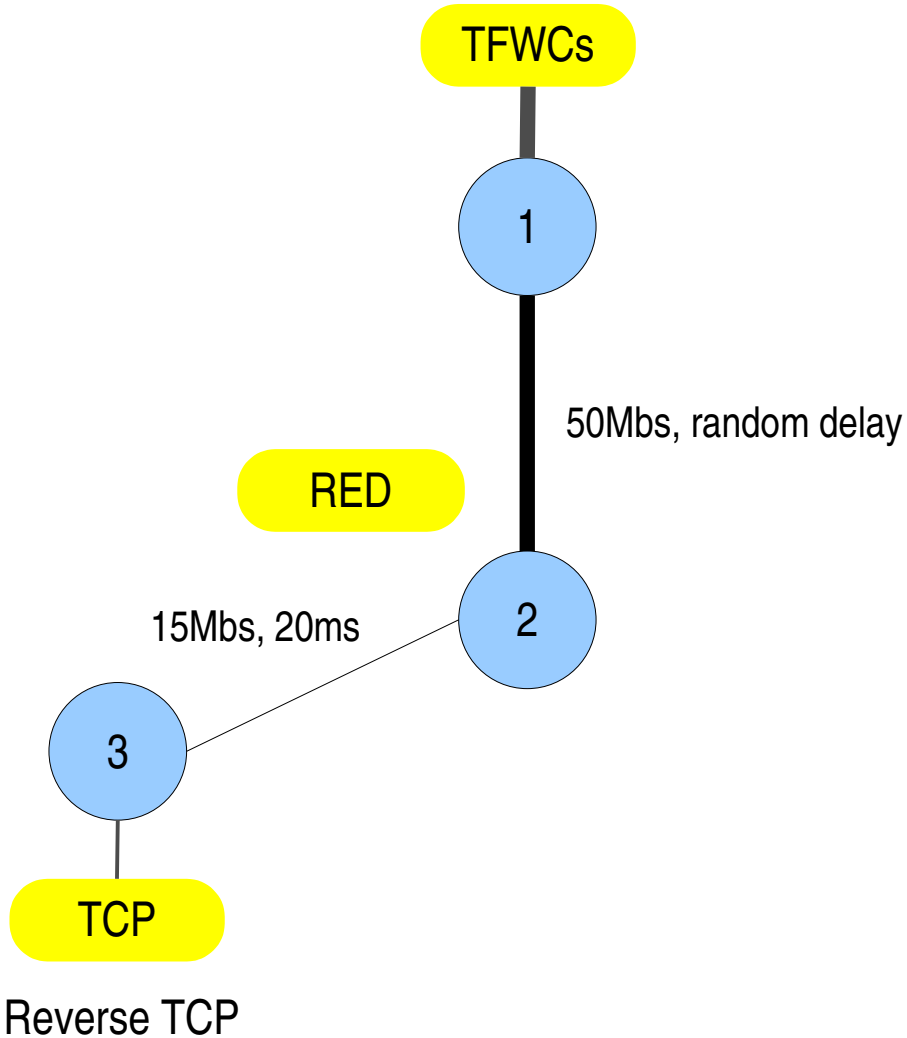
TFWCs w/ reverse TCP Sack



- Random FTP start time: 1s ~ 5s

- Random Access Link Delay: 2ms ~ 5ms
- e2e RTT = 44ms ~ 50ms

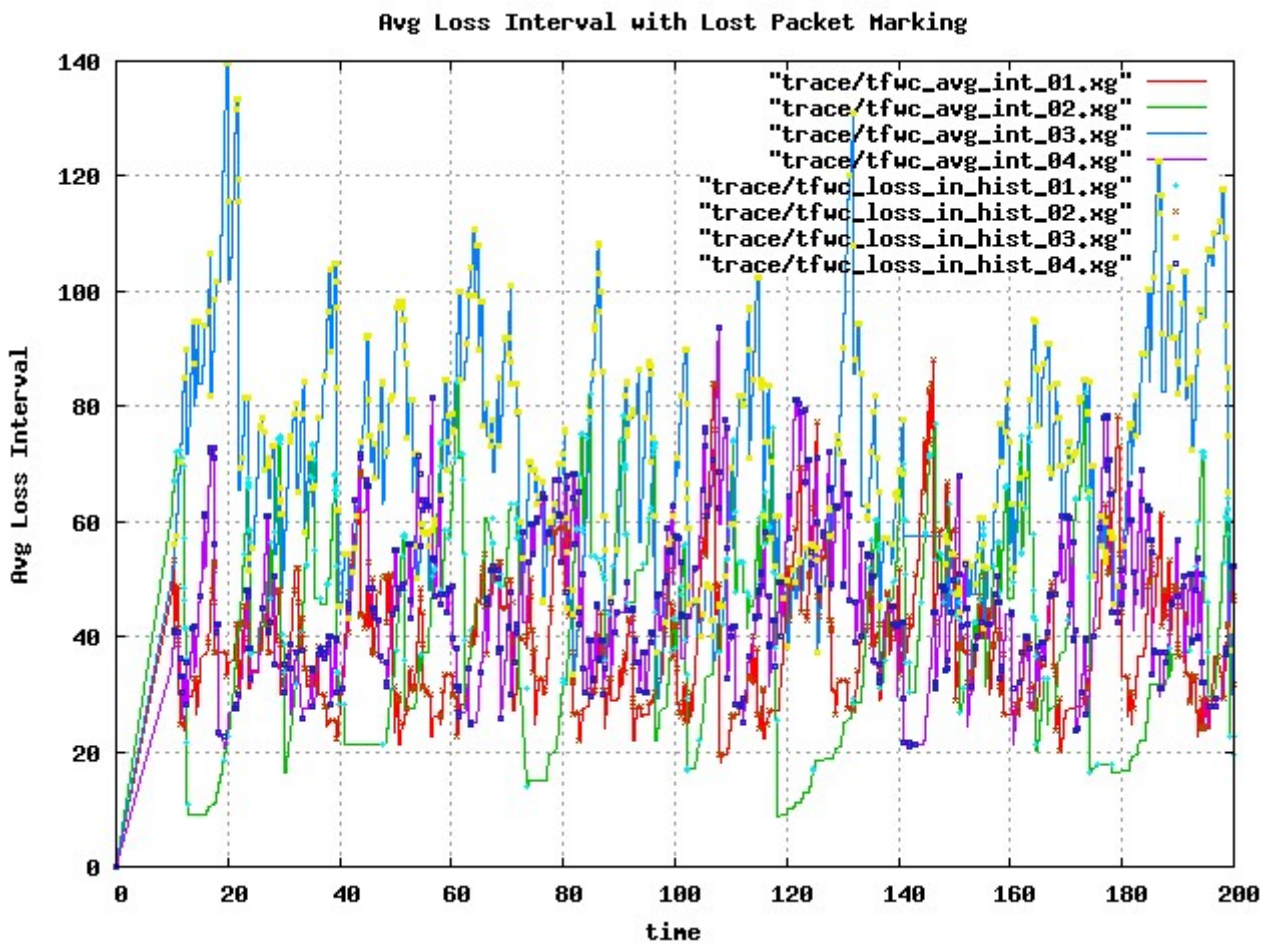
- Delay x Bandwidth = 20ms x 15Mb/s
  = 300 Kbits

- 1 packet = 1000 bytes = 8000 bits
- Delay x BW = 37.5 packets

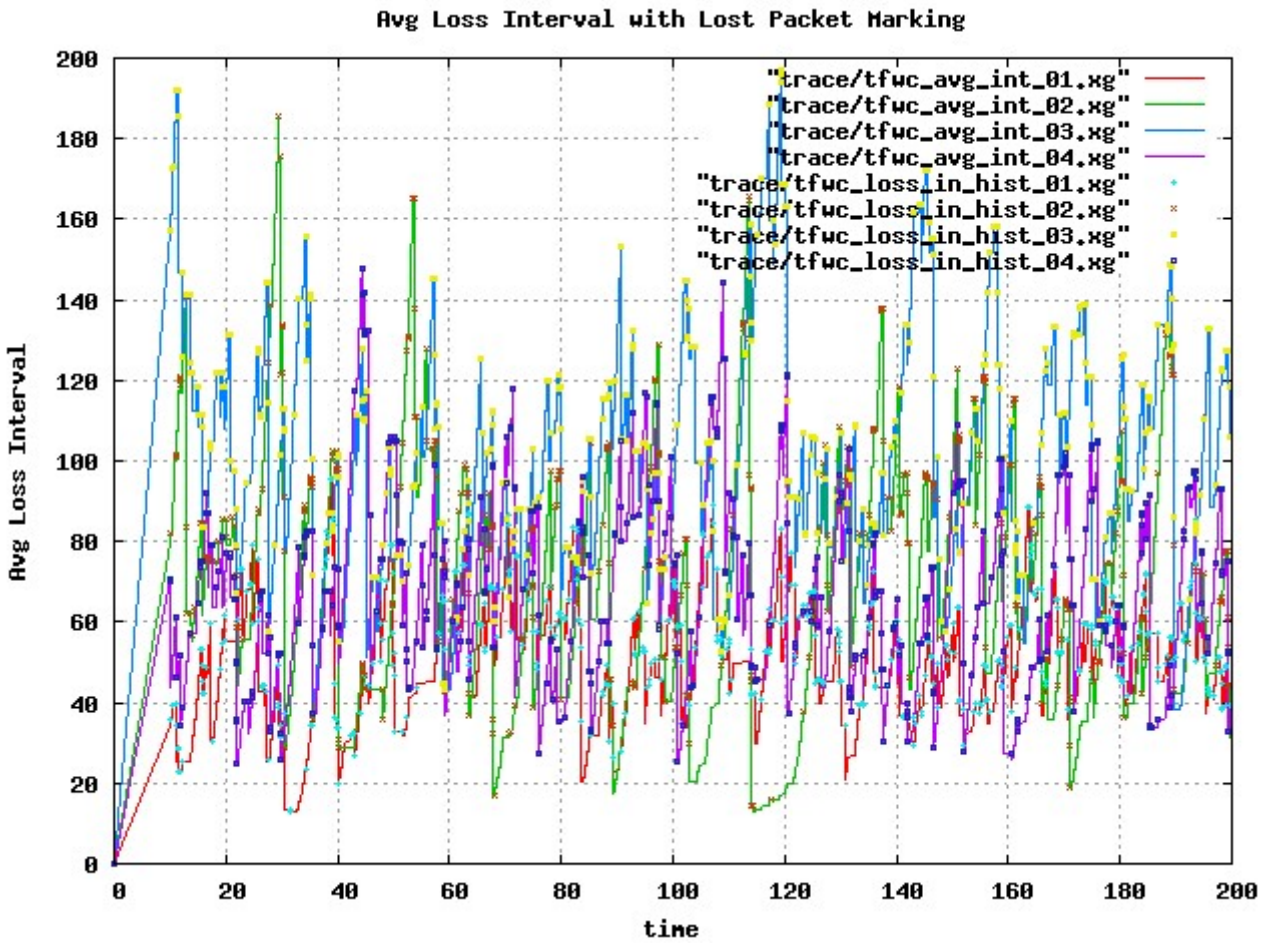
4 TFWC w/ 4 reverse TCP
Varying Bottleneck (RED) Queue Size (10 ~ 75)
Simulation Time = 200
Random Seed Number = 177

Phase Break = On
Probability = 10%

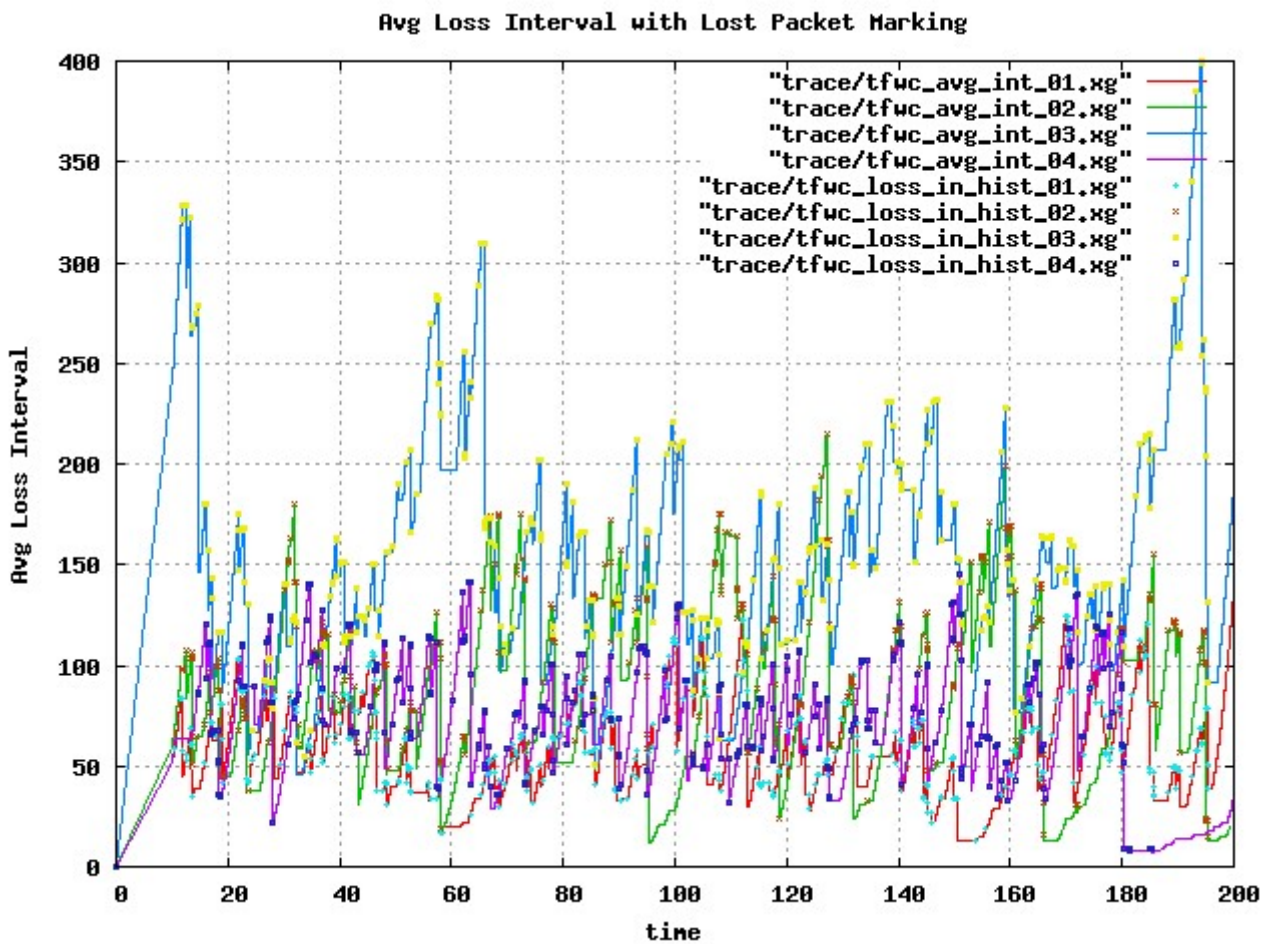
average loss interval (q=10, 4TFWC)



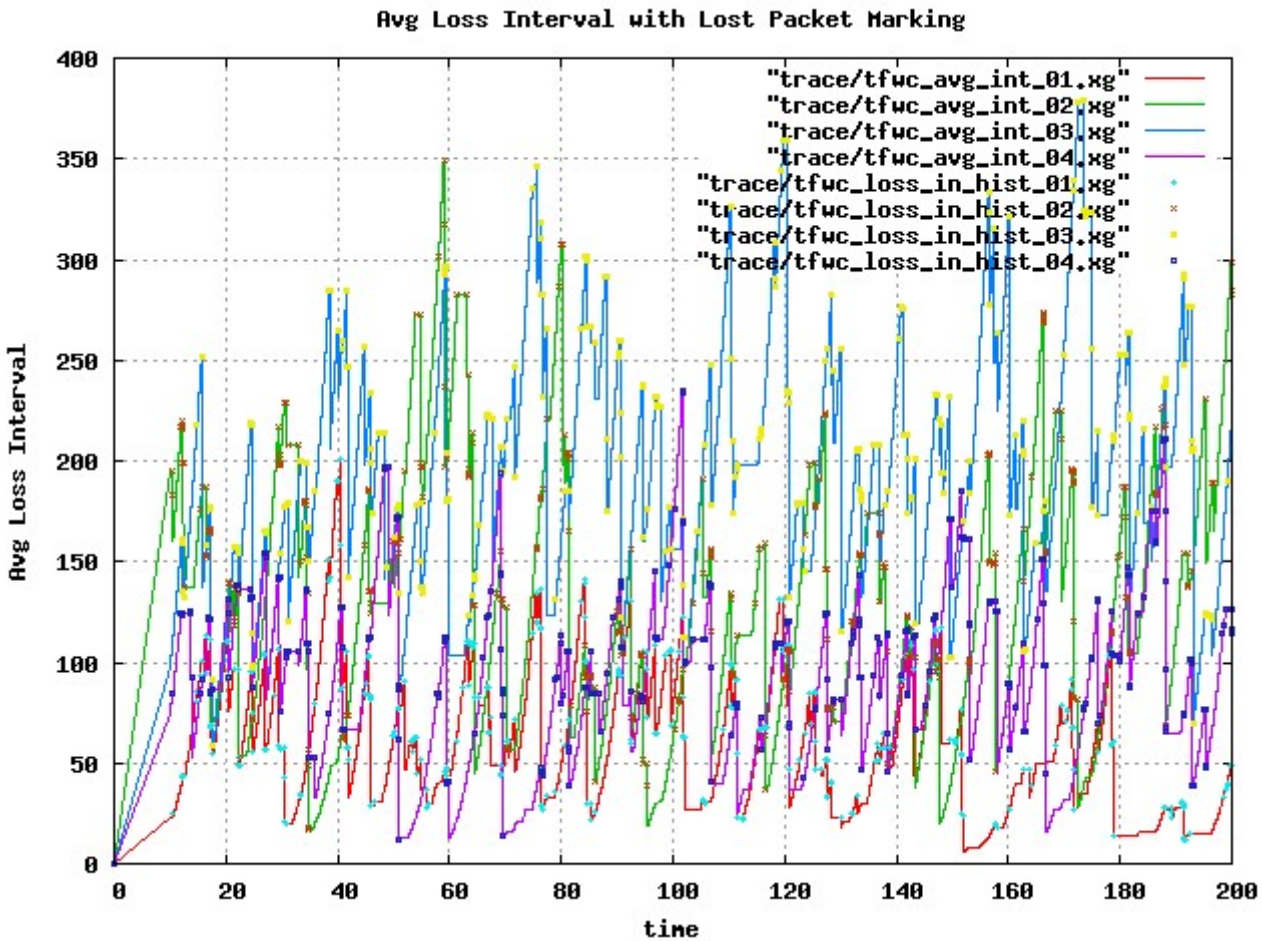
average loss interval (q=15, 4TFWC)



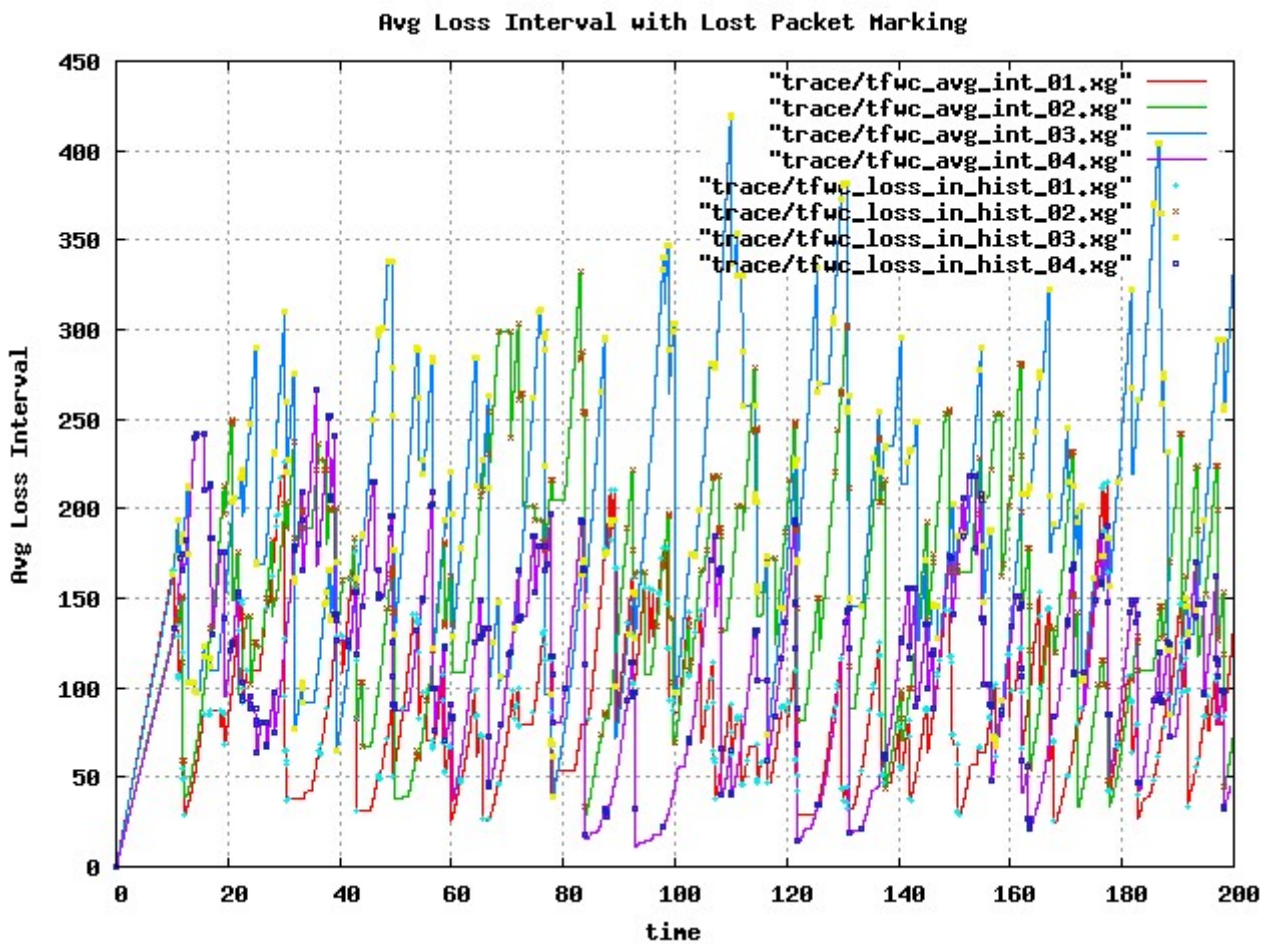
average loss interval (q=20, 4TFWC)



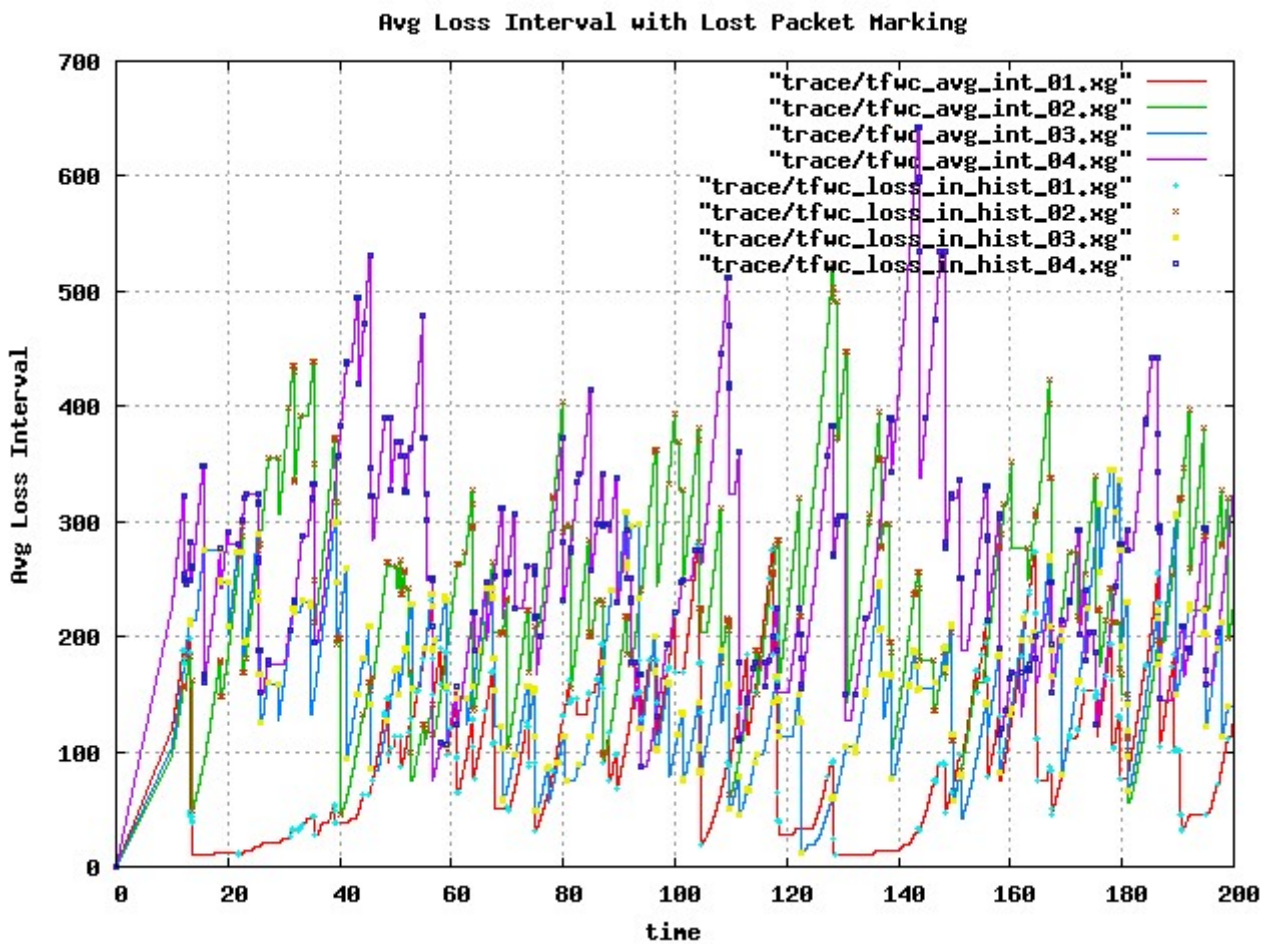
average loss interval (q=25, 4TFWC)



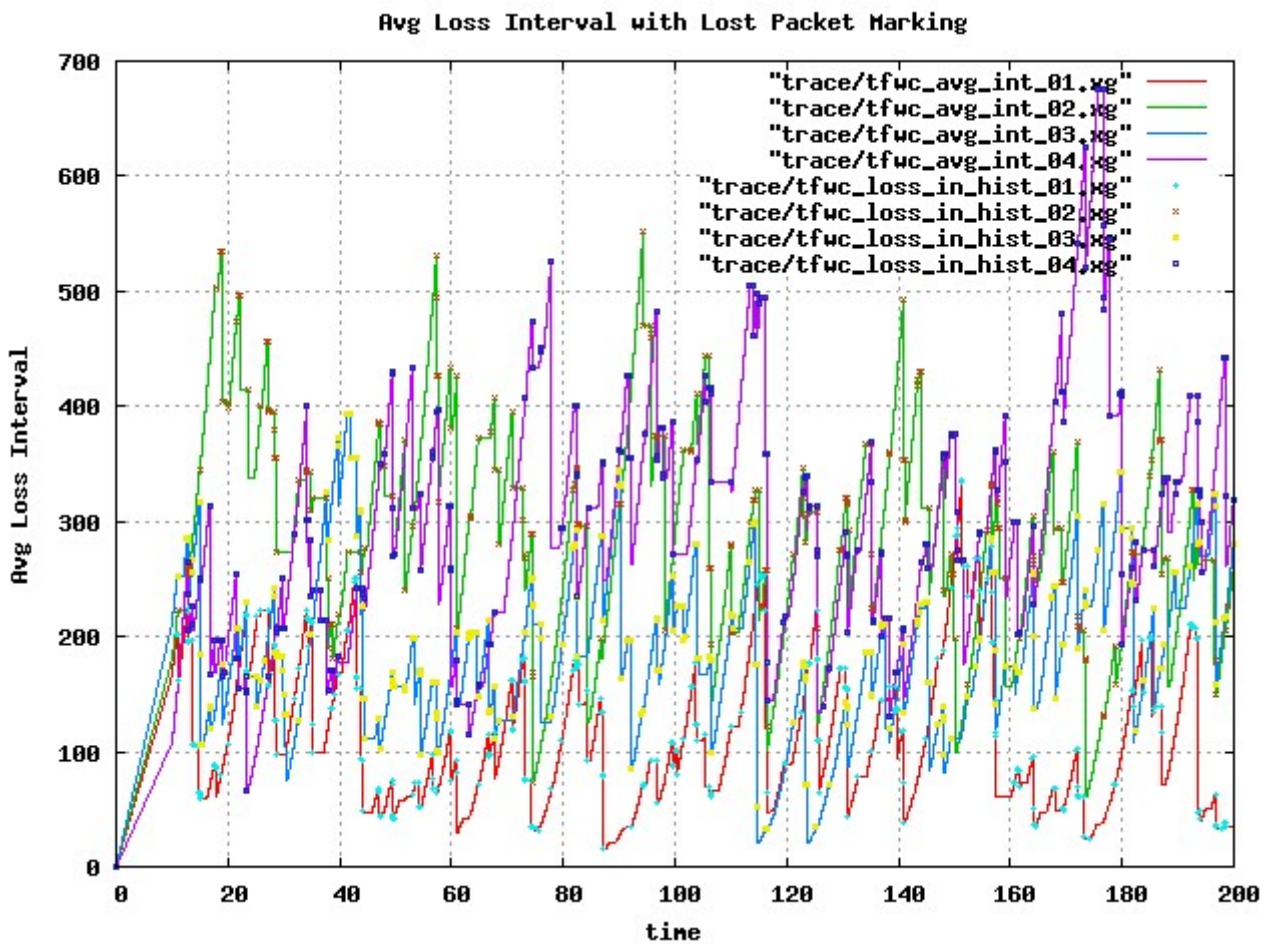
average loss interval (q=30, 4TFWC)



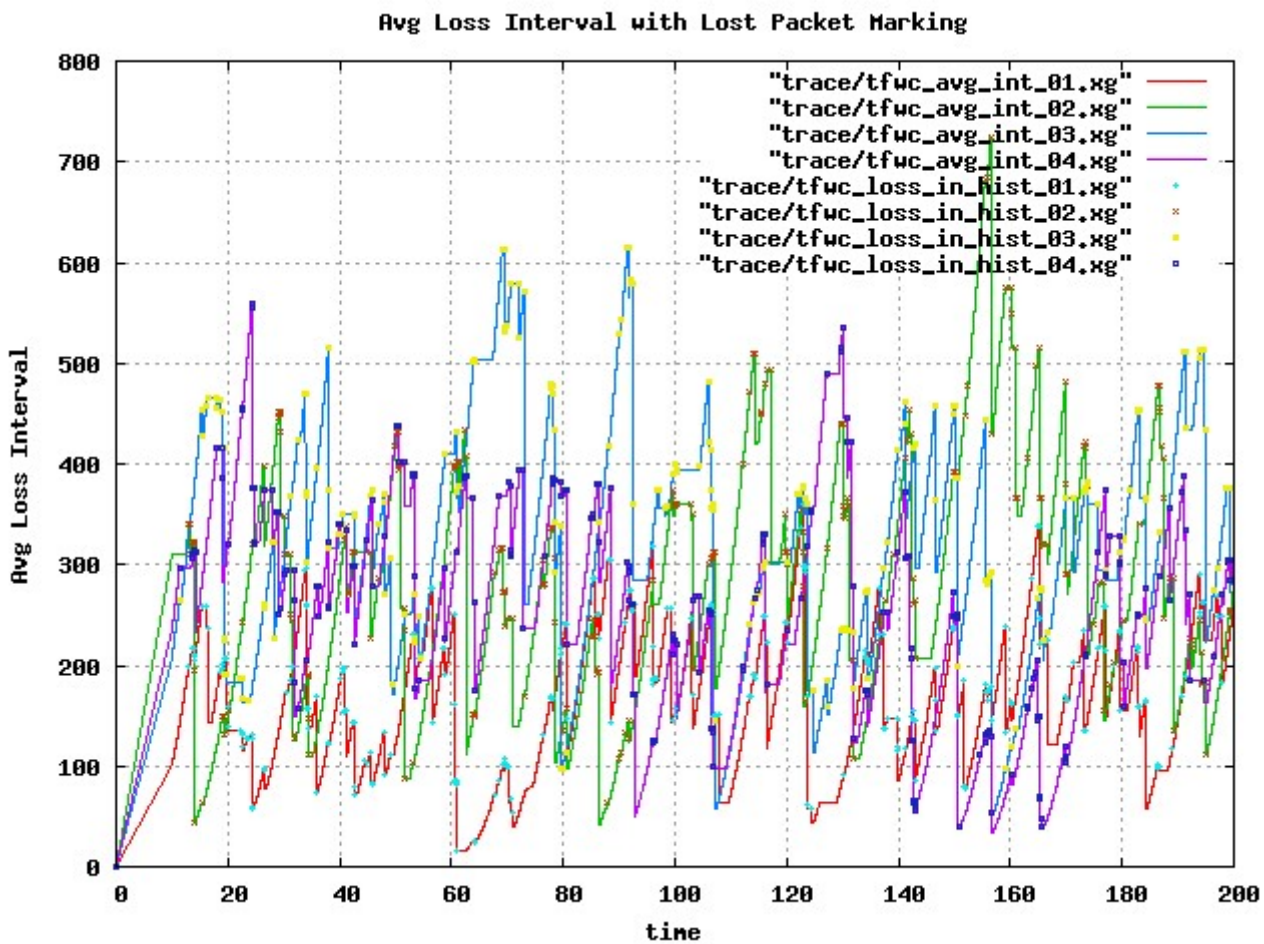
average loss interval (q=35, 4TFWC)



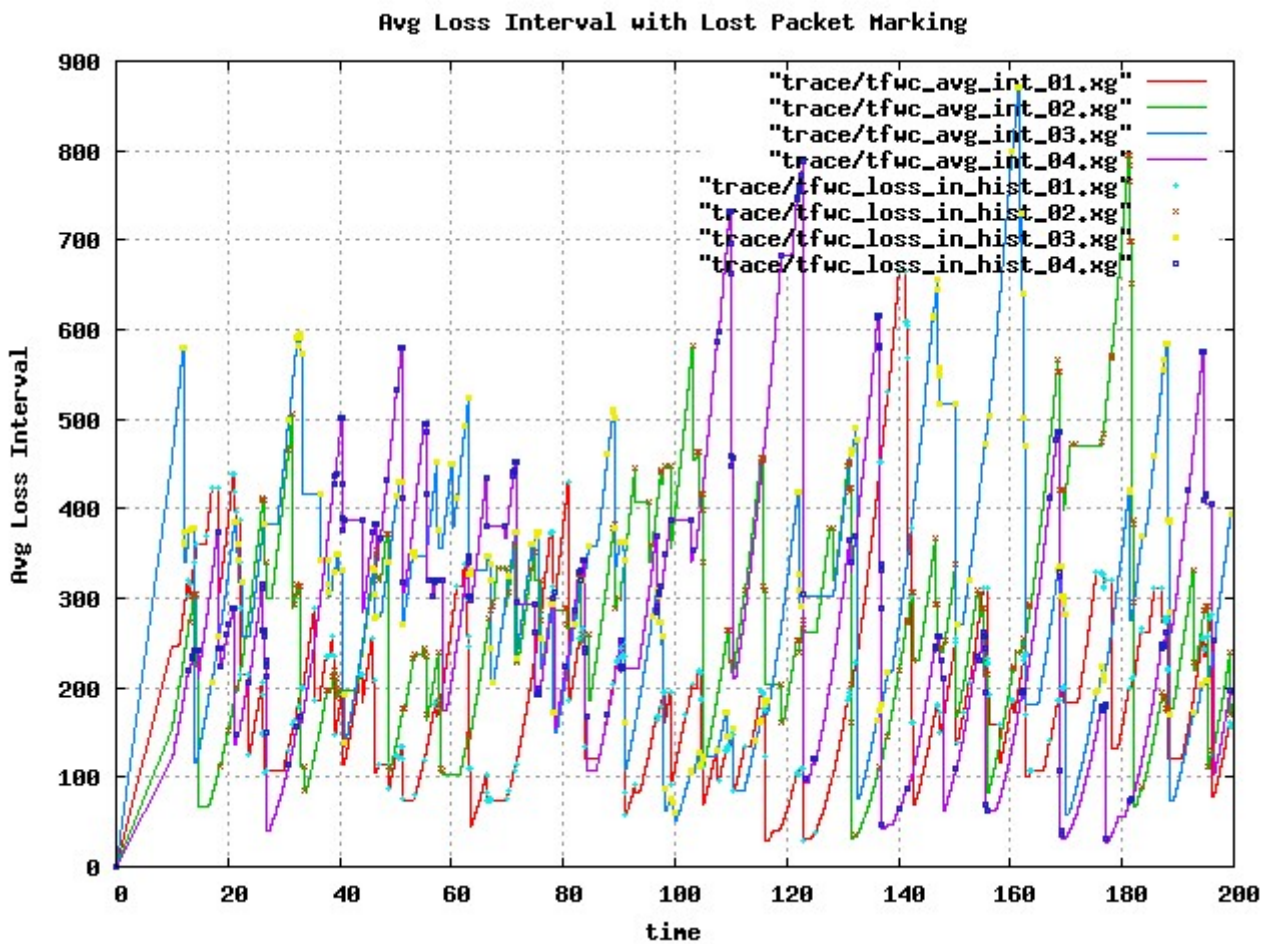
average loss interval (q=40, 4TFWC)



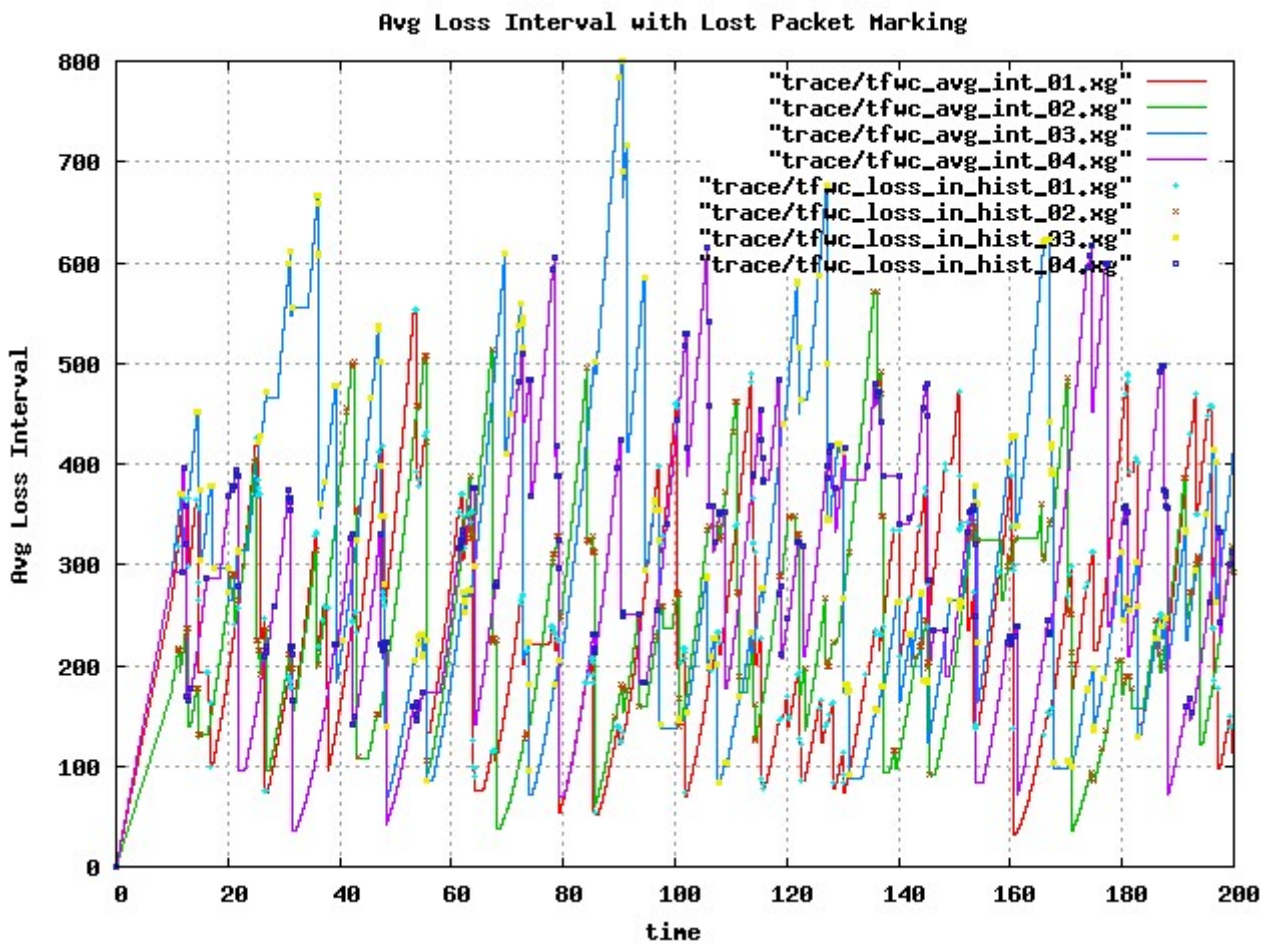
average loss interval (q=45, 4TFWC)



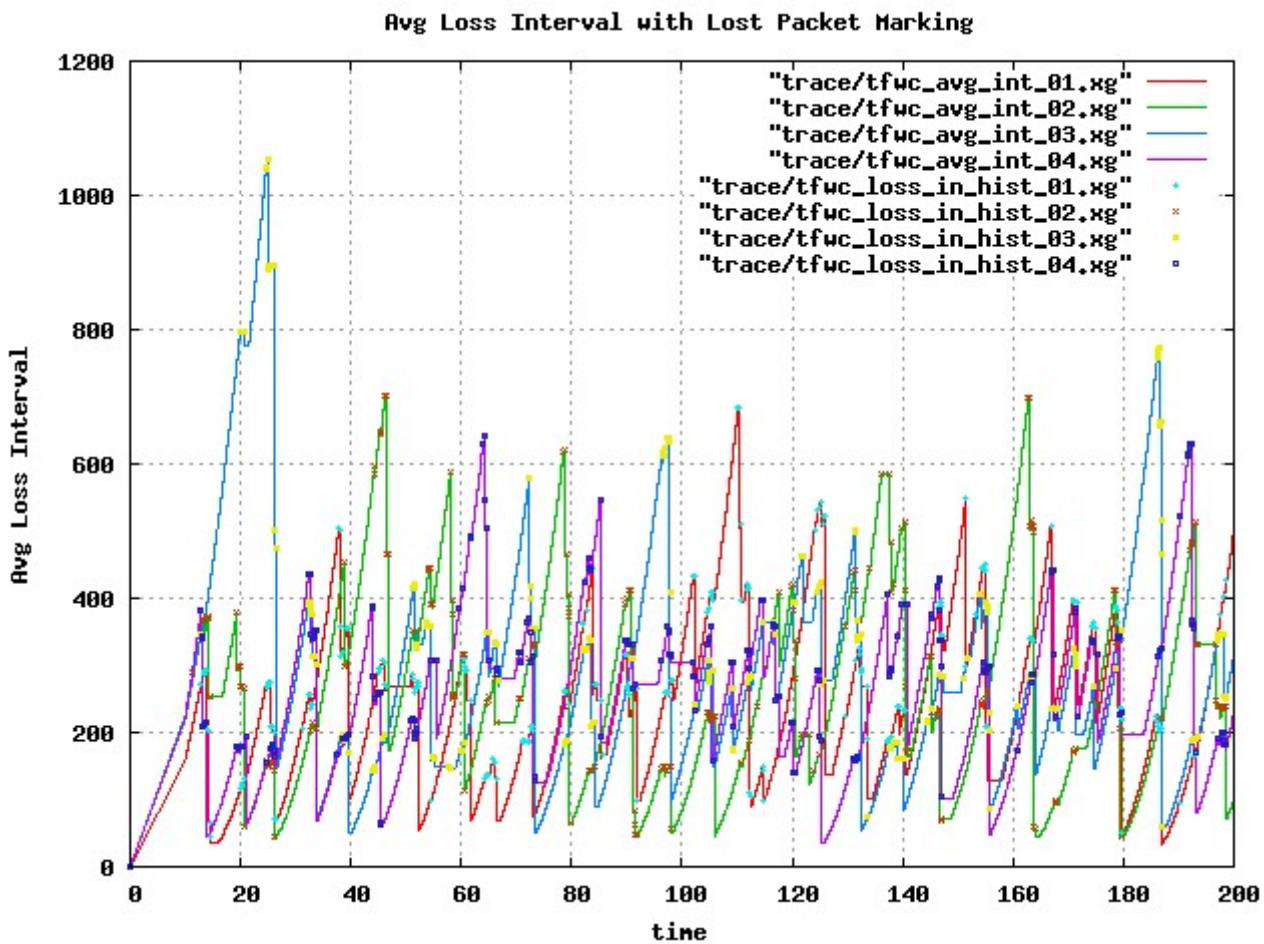
average loss interval (q=50, 4TFWC)



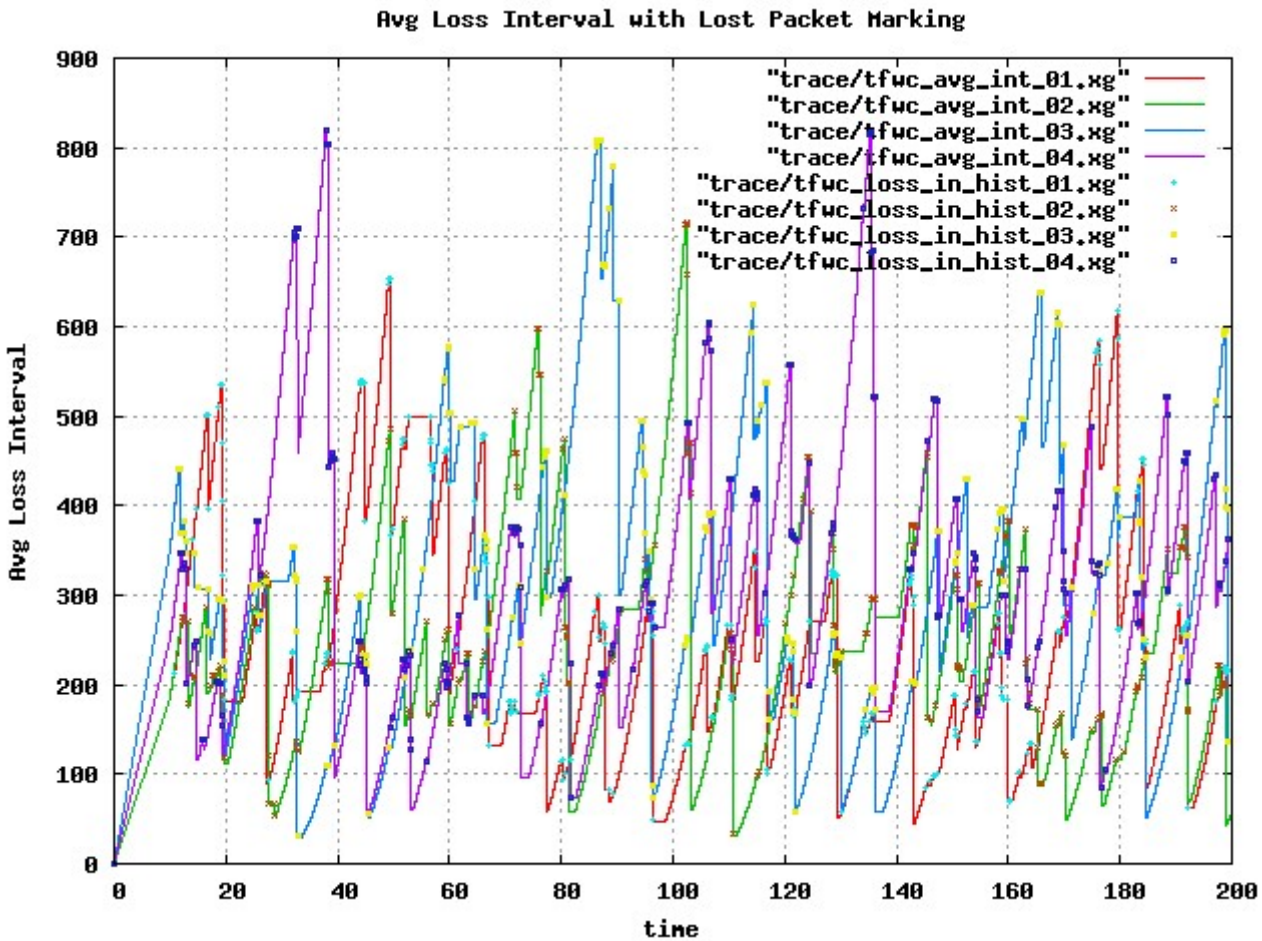
average loss interval (q=55, 4TFWC)



