COMP 3721 – Fall 2024

GNS3 Setup

1. Introduction

GNS3, the Graphical Network Simulator-3, stands as a cornerstone in the realm of network simulation and emulation. As an open-source platform, GNS3 empowers network engineers, students, and professionals alike to design, test, and troubleshoot complex networks with unparalleled flexibility. Through its intuitive graphical interface and integration with various network devices and appliances, GNS3 transcends traditional simulation boundaries, offering a dynamic environment to explore networking concepts, prototype configurations, and refine skills. Whether crafting intricate topologies or replicating real-world scenarios, GNS3 remains an indispensable tool for fostering innovation within the ever-evolving landscape of networking technologies.

2. Downloading and Installation of GNS3

In the next sections, you will walk through the installation of GNS3 and its required components for Windows and macOS operating systems. While there exists extensive documentation within open-source communities for installing GNS3 on various Linux distributions, this manual will prioritize providing comprehensive guidance for GNS3 installation on Windows and macOS platforms, which cater to a broader user base. **During installation, please ensure that your GNS3 version and GNS3 VM version belong to the same release.**

2.1 Installation on Windows

In Windows 10, to install GNS3 with VMware Workstation Player, please follow these 6 steps:

Step1)

First you need to download “VMware Workstation Player”. This software is Free and can be easily obtained from the VMware site (below link), as shown in Figures 1 and 2.

https://www.vmware.com/products/workstation-player.html

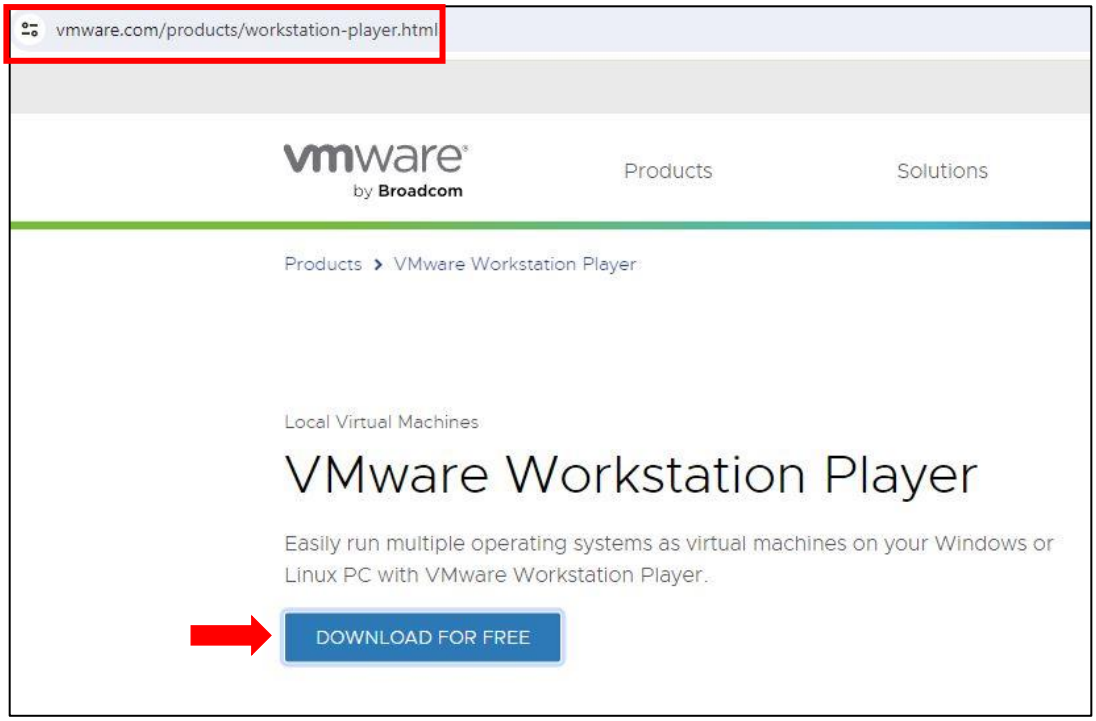

Figure 1. “VMware Workstation Player” download page.

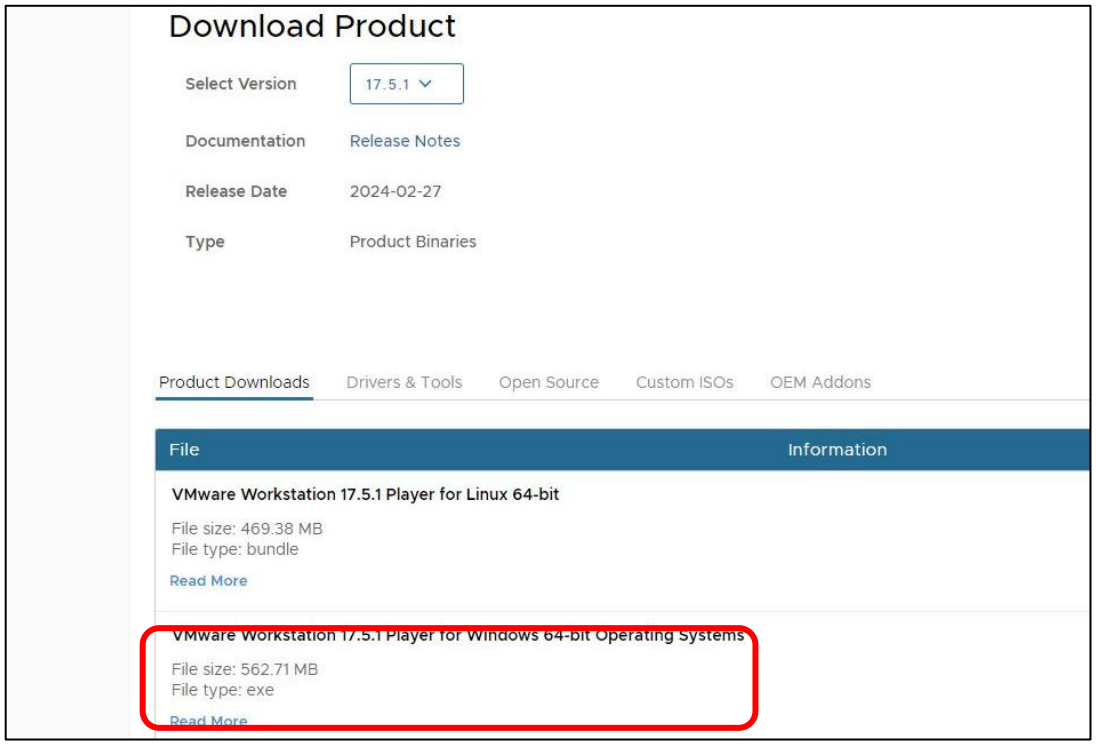

Figure 2. Download “VMware Workstation Player” for Windows 64-bit.

