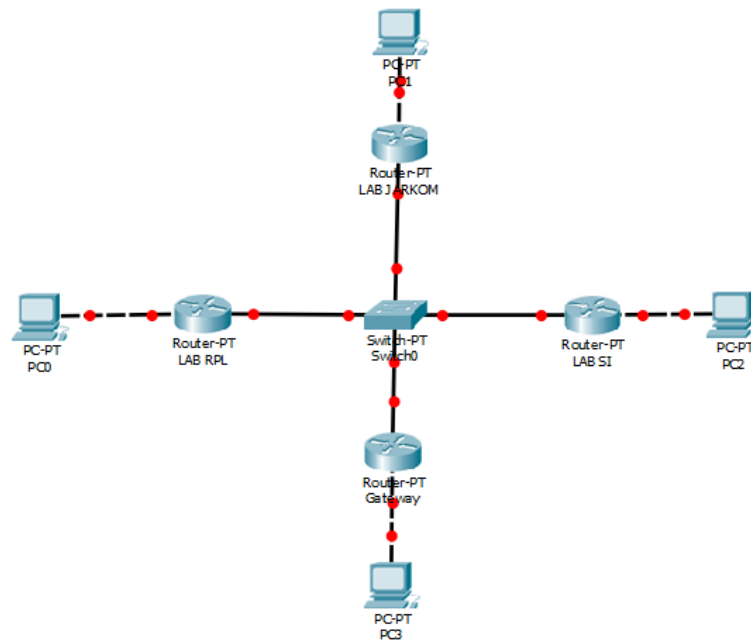Nama   : Bintang Citra Kusumaatmaja
Nim   : L200170078
Kelas   : B

LAPORAN MODUL PRAKTIKUM JARINGAN KOMPUTER MODUL-11
PERANCANGAN LABORATORIUM SEDERHANA MENGGUNAKAN PACKET TRACER

A. Kegiatan Praktikum
1. Buat Topologi seperti pada gambar dibawah ini.
    Buka netmap dan pilih router 2514 yang memiliki interface 2 sertial dan 2 ethernet untuk swtich pilih switch 1912

2. Konfigurasi Semua Router
    Pada tahap ini kita lakukan konfigurasi setiap router sebagai berikut :
    -   Konfigurasi Router LAB JARKOM

```
Router(config-if)#ip address 172.15.0.1 255.255.255.0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet1/0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet1/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0,
changed state to up
ip address 172.16.0.1 255.255.0.0
Router(config-if)#ip address 172.16.0.1 255.255.255.0
Router(config-if)#
```

- Konfigurasi Router LAB SI

```
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0,
changed state to up
ip address 172.15.0.2 255.255.0.0
Router(config-if)#ip address 172.15.0.2 255.255.255.0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet1/0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet1/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0,
changed state to up
ip address 172.17.0.1 255.255.0.0
Router(config-if)#ip address 172.17.0.1 255.255.255.0
Router(config-if)#
```

- Konfigurasi LAB RPL

```
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

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0,
changed state to up
ip address 172.15.0.3 255.255.0.0
Router(config-if)#ip address 172.15.0.3 255.255.255.0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet1/0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet1/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0,
changed state to up
ip address 172.18.0.2 255.255.0.0
Router(config-if)#ip address 172.18.0.2 255.255.255.0
Router(config-if)#
```

- Konfigurasi GATEWAY UMS

```
Router#
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface FastEthernet1/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0,
changed state to up
ip address 172.15.0.4 255.255.0.0
Router(config-if)#ip address 172.15.0.4 255.255.255.0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet1/0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet1/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0,
changed state to up
ip address 172.19.0.1 255.255.0.0
Router(config-if)#ip address 172.19.0.1 255.255.255.0
Router(config-if)#
```

