

**Gökhan Özeloğlu - 21627557**

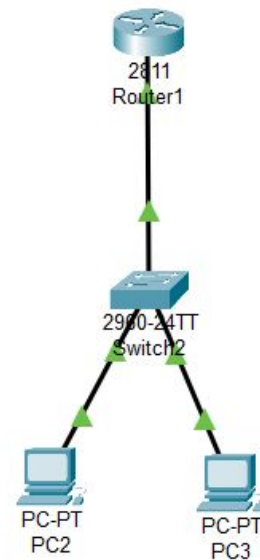
**Burak Yılmaz - 21627868**

**BBM 453 Computer Networks Lab - Router Lab Assignment**

**Group ID: 1**

1-You should use one router, one switch and at least one PC for your group, and plug required cables and activate required connections. So you are going to create your own local area network with Router as a gateway.

Ans: Our topology. Green arrows mean every connection works fine on the topology.



2-You should enter enable mode if you want to configure anything on the router. Show commands can be used in user or enable mode (outside of config mode)

```
Group1>enable
Group1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Group1(config)#
```

3-First you have to give appropriate names to your Router, according to your section/group number using hostname command

```
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname Group1
Group1(config)#
%SYS-5-CONFIG_I: Configured from console by console
```

We set our hostname as Group1 because our group number is 1.

4-In this step, each group runs simple show commands, snapshot and discuss the results.

**show version:** Displays general information about router and Cisco IOS version. We used that command and got the following result.

```
Group1#show version
Cisco IOS Software, 2800 Software (C2800NM-ADVIPSERVICESK9-M), Version 12.4(15)T1, RELEASE SOFTWARE (fc2)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2007 by Cisco Systems, Inc.
Compiled Wed 18-Jul-07 06:21 by pt_rel_team
```

```
ROM: System Bootstrap, Version 12.1(3r)T2, RELEASE SOFTWARE (fc1)
Copyright (c) 2000 by cisco Systems, Inc.
```

```
System returned to ROM by power-on
System image file is "c2800nm-advipservicesk9-mz.124-15.T1.bin"
```

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If you require further assistance please contact us by sending email to [export@cisco.com](mailto:export@cisco.com).

```
cisco 2811 (MPC860) processor (revision 0x200) with 60416K/5120K bytes of memory
Processor board ID JAD05190MTZ (4292891495)
M860 processor: part number 0, mask 49
2 FastEthernet/IEEE 802.3 interface(s)
1 Low-speed serial(sync/async) network interface(s)
239K bytes of NVRAM.
62720K bytes of processor board System flash (Read/Write)
```

```
Configuration register is 0x2102
```

**show running-config:**Shows the current configuration settings (stored in main memoryRAM) on the router.We used that command and got the following result.

```
Group1#show running-config
Building configuration...

Current configuration : 639 bytes
!
version 12.4
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Group1
!
!
!
!
!
!
!
no ip cef
no ipv6 cef
!
!
--More--
```

---

**show startup-config:** Shows the configuration settings to be loaded on the router during bootup (stored in the NVRAM environment)

```
Group1#show startup-config
Using 639 bytes
!
version 12.4
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Group1
!
!
!
!
!
!
no ip cef
no ipv6 cef
!
!
!
!
!
!
!
!
!
!
spanning-tree mode pvst
!
!
!
!
!
!
interface FastEthernet0/0
ip address 10.101.1.254 255.255.255.0
duplex auto
speed auto
!
interface FastEthernet0/1
no ip address
duplex auto
speed auto
shutdown
!
interface Serial0/0/0
no ip address
```

```

interface Serial0/0/0
    no ip address
    clock rate 2000000
    shutdown
!
interface Vlan1
    no ip address
    shutdown
!
ip classless
!
ip flow-export version 9
!
!
!
!
!
!
!
line con 0
!
line aux 0
!
line vty 0 4
login
!
!
!
end
```

**show users:**Gives information about the connected users

Group1#show users					
Line	User	Host(s)	Idle	Location	
* 0 con 0		idle	00:00:00		
Interface	User	Mode	Idle	Peer Address	

**dir all filesystems:** This command is not working that's why we try another method to see file systems. We use **show file systems** first and then for each file system we use dir command with that file system.

