

**LAPORAN PRAKTIKUM
ADMINISTRASI DAN KEAMANAN JARINGAN**

Jobsheet NAT

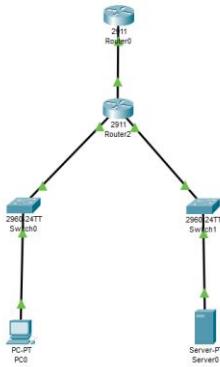


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**JURUSAN TEKNOLOGI INFORMASI
POLITEKNIK NEGERI MALANG
2025/2026**

Langkah-Langkah Praktikum

1. Bangun Topologi Fisik di Simulator:
 - Tempatkan perangkat: Router /Firewall, 2 Switch, 1 PC klien (LAN), 1 Web Server (DMZ).
 - Sambungkan sesuai kabel (straight-through / cross-over).



- ## 2. Konfigurasi IP & Default Gateway:

- Router/Firewall:

```
interface G0/1  
ip address 192.168.10.1 255.255.255.0  
no shutdown
```

```
no shutdown
Router(config)#interface GigabitEthernet0/0
Router(config-if)#ip address 203.0.113.2 255.255.255.252
Router(config-if)#ip address 203.0.113.2 255.255.255.252
Router(config-if)#no shutdown
```

```
Router(config-if)#
```

Interface G0/2
ip address 192.168.20.1 255.255.255.0

ip address 192.168.1.1
no shutdown

```
| Router(config)#interface GigabitEthernet
```

```
Router(config-if)#ip address 192.168.10.
```

```
Router(config-if)#no shutdown
```

```
Router(config-if)#exit
```

| Router(config)#

interface G0/0
ip address 203.0.113.1 255.255.255.252

ip address 20.
1.4.1

no shutdown

```
Router(config)#interface GigabitEthernet0/0  
Router(config-if)#ip address 203.0.113.1 25
```

```
Router(config-if)#ip address 203.0.113.1 255.255.255.252
```

```
Router(config-if)#no shutdown
```

Router(config-if)#

*LINK-5-CHANGED: Inter

```
Router(config-if)#exit
```

REFERENCES AND NOTES

PC PLAN: 192.16

- PC LAN: 192.168.10.10 /24, Gateway 192.168.10.1

IP Configuration

<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	192.168.10.10
Subnet Mask	255.255.255.0
Default Gateway	192.168.10.1
DNS Server	0.0.0.0

IPv6 Configuration

<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	/
Link Local Address	FE80::201:42FF:FEBC:6C75
Default Gateway	
DNS Server	

802.1X

<input type="checkbox"/> Use 802.1X Security	
Authentication	MD5
Username	
Password	

- Server DMZ: 192.168.20.10 /24, Gateway 192.168.20.1

IP Configuration

<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	192.168.20.10
Subnet Mask	255.255.255.0
Default Gateway	192.168.20.1
DNS Server	0.0.0.0

IPv6 Configuration

<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	/
Link Local Address	FE80::204:9AFF:FE58:BADA
Default Gateway	
DNS Server	

802.1X

<input type="checkbox"/> Use 802.1X Security	
Authentication	MD5
Username	
Password	

3. Konfigurasi Routing Dasar:

```
ip route 0.0.0.0 0.0.0.0 203.0.133.1
Router(config)#ip route 0.0.0.0 0.0.0.0 203.0.133.1
Router(config)#[
```

4. Konfigurasi NAT:

```
interface G0/0
ip nat outside
interface G0/1
ip nat inside
access-list 1 permit 192.168.10.0 0.0.0.255
ip nat inside source list 1 interface G0/0 overload
Router(config)#interface GigabitEthernet0/1
Router(config-if)#ip nat inside
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/2
Router(config-if)#ip nat inside
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0
Router(config-if)#ip nat outside
Router(config-if)#exit
Router(config)#
Router(config)#access-list 1 permit 192.168.10.0 0.0.0.255
Router(config)#ip nat inside source list 1 interface GigabitEthernet0/0 overload
Router(config)#[
```

