DOKUMENTASI PROJEK MIKROTIK + AWS
KONSENTRASI KEAHLIAN TKJ 2024

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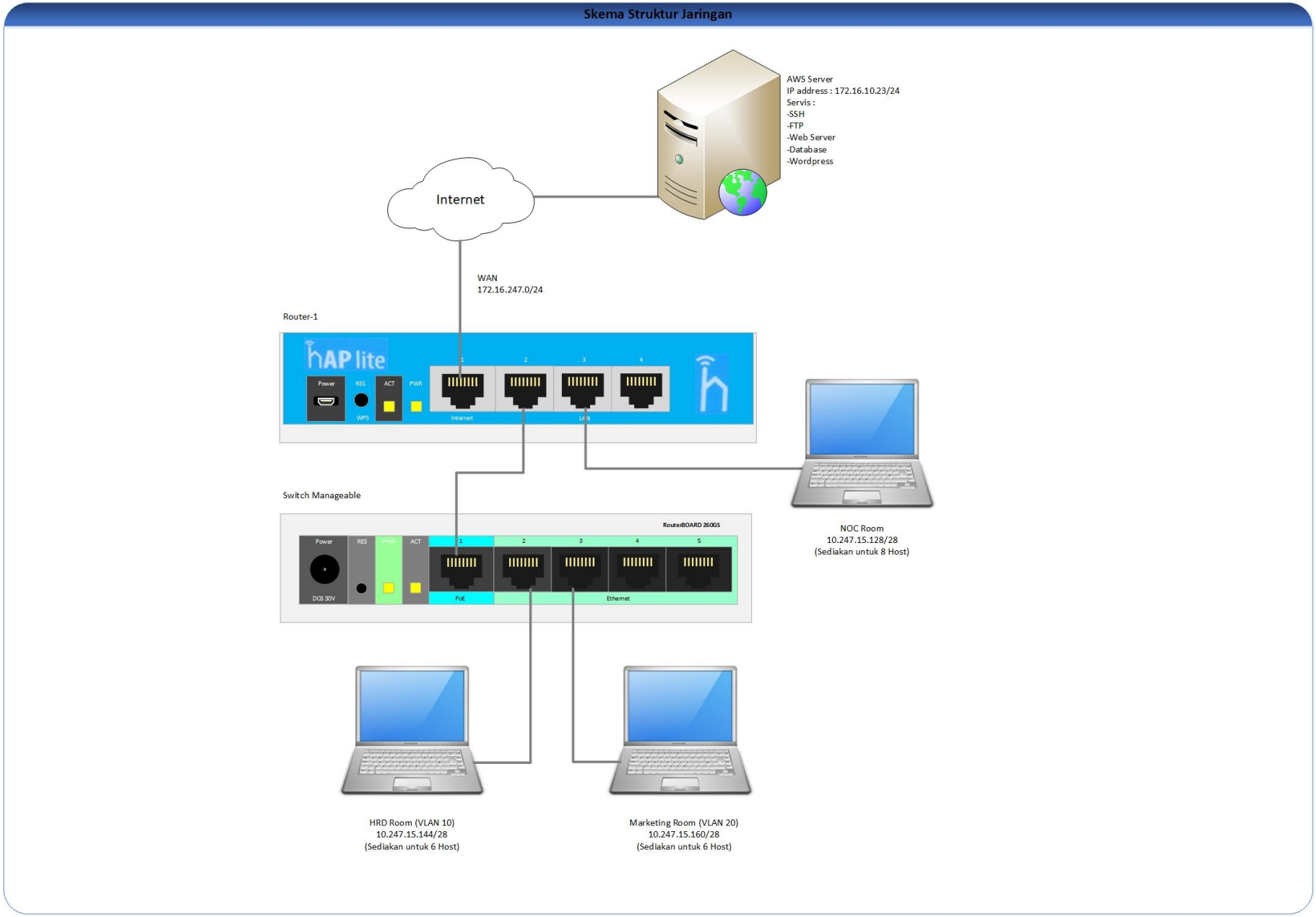
I. Membuat Daftar Perangkat Jaringan dan Rancangan

No	Nama Perangkat	Spesifikasi	Jumlah	Harga	Total	Keterangan
1	Switch Manageable CRS112-8G-4S-IN	QCA8511 RAM 128 MB 400 MHz	1 Pc	Rp 2.566.000	Rp 2.566.000	memiliki interface lebih banyak sehingga akan lebih flexible saat diimplementasikan pada jaringan.
2	Router RB1100AHx4	ARM 32bit AL21400, 4, 1.4 GHz RAM 128MB/1GB 10/100/1000Mbps 13 Port	1 Pc	Rp 4.250.000	Rp 4.250.000	menggunakan spesifikasi hardware yang lebih baru yaitu processor Alpine AL21400 1.4GHz Quad Core , 1GB RAM , routerOS level 6, dan casing 1U rackmount.
3	UTP	Cat 6 305 Meter	1 Roll	Rp 900.000	Rp 900.000	Kabel CAT6 dapat mengirimkan 1000 Mbps Ethernet pada jarak 100 meter.
4	Switch Unmanageable D-Link DGS-1024C	24-Port Gigabit Ethernet 10/100/1000Mbps Unmanaged	1 Pc	Rp 843.000	Rp 843.000	Digunakan pada Production Room untuk 20 perangkat.
5	Switch Unmanageable D-Link DGS-1016A	16-Port Fast ethernet 10/100/1000Mbps Unmanaged	2 Pcs	Rp 699.000	Rp 1.368.000	Digunakan pada Ruang Markting dan HRD - Pada Marketing room digunakan 11 Port Pada HRD room digunakan 9 port
6	Access point Unifi Ubiquiti U6-Lite	2.4 GHz=300 Mbps 5 GHz=1201 Mbps 802.11a/b/g/n/ac/ax WPA-PSK, WPA-Enterprise (WPA/WPA2/WPA3)	4 Pcs	Rp 1.760.000	Rp 7.040.000	Dipasang untuk konektivitas stabil

7	UPS ICA RN2000 RN 2000	2000VA 1000WATT RACKMOUNT SINEWAVE AC Voltage : 160 – 250 V AC Frequency : 50 ± 3 Hz AC Protection : 10 A DC Voltage : 36 V DC INT Battery : 3 x 12 V, 7 Ah DC Protection : FUSE	1 Pc	Rp 5.590.000	Rp 5.590.000	UPS berguna ketika ada pemadaman listrik tiba tiba dan server masi belum dimatikan secara benar. Operator bisa melakukan *shutting down* beberapa menit yang diberikan oleh UPS supaya server, router, switch bisa lebih awet
8	INDORACK PDU 8 SOCKET	Socket Port : 8 ports Rating Voltase : 250V 50/60HZ Rating Curent : 16A Max Power : 4000 Watt Material : Aluminium	1 Pc	Rp 532.500	Rp 532.500	Diperlukan agar server bisa dicolok secara rapi tanpa khawatir kehabisan slot colokan.

II. Membuat Desain Jaringan



III. Merancang Pengalamatan Jaringan

Divisi	Network	Prefix/CIDR	Range	Broadcast
Network Router	172.16.247.0	255.255.255.0/24	172.16.247.1-172.16.247.254	172.16.247.255
Marketing Room	10.247.15.160	255.255.255.240/28	10.247.15.161-10.247.15.174	10.247.15.175
Public WiFi Area	10.247.15.0	255.255.255.128/25	10.247.15.1-10.247.15.126	10.247.15.127
HRD Room	10.247.15.144	255.255.255.240/28	10.247.15.145-10.247.15.158	10.247.15.159
NOC Room	10.247.15.128	255.255.255.240/28	10.247.15.129-10.247.15.142	10.247.15.143

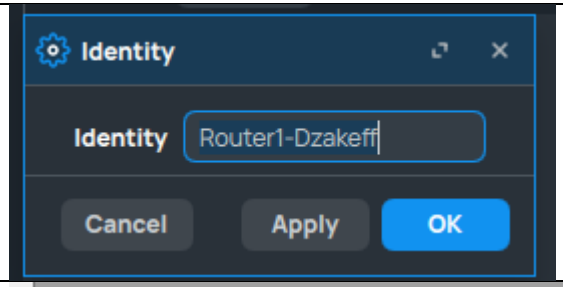
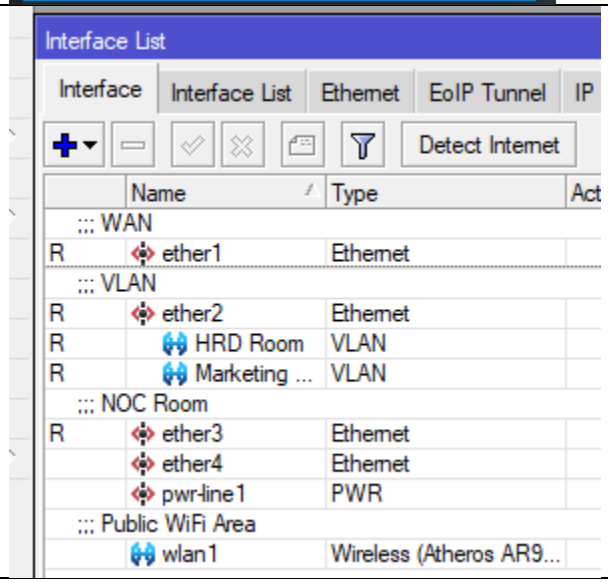
IV. Menentukan Pengalamatan Jaringan

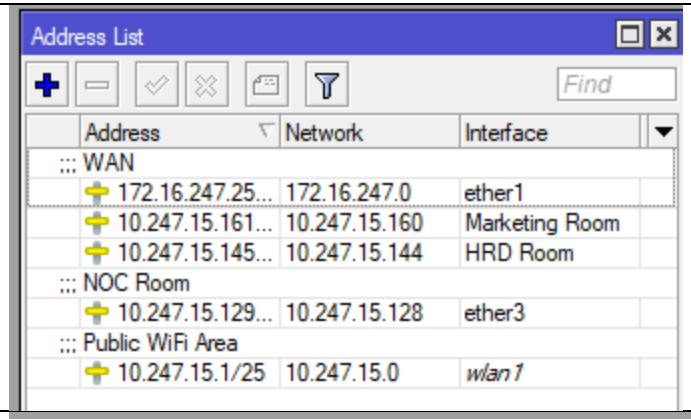
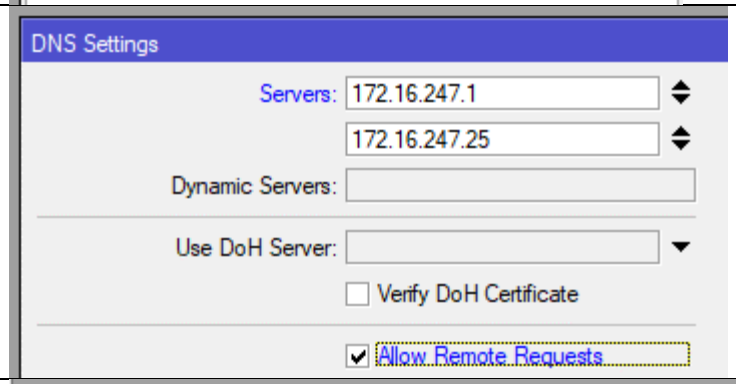
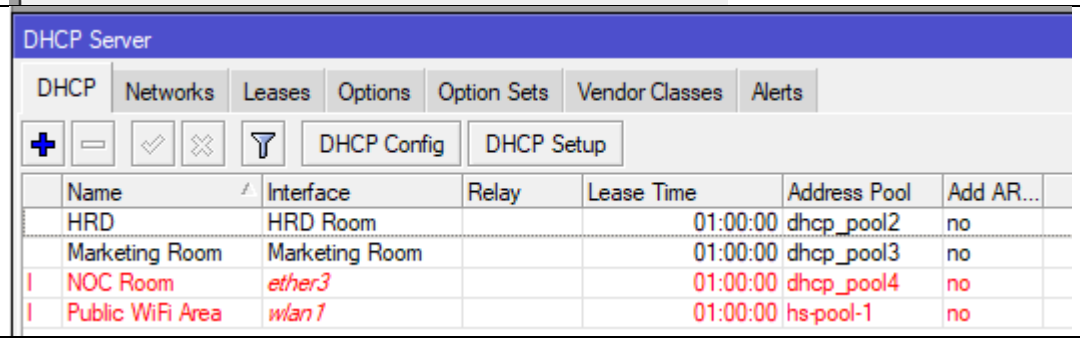
Device	Interface	Mac Address	IP Address	Subnet Mask	Gateway
Router 1	Ether1 WAN	48:8F:5A:13:79:AE	172.16.247.25	255.255.255.0	172.16.247.1
	Ether2 HRD Room	48:8F:5A:13:79:AF	10.247.15.145	255.255.255.240	10.247.15.145
	Ether2 Marketing Room	48:8F:5A:13:79:AF	10.247.15.161	255.255.255.240	10.247.15.161
	Ether3 NOC Room	48:8F:5A:13:79:B0	10.247.15.129	255.255.255.240	10.247.15.129
	Wlan1 Public WiFi Area	48:8F:5A:13:79:B3	10.247.15.1	255.255.255.128	10.247.15.1
Client Public WiFi Area	Wireless	00:BB:60:0C:A0:85	10.247.15.111	255.255.255.	10.247.15.1
Client Marketing Room	LAN	E4:B9:7A:39:58:66	10.247.15.174	255.255.255.	10.247.15.161
Client HRD Room	LAN	E4:B9:7A:39:58:66	10.247.15.158	255.255.255.	10.247.15.145
Client NOC Room	LAN	E4:B9:7A:39:58:66	10.247.15.158	255.255.255.	10.247.15.129

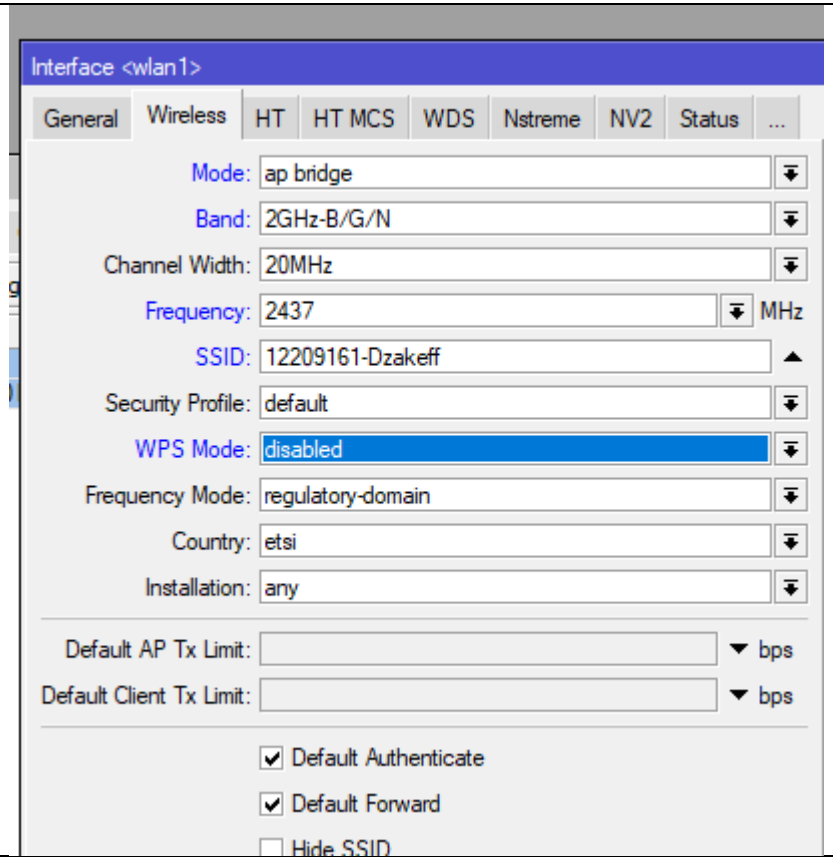
VI. Implementasi

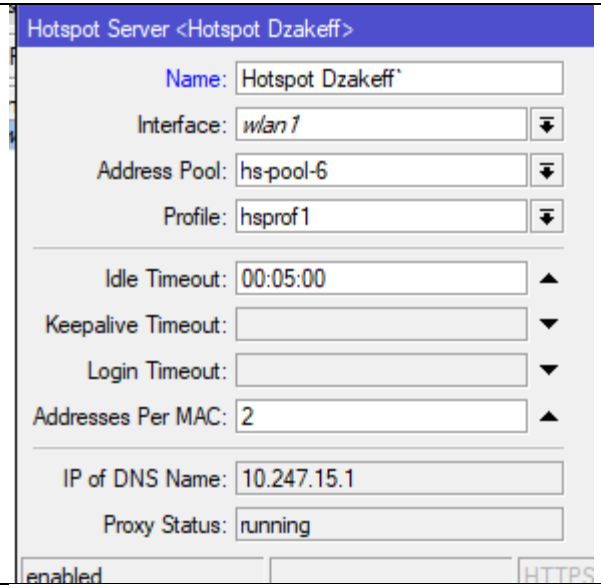
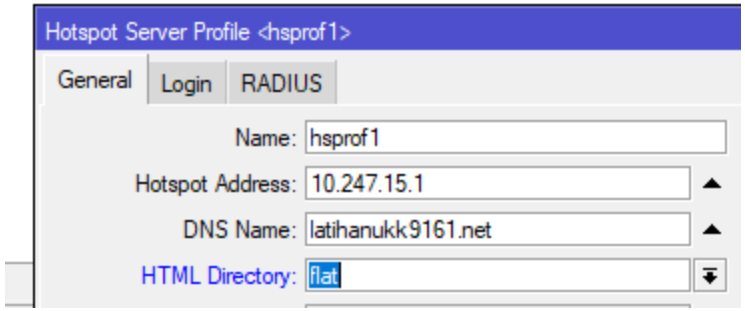
A. HASIL KONFIGURASI

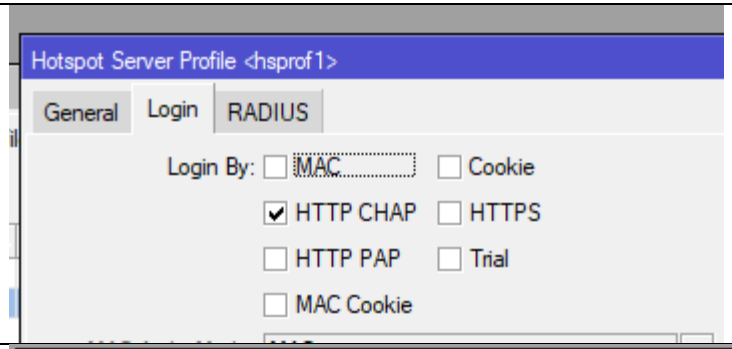
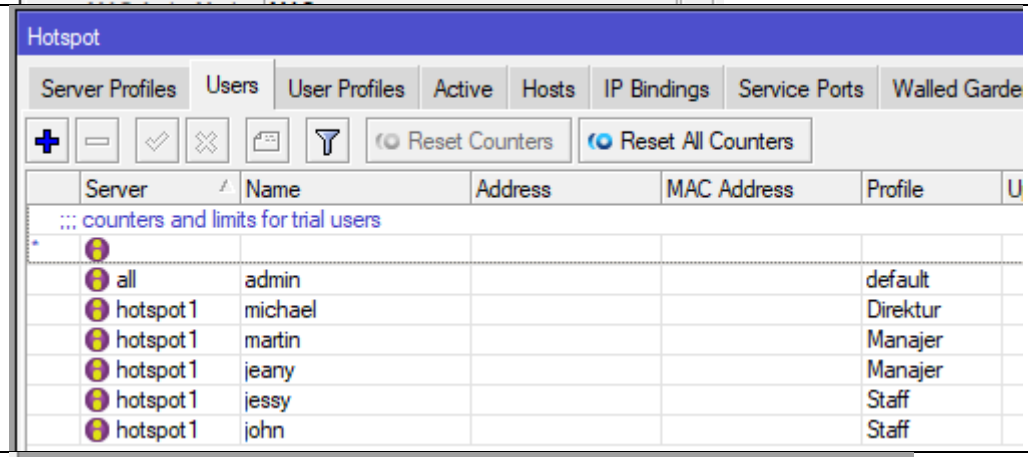
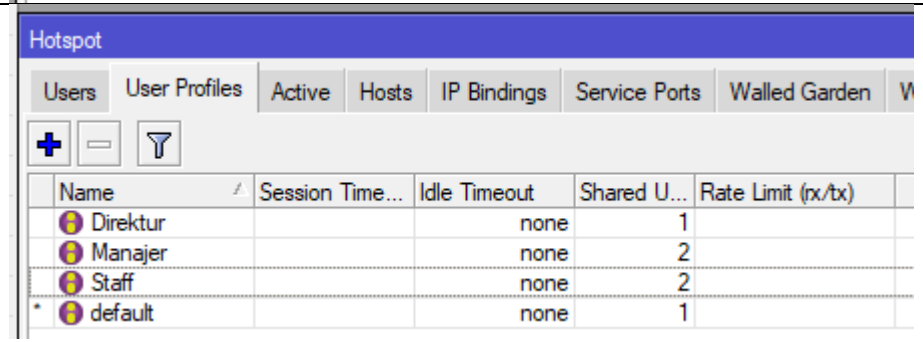
- **Router**

No	Konfigurasi	Hasil/Dokumentasi	Keterangan
1.	Identity		Mengubah identitas router bertujuan agar dapat mudah dikenali jenis, fungsi router tersebut.
2.	Interface		Disini diberi comment agar tidak tertukar dengan port yang lain.

