

Advanced Networking Assignment (CISCO Packet Tracer)

Semester 2

Paper: Advanced Networking Laboratory

Subject: Computer Application

Course: MCA (2 years)

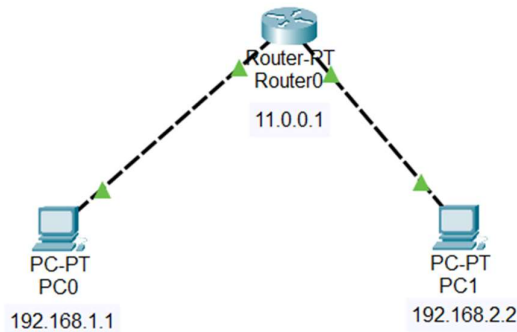
University of Calcutta



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Assignment 1: Making a Connection on Router & End Devices

1. Take one router
2. Take two PC's (end devices)
3. Connect router and end devices with copper cross wires
4. Configure IP address of each device as shown in the figure



5. Test Connectivity with ping command

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.2.2

Pinging 192.168.2.2 with 32 bytes of data:

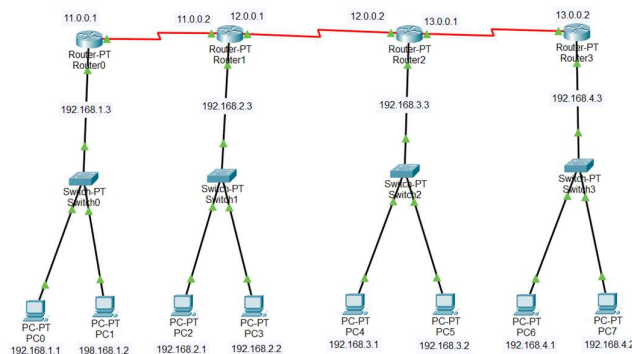
Request timed out.
Reply from 192.168.2.2: bytes=32 time<1ms TTL=127
Reply from 192.168.2.2: bytes=32 time<1ms TTL=127
Reply from 192.168.2.2: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.2.2:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

c:\>|
```

Assignment 2: Making a Connection with Static Routing Across 4 Routers

1. Add four routers
2. Take 2 end devices for each of the routers
3. Connect the router's serial ports using serial DCE or DTE cables
4. Take 4 switches for each of the networks
5. Connect them all with copper straight wire
6. Configure IP addresses shown in the figure



7. Add Network Addresses, subnet mask and next hop addresses to the static routing table of the routers

Network Address
192.168.3.0/24 via 11.0.0.2
192.168.2.0/24 via 11.0.0.2
192.168.4.0/24 via 11.0.0.2
12.0.0.0/8 via 11.0.0.2
13.0.0.0/8 via 12.0.0.2

8. Check connection by using ping command

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.4.2

Pinging 192.168.4.2 with 32 bytes of data:

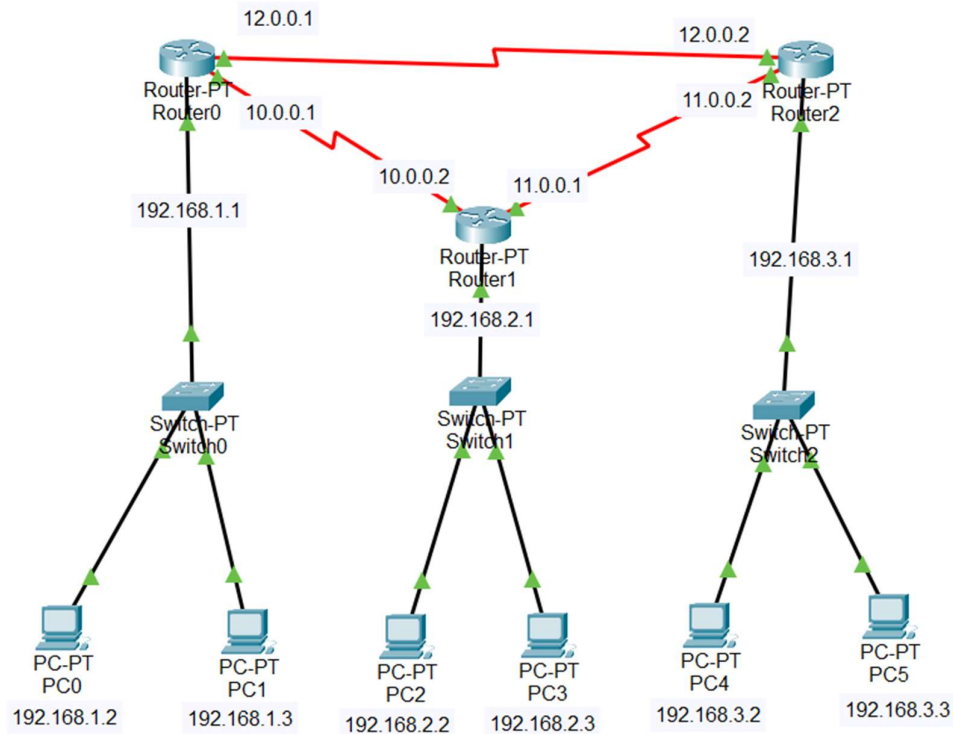
Request timed out.
Reply from 192.168.4.2: bytes=32 time=12ms TTL=124
Reply from 192.168.4.2: bytes=32 time=27ms TTL=124
Reply from 192.168.4.2: bytes=32 time=30ms TTL=124

Ping statistics for 192.168.4.2:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 12ms, Maximum = 30ms, Average = 23ms

C:\>|
```

