Report Presentation on NS2

Course No. : CSE 322

Submitted By:

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Tasks

i) According to the given formula (Std_ID%8) in or group, having the lower ID 1505041, we got to simulate the following network topologies:

1. 802.11
2. 802.15.4

ii) Parameters that were under variation are given below

1. The number of nodes which are varied as 20, 40, 60, 80, 100.
2. Number of nodes that are varied as 10, 20, 30, 40, 50.
3. Number of packets per second which are 100, 200, 300, 400, 500.
   Coverage area (square coverage are varying one side as Tx_range, 2 x Tx_range, 3 x Tx_range, 4 x Tx_range, and 5 x Tx_range).

   Here Tx_range = 100 meters.

iii) Modifications that have been made in the simulator are given in the following log table:

Filename	Location	Line no	Change
dsdv.cc	ns-2.35/dsdv/dsdv.cc	459	Commented out (459-461)
		533	Removed sqnum from condition
		669	Removed if-else
		---	Removed all seqnum
wireless-phy.cc	ns-2.35/mac/wireless-phy.cc	114-115	Pt_consume_= 0.960; //0.660 Pr_consume_ = 0.695; //0.395
omni-antenna.cc	ns-2.35/mobile/omni-antenna.cc	51-52	Gt_ = 2.0; //1.0 Gr_ = 2.0; //1.0
queue.h	ns-2.35/queue/queue.h	84-87	Commented out
Tcp-vegas.cc	ns-2.35/tcp/tcp-vegas.cc	130	Slow start = 3 //2
		182-184	Values doubled

		197	Ssthresh changed
		239	Delta changed
		269	1/cwnd → 1/(2*cwnd)
		325-331	Values changed
Ns-default.tcl	ns-2.35/tcl/lib/ns-default.tcl	55	tcl_precision 19 //17
		70	radius_scaling_factor_3.0 duration_scaling_factor_3.0e3
		75	Changed recalculate time
		76	min_bin_width_3e-18
		686	SlotTime_ 0.000040 SIFS_ 0.000020 //doubled
		692	ShortRetryLimit_ 15 LongRetryLimit_ 7
		698	BeaconInterval_ 0.2
		1086	Agent/TCP/Vegas set v_alpha_ 3 //1 Agent/TCP/Vegas set v_beta_ 5 //3 Agent/TCP/Vegas set v_gamma_ 3 //1
tcp.cc	ns-2.35/tcp/tcp.cc	426	cwnd_ = 3.0 //1.0
		495	hstcp_. low_p = 3.5/(low_window_*low_window_); //1.5
		557	timeout = 3.0 * tcp_tick //2.0
		813	curseq_ += delta/2 //delta
		1030	int round = int(cwnd / (double(max_ssthresh) /3.0)); //2.0
		1088	answer = 1 / (2*cwnd_);
		1330	ssthresh_ =3;
		1867	cwnd_ = 3;
		2017	ssthresh_ = 3;

iv) Results with corresponding graphs are shown below.

1. Varying the coverage area, we get these performances from the default and modified version of 802.11

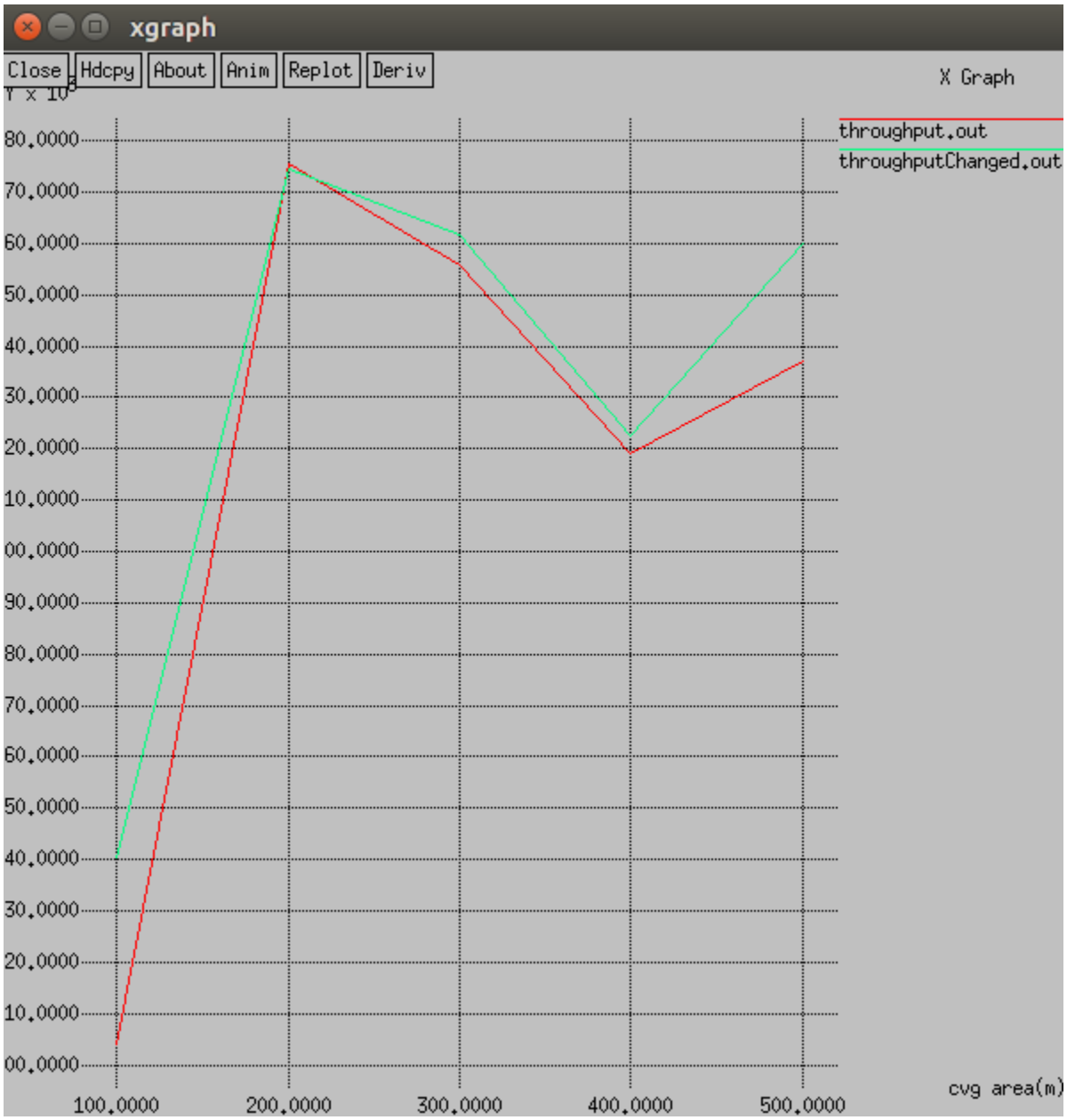


Fig: Throughput (default vs. modified)

Fig: Energy consumed (default vs. modified)

Fig: dropRatio (default vs. modified)

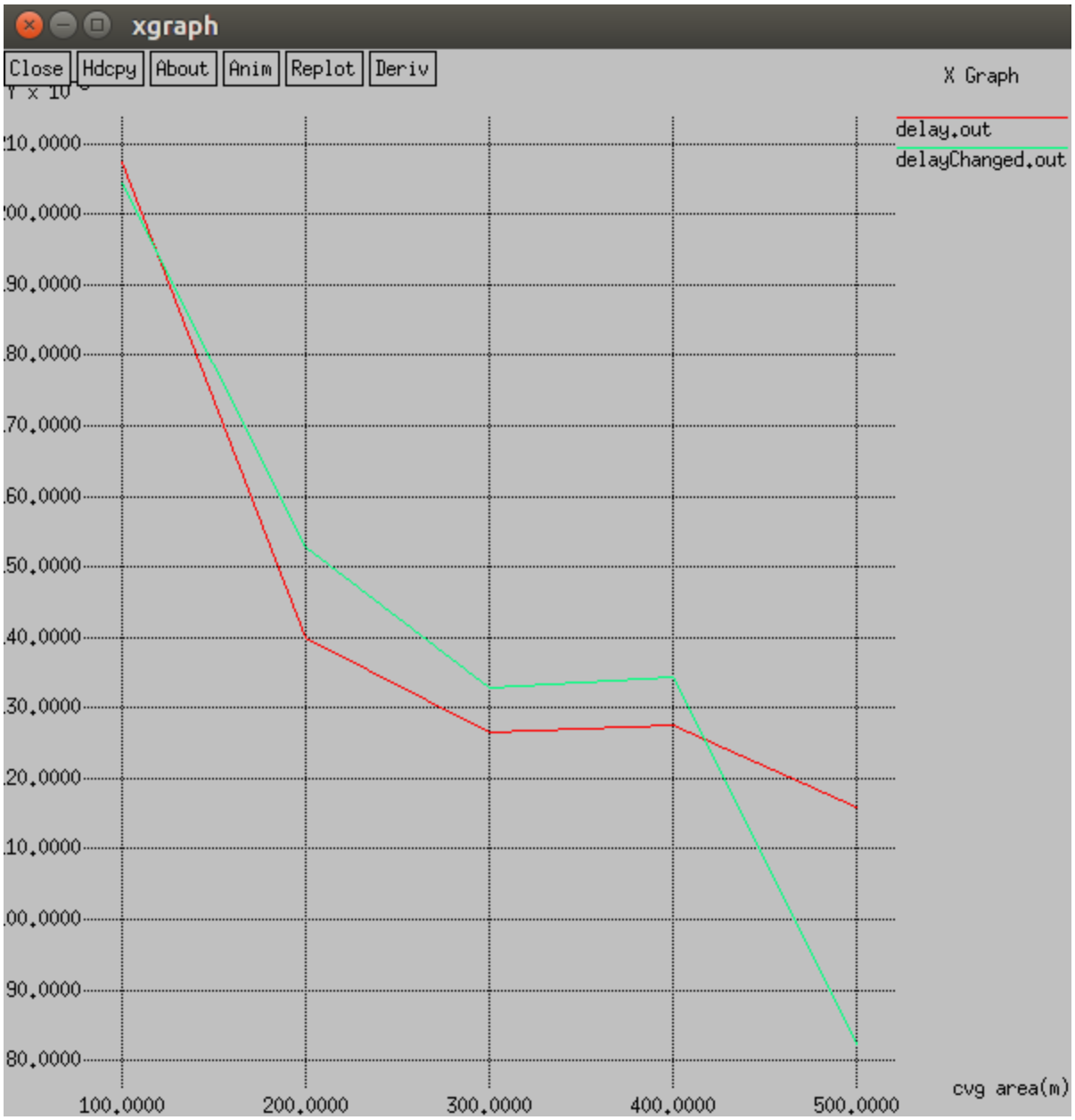


Fig: delay (default vs. modified)

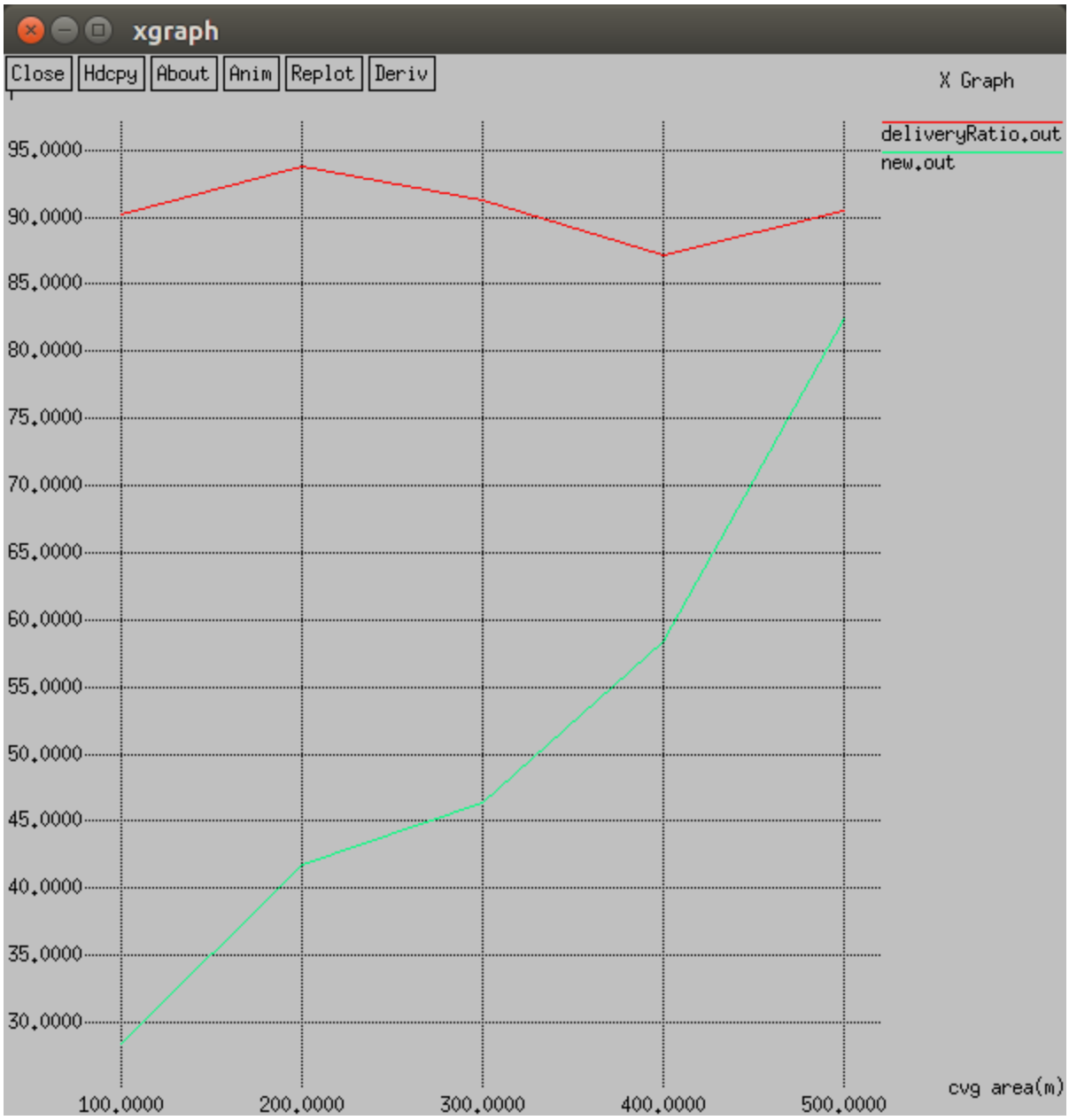


Fig: deliveryRatio (default vs. modified)