3. Konfigurasi Routing Table pada ke 4 Router
    -   Routing Table Router 1 / Jarkom
        ```
        Router(config)#router rip
        Router(config-router)#network 172.15.0.0
        Router(config-router)#network 172.16.0.0
        Router(config-router)#network 172.17.0.0
        Router(config-router)#network 172.18.0.0
        Router(config-router)#network 172.19.0.0
        Router(config-router)#
        ```
    -   Routing Table Router 2 / SI
        ```
        Router(config)#router rip
        Router(config-router)#network 172.15.0.0
        Router(config-router)#network 172.16.0.0
        Router(config-router)#network 172.17.0.0
        Router(config-router)#network 172.18.0.0
        Router(config-router)#network 172.19.0.0
        Router(config-router)#
        ```
    -   Routing Table Router 3 / RPL
        ```
        Router(config)#router rip
        Router(config-router)#network 172.15.0.0
        Router(config-router)#network 172.16.0.0
        Router(config-router)#network 172.17.0.0
        Router(config-router)#network 172.18.0.0
        Router(config-router)#network 172.19.0.0
        Router(config-router)#
        ```
    -   Routing Table Router 4 / Gateway UMS

```
Router(config)#router rip
Router(config-router)#network 172.15.0.0
Router(config-router)#network 172.16.0.0
Router(config-router)#network 172.17.0.0
Router(config-router)#network 172.18.0.0
Router(config-router)#network 172.19.0.0
Router(config-router)#
```

4. Konfiguarsi setiap PC sesuai dengan GATEWAY MASING2.
   - **PC JARKOM**
     IP   : 172.16.0.2
     Gateway   : 172.16.0.1
   - **PC SI**
     IP   : 172.17.0.2
     Gateway   : 172.17.0.1
   - **PC RPL**
     IP   : 172.18.0.2
     Gateway   : 172.18.0.1
   - **PC Gateway UMS**
     IP   : 172.19.0.2
     Gateway   : 172.19.0.1

5. Tesk Konfigurasi Kita Dengan Menggunakan PING dari PC JARKOM ke semua PC

```
C:\>ping 172.17.0.2

Pinging 172.17.0.2 with 32 bytes of data:

Reply from 172.17.0.2: bytes=32 time<1ms TTL=126
Reply from 172.17.0.2: bytes=32 time=3ms TTL=126
Reply from 172.17.0.2: bytes=32 time<1ms TTL=126
Reply from 172.17.0.2: bytes=32 time<1ms TTL=126

Ping statistics for 172.17.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 3ms, Average = 0ms

C:\>ping 172.18.0.2

Pinging 172.18.0.2 with 32 bytes of data:

Reply from 172.18.0.2: bytes=32 time=1ms TTL=126
Reply from 172.18.0.2: bytes=32 time<1ms TTL=126
Reply from 172.18.0.2: bytes=32 time<1ms TTL=126
Reply from 172.18.0.2: bytes=32 time=10ms TTL=126

Ping statistics for 172.18.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 10ms, Average = 2ms

C:\>ping 172.19.0.2

Pinging 172.19.0.2 with 32 bytes of data:

Reply from 172.19.0.2: bytes=32 time=1ms TTL=126
Reply from 172.19.0.2: bytes=32 time=1ms TTL=126
Reply from 172.19.0.2: bytes=32 time<1ms TTL=126
Reply from 172.19.0.2: bytes=32 time<1ms TTL=126

Ping statistics for 172.19.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
```

B. Tugas
1. Buatlah Topologi seperti diatas namun menggunakan metode routing yang digunakan adalah metode **routing statis**
2. Buatlah Topologi Jaringan BUS untuk membangun sebuah laboratorium komputer yang terdiri dari 3 Router (jarkom, rpl, si) dan berposat pada 1 router gateway dengan metode routing **STATIS** dan **DINAMIS**

