

Packet tracer

Beautiful lab ...

Mohamed ANADDAM

5th March, 2025

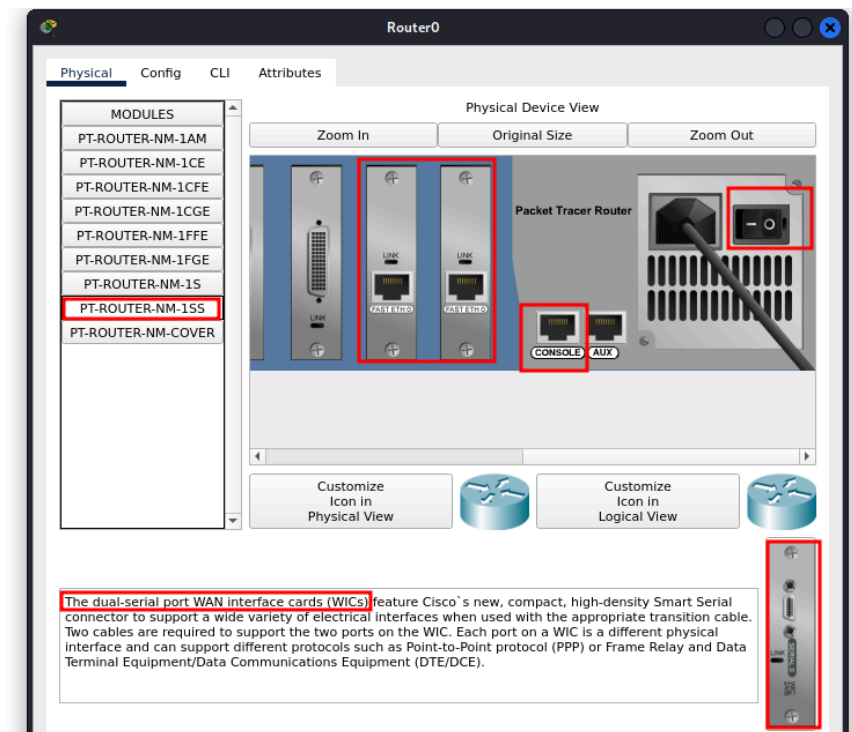
ICCN INE1

Phase 1: Prise en main du routeur et interconnexion simple de deux sites :

1- Seems like I found a suitable router 👍

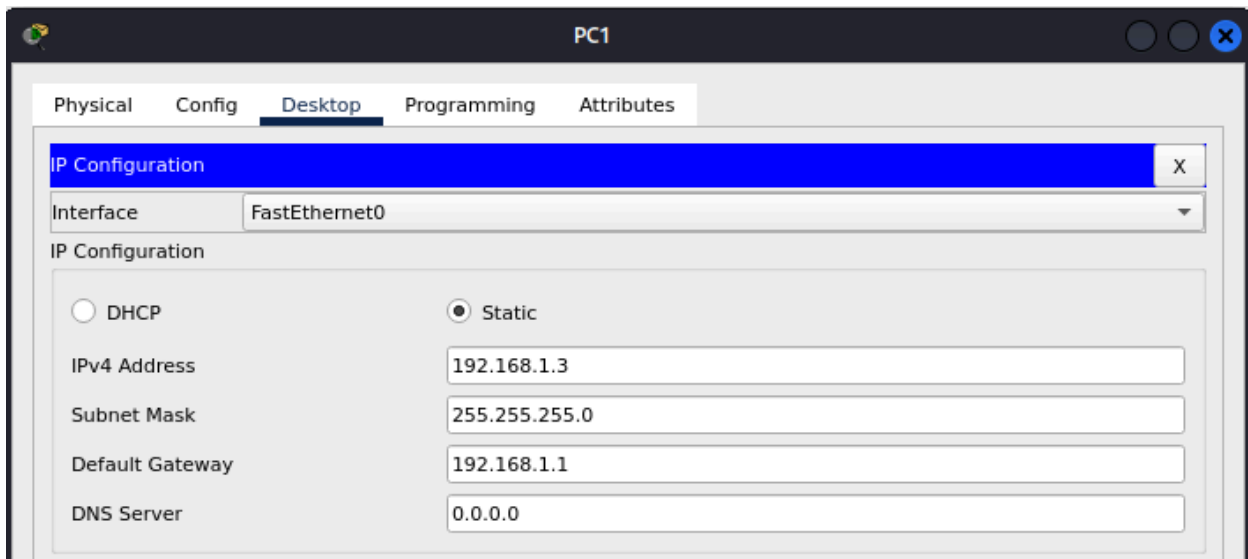
! MOHAMED ANADDAM
is HERE !

