

Chapter 11, Pre-task 1, Cisco CML (Cisco Modeling Labs) Router and Switch Installation on GNS3

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About this document:

Welcome to the software installation guide for the Apress book, "**Introduction to Ansible Network Automation: A Practical Primer**". This guide has been created by the authors as supplementary material to the book, but it is not part of the actual book itself. **The content has been borrowed from the prequel book, "Introduction to Python Network Automation: The First Journey" written by Brendan Choi in 2021.** Its purpose is to provide clear and concise instructions to assist readers in installing the necessary software required to follow the examples and exercises in the book.

By following the steps outlined in this guide, you will be able to set up the required software for Ansible/Python network automation and begin exploring the concepts while engaging in the practical exercises covered in the book. Please note that this guide is not intended to serve as a comprehensive resource on network automation or Ansible, but rather as a focused guide designed to help you get started quickly and easily.

If you encounter any questions or issues during the installation process, please do not hesitate to reach out to the authors or refer to the resources listed in the guide. We hope this guide proves helpful in your journey toward mastering Ansible/Python network automation.

Required files for installation:

Description	File name	File Size
Cisco CML L2 Switch:	vios_l2-adventerprise9-m.vmdk.SSA.152-4.0.55.E	92.3MB
Cisco CML L3 Router:	vios-adventerprise9-m.vmdk.SPA.157-3.M3.qcow2 IOSv_startup_config	127MB 1MB
JunOS L2 Switch (Optional)	JunOS Olive-disk1.vmdk	272MB
Internet connection:	Yes	n/a

Warning! The software used in this guide may include a combination of free, open-source and proprietary software. Readers can search for most of the free and open-source software on the internet. However, the authors are unable to legally provide the proprietary software. Please ensure that you acquire the proprietary software through authorized channels.

Contents

Chapter 11, Pre-task 1, Cisco CML (Cisco Modeling Labs) Router and Switch Installation on GNS3	1
About this document:	1
Required files for installation:.....	1
Part A: GNS3 installation Pre-task, uninstall, and disable Hyper-V on Windows Host PC.....	3
Part B: GNS3 installation.....	7
Part C: Downloading GNS3 appliances and looking for the image files for your lab build	15
CML Layer 2 Switch image installation on GNS3:	16
CML Layer 3 Router image installation on GNS3:	20
Troubleshooting Import Error.....	26
Juniper Switch vmdk file download link.....	27

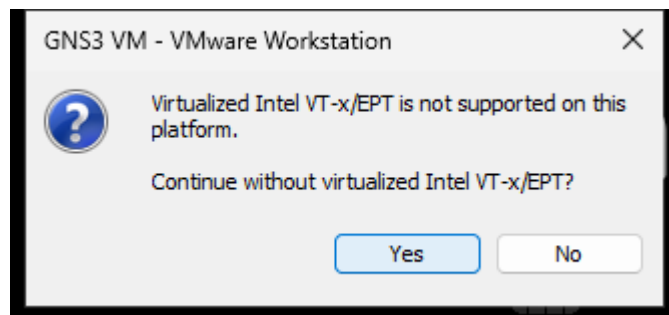
Part A: GNS3 installation Pre-task, uninstall, and disable Hyper-V on Windows Host PC

We have been using Microsoft Hyper-V to run WSL on our Windows 11 PC. To allow the installation of GNS3's GNS3 VM on VMware Workstation 17 Pro, we have to make sure we disable the Microsoft Hyper-V.

If you install GNS3 and then try to import GNS3 VM, you will be encountering the following GNS3 VM error.

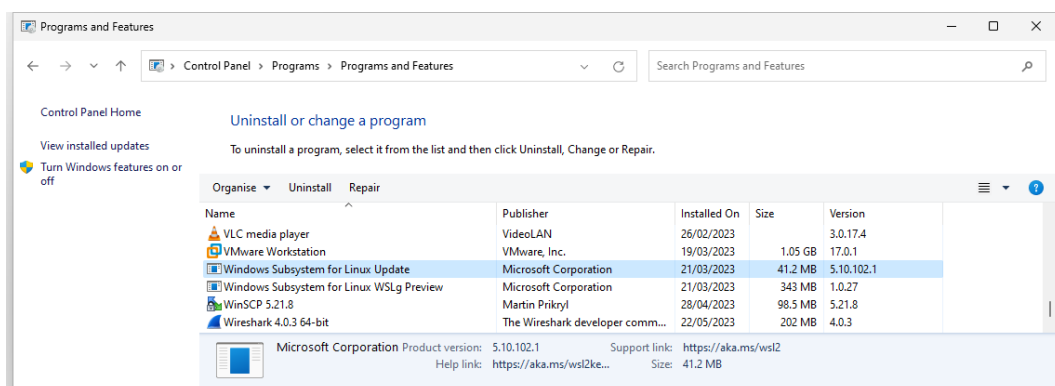
Virtualized Intel VT-x/EPT is not supported on this platform.

Continue without virtualized Intel VT-x/EPT?

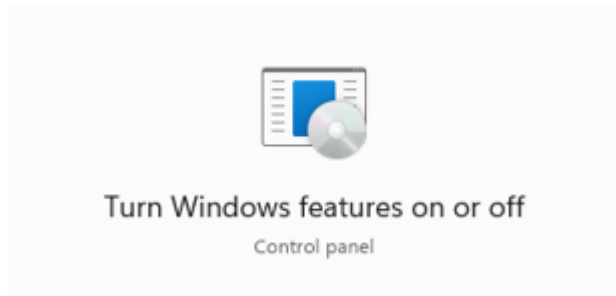


To avoid the above error, you will need to follow the following steps based on the VMware knowledge base. <https://kb.vmware.com/s/article/2146361>

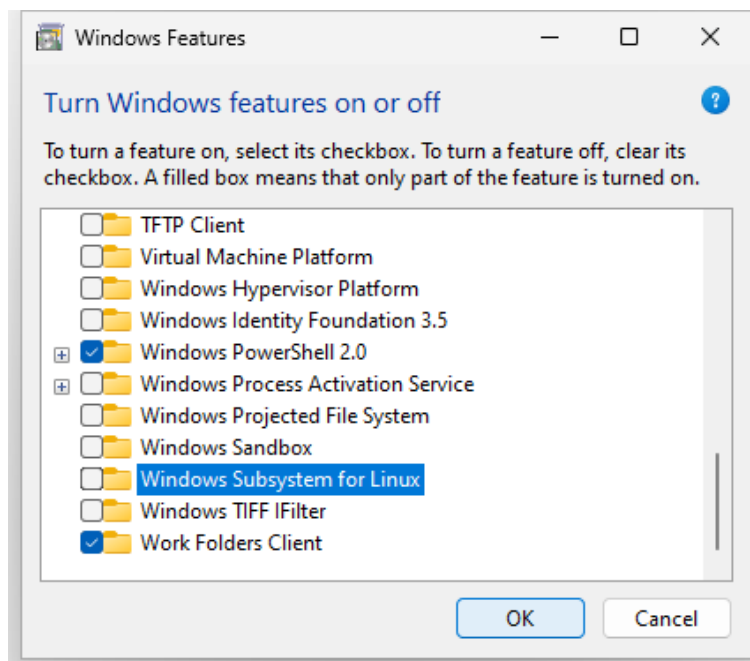
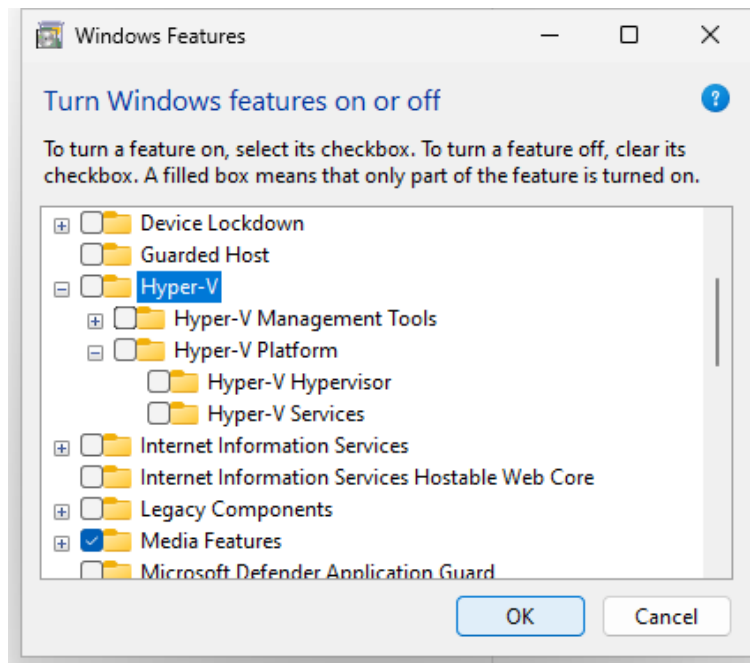
1. Go to Programs and Features > Uninstall or change a program. If you see the 'Windows Subsystem for Linux Update' and 'Windows Subsystem for Linux WSLg Preview'. WSL has served its purpose for use in chapters 2 and 3, so we can remove this software safely.



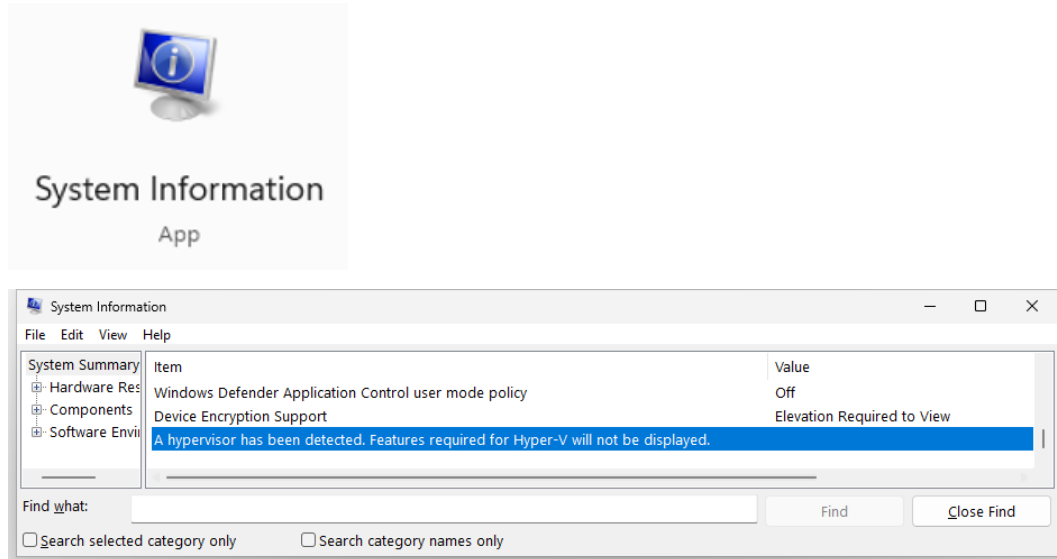
- Next, go to your Windows Search bar and type in “Turn Windows features on or off”.



