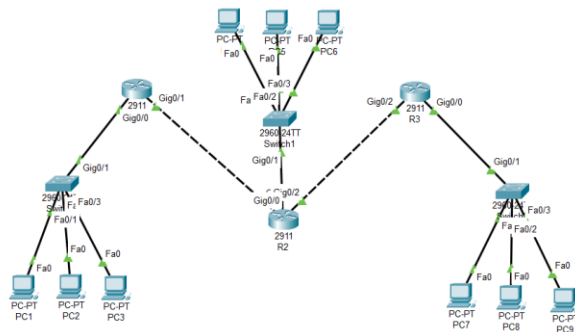


ROUTING STATIC

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TOPOLOGI



ROUTER 1

```
09010182327016_R1>EN
09010182327016_R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
09010182327016_R1(config)#ip route 192.168.20.0 255.255.255.0 10.10.10.2
09010182327016_R1(config)#ip route 10.20.10.0 255.255.255.252 10.10.10.2
09010182327016_R1(config)#ip route 192.168.40.0 255.255.255.0 10.10.10.2
09010182327016_R1(config)#ex
09010182327016_R1#
%SYS-5-CONFIG_I: Configured from console by console

09010182327016_R1#e
% Ambiguous command: "e"
09010182327016_R1#sh ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

    10.0.0.0/8 is variably subnetted, 4 subnets, 3 masks
C       10.10.10.0/24 is directly connected, GigabitEthernet0/1
L       10.10.10.1/32 is directly connected, GigabitEthernet0/1
S       10.20.10.0/30 [1/0] via 10.10.10.2
S       10.20.10.0/32 [1/0] via 10.10.10.2
    192.168.2.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.2.0/24 is directly connected, GigabitEthernet0/0
L       192.168.2.1/32 is directly connected, GigabitEthernet0/0
S       192.168.20.0/24 [1/0] via 10.10.10.2
S       192.168.40.0/24 [1/0] via 10.10.10.2
```

ROUTER 2

```
09010182327016_R2>en
09010182327016_R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
09010182327016_R2(config)#ip route 192.168.2.0 255.255.255.0 10.10.10.1
09010182327016_R2(config)#ip route 192.168.40.0 255.255.255.0 10.20.10.2
09010182327016_R2(config)#ex
09010182327016_R2#
%SYS-5-CONFIG_I: Configured from console by console

09010182327016_R2#sh ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

    10.0.0.0/8 is variably subnetted, 4 subnets, 2 masks
C       10.10.10.0/30 is directly connected, GigabitEthernet0/1
L       10.10.10.2/32 is directly connected, GigabitEthernet0/1
C       10.20.10.0/30 is directly connected, GigabitEthernet0/2
L       10.20.10.1/32 is directly connected, GigabitEthernet0/2
S       192.168.2.0/24 [1/0] via 10.10.10.1
        192.168.20.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.20.0/24 is directly connected, GigabitEthernet0/0
L       192.168.20.1/32 is directly connected, GigabitEthernet0/0
S       192.168.40.0/24 [1/0] via 10.20.10.2
```

ROUTER 3

```
09010182327016_R3>en
09010182327016_R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
09010182327016_R3(config)#ip route 192.168.20.0 255.255.255.0 10.20.10.1
09010182327016_R3(config)#ip route 10.10.10.0 255.255.255.252 10.20.10.1
09010182327016_R3(config)#ip route 192.168.1.0 255.255.255.0 10.20.10.1
^
% Invalid input detected at '^' marker.

09010182327016_R3(config)#ex
09010182327016_R3#
%SYS-5-CONFIG_I: Configured from console by console

09010182327016_R3#sh ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

    10.0.0.0/8 is variably subnetted, 3 subnets, 2 masks
S       10.10.10.0/30 [1/0] via 10.20.10.1
C       10.20.10.0/30 is directly connected, GigabitEthernet0/2
L       10.20.10.2/32 is directly connected, GigabitEthernet0/2
S       192.168.2.0/24 [1/0] via 10.20.10.1
S       192.168.20.0/24 [1/0] via 10.20.10.1
        [1/0] via 10.10.10.2
        192.168.40.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.40.0/24 is directly connected, GigabitEthernet0/0
L       192.168.40.1/32 is directly connected, GigabitEthernet0/0
```