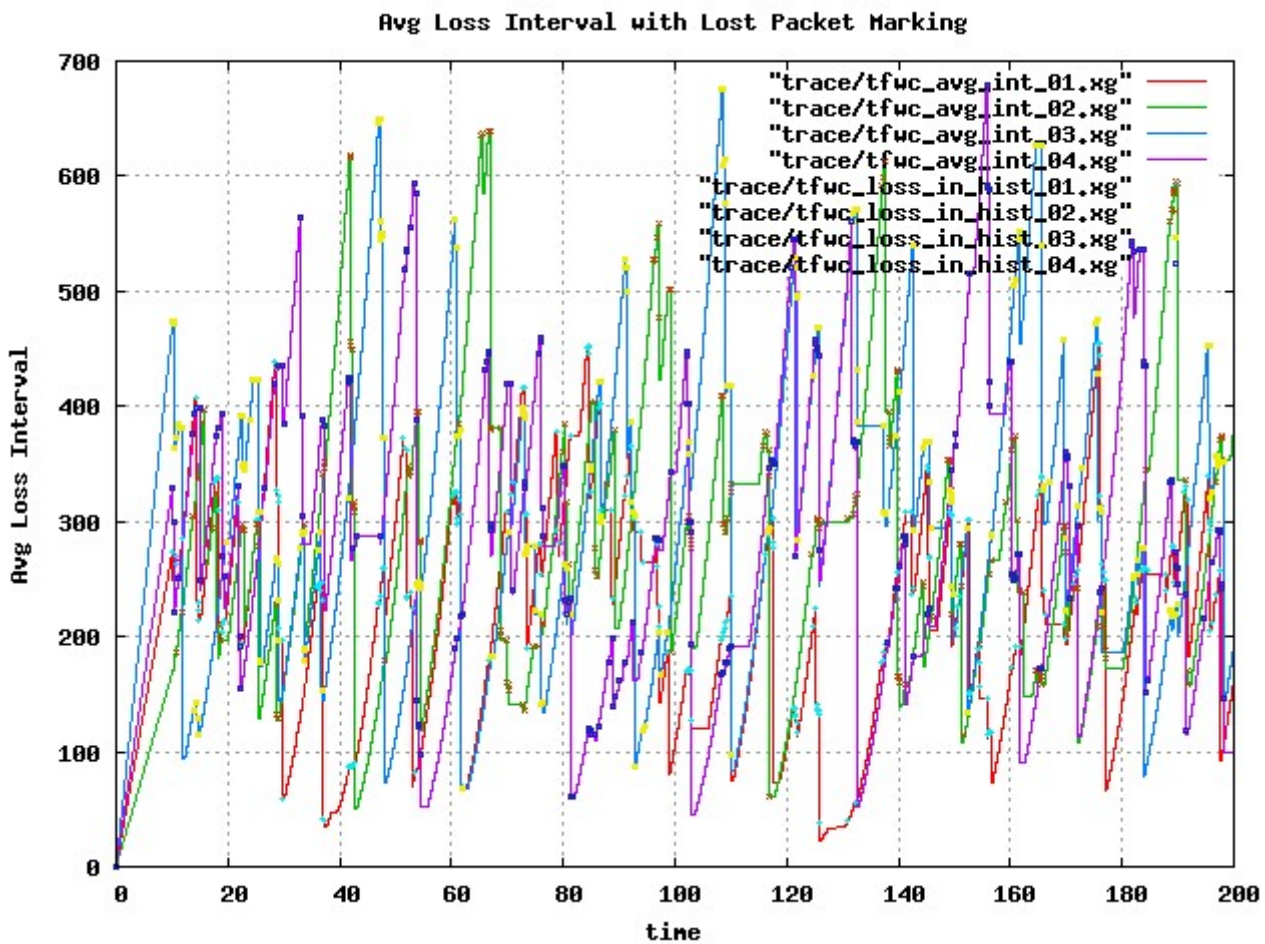
average loss interval (q=60, 4TFWC)



average loss interval (q=65, 4TFWC)



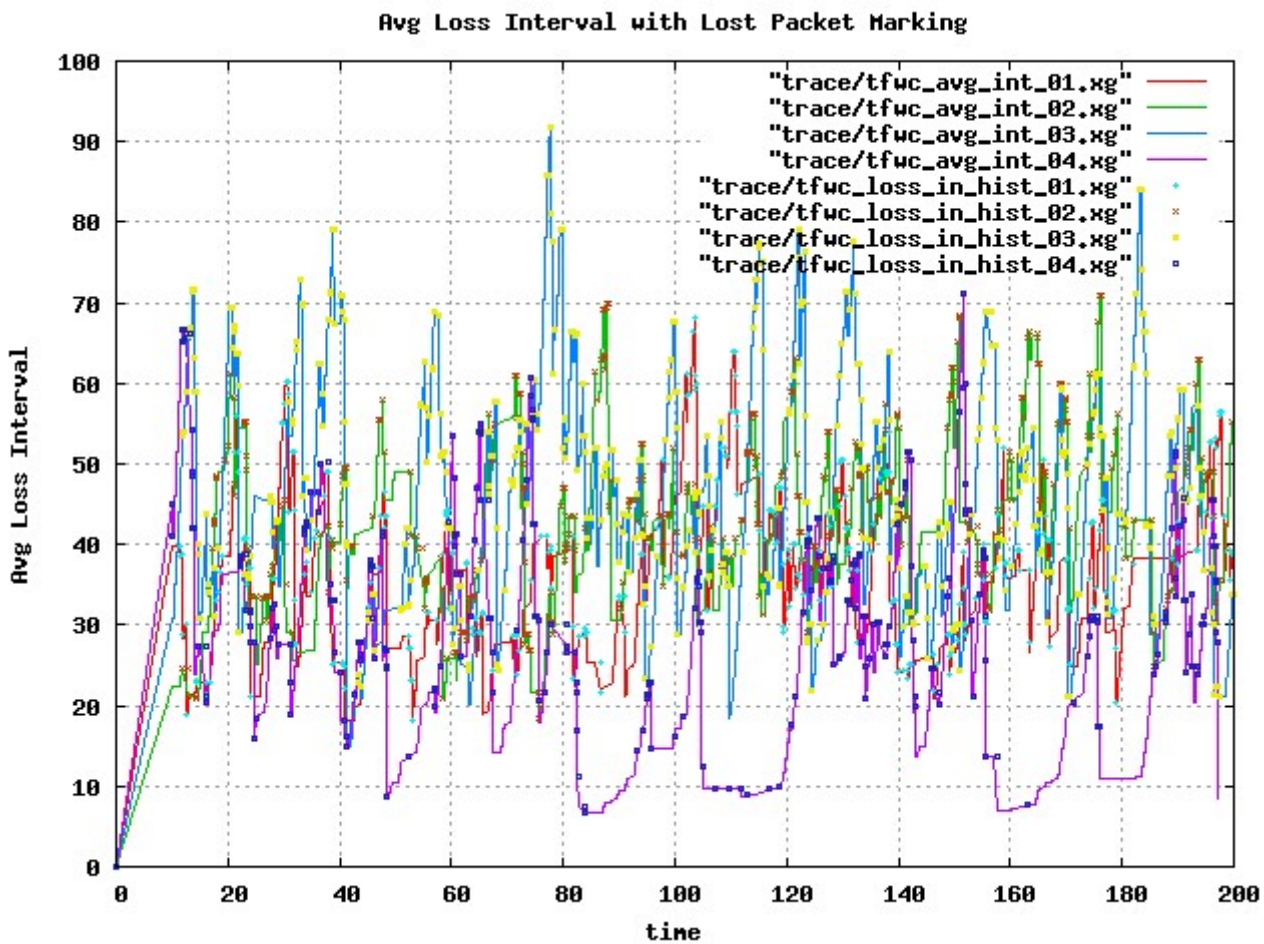
average loss interval (q=70, 4TFWC)



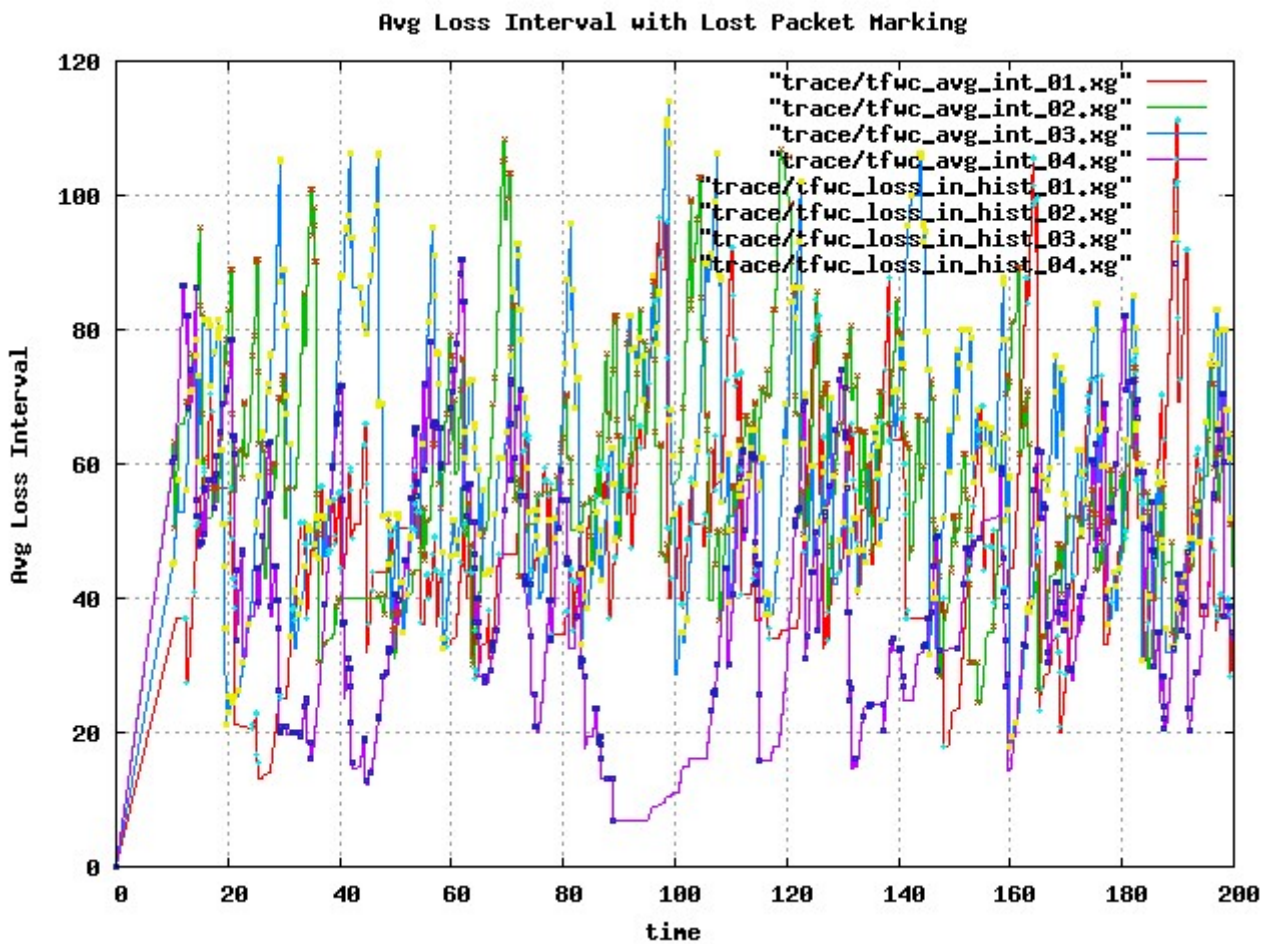
8 TFWC w/ 8 reverse TCP
Varying Bottleneck (RED) Queue Size (10 ~ 75)
Simulation Time = 200
Random Seed Number = 177

Phase Break = On
Probability = 10%

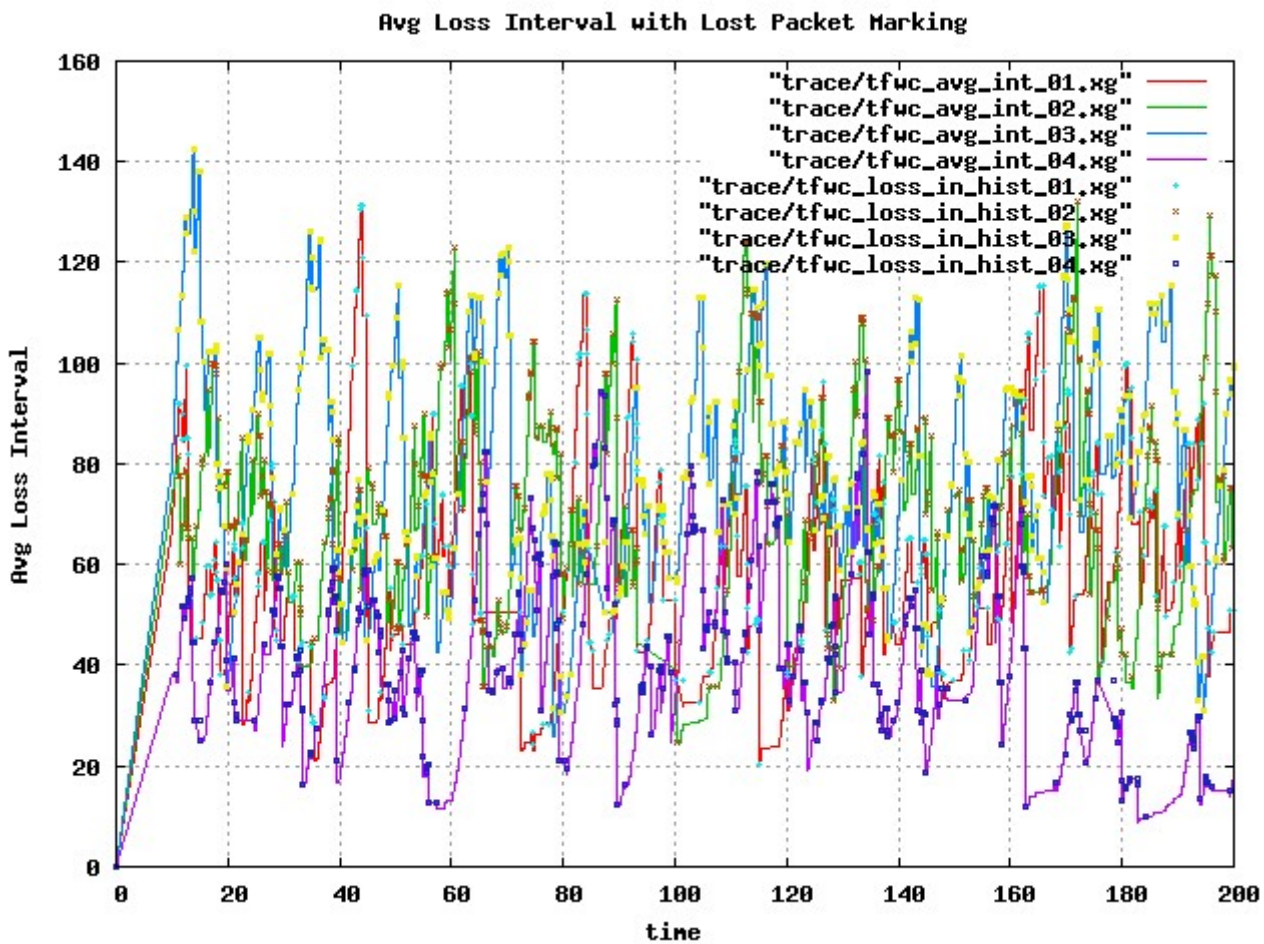
average loss interval (q=10, 8TFWC)



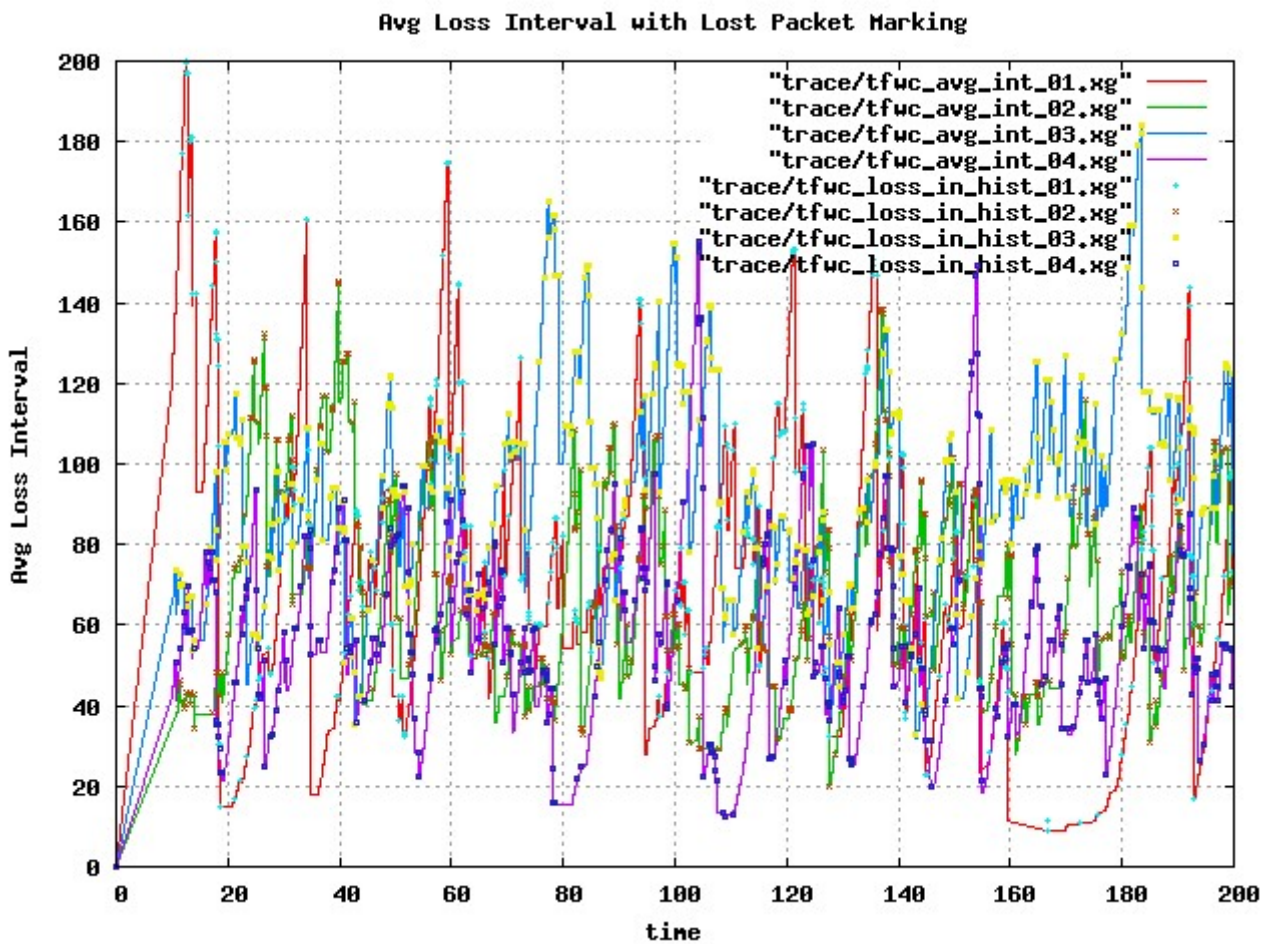
average loss interval (q=15, 8TFWC)



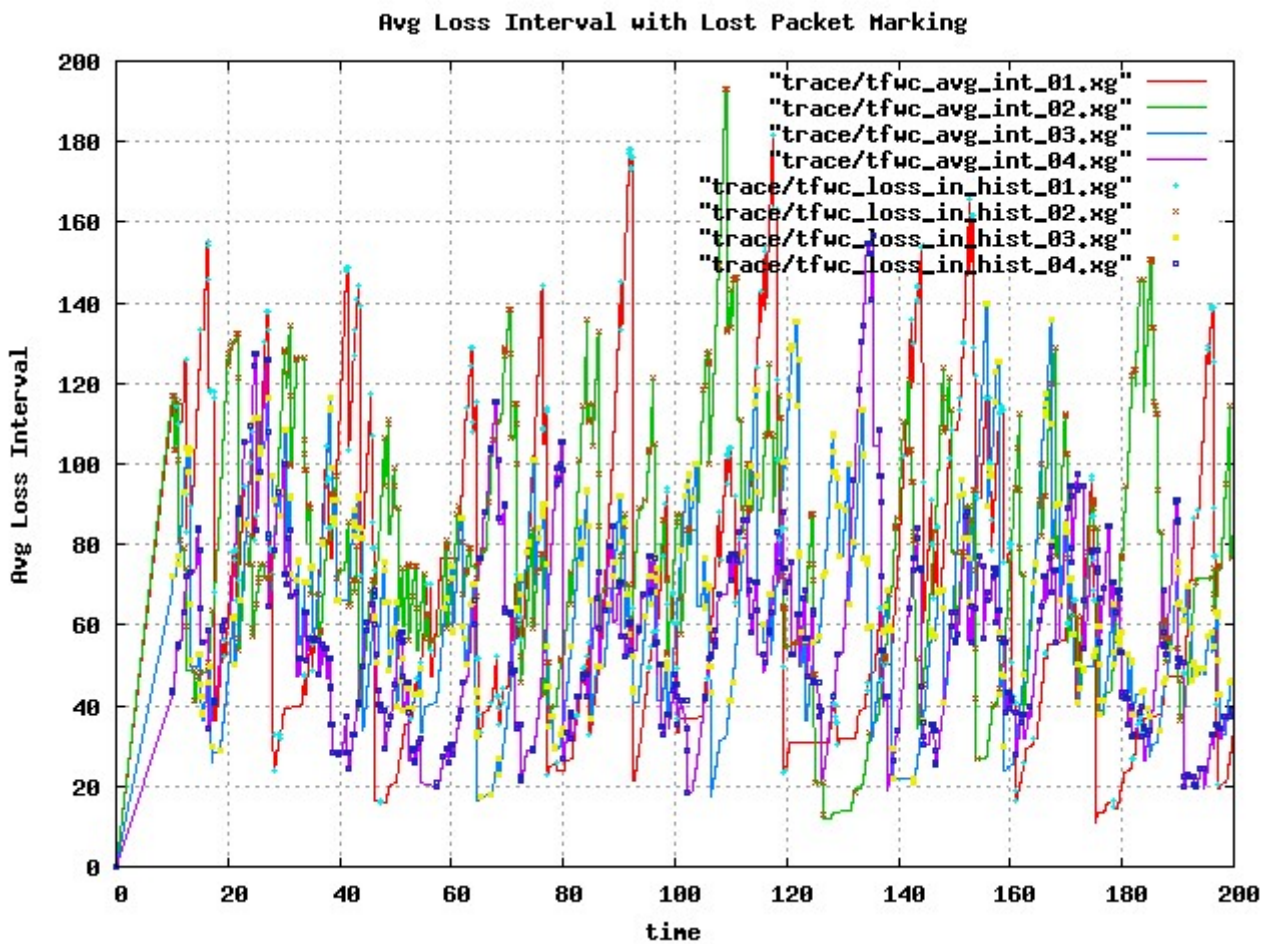
average loss interval (q=20, 8TFWC)



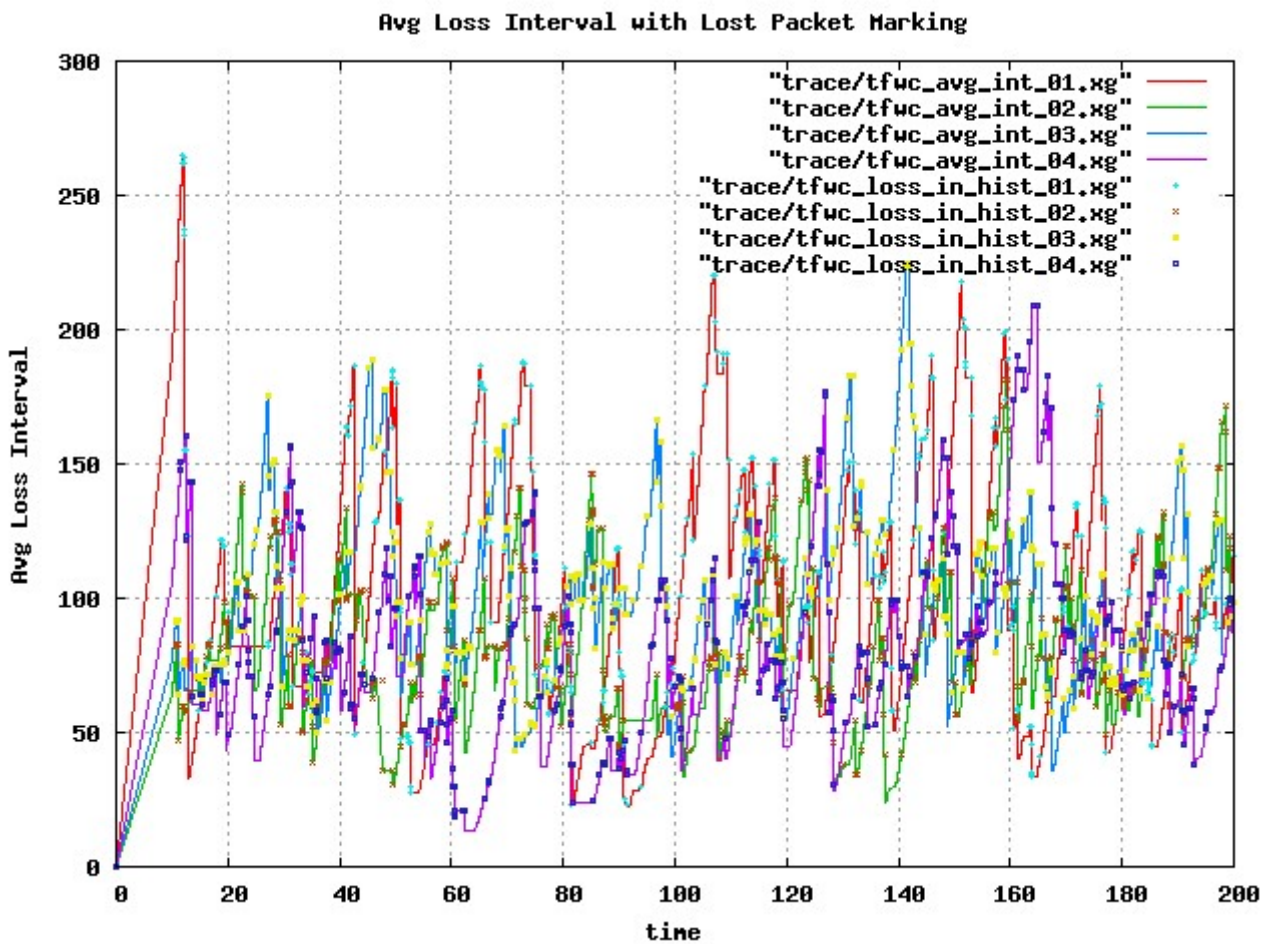
average loss interval (q=25, 8TFWC)



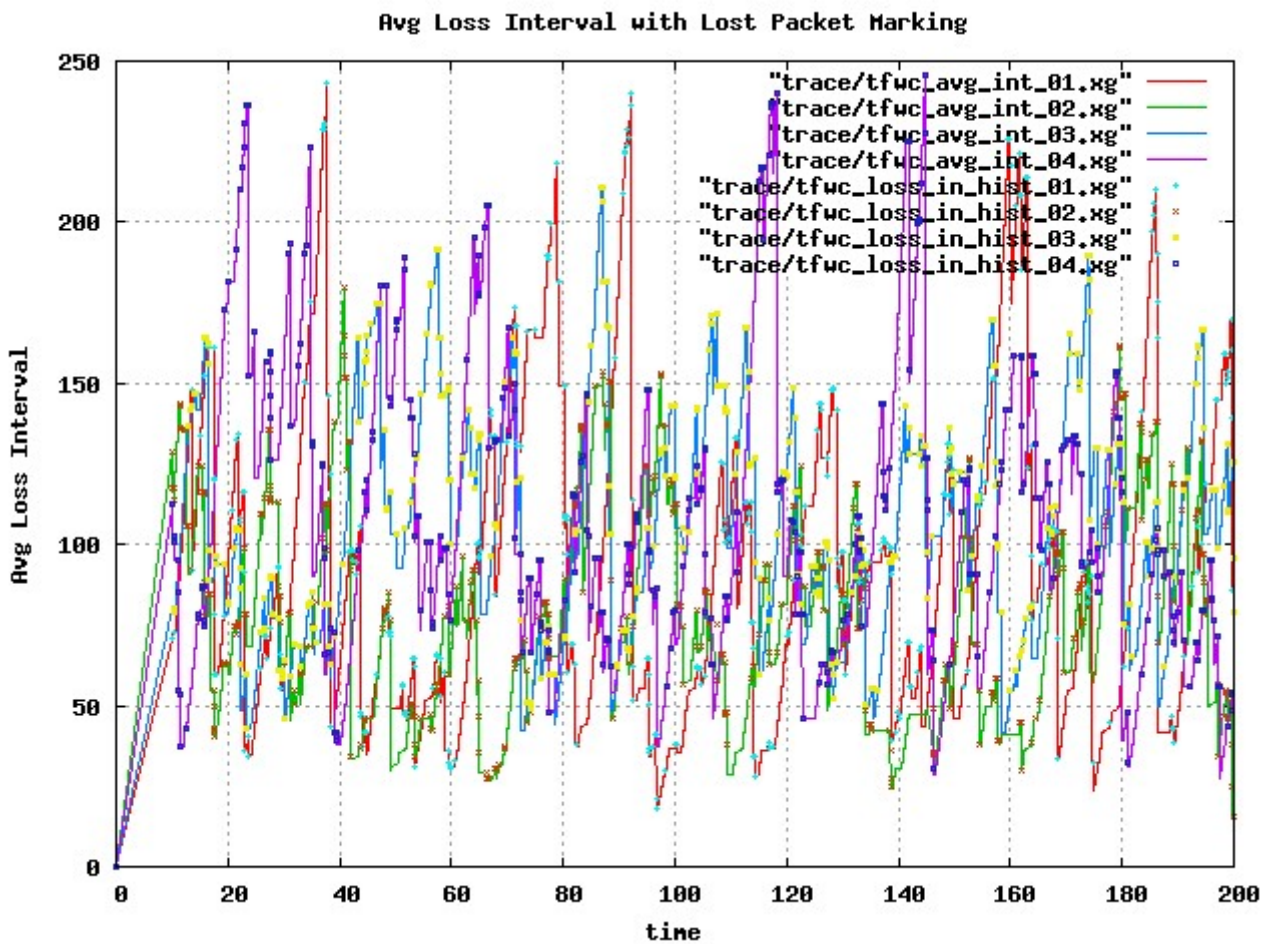
average loss interval (q=30, 8TFWC)



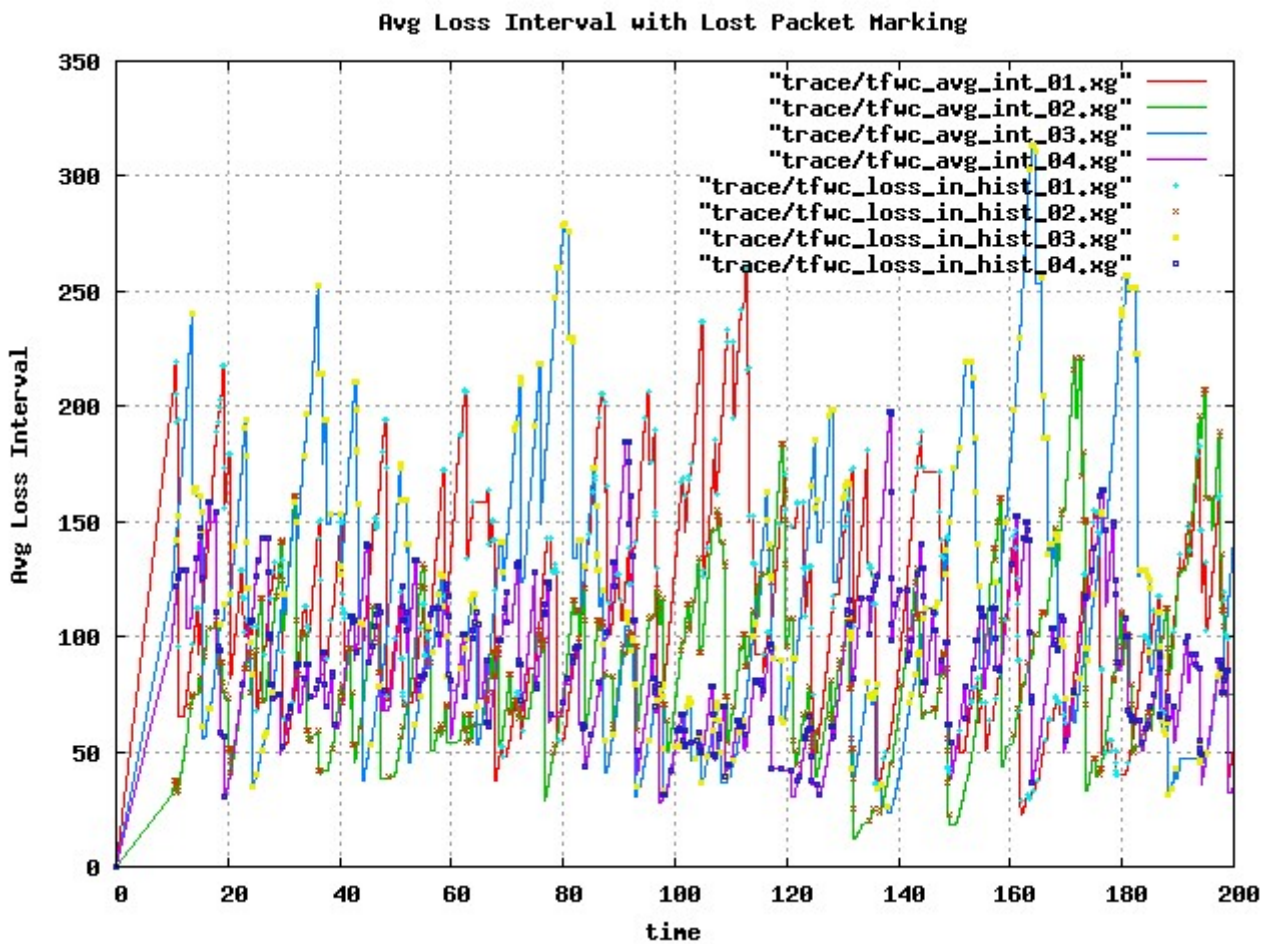
average loss interval (q=35, 8TFWC)



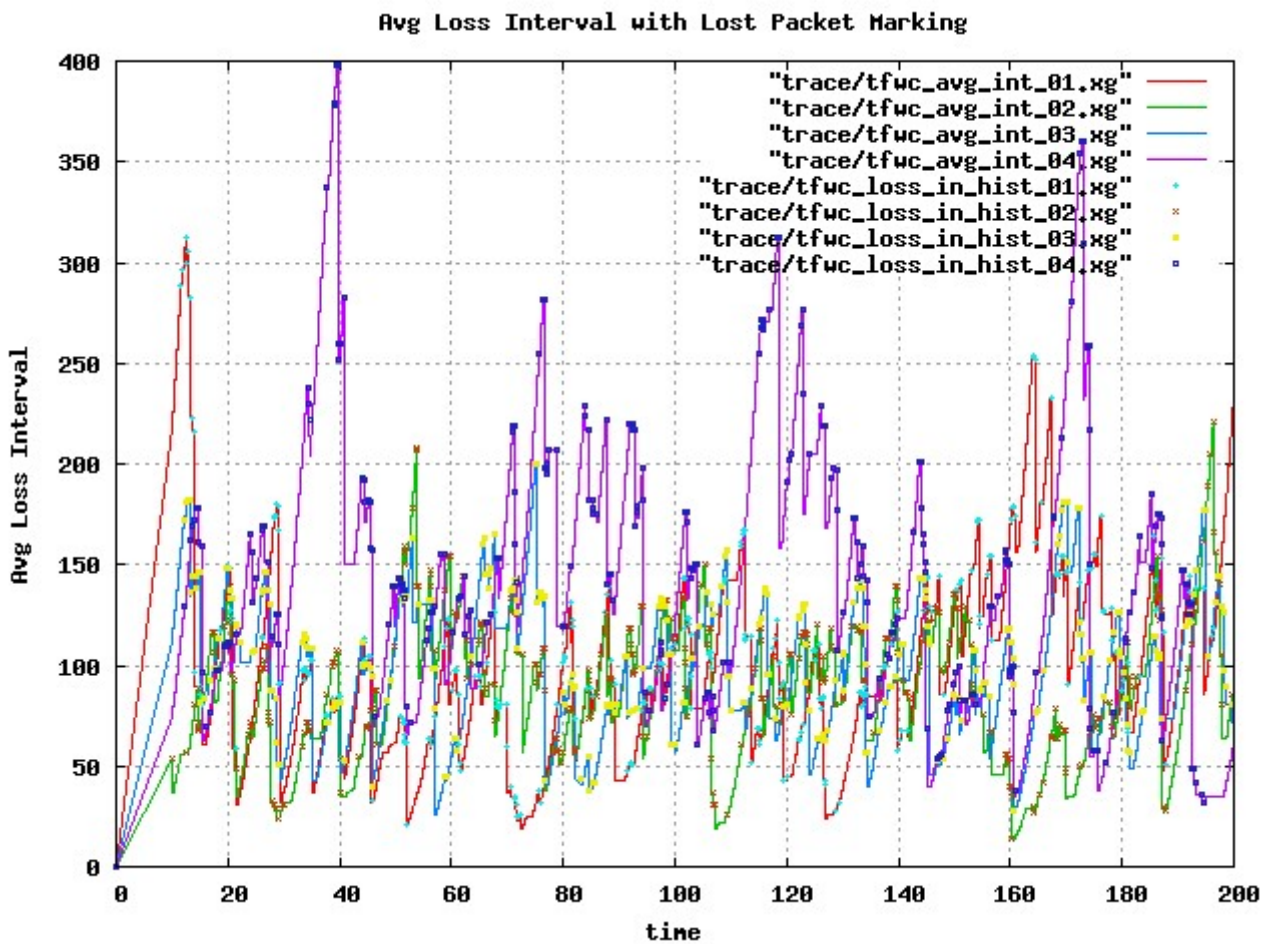
average loss interval (q=40, 8TFWC)



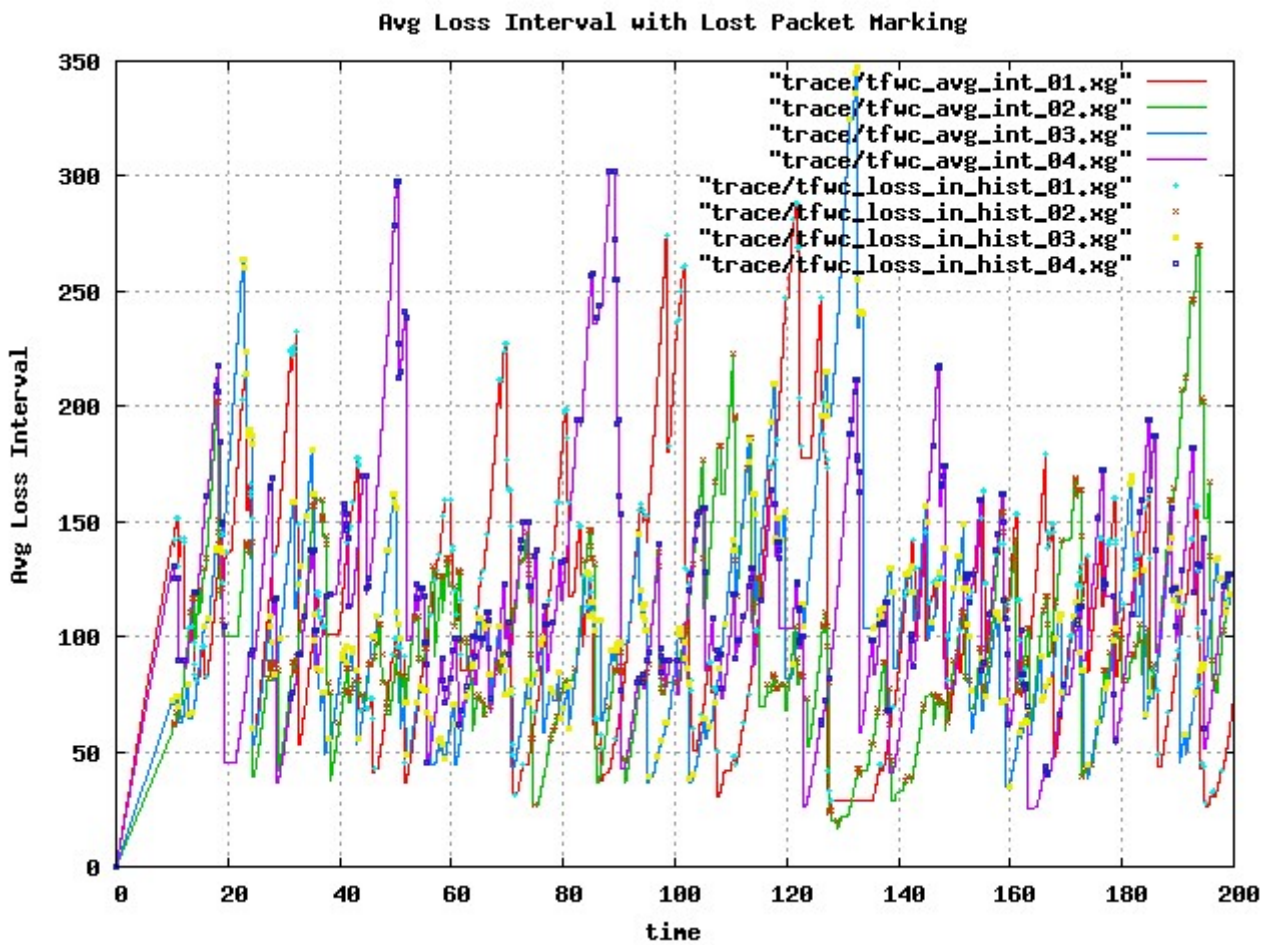
average loss interval (q=45, 8TFWC)



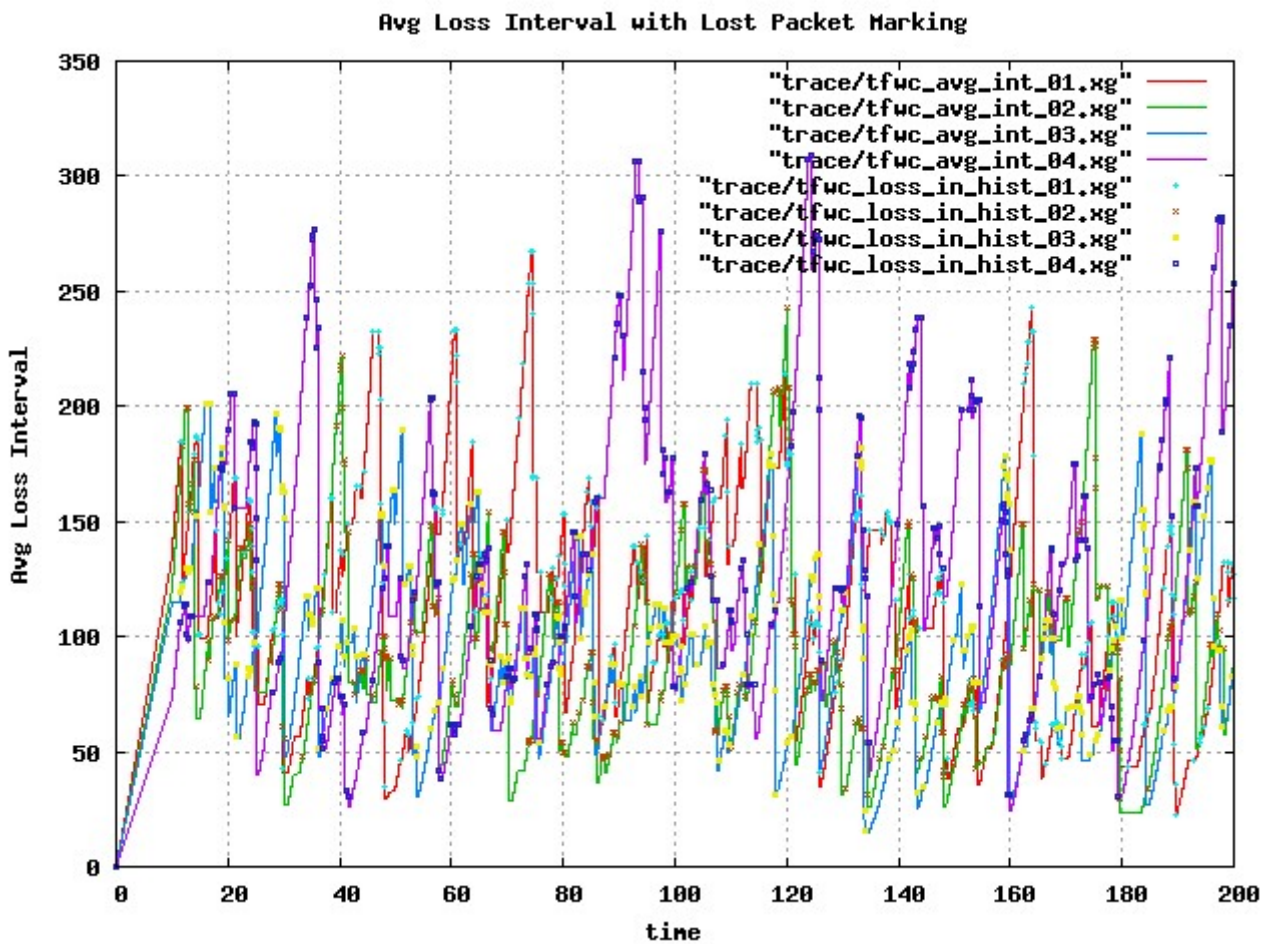
average loss interval (q=50, 8TFWC)



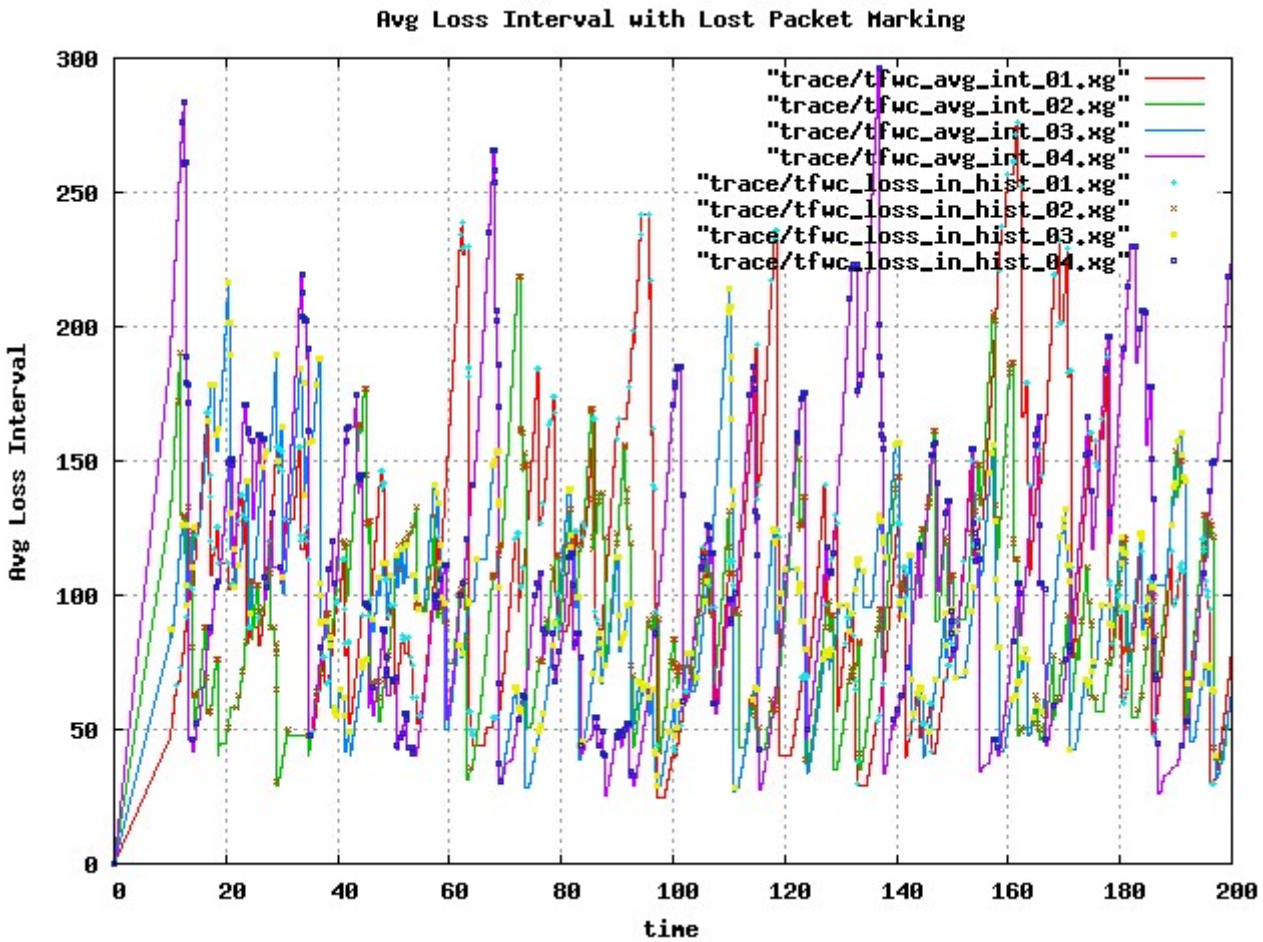
average loss interval (q=55, 8TFWC)



