

Computer Network

AoL

Kelompok IV

ANGGOTA

01

Andrew

2602161671

02

Ariana

2602105380

03

Bill

2602131082

04

Catherine

2602103791

05

Darren

2602159572

06

Lauren

2602107373

07

Anjori

2602155246

The background is a dark blue gradient with various light blue and white geometric elements. There are circuit-like lines with small circles at the ends, scattered dots, and angular shapes. A large, glowing cyan number '01' is centered in the upper half.

01

>>>>>

DEVICE AND MEDIA

A horizontal bar with a gradient from dark blue to light blue, located below the title.

.....

A vertical bar with a gradient from dark blue to light blue, containing four white upward-pointing chevrons at the bottom.



MEDIA

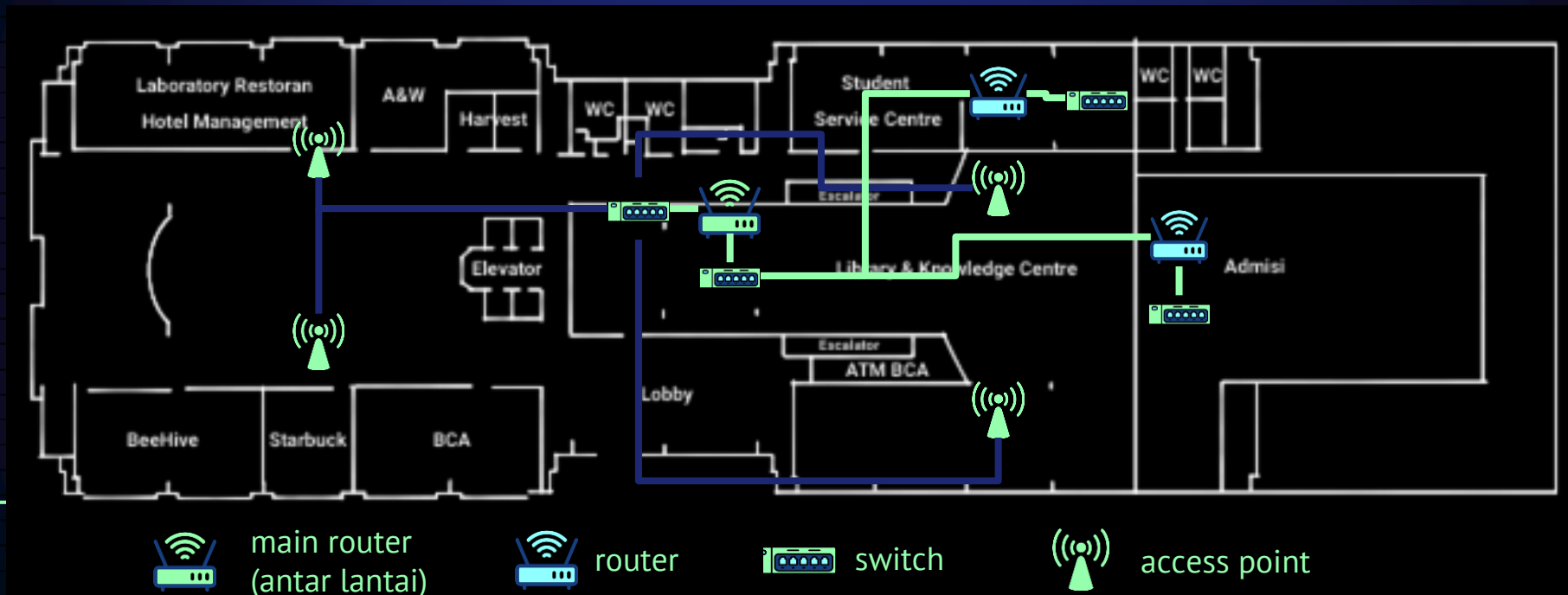


Kabel yang kita gunakan adalah kabel Fiber Optic dan kabel UTP CAT-6. Kabel Fiber Optic merupakan kabel yang mentransmisikan cahaya agar mempercepat proses pengiriman data. Kabel Fiber Optic juga bisa mentransmisikan data hingga 1 km sehingga kabel Fiber Optic digunakan untuk menghubungkan antar lantai pada kampus.

Kabel UTP merupakan kabel yang mentransmisikan signal listrik untuk mengirimkan data. Kabel UTP hanya mampu untuk mentransmisikan data secara efektif pada panjang 80-100 m saja, sehingga kabel UTP digunakan untuk menghubungkan antar ruangan pada kampus.



Lantai 01



Ruangan Lantai 1

Ruangan	Jumlah device	Catatan
Lab. Restoran Hotel Management	45	connected device
A&W	64	connected device
The Harvest	5	connected device
Admisi	35	komputer kantor
SSC	35	komputer kantor
Starbucks	72	connected device
Beehive	15	connected device
BCA	20	connected device
LKC	230	connected device

Costing Lantai 1

Router + Access Point			
Produk	Harga	Qty.	Total
TP LINK Archer AX50 AX3000 Dual Band Gigabit Wi-Fi 6 Router	Rp 1.200.000	1	Rp 1.200.000
TP LINK Archer C54 AC1200 Dual Band Wi-Fi Router	Rp 300.000	2	Rp 600.000
EAP613 AX1800 Ceiling Mount Wi-Fi 6 Access Point	Rp 1.100.000	4	Rp 4.400.000

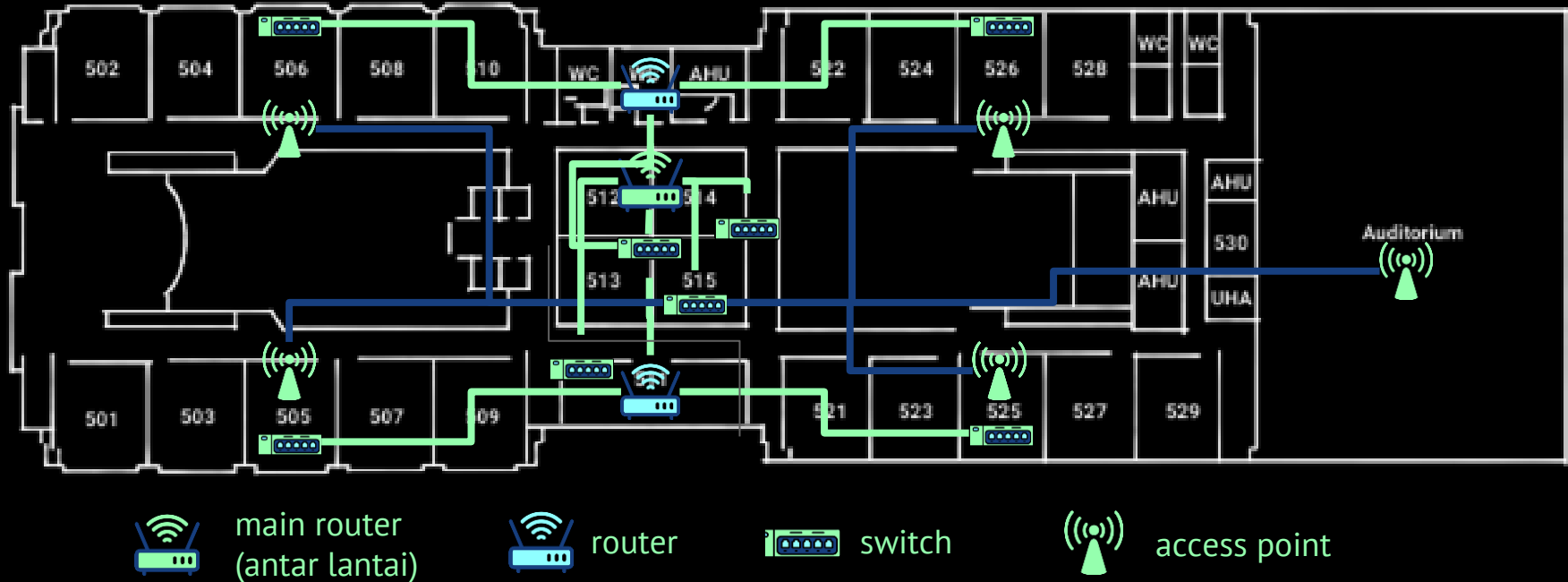
Costing Lantai 1

Switch			
Produk	Harga	Qty.	Total
TP LINK TL-SG1008MP 8-Port Desktop/ Rackmount Switch with 8-Port PoE+	Rp 1.350.000	1	Rp 1.350.000
TP LINK TL-SG108E 8-Port Gigabit Easy Smart Switch	Rp 500.000	1	Rp 500.000
TL-SF1048 48-Port 10/100 Mbps Rackmount Switch	Rp 1.960.000	1	Rp 240.000

Costing Lantai 1

<i>Kabel</i>			
Produk	Harga	Qty.	Total
Kabel LAN UTP Belden CAT 6 7814A (305 meter)	Rp2.030.000 (per 305 meter)	1 pcs	Rp2.030.000
kepala RJ45 CAT 6 Belden	Rp7.000	50 pcs	Rp350.000

Lantai 05



Ruangan Lantai 5

Ruangan	Jumlah device	Catatan
CBDC Office	40	Ruang 511, komputer kantor
SAC Office	40	Ruang 512 - 515, komputer kantor
Kelas 502 - 510	300 + 5	5 Ruangan, 5 komputer kelas, estimasi 60 connected device per ruangan
Kelas 522 - 528	240 + 4	4 Ruangan, 4 komputer kelas, estimasi 60 connected device per ruangan
Kelas 501 - 509	300 + 5	5 Ruangan, 5 komputer kelas, estimasi 60 connected device per ruangan
Kelas 521 - 529	300 + 5	5 Ruangan, 5 komputer kelas, estimasi 60 connected device per ruangan
Auditorium	520	estimasi connected device berdasarkan kapasitas auditorium

