OSPF OVER L2TP

Tujuan

Adapan tujuan dari presentasi ini adalah

- Memahami konsep dasar cara kerja OSPF di Mikrotik
- Memahami Konfigurasi OSPF dengan L2TP

Tentang Saya

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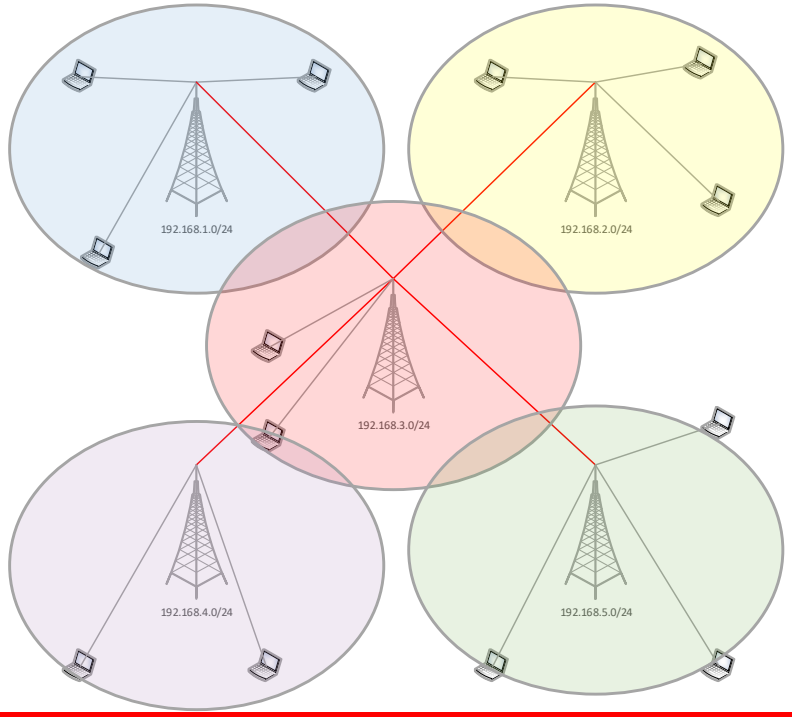
Route

- Routing adalah proses untuk meneruskan paket data dari satu jaringan ke jaringan yang lain di segment yang berbeda.



Route – *cont.*

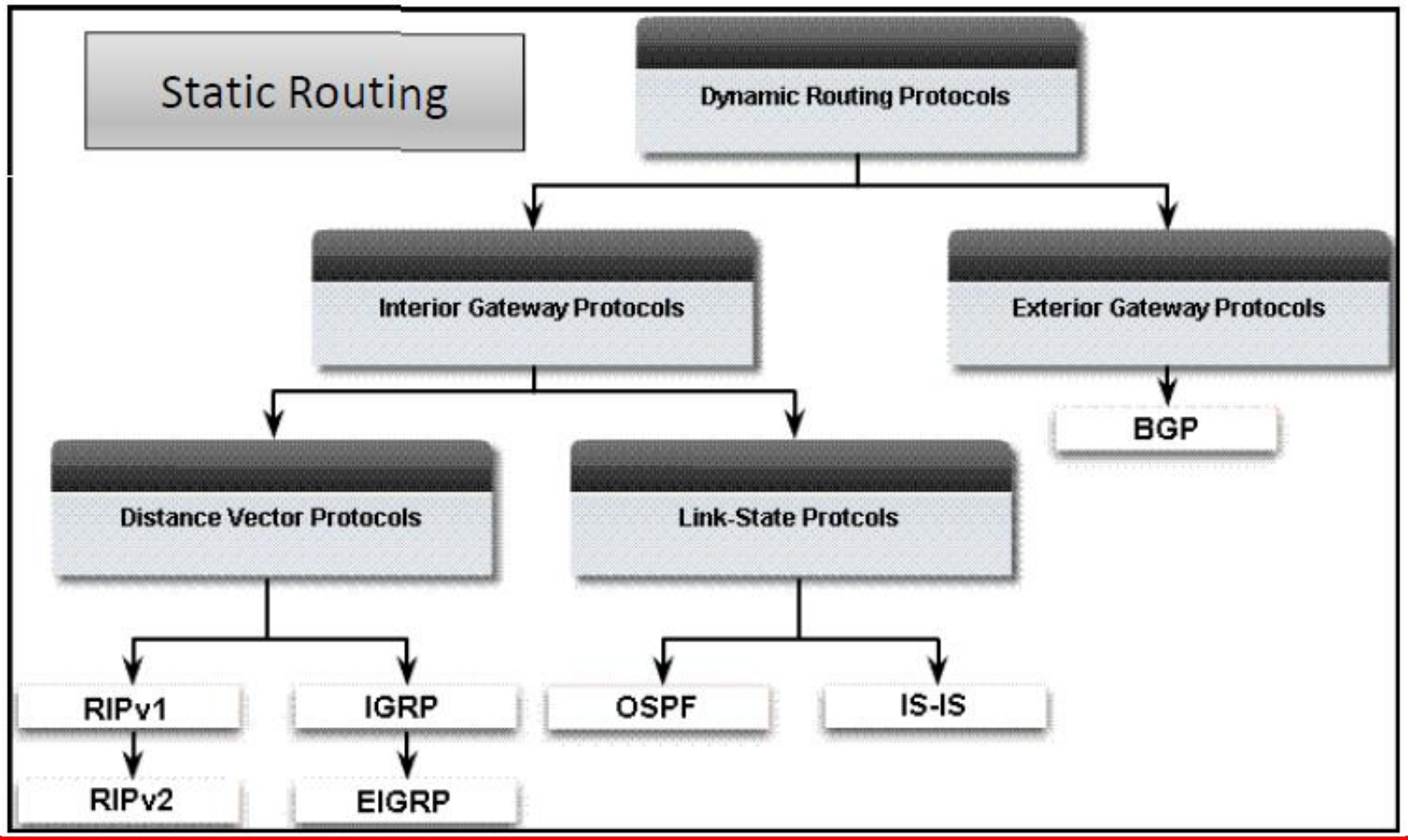
- Routing merupakan fungsi standar dari mikrotik.

```
[admin@MikroTik] > /system package print
Flags: X - disabled
 #    NAME                                 VERSION                              SCH
 1    system                               6.42.5
 3    wireless                             6.42.5
 4    hotspot                              6.42.5
 5    dhcp                                 6.42.5
 6    mpls                                 6.42.5
 7    routing                              6.42.5
 8    ppp                                  6.42.5
 9    security                             6.42.5
10    advanced-tools                       6.42.5
[admin@MikroTik] >
```