2. Varying the number of flows, we get this performances from the default and modified version of 802.11

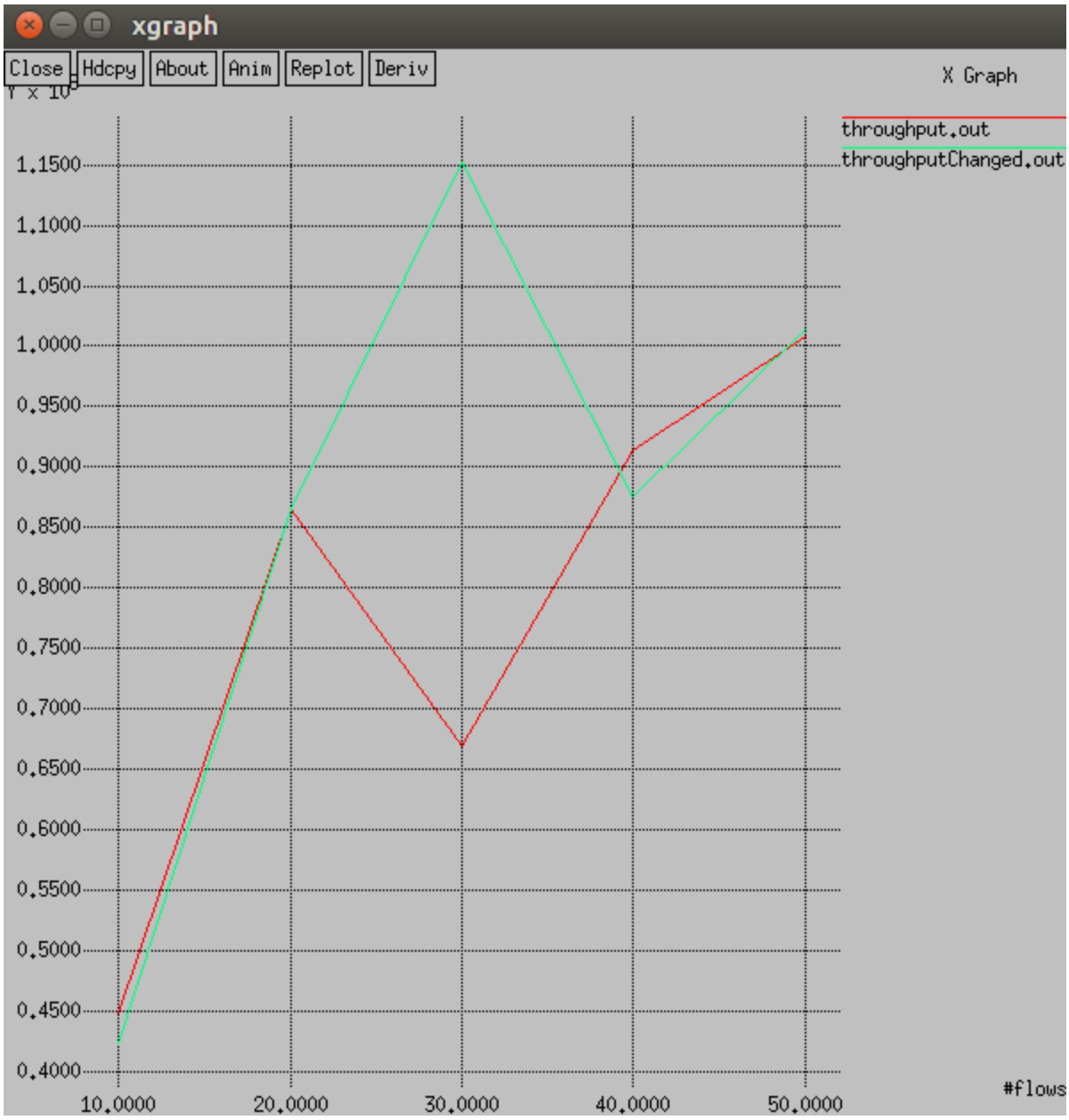


Fig: throughput (default vs. modified)

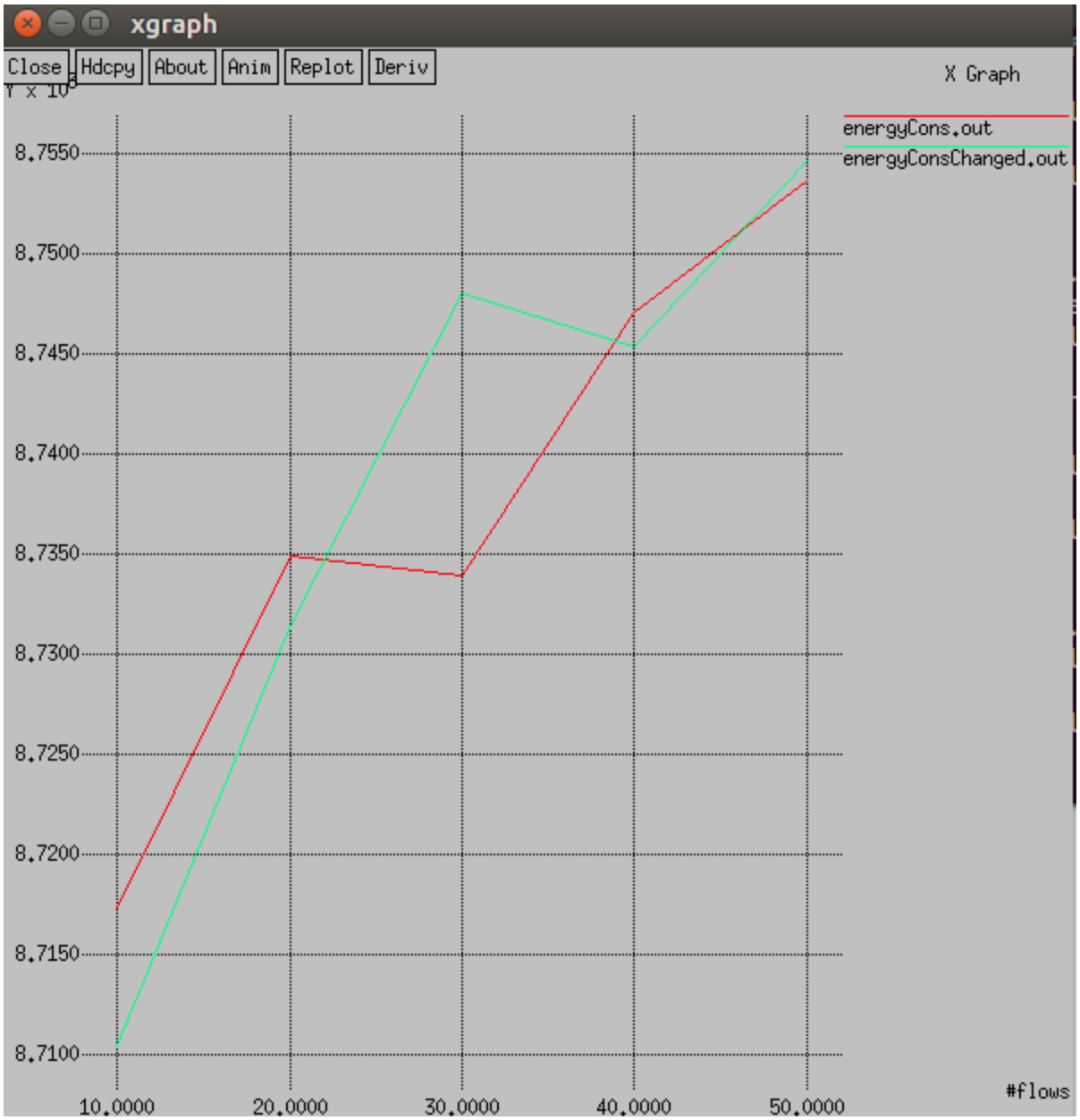


Fig: energy consumed (default vs. modified)

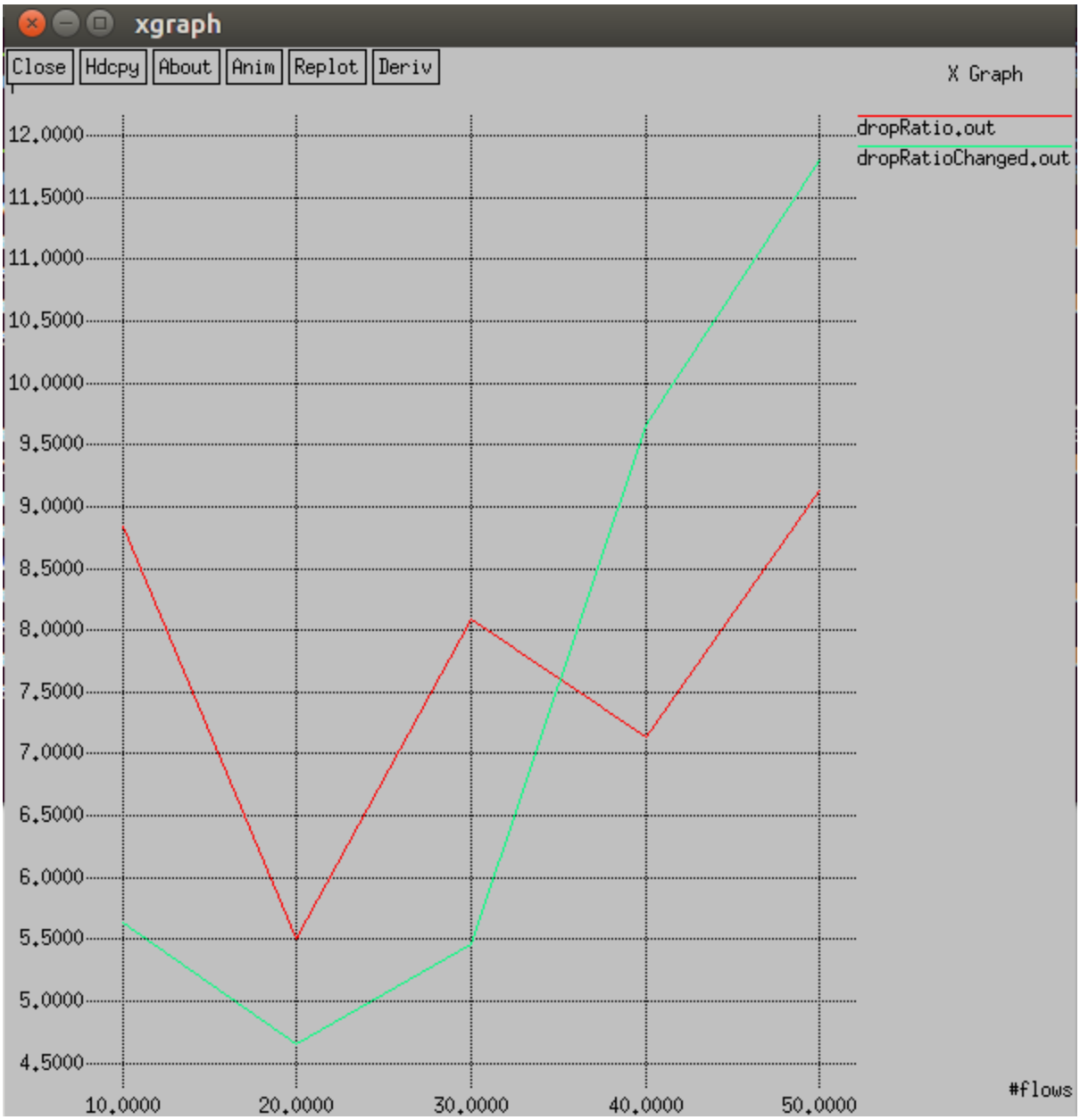


Fig: dropRatio (default vs. modified)

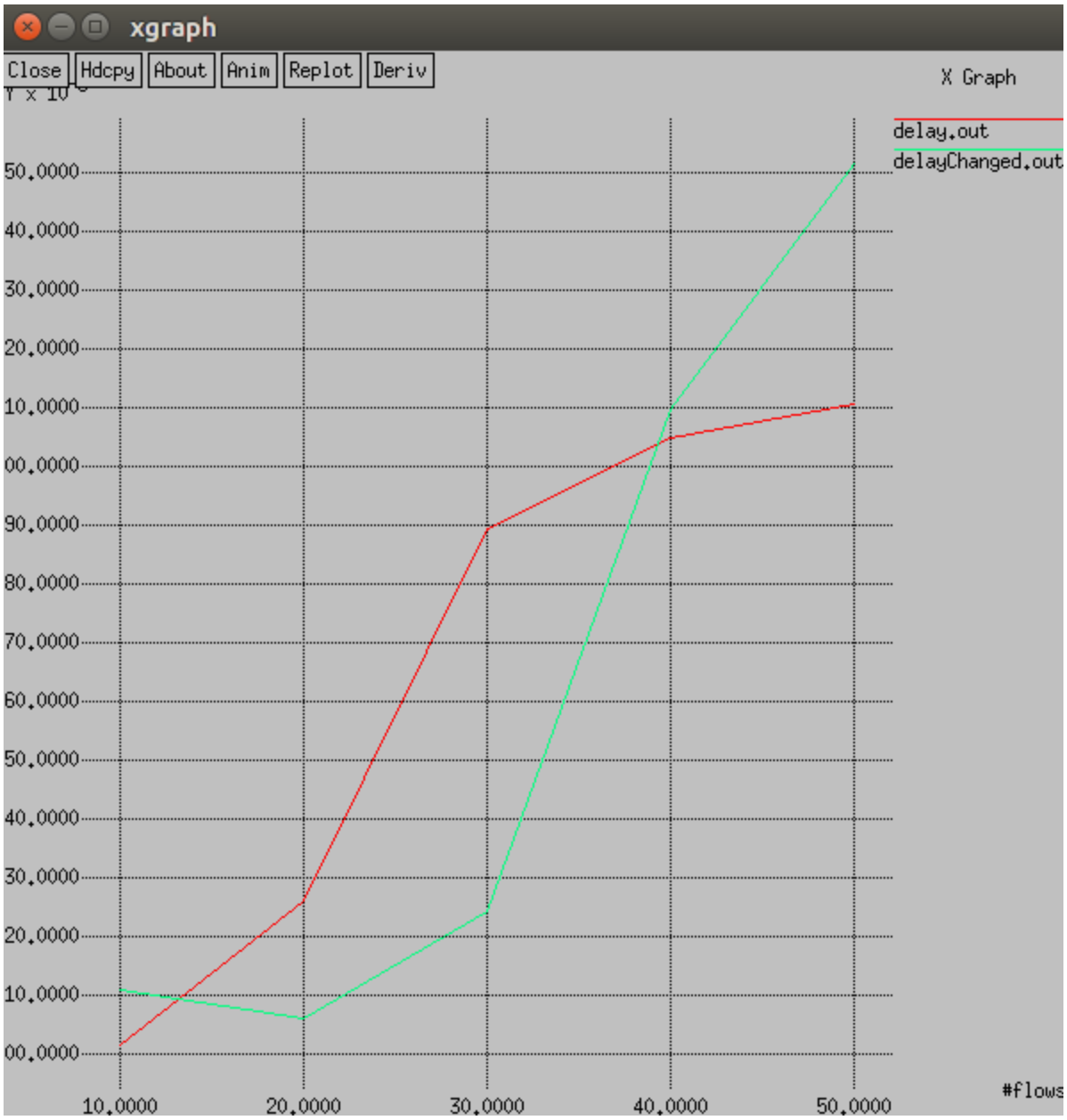


Fig: delay (default vs. modified)

