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Windows 10

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*"Windows 9" redirects here. For the series of Windows produced from 1995 to 2000, see*[*Windows 9x*](https://en.wikipedia.org/wiki/Windows_9x)*.*

*This article is about the operating system for personal computers. For the related operating system for mobile devices, see*[*Windows 10 Mobile*](https://en.wikipedia.org/wiki/Windows_10_Mobile)*.*

*Not to be confused with*[*Windows 1.0*](https://en.wikipedia.org/wiki/Windows_1.0)*.*

|  |  |
| --- | --- |
| **Windows 10** | |
| A version of the [Windows NT](https://en.wikipedia.org/wiki/Windows_NT) operating system | |
| [Windows 10 Logo.svg](https://en.wikipedia.org/wiki/File:Windows_10_Logo.svg) | |
| [Windows 10 1803.png](https://en.wikipedia.org/wiki/File:Windows_10_1803.png)  Windows 10 April 2018 Update (version 1803), showing the [Start menu](https://en.wikipedia.org/wiki/Start_menu) and [Action Center](https://en.wikipedia.org/wiki/Action_Center) | |
| [**Developer**](https://en.wikipedia.org/wiki/Software_developer) | [Microsoft](https://en.wikipedia.org/wiki/Microsoft) |
| **OS family** | [Microsoft Windows](https://en.wikipedia.org/wiki/Microsoft_Windows) |
| **Source model** | [Closed source](https://en.wikipedia.org/wiki/Closed_source) and [shared source](https://en.wikipedia.org/wiki/Shared_source) ([Windows Driver Frameworks](https://en.wikipedia.org/wiki/Windows_Driver_Frameworks) is now [open-source](https://en.wikipedia.org/wiki/Open-source))[[1]](https://en.wikipedia.org/wiki/Windows_10#cite_note-1) |
| [**Released to manufacturing**](https://en.wikipedia.org/wiki/Software_release_life_cycle#RTM) | July 15, 2015; 2 years ago |
| [**General availability**](https://en.wikipedia.org/wiki/Software_release_life_cycle#General_availability_(GA)) | July 29, 2015; 2 years ago |
| [**Latest release**](https://en.wikipedia.org/wiki/Software_release_life_cycle) | 1803 (10.0.17134.83) (June 5, 2018; 5 days ago[[2]](https://en.wikipedia.org/wiki/Windows_10#cite_note-2)) [[±]](https://en.wikipedia.org/w/index.php?title=Template:Latest_stable_software_release/Windows_10&action=edit) |
| [**Latest preview**](https://en.wikipedia.org/wiki/Software_release_life_cycle) | RS5 (10.0.17686) (June 6, 2018; 4 days ago[[3]](https://en.wikipedia.org/wiki/Windows_10#cite_note-previewrelease2-3)) [[±]](https://en.wikipedia.org/w/index.php?title=Template:Latest_preview_software_release/Windows_10&action=edit) |
| **Marketing target** | [Personal computing](https://en.wikipedia.org/wiki/Personal_computing) |
| **Update method** | [Windows Update](https://en.wikipedia.org/wiki/Windows_Update), [Microsoft Store](https://en.wikipedia.org/wiki/Microsoft_Store_(digital)), [Windows Server Update Services](https://en.wikipedia.org/wiki/Windows_Server_Update_Services) (WSUS) |
| **Platforms** | [IA-32](https://en.wikipedia.org/wiki/IA-32), [x86-64](https://en.wikipedia.org/wiki/X86-64) and, as of version 1709, [ARM64](https://en.wikipedia.org/wiki/ARM64)[[4]](https://en.wikipedia.org/wiki/Windows_10#cite_note-4)[[5]](https://en.wikipedia.org/wiki/Windows_10#cite_note-5) |
| [**Kernel**](https://en.wikipedia.org/wiki/Kernel_(operating_system))**type** | [Hybrid](https://en.wikipedia.org/wiki/Hybrid_kernel) ([Windows NT](https://en.wikipedia.org/wiki/Windows_NT)) |
| [**Userland**](https://en.wikipedia.org/wiki/User_space#USERLAND) | [Windows API](https://en.wikipedia.org/wiki/Windows_API) [.NET Framework](https://en.wikipedia.org/wiki/.NET_Framework) [Universal Windows Platform](https://en.wikipedia.org/wiki/Universal_Windows_Platform) [Windows Subsystem for Linux](https://en.wikipedia.org/wiki/Windows_Subsystem_for_Linux) |
| **Default**[**user interface**](https://en.wikipedia.org/wiki/User_interface) | [Windows shell](https://en.wikipedia.org/wiki/Windows_shell) ([Graphical](https://en.wikipedia.org/wiki/Graphical_user_interface)) |
| [**License**](https://en.wikipedia.org/wiki/Software_license) | [Trialware](https://en.wikipedia.org/wiki/Trialware),[[6]](https://en.wikipedia.org/wiki/Windows_10#cite_note-6) [Microsoft Software Assurance](https://en.wikipedia.org/wiki/Microsoft_Software_Assurance), [MSDN subscription](https://en.wikipedia.org/wiki/Microsoft_Developer_Network#Software_subscriptions), [Microsoft Imagine](https://en.wikipedia.org/wiki/Microsoft_Imagine) |
| **Preceded by** | [Windows 8.1](https://en.wikipedia.org/wiki/Windows_8.1) (2013) |
| **Official website** | [windows.com](https://windows.com/) |
| **Support status** | |
| *All editions except LTSB:*   * Mainstream support until October 13, 2020 * Extended support until October 14, 2025 * A device needs to install the latest update to remain supported[[7]](https://en.wikipedia.org/wiki/Windows_10#cite_note-7)   *2015 LTSB:*   * Mainstream support until October 13, 2020 * Extended support until October 14, 2025[[8]](https://en.wikipedia.org/wiki/Windows_10#cite_note-sup-8)   *2016 LTSB:*   * Mainstream support until October 12, 2021 * Extended support until October 13, 2026[[8]](https://en.wikipedia.org/wiki/Windows_10#cite_note-sup-8) | |

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| * [v](https://en.wikipedia.org/wiki/Template:Windows_10) * [t](https://en.wikipedia.org/wiki/Template_talk:Windows_10) * [e](https://en.wikipedia.org/w/index.php?title=Template:Windows_10&action=edit) |

**Windows 10** (codenamed **Redstone**, formerly **Threshold**) is a [personal computer](https://en.wikipedia.org/wiki/Personal_computer) [operating system](https://en.wikipedia.org/wiki/Operating_system) developed and released by [Microsoft](https://en.wikipedia.org/wiki/Microsoft), as part of the [Windows NT](https://en.wikipedia.org/wiki/Windows_NT) family of operating systems. It was released on July 29, 2015.[[9]](https://en.wikipedia.org/wiki/Windows_10#cite_note-release-date-9) It is the first version of Windows that receives ongoing feature updates. Devices in enterprise environments can receive these updates at a slower pace, or use long-term support milestones that only receive critical updates, such as security patches, over their ten-year lifespan of extended support.[[10]](https://en.wikipedia.org/wiki/Windows_10#cite_note-zdnet-onebillion-10)[[11]](https://en.wikipedia.org/wiki/Windows_10#cite_note-11)

Windows 10 introduces what Microsoft described as "[universal apps](https://en.wikipedia.org/wiki/Universal_app)"; expanding on [Metro-style apps](https://en.wikipedia.org/wiki/Metro-style_app), these apps can be designed to run across multiple Microsoft product families with nearly identical code‍—‌including [PCs](https://en.wikipedia.org/wiki/Personal_computer), [tablets](https://en.wikipedia.org/wiki/Tablet_computer), [smartphones](https://en.wikipedia.org/wiki/Smartphone), [embedded systems](https://en.wikipedia.org/wiki/Embedded_system), [Xbox One](https://en.wikipedia.org/wiki/Xbox_One), [Surface Hub](https://en.wikipedia.org/wiki/Surface_Hub) and [Mixed Reality](https://en.wikipedia.org/wiki/Windows_Mixed_Reality). The Windows user interface was revised to handle transitions between a mouse-oriented interface and a [touchscreen](https://en.wikipedia.org/wiki/Touchscreen)-optimized interface based on available input devices‍—‌particularly on [2-in-1 PCs](https://en.wikipedia.org/wiki/2-in-1_PC); both interfaces include an updated [Start menu](https://en.wikipedia.org/wiki/Start_menu) which incorporates elements of [Windows 7](https://en.wikipedia.org/wiki/Windows_7)'s traditional Start menu with the tiles of [Windows 8](https://en.wikipedia.org/wiki/Windows_8). The first release of Windows 10 also introduces a [virtual desktop](https://en.wikipedia.org/wiki/Virtual_desktop) system, a window and desktop management feature called Task View, the [Microsoft Edge](https://en.wikipedia.org/wiki/Microsoft_Edge) [web browser](https://en.wikipedia.org/wiki/Web_browser), support for [fingerprint](https://en.wikipedia.org/wiki/Fingerprint_recognition) and [face recognition](https://en.wikipedia.org/wiki/Face_recognition) login, new security features for enterprise environments, and [DirectX 12](https://en.wikipedia.org/wiki/DirectX_12) and [WDDM](https://en.wikipedia.org/wiki/WDDM) 2.0 to improve the operating system's graphics capabilities for [games](https://en.wikipedia.org/wiki/Video_games).

Windows 10 received mostly positive reviews upon its original release in July 2015; critics praised Microsoft's decision to provide a desktop-oriented interface in line with previous versions of Windows, contrasting the tablet-oriented approach of 8, although Windows 10's touch-oriented user interface mode was panned for containing regressions upon the touch-oriented interface of Windows 8. Critics also praised the improvements to Windows 10's bundled software over Windows 8.1, [Xbox Live](https://en.wikipedia.org/wiki/Xbox_Live) integration, as well as the functionality and capabilities of [Cortana](https://en.wikipedia.org/wiki/Cortana_(software)) personal assistant and the replacement of [Internet Explorer](https://en.wikipedia.org/wiki/Internet_Explorer) with [Microsoft Edge](https://en.wikipedia.org/wiki/Microsoft_Edge). However, media outlets have been critical of changes to operating system behaviors, including mandatory [update](https://en.wikipedia.org/wiki/Windows_Update)installation, [privacy](https://en.wikipedia.org/wiki/Digital_privacy) concerns over data collection performed by the OS for Microsoft and its partners, and the [adware](https://en.wikipedia.org/wiki/Adware)-like tactics used to promote the operating system on its release.[[12]](https://en.wikipedia.org/wiki/Windows_10#cite_note-infoworld_2015_KB3035583-12)[[13]](https://en.wikipedia.org/wiki/Windows_10#cite_note-infoworld-upgradetonight-13)[[14]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-w10optional-14)[[15]](https://en.wikipedia.org/wiki/Windows_10#cite_note-infoworld_2016_KB3035583-15)[[16]](https://en.wikipedia.org/wiki/Windows_10#cite_note-16)

Microsoft aimed to have Windows 10 installed on at least one billion devices in the two to three years following its release.[[10]](https://en.wikipedia.org/wiki/Windows_10#cite_note-zdnet-onebillion-10) Up to August 2016, Windows 10 usage was increasing, with it then [plateauing](https://en.wikipedia.org/wiki/Plateau_effect),[[17]](https://en.wikipedia.org/wiki/Windows_10#cite_note-desktop-17)[[18]](https://en.wikipedia.org/wiki/Windows_10#cite_note-18) while eventually in 2018, it became more popular than Windows 7 (though that is still more used in most countries in Asia and Africa[[19]](https://en.wikipedia.org/wiki/Windows_10#cite_note-19)), and thus the single most used Windows version overall (at 46.07%, thus the other more used overall),[[20]](https://en.wikipedia.org/wiki/Windows_10#cite_note-Win10press-20) though not on some continents as measured by [web traffic](https://en.wikipedia.org/wiki/Web_traffic). As of November 2017, the operating system is running on more than 600 million devices[[21]](https://en.wikipedia.org/wiki/Windows_10#cite_note-21) and has an estimated usage share of 32% on traditional PCs[[22]](https://en.wikipedia.org/wiki/Windows_10#cite_note-22)[[23]](https://en.wikipedia.org/wiki/Windows_10#cite_note-23) and 15% across all platforms (PC, mobile, tablet, and console).[[24]](https://en.wikipedia.org/wiki/Windows_10#cite_note-24)[[25]](https://en.wikipedia.org/wiki/Windows_10#cite_note-25)

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Development[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=1)]

At the [Microsoft Worldwide Partner Conference](https://en.wikipedia.org/wiki/Microsoft_Worldwide_Partner_Conference) in 2011, Andrew Lees, the chief of Microsoft's mobile technologies, said that the company intended to have a single [software ecosystem](https://en.wikipedia.org/wiki/Software_ecosystem) for PCs, phones, tablets, and other devices. "We won't have an ecosystem for PCs, and one for phones, and one for tablets‍—‌they'll all come together."[[26]](https://en.wikipedia.org/wiki/Windows_10#cite_note-UniversalOS-26)[[27]](https://en.wikipedia.org/wiki/Windows_10#cite_note-SingleEcosystem-27)

In December 2013, technology writer [Mary Jo Foley](https://en.wikipedia.org/wiki/Mary_Jo_Foley) reported that Microsoft was working on an update to Windows 8 codenamed "Threshold", after a planet in Microsoft's [*Halo*](https://en.wikipedia.org/wiki/Halo_(series)) video game franchise.[[28]](https://en.wikipedia.org/wiki/Windows_10#cite_note-zdnet-threshold-28) Similarly to "Blue" (which became Windows 8.1),[[29]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcw-whatisblue-29) Foley called Threshold a "wave of operating systems" across multiple Microsoft platforms and services, scheduled for the second quarter of 2015. Foley reported that among the goals for Threshold was to create a unified application platform and development toolkit for Windows, [Windows Phone](https://en.wikipedia.org/wiki/Windows_Phone) and Xbox One (which all use a similar [Windows NT kernel](https://en.wikipedia.org/wiki/Windows_NT_kernel)).[[28]](https://en.wikipedia.org/wiki/Windows_10#cite_note-zdnet-threshold-28)[[30]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-9leaks1-30)

In April 2014, at the [Build Conference](https://en.wikipedia.org/wiki/Build_(developer_conference)), Microsoft's [Terry Myerson](https://en.wikipedia.org/wiki/Terry_Myerson) unveiled an updated version of Windows 8.1 that added the ability to run [Windows Store apps](https://en.wikipedia.org/wiki/Windows_Store_app) inside desktop windows and [a more traditional Start menu](https://en.wikipedia.org/wiki/Start_menu#Second_version) in place of the [Start screen](https://en.wikipedia.org/wiki/Start_menu#Third_version) seen in Windows 8. The new Start menu takes after [Windows 7](https://en.wikipedia.org/wiki/Windows_7)'s design by using only a portion of the screen and including a Windows 7-style application listing in the first column. The second column displays Windows 8-style app tiles. Myerson said that these changes would occur in a future update, but did not elaborate.[[31]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcw-startback-31)[[32]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-startreturn-32) Microsoft also unveiled the concept of a "universal Windows app", allowing Windows Store apps created for Windows 8.1 to be [ported](https://en.wikipedia.org/wiki/Porting) to [Windows Phone 8.1](https://en.wikipedia.org/wiki/Windows_Phone_8.1) and Xbox One while sharing a common codebase, with an interface designed for different device form factors, and allowing user data and [licenses](https://en.wikipedia.org/wiki/Software_licensing) for an app to be shared between multiple platforms. Windows Phone 8.1 would share nearly 90% of the common [Windows Runtime](https://en.wikipedia.org/wiki/Windows_Runtime) APIs with Windows 8.1 on PCs.[[31]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcw-startback-31)[[33]](https://en.wikipedia.org/wiki/Windows_10#cite_note-windowsApps-33)[[34]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcworld-universalapps-34)[[35]](https://en.wikipedia.org/wiki/Windows_10#cite_note-UniversalApps-35)

Screenshots of a Windows build which purported to be Threshold were leaked in July 2014, showing the previously presented Start menu and windowed Windows Store apps[[36]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-9leaks2-36)followed by a further screenshot in September 2014 of a build identifying itself as "Windows Technical Preview", numbered 9834, showing a new virtual desktop system, a notification center, and a new File Explorer icon.[[37]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-futuredesktop-37)