Costing Lantai 5

Router + Access Point			
Produk	Harga	Qty.	Total
TP LINK Archer AX50 AX3000 Dual Band Gigabit Wi-Fi 6 Router	Rp 1.200.000	1	Rp 1.200.000
TP LINK Archer C54 AC1200 Dual Band Wi-Fi Router	Rp 300.000	2	Rp 600.000
EAP613 AX1800 Ceiling Mount Wi-Fi 6 Access Point	Rp 1.100.000	5	Rp 5.500.000

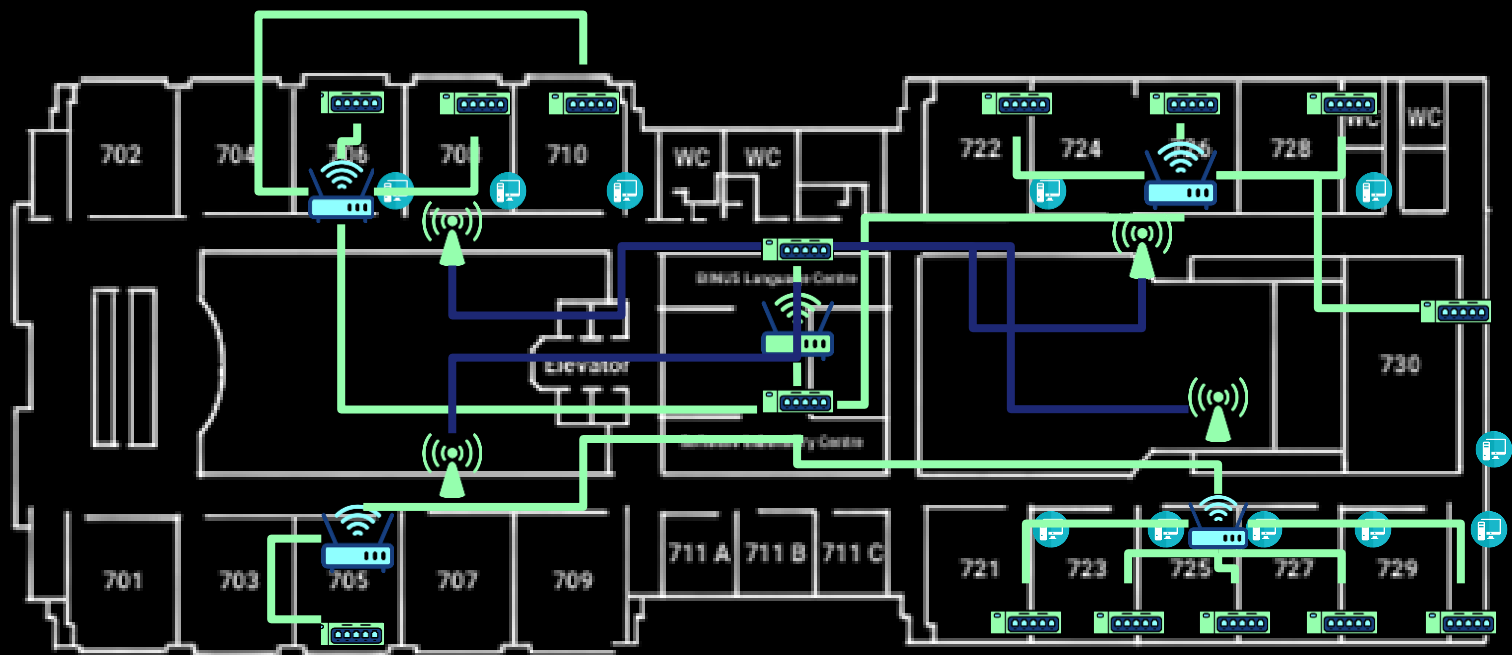
Costing Lantai 5

Switch			
Produk	Harga	Qty.	Total
TP LINK TL-SG1008MP 8-Port Desktop/ Rackmount Switch with 8-Port PoE+	Rp 1.350.000	1	Rp 1.350.000
TP LINK TL-SG108E 8-Port Gigabit Easy Smart Switch	Rp 500.000	1	Rp 500.000
TL-SF1008D 8-Port 10/100 Mbps Desktop Switch	Rp 120.000	4	Rp 480.000
TL-SF1048 48-Port 10/100 Mbps Rackmount Switch	Rp 1.960.000	2	Rp 3.920.000

Costing Lantai 5

<i>Kabel</i>			
Produk	Harga	Qty.	Total
Kabel LAN UTP Belden CAT 6 7814A (305 meter)	Rp2.030.000 (per 305 meter)	1 pcs	Rp2.030.000
kepala RJ45 CAT 6 Belden	Rp7.000	100 pcs	Rp700.000

Lantai 07



main router
(antar lantai)



router



switch



kelas lab



access point



Ruangan Lantai 7

Ruangan	Jumlah device	Catatan
Kelas 701, 702, 703, 704, 705, 707, 709, 711A-711C	$600 + 10$	10 ruangan, <u>10 komputer kelas</u> , estimasi 60 connected device per ruangan
Lab 706, 708, 710, 721, 722, 723, 725, 727, 728, 729, 730	$660 + 451$	11 ruangan x <u>41 PC lab per ruangan</u> , estimasi 60 connected device per ruangan
Office 724, 726	$30 + 30$	komputer kantor dan connected device

Costing Lantai 7

Router + Access Point			
Produk	Harga	Qty.	Total
TP LINK Archer AX50 AX3000 Dual Band Gigabit Wi-Fi 6 Router	Rp 1.200.000	1	Rp 1.200.000
TP LINK Archer C54 AC1200 Dual Band Wi-Fi Router	Rp 300.000	4	Rp 1.200.000
EAP613 AX1800 Ceiling Mount Wi-Fi 6 Access Point	Rp 1.100.000	4	Rp 4.400.000

Costing Lantai 7

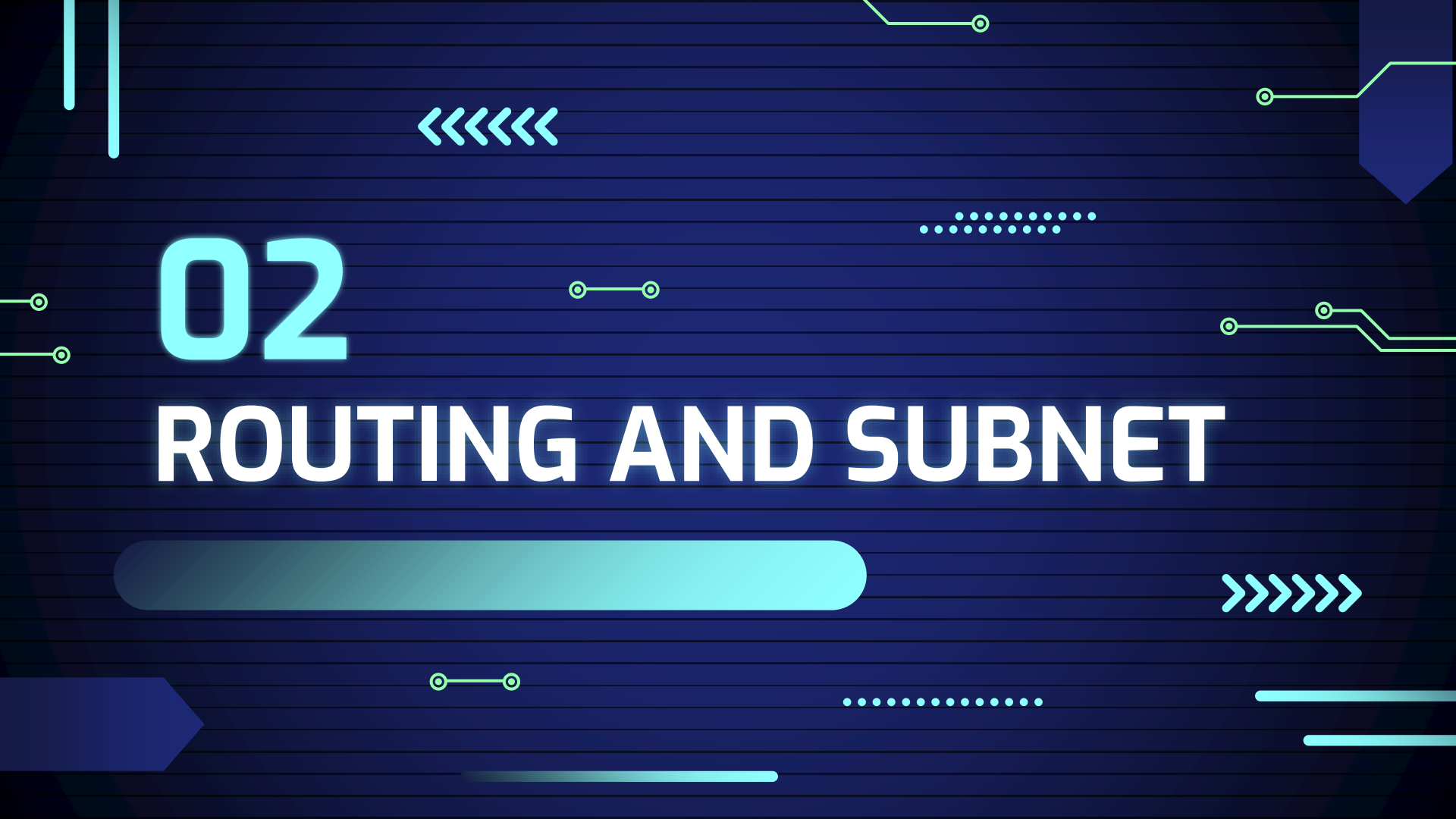
Switch			
Produk	Harga	Qty.	Total
TP LINK TL-SG1008MP 8-Port Desktop/ Rackmount Switch with 8-Port PoE+	Rp 1.350.000	1	Rp 1.350.000
TP LINK TL-SG108E 8-Port Gigabit Easy Smart Switch	Rp 500.000	1	Rp 500.000
TP LINK TL-SF1008D 8-Port 10/100 Mbps Desktop Switch	Rp 120.000	1	Rp 120.000
TL-SF1048 48-Port 10/100 Mbps Rackmount Switch	Rp 1.960.000	11	Rp 21.560.000