JAWABAN NO 1
1. Dari Topologi Diatas seperti gambar dibawah ini kita tinggal mengubah settingan routing kita. Sebelumnya kita kosongkan konfigurasi RIP sebelumnya dan kemudian ganti dengan konfigurasi statis seperti dibawah berikut :
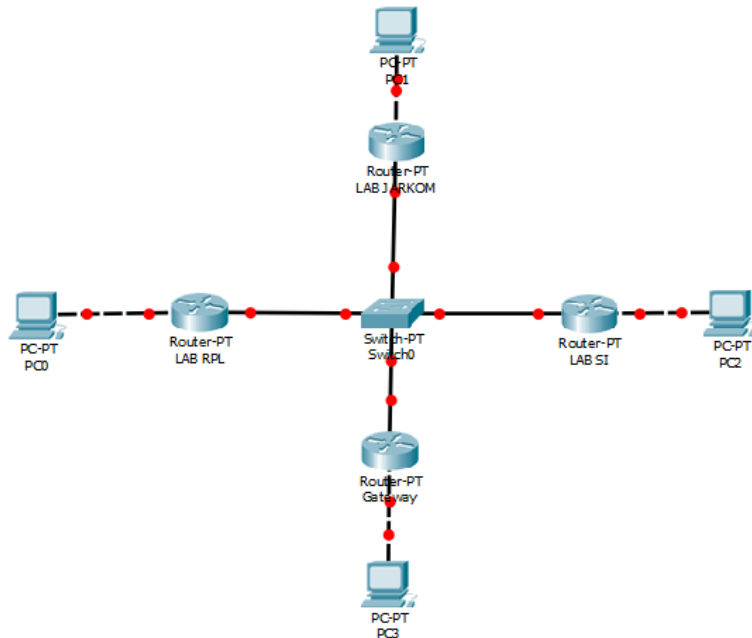
- Router JARKOM
```
ip route 172.17.0.0 255.255.255.0 172.15.0.2
Router(config)#ip route 172.18.0.0 255.255.255.0 172.15.0.3
Router(config)#ip route 172.19.0.0 255.255.255.0 172.15.0.4
Router(config)#
```

- Router SI
```
Router(config)#ip route 172.16.0.0 255.255.255.0 172.15.0.1
Router(config)#ip route 172.18.0.0 255.255.255.0 172.15.0.3
Router(config)#ip route 172.19.0.0 255.255.255.0 172.15.0.4
```

- Router RPL
```
Router(config)#ip route 172.16.0.0 255.255.255.0 172.15.0.1
Router(config)#ip route 172.17.0.0 255.255.255.0 172.15.0.2
Router(config)#ip route 172.19.0.0 255.255.255.0 172.15.0.4
```

- Router Gateway UMS
```
ip route 172.16.0.0 255.255.255.0 172.15.0.1
Router(config)#ip route 172.17.0.0 255.255.255.0 172.15.0.2
Router(config)#ip route 172.18.0.0 255.255.255.0 172.15.0.3
```

