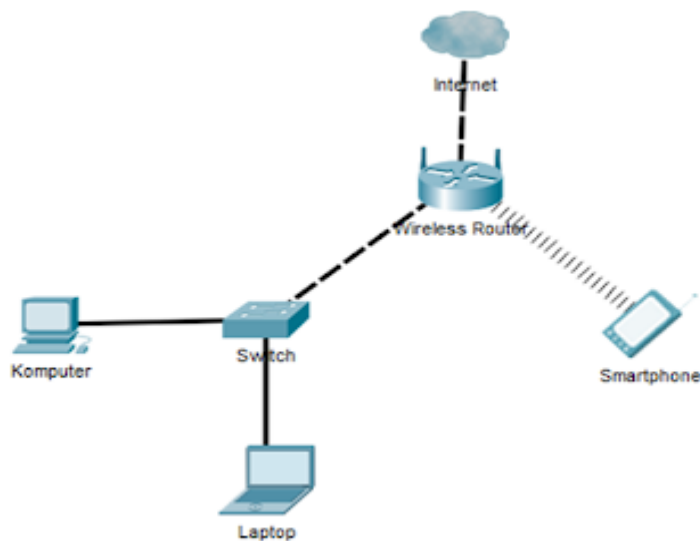


# Dokumentasi Tugas Praktek Demonstrasi

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Kelas : PSJ(Pengelola Sistem dan Jaringan)

## A. Rancangan Topologi Jaringan



1. Pertama saya meberikan identitas pada Router Mikrotik

### System - identity - isi Nama

The screenshot shows the Mikrotik RouterOS v6.49.7 (stable) web interface. The left sidebar contains a menu with the following items: CAPsMAN, Wireless, Interfaces, PPP, Bridge, Switch, Mesh, IP, MPLS, Routing, System, Auto Upgrade, Certificates, Clock, Console, Disks, History, Identity, LEDs, and License. The main content area is titled 'RouterOS v6.49.7 (stable)' and 'Identity'. There is an 'Apply' button and a text input field containing 'Wifi Routerboard-Faskal'.

2. Berikutnya Mengaktifkan interface Wlan1, dengan cara

### Interfaces - interface - Wlan1 - Tekan D.

The screenshot shows the RouterOS v6.49.7 (stable) web interface. The 'Interface List' tab is active, displaying a table of 9 network interfaces. The 'wlan1' interface is highlighted in blue, indicating it is selected. The table columns are Name, Type, Actual MTU, L2 MTU, Tx, and Rx. The 'wlan2' interface is also visible at the bottom of the list.

		Name	Type	Actual MTU	L2 MTU	Tx	Rx	
-	D	R	VLAN 1 - SISWA	VLAN	1500	1594	0 bps	0 bps
-	D	R	VLAN 2 - GURU	VLAN	1500	1594	0 bps	0 bps
D		R	ether1	Ethernet	1500	1598	6.1 kbps	8.4 kbps
D		R	ether2	Ethernet	1500	1598	91.8 kbps	14.6 kbps
D			ether3	Ethernet	1500	1598	0 bps	0 bps
D			ether4	Ethernet	1500	1598	0 bps	0 bps
D			ether5	Ethernet	1500	1598	0 bps	0 bps
D			wlan1	Wireless (Atheros AR9	1500	1600	0 bps	0 bps
E	X		wlan2	Wireless (Atheros AR9	1500	1600	0 bps	0 bps

D	R	wlan1	Wireless (Atheros AR9	1500	1600	0 bps	0 bps
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3. Membuat Interface VLAN 1 - Siswa dan VLAN 2 - Guru.

### Interface - VLAN - add VLAN

- VLAN 1
  - VLAN ID : 10
  - Name : Siswa
- VLAN 2
  - VLAN ID : 20
  - Name : Guru

2 items

		Name	Type	MTU	Actual MTU	L2 MTU	Tx	
-	D	R	VLAN 1 - SISWA	VLAN	1500	1500	1594	0 bps
-	D	R	VLAN 2 - GURU	VLAN	1500	1500	1594	0 bps

Name	VLAN 1 - SISWA
Type	VLAN
MTU	1500
Actual MTU	1500
L2 MTU	1594
MAC Address	CC:2D:E0:D9:F1:BE
ARP	enabled
ARP Timeout	▼
VLAN ID	10
Interface	ether2

Name	VLAN 2 - GURU
Type	VLAN
MTU	1500
Actual MTU	1500
L2 MTU	1594
MAC Address	CC:2D:E0:D9:F1:BE
ARP	enabled
ARP Timeout	▼
VLAN ID	20
Interface	ether2

