

Windows 11 is a version of Microsoft's Windows NT operating system, released on October 5, 2021, as the successor to Windows 10 (2015). It is available as a free upgrade for devices running Windows 10 that meet the Windows 11 system requirements. A Windows Server counterpart, Server 2022 was also released in 2021 and was updated to Server 2025 in 2024. Windows 11 is the first major version of Windows without a corresponding mobile edition, following the discontinuation of Windows 10 Mobile.

Windows 11 introduced a redesigned Windows shell influenced by elements of the canceled Windows 10X project, including a centered Start menu, a separate "Widgets" panel replacing live tiles, and new window management features. It also incorporates gaming technologies from the Xbox Series X and Series S, such as Auto HDR and DirectStorage on supported hardware. The Chromium-based Microsoft Edge remains the default web browser, replacing Internet Explorer, while Microsoft Teams is integrated into the interface. Microsoft also expanded support for third-party applications in the Microsoft Store, including limited compatibility with Android apps through a partnership with the Amazon Appstore.

Windows 11 introduced significantly higher system requirements than typical operating system upgrades, which Microsoft attributed to security considerations. The operating system requires features such as UEFI, Secure Boot, and Trusted Platform Module (TPM) version 2.0. Official support is limited to devices with an eighth-generation Intel Core or newer processor, a second-generation AMD Ryzen or newer processor, or a Qualcomm Snapdragon 850 or later system-on-chip. These restrictions exclude a substantial number of otherwise capable systems, prompting criticism from users and media. While installation on unsupported hardware is technically possible, Microsoft does not guarantee access to updates or support. Windows 11 also ends support for all 32-bit processors, running only on x86-64 and ARM64 architectures.

Windows 11 received mixed reviews upon its release. Pre-launch discussion focused on its increased hardware requirements, with debate over whether these changes were primarily motivated by security improvements or to encourage users to purchase newer devices. The operating system was generally praised for its updated visual design, improved window management, and enhanced security features. However, critics pointed to changes in the user interface, such as limitations on taskbar customization and difficulties in changing default applications, as steps back from Windows 10.[18] As of April 2025, Windows 11 held approximately 43.7% of the desktop Windows market share, with Windows 10 still leading at 52.9%.[19]

Development

At the 2015 Ignite conference, Microsoft employee Jerry Nixon stated that Windows 10 would be the "last version of Windows".[20][21] The operating system was considered to be a service, with new builds and updates to be released over time.[22] PC World argued that the widely reported comment was however taken out of context, noting that the official event transcript marks it only as a segue rather than a core part of the talk. It argues that Nixon was referring to the fact that he could talk freely at the event because 10 was the last version in current development.[23]

In October 2019, Microsoft announced "Windows 10X", a future edition of Windows 10 designed exclusively for dual-touchscreen devices such as the then-upcoming Surface Neo. It featured a modified user interface designed around context-sensitive "postures" for different screen configurations and usage scenarios, and changes such as a centered taskbar and updated Start menu without Windows 10's "live tiles". Legacy Windows applications would also be required to run in "containers" to ensure performance and power optimization. Microsoft stated that it planned to release Windows 10X devices by the end of 2020.[24][25][26]

In May 2020, during the COVID-19 pandemic, Panos Panay, Microsoft's chief product officer for Microsoft Windows and Microsoft Office, stated that "as we continue to put customers' needs at the forefront, we need to focus on meeting customers where they are now", and announced that Windows 10X would only launch on single-screen devices at first, and that Microsoft would "continue to look for the right moment, in conjunction with our OEM partners, to bring dual-screen devices to market".[27][28]

In October 2020, reports emerged that Microsoft was working on a user interface refresh for Windows 10 codenamed "Sun Valley", scheduled to be included in a late-2021 feature update codenamed "Cobalt". Internal documentation stated that the aim for "Sun Valley" was to "reinvigorat[e]" the Windows user interface and make it more "fluid", with a more consistent application of WinUI, while reports suggested Microsoft planned to adapt UI elements seen in Windows 10X.[29] In January 2021, it was reported that a job listing referring to a "sweeping visual rejuvenation of Windows" had been posted by Microsoft.[30]

