

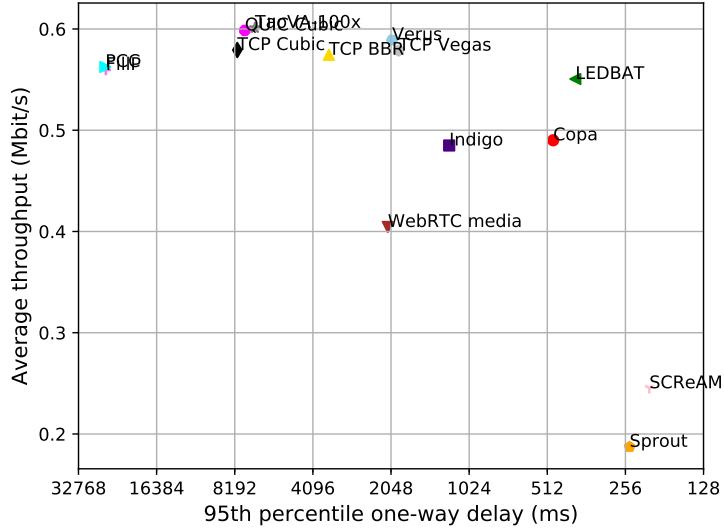
## Pantheon Report

Generated at 2017-12-20 19:45:33 (UTC).  
Data path: Colombia ppp0 (*remote*) → AWS Brazil 2 Ethernet (*local*).  
Repeated the test of 14 congestion control schemes 3 times.  
Each test lasted for 30 seconds running 3 flows with 10-second interval between two flows.  
Increased UDP receive buffer to 16 MB (default) and 32 MB (max).  
Tested BBR with qdisc of Fair Queuing (**fq**), and other schemes with the default Linux qdisc (**pfifo\_fast**).  
NTP offsets were measured against `gps.ntp.br` and have been applied to correct the timestamps in logs.

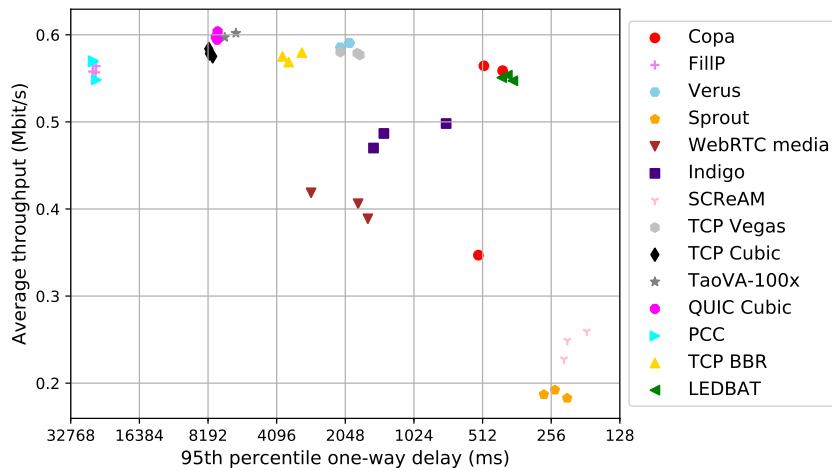
### Git summary:

```
branch: master @ 904a5750834816b1e46a2c86405d707788d27c16
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
  M datagrump/sender.cc
third_party/fillp @ dcaef6b00654e660f73f7ed679d2eab61ce08639
third_party/genericCC @ 80b516c448f795fd6e9675f7177b69c622f07da8
third_party/indigo @ b19f3730105f9aa95452552af924e3719b03cc55
third_party/indigo-no-calib @ 7224f2202e8a044d8306fa0b983ad84360c53d89
third_party/koho_cc @ f0f2e693303aee82ea808e6928eac4f1083a6681
  M datagrump/sender.cc
third_party/libutp @ b3465b942e2826f2b179eab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ fb1053193c2861da659ba9013db26744ccfcf993
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
  M receiver/src/buffer.h
  M receiver/src/core.cpp
  M sender/src/buffer.h
  M sender/src/core.cpp
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream @ c3370fd7bd17265a79aeb34e4016ad23f5965885
third_party/sourdough @ f1a14bffe749737437f61b1eaeeb30b267cde681
third_party/sprout @ 6f2efe6e088d91066a9f023df375eee2665089ce
  M src/examples/cellsim.cc
  M src/examples/sproutbt2.cc
  M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
  M src/verus.hpp
  M tools/plot.py
third_party/webrtc @ a488197ddd041ace68a42849b2540ad834825f42
```

test from Colombia ppp0 to AWS Brazil 2 Ethernet, 3 runs of 30s each per scheme  
3 flows with 10s interval between flows (mean of all runs by scheme)



test from Colombia ppp0 to AWS Brazil 2 Ethernet, 3 runs of 30s each per scheme  
3 flows with 10s interval between flows



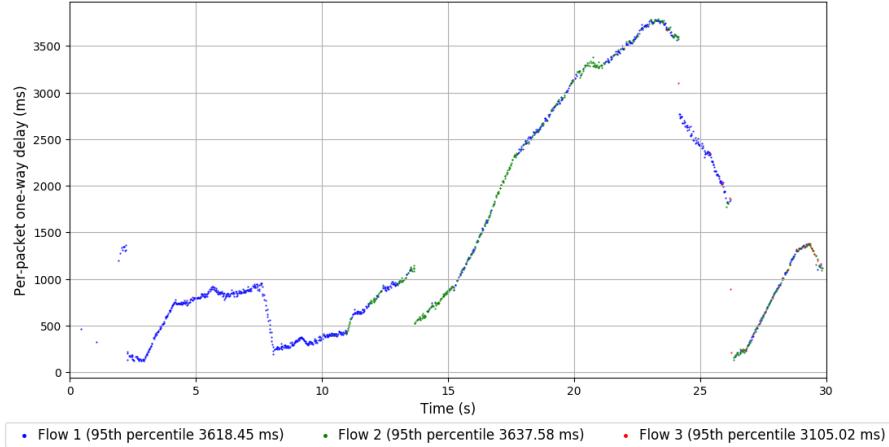
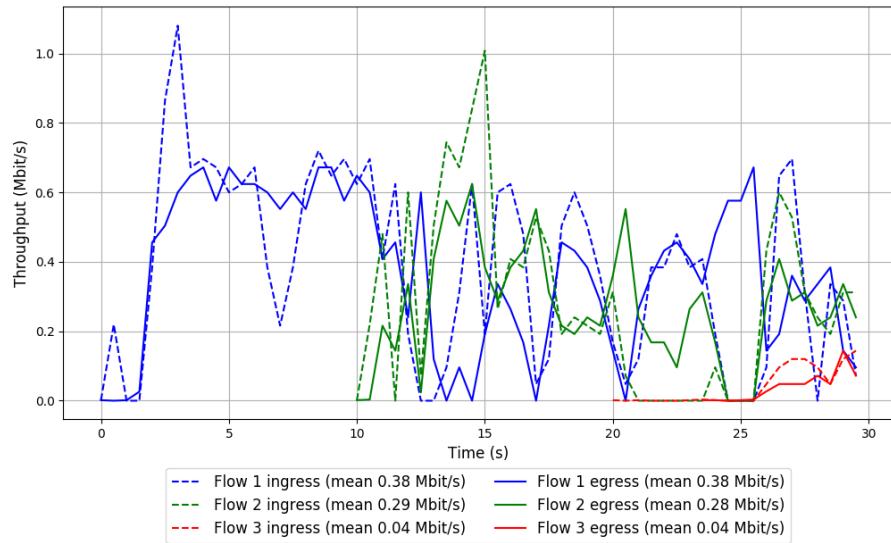
scheme	# runs	mean avg tput (Mbit/s)			mean 95th-%ile delay (ms)			mean loss rate (%)		
		flow 1	flow 2	flow 3	flow 1	flow 2	flow 3	flow 1	flow 2	flow 3
TCP BBR	3	0.37	0.30	0.03	3528.96	3571.75	3297.22	2.85	6.65	42.49
TCP Cubic		0.57	0.03	0.00	8010.65	6267.31	8352.82	30.96	46.41	75.13
LEDBAT		0.25	0.38	0.18	336.22	412.23	433.20	0.11	1.74	7.52
PCC		0.56	0.00	N/A	25828.55	N/A	N/A	98.50	N/A	N/A
QUIC Cubic		0.56	0.06	0.00	7460.92	7660.51	7579.03	27.99	32.50	33.33
SCReAM		0.08	0.17	0.14	185.19	201.96	227.66	0.80	0.87	1.51
WebRTC media		0.21	0.15	0.05	1961.68	2088.97	2078.03	2.54	5.43	6.10
Sprout		0.09	0.09	0.09	694.58	206.94	237.07	1.10	3.01	4.42
TaoVA-100x		0.38	0.36	0.16	7165.73	6216.47	7051.60	20.20	19.77	54.17
TCP Vegas		0.41	0.21	0.16	1760.55	1943.88	1968.00	3.66	7.45	22.73
Verus		0.58	0.01	0.01	2029.47	1990.88	1898.39	4.35	6.12	11.78
Copa		0.43	0.21	0.22	984.62	445.82	558.93	1.08	0.47	7.51
FillP		0.56	0.00	N/A	25714.64	N/A	N/A	98.33	N/A	N/A
Indigo		0.23	0.30	0.21	1244.71	975.95	829.99	9.75	6.32	5.19

Run 1: Statistics of TCP BBR

```
Start at: 2017-12-20 18:07:37
End at: 2017-12-20 18:08:07
Local clock offset: -0.034 ms
Remote clock offset: 16.971 ms

# Below is generated by plot.py at 2017-12-20 19:44:59
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 3627.497 ms
Loss rate: 4.53%
-- Flow 1:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 3618.446 ms
Loss rate: 2.63%
-- Flow 2:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 3637.578 ms
Loss rate: 6.10%
-- Flow 3:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 3105.024 ms
Loss rate: 35.87%
```

## Run 1: Report of TCP BBR — Data Link

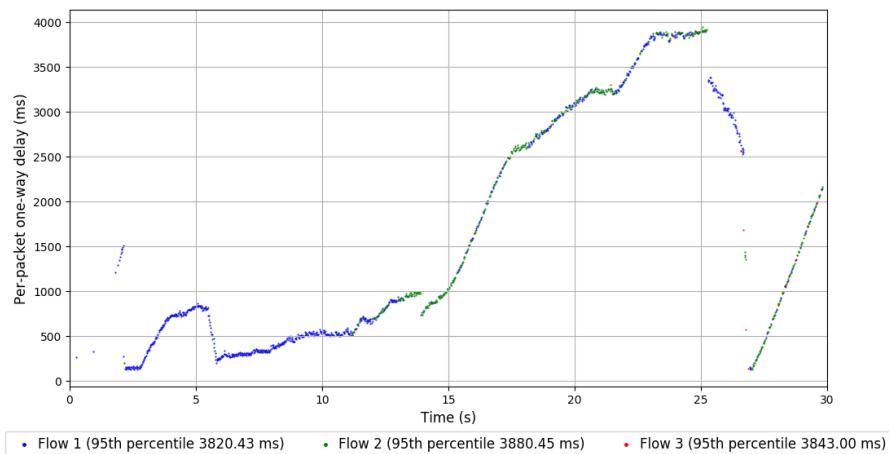
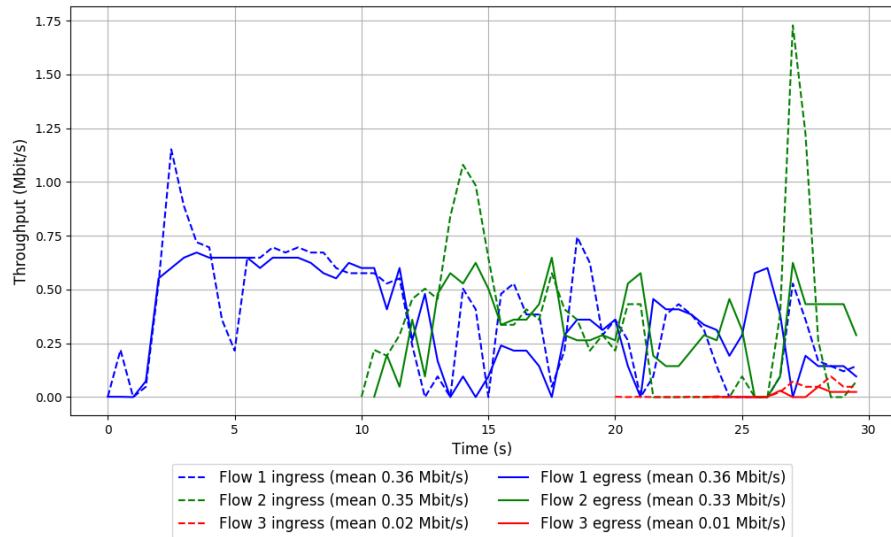


Run 2: Statistics of TCP BBR

```
Start at: 2017-12-20 18:26:26
End at: 2017-12-20 18:26:56
Local clock offset: -0.037 ms
Remote clock offset: 12.34 ms

# Below is generated by plot.py at 2017-12-20 19:45:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 3860.358 ms
Loss rate: 5.60%
-- Flow 1:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 3820.430 ms
Loss rate: 3.41%
-- Flow 2:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 3880.449 ms
Loss rate: 7.48%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 3843.002 ms
Loss rate: 60.79%
```

## Run 2: Report of TCP BBR — Data Link

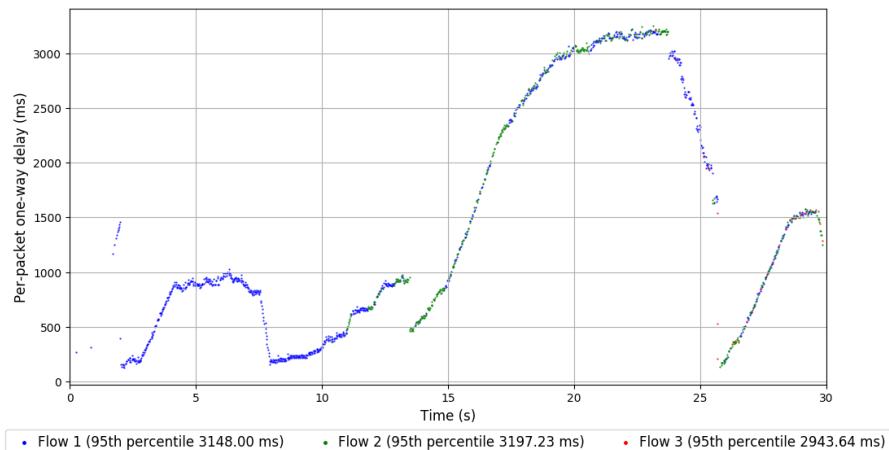
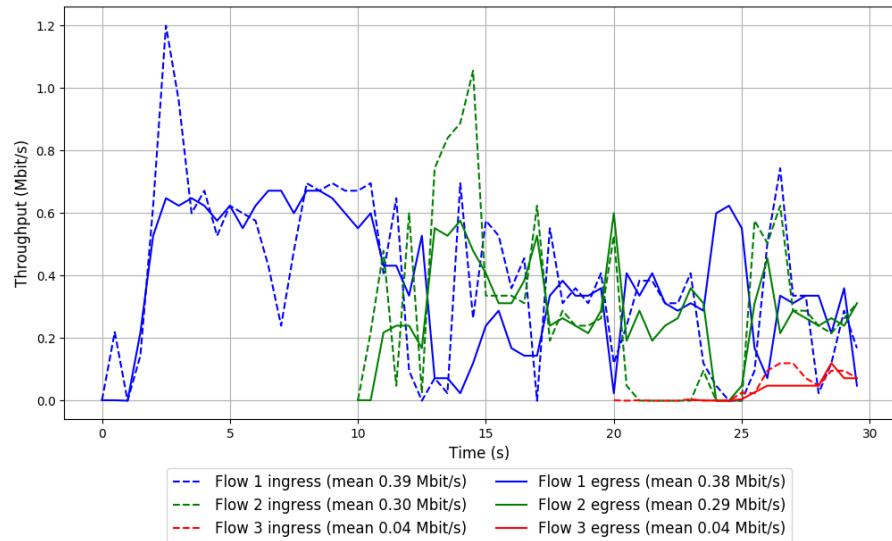


