# PRAKTIKUM JARINGAN KOMPUTER

**Tugas Persiapan UAS Jaringan Komputer**

**2022/2023**


**Disusun oleh:**

**Bima Triadmaja**

**L200210137**

**F**

**TEKNIK INFORMATIKA**

**FAKULTAS KOMUNIKASI DAN INFORMATIKA**

**UNIVERSITAS MUHAMMADIYAH SURAKARTA**

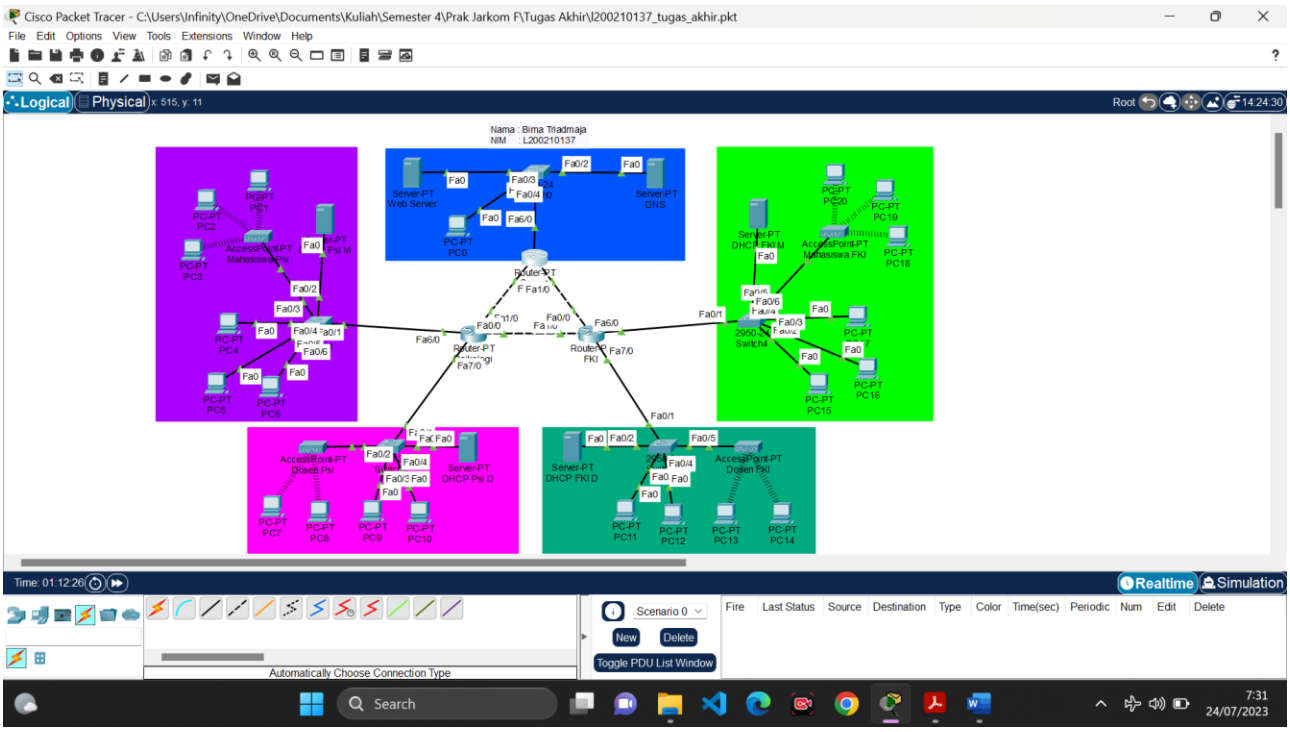
**2022/2023**

Buatlah topologi jaringan yang terdapat :

- 3 Router
- 1 Web Server dan 1 DNS Server
- 4 Access Point
- 5 Switch
- 4 DHCP Server
- Beberapa PC

**Kembangkan jaringan diatas** sesuai dengan spesifikasi berikut:

1. Topologi diatas terdiri dari:
   a. Setiap gedung FKIP, FKI, Ekonomi, dan Teknik terdapat router, switch, access point, DHCP Server, dan beberapa PC yg sudah ditentukan.
   b. Perangkat yang terpasang pada setiap gedung terdapat 3 PC yang terhubung pada jaringan mahasiswa menggunakan media wireless dan 3 PC menggunakan jaringan kabel.
   c. Pada ruang dosen 2 PC terhubung dengan jaringan kabel dan 2 PC terhubung dengan jaringan wireless.
   d. Pada gedung Server terdapat PC server, web server, dan DNS server.
      - ***Dokumentasikan hasil topologi kalian.***



2. Konfigurasikan IP masing-masing perangkat (router, server, PC) agar bisa memenuhi client dibawah ini :
   a. DHCP - Gedung Psikologi (200 mhs) (20 dosen)
   b. DHCP - Gedung FKI (100 mahasiswa)(10 dosen)
   c. Manual – Gedung server
      - ***Dokumentasikan pemberian alamat IP pada router.***

***Router Server***

```
Device Name: Server
Device Model: Router-PT
Hostname: Router

Port              Link   IP Address         IPv6 Address                            MAC Address
FastEthernet0/0   Up     10.1.0.0/8         <not set>                               0007.EC62.E597
FastEthernet1/0   Up     11.1.0.0/8         <not set>                               00D0.9714.596E
Serial2/0         Down   <not set>          <not set>                               <not set>
Serial3/0         Down   <not set>          <not set>                               <not set>
FastEthernet4/0   Down   <not set>          <not set>                               0001.4393.1BC1
FastEthernet5/0   Down   <not set>          <not set>                               0090.0CE8.661B
FastEthernet6/0   Up     13.1.1.1/8         <not set>                               000C.8564.A739

Physical Location: Intercity > Home City > Corporate Office > Main Wiring Closet > Rack > Server
```

***Router Psikologi***

```
Device Name: Psikologi
Device Model: Router-PT
Hostname: Router

Port              Link   IP Address         IPv6 Address                            MAC Address
FastEthernet0/0   Up     12.2.0.0/8         <not set>                               00D0.BC9D.8DC8
FastEthernet1/0   Up     10.2.0.0/8         <not set>                               00D0.FF32.C8AD
Serial2/0         Down   <not set>          <not set>                               <not set>
Serial3/0         Down   <not set>          <not set>                               <not set>
FastEthernet4/0   Down   <not set>          <not set>                               000D.BD44.7894
FastEthernet5/0   Down   <not set>          <not set>                               00E0.F7E9.08B2
FastEthernet6/0   Up     14.1.1.1/8         <not set>                               00E0.8F0B.693C
FastEthernet7/0   Up     15.1.1.1/8         <not set>                               00D0.5844.0E46

Physical Location: Intercity > Home City > Corporate Office > Main Wiring Closet > Rack > Psikologi
```

***Router FKI***

```
Device Name: FKI
Device Model: Router-PT
Hostname: Router

Port              Link   IP Address         IPv6 Address                            MAC Address
FastEthernet0/0   Up     11.2.0.0/8         <not set>                               000C.CF6A.ADA1
FastEthernet1/0   Up     12.1.0.0/8         <not set>                               0001.C758.E91A
Serial2/0         Down   <not set>          <not set>                               <not set>
Serial3/0         Down   <not set>          <not set>                               <not set>
FastEthernet4/0   Down   <not set>          <not set>                               0002.1752.50E5
FastEthernet5/0   Down   <not set>          <not set>                               000A.4166.A00D
FastEthernet6/0   Up     17.1.1.1/8         <not set>                               0060.479C.3D79
FastEthernet7/0   Up     16.1.1.1/8         <not set>                               00E0.F74B.D6B1

Physical Location: Intercity > Home City > Corporate Office > Main Wiring Closet > Rack > FKI
```

- ***Dokumentasikan pemberian alamat IP pada jaringan server.***

  ***Web server***

```
Device Name: Web Server
Device Model: Server-PT

Port            Link   IP Address         IPv6 Address                          MAC Address
FastEthernet0   Up     13.1.1.2/8         <not set>                             0060.3E81.EAC1

Gateway: 13.1.1.1
DNS Server: <not set>
Line Number:  <not set>

Physical Location: Intercity > Home City > Corporate Office > Main Wiring Closet > Rack > Web Server
```

  ***DNS server***

```
Device Name: DNS
Device Model: Server-PT

Port            Link   IP Address         IPv6 Address                          MAC Address
FastEthernet0   Up     13.1.1.3/8         <not set>                             0002.4AD5.C404

Gateway: 13.1.1.1
DNS Server: <not set>
Line Number:  <not set>

Physical Location: Intercity > Home City > Corporate Office > Main Wiring Closet > Rack > DNS
```

  ***PC server***

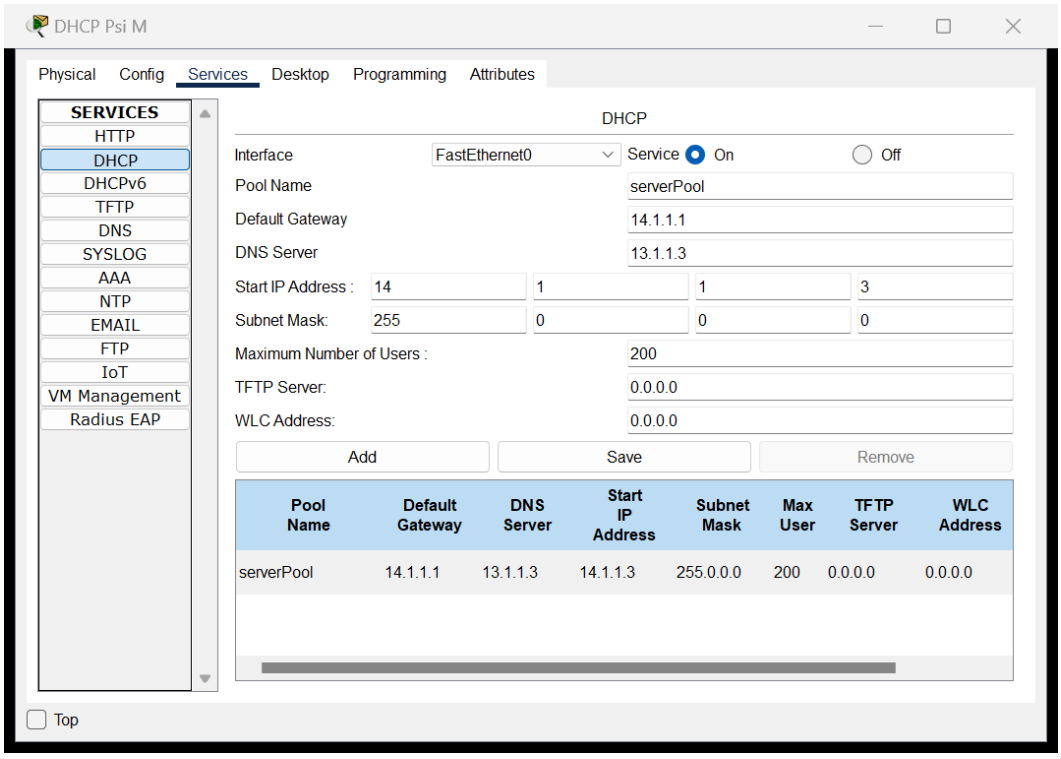
```
Device Name: PC0
Device Model: PC-PT

Port            Link   IP Address         IPv6 Address                          MAC Address
FastEthernet0   Up     13.1.1.4/8         <not set>                             000A.4169.BE2D
Bluetooth       Down   <not set>          <not set>                             000A.41E4.1011

Gateway: 13.1.1.1
DNS Server: 13.1.1.3
Line Number:  <not set>

Physical Location: Intercity > Home City > Corporate Office > PC0
```

- ***Dokumentasikan konfigurasi setiap DHCP server dan hasil pemberian IP pada masing-masing PC.***