**Announcement**[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=2)]

Threshold was officially unveiled during a media event on September 30, 2014, under the name Windows 10; Myerson said that Windows 10 would be Microsoft's "most comprehensive platform ever", providing a single, unified platform for [desktop computers](https://en.wikipedia.org/wiki/Desktop_computer), [laptops](https://en.wikipedia.org/wiki/Laptop), [tablets](https://en.wikipedia.org/wiki/Tablet_computer), smartphones, and [all-in-one](https://en.wikipedia.org/wiki/All-in-One_PC) devices.[[38]](https://en.wikipedia.org/wiki/Windows_10#cite_note-slate-name-38)[[39]](https://en.wikipedia.org/wiki/Windows_10#cite_note-seatimes-windows10-39)[[40]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ext-why10-40) He emphasized that Windows 10 would take steps towards restoring user interface mechanics from [Windows 7](https://en.wikipedia.org/wiki/Windows_7) to improve the experience for users on non-touch devices, noting criticism of Windows 8's touch-oriented interface by keyboard and mouse users.[[41]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-win10-41)[[42]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-continuum-42) Despite these concessions, Myerson noted that the touch-oriented interface would evolve as well on 10.[[43]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ext-liveblog-43)

In regards to Microsoft naming the new operating system Windows 10 instead of Windows 9, Terry Myerson said that "based on the product that's coming, and just how different our approach will be overall, it wouldn't be right to call it Windows 9."[[44]](https://en.wikipedia.org/wiki/Windows_10#cite_note-Guardian-name-44) He also joked that they could not call it "Windows One" (alluding to several recent Microsoft products with a similar brand, such as [OneDrive](https://en.wikipedia.org/wiki/OneDrive), [OneNote](https://en.wikipedia.org/wiki/OneNote), and Xbox One) because [Windows 1.0](https://en.wikipedia.org/wiki/Windows_1.0) already existed.[[45]](https://en.wikipedia.org/wiki/Windows_10#cite_note-reuters-name-45) Tony Prophet, Microsoft Vice President of Windows Marketing, said at a San Francisco conference in October 2014 that Windows 9 "came and went", and that Windows 10 is not "an incremental step from Windows 8.1," but "a material step. We're trying to create one platform, one eco-system that unites as many of the devices [[*sic*](https://en.wikipedia.org/wiki/Sic)] from the small embedded Internet of Things, through tablets, through phones, through PCs and, ultimately, into the Xbox."[[46]](https://en.wikipedia.org/wiki/Windows_10#cite_note-BuinessInsider-name-46)

Further details surrounding Windows 10's consumer-oriented features were presented during another media event held on January 21, 2015, entitled "Windows 10: The Next Chapter". The keynote featured the unveiling of Cortana integration within the operating system, new [Xbox](https://en.wikipedia.org/wiki/Xbox)-oriented features, Windows 10 Mobile, an updated [Office Mobile](https://en.wikipedia.org/wiki/Office_Mobile) suite, [Surface Hub](https://en.wikipedia.org/wiki/Surface_Hub)‍—‌a large-screened Windows 10 device for enterprise collaboration based upon [Perceptive Pixel](https://en.wikipedia.org/wiki/Perceptive_Pixel) technology,[[47]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-surfacehub-47) along with [HoloLens](https://en.wikipedia.org/wiki/HoloLens)‑[augmented reality](https://en.wikipedia.org/wiki/Augmented_reality) eyewear and an associated platform for building apps that can render [holograms](https://en.wikipedia.org/wiki/Holograms) through HoloLens.[[48]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcmag-nextchapterevent-48)

Additional developer-oriented details surrounding the "[Universal Windows Platform](https://en.wikipedia.org/wiki/Universal_Windows_Platform)" concept were revealed and discussed during Microsoft's developers' conference [*Build*](https://en.wikipedia.org/wiki/Microsoft_Build). Among them were the unveiling of "Islandwood", which provides a [middleware](https://en.wikipedia.org/wiki/Middleware) [toolchain](https://en.wikipedia.org/wiki/Toolchain) for compiling [Objective-C](https://en.wikipedia.org/wiki/Objective-C) based software (particularly, [iOS](https://en.wikipedia.org/wiki/IOS) software) to run as universal apps on Windows 10 and Windows 10 Mobile. A port of *Candy Crush Saga* made using the toolkit, which shared much of its code with the iOS version, was demonstrated, alongside the announcement that the [King](https://en.wikipedia.org/wiki/King_(company))-developed game would be bundled with Windows 10 at launch.[[49]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-humanityweeps-49)[[50]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcw-windowsbridge-50)[[51]](https://en.wikipedia.org/wiki/Windows_10#cite_note-anandtech-islandwood-51)[[52]](https://en.wikipedia.org/wiki/Windows_10#cite_note-vb-androidios-notonlaunch-52)

**Release**[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=3)]

On June 1, 2015, Microsoft announced that Windows 10 would be released on July 29, 2015.[[9]](https://en.wikipedia.org/wiki/Windows_10#cite_note-release-date-9) Microsoft began an [advertising campaign](https://en.wikipedia.org/wiki/Advertising_campaign) centering on Windows 10, "Upgrade Your World", on July 20, 2015 with the premiere of television commercials in Australia, Canada, France, Germany, Japan, the United Kingdom, and the United States. The commercials focused on the tagline "A more human way to do", emphasizing new features and technologies supported by Windows 10 that sought to provide a more "personal" experience to users.[[53]](https://en.wikipedia.org/wiki/Windows_10#cite_note-zdnet-campaign-53)[[54]](https://en.wikipedia.org/wiki/Windows_10#cite_note-nyt-10ads-54) The campaign culminated with launch events in thirteen cities on July 29, which celebrated "the unprecedented role our biggest fans played in the development of Windows 10".[[55]](https://en.wikipedia.org/wiki/Windows_10#cite_note-cw-10campaign-55)

Features[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=4)]

*Main article:*[*Features new to Windows 10*](https://en.wikipedia.org/wiki/Features_new_to_Windows_10)

Windows 10 harmonizes the user experience and functionality between different classes of device, and addresses shortcomings in the user interface that were introduced in Windows 8.[[41]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-win10-41)[[42]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-continuum-42)[[56]](https://en.wikipedia.org/wiki/Windows_10#cite_note-tomsguide-unveiled-56) [Windows 10 Mobile](https://en.wikipedia.org/wiki/Windows_10_Mobile), the successor to Windows Phone 8.1, shares some user interface elements and apps with its PC counterpart.[[57]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-thisiswp10-57)

The Windows Runtime app ecosystem was revised into the [Universal Windows Platform](https://en.wikipedia.org/wiki/Universal_Windows_Platform) (UWP).[[33]](https://en.wikipedia.org/wiki/Windows_10#cite_note-windowsApps-33)[[58]](https://en.wikipedia.org/wiki/Windows_10#cite_note-msdn-uwp-58)[[59]](https://en.wikipedia.org/wiki/Windows_10#cite_note-59) These universal apps are made to run across multiple platforms and device classes, including smartphones, tablets, Xbox One consoles, and other compatible Windows 10 devices. Windows apps share code across platforms, have [responsive designs](https://en.wikipedia.org/wiki/Responsive_design) that adapt to the needs of the device and available inputs, can synchronize data between Windows 10 devices (including notifications, credentials, and allowing cross-platform multiplayer for games), and are distributed through [Microsoft Store](https://en.wikipedia.org/wiki/Microsoft_Store_(digital)) (rebranded from Windows Store since September 2017).[[60]](https://en.wikipedia.org/wiki/Windows_10#cite_note-60) Developers can allow "cross-buys", where purchased licenses for an app apply to all of the user's compatible devices, rather than only the one they purchased on (e.g., a user purchasing an app on PC is also entitled to use the smartphone version at no extra cost).[[34]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcworld-universalapps-34)[[61]](https://en.wikipedia.org/wiki/Windows_10#cite_note-61)[[62]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-w10universal-62)

On Windows 10, Microsoft Store serves as a unified storefront for apps, video content, and ebooks.[[63]](https://en.wikipedia.org/wiki/Windows_10#cite_note-bw-entertainment-63) Windows 10 also allows [web apps](https://en.wikipedia.org/wiki/Web_app) and desktop software (using either [Win32](https://en.wikipedia.org/wiki/Win32)or [.NET Framework](https://en.wikipedia.org/wiki/.NET_Framework)) to be packaged for distribution on Microsoft Store. Desktop software distributed through Windows Store is packaged using the [App-V](https://en.wikipedia.org/wiki/App-V) system to allow [sandboxing](https://en.wikipedia.org/wiki/Sandbox_(computer_security)).[[64]](https://en.wikipedia.org/wiki/Windows_10#cite_note-64)[[65]](https://en.wikipedia.org/wiki/Windows_10#cite_note-zdnet-appvappgap-65)

**User interface and desktop**[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=5)]

[](https://en.wikipedia.org/wiki/File:Virtual_Desktops_in_Windows_10.png)

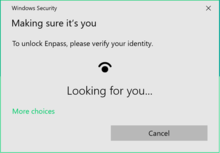
The "[Task View](https://en.wikipedia.org/wiki/Task_View)" display is a new feature to Windows 10, allowing the use of multiple workspaces.

A new iteration of the [Start menu](https://en.wikipedia.org/wiki/Start_menu) is used on the Windows 10 desktop, with a list of places and other options on the left side, and tiles representing applications on the right. The menu can be resized, and expanded into a full-screen display, which is the default option in Tablet mode.[[41]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-win10-41)[[56]](https://en.wikipedia.org/wiki/Windows_10#cite_note-tomsguide-unveiled-56)[[66]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-closerlook-66) A new virtual desktop system was added. A feature known as Task View displays all open windows and allows users to switch between them, or switch between multiple workspaces.[[41]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-win10-41)[[56]](https://en.wikipedia.org/wiki/Windows_10#cite_note-tomsguide-unveiled-56) Universal apps, which previously could be used only in full screen mode, can now be used in self-contained windows similarly to other programs.[[41]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-win10-41)[[56]](https://en.wikipedia.org/wiki/Windows_10#cite_note-tomsguide-unveiled-56) Program windows can now be snapped to quadrants of the screen by dragging them to the corner. When a window is snapped to one side of the screen, Task View appears and the user is prompted to choose a second window to fill the unused side of the screen (called "Snap Assist").[[56]](https://en.wikipedia.org/wiki/Windows_10#cite_note-tomsguide-unveiled-56) Windows' system icons were also changed.[[66]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-closerlook-66)

[Charms](https://en.wikipedia.org/wiki/Windows_shell#Charms) have been removed; their functionality in universal apps is accessed from an *App commands* menu on their title bar.[[41]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-win10-41)[[56]](https://en.wikipedia.org/wiki/Windows_10#cite_note-tomsguide-unveiled-56) In its place is Action Center, which displays notifications and settings toggles. It is accessed by clicking an icon in the notification area, or dragging from the right of the screen. Notifications can be synced between multiple devices.[[57]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-thisiswp10-57)[[66]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-closerlook-66) The Settings app (formerly PC Settings) was refreshed and now includes more options that were previously exclusive to the desktop [Control Panel](https://en.wikipedia.org/wiki/Control_Panel_(Windows)).[[67]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcpro-settingsmenu-67)[[68]](https://en.wikipedia.org/wiki/Windows_10#cite_note-cnet-settingsmenu-68)

Windows 10 is designed to adapt its user interface based on the type of device being used and available input methods. It offers two separate user interface modes: a user interface optimized for mouse and keyboard, and a "Tablet mode" designed for touchscreens. Users can toggle between these two modes at any time, and Windows can prompt or automatically switch when certain events occur, such as disabling Tablet mode on a tablet if a keyboard or mouse is plugged in, or when a [2-in-1 PC](https://en.wikipedia.org/wiki/2-in-1_PC) is switched to its laptop state. In Tablet mode, programs default to a maximized view, and the taskbar contains a back button and hides buttons for opened or pinned programs; Task View is used instead to switch between programs. The full screen Start menu is used in this mode, similarly to Windows 8, but scrolls vertically instead of horizontally.[[42]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-continuum-42)[[69]](https://en.wikipedia.org/wiki/Windows_10#cite_note-thurrotcom-tablet1-69)[[70]](https://en.wikipedia.org/wiki/Windows_10#cite_note-thurrotcom-tablet2-70)[[71]](https://en.wikipedia.org/wiki/Windows_10#cite_note-winbeta-w10touch-71)

**System security**[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=6)]

[](https://en.wikipedia.org/wiki/File:Windows_Hello_in_Enpass.png)

Windows Hello unlock prompt on a [Surface Pro 4](https://en.wikipedia.org/wiki/Surface_Pro_4) while using [Enpass](https://en.wikipedia.org/wiki/Enpass) (a [password manager](https://en.wikipedia.org/wiki/Password_manager))

Windows 10 incorporates [multi-factor authentication](https://en.wikipedia.org/wiki/Multi-factor_authentication) technology based upon standards developed by the [FIDO Alliance](https://en.wikipedia.org/wiki/FIDO_Alliance).[[72]](https://en.wikipedia.org/wiki/Windows_10#cite_note-zdnet-nextgencredentials-72) The operating system includes improved support for [biometric authentication](https://en.wikipedia.org/wiki/Biometric_authentication) through the [Windows Hello](https://en.wikipedia.org/wiki/Windows_Hello) platform. Devices with supported cameras (requiring [infrared](https://en.wikipedia.org/wiki/Infrared) illumination, such as [Intel RealSense](https://en.wikipedia.org/wiki/Intel_RealSense)) allow users to log in with iris or [face recognition](https://en.wikipedia.org/wiki/Face_recognition), similarly to [Kinect](https://en.wikipedia.org/wiki/Kinect). Devices with supported readers allow users to log in through [fingerprint recognition](https://en.wikipedia.org/wiki/Fingerprint_recognition). Support was also added for palm-vein scanning through a partnership with [Fujitsu](https://en.wikipedia.org/wiki/Fujitsu) in February 2018.[[73]](https://en.wikipedia.org/wiki/Windows_10#cite_note-73) Credentials are stored locally and protected using [asymmetric encryption](https://en.wikipedia.org/wiki/Asymmetric_encryption).[[74]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-hello-74)

When Windows 10 was first introduced, multi-factor authentication was provided by two components: Windows Hello and Passport (not to be confused with [the Passport platform of 1998](https://en.wikipedia.org/wiki/Microsoft_account)). Later, Passport was merged into Windows Hello.[[75]](https://en.wikipedia.org/wiki/Windows_10#cite_note-75)[[74]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-hello-74)

The enterprise version of Windows 10 offers additional security features; administrators can set up policies for the automatic [encryption](https://en.wikipedia.org/wiki/Data_encryption) of sensitive data, selectively block applications from accessing encrypted data, and enable *Device Guard*‍—‌a system which allows administrators to enforce a high security environment by blocking the execution of software that is not digitally signed by a trusted vendor or Microsoft. Device Guard is designed to protect against [zero-day exploits](https://en.wikipedia.org/wiki/Zero-day_exploit), and runs inside a [hypervisor](https://en.wikipedia.org/wiki/Hypervisor) so that its operation remains separated from the operating system itself.[[72]](https://en.wikipedia.org/wiki/Windows_10#cite_note-zdnet-nextgencredentials-72)[[76]](https://en.wikipedia.org/wiki/Windows_10#cite_note-techradar-deviceguard-76)

**Command line**[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=7)]

[Win32 console](https://en.wikipedia.org/wiki/Win32_console) windows can now be resized without any restrictions, can be made to cover the full screen by pressing Alt+↵ Enter, and can use standard keyboard shortcuts, such as those for [cut, copy, and paste](https://en.wikipedia.org/wiki/Cut,_copy,_and_paste). Other features such as word wrap and transparency were also added. These functions can be disabled to revert to the legacy console, if needed.[[77]](https://en.wikipedia.org/wiki/Windows_10#cite_note-77)

The Anniversary Update adds [Windows Subsystem for Linux](https://en.wikipedia.org/wiki/Windows_Subsystem_for_Linux), which allows the installation of a [user space](https://en.wikipedia.org/wiki/User_space) environment from a supported [Linux](https://en.wikipedia.org/wiki/Linux) [distribution](https://en.wikipedia.org/wiki/Linux_distribution) that runs natively on Windows. The subsystem translates Linux [system calls](https://en.wikipedia.org/wiki/System_call) that the Linux system uses to those of the Windows NT kernel. The environment can execute the [Bash](https://en.wikipedia.org/wiki/Bash_(Unix_shell)) shell and 64-bit command line programs. Windows applications cannot be executed from the Linux environment, and vice versa. Linux distributions for Windows Subsystem for Linux are obtained through Microsoft Store. The feature initially supported an [Ubuntu](https://en.wikipedia.org/wiki/Ubuntu_(operating_system))-based environment; Microsoft announced in May 2017 that it would add [Fedora](https://en.wikipedia.org/wiki/Fedora_(operating_system)) and [OpenSUSE](https://en.wikipedia.org/wiki/OpenSUSE) environment options as well.[[78]](https://en.wikipedia.org/wiki/Windows_10#cite_note-78)[[79]](https://en.wikipedia.org/wiki/Windows_10#cite_note-79)[[80]](https://en.wikipedia.org/wiki/Windows_10#cite_note-80)[[81]](https://en.wikipedia.org/wiki/Windows_10#cite_note-81)[[82]](https://en.wikipedia.org/wiki/Windows_10#cite_note-82)[[83]](https://en.wikipedia.org/wiki/Windows_10#cite_note-83)[[84]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-susefedorawin10-84)