Router-PT
Router0



- ☒ Console
- ☒ Power switch
- ☒ port ether
- ☒ Port wan
- ☒ My name on packet tracer

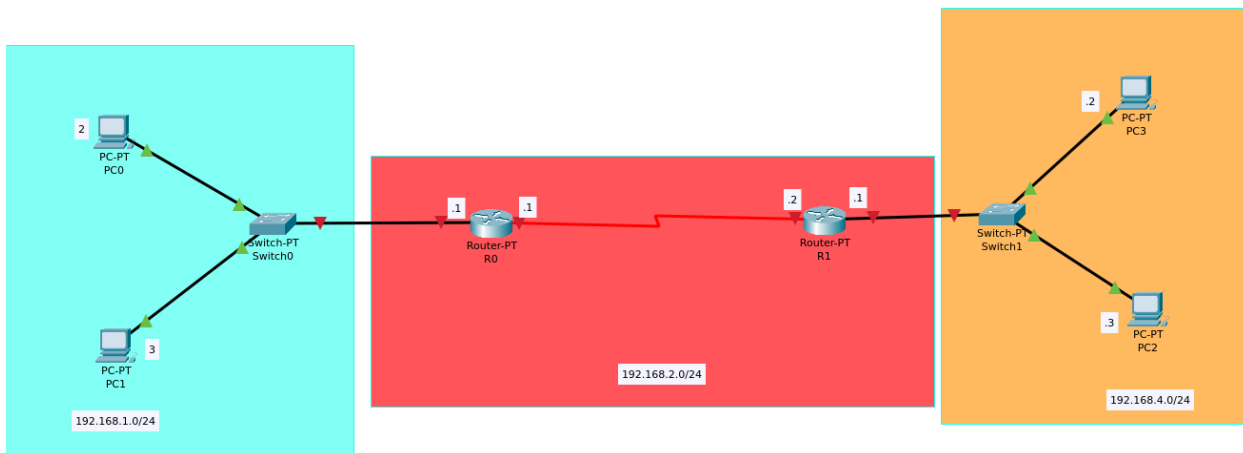
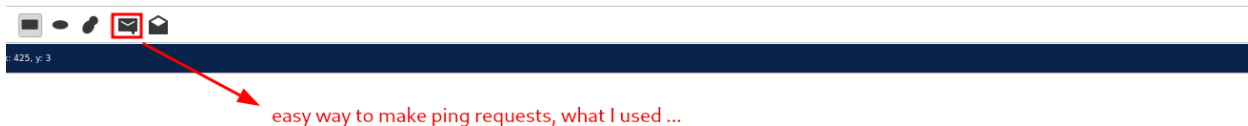
2- Let's connect our Pc's to a switch, and configure their ip addresses :



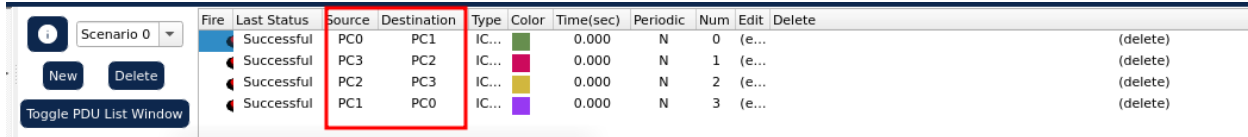
Here we are, example of how to configure PC1, it's static, the ip address and mask look good, and the gateway is 192.168.1.1

Same for PC2, except that it's ip address is 192.168.1.2

Same for PC3 and PC4, except that they have a different gateway : 192.168.4.1 and different ip addresses.