Route – *cont.*

- Keuntungan routing :
  - Pengawasan jaringan lebih mudah.
  - Lebih aman

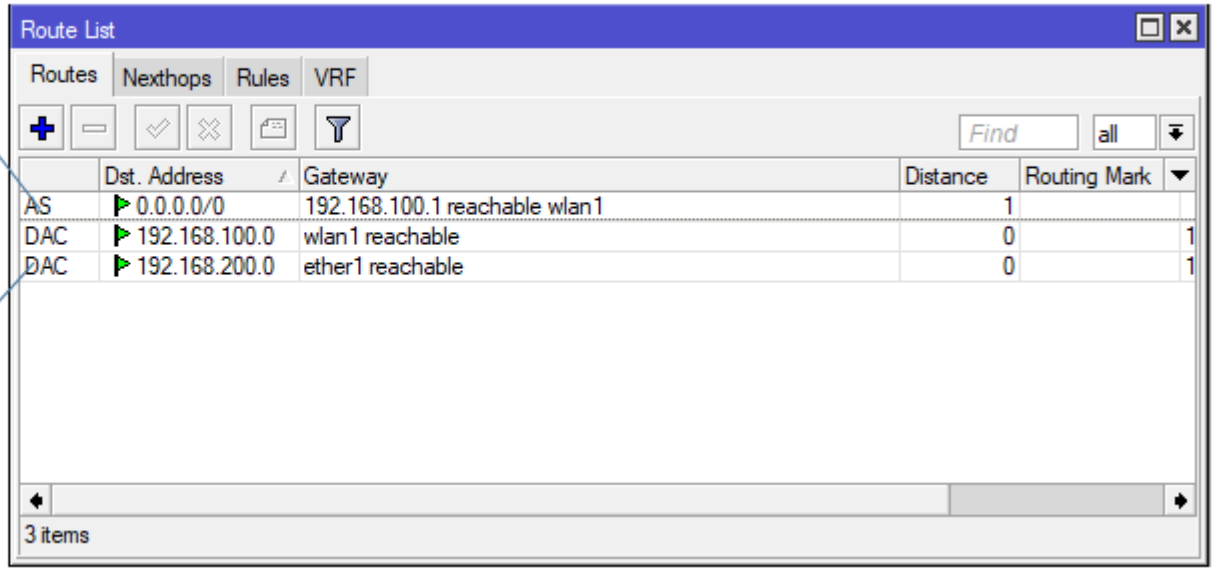
Route –*Cont.*



Route –*Cont.*

[A]ctive
[S]tatic

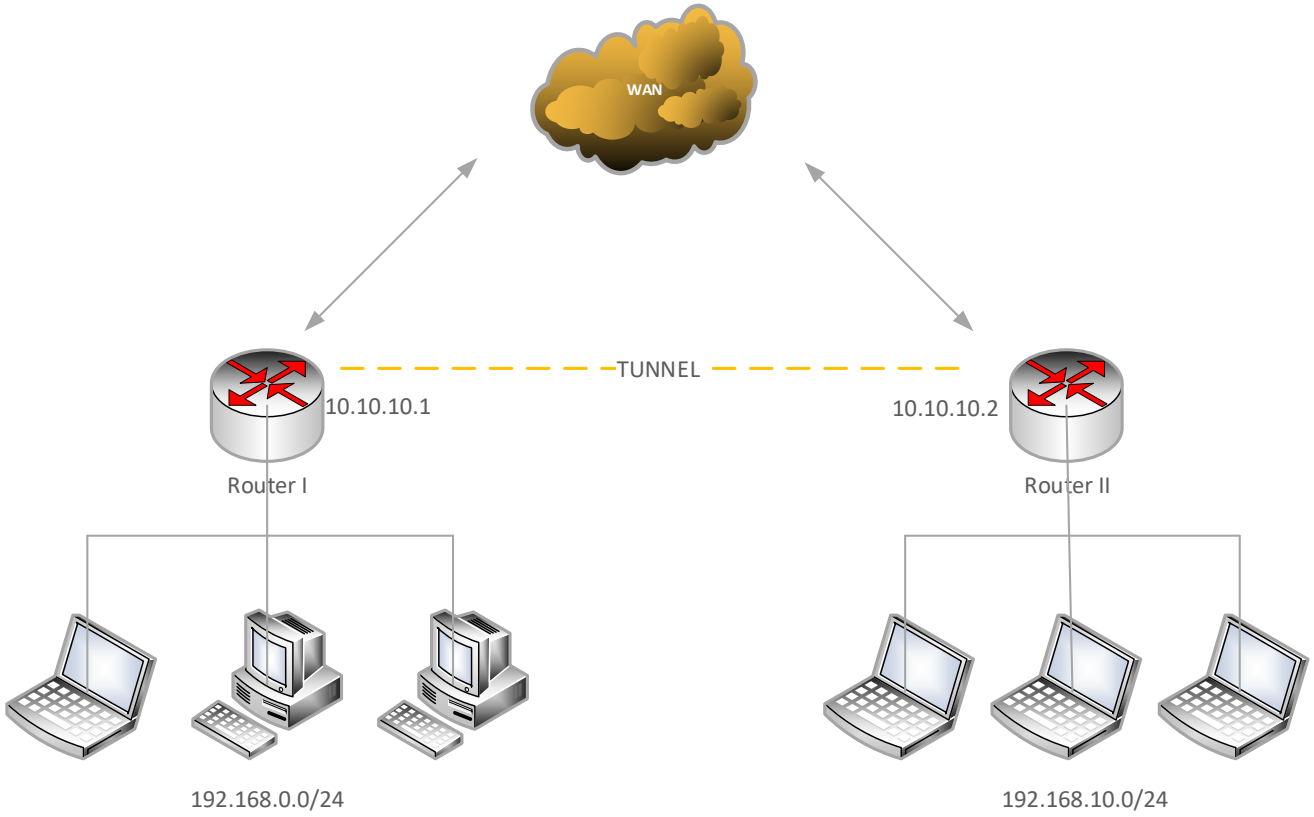
[D]ynamic
[A]ctive
[C]onnected



Tunnel

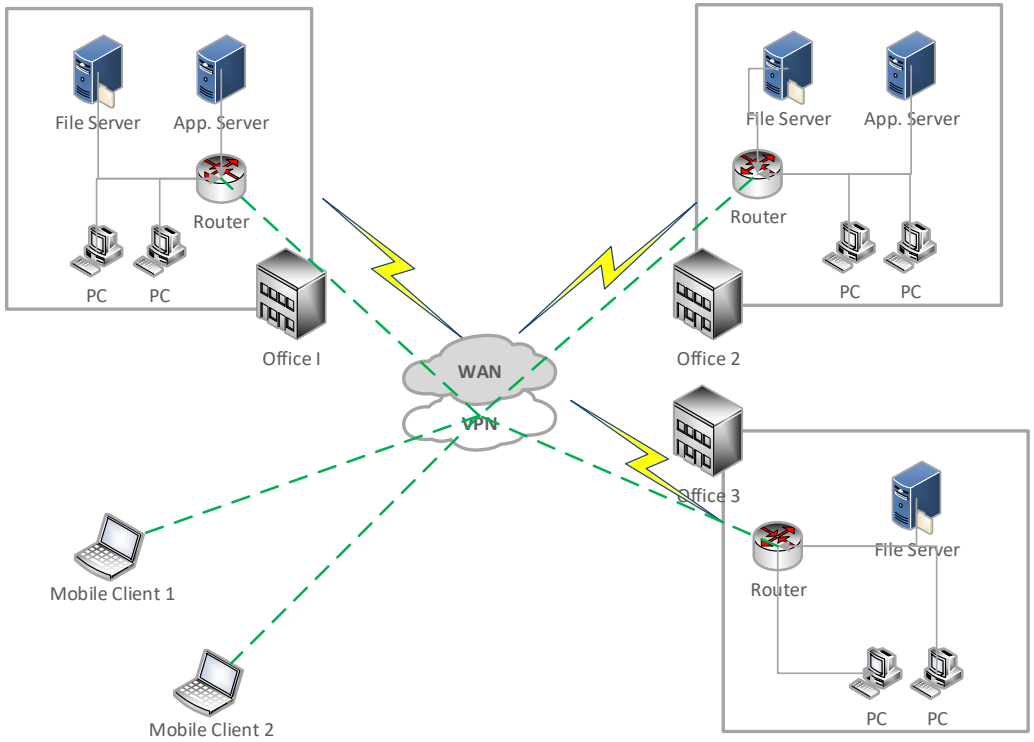
- Merupakan sebuah motede enkapsulasi paket data dalam jaringan.
- Paket Data mengalami modifikasi sebelum dikirim, yaitu penambahan header.
- Ketika data sudah melewati tunnel dan sampai di tujuan tunnel, maka header dari paket data akan dikembalikan seperti semula (header tunnel dilepas).

Tunnel – *cont.*



VPN

- Sebuah cara aman untuk mengakses local area network dengan menggunakan internet atau jaringan publik



Tunnel And VPN

Tunnel	VPN
• IPIP	• PPTP
• PPPoE	• L2TP
• EoIP	• OpenVPN
• VLAN	• IPSec
• Gre Tunnel	• SSTP

L2TP

- Layer 2 Tunneling Protocol
- Menggunakan Protokol UDP(Port 1701),
- Lebih aman di bandingkan PPTP

