JUNIPER

01 – SIMULATION/LAB JUNOS FUNDAMENTAL

- ✓ Konfigurasi hostname, root password, services ssh & telnet, user login (super user & operator), dan IP Address.
- ✓ Uji Konektivitas

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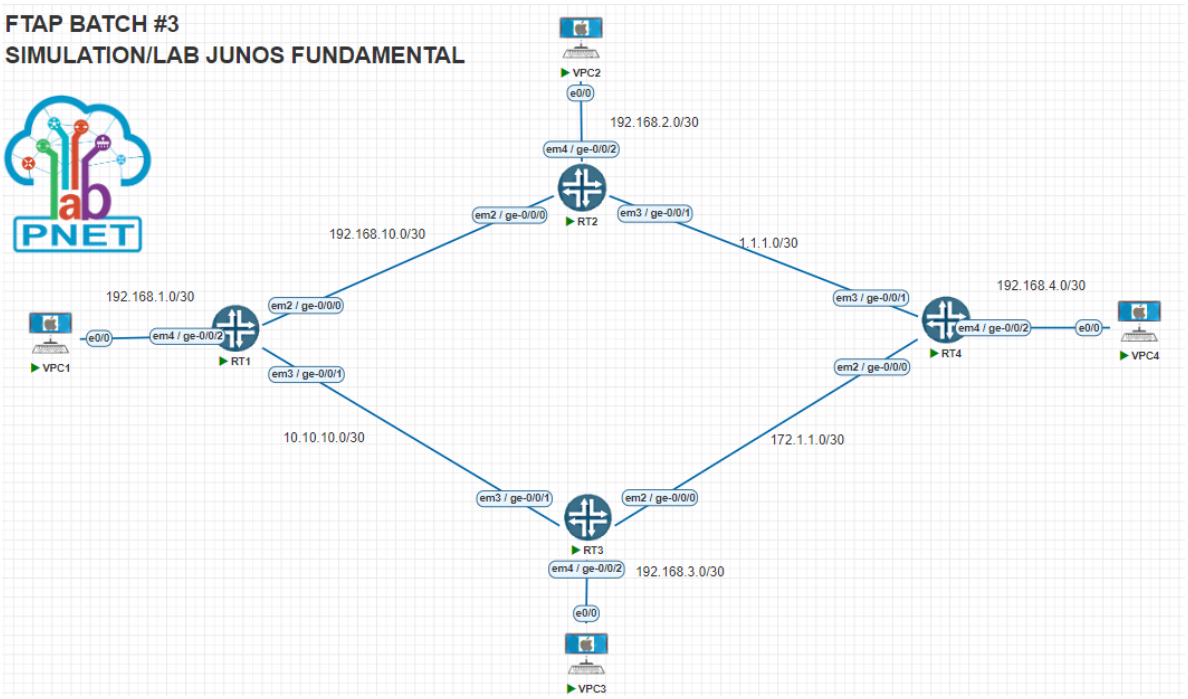
1. Topology



2. Task

- Konfigurasi hostname, root password, , services ssh & telnet, user login (super user & operator), dan IP Address dimasing-masing port interfaces di RT1, RT2, RT3, dan RT4

#Configure Hostname

set system host-name (name)

Perintah yang digunakan untuk memberikan identitas pada beberapa sistem atau perangkat.

```
host-name RT1;
root-authentication {
    encrypted-password "$1$rPKcF8YJ$e/d.iquGb9OxeDCf8qZGm/"; ## SECRET-DATA
}
```

#Configure Password

```
set system root-authentication authentication plain-text-password
```

Perintah ini digunakan untuk mengatur kata sandi untuk akun root saat melakukan login.

```
host-name RT1;
root-authentication {
    encrypted-password "$1$rPKcF8YJ$e/d.iquGb9OxeDCf8qZGm/"; ## SECRET-DATA
}
```

#Configure SSH dan Telnet

```
set system services ssh
set system services telnet
```