4. Kemudian Saya akan meminta DHCP Client agar mendapatkan internet dari ISP. Untuk mendapatkan internet menggunakan port 1

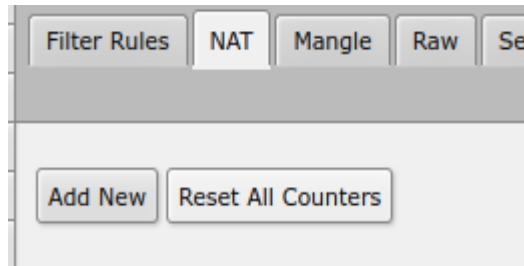
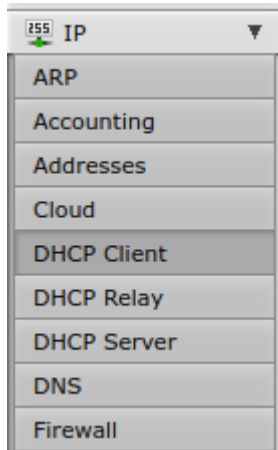
### IP - DHCP Client - Add (+)

- Interface : ether1
- APPLY

	Interface	Use Peer DNS	Add Defa... Route	IP Address	Expires After
- D	ether1	yes	yes	192.168.4.44/24	2d 23:00:36

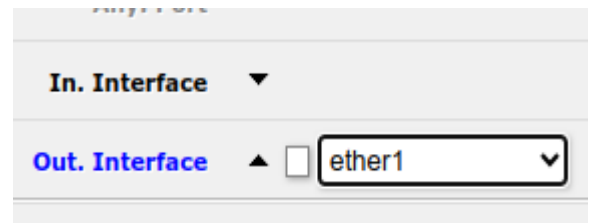
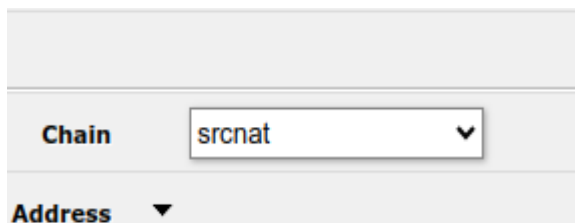
## 5. Konfigurasi Firewall NAT Dengan Action MASQUERADE

### IP - Firewall - NAT - Add(+)



### IP - Firewall - NAT - Add - General

- Chain : Srcnat
- Out Interface : Ether1
- Actions : Masquerade
- 



6. Berikutnya MengKonfigurasi IP Address pada masing-masing Interface.

### IP - Addresses - Add (+)

#### WLAN 1

- IP : 192.168.20.1/24
- Interface : ether1

Enabled	<input checked="" type="checkbox"/>
Address	<input type="text" value="192.168.20.1/24"/>
Network	<input type="text" value="192.168.20.0"/>
Interface	<input type="text" value="wlan1"/>
Comment	<input type="text"/>

#### VLAN 1 - SISWA

- Address :192.168.40.1/24
- interface : VLAN 1 - SISWA

Enabled	<input checked="" type="checkbox"/>
Address	<input type="text" value="192.168.40.1/24"/>
Network	<input type="text" value="192.168.40.0"/>
Interface	<input type="text" value="VLAN 1 - SISWA"/>
Comment	<input type="text"/>

#### VLAN 2 - GURU

- Address : 192.168.60.1/24
- Interface : VLAN 2 - GURU

<b>Enabled</b>	<input checked="" type="checkbox"/>
<b>Address</b>	<input type="text" value="192.168.60.1/24"/>
<b>Network</b>	<input type="text" value="192.168.60.0"/>
<b>Interface</b>	<input type="text" value="VLAN 2 - GURU"/>
<b>Comment</b>	<input type="text"/>

		▲ Address	Network	Interface	
-	D	✚ 192.168.4.44/24	192.168.4.0	ether1	
-	D	✚ 192.168.20.1/24	192.168.20.0	wlan1	
-	D	✚ 192.168.40.1/24	192.168.40.0	VLAN 1 - SISWA	
-	D	✚ 192.168.60.1/24	192.168.60.0	VLAN 2 - GURU	

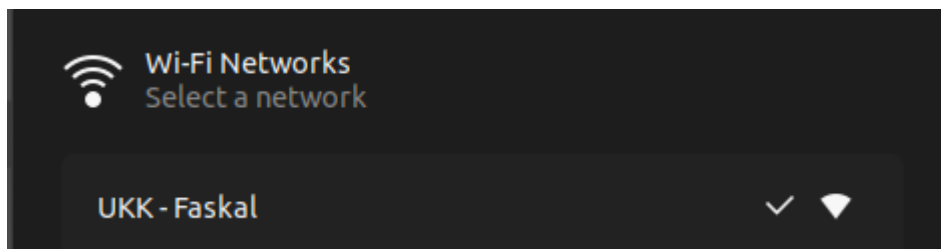
7. Melakukan Konfigurasi pada Wlan1, Membuat WIFI.

