EPL606: Assignment 1 Routing & Quality of Service

- 1. Download from the lab website the OPNET Files taffic engineering.rar.
- 2. UNZIP the file and add it to the OPNET Modeler

Questions:

- 1. Create three new duplicate scenarios and configure them to run RIP, OSPF, EIGRP. Compare them and explain the differences among them. Your answer must be supported with the appropriate graphs and paths that will justify the implementation of the scenarios.
- 2. Duplicate all the three scenarios above and create a failure of one link of the path from each scenario. The failure should take place at 300 seconds and recover at 400 seconds. Compare all the scenarios among them. (You need to disable the simulation efficiency parameter and also make a change to the Tracer packet per interval parameter to 20, see below)

Cor	nfigure/Run DES: qos_traffic_en	ngineering-Baseline_Routing2 — 🗆 🗙
	Duration: 60 minu	te(s)
alues p	er statistic: 100	
Global	attributes Reports	
Att	ribute	Value
± t	3GP	
±.	COP	
	:IGRP	
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	3-13	
E C	NPL5	
E F		
	Simulation Efficiency	
0	LARP Sim Efficiency	Enabled
õ	- BGP Sim Efficiency Mode	Enabled
ð	- FIGRP Sim Efficiency	Enabled
ŏ	- EIGRP Stop Time (seconds)	365
ð	- IGMP Sim Efficiency	Enabled
ŏ	-IGRP Sim Efficiency	Enabled
õ	-IGRP Stop Time (seconds)	365
õ	- IPv6 ND Simulation Efficiency	Disabled
õ	-ISIS Sim Efficiency	Enabled
õ	-ISIS Stop Time (seconds)	260
õ	- LACP Simulation Efficiency	Enabled
Õ	OSPF Sim Efficiency	Disabled
0	-OSPF Stop Time (seconds)	260
0	-PIM-SM Sim Efficiency	Enabled
0	- RIP Sim Efficiency	Enabled
0	-RIP Stop Time (seconds)	65
0	-RIPng Sim Efficiency	Enabled
0	RIPng Stop Time (seconds)	65
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alue	Duration: 60 minute(s) es per statistic: 100	•
Glo	bal attributes Reports	
	Attribute	Value
	Applications	
	■ BGP	
	DHCP	
	■ EIGRP	
	■ IGRP	
	€IP	
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	MANET	
	MPLS	
	■OSPF	
	■ RIP	
	Simulation Efficiency	
	■ TCP	
_	Traffic	
0	 Background Traffic Start Delay (secor 	nds) 150
0	Hybrid Simulation Efficiency	Enabled
Q	Link Usage Report	Disabled
0	Firacer Packet Redundancy	Enabled
Ő	 Tracer Packets Per Interval (packets) Terffie Section Feeting 	20
0	Tartic Scaling Factor	I.U Deckersund Tarffin
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- Duplicate the OSPF scenario (from q1) and force your traffic to traverse from Sender Router to Router 3 and Receive Router. Attach a screenshot with the path and describe how you have done it.
- 4. Create a duplicate scenario from Baseline_Qos scenario, configure it with OSPF routing algorithm and add the following applications and profiles to the network.

Applications Http: heavy browsing, Page interarrival time 30 seconds

FTP: High load please see the picture below

🚺 (Ftp) Table

Attribute	Value	۸
Command Mix (Get/Total)	50%	
Inter-Request Time (seconds)	exponential (45)	
File Size (bytes)	constant (500000)	
Symbolic Server Name	FTP Server	
Type of Service	Best Effort (0)	
RSVP Parameters	None	
Back-End Custom Application	Not Used	
		-

Voice: PCM Quality Speech

Profile: VOIP Sender 1 – Receiver 1 Sender 2 – Receiver 2 Sender 3 – Receiver 3

All users use the same.

- 5. Run the above scenario and present the paths and the applications response times using graphs.
- Duplicate the above scenario and configure with quality of service mechanisms to provide better service to your users. You are not allowed to change the data rate of the links.
- 7. Duplicate the scenario above (q4) and make changes to your links so your network is running with utilization 60% on all links.
- 8. Duplicate the scenario from question 4 and configure it to run RSVP routing algorithm.
- 9. Write your conclusions.