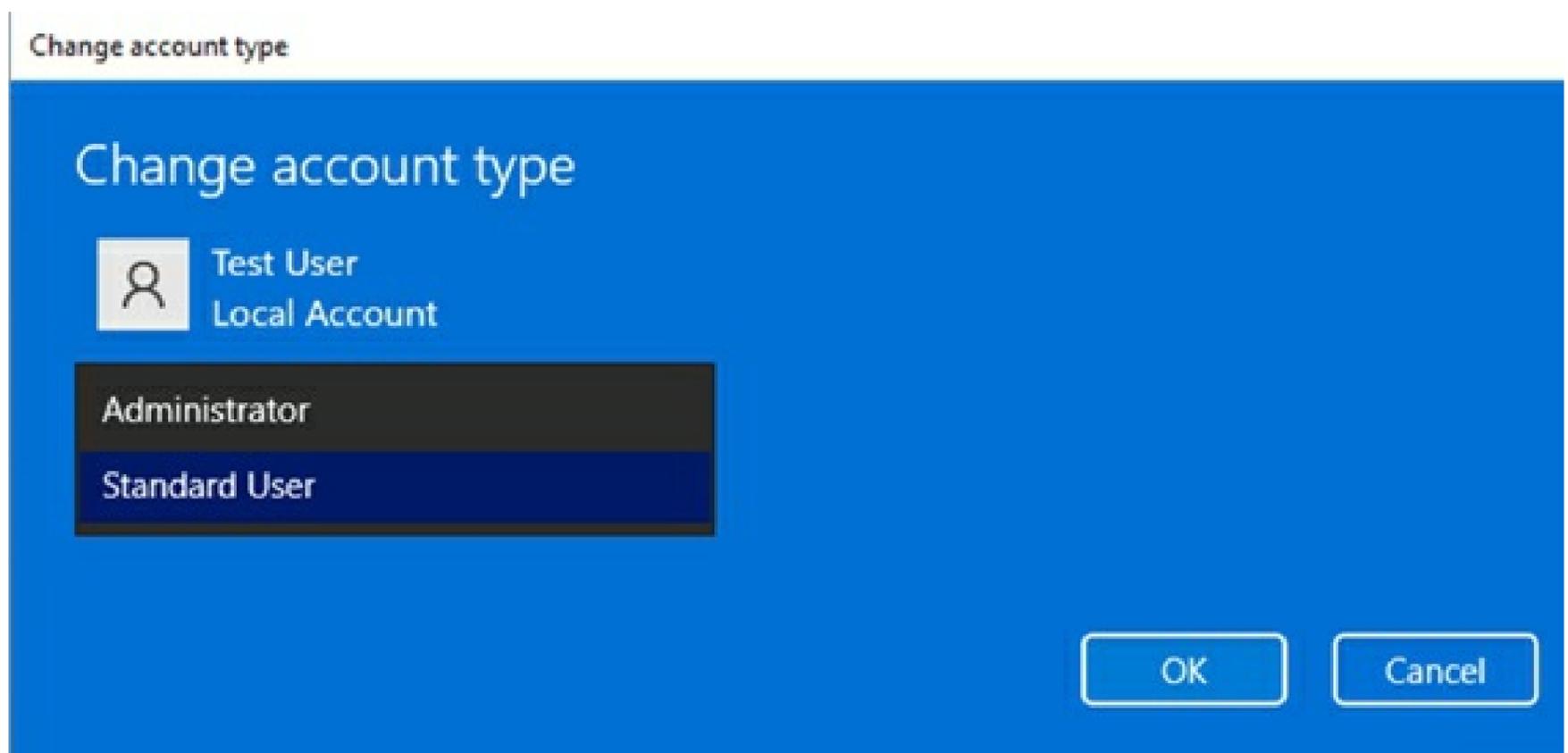


Figure 98: Change the type of an account

1. Go to Settings > Accounts > Family > other users.
2. Expand the “other user” account or the “family account” that you want to change the account type for.
 - . Activate the “change account type” button.
4. Select “Standard User” or “Administrator” in the window that opens.
 - . Confirm the change with a click on the OK button.

The change is immediate a confirmation is not required.

Removing a user account

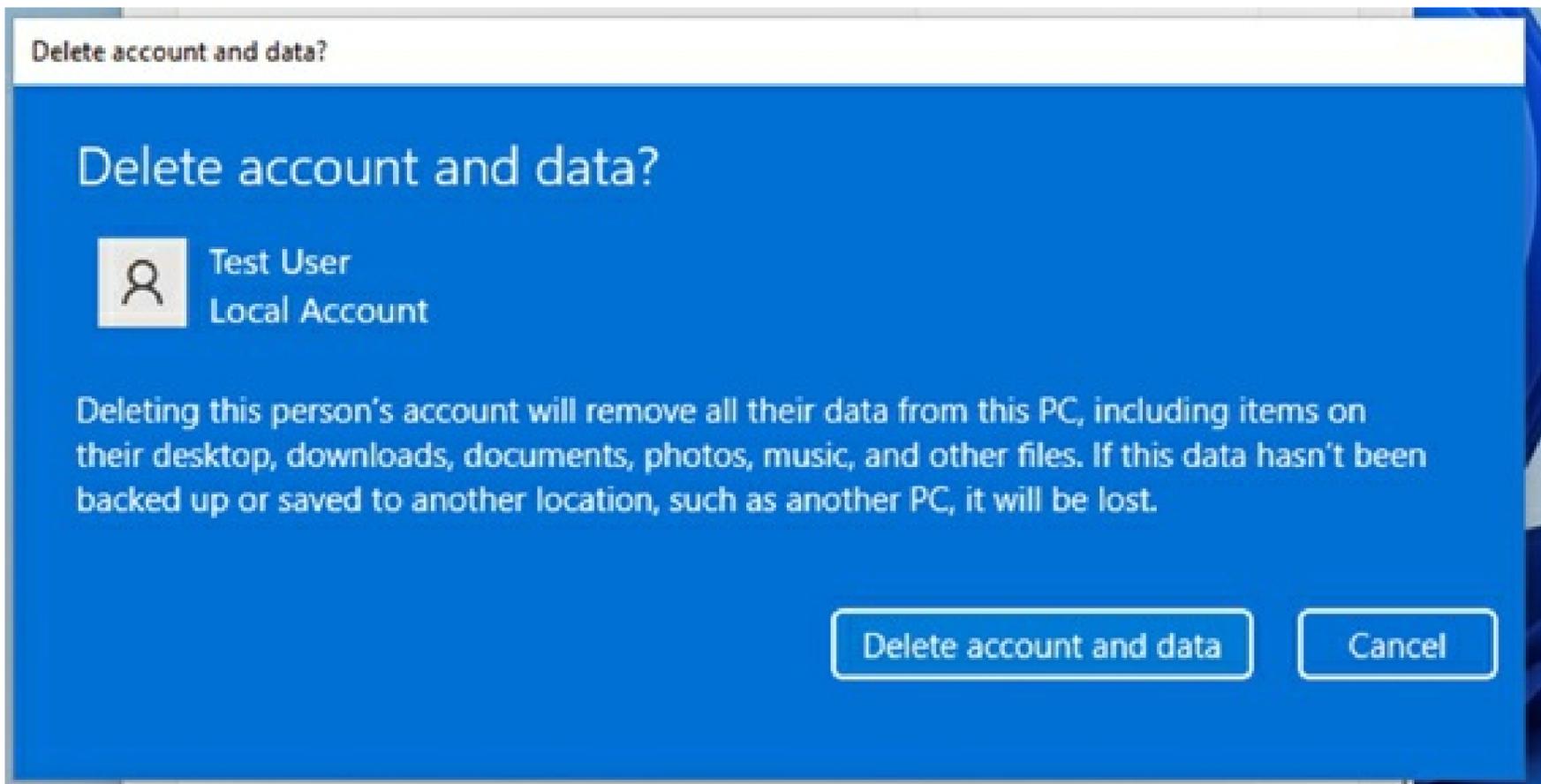


Figure 99: Delete user account

All Windows 11 user accounts with the exception of the main account and default accounts can be removed from the Settings application.

Note: the removal of a user account deletes downloads documents other files that were downloaded transferred or created. The data is not recoverable through normal means once the account has been deleted.

1. Select Start > Settings or use the keyboard shortcut Windows-I to open the Settings application.
2. Go to Accounts > Family > other users.
 - . Expand the account that you want to remove. Note that you may only remove “other user” accounts from the Settings application. Family member accounts need to be removed online by signing-in to <https://family.microsoft.com/>.¹²
4. Select “remove” next to account and data to remove the account.
 - . Confirm the prompt with a click on “Delete account and data”.

Enable passwordless account feature for Microsoft accounts

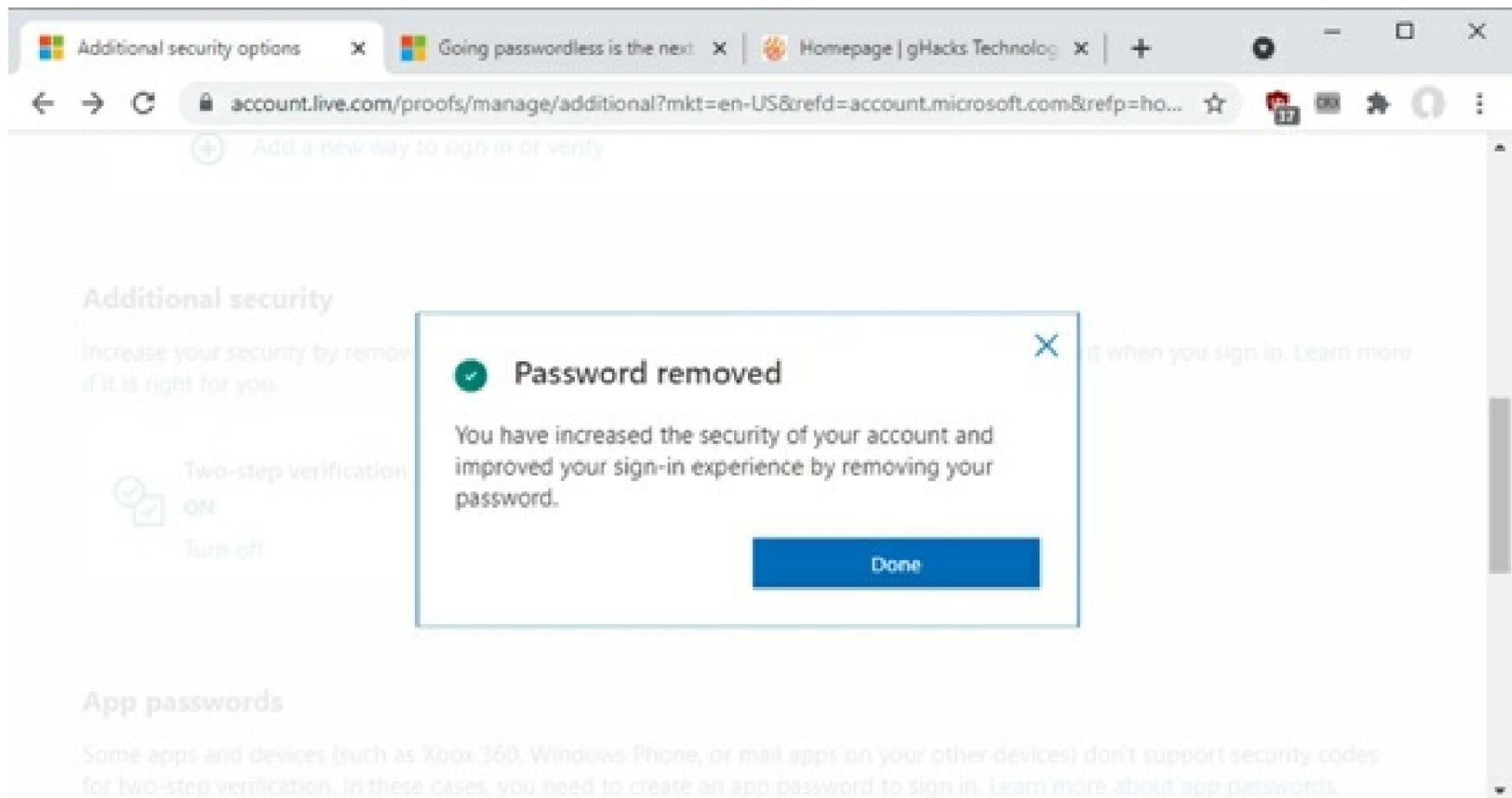


Figure 100: Microsoft Passwordless account

Microsoft released the passwordless account feature for Microsoft accounts in September 2021. The feature removes the password of the account and replaces it with another form of authentication. In Microsoft's case the Microsoft Authenticator application.

Users who enable the feature are asked to confirm login attempts after selecting their user account on the sign-in screen using the Microsoft Authenticator application. Successful confirmation signs the user in as if a password would have been entered.

Note: Some older applications and services including Xbox 360 and early versions of Microsoft Office don't support the passwordless account feature.

To make a Microsoft account passwordless follow these instructions (there is a way to restore the use of a password):

1. Download the Microsoft Authenticator¹ application and sign-in to the Microsoft account.
2. Open the Microsoft account website and sign-in to the account that you want to make passwordless.
 - . Scroll down to Additional security.
4. Select the Turn on link under Passwordless account.
 - . Select the next button when the informational overlay is displayed.
 - . You are asked to confirm the removal of the password in the Authenticator application.
 - . The password is removed from the account after successful confirmation.

Microsoft Edge

Windows 11 includes the new Chromium-based Microsoft Edge web browser as the default browser. Edge supports Internet Explorer Mode to load webpages designed for Microsoft's Internet Explorer browser.

Edge supports browser extensions. It uses the same format as Google Chrome and supports the installation of Google Chrome extensions because of that.

Important Microsoft Edge preferences

Microsoft Edge includes a number of important preferences some are enabled by default others are disabled. Load `edge://settings` to load the main Settings page.

Here is a list of important preferences to look at on the first run of the web browser:

- our Profile Sync – Set up data synchronization between Edge browsers or disable it.
- our Profile Personal Info – Edge save's personal information that is entered on webpages by default.
- our Profile Import browser data – to import data from other browsers.
- Privacy search and services – Configure tracking prevention. Set to balanced by default it may be changed to basic (less blocking better compatibility) or strict (more blocking less compatibility).
- Privacy search and services Optional diagnostic data – disable if you want to block the sending of data to Microsoft.
- Privacy search and services Block potentially unwanted apps – enable to block apps that Windows Defender considers potentially unwanted.
- Privacy search and services Secure DNS – enable to use a secure DNS provider to improve privacy.
- Appearance – increase or decrease the font size in Edge.
- Start home and new tabs When Edge starts – configure whether Edge should open the tabs from the previous session
- Start home and new tabs New tab page – customize the layout and content of the New Tab page in Edge.
- Share copy and paste – switch the URL copy and paste format to plain text.
- Cookies and site permissions – configure site permissions e.g. set them to allow sites access to them without user interaction to ask or to deny.
- Downloads – change the default location for downloads in Microsoft Edge.
- System – configure the Sleeping Tabs feature of the browser. If enabled Edge will put tabs to sleep automatically to free up memory.

Install browser extensions

Users of Windows 11's default web browser Microsoft Edge have two main options when it comes to the installation of extensions:

1. Install extensions from the Microsoft Store.
2. Install extensions from the Chrome Web Store.

The Chrome Web Store hosts thousands of extensions the selection at Microsoft's own store for Edge is limited but it is a good idea to check there first.

Install extensions from the Microsoft Store

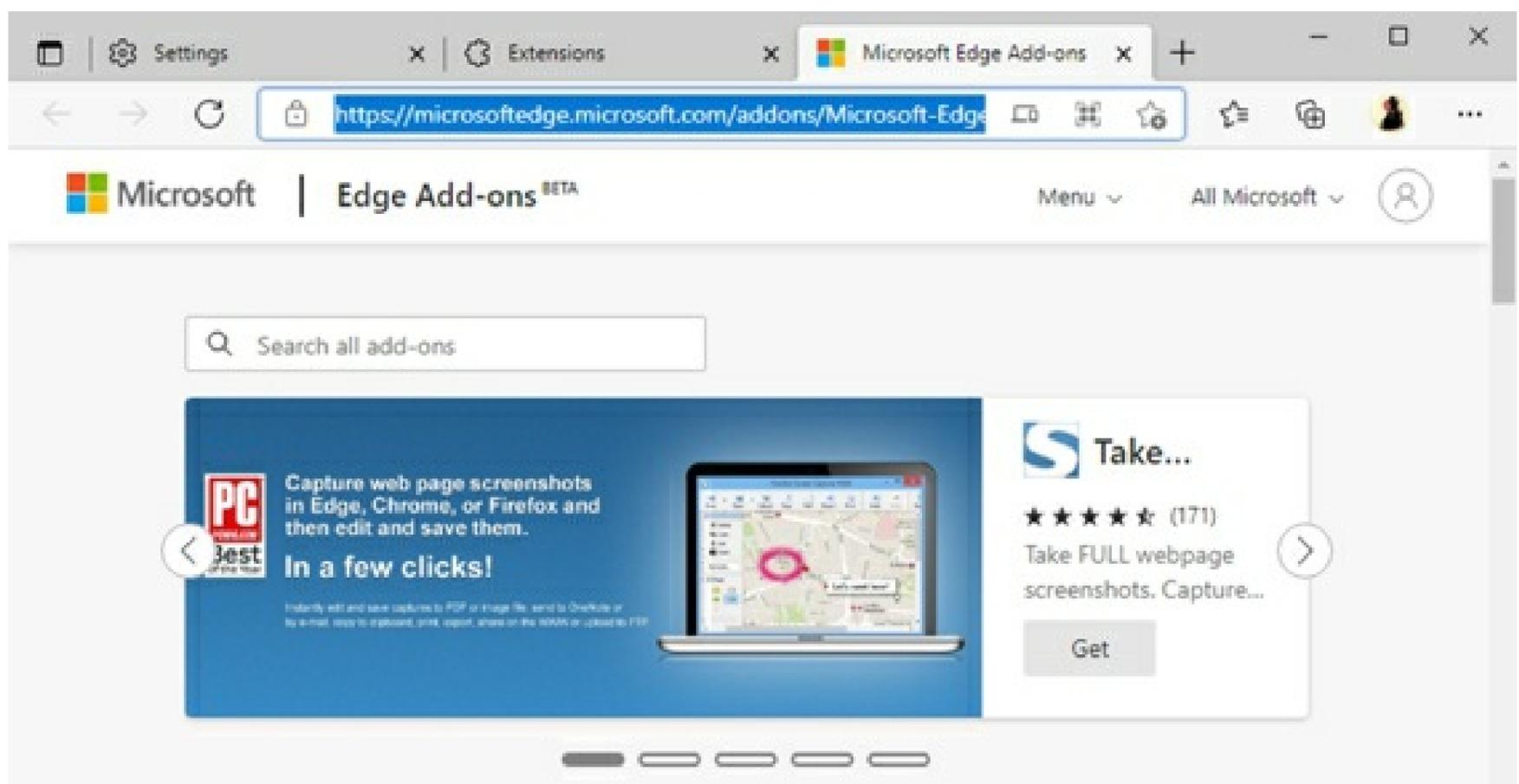


Figure 101: Microsoft Edge Extensions

Official Edge extensions are hosted on the Edge Add-ons website. The easiest option to access the store is to open `edge://extensions` in the web browser. The page contains a link “Get extensions for Microsoft Edge” that loads the add-ons store in the browser.

Select the “get” button on the extension’s page to install it in the Edge browser. Microsoft Edge displays the permissions that the extension has in a prompt. Select “add extension” to install it in Edge.

Install extensions from the Chrome Web Store

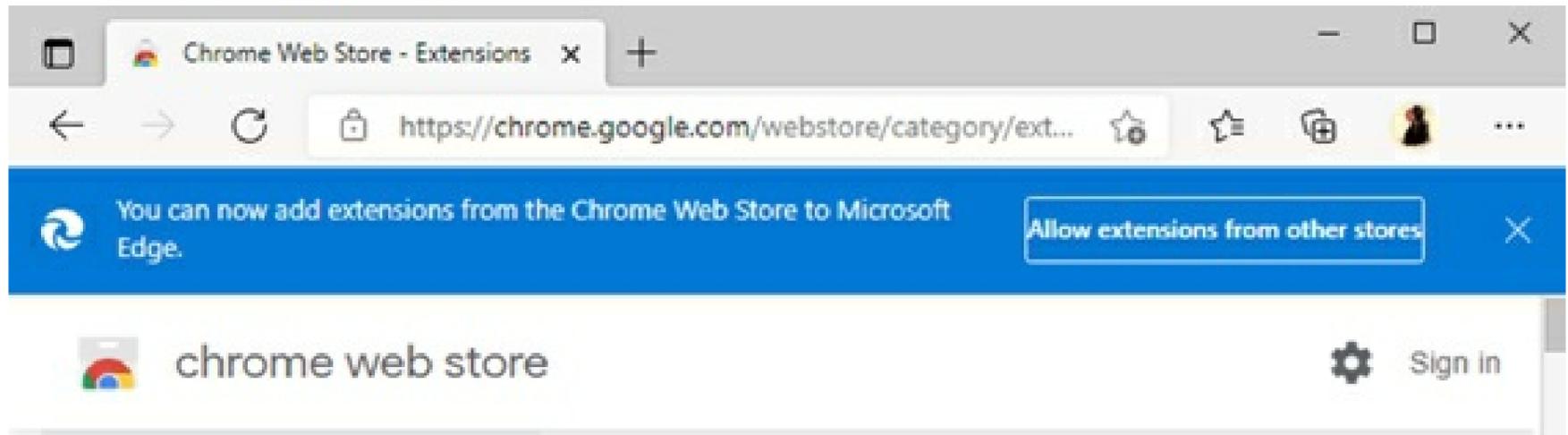


Figure 102: Microsoft Edge install Chrome extensions

Microsoft Edge is based on the same source as Google Chrome this makes the browser compatible with most extensions for Google Chrome.

Microsoft Edge displays a notification at the top when the Chrome Web Store is opened for the first time.

You can now add extensions from the Chrome Web Store to Microsoft Edge.

A click on the “allow extensions from other stores” button displays a prompt. Select allow to unlock installing extensions from the Chrome Web Store in Edge.

Chrome extensions may be added with a click on the “add to Chrome” button on the extension’s page on the Chrome web store from that moment on.

Manage browser extensions

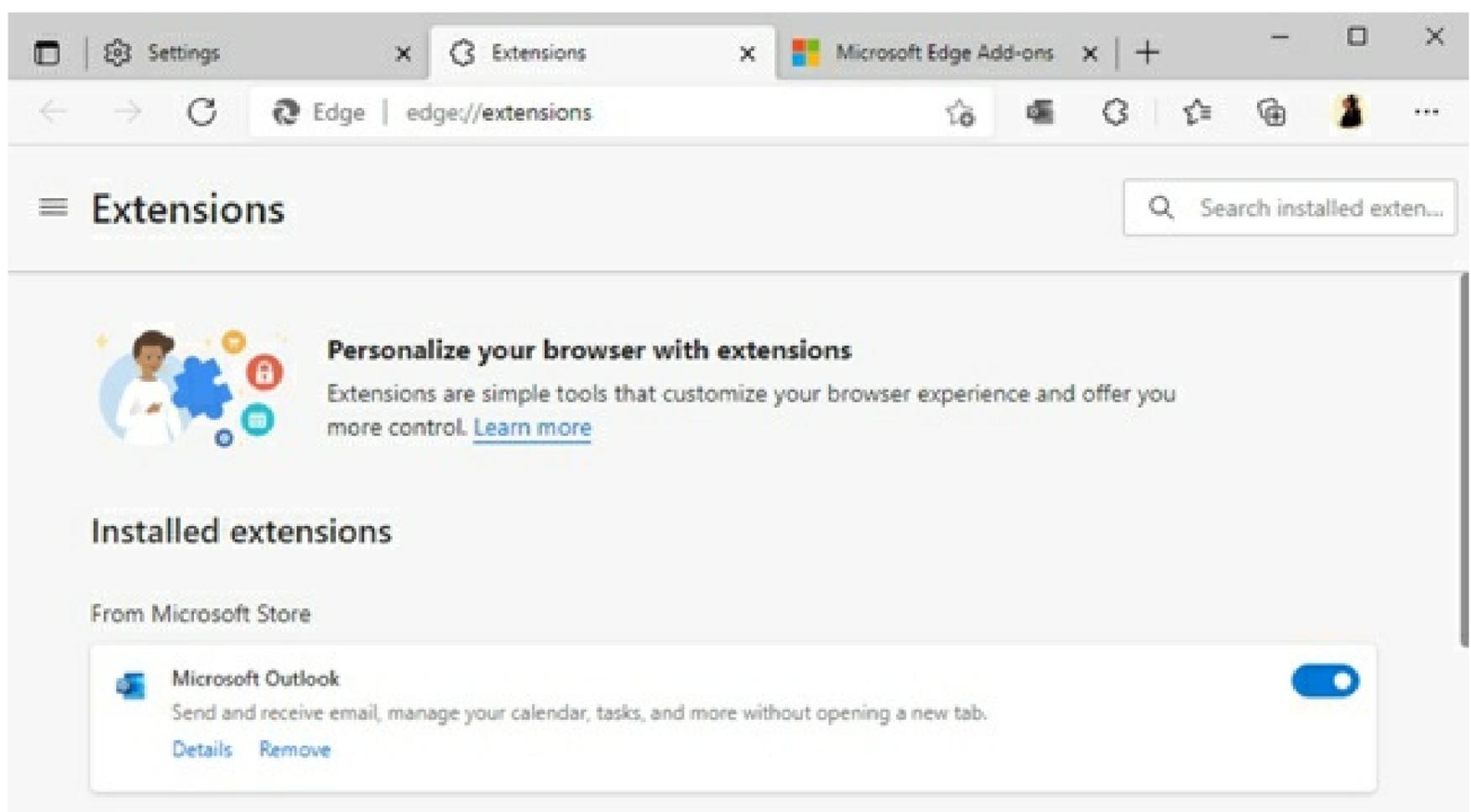


Figure 103: Microsoft Edge Manage Extensions

Load `edge://extensions` to display all installed extensions. Each extension includes a toggle to turn it off (without removing it) and an option to remove it from Microsoft Edge again.

A click on Details displays additional information about the selected extension including its permissions, site access preferences, and whether it is allowed to run in InPrivate mode and may access file URLs.

Site access defines whether the extension may read and change data on all sites that are visited (default), only when it is clicked (activated), or only on specific sites. [14](#)

InPrivate is Microsoft Edge's private browsing mode. The browser does not record data that it collects normally, including the browsing history or cookies, when in that mode.

Power

Power Buttons

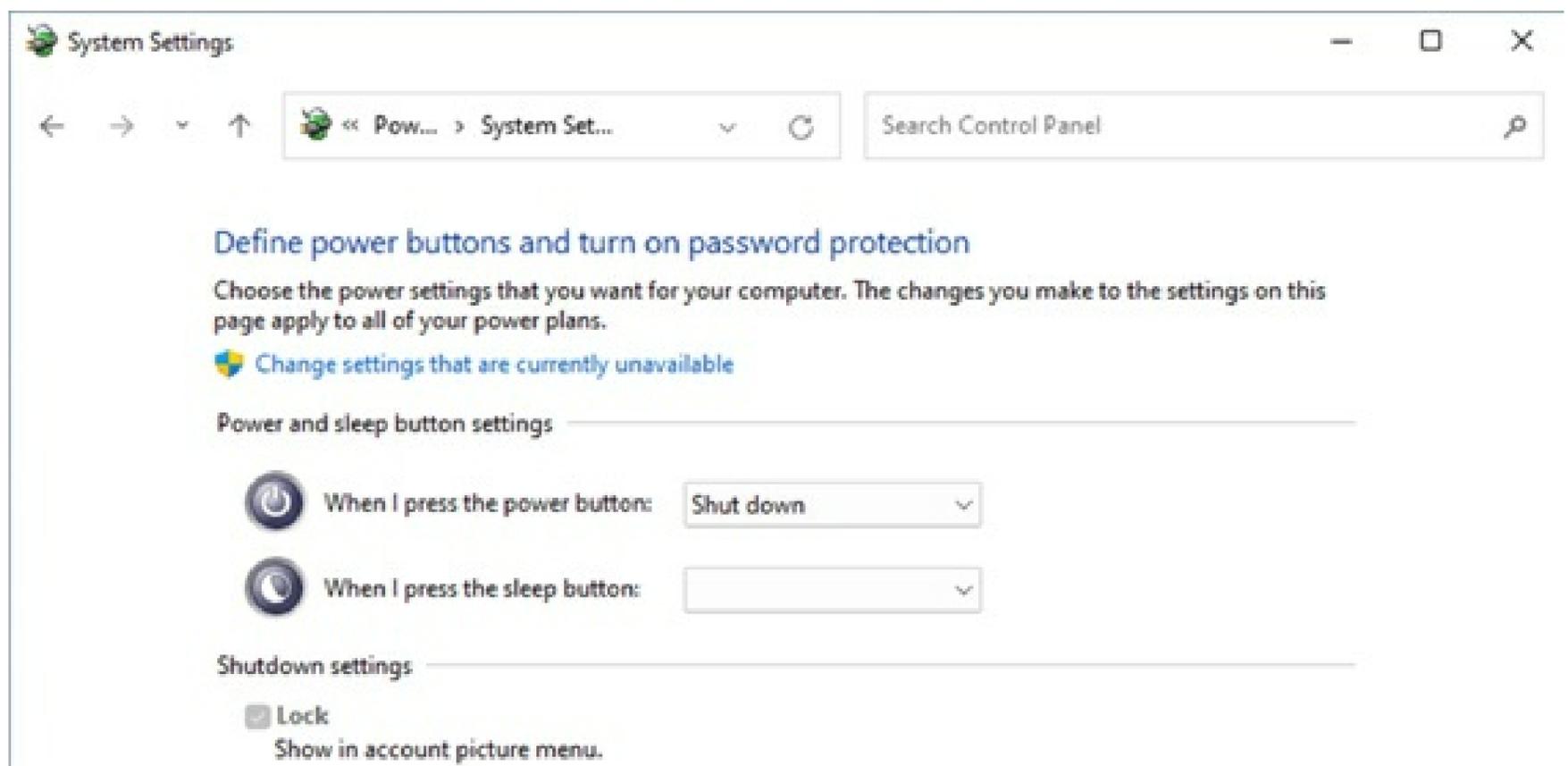


Figure 104: Power Buttons

Windows 11 users may configure power options; these define actions when the lid of a laptop or tablet is closed and when the power or sleep buttons are pressed on the device.

The Windows- menu links to the Power Options, but these are not the right ones. It opens the Settings application with barely any configuration options. It is possible that Microsoft is going to add to the page in future releases, but for now, it is the Power Options of the Control Panel that holds all the options.

1. Open Start and run a search for Control Panel and open the result.
2. Select Hardware and Sound.
 - . Under Power Options, select "Change what the power buttons do".

Windows 11 displays options based on the device type. If the device has no lid, the option to configure the lid closing behavior is not provided.

The following three options may be listed on the page:

- When I press the power button – Defines the action that Windows executes when the power button on the device is activated.
- When I press the sleep button – Defines the action that is executed when the Sleep button is activated.
- When I close the lid – Defines the action that is executed when the lid of the laptop or tablet is closed.

Options include “do nothing” sleep hibernate and shut down. Devices that have a battery show the options for “on battery” and “plugged in” separately. Activate “save changes” in the end to save the new settings.

Configure Screen turning off and PC Sleep

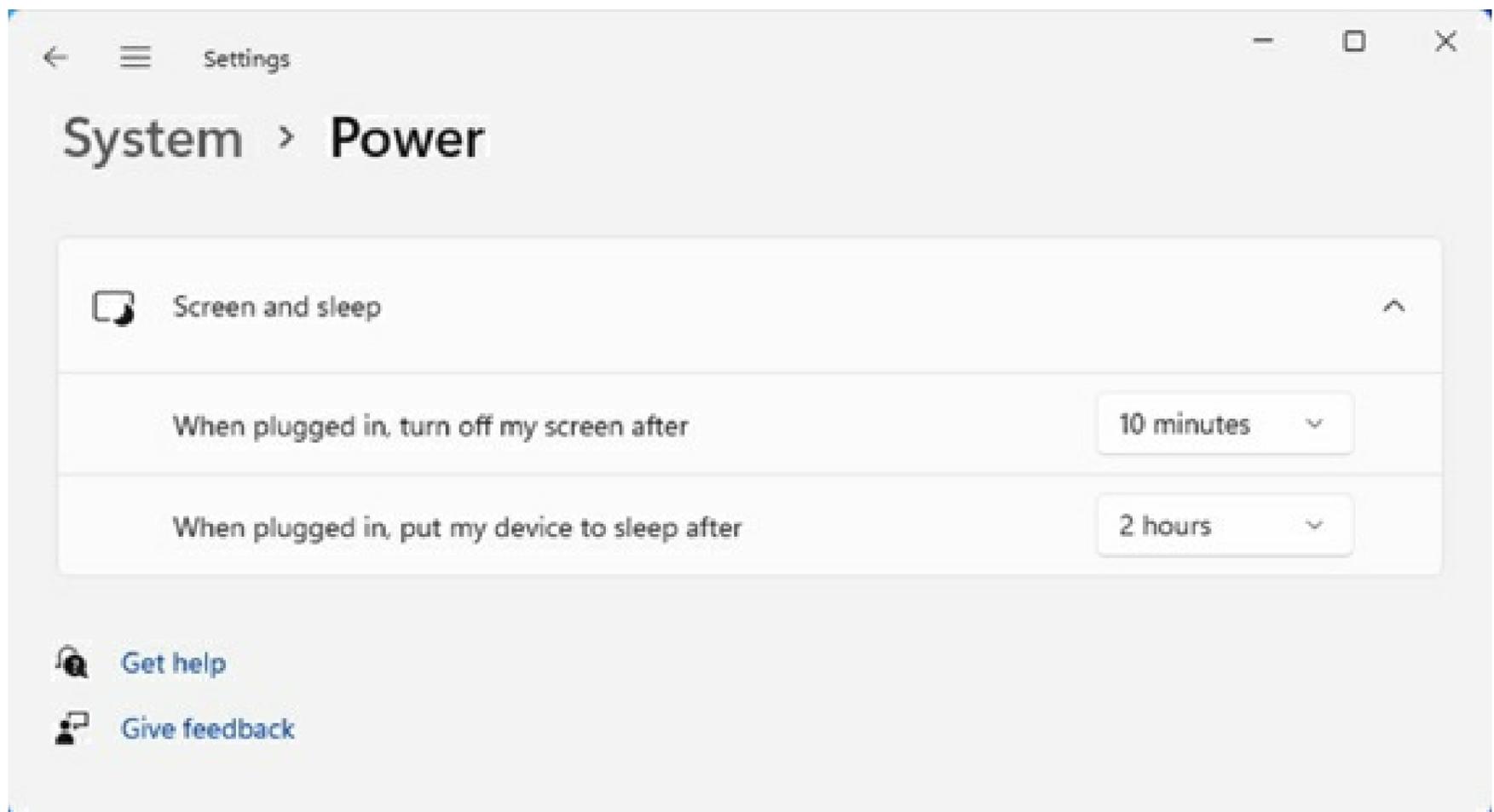


Figure 105: Power Settings

Windows 11 may turn off the monitor and enter sleep mode automatically after a period of inactivity. Users of the operating system may configure the behavior e.g. to prevent Windows 11 from ever going to sleep or to change the period of inactivity before either mode is activated.

The menu that Windows 11 displays depends on the type of device. Mobile devices such as laptops get two pairs of options one for battery mode and the other for plugged in mode. Desktop PCs on the other hand get only the plugged in options.

1. Open the Settings application either with Windows-I or by selecting Start Settings.
2. Navigate to System Power.
 - . Expand the Screen and Sleep section.
4. Change the sleep and screen timeout values on the page. Both can be turned off to keep the screen and the PC active all the time.