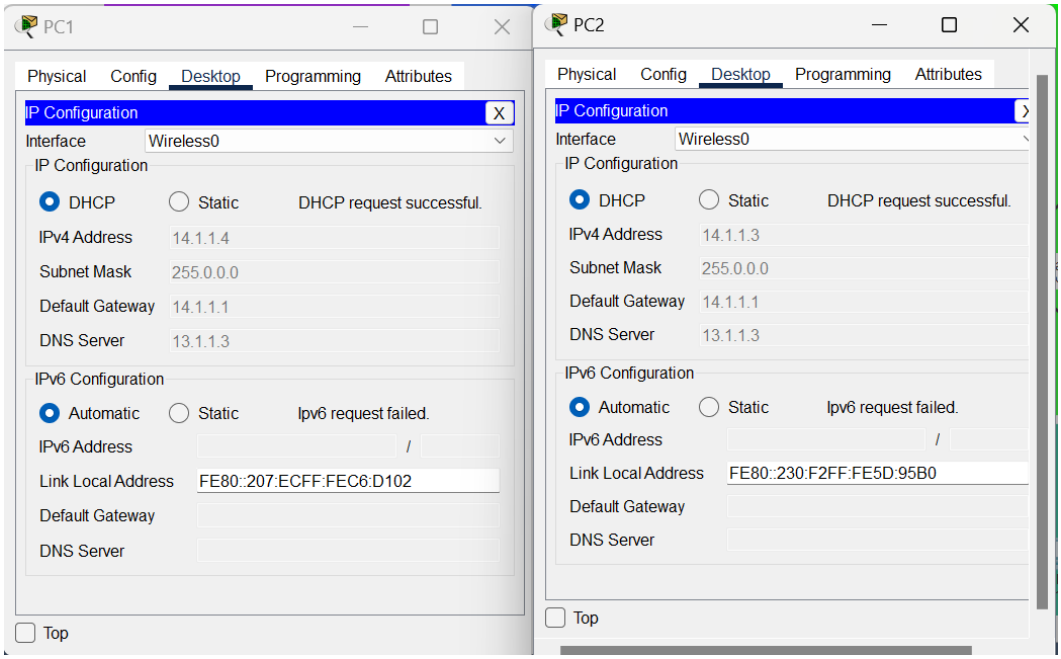
  ***Jaringan Mahasiswa Psikologi :***

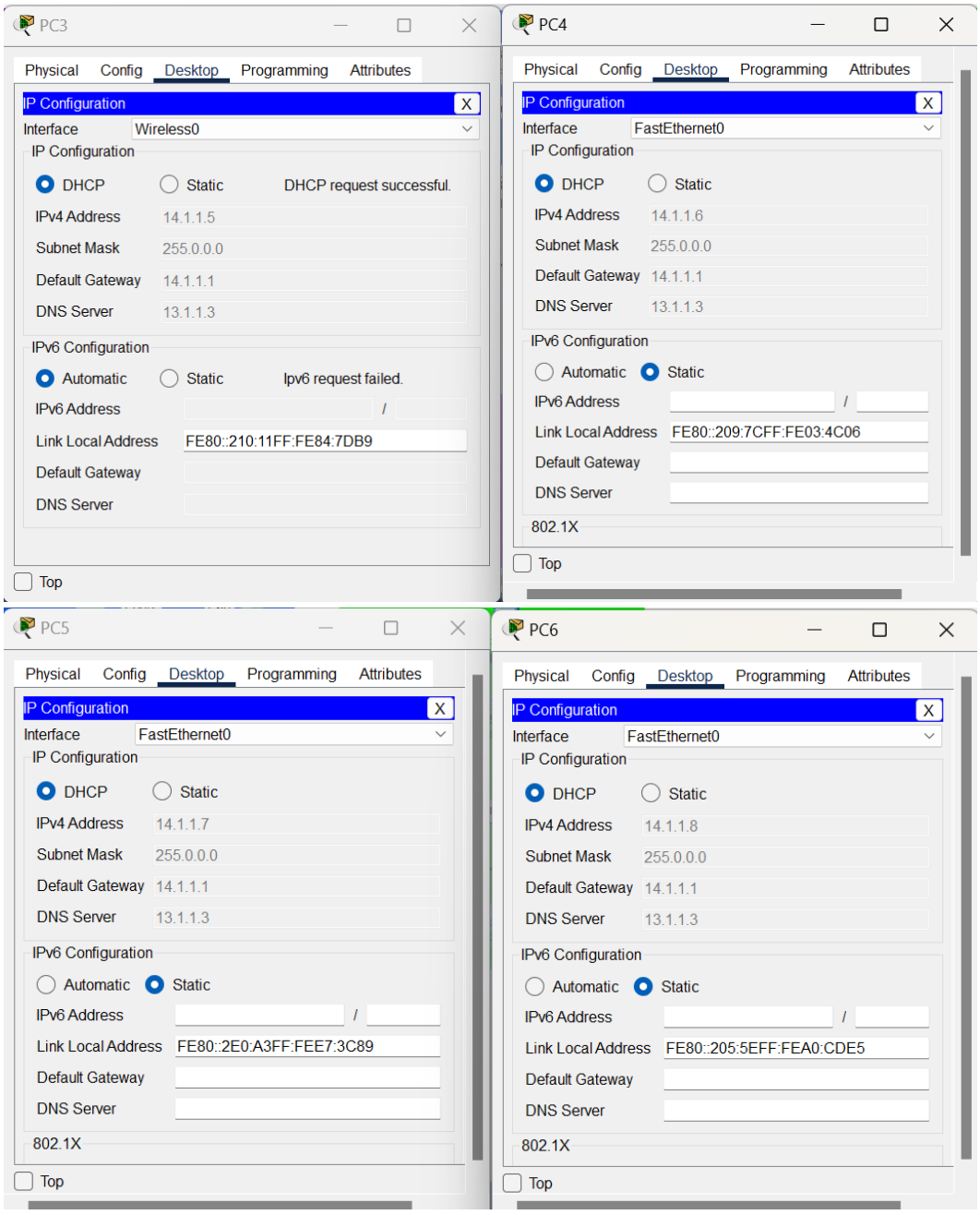
  ***DHCP Mahasiswa Psikologi (Server)***

```
Device Name: DHCP Psi M
Device Model: Server-PT

Port            Link   IP Address         IPv6 Address                          MAC Address
FastEthernet0   Up     14.1.1.2/8         <not set>                             0060.47B4.2131

Gateway: 14.1.1.1
DNS Server: <not set>
Line Number:  <not set>

Physical Location: Intercity > Home City > Corporate Office > Main Wiring Closet > Rack > DHCP Psi M
```




## *Hasil pemberian IP pada masing-masing PC*

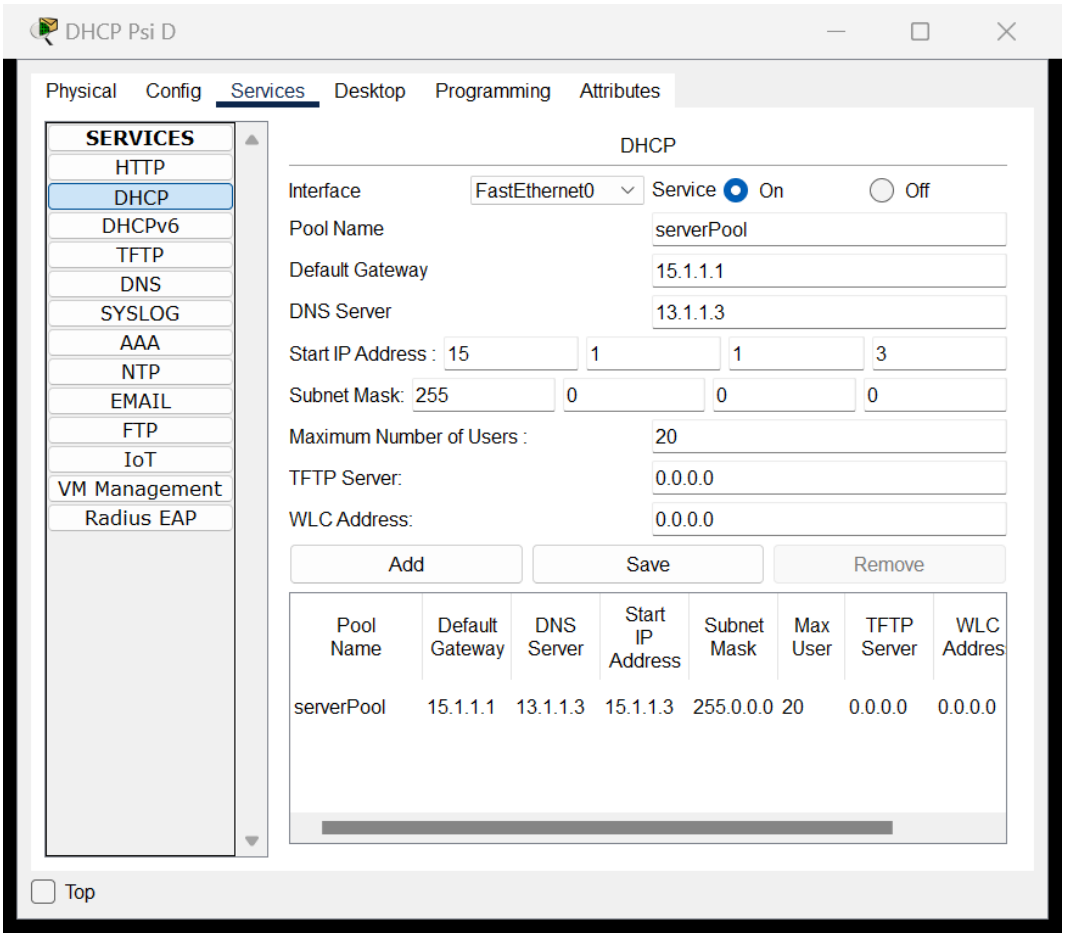



PC3
Physical Config Desktop Programming Attributes
IP Configuration
Interface Wireless0
IP Configuration
DHCP Static DHCP request successful.
IPv4 Address 14.1.1.5
Subnet Mask 255.0.0.0
Default Gateway 14.1.1.1
DNS Server 13.1.1.3
IPv6 Configuration
Automatic Static Ipv6 request failed.
IPv6 Address /
Link Local Address FE80::210:11FF:FE84:7DB9
Default Gateway
DNS Server
Top
PC4
Physical Config Desktop Programming Attributes
IP Configuration
Interface FastEthernet0
IP Configuration
DHCP Static
IPv4 Address 14.1.1.6
Subnet Mask 255.0.0.0
Default Gateway 14.1.1.1
DNS Server 13.1.1.3
IPv6 Configuration
Automatic Static
IPv6 Address /
Link Local Address FE80::209:7CFF:FE03:4C06
Default Gateway
DNS Server
802.1X
Top
PC5
Physical Config Desktop Programming Attributes
IP Configuration
Interface FastEthernet0
IP Configuration
DHCP Static
IPv4 Address 14.1.1.7
Subnet Mask 255.0.0.0
Default Gateway 14.1.1.1
DNS Server 13.1.1.3
IPv6 Configuration
Automatic Static
IPv6 Address /
Link Local Address FE80::2E0:A3FF:FEE7:3C89
Default Gateway
DNS Server
802.1X
Top
PC6
Physical Config Desktop Programming Attributes
IP Configuration
Interface FastEthernet0
IP Configuration
DHCP Static
IPv4 Address 14.1.1.8
Subnet Mask 255.0.0.0
Default Gateway 14.1.1.1
DNS Server 13.1.1.3
IPv6 Configuration
Automatic Static
IPv6 Address /
Link Local Address FE80::205:5EFF:FEA0:CDE5
Default Gateway
DNS Server
802.1X
Top

