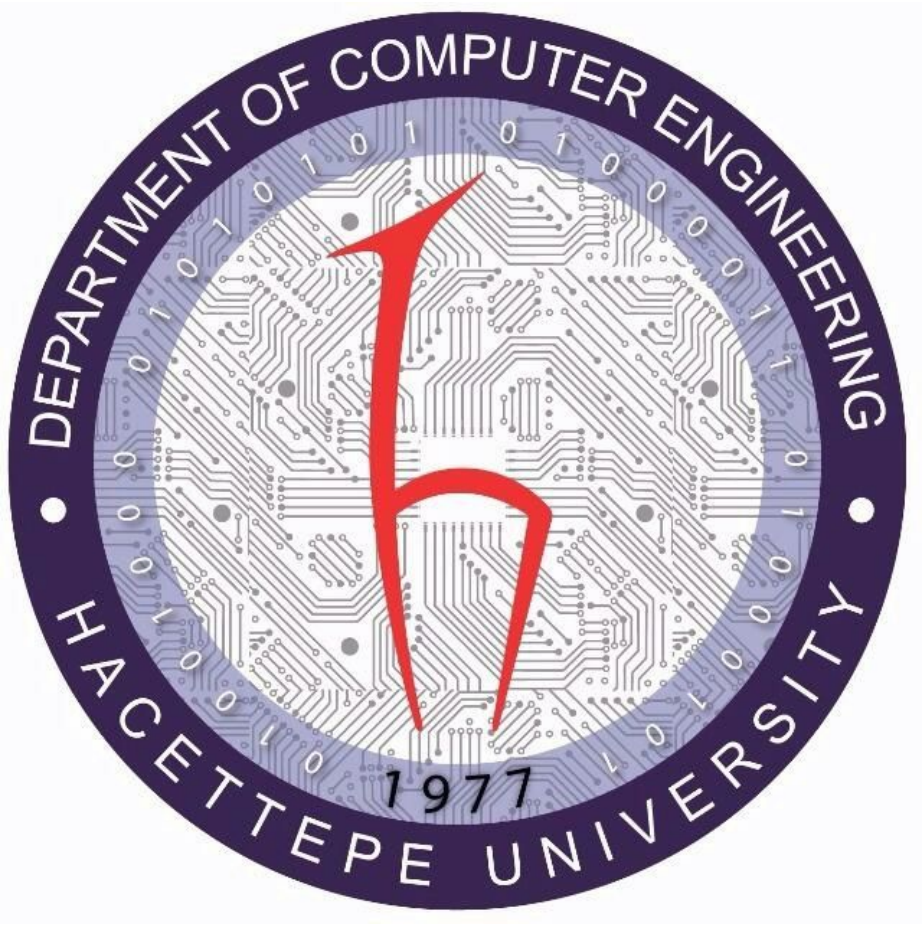

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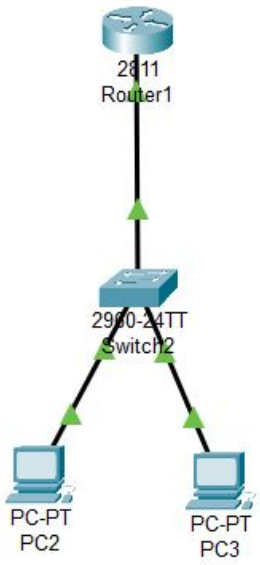
BBM 453 Computer Networks Lab - Router Lab Assignment
Group ID: 1

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"


This product contains cryptographic features and is subject to United
States and local country laws governing import, export, transfer and
use. Delivery of Cisco cryptographic products does not imply
third-party authority to import, export, distribute or use encryption.
Importers, exporters, distributors and users are responsible for
compliance with U.S. and local country laws. By using this product you
agree to comply with applicable laws and regulations. If you are unable
to comply with U.S. and local laws, return this product immediately.

A summary of U.S. laws governing Cisco cryptographic products may be found at:
http://www.cisco.com/wwl/export/crypto/tool/stqrg.html

If you require further assistance please contact us by sending email to
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
 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     nvram     rw  nvram:
```

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)
```

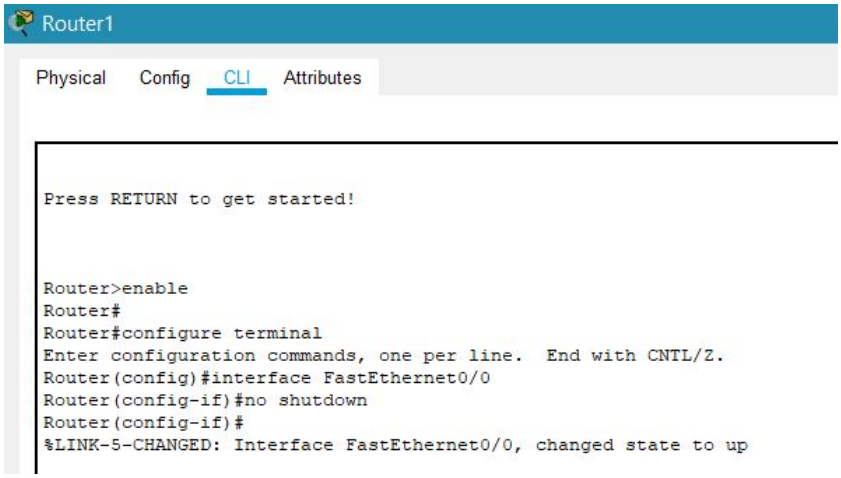
show interfaces: Shows all details about interfaces on the router

```
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>
```