Step 2)

Now, you need to install the “VMware Workstation Player” by double clicking the downloaded file. The installation process (via the installation wizard) is quite straightforward. After running the software for the first time, you will see a message similar to the one displayed in Figure. 3 and you have to choose the first option.

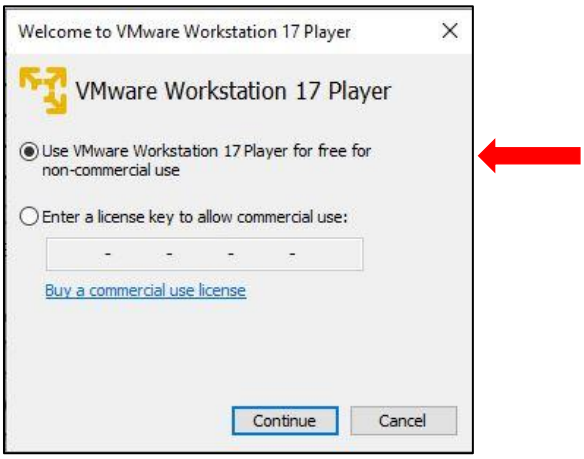

Figure 3. Using “VMware Workstation Player” for free (non-commercial use).

Step 3)

After completing the installation of “VMware Workstation Player”, you have to download and install the latest version of GNS3 via its web site. Before downloading the software, you need to create an account on the website using your personal email account. Figure. 4 shows the GNS3 download page and list of supported operating systems along with their installation guide. The download link is as follows:

https://www.gns3.com/software/download

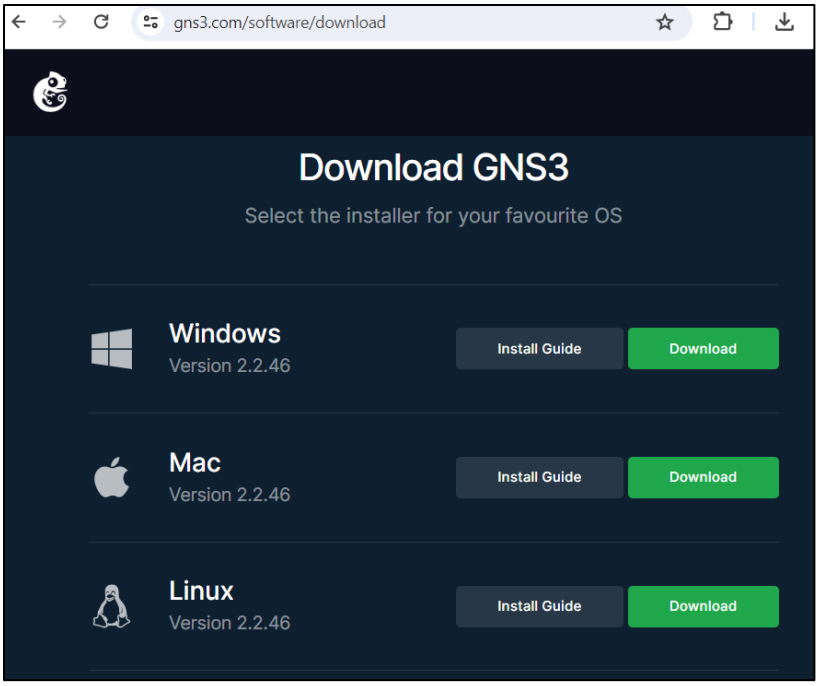

Figure 4. GNS3 download page.

During the installation process, please ensure to select "**GNS3 VM**" as a component required for the lab experiments. Please note that you do NOT need to install "GNS3 WebClient" as shown in Figure. 5. Indeed, "**GNS3 Desktop**" and "**GNS3 VM**" are only required components.

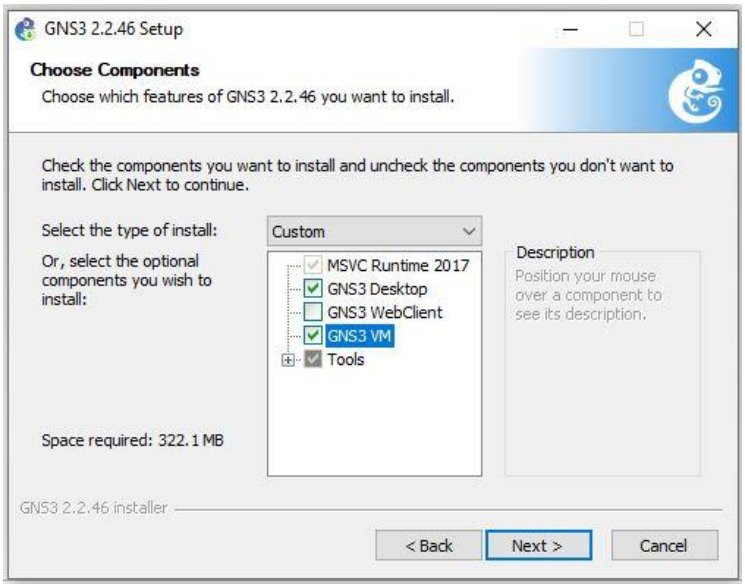

Figure 5. Selecting "GNS3 Desktop" and "GNS3 VM" during the installation process.

Also, during the installation of GNS3, you have to choose "**VMware Workstation**" as the selected virtualization platform, as shown in Figure 6. This means "VMware Workstation Player" will be used to run the "GNS3 VM" that will be downloaded in the next step.

