Windows 11 Installation Guide

Operating System Installation

Introduction

Operating systems are the foundation of any computer and overall IT infrastructure. Therefore learning to install the OS in a secure, consistent and well established process is essential. An OS that is installed as per best practices is easy to automate, maintain, resilient to failures and secure. Applications will also run with minimal compatibility issues or problems.

What does an OS Installer do?

Major Installation Steps

1. BIOS configuration to boot temporarily from install medium (USB pen drive).
2. Boot the OS installer from install medium (USB pen drive).
3. Detect target disk, partition and format it.
4. Copy OS image to the target disk. OS image may be available locally in the install medium (USB pen drive), or downloaded from network/internet.
5. Make the target disk bootable and reboot.
6. The installer may create the first super user account either during the install process or on first boot.
7. Optionally, the installer software may install updates to itself or the target OS during the install process.

Post Installation Steps

1. Create separate "Standard User" and "Administrator" accounts. Always use "Standard User" for daily use, and Administrator account only for special requirements like new software installation, etc.

2. Ensure all software updates are installed, on Windows configure Windows Updates to install software for all Microsoft Products so hardware drivers and Edge browser is always updated.

Note: It is recommended to install hardware drivers directly from Windows Update rather than relying on the manufacturer's websites. Windows Update provides the latest certified drivers that are tested and verified for compatibility with the operating system.

Practical Session 1: Installation of Windows 11

Prepare Win 11 USB Install Media

1. For basic usage, use the media creation tool from [Download Windows 11 (microsoft.com)](#) web page.
2. For advanced usage, e.g. installing Win11 on unsupported computers, download the ISO from [Download Windows 11 (microsoft.com)](#) and use Rufus to create the patched install media. See [Installing Windows 11 on Unsupported Hardware](#).

BIOS configuration

1. Enable virtualization: VT-x for Intel and SVM for AMD CPUs.
2. BIOS UEFI mode and Secure Boot must be enabled for Win 11.
3. Set the boot sequence to always boot from HDD/SSD and temporarily boot from USB in order to boot the Windows installer from USB.

Installation

1. Boot from USB
2. To install the Win 11 operating system, follow the steps in Annexure 1.
3. Set Windows region to *English India*. This will ensure number formatting in Excel is shown in crores/lakhs rather than millions and hundred thousands.
4. Delete all partitions in the target disk and click *Next*. Windows installer will partition the disk as required - EFI, C:\, etc.
5. Do NOT split the target disk into smaller partitions. Eg. C:\ for OS, D:\ for data, etc. This is an obsolete practice that is no longer required for modern computers with Win 11 and SSDs.

6. Create an Administrator user with a name <u>admin</u> for doing Administrator tasks like software installation, etc.
7. Install Windows Updates to receive software updates, security patches, and driver updates from Microsoft servers.
8. Create a "Standard user" for doing regular tasks.

Annexure 1: Win 11 Bare Metal Installation Steps
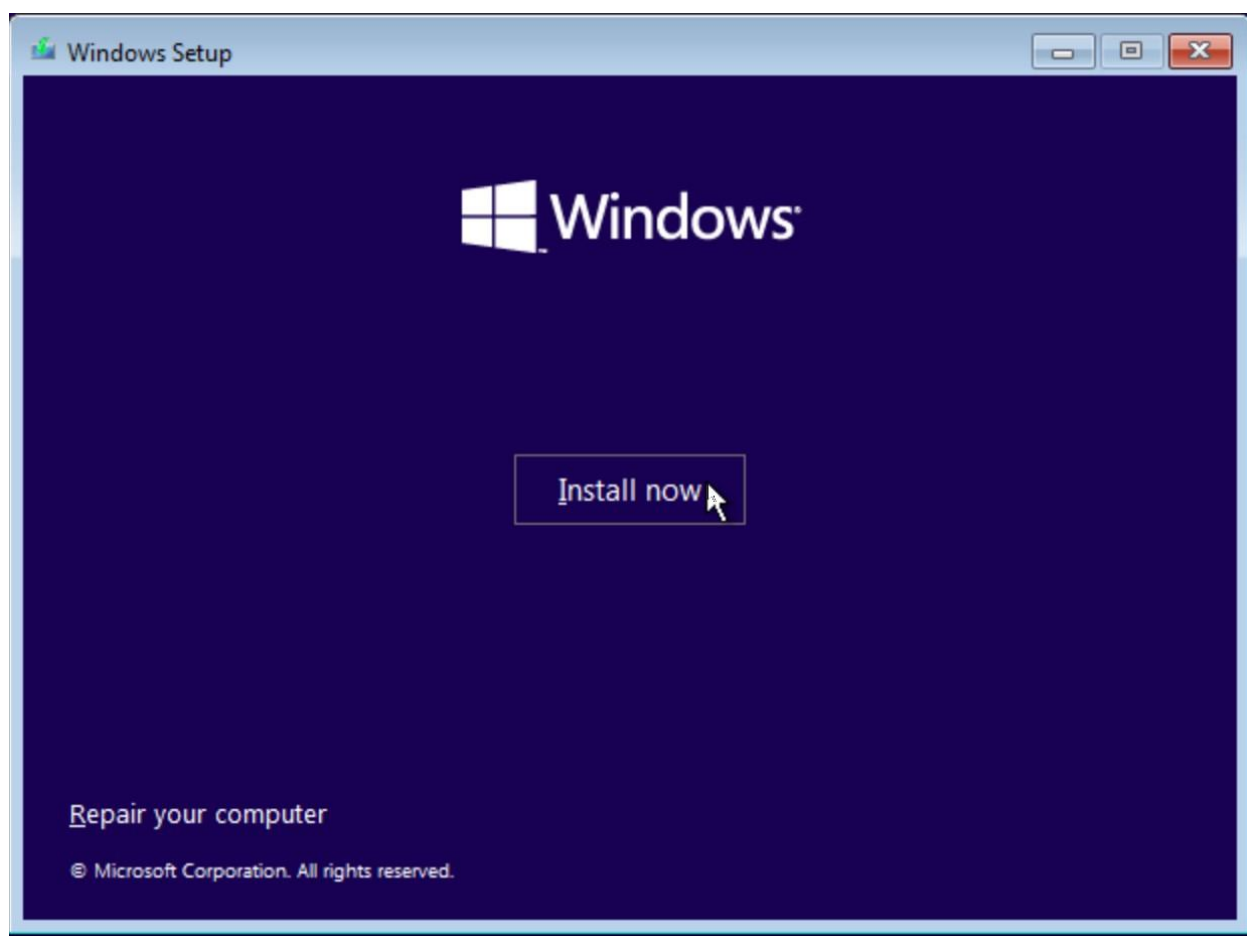
Step 1: Choose languages & time format

Change **Time and currency format** to **English (India)**.

Accept the default values **(English (United States)** and **US**) for the other items.

<u>Background</u>**:** Changing Time and currency format setting will ensure Excel formats currencies in Rs and in lakhs, crores and dates in dd-mm-yy format.

Step 2: Start Installation

Click <u>Install now</u> to start installing Win11.

Step 3: Windows Activation

Activate Windows

If this is the first time you're installing Windows on this PC (or you're installing a different edition), you need to enter a valid Windows product key. Your product key should be in the confirmation email you received after buying a digital copy of Windows or on a label inside the box that Windows came in.

The product key looks like this: XXXXX-XXXXX-XXXXX-XXXXX-XXXXX

If you're reinstalling Windows, select I don't have a product key. Your copy of Windows will be automatically activated later.

Privacy Statement   I don't have a product key   Next

Select <u>I don't have a product key</u> and click <u>Next</u>.

<u>Background</u>: If you have purchased a Windows license along with your desktop/laptop, the keys are usually saved in the computer's BIOS. Once the computer is connected to the Internet, Windows will use the saved license key and automatically register and activate itself. There is no need to enter a key manually.

Step 4: Select OS Edition

Select the operating system you want to install

Operating system	Architecture	Date modified
Windows 11 Home	x64	11/4/2021
Windows 11 Home N	x64	11/4/2021
Windows 11 Home Single Language	x64	11/4/2021
Windows 11 Education	x64	11/4/2021
Windows 11 Education N	x64	11/4/2021
Windows 11 Pro	x64	11/4/2021
Windows 11 Pro N	x64	11/4/2021

Description:
Windows 11 Pro

Next

1. Select <u>Win11 Pro</u> as the edition of Windows to install.
2. If you already have a Win 11 Home license for your laptop/desktop, then you can select Win 11 Home.

<u>Background</u>:
Win11 Pro has the following features so Win 11 Pro is recommended over Win 11 Home: 1. Bitlocker disk encryption for added security

Note: Microsoft had earlier restrictions on WSL2 which required Win11 Pro. Now the licensing is relaxed and WSL2 is supported on Win 11 Home as well.

Step 5: Windows license terms

Applicable notices and license terms

Last updated June 2021

MICROSOFT SOFTWARE LICENSE TERMS

WINDOWS OPERATING SYSTEM

IF YOU LIVE IN (OR IF YOUR PRINCIPAL PLACE OF BUSINESS IS IN) THE UNITED STATES, PLEASE READ THE BINDING ARBITRATION CLAUSE AND CLASS ACTION WAIVER IN SECTION 11. IT AFFECTS HOW DISPUTES ARE RESOLVED.

Thank you for choosing Microsoft!

☑ I accept the Microsoft Software License Terms. If an organization is licensing it, I am authorized to bind the organization.

Next

Accept the license terms and click Next.

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Step 6: Installation types

Which type of installation do you want?