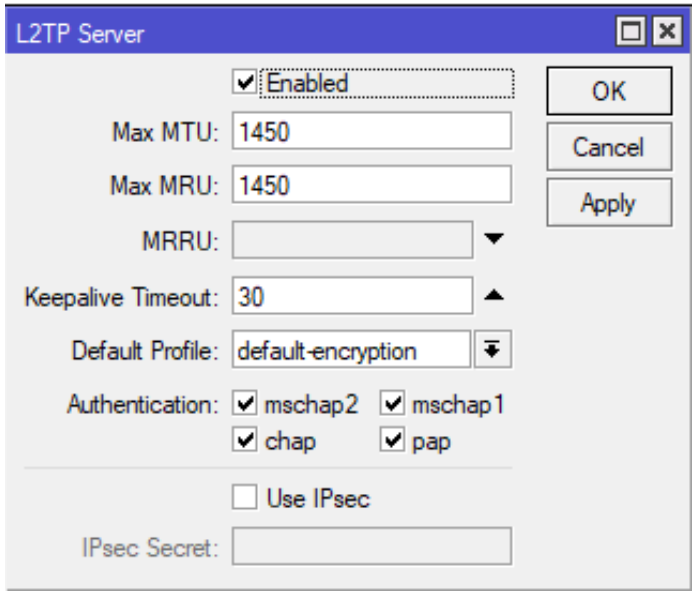
L2TP – *cont.*

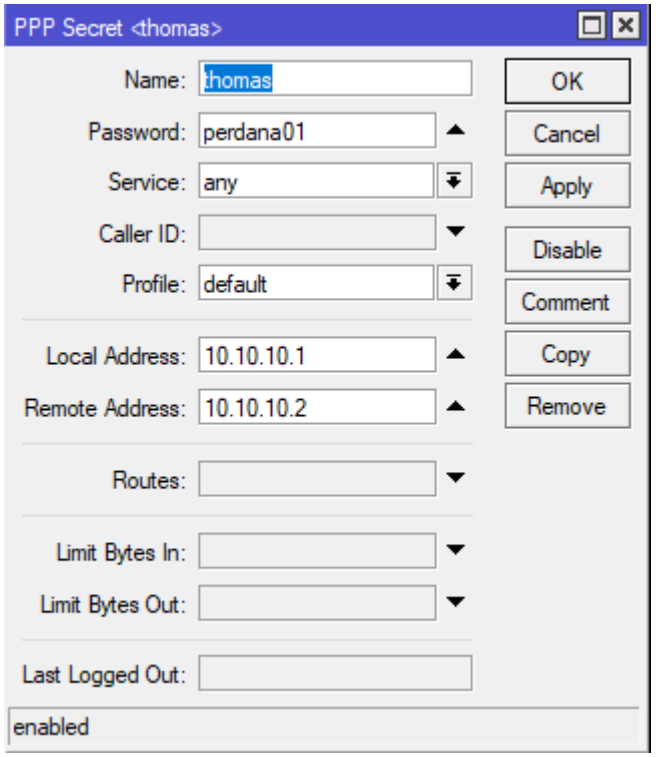
- Membuat Server L2TP
  - Basis Perintah

```
[admin@MikroTik] > interface l2tp-server server set enabled=yes
[admin@MikroTik] > /ppp secret add name=thomas password=perdana01 local-address=10
.10.10.1 remote-address=10.10.10.2
```

L2TP – *cont.*

- Winbox





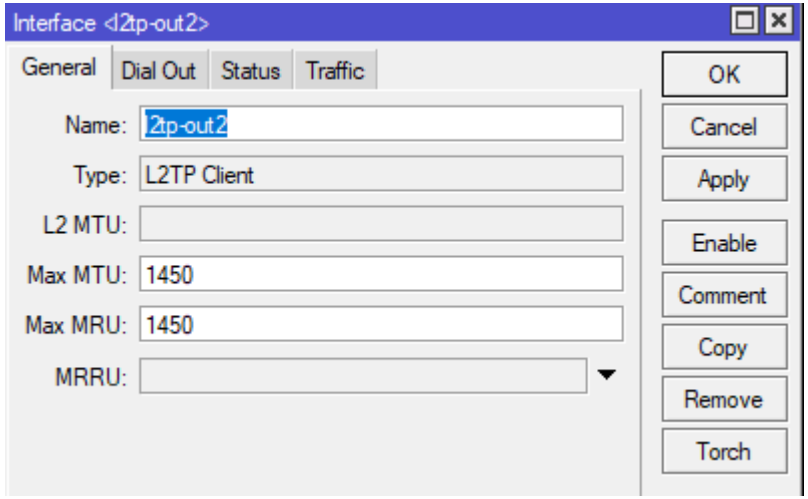
L2TP – *cont.*

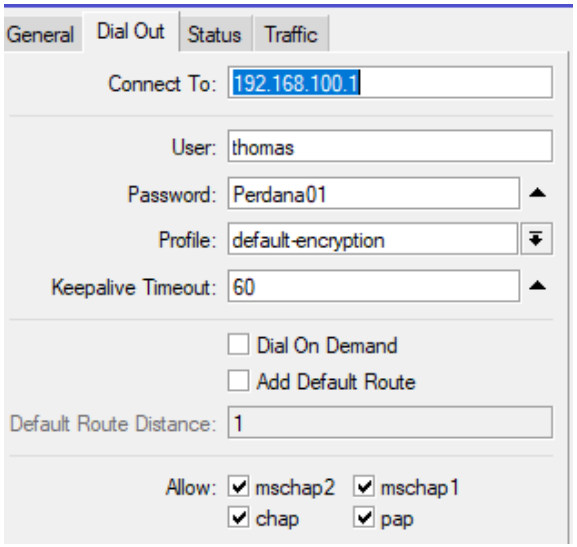
- L2TP Client
  - Basis Perintah

```
[admin@MikroTik] > /interface l2tp-client add user=thomas password=Perdana01 connect-to=192.168.100
.1
[admin@MikroTik] > /interface l2tp-client print
Flags: X - disabled, R - running
 0 X  name="l2tp-out2" max-mtu=1450 max-mru=1450 mrru=disabled connect-to=192.168.100.1
      user="thomas" password="Perdana01" profile=default-encryption keepalive-timeout=60
      add-default-route=no dial-on-demand=no allow=pap,chap,mschap1,mschap2
```

