// Generic x86-64

Install Home Assistant Operating System

Follow this guide if you want to get started with Home Assistant easily or if you have little to no Linux experience.

Note

Prerequisites

This guide assumes that you have a dedicated Generic x86-64 PC to exclusively run the Home Assistant Operating System.

- This is typically an Intel or AMD-based system.
- The system must be 64-bit capable and be able to boot using UEFI.
  - Most systems produced in the last 10 years support the UEFI boot mode.

Summary

1. First, you will need to configure your Generic x86-64 PC to use UEFI boot mode.
2. Then, write the Home Assistant Operating System disk image to your boot medium.

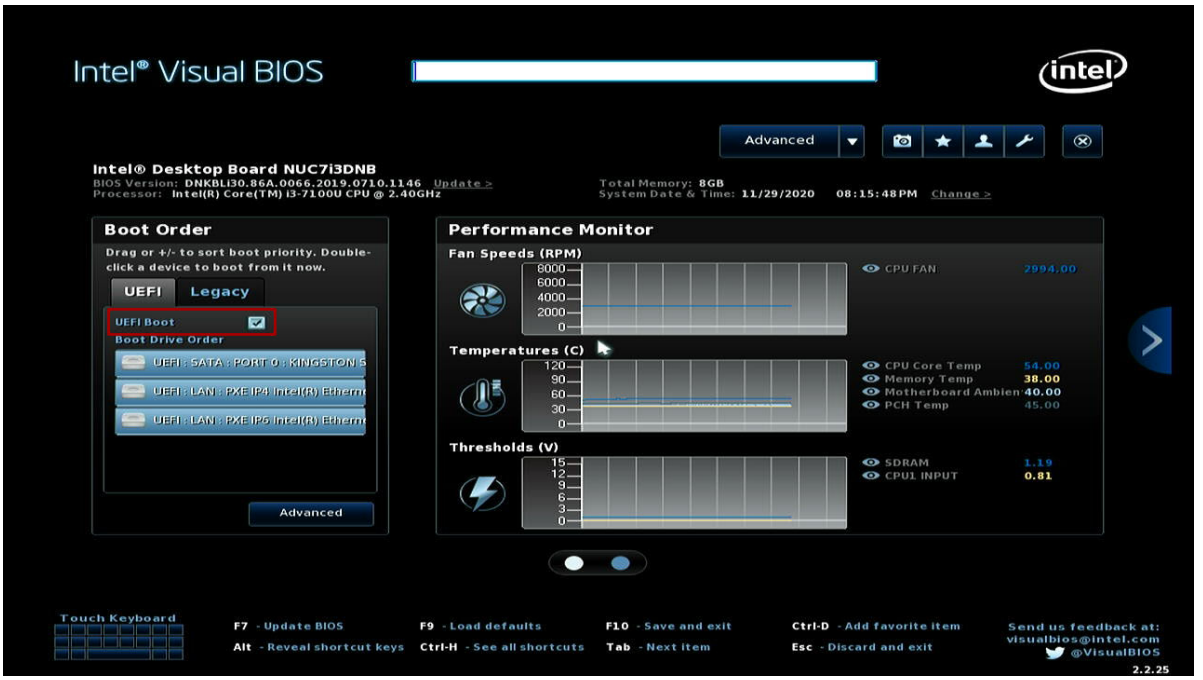
Configure the BIOS on your x86-64 hardware

To boot Home Assistant OS, the BIOS needs to have UEFI boot mode enabled and Secure Boot disabled. The following screenshots are from a 7th generation

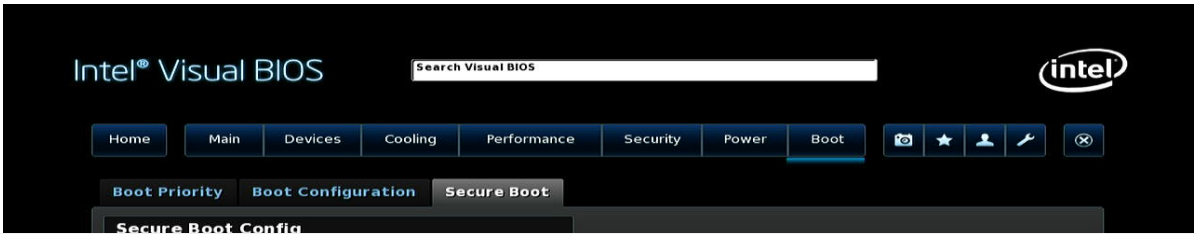
Intel NUC system. The BIOS menu will likely look different on your system. However, the options should still be present and named similarly.

1. To enter the BIOS, start up your x86-64 hardware and repeatedly press the `F2` key (on some systems this might be `Del`, `F1` or `F10`).

2. Make sure the UEFI Boot mode is enabled.



3. Disable Secure Boot.



4. Save your changes and exit.

The BIOS configuration is now complete.

Write HAOS onto your x86-64 hardware

Next, you need to write the Home Assistant Operating System image to the *boot medium*, which is the medium your x86-64 hardware will boot from when it is running Home Assistant.

> **Note**
>
> HAOS has no integrated installer that writes the image automatically. You will write it manually using either the **Disks** utility from Ubuntu or Balena Etcher.

Typically, an internal medium like S-ATA hard disk, S-ATA SSD, M.2 SSD, or a non-removable eMMC is used for the x86-64 boot medium. Alternatively, an external medium can be used such as a USB SDD, though this is not recommended.

To write the HAOS image to the boot medium on your x86-64 hardware, there are 2 different methods:

Method 1 (recommended): Boot Ubuntu from a USB flash drive and install the Home Assistant Operating System from there. It also works on laptops and PCs with internal hard disks.