Perintah ini digunakan untuk mengonfigurasi layanan SSH (Secure Shell) dan Telnet pada sistem untuk mengakses perangkat jarak jauh.

```
services {
    ssh;
    telnet;
```

#Configure User Login (Super Admin dan Operator)

```
set system login user (name user) class super-user
set system login user (name user) authentication plain-text-password

set system login user (name user) class operator
set system login user (name user) authentication plain-text-password
```

Perintah ini digunakan untuk menetapkan user yang ditentukan ke kelas super-user. Kelas super-user memiliki hak akses penuh ke sistem, termasuk mengubah konfigurasi sedangkan kelas operator memiliki hak akses yang lebih terbatas (tidak bisa melakukan konfigurasi) dari pada super-user, tetapi masih memiliki kemampuan untuk menjalankan beberapa perintah. Dan Terdapat perintah untuk mengatur kata sandi saat melakukan login.

```
login {
    user ftap.annisa {
        uid 2000;
        class super-user;
        authentication {
            encrypted-password "$1$S1r6ZHeO$a42IpszyW2lWMBeHqrypJ."; ## SECRET-DATA
        }
    }
    user mentor.dito {
        uid 2001;
        class operator;
        authentication {
            encrypted-password "$1$MAkr.D48$uCt65B9GpxmPgEoTW6aEn."; ## SECRET-DATA
        }
    }
}
```

#Configure IP Address

```
set interfaces ge-0/0/0 unit 0 family inet address 192.168.10.x/30
set interfaces ge-0/0/1 unit 0 family inet address 10.10.10.x/30
set interfaces ge-0/0/2 unit 0 family inet address 192.168.1.x/30
```

Perintah ini digunakan untuk mengonfigurasi alamat IP dalam sebuah perangkat jaringan.

```
interfaces {
    ge-0/0/0 {
        unit 0 {
            family inet {
                address 192.168.10.1/30;
            }
        }
    }
    ge-0/0/1 {
        unit 0 {
            family inet {
                address 10.10.10.1/30;
            }
        }
    }
    ge-0/0/2 {
        unit 0 {
            family inet {
                address 192.168.1.1/30;
            }
        }
    }
}
```

3. Pengujian Konektivitas

Pengujian konektivitas antar router dilakukan untuk memastikan bahwa router dapat saling berkomunikasi.

- R1 to R2

```
root@RT1> ping 192.168.10.2
PING 192.168.10.2 (192.168.10.2): 56 data bytes
64 bytes from 192.168.10.2: icmp_seq=0 ttl=64 time=4.777 ms
64 bytes from 192.168.10.2: icmp_seq=1 ttl=64 time=38.476 ms
64 bytes from 192.168.10.2: icmp_seq=2 ttl=64 time=2.354 ms
64 bytes from 192.168.10.2: icmp_seq=3 ttl=64 time=1.782 ms
64 bytes from 192.168.10.2: icmp_seq=4 ttl=64 time=1.956 ms
^C
--- 192.168.10.2 ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max/stddev = 1.782/9.869/38.476/14.344 ms
```

- R1 to R3

```
root@RT1> ping 10.10.10.2
PING 10.10.10.2 (10.10.10.2): 56 data bytes
64 bytes from 10.10.10.2: icmp_seq=0 ttl=64 time=4.415 ms
64 bytes from 10.10.10.2: icmp_seq=1 ttl=64 time=69.166 ms
64 bytes from 10.10.10.2: icmp_seq=2 ttl=64 time=1.800 ms
64 bytes from 10.10.10.2: icmp_seq=3 ttl=64 time=2.372 ms
64 bytes from 10.10.10.2: icmp_seq=4 ttl=64 time=2.677 ms
^C
--- 10.10.10.2 ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max/stddev = 1.800/16.086/69.166/26.554 ms
```