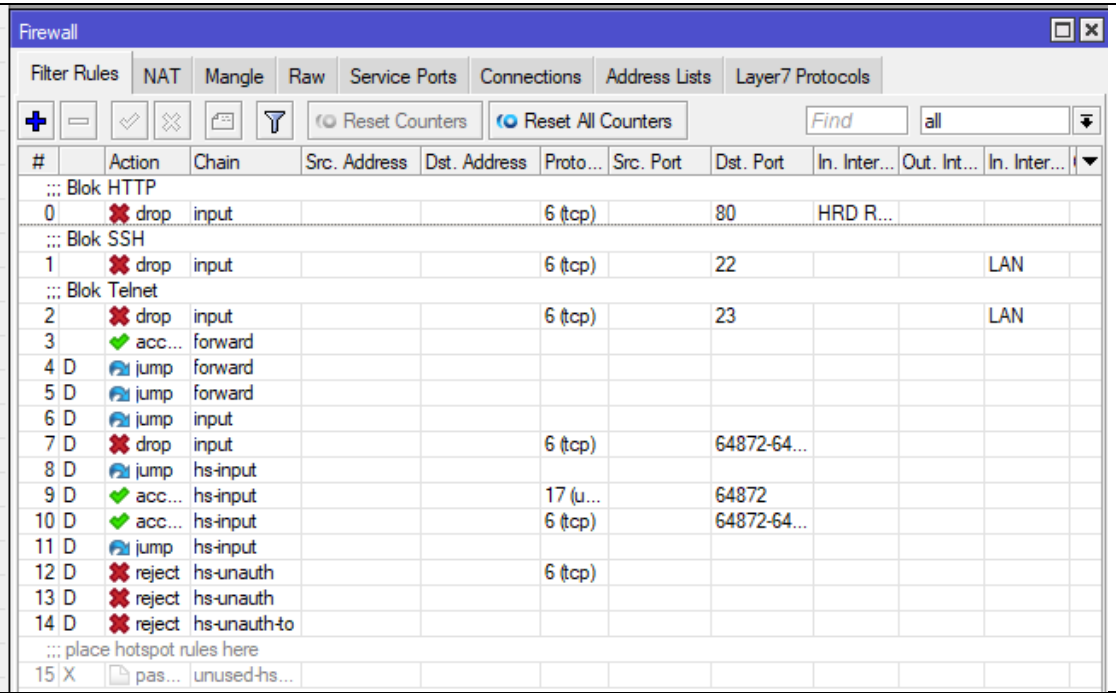
No	Konfigurasi	Hasil/Dokumentasi	Keterangan
3	IP Address		Disini merupakan IP address yang telah sesuai dengan VLSM. Ether1 menggunakan IP static.
4	DNS		Ketika menggunakan IP static, perlu memasukan DNS server secara manual dan mencentang Allow Remote Requests agar DHCP server mendapat DNS nya.
5	DHCP Server		Berikut merupakan asil konfigurasi DHCP Server sesuai kebutuhan client.

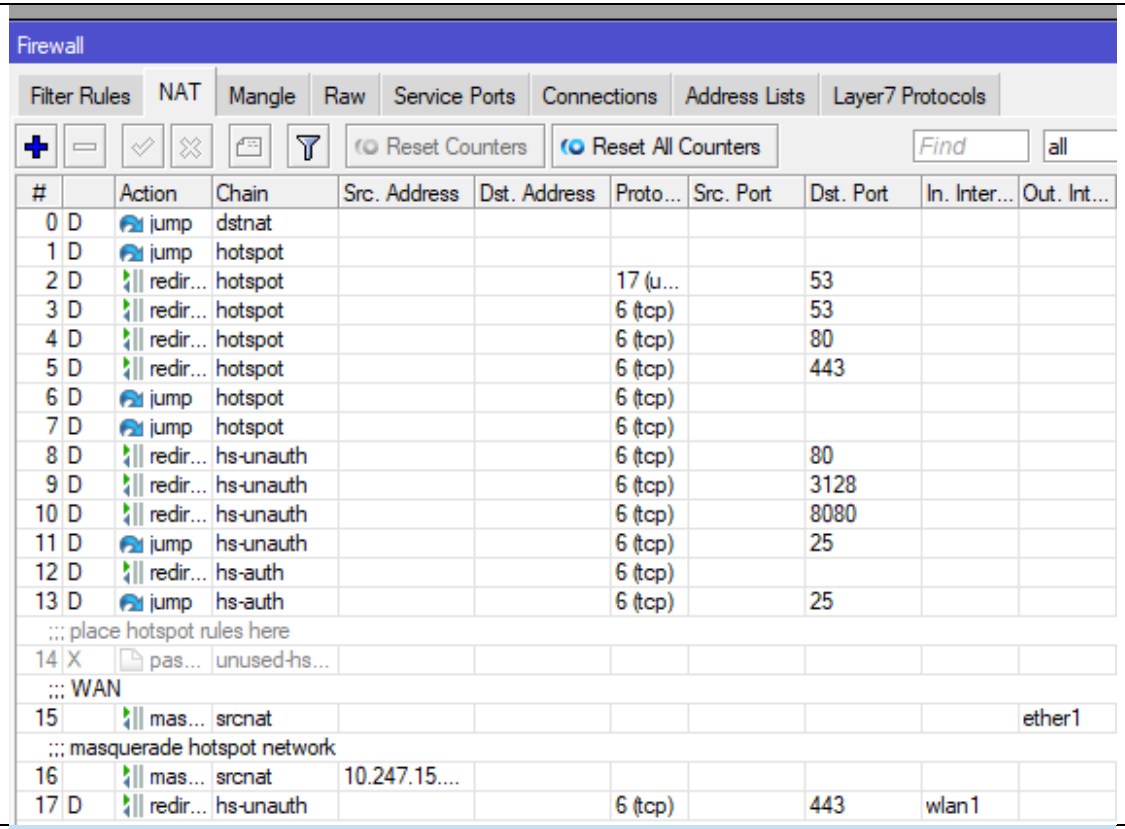
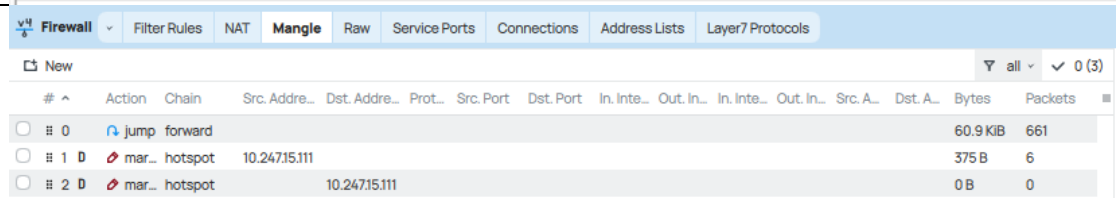
No	Konfigurasi	Hasil/Dokumentasi	Keterangan
6	Wlan 1 (Mode, Band, SSID)		Mode AP sudah sesuai dengan permintaan client.

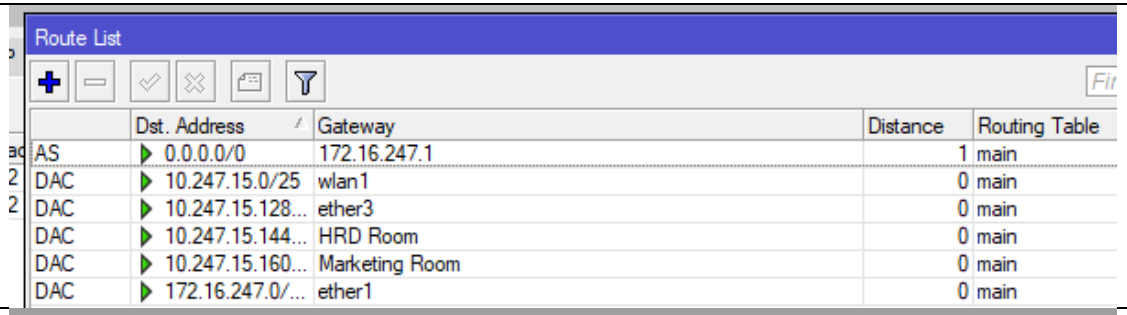
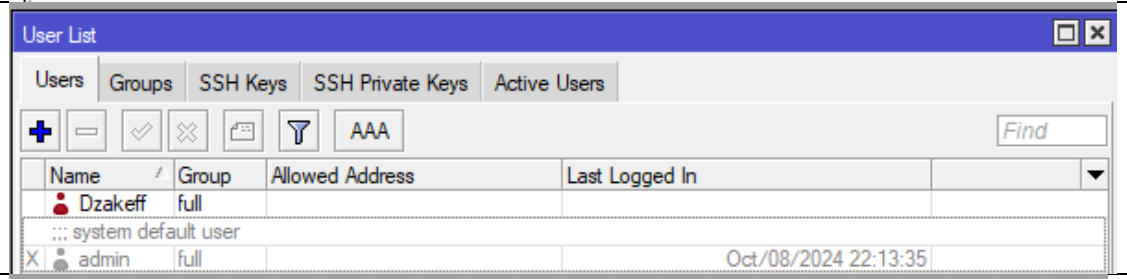
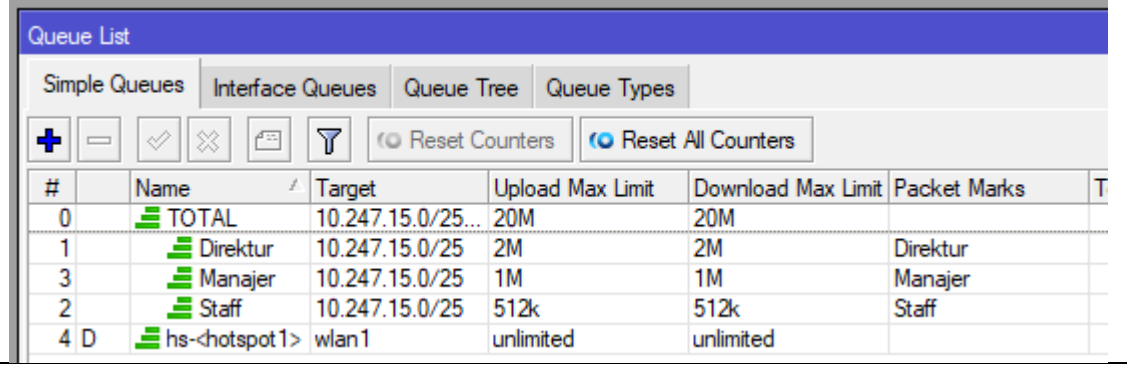
No	Konfigurasi	Hasil/Dokumentasi	Keterangan
7	Server Hotspot		Disini merupakan server hotspot yang telah dibuat.
8	Server Profile Hotspot		Disini merukapak server profiles untuk server hotspot. Menggunakan IP address ether 3 dan menggunakan DNS, serta saya menggunakan webpage HTML yang berbeda. Jika tidak ingin menyimpan informasi, silahkan matikan cookie.

No	Konfigurasi	Hasil/Dokumentasi	Keterangan
			
9	User Hotspot		Disini merupakan akun untuk hotspot dengan user profile yang telah ditentukan
10	User Profile Hotspot		Disini merupakan pusat informasi dari suatu user. Terdiri dari keepalive, shared user, rate limit, Dll. Disini saya menggunakan rate limit terpisah, yaitu menggunakan simple queue berbasis PCQ. PCQ (Per-Connection Queue) adalah queue types yang membagi paket dengan rata

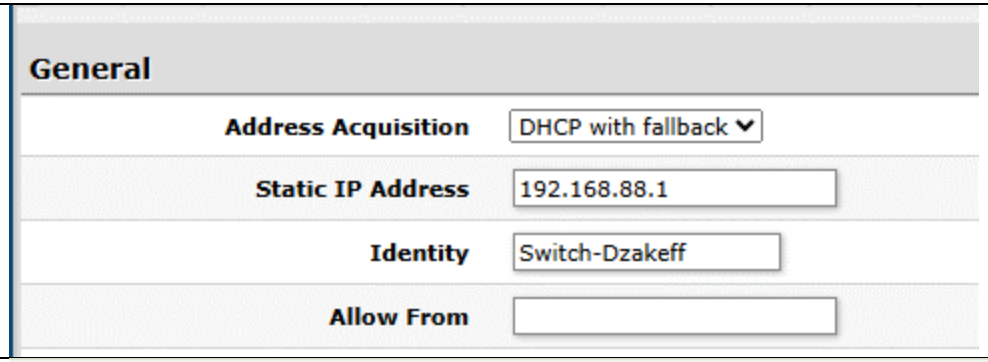
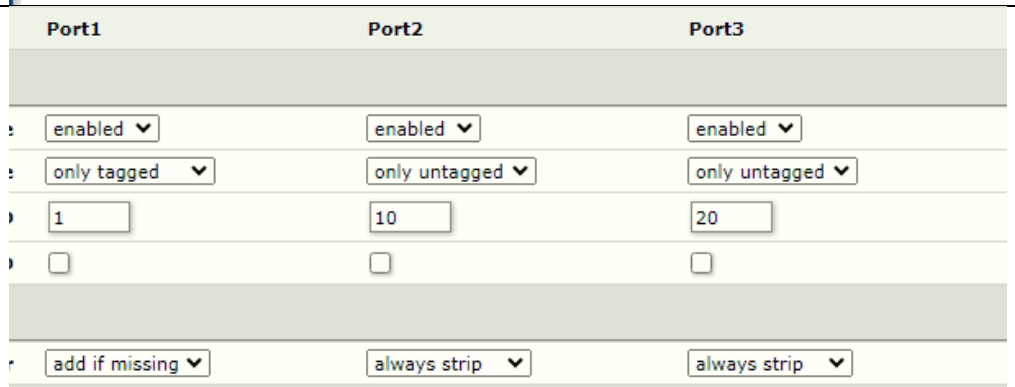
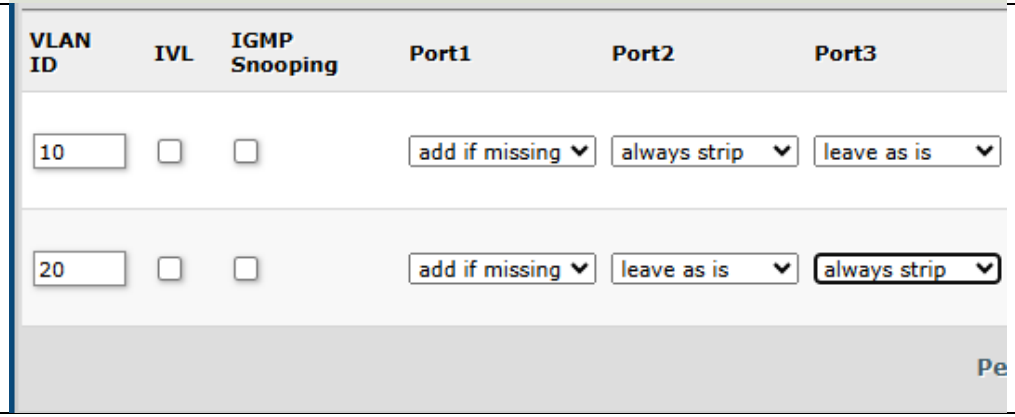
No	Konfigurasi	Hasil/Dokumentasi	Keterangan
			sesuai dengan berapa user yang terhubung. Kelebihannya adalah dapat mendistribusikan paket dengan rata kepada tiap end user lebih banyak dibandingkan dengan queue type hotspot dan pfifo. Disini juga menambahkan incoming dan outcoming marks yang berfungsi untuk menandakan paket sesuai dengan user profiles.

No	Konfigurasi	Hasil/Dokumentasi	Keterangan
11	Filter Firewall (Forward dan Blok)		Blok HTTP, SSH, dan telnet berguna agar router lebih aman dari ancaman pengguna yang ingin masuk ke konfigurasi router. Menambahkan Forward : accept agar traffic yang melewati router tersebut bisa diterima/diperbolehkan lewat, namun harus dibawah dari blok agar firewall bisa melakukan filter blok yang sudah ditentukan terlebih dahulu, baru paket yang lain dapat diizinkan melewati router.

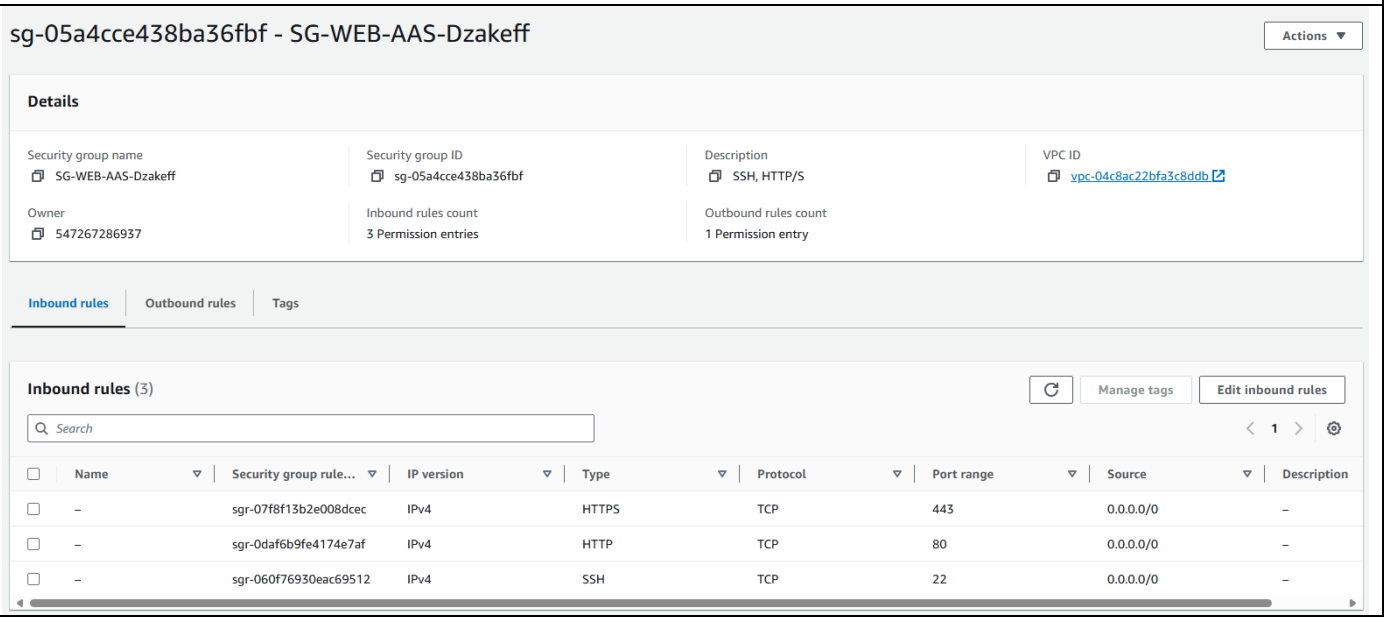
No	Konfigurasi	Hasil/Dokumentasi	Keterangan
12	NAT Firewall		Menambahkan srcnat : masquerade pada port 1-R1 agar IP private bisa keluar menggunakan IP sumber internet.
13	Mangle Firewall		Disini merupakan setting mangle yang berfungsi agar user yang menggunakan hotpot login dapat di jump ke paket marks yang secara otomatis akan muncul dan dapat di setting limitnya di queue.

No	Konfigurasi	Hasil/Dokumentasi	Keterangan
14	IP Routes		Disini merupakan table route yang berfungsi agar paket dapat melewati melalui traffic tersebut.
15	Users		Demi keamanan extra, saya mengganti user login agar tidak mudah orang lain masuk.
16	Queue		Disini merupakan queue yang sudah sesuai dengan packet marks.

