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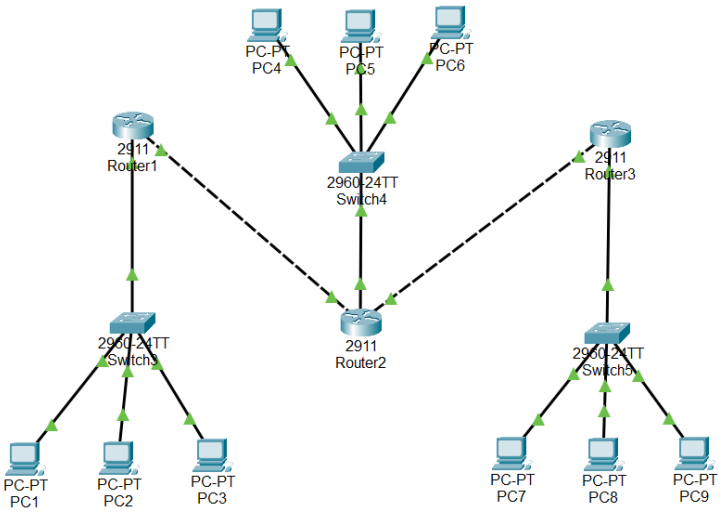
MK : KOMPUTER JARINGAN

Praktikum jaringan komputer



Router 1

```
09010182327009_R1>show 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, 4 masks
C       10.0.0.0/8 is directly connected, GigabitEthernet0/1
L       10.10.10.1/32 is directly connected, GigabitEthernet0/1
S       10.20.10.0/24 [1/0] via 10.10.10.2
S       10.20.10.0/30 [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

09010182327009_R1>
```

Router 2

```
09010182327009_R2#show 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

09010182327009_R2#
```

Router 3

```
0910182327009_R3#show 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
     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

0910182327009_R3#
```

No	Sumber	Tujuan	Hasil	
			Ya	Tidak
	PC 1	PC 2	Ya	
		PC 3	Ya	
		PC 4	Ya	
		PC 5	Ya	
		PC 6	Ya	
		PC 7	Ya	
		PC 8	Ya	
		PC 9	Ya	

Sumber	Sumber	Tujuan	Hasil	
			Ya	Tidak
	PC 4	PC 1	Ya	
		PC 2	Ya	
		PC 3	Ya	
		PC 5	Ya	
		PC 6	Ya	
		PC 7	Ya	
		PC 8	Ya	
		PC 9	Ya	

No	Sumber	Tujuan	Hasil	
			Ya	Tidak
	PC 7	PC 1	Ya	
		PC 2	Ya	
		PC 3	Ya	
		PC 4	Ya	
		PC 5	Ya	
		PC 6	Ya	
		PC 8	Ya	
		PC 9	Ya	

PC1→PC5
PC1→PC7

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.20.3

Pinging 192.168.20.3 with 32 bytes of data:

Request timed out.
Request timed out.
Reply from 192.168.20.3: bytes=32 time=10ms TTL=126
Reply from 192.168.20.3: bytes=32 time=10ms TTL=126

Ping statistics for 192.168.20.3:
    Packets: Sent = 4, Received = 2, Lost = 2 (50% loss),
Approximate round trip times in milli-seconds:
    Minimum = 10ms, Maximum = 10ms, Average = 10ms

C:\>ping 192.168.40.3

Pinging 192.168.40.3 with 32 bytes of data:

Request timed out.
Request timed out.
Reply from 192.168.40.3: bytes=32 time=13ms TTL=125
Reply from 192.168.40.3: bytes=32 time=12ms TTL=125

Ping statistics for 192.168.40.3:
    Packets: Sent = 4, Received = 2, Lost = 2 (50% loss),
Approximate round trip times in milli-seconds:
    Minimum = 12ms, Maximum = 13ms, Average = 12ms