Upgrade: Install Windows and keep files, settings, and applications
The files, settings, and applications are moved to Windows with this option. This option is only available when a supported version of Windows is already running on the computer.

Custom: Install Windows only (advanced)
The files, settings, and applications aren't moved to Windows with this option. If you want to make changes to partitions and drives, start the computer using the installation disc. We recommend backing up your files before you continue.

As we are deleting everything on the computer and performing a **"clean install"** of Windows, select the bottom option: Custom: Install Windows only (advanced).

Note that this process will delete all existing data in the computer and perform a fresh install of Windows.

Step 7: Select disk to install

Where do you want to install Windows?

Name	Total size	Free space	Type
Drive 0 Unallocated Space	32.0 GB	32.0 GB	

Refresh   Delete   Format   New

Load driver   Extend

⚠ To install this version of Windows, the system drive needs to be 52 GB or larger.

Next

1. This menu lists all the available drives in your computer. Usually you will have only one drive shown as Drive 0.
2. Delete all existing partitions, by selecting them and clicking delete.
3. Once all existing partitions are deleted, your screen will look like the screenshot above.
4. **The next step will erase all existing data on your computer, you cannot go back after this step. Ensure all valuable data on the computer is backed up elsewhere before proceeding.**
5. Select Drive 0 Unallocated Space and then click Next to delete all data and clean install Win 11.

Background: Win 11 prefers the boot disk to be partitioned using the *GPT partition scheme* in order for advanced functionality like *Secure Boot* to work correctly. By removing all partitions and asking the installer to use the unallocated space, the installer will automatically follow best

practices and create the UEFI, OS and other partitions as required. In the end, you will have a single C: drive that fills the entire contents of your disk.

Do NOT partition the drive into multiple individual partitions of smaller sizes.

Eg. **AVOID** partitioning a 500GB SSD like this:
1. C:\ - 100GB - OS disk
2. D:\ - 100GB - Application disk
3. E:\ - 300GB - data disk

Instead create a single C:\ that is of 500GB capacity.

Step 8: Installing Windows

Installing Windows

Status

✓ Copying Windows files
Getting files ready for installation (0%)
Installing features
Installing updates
Finishing up
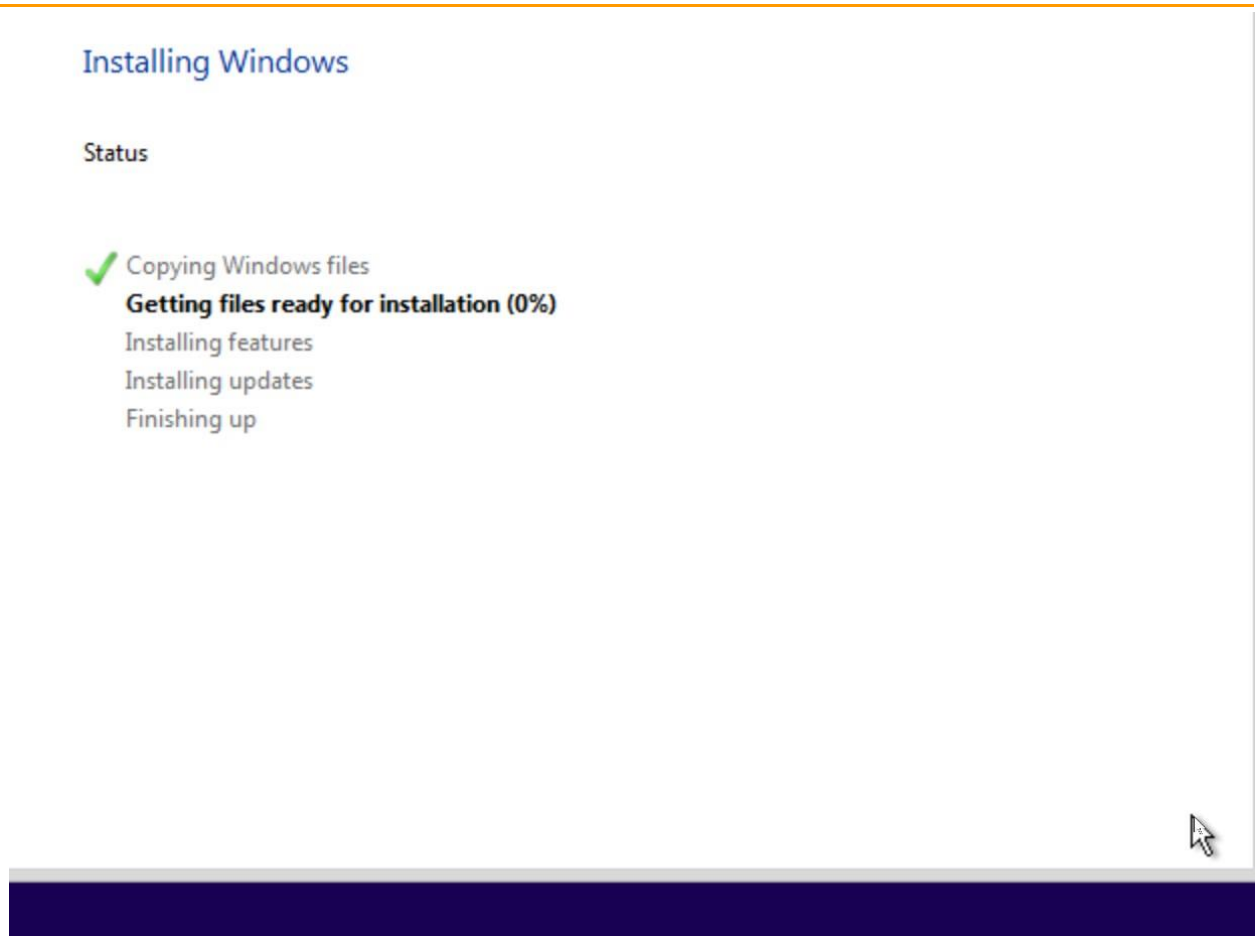
At this point, the installation of Windows will start. It will take around 20-25 minutes to complete the installation process. Wait patiently until it completes the installation.

During the installation, your system may reboot two or three times.

Note: At the time or reboot, make sure to unplug the USB drive or DVD drive otherwise it will load the complete setup again. Or if your Flash drive is bootable then don't press Any key on your keyboard.

Step 9: Windows startup
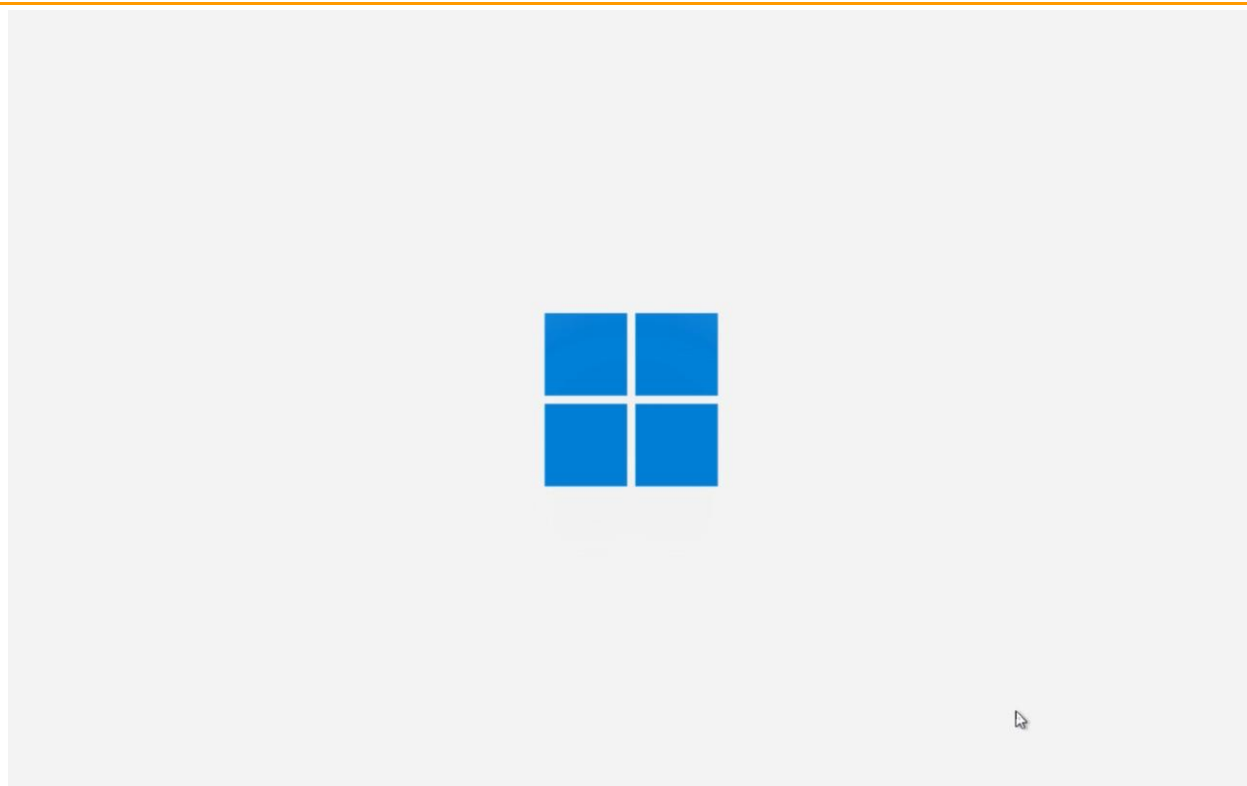
You need to wait a couple of minutes to allow Windows 11 to starts up. During this period, you will first see the Windows 11 logo.

