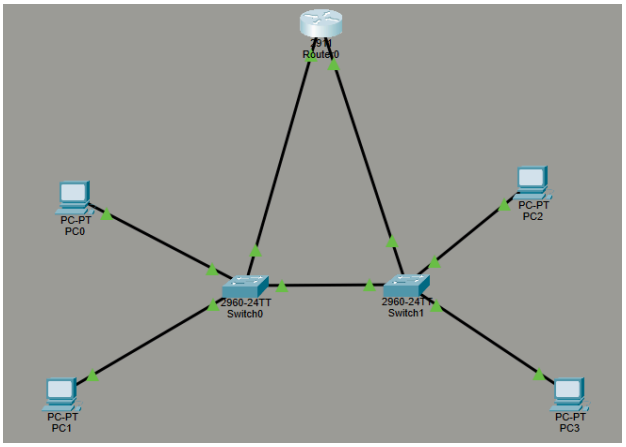
REPORT – Rete VLAN con Router

1. Obiettivo dell’esercizio

L’obiettivo era progettare e configurare una rete segmentata tramite VLAN utilizzando:

- **2 Switch Cisco 2960**
- **1 Router Cisco** (Router-on-a-Stick)
- **4 PC**, distribuiti su VLAN diverse
- la creazione di 4 VLAN
- la propagazione delle VLAN tramite trunk 802.1Q
- il routing inter-VLAN tramite sub-interface del router
- test di comunicazione per verificare il funzionamento

2. Progetto



3. Assegnazione VLAN

Ho creato 4 VLAN:

- **VLAN 10 – RED**
- **VLAN 20 – BLUE**
- **VLAN 30 – GREEN**
- **VLAN 40 – ORANGE**

SWITCH 0

```
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#configure terminal
                ^
% Invalid input detected at '^' marker.

Switch(config)#vlan 10
Switch(config-vlan)#name RED
Switch(config-vlan)#vlan 20
Switch(config-vlan)#name BLUE
Switch(config-vlan)#vlan 30
Switch(config-vlan)#name GREEN
Switch(config-vlan)#vlan40
                    ^
% Invalid input detected at '^' marker.

Switch(config-vlan)#vlan 40
Switch(config-vlan)#name ORANGE
Switch(config-vlan)#exit
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console
```

SWITCH 1

```
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#vlan 10
Switch(config-vlan)#name RED
Switch(config-vlan)#vlan 20
Switch(config-vlan)#name BLUE
Switch(config-vlan)#vlan 30
Switch(config-vlan)#name GREEN
Switch(config-vlan)#vlan 40
Switch(config-vlan)#name ORANGE
Switch(config-vlan)#exit
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console
```

4. Configurazione porte Access

Ho assegnato ogni PC alla VLAN corretta:

- PC0 → VLAN 10
- PC1 → VLAN 20
- PC2 → VLAN 30
- PC3 → VLAN 40

5. Configurazione collegamento Trunk

I due switch sono collegati tramite trunk su Fa0/2.

SWITCH 0

```
Switch(config)#interface Fa0/2
Switch(config-if)#switchport mode trunk

Switch(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up
switchport trunk allowed vlan 10, 20, 30, 40
                                          ^
% Invalid input detected at '^' marker.

Switch(config-if)#switchport allowed vlan 10
                               ^
% Invalid input detected at '^' marker.

Switch(config-if)#
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/2 (1), with Switch FastEthernet0/2 (20).

%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/2 (1), with Switch FastEthernet0/2 (20).

%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/2 (1), with Switch FastEthernet0/2 (20).
```

SWITCH 1

```
Switch(config)#interface Fa0/2
Switch(config-if)#switchport mode tr
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/2 (20), with Switch Fas
Switch(config-if)#switchport mode trunk

Switch(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up

Switch(config-if)#switchport trunk allowed vlan 10,20,30,40
Switch(config-if)#switchport trunk native vlan 1
Switch(config-if)#end
Switch#
%SYS-5-CONFIG_I: Configured from console by console
```

6. Configurazione del Router (Router-on-a-Stick)

Ho configurato un'unica porta fisica (GigabitEthernet0/1) suddivisa in 4 sub-interface, una per ogni VLAN.

```
Router#show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
GigabitEthernet0/0     unassigned      YES unset  up                    up
GigabitEthernet0/0.10  192.168.10.1    YES manual up                    up
GigabitEthernet0/0.20  192.168.20.1    YES manual up                    up
GigabitEthernet0/0.30  192.168.40.1    YES manual up                    up
GigabitEthernet0/0.40  192.168.30.1    YES manual up                    up
GigabitEthernet0/1     unassigned      YES unset  administratively down down
GigabitEthernet0/2     unassigned      YES unset  administratively down down
Vlan1                  unassigned      YES unset  administratively down down
Router#
```

7. Conclusione

- 4 VLAN create
- Trunk funzionante tra i due switch
- Sub-interface router configurate
- Routing inter-VLAN operativo
- Test di ping completati