BAHAN AJAR

Nama Sekolah : SMKN 1 Kutalimbaru
Mata Pelajaran : Administrasi Infrastruktur Jaringan (C3)
Kelas/Semester : XI/I
Materi Pokok : Routing Statis
Alokasi Waktu : 2 x 45 Menit

A. Tujuan Pembelajaran

1. **Pengetahuan**

   a. Produk

   1) Secara mandiri tanpa membuka bahan ajar, siswa dapat menganalisis prinsip kerja routing statis dan mengerjakan soal terkait di LP 3 minimal nilai sama dengan KKM
   2) Secara mandiri tanpa membuka bahan ajar, siswa dapat menyimpulkan prinsip kerja routing statis dengan mengerjakan soal terkait di LP 3 minimal nilai sama dengan KKM

   b. Proses

   Siswa diharapkan dapat menganalisis prinsip kerja routing statis dengan mengerjakan evaluasi terkait di LP 4 minimal nilai sama dengan KKM

2. **Keterampilan**

   Dengan menggunakan *Jobsheet*, siswa dapat menjawab pertanyaan tentang routing statis di LP 5 minimal nilai sama dengan KKM

B. Kompetensi Dasar

3.4 Menevaluasi Routing Statis

4.3 Mengkonfigurasi Routing Statis

C. Indikator Pencapaian Kompetensi

1. **Pengetahuan**

   a. Produk

   3.4.1 Menganalisis Routing Statis

   b. Proses

   3.4.2 Menyimpulkan Routing Statis

2. Keterampilan

Melakukan Routing Statis

D. Materi Pembelajaran
Penggalan Materi 2

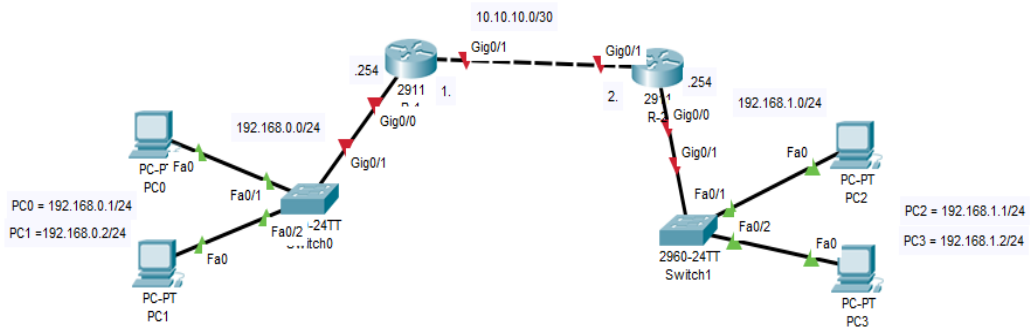
B. Membangun Jaringan dengan Dua Router

Pada latihan sebelumnya, anda telah menggunakan format

ip route[network_id][subnetmask][interface_next_hop|ip_address_interface]

dengan parameter next hop adalah Network ID pada satu router untuk menghubungkan dua jaringan lokal serta parameter next hop dengan interface router. Selanjutnya pada latihan ini, anda akan menggunakan parameter next hop IP address router yang akan dilewati data. Menghubungkan dua jaringan lokal dengan dua router Cisco Seri 2911, sebagai berikut.

1. Jalankan aplikasi Packet Tracer 7.1 kemudian desain dana tur topologi jaringan sesuai gambar.



Gambar dua jaringan lokal dengan dua router Cisco Seri 2911

2. Pastikan IP address setiap komputer klien dari PC0 sampai PC3 telah dikonfigurasi sesuai ketentuan.
3. Konfigurasi Router R-1

Langkah Ke	*Command*	Keterangan
1	Router>enable Router#configure terminal Enter configuration commands, one per line. End with CNTL/Z. Router(config)#	Login ke router, setelah itu masuk ke *User Priveleged Mode*. Lalu, masuk ke *Global Configuration Mode* untuk melakukan konfigurasi *router*.
2	Router(config)#hostname R-1 R-1(config)#	Mengubah *hostname router* menjadi R-1
3	R-1(config)#interface gig0/0 R-1(config-if)#ip address 10.10.10.1	Melakukan konfigurasi IP address dan status interface

	255.255.255.252 R-1(config-if)#no shutdown R-1(config-if)# %LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up exit R-1(config)#	GigabitEthernet 0/0
4	R-1(config)#int gig0/1 R-1(config-if)#ip address 192.168.0.254 255.255.255.0 R-1(config-if)#no shutdown R-1(config-if)# %LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up R-1(config-if)#exit R-1(config)#	Melakukan konfigurasi IP address dan status GigabitEthernet 0/1
5	R-1(config)#ip route 192.168.1.0 255.255.255.0 10.10.10.2 R-1(config)#	Menambah *static routing* menuju *remote network*
6	R-1(config)#do 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, 2 subnets, 2 masks C 10.10.10.0/30 is directly connected,	Melihat tabel *routing*

