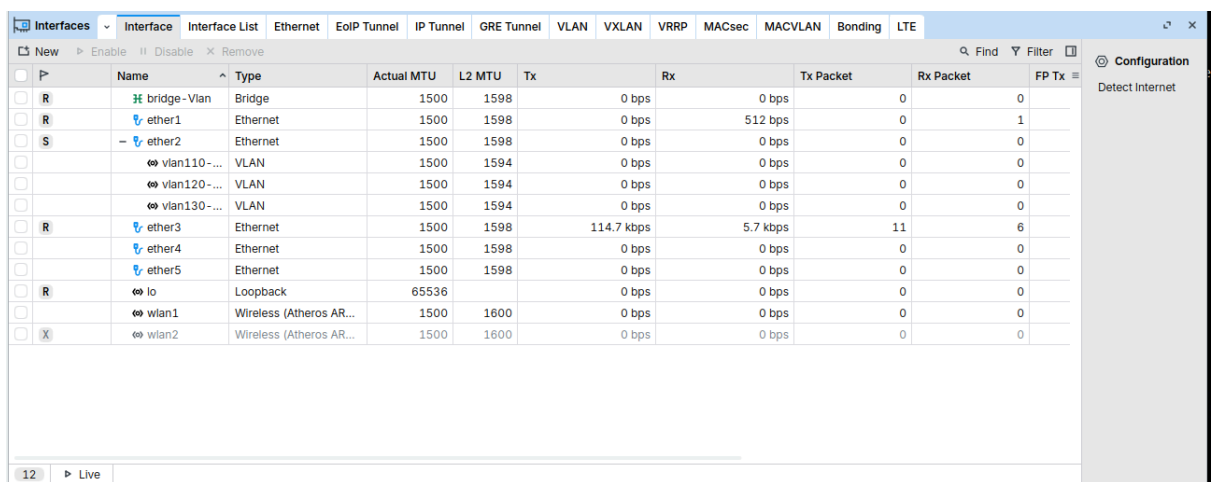


# Laporan Praktik: Konfigurasi Jaringan MikroTik Berbasis VLAN & Hotspot

## 1. Perancangan Pengalamatan Jaringan (Unit 004.01)

Langkah pertama adalah menentukan blok IP untuk setiap departemen.

- **VLAN 110 (ADMIN):** 192.168.110.1/24
- **VLAN 120 (TEKNISI):** 192.168.120.1/24
- **VLAN 130 (HOTSPOT):** 192.168.130.1/24



Name	Type	Actual MTU	L2 MTU	Tx	Rx	Tx Packet	Rx Packet	FP Tx
bridge-Vlan	Bridge	1500	1598	0 bps	0 bps	0	0	0
ether1	Ethernet	1500	1598	0 bps	512 bps	0	0	1
ether2	Ethernet	1500	1598	0 bps	0 bps	0	0	0
vlan110-...	VLAN	1500	1594	0 bps	0 bps	0	0	0
vlan120-...	VLAN	1500	1594	0 bps	0 bps	0	0	0
vlan130-...	VLAN	1500	1594	0 bps	0 bps	0	0	0
ether3	Ethernet	1500	1598	114.7 kbps	5.7 kbps	11	6	6
ether4	Ethernet	1500	1598	0 bps	0 bps	0	0	0
ether5	Ethernet	1500	1598	0 bps	0 bps	0	0	0
lo	Loopback	65536		0 bps	0 bps	0	0	0
wlan1	Wireless (Atheros AR...	1500	1600	0 bps	0 bps	0	0	0
wlan2	Wireless (Atheros AR...	1500	1600	0 bps	0 bps	0	0	0

## 2. Konfigurasi VLAN & Trunking (Unit 012.02)

Membuat jalur segmentasi pada ether2 yang mengarah ke Switch.

- **Menu:** Interfaces > Tab VLAN.
- **Langkah:** Buat 3 VLAN (ID 110, 120,130) dengan interface target ether2.

Name	Type	MTU	Actual MTU	L2 MTU	VLAN ID	Interface	Tx	Rx	Tx Packet	Rx Packets
vlan110-Admin	VLAN	1500	1500	1594	110	ether2	0 bps	0 bps	0	0
vlan120-Teknisi	VLAN	1500	1500	1594	120	ether2	0 bps	0 bps	0	0
vlan130-Hotspot	VLAN	1500	1500	1594	130	ether2	0 bps	0 bps	0	0

### 3. Konfigurasi DHCP Server (Unit 013.02)

Agar setiap divisi mendapatkan IP otomatis sesuai segmennya.

- **Menu:** IP > DHCP Server > Klik DHCP Setup.
- **Langkah:** Jalankan DHCP Setup untuk masing-masing interface (VLAN 110, VLAN 120, dan VLAN 130).