- **Switch Manage**

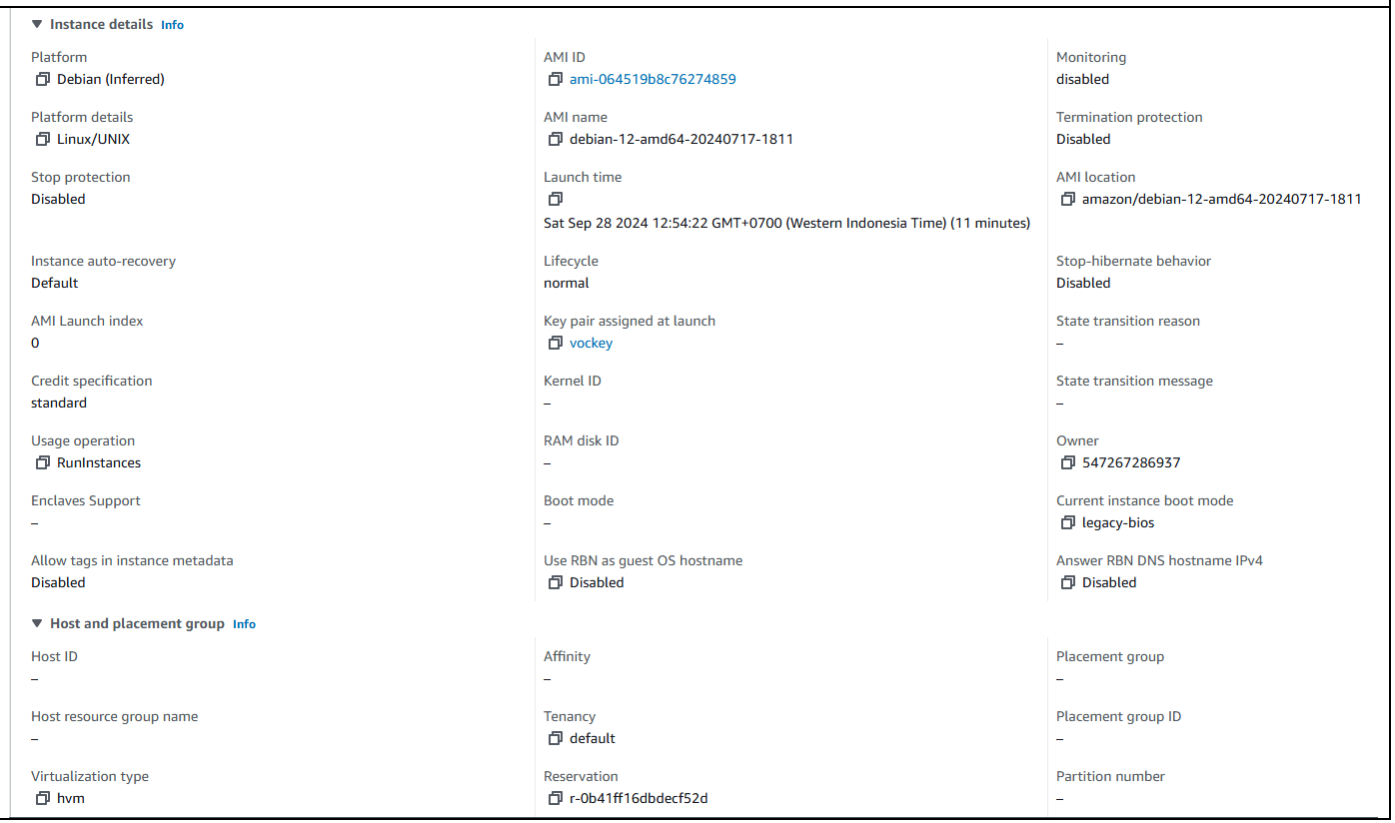
No	Konfigurasi	Hasil/Dokumentasi	Keterangan
1	Identity		Penting nya memberikan penamaan pada suatu perangkat agar mudah dikenali.
2	VLAN		Only tagged – add if missing berguna untuk mengubah port menjadi port trunk VLAN (yang menyalurkan semua VLAN masuk ke switch.) Only untagged – always strip berguna untuk menandakan port menjadi Access (sebagai perantara agar perangkat terhubung ke suatu VLAN ID.)
3	VLANs		Disini merupakan proses penandaan port ke suatu VLAN ID.

- **Hasil Konfigurasi Security Group**

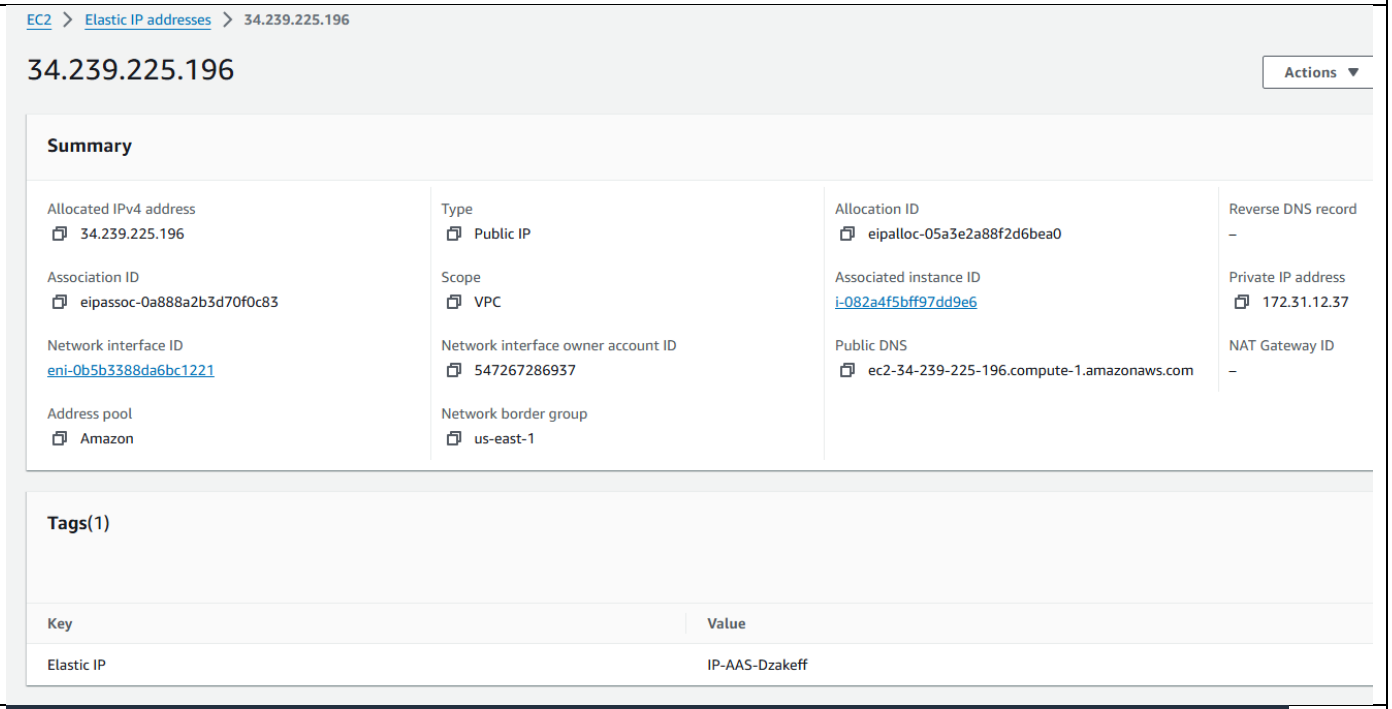
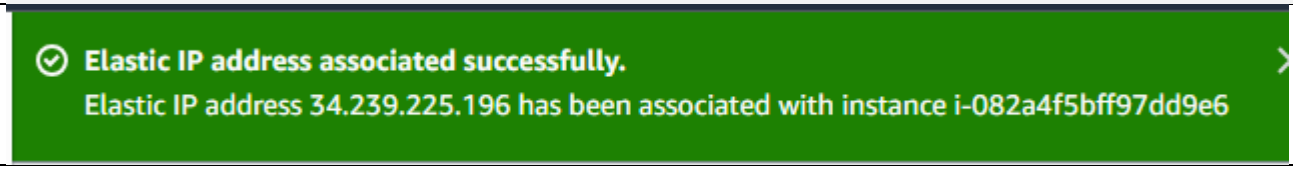
No	Konfigurasi	Screenshot Hasil Konfigurasi
1	Inbound rules SG-1	

- **Hasil Konfigurasi EC2 Instance**

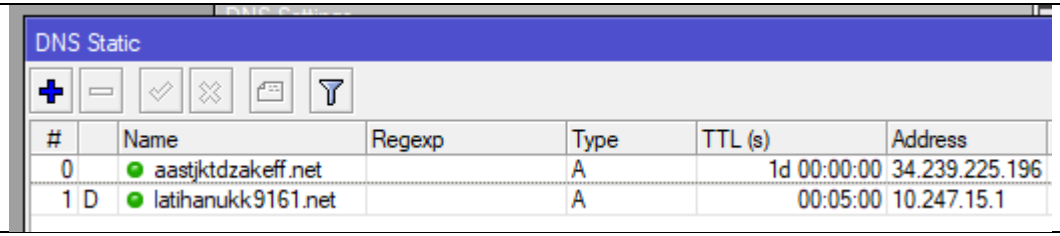
No	Konfigurasi	Screenshot Hasil Konfigurasi
1	Nama Instance	**Instance summary for i-082a4f5bff97dd9e6 (SRV-AAS-Dzakeff)** Info Updated less than a minute ago
2	OS / AMI	Platform: Debian (Inferred) Platform details: Linux/UNIX AMI ID: ami-064519b8c76274859 AMI name: debian-12-amd64-20240717-1811
3	Instance type	Instance type t2.small
4	Key Pair	Key pair assigned at launch vockey
5	Storage	vol-0bb46c4b467e3807b /dev/xvda 15 Attached

No	Konfigurasi	Screenshot Hasil Konfigurasi
6	Instance Details	

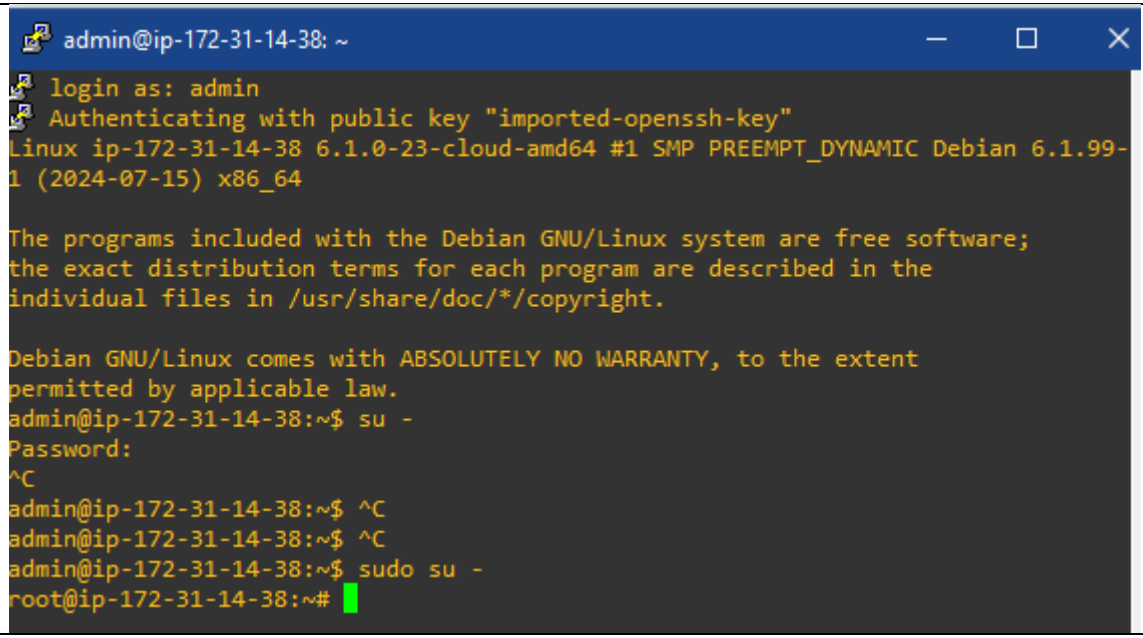
- **Hasil Konfigurasi Elastic IP Address**

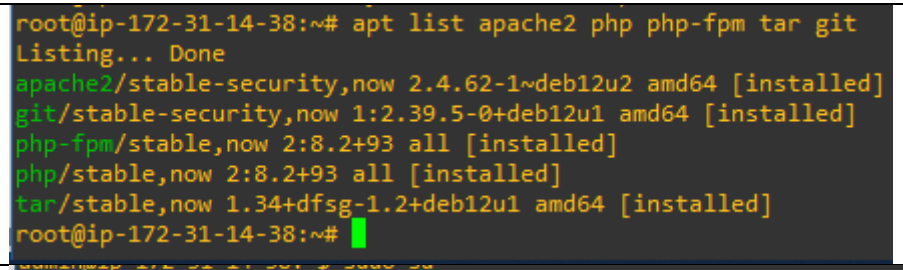
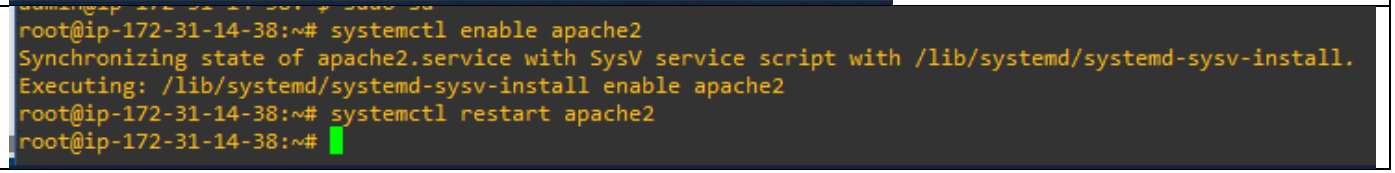
No	Konfigurasi	Screenshot Hasil Konfigurasi
1	Buat / Alokasikan Elastic IP	
2	Associate Elastic IP to EC2 Instance (Pasang Elastic IP ke EC2 Instance)	

- **Hasil Konfigurasi DNS Lokal di MikroTik**

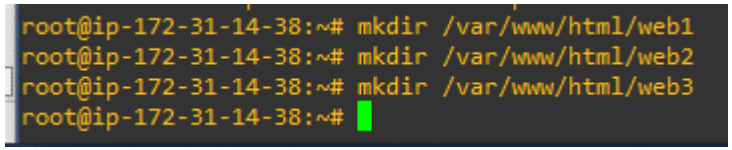
No	Konfigurasi	Screenshot Hasil Konfigurasi
1	Tampilan tabel DNS Lokal di router MikroTik	

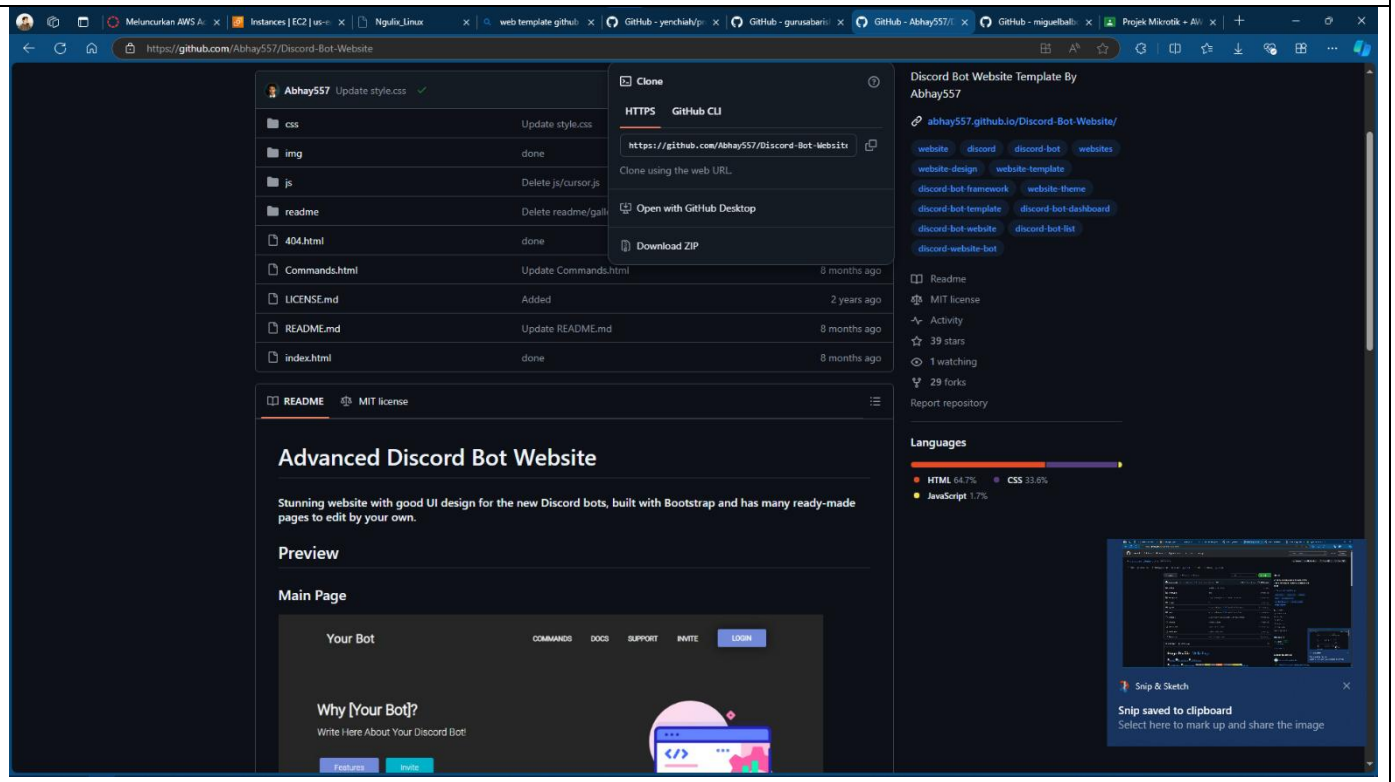
- **Hasil Konfigurasi Web Server (Apache2 atau NGINX) dan Clone Sources-Code**

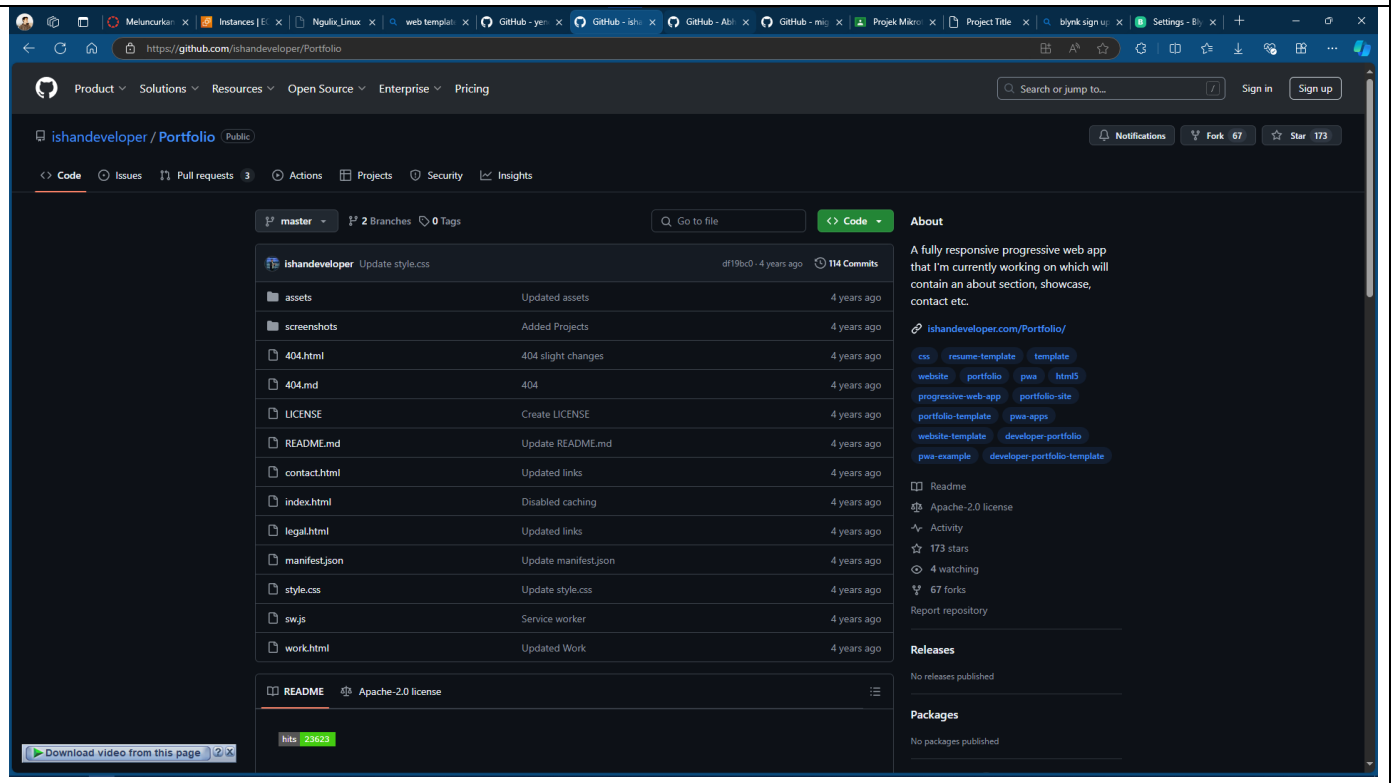
No	Konfigurasi	Screenshot Hasil Konfigurasi
1	Remote server menggunakan SSH Client	