Method 2: With this method, you write the Home Assistant Operating disk image directly onto a boot medium from your regular computer. The steps are a bit more complex. If you have non-removable internal mediums (for example because you are using a laptop) or do not have the necessary adapter (for example an USB to S-ATA adapter) use method 1 instead.

METHOD 1: INSTALLING HAOS VIA UBUNTU BOOTING FROM A USB FLASH DRIVE

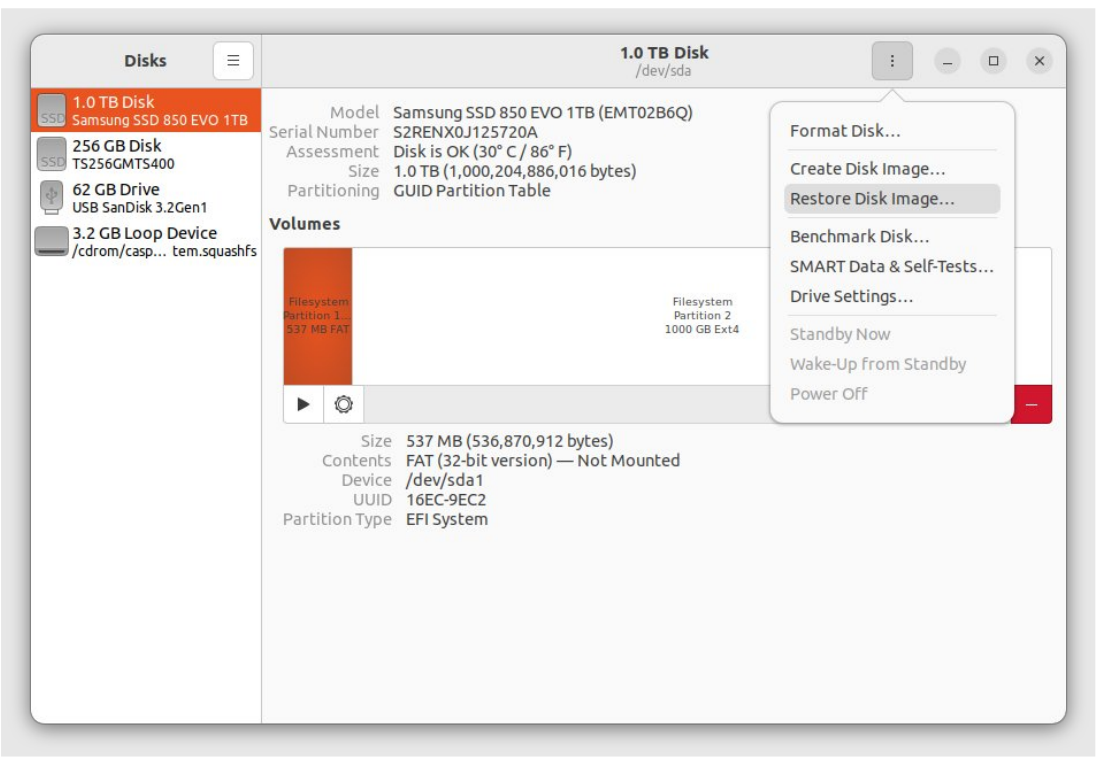
Required material

- Computer
- The target x86-64 hardware, on which you want to install the Home Assistant Operating System (HAOS)
- USB flash drive (USB thumb drive is sufficient, it should be at least 4 GB in size)
- Internet connection

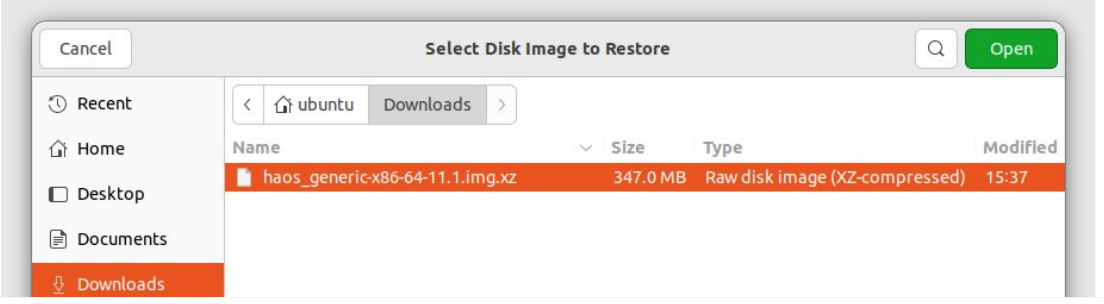
To install HAOS via Ubuntu from a USB flash drive

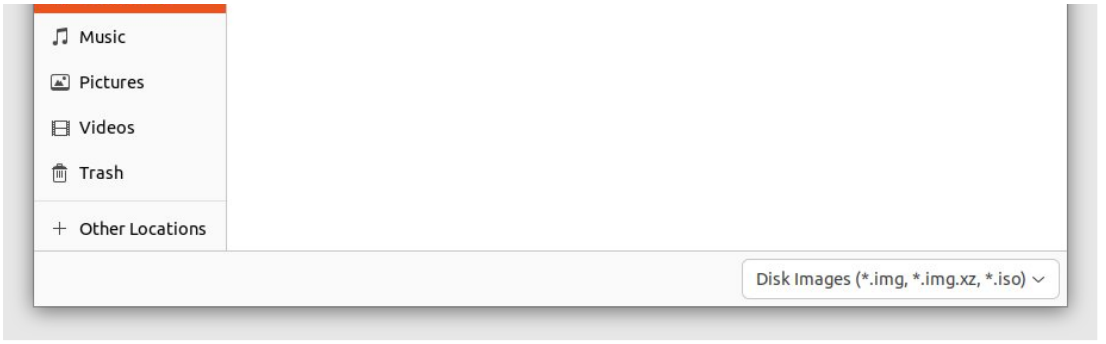
1. **Notice**: This procedure will write the Home Assistant Operating System onto your device.
    - This means you will lose all the data as well as the previously installed operating system.
    - Back up your data before carrying out this procedure.
2. Create a *live operating system* on a USB flash drive:
    - Follow the Ubuntu instructions on writing an Ubuntu iso file onto a USB device.
3. Insert the USB flash drive into the system on which you want to run Home Assistant.
    - Boot the live operating system.
    - You might need to adjust boot order or use F10 (might be a different F-key depending on the BIOS) to select the USB flash drive as boot device.