L2TP – *cont.*

- Winbox



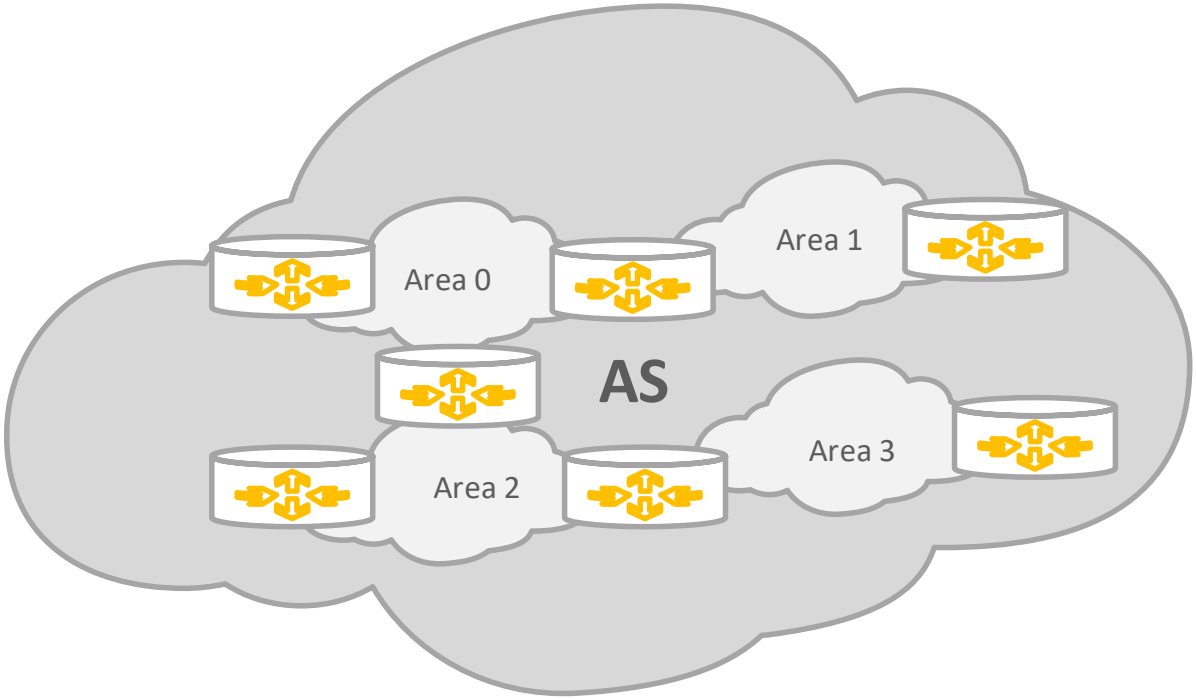


OSPF

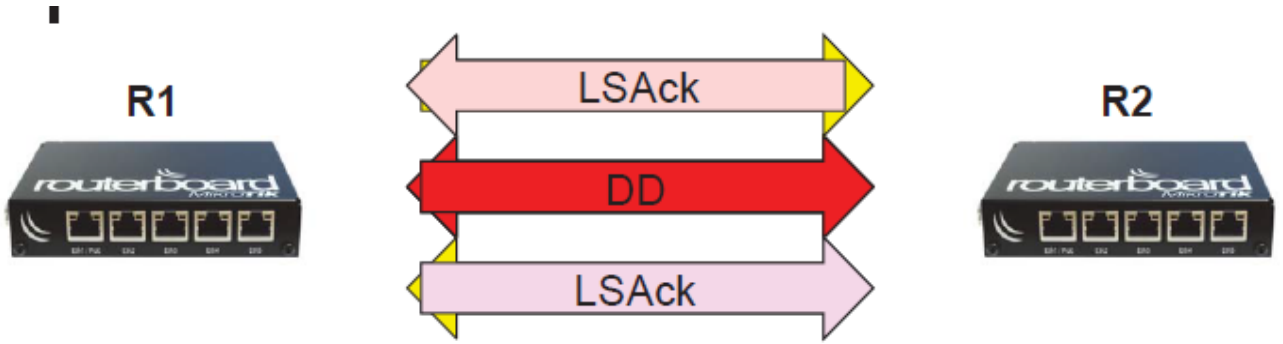
- Open Shortest Path First.
- Merupakan protocol routing otomatis yang memiliki kemampuan untuk menjaga, memelihara dan mendistribusikan informasi routing antar jaringan.
- Termasuk didalam IGP(Interior Gateway Protocol)
- Menggunakan Protokol 89.

OSPF – *cont.*

- Kenapa menggunakan OSPF?