Networking

Check the Data usage of apps and the system

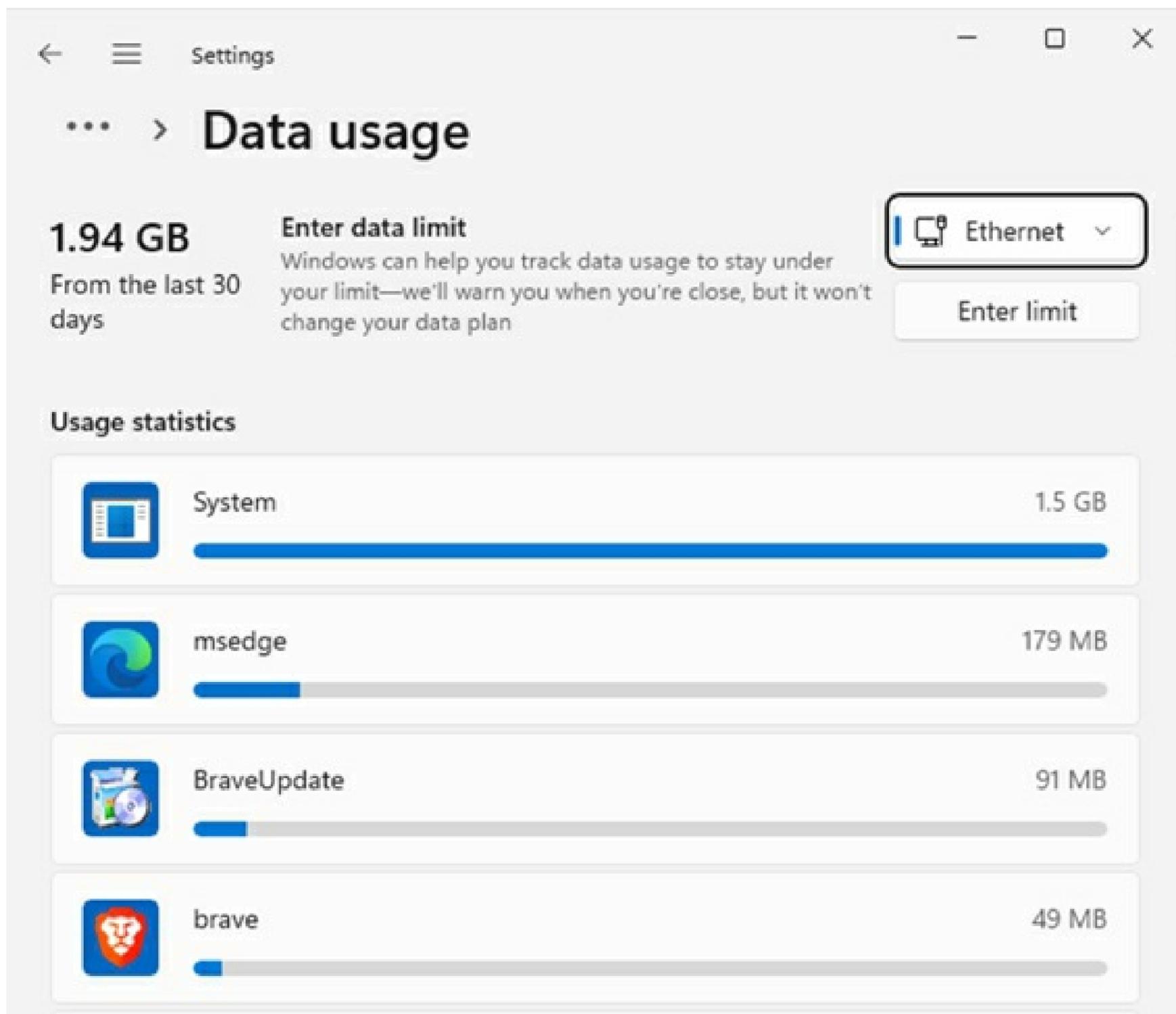


Figure 106: Networking Data Usage

Windows 11 keeps track of the data usage of applications and the system. It is a useful feature especially for users without unlimited data.

The listing reveals the programs that use the most data and it may help optimize data usage.

- Open the Settings application either with the shortcut Windows+I or by going to Start Settings.
- Navigate to Network Internet.
- Click on the Data usage section at the top of the page.

Windows 11 displays the usage statistic from the last 30 days. The page displays the total data but also data by program or system. An option to switch to the statistics of a different network adapter is displayed at the top.

Setting data limits

Set data limit

Limit type

- Monthly
- One time
- Unlimited

Monthly reset date

Data limit

Unit

Figure 107: Networking data limit

Windows administrators may set data limits for network adapters. While still on the Data usage page select the “Enter limit” option at the top after selecting the network adapter that you want to set limits for.

The following options are available:

- Limit Type – Set to monthly one time or unlimited.
- Monthly reset date – if set to monthly set the day of the month on which the limit is reset.
- Days until data expires – only available if “one time” is selected. Defines for how many days the data is available before it expires.
- Data limit – set the data limit in Megabytes (MB) or Gigabytes (GB).

ou may need to repeat the process for other network adapters that are available and used.

Turn off Wi-Fi automatically when connected to Ethernet

Windows supports several connection types and may continue to keep them all turned on even if only one is used. If you connect a device that supports Wi-Fi via Ethernet Wi-Fi is not turned off automatically even if it is not used by Windows because of the prioritized Ethernet connection.

This may not be a problem on devices that don't run on battery but on these it may be a good idea to turn off Wi-Fi as a power saving method.

While it is possible to do that manually some adapters support disabling Wi-Fi automatically when Ethernet connections are available.

1. Open the Settings application either with the shortcut Windows-I or by selecting Start Settings.
2. Go to Network Internet.
 - . Select Advanced network settings on the page that opens.
4. Activate more network adapter options on the next page. Windows opens a window with all available network connections.
 - . Right-click on the wireless connection and select Properties from the context menu.
 - . Make sure the networking tab is selected.
 - . Activate the configure button.
 - . Locate Disable Upon Wired Connected.
9. Set its value to Enabled in the dropdown menu.

If the option is not available it may not be supported by the adapter. A driver update may introduce the feature.

Reset or Reinstall Network Adapters

Network adapters work automatically in the majority of cases. Sometimes things may not work properly this may happen after a driver update running a network optimization or tweaking software or making manual changes to the Windows Registry that impact the functionality of networking adapters.

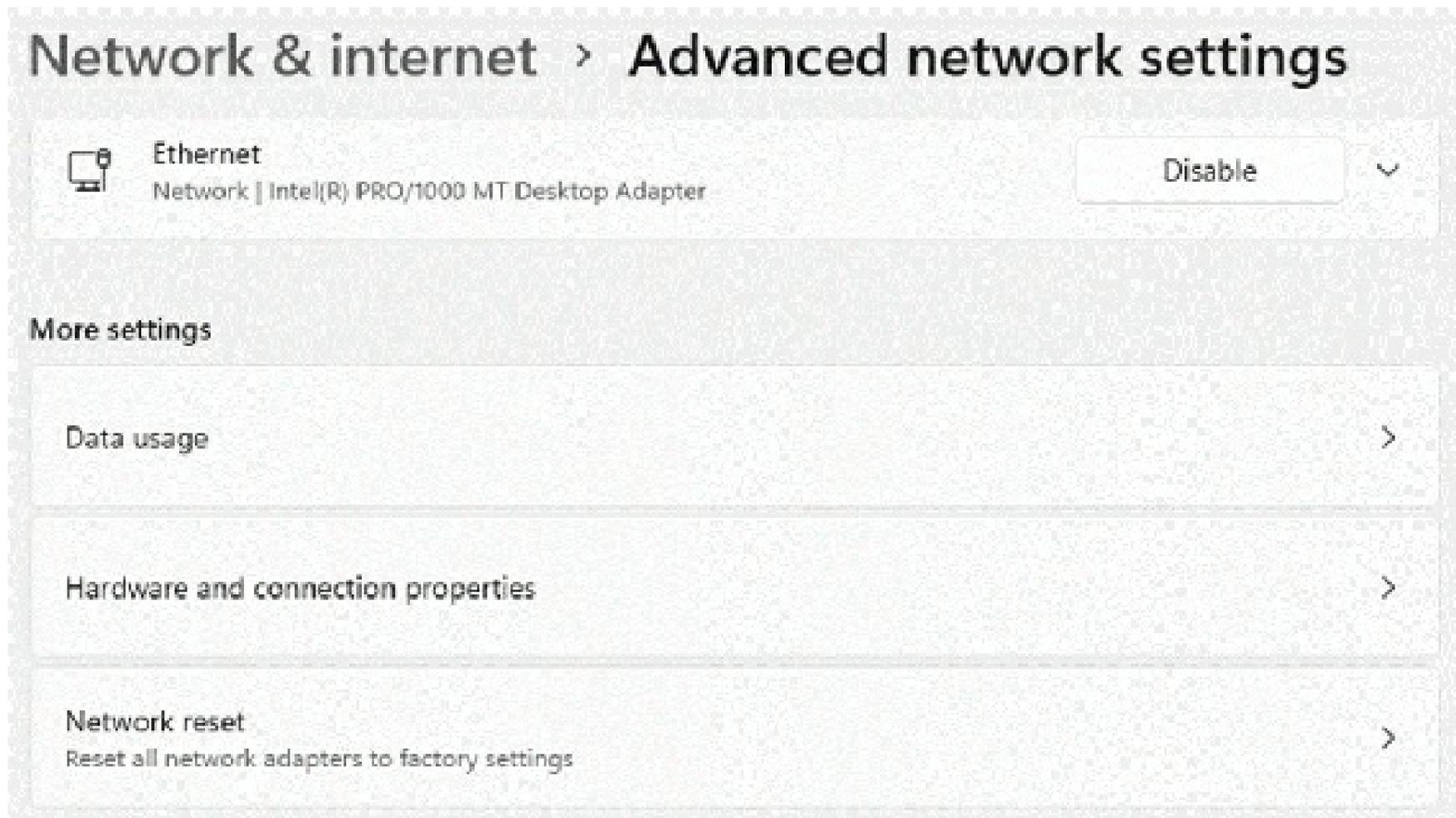
Resetting or reinstalling network adapters may resolve issues that you experience.

Note: Resetting and reinstallation makes Windows forget about the stored passwords and other custom settings. ou may also need to reinstall VPN software or other networking software.

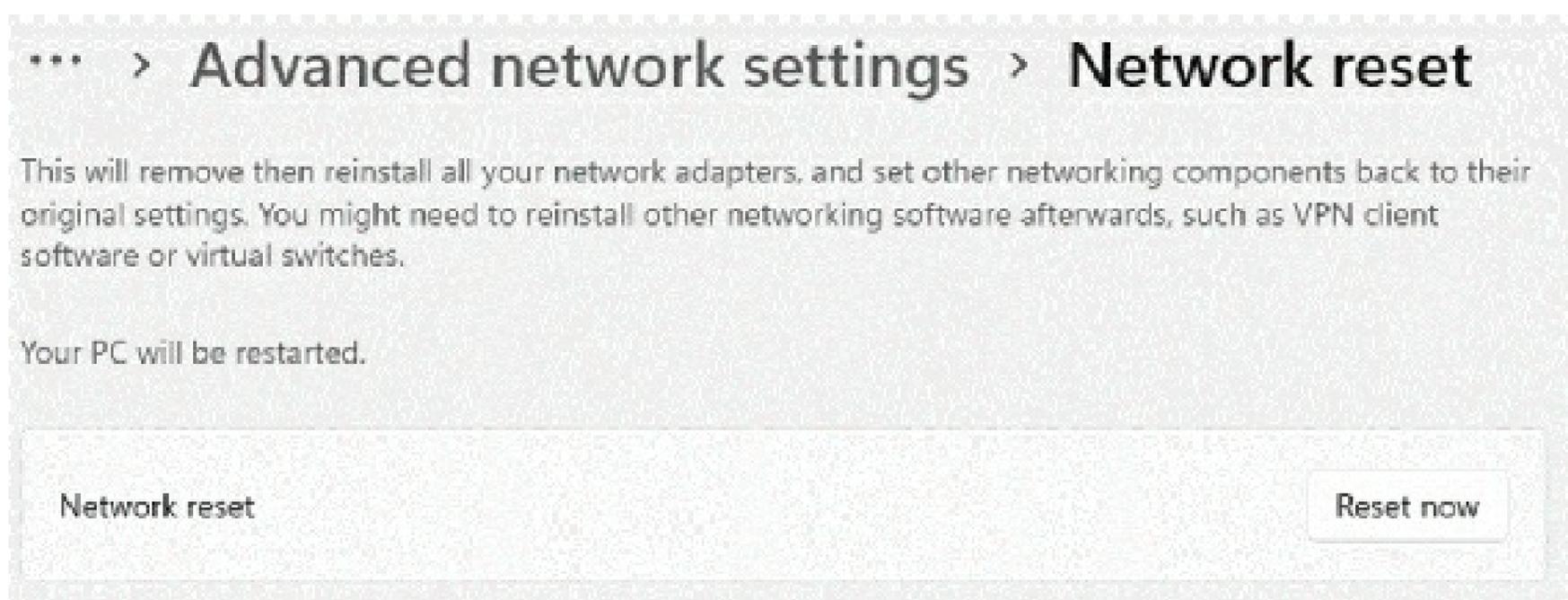
Windows 11 includes two main options to reset or reinstall network adapters.

Using the Settings app

This will remove then reinstall all of your network adapters and set other networking components back to their original settings. ou might need to reinstall other networking software afterwards such as VPN client software or virtual switches.

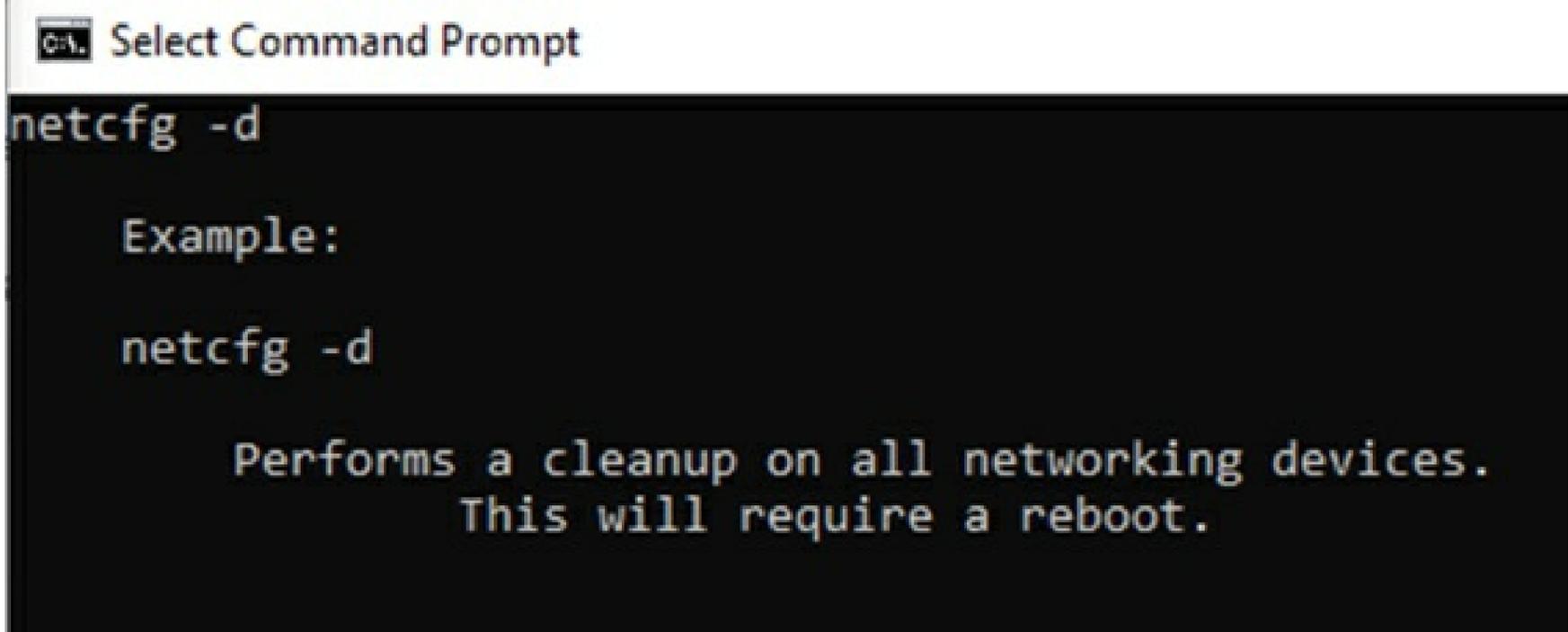


1. Open the Settings application using Ctrl-I or by selecting Start > Settings.
2. Go to Network > Internet.
 - . Select Advanced network settings.
4. Find the “Network reset” option under “More settings”.
 - . Click on the Network reset option.
 - . Activate the “Reset now” button on the page that opens.
 - . Select Yes when the Network reset prompt is displayed.



Windows needs to restart the PC after the operation completes.

Using the Command Line



```
netcfg -d

Example:

netcfg -d

Performs a cleanup on all networking devices.
This will require a reboot.
```

You may also reset and reinstall networking settings using the command line.

1. Select Start type cmd.exe and select "Run as administrator" to open an elevated command prompt.
2. Confirm the UAC prompt that is displayed to continue.
 - . Run the command netcfg -d.

o

The command performs a cleanup on all networking devices.

4. A reboot is required.

Windows should identify available network adapters on the next restart and install drivers so that these may be used on the system.

Enable DNS over HTTPS

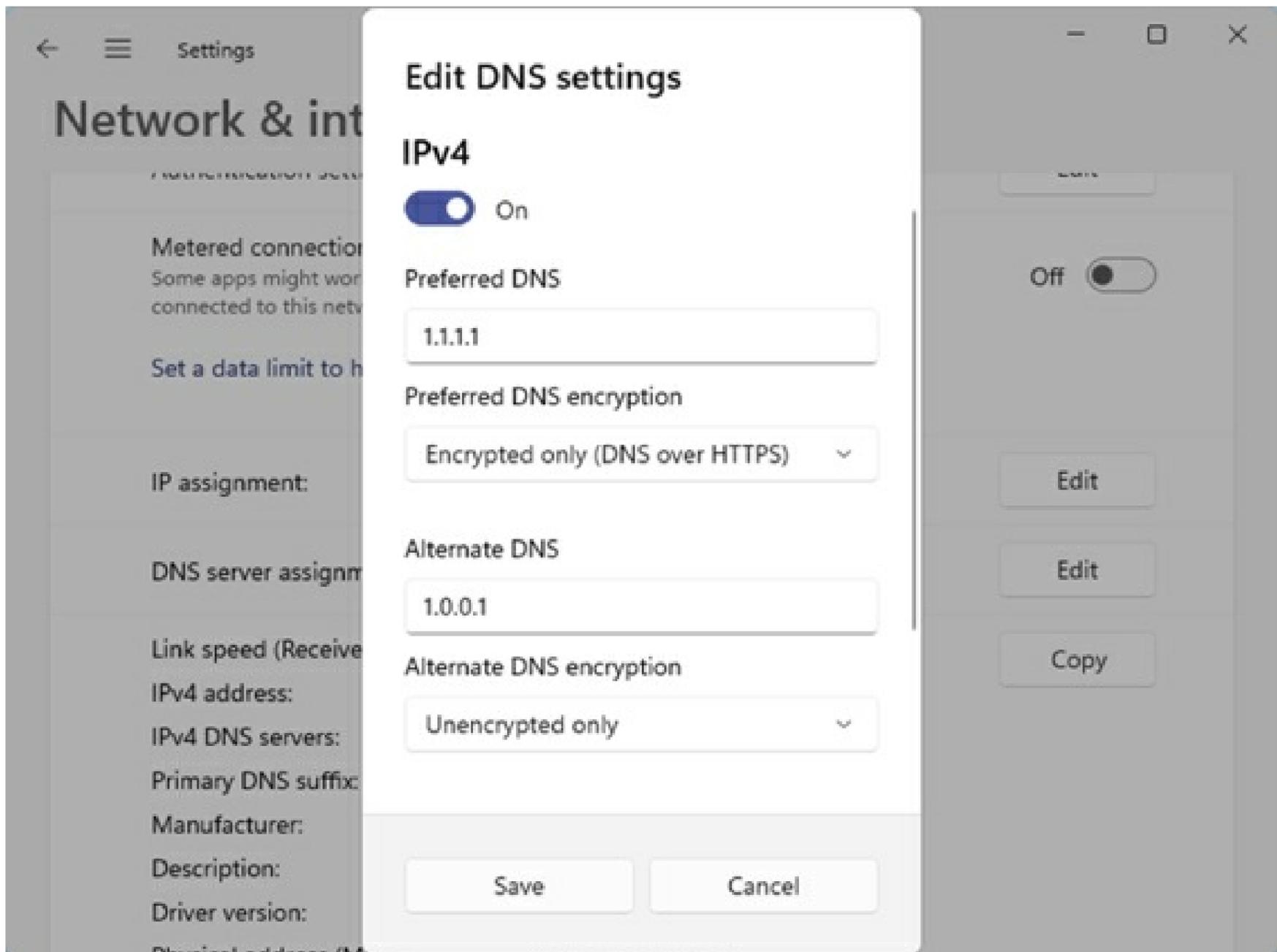


Figure 108: DNS-Over-HTTPS Configuration

DNS is a cornerstone of the Internet. It is used to “translate” domain names which humans can better memorize to IP addresses which computers use for communication.

DNS services are provided by Internet Service Providers but Internet users may switch providers on most devices or in certain applications.

DNS is unencrypted in its default form which means that third-parties may see the domains that are visited by looking at DNS traffic.

Microsoft’s Windows 11 operating system supports DNS over HTTPS a feature that encrypts DNS traffic so that it is protected against spying DNS-based censorship and certain forms of attacks such as man-in-the-middle attacks.

Note: some web browsers such as Google Chrome Mozilla Firefox or Microsoft Edge have implementations of DNS-over-HTTPS already. These are specific to these browsers whereas Microsoft’s implementation in Windows 11 is system-wide.

The DNS provider needs to support DNS-over-HTTPS. Providers that do include Cloudflare Google and Quad. These DNS servers may be set when DNS-over-HTTPS is set up on Windows 11.

DNS-over-HTTPS Server information (IPv4)

- Cloudflare: 1.1.1.1 and 1.0.0.1
- Google: . . . and . . .4
- Quad9: 9.9.9.9 and 149.112.112.112

DNS-over-HTTPS Server information (IPv6)

- Cloudflare: 2 0 :4 00:4 00::1111 and 2 0 :4 00:4 00::1001
- Google: 2001:4 0:4 0:: and 2001:4 0:4 0:: 44

- Quad9: 2 20:fe::fe and 2 20:fe::9

Configure Dns-over-HTTPS on Windows 11 in the following steps:

1. Open the Windows Settings application either with the shortcut Windows-I or by selecting Start Settings.
2. Open the Network > Internet settings.
 - . Select Ethernet for cable-based Internet or Wireless for wireless Internet. The steps need to be repeated for the other connection type if both are used to connect to the Internet.
4. Select the Edit button next to DNS Server Assignment.
 - . Toggle Ipv4 if it is not enabled already.
 - . Type the DNS server IP address e.g. 1.1.1.1 for Cloudflare.
 - . Select "Encrypted only (DNS over HTTPS) under Preferred DNS encryption.
 - . Type the second DNS server IP address under Alternate DNS encryption.
9. Set it to use Encrypted only (DNS over HTTPS) as well.
10. Repeat the steps for IPv6 .
11. Select Save to save the new settings.

Windows displays the previous settings page again when save is selected. The DNS server information should indicate that encryption is being used.

Look up DNS-over-HTTPS information

Windows system administrators may run commands¹ from the command line to display the system's current definitions

1. Select Start.
2. Type CMD and select Command Prompt.
 - . Run netsh dns show encryption.

Information is also available via PowerShell

1. Select Start.
2. Type PowerShell.
 - . Run Get-DnsClientDohServerAddress.

System administrators may add server definitions to the list to make sure that these will never fall back to using plaintext DNS.

Using netsh:

```
netsh dns add encryption server resolver-IP-address dohtemplate resolver-DoH-template autoupgrade yes
udpfallback no
```

Using PowerShell:

```
Add-DnsClientDohServerAddress -ServerAddress resolver-IP-address -DohTemplate resolver-DoH-template -
AllowFallbackToUdp False -AutoUpgrade True
```

The same commands may be altered to allow fallbacks to plaintext DNS queries if encrypted DNS is not functioning.

Using netsh:

```
netsh dns add encryption server resolver-IP-address dohtemplate resolver-DoH-template autoupgrade yes
udpfallback yes
```

Using PowerShell:

```
Add-DnsClientDohServerAddress -ServerAddress resolver-IP-address -DohTemplate resolver-DoH-template -
AllowFallbackToUdp True -AutoUpgrade True
```

Manage DNS over HTTPS settings in Group Policy

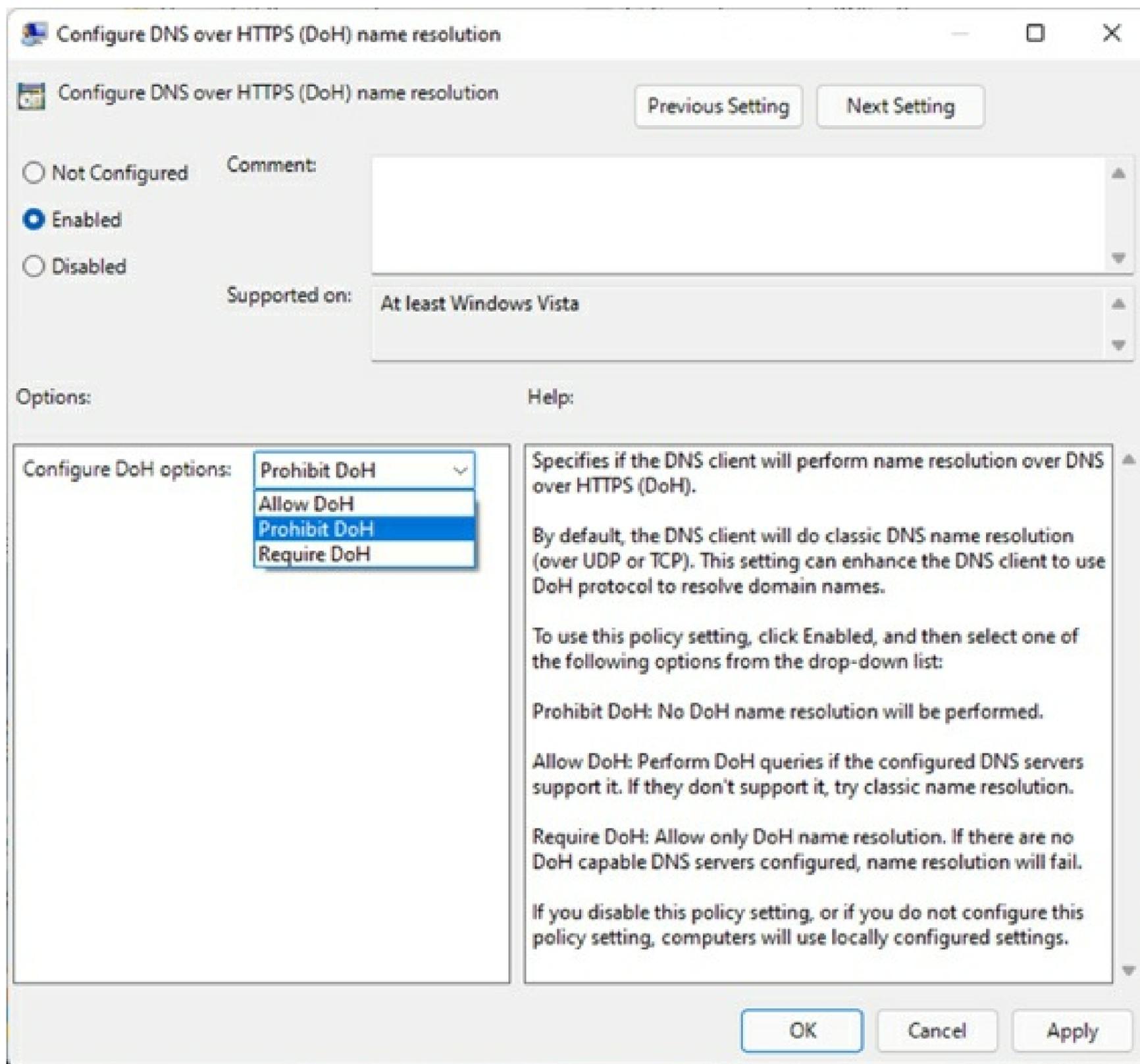


Figure 109: Group Policy: Configure DNS over HTTPS name resolution

Administrators may configure DNS-over-HTTPS preferences using a policy.

1. Select Start.
2. Type gpedit.msc.
 - . Go to Computer Configuration Administrative Templates Network DNS Client.
4. Double-click on the preference Configure DNS over HTTPS (DoH) name resolution.
 - . Set the status of the policy to Enabled.

The policy may be used to prohibit allow or require DNS-over-HTTPS.

Prohibit DoH: No DoH name resolution will be performed.

Allow DoH: Perform DoH queries if the configured Dns servers support it. If they don't support it try classic name resolution.

Require DoH: Allow only DoH name resolution. If there are no DoH capable DNS servers configured name resolution will fail.

Display network connection properties

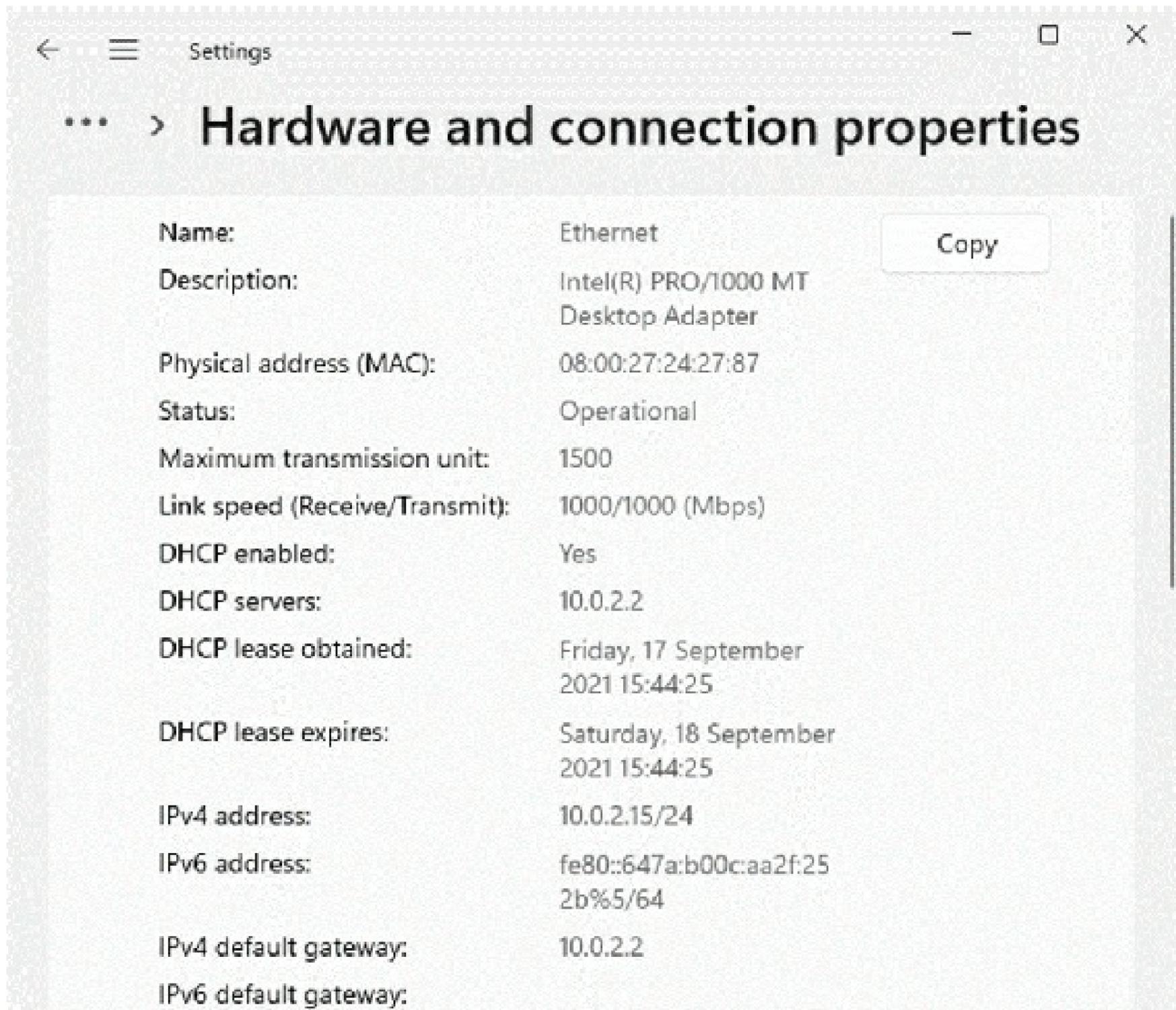


Figure 110: Networking Connection Properties

Windows 11 includes a handy option to display connection properties including the device's local and public IP addresses in the Settings application.

1. Open the Settings application either with the shortcut Windows+I or by selecting Start Settings.
2. Select Network > Internet.
 - Open Advanced network settings on the page that opens.
4. Select Hardware and connection properties.

The page displays the following information (and more):

- The local IPv4 and IPv6 address.
- The default IPv4 and IPv6 gateway.
- The IP addresses of DHCP servers.
- The Link speed.
- The MAC address of the network adapter.
- DNS Server information.
- The name of the network.
- The connectivity status of IPv4 and IPv6.
- Proxy auto detect setting.

Privacy

General privacy settings

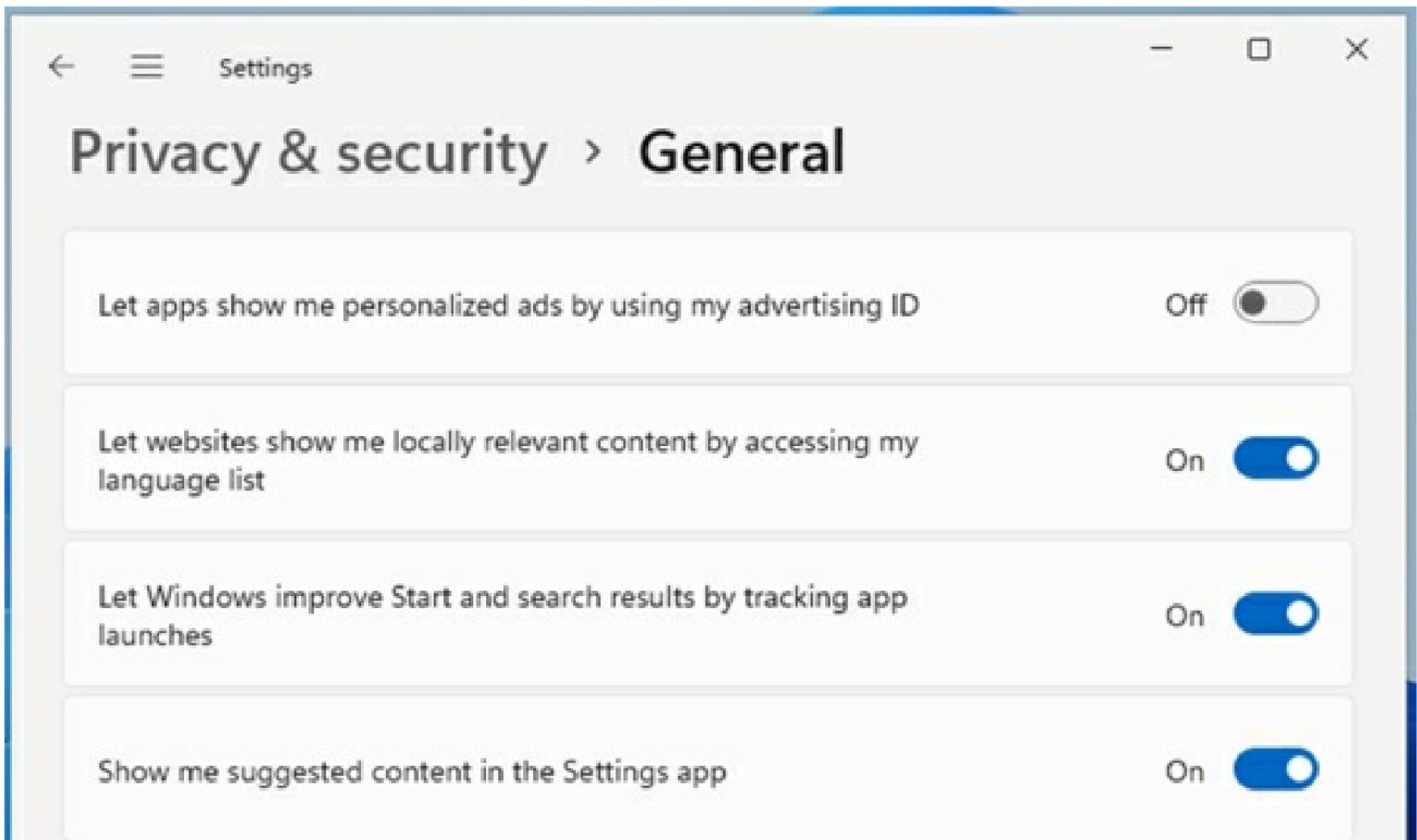


Figure 111: General Privacy settings

Windows 11 lists four items under General in the privacy settings.

Let apps show me personalized ads by using my advertising ID

A unique advertising ID may be used by apps and advertising networks to display ads. It may be used for tracking purposes.

Windows generates a unique advertising ID for each user on a device, which app developers and advertising networks can then use for their own purposes, including providing more relevant advertising in apps. When the advertising ID is enabled, apps can access and use it in much the same way that websites can access and use a unique identifier stored in a cookie. Thus, app developers (and the advertising networks they work with) can associate personal data they collect about you with your advertising ID and use that personal data to provide more relevant advertising and other personalized experiences across their apps.¹⁶

Users who disable the use of the advertising ID won't see fewer ads but they will see ads that may not be as relevant as advertisers can't use the advertising ID for tracking purposes anymore.

Recommendation: disable the setting to limit tracking capabilities.

Let websites show me locally relevant content by accessing my language list

Whether websites may access the list of installed languages to show local content automatically based on those languages.

Recommendation: disable the setting unless you run into issues with certain sites that use the wrong display language and don't support options to change it.

Let Windows improve Start and search results by tracking app launches.

The feature powers the most used applications feature of the Windows 11 Start menu and search. If you turn it off Windows won't display applications based on use in the Start menu or in search results anymore.

Recommendation: turn off. Pin apps that you use often to the Start menu taskbar or desktop to run them from there. No real use in using the feature.

Show me suggested content in the Settings app

Windows may suggest content in various locations including in the Settings application if the feature is enabled.

This content comes in a variety of forms, and can help you discover new features within Settings, or suggest new content and apps

you may find interesting.¹⁷

Recommendation: turn off. Microsoft uses it to advertise apps or certain features in Settings which most users don't need.

Speech privacy settings



Figure 112: Privacy Speech settings

Windows 11 and apps may support device-based and online speech recognition e.g. to interact with digital assistants Windows Mixed Reality HoloLens dictation or other forms of voice commands or interactions.

Some apps may use online speech recognition services provided by Microsoft. The Online speech recognition setting determines whether the feature is enabled on the system or if it is not available.

Turning on the Online speech recognition setting lets you use Microsoft cloud-based speech recognition in , the Mixed Reality Portal, dictation in Windows from the software keyboard, supported Microsoft Store apps, and over time, in other parts of Windows.¹⁸

Apps that rely on online speech recognition won't work if the feature is disabled.