4. When prompted, make sure to select **Try Ubuntu**. This runs Ubuntu on the USB flash device.
    - The system then starts Ubuntu.
    - Connect your system to your network and make sure it has internet access.
5. In Ubuntu, open a browser and open this procedure.
    - From there, download the image.
6. In Ubuntu, in the bottom left corner, select **Show Applications**.
7. In the applications, search and open **Disks** and start restoring the HOAS image:
    1. In **Disks**, on the left side, select the internal disk device you want to install HAOS onto.
    2. On top of the screen, select the three dots menu and select **Restore Disk Image…**.



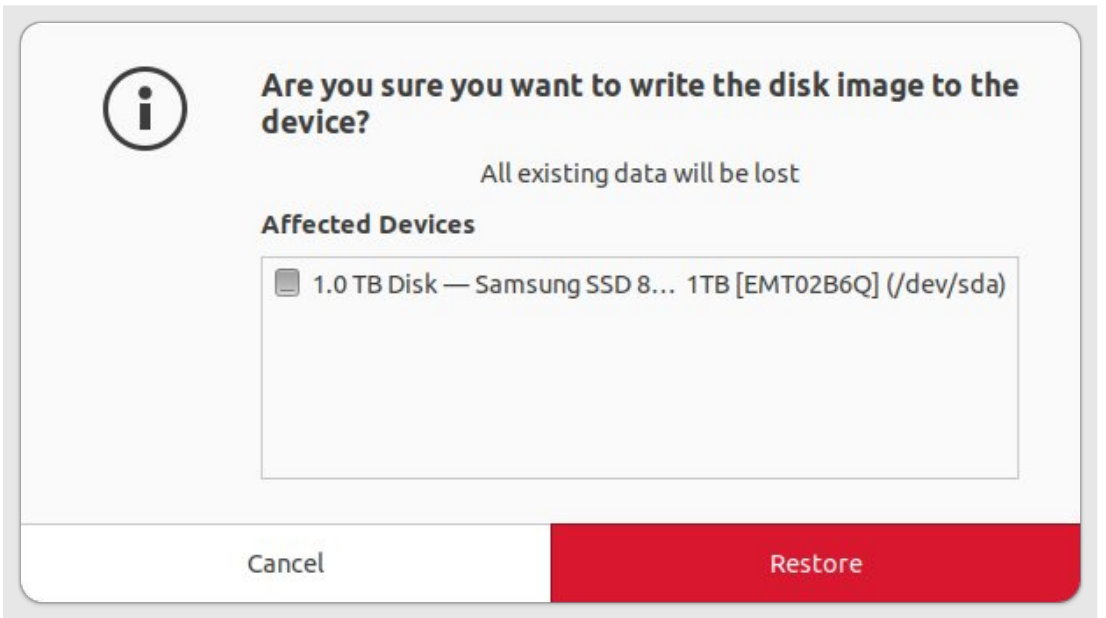
    3. Select the image you just downloaded.





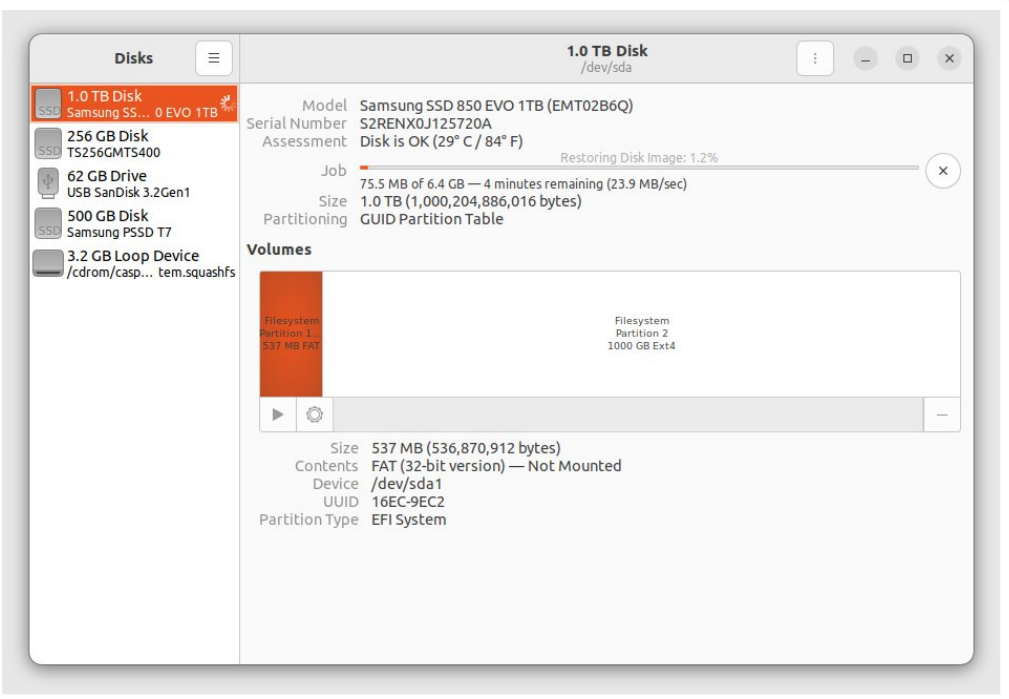
4. Select **Start Restoring…**.