Costing Lantai 7

<i>Kabel</i>			
Produk	Harga	Qty.	Total
Kabel LAN UTP Belden CAT 6 7814A (305 meter)	Rp2.030.000 (per 305 meter)	1 pcs	Rp2.030.000
kepala RJ45 CAT 6 Belden	Rp7.000	500 pcs	Rp3.500.000

Kabel penghubung lantai

Produk	Harga	Qty.	Total
Belden Fiber Optic Pigtaills TF3LC900PS01 LC Multimode (OM3)	Rp240.000 (per 2 meter)	15 pcs	Rp3.600.000 (30 meter)



02

ROUTING AND SUBNET

Variable Length Subnet Mask (VLSM)

Variable Length Subnet Mask adalah teknik pembagian network di mana setiap subnet memiliki ukuran subnet mask yang berbeda tergantung jumlah host yang ada di network tersebut. Dengan VLSM kita dapat mengoptimalkan alokasi alamat IP, mengurangi pemborosan alamat IP, dan menyesuaikan ukuran subnet yang berbeda sesuai kebutuhan. Sehingga penggunaan ruang alamat IP lebih efisien dan fleksibel.



TIPE KABEL: FIBER OPTIC

Kabel fiber optic terbuat dari serat kaca dan plastik halus yang mengubah sinyal listrik menjadi cahaya dan mengalirkannya ke titik yang lain. Kelebihan kabel fiber optic adalah mampu mengantarkan data dengan kapasitas besar serta jarak transmisi yang jauh, dan kemampuan hilangnya data sangat rendah. Kabel Fiber optic tidak menggunakan listrik sehingga keamanannya lebih terjamin.

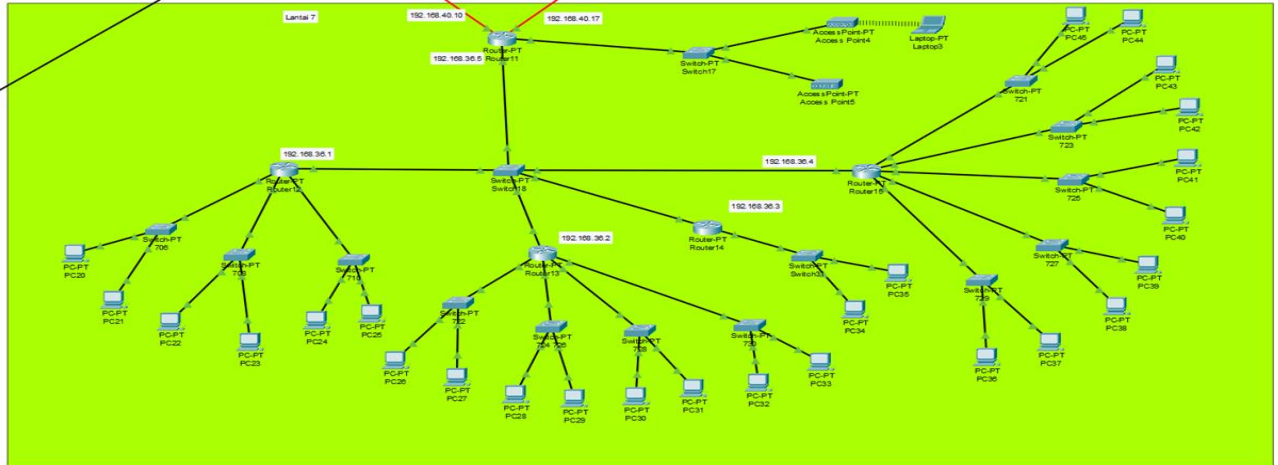
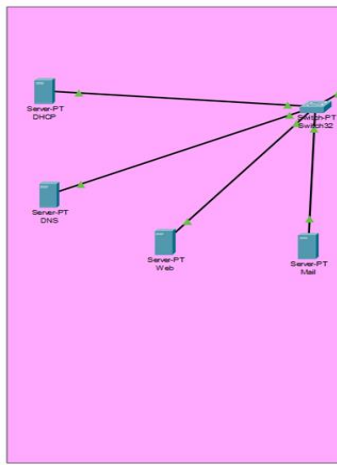
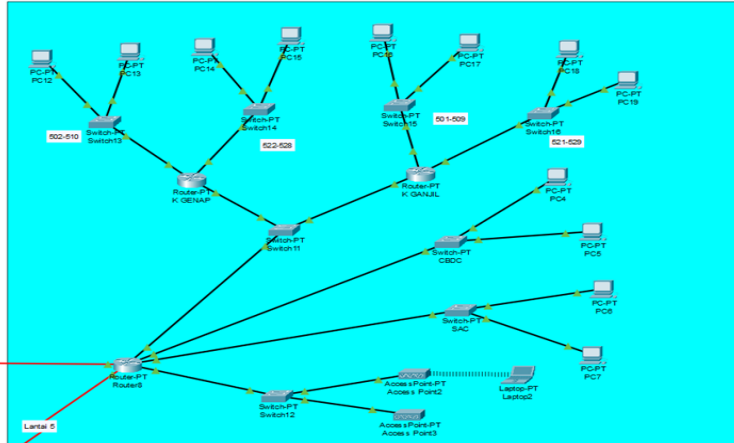
Panjang maksimum: 100 KM
Kecepatan: 1 Gbps

TIPE KABEL:

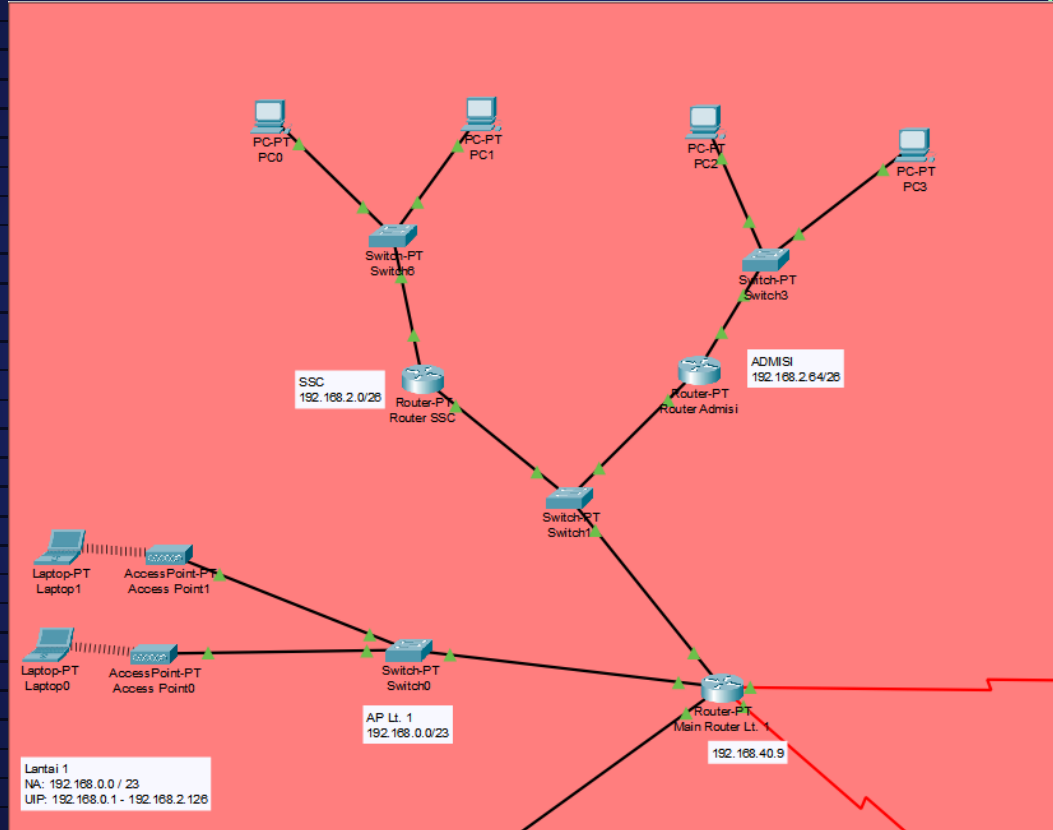
UTP (Unshielded Twisted Pair)

Kabel UTP terbuat dari penghantar tembaga yang terbungkus bahan isolasi dari plastik. Kabel UTP terdiri dari 4 pasang inti kabel yang saling berbelit dan masing masing mempunyai kode warna yang berbeda. Kabel UTP memiliki harga yang terjangkau, ukuran konektor dan kabel yang relatif kecil sehingga lebih fleksibel dan mudah digunakan.