Run 3: Statistics of TCP BBR

```
Start at: 2017-12-20 18:45:14
End at: 2017-12-20 18:45:44
Local clock offset: -0.023 ms
Remote clock offset: 17.611 ms

# Below is generated by plot.py at 2017-12-20 19:45:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 3175.758 ms
Loss rate: 4.42%
-- Flow 1:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 3148.003 ms
Loss rate: 2.50%
-- Flow 2:
Average throughput: 0.29 Mbit/s
95th percentile per-packet one-way delay: 3197.232 ms
Loss rate: 6.37%
-- Flow 3:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 2943.638 ms
Loss rate: 30.82%
```

### Run 3: Report of TCP BBR — Data Link

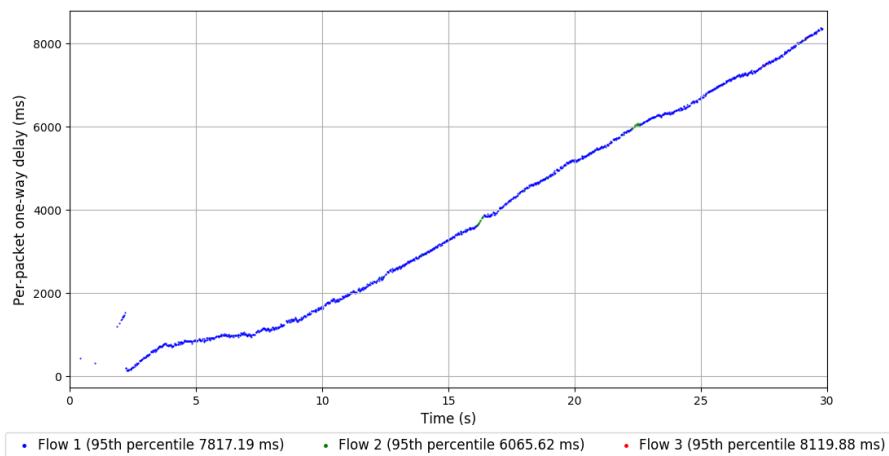
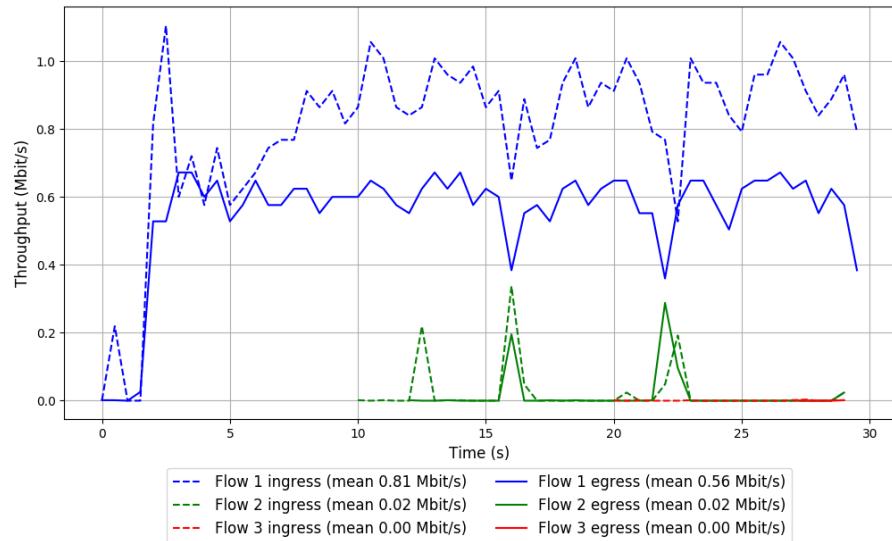


Run 1: Statistics of TCP Cubic

```
Start at: 2017-12-20 17:53:48
End at: 2017-12-20 17:54:18
Local clock offset: -0.039 ms
Remote clock offset: 18.464 ms

# Below is generated by plot.py at 2017-12-20 19:45:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 7817.189 ms
Loss rate: 31.18%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 7817.189 ms
Loss rate: 31.16%
-- Flow 2:
Average throughput: 0.02 Mbit/s
95th percentile per-packet one-way delay: 6065.625 ms
Loss rate: 32.05%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 8119.880 ms
Loss rate: 75.13%
```

## Run 1: Report of TCP Cubic — Data Link

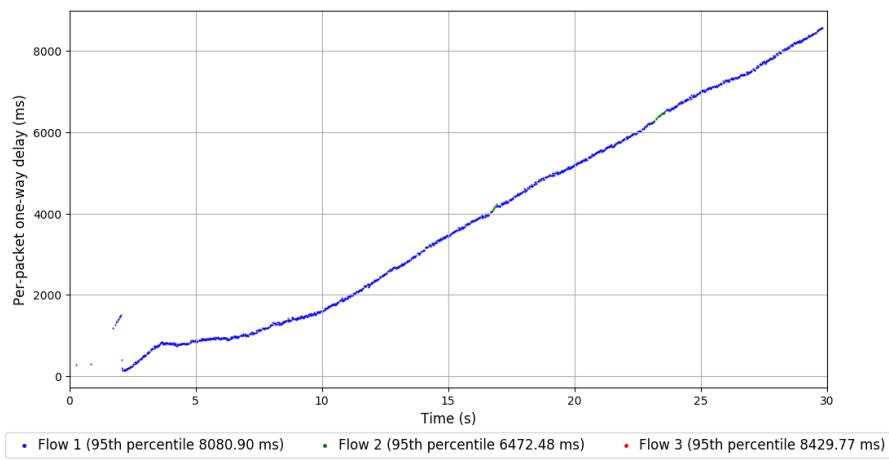
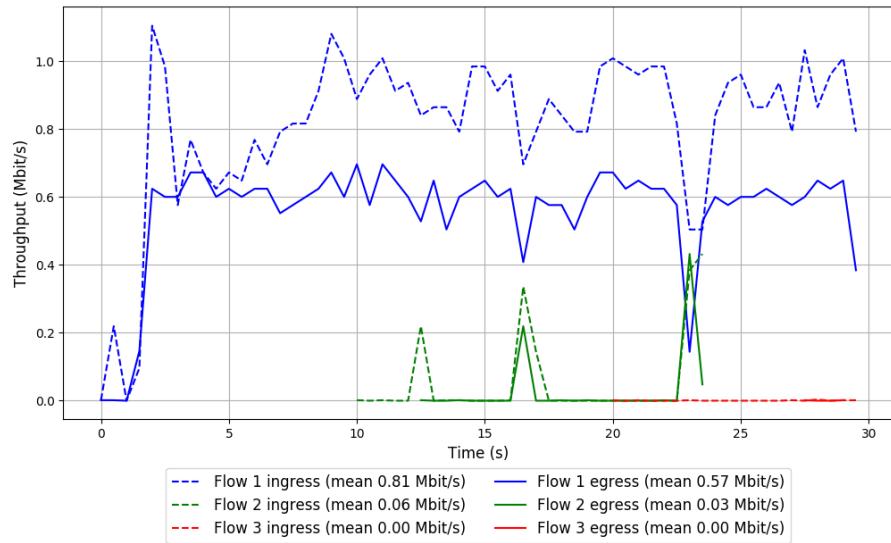


Run 2: Statistics of TCP Cubic

```
Start at: 2017-12-20 18:12:37
End at: 2017-12-20 18:13:07
Local clock offset: -0.048 ms
Remote clock offset: 16.168 ms

# Below is generated by plot.py at 2017-12-20 19:45:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 8080.769 ms
Loss rate: 31.75%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 8080.903 ms
Loss rate: 31.06%
-- Flow 2:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 6472.481 ms
Loss rate: 53.59%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 8429.767 ms
Loss rate: 75.13%
```

## Run 2: Report of TCP Cubic — Data Link

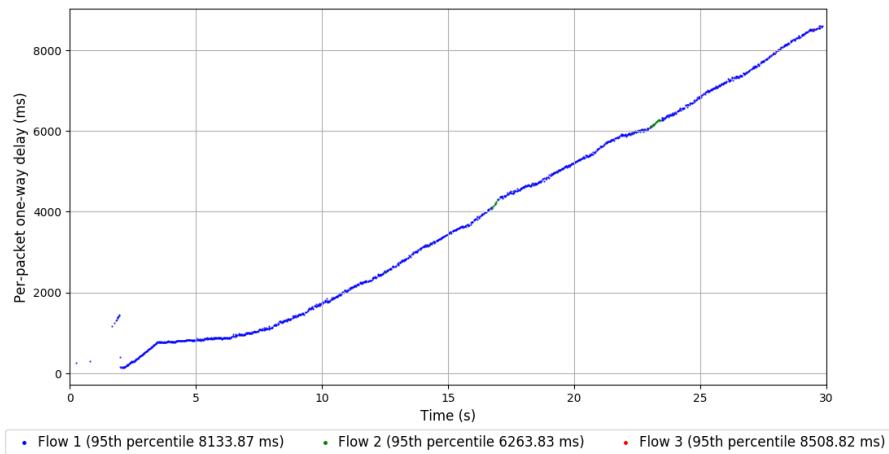
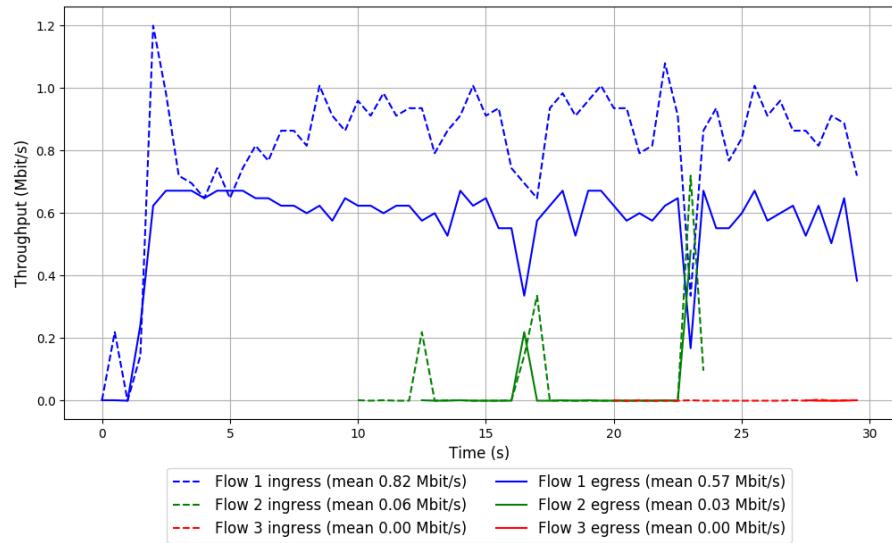


Run 3: Statistics of TCP Cubic

```
Start at: 2017-12-20 18:31:25
End at: 2017-12-20 18:31:55
Local clock offset: -0.048 ms
Remote clock offset: 17.798 ms

# Below is generated by plot.py at 2017-12-20 19:45:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 8133.870 ms
Loss rate: 31.36%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 8133.870 ms
Loss rate: 30.66%
-- Flow 2:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 6263.830 ms
Loss rate: 53.59%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 8508.819 ms
Loss rate: 75.13%
```

### Run 3: Report of TCP Cubic — Data Link

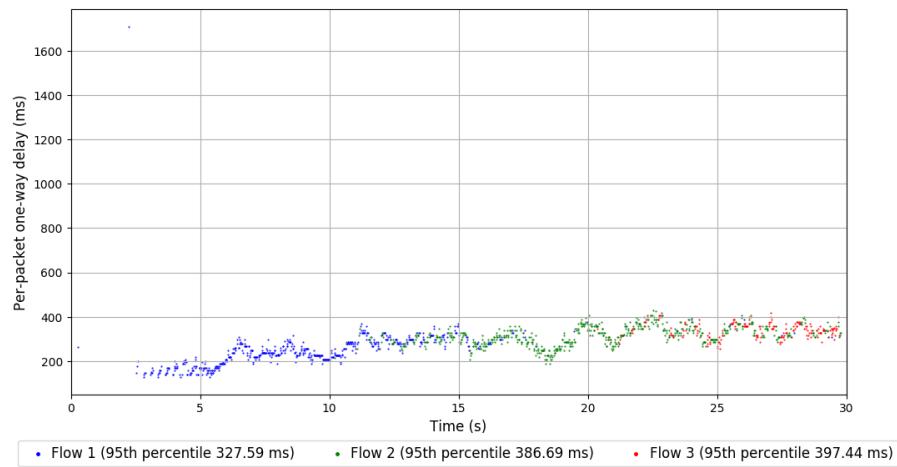
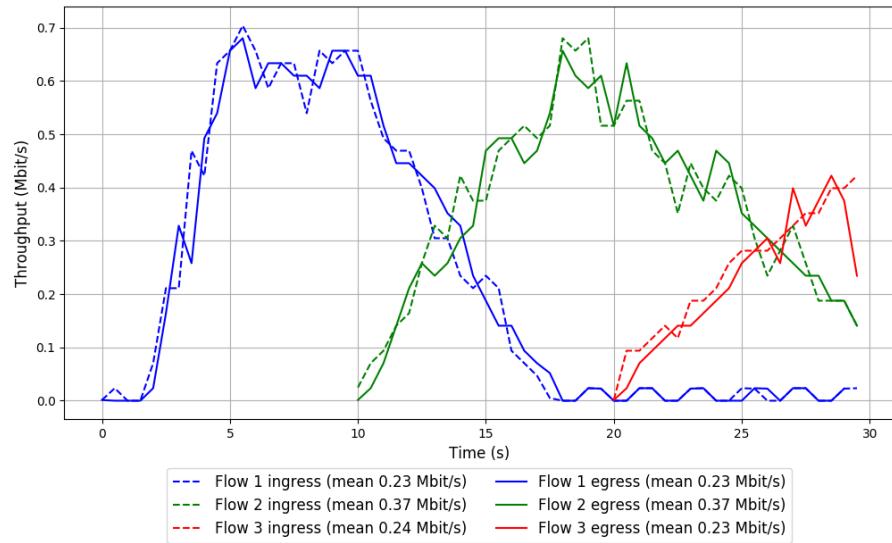


```
Run 1: Statistics of LEDBAT
```

```
Start at: 2017-12-20 17:57:33
End at: 2017-12-20 17:58:03
Local clock offset: -0.041 ms
Remote clock offset: 17.455 ms

# Below is generated by plot.py at 2017-12-20 19:45:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 377.133 ms
Loss rate: 1.78%
-- Flow 1:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 327.588 ms
Loss rate: 0.17%
-- Flow 2:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 386.689 ms
Loss rate: 0.96%
-- Flow 3:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 397.441 ms
Loss rate: 8.78%
```

