Modul - 3

✓ **Routing Static**

✓ **Routing** adalah suatu proses penerusan paket data dari suatu jaringan menuju jaringan lainnya. Pengiriman paket pada jaringan dapat diteruskan ke jaringan lainnya melalui mekanisme routing.

"Routing merupakan proses pencarian path atau alur guna memindahkan informasi /data dari host sumber (source address) ke host tujuan (destination address) Melalui koneksi internetwork"

"Proses pengambilan keputusan : Jalur / *gateway* yang mana paket data harus dilalukan"

Routing Static

✓ Entry Route pada Tabel Routing secara manual pada setiap router yang ada dalam jaringan.

✓ Mengetahui network tujuan [remote network] dan bagaimana cara mencapainya

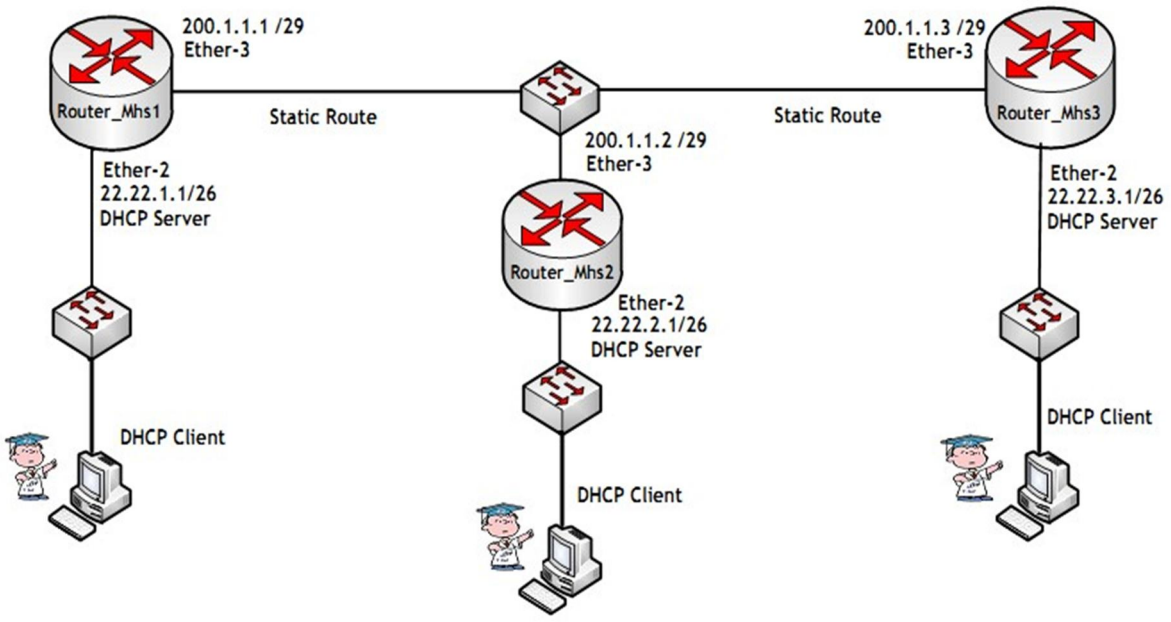
Topologi Simulasi Routing Static

Pada topologi berikut akan dilakukan simulasi routing untuk 3 Router yaitu Router_Mhs1 [untuk simulasi Lab penamaan Router adalah **XX_Nama_Mhs],** dengan pengaturan IP Address :

Router Mhs1 : IP Address **Ether2** [LAN DHCP] 22.22.**1**.1/26 [Angka 1 Oktet ke-3 No Urut Komputer peserta.

IP Address **Ether3** [Gateway Router] 200.1.1.**1**/29 [Angka 1 Oktet ke-4 No Urut Komputer peserta.