5. Confirm by selecting **Restore**.



- If you are getting an **Error unmounting filesystem** error message, stating that the **target is busy**:
- Most likely, you are running Ubuntu on your internal disk. Instead, you need to run it on your stick.
    - Go back to step 3 and during start up, make sure you select **Try Ubuntu** (and NOT **Install Ubuntu**).

6. In the partitions overview, you should now see the restore operation in progress.
    - The Home Assistant Operating System is now being installed on your system.



8. Once the Home Assistant Operating System is installed, shut down the system.
    - Once Ubuntu has been shut down, remove the USB flash drive (Ubuntu will inform you when this is the case).
    - Your Home Assistant server is now set up and you can start using it.
    - To use it, proceed as described under start up your generic x86-64.

METHOD 2: INSTALLING HAOS DIRECTLY FROM A BOOT MEDIUM

Use this method only if Method 1 does not work for you.

Required material

- Computer
- The target x86-64 hardware, on which you want to install the Home Assistant Operating System (HAOS)
- Boot medium

- Internet connection

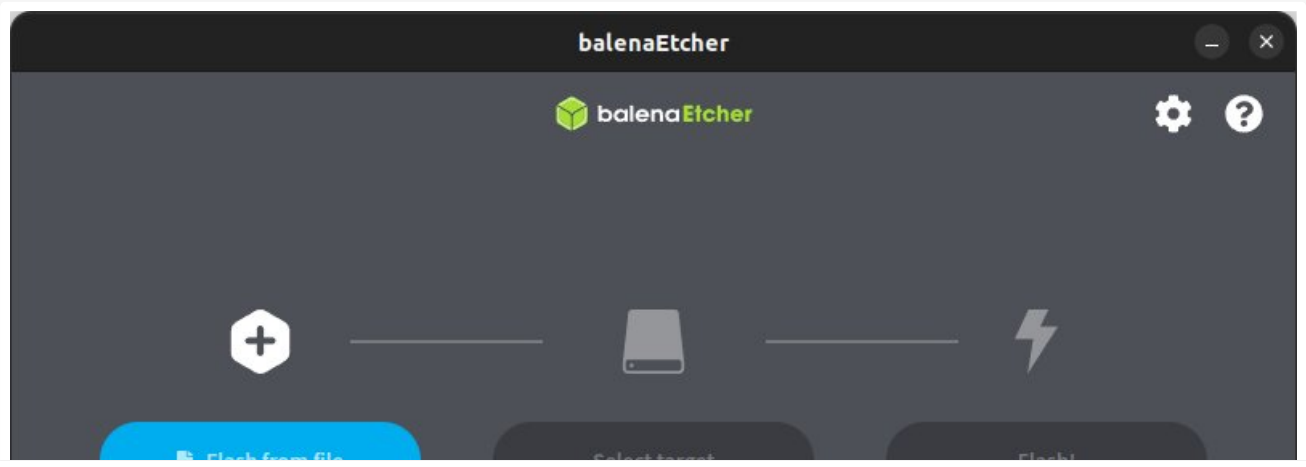
Write the image to your boot medium

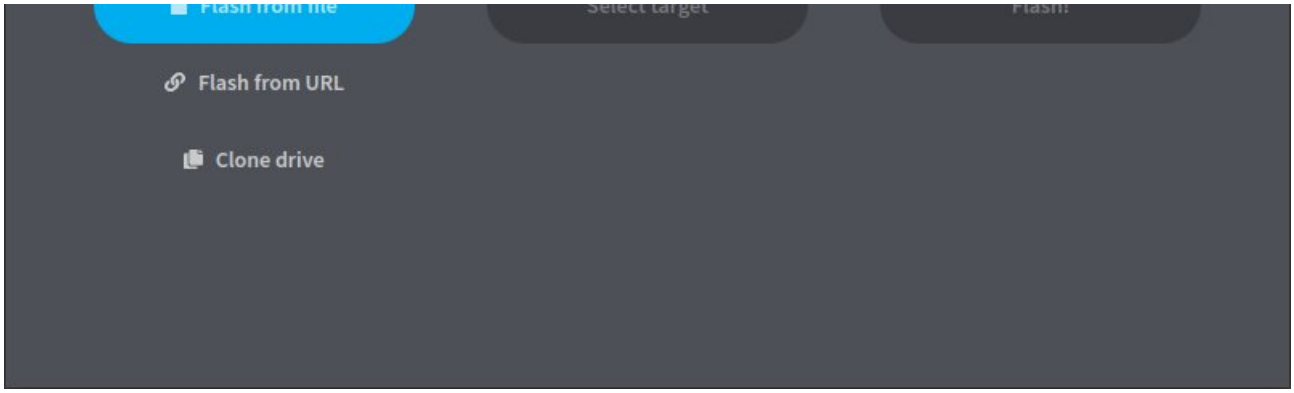
1. **Notice**: This procedure will write the Home Assistant Operating System onto your device.
    - This means you will lose all the data as well as the previously installed operating system.
    - Back up your data before continuing with the next step.
2. Attach the Home Assistant boot medium (storage device) to your computer.
3. Download and start Balena Etcher. You may need to run it with administrator privileges on Windows.
4. Download the image to your computer.
    - Copy the URL for the image.
    - If there are multiple links below, make sure to select the correct link for your version of Generic x86-64.

```
https://github.com/home-assistant/operating-system/releases/download/11.3/haos_generic-x86-64-11.3.img.xz
```

