

NETWORKS AND PROTOCOLS

Lab 4

Introduction

The objectives of this lab are to :

- Learn some basic router configuration commands,
- Create subnets,
- Assign appropriate addresses to interfaces (router and terminal),
- Access and configure the router's CLI (Command Line Interface),
- Test and verify configurations.

Lab topology

- A simple architecture is proposed, with 2 Local Area Networks (LANs) interconnected with a router, Figure 1,
- The addresses used are :
 - 192.168.1.0/24 for LAN 1
 - 192.168.2.0/24 for LAN 2

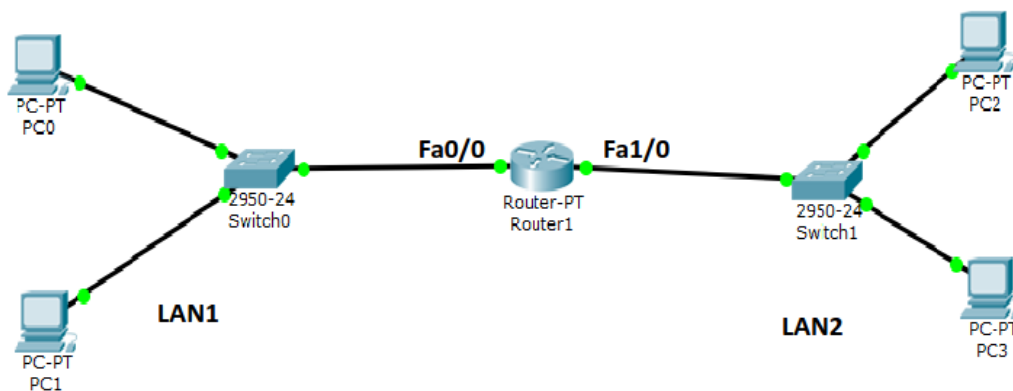


Figure 1: Topologie 1

Table 1: Addressing table

Device	IP Address	Mask	Gateway
LAN 1			
PC0	192.168.1.2	255.255.255.0	192.168.1.1
PC1	192.168.1.3	255.255.255.0	192.168.1.1
LAN 2			
PC2	192.168.2.2	255.255.255.0	192.168.2.1
PC3	192.168.2.3	255.255.255.0	192.168.2.1
Router 1			
Fa0/0	192.168.1.1	255.255.255.0	/
Fa0/1	192.168.2.1	255.255.255.0	/

Task 1. Assign IP addresses to Packet Tracer machines.

Step 1: Build the proposed topology by assigning correct IP addresses to the PCs.

Step 2: Assign addresses to router interfaces.

- Click on the router to assign IP addresses to the Fa0/0 and Fa0/1 interfaces,
- There are two ways of assigning IP addresses to router interfaces on Packet Tracer: using the graphical interface or the CLI (Command Line Interface, which represents the command line or interface of the router's operating system). We'll explore both methods below:

1. Using the graphical user interface, see Figure 2

Note

- Any modification to the GUI requires the execution of the router's CLI configuration commands. router CLI configuration commands.

2. Using the CLI :

- Click on the CLI tab in the same window, see Figure 3.
- The *enable* command accesses privileged mode,
- The *configure terminal* (or *conf t*) command is used to access the global configuration mode.
- The *interface <interface name>* command is used to access the interface configuration mode in order to set the desired configuration,
- The *ip address <ip address> <network mask>* command is used to assign an IP address to the current interface,
- The *no shutdown* command activates the interface,

In this step, we ask:

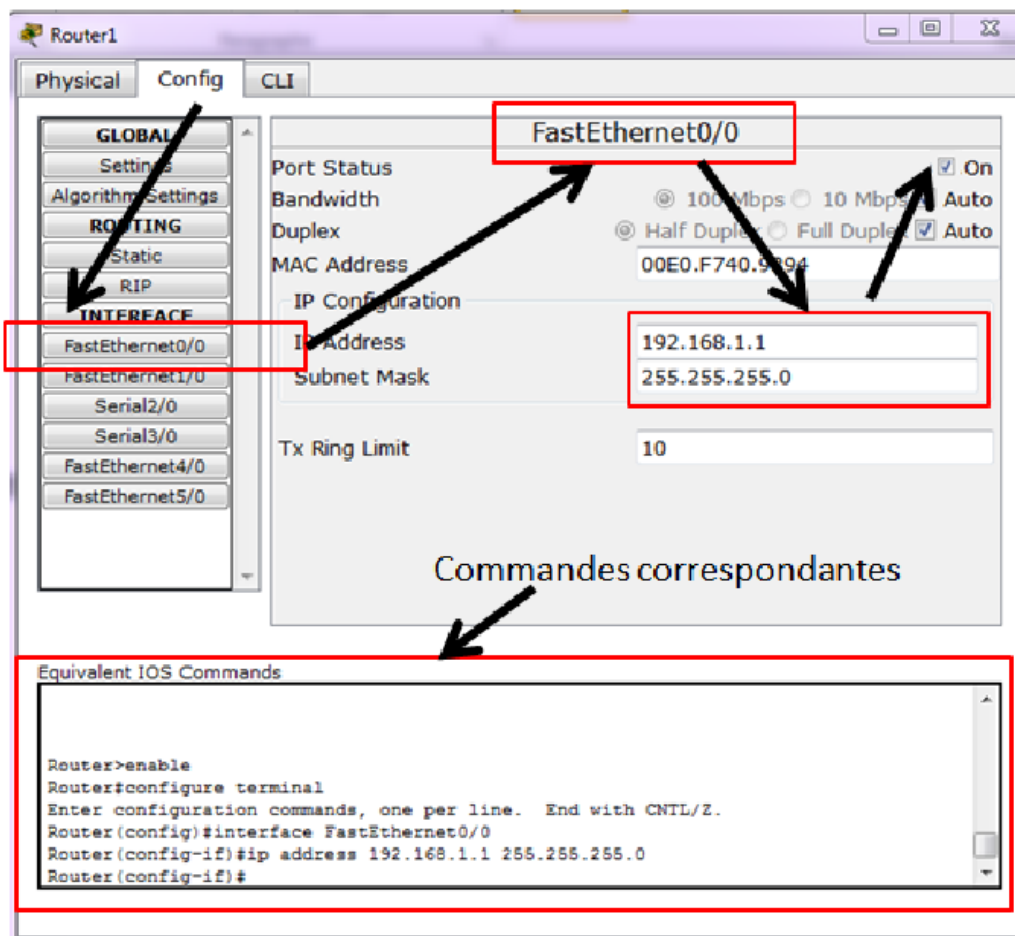


Figure 2: graphical user interface

- use Packet Tracer's graphical interface to configure the router's Fa0/0 interface,
- and use the CLI to configure the second interface.

Step 3: Default gateway configuration.

- For example, on PC0, click on PC0 => "Config" tab => "Global Settings" => "Gateway", Figure 4.
- Each PC must have a default gateway address corresponding to the router interface belonging to the same local network as the PC itself,
- So in this step, complete the configuration of all PCs by assigning them a corresponding default gateway address.

Note: You can do the same thing by going to : "Desktop" => "IP Configuration".

Step 4: Perform a connectivity test (*ping*).

- We need to ping PC0 with PC3
- In case the ping shows a connectivity problem, check the following:

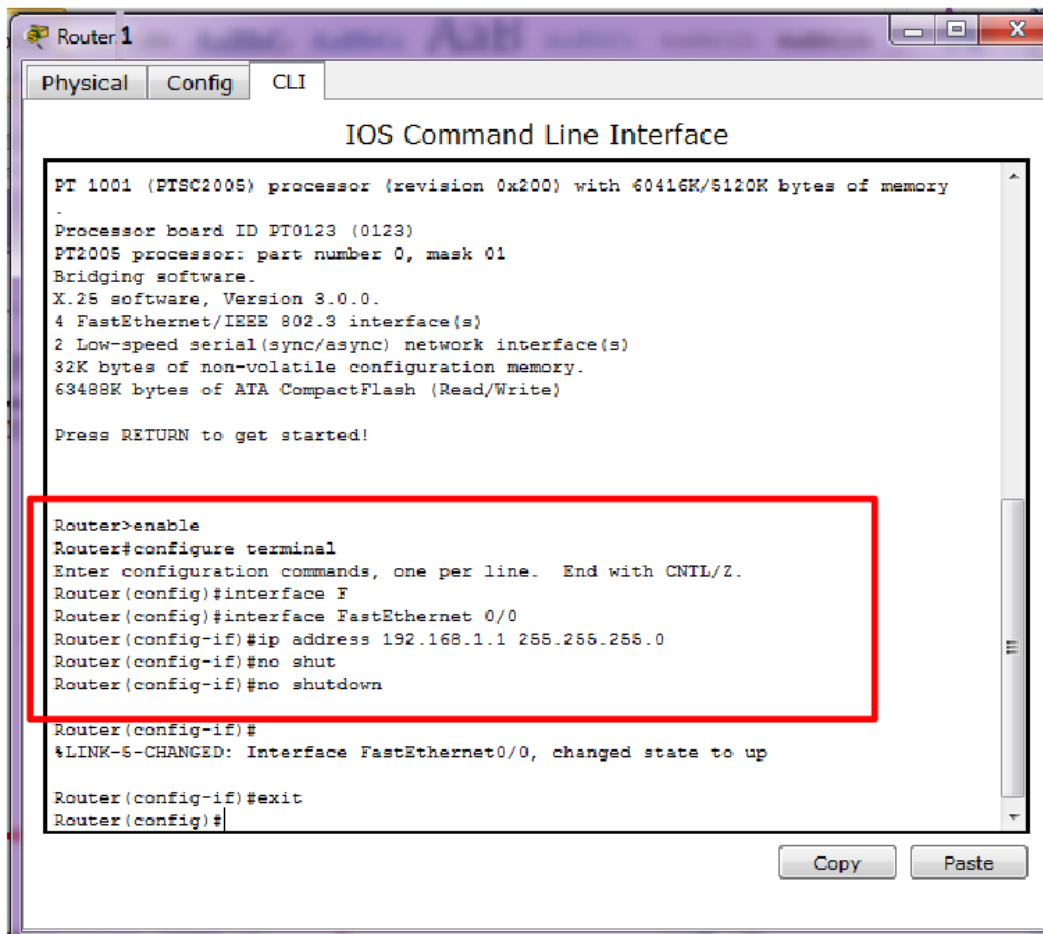


Figure 3: CLI interface

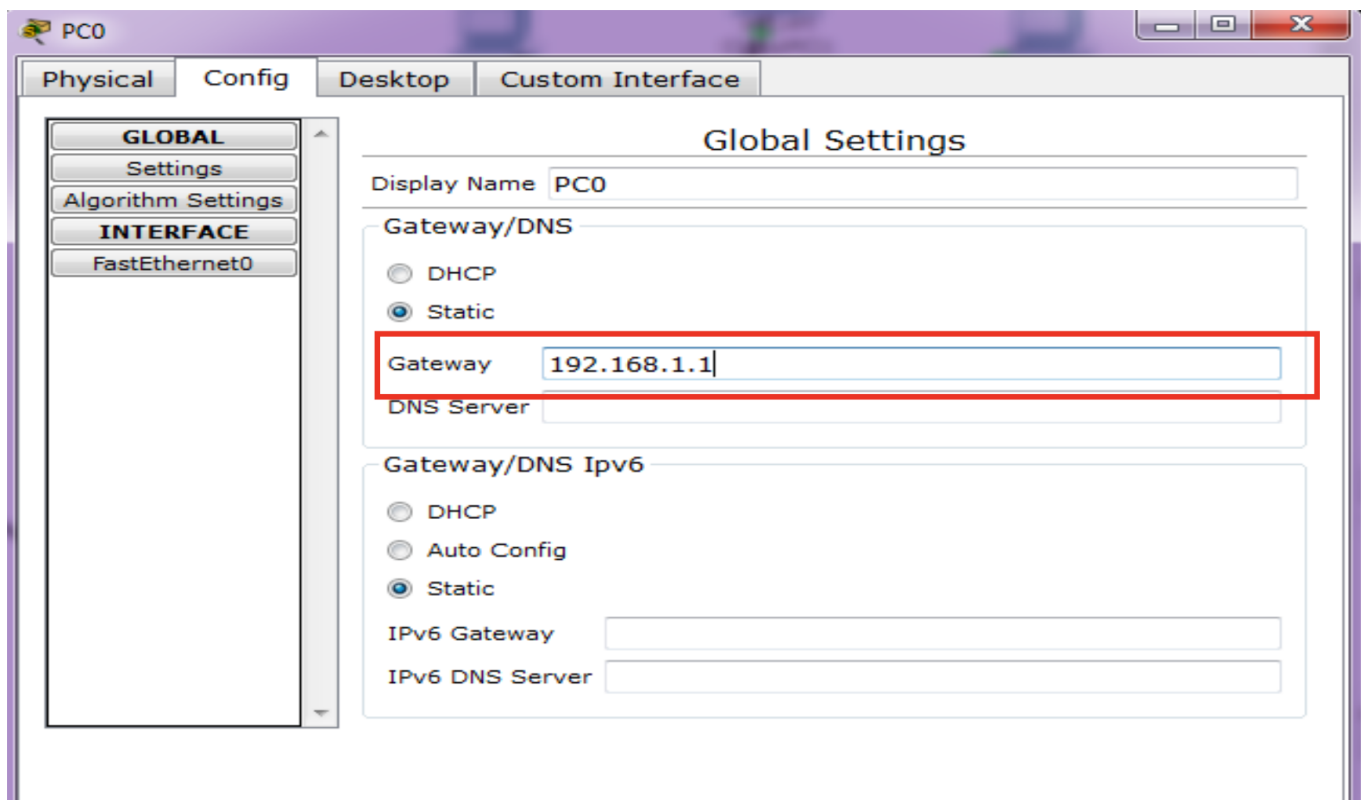


Figure 4: Default gateway configuration

- Check that the router interfaces are switched on correctly,
- Check that router IP addresses are correctly entered and assigned to the correct interfaces. To do this, use the command: show running-config (or sh run for short) in privileged mode,
- Check that machine IP addresses have been entered correctly,
- Check that there are no errors when entering default gateways.
- Do the ping again as it may not work at the very first time.

Step 5: Perform an *ARP* test.

- Change Packet tracer operational mode to simulation mode.
- Uncheck all protocols except ARP and ICMP in the filter.
- Perform a ping like the previous Lab
- What do you notice?