

**E-UTS PRAKTIKUM JARINGAN KOMPUTER**



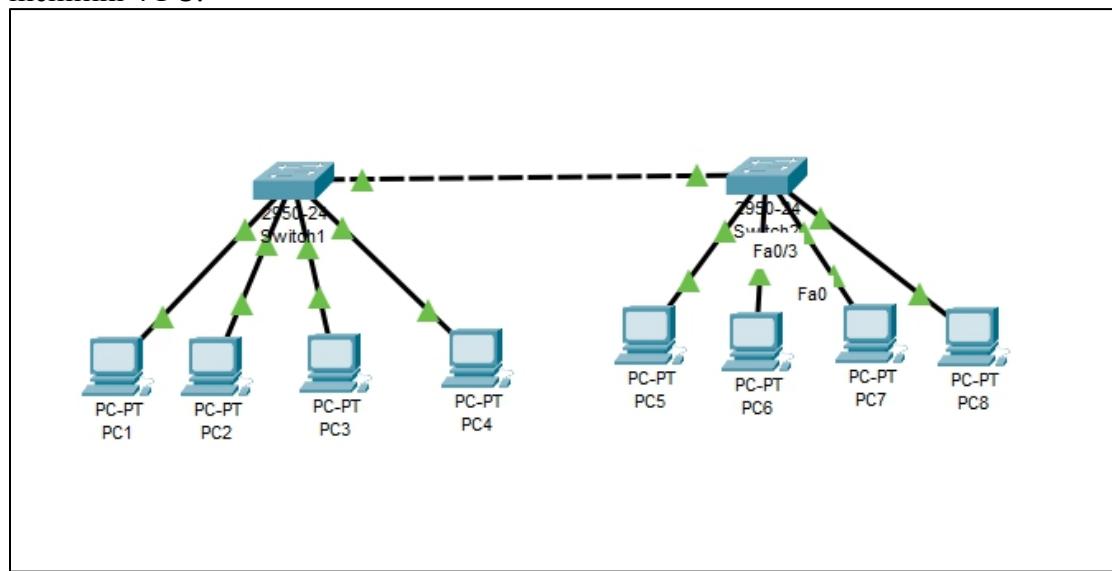
**Oleh:**

<b>NAMA</b>	<b>: Daffa Putra Alwansyah</b>
<b>NIM</b>	<b>: L200190031</b>
<b>KELAS</b>	<b>: A</b>
<b>PRODI</b>	<b>: INFORMATIKA</b>