- Deselect the 'Hyper-V' option and also deselect 'Windows Subsystem for Windows' as shown and click on the [OK] button.

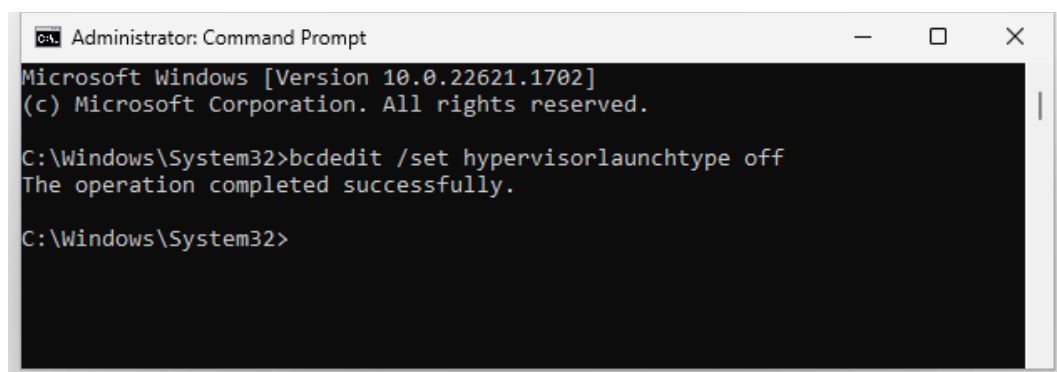


4. If you open the system information and check the system summary, go to the end of the line and you will notice 'A hypervisor has been detected. Features required for Hyper-V will not be displayed message and this will stop the GNS3 and GNS3 VM integration. This is what we are trying to troubleshoot here.



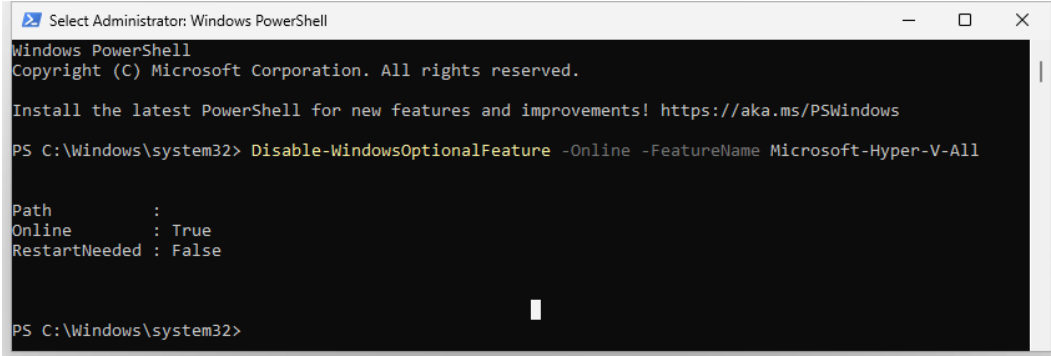
5. Open the Windows Command Prompt in **Administrator mode** to turn off hypervisorlaunchtype using the following command. You have to run this command in Administrator mode in the Command Prompt.

bcdedit /set hypervisorlaunchtype off



6. Also, use Windows PowerShell in Administrator mode to remove all Hyper-V features by running the following command.

Disable-WindowsOptionalFeature -Online -FeatureName Microsoft-Hyper-V-All

A screenshot of a Windows PowerShell window titled "Select Administrator: Windows PowerShell". The window has a black background with white text. It shows the command "Disable-WindowsOptionalFeature -Online -FeatureName Microsoft-Hyper-V-All" being executed. The output shows the command's path, that it was run online, and that a restart is not needed.

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Windows\system32> Disable-WindowsOptionalFeature -Online -FeatureName Microsoft-Hyper-V-All