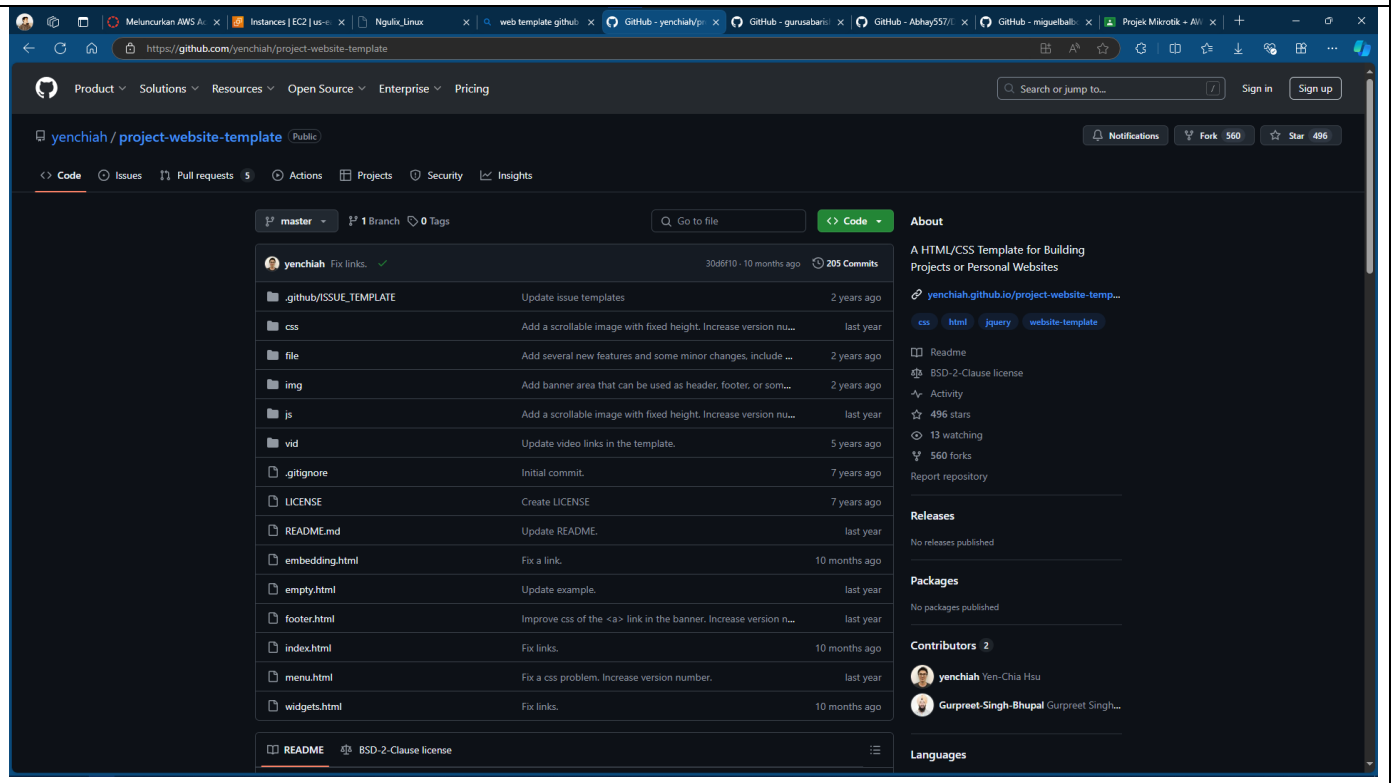
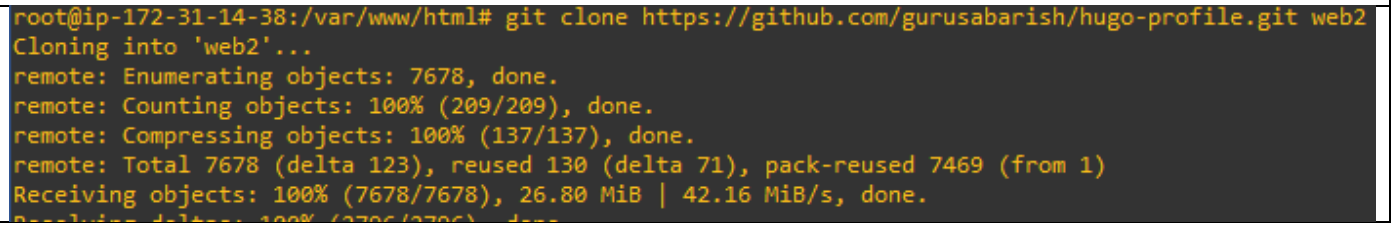
No	Konfigurasi	Screenshot Hasil Konfigurasi
2	Install services apache2, php, library php, unzip dan git	
3	Restart service web server	

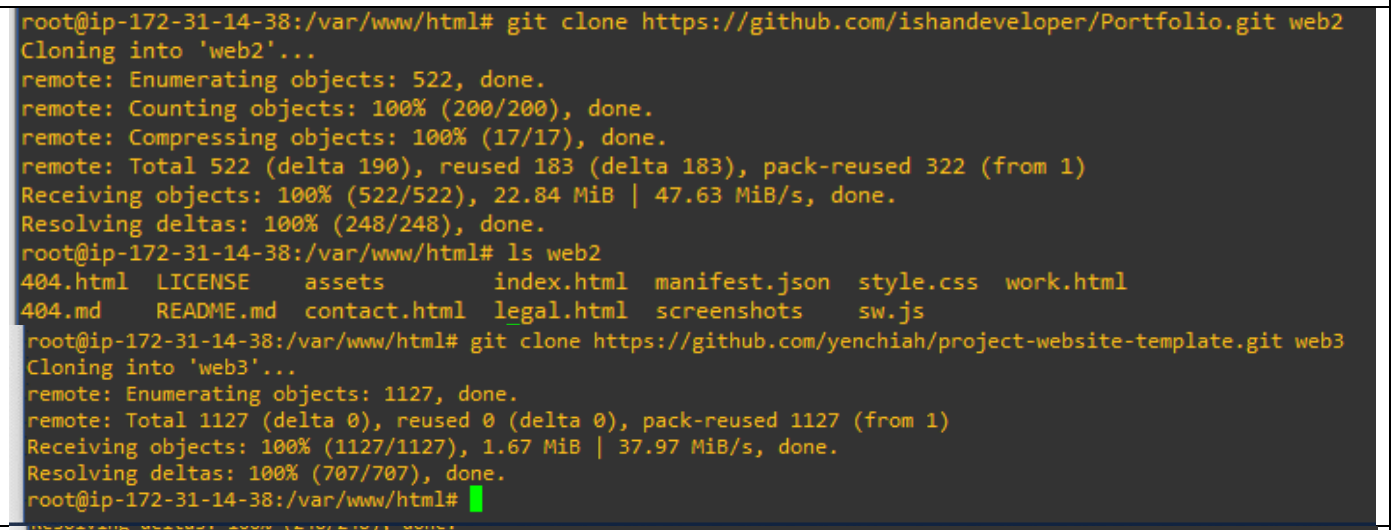
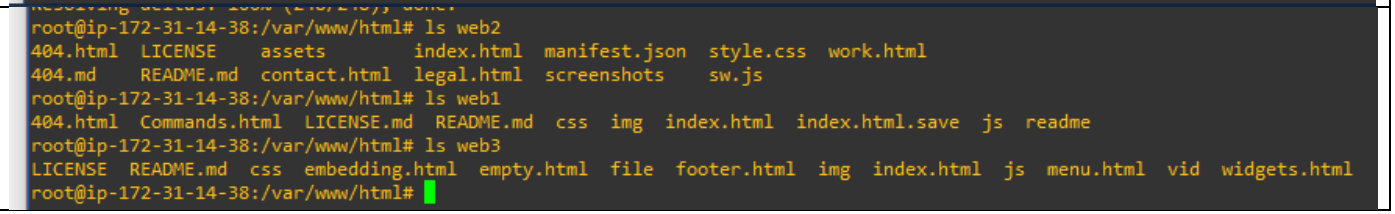
- **Hasil Konfigurasi Clone Sourcescode Web Statis dari Github**

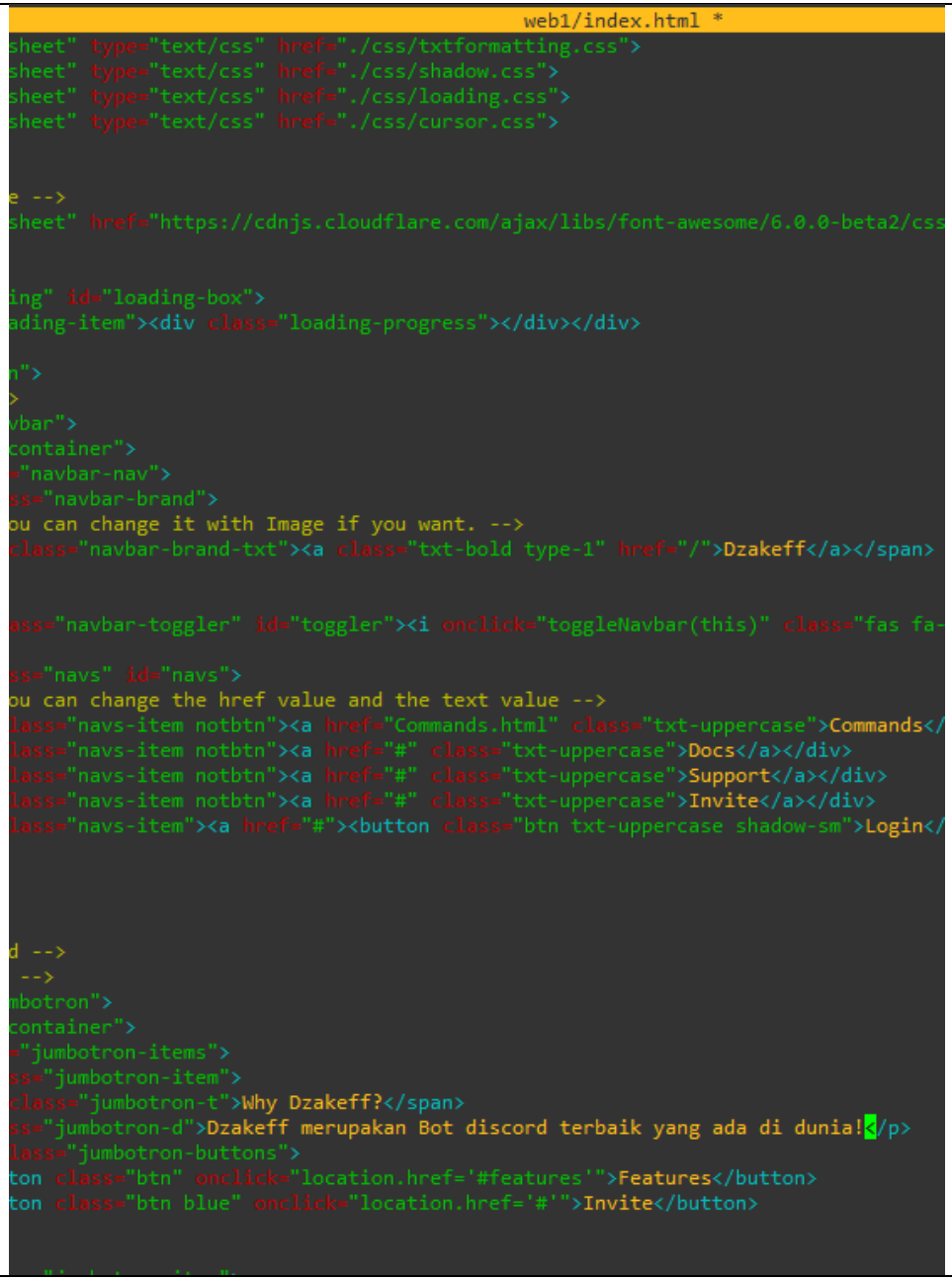
No	Konfigurasi	Screenshot Hasil Konfigurasi
1	Buat direktori baru /var/www/html/web1 /var/www/html/web2 /var/www/html/web3	

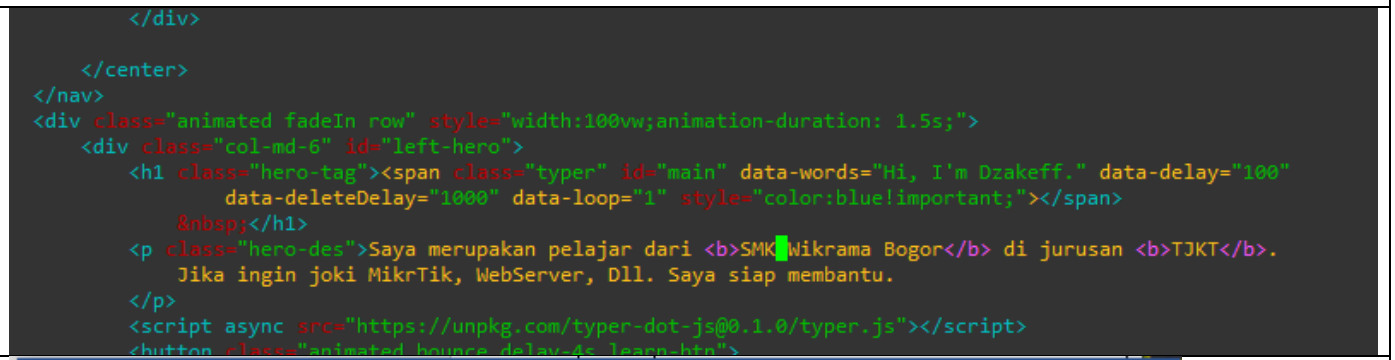
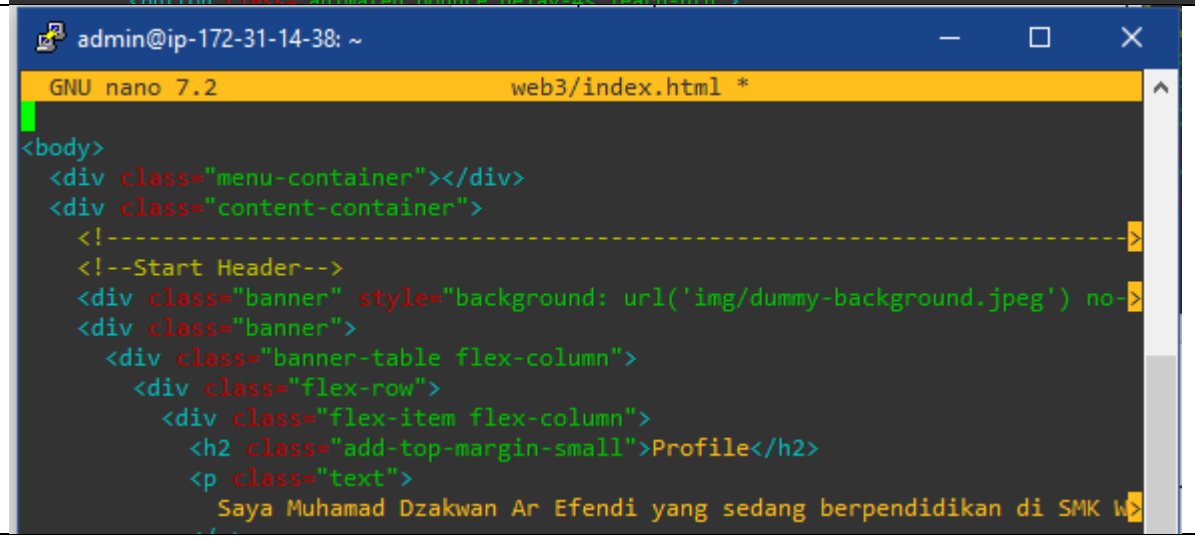
No	Konfigurasi	Screenshot Hasil Konfigurasi
2	3 link sourcecode / screenshot tampilan repository github ***** Sertakan 3 screenshot***	 Web1

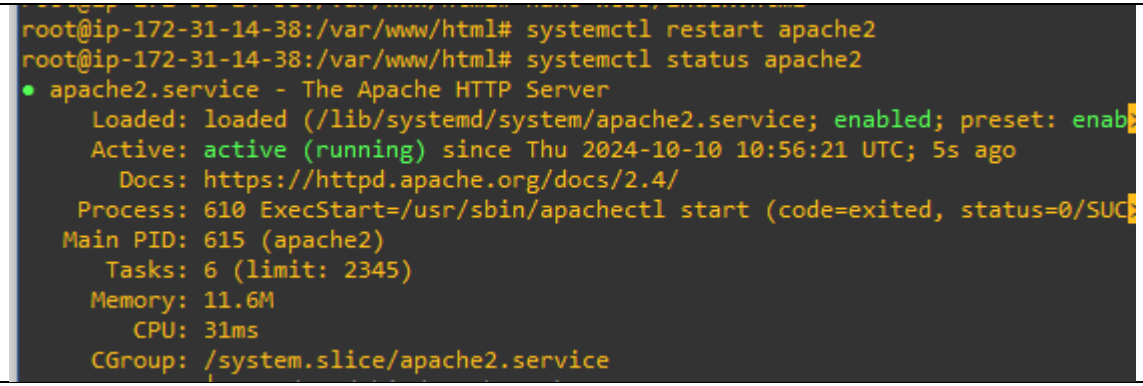
No	Konfigurasi	Screenshot Hasil Konfigurasi
		 Web2

No	Konfigurasi	Screenshot Hasil Konfigurasi
		 Web3
3	Clone source code **** Sertakan 3 screenshot***	

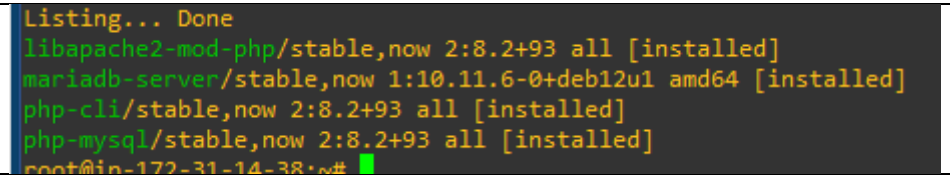
No	Konfigurasi	Screenshot Hasil Konfigurasi
		
