LAPORAN TUGAS BESAR JARKOM

Disusun Oleh:

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PROGRAM STUDI S1 SISTEM INFORMASI

FAKULTAS REKAYASA INDUSTRI

TELKOM UNIVERSITY

BANDUNG

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DAFTAR ISI

BAB 1

PENDAHULUAN

1.1 Studi Case

Sebuah universitas ingin membangun jaringan untuk kompleks asramanya. Jaringan ini harus mendukung subnet untuk Asrama Putra (52 host), Asrama Putri (39 host), Staf Kantin & Asrama (11 host), dan Kantin (44 host). Terdapat area Gym yang setiap mahasiswa dapat terkoneksi jaringan secara otomatis. VLAN akan memisahkan lalu lintas berdasarkan asrama dan fasilitas umum. Area kantin dan Staf asrama memerlukan koneksi antar-VLAN untuk bisa merespon komunikasi pada area kantin. Empat router akan menghubungkan Asrama Putra, Asrama Putri, Kantin & Staf Asrama, dan Gym untuk akses ke intranet maupun internet dengan lancar.

Laporan ini menjelaskan pembuatan jaringan untuk area asrama di sebuah universitas yang terdiri dari beberapa lingkup. Setiap lingkup dipisahkan menggunakan VLAN untuk menjaga keamanan dan efisiensi jaringan, dengan koneksi antar router menggunakan static routing. GYM diberikan akses internet menggunakan DHCP agar mahasiswa dapat langsung terhubung ke jaringan secara otomatis tanpa konfigurasi manual. Selain itu, koneksi antar VLAN digunakan khusus untuk kantin dan staff asrama untuk mendukung komunikasi opersional antar divisi.

BAB 2

PERANCANGAN JARINGAN

2.1 TABEL VLSM

Vlan	NAMA VLAN	Host	Ip switch	Ip network	Subnetmask	Default gateway	IP range
10	KANTIN	44	192.168.10.10	192.168.10.0	255.255.255.192	192.168.10.1	192.168.10.2 - 192.168.10.62
20	STAFF	11	192.168.10.10	192.168.20.0	255.255.255.240	192.168.20.1	192.168.20.2 - 192.168.20.14
30	ASRAMA PUTRI	39	192.168.10.2	192.168.30.0	255.255.255.192	192.168.30.1	192.168.30.2 - 192.168.30.62
40	ASRAMA PUTRA	52	192.168.10.1	192.168.40.0	255.255.255.192	192.168.40.1	192.168.30.2 - 192.168.30.62
50	GYM	-	192.168.10.6	192.168.50.0	255.255.255.0	192.168.50.1	192.168.30.2 - 192.168.30.254

2.2 Network Analys

Department	Host	CIDR	Subnet Mask
Kantin	44 hosts	/26	255.255.255.192
Staff	11 hosts	/25	255.255.255.240
Asrama Putri	39 hosts	/26	255.255.255.192
Asrama Putra	52 hosts	/26	255.255.255.192
Gym	250 hosts	/24	255.255.255.0

2.3 Vlans

Vlans ID	Name
10	Kantin
20	Staff
30	Asrama Putri
40	Asrama Putra
50	GYM

2.4 Router

Device	Interface	Ip address	Subnet Mask	Encapsulation
RTR-Asrama Putra	Gig0/0.40	192.168.40.1	255.255.255.192	40
RTR-Asrama Putri	Gig2/0.30	192.168.30.1	255.255.255.192	30
RTR-Gym	Gig1/0.50	192.168.50.1	255.255.255.0	50
RTR-Kantin & Staff	Gig1/0.10 & Gig2/0.20	192.168.10.1 & 192.168.20.1	255.255.255.192 & 255.255.255.240	10 & 20