We have two file systems in router1.

```
Group1#show file systems
```

```
File Systems:
```

	Size(b)	Free(b)	Type	Flags	Prefixes
*	64016384	12822561	flash	rw	flash:
	29688	23590	nvr	rw	nvr

dir flash

```
Group1#dir flash
```

```
Directory of flash:/
```

3	-rw-	50938004	<no date>	c2800nm-advipservicesk9-mz.124-15.T1.bin
2	-rw-	28282	<no date>	sigdef-category.xml
1	-rw-	227537	<no date>	sigdef-default.xml

```
64016384 bytes total (12822561 bytes free)
```

dir nvram

```
Group1#dir nvram
```

```
Directory of nvram:/
```

238	-rw-	561	<no date>	startup-config
-----	------	-----	-----------	----------------

```
561 bytes total (237588 bytes free)
```



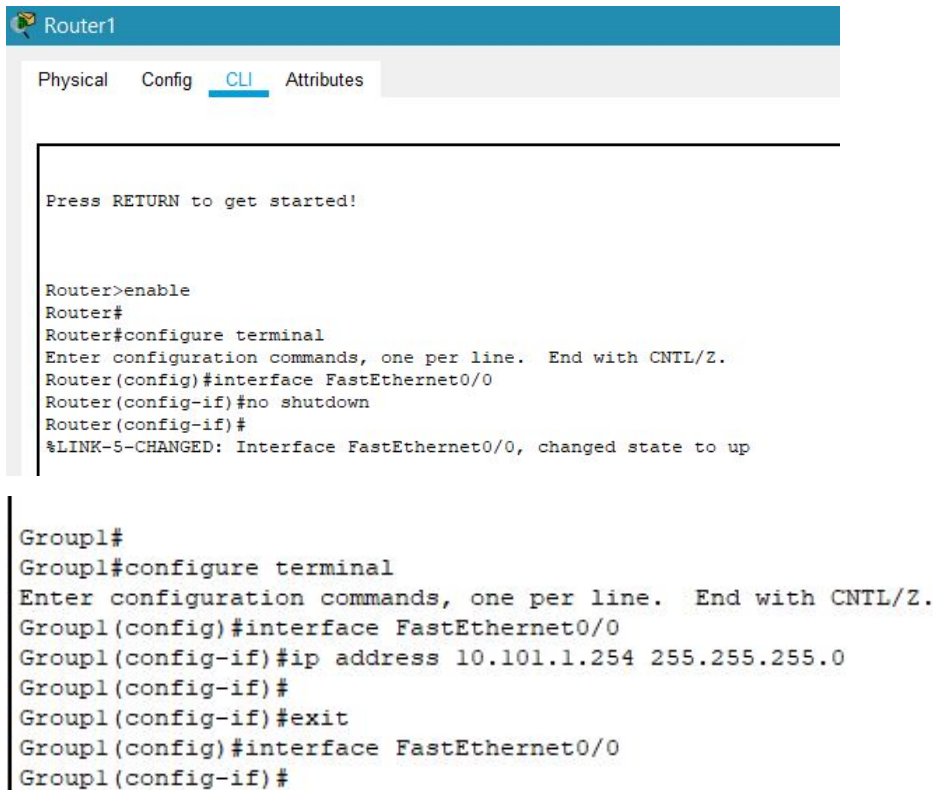
**show interfaces:**Shows all details about interfaces on the router

```
Group1>show interface
FastEthernet0/0 is up, line protocol is up (connected)
  Hardware is Lance, address is 0060.2fc3.e101 (bia 0060.2fc3.e101)
  Internet address is 10.101.1.254/24
  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
    13 packets input, 1664 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
    13 packets output, 1664 bytes, 0 underruns
    0 output errors, 0 collisions, 1 interface resets
    0 babbles, 0 late collision, 0 deferred
--More--
```

**show ip interface brief:** Shows interfaces' ip address and status briefly.

```
Group1>show ip interface brief
Interface          IP-Address      OK? Method Status                Protocol
FastEthernet0/0    10.101.1.254    YES manual up                    up
FastEthernet0/1    unassigned      YES unset  administratively down down
Serial0/0/0        unassigned      YES unset  administratively down down
Vlan1              unassigned      YES unset  administratively down down
Group1>
```

