NETWORKS AND PROTOCOLS

Lab 2

Introduction

The aim of this tutorial is to learn how to connect the different parts of a local network, configure terminal machines by assigning them an identity in terms of IP (Internet Protocol) address, and test connectivity between these machines. The following tasks will be carried out:

- Correctly identify the cables to be used within the network,
- Use "Packet Tracer" software to create and configure each individual architectures,
- Physically connect a machine-to-machine network and a switched network,
- Check the basic connectivity of each PC,

Task 1: Creating a machine-to-machine network

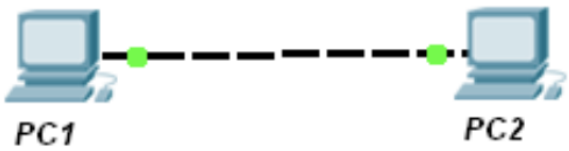

Figure 1: Machine to machine

Step 1: Connect the two workstations PC1 and PC2

- Connect the two workstations using the appropriate Ethernet cable,
- Connect one end of the cable to the network interface on PC1 and the other to PC2,
- Which cable is used?

Step 2: Define a Layer 3 address for each workstation.

- Click on each terminal and go to the "Config" tab, the window below appears,
- Enter IP addresses for each station as shown above,
  - PC1 has the IP address: 192.168.1.2
  - PC2 has the IP address: 192.168.1.3
- Ensure that the "On" button is activated.

Note: The same configuration can also be performed from the "Desktop" tab, as shown in the figure 3:

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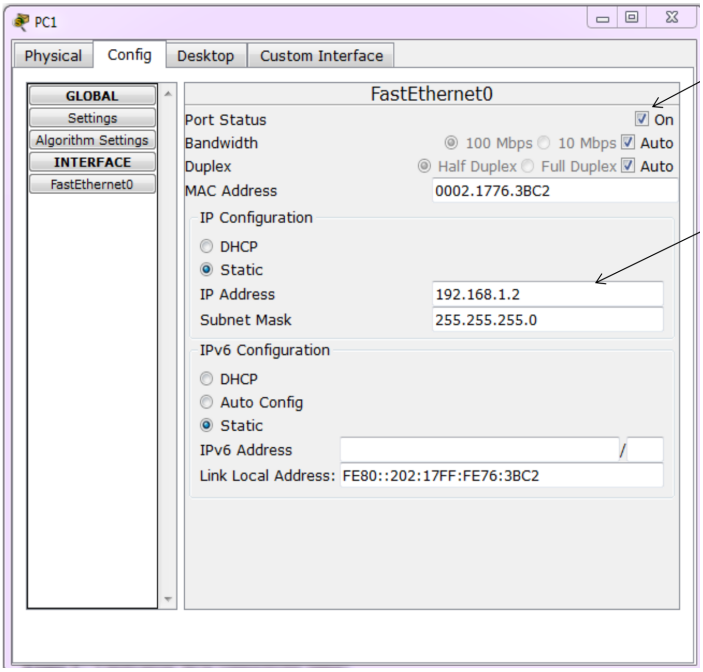

Figure 2: PC config page

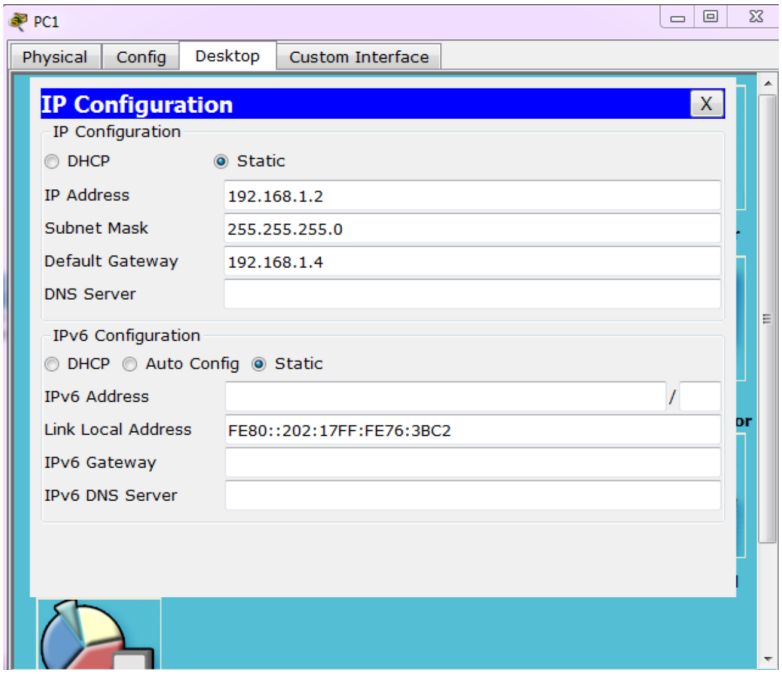

Figure 3: PC Desktop config page

Step 3: Checking the connectivity of PC1 and PC2 stations

- Click on each station, and the previous window appears,
- Go to the "Desktop" tab, the window below appears (Figure 4).
- Click on "**Command Prompt**", the command line appears.
- Type the ping command as shown in the "Command Prompt" window (Figure 5),
- On PC1, enter the address of PC2 and on PC2, enter the address of PC1,

