Final Report - WAN Project 2

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The following table shows the simulated results for LAN and WAN.

Table for LAN Loss Rate

Loss Rates	Latency Window	RTT	LAN Loss Rate
0	10	1.12	0
0	50	1.25	0
0	100	1.64	0
0	200	1.73	0
1	10	1.69	1.07
1	50	1.47	1.1
1	100	1.66	1.04
1	200	1.5	0
5	10	1.3	4.44
5	50	1.45	4.83
5	100	1.53	4.99
5	200	1.67	3.66
10	10	1.34	9.5
10	50	1.42	9.06
10	100	1.59	9.17
10	200	1.66	8.46
20	10	1.43	18.74
20	50	1.55	17.47
20	100	1.25	16.57
20	200	1.91	17.92
30	10	1.25	28.53
30	50	1.39	27.15
30	100	1.9	27.17
30	200	1.93	26.96

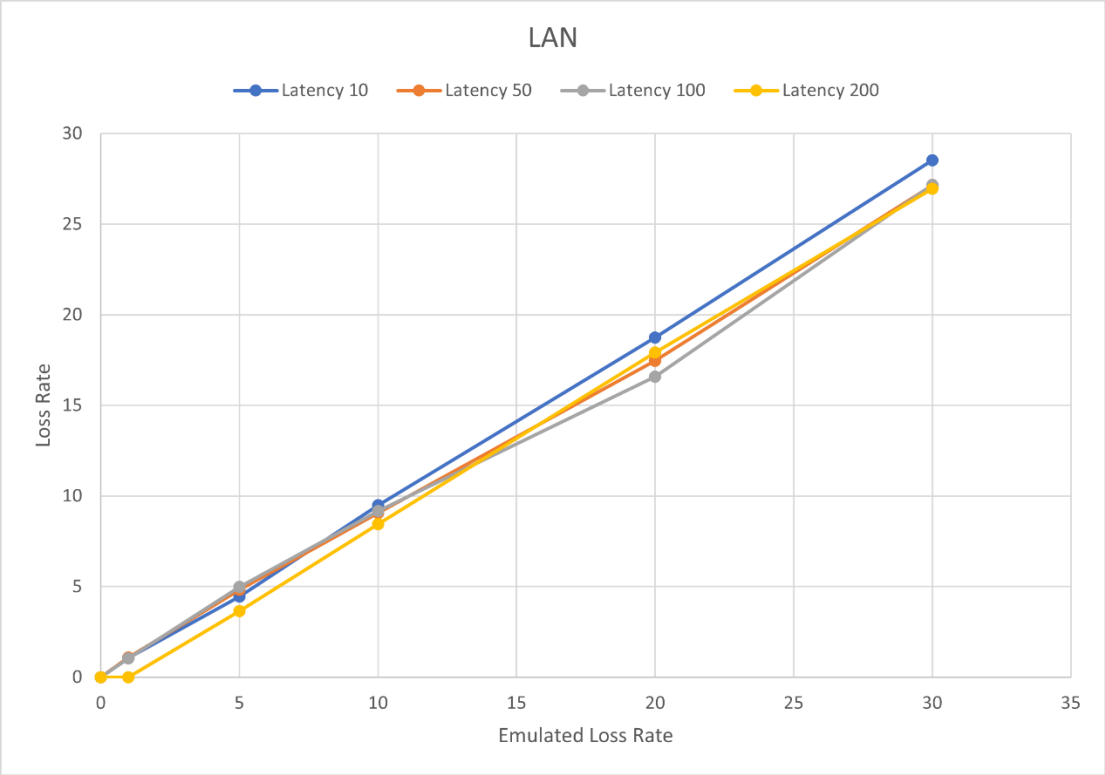
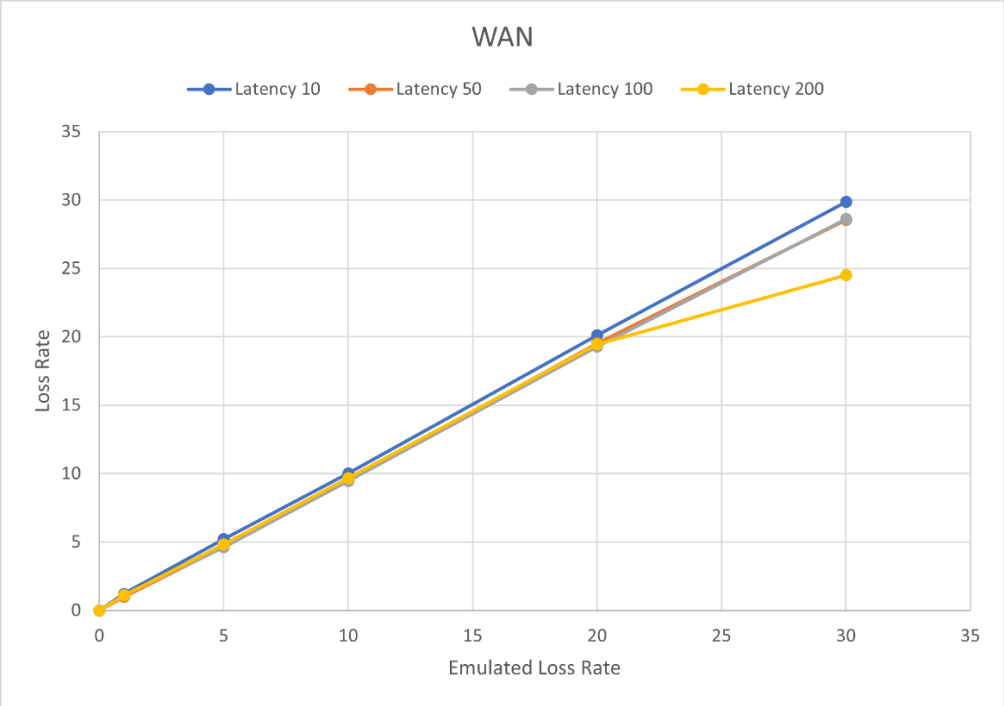


