Universitat de Lleida

Exercise 4. Communication Services and Security
Escola Politècnica Superior. Departament d'Informàtica

Problem 1 Build the topology corresponding to slide 68.

1. Configure properly R1, R2 and your PC. Comment the following points:
   - NAT and routing configuration at R1 and R2
   - Routing configuration at your PC [1]
   - Show the interface queueing status for random-detect at some time where there are random dropped packets for class 1 and 6
2. Check for some combination of classes (IP precedence). Fullfill the average throughput for the following table, after 1 minute of transferred data:

Outgoing traffic		IP precedence		Average throughput (KB/s)	
To tap1	To tap2	To tap1	To tap2	To tap1	To tap2
✓		1	-		-
✓	✓	1	6		
✓	✓	3	6		
✓	✓	6	6		
✓	✓	6	2		

   Comment the results.

(3 points)

[1] Hint: To correctly route traffic to destination 21.0.0.0/24 from `tap2`, use a second routing table as in slide 24

Problem 2 Build a network as in Fig. 1.

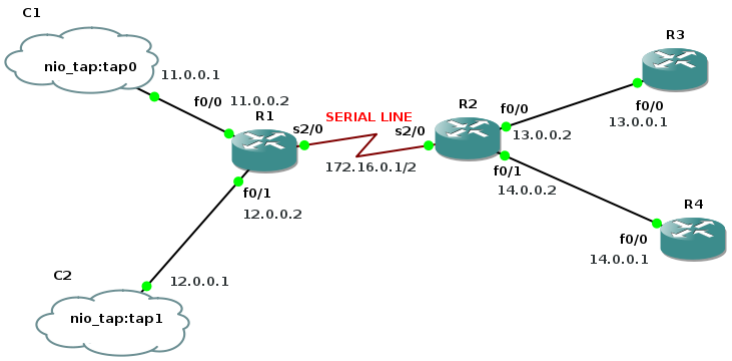

Figure 1: Network topology

RSVP configuration

- Reserve 400 Kbps FF style from 11.0.0.1:48823 to 13.0.0.1:5004
- Reserve 200 Kbps FF style from 12.0.0.1:40258 to 14.0.0.1:5004

Traffic patterns. Create the following streams:

1. A 1 Mbps ping flow from C1 to R3, with on-off pulses of 1 second each at Serial Line
2. 1 Mbps continuous video streaming from 11.0.0.1:48823 to 13.0.0.1:5004 (Use `packETHcli` with captured packet)[2]
3. 1 Mbps continuous video streaming from 12.0.0.1:40258 to 14.0.0.1:5004 (Use `packETHcli` with captured packet)

Deliver: A short PDF file containing:

- R1 console screenshot showing RSVP reservations
- Show the command to generate traffic pattern 1. Capture on Serial Line (only this traffic active) and plot throughput at different averaging slots (1", 0.1" and 0.01"). Use the same `ping` command for all the three plots.
- Repeat previous item having 3 traffic patterns active
- Comment each point

(3 points)

[2]Find de captured packets on folder `Lab Work` → `2 QoS` → `Captures`