By December 2020, Microsoft had begun to implement and announce some of these visual changes and other new features on Windows 10 Insider Preview builds, such as new system icons (which also included the replacement of shell resources dating back as far as Windows 95),[31] improvements to Task View to allow

changing the wallpaper on each virtual desktop, x86-64 emulation on ARM, and adding the Auto HDR feature from Xbox Series X.[32][33][34]

On May 18, 2021, Head of Windows Servicing and Delivery John Cable stated that Windows 10X had been canceled and that Microsoft would be "accelerating the integration of key foundational 10X technology into other parts of Windows and products at the company".[35]

Announcement

At the Microsoft Build 2021 developer conference, CEO and chairman Satya Nadella teased about the existence of the next generation of Windows during his keynote speech. According to Nadella, he had been self-hosting it for several months. He also teased that an official announcement would come very soon.[36] Just a week after Nadella's keynote, Microsoft started sending invitations for a dedicated Windows media event at 11:00 a.m. ET on June 24, 2021.[37][38] Microsoft also posted an 11-minute video of Windows start-up sounds to YouTube on June 10, 2021, with many people speculating both the time of the Microsoft event and the duration of the Windows start-up sound video to be a reference to the name of the operating system as Windows 11.[39][40]

On June 24, 2021, Windows 11 was officially announced at a virtual event hosted by Chief Product Officer Panos Panay.[38][41][42] According to Nadella, Windows 11 is "a re-imagining of the operating system".[43] Further details for developers such as updates to the Microsoft Store, the new Windows App SDK (code-named "Project Reunion"), new Fluent Design guidelines, and more were discussed during another developer-focused event on the same day.[44][45][46]

Release and marketing

The Windows 11 name was accidentally released in an official Microsoft support document in June 2021.[47][48] Leaked images of a purported beta build of Windows 11's desktop surfaced online later on June 15, 2021,[49][50] which were followed by a leak of the aforementioned build on the same day.[51] The screenshots and leaked build show an interface resembling that of the canceled Windows 10X, alongside a redesigned out-of-box experience (OOBE) and Windows 11 branding.[52] Microsoft would later confirm the authenticity of the leaked beta, with Panay stating that it was an "early weird build".[53][54]

At the June 24 media event, Microsoft also announced that Windows 11 would be released in "Holiday 2021".[55][56] Its release will be accompanied by a free upgrade for compatible Windows 10 devices through Windows Update.[57] On June 28, Microsoft announced the release of the first preview build and SDK of Windows 11

to Windows Insiders.[58]

On August 31, 2021, Microsoft announced that Windows 11 was to be released on October 5, 2021.[59] The release would be phased, with newer eligible devices to be offered the upgrade first.[8] Since its predecessor Windows 10 was released on July 29, 2015, more than six years earlier, this is the longest time span between successive releases of Microsoft Windows operating systems, beating the time between Windows XP (released on October 25, 2001) and Windows Vista (released on January 30, 2007).[60]

The first television commercial for Windows 11 premiered during the 2021 NFL Kickoff Game on September 9, 2021; it was intended to showcase a "feeling of immersion and fluidity", with imagery of operating system features and Xbox Game Studios' Halo Infinite.[61] Other promotional campaigns on release day included the Burj Khalifa in Dubai being illuminated with imagery of the Windows 11 logo and default "Bloom" wallpaper,[62] and Mikey Likes It ice cream parlors in New York City distributing free cups of "Bloomberry" ice cream.[63][64]