Panjang maksimum: 100 meter
Kecepatan: 10 sampai 100 Mbps



Lantai 1



Perhitungan Lantai 1

IP Address : 192.168.0.0

Access Point : 451 devices

$2^h - 2 \geq 451$

$2^9 - 2 \geq 451 \rightarrow h = 9$

CIDR : 32-9 = /23

Subnet : 255.255.254.0

Network Address : 192.168.0.0/23

Broadcast Address : 192.168.1.255/23

Useable IP Address : 192.168.0.1 -
192.168.1.254

=====

SSC : 35 Devices

$2^h - 2 \geq 35$

$2^6 - 2 \geq 35 \rightarrow h = 6$

CIDR : 32-6 = /26

Subnet : 255.255.255.192

Network Address : 192.168.2.0/26

Broadcast Address : 192.168.2.63/26

Useable IP Address : 192.168.2.1 -

Admisi : 35 devices

$2^h - 2 \geq 35$

$2^6 - 2 \geq 35 \rightarrow h = 6$

CIDR : 32-6 = /26

Subnet : 255.255.255.192

Network Address : 192.168.2.64/26

Broadcast Address : 192.168.2.127/26

Useable IP Address : 192.168.2.65 - 192.168.2.126

=====

Router internal SSC & Admisi : 3 devices

$2^h - 2 \geq 3$

$2^3 - 2 \geq 3 \rightarrow h = 3$

CIDR : 32-3 = /29

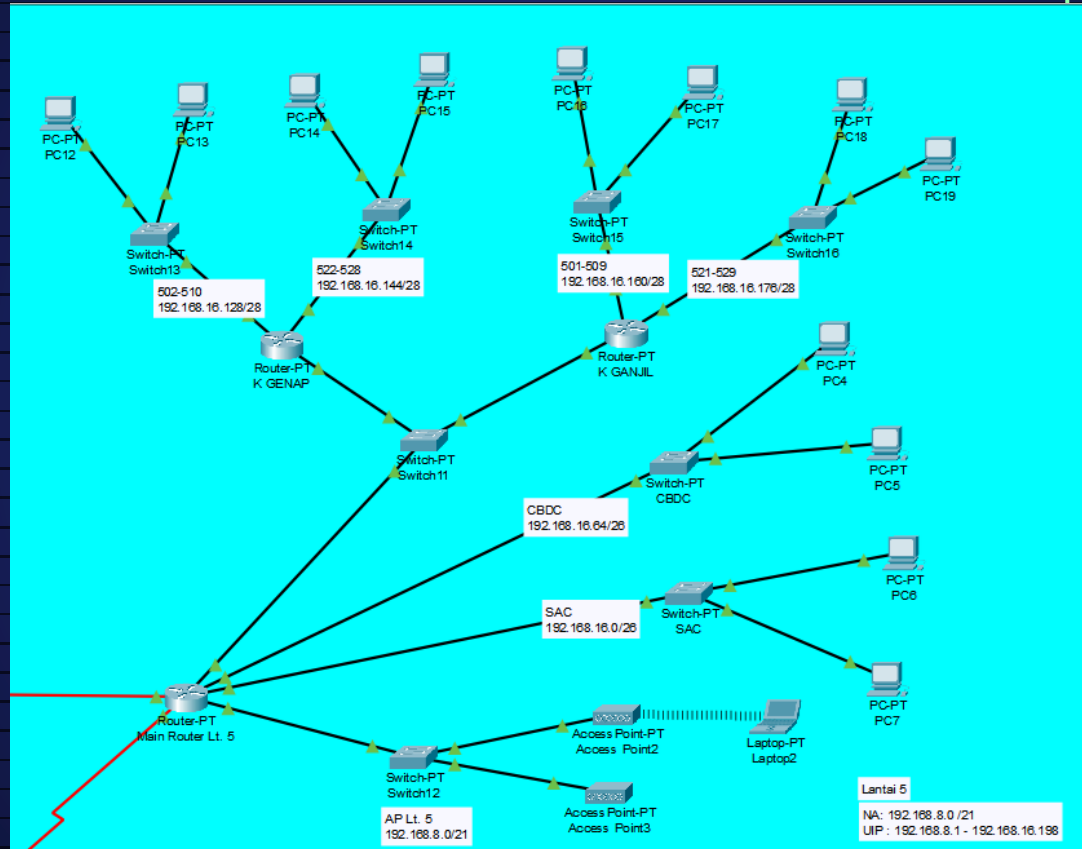
Subnet : 255.255.255.248

Network Address : 192.168.2.128/29

Broadcast Address : 192.168.2.135/29

Useable IP Address : 192.168.2.129 -
192.168.2.134

Lantai 5



Perhitungan Lantai 5

IP Address : 192.168.8.0

Access Point : 1740 devices

$2^h - 2 \geq 1740$

$2^{11} - 2 \geq 1740 \rightarrow h = 11$

CIDR : $32-11 = /21$

Subnet : 255.255.248.0

Network Address : 192.168.8.0/21

Broadcast Address : 192.168.15.255/21

Useable IP Address : 192.168.8.1 -

192.168.15.254

CBDC Office : 40 devices

$2^h - 2 \geq 40$

$2^6 - 2 \geq 40 \rightarrow h = 6$

CIDR : $32-6 = /26$

Subnet : 255.255.255.192

Network Address : 192.168.16.64/26

Broadcast Address : 192.168.16.127/26

Useable IP Address : 192.168.16.65 -

192.168.16.126

SAC Office : 40 Devices

$2^h - 2 \geq 40$

$2^6 - 2 \geq 40 \rightarrow h = 6$

CIDR : $32-6 = /26$

Subnet : 255.255.255.192

Network Address : 192.168.16.0/26

Broadcast Address : 192.168.16.63/26

Useable IP Address : 192.168.16.1 -

Kelas 502, 504, 506, 508, 510 : 5 devices

$2^h - 2 \geq 5$

$2^4 - 2 \geq 5 \rightarrow h = 4$

CIDR : $32-4 = /28$

Subnet : 255.255.255.240

Network Address : 192.168.16.128/28

Broadcast Address : 192.168.16.143/28

Useable IP Address : 192.168.16.129 -

Perhitungan Lantai 5

IP Address : 192.168.8.0

Kelas 522, 524, 526, 528 : 4 devices

$$2^h - 2 \geq 4$$

$$2^4 - 2 \geq 4 \rightarrow h = 4$$

CIDR : 32-4 = /28

Subnet : 255.255.255.240

Network Address : 192.168.16.144/28

Broadcast Address : 192.168.16.159/28

Useable IP Address : 192.168.16.145 -
192.168.16.158

Kelas 521, 523, 525, 527, 529 : 5 devices

$$2^h - 2 \geq 5$$

$$2^4 - 2 \geq 5 \rightarrow h = 4$$

CIDR : 32-4 = /28

Subnet : 255.255.255.240

Network Address : 192.168.16.176/28

Broadcast Address : 192.168.16.191/28

Useable IP Address : 192.168.16.177 -
192.168.16.190

=====

=====

Kelas 501, 503, 505, 507, 509 : 5 devices

$$2^h - 2 \geq 5$$

$$2^4 - 2 \geq 5 \rightarrow h = 4$$

CIDR : 32-4 = /28

Subnet : 255.255.255.240

Network Address : 192.168.16.160/28

Broadcast Address : 192.168.16.175/28

Useable IP Address : 192.168.16.161 -

Router internal antar kelas : 3 devices

$$2^h - 2 \geq 3$$

$$2^3 - 2 \geq 3 \rightarrow h = 3$$

CIDR : 32-3 = /29

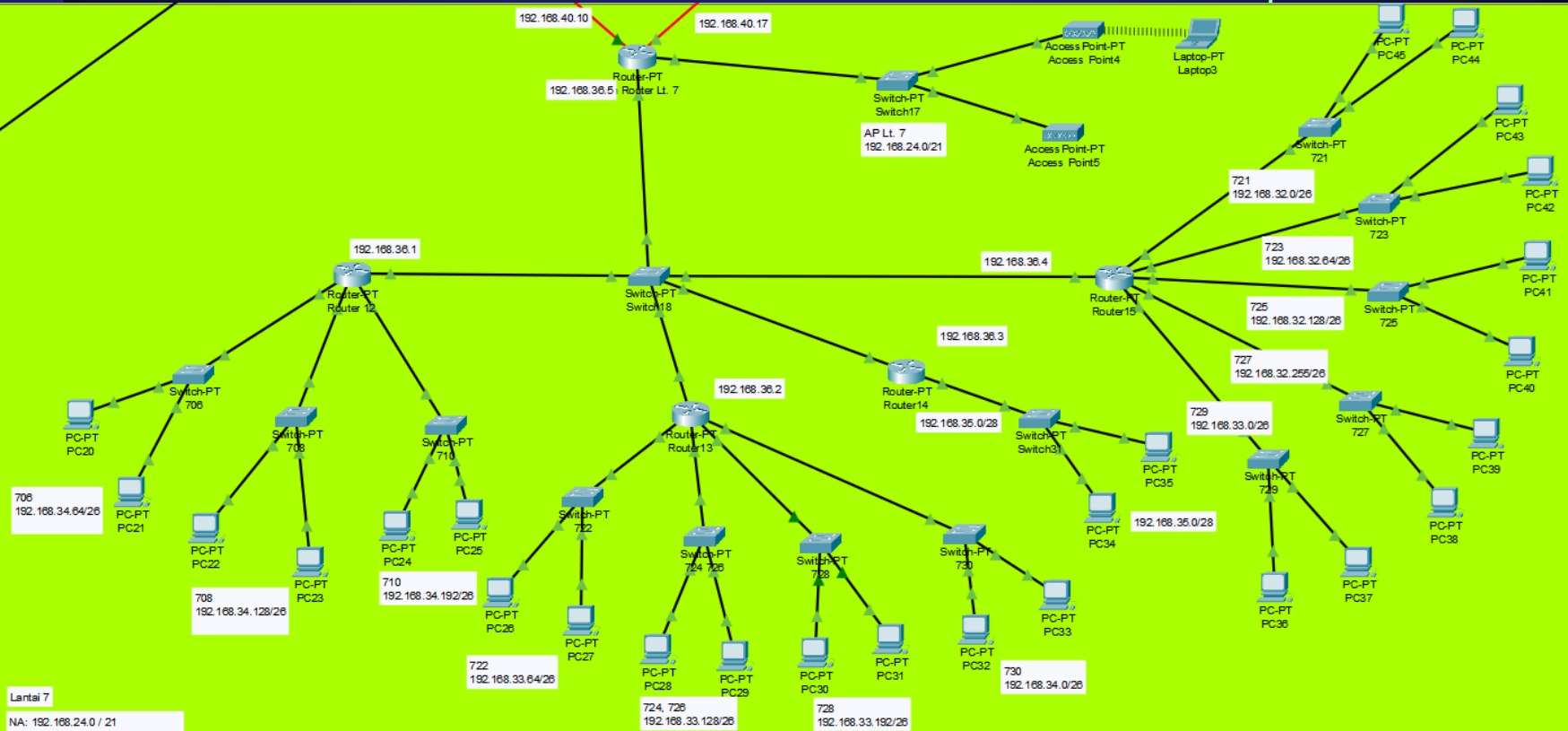
