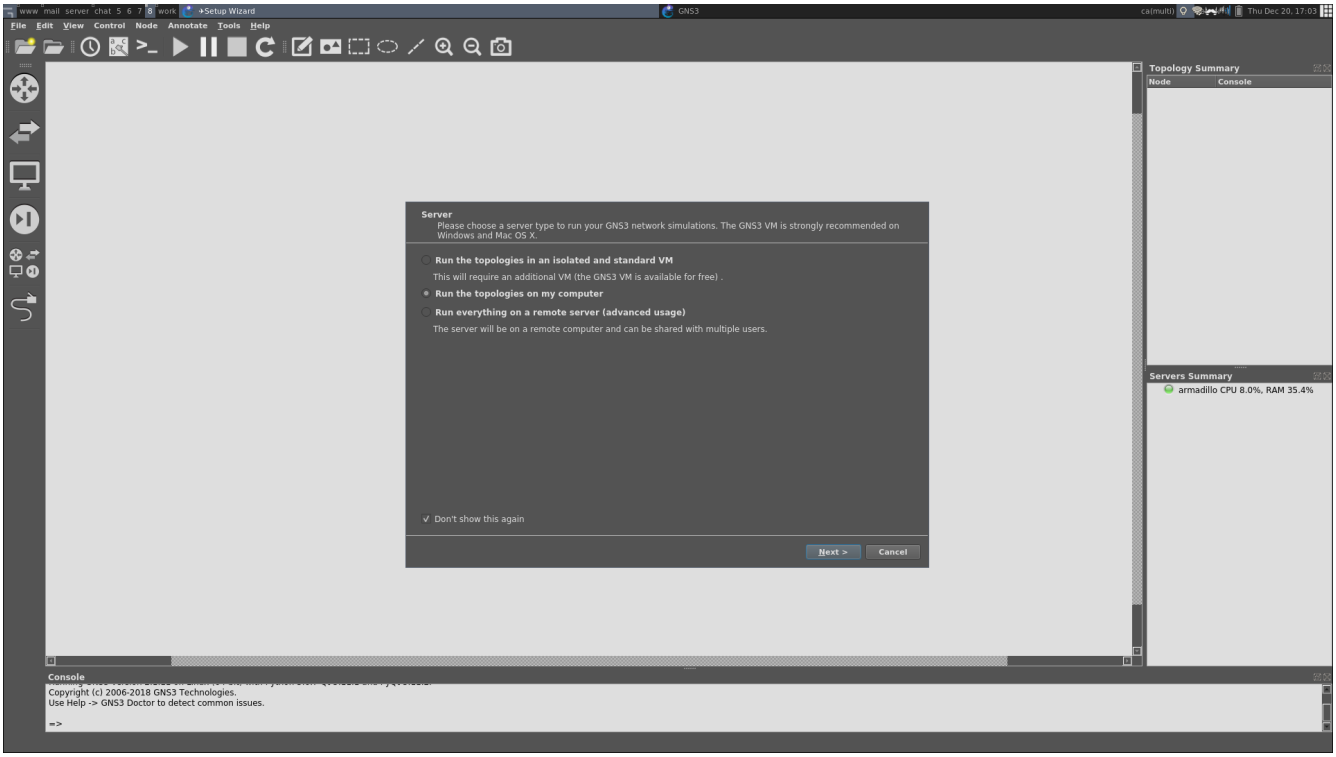
# TEAR: lab session with GNS3

## The setup

In this lab session, you will get familiar with GNS3 and create your first topology.

To begin, simply launch `gns3`, it should already be installed on this environment. On your first launch, you will be greeted with setup wizard:




A note on the setup: GNS3 can run the nodes either directly on your computer, or through a virtual machine. Both have their pros and cons: not having the VM is easier, but requires your setup to have access to docker which is, in fact, equivalent to giving you root access (though for this special session this is fine). Using the VM exempts us from this security problem, but we'd have to store the VM state somewhere, and the AFS wouldn't like it.

For this lab session, we are in a special environment where giving you root access is not a problem, so you can run the topologies on the computer directly without problems.