**Storage requirements**[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=8)]

To reduce the storage footprint of the operating system, Windows 10 automatically [compresses](https://en.wikipedia.org/wiki/Data_compression) system files. The system can reduce the storage footprint of Windows by approximately 1.5 GB for [32-bit](https://en.wikipedia.org/wiki/32-bit) systems and 2.6 GB for [64-bit](https://en.wikipedia.org/wiki/64-bit_computing) systems. The level of compression used is dependent on a performance assessment performed during installations or by [OEMs](https://en.wikipedia.org/wiki/Original_equipment_manufacturer), which tests how much compression can be used without harming operating system performance. Furthermore, the Refresh and Reset functions use runtime system files instead, making a separate recovery partition redundant, allowing patches and updates to remain installed following the operation, and further reducing the amount of space required for Windows 10 by up to 12 GB. These functions replace the [WIMBoot mode](https://en.wikipedia.org/wiki/Features_new_to_Windows_8#Installation) introduced on Windows 8.1 Update, which allowed OEMs to configure low-capacity devices with flash-based storage to use Windows system files out of the compressed [WIM image](https://en.wikipedia.org/wiki/Windows_Imaging_Format) typically used for installation and recovery.[[85]](https://en.wikipedia.org/wiki/Windows_10#cite_note-85)[[86]](https://en.wikipedia.org/wiki/Windows_10#cite_note-86)[[87]](https://en.wikipedia.org/wiki/Windows_10#cite_note-winblog-compression-87) Windows 10 also includes a function in its Settings app that allows users to view a breakdown of how their device's storage capacity is being used by different types of files, and determine whether certain types of files are saved to internal storage or an [SD card](https://en.wikipedia.org/wiki/SD_card) by default.[[88]](https://en.wikipedia.org/wiki/Windows_10#cite_note-techrepublic-storagesense-88)

**Online services and functionality**[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=9)]

Windows 10 introduces a new default [web browser](https://en.wikipedia.org/wiki/Web_browser), [Microsoft Edge](https://en.wikipedia.org/wiki/Microsoft_Edge).[[89]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-msedge-89) It features a new [standards](https://en.wikipedia.org/wiki/Web_standards)-compliant rendering engine forked from [Trident](https://en.wikipedia.org/wiki/Trident_(layout_engine)), annotation tools, and offers integration with other Microsoft platforms present within Windows 10.[[90]](https://en.wikipedia.org/wiki/Windows_10#cite_note-zdnet-underhood-90)[[91]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ieblog-spartan-91) Internet Explorer 11 is maintained on Windows 10 for compatibility purposes, but is deprecated in favor of Edge and will no longer be actively developed.[[92]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-relegatesie11-92)[[93]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ieblog-edge-93)

Windows 10 incorporates Microsoft's [intelligent personal assistant](https://en.wikipedia.org/wiki/Intelligent_personal_assistant), Cortana, which was first introduced with Windows Phone 8.1 in 2014. Cortana replaced Windows' embedded search feature, supporting both text and voice input. Many of its features are a direct carryover from Windows Phone, including integration with [Bing](https://en.wikipedia.org/wiki/Bing_(search_engine)), setting reminders, a *Notebook*feature for managing personal information, as well as searching for files, playing music, launching applications and setting reminders or sending emails.[[94]](https://en.wikipedia.org/wiki/Windows_10#cite_note-94)[[95]](https://en.wikipedia.org/wiki/Windows_10#cite_note-95) Cortana is implemented as a universal search box located alongside the Start and Task View buttons, which can be hidden or condensed to a single button.[[66]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-closerlook-66)

[Microsoft Family Safety](https://en.wikipedia.org/wiki/Microsoft_Family_Safety) is replaced by Microsoft Family, a [parental controls](https://en.wikipedia.org/wiki/Parental_controls) system that applies across Windows platforms and Microsoft online services. Users can create a designated family, and monitor and restrict the actions of users designated as children, such as access to websites, enforcing age ratings on Microsoft Store purchases, and other restrictions. The service can also send weekly e-mail reports to parents detailing a child's computer usage. Unlike previous versions of Windows, child accounts in a family must be associated with a Microsoft account‍—‌which allows these settings to apply across all Windows 10 devices that a particular child is using.[[96]](https://en.wikipedia.org/wiki/Windows_10#cite_note-thurrott-family-96)[[97]](https://en.wikipedia.org/wiki/Windows_10#cite_note-bi-emailfamily-97)

Windows 10 also offers the Wi-Fi Sense feature originating from Windows Phone 8.1; users can optionally have their device automatically connect to suggested open hotspots, and share their home network's password with contacts (either via [Skype](https://en.wikipedia.org/wiki/Skype), [People](https://en.wikipedia.org/wiki/People_(Microsoft_service)), or [Facebook](https://en.wikipedia.org/wiki/Facebook)) so they may automatically connect to the network on a Windows 10 device without needing to manually enter its password. Credentials are stored in an encrypted form on Microsoft servers, and sent to the devices of the selected contacts. Passwords are not viewable by the guest user, and the guest user is not allowed to access other computers or devices on the network. Wi-Fi Sense is not usable on [802.1X](https://en.wikipedia.org/wiki/802.1X)-encrypted networks. Adding "\_optout" at the end of the [SSID](https://en.wikipedia.org/wiki/SSID) will also block the corresponding network from being used for this feature.[[98]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcworld-wifisense-98)

Universal calling and messaging apps for Windows 10 are built in as of the November 2015 update: Messaging, Skype Video, and Phone. These offer built-in alternatives to the Skype download and sync with Windows 10 Mobile.[[99]](https://en.wikipedia.org/wiki/Windows_10#cite_note-techradar-th2november-99)[[100]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-10messaging-100)

**Multimedia and gaming**[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=10)]

*See also:*[*List of Xbox Live Games on Windows 10*](https://en.wikipedia.org/wiki/List_of_Xbox_Live_Games_on_Windows_10)

[](https://en.wikipedia.org/wiki/File:Xbox_Avatars_Store.png)

The dedicated [Xbox app](https://en.wikipedia.org/wiki/Xbox_(software)) on Windows 10, on the "Avatar Store" page

Windows 10 provides heavier integration with the Xbox ecosystem. Xbox SmartGlass is succeeded by the [Xbox app](https://en.wikipedia.org/wiki/Xbox_(software)), which allows users to browse their game library (including both PC and Xbox console games), and Game DVR is also available using a [keyboard shortcut](https://en.wikipedia.org/wiki/Keyboard_shortcut), allowing users to save the last 30 seconds of gameplay as a video that can be shared to Xbox Live, OneDrive, or elsewhere.[[101]](https://en.wikipedia.org/wiki/Windows_10#cite_note-engadget-w10xbox-101)[[102]](https://en.wikipedia.org/wiki/Windows_10#cite_note-polygon-10xboxapp-102) Windows 10 also allows users to control and play games from an Xbox One console over a local network.[[103]](https://en.wikipedia.org/wiki/Windows_10#cite_note-polygon-w10streamone-103) The Xbox Live SDK allows application developers to incorporate Xbox Live functionality into their apps, and future wireless Xbox One accessories, such as controllers, are supported on Windows with an adapter.[[104]](https://en.wikipedia.org/wiki/Windows_10#cite_note-xboxgdc15-104) Microsoft also intends to allow cross-buys and save synchronization between Xbox One and Windows 10 versions of games; [Microsoft Studios](https://en.wikipedia.org/wiki/Microsoft_Studios) games such as [*ReCore*](https://en.wikipedia.org/wiki/ReCore) and [*Quantum Break*](https://en.wikipedia.org/wiki/Quantum_Break) are intended as being exclusive to Windows 10 and Xbox One.[[105]](https://en.wikipedia.org/wiki/Windows_10#cite_note-gs-crossplay-105)

[*Candy Crush Saga*](https://en.wikipedia.org/wiki/Candy_Crush_Saga) and [*Microsoft Solitaire Collection*](https://en.wikipedia.org/wiki/Microsoft_Solitaire_Collection) are also automatically installed upon installation of Windows 10.[[106]](https://en.wikipedia.org/wiki/Windows_10#cite_note-106)[[107]](https://en.wikipedia.org/wiki/Windows_10#cite_note-wired10-107)

Windows 10 adds native game recording and screenshot capture ability using the newly introduced game bar. Users can also have the OS continuously record gameplay in the background, which, then, allows the user to save the last few, user configurable, moments of gameplay to the hard disk.[[108]](https://en.wikipedia.org/wiki/Windows_10#cite_note-108)

Windows 10 adds [FLAC](https://en.wikipedia.org/wiki/FLAC) and [HEVC](https://en.wikipedia.org/wiki/HEVC) codecs and support for the [Matroska](https://en.wikipedia.org/wiki/Matroska) media container, allowing these formats to be opened in [Windows Media Player](https://en.wikipedia.org/wiki/Windows_Media_Player) and other applications.[[109]](https://en.wikipedia.org/wiki/Windows_10#cite_note-MicrosoftHEVCNovember2014W10-109)[[110]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcw-flac10-110)[[111]](https://en.wikipedia.org/wiki/Windows_10#cite_note-engadget-mkv10-111)

**DirectX 12**[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=11)]

Windows 10 includes [DirectX 12](https://en.wikipedia.org/wiki/DirectX_12), alongside [WDDM 2.0](https://en.wikipedia.org/wiki/Windows_Display_Driver_Model#WDDM_2.0).[[112]](https://en.wikipedia.org/wiki/Windows_10#cite_note-dx12PreviewAnandtech-112)[[113]](https://en.wikipedia.org/wiki/Windows_10#cite_note-dx12-w10-113) Unveiled March 2014 at [GDC](https://en.wikipedia.org/wiki/Game_Developers_Conference), DirectX 12 aims to provide "[console](https://en.wikipedia.org/wiki/Video_game_console)-level efficiency" with "closer to the metal" access to hardware resources, and reduced [CPU](https://en.wikipedia.org/wiki/Central_processing_unit) and graphics driver [overhead](https://en.wikipedia.org/wiki/Overhead_(computing)).[[114]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcworld-woogamers-114)[[115]](https://en.wikipedia.org/wiki/Windows_10#cite_note-techradar-dx12-115) Most of the performance improvements are achieved through [low-level programming](https://en.wikipedia.org/wiki/Low-level_programming_language), which allow developers to use resources more efficiently and reduce single-[threaded](https://en.wikipedia.org/wiki/Thread_(computing)) CPU bottlenecking caused by abstraction through higher level APIs.[[116]](https://en.wikipedia.org/wiki/Windows_10#cite_note-116)[[117]](https://en.wikipedia.org/wiki/Windows_10#cite_note-117) DirectX 12 will also feature support for vendor agnostic multi-GPU setups.[[118]](https://en.wikipedia.org/wiki/Windows_10#cite_note-118) WDDM 2.0 introduces a new virtual memory management and allocation system to reduce workload on the kernel-mode driver.[[112]](https://en.wikipedia.org/wiki/Windows_10#cite_note-dx12PreviewAnandtech-112)[[119]](https://en.wikipedia.org/wiki/Windows_10#cite_note-119)

Removed features[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=12)]

[Windows Media Center](https://en.wikipedia.org/wiki/Windows_Media_Center) was discontinued, and is uninstalled when upgrading from a previous version of Windows.[[120]](https://en.wikipedia.org/wiki/Windows_10#cite_note-EdBott-120)[[121]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ndtv-10removedfeatures-121) Upgraded Windows installations with Media Center will receive the paid app [Windows DVD Player](https://en.wikipedia.org/wiki/DVD_Player_(Windows)#Windows_10_version) free of charge for a limited, but unspecified, time.[[122]](https://en.wikipedia.org/wiki/Windows_10#cite_note-zdnet-doyouknow-122) Microsoft had previously relegated Media Center and integrated DVD playback support to a paid add-on beginning on Windows 8 due to the cost of licensing the required DVD playback related patents, and the increasing number of PC devices that have no optical drives.[[123]](https://en.wikipedia.org/wiki/Windows_10#cite_note-droppingDVD-123)

The OneDrive built-in sync client, which was [introduced in Windows 8.1](https://en.wikipedia.org/wiki/Windows_8.1#Online_services_and_functionality), no longer supports offline placeholders for online-only files in Windows 10.[[124]](https://en.wikipedia.org/wiki/Windows_10#cite_note-MSFT-Win10removedfeatures-124)[[125]](https://en.wikipedia.org/wiki/Windows_10#cite_note-125) This functionality was re-added in Windows 10 version 1709, under the name "OneDrive Files On-Demand".[[126]](https://en.wikipedia.org/wiki/Windows_10#cite_note-126)

Users are no longer able to synchronize Start menu layouts across all devices associated with a [Microsoft account](https://en.wikipedia.org/wiki/Microsoft_account). A Microsoft developer justified the change by explaining that a user may have different applications they want to emphasize on each device that they use, rather than use the same configuration across each device. The ability to automatically install an universal app across all devices associated with an account was also removed.[[127]](https://en.wikipedia.org/wiki/Windows_10#cite_note-supersite-nosync-127)

Web browsers can no longer set themselves as a user's default without further intervention; changing the default web browser must be performed manually by the user from Settings' "Default apps" page, ostensibly to prevent [browser hijacking](https://en.wikipedia.org/wiki/Browser_hijacking).[[128]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-w10defaults-128)

Parental controls no longer support browsers other than Internet Explorer and Edge, and the ability to control browsing by a whitelist was removed.[[129]](https://en.wikipedia.org/wiki/Windows_10#cite_note-microsoft-familyfaq-129) Also removed were the ability to control local accounts, and the ability to scan a machine for applications to allow and block.[[*citation needed*](https://en.wikipedia.org/wiki/Wikipedia:Citation_needed)]

The Food & Drink, Health & Fitness, and Travel apps have been discontinued.[[130]](https://en.wikipedia.org/wiki/Windows_10#cite_note-thurrottcom-msndiscontinue-130)

Drivers for [floppy drives](https://en.wikipedia.org/wiki/Floppy_drives) are no longer integrated and must be downloaded separately.[[121]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ndtv-10removedfeatures-121)[[131]](https://en.wikipedia.org/wiki/Windows_10#cite_note-131)

While all Windows 10 editions include fonts that provide broad language support, some fonts for Middle Eastern and East Asian languages (Arabic, Chinese, Hindi, Japanese, Korean, etc.) are no longer included with the standard installation to reduce storage space used, but are available without charge as optional font packages. When software invokes text in languages other than those for which the system is configured and does not use the Windows font fallback mechanisms designed always to display legible glyphs, Windows displays unsupported characters as a default "not defined" glyph, a square or rectangular box, or a box with a dot, question mark or "x" inside.[[132]](https://en.wikipedia.org/wiki/Windows_10#cite_note-132)

[Windows Defender](https://en.wikipedia.org/wiki/Windows_Defender) could be integrated into [File Explorer](https://en.wikipedia.org/wiki/File_Explorer)'s context menu in Windows 8.x, but Microsoft initially removed integration from Windows 10, restoring it in Windows 10 build 10571 in response to user feedback.[[133]](https://en.wikipedia.org/wiki/Windows_10#cite_note-133)

User control over Windows Updates was removed (except in enterprise versions). In earlier versions users could opt for updates to be installed automatically, or to be notified so they could update as and when they wished, or not to be notified; and they could choose which updates to install, using information about the updates. Windows 10 Pro and Enterprise users may be configured by an administrator to defer updates, but only for a limited time.[[134]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-whatyoulllose-134) Under the Windows [end-user license agreement](https://en.wikipedia.org/wiki/End-user_license_agreement), users consent to the automatic installation of all updates, features and drivers provided by the service, and implicitly consent "without any additional notice" to the possibility of features being modified or removed.[[135]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-updateeula-135)[[136]](https://en.wikipedia.org/wiki/Windows_10#cite_note-cw-details-136)[[137]](https://en.wikipedia.org/wiki/Windows_10#cite_note-cw-culmwitheld-137)

**Features removed in version 1607**[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=13)]

[Cortana](https://en.wikipedia.org/wiki/Cortana_(software)) can no longer be fully hidden, as it was made the default search experience in the Windows shell for all users (on previous revisions, a generic search experience without any Cortana branding and functionality is used if it is disabled). As with previous builds, users must still opt-in and grant permission for the software to perform data collection and tracking in order to fully enable Cortana's personalized features. If this functionality is not enabled, Cortana operates in a feature-limited mode with basic web and device search functionality, nearly identical to the non-Cortana search experience on previous builds.[[138]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcw-cantturnoffcortana-138)[[139]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcw-cortanadisable-139)