Path          :
Online        : True
RestartNeeded : False

PS C:\Windows\system32>
```

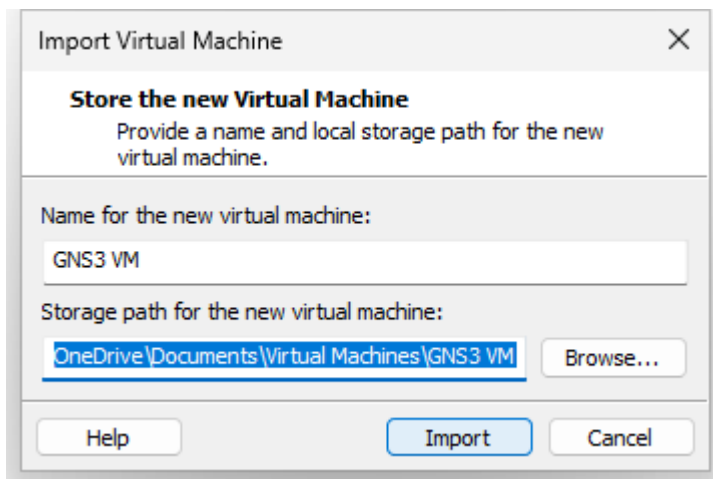
7. Now you have to **restart the PC** and continue with the installation of GNS3 and then follow through with the GNS3 VM integration on VMware Workstation.

Part B: GNS3 installation

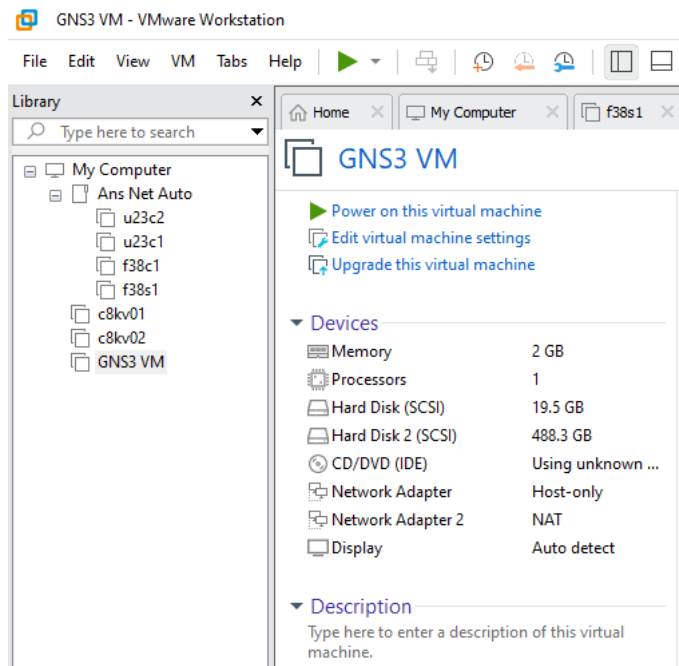
1. Go to the GNS3 GitHub site to **download and save GNS3-2.2.39-all-in-one.exe and GNS3.VM.VMware.Workstation.2.2.39.zip in the Downloads folder** of your Windows PC. You can download the latest version but the versions of two files must match. i.e.) 2.2.39 exe file for 2.2.39 zip file.
<https://github.com/GNS3/gns3-gui/releases>
2. **Extract the zip file (GNS3.VM.VMware.Workstation.2.2.39.zip) in the Downloads folder** and leave it there.
3. Launch your VMware Workstation 17 Pro. From the File menu, select [Open ...] or press 'Ctrl + O'.
4. Navigate to the extracted file in the Downloads folder which contains 'GNS3 VM' and highlight the GNS VM ova file and click on the [Open] button.
5. When you are prompted with the Import Virtual Machine window, enter the virtual machine name the same as "GNS3 VM" and it should automatically populate the Storage path, leave that setting as default, then click on the [Import] button.

Virtual Machine name: **GNS3 VM**

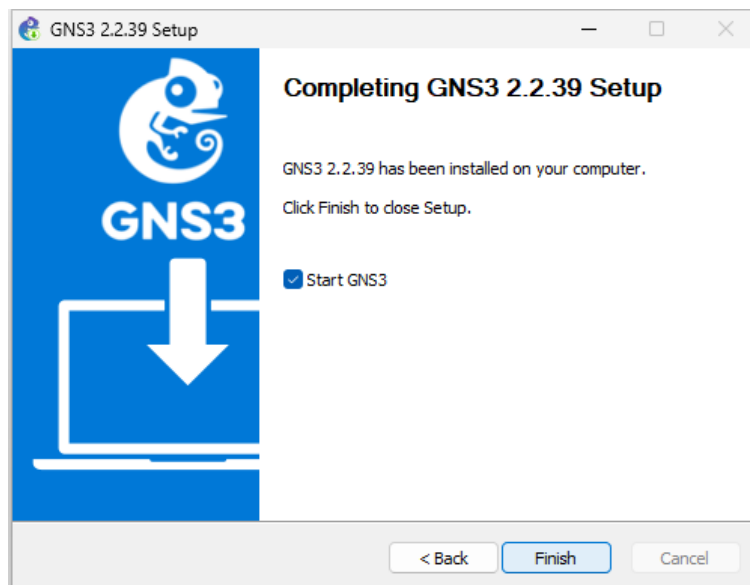
Storage Path: **C:\Users\<User_ID>\OneDrive\Documents\Virtual Machines\GNS3 VM**



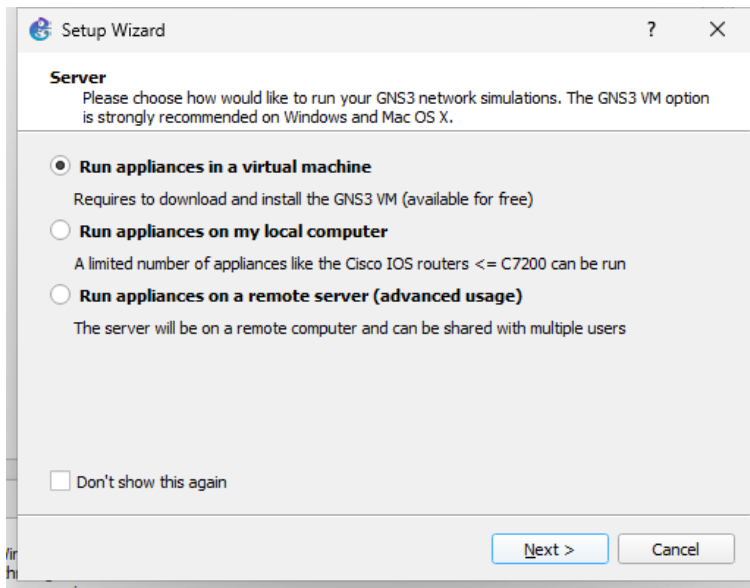
6. If your GNS VM has been successfully imported. Leave the VMware Workstation running in the background and now move to the next step, the installation of GNS3.



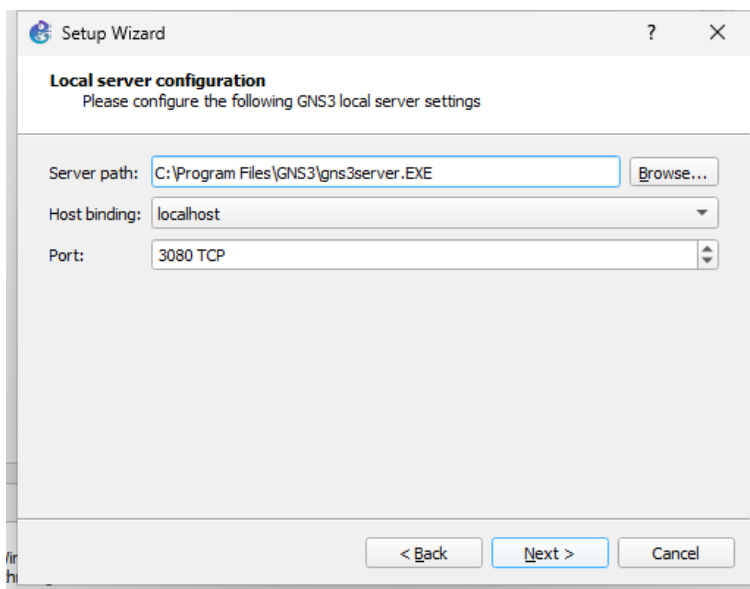
