# Esercizi svolti Routing dinamico RIPv1

**Esercizio**: Realizzare una rete con Packet Tracer costituita da tre router interconnessi. A ciascuno di essi è collegato uno switch e a ciascuno switch è collegato un PC. La rete deve essere fault-tolerant. La scelta degli indirizzi di rete è lasciata al progettista

**Soluzione 1:**

Fase 1: piano di indirizzamento

Scelgo i seguenti indirizzi per le reti:

LAN_1: 192.168.0.0/24

LAN_2: 192.168.1.0/24

LAN_3: 192.168.2.0/24

Link_1 (LAN_1 – LAN_2): 10.0.0.0/8

Link_2 (LAN_2 – LAN_3): 20.0.0.0/8

Link_3 (LAN_3 – LAN_1): 30.0.0.0/8

| Dispositivi /interfaccia | IPv4 | Subnet mask | Default Gateway |
|---|---|---|---|
| PC0 | 192.168.0.2 | 255.255.255.0 | 192.168.0.1 |
| PC1 | 192.168.1.2 | 255.255.255.0 | 192.168.1.1 |
| PC2 | 192.168.2.2 | 255.255.255.0 | 192.168.2.1 |
| Router0 / Fa0/0 (LAN) | 192.168.0.1 | 255.255.255.0 | - |
| Router0 / Se2/0 (Link_1) | 10.0.0.1 | 255.0.0.0 | – |
| Router0 / Se3/0 (Link_3) | 30.0.0.2 | 255.0.0.0 | - |
| Router1 / Fa0/0 (LAN) | 192.168.1.1 | 255.255.255.0 | - |
| Router1 / Se2/0 (Link_1) | 10.0.0.2 | 255.0.0.0 | – |
| Router1 / Se3/0 (Link_2) | 20.0.0.1 | 255.0.0.0 | - |
| Router2 / Fa0/0 (LAN) | 192.168.2.1 | 255.255.255.0 | - |
| Router2 / Se2/0 (Link_2) | 20.0.0.2 | 255.0.0.0 | – |
| Router2 / Se3/0 (Link_3) | 30.0.0.1 | 255.0.0.0 | - |

Fase 2: Posizionamento dispositivi sul workspace

Posizionare i 3 router, i 3 switch e i 3 PC ed eseguire le connessioni come da specifica. Inserire gli elementi grafici utili all'identificazione delle reti:
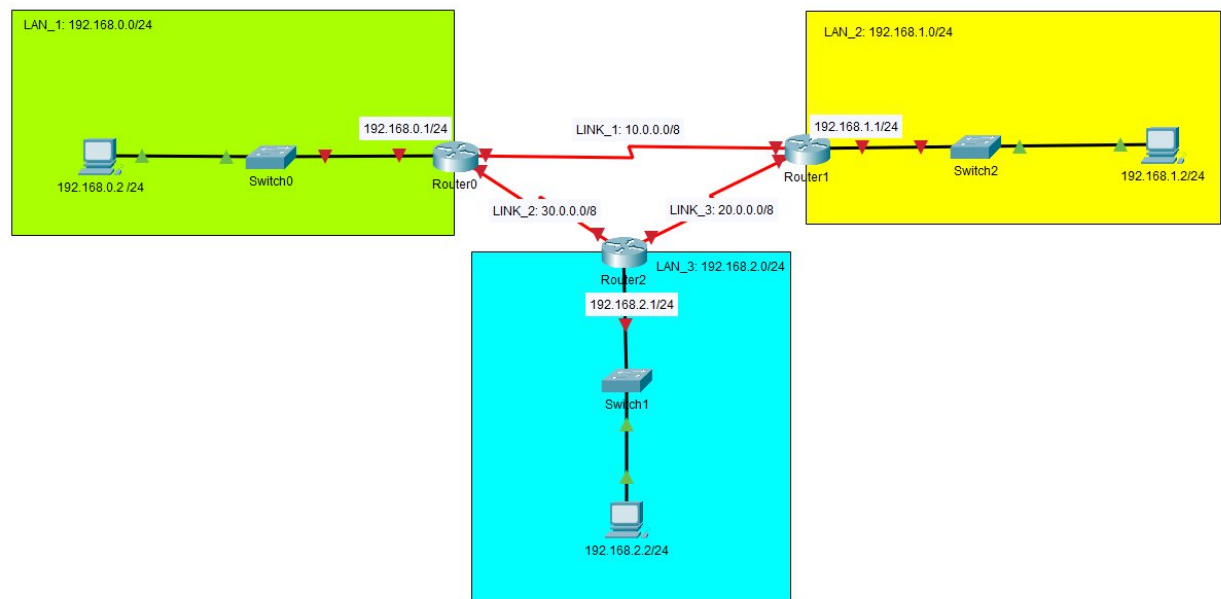
## Fase 3: Configurazione dispositivi terminali