OSPF – Discovery Process

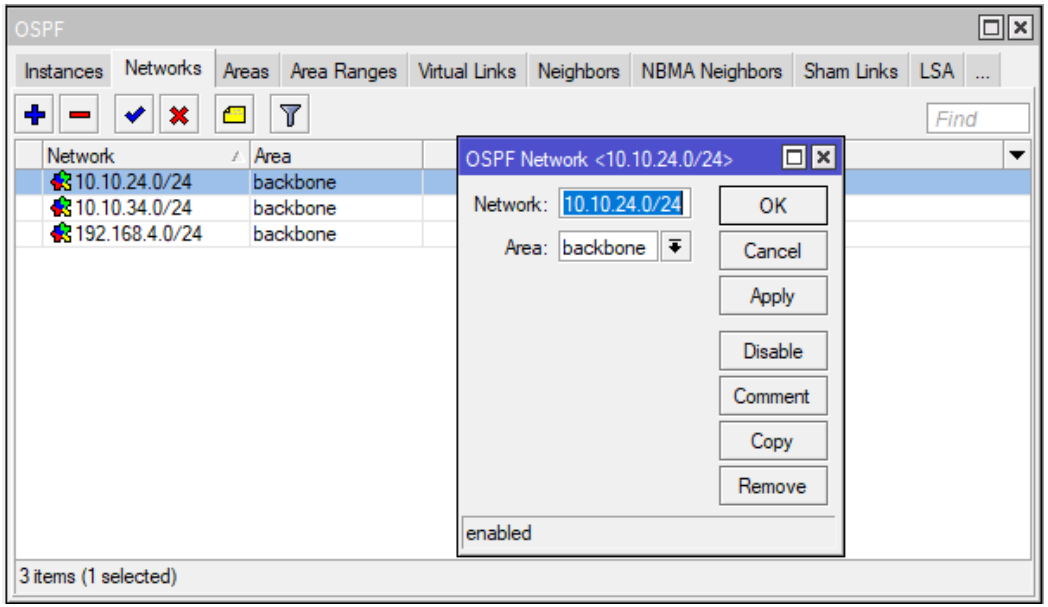


	Neighbor	State
1		**DOWN**
3	**R2**	**2-WAY**
4	**R2**	**ExStart**
6	**R2**	**ExChange**
8	**R2**	**Loading**
10	**R2**	**Full**

	Neighbor	State
1		**DOWN**
2	**R1**	**INIT**
5	**R1**	**ExStart**
7	**R1**	**ExChange**
9	**R1**	**Loading**
10	**R1**	**Full**

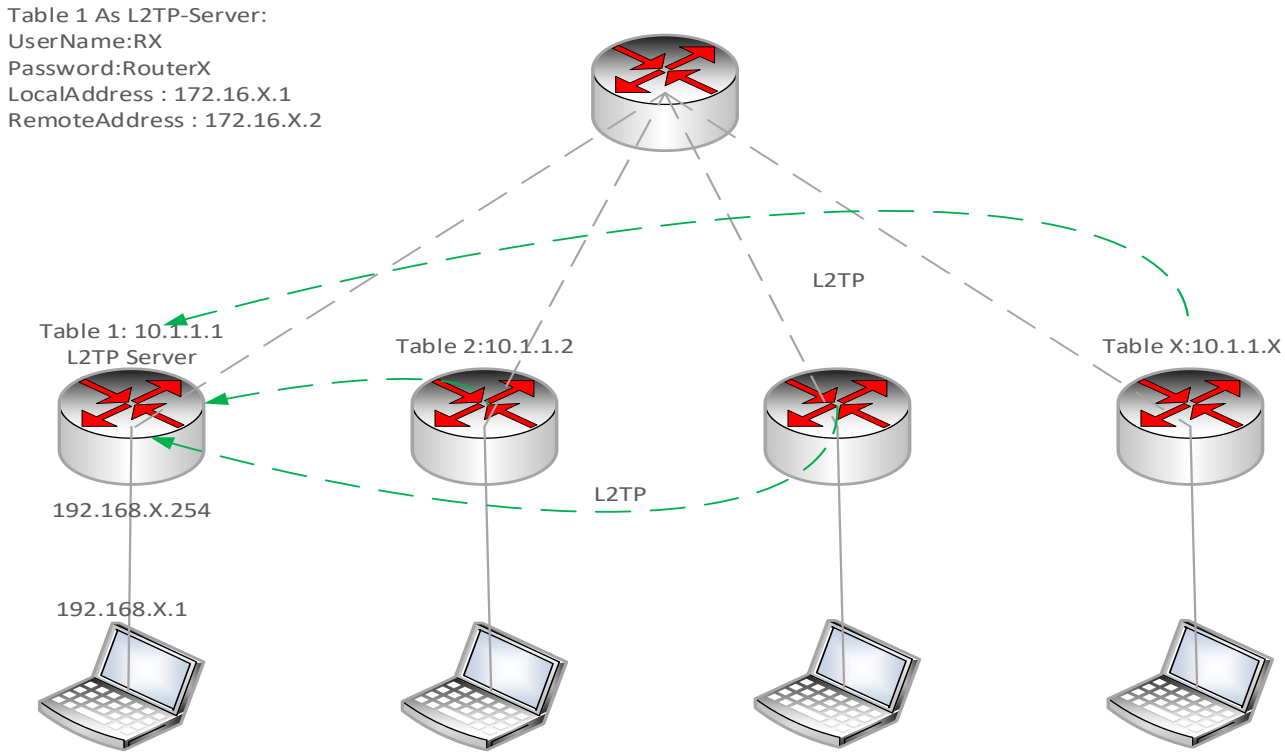
OSPF - *cont.*

```
[admin@Branch] > /routing ospf network add network=10.10.24.0/24 area=backbone
[admin@Branch] > /routing ospf network print
Flags: X - disabled, I - invalid
 #    NETWORK            AREA
 0    10.10.34.0/24      backbone
 1    192.168.4.0/24     backbone
 2    10.10.24.0/24      backbone
```



