Setting a Networking Lab with GNS3

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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. Moreover, during the first steps of the installation, choose to Run only legacy IOS as shown below.

| Setup Wizard | ? | × |
|--|-----------|-----|
| Server Please choose a server type to run your GNS3 network simulations. The GNS3 VM is strongly recommended on Windows and | Mac OS X. | |
| Run modern IOS (IOSv or IOU), ASA and appliances from non Cisco manufacturers. | | |
| This will require an additional VM (the GNS3 VM is available for free) . | | |
| Run only legacy IOS on my computer | | |
| Requires IOS images <= C7200 | | |
| Run everything on a remote server (advanced usage) | | |
| The server will be on a remote computer and can be shared with multiple users. | | |
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| Don't show this again | | |
| Next > | Can | cel |

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 | ? | \times |
|--|-------|----------|
| Server 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 | | |
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Now proceed to add an IOS router.

| 5 Setup Wizard | ? | |
|---|------|----|
| Add virtual machines 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.

| 😵 New IOS router template | ? | \times |
|--|--------|----------|
| IOS image Please choose an IOS image. | 2 | i K |
| IOS image: | | |
| 🚱 Image | Browse | |
| Would you like to copy c3725-adventerprisek9-mz.124-15.T14.image to the default images directory Yes | e | |
| | |] |
| | | |
| < <u>B</u> ack <u>N</u> ext > | Canc | el |

Now check the button This is an EtherSwitch router.

| | | - | × |
|-----------|---|---|---|
| New IO | S router - c3725-adventerprisek9-mz.124-15.T14.image | ? | ~ |
| | d platform e choose a descriptive name for this new IOS router and verify the platform and chassis. | 2 | ~ |
| Name: | EtherSwitch router | | |
| Platform: | c3725 | | • |
| Chassis: | | | - |
| | an EtherSwitch router | | |
| | | | |

Click on Idle-PC finder and wait for the process to complete.

| Idle-PC | dle-pc value is necessary to prevent IOS to use 100% of your processor or one of its s. | |
|----------|---|------------|
| Idle-PC: | 0x60c086a8 | -PC finder |
| | 🛞 Idle-PC finder X | |
| | Idle-PC value 0x60c086a8 has been found suitable for your IOS image OK | |
| | | |
| | < <u>B</u> ack <u>Finish</u> | Cancel |

Apply to validate the new device parameters. Now you are set to start using Cisco switches with GNS3.

-. Starting a New Project

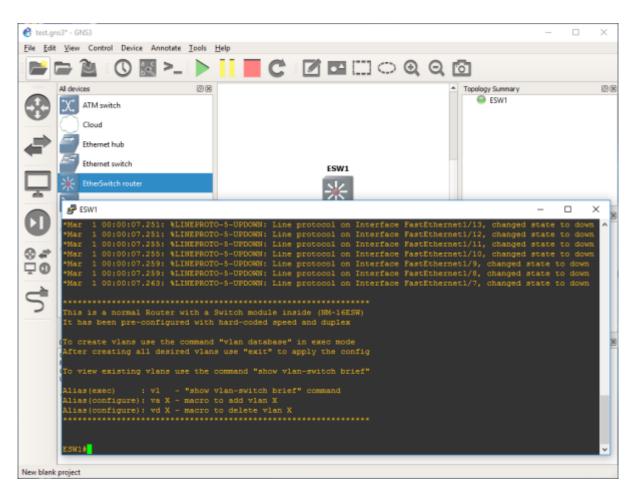
Choose a name for your project.

| 🚷 Unsav | d project - GNS3 | | _ | | \times |
|---------|--|---------|----------------|---------|----------|
| | View Control Device Annotate Tools Help | | | | |
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| | | * To | pology Summary | | 88 |
| | New project ? × Project Name: test Location: C:\Users\710238\GN53\projects\test Browse Qpen a project Becent projects OK Cancel | Se * | ervers Summary | 4 27.1% | 28 |
| | Console | | | | ØX |
| | GNS3 management console. Running GNS3 version 1.5.3 on Windows (64-bit) with Python 3.5.2 Qt 5.7.0. Copyright (c) 2006-2018 GNS3 Technologies. Use Help -> GNS3 Doctor to detect common issues. => | | | | |

Select the devices from the left panel.

| 🚯 test.gns3* - GNS3 | | - 🗆 X | | |
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| All devices Ø | 8 | ▲ Topology Summary 図図 | | |
| ATM switch Cloud Cloud Ethernet hub Ethernet switch | ESW1 | ⊖ ESW1 | | |
| Frame Relay switch | | Servers Summary | | |
| Host | | Servers Summary 2018 Local CPU 1.7%, RAM 26.5% | | |
| VPCS | | | | |
| | | • | | |
| New applance template | 4 | b . | | |
| Console | | 88 | | |
| GNS3 management console. Running GNS3 version 1.5.3 on Windows (64-bit) with Python 3.5.2 Qt 5.7.0. Copyright (c) 2006-2018 GNS3 Technologies. Use Help -> GNS3 Doctor to detect common issues. => | | | | |

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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