Step 10: Setup Windows without Internet
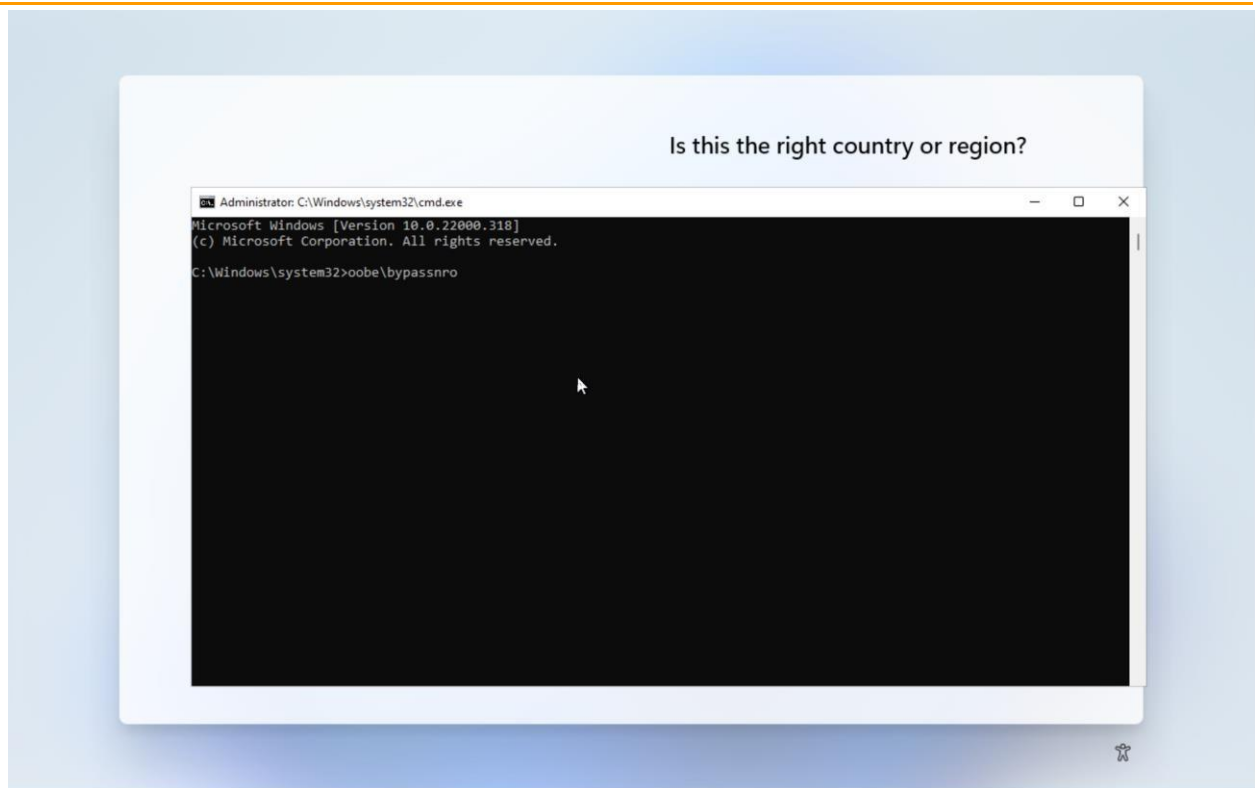
Open cmd with **Shift + F10** and type **OOBE\BYPASSNRO**. Your computer will restart and now no need to have the internet to set up Windows 11.

Background: Windows 11 requires an internet connection to finish the initial setup (out-of-box experience (**OOBE**)). If the setup detects that the device doesn't have a network connection, you'll land on the "Oops, you've lost internet connection" page.

Step 11: Customize the region
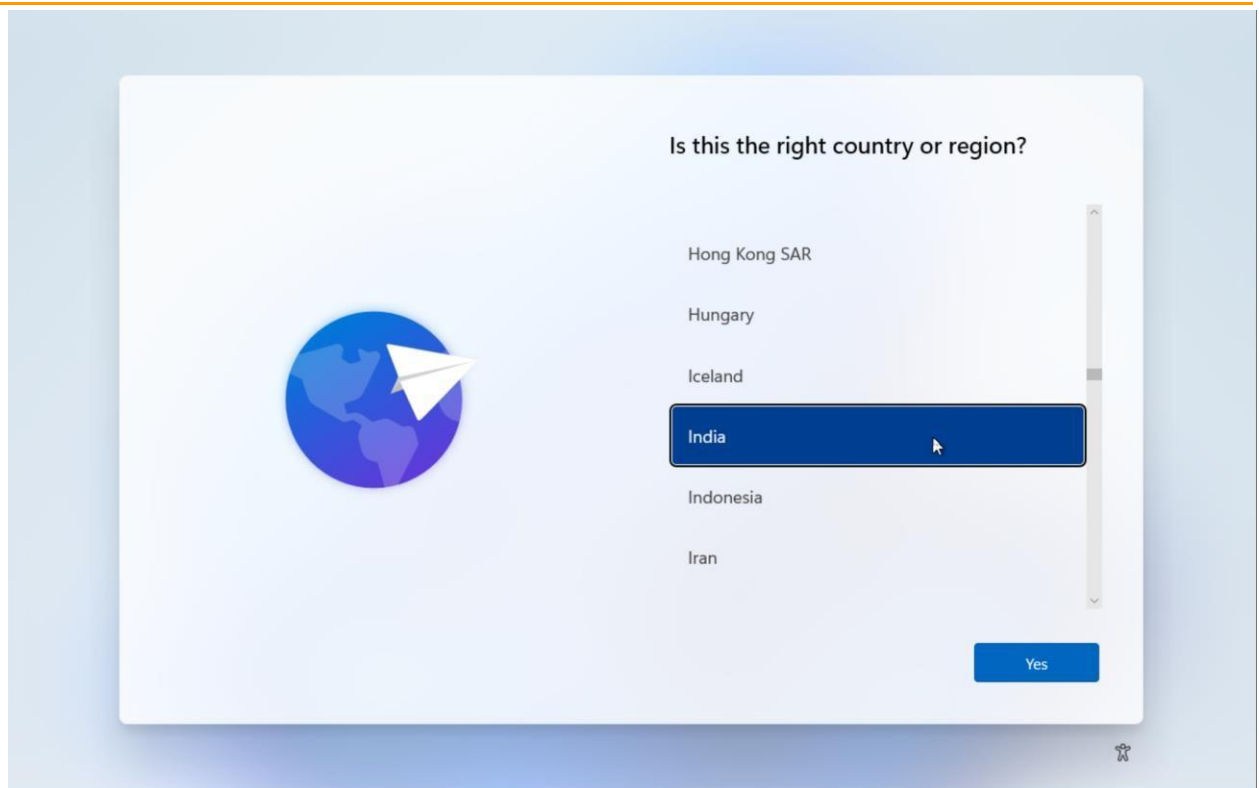
You will be invited to customize your Windows 11 settings. First of all, customize your country or region.

Step 12: Keyboard layouts
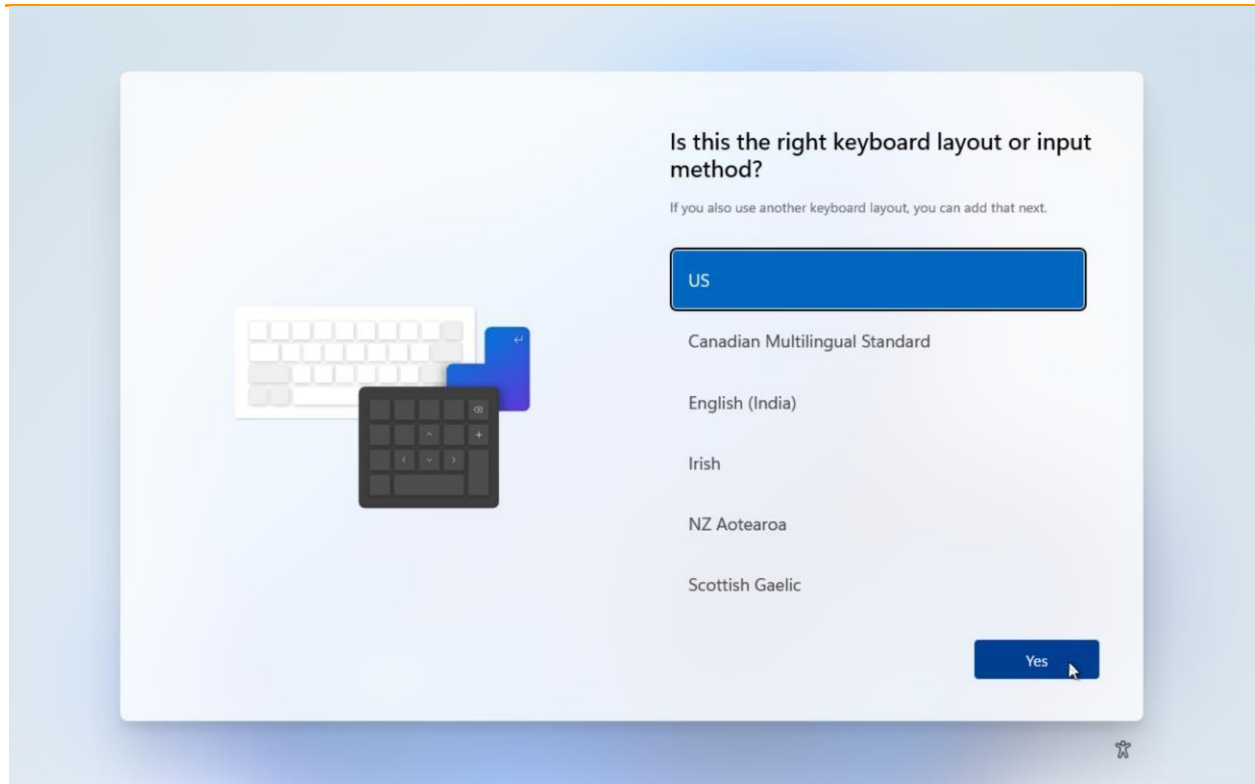
Choose your Windows 11 keyboard layout and input method.