Tes Koneksi ICMP

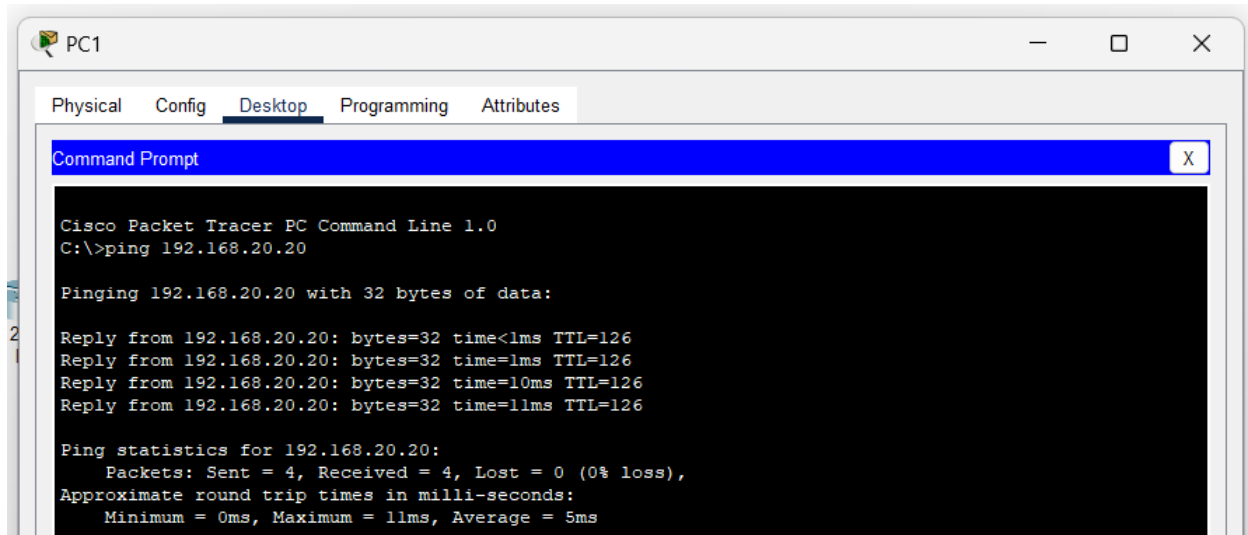
No	Sumber	Tujuan	Hasil	
			Ya	Tidak
1	PC1	PC2	Ya	-
		PC3	Ya	-
		PC4	Ya	-
		PC5	Ya	-
		PC6	Ya	-
		PC7	Ya	-
		PC8	Ya	-
		PC9	Ya	-

No	Sumber	Tujuan	Hasil	
			Ya	Tidak
2	PC4	PC1	Ya	-
		PC2	Ya	-
		PC3	Ya	-
		PC5	Ya	-
		PC6	Ya	-
		PC7	Ya	-
		PC8	Ya	-
		PC9	Ya	-

No	Sumber	Tujuan	Hasil	
			Ya	Tidak
3	PC7	PC1	Ya	-
		PC2	Ya	-
		PC3	Ya	-
		PC4	Ya	-
		PC5	Ya	-
		PC6	Ya	-
		PC8	Ya	-
		PC9	Ya	-

Tes PC

PC1 >> PC5



The screenshot shows a Cisco Packet Tracer PC Command Line window for PC1. The 'Desktop' tab is selected. The command prompt displays the output of a ping command to 192.168.20.20. The output shows four successful replies with varying times (less than 1ms, 1ms, 10ms, and 11ms) and a TTL of 126. The ping statistics indicate 4 packets sent, 4 received, and 0% loss, with an average round trip time of 5ms.