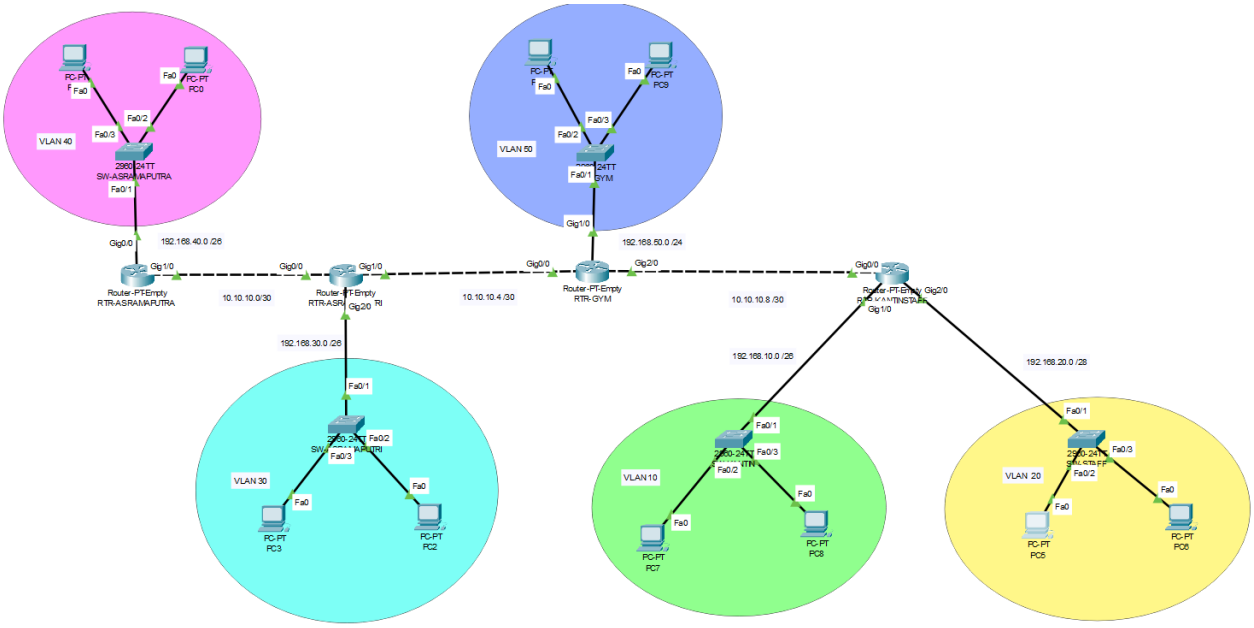
2.5 Device

Device	IP Address	Subnet Mask	Gateway	VLAN
PC0	192.168.40.2	255.255.255.192	192.168.40.1	40
PC1	192.168.40.3	255.255.255.192	192.168.40.1	40
PC2	192.168.30.2	255.255.255.192	192.168.30.1	30
PC3	192.168.30.2	255.255.255.192	192.168.30.1	30
PC5	192.168.20.2	255.255.255.240	192.168.20.1	20
PC6	192.168.20.3	255.255.255.240	192.168.20.1	20
PC7	192.168.10.2	255.255.255.192	192.168.10.1	10
PC8	192.168.10.3	255.255.255.192	192.168.10.1	10
PC9	192.168.50.2	255.255.255.0	192.168.50.1	50
PC10	192.168.50.3	255.255.255.0	192.168.50.1	50

2.6 Switch

Switch	Port	Mode	VLAN
SW-ASRAMAPUTRA	Fa0/1	trunk	-
SW-ASRAMAPUTRA	Fa0/2	access	40
SW-ASRAMAPUTRA	Fa0/3	access	40
SW-ASRAMAPUTRI	Fa0/1	trunk	-
SW-ASRAMAPUTRI	Fa0/2	access	30
SW-ASRAMAPUTRI	Fa0/3	access	30
SW-GYM	Fa0/1	trunk	-
SW-GYM	Fa0/2	access	50
SW-GYM	Fa0/3	access	50
SW-KANTIN	Fa0/1	trunk	-
SW-KANTIN	Fa0/2	access	10
SW-KANTIN	Fa0/3	access	10
SW-STAFF	Fa0/1	trunk	-
SW-STAFF	Fa0/2	access	20
SW-STAFF	Fa0/3	access	20