## 6-Configure IP address of your PC and Router



```
Router1
Physical Config CLI Attributes

Press RETURN to get started!

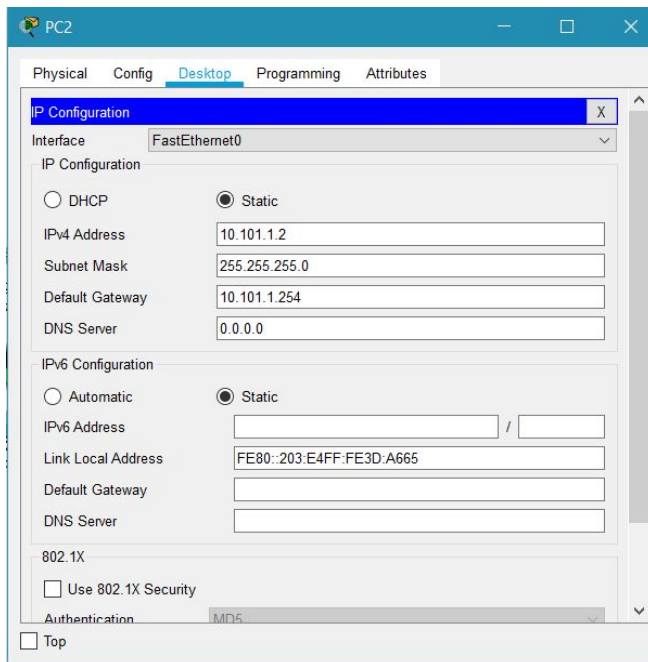
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

Group1#
Group1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Group1(config)#interface FastEthernet0/0
Group1(config-if)#ip address 10.101.1.254 255.255.255.0
Group1(config-if)#
Group1(config-if)#exit
Group1(config)#interface FastEthernet0/0
Group1(config-if)#
```

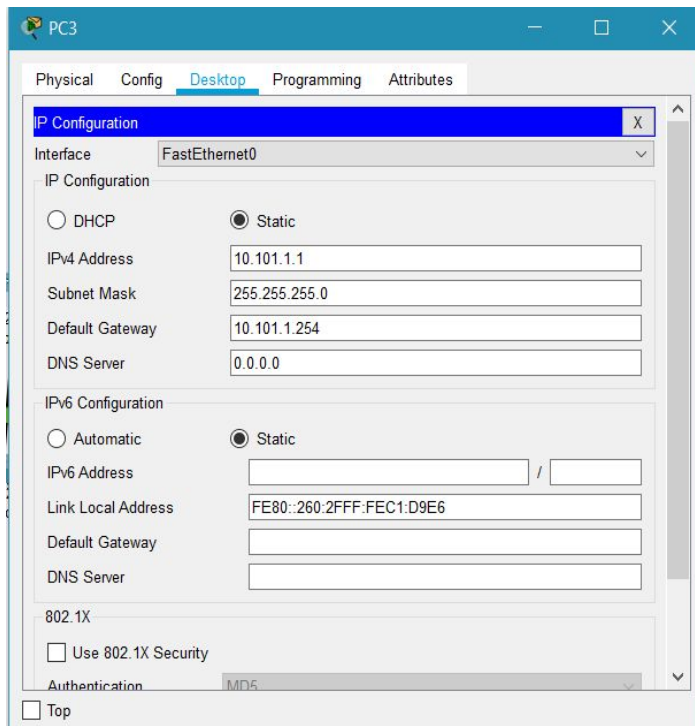


7- We pinged from router to pc and from pc to router to check if we can actually achieve topology.

Pc-2 Configuration(we use 101 because our group number is 1)



Pc3 configuration(we use 101 because our group number is 1)



Router Configuration (we use 101 because our group number is 1)

The screenshot shows the 'Router1' configuration window with the 'Config' tab selected. The left sidebar contains a tree view with categories: GLOBAL, Settings, Algorithm Settings, ROUTING, Static, RIP, SWITCHING, VLAN Database, and INTERFACE. Under the INTERFACE category, 'FastEthernet0/0' is selected. The main configuration area for 'FastEthernet0/0' includes: Port Status (checked 'On'), Bandwidth (radio buttons for 100 Mbps, 10 Mbps, and Auto; 'Auto' is selected), Duplex (radio buttons for Half Duplex, Full Duplex, and Auto; 'Auto' is selected), MAC Address (0060.2FC3.E101), IP Configuration (IPv4 Address: 10.101.1.254, Subnet Mask: 255.255.255.0), and Tx Ring Limit (10). Below the configuration area is a text box labeled 'Equivalent IOS Commands' containing the following commands: 

```
!
!
!
line con 0
!
line aux 0
!
```

 At the bottom left, there is a 'Top' button.