In April 2016, Microsoft announced that it will no longer allow Cortana web searches to be executed through any other web browser and search engine combination but [Microsoft Edge](https://en.wikipedia.org/wiki/Microsoft_Edge) and [Bing](https://en.wikipedia.org/wiki/Bing_(search_engine)), intentionally disregarding user settings. Microsoft stated that circumvention of these settings (which could be accomplished with third-party software) results in a "compromised experience that is less reliable and predictable", and that only Microsoft Edge supports direct integration with Cortana within the browser itself.[[140]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcw-lockdowncortana-140)[[141]](https://en.wikipedia.org/wiki/Windows_10#cite_note-141)

Certain features related to embedded advertising in the operating system can no longer be disabled on non-enterprise versions of Windows 10 using management settings such as [Group Policy](https://en.wikipedia.org/wiki/Group_Policy),[[142]](https://en.wikipedia.org/wiki/Windows_10#cite_note-forced-ads-142) including disabling Microsoft Store and [Universal Windows Platform](https://en.wikipedia.org/wiki/Universal_Windows_Platform) apps, "Microsoft consumer experiences" (which pushes tiles to the Start menu advertising promoted Microsoft Store apps, typically following a new installation of Windows 10), Windows Tips, turning off the [lock screen](https://en.wikipedia.org/wiki/Lock_screen) (which can optionally display ads as part of "Spotlight" tips), or enforcing a specific lock screen background. Critics argued that this change was meant to discourage Windows 10 *Pro* from being used in business environments, since Microsoft was making it less attractive by reducing the amount of control administrators have over their devices' environment without using an enterprise version of Windows 10.[[142]](https://en.wikipedia.org/wiki/Windows_10#cite_note-forced-ads-142)

The ability to share Wi-Fi credentials with other contacts via Wi-Fi Sense was removed; Wi-Fi passwords can still be synced between devices tied to the same Microsoft account.[[143]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-nomorewifisense-143)

The ability to change the Exit Windows, Windows Logoff and Windows Logon sounds was hidden in Version 1607, although these features can be enabled by going to the [Windows Registry](https://en.wikipedia.org/wiki/Windows_Registry) and under the EventLabels folder and setting the value to 0.[[144]](https://en.wikipedia.org/wiki/Windows_10#cite_note-144)

**Features removed in version 1703 and 1709**[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=14)]

Windows Update will no longer postpone the download of certain critical updates if the device is connected to a network that was designated by the user as being "[metered](https://en.wikipedia.org/wiki/Bandwidth_cap)". Although meant to prevent the updates from utilizing data allotments, this behavior had been used as a workaround by users to avoid the requirement for all updates to be automatically downloaded.[[145]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcw-w10meteredupdates-145)

Devices containing an [Intel Atom "Clover Trail"](https://en.wikipedia.org/wiki/Atom_(system_on_chip)) system-on-chip are incompatible with Version 1703, and cannot be upgraded to this version of Windows 10.[[146]](https://en.wikipedia.org/wiki/Windows_10#cite_note-:1-146)

[Server Message Block](https://en.wikipedia.org/wiki/Server_Message_Block) version 1 (SMB1) is disabled by default on version 1709. The Home and Pro editions only disable the SMB1 server, but retain the SMB1 client, so they can connect to SMB1 network shares. The Enterprise and Education editions disable the SMB1 entirely. This version of the 30-year-old protocol gained notoriety in the [WannaCry ransomware attack](https://en.wikipedia.org/wiki/WannaCry_ransomware_attack), although Microsoft had been discouraging its use even before.[[147]](https://en.wikipedia.org/wiki/Windows_10#cite_note-147)

The Interactive Service Detection service, introduced in Windows Vista to combat [shatter attacks](https://en.wikipedia.org/wiki/Shatter_attack), is removed in 1703.[[148]](https://en.wikipedia.org/wiki/Windows_10#cite_note-148) [Syskey](https://en.wikipedia.org/wiki/Syskey) was removed in 1709, with Microsoft recommending the use of Bitlocker instead.[[149]](https://en.wikipedia.org/wiki/Windows_10#cite_note-149)

**Features removed in version 1803**[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=15)]

HomeGroup, a home network sharing feature first introduced in Windows 7, is removed.[[150]](https://en.wikipedia.org/wiki/Windows_10#cite_note-150) It is replaced with a new feature called "Nearby Sharing."[[151]](https://en.wikipedia.org/wiki/Windows_10#cite_note-151)

Editions and pricing[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=16)]

*Main article:*[*Windows 10 editions*](https://en.wikipedia.org/wiki/Windows_10_editions)

Windows 10 is available in five main editions for personal computer devices, of which the *Home* and *Pro* versions are sold at retail in most countries, and as pre-loaded software on new computers. *Home* is aimed at home users, while *Pro* is aimed at small businesses. Each edition of Windows 10 includes all of the capabilities and features of the edition below it, and add additional features oriented towards their market segments; for example, *Pro* adds additional networking and security features such as [BitLocker](https://en.wikipedia.org/wiki/BitLocker), Device Guard, Windows Update for Business, and the ability to join a [domain](https://en.wikipedia.org/wiki/Windows_domain). The remaining editions, *Enterprise* and *Education*, contain additional features aimed towards business environments, and are only available through [volume licensing](https://en.wikipedia.org/wiki/Volume_licensing).[[152]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-w10editions-152)[[153]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ms-w10editions-153)

As part of Microsoft's unification strategies, Windows products that are based on Windows 10's common platform but meant for specialized platforms are marketed as editions of the operating system, rather than as separate product lines. An updated version of Microsoft's Windows Phone operating system for smartphones, and also tablets, was branded as [*Windows 10 Mobile*](https://en.wikipedia.org/wiki/Windows_10_Mobile).[[154]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-firstlookwp10-154) Editions of *Enterprise* and *Mobile* will also be produced for [embedded systems](https://en.wikipedia.org/wiki/Embedded_systems), along with [*Windows 10 IoT Core*](https://en.wikipedia.org/wiki/Windows_10_IoT_Core), which is designed specifically for use in small footprint, low-cost devices and [Internet of Things](https://en.wikipedia.org/wiki/Internet_of_Things) (IoT) scenarios and is similar to [Windows Embedded](https://en.wikipedia.org/wiki/Windows_Embedded).[[152]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-w10editions-152)[[153]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ms-w10editions-153)

On May 2, 2017, Microsoft unveiled *Windows 10 S* (referred to in leaks as *Windows 10 Cloud*), a feature-limited version of Windows 10 which was designed primarily for devices in the education market (competing, in particular, with [Chrome OS](https://en.wikipedia.org/wiki/Chrome_OS) netbooks), such as the [Surface Laptop](https://en.wikipedia.org/wiki/Surface_Laptop) that Microsoft also unveiled at this time. The OS restricts software installation to applications obtained from Microsoft Store; the device may be upgraded to Windows 10 *Pro* for a fee to enable unrestricted software installation. As a time-limited promotion, Microsoft stated that this upgrade would be free on the Surface Laptop until March 31, 2018.[[155]](https://en.wikipedia.org/wiki/Windows_10#cite_note-155) Windows 10 S also contains a faster initial setup and login process, and allows devices to be provisioned using a USB drive with the Windows Intune for Education platform.[[156]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcw-w10s-156)[[157]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-windows10s-157)[[158]](https://en.wikipedia.org/wiki/Windows_10#cite_note-158)[[159]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-10cloudscreen-159)[[160]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcw-w10cloud-160) In March 2018, Microsoft announced that Windows 10 S would be deprecated due to market confusion, and would be replaced by "S Mode", an OEM option wherein Windows defaults to only allowing applications to be installed from Microsoft Store, but does not require payment in order to disable these restrictions.[[161]](https://en.wikipedia.org/wiki/Windows_10#cite_note-161)[[162]](https://en.wikipedia.org/wiki/Windows_10#cite_note-Tung-162)

**Preview releases**[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=17)]

*See also:*[*Windows Insider*](https://en.wikipedia.org/wiki/Windows_Insider)

A [public beta](https://en.wikipedia.org/wiki/Public_beta) program for Windows 10 known as the *Windows Insider Program* began with the first publicly available preview release on October 1, 2014. Insider preview builds are aimed towards enthusiasts and enterprise users for the testing and evaluation of updates and new features.[[163]](https://en.wikipedia.org/wiki/Windows_10#cite_note-163) Users of the [*Windows Insider* program](https://en.wikipedia.org/wiki/Windows_Insider) receive occasional updates to newer preview builds of the operating system and will continue to be able to evaluate preview releases after [general availability (GA)](https://en.wikipedia.org/wiki/Software_release_cycle#General_availability) in July 2015‍—‌this is in contrast to previous Windows beta programs, where public preview builds were released less frequently and only during the months preceding GA.[[41]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-win10-41)[[43]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ext-liveblog-43)[[164]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-windows10turbo-164)[[165]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-10tp-165)[[166]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-10tp-166) Windows Insider builds continued being released after the [release to manufacturing](https://en.wikipedia.org/wiki/Release_to_manufacturing) (RTM) of Windows 10.[[167]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-msbacksaway-167)[[168]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-w10insiderfree-168)

**Public release**[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=18)]

Microsoft promoted that Windows 10 would become [generally available (GA)](https://en.wikipedia.org/wiki/Software_release_life_cycle#General_availability) on July 29, 2015. In comparison to previous Windows releases, which had a longer turnover between the [release to manufacturing](https://en.wikipedia.org/wiki/Release_to_manufacturing) (RTM) and general release to allow for testing by vendors (and in some cases, the development of "upgrade kits" to prepare systems for installation of the new version), an [HP Inc.](https://en.wikipedia.org/wiki/HP_Inc.) executive explained that because it knew Microsoft targeted the operating system for a release in 2015, the company was able to optimize its then-current and upcoming products for Windows 10 in advance of its release, negating the need for such a milestone.[[169]](https://en.wikipedia.org/wiki/Windows_10#cite_note-169)[[*better source needed*](https://en.wikipedia.org/wiki/Wikipedia:NOTRS)]

The general availability build of Windows 10, numbered 10240, was first released on July 15, 2015 to Windows Insider channels for pre-launch testing prior to its formal release.[[170]](https://en.wikipedia.org/wiki/Windows_10#cite_note-anandtech-10240-170)[[171]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-rtminsider-171) Although a Microsoft official said that there would be no specific RTM build of Windows 10, 10240 was described as an RTM build by media outlets because it was released to all Windows Insider members at once (rather than to users on the "Fast ring" first), it no longer carried pre-release branding and [desktop watermark](https://en.wikipedia.org/wiki/Digital_watermarking) text, and because its build number had [mathematical connections](https://en.wikipedia.org/wiki/1024_(number)) to the number 10 in reference to the operating system's naming.[[172]](https://en.wikipedia.org/wiki/Windows_10#cite_note-172)[[173]](https://en.wikipedia.org/wiki/Windows_10#cite_note-173)[[174]](https://en.wikipedia.org/wiki/Windows_10#cite_note-174)[[175]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-numbermeaning-175)[[176]](https://en.wikipedia.org/wiki/Windows_10#cite_note-thurrott-notrtm-176)[[177]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-rtmfinalized-177) The *Enterprise* edition was released to volume licensing on August 1, 2015.[[178]](https://en.wikipedia.org/wiki/Windows_10#cite_note-redmondmag-branches-178)

Users are able to in-place upgrade through the "Get Windows 10" application (GWX) and [Windows Update](https://en.wikipedia.org/wiki/Windows_Update),[[179]](https://en.wikipedia.org/wiki/Windows_10#cite_note-cnet-getw10-179) or the "Media Creation Tool", which is functionally identical to the Windows 8 online installer, and can also be used to generate an [ISO image](https://en.wikipedia.org/wiki/ISO_image) or USB install media.[[180]](https://en.wikipedia.org/wiki/Windows_10#cite_note-wired-howtoupgrade-180) In-place upgrades are supported from most editions of Windows 7 with [Service Pack 1](https://en.wikipedia.org/wiki/Windows_7_Service_Pack_1) and Windows 8.1 with [Update 1](https://en.wikipedia.org/wiki/Windows_8.1#Update), while users with Windows 8 must first upgrade to Windows 8.1. Changing between [architectures](https://en.wikipedia.org/wiki/Computer_architecture) (e.g., upgrading from [32-bit](https://en.wikipedia.org/wiki/IA-32) edition to a [64-bit](https://en.wikipedia.org/wiki/X86-64) editions) via in-place upgrades is not supported; a clean install is required.[[181]](https://en.wikipedia.org/wiki/Windows_10#cite_note-penton-10activate-181)[[182]](https://en.wikipedia.org/wiki/Windows_10#cite_note-zdnet-w10paths-182) In-place upgrades may be rolled back to the device's previous version of Windows, provided that 30 days have not passed since installation, and backup files were not removed using [Disk Cleanup](https://en.wikipedia.org/wiki/Disk_Cleanup).[[183]](https://en.wikipedia.org/wiki/Windows_10#cite_note-cnet-restoreoldver-183)

Windows 10 was available in 190 countries and 111 languages upon its launch, and as part of efforts to "re-engage" with users in China, Microsoft also announced that it would partner with [Qihoo](https://en.wikipedia.org/wiki/Qihoo) and [Tencent](https://en.wikipedia.org/wiki/Tencent) to help promote and distribute Windows 10 in China, and that Chinese PC maker [Lenovo](https://en.wikipedia.org/wiki/Lenovo) would provide assistance at its service centers and retail outlets for helping users upgrade to Windows 10.[[184]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-freeforall-184)[[185]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcw-w10keepcoming-185)[[186]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-10pirate-186) At retail, Windows 10 is priced similarly to editions of Windows 8.1, with U.S. prices set at [$](https://en.wikipedia.org/wiki/United_States_dollar)119 and $199 for Windows 10 *Home* and *Pro* respectively. A *Windows 10 Pro Pack* license allows upgrades from *Windows 10 Home* to *Windows 10 Pro*.[[187]](https://en.wikipedia.org/wiki/Windows_10#cite_note-cnet-10msrp-187)[[188]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-10upgradedetails-188) Retail copies ship on [USB flash drive](https://en.wikipedia.org/wiki/USB_flash_drive) media or [DVD-ROM](https://en.wikipedia.org/wiki/DVD-ROM) media.[[189]](https://en.wikipedia.org/wiki/Windows_10#cite_note-anandtech-usb-189) New devices shipping with Windows 10 were also released during the operating system's launch window.[[190]](https://en.wikipedia.org/wiki/Windows_10#cite_note-cnet-w10retaildevices-190)

[Windows RT](https://en.wikipedia.org/wiki/Windows_RT) devices cannot be upgraded to Windows 10.[[182]](https://en.wikipedia.org/wiki/Windows_10#cite_note-zdnet-w10paths-182)[[191]](https://en.wikipedia.org/wiki/Windows_10#cite_note-cnet-notdeadyet-191)

**Free upgrade offer**[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=19)]

*Main article:*[*Windows 10 editions § Free upgrade*](https://en.wikipedia.org/wiki/Windows_10_editions#Free_upgrade)

During its first year of availability (ended on July 29, 2016),[[192]](https://en.wikipedia.org/wiki/Windows_10#cite_note-free-upgrade-faq-192) upgrade licenses for Windows 10 could be obtained at no charge for devices with a [genuine](https://en.wikipedia.org/wiki/Windows_Genuine_Advantage) license for an eligible edition of Windows 7 or 8.1.[[188]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-10upgradedetails-188)[[193]](https://en.wikipedia.org/wiki/Windows_10#cite_note-w10specs-193)[[194]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-winasaservice-194) This offer did not apply to *Enterprise* editions, as customers under an active [Software Assurance](https://en.wikipedia.org/wiki/Microsoft_Software_Assurance) (SA) contract with upgrade rights are entitled to obtain Windows 10 *Enterprise* under their existing terms. All users running non-genuine copies of Windows, and those without an existing Windows 7 or 8 license, were ineligible for this promotion; although upgrades from a non-genuine version were possible, they result in a non-genuine copy of 10.[[167]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-msbacksaway-167)[[184]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-freeforall-184)[[194]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-winasaservice-194)[[195]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ms-w10piratednongen-195)[[196]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-notfreepirate-196)