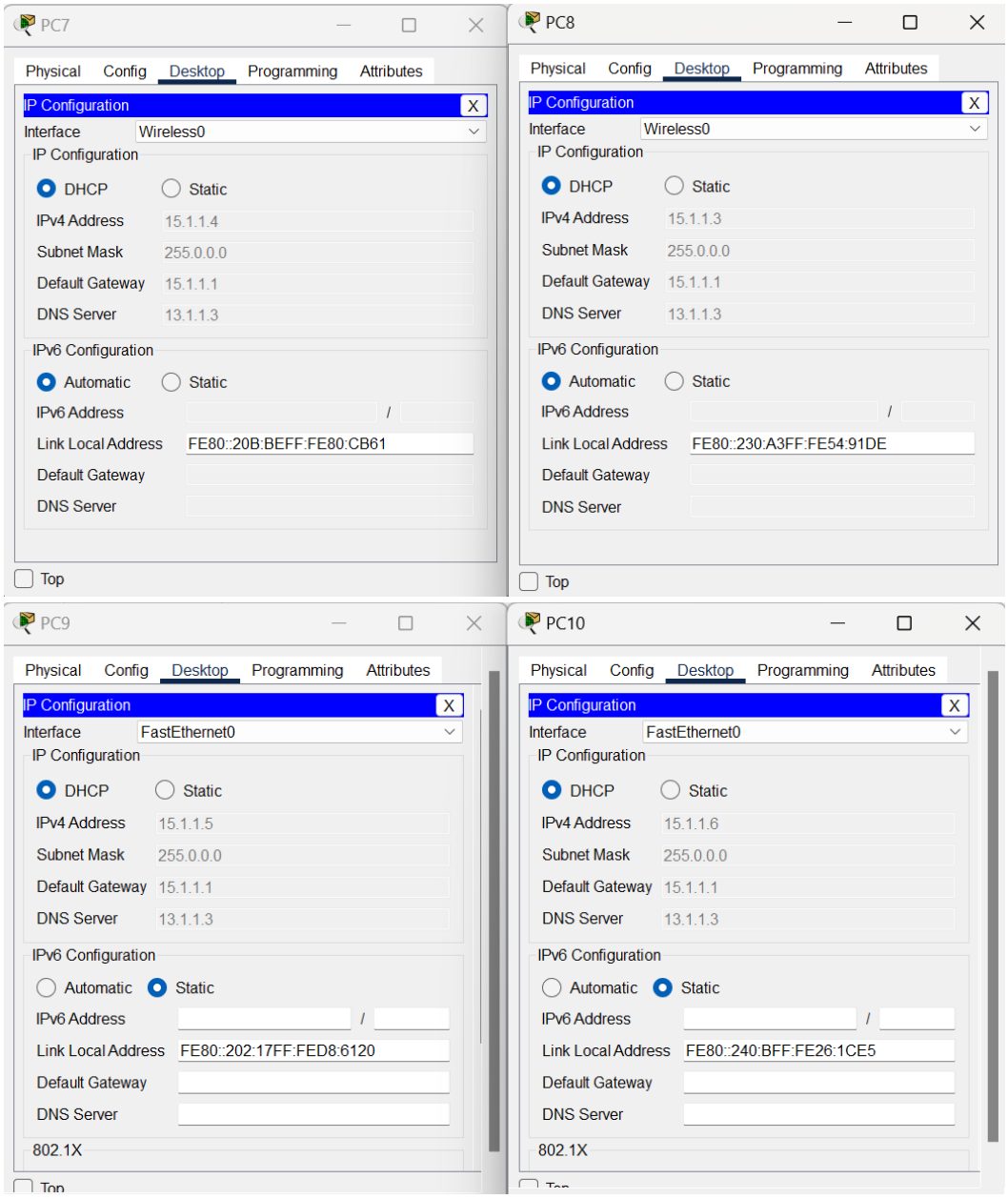
***Jaringan Dosen Psikologi :***

***DHCP Dosen Psikologi (Server)***

```
Device Name: DHCP Psi D
Device Model: Server-PT

Port            Link   IP Address         IPv6 Address                              MAC Address
FastEthernet0   Up     15.1.1.2/8         <not set>                                 0090.0C77.9405

Gateway: 15.1.1.1
DNS Server: <not set>
Line Number:  <not set>

Physical Location: Intercity > Home City > Corporate Office > Main Wiring Closet > Rack > DHCP Psi D
```



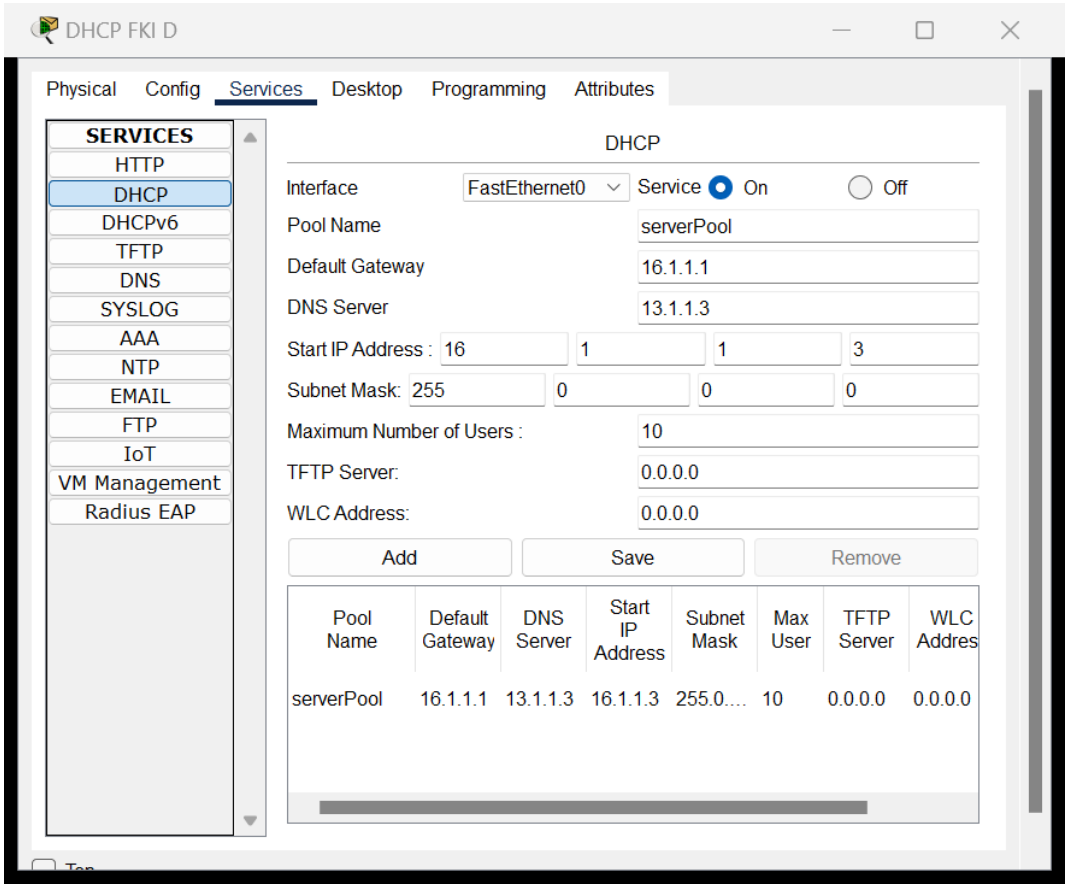
***Hasil pemberian IP pada masing-masing PC***



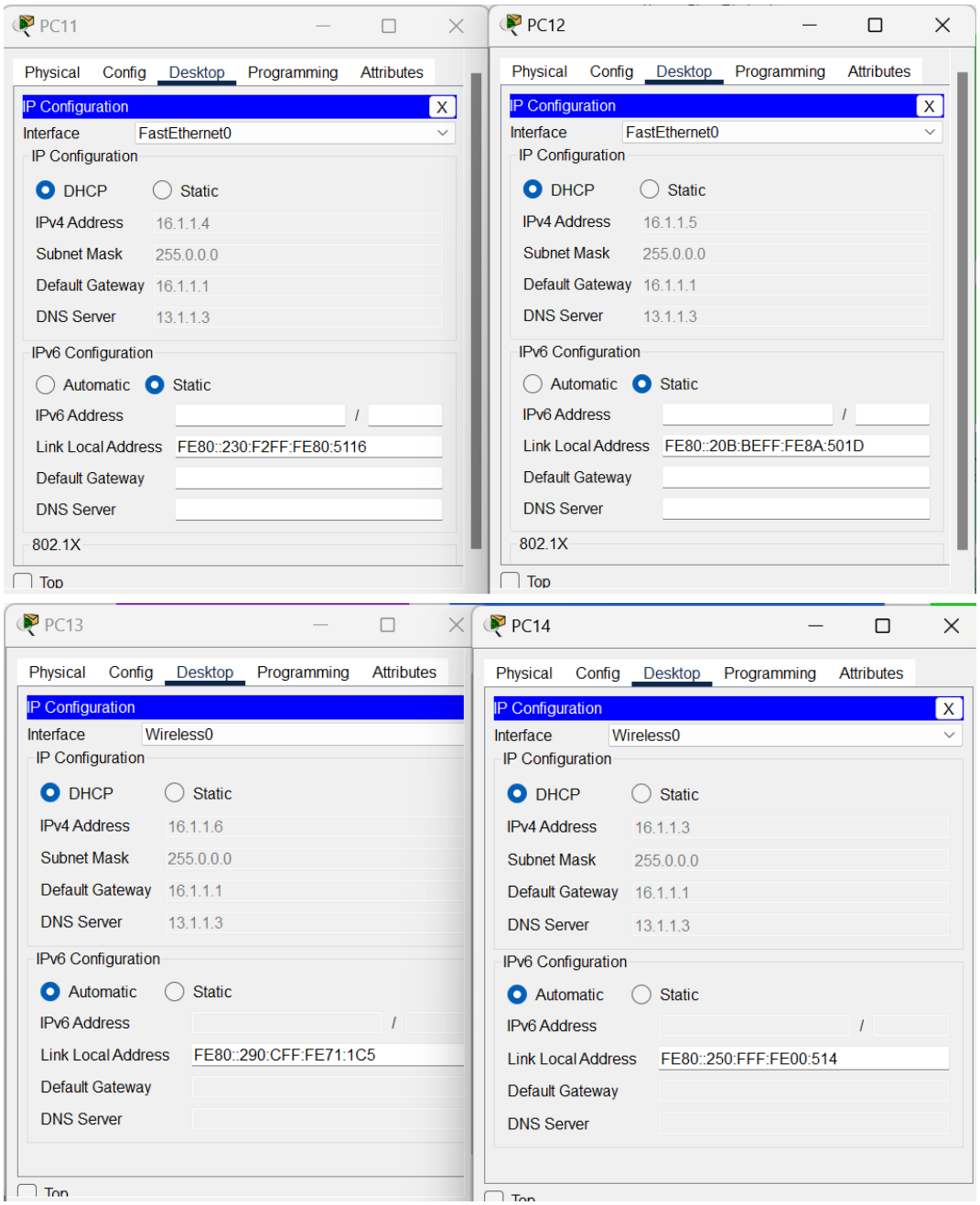
***Jaringan Dosen FKI :***

***DHCP Dosen FKI (Server)***

```
Device Name: DHCP FKI D
Device Model: Server-PT

Port            Link   IP Address         IPv6 Address                          MAC Address
FastEthernet0   Up     16.1.1.2/8         <not set>                             0001.C70E.824A

Gateway: 16.1.1.1
DNS Server: <not set>
Line Number:  <not set>

Physical Location: Intercity > Home City > Corporate Office > Main Wiring Closet > Rack > DHCP FKI D
```



