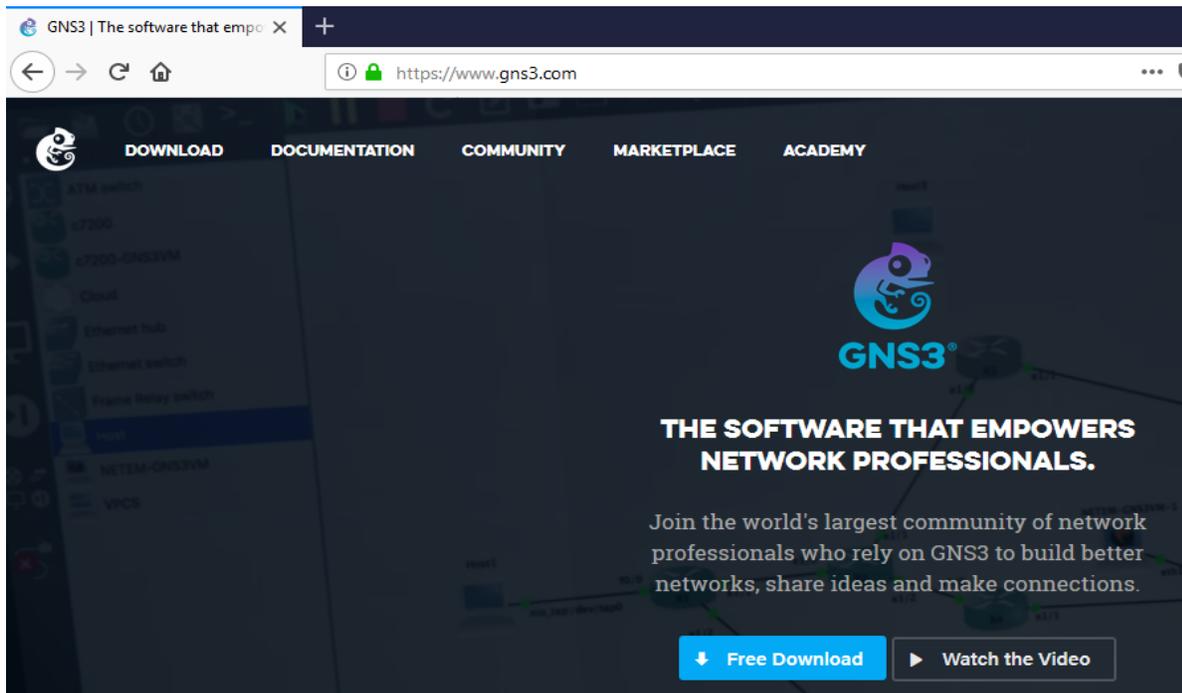


Quick Start GNS3

GNS3 stand for Graphical Network Simulator 3 and it is a network software emulator that is used to simulate complex networks. GNS3 runs on Windows, macOS, and Linux, but you must have either VirtualBox or VMware already installed on your system.

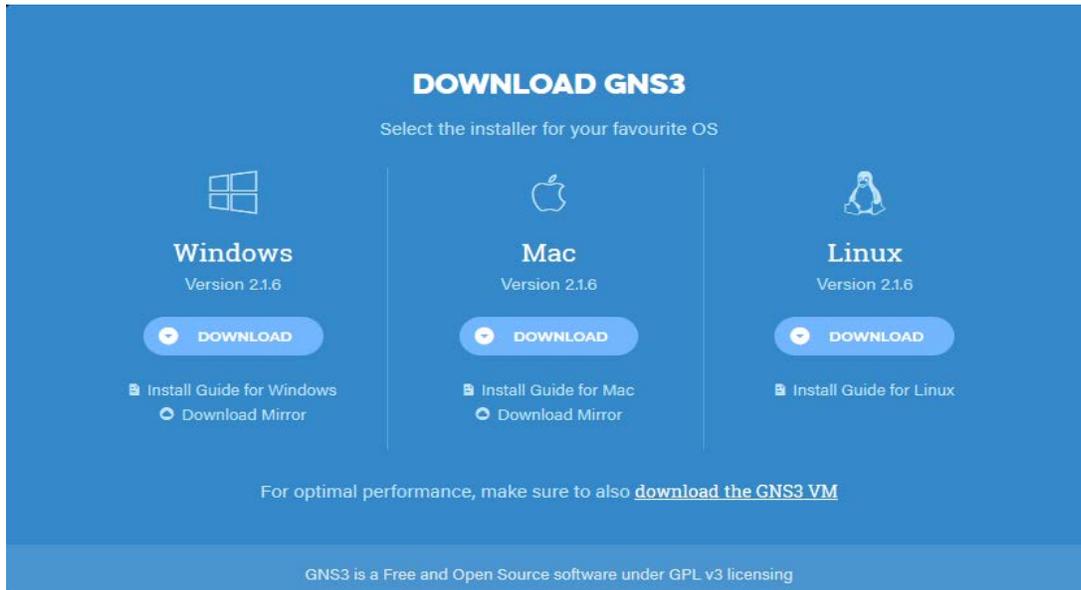
To get started visit: <http://www.gns3.com> and click the **Free Download** button.



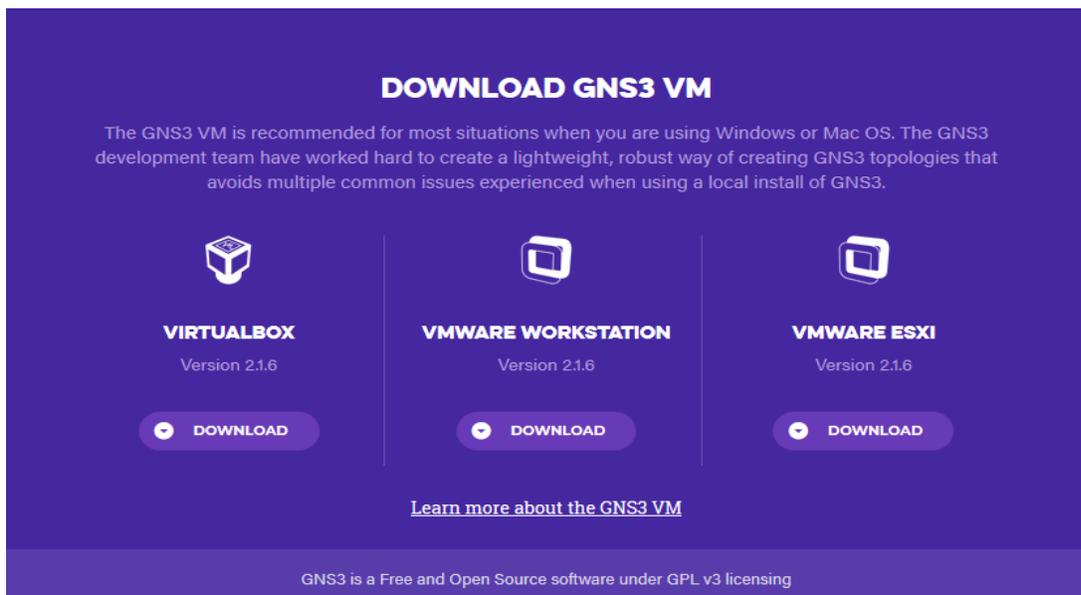
You must create a free account as shown below.