**Fakultas Komunikasi dan Informatika Universitas  
Muhammadiyah Surakarta**

## Nomor 1

1. Membuat sebuah jaringan dengan 2 buah switch 2950, dan setiap switch memiliki 4 PC.



2. Setting alamat IP PC1 sampai PC8.

PC1

Physical Config Desktop Program

IP Configuration

Interface FastEthernet0

IP Configuration

DHCP  Static

IPv4 Address 220.168.3.1

Subnet Mask 255.255.255.0

Default Gateway 0.0.0.0

DNS Server n.n.n.n

PC2

Physical Config Desktop Program

IP Configuration

Interface FastEthernet0

IP Configuration

DHCP  Static

IPv4 Address 220.168.3.2

Subnet Mask 255.255.255.0

Default Gateway 0.0.0.0

DNS Server 0.0.0.0

PC3

Physical Config Desktop Programming Attrib

IP Configuration

Interface FastEthernet0

IP Configuration

DHCP  Static

IPv4 Address 220.168.3.3

Subnet Mask 255.255.255.0

Default Gateway 0.0.0.0

DNS Server 0.0.0.0

PC4

Physical Config Desktop Program

IP Configuration

Interface FastEthernet0

IP Configuration

DHCP  Static

IPv4 Address 220.168.3.4

Subnet Mask 255.255.255.0

Default Gateway 0.0.0.0

DNS Server 0.0.0.0

PC5

Physical Config Desktop Program

IP Configuration

Interface FastEthernet0

IP Configuration

DHCP  Static

IPv4 Address 220.168.3.5

Subnet Mask 255.255.255.0

Default Gateway 0.0.0.0

DNS Server 0.0.0.0

PC6

Physical Config Desktop Programming Attrib

IP Configuration

Interface FastEthernet0

IP Configuration

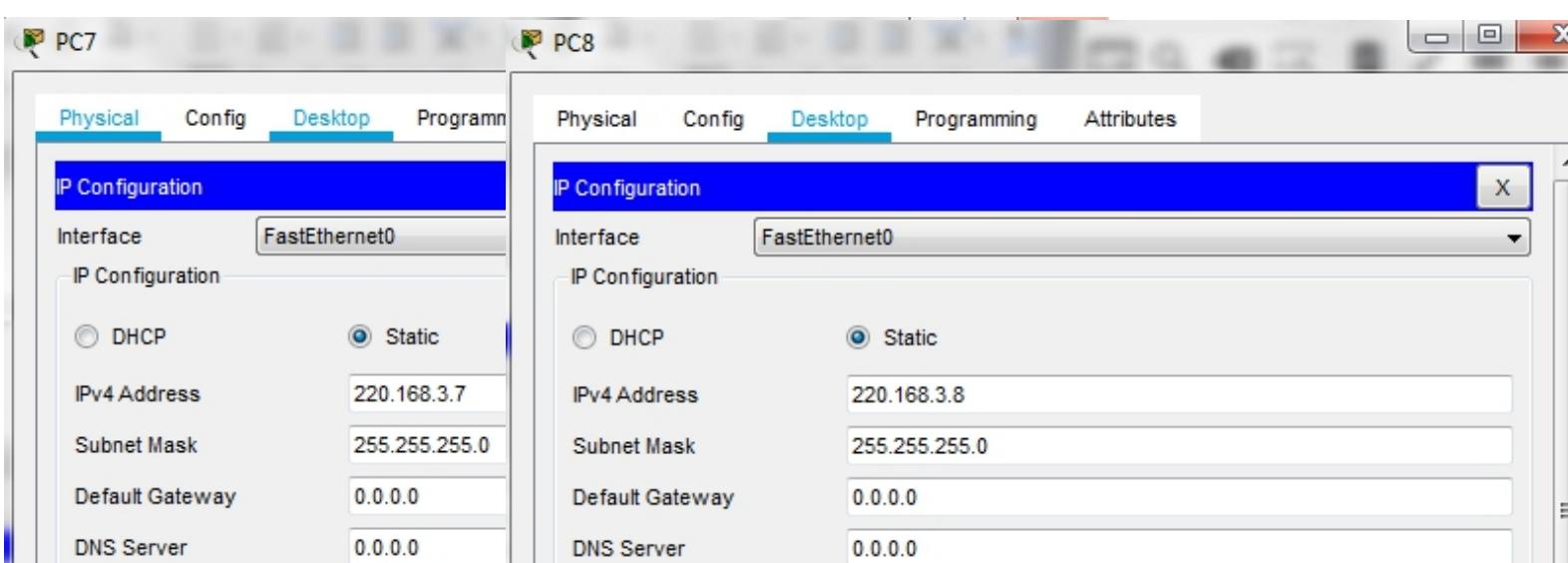
DHCP  Static

IPv4 Address 220.168.3.6

Subnet Mask 255.255.255.0

Default Gateway 0.0.0.0

DNS Server 0.0.0.0



3. Setting vlan Switch1 dan Switch2 dengan memberi nama vlan 10 = Laboratorium, vlan 20 = Perpustakaan, dan vlan 30 = Kelas.

```

Switch 1 CLI output:
IOS Command Line Interface
changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/1,
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1,
changed state to up

Switch>enable
Switch#conf term
Enter configuration commands, one per line.
Switch(config)#vlan Laboratorium
^
% Invalid input detected at '^' marker.

Switch(config)#vlan 10
Switch(config-vlan)#name Laboratorium
Switch(config-vlan)#exit
Switch(config)#vlan 20
Switch(config-vlan)#name Perpustakaan
Switch(config-vlan)#exit
Switch(config)#vlan 30
Switch(config-vlan)#name Kelas
Switch(config-vlan)#exit
Switch(config)#
Ctrl+F6 to exit CLI focus
Top

Switch 2 CLI output:
IOS Command Line Interface
%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3,
changed state to up

%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4,
changed state to up

Switch>enable
Switch#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#vlan 10
Switch(config-vlan)#name Laboratorium
Switch(config-vlan)#exit
Switch(config)#vlan 20
Switch(config-vlan)#name Perpustakaan
Switch(config-vlan)#exit
Switch(config)#vlan 30
Switch(config-vlan)#name Kelas
Switch(config-vlan)#exit
Switch(config)#
Ctrl+F6 to exit CLI focus
Copy Paste
Top

```

4. Lakukan konfigurasi tiap anggota dengan Switch1 = vlan10 anggota PC1, vlan 20 anggota PC2 dan vlan30 anggota PC3 dan PC4, Switch2 = vlan 10 anggota PC8, vlan 20 anggota PC7 dan vlan 30 anggota PC5 dan PC6 dan melakukan trunking.

The screenshots show the Cisco Configuration Constructor (CC) interface with two windows open:

- Switch1 Configuration:**

```
Switch(config)#int fa 0/1
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 10
Switch(config-if)#switch mode trunk

Switch(config-if)#
*LINPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1,
changed state to down

*LINPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1,
changed state to up
exit
Switch(config)#exit
Switch#
*SYS-5-CONFIG_I: Configured from console by console

Switch#en
Switch#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#int fa 0/2
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 20
Switch(config-if)#exit
Switch(config)#int fa 0/2
Switch(config-if)#exit
```
- Switch2 Configuration:**

```
Switch(config)#int fa 0/1
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 10
Switch(config-if)#switchport mode trunk

Switch(config-if)#
*LINPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1,
changed state to down

*LINPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1,
changed state to up
exit
Switch(config)#exit
Switch#
*SYS-5-CONFIG_I: Configured from console by console

Switch#en
Switch#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#int fa 0/2
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 20
Switch(config-if)#exit
Switch(config)#int fa 0/3
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 30
Switch(config-if)#int fa 0/4
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 30
Switch(config-if)#exit
Switch(config)#

```

Switch2

Physical Config **CLI** Attributes

IOS Command Line Interface

```
Switch(config)#int fa 0/4
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 10
Switch(config-if)#switch mode trunk

Switch(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4,
changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4,
changed state to up

Switch(config-if)#exit
Switch(config)#int fa 0/3
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 20
Switch(config-if)#exit
Switch(config)#int fa 0/2
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 30
Switch(config-if)#exit
Switch(config)#int fa 0/1
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 30
Switch(config-if)#exit
```

Ctrl+F6 to exit CLI focus      **Copy**      **Paste**

Top

5. ketikan “show vlan brief” dan “ show int fa (port) switchport” untuk melihat konfigurasi vlan.

Switch1

Physical Config **CLI** Attributes

IOS Command Line Interface

```
Switch#
Switch#show vlan brief

VLAN Name                               Status      Ports
---- -----
1   default                             active     Fa0/5, Fa0/6, Fa0/7,
                                            Fa0/8
                                            Fa0/9, Fa0/10,
                                            Fa0/11, Fa0/12
                                            Fa0/13, Fa0/14,
                                            Fa0/15, Fa0/16
                                            Fa0/17, Fa0/18,
                                            Fa0/19, Fa0/20
                                            Fa0/21, Fa0/22,
                                            Fa0/23, Fa0/24
10  Laboratorium                        active     Fa0/2
20  Perpustakaan                         active     Fa0/3, Fa0/4
30  Kelas                                active
1002 fddi-default                        active
1003 token-ring-default                  active
1004 fddinet-default                     active
1005 trnet-default                      active
Switch#
```

Ctrl+F6 to exit CLI focus      **Copy**      **Paste**

**Switch1**

Physical Config **CLI** Attributes

IOS Command Line Interface

```

Switch>en
Switch#show int fa 0/1 switchport
Name: Fa0/1
Switchport: Enabled
Administrative Mode: trunk
Operational Mode: trunk
Administrative Trunking Encapsulation: dot1q
Operational Trunking Encapsulation: dot1q
Negotiation of Trunking: Off
Access Mode VLAN: 10 (Laboratorium)
Trunking Native Mode VLAN: 1 (default)
Voice VLAN: none
Administrative private-vlan host-association: none
Administrative private-vlan mapping: none
Administrative private-vlan trunk native VLAN: none
Administrative private-vlan trunk encapsulation: dot1q
Administrative private-vlan trunk normal VLANs: none
Administrative private-vlan trunk private VLANs: none
Operational private-vlan: none
Trunking VLANs Enabled: All
Pruning VLANs Enabled: 2-1001
Capture Mode Disabled
Capture VLANs Allowed: ALL
Protected: false
Announce trust: none

```

Ctrl+F6 to exit CLI focus      **Copy**      **Paste**

Top

**Switch2**

Physical Config **CLI** Attributes

IOS Command Line Interface

```

Switch>en
Switch#show int fa 0/4 switchport
Name: Fa0/4
Switchport: Enabled
Administrative Mode: trunk
Operational Mode: trunk
Administrative Trunking Encapsulation: dot1q
Operational Trunking Encapsulation: dot1q
Negotiation of Trunking: Off
Access Mode VLAN: 10 (Laboratorium)
Trunking Native Mode VLAN: 1 (default)
Voice VLAN: none
Administrative private-vlan host-association: none
Administrative private-vlan mapping: none
Administrative private-vlan trunk native VLAN: none
Administrative private-vlan trunk encapsulation: dot1q
Administrative private-vlan trunk normal VLANs: none
Administrative private-vlan trunk private VLANs: none
Operational private-vlan: none
Trunking VLANs Enabled: All
Pruning VLANs Enabled: 2-1001
Capture Mode Disabled
Capture VLANs Allowed: ALL
Protected: false
--More--

```

Ctrl+F6 to exit CLI focus

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**Switch2**

Physical Config **CLI** Attributes

IOS Command Line Interface

```

Switch#show vlan brief
-----
```

VLAN	Name	Status	Ports
1	default	active	Fa0/5, Fa0/8
Fa0/11, Fa0/12			Fa0/9, Fa0/13
Fa0/15, Fa0/16			Fa0/17
Fa0/19, Fa0/20			Fa0/21
Fa0/23, Fa0/24			
10	Laboratorium	active	Fa0/3
20	Perpustakaan	active	Fa0/1, Fa0/2
30	Kelas	active	
1002	fdmi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

```

Switch#

