

The logical topology of the network to configure is reported in the figure. The devices to be configured are routers R0, R3 and R4, switches S0, S1, S2, S3 and S4, PCs PC0 – PC5, PC7-PC8, and server Server0.

1) IP addressing:

- a. the interfaces of R0 and R4 must have the last available IP address of the blocks; the interfaces of R3 must have the first available IP address of the blocks; in the case of a clock rate, value 64000 should be used;
- b. the PCs belong to three different VLANs, on the basis of the following table:

Host	# VLAN	VLAN address space
PC7, PC8	1	10.0.1.0/24
PC0, PC3, Server 0	10	10.0.0.0/24
PC1, PC4	40	10.0.40.0/24
PC2, PC5	89	192.168.89.0/24

the IP addresses for VLAN 40 and VLAN 89 must be assigned statically, while the IP addresses for VLAN 1 and VLAN10 must be assigned dynamically. Server0 must have IP address 23.0.0.4.

2) Management

- a. VLAN 89 is the management VLAN for the switches; the switches must be accessible and configurable via telnet (the password must be **cisco**);
- b. router R0 must be accessible and configurable via telnet only by the hosts of VLAN 89 (the password must be **cisco**).

3) Routing configuration and Internet access:

- a. PCs of VLANs 1, 10, and 40 must be reachable each other using their private IP addresses;
- b. OSPF protocol must be enabled among routers R0, R1, R2, R3 and R4 (network 11.0.0.0/29 is outside the OSPF area);
- c. The OSPF protocol must be used to configure the Internet access; the configuration must allow R0 to reach Internet using R1 as next-hop while Internet traffic must reach R0 from R3.
- d. Hosts of VLAN 10 and VLAN 40 must have Internet access.

4) Access Control List (implemented using NAMED ACL and minimizing the processing on routers):

- a. Traffic from network 110.10.0.0/24 to VLAN 10 and VLAN 40 must be blocked;
- b. Bidirectional HTTP traffic from VLAN 40 to Internet must be blocked;
- c. ICMP traffic from Server0 to VLAN1 must be blocked;
- d. all the remaining traffic must be allowed.

5) Security:

- a. Sticky dynamic port security for VLAN 10 must be configured;
- b. DHCP must be secured for VLAN1.