- R2 to R1

```
root@RT2> ping 192.168.10.1
PING 192.168.10.1 (192.168.10.1): 56 data bytes
64 bytes from 192.168.10.1: icmp_seq=0 ttl=64 time=2.674 ms
64 bytes from 192.168.10.1: icmp_seq=1 ttl=64 time=3.206 ms
64 bytes from 192.168.10.1: icmp_seq=2 ttl=64 time=1.561 ms
64 bytes from 192.168.10.1: icmp_seq=3 ttl=64 time=3.847 ms
64 bytes from 192.168.10.1: icmp_seq=4 ttl=64 time=2.341 ms
^C
--- 192.168.10.1 ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max/stddev = 1.561/2.726/3.847/0.774 ms
```

- R2 to R4

```
root@RT2> ping 1.1.1.2
PING 1.1.1.2 (1.1.1.2): 56 data bytes
64 bytes from 1.1.1.2: icmp_seq=0 ttl=64 time=3.902 ms
64 bytes from 1.1.1.2: icmp_seq=1 ttl=64 time=1.959 ms
64 bytes from 1.1.1.2: icmp_seq=2 ttl=64 time=2.664 ms
64 bytes from 1.1.1.2: icmp_seq=3 ttl=64 time=2.534 ms
64 bytes from 1.1.1.2: icmp_seq=4 ttl=64 time=2.180 ms
^C
--- 1.1.1.2 ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max/stddev = 1.959/2.648/3.902/0.675 ms
```

- R3 to R1

```
root@RT3> ping 10.10.10.1
PING 10.10.10.1 (10.10.10.1): 56 data bytes
64 bytes from 10.10.10.1: icmp_seq=0 ttl=64 time=7.552 ms
64 bytes from 10.10.10.1: icmp_seq=1 ttl=64 time=3.357 ms
64 bytes from 10.10.10.1: icmp_seq=2 ttl=64 time=4.778 ms
64 bytes from 10.10.10.1: icmp_seq=3 ttl=64 time=3.491 ms
64 bytes from 10.10.10.1: icmp_seq=4 ttl=64 time=5.051 ms
^C
--- 10.10.10.1 ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max/stddev = 3.357/4.846/7.552/1.511 ms
```

- R3 to R4

```
root@RT3> ping 172.1.1.2
PING 172.1.1.2 (172.1.1.2): 56 data bytes
64 bytes from 172.1.1.2: icmp_seq=0 ttl=64 time=9.825 ms
64 bytes from 172.1.1.2: icmp_seq=1 ttl=64 time=5.753 ms
64 bytes from 172.1.1.2: icmp_seq=2 ttl=64 time=3.777 ms
64 bytes from 172.1.1.2: icmp_seq=3 ttl=64 time=5.163 ms
64 bytes from 172.1.1.2: icmp_seq=4 ttl=64 time=3.734 ms
^C
--- 172.1.1.2 ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max/stddev = 3.734/5.650/9.825/2.230 ms
```

- R4 to R2

```
root@RT4> ping 1.1.1.1
PING 1.1.1.1 (1.1.1.1): 56 data bytes
64 bytes from 1.1.1.1: icmp_seq=0 ttl=64 time=98.526 ms
64 bytes from 1.1.1.1: icmp_seq=1 ttl=64 time=12.627 ms
64 bytes from 1.1.1.1: icmp_seq=2 ttl=64 time=4.141 ms
64 bytes from 1.1.1.1: icmp_seq=3 ttl=64 time=6.214 ms
64 bytes from 1.1.1.1: icmp_seq=4 ttl=64 time=4.975 ms
^C
--- 1.1.1.1 ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max/stddev = 4.141/25.297/98.526/36.736 ms
```

- R4 to R3

```
root@RT4> ping 172.1.1.1
PING 172.1.1.1 (172.1.1.1): 56 data bytes
64 bytes from 172.1.1.1: icmp_seq=0 ttl=64 time=5.424 ms
64 bytes from 172.1.1.1: icmp_seq=1 ttl=64 time=8.406 ms
64 bytes from 172.1.1.1: icmp_seq=2 ttl=64 time=4.404 ms
64 bytes from 172.1.1.1: icmp_seq=3 ttl=64 time=5.598 ms
64 bytes from 172.1.1.1: icmp_seq=4 ttl=64 time=4.868 ms
^C
--- 172.1.1.1 ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max/stddev = 4.404/5.740/8.406/1.398 ms
```