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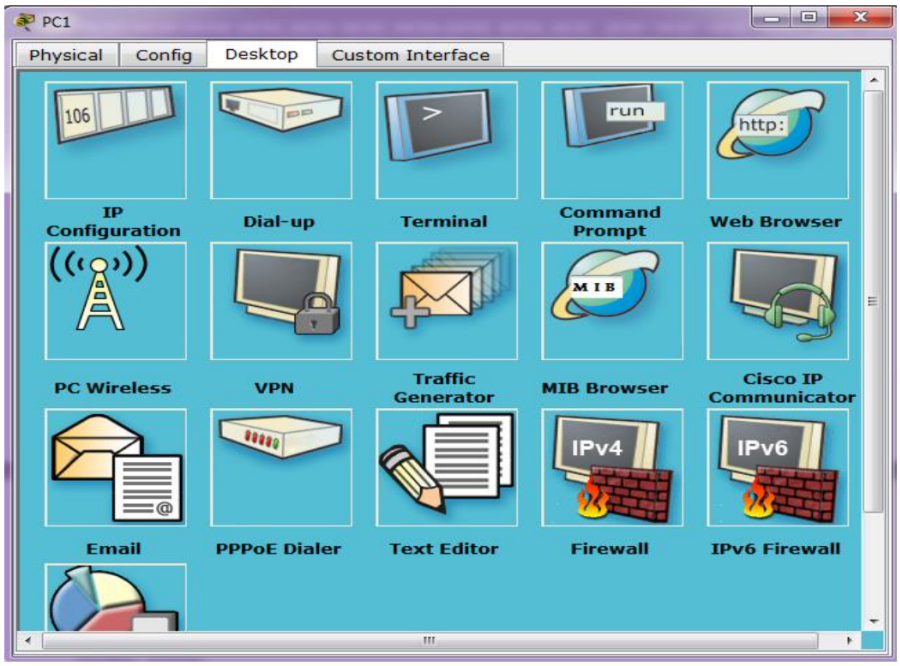

Figure 4: PC Desktop App page

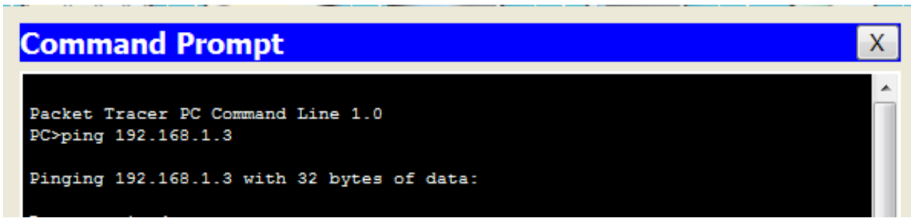

Figure 5: PC Command Prompt

- If the ping responds with a reply, connectivity is successful (Figure 6).

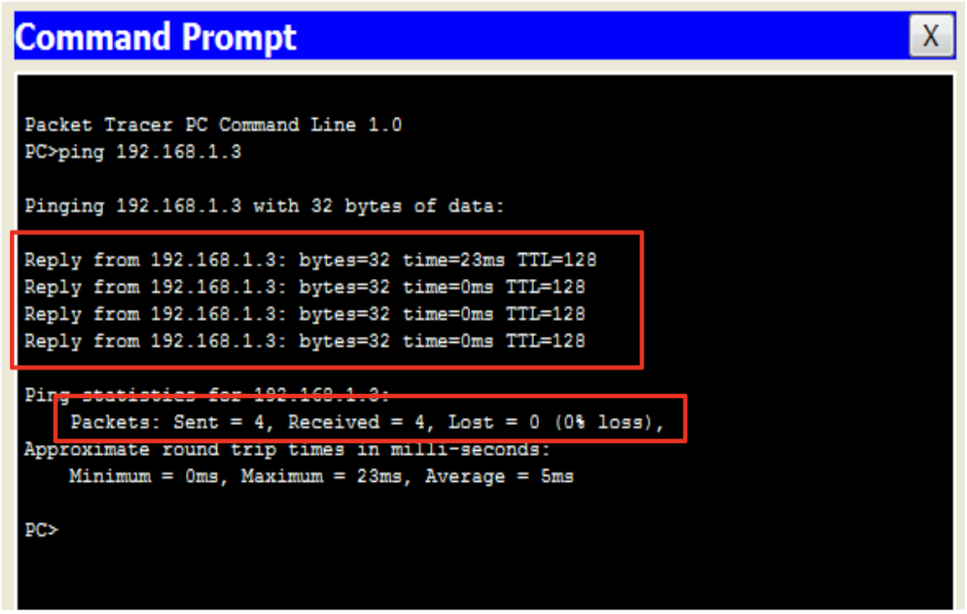

Figure 6: Ping positive response

- If the ping responds with a Timeout or Host Destination Unreachable (see figure 7),

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connectivity has failed. In the latter case, you need to troubleshoot the network by checking the configuration of each machine.