Name	Type	MTU	Actual MTU	L2 MTU	VLAN ID	Interface	Tx	Rx	Tx Packet	Rx Packets
vlan110-Admin	VLAN	1500	1500	1594	110	ether2	0 bps	0 bps	0	0
vlan120-Teknisi	VLAN	1500	1500	1594	120	ether2	0 bps	0 bps	0	0
vlan130-Hotspot	VLAN	1500	1500	1594	130	ether2	0 bps	0 bps	0	0

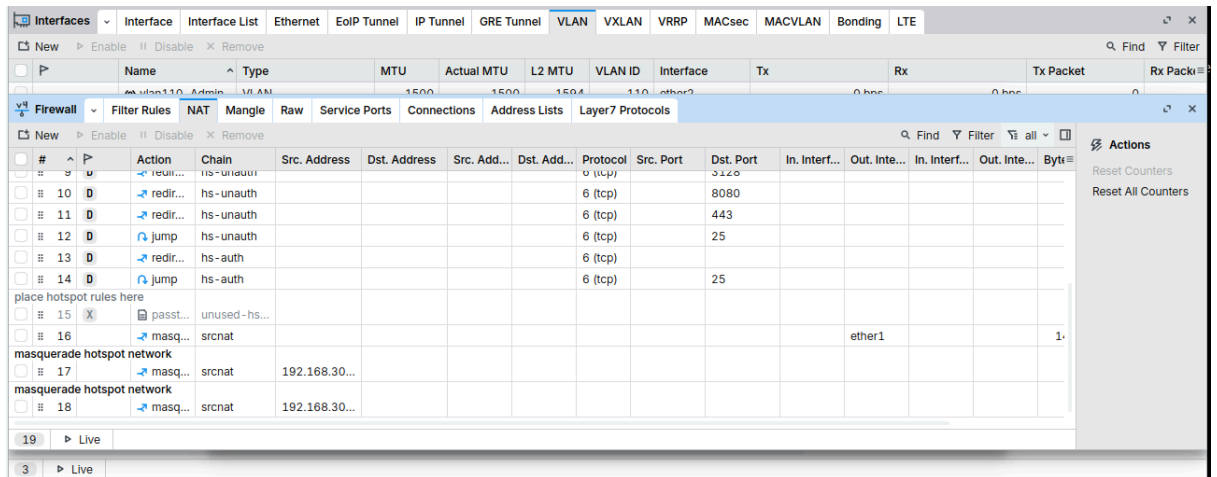
  

Name	Interface	Relay	Lease Time	Address Pool	Add ARP...
dhcp1	ether2		00:30:00	dhcp_pool5	no
dhcp2	ether3		00:30:00	dhcp_pool1	no
dhcp3	wlan1		00:30:00	dhcp_pool2	no
dhcp4	vlan110-Admin		00:30:00	dhcp_pool6	no
dhcp5	vlan120-Teknisi		00:30:00	dhcp_pool7	no
dhcp6	vlan130-Hotspot		00:30:00	dhcp_pool8	no

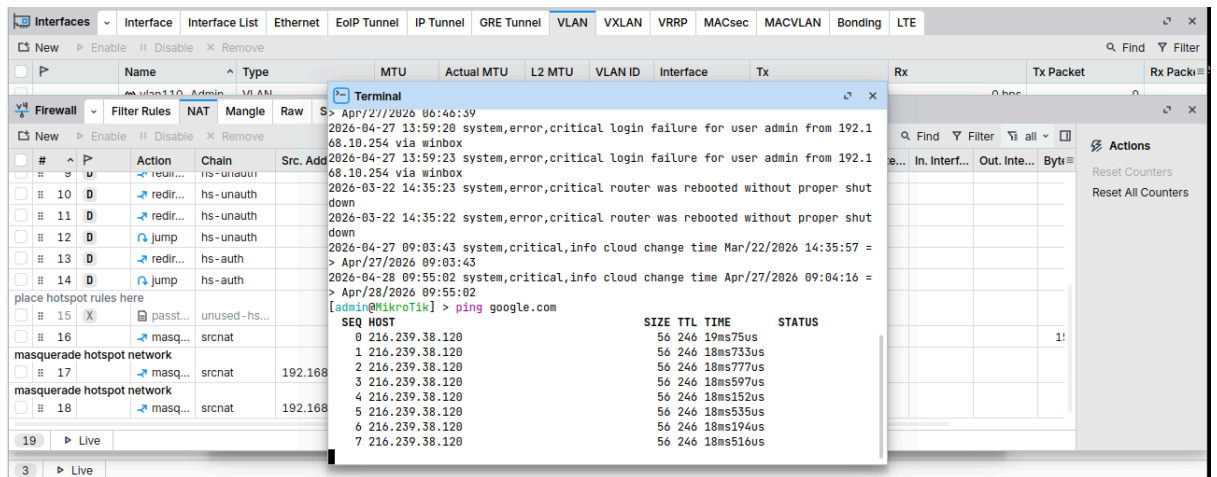
### 4. Konfigurasi Internet & NAT (Unit 014.02)

Menghubungkan jaringan lokal ke internet dunia luar.