**Wireless - WIFI interfaces - Klik Wlan1**

**Pindah ke Wireless -mode : Ap bridge - SSID : UKK- Faskal**

Wireless	
<b>Mode</b>	<input type="text" value="ap bridge"/>
<b>Band</b>	<input type="text" value="2GHz-B/G/N"/>
<b>Channel Width</b>	<input type="text" value="20MHz"/>
<b>Frequency</b>	<input type="text" value="2412"/> MHz
<b>SSID</b>	<input type="text" value="UKK - Faskal"/>
<b>Security Profile</b>	<input type="text" value="default"/>

Selanjutnya Memeriksa Wifi Yg sudah di buat, di Laptop, komputer atau HP.



8. Selanjutnya Membuat DHCP Server.

**IP - DHCP Server - DHCP Setup - Kemudian Next-next aja ya**

### **VLAN 1 - SISWA**

255 IP

- ARP
- Accounting
- Addresses
- Cloud
- DHCP Client
- DHCP Relay
- DHCP Server**
- DNS

Add New DHCP Config DHCP Setup

**DHCP Server Interface** VLAN 1 - SISWA

**DHCP Address Space** 192.168.40.0/24

**Gateway for DHCP Network** 192.168.40.1

**Addresses to Give Out** 192.168.40.2-192.168.40

**DNS Servers** 192.168.100.1  
8.8.8.8

**Lease Time** 09:10:00

### **VLAN 2 - GURU**

255 IP

- ARP
- Accounting
- Addresses
- Cloud
- DHCP Client
- DHCP Relay
- DHCP Server**
- DNS

Add New DHCP Config DHCP Setup

**DHCP Server Interface** VLAN 2 - GURU

**DHCP Address Space** 192.168.60.0/24

**Gateway for DHCP Network** 192.168.60.1

**Addresses to Give Out** 192.168.60.10-192.168.60

**DNS Servers** 192.168.100.1  
8.8.8.8

**Lease Time**

- D	dhcp2	VLAN 1 - SISWA	09:10:00	dhcp_pool5	no
- D	dhcp3	VLAN 2 - GURU	09:10:00	dhcp_pool6	no

### 9. Selanjutnya Mengkonfigurasi HOTSPOT.

WLAN :

- IP WLAN : 192.168.20.1/24
- SSID : UKK\_Nama
- Password : 12345678
- DHCP Pool : 192.168.20.10 – 192.168.20.50
- Hotspot : alamat login hotspot = portalsmk.sch.id
- Ubah tampilan halaman login hotspot sehingga minimal terdapat tampilan tulisan:

**“Selamat Datang di Hotspot PeTIK”**

### IP - Hotspot - Tab Server - Hotspot Setup

- Mesh
- IP
- ARP
- Accounting
- Addresses
- Cloud
- DHCP Client
- DHCP Relay
- DHCP Server
- DNS
- Firewall
- Hotspot

Add New Hotspot Setup

1 item

	Name	Interface	Address Pool	Profile	Address Per MAC
- D	hotspot1	wlan1	hs-pool-6	hsprof1	2