```

Ctrl+F6 to exit CLI focus

Top

6. Ping PC1 ke PC8 dan Ping PC1 ke PC6.

The screenshot shows a Windows Command Prompt window titled "Command Prompt". The window has tabs at the top: Physical, Config, Desktop (which is selected), Programming, and Attributes. The main area displays the following command and its output:

```
C:\>ping 220.168.3.8

Pinging 220.168.3.8 with 32 bytes of data:

Reply from 220.168.3.8: bytes=32 time=1ms TTL=128
Reply from 220.168.3.8: bytes=32 time<1ms TTL=128
Reply from 220.168.3.8: bytes=32 time<1ms TTL=128
Reply from 220.168.3.8: bytes=32 time<1ms TTL=128

Ping statistics for 220.168.3.8:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>ping 220.168.3.6

Pinging 220.168.3.6 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 220.168.3.6:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
    C:\>
```

#### Penjelasan:

##### 1. Ping PC1 ke PC8

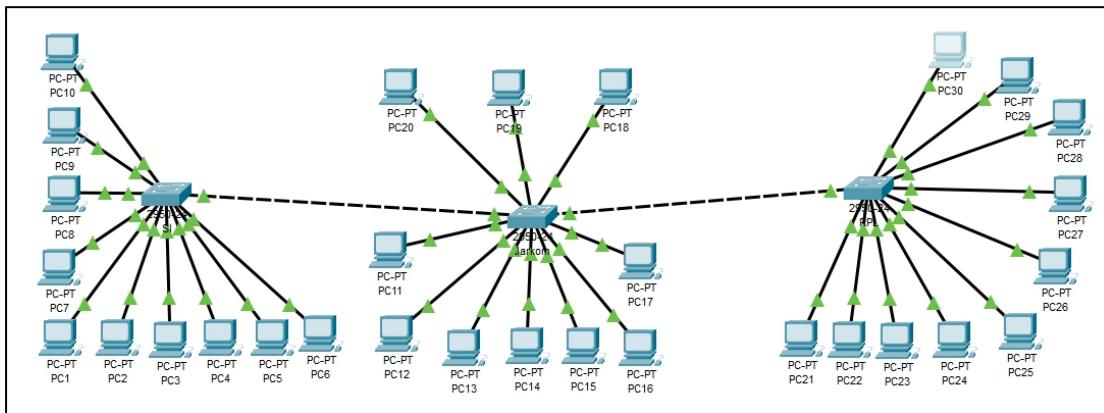
Mendapatkan “Reply from....” karena PC1 dan PC8 berada pada vlan yang sama, yaitu Laboratorium.

##### 2. Ping PC1 ke PC6

Mendapatkan “Request time out.” karena PC1 dan PC6 berada pada vlan yang berbeda PC1 adalah Laboratorium dan PC6 adalah Kelas.

## Nomor 2

- a. Sebuah laboratorium akan memasang sebuah jaringan computer menggunakan network id 192.168.51.0/24. Laboratorium tsb terbagi menjadi 3 bagian(SI, Jarkom, RPL) dan masing-masing bagian berisi hingga 10 komputer.



NETWORK ID

192.168.51.0/24

11111111 . 11111111 . 11111111 . 00000000

Blok 1      Blok 2      Blok 3      Blok 4

Merubah setiap biner blok menjadi desimal

Subnet mask default = 255.255.255.0

- **Jumlah subnet**

$$2^x = 2^0 = 1 \text{ subnet } (x \text{ adalah jumlah bit 1 pada blok ke 4})$$

- **Jumlah host**

$$2^y - 2 = 2^8 - 2 = 256 - 2 = 254 \text{ host } (y \text{ adalah jumlah bit 0 pada blok ke 4})$$

- **Block subnet**

$$256 - 0 = 256$$

- **Tabel subnet**

Network	Host Pertama	Host Terakhir	Broadcast
192.168.51.0	192.168.51.1	192.168.51.254	192.168.51.255

- **Alamat IP**

IP dari PC1 192.168.51.1 s/d PC30 192.168.51.30

- **Konfigurasi IP**

PC10

Physical Config Desktop Programming

IP Configuration

Interface: FastEthernet0

DHCP (radio button) Static (radio button)

IPv4 Address: 192.168.51.10

Subnet Mask: 255.255.255.0

Default Gateway: 0.0.0.0

DNS Server: 0.0.0.0

PC20

Physical Config Desktop Programming

IP Configuration

Interface: FastEthernet0

DHCP (radio button) Static (radio button)

IPv4 Address: 192.168.51.20

Subnet Mask: 255.255.255.0

Default Gateway: 0.0.0.0

DNS Server: 0.0.0.0

PC30

Physical Config Desktop Programming

IP Configuration

Interface: FastEthernet0

DHCP (radio button) Static (radio button)

IPv4 Address: 192.168.51.30

Subnet Mask: 255.255.255.0

Default Gateway: 0.0.0.0

DNS Server: 0.0.0.0

- Melakukan Ping antar PC

The screenshot shows a Windows-style window titled "PC10" with a "Command Prompt" tab selected. The window displays two separate ping sessions. The first session, at the top, shows four successful pings to IP 192.168.51.20 with a TTL of 128 and times less than 1ms. It includes statistics: Packets Sent = 4, Received = 4, Lost = 0 (0% loss), and round trip times from 0ms to 10ms. The second session, at the bottom, shows four successful pings to IP 192.168.51.30 with a TTL of 128 and times less than 1ms. It also includes similar statistics.

```
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.51.20

Pinging 192.168.51.20 with 32 bytes of data:

Reply from 192.168.51.20: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.51.20:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

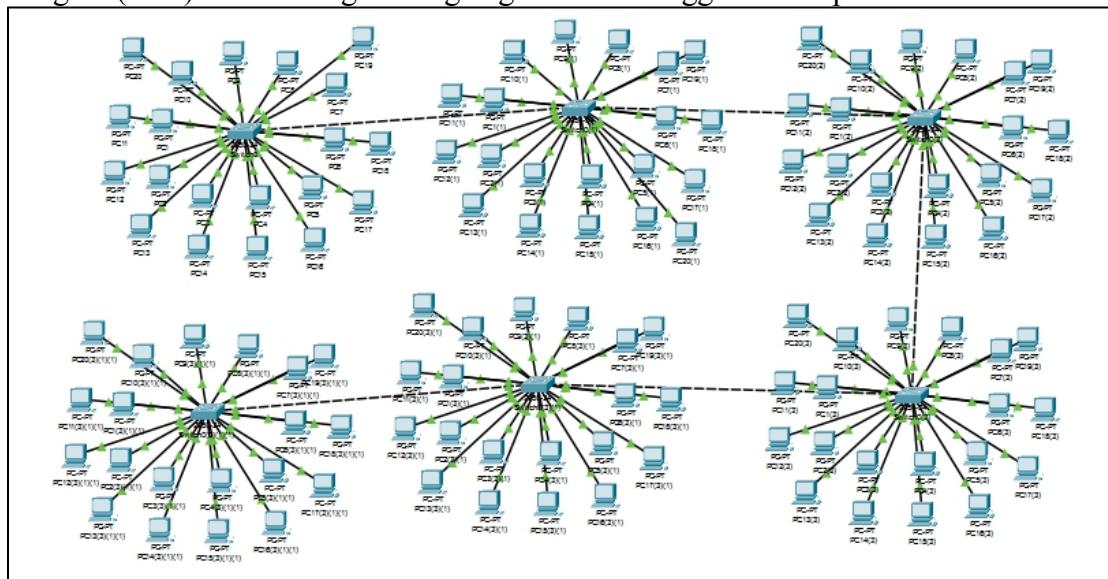
C:\>ping 192.168.51.30

Pinging 192.168.51.30 with 32 bytes of data:

Reply from 192.168.51.30: bytes=32 time<1ms TTL=128
Reply from 192.168.51.30: bytes=32 time=10ms TTL=128
Reply from 192.168.51.30: bytes=32 time<1ms TTL=128
Reply from 192.168.51.30: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.51.30:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
```

- b. Diketahui sebuah laboratorium akan memasang sebuah jaringan komputer menggunakan network ID 192.168.50.0/25 Laboratorium tersebut terbagi menjadi 6 bagian (A-G). dan masing-masing bagian berisi hingga 20 komputer.