7. Now install **GNS3-2.2.39-all-in-one.exe** on your Windows host PC. There are no special instructions to follow here, simply follow the prompts and complete your installation. Don't install Solarwinds Standard Toolset and keep everything as default settings. Once the installation completes successfully, you should see the same or similar windows as shown below. Click on the [Finish] button to start GNS3 for the first time.



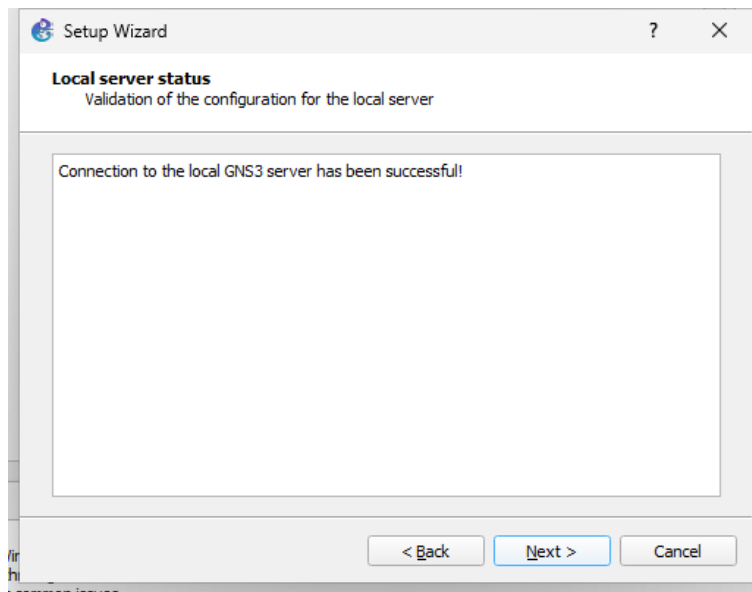
8. In the Setup Wizard window, **leave the first option** as we will be running the appliances in a virtual machine. Click on the [Next >] button.



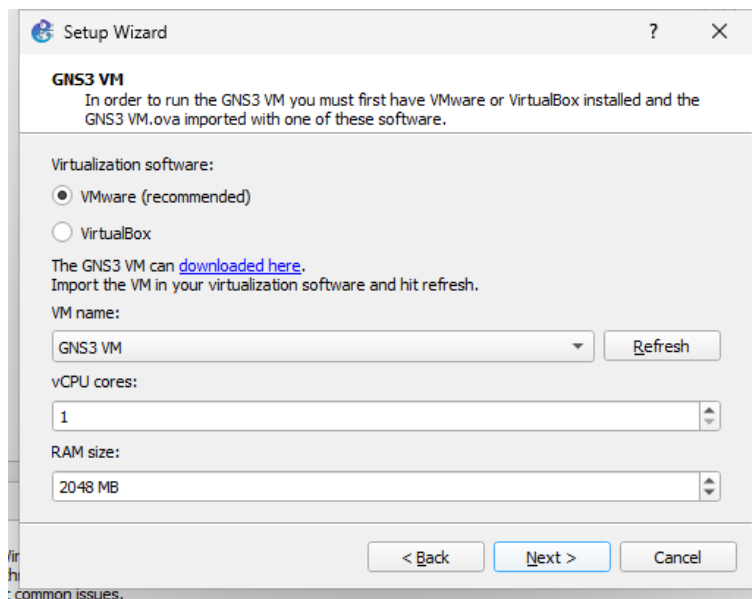
9. **Leave everything as default** and click on the [Next >] button.



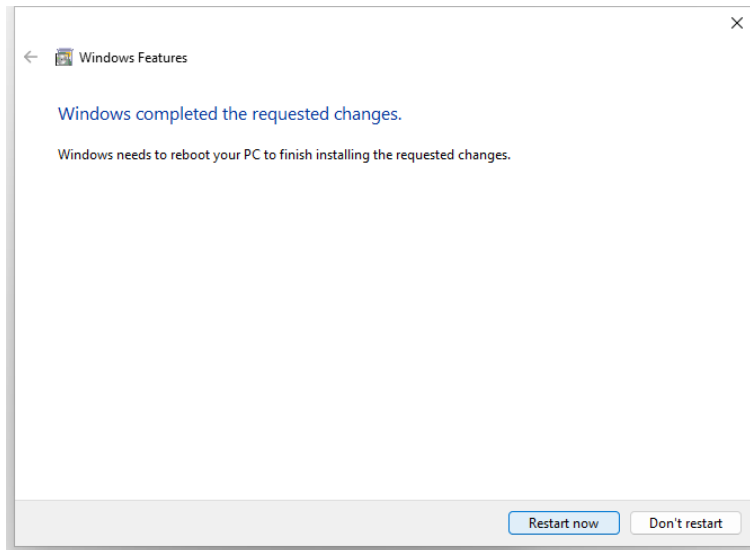
10. Click on the [Next >] button.



11. We installed the GNS3 VM on the VMware Workstation 17 Pro in steps 3-6, the GNS3 VM will be detected automatically by GNS3. Leave all the settings as default and click on the [Next >] button.



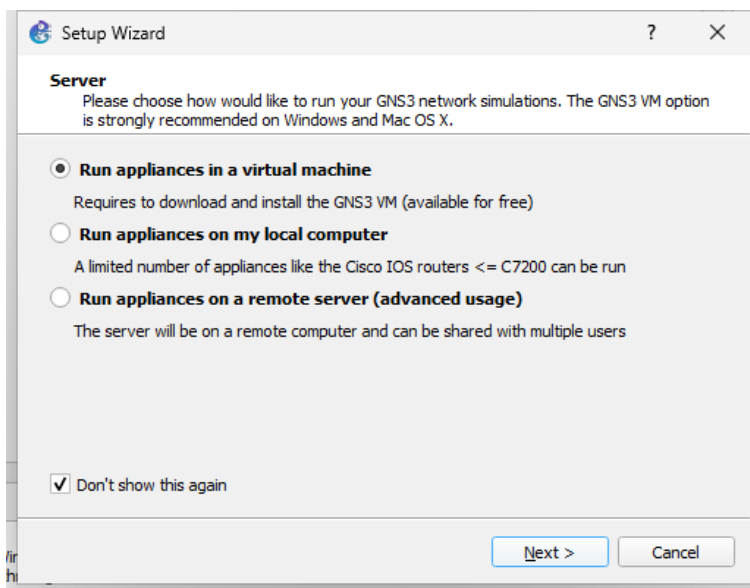
12. Save any unsaved work and then close all the applications running on your Windows 11 PC and restart the Windows.



13. After your PC restarts, start GNS3 by double-clicking on the GNS3 start icon on your Windows Desktop.

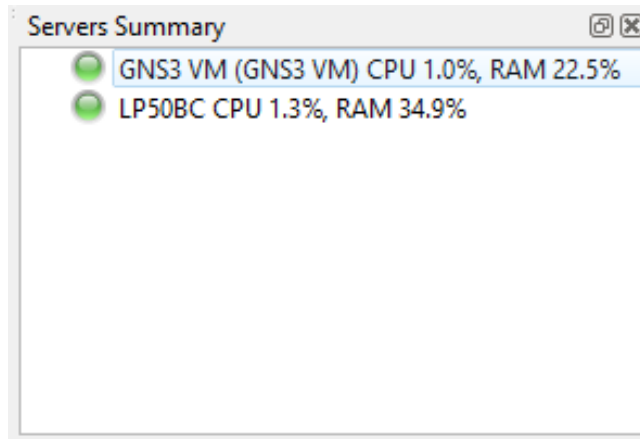


14. The GNS3 Setup Wizard will run one more time, leave the first option and select the 'Don't show this again' option and click on the [Next >] button.

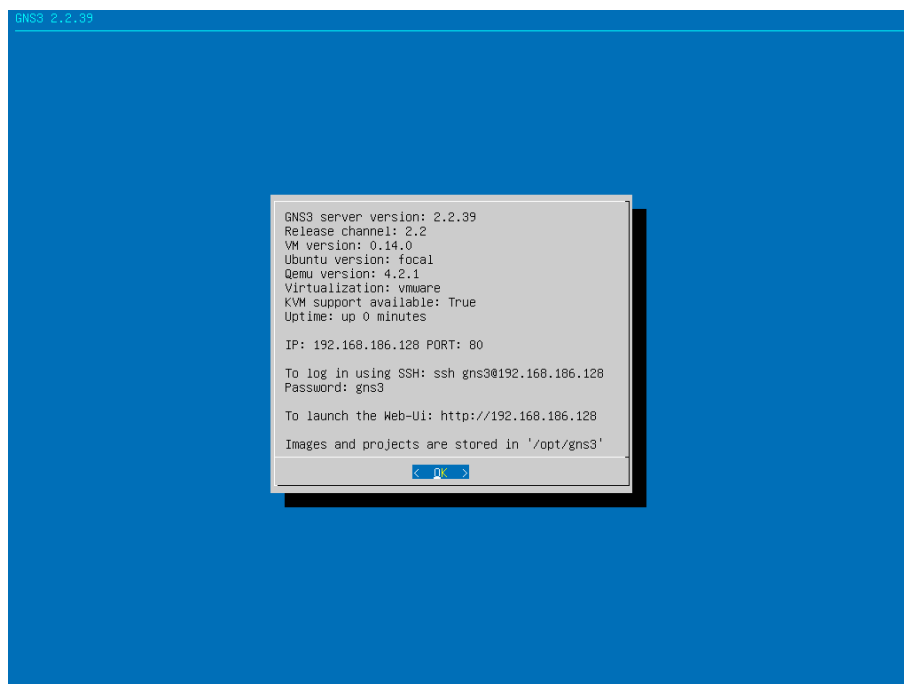


15. Wait for 1-2 minutes and your GNS3 will start the GNS3 VM from VMware Workstation 17 Pro automatically.

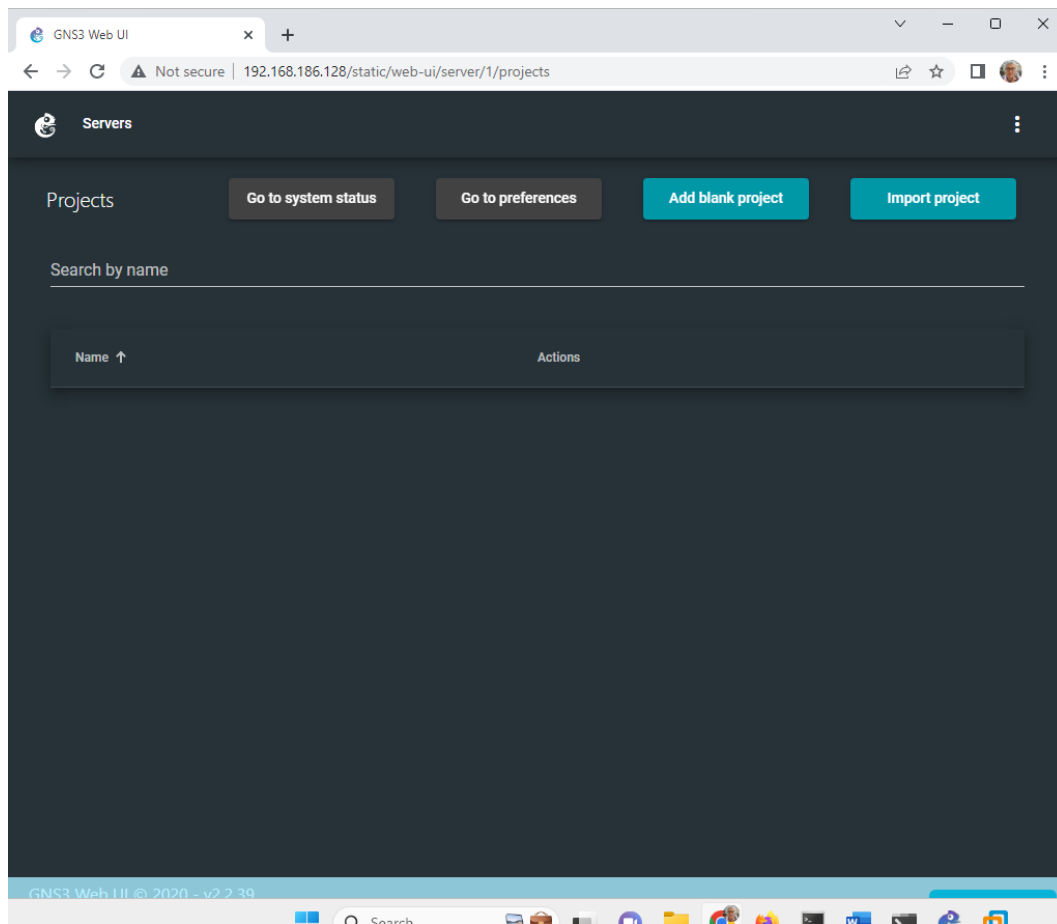
On GNS3, you should see the green light next to the GNS3 VM.



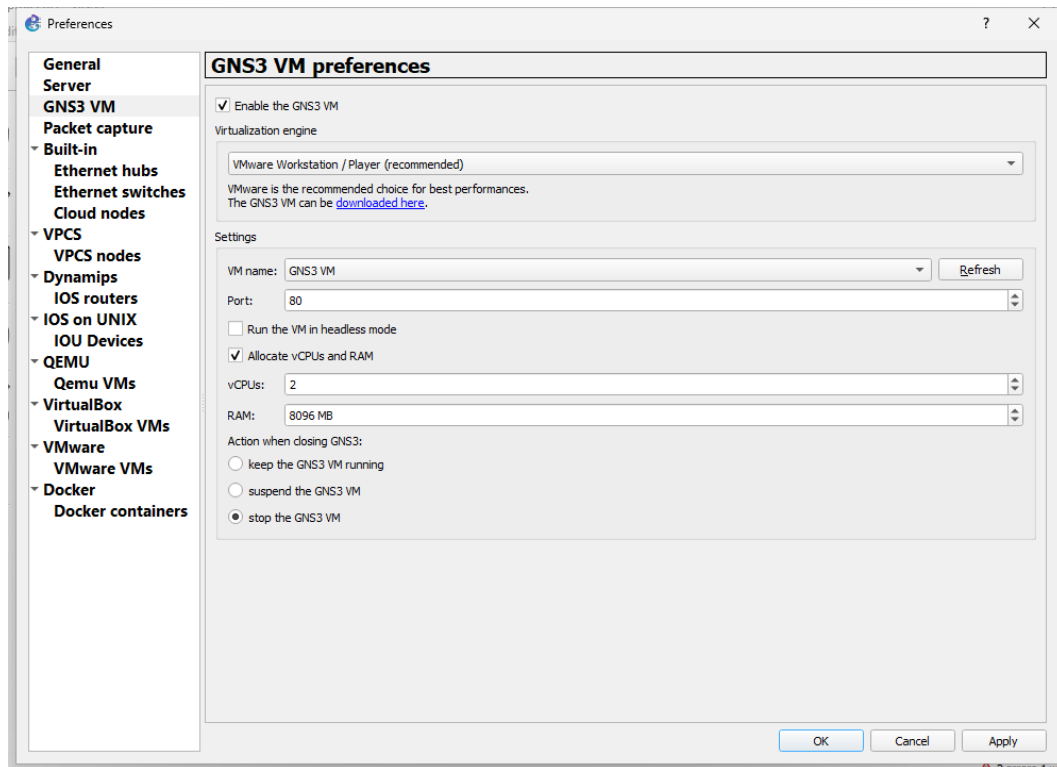