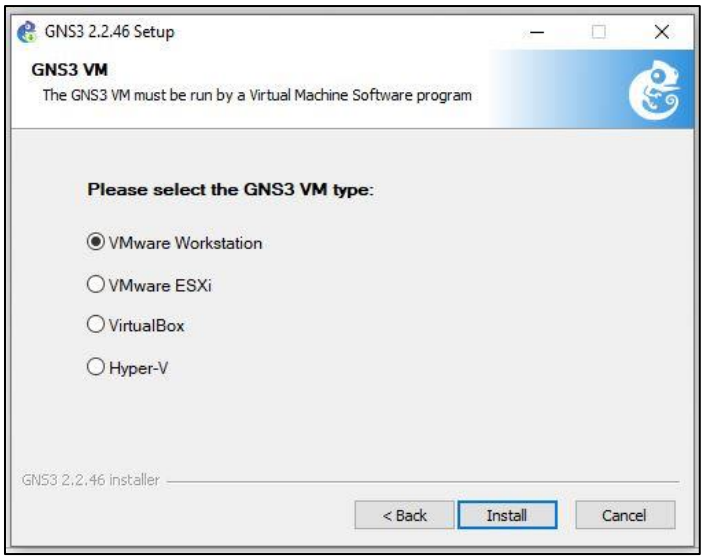

Figure 6. Selecting "VMware Workstation" as the virtualization platform used for GNS3 VM.

Step 4)
Since in the previous step, you selected "**GNS3 VM**" (Figure. 6) to be installed, a zipped file containing GNS3 VM (as an OVA file) will be downloaded on your computer and you need to extract (unzip) it when GNS3 installation is completed. The name of downloaded file looks like GNS3.VM.VMware.Workstation.2.2.46.zip.

After extracting the file, you have to import it into the "VMware Workstation Player" by selecting the highlighted section in Figure 7 and choose the "**GNS3 VM.ova**" file from the folder that you extracted the zipped file into it. Then you need to pick a name for your VM and it is very important to set the name for the virtual machine to "**GNS3 VM**" as shown in Figure 8.

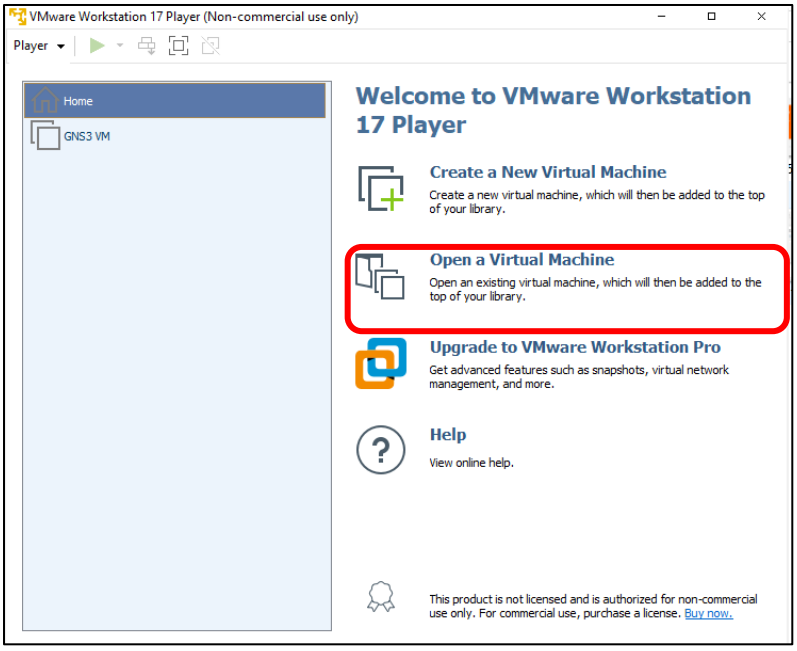

Figure 7. Importing GNS3 VM into “VMware Workstation Player”.

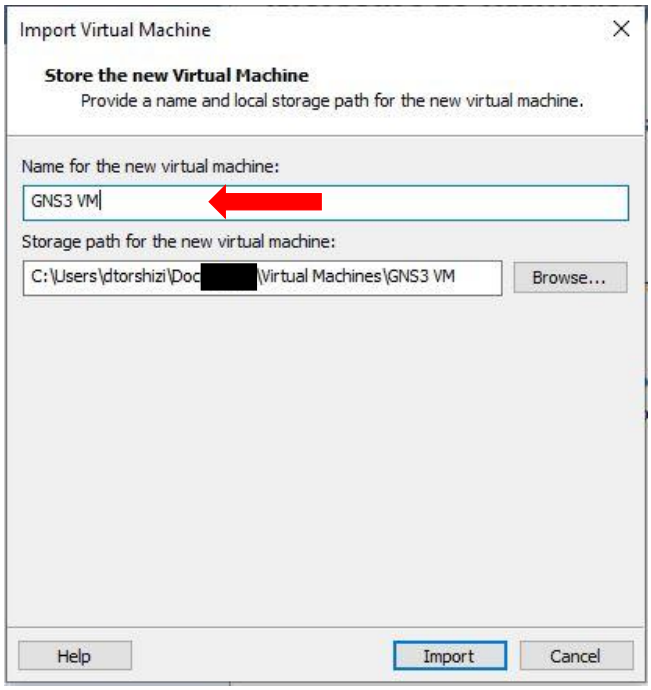

Figure 8. Set the name for GNS3 VM.

Step 5)

After importing/creating the VM for GNS3, there is another important step that should be done before powering on the VM, which is updating the Hardware settings of the GNS3 VM. For applying this change, you need to right-click on imported GNS3 VM in VMware Workstation Player and choose “Processor” and de-select all options under “Virtualization engine” as shown in Figures 9 and 10.

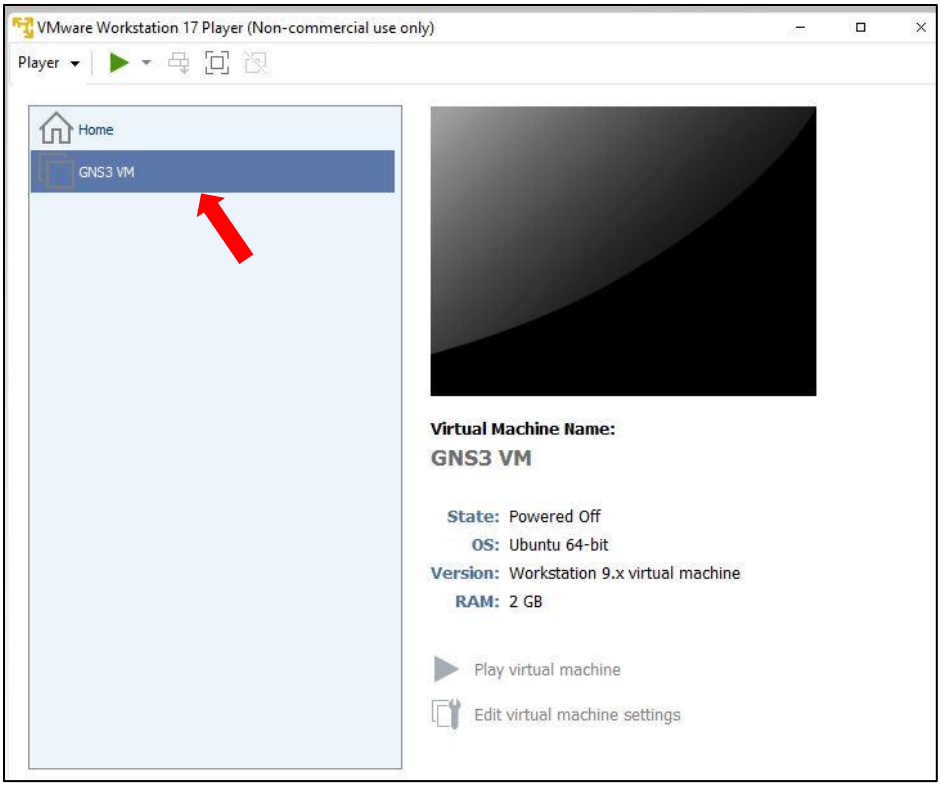

Figure 9. Changing the VM settings by right-click and choosing “Settings”.

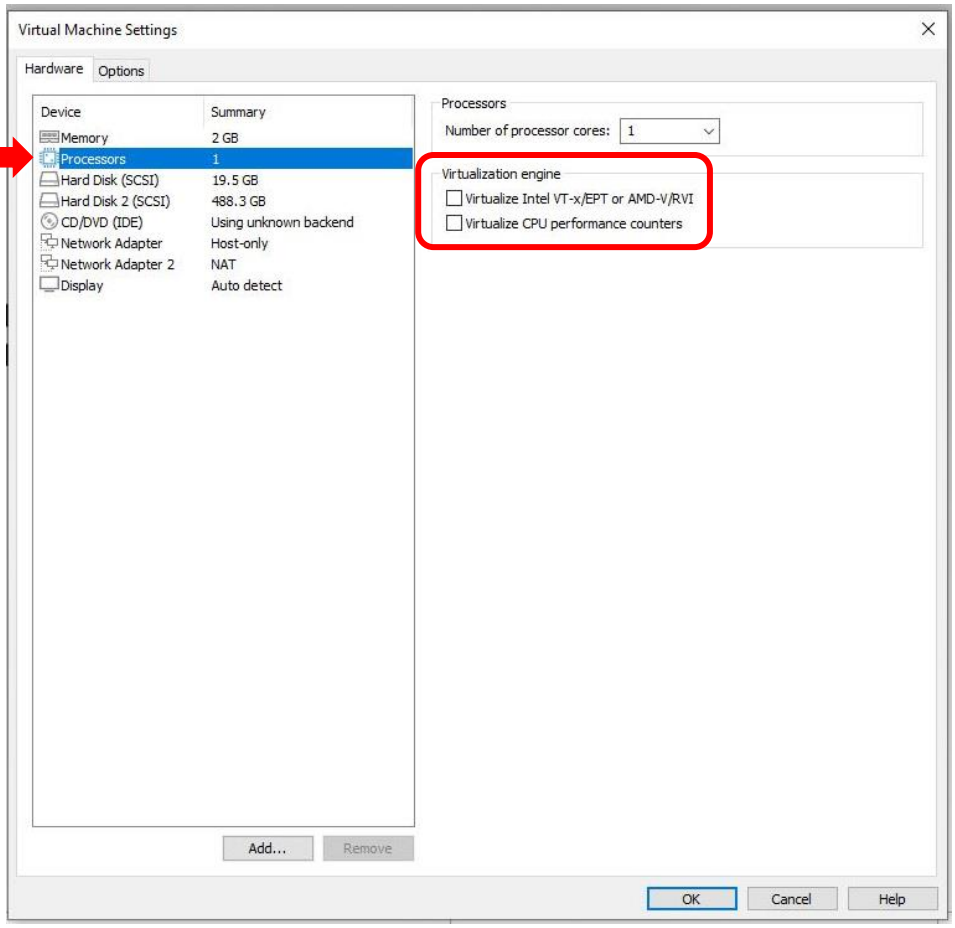

Figure 10. De-selecting all options under “Virtualization engine” of the Processor.

Now, you are ready to power on the GNS3 VM. If everything goes well and GNS3 VM boots up with no issue, you should see what is displayed in Figure. 11.

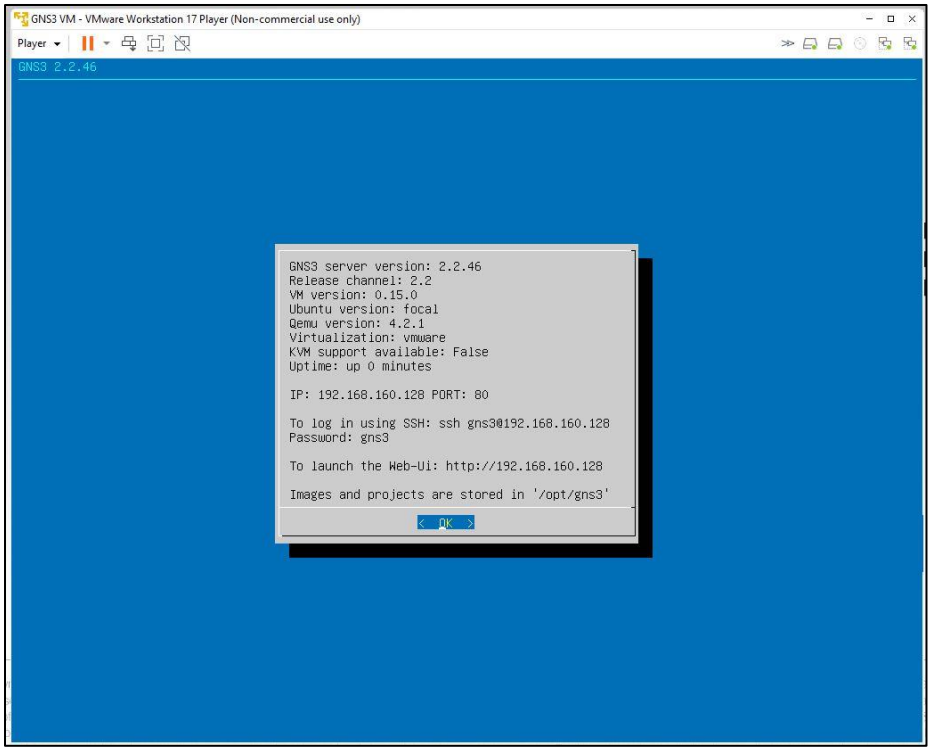

Figure 11. GNS3 VM powered-on in VMware Workstation Player.

If during this the VM power-on, you see the error shown in Figure 12, then you may need to run the following command as Administrator in your Windows command line (cmd) to disable the Hypervisor Launch Type.

> **bcdedit /set hypervisorlaunchtype off**

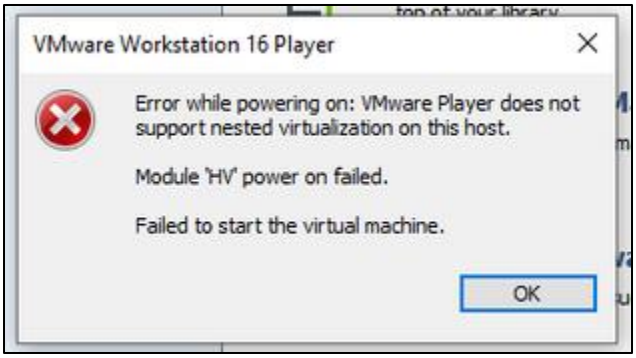

Figure 12. VMware workstation error.

Running this command will help to resolve the shown error. Remember to enable the "Virtualization" feature in your computer's CPU via the BIOS settings. In most cases, this feature is enabled by default, however, if this feature isn't already enabled, access the system BIOS during the system boot and enable “Virtualization” to activate nested virtualization which is crucial for utilizing GNS3 VM.

Step 6)
Now, you can start GNS3 and a “Setup Wizard” will shows up. By following up the steps illustrated in Figures 13, 14, and 15, the GNS3 should be connected to its VM and ready to use. If everything has been configured properly, you should see a GREEN circle next to GNS3 VM as shown in Figure 16.

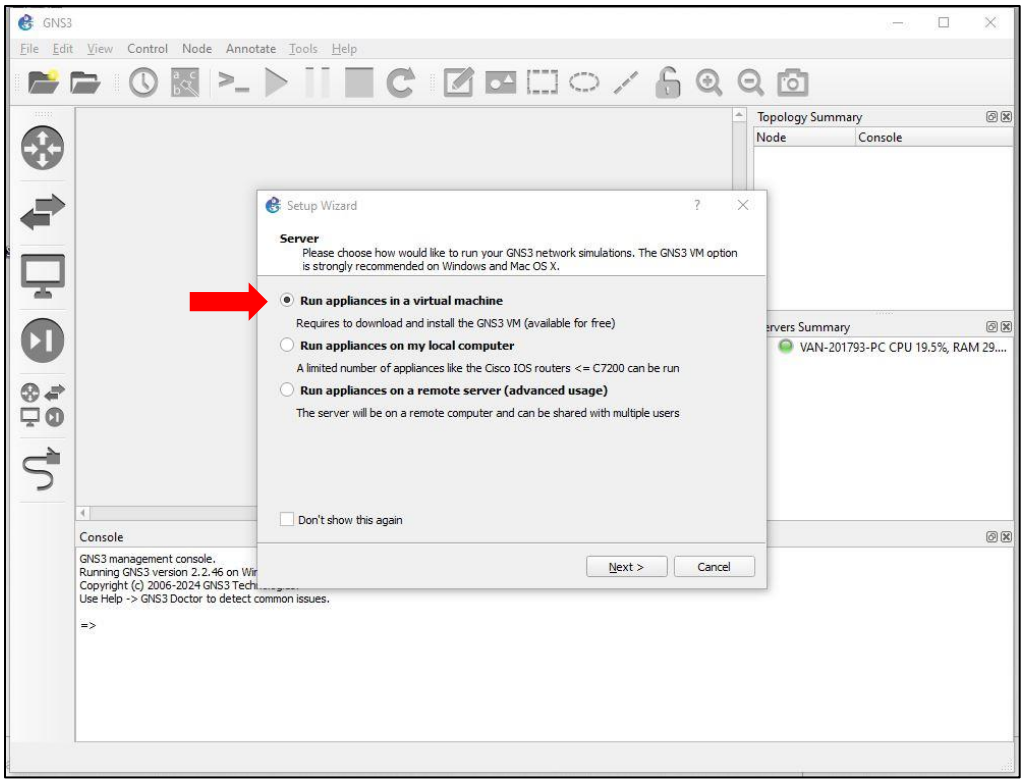

Figure 13. GNS3 setup wizard.

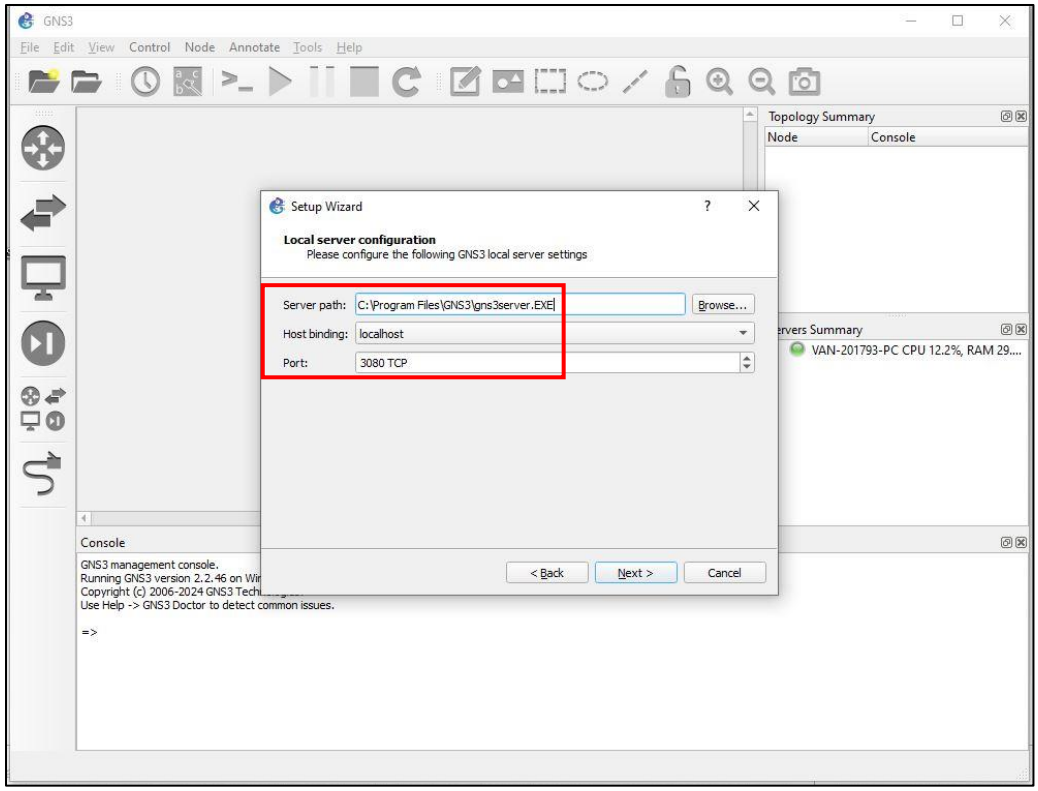

Figure 14. GNS3 setup wizard, local server configuration.

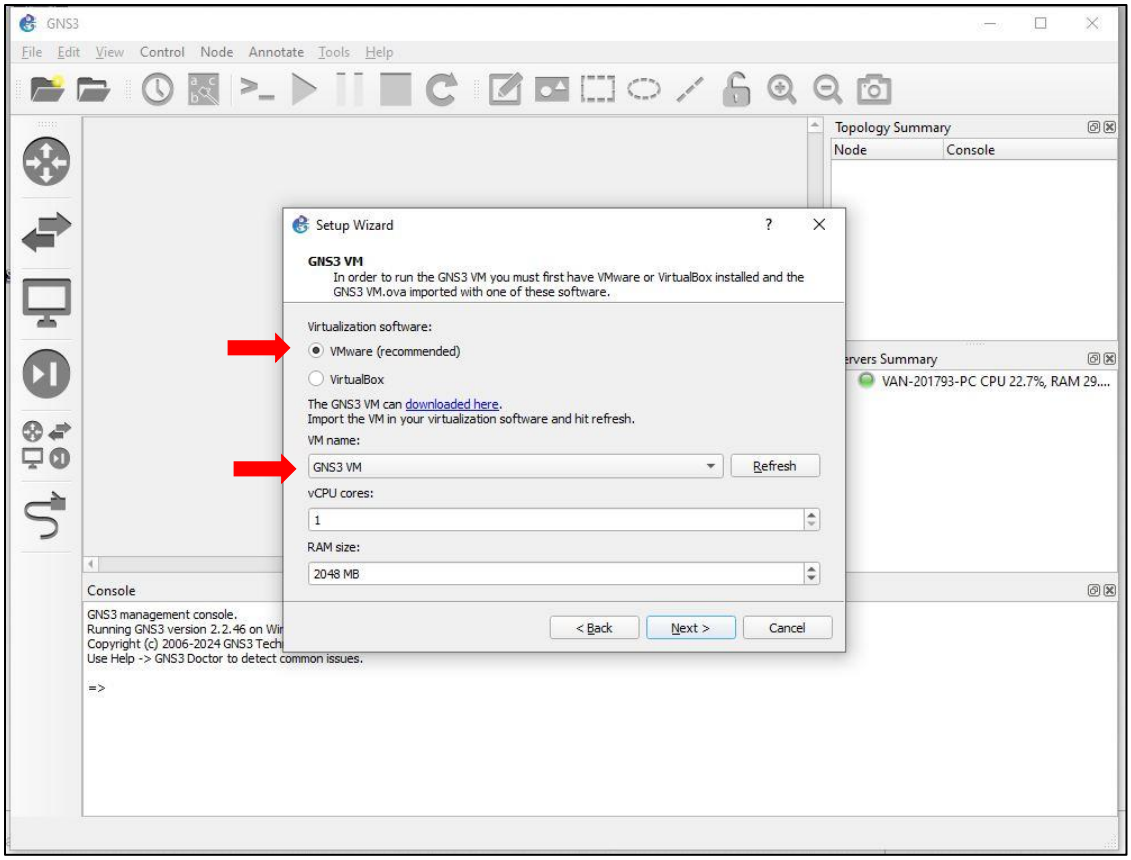

Figure 15. GNS3 VM setup.

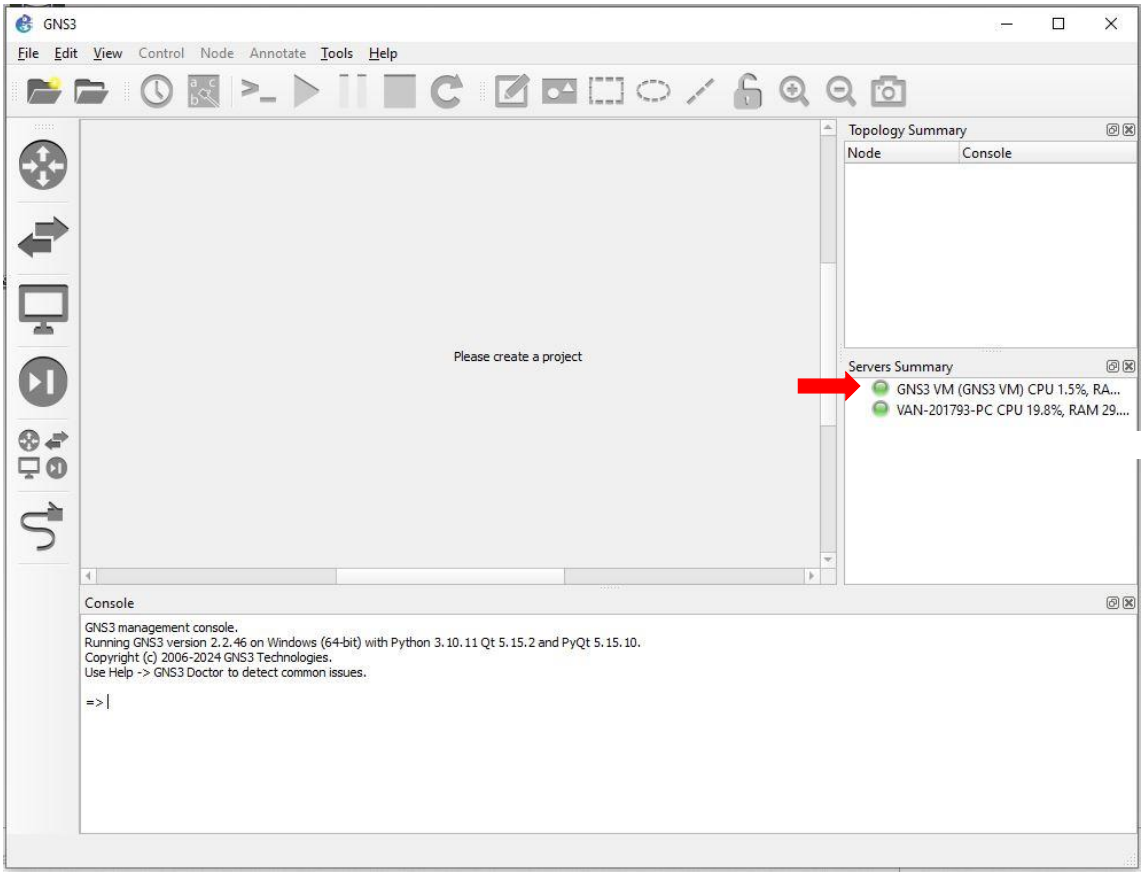

Figure 16. VMware workstation error.

Please remember that the GNS3 VM should be running in VMware Workstation Player while you are working with GNS3. Also, based on the stated instructions, you should have noticed that you need three key components for using GNS3:

1. GNS3 software (GUI)
2. GNS3 VM
3. VMware Workstation Player

After completing all these steps, please ensure the GNS3 VM has been enabled from the GNS3 GUI as it is displayed in Figure 17.

Edit → Preferences → GNS3 VM → Enable the GNS3 VM

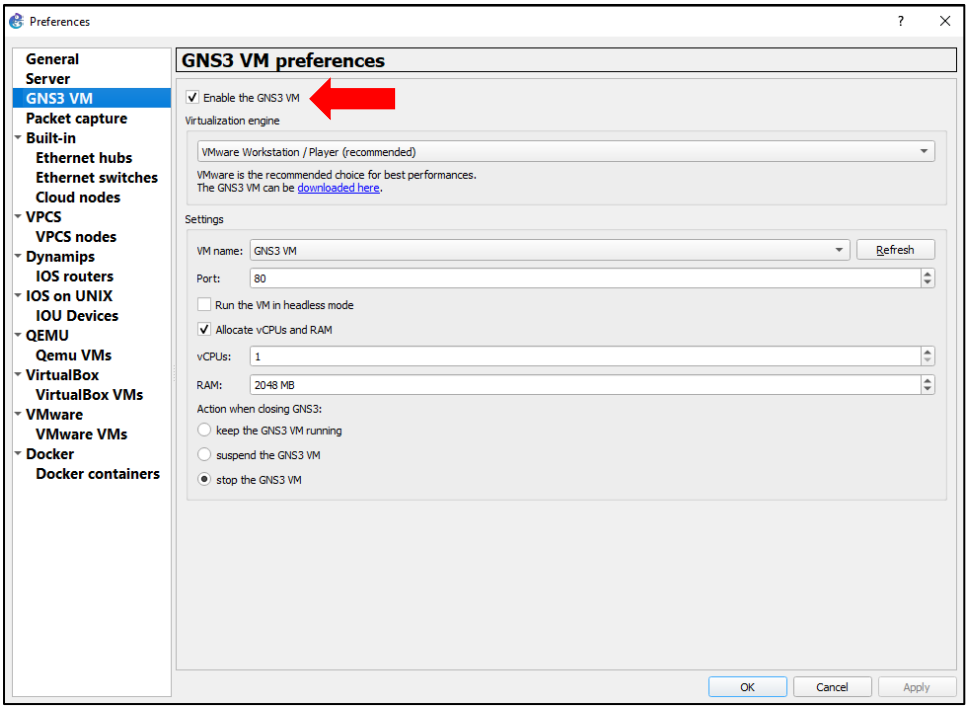

Figure 17. Enabling the GNS3 VM in GNS3 GUI.

You can also refer to online resources for Windows 10 installation such as the following: https://www.youtube.com/watch?v=_EblCywJqBs

2.2 Installation on macOS

The installation process of GNS3 for macOS is similar to the Windows one (refer to the previous section), but there is a difference in using "**VMware Fusion**" instead of "**VMware Workstation Player**". To download VMware Fusion for running the GNS3 VM in macOS, you need to download and install it form the following link. Also, it is necessary to create an account in VMware website and register to get a personal license for using the software.

https://www.vmware.com/products/fusion/fusion-evaluation.html

Also, you can download the GNS3 VM directly from GitHub using the following link, and then after extracting the zipped file, the VM can be imported into the VMware Fusion (similar to Step 5 in the previous section).

https://github.com/GNS3/gns3-gui/releases/download/v2.2.46/GNS3.VM.VMware.Workstation.2.2.46.zip

Remember that you can download GNS3 software (GUI) and GNS3 VM based on the instructions provided in previous section. There are many online resources and videos that you can use to get a better understanding about the installation process.

If you are an ARM architecture Mac user, please download VMware Fusion version 13 or above. It has been successfully tested on MacOS 12.5.1 with the VMware Fusion version 13.5.1. It is advisable to download it from the official website.

Note that *GNS3.VM.VMware.Workstation.2.2.46.zip is not working on the ARM Mac.*

For the virtualized GNS3, please download a version that supports the ARM architecture. Installing other architecture versions may not guarantee the proper startup of the virtual machine. Please refer to the following link: https://sourceforge.net/projects/gns-3/files/Releases/v2.2.46/ Your GNS3 VM file should have a name similar to this: GNS3.VM.ARM64.2.2.46.zip

A reference for installation on macOS:
https://www.youtube.com/watch?v=Ma2znNZQ574

Please strictly follow the steps outlined in the video for installation, as it might differ slightly from the Windows installation process and GUI interface. Your final installation outcome will be the same as that in end of the video, shown as the Fig, where the main server connects to the GNS3 VM.

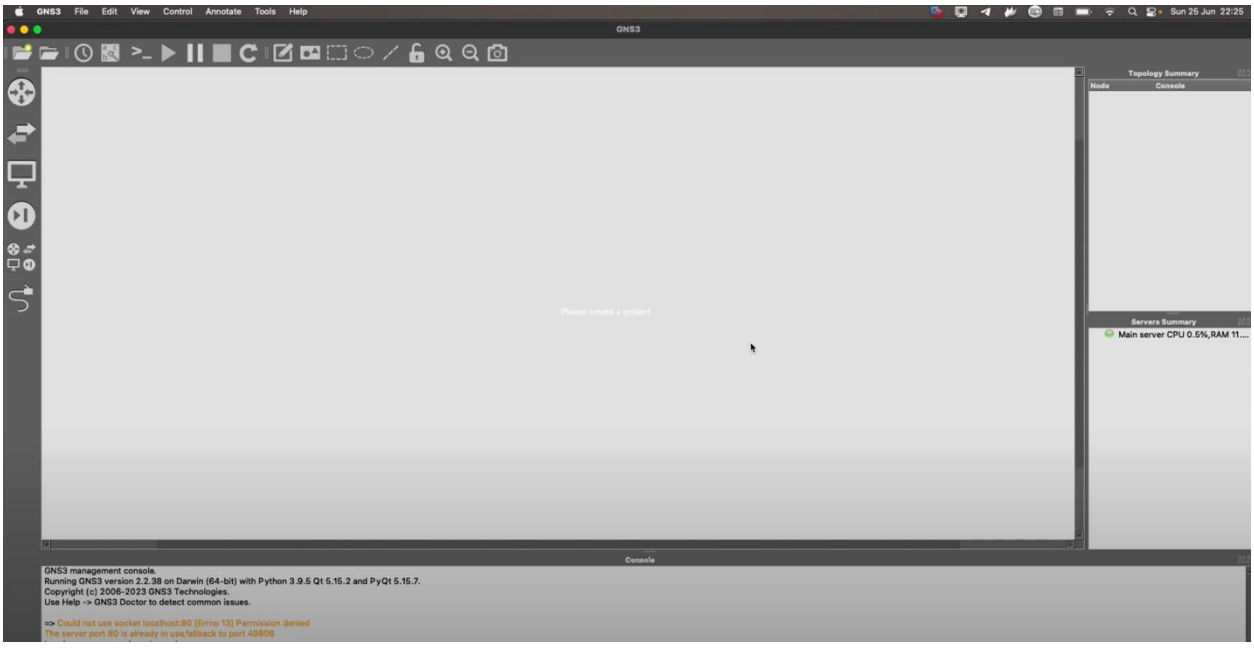

Figure 18. The setting on the Arm Mac.

If you're using an Intel architecture Mac, you may need to refer to other resources.

3. GNS3 Marketplace

You can also download different types of appliances from the GNS3 marketplace which is accessible via the following link:

https://gns3.com/marketplace/appliances

For instance, you can search for "**Alpine Linux**" in GNS3 marketplace and download it on your computer. The file will be stored as **alpine-linux.gns3a**, and can be imported into GNS3 GUI via "File → Import" appliance section. Alpine Linux is a lightweight Linux distribution that can be used as a host or endpoint in different networking scenarios. Figure 18 shows the search section from GNS3 marketplace to find and download Alpine Linux appliance. You can import this lightweight Linux and use it to **emulate Linux hosts** under GNS3. In future lab assignments, further instructions will be provided to download free additional appliances from the GNS3 marketplace.

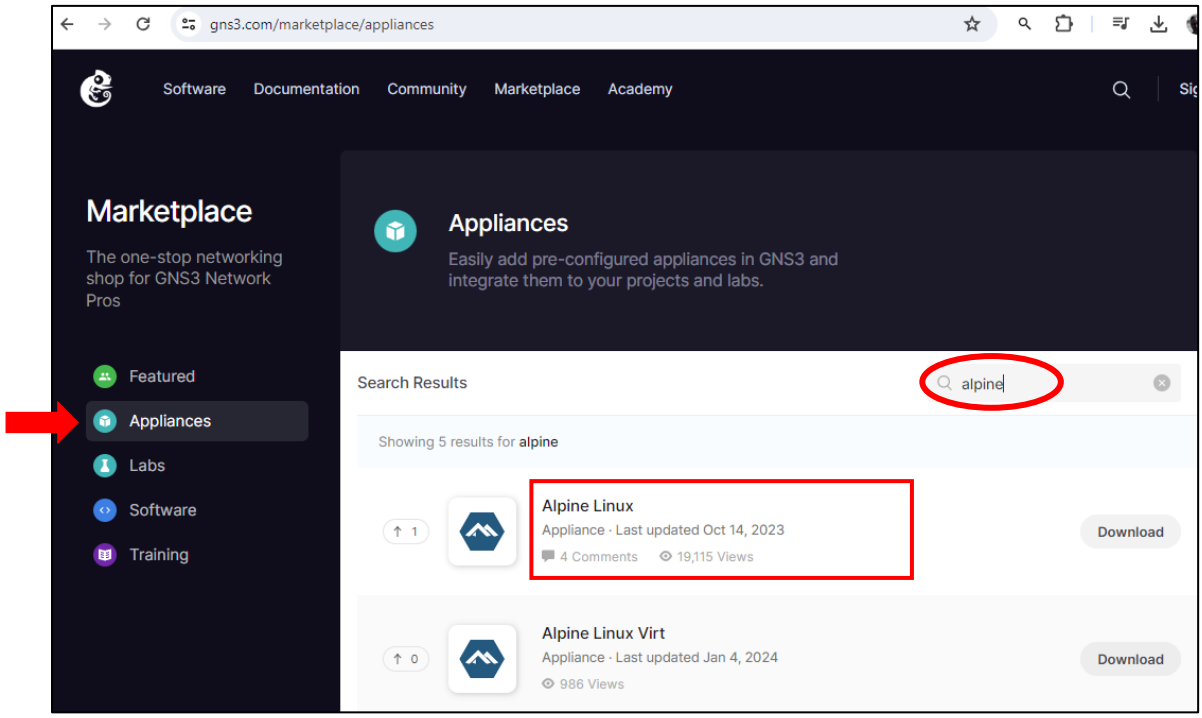

Figure 18. Searching "Alpine Linux" from GNS3 Marketplace.

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