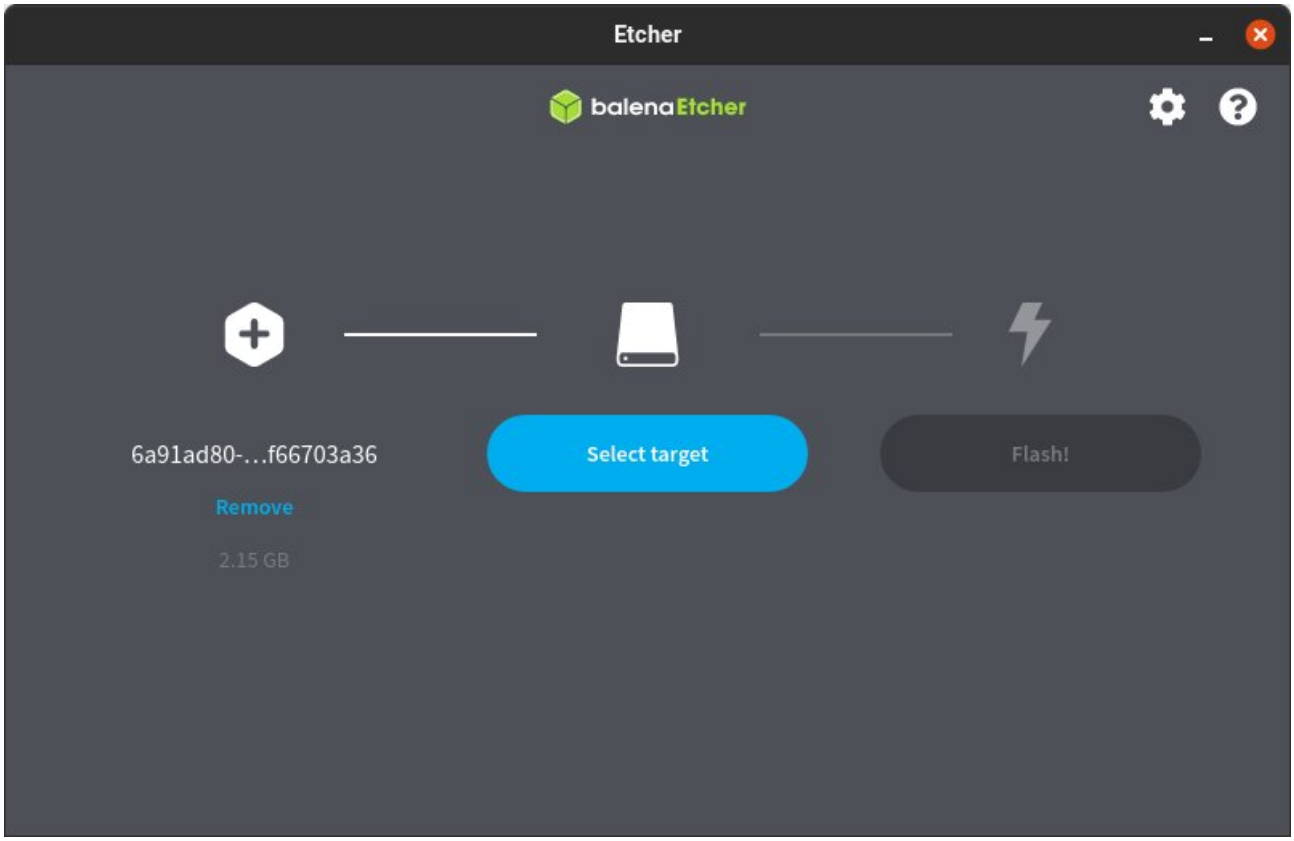
Select and copy the URL or use the “copy” button that appear when you hover it.

5. Paste the URL into your browser to start the download.
6. Select **Flash from file** and select the image you just downloaded.
    - Do not use **Flash from URL**. It does not work on some systems.