On the VMware Workstation console, you should see the following screen.



16. Open your favorite web browser and launch GNS3 from the Web-UI. Now you are ready to install CML images.

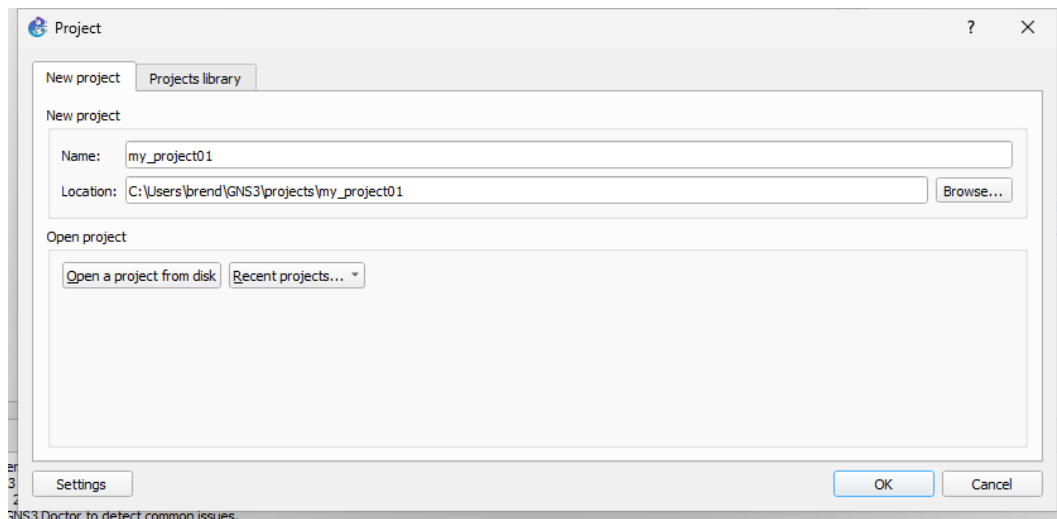


17. Now go to Edit > Preferences ... > GNS3 VM. Then increase the number of vCPUs to 2 and RAM to 8096MB. Click on the [OK] button.



This will trigger your VMware GNS3 VM to restart. Wait until the server takes the new settings and fully boots up.

18. When you are prompted to the Project menu, give the name of your project and click on the [OK] button.



Part C: Downloading GNS3 appliances and looking for the image files for your lab build

You can go to the following GNS3.com site and refer to instructions on how to download the required appliance and Virtual Networking/Server image files. You will need vendor accounts to download the actual proprietary image files and you will also need to download the appliances to import the virtual machines. Some vendor accounts will only require an account associated with a valid support contract, some accounts will require you to purchase the subscriptions to download the genuine software.

<https://www.gns3.com/marketplace/appliances>

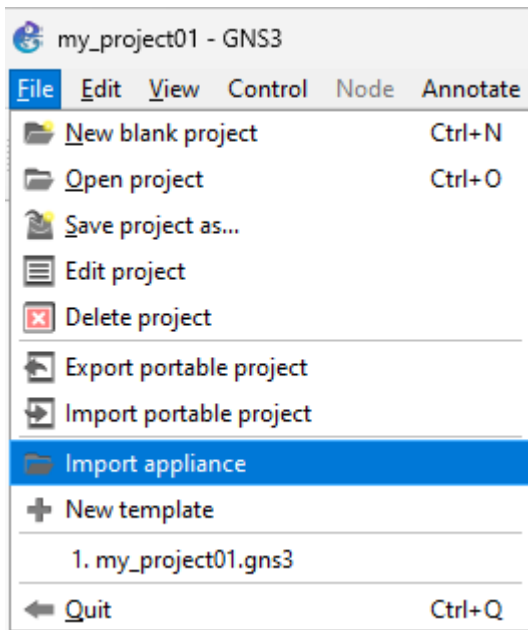


In the older GNS3 versions, GNS3 appliances were pre-installed and were ready to use out of the box. But now, you have to import an appliance first for each of the devices you want to import and use and then 'import appliance'. If you want to download the appliance files used in this book, you can download the zip file from the following link. Please note that these are not the virtual networking devices' image files, but only the appliance files for GNS3 which is commonly shared by the GNS3 community. As mentioned before, you will need to source the appropriate device image files through various channels, but the authors cannot share any proprietary image files.