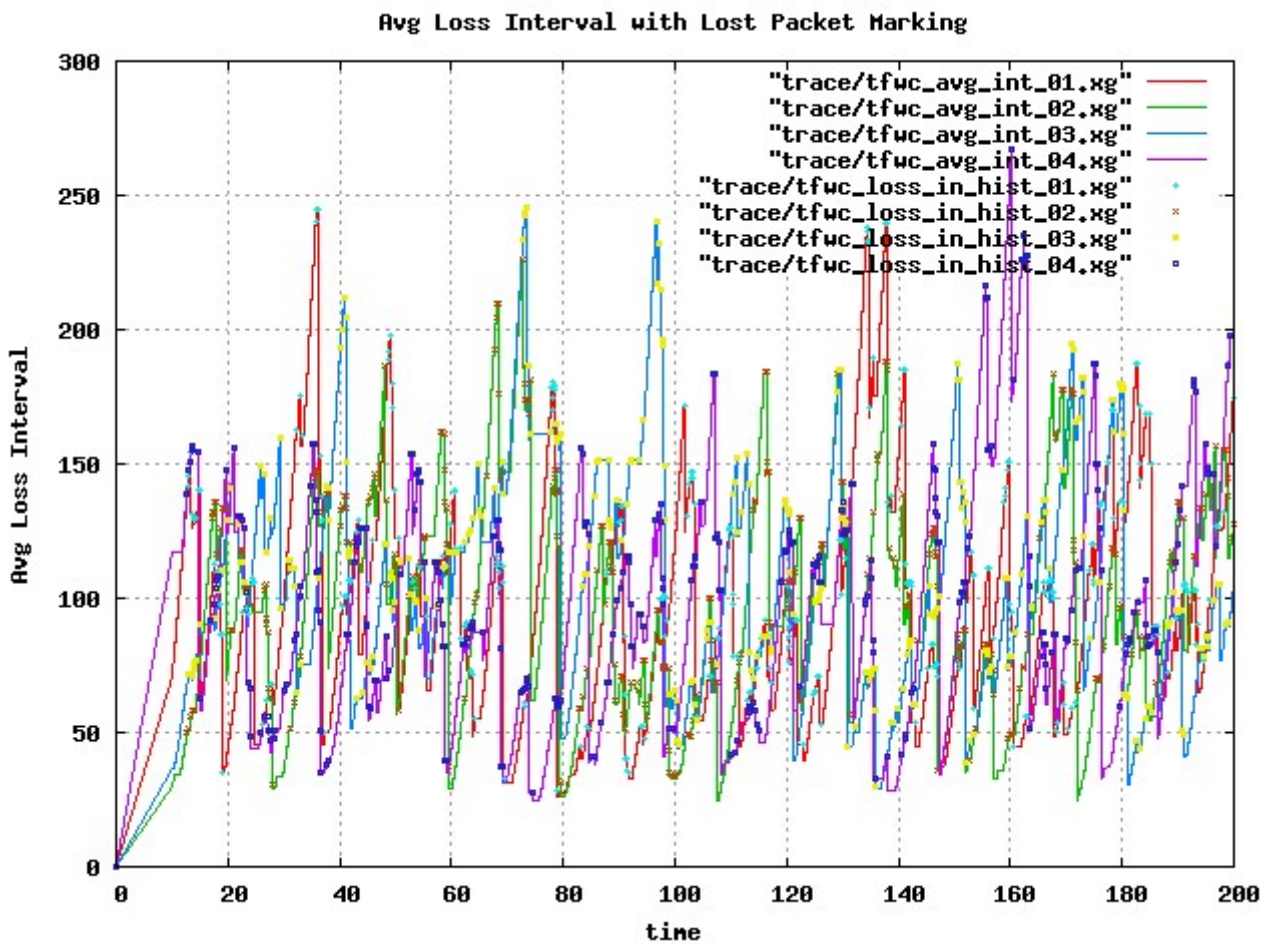
average loss interval (q=60, 8TFWC)



average loss interval (q=65, 8TFWC)



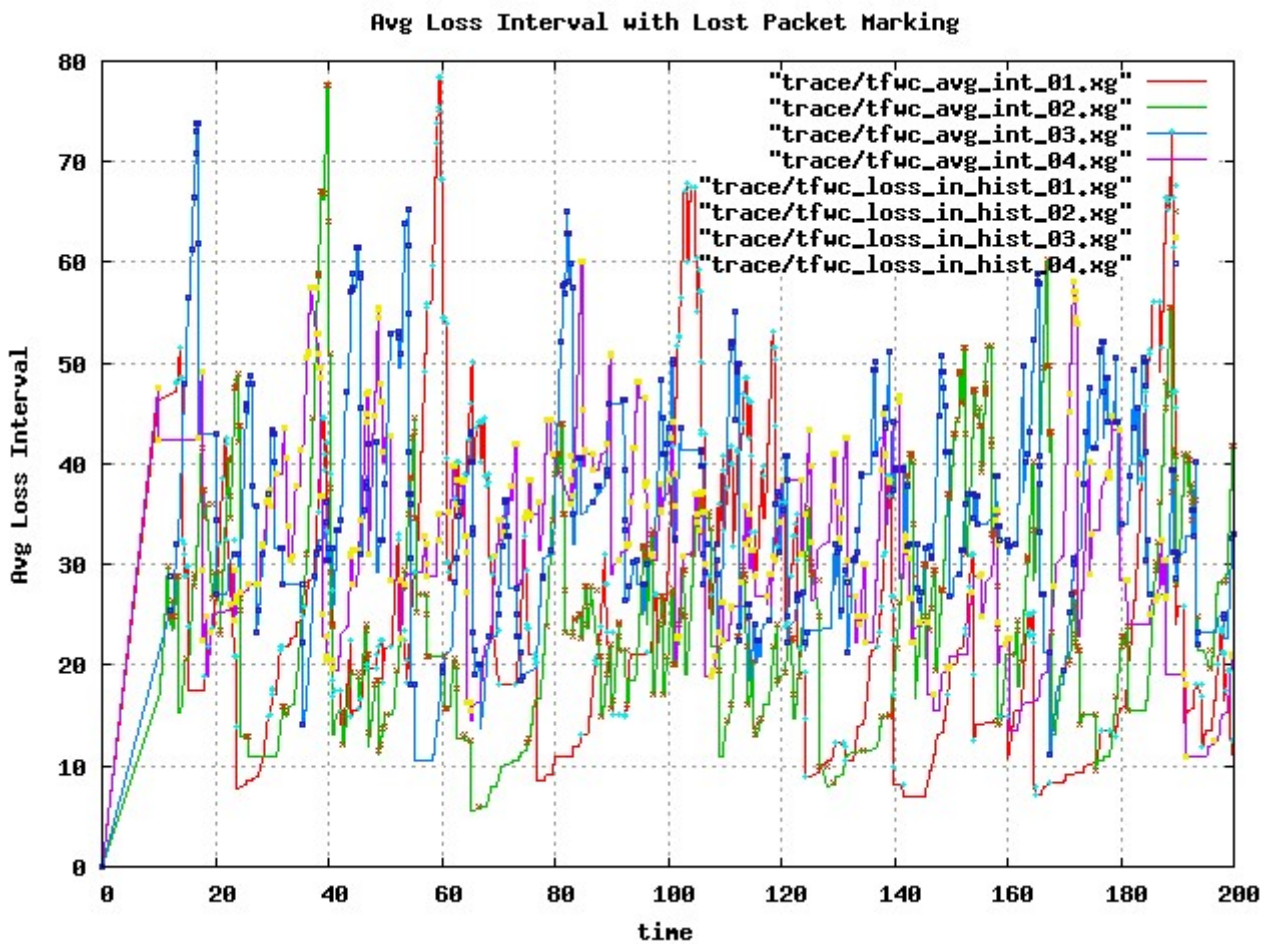
average loss interval (q=70, 8TFWC)



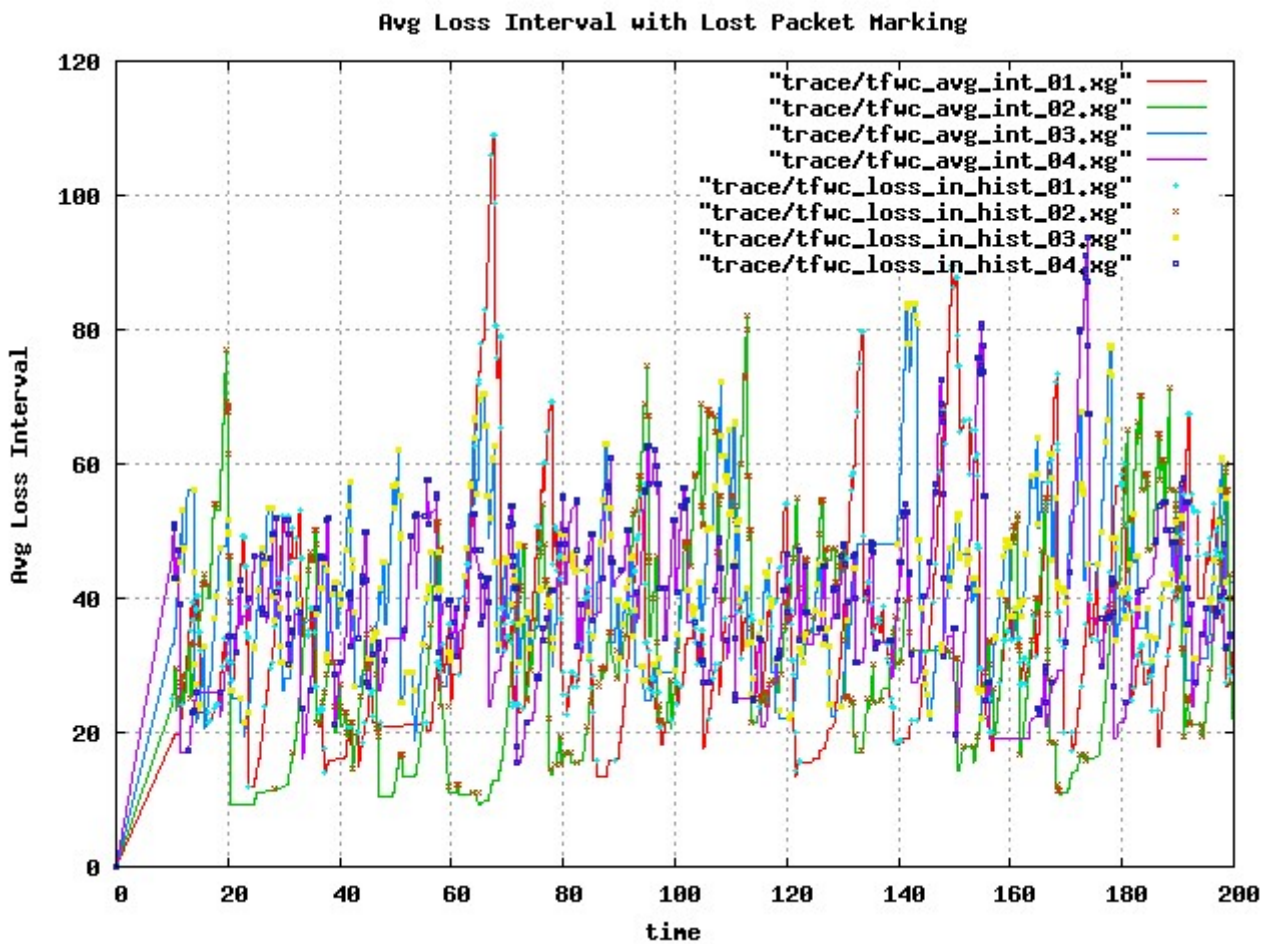
12 TFWC w/ 12 reverse TCP
Varying Bottleneck (RED) Queue Size (10 ~ 75)
Simulation Time = 200
Random Seed Number = 177

Phase Break = On
Probability = 10%

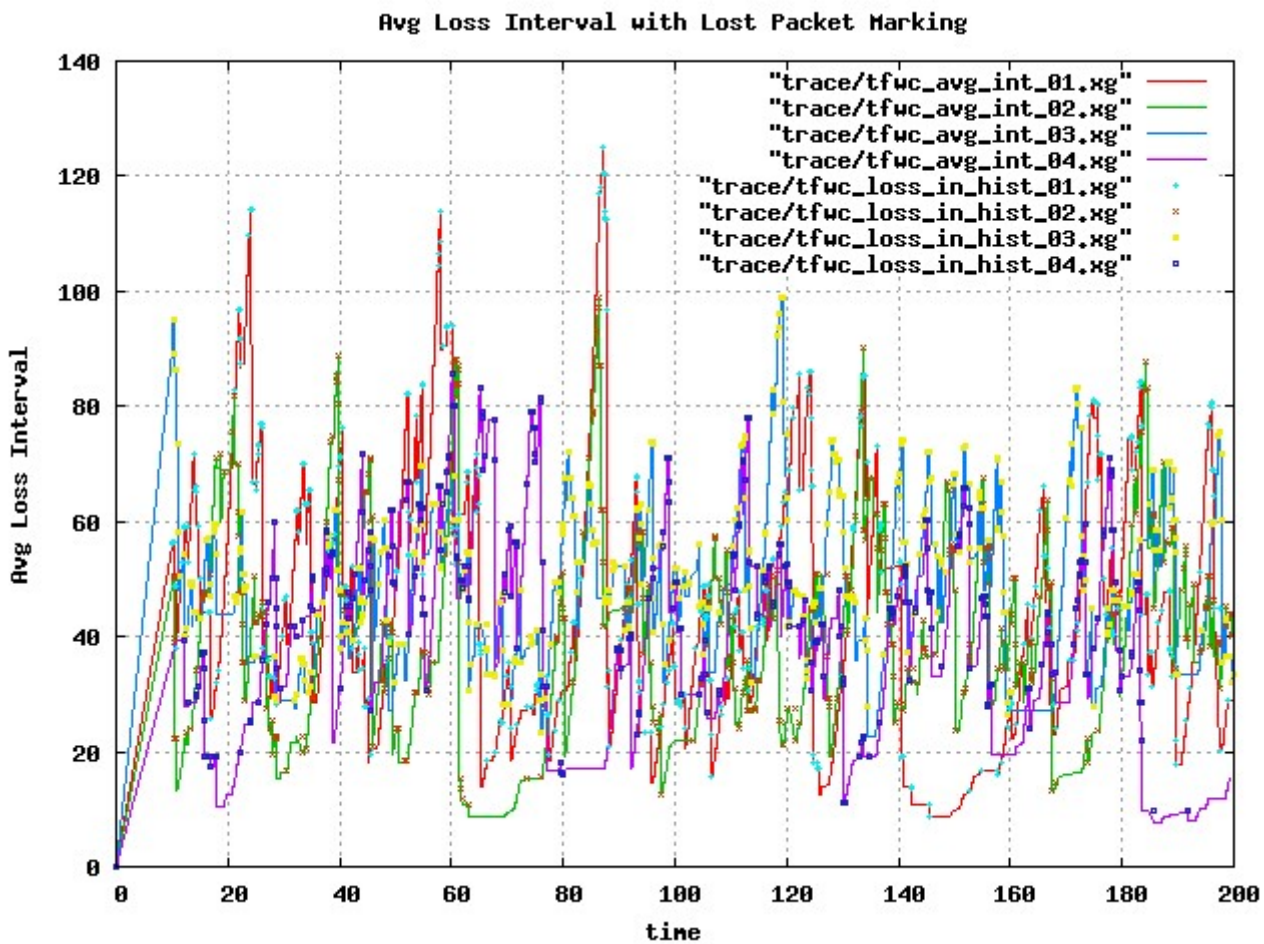
average loss interval (q=10, 12TFWC)



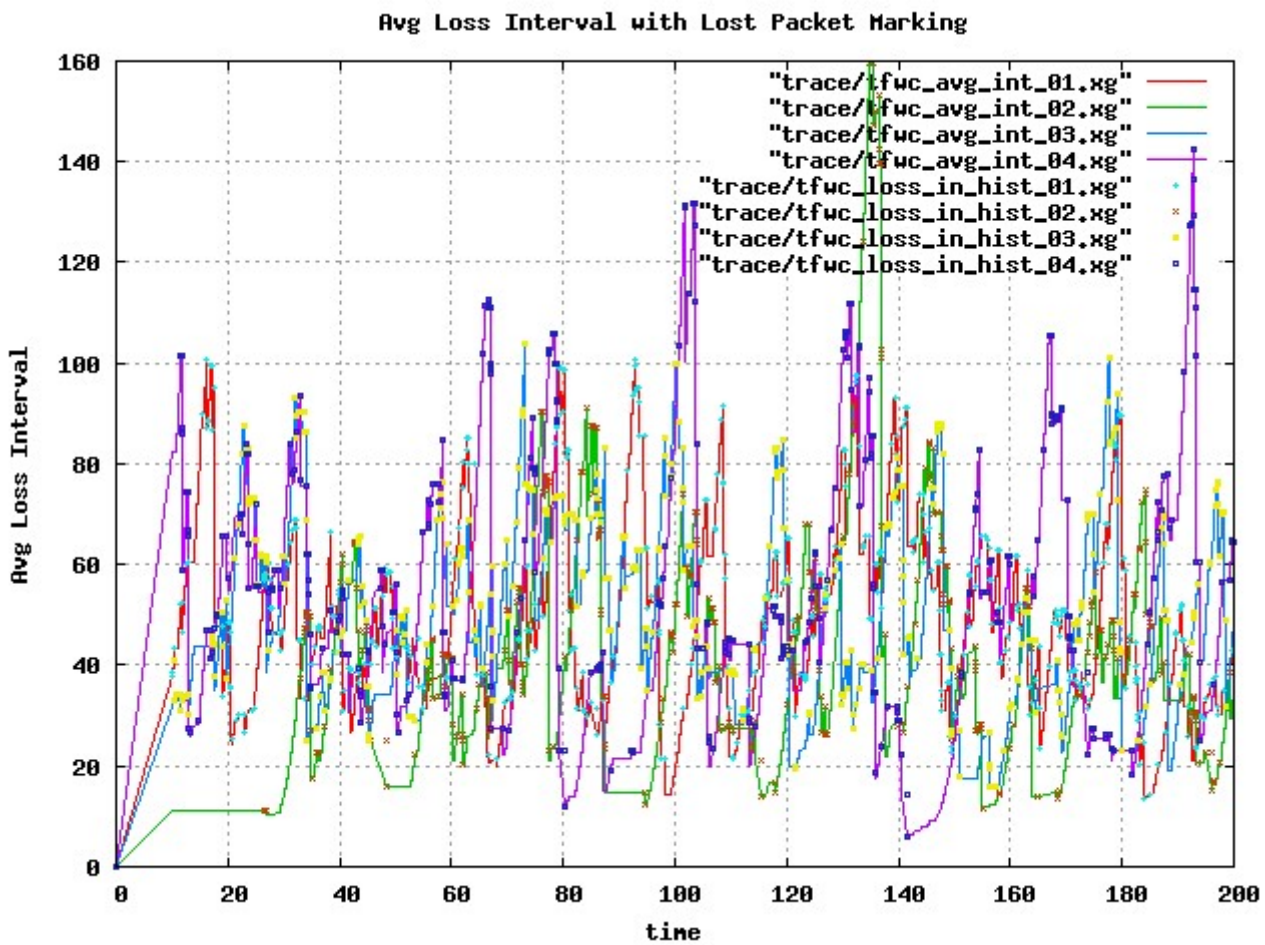
average loss interval (q=15, 12TFWC)



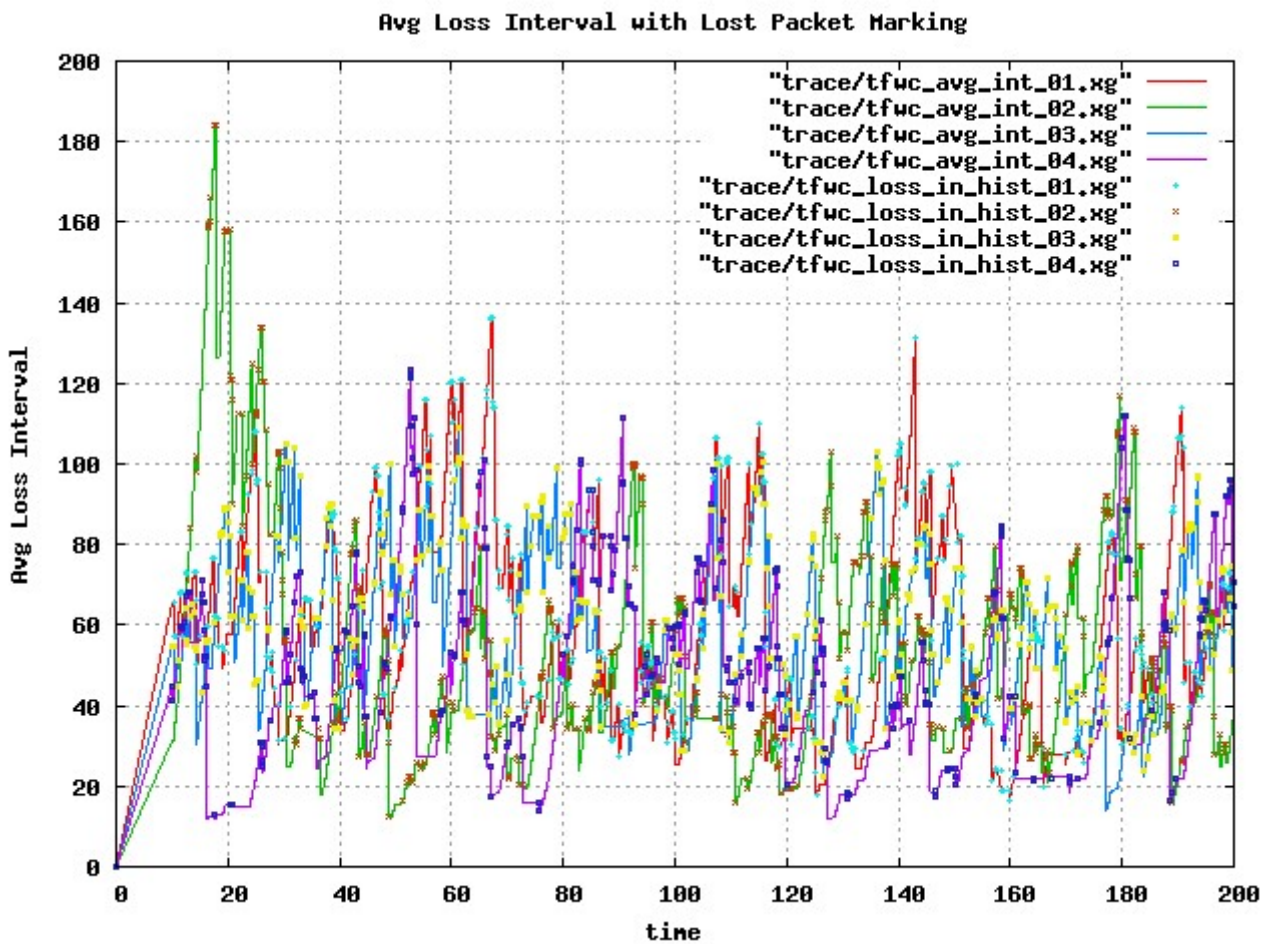
average loss interval (q=20, 12TFWC)



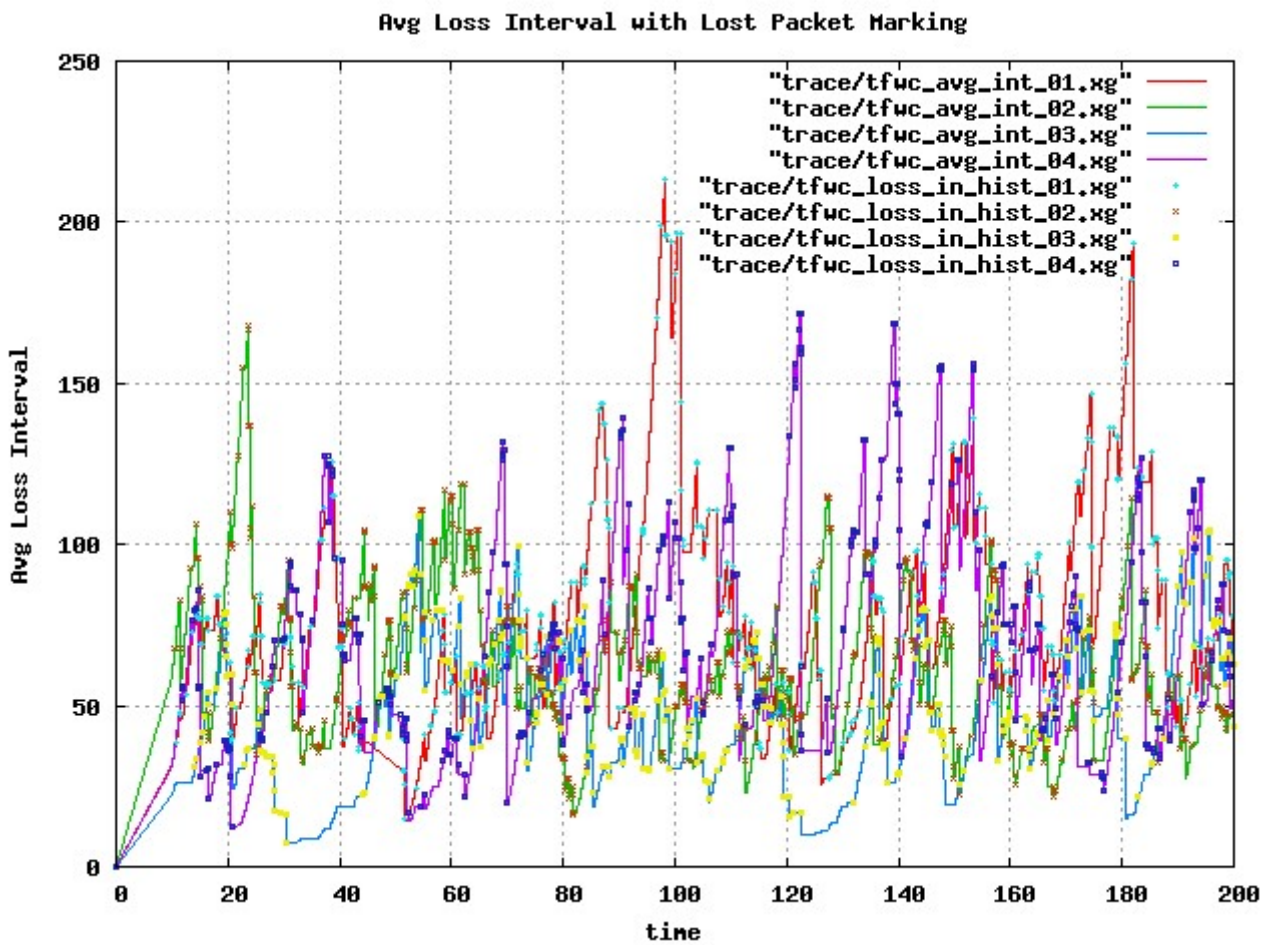
average loss interval (q=25, 12TFWC)



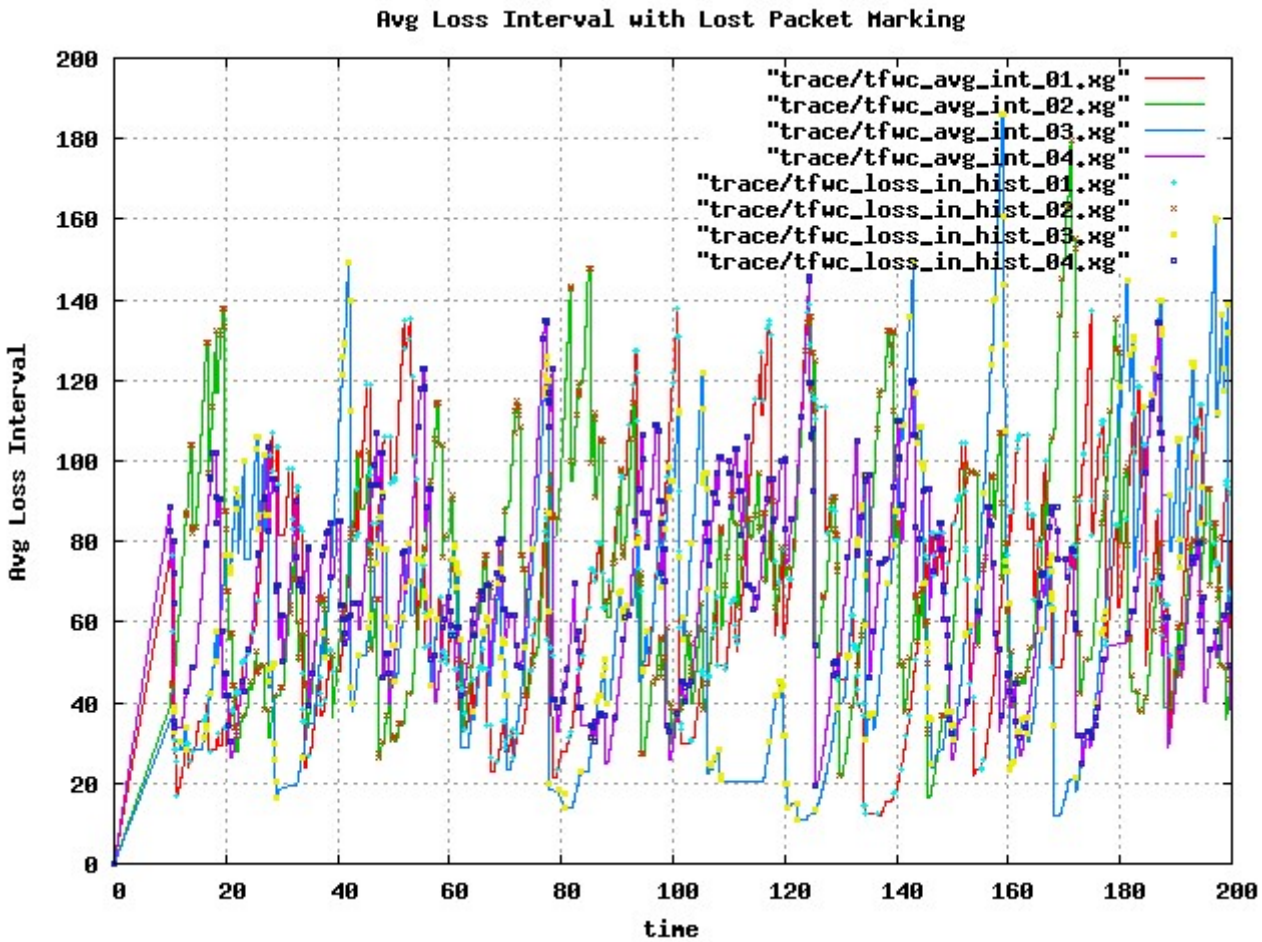
average loss interval (q=30, 12TFWC)



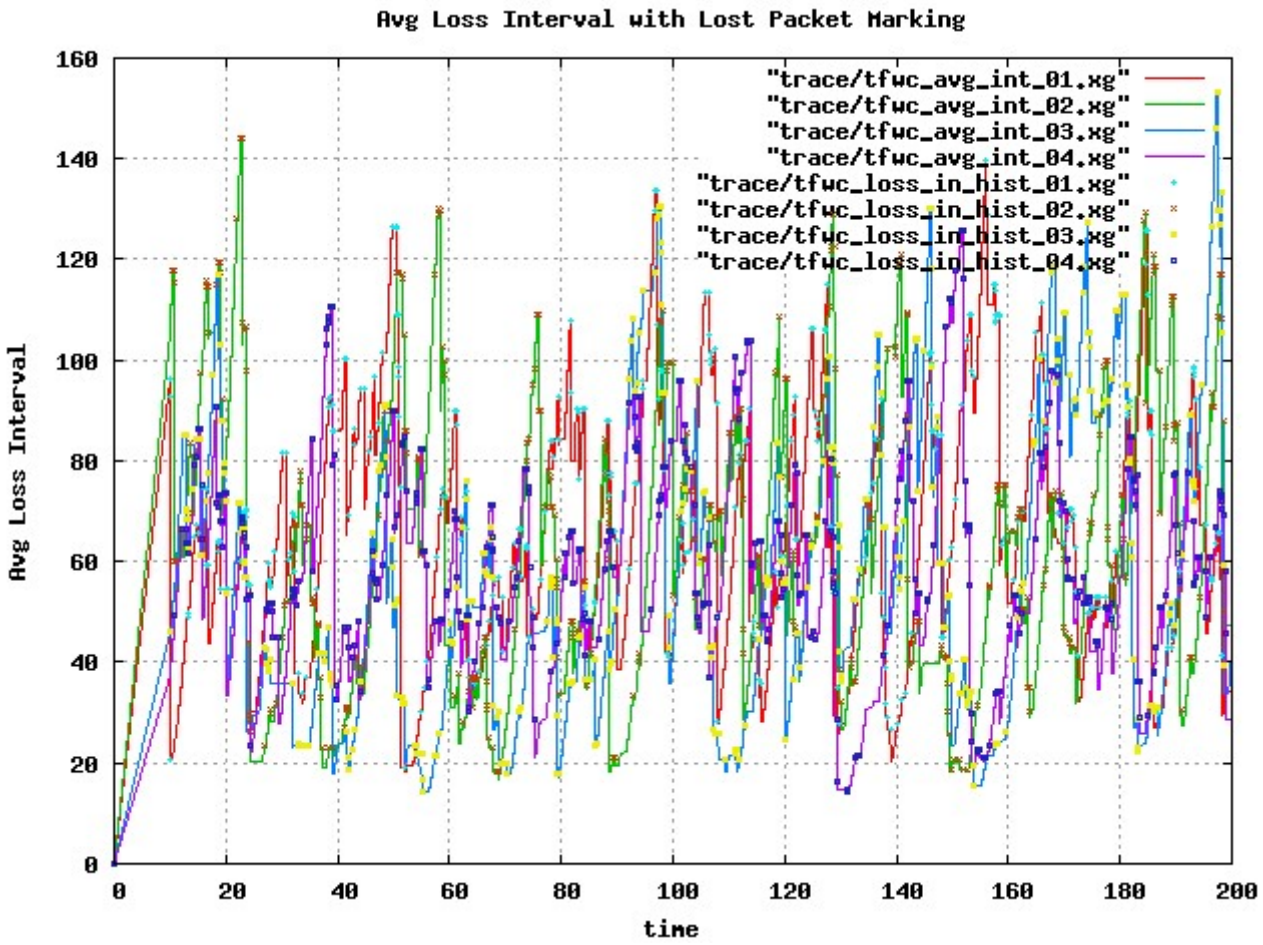
average loss interval (q=35, 12TFWC)



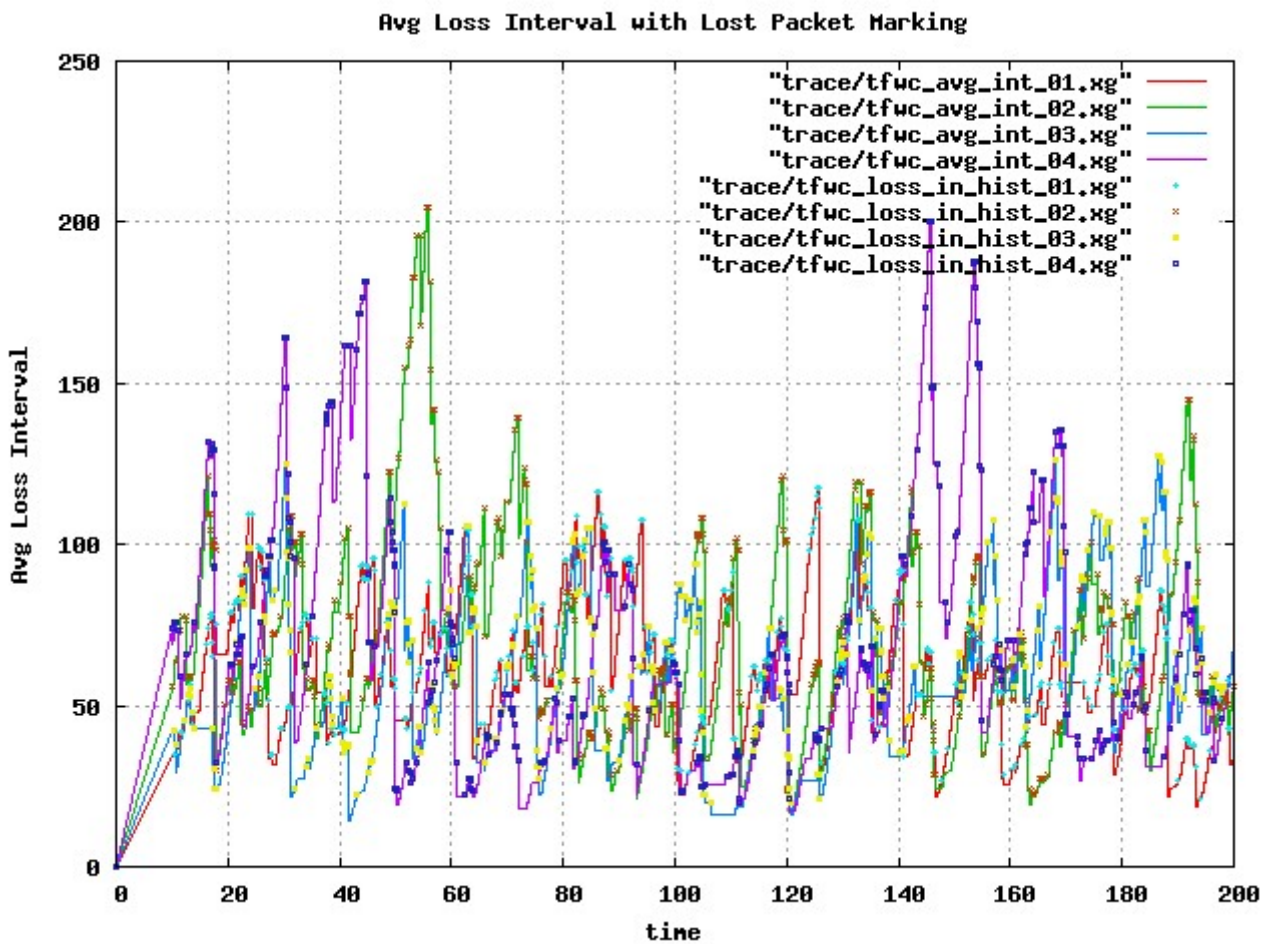
average loss interval (q=40, 12TFWC)



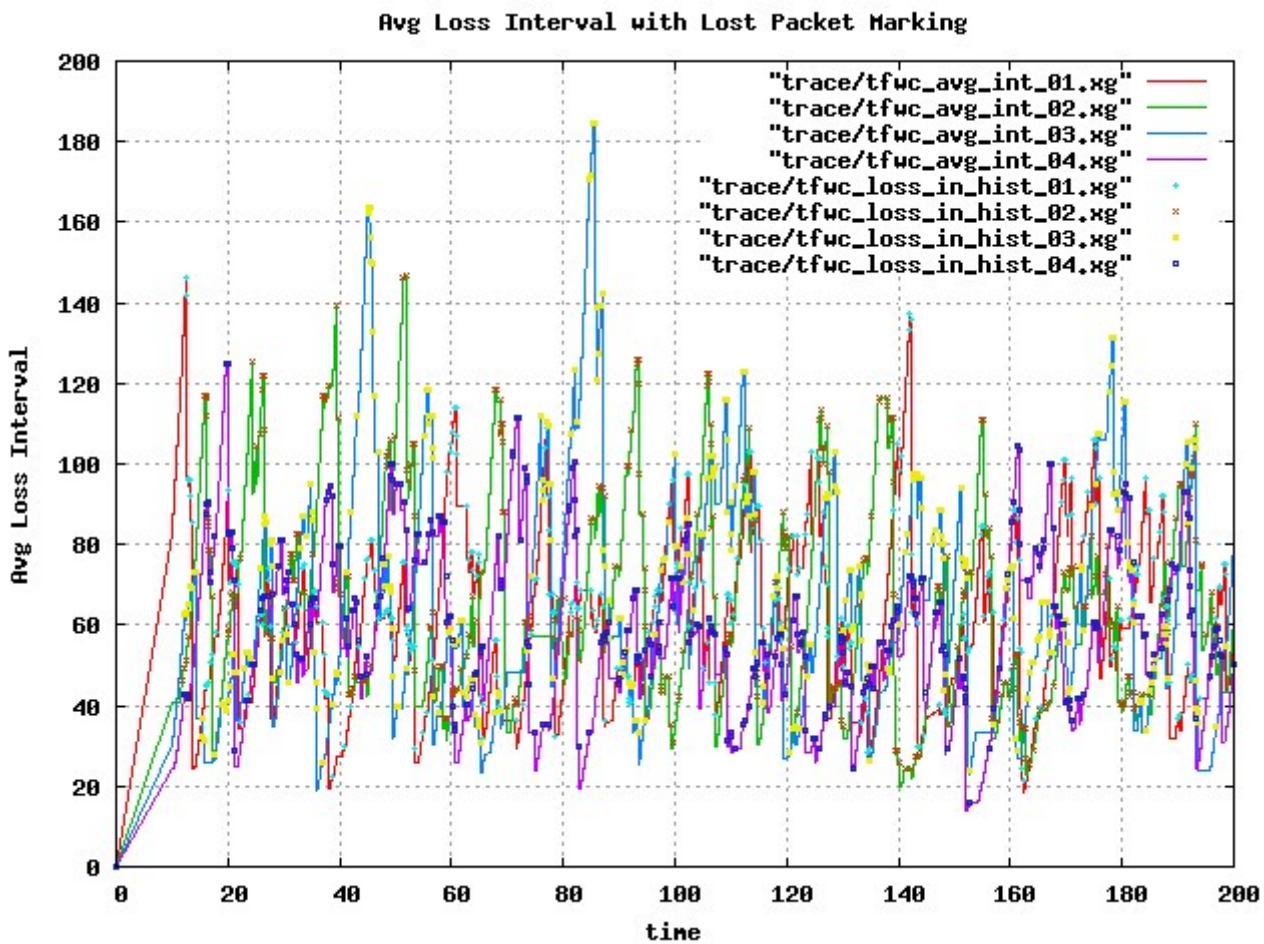
average loss interval (q=45, 12TFWC)



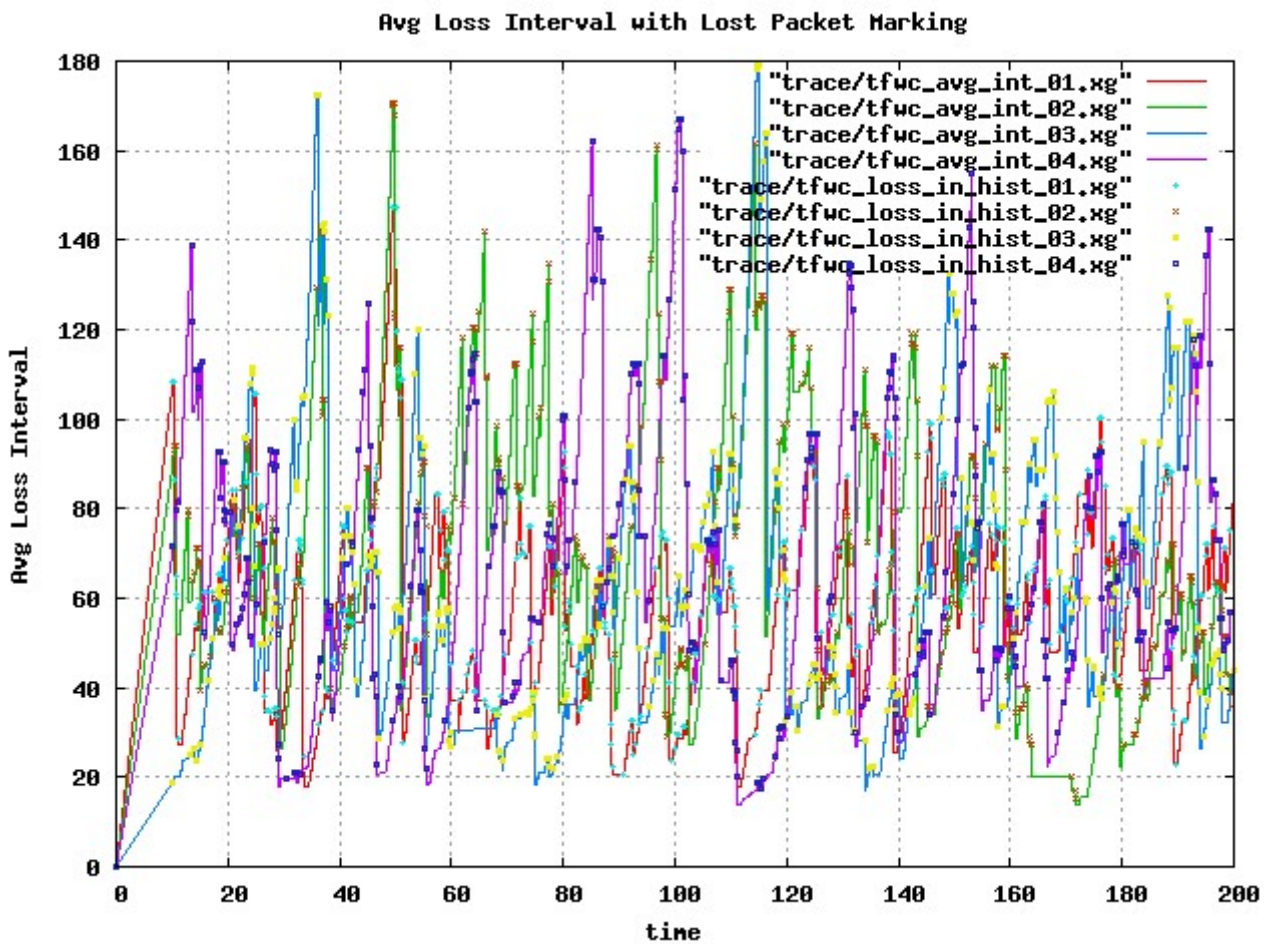
average loss interval (q=50, 12TFWC)



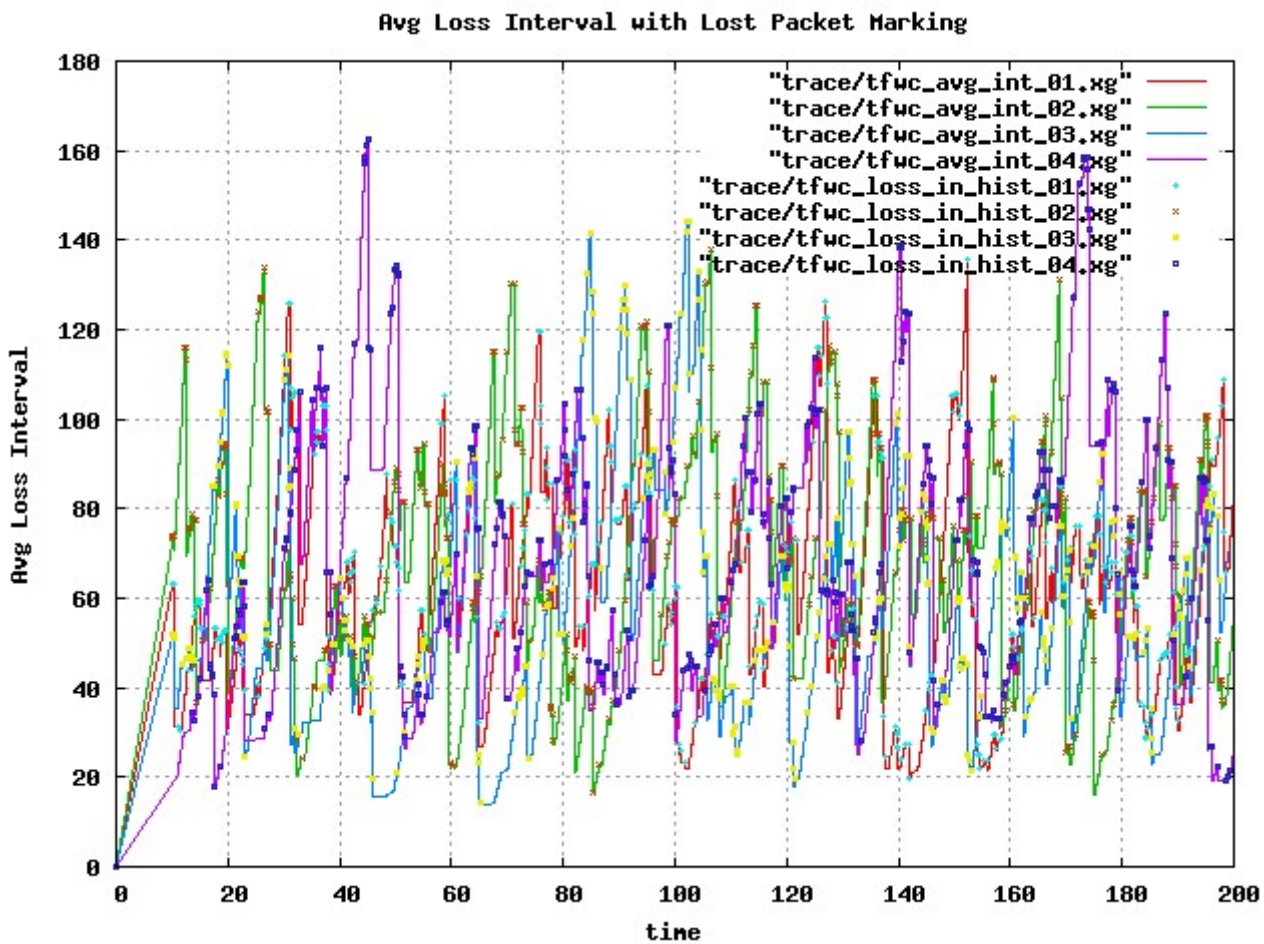
average loss interval (q=55, 12TFWC)