Run 1: Report of LEDBAT — Data Link

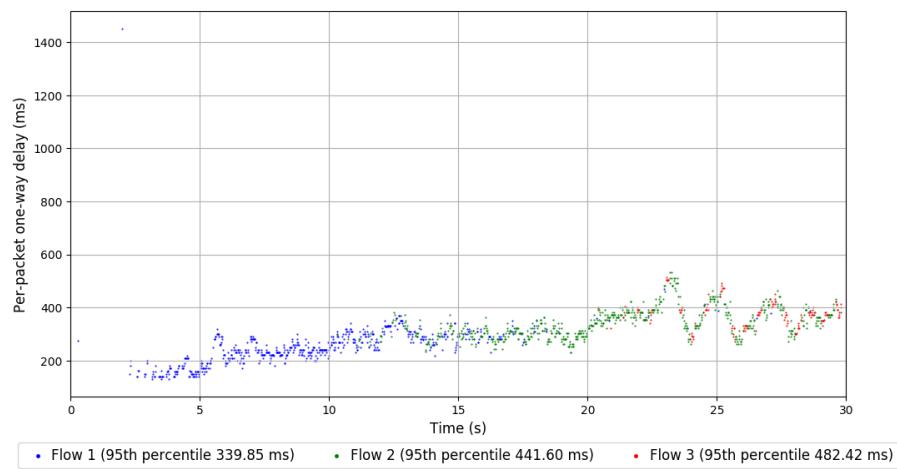
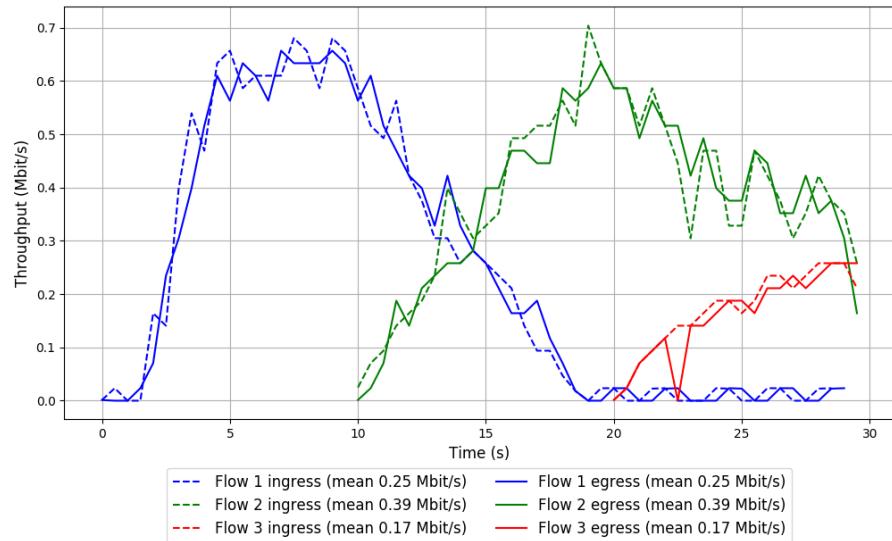


Run 2: Statistics of LEDBAT

```
Start at: 2017-12-20 18:16:22
End at: 2017-12-20 18:16:52
Local clock offset: -0.052 ms
Remote clock offset: 11.396 ms

# Below is generated by plot.py at 2017-12-20 19:45:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 421.958 ms
Loss rate: 1.63%
-- Flow 1:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 339.853 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 441.596 ms
Loss rate: 2.11%
-- Flow 3:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 482.423 ms
Loss rate: 6.25%
```

## Run 2: Report of LEDBAT — Data Link

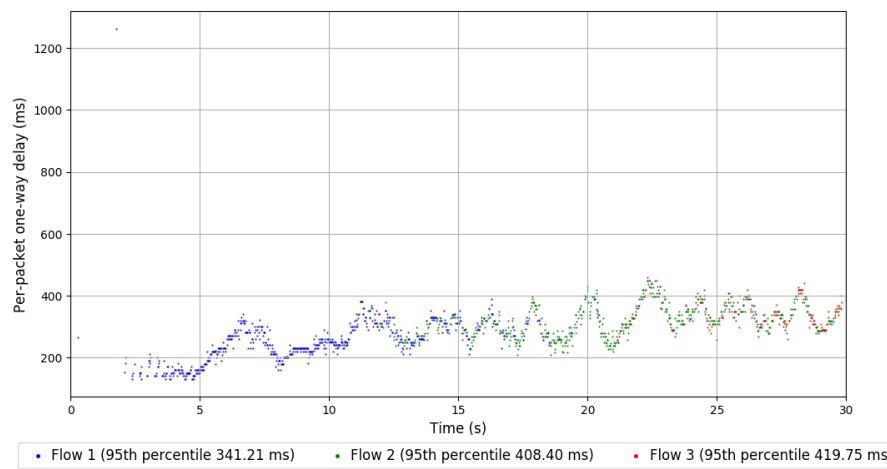
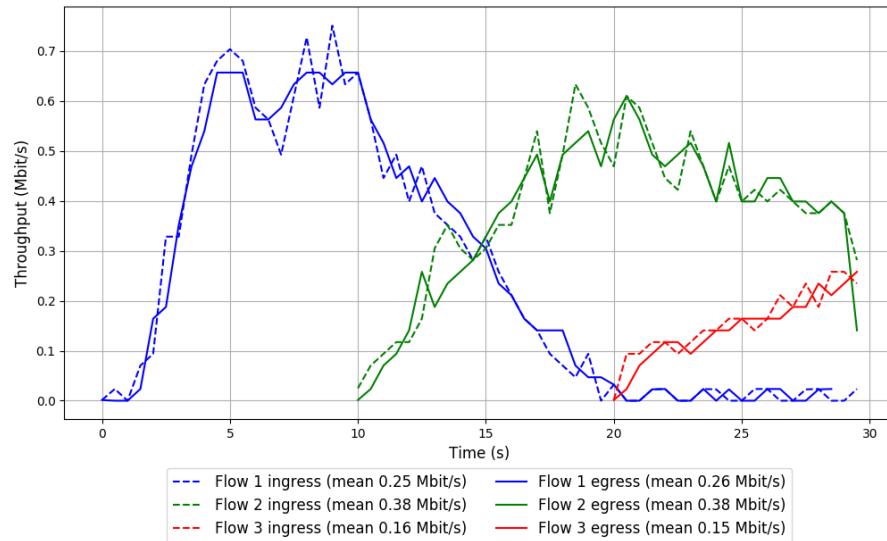


Run 3: Statistics of LEDBAT

```
Start at: 2017-12-20 18:35:10
End at: 2017-12-20 18:35:40
Local clock offset: -0.1 ms
Remote clock offset: 16.918 ms

# Below is generated by plot.py at 2017-12-20 19:45:03
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 398.730 ms
Loss rate: 1.76%
-- Flow 1:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 341.212 ms
Loss rate: 0.16%
-- Flow 2:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 408.399 ms
Loss rate: 2.16%
-- Flow 3:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 419.749 ms
Loss rate: 7.52%
```

### Run 3: Report of LEDBAT — Data Link

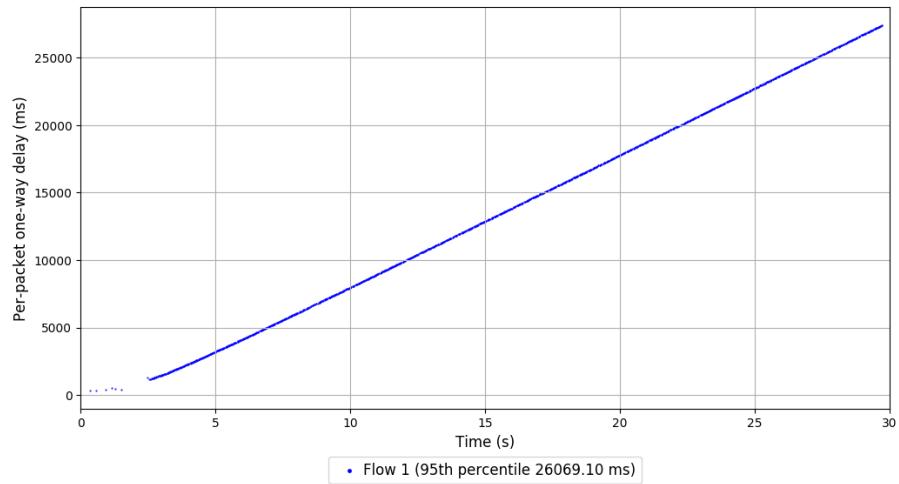
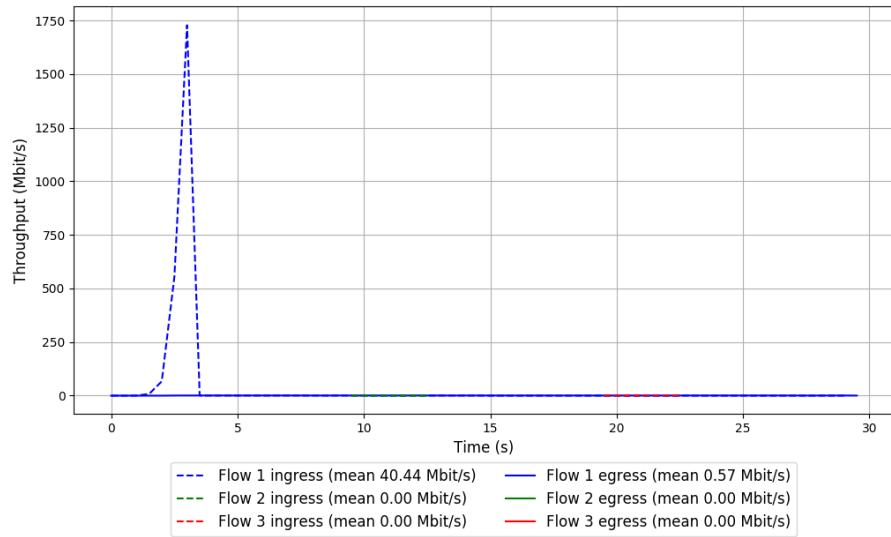


Run 1: Statistics of PCC

```
Start at: 2017-12-20 18:05:05
End at: 2017-12-20 18:05:35
Local clock offset: -0.038 ms
Remote clock offset: 11.836 ms

# Below is generated by plot.py at 2017-12-20 19:45:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 26069.096 ms
Loss rate: 98.59%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 26069.096 ms
Loss rate: 98.59%
-- Flow 2:
Average throughput: 0.00 Mbit/s
-- Flow 3:
Average throughput: 0.00 Mbit/s
```

## Run 1: Report of PCC — Data Link

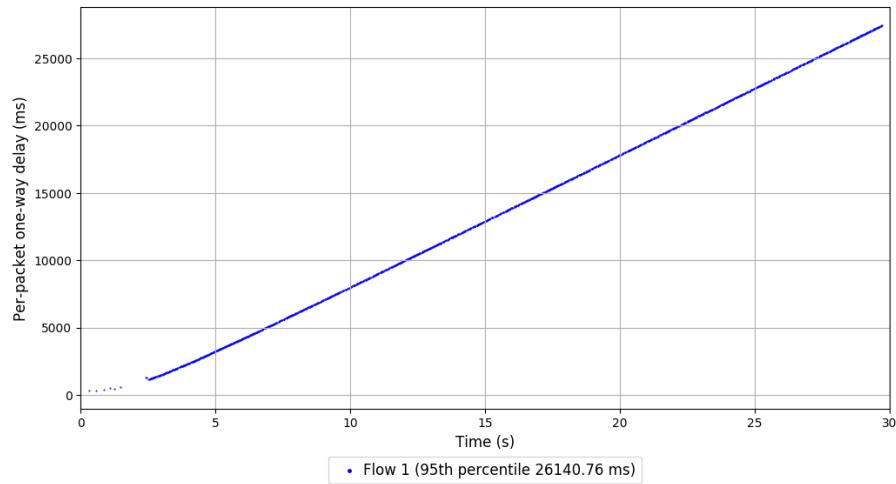
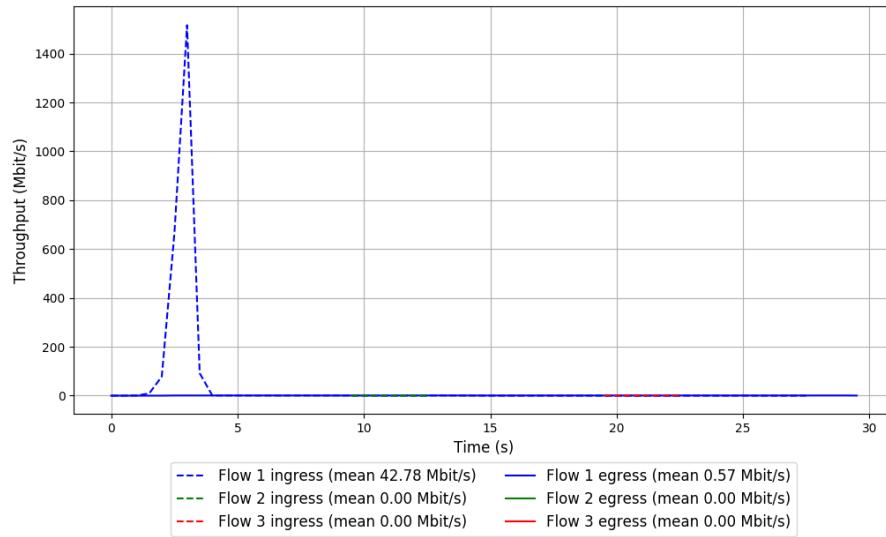


Run 2: Statistics of PCC

```
Start at: 2017-12-20 18:23:55
End at: 2017-12-20 18:24:25
Local clock offset: -0.045 ms
Remote clock offset: 11.012 ms

# Below is generated by plot.py at 2017-12-20 19:45:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 26140.758 ms
Loss rate: 98.59%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 26140.758 ms
Loss rate: 98.59%
-- Flow 2:
Average throughput: 0.00 Mbit/s
-- Flow 3:
Average throughput: 0.00 Mbit/s
```

## Run 2: Report of PCC — Data Link

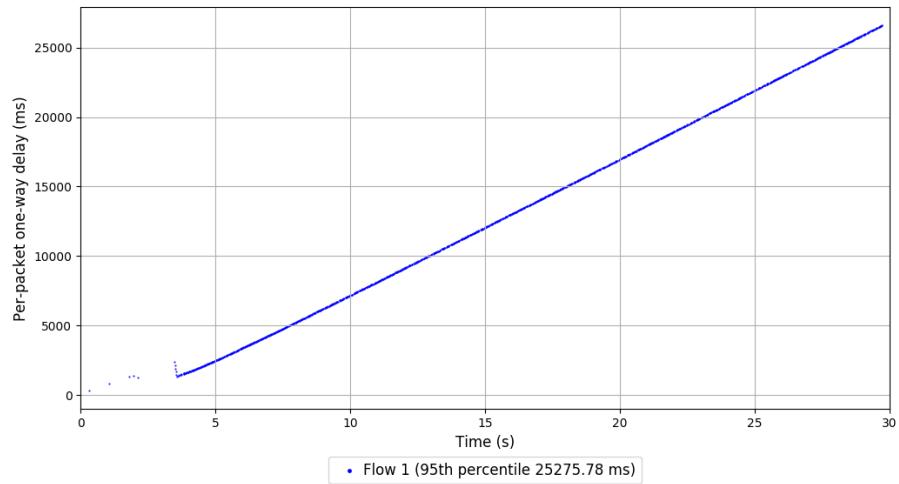
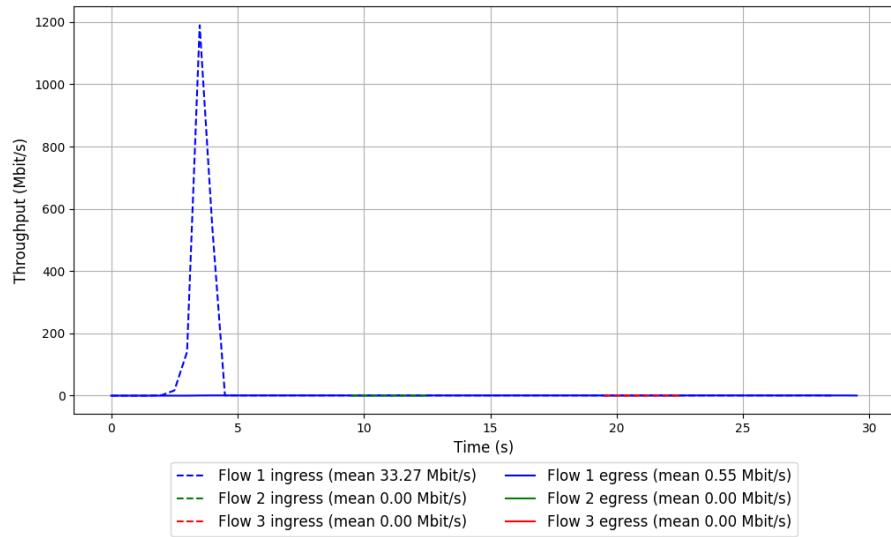