Untuk Router lainnya disesuaikan dengan contoh IP Address Topologi dibawah ini



Tahapan Konfigurasi Routing

✓ **Konfigurasi IP Address Masing-masing Router**

Tahap awal sebelum melakukan Routing Static adalah setting IP Address interface Ether2 dan ether3 sesuai dengan rencana topologi, berikut contoh konfigurasi menggunakan Command Line Interface [CLI] :

Konfigurasi IP Address Router_Mhs1

```
[indra@Router_Mhs1] > ip address add address=22.22.1.1/26 interface=ether2
[indra@Router_Mhs1] > ip address add address=200.1.1.1/29 interface=ether3
[indra@Router_Mhs1] > ip address print
Flags: X - disabled, I - invalid, D - dynamic
 #   ADDRESS          NETWORK        INTERFACE
 0   22.22.1.1/26      22.22.1.0      ether2-LAN
 1   200.1.1.1/29      200.1.1.0      ether3
```

Konfigurasi IP Address Router_Mhs2

```
[admin@Router_Mhs2] > ip address  add  address=22.22.2.1/26 interface=ether2
[admin@Router_Mhs2] > ip address  add  address=200.1.1.2/29 interface=ether3
[admin@Router_Mhs2] > ip address print
Flags: X - disabled, I - invalid, D - dynamic
 #   ADDRESS          NETWORK        INTERFACE
 0   22.22.2.1/26      22.22.2.0      ether2
 1   200.1.1.2/29      200.1.1.0      ether3
```

Konfigurasi IP Address Router_Mhs3

```
[admin@Router_Mhs3] > ip address add address=22.22.3.1/26 interface=ether2
[admin@Router_Mhs3] > ip address add address=200.1.1.3/29 interface=ether3
[admin@Router_Mhs3] > ip address print
Flags: X - disabled, I - invalid, D - dynamic
 #   ADDRESS          NETWORK        INTERFACE
 0   22.22.3.1/26      22.22.3.0      ether2
 1   200.1.1.3/29      200.1.1.0      ether3
```

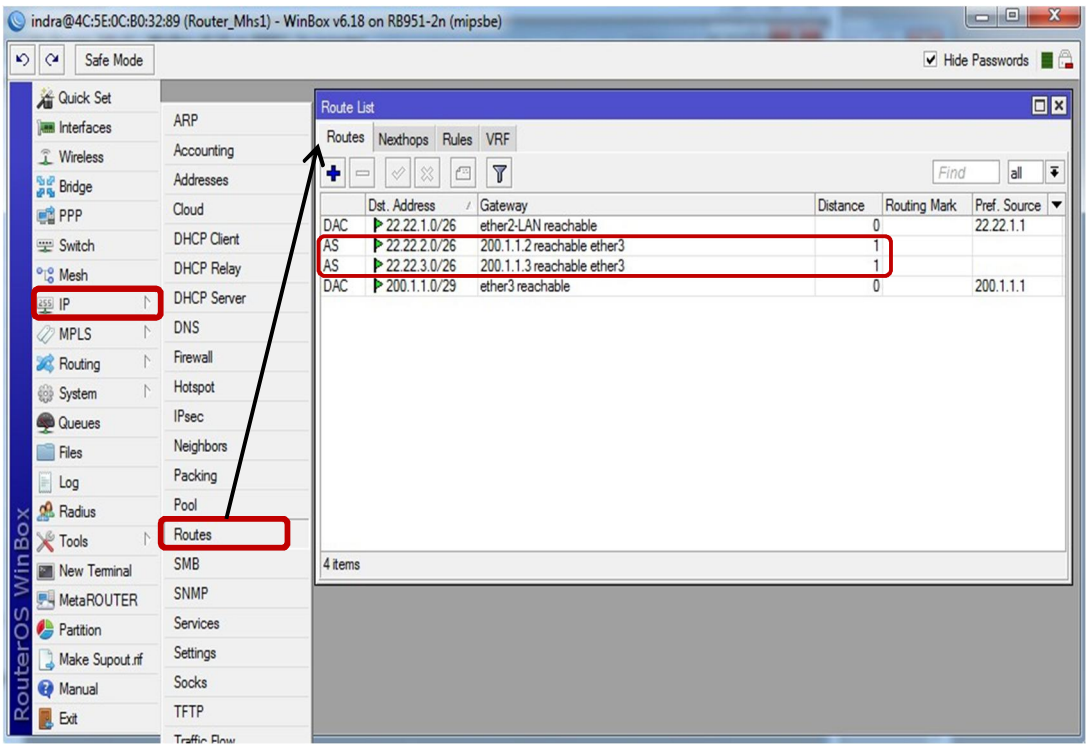
✓ **Konfigurasi Route/Routing Masing-masing Router**

Setelah tahapan konfigurasi IP Address pada setiap router, berikut adalah konfigurasi routing pada setiap router dengan perintah CLI : ***IP Router add*** [**Network yang akan dituju**] dan **gateway** sebagai jalur untuk mencapainya. [contoh pada topologi Router_Mhs1 menambahkan network untuk Router_Mhs2 dan Router_Mhs3.