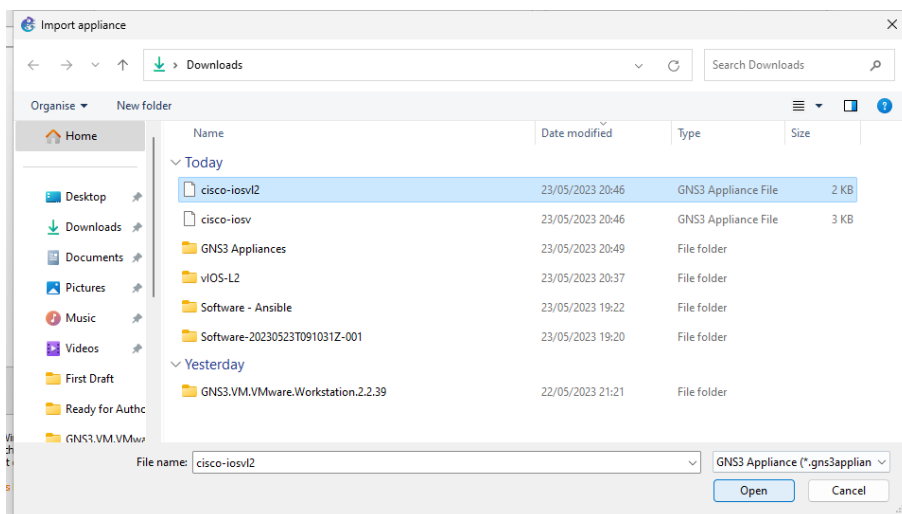
<https://github.com/ansnetauto/GNS3-Appliances>

CML Layer 2 Switch image installation on GNS3:

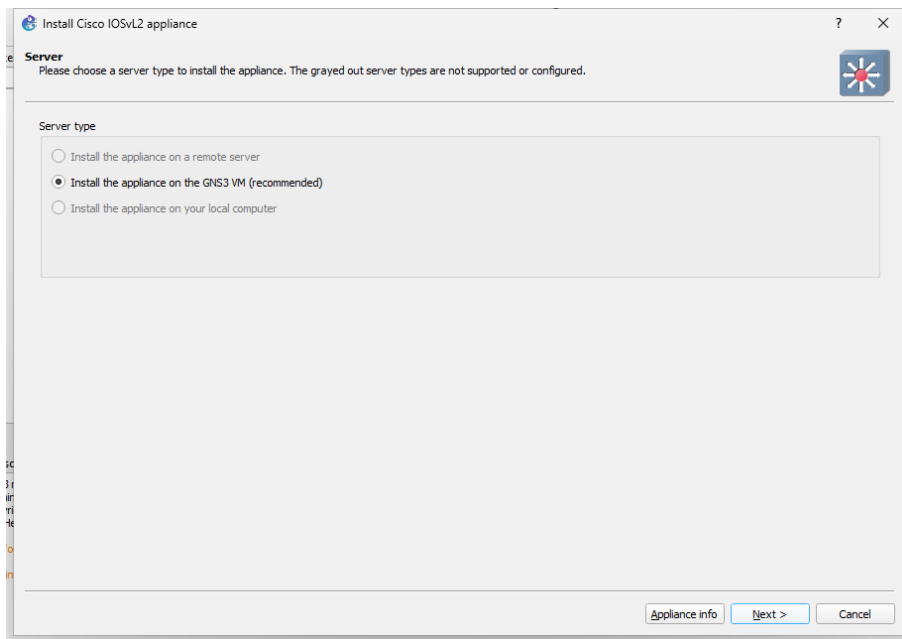
1. Now you have the appliance files and image files located, downloaded, and extracted to your Downloads folder, from your GNS3 project window, go to File > Import Appliance.



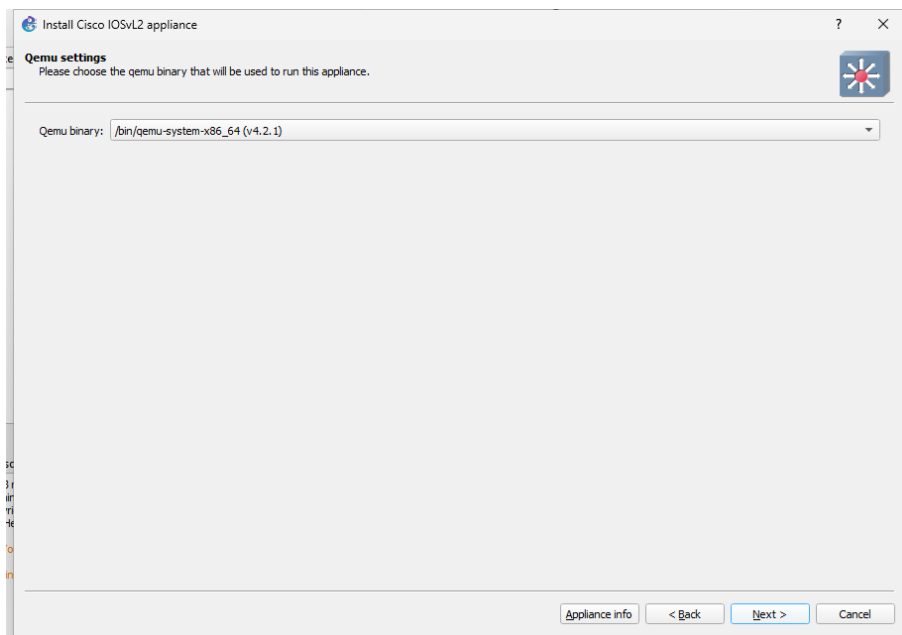
2. Let's import Cisco L2 switch appliance template by locating the cisco-iosv2 file in your Downloads folder and clicking on the [Open] button.



3. On the next window, leave the default setting and click on the [Next >] button.

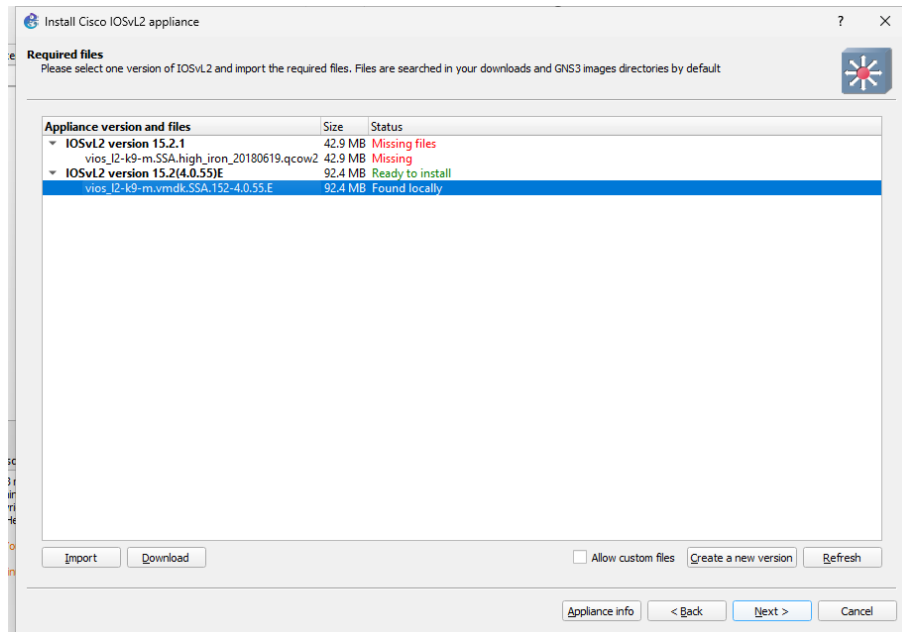


4. Once again click on the [Next >] button.

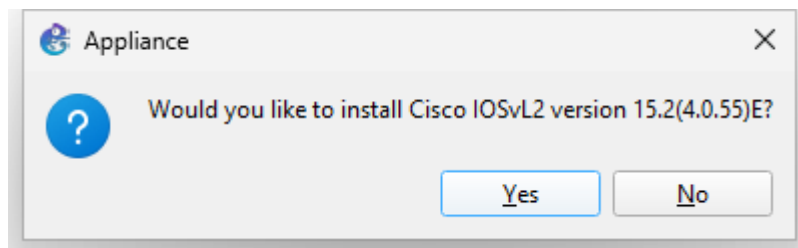


5. Your GNS3 will automatically detect your L2 Cisco Switch image if you have placed it correctly in the Downloads folder. The L2 image file name is given below:

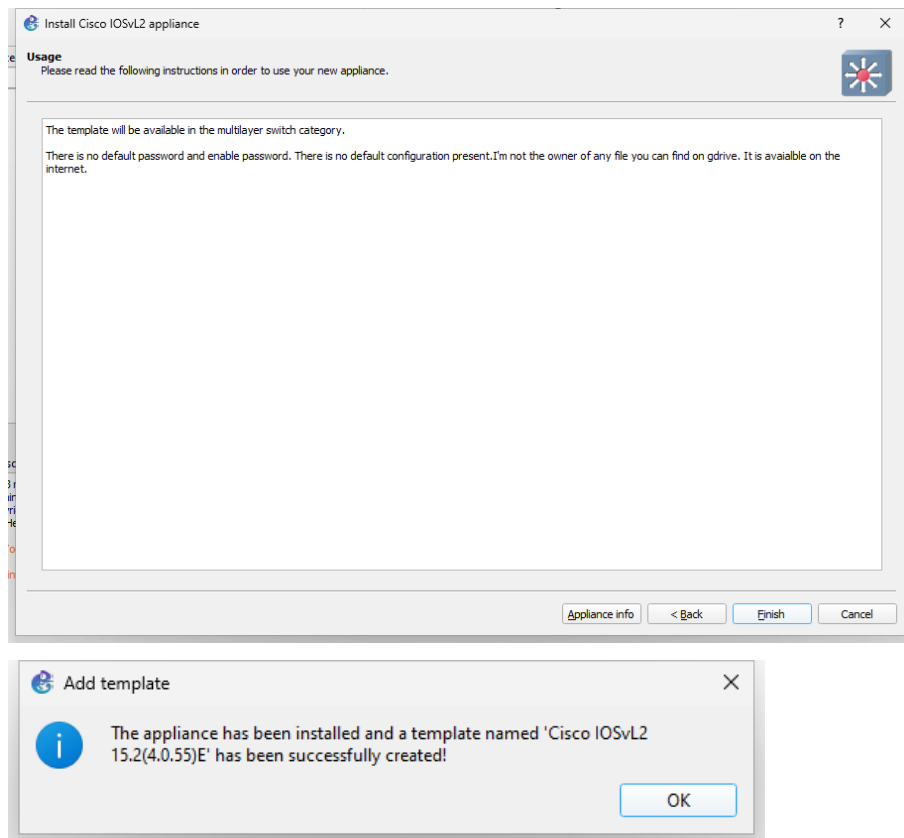
File name: `vios_l2-adventerprisek9-m.vmdk.SSA.152-4.0.55.E`



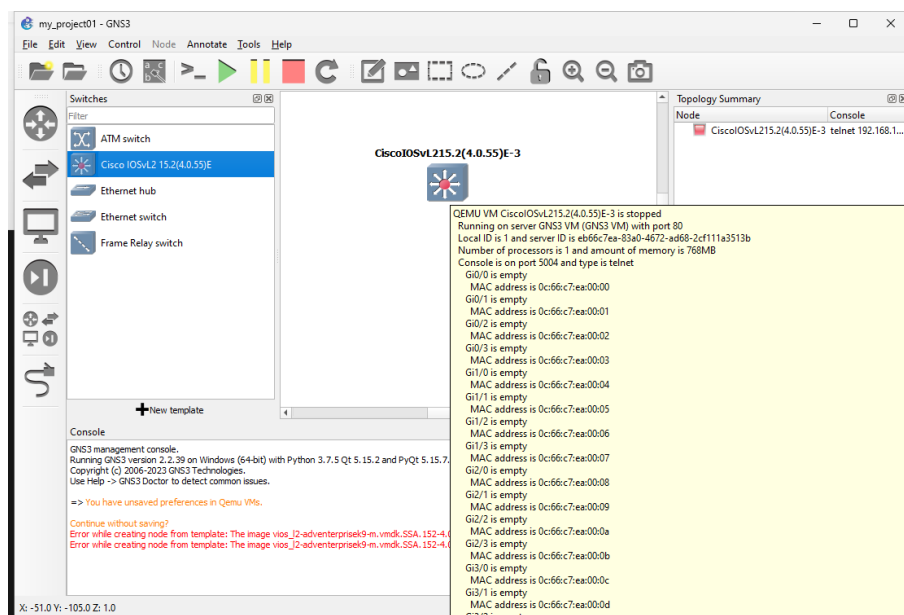
6. When you are prompted to install the Cisco IOSvL2 VIRL image, click on the [Yes] button to proceed.



7. Once the installation is complete and successful, you should see the following messages.

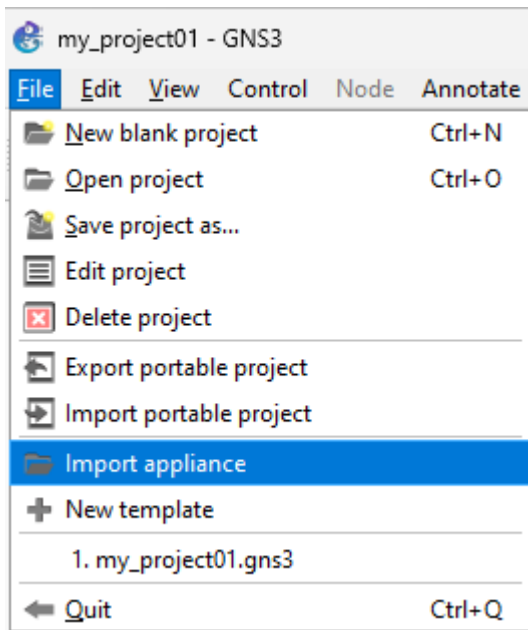