A screenshot of the GNS3 sign-up form. The form is titled "Sign Up" and "Login". It features a blue header with the GNS3 logo and the text "Login to the GNS3 Community" and "Join the growing GNS3 community of over 1 million network professionals." The main form area has a light blue background with the text "An account is required to download the GNS3 Software and participate in the Community. To create an account, just fill in the fields below!". The form fields include: "First Name", "Last Name", "E-mail", "School/Organization", "Password", "Confirm Password", "United States" (a dropdown menu), "Zip Code", "I use GNS3 Software for:" (a dropdown menu with "Education & Training" selected), and a checkbox for "Sign me up for the GNS3 newsletter". At the bottom, there is a large blue button labeled "Create Account & Continue". Below the button, it says "By creating an account, you agree to the GNS3 Terms and Conditions and Privacy Policy".

Once the account is created (or you login) you will be presented with the download page.



You MUST download the appropriate version for your operating system AND the GNS3 VM that matches with your virtualization software. Clicking the **download the GNS3 VM** link presents this page.



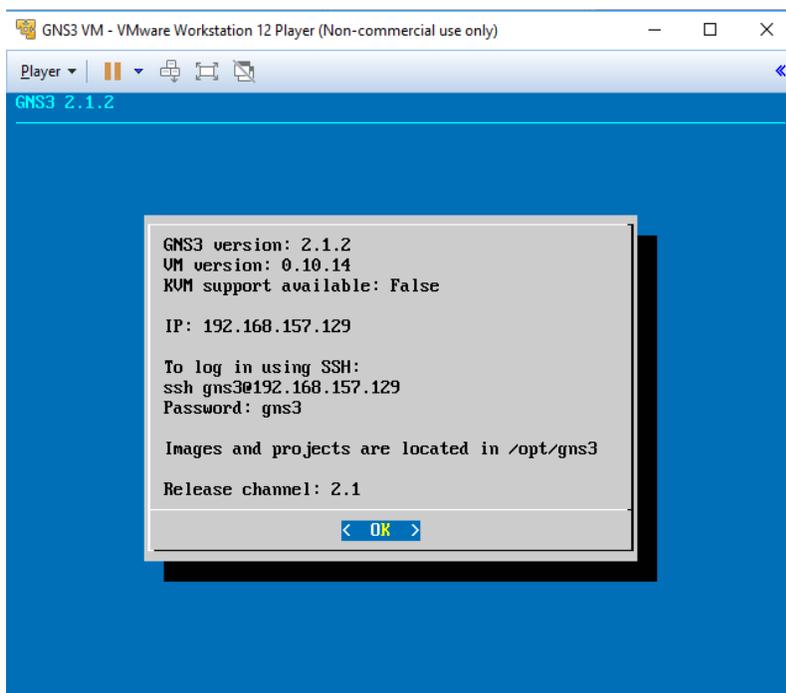
Once you have downloaded both the GNS3 software installer for your operating system AND the GNS3 VM which goes with your virtualization software, make note of where you downloaded these files. Then to start the process, FIRST import the GNS3 VM BEFORE installing the GNS3 software.

The GNS3 VM download file will be in zip file format, so you must copy the contents (i.e., file called GNS3 VM.ova) out of the zip file and to another location such as Downloads or your Desktop.

To import the GNS3 VM into VirtualBox, choose **File** from the menu bar and then **Import Appliance...** from the File menu. Click on the little folder icon and navigate to the location of the GNS3 VM.ova file you copied out of the downloaded zip file. Once successfully imported, the GNS3 VM will show within the list of your virtual machines. Select it and click the **Start** button to launch the GNS3 VM. Once it boots up, you should see a screen which shows its IP address. When using VirtualBox, this IP address should be in the range of 192.168.56.x, likely 192.168.56.101 as this is the range VirtualBox provides via DHCP to virtual machines on the host-only adapter.

To import the GNS3 VM into VMWare, use the **Open a Virtual Machine** choose from either the main screen or the **Player/File** menu. Use the file open dialog box to navigate to the location of the GNS3 VM.ova file you copied out of the downloaded zip file. Once it is successful imported, the GNS3 VM will show in your list of virtual machines. Select it and click the **Play virtual machine** button to launch the GNS3 VM. Once it boots up, you should see a screen which shows its IP address. When using VMWare, this IP address is typically in the range of 192.168.157.x under VMnet1, the VMWare host-only adapter.

The example below shows the GNS3 running under VMWare, but the screen looks the same on VirtualBox except for having a different IP range.



Only once you have the GNS3 VM running successfully within your virtualization environment should you proceed to actually installing the GNS3 software itself.

The GNS3 software (the GUI front end of the system) installer is generally named in the format of:

GNS3-x.x.x-all-in-one.exe (where x.x.x is the version number) for Windows or

GNS3.x.x.x.dmg (where again x.x.x is the version number) for macOS.

To launch these installers for Windows or macOS, you simply need to double-click on them to start the install process.

For Linux, things are a bit different...