4	Cek isi direktori web1, web2, dan web3 ***** Sertakan 3 screenshot***	

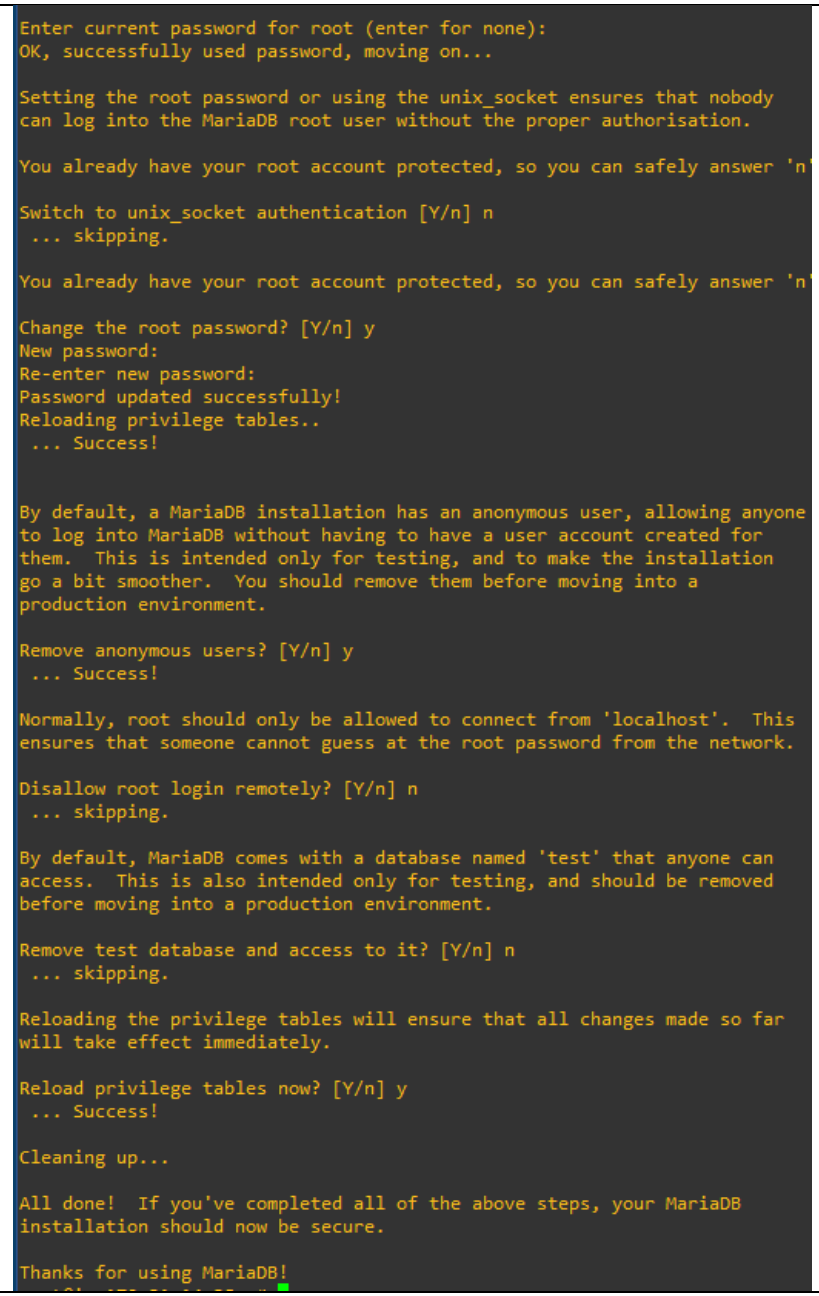
7	Edit tampilan website : web1	

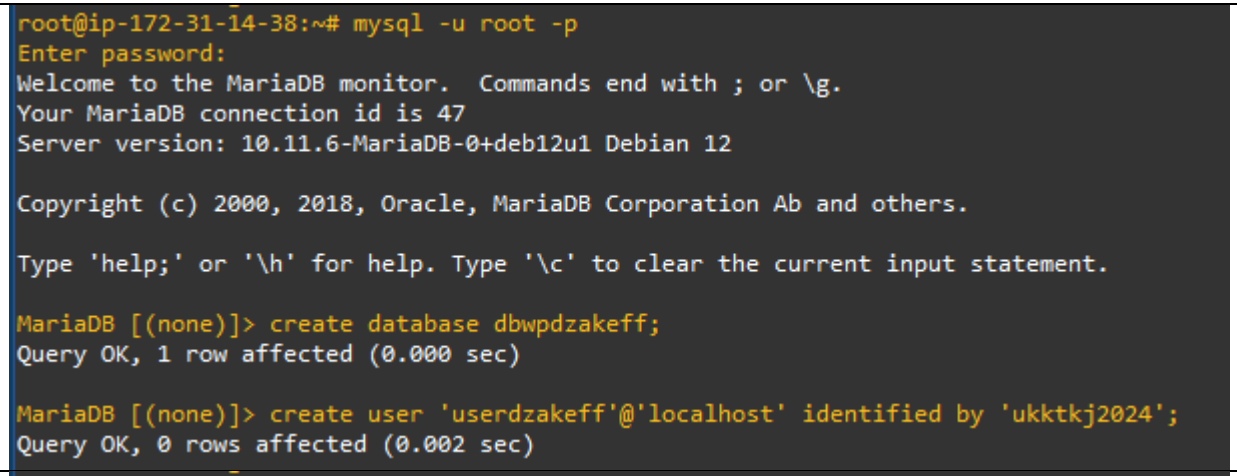
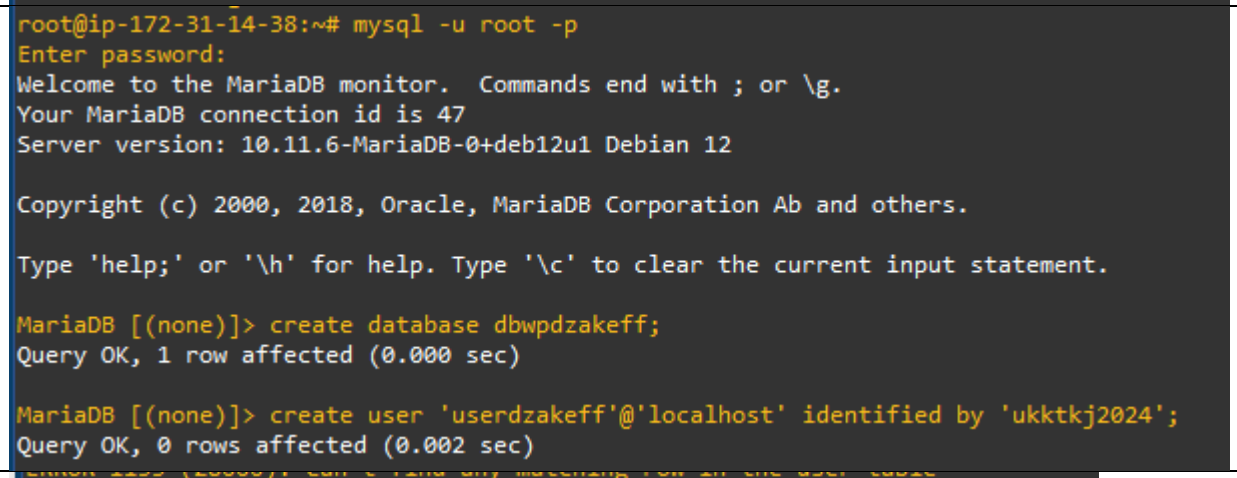
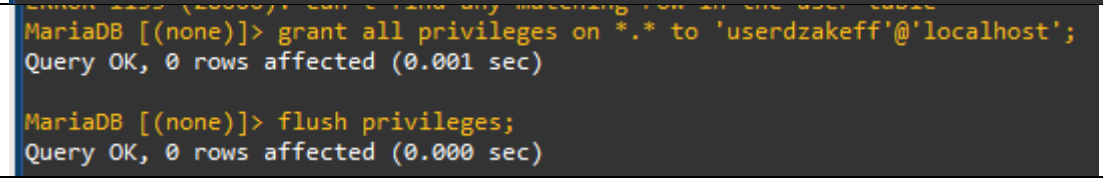
No	Konfigurasi	Screenshot Hasil Konfigurasi
8	Edit tampilan website : web2	
9	Edit tampilan website : web3	

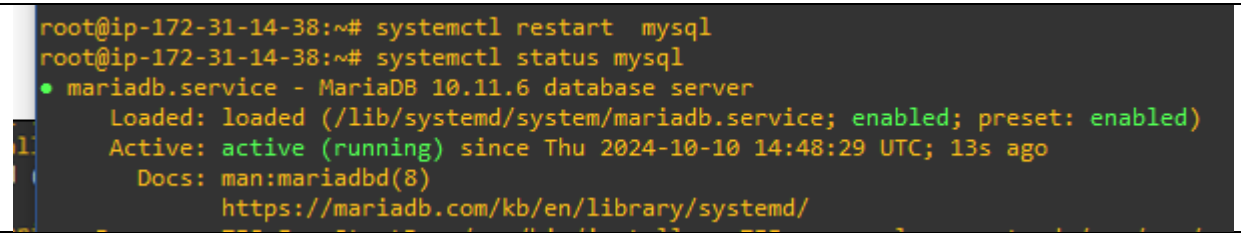
No	Konfigurasi	Screenshot Hasil Konfigurasi
10	Restart dan cek status service web server	

- **Hasil Konfigurasi DBMS MariaDB**

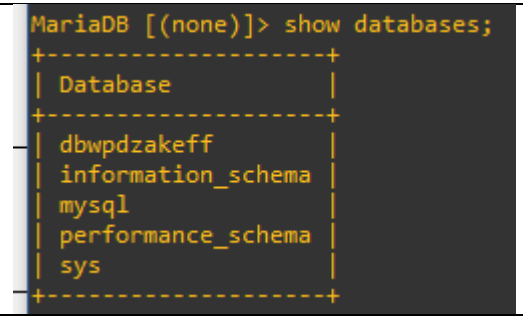
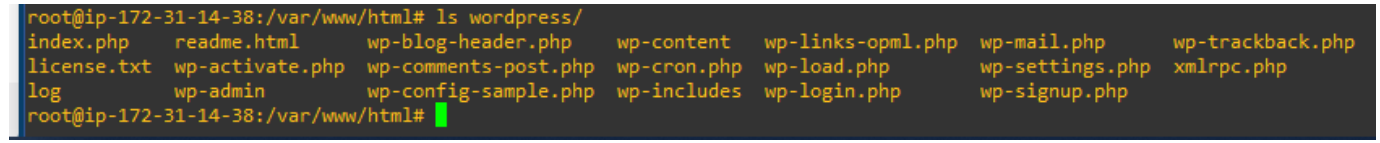
No	Konfigurasi	Screenshot Hasil Konfigurasi
1	Install mariadb-server	

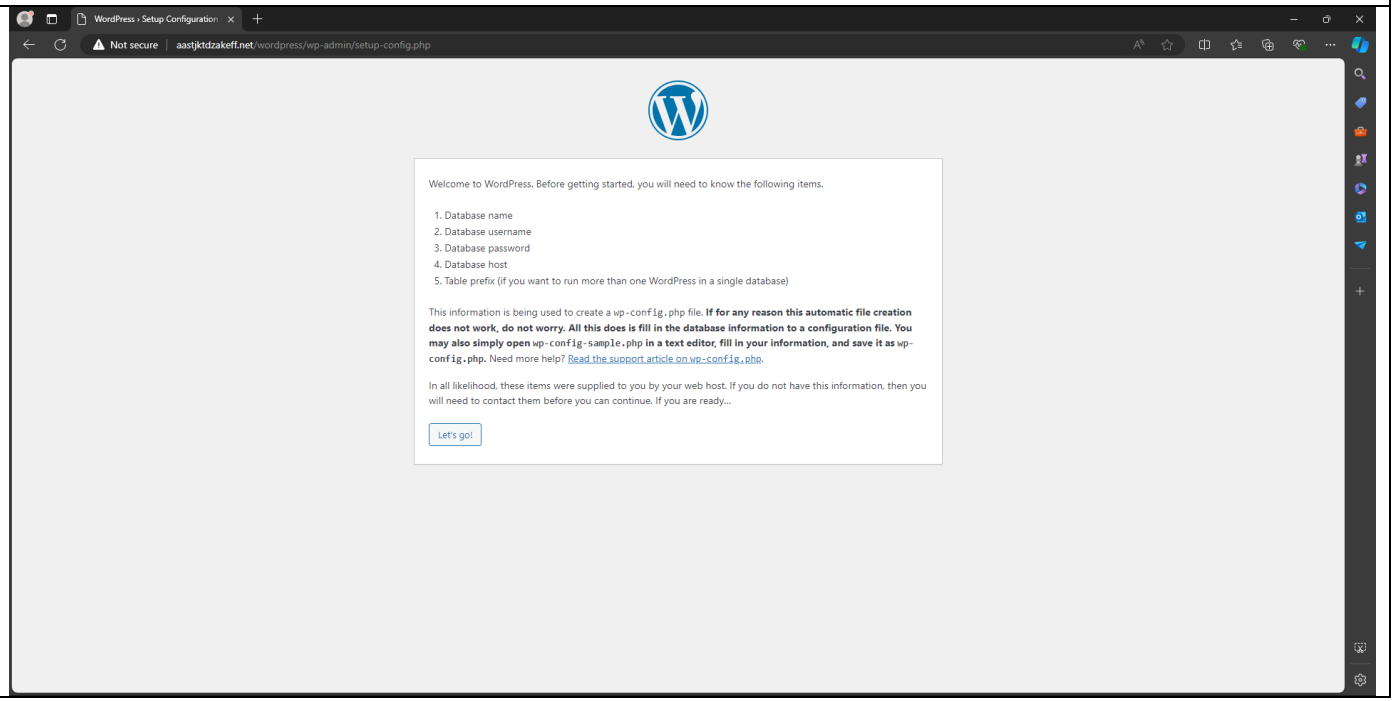
2	Konfigurasi instalasi aman mysql (mysql secure installation)		

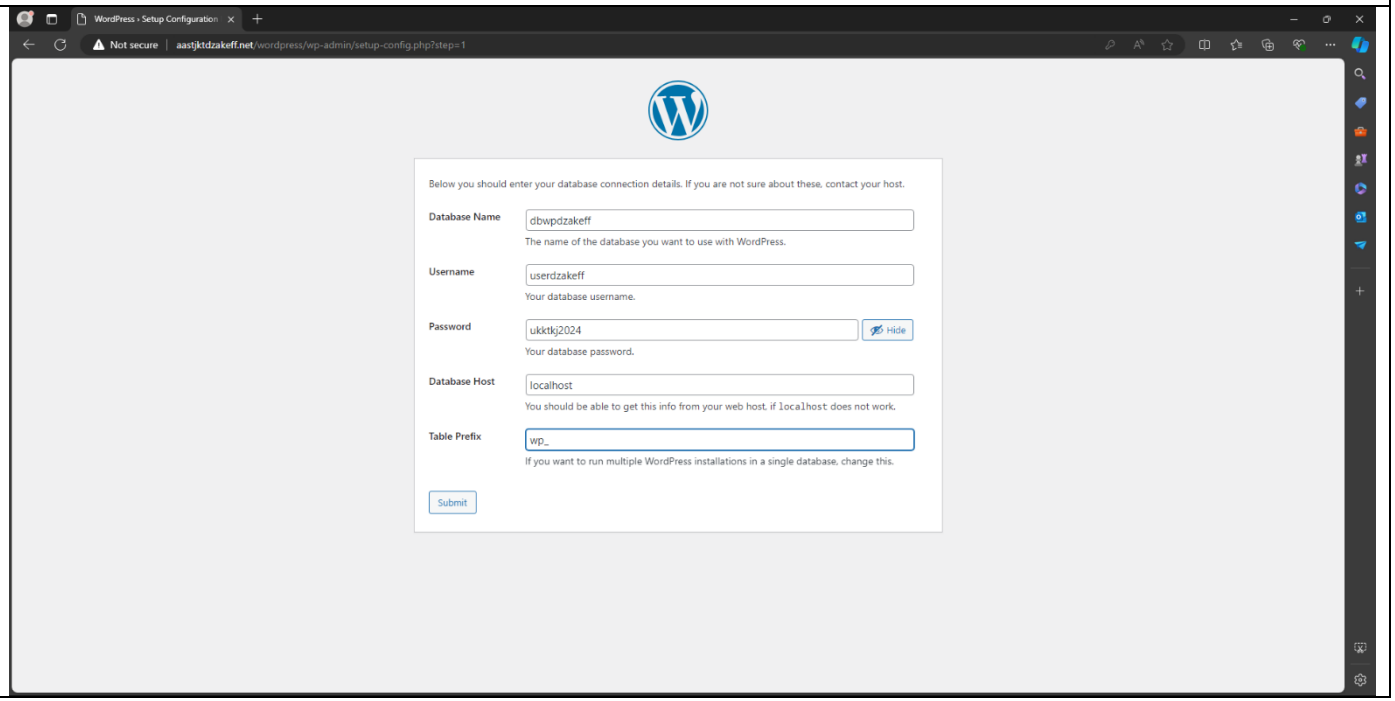
No	Konfigurasi	Screenshot Hasil Konfigurasi
3	Membuat database baru	
4	Membuat user database baru	
5	Konfigurasi privileges untuk user baru	

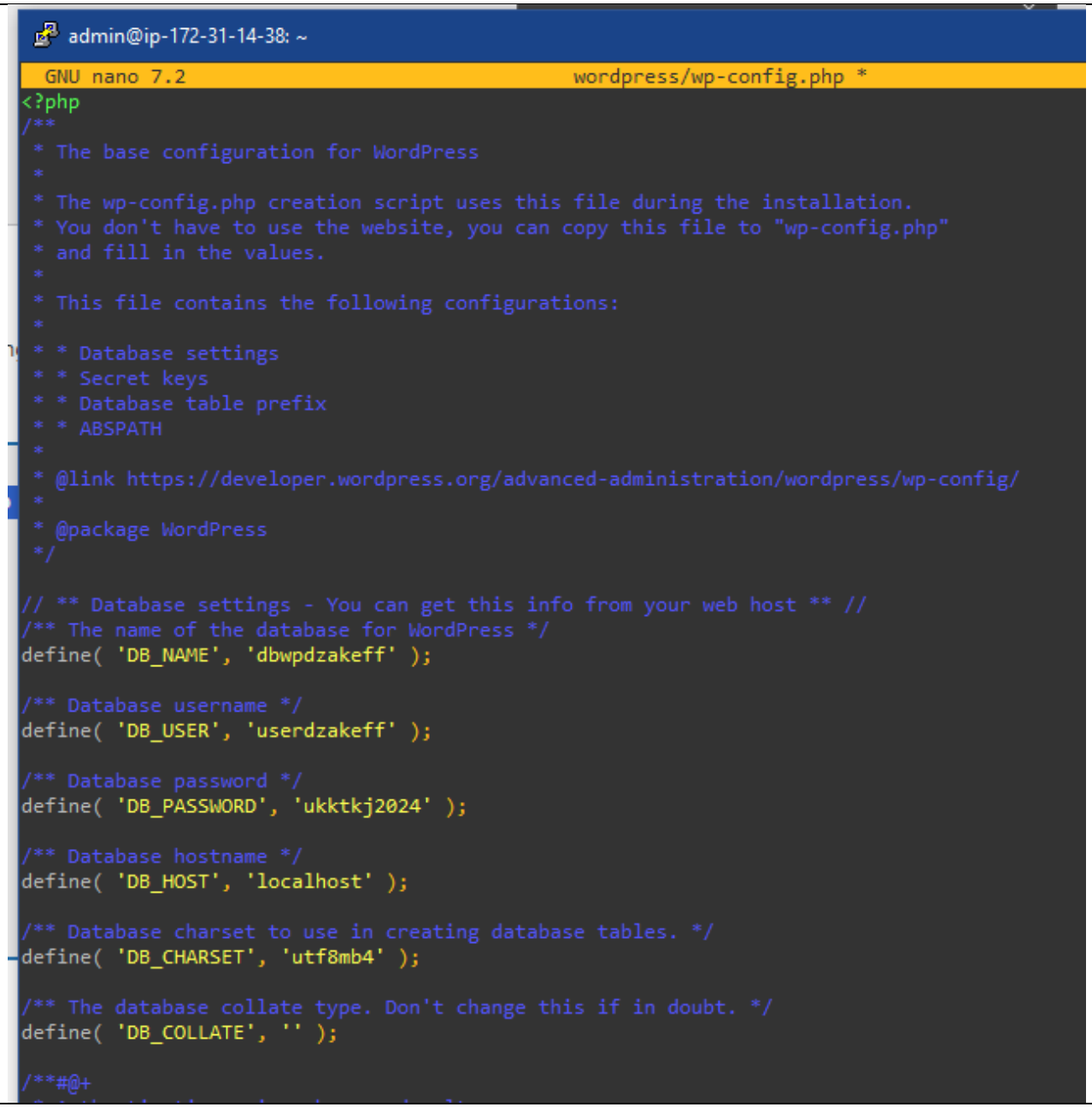
No	Konfigurasi	Screenshot Hasil Konfigurasi
6	Restart dan cek status service mysql	