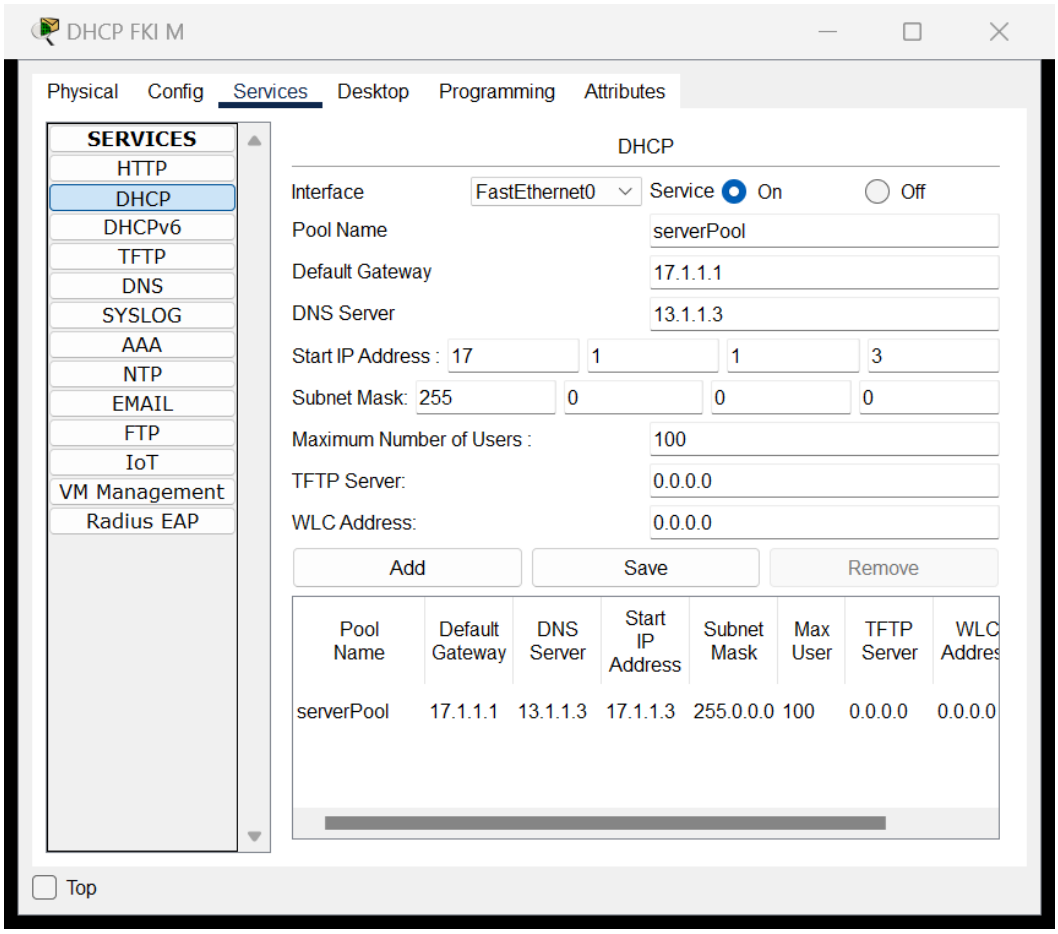
***Hasil pemberian IP pada masing-masing PC***



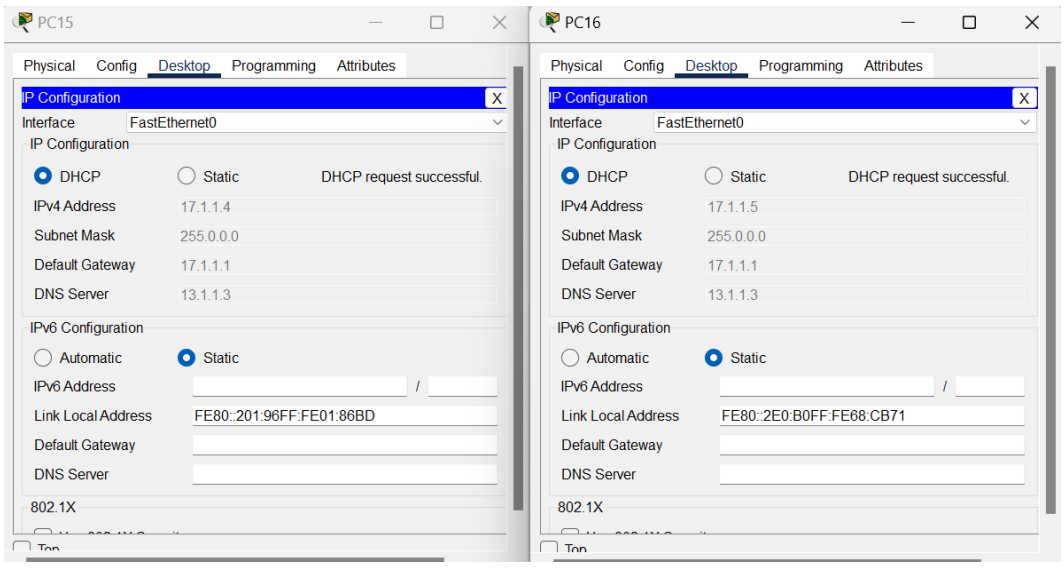

***Jaringan Mahasiswa FKI :***

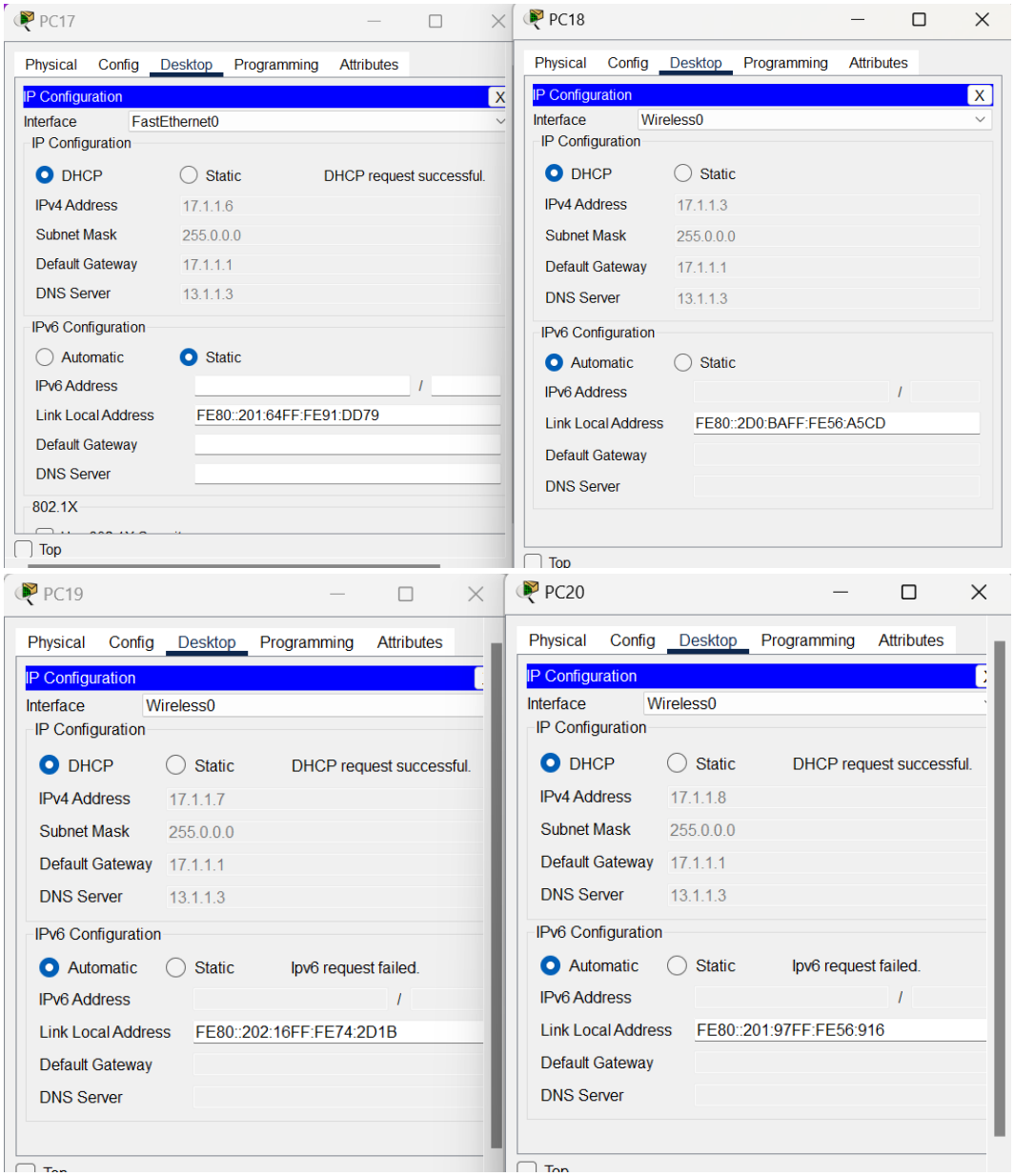
***DHCP Mahasiswa FKI (Server)***

```
Device Name: DHCP FKI M
Device Model: Server-PT

Port            Link   IP Address         IPv6 Address                          MAC Address
FastEthernet0   Up     17.1.1.2/8         <not set>                             0001.6357.C63E

Gateway: 17.1.1.1
DNS Server: <not set>
Line Number:  <not set>

Physical Location: Intercity > Home City > Corporate Office > Main Wiring Closet > Rack > DHCP FKI M
```




## *Hasil pemberian IP pada masing-masing PC*

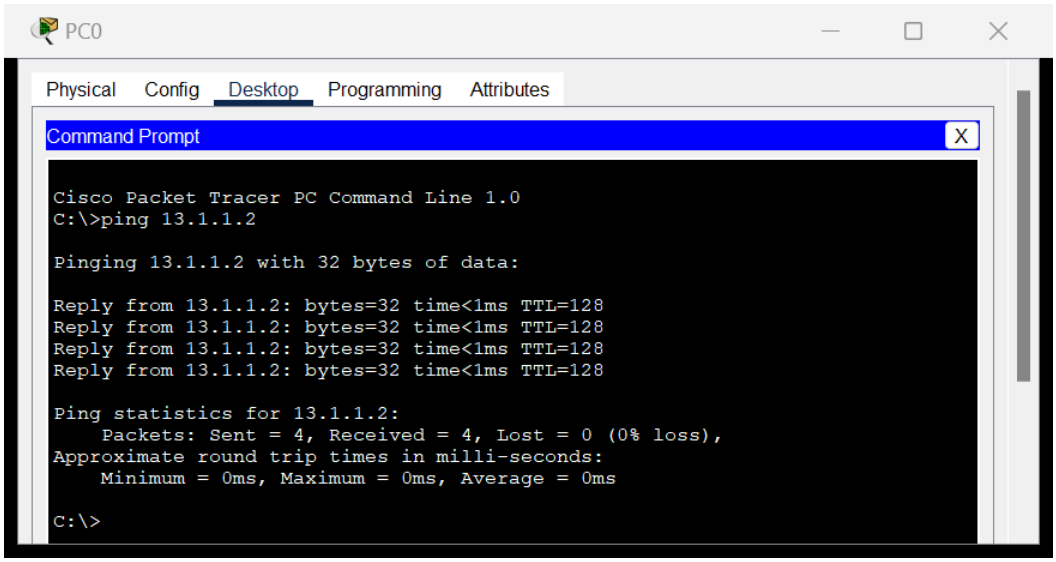



PC17
Physical Config Desktop Programming Attributes
IP Configuration
Interface FastEthernet0
IP Configuration
DHCP Static DHCP request successful.
IPv4 Address 17.1.1.6
Subnet Mask 255.0.0.0
Default Gateway 17.1.1.1
DNS Server 13.1.1.3
IPv6 Configuration
Automatic Static
IPv6 Address /
Link Local Address FE80::201:64FF:FE91:DD79
Default Gateway
DNS Server
802.1X
Top
PC18
Physical Config Desktop Programming Attributes
IP Configuration
Interface Wireless0
IP Configuration
DHCP Static
IPv4 Address 17.1.1.3
Subnet Mask 255.0.0.0
Default Gateway 17.1.1.1
DNS Server 13.1.1.3
IPv6 Configuration
Automatic Static
IPv6 Address /
Link Local Address FE80::2D0:BAFF:FE56:A5CD
Default Gateway
DNS Server
Top
PC19
Physical Config Desktop Programming Attributes
IP Configuration
Interface Wireless0
IP Configuration
DHCP Static DHCP request successful.
IPv4 Address 17.1.1.7
Subnet Mask 255.0.0.0
Default Gateway 17.1.1.1
DNS Server 13.1.1.3
IPv6 Configuration
Automatic Static Ipv6 request failed.
IPv6 Address /
Link Local Address FE80::202:16FF:FE74:2D1B
Default Gateway
DNS Server
PC20
Physical Config Desktop Programming Attributes
IP Configuration
Interface Wireless0
IP Configuration
DHCP Static DHCP request successful.
IPv4 Address 17.1.1.8
Subnet Mask 255.0.0.0
Default Gateway 17.1.1.1
DNS Server 13.1.1.3
IPv6 Configuration
Automatic Static Ipv6 request failed.
IPv6 Address /
Link Local Address FE80::201:97FF:FE56:916
Default Gateway
DNS Server