Step 13: Adding Additional layouts
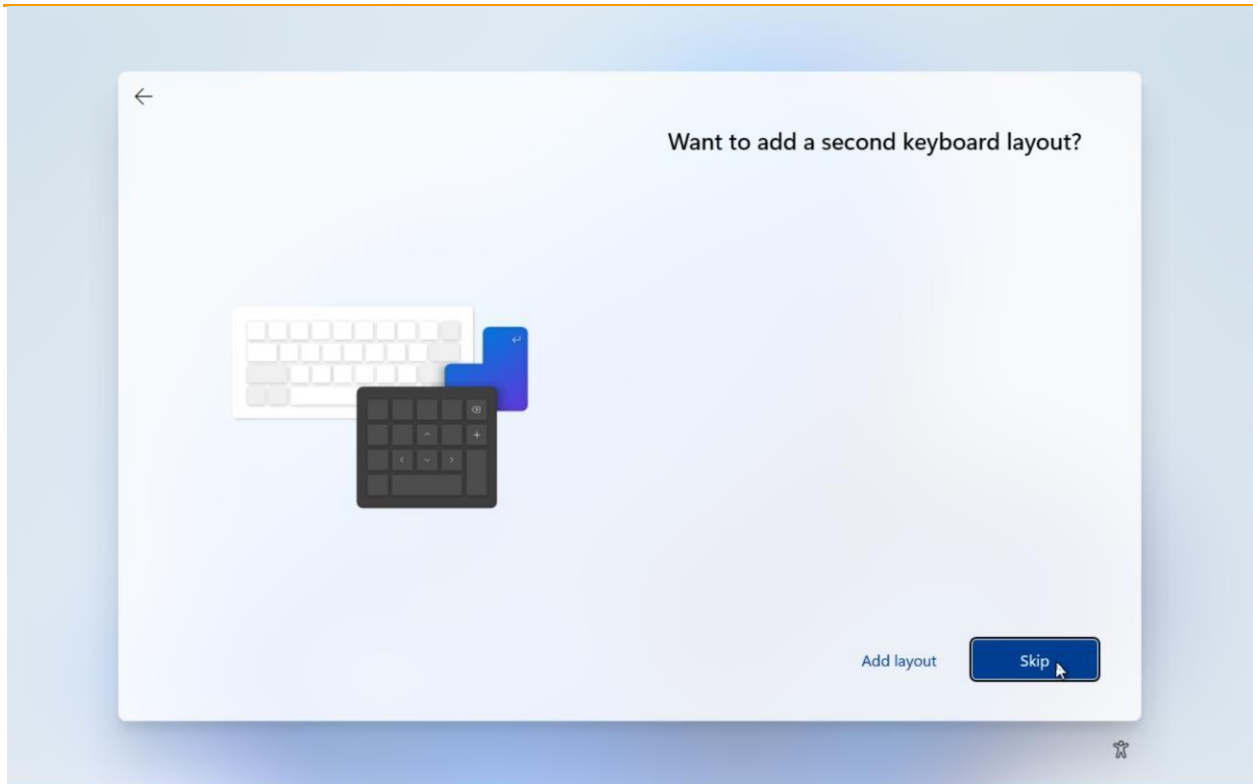
Decide whether you want a second keyboard layout in Windows 11 or not.

Step 14: Adding Network
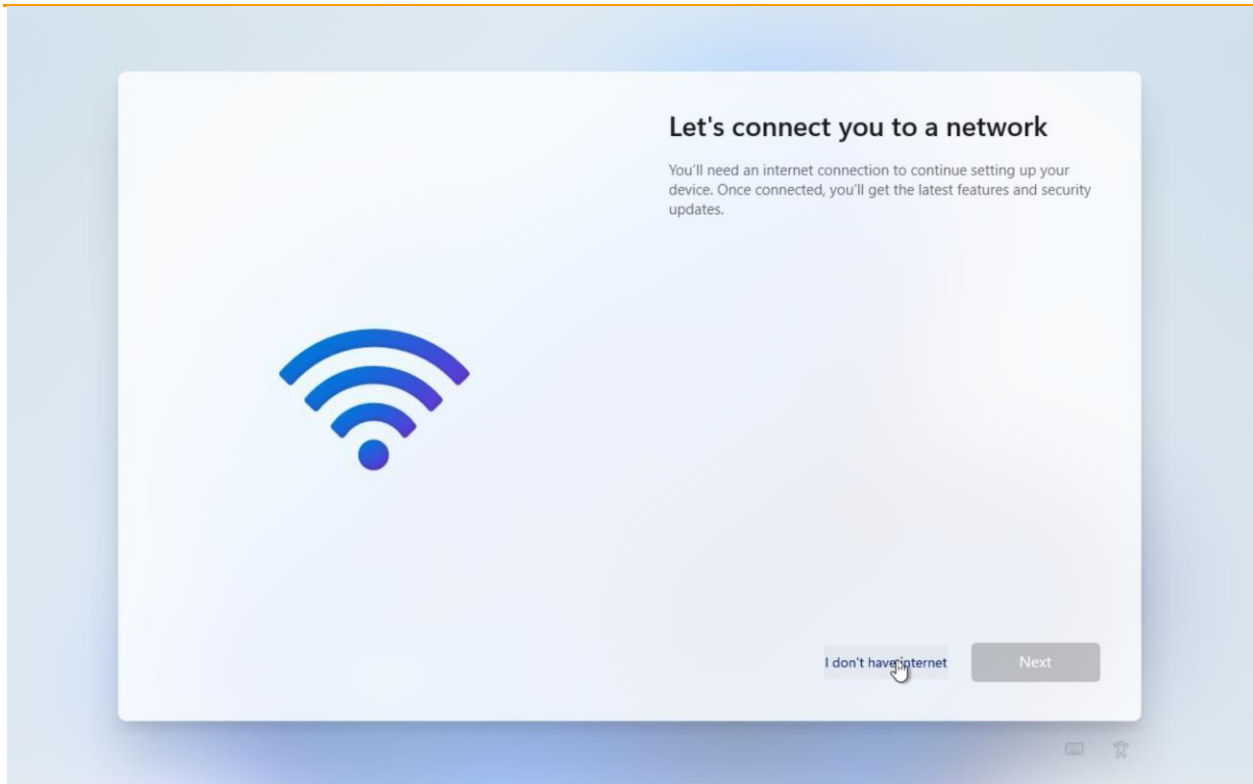
Select the **"I don't have Internet"** option.

