

System requirements for installing Windows 10

These are the basic requirements for installing Windows 10 on a PC. If your device does not meet these requirements, you may not have the great experience intended with Windows 10 and might want to consider purchasing [a new PC](#).

Processor:	1 gigahertz (GHz) or faster compatible processor or System on a Chip (SoC)
RAM:	1 gigabyte (GB) for 32-bit or 2 GB for 64-bit
Hard drive size:	32GB or larger hard disk Note: See below under "More information on hard drive space to install or update Windows 10" for more details.
Graphics card:	Compatible with DirectX 9 or later with WDDM 1.0 driver
Display:	800x600
Internet Connection:	Internet connectivity is necessary to perform updates and to download and take advantage of some features. Windows 10 Pro in S mode, Windows 10 Pro Education in S mode, Windows 10 Education in S mode, and Windows 10 Enterprise in S mode require an internet connection during the initial device setup (Out of Box Experience or OOBE), as well as either a Microsoft account (MSA) or Azure Activity Directory (AAD) account. Switching a device out of Windows 10 in S mode also requires internet connectivity. Learn more about S mode here .

There may be additional requirements over time for updates, as well as requirements to turn on [specific features](#) within the OS.

Keeping Windows 10 up-to-date

Windows 10 is designed to deliver updates for the supported lifetime of the device. Two types of updates may be provided: quality updates and feature updates. Quality updates include both security and non-security updates and are typically targeted to be released once a month. Feature updates also include security and non-security fixes as well as new features to Windows 10 and are typically provided twice a year. Ensuring that your device receives these updates and is kept up-to-date is important for your device security. Windows 10 periodically checks for updates so you don't have to. When an update is available—and sufficient free disk space is available on your device—it will be automatically installed. So that Windows 10 continues to stay updated, it's important to ensure your device has sufficient free space. See additional applicable details in the following notes.

Important notes about updates:

- A device might not be able to receive updates if the device hardware is incompatible, if it lacks current drivers or sufficient available hard drive space, or if it's otherwise outside of the Original Equipment Manufacturer's ("OEM") support period. Visit the [Windows Lifecycle Fact Sheet](#) or the [Lifecycle FAQ for Windows products](#) to learn more about the servicing timeline for each feature update.
 - Some of the disk space needed for installing updates is only temporarily required. Typically, ten days after installing an update, a disk cleanup will be automatically performed to delete copies of the older, unneeded Windows files and free up space again.
- Not all features in an update will work on all devices.
- An internet connection is required to perform updates and Internet access (ISP) fees might apply.
- If you need assistance installing an update, [Windows 10 Update Assistant](#) may be able to help.

More information on hard drive space requirements to install or update Windows 10

The size of the Windows operating system that comes with your device and the amount of space needed to download and install Windows updates, are highly variable as they depend on a variety of factors. [Visit here to learn why](#). The factors that impact the amount of free hard drive space needed to take an update include: the versions of Windows previously installed on the machine, the amount of disk space available to reuse from Windows files, such as the virtual memory pagefile or hibernation file, which applications are installed on your device and how those applications store data. Starting with the May 2019 Update, the system requirements for hard drive size for [clean installs](#) of Windows 10 as well as new PCs changed to a minimum of 32GB. The 32GB or larger drive requirement is set to leave space for users to install apps and to keep data on the device. Installing Windows or updating from a previous version of Windows on devices with less than 32GB storage will continue to work if the device has enough free space available. When updating, Windows will attempt to automatically free up enough hard drive space and guide you through freeing up even more if the automatic cleanup is not sufficient. You can also take steps to free up space on your own. For more information, see [Free up space to install the latest Windows 10 update](#) or visit [the related FAQ](#).

Feature-specific requirements for Windows 10

In addition to the requirements above that are needed to run Windows, some features have additional requirements. In some cases, features included with updated versions of Windows 10 will be best experienced [with newer processors](#). For specific hardware support please refer to your Original Equipment Manufacturer (OEM). Below are some additional details regarding requirements for key features:

- **BitLocker Drive Encryption** (available with Windows 10 Pro or Windows 10 Enterprise only) requires a Trusted Platform Module (TPM) 1.2 or higher and Trusted Computing Group (TCG)-compliant BIOS or UEFI. BitLocker can be used on devices without TPM, but you will need to save a startup key on a removable device such as a USB flash drive. TPM 2.0 and InstantGo support is required when you want to automatically encrypt the local drive when joining a device to Azure Active Directory (AAD). Check with your PC manufacturer to confirm if your device supports the correct TPM version and InstantGo for the scenario you want to enable.
- **BitLocker To Go** requires a USB flash drive (available in Windows 10 Pro and Windows 10 Enterprise only).
- **Client Hyper-V** requires a 64-bit system with second level address translation (SLAT) capabilities and additional 2 GB of RAM (available in Windows 10 Pro and Windows 10 Enterprise only).