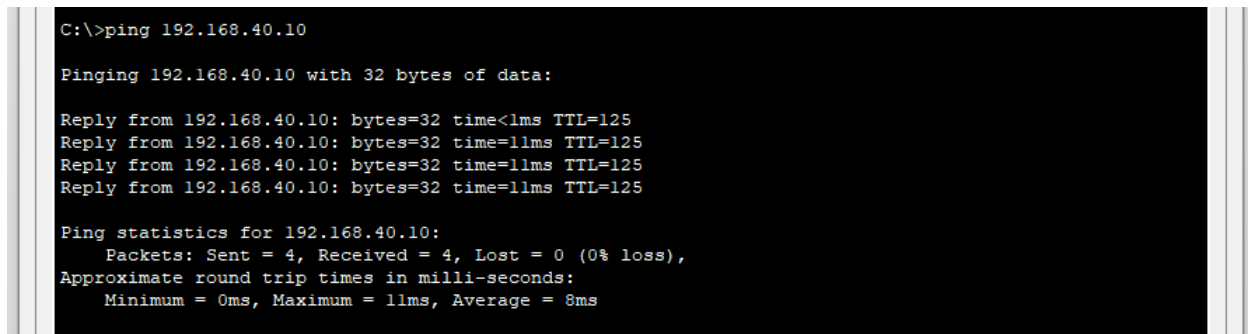
```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.20.20

Pinging 192.168.20.20 with 32 bytes of data:

Reply from 192.168.20.20: bytes=32 time<1ms TTL=126
Reply from 192.168.20.20: bytes=32 time=1ms TTL=126
Reply from 192.168.20.20: bytes=32 time=10ms TTL=126
Reply from 192.168.20.20: bytes=32 time=11ms TTL=126

Ping statistics for 192.168.20.20:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 11ms, Average = 5ms
```

PC1 >> PC7



The screenshot shows a Cisco Packet Tracer PC Command Line window for PC1. The command prompt displays the output of a ping command to 192.168.40.10. The output shows four successful replies with varying times (less than 1ms, 11ms, 11ms, and 11ms) and a TTL of 125. The ping statistics indicate 4 packets sent, 4 received, and 0% loss, with an average round trip time of 8ms.

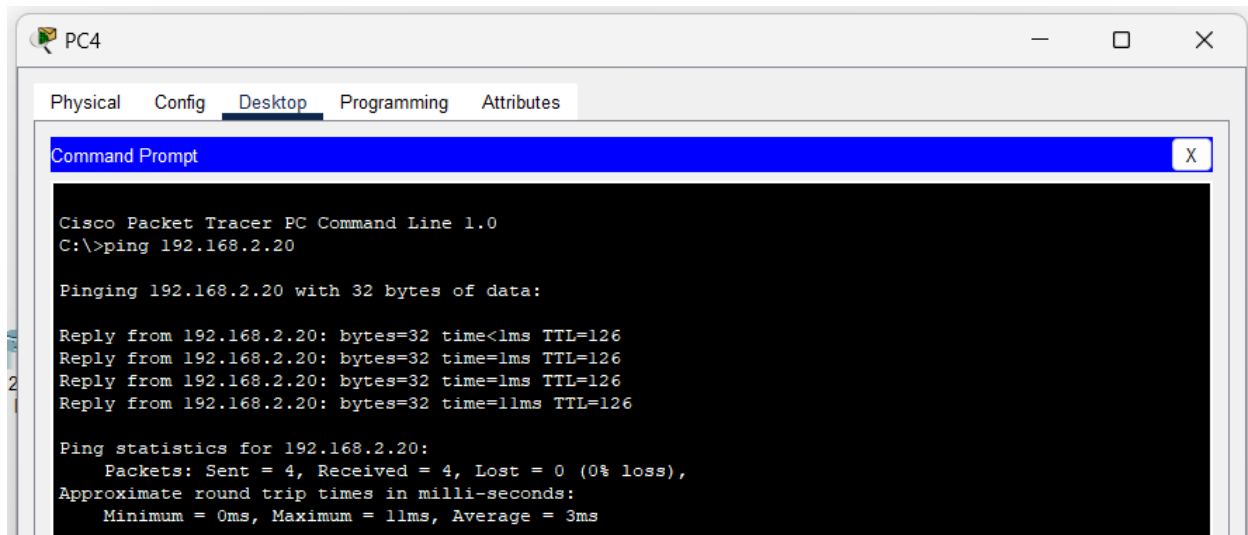
```
C:\>ping 192.168.40.10

Pinging 192.168.40.10 with 32 bytes of data:

Reply from 192.168.40.10: bytes=32 time<1ms TTL=125
Reply from 192.168.40.10: bytes=32 time=11ms TTL=125
Reply from 192.168.40.10: bytes=32 time=11ms TTL=125
Reply from 192.168.40.10: bytes=32 time=11ms TTL=125

Ping statistics for 192.168.40.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 11ms, Average = 8ms
```