OSPF Via L2TP[Example]

- Contoh.



OSPF Via L2TP[Example] – *cont.*

- R1 as L2TP-Server

```
[admin@R1] > /routing ospf network add network=172.16.2.0/24 area=backbone
[admin@R1] > /routing ospf network add network=172.16.3.0/24 area=backbone
[admin@R1] > /routing ospf network add network=172.16.4.0/24 area=backbone
[admin@R1] > /routing ospf network add network=192.168.1.0/24 area=backbone
[admin@R1] > /routing ospf interface print
Flags: X - disabled, I - inactive, D - dynamic, P - passive
 #    INTERFACE    COST PRIORITY NETWORK-TYPE   AUTHENTICATION AUTHENTICATION-KEY
 0 D  <l2tp-R3>      10        1 point-to-point none
 1 D  ether1         10        1 broadcast      none
```

- R3

```
[admin@R3] > /routing ospf network add network=172.16.3.0/24 area=backbone
[admin@R3] > /routing ospf network add network=192.168.3.0/24 area=backbone
[admin@R3] > /routing ospf interface print
Flags: X - disabled, I - inactive, D - dynamic, P - passive
 #    INTERFACE    COST PRIORITY NETWORK-TYPE   AUTHENTICATION AUTHENTICATION-KEY
 0 D  ether1         10        1 broadcast      none
 1 D  l2tp-out2      10        1 point-to-point none
```

OSPF Via L2TP[Example] – *cont.*

```
[admin@R3] > ping 192.168.1.100
  SEQ HOST                                     SIZE TTL TIME  STATUS
    0 192.168.1.100                              56  63 17ms
    1 192.168.1.100                              56  63 859ms
    2 192.168.1.100                              56  63 100ms
    3 192.168.1.100                              56  63 40ms
    sent=4 received=4 packet-loss=0% min-rtt=17ms avg-rtt=254ms max-rtt=859ms
```

```
C:\Users\holys>ping 192.168.1.100

Pinging 192.168.1.100 with 32 bytes of data:
Reply from 192.168.1.100: bytes=32 time=80ms TTL=62
Reply from 192.168.1.100: bytes=32 time=34ms TTL=62
Reply from 192.168.1.100: bytes=32 time=142ms TTL=62
Reply from 192.168.1.100: bytes=32 time=29ms TTL=62

Ping statistics for 192.168.1.100:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 29ms, Maximum = 142ms, Average = 71ms
```

OSPF Via L2TP[Example] – *cont.*

- IP Route Table
  - R1

```
[admin@R1] > /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  0.0.0.0/0                          10.1.1.254                1
 1 ADC  10.1.1.0/24        10.1.1.1        wlan1                     0
 2 ADo  172.16.3.1/32                      172.16.3.2              110
 3 ADC  172.16.3.2/32      172.16.3.1      <l2tp-R3>                 0
 4 ADC  192.168.1.0/24     192.168.1.254   ether1                    0
 5 ADo  192.168.3.0/24                     172.16.3.2              110
```

  - R3

```
[admin@R3] > /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  0.0.0.0/0                          10.1.1.254                1
 1 ADC  10.1.1.0/24        10.1.1.3        wlan1                     0
 2 ADC  172.16.3.1/32      172.16.3.2      l2tp-out2                 0
 3 ADo  172.16.3.2/32                      172.16.3.1              110
 4 ADo  192.168.1.0/24                     172.16.3.1              110
 5 ADC  192.168.3.0/24     192.168.3.254   ether1                    0
```

Summary

- Untuk jaringan yang besar lebih bagus menggunakan dynamic route.
- Penggunaan L2TP lebih bagus dikarenakan L2TP lebih aman.
- OSPF dapat di jalankan melalui L2TP

THANK YOU