- ***Dokumentasikan percobaan ping dari satu jaringan yang sama. Pastikan semua PC dapat terkoneksi satu sama lain menggunakna media wireless maupun wired.***

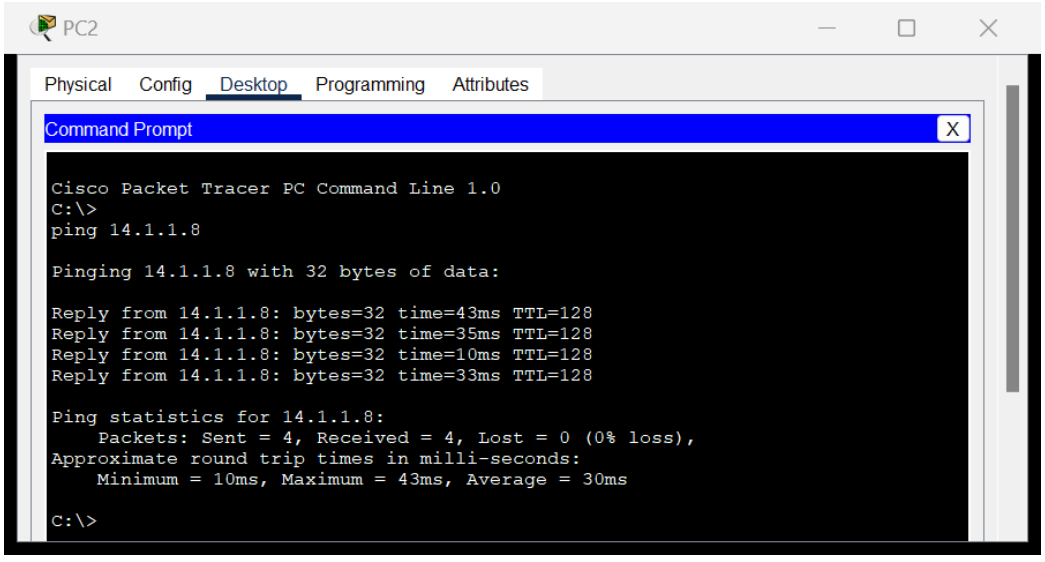
  ***Jaringan Server***

  ***Ping PC 0 → web server***

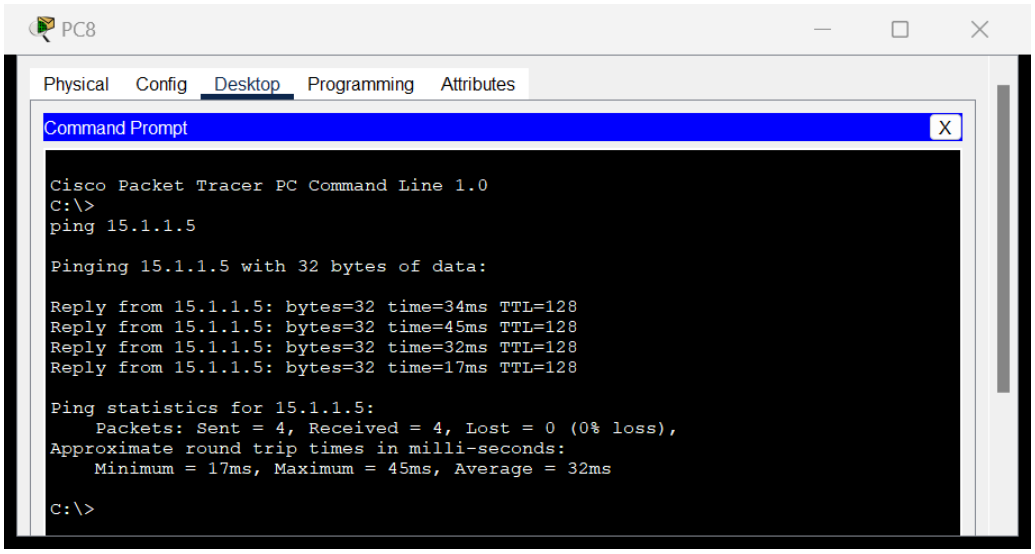



***Jaringan Mahasiswa Psikologi***

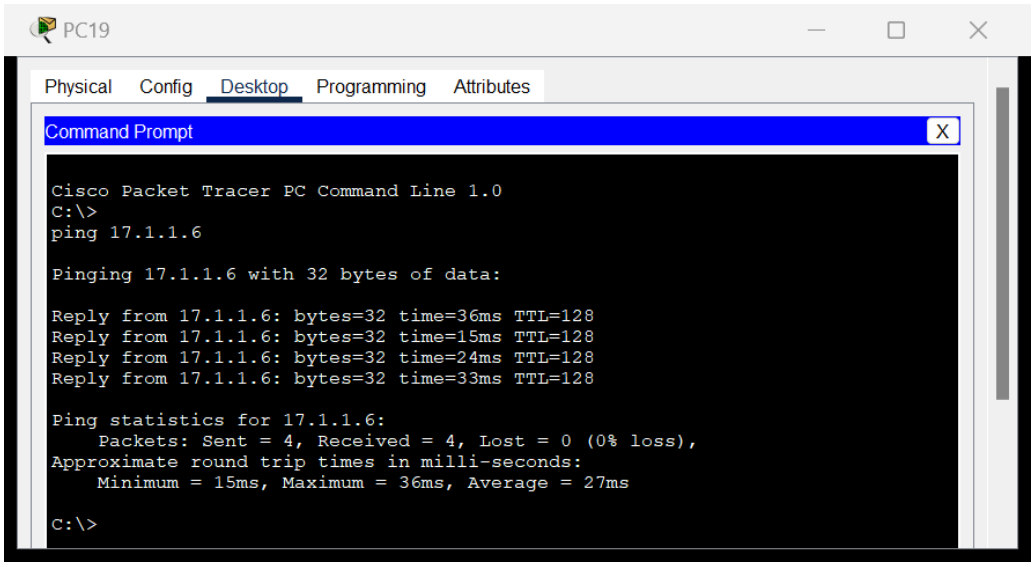
***Ping PC 2 (wireless) → PC 6 (wired)***



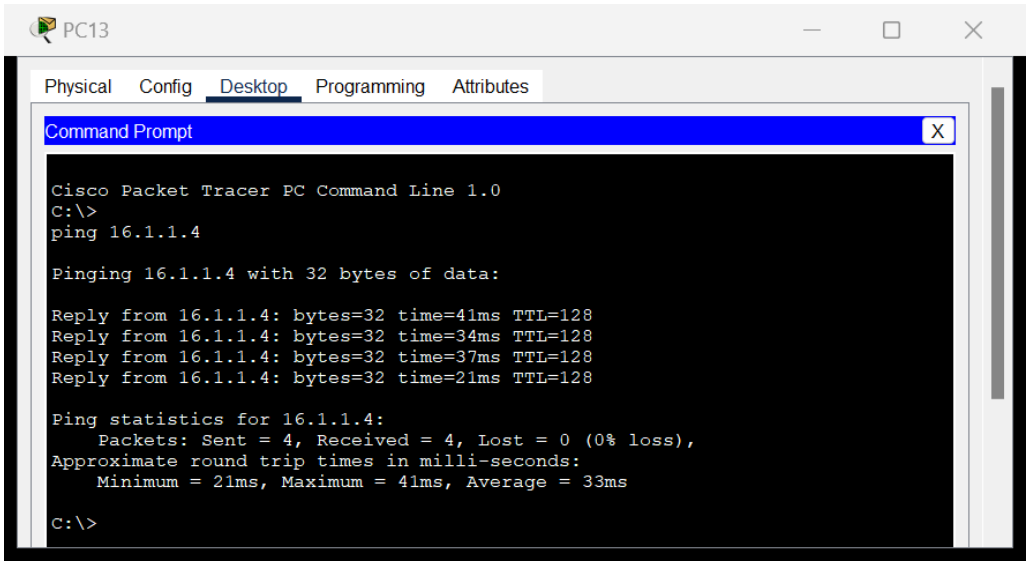
***Jaringan Dosen Psikologi***
***Ping PC 8 (wireless) → PC 9 (wired)***