Step 15: Microsoft Sign-in
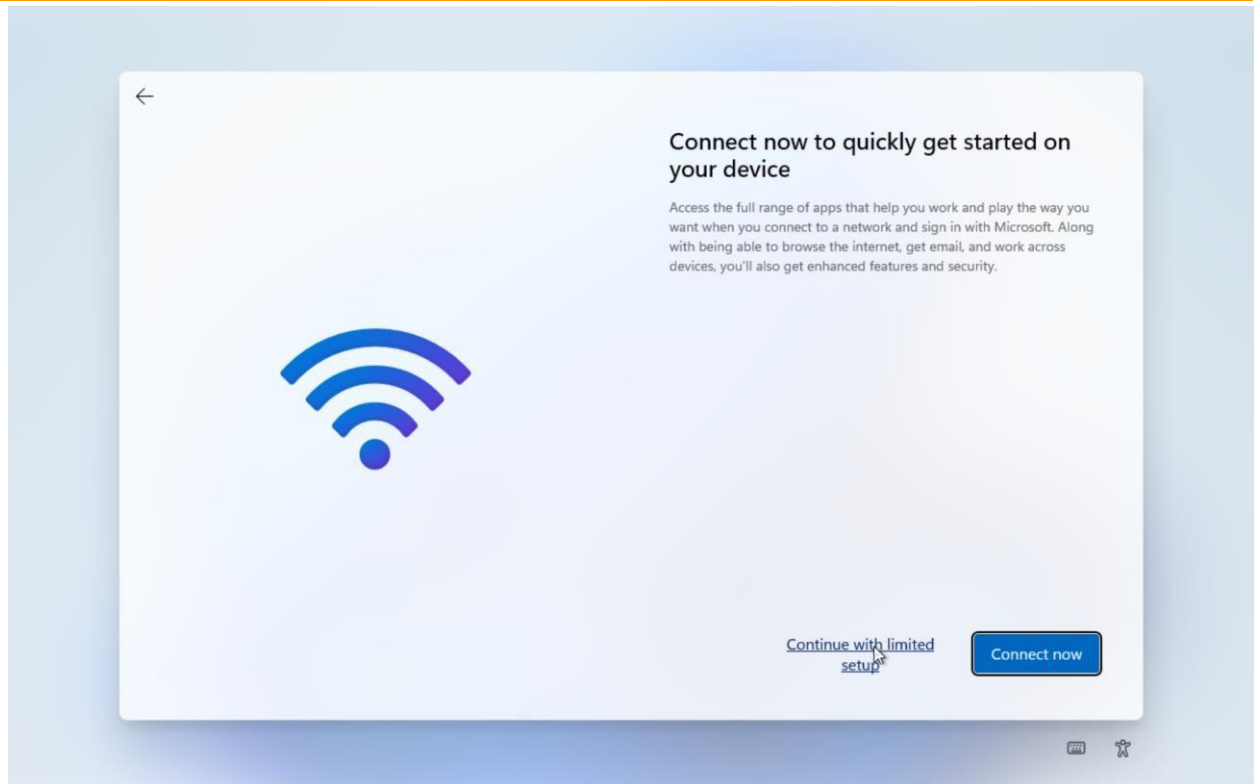
Select the <u>Continue with limited setup</u> option to set up Win 11 without connecting to Microsoft Account.
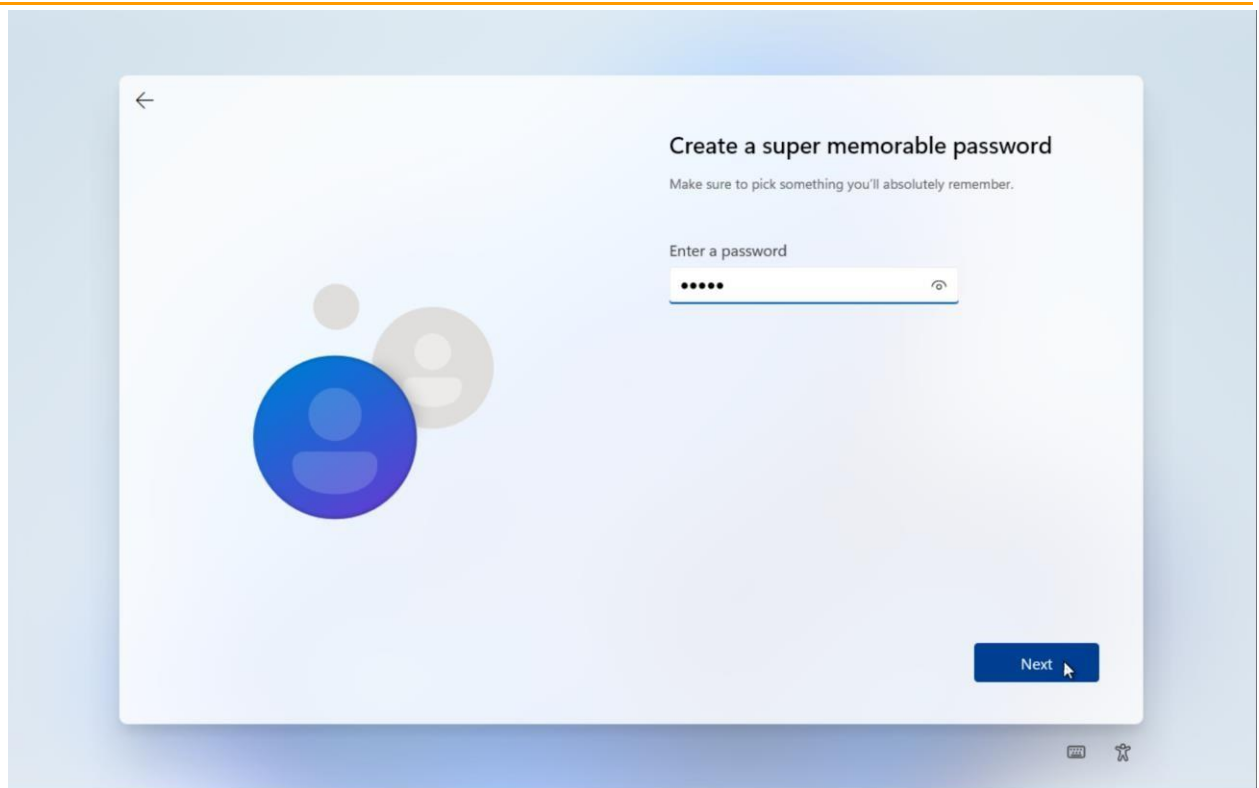
Step 16: Creating Admin User
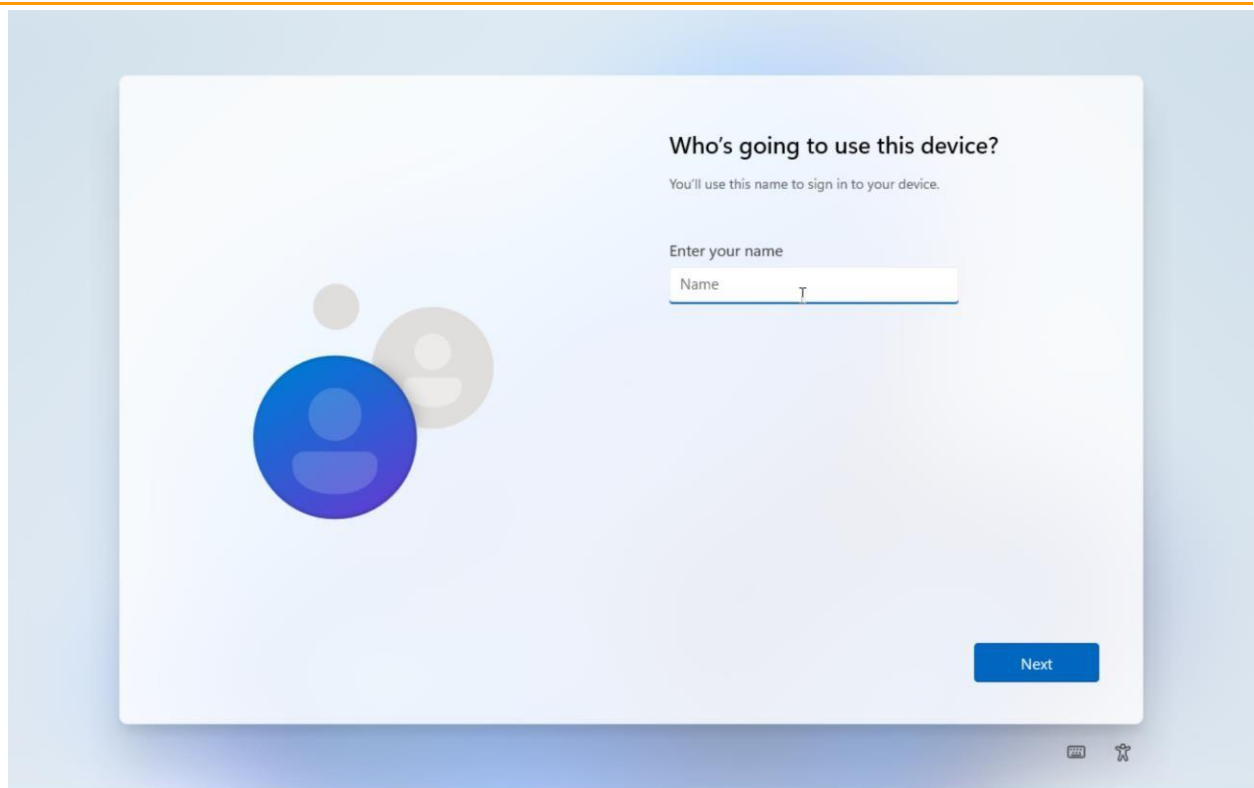
Username: <u>admin</u>

<u>Background</u>: The first user will automatically have Administrator privileges. This user account will be used for maintenance activities (installing software, changing Windows system settings, etc). Do <u>not</u> use the Administrator account for regular usage. Later on we will create a *Standard User* for regular usage.
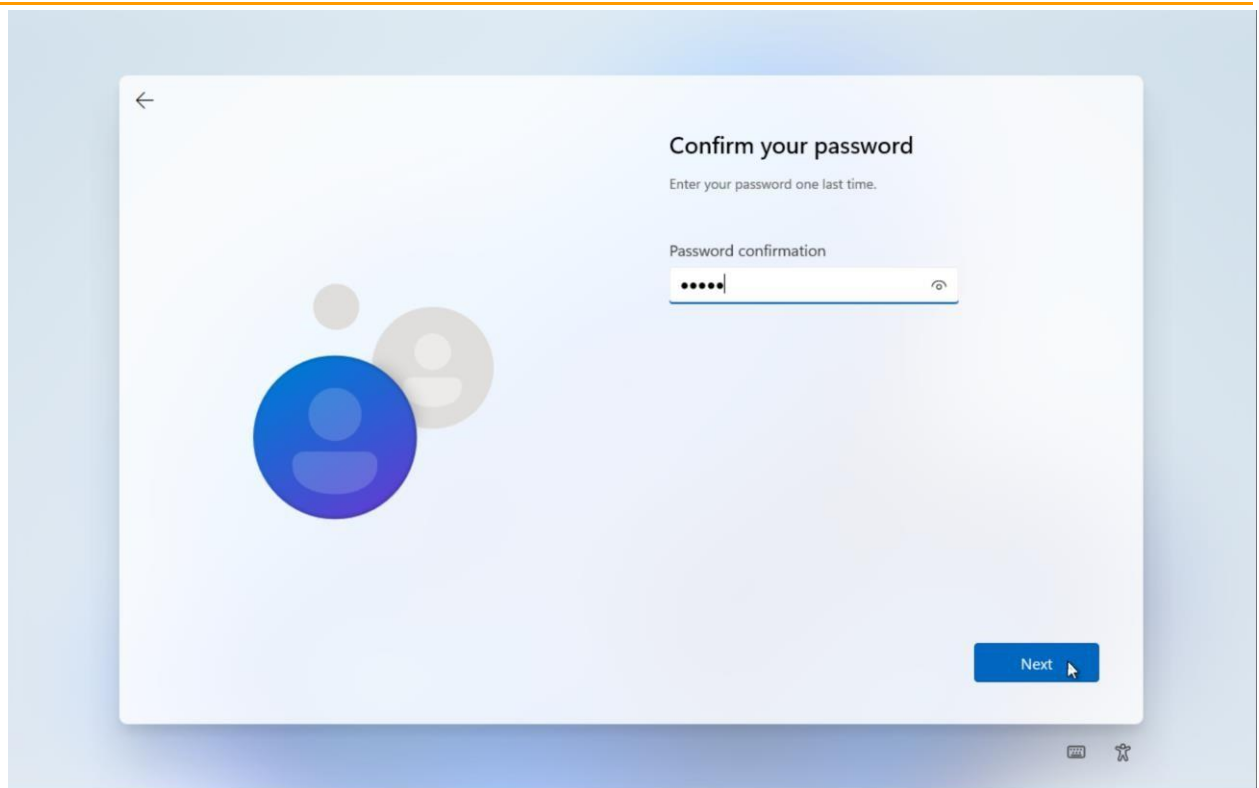
Step 17: Creating user password

Enter password for <u>admin</u>.