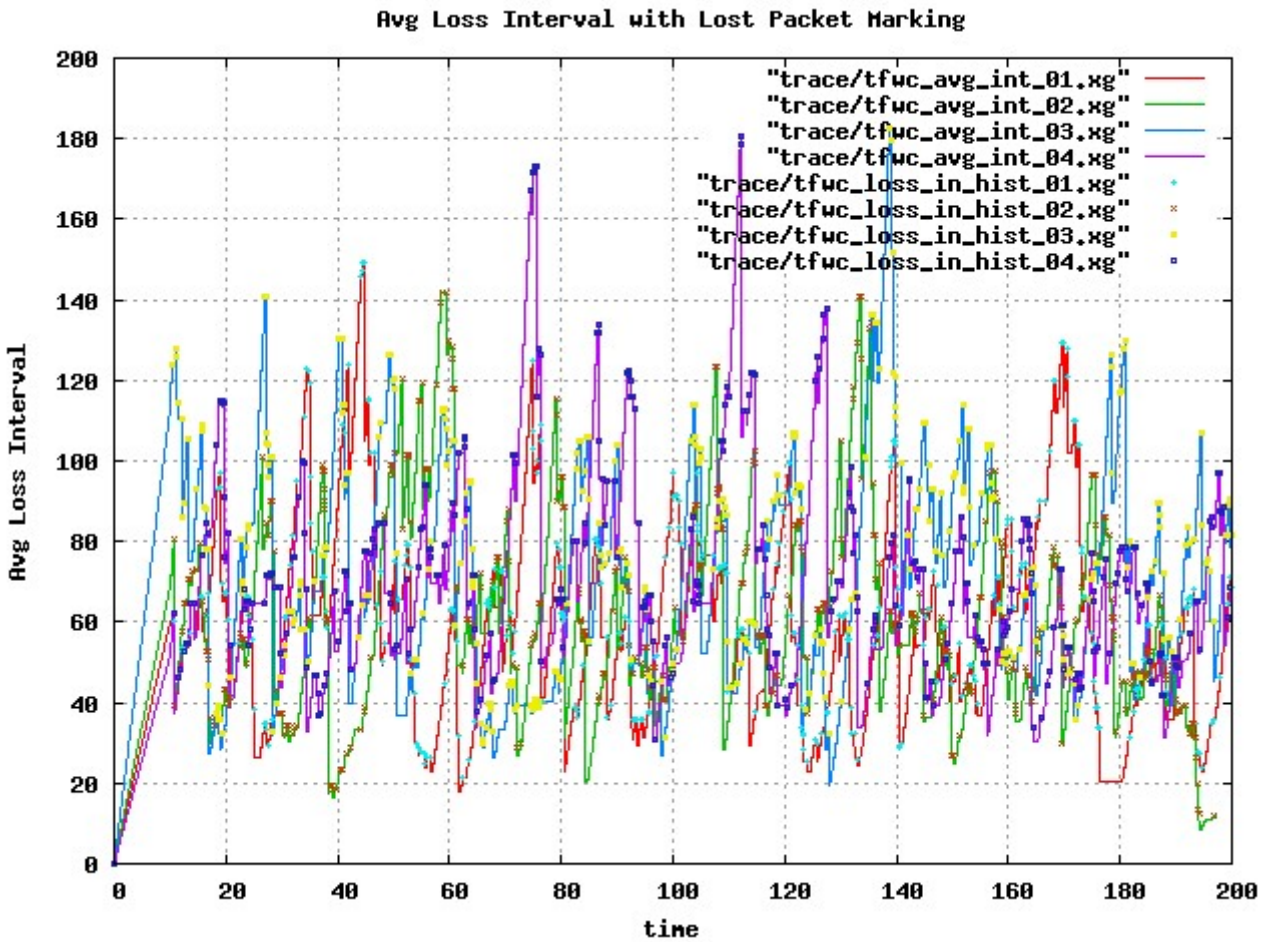
average loss interval (q=60, 12TFWC)



average loss interval (q=65, 12TFWC)



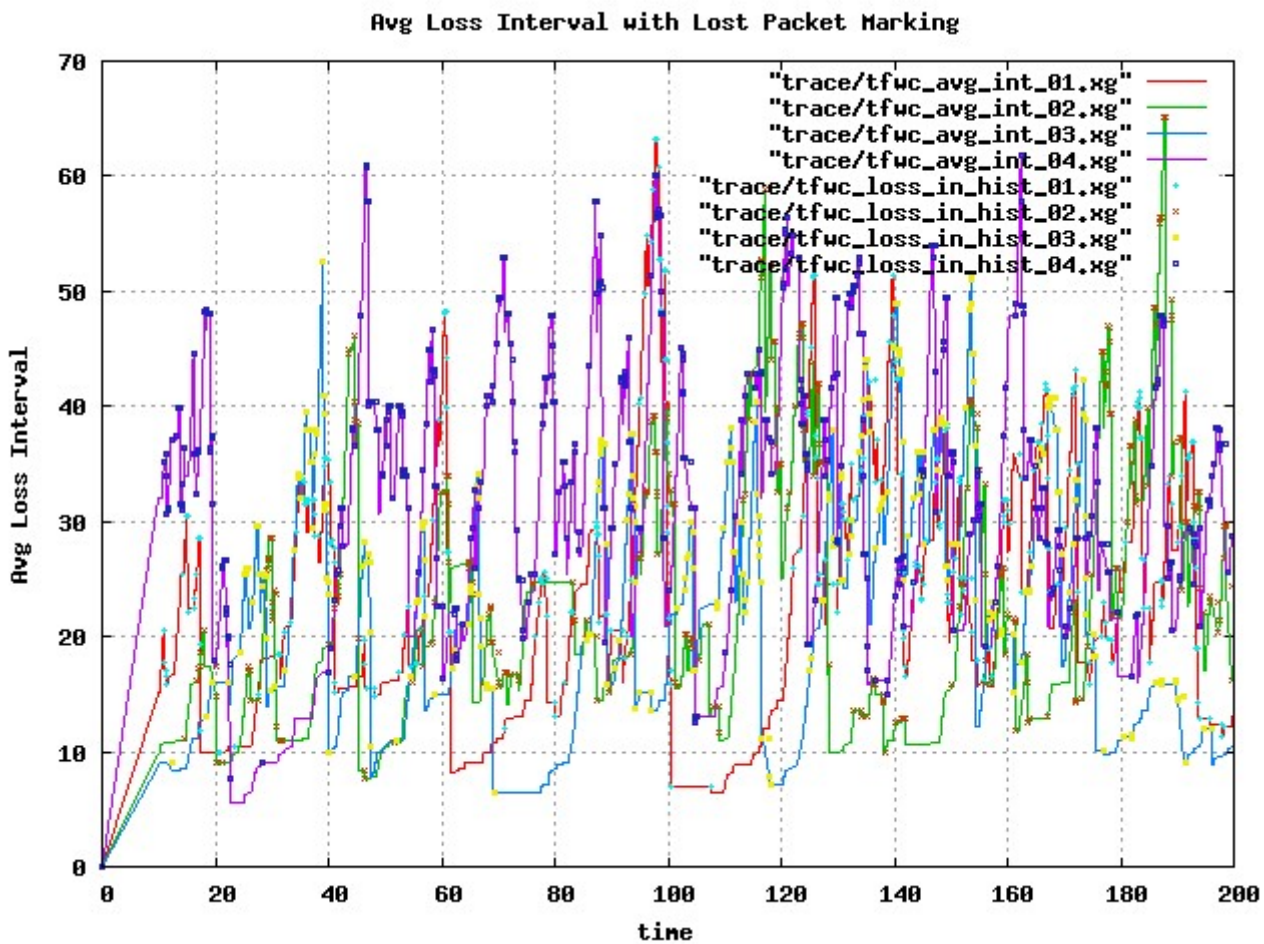
average loss interval (q=70, 12TFWC)



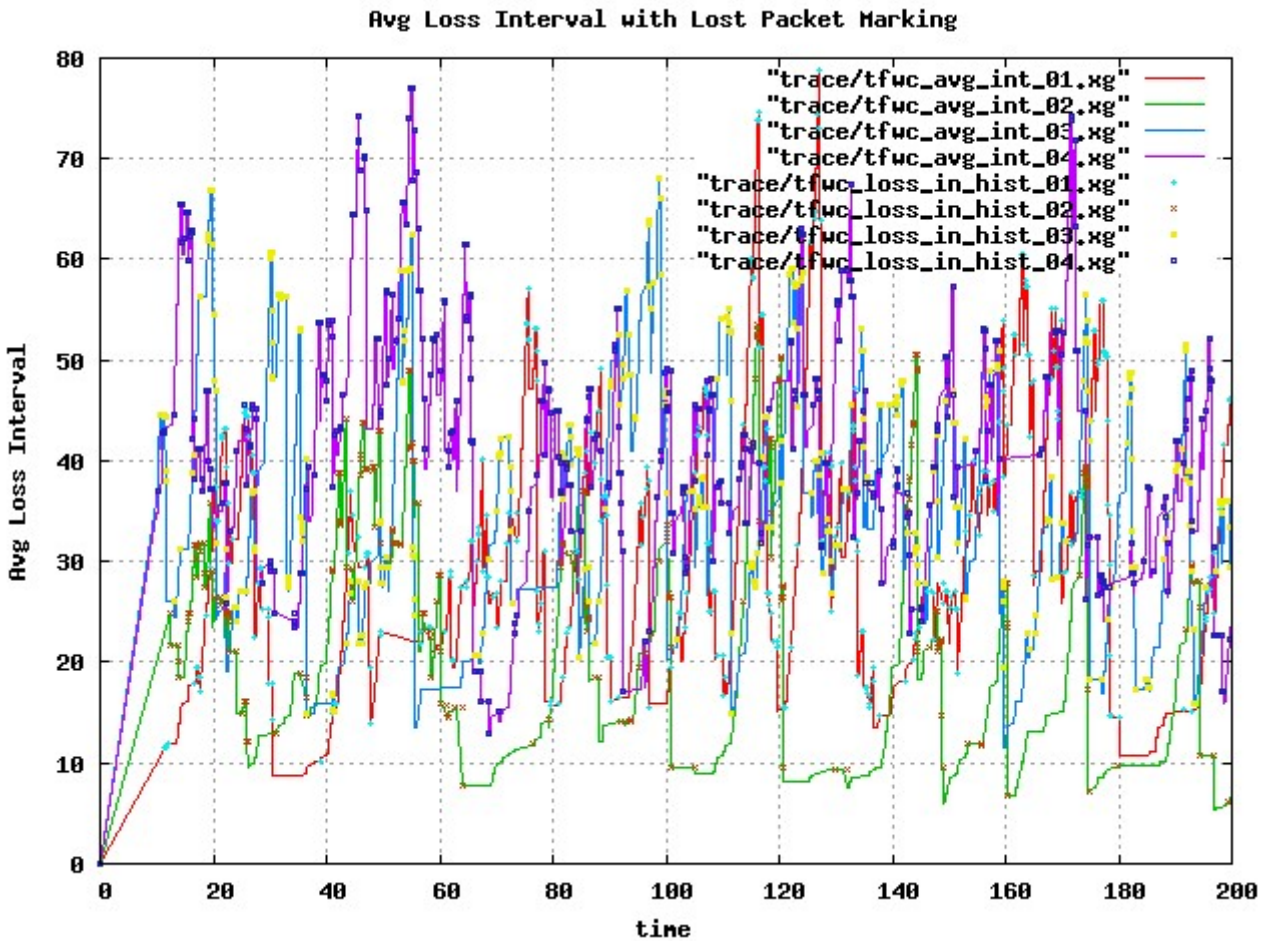
16 TFWC w/ 16 reverse TCP
Varying Bottleneck (RED) Queue Size (10 ~ 75)
Simulation Time = 200
Random Seed Number = 177

Phase Break = On
Probability = 10%

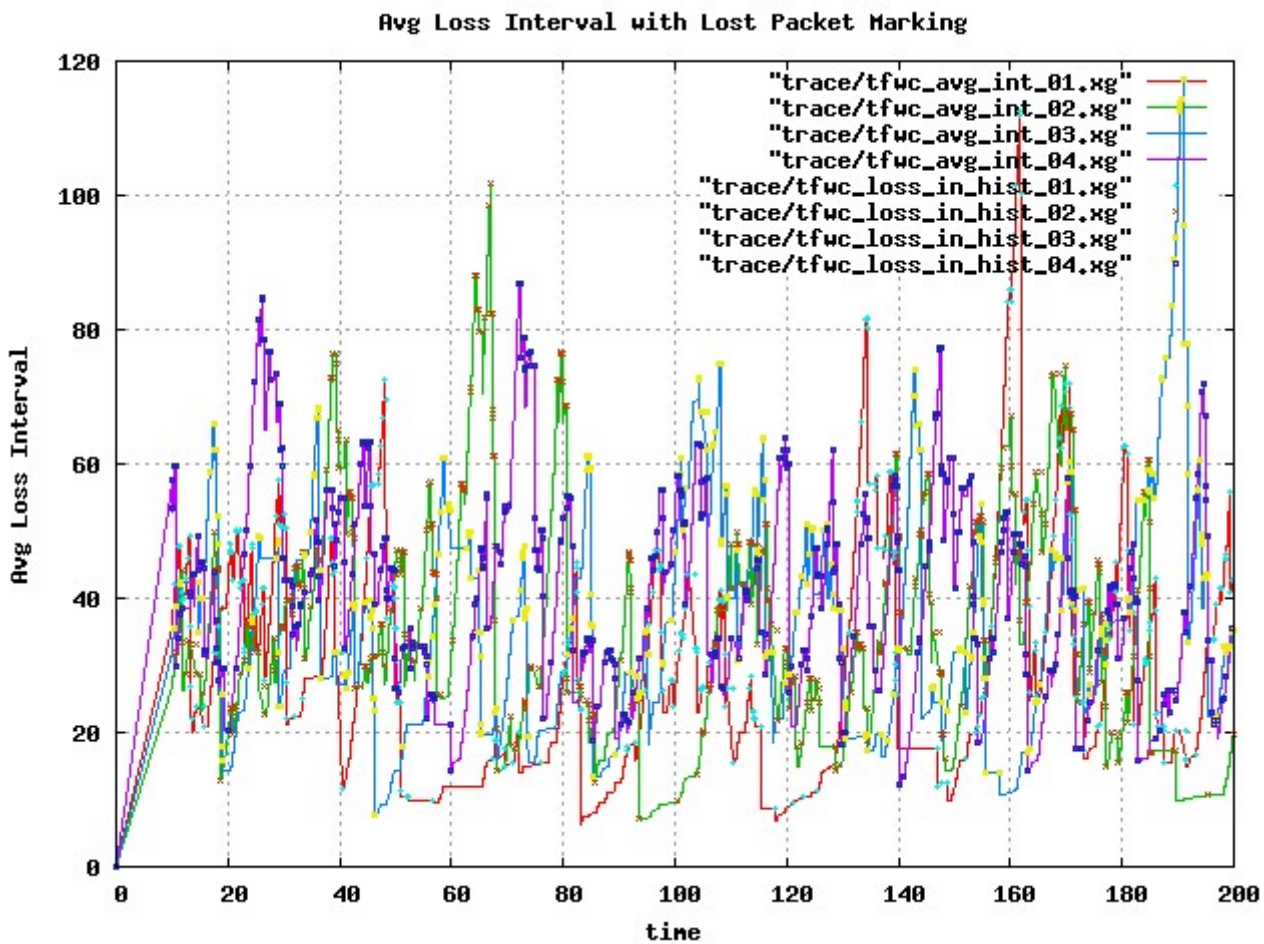
average loss interval (q=10, 16TFWC)



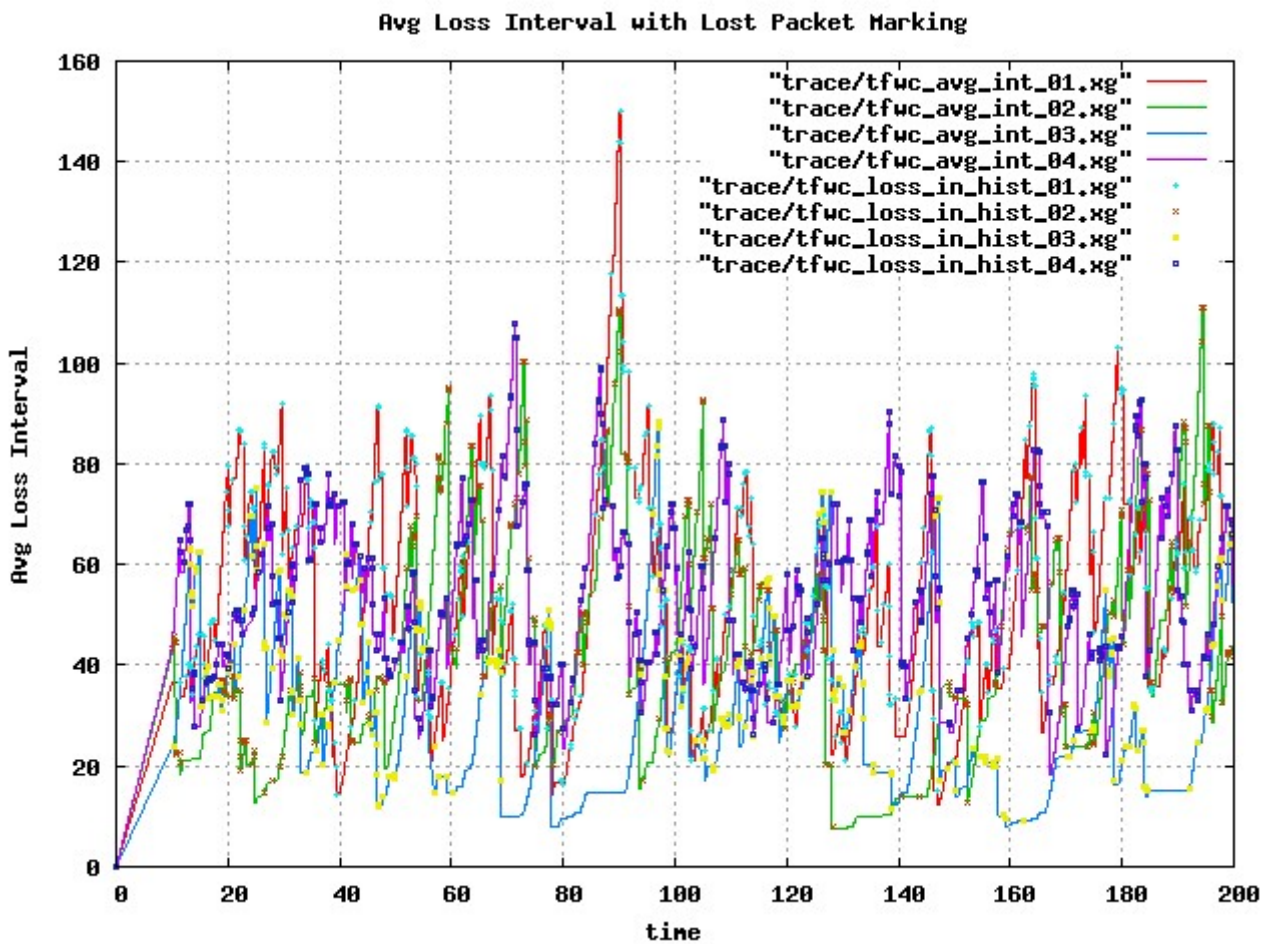
average loss interval (q=15, 16TFWC)



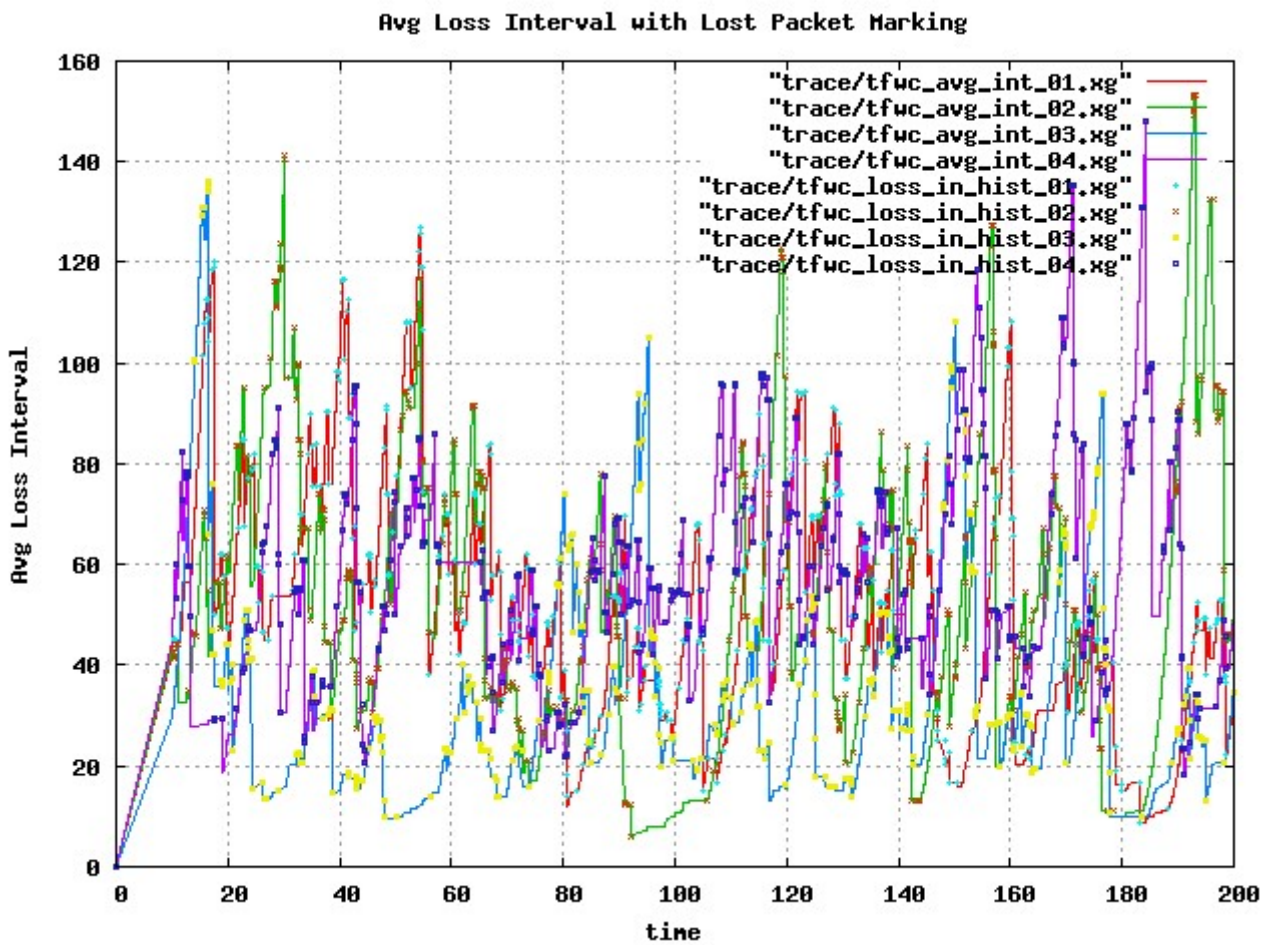
average loss interval (q=20, 16TFWC)



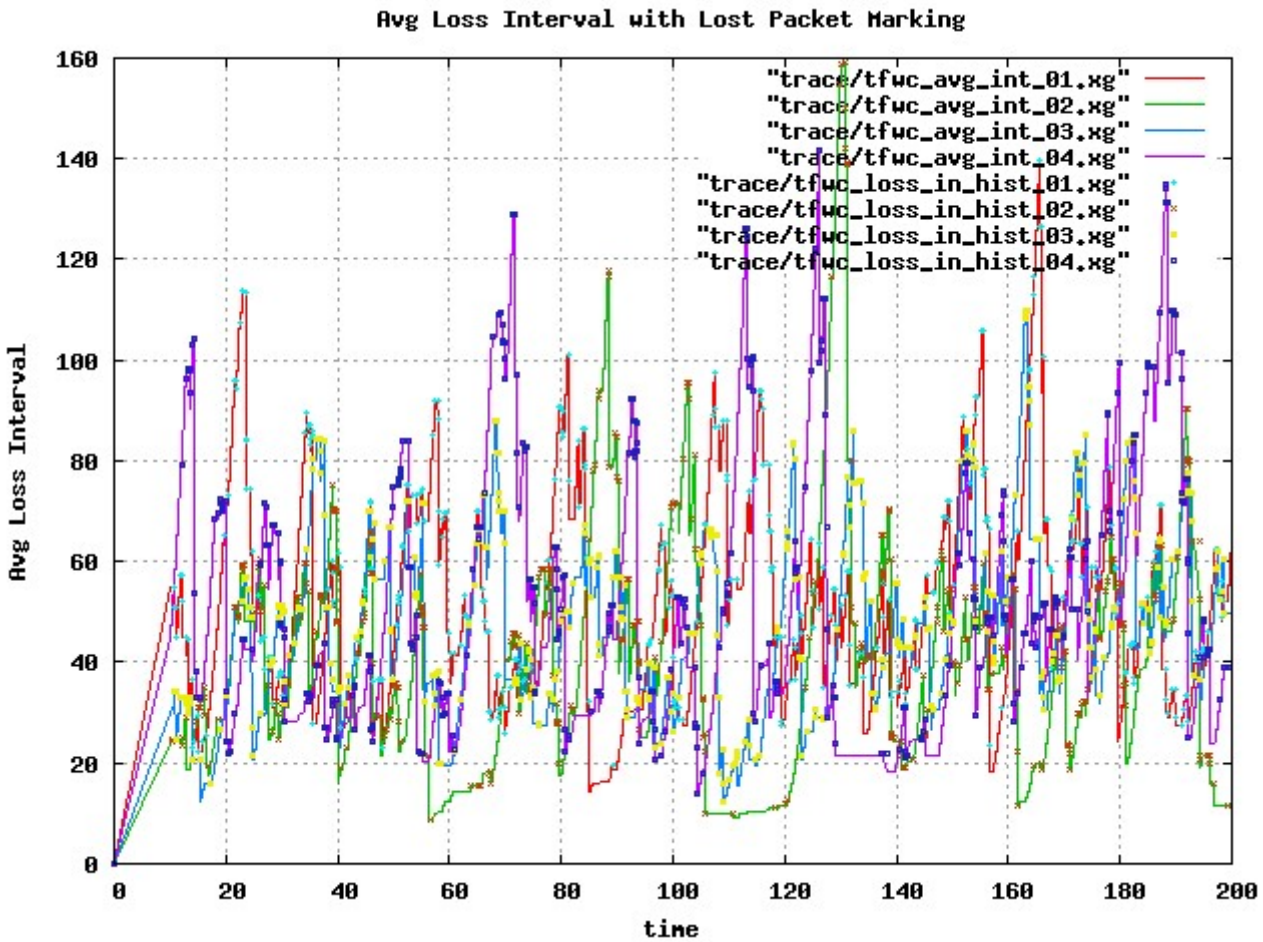
average loss interval (q=25, 16TFWC)



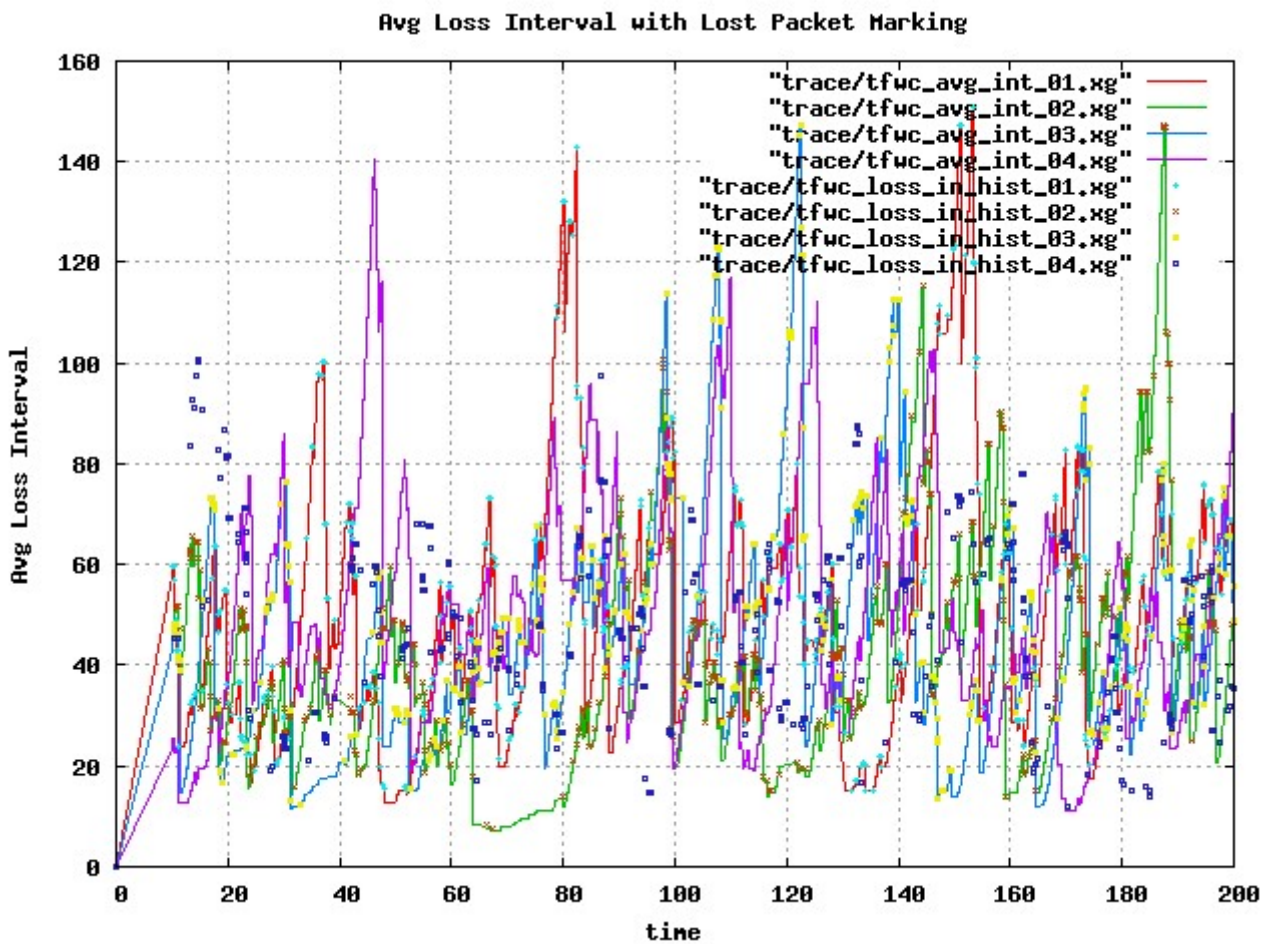
average loss interval (q=30, 16TFWC)



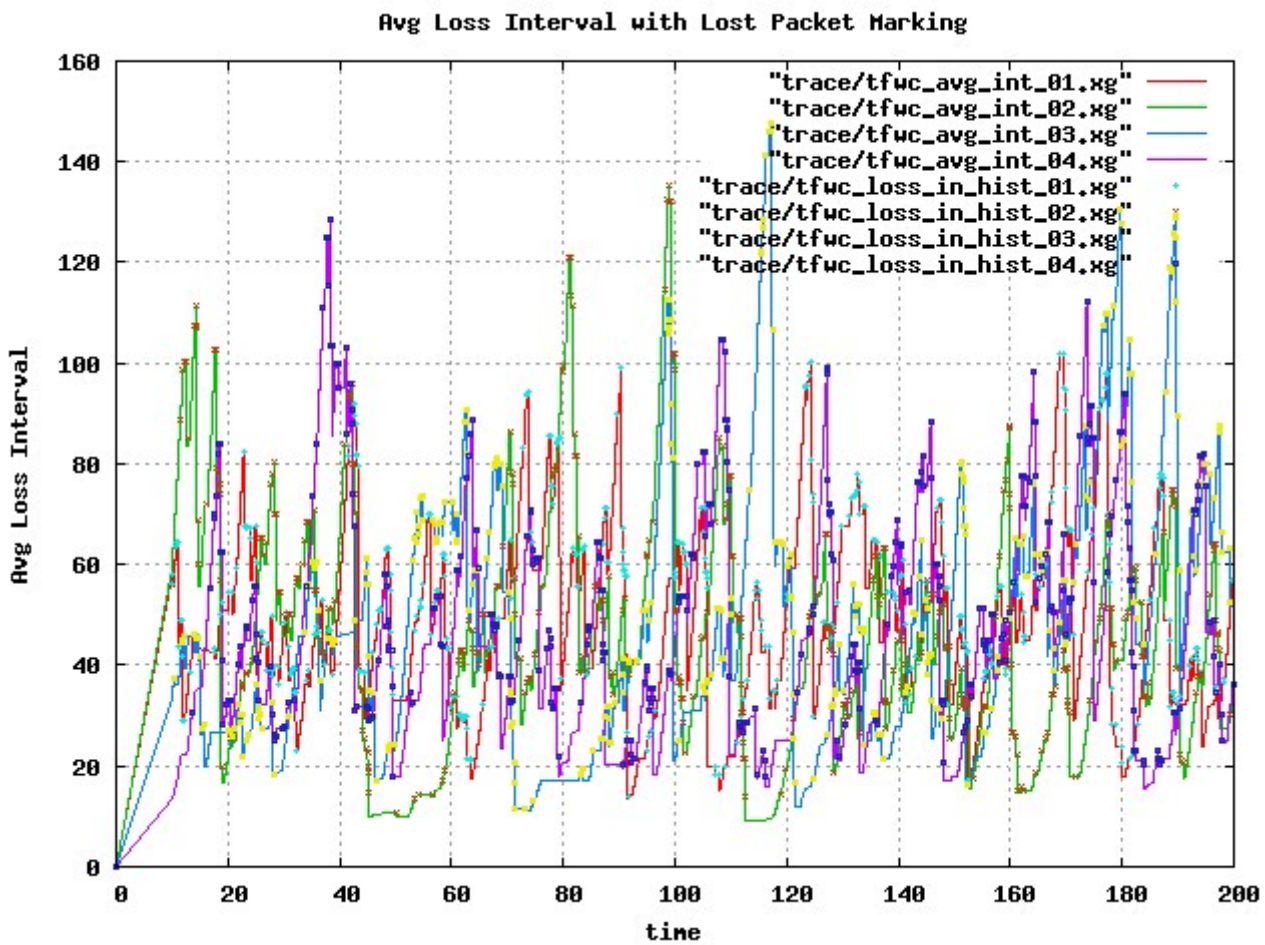
average loss interval (q=35, 16TFWC)



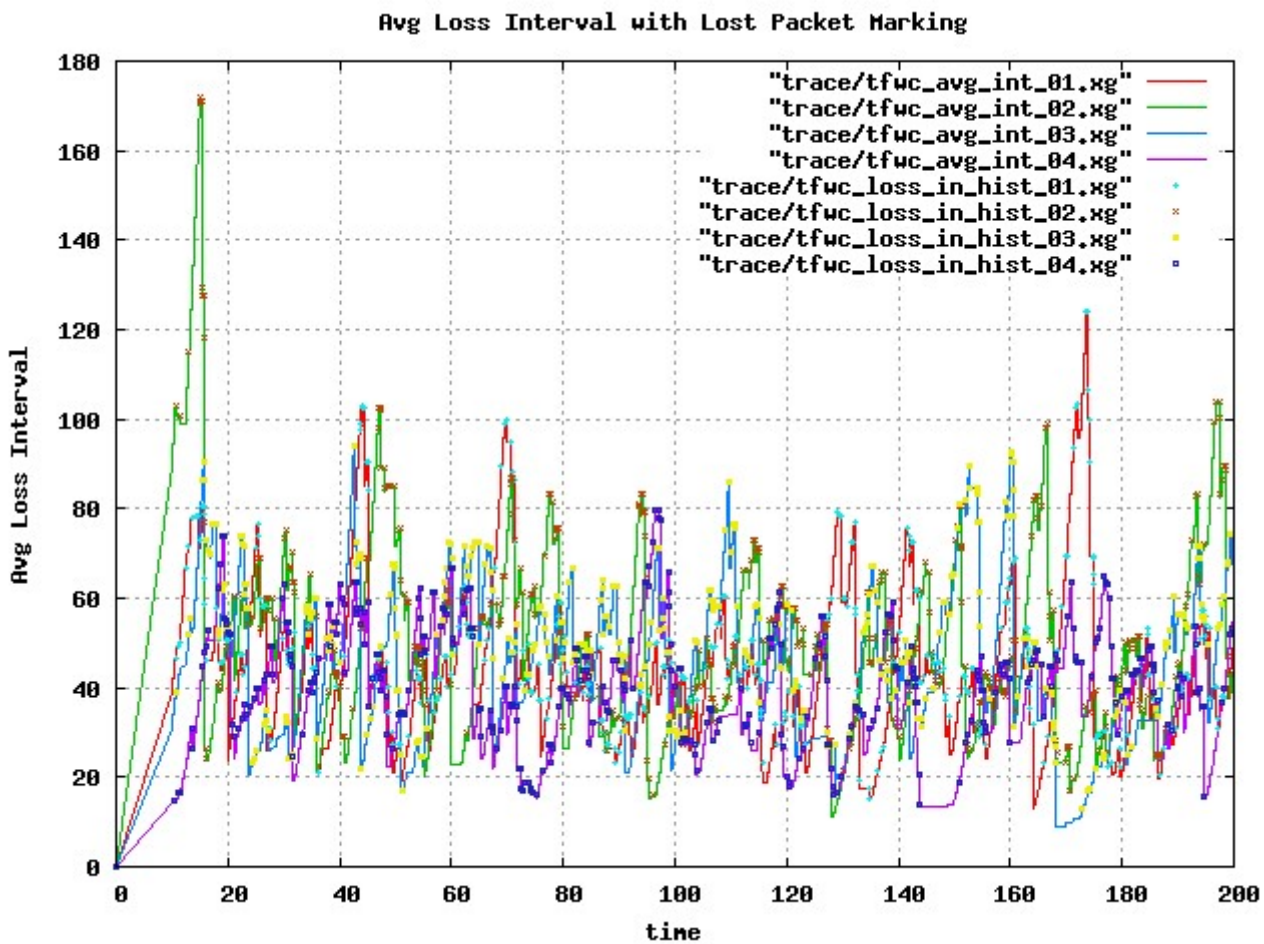
average loss interval (q=40, 16TFWC)



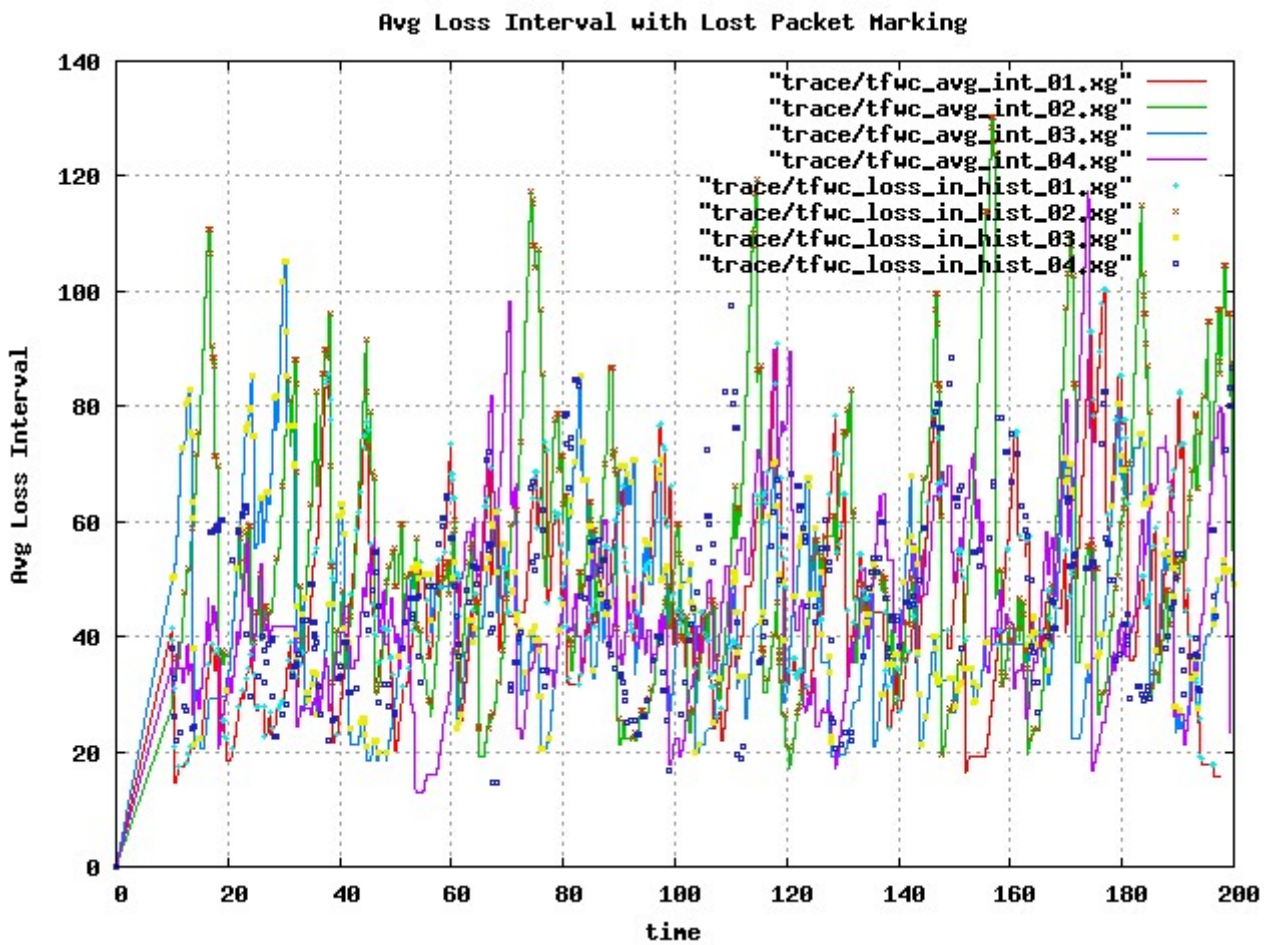
average loss interval (q=45, 16TFWC)



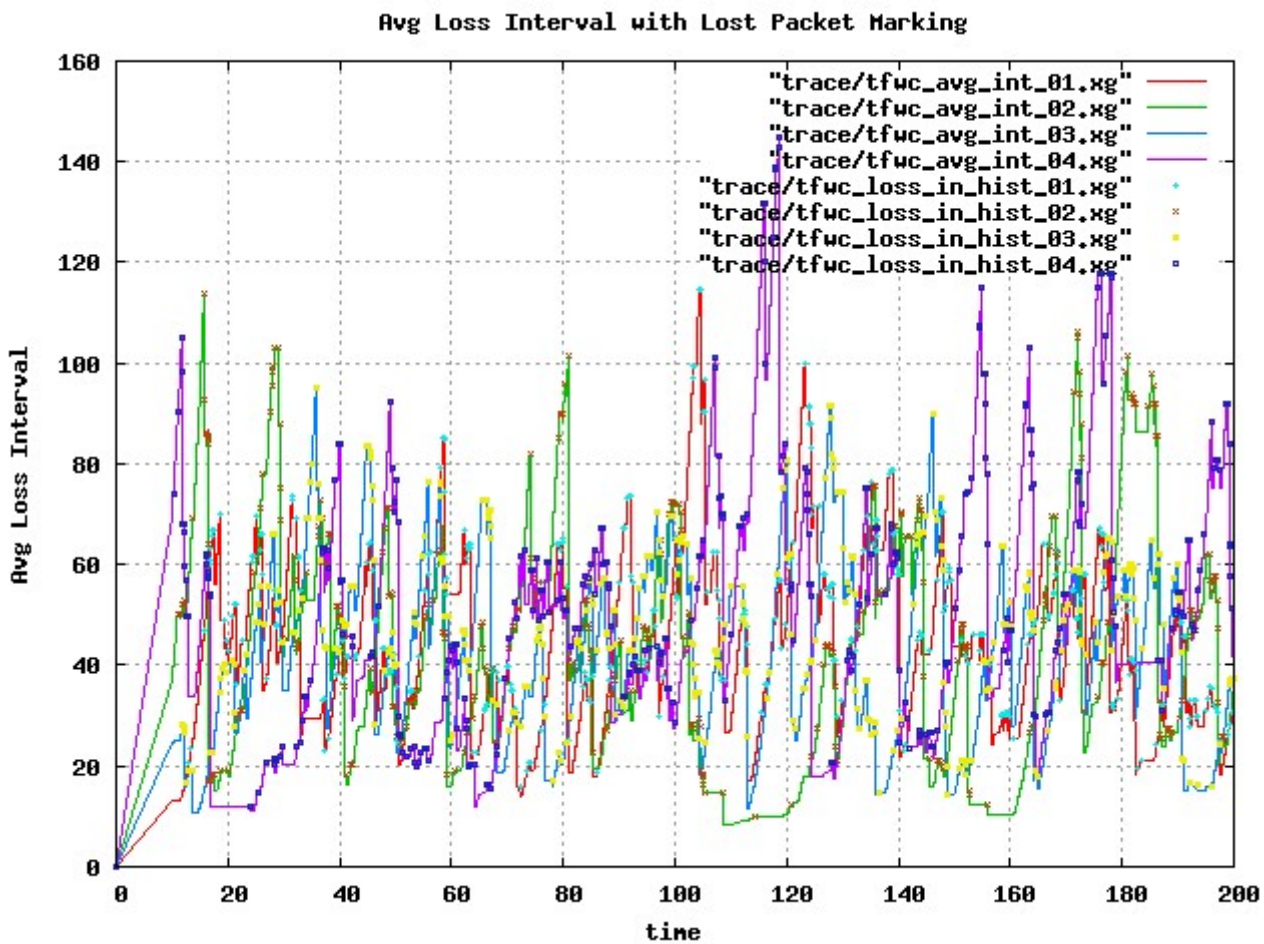
average loss interval (q=50, 16TFWC)



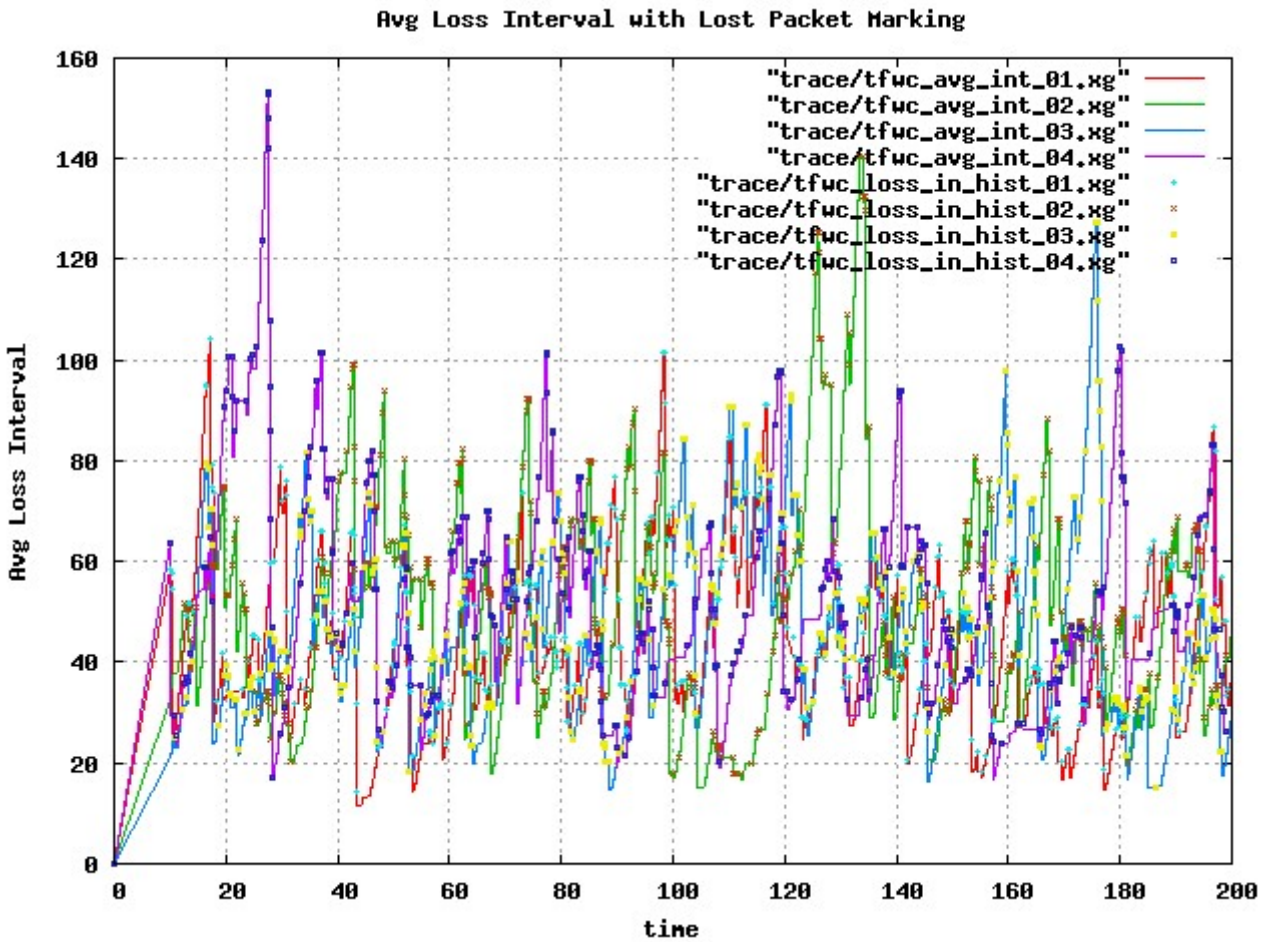
average loss interval (q=55, 16TFWC)



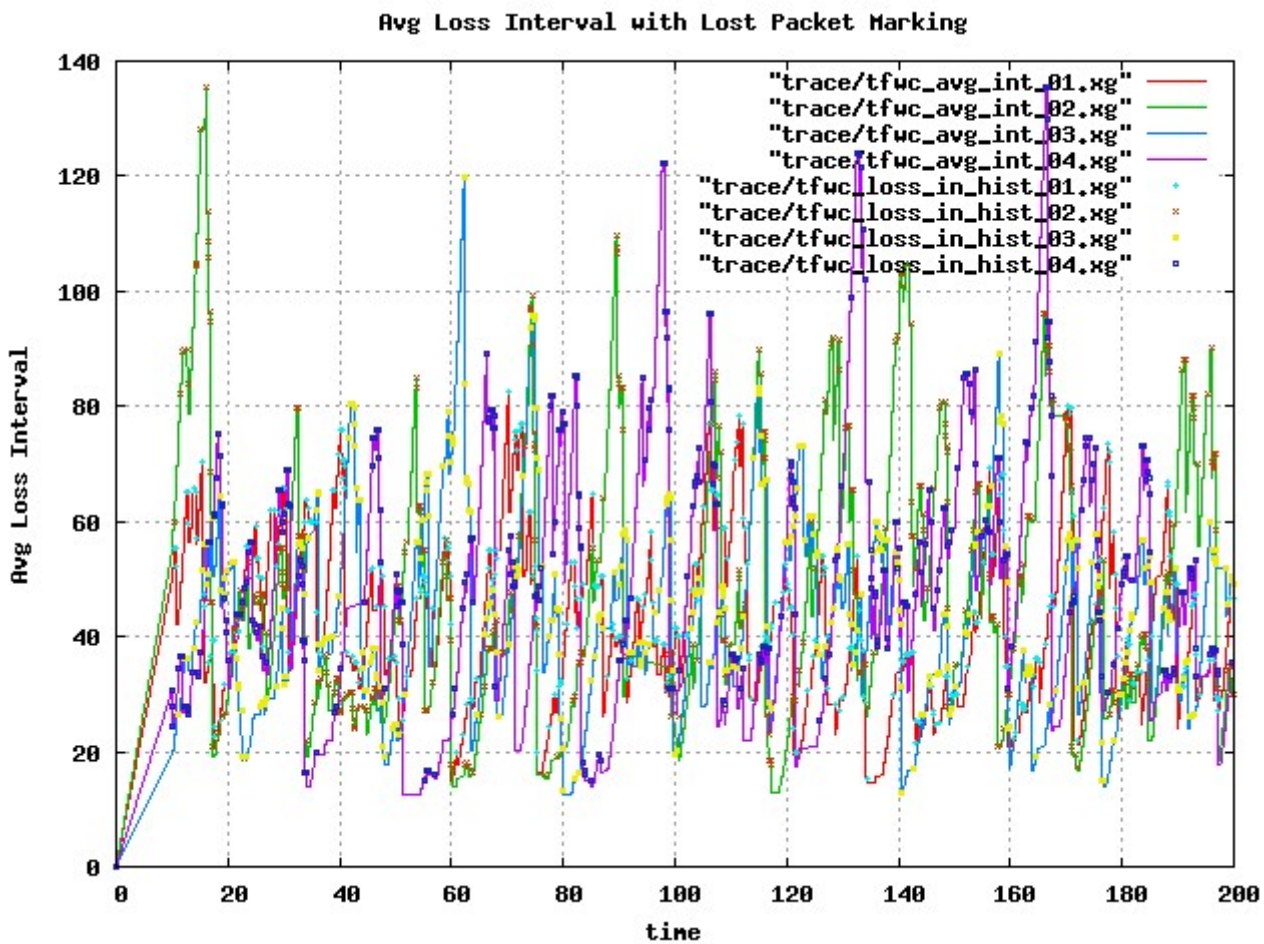
average loss interval (q=60, 16TFWC)



average loss interval (q=65, 16TFWC)