4. Pengujian Akses Remote SSH & Telnet

Pengujian SSH dan Telnet dilakukan untuk memastikan apakah dapat mengakses router secara remote atau jarak jauh dari perangkat VPC. Pada pengujian ini, dilakukan dengan menggunakan 2 user:

1. Super-user memiliki hak akses penuh ke sistem, termasuk mengubah konfigurasi.
2. Operator memiliki hak akses yang lebih terbatas (tidak bisa melakukan konfigurasi), tetapi masih memiliki kemampuan untuk menjalankan beberapa perintah.

- **VPC1**

SSH

```
VPC1>ssh -l ftap.annisa 192.168.1.1
Password:
--- JUNOS 14.1R4.8 built 2015-01-28 03:38:12 UTC
ftap.annisa@RT1> configure
Entering configuration mode
The configuration has been changed but not committed

[edit]
ftap.annisa@RT1#
```

```
VPC1>ssh -l mentor.dito 192.168.1.1
Password:
--- JUNOS 14.1R4.8 built 2015-01-28 03:38:12 UTC
mentor.dito@RT1> configure
                 ^
unknown command.
```

Telnet

```
VPC1>telnet 192.168.1.1
Trying 192.168.1.1 ... Open

RT1 (ttyp0)

login: ftap.annisa
Password:

--- JUNOS 14.1R4.8 built 2015-01-28 03:38:12 UTC
ftap.annisa@RT1>
```

```
VPC1>telnet 192.168.1.1
Trying 192.168.1.1 ... Open

RT1 (ttyp0)

login: mentor.dito
Password:

--- JUNOS 14.1R4.8 built 2015-01-28 03:38:12 UTC
mentor.dito@RT1>
```

- **VPC2**

  SSH

```
VPC2>ssh -l ftap.annisa 192.168.2.1
Password:
--- JUNOS 14.1R4.8 built 2015-01-28 03:38:12 UTC
ftap.annisa@RT2> configure
Entering configuration mode

[edit]
ftap.annisa@RT2#
```

```
VPC2>ssh -l mentor.dito 192.168.2.1
Password:
--- JUNOS 14.1R4.8 built 2015-01-28 03:38:12 UTC
mentor.dito@RT2>

mentor.dito@RT2> configure
                 ^
unknown command.

mentor.dito@RT2>
```

Telnet

```
VPC2>telnet 192.168.2.1
Trying 192.168.2.1 ... Open

RT2 (ttyp0)

login: ftap.annisa
Password:

--- JUNOS 14.1R4.8 built 2015-01-28 03:38:12 UTC
ftap.annisa@RT2>
```

```
VPC2>telnet 192.168.2.1
Trying 192.168.2.1 ... Open

RT2 (ttyp0)

login: mentor.dito
Password:

--- JUNOS 14.1R4.8 built 2015-01-28 03:38:12 UTC
mentor.dito@RT2>
```

- **VPC3**

SSH

```
VPC3#ssh -l ftap.annisa 192.168.3.1
Password:
--- JUNOS 14.1R4.8 built 2015-01-28 03:38:12 UTC
ftap.annisa@RT3> configure
Entering configuration mode

[edit]
ftap.annisa@RT3#
```

```
VPC3#ssh -l mentor.dito 192.168.3.1
Password:
--- JUNOS 14.1R4.8 built 2015-01-28 03:38:12 UTC
mentor.dito@RT3> configure
                 ^
unknown command.
```

Telnet

```
VPC3#telnet 192.168.3.1
Trying 192.168.3.1 ... Open

RT3 (ttyp0)

login: ftap.annisa
Password:

--- JUNOS 14.1R4.8 built 2015-01-28 03:38:12 UTC
ftap.annisa@RT3>
```

```
VPC3#telnet 192.168.3.1
Trying 192.168.3.1 ... Open

RT3 (ttyp0)

login: mentor.dito
Password:

--- JUNOS 14.1R4.8 built 2015-01-28 03:38:12 UTC
mentor.dito@RT3>

mentor.dito@RT3>
```