## Adding appliances

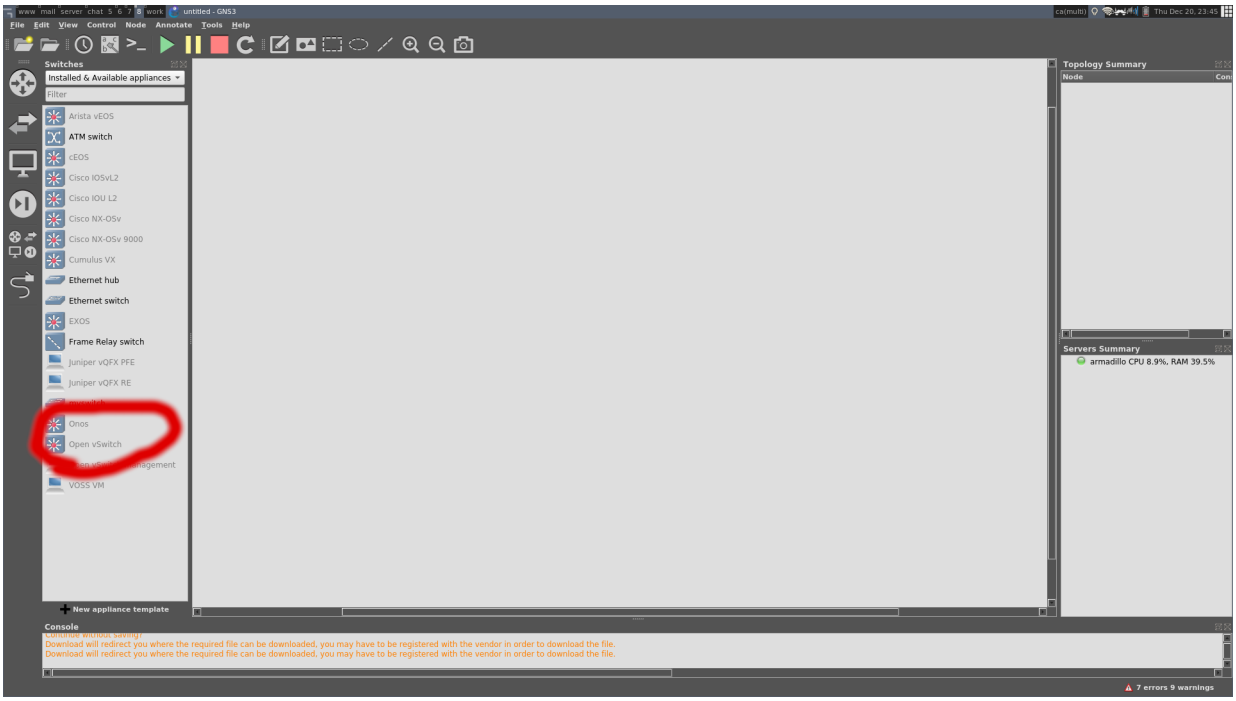
Once the setup wizard has been completed, the first step is to add some appliances!

Appliances are the "thingies" that you drag and drop on the drawing boards. Appliances could be run as a VM through Qemu, VirtualBox, VMware... or as docker containers, which is what we'll use since they're more

lightweight.

## The `OpenVSwitch` Appliance

For switches, we can simply use `OpenVSwitch` appliance, just enable it by double-clicking on it or dragging it on the board.