NETWORK ID  
 192.168.50.1/25  
**11111111 . 11111111 . 11111111 . 10000000**  
**Blok 1      Blok 2      Block 3      Block 4**

Merubah setiap biner blok menjadi desimal  
 Subnet mas default = 255.255.255.128

- **Jumlah subnet**

$2^x = 2^1 = 2$  subnet (x adalah jumlah bit 1 pada blok ke 4)

- **Jumlah host**

$2^y - 2 = 2^7 - 2 = 128 - 2 = 126$  host (y adalah jumlah bit 0 pada blok ke 4)

- **Block subnet**

$256 - 128 = 128$

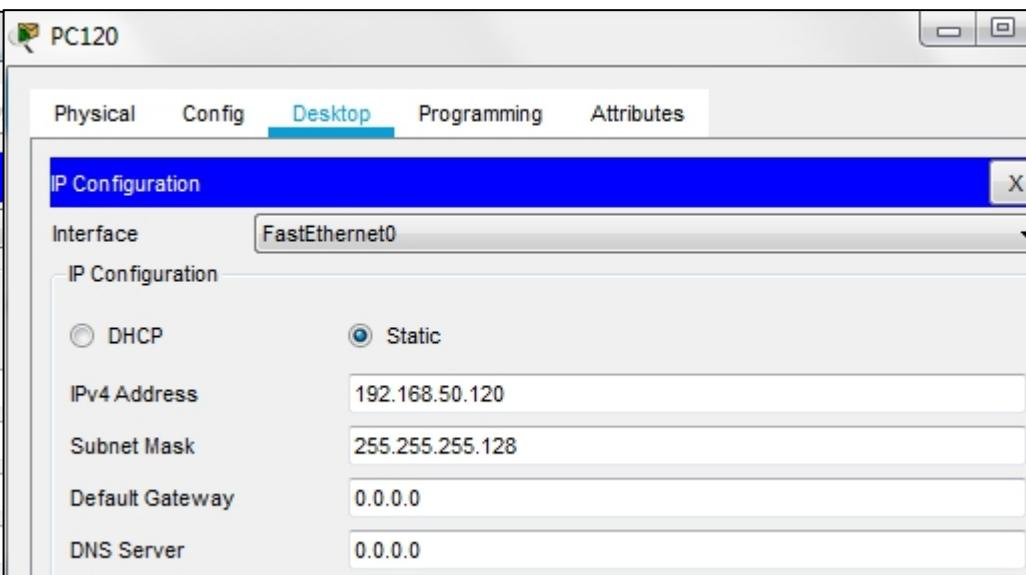
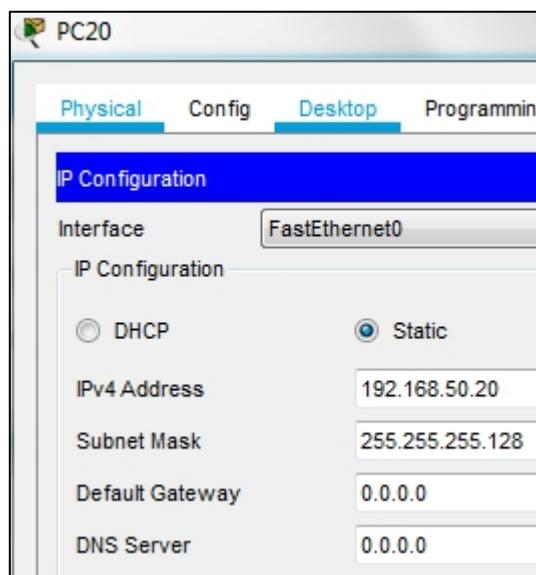
- **Tabel subnet**

Network	Host Pertama	Host Terakhir	Broadcast
192.168.50.0	192.168.50.1	192.168.50.126	192.168.51.127
192.168.50.128	192.168.50.129	192.168.50.254	192.168.51.255