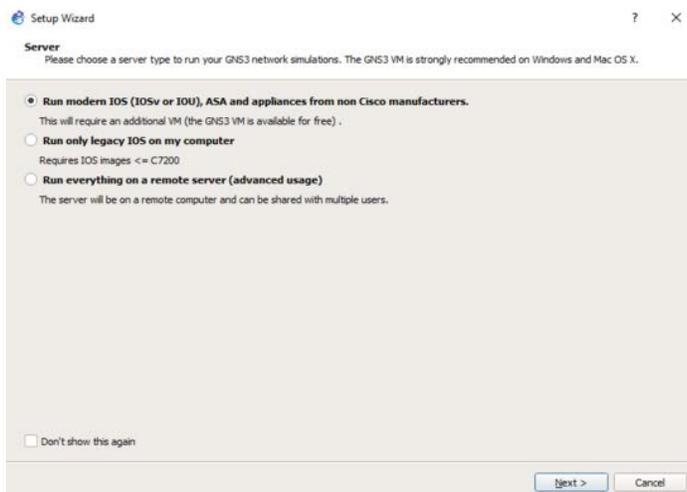
The download button for the Linux option actually takes you to another page, where there are instructions for different versions of Linux including Ubuntu, Debian, Fedora, OpenSuse, and Gentoo among others. There are also instructions for compiling and installing from the source code. The URL of this Linux install page is below:

<https://docs.gns3.com/1QXVlihk7dsOL7Xr7Bmz4zRzTsJ02wklflmGuHwTlaA4/>

It should also be noted here that links for install guides for each operating system are available from the download page as well.

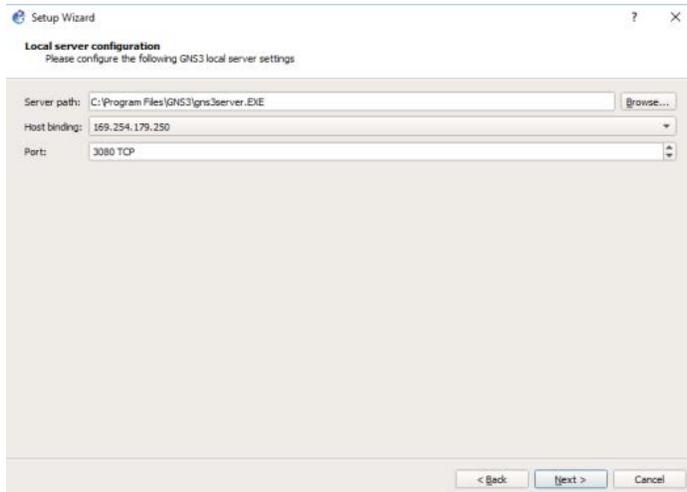
Once started the install process for GNS3 is generally fairly easy, but there are a couple of things to make sure of along the way.

1. Most default choices work fine, though we will point out a couple important choices below.
2. GNS3 will install a number of things along with its core software including winpcap. When asked to install additional components generally choose to do so. The exception is the free and trial stuff offered by Solarwinds, they are completely optional to the functioning of GNS3.
3. One of the first important choices during the Setup Wizard is the choice about server type.

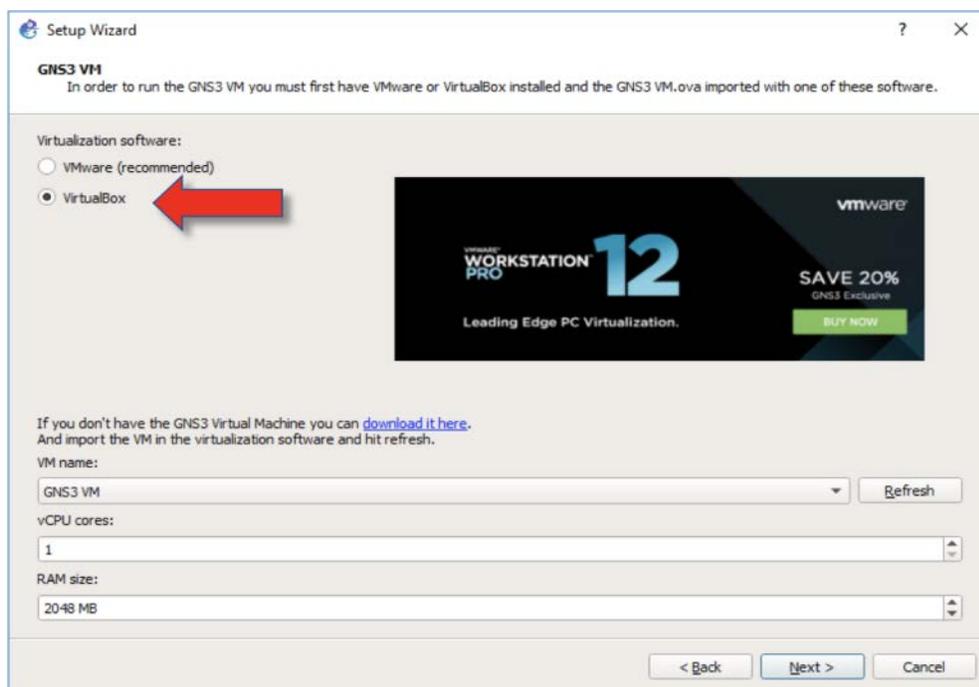


For most people, the first and default choice is appropriate.