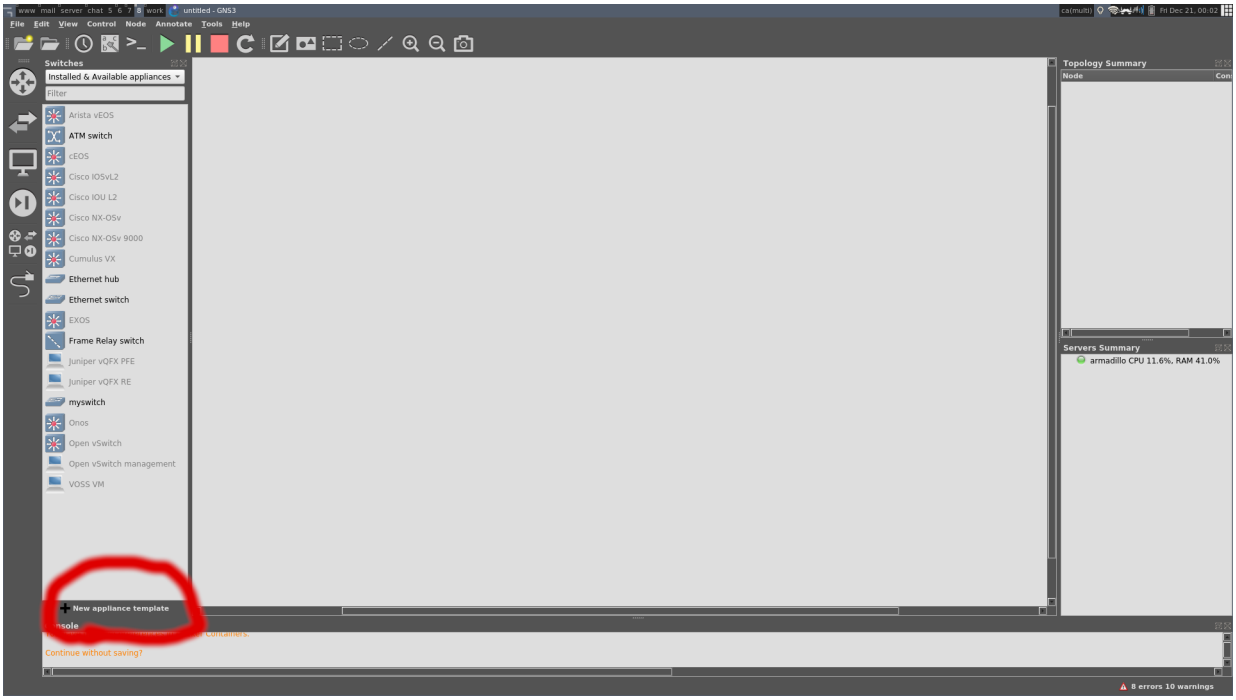



## Hosts and routers

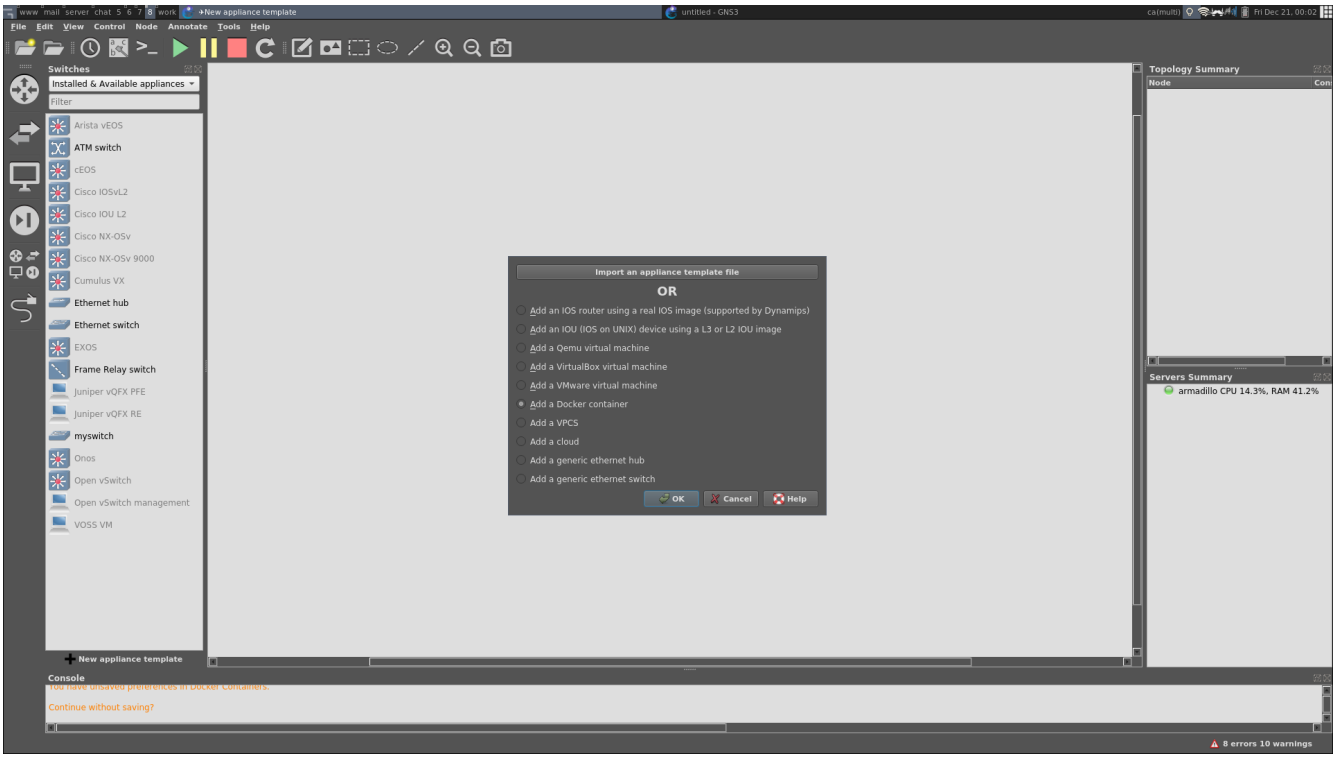
Similar to `OpenVSwitch`, there are numerous ready-to-use appliances, but for comfort, I have prepared an image for you: A debian OS with the usual packages already installed. We'll use this image for both the end hosts and the routers.

