# Setting a Networking Lab with GNS3

GNS3 is a software tool for network emulation. With GNS3, you can emulate Cisco devices (routers, switches, firewalls, etc.) with Cisco IOS on your PC. GNS3 enables to test the configurations and functionalities of Cisco devices and deploy complex networking scenarios on a single PC.

During the course on Routing and Switching at ESIB, you will discover different functionalities of GNS3 and get familiar with its various features.

### -. Software Download

GNS3 is already downloaded on the Lab PCs. If you need to install it on your PC, you should create an account and download it from https://www.gns3.com/software/download. Make sure to choose the right version for your operating system.

Copy the file c3725-adventerprisek9-mz.124-15.T14.image from the folder commun to your local Downloads folder.

#### -. Basic Configuration

Start the GNS3 software by double-clicking on the Desktop icon. Select the Local server and Don't show this again button.

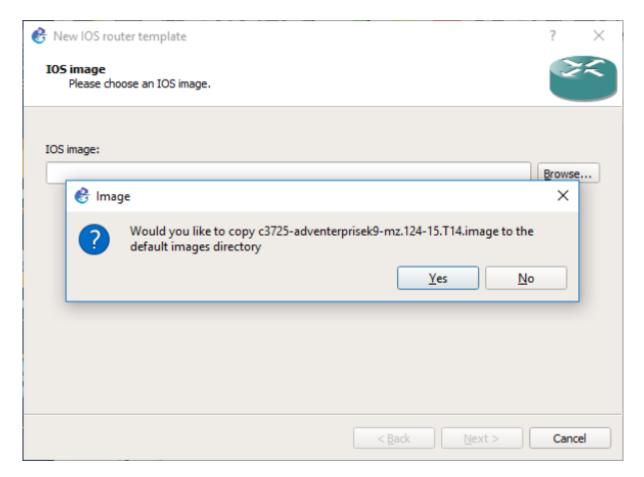
| 🔗 Setup Wizard   | ?     | × |
|--|-------|---|
| Server<br>Please choose a server type to run your GNS3 network simulations. The GNS3 VM is strongly recommended on Windows and Mac OS X. |       |   |
| O Local GNS3 VM  |       |   |
| Local server   |       |   |
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| ✓ Don't show this again  |       |   |
| Next >   | Cance |   |

Now proceed to add an IOS router.

| 3 Setup Wizard  | ?    | Х  |
|---|------|----|
| Add virtual machines<br>Now that you have configured the server type you can choose to add one or more virtual machines (VMs) of different types. |      |    |
| ✓ Add an IOS router using a real IOS image (supported by Dynamips)  |      |    |
| Add an IOU (IOS on UNIX) device using a L3 or L2 IOU image  |      |    |
| Add a Qemu virtual machine  |      |    |
| Add a VirtualBox virtual machine  |      |    |
| Add a VMware virtual machine  |      |    |
| Add a Docker container  |      |    |
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## -. Adding a Cisco Switch

In order to add a Cisco switch to GNS3, browse and select the c3725-adventerprisek9mz.124-15.T14.image in your Downloads folder. Click yes to copy it to the default images library.



Now check the button This is an EtherSwitch router.

| 😚 New IOS | 6 router - c3725-adventerprisek9-mz.124-15.T14.image  | ?     | $\times$ |
|-----------|---|-------|----------|
|           | <b>d platform</b><br>e choose a descriptive name for this new IOS router and verify the platform and chassis. | 2     | <        |
| Name:     | EtherSwitch router  |       |          |
| Platform: | c3725   |       | •        |
| Chassis:  |   |       | •        |
|           |   |       |          |
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Click on Idle-PC finder and wait for the process to complete.

| 🛞 New IOS                  | o router - c3725-adventerprisek9-mz.124-15.T14.image                               | ?            | $\times$ |
|----------------------------|--|--------------|----------|
| Idle-PC<br>An idl<br>cores | e-pc value is necessary to prevent IOS to use 100% of your processor or one of its | ()           | ۶        |
| Idle-PC:                   | 0x60c086a8   | Idle-PC find | er       |
|                            | 🚱 Idle-PC finder   | ×            |          |
|                            | Idle-PC value 0x60c086a8 has been found suitable for your IOS image                | ge           |          |
|                            | OK   |              |          |
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Apply to validate the new device parameters. Now you are set to start using Cisco switches with

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GNS3.

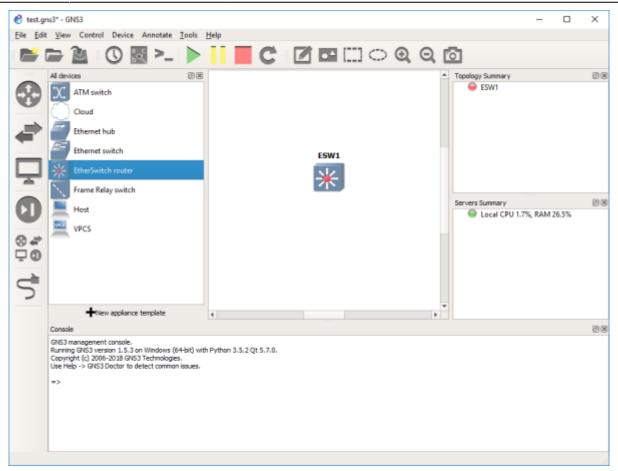
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## -. Starting a New Project

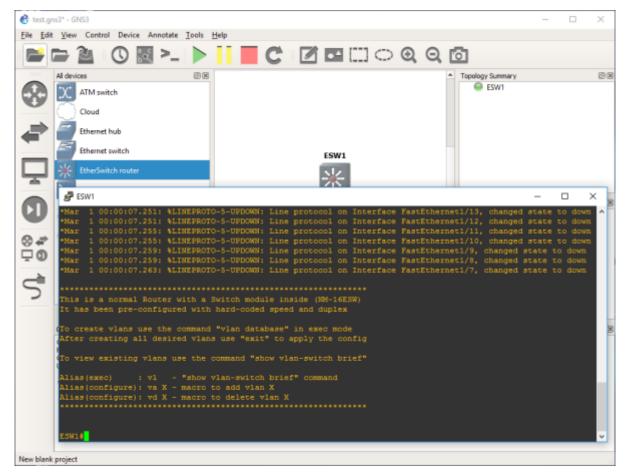
Choose a name for your project.

| 😵 Unsaved project - GNS3  | - 🗆 X    |
|---|----------|
| <u>File Edit View</u> Control Device Annotate <u>I</u> ools <u>H</u> elp  |          |
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| Image: Second project   Image: Second project |          |
| 4   | <b>b</b> |
| Console<br>GNS3 menagement console.<br>Running GNS3 version 1.5.3 on Windows (64-bit) with Python 3.5.2 Qt 5.7.0.<br>Copyright (c) 2006-2018 GNS3 Technologies.<br>Use Help -> GNS3 Doctor to detect common issues.<br>=>   | ©⊗<br>   |

Select the devices from the left panel.



Click on the green button to start all devices. Then select Control and Console connect to all nodes.



Now you have access to the CLI (Command Line Interface) of the Cisco devices in your network.

#### -. Saving your Work

During the Lab, you should frequently save the configuration of each of the Cisco devices. For this, you can use the following command to store the running-config into the startup-config (NVRAM).

#copy run start

Then, using the File drop-down menu, you can export your work into a portable project you can use on another machine.

#### -. Tips and Hints

- Click on the abc button to show the interface names on the network.
- Right click on any link to start capturing packets using Wireshark.

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#### -. TBD

Adding a Router

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