**HotSpot Interface**

**Local Address of Network**

**Masquerade Network**

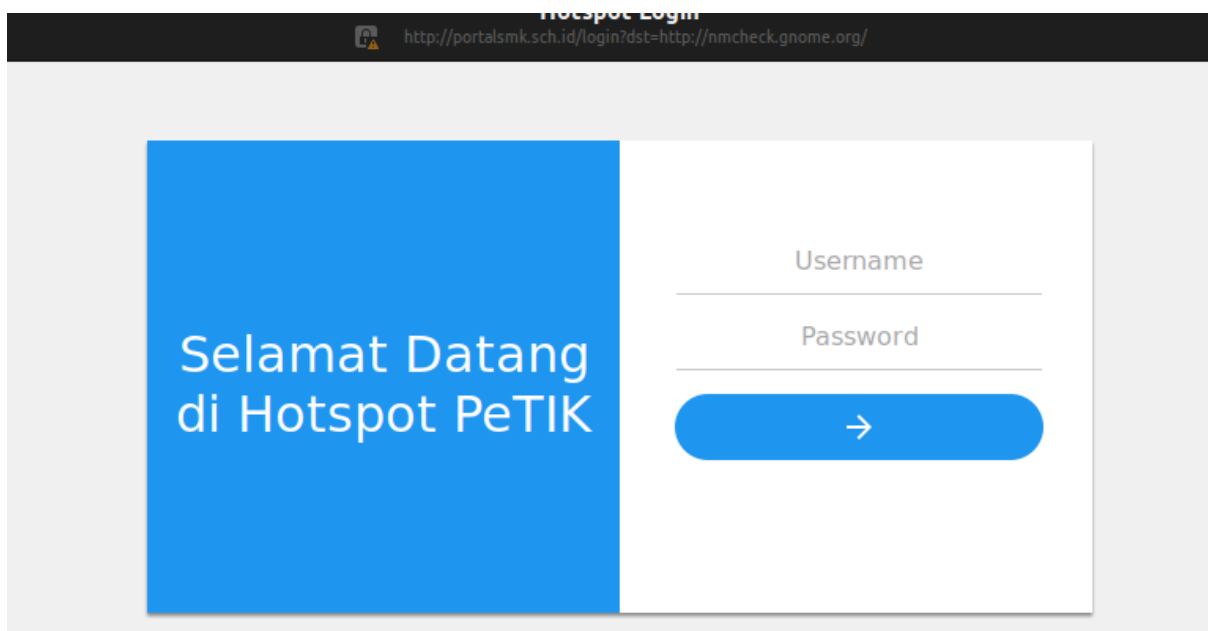
**Address Poo** **Select Certificate**

**DNS Servers** ▼  ▲

**IP Address of SMTP Server**

**DNS Name**

10. Merubah Tampilan Login Hotspot.  
- **Selamat Datang di Hotspot PeTIK -**



11. Membuat User Profile dan User Hotspot.

<b>Username</b>	<b>Password</b>	<b>Bandwidth</b>
Kepalasekolah	123	512k
Guru	456	256k
Siswa	789	128k

Caranya :

- Hotspot - User Profiles - Add (+)

The screenshot shows the Mikrotik WinBox interface for configuring Hotspot User Profiles. The left sidebar lists various network services, with 'Hotspot' selected. The main window has several tabs: Servers, Server Profiles, Users, User Profiles (active), Active, Hosts, IP Bindings, and Service Ports. Below these are sub-tabs: Walled Garden, Walled Garden IP List, and Cookies. An 'Add New' button is visible. A table displays 4 items, with the following details for the first item:

Name	Session Timeout	Idle Timeout	Shared Users	Rate Limit (rx/tx)
default	none	none	1	

- Membuat 3 Users Profile

The screenshot displays the configuration form for three user profiles. The settings for each profile are as follows:

Profile Name	Name	Address Pool	Session Timeout	Idle Timeout	Keepalive Timeout	Status Autorefresh	Shared Users	Rate Limit (rx/tx)
1	guru	none		none	00:02:00	00:01:00	5	256k
2	kepala sekolah	none		none	00:02:00	00:01:00	5	512k
3	siswa	none		none	00:02:00	00:01:00	5	128k

This block provides a detailed view of the configuration for the 'siswa' user profile. The settings are:

- Name: siswa
- Address Pool: none
- Session Timeout: (dropdown menu)
- Idle Timeout: none
- Keepalive Timeout: 00:02:00
- Status Autorefresh: 00:01:00
- Shared Users: 5
- Rate Limit (rx/tx): 128k