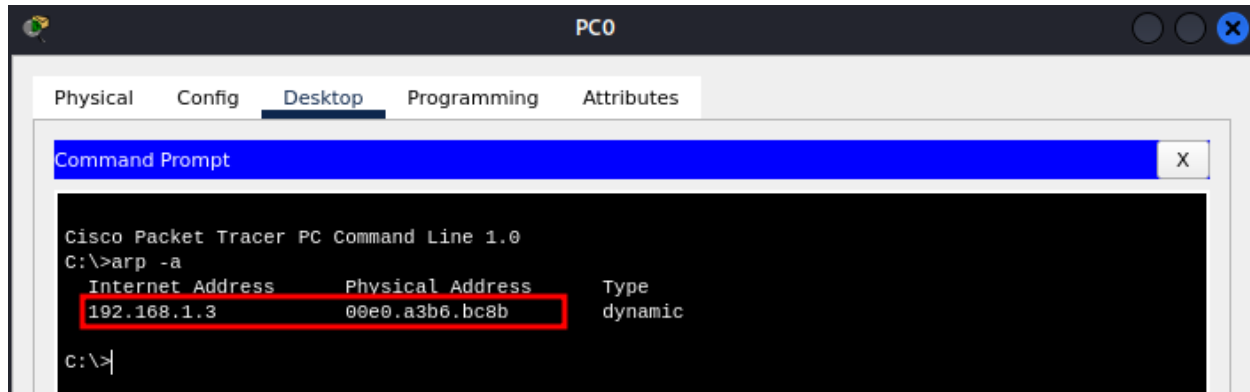
3- Testing the pings ... can everybody ping everybody ... ofcrs not, but at least within their networks.



Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC0	PC1	IC...	Green	0.000	N	0	(e...)	(delete)
	Successful	PC3	PC2	IC...	Pink	0.000	N	1	(e...)	(delete)
	Successful	PC2	PC3	IC...	Yellow	0.000	N	2	(e...)	(delete)
	Successful	PC1	PC0	IC...	Purple	0.000	N	3	(e...)	(delete)

As shown here, indeed they can talk to each other within their networks (LANs).

4- Let's spy on the arp cache :



This is to be expected, since this is PC0 that has the ip 192.168.1.2, it only knows of the existence of 192.168.1.3 on the same network, it is the only Pc it can talk to. (after arp request ofcrs when we did ping, PC0 obtained the info back then of the @mac of 192.168.1.3 through the arp broadcast request Within the same LAN ofcrs, as always)

5- route -r

```
C:\>netstat -r

Route Table
=====
Interface List
0x1 ..... PT TCP Loopback interface
0x2 ...00 16 6f 0d 88 ec ..... PT Ethernet interface
0x1 ..... PT TCP Loopback interface
0x2 ...00 16 6f 0d 88 ec ..... PT Bluetooth interface
=====

Active Routes:
Network Destination        Netmask          Gateway          Interface        Metric
0.0.0.0                    0.0.0.0          192.168.1.1      192.168.1.2      1
Default Gateway:          192.168.1.1
=====

Persistent Routes:
None
```

NOW configuring routers ... cuz routers are FUN 😊 !i

```
Router>en
Router#show running-config
Building configuration...

Current configuration : 796 bytes
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Router
!
!
!
!
!
!
no ip cef
no ipv6 cef
!
!
--More--
```

Instead of enable just en is fine, same for interface just int, and same for terminal just t is fine, I'll be using these shortcuts to save time typing ..., here we are in enabled mode and we saw running-configs

```

Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname Routeur R2
      ^
% Invalid input detected at '^' marker.

Router(config)#hostname R2
R2(config)#show int