Step 18: Confirm user password

Confirm your password for <u>admin</u>.

Step 19: Adding security questions

Choose and answer your security questions, and then click <u>Next</u>

<u>Background</u>: You do need to set up all three questions with answers, that will help you recover your account in case you forget the password.
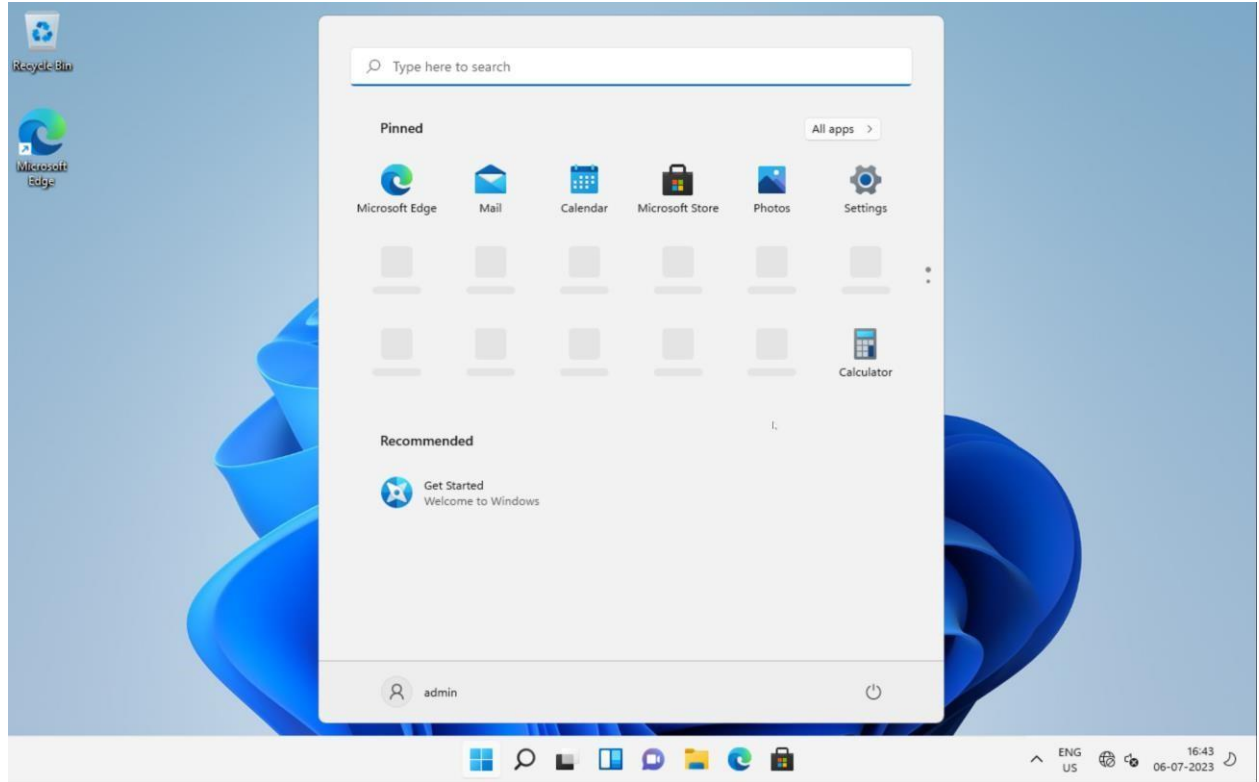
Step 20: Privacy settings
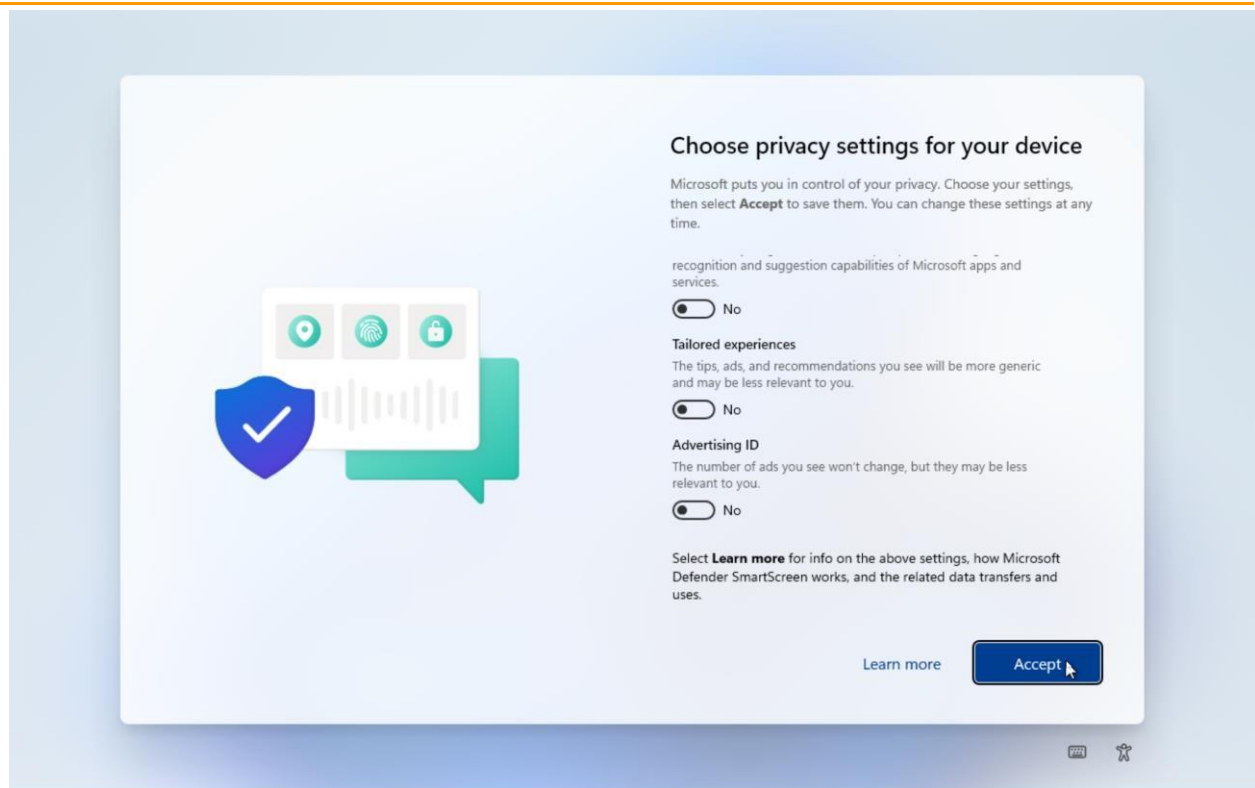
You should disable everything that's possible at this step and click <u>Accept</u>

Step 21: Almost Done

After a few moments and a couple of different screens you'll be greeted with the familiar Windows 11 desktop for the first time.

Step 22: Setup complete

That's it. You've successfully installed Windows 11 on your new computer.