- **Alamat IP**

IP dari PC1 192.168.50.1 s/d PC120 192.168.50.120

- **Konfigurasi IP**



- Melakukan Ping antar PC

The screenshot shows a software application window titled "PC20". The window has a tab bar at the top with "Physical", "Config", "Desktop" (which is selected), "Programming", and "Attributes". Below the tabs is a "Command Prompt" window with a blue header bar containing "Command Prompt" and a close button "X". The main area of the Command Prompt window displays the following text:

```
0.0.0.0

Bluetooth Connection:

Connection-specific DNS Suffix...:
Link-local IPv6 Address..... :::
IPv6 Address..... :::
IPv4 Address..... 0.0.0.0
Subnet Mask..... 0.0.0.0
Default Gateway..... 0.0.0.0

C:\>ping 192.168.50.120

Pinging 192.168.50.120 with 32 bytes of data:

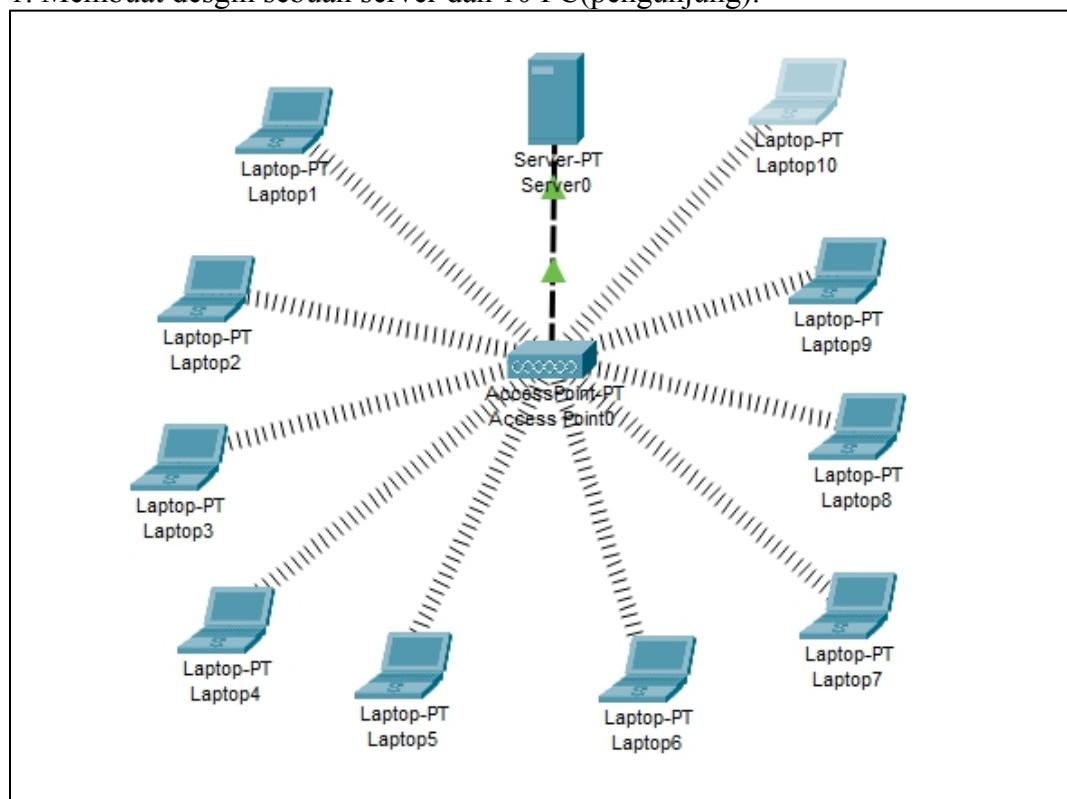
Reply from 192.168.50.120: bytes=32 time=52ms TTL=128
Reply from 192.168.50.120: bytes=32 time<1ms TTL=128
Reply from 192.168.50.120: bytes=32 time=1ms TTL=128
Reply from 192.168.50.120: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.50.120:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 52ms, Average = 13ms

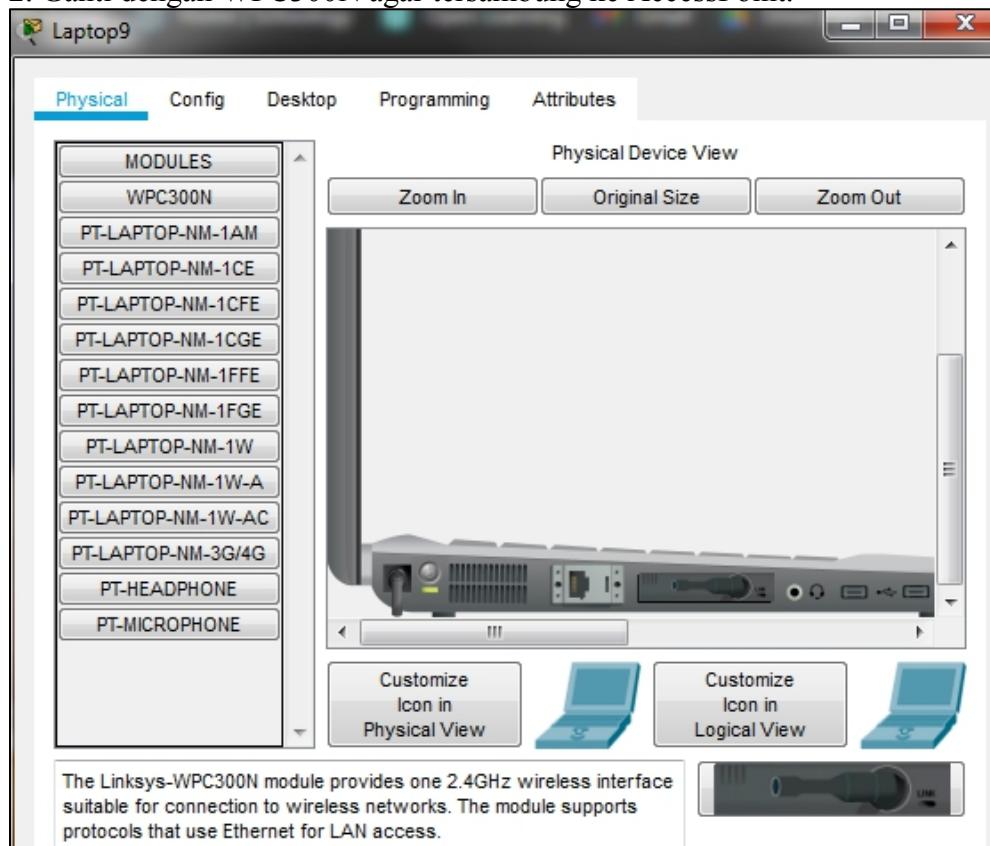
C:\>
```

**Nomor 3**

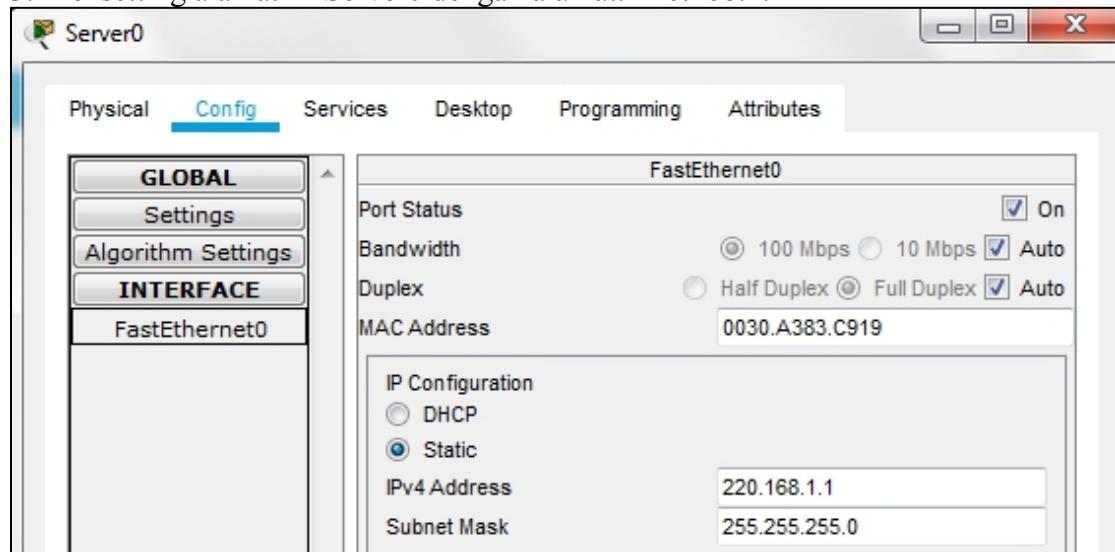
1. Membuat desgin sebuah server dan 10 PC(pengunjung).