Subnet : 255.255.255.248

Network Address : 192.168.16.192/29

Broadcast Address : 192.168.16.199/29

Useable IP Address : 192.168.16.193 -

Lantai 7



Lantai 7

NA: 192.168.24.0 / 21
UIP: 192.168.24.1 - 192.168.35.14

Perhitungan Lantai 7

IP Address : 192.168.24.0

Access Point : 1170 devices

$2^h - 2 \geq 1170$

$2^{11} - 2 \geq 1170 \rightarrow h = 11$

CIDR : 32-11 = /21

Subnet : 255.255.248.0

Network Address : 192.168.24.0/21

Broadcast Address : 192.168.31.255/21

Useable IP Address : 192.168.24.1 -
192.168.31.254

=====

LAB 721 : 41 Devices

$2^h - 2 \geq 41$

$2^6 - 2 \geq 41 \rightarrow h = 6$

CIDR : 32-6 = /26

Subnet : 255.255.255.192

Network Address : 192.168.32.0/26

Broadcast Address : 192.168.32.63/26

Useable IP Address : 192.168.32.1 -

LAB 723 : 41 Devices

$2^h - 2 \geq 41$

$2^6 - 2 \geq 41 \rightarrow h = 6$

CIDR : 32-6 = /26

Subnet : 255.255.255.192

Network Address : 192.168.32.64/26

Broadcast Address : 192.168.32.127/26

Useable IP Address : 192.168.32.65 - 192.168.32.126

=====

LAB 725 : 41 Devices

$2^h - 2 \geq 41$

$2^6 - 2 \geq 41 \rightarrow h = 6$

CIDR : 32-6 = /26

Subnet : 255.255.255.192

Network Address : 192.168.32.128/26

Broadcast Address : 192.168.32.191/26

Useable IP Address : 192.168.32.129 - 192.168.32.190

Perhitungan Lantai 7

IP Address : 192.168.24.0

LAB 727 : 41 Devices

$2^h - 2 \geq 41$

$2^6 - 2 \geq 41 \rightarrow h = 6$

CIDR : 32-6 = /26

Subnet : 255.255.255.192

Network Address : 192.168.32.192/26

Broadcast Address : 192.168.32.255/26

Useable IP Address : 192.168.32.193 -
192.168.32.254

=====

LAB 729 : 41 Devices

$2^h - 2 \geq 41$

$2^6 - 2 \geq 41 \rightarrow h = 6$

CIDR : 32-6 = /26

Subnet : 255.255.255.192

Network Address : 192.168.33.0/26

Broadcast Address : 192.168.33.63/26

Useable IP Address : 192.168.33.1 -

LAB 722 : 41 Devices

$2^h - 2 \geq 41$

$2^6 - 2 \geq 41 \rightarrow h = 6$

CIDR : 32-6 = /26

Subnet : 255.255.255.192

Network Address : 192.168.33.64/26

Broadcast Address : 192.168.33.127/26

Useable IP Address : 192.168.33.65 - 192.168.33.126

=====

LAB 724 & 726 : 30 Devices

$2^h - 2 \geq 30$

$2^6 - 2 \geq 30 \rightarrow h = 6$

CIDR : 32-6 = /26

Subnet : 255.255.255.192

Network Address : 192.168.33.128/26

Broadcast Address : 192.168.33.191/26

Useable IP Address : 192.168.33.129 - 192.168.33.190

Perhitungan Lantai 7

IP Address : 192.168.24.0

LAB 728 : 41 Devices

$2^h - 2 \geq 41$

$2^6 - 2 \geq 41 \rightarrow h = 6$

CIDR : 32-6 = /26

Subnet : 255.255.255.192

Network Address : 192.168.33.192/26

Broadcast Address : 192.168.33.255/26

Useable IP Address : 192.168.33.193 -
192.168.33.254

=====

LAB 730 : 41 Devices

$2^h - 2 \geq 41$

$2^6 - 2 \geq 41 \rightarrow h = 6$

CIDR : 32-6 = /26

Subnet : 255.255.255.192

Network Address : 192.168.34.0/26

Broadcast Address : 192.168.34.63/26

Useable IP Address : 192.168.34.1 -

LAB 706 : 41 Devices

$2^h - 2 \geq 41$

$2^6 - 2 \geq 41 \rightarrow h = 6$

CIDR : 32-6 = /26

Subnet : 255.255.255.192

Network Address : 192.168.34.64/26

Broadcast Address : 192.168.34.127/26

Useable IP Address : 192.168.34.65 - 192.168.34.126

=====

LAB 708 : 41 Devices

$2^h - 2 \geq 41$

$2^6 - 2 \geq 41 \rightarrow h = 6$

CIDR : 32-6 = /26

Subnet : 255.255.255.192