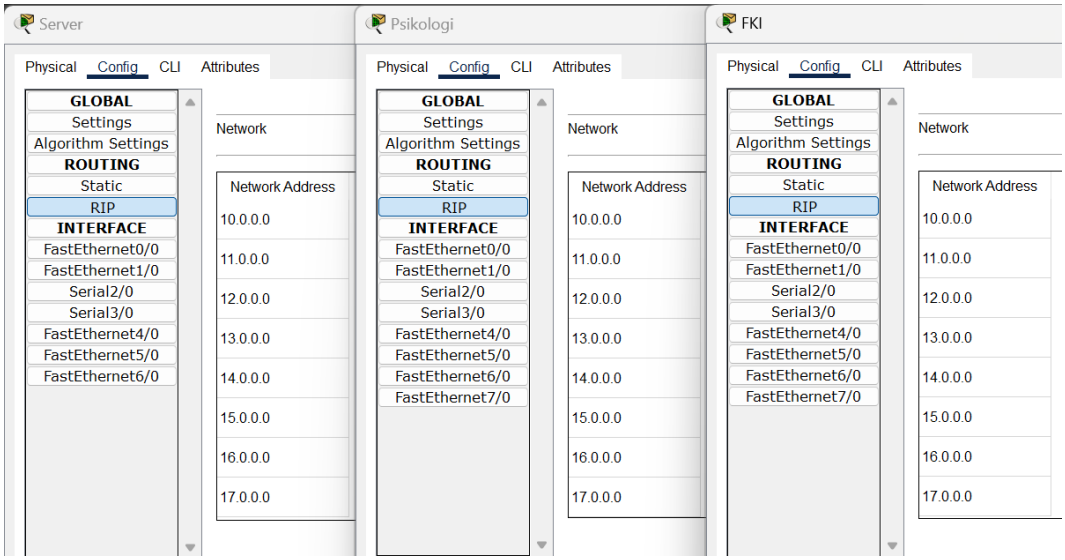

***Jaringan Mahasiswa FKI***
***Ping PC 19 (wireless) → PC 17 (wired)***



***Jaringan Dosen FKI***
***Ping PC 13 (wireless) → PC 11 (wired)***

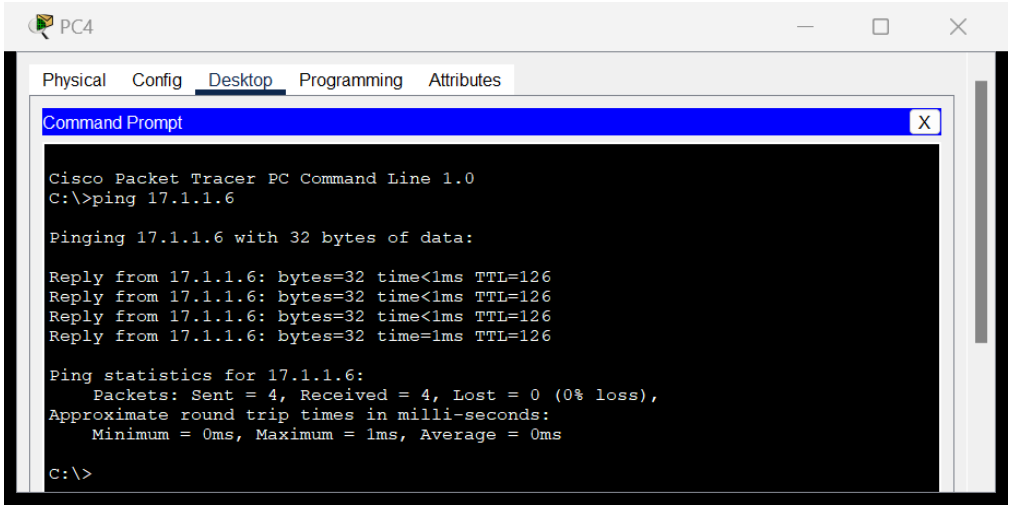



3. Buatlah konfigurasi routing dinamis pada setiap router
   - ***Dokumentasikan konfigurasi routing setiap router***

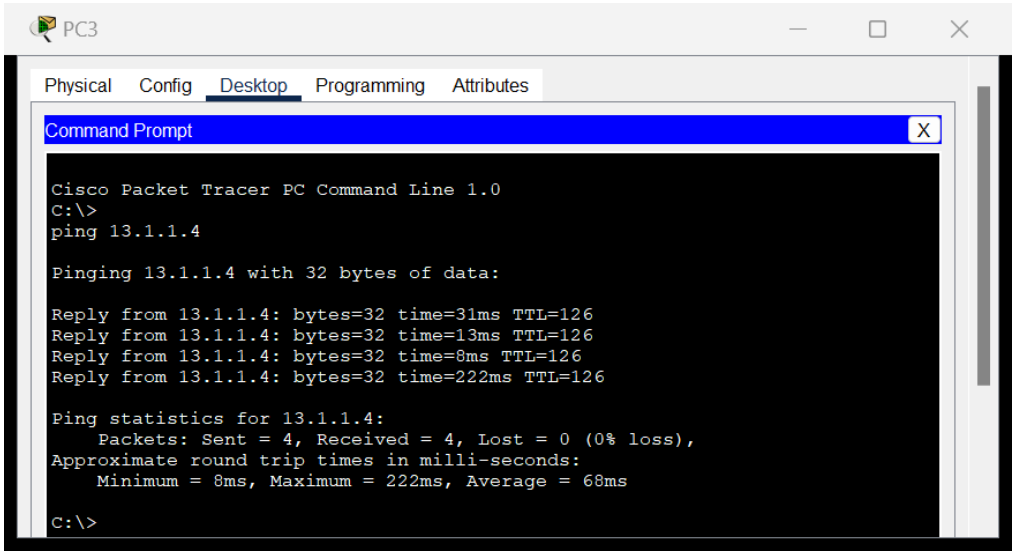


- ***Dokumentasikan hasil percobaan ping dari pc Psi ke FKI, Psi ke server, dan FKI ke server.***

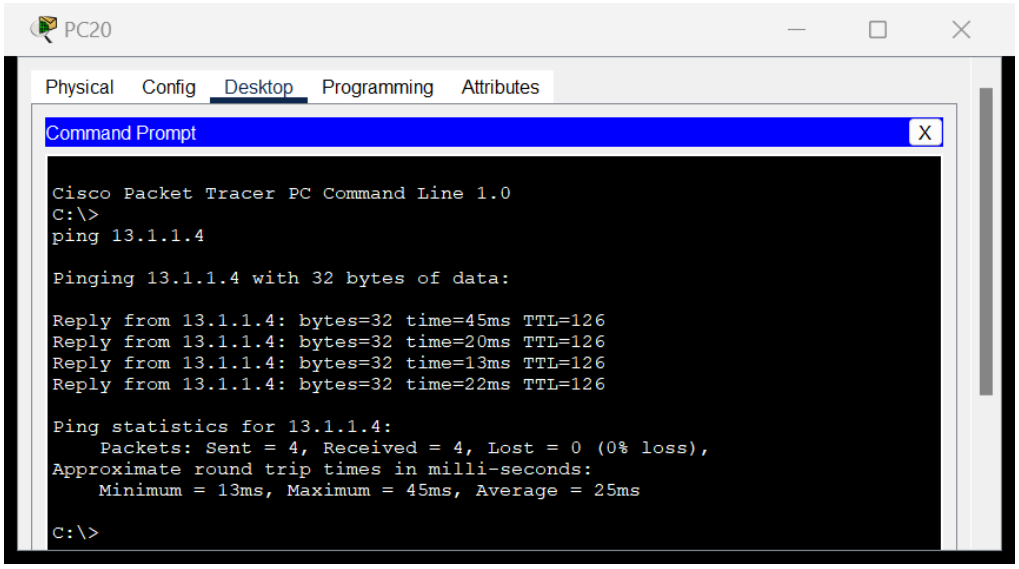
***Ping Psikologi (PC 4) → FKI (PC 17)***



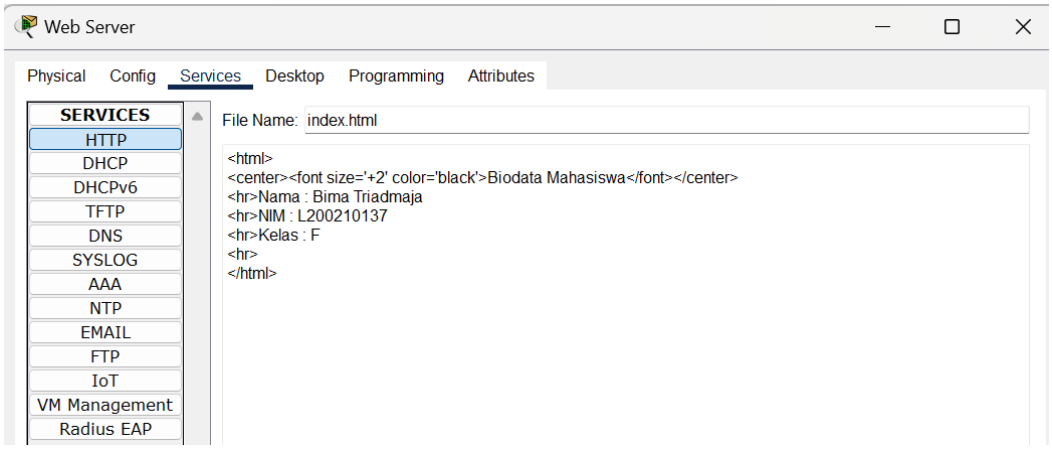

***Ping Psikologi (PC 3) → Server (PC 0)***

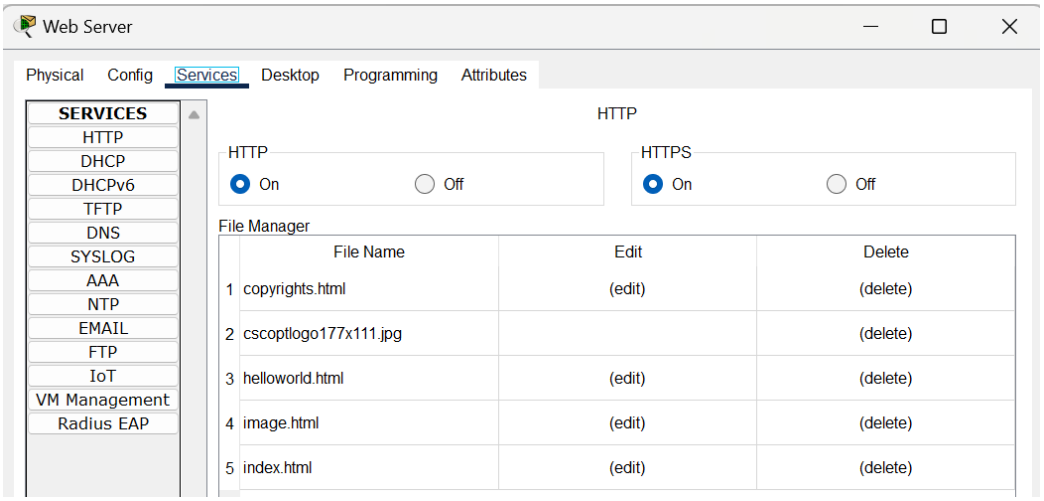


***Ping FKI (PC 20) → Server (PC 0)***

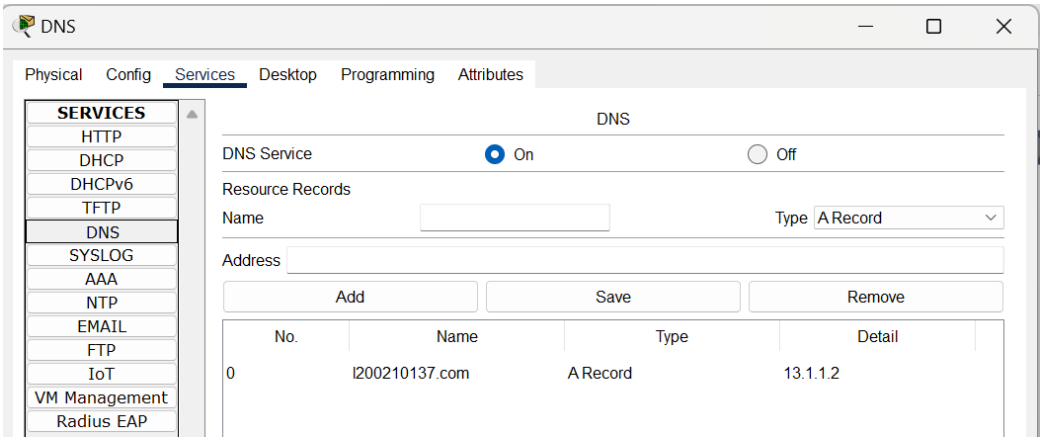



4. Rancanglah server Web dan DNS server di gedung server.
   a. Pada web server menampilkan tampilan tentang biodata setiap mahasiswa yang terdiri dari Nama, NIM, Kelas.
   b. Pada DNS server menampilkan alamat web sesuai nimnya masing- masing
   c. Hasil dari server diatas dibuktikan dengan menampilkan pada pc server
      - ***Dokumentasikan konfigurasi HTTP pada web server .***