```

Now to conf t mode, I changed the name of the router to R2.

```

R2#show interface
FastEthernet0/0 is administratively down, line protocol is down (disabled)
  Hardware is Lance, address is 0001.970b.b495 (bia 0001.970b.b495)
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Full-duplex, 100Mb/s, media type is RJ45
  ARP type: ARPA, ARP Timeout 04:00:00,
  Last input 00:00:08, output 00:00:05, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0 (size/max/drops); Total output drops: 0
  Queueing strategy: fifo
  Output queue :0/40 (size/max)
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    0 packets input, 0 bytes, 0 no buffer
    Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    0 input packets with dribble condition detected
    0 packets output, 0 bytes, 0 underruns
    0 output errors, 0 collisions, 2 interface resets
    0 babbles, 0 late collision, 0 deferred
    0 lost carrier, 0 no carrier
--More--

```

And we should exit from conf t mode to be able to exec show interface.

11- Ops, I guess I should name the interfaces per this question :
The router has **4 Ethernet interfaces**:

- **FastEthernet0/0**
- **FastEthernet1/0**
- **FastEthernet4/0**

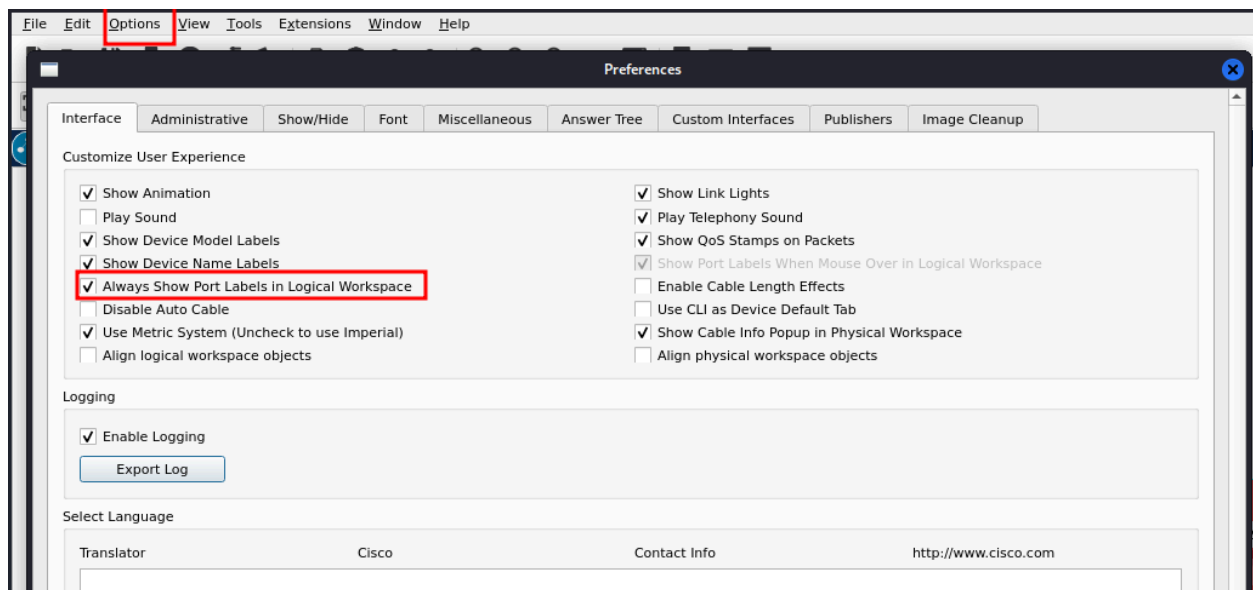
- **FastEthernet5/0**

The router has **3 WAN interfaces** (Serial connections are typically used for WAN links):