On the general availability build of Windows 10, to activate and generate the "digital entitlement" for Windows 10, the operating system must have first been installed as an in-place upgrade. Once installed, the operating system can be reinstalled on that particular system via normal means without a product key, and the system's license will automatically be detected via online activation.[[181]](https://en.wikipedia.org/wiki/Windows_10#cite_note-penton-10activate-181)[[197]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcw-digitalentitlement-197)[[198]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-cleaninstall-198) As of the November 2015 build, an existing Windows 7 or Windows 8.1 product key could be entered during installation to activate the free license, without the need to upgrade first to "activate" the hardware with Microsoft's activation servers.[[199]](https://en.wikipedia.org/wiki/Windows_10#cite_note-Windows_10_Blog-199) The Windows Insider Preview version of Windows 10 automatically updated itself to the generally released version as part of the version progression, and continues to be updated to new beta builds, as it had throughout the testing process. [Microsoft](https://en.wikipedia.org/wiki/Microsoft)explicitly stated that [Windows Insider](https://en.wikipedia.org/wiki/Windows_Insider) was not a valid upgrade path for those running a version of [Windows](https://en.wikipedia.org/wiki/Windows) that is ineligible for the upgrade offer; although, if it was not installed with a license carried over from an in-place upgrade to 10 *Insider Preview* from Windows 7 or 8, the Insider Preview does remain activated as long as the user does not exit the Windows Insider program.[[167]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-msbacksaway-167)[[168]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-w10insiderfree-168)

The offer was promoted and delivered via the "Get Windows 10" application ("GWX"), which was automatically installed via [Windows Update](https://en.wikipedia.org/wiki/Windows_Update) ahead of Windows 10's release, and activated on systems deemed eligible for the upgrade offer. Via a [notification area](https://en.wikipedia.org/wiki/Notification_area) icon, users could access an application that advertised Windows 10 and the free upgrade offer, check device compatibility, and "reserve" an automatic download of the operating system upon its release.[[200]](https://en.wikipedia.org/wiki/Windows_10#cite_note-200)[[201]](https://en.wikipedia.org/wiki/Windows_10#cite_note-nw-reserve10-201) On July 28, a pre-download process began in which Windows 10 installation files were downloaded to some computers that had reserved it. Microsoft said that those who reserved Windows 10 would be able to install it through GWX in a phased rollout process. The operating system could alternatively be downloaded at any time using a separate "Media Creation Tool" setup program (similar to Windows 8's setup program), that allows for the creation of [DVD](https://en.wikipedia.org/wiki/DVD) or [USB](https://en.wikipedia.org/wiki/Live_USB) installation media.[[180]](https://en.wikipedia.org/wiki/Windows_10#cite_note-wired-howtoupgrade-180)[[190]](https://en.wikipedia.org/wiki/Windows_10#cite_note-cnet-w10retaildevices-190)[[202]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcw-predownload-202)[[203]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-howtoget-203)

Microsoft announced in May 2016 that the free upgrade offer would be extended to users of [assistive technologies](https://en.wikipedia.org/wiki/Assistive_technology); however, Microsoft did not implement any means of certifying eligibility for this offer, which some outlets thereby promoted as being a loophole to fraudulently obtain a free Windows 10 upgrade. Microsoft said that the loophole is not intended to be used in this manner.[[204]](https://en.wikipedia.org/wiki/Windows_10#cite_note-cnet-assitivetech-204)[[205]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcworld-assistive-205)[[206]](https://en.wikipedia.org/wiki/Windows_10#cite_note-206) In November 2017, Microsoft stated that this program would end December 31, 2017.[[207]](https://en.wikipedia.org/wiki/Windows_10#cite_note-207)

**Licensing**[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=20)]

During upgrades, Windows 10 licenses are not tied directly to a product key. Instead, the license status of the system's current installation of Windows is migrated, and a "Digital license" (also known as "Digital entitlement" in version 1511 or earlier) is generated during the [activation](https://en.wikipedia.org/wiki/Windows_Product_Activation) process, which is bound to the hardware information collected during the process. If Windows 10 is reinstalled cleanly and there have not been any significant hardware changes since installation (such as a motherboard change), the online activation process will automatically recognize the system's digital entitlement if no product key is entered during installations. However, unique product keys are still distributed within retail copies of Windows 10. As with previous non-volume-licensed versions of Windows, significant hardware changes will invalidate the digital entitlement, and require Windows to be re-activated.[[181]](https://en.wikipedia.org/wiki/Windows_10#cite_note-penton-10activate-181)[[197]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcw-digitalentitlement-197)

Updates and support[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=21)]

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Overview** | | | | | | | | | |
| **Version** | **Code name** | **Marketing name** | **Release date** | **Support until** | | | | **Latest build** | |
| [**SAC**](https://en.wikipedia.org/wiki/Windows_10_editions#Release_branches)   * **Home** * **Pro** | **SAC**   * **Ent** * **Edu** | [**LTSC**](https://en.wikipedia.org/wiki/Windows_10_editions#Release_branches) | **Mobile** | **PC** | **Mobile** | |
| 1507 | Threshold 1 | N/A | July 29, 2015 | May 9, 2017 | May 9, 2017 | October 14, 2025 | N/A | 10240 | N/A |  |
| 1511 | Threshold 2 | November Update | November 10, 2015 | October 10, 2017 | April 10, 2018 | N/A | January 9, 2018 | 10586 | 10586 |  |
| 1607 | Redstone 1 | Anniversary Update | August 2, 2016 | April 10, 2018 | October 9, 2018 | October 13, 2026 | October 9, 2018 | 14393 | 14393 |  |
| 1703 | Redstone 2 | Creators Update | April 5, 2017 | October 9, 2018 | April 9, 2019 | N/A | July 11, 2019 | 15063 | 15063 |  |
| 1709 | Redstone 3 | Fall Creators Update | October 17, 2017 | April 9, 2019 | October 8, 2019 | N/A | December 10, 2019 | 16299 | **15254** |  |
| 1803 | Redstone 4 | April 2018 Update | April 30, 2018 | November 12, 2019 | November 12, 2019 | N/A | N/A | **17134** | N/A |  |
| 1809 | Redstone 5 | TBA | Late 2018 | TBA | TBA | TBA | N/A | 17686 | N/A |  |
| **Legend:**  Old version  Older version, still supported  **Latest version**  Latest preview version | | | | | | | | | | |

Unlike previous versions of Windows, Windows Update does not allow the selective installation of updates, and all updates (including patches, feature updates, and [driver software](https://en.wikipedia.org/wiki/Driver_software)) are downloaded and installed automatically. Users can only choose whether their system will reboot automatically to install updates when the system is inactive, or be notified to schedule a reboot.[[208]](https://en.wikipedia.org/wiki/Windows_10#cite_note-cnet-scheduleupdate-208)[[209]](https://en.wikipedia.org/wiki/Windows_10#cite_note-crn-updates-209) If a wireless network is designated as "Metered"—a function which automatically reduces the operating system's background network activity to conserve [limits on internet usage](https://en.wikipedia.org/wiki/Bandwidth_cap), most updates are not downloaded until the device is connected to a non-metered network. Redstone 2 allows wired ([Ethernet](https://en.wikipedia.org/wiki/Ethernet)) networks to be designated as metered, but Windows may still download certain updates while connected to a metered network.[[145]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcw-w10meteredupdates-145)[[210]](https://en.wikipedia.org/wiki/Windows_10#cite_note-210) Updates can cause compatibility or other problems; a Microsoft troubleshooter program allows bad updates to be uninstalled.[[211]](https://en.wikipedia.org/wiki/Windows_10#cite_note-211)[[212]](https://en.wikipedia.org/wiki/Windows_10#cite_note-212)

Windows Update can also use a [peer to peer](https://en.wikipedia.org/wiki/Peer_to_peer) system for distributing updates; by default, users' [bandwidth](https://en.wikipedia.org/wiki/Bandwidth_(computing)) is used to distribute previously downloaded updates to other users, in combination with Microsoft servers. Users can instead choose to only use peer-to-peer updates within their [local area network](https://en.wikipedia.org/wiki/Local_area_network).[[213]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcw-peertopeer-213)

The original RTM release of Windows 10 ("Windows 10, released in July 2015") receives mainstream support for five years after its original release, followed by five years of extended support, but this is subject to conditions. Microsoft's support lifecycle policy for the operating system notes that "Updates are cumulative, with each update built upon all of the updates that preceded it", that "a device needs to install the latest update to remain supported", and that a device's ability to receive future updates will depend on hardware compatibility, driver availability, and whether the device is within the OEM's "support period"‍—‌a new aspect not accounted for in lifecycle policies for previous versions.[[214]](https://en.wikipedia.org/wiki/Windows_10#cite_note-computerworld-10years-214)[[194]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-winasaservice-194)[[215]](https://en.wikipedia.org/wiki/Windows_10#cite_note-cw-patchstick-215)[[216]](https://en.wikipedia.org/wiki/Windows_10#cite_note-cw-supportedlifetime-216) This policy was first invoked in 2017 to block [Intel Clover Trail](https://en.wikipedia.org/wiki/Intel_Clover_Trail) devices from receiving the Creators Update, as Microsoft asserts that future updates "require additional hardware support to provide the best possible experience", and that Intel no longer provided support or drivers for the platform. Microsoft stated that these devices would no longer receive feature updates, but would still receive security updates through January 2023.[[217]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcworld-clovertrail-217)

**Feature updates**[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=22)]

*Main article:*[*Windows 10 version history*](https://en.wikipedia.org/wiki/Windows_10_version_history)

Windows 10 is often described by Microsoft as a being as a "service", as it receives regular *feature updates* that contain new features and other changes.[[194]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-winasaservice-194)[[218]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-win10freefirstyear-218)[[219]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ms-nextgen-219)[[220]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ms-serviceoverview-220) In April 2017, Microsoft stated that in the future, these updates would be released twice a year every March and September.[[221]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-update_sched-221)

The pace at which feature updates are received by devices is dependent on which release channel is used. The default branch for all users of Windows 10 *Home* and *Pro* is "Semi-Annual Channel (Targeted)" (formerly "Current Branch", or "CB"),[[220]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ms-serviceoverview-220) which receives stable builds after they are publicly released by Microsoft. Each build of Windows 10 is supported for 18 months after its original release.[[220]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ms-serviceoverview-220) In enterprise environments, Microsoft officially intends that this branch be used for "targeted" deployments of newly-released stable versions, so that they can be evaluated and tested on a limited number of devices before a wider deployment. Once a stable build is certified by Microsoft and its partners as being suitable for broad deployment, the build is then released on the "Semi-Annual Channel" (formerly "Current Branch for Business", or "CBB"), which is supported by the *Pro* and *Enterprise* editions of Windows 10.[[220]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ms-serviceoverview-220)[[209]](https://en.wikipedia.org/wiki/Windows_10#cite_note-crn-updates-209)[[222]](https://en.wikipedia.org/wiki/Windows_10#cite_note-updates_infoworld-222) Semi-Annual Channel receives stable builds on a four-month delay from their release on the Targeted channel,[[220]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ms-serviceoverview-220) Administrators can also use the "Windows Update for Business" system, as well as existing tools such as [WSUS](https://en.wikipedia.org/wiki/Windows_Server_Update_Services) and [System Center Configuration Manager](https://en.wikipedia.org/wiki/System_Center_Configuration_Manager), to organize structured deployments of feature updates across their networks.[[220]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ms-serviceoverview-220)[[209]](https://en.wikipedia.org/wiki/Windows_10#cite_note-crn-updates-209)

The Windows Insider branches receive unstable builds as they are released; it is divided into two channels, "Fast" (which receives new builds immediately after their release), and "Slow" (whose releases are slightly delayed from their "Fast" release).[[220]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ms-serviceoverview-220)

Enterprise licensees may use the Windows 10 Enterprise LTSB edition, where "LTSB" stands for "long-term servicing branch".[[220]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ms-serviceoverview-220)[[222]](https://en.wikipedia.org/wiki/Windows_10#cite_note-updates_infoworld-222) LTSB milestones of Windows 10 are designed for long-term deployments in specialized environments (such as [automated teller machines](https://en.wikipedia.org/wiki/Automated_teller_machine) and medical equipment), and only receive quality of life updates (i.e. security patches). Each LTSB milestone is given a full, 10-year support lifecycle. Due to Microsoft's intended use cases for LTSB builds, certain features, including most Cortana functionality, Microsoft Store, and bundled apps, are excluded from LTSB.[[220]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ms-serviceoverview-220)[[194]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-winasaservice-194)[[223]](https://en.wikipedia.org/wiki/Windows_10#cite_note-cw-biggestchange-223)[[224]](https://en.wikipedia.org/wiki/Windows_10#cite_note-winblog-w10forbusiness-224) Microsoft director Stella Chernyak explained that "we have businesses [that] may have mission-critical environments where we respect the fact they want to test and stabilize the environment for a long time."[[225]](https://en.wikipedia.org/wiki/Windows_10#cite_note-iw-unanswered-225) Two LTSB builds have been released, correlating with the 1507 and 1607 versions of Windows 10; Microsoft stated in 2017 that the next LTSB build will be released in 2019.[[226]](https://en.wikipedia.org/wiki/Windows_10#cite_note-226)

In July 2017, Microsoft announced changes in the terminology for Windows branches, as part of its effort to unify the update cadence with that of [Office 365](https://en.wikipedia.org/wiki/Office_365) ProPlus and [Windows Server 2016](https://en.wikipedia.org/wiki/Windows_Server_2016).[[227]](https://en.wikipedia.org/wiki/Windows_10#cite_note-227)[[220]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ms-serviceoverview-220) The branch system now defines two paces of upgrade deployment in enterprise environments, "targeted" initial deployment of a new version on selected systems immediately after its stable release for final testing, and "broad" deployment afterwards. Hence, "Current Branch" is now known as "Semi-Annual Channel (Targeted)", and "Current Branch for Business" for broad deployment is now referred to as "Semi-Annual Channel".[[228]](https://en.wikipedia.org/wiki/Windows_10#cite_note-CB-CBB-LTSB-name-change-228)[[220]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ms-serviceoverview-220)

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| --- | --- | --- | --- | --- |
| **Windows 10 support and update branches**[[194]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-winasaservice-194)[[229]](https://en.wikipedia.org/wiki/Windows_10#cite_note-229)[[230]](https://en.wikipedia.org/wiki/Windows_10#cite_note-230)[[231]](https://en.wikipedia.org/wiki/Windows_10#cite_note-231) | | | | |
| **Update branch** | [**Windows Insider**](https://en.wikipedia.org/wiki/Windows_Insider)**Preview Branch** (WIPB) [Beta software](https://en.wikipedia.org/wiki/Beta_software) | **Semi-Annual Channel (Targeted)** (formerly CB) "Consumer grade" | **Semi-Annual Channel** (formerly CBB) "Business ready" | **Long-term Servicing branch** (LTSB) "[Mission critical](https://en.wikipedia.org/wiki/Mission_critical)" |
| [**Edition**](https://en.wikipedia.org/wiki/Windows_10_editions) | Home | |  | |
| Pro | | |  |
| Education | | |  |
| Enterprise | | | Enterprise LTSB |
| **Critical updates** Security patches and stability updates | Continuous as made available (choice of *slow*, *fast*, or *release preview*ring) | Automatic and mandatory[[232]](https://en.wikipedia.org/wiki/Windows_10#cite_note-232) | Automatic | User can defer updates indefinitely |
| **Feature upgrades** Non-critical functionality and feature updates | Automatic or defer | Only through LTSB in-place upgrades |
| **Feature upgrades cadence** | Continuous as released | Progressively after WIPB evaluation | ~4 months after SAC pre-evaluation or defer for an additional ~8 months | LTSB releases are stable 'snapshots' of SAC |
| **Upgrade support** | Continuous updating, features silently come and sometimes go with new builds | | Continuous updating or in-place upgrade to supported LTSB builds | In-place upgrade support for the three most recent LTSB builds |
| **Update support** | 10 years (or until future builds require hardware support the old device doesn't have or ~4 months after a missed cumulative update made into SAC.)[[214]](https://en.wikipedia.org/wiki/Windows_10#cite_note-computerworld-10years-214) | | 10 years (or ~8 months from deferring build upgrade or until future builds require hardware support the old device doesn't have.) | 5 years mainstream + 5 years extended |
| **Update methods** | [Windows Update](https://en.wikipedia.org/wiki/Windows_Update) | | [Windows Update](https://en.wikipedia.org/wiki/Windows_Update) Windows Update for Business [Windows Server Update Services](https://en.wikipedia.org/wiki/Windows_Server_Update_Services) | Windows Update for Business [Windows Server Update Services](https://en.wikipedia.org/wiki/Windows_Server_Update_Services) |

**Version 1511 (November Update)**[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=23)]

The second stable build of Windows 10 is called **version 1511**. Its build number is 10586. It was codenamed "**Threshold 2**" (**TH2**) during development. This version is installed by the **November Update**, which began to be distributed via Windows Update on November 12, 2015. It contains various improvements to the operating system, its user interface, bundled services, as well as the introduction of Skype-based universal messaging apps, and the Windows Store for Business and Windows Update for Business features.[[233]](https://en.wikipedia.org/wiki/Windows_10#cite_note-iw-th2release-233)[[234]](https://en.wikipedia.org/wiki/Windows_10#cite_note-234)[[235]](https://en.wikipedia.org/wiki/Windows_10#cite_note-Ars_Technica_10.10586.3-235)[[236]](https://en.wikipedia.org/wiki/Windows_10#cite_note-236)