Fig: deliveryRatio (default vs. modified)

3. Varying the number of nodes, we get these performances from the default and modified version of 802.11

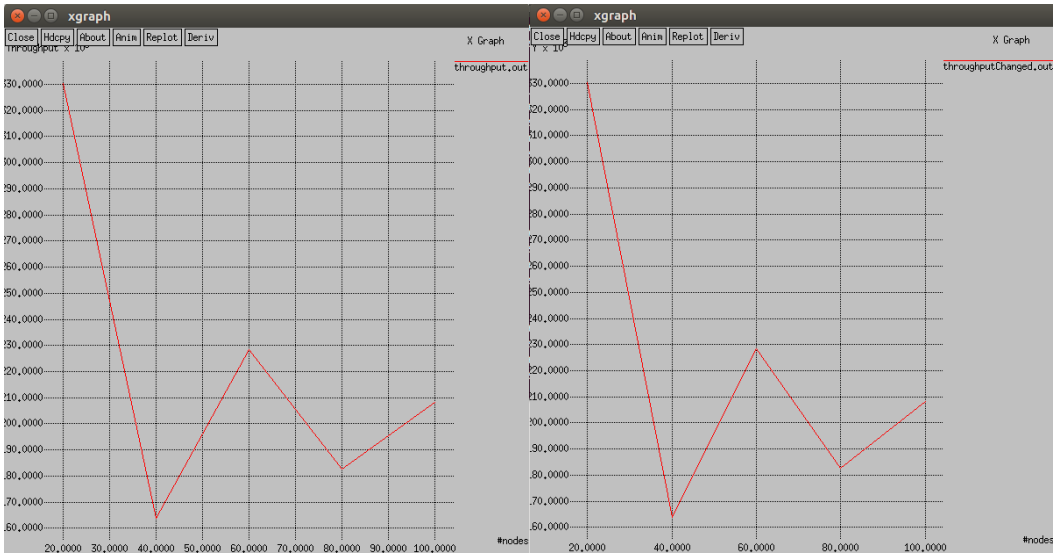


Fig: throughput (default vs. modified)

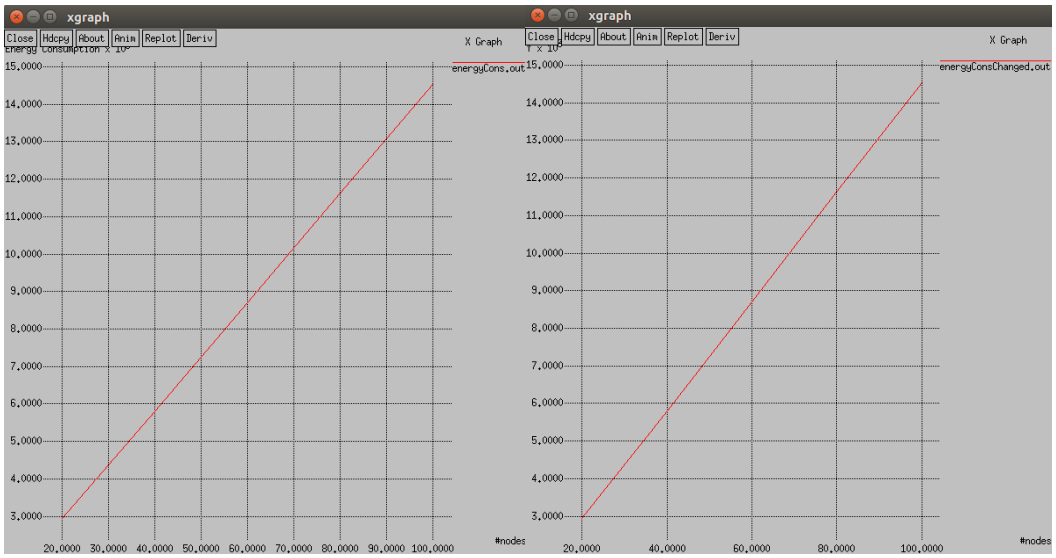


Fig: energy consumed (default vs. modified)

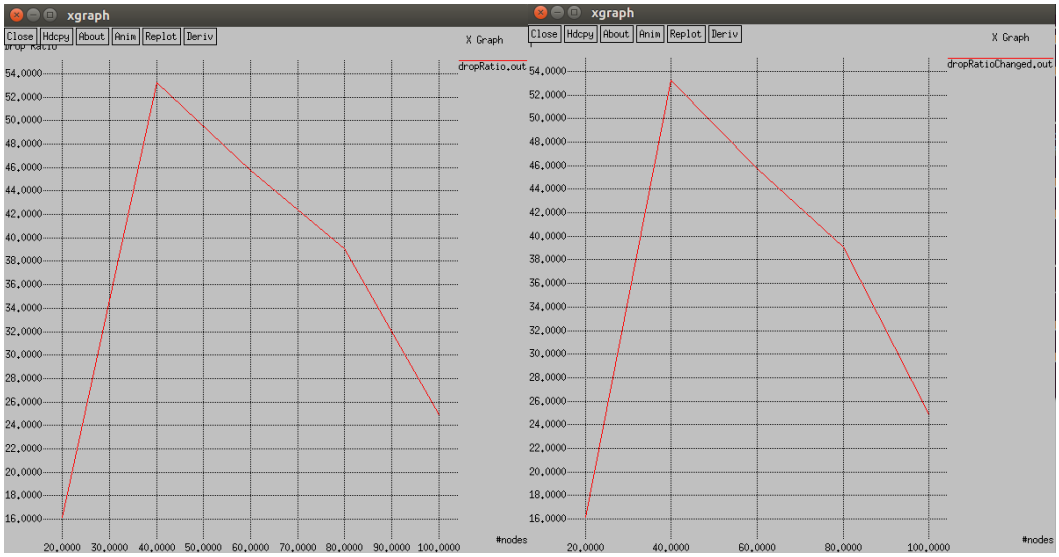


Fig: dropRatio (changed vs. modified)

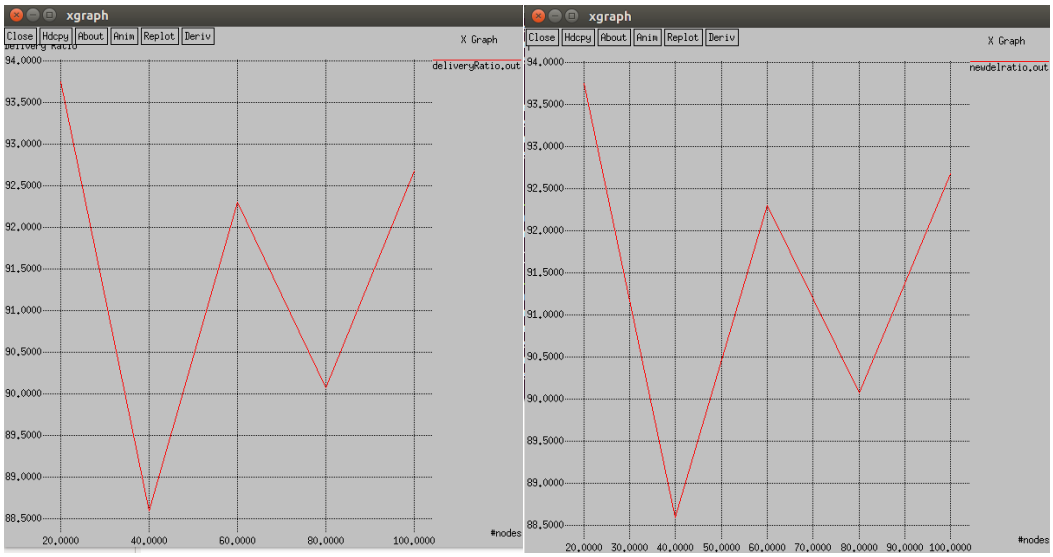


Fig: deliveryRatio (default vs. modified)

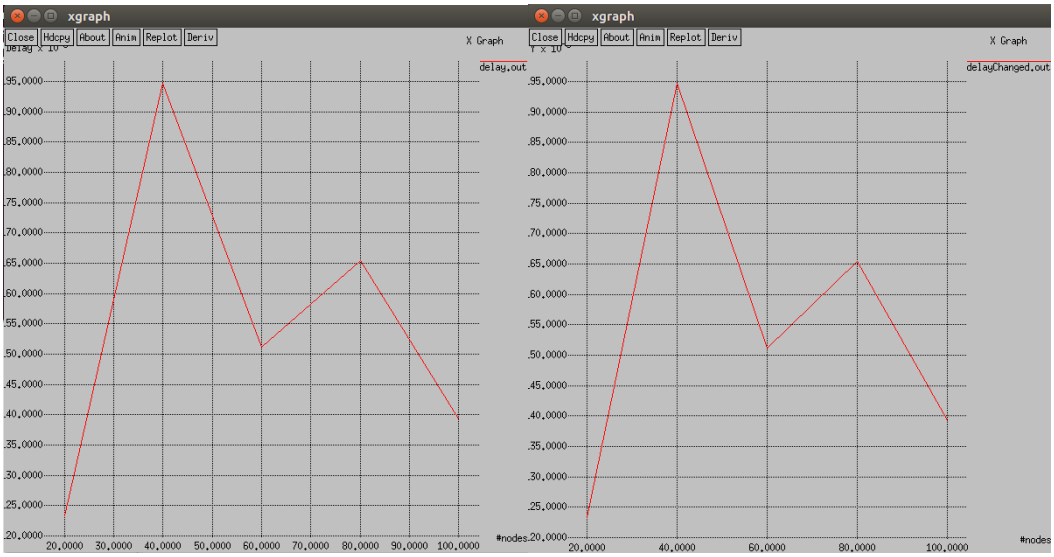


Fig: delay (default vs. modified)

4. Varying the packet rate we get these performances from the default and modified version of 802.11

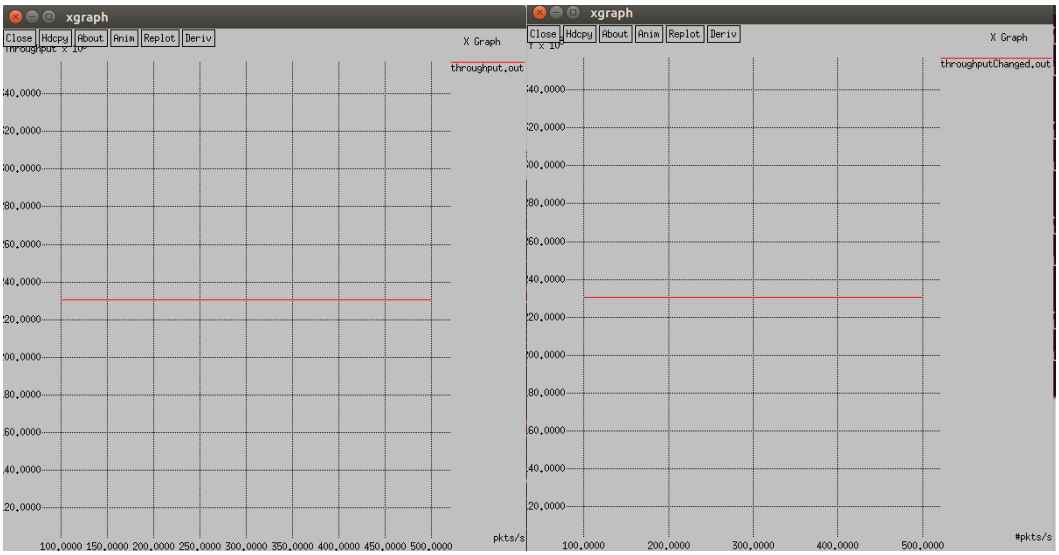


Fig: throughput (default vs. modified)

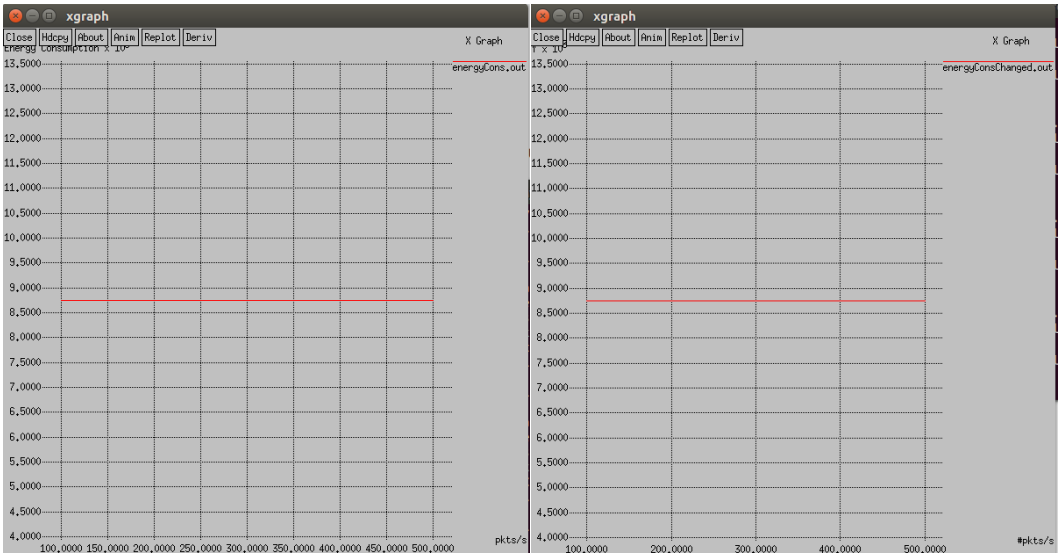


Fig: energy consumed (default vs. modified)