Network Address : 192.168.34.128/26

Broadcast Address : 192.168.34.191/26

Useable IP Address : 192.168.34.129 - 192.168.34.190

Perhitungan Lantai 7

IP Address : 192.168.24.0

LAB 710 : 41 Devices

$2^h - 2 \geq 41$

$2^6 - 2 \geq 41 \rightarrow h = 6$

CIDR : $32 - 6 = /26$

Subnet : 255.255.255.192

Network Address : 192.168.34.192/26

Broadcast Address : 192.168.34.255/26

Useable IP Address : 192.168.34.193 -
192.168.34.254

Kelas 701, 702, 703, 704, 705, 707, 709, 711A, 711B, 711C :
10 Devices

$2^h - 2 \geq 10$

$2^4 - 2 \geq 10 \rightarrow h = 4$

CIDR : $32 - 4 = /28$

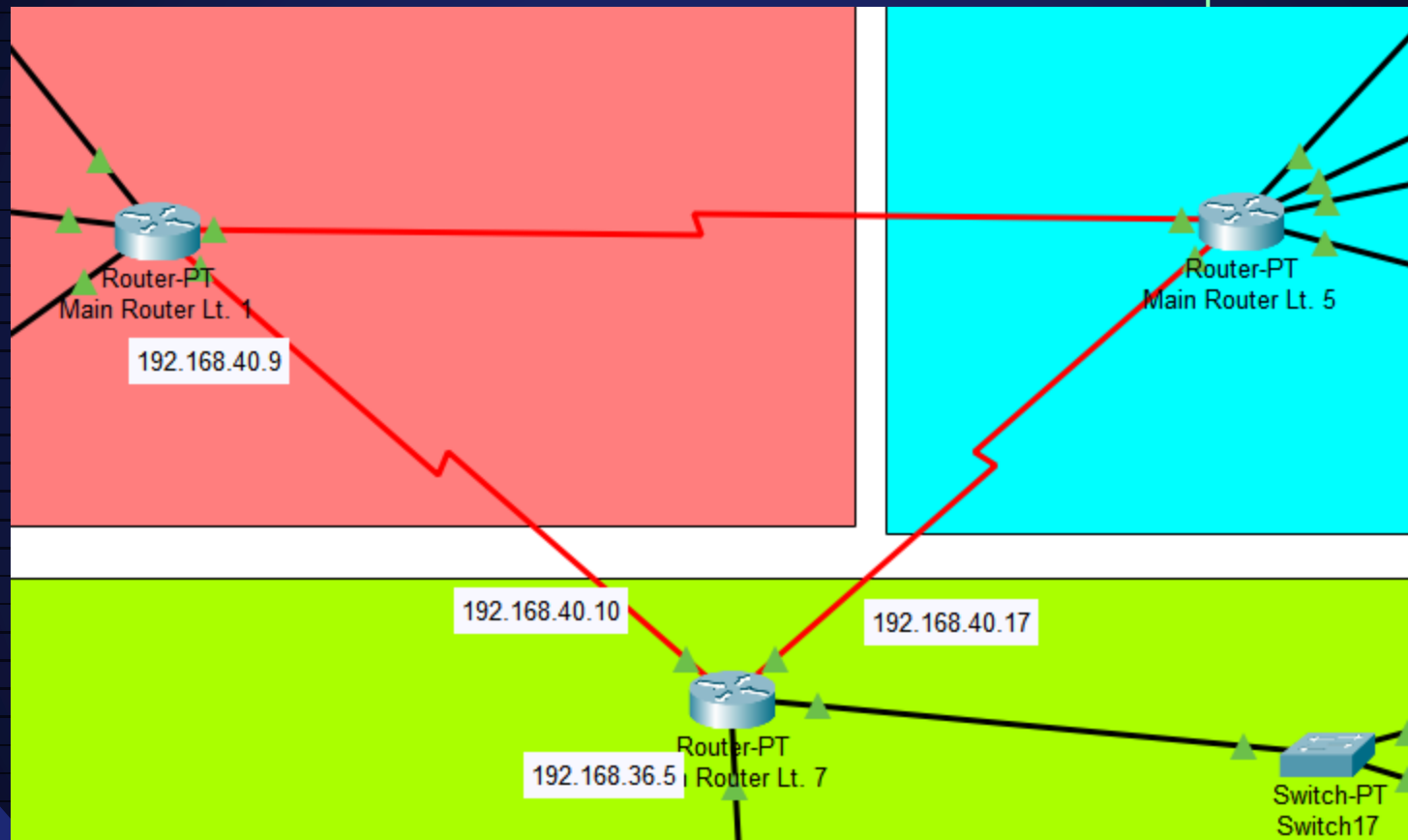
Subnet : 255.255.255.240

Network Address : 192.168.35.0/28

Broadcast Address : 192.168.35.15/28

Useable IP Address : 192.168.35.1 - 192.168.35.14

Router Internal Antar Kelas



Perhitungan Router Internal Antar Lantai

Router Lantai 1 dengan Lantai 5 : 2 devices

$$2^h - 2 \geq 2$$

$$2^3 - 2 \geq 2 \rightarrow h = 3$$

CIDR : 32-3 = /29

Subnet : 255.255.255.248

Network Address : 192.168.40.0/29

Broadcast Address : 192.168.40.7/29

Useable IP Address : 192.168.40.1 -
192.168.40.6

=====

Router Lantai 1 dengan Lantai 7 : 2 devices

$$2^h - 2 \geq 2$$

$$2^3 - 2 \geq 2 \rightarrow h = 3$$

CIDR : 32-3 = /29

Subnet : 255.255.255.248

Network Address : 192.168.40.8/29

Broadcast Address : 192.168.40.15/29

Useable IP Address : 192.168.40.9 -

IP Address : 192.168.40.0

Router Lantai 5 dengan Lantai 7 : 2 devices

$$2^h - 2 \geq 2$$

$$2^3 - 2 \geq 2 \rightarrow h = 3$$

CIDR : 32-3 = /29

Subnet : 255.255.255.248

Network Address : 192.168.40.16/29

Broadcast Address : 192.168.40.23/29

Useable IP Address : 192.168.40.17 -
192.168.40.22



STATIC ROUTING

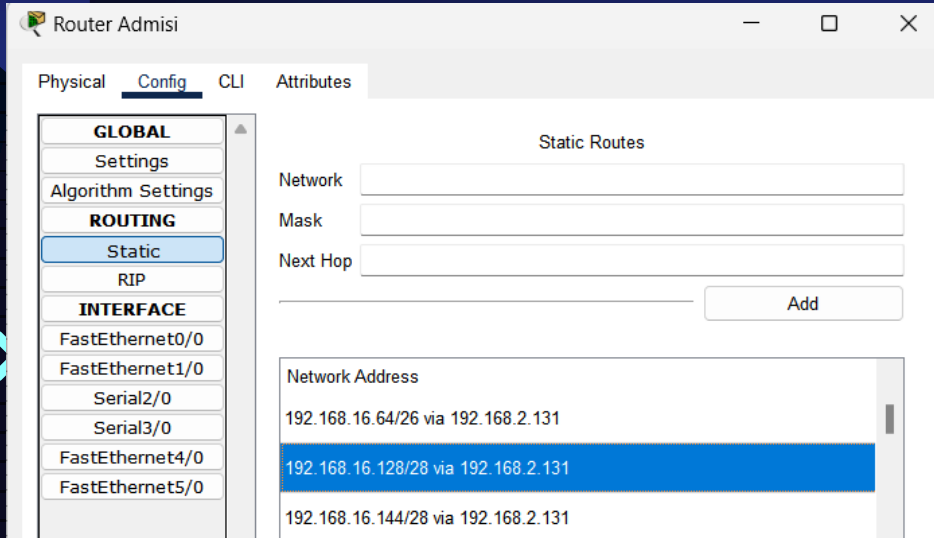
Static Routing adalah proses *setting* router jaringan menggunakan *table* routing yang dikonfigurasi secara manual. Static Routing dapat digunakan pada:

- Jaringan yang cakupannya kecil (LAN)
- Sebagai Backup Dynamic Routing
- Transfer informasi router dari protokol satu ke protokol lain (Routing Redistribution)

Alasan memilih Static Routing dalam konfigurasi jaringan adalah lebih aman, bebas menentukan jalur jaringan, tidak ada bandwidth yang terbuang saat terjadi pertukaran paket.



STATIC ROUTING

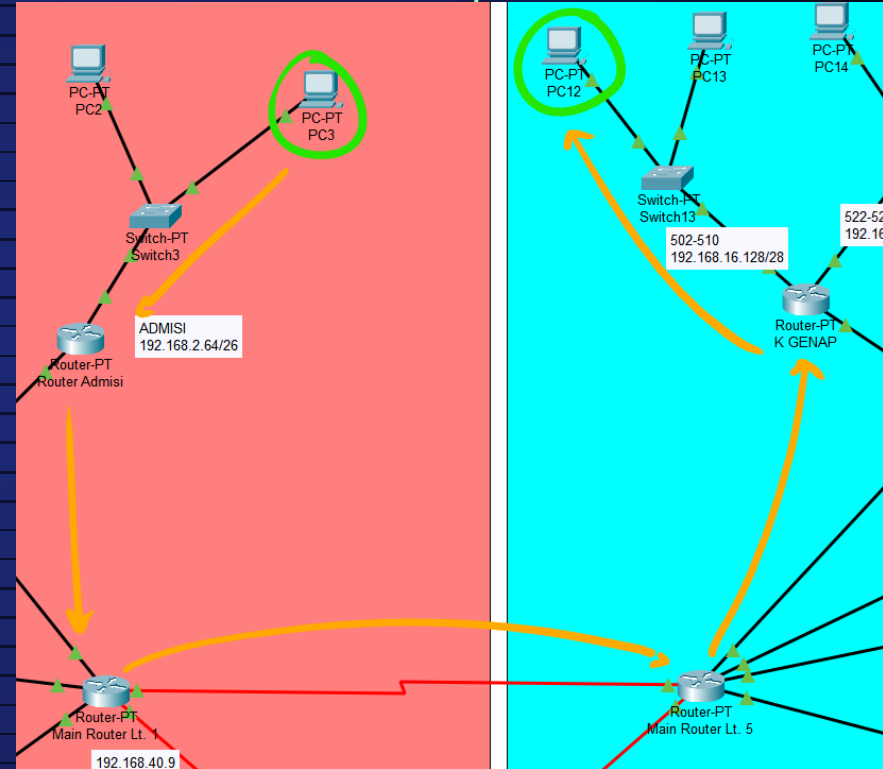


```
C:\>tracert 192.168.16.130
```

```
Tracing route to 192.168.16.130 over a maximum of 30 hops:
```

1	0 ms	7 ms	0 ms	192.168.2.65
2	*	0 ms	0 ms	192.168.2.131
3	1 ms	1 ms	0 ms	192.168.40.2
4	*	0 ms	0 ms	192.168.16.193
5	*	1 ms	1 ms	192.168.16.130

```
Trace complete.
```

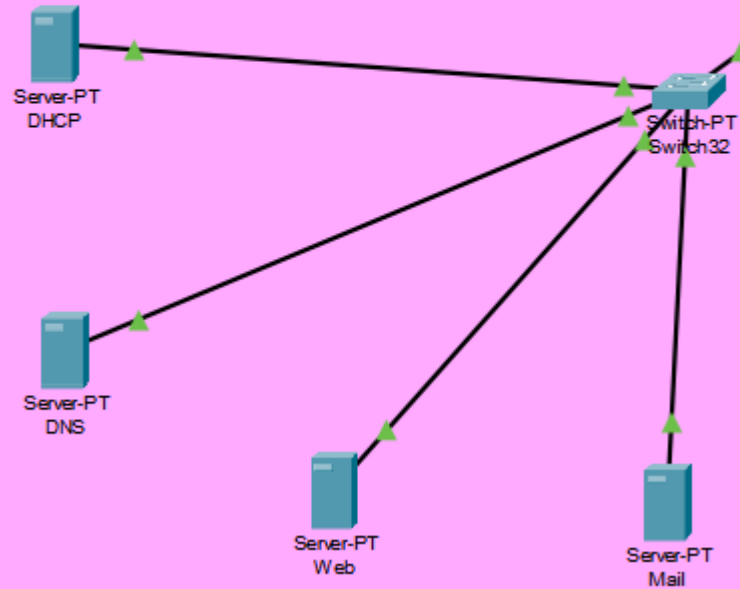


Servers

Servers [Lt. 1]

NA : 192.168.4.0/29

UIP : 192.168.4.1 - 192.167.4.6



Perhitungan IP Server

IP Address : 192.168.4.0

Servers : 4 devices

$$2^h - 2 \geq 4$$

$$2^3 - 2 \geq 4 \rightarrow h = 3$$

CIDR : $32 - 3 = /29$

Subnet : 255.255.255.248

NA : 192.168.4.0/29

BA : 192.168.4.7/29

UIP : 192.168.4.1 -

192.168.4.6



DHCP Server



DHCP atau *Dynamic Host Configuration Protocol* adalah sebuah protokol network yang digunakan untuk memberikan alamat IP secara otomatis pada device lain. Dalam sebuah network, DHCP diterapkan menggunakan DHCP server yang akan memberikan alamat IP secara otomatis pada klien yang terhubung.