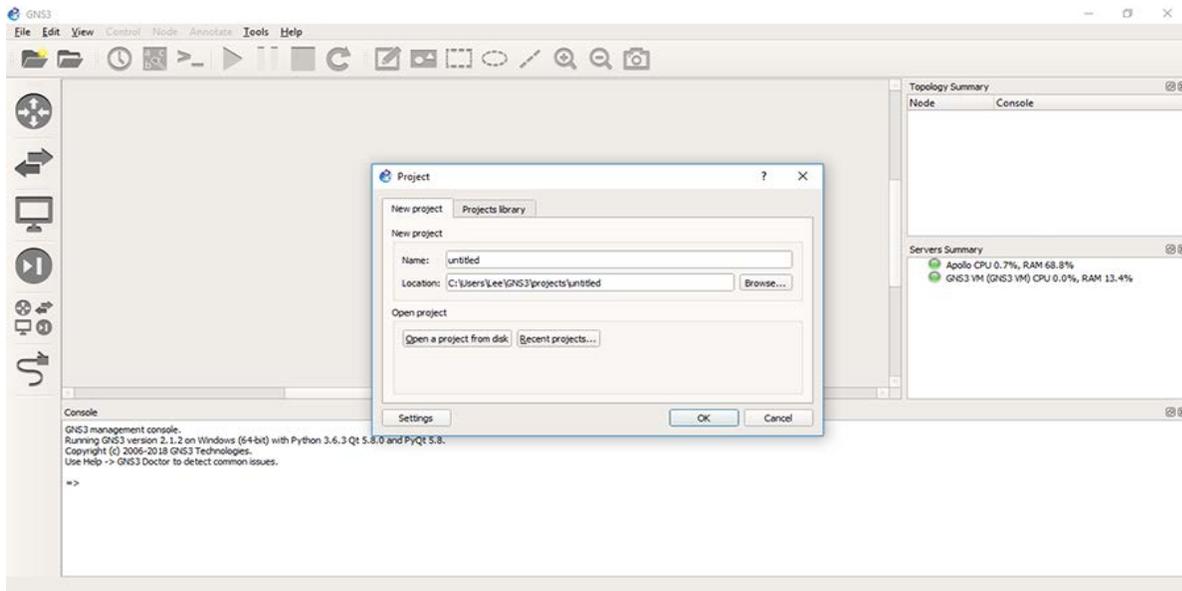
4. The most critical thing to get right during the installation is the IP address of the Host binding choice. This MUST be the real IP address of your system's network interface (whether wired or wireless). This usually is in the range of 192.168.0.x or 192.168.1.x using most typical home routers. You can use either ipconfig or ifconfig to check the IP addresses of your interfaces. Make sure you do not pick 127.0.0.1 or an IP assigned to a virtual network interface.



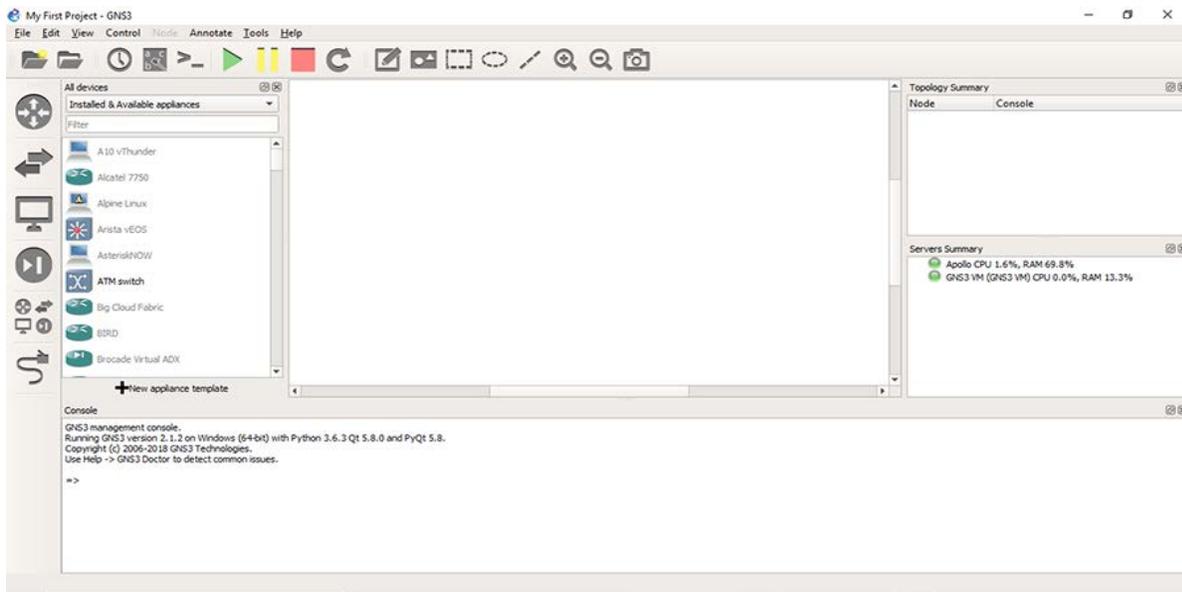
5. The last major thing to get right, is to correctly select the virtualization environment you are using. Once you select the right one, it should auto fill in the GNS3 VM name in the drop down. The example below shows choosing VirtualBox instead of the default VMWare.



Once the install is finished and GNS3 launches, expect to see a small black box (a Command prompt type box, but it will be blank) pop up briefly before the GNS3 GUI appears. If all goes well the 'local' GNS3 server software (i.e., the stuff you just installed on your system) will be able to connect up with the GNS3 VM and you should see two green lights under the Servers heading on the right side of the GNS3 GUI as shown in the image on the next page.

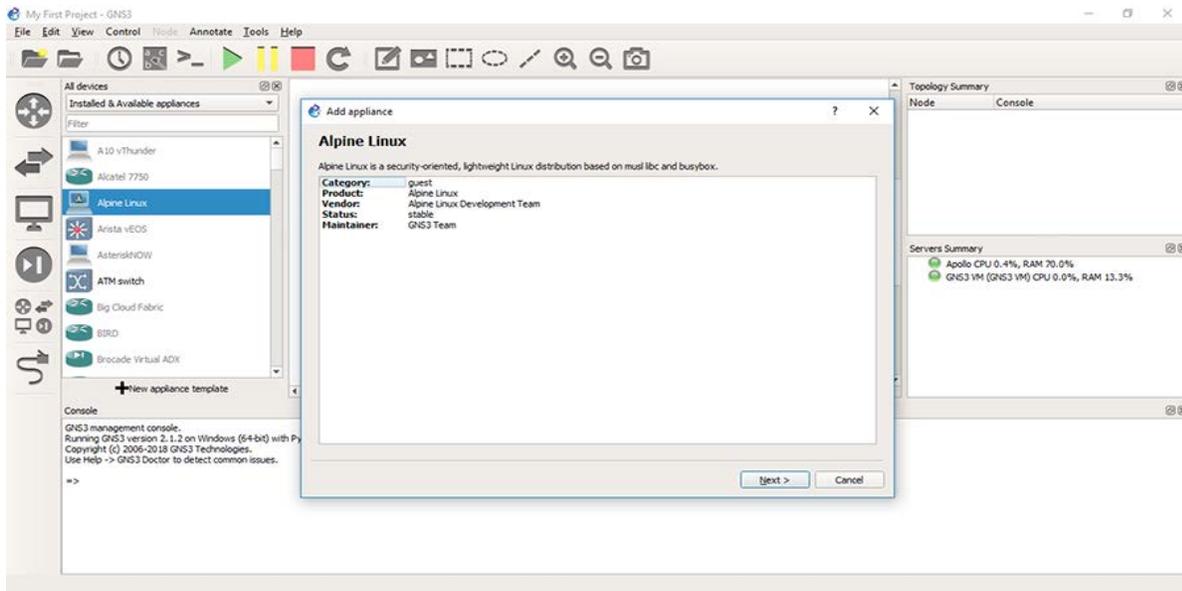


From this dialog you can create your first project or open an existing one. Create **My First Project** by typing this into the **Name** field and clicking **OK**. This creates a blank topology. Click on the second to the last button on the left side to **Browse all devices**. This will display a list of Installed and Available devices. Only a handful of default devices come pre-installed with GNS3. The rest you must add.

