# LAPORAN PRAKTIKUM
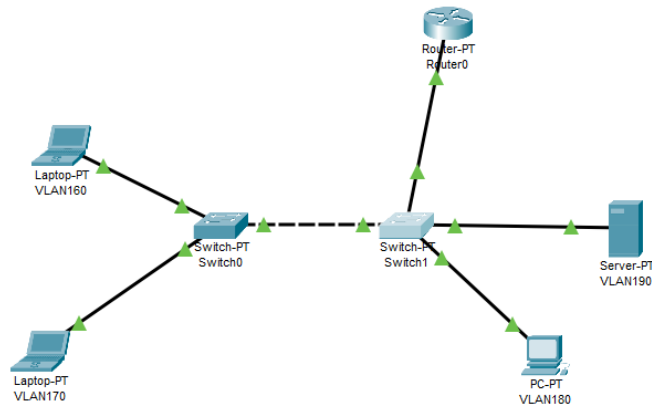# ADMINISTRASI DAN KEAMANAN JARINGAN

## UTS



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**JURUSAN TEKNOLOGI INFORMASI**
**POLITEKNIK NEGERI MALANG**
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**Langkah-Langkah Praktikum**

1. Topologi



2. Konfigurasi Router

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname Router1
Router1(config)#interface fastEthernet0/0
Router1(config-if)#no shutdown

Router1(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Router1(config-if)#exit
Router1(config)#interface fa0/0.160
Router1(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.160, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.160, changed state to up

Router1(config-subif)#encapsulation dot1Q 160
Router1(config-subif)#ip address 192.168.160.1 255.255.255.192
Router1(config-subif)#exit
Router1(config)#interface fa0/0.170
Router1(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.170, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.170, changed state to up

Router1(config-subif)#encapsulation dot1Q 170
Router1(config-subif)#ip address 192.168.170.1 255.255.255.128
Router1(config-subif)#exit
Router1(config)#interface fa0/0.180
Router1(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.180, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.180, changed state to up

Router1(config-subif)#encapsulation dot1Q 180
Router1(config-subif)#ip address 192.168.180.1 255.255.255.240
Router1(config-subif)#exit
Router1(config)#interface fa0/0.190
Router1(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.190, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.190, changed state to up

Router1(config-subif)#encapsulation dot1Q 190
Router1(config-subif)#ip address 192.168.190.1 255.255.255.248
Router1(config-subif)#exit
Router1(config)#write memory
                 ^
% Invalid input detected at '^' marker.

Router1(config)#exit
Router1#
%SYS-5-CONFIG_I: Configured from console by console

Router1#write memory
Building configuration...
[OK]
Router1#
```

PENJELASAN:

Router1 dikonfigurasi sebagai inter-VLAN router menggunakan metode ROAS (Router on a Stick). Interface FastEthernet0/0 digunakan sebagai jalur trunk yang dibagi menjadi beberapa sub-interface untuk VLAN 160, 170, 180, dan 190, masing-masing memiliki alamat IP sebagai gateway bagi setiap VLAN. Beberapa interface lain masih nonaktif. Perintah ip classless memungkinkan router meneruskan paket meski rute tidak lengkap. Secara keseluruhan, Router1 berfungsi menghubungkan antar VLAN agar dapat saling berkomunikasi.

3. Konfigurasi Switch 1

```
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#hostname Switch1
Switch1(config)#vlan 160
Switch1(config-vlan)#name VLAN160
Switch1(config-vlan)#exit
Switch1(config)#vlan 170
Switch1(config-vlan)#name VLAN170
Switch1(config-vlan)#exit
Switch1(config)#vlan 180
Switch1(config-vlan)#name VLAN180
Switch1(config-vlan)#exit
Switch1(config)#vlan 190
Switch1(config-vlan)#name VLAN190
Switch1(config-vlan)#exit
Switch1(config)#interface fa0/1
Switch1(config-if)#switchport mode trunk

Switch1(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

Switch1(config-if)#exit
Switch1(config)#interface fa3/1
Switch1(config-if)#switchport mode trunk

Switch1(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet3/1, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet3/1, changed state to up

Switch1(config-if)#exit
Switch1(config)#interface fa1/1
Switch1(config-if)#switchport mode access
Switch1(config-if)#switcport access vlan 180
                        ^
% Invalid input detected at '^' marker.