- **Menu:** IP > Firewall > Tab NAT.
- **Langkah:** Tambahkan rule baru: Chain: srcnat, Out. Interface: ether1, Action: masquerade.



ping google.com



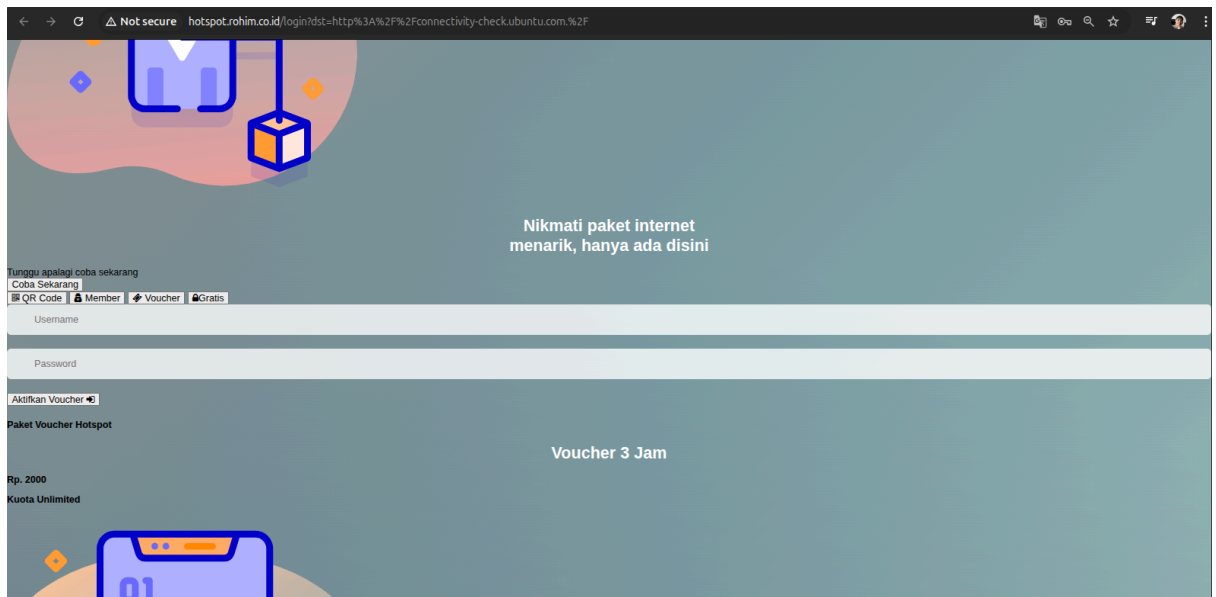
## 5. Memasang Jaringan Nirkabel & Hotspot (Unit 010.02)

Mengaktifkan akses WiFi untuk siswa di VLAN 30.

- **Menu:** IP > Hotspot > Klik Hotspot Setup.
- **Langkah:** Pilih interface VLAN 30. Masukkan DNS Name (contoh: portal.siswa.id). Buat 1 user untuk tes.

Name	Interface	Address Pool	Profile	Addresses ...
• hotspot1	wlan1	dhcp_pool2	hsprof1	2

### Tampilan login Hotspot:



## 6. Pengaturan Bandwidth / Simple Queue

Membatasi kecepatan setiap jaringan menjadi 5 Mbps sesuai soal.

- **Menu:** Queues > Tab Simple Queues.
- **Langkah:** Buat 3 Queue:
  1. Target: 192.168.110.0/24, Max Limit: 5M/5M.
  2. Target: 192.168.120.0/24, Max Limit: 5M/5M.
  3. Target: 192.168.130.0/24, Max Limit: 5M/5M.

#	Name	Target	Upload Max Limit	Download Max Limit	Packet Marks	Total Max Limit
0	Hotspot-...	192.168.110.0/24	5M	5M		
1	TEKNISI	192.168.120.0/24	5M	5M		
2	Admin	192.168.130.0/24	5M	5M		

## 7. Kebijakan Firewall (Pembatasan Akses)

Mengatur hak akses: ADMIN bisa ke mana saja, TEKNISI dilarang ke ADMIN.