DHCP server memiliki fungsi:

- Mengelola dan mendistribusikan alamat IP
 - Alamat IP diperbaharui secara otomatis
 - Penggunaan kembali alamat IP
- Mencegah konflik IP

Dalam konteks network yang di desain oleh kelompok kami, DHCP Server digunakan untuk mendistribusikan IP ke perangkat-perangkat yang terhubung secara wireless melalui access point.



DHCP SERVER TESTING

DHCP

Physical

Config

Services

Desktop

Programming

Attributes

SERVICES

HTTP

DHCP

DHCPv6

TFTP

DNS

SYSLOG

AAA

NTP

EMAIL

FTP

IoT

VM Management

Radius EAP

DHCP

Interface

FastEthernet0

 Service ☒ On ☐ Off

Pool Name

serverPool

Default Gateway

192.168.4.1

DNS Server

0.0.0.0

Start IP Address :

192

168

4

3

Subnet Mask:

255

255

255

248

Maximum Number of Users :

5

TFTP Server:

0.0.0.0

WLC Address:

0.0.0.0

Add

Save

Remove

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
Access Point L7	192.168.24.1	192.168.4.3	192.168.24.2	255.255.248.0	2000	0.0.0.0	0.0.0.0
Access Point L1	192.168.0.1	192.168.4.3	192.168.0.2	255.255.254.0	510	0.0.0.0	0.0.0.0
Access Point L5	192.168.8.1	192.168.4.3	192.168.8.2	255.255.248.0	2000	0.0.0.0	0.0.0.0
serverPool	192.168.4.1	0.0.0.0	192.168.4.3	255.255.255....	5	0.0.0.0	0.0.0.0

☐ Top

DHCP TESTING LT 1

Laptop0

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface Wireless0

IP Configuration

☒ DHCP ☐ Static DHCP request successful.

IPv4 Address 192.168.0.3

Subnet Mask 255.255.254.0

Default Gateway 192.168.0.1

DNS Server 192.168.4.3

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::202:16FF:FE37:56C3

Default Gateway

DNS Server

DHCP TESTING LT 5

Laptop2

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface: Wireless0

IP Configuration

☒ DHCP ☐ Static DHCP request successful.

IPv4 Address: 192.168.8.2

Subnet Mask: 255.255.248.0

Default Gateway: 192.168.8.1

DNS Server: 192.168.4.3

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::2E0:F9FF:FE15:273E

Default Gateway:

DNS Server:

DHCP TESTING LT 7

Laptop3

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface: Wireless0

IP Configuration

☒ DHCP ☐ Static DHCP request successful.

IPv4 Address: 192.168.24.2

Subnet Mask: 255.255.248.0

Default Gateway: 192.168.24.1

DNS Server: 192.168.4.3

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::202:17FF:FE9B:4574

Default Gateway:

DNS Server:

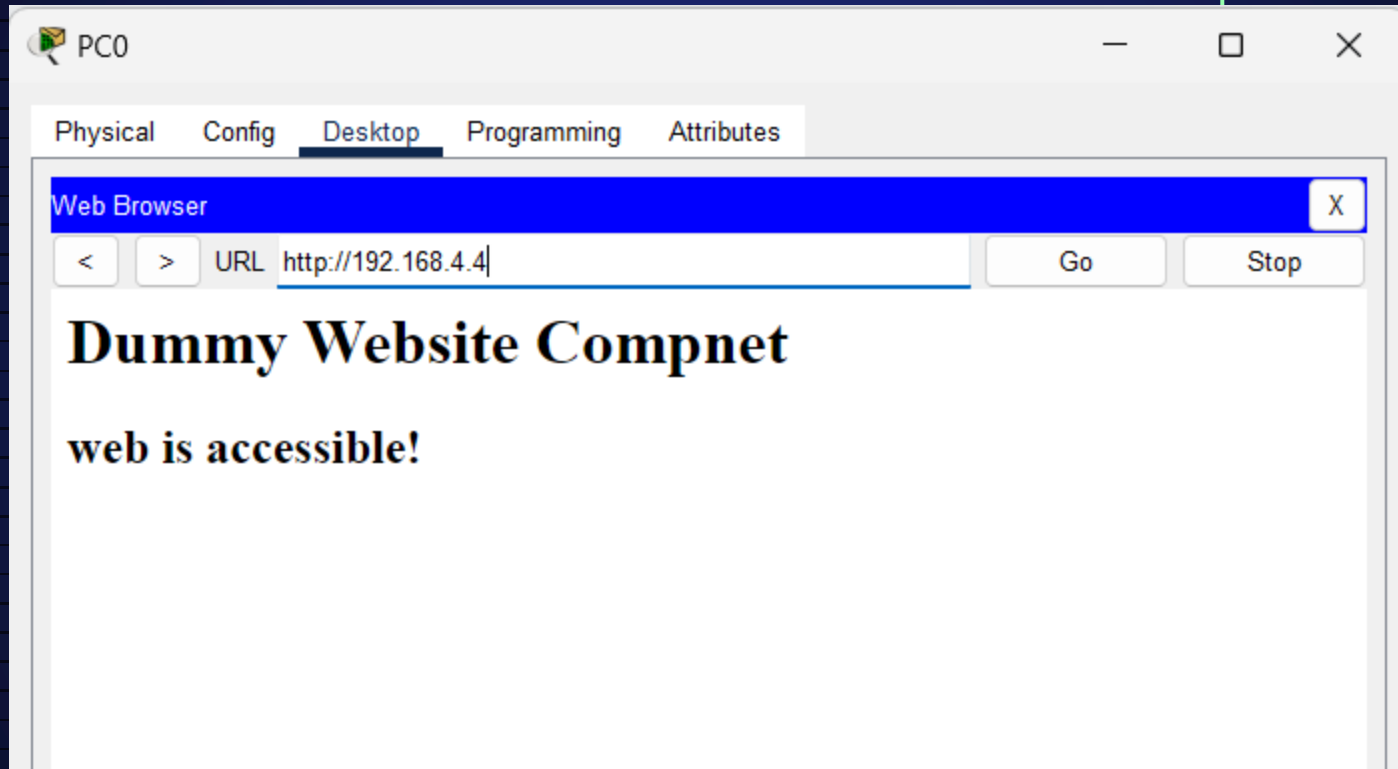
Web Server

Web server dapat diartikan sebagai:

- Komputer (hardware) yang menyimpan software web server dan file-file komponen sebuah website (dokumen HTML, gambar, CSS stylesheet, dan file Javascript).
- Software untuk memproses permintaan HTTP atau HTTPS. Server web mengendalikan bagaimana web user dapat mengakses file yang di-host oleh web server tersebut.

Web user dapat mengakses web server dengan sebuah URL. Web server berperan memproses permintaan HTTP/HTTPS dari user, mencari dokumen yang sesuai dan mengirim kembali informasi tersebut balik ke device web user untuk ditampilkan di browser.

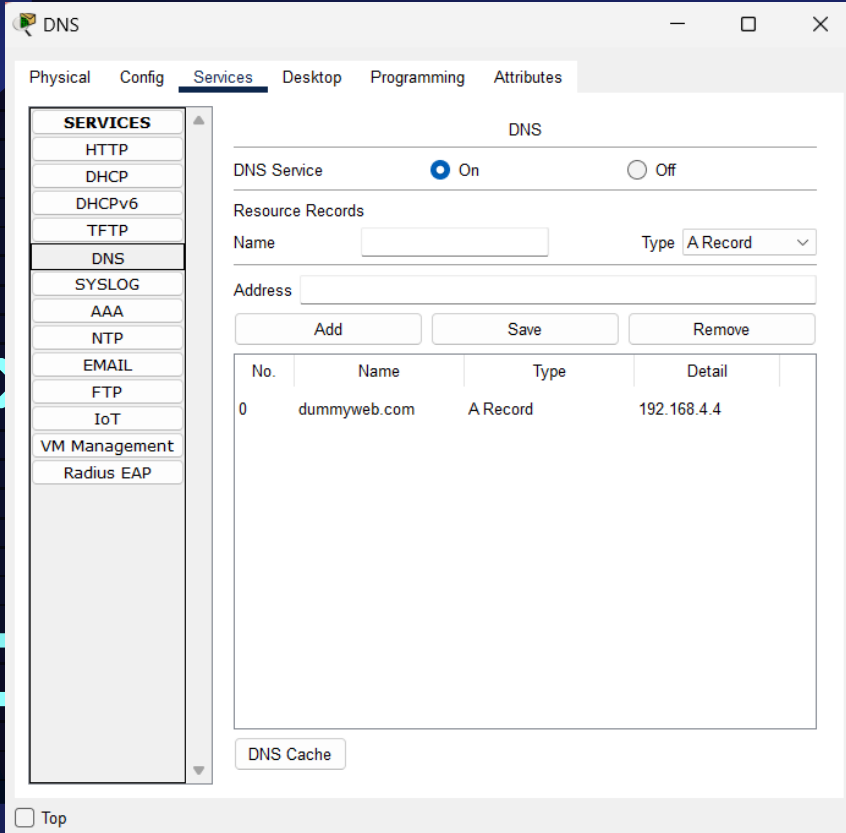
WEB SERVER TESTING



DNS Server

DNS atau *Domain Name System* merupakan sebuah sistem yang menyimpan data domain dan mengasosiasikannya dengan sebuah IP address. Sistem ini diterapkan melalui DNS server, yang memiliki fungsi utama mentranslasi domain name dan URL menjadi IP address. DNS server akan menerjemahkan URL yang dimasukkan oleh user dalam browser menjadi IP address dan mengembalikan IP address tersebut sehingga web user dapat mengakses site tersebut.