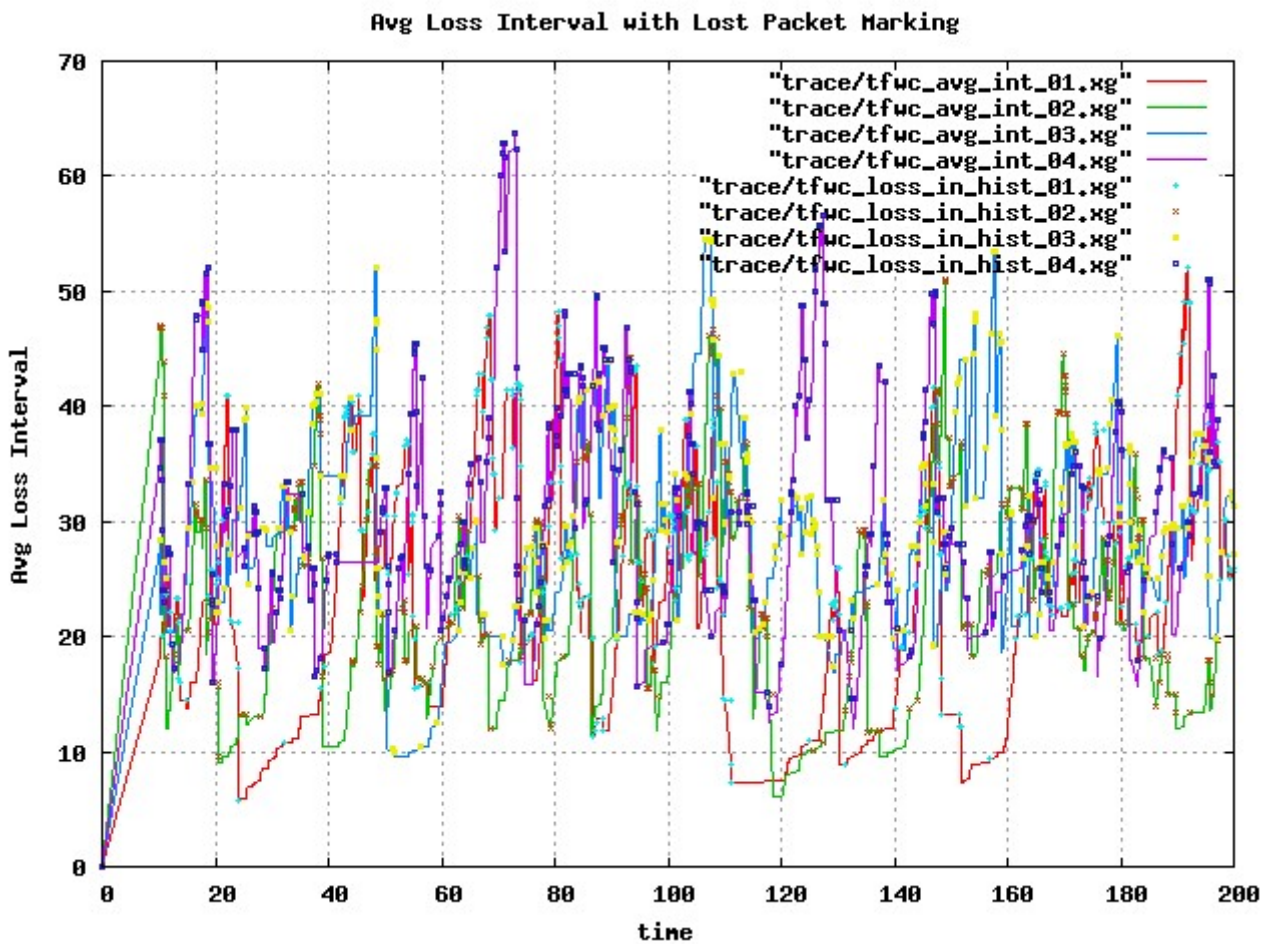
average loss interval (q=70, 16TFWC)



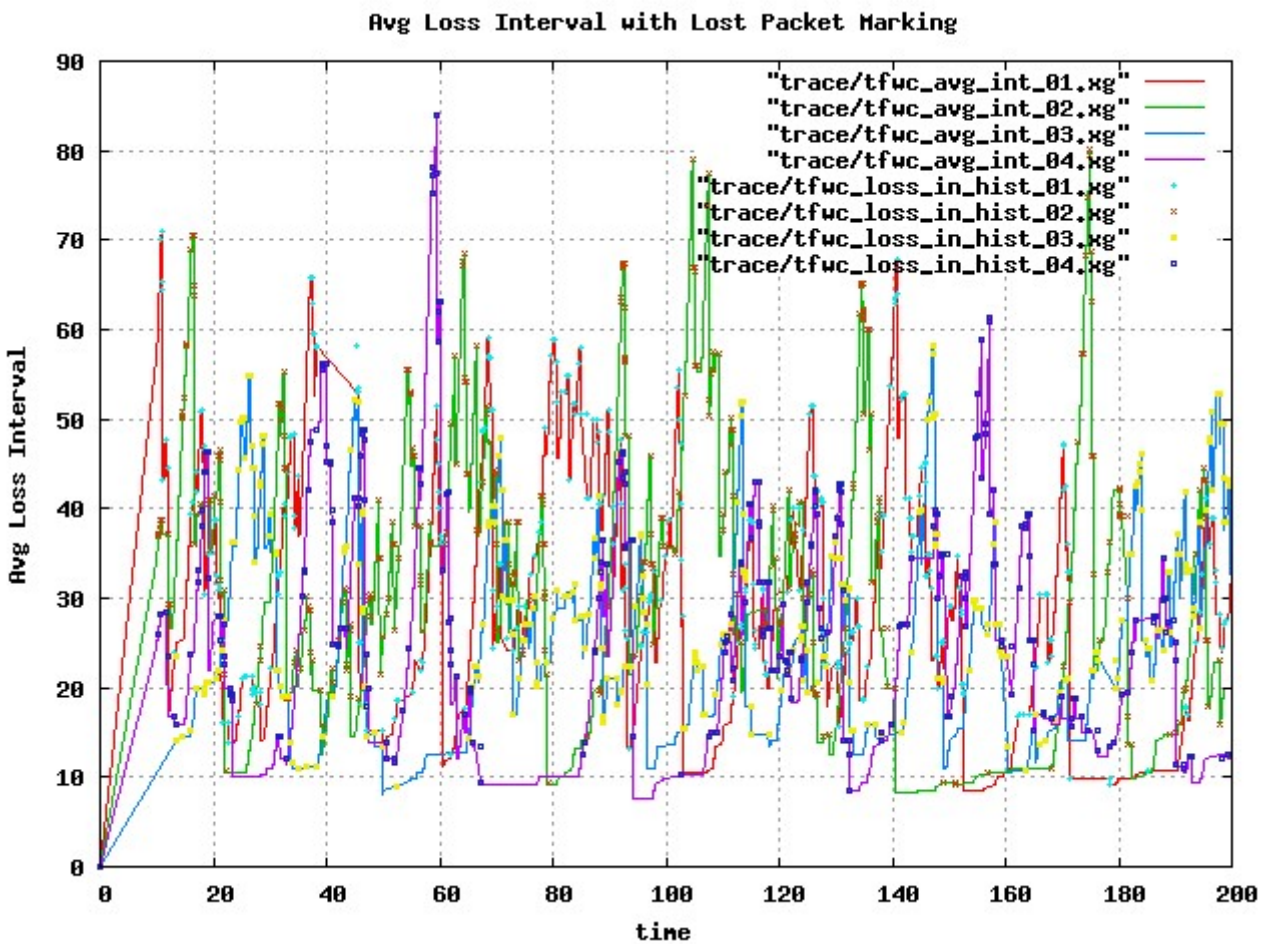
20 TFWC w/ 20 reverse TCP
Varying Bottleneck (RED) Queue Size (10 ~ 75)
Simulation Time = 200
Random Seed Number = 177

Phase Break = On
Probability = 10%

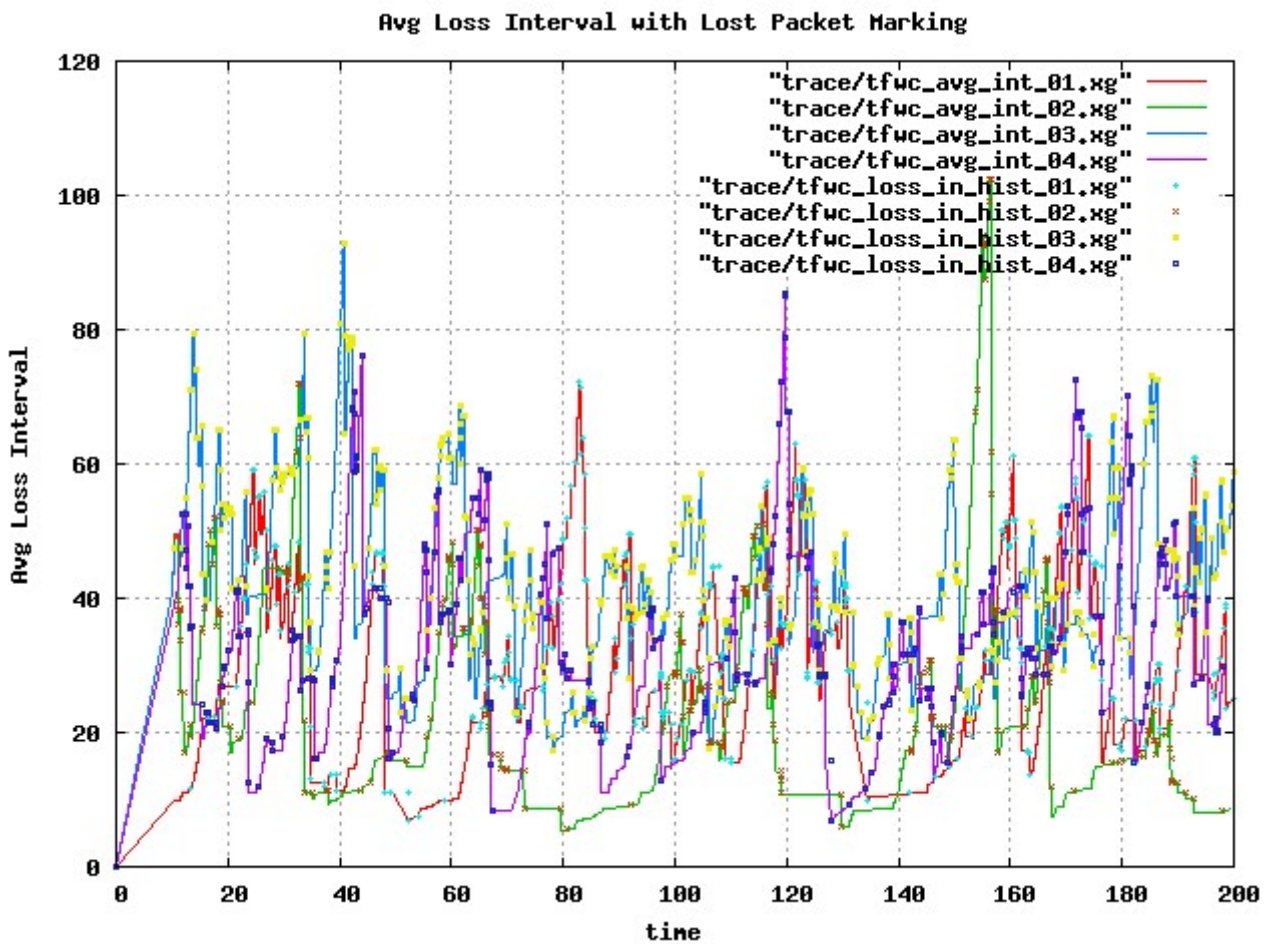
average loss interval (q=10, 20TFWC)



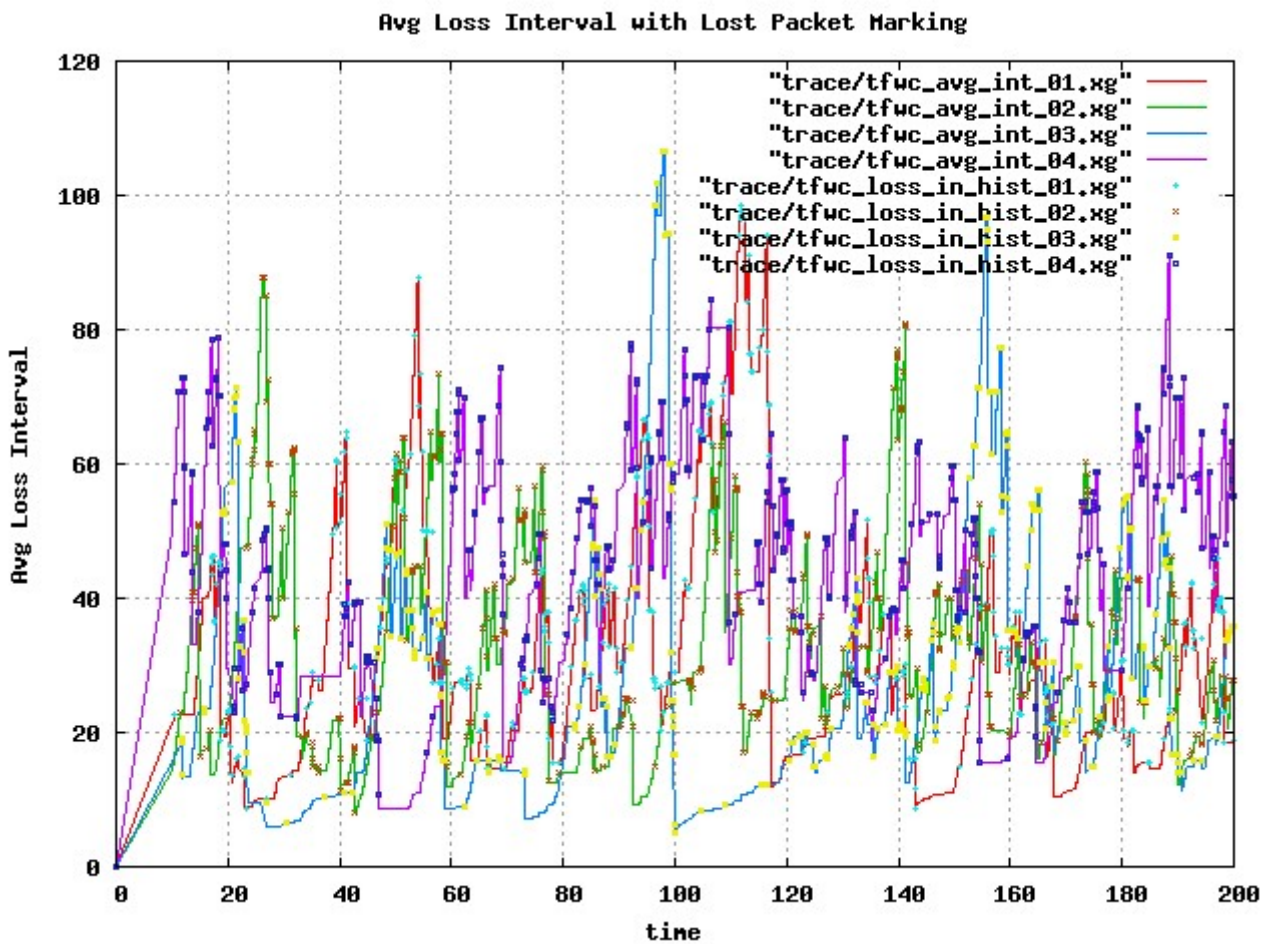
average loss interval (q=15, 20TFWC)



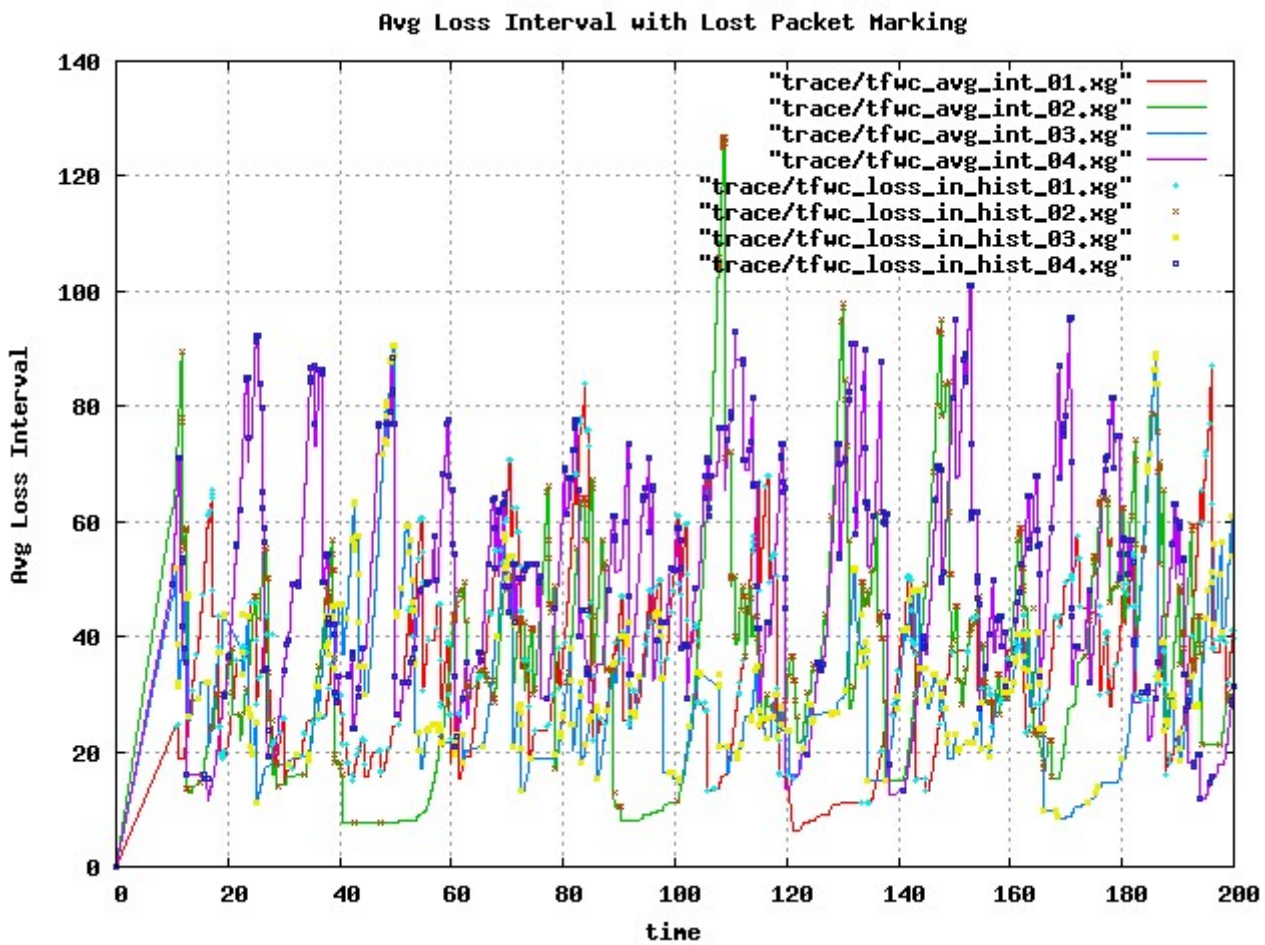
average loss interval (q=20, 20TFWC)



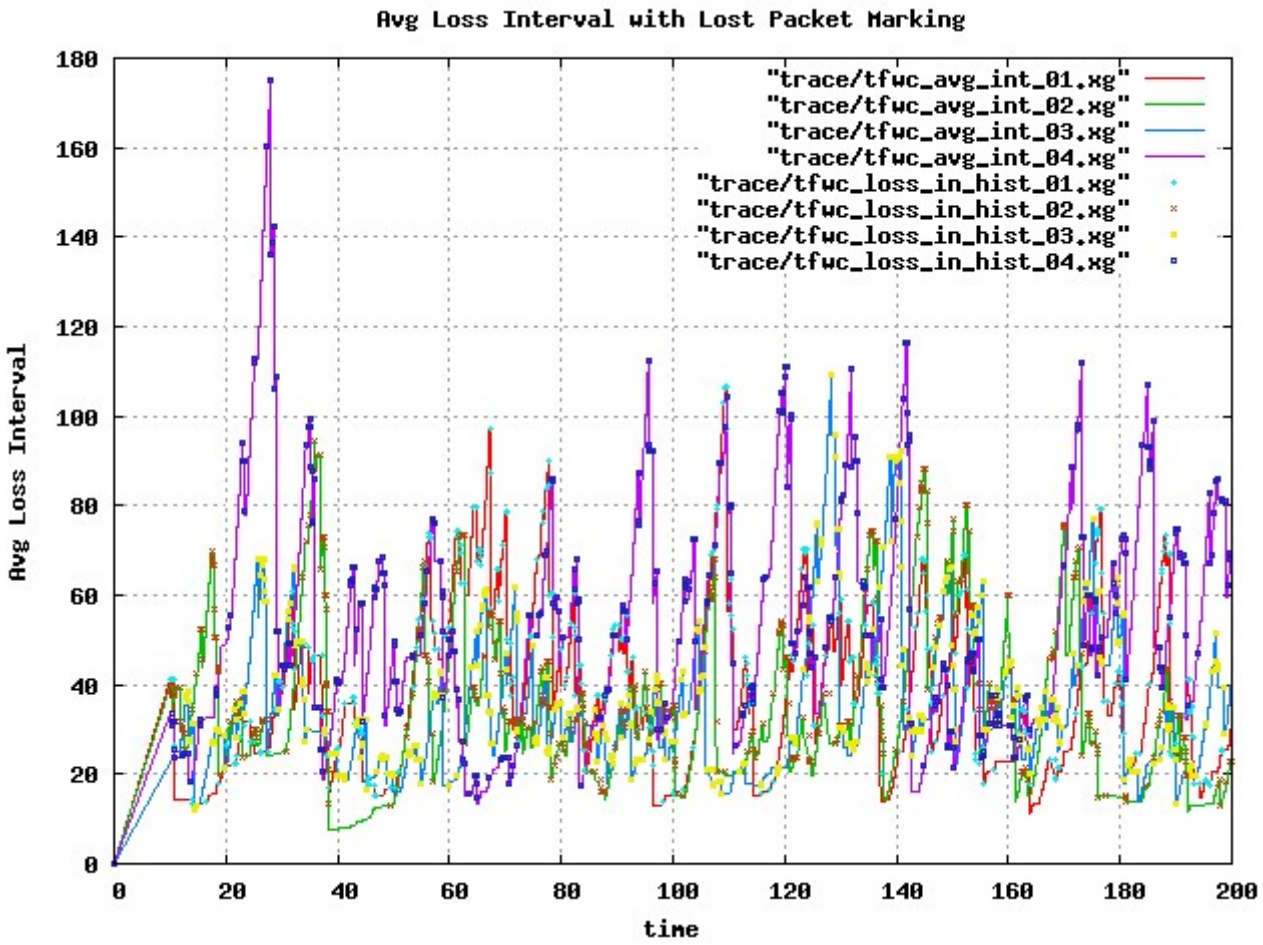
average loss interval (q=25, 20TFWC)



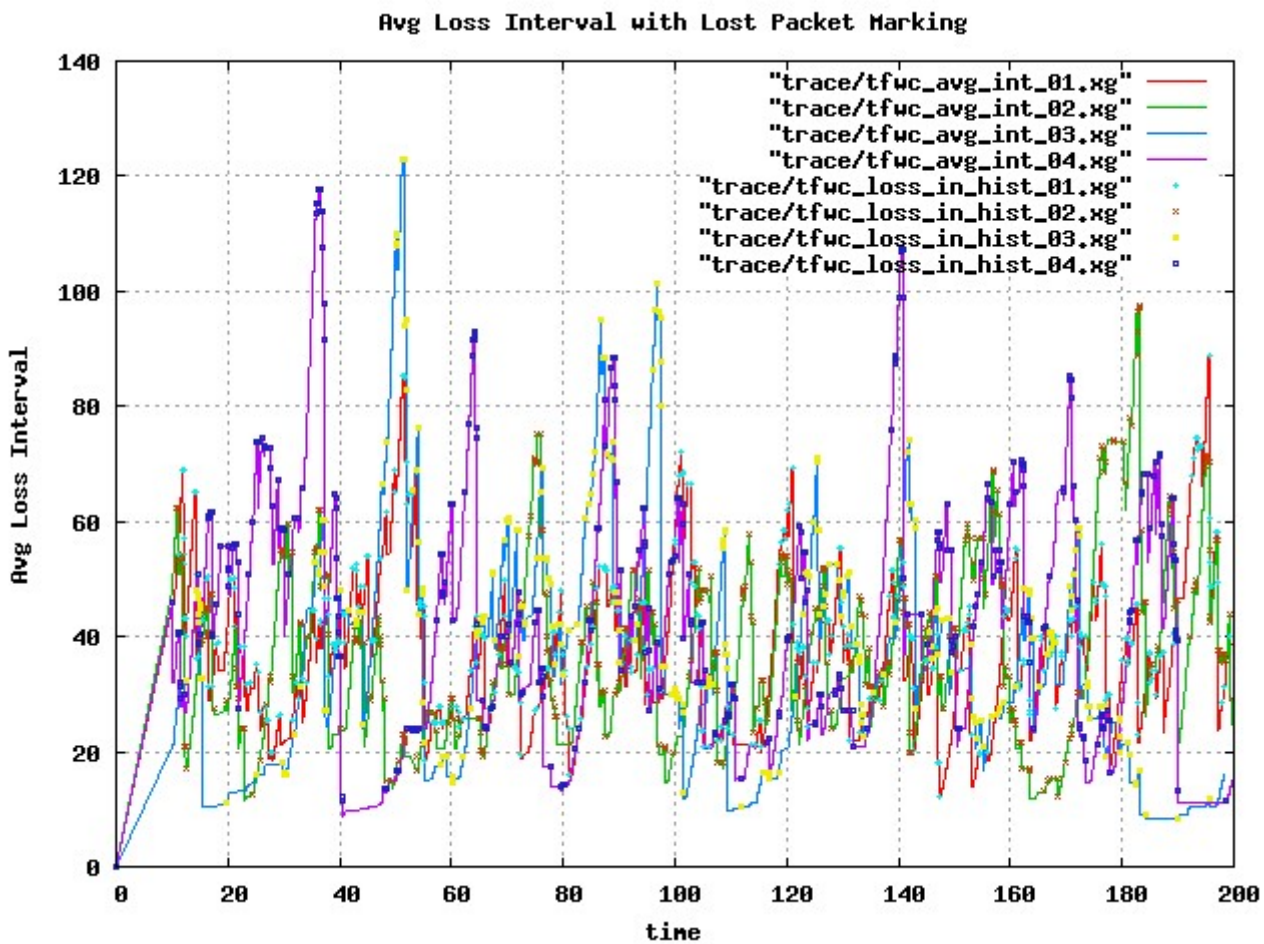
average loss interval (q=30, 20TFWC)



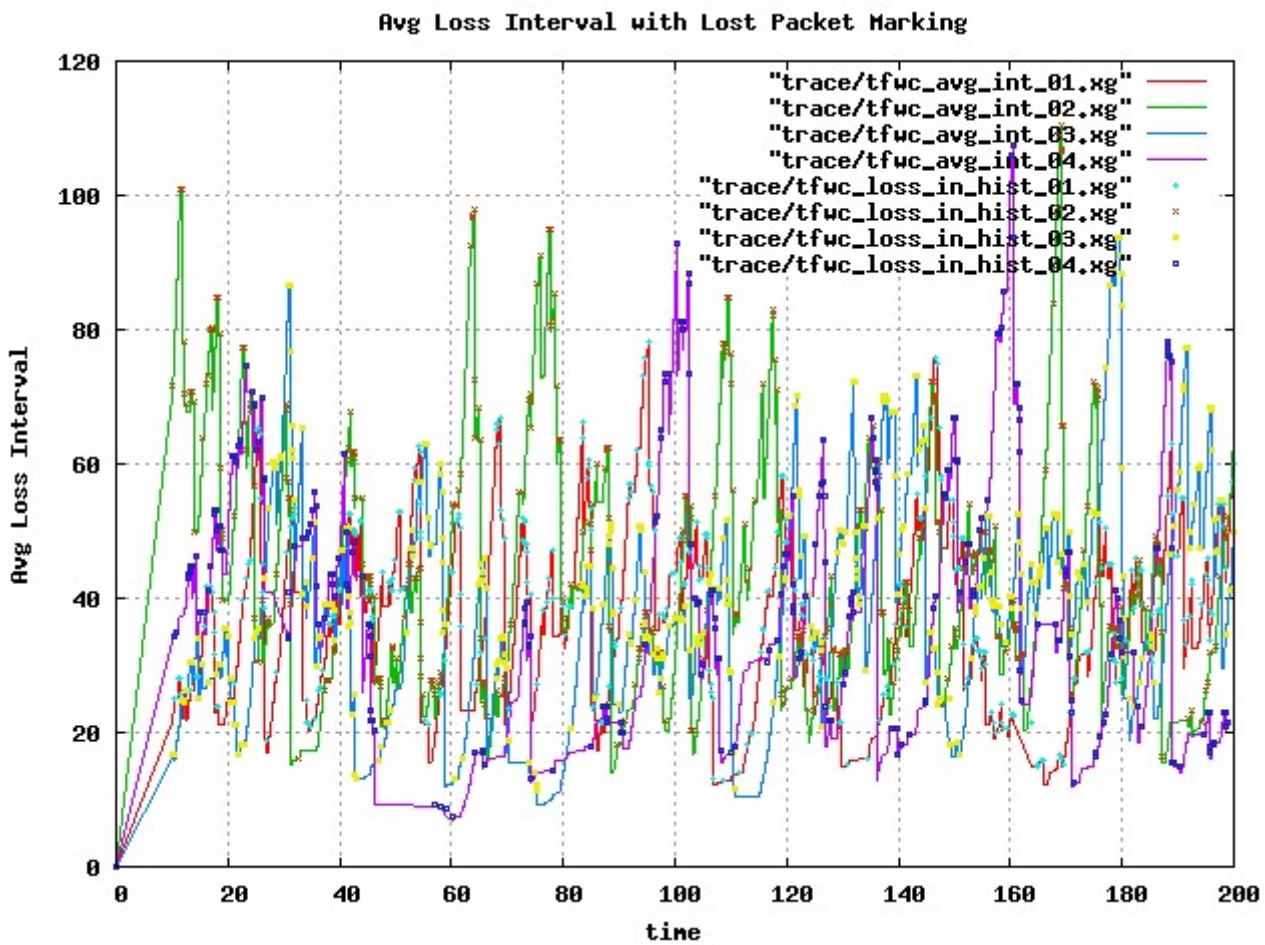
average loss interval (q=35, 20TFWC)



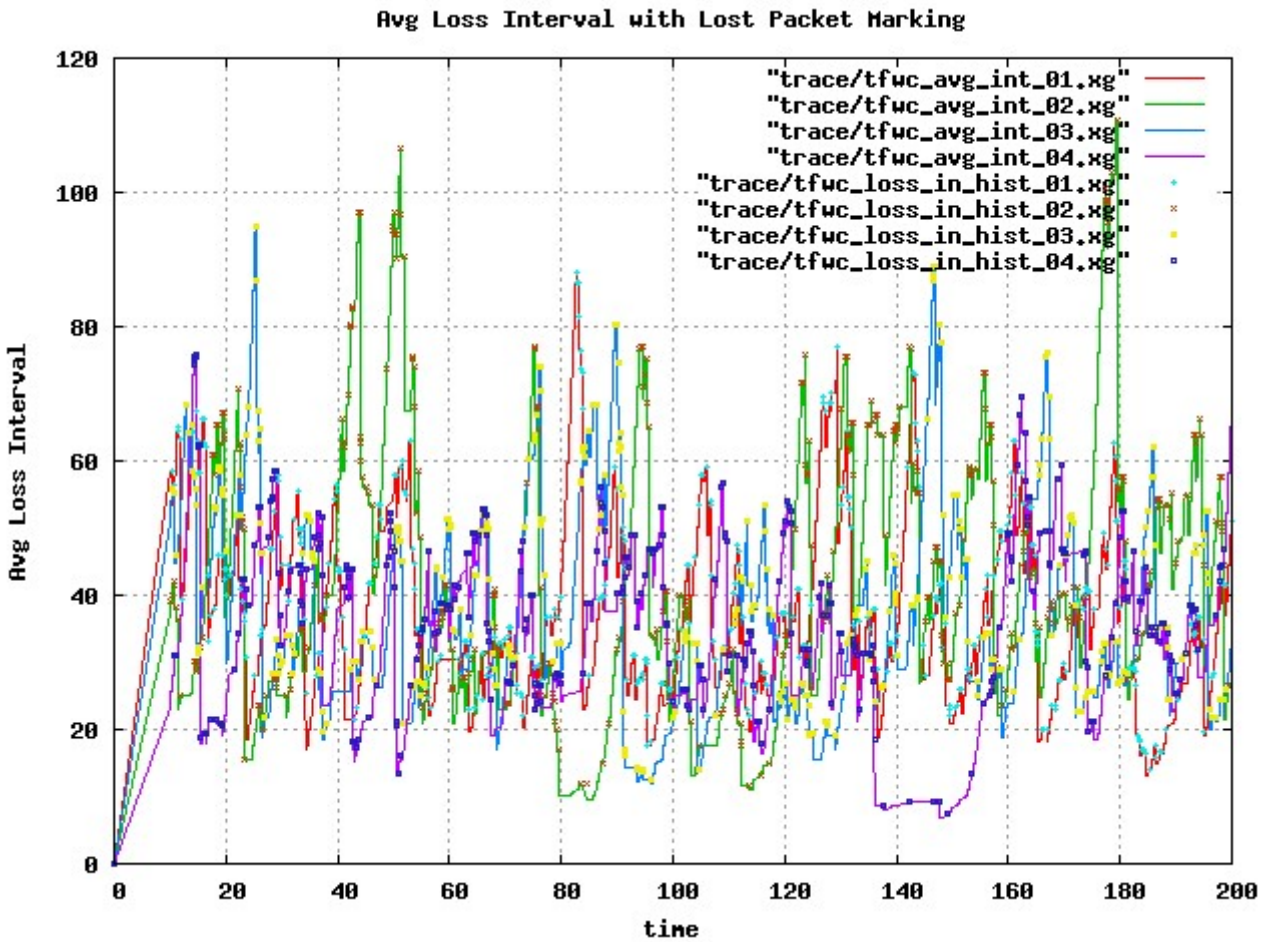
average loss interval (q=40, 20TFWC)



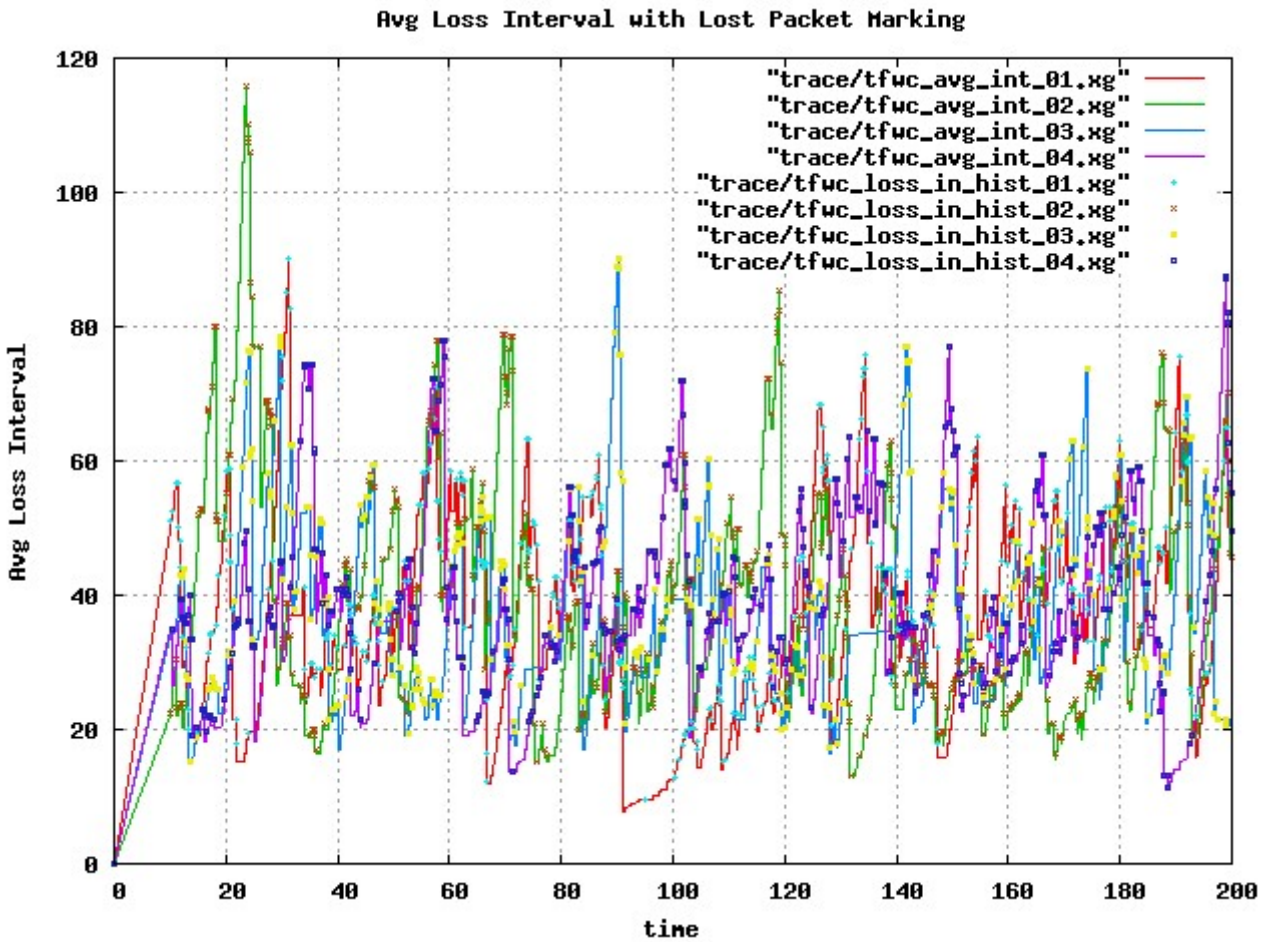
average loss interval (q=45, 20TFWC)



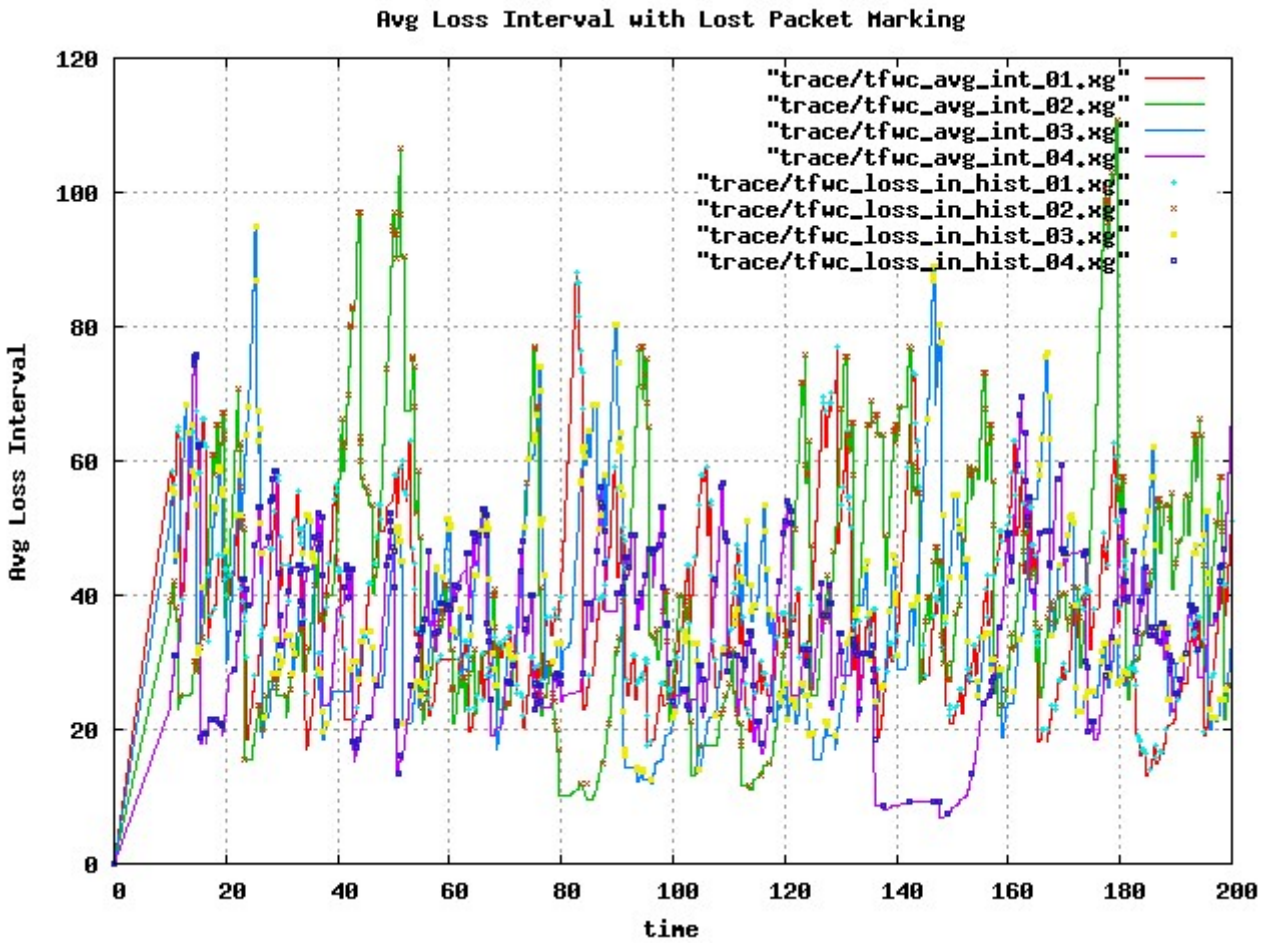
average loss interval (q=50, 20TFWC)



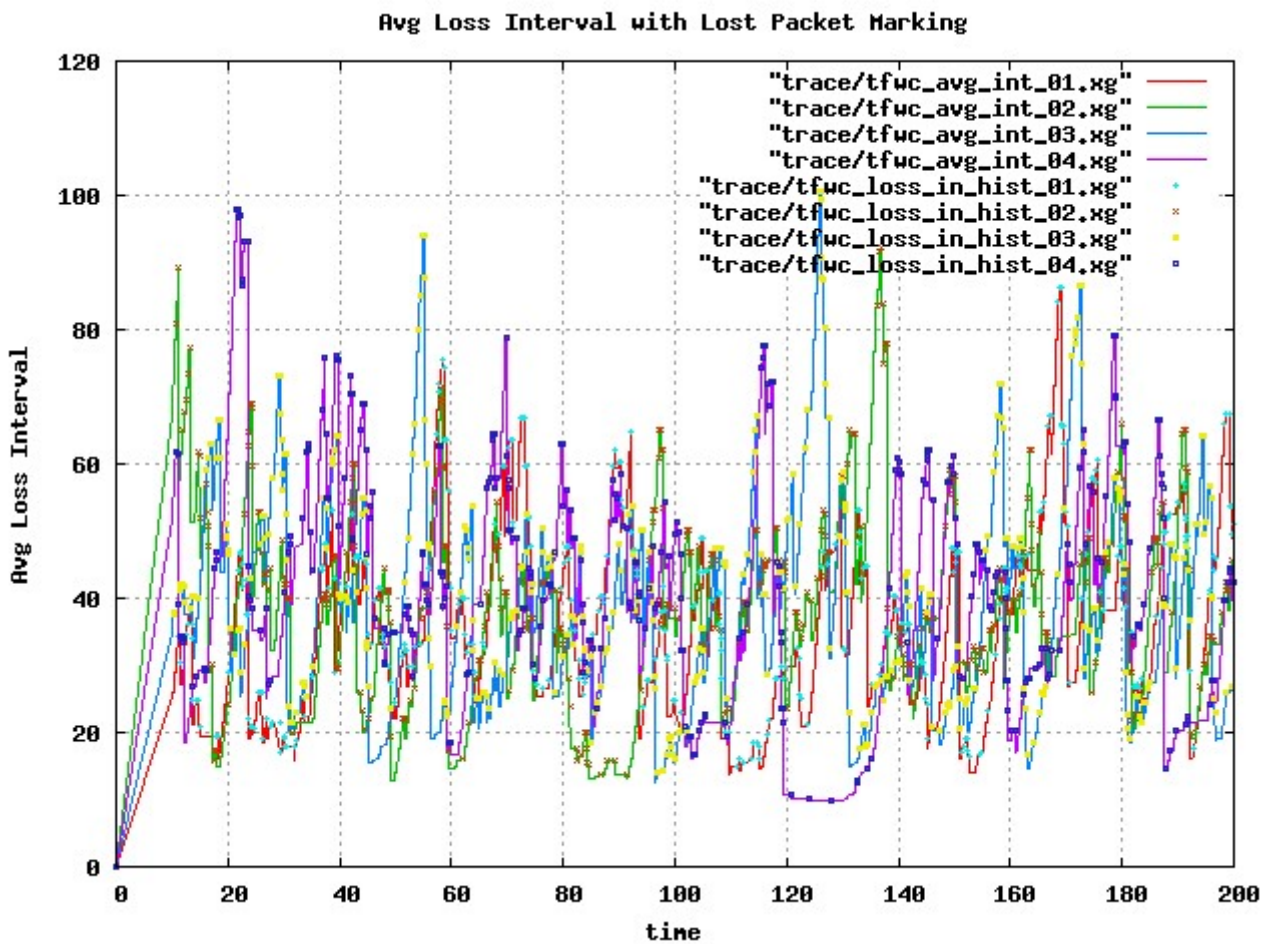
average loss interval (q=55, 20TFWC)



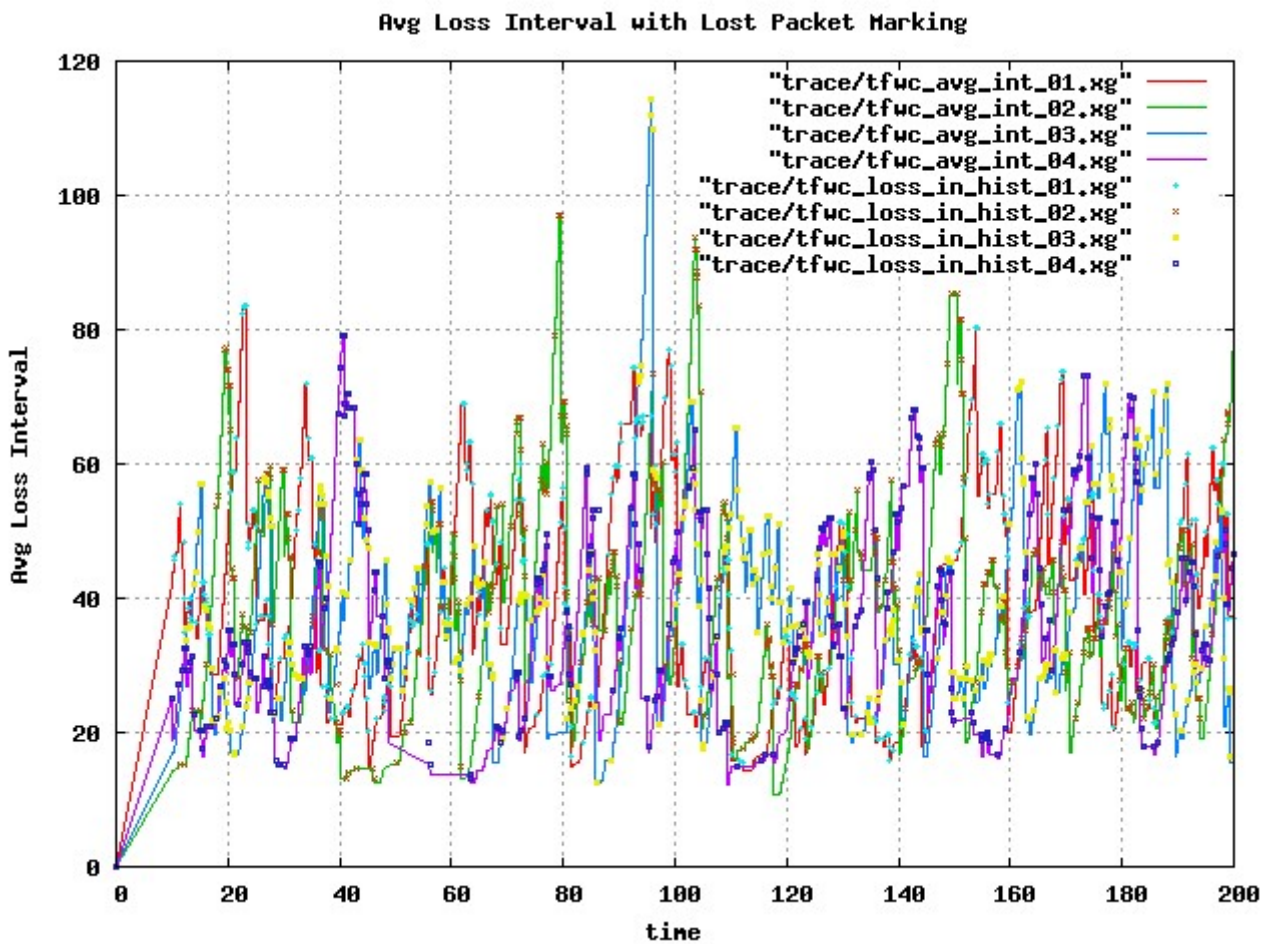
average loss interval (q=60, 20TFWC)



average loss interval (q=65, 20TFWC)



