

B2 - Lab 1

Stage 0 - Instructions

This lab should be done by a groups of 2 students. Students shall produce various documents:

- An export of a portable gns3 project called `lab1.GROUP_NB.gns3project`
- A Markdown document called `lab1.GROUP_NB.md` (french or english accepted not a mix of both)
- This document should be readable as a tutorial containing the answers to this lab.
- the following lines should be present at the top of this document (this is used by pandoc to generate a beautifull pdf):

```
---
title: "B2 - Lab 1"
author:
- GROUP MEMBER 1
- GROUP MEMBER 2
output:
  pdf_document: default
---
```

- images should be included in an `images/` folder (only `png` and `jpeg/jpg` allowed)
- Included images should be included like so: `![NOM DE LA FIGURE](images/FILENAME.EXT)` in the document.

Thoses various documents should be compressed in an archive called `lab1.GROUP_NB.zip`.

Once unarchived we should have the following structure:

```
lab1.GROUP_NB.zip
lab1.GROUP_NB
├── images
│   ├── bar.jpeg
│   ├── foo.png
│   └── ...
├── lab1.GROUP_NB.gns3project
└── lab1.GROUP_NB.md
```

This final zip should be send via email your teacher.

Be sure you read all of this document before starting the exercise.

If you have any doubt you mays express them.

Of course internet is allowed.

Stage 1 - Initialization

Create a new blank gns3 project called `Lab1`.

Spawn a NAT appliance and call it **LeNatXX** where XX is your group number.

Spawn an OpenWrt 19.07.4 appliance and call it **Le*Router**

Connect **LeNatXX** to the wan port of **Le*Router**

Stage 2 - OpenSSH access

Install & config openssh on port XX22 Install **openssh-server** and start it on **Le*Router**.

Create a firewall rule named **Allow SSH** that allows connections from wan on port XX22 where XX is your group number.

On your host generate a key with ED25519 format and explain briefly the current advantages (as of 2020) of this format.

With your configuration, you should be able to login with root from your host.

Hint (Unix): `ssh-keygen`

Hint (windows): use `pyttygen`

Stage 3 - LuCi

Configure luci do listen on localhost:80 ipv4 only and list 2 ways to listen to localhost only (in this context).

Configure your ssh server to enable port forwarding and explain what it is.

Hint: [click here](#)

Use luci only like in the hint from before.

Stage 4 - Lan

Configure **Le*Router** to use a class A, with a mask of 16 bits the second byte of the lan network should be your group number.

Find which RFC defines what are the reserved ips for our use case. List and explain all of the available ip prefixes.

Add an Alpine linux appliance called **LeWebServer** and connect it to the lan.

Stage 5 - HTTP

Configure nginx to serve basic files from port XX80 on **LeWebServer** where XX is your group number.

Serve static files with nginx the following file should be served as index:

```
<!doctype html>
<html lang="en">
<head>
  <meta charset="utf-8">
  <title>The HTML5 Herald</title>
  <meta name="description" content="The HTML5 Herald">
  <meta name="author" content="SitePoint">
</head>
<body>
  <a href="./pocorgtfoo1.pdf">issue 1</a>
```

```
</body>
</html>
```

hint: click me!

Using a tool to download the missing pdf from into the files served so that the pdf is downloadable from that page.

Use and Show 2 different commands to download the file in the served nginx folder.

hint: you are encouraged to bookmark me and read me later

Verify that the setup is working by downloading the pdf from your host.

Stage 6 - Make it generic

Add a an ethernet switch between **LeWebServer** and **Le*Router**.

Add a static ip (10.XX.2.1) for **LeWebServer**.

Stage 7 - Make your own

Create 2 separates subnets and put **LeWebServer** in one of them. Add another alpine linux and make it get the file without adding a route to the other network.

Stage 8 - Wrap up

Choose at least 4 protocols that you used during this Lab, name them and describe them and give a link to their(s) respective RFCs or spec.

Stage 9 - I have finished the Lab

If you vahe finished this lab, ask the teacher, additional instructiuons will be delivered to you.