- selanjutnya membuat 3 user sebagai berikut

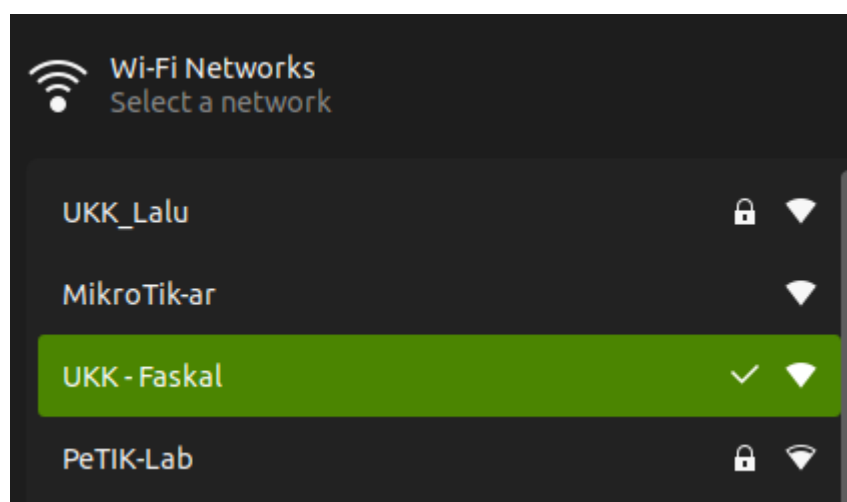
Server	hotspot1 ▾
Name	kepalasekolah
Password	...
Address	▾
MAC Address	▾
Profile	kepalasekolah ▾

Server	hotspot1 ▾
Name	siswa
Password	...
Address	▾
MAC Address	▾
Profile	siswa ▾

Server	hotspot1 ▾
Name	guru
Password	...
Address	▾
MAC Address	▾
Profile	guru ▾

- Percobaan Hotspot Menggunakan Laptop / HP :

1. menghubungkan ke WIFI yg sudah di buat

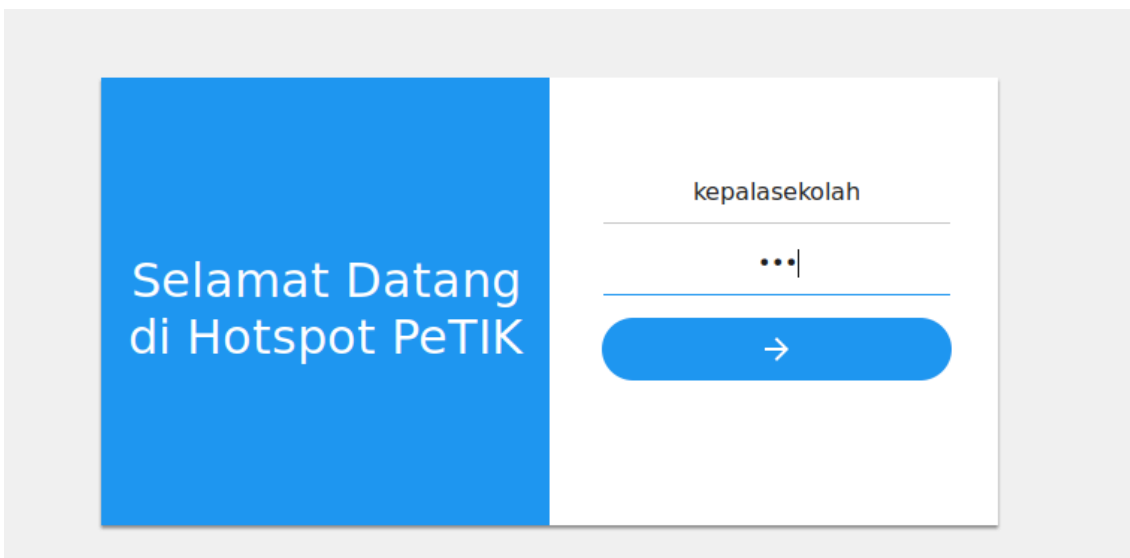


2. Login ke Hotspot Dengan mengetikan pada Browser

<http://portalsmk.sch.id>

Kemudian Login Pake 2 Akun :

- kepalasekolah



Welcome kepalasekolah!