Run 3: Statistics of PCC

```
Start at: 2017-12-20 18:42:42
End at: 2017-12-20 18:43:12
Local clock offset: -0.031 ms
Remote clock offset: 16.893 ms

# Below is generated by plot.py at 2017-12-20 19:45:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 25275.784 ms
Loss rate: 98.32%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 25275.784 ms
Loss rate: 98.32%
-- Flow 2:
Average throughput: 0.00 Mbit/s
-- Flow 3:
Average throughput: 0.00 Mbit/s
```

### Run 3: Report of PCC — Data Link

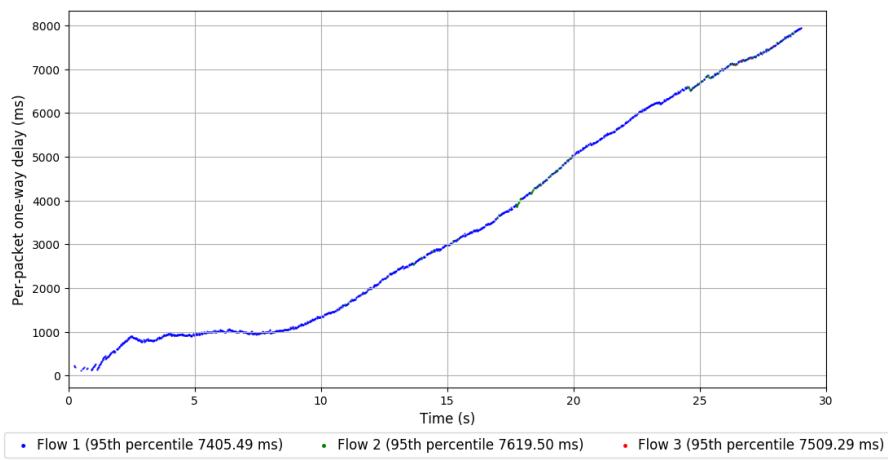
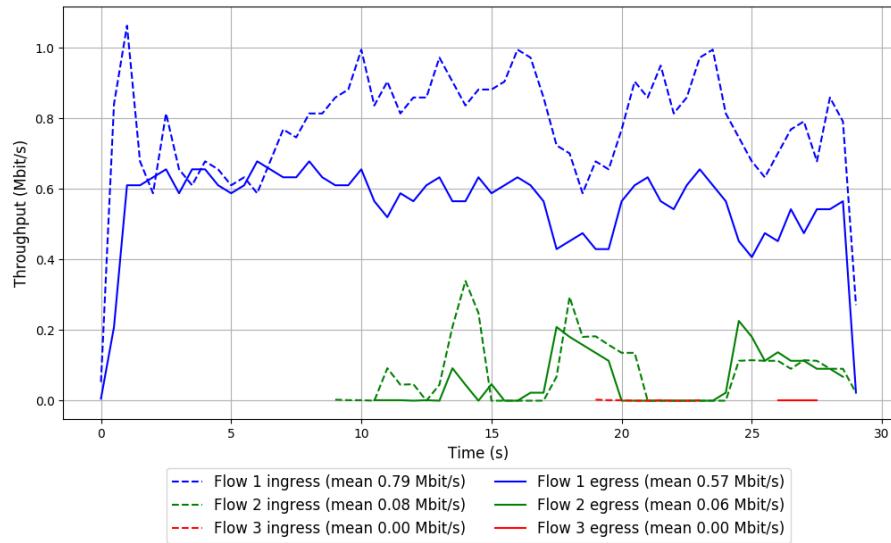


```
Run 1: Statistics of QUIC Cubic
```

```
Start at: 2017-12-20 18:08:52
End at: 2017-12-20 18:09:22
Local clock offset: -0.03 ms
Remote clock offset: 16.226 ms

# Below is generated by plot.py at 2017-12-20 19:45:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 7438.818 ms
Loss rate: 28.97%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 7405.486 ms
Loss rate: 28.84%
-- Flow 2:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 7619.500 ms
Loss rate: 30.85%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 7509.290 ms
Loss rate: 33.33%
```

## Run 1: Report of QUIC Cubic — Data Link

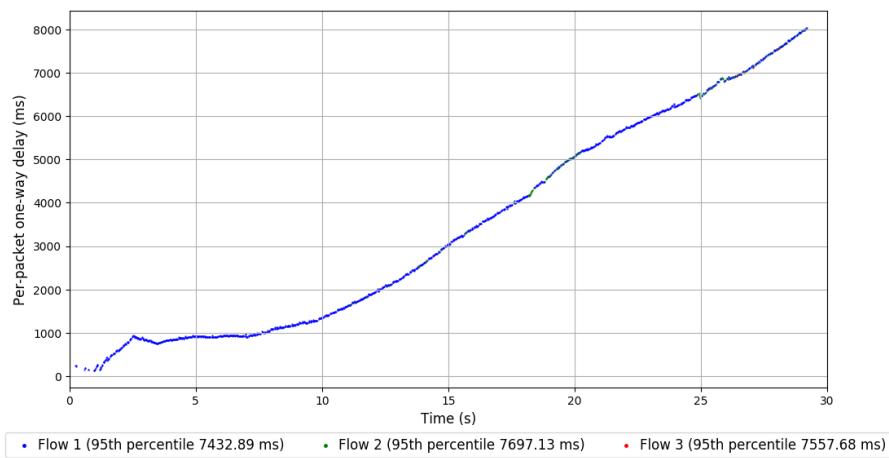
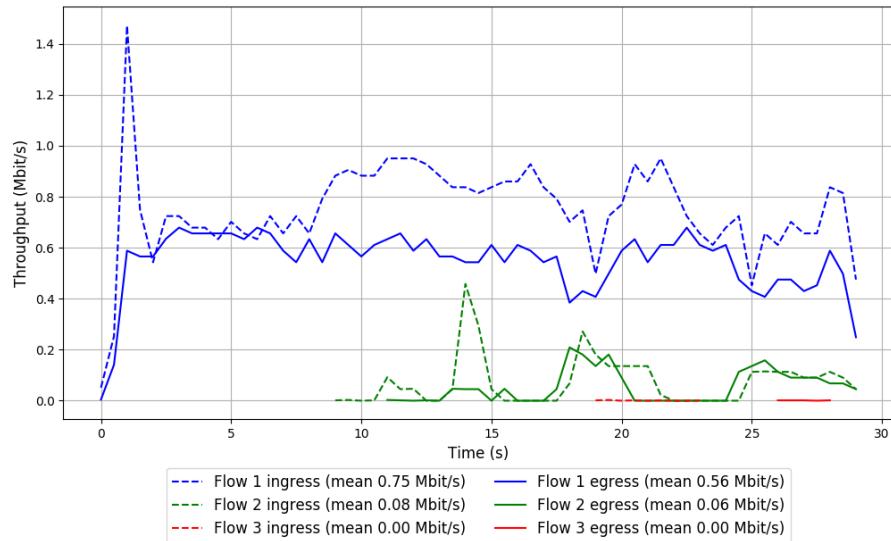


Run 2: Statistics of QUIC Cubic

```
Start at: 2017-12-20 18:27:41
End at: 2017-12-20 18:28:11
Local clock offset: -0.044 ms
Remote clock offset: 11.091 ms

# Below is generated by plot.py at 2017-12-20 19:45:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 7466.808 ms
Loss rate: 27.03%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 7432.894 ms
Loss rate: 26.61%
-- Flow 2:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 7697.131 ms
Loss rate: 33.21%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 7557.677 ms
Loss rate: 33.33%
```

## Run 2: Report of QUIC Cubic — Data Link

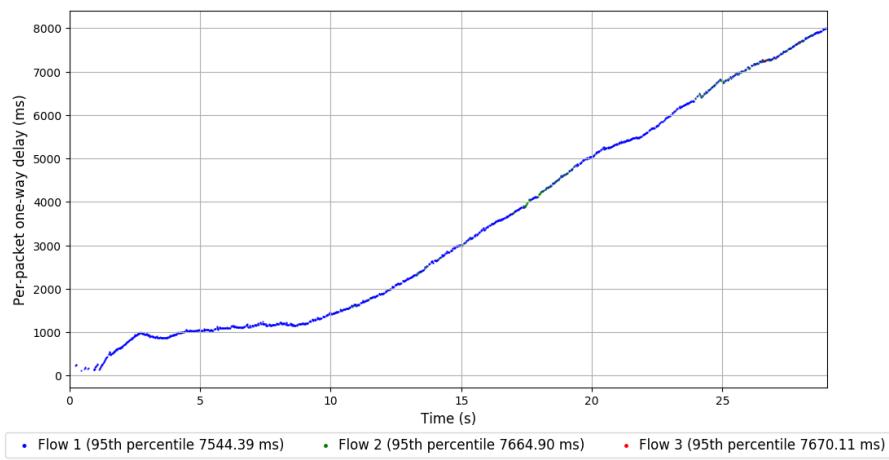
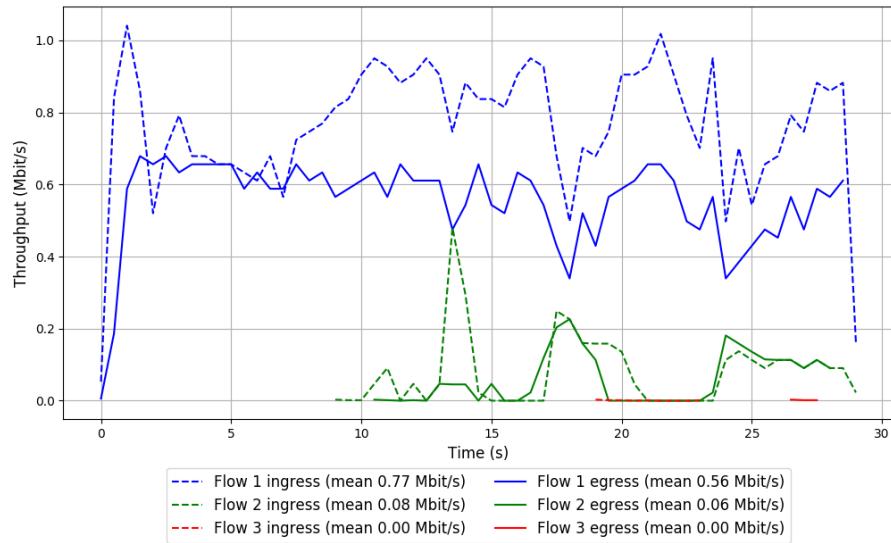


Run 3: Statistics of QUIC Cubic

```
Start at: 2017-12-20 18:46:29
End at: 2017-12-20 18:46:59
Local clock offset: -0.016 ms
Remote clock offset: 16.125 ms

# Below is generated by plot.py at 2017-12-20 19:45:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 7571.968 ms
Loss rate: 28.85%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 7544.390 ms
Loss rate: 28.51%
-- Flow 2:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 7664.896 ms
Loss rate: 33.43%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 7670.112 ms
Loss rate: 33.33%
```

### Run 3: Report of QUIC Cubic — Data Link

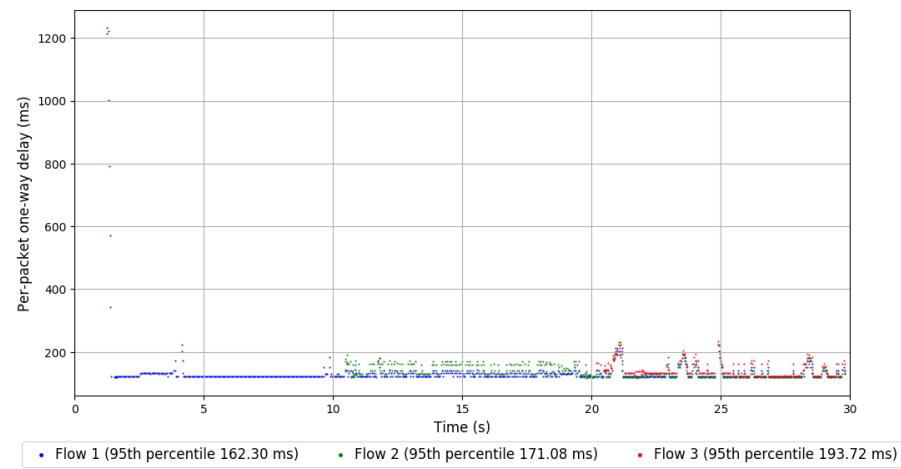
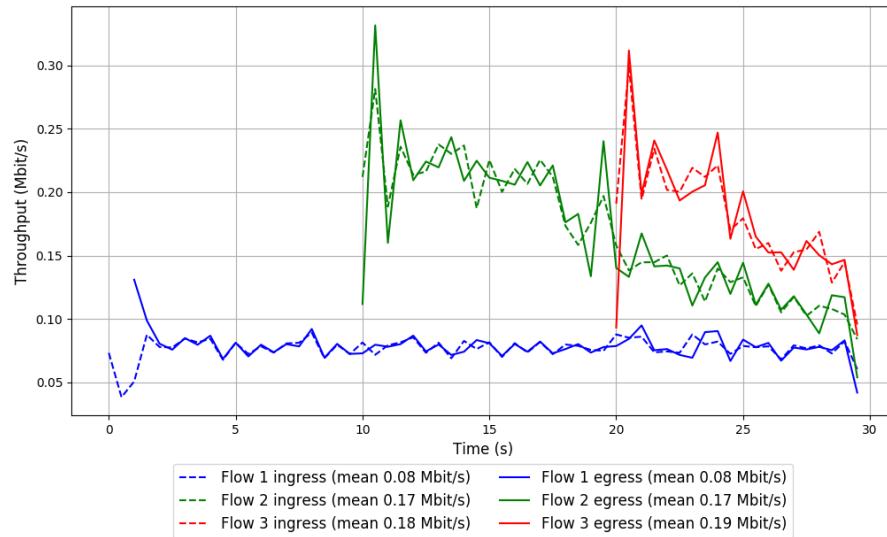


Run 1: Statistics of SCReAM

```
Start at: 2017-12-20 17:56:18
End at: 2017-12-20 17:56:48
Local clock offset: -0.037 ms
Remote clock offset: 16.645 ms

# Below is generated by plot.py at 2017-12-20 19:45:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 178.820 ms
Loss rate: 0.94%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 162.301 ms
Loss rate: 0.79%
-- Flow 2:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 171.079 ms
Loss rate: 0.77%
-- Flow 3:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 193.724 ms
Loss rate: 1.42%
```