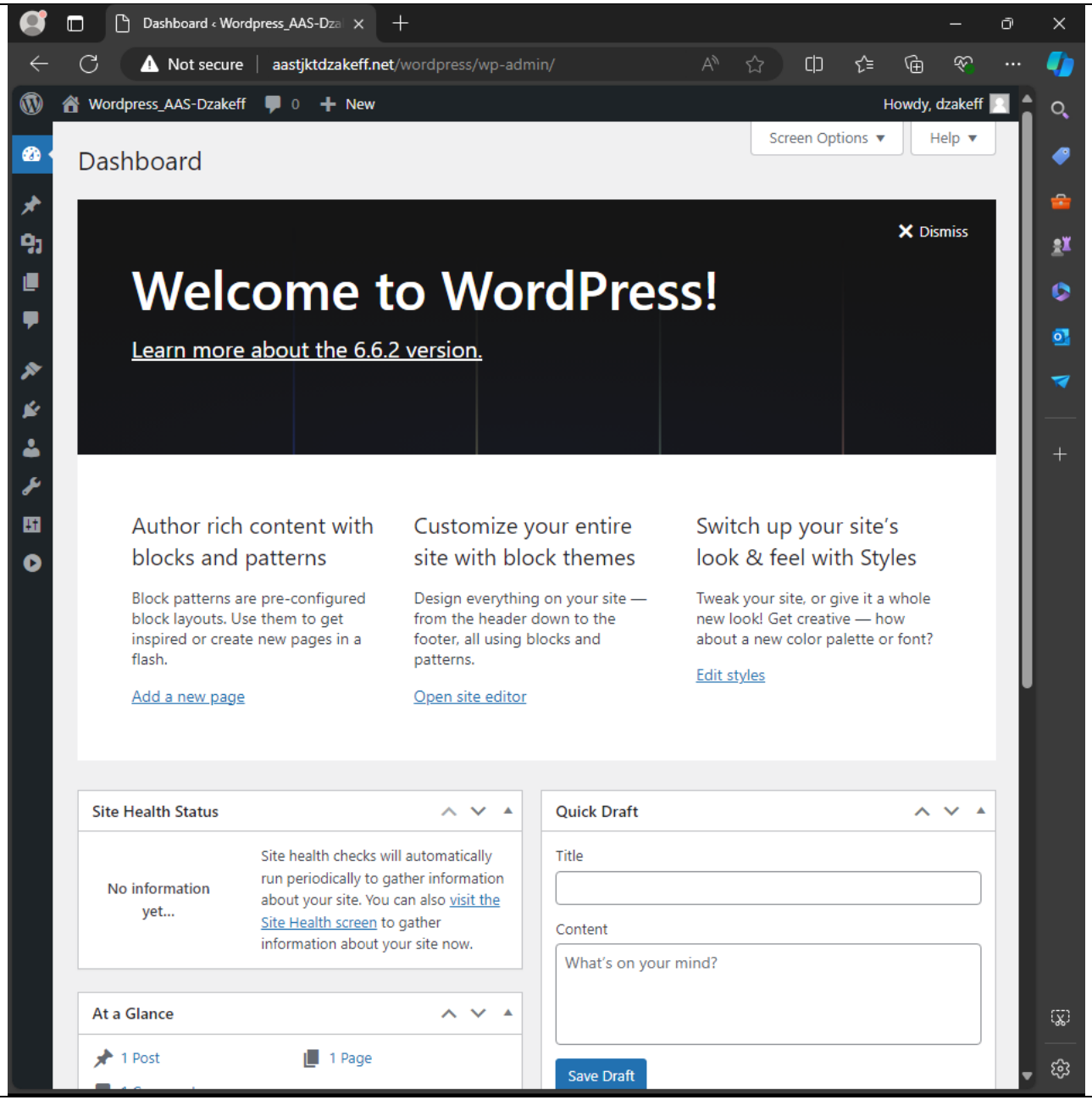
- **Hasil Konfigurasi Wordpress**

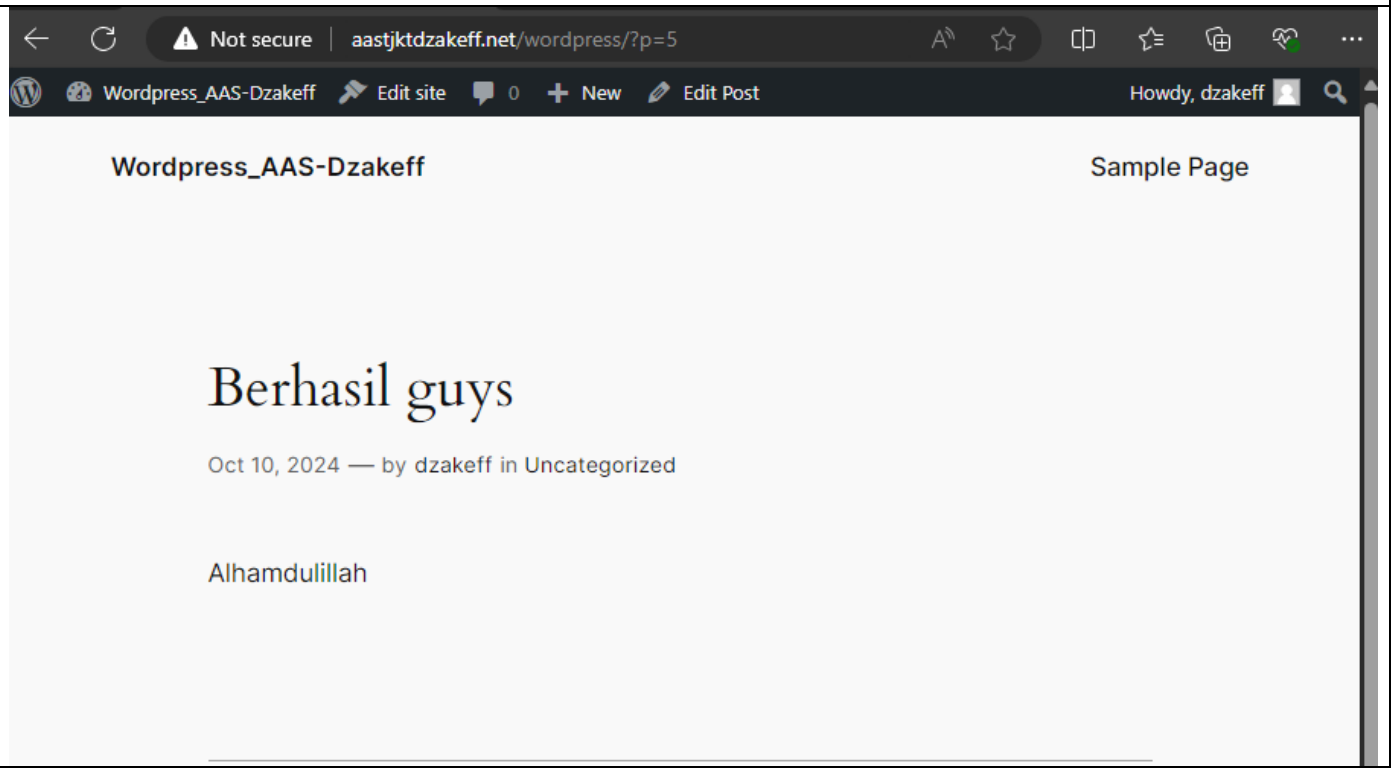
No	Konfigurasi	Screenshot Hasil Konfigurasi
1	Cek database untuk wordpress di terminal mysql	
2	Cek direktori /var/www/html/wordpress	

No	Konfigurasi	Screenshot Hasil Konfigurasi
3	Akses website wordpress	

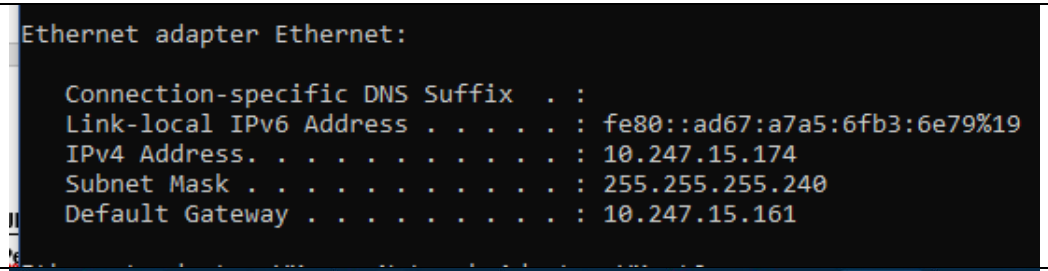
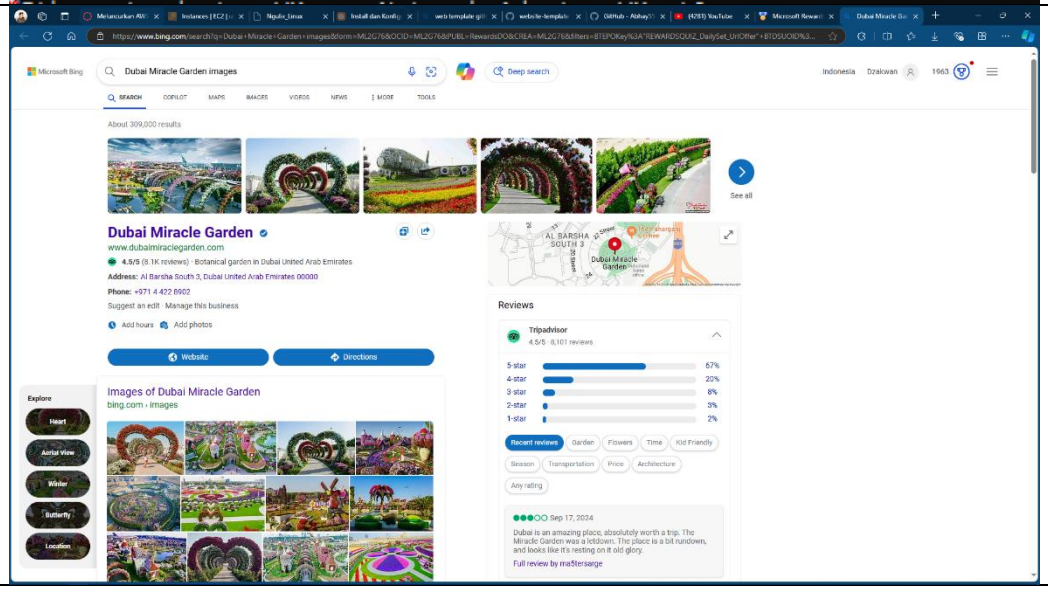
No	Konfigurasi	Screenshot Hasil Konfigurasi
4	Konfigurasi databases (via browser)	

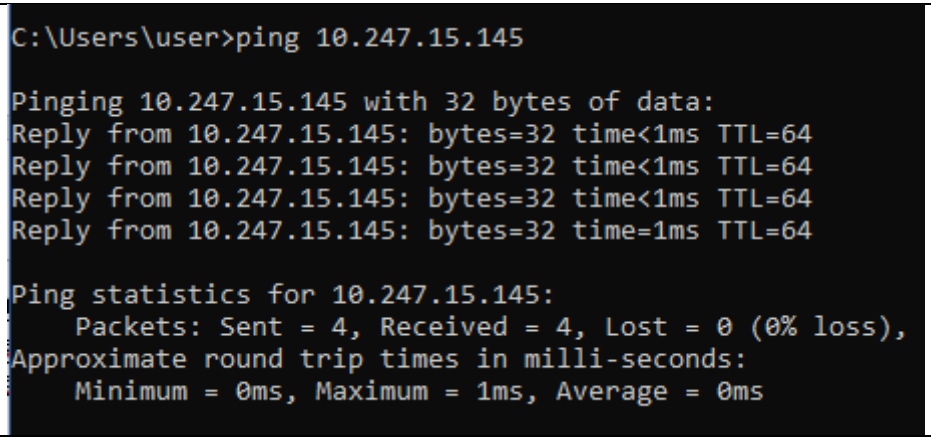
5	Konfigurasi Information Website (via browser)	

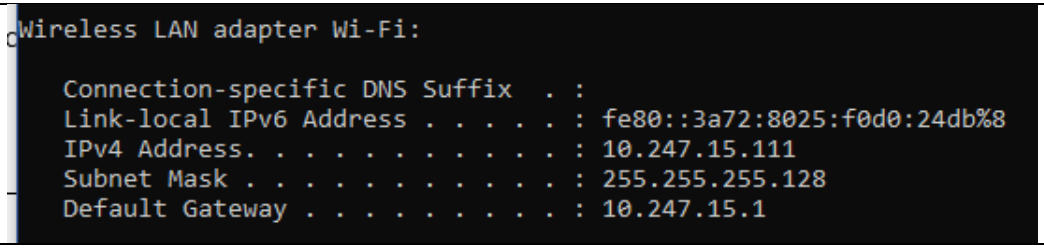
6	Akses wp-admin	

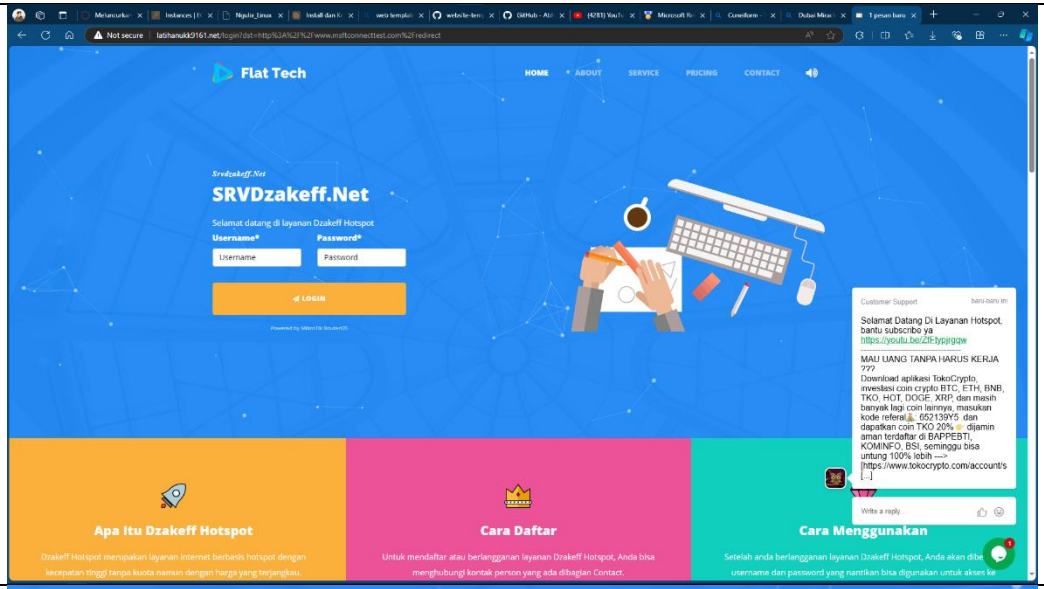
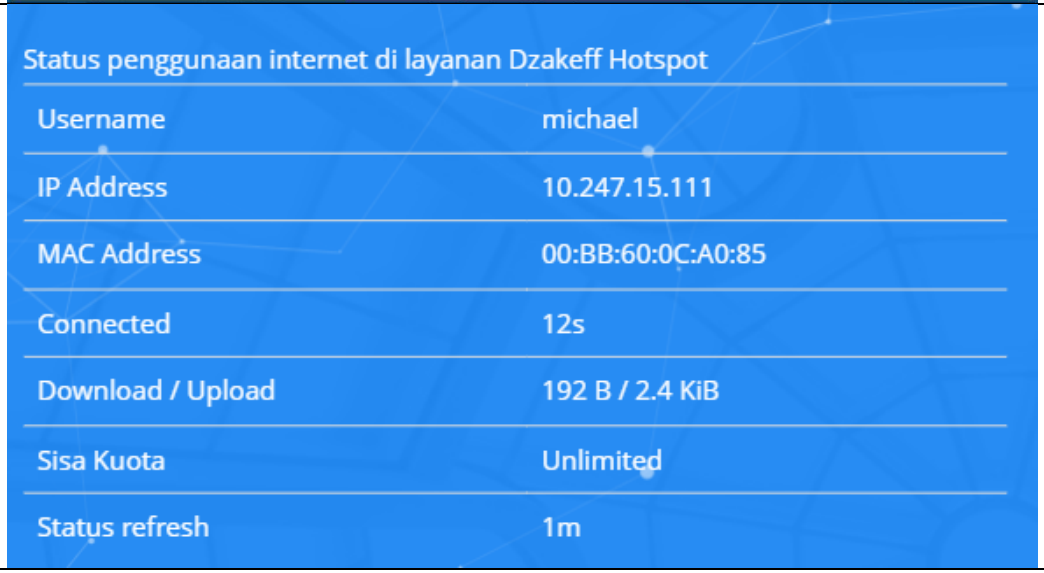
No	Konfigurasi	Screenshot Hasil Konfigurasi
7	Buat 1 postingan baru	

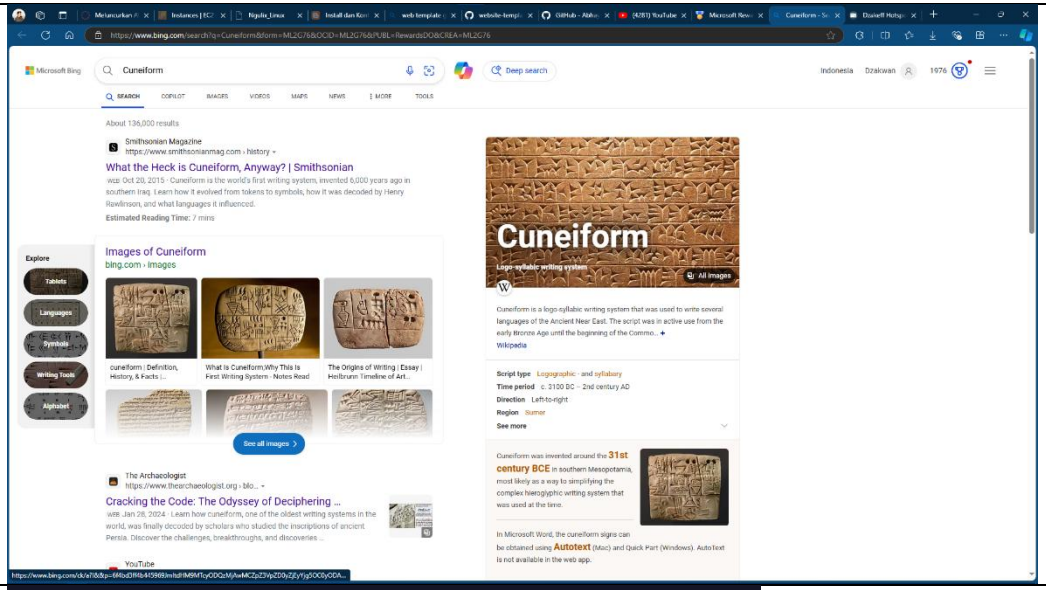
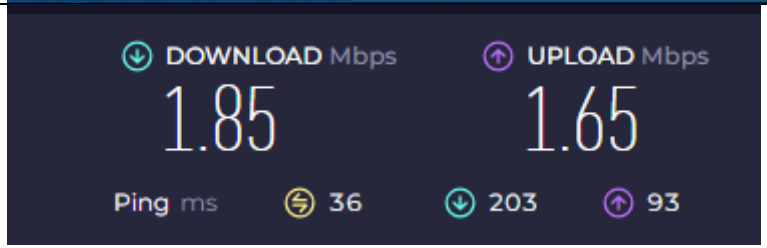
B. HASIL UJI KONFIGURASI

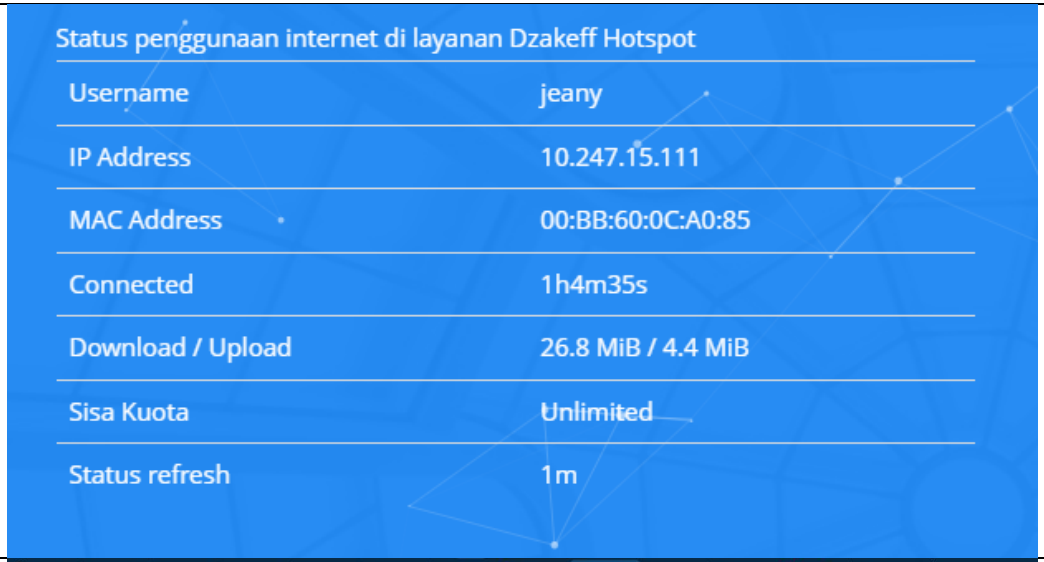
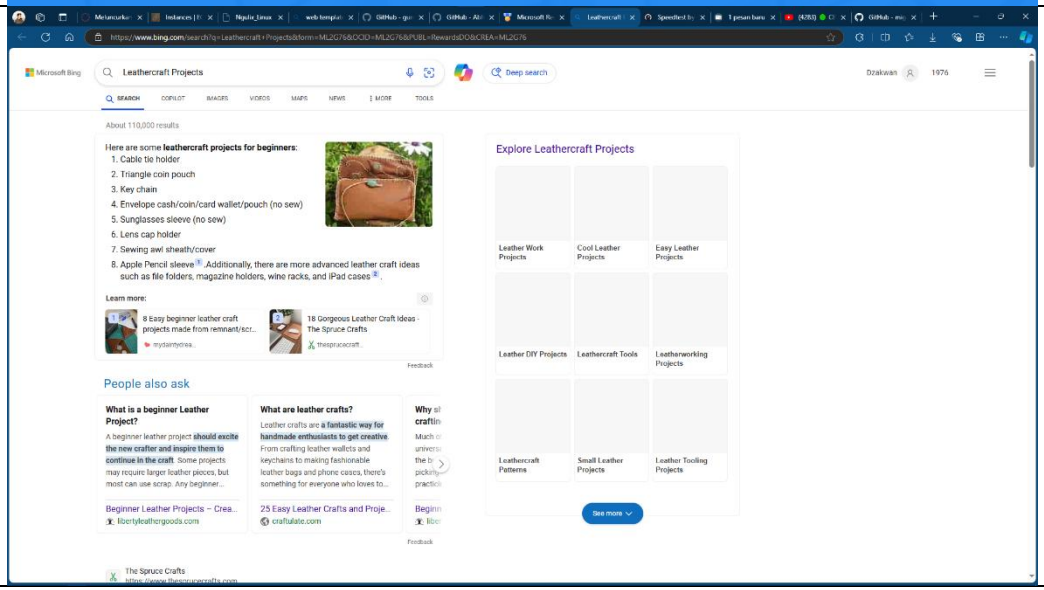
No	Pengecekan	Hasil/Dokumentasi	Keterangan
Uji Coba Client jaringan Marketing Room			
1.	IP Address Client Marketing Room		DHCP Server VLAN 20 berhasil.
2.	Browsing Internet		Internet aman.

