

**Ankara University**  
**Department of Computer Engineering**  
**COM332 2017**  
**LAB 1 Part 1**

**SECTION 1**

**PC Network TCP/IP Configuration Objective**

**Objective:**

- Identify tools used to discover a computer network configuration
- Gather information including connection, host name, Layer 2 MAC address and Layer 3 TCP/IP network address information.
- Compare network information to other PCs on the network

**Step 1:** Connect into the Internet

**Step 2:** Gather TCP/IP configuration information

Use the Start menu to open the Command Prompt, an MS-DOS-like window. Press **Start > Programs > Accessories > Command Prompt or Start > Programs > Command Prompt**

**Step 3:** Record the following TCP/IP information for this computer (use **ipconfig** command)

- IP address:
- Subnet Mask:
- Default Gateway:

**Step 4:** Compare the TCP/IP configuration of this computer to others on the LAN

If this computer is on a LAN, compare the information of several machines.

- Are there any similarities?
- What is similar about the IP addresses?
- What is similar about the default gateways?

**Step 5:** Check additional TCP/IP configuration information

To see detailed information, type **ipconfig /all** and press **Enter**.

**Step 6:** Close the screen.

## SECTION 2

### Using ping and tracert from a Workstation

#### Objective:

- Learn to use the TCP/IP Packet Internet Groper (**ping**) command from a workstation.
- Learn to use the trace route (**tracert**) command from a workstation.
- Observe name resolution occurrences using WINS and/or DNS servers

**Step 1:** Establish and verify connectivity to the Internet

**Step 2:** Access the command prompt

Use the Start menu to open the Command Prompt window. Pres

**Start > Programs > Accessories > Command Prompt** or **Start > Programs > Command Prompt** or **Start > All Programs > Command Prompt**

**Step 3:** ping the IP address of another computer

**Step 4:** ping the IP address of the default gateway

**Step 5:** ping the IP address of a DHCP or DNS servers

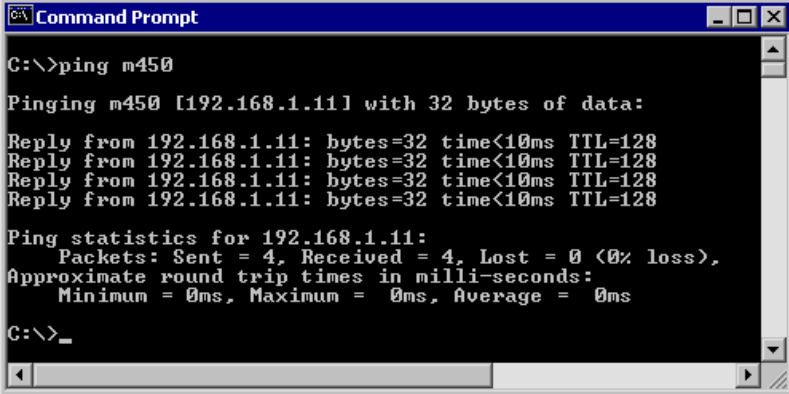
**Step 6:** ping the Loopback IP address of this computer

Type the following command: **ping 127.0.0.1**

The 127.0.0.0 network is reserved for loopback testing. If the ping is successful, then TCP/IP is properly installed and functioning on this computer

**Step 7:** ping the hostname of another computer

Try to ping the hostname of the computer that was recorded in the previous lab. The figure shows the successful result of the ping the hostname.



```
C:\>ping m450

Pinging m450 [192.168.1.11] with 32 bytes of data:

Reply from 192.168.1.11: bytes=32 time<10ms TTL=128
Reply from 192.168.1.11: bytes=32 time<10ms TTL=128
Reply from 192.168.1.11: bytes=32 time<10ms TTL=128
Reply from 192.168.1.11: bytes=32 time<10ms TTL=128

Ping statistics for 192.168.1.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>_
```

**Step 8:** ping the Cisco web site

**Step 9:** Trace the route to the Cisco web site

Type **tracert www.cisco.com** and press **Enter**

### SECTION 3

#### Decimal to Binary Conversion

##### Objective:

- Learn to convert decimal values to binary values.
- Practice converting decimal values to binary values.