PC4 >> PC2



The screenshot shows a Cisco Packet Tracer PC Command Line window for PC4. The 'Desktop' tab is selected. The command prompt displays the output of a ping command to 192.168.2.20. The output shows four successful replies with varying times (less than 1ms, 1ms, 1ms, and 11ms) and a TTL of 126. The ping statistics indicate 4 packets sent, 4 received, and 0% loss, with an average round trip time of 3ms.

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.2.20

Pinging 192.168.2.20 with 32 bytes of data:

Reply from 192.168.2.20: bytes=32 time<1ms TTL=126
Reply from 192.168.2.20: bytes=32 time=1ms TTL=126
Reply from 192.168.2.20: bytes=32 time=1ms TTL=126
Reply from 192.168.2.20: bytes=32 time=11ms TTL=126

Ping statistics for 192.168.2.20:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 11ms, Average = 3ms
```

PC4 >> PC 8

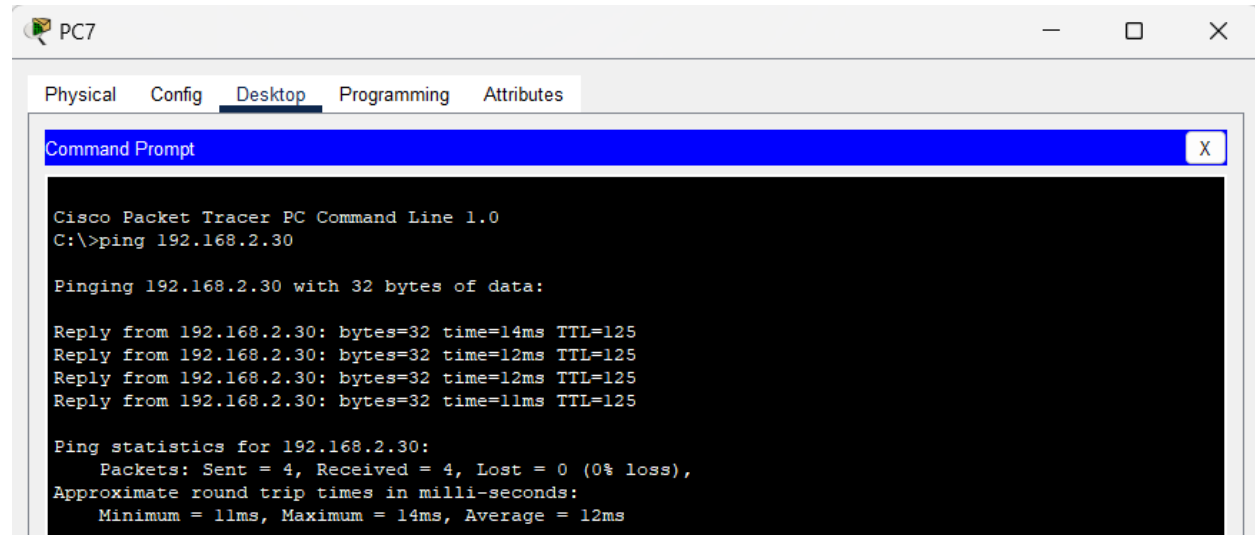
```
C:\>ping 192.168.40.20