Run 1: Report of SCReAM — Data Link

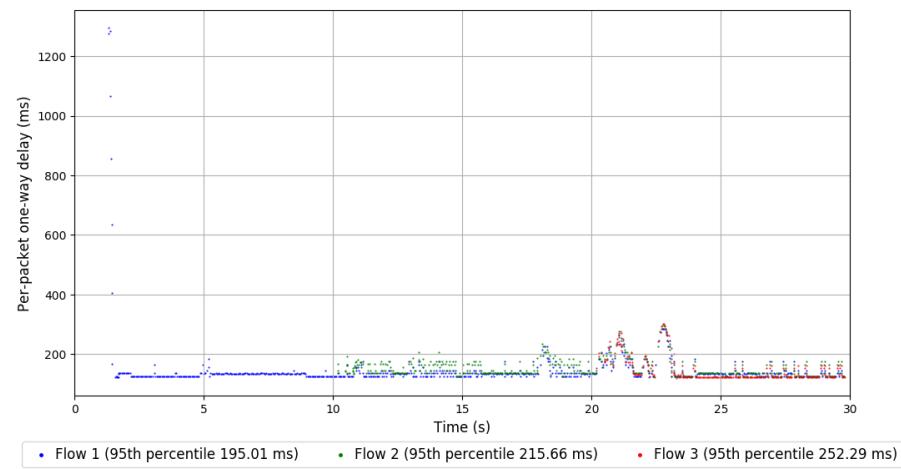
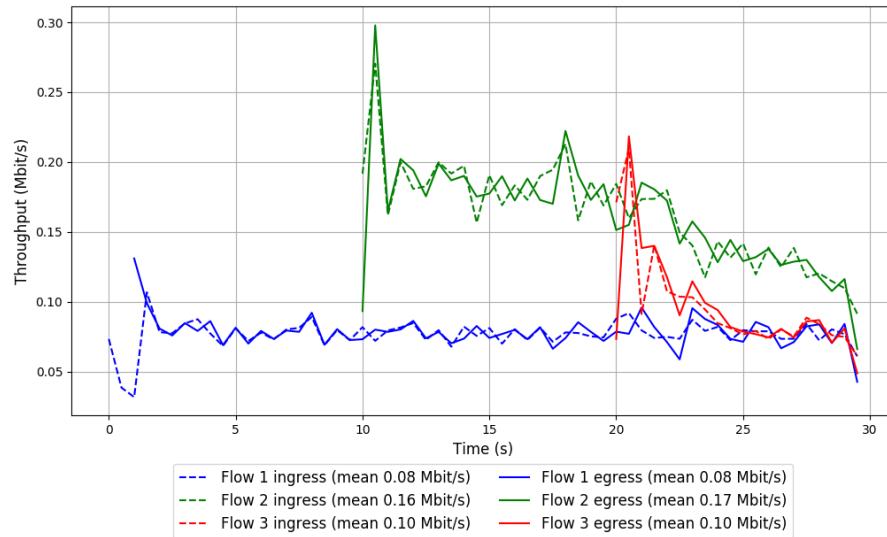


Run 2: Statistics of SCReAM

```
Start at: 2017-12-20 18:15:07
End at: 2017-12-20 18:15:37
Local clock offset: -0.043 ms
Remote clock offset: 11.391 ms

# Below is generated by plot.py at 2017-12-20 19:45:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 224.931 ms
Loss rate: 0.95%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 195.010 ms
Loss rate: 0.80%
-- Flow 2:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 215.662 ms
Loss rate: 0.87%
-- Flow 3:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 252.295 ms
Loss rate: 1.56%
```

## Run 2: Report of SCReAM — Data Link

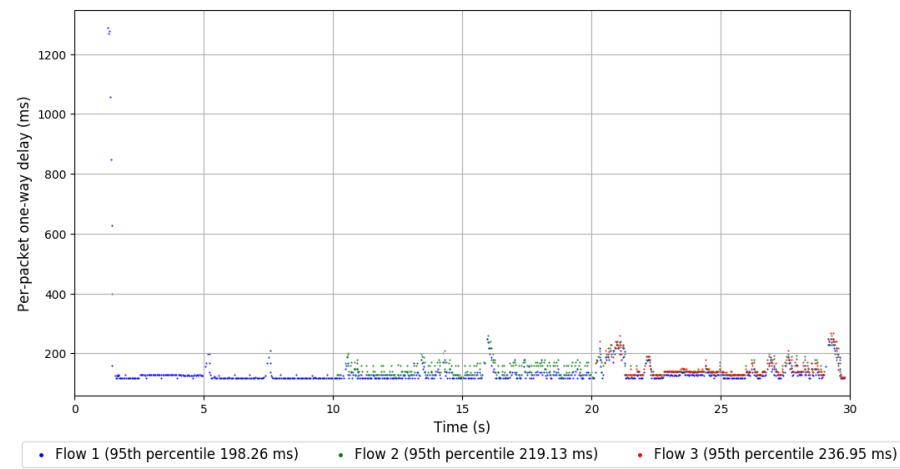
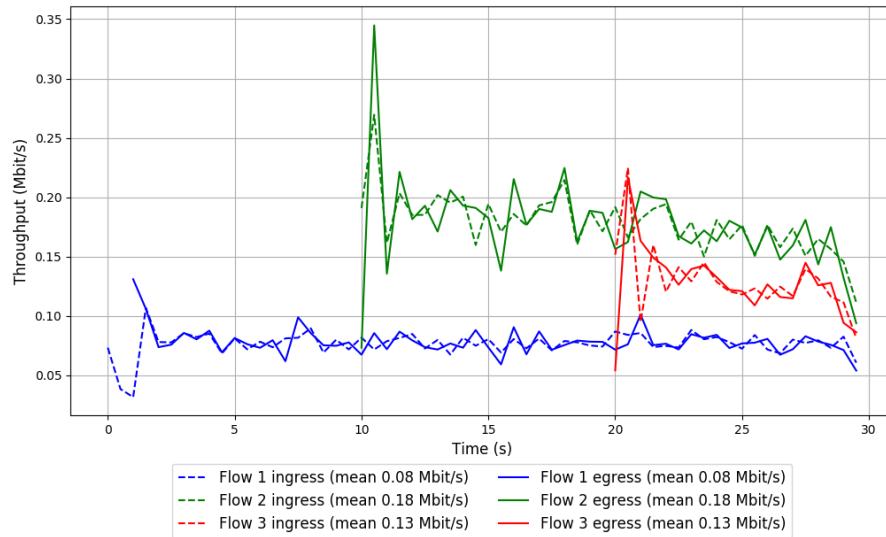


Run 3: Statistics of SCReAM

```
Start at: 2017-12-20 18:33:55
End at: 2017-12-20 18:34:25
Local clock offset: -0.028 ms
Remote clock offset: 12.496 ms

# Below is generated by plot.py at 2017-12-20 19:45:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 217.432 ms
Loss rate: 1.03%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 198.259 ms
Loss rate: 0.80%
-- Flow 2:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 219.132 ms
Loss rate: 0.98%
-- Flow 3:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 236.949 ms
Loss rate: 1.56%
```

### Run 3: Report of SCReAM — Data Link

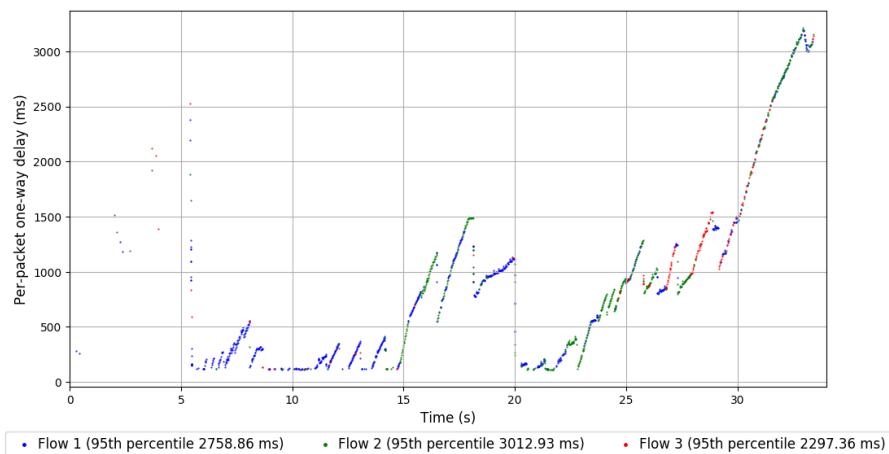
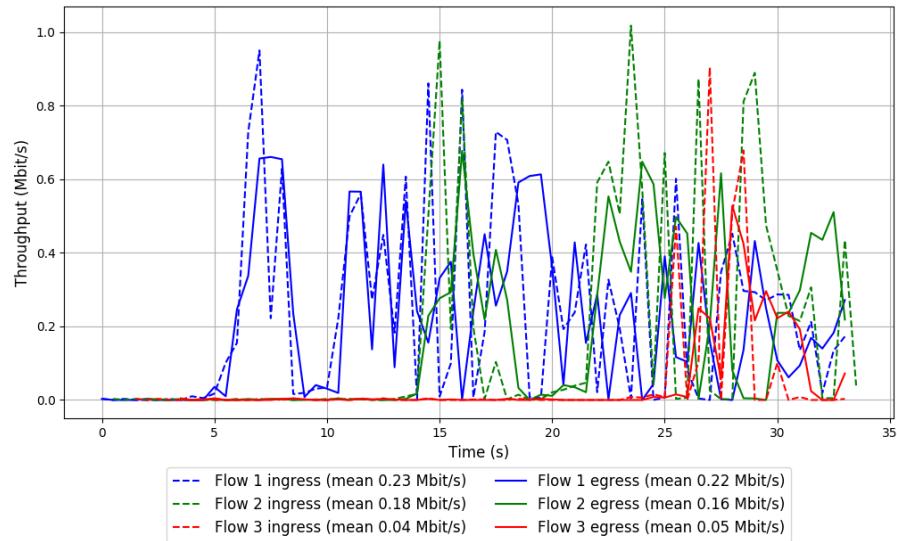


```
Run 1: Statistics of WebRTC media

Start at: 2017-12-20 17:55:04
End at: 2017-12-20 17:55:34
Local clock offset: -0.044 ms
Remote clock offset: 16.567 ms

# Below is generated by plot.py at 2017-12-20 19:45:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 2893.319 ms
Loss rate: 8.18%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 2758.862 ms
Loss rate: 6.79%
-- Flow 2:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 3012.926 ms
Loss rate: 11.67%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 2297.358 ms
Loss rate: 1.38%
```

### Run 1: Report of WebRTC media — Data Link

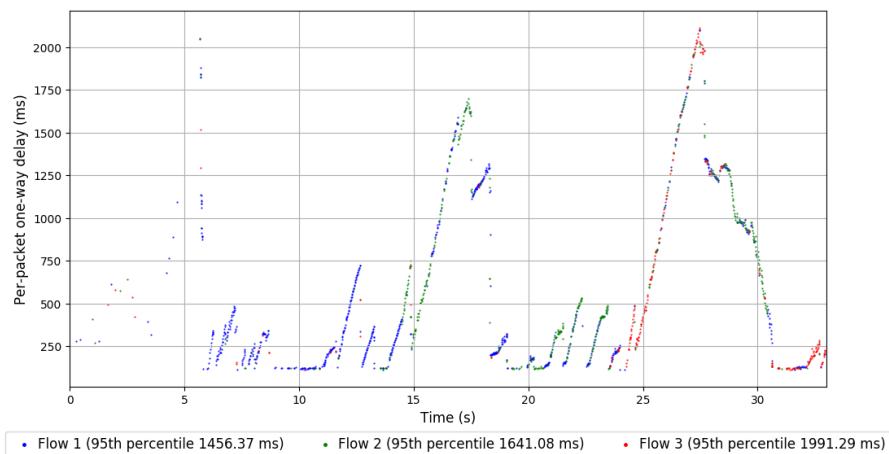
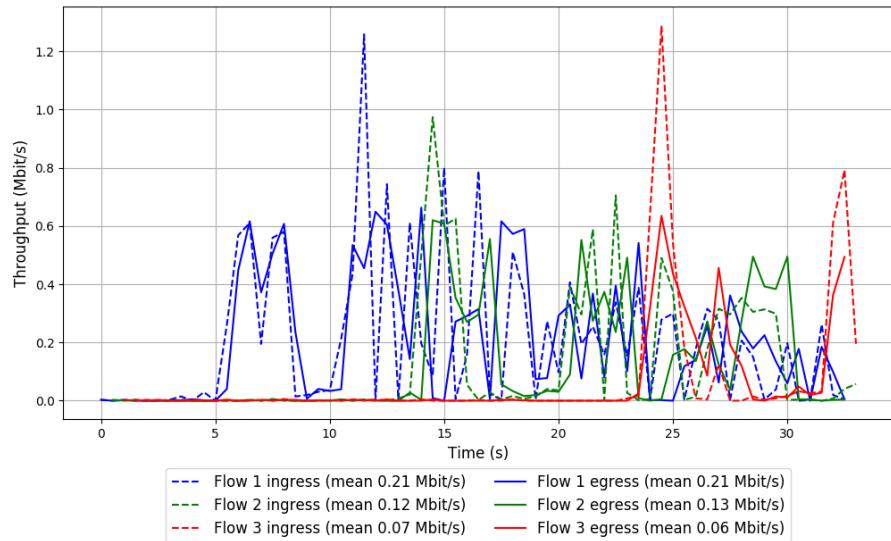


Run 2: Statistics of WebRTC media

```
Start at: 2017-12-20 18:13:52
End at: 2017-12-20 18:14:22
Local clock offset: -0.027 ms
Remote clock offset: 16.683 ms

# Below is generated by plot.py at 2017-12-20 19:45:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 1630.862 ms
Loss rate: 3.23%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 1456.374 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 1641.084 ms
Loss rate: 1.22%
-- Flow 3:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 1991.285 ms
Loss rate: 16.38%
```

## Run 2: Report of WebRTC media — Data Link

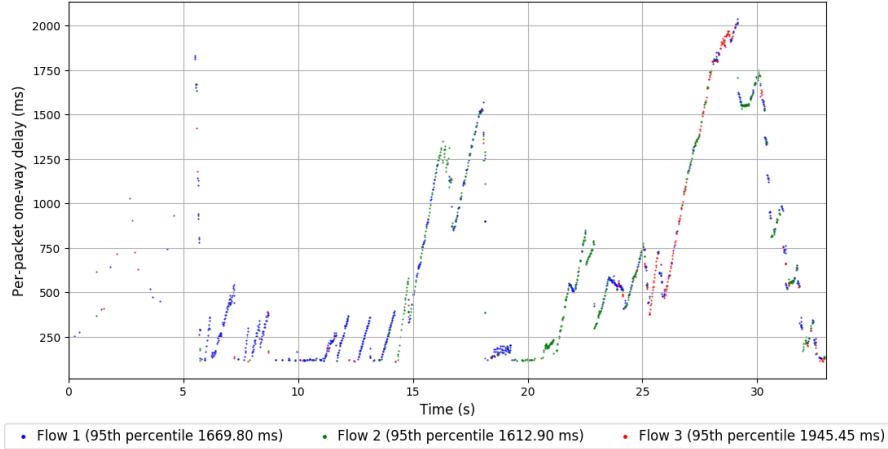
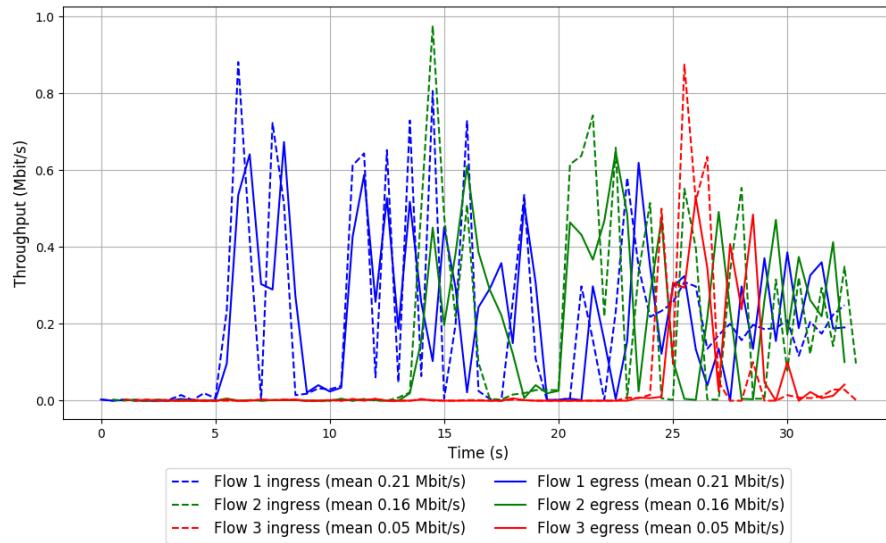