Step 23: Enabling updates for Microsoft products
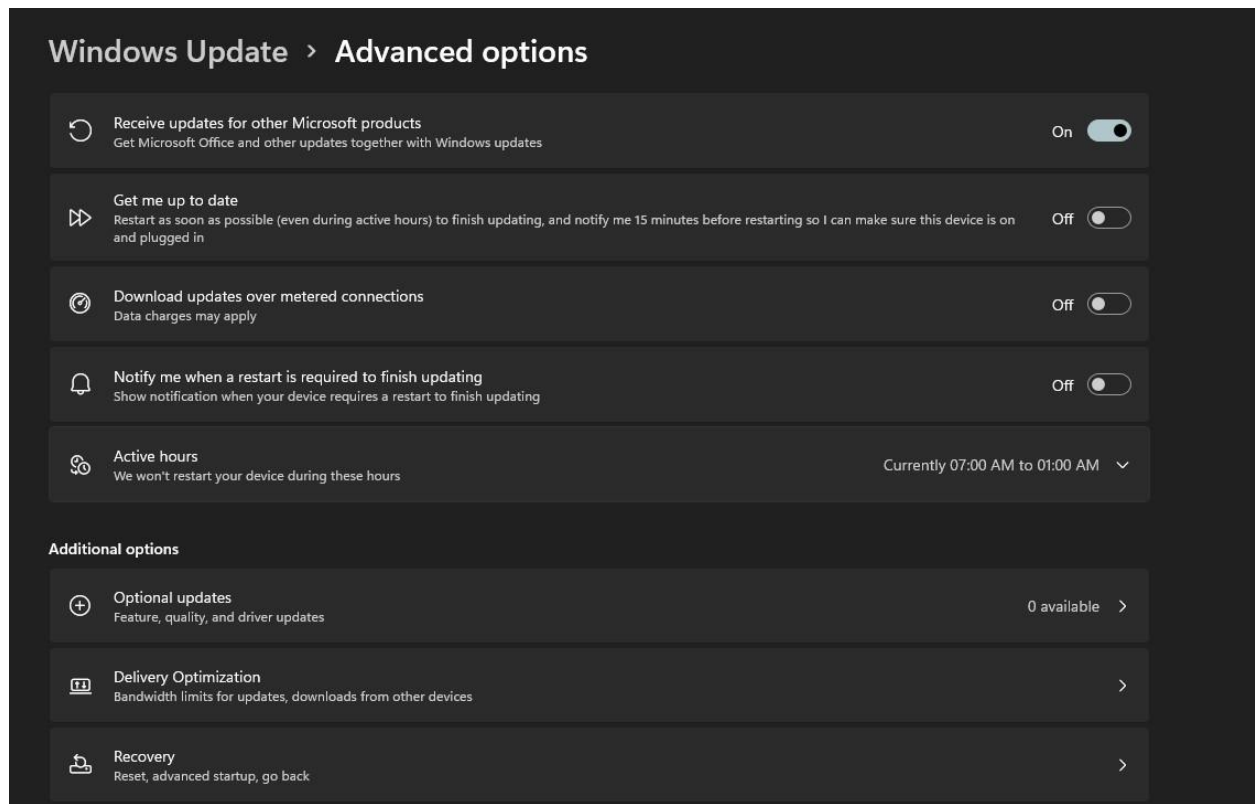
To receive updates from all microsoft products, Enable the "Receive updates for other microsoft products" in **Settings > Windows Update > Advanced options** section.

Step 24: Update Windows
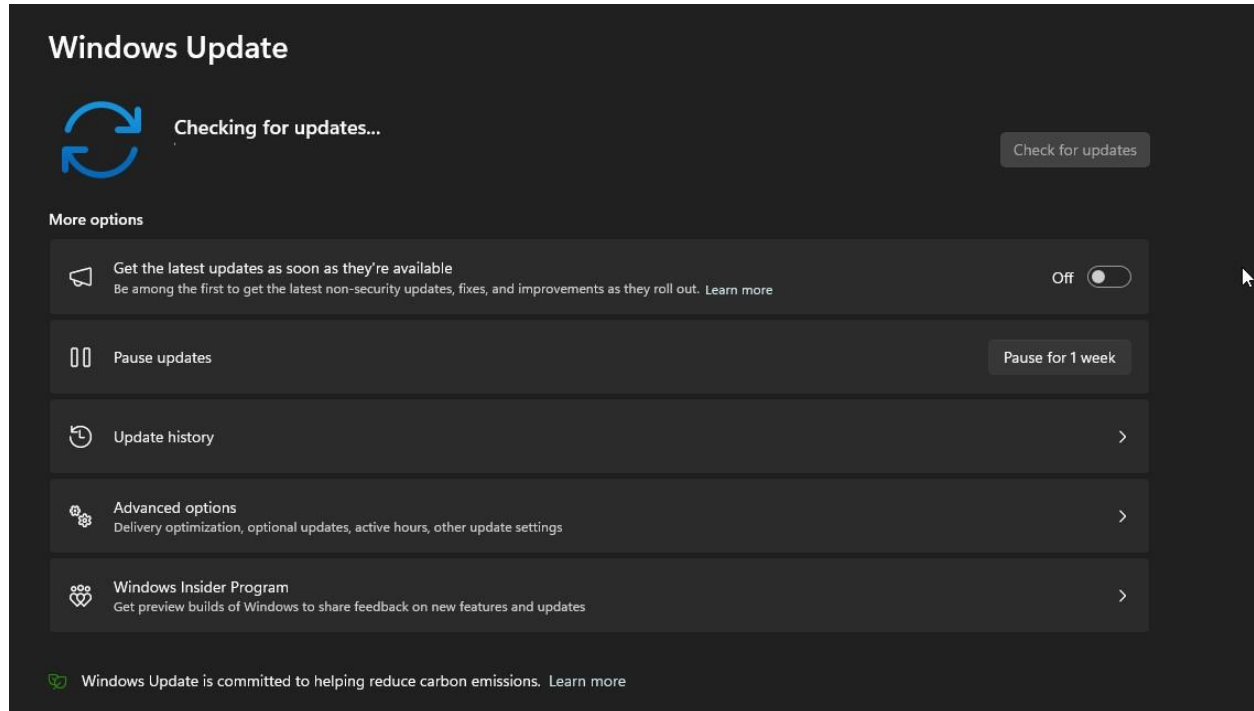
Goto **Start > Settings > Windows Update** and select "Check for updates". Check for available updates and install them accordingly. The computer may restart several times during the process. Continue checking for updates until none are found.

Note: If the Wi-Fi driver is not installed on your computer, you can still establish an internet connection using USB tethering with your mobile device.

1. Connect your mobile device to your computer using a USB cable
2. Enable USB tethering in the device settings. This will allow your computer to access the internet through your mobile device.
3. Proceed with the initial Windows update, and Windows will automatically install the required Wi-Fi driver during the update process.
4. Once the driver is installed, you can switch to a wireless network connection if available

Background: Windows Update is to provide regular software updates, security patches, and driver updates for Microsoft Windows operating systems. It ensures system stability, enhances performance, adds new features, and protects against security vulnerabilities, keeping your computer up to date and secure.

Annexure 2: Creating a Standard User

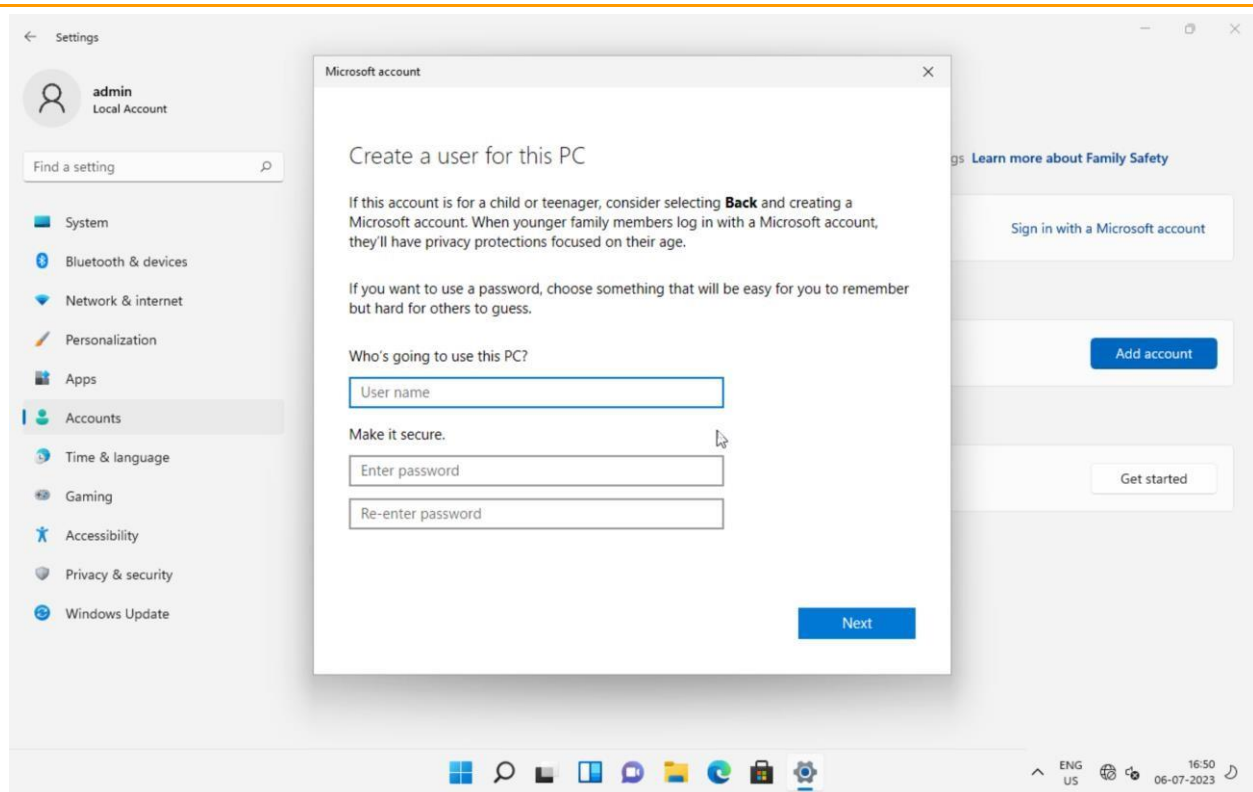The Administrator user created during Win11 installation must not be used for regular tasks.

