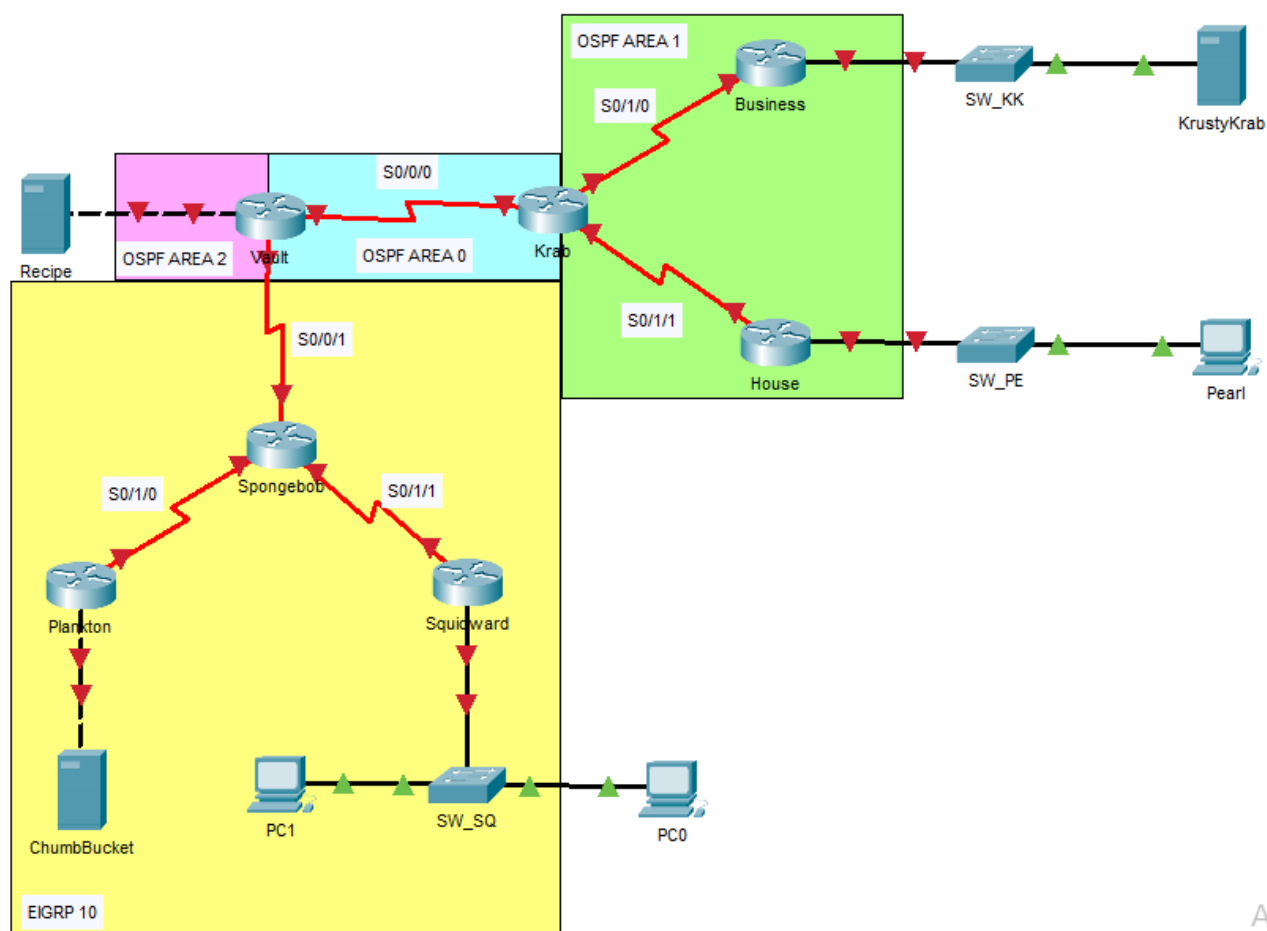


PRAKTIKUM DESAIN DAN MANAJEMEN JARINGAN KOMPUTER

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1. Topologi jaringan.



2. $X = 6$; $Y = 8$; $Z = 2$.