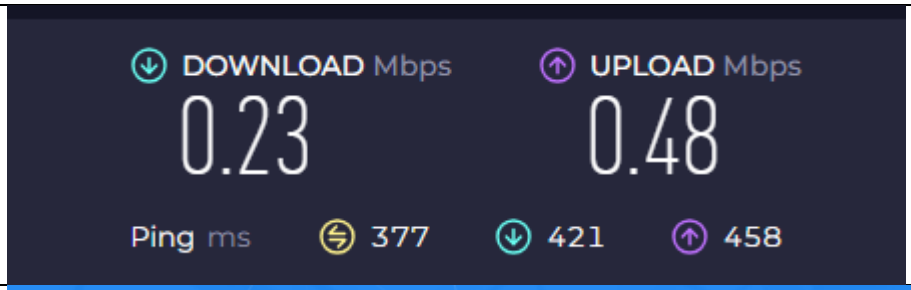
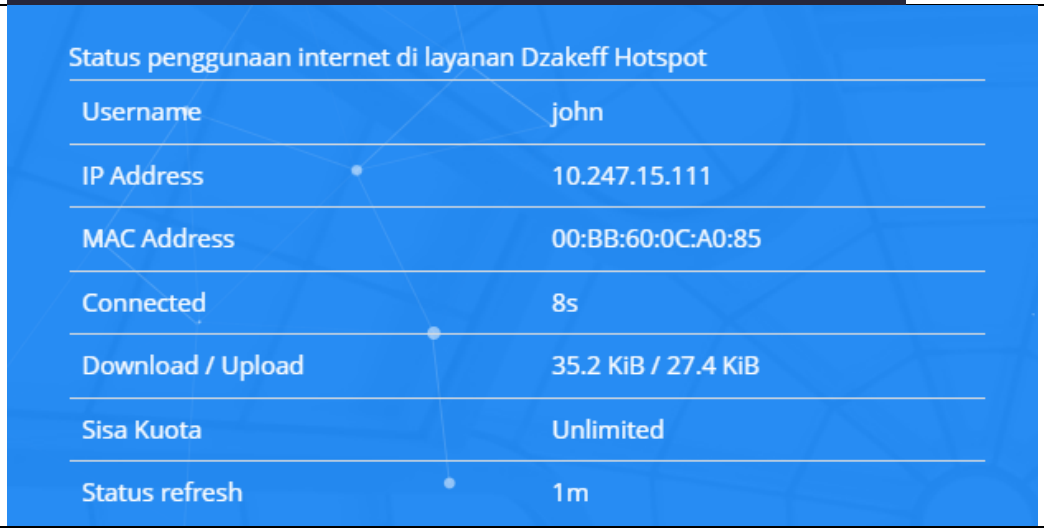
No	Pengecekan	Hasil/Dokumentasi	Keterangan
3.	Ping ke IP Client HRD Room		IP routes berhasil.

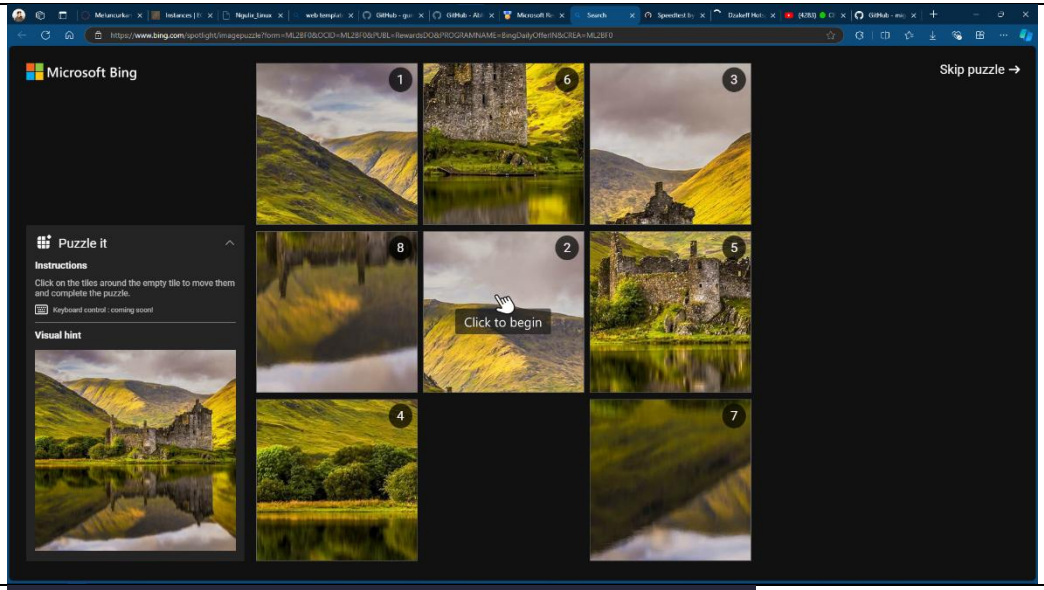
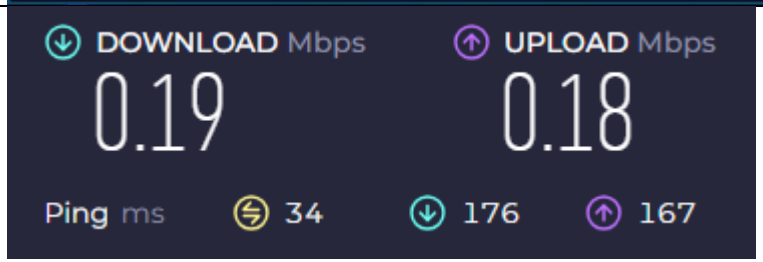
No	Pengecekan	Hasil/Dokumentasi	Keterangan
Uji Coba Client Public WiFi Area			
1.	IP Address Client Public WiFi Area		DHCP Server hotspot wlan1 berhasil.

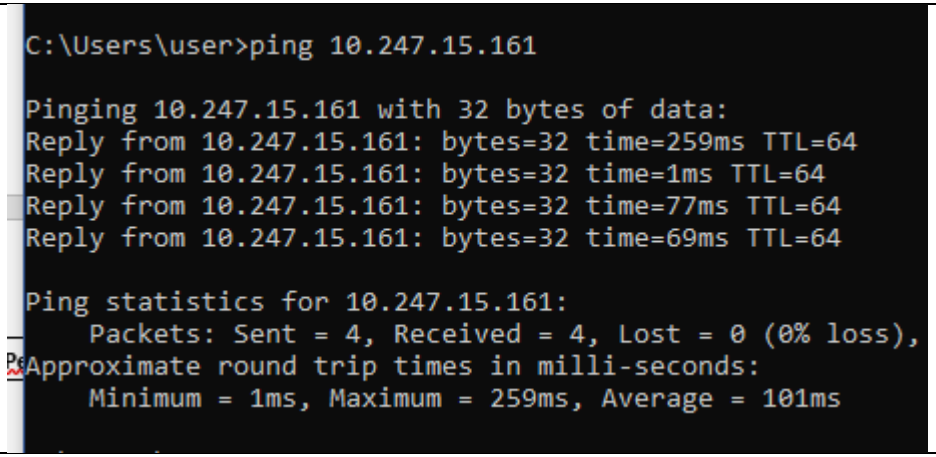
No	Pengecekan	Hasil/Dokumentasi	Keterangan
2.	Tampilan Login Hotspot		Webpage hotspot berhasil terpanggil.
3.	Login Hotspot Direktur		User direktur berhasil masuk.

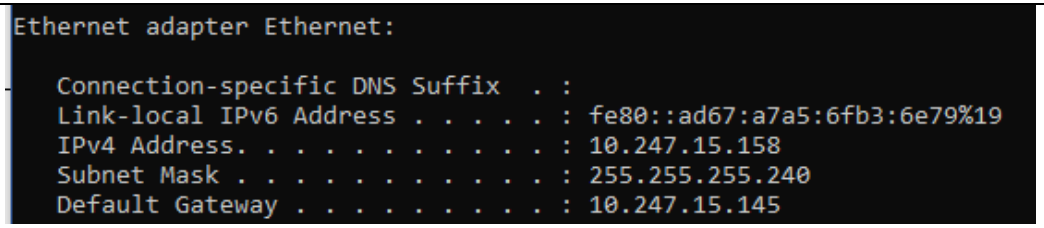
No	Pengecekan	Hasil/Dokumentasi	Keterangan
4.	Browsing User Direktur		Internet aman.
5.	Speedtest User Direktur		Bila hanya terdapat satu user pada suatu user profiles saja, paket dapat dikirim sampai max limit. Jika terdapat dua user akan terbagi rata sampai jumlah user seterusnya.

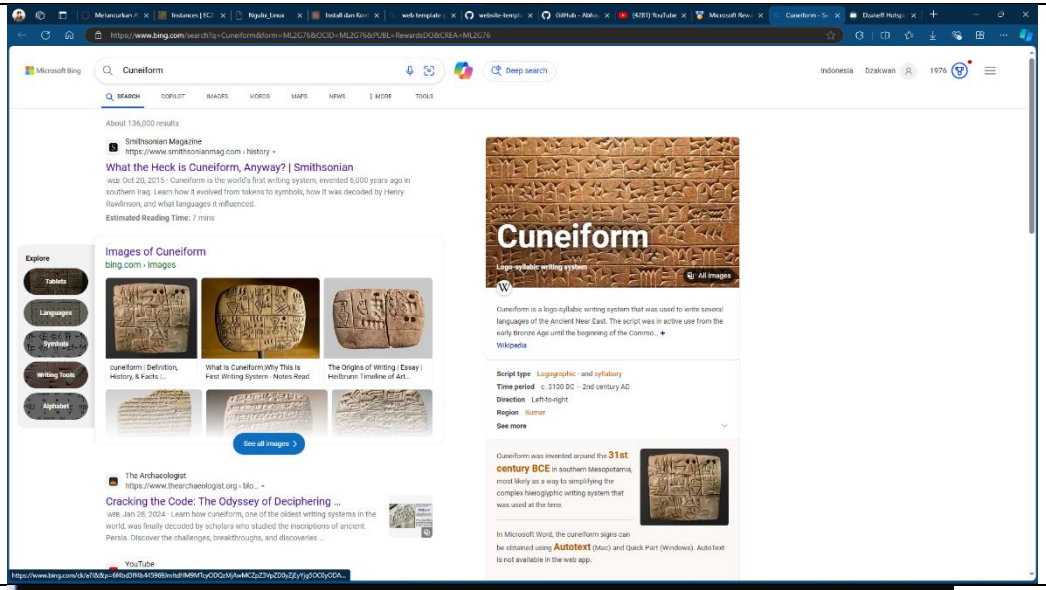
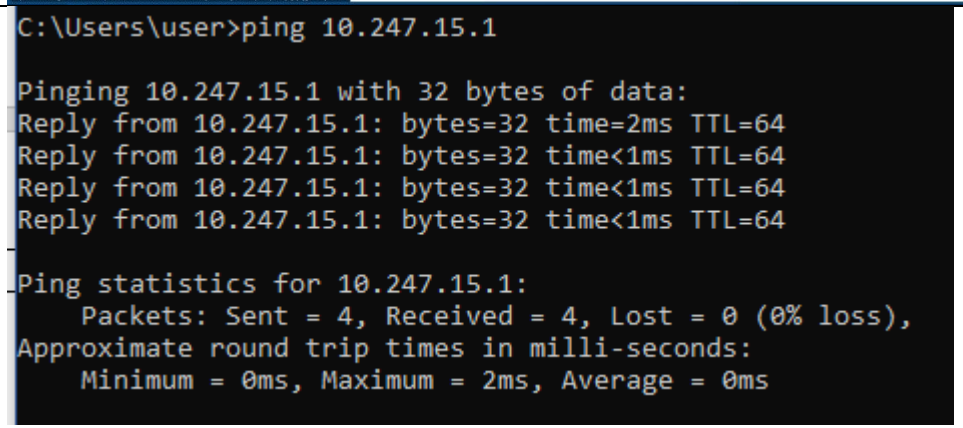
6.	Login Hotspot Manajer		Berhasil login menggunakan user manajer.
7.	Browsing User Manajer		Internet aman.

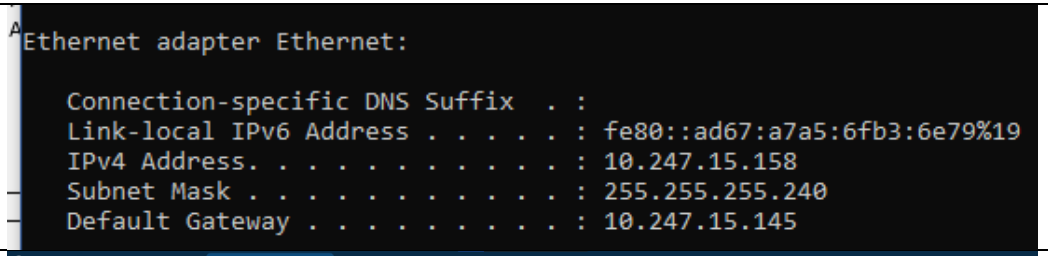
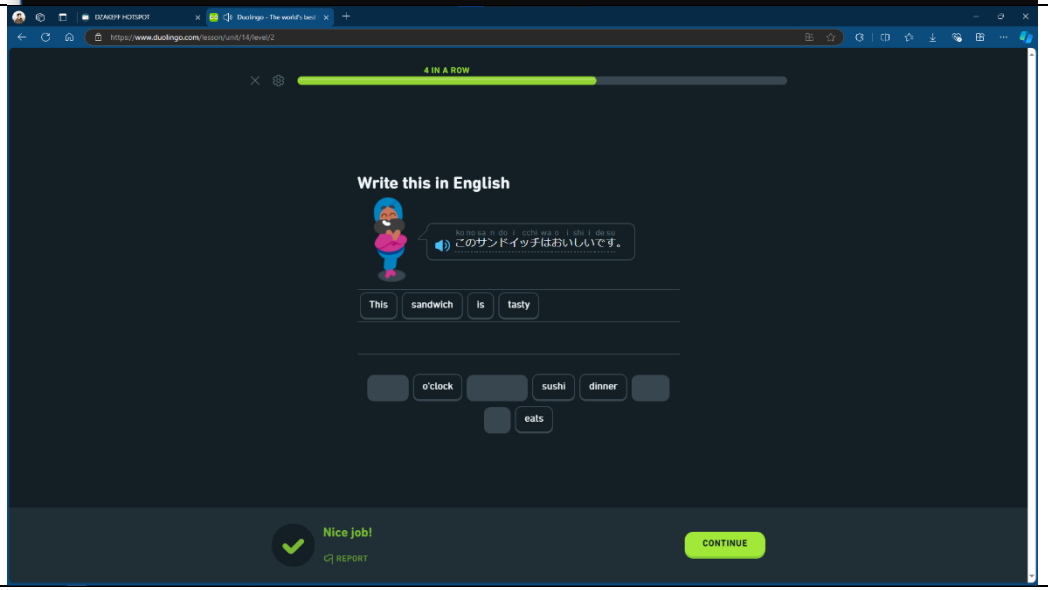
8.	Speedtest User Manajer		Bila hanya terdapat satu user pada suatu user profiles saja, paket dapat dikirim sampai max limit. Jika terdapat dua user akan terbagi rata sampai jumlah user seterusnya.
9.	Login Hotspot Staf		Berhasil menggunakan user staff.

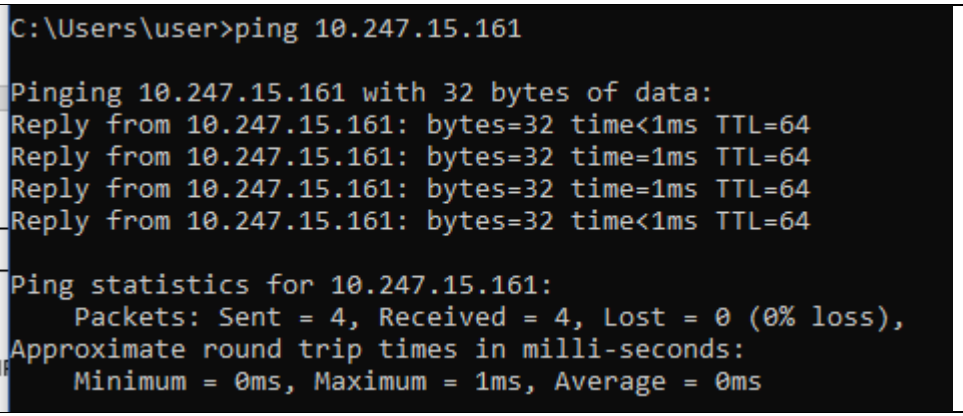
10.	Browsing User Staf		Internet aman.
11.	Speedtest User Staf		Bila hanya terdapat satu user pada suatu user profiles saja, paket dapat dikirim sampai max limit. Jika terdapat dua user akan terbagi rata sampai jumlah user seterusnya.

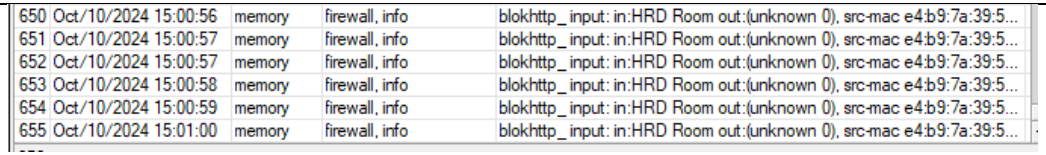
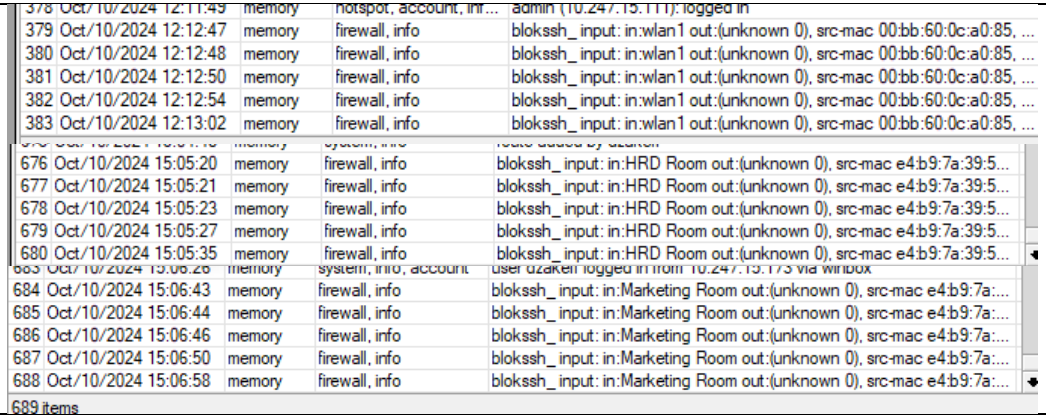
12.	Ping ke IP Client Marketing Room		Ping telah berhasil.

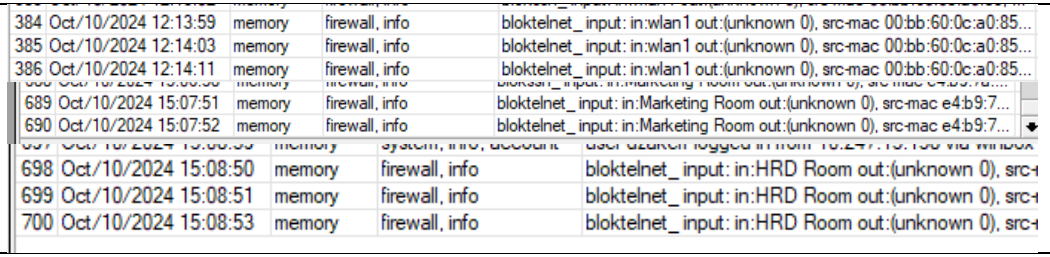
No	Pengecekan	Hasil/Dokumentasi	Keterangan
Uji Coba Client HRD Room			
1.	IP Address Client HRD Room		DHCP Server VLAN berhasil.

No	Pengecekan	Hasil/Dokumentasi	Keterangan
2.	Browsing Internet		Internet aman.
3.	Ping ke IP Client Public WiFi Area		Ping telah berhasil.

No	Pengecekan	Hasil/Dokumentasi	Keterangan
Uji Coba Client NOC Room			
1.	IP Address Client NOC Room		DHCP Server ether3 berhasil.
2.	Browsing Internet		Internet aman.

No	Pengecekan	Hasil/Dokumentasi	Keterangan
3.	Ping ke IP Client Marketing Room		Ping telah berhasil.