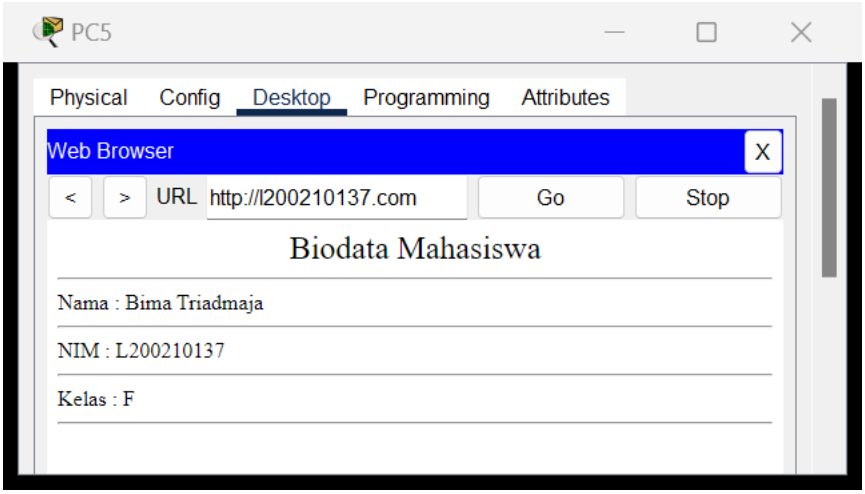




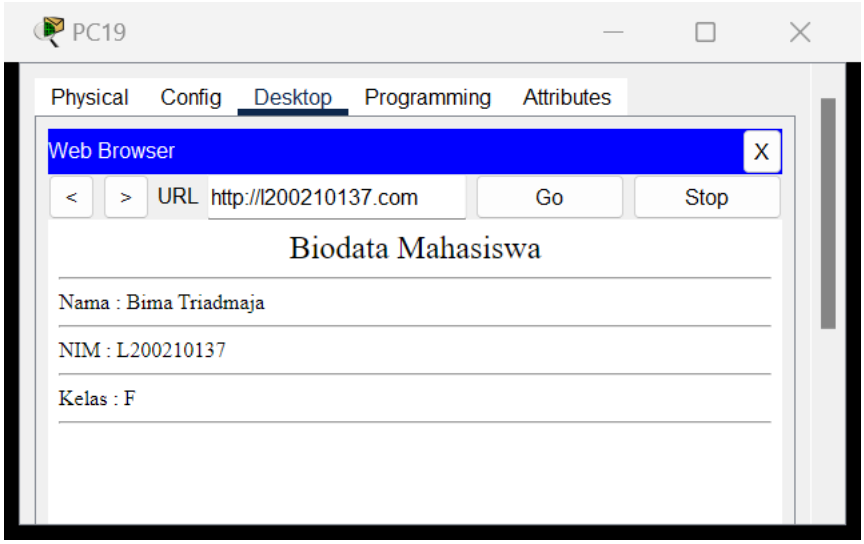

- ***Dokumentasikan konfigurasi DNS server.***



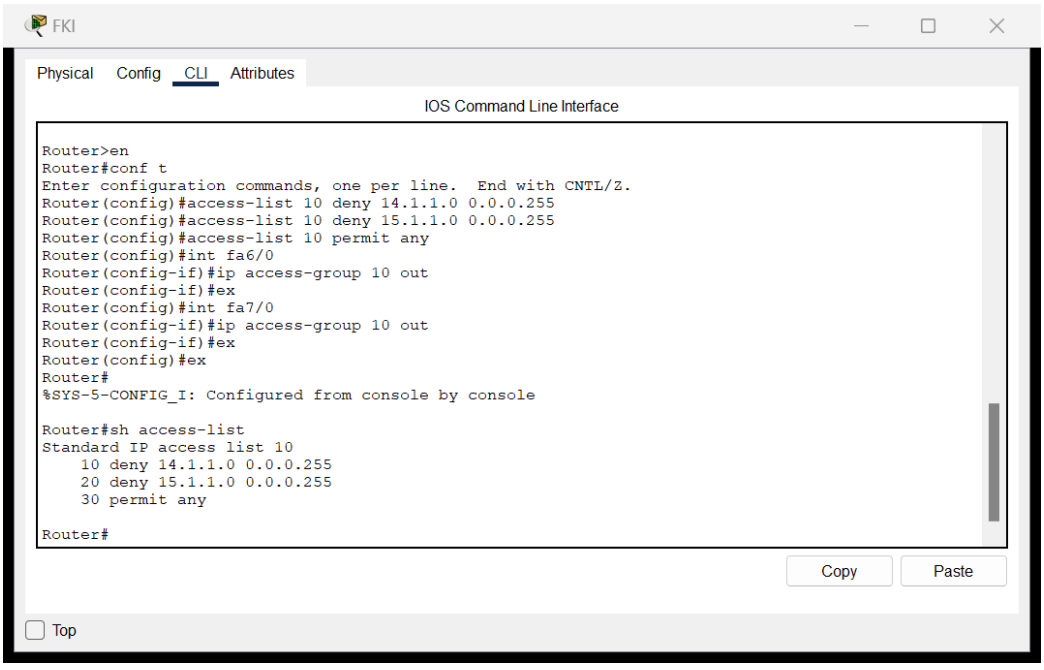

- ***Dokumentasikan hasil akses domain name dari salah satu PC Psi dan FKI. Akses domain name dari PC Psikologi (PC 5)***



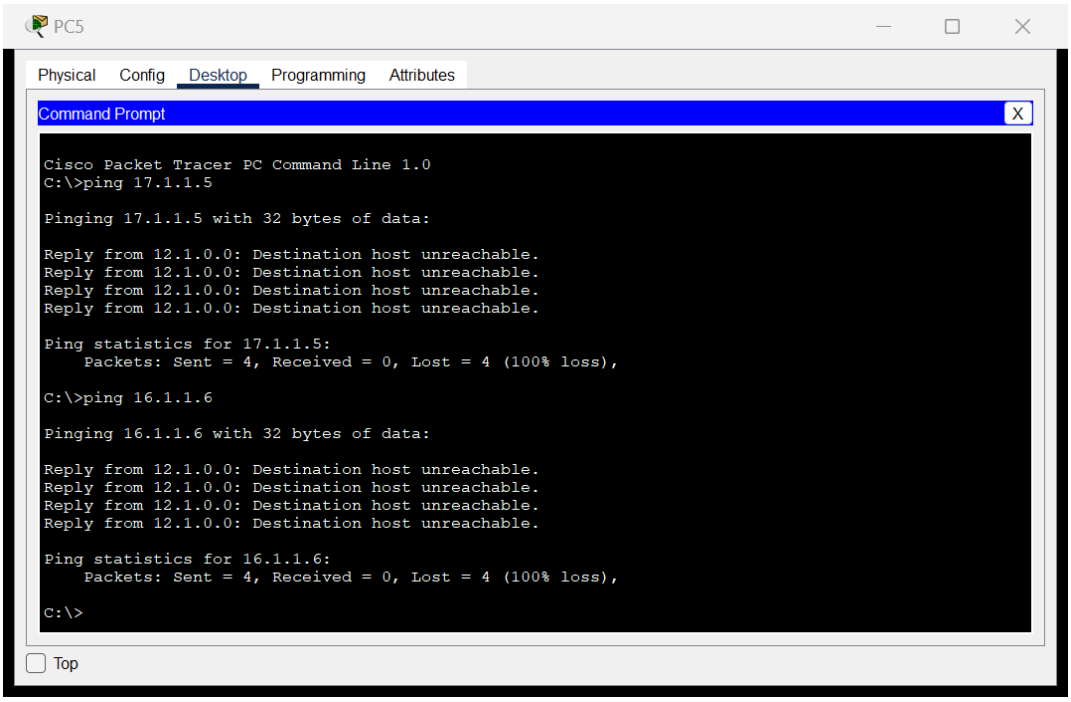
***Akses domain name dari PC FKI***



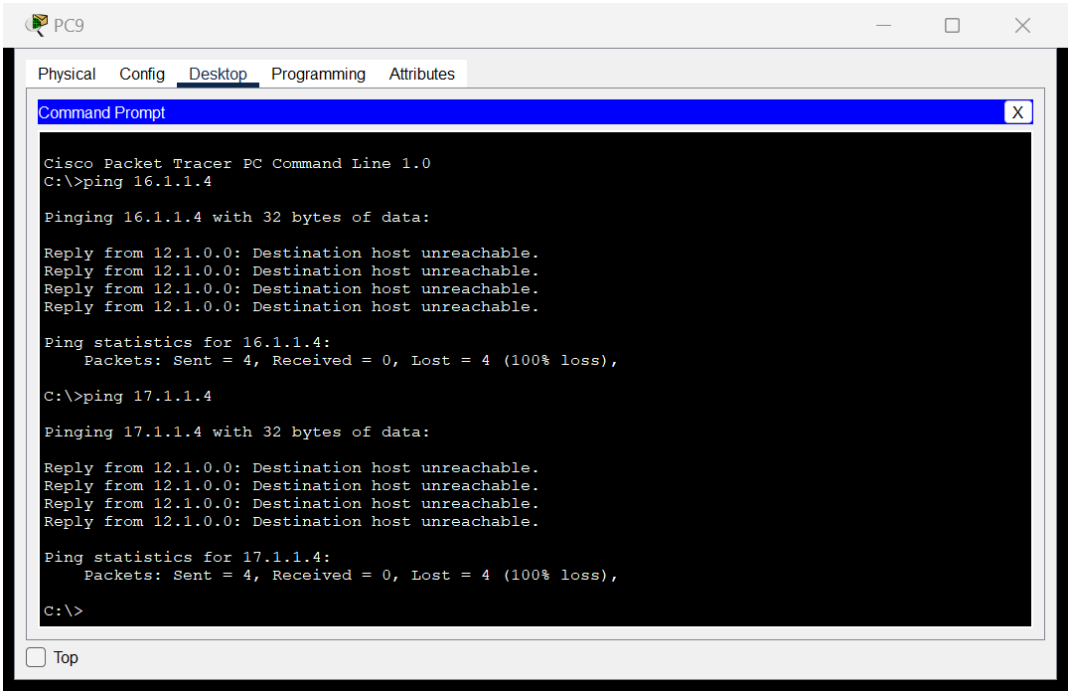

5. Buatlah pembatasan dengan access list dimana
   a. NIM Ganjil : Mahasiswa & Dosen Psi tidak bisa melakukan ping pada Jaringan FKI
      - ***Dokumentasikan konfigurasi ACL pada router***



- ***Dokumentasikan hasil percobaan ping***
  ***Ping PC mahasiswa Psikologi → PC mahasiswa dan dosen FKI***