3. Addressing table.

Device	Interface	IP Address	Subnet Mask	Gateway
Plankton	S0/1/0	10.0.8.1	255.255.255.252	
	G0/1	192.168.8.1	255.255.255.0	
Squidward	S0/1/1	10.0.6.1	255.255.255.252	

	G0/1	192.168.6.1	255.255.255.0	
Spongebob	S0/0/1	10.0.2.2	255.255.255.252	
	S0/1/0	10.0.8.2	255.255.255.252	
	S0/1/1	10.0.6.2	255.255.255.252	
Vault	S0/0/0	20.0.2.1	255.255.255.252	
	S0/0/1	10.0.2.1	255.255.255.252	
	G0/1	200.0.2.1	255.255.255.0	
Krab	S0/0/0	20.0.2.2	255.255.255.252	
	S0/1/0	20.0.8.2	255.255.255.252	
	S0/1/1	20.0.6.2	255.255.255.252	
Business	S0/1/0	20.0.8.1	255.255.255.252	
	G0/1	169.69.8.1	255.255.255.0	
House	S0/1/1	20.0.6.1	255.255.255.252	
	G0/1	169.69.6.1	255.255.255.0	
KrustyKrab	NIC	169.69.8.2	255.255.255.0	169.69.8.1
Pearl		169.69.6.2	255.255.255.0	169.69.6.1
Recipe		200.0.2.2	255.255.255.0	200.0.2.1
PC0		DHCP	255.255.255.0	DHCP
PC1			255.255.255.0	
ChumbBucket			255.255.255.0	

4. Mengubah *hostname*.

```
Router(config)#host Plankton Router(config)#host Squidward Router(config)#host Spongebob
Plankton(config)# Squidward(config)# Spongebob(config)#
Router(config)#host Vault Router(config)#host Krab Router(config)#host House
Vault(config)# Krab(config)# House(config)#
```

5. Pengalamatan IP.

- Plankton:

```
Plankton(config)#int s0/1/0
Plankton(config-if)#ip add 10.0.8.1 255.255.255.252
Plankton(config-if)#no sh
Plankton(config-if)#int g0/1
Plankton(config-if)#ip add 192.168.8.1 255.255.255.0
Plankton(config-if)#no sh
```

- Squidward:

```
Squidward(config)#int s0/1/1
Squidward(config-if)#ip add 10.0.6.1 255.255.255.252
Squidward(config-if)#no sh
Squidward(config-if)#int g0/1
Squidward(config-if)#ip add 192.168.6.1 255.255.255.0
Squidward(config-if)#no sh
```

- Spongebob:

```
Spongebob(config)#int s0/0/1
Spongebob(config-if)#ip add 10.0.2.2 255.255.255.252
Spongebob(config-if)#no sh
Spongebob(config-if)#int s0/1/0
Spongebob(config-if)#ip add 10.0.8.2 255.255.255.252
Spongebob(config-if)#no sh
Spongebob(config-if)#int s0/1/1
Spongebob(config-if)#ip add 10.0.6.2 255.255.255.252
Spongebob(config-if)#no sh
```

- Vault:

```
Vault(config)#int s0/0/0
Vault(config-if)#ip add 20.0.2.1 255.255.255.252
Vault(config-if)#no sh
Vault(config-if)#int s0/0/1
Vault(config-if)#ip add 10.0.2.1 255.255.255.252
Vault(config-if)#no sh
Vault(config-if)#int g0/1
Vault(config-if)#ip add 200.0.2.1 255.255.255.0
Vault(config-if)#no sh
```

- Krab:

```
Krab(config)#int s0/0/0
Krab(config-if)#ip add 20.0.2.2 255.255.255.252
Krab(config-if)#no sh
Krab(config-if)#int s0/1/0
Krab(config-if)#ip add 20.0.8.2 255.255.255.252
Krab(config-if)#no sh
Krab(config-if)#int s0/1/1
Krab(config-if)#ip add 20.0.6.2 255.255.255.252
Krab(config-if)#no sh
```


- Business:

```
Business(config)#int s0/1/0
Business(config-if)#ip add 20.0.8.1 255.255.255.252
Business(config-if)#no sh
Business(config-if)#int g0/1
Business(config-if)#ip add 169.69.8.1 255.255.255.0
Business(config-if)#no sh
```