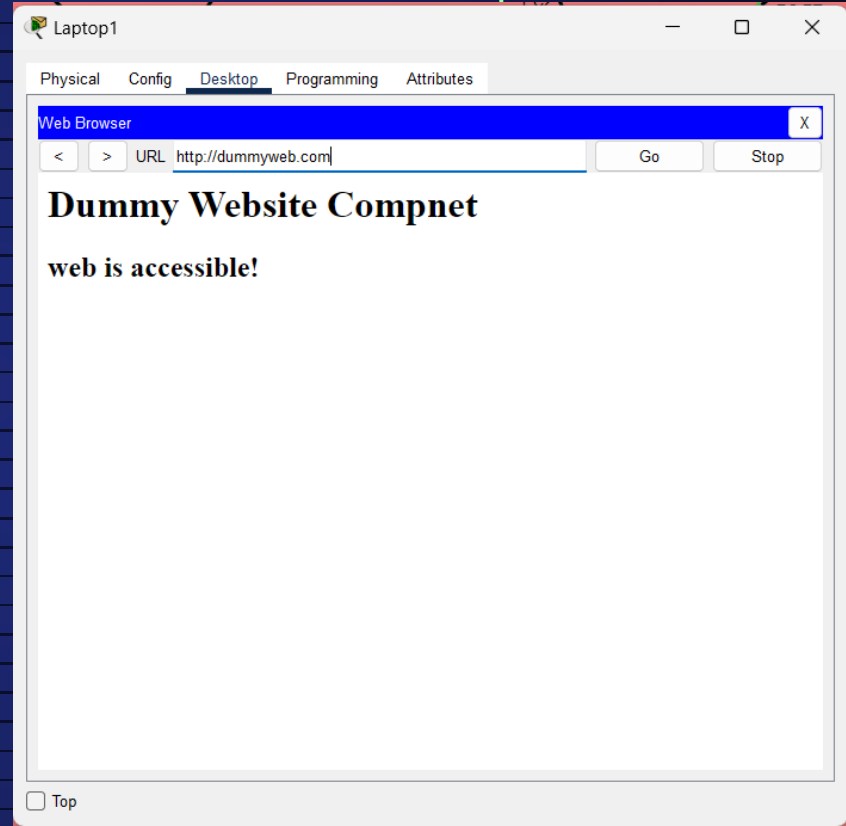
DNS SERVER TESTING



The screenshot shows a window titled "DNS" with tabs for Physical, Config, Services, Desktop, Programming, and Attributes. The "Services" tab is active, displaying the DNS configuration. The "DNS Service" is turned "On". Under "Resource Records", there is a form to add a new record with fields for Name, Type (set to "A Record"), and Address. Below this is a table of existing records.

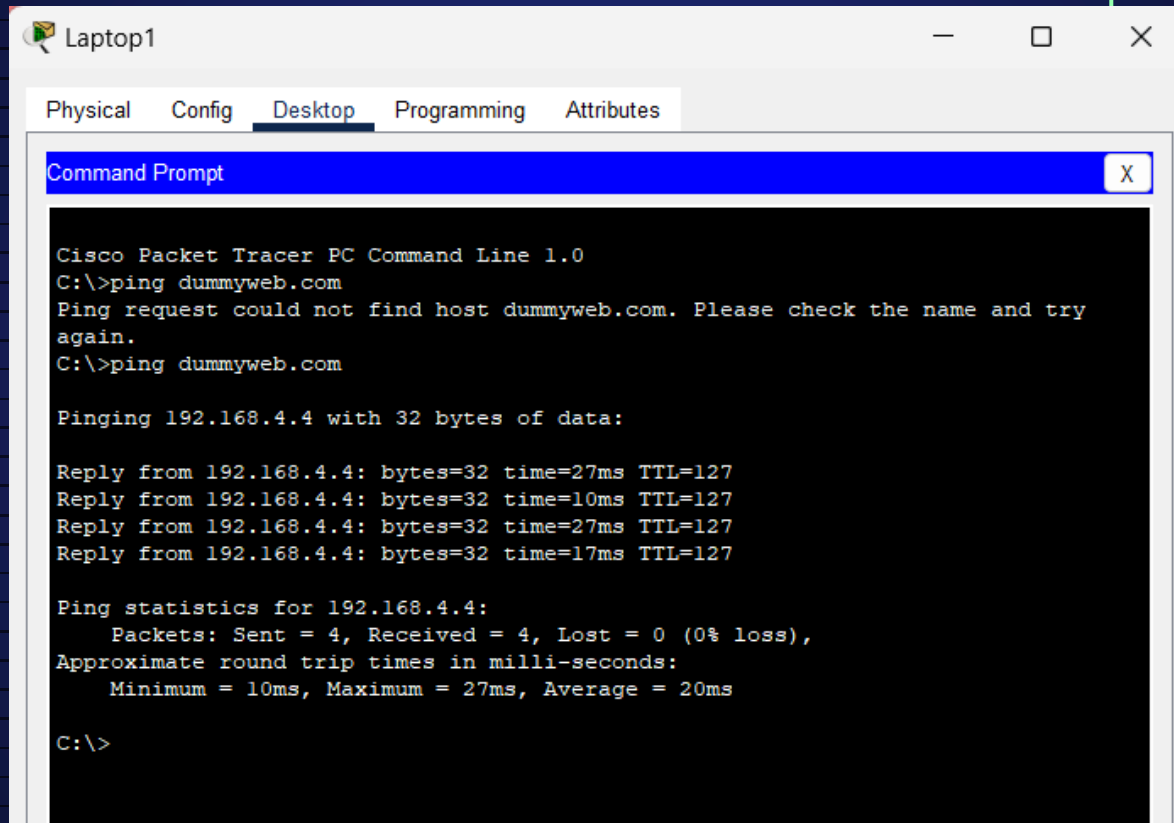
No.	Name	Type	Detail
0	dummyweb.com	A Record	192.168.4.4

Buttons for "Add", "Save", and "Remove" are located below the table. A "DNS Cache" button is at the bottom. A "Top" button is in the bottom left corner.



The screenshot shows a window titled "Laptop1" with tabs for Physical, Config, Desktop, Programming, and Attributes. The "Desktop" tab is active, displaying a "Web Browser" window. The browser's address bar shows the URL "http://dummyweb.com". The page content displays the title "Dummy Website Compnet" and the message "web is accessible!". A "Top" button is in the bottom left corner.

DNS SERVER TESTING



The screenshot shows a Cisco Packet Tracer PC Command Line window for a device named 'Laptop1'. The window has tabs for 'Physical', 'Config', 'Desktop', 'Programming', and 'Attributes', with 'Desktop' selected. The command prompt shows the following sequence of commands and output:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping dummyweb.com
Ping request could not find host dummyweb.com. Please check the name and try again.
C:\>ping dummyweb.com

Pinging 192.168.4.4 with 32 bytes of data:

Reply from 192.168.4.4: bytes=32 time=27ms TTL=127
Reply from 192.168.4.4: bytes=32 time=10ms TTL=127
Reply from 192.168.4.4: bytes=32 time=27ms TTL=127
Reply from 192.168.4.4: bytes=32 time=17ms TTL=127

Ping statistics for 192.168.4.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 10ms, Maximum = 27ms, Average = 20ms

C:\>
```

Mail Server

Mail server merupakan server yang menggunakan *mail protocols* untuk mengatur proses pengiriman dan penerimaan email dan berfungsi seperti kantor pos untuk email. Terdapat dua jenis mail server, yaitu *outgoing mail server* (MTA / *Mail Transfer Agent*) dan *incoming mail server* (MDA / *Mail Delivery Agent*). MTA akan mengambil email yang dikirim lalu memberikannya kepada MDA. MDA kemudian akan menyimpannya sementara dan mengirimkannya kepada *mail client* yang sesuai.

MAIL SERVER TESTING

Mail

Physical

Config

Services

Desktop

Programming

Attributes

SERVICES

HTTP

DHCP

DHCPv6

TFTP

DNS

SYSLOG

AAA

NTP

EMAIL

FTP

IoT

VM Management

Radius EAP

EMAIL

SMTP Service

☒ ON ☐ OFF

POP3 Service

☒ ON ☐ OFF

Domain Name: fakemail.com

Set

User Setup

User Password

1_WL0
1_PC0
1_PC2
5_WL2
5_PC4
5_PC6
5_PC12
5_PC14
5_PC16
5_PC18
7_WL3
7_PC20
7_PC22
7_PC24
7_PC26
7_PC28
7_PC30
7_PC32

+

-

Change

Password

MAIL SERVER TESTING

PC12

Physical Config Desktop Programming Attributes

MAIL BROWSER X

Mails

Compose Reply Receive Delete Configure Mail

	From	Subject	Received
1	5_WL2@fakemail.com	5_WL3 Sending	Sun May 14 2023 20:49:31
2	1_WL0@fakemail.com	1_WL0 Sending	Sun May 14 2023 20:41:38

Sending mail to 7_WL3@fakemail.com , with subject : Web Server Test ... Mail Server: 192.168.4.5
Send Success.

Cancel
Send/Receive

Laptop3

Physical Config Desktop Programming Attributes

Message X

Reply

From: 5_PC12@fakemail.com Sent: Sun May 14 2023 20:44:43
To: 7_WL3@fakemail.com
Subject: Web Server Test

☐ Top

Kesimpulan Design

Kategori	Keterangan	Verdict
IP addressing & Subnetting	IP addressing dan subnetting yang dilakukan menggunakan VLSM telah bekerja seperti seharusnya.	✓
DHCP Server	DHCP server berhasil untuk memberikan IP secara otomatis pada device yang terhubung secara wireless.	✓
Web Server	Web server dapat merespons user request seperti seharusnya.	✓
DNS Server	Web server (192.168.4.4) berhasil diakses menggunakan URL dummyweb.com.	✓
Mail Server	Email berhasil dikirim dan diterima oleh klien dalam network.	✓



Thank you