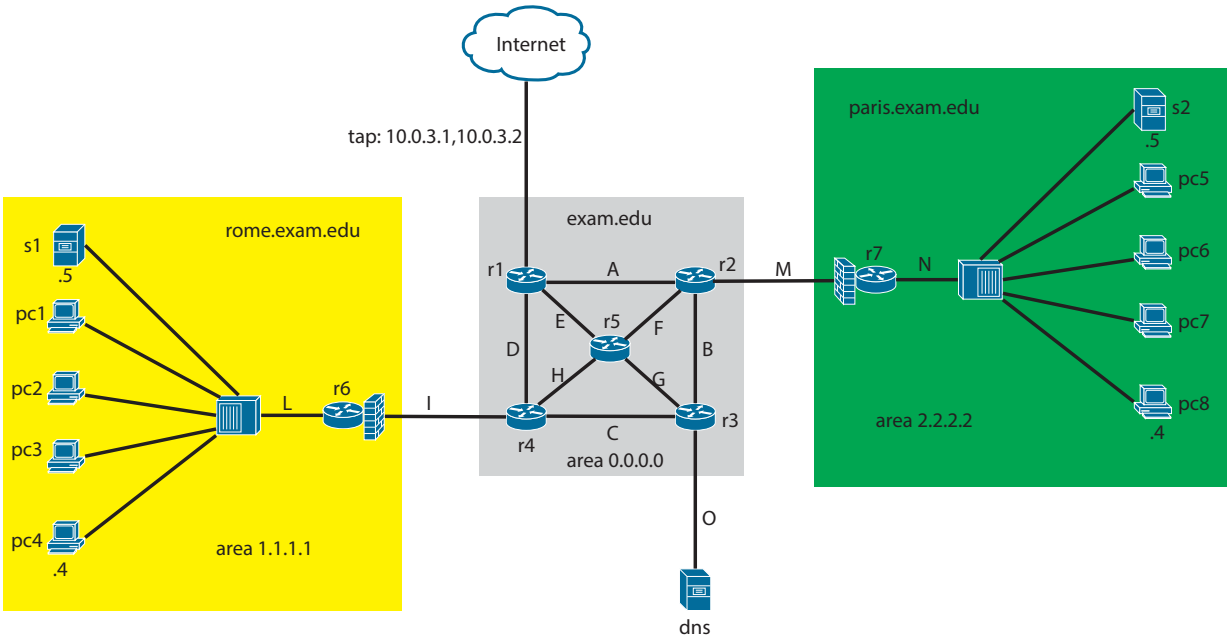
Third Homework: A topology

For MATRICOLA ending with 0-1



Collision domain	Subnet
A	1.0.1.2/31
B	1.0.1.4/31
C	1.0.1.6/31
D	1.0.1.8/31
E	1.0.1.10/31
F	1.0.1.12/31
G	1.0.1.14/31
H	1.0.1.16/31
I	1.0.1.18/31
L	192.168.1.0/24
M	20.0.1.2/31
N	192.168.2.0/24
O	20.0.1.4/31

Given the topology in figure, reproduce it in netkit. You must use the VM names and addresses specified in the figure above.
For /31 subnets, the addresses are assigned with the following rule: the lower router number takes the even address, e.g. r1 takes 1.0.1.2 with respect to r2.

The maximum points are 10+2 and are assigned as follows:

- +0.5 points: lab created with folders and lab.conf
- +0.5 points: r6 and r7 are DHCP Servers. Hosts on L and N are DHCP clients except s1, pc4, s2 and pc8 (use static static for them).
- +1 point: Configure the TAP interface and set default gateways on routers in order to use the TAP.
- +2 points: OSPF on every router (and only on them) in order to have dynamic routing. Respect the areas given in figure and keep in mind the default gateways for the TAP.
- +1 point: Create a user called *a_user* with password *user* on every router and allow s1 to access the routers trough ssh via asymmetric authentication. (**This must be done at startup)**
- +1 point: Setup a VPN between pc4 and pc8 (with pc8 as server). Use the same UDP port we have used on lecture. The CA for this VPN is s2.
- +2 points: Configure firewall on r6 and r7 to accept the incoming traffic **only** if is initialized by the respective subnets (L and N). Set s1 and s2 in DMZ. Add exceptions for the services you have setup until now (SSH and VPN).
- +2 points: Configure DNS as name server. DNS is authoritative for *exam.edu* and delegates *rome.exam.edu* to s1 and *paris.exam.edu* to s2. Every host must be reachable by hits hostname.domain, eg: $r1 \rightarrow r1.exam.edu$, $pc4 \rightarrow pc4.rome.exam.edu$, $pc8 \rightarrow pc8.paris.exam.edu$. Every host must use DNS as name server (not s1 and s2!).

Extra points:

- +1 point: Setup a webserver (the plain page of apache2 It Works! it's fine) on pc5 on port 8080
- +1 point: Using iptables, redirect the TCP port 80 of r7 to the TCP port 8080 of pc5.

Restart for all the daemons is required.