Konfigurasi Routing : Router_Mhs1

```
[indra@Router_Mhs1] > ip route add dst-address=22.22.2.0/26 gateway=200.1.1.2
[indra@Router_Mhs1] > ip route add dst-address=22.22.3.0/26 gateway=200.1.1.3
[indra@Router_Mhs1] > ip route print
Flags: X - disabled, A - active, D - dynamic, C - connect, S - static, r - rip, b - bgp, o - ospf, m -
mme, B - blackhole, U - unreachable, P - prohibit
        #      DST-ADDRESS       PREF-SRC       GATEWAY          DISTANCE
        0  DC  22.22.1.0/26      22.22.1.1      ether2-LAN          255
        1 A S  22.22.2.0/26                     200.1.1.2             1
        2 A S  22.22.3.0/26                     200.1.1.3             1
        3 ADC  200.1.1.0/29      200.1.1.1      ether3                0
```

Konfigurasi Routing_Winbox GUI : Router_Mhs1



Tes koneksi Router_Mhs1 ke _Router_Mhs2

```
[indra@Router_Mhs1] > ping 200.1.1.2
HOST                                     SIZE TTL TIME  STATUS
200.1.1.2                                  56  64 0ms
200.1.1.2                                  56  64 0ms
sent=2 received=2 packet-loss=0% min-rtt=0ms avg-rtt=0ms max-rtt=0ms

[indra@Router_Mhs1] > ping 22.22.2.1
HOST                                     SIZE TTL TIME  STATUS
22.22.2.1                                  56  64 0ms
22.22.2.1                                  56  64 0ms
sent=2 received=2 packet-loss=0% min-rtt=0ms avg-rtt=0ms max-rtt=0m
```

Tes koneksi Router_Mhs1 ke _Router_Mhs3

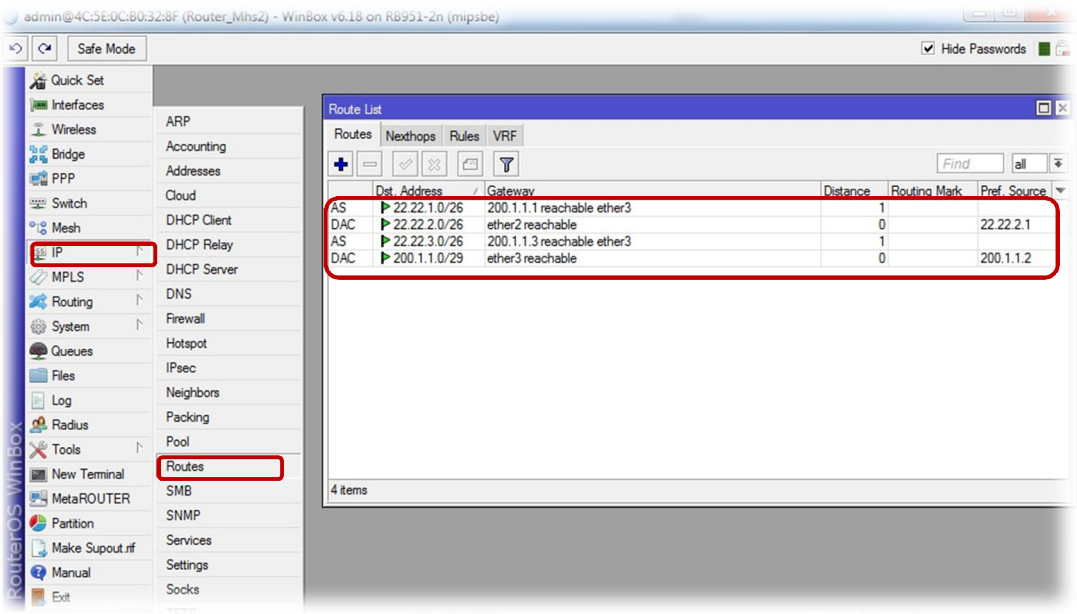
```
[indra@Router_Mhs1] > ping 200.1.1.3
HOST                                     SIZE TTL TIME  STATUS
200.1.1.3                                  56  64 0ms
200.1.1.3                                  56  64 0ms
sent=2 received=2 packet-loss=0% min-rtt=0ms avg-rtt=0ms max-rtt=0ms

[indra@Router_Mhs1] > ping 22.22.3.1
HOST                                     SIZE TTL TIME  STATUS
22.22.3.1                                  56  64 0ms
22.22.3.1                                  56  64 0ms
sent=2 received=2 packet-loss=0% min-rtt=0ms avg-rtt=0ms max-rtt=0ms
```