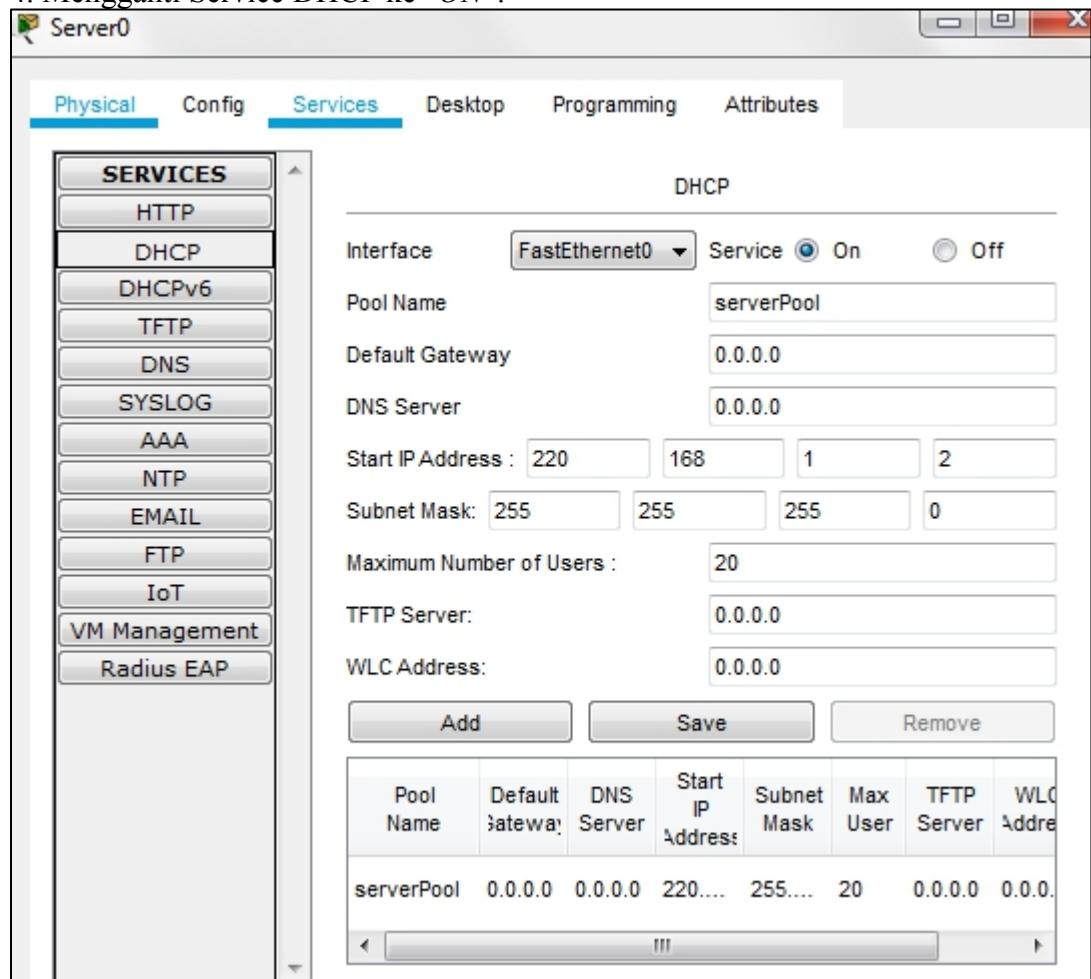
2. Ganti dengan WPC300N agar tersambung ke AccessPoint.



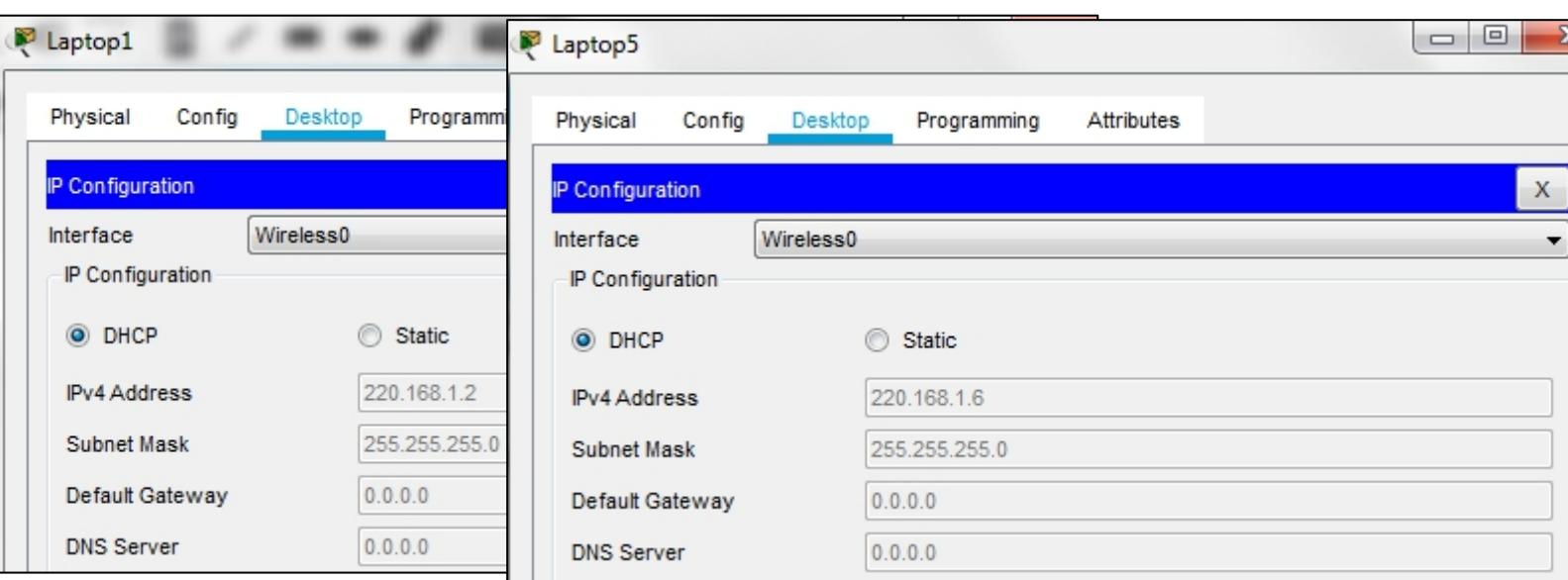
3. Mensetting alamat IP Server0 dengan alamat: 220.168.1.1



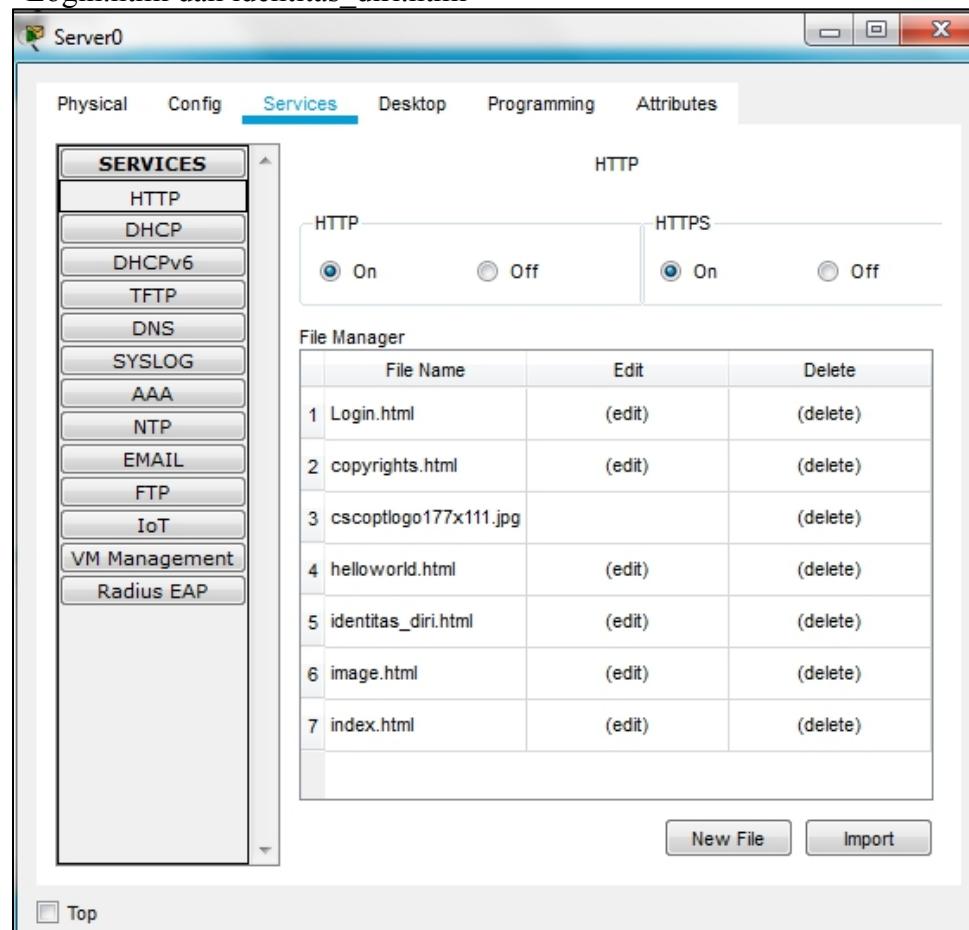
4. Mengganti Service DHCP ke “ON”.