- House:

```
House(config)#int s0/1/1
House(config-if)#ip add 20.0.6.1 255.255.255.252
House(config-if)#no sh
House(config-if)#int g0/1
House(config-if)#ip add 169.69.6.1 255.255.255.0
House(config-if)#no sh
```

- End Devices:

 KrustyKrab

Physical	Config	Services	Desktop	Programming
IP Configuration				
IP Configuration				
<input type="radio"/> DHCP		<input checked="" type="radio"/> Static		
IPv4 Address		169.69.8.2		
Subnet Mask		255.255.255.0		
Default Gateway		169.69.8.1		

 Pearl

Physical	Config	Desktop	Programming	Attributes
IP Configuration				
Interface FastEthernet0				
IP Configuration				
<input type="radio"/> DHCP		<input checked="" type="radio"/> Static		
IPv4 Address		169.69.6.2		
Subnet Mask		255.255.255.0		
Default Gateway		169.69.6.1		

Recipe

Physical	Config	Services	Desktop	Programming
IP Configuration				
IP Configuration				
<input type="radio"/> DHCP <input checked="" type="radio"/> Static				
IPv4 Address		200.0.2.2		
Subnet Mask		255.255.255.0		
Default Gateway		200.0.2.1		

Konfigurasi Routing EIGRP

6. Konfigurasi.

- Plankton:

```
Plankton(config)#router eigrp 10
Plankton(config-router)#net 10.0.8.0 0.0.0.3
Plankton(config-router)#net 192.168.8.0 0.0.0.255
Plankton(config-router)#passive g0/1
Plankton(config-router)#no auto
```

- Squirdward:

```
Squirdward(config)#router eigrp 10
Squirdward(config-router)#net 10.0.6.0 0.0.0.3
Squirdward(config-router)#net 192.168.6.0 0.0.0.255
Squirdward(config-router)#passive g0/1
Squirdward(config-router)#no auto
```

- Spongebob:

```
Spongebob(config)#router eigrp 10
Spongebob(config-router)#net 10.0.2.0 0.0.0.3
Spongebob(config-router)#net 10.0.8.0 0.0.0.3
Spongebob(config-router)#net 10.0.6.0 0.0.0.3
Spongebob(config-router)#no auto
```

- Vault:

```
Vault(config)#router eigrp 10
Vault(config-router)#net 10.0.2.0 0.0.0.3
Vault(config-router)#no auto
```

Konfigurasi DHCP

7. DHCP server.

```
Spongebob(config)#ip dhcp ex 192.168.8.1
Spongebob(config)#ip dhcp pool PlanktonNet
Spongebob(dhcp-config)#net 192.168.8.0 255.255.255.0
Spongebob(dhcp-config)#default-router 192.168.8.1
Spongebob(dhcp-config)#ex
Spongebob(config)#ip dhcp ex 192.168.6.1
Spongebob(config)#ip dhcp pool SquidNet
Spongebob(dhcp-config)#net 192.168.6.0 255.255.255.0
Spongebob(dhcp-config)#def 192.168.6.1
```