Run 3: Statistics of WebRTC media

```
Start at: 2017-12-20 18:32:40
End at: 2017-12-20 18:33:10
Local clock offset: -0.102 ms
Remote clock offset: 17.75 ms

# Below is generated by plot.py at 2017-12-20 19:45:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 1799.641 ms
Loss rate: 1.77%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 1669.800 ms
Loss rate: 0.82%
-- Flow 2:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 1612.902 ms
Loss rate: 3.39%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 1945.447 ms
Loss rate: 0.55%
```

### Run 3: Report of WebRTC media — Data Link

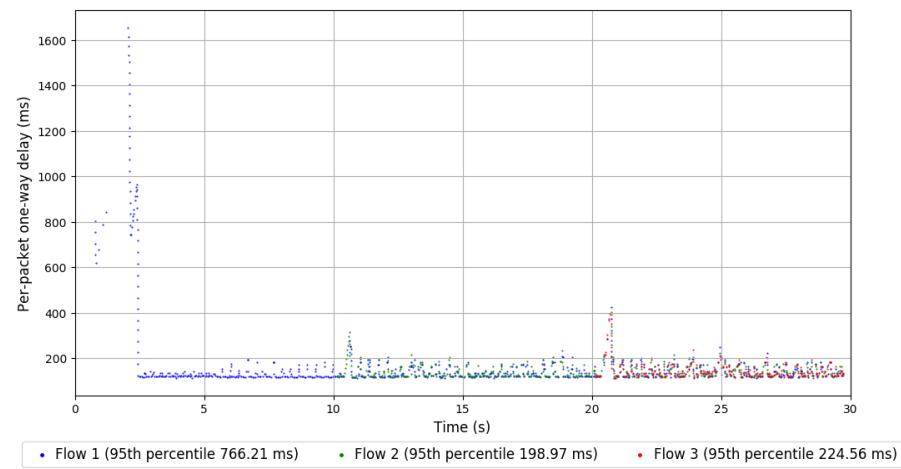
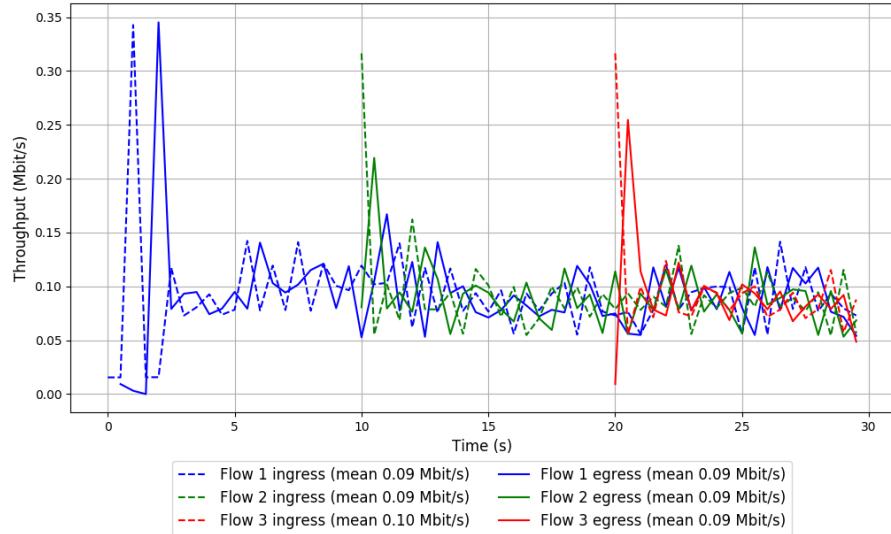


Run 1: Statistics of Sprout

```
Start at: 2017-12-20 18:01:17
End at: 2017-12-20 18:01:47
Local clock offset: -0.037 ms
Remote clock offset: 15.719 ms

# Below is generated by plot.py at 2017-12-20 19:45:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 275.688 ms
Loss rate: 2.88%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 766.213 ms
Loss rate: 1.66%
-- Flow 2:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 198.967 ms
Loss rate: 3.18%
-- Flow 3:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 224.556 ms
Loss rate: 5.74%
```

## Run 1: Report of Sprout — Data Link

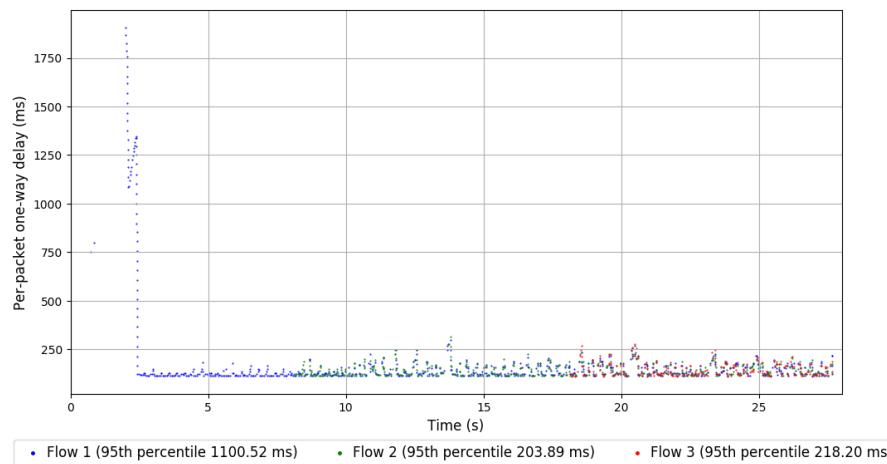
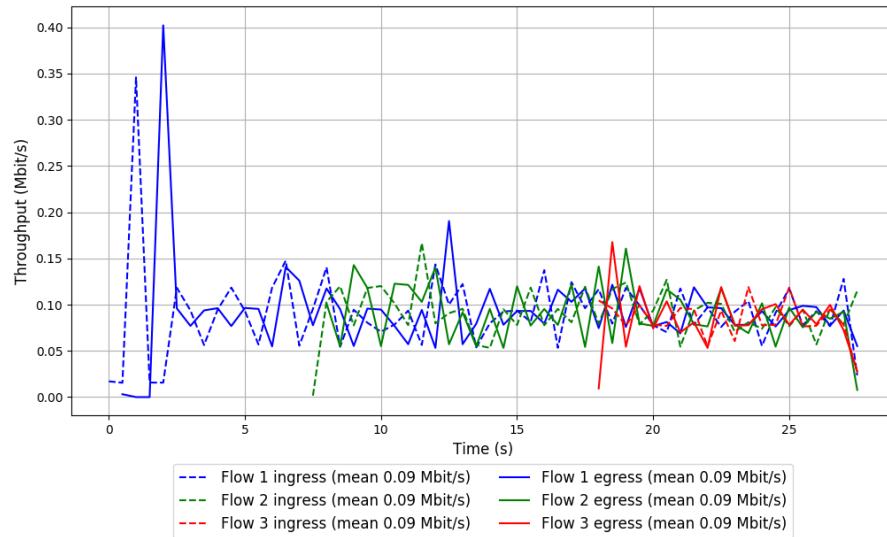


Run 2: Statistics of Sprout

```
Start at: 2017-12-20 18:20:06
End at: 2017-12-20 18:20:36
Local clock offset: -0.115 ms
Remote clock offset: 17.967 ms

# Below is generated by plot.py at 2017-12-20 19:45:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 246.579 ms
Loss rate: 1.54%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 1100.516 ms
Loss rate: 0.46%
-- Flow 2:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 203.886 ms
Loss rate: 3.03%
-- Flow 3:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 218.203 ms
Loss rate: 1.52%
```

## Run 2: Report of Sprout — Data Link

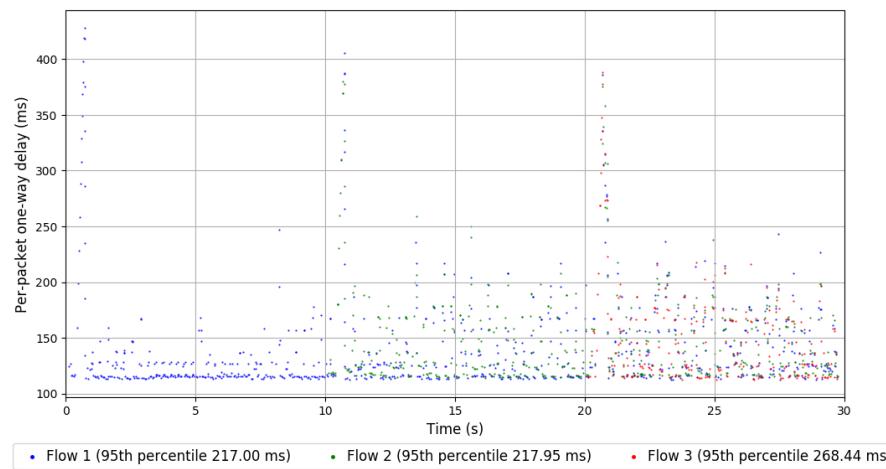
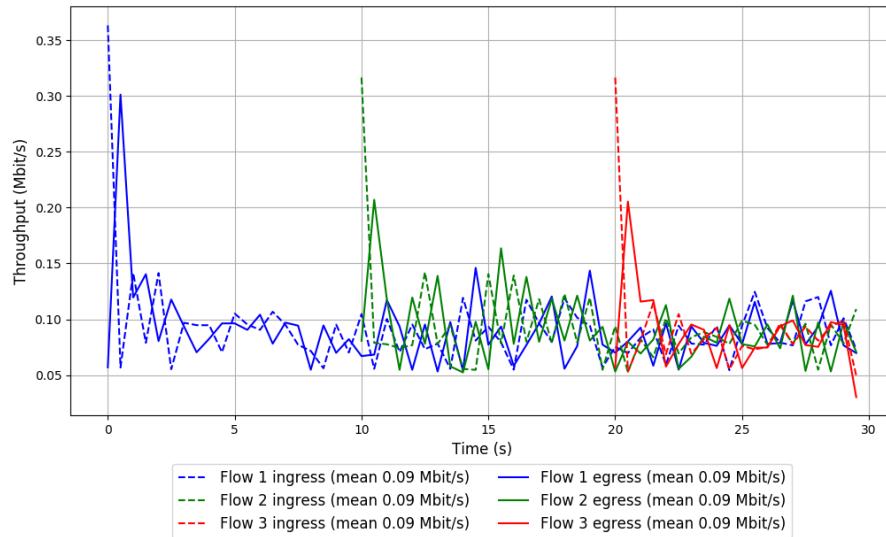


Run 3: Statistics of Sprout

```
Start at: 2017-12-20 18:38:54
End at: 2017-12-20 18:39:24
Local clock offset: -0.042 ms
Remote clock offset: 16.525 ms

# Below is generated by plot.py at 2017-12-20 19:45:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 217.953 ms
Loss rate: 2.54%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 217.003 ms
Loss rate: 1.17%
-- Flow 2:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 217.953 ms
Loss rate: 2.83%
-- Flow 3:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 268.445 ms
Loss rate: 6.01%
```

### Run 3: Report of Sprout — Data Link

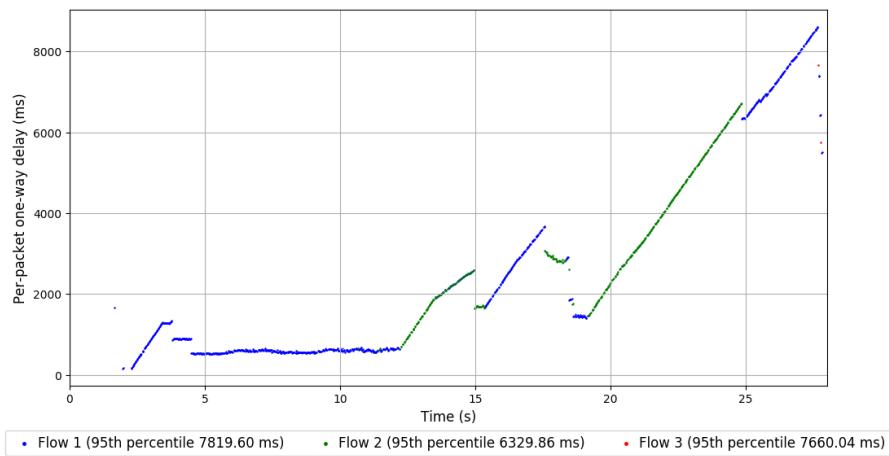
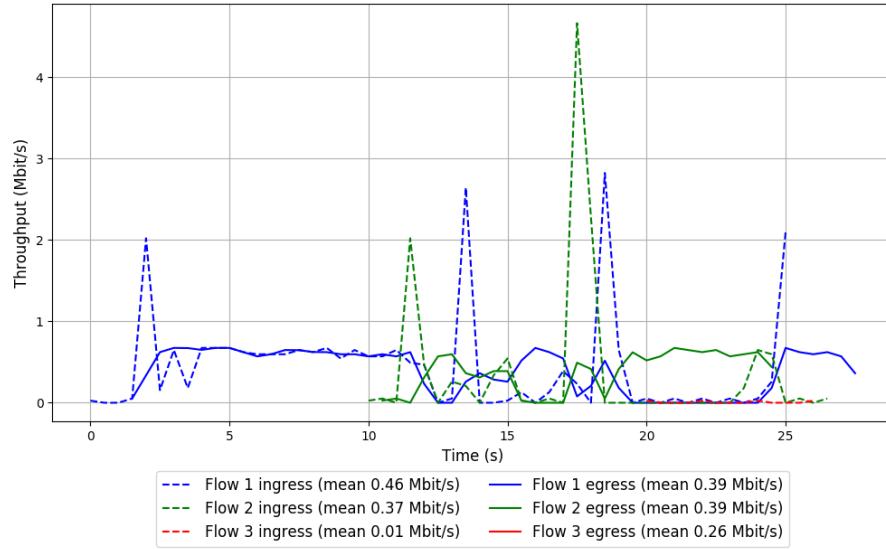


Run 1: Statistics of TaoVA-100x

```
Start at: 2017-12-20 18:00:02
End at: 2017-12-20 18:00:33
Local clock offset: -0.035 ms
Remote clock offset: 11.381 ms

# Below is generated by plot.py at 2017-12-20 19:45:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 7440.235 ms
Loss rate: 11.41%
-- Flow 1:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 7819.600 ms
Loss rate: 10.77%
-- Flow 2:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 6329.859 ms
Loss rate: 12.27%
-- Flow 3:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 7660.042 ms
Loss rate: 50.00%
```