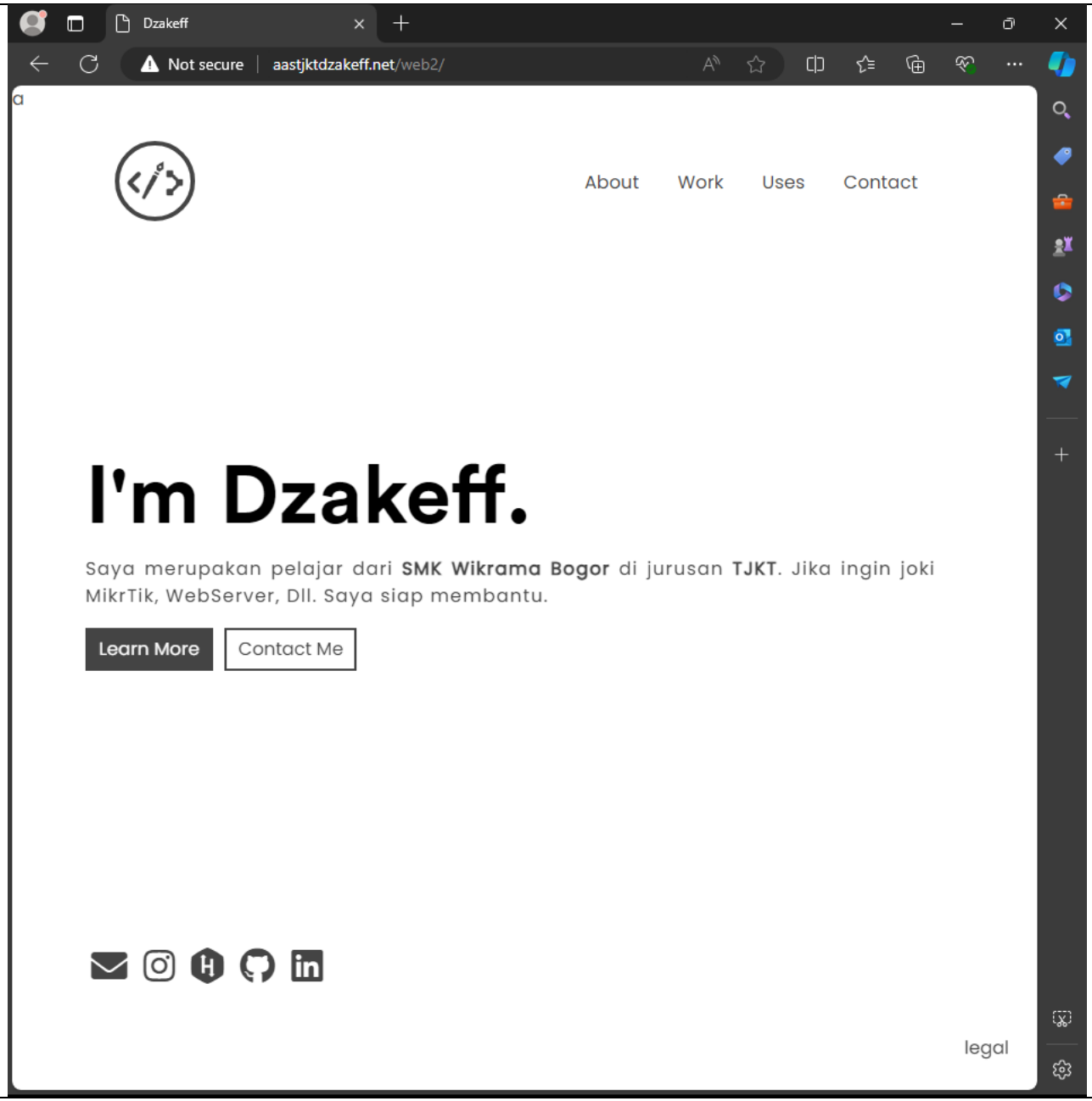
No	Pengecekan	Hasil/Dokumentasi	Keterangan
Uji Coba Blok Akses			
1.	Log akses blok port 80 dari HRD		Firewall filter telah berhasil.
2.	Log akses blok port 22 dari HRD Marketing dan Public Wifi		Firewall filter telah berhasil.

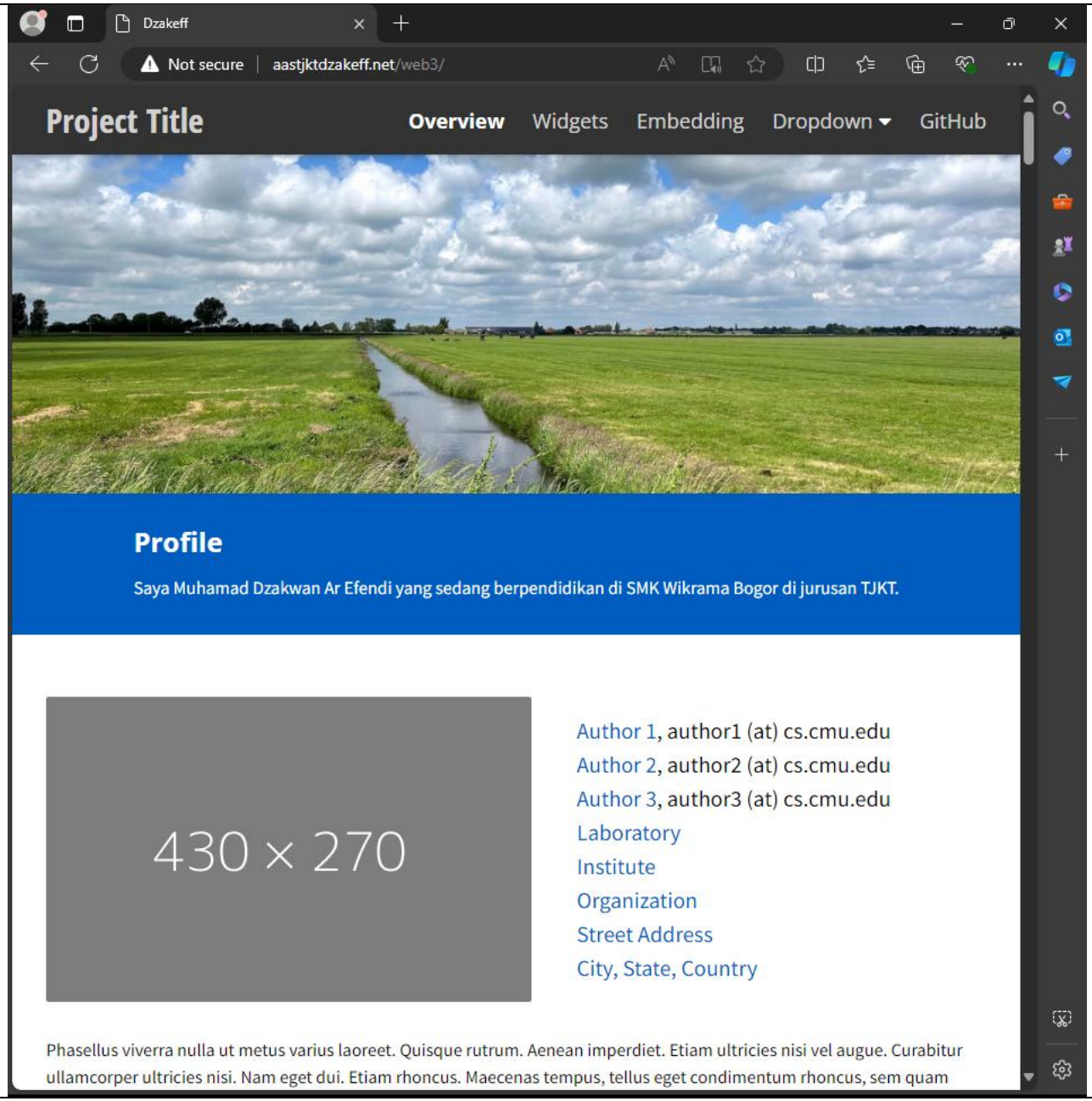
No	Pengecekan	Hasil/Dokumentasi	Keterangan
3.	Log akses blok port 23 dari HRD Marketing dan Public Wifi		Firewall filter telah berhasil.

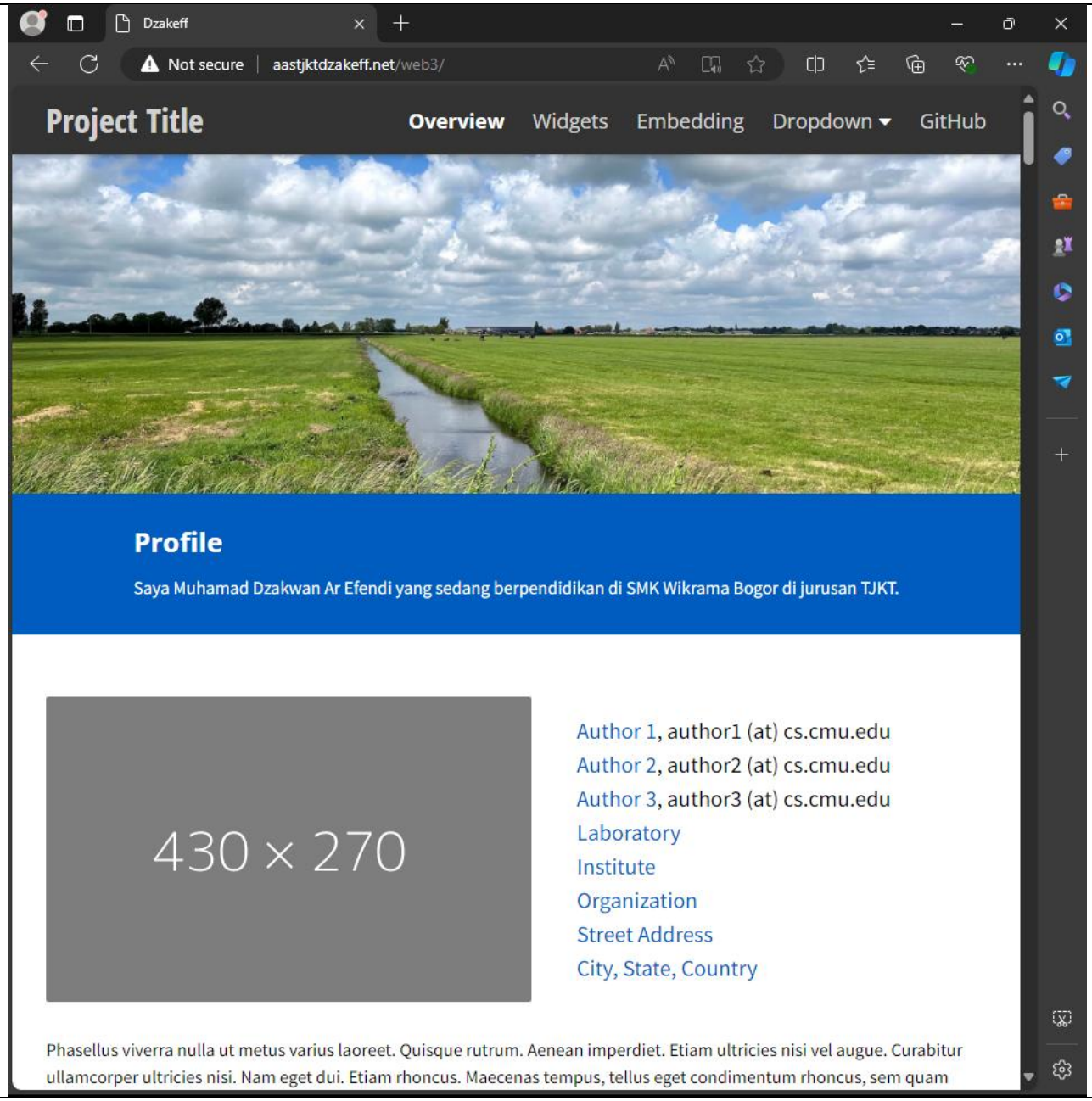
384	Oct/10/2024 12:13:59	memory	firewall, info	bloktelnet_ input: in:wlan1 out:(unknown 0), src-mac 00:bb:60:0c:a0:85...
385	Oct/10/2024 12:14:03	memory	firewall, info	bloktelnet_ input: in:wlan1 out:(unknown 0), src-mac 00:bb:60:0c:a0:85...
386	Oct/10/2024 12:14:11	memory	firewall, info	bloktelnet_ input: in:wlan1 out:(unknown 0), src-mac 00:bb:60:0c:a0:85...
689	Oct/10/2024 15:07:51	memory	firewall, info	bloktelnet_ input: in:Marketing Room out:(unknown 0), src-mac e4:b9:7...
690	Oct/10/2024 15:07:52	memory	firewall, info	bloktelnet_ input: in:Marketing Room out:(unknown 0), src-mac e4:b9:7...
698	Oct/10/2024 15:08:50	memory	firewall, info	bloktelnet_ input: in:HRD Room out:(unknown 0), src-m
699	Oct/10/2024 15:08:51	memory	firewall, info	bloktelnet_ input: in:HRD Room out:(unknown 0), src-m
700	Oct/10/2024 15:08:53	memory	firewall, info	bloktelnet_ input: in:HRD Room out:(unknown 0), src-m

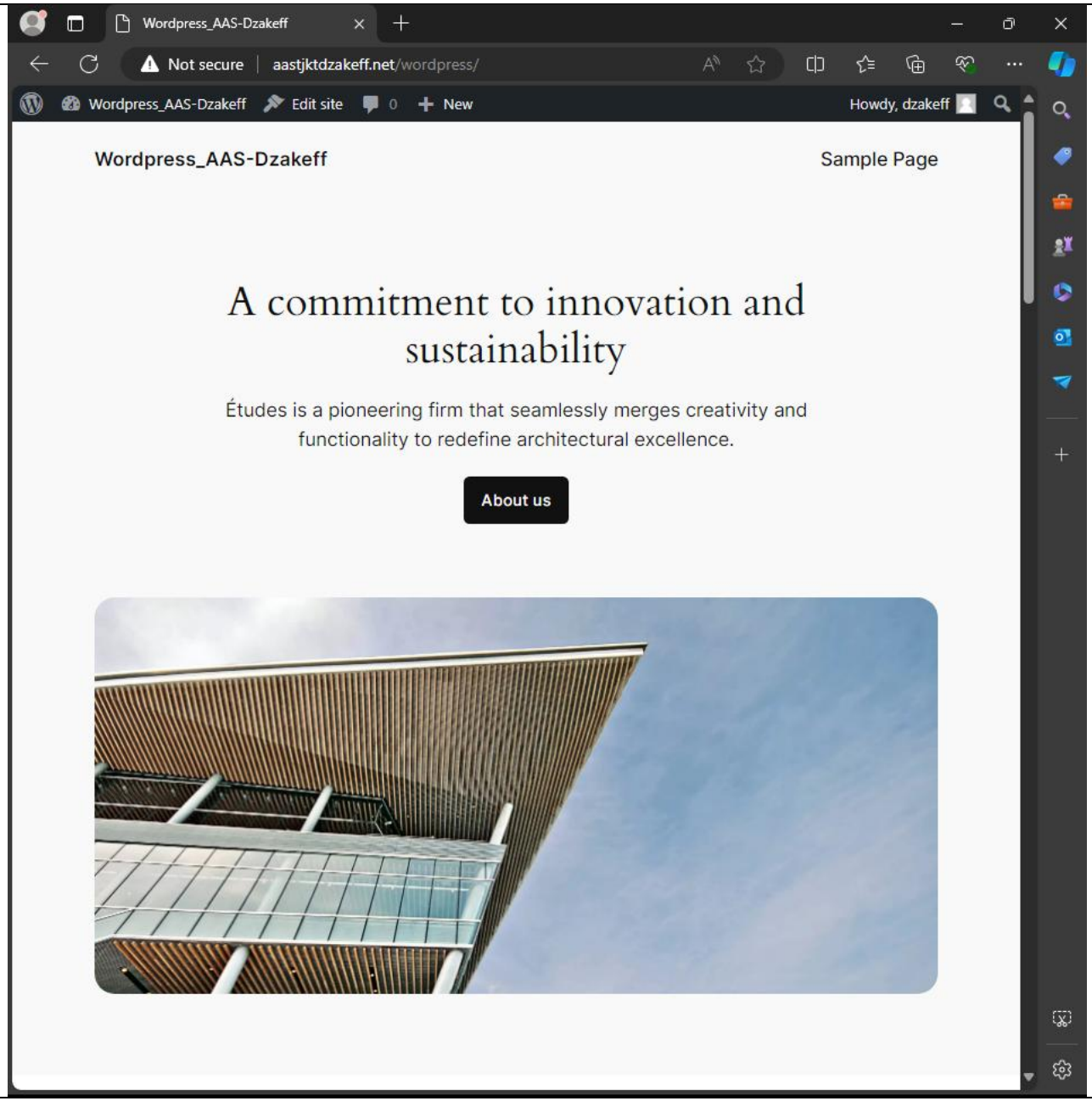
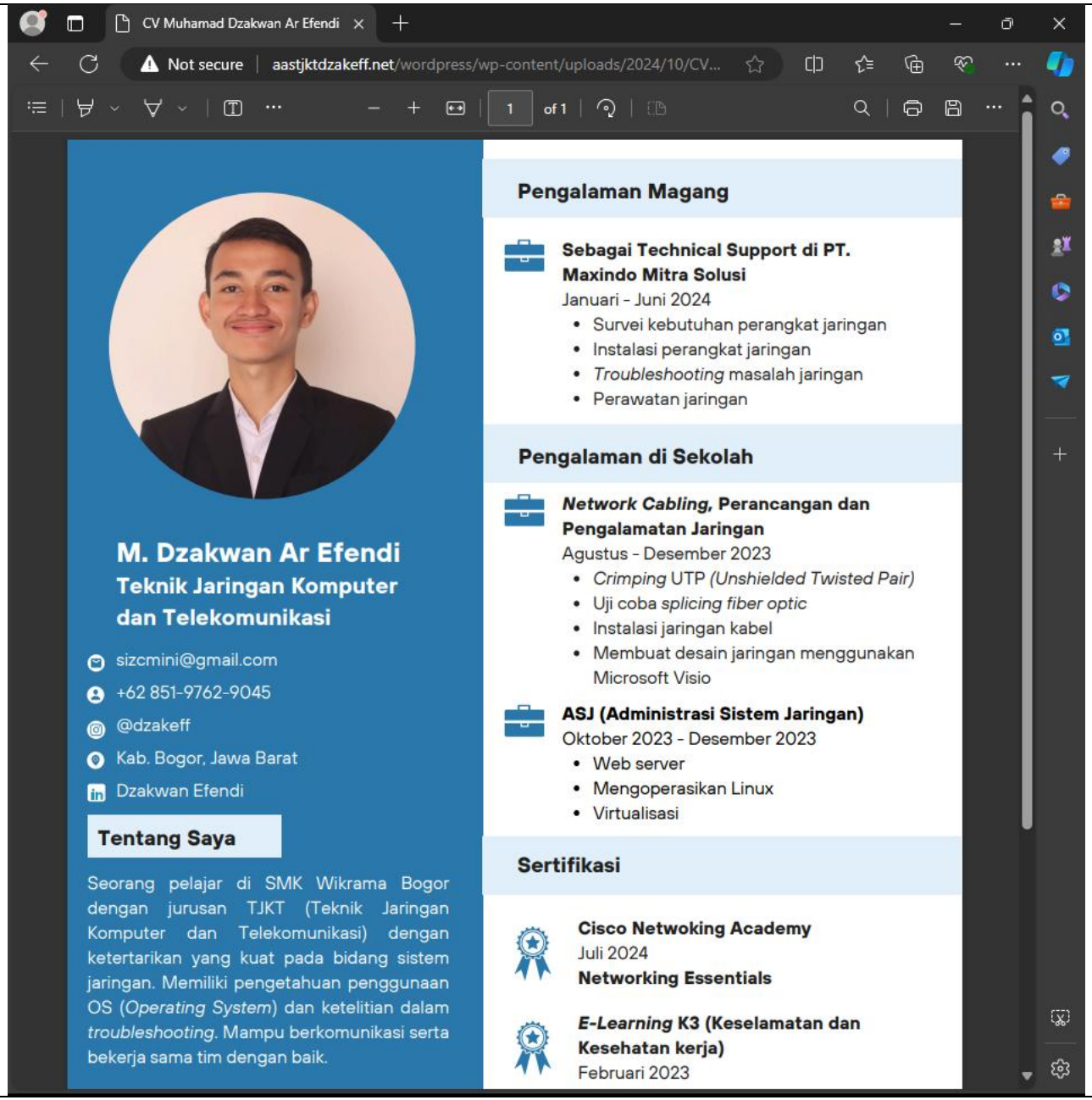
Hasil Ujicoba Server

No	Ujicoba	Screenshot Hasil Ujicoba

1	Akses website : aastjktnama.net/web1	

2	Akses website : aastjktnama.net/web2	

3	Akses website : aastjktnama.net/web3	

4	Akses website : aastjktnama.net/wordpress	

5	Tampilkan hasil postingan portofolio / CV