Lab 4: Smart Home

Part 1: Introduction to the Home Assistant platform

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1.3.1 Home Assistant installation

After getting familiar with the platform basics, you may proceed with the installation.

There are several installation methods available for Home Assistant. Furthermore, the installation options depend on the device/operating system you would like to use for the installation. You can find more detailed information at:
https://www.home-assistant.io/installation/

You may select the suitable installation approach depending on the available hardware and/or operating system.

1.3.1.A Home Assistant installation in Windows with VirtualBox

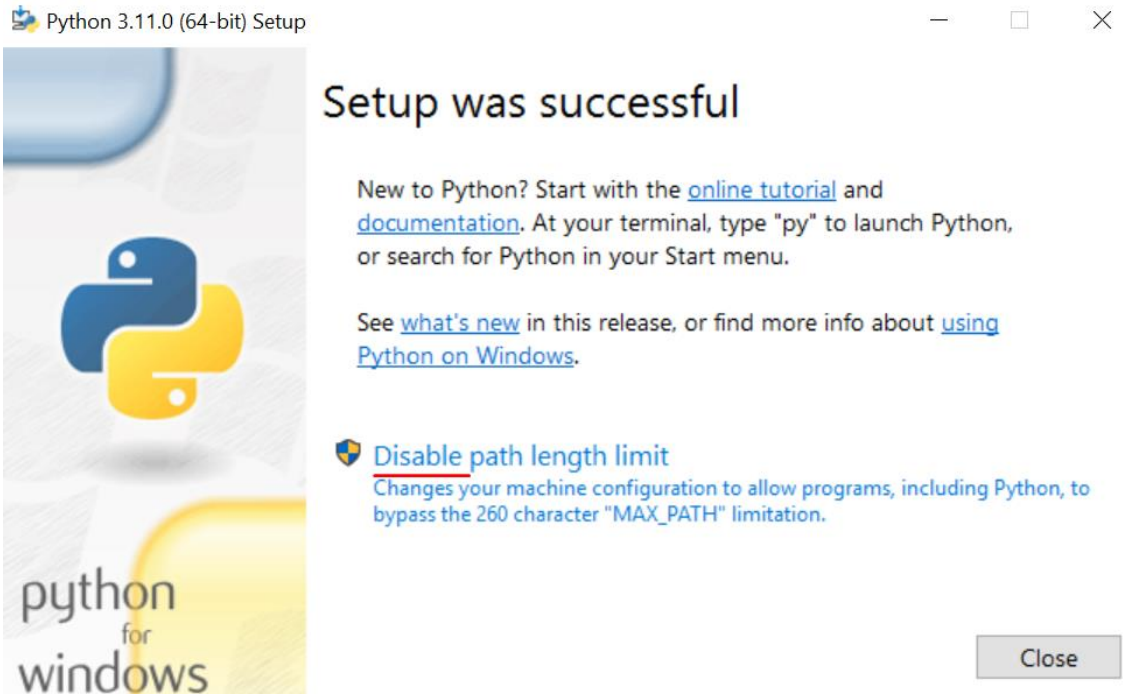
E.g. in the case you would prefer to install the Home Assistant on a computer running Windows, you may follow the instructions from:
https://www.home-assistant.io/installation/windows

In this case, you will need first to create a virtual machine. Several options are available, and you may choose one preferred by you, e.g. because of previous experience.
One of the options would be the use of VirtualBox:
https://www.virtualbox.org/wiki/Downloads