Though a support document listed October 4, 2021, as the initial release date,[65] Microsoft officially released Windows 11 on October 5, 2021,[8][66] as an opt-in, in-place upgrade through either the Windows 11 Installation Assistant application (which can perform the upgrade, or generate an ISO image or USB install media), or via Windows Update in a phased rollout; Microsoft anticipated that Windows 11 would be available via Windows Update to all eligible devices by mid-2022.[67][68][69] New installations of Windows 10 on eligible hardware may present an option to upgrade during the OOBE.[70] Retail copies of Windows 11 (consisting of a license key and USB flash drive) were released on May 9, 2022,[71][72] and digital licenses became available via Microsoft Store on July 28, 2022.[73] On September 20, 2023, around two years after the release date of Windows 11, Microsoft announced that users would no longer be able to use Windows 7 or Windows 8/8.1 product keys to activate Windows 10/11.[74] However, as of 2024, there are some reports that they still work, under certain conditions.[75][76]

Features

Main article: Features new to Windows 11

See also: List of features removed in Windows 11

Windows 11, the first major Windows release since 2015, builds upon its predecessor by revamping the user interface to follow Microsoft's new Fluent Design guidelines. The redesign, which focuses on ease of use and flexibility,[57] comes alongside new productivity and social features and updates to security and

accessibility, addressing some of the deficiencies of Windows 10.[77]

The Microsoft Store, which serves as a unified storefront for apps and other content, is also redesigned in Windows 11. Microsoft now allows developers to distribute Win32, progressive web applications, and other packaging technologies in the Microsoft Store, alongside Universal Windows Platform apps.[78] Microsoft also announced plans to allow third-party application stores (such as Epic Games Store) to distribute their clients on Microsoft Store.[79] Windows 11 supports x86-64 software emulation on ARM-based platforms.[80]

The collaboration platform Microsoft Teams is integrated into the Windows 11 user interface, and is accessible via the taskbar.[81] Skype will no longer be bundled with the OS by default.[82][83][84] In early 2023, the Phone Link app gained limited support for iMessage.[85][86][87]

Microsoft claims performance improvements such as smaller update sizes, faster web browsing in "any browser", faster wake time from sleep mode, and faster Windows Hello authentication.[82][88]

Windows 11 ships with the Chromium-based Microsoft Edge web browser (for compatibility[89][90] with Google Chrome web browser[91]), and does not include or support Internet Explorer.[92] Its rendering engine MSHTML (Trident) is still included with the operating system for backwards compatibility reasons, and Edge can be configured with Group Policy to render whitelisted websites in "IE Mode" (which still uses IE's rendering engine MSHTML, instead of Blink layout engine).[93] Windows 11 is the first version of Windows since the original retail release of Windows 95 to not ship with Internet Explorer.[94] To comply with the Digital Markets Act, Microsoft is allowing users in the European Economic Area to remove the Microsoft Edge browser, Microsoft Bing search engine, and advertisements to comply with users' interests.[95][96][97]

The updated Xbox app,[98][99] along with the Auto HDR and DirectStorage technologies introduced by the Xbox Series X and Series S, will be integrated into Windows 11; the latter requiring a graphics card supporting DirectX 12 and an NVMe solid-state drive.[99][100]

User interface

A redesigned user interface is present frequently throughout the operating system, building upon the Fluent Design System: translucency, shadows, a new color palette, and a rounded geometry are prevalent throughout the UI. A prevalent aspect of the design is an appearance known as "Mica", described as an "opaque,

dynamic material that incorporates theme and desktop wallpaper to paint the background of long-lived windows such as apps and settings".[101][102] Much of the interface and start menu takes heavy inspiration from the now-canceled Windows 10X.[1] The Segoe UI font used since Windows Vista has been updated to a variable version, improving its ability to scale between different display resolutions.[103]

The taskbar's buttons are center-aligned by default, and it is permanently pinned to the bottom edge of the screen; it cannot be moved to the top, left, or right edges of the screen as in previous versions of Windows without manual changes to the registry.[104] The notifications sidebar is now accessed by clicking the date and time, with other Quick Actions toggles, as well as volume, brightness, and media playback controls, moved to a new settings pop-up displayed by clicking on the system tray. The "Widgets" button on the taskbar displays a panel with Microsoft Start,[105] a news aggregator with personalized stories and content (expanding upon the "news and interests" panel introduced in later builds of Windows 10).[88][101] Microsoft Teams is similarly integrated with the taskbar, with a pop-up showing a list of recent conversations.[84]