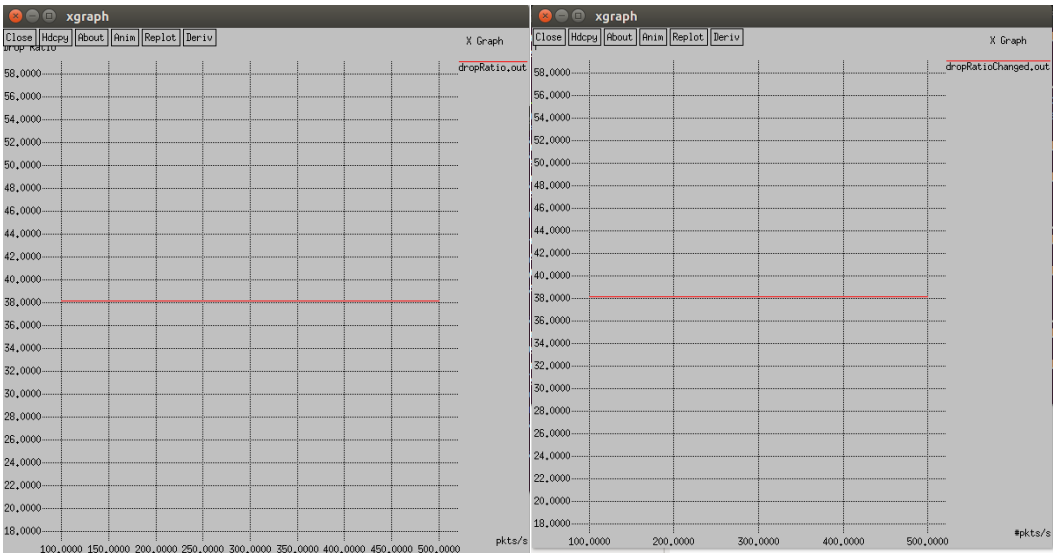


Fig: dropRatio (default vs. modified)

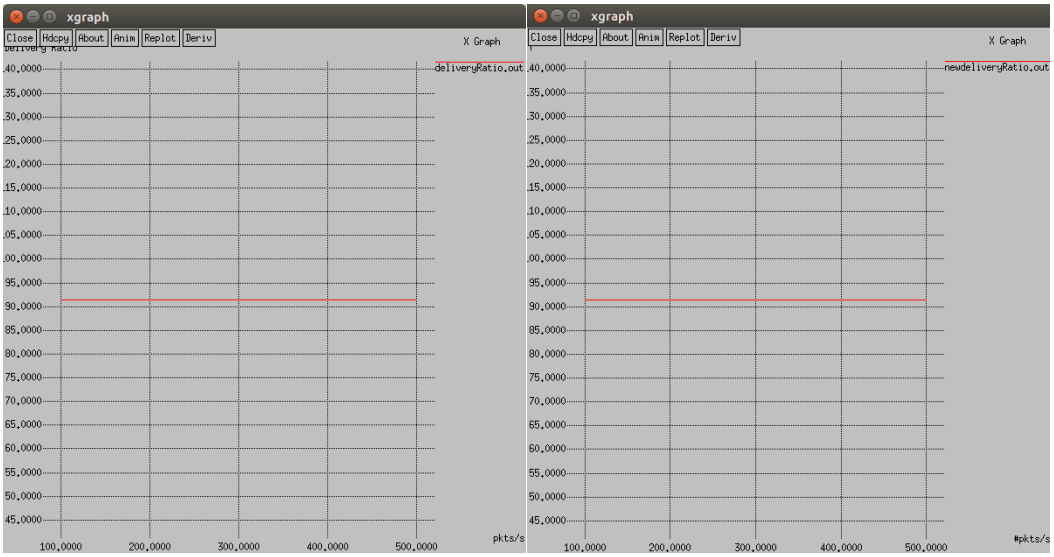


Fig: deliveryRatio (default vs. modified)

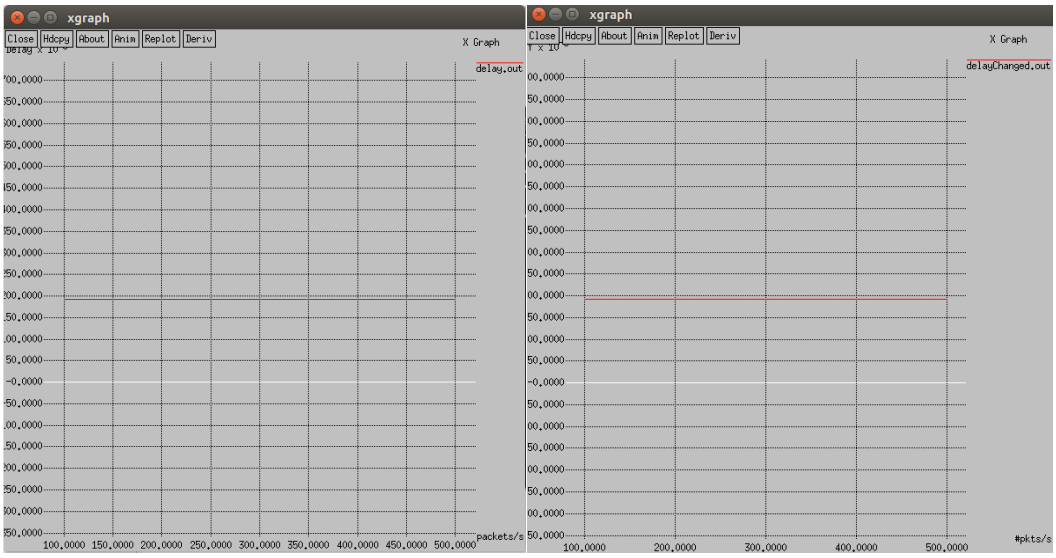


Fig: delay (default vs. modified)