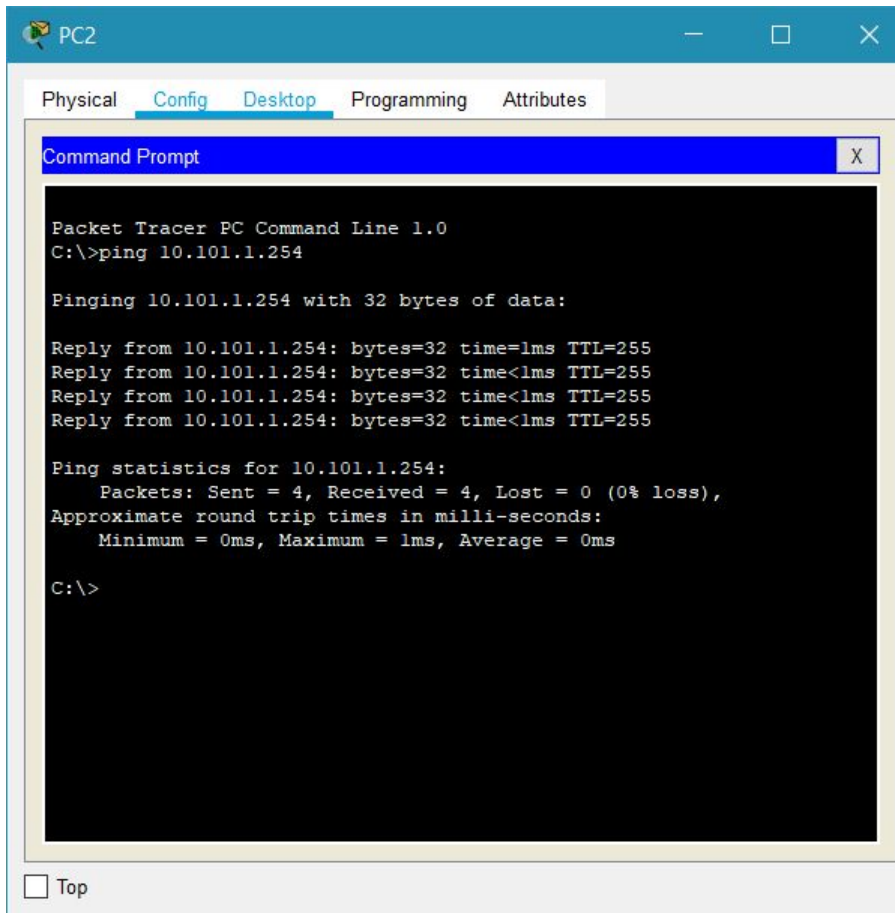
Pinging pc3 from router and we successfully achieve this.

```
Group1#ping 10.101.1.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.101.1.1, timeout is 2 seconds:
!!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/1 ms

Group1#
```

This time pinging from pc2 to router also we successfully achieve this.



The screenshot shows a Packet Tracer interface for a PC named 'PC2'. The 'Config' tab is selected, and a 'Command Prompt' window is open. The command prompt displays the output of a ping command to the IP address 10.101.1.254. The output shows four successful replies with 32 bytes of data, a time of 1ms, and a TTL of 255. The ping statistics indicate that 4 packets were sent, 4 were received, and there was 0% loss. The approximate round trip times in milliseconds are: Minimum = 0ms, Maximum = 1ms, and Average = 0ms.

```
Packet Tracer PC Command Line 1.0
C:\>ping 10.101.1.254

Pinging 10.101.1.254 with 32 bytes of data:

Reply from 10.101.1.254: bytes=32 time=1ms TTL=255
Reply from 10.101.1.254: bytes=32 time<1ms TTL=255
Reply from 10.101.1.254: bytes=32 time<1ms TTL=255
Reply from 10.101.1.254: bytes=32 time<1ms TTL=255

Ping statistics for 10.101.1.254:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>
```

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