Speech data is submitted to online servers if the service is enabled and if applications make use of it.

When you use the Microsoft cloud-based speech recognition technologies, Microsoft collects and uses your voice recordings to create a text transcription of the spoken words in the voice data.¹⁹

Microsoft states that device-based speech recognition may be used if online speech recognition is disabled. The quality and accuracy of device-based speech recognition is not as good as that of the online version according to Microsoft.

Recommendation: unless an app or service is used that relies on online speech recognition turn the feature off.

Inking & Typing personalization



Windows 11 collects unique words that users type or write in local personal dictionaries. The data is used to improve typing and inking on the local device.

If syncing is enabled Windows will sync the personal local dictionary with OneDrive and other Windows devices the user signs-in to. The syncing is limited to 100 Kilobytes per language and a total of 100 Kilobytes of hard drive space.

Windows 11 users may disable the use of the personal dictionary on the device.

1. Open the Settings application either with the shortcut Windows+I or by selecting Start Settings.
2. Go to Privacy & Security Inking & typing personalization.
 - . Toggle the setting “Personal inking and typing dictionary” to off to disable the use of the personal dictionary.

The Personal Dictionary setting on the page opens a new page in Settings with an option to clear the personal dictionary.

Note: the personal dictionary is cleared if the feature is turned off.

Recommendation: since it is stored locally only by default there is no harm in using the dictionary.

Manage application permissions

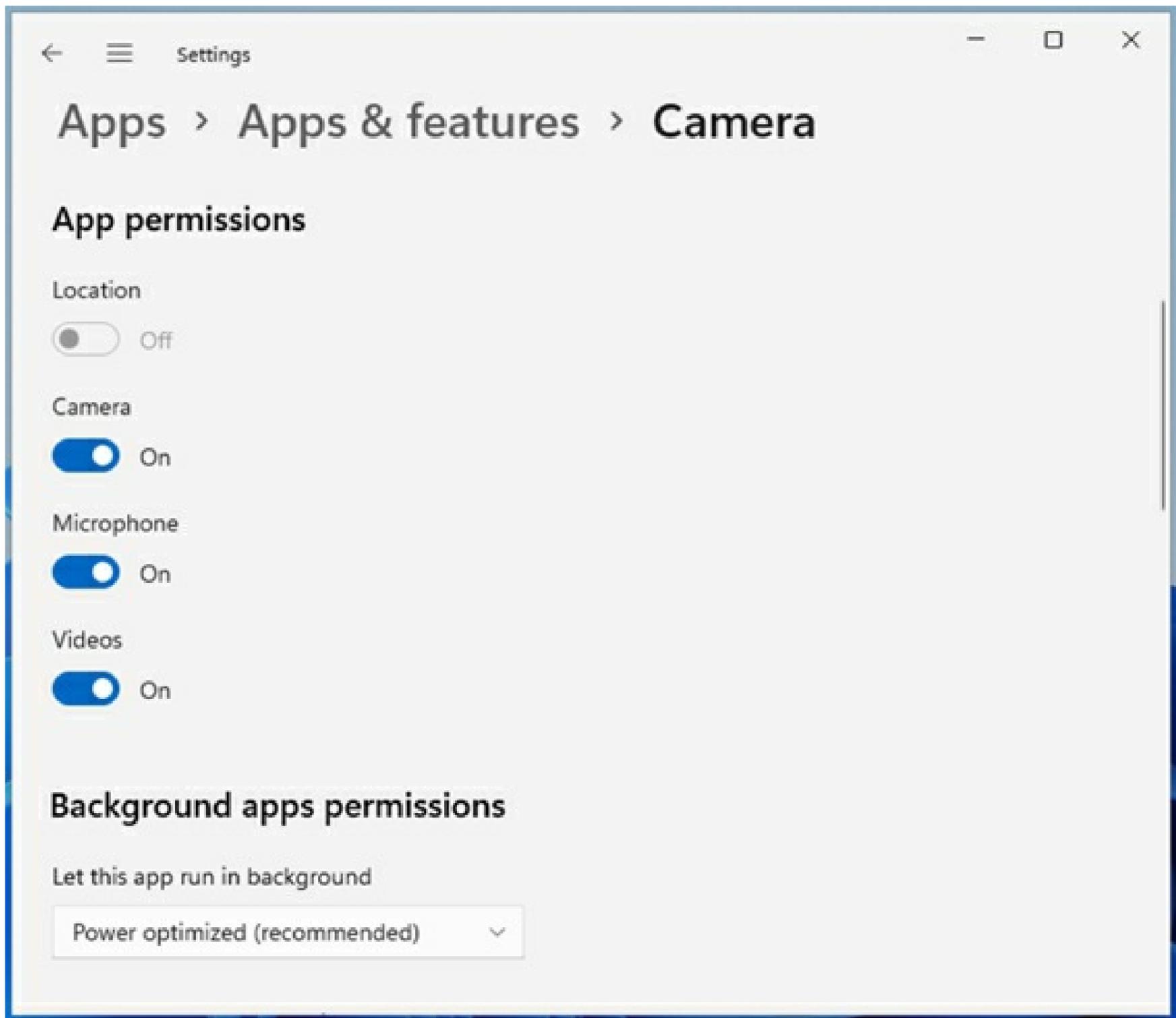


Figure 113: Manage application permissions

Application permissions apply to applications downloaded from the Microsoft Store or other locations only and not to traditional desktop programs.

Applications may request certain permissions e.g. to access the camera or microphone or the location of the device.

These permissions may be revoked or given at any time using the Settings application.

1. Open the Settings application on the device either with the shortcut Ctrl-I or by selecting Start Settings.
2. Go to Apps > Apps > Features. Windows displays a list of installed programs. Note that Microsoft Store apps and traditional desktop programs are mixed in the listing.
 - . Activate the three-dots menu icon next to an installed application and select Advanced options from the context menu.
4. The following page lists specifications and the application's permissions. Permissions are divided into app permissions and Background apps permissions.
 - . Set any app permission to Off to disallow the use of the feature. Note that an app may not function correctly anymore if you revoke feature access that are required for certain functionality.
 - . The background apps permission may be set to "never" to prevent it from running in the background.

Windows 11 supports another way of managing permissions for applications. Besides managing permissions of individual applications users may also manage permissions based on features such as camera location or video.

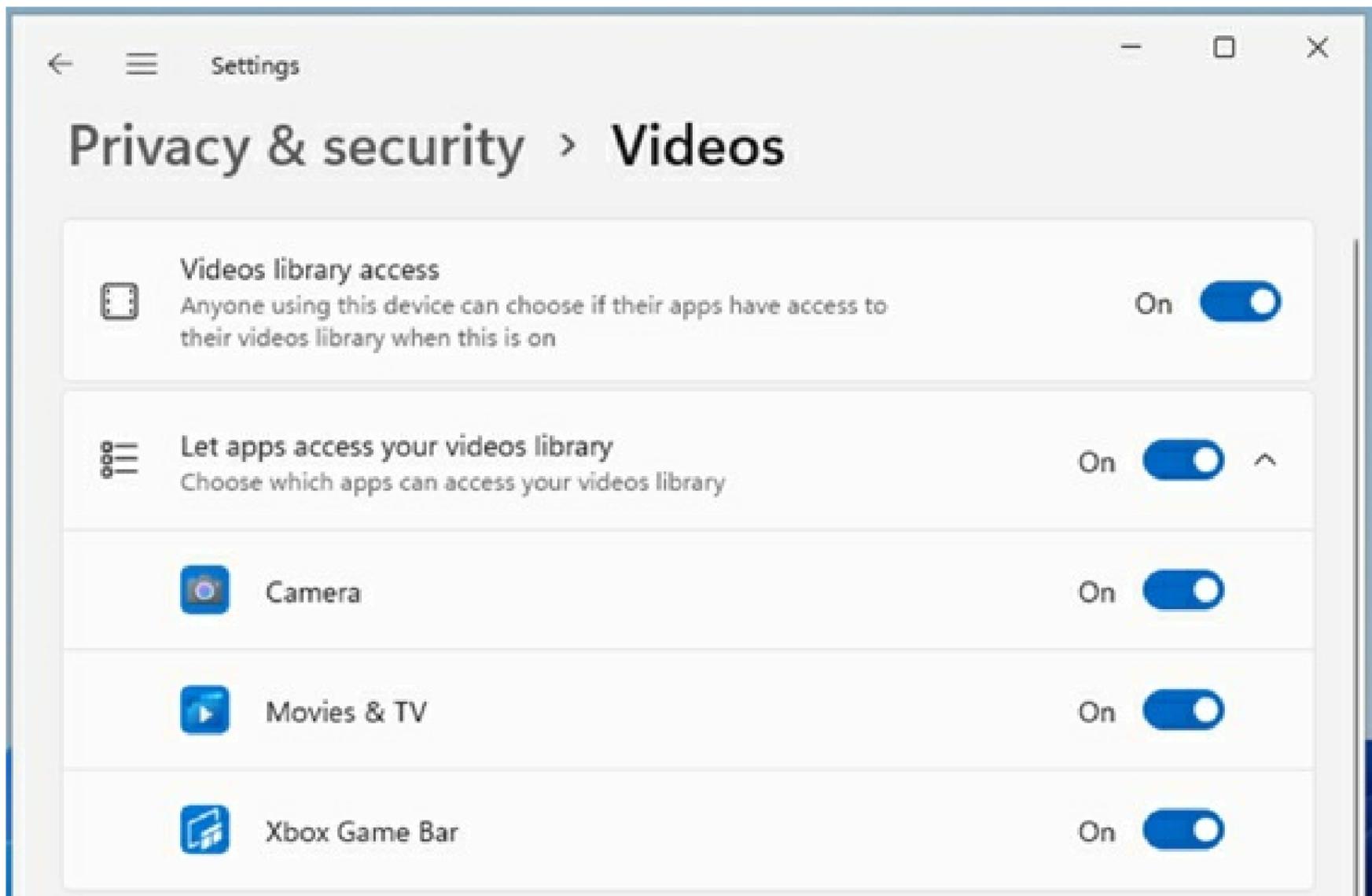


Figure 114: Privacy Settings: Permissions

1. Open Privacy > Security in the Settings application on the Windows 11 devices.
2. Scroll down to the App permissions section. Select one of the available menu items: Location, Camera, Microphone, Voice activation, Notifications, Account info, Contacts, Calendar, Phone calls, Call history, Email, Messaging, Radios, Other devices, App diagnostics, Automatic file downloads, Documents, Downloads folder, Music library, Pictures, Videos, File System, Screenshots borders, or Screenshots and apps.
 - . All configuration pages offer the same options:

- Allow or block access to the feature for all apps e.g. to Video, Calendar, or Radios. No Microsoft Store application may use the feature from that moment on.
- Allow or block access to the feature for individual apps. All apps that have access to the feature allowed or blocked are listed on the configuration page.
- Allow or block access to the feature for other users on the system.

Windows 11 may display a notification if an app with blocked permissions is launched.

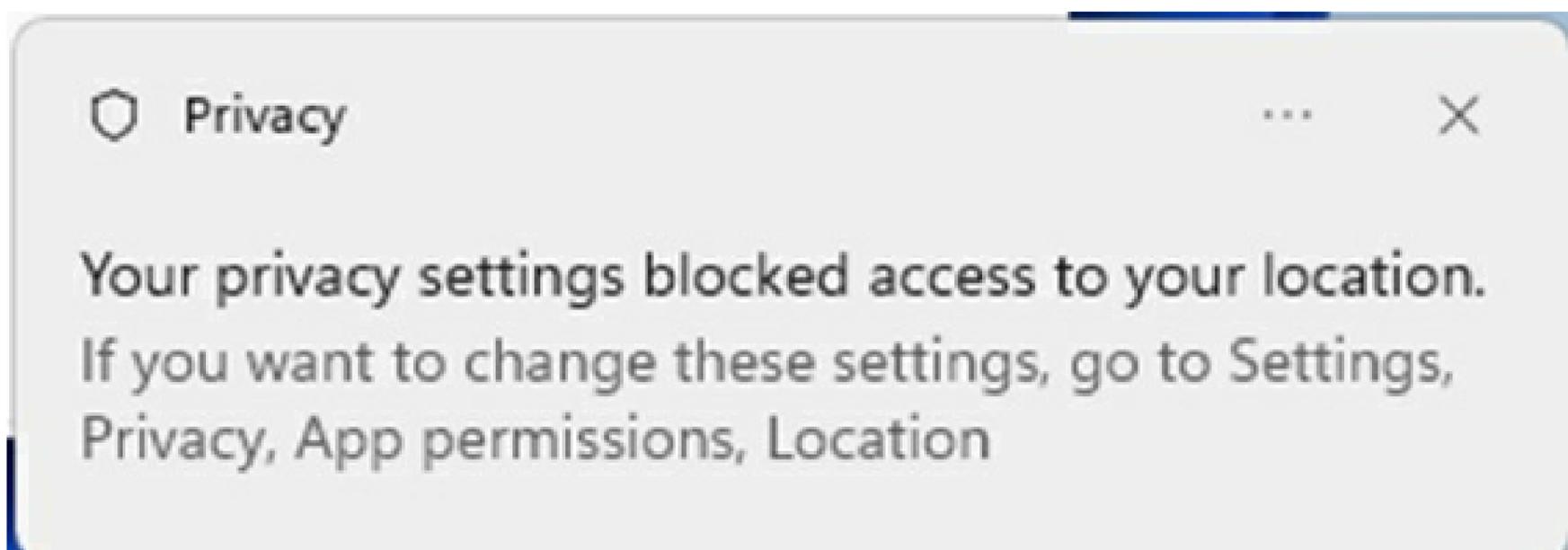


Figure 115: Privacy notification

Some applications may display information about missing permissions in the interface as well. The Calendar displays a notification at the top of the interface if a permission is not available.

Recommendation: it may take a while but is recommended to disable as many permissions as possible from the installed applications and services.

Allow or Disallow Apps to run in background

Some applications may be configured to run with the background apps permission this allows them to perform actions such as retrieving new emails or syncing data while users are “not actively in the app’s window”. [20](#)

Windows 11 users have one main options when it comes to background apps:

- Allow or disallow individual apps to run in the background.

The Windows 10 privacy option to turn off “most” background apps is no longer present in Windows 11.

System administrators who administrate professional versions of Windows may configure the behavior in the Group Policy Editor.

Note: Microsoft moved the option to

Control which apps can run in the background

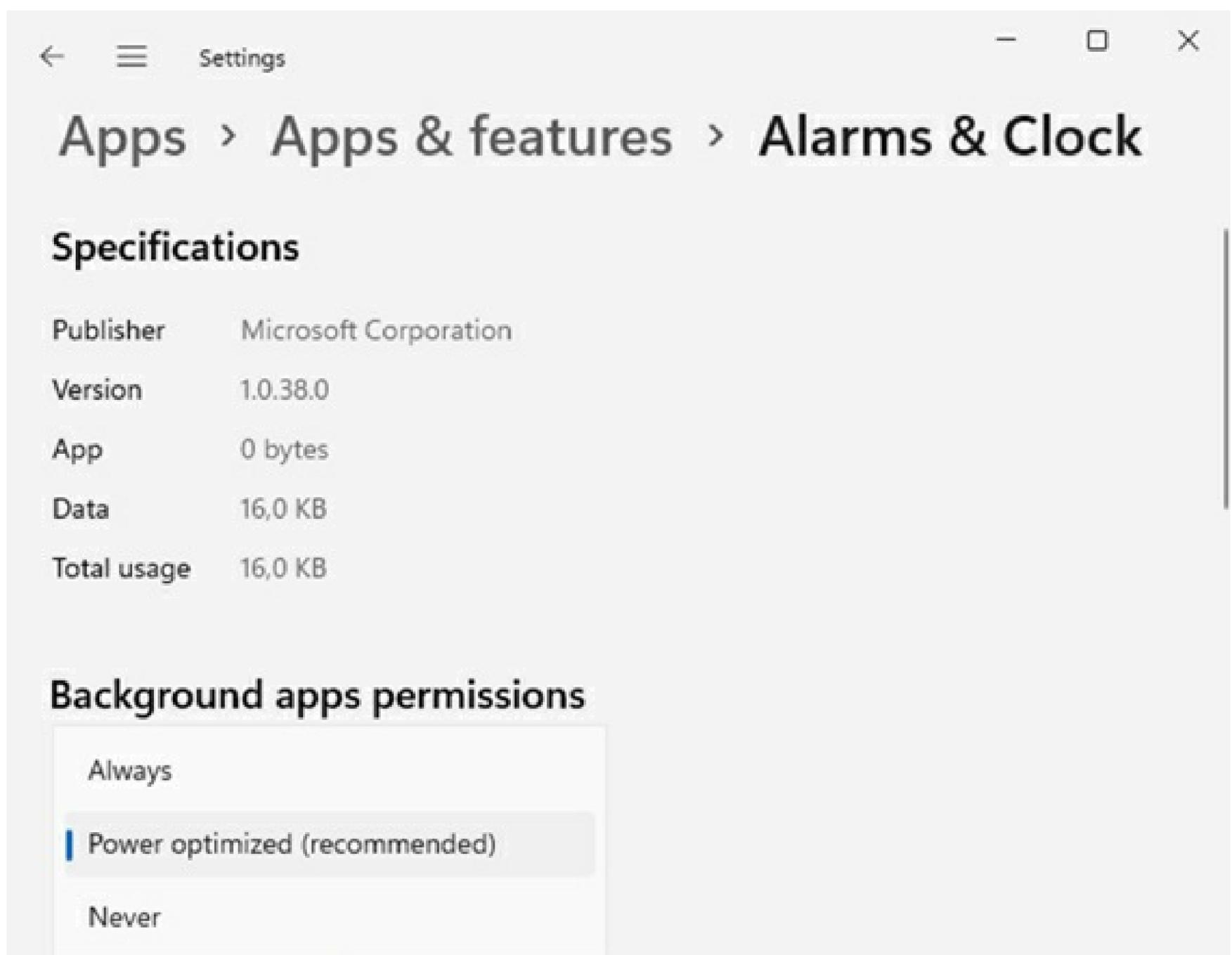


Figure 116: Privacy Background Apps

1. Open the Settings application either with the shortcut Windows-I or by selecting Start Settings.
2. Go to Apps and select Apps features.

- . Activate the three-dots menu next to the application that you want to modify the background apps setting for and select Advanced options from the context menu.
- 4. The Background apps permissions setting defines whether an app is allowed to run in the background or not. Three options are provided:
 - Always – the app is allowed to run in the background all the time.
 - Power optimized (recommended) – The app is allowed to run in the background in a power optimized state.
 - Never – the app is not allowed to run in the background.

The process needs to be repeated for each application individually.

Group Policy Editor: control background apps

1. Open Start type gpedit.msc and select the result to launch the Group Policy Editor.
2. Go to Computer Configuration Administrative Templates Windows Components App Privacy
 - . Double-click on Let Windows apps run in the background to open the policy.
4. To disable background apps:
 1. Set the policy to Enabled.
 2. Select “Force Deny” as the default for all apps.
 - . Select OK.
- . To allow background apps:
 1. Set the policy to Enabled.
 2. Select “Force Allow” as the default for all apps.
 - . Select OK.

If you choose the “Force Deny” option, Windows apps are not allowed to run in the background and employees in your organization cannot change it.

If you choose the “Force Allow” option, Windows apps are allowed to run in the background and employees in your organization cannot change it.

The default setting is Not Configured which gives users control over the behavior of applications using the method described above.

Diagnostics & feedback

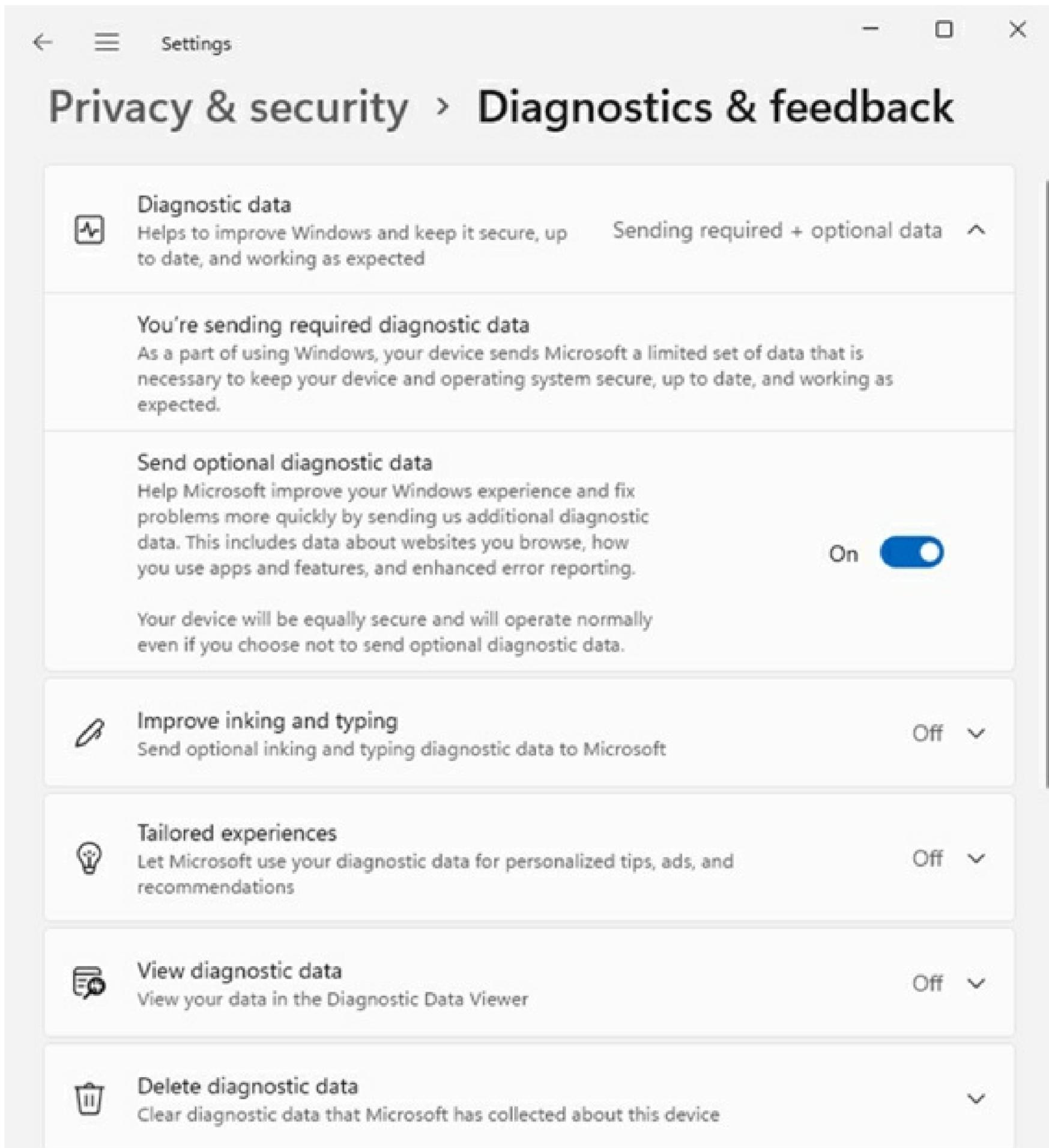


Figure 117: Privacy Diagnostic Data and Feedback

The introduction of Telemetry collection in Windows 10 was controversial. Up to this day Windows 10 is seen by many as a privacy invasive operating system which is sending data to Microsoft all the time.

Since Windows 11 is based on Windows 10 Telemetry is still a core part of the operating system. Just like on Windows 10 users have no option to disable Telemetry completely.

The Diagnostics & feedback section in Privacy offers some control over the data but control is limited.

Regular Home systems of Windows 11 may limit the data that is submitted to Microsoft. Windows Insider machines that test pre-release versions of the operating system need to send optional data as part of the joining agreement.

Required diagnostic data is sent automatically and there is no option to turn it off.

Required diagnostic data is information about your device, its settings and capabilities, and whether it is performing properly. This is the minimum level of diagnostic data needed to help keep your device reliable, secure, and operating normally.²¹

Microsoft uses required optional diagnostic data for the following purposes:

- Basic error information to help determine whether problems your device is experiencing can be addressed by the update process.
- Information about your device its settings and capabilities including applications and drivers installed on your device to ascertain whether your device is ready for and compatible with the next operating system or app release and ready for update.
- Logging information from the update process itself to understand how well your device's updates are proceeding through the stages of downloading pre-installation post-installation post-reboot and setup.
- Data about the performance of updates on all Windows devices to assess the success of an update's deployment and to learn device characteristics (e.g. hardware peripherals settings and applications) that are associated with the success or failure of an update.
- Data about which devices have had upgrade failures and why to determine whether to offer the same upgrade again.
- Comprehend the immense number of hardware system and software combinations customers use.
- Analyze issues based on specific hardware system and software combinations and identify where problems or issues occur with a specific or limited set of devices.
- Determine whether an app or process experiences a performance issue (e.g. the app crashes or hangs) and when a crash-dump file is created on the device (crash dumps themselves are not collected without additional permissions such as choosing to send Optional diagnostic data).
- Understand the effectiveness and fix problems with the diagnostic transmission system itself.
- Information about customers' devices peripherals and settings (and their configurations) is used to prioritize product improvements by determining which improvements will have the greatest positive impact to the most Windows 10 customers.
- Information about which apps are installed on devices is used to prioritize app-compatibility testing and feature improvements for the most popular apps.
- App activity information helps us prioritize app-compatibility testing and make feature improvements to apps and features that are used the most.
- Information about the impact of device characteristics configuration and app activity on device health (for example on battery life) is used to analyze and make changes that improve the performance of Windows devices.
- Aggregate information about browsing history in Microsoft browsers is used to tune Bing's search algorithms to provide more effective search results.

Microsoft uses optional diagnostic data for the following purposes:

Information about app activity to understand what the user was doing in an app that caused a problem in conjunction with what we learn about the impact of other apps or processes running on a device.
Information about device health, such as battery level or how quickly applications respond to input, to better understand the data we collect about application performance issues and make corrections.
Information contained in enhanced error reporting and crash dumps to better understand the data related to the specific conditions under which an error or crash occurred.

Home users may disable the sending of optional diagnostic data.

1. Open the Settings application either with the shortcut Windows-I or by selecting Start Settings.
2. Go to Privacy Security Diagnostics feedback.
 - . Expand the Diagnostics data section on the page that opens.
4. Set "Send optional diagnostic data" to Off on the page to disable the optional sending of ata.

Optional diagnostic data includes information about websites that users visit while using the machine how apps and features are used and will also include more data in error reports.

Recommendation: disable optional diagnostic data to limit the data that is submitted to Microsoft on a regular basis.

View and Delete diagnostic data

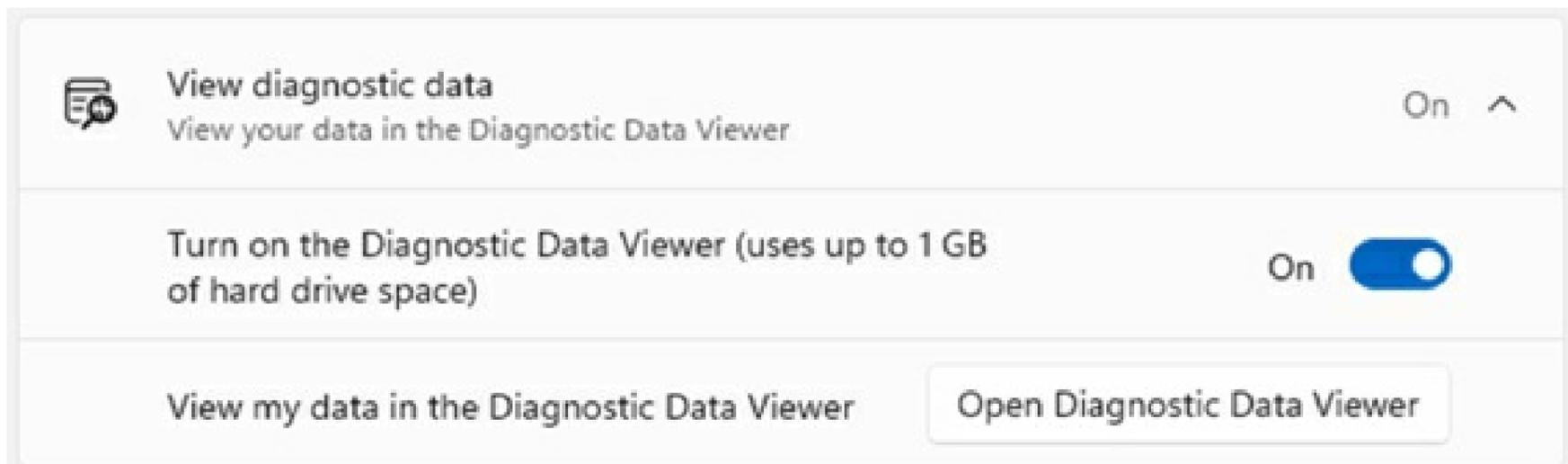


Figure 118: Privacy View Diagnostic Data

Windows includes an option to view and delete collected diagnostic data. The options are found under Diagnostics feedback in the Privacy section of the Settings app.

Viewing requires the installation of the Diagnostic Data Viewer. The option is turned off by default as the viewer may use up to 1 Gigabyte of hard drive space.

1. Expand the “View diagnostic data” section.
2. Toggle “Turn on the Diagnostic Data Viewer (uses up to 1 GB of hard drive space)” so that it is set to ON.

The link “Open Diagnostic Data Viewer” becomes active after the feature has been turned on. The initial click on the button opens the applications’ home on the Microsoft Store. It needs to be installed from there before it becomes available.

Once installed it will launch immediately whenever the button is activated on the Privacy page. Since it is an application it may also be run from Start.

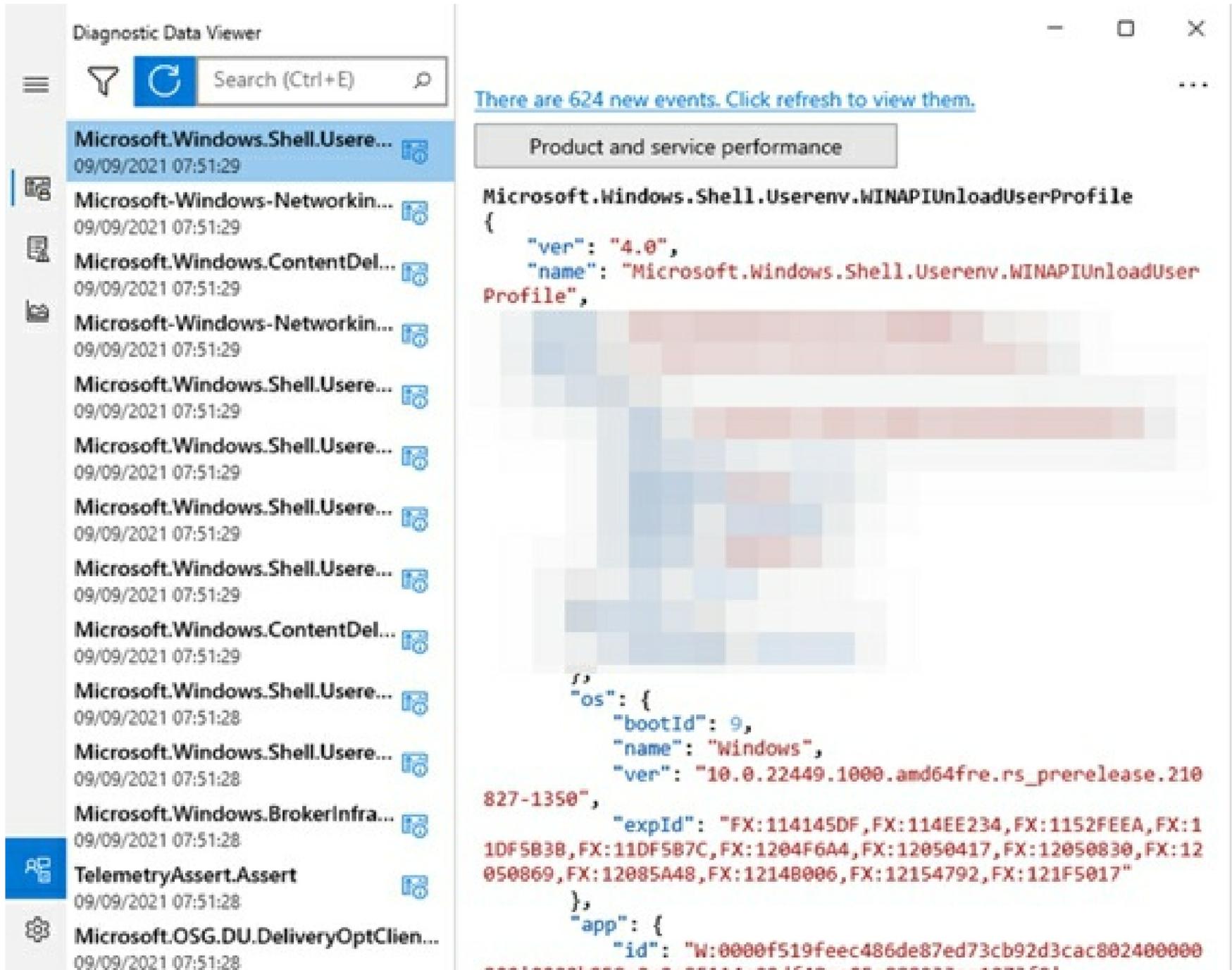


Figure 119: Diagnostic Data Viewer app

The Diagnostic Data Viewer application is not the most comfortable viewer when it comes to diagnostic data. It displays JSON format information in its interface. On the left data is broken down into different types and on the right the actual data that was collected and submitted is displayed.

Users may turn off the option to view Diagnostic Data but the application itself that is installed remains on the system. It can be uninstalled like any other application.

Improved inking and typing



Figure 120: Privacy inking and typing

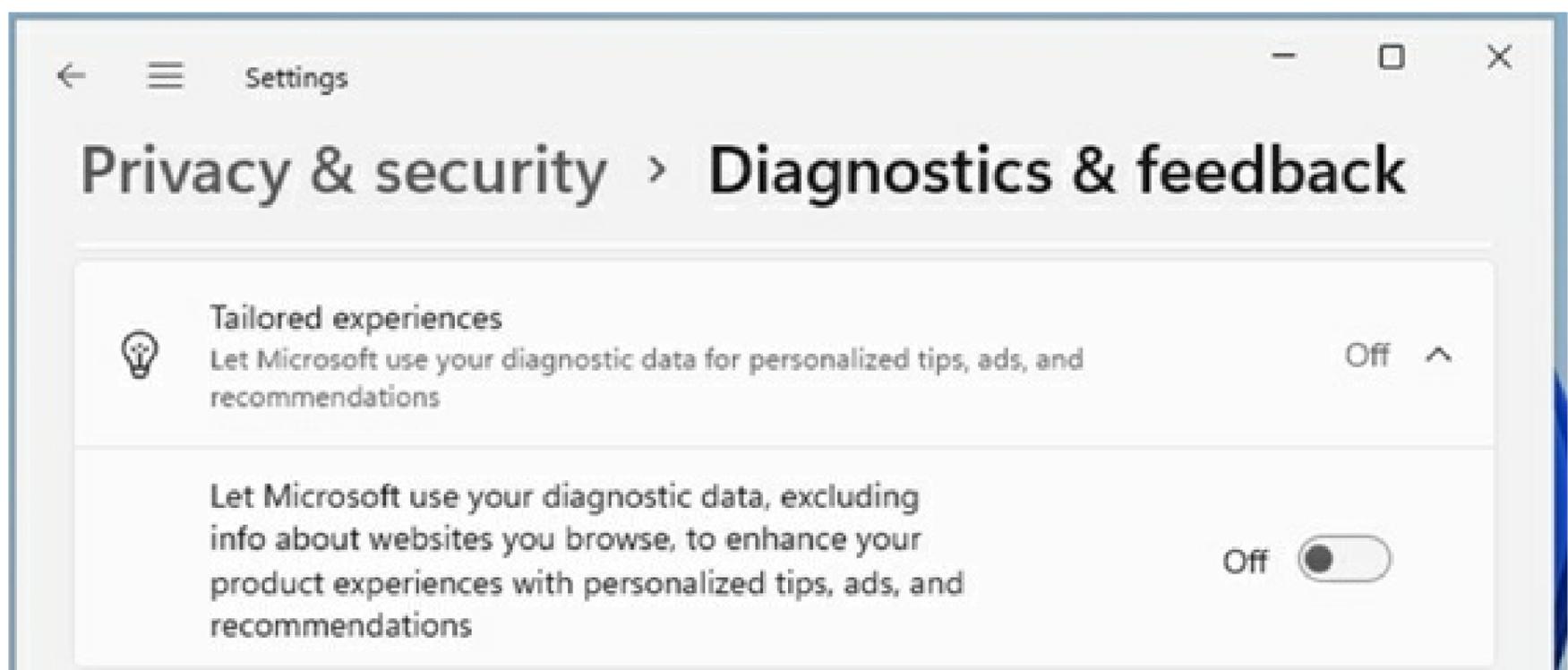
Windows 11 users may submit inking and typing diagnostic data to Microsoft to “improve the language recognition and suggestion capabilities of Microsoft apps and services”. Inking typing is one of the privacy prompts that Windows 11 displays to the administrator during setup.

1. While still in Diagnostics feedback in the Windows 11 Settings application expand “Improve inking and typing”.
2. Toggle the feature to disabled it (Off) or enable it (On).

The change takes effect immediately.

Recommendation: turn this feature off to limit the data that is submitted to Microsoft.

Tailored Experiences



Tailored Experiences is another privacy setting that Windows 11 users may configure during setup.

The enabled feature gives Microsoft permission to use diagnostic data to give personal tips advertisement and recommendations.