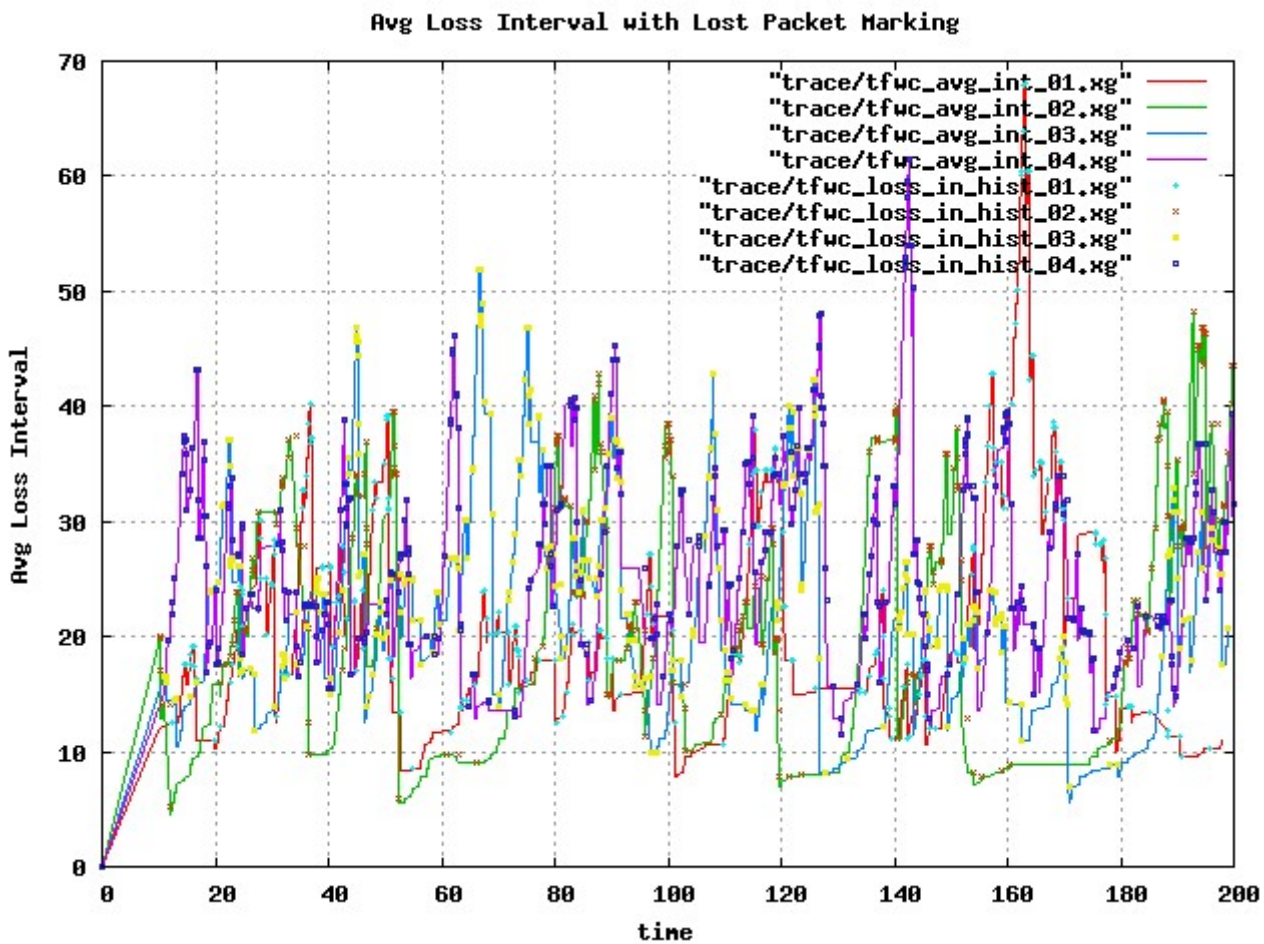
average loss interval (q=70, 20TFWC)



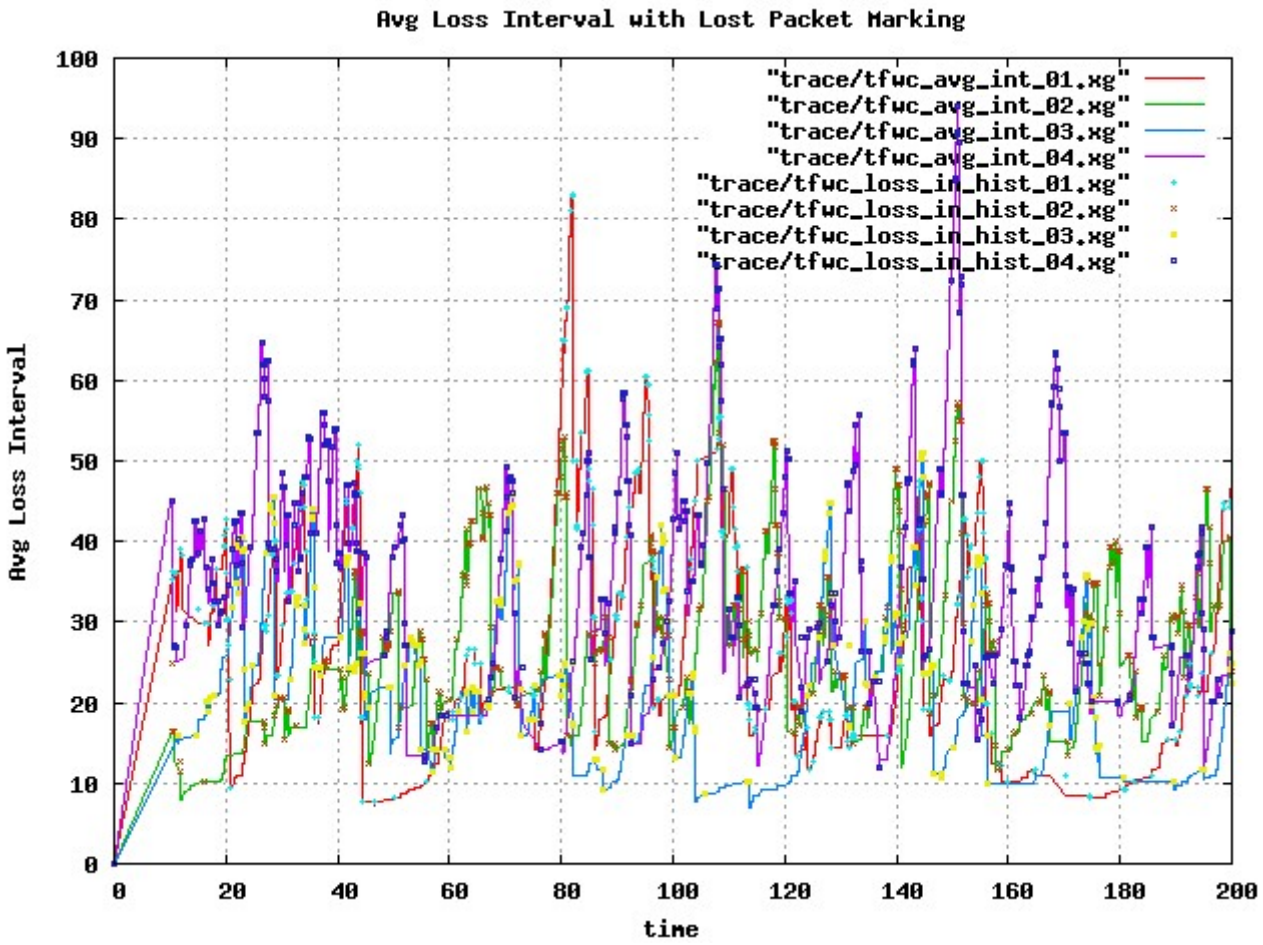
24 TFWC w/ 24 reverse TCP
Varying Bottleneck (RED) Queue Size (10 ~ 75)
Simulation Time = 200
Random Seed Number = 177

Phase Break = On
Probability = 10%

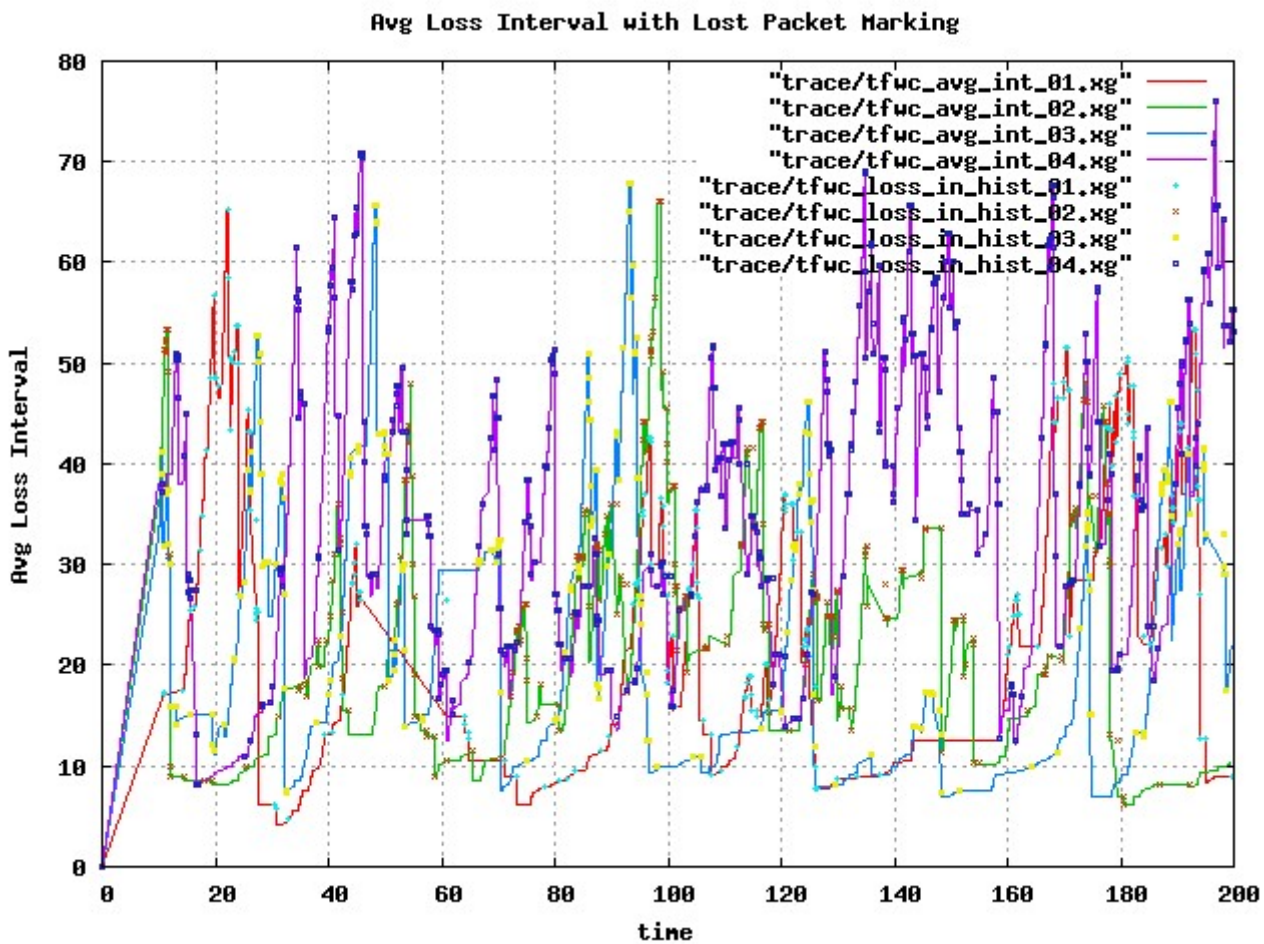
average loss interval (q=10, 24TFWC)



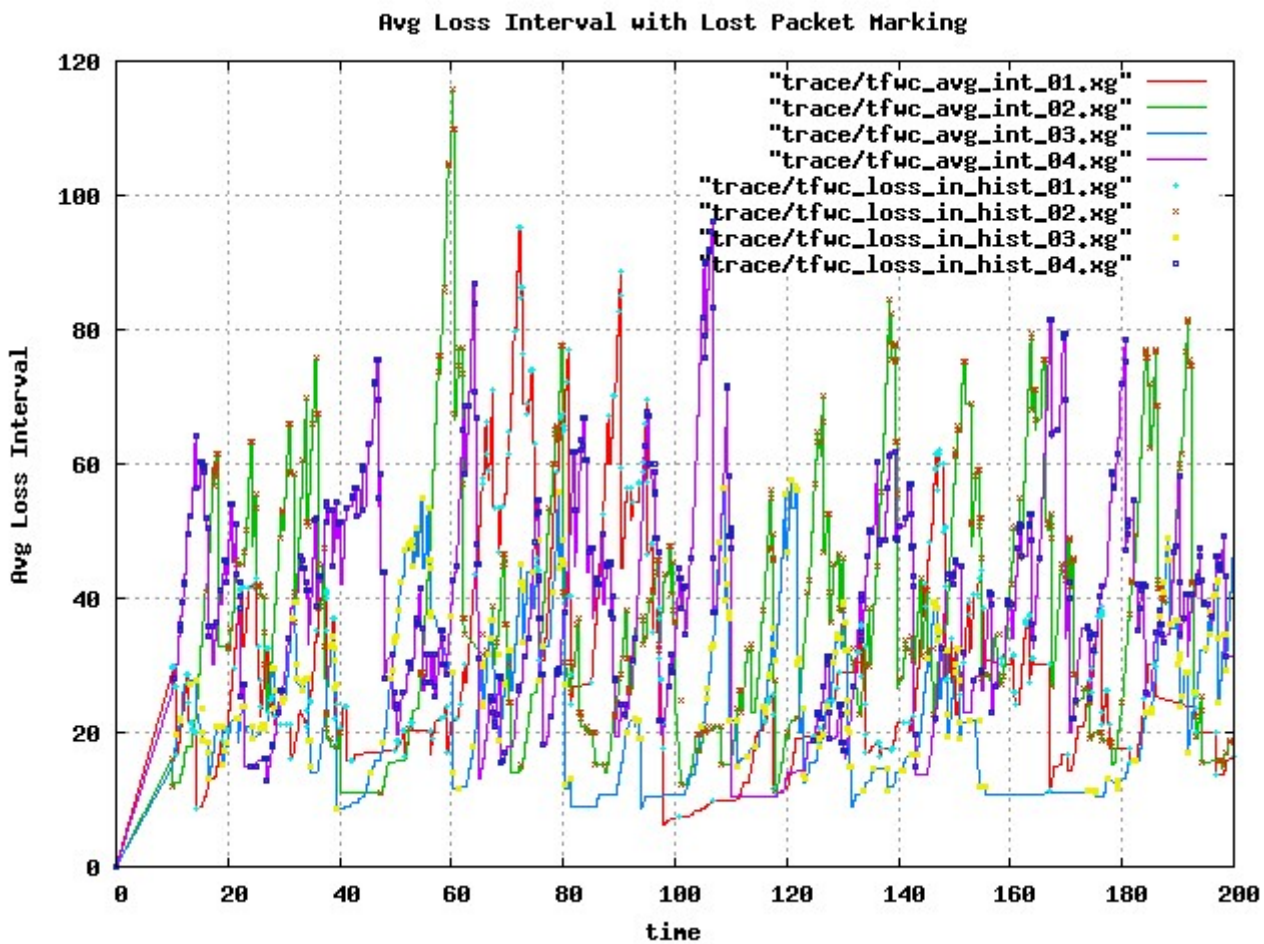
average loss interval (q=15, 24TFWC)



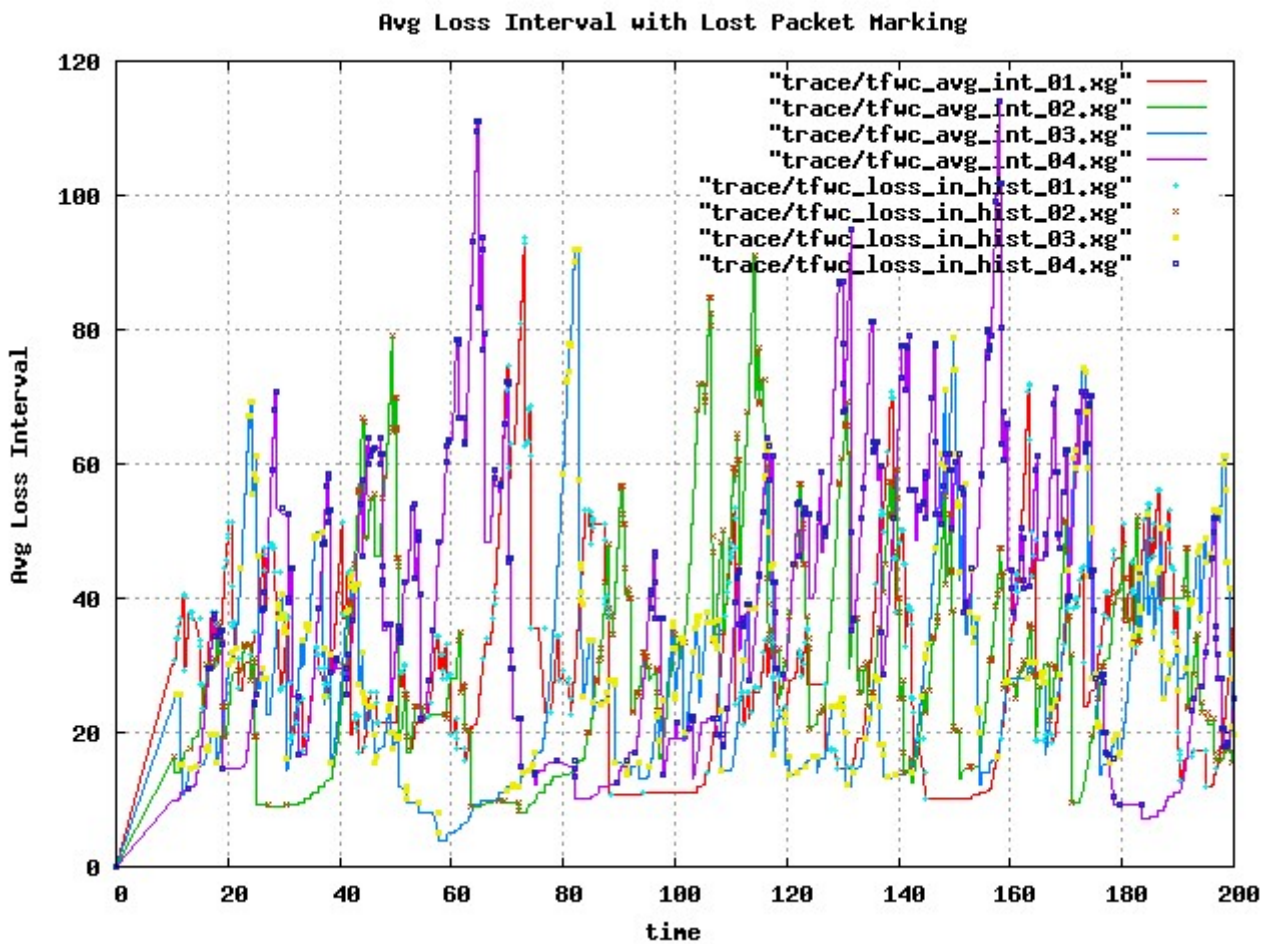
average loss interval (q=20, 24TFWC)



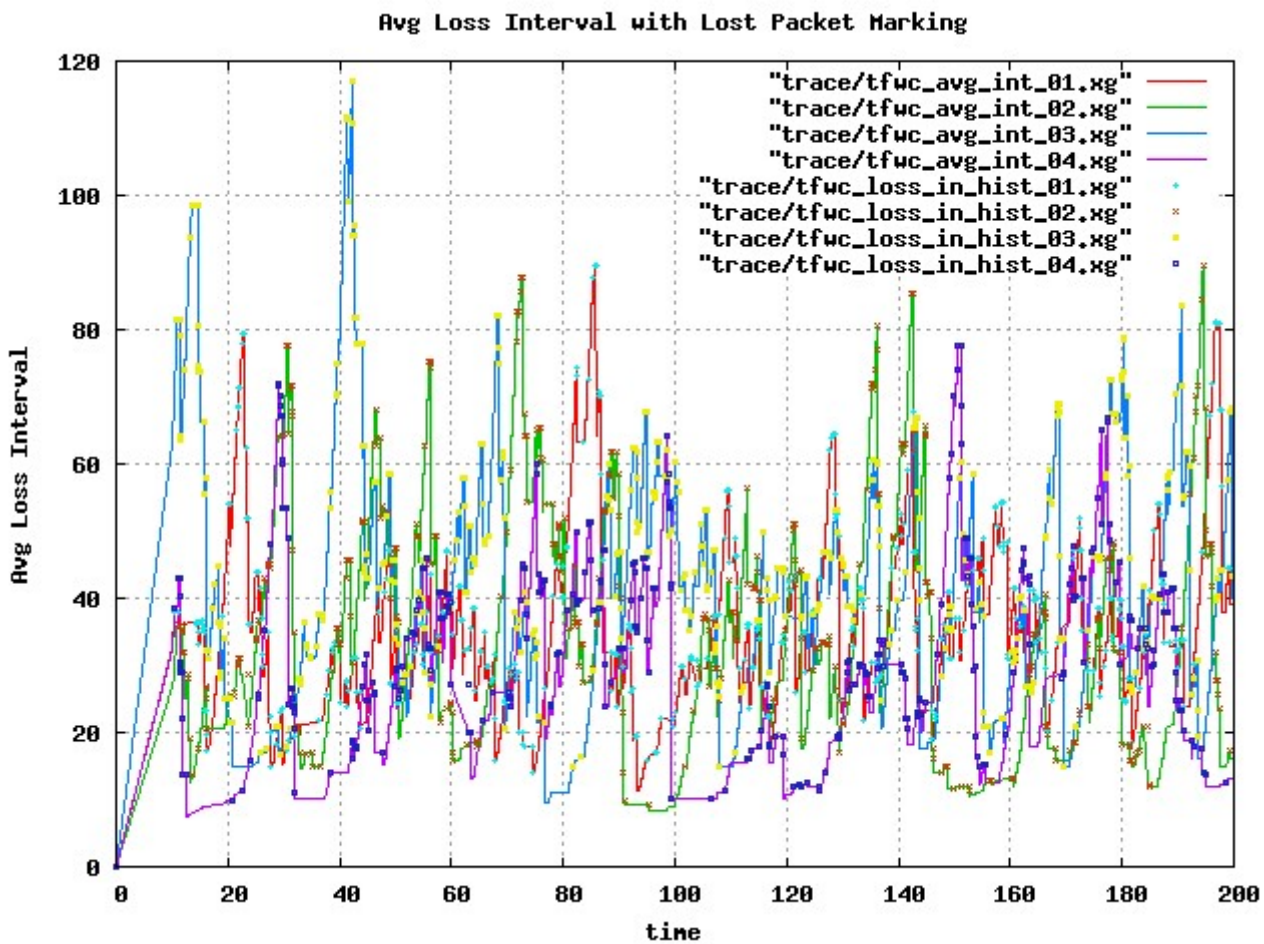
average loss interval (q=25, 24TFWC)



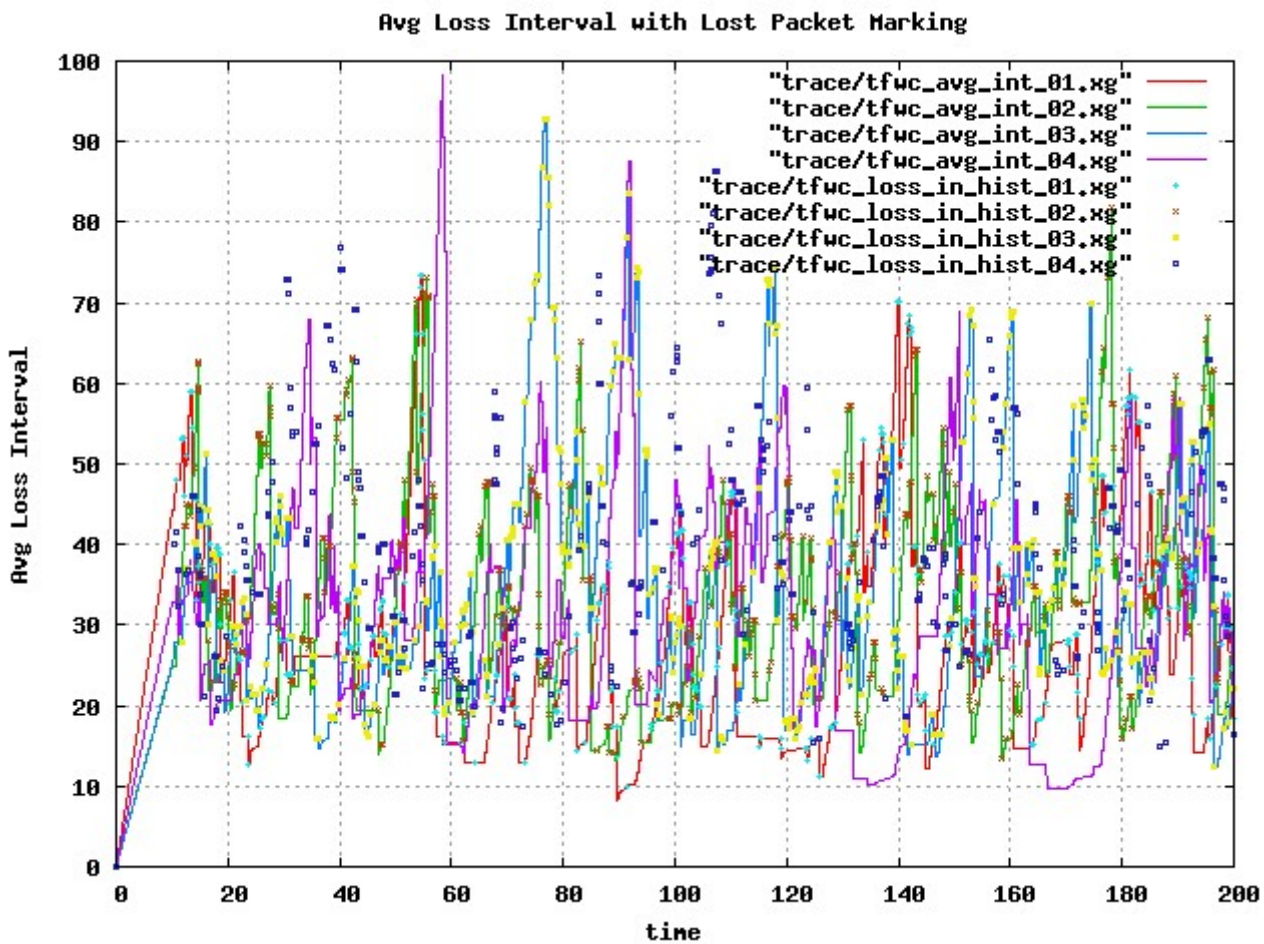
average loss interval (q=30, 24TFWC)



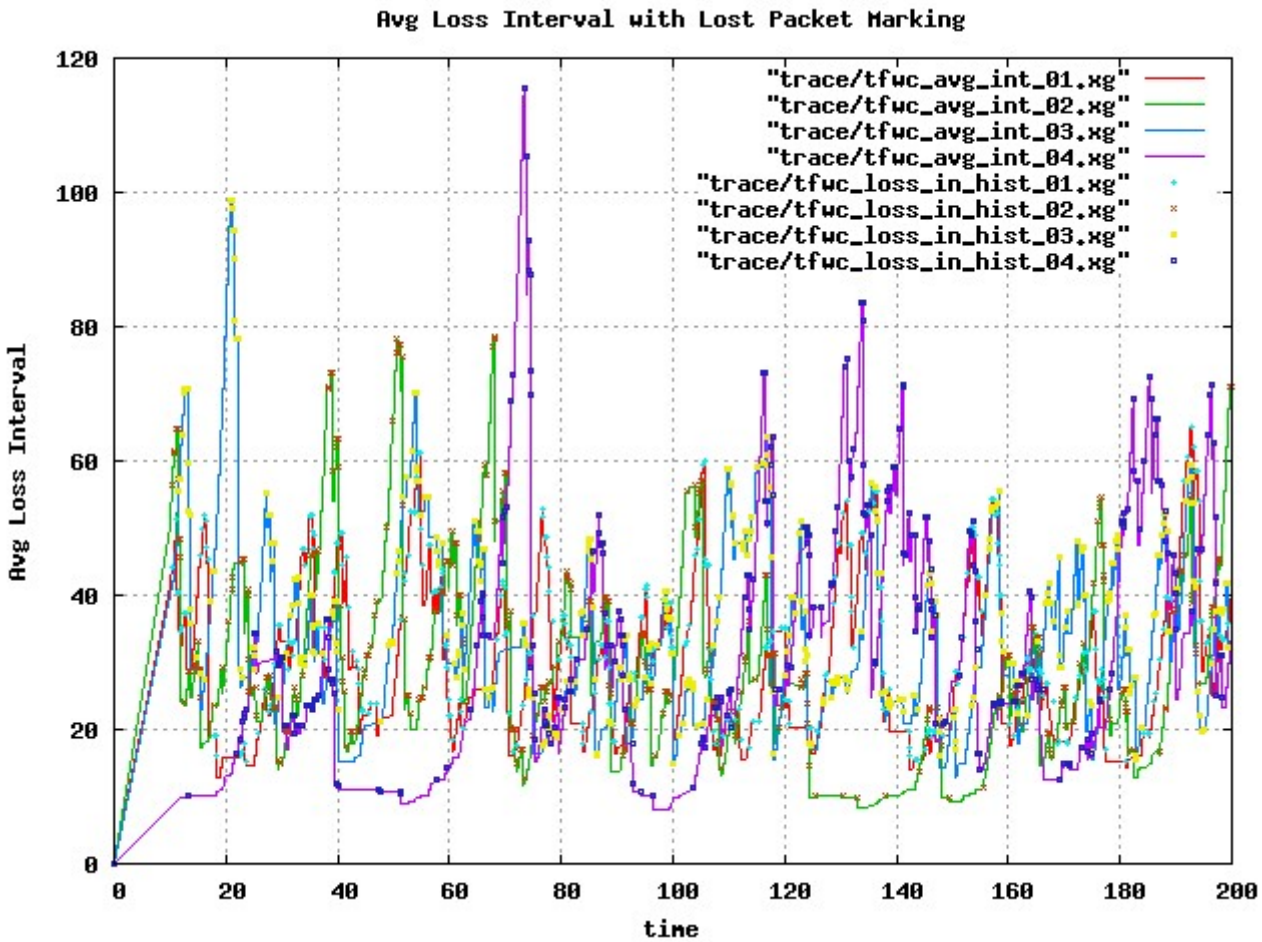
average loss interval (q=35, 24TFWC)



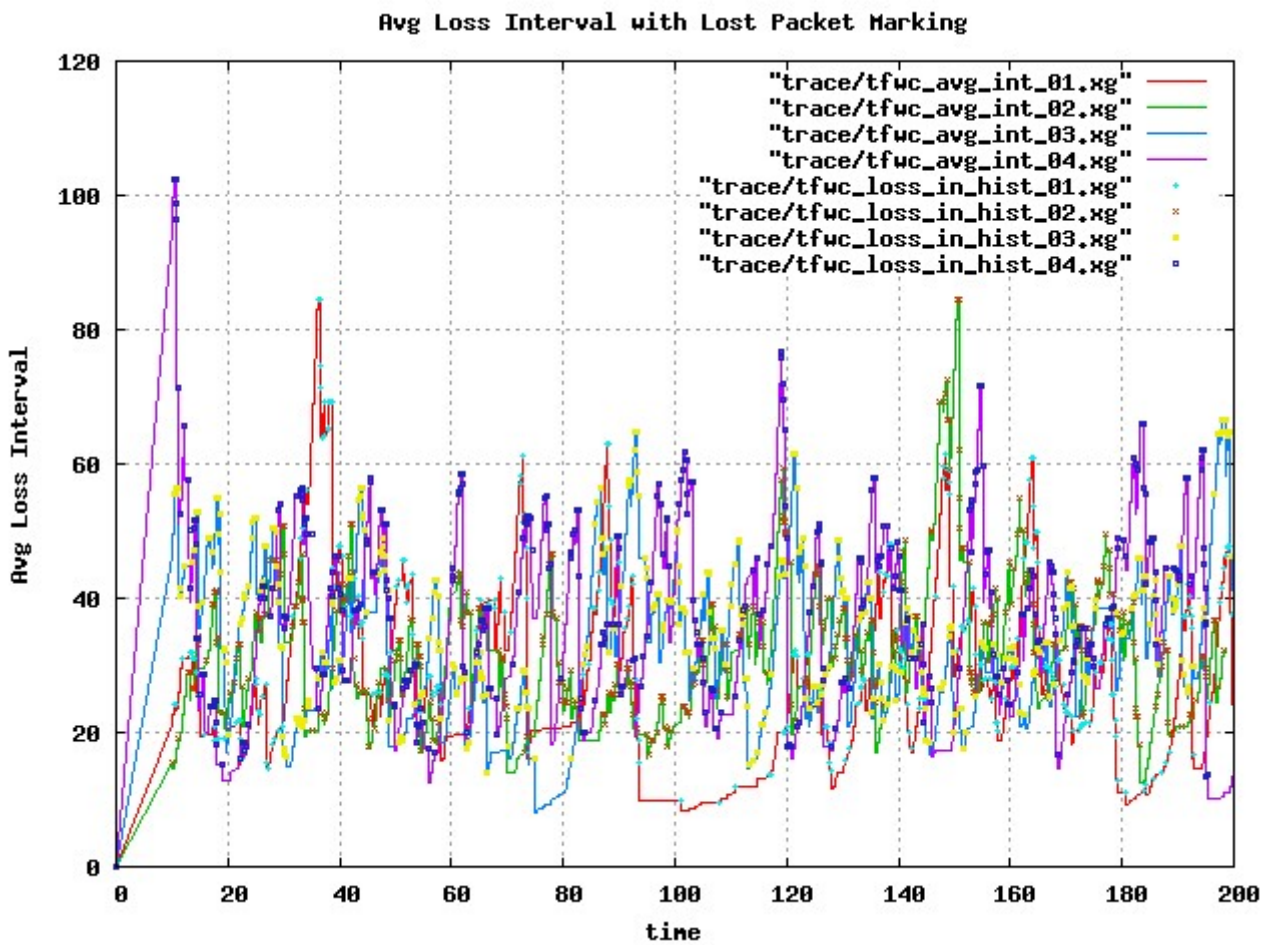
average loss interval (q=40, 24TFWC)



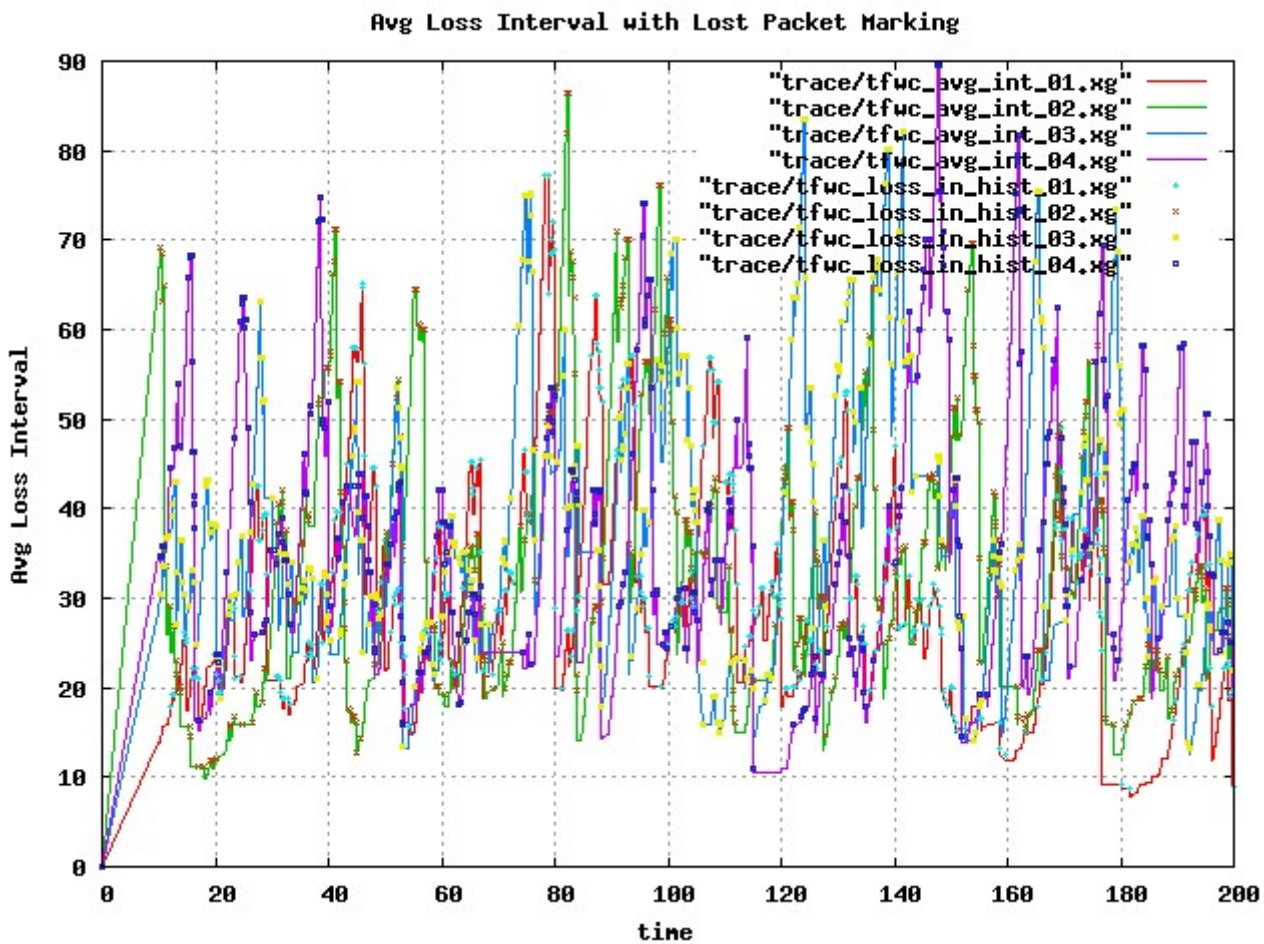
average loss interval (q=45, 24TFWC)



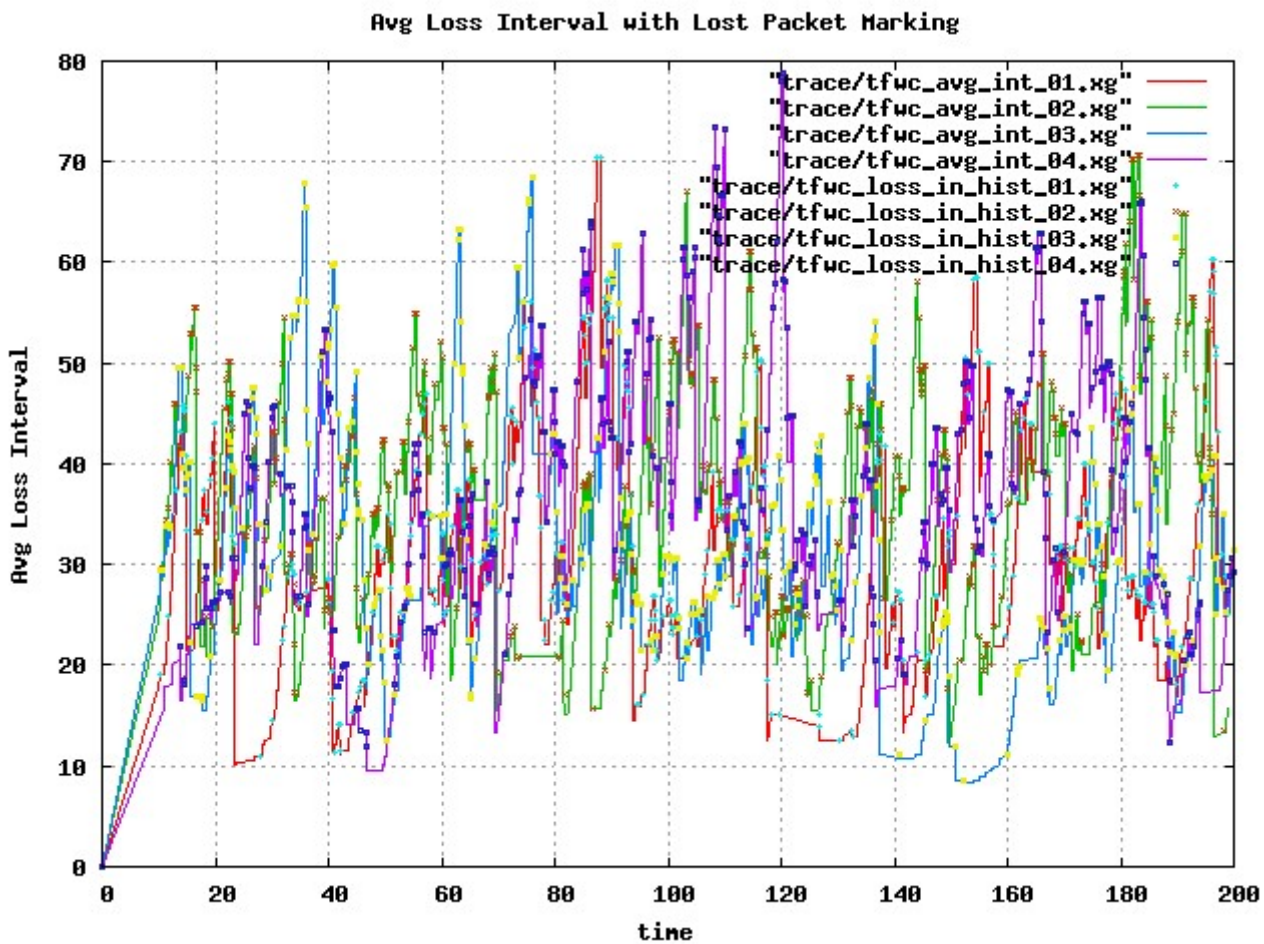
average loss interval (q=50, 24TFWC)



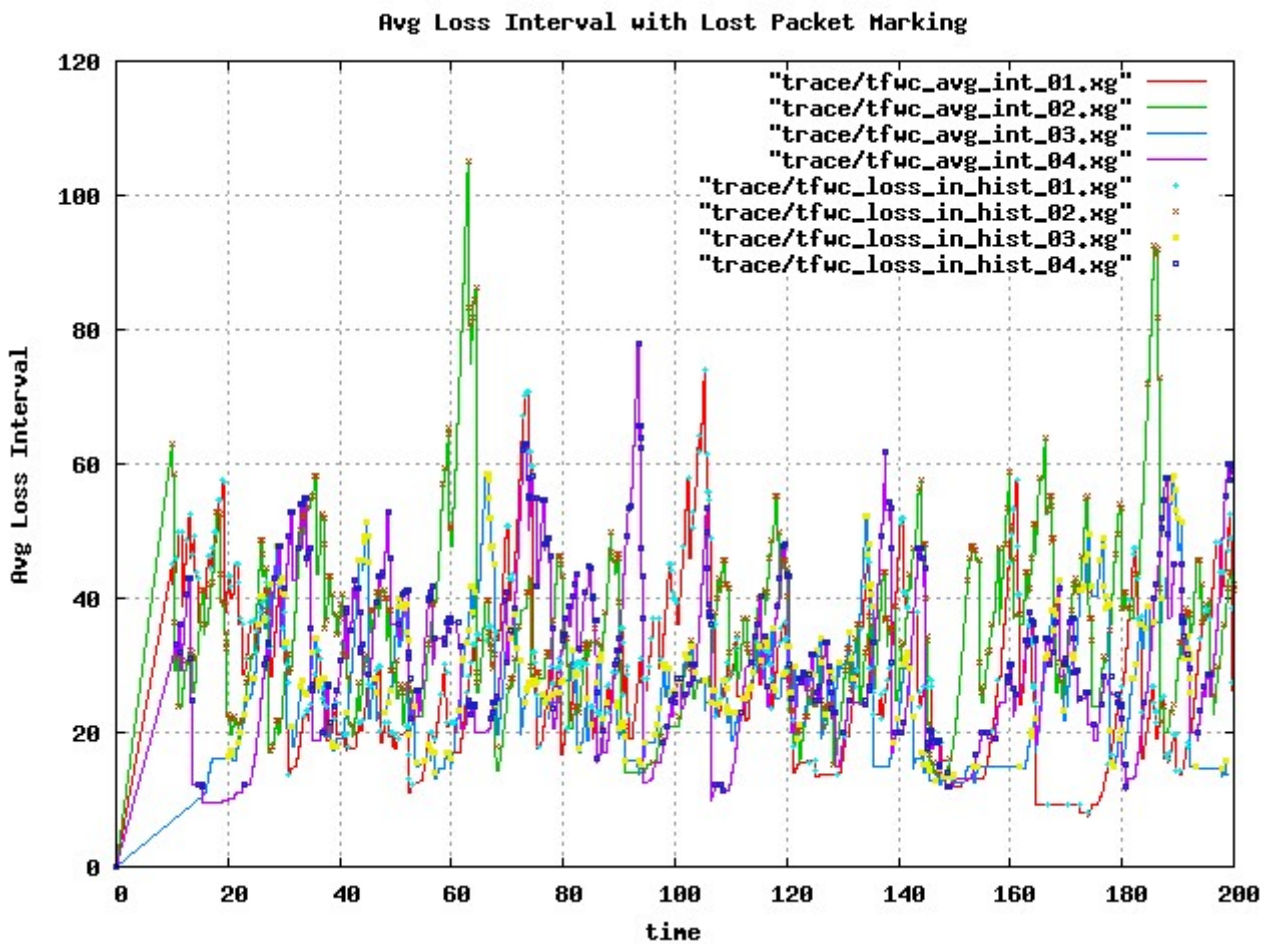
average loss interval (q=55, 24TFWC)



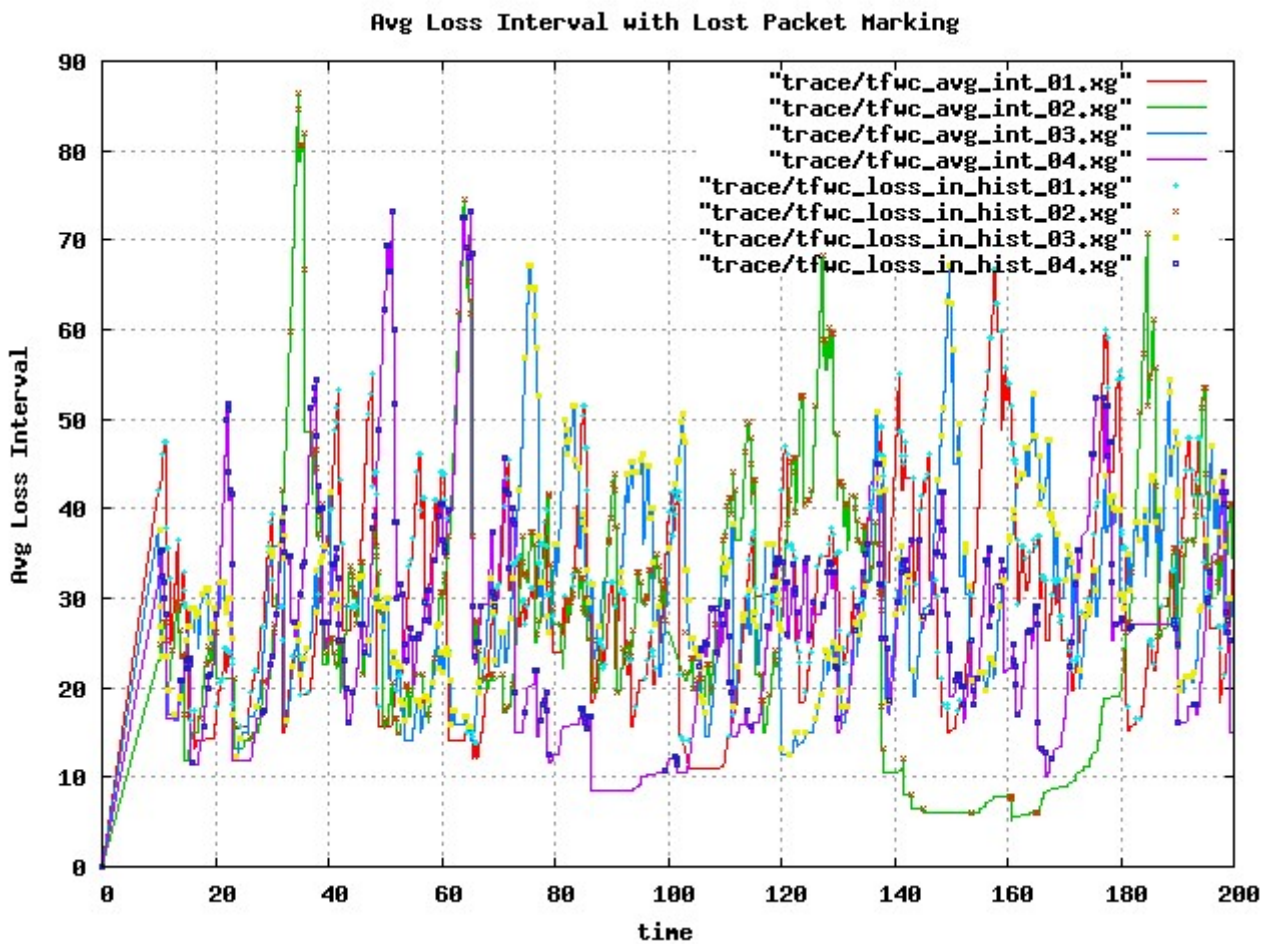
average loss interval (q=60, 24TFWC)



average loss interval (q=65, 24TFWC)