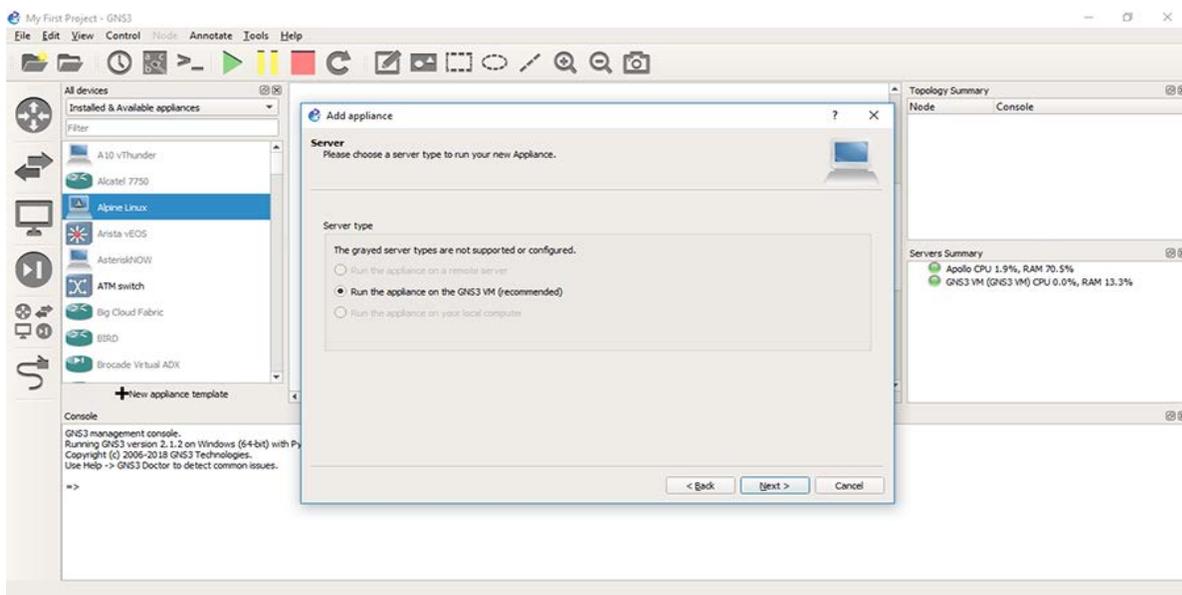


GNS3 supports a number of different types of virtual devices for use within your simulated network topologies. Most devices you can install by simply double-clicking on them (or by starting to drag one to a topology) to start an install wizard as shown on the next page.

In this case, the wizard is starting to add the Alpine Linux device.

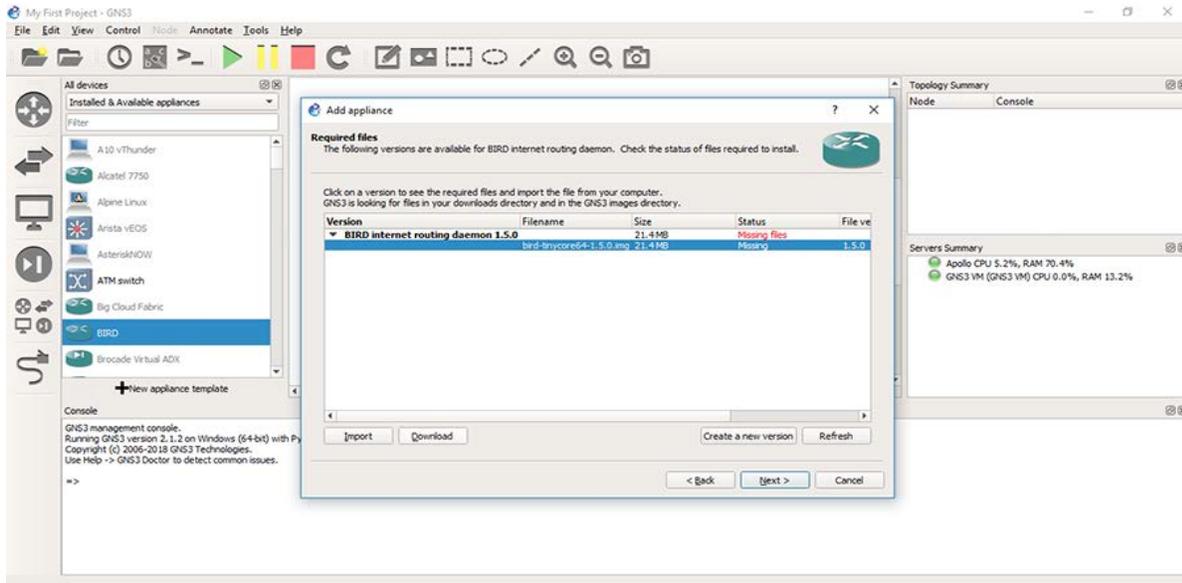


A critical factors in most cases, is the need to run everything in the GNS3 VM when asked. Always choose to install and run devices within the GNS3 VM as shown below.