5. Varying the coverage area, we get these performances from the default and modified version of 802.15.4

Fig: delay vs cvg area

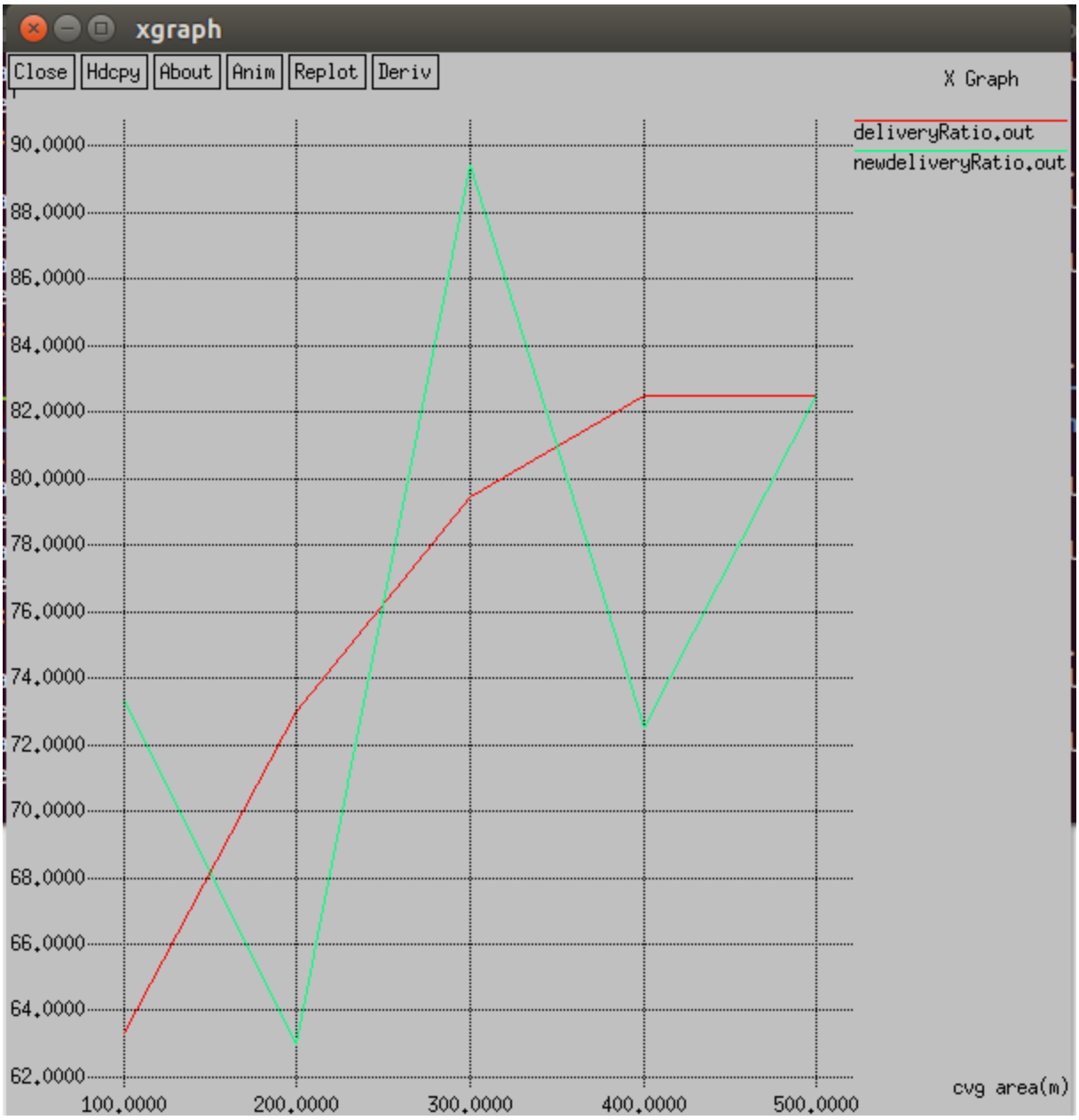


Fig: deliveryRatio vs cvg area

Fig: drop ratio vs cvg area

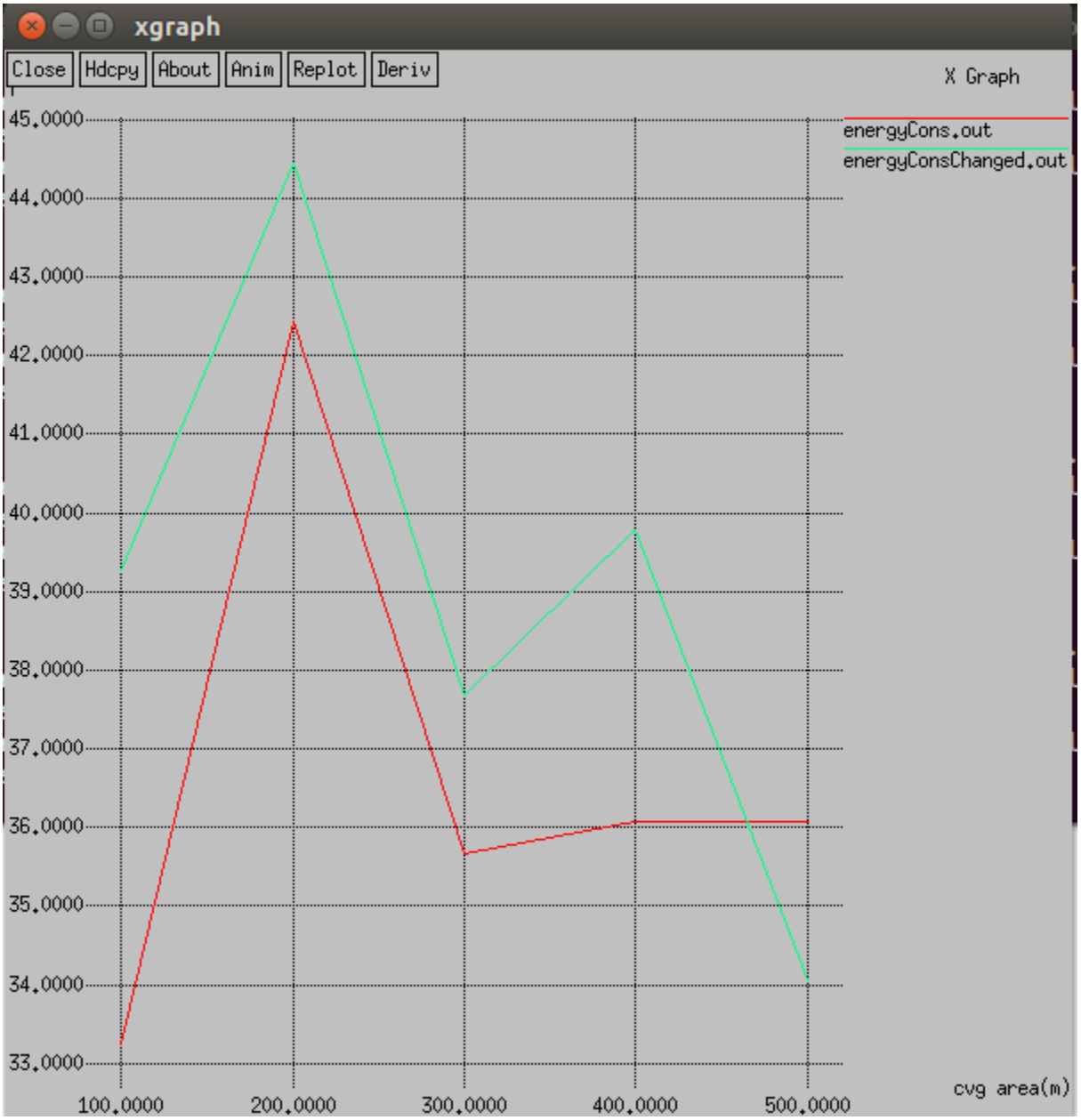


Fig: energy consumption vs cvg area

Fig: throughput vs cvg area