Tailored experiences include suggestions on how to customize and optimize Windows, as well as ads and recommendations for Microsoft and third-party products and services, features, apps, and hardware for your Windows experiences.²²

Microsoft does not use the content of crash dumps visited websites speech typing or inking input data for this kind of personalization.

1. While still in Diagnostics feedback in the Windows 11 Settings application expand “Tailored experiences”.
2. Toggle the feature to disable it (Off) or enable it (On).

The change takes effect immediately.

Recommendation: turn this feature off as the suggestions and recommendations are all that useful.

Activity History



Figure 121: Privacy Activity History

Windows may store information about a user's past activity on the device or in the case of work or school accounts and with permission by the user send it to Microsoft.

Activity history helps keep track of the things you do on your device, such as the apps and services you use, the files you open, and the websites you browse. [23](#)

The information is used by select applications and Windows may provide "personalized experiences" based on the recorded history.

Microsoft uses the activity history data to provide you with personalized experiences (such as ordering your activities based on duration of use) and relevant suggestions (such as anticipating what your needs might be based on your activity history).

Only a few applications including Timeline and Microsoft Edge use the Activity Feature on Windows 11.

Clear the Activity History

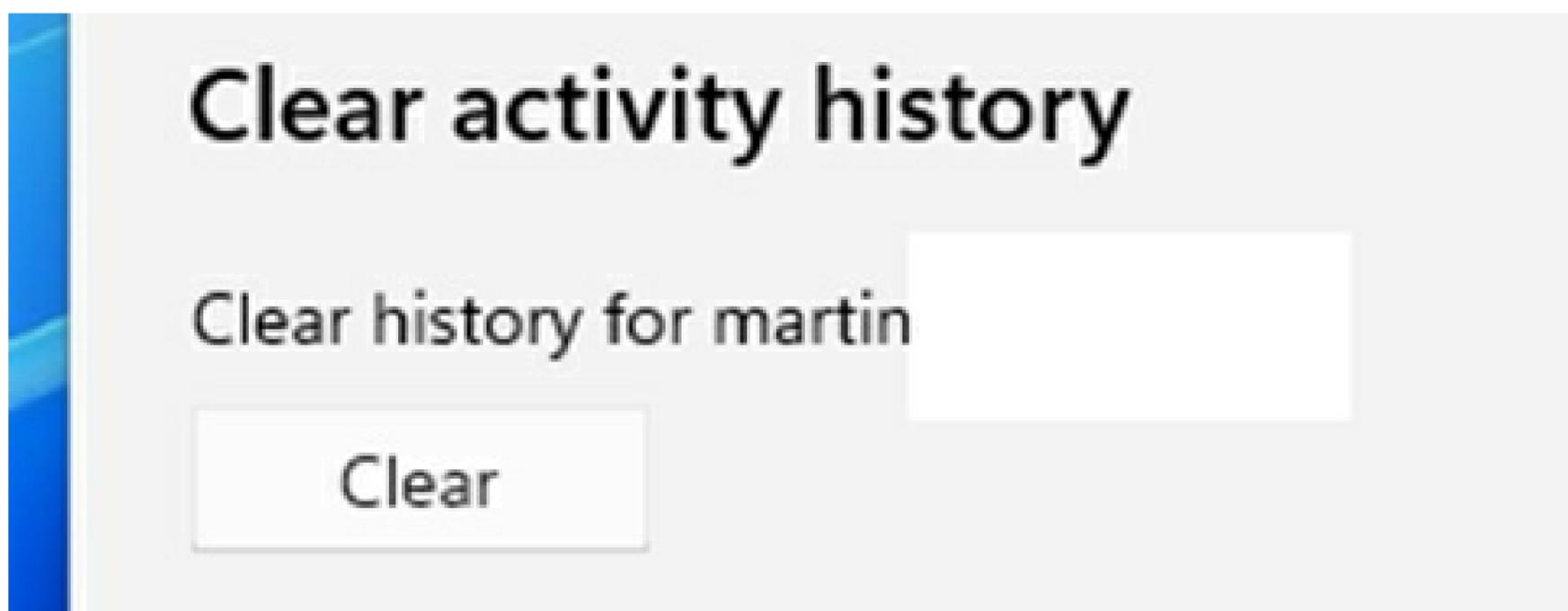


Figure 122: Clear the Activity History

Windows users may clear the Activity History at any time. The option is provided on the same Settings page that may be used to enable or disable the feature.

Just select "clear" on the page under "Clear activity history" and then "yes" when the confirmation prompt opens.

Recommendation: if you don't use any of the services that use the Activity History turn it off.

Search permissions

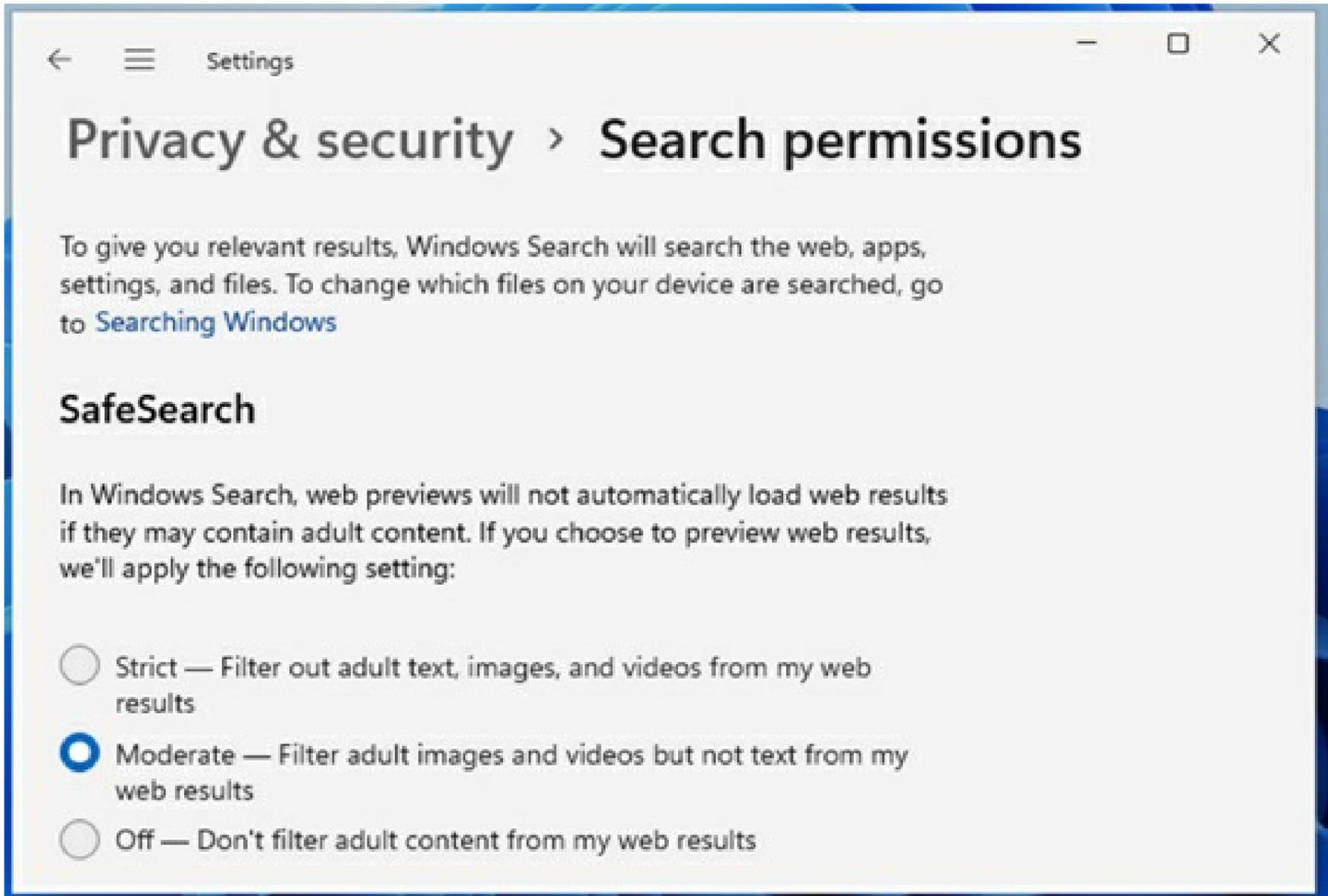


Figure 123: Search Permissions

Search is a key feature of the Windows operating system. While it never worked too well the introduction of cloud-based search results has changed the search function significantly since the release of Microsoft's Windows 10 operating system.

The Search permissions page in Privacy & security lists three configuration options:

- SafeSearch – Web previews that Windows Search may display when users run searches are filtered by default. The filter level is set to moderate which will block adult images and videos but not text from search results. Administrators may switch the filtering to strict which includes the filtering of text results or to off to provide unfiltered results.
- Cloud content search – Users who are signed in with a Microsoft account or work or school account may get search results pulled from online sources such as OneDrive SharePoint Outlook or Bing. These options can be turned off on the Settings page.

If you turn on the Microsoft account setting for Cloud content search, Windows Search will show results from items in your personal OneDrive, Outlook, and other Microsoft services. If you search the web or get web search suggestions with Windows Search, Bing will personalize your results. You can also earn Microsoft Rewards points when you search with Bing in the Windows search box.²⁴

- History – Windows stores the search history on the device “to improve” search suggestions. The functionality can be turned off and the local device history can be cleared using the provided options.

Two additional options are provided on the page:

- [A link](#) to the privacy dashboard to clear the online search history.
- [A link](#) to Bing's search history settings to include or exclude a user's web searches from search suggestions.

Searching Windows

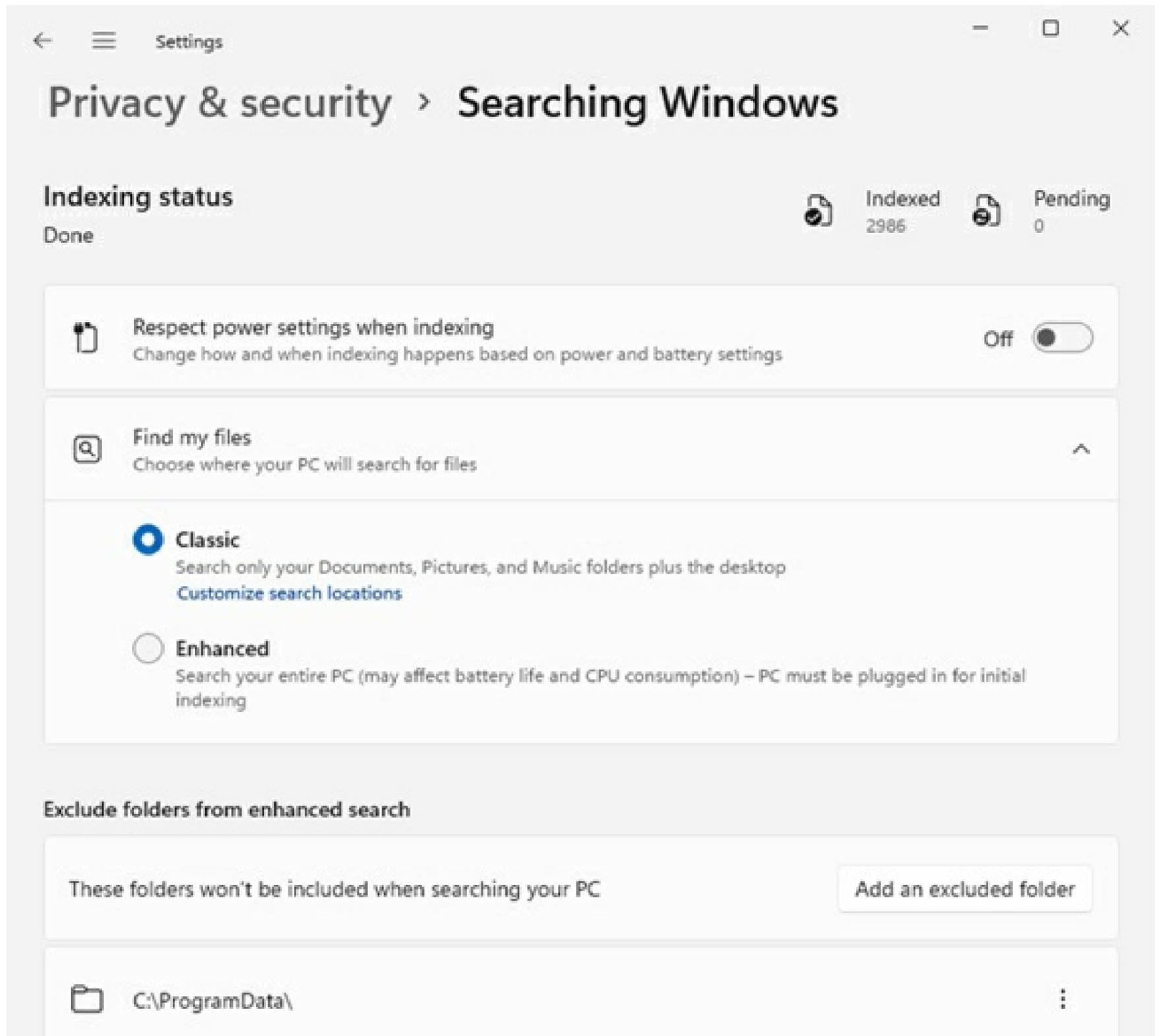


Figure 124: Privacy Settings Searching Windows

Searching Windows displays several search-related configuration options. The page displays the number of indexed items and the pending items at the top.

Find my files defines the locations that Windows Search will search when users run searches. The default setting is Classic and that means that searches are reserved to a handful locations only including the Desktop Documents Pictures and Music folders.

Enhanced the second option changes that to the entire PC.

Users may customize the locations with a click on the “customize search locations” link on the page.

The click opens the Indexing Options window this window displays all locations that Windows Search will parse for files and changes regularly.

Select the Modify button on the page to add or remove locations from indexing.

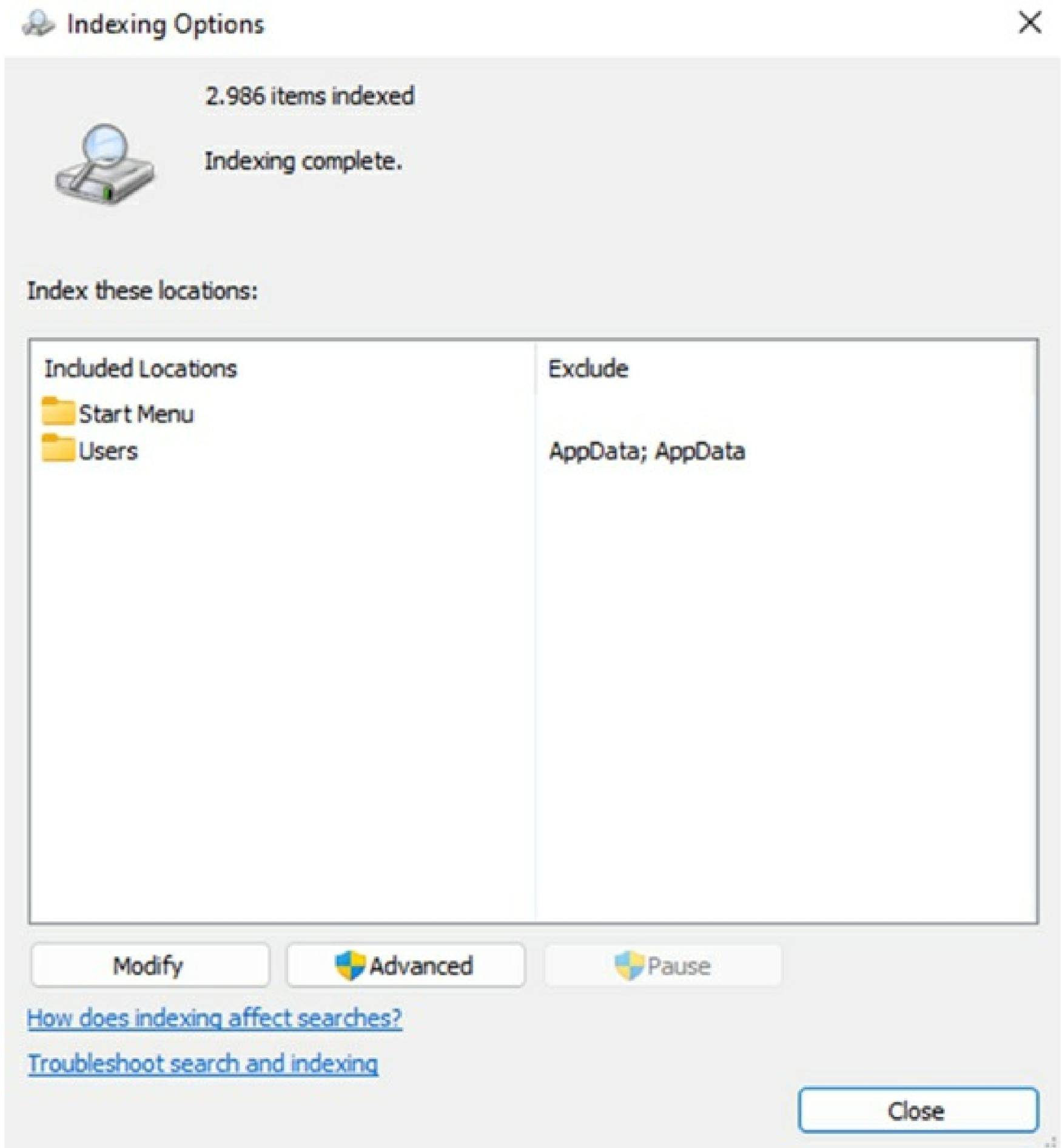


Figure 125: Indexing Options

The Advanced button displays several indexing options. Change the file types that Windows Search will index properties of or switch to the indexing of properties and file contents on the page.

Index settings include a button to rebuild the index manually to include encrypted files in the indexing and to change the location of the index on the system.

The setting “Respect power settings when indexing” forces the indexing to respect the system’s power settings.

Folders can be excluded from search. Windows 11 includes several folders that are excluded by default including the ProgramData folder the AppData folder or the Windows folder.

Folders can be added to the list and existing folders can be removed from it as well.

Security

Windows Defender

Windows Defender is the default security solution² of Microsoft's Windows 11 operating system. It is enabled automatically unless a different security solution is installed.

Administrators may use the following methods to find out if Windows Defender is the default security solution on the Windows 11 device.

Using Windows Security

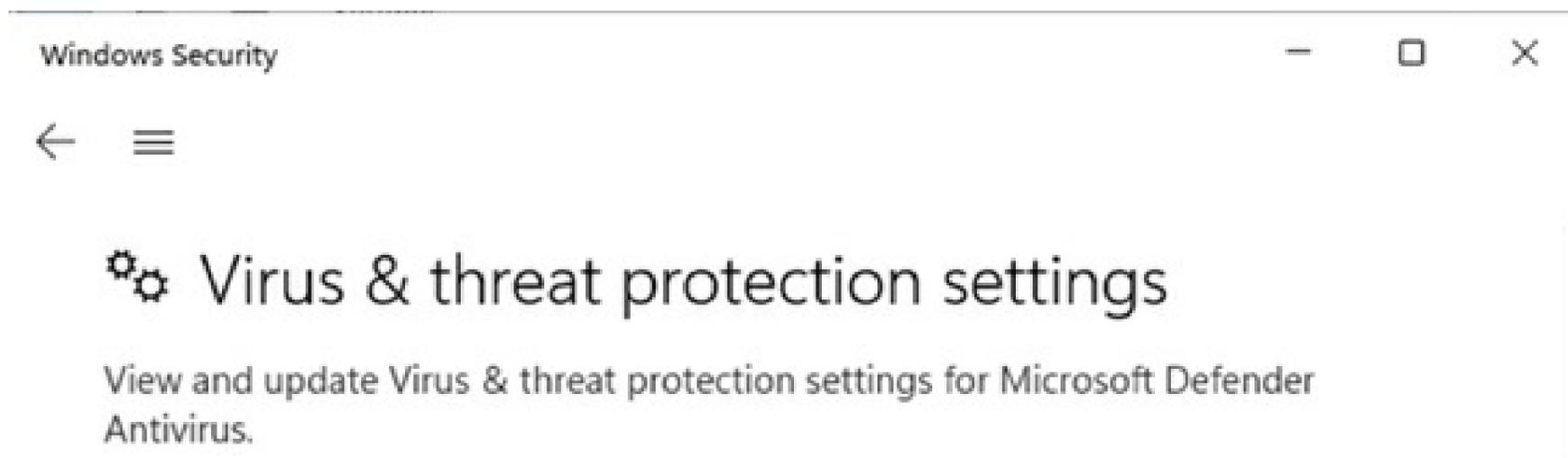


Figure 126: Windows Defender Security Solution

1. Open the Settings application either with the keyboard shortcut Windows+I or by selecting Start Settings.
2. Go to Privacy Security Windows Security.
 - . Select Open Windows Security on the page that is displayed.
4. Open Virus threat protection.
 - . Select "Manage settings" under Virus threat protection settings.
 - . The name of the antivirus solution is displayed at the top of the page.

Using PowerShell

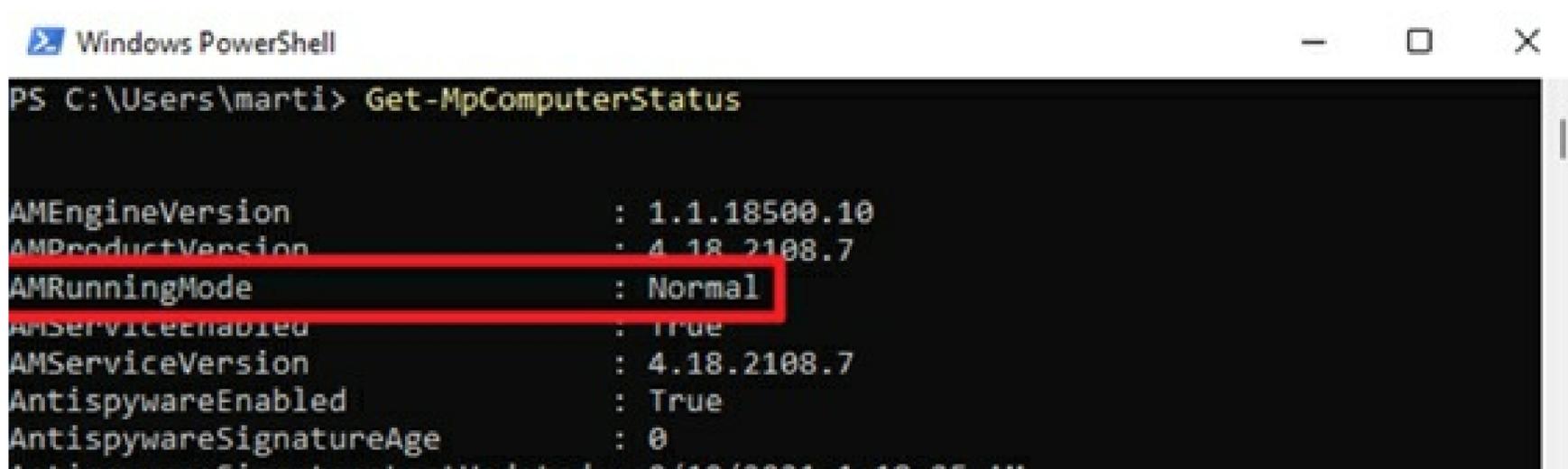


Figure 127: Windows Defender Running Check

1. Open the Start menu.
2. Type PowerShell and load the result to start a new PowerShell window.
 - . Run the command `Get-MpComputerStatus`.
4. Check the `AMRunningMode` value. If it is "normal" Microsoft Defender Antivirus is in active mode.

The other values are:

Passive mode means Microsoft Defender Antivirus running but is not the primary antivirus/antimalware product on your device. Passive mode is only available for devices that are onboarded to Microsoft Defender for Endpoint and that meet certain requirements.

EDR Block Mode means Microsoft Defender Antivirus is running and Endpoint detection and response (EDR) in block mode a capability in Microsoft Defender for Endpoint is enabled.

SxS Passive Mode means Microsoft Defender Antivirus is running alongside another antivirus/antimalware product and limited periodic scanning is used.

Windows Defender Configuration

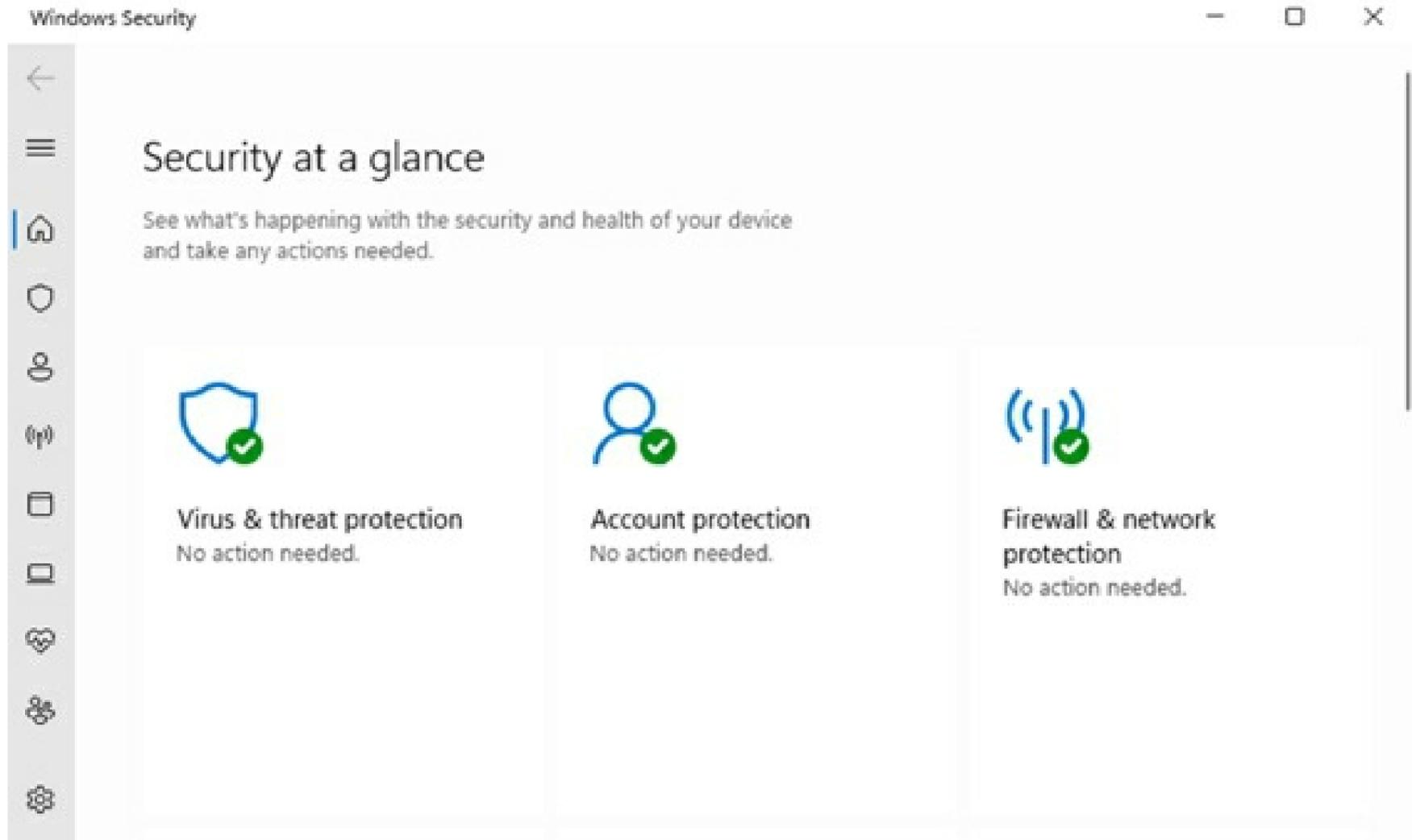


Figure 128: Windows Security

Windows Security is the central location for managing Windows Defender on home versions of Microsoft Windows 11.

1. Open the Start menu.
2. Type Windows Security and load the result to open the dashboard.

All menus are displayed in the main pane and also as icon links on the left sidebar.

Virus & threat protection

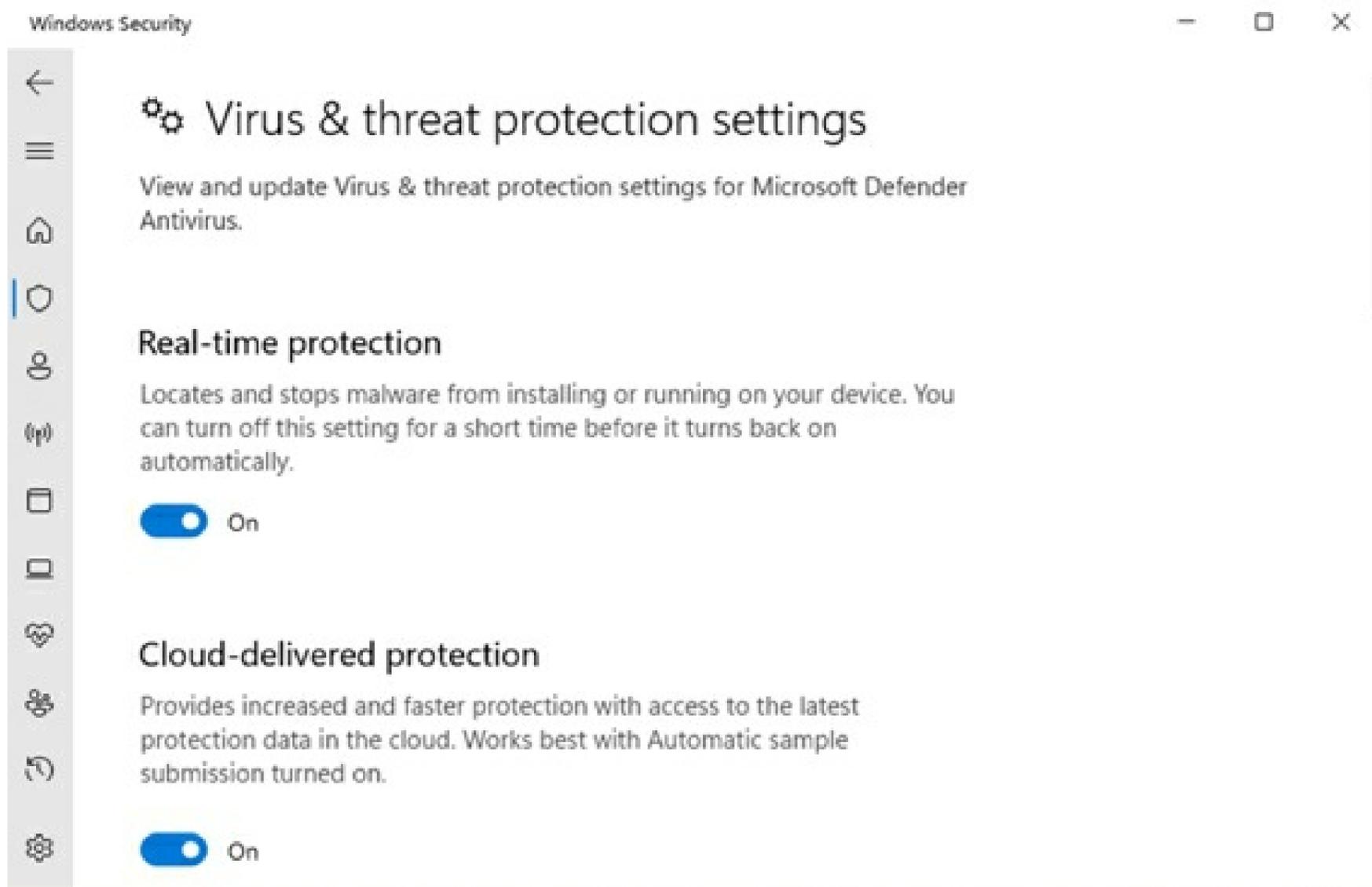


Figure 129: Windows Defender Virus Threat Protection

Virus & threat protection is an important page in Windows Security. You may start quick scans from here and get information about the last scan done by Windows Defender.

A click on Scan options on the page displays options to run a full scan, a custom scan, or a Microsoft Defender offline scan:

- Quick Scan – checks popular and common folders for threats. Fast, but ignores other folders.
- Full Scan – scans the entire hard disk including all files and running programs. Takes longer but is thorough.
- Custom Scan – select the files and locations for the scan.
- Microsoft Defender Offline scan – may identify and remove hard-to-detect and remove threats from the system. May also take some time to complete.

The Protection History lists protection suggestions and recommendations. It may remind you that a feature is turned off, which it recommends turning on.

Allowed threats are threats that a user or admin allowed to run on the device. This may happen if a file is identified erroneously as malicious by Windows Defender.

Virus and Threat Protection Settings display the following options:

- Real-time protection – enable or disable real-time protection. This feature turns itself back on automatically after a short period.
- Cloud-delivered protection – uses local and cloud data to identify threats.
- Automatic sample submission – files are uploaded automatically to Microsoft for scanning. Microsoft may use the information to protect others from the same threat. Option to submit a sample manually is provided.
- Tamper Protection – secures important security features on the system to protect them from tampering by others.
- Controlled Folder Access – Not enabled by default. The feature protects files against ransomware attacks. It protects files in common folders such as Documents, Pictures, or Videos. Users may add

- custom folders to the listing. Apps may be added to the list of trusted apps to access protected files.
- Exclusions – add files to the list of exclusions to exclude them from Microsoft Defender Antivirus scans.

Account Protection

The menu displays account-specific protection options. In particular:

- View the Microsoft account info if signed-in with a Microsoft account.
- Manage sync settings.
- Manage Windows Hello sign-in options.
- Configure Dynamic Lock

Dynamic Lock is a security feature that requires a mobile phone that is paired via Bluetooth with the PC. When enabled Dynamic Lock will lock the system automatically when the user moves away (provided that the mobile phone is not left behind).

Firefox & network protection

The page reveals whether the domain private and public firewall is enabled. It has a link to Windows Defender Firewall with Advanced Security which can be used to manage create and change firewall rules among other things.

Apart from that administrators may allow apps through the firewall on this page change firewall notification settings and restore the firewall to the defaults.

App & browser control

The App Browser control page lists options to configure the reputation-based protection and exploit protection features.

Reputation-based protection better known as protection against potentially unwanted apps may be turned on or off on the page. Turned on Windows Defender will block downloads and executions of programs that it considers potentially harmful.

Exploit protection is turned on by default but some of the options are turned off.

Device Security

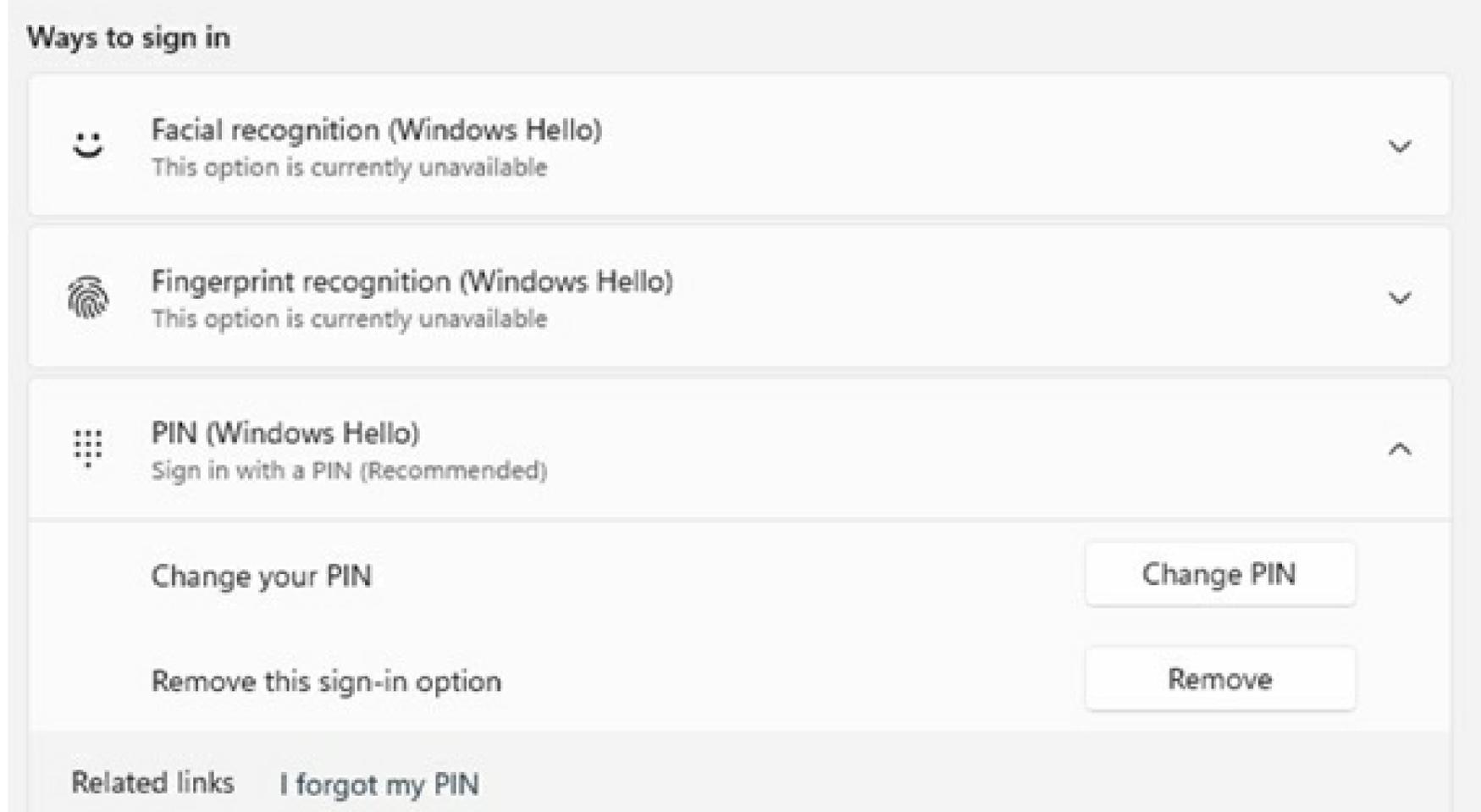
Device Security lists hardware security capabilities of the device. Standard hardware security requires TPM 2.0 secure boot DEP and UEFI MAT. Core Isolation adds virtualization-based protections to the device.