C:\>
```

PC4→PC2
PC4→PC8

```
C:\>ping 192.168.2.3

Pinging 192.168.2.3 with 32 bytes of data:

Reply from 192.168.2.3: bytes=32 time<1ms TTL=128
Reply from 192.168.2.3: bytes=32 time<1ms TTL=128
Reply from 192.168.2.3: bytes=32 time=1ms TTL=128
Reply from 192.168.2.3: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.2.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>ping 192.168.40.3

Pinging 192.168.40.3 with 32 bytes of data:

Reply from 192.168.40.3: bytes=32 time<1ms TTL=125
Reply from 192.168.40.3: bytes=32 time=10ms TTL=125
Reply from 192.168.40.3: bytes=32 time<1ms TTL=125
Reply from 192.168.40.3: bytes=32 time=18ms TTL=125

Ping statistics for 192.168.40.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 18ms, Average = 7ms
```

PC7→PC3
PC7→PC9

```
C:\>ping 192.168.2.4

Pinging 192.168.2.4 with 32 bytes of data:

Reply from 192.168.2.4: bytes=32 time<1ms TTL=128
Reply from 192.168.2.4: bytes=32 time<1ms TTL=128
Reply from 192.168.2.4: bytes=32 time<1ms TTL=128
Reply from 192.168.2.4: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.2.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.40.4

Pinging 192.168.40.4 with 32 bytes of data:

Request timed out.
Reply from 192.168.40.4: bytes=32 time=23ms TTL=125
Reply from 192.168.40.4: bytes=32 time=12ms TTL=125
Reply from 192.168.40.4: bytes=32 time=12ms TTL=125

Ping statistics for 192.168.40.4:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 12ms, Maximum = 23ms, Average = 15ms
```

Hasil percobaan:

Hasil percobaan menunjukkan bahwa setiap router berhasil dikonfigurasi dengan alamat IP yang sesuai, dan tabel routing yang telah ditambahkan dapat ditampilkan dengan benar. Setiap router mampu mengenali rute yang diperlukan untuk mengarahkan paket data ke jaringan yang dituju, memastikan komunikasi yang efektif antar subnet.

Analisis percobaan:

Percobaan ini berhasil menunjukkan bahwa pengaturan routing statis memungkinkan komunikasi yang efisien antar subnet yang tidak terhubung langsung, dengan setiap router mampu mengarahkan paket data ke jaringan tujuan melalui entri routing yang ditentukan secara manual. Pengujian konektivitas menggunakan ICMP (ping) membuktikan bahwa semua perangkat dalam jaringan dapat saling berkomunikasi dengan baik, menegaskan bahwa konfigurasi routing telah dilakukan dengan tepat.

Meskipun routing statis menawarkan kemudahan dan keamanan, analisis juga mengungkapkan bahwa pendekatan ini kurang fleksibel dan dapat meningkatkan risiko kesalahan manusia, terutama dalam jaringan yang lebih besar atau dinamis. Oleh karena itu, meskipun efektif untuk jaringan kecil, penting untuk mempertimbangkan penggunaan routing dinamis pada skala yang lebih besar untuk memastikan adaptabilitas dan efisiensi operasional.

Kesimpulan percobaan:

Kesimpulan dari percobaan ini adalah bahwa penerapan routing statis yang tepat memungkinkan komunikasi yang efisien antara berbagai jaringan yang tidak terhubung secara langsung. Dengan menyusun tabel routing secara manual, setiap router dapat mengarahkan paket data dengan akurat ke tujuan yang diinginkan. Pengujian konektivitas melalui ICMP (ping) menunjukkan bahwa perangkat di subnet yang berbeda dapat saling berkomunikasi dengan baik, membuktikan keberhasilan konfigurasi routing statis yang telah dilakukan. Selain itu, percobaan ini menyoroti pentingnya pemahaman dan pemeliharaan tabel routing untuk menjamin kelancaran operasional jaringan.