- **Cortana** is only currently available on Windows 10 for the United States, United Kingdom, China, France, Italy, Germany, Brazil, Mexico, Japan, Canada, Spain, Australia and India.
- **Microsoft account** is required for some features.
- **Miracast** requires a display adapter which supports Windows Display Driver Model (WDDM) 1.3, and a Wi-Fi adapter that supports Wi-Fi Direct.
- **Movies & TV** application is not available in all regions. For the most up-to-date list of regions, please go to the [Movies & TV](#) information page.
- **Secure boot** requires firmware that supports UEFI v2.3.1 Errata B and has the Microsoft Windows Certification Authority in the UEFI signature database.
- **Skype** is available only in select countries and regions. Calling to select countries and regions only. Excludes special, premium and non-geographic numbers. For details, visit the [Office FAQ page](#).
- **Snap**: The number of applications that can be snapped will depend upon the minimum resolution for the application with a limit of two applications in Tablet mode and four applications in Desktop mode.
- **Speech recognition** will vary by device microphone. For a better speech experience, you will need a:
 - High fidelity microphone array
 - Hardware driver with microphone array geometry exposed
- **Tablet mode** is available on tablets and 2-in-1s with GPIO indicators or those that have a laptop and slate indicator will be able to be configured to enter "tablet mode" automatically.
- **Touch**: To use touch, you need a tablet or a monitor that supports multi-touch.
- **Two-factor authentication** requires the use of a PIN, Biometric (finger print reader or illuminated infrared camera), or a phone with Wi-Fi or Bluetooth capabilities.
- **Windows Hello** requires a camera configured for near infrared (IR) imaging or fingerprint reader for biometric authentication. Devices without biometric sensors can use Windows Hello with a PIN or a portable Microsoft compatible security key.
- **Xbox** application requires an Xbox Live account, which is not available in all regions. For the most up-to-date list of regions, please go to [Xbox Live Countries and Regions website](#).
- **Wi-Fi Direct Printing** requires a Wi-Fi adapter that supports Wi-Fi Direct and a device that supports Wi-Fi Direct Printing.

Language versions

Windows 10 full localization languages include: Arabic (Saudi Arabia), Bulgarian (Bulgaria), Chinese (PRC), Chinese (Taiwan), Croatian (Croatia), Czech (Czech Republic), Danish (Denmark), Dutch (Netherlands), English (United Kingdom), English (United States), Estonian (Estonia), Finnish (Finland), French (France), French (Canada), German (Germany), Greek (Greece), Hebrew (Israel), Hungarian (Hungary), Italian (Italy), Japanese (Japan), Korean (Korea), Latvian (Latvia), Lithuanian (Lithuania), Norwegian, Bokmål (Norway), Polish (Poland), Portuguese (Brazil), Portuguese (Portugal), Romanian (Romania), Russian (Russia), Serbian (Latin, Serbia), Slovak (Slovakia), Slovenian (Slovenia), Spanish (Spain), Spanish (Mexico), Swedish (Sweden), Thai (Thailand), Turkish (Turkey), Ukrainian (Ukraine).

Additional languages available as [Language Interface Packs](#)

Feature deprecations and removals

When upgrading to Windows 10 from a previous version of Windows such as Windows 7 or Windows 8.1 as well as when installing a newer update to Windows 10, some features may be deprecated or removed. Please see below for information regarding some of the key removed features:

- **Desktop Messaging App:** The messaging app on Desktop has a sync feature that can be used to sync SMS text messages received from Windows Mobile and keep a copy of them on the Desktop. Starting with the May 2019 Update (Windows 10, version 1903), the sync feature has been removed from all devices. Due to this change, you will only be able to access messages from the device that received the message.
- **Wi-Fi WEP and TKIP:** Starting with the May 2019 Update (Windows 10, version 1903), a warning message will appear when connecting to Wi-Fi networks secured with WEP or TKIP, which are not as secure as those using WPA2 or WPA3. In a future release, any connection to a Wi-Fi network using these old ciphers will be disallowed. Wi-Fi routers should be updated to use AES ciphers, available with WPA2 or WPA3.
- **Cortana:** Cortana has been updated and enhanced in the Windows 10 May 2020 Update (Windows 10, version 2004). With these changes, some previously available consumer skills such as music, connected home, and third-party skills will no longer be available. [Get detailed information here](#).