Configurare le interfacce dei dispositivi terminali come da piano di indirizzamento (esempio seguente PC0). Cliccare sui PC e inserire i parametri nella scheda Desktop->IP Configuration:
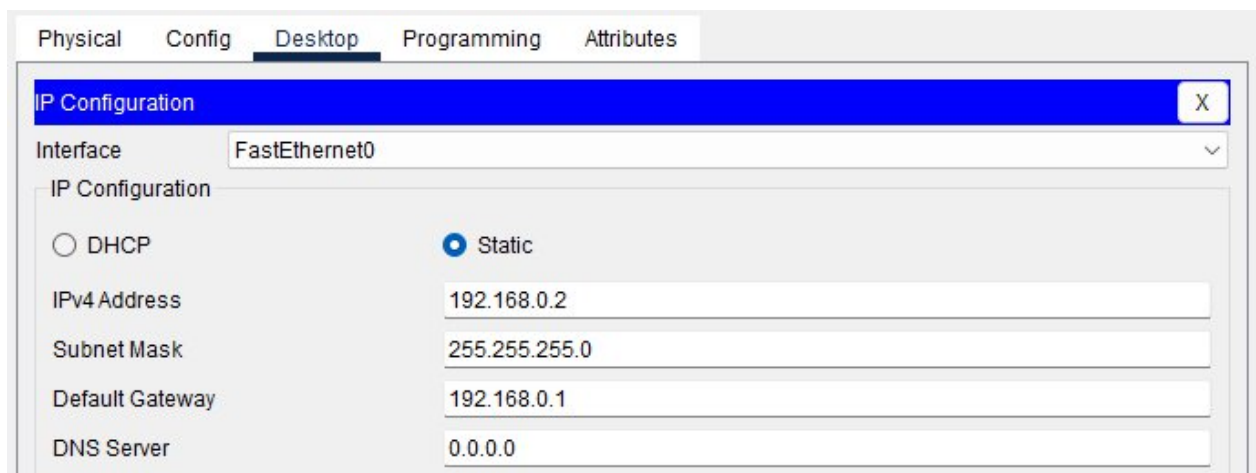


## Fase 4: Configurazione Router

### 4a) Configurare l'interfaccia Fa0/0, Se2/0 e Se3/0 del Router0

```
Router>enable
Router#conf t
Router(config)#interface FastEthernet0/0
Router(config-if)#no shutdown
Router(config-if)#ip address 192.168.0.1 255.255.255.0
```

```
Router(config)#interface Serial2/0
Router(config-if)#no shutdown
Router(config-if)#ip address 10.0.0.1 255.0.0.0
Router(config-if)#interface Serial3/0
Router(config-if)#no shutdown
Router(config-if)#ip address 30.0.0.2 255.0.0.0
```

## 4b) Configurare l'interfaccia  Fa0/0, Se2/0 e Se3/0 del Router1

```
Router>enable
Router#conf t
Router(config)#interface FastEthernet0/0
Router(config-if)#no shutdown
Router(config-if)#ip address 192.168.1.1 255.255.255.0
Router(config)#interface Serial2/0
Router(config-if)#no shutdown
Router(config-if)#ip address 10.0.0.2 255.0.0.0
Router(config-if)#interface Serial3/0
Router(config-if)#no shutdown
Router(config-if)#ip address 20.0.0.1 255.0.0.0
```

## 4c) Configurare l'interfaccia  Fa0/0, Se2/0 e Se3/0 del Router2

```
Router>enable
Router#conf t
Router(config)#interface FastEthernet0/0
Router(config-if)#no shutdown
Router(config-if)#ip address 192.168.2.1 255.255.255.0
Router(config)#interface Serial2/0
Router(config-if)#no shutdown
Router(config-if)#ip address 20.0.0.2 255.0.0.0
Router(config-if)#interface Serial3/0
Router(config-if)#no shutdown
Router(config-if)#ip address 30.0.0.1 255.0.0.0
```

## 4d) Configurare il protocollo RIPv1 sui tre router

Per ogni router dobbiamo annunciare le reti adiacenti:
Il comando è: router rip <rete_adiacente>

**Router0:**
Router(config)#router rip
Router(config-router)#network 10.0.0.0
Router(config-router)#network 30.0.0.0
Router(config-router)#network 192.168.0.0


**Router1:**
Router(config)#router rip
Router(config-router)#network 10.0.0.0
Router(config-router)#network 20.0.0.0
Router(config-router)#network 192.168.1.0


**Router1:**
Router(config)#router rip
Router(config-router)#network 30.0.0.0
Router(config-router)#network 20.0.0.0
Router(config-router)#network 192.168.2.0


4e) Copiare la configurazione in NVRAM (su entrambi i router)


Router#copy run start


Fase 5: Test

Eseguire il ping da PC0 a PC1 o da PC0 a PC2 (più volte per attendere che i router completino le tabelle di routing)

```
Command Prompt                                                    X

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.2

Pinging 192.168.1.2 with 32 bytes of data:

Reply from 192.168.1.2: bytes=32 time=1ms TTL=126
Reply from 192.168.1.2: bytes=32 time=21ms TTL=126
Reply from 192.168.1.2: bytes=32 time=7ms TTL=126
Reply from 192.168.1.2: bytes=32 time=1ms TTL=126

Ping statistics for 192.168.1.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 21ms, Average = 7ms

C:\>ping 192.168.2.2

Pinging 192.168.2.2 with 32 bytes of data:

Reply from 192.168.2.2: bytes=32 time=15ms TTL=126
Reply from 192.168.2.2: bytes=32 time=19ms TTL=126
Reply from 192.168.2.2: bytes=32 time=6ms TTL=126
Reply from 192.168.2.2: bytes=32 time=8ms TTL=126

Ping statistics for 192.168.2.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
```