	GigabitEthernet0/0 L 10.10.10.1/32 is directly connected, GigabitEthernet0/0 S 192.168.1.0/24 [1/0] via 10.10.10.2	
7	R-1(config)#do write Building configuration... [OK] R-1(config)#	Menyimpan konfigurasi *router* ke NVRAM agar konfigurasi tidak hilang saat router di-*restart*

4. Selanjutnya adalah mengkonfigurasi router R-2

Langkah Ke	Command	Keterangan
1	Router>enable Router#configure terminal Enter configuration commands, one per line. End with CNTL/Z. Router(config)#	Login ke router, setelah itu masuk ke *User Priveleged Mode*. Lalu, masuk ke *Global Configuration Mode* untuk melakukan konfigurasi *router*.
2	Router(config)#hostname R-2 R-2(config)#	Mengubah *hostname router* menjadi R-2
3	R-2(config)#interface gig0/0 R-2(config-if)#ip address 10.10.10.2 255.255.255.252 R-2(config-if)#no shutdown R-2(config-if)# %LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up R-2(config-if)#exit R-2(config)#	Melakukan konfigurasi IP address dan status interface GigabitEthernet 0/0
4	R-2(config)#int gig0/1 R-2(config-if)#ip address 192.168.1.254 255.255.255.0 R-2(config-if)#no shutdown R-2(config-if)# R-2(config-if)#exit	Melakukan konfigurasi IP address dan status interface GigabitEthernet 0/1
5	R-2(config)#ip route 192.168.1.0 255.255.255.0 10.10.10.1 R-2(config)#	Menambah *static routing* menuju *remote network*
6	R-2(config)#do show ip route	Melihat tabel *routing*

	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, 2 subnets, 2 masks C 10.10.10.0/30 is directly connected, GigabitEthernet0/0 L 10.10.10.2/32 is directly connected, GigabitEthernet0/0 S 192.168.0.0/24 [1/0] via 10.10.10.1	
7	R-2(config)#do write Building configuration... [OK]	Menyimpan konfigurasi *router* ke NVRAM agar konfigurasi tidak hilang saat router di-*restart*

5. Langkah terakhir adalah melakukan pengujian koneksi antar PC klien.

Langkah Ke	Command	Keterangan
1	Packet Tracer PC Command Line 1.0 C:\>ping -n 1 192.168.0.1 Pinging 192.168.0.1 with 32 bytes of data: Reply from 192.168.0.1: bytes=32 time=16ms TTL=128 Ping statistics for 192.168.0.1: Packets: Sent = 1, Received = 1, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 16ms, Maximum = 16ms, Average =	Pengujian pada PC0

	16ms C:\>ping -n 1 192.168.0.2 Pinging 192.168.0.2 with 32 bytes of data: Reply from 192.168.0.2: bytes=32 time=1ms TTL=128 Ping statistics for 192.168.0.2: Packets: Sent = 1, Received = 1, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 1ms, Maximum = 1ms, Average = 1ms C:\>ping -n 1 10.10.10.1 Pinging 10.10.10.1 with 32 bytes of data: Reply from 10.10.10.1: bytes=32 time<1ms TTL=255 Ping statistics for 10.10.10.1: Packets: Sent = 1, Received = 1, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 0ms, Maximum = 0ms, Average = 0ms C:\>ping -n 1 10.10.10.2 Pinging 10.10.10.2 with 32 bytes of data: Reply from 10.10.10.2: bytes=32 time=1ms TTL=254 Ping statistics for 10.10.10.2: Packets: Sent = 1, Received = 1, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 1ms, Maximum = 1ms, Average = 1ms	
2	C:\>ping -n 1 192.168.1.1	Pengujian pada PC2

	Pinging 192.168.1.1 with 32 bytes of data: Reply from 192.168.1.1: bytes=32 time=19ms TTL=128 Ping statistics for 192.168.1.1: Packets: Sent = 1, Received = 1, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 19ms, Maximum = 19ms, Average = 19ms C:\>ping -n 1 192.168.1.2 Pinging 192.168.1.2 with 32 bytes of data: Reply from 192.168.1.2: bytes=32 time=1ms TTL=128 Ping statistics for 192.168.1.2: Packets: Sent = 1, Received = 1, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 1ms, Maximum = 1ms, Average = 1ms C:\>ping -n 1 10.10.10.1 Pinging 10.10.10.1 with 32 bytes of data: Reply from 10.10.10.1: bytes=32 time=2ms TTL=254 Ping statistics for 10.10.10.1: Packets: Sent = 1, Received = 1, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 2ms, Maximum = 2ms, Average = 2ms C:\>ping -n 1 10.10.10.2 Pinging 10.10.10.2 with 32 bytes of data:	

	Reply from 10.10.10.2: bytes=32 time=1ms TTL=255 Ping statistics for 10.10.10.2: Packets: Sent = 1, Received = 1, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 1ms, Maximum = 1ms, Average = 1ms	

6. Hasil konfigurasi jaringan Router R-1 terhubung ke Router R-2