Run 1: Report of TaoVA-100x — Data Link

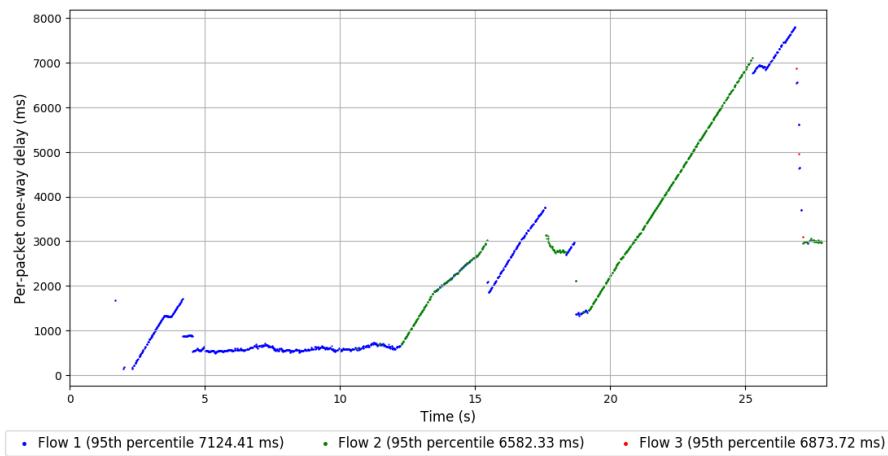
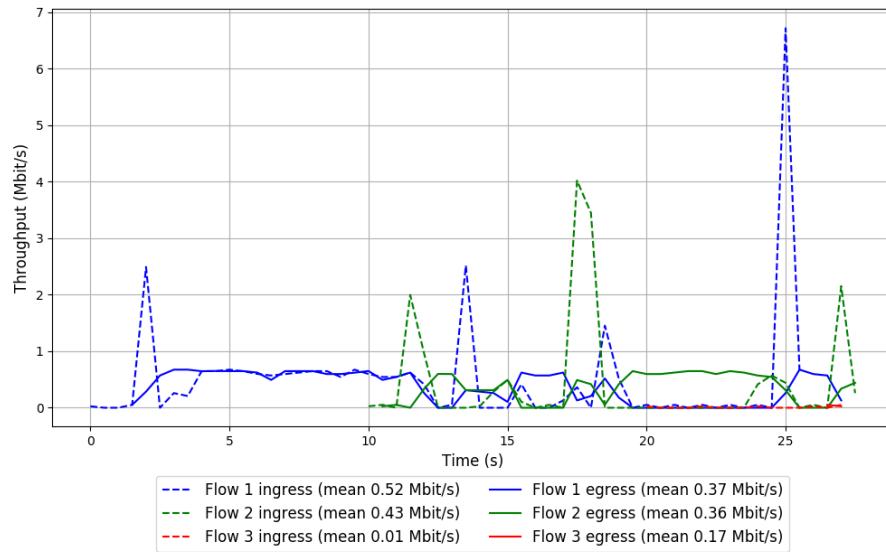


Run 2: Statistics of TaoVA-100x

```
Start at: 2017-12-20 18:18:52
End at: 2017-12-20 18:19:22
Local clock offset: -0.039 ms
Remote clock offset: 17.084 ms

# Below is generated by plot.py at 2017-12-20 19:45:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 6923.874 ms
Loss rate: 25.45%
-- Flow 1:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 7124.413 ms
Loss rate: 28.32%
-- Flow 2:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 6582.333 ms
Loss rate: 20.27%
-- Flow 3:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 6873.722 ms
Loss rate: 50.00%
```

## Run 2: Report of TaoVA-100x — Data Link

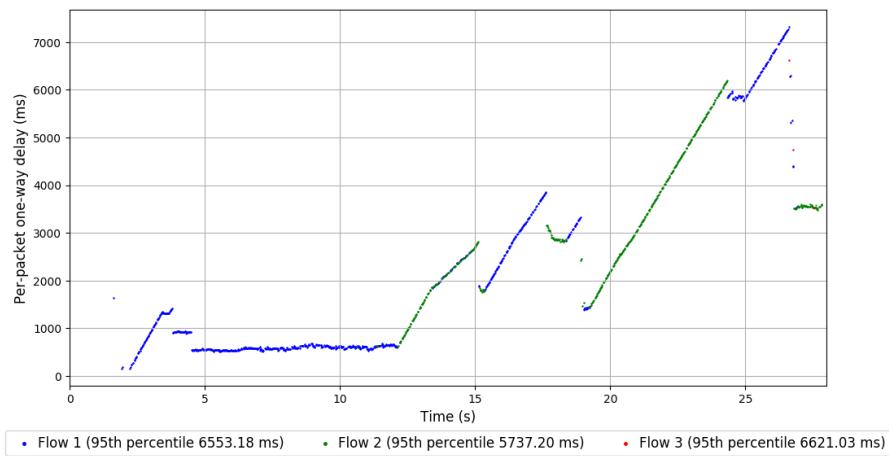
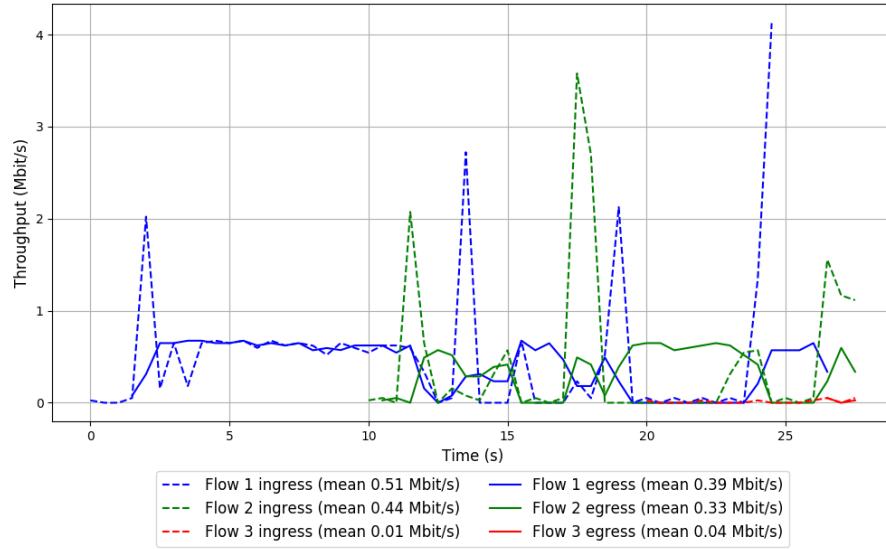


Run 3: Statistics of TaoVA-100x

```
Start at: 2017-12-20 18:37:39
End at: 2017-12-20 18:38:09
Local clock offset: -0.041 ms
Remote clock offset: 12.498 ms

# Below is generated by plot.py at 2017-12-20 19:45:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 6181.601 ms
Loss rate: 23.71%
-- Flow 1:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 6553.184 ms
Loss rate: 21.51%
-- Flow 2:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 5737.204 ms
Loss rate: 26.78%
-- Flow 3:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 6621.033 ms
Loss rate: 62.50%
```

### Run 3: Report of TaoVA-100x — Data Link

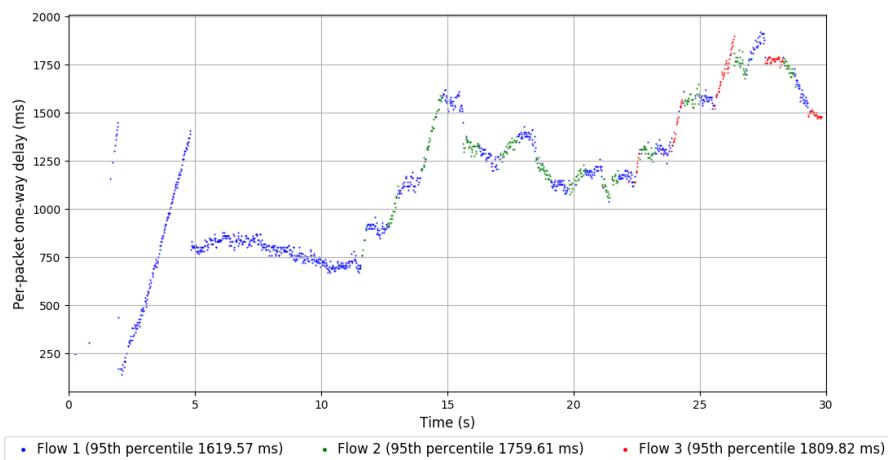
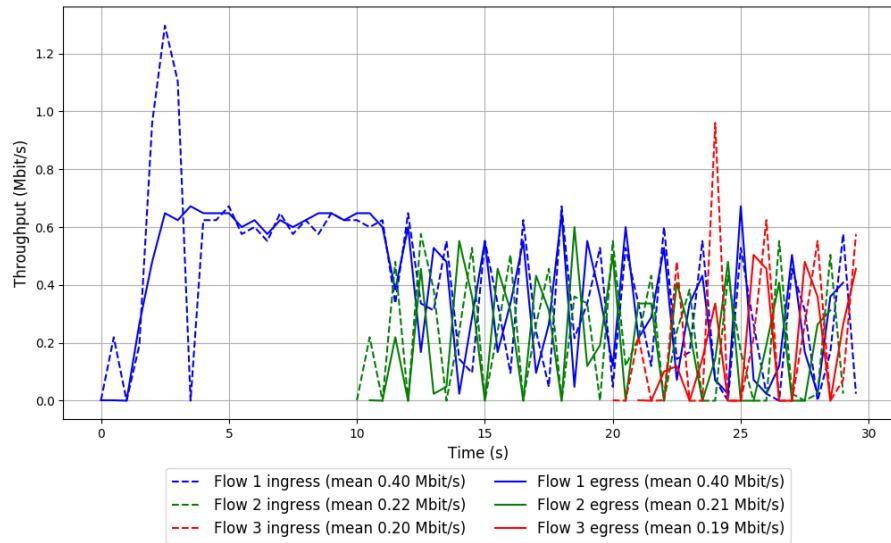


Run 1: Statistics of TCP Vegas

```
Start at: 2017-12-20 18:02:32
End at: 2017-12-20 18:03:02
Local clock offset: -0.111 ms
Remote clock offset: 17.88 ms

# Below is generated by plot.py at 2017-12-20 19:45:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 1769.575 ms
Loss rate: 5.70%
-- Flow 1:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 1619.573 ms
Loss rate: 3.21%
-- Flow 2:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 1759.612 ms
Loss rate: 6.68%
-- Flow 3:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 1809.823 ms
Loss rate: 18.75%
```

## Run 1: Report of TCP Vegas — Data Link

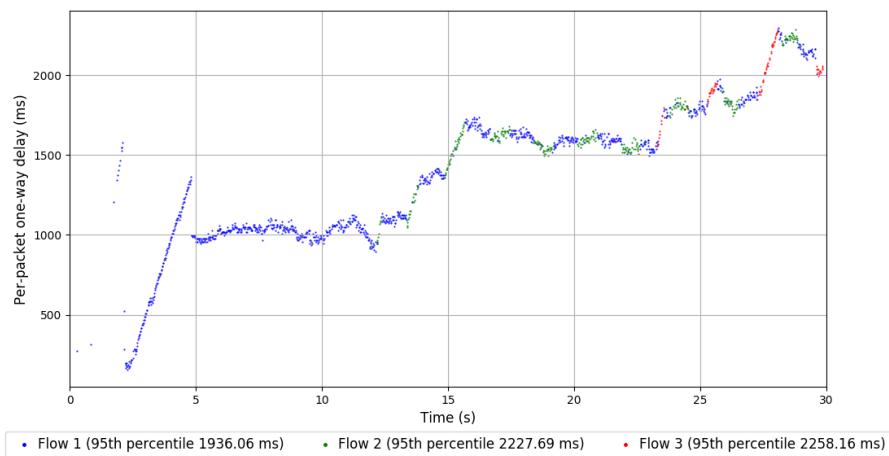
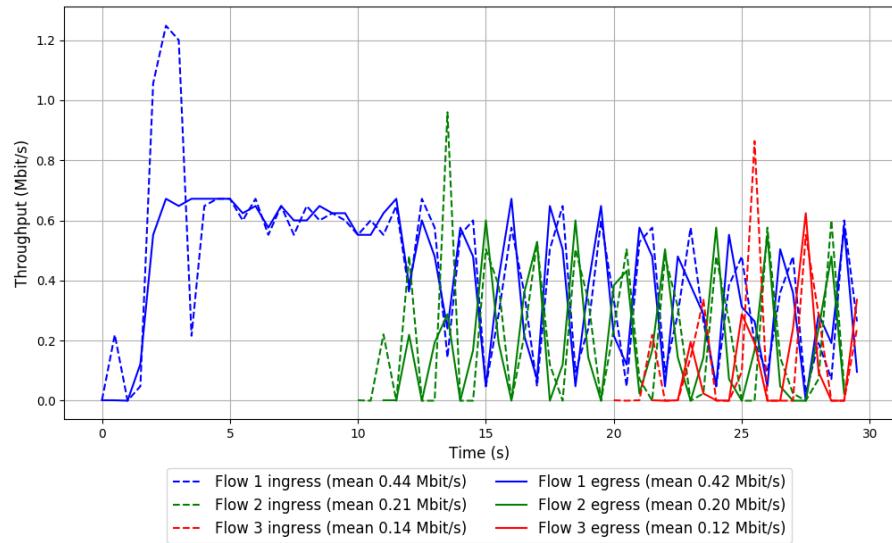


Run 2: Statistics of TCP Vegas

```
Start at: 2017-12-20 18:21:21
End at: 2017-12-20 18:21:51
Local clock offset: -0.113 ms
Remote clock offset: 11.815 ms

# Below is generated by plot.py at 2017-12-20 19:45:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 2155.735 ms
Loss rate: 7.03%
-- Flow 1:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 1936.060 ms
Loss rate: 4.33%
-- Flow 2:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 2227.694 ms
Loss rate: 8.89%
-- Flow 3:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 2258.157 ms
Loss rate: 27.11%
```

## Run 2: Report of TCP Vegas — Data Link

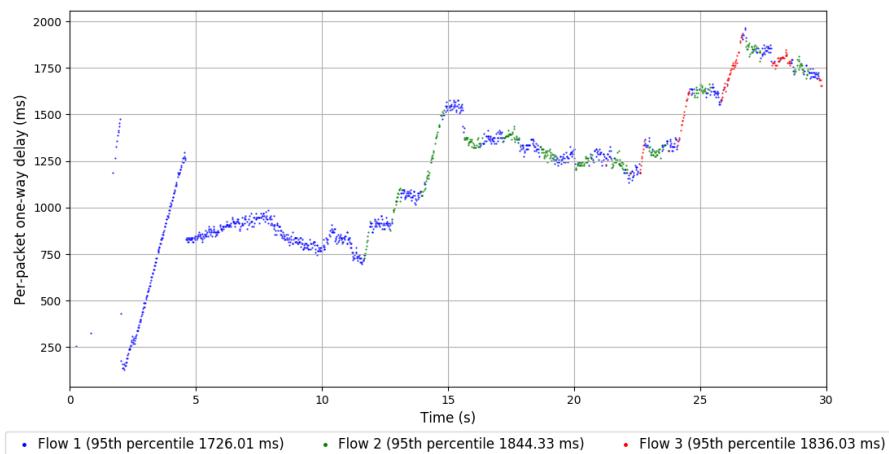
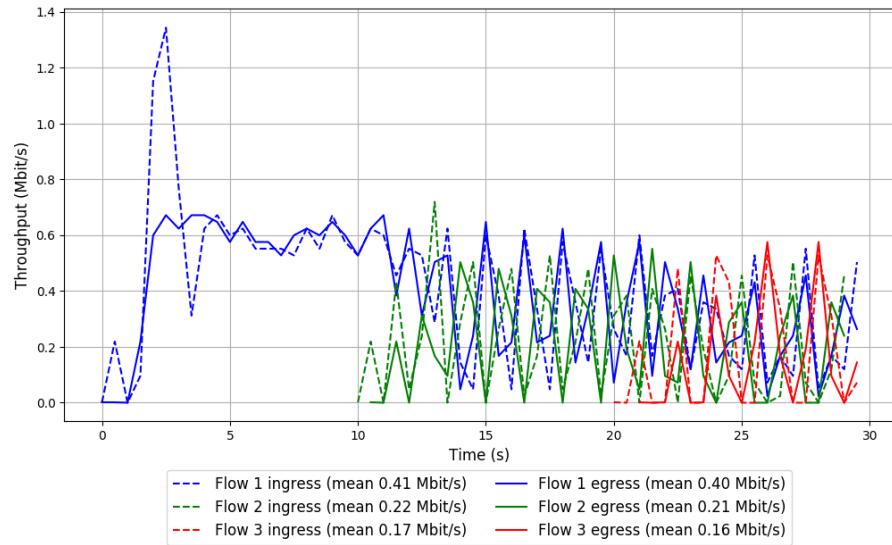