Remove the PIN from an account

Microsoft may enforce the use of a Pin to sign-in to a Microsoft Account on Windows 11. PIN which is part of Windows Hello offers a more comfortable option to sign-in. Downside is that it is less secure especially if a four digit or less PIN is set and that you may lock yourself out of the account if you enter it incorrectly too many times.

You can still sign-in using a password but may need to turn off the use of the PIN in the operating system's Settings before you can do so.

Accounts > Sign-in options



Do the following to disable the PIN sign-in option on a Windows 11 PC:

1. Select Start > Settings to open the Preferences.
2. Go to Accounts > Sign-in Options.
 - . Select Pin (Windows Hello).
4. Activate the “remove” button.
 - . Confirm your choice with another click on the “remove” button.
 - . Type the account password of the Microsoft Account for verification purposes.

Note: If remove is not selectable scroll down to Additional Settings on the Sign-in options settings page and set “For improved security, only allow Windows Hello sign-in for Microsoft accounts on this device (Recommended)” to off. Reload the Sign-in options page afterwards and the remove button should be active.



Disable the Set Up Pin Prompt on start

Windows 11 displays a “set up Pin” prompt on every sign-in to the system when you use the method described above to disable the Pin again.

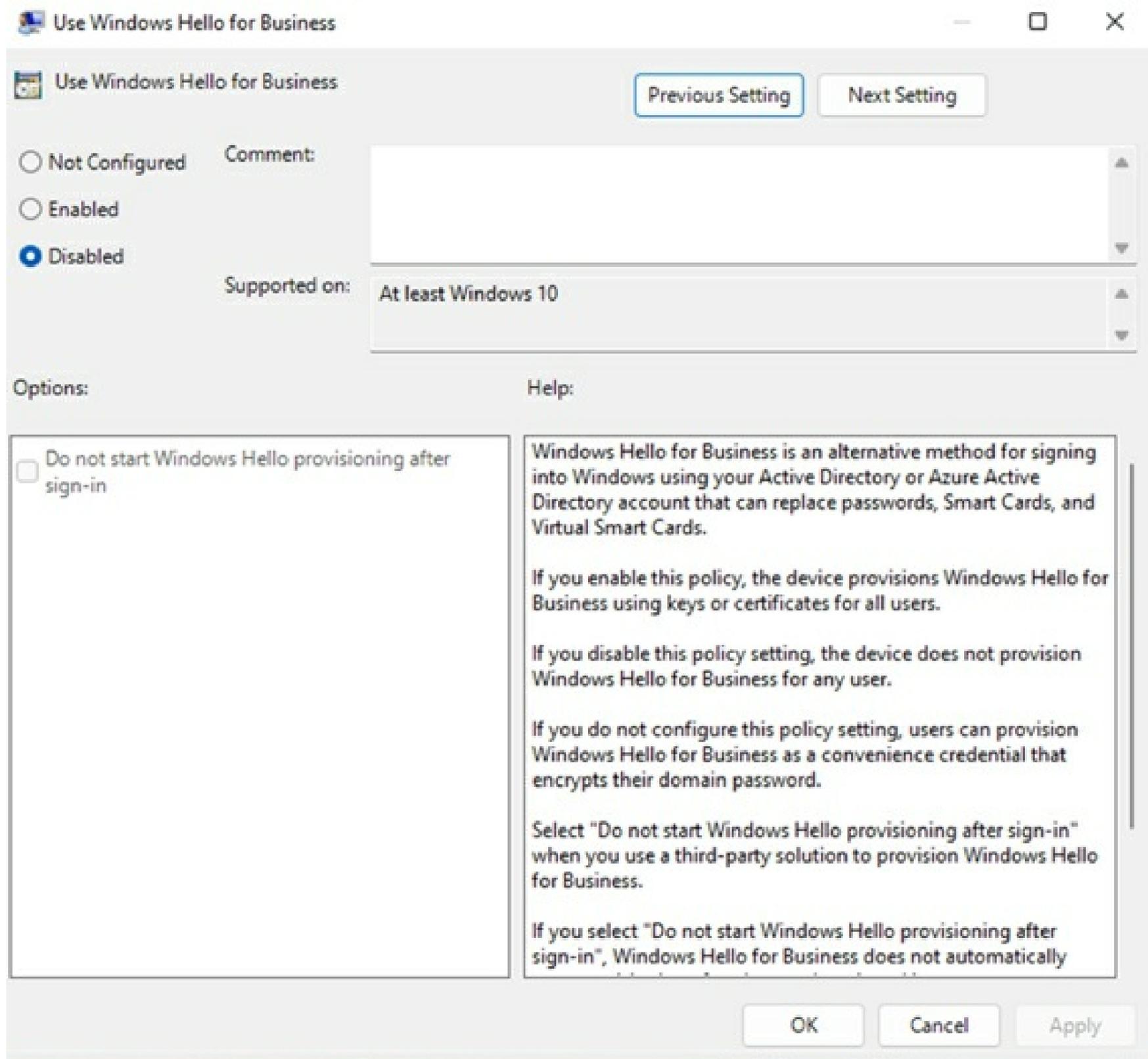


Figure 130: Disable Windows Hello

Windows 11 Pro Education and Enterprise devices may be configured to turn this off completely. Note that doing so will disable Windows Hello entirely.

1. Open the Start menu.
2. Type gpedit.msc and launch the "Edit group policy" result that is displayed in the search results.
 - . Use the folder structure on the left and go to Computer Configuration > Administrative Templates > Windows Components > Windows Hello for Business.
4. Double-click on the policy "Use Windows Hello for Business".
 - . Set the policy to Disabled on the page that opens.
- 6.

Windows 11 won't display the prompt to set up a PIN anymore when you start the operating system.

Unlock downloaded files or email attachments

📁 tportable.3.0.0 Properties



General Security Details Previous Versions



tportable.3.0.0

Type of file: Compressed (zipped) Folder (.zip)

Opens with: 📁 Windows Explorer

Change...

Location: C:\Users\Martin\Downloads

Size: 34.8 MB (36,559,583 bytes)

Size on disk: 34.8 MB (36,564,992 bytes)

Created: Wednesday, September 1, 2021, 5:47:33 AM

Modified: Wednesday, September 1, 2021, 5:48:16 AM

Accessed: Today, September 1, 2021, 1 minute ago

Attributes: Read-only Hidden

Advanced...

Security: This file came from another computer and might be blocked to help protect this computer.

Unblock

OK

Cancel

Apply

Microsoft's Windows 11 operating system comes with an Attachment Manager which is a security component of the operating system designed to protect computer users against the launching of unsafe email attachments or

Internet downloads.

https://support.microsoft.com/en-us/topic/information-about-the-attachment-manager-in-microsoft-windows-c4_a4dcd-de-2af-ee9b-cd-9-ae42

Advanced Attachment Manager configuration

System administrators may configure the behavior of the Attachment Manager in the Registry or by using the Group Policy.

Download files and attachments are assigned the following risk levels based on the following parameters:

- The program that is being used.
- The file type that is downloaded or being opened.
- The security setting of the Web content zone the file is downloaded from.

Based on these files have the following risk associated with them:

- High Risk – If the attachment is in the list of high risk file types and is from the restricted zone Windows blocks the user from accessing the file. If the file is from the Internet zone Windows prompts the user before accessing the file.
- Moderate Risk – If the attachment is in the list of Moderate Risk file types Windows will not prompt the user before accessing the file regardless of the file's zone information.
- Low Risk – If the attachment is in the list of low risk file types Windows will not prompt the user before accessing the file regardless of the file's zone information.

Windows users may unblock files by default. One option to do so is to right-click on a file and select properties from the context menu. The option to unblock the file is displayed at the bottom of the properties window. Check the box and select apply to unblock it.

Windows displays a security warning page if a file is blocked. Users can unblock the file using the dialog by unchecking "always ask before opening this file" before selecting opening.

The file may be launched without security warning from this moment on.

The following policies are available:

Notify antivirus programs when opening attachments

Windows informs registered antivirus solutions to scan file attachments when users attempt to open these files on the local system. If the antivirus program fails to scan the file the file is blocked from being opened.

Path: User Configuration\Administrative Templates\Windows Components\Attachment Manager

Registry: HKE _CURRENT_USER\ Software\Microsoft\Windows\CurrentVersion\Policies\Attachments

- Name: ScanWithAntivirus
- Type: Dword
- Values:
 - 1 – Off
 - 2 –Optional
 - – On

Trust logic for file attachments

The policy configures the logic that Windows uses to determine file risks. Windows' default logic prefers the file handler over the file type. Administrators may change that to trust the file type over the file handler or to use both to be even more restrictive.

Path: User Configuration\Administrative Templates\Windows Components\Attachment Manager

Registry: HKE _CURRENT_USER\ Software\Microsoft\Windows\CurrentVersion\Policies\Attachments

- Name: UseTrustedHandlers
- Type: Dword
- Values:

- 1 – File Type
- 2 – File Handler
- – Both

Do not preserve zone information in file attachments

The policy defines whether Windows marks file attachments that have information about their zone of origin. Requires NTFS.

Path: User Configuration\Administrative Templates\Windows Components\Attachment Manager

Registry: HKE _CURRENT_USER\ Software\Microsoft\Windows\CurrentVersion\Policies\Attachments

- Name: SaveZoneInformation
- Type: Dword
- Values:
- 1 – On
- 2 – Off

Hide mechanisms to remote zone information in file attachments

The policy defines whether users may remove zone information from saved file attachments using a file's properties dialog or through the Security Warning dialog box. By default both options are available.

Path: User Configuration\Administrative Templates\Windows Components\Attachment Manager

Registry: HKE _CURRENT_USER\ Software\Microsoft\Windows\CurrentVersion\Policies\Attachments

- Name: HideZoneInfoOnProperties
- Type: Dword
- Values:
- 1 – Off
- 2 – On

Default risk level for file attachments

Set the default risk level for file attachments. The default risk level is moderate.

Path: User Configuration\Administrative Templates\Windows Components\Attachment Manager

Registry: HKE _CURRENT_USER\ Software\Microsoft\Windows\CurrentVersion\Policies\AssociationsAttachments

- Name: DefaultFileTypeRisk
- Type: Dword
- Values:
- 1 0 – High
- 1 1 – Moderate
- 1 2 – Low

Inclusion list for high risk file types

Inclusion list for low file types

Inclusion list for moderate risk file types

Add custom file extensions to the high moderate and low file risk assessments.

Path: User Configuration\Administrative Templates\Windows Components\Attachment Manager

Registry: HKE _CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Policies\Associations

- Name: HighRiskFileTypes
- Name: ModRiskFileTypes
- Name: **LowRiskFileTypes**
- Type: String Value
- Values: file types separated by " ". Example: .exe .cmd

Backups and recovery

Backups are important. Files may become corrupt because of hard drive failures, copy errors or networking issues. There are also other dangers, such as malware on the Internet, e.g. ransomware that encrypts files or viruses that delete files automatically.

Sometimes it is Windows itself, for instance during or after upgrades, that may not run correctly anymore or at all.

Backups come to the rescue when disaster strikes. Most backup solutions, with the exception of cloud-based backups, require a second drive that is connected locally or as a network drive.

File History

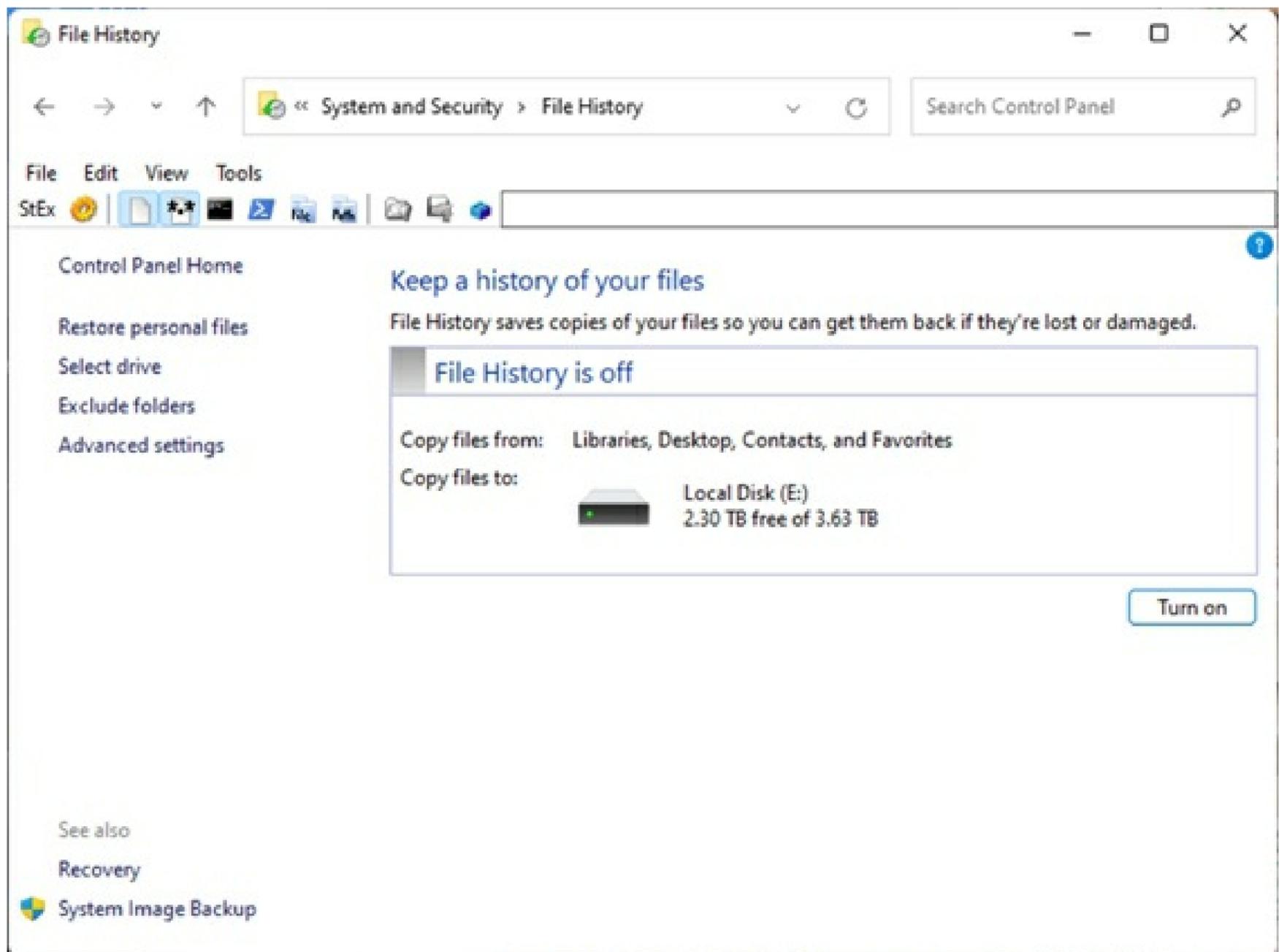


Figure 131: File History

File History backs up older versions of files that reside in certain folders on the hard drive. It backs up files in folders such as Documents or the Desktop, and gives users options to restore older versions of files, even if the current version is corrupt or has been deleted.

File History is disabled by default. Here are the instructions to enable it:

1. Open Start.
2. Type File History and select the first result to open the File History management page.
 - . Activate the “select drive” option in the sidebar on the left.
4. Select one of the available local drives, or select “add network location” if a network drive is to be used for File History. Click on OK to pick the selected drive.
 - . Select the “Exclude folders” option next to add or remove folders from File History. Note that File History is limited to folders under the current username: `c:\users\username`
 - . Select “Advanced Settings” next. The default versioning saves files every hour and keeps saved versions forever; this can be changed to other values. Especially the “forever” option may

cause lots of disk space to be used. It can be changed to another interval e.g. months or “until space is needed”. Save the changes afterwards.

- . Activate the “turn on” button on the main File History page to enable the feature on the device.
- . A “run now” link is displayed once File History is turned on which may be activated at any time to save a copy. It is recommended to do that right then and there for the first time.

With File history enabled it is now possible to restore files or folders using the feature.

Restore files using File History

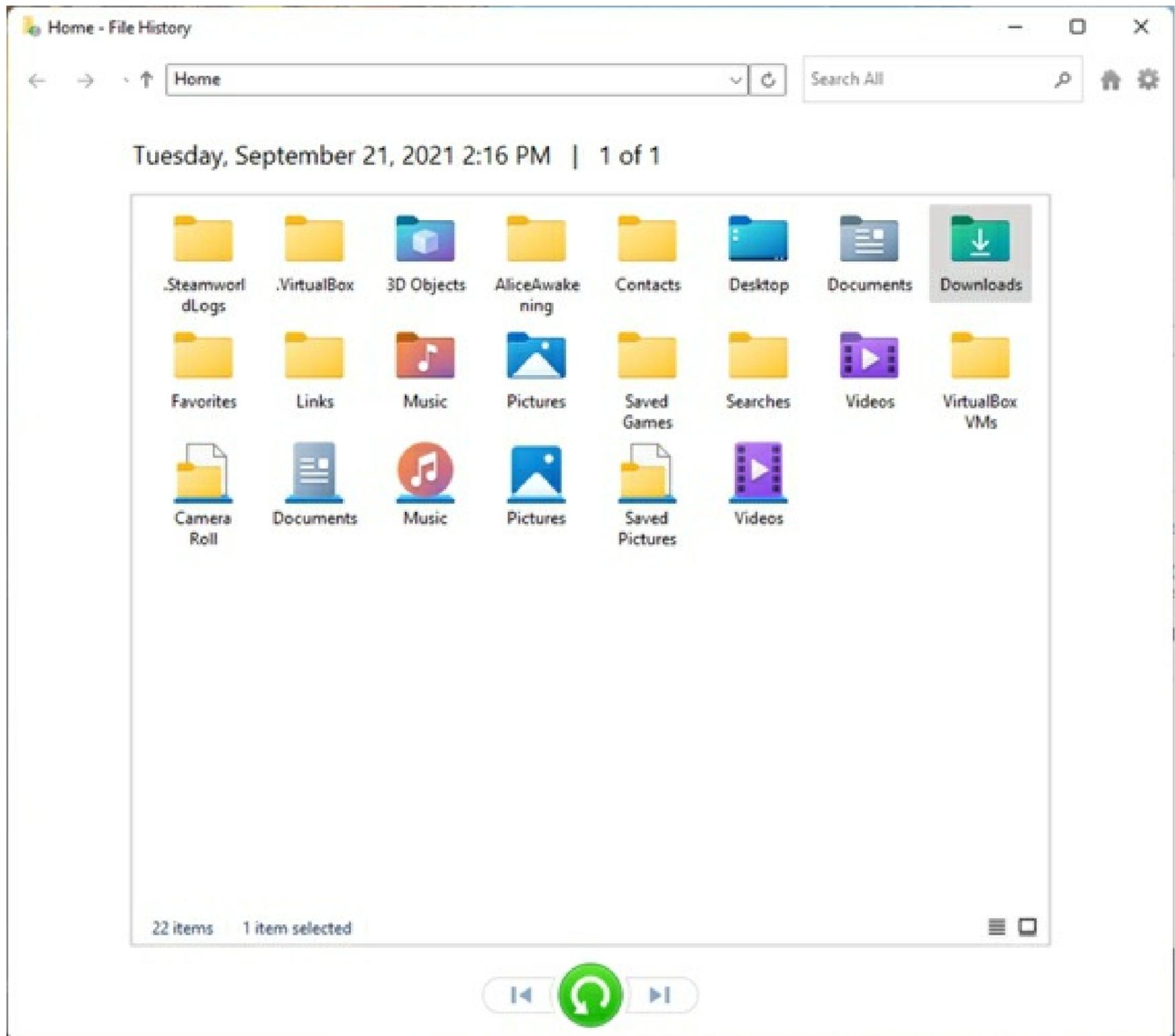


Figure 132: File History Restore

Windows 11 supports two main options when it comes to restoring files saved by the File History feature. The first is displayed on the main File History page in the Control Panel:

1. Open Start.
2. Type File History and select the result.
 - . Click on the “Restore personal files” link in the sidebar of the File History window that opens.
4. File History displays the files and folders that it saved recently. Use the back and forward buttons to go back in time or forward (if available) to find the files or folders that you want to restore. A search option is provided as well to find files or folders that way.
 - . Select any file or folder with a click. Right-click on a file and select the preview option to

preview it without restoration.

- . The green button at the bottom center opens the restore to original location menu. A right-click on the button displays an option to restore the selection to another location.

Open File Explorer for the second.

1. Right-click on any file and select Properties
2. Switch to the Previous Versions tab in the properties window.
 - . File History displays all previous versions of the file in the interface in chronological order.

Files can be opened or restored using the menu.

Setting up a backup solution

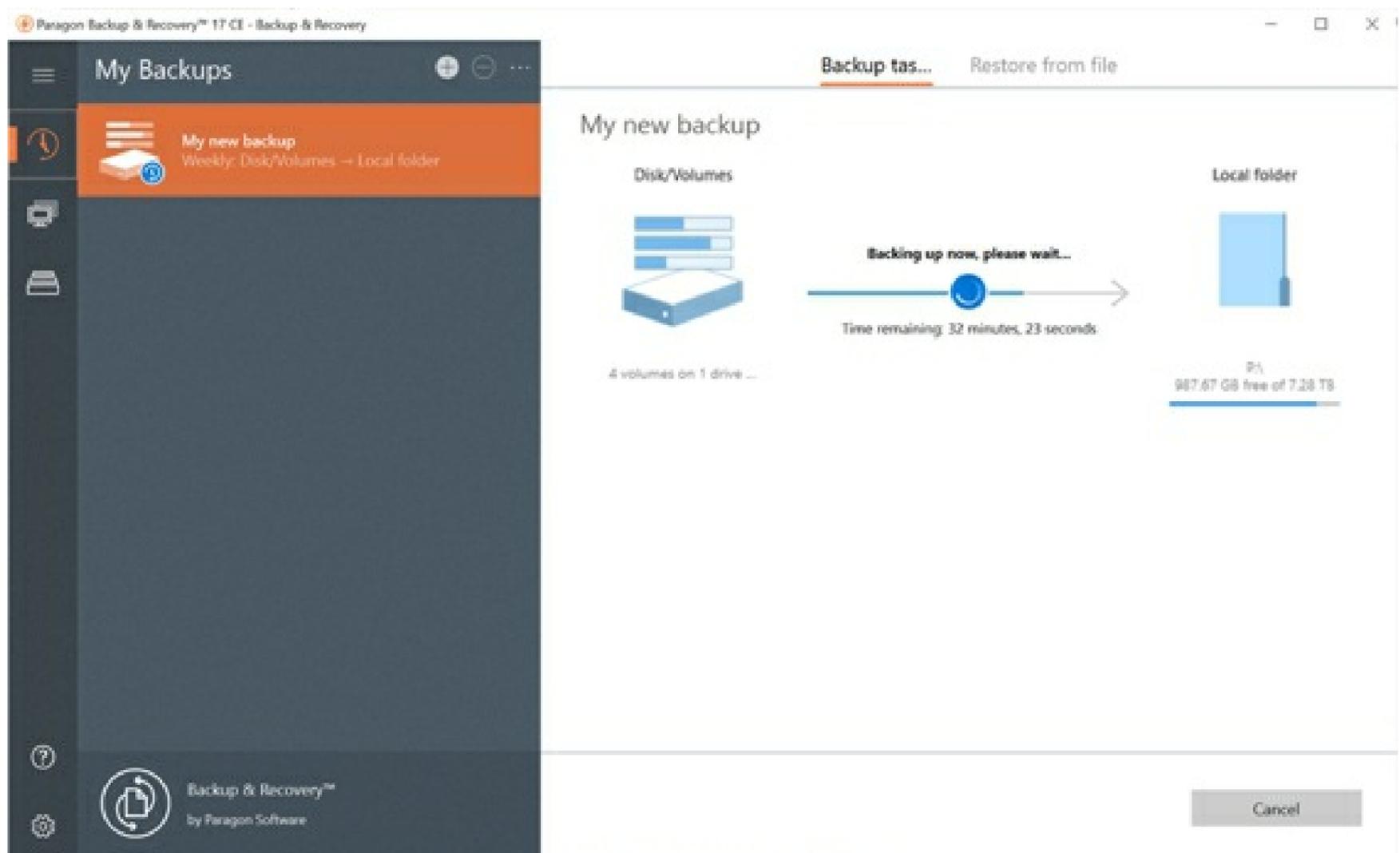


Figure 133: Backup solution

Backups are essential as data may get deleted corrupted or changed without the user's doing or other precautions in place. A hard drive may fail or it may have bad sectors a virus or ransomware attack may be successful in deleting or encrypting files of importance or files may have been deleted by accident. Then there are Windows updates which may introduce bugs and issues.

Backups are a key element in any recovery strategy. It is essential to start right away by setting up a backup solution and making sure that it runs regularly.

Windows 11 includes some backup options but these are not overly reliable and it is better to use a third-party solution.

Paragon Backup Recovery² is a free backup solution for Windows. It supports backing up entire drives including the system partition and includes options to restore it while Windows 11 is running or when it is not running. Installation of the backup software is straightforward.

Note: A secondary hard drive external or internal is needed to store the backups.

Creating the first backup job

1. Click on Backup source to display the backup options. Paragon supports backing up the entire computer disks and volumes or files and folders.
2. Select the Disk/Volumes option. Backup Recovery displays all disks and the partitions.
 - . Select all drives that you want to backup with the mouse. The disk that Windows 11 is installed on should be included (you recognize it as it includes the c: partition). Backup Recovery displays the total disk size and the used space of all selected disks.
4. Select OK to continue.
 - . Click on Destination to select the device that the backup should be stored on.
 - . Select the “is not scheduled” link to create a backup schedule. Backups can run daily weekly monthly or on events e.g. on system start.
 - . Switch to the options tab on the page and check “prevent from sleep/hibernate during backup”. Backup integrity checks can be enabled on the page and passwords may be set to protect backups.

Select Back up now to start the initial backup.

Tip: Paragon Backup Recovery creates full backups only by default. You may switch to using incremental backups and full backups to save storage space.

Tip 2: Select Settings Recovery Media Builder to create recovery media. Boot the PC using the media if Windows 11 does not boot anymore. Select “download ADK” on the settings page to download the required ADK package [2](#). Once it has been downloaded add the path to the installed ADK on the Recovery Media Builder page.

Recovery Media can be placed on a USB thumb drive or an ISO file which can be burned to DVD.

Recovery

Paragon Backup Recovery supports two main modes of recovery. If the Windows 11 device boots it is possible to mount backups using the software to copy files and folders to another location. The second option uses a WinPE recovery environment. It needs to be created before it can be used.

The main advantage of using recovery media builder is that you can restore a backup even if the PC won't boot anymore e.g. when Windows throws an error during boot that prevents the operating system from loading.

Expert

Troubleshooting

Troubleshoot apps

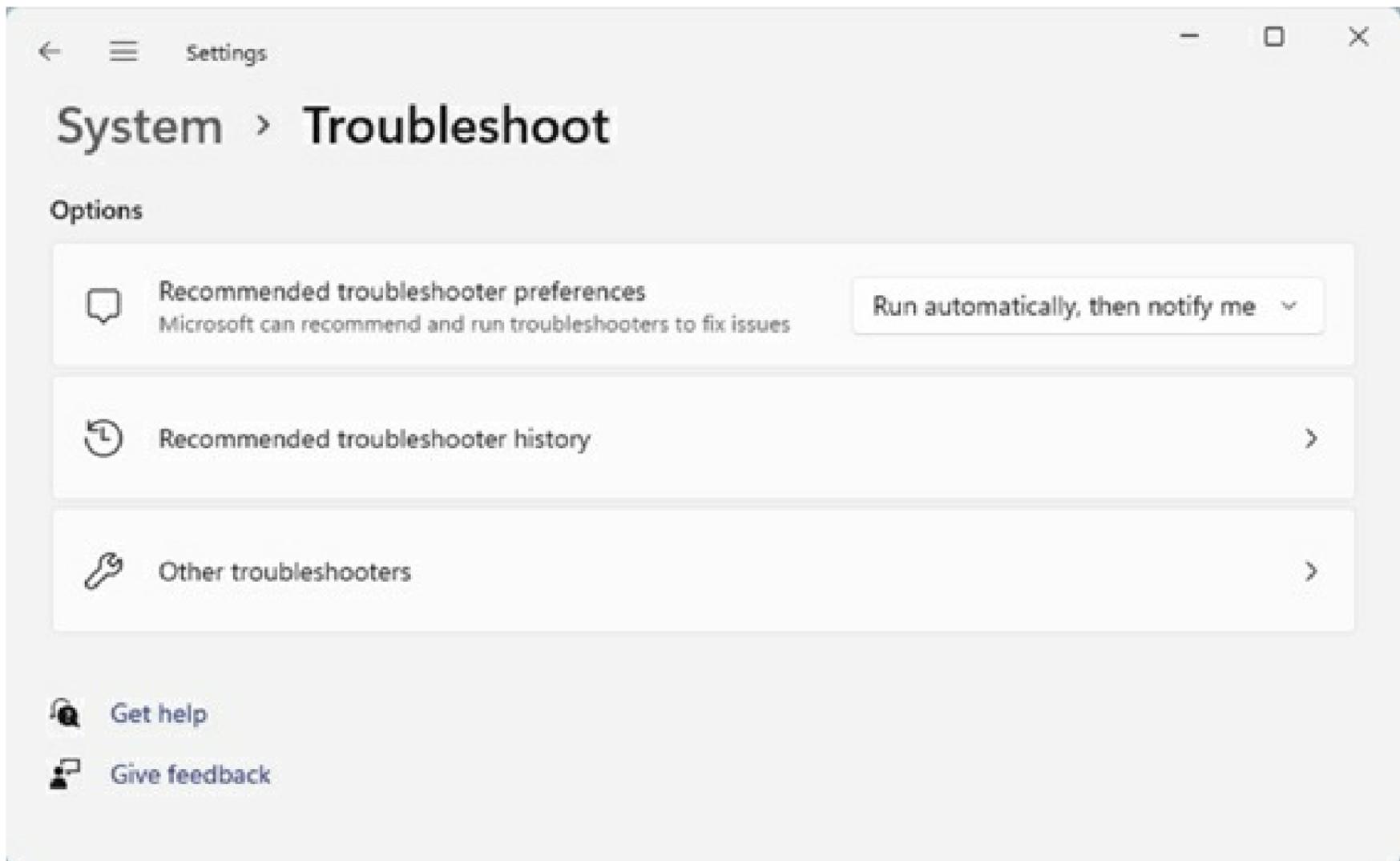


Figure 134: System Troubleshoot

Windows 10 users who have upgraded their PCs to Windows 11 may have troubles finding the Troubleshoot options as Microsoft moved them to a new location. Users may search for Troubleshoot when the Start menu or Settings application is open.

1. Open the Settings application either with the shortcut Windows-I or by selecting Start Settings.
2. Go to System > Troubleshoot.

The main troubleshoot page lists just a few options:

- Recommended troubleshooter preferences – Microsoft Windows 11 can recommend and run troubleshooters to fix issues. Configured to run automatically and then notify the user this option can be changed to “run automatically don’t notify” “ask me before running” or “don’t run any” instead.
- Recommended troubleshooter history – lists past troubleshooting runs provides details on the troubleshooting attempt and its outcome.
- Other troubleshooters – displays a number of additional troubleshooters previously known as Fix-It solutions that users may run. The following troubleshooters are listed and can be run manually:

- Internet Connection
- Playing Audio
- Printer
- Windows Update
- Bluetooth
- Camera
- Connection to a Workplace using DirectAccess
- Incoming Connections
- Keyboard
- Network Adapter
- Power
- Program Compatibility Troubleshooter
- Recording Audio
- Search and indexing
- Shared folders
- Video Playback
- Windows Store Apps
- Privacy resources

All troubleshooters open a new program window when the run button is activated. Some may run automatically others may ask the user to select the issue that is experienced.

Tip: these troubleshooters may fix basic issues that Windows 11 users experience. It is often a good idea to run these first before trying more advanced fixes.

Booting into the Advanced options menu

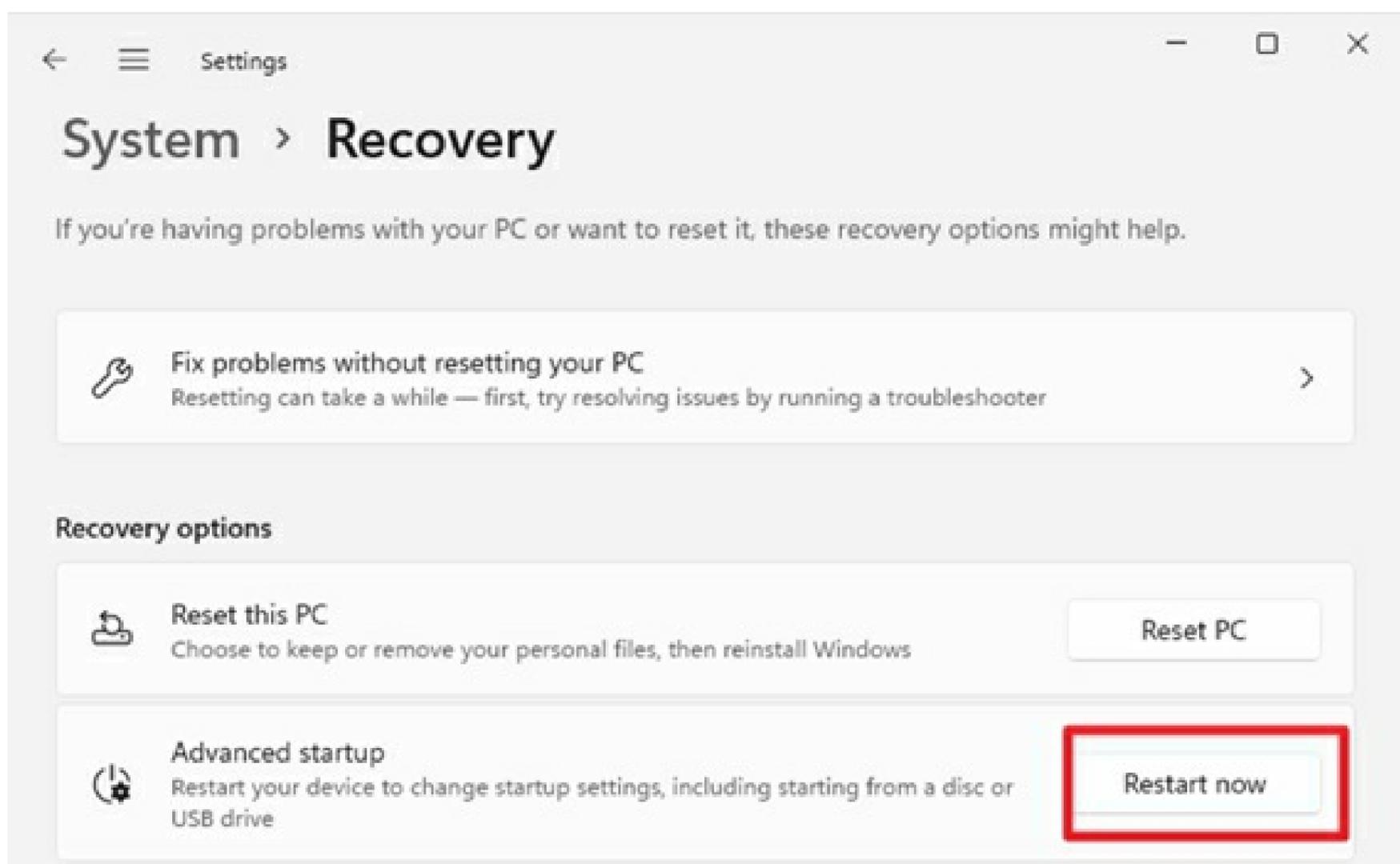


Figure 135: Troubleshoot Advanced Startup options

Windows administrators may boot into the Advanced options menu of the operating system to troubleshoot certain issues that are experienced on the system.

The main options that are provided are the following ones:

- Startup Repair – useful if Windows 11 does not boot correctly anymore. Start repair tries to fix startup related issues automatically when the option is selected.
- Startup Settings – launch Windows in different modes e.g. in Safe Mode.
- Uninstall Updates – remove recently installed updates to go back to a previous system useful if an update is causing issues e.g. boot issues.
- System Restore – restore a System Restore point. Works only if System Restore is enabled on the device.
- Command Prompt – run commands from the command prompt.
- System Image Recovery – restore Windows from a system image.
- Go back to the previous version – only available after upgrades from Windows 10 to Windows 11 and only for a limited period.