Konfigurasi Routing : Router_Mhs2

```
[admin@Router_Mhs2] > ip route add dst-address=22.22.1.0/26 gateway=200.1.1.1
[admin@Router_Mhs2] > ip route add dst-address=22.22.3.0/26 gateway=200.1.1.3
[admin@Router_Mhs2] > ip route print
Flags: X - disabled, A - active, D - dynamic, C - connect, S - static, r - rip, b - bgp, o - ospf, m -
mme, B - blackhole, U - unreachable, P - prohibit
      #      DST-ADDRESS        PREF-SRC        GATEWAY            DISTANCE
      0 A S  22.22.1.0/26                       200.1.1.1             1
      1  DC  22.22.2.0/26       22.22.2.1       ether2              255
      2 A S  22.22.3.0/26                       200.1.1.3             1
      3 ADC  200.1.1.0/29       200.1.1.2       ether3                0
     [admin@Router_Mhs2] >
```

Konfigurasi Routing_Winbox GUI : Router_Mhs2



Tes koneksi Router_Mhs2 ke Router_Mhs1

```
[admin@Router_Mhs2] > ping 200.1.1.1
HOST                                     SIZE TTL TIME  STATUS
200.1.1.1                                  56  64 0ms
200.1.1.1                                  56  64 0ms
    sent=2 received=2 packet-loss=0% min-rtt=0ms avg-rtt=0ms max-rtt=0ms

[admin@Router_Mhs2] > ping 22.22.1.1
HOST                                     SIZE TTL TIME  STATUS
22.22.1.1                                  56  64 0ms
22.22.1.1                                  56  64 0ms
    sent=2 received=2 packet-loss=0% min-rtt=0ms avg-rtt=0ms max-rtt=0ms
```