- **Serial2/0**
- **Serial3/0**
- **Serial6/0**

12-

To make my life easier so interfaces would be visible to me effortlessly



And configuring the R2 interface Fa0/0 that is actually the gateway for the other network ..

```
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#interface Fa0/0
R2(config-if)#no ip address
R2(config-if)#ip address 192.168.4.1 255.255.255.0
R2(config-if)#no sh

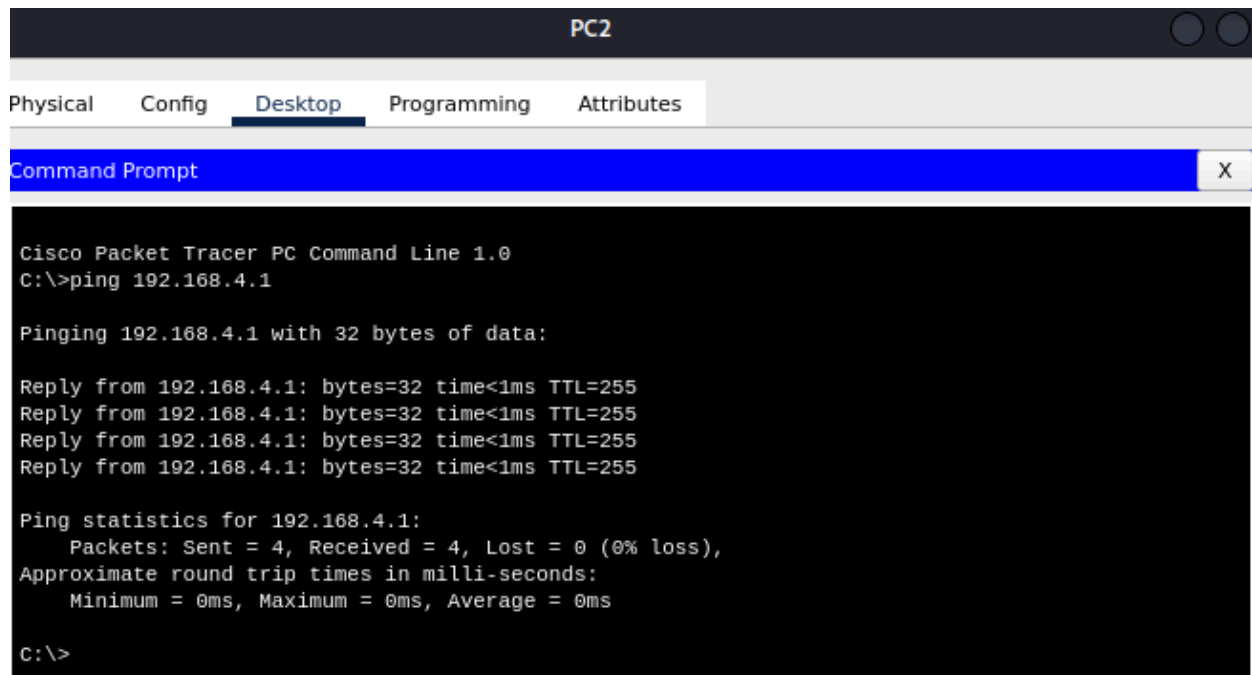
R2(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
```

13-

And it is UP and running. U don't believe me 😞 ?

Okay 😊



The screenshot shows a Cisco Packet Tracer interface for PC2. The 'Desktop' tab is selected, displaying a 'Command Prompt' window. The window title is 'Command Prompt' with a close button (X). The text inside the window shows the execution of a ping command to 192.168.4.1. The output indicates that the ping was successful with 0% loss and 0ms round trip times.

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.4.1

Pinging 192.168.4.1 with 32 bytes of data:

Reply from 192.168.4.1: bytes=32 time<1ms TTL=255
Reply from 192.168.4.1: bytes=32 time<1ms TTL=255
Reply from 192.168.4.1: bytes=32 time<1ms TTL=255
Reply from 192.168.4.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.4.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

It is reachable, now we have to do the same for the other interfaces ...

14-15-

```
R2#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

C    192.168.4.0/24 is directly connected, FastEthernet0/0

R2#
```

I'll configure the other router now, since they are the same.. And only the one would be left ...

