

ESCUELA SUPERIOR POLITÉCNICA DEL LITORAL
FACULTAD DE INGENIERÍA EN ELECTRICIDAD Y COMPUTACIÓN
CALIDAD DE SERVICIOS DE RED (TLMG1005)



TERCERA EVALUACIÓN - PRIMER TÉRMINO 2019 – 11/09/2019

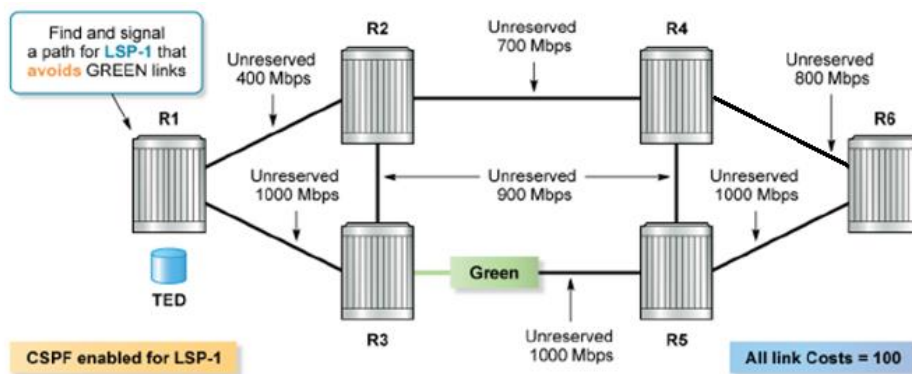
Estudiante:

Matricula:

Quien firma, acepta cumplir como estudiante lo dispuesto en el Código de Ética de la ESPOL, con respecto al capítulo "Comportamiento de la Comunidad Politécnica" en todos sus artículos. En caso de no cumplimiento, aceptaré acatar las sanciones que disponga la ESPOL hacia mi persona.

Firma del estudiante:

1.- Regarding the figure below, consider all links have equal cost=100. (25 puntos)

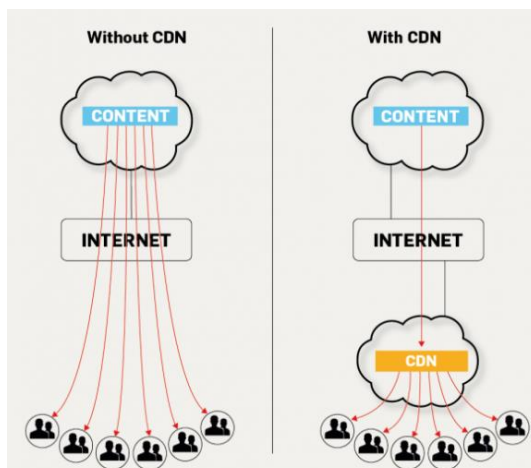


- What is the Constraint-based Shortest Path First (CSPF) output? (Draw the new logical topology). (5 points).
- What is the Shortest Path First (SPF) output? (Draw the new logical topology). (5 points).
- Explain in detail the RSVP signaling procedure (Hint: consider the output obtained in section 'b'). (15 points)

2.- Which information is stored within the Path State Block? (5 points).

3.- Describe distinguishing features regarding: Voice, Video and Data traffic. (15 points)

4.- Talking about Content Delivery Network (CDN), please provide one merit and one demerit of this technology. Explain them briefly. (5 points).



5.- Regarding the topology shown and the tools detailed in the table below.
 Please draw the block diagram and outgoing packets. Consider the buffer length = 2 packets. (25 puntos)

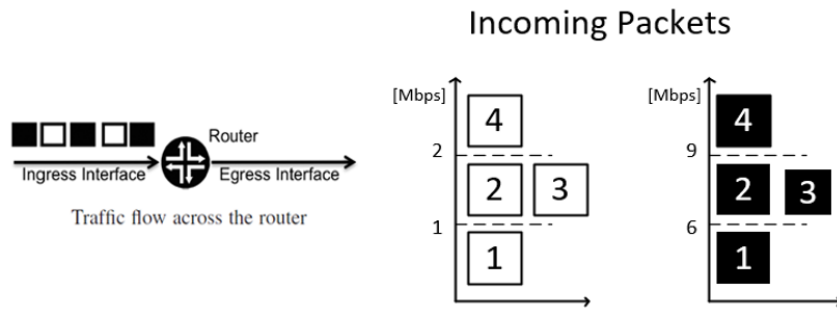


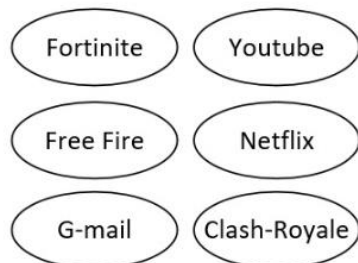
Table PHB requirements

Traffic	Class of service	Metering and policing			Queue	Scheduler	Egress rate	Rewrite
		Rate	Color	Action				
Black	COS1	< 6 M	Green	Accept	Use Q1	Prioritize Q2	Limit 6 Mbps Policer Tool	None
		>6M<9M	Yellow	Accept				
		> 9M	Red	Drop				
White	COS2	<1M	Green	Accept	Use Q2	Prioritize Q2	Limit 6 Mbps Policer Tool	Marking = X
		>1M<2M	Yellow	Accept				None
		>2M	Red	Drop				None