- **Phone Companion:** As of the October 2018 Update (Windows 10, version 1809), Phone Companion is removed from your PC. Use the Phone page in the Settings app to sync your mobile phone with your PC. It includes all the Phone Companion features.
- **HomeGroup:** [HomeGroup](#) was removed starting with the April 2018 Update (Windows 10, version 1803), but you still have the ability to share printers, files, and folders. When you update from an earlier version of Windows 10, you won't see HomeGroup in File Explorer, the Control Panel, or Troubleshoot (Settings > Update & Security > Troubleshoot). Any printers, files, and folders you shared using HomeGroup will continue to be shared. Instead of using HomeGroup, you can now share printers, files, and folders by using features that are built into Windows 10:
 - [Share your network printers](#)
 - [Share files in File Explorer](#)
 - For Xbox 360 and HomeGroup users, please see more information on [streaming media](#)
- **People app:** In Windows 10, the **People app** shows mail from Microsoft 365 contacts and contacts from your school or work organization under **Conversations**. Starting with the April 2018 Update (Windows 10, version 1803), in order to see new mail in the People app from these specific contacts, you need to be online, and you need to have signed in with either a Microsoft 365 account or, for work or school organization accounts, through the [Mail](#), [People](#), or [Calendar](#) apps. Please be aware that you'll only see mail for work and school organization accounts and some Microsoft 365 accounts.
- **Reader app:** The Reader app was removed from Windows 10 starting with the Fall Creators Update (Windows 10, version 1709). For reading PDF files, Microsoft Edge is the recommended replacement app and offers similar functionality as well as additional features including improved accessibility support, improved Inking, and support for AskCortana. Similarly, Windows XPS Viewer is recommended when reading XPS files and Windows Photos app for viewing TIFF files. Note that users of earlier Windows 10 versions can continue using the Reader app.
- **Windows Journal:** Windows Journal was removed starting with the Windows 10 Anniversary Update (Windows 10, version 1607). After Windows Journal is removed, you will no longer be able to open or edit Journal files (with .JNT or .JTP extensions). In place of Windows Journal, we encourage you to switch to OneNote. If you need to open or edit your journal files, more information is available [here](#).
- **Windows Media Digital Rights Management (WMDRM):** WMDRM is no longer supported starting with the Windows 10 Anniversary Update (Windows 10, version 1607). You are no longer able to play music or video files that were protected by this rights management technology. [Click here](#) to learn more.

The following changes impact devices that are upgrading to Windows 10 from Windows 7, Windows 8 or Windows 8.1:

- **Windows Media Center:** If you have Windows 7 Home Premium, Windows 7 Professional, Windows 7 Ultimate, Windows 8 Pro with Media Center, or Windows 8.1 Pro with Media Center and you install Windows 10, Windows Media Center will be removed.
- **Mobile Device Management (MDM):** MDM functionality will not be available in Windows 10 Home edition.
- **Windows 7 desktop gadgets:** These will be removed as part of installing Windows 10.
- **Solitaire, Minesweeper, and Hearts Games:** These games that came pre-installed on Windows 7 will be removed as part of installing the Windows 10 upgrade. Microsoft has released our version of Solitaire and Minesweeper called the "Microsoft Solitaire Collection" and "Microsoft Minesweeper".
- **Floppy drives:** If you have a floppy drive, you will need to download the latest driver from Windows Update or from the manufacturer's website.
- If you have Windows Live Essentials installed on your system, the OneDrive application is removed and replaced with the inbox version of OneDrive.
- **OneDrive place holder files:** OneDrive placeholder files are not supported in Windows 10. Windows 8.1 displayed placeholders for files available in OneDrive but not locally on the device. In Windows 10, users can choose which folders to sync from OneDrive settings.
- **Snap:** Snap is limited to two applications in Tablet mode.