6. Varying the num of flows, we get these performances from the default and modified version of 802.15.4

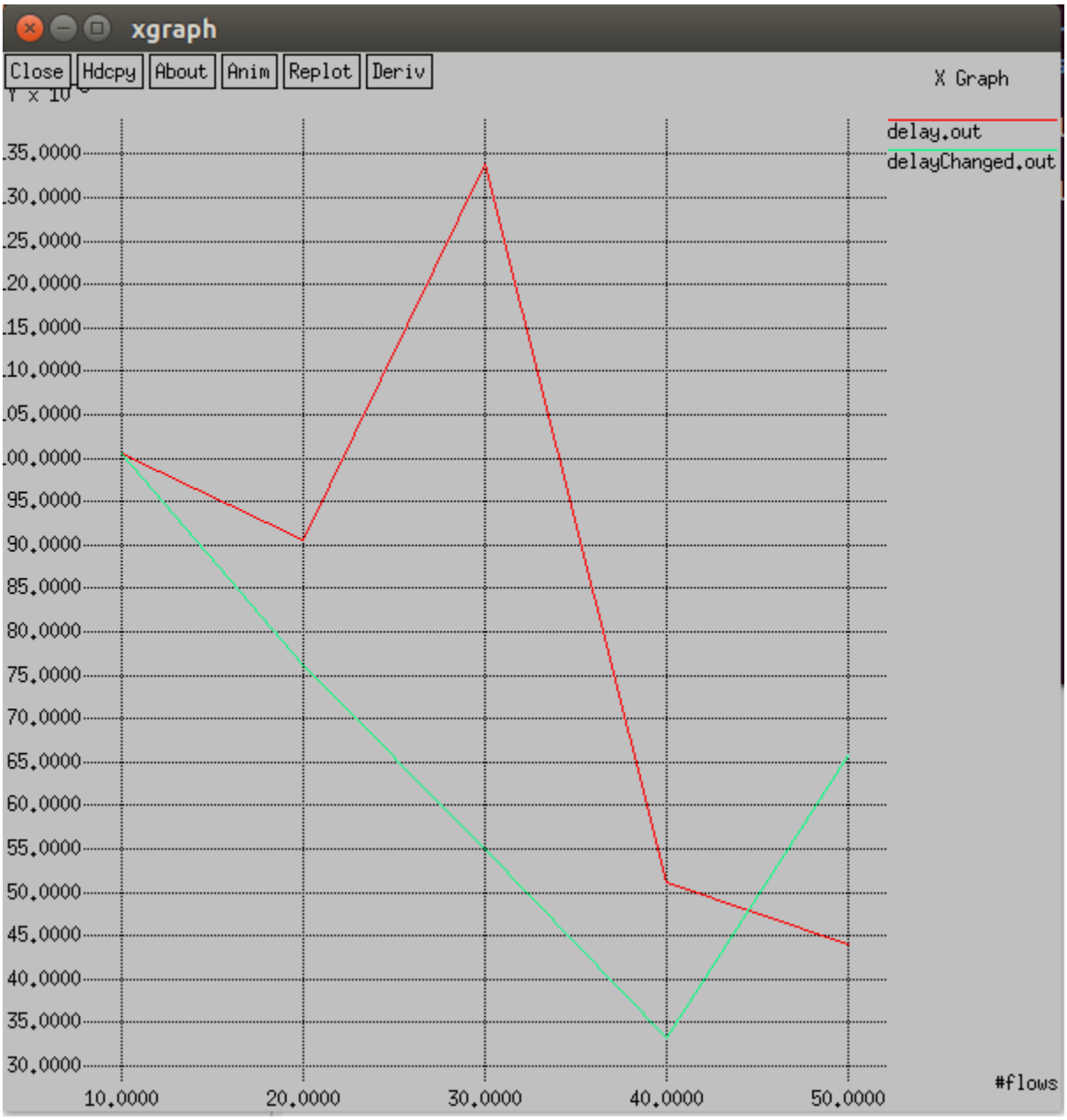


Fig: delay vs flows

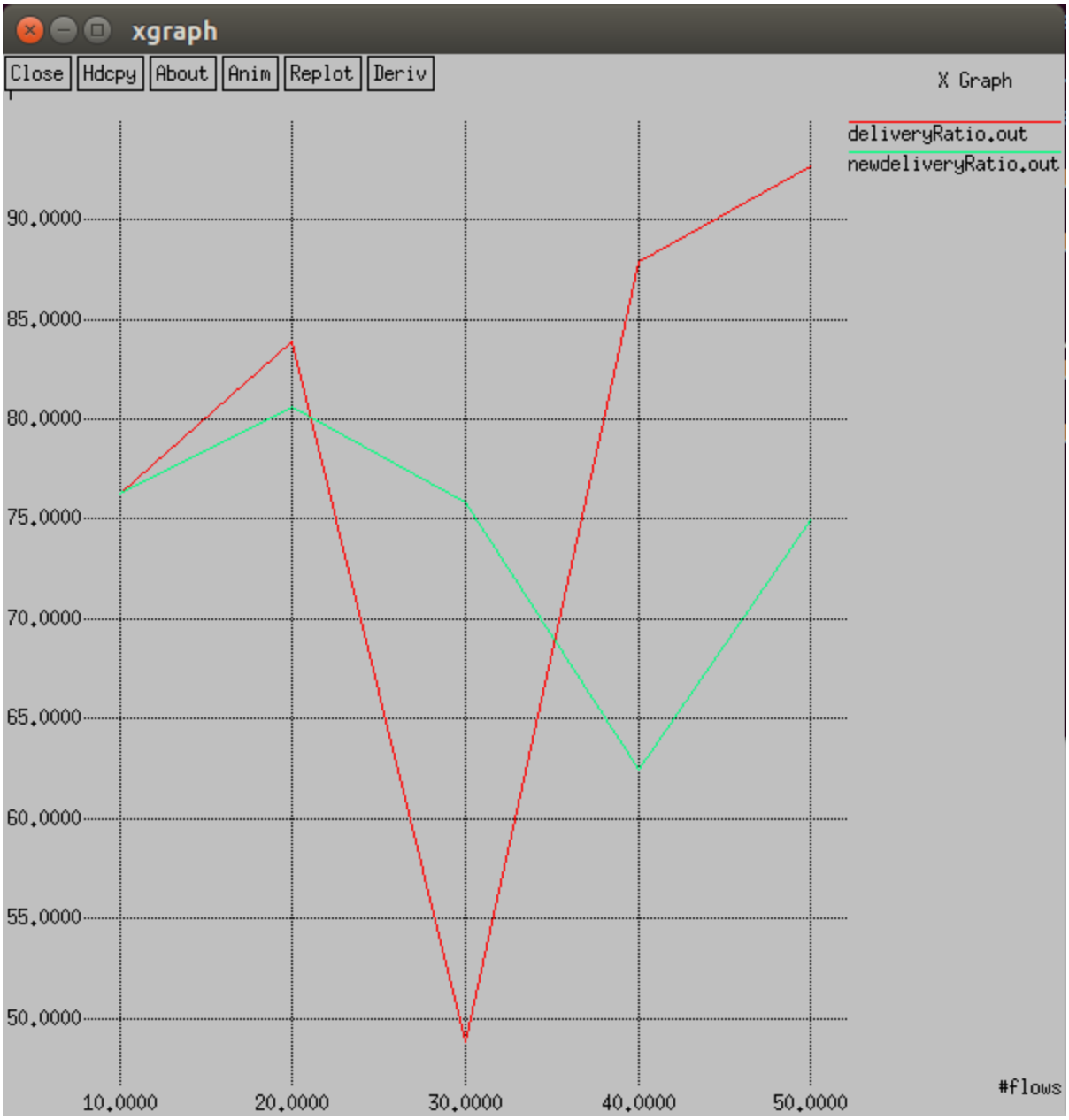


Fig:delivery ratio vs flows

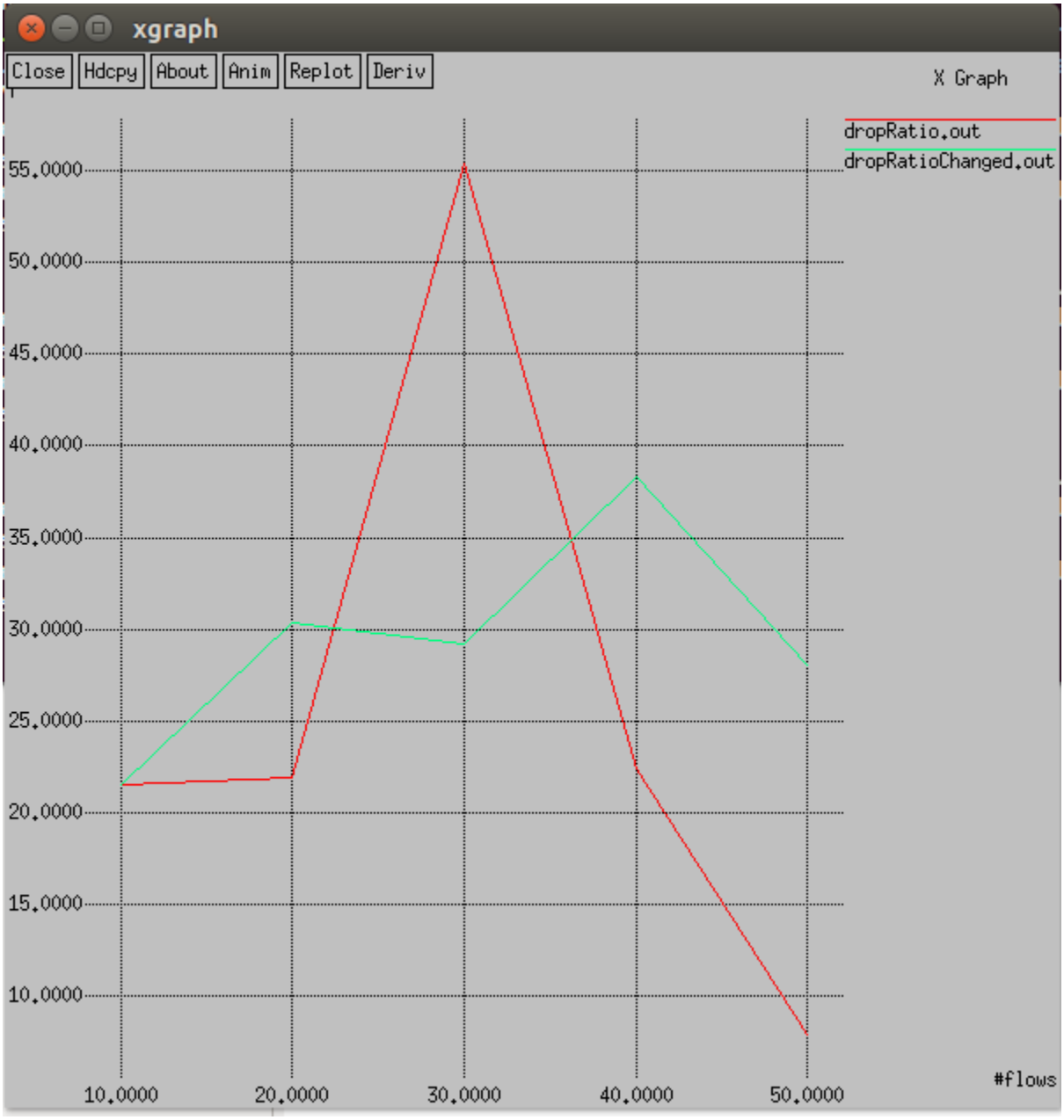


Fig :drop ratio vs flows

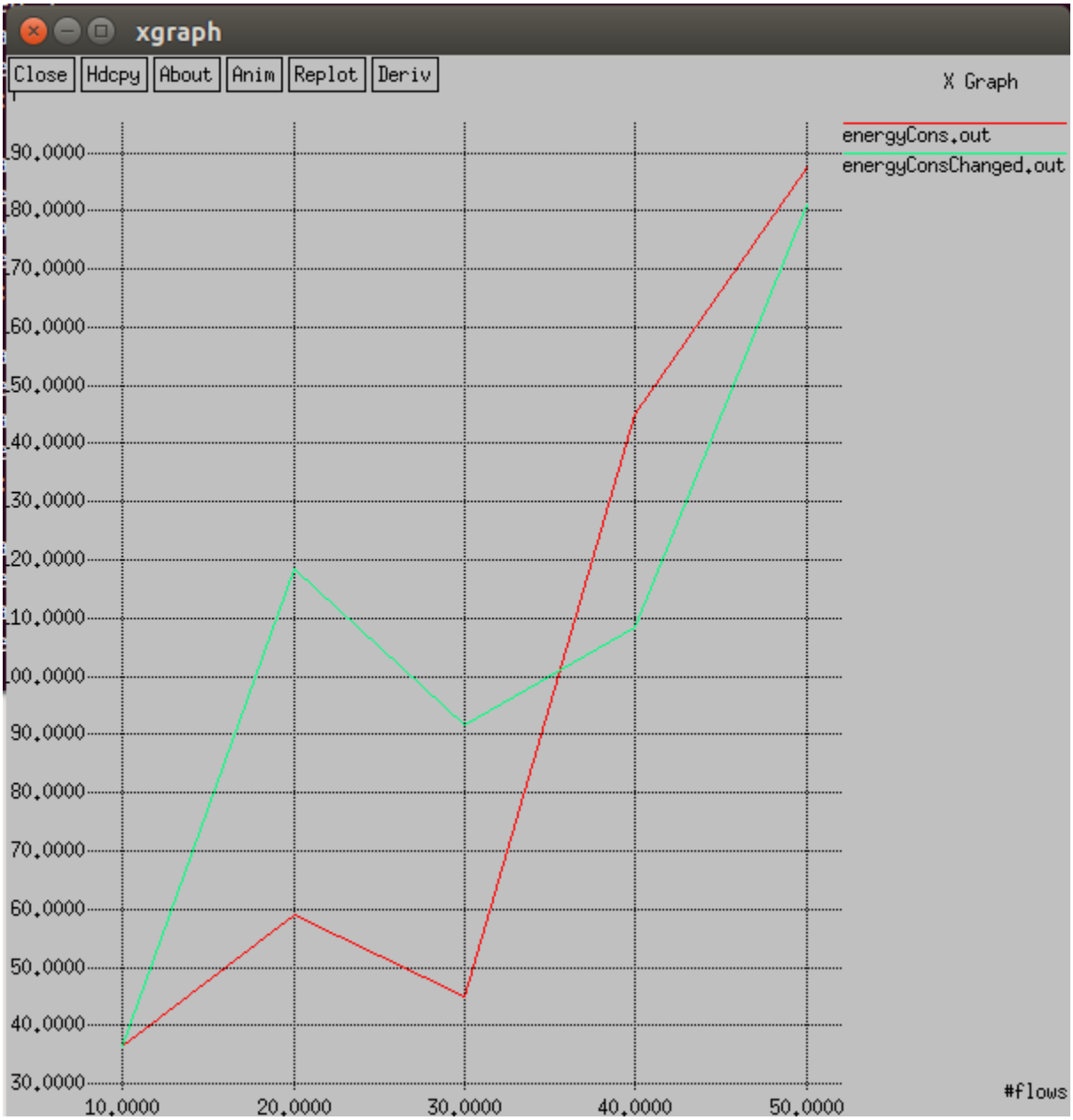
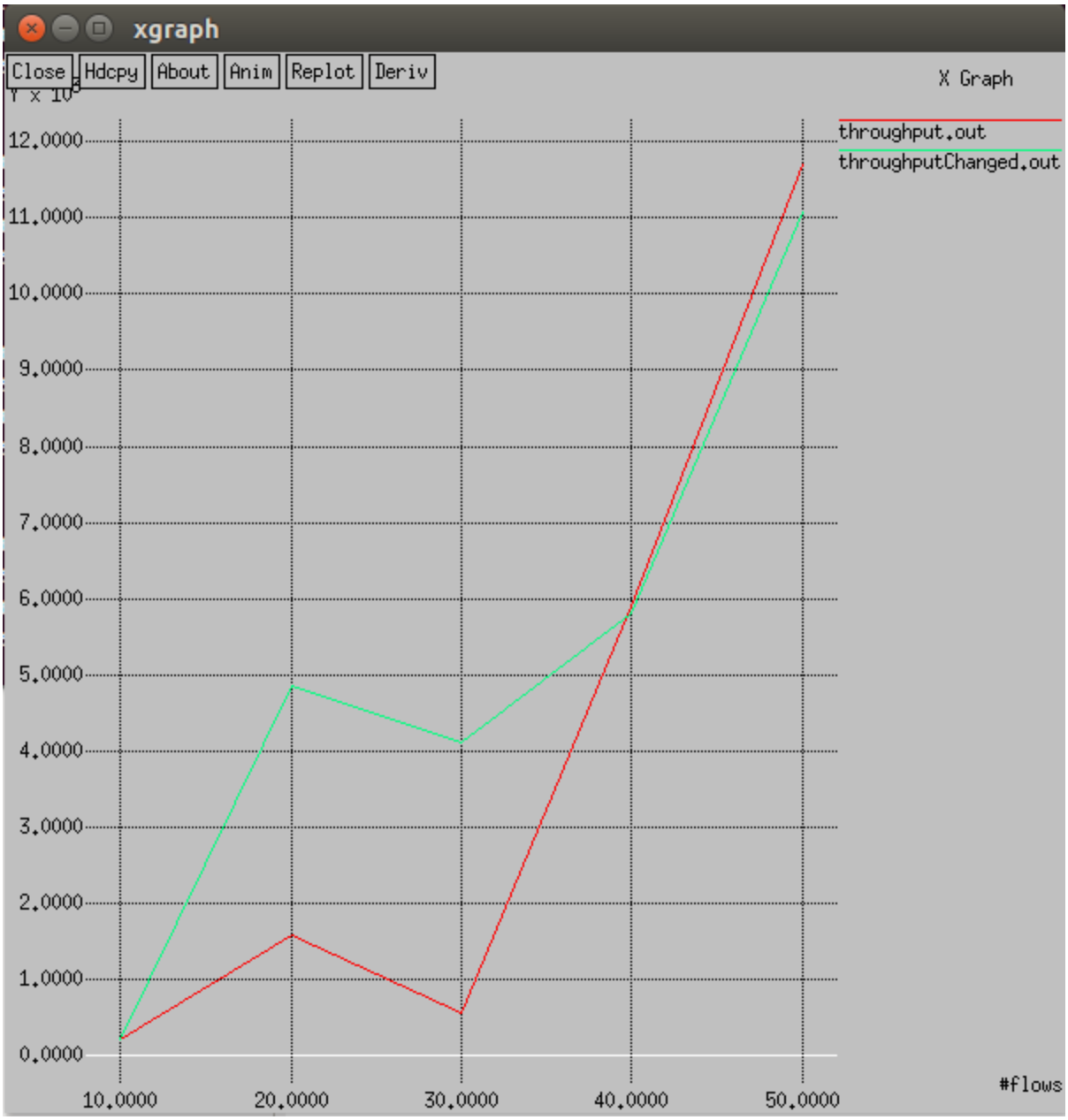