You need to create your own templates, but fear not! This is a very simple thing to do. You just have to do the following twice (once for the host template, one for the router):

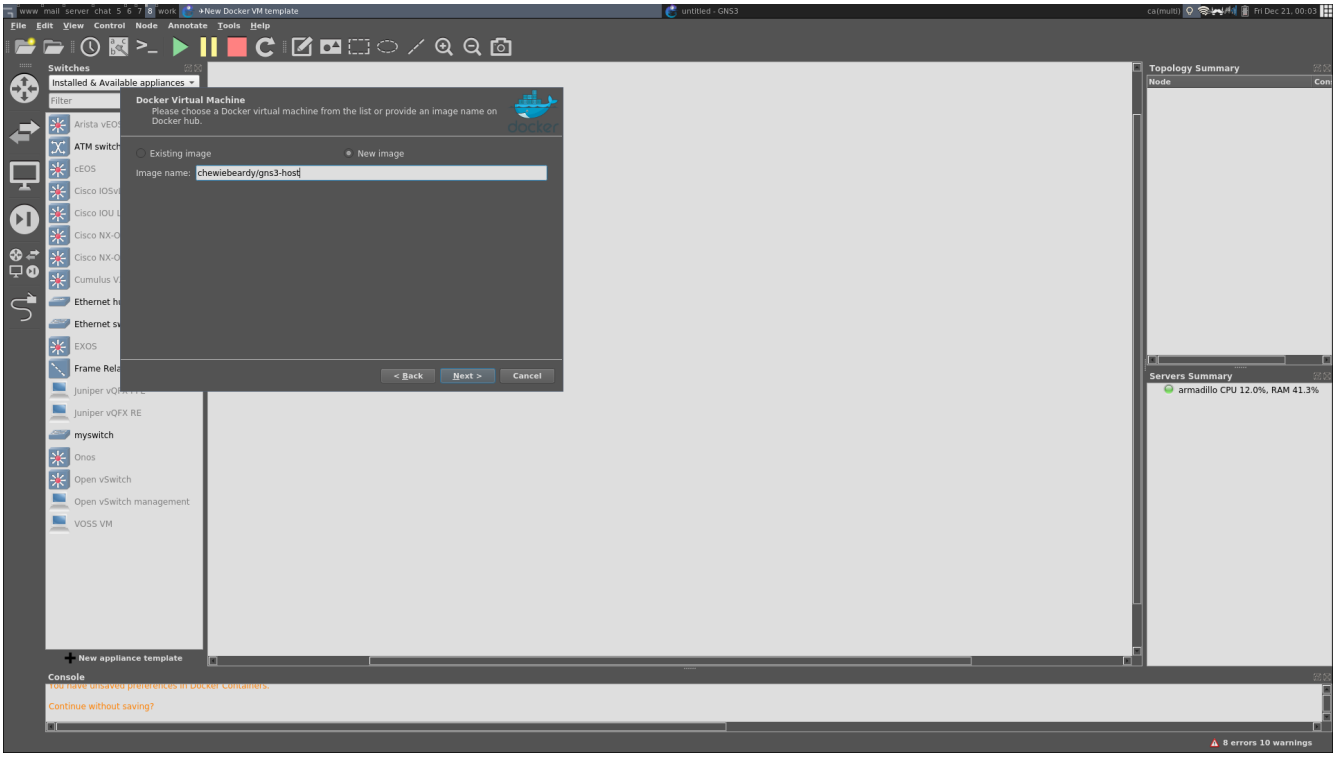
1. First, click on `New appliance template` on the bottom left