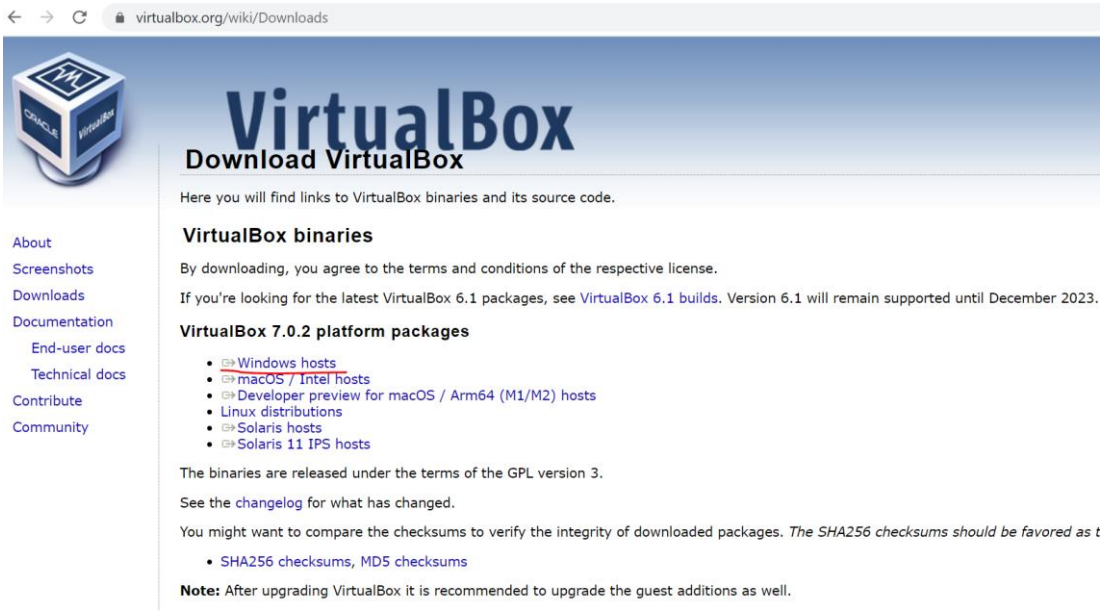
Before starting the installation of VirtualBox, you should check if you have Visual C++ Redistributable and Python installed. If not, you can install them using the following links:
https://learn.microsoft.com/en-us/cpp/windows/latest-supported-vc-redist?view=msvc-170 (or https://aka.ms/vs/17/release/vc_redist.x86.exe for latest supported x86 version)

https://www.python.org/downloads/windows/ (use the "installer version" version and not the embeddable package for the Python installation and check the checkbox "Add python.exe to PATH" in the first installation window):

It is also recommended to disable the path length limit if requested after finishing the installation:

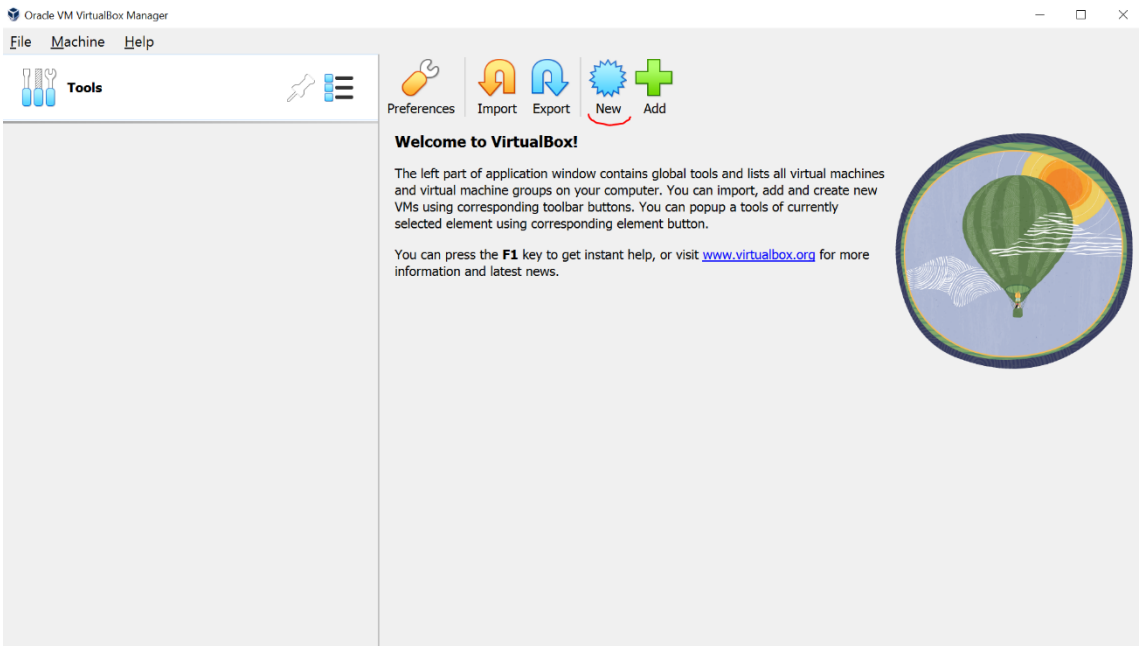


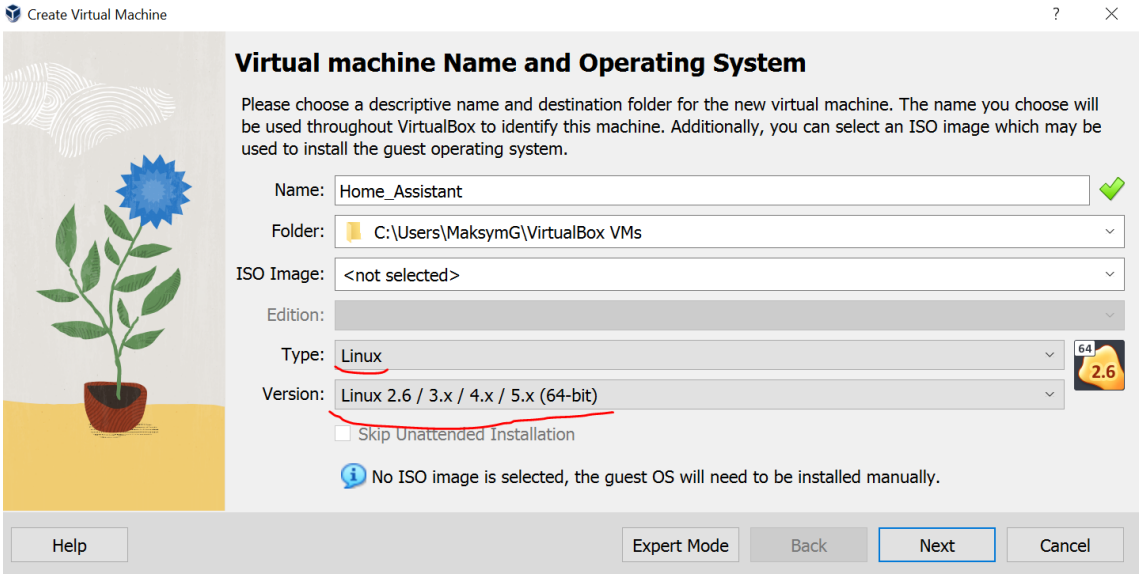
Now you can proceed with the installation of the VirtualBox on your computer, and it is recommended to confirm the proposed during the installation adjustments:
https://www.virtualbox.org/wiki/Downloads