Tes koneksi Router_Mhs2 ke Router_Mhs3

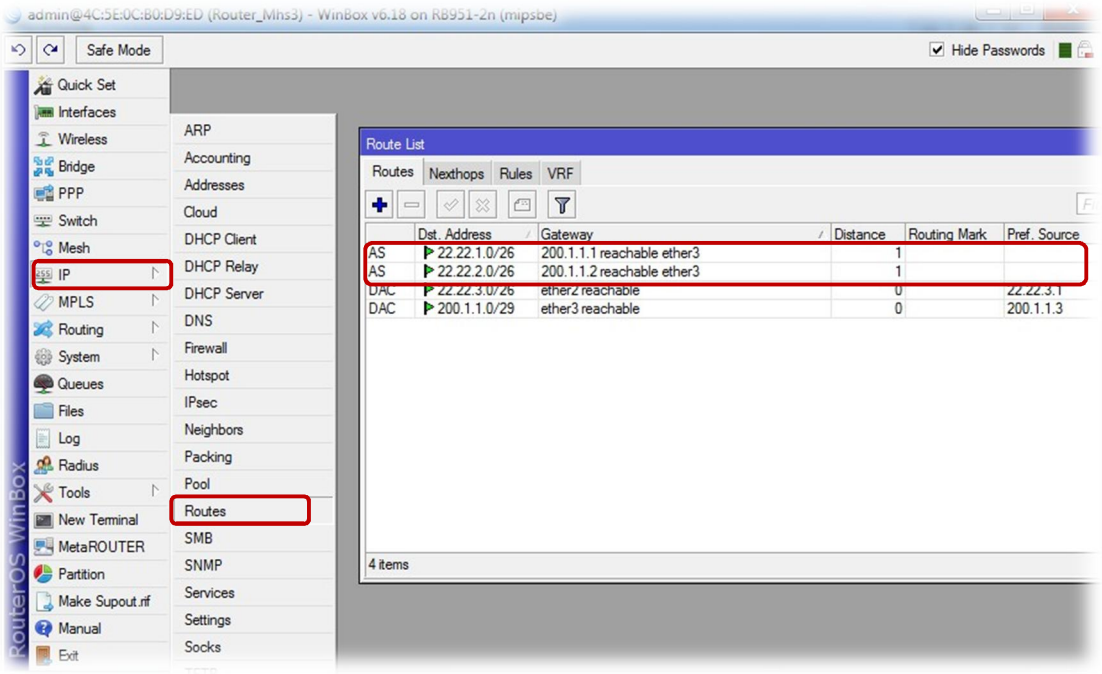
```
[admin@Router_Mhs2] > ping 200.1.1.3
HOST                                     SIZE TTL TIME  STATUS
200.1.1.3                                  56  64 0ms
200.1.1.3                                  56  64 0ms
    sent=2 received=2 packet-loss=0% min-rtt=0ms avg-rtt=0ms max-rtt=0ms
```

```
[admin@Router_Mhs2] > ping 22.22.3.1
HOST                                     SIZE TTL TIME  STATUS
22.22.3.1                                  56  64 0ms
22.22.3.1                                  56  64 0ms
sent=2 received=2 packet-loss=0% min-rtt=0ms avg-rtt=0ms max-rtt=0ms
```

Konfigurasi Routing : Router_Mhs3

```
[admin@Router_Mhs3] > ip route add dst-address=22.22.1.0/26 gateway=200.1.1.1
[admin@Router_Mhs3] > ip route add dst-address=22.22.2.0/26 gateway=200.1.1.2
[admin@Router_Mhs3] > ip route print
Flags: X - disabled, A - active, D - dynamic, C - connect, S - static, r - rip, b - bgp, o - ospf, m -
mme, B - blackhole, U - unreachable, P - prohibit
 #      DST-ADDRESS        PREF-SRC        GATEWAY            DISTANCE
 0 A S  22.22.1.0/26                       200.1.1.1           1
 1   S  22.22.2.0/26                       200.1.1.2           1
 2  DC  22.22.3.0/26      22.22.3.1        ether2              255
 3 ADC  200.1.1.0/29      200.1.1.3        ether3              0
```

Konfigurasi Routing Winbox GUI : Router_Mhs1



Tes koneksi Router_Mhs3 ke Router_Mhs1

```
[admin@Router_Mhs3] > ping 200.1.1.1
HOST                                     SIZE TTL TIME  STATUS
200.1.1.1                                  56  64 0ms
200.1.1.1                                  56  64 0ms
   sent=2 received=2 packet-loss=0% min-rtt=0ms avg-rtt=0ms max-rtt=0ms

[admin@Router_Mhs3] > ping 22.22.1.1
HOST                                     SIZE TTL TIME  STATUS
22.22.1.1                                  56  64 0ms
22.22.1.1                                  56  64 0ms
   sent=2 received=2 packet-loss=0% min-rtt=0ms avg-rtt=0ms max-rtt=0ms
```