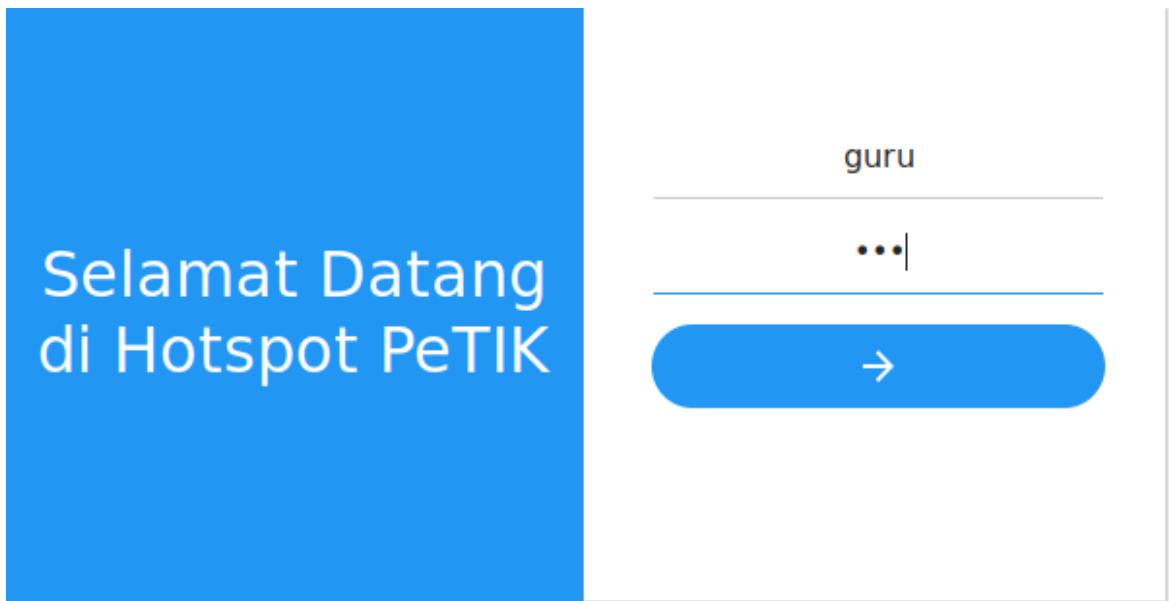
IP address:	192.168.20.48
bytes up/down:	153.6 KiB / 541.9 KiB
connected:	21s
status refresh:	1m

log off

		#	Name	Target	Upload Max Limit	Download Max Limit	Packet Marks	Total Max Limit (bits/s)
-	D	0	<hotspot-kepalasekolah>	192.168.20.48/32	512k	512k		

*Pengujian Kepala Sekolah*


- Guru



Welcome guru!

IP address:	192.168.20.48
bytes up/down:	167.7 KiB / 140.1 KiB
connected:	15s
status refresh:	1m

log off

		#	Name	Target	Upload Max Limit	Download Max Limit	Packet Marks	Total Max Limit (bits/s)
-	D	0	 <hotspot-guru>	192.168.20.48/32	256k	256k		

### *Pengujian Guru*

## 11. Konfigurasi Switch

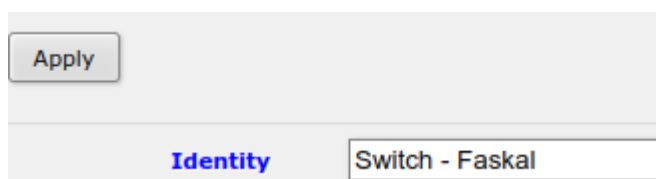
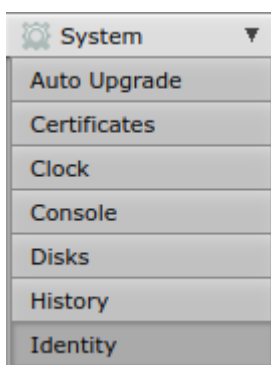
Selanjutnya Saya akan memindahkan kabel router ke switch, di port4, ini bertujuan untuk Konfigurasi Switch pada MikroTik.



*“Gambar sebelah kiri ISP & sebelah kanan SWITCH”*

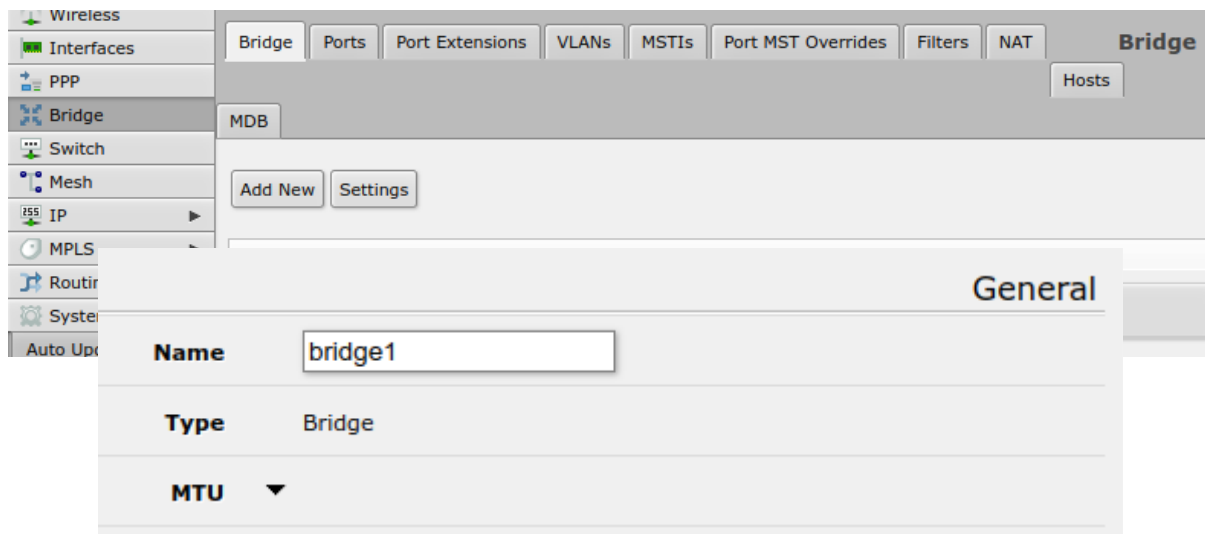
1. Merubah identitas pada Mikrotik.