On November 21, 2015, the November Update was temporarily pulled from public distribution.[[237]](https://en.wikipedia.org/wiki/Windows_10#cite_note-betanews-pulled-237)[[238]](https://en.wikipedia.org/wiki/Windows_10#cite_note-zdnet-pulled-238) The upgrade was re-instated on November 24, 2015, with Microsoft stating that the removal was due to a bug that caused privacy and data collection settings to be reset to defaults when installing the upgrade.[[239]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-w10novupdateback-239)

**Version 1607 (Anniversary Update)**[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=24)]

The third stable build of Windows 10 is called **version 1607**. It was codenamed "**Redstone 1**" (**RS1**) during development. This version is installed by the **Anniversary Update**, which was released on August 2, 2016, a little over one year after the first stable release of Windows 10.[[240]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-rsreleasedate-240)[[241]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-anniupdate-241)[[242]](https://en.wikipedia.org/wiki/Windows_10#cite_note-venturebeat-redstone-242)[[243]](https://en.wikipedia.org/wiki/Windows_10#cite_note-softpedia-redstone-243) Codename "Redstone" was originally thought to have been set aside for two feature updates. While both were originally to be released in 2016, the second was moved into 2017 so that it would be released in concert with that year's wave of Microsoft first-party devices.[[244]](https://en.wikipedia.org/wiki/Windows_10#cite_note-big_Windows_update-244)[[245]](https://en.wikipedia.org/wiki/Windows_10#cite_note-245)[[241]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-anniupdate-241)

The Anniversary Update introduces new features such as the Windows Ink platform, which eases the ability to add stylus input support to Universal Windows Platform apps and provides a new "Ink Workspace" area with links to pen-oriented apps and features,[[246]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-winink-246)[[241]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-anniupdate-241) enhancements to Cortana's proactive functionality,[[247]](https://en.wikipedia.org/wiki/Windows_10#cite_note-247) a dark user interface theme mode, a new version of [Skype](https://en.wikipedia.org/wiki/Skype) designed to work with the Universal Windows Platform, improvements to Universal Windows Platform intended for video games,[[240]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-rsreleasedate-240) and offline scanning using [Windows Defender](https://en.wikipedia.org/wiki/Windows_Defender).[[248]](https://en.wikipedia.org/wiki/Windows_10#cite_note-248) Redstone also supports [Windows Subsystem for Linux](https://en.wikipedia.org/wiki/Windows_Subsystem_for_Linux), a new component that provides an environment for running [Linux](https://en.wikipedia.org/wiki/Linux)-compatible binary software in an [Ubuntu](https://en.wikipedia.org/wiki/Ubuntu_(operating_system))-based user mode environment.[[249]](https://en.wikipedia.org/wiki/Windows_10#cite_note-249)

On new installations of Windows 10 on systems with secure boot enabled, all kernel mode drivers issued after July 29, 2015, must be digitally signed with an [Extended Validation Certificate](https://en.wikipedia.org/wiki/Extended_Validation_Certificate) issued by Microsoft.[[250]](https://en.wikipedia.org/wiki/Windows_10#cite_note-250)

This version is the basis for "LTSB 2016", the first upgrade to the LTSB since Windows 10's release. The first LTSB release, based on RTM (version 1507), has been retroactively named "LTSB 2015".

**Version 1703 (Creators Update)**[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=25)]

The fourth stable build of Windows 10 is called **version 1703**. It was codenamed "**Redstone 2**" (**RS2**) during development. This version is installed by the **Creators Update**, which Microsoft announced on October 26, 2016.[[251]](https://en.wikipedia.org/wiki/Windows_10#cite_note-251)[[252]](https://en.wikipedia.org/wiki/Windows_10#cite_note-252) Version 1703 was released on April 11, 2017 for [general availability](https://en.wikipedia.org/wiki/General_availability),[[253]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-creatorsupdate-253)[[254]](https://en.wikipedia.org/wiki/Windows_10#cite_note-zdnet-rs2creators-254) and on April 5, 2017 for manual installation via Windows 10 Upgrade Assistant and Media Creation Tool tools.[[255]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-creatorsmanual-255) This update primarily focuses on content creation, productivity, and gaming features—with a particular focus on [virtual](https://en.wikipedia.org/wiki/Virtual_reality) and [augmented reality](https://en.wikipedia.org/wiki/Augmented_reality) (including [HoloLens](https://en.wikipedia.org/wiki/HoloLens) and [virtual reality headsets](https://en.wikipedia.org/wiki/Virtual_reality_headset)) and on aiding the generation of three-dimensional content.

It supports a new virtual reality workspace designed for use with headsets; Microsoft announced that several OEMs planned to release VR headsets designed for use with the Creators Update.[[254]](https://en.wikipedia.org/wiki/Windows_10#cite_note-zdnet-rs2creators-254)[[253]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-creatorsupdate-253)[[256]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-gamestreaming-256) Controls for the Xbox app's Game Bar and Game DVR feature have moved to the Settings app, while a new "Game Mode" option allows resources to be prioritized towards games.[[257]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-creatorsreview-257) Integration with Microsoft acquisition [Mixer](https://en.wikipedia.org/wiki/Mixer_(website)) (formerly Beam)[[258]](https://en.wikipedia.org/wiki/Windows_10#cite_note-polygon-renamedmixer-258) was added for live streaming.[[257]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-creatorsreview-257) The themes manager moved to Settings app, and custom accent colors are now possible.[[257]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-creatorsreview-257) The new app [Paint 3D](https://en.wikipedia.org/wiki/Paint_3D) allows users to produce artwork using 3D models; the app is designed to make 3D creation more accessible to mainstream users.[[259]](https://en.wikipedia.org/wiki/Windows_10#cite_note-engadget-3dpaint-259)

Windows 10's privacy settings have more detailed explanations on data that the operating system may collect. Additionally, the "enhanced" level of telemetry collection was removed.[[257]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-creatorsreview-257) Windows Update notifications may now be "snoozed" for a period of time, the "active hours" during which Windows will not try to install updates may now extend up to 18 hours in length, and updates may be paused for up to seven days.[[257]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-creatorsreview-257) Windows Defender has been replaced by the universal app [Windows Defender Security Center](https://en.wikipedia.org/wiki/Windows_Defender_Security_Center).[[257]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-creatorsreview-257)Devices may optionally be configured to prevent use of software from outside of Microsoft Store, or warn before installation of apps from outside of Microsoft Store.[[162]](https://en.wikipedia.org/wiki/Windows_10#cite_note-Tung-162) "Dynamic Lock" allows a device to automatically lock if it is outside of the proximity of a designated [Bluetooth](https://en.wikipedia.org/wiki/Bluetooth) device, such as a smartphone.[[260]](https://en.wikipedia.org/wiki/Windows_10#cite_note-260) A "Night Light" feature was added, which allows the user to change the [color temperature](https://en.wikipedia.org/wiki/Color_temperature) of the display to the red part of the spectrum at specific times of day (similarly to the third-party software [f.lux](https://en.wikipedia.org/wiki/F.lux)).[[261]](https://en.wikipedia.org/wiki/Windows_10#cite_note-261)

**Version 1709 (Fall Creators Update)**[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=26)]

The fifth stable build of Windows 10 is called **version 1709**. It was codenamed "**Redstone 3**" (**RS3**) during development. This version is installed by the **Fall Creators Update**, which was released on October 17, 2017.[[262]](https://en.wikipedia.org/wiki/Windows_10#cite_note-262)[[263]](https://en.wikipedia.org/wiki/Windows_10#cite_note-computerworld-buildguide-263)[[264]](https://en.wikipedia.org/wiki/Windows_10#cite_note-264) Version 1709 introduces a new feature known as "My People", where shortcuts to "important" contacts can be displayed on the taskbar. Notifications involving these contacts appear above their respective pictures, and users can communicate with the contact via either [Skype](https://en.wikipedia.org/wiki/Skype), e-mail, or text messaging (integrating with [Android](https://en.wikipedia.org/wiki/Android_(operating_system)) and [Windows 10 Mobile](https://en.wikipedia.org/wiki/Windows_10_Mobile) devices). Support for additional services, including Xbox, [Skype for Business](https://en.wikipedia.org/wiki/Skype_for_Business), and third-party integration, are to be added in the future. Files can also be dragged directly to the contact's picture to share them.[[265]](https://en.wikipedia.org/wiki/Windows_10#cite_note-techcrunch-mypeople-265) My People was originally announced for Creators Update, but was ultimately held over to the next release,[[266]](https://en.wikipedia.org/wiki/Windows_10#cite_note-winblog-build15007-266)[[267]](https://en.wikipedia.org/wiki/Windows_10#cite_note-iw-rs3-267) and made its first public appearance in Build 16184 in late April 2017.[[263]](https://en.wikipedia.org/wiki/Windows_10#cite_note-computerworld-buildguide-263) A new "Files-on-Demand" feature for OneDrive serves as a partial replacement for the previous "placeholders" function.[[268]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-fcu-268)

It also introduces a new security feature known as "controlled folder access", which can restrict the applications allowed to access specific folders. This feature is designed mainly to defend against file-encrypting [ransomware](https://en.wikipedia.org/wiki/Ransomware).[[269]](https://en.wikipedia.org/wiki/Windows_10#cite_note-269)

**Version 1803 (April 2018 Update)**[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=27)]

The sixth stable build of Windows 10 is called **version 1803**. It was codenamed "**Redstone 4**" (**RS4**) during development. This version is installed by the **April 2018 Update**, which was released as a manual download on April 30, 2018, with a broad rollout coming on May 8, 2018.[[270]](https://en.wikipedia.org/wiki/Windows_10#cite_note-270)[[271]](https://en.wikipedia.org/wiki/Windows_10#cite_note-271) This update was originally meant to be released on April 10 but was delayed due to a bug which could "increase chances of a [Blue Screen of Death](https://en.wikipedia.org/wiki/Blue_Screen_of_Death) (BSOD)".[[272]](https://en.wikipedia.org/wiki/Windows_10#cite_note-272)

One of the most highlighted features of this update was the "Timeline" feature which allowed the users to see a history of their activity in their PC in the past and continue from where they left out. This works on most of the Microsoft Store apps and select sideloaded apps namely [WinRAR](https://en.wikipedia.org/wiki/WinRAR) and older versions of [Microsoft Office](https://en.wikipedia.org/wiki/Microsoft_Office).

**Features in development**[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=28)]

In May 2017, Microsoft unveiled [Fluent Design System](https://en.wikipedia.org/wiki/Fluent_Design_System) (previously codenamed "Project Neon"), a revamp of [Microsoft Design Language 2](https://en.wikipedia.org/wiki/Metro_design_language) that will include guidelines for the designs and interactions used within software designed for all Windows 10 devices and platforms. The new design language will include more prominent use of motion, depth, and translucency effects. Microsoft stated that the implementation of this design language would be performed over time, and it had already started to implement elements of it in Creators Update and Fall Creators Update.[[273]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-fluentdesign-273)

At Build 2017, Microsoft announced several key features that were to launch in Fall Creators Update; "Timeline" and "Pick up where you left off" will allow users to view a list of recently-used applications and files sourced from multiple devices in an on-screen timeline, and synchronize opened content in apps (such as Office documents) so a user can continue working on it from a different device (similar to macOS's ["Handoff"](https://en.wikipedia.org/wiki/Handoff_(Continuity))). These functions are enabled via the [Microsoft Graph](https://en.wikipedia.org/wiki/Microsoft_Graph) platform, and will support [Android](https://en.wikipedia.org/wiki/Android_(operating_system)) and [iOS](https://en.wikipedia.org/wiki/IOS)devices.[[274]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-msgraph-274)[[275]](https://en.wikipedia.org/wiki/Windows_10#cite_note-engadget-msgraph-275) Microsoft also plans to add a "[Cloud clipboard](https://en.wikipedia.org/wiki/Clipboard_(computing))" synchronized between devices.[[268]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-fcu-268) Timeline has since been delayed to the next release.[[276]](https://en.wikipedia.org/wiki/Windows_10#cite_note-276)

In November 2017, Microsoft detailed a new UI feature known as "Sets", which initially allows supported UWP programs to be hosted within Microsoft Edge tabs. Microsoft states that this feature is designed to "organize and resume multi-faceted tasks", and will eventually be extended to non-UWP software.[[277]](https://en.wikipedia.org/wiki/Windows_10#cite_note-277)[[278]](https://en.wikipedia.org/wiki/Windows_10#cite_note-278)

On December 7, 2016, Microsoft announced that as part of a partnership with Qualcomm, it planned to introduce support for running [Win32](https://en.wikipedia.org/wiki/Win32) software on [ARM architecture](https://en.wikipedia.org/wiki/ARM_architecture) with a 32-bit x86 processor emulator, in 2017. Terry Myerson stated that this move would enable the production of [Qualcomm Snapdragon](https://en.wikipedia.org/wiki/Qualcomm_Snapdragon)-based Windows devices with cellular connectivity and improved power efficiency over Intel-compatible devices, and still capable of running the majority of existing Windows software (unlike the previous [Windows RT](https://en.wikipedia.org/wiki/Windows_RT), which was restricted to Windows Store apps). Microsoft is initially targeting this project towards laptops.[[279]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-w10armsoftware-279) Microsoft launched the branding *Always Connected PCs* in December 2017 to market Windows 10 devices with cellular connectivity, which included two ARM-based 2-in-1 laptops from Asus and HP featuring the Snapdragon 835 system-on-chip, and the announcement of a partnership between AMD and Qualcomm to integrate its [Snapdragon X16](https://en.wikipedia.org/wiki/Qualcomm_Snapdragon_LTE_modem) gigabit LTE modem with AMD's [Ryzen Mobile](https://en.wikipedia.org/wiki/Ryzen_Mobile) platform.[[280]](https://en.wikipedia.org/wiki/Windows_10#cite_note-280)[[281]](https://en.wikipedia.org/wiki/Windows_10#cite_note-281)

System requirements[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=29)]

|  |  |  |
| --- | --- | --- |
| **Hardware requirements for Windows 10**[[193]](https://en.wikipedia.org/wiki/Windows_10#cite_note-w10specs-193) | | |
| **Component** | **Minimum** | **Recommended** |
| [**Processor**](https://en.wikipedia.org/wiki/Central_processing_unit) | 1 [GHz](https://en.wikipedia.org/wiki/Gigahertz) [clock rate](https://en.wikipedia.org/wiki/Clock_rate) [IA-32](https://en.wikipedia.org/wiki/IA-32) or [x86-64](https://en.wikipedia.org/wiki/X86-64) architecture with support for [PAE](https://en.wikipedia.org/wiki/Physical_Address_Extension), [NX](https://en.wikipedia.org/wiki/NX_bit) and [SSE2](https://en.wikipedia.org/wiki/SSE2) x86-64 CPUs must also support [CMPXCHG16B](https://en.wikipedia.org/wiki/Compare-and-swap#Extensions), [PrefetchW](https://en.wikipedia.org/wiki/3DNow!) and LAHF/SAHF [instructions](https://en.wikipedia.org/wiki/Instruction_set).[[282]](https://en.wikipedia.org/wiki/Windows_10#cite_note-282)[[283]](https://en.wikipedia.org/wiki/Windows_10#cite_note-283) | |
| [**Memory (RAM)**](https://en.wikipedia.org/wiki/Random-access_memory) | **IA-32 edition:** 1 [GB](https://en.wikipedia.org/wiki/Gigabyte) **x86-64 edition:** 2 [GB](https://en.wikipedia.org/wiki/Gigabyte) | 4 [GB](https://en.wikipedia.org/wiki/Gigabyte) |
| [**Graphics card**](https://en.wikipedia.org/wiki/Graphics_card) | [DirectX 9](https://en.wikipedia.org/wiki/DirectX_9) graphics device [WDDM](https://en.wikipedia.org/wiki/Windows_Display_Driver_Model) 1.0 or higher driver | WDDM 1.3 or higher driver |
| [**Display**](https://en.wikipedia.org/wiki/Computer_monitor) | 800×600 [pixels](https://en.wikipedia.org/wiki/Pixel) | N/A |
| **Input device** | [Keyboard](https://en.wikipedia.org/wiki/Computer_keyboard) and [mouse](https://en.wikipedia.org/wiki/Mouse_(computing)) | [Multi-touch](https://en.wikipedia.org/wiki/Multi-touch) display |
| **Storage space** | **IA-32 edition:** 16 [GB](https://en.wikipedia.org/wiki/Gigabyte) **x86-64 edition:** 20 [GB](https://en.wikipedia.org/wiki/Gigabyte) | N/A |

|  |  |
| --- | --- |
| **Additional requirements for optional functionality**[[193]](https://en.wikipedia.org/wiki/Windows_10#cite_note-w10specs-193) | |
| **Feature** | **Requirements** |
| Biometric authentication | [Fingerprint reader](https://en.wikipedia.org/wiki/Fingerprint_reader) |
| [BitLocker](https://en.wikipedia.org/wiki/BitLocker) | [Trusted Platform Module](https://en.wikipedia.org/wiki/Trusted_Platform_Module) (TPM) 1.2 or 2.0, a dedicated [USB flash drive](https://en.wikipedia.org/wiki/USB_flash_drive), or a [password](https://en.wikipedia.org/wiki/Password) |
| [Device encryption](https://en.wikipedia.org/wiki/Device_encryption) | [Trusted Platform Module](https://en.wikipedia.org/wiki/Trusted_Platform_Module) (TPM) 2.0 and [InstantGo](https://en.wikipedia.org/wiki/InstantGo) |
| [Hyper-V](https://en.wikipedia.org/wiki/Hyper-V) | [Second Level Address Translation](https://en.wikipedia.org/wiki/Second_Level_Address_Translation) (SLAT) |
| [Miracast](https://en.wikipedia.org/wiki/Miracast) | [Wi-Fi](https://en.wikipedia.org/wiki/Wi-Fi) adapter that supports [Wi-Fi Direct](https://en.wikipedia.org/wiki/Wi-Fi_Direct) |
| [Secure attention](https://en.wikipedia.org/wiki/Secure_attention_key) | Hardware equivalent of Ctrl+Alt+Delete or ⊞ Win+Power key sequence |
| [Secure Boot](https://en.wikipedia.org/wiki/Secure_Boot) | [UEFI](https://en.wikipedia.org/wiki/UEFI) v2.3.1 Errata B with Microsoft Windows Certification Authority in its database |
| [Speech recognition](https://en.wikipedia.org/wiki/Speech_recognition) | Microphone |
| Windows Hello | Illuminated infrared camera |