Assignment 3: Making a Connection Using Dynamic Routing

1. Add 3 routers
2. Connect the serial ports of them using wire
3. Add 3 switches for each router
4. Add 2 end devices for each switch
5. Connect them with copper wire and assign IP address to them like the given picture



6. Add RIP protocol to each of the router
7. As a dynamic routing protocol it does not need any next hop addresses

Network Address
10.0.0.0
11.0.0.0
12.0.0.0
192.168.1.0
192.168.2.0
192.168.3.0

8. Check the connection using ping command

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.3.3

Pinging 192.168.3.3 with 32 bytes of data:

Request timed out.
Reply from 192.168.3.3: bytes=32 time=13ms TTL=126
Reply from 192.168.3.3: bytes=32 time=12ms TTL=126
Reply from 192.168.3.3: bytes=32 time=5ms TTL=126

Ping statistics for 192.168.3.3:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 5ms, Maximum = 13ms, Average = 10ms

C:\>|
```

Assignment 4: Configuring Basic Router Settings and Setting Password with IOS CLI

Step 1: Access the CLI of a Router

1. Connect to the router via console cable, SSH, or telnet
2. Open a terminal emulator

Step 2: Configure Basic Settings

1. Enter Global Configuration Mode:

```
Router> enable
Router# configure terminal
Router(config)#
```

2. Set the Hostname:

```
Router(config)# hostname MyRouter
MyRouter(config)#
```

3. Set the Domain Name:

```
MyRouter(config)# ip domain-name mydomain.com
MyRouter(config)#
```

4. Configure Interface IP Addresses:

```
MyRouter(config)# interface GigabitEthernet0/0
MyRouter(config-if)# ip address 192.168.1.1 255.255.255.0
MyRouter(config-if)# no shutdown
MyRouter(config-if)# exit
```

Repeat for other interfaces as needed.

Step 3: Set an Enable Secret Password

1. Enter Global Configuration Mode (if not already):

```
MyRouter(config)# enable secret mySecretPassword
```

Step 4: Set Console and VTY Line Passwords

1. Set Console Line Password:

```
MyRouter(config)# line console 0
MyRouter(config-line)# password consolePassword
MyRouter(config-line)# login
MyRouter(config-line)# exit
```

2. Set VTY Line Passwords:

```
MyRouter(config)# line vty 0 4
MyRouter(config-line)# password vtyPassword
MyRouter(config-line)# login
MyRouter(config-line)# exit
```

Step 5: Save the Configuration

1. Exit to Privileged EXEC Mode:

```
MyRouter(config)# end
MyRouter#
```

2. Save the Configuration to NVRAM:

```
MyRouter# write memory
```

Assignment 5: Configuring Static Routing with 3 Routers Using CLI Commands

Steps

1. Connecting End Devices:

- We take 8 different end devices and 4 switches.
- We connect the end devices to the switches using copper straight-through wires.
- We use copper straight-through wires to connect the switches to the routers.

2. Configuring Routers:

- Since more ports are needed for the routers, we click on the router and go to Physical -> WIC-2T.
- We turn off the router, drag the WIC-2T module inside the router's box, and turn it back on.
- Now we connect the routers using Serial DTE cables.

3. Assigning IP Addresses:

- We assign IP addresses to the end devices.
- We set the default gateway of each end device to the corresponding router's IP address.

4. Enabling Router Interfaces:

We click the router and then go to CLI and then do the following :

- We enable the first router by writing 'en'
- Then after the hash sign comes we write 'conf t' to configure our switch port.
- We configure the Ethernet port using 'int fa 0/0'. Now we add the IP address and the mask by the following command 'ip add 192.168.10.1 255.255.255.0'

d. We write 'no shutdown' to turn the state from down to up. Next, we write 'ex' to exit.

e. We configure other ports in the same way. (For serial port we write 'int serial 0/0/0')

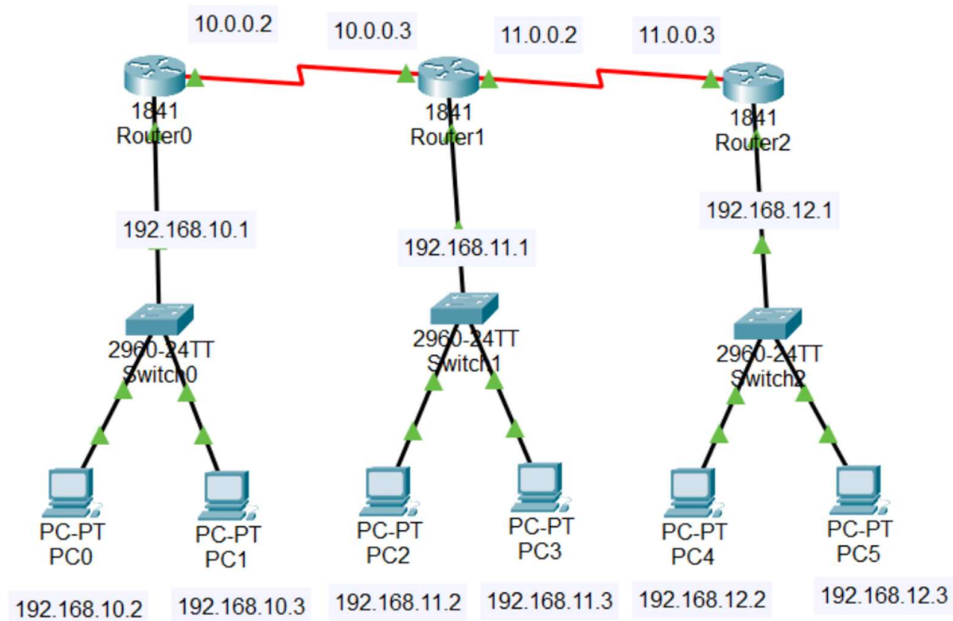
f. We repeat the above steps for all the other routers

5. Defining Network Routes:

a. To enable communication between networks, we define the routes.

