## 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 <a href="https://www.gns3.com/software/download">https://www.gns3.com/software/download</a>. 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 an	d Mac OS X.	
Run modern IO5 (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.		
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	?	×
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		
✓ Don't show this again		
Next >	Cance	

Now proceed to add an IOS router.

😚 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		
< Back Einish	Cano	cel

#### -. 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	? ×
IOS image Please choose an IOS image.	24
IOS image:	
	Browse
🚱 Image	×
Would you like to copy c3725-adventerprisek9-mz.124-15.T14.image to t default images directory	he
<u>Y</u> es	No
< <u>B</u> ack Next >	Cancel

Now check the button This is an EtherSwitch router.

New IOS	S router - c3725-adventerprisek9-mz.124-15.T14.image	?	×
	<b>d platform</b> e choose a descriptive name for this new IOS router and verify the platform and chassis.		~
Name:	EtherSwitch router		
Platform:	c3725		¥
Chassis:			-
	< <u>B</u> ack Next >	Canc	el

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

🛞 New IO	S router - c3725-adventerprisek9-mz.124-15.T14.image	? ×
Idle-PC An id cores	e-pc value is necessary to prevent IOS to use 100% of your processor or one of its	24
Idle-PC:	0x60c086a8	Idle-PC finder
	😢 Idle-PC finder	×
	Idle-PC value 0x60c086a8 has been found suitable for your IOS ima	ge
	ОК	
	< <u>B</u> ack <u>F</u> inish	Cancel

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

## -. Adding a Cisco Router

In order to add a Cisco router to GNS3, start by copying the file c7200-advipservicesk9mz.150-1.M.bin from the folder commun to your local Downloads folder. Now, go to Preferences, then IOS Routers and click on New.

Last update: 2018/04/13 15:02	networking-lab-setting-with-gns3http://wiki.lahoud.fr/doku.php?id=networking-lab-setting-with-gns3&rev=1523624560, and

	TOC waster templates
General Server	IOS router templates
Packet capture VPCS • Dynamips IOS routers • IOS on UNIX IOU Devices • QEMU Qemu VMs • VirtualBox VMs • VirtualBox VMs • VMware VMware VMs • Docker Docker Containers	EtherSwitch router General Template name: EtherSwitch router Default name format: ESW(0) Server: local Platform: c3725 Image: C(\Users\710238\GNS3\images\IOS\c3725-adventerprisek9-mz.124-15.T14.imas Idle=PC: 0x40cc086a3 Startup-config: C-\Users\710238\GNS3\configs\ios_etherswitch_startup-config.txt Wemories and disks RAM: 128 MB NVRAM: 256 KB I/O memory: 5% PC/MCIA disk1: 0 MB Auto delete: False Adapters Slot 0: GT95100-FE Slot 1: NMM-16ESW
	4
	New Decompress Edit Delete

Click on New Image, then browse and select the c7200-advipservicesk9-mz.150-1.M.bin in your Downloads folder. Click yes to copy it to the default images library.

🛞 New IOS router template			?	×
IOS image Please choose an IOS image.			()	<
Existing image New Image				
IOS image:			Browse	
	< <u>B</u> ack	<u>N</u> ext >	Cance	1

Make sure to add Fast Ethernet interfaces to your router as in the image below.

🔗 New	IOS router - c7200-advipservicesk9-mz.150-1.M.image	?	$\times$
Ple	ork adapters ease choose the default network adapters that should be inserted into every new instance of is router.	¢	۶
slot 0:	C7200-IO-FE		Ŧ
slot 1:	PA-2FE-TX		•
slot 2:			-
slot 3:			Ŧ
slot 4:			•
slot 5:			•
slot 6:			•
	< <u>B</u> ack <u>N</u> ext >	Cance	el 🛛

Click on Idle-PC finder and wait for the process to complete. Finally, apply to validate the new device parameters. Now you are set to start using Cisco routers with GNS3.

#### -. Starting a New Project

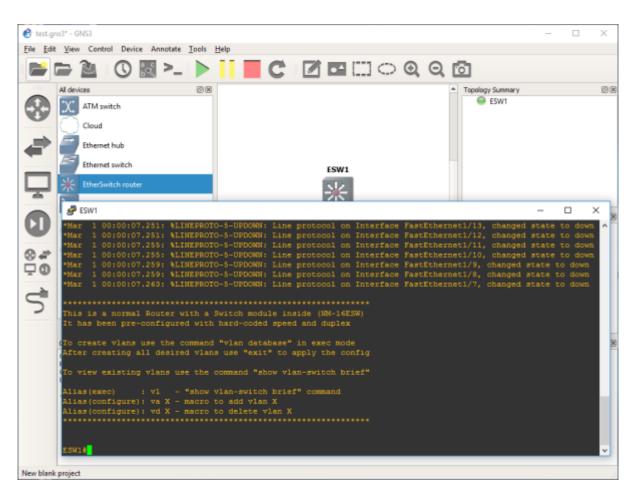
Choose a name for your project.

😚 Unsav	d project - GNS3	×	ς
	View Control Device Annotate Tools Help		
	≥ 2 0 0 0 >_ >   <b>    C 2</b> ⊡ ⊡ ○ Q 6	२ 🖻	
		Topology Summary	98
	New project ? X  Project  Name: test  Location: C:\Users\710238\GN53\projects\test  Browse  Qpen a project  Becent projects  OK  Cancel	Servers Summary	38
	Console	E	98
	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 (RNS3 Technologies. Use Help -> GNS3 Doctor to detect common issues. =>		

Select the devices from the left panel.

😵 test.gns3* - GNS3 —	×
<u>File Edit View Control Device Annotate Tools H</u> elp	
📂 🗁 🎦 I 🛛 📓 >_ 🕨 📔 🗰 🗰 🖽 🗆 🔍 Q, Q, 🔯	
Al devices Al devices ATM switch Cloud Cloud Ethernet hub Ethernet switch Ethernet switch Etherswitch router Frame Relay switch	08
Host VPCS VPCS VPCS	88
Console	ØX
GN83 management console. Rumning GN83 version 1.5.3 on Windows (64-bit) with Python 3.5.2 Qt 5.7.0. Copyright (:) 2006-2018 GN83 Technologies. Use Help -> GN83 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.

From: http://wiki.lahoud.fr/ - wikiroute

Permanent link: http://wiki.lahoud.fr/doku.php?id=networking-lab-setting-with-gns3&rev=1523624560



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