Switch1(config-if)#switchport access vlan 180
Switch1(config-if)#exit
Switch1(config)#interface fa2/1
Switch1(config-if)#switchport mode access
Switch1(config-if)#switchport access vlan 190
Switch1(config-if)#exit
Switch1(config)#exit
Switch1#
%SYS-5-CONFIG_I: Configured from console by console

Switch1#end
Translating "end"...domain server (255.255.255.255)
% Unknown command or computer name, or unable to find computer address

Switch1#write memory
Building configuration...
[OK]
Switch1#
```

PENJELASAN:

Switch1 dikonfigurasi sebagai distribution switch yang menghubungkan berbagai VLAN ke Router1 menggunakan metode ROAS (Router on a Stick). Port FastEthernet0/1 dan FastEthernet3/1 diset ke mode trunk untuk membawa semua VLAN (160, 170, 180, 190). Port FastEthernet1/1 digunakan untuk PC di VLAN 180, dan FastEthernet2/1 untuk server di VLAN 190, keduanya menggunakan mode access. Selain itu, spanning-tree PVST diaktifkan untuk mencegah loop jaringan. Secara keseluruhan, Switch1 berfungsi meneruskan lalu lintas antar-VLAN dan menghubungkan perangkat ke Router1.

4. Konfigurasi Switch 0

```
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#hostname Switch0
Switch0(config)#vlan 160
Switch0(config-vlan)#name VLAN160
Switch0(config-vlan)#exit
Switch0(config)#vlan 170
Switch0(config-vlan)#name VLAN170
Switch0(config-vlan)#exit
Switch0(config)#vlan 180
Switch0(config-vlan)#name VLAN180
Switch0(config-vlan)#exit
Switch0(config)#vlan 190
Switch0(config-vlan)#name VLAN190
Switch0(config-vlan)#exit
Switch0(config)#interface fa3/1
Switch0(config-if)#switchport mode trunk
Switch0(config-if)#exit
Switch0(config)#interface fa1/1
Switch0(config-if)#switchport mode access
Switch0(config-if)#switchport access vlan 160
Switch0(config-if)#exit
Switch0(config)#interface fa2/1
Switch0(config-if)#switchport mode access
Switch0(config-if)#switchport access vlan 170
Switch0(config-if)#exit
Switch0(config)#exit
Switch0#
%SYS-5-CONFIG_I: Configured from console by console

Switch0#end
Translating "end"...domain server (255.255.255.255)
% Unknown command or computer name, or unable to find computer address

Switch0#write memory
Building configuration...
[OK]
Switch0#
```
PENJELASAN:

Switch0 dikonfigurasi sebagai access switch yang menghubungkan perangkat pengguna ke jaringan VLAN. Port FastEthernet1/1 digunakan untuk Laptop VLAN160, dan FastEthernet2/1 untuk Laptop VLAN170, keduanya dalam mode access. Port FastEthernet3/1 diset sebagai trunk untuk meneruskan semua VLAN ke Switch1, yang kemudian terhubung ke Router1. Selain itu, spanning-tree PVST diaktifkan untuk mencegah terjadinya loop pada jaringan.

5. Ringkasan topologi

a. Switch0 berfungsi sebagai access switch untuk perangkat VLAN160 dan VLAN170.

b. Switch1 berperan sebagai distribution switch yang menghubungkan semua VLAN ke router.

c. Router1 bertugas melakukan inter-VLAN routing (ROAS) agar seluruh VLAN dapat saling berkomunikasi.