💻 Dual Boot Setup Guide: Windows 10, Windows 11, and Ubuntu via Ventoy

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📋 Overview

This guide walks you through creating a multiboot USB using **Ventoy**, installing **Windows 10**, **Windows 11 (with TPM/CPU bypass)**, and **Ubuntu Linux** in a dual-boot setup. It includes BIOS setup, manual partitioning, and troubleshooting tips.

💡 *Back up important data before proceeding with a dual-boot installation.*

🔧 Requirements

- 1 USB drive (16GB minimum) — `/dev/sdb` assumed in guide
- Ventoy installed on USB
- Windows 10 ISO: `Win10_22H2_EnglishInternational_x64v1.iso`
- Windows 11 ISO: `Win11_EnglishInternational.iso`
- Ubuntu ISO: `ubuntu-22.04.4-desktop-amd64.iso`
- PC with BIOS/UEFI access

🧰 Step 1: Prepare Ventoy USB

⚠️ **Double-check `/dev/sdb` is your USB! This command will erase the drive.**

```
wget https://github.com/ventoy/Ventoy/releases/download/v1.0.96/ventoy-1.0.96-linux.tar.gz
tar -xzvf ventoy-1.0.96-linux.tar.gz
cd ventoy-1.0.96
sudo ./Ventoy2Disk.sh -i /dev/sdb
```

📥 Step 2: Download and Copy ISOs to Ventoy USB

```
cp ~/Downloads/Win10_22H2_EnglishInternational_x64v1.iso /mnt/ventoy
cp ~/Downloads/Win11_EnglishInternational.iso /mnt/ventoy
cp ~/Downloads/ubuntu-22.04.4-desktop-amd64.iso /mnt/ventoy
```

💡 *Optional: Verify ISO checksum with `sha256sum` to avoid corrupted installs.*

🪛 Step 3: Install Windows 10 (First OS)

1. Boot from Ventoy USB
2. Select Windows 10 ISO
3. Use **Custom Install**
4. Delete existing partitions
5. Create:
    - **100GB Primary Partition** for Windows 10
    - Leave **Unallocated Space** for Ubuntu

🪟 Step 4: Install Windows 11 (Optional Dual-Boot with Bypass)

1. Boot from Ventoy USB
2. Select Windows 11 ISO
3. On unsupported hardware, press `Shift+F10` during install
4. Bypass TPM/CPU check:

```
regedit
```

Add the following in Registry Editor:

```
HKEY_LOCAL_MACHINE\SYSTEM\Setup
  → Create Key: LabConfig
  → Inside LabConfig, create DWORD (32-bit) values:
     BypassTPMCheck = 1
     BypassSecureBootCheck = 1
     BypassCPUCheck = 1
```

5. Restart the setup and continue installation

🐧 Step 5: Install Ubuntu on Remaining Space

1. Boot from Ventoy USB
2. Select Ubuntu ISO
3. Choose `Try Ubuntu` to load live desktop
4. Open terminal and launch GParted:

```
sudo gparted
```

5. Partition remaining space:
    - 1GB Linux swap partition (Type: `linux-swap`)

- Remaining space as ext4 (mount point: `/`)

6. Launch installer and choose `Something Else`
    - Set root partition (`/`) to ext4
    - Set swap partition
    - Install bootloader to `/dev/sda`

🖼️ Partition Layout Diagram

Partition	Size	Type	Use
/dev/sda1	100MB	EFI System	Boot Manager (Windows/GRUB)
/dev/sda2	100GB	NTFS	Windows 10
/dev/sda3	80GB	NTFS	Windows 11 (optional)
/dev/sda4	1GB	linux-swap	Ubuntu Swap
/dev/sda5	Remaining	ext4	Ubuntu Root `/`

⚙️ Step 6: Post-Install: GRUB Fix + OS Default

Boot into Ubuntu and run:

```
sudo update-grub
sudo grub-install /dev/sda
```

Edit GRUB config:

```
sudo nano /etc/default/grub
```

To set Windows as default:

```
GRUB_DEFAULT="Windows Boot Manager (on /dev/sda2)"
```

Or use:

```
GRUB_DEFAULT=saved
GRUB_SAVEDEFAULT=true
```

Then run:

```
sudo update-grub
```

🧰 Optional Tuning

- Change BIOS boot order to boot from Ubuntu first
- Use `Startup Applications` in Ubuntu to enable auto-login or disable unnecessary apps

- Run Ubuntu Updates:

```
sudo apt update && sudo apt upgrade
```

🧯 Troubleshooting Appendix

GRUB Not Showing After Ubuntu Install

```
sudo grub-install /dev/sda
sudo update-grub
```

Can't Boot USB (Ventoy not loading)

- Try reformatting USB and reinstalling Ventoy
- Ensure USB is set as first boot device in BIOS

Windows 11 TPM/CPU Bypass Didn't Work

- Ensure correct registry keys were added under `LabConfig`
- Double-check spelling and DWORD (32-bit) format

Ubuntu Install Crashes or Freezes

- Use `nomodeset` boot parameter in GRUB to disable GPU drivers

📸 Photos & Screenshots (See Appendices)

All referenced steps are visually supported with attached installation images, BIOS screenshots, partition layout, and Ventoy interface photos.

✅ Final Notes

You now have a full **multiboot USB** and a **custom dual-boot system** running Windows and Ubuntu! This process helps you:

- Avoid multiple USBs
- Skip TPM/CPU checks for Win11
- Use Linux alongside Windows for development, IT, or learning purposes.

🧠 *Document compiled by Tom Kemp*

🗂️ PDF version includes all commands, images, and instructions for offline reference.