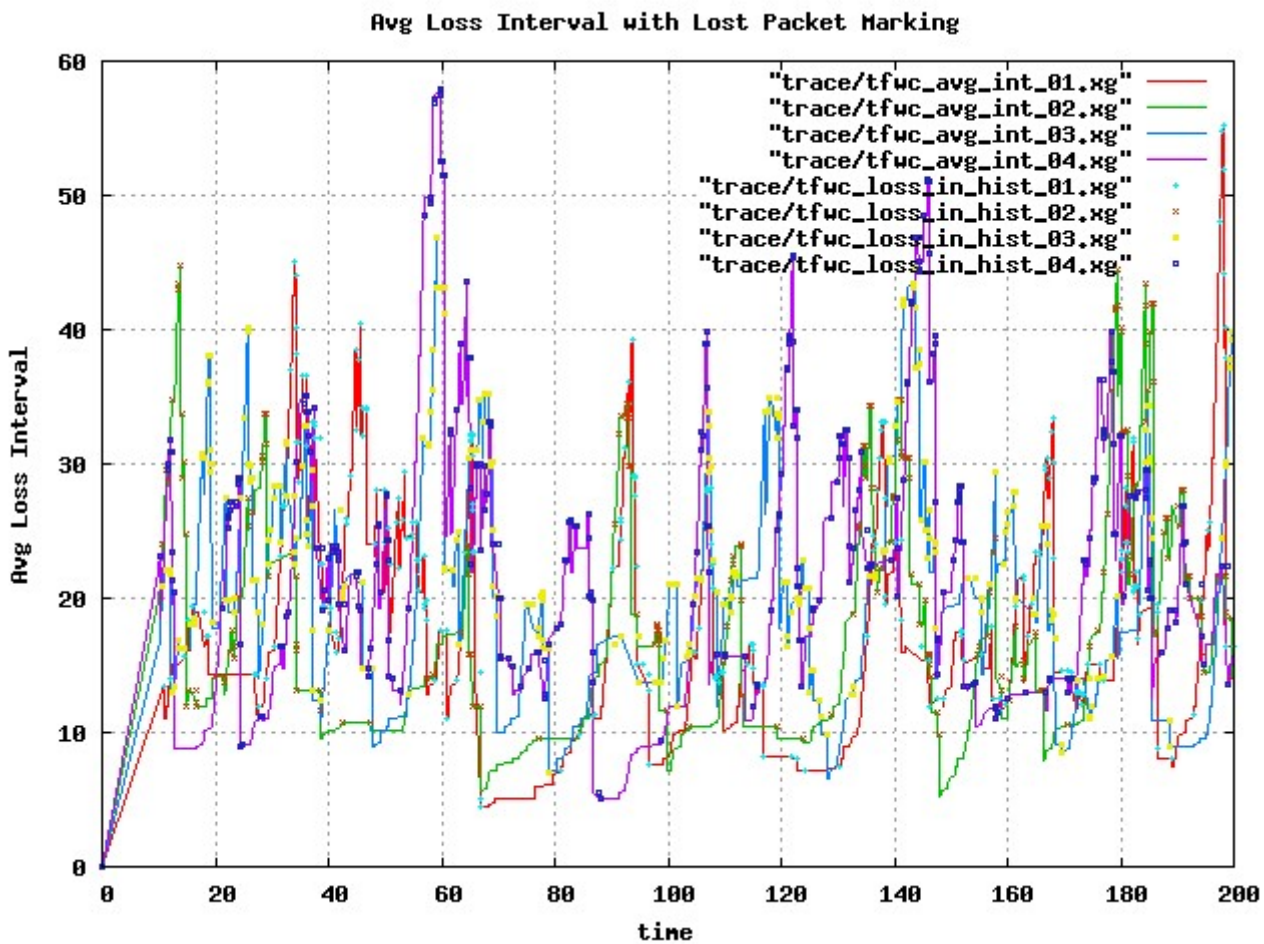
average loss interval (q=70, 24TFWC)



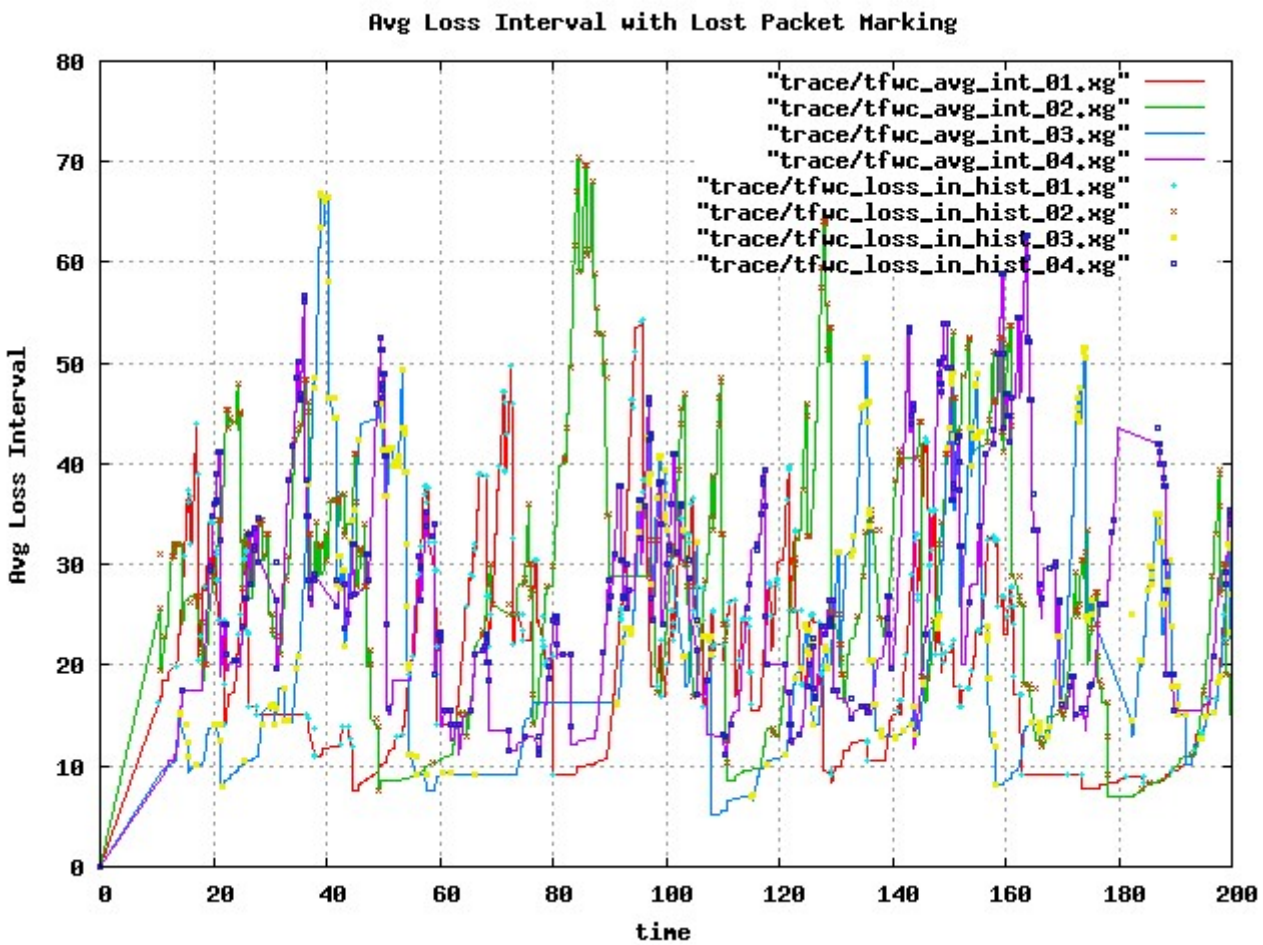
28 TFWC w/ 28 reverse TCP
Varying Bottleneck (RED) Queue Size (10 ~ 75)
Simulation Time = 200
Random Seed Number = 177

Phase Break = On
Probability = 10%

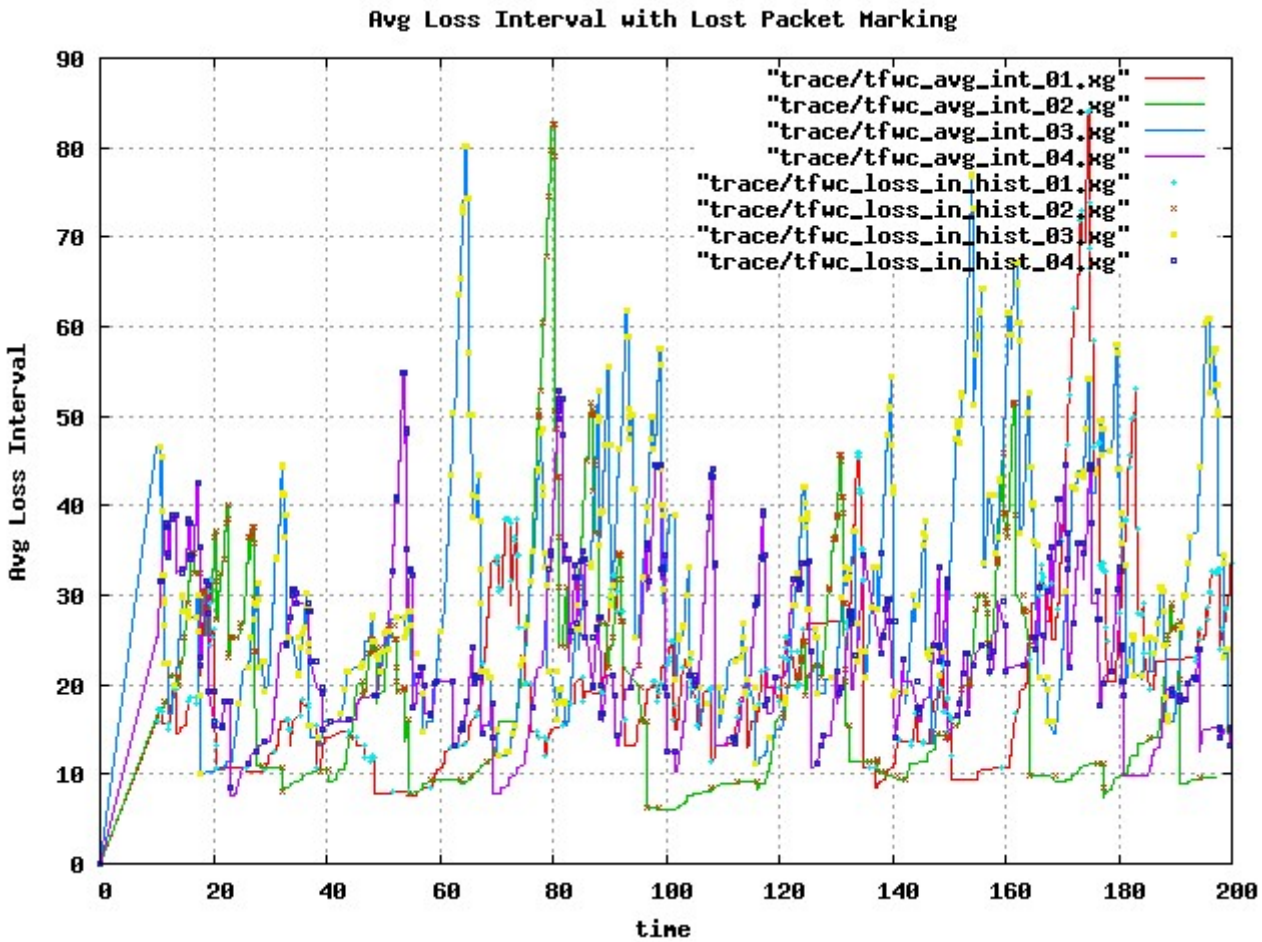
average loss interval (q=10, 28TFWC)



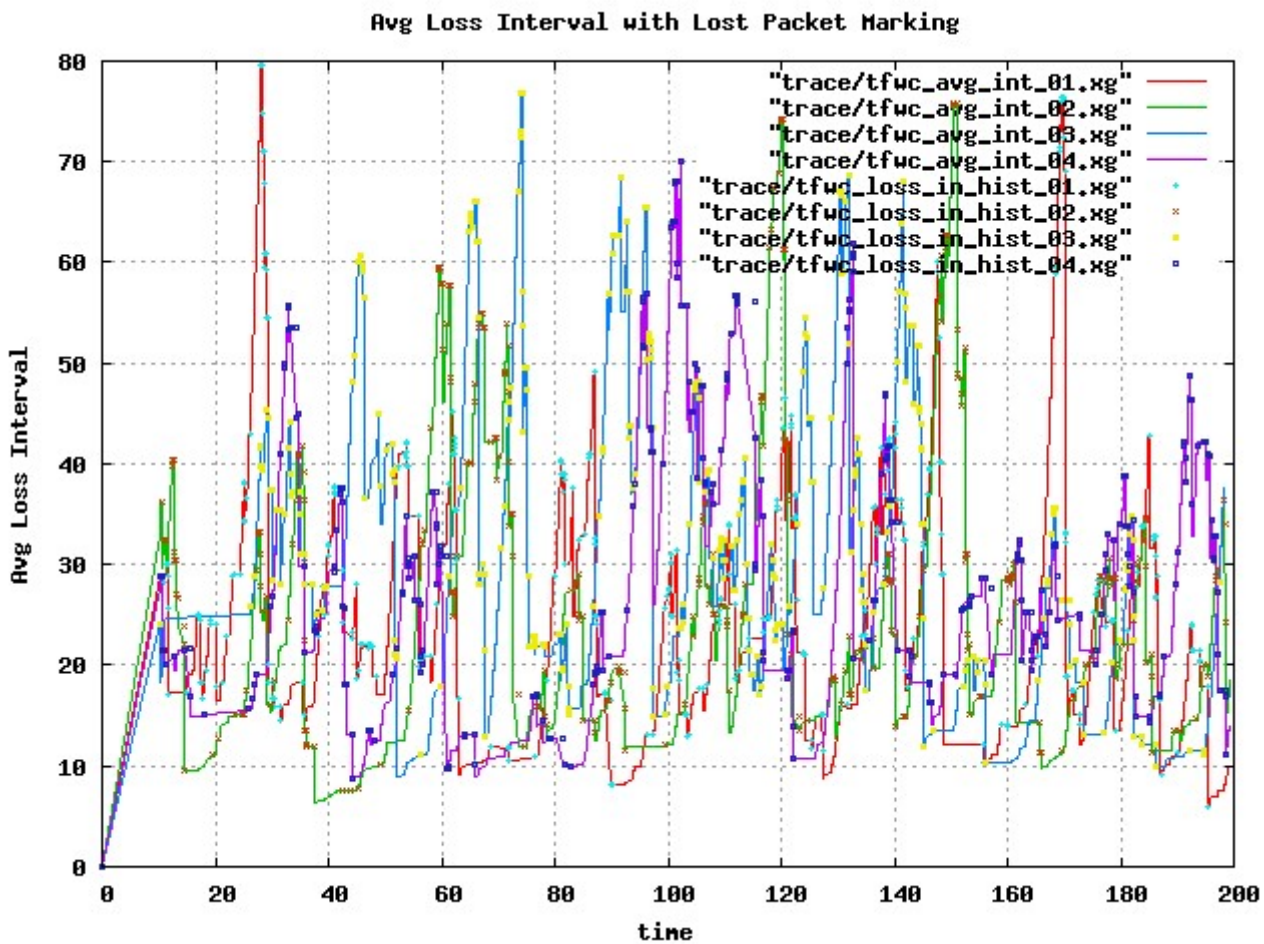
average loss interval (q=15, 28TFWC)



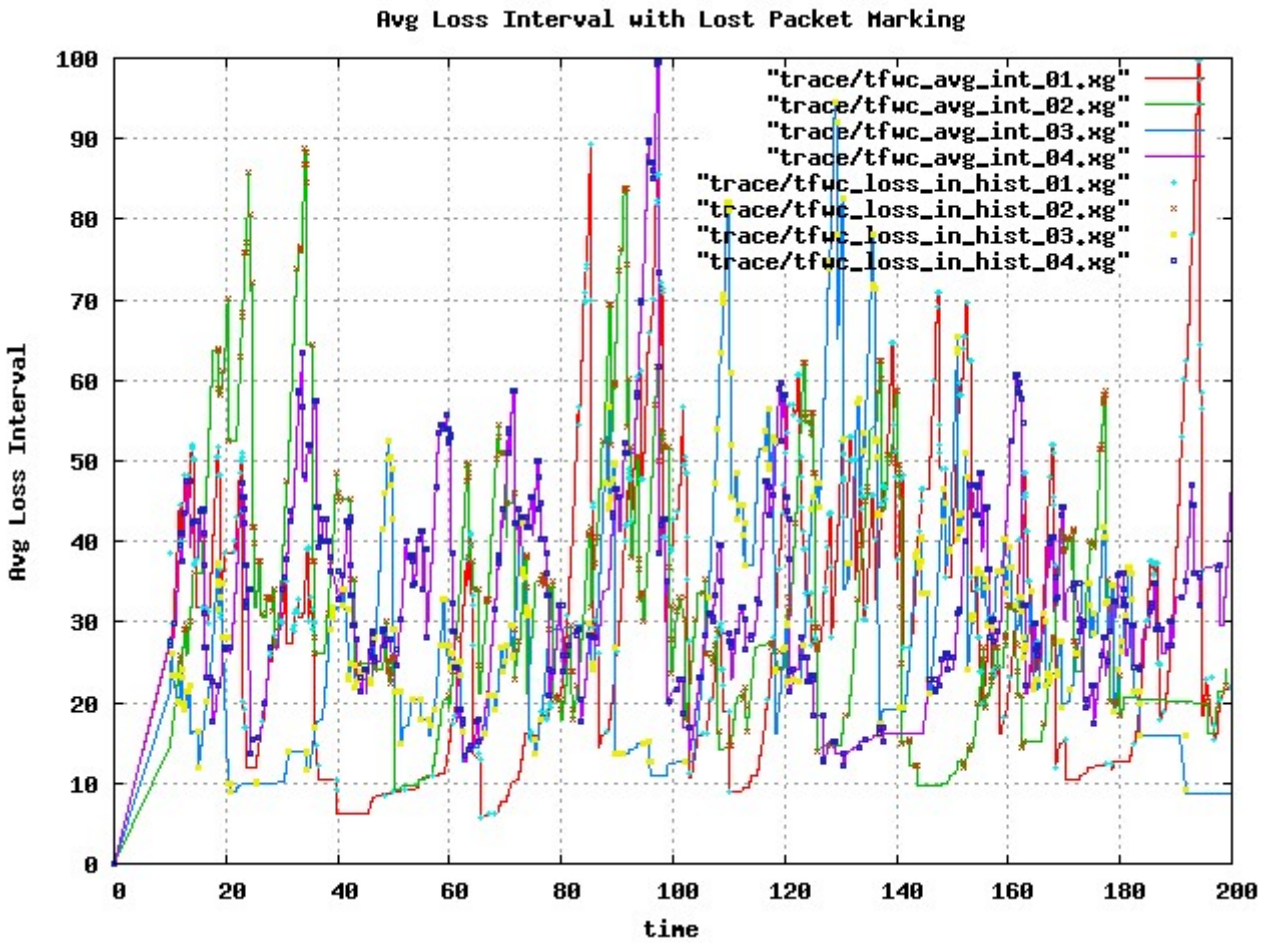
average loss interval (q=20, 28TFWC)



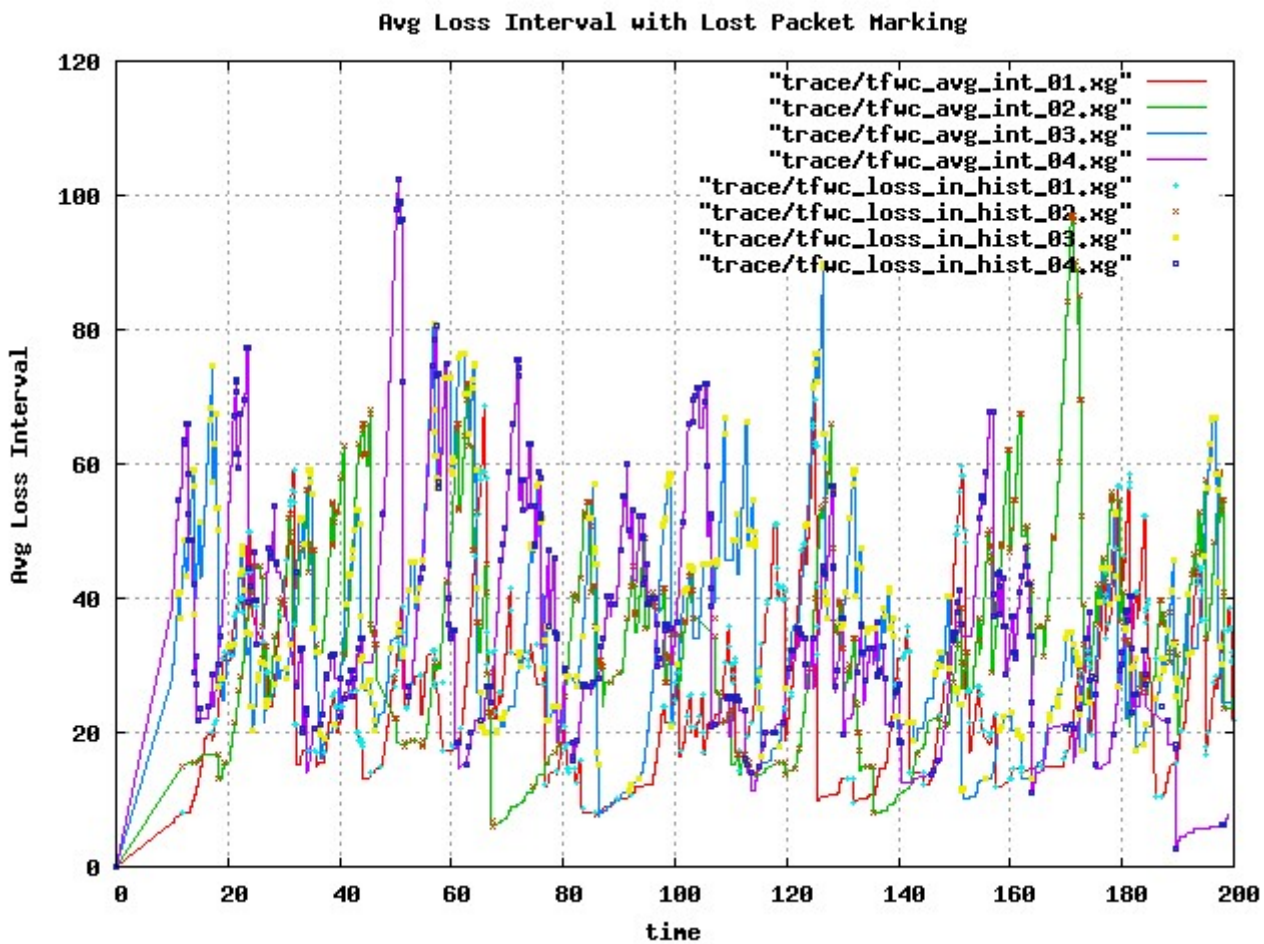
average loss interval (q=25, 28TFWC)



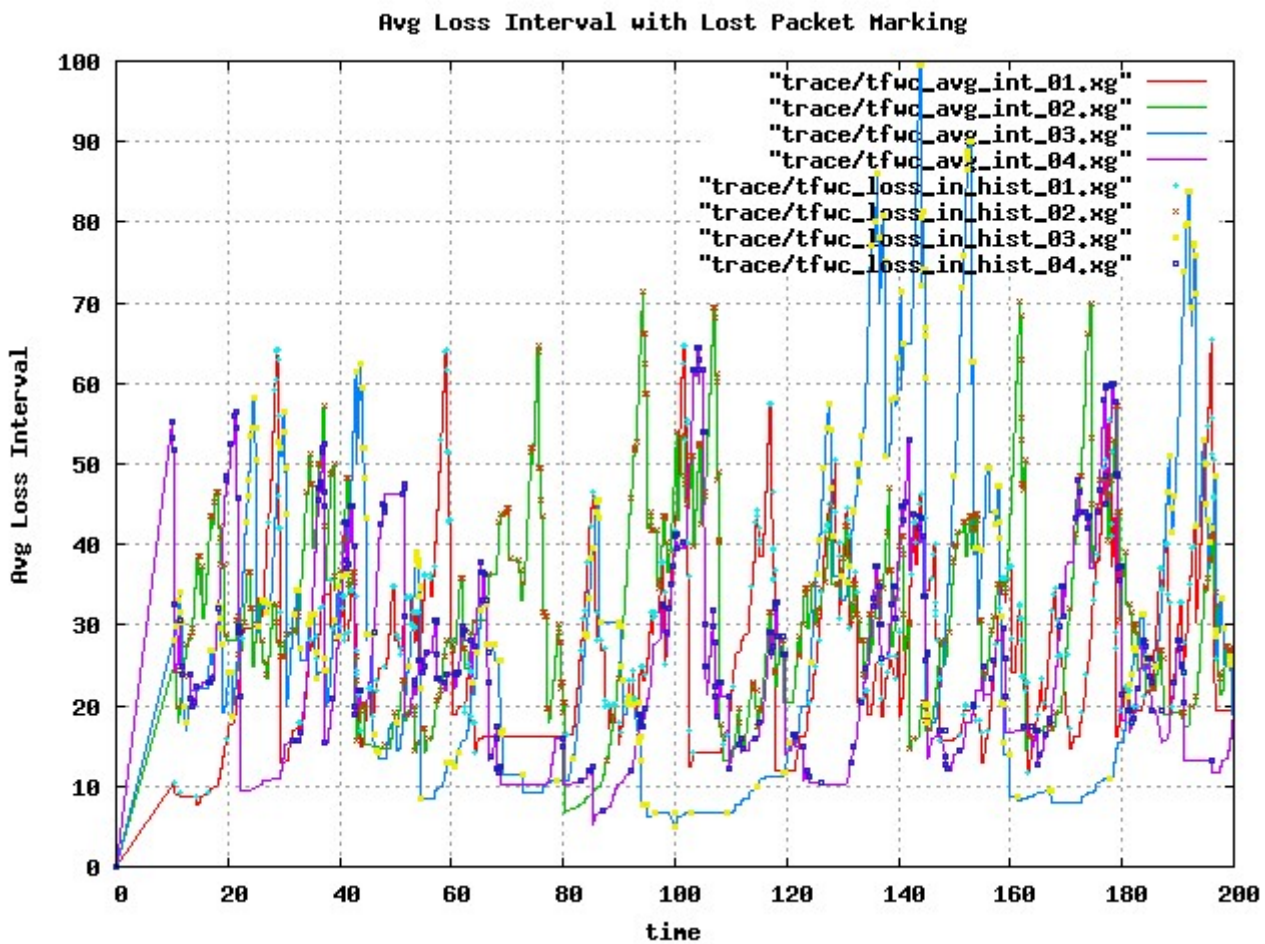
average loss interval (q=30, 28TFWC)



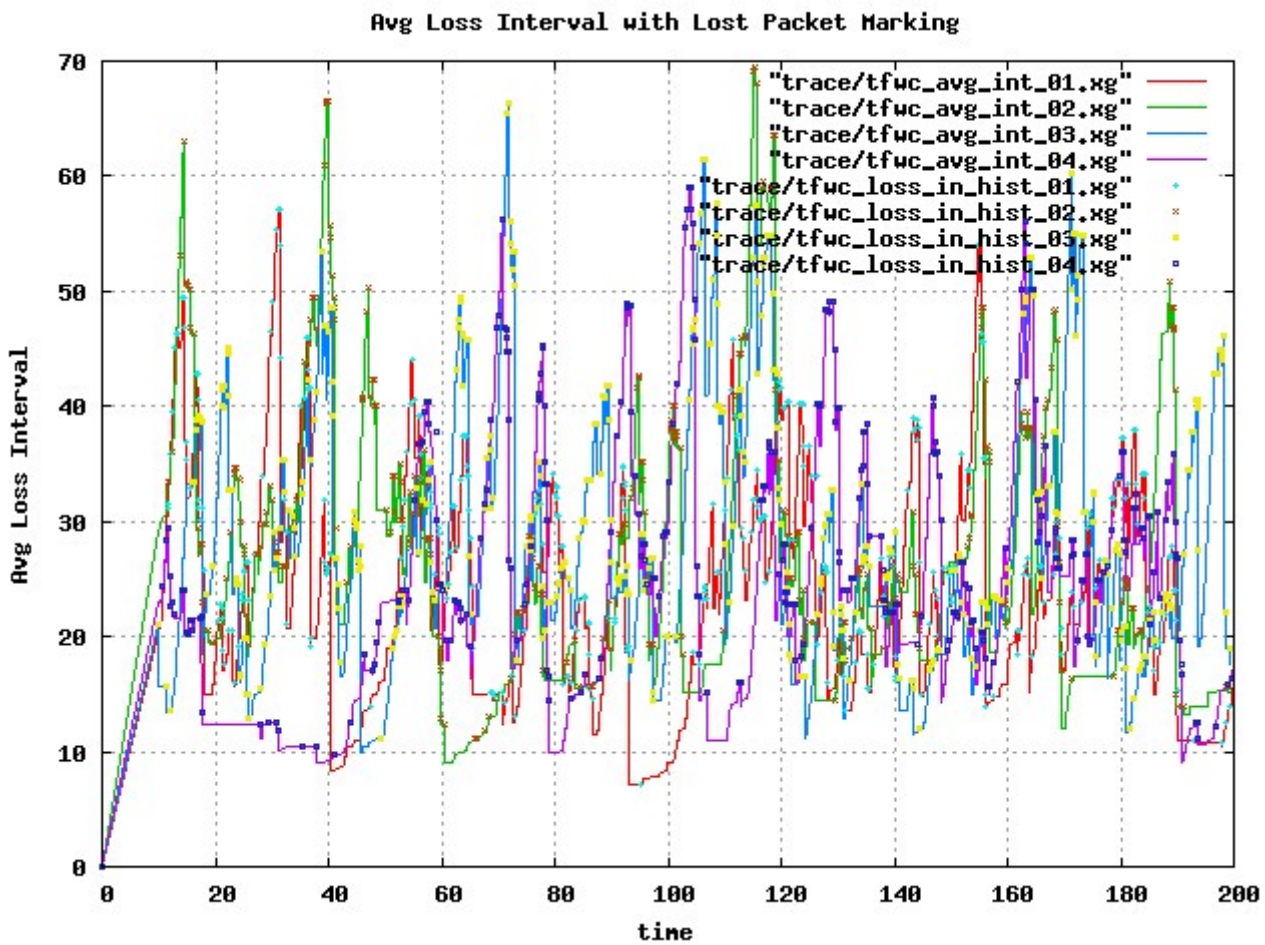
average loss interval (q=35, 28TFWC)



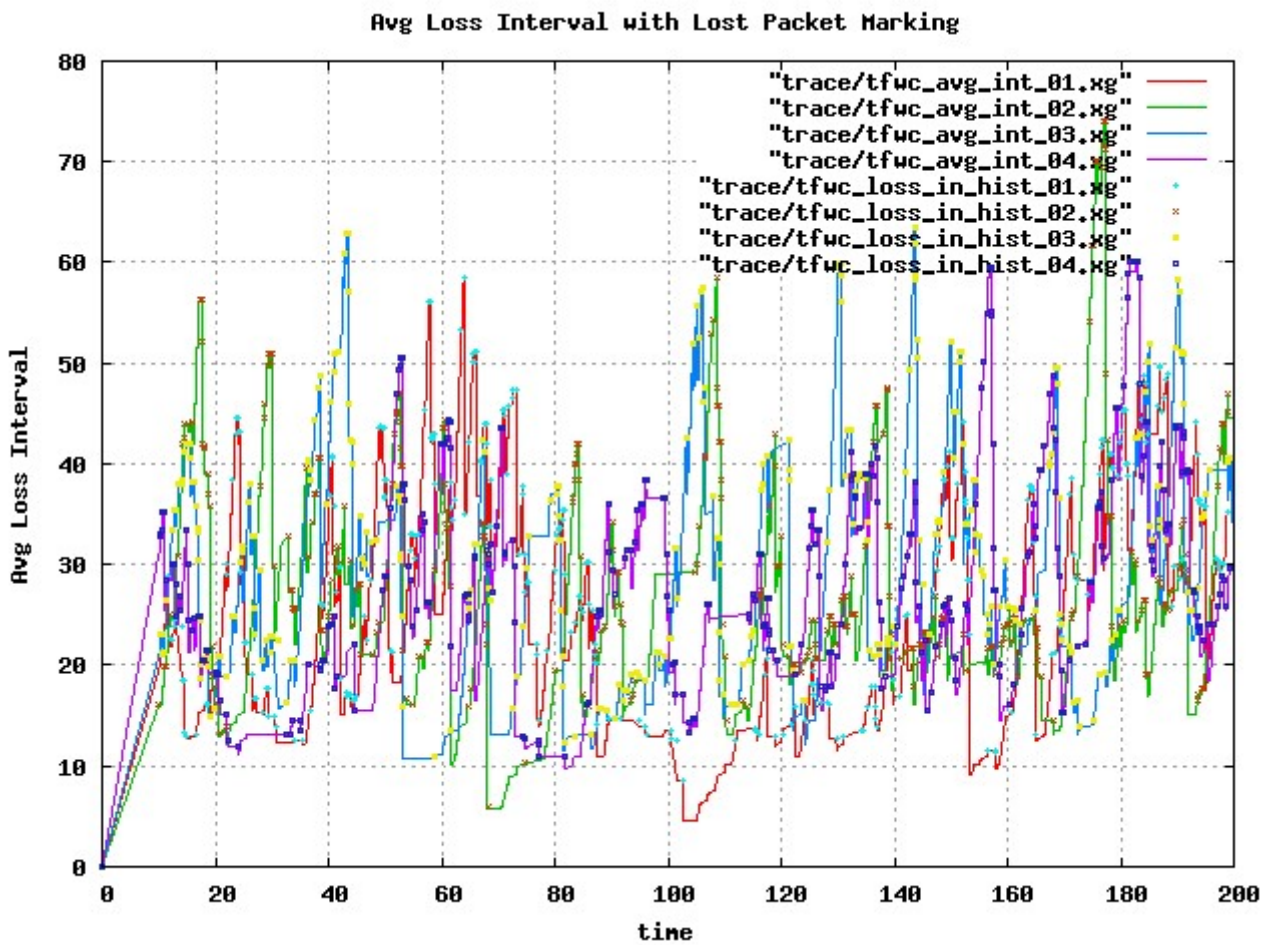
average loss interval (q=40, 28TFWC)



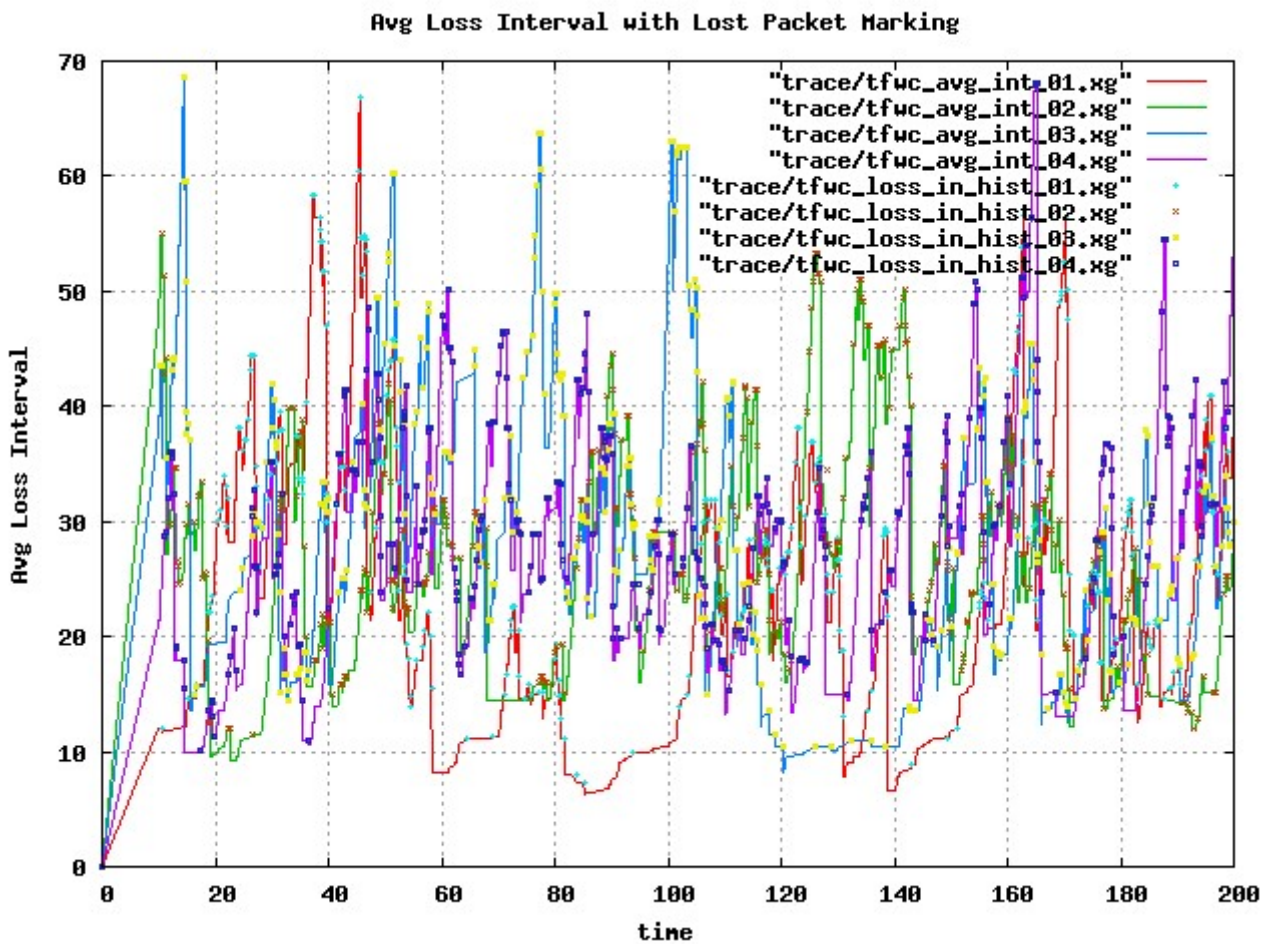
average loss interval (q=45, 28TFWC)



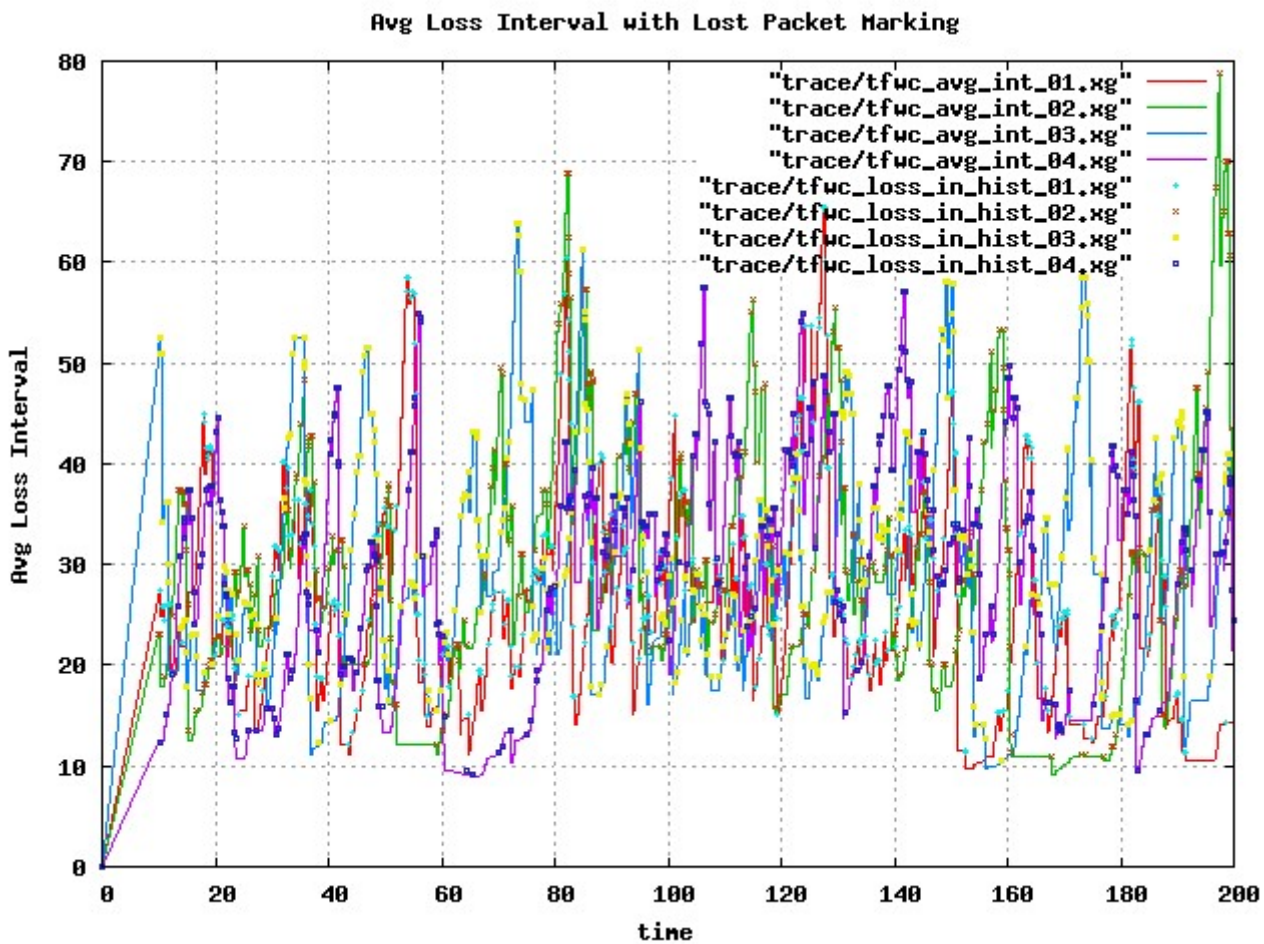
average loss interval (q=50, 28TFWC)



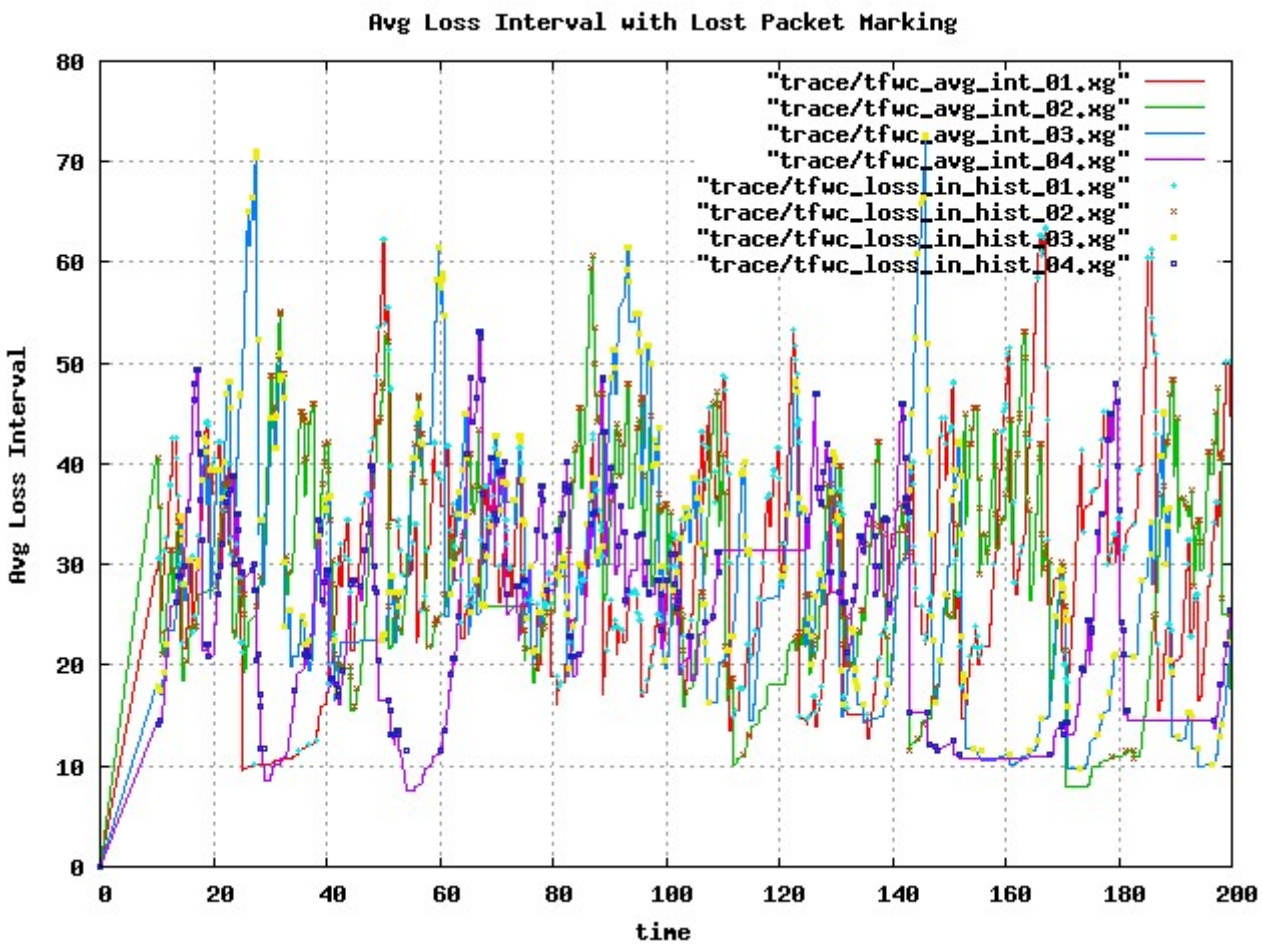
average loss interval (q=55, 28TFWC)



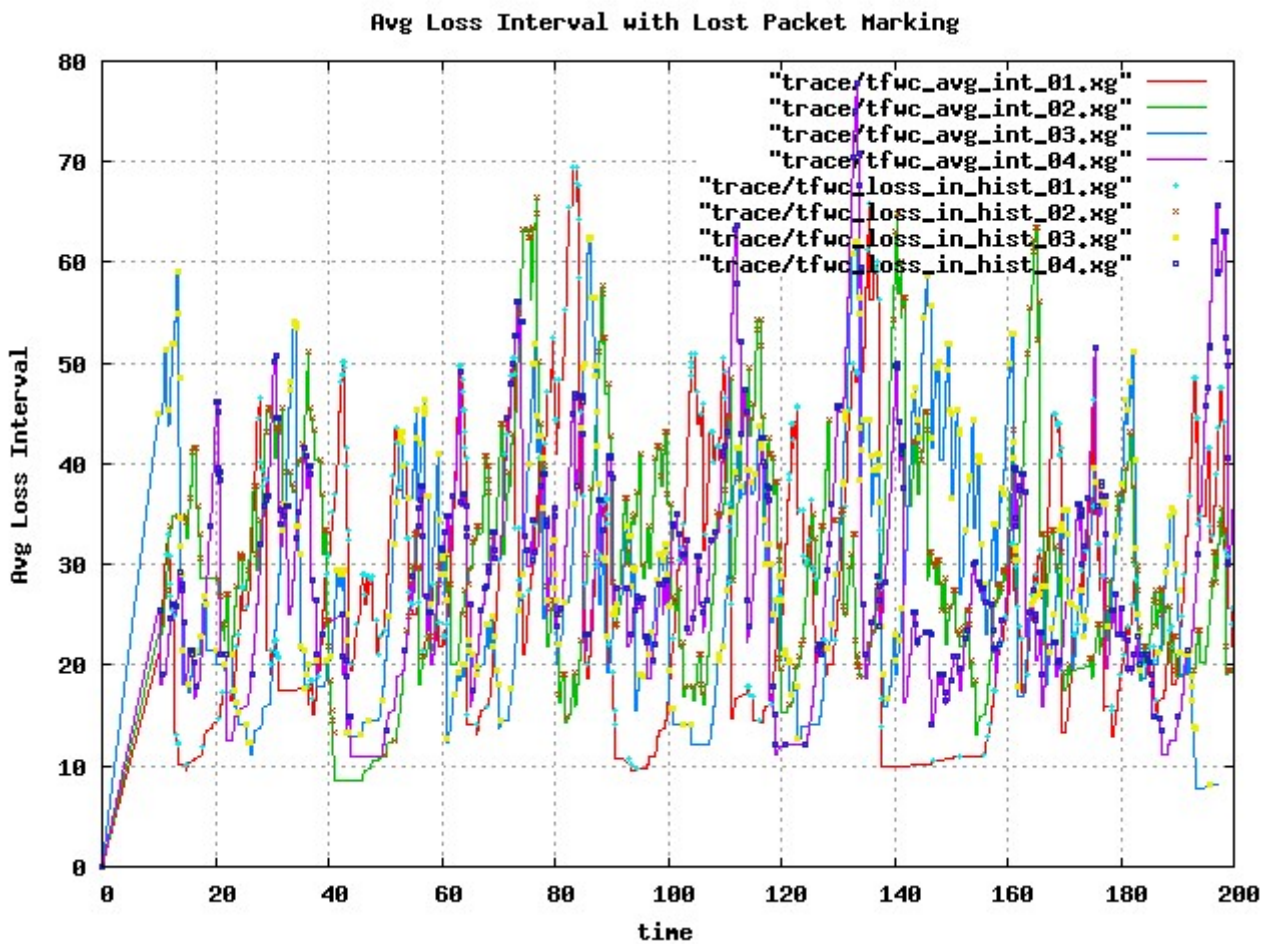
average loss interval (q=60, 28TFWC)



average loss interval (q=65, 28TFWC)