Fig: energy consumption vs flows



Fig;throughput vs flows

7 Varying the num of nodes, we get these performances from the default and modified version of 802.15.4

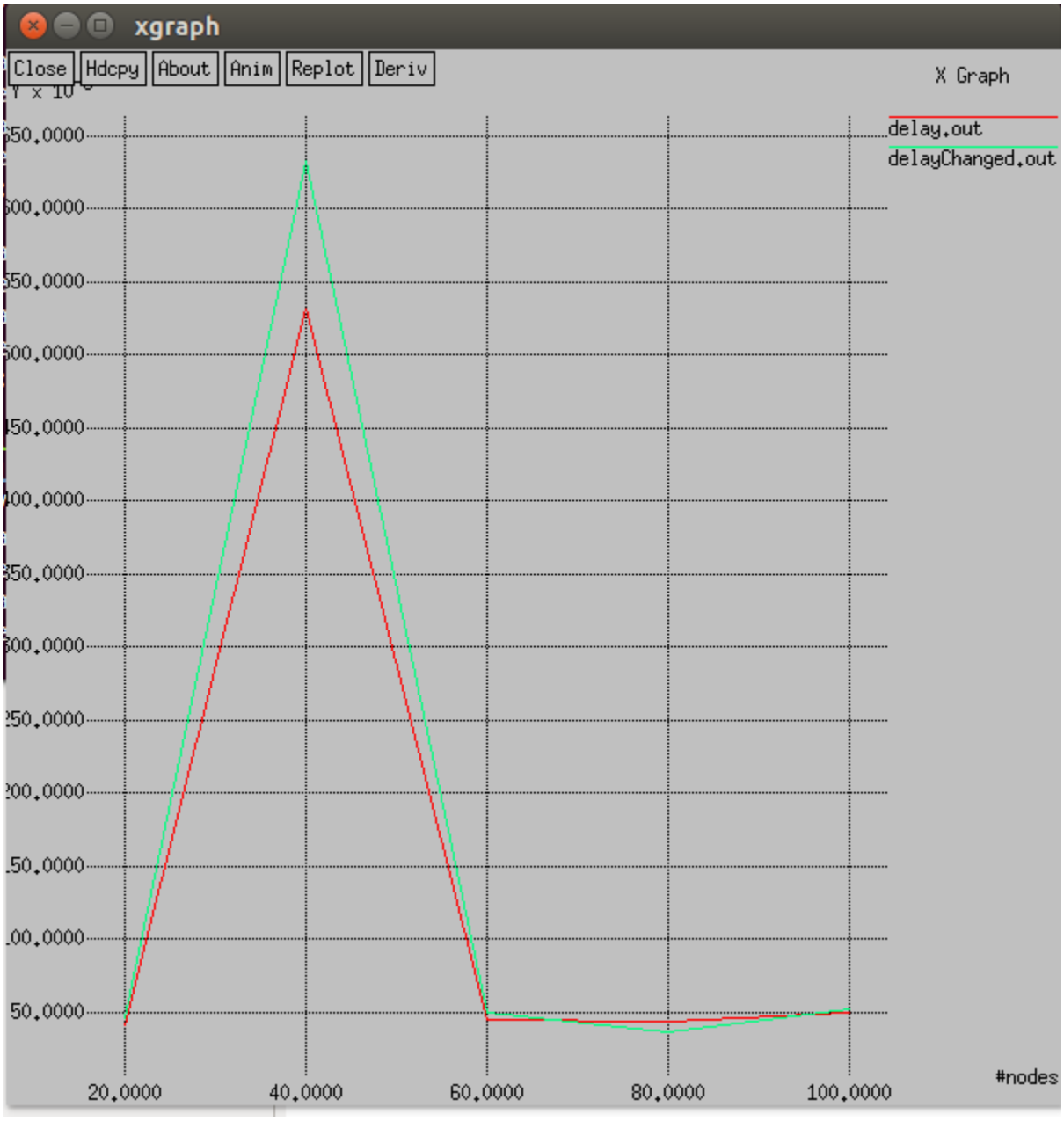


Fig: Delay vs nodes

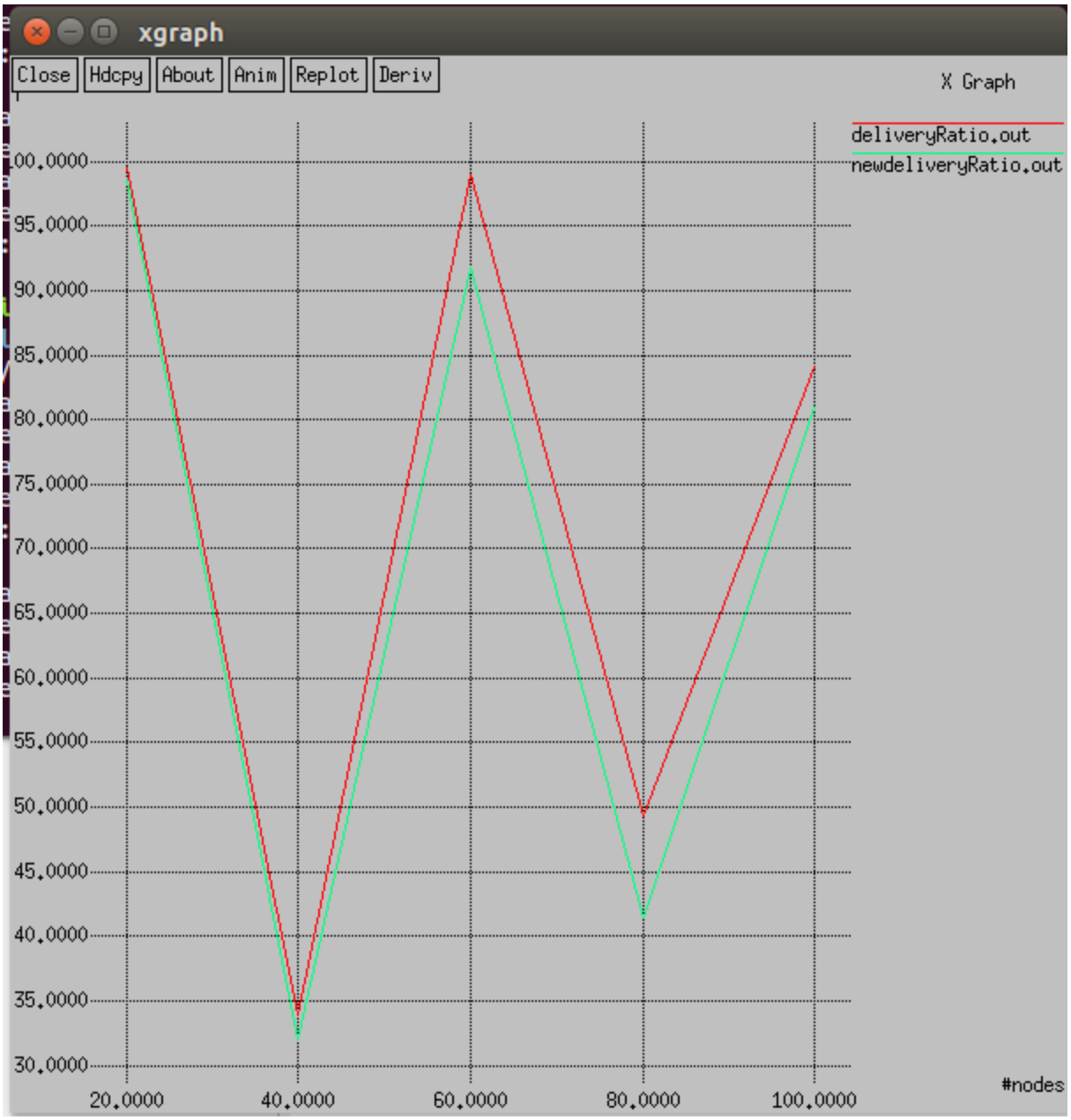


Fig: DeliveryRatio vs nodes

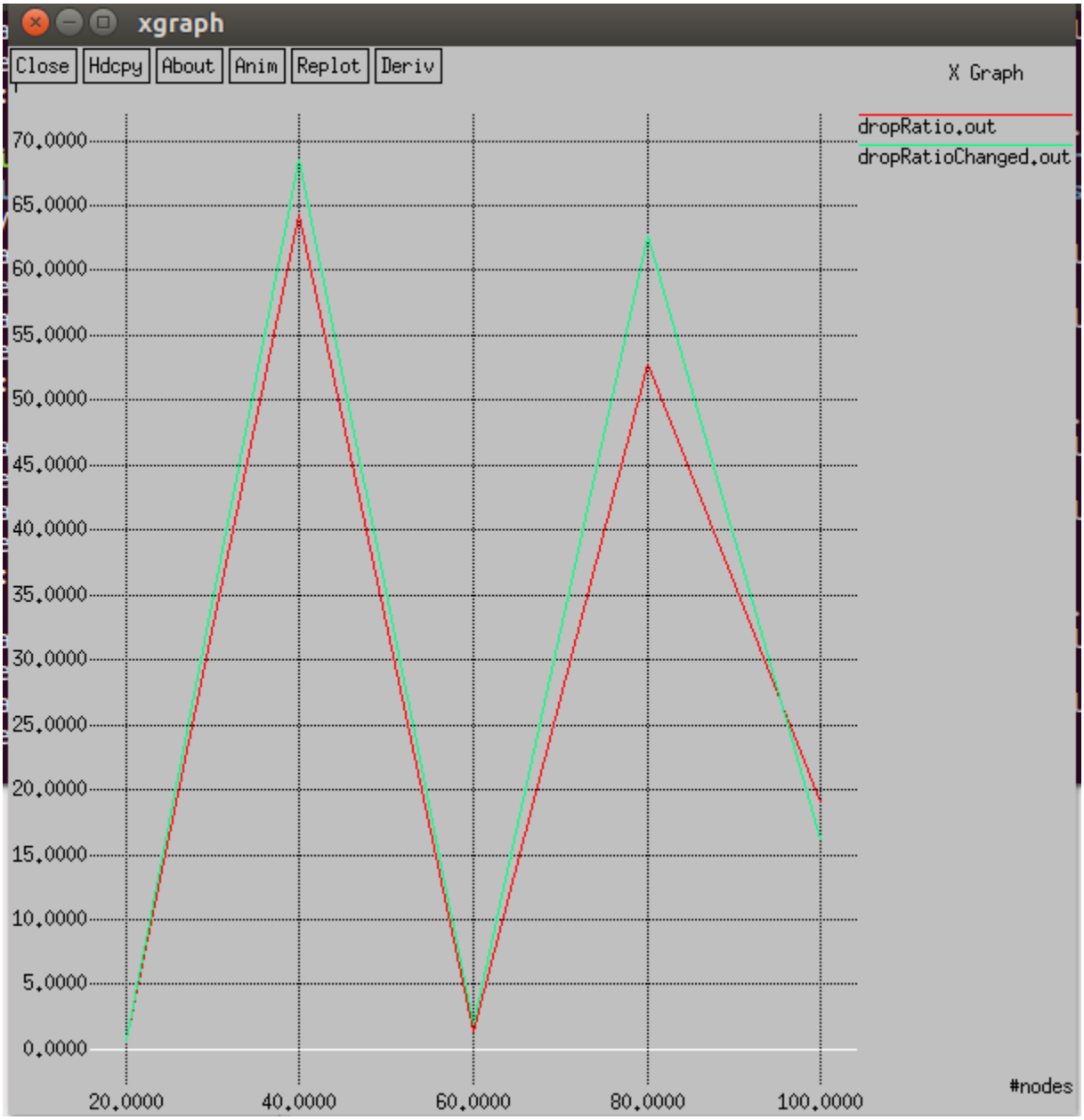


Fig: DropRatio vs nodes

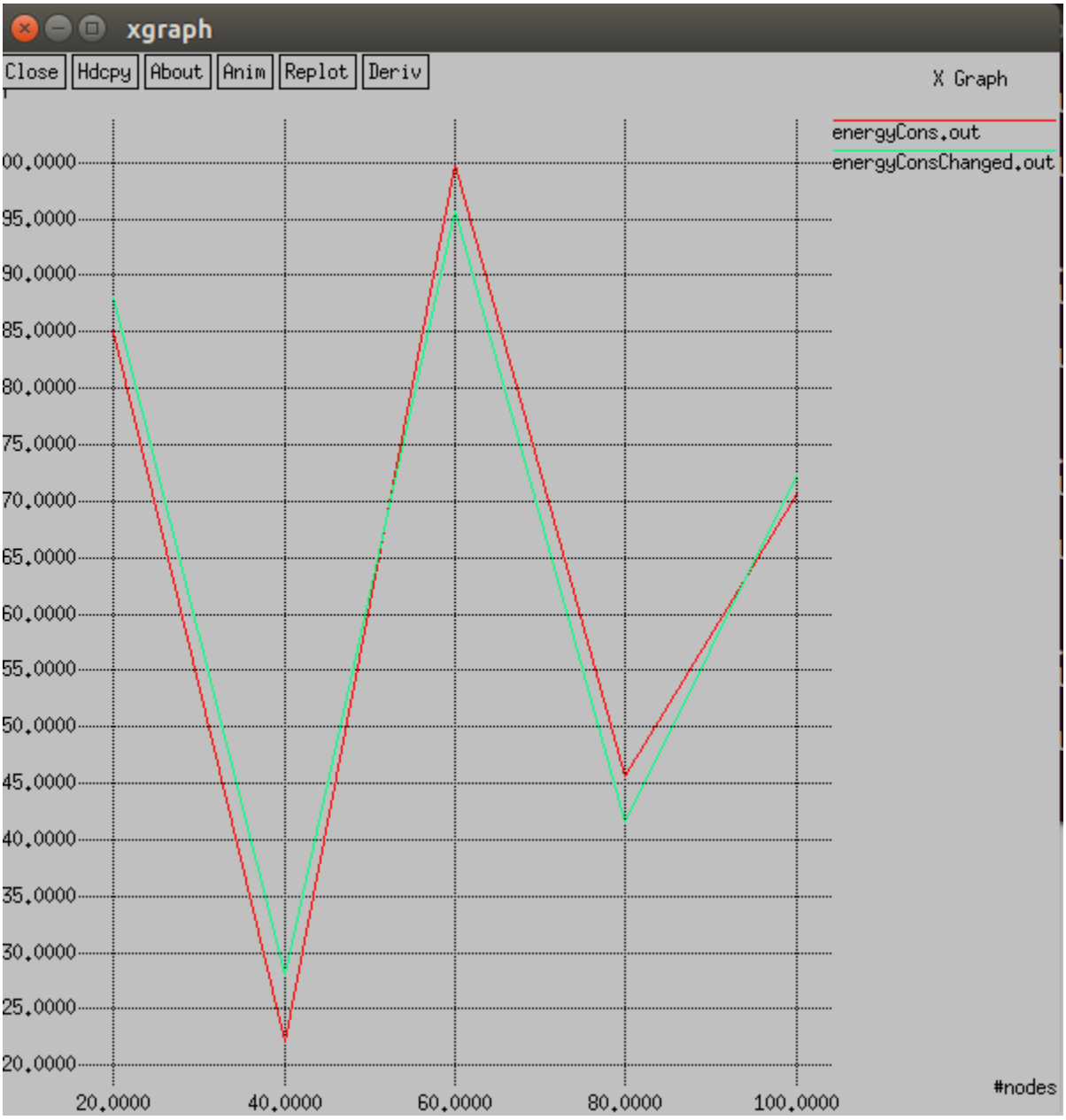


Fig: Energy Consumption vs nodes

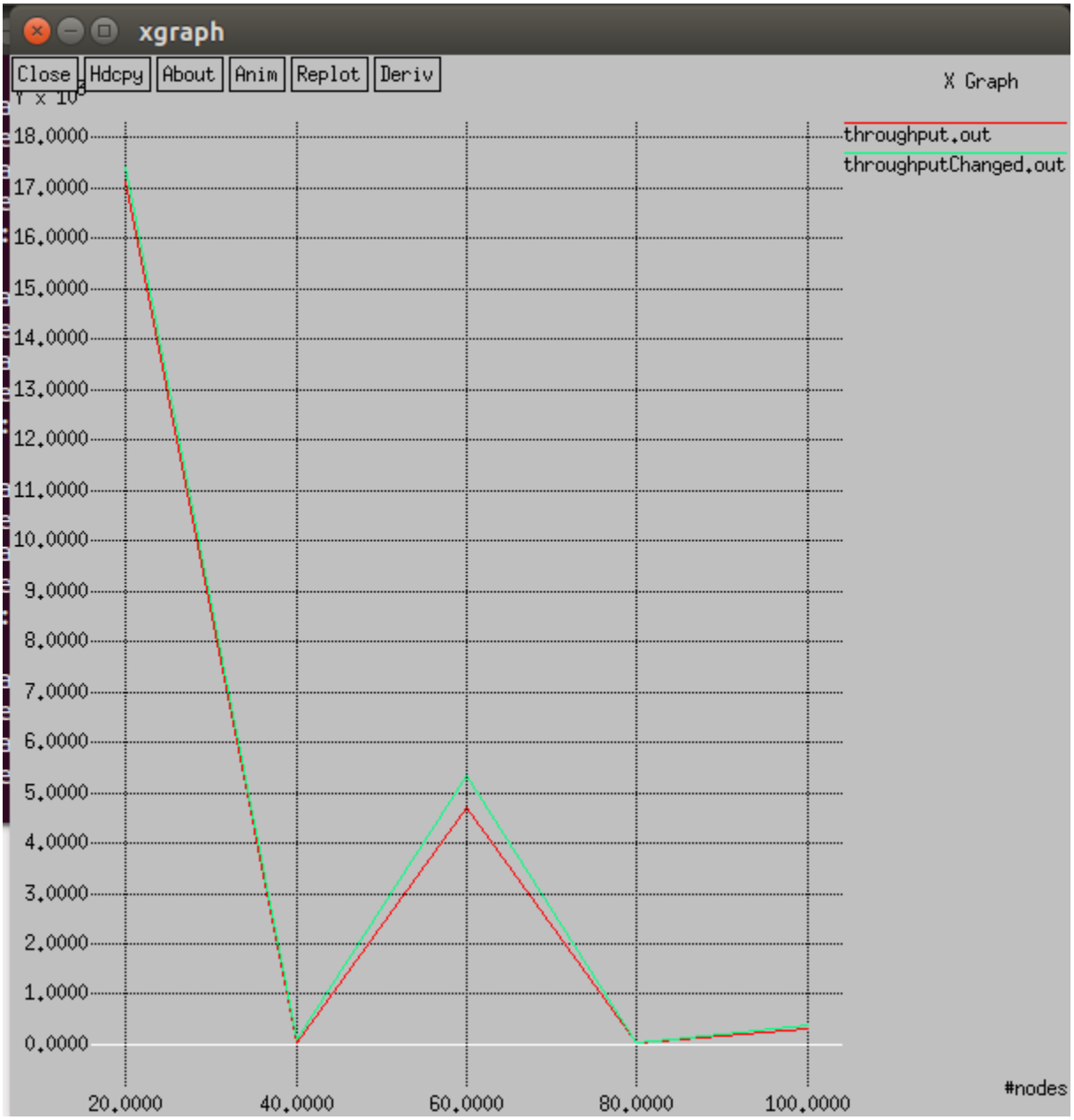


Fig: Throughput vs nodes

8 Varying the num of pkts/s, we get these performances from the default and modified version of 802.15.4