2. Uji Konektivitas dari PC JARKOM ke SEMUA PC

```
C:\>ping 172.17.0.2

Pinging 172.17.0.2 with 32 bytes of data:

Reply from 172.17.0.2: bytes=32 time<1ms TTL=126
Reply from 172.17.0.2: bytes=32 time=3ms TTL=126
Reply from 172.17.0.2: bytes=32 time<1ms TTL=126
Reply from 172.17.0.2: bytes=32 time<1ms TTL=126

Ping statistics for 172.17.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 3ms, Average = 0ms

C:\>ping 172.18.0.2

Pinging 172.18.0.2 with 32 bytes of data:

Reply from 172.18.0.2: bytes=32 time=1ms TTL=126
Reply from 172.18.0.2: bytes=32 time<1ms TTL=126
Reply from 172.18.0.2: bytes=32 time<1ms TTL=126
Reply from 172.18.0.2: bytes=32 time=10ms TTL=126

Ping statistics for 172.18.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 10ms, Average = 2ms

C:\>ping 172.19.0.2

Pinging 172.19.0.2 with 32 bytes of data:

Reply from 172.19.0.2: bytes=32 time=1ms TTL=126
Reply from 172.19.0.2: bytes=32 time=1ms TTL=126
Reply from 172.19.0.2: bytes=32 time<1ms TTL=126
Reply from 172.19.0.2: bytes=32 time<1ms TTL=126

Ping statistics for 172.19.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```
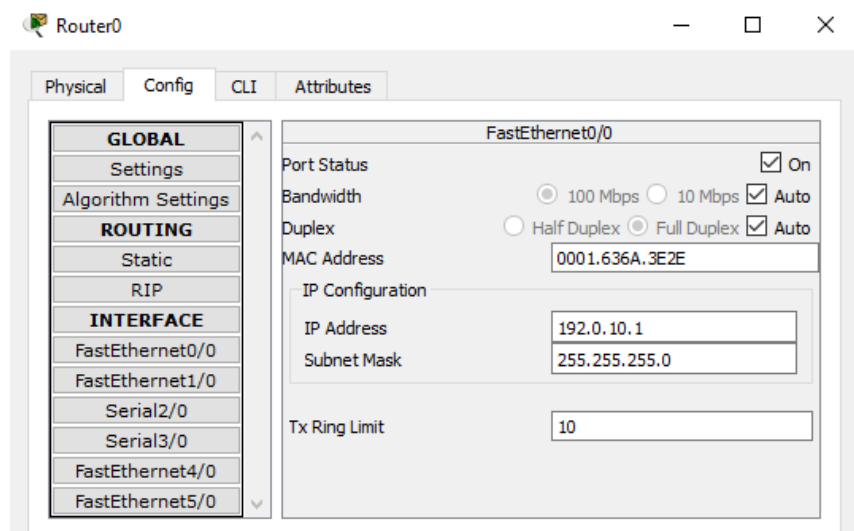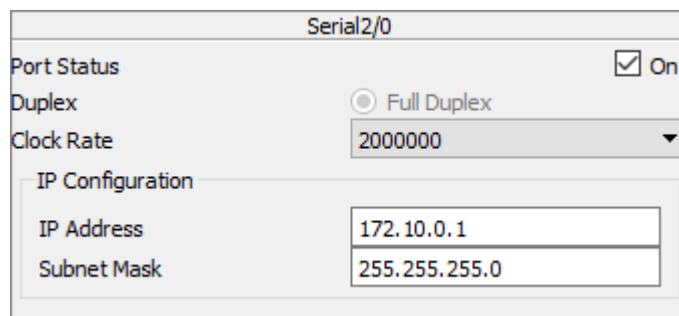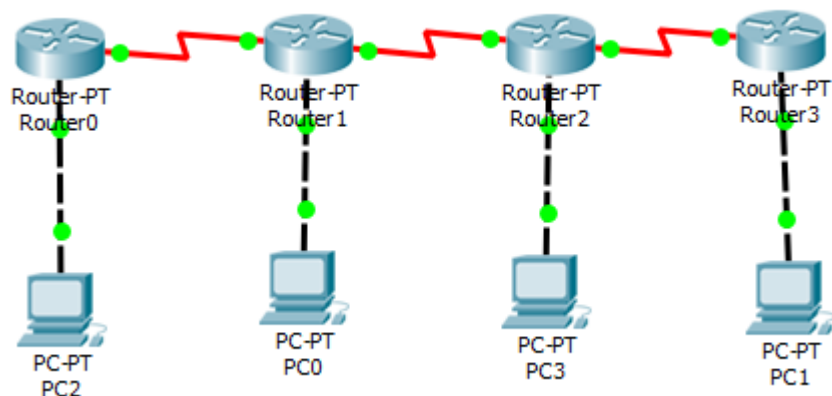
Konfigurasi BERHASIL

JAWABAN NO 2 DINAMIS

1. Langkah Pertama adalah Konfigurasi SERIAL DAN FA0/0 pada setiap Router dengan konfigurasi Sebagai Berikut :
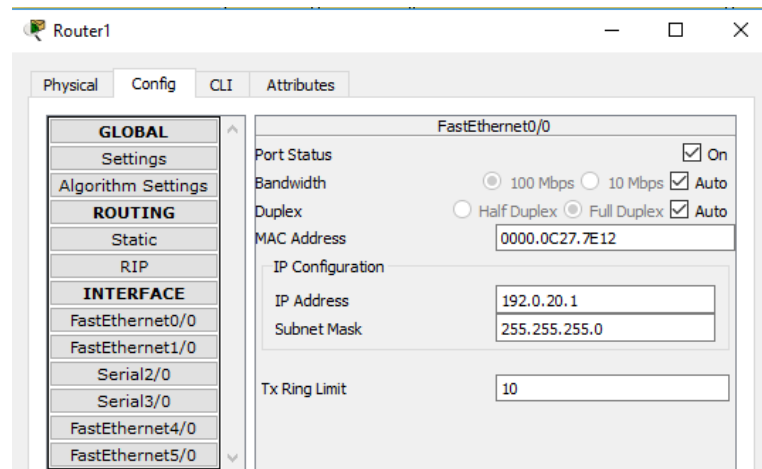   - Router 0

   - Router 1

Serial2/0

Port Status	☑ On
Duplex	◉ Full Duplex
Clock Rate	1200

IP Configuration

IP Address	172.10.0.2
Subnet Mask	255.255.255.0

Serial3/0

Port Status	☑ On
Duplex	◉ Full Duplex
Clock Rate	2000000

IP Configuration

IP Address	172.20.0.1
Subnet Mask	255.255.255.0

- Router 2

Router2   —   □   ×