The Start menu has been significantly redesigned, replacing the "live tiles" used by Windows 8.x and 10 with a grid of "pinned" applications, and a list of recent applications and documents.[82][88] File Explorer was updated to replace its ribbon toolbar with a more traditional toolbar, while its context menus have been redesigned to move some tasks (such as copy and paste) to a toolbar along the top of the menu, and hide other operations under an overflow menu.[101]

Task View, a feature introduced in Windows 10, features a refreshed design, and supports giving separate wallpapers to each virtual desktop. The window snapping functionality has been enhanced with two additional features: hovering over a window's maximize button displays pre-determined "Snap Layouts" for tiling multiple windows onto a display, and tiled arrangement of windows can be minimized and restored from the taskbar as a "snap group".[88][106] When a display is disconnected in a multi-monitor configuration, the windows that were previously on that display will be minimized rather than automatically moved to the main display. If the same display is reconnected, the windows are restored to their prior location.[107]

Windows Subsystem for Android

Further information: Project Astoria and Windows Subsystem for Linux

On October 21, 2021, Windows Subsystem for Android (WSA) became available to Beta channel builds of Windows 11 for users in the United States,[108] which allowed users to install and run Android apps on their devices. Users could install Android apps through any source using the APK file format.[109] An Amazon Appstore client for Microsoft Store was also available.[110][111][112][113] The Windows Subsystem for Android and Amazon Appstore became available to Release channel users in the United States on February 15, 2022, in Windows 11 Release build 22000.527.[114] On March 5, 2024, Microsoft announced deprecation of WSA with support ending on March 5, 2025.[115]

WSA was based on the Intel Bridge runtime compiler; Intel stated that the technology was not dependent on its CPUs, and would also be supported on x86-64 and ARM CPUs from other vendors.[113]

Setup

Home and Pro (since version 22H2) edition installation requires internet connection and Microsoft account login (only if for personal use on Pro) is mandatory unless manually bypassed to create a local user.[116][117][118][119][120] However, Microsoft has since blocked one of the last remaining easy bypass methods that allowed local account creation during initial setup, complicating the bypass process further.[121][122] All other editions are excluded from this requirement.[104][123]

System security

As part of the minimum system requirements, Windows 11 only runs on devices with a Trusted Platform Module 2.0 security coprocessor,[124][125] albeit with some exceptions, see § System requirements for details. According to Microsoft, the TPM 2.0 coprocessor is a "critical building block" for protection against firmware and hardware attacks. In addition, Microsoft now requires devices with Windows 11 to include virtualization-based security (VBS), hypervisor-protected code integrity (HVCI), and Secure Boot built-in and enabled by default.[126] The operating system also features hardware-enforced stack protection for supported Intel and AMD processors for protection against zero-day exploits.[127]

Like its predecessor, Windows 11 also supports multi-factor authentication and biometric authentication through Windows Hello.[126]

Artificial intelligence

In subsequent updates, Microsoft added several features based on artificial intelligence (AI), like live captions, background noise removal in videoconferencing, webcam auto-framing that follows the user's movements,[87] and AI-powered Bing Chat in the taskbar's search field.[128] Following the integration of GPT-4 in

Microsoft's other products, the company announced that by summer 2023, the newly released Microsoft Copilot would add GPT-4 integration to the Windows taskbar.[129]

On May 20, 2024, Microsoft officially announced Recall, a feature that uses a hardware AI accelerator to locally store snapshots of the user's activity (including content transcribed using live captions), and which allows users to search through them. This feature is exclusive to devices certified under the "Copilot+ PC" branding.[130][131][132] Following pushback from the cyber security community, Microsoft delayed the feature in June 2024. A preview version will be added to the Microsoft Insider program at later date in order to test added security measures.[133]