For regular Windows usage, a standard user with limited privileges must be created using the below steps.
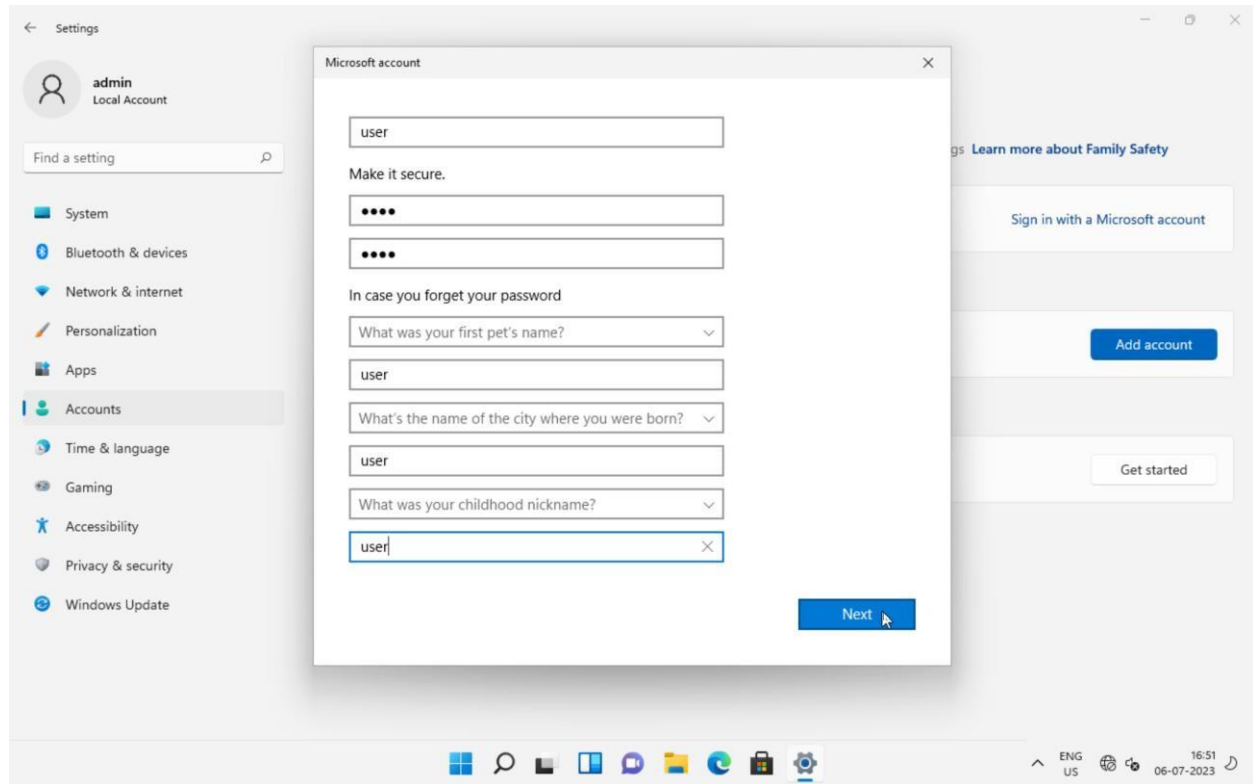
Step 1: Add standard user
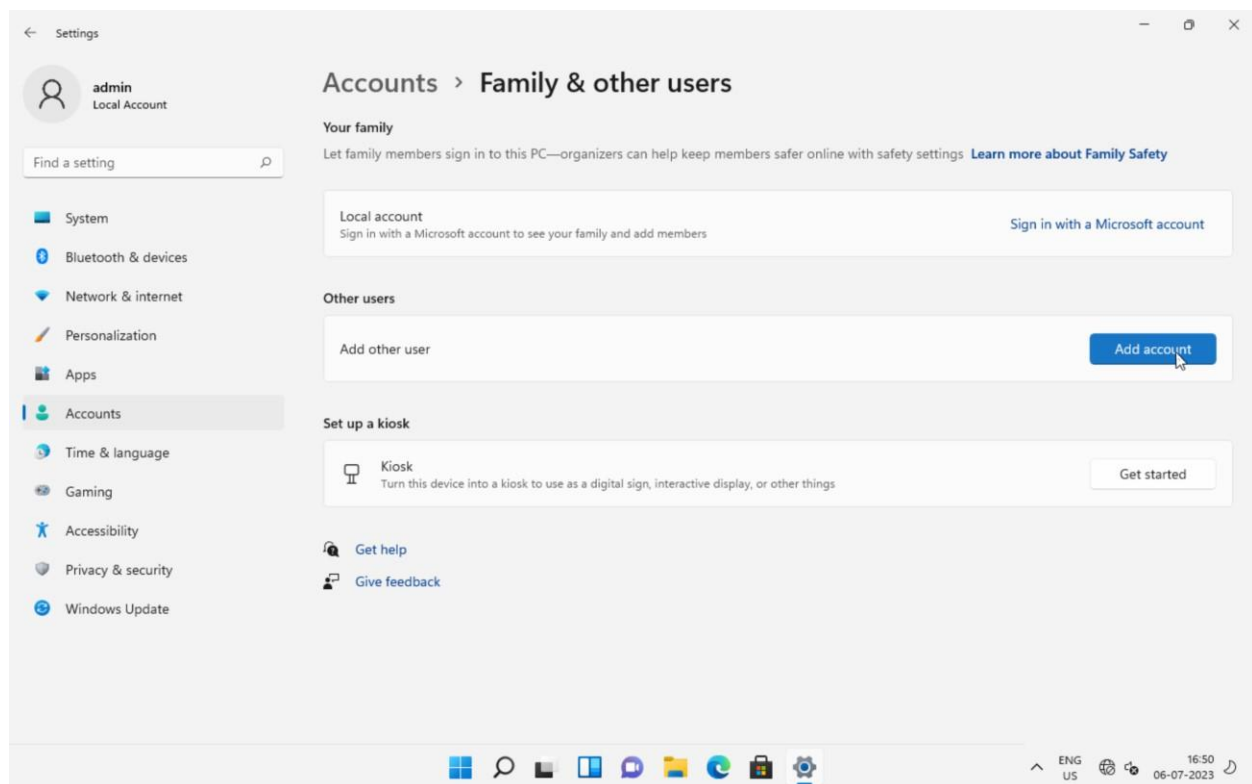
Select **Start > Settings > Accounts > Family & other users** and then select "Add account" under other users.

Step 2: Adding user credentials

Create a Windows 11 standard account by confirming a name and password.

Step 3: Adding security questions

Configure the security questions to recover the account if the password is lost and click the
<u>Next</u> button.

Step 4: Login as standard user
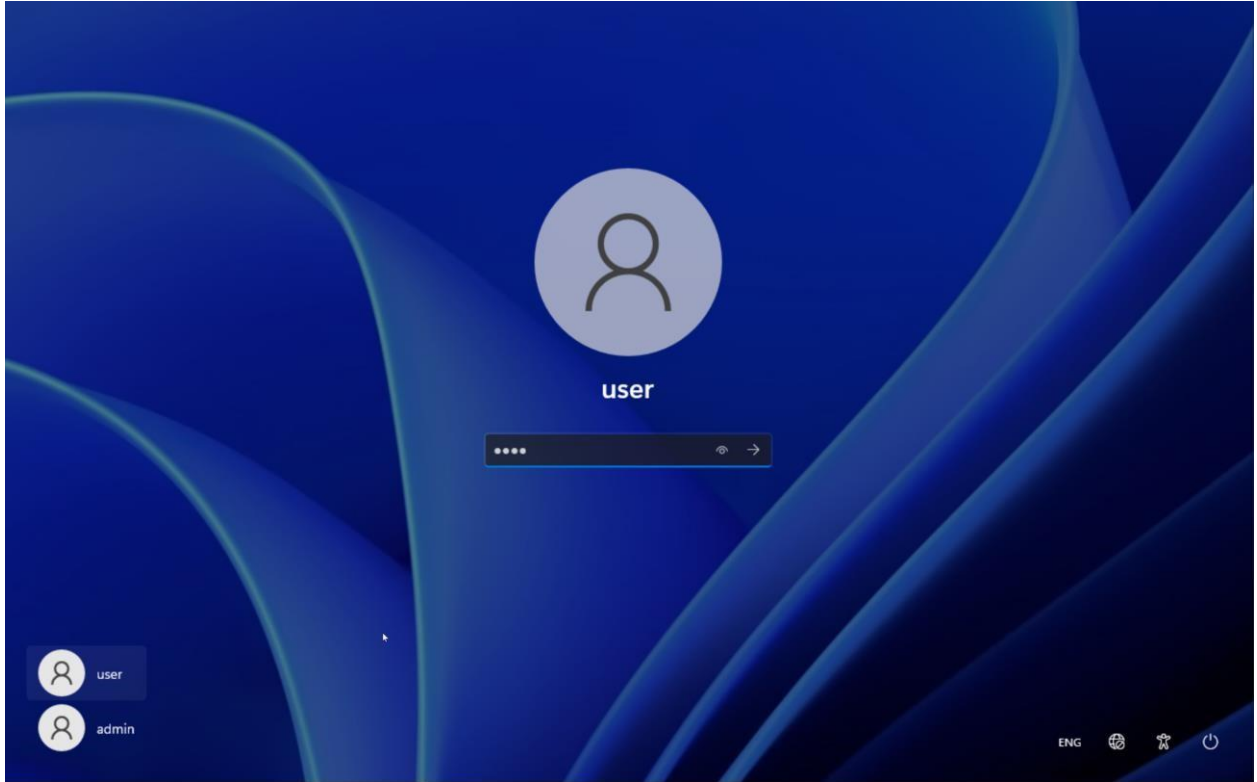
Now, Login with a standard account for regular Windows usage.

Note: Administrator account is used only to install softwares, troubleshoot problems and manage system settings.