6.- Please describe the main difference between Differentiated services (DiffServ) and Integrated Services (IntServ). Moreover, describe a merit and a demerit about each one. **(5 puntos)**

7.- Consider the applications and services listed below. How many Class of Service would you set up, why? **(5 puntos)**

Services and applications

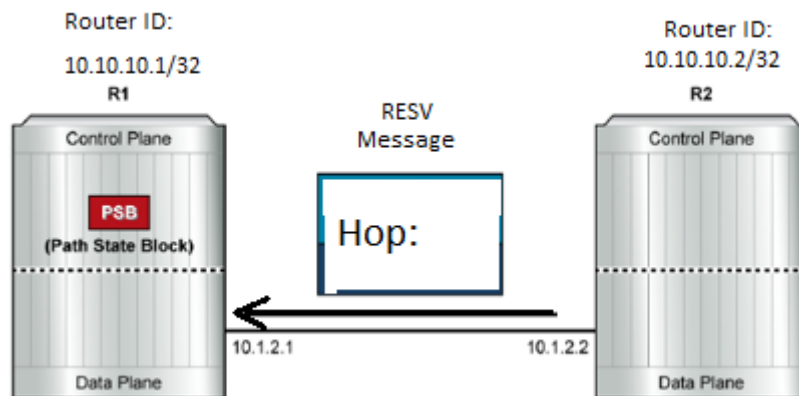


8.- Assume that in the previous question you chose to apply one CoS. Then, which Cos would you use, a CoS with higher or lower priority? Or it is no longer important? Why? **(5 points)**

9.- Regarding the IPv4 packet header which field carry the CoS information? **(5 points)**

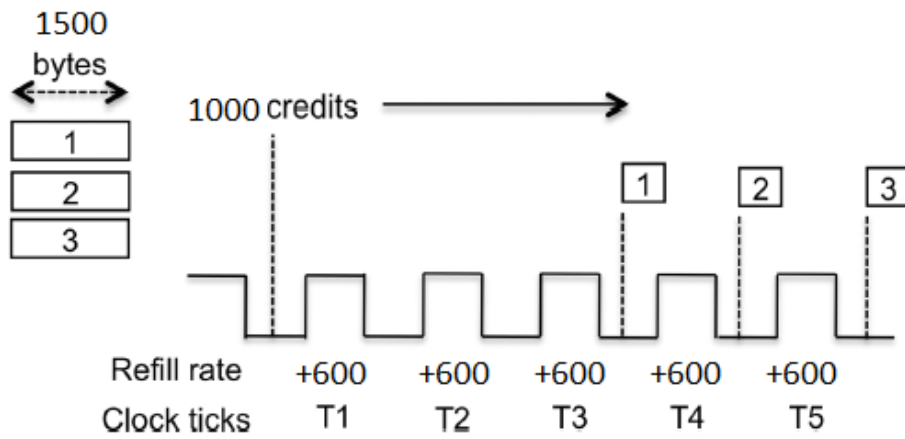
- a.- Flags
- b.- Type of Service
- c.- Identification
- d.-Options

10.- The figure below shows the RSVP signaling procedure at the RESV message flooding stage of a *fully loose* LSP. Which information is carried out in the **HOP** field? Why? (5 points)



- a.- R1 router ID address (10.10.10.1/32)
- b.- R2 router ID address (10.10.10.2/32)
- c.- The IP address 10.1.2.1 belonging to the interface at R1
- d.- The IP address 10.1.2.2 belonging to the interface at R2
- e.- Next Hop ip address provided by the IGP.

11.- The figure below represents a full operation of a token bucket implementation. (20marks)



a.- What is the BW limit right (number of credits) after the second clock tick? (4marks)

b.-What will happen with the packet number 2? (4marks)

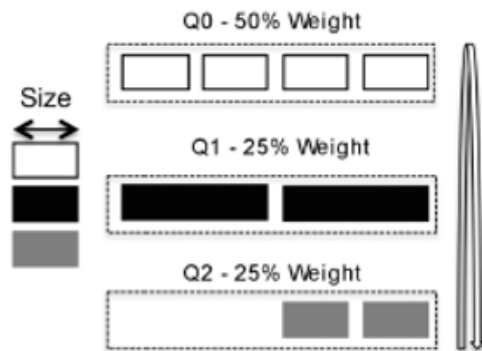
c.- What is the BW limit right after the fourth clock tick? (4marks)

d.- What will happen with the packet number 3? (4marks)

e.- What is the BW limit right after the fifth clock tick? (4marks)

12.- Please explain in detail how the Weighted Round Robin algorithm works. A graph is highly recommended (15 marks).

13.- In the figure below, what would be output if Weighted Round Robin (WRR) is the algorithm used. Draw the output. (15 marks).



14.- Regarding the graph shown below and assuming DWRR is the algorithm used. Describe the scheduling process. (20 marks).