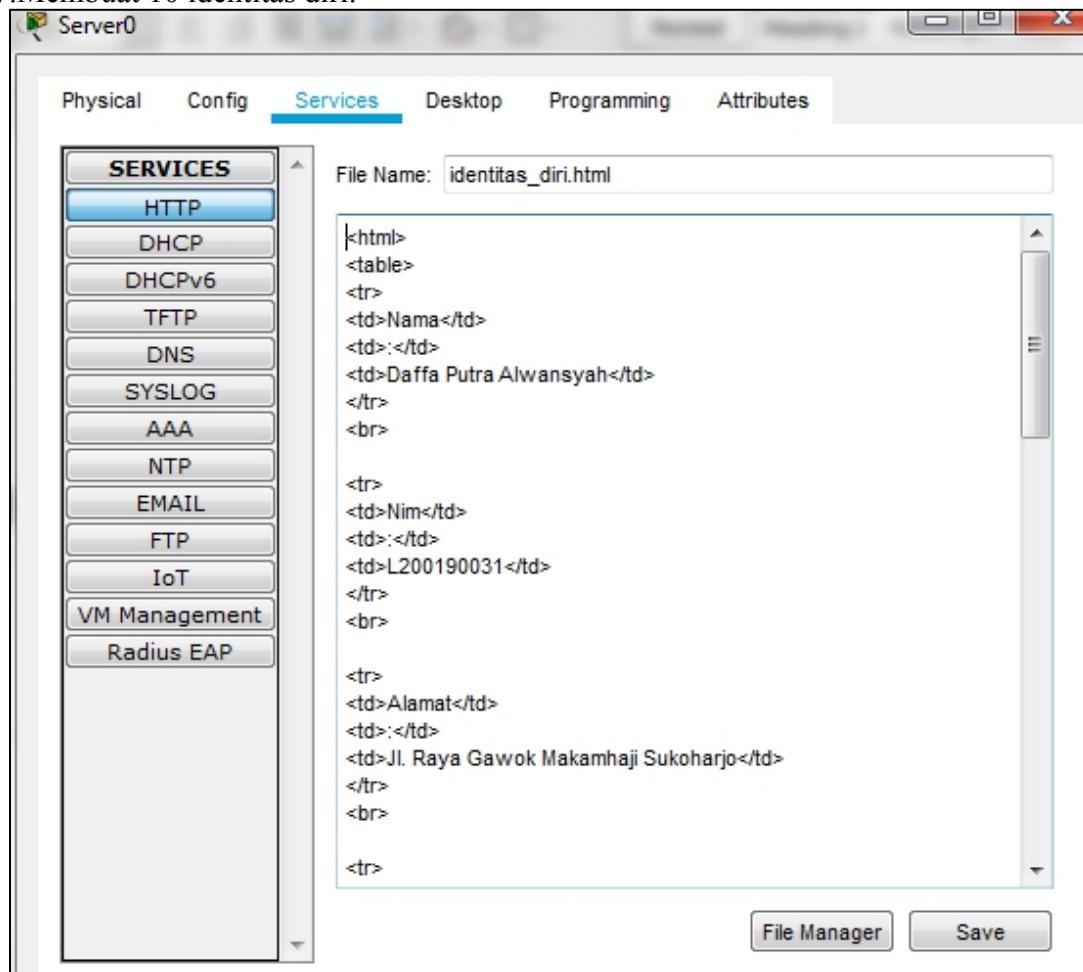
## 5. Konfigurasi alamat IP.



6. Masuk ke HTTP lalu buat file baru, disini saya membuat file dengan nama "Login.html dan identitas\_diri.html"



7. Membuat 10 identitas diri.



The screenshot shows the Server0 application interface. The top menu bar has tabs: Physical, Config, Services (which is highlighted in blue), Desktop, Programming, and Attributes. On the left, there's a vertical sidebar titled "SERVICES" with options like HTTP, DHCP, DNS, etc. The main right pane shows a file named "identitas\_diri.html" with the following content:

```
<html>
<table>
<tr>
<td>Nama</td>
<td>Daffa Putra Alwansyah</td>
</tr>
<br>

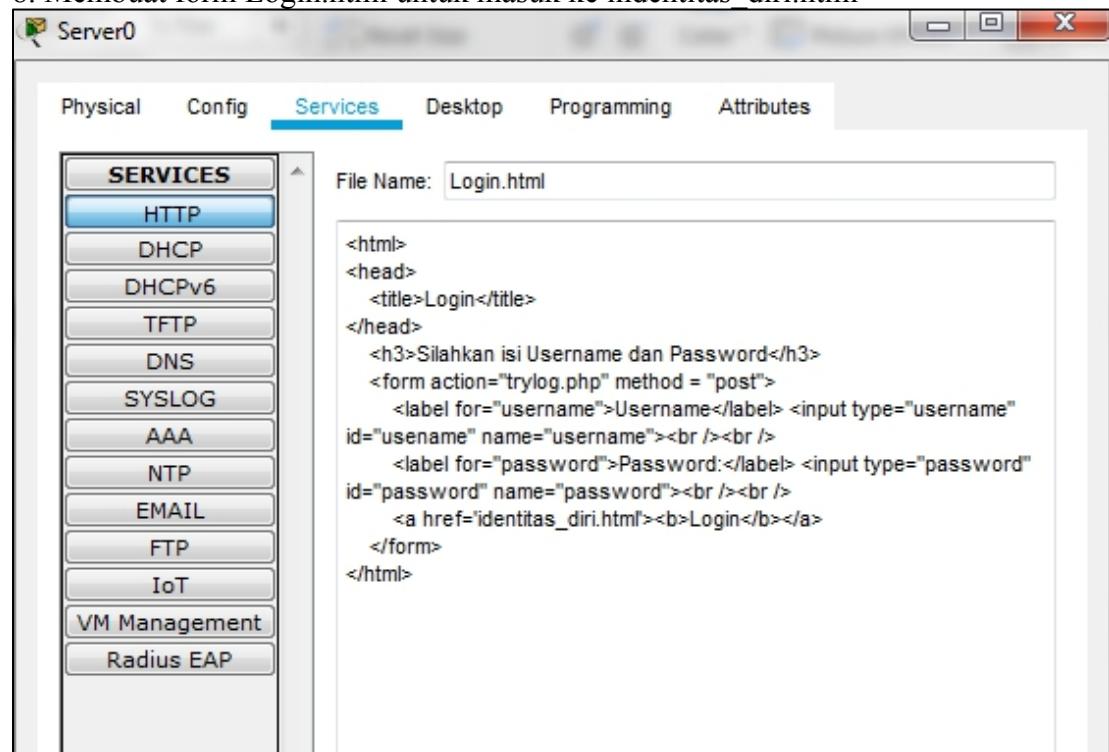
<tr>
<td>Nim</td>
<td>L200190031</td>
</tr>
<br>

<tr>
<td>Alamat</td>
<td>Jl. Raya Gawok Makamhaji Sukoharjo</td>
</tr>
<br>

<tr>
```

At the bottom right of the main pane are "File Manager" and "Save" buttons.