### **System - Identity - Switch - Faskal**



2. Kemudian Saya akan membuat Interface Bridge pada MikroTik :

### Bridge - Tab Bridge - Add (+) - OK



Selanjutnya Pindah ke Tab PORTS, dan membuat 4 ports , ether1,ether2,ether3,ether4 caranya:

### Bridge - Tab ports - Add (+)

- Interface : ether1
- Bridge : bridge 1
  
- Interface :ether2
- Bridge : bridge1
  
- Interface : ether3
- Bridge : bridge1
  
- Interface : ether4
- bridge : bridge1

Pastikan Jika sudah Klik OK

4 items

		#	Interface	Bridge	Horiz...	Trust...	Priority (hex)	Path Cost
- D	H	0	ether1	bridge1		no	80	10
- D	IH	1	ether2	bridge1		no	80	10
- D	H	2	ether3	bridge1		no	80	10
- D	IH	3	ether4	bridge1		no	80	10

Interface

Bridge

Horizon

Interface

Bridge

Horizon

Interface

Bridge

Horizon

Interface

Bridge

Horizon

3. Selanjutnya Saya mengkonfigurasi Akhir yaitu switch . caranya sebagai berikut :

Masuk Ke tab VLAN

**Switch - Tab VLAN - Add (+)**

- **Switch : switch1**
- **VLAN 1 : 10**
- **Ports : ether1,ether2,ether3**
  
- **Switch : switch1**
- **VLAN 2 : 20**
- **Ports : ether1,ether4**

**Jangan lupa Klik Ok atau APPLY.**

2 items					
		▲ Switch	VLAN ID	Ports	
-	D	switch1	20	ether1, ether4	
-	D	switch1	10	ether1, ether2, ether3	

Jika sudah Pada menu VLAN selanjutnya ke TAB Ports pada Switch

### Switch - Tab PORT - Konfigurasi pada ether1,ether2,ether3,ether4

Switch	Port	Port Isolation	Host	VLAN	Rule	Switch	
6 items							
		▲ Name	Switch	VLAN Mode	VLAN Header	Default VLAN ID	
		ether1	switch1	secure	add if missing	0	
		ether2	switch1	secure	always strip	10	
		ether3	switch1	secure	always strip	10	
		ether4	switch1	secure	always strip	20	
		ether5	switch1	disabled	leave as is	0	
		switch1 cpu	switch1	disabled	leave as is	0	