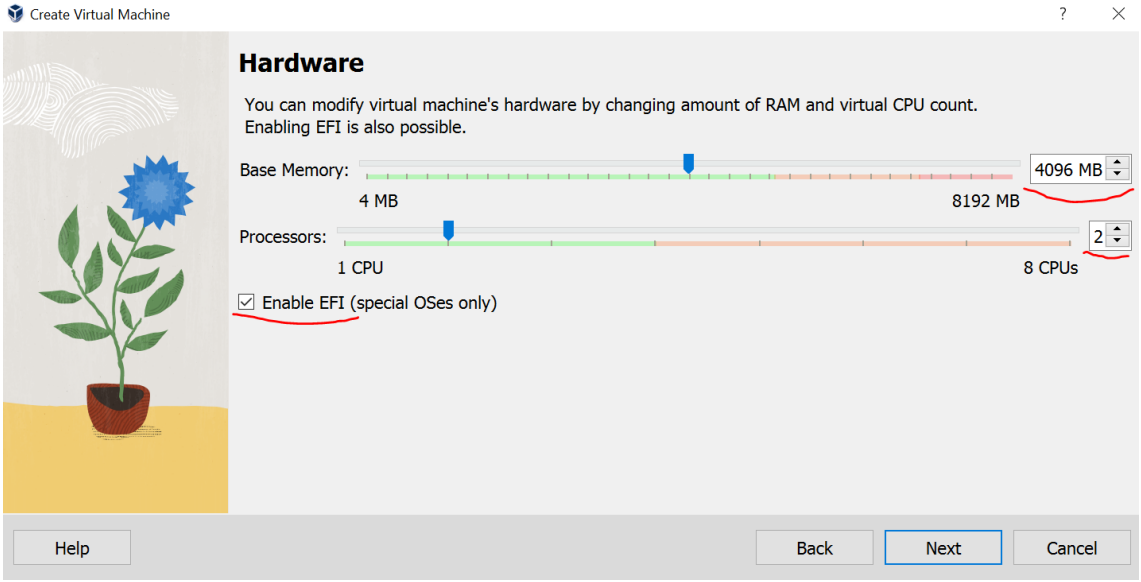


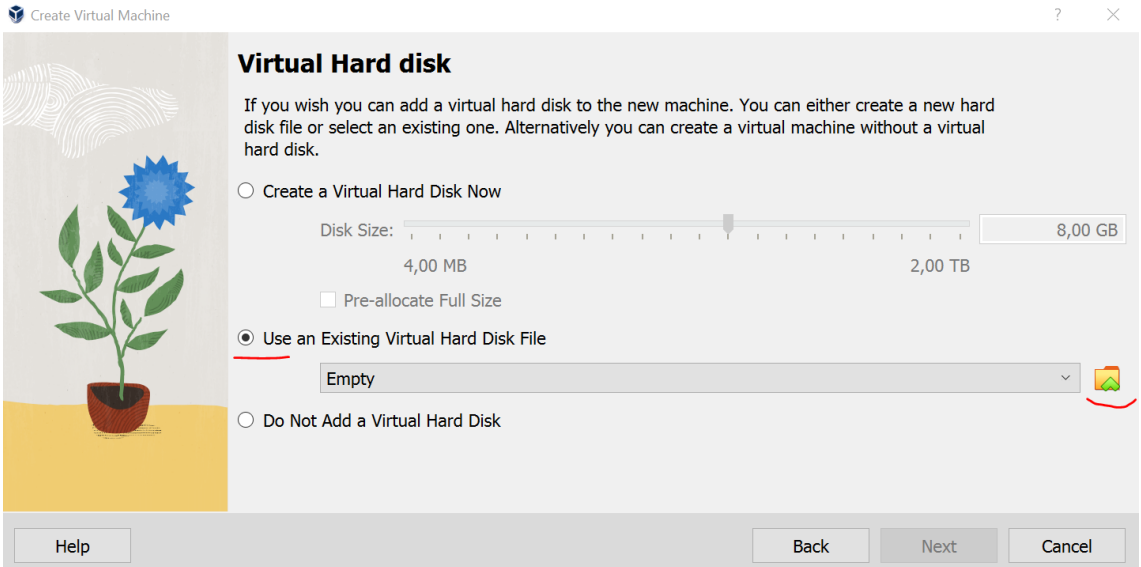
After its installation, create a new virtual machine according to https://www.home-assistant.io/installation/windows

First of all, download the appropriate image using the mentioned above link.
Next, you should start the VirtualBox and create a new virtual machiBBeides. The following screenshots will guide you through the creation/configuration process:

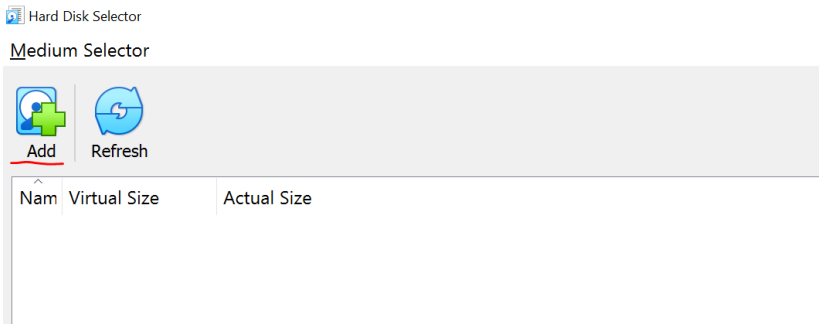




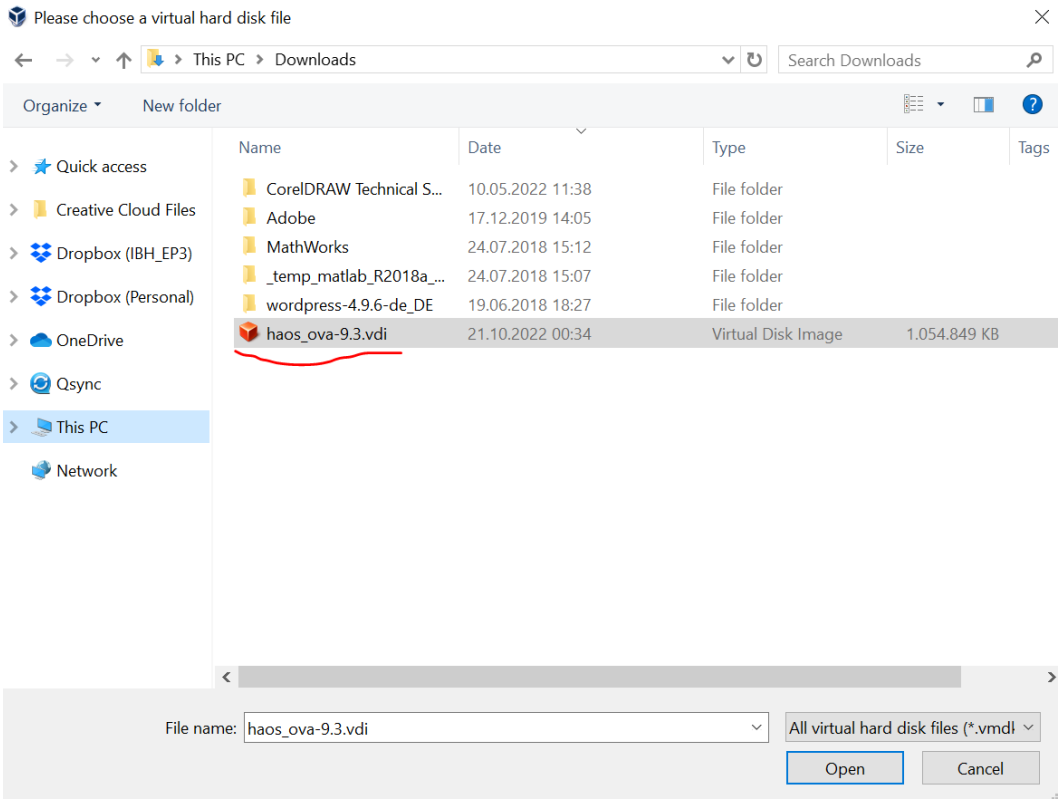




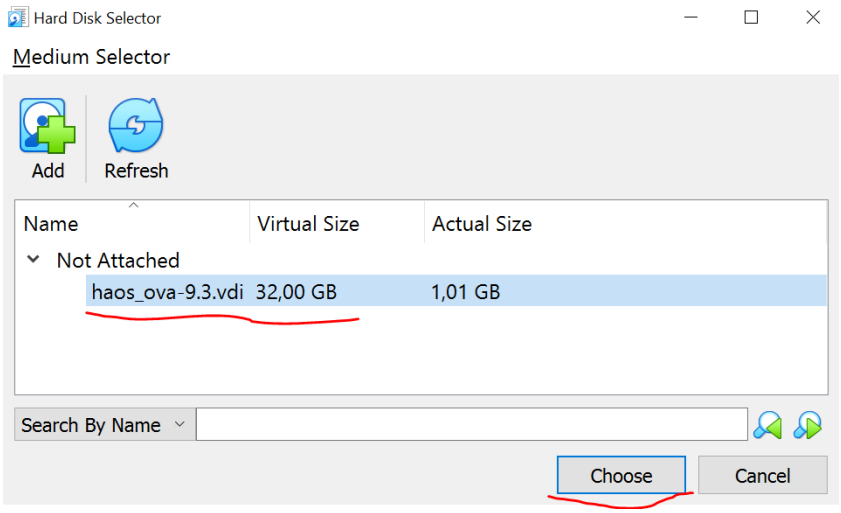
In the next step, select the downloaded image:

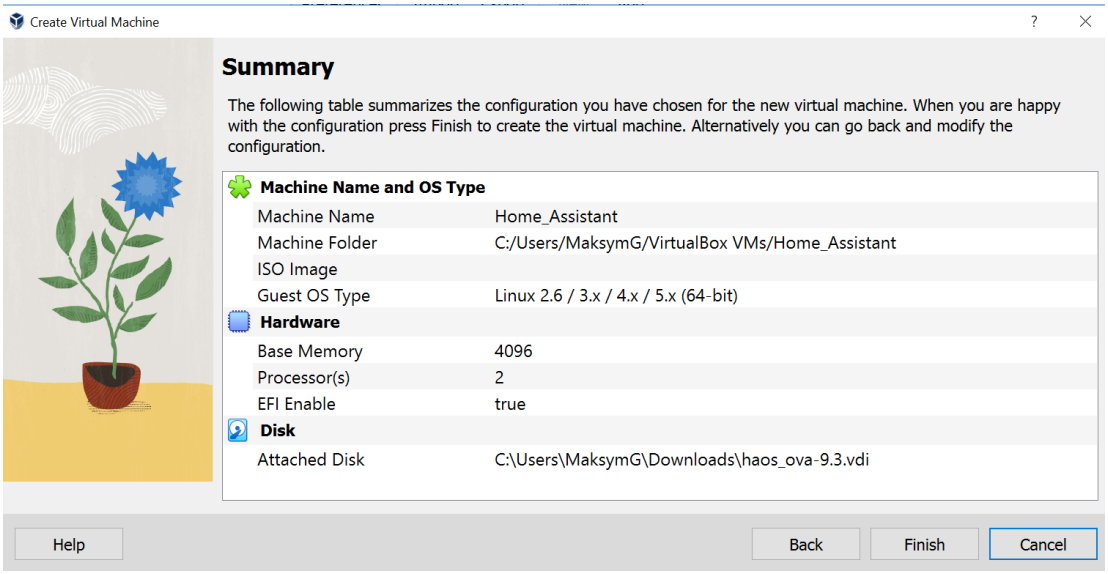


Find the required image file on your drive:

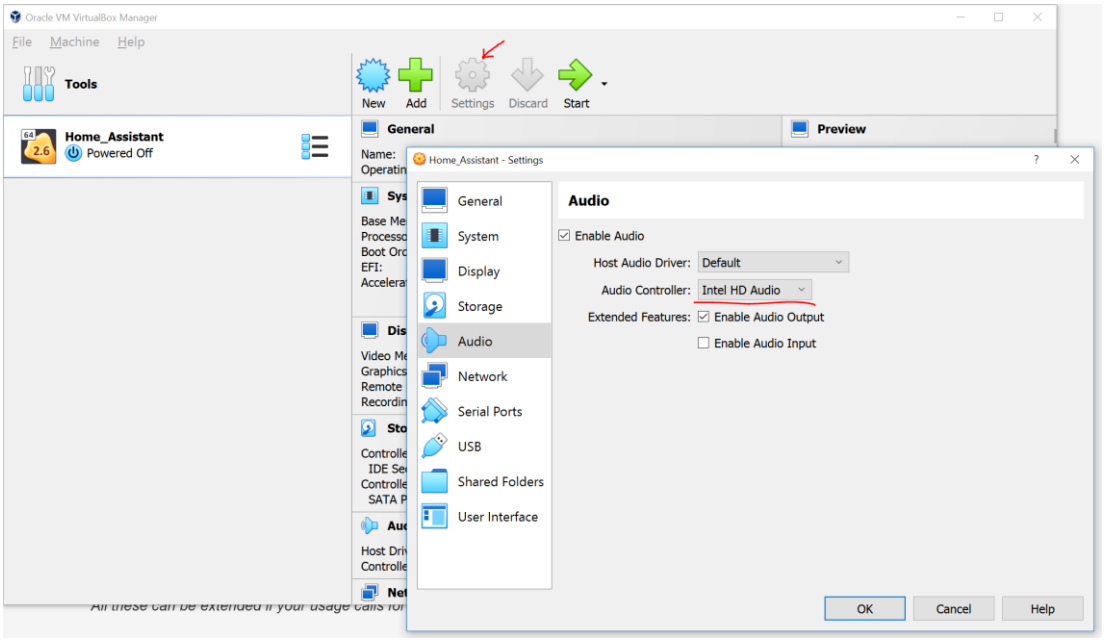


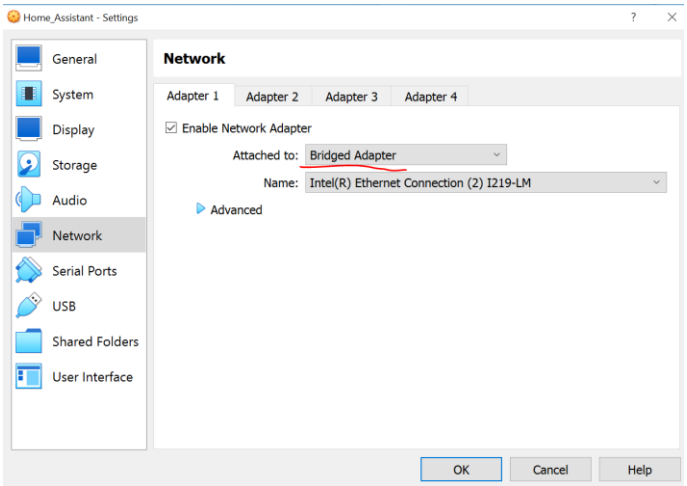
And choose it as the Virtual Hard Disc:



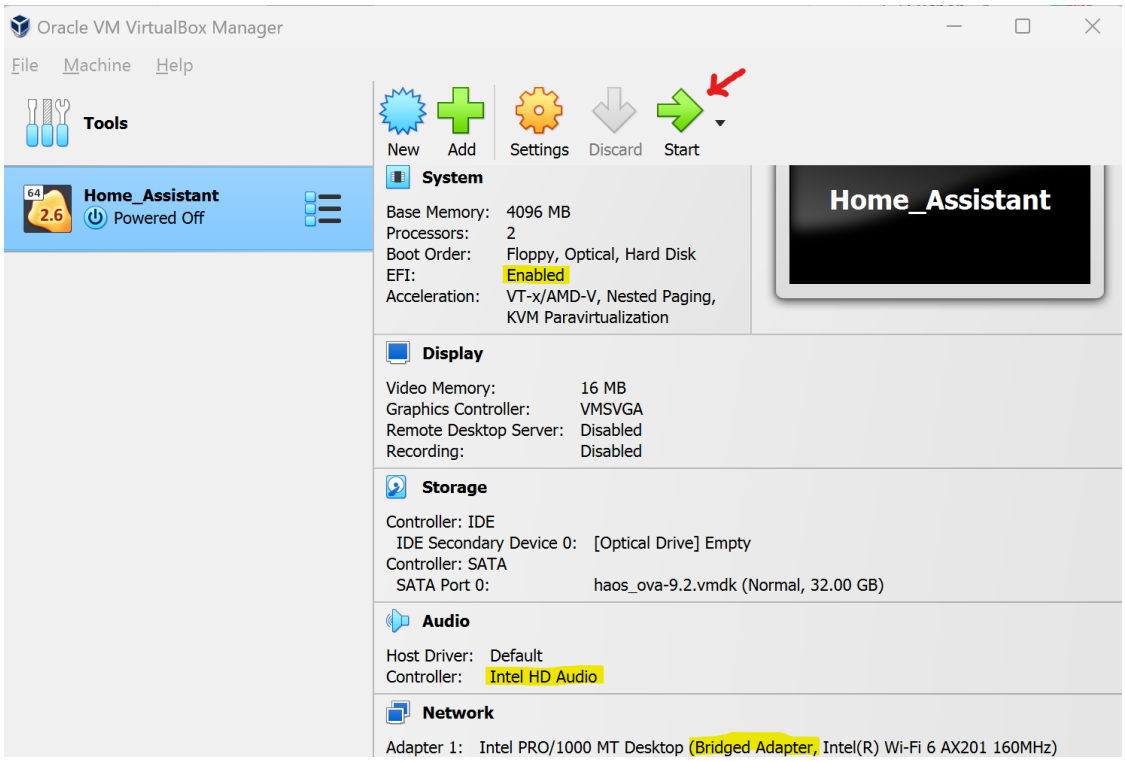


Set the Audio and Network settings according to the instructions on the Home Assistant installation page:





After adjusting, recheck the relevant settings, especially EFI, Network and Audio adapters. After that, you may start the virtual image by pressing the “Start” button to be able to proceed to the following configuration steps:



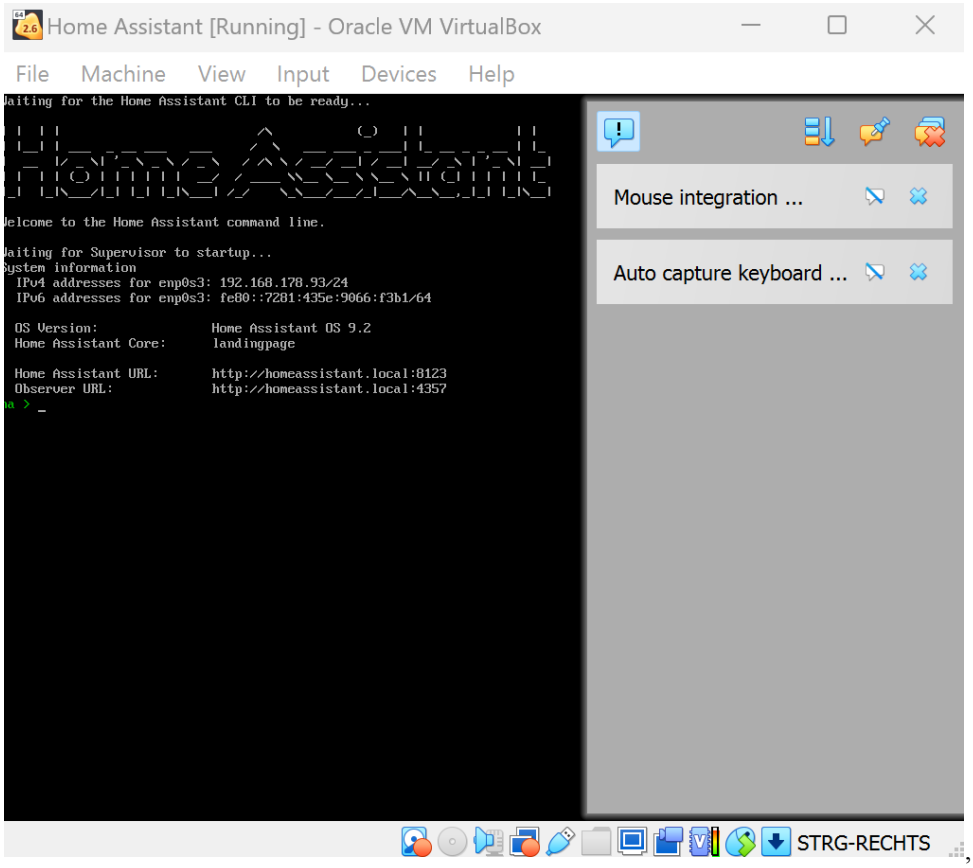
In a very seldom case of getting an error message like “The native API dll was not found (C:\Windows\system32\WinHvPlatform.dll) (VERR_NEM_NOT_AVAILABLE). VT-x is not available (VERR_VMX_NO_VMX).”, check the following three links to solve the problem. Often, performing the actions according to link one and link two is sufficient:

https://forums.virtualbox.org/viewtopic.php?f=5&t=92393

https://learn.microsoft.com/en-us/troubleshoot/windows-client/application-management/virtualization-apps-not-work-with-hyper-v

https://stackoverflow.com/questions/56823151/vt-x-is-not-available-verr-vmx-no-vmx-when-starting-ubuntu-in-virtualbox

If the system has started correctly like in the following screenshot:



it should be possible to access the Home Assistant on homeassistant.local:8123 or sometimes homeassistant:8123

As soon as this is performed, you can step forward to the next task – Onboarding Home Assistant.

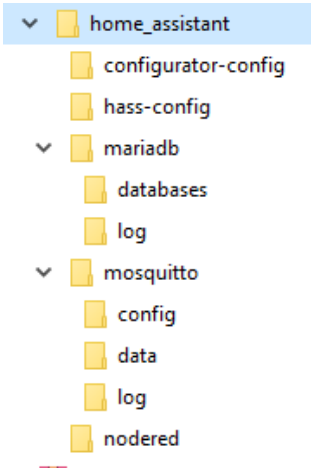
1.3.1.B Home Assistant installation with Docker

This installation method is only possible if you already have Docker running on your computer.

Preparation

Create a directory to put all provided configuration files and the docker-compose script.

In this example, **the base directory is called home_assistant**. The structure must be, as shown below, created as a regular **non-root** user.



Place the provided configuration files and docker script in the following distribution:

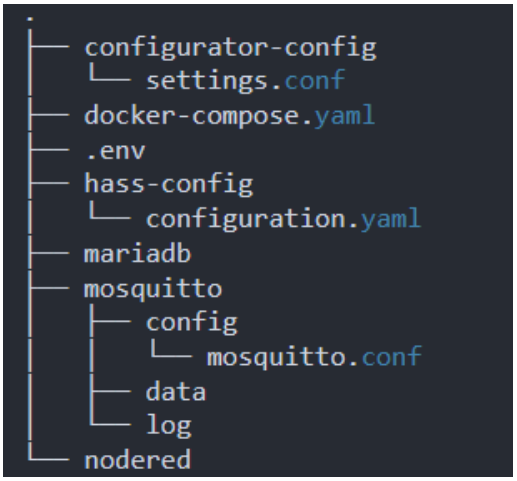
To run the dockerised version of home_assistance, call the docker-compose script from the command line:

$>**docker-compose up -d**

Remember to use the "down" command to stop the containers and before changing any configuration.

$>**docker-compose down**

Node-RED configuration



In order for **Node-RED** to be fully functional, the further configuration should be done in **Node-RED** itself. From inside **Home Assistant**, click the **Node-RED** icon in the left bar.

- **Add Home Assistant nodes to Node-RED**: From the **Node-RED** menu on the top right bar select **'Manage palette'**; then, in the install tab, search for **'node-red-contrib-home-assistant-websocket'** and install the module.
- **Configure the mqtt broker**: After putting an **input** or **output mqtt node** on a flow, you will be able to configure the **mqtt** broker in **Node-RED** editing the server field of the node. More info here.
- **Configure connexion with Home Assistant**: You need to edit an **Events: all** node on your workspace and fill the **Home Assistant url** and the **access token**. Information about this and how to generate an **access token** in **Home Assistant** can be found here.

NOTE: Node-RED should be **restarted** for this configurations to take effect. To restart the Node-RED container, execute **'docker restart nodered'**

It should now be possible to access the Home Assistant on homeassistant.local:8123 or sometimes homeassistant:8123

As soon as this is performed, you can step forward to the next task – Onboarding Home Assistant.