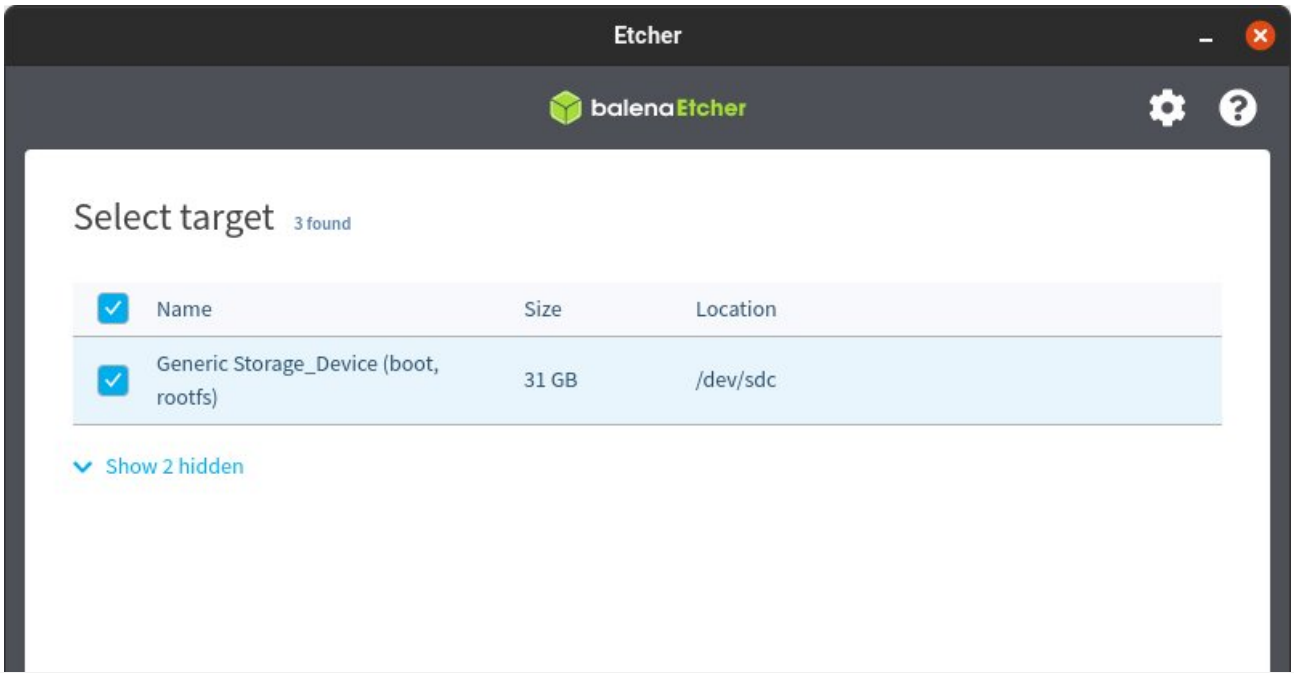


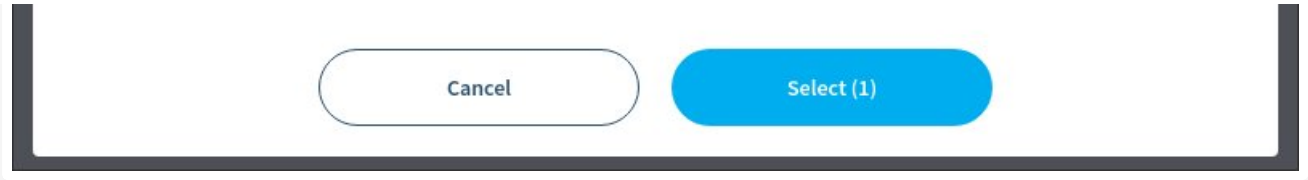


7. **Select target**.



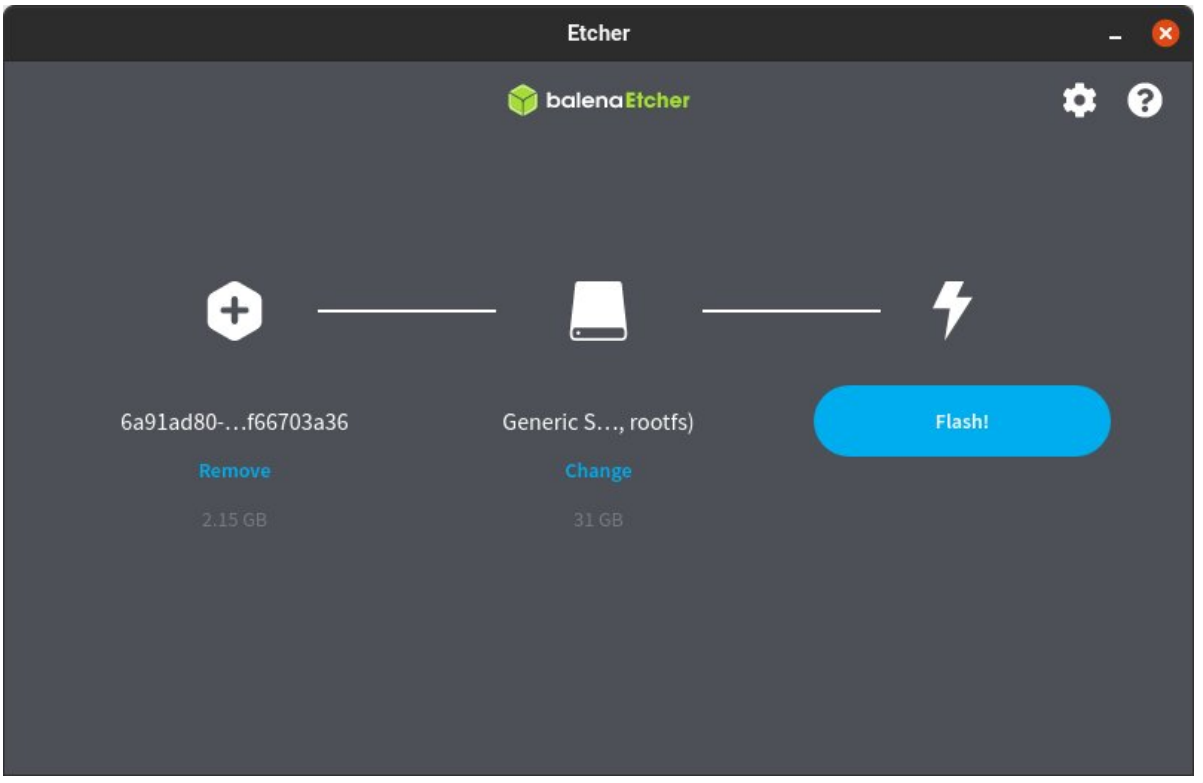
8. Select the boot medium (storage device) you want to use for your installation.