Physical   Config   CLI   Attributes

GLOBAL	FastEthernet0/0
Settings	Port Status ☑ On
Algorithm Settings	Bandwidth ◉ 100 Mbps ○ 10 Mbps ☑ Auto
ROUTING	Duplex ○ Half Duplex ◉ Full Duplex ☑ Auto
Static	MAC Address 0002.163C.8CEC
RIP	IP Configuration
INTERFACE	IP Address 192.0.30.1
FastEthernet0/0	Subnet Mask 255.255.255.0
FastEthernet1/0	
Serial2/0	Tx Ring Limit 10
Serial3/0	
FastEthernet4/0	
FastEthernet5/0	

Serial2/0

Port Status	☑ On
Duplex	◉ Full Duplex
Clock Rate	1200

IP Configuration

IP Address	172.20.0.2
Subnet Mask	255.255.255.0

Serial3/0	
Port Status	☑ On
Duplex	◉ Full Duplex
Clock Rate	2000000 ▼
IP Configuration	
IP Address	172.100.0.1
Subnet Mask	255.255.255.0

- Router 3

Serial2/0	
Port Status	☑ On
Duplex	◉ Full Duplex
Clock Rate	1200 ▼
IP Configuration	
IP Address	172.100.0.2
Subnet Mask	255.255.255.0

2. Kemudian Kita lakukan Konfigurasi setiap PC :
   - **PC 2**
     IP   : 192.0.10.2
     Gateway   : 192.0.10.1
   - **PC 0**
     IP   : 192.0.20.2
     Gateway   : 192.0.20.1
   - **PC 3**
     IP   : 192.0.30.2
     Gateway   : 192.0.30.1
   - **PC 1**
     IP   : 192.0.40.2
     Gateway   : 192.0.40.1
3. Kemudian Kita lakukan Routing **DINASMI** dengan konfigurasi Sebagai Berikut

- Router 0

RIP Routing

Network

Add

Network Address
172.10.0.0
192.0.10.0
192.0.20.0
192.0.30.0
192.0.40.0

- Router 1

RIP Routing

Network

Add

Network Address
172.10.0.0
172.20.0.0
192.0.10.0
192.0.20.0
192.0.30.0
192.0.40.0

- Router 2

RIP Routing

Network

Add

Network Address
172.20.0.0
172.100.0.0
192.0.10.0
192.0.20.0
192.0.30.0
192.0.40.0

- Router 3

RIP Routing

Network [   ]

[Add]

Network Address
172.100.0.0
192.0.10.0
192.0.20.0
192.0.30.0
192.0.40.0

4. Uji Konektivitas dengan PING dari PC 1 KE SELURUH PC