Table for WAN Loss Rate

Loss Rates	Latency Window	RTT	WAN Loss Rate
0	10	41.29	0
0	50	41.42	0
0	100	41.89	0
0	200	42.26	0
1	10	41.53	1.22
1	50	43.56	0.98
1	100	44.69	1.12
1	200	41.3	1.11
5	10	41.31	5.22
5	50	42.37	4.66
5	100	42.55	4.63
5	200	42.3	4.84
10	10	41.23	10.03
10	50	41.22	9.45
10	100	41.61	9.47
10	200	42.1	9.66
20	10	41.37	20.12

20	50	41.97	19.53
20	100	42.33	19.27
20	200	42.4	19.46
30	10	42.24	29.88
30	50	41.56	28.56
30	100	42.9	28.61
30	200	43.13	24.5



Based on the data above, the protocol works as per our expectations. We see the loss rates are lesser than the actual expected loss rate which means our protocol is somewhat efficient.

Loss rate for case 0 stays zero in actual too in both LAN and WAN

There is almost a linear dependency between the emulated loss rate and actual loss rates. It however, does not depend on the RTT according to our results.

The loss rate decreases with increase in latency window.

Loss rate = alpha(emulated loss rate) -beta(latency window)

We observe that with a higher latency window, the loss rate usually decreases. This is because we buffer more packets to send out which means more time to recover lost packets.

The Round-Trip Time is seen to usually increase along with increasing loss rates.

The loss rate in rt_rcv is higher than that seen in the udp_stream_rcv side which we do not quite understand. We calculated the loss rate at rt_rcv as

(highest Recvd Seq – clean packets received)/highest Recvd Seq.

We calculated loss rate in udp_stream_rcv as

Out of order count/ total packets recvd