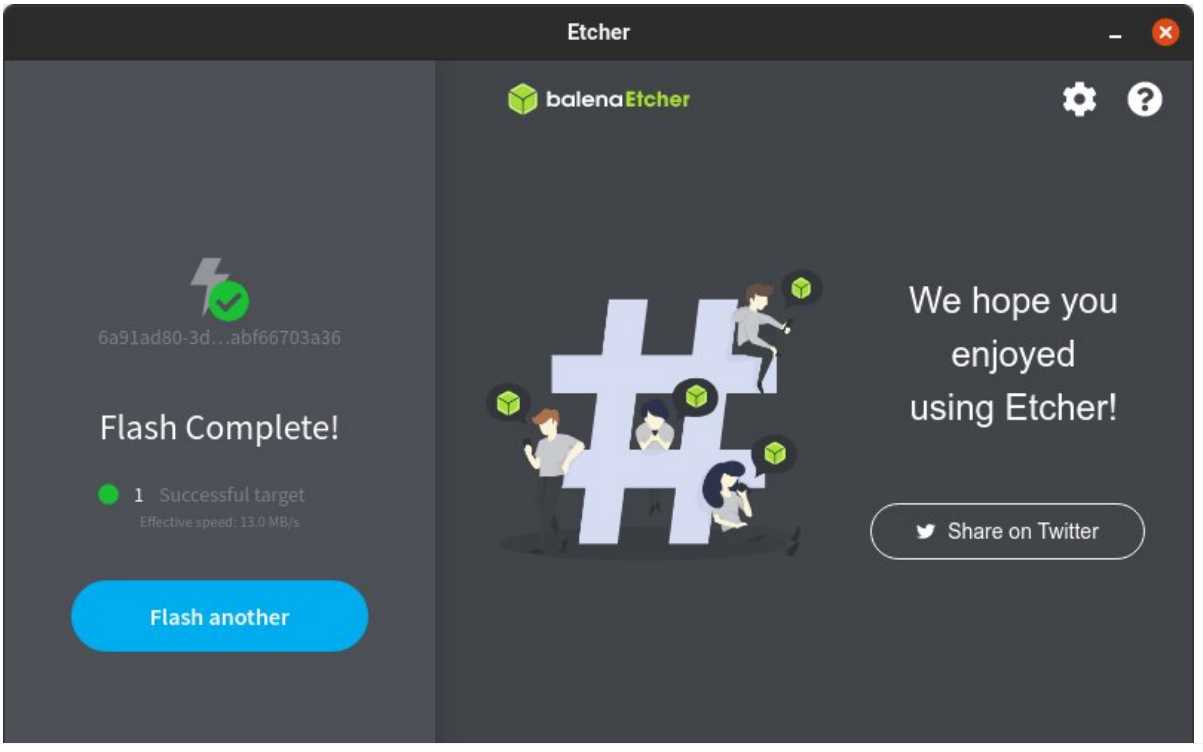


9. Select **Flash!** to start writing the image.

- If the operation fails, decompress the .xz file and try again.



1. When Balena Etcher has finished writing the image, you will see a confirmation.



START UP YOUR GENERIC X86-64

- If you used method 1 for the installation, make sure the USB flash drive is removed from the system.
- If you used method 2 for the installation, install the boot medium into your x86-64 hardware.

1. Plug in an Ethernet cable that is connected to the network.
2. Power the system on. If you have a screen connected to the Generic x86-64 system, after a minute or so the Home Assistant welcome banner will appear in the console.

Note

If the machine complains about not being able to find a bootable medium, you might need to specify the EFI entry in your BIOS. This can be accomplished either by using a live operating system (e.g. Ubuntu) and running the following command (replace `<drivename>` with the appropriate drive name assigned by Linux, typically this will be `sda` or `nvme0n1` on NVMe SSDs):

```
efibootmgr --create --disk /dev/<drivename> --part 1 --label "HAOS" \
   --loader '\EFI\BOOT\bootx64.efi'
```

The efibootmgr command will only work if you booted the live operating system in UEFI mode, so be sure to boot from your USB flash drive in this mode. Depending on your privileges on the prompt, you may need to run efibootmgr using sudo.
Or else, the BIOS might provide you with a tool to add boot options, there you can specify the path to the EFI file:

```
\EFI\BOOT\bootx64.efi
```

3. In the browser of your desktop system, within a few minutes you will be able to reach your new Home Assistant at homeassistant.local:8123.

Note

If you are running an older Windows version or have a stricter network configuration, you might need to access Home Assistant at homeassistant:8123 or `http://X.X.X.X:8123` (replace X.X.X.X with your Generic x86-64's IP address).

Help us improve Home Assistant

Have you just installed Home Assistant? The Home Assistant team is looking to talk to you to understand how the installation went.

Help now

With the Home Assistant Operating System installed and accessible, you can continue with onboarding.

ONBOARDING ›

Install Home Assistant Container

These below instructions are for an installation of Home Assistant Container running in your own container environment, which you manage yourself. Any OCI compatible runtime can be used, however this guide will focus on installing it with Docker.

Note

Prerequisites

This guide assumes that you already have an operating system setup and a container runtime installed (like Docker).

If you are using Docker then you need to be on at least version 19.03.9, ideally an even higher version, and `libseccomp` 2.4.2 or newer.

