Exercise 19: Configuring Basic Networking - Part 3

I. **Prepare the environment**
II. **Network troubleshooting tool**

1. Power on both servers CentOS and Ubuntu and login to the CentOS 7 server with user student.
2. Using ping to do the following test to the Ubuntu server
   - Send just 5 Echo request
   - Send 20 Echo request with interval is 0.2 and 0.1 second
   - Send 20 Echo request with size is 1500 bytes
3. Show the route from your server to google.com.
4. Look up the IP address of google.com.
5. Find out the Mail servers IP address of domain google.com
6. Find out the Name servers IP address of domain google.com
7. Display all network connections on the system without name resolving
8. Display all tcp connection on the server
9. Display all connections that's in listening state
10. Display all tcp connections that's working on port 22
11. Display the network connections statistic
12. Specify the process that's holding the port 22, what is the command of that process?
13. Using netcat to do the following test:
    - Check if the port 22 is used or not
    - From the Ubuntu check if the port 22 is opened on CentOS
14. Assume that your server (CentOS server) is going to deploy an appliation on port 8080. Check if the ubuntu server can connect and work with CentOS on port 8080.

Exercise Instructions

I. Prepare the environment
II. Persistent network configuration and Configure client side DNS

1. Power on both servers CentOS and Ubuntu and login to the CentOS 7 server with user student.

2. Using ping to do the following test to the Ubuntu server
   - Send just 5 Echo request
   - Send 20 Echo request with interval is 0.2 and 0.1 second
   - Send 20 Echo request with size is 1500 bytes

   $ ping -c 5 <ubuntu server IP>

   $ ping -c 20 -i 0.2 <ubuntu server IP>

   You cannot ping with interval less than 0.2 second without root privileges.

   $ sudo ping -c 20 -i 0.1 <ubuntu server IP>

   $ ping -c 20 -s 1500 <ubuntu server IP>

3. Show the route from your server to google.com.
   $ traceroute google.com
   Or
   $ tracepath google.com

4. Look up the IP address of google.com.
   $ host google.com
   Or
   $ dig google.com
   Or
   $ nslookup google.com

5. Find out the Mail servers IP address of domain google.com
   $ dig google.com MX
   Or
   $ nslookup
   > set type=MX
   > google.com

6. Find out the Name servers IP address of domain google.com
   $ dig google.com NS
   Or
   $ nslookup
   > set type=NS
   > google.com

7. Display all network connections on the system without name resolving
   $ netstat -an

8. Display all tcp connection on the server
   $ netstat -tn

9. Display all connections that's in listening state
   $ netstat -ln

10. Display all tcp connections that's working on port 22
    $ netstat -tn |grep 22

11. Display the network connections statistic
    $ netstat -s

12. Specify the process that's holding the port 22, what is the command of that process?
    $ sudo ss -anpt |grep 22

    Using ps utility to specify the command name of the process number associated with *"*:22"* socket.

    $ ps -ef |grep <PID>

13. Using netcat to do the following test:
    - Check if the port 22 is used or not
    - From the Ubuntu check if the port 22 is opened on CentOS

    $ nc -l 22

    While the port is holded by sshd service, you should see the message ":22: Address already in use. QUITTING."

    Log in tu the Ubuntu server with user student and open terminal.

    $ nc -zv <CentOS IP> 22

    While the sshd service is listening on port 22 of CentOS server, you should see the message "Connection to <CentOS IP> 22 port [tcp/ssh] succeeded!"

14. Assume that your server (CentOS server) is going to deploy an appliation on port 8080. Check if the ubuntu server can connect and work with CentOS on port 8080.

    On the CentOS, using netcat to simulate an application listening on port 8080
    $ nc -l 8080

    Leave the netcat process listening, turn to the Ubuntu server. Using netcat as a client to connect to port 8080 on CentOS server and try to send some

messages. You should see the messages from Ubuntu server show up on CentOS server.
$ nc <CentOS IP> 8080
<writing some messages and press enter to send to CentOS>
Ctrl+C to exit netcat