- **VPC4**

  SSH

```
VPC4>ssh -l ftap.annisa 192.168.4.1
Password:
--- JUNOS 14.1R4.8 built 2015-01-28 03:38:12 UTC
ftap.annisa@RT4> configure
Entering configuration mode

[edit]
ftap.annisa@RT4#
```

```
VPC4>ssh -l mentor.dito 192.168.4.1
Password:
--- JUNOS 14.1R4.8 built 2015-01-28 03:38:12 UTC
mentor.dito@RT4> configure
                 ^
unknown command.
```

  Telnet

```
VPC4#telnet 192.168.4.1
Trying 192.168.4.1 ... Open

RT4 (ttyp0)

login: ftap.annisa
Password:

--- JUNOS 14.1R4.8 built 2015-01-28 03:38:12 UTC
ftap.annisa@RT4>
```

```
VPC4#telnet 192.168.4.1
Trying 192.168.4.1 ... Open

RT4 (ttyp0)

login: mentor.dito
Password:

--- JUNOS 14.1R4.8 built 2015-01-28 03:38:12 UTC
mentor.dito@RT4>
```

5. Pengujian Konektivitas VPC to Router

Pengujian konektivitas dari VPC ke router dilakukan untuk memastikan bahwa perangkat VPC dapat berkomunikasi dengan router yang sesuai.

- **VPC1 to R1**

```
VPC1>ping 192.168.1.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.1.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 2/2/4 ms
```

- **VPC2 to R2**

```
VPC2>ping 192.168.2.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.2.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 2/2/3 ms
```

- **VPC3 to R3**

```
VPC3>ping 192.168.3.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.3.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 2/3/4 ms
```

- **VPC4 to R4**

```
VPC4>ping 192.168.4.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.4.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 2/2/4 ms
```

6. Show ARP

Show ARP dilakukan untuk menampilkan tabel ARP (Address Resolution Protocol) pada perangkat jaringan, tabel yang ditampilkan mencakup MAC Address, IP Address, dan Interfaces.

- **R1**

```
root@RT1> show arp
MAC Address       Address         Name                    Interface           Flags
00:05:86:71:30:01 10.10.10.2      10.10.10.2              ge-0/0/1.0          none
aa:bb:cc:00:01:00 192.168.1.2     192.168.1.2             ge-0/0/2.0          none
00:05:86:71:48:00 192.168.10.2    192.168.10.2            ge-0/0/0.0          none
Total entries: 3
```

- **R2**

```
root@RT2> show arp
MAC Address       Address         Name                    Interface           Flags
00:05:86:71:1a:01 1.1.1.2         1.1.1.2                 ge-0/0/1.0          none
aa:bb:cc:00:04:00 192.168.2.2     192.168.2.2             ge-0/0/2.0          none
00:05:86:71:17:00 192.168.10.1    192.168.10.1            ge-0/0/0.0          none
Total entries: 3
```

- **R3**

```
root@RT4> show arp
MAC Address       Address         Name                    Interface           Flags
00:05:86:71:48:01 1.1.1.1         1.1.1.1                 ge-0/0/1.0          none
00:05:86:71:30:00 172.1.1.1       172.1.1.1               ge-0/0/0.0          none
aa:bb:cc:00:03:00 192.168.4.2     192.168.4.2             ge-0/0/2.0          none
Total entries: 3
```

- **R4**

```
root@RT3> show arp
MAC Address       Address         Name                    Interface           Flags
00:05:86:71:17:01 10.10.10.1      10.10.10.1              ge-0/0/1.0          none
00:05:86:71:1a:00 172.1.1.2       172.1.1.2               ge-0/0/0.0          none
aa:bb:cc:00:02:00 192.168.3.2     192.168.3.2             ge-0/0/2.0          none
Total entries: 3
```