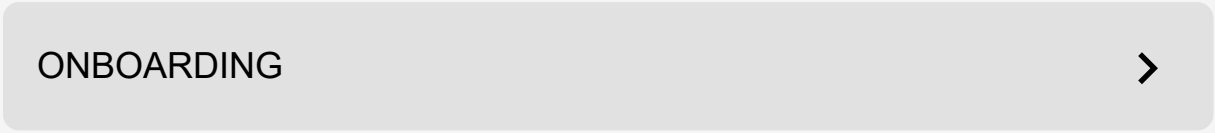
PLATFORM INSTALLATION

Installation with Docker is straightforward. Adjust the following command so that:

- `/PATH_TO_YOUR_CONFIG` points at the folder where you want to store your configuration and run it. Make sure that you keep the `:/config` part.
- `MY_TIME_ZONE` is a tz database name, like `TZ=America/Los_Angeles`.
- D-Bus is optional but required if you plan to use the Bluetooth integration.

Install Update

Once the Home Assistant Container is running Home Assistant should be accessible using `http://<host>:8123` (replace with the hostname or IP of the system). You can continue with onboarding.



RESTART HOME ASSISTANT

If you change the configuration, you have to restart the server. To do that you have 3 options.

1. In your Home Assistant UI, go to the **Settings** > **System** and click the **Restart** button.
2. You can go to the **Developer Tools** > **Services**, select the service `homeassistant.restart` and select **Call Service**.
3. Restart it from a terminal.

Docker CLI Docker Compose

DOCKER COMPOSE

Note

`docker compose` should already be installed on your system. If not, you can manually install it.

As the Docker command becomes more complex, switching to `docker compose` can be preferable and support automatically restarting on failure or system restart. Create a `compose.yml` file:

```
version: '3'
services:
  homeassistant:
    container_name: homeassistant
    image: "ghcr.io/home-assistant/home-assistant:stable"
    volumes:
      - /PATH_TO_YOUR_CONFIG:/config
      - /etc/localtime:/etc/localtime:ro
      - /run/dbus:/run/dbus:ro
    restart: unless-stopped
    privileged: true
    network_mode: host
```

Start it by running:

```
docker compose up -d
```

Once the Home Assistant Container is running, Home Assistant should be accessible using `http://<host>:8123` (replace with the hostname or IP of the system). You can continue with onboarding.

ONBOARDING ›

EXPOSING DEVICES

In order to use Zigbee or other integrations that require access to devices, you need to map the appropriate device into the container. Ensure the user that is running the container has the correct privileges to access the `/dev/tty*` file, then add the device mapping to your container instructions:

Docker CLI Docker Compose

OPTIMIZATIONS

The Home Assistant Container is using an alternative memory allocation library jemalloc for better memory management and Python runtime

speedup.

As jemalloc can cause issues on certain hardware, it can be disabled by passing the environment variable `DISABLE_JEMALLOC` with any value, for example:

Docker CLI Docker Compose

The error message `<jemalloc>: Unsupported system page size` is one known indicator.

Install Home Assistant Core

⚠ Warning

This is an advanced installation process, and some steps might differ on your system. Considering the nature of this installation type, we assume you can handle subtle differences between this document and the system configuration you are using. When in doubt, please consider one of the other installation methods, as they might be a better fit instead.

ℹ Note

Prerequisites

This guide assumes that you already have an operating system setup and have installed Python 3.11 (including the package `python3-dev`) or newer.

INSTALL DEPENDENCIES

Before you start, make sure your system is fully updated, all packages in this guide are installed with `apt`, if your OS does not have that, look for alternatives.

```
sudo apt-get update
sudo apt-get upgrade -y
```

Install the dependencies:

```
sudo apt-get install -y python3 python3-dev python3-venv python3-pip bluez libffi-dev libssl-dev libjpeg-dev zlib1g-dev autoconf build-essential libopenjp2-7 libtiff6 libturbojpeg0-dev tzdata ffmpeg liblapack3 liblapack-dev libatlas-base-dev
```

The above-listed dependencies might differ or missing, depending on your system or personal use of Home Assistant.

CREATE AN ACCOUNT

Add an account for Home Assistant Core called `homeassistant`. Since this account is only for running Home Assistant Core the extra arguments of `-rm` is added to create a system account and create a home directory. The arguments `-G dialout,gpio,i2c` adds the user to the `dialout`, `gpio` and the `i2c` group. The first is required for using Z-Wave and Zigbee controllers, while the second is required to communicate with GPIO.

```
sudo useradd -rm homeassistant -G dialout,gpio,i2c
```

CREATE THE VIRTUAL ENVIRONMENT

First we will create a directory for the installation of Home Assistant Core and change the owner to the `homeassistant` account.

```
sudo mkdir /srv/homeassistant
sudo chown homeassistant:homeassistant /srv/homeassistant
```

Next up is to create and change to a virtual environment for Home Assistant Core. This will be done as the `homeassistant` account.

```
sudo -u homeassistant -H -s
cd /srv/homeassistant
python3 -m venv .
source bin/activate
```

Once you have activated the virtual environment (notice the prompt change to `(homeassistant) homeassistant@raspberrypi:/srv/homeassistant $`) you will need to run the following command to install a required Python package.

```
python3 -m pip install wheel
```

Once you have installed the required Python package, it is now time to install Home Assistant Core!

```
pip3 install homeassistant==2024.1.2
```

Start Home Assistant Core for the first time. This will complete the installation for you, automatically creating the `.homeassistant` configuration directory in the `/home/homeassistant` directory, and installing any basic dependencies.

```
hass
```

You can now reach your installation via the web interface on `http://homeassistant.local:8123`.

If this address doesn't work you may also try `http://localhost:8123` or `http://X.X.X.X:8123` (replace X.X.X.X with your machines' IP address).

Note

When you run the `hass` command for the first time, it will download, install and cache the necessary libraries/dependencies. This procedure may take anywhere between 5 to 10 minutes. During that time, you may get a **site cannot be reached** error when accessing the web interface. This will only happen the first time. Subsequent restarts will be much faster.

Installation

Home Assistant