8. Konfigurasi router.

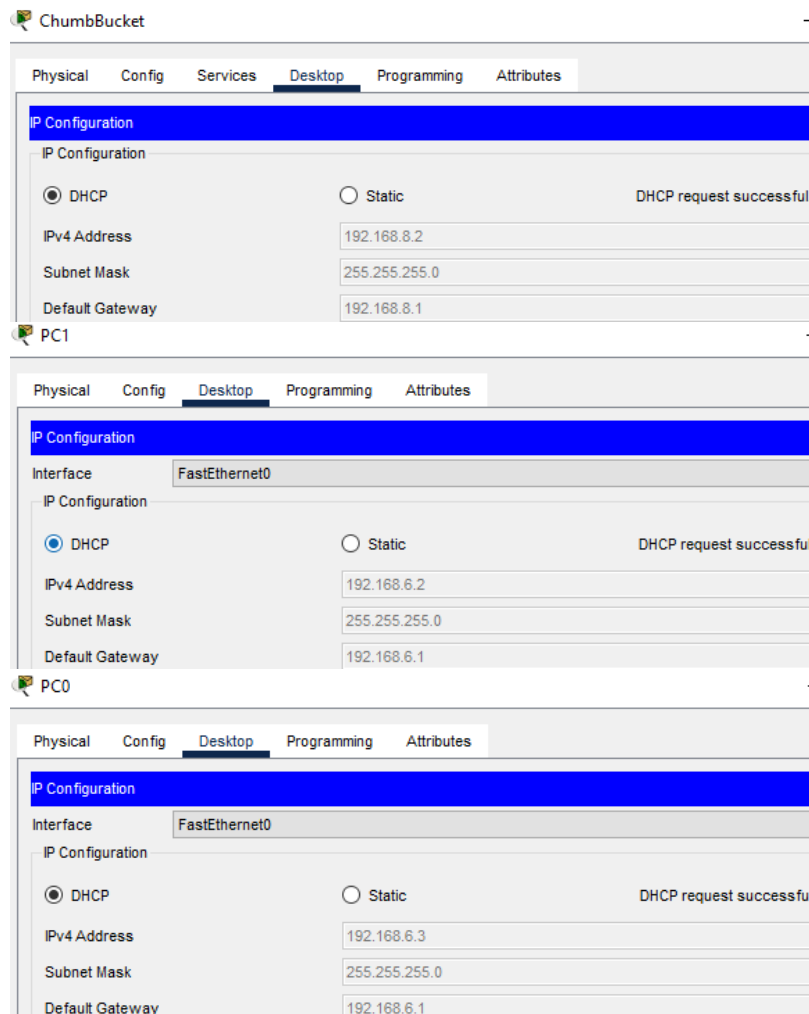
- Plankton:

```
Plankton(config)#int g0/1
Plankton(config-if)#ip help 10.0.8.2
```

- Squidward:

```
Squidward(config)#int g0/1
Squidward(config-if)#ip help 10.0.6.2
```

9. Request DHCP.



The image shows three screenshots of the ChumbBucket network simulator interface, specifically the 'Desktop' tab for IP Configuration. Each screenshot shows a 'DHCP' configuration for a specific interface (FastEthernet0) with the following details:

- PC1:** IP Address: 192.168.8.2, Subnet Mask: 255.255.255.0, Default Gateway: 192.168.8.1. Status: DHCP request successful.
- PC0:** IP Address: 192.168.6.2, Subnet Mask: 255.255.255.0, Default Gateway: 192.168.6.1. Status: DHCP request successful.
- PC0:** IP Address: 192.168.6.3, Subnet Mask: 255.255.255.0, Default Gateway: 192.168.6.1. Status: DHCP request successful.

10. Cek konektivitas.

Last Status	Source	Destination
Successful	PC0	Squidward
Successful	PC1	Squidward
Successful	ChumbBucket	Plankton

Last Status	Source	Destination
Successful	PC0	ChumbBucket
Successful	ChumbBucket	PC1

Konfigurasi Routing OSPF

11. Konfigurasi.

- Vault:


```
Vault(config)#router ospf 10
Vault(config-router)#net 200.0.2.0 0.0.0.255 area 2
Vault(config-router)#net 20.0.2.0 0.0.0.3 area 0
```
- Krab:


```
Krab(config)#router ospf 10
Krab(config-router)#net 20.0.2.0 0.0.0.3 area 0
Krab(config-router)#net 20.0.8.0 0.0.0.3 area 1
Krab(config-router)#net 20.0.6.0 0.0.0.3 area 1
```
- Business:


```
Business(config)#router ospf 10
Business(config-router)#net 20.0.8.0 0.0.0.3 area 1
Business(config-router)#net 169.69.8.0 0.0.0.255 area 1
```
- House:


```
House(config)#router ospf 10
House(config-router)#net 20.0.6.0 0.0.0.3 area 1
House(config-router)#net 169.69.6.0 0.0.0.255 area 1
```

12. Cek konektivitas.

Last Status	Source	Destination
Successful	Recipe	KrustyKrab
Successful	Recipe	Pearl
Successful	KrustyKrab	Pearl
Successful	ChumbBucket	PC1
Failed	ChumbBucket	Recipe
Failed	ChumbBucket	KrustyKrab
Failed	ChumbBucket	Pearl