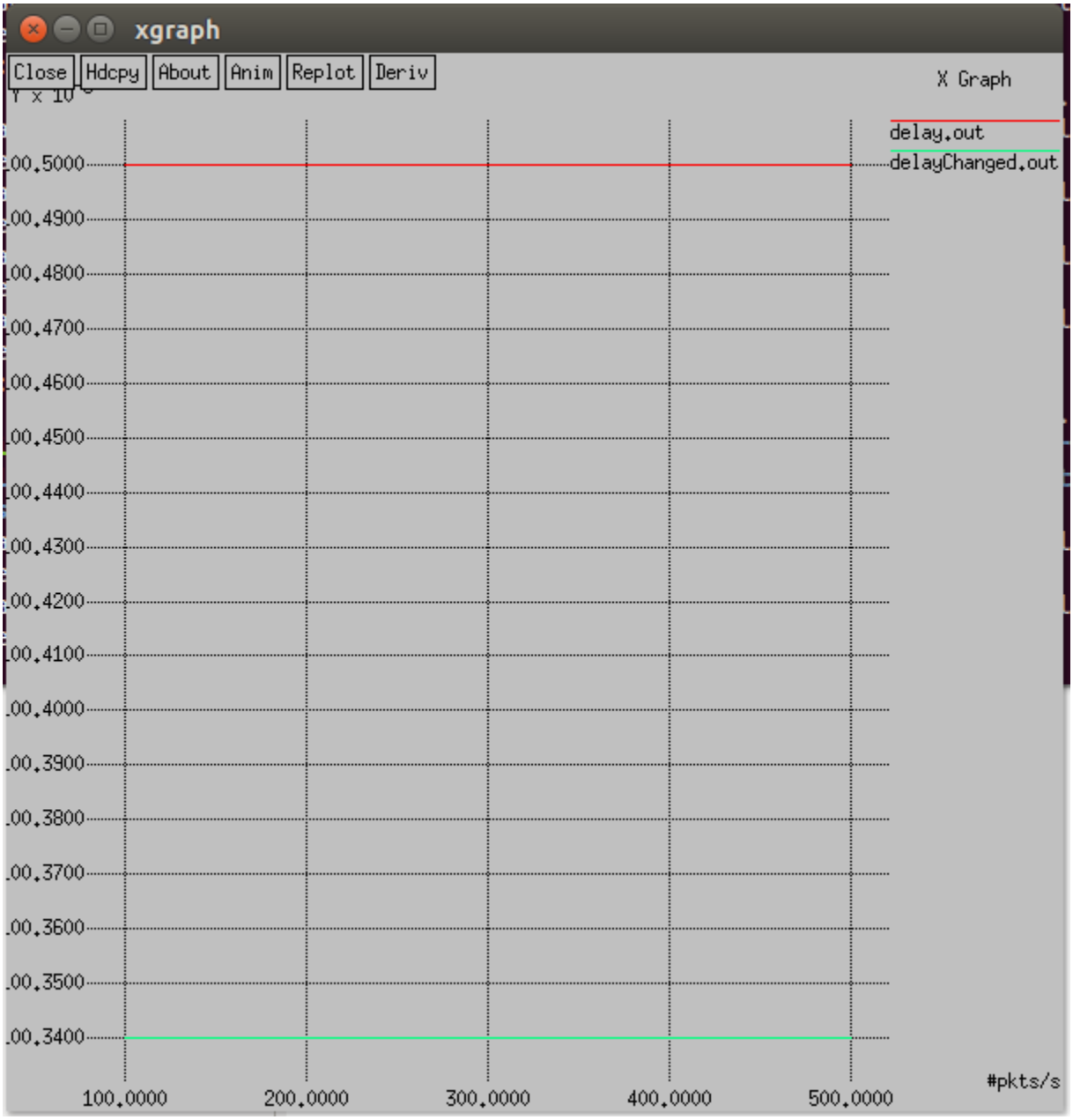


Fig: delay vs pkts/s

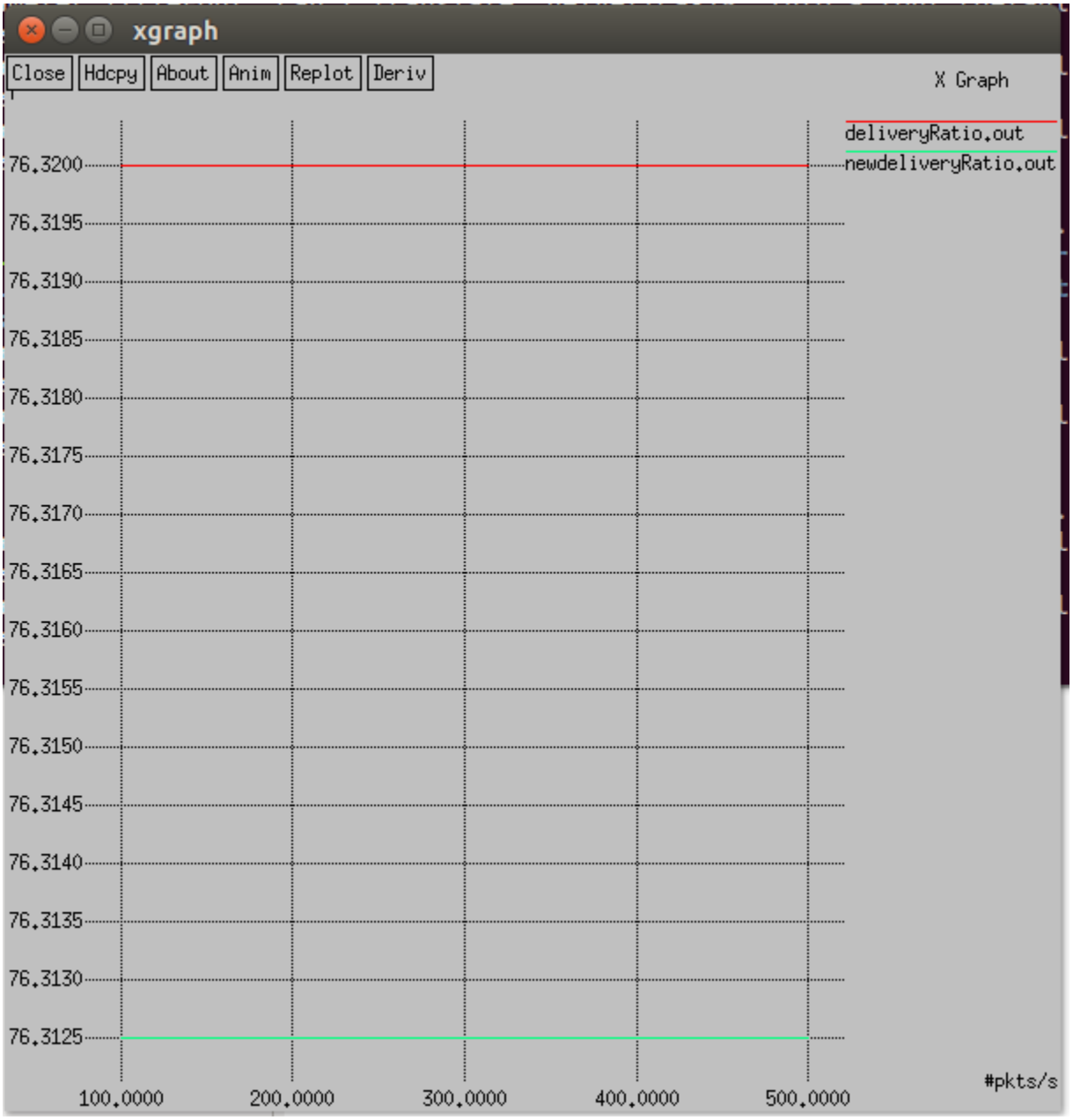


Fig: delivery Ratio vs pkts/s

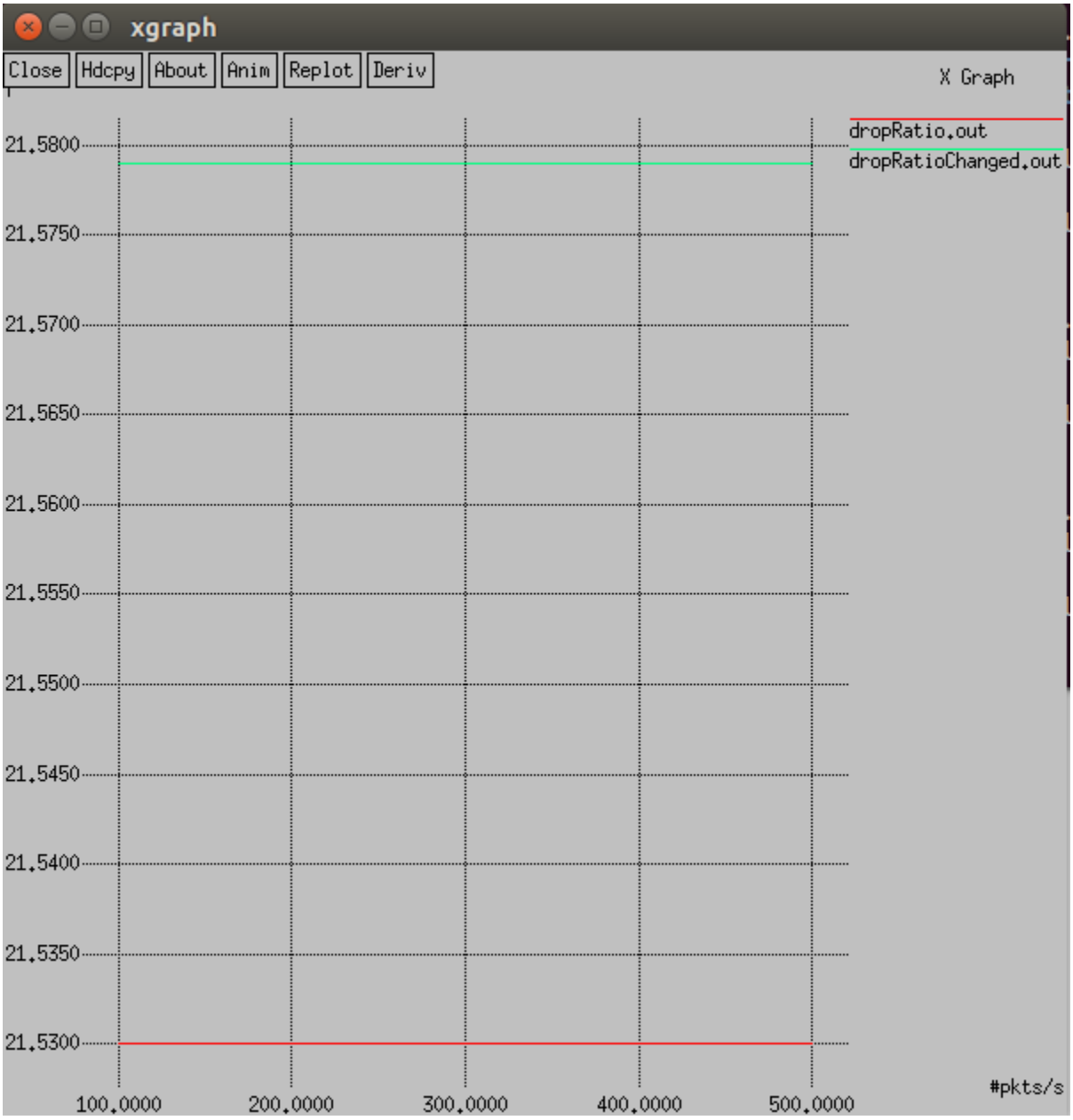


Fig: Drop Ratio vs pkts/s

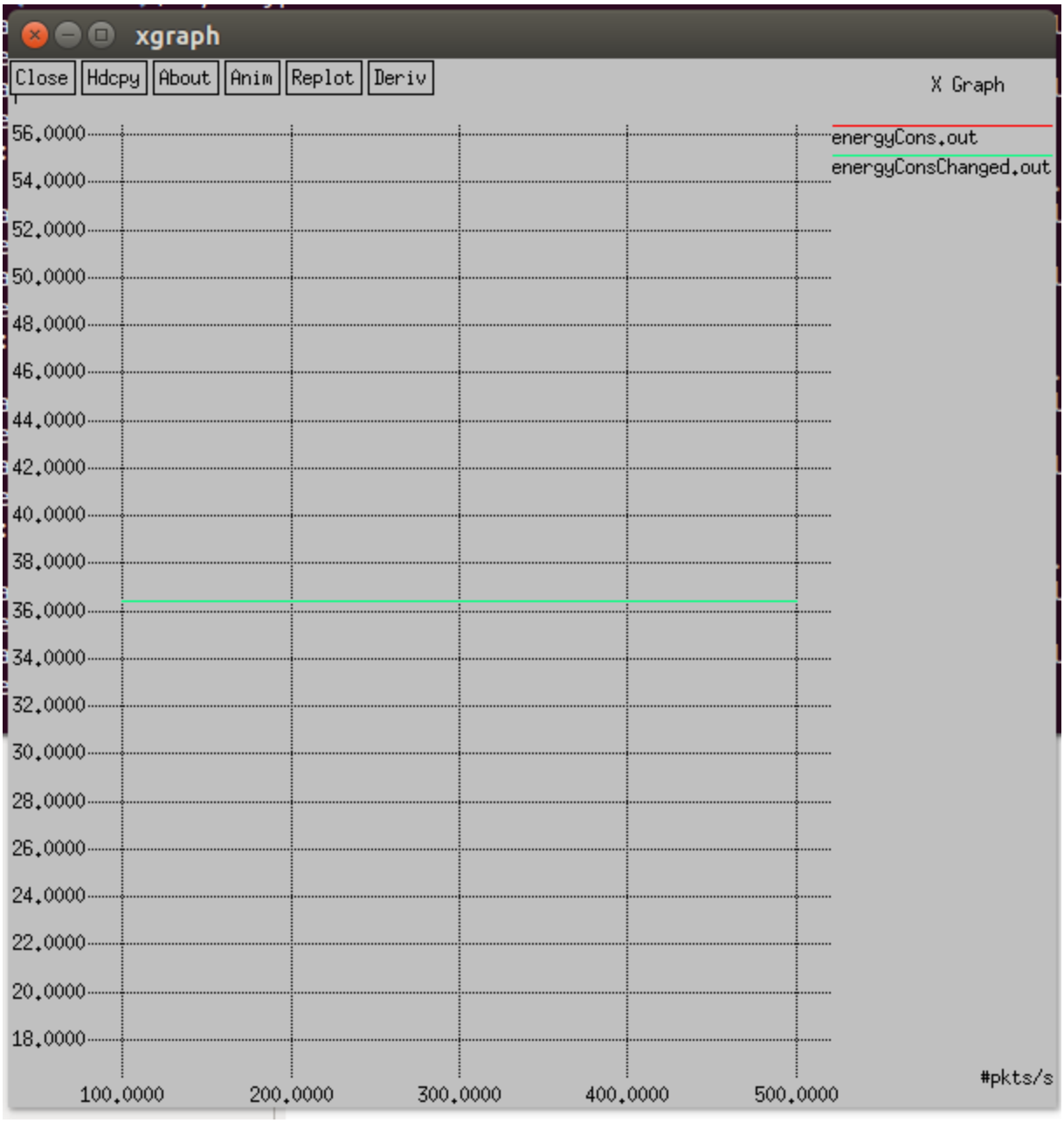


Fig: Energy Consumption vs pkts/s

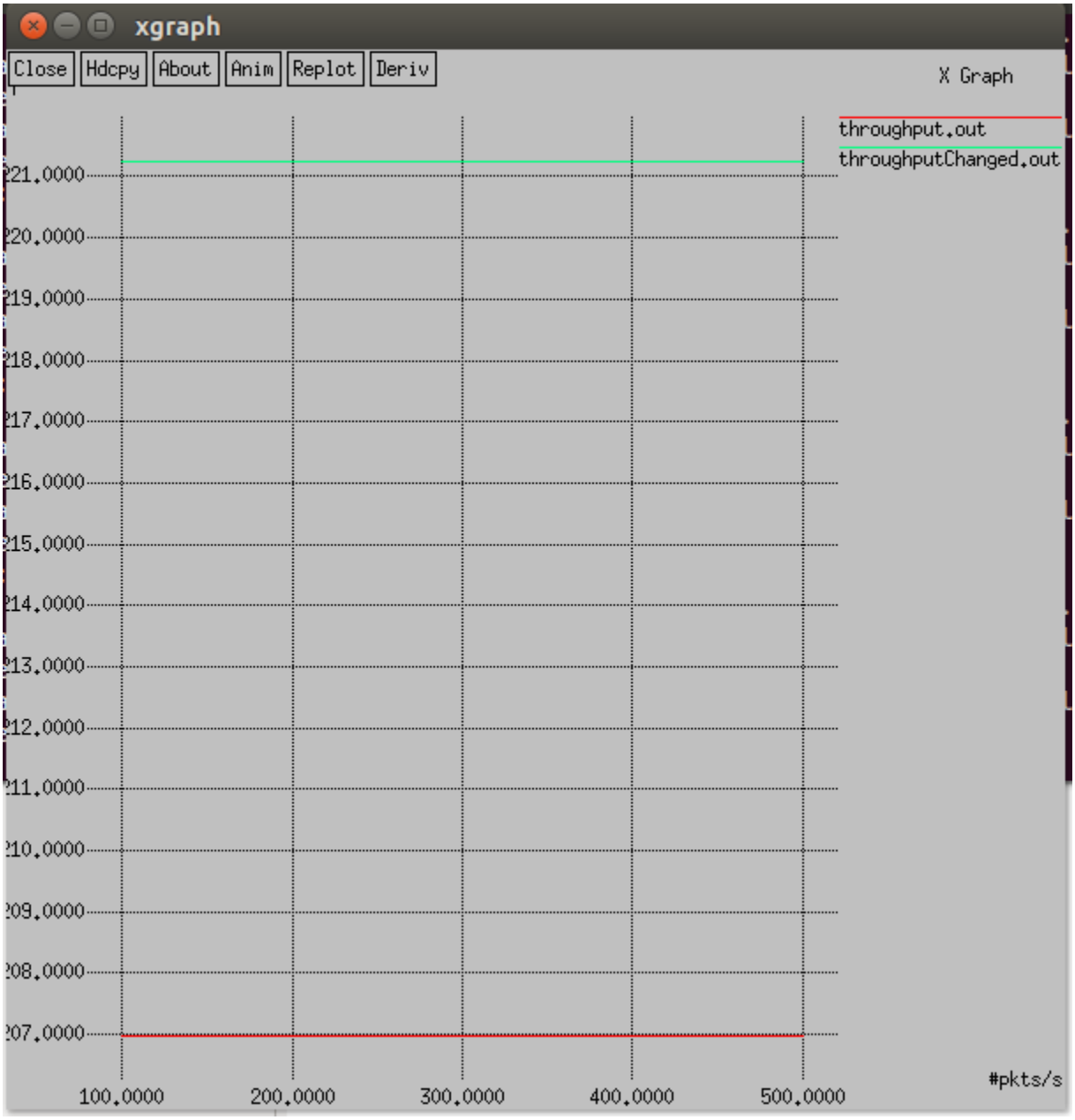


Fig: throughput vs pkts/s

Summary and findings:

1.Modifications were done in congestion control,rtt and routing protocol(dsdv).

2.Modified simulator's performance varied from the default one in various manners.It performed better in some cases,worse in some.

3.Throughput,Delivey Ratio and delay were major beneficiaries.