# Windows

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| **Windows 11 ARM on Orange Pi 5** | **How-to install the latest Windows 11 ARM image on an Orange Pi.** |

This guide describes how to install the latest Windows 11 ARM image on an Orange Pi 5.

# Hardware Requirements

- Orange Pi 5 (OPi5) and newer devices support ARMv8.2 Windows 11 requires ARMv8.1 As of June 2024, Orange Pi 5 Pro is not supported
- USB hub (uni USB C to USB Hub 4 Ports) USB hub is requires as only the vertical USB-A ports will work for keyboard and mouse. Any USB hub may work, this is just want I had.
- USB-C to USB-A adapter for hub
- NVMe drive (SABRENT 1TB Rocket NVMe PCIe M.2 2242) Must be NVMe M.2. Some NVMe drives do not have driver support. All M.2 SATA drives do not have driver support.
- M.2 SSD Screw Set
- USB keyboard and mouse

# Install UEFI firmware to SPI NOR flash

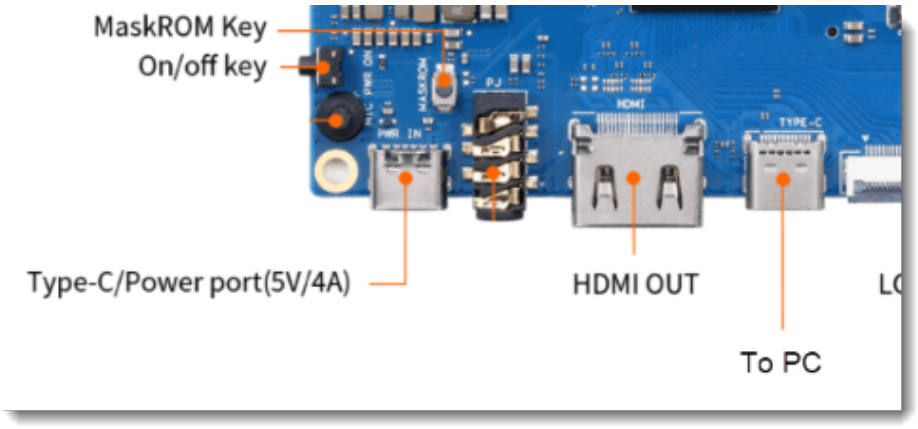
Reference: https://wiki.radxa.com/Rock5/install/spi (section 4, option 2)

- Download rkdevtools and install driver
  - https://wiki.radxa.com/Rock5/install/rockchip-flash-tools
- Download latest EDK2 UEFI firmware for Orange Pi 5 0.9.1 does not support built-in GMAC ethernet, use a newer build.
- Open https://github.com/edk2-porting/edk2-rk3588/actions/workflows/build.yml
- Sign in to GitHub
- Select latest successful build
- Download orangepi-5 UEFI Debug image
- Extract download

**Write firmware**

- Open RKDevTool as Administrator
- Right-click and select Load Config
  - Select rock-5b-spinor.cfg
  - Click empty box under ... to select file
    - Rk3588_spl_loader.bin for Loader

    - Orangepi-5_UEFI.img for Image
    - Check Write by Address
    - Connect OPi5 from USB-C port to PC
- Hold down MARKROM button and connect USB-C power, wait a few seconds and release button




- Status in RKDevTool should change from No Devices Found to Found One MASKROM Device
- Click Run
- Process is done when "Download image OK" is displayed in the logging pane.

OPi5 will restarts by itself and exits MASKROM mode

- Disconnect from PC

# Download Drivers

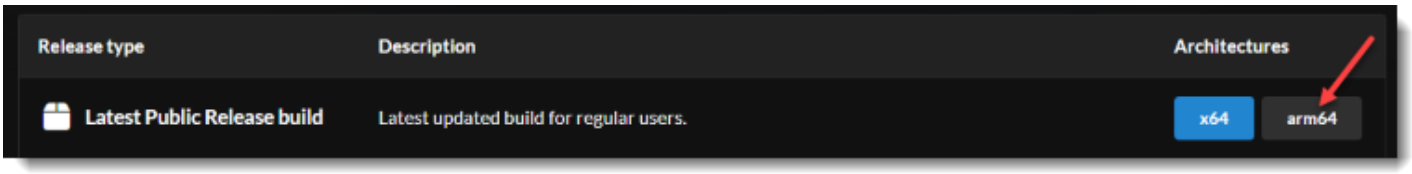
Driver download messages are pinned in the #development channel

- Download and extract RK3588 signed drivers
    - https://discord.com/channels/1082772881735438346/1082848823233216532/1236925998696763392
- Download updated storage driver (pdb, inf, and sys)
    - https://github.com/worproject/Rockchip-Windows-Drivers/tree/storportDriver/drivers/storage
- Download updated USB driver (inf and sys)
    - https://github.com/worproject/Rockchip-Windows-Drivers/tree/master/drivers/usb/usbehci_nointerlocked
- Add updated drivers to rk3588_drivers zip file

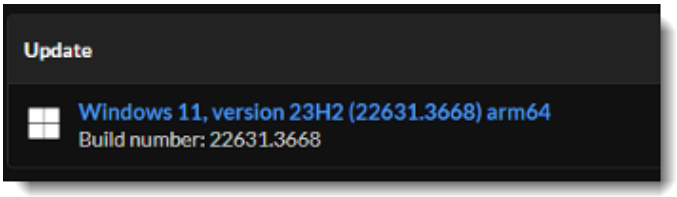
# Download Windows arm64 release package

- Open https://uupdump.net/

- Select arm64 build, typically choose the latest public release build




- Select update




- Choose language and click Next
- Uncheck Windows Home and click Next
- Select Download, add additional editions and convert to ISO
- Check only Windows Enterprise
- Click Create download package file to download package
- Extract package to a folder that does not contain spaces in the path

# Generate Windows ISO

- Run uup_download_windows.cmd
- Wait 60-minutes for files to be downloaded, processed, and ISO generated

# Install Windows onto NVMe Drive

- Download and extract imager

Ignore that it says Raspberry. This was original built for Raspberry Pi devices, but developer has been extended support to Orange Pi devices)

- https://worproject.com/downloads#windows-on-raspberry-imager
- Plug the NVMe drive into your PC
- Run WoR.exe as an Administrator
    - Set wizard mode = Select show all options
    - Select storage device and device type = Raspberry Pi 2/3
    - Select ISO image and Windows Pro build
    - For drivers, select the downloaded rk3588_drivers-v2.zip file

    - For UEFI firmware, leave use the latest firmware. This doesn't really apply to OPi5.
    - Leave defaults for configuration
    - Click Install
    - Wait for the Windows offline install to complete
    - Click Finish

# Windows Setup

- Install NVMe drive into the bottom of your OPi5
- Power-on OPi5
- Wait 30+ minutes for Windows to finish setup

System may be slow while .NET optimization runs

- Disable Windows Search service
- Disable Print Spooler service
- Uninstall all unused apps
- Open Microsoft Store and update all. Might need to be run multiple times
- Configure and run Windows Updates
- Rename device

# Installing and Configuring Hyper-V

- Create C:\Hyper-V folder
- Open Control Panel > Uninstall a program > Turn Windows features on or off
    - Check Hyper-V
    - Uncheck Windows PowerShell 2.0
    - Uncheck Work Folder Client
    - Click OK
- Configure Hyper-V Settings
- Configure Hyper-V external virtual switch

# Thank you

This guide wouldn't have been possible without Mario Bălănică, the developers, and the community that supports the Windows on R project.

- Windows on R Project
- Windows on R Community Discord