13. Propagasi.

```
Vault(config)#router eigrp 10
Vault(config-router)#redistribute ospf 10 metric 1 1 1 1 1
Vault(config)#router ospf 10
Vault(config-router)#red
Vault(config-router)#redistribute eigrp 10
```

14. Cek konektivitas.

Last Status	Source	Destination
Successful	ChumbBucket	Recipe
Successful	ChumbBucket	KrustyKrab
Successful	ChumbBucket	Pearl
Successful	PC1	Recipe
Successful	PC0	KrustyKrab
Successful	PC0	Pearl

Konfigurasi GRE Tunnel

15. Tunneling table.

Tunnel 2	IP Address	Subnet Mask	Source	Destination
Vault	220.0.2.1	255.255.255.252	S0/0/0	20.0.2.2
Krab	220.0.2.2	255.255.255.252	S0/0/0	20.0.2.1

16. Konfigurasi.

- Vault:


```
Vault(config)#int tunnel 2
Vault(config-if)#ip add 220.0.2.1 255.255.255.252
Vault(config-if)#tunnel source s0/0/0
Vault(config-if)#tunnel dest 20.0.2.2
```
- Krab:


```
Krab(config)#int tunnel 2
Krab(config-if)#ip add 220.0.2.2 255.255.255.252
Krab(config-if)#tunnel source s0/0/0
Krab(config-if)#tunnel dest 20.0.2.1
```

17. Kontribusi jaringan GRE Tunnel.

```
Vault(config)#router ospf 10
Vault(config-router)#net 220.0.2.0 0.0.0.3 area 0
Krab(config)#router ospf 10
Krab(config-router)#net 220.0.2.0 0.0.0.3 area 0
```

18. Tunneling table.

Tunnel 62	IP Address	Subnet Mask	Source	Destination
Vault	220.0.62.1	255.255.255.252	S0/0/1	10.0.6.1
Squidward	220.0.62.2	255.255.255.252	S0/1/1	10.0.2.1

19. Konfigurasi.

- Vault:


```
Vault(config)#int tunnel 62
Vault(config-if)#ip add 220.0.62.1 255.255.255.252
Vault(config-if)#tunnel source s0/0/1
Vault(config-if)#tunnel dest 10.0.6.1
```
- Squidward:


```
Squidward(config)#int tunnel 62
Squidward(config-if)#ip add 220.0.62.2 255.255.255.252
Squidward(config-if)#tunnel source s0/1/1
Squidward(config-if)#tunnel dest 10.0.2.1
```

20. Static routing.


```
Vault(config)#ip route 192.168.6.0 255.255.255.0 220.0.62.2
Squidward(config)#ip route 200.0.2.0 255.255.255.0 220.0.62.1
```

Access-List, TraceRoute, dan Analisa

21. Access-List.

```
Vault(config)#ip access stand deny1
Vault(config-std-nacl)#deny 10.0.2.0 0.0.0.3
Vault(config-std-nacl)#permit any
Vault(config-std-nacl)#int s0/0/1
Vault(config-if)#ip access deny1 in
```

22. Ping antara ChumbBucket dan Recipe.

Last Status	Source	Destination
Failed	ChumbBucket	Recipe

```
C:\>ping 200.0.2.2

Pinging 200.0.2.2 with 32 bytes of data:

Reply from 192.168.8.1: Destination host unreachable.
Reply from 192.168.8.1: Destination host unreachable.
Reply from 192.168.8.1: Destination host unreachable.
Request timed out.

Ping statistics for 200.0.2.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

23. Traceroute.

a. Vault – KrustyKrab:

```
Vault#traceroute 169.69.8.2
Type escape sequence to abort.
Tracing the route to 169.69.8.2

  1  20.0.2.2          16 msec    0 msec    1 msec
  2  20.0.8.1          2 msec     13 msec    1 msec
  3  169.69.8.2        11 msec    2 msec    1 msec
```

b. Vault – Pearl:

```
Vault#tracer 169.69.6.2
Type escape sequence to abort.
Tracing the route to 169.69.6.2

  1  20.0.2.2          0 msec     1 msec     1 msec
  2  20.0.6.1          1 msec     6 msec     1 msec
  3  169.69.6.2        11 msec    12 msec    10 msec
```

c. PC1 – Recipe:

```
C:\>tracert 200.0.2.2

Tracing route to 200.0.2.2 over a maximum of 30 hops:

  1  0 ms              0 ms              0 ms              192.168.6.1
  2  *                *                *                Request timed out.
  3  *                *                *                Request timed out.
  4  *                *                *                Request timed out.
  5  *                *                *                Request timed out.
```


d. PC0 – KrustyKrab:

```
C:\>tracert 169.69.8.2

Tracing route to 169.69.8.2 over a maximum of 30 hops:

  1  0 ms      0 ms      0 ms      192.168.6.1
  2  0 ms      *          0 ms      192.168.6.1
  3  *          0 ms      *          Request timed out.
  4  0 ms      *          0 ms      192.168.6.1
  5  *          0 ms      *          Request timed out.
```

e. PC0 – Pearl:

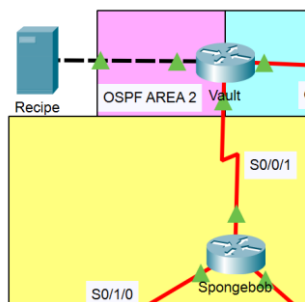
```
C:\>tracert 169.69.6.2

Tracing route to 169.69.6.2 over a maximum of 30 hops:

  1  0 ms      0 ms      0 ms      192.168.6.1
  2  1 ms      *          0 ms      192.168.6.1
  3  *          1 ms      *          Request timed out.
  4  0 ms      *          0 ms      192.168.6.1
  5  *          0 ms      *          Request timed out.
```

24. Analisa.

- Ping antara ChumbBucket dan Recipe gagal dengan status *host unreachable*. Hal ini terjadi karena tidak ada rute yang dapat digunakan untuk mengirimkan paket diantara kedua perangkat tersebut. Pada soal nomor 21, telah diterapkan *access list* pada *router* Vault yang akan menolak semua paket dari jaringan 10.0.2.0/30 (*interface* S0/0/1).



Karena ChumbBucket termasuk dalam jaringan yang ditolak tersebut, maka ChumbBucket tidak dapat melakukan ping dengan Recipe.

- Traceroute dari Vault ke KrustyKrab dan Pearl berhasil. Perangkat-perangkat tersebut terhubung dengan multiarea OSPF. Tidak ada *access list* yang diterapkan, sehingga rute dapat ditemukan. Rute dari Vault ke KrustyKrab adalah sebagai berikut:

Vault – Krab -Business – KrustyKrab.

Rute dari Vault ke Pearl adalah sebagai berikut:

Vault – Krab – House – Pearl.

- Traceroute dari PC1 ke Recipe tidak berhasil menemukan rute sampai ke tujuan akhir. Paket berhenti di *router* Squidward. Namun jika dilihat dengan menggunakan mode simulasi, paket berhasil sampai ke *router* Vault, namun di kembalikan lagi. Antara *router* Vault dan Squidward telah diterapkan GRE *tunnel*,

sehingga paket dapat melewati *tunnel* tersebut (dapat sampai ke Vault). Namun karena terdapat *access list* di Vault, maka paket tetap tidak dapat sampai ke Recipe. *Routing* yang digunakan adalah *static routing*, sehingga jika satu rute tersebut tidak dapat digunakan, otomatis status dalam traceroute menunjukkan *request timed out*.

- Traceroute dari PC0 ke KrustyKrab dan Pearl gagal. Alasannya hampir sama seperti traceroute antara PC1 ke Recipe. Namun *output* yang ditunjukkan traceroute keduanya berbeda. Jika dilakukan traceroute ke OSPF area 1, maka setelah sampai ke Squidward, status akan menunjukkan *request timed out*. Sedangkan jika traceroute ke OSPF area 2, terjadi pergantian status, yaitu bergantian antara sampai ke Squidward dan *request timed out*. Hal ini karena selain terdapat GRE *tunnel* antara Squidward dan Vault, *routing* yang diterapkan adalah OSPF. Sehingga jika suatu rute gagal, akan dicari rute lainnya. Karena itulah paket berkali-kali sampai di Squidward lalu kembali menunjukkan *request timed out* (paket tidak akan sampai ke tujuan karena ada *access list* di router Vault).