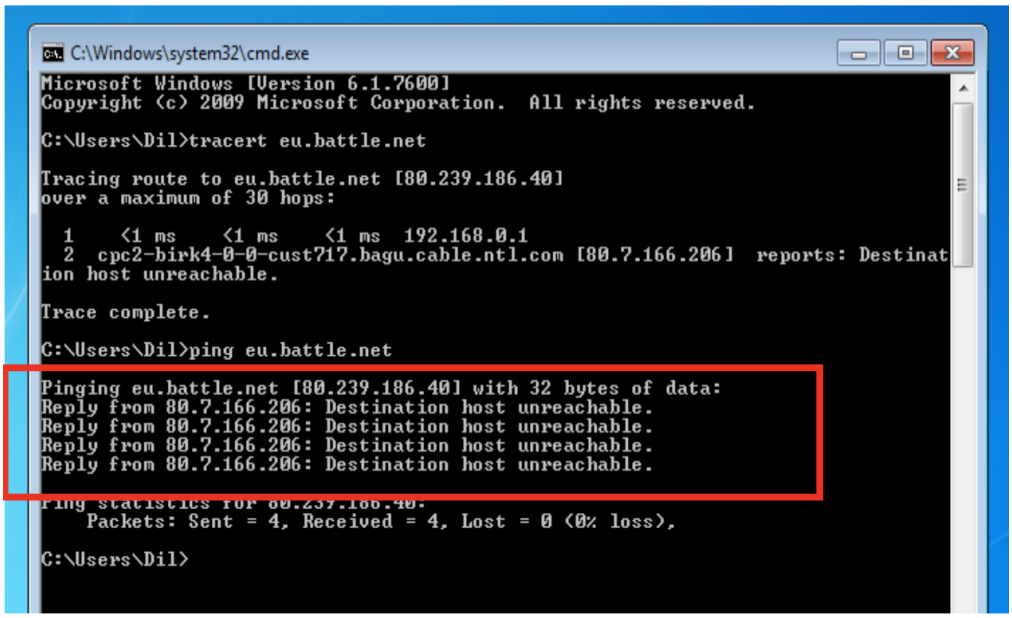

Figure 7: Ping negative response

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Task 2: Creating a switched network with Packet Tracer

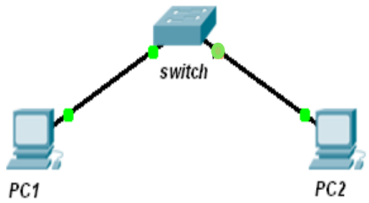

Figure 8: Switched network

Step 1: Connect a workstation to the switch.

- Connect one end of the appropriate Ethernet cable to the network interface of a workstation,
- Connect the other end to one of the switch ports,
- Do the same with the other workstation. Select any port on the switch,
- Which cable should we use?

Step 2: Define a Layer 3 address for each workstation.
Step 3: Check connectivity using the ping command.

Task 3: Creation of a network using hardware from the network room (using the same network ID)

Step 1: Please connect to the ENSIA network (via WiFi or Ethernet cable).
Step 2: Define a Layer 3 address for each PC.

- We will use the same network address for all machines (we can use the provided IP address from our HDCP server)
- Obtain your IP address (using ifconfig or ipconfig)
- What is your IP address ?

Note: IP address configuration window may vary from one machine to another, depending on the operating system or version. However, the principle is the same.
Step 3: Check the connectivity of both PCs

- From the source host, launch the terminal or command prompt
- Type the ping command as explained above,
- Indicate the average RTT value

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Task 4: Creation of a network using hardware from the network room (using different network ID)

Step 1: Please connect to the ENSIA network (via WiFi or Ethernet cable).
Step 2: Define a Layer 3 address for each PC.

- We will split the room into two different (logical) network addresses
  - One half using the network address 192.168.0.0 /24
  - Other half using the network address: 192.168.1.0 /24

Note: IP address configuration window may vary from one machine to another, depending on the operating system or version. However, the principle is the same.
Step 3: Check the connectivity of both PCs

- From the source host, launch the terminal or command prompt
- Type the ping command as explained above,
- Why the ping doesn't work?

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