5. Konfigurasi Firewall / ACL:

```
ip access-list extended FW_RULES
```

```
permit tcp 192.168.10.0 0.0.0.255 host 192.168.20.10 eq 80
```

```
permit tcp 192.168.10.0 0.0.0.255 host 192.168.20.10 eq 443
```

```
permit tcp 192.168.10.0 0.0.0.255 host 192.168.20.10 eq 22
```

```
deny ip 192.168.20.0 0.0.0.255 192.168.10.0 0.0.0.255
```

```
permit tcp any host 192.168.20.10 eq 80
```

```
permit tcp any host 192.168.20.10 eq 443
```

```
Router(config)#ip access-list extended FW_RULES
```

```
Router(config-ext-nacl)#permit tcp 192.168.10.0 0.0.0.255 host 192.168.20.Y eq 80
```

```
% Invalid input detected at '^' marker.
```

```
Router(config-ext-nacl)#permit tcp 192.168.10.0 0.0.0.255 host 192.168.20.10 eq 80
```

```
Router(config-ext-nacl)#permit tcp 192.168.10.0 0.0.0.255 host 192.168.20.10 eq 443
```

```
Router(config-ext-nacl)#permit tcp 192.168.10.0 0.0.0.255 host 192.168.20.10 eq 22
```

```
Router(config-ext-nacl)#deny ip 192.168.20.0 0.0.0.255 192.168.10.0 0.0.0.255
```

```
Router(config-ext-nacl)#permit tcp any host 192.168.20.10. eq 80
```

```
% Invalid input detected at '^' marker.
```

```
Router(config-ext-nacl)#permit tcp any host 192.168.20.10 eq 80
```

```
Router(config-ext-nacl)#permit tcp any host 192.168.20.10 eq 443
```

```
Router(config-ext-nacl)#exit
```

```
^ . . . .!
```

Uji & Verifikasi (Detail)

1. Ping Test

Dari PC LAN → ping 192.168.10.1 (gateway LAN)

Dari PC LAN → ping 192.168.20.10 (server DMZ)

Dari PC LAN → ping 203.0.113.1 (uji keluar ke internet)

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.10.1

Pinging 192.168.10.1 with 32 bytes of data:
Reply from 192.168.10.1: bytes=32 time<1ms TTL=255
Reply from 192.168.10.1: bytes=32 time<1ms TTL=255
Reply from 192.168.10.1: bytes=32 time=6ms TTL=255
Reply from 192.168.10.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.10.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 6ms, Average = 1ms

C:\>ping 192.168.20.10

Pinging 192.168.20.10 with 32 bytes of data:
Request timed out.
Reply from 192.168.20.10: bytes=32 time<1ms TTL=127
Reply from 192.168.20.10: bytes=32 time<1ms TTL=127
Reply from 192.168.20.10: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.20.10:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 203.0.113.1

Pinging 203.0.113.1 with 32 bytes of data:
Request timed out.
Reply from 203.0.113.1: bytes=32 time<1ms TTL=254
Reply from 203.0.113.1: bytes=32 time<1ms TTL=254
Reply from 203.0.113.1: bytes=32 time<1ms TTL=254

Ping statistics for 203.0.113.1:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

2. Telnet / HTTP Test

telnet 192.168.20.10 80 (akses Web Server di DMZ).

telnet 192.168.20.10 22 (akses SSH, seharusnya hanya LAN yang boleh, Internet tidak boleh).

```
C:\>telnet 203.0.113.2 80
Trying 203.0.113.2 ...
* Connection refused by remote host
C:\>telnet 203.0.113.2 22
Trying 203.0.113.2 ...Open

[Connection to 203.0.113.2 closed by foreign host]
```

3. NAT Check

Perintah: show access-lists

4. Firewall / ACL Logs

```
Router>enable
Router#show access-lists
Standard IP access list 1
  10 permit 192.168.10.0 0.0.0.255
  20 permit 192.168.20.0 0.0.0.255
Extended IP access list FW_RULES
  10 permit tcp 192.168.10.0 0.0.0.255 host 192.168.20.10 eq www
  20 permit tcp 192.168.10.0 0.0.0.255 host 192.168.20.10 eq 443
  30 permit tcp 192.168.10.0 0.0.0.255 host 192.168.20.10 eq 22
  40 deny ip 192.168.20.0 0.0.0.255 192.168.10.0 0.0.0.255
  50 permit tcp any host 192.168.20.10 eq www
  60 permit tcp any host 192.168.20.10 eq 443
```