Editions

Windows 11 is available in two main editions: the Home edition, which is intended for consumer users, and the Pro edition, which contains additional networking and security features (such as BitLocker), as well as the ability to join a domain.[134] Windows 11 Home may be restricted by default to verified software obtained from Microsoft Store ("S Mode").[135] Windows 11 Home requires an Internet connection and a Microsoft account in order to complete first-time setup.[136] This restriction is also applied to Windows 11 Pro since version 22H2[120] as it was announced in February 2022, although a Microsoft account isn't required if it's not for personal use.[137]

Windows 11 SE was announced on November 9, 2021, as an edition exclusively for low-end devices sold in the education market: it is intended as a successor to Windows 10 S, and also competes primarily with ChromeOS. It is designed to be managed via Microsoft Intune. Based on feedback from educators, Windows 11 SE has multiple UI differences and limitations, including Snap Layouts not containing layouts for more than two applications at once, all applications opening maximized by default, and Widgets being removed. It is bundled with applications such as Microsoft Office for Microsoft 365, Minecraft Education Edition, and Flipgrid, while OneDrive is used to save files by default. Windows 11 SE does not include Microsoft Store; third-party software is provisioned or installed by administrators. To target organizations migrating from Google Chrome, Microsoft Edge is configured by default to enable the installation of extensions from the Chrome Web Store.[138][139]

Other editions

See also: Windows 10 editions

Other editions include Pro Education, Pro for Workstations, Education, Enterprise,

Enterprise multi-session, IoT Enterprise, Enterprise LTSC, IoT Enterprise LTSC, Home Single Language, and Team; along with regional variations. These editions remain fundamentally the same as their Windows 10 edition counterparts.

Two new edition variants called IoT Enterprise Subscription and IoT Enterprise Subscription LTSC have been introduced in version 24H2.[140]

Supported languages

Before the launch of Windows 11, OEMs (as well as mobile operators) and businesses were offered two options for device imaging: Component-Based Servicing lp.cab files (for the languages to be preloaded on the first boot) and Local Experience Pack .appx files (for the languages available for download on supported PCs). The 38 fully-localized Language Pack (LP) languages were available as both lp.cab and .appx packages, while the remaining 72 partially-localized Language Interface Pack (LIP) languages were only available as .appx packages.[141]

With Windows 11, that process has changed. Five new LP languages were added – Catalan, Basque, Galician, Indonesian, and Vietnamese – bringing the total number of LP languages to 43. Furthermore, these 43 languages can only be imaged using lp.cab packages. This is to ensure a fully supported language-imaging and cumulative update experience.

The remaining 67 LIP languages that are LXP-based will move to a self-service model, and can only be added by Windows users themselves via the Microsoft Store and Windows Settings apps, not during the Windows imaging process. Any user, not just admins, can now add both the display language and its features, which can help users in business environments, but these exact options for languages (both LP and LIP) still depend on the OEM and mobile operator.

Updates and support

Main article: Windows 11 version history

Like Windows 10, Windows 11 follows Microsoft's Modern Lifecycle Policy. Each annual feature update has its own support lifecycle: two years for the Home and Pro editions, and three years for the Education and Enterprise editions. Microsoft has stated that Windows 11 provides no lifecycle guarantee if it has been installed on a machine that does not meet its minimum hardware requirements.[142]

Windows 11 receives annual major updates, though Microsoft sometimes adds major features in mid-cycle releases. Starting in 2022, in the Enterprise and Education editions, major features added in yearly releases will be turned off by

default until the next yearly release, though these features can be manually enabled as a group policy.[143]

Preview releases

The Windows Insider program carries over from Windows 10, with pre-release builds divided into "Dev" (unstable builds used to test features for future feature updates), "Beta" (test builds for the next feature update; relatively stable in comparison to Dev channel), and "Release Preview" (pre-release builds for final testing of upcoming feature updates) channels.[144]