8. Membuat form Login.html untuk masuk ke indentitas\_diri.html



The screenshot shows the Server0 application interface. The top menu bar has tabs: Physical, Config, Services (which is highlighted in blue), Desktop, Programming, and Attributes. On the left, there's a vertical sidebar titled "SERVICES" with options like HTTP, DHCP, DNS, etc. The main right pane shows a file named "Login.html" with the following content:

```
<html>
<head>
<title>Login</title>
</head>
<h3>Silahkan isi Username dan Password</h3>
<form action="trylog.php" method = "post">
<label for="username">Username:</label> <input type="username"
id="username" name="username"><br /><br />
<label for="password">Password:</label> <input type="password"
id="password" name="password"><br /><br />
<a href="identitas_diri.html"><b>Login</b></a>
</form>
</html>
```

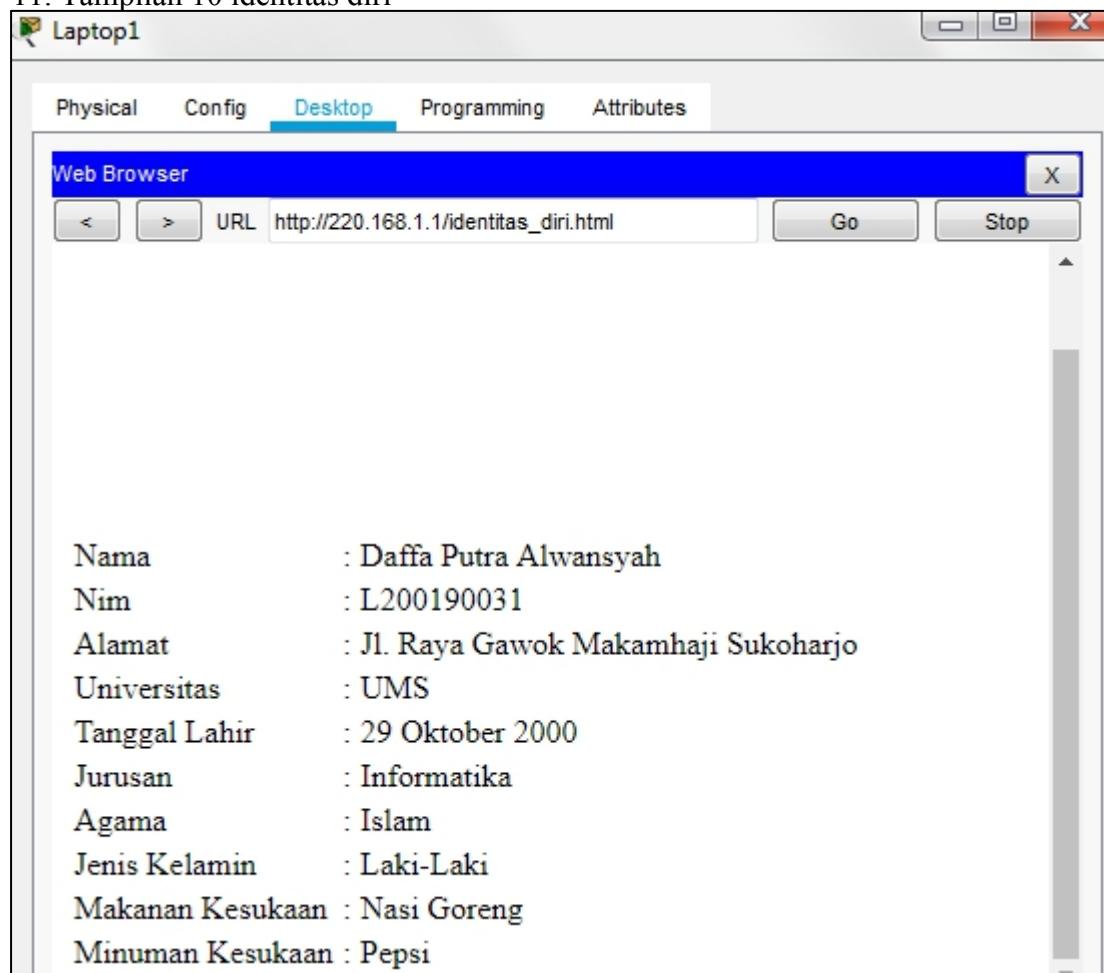
9. Masuk ke Laptop1>Web Browser>ketikan alamat ip server



10. Masukan Username dan Password

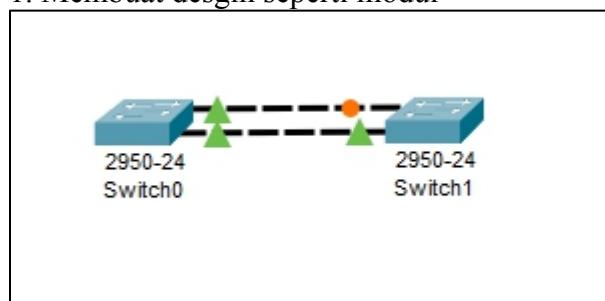


11. Tampilan 10 identitas diri



#### Nomor 4

1. Membuat desgin seperti modul



2. ketikan “show spanning-tree” pada kedua switch

Switch0

Physical	Config	CLI	Attributes
IOS Command Line Interface			
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up			
Switch>en			
Switch#show spanning-tree			
VLAN0001			
Spanning tree enabled protocol ieee			
Root ID   Priority   32769			
Address   0060.70E3.A583			
This bridge is the root			
Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec			
Bridge ID  Priority   32769 (priority 32768 sys-id-ext 1)			
Address   0060.70E3.A583			
Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec			
Aging Time 20			
Interface   Role Sts Cost    Prio.Nbr Type			
-----			
Fa0/1       Desg FWD 19    128.1    P2p			
Fa0/2       Desg FWD 19    128.2    P2p			
Switch#			

Ctrl+F6 to exit CLI focus

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Switch1

Physical Config **CLI** Attributes

IOS Command Line Interface

```
changed state to up

Switch>en
Switch#show spanning-tree
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority      32769
              Address       0060.70E3.A583
              Cost          19
              Port          1 (FastEthernet0/1)
              Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority      32769  (priority 32768 sys-id-ext 1)
              Address       00E0.A314.3B71
              Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
              Aging Time   20

  Interface      Role Sts Cost      Prio.Nbr Type
  -----  -----
  Fa0/1          Root FWD 19      128.1      P2p
  Fa0/2          Altn BLK 19      128.2      P2p

Switch#
```

Ctrl+F6 to exit CLI focus

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Membuat Keterangan:

- A. **Root Bridge(RB)** : Switch0 (dapat dilihat “*this bridge is the root*”).
- B. **Root Port(RP)** : Switch1 (Fa0/1)
- C. **Designated Bride(DB)** : Switch0 (dapat dilihat dari role “*Desg,Desg*”).
- D. **Designated Port** : Switch0(Fa0/1,Fa0/2)