Tes koneksi Router_Mhs3 ke Router_Mhs2

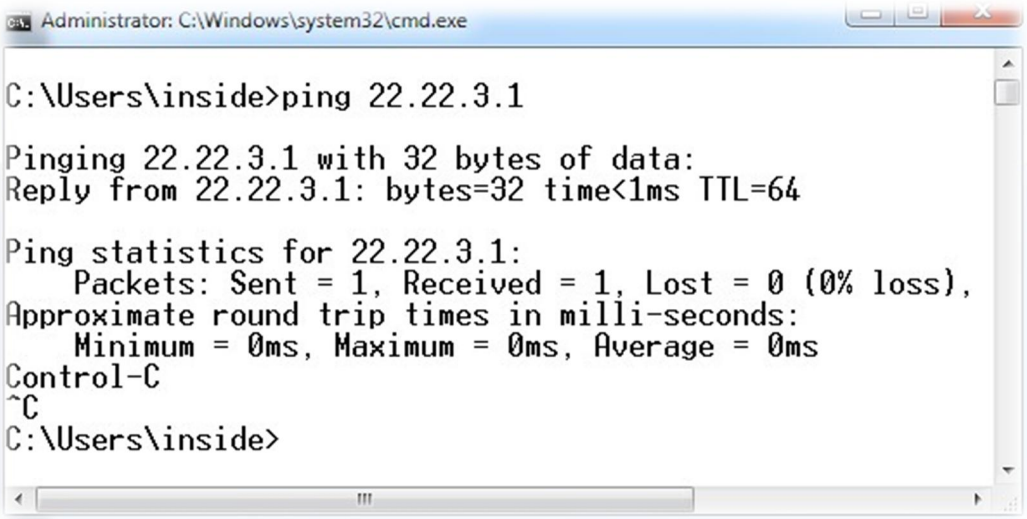
```
[admin@Router_Mhs3] > ping 200.1.1.2
HOST                                     SIZE TTL TIME  STATUS
200.1.1.2                                  56  64 0ms
200.1.1.2                                  56  64 0ms
    sent=2 received=2 packet-loss=0% min-rtt=0ms avg-rtt=0ms max-rtt=0ms

[admin@Router_Mhs3] > ping 22.22.2.1
HOST                                     SIZE TTL TIME  STATUS
22.22.2.1                                  56  64 0ms
22.22.2.1                                  56  64 0ms
    sent=2 received=2 packet-loss=0% min-rtt=0ms avg-rtt=0ms max-rtt=0ms
```

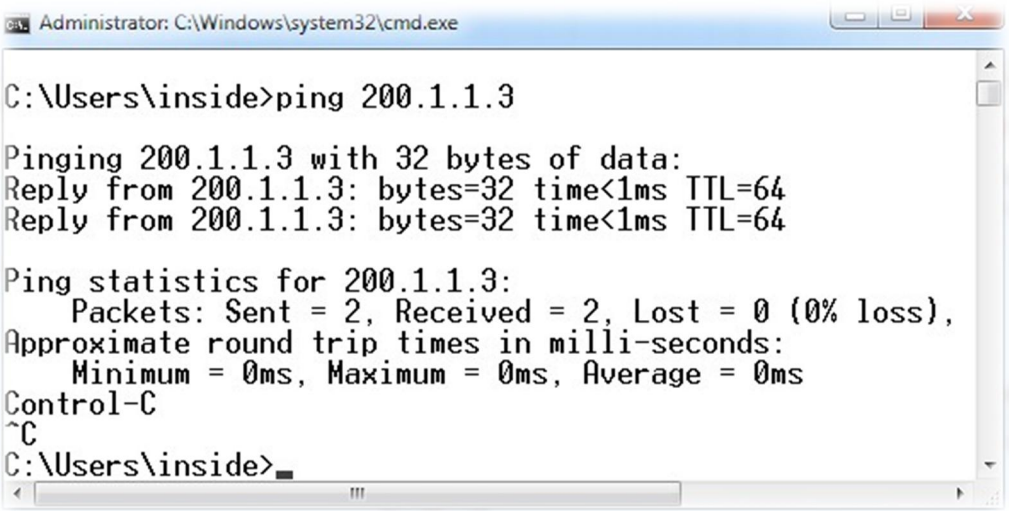
Tes koneksi PC/Notebook DHCP terkoneksi via Router_Mhs3 ke Router_Mhs2 & Router_Mhs3

Dalam contoh ini DHCP server sudah dikonfigurasi seperti contoh pada materi modul-2 DHCP, berikut gambar tes ping koneksi