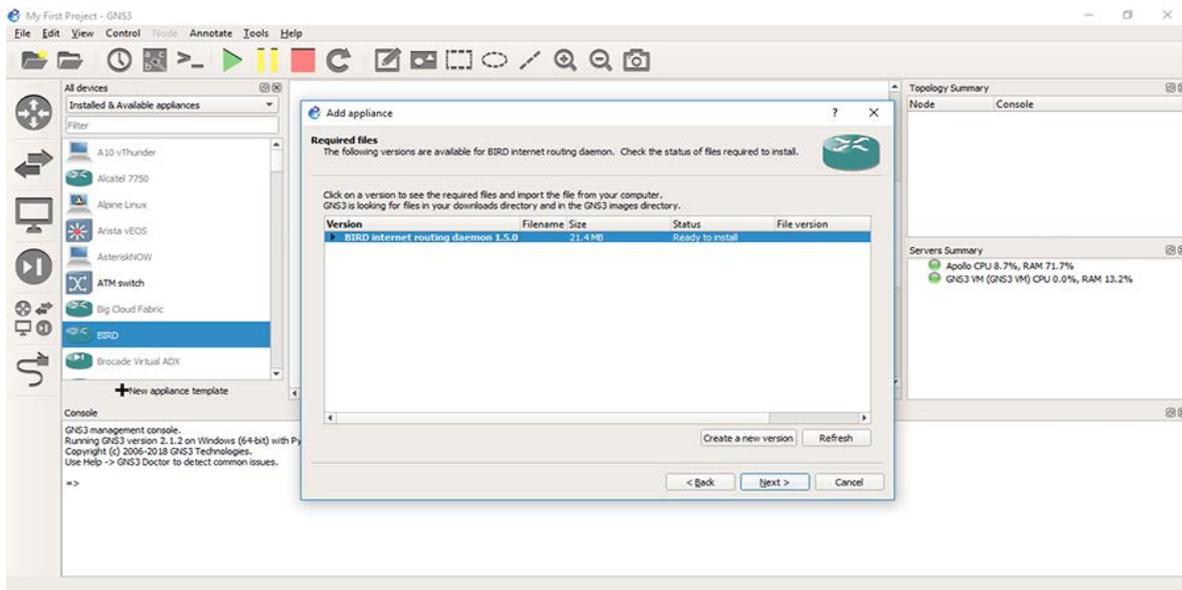


Once the install is finished, the device should no longer be grey in your list of devices and can now be dragged and dropped into a topology for use. The first time some devices are added to a topology, they will perform a one-time download via a Docker pull.

Other times when you attempt to add a device, it will present a screen such as the following one saying there are missing files.

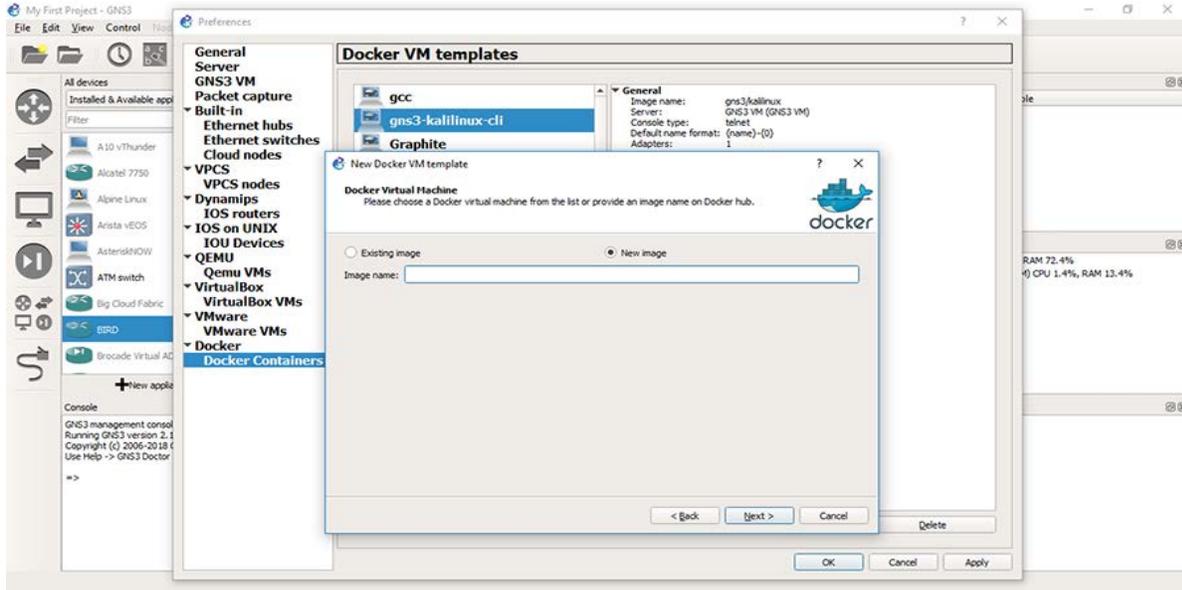


Simply select the missing file(s) from the list, and the **Download** button near the bottom left of the dialog box will become available. Clicking this **Download** button will launch a browser and take you to download the file (if there are more than one needed file, rinse and repeat). Once you have downloaded any needed files, click the **Refresh** button and the screen should switch to saying **Ready to Install** as shown.

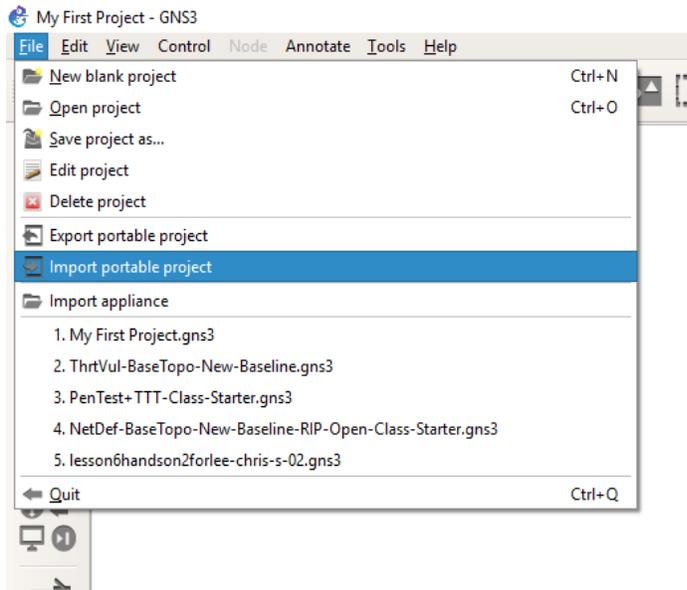


To finish the install, select the **Ready to Install** line and click **Next** to proceed until the **Finish** button, choosing defaults as needed. This device will then be available from the list for use.