Pinging 192.168.40.20 with 32 bytes of data:

Reply from 192.168.40.20: bytes=32 time<1ms TTL=126
Reply from 192.168.40.20: bytes=32 time=11ms TTL=126
Reply from 192.168.40.20: bytes=32 time=10ms TTL=126
Reply from 192.168.40.20: bytes=32 time=11ms TTL=126

Ping statistics for 192.168.40.20:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 11ms, Average = 8ms
```

PC7 >> PC3



PC7 >> PC9

```
C:\>ping 192.168.40.30

Pinging 192.168.40.30 with 32 bytes of data:

Reply from 192.168.40.30: bytes=32 time<1ms TTL=128
Reply from 192.168.40.30: bytes=32 time=1ms TTL=128
Reply from 192.168.40.30: bytes=32 time=1ms TTL=128
Reply from 192.168.40.30: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.40.30:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

Hasil Percobaan

Berdasarkan hasil tes koneksi ICMP yang dilakukan dalam percobaan routing static:

- PC1 berhasil terhubung dengan PC2, PC3, PC4, PC5, PC6, PC7, PC8, dan PC9.
- PC4 berhasil terhubung dengan PC1, PC2, PC3, PC5, PC6, PC7, PC8, dan PC9.
- PC7 berhasil terhubung dengan PC1, PC2, PC3, PC4, PC5, PC6, PC8, dan PC9.

Semua perangkat dalam jaringan berhasil terhubung satu sama lain menggunakan protokol ICMP. Tidak ditemukan kendala dalam pengiriman paket ICMP, yang mengindikasikan bahwa konfigurasi routing statis telah diterapkan dengan baik. Setiap perangkat di jaringan dapat berkomunikasi dengan perangkat lain tanpa hambatan.

Analisis Percobaan

Pada percobaan ini, fokus utamanya adalah mengonfigurasi routing statis untuk memungkinkan komunikasi antar jaringan yang dihubungkan oleh beberapa router. Masing-masing router telah dikonfigurasi dengan alamat IP dan disimpan ke dalam NVRAM agar konfigurasi tetap aktif meskipun perangkat di-restart. Dengan membuat tabel routing statis, setiap router mampu mengetahui jalur menuju jaringan lain yang tidak terhubung langsung. Rute ini ditambahkan secara manual untuk memastikan bahwa setiap router dapat meneruskan paket ke tujuan yang berada di luar subnetnya.

Tes koneksi dilakukan menggunakan protokol ICMP, di mana paket ping dikirim antar PC di berbagai jaringan. Tes ini bertujuan untuk memverifikasi bahwa perangkat yang berada di jaringan berbeda dapat saling berkomunikasi melalui router yang sudah dikonfigurasi. Hasil tes menunjukkan bahwa seluruh PC yang diuji berhasil merespons ping, menandakan tidak ada masalah dalam penerusan paket melalui routing statis yang diterapkan.

Kesimpulan Percobaan

Konfigurasi routing statis yang dilakukan pada jaringan ini berjalan dengan sukses. Semua perangkat mampu saling terhubung dan berkomunikasi antar subnet tanpa mengalami masalah. Pengaturan rute yang ditambahkan secara manual memungkinkan setiap router untuk mengetahui dan meneruskan paket ke jaringan lain, menunjukkan bahwa routing statis dapat diandalkan untuk menghubungkan jaringan yang tidak terhubung secara langsung.