The basic hardware [requirements](https://en.wikipedia.org/wiki/System_requirements) to install Windows 10 are the same as for Windows 8.1 and Windows 8, and only slightly higher than Windows 7. The 64-bit versions require a CPU that supports certain instructions.[[284]](https://en.wikipedia.org/wiki/Windows_10#cite_note-284) Devices with low storage capacity must provide a USB flash drive or SD card with sufficient storage for temporary files during upgrades.[[285]](https://en.wikipedia.org/wiki/Windows_10#cite_note-thurrott-w10smallupdate-285)

Some pre-built devices may be described as "certified" by Microsoft. Certified tablets must include Power, Volume up, and Volume down keys; ⊞ Win and Rotation lock keys are no longer required.[[286]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ndtv-specs-286)

As with Windows 8, all certified devices must ship with [UEFI Secure Boot](https://en.wikipedia.org/wiki/UEFI_Secure_Boot) enabled by default. Unlike Windows 8, OEMs are no longer required to make Secure Boot settings user-configurable, meaning that devices may optionally be locked to run only Microsoft-signed operating systems.[[287]](https://en.wikipedia.org/wiki/Windows_10#cite_note-arstechnica-securebootw10-287) A supported infrared-illuminated camera is required for Windows Hello face authentication, and a supported fingerprint reader is required for Windows Hello fingerprint authentication.[[193]](https://en.wikipedia.org/wiki/Windows_10#cite_note-w10specs-193) Device Guard requires a UEFI system with no third-party certificates loaded, and CPU virtualization extensions (including SLAT and [IOMMU](https://en.wikipedia.org/wiki/Input%E2%80%93output_memory_management_unit)) enabled in firmware.

Beginning with Intel [Kaby Lake](https://en.wikipedia.org/wiki/Kaby_Lake) and AMD [Bristol Ridge](https://en.wikipedia.org/wiki/Bristol_Ridge), Windows 10 is the only version of Windows that Microsoft will officially support on newer CPU microarchitectures.[[288]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-oemskylake-288)[[289]](https://en.wikipedia.org/wiki/Windows_10#cite_note-cw-skylakechange-289)Terry Myerson stated that Microsoft did not want to make further investments in optimizing older versions of Windows and associated software for newer generations of processors.[[290]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-skylake18months-290)[[291]](https://en.wikipedia.org/wiki/Windows_10#cite_note-zdnet-newsupportpolicy-291) These policies were criticized by the media, who especially noted that Microsoft was refusing to support newer hardware (particularly Intel's [Skylake](https://en.wikipedia.org/wiki/Skylake_(microarchitecture)) CPUs, which was also originally targeted by the new policy with a premature end of support that was ultimately retracted)[[292]](https://en.wikipedia.org/wiki/Windows_10#cite_note-292)[[293]](https://en.wikipedia.org/wiki/Windows_10#cite_note-293) on Windows 8.1, a version of Windows that was still in mainstream support until January 2018.[[294]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-nowblockedskylake-294)[[295]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcw-blockkaby-295) In addition, an enthusiast-created [modification](https://en.wikipedia.org/wiki/Modding) was released that disabled the check and allowed Windows 8.1 and earlier to continue to work on the platform.[[296]](https://en.wikipedia.org/wiki/Windows_10#cite_note-296)

Windows 10 Creators Update and later does not support [Intel Clover Trail](https://en.wikipedia.org/wiki/Atom_(system_on_chip)) system-on-chips, per Microsoft's stated policy of only providing updates for devices during their OEM support period.[[217]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcworld-clovertrail-217)[[146]](https://en.wikipedia.org/wiki/Windows_10#cite_note-:1-146)

Reception[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=30)]

*Main article:*[*Criticism of Windows 10*](https://en.wikipedia.org/wiki/Criticism_of_Windows_10)

Critics characterized the initial release of Windows 10 in July 2015 as being rushed, citing the incomplete state of some of the operating system's bundled software (such as the Edge web browser), as well as the stability of the operating system itself on launch.[[297]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-review-297)[[298]](https://en.wikipedia.org/wiki/Windows_10#cite_note-tr-review-298)[[299]](https://en.wikipedia.org/wiki/Windows_10#cite_note-cw-rushed-299) However, [*TechRadar*](https://en.wikipedia.org/wiki/TechRadar) felt that Windows 10 would be "the new Windows 7", citing the operating system's more familiar user interface, improvements to bundled apps, performance improvements, a "rock solid" search system, and the Settings app being more full-featured than its equivalents on 8 and 8.1. The Microsoft Edge web browser was praised for its performance, although it was not in a feature-complete state at launch. While considering them a "great idea in principle", concerns were shown for Microsoft's focus on the universal app ecosystem, noting that "It's by no means certain that developers are going to flock to Windows 10 from [iOS](https://en.wikipedia.org/wiki/IOS) and [Android](https://en.wikipedia.org/wiki/Android_(operating_system)) simply because they can convert their apps easily. It may well become a no-brainer for them, but at the moment a conscious decision is still required."[[298]](https://en.wikipedia.org/wiki/Windows_10#cite_note-tr-review-298)

[*Engadget*](https://en.wikipedia.org/wiki/Engadget) was similarly positive, noting that the upgrade process was painless, and that Windows 10's user interface had balanced aspects of Windows 8 with those of previous versions with a more mature aesthetic. Cortana's always-on voice detection was considered to be its "true strength", also citing its query capabilities and personalization features, but noting that it was not as pre-emptive as [Google Now](https://en.wikipedia.org/wiki/Google_Now). Windows 10's stock applications were praised for being improved over their Windows 8 counterparts, and for supporting windowed modes. The Xbox app was also praised for its Xbox One streaming functionality, although recommending its use over a wired network due to inconsistent quality over Wi-Fi. In conclusion, it was argued that "Windows 10 delivers the most refined desktop experience ever from Microsoft, and yet it's so much more than that. It's also a decent tablet OS, and it's ready for a world filled with hybrid devices. And, barring another baffling screwup, it looks like a significant step forward for mobile. Heck, it makes the Xbox One a more useful machine."[[300]](https://en.wikipedia.org/wiki/Windows_10#cite_note-300)

[*Ars Technica*](https://en.wikipedia.org/wiki/Ars_Technica) panned the new Tablet mode interface for removing the charms and app switching, making the Start button harder to use by requiring users to reach for the button on the bottom-left rather than at the center of the screen when swiping with a thumb, and for making application switching less instantaneous through the use of Task View. Microsoft Edge was praised for being "tremendously promising", and "a much better browser than Internet Explorer ever was", but criticized it for its lack of functionality on-launch. In conclusion, contrasting Windows 8 as being a "reliable" platform albeit consisting of unfinished concepts, Windows 10 was considered "the best Windows yet" and was praised for having a better overall concept in its ability to be "comfortable and effective" across a wide array of form factors, but that it was buggier than previous versions of Windows were on-launch.[[297]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-review-297) [*ExtremeTech*](https://en.wikipedia.org/wiki/ExtremeTech) felt that Windows 10 restricted the choices of users, citing its more opaque setting menus, forcing users to give up bandwidth for the peer-to-peer distribution of updates, and for taking away user control of specific functions, such as updates, explaining that "it feels, once again, as if Microsoft has taken the seed of a good idea, like providing users with security updates automatically, and shoved the throttle to maximum."[[301]](https://en.wikipedia.org/wiki/Windows_10#cite_note-extremetech-privacysettings-301)

Critics have noted that Windows 10 heavily emphasizes [freemium](https://en.wikipedia.org/wiki/Freemium) services, and contains various advertising facilities. Some outlets have considered these to be a hidden "cost" of the free upgrade offer.[[302]](https://en.wikipedia.org/wiki/Windows_10#cite_note-time-hiddenfee-302)[[303]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcw-w10ads-303)[[304]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-w10ads-304) Examples of these have included [microtransactions](https://en.wikipedia.org/wiki/Microtransactions) in bundled games such as *Microsoft Solitaire Collection*,[[305]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcw-solitaire-305)[[302]](https://en.wikipedia.org/wiki/Windows_10#cite_note-time-hiddenfee-302)[[306]](https://en.wikipedia.org/wiki/Windows_10#cite_note-306)[[307]](https://en.wikipedia.org/wiki/Windows_10#cite_note-techradar-freemium-307) default settings that display promotions of "suggested" apps in Start menu and "tips" on the lock screen that may contain advertising,[[303]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcw-w10ads-303)[[304]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-w10ads-304) ads displayed in File Explorer for Office 365 subscriptions on Creators' Update,[[304]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-w10ads-304) and various advertising notifications promoting Microsoft Edge when it is not set as default web browser.[[308]](https://en.wikipedia.org/wiki/Windows_10#cite_note-extech-edgeads-308)

**Market share and sales**[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=31)]

*See also:*[*Usage share of operating systems § Crossover to smartphones having majority share*](https://en.wikipedia.org/wiki/Usage_share_of_operating_systems#Crossover_to_smartphones_having_majority_share)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Windows PC market share (of Windows) statistics** | | | | |
|  |  |  |  |  |
| Windows 10 | |  | 47.21% | |
| [Windows 7](https://en.wikipedia.org/wiki/Windows_7) | |  | 39.44% | |
| [Windows 8.1](https://en.wikipedia.org/wiki/Windows_8.1) | |  | 7.78% | |
| [Windows XP](https://en.wikipedia.org/wiki/Windows_XP) | |  | 2.98% | |
| [Windows 8](https://en.wikipedia.org/wiki/Windows_8) | |  | 1.92% | |
| [Windows Vista](https://en.wikipedia.org/wiki/Windows_Vista) | |  | 0.61% | |
| Other | |  | 0.07% | |
|  | | | | |
| "Desktop Windows Version Market Share Worldwide" according to [StatCounter](https://en.wikipedia.org/wiki/StatCounter) for May 2018.[[309]](https://en.wikipedia.org/wiki/Windows_10#cite_note-309) Note, StatCounter tracks Windows vs. macOS, Linux etc. separately, and this statistic is only thereof Windows share. | | | | |

Twenty-four hours after it was released, Microsoft announced that more than 14 million devices were running Windows 10.[[310]](https://en.wikipedia.org/wiki/Windows_10#cite_note-310) On August 26, Microsoft said more than 75 million devices were running Windows 10, in 192 countries, and on more than 90,000 unique PC or tablet models.[[311]](https://en.wikipedia.org/wiki/Windows_10#cite_note-311) According to Terry Myerson, there were more than 110 million devices running Windows 10 as of October 6, 2015.[[312]](https://en.wikipedia.org/wiki/Windows_10#cite_note-312) On January 4, 2016, Microsoft reported that Windows 10 had been activated on more than 200 million devices since the operating system's launch in July 2015.[[313]](https://en.wikipedia.org/wiki/Windows_10#cite_note-313)[[314]](https://en.wikipedia.org/wiki/Windows_10#cite_note-314)

According to StatCounter, Windows 10 overtook Windows 8.1 in December 2015.[[315]](https://en.wikipedia.org/wiki/Windows_10#cite_note-315)[[316]](https://en.wikipedia.org/wiki/Windows_10#cite_note-316) [Iceland](https://en.wikipedia.org/wiki/Iceland) was the first country where Windows 10 was ranked first (not only on the desktop, but across all platforms),[[317]](https://en.wikipedia.org/wiki/Windows_10#cite_note-317) with several bigger European countries following. For one week late in November 2016, Windows 10 overtook first rank from Windows 7 in the United States, before losing it again.[[318]](https://en.wikipedia.org/wiki/Windows_10#cite_note-318) By February 2017, Windows 10 was losing market share to Windows 7.[[319]](https://en.wikipedia.org/wiki/Windows_10#cite_note-319)

In middle of January 2018, Windows 10 had a slightly higher global market share than Windows 7,[[20]](https://en.wikipedia.org/wiki/Windows_10#cite_note-Win10press-20) with it noticeably more popular on weekends,[[320]](https://en.wikipedia.org/wiki/Windows_10#cite_note-320) while popularity varies widely by region, e.g. Windows 10 is still far behind in Asia[[321]](https://en.wikipedia.org/wiki/Windows_10#cite_note-321) and Africa[[322]](https://en.wikipedia.org/wiki/Windows_10#cite_note-322) and thus far ahead in some other regions e.g. Oceania.[[323]](https://en.wikipedia.org/wiki/Windows_10#cite_note-323)

**Update system changes**[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=32)]

Windows 10 *Home* is permanently set to download all updates automatically, including cumulative updates, security patches, and drivers, and users cannot individually select updates to install or not.[[121]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ndtv-10removedfeatures-121) Microsoft offers a diagnostic tool that can be used to hide updates and prevent them from being reinstalled, but only after they had been already installed, then uninstalled without rebooting the system.[[324]](https://en.wikipedia.org/wiki/Windows_10#cite_note-iw-nvidiadriver-324)[[325]](https://en.wikipedia.org/wiki/Windows_10#cite_note-iw-3073930-325) Tom Warren of [*The Verge*](https://en.wikipedia.org/wiki/The_Verge) felt that, given web browsers such as [Google Chrome](https://en.wikipedia.org/wiki/Google_Chrome) had already adopted such an automatic update system, such a requirement would help to keep all Windows 10 devices secure, and felt that "if you're used to family members calling you for technical support because they've failed to upgrade to the latest Windows service pack or some malware disabled Windows Update then those days will hopefully be over."[[326]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-forcedupdates-326)

Concerns were raised that due to these changes, users would be unable to skip the automatic installation of updates that are faulty or cause issues with certain system configurations‍—‌although build upgrades will also be subject to public beta testing via Windows Insider program.[[324]](https://en.wikipedia.org/wiki/Windows_10#cite_note-iw-nvidiadriver-324)[[326]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-forcedupdates-326) There were also concerns that the forced installation of driver updates through Windows Update, where they were previously designated as "optional", could cause conflicts with drivers that were installed independently of Windows Update. An example of such a situation occurred just prior to the general release of the operating system, when an [Nvidia](https://en.wikipedia.org/wiki/Nvidia) [graphics card](https://en.wikipedia.org/wiki/Graphics_card) driver that was automatically pushed to Windows 10 users via Windows Update caused issues that prevented the use of certain functions, or prevented their system from booting at all.[[324]](https://en.wikipedia.org/wiki/Windows_10#cite_note-iw-nvidiadriver-324)

Criticism was also directed towards Microsoft's decision to no longer provide specific details on the contents of cumulative updates for Windows 10.[[137]](https://en.wikipedia.org/wiki/Windows_10#cite_note-cw-culmwitheld-137) On February 9, 2016, Microsoft retracted this decision and began to provide release notes for cumulative updates on the Windows website.[[327]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-w10history-327)

Some users reported that during the installation of the November upgrade, some applications (particularly utility programs such as [CPU-Z](https://en.wikipedia.org/wiki/CPU-Z) and [Speccy](https://en.wikipedia.org/wiki/Speccy)) were automatically uninstalled during the upgrade process, and some default programs were reset to Microsoft-specified defaults (such as Photos app, and Microsoft Edge for [PDF](https://en.wikipedia.org/wiki/PDF) viewing), both without warning.[[328]](https://en.wikipedia.org/wiki/Windows_10#cite_note-softpedia-th2removed-328)[[329]](https://en.wikipedia.org/wiki/Windows_10#cite_note-329)