There is another way to install devices, which involves using the **Edit, Preferences** menu screen. GNS3 support numerous device types as can be seen from the side menu of the Preferences screen. The following example shows adding a new Docker Container. The image name could be any valid Docker pull path.

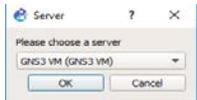


Once you have GNS3 up and running, and have added some devices to work with, you will probably then either want to import an existing portable project someone has given you or start your own. Importing a GNS3 portable projects is easy, simply use the **Import portable project** choose from the **File** menu.

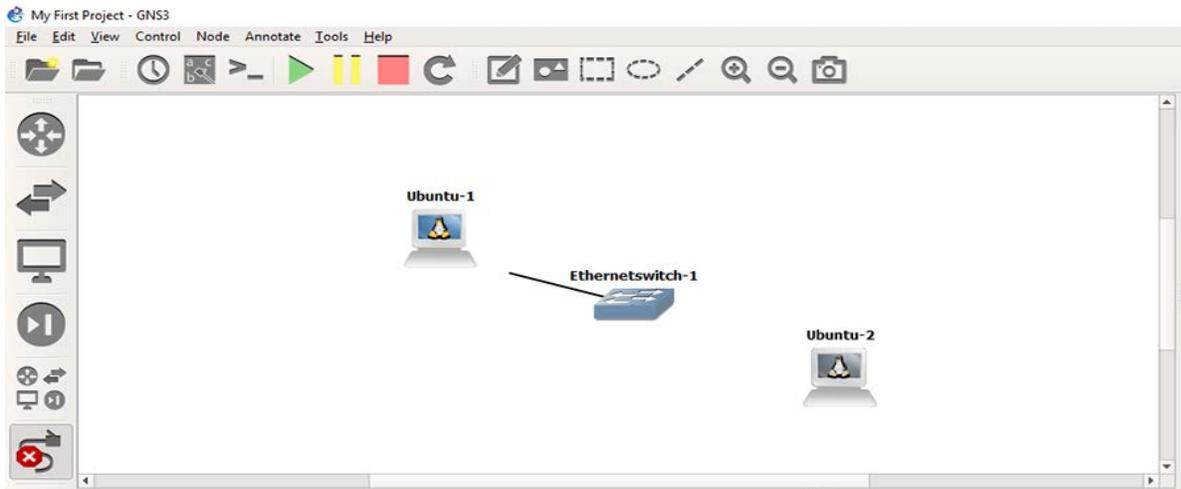


Navigate to the portable project file, it should have a .gns3project file extension to its name.

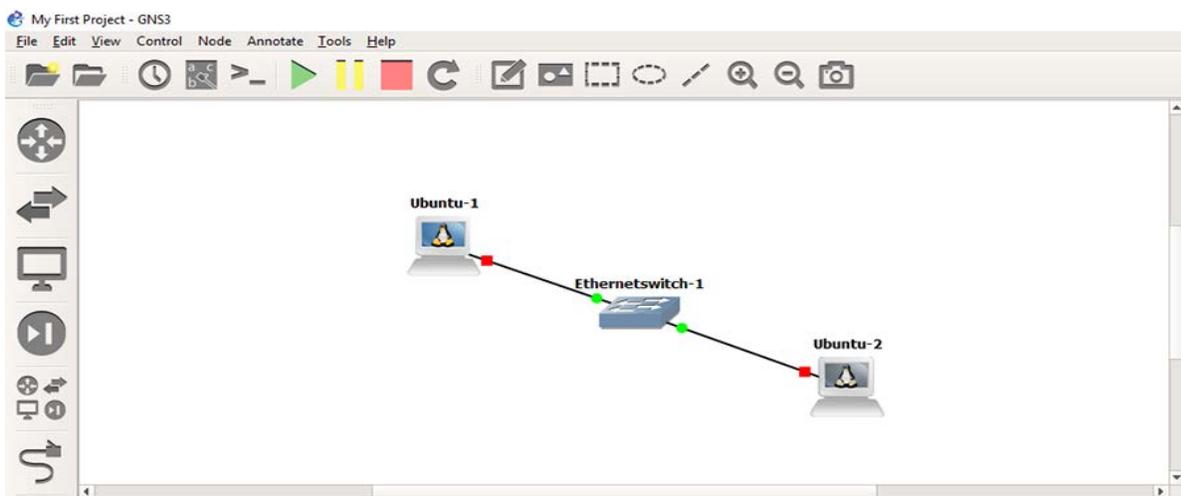
Otherwise, start creating your own topology by dragging in devices and wiring them up with the provided tools. Start by dragging in an Ethernet Switch, note the need to run it in the GNS3 VM as shown.