Run 3: Statistics of TCP Vegas

```
Start at: 2017-12-20 18:40:09
End at: 2017-12-20 18:40:39
Local clock offset: -0.021 ms
Remote clock offset: 16.504 ms

# Below is generated by plot.py at 2017-12-20 19:45:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 1814.612 ms
Loss rate: 6.00%
-- Flow 1:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 1726.008 ms
Loss rate: 3.44%
-- Flow 2:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 1844.330 ms
Loss rate: 6.78%
-- Flow 3:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 1836.033 ms
Loss rate: 22.33%
```

### Run 3: Report of TCP Vegas — Data Link

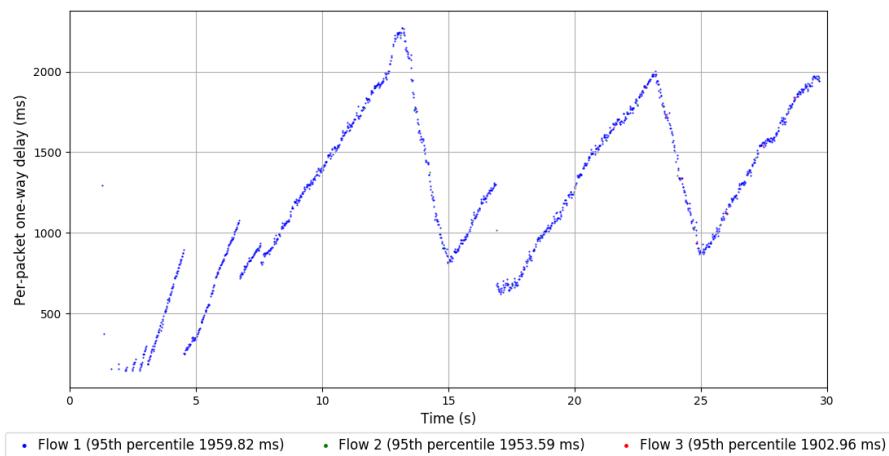
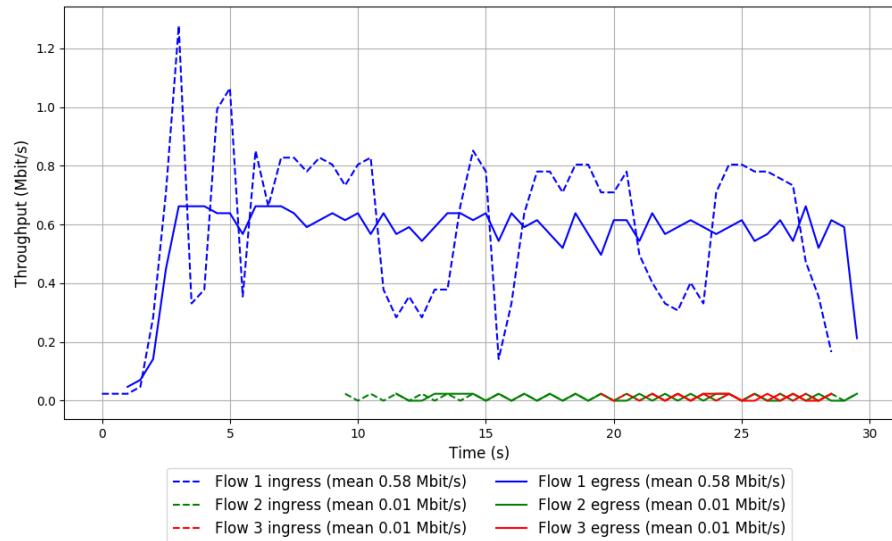


Run 1: Statistics of Verus

```
Start at: 2017-12-20 17:58:48
End at: 2017-12-20 17:59:18
Local clock offset: -0.028 ms
Remote clock offset: 10.914 ms

# Below is generated by plot.py at 2017-12-20 19:45:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 1959.820 ms
Loss rate: 2.41%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 1959.820 ms
Loss rate: 2.18%
-- Flow 2:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1953.591 ms
Loss rate: 9.52%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1902.965 ms
Loss rate: 20.00%
```

## Run 1: Report of Verus — Data Link

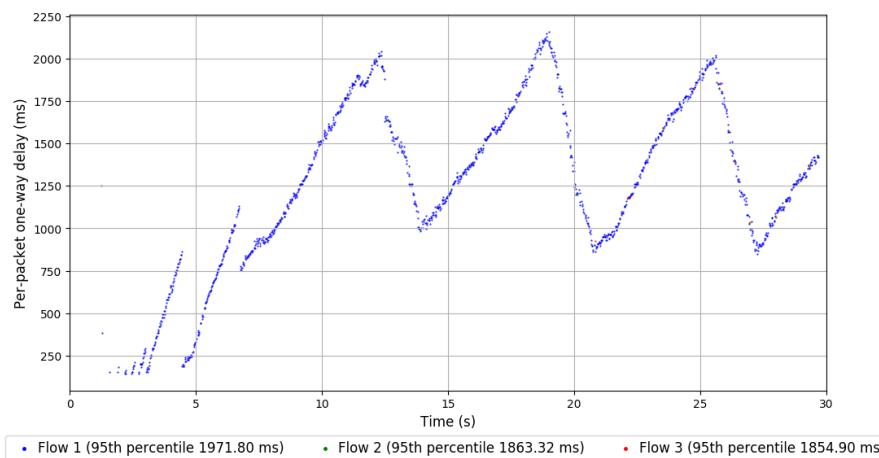
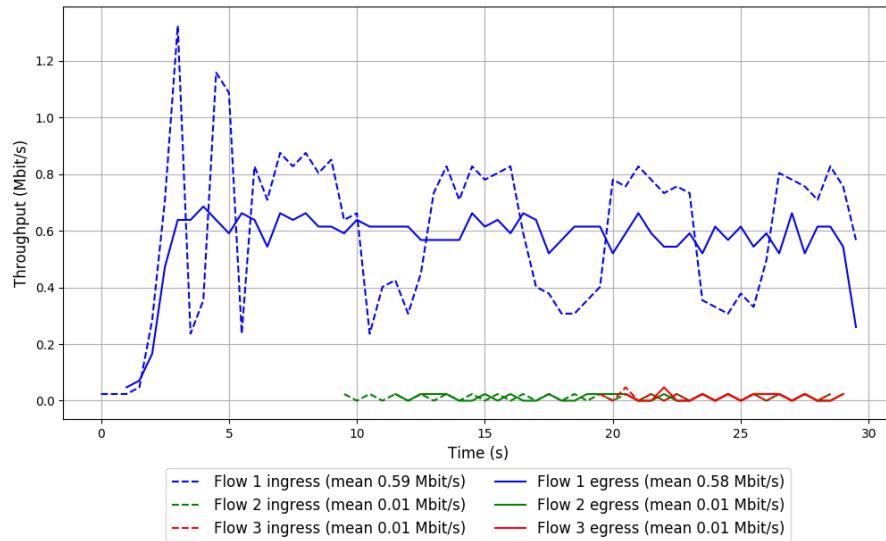


Run 2: Statistics of Verus

```
Start at: 2017-12-20 18:17:37
End at: 2017-12-20 18:18:07
Local clock offset: -0.041 ms
Remote clock offset: 10.947 ms

# Below is generated by plot.py at 2017-12-20 19:45:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 1971.801 ms
Loss rate: 7.06%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 1971.801 ms
Loss rate: 7.08%
-- Flow 2:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1863.321 ms
Loss rate: 5.00%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1854.900 ms
Loss rate: 9.09%
```

## Run 2: Report of Verus — Data Link

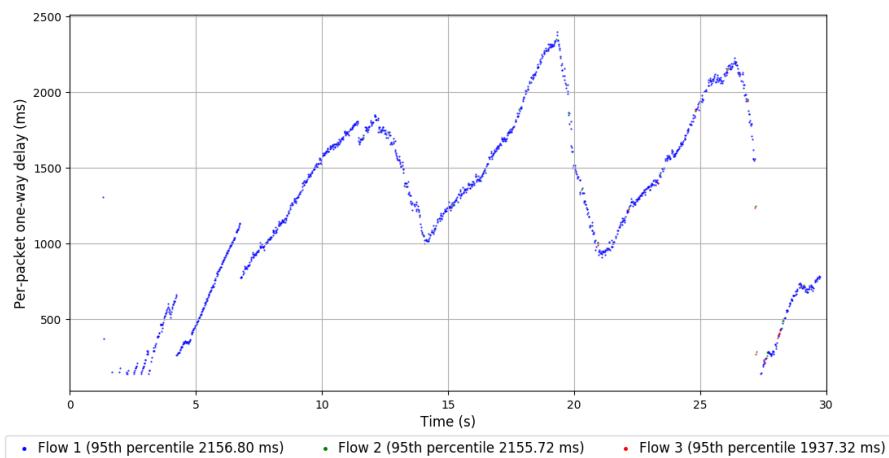
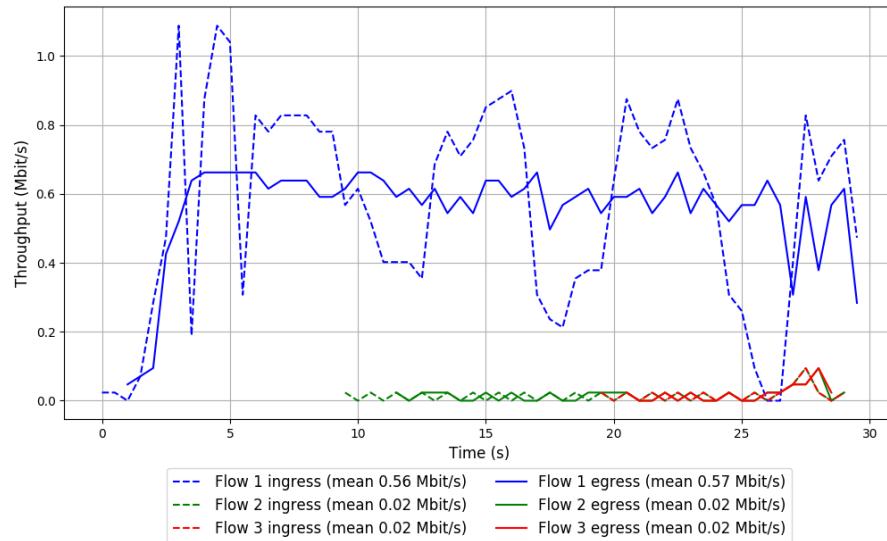


Run 3: Statistics of Verus

```
Start at: 2017-12-20 18:36:24
End at: 2017-12-20 18:36:54
Local clock offset: -0.106 ms
Remote clock offset: 17.384 ms

# Below is generated by plot.py at 2017-12-20 19:45:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 2155.724 ms
Loss rate: 3.83%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 2156.796 ms
Loss rate: 3.80%
-- Flow 2:
Average throughput: 0.02 Mbit/s
95th percentile per-packet one-way delay: 2155.724 ms
Loss rate: 3.85%
-- Flow 3:
Average throughput: 0.02 Mbit/s
95th percentile per-packet one-way delay: 1937.315 ms
Loss rate: 6.25%
```

### Run 3: Report of Verus — Data Link

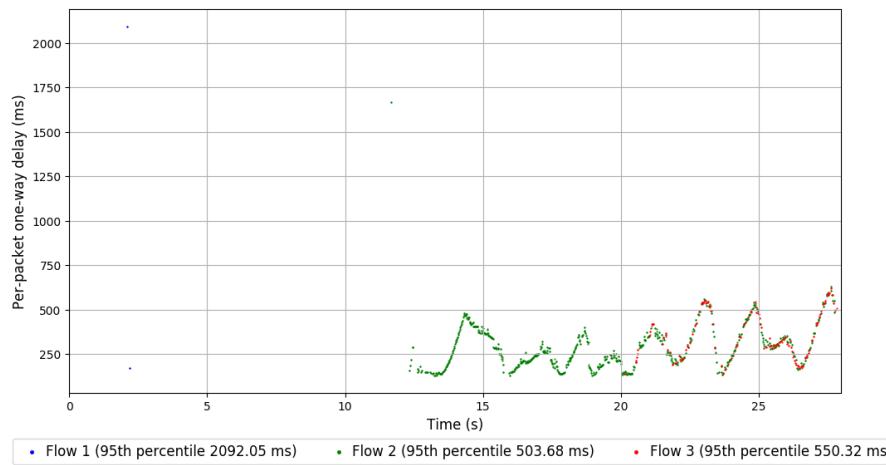
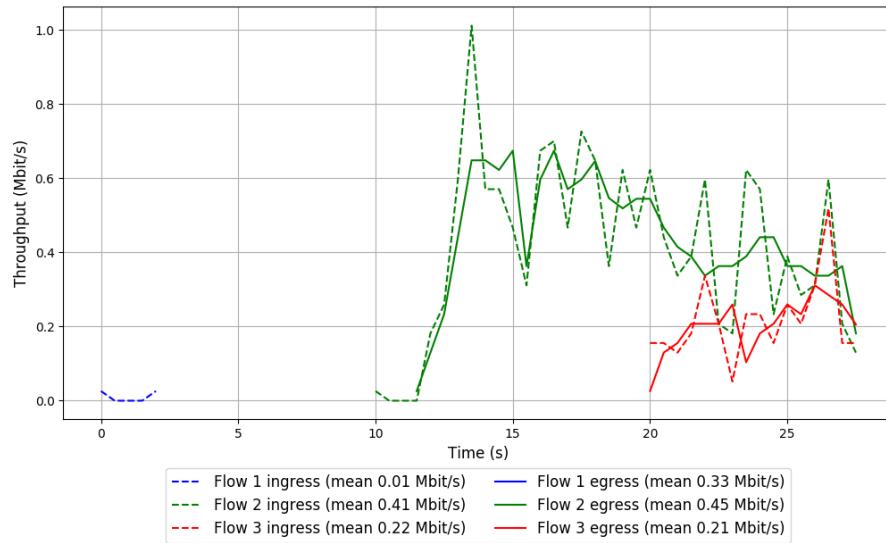


Run 1: Statistics of Copa

```
Start at: 2017-12-20 18:06:21
End at: 2017-12-20 18:06:51
Local clock offset: -0.037 ms
Remote clock offset: 10.924 ms

# Below is generated by plot.py at 2017-12-20 19:45:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 534.046 ms
Loss rate: 2.28%
-- Flow 1:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 2092.049 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 503.680 ms
Loss rate: 1.40%
-- Flow 3:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 550.324 ms
Loss rate: 6.07%
```

## Run 1: Report of Copa — Data Link

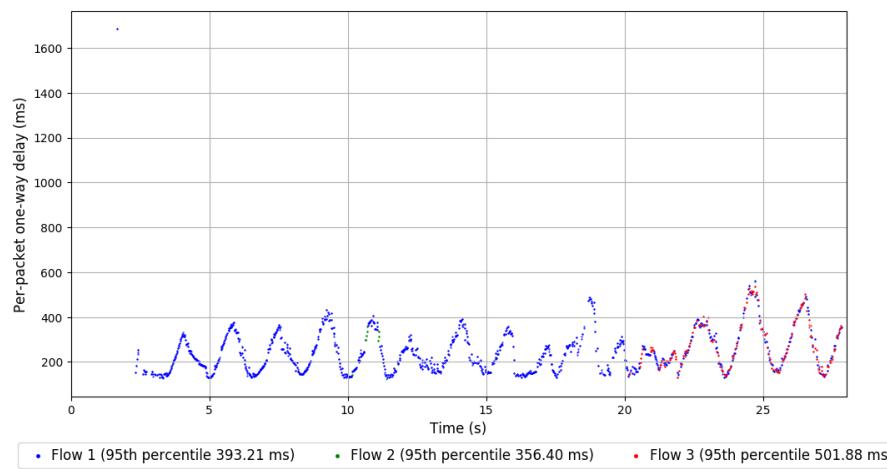