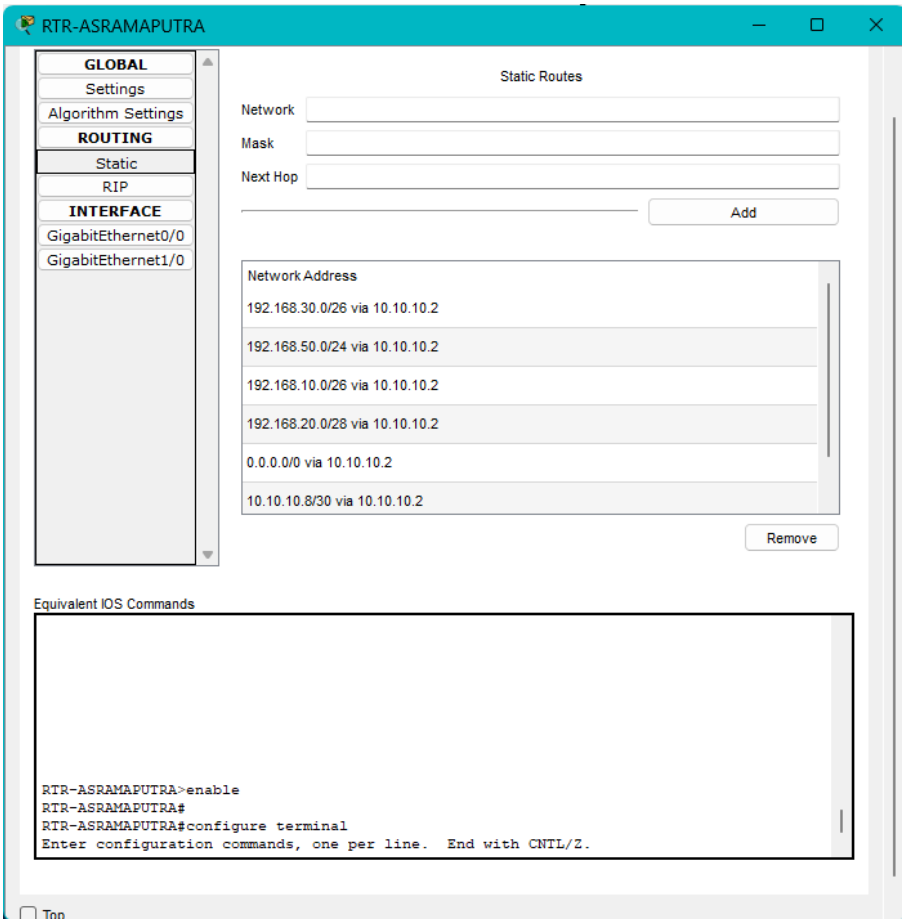
2.7 TOPOLOGI



2.3 Konfigurasi jaringan & Static Routes

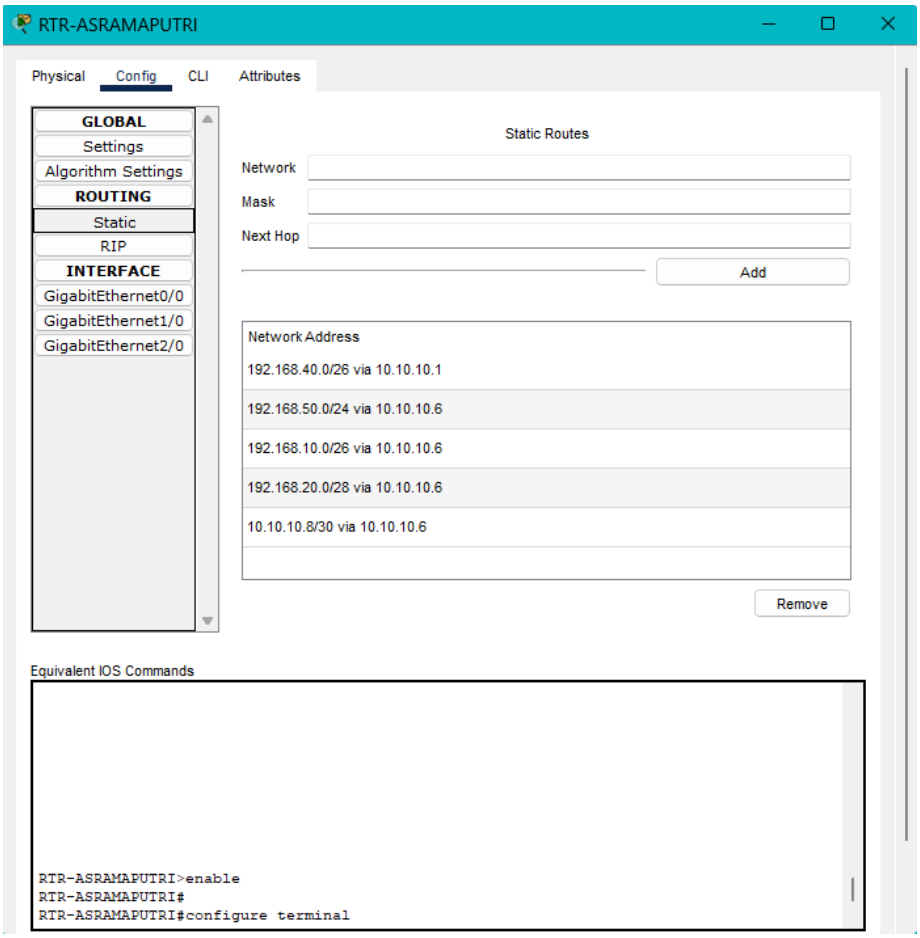
2.3.1. RTR-ASRAMAPUTRA

- VLAN: 40
- IP Subnet: 192.168.40.0/26
- Perangkat: 2 PC
- Router terhubung dengan IP: 10.10.10.1/30
- Static routes:



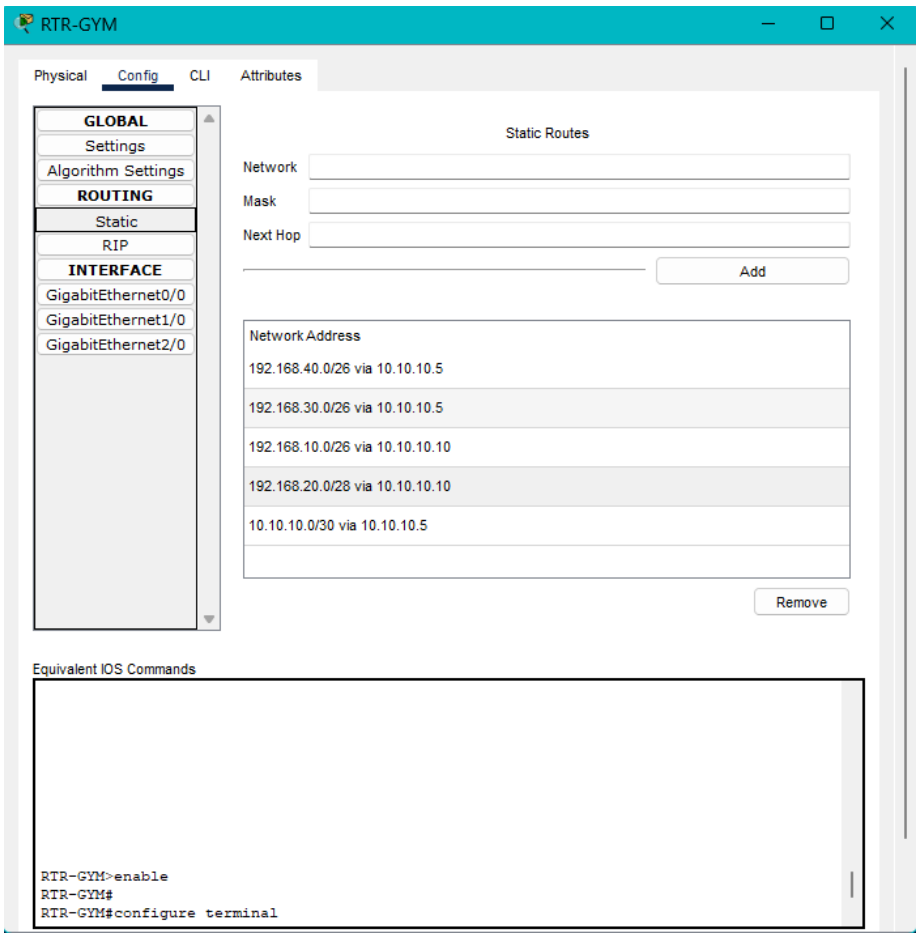
2.3.2 RTR-ASRAMAPUTRI

- VLAN: 30
- IP Subnet: 192.168.30.0/26
- Perangkat: 2 PC
- Static routes:



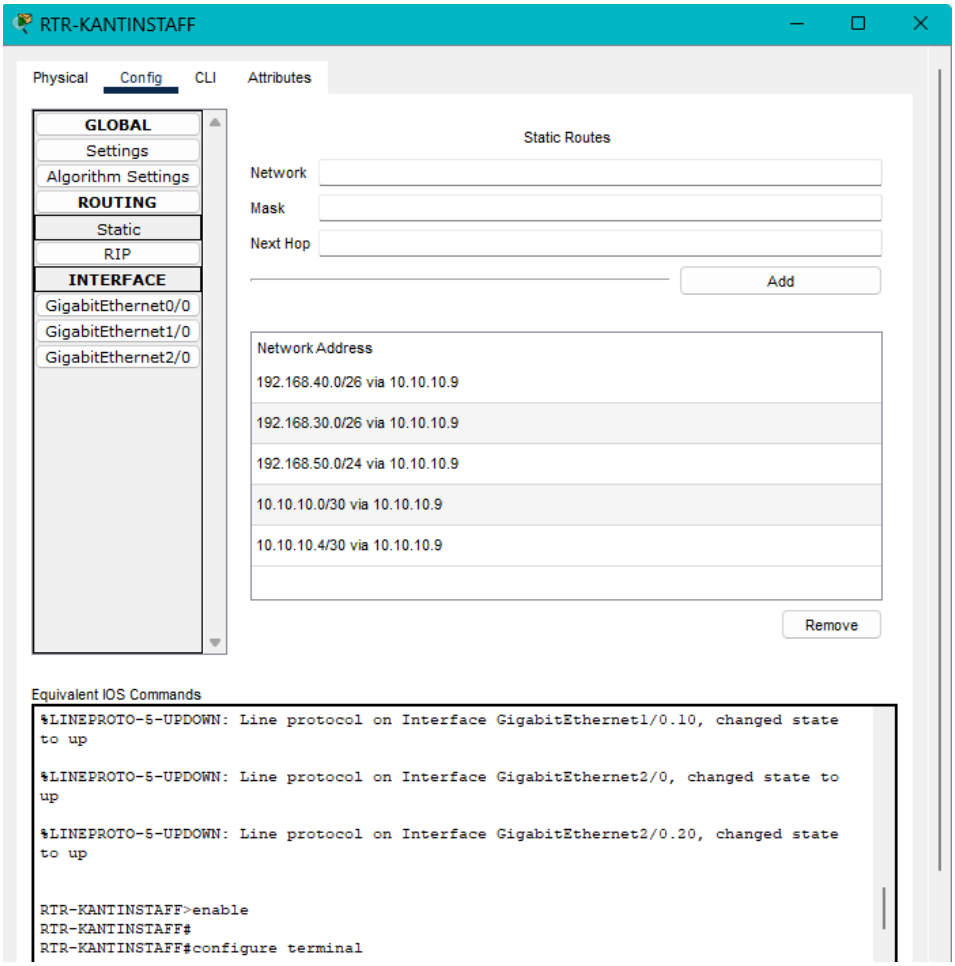
2.3.3 RTR-GYM

- VLAN: 50
- IP Subnet: 192.168.50.0/24
- Router: RTR-GYM
- Perangkat: 2 PC
- Router terhubung dengan IP: 10.10.10.6/30
- Static routes:



2.3.4. RTR-KANTINSTAFF

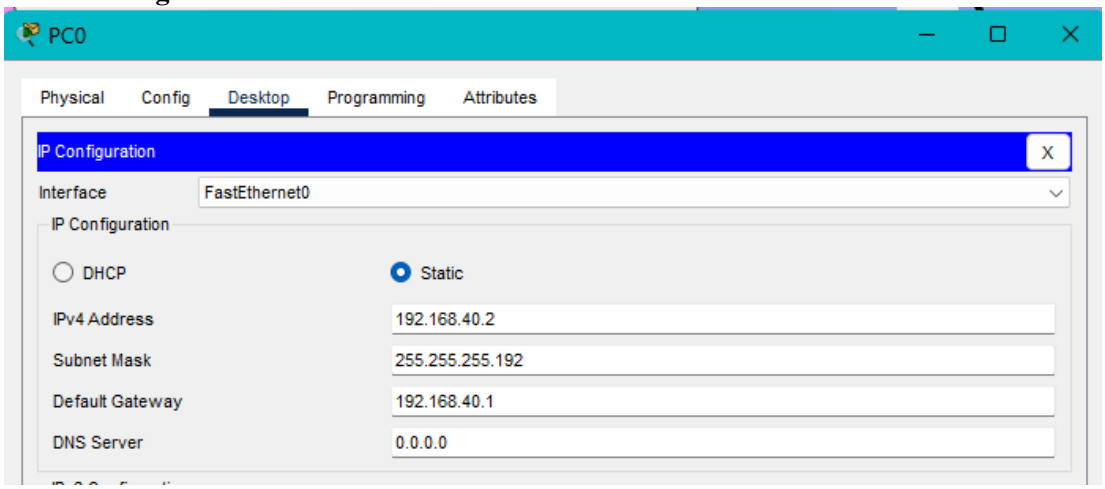
- Kantin:
  - VLAN: 10
  - IP Subnet: 192.168.10.0/26
  - Perangkat: 2 PC
  - VLAN ini berkomunikasi dengan VLAN 20 (inter-VLAN)
- Staff:
  - VLAN: 20
  - IP Subnet: 192.168.20.0/28
  - Perangkat: 2 PC
  - VLAN ini berkomunikasi dengan VLAN 10 (inter-VLAN)
- Static routes:

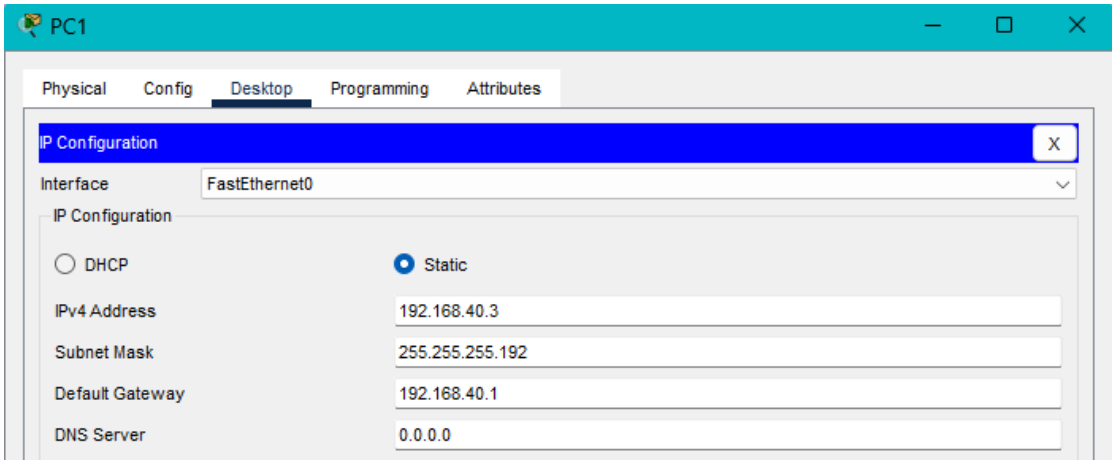


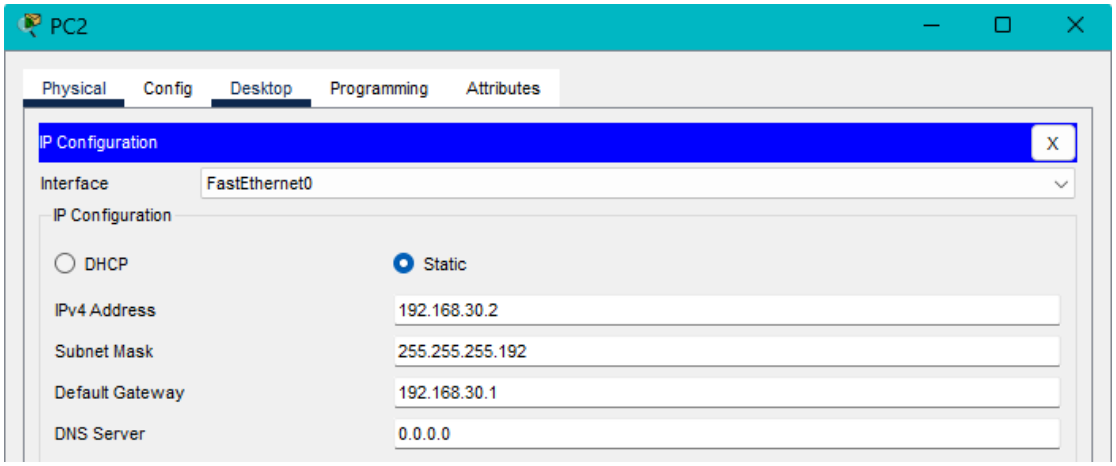
BAB 3

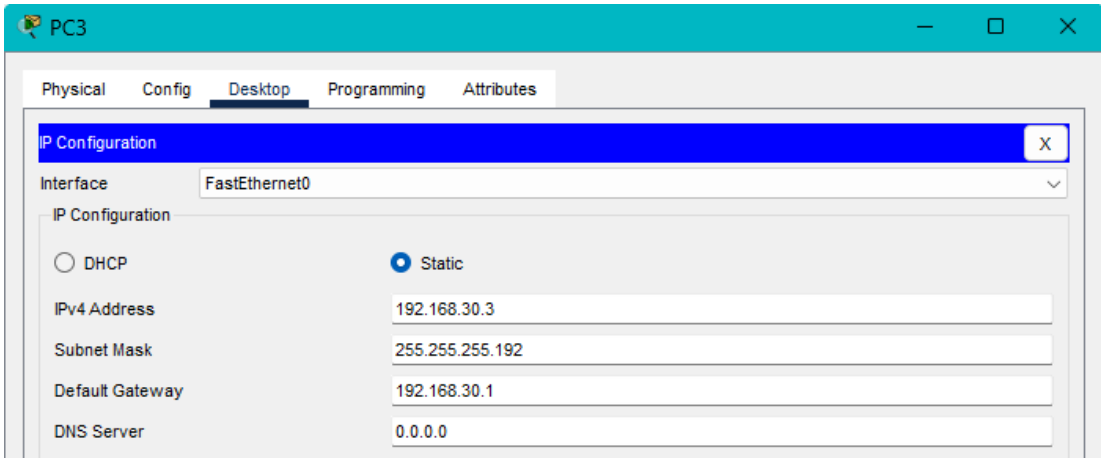
DETAIL CONFIGURATION

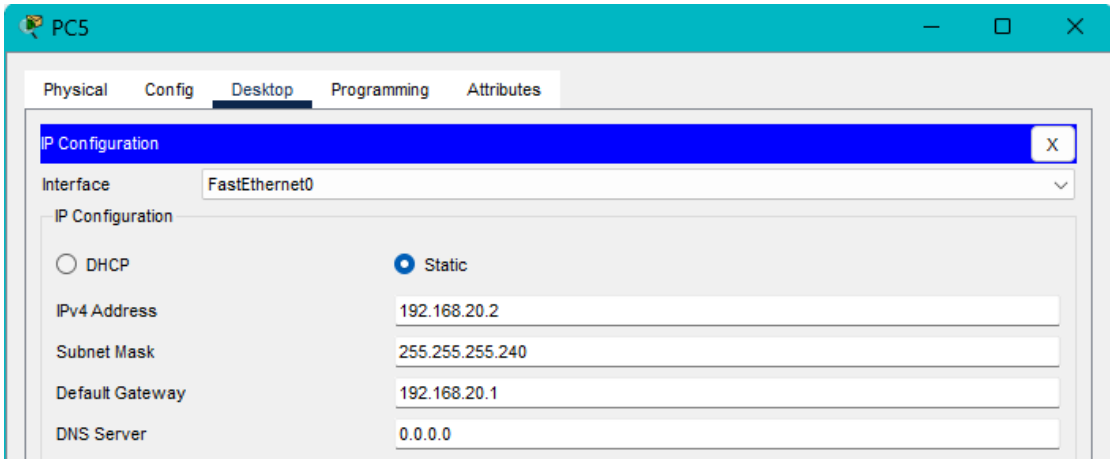
3.1 IP Configuration

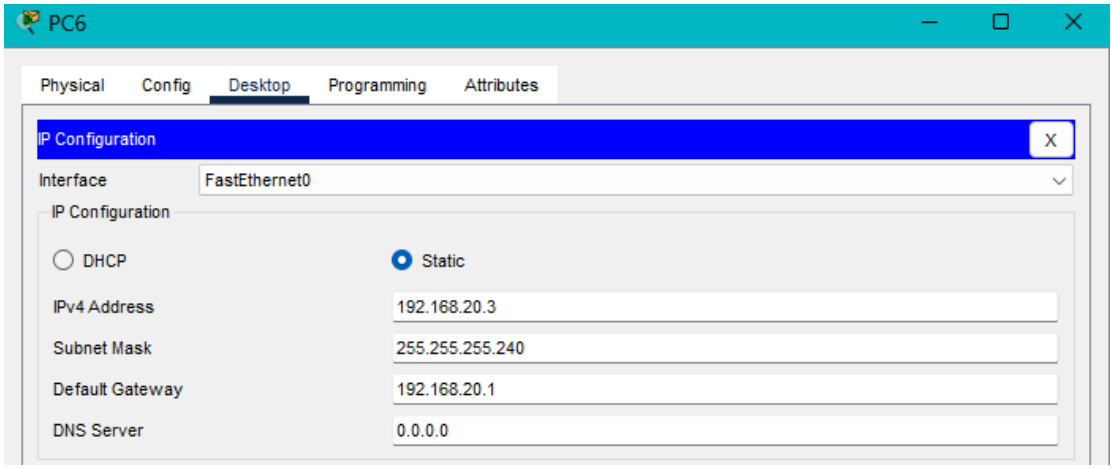


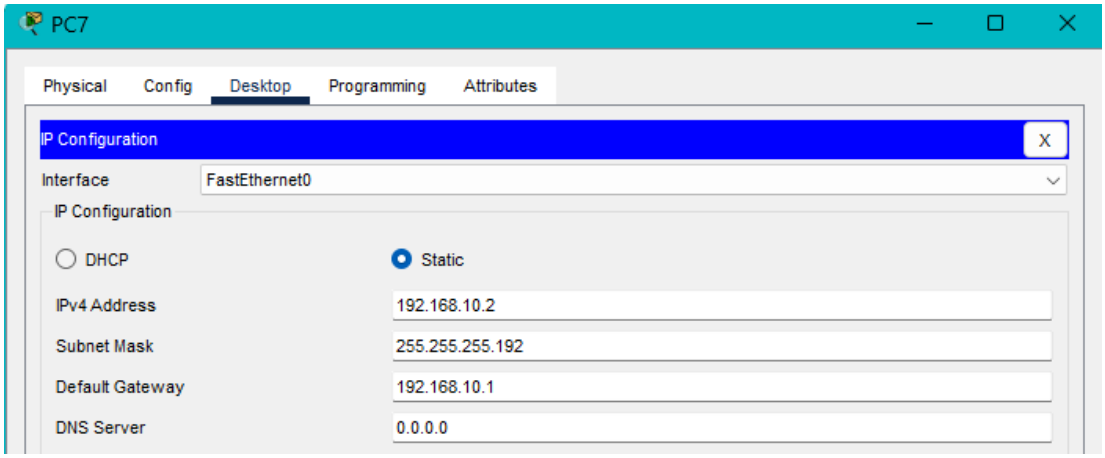


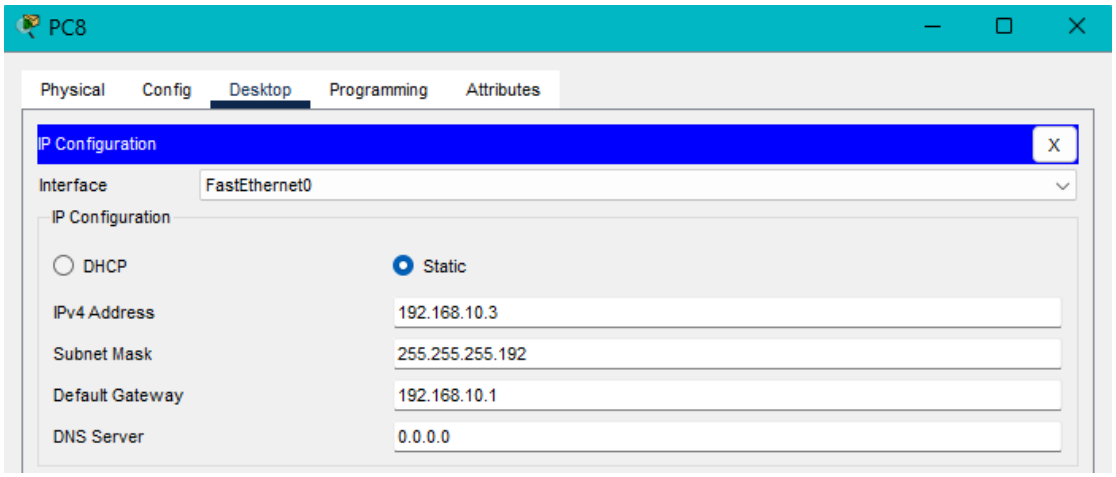


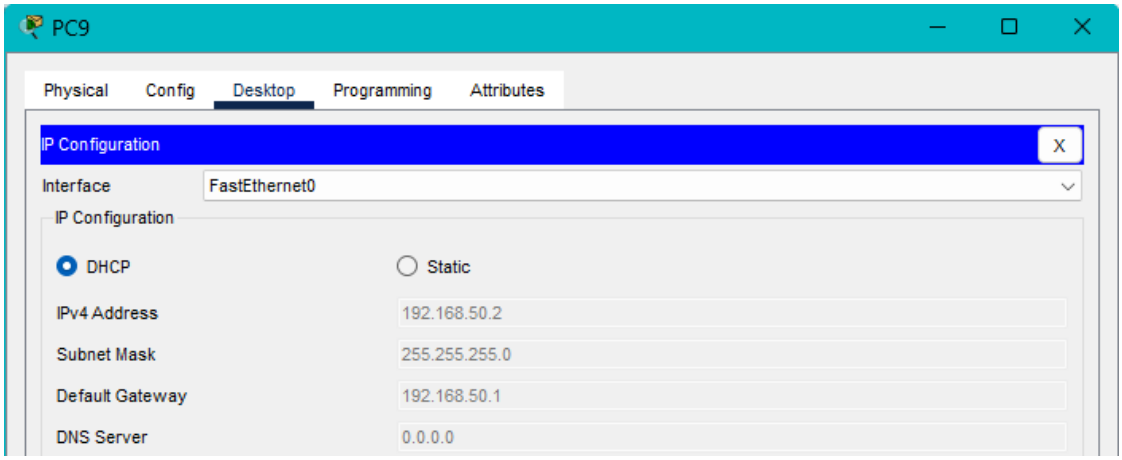

PC3
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.168.30.3
Subnet Mask
255.255.255.192
Default Gateway
192.168.30.1
DNS Server
0.0.0.0

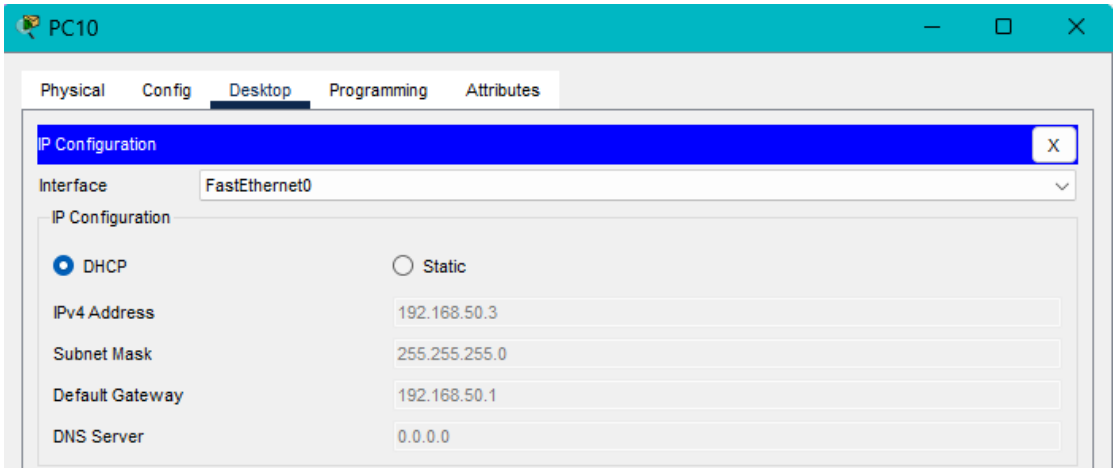

PC5
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.168.20.2
Subnet Mask
255.255.255.240
Default Gateway
192.168.20.1
DNS Server
0.0.0.0