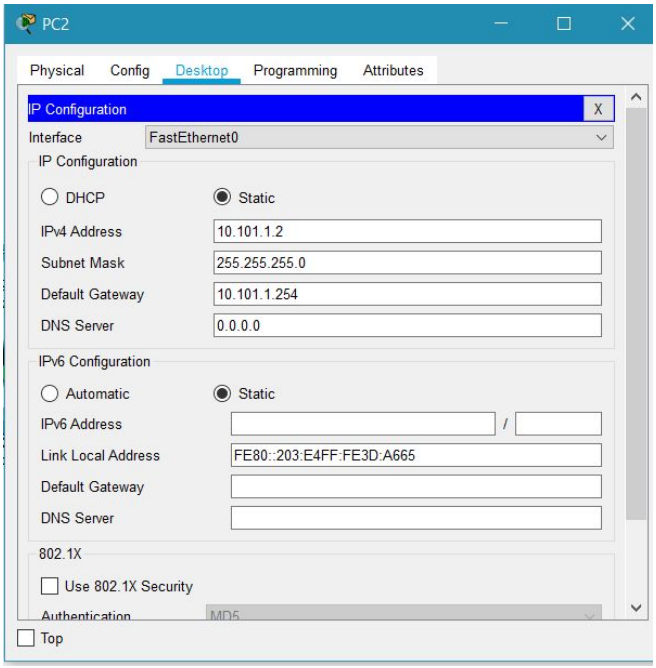
6-Configure IP address of your PC and Router



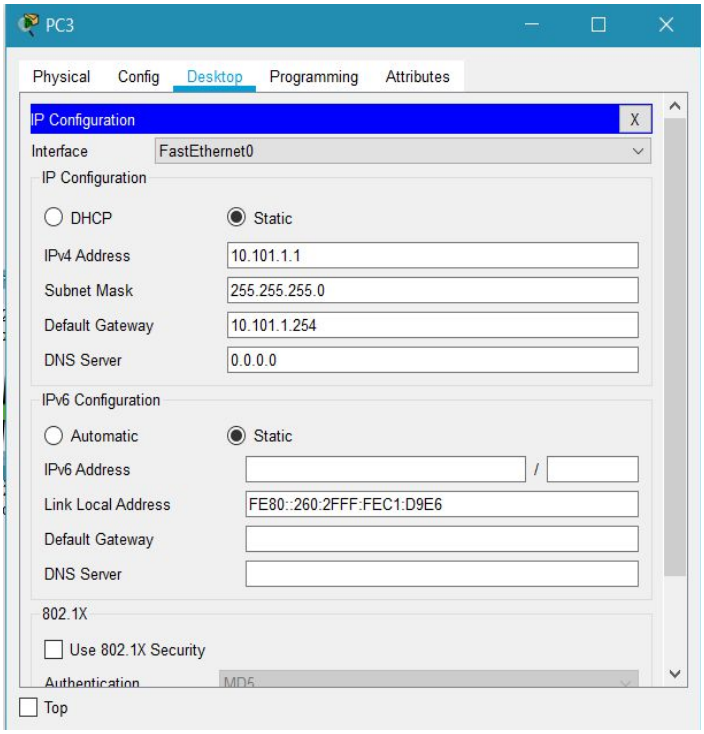

```
Group1#
Group1#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Group1(config)#interface FastEthernet0/0
Group1(config-if)#ip address 10.101.1.254 255.255.255.0
Group1(config-if)#
Group1(config-if)#exit
Group1(config)#interface FastEthernet0/0
Group1(config-if)#
```

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

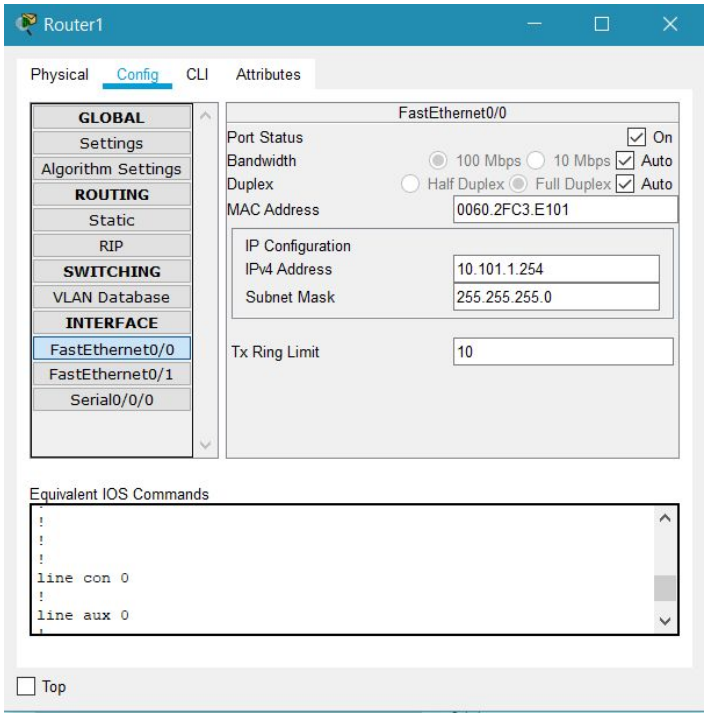
Pc-2 Configuration(we use 101 because our group number is 1)



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



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



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.