8. On the left side of the GNS3 pane, click on the Switch icon and you will see the new Cisco L2 IOS image. Drag and drop to the GNS3's Topology Canvas, and validate that the installation is successful. If the drag and drop fails at this point, you will have to remove the L2 icon from the left menu and repeat the installation one more time. If you were successful with the drag and drop, leave it unpowered and move to the installation of the IOSv L3 router image.

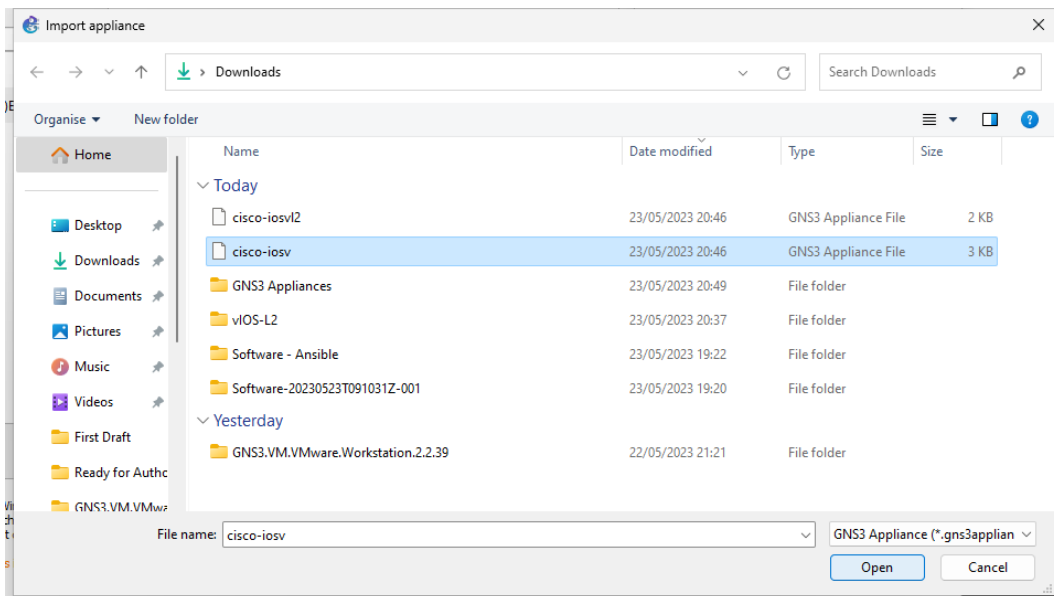


CML Layer 3 Router image installation on GNS3:

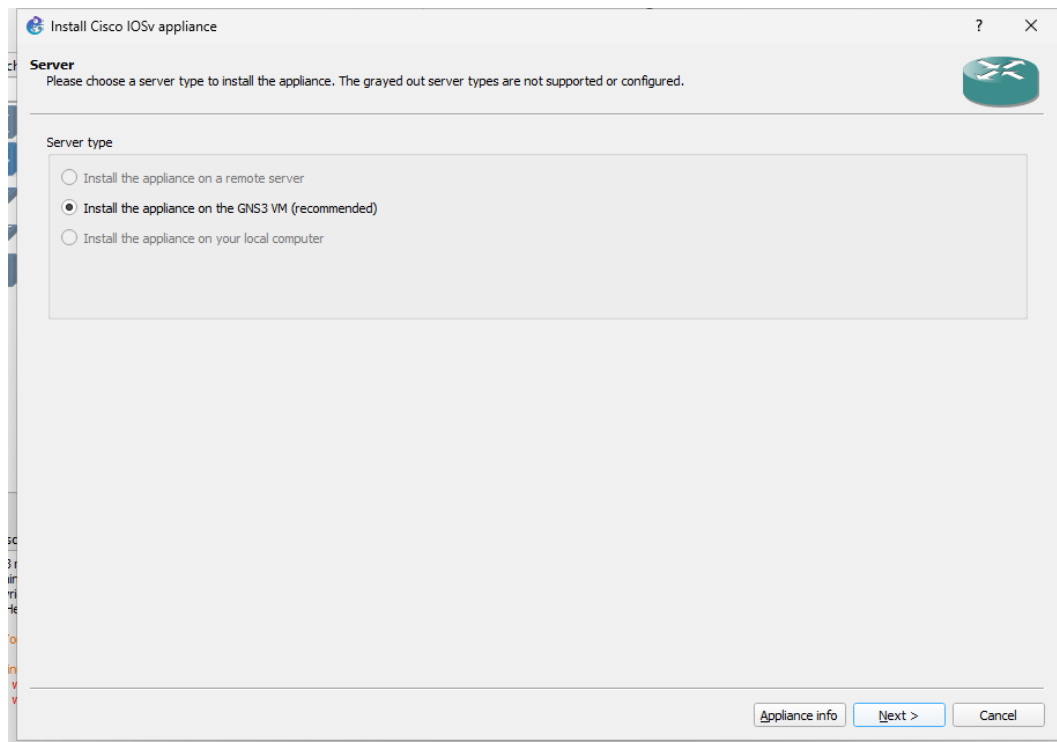
1. Now install CML L3 or router image with GNS3. As before, start by selecting 'Import Appliance'.



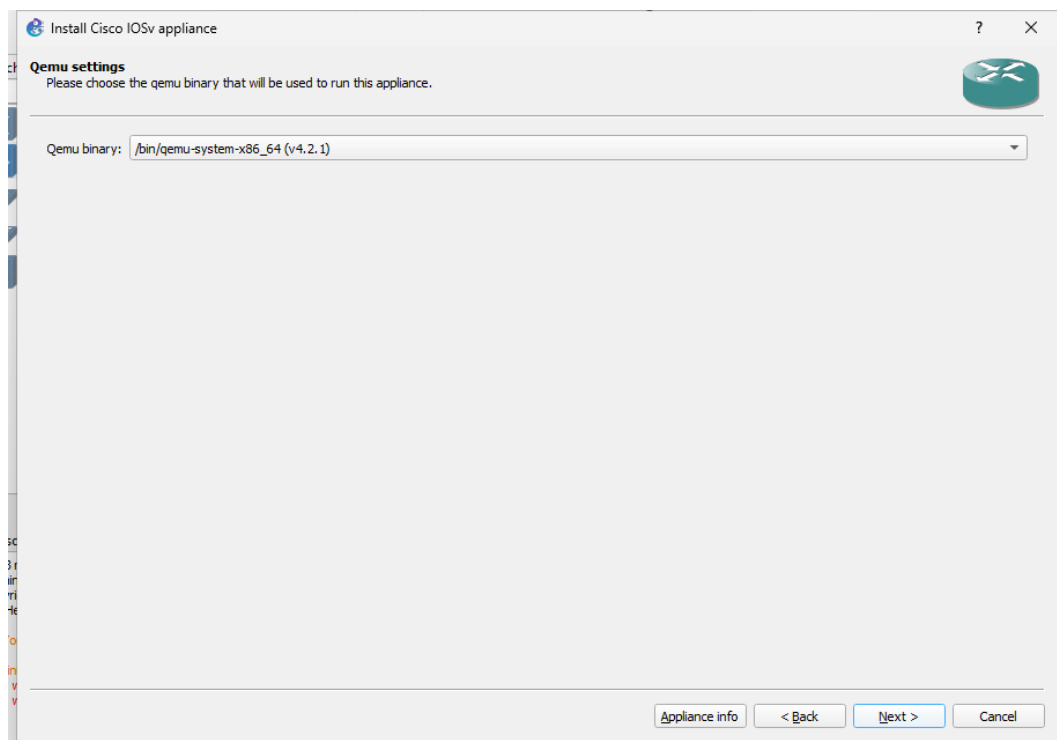
2. Locate the GNS3 Appliance file for the CML L3 router image, named 'cisco-iosv'.



3. Leave the default selection and click on the [Next >] button.



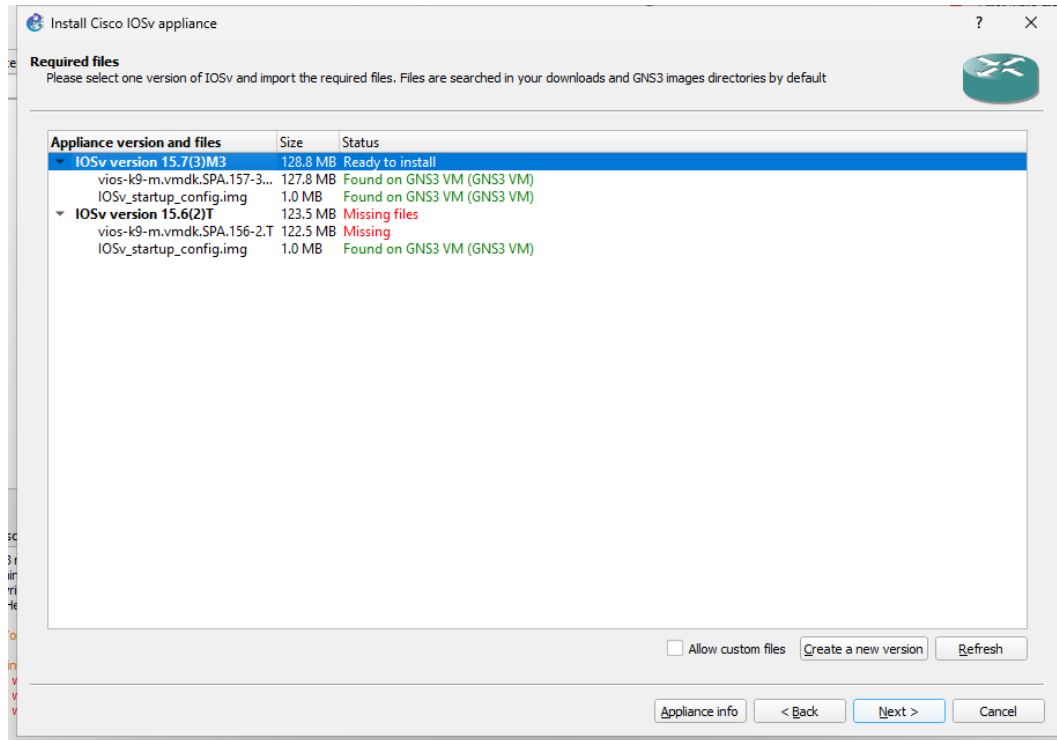
4. Again, click on the [Next >] button.



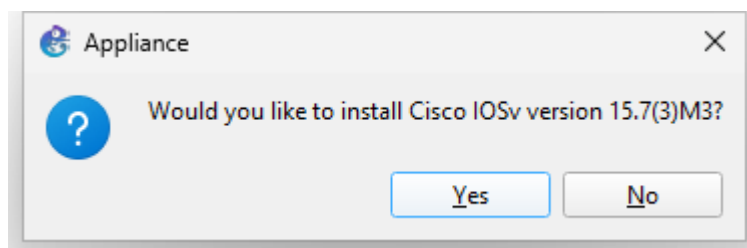
5. If you have placed your files in the correct folder, the Downloads folder, then your GNS3 will automatically detect all the valid IOSv files. Unlike the L2 switch file, here you will require two files, one file for the image and another for the IOSv start-up.

Start-up file name: `IOSv_startup_config`

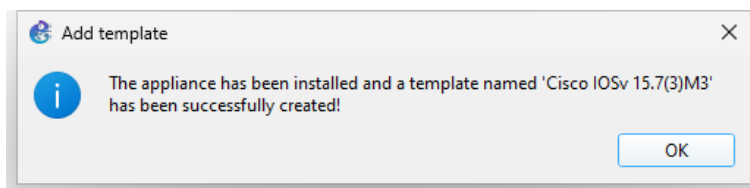
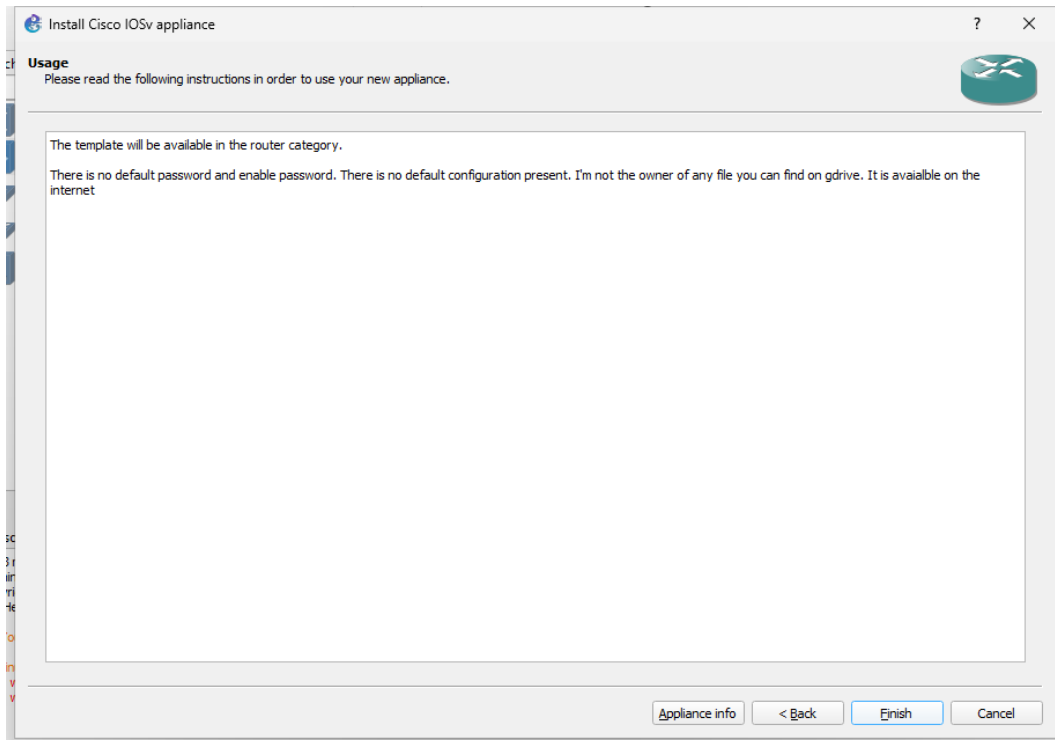
Image file name: `vios-adventerprisek9-m.vmdk.SPA.157-3.M3.qcow2`



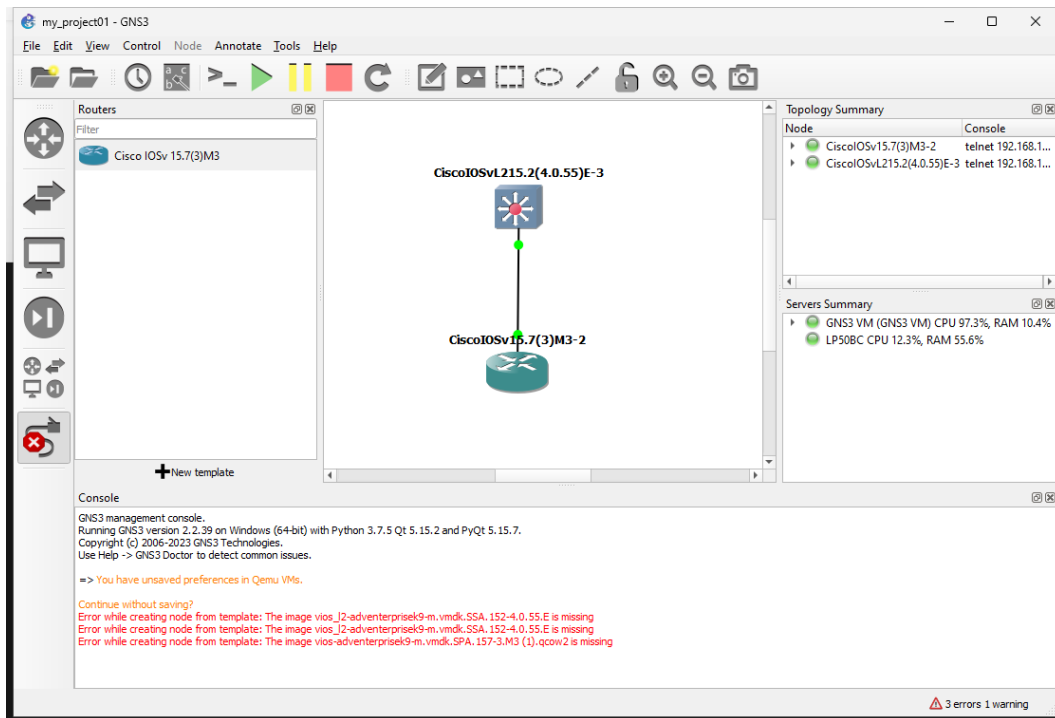
6. Click the [Yes] button to start the Cisco IOSv installation.



7. Once again, when your installation has been completed, you should expect to see the following screenshots.

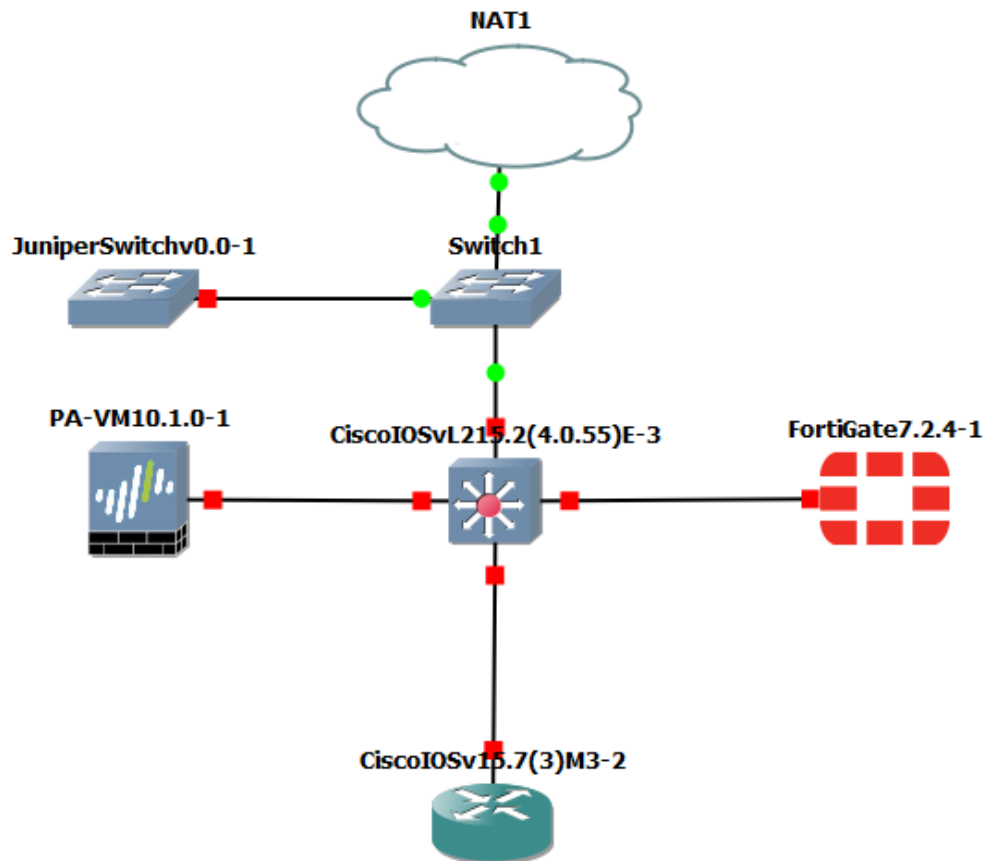


8. Click on the router menu on the left side and you should find your Cisco IOSv version. As before, drag and drop it onto the GNS3's Topology Canvas. Use the connector tool and connect the switch and the router and click on Power on. If they power on and you can open the console of each device, then your L2 and L3 device installations are completed.