**Step 1:** Convert the following decimal values to binary values:

- a. 123**
- b. 202**
- c. 67**
- d. 116.127.71.3**
- e. 255.255.255.0**
- f. 12.101.9.16**

### SECTION 4

#### Binary to Decimal Conversion

##### Objective:

- Learn the process of converting binary values to decimal values.
- Practice converting binary values to decimal values.

**Step 1:** Convert the following binary values to decimals:

- a. 11111111**
- b. 11010011**
- c. 11101001.00011011.10000000.10100100**
- d. 10101010.00110100.11100110.00010111**

### SECTION 5

#### Hexadecimal Conversions

##### Objective:

- Learn the process to convert hexadecimal values to decimal and binary values.

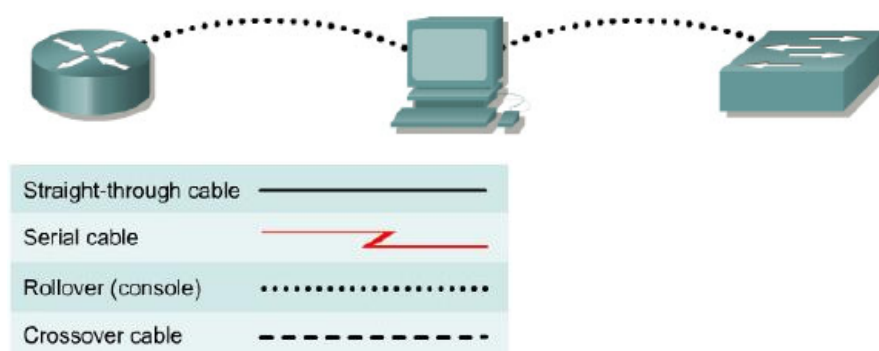
- Learn the process to convert decimal and binary values to hexadecimal values.
- Practice converting between decimal, binary and hexadecimal values.

**Step 1:** Convert the following values to the other two forms:

	Decimal	Hex	Binary
1		a9	
2		FF	
3		E7-63-1C	
4	53		
5	115		
6	212.65.119.45		
7			10101010
8			110

## SECTION 6

### Establishing a Console Connection to a Router or Switch



#### Objective:

- Create a console connection from a PC to a router and switch using the proper cable
- Configure the HyperTerminal on PC
- Observe the router and switch user interface

This lab will focus on the ability to connect a PC to a router or a switch in order to establish a console session and observe the user interface. A console session allows the user to check or change the configuration of the switch or router and is the simplest method of connecting to one of these devices.

This lab should be performed twice, once with a router and once with a switch to see the differences between the user interfaces. Start this lab with the equipment turned off and with cabling disconnected.

**Step 1:** Identify the Router/Switch console connectors

Examine the router or switch and locate the RJ-45 connector labeled "Console"

**Step 2:** Identify the computer serial interface, which is COM 1 or 2

**Step 3:** Locate the RJ-45 to DB-9 adapter

**Step 4:** Locate or build a rollover cable

**Step 5:** Connect the cabling components

**Step 6:** Start the PC HyperTerminal program

Turn on the computer

From the Windows taskbar, locate the HyperTerminal program:

**Start > Programs > Accessories > Communications >  
HyperTerminal**

**Step 7:** Name the HyperTerminal Session

**Step 8:** Specify the computer connecting interface

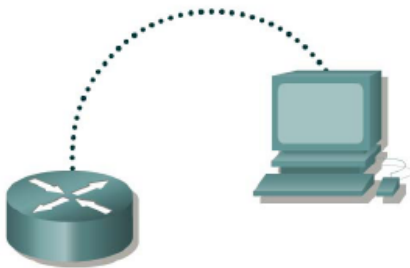
**Step 9:** Observe the router or switch user interface