16 - Destination host unreachable :: ofcrs, the Lans are not connected yet ... we have to set the other remaining interfaces to make the WAN.

Router configurations 👍

```
R2(config)#
R2(config)#interface Se2/0
R2(config-if)#no ip address
R2(config-if)#ip address 192.168.2.2 255.255.255.0
R2(config-if)#encapsulation ?
    frame-relay  Frame Relay networks
    hdlc          Serial HDLC synchronous
    ppp           Point-to-Point protocol
R2(config-if)#encapsulation
% Incomplete command.
R2(config-if)#encapsulation hdlc
R2(config-if)#no sh

%LINK-5-CHANGED: Interface Serial2/0, changed state to down
R2(config-if)#
%LINK-5-CHANGED: Interface Serial2/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up
```

We set the ip addr of the interface, mask , encapsulation protocol and we're gd to gooo.

```
0 output buffer failures, 0 output buffers swapped out
Serial2/0 is up, line protocol is up (connected)
Hardware is HD64570
Internet address is 192.168.2.1/24
MTU 1500 bytes, BW 128 Kbit, DLY 20000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
Encapsulation HDLC, loopback not set, keepalive set (10 sec)
Last input never, output never, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0 (size/max/drops); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/1000/64/0 (size/max total/threshold/drops)
Conversations 0/0/256 (active/max active/max total)
Reserved Conversations 0/0 (allocated/max allocated)
Available Bandwidth 96 kilobits/sec
5 minute input rate 3 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
  3 packets input, 141 bytes, 0 no buffer
    Received 3 broadcasts, 0 runts, 0 giants, 0 throttles
  0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
  0 packets output, 0 bytes, 0 underruns
  0 output errors. 0 collisions. 1 interface resets
```

The command show interface results, the capture highlights the Serial2/0 we just set up is UP .

```
R1>ping 192.168.2.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.2.2, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/18/39 ms
R1>
```

From the interface 192.168.2.1 I am able to ping the other interface of the second router, which means everything works fine.

Configuration du routage statique :

- We need the default gateway if we want our PC to be able to communicate with another PC outside of our network.

23- seems I already added the gateways from the start ... sorry, I should have followed the script ...

24- configuring the next-hopes...and from the ping command it works!

```
R1(config)#ip route 192.168.4.0 255.255.255.0 192.168.2.2
R1(config)#ping 192.168.4.3
^
% Invalid input detected at '^' marker.

R1(config)#end
R1#
%SYS-5-CONFIG_I: Configured from console by console

R1#ping 192.168.4.3

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.4.3, timeout is 2 seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 16/28/34 ms

R1#
```

25- from another machine, we ping the interface and it works.

```
C:\>ping 192.168.2.1

Pinging 192.168.2.1 with 32 bytes of data:

Reply from 192.168.2.1: bytes=32 time=1ms TTL=254
Reply from 192.168.2.1: bytes=32 time=1ms TTL=254
Reply from 192.168.2.1: bytes=32 time=1ms TTL=254
Reply from 192.168.2.1: bytes=32 time=18ms TTL=254

Ping statistics for 192.168.2.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 18ms, Average = 5ms

C:\>
```

27- Tracert

- Ofcrs I configured everything correctly ... so tracert should show us going from the gateway to next hope interface of the next router and to the last endpoint we are pinging. And that's what's happening here ... and Done !

```
C:\>tracert 192.168.4.3

Tracing route to 192.168.4.3 over a maximum of 30 hops:

  0  0 ms    0 ms    0 ms    192.168.1.1
  1  1 ms    0 ms    1 ms    192.168.2.2
  2  1 ms    0 ms   12 ms   192.168.4.3

Trace complete.
```

#FIN

Phase 2: Prise en main du routeur et interconnexion simple de deux sites :

Conclusion

I just saw that I didn't need to write all of this Tsk sometimes I am dumb beyond and beyond ...

■ ■ ■