PC6
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.168.20.3
Subnet Mask
255.255.255.240
Default Gateway
192.168.20.1
DNS Server
0.0.0.0


PC7
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.168.10.2
Subnet Mask
255.255.255.192
Default Gateway
192.168.10.1
DNS Server
0.0.0.0


PC8
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.168.10.3
Subnet Mask
255.255.255.192
Default Gateway
192.168.10.1
DNS Server
0.0.0.0


PC9
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.168.50.2
Subnet Mask
255.255.255.0
Default Gateway
192.168.50.1
DNS Server
0.0.0.0


PC10
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.168.50.3
Subnet Mask
255.255.255.0
Default Gateway
192.168.50.1
DNS Server
0.0.0.0

BAB 4

HASIL TESTING & FILE PKA

4.1 PERCOBAAN INTER-VLAN & STATIC ROUTING

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC3	PC7	ICMP		0.000	N	1	(edit)	
	Successful	PC8	PC5	ICMP		0.000	N	2	(edit)	
	Successful	PC2	PC0	ICMP		0.000	N	3	(edit)	
	Successful	PC10	PC7	ICMP		0.000	N	4	(edit)	

Pengujian konektivitas jaringan telah berhasil dan sesuai kentetuan studi case

1. Pc8 di switch kantin dan pc5 di switch staff sudah berhasil inter-vlan
2. Pc3 di router asrama putri dan pc7 di switch kantin berhasil static routing
3. Pc10 di router gym yang menggunakan dhcp bisa static routing ke pc7 di switch kantin

4.2 File PKA here

https://drive.google.com/file/d/1WPOtKfNrdy8euK24QLikT_wamolr3a9t/view?usp=drive_link