



### Read these instructions completely (and carefully) before starting!

Download and open project "initial.nsw". We have a collection of Ethernet LANs, interconnected using 2620 routers (3 serial interfaces, 2 FastEthernet interfaces).

- PC1 and PC2 in LAN1, connected to router Rout1.
- PC3 and PC4 in LAN2, connected to router Rout2.
- PC5, PC6, PC7 and PC8 are physically in the same LAN3, connected to Rout3. We have defined two VLANs:
  - VLAN1 (PC5, PC7) and
  - VLAN2 (PC6, PC8)

In addition to that we have several point to point serial links between a central router CR and Rout1, Rout2, Rout3 (rate: 1000000; be careful when identifying the DCE sides).

The only configurations done in devices are name changes. In routers, commands "ip classless" and "ip subnet-zero" have also been executed.

1. Obtain from the companion document "**network addresses 1.pdf**" a block of addresses with a /20 mask. **Use your ID number to find the address block assigned to you.** Identify all subnets and prepare an addressing plan covering all of them, splitting your /20 block as necessary in such a way that a /24 mask is used in **all** subnets. **Do not use addresses not assigned to you.**
2. Implement the addressing plan by configuring manually all the necessary interfaces of devices in the network, including PCs. **Save a copy of your project as "norouting".**
  - a. Use simple switches for LAN1 and LAN2, and 2950 switches for LAN3. Do the necessary configurations in the 2950 switches to define the VLANs. **(6 pt. if VLANs are well defined, addressing plan is correct and all interfaces are correctly configured)**
  - b. If you do not know how to work with VLANs, use simple switches instead of 2950 switches and consider that PC5, PC6, PC7 and PC8 are in the same subnet. **(4 pt. if VLANs are not used but addressing plan is correct and all interfaces are correctly configured)**
3. Add manually all the necessary static entries in the forwarding tables of the routers in order to have full connectivity: all "pings" between any pair of PCs should work. You can use default routes in all routers except CR. When done, **save your project as "static" and close it. (3 pt. if all pings work and configurations are correct)**
4. Open again project "norouting". Use RIPv2 for the automatic setup of forwarding tables of routers. Again, all "pings" between any pair of PCs should work. When done, **save your project as "dynamic" and close it. (3 pt. if all pings work and configurations are correct)**
5. **Submit files "static.nsw" and "dynamic.nsw" through eGela.**

#### NOTES:

- Although the maximum score for the exam is 10, the total number of achievable points is 12. This is not an error: it means that you can get the maximum score even with some errors.
- Save often your working project to disk, so that in case of problems you can roll back to a previous version instead of starting again from an empty network.
- You should use "ping", from a PC or from the "Teaching" menu, to verify that all PCs can reach the remaining ones.
- The "IPs" and "Vlan" buttons can be useful to verify your configurations. The "yellow" routing tables too but, remember, the valid ones are those obtained using "sh ip route" or double-clicking on a router.