```
C:\>ping 192.0.10.2

Pinging 192.0.10.2 with 32 bytes of data:

Reply from 192.0.10.2: bytes=32 time=12ms TTL=124
Reply from 192.0.10.2: bytes=32 time=5ms TTL=124
Reply from 192.0.10.2: bytes=32 time=12ms TTL=124
Reply from 192.0.10.2: bytes=32 time=11ms TTL=124

Ping statistics for 192.0.10.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 5ms, Maximum = 12ms, Average = 10ms

C:\>ping 192.0.20.2

Pinging 192.0.20.2 with 32 bytes of data:

Reply from 192.0.20.2: bytes=32 time=3ms TTL=125
Reply from 192.0.20.2: bytes=32 time=10ms TTL=125
Reply from 192.0.20.2: bytes=32 time=2ms TTL=125
Reply from 192.0.20.2: bytes=32 time=4ms TTL=125

Ping statistics for 192.0.20.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 10ms, Average = 4ms

C:\>ping 192.0.30.2

Pinging 192.0.30.2 with 32 bytes of data:

Reply from 192.0.30.2: bytes=32 time=2ms TTL=126
Reply from 192.0.30.2: bytes=32 time=3ms TTL=126
Reply from 192.0.30.2: bytes=32 time=3ms TTL=126
Reply from 192.0.30.2: bytes=32 time=3ms TTL=126

Ping statistics for 192.0.30.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 3ms, Average = 2ms
```

Konfigurasi Berhasil

JAWABAN NO 2 STATIC

1. Dari Konfigurasi DINAMIS diatas kita hanya perlu merubah jalan routingnya dengan
   mengkonfigurasi ulang routingnya. Dengan yang pertama menghapus seluruh konfigurasi
   RIP Routing kemudian Menambahkan Static konfigurasi Pada setiap Router. Yang akan
   menghasilkan

```
C:\>ping 192.0.10.2

Pinging 192.0.10.2 with 32 bytes of data:

Reply from 192.0.10.2: bytes=32 time=12ms TTL=124
Reply from 192.0.10.2: bytes=32 time=5ms TTL=124
Reply from 192.0.10.2: bytes=32 time=12ms TTL=124
Reply from 192.0.10.2: bytes=32 time=11ms TTL=124

Ping statistics for 192.0.10.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 5ms, Maximum = 12ms, Average = 10ms

C:\>ping 192.0.20.2

Pinging 192.0.20.2 with 32 bytes of data:

Reply from 192.0.20.2: bytes=32 time=3ms TTL=125
Reply from 192.0.20.2: bytes=32 time=10ms TTL=125
Reply from 192.0.20.2: bytes=32 time=2ms TTL=125
Reply from 192.0.20.2: bytes=32 time=4ms TTL=125

Ping statistics for 192.0.20.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 10ms, Average = 4ms

C:\>ping 192.0.30.2

Pinging 192.0.30.2 with 32 bytes of data:

Reply from 192.0.30.2: bytes=32 time=2ms TTL=126
Reply from 192.0.30.2: bytes=32 time=3ms TTL=126
Reply from 192.0.30.2: bytes=32 time=3ms TTL=126
Reply from 192.0.30.2: bytes=32 time=3ms TTL=126

Ping statistics for 192.0.30.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 3ms, Average = 2ms
```