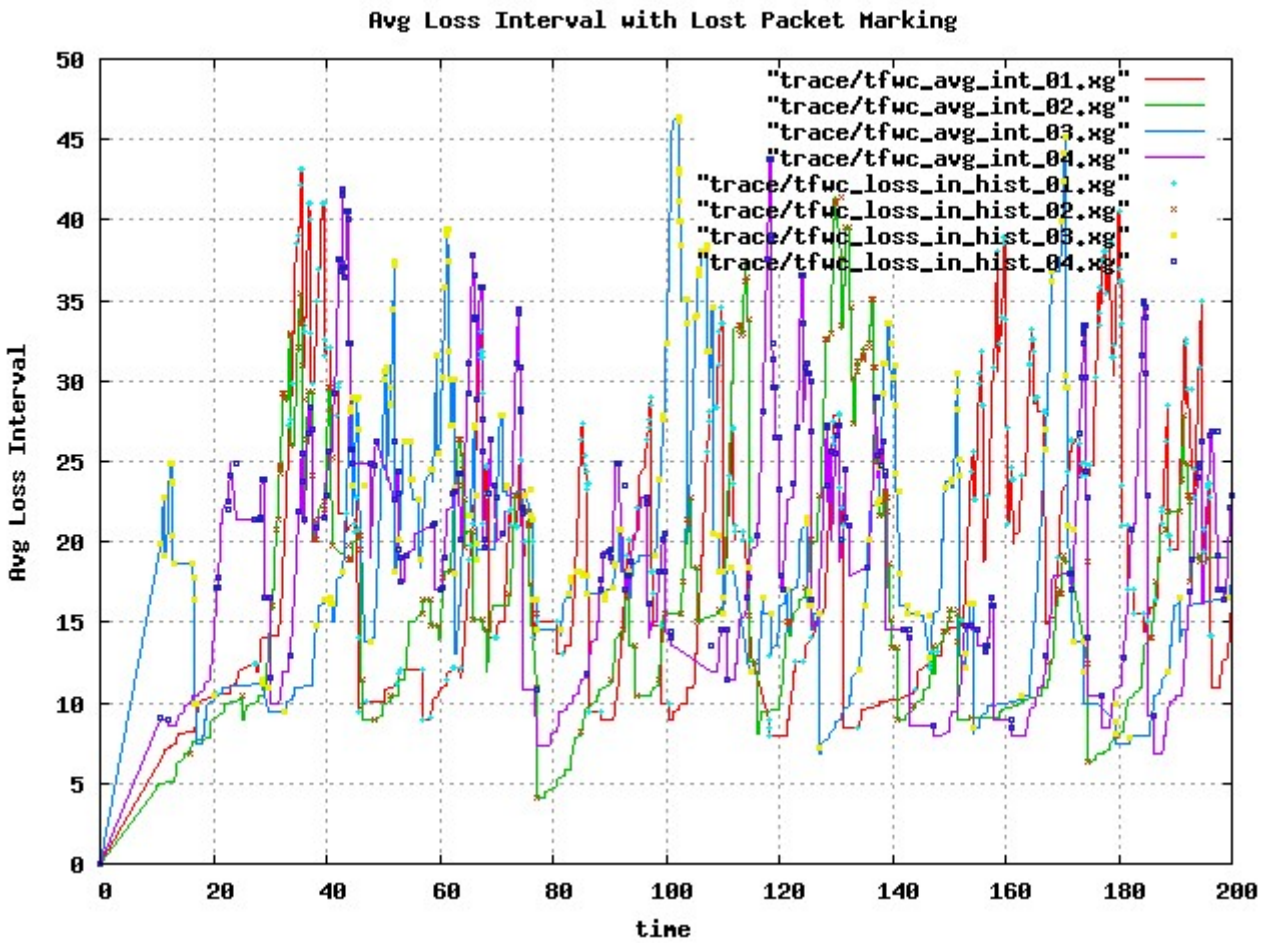
average loss interval (q=70, 28TFWC)



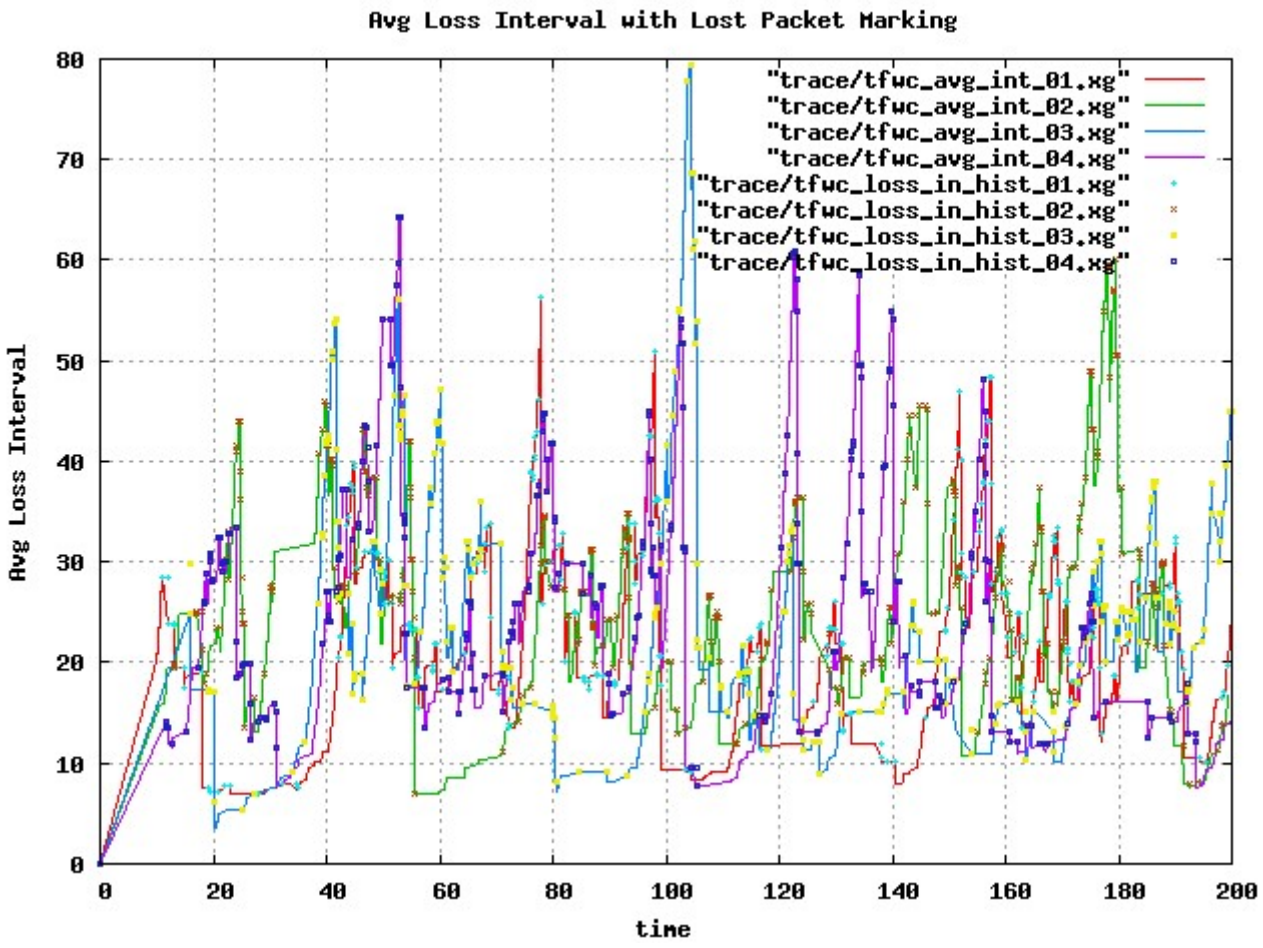
32 TFWC w/ 32 reverse TCP
Varying Bottleneck (RED) Queue Size (10 ~ 75)
Simulation Time = 200
Random Seed Number = 177

Phase Break = On
Probability = 10%

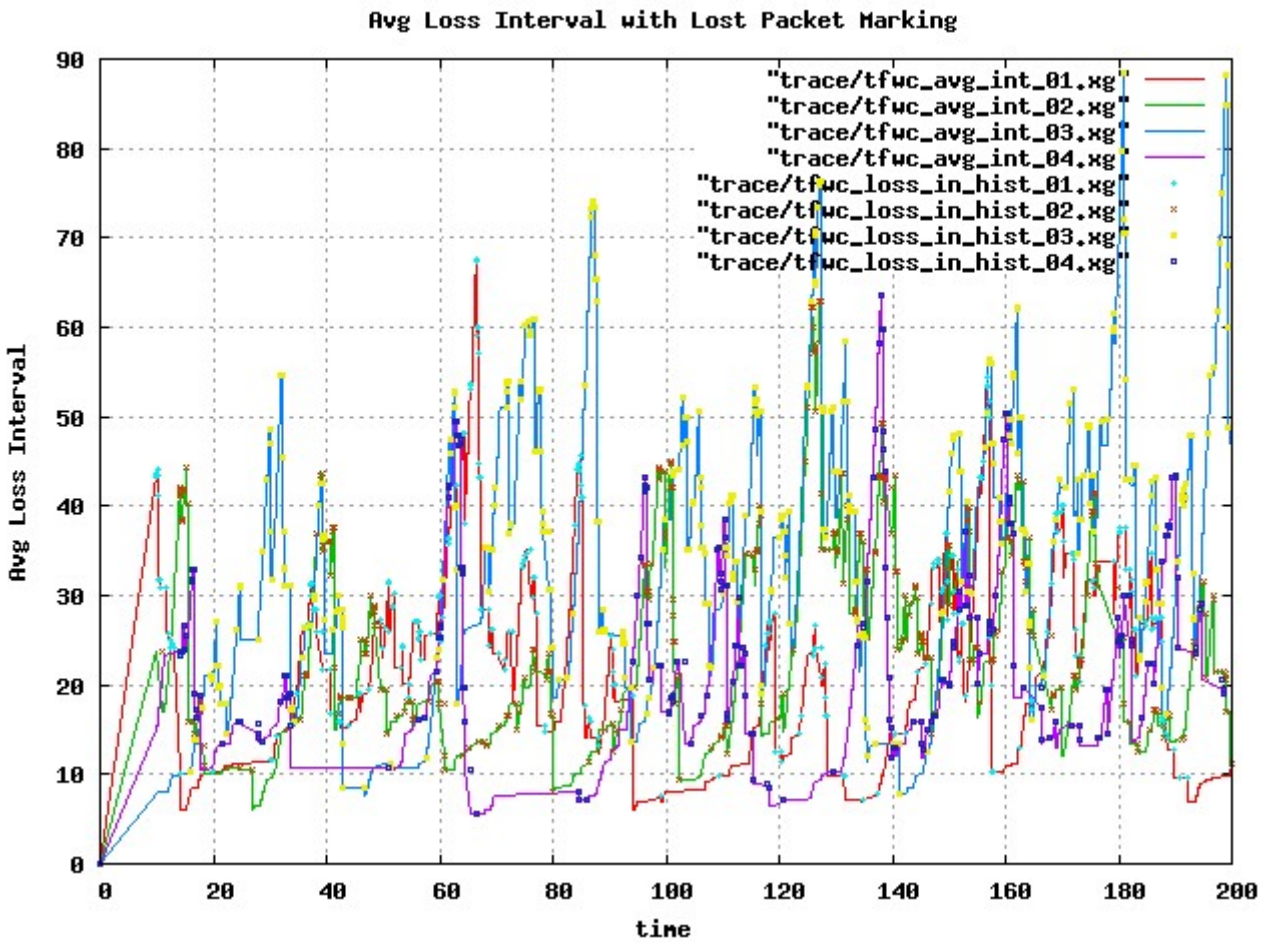
average loss interval (q=10, 32TFWC)



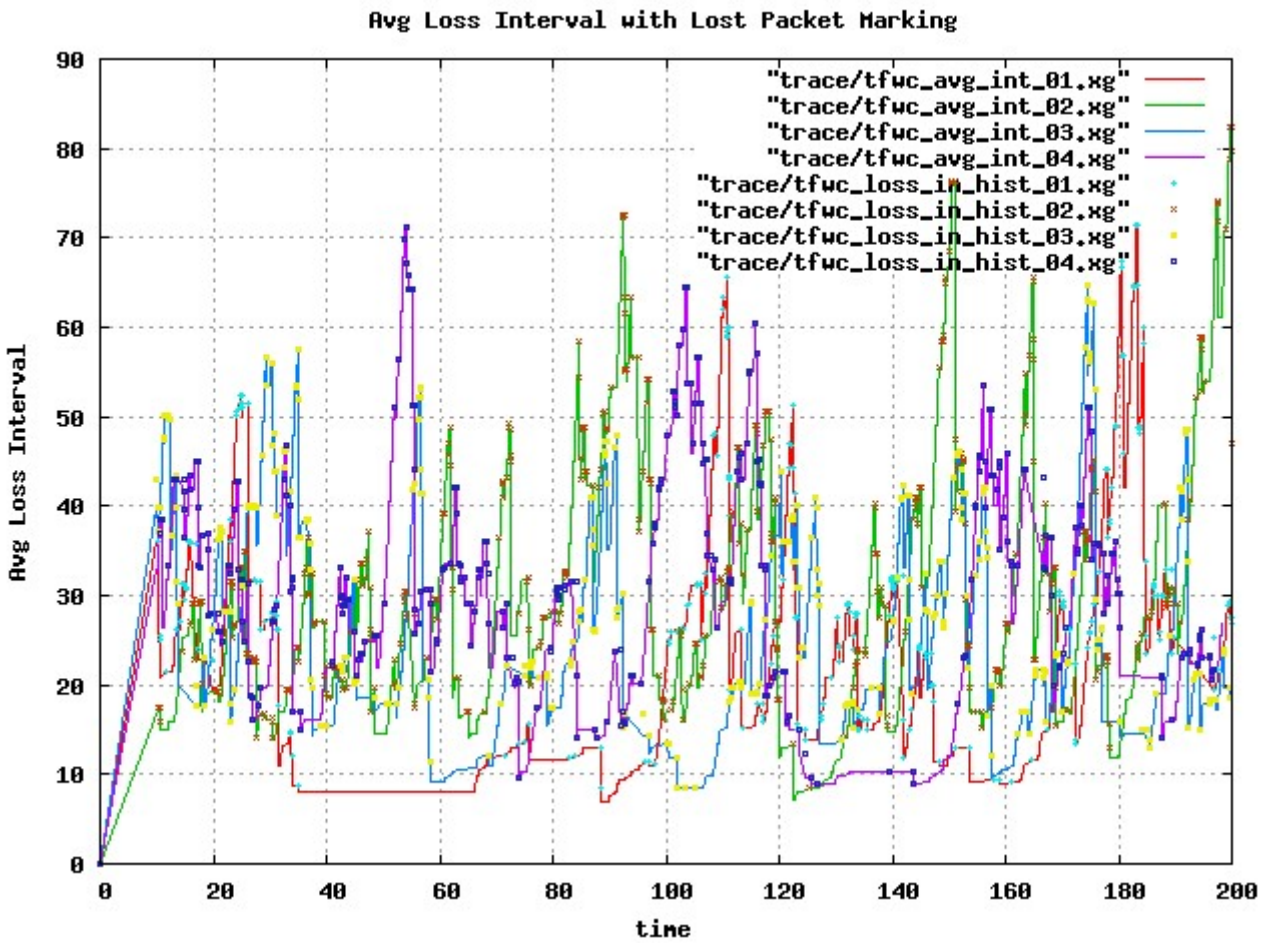
average loss interval (q=15, 32TFWC)



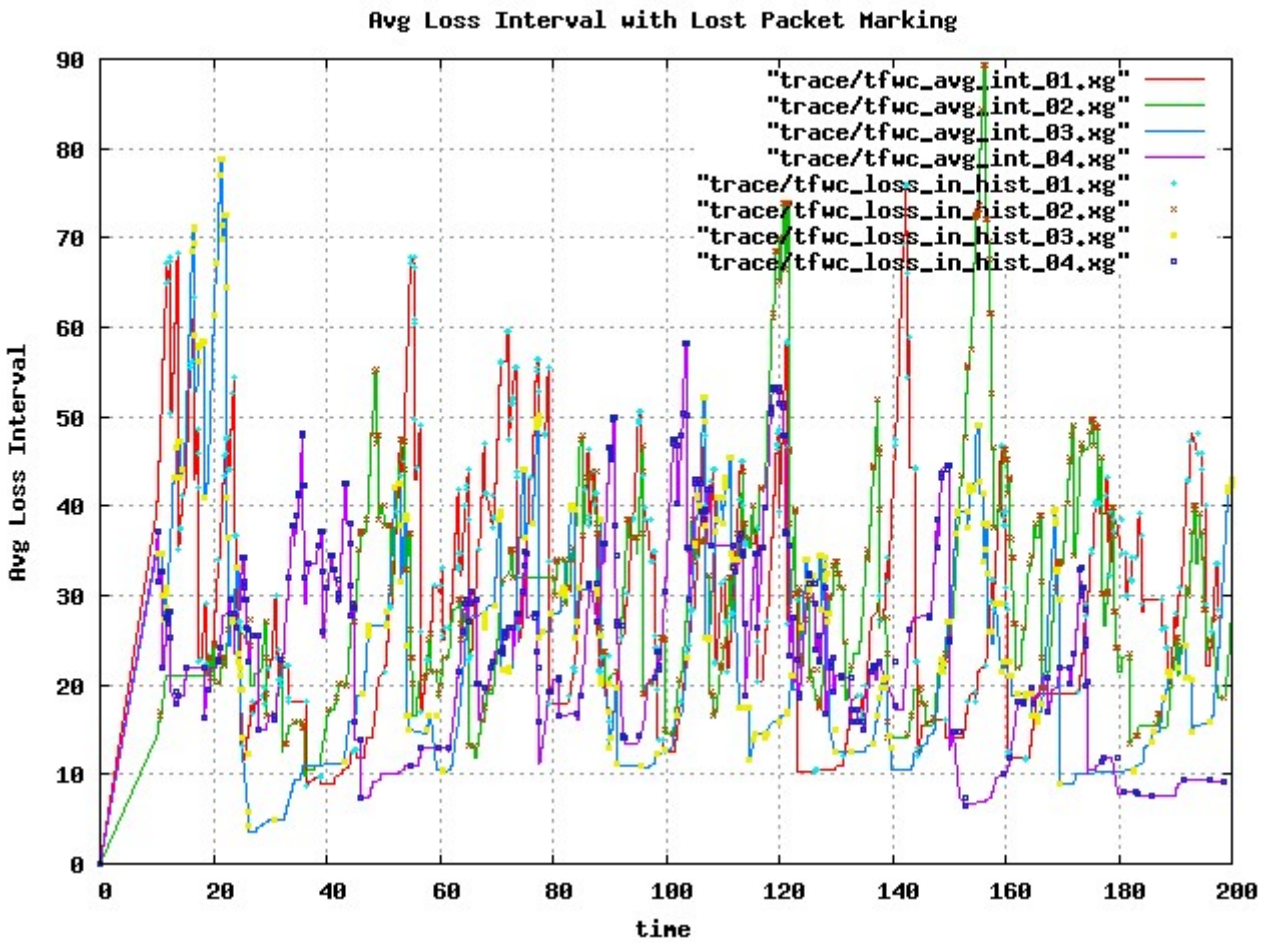
average loss interval (q=20, 32TFWC)



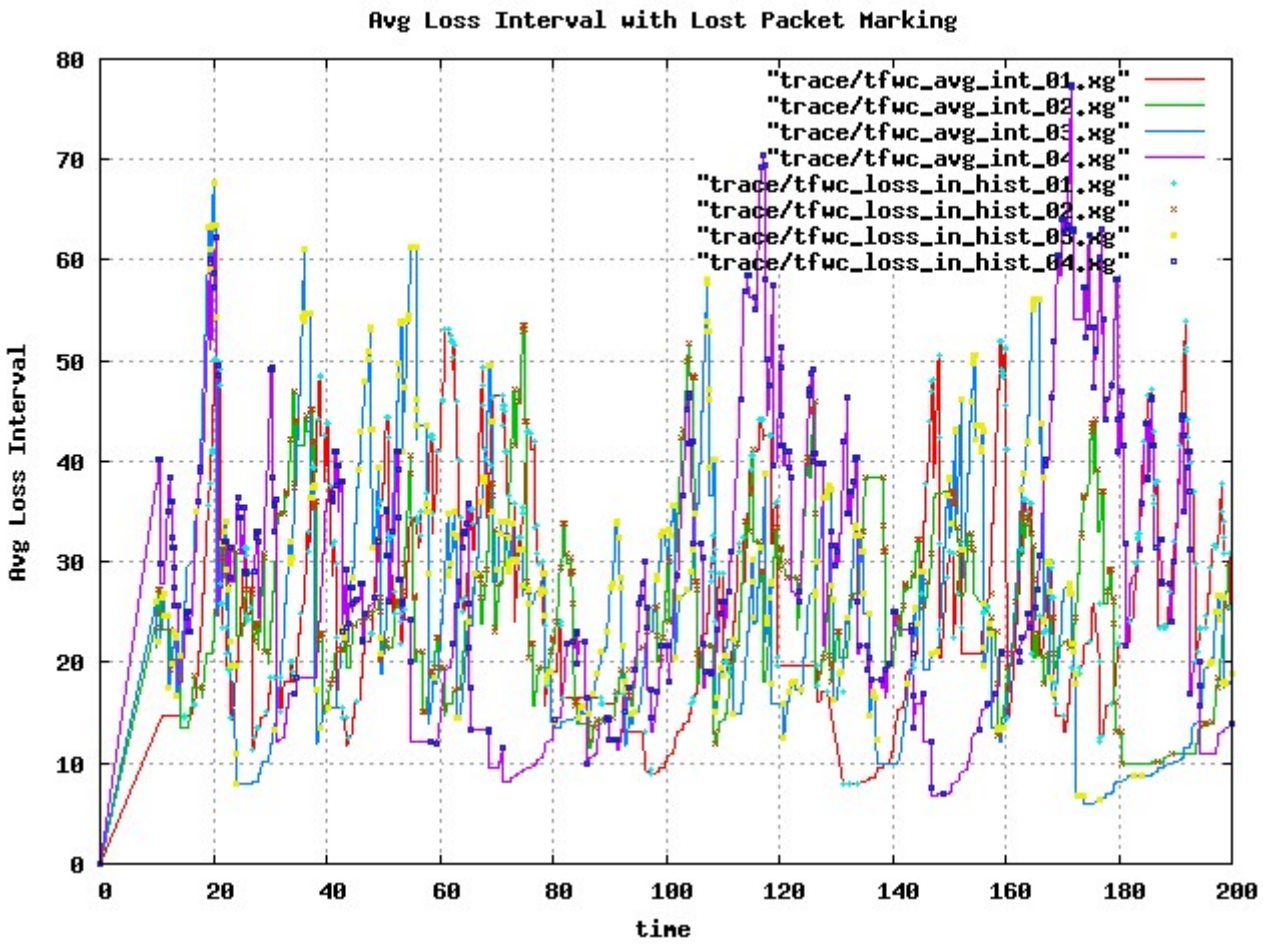
average loss interval (q=25, 32TFWC)



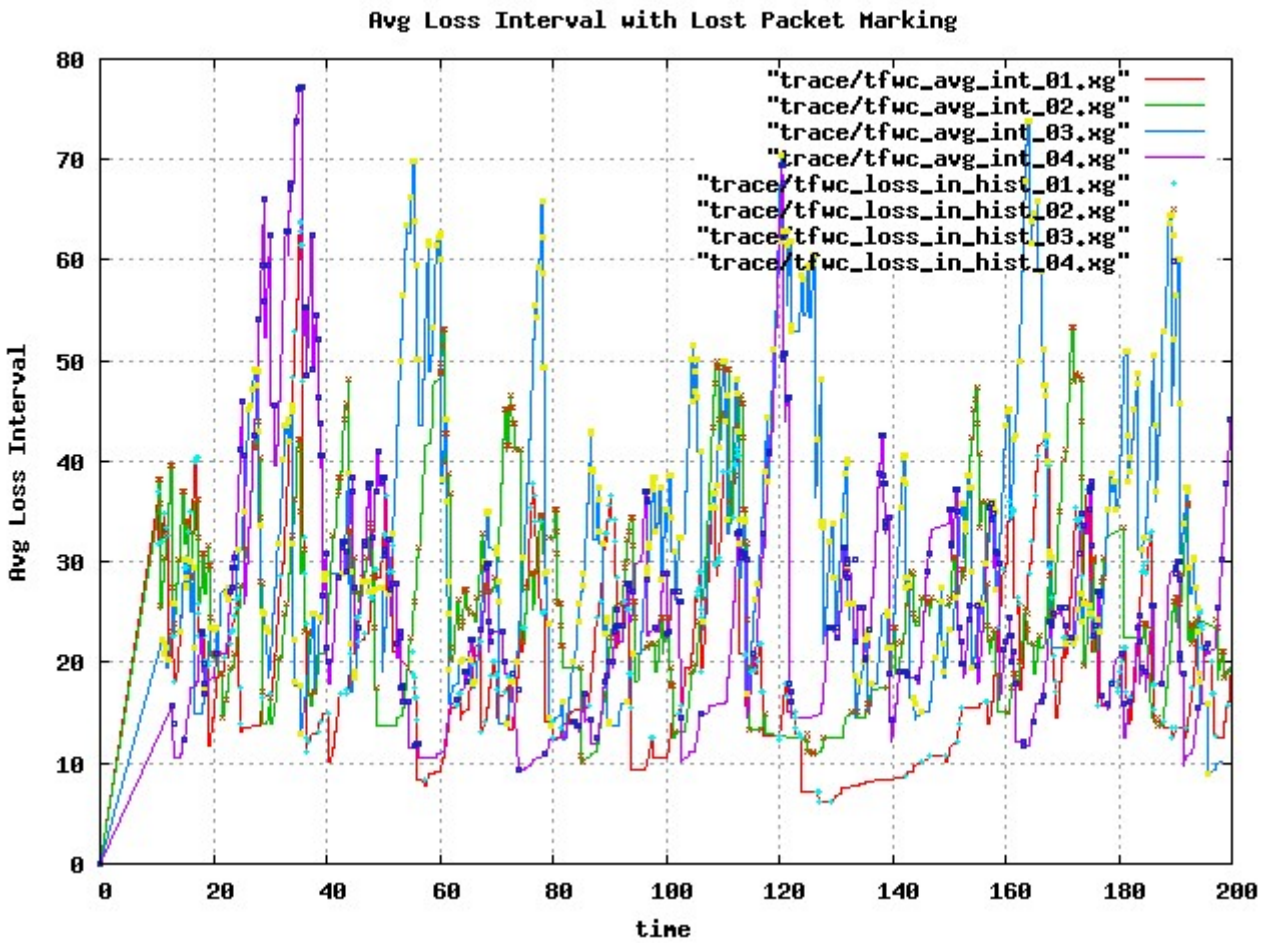
average loss interval (q=30, 32TFWC)



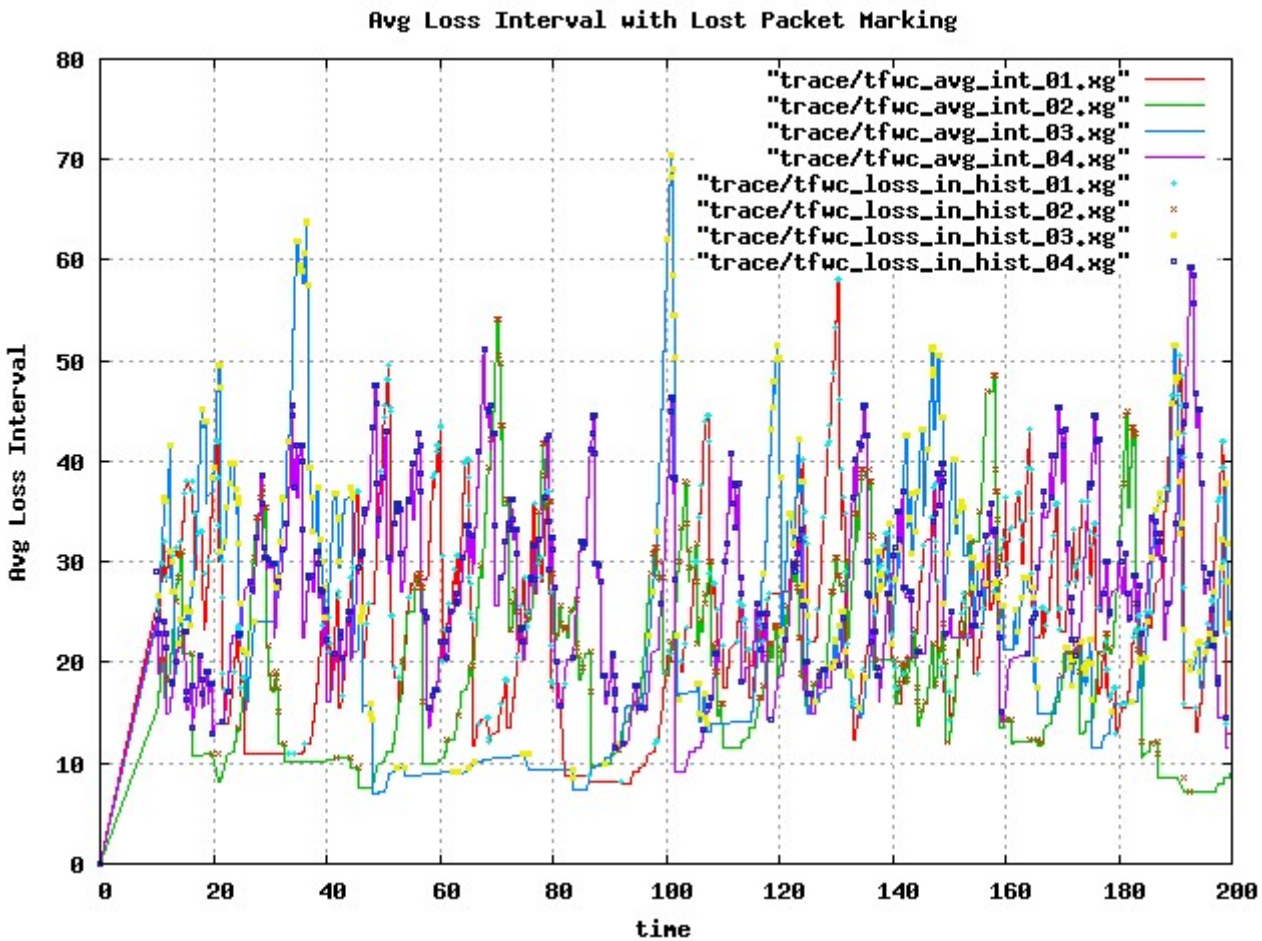
average loss interval (q=35, 32TFWC)



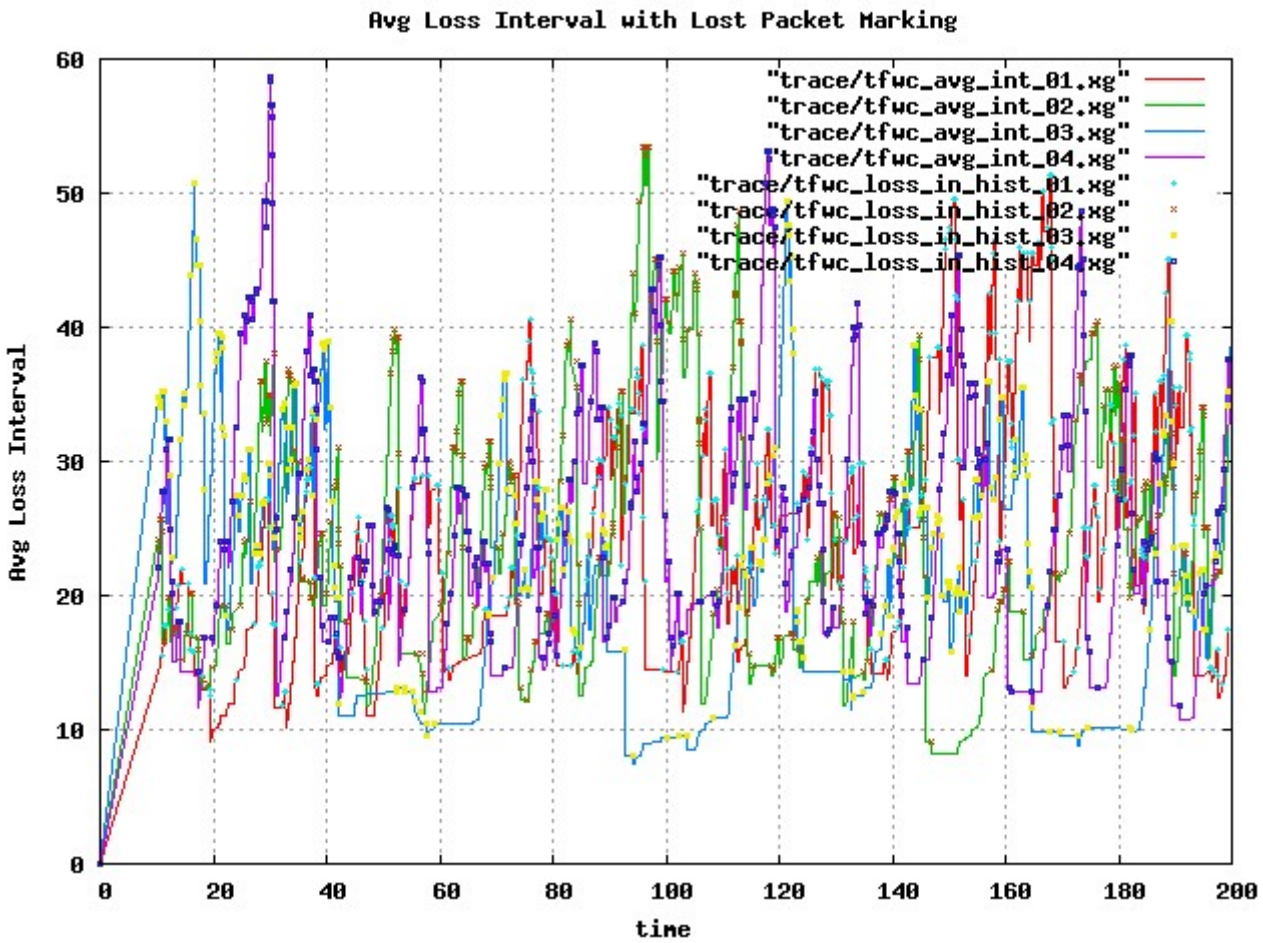
average loss interval (q=40, 32TFWC)



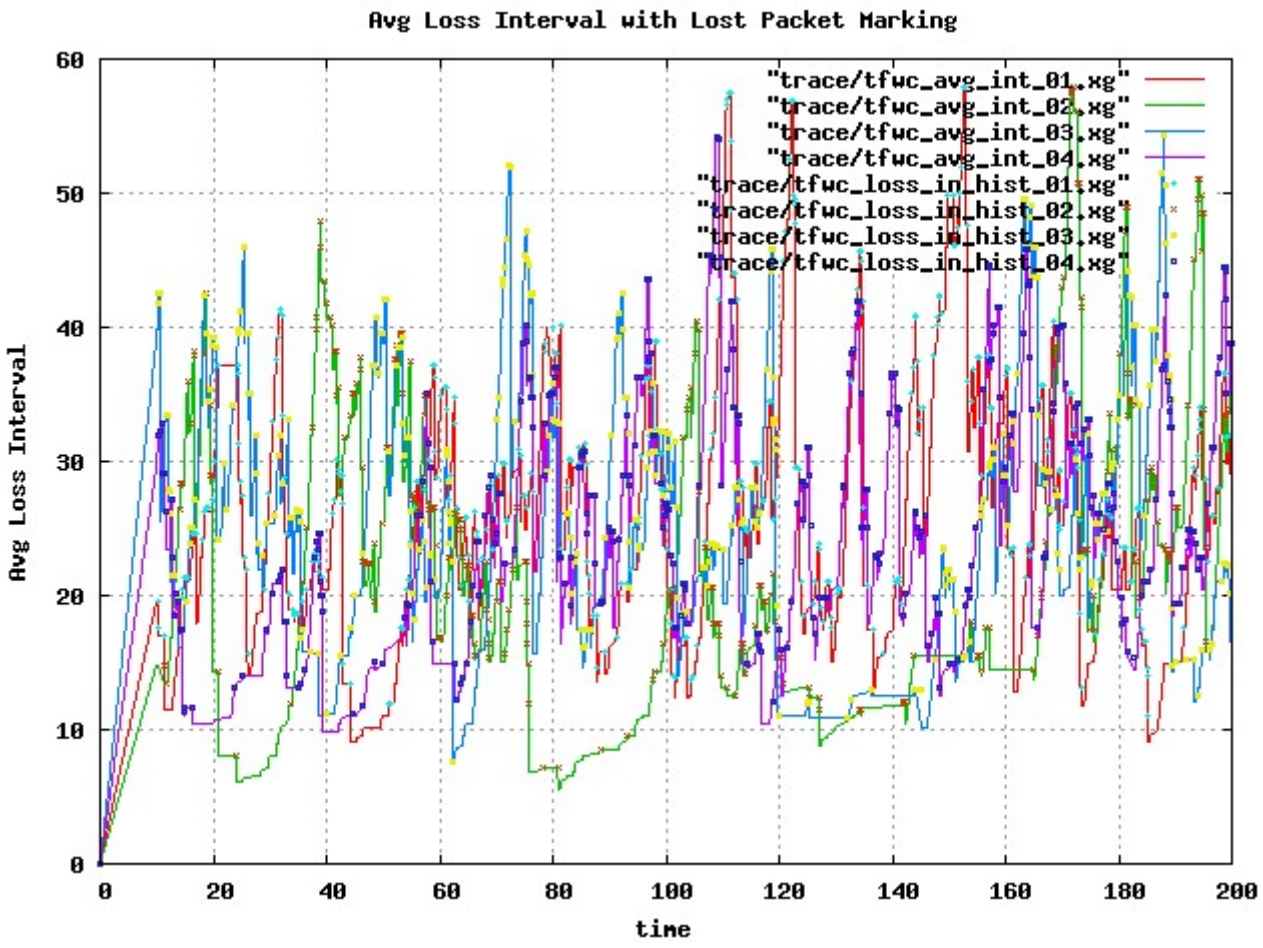
average loss interval (q=45, 32TFWC)



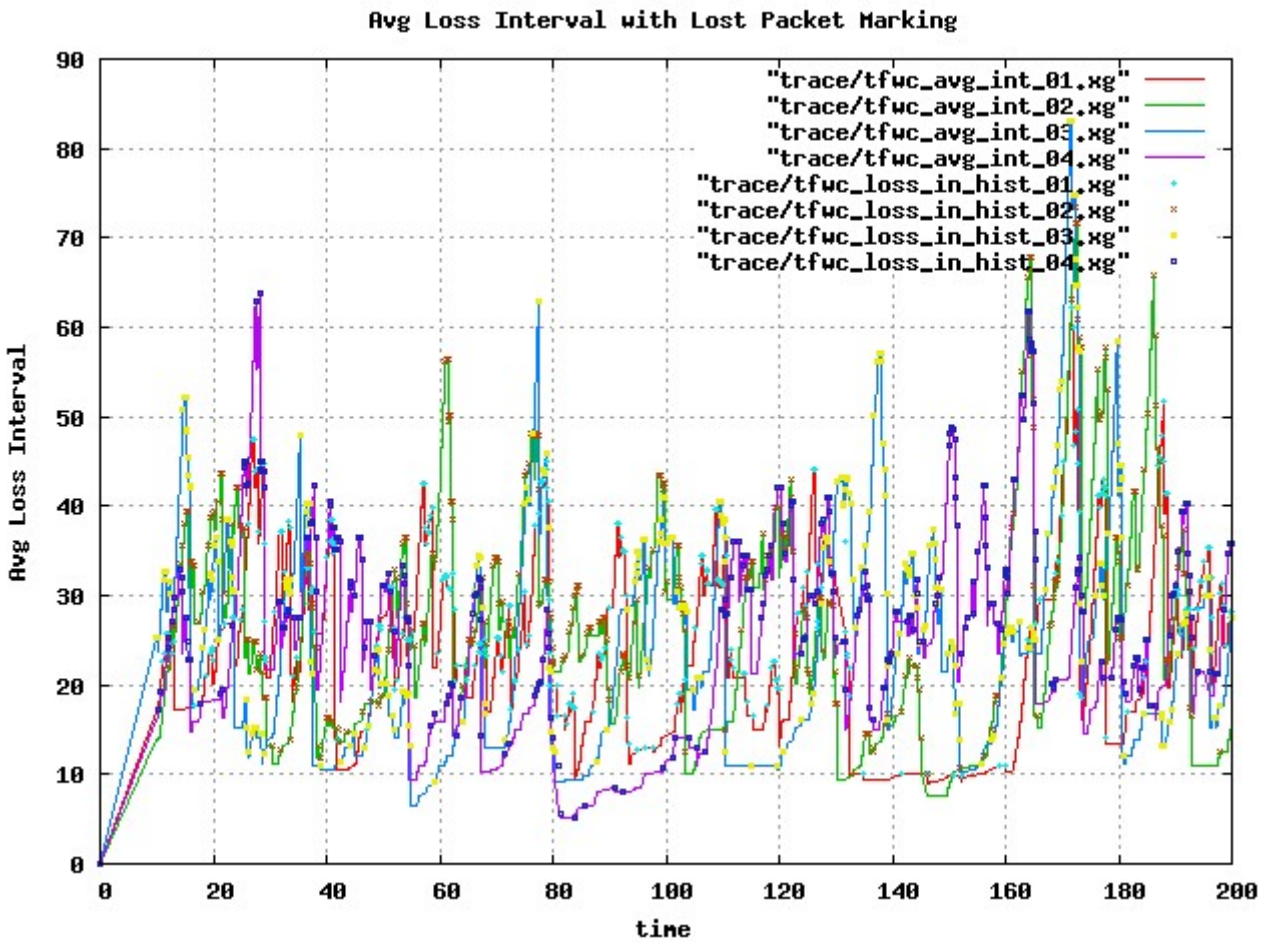
average loss interval (q=50, 32TFWC)



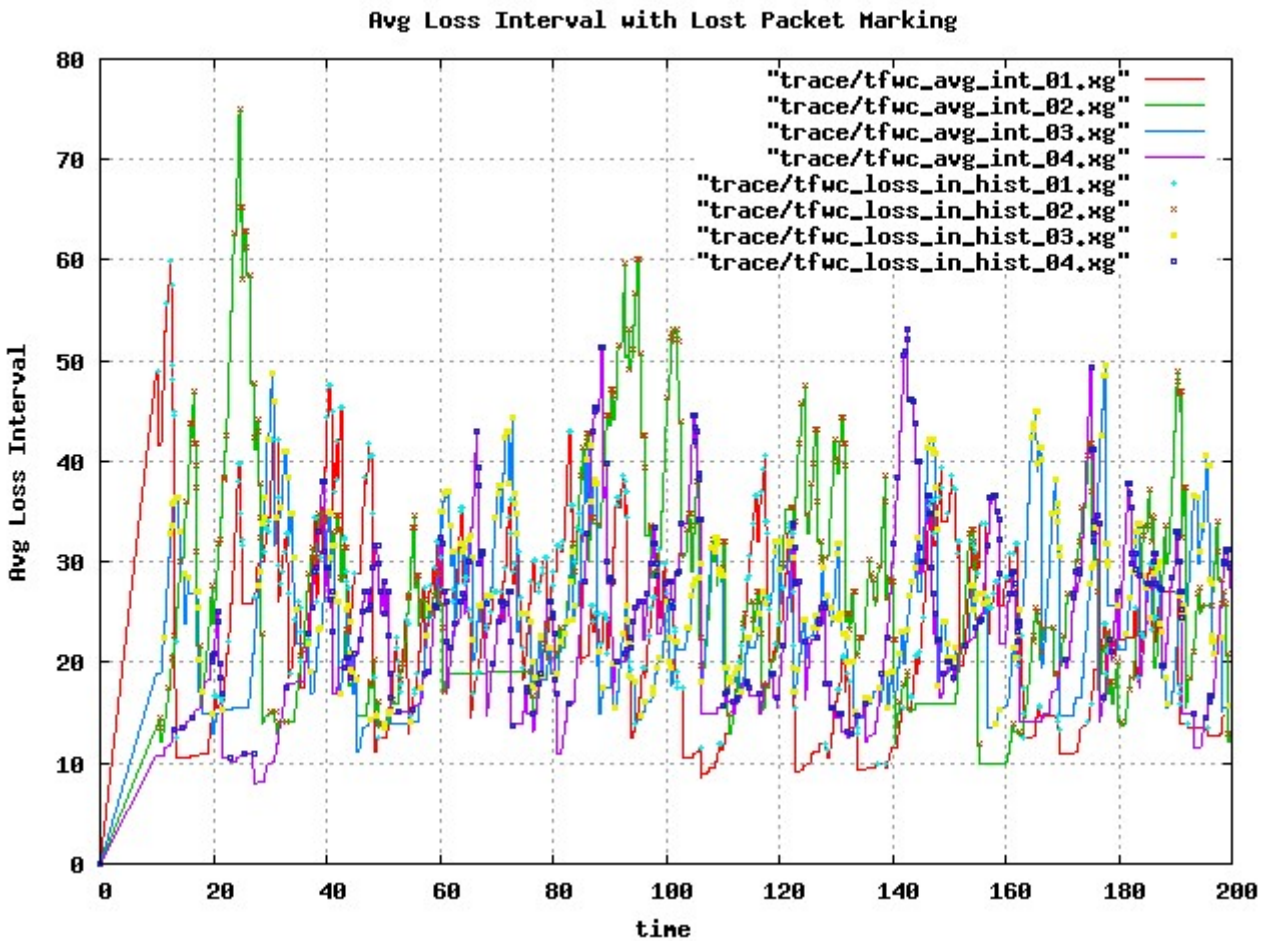
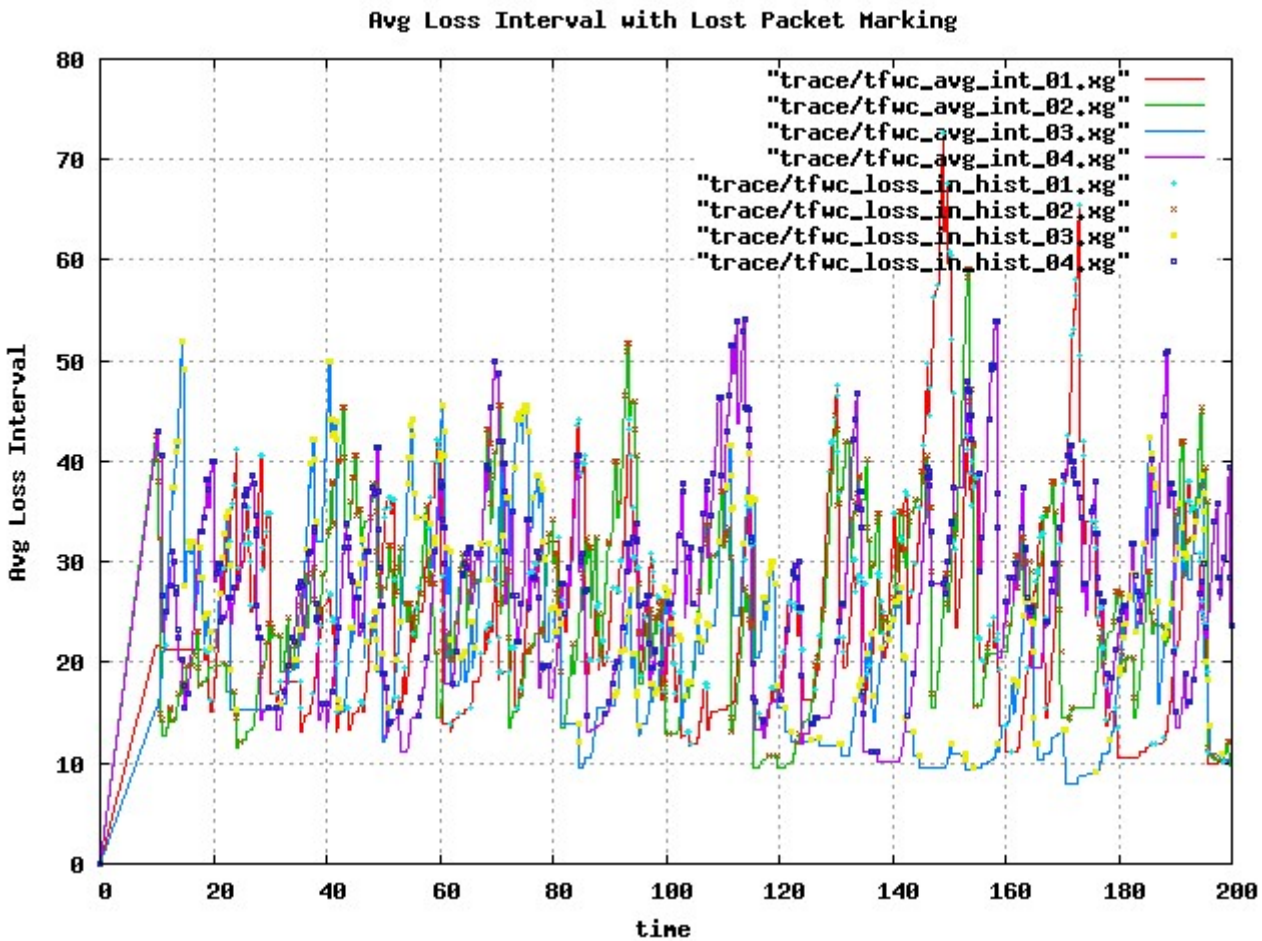
average loss interval (q=55, 32TFWC)



average loss interval (q=60, 32TFWC)



average loss interval (q=65, 32TFWC)



average loss interval (q=70, 32TFWC)