**Step 10:** Close the session

**Step 11:** Shut down the router or the switch and store the cables

## SECTION 7

### Establishing a Console Session with HyperTerminal



#### Objective:

- Connect a router and workstation using a console cable
- Configure HyperTerminal to establish a console session with the router

HyperTerminal is a simple Windows-based terminal emulation program that can be used to connect to the console port on the router. A PC with HyperTerminal provides a keyboard and monitor for the router. Connecting to the console port with a rollover cable and using HyperTerminal is the most basic way to access a router for checking or changing its configuration.

Set up a network similar to the one in the diagram. Any router that meets the interface requirements may be used. Possible routers include 800, 1600, 1700, 2500, 2600 routers, or a combination. The following resources will be required:

- Workstation with a serial interface and HyperTerminal
- Cisco Router
- Console (rollover) cable for connecting the workstation to the router

**Step 1:** Basic router configuration

**Step 2:** Start HyperTerminal program

**Step 3:** Name the HyperTerminal session

**Step 4:** Specify the computers connecting interfaces

**Step 5:** Specify the interface connection properties

Bits per second: 9600

Data bits: 8

Parity: None

Stop Bits: 1

Flow Control: None

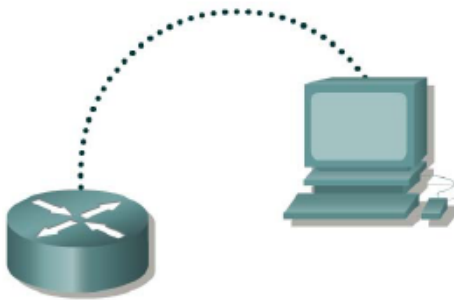
**Step 6:** Closing the session

**Step 7:** Reopen the HyperTerminal connection, as shown in Step 2

**Step 8:** Terminating the HyperTerminal session

## SECTION 8

### Command Line Fundamentals



#### Objective:

- Log into a router and go to the user and privileged modes
- Use several basic router commands to determine how the router is configured
- Use the router HELP facility
- Use command history and editing features
- Logout of the router

**Step 1:** Start HyperTerminal

**Step 2:** Log into the router

If prompted to enter the initial setup mode, answer no.

**Step 3:** Use the HELP feature

Router>?

**Step 4:** Enter privileged EXEC mode

Router>enable

**Step 5:** Use the HELP feature

Router#?

**Step 6:** List the show commands

Router#show ?

**Step 7:** Examine the running configuration

Router#show running-config

**Step 8:** Examine the configuration in more detail

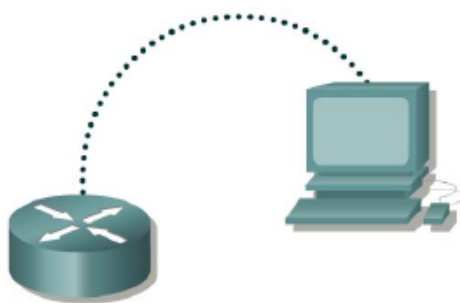
**Step 9:** Use the command history feature

Router#show history

**Step 10:** Logoff and turn the router off

## SECTION 9

### Command Modes and Router Identification



#### Objective:

- Identify basic router modes of user EXEC and privileged EXEC
- Use commands to enter specific modes
- Become familiar with the router prompt for each mode
- Assign a name to the router



**Step 1:** Login to the router in user EXEC mode

**Step 2:** Login to the router in privileged EXEC mode

Router>enable

**Step 3:** Enter global configuration mode

Router#configure terminal

**Step 4:** Enter router configuration mode

Router(config)#router rip

**Step 5:** Exit from router mode and go into interface configuration mode

Router(config-router)#exit

Router(config)#interface Serial 0

**Step 6:** Assign a name to the router

Router(config)#hostname GAD

**Step 7:** Exit the router

GAD(config)#exit