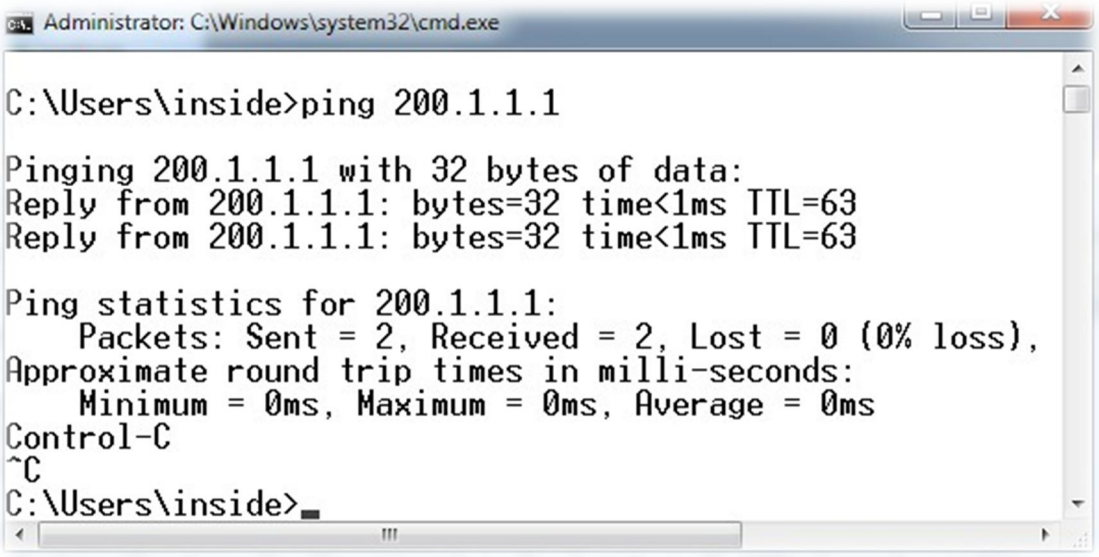
✓ Tes Ping ke interface ether2 Router_Mhs3



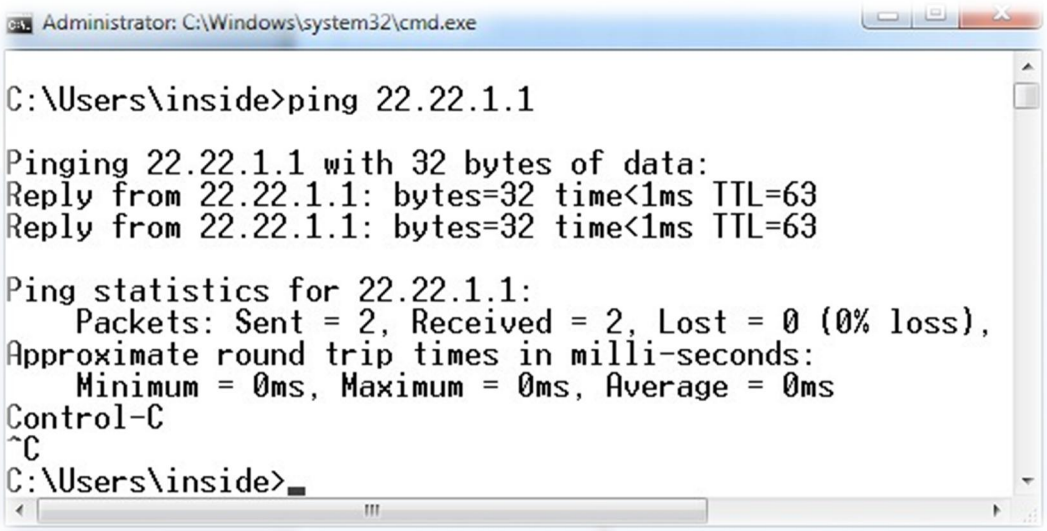
✓ Tes Ping ke interface ether3 Gateway Router_Mhs3



✓ Tes Ping ke interface ether3 Gateway **Router_Mhs1**



✓ Tes Ping ke interface ether2 [**LAN**] Gateway **Router_Mhs1**



✓ Tes Tracert ke IP Address **22.22.1.1** interface ether2 [**LAN**] Gateway **Router_Mhs1**