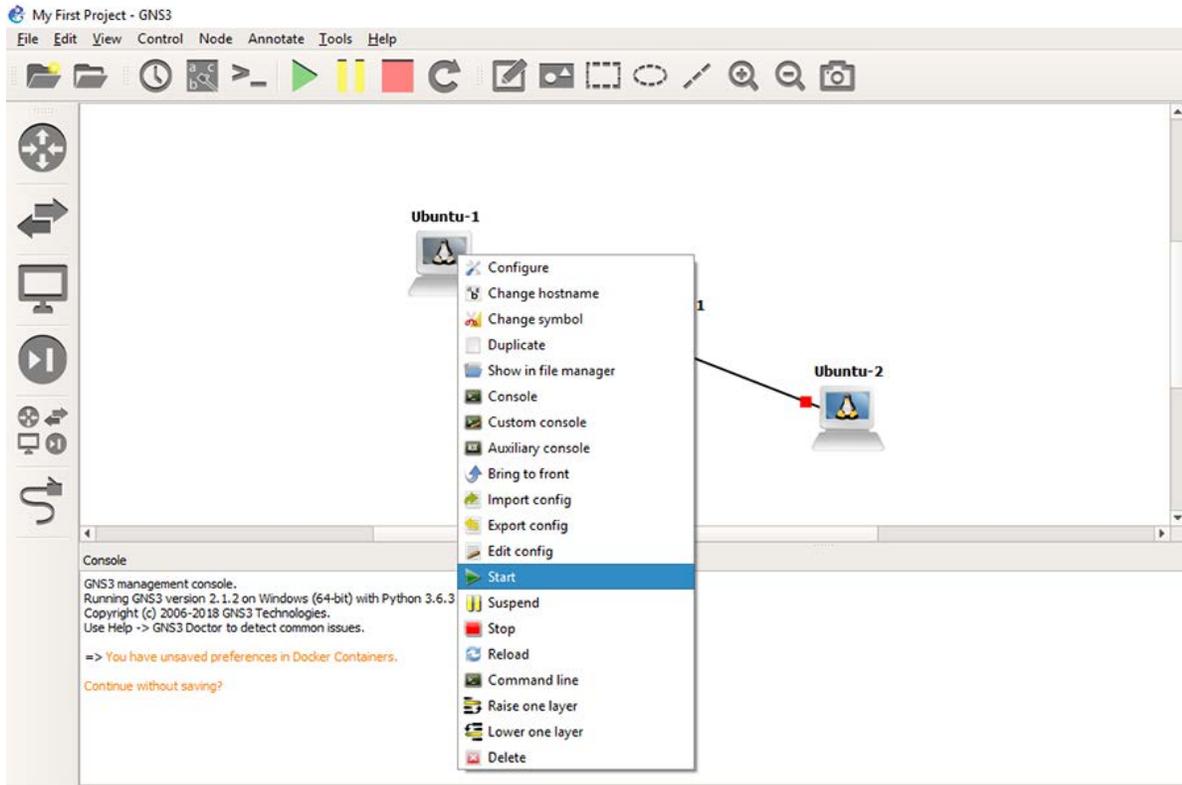
Then add a few more devices. In the example below we have added two Ubuntu devices and are beginning to connect them together with cabling using the last button on the left side bar which should look like a network cable (or maybe to some a phone cable 😊).



When you click on a device in this cabling mode, a selection pop up will let you choose which port you are connecting the cable to, if there is a choice. Once you have finished wiring up your topology, click the cabling button again to turn off cabling mode.

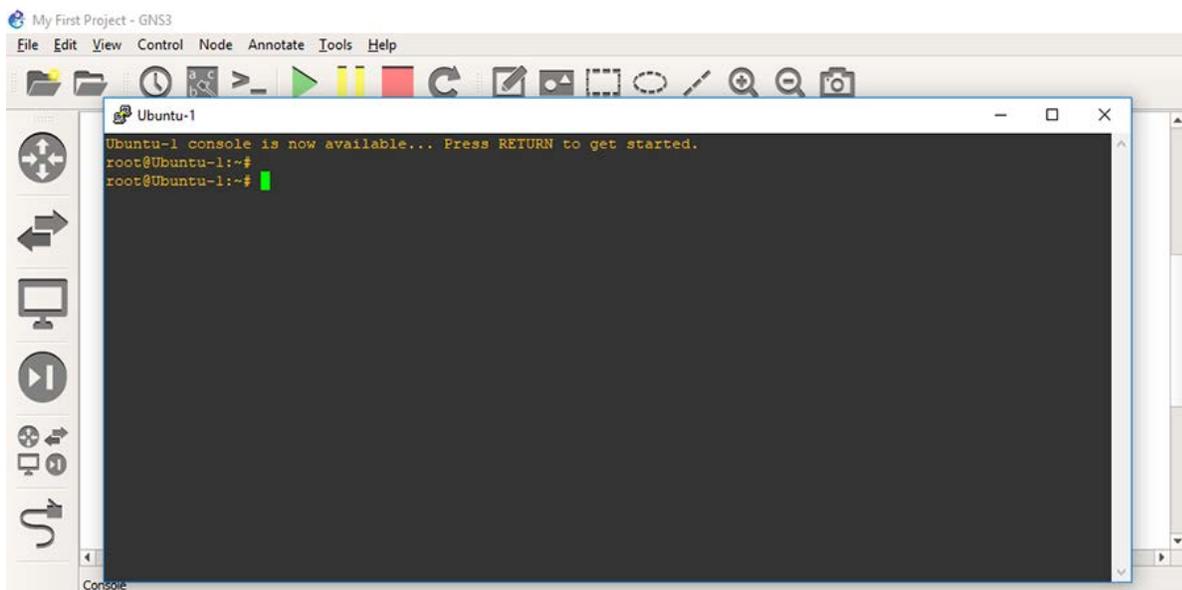


You will notice that the switch is already 'on' (thus the green lights) but the Ubuntu clients need to be started. To bring up the context menu on any device, simply right-click on it.



As you can see, you can Start, Stop, Configure, Delete, Duplicate, and a number of other choices for each device. The Start, Stop and other buttons along the top button bar affect the entire project (i.e., turning EVERYTHING on or off together), but you can affect individual devices using this right-click menu.

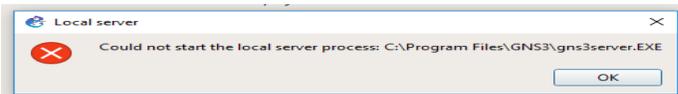
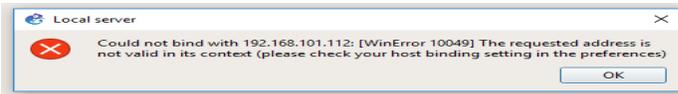
Once a device is running, you can right-click again and select **Console** to bring up a Console. This will either be a Putty session (telnet/console type connections) or a VNC window (remote desktop type connections).



Using these consoles, you can configure and run the devices as you would a real system since they are virtual emulations of the real thing. There are way too many devices to attempt to cover in this guide. But the GNS3 website and Marketplace has tons of useful information and links.

We will close this guide with some common trouble shooting tips.

1. If the GNS3 VM doesn't run correctly and get the right IP address range, double-click the VM's settings. The GNS3 VM actually has two network interfaces. The first should be on the host-only adapter and the second should be on NAT with both getting their IP addresses via DHCP. If this is not happening, double-check the virtual network settings of either VirtualBox or VMWare.
2. If the GNS3 VM runs fine and gets the right IP address, but the GNS3 GUI will not connect, it is usually due to host binding errors. Either the wrong IP was entered or this IP address has changed due to maybe a reboot and assignment of new IP address. You will see errors like:



To fix this, cancel the new project dialog and go to **Edit, Preferences, Server** and change the IP of the host binding drop-down as shown to match your real IP address.