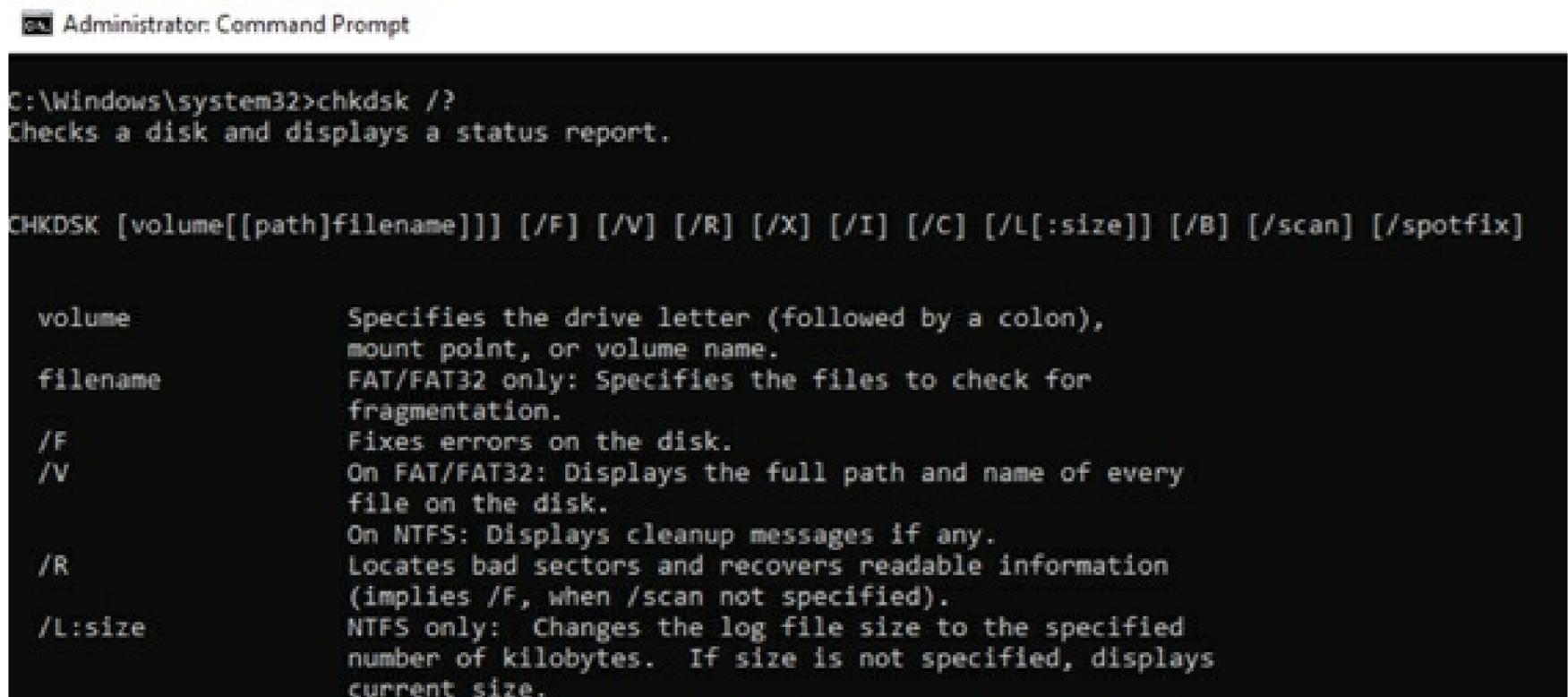
How to access the Advanced options menu

Windows 11 offers several methods to boot into the Advanced options menu on the device.

1. Run the command `shutdown.exe /r /o` from an elevated command prompt window or PowerShell prompt.
2. Hold down the Shift-key on the computer keyboard before selecting the Restart option of the Start Power menu.
 - . Go to Settings > Windows Update > Advanced options > Recovery and select Restart now next to Advanced startup.

Windows loads the “choose an option” menu when one of the methods is used. Select Troubleshoot in the menu and on the next page Advanced options to display the options on the screen.

Checking and repairing hard drive errors



```
Administrator: Command Prompt
C:\Windows\system32>chkdsk /?
Checks a disk and displays a status report.

CHKDSK [volume[[path]filename]] [/F] [/V] [/R] [/X] [/I] [/C] [/L[:size]] [/B] [/scan] [/spotfix]

volume          Specifies the drive letter (followed by a colon),
                 mount point, or volume name.
filename        FAT/FAT32 only: Specifies the files to check for
                 fragmentation.
/F              Fixes errors on the disk.
/V              On FAT/FAT32: Displays the full path and name of every
                 file on the disk.
                 On NTFS: Displays cleanup messages if any.
/R              Locates bad sectors and recovers readable information
                 (implies /F, when /scan not specified).
/L:size         NTFS only: Changes the log file size to the specified
                 number of kilobytes. If size is not specified, displays
                 current size.
```

Figure 136: Check Disk commands

Hard drives are essential parts of every computer system regardless of whether they are platter-based or Solid State Drives. Drive reliability may go down the longer a drive is in use and read errors or other issues may occur eventually.

Windows includes the Check Disk tool which may be run to check hard drives for errors and issues and to try and repair some of these errors.

Checks the file system and file system metadata of a volume for logical and physical errors. If used without parameters, `chkdsk` displays only the status of the volume and does not fix any errors. If used with the `/f`, `/r`, `/x`, or `/b` parameters, it fixes errors on the

volume.[28](#)

1. Open Start.
2. Type cmd.exe.
 - . Select run as administrator to launch an elevated command prompt window.

Core Check Disk commands:

- chkdsk – runs Check Disk on the active partition in read-only mode. Check Disk reports errors but won't fix them.
- chkdsk /? – displays the help file listing all available Check Disk parameters and options.
- chkdsk c: /f – runs CheckDisk on drive c: and repairs errors that are encountered (if possible).
- chkdsk d: /f /r – runs CheckDisk on drive d: errors are repaired bad sectors are located and readable information is recovered.

Windows 11 includes another tool that may be useful. The tool fsutil can be used to “perform tasks that are related to file allocation table (FAT) and NTFS file systems.

Performs tasks that are related to file allocation table (FAT) and NTFS file systems, such as managing reparse points, managing sparse files, or dismounting a volume. If it's used without parameters, fsutil displays a list of supported subcommands.[29](#)

The commands need to be run from an elevated command prompt window:

- fsutil dirty query c: – the command checks if the specified volume is dirty or not but it does not act on it.
- fsutil dirty set c: – sets the dirty bit manually on the specified drive. Check Disk will be run on the next start of the system to correct issues.

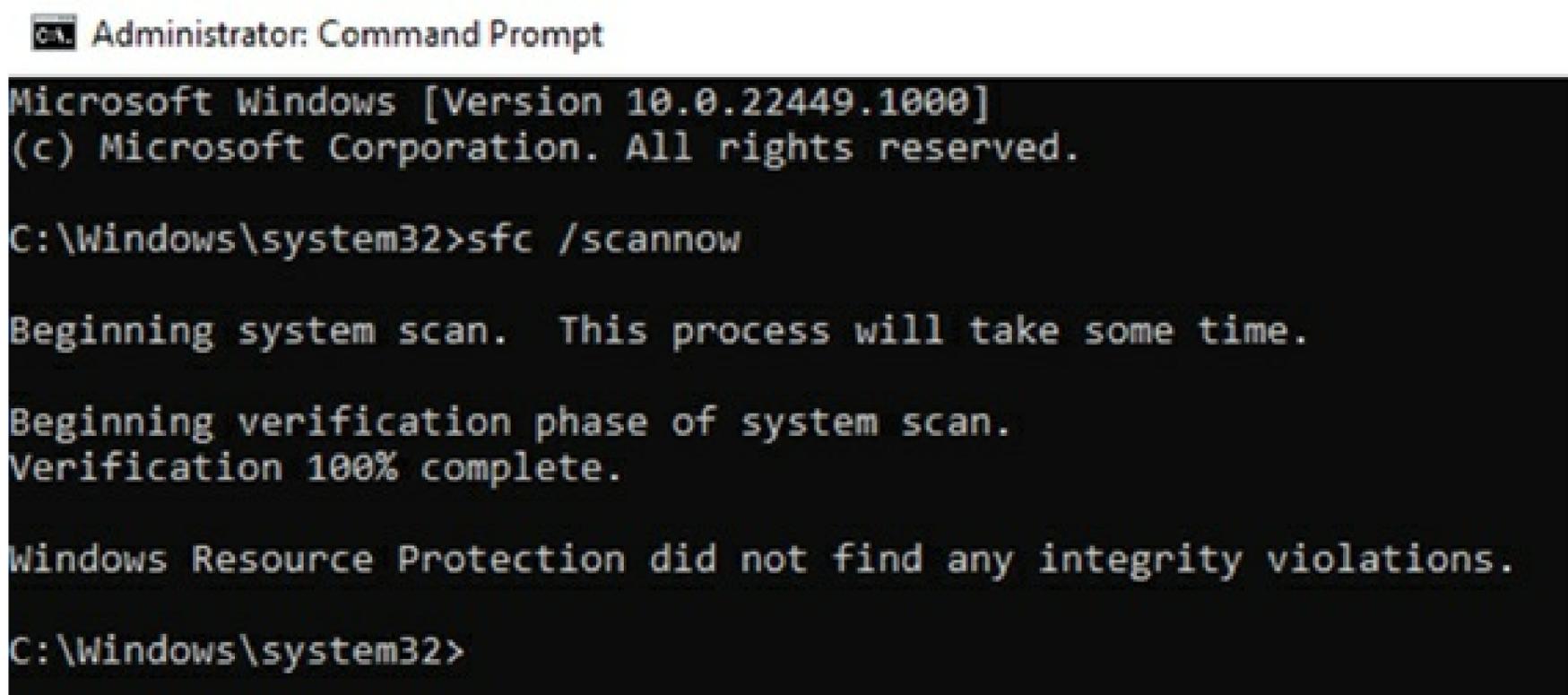
Scan and repair system files with SFC and DISM

System files are protected specifically but there is still the chance that system files may become corrupt. Windows 11 includes several tools just like previous versions of the Windows operating system to scan and repair system files.

System File Checker or short SFC is one of the tools.

Deployment Image Servicing and Management or short DISM⁰ is another more extensive option.

Using SFC



```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.22449.1000]
(c) Microsoft Corporation. All rights reserved.

C:\Windows\system32>sfc /scannow

Beginning system scan. This process will take some time.

Beginning verification phase of system scan.
Verification 100% complete.

Windows Resource Protection did not find any integrity violations.

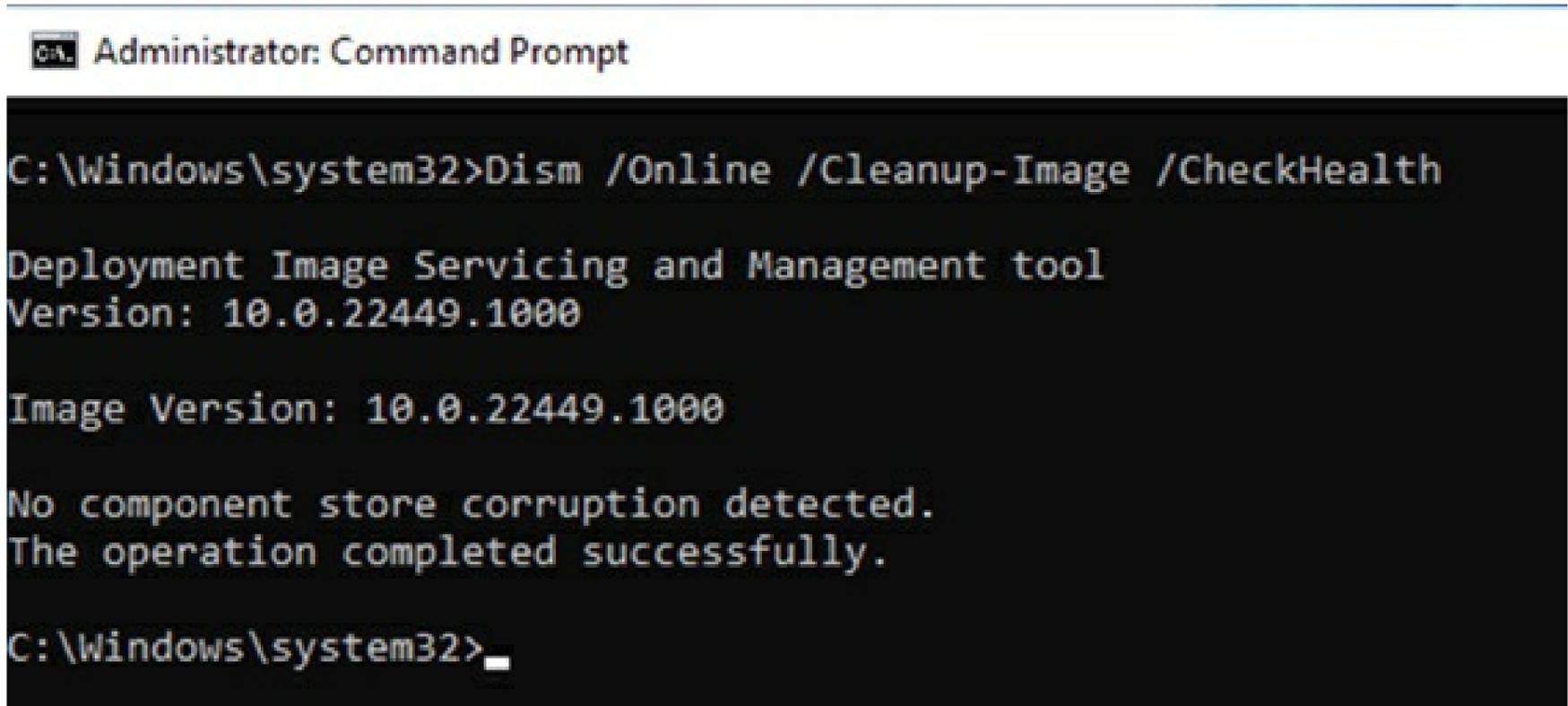
C:\Windows\system32>
```

Figure 137: Troubleshoot SFC command

1. Open an elevated command prompt window e.g. by selecting start typing CMD and selecting the “run as administrator” option that is displayed. Confirm the UAC prompt.
2. Run the command `sfc /scannow`.

The process may take a couple of minutes to complete. Windows displays the verification progress on the command line

Using DISM



```
Administrator: Command Prompt

C:\Windows\system32>Dism /Online /Cleanup-Image /CheckHealth

Deployment Image Servicing and Management tool
Version: 10.0.22449.1000

Image Version: 10.0.22449.1000

No component store corruption detected.
The operation completed successfully.

C:\Windows\system32>
```

Figure 138: Troubleshoot DISM command

1. Open an elevated command prompt window e.g. by selecting start typing CMD and selecting the “run as administrator” option that is displayed. Confirm the UAC prompt.
2. Run the command: `Dism /Online /Cleanup-Image /CheckHealth`
 - . This command checks whether the image has been flagged as corrupted by a failed process and whether the corruption can be repaired.
4. Run the command `Dism /Online /Cleanup-Image /ScanHealth`
 - . This command checks for component store corruption
 - . Run the command `Dism /Online /Cleanup-Image /RestoreHealth`
 - . This command scans the image for component store corruption and performs automatic repair operations.

Notes:

`/Online` – run the specified command on the active operating system.

Repair Windows with an Inplace Upgrade

Windows administrators may try and repair a Windows installation with an Inplace upgrade. Is it necessary that booting and signing-in is still available.

Introduced in Windows 10 Inplace upgrades were designed to install new feature updates on Windows 10 devices. These upgrades install new versions of Windows while keeping user applications settings and files installed and available on the new system.

Inplace Upgrades installs a new copy of Windows over the existing one without touching user files or settings. Corrupt or missing system files are replaced and Registry keys reset to their default values.

The following steps are required to run an Inplace Upgrade on Windows 11:

1. Open an elevated command prompt window e.g. by opening Start typing CMD and selecting run as administrator.
2. Confirm the UAC prompt.

```
. Run the following command: Reg.exe Add
HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion /v AllowInplaceUpgrade /t
REG_DWORD /f /d 1
```

The command instructs Windows to run an Inplace Upgrade. It may take up to 4 hours before the upgrade is executed. Once it is done Windows will remove the Registry key.

Windows Update

Microsoft continues to release monthly cumulative updates for its Windows 11 operating system on the second Tuesday of the month. These updates include security but also non-security improvements and fixes.

All update management tools and processes that worked under Windows 10 continue to work under Windows 11.

Feature updates will be released once a year this is a core difference to feature updates for Windows 10 which were released twice a year.

New Windows 11 feature updates will be released in the second half of the year, usually around September/October according to Microsoft. The first feature update for Windows 11 will be released in September/October of 2022. [31](#)

Microsoft changed the servicing timeline for all editions of Windows 11 as well. Home editions receive updates for 24 months from the release date of the operating system or a feature update, Enterprise and Education editions 36 months. Previously, Home editions received 18 months of servicing, and Enterprise and Education editions 30 months but only for second feature update of the year releases. [32](#)

Edition	Servicing timeline (one release per year)
Windows 11 Enterprise	36 months from release date
Windows 11 Education	
Windows 11 IoT Enterprise	
Windows 11 Pro	24 months from release date
Windows 11 Home	

Windows Update Settings

Some Windows Update settings are only available in specific editions of the operating system. Windows 11 Home offers fewer options than other editions including Windows 11 Pro or Enterprise.

The Settings application displays just some of the available options. More options are found in the Group Policy which is also only supported in Pro Education and Enterprise editions of Windows 11.

Feature updates are listed as optional updates by default that administrators may install but don't have to until the installed version of Windows is reaching end of servicing.

Windows Update in the Settings app

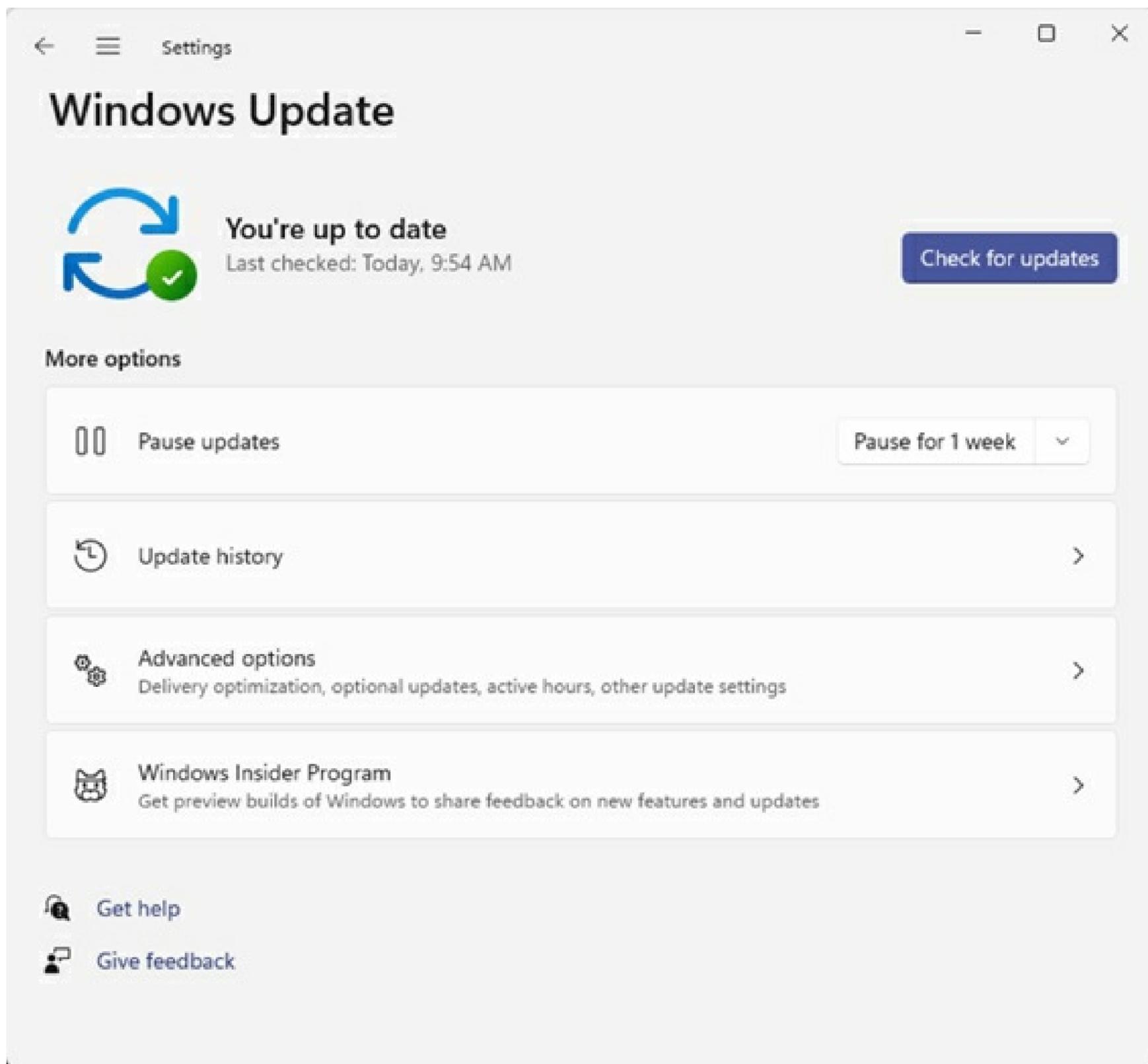


Figure 139: Settings Windows Update

The Settings application displays four options one of which is reserved for the Windows Insider Program.

1. Open the Settings application either with the keyboard shortcut Windows-I or by selecting Start Settings.
2. Open Windows Update.

The following options / links are provided:

- Pause updates – An option to pause Windows updates by up to 1 weeks.
- Update history – Opens a chronological listing of updates that were installed on the device. The list of updates is divided into the following groups which may be expanded and collapsed: Feature Updates Quality Updates Driver Updates Definition Updates and Other Updates. Updates can't be removed from this page.
- Advanced options – List several update related options including whether to download and install updates for other Microsoft products or Active Hours a feature that prevents the restart of the system if updates have been installed.
- Windows Insider Program – The beta program that Microsoft uses to test new operating system versions before they are released to the public. Requires a Microsoft Account.

The Update History

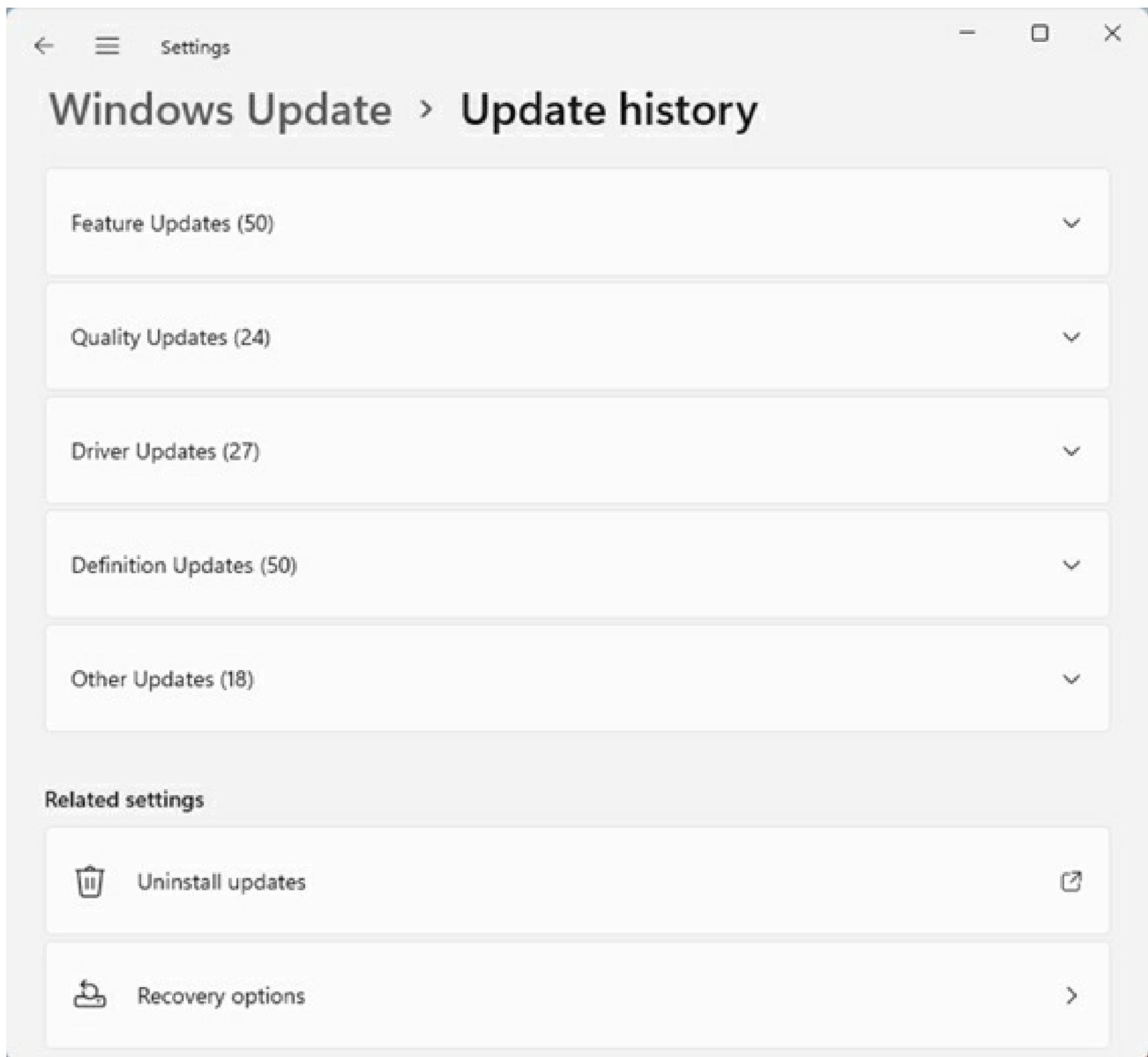


Figure 140: Settings Windows Update History

The Update history displays all installed updates that were delivered via Windows Update. Updates are sorted into the five groups Feature Updates Quality Updates Driver Updates Definition Updates and Other Updates:

- Feature Updates – These are installed once a year only on release versions of Windows. Systems that have joined the Windows Insider Program may receive feature updates more frequently.
- Quality Updates – These are monthly update releases that include security and non-security updates. Preview updates may be installed manually as well.
- Driver Updates – Updated drivers that were downloaded and installed via Windows Update.
- Definition Updates – Windows Defender definitions that get updated for instance to defend against new threats or update existing threats to protect the PC system.
- Other Updates – Any update that is delivered via Windows Update but does not fall into any of the other categories e.g. updates for the Windows Malicious Software Removal Tool.

Updates can't be uninstalled from the Update history page. Links at the bottom open management pages to uninstall updates and the recovery options.

Advanced Options

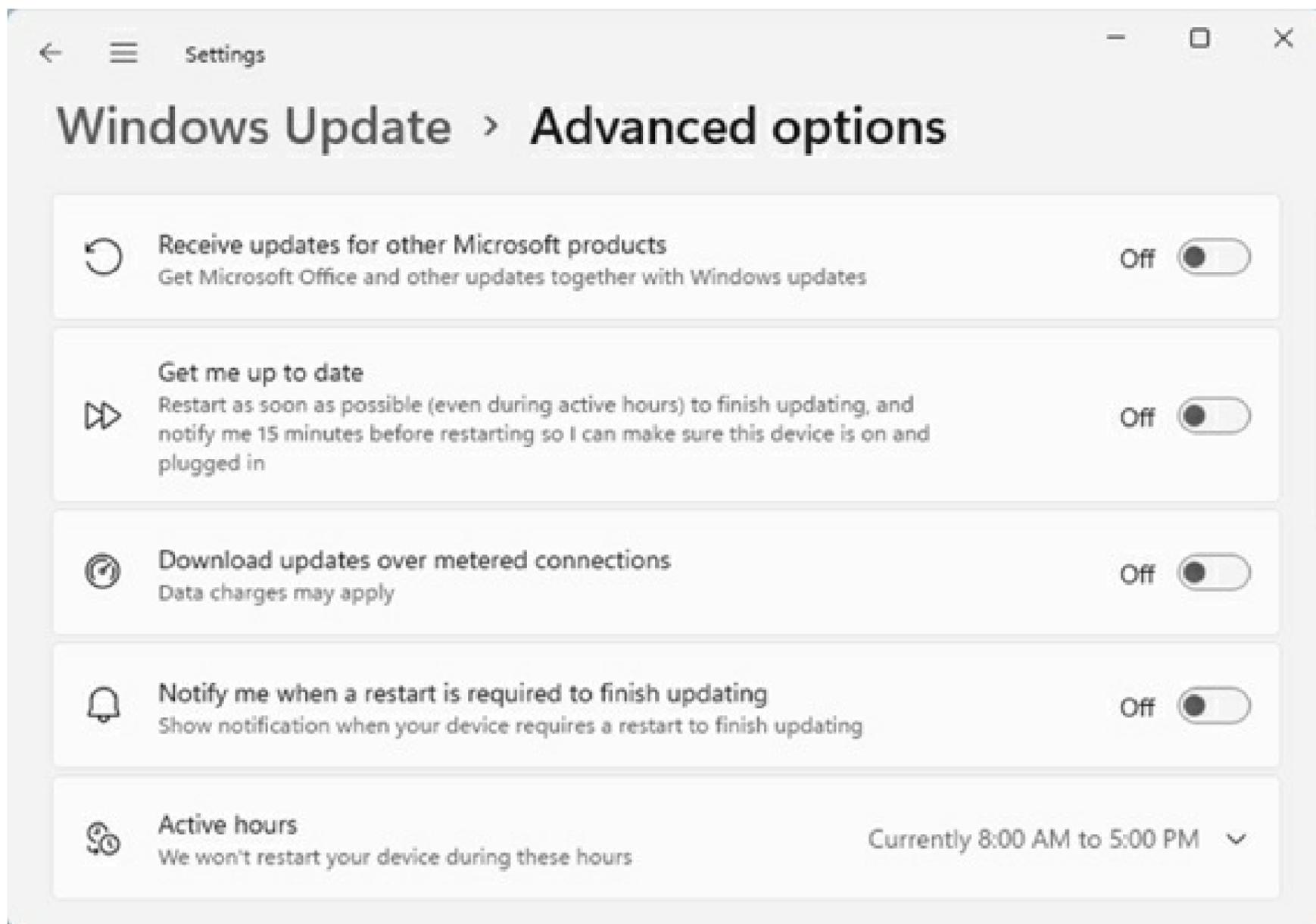


Figure 141: Settings Windows Update Advanced Options

The Advanced options page separates options into two groups. First the main options and then additional options displayed beneath the core ones.

- Receive updates for other Microsoft products – Determines whether other Microsoft products such as Microsoft Office will be updated together with Windows updates.
- Get me up to date – To install updates as soon as they are ready with just 15 minutes advanced notice and by bypassing Active Hours.
- Download updates over metered connections – Allows update downloads even if the PC is connected to a metered connection (which may have different bandwidth restrictions and may include data charges).
- Notify me when a restart is required to finish updating – Shows a desktop notification when the device requires a restart to finish an update.
- Active Hours – Prevents Windows from restarting itself automatically to finalize the installation of updates. Useful to block Windows from restarting because of updates on a work day or during other activities on the computer.

The additional updates provide the following features:

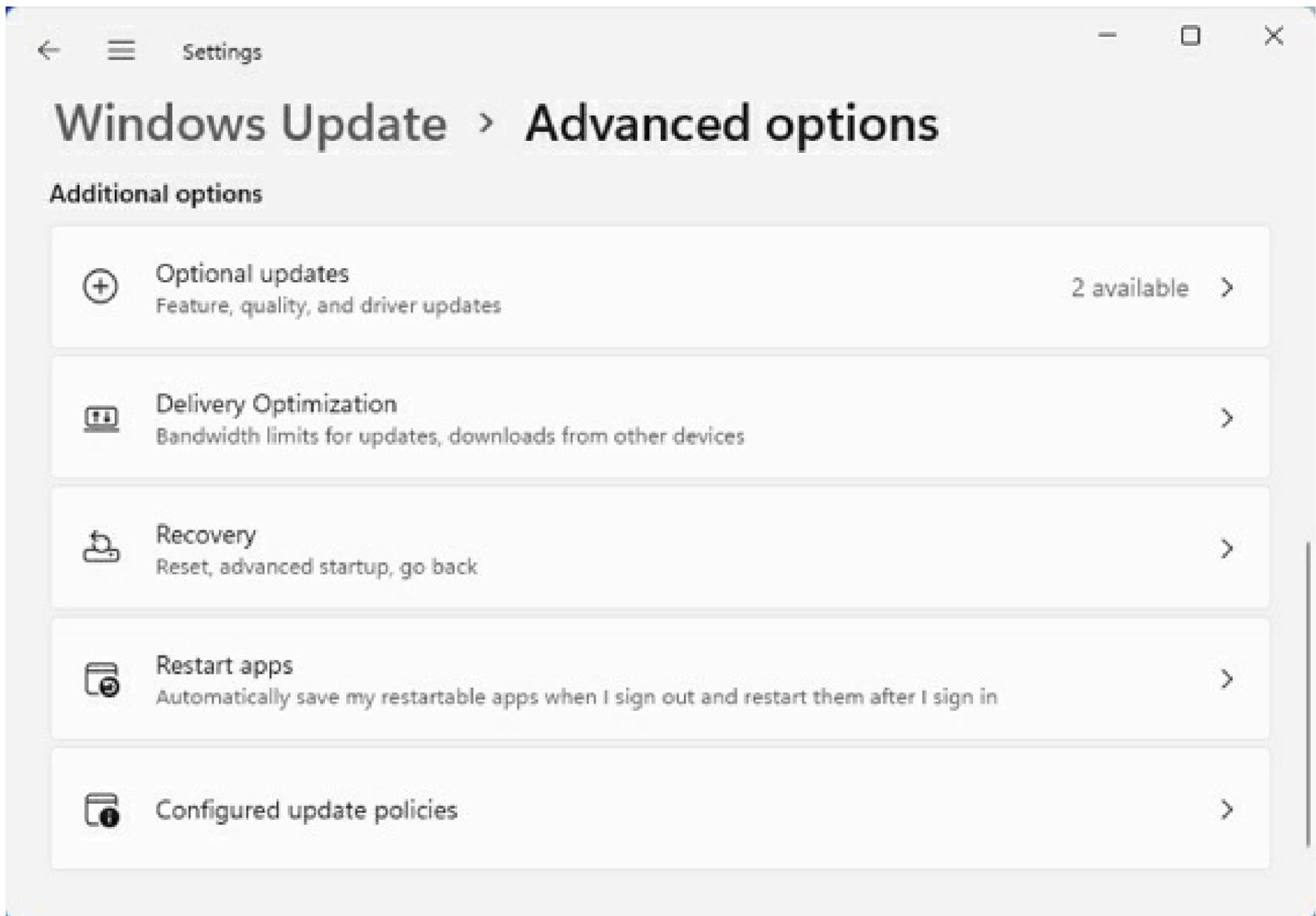


Figure 142: Settings Windows Update Additional Options

- Optional updates – Displays updates that Microsoft classifies as optional. These can be driver updates quality of feature updates.
- Delivery optimization – Settings to limit bandwidth for updates and to allow downloads from other PCs to save bandwidth.
- Recovery – Open the recovery options.
- Restart apps – Have Windows save the state of apps that support the feature to restart them on the next sign-in to the system.
- Configured update policies – Display the list of policies affecting updating on the system.

Active Hours

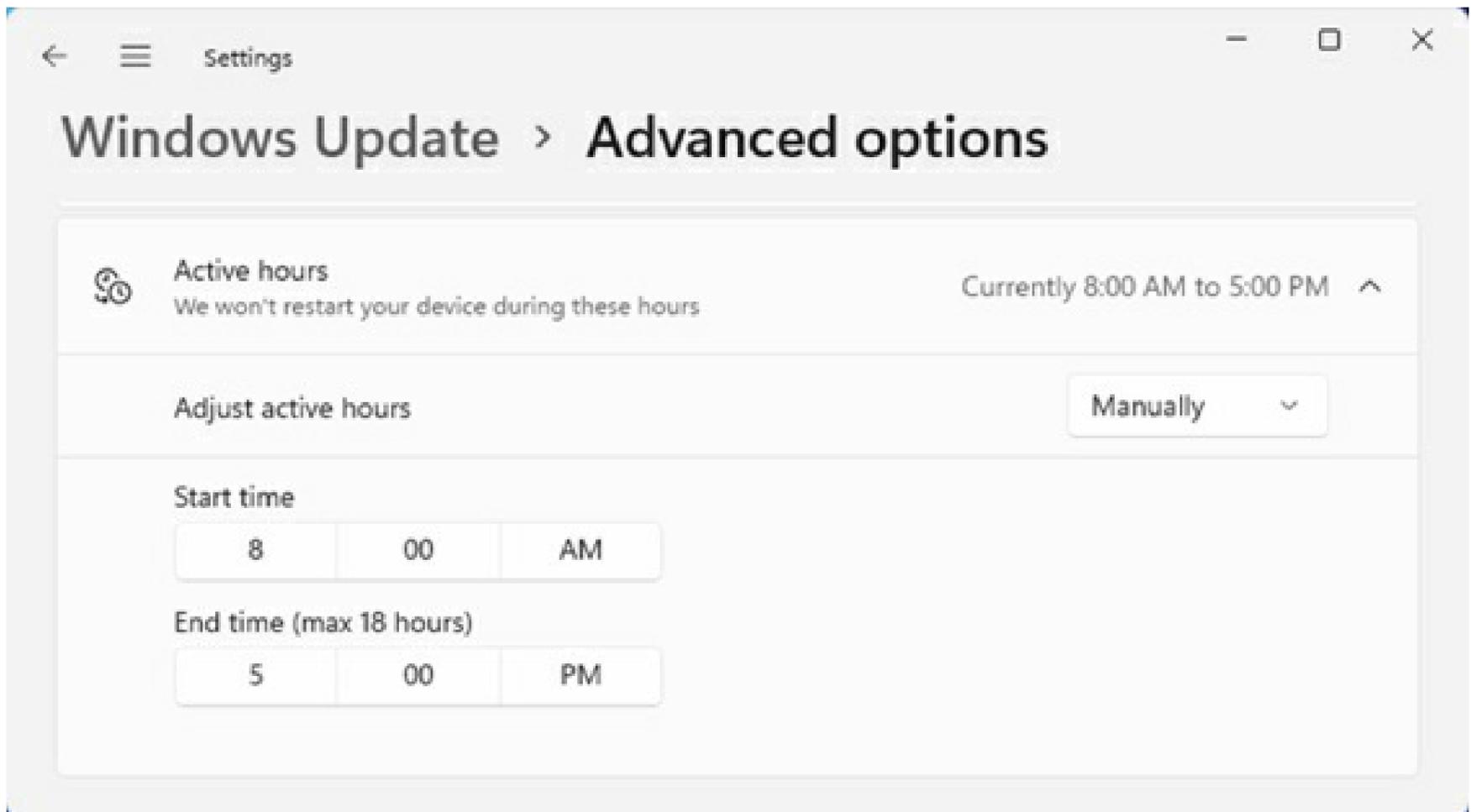


Figure 143: Settings Windows Update Active Hours

Windows may restart the PC automatically if updates are ready for installation. The operating system may display a prompt but if no user interaction is noticed it may reboot the system to complete the update installation process.