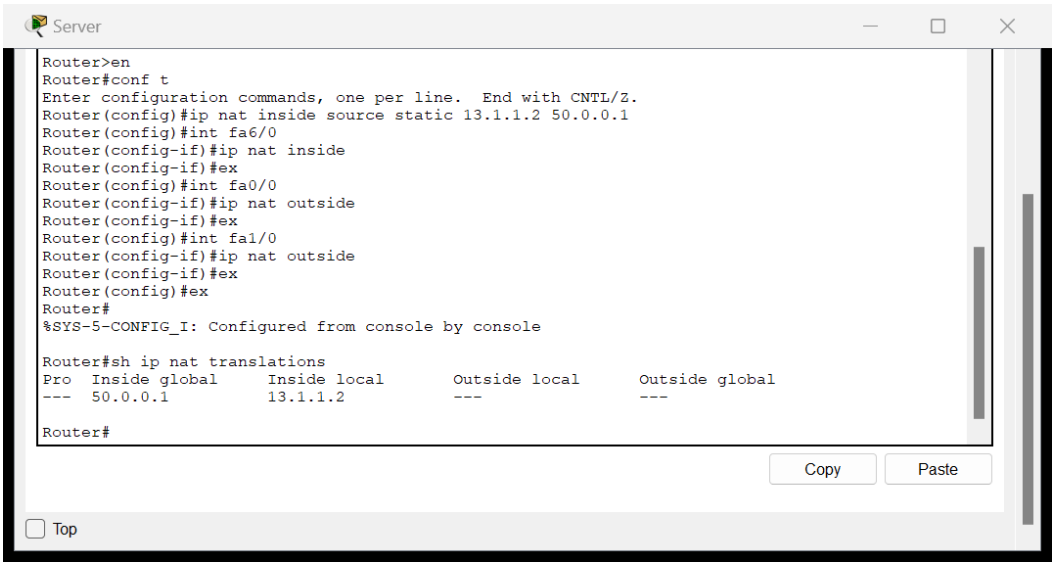



***Ping PC dosen Psikologi → PC mahasiswa dan dosen FKI***

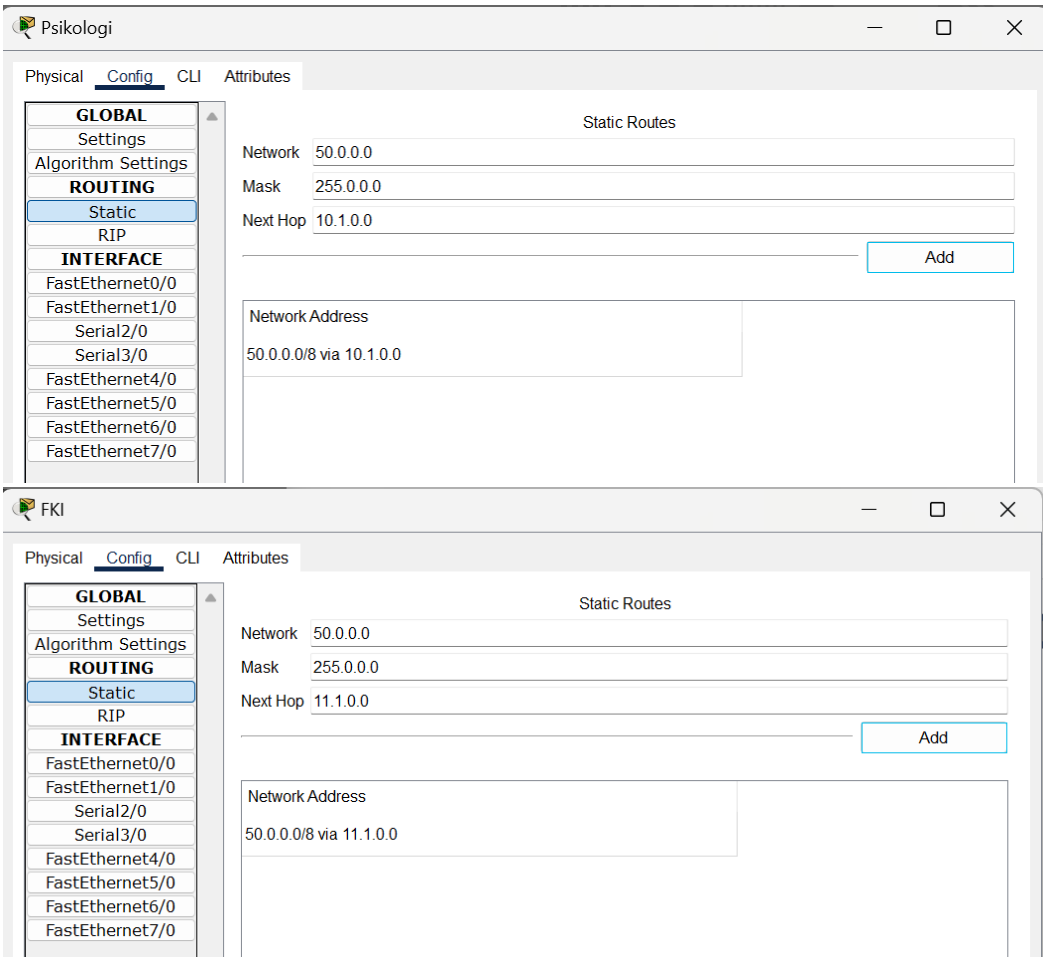


6. Tambahkan konfigurasi NAT pada server web.
    - ***Dokumentasikan konfigurasi NAT pada router***

***Konfigurasi IP NAT pada Router Server***

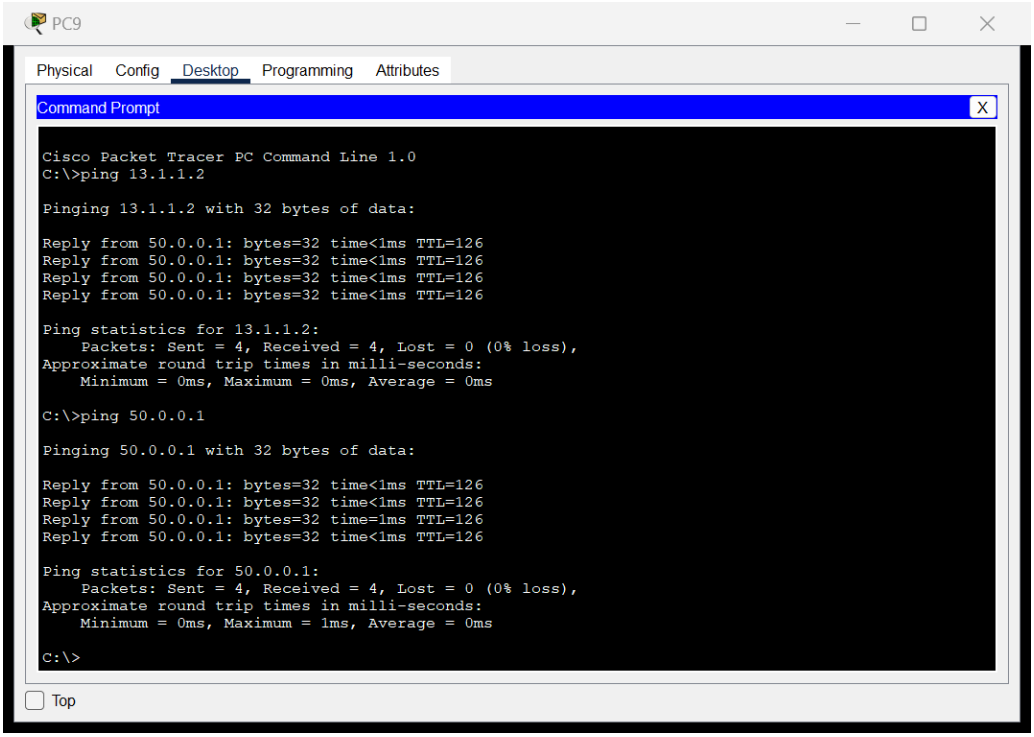



***Routing static pada Router Psikologi dan FKI***

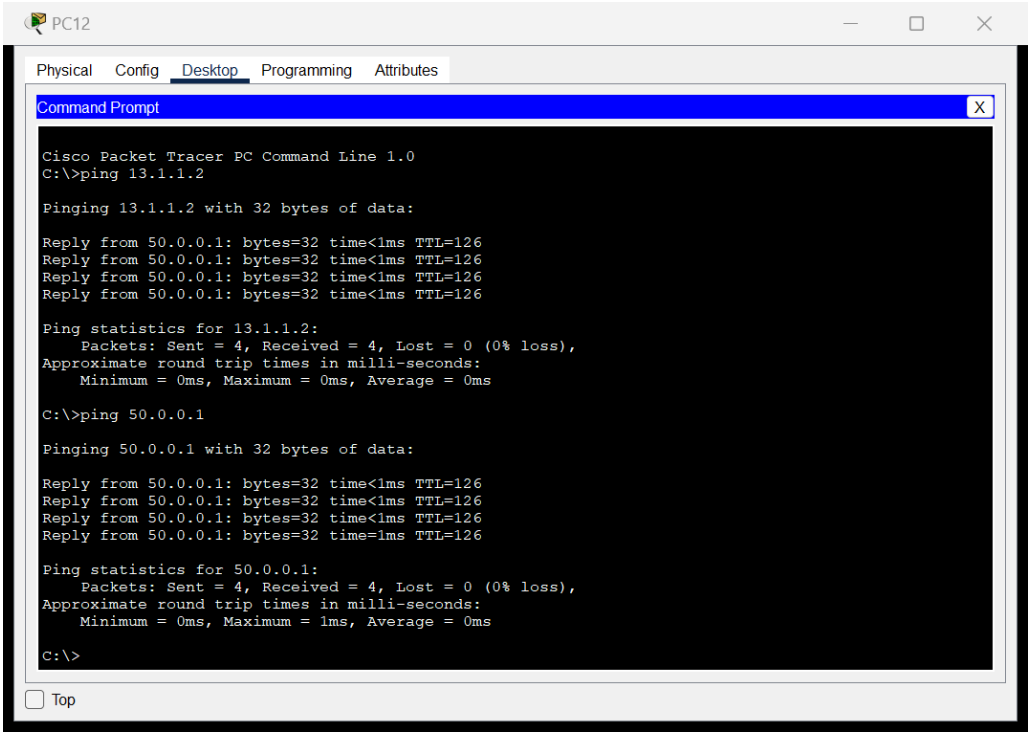


- ***Dokumentasikan hasil percobaan ping***

***Ping PC dosen Psikologi → Web server (ip local 13.1.1.2) dan (ip global 50.0.0.1)***



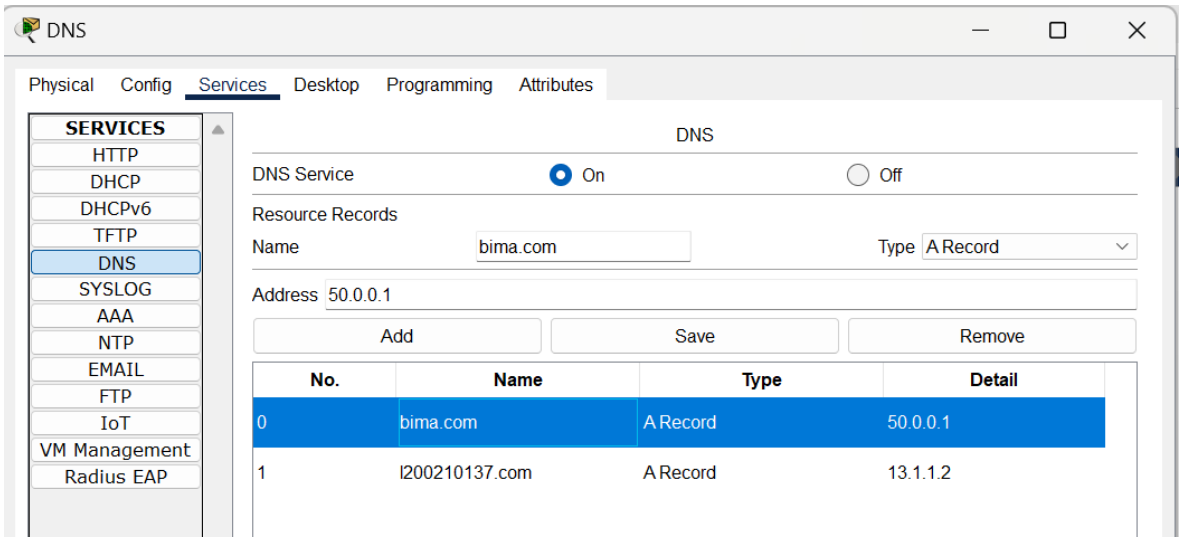

***Ping PC dosen PSI → Web server (ip local 13.1.1.2) dan (ip global 50.0.0.1)***



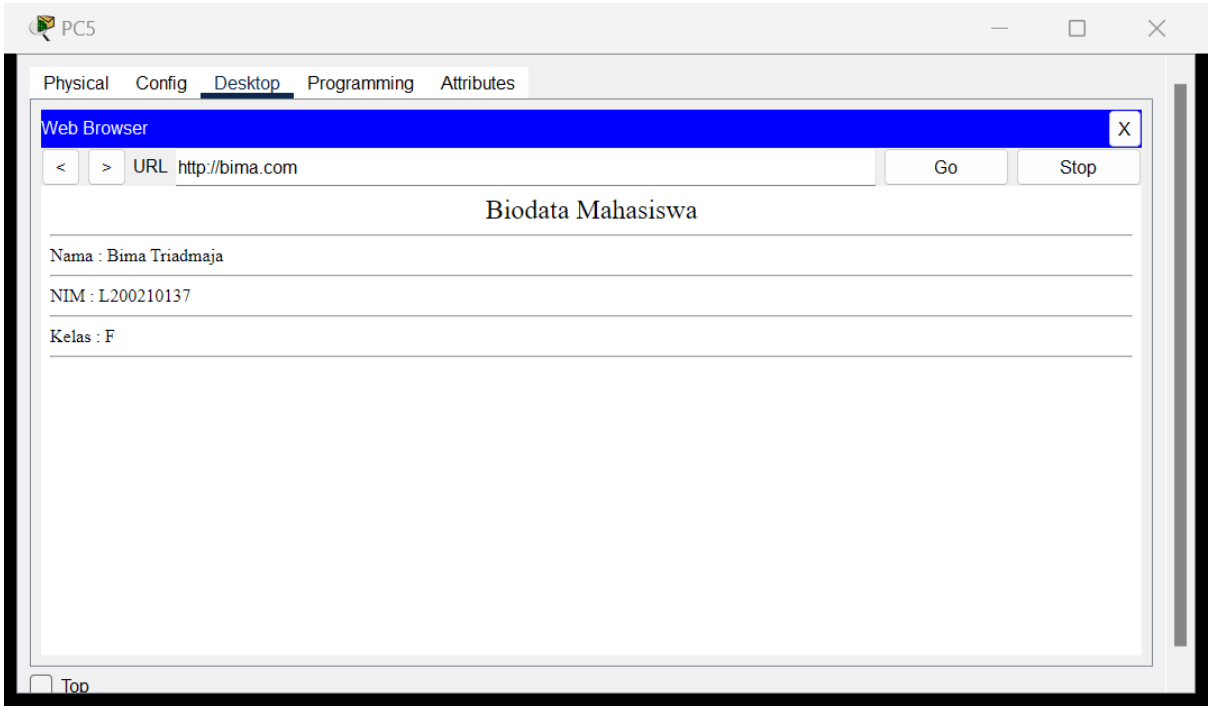
***Perubahan Address pada DNS server***

Sebelum melakukan proses IP NAT pada router server, saya melakukan DNS dalam server DNS dengan memanggil IP pada web server yaitu **13.1.1.2** dan domain akses **l200210137.com**.

Namun, setelah saya melakukan IP NAT pada web server yang awalnya **IP 13.1.1.2 (local)** kemudian ditranslasikan menjadi **50.0.0.1 (global)** yang menyebabkan akses domain **l200210137.com** bermasalah ketika di akses pada PC mahasiswa dan dosen Psikologi maupun FKI, untuk mengatasi masalah tersebut, saya melakukan penambahan pada DNS server dengan IP address **50.0.0.1** dan domain akses **bima.com**, seperti pada gambar dibawah ini :



***Akses domain name dari PC Psikologi***




***Akses domain name dari PC FKI***