Further issues were discovered upon the launch of the *Anniversary Update* ("Redstone"), including a bug that caused some devices to freeze (but addressed by cumulative update KB3176938, released on August 31, 2016),[[330]](https://en.wikipedia.org/wiki/Windows_10#cite_note-330)[[331]](https://en.wikipedia.org/wiki/Windows_10#cite_note-331) and that fundamental changes to how Windows handles [webcams](https://en.wikipedia.org/wiki/Webcam) had caused many to stop working.[[332]](https://en.wikipedia.org/wiki/Windows_10#cite_note-332)

In June 2017, a Redstone 3 Insider build (which is known as *rs\_IoT* on Mobile) was accidentally released to Insider as well non-Insider users on all Windows 10 PCs and Mobile, but the update was retracted, with Microsoft apologizing and releasing a note on their Windows Insider Program blog describing how to prevent the build from being installed on their device.[[333]](https://en.wikipedia.org/wiki/Windows_10#cite_note-333) According to [Dona Sarkar](https://en.wikipedia.org/wiki/Dona_Sarkar), "because an inadvertent deployment to the engineering system that controls which builds/which rings to push out to insiders."[[334]](https://en.wikipedia.org/wiki/Windows_10#cite_note-334)

A [Gartner](https://en.wikipedia.org/wiki/Gartner) analyst felt that Windows 10 *Pro* was becoming increasingly inappropriate for use in enterprise environments due to support policy changes by Microsoft, including consumer-oriented upgrade lifecycle length, and only offering extended support for individual builds to *Enterprise* and *Education* editions of Windows 10.[[335]](https://en.wikipedia.org/wiki/Windows_10#cite_note-335)

**Distribution practices**[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=33)]

Microsoft was criticized for the tactics that it used to promote its free upgrade campaign for Windows 10, including [adware](https://en.wikipedia.org/wiki/Adware)-like behaviours,[[336]](https://en.wikipedia.org/wiki/Windows_10#cite_note-cw-forced10-336) using deceptive user interfaces to coax users into installing the operating system,[[12]](https://en.wikipedia.org/wiki/Windows_10#cite_note-infoworld_2015_KB3035583-12)[[13]](https://en.wikipedia.org/wiki/Windows_10#cite_note-infoworld-upgradetonight-13)[[14]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-w10optional-14)[[15]](https://en.wikipedia.org/wiki/Windows_10#cite_note-infoworld_2016_KB3035583-15) downloading installation files without user consent,[[337]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcw-didntask-337)[[336]](https://en.wikipedia.org/wiki/Windows_10#cite_note-cw-forced10-336) and making it difficult for users to suppress the advertising and notifications if they did not wish to upgrade to 10.[[337]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcw-didntask-337)[[336]](https://en.wikipedia.org/wiki/Windows_10#cite_note-cw-forced10-336)[[338]](https://en.wikipedia.org/wiki/Windows_10#cite_note-iw-banishing-338) The upgrade offer was marketed and initiated using the "Get Windows 10" (GWX) application, which was first downloaded and installed via Windows Update in March 2015.[[12]](https://en.wikipedia.org/wiki/Windows_10#cite_note-infoworld_2015_KB3035583-12)[[15]](https://en.wikipedia.org/wiki/Windows_10#cite_note-infoworld_2016_KB3035583-15) [Registry](https://en.wikipedia.org/wiki/Windows_Registry) keys and [group policies](https://en.wikipedia.org/wiki/Group_Policy) could be used to partially disable the GWX mechanism, but the installation of patches to the GWX software via Windows Update could reset these keys back to defaults, and thus reactivate the software.[[337]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcw-didntask-337)[[336]](https://en.wikipedia.org/wiki/Windows_10#cite_note-cw-forced10-336)[[338]](https://en.wikipedia.org/wiki/Windows_10#cite_note-iw-banishing-338)[[339]](https://en.wikipedia.org/wiki/Windows_10#cite_note-339)[[338]](https://en.wikipedia.org/wiki/Windows_10#cite_note-iw-banishing-338)[[13]](https://en.wikipedia.org/wiki/Windows_10#cite_note-infoworld-upgradetonight-13) Third-party programs were also created to assist users in applying measures to disable GWX.[[340]](https://en.wikipedia.org/wiki/Windows_10#cite_note-computerworld_horowitz-340)

In September 2015, it was reported that Microsoft was triggering automatic downloads of the Windows 10 installation files on all compatible Windows 7 or 8.1 computers configured to automatically download and install updates, regardless of whether or not they had specifically requested the upgrade. Microsoft officially confirmed the change, claiming it was "an industry practice that reduces time for installation and ensures device readiness." This move was criticized by users who have [data caps](https://en.wikipedia.org/wiki/Data_cap) or devices with low storage capacity, as resources were consumed by the automatic downloads of up to 6 GB of data. Other critics argued that Microsoft should not have triggered any downloading of Windows 10 installation files without user consent.[[336]](https://en.wikipedia.org/wiki/Windows_10#cite_note-cw-forced10-336)[[337]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcw-didntask-337)[[341]](https://en.wikipedia.org/wiki/Windows_10#cite_note-inquirer-autodownload-341)

In October 2015, Windows 10 began to appear as an "Optional" update in the Windows Update interface, but pre-selected for installation on some systems. A Microsoft spokesperson said that this was a mistake, and that the download would no longer be pre-selected by default.[[14]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-w10optional-14) However, on October 29, 2015, Microsoft announced that it planned to classify Windows 10 as a "recommended" update in the Windows Update interface some time in 2016, which will cause an automatic download of installation files and a one-time prompt with a choice to install to appear.[[342]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ms-makingeasier-342)[[343]](https://en.wikipedia.org/wiki/Windows_10#cite_note-verge-10autoupdate-343) In December 2015, it was reported that a new advertising dialog had begun to appear, only containing "Upgrade now" and "Upgrade tonight" buttons, and no obvious method to decline installation besides the close button.[[13]](https://en.wikipedia.org/wiki/Windows_10#cite_note-infoworld-upgradetonight-13)

In March 2016, some users also alleged that their Windows 7 and 8.1 devices had automatically begun upgrading to 10 without their consent.[[344]](https://en.wikipedia.org/wiki/Windows_10#cite_note-infoworld-w10withoutok-344) In June 2016, the GWX dialog's behavior changed to make closing the window imply a consent to a scheduled upgrade.[[345]](https://en.wikipedia.org/wiki/Windows_10#cite_note-345)[[346]](https://en.wikipedia.org/wiki/Windows_10#cite_note-seatimes-lawsuit-346) Despite this, an [*Infoworld*](https://en.wikipedia.org/wiki/Infoworld) editor disputed the claims that upgrades had begun without any consent at all; testing showed that the upgrade to Windows 10 would only begin once the user accepts the [end-user license agreement](https://en.wikipedia.org/wiki/End-user_license_agreement) (EULA) presented by its installer, and that not doing so would eventually cause Windows Update to time out with an error, thus halting the installation attempt. It was concluded that these users may have unknowingly clicked the "Accept" prompt without full knowledge that this would begin the upgrade.[[347]](https://en.wikipedia.org/wiki/Windows_10#cite_note-cw-nearnucular-347) In December 2016, Microsoft chief marketing officer Chris Capossela admitted that the company had "gone too far", by using this tactic, stating that "we know we want people to be running Windows 10 from a security perspective, but finding the right balance where you're not stepping over the line of being too aggressive is something we tried and for a lot of the year I think we got it right."[[348]](https://en.wikipedia.org/wiki/Windows_10#cite_note-softpedia--348)

On January 21, 2016, Microsoft was sued in [small claims court](https://en.wikipedia.org/wiki/Small_claims_court) by a user whose computer, shortly after the release of the OS, had attempted to upgrade to Windows 10 without her consent. The upgrade failed, and her computer was left in an broken state thereafter, which disrupted the ability to run her travel agency. The court ruled in favor of the user and awarded her $10,000 in damages, but Microsoft appealed. However, in May 2016, Microsoft dropped the appeal and chose to pay the damages. Shortly after the suit was reported on by the [*Seattle Times*](https://en.wikipedia.org/wiki/Seattle_Times), Microsoft confirmed that it was updating the GWX software once again to add more explicit options for opting out of a free Windows 10 upgrade;[[349]](https://en.wikipedia.org/wiki/Windows_10#cite_note-pcw-lawsuit-349)[[350]](https://en.wikipedia.org/wiki/Windows_10#cite_note-infoworld-anotherchange-350)[[346]](https://en.wikipedia.org/wiki/Windows_10#cite_note-seatimes-lawsuit-346)the final notification was a full-screen pop-up window notifying users of the impending end of the free upgrade offer, and contained "Remind me later", "Do not notify me again" and "Notify me three more times" options.[[351]](https://en.wikipedia.org/wiki/Windows_10#cite_note-zdnet-finalgwx-351)

**Privacy and data collection**[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=34)]

Privacy advocates and other critics have expressed concern regarding Windows 10's privacy policies and its collection and use of customer data.[[352]](https://en.wikipedia.org/wiki/Windows_10#cite_note-guardian-privacy-352) Under the default "Express" settings, Windows 10 is configured to send various information to Microsoft and other parties, including the collection of user contacts, calendar data, and "associated input data" to personalize "speech, typing, and inking input", typing and inking data to improve recognition, allowing apps to use a unique "advertising ID" for analytics and advertising personalization (functionality introduced by Windows 8.1)[[353]](https://en.wikipedia.org/wiki/Windows_10#cite_note-tnw-adid-353) and allow apps to request the user's location data and send this data to Microsoft and "trusted partners" to improve location detection (Windows 8 had similar settings, except that location data collection did not include "trusted partners"[[301]](https://en.wikipedia.org/wiki/Windows_10#cite_note-extremetech-privacysettings-301)). Users can opt out from most of this data collection,[[301]](https://en.wikipedia.org/wiki/Windows_10#cite_note-extremetech-privacysettings-301)[[352]](https://en.wikipedia.org/wiki/Windows_10#cite_note-guardian-privacy-352) but telemetry data for error reporting and usage is also sent to Microsoft, and this cannot be disabled on non-Enterprise versions of Windows 10.[[301]](https://en.wikipedia.org/wiki/Windows_10#cite_note-extremetech-privacysettings-301) Microsoft's privacy policy states, however, that "Basic"-level telemetry data is [anonymized](https://en.wikipedia.org/wiki/Data_anonymization) and cannot be used to identify an individual user or device.[[354]](https://en.wikipedia.org/wiki/Windows_10#cite_note-bott-is-windows-10-telemetry-a-threat-354) The use of Cortana also requires the collection of data "such as your device location, data from your calendar, the apps you use, data from your emails and text messages, who you call, your contacts and how often you interact with them on your device" to personalize its functionality.[[352]](https://en.wikipedia.org/wiki/Windows_10#cite_note-guardian-privacy-352)[[355]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-w10newnormal-355)

[*Rock Paper Shotgun*](https://en.wikipedia.org/wiki/Rock_Paper_Shotgun) writer Alec Meer argued that Microsoft's intent for this data collection lacked transparency, stating that "there is no world in which 45 pages of policy documents and opt-out settings split across 13 different settings screens and an external website constitutes 'real transparency'."[[352]](https://en.wikipedia.org/wiki/Windows_10#cite_note-guardian-privacy-352) Joel Hruska of *ExtremeTech* writes that "The company that brought us the “Scroogled” campaign now hoovers up your data in ways that would make Google jealous."[[301]](https://en.wikipedia.org/wiki/Windows_10#cite_note-extremetech-privacysettings-301) However, it was also pointed out that the requirement for such vast usage of customer data had become a norm, citing the increased reliance on [cloud computing](https://en.wikipedia.org/wiki/Cloud_computing) and other forms of external processing, as well as similar data collection requirements for services on mobile devices such as [Google Now](https://en.wikipedia.org/wiki/Google_Now) and [Siri](https://en.wikipedia.org/wiki/Siri).[[352]](https://en.wikipedia.org/wiki/Windows_10#cite_note-guardian-privacy-352)[[355]](https://en.wikipedia.org/wiki/Windows_10#cite_note-ars-w10newnormal-355) In August 2015, Russian politician [Nikolai Levichev](https://en.wikipedia.org/wiki/Nikolai_Levichev) called for Windows 10 to be banned from use within the [Russian government](https://en.wikipedia.org/wiki/Russian_government), as it sends user data to servers in the United States. The country had passed a federal law requiring all online services to store the data of Russian users on servers within the country by September 2016, or be blocked.[[356]](https://en.wikipedia.org/wiki/Windows_10#cite_note-cnet-datalaw-356)[[357]](https://en.wikipedia.org/wiki/Windows_10#cite_note-bbc-datastoragelaw-357)[[358]](https://en.wikipedia.org/wiki/Windows_10#cite_note-rt-10ban-358) Writing for [*ZDNet*](https://en.wikipedia.org/wiki/ZDNet), Ed Bott said that the lack of complaints by businesses about privacy in Windows 10 indicated "how utterly normal those privacy terms are in 2015."[[359]](https://en.wikipedia.org/wiki/Windows_10#cite_note-bott-359) In a [*Computerworld*](https://en.wikipedia.org/wiki/Computerworld) editorial, Preston Gralla stated that "the kind of information Windows 10 gathers is no different from what other operating systems gather. But Microsoft is held to a different standard than other companies."[[360]](https://en.wikipedia.org/wiki/Windows_10#cite_note-gralla-360)

Microsoft Services Agreement reads that the company's online services may automatically "download software updates or configuration changes, including those that prevent you from accessing the Services, playing counterfeit games, or using unauthorized hardware peripheral devices." Critics interpreted this statement as implying that Microsoft would scan for and delete [unlicensed software](https://en.wikipedia.org/wiki/Copyright_infringement_of_software) installed on devices running Windows 10.[[361]](https://en.wikipedia.org/wiki/Windows_10#cite_note-gamespot-w10pirated-361) However, others pointed out that this agreement was specifically for Microsoft online services such as Microsoft account, [Office 365](https://en.wikipedia.org/wiki/Office_365), Skype, as well as Xbox Live, and that the offending passage most likely referred to [digital rights management](https://en.wikipedia.org/wiki/Digital_rights_management) on [Xbox consoles](https://en.wikipedia.org/wiki/Xbox_consoles) and first-party games, and not plans to police pirated video games installed on Windows 10 PCs.[[361]](https://en.wikipedia.org/wiki/Windows_10#cite_note-gamespot-w10pirated-361)[[362]](https://en.wikipedia.org/wiki/Windows_10#cite_note-idg-eulapiracy-362) Despite this, some [torrent trackers](https://en.wikipedia.org/wiki/Torrent_tracker) announced plans to block Windows 10 users, also arguing that the operating system could send information to anti-piracy groups that are affiliated with Microsoft.[[363]](https://en.wikipedia.org/wiki/Windows_10#cite_note-tf-w10ban-363) Writing about these allegations, Ed Bott of *ZDNet* compared Microsoft's privacy policy to Apple's and Google's and concluded that "after carefully reading the Microsoft Services Agreement, the Windows license agreement...and the Microsoft Privacy Statement carefully, I don't see anything that looks remotely like Big Brother."[[359]](https://en.wikipedia.org/wiki/Windows_10#cite_note-bott-359) Columnist [Kim Komando](https://en.wikipedia.org/wiki/Kim_Komando) argued that "Microsoft might in the future run scans and disable software or hardware it sees as a security threat," consistent with the Windows 10 update policy.[[364]](https://en.wikipedia.org/wiki/Windows_10#cite_note-komando-364)

See also[[edit](https://en.wikipedia.org/w/index.php?title=Windows_10&action=edit&section=35)]

* [Comparison of operating systems](https://en.wikipedia.org/wiki/Comparison_of_operating_systems)
* [History of Microsoft Windows](https://en.wikipedia.org/wiki/History_of_Microsoft_Windows)
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* [List of operating systems](https://en.wikipedia.org/wiki/List_of_operating_systems)
* **[Emblem-money.svg](https://en.wikipedia.org/wiki/File:Emblem-money.svg)**[**Business and economics portal**](https://en.wikipedia.org/wiki/Portal:Business_and_economics)

* **[M box.svg](https://en.wikipedia.org/wiki/File:M_box.svg)**[**Microsoft portal**](https://en.wikipedia.org/wiki/Portal:Microsoft)

* **[Crystal Clear device cdrom unmount.png](https://en.wikipedia.org/wiki/File:Crystal_Clear_device_cdrom_unmount.png)**[**Software portal**](https://en.wikipedia.org/wiki/Portal:Software)

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