Windows users who want to prevent these restarts from happening during work hours or during critical processes may configure the Active Hours feature to block restarts during that time period.

1. Open the Settings application either with the keyboard shortcut Windows+I or by selecting Start > Settings.
2. Select Windows Update.
 - . Open Advanced Options.
4. Expand Active Hours.

Active Hours may be set automatically by the operating system based on recorded use or manually by the user. Switch to manual and set a start time and end time for Active Hours.

Windows won't reboot the PC during that period to finalize the installation of updates that are ready for deployment.

Delivery Optimization

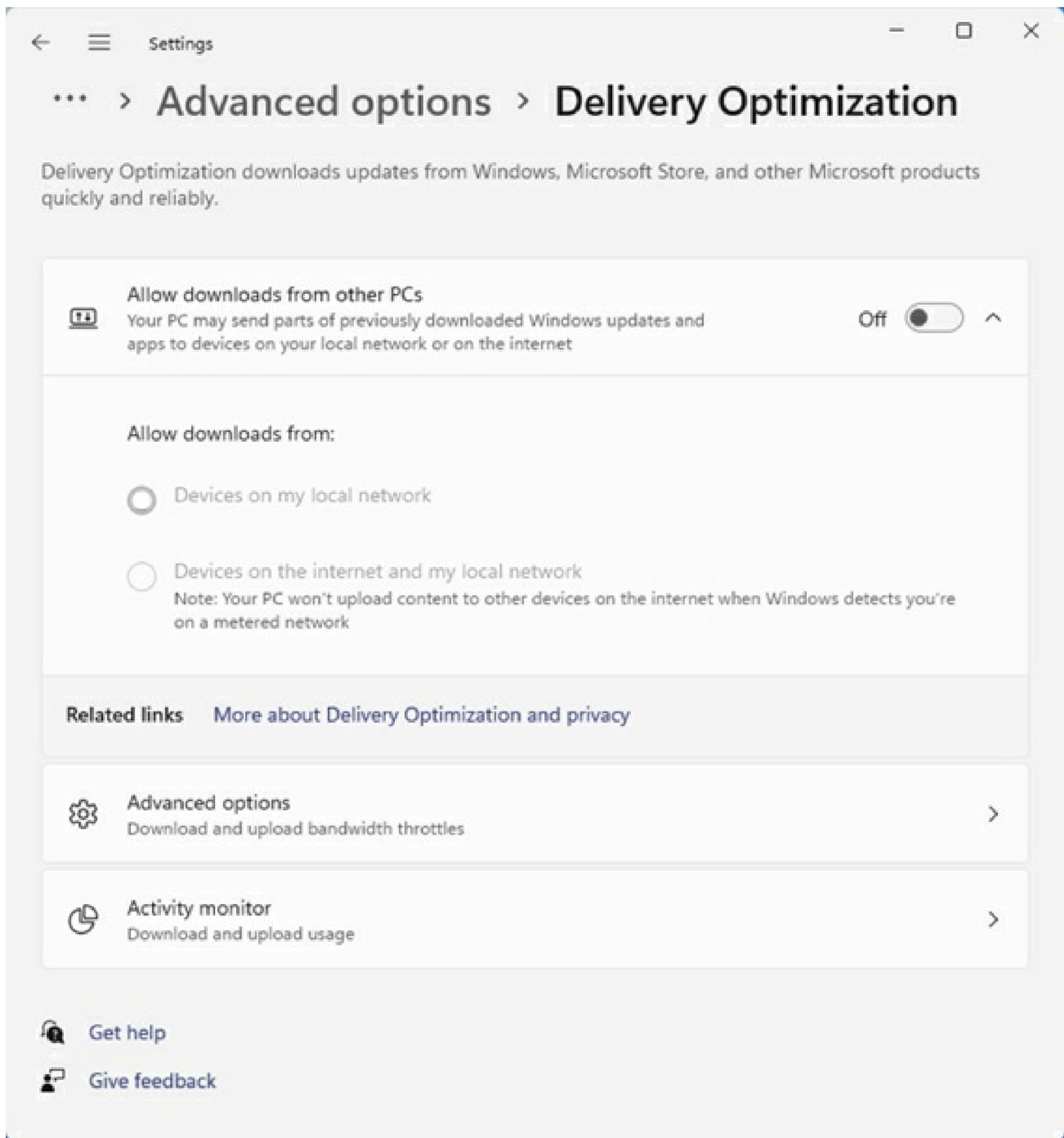


Figure 144: Settings Windows Update Delivery Optimization

Delivery Optimization— offers two main options to optimize the downloading and installation of updates: first to limit update download and upload bandwidths and second to configure the delivery of updates from other PCs.

The first option may be useful in company environments as updates may be downloaded and installed from other PCs and not from Microsoft Servers from the Internet.

Windows administrators may restrict the update bandwidth using Delivery Optimization.

1. Select Advanced options on the Delivery Optimization page.
2. Under Download settings select absolute bandwidth or “percentage of measured bandwidth” and set foreground and background update download limits either in Megabytes per second or percentage of total bandwidth.
 - . Upload settings allow administrators to limit the bandwidth that is used to upload updates to other PCs on the Internet and to set a monthly upload limit.

Windows administrators with access to the Group Policy Editor may use it to restrict Delivery Optimization further.

1. Select Start.
2. Type gpedit.msc and load the Group Policy Editor.
 - . Go to Computer Configuration Administrative Templates Windows Components Delivery Optimization.
4. Double-click on Download Mode.
 - . Set the policy to Enabled.
 - . Set the mode to 0 – HTTP Only to disable peering.

Disable Automatic Windows Updates

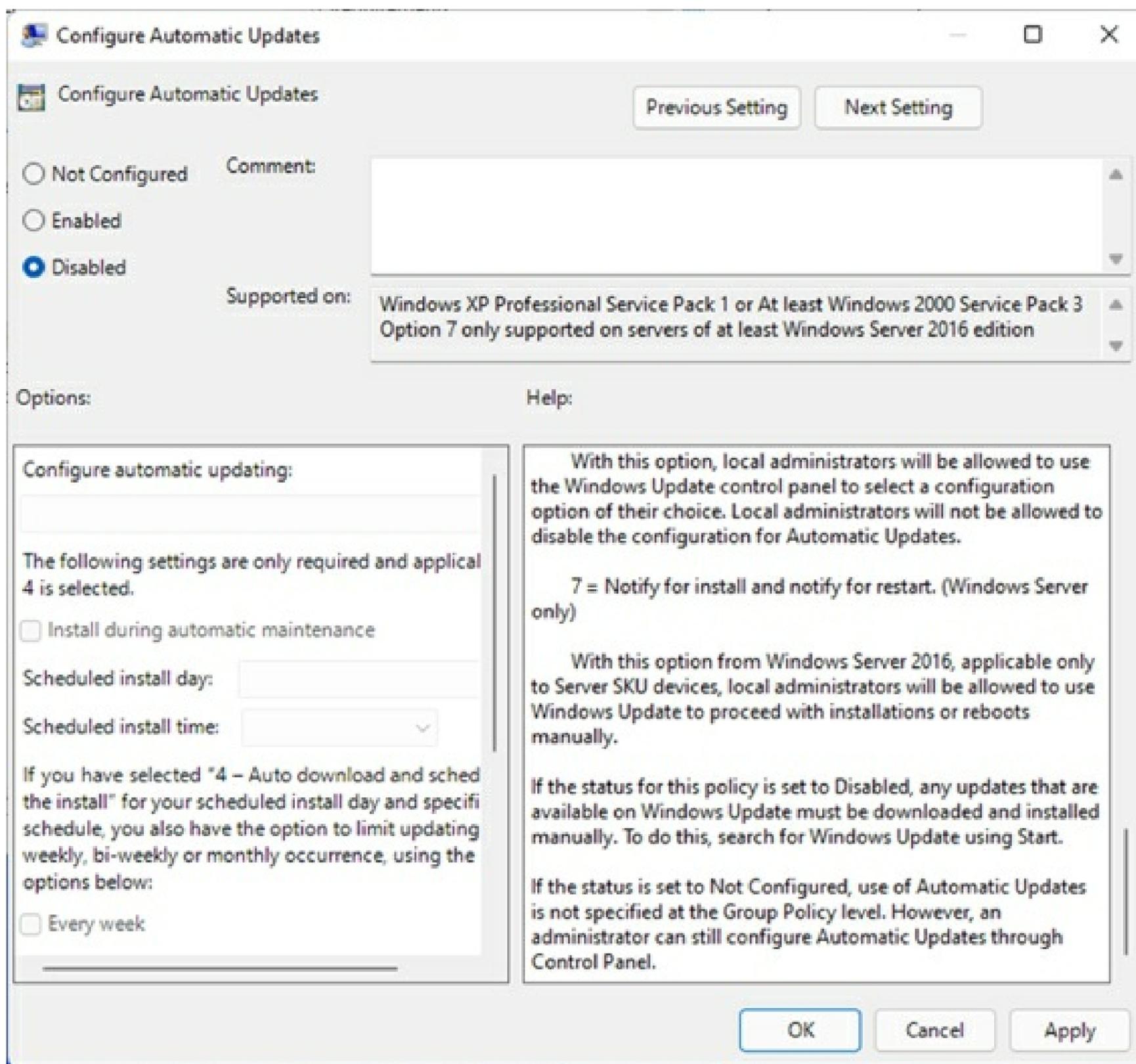


Figure 145: Group Policy Disable Automatic Updates

Windows administrators may prevent the automatic installation of Windows updates on most editions of Windows 11. Windows 11 Home does not feature the options described below while Windows 11 Pro, Education, or Enterprise do.

Note: It is still possible to run a manual check for updates and get these installed. Other options include downloading updates directly from the Microsoft Update Catalog website to install them manually on devices.

1. Select Start.

2. Type gpedit.msc
 - . Open the Local Group Policy Editor.
4. Use the tree structure on the left to go to Computer Configuration Administrative Templates Windows Components Windows Update Manage end user experience.
 - . Double-click on Configure Automatic Updates.
 - . Set the policy to Disabled.

Disabled turns off automatic updates on the system. Administrators need to run manual checks for updates or download them from other sources to install the updates manually.

Uninstall Windows Updates

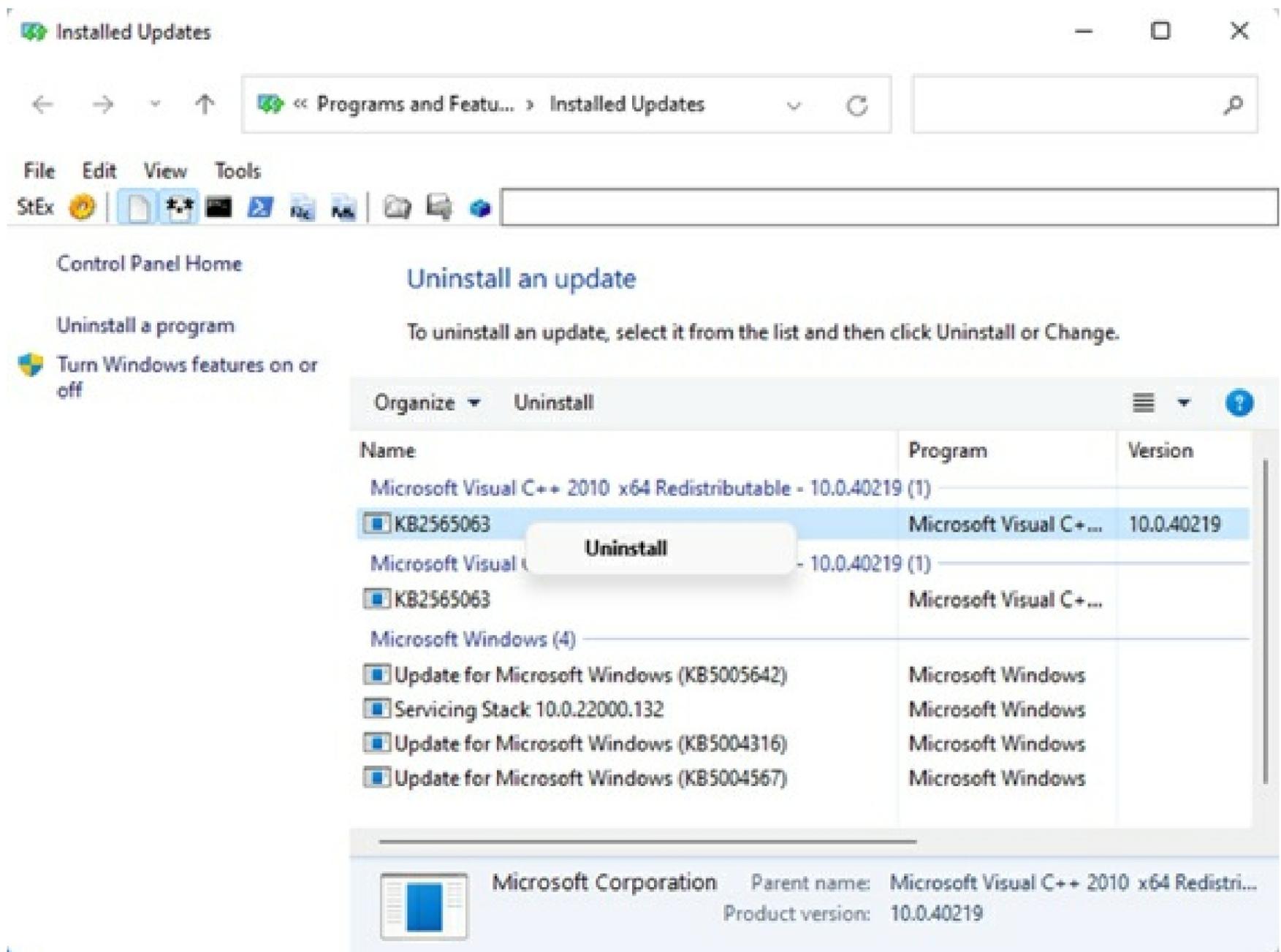


Figure 146: Uninstall Windows Updates

Sometimes it may be necessary to remove installed updates again from a system. Updates may introduce bugs or issues and it is sometimes better to remove them to resolve these issues and install the updates again at a later point in time.

Updates are installed automatically on Home editions of Windows 11. Windows updates can be removed while Windows is running. Windows 11 may display recovery options if boot issues are detected or if updates cannot be installed properly.

1. Open the Settings application either with the shortcut Windows-I or by selecting Start Settings.
2. Select Windows Update.
 - . On the page that opens activate Update History.
4. Scroll all the way down on the page and select the “Uninstall updates” option.

The activation of the link opens a new window that contains a list of all installed updates. Updates are grouped

some may display versions all display an installation date.

Locate the update that you need to uninstall. A good starting point is to sort the update listing by date to identify updates that were installed recently on the system.

- Right-click on an update and select the “uninstall” option from the context menu. Follow the instructions to remove the update from Windows. Some removals require a restart of the system.

Updates may also be uninstalled from the command line⁴. The KB ID of the update is required for this operation.

1. Select Start.
2. Type CMD.
 - . Select Run as administrator to open an elevated command prompt window.

The core command is “wusa /uninstall /kb:ID. Replace ID with the actual ID of the update that you want to uninstall on the Windows machine e.g. wusa /uninstall /kb:29 2 91 and hit the Enter-key to execute the command.

Disable Driver Updates via Windows Update

Windows may install new drivers for hardware components automatically. System administrators who want more control over the updating of drivers can disable driver updates via Windows Update.

Drivers may be downloaded from the manufacturer website to install them manually on the device. Drivers may introduce new features fix security issues or improve reliability. They may also introduce unwanted functionality.

Group Policy

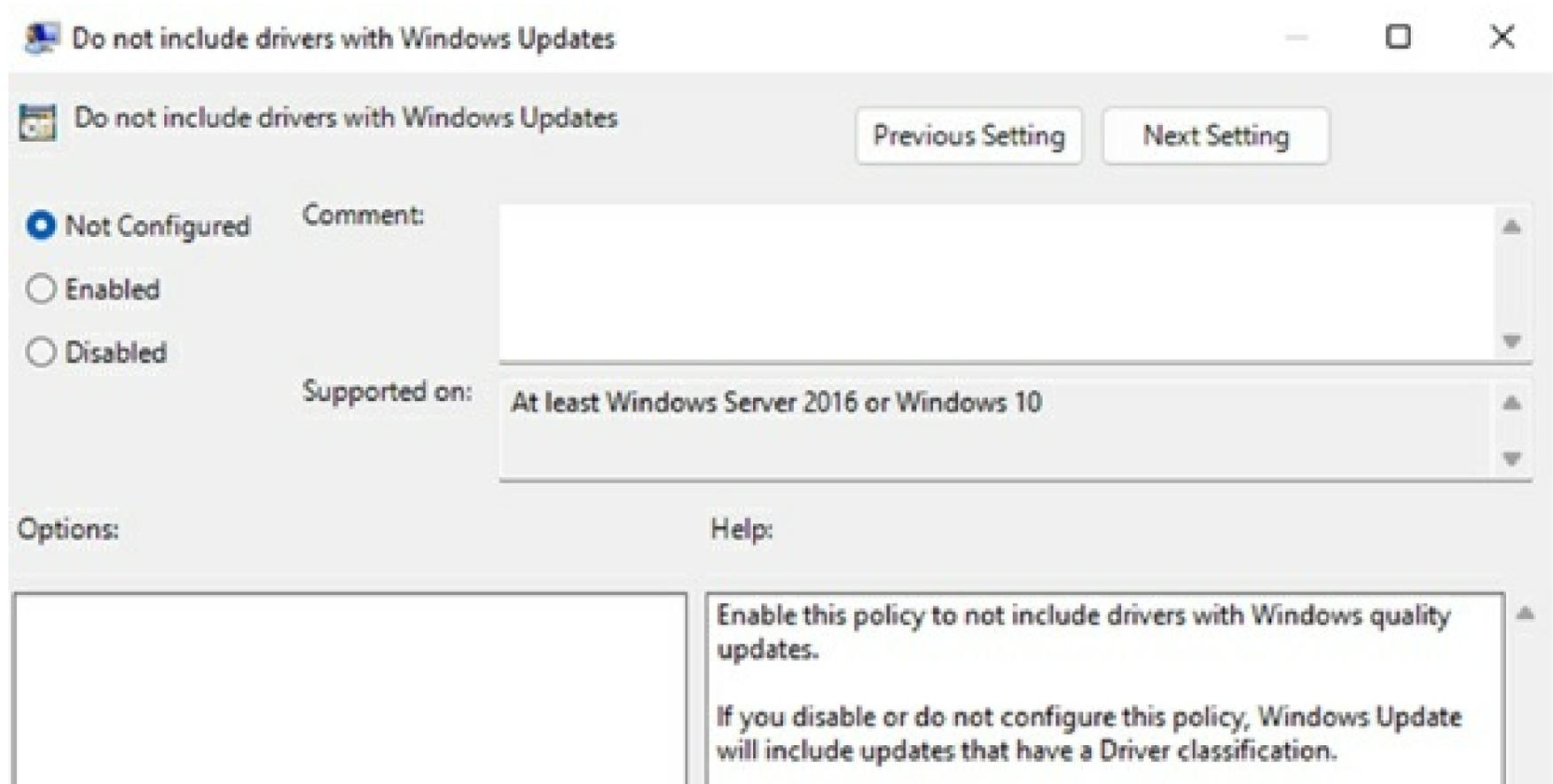


Figure 147: Disable driver updates in Windows Update

The Group Policy is only available in professional versions of Windows 11 such as Windows 11 Pro or enterprise.

1. Use Windows-R to open the run box.
2. Type gpedit.msc and select Ok to launch the Group Policy Editor.
 - . Go to Computer Configuration Administrative Templates Windows Components Windows Update Manage updates offered from Windows Update.
4. Double-click on the policy “Do not include drivers with Windows Updates”.
 - . Set the preference to Enabled.

Registry

Windows 11 Home admins have no access to the Group Policy. The change needs to be applied in the Registry directly to take effect.

1. Open Start.
2. Type regedit.
 - . Launch the Registry Editor on the device.
4. Go to HKE _LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\WindowsUpdate
 - . If a key does not exist create it by right-clicking on the parent key in the path and selecting New Key.
 - . Right-click on WindowsUpdate and select New Dword (2-bit) Value.
 - . Name the new Dword ExcludeWUDriversInQualityUpdate.
 - . Set its value to 1 with a double-click.
9. Go to HKE _LOCAL_MACHINE\SOFTWARE\WOW 4 2Node\Policies\Microsoft\Windows\WindowsUpdate
10. Right-click on WindowsUpdate and select New Dword (2-bit) Value.
11. Name it ExcludeWUDriversInQualityUpdate and set its value to 1 with a double-click.

Reserved Storage

Introduced in Windows 10 version 190 — Reserved Storage is designed to improve the installation of updates on Windows PCs by reserving storage for the downloading and installations of Windows updates.

Feature updates require free storage space on a device for installation. If there is not enough free storage updates may not start at all or throw error messages until more storage space becomes available.

Reserved storage is enabled by default on new clean installations of Windows 10 and on newly manufactured Windows 10 PCs. The feature is not available automatically when management solutions such as Windows Server Update Services (WSUS) or Configuration Manager are used.

Reserve Storage disk space allocation



Figure 148: Reserved Storage

Reserved Storage uses about 7.81 Gigabytes of storage space initially but the space that is reserved may vary over time according to Microsoft.

The information may be displayed using the following method:

1. Open the Settings application either by selecting Start > Settings or by using the keyboard shortcut Windows+I.
2. Go to System > Storage.
 - . Select "show more categories" on the page that opens.
4. Select the "system reserved" entry on the next page.
 - . Windows 11 lists the space that Reserved Storage uses on the page that opens.

Manage Reserved Storage on Windows 11

Reserved Storage starts with 7.81 Gigabytes of storage space but the amount varies over time. Administrators may reduce the amount of storage space that is reserved by removing optional features or languages from the system.

Optional features: Settings > Apps > Apps > features > Manage optional features

Installed languages: Settings > Time > Language > Language

When it is enabled Reserved Storage will reserve the storage space immediately. The feature may take less storage space either 7.81 Gigabytes or 2% of the system volume capacity on disk space constrained devices.

The following commands may be run from an elevated command prompt window to query reserved storage and to turn it on or off on a device.

1. Open Start.
2. Type cmd.
 - . Select Run as administrator.

4. Confirm the UAC prompt that is displayed.

The commands:

- `DISM /Online /Get-ReservedStorageState` – The command displays whether Reserved Storage is enabled on the system.
- `DISM /Online /Set-ReservedStorageState /State:Enabled` – The command enables Reserved Storage on the device.
- `Dism /Online /Set-ReservedStorageState /State:Disabled` – The command disables Reserved Storage on the device.

Install updates provided as CAB files

Updates are installed by default on most Home Windows systems. Sometimes administrators may want to install updates that are provided from other sources e.g. the Microsoft Update Catalog website.

Updates may be provided as CAB files and these need to be installed using DISM.

1. Open Start.
2. Type `cmd`.
 - . Select run as administrator to open an elevated command prompt window.
4. The command `DISM.exe /Online /Add-Package /PackagePath:c:\FILENAME.cab` installs the CAB update on the Windows machine. You need to replace `c:\FILENAME.cab` with the correct location of the downloaded CAB file.

Tip: Copy the entire path of files in File Explorer by right-clicking on it and selecting “copy as path”. Paste the path then in the right location in the command to make things easier.

Advanced Security

Advanced security covers additional areas of security. While these are useful to most users of the operating system using them or enabling them is usually not as easy as flipping a switch.

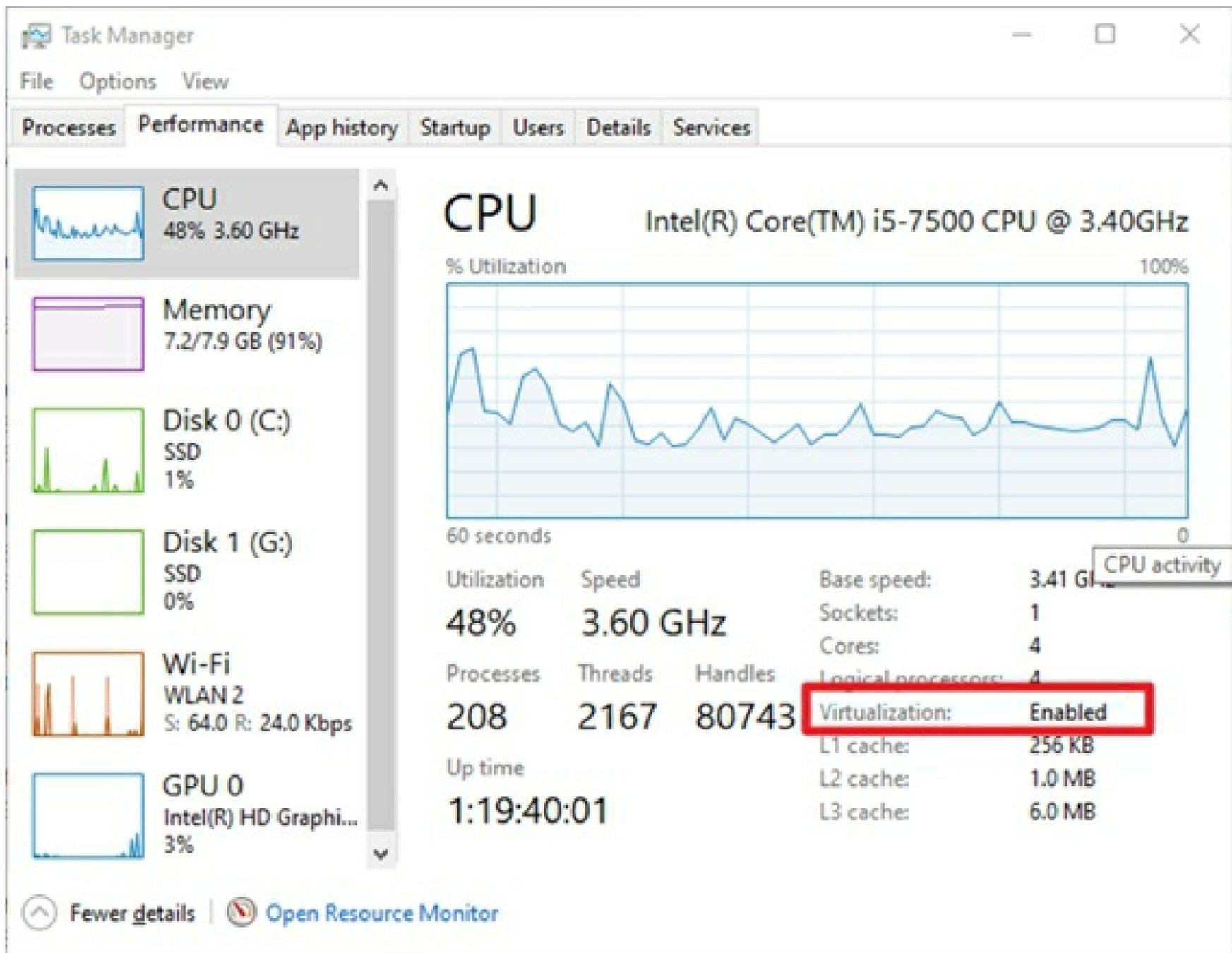
Windows Sandbox

Windows Sandbox is a sandboxing solution that Microsoft integrated into Windows Pro and Enterprise. The feature creates a special environment on the system that is separate from the underlying “real” Windows installation.

The functionality it provides is identical to that of Windows it is possible to run programs or files in the sandbox. These can't affect the underlying system and will be gone once the sandbox is terminated.

Windows Sandbox is ideal for running files or programs that may not be trustworthy or to run programs or files for testing purposes.

Note: Windows Sandbox can be enabled or disabled by administrators only. Also it is required that Virtualization is enabled in UEFI. The Performance tab of the Task Manager displays whether Virtualization is enabled or not.



1. Use the keyboard shortcut Ctrl-Shift-Esc to open the Task Manager.
2. Make sure it displays all details.
 - . Go to Performance.
4. With CPU selected check the Virtualization state.

Windows Sandbox Requirements

Microsoft lists the following requirements for Windows Sandbox—

- Windows 10 Pro Enterprise or Education build 1 0 or Windows 11 (Windows Sandbox is currently not supported on Windows Home edition)
- AMD 4 architecture
- Virtualization capabilities enabled in BIOS
- At least 4 GB of RAM (8 GB recommended)
- At least 1 GB of free disk space (SSD recommended)
- At least two CPU cores (four cores with hyperthreading recommended)

Enable Windows Sandbox

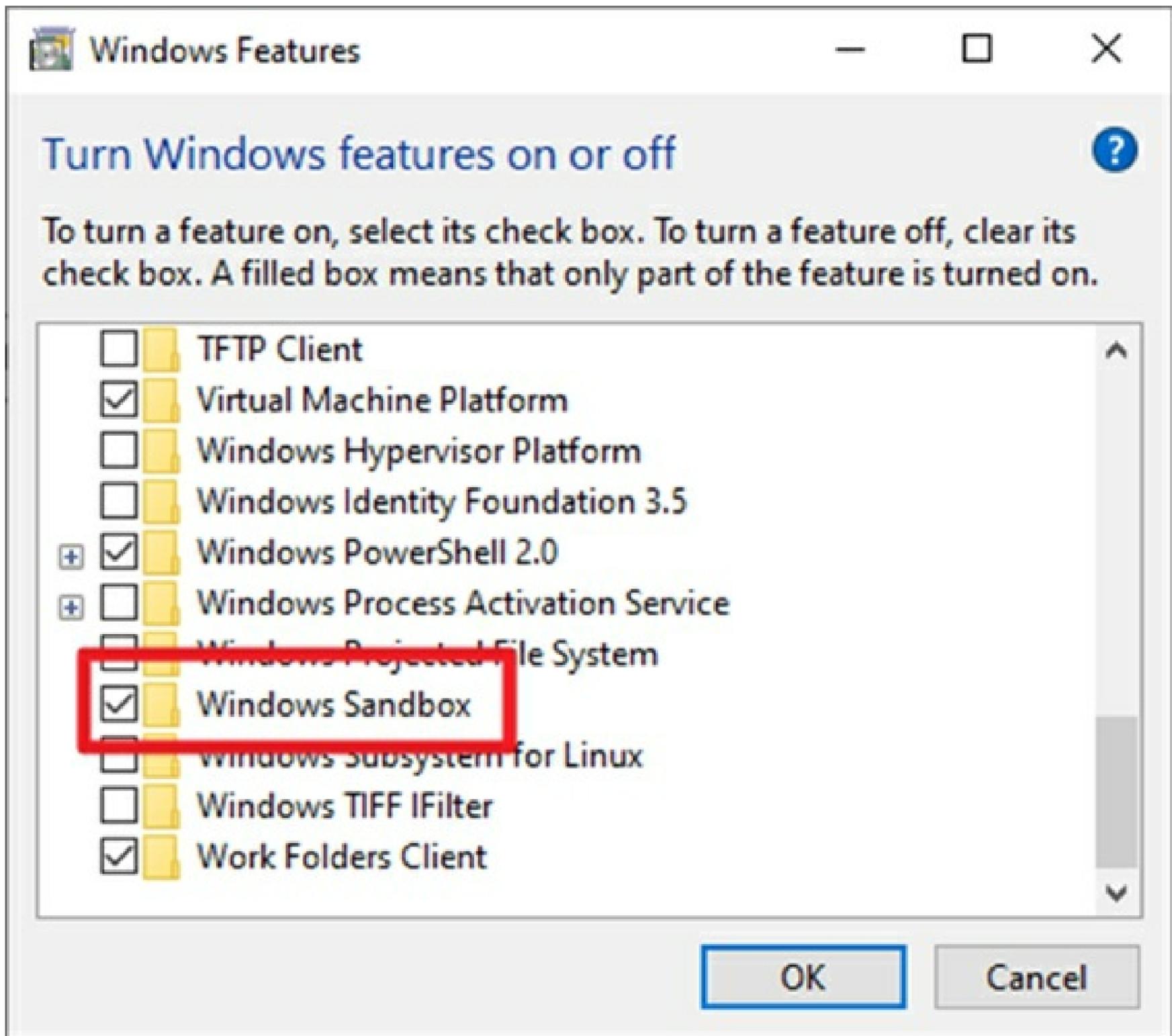


Figure 149: Enable Windows Sandbox

1. Open Start.
2. Type Windows Features and load the first result that is displayed.
 - . Scroll down to Windows Sandbox on the window that opens. Note that you will be reminded here if Windows Sandbox can't be installed. Hover over the entry to display the reason.
4. Check Windows Sandbox.
 - . Select OK.
 - . Windows 11 begins to install the Windows Sandbox feature on the system. Select the close button in the end.

Windows 11 administrators may enable or disable Windows Sandbox using PowerShell as well from an elevated PowerShell window:

- To enable Windows Sandbox: `Enable-WindowsOptionalFeature -Online -FeatureName Containers-DisposableClientVM -All`
- To turn Windows Sandbox off: `Disable-WindowsOptionalFeature -Online -FeatureName Containers-DisposableClientVM -Online`

Running Windows Sandbox is straightforward after the installation. Just open Start type Windows Sandbox and select the result to start a new instance of Windows Sandbox.

Applications can be run by pasting them into the Windows Sandbox window. Exiting the sandboxed environment

removes all data and discards any changes made to the environment during use.

The Windows Subsystem for Linux

The Windows Subsystem for Linux (WSL) is available in all editions of Windows 11. The subsystem allows users to run Linux applications on Windows 11.

Introduced in Windows 10 Microsoft released several updates for the subsystem. Windows 11 uses Windows Subsystem for Linux 2. The second major version of WSL was redesigned by Microsoft.

The feature is not enabled by default but Microsoft made it a lot easier to enable WSL. WSL 2 runs a Linux kernel and requires a compatible distribution. The default distribution is Ubuntu but others are available as well.

The installation gives users access to a command line environment but it is possible to run Linux applications with graphical user interfaces as well.

Installing WSL on Windows 11

Installation of WSL is a straightforward process nowadays. It requires the following steps:

1. Open Start.
2. Type PowerShell.
 - . Select the Run as administrator option to launch an elevated PowerShell window.
4. Run the command `wsl --install` to install WSL and Ubuntu on the device. The distribution is downloaded from the Internet.
 - . A reboot is required to complete the installation.

Tip: Use the command `wsl -l -o` to display the available Linux distributions. You may then install any of the listed distributions with the command `wsl --install -d NameOfDistribution`.

Launching WSL

WSL becomes an option in the Windows Terminal application which you may run using the Windows- shortcut. It is also possible to type the name of the distribution in Start or Search to launch it that way.

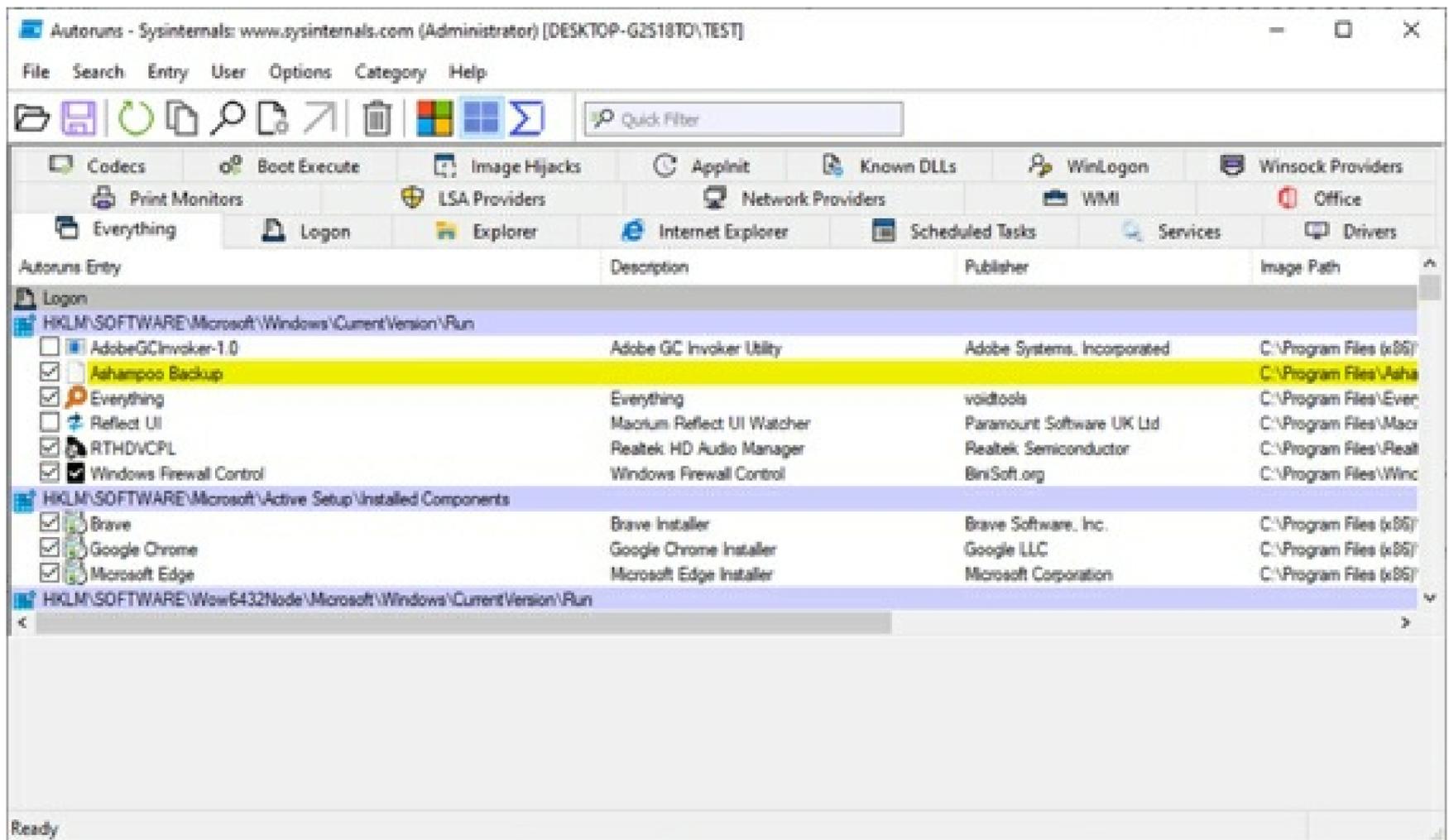
Use Linux commands e.g. to install new applications or launch them once on the command line. Running Linux graphical user applications is out of the scope of the book.