#### - Pengujian Hasil Konfigurasi

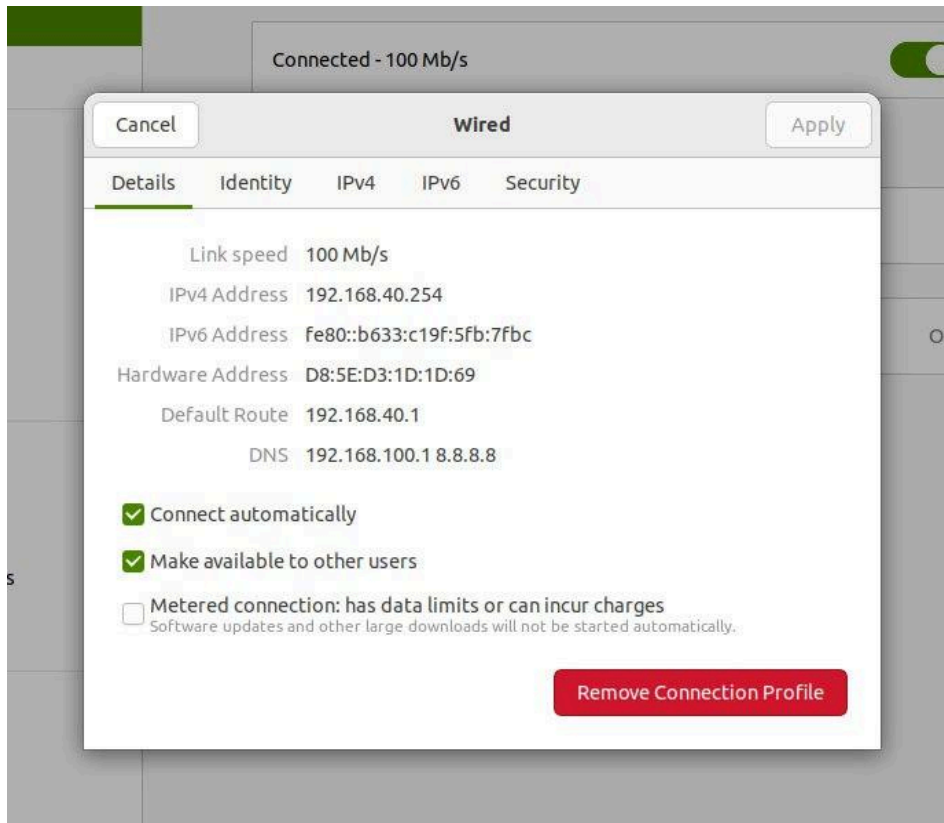
Pada Pengujian Ini, saya menggunakan 1 Komputer, punya teman saya bernama LALU, Seperti Yang ada di bawah ini :

#### - Pengujian Secara UMUM

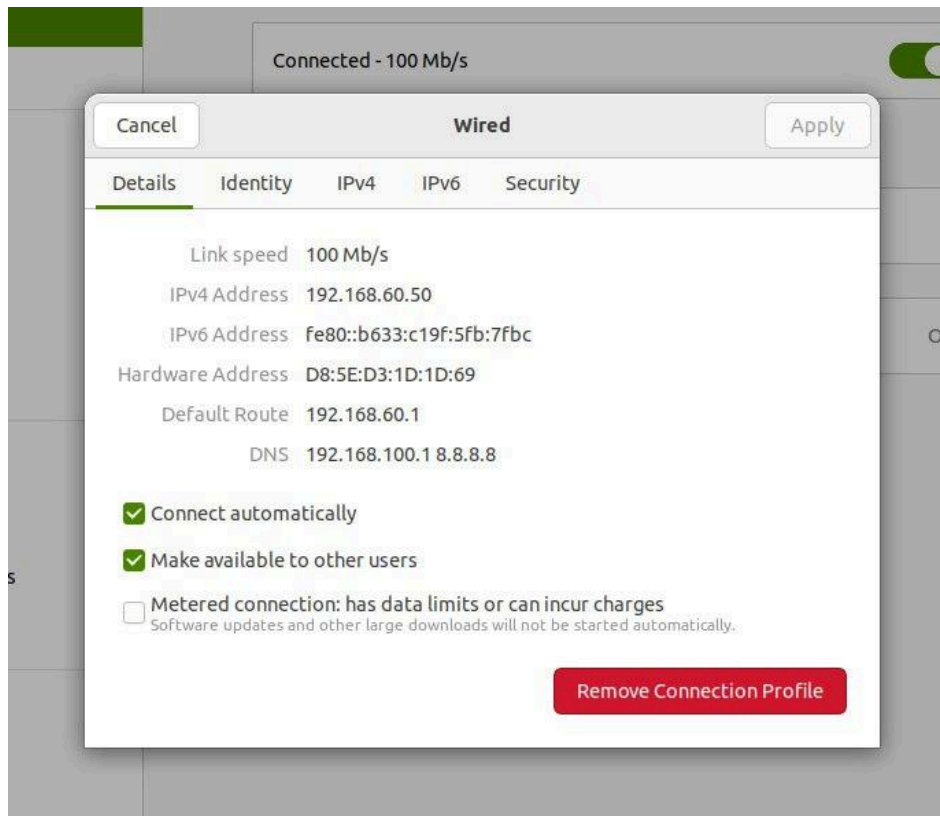
**Pada VLAN 1 - SISWA dapat ip : 192.168.40.0/24**

**Pada VLAN 2 - GURU dapat IP : 192.168.60.0/24**

## - Pengujian Pada VLAN SISWA



## - Pengujian Pada VLAN GURU



Kita juga Bisa Testing dengan Cara Ping ke Masing masing Gateway

**SEKIAN TRIMAKASIH**