1 IP Interconnection

Consider the local area network based on VLANs (Virtual Local Area Network) presented in Figure 1. A switch manages two VLANs: VLAN1 et VLAN2. The router is connected to a *trunk* link—outgoing frames are labeled with a VLAN identifier, which allows the router to be connected to VLAN1 and VLAN2 at the same time. Hosts on VLAN1 form an IP subnetwork with prefix `200.195.128/23` and hosts on VLAN1 form an IP subnetwork with prefix `200.195.130.1/25`. Addresses like `11:11` are Ethernet. The switch operates according to the *store-and-forward* principle. We assume that at the beginning all the network has been rebooted and the router is correctly configured.

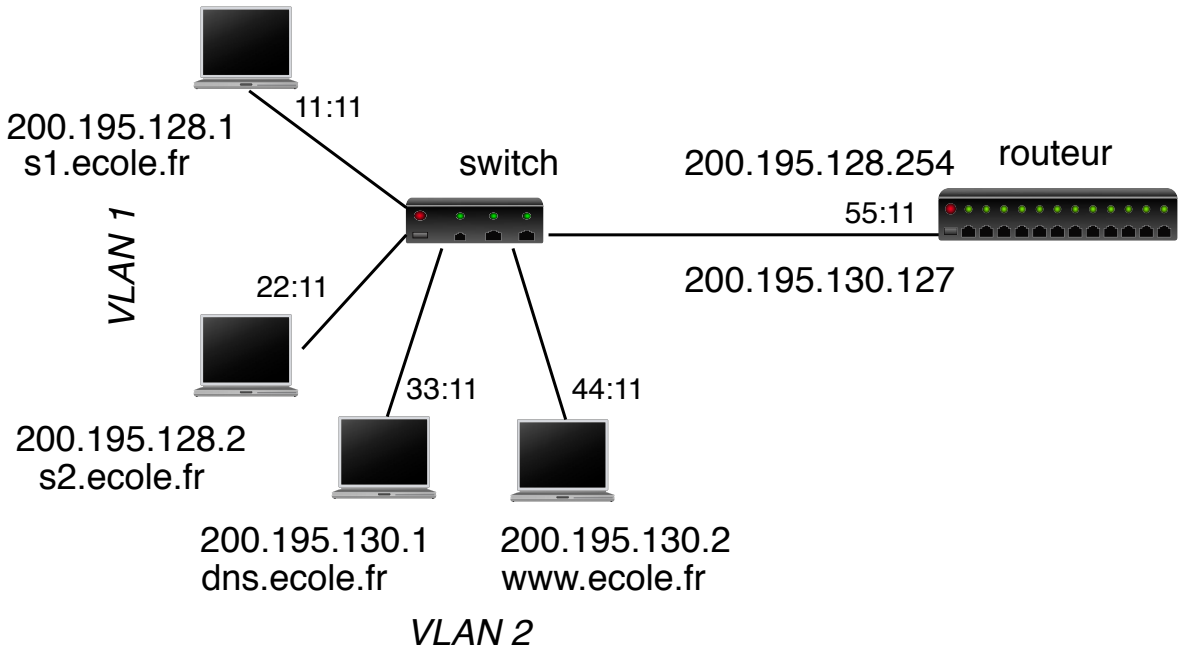
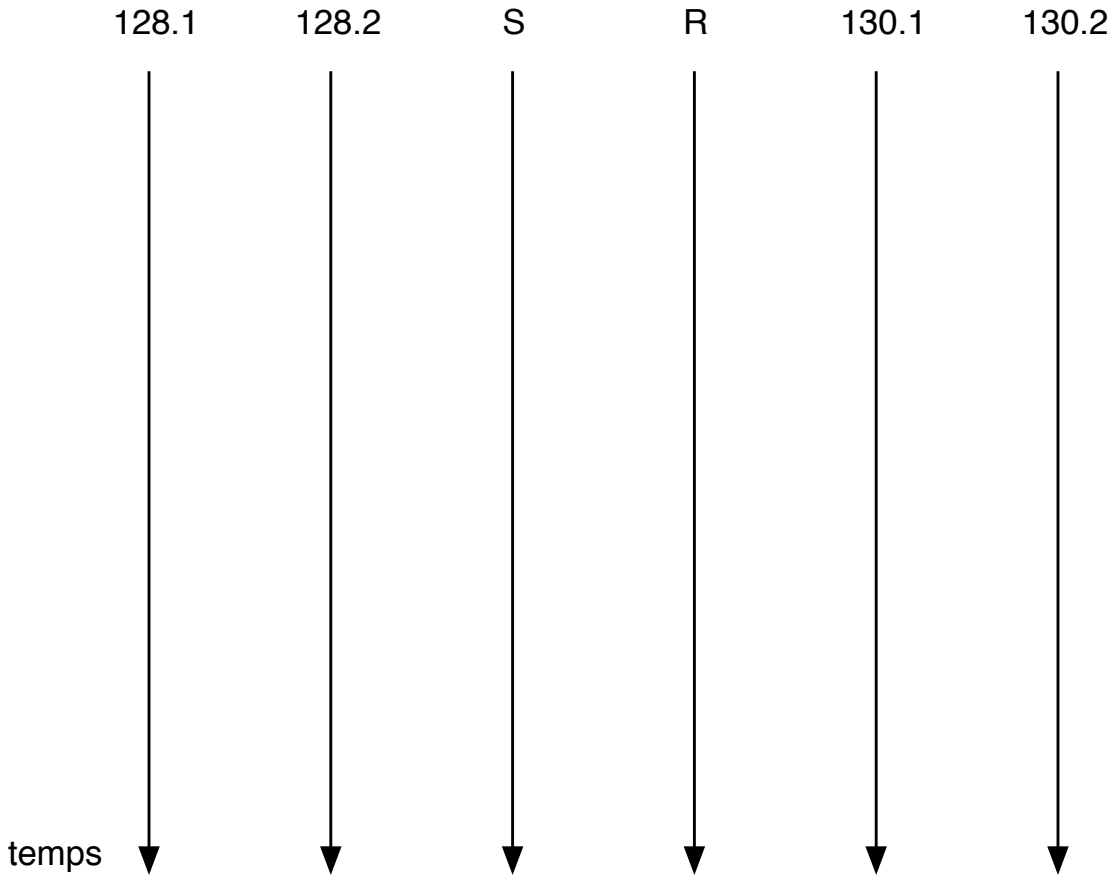


Figure 1: An IP network based on VLANs.

1. The user executes on host `200.195.128.1` command `ping 200.195.128.2`. Draw a temporal diagram of transmissions below.



2. Later on, the user executes on host `s1.ecole.fr` command `ping www.ecole.fr`

   Give the temporal sequence of all Ethernet frames and their content that can be observed during the execution of this command.

3. How do you propose to evaluate the available capacity (*i.e.* bit rate) of a network link? Try to imagine a solution that is not too aggressive! Can you imagine a way to evaluate de buffer size at the bottleneck link in a network?