- **Menu:** IP > Firewall > Tab Filter Rules.
- **Langkah:**
  - Chain: forward, Src. Address: 192.168.120.0/24 (TEKNISI), Dst. Address: 192.168.110.0/24 (ADMIN), Action: drop.

#	Action	Chain	Src. Address	Dst. Address	Src. Add...	Dst. Add...	Protocol	Src. Port	Dst. Port	In. Interf...	Out. Inte...	In. Interf...
0	drop	input	192.168.110.0/24	192.168.120.0/24								
1	jump	forward										
2	jump	forward										
3	drop	input					6 (tcp)		64872-6...			
4	jump	input										
5	jump	hs-input										
6	accept	hs-input					17 (u...		64872			
7	accept	hs-input					6 (tcp)		64872-6...			
8	jump	hs-input										
9	reject	hs-unauth					6 (tcp)					
10	reject	hs-unauth										
11	reject	hs-unauth										

## 8. Pengujian & Troubleshooting

Bagian terakhir untuk memastikan semua kondisi terpenuhi.

- **Uji ADMIN:** Ping ke Google dan Ping ke IP Teknisi (Harus Reply).

```

Terminal
4 192.168.20.1 56 64 421us
sent=5 received=5 packet-loss=0% min-rtt=403us avg-rtt=499us max-rtt=803us

[admin@MikroTik] > ping google.com
  SEQ HOST                SIZE TTL TIME          STATUS
  0 216.239.38.120        56 246 18ms616us
  1 216.239.38.120        56 246 19ms766us
  2 216.239.38.120        56 246 18ms718us
  3 216.239.38.120        56 246 19ms54us
  4 216.239.38.120        56 246 19ms6us
  5 216.239.38.120        56 246 18ms723us
sent=6 received=6 packet-loss=0% min-rtt=18ms616us avg-rtt=18ms980us
max-rtt=19ms766us

[admin@MikroTik] > ping 192.168.120.1
  SEQ HOST                SIZE TTL TIME          STATUS
  0 192.168.120.1          56 246 timeout
  1 192.168.120.1          56 246 timeout
  2 192.168.120.1          56 246 timeout
  3 192.168.120.1          56 246 timeout
  4 192.168.120.1          56 246 timeout
sent=5 received=0 packet-loss=100%

[admin@MikroTik] >

```

- Uji TEKNIISI: Ping ke Google (Reply) dan Ping ke IP Admin (Harus RTO/Drop).

```

pc-7@rohim:~$ ping google.com
PING forcesafesearch.google.com (216.239.38.120) 56(84) bytes of data:
64 bytes from any-in-2678.1e100.net (216.239.38.120): icmp_seq=1 ttl=245 time=18.6 ms
64 bytes from any-in-2678.1e100.net (216.239.38.120): icmp_seq=2 ttl=245 time=18.3 ms
64 bytes from any-in-2678.1e100.net (216.239.38.120): icmp_seq=3 ttl=245 time=18.7 ms
64 bytes from any-in-2678.1e100.net (216.239.38.120): icmp_seq=4 ttl=245 time=18.7 ms
64 bytes from any-in-2678.1e100.net (216.239.38.120): icmp_seq=5 ttl=245 time=18.4 ms
^V64 bytes from any-in-2678.1e100.net (216.239.38.120): icmp_seq=6 ttl=245 time=18.6 ms
^V64 bytes from any-in-2678.1e100.net (216.239.38.120): icmp_seq=7 ttl=245 time=18.9 ms
64 bytes from any-in-2678.1e100.net (216.239.38.120): icmp_seq=8 ttl=245 time=18.7 ms
^C
--- forcesafesearch.google.com ping statistics ---
8 packets transmitted, 8 received, 0% packet loss, time 7011ms
rtt min/avg/max/mdev = 18.251/18.604/18.861/0.184 ms
pc-7@rohim:~$ ping google.com
PING forcesafesearch.google.com (216.239.38.120) 56(84) bytes of data:
64 bytes from any-in-2678.1e100.net (216.239.38.120): icmp_seq=1 ttl=245 time=19.4 ms
64 bytes from any-in-2678.1e100.net (216.239.38.120): icmp_seq=2 ttl=245 time=18.9 ms
64 bytes from any-in-2678.1e100.net (216.239.38.120): icmp_seq=3 ttl=245 time=18.4 ms
^C
--- forcesafesearch.google.com ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 18.355/18.867/19.394/0.424 ms
pc-7@rohim:~$ ping 192.168.10.1
PING 192.168.10.1 (192.168.10.1) 56(84) bytes of data:

```

- Uji HOTSPOT: Muncul halaman login dan bisa internetan setelah login.