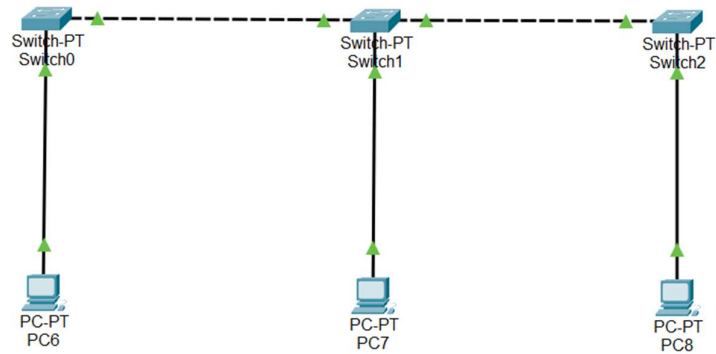
b. Now we give the network, mask, and next hop by the command
'ip route 192.168.11.0 255.255.255.0 11.0.0.2'

Following these steps will enable the end devices to communicate with each other, establishing a functional network connection.

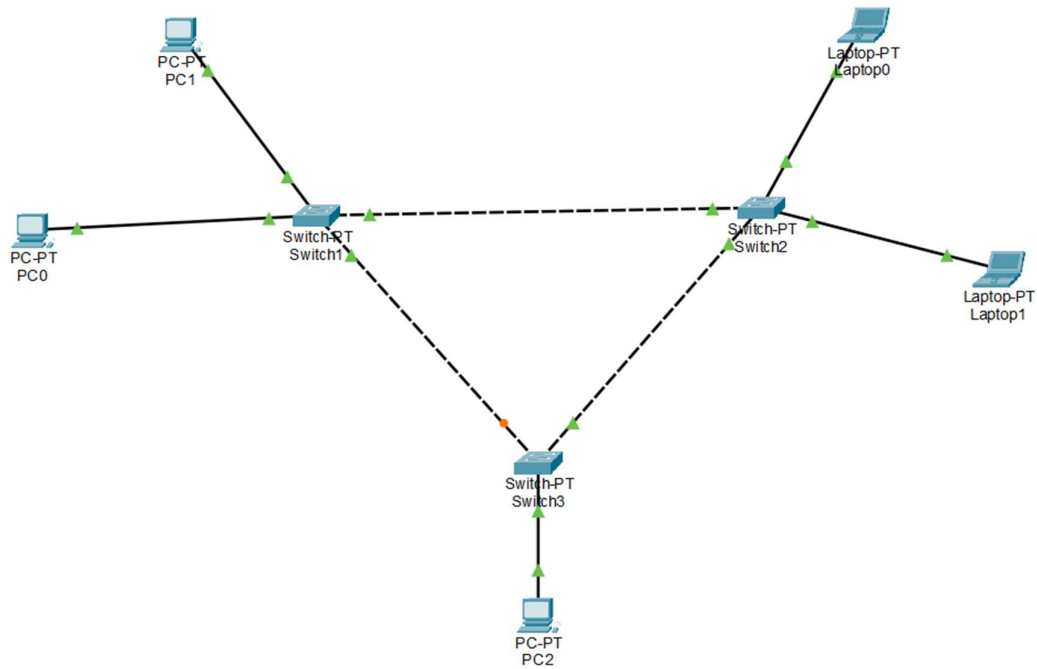


Assignment 6: Create Bus, Ring, Star, Mesh and Hybrid Topology

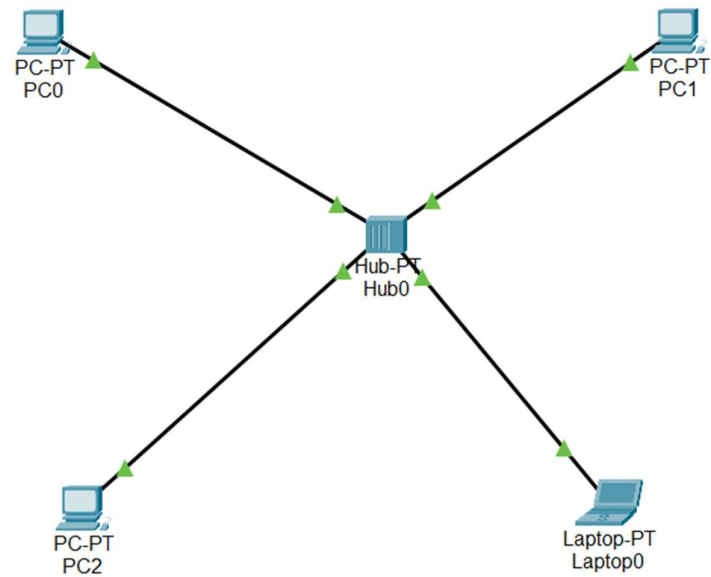
1. Bus Topology:



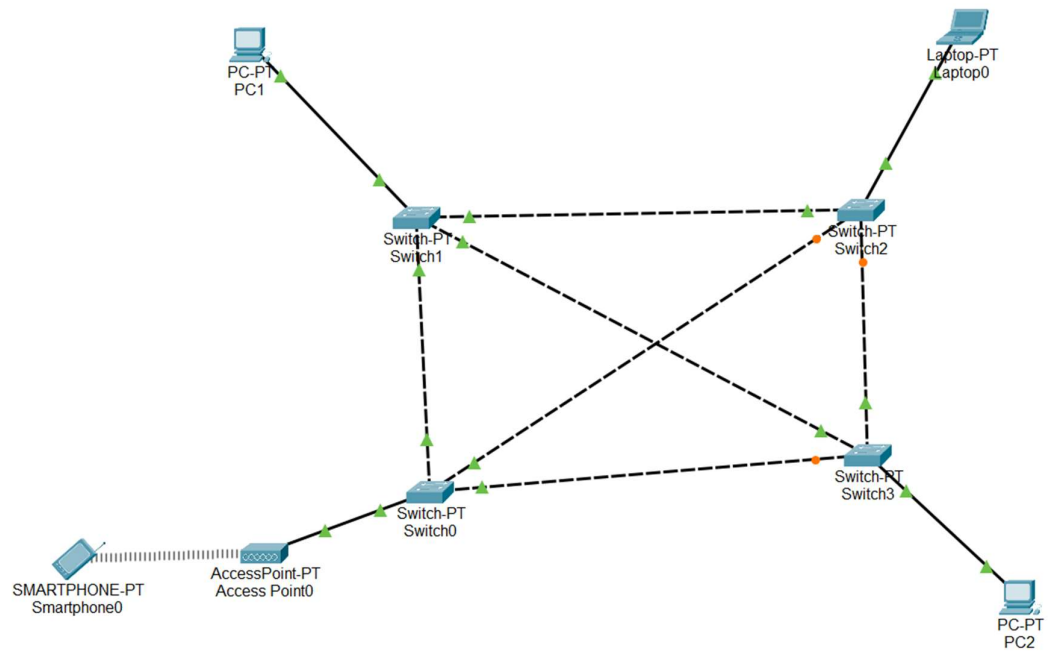
2. Ring Topology:



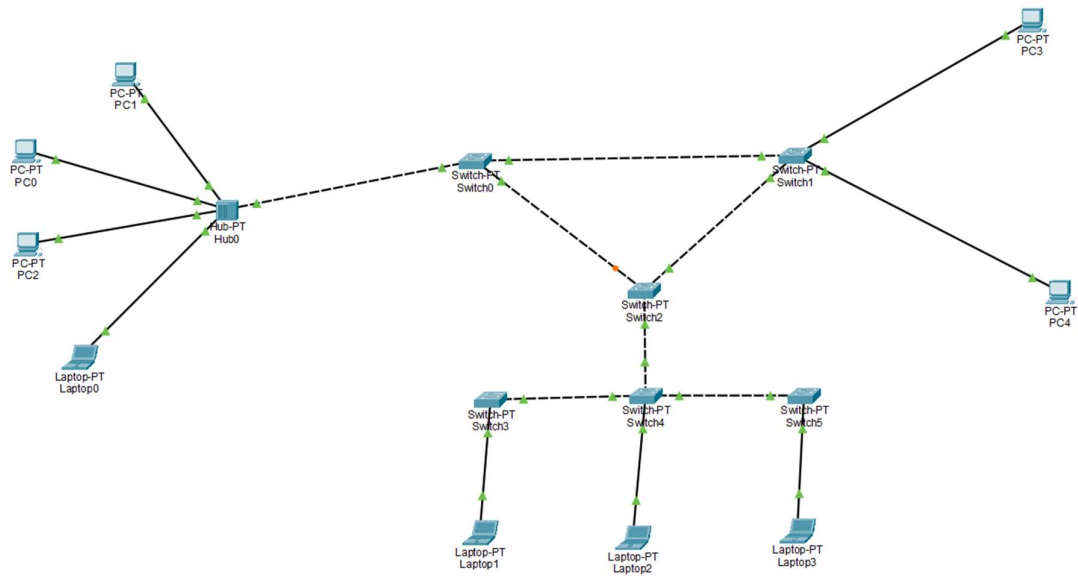
3. Star Topology:



4. Mesh Topology:

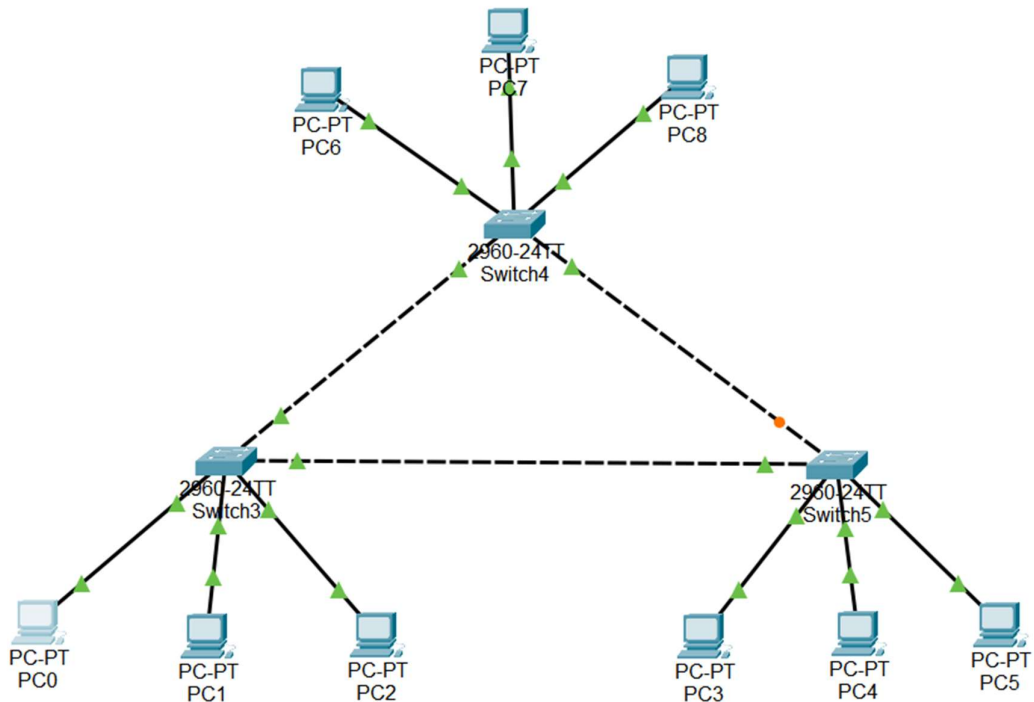


5. Hybrid Topology:



Assignment 7: VLAN Creation and implementation

1. Take 3 switches and 3 devices for each switch
2. Connect them through wire
3. Assign IP addresses to all the end devices
4. Open CLI of switch and write command to create and manage VLAN



```
vlan 10
name V10
vlan 11
name V11
vlan 12
name V12
int fa 0/1
sw mo ac
sw ac vlan 10
ex
int fa 0/2
sw ac vlan 11
ex
int fa 0/3
sw ac vlan 12
ex
int fa 0/4
sw mo tr
sw non
ex
int fa 0/4
sw mo tr
sw non
ex
```

Output:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.3

Pinging 192.168.1.3 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.1.3:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 192.168.1.4

Pinging 192.168.1.4 with 32 bytes of data:

Reply from 192.168.1.4: bytes=32 time<1ms TTL=128
Reply from 192.168.1.4: bytes=32 time<1ms TTL=128
Reply from 192.168.1.4: bytes=32 time<1ms TTL=128
Reply from 192.168.1.4: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>|
```