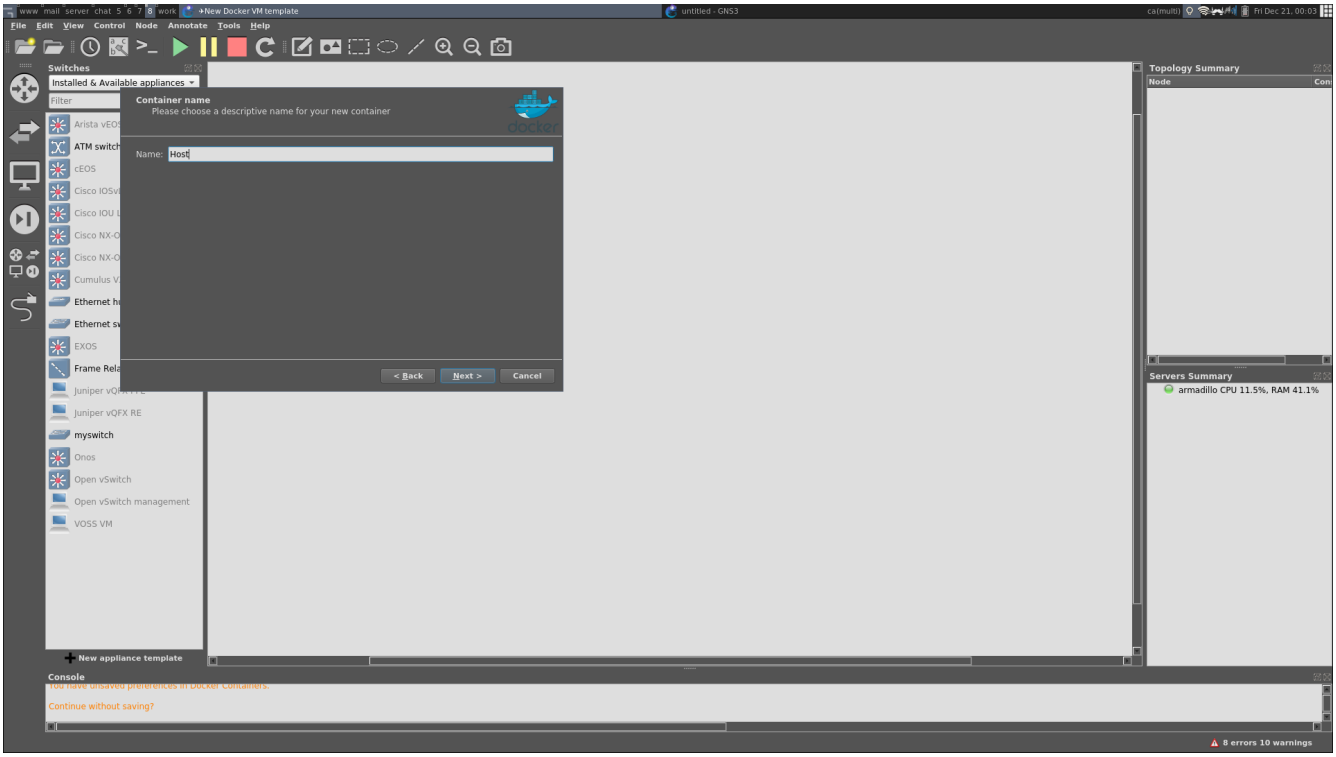

2. Select `Add a docker container` on the wizard



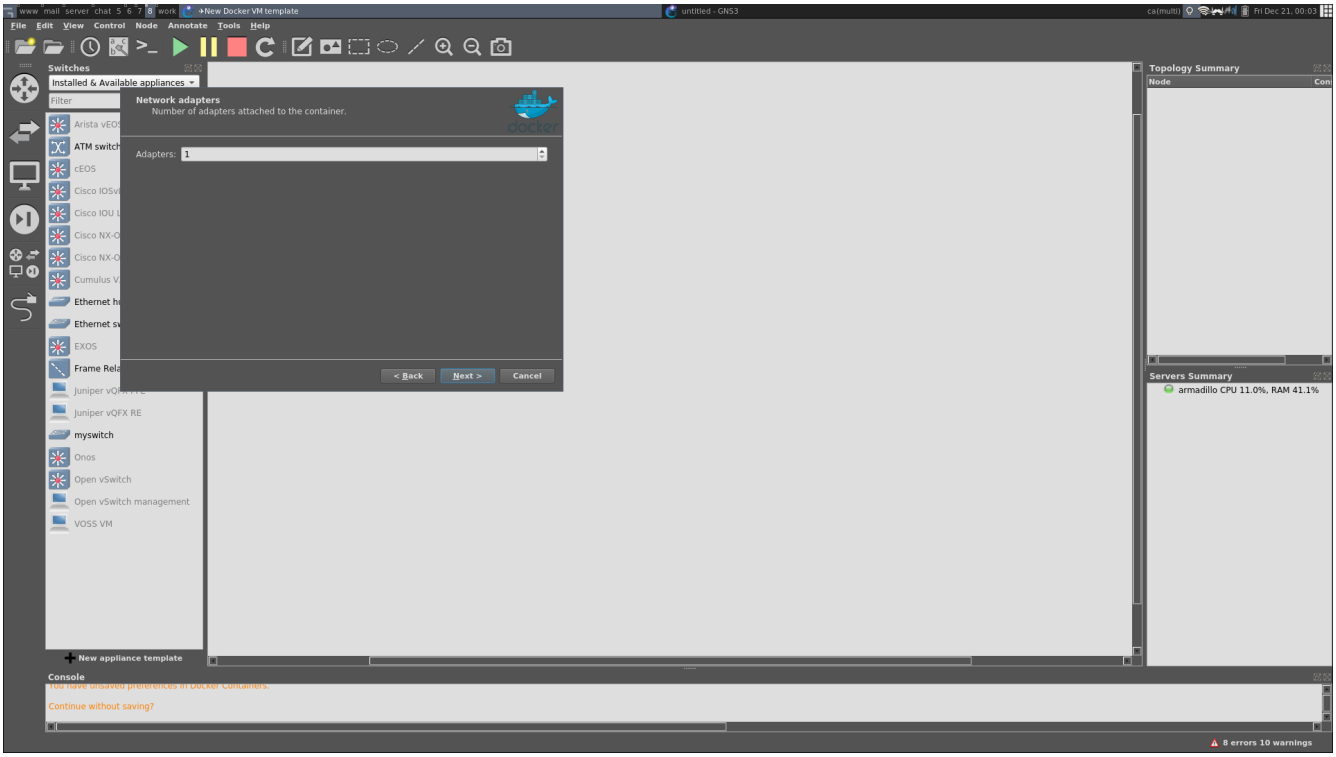

3. Select `New image` and enter the following: `chewiebeardy/gns3-host` (as you can guess, `chewiebeardy` is my account on the Docker Hub)




4. Give it a friendly name. If it's a host, I recommend `Host`. If it's a router, I recommend `Router`.




5. Select the number of network adapters. If it's the host, stick with 1. If it's the router, I recommend 4.




6. The rest of the flags (start commands, console type, environnment) can be left as-is.
7. (optional) By default, all new appliances are in the guest category, but you can edit the router to put it in the appropriate `router` category, change its icon, whatever you want.

Congratulations, you now have everything you need! You can start creating your first topology on a new project.

# Your first project

Create a new project, and start playing! A basic topology with two hosts connected to a switch is a good start. Don't forget to add links between your appliances!

You can start the containers with the big green arrow on top, or just start them individually by right-clicking on them.

Connect to the containers by double-clicking on them, but be careful not to exit the shell inside! For complicated and boring reasons, if you want to quit the terminal without shutting down the node, you have to close the windows, not use `exit` or `^D`.

## Persistence

You might have noticed that the state of a node is not preserved upon restarting, and all your networking configuration is lost!

To be more precise, only three things are preserved across restarts:

- `/etc/network/interfaces`
- `/etc/bind/*`
- `/etc/dhcp/*`

The `/etc/network/interfaces` file is of particular interest to you: this is how network configuration for your adapters is persisted. You are **heavily** encouraged to use this file instead configuring everything by hand each time. Have a look at the comments in the file, or read the man interfaces(5).

## Exporting your project

Having a working topology is all fine, but at some point you need to send it to me for evaluation!

You can find the `Export portable project` in the `File` menu. You will get a `.gns3project` file which is basically a zip archive.

Send it to me via mail at `kevin.sztern@epita.fr` with the subject: `[TEAR][LAB] - yourlogin`.