Run `sudo apt-get update` to update the package distribution and use the command `sudo apt-get install APPNAME -y` to install an application.

Software Recommendations

- Autoruns – Startup Manager
- Everything – A fast local search tool for Windows
- Firefox – Highly customizable web browser that is not based on Chromium (like Google Chrome or Microsoft Edge)
- GPU-Z – Video Card and Graphics Processor information utility
- PicPick – Screenshot capturing tool with editor and advanced features.
- Thunderbird – A cross-platform open source email client.

Autoruns – Manage Startup entries



Autoruns is a portable software program that is developed by Microsoft's SysInternals division. The program is considered by many as the best startup manager for Windows. It displays lots of startup entries including those displayed in the Windows Task Manager but also dozens of others.

It may be used to enable or disable autostart programs with just a click of the mouse. Most of the tabs it provides should be ignored by most users though.

Homepage: <https://docs.microsoft.com/en-us/sysinternals/downloads/autoruns>

Everything – Search tool

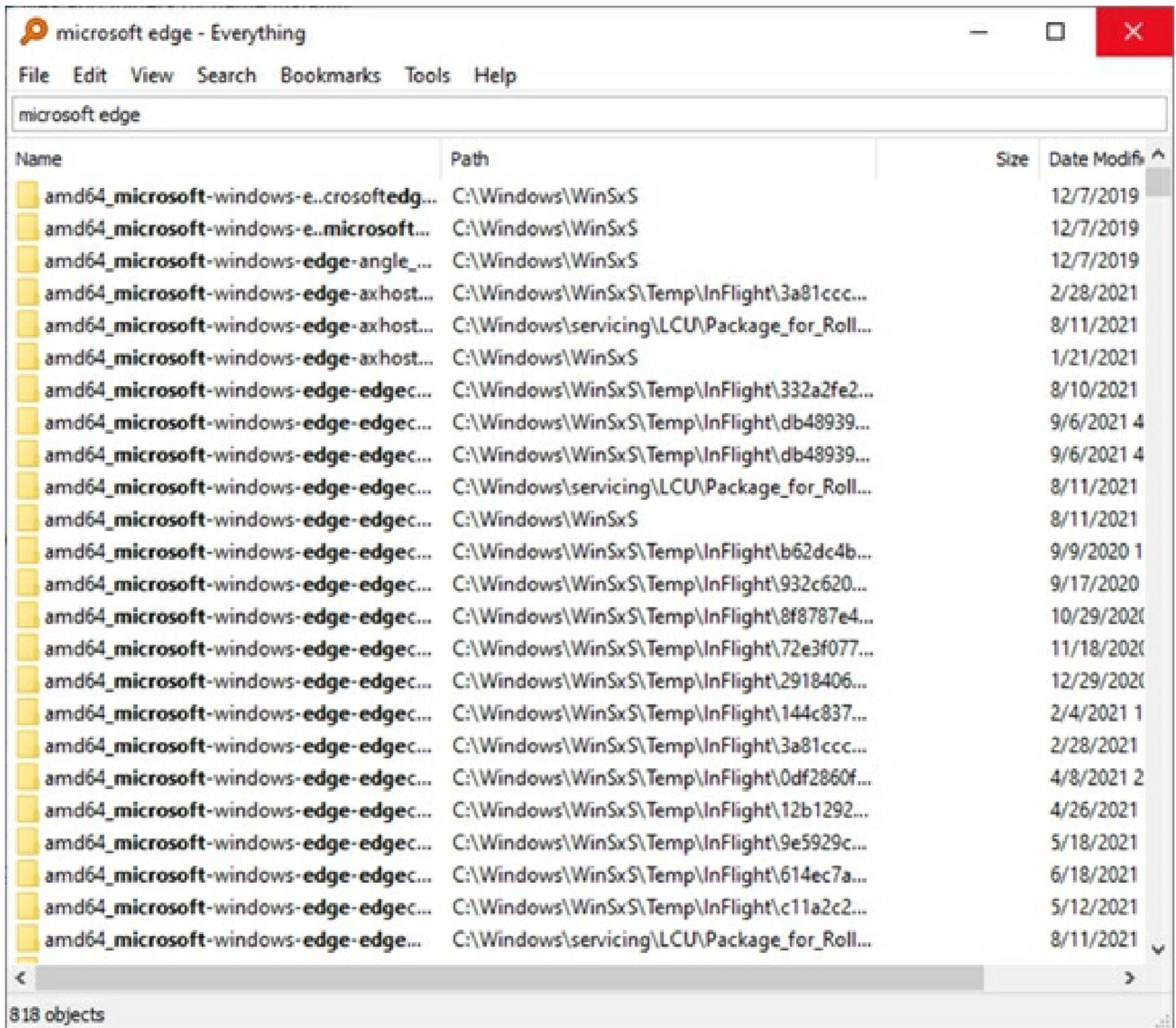


Figure 150: Software Everything Search

Everything is a free search tool for Windows that is incredibly fast and powerful. Download a portable version or installer from the official project website and run the program whenever you need to search.

The application displays results in a matter of milliseconds. Everything supports filters to display certain kinds of files or folders only may be configured to search file contents supports bookmarks and advanced features such as regular expressions.

Homepage: <https://www.voidtools.com/>

Firefox – Web Browser

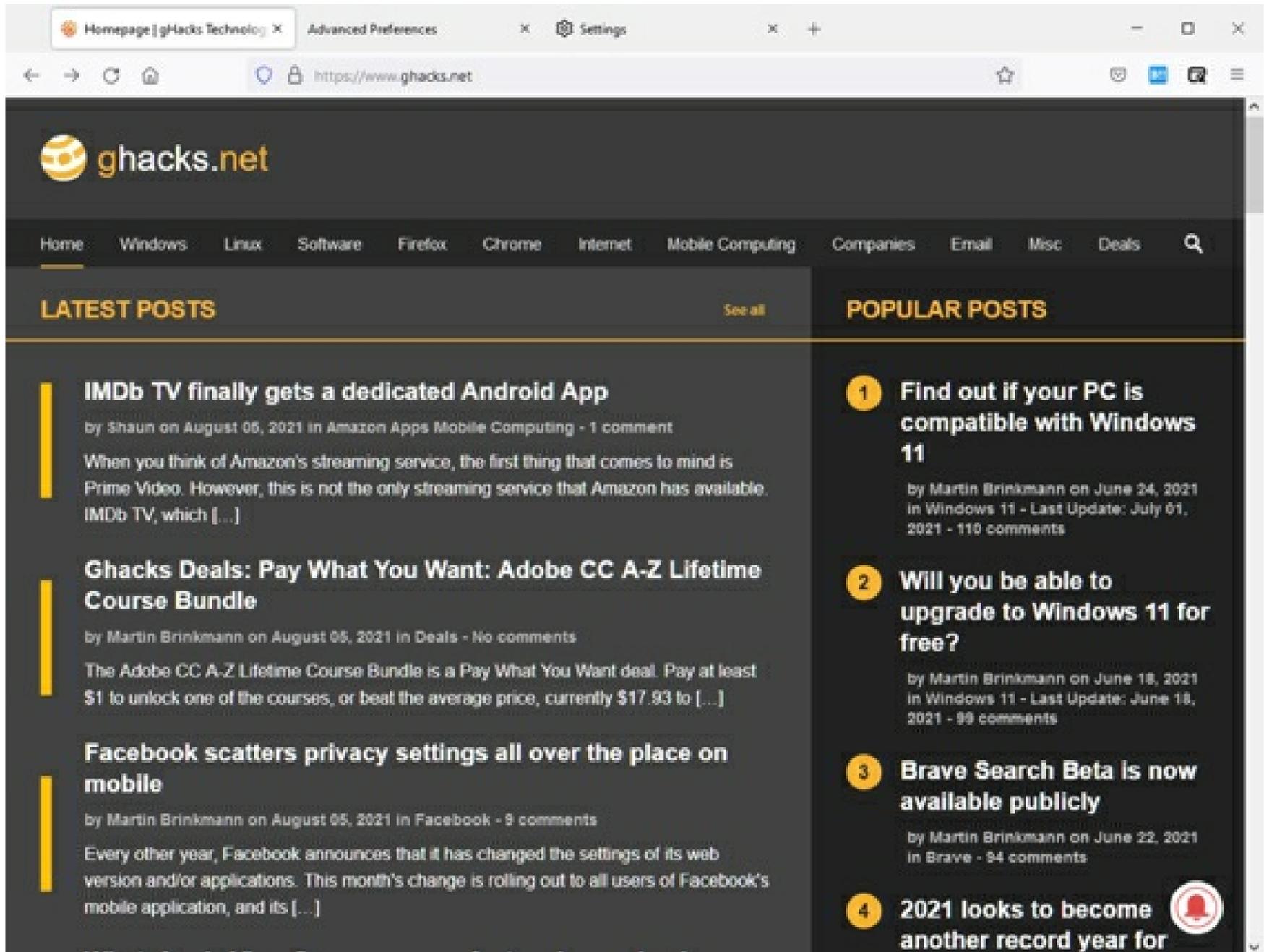


Figure 151: Mozilla Firefox

Firefox is an open source web browser by Mozilla. It is highly customizable thanks to its preferences system but also add-ons that users may install.

Supports many extensions including several that are more powerful than their counterparts from the Chrome Web Store.

Homepage: <https://www.mozilla.org/en-US/>

GPU-Z – Graphics Card information tool

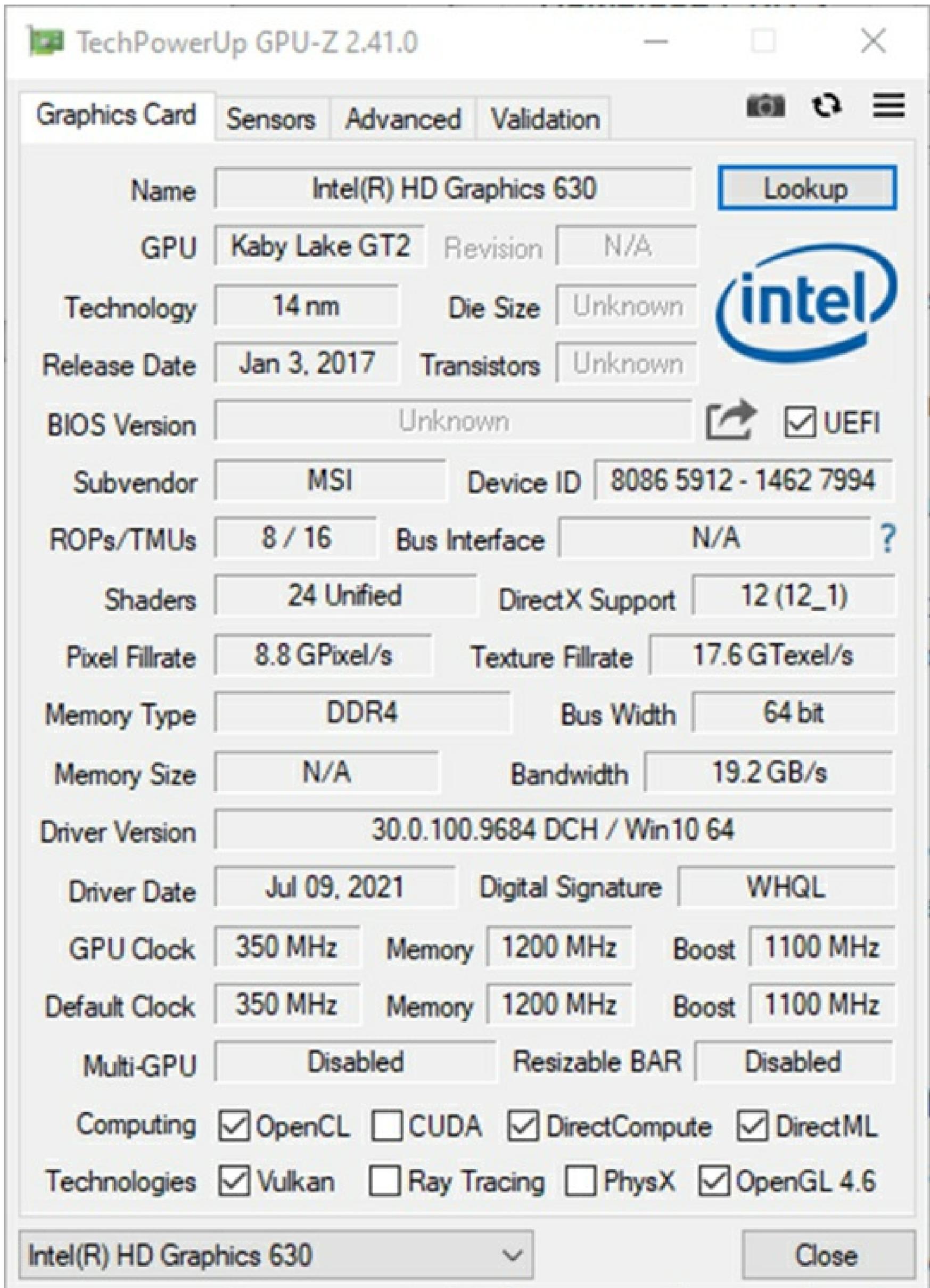


Figure 152: GPU-Z

GPZ-U is free for non-commercial and commercial use. It is a portable program that may also be installed. The

application displays information about the installed video card and video card related features.

You may use it to get the exact make and model of the video card, find out about the features that it supports, how much memory it has, and advanced information such as the GPU Clock speed or pixel fillrate.

Homepage: <https://www.techpowerup.com/gpuz/>

Notepad++

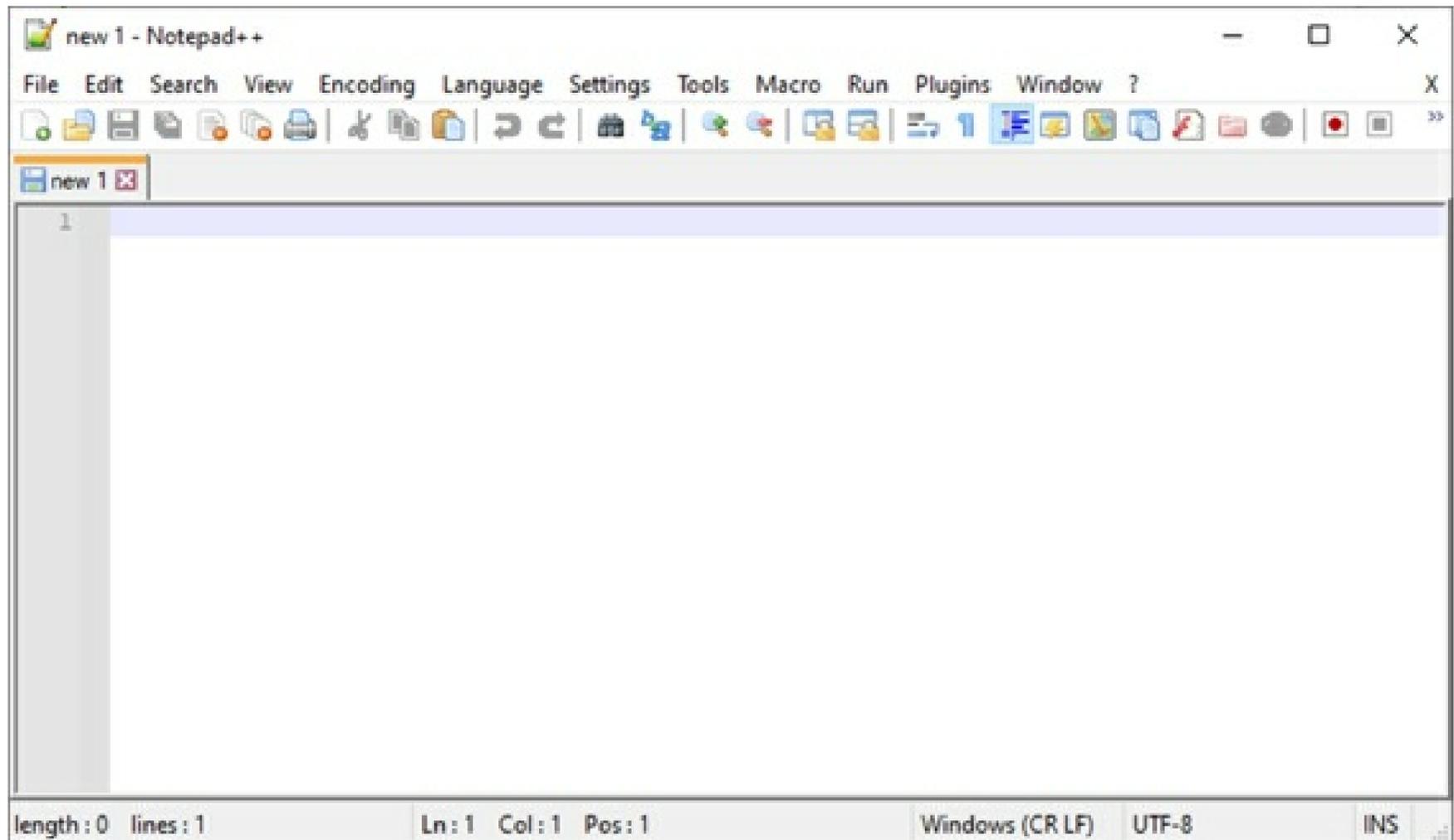


Figure 153: Notepad Text Editor

Notepad++ is a free plain text and source code editor for Windows, which was designed as a Notepad replacement from the get-go. The editor opens quickly and handles large text file sizes and source code files easily.

It supports a plugin system to extend the application's functionality and syntax highlighting to display source code efficiently in the interface.

Homepage: <https://notepad-plus-plus.org/>

Paragon Backup & Recovery

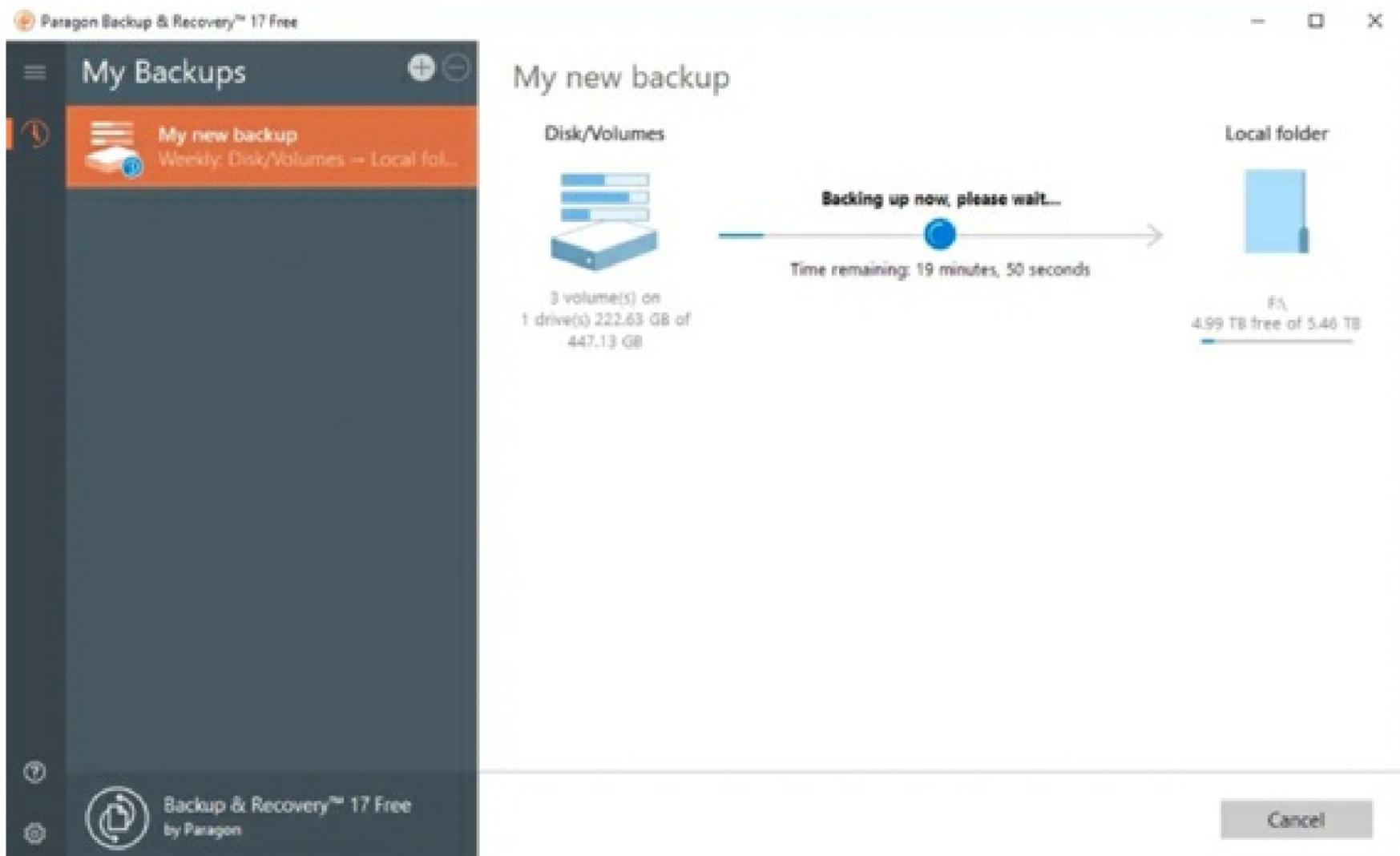


Figure 154: Backup software

The free Paragon Backup & Recovery application can be used to backup files, folders, entire disks or the operating system. The program supports restoring the entire system or files.

Other features that it supports include scheduling backup jobs so that they run regularly and using a WinPE recovery environment for backup and restore jobs.

The application is easy to use yet powerful at the same time.

Homepage: <https://www.paragon-software.com/free/br-free/>

PicPick – screen capturing software

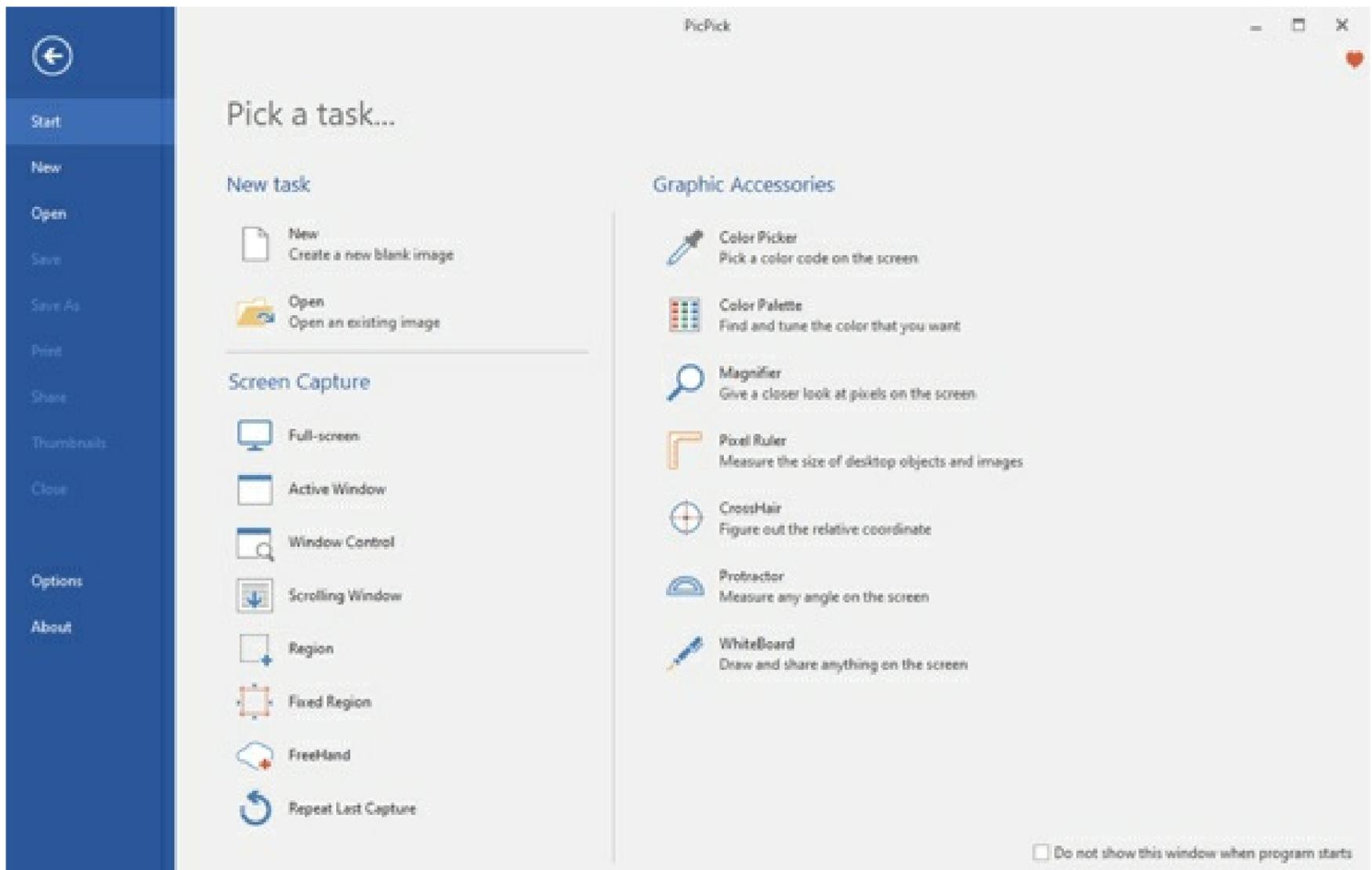


Figure 155: Screen Capturing Tool PicPick

PicPick is a free (for non-commercial-use) screenshot capturing tool for Windows that does not have to hide behind commercial alternatives such as SnagIt.

The program supports all major screen capturing modes including fullscreen window scrolling windows regions or freehand an editor to edit screenshots directly and additional tools such as a color palette and picker magnifier or pixel ruler.

If Windows 11's native screenshot capturing tools lack functionality that is required this is one of the tools that may replace it. The only functionality that is missing is video capture support.

Homepage: <https://picpick.app/en/>

Thunderbird – open source email client

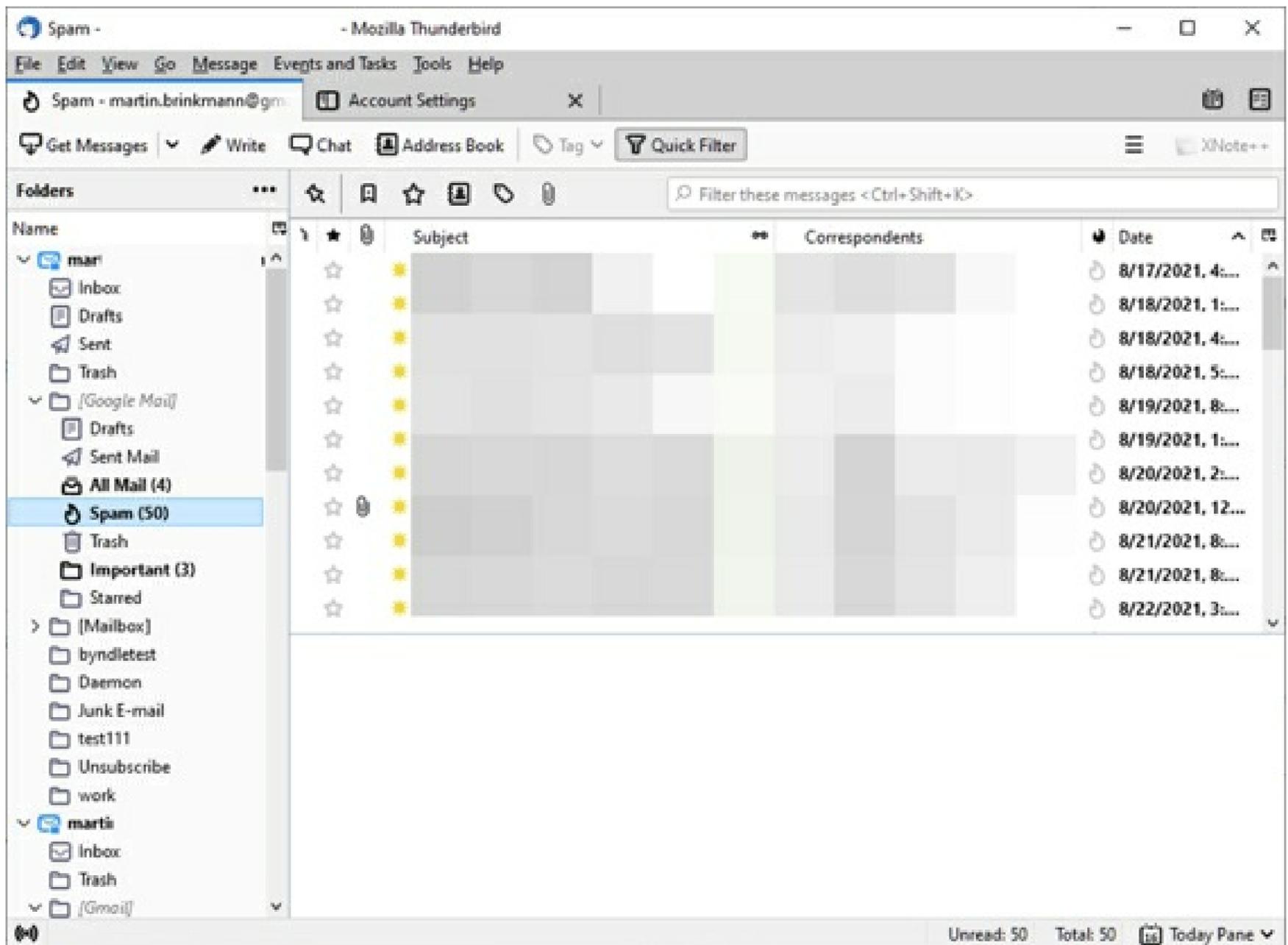


Figure 156: Thunderbird email client

Thunderbird is an open source desktop email client that is based largely on Firefox code. The application supports different account types and the integration of popular email services such as Gmail, Microsoft Outlook or Yahoo Mail.

The latest version includes a native OpenPGP implementation to encrypt emails, an easy to use wizard to add email accounts, tabbed email support, extensive search features and a lot more.

Thunderbird users may [install extensions](#) to add new features and improvements to the email client.

Homepage: <https://www.thunderbird.net/en-US/>

VLC Media Player

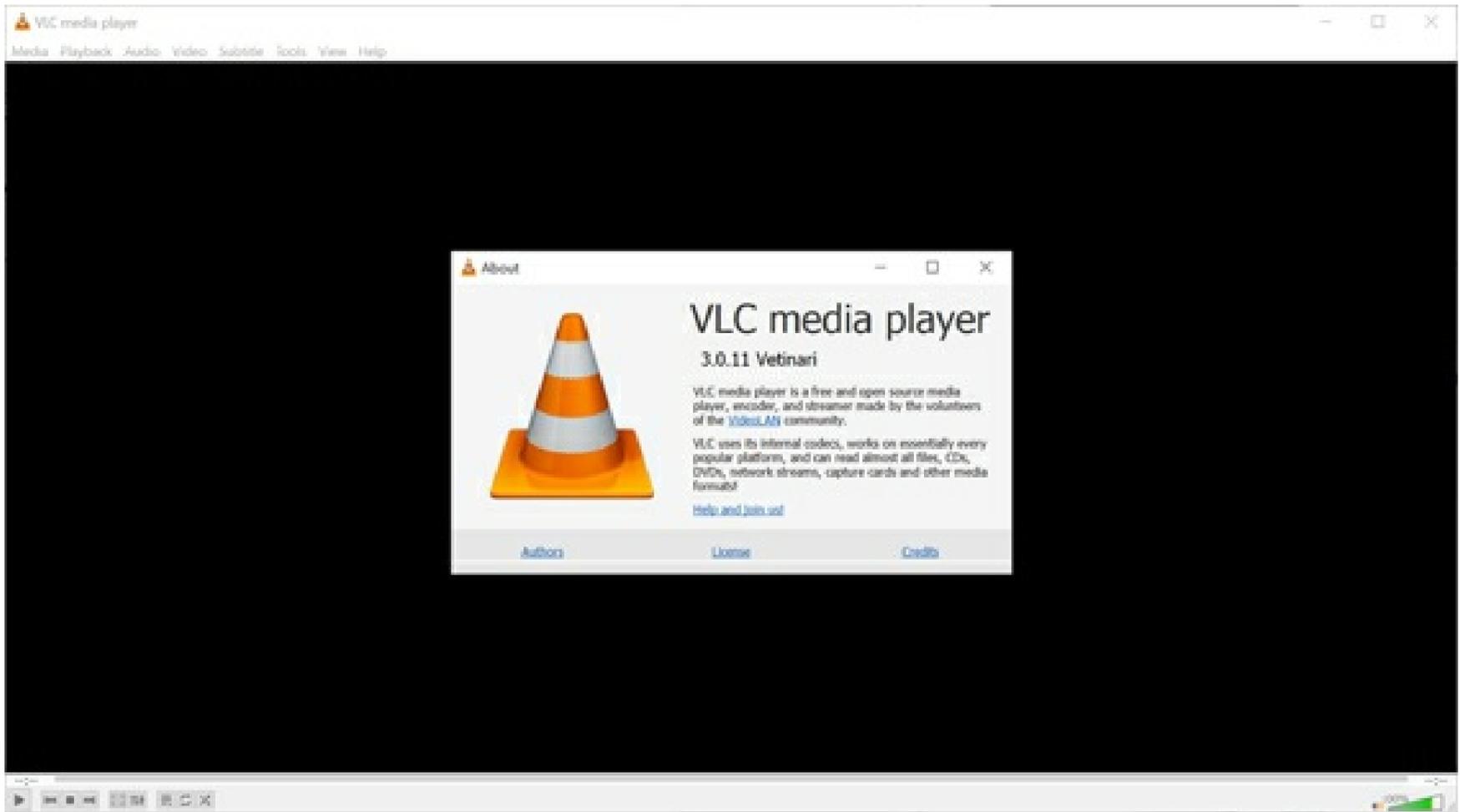


Figure 1 : VLC Media Player

VLC Media Player is a popular video and audio player. It supports all major formats out of the box and may be used to play DVDs audio CDs and other disc-based media as well. The player supports streaming video next to all that.

VLC Media Player can be customized with skins and extensions that improve the player's functionality.

Homepage: <https://www.videolan.org/vlc/>

Notes

[[1](#)]

<https://devblogs.microsoft.com/directx/auto-hdr-preview-for-pc-available-today/>

[[2](#)]

<https://devblogs.microsoft.com/directx/directstorage-is-coming-to-pc/>



<https://docs.microsoft.com/en-us/windows-hardware/design/minimum/supported/windows-11-supported-intel-processors>

[4]

<https://docs.microsoft.com/en-us/windows-hardware/design/minimum/supported/windows-11-supported-amd-processors>

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<https://docs.microsoft.com/en-us/windows-hardware/design/minimum/supported/windows-11-supported-qualcomm-processors>

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<https://support.microsoft.com/en-us/windows/search-indexing-in-windows-10-faq-da061c83-af6b-095c-0f7a-4dfecda4d15a>

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<https://support.microsoft.com/en-us/windows/search-indexing-in-windows-10-faq-da061c83-af6b-095c-0f7a-4dfecda4d15a>



<https://devblogs.microsoft.com/directx/auto-hdr-preview-for-pc-available-today/>

[[9](#)]

<https://devblogs.microsoft.com/directx/directstorage-is-coming-to-pc/>

[[10](#)]

<https://docs.microsoft.com/en-us/windows-hardware/drivers/kernel/system-sleeping-states>

[[11](#)]

[https://support.microsoft.com/en-us/account-billing/what-is-a-microsoft-family-group-b 2 0c9d- d - 2ff-0e4f-a cb e 9 44](https://support.microsoft.com/en-us/account-billing/what-is-a-microsoft-family-group-b20c9d-d-2ff-0e4f-a-cb-e-9-44)

[[12](#)]

<https://support.microsoft.com/en-us/account-billing/remove-members-or-leave-your-family-group-d0bbb-eb-a9-10f4-bbb-14ffc4>

[1]

<https://support.microsoft.com/en-us/account-billing/how-to-use-the-microsoft-authenticator-app-9c0042fb-a19c-fef0acc>

[[14](#)]

<https://support.microsoft.com/en-us/microsoft-edge/change-site-access-permissions-for-extensions-in-microsoft-edge-d1c-9d-e2-4be0-1d4-ed-d0c-2ef>

[[1](#)]

<https://techcommunity.microsoft.com/t/networking-blog/windows-insiders-gain-new-dns-over-https-controls/ba-p/2494> 44

[1]

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