Now you have completed the installations of the Cisco CML router and switch on GNS3.

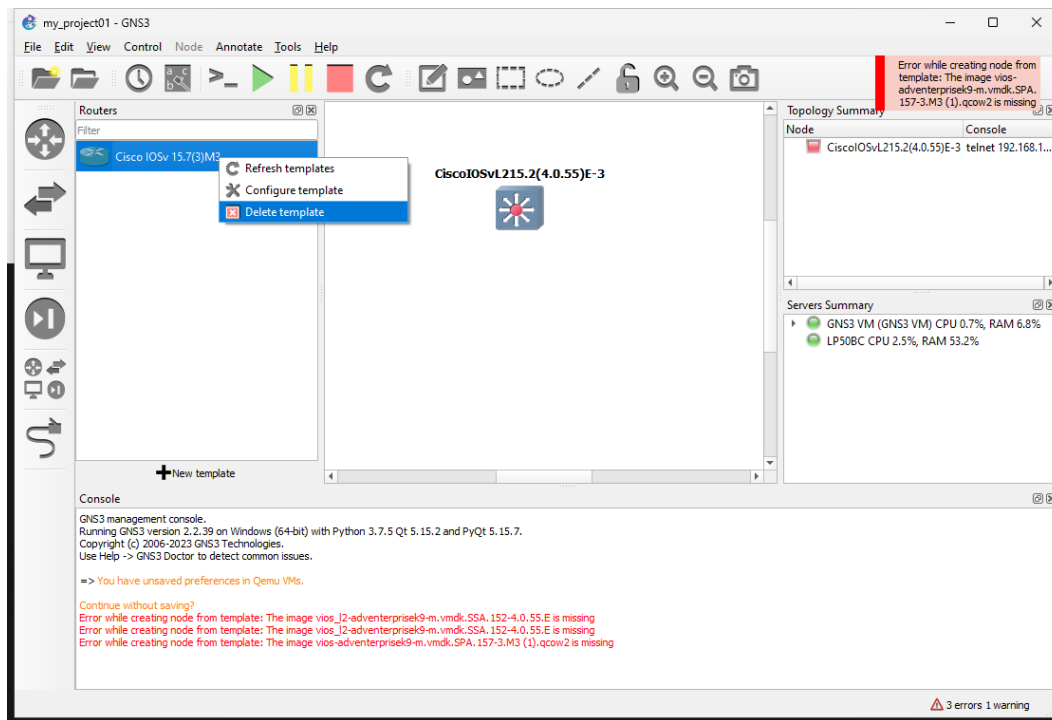
9. **[Optional]** If you have access to other network device images, you have the option to install them for your labs. The provided screenshot showcases Cisco (L2 Switch & L3 Router), Juniper (Switch), Palo Alto (Firewall), and Fortinet (Firewall) network devices in the topology. If you can find the appropriate images and configuration files for any of these devices, you can create highly versatile and reliable virtual labs within GNS3 environments.



Now read the book and follow through with the Palo Alto and Fortinet firewall installation guide in “Ch11_Pre-task2_PaloAlto_and_Fortinet_Firewall_installation_on_GNS3.pdf”. Enjoy building your lab!

Troubleshooting Import Error

If you received an error while trying to drag and drop your device onto the canvas, you have to delete the device template as shown below and start the installation again until it works. If you encounter other installation and starting issues, you will have to take time to troubleshoot the issue before going back to Chapter 11 to continue with the chapter readings.



That's it! Now you have completed the installation of Cisco virtual routers for the testing lab. Now continue your reading and study with the book.

Juniper Switch vmdk file download link

You can download a JunOS router image from the following links.

Juniper JunOS Olive 12.1R1.9 image:

[JunOS Olive-disk1.vmdk](#)

<http://www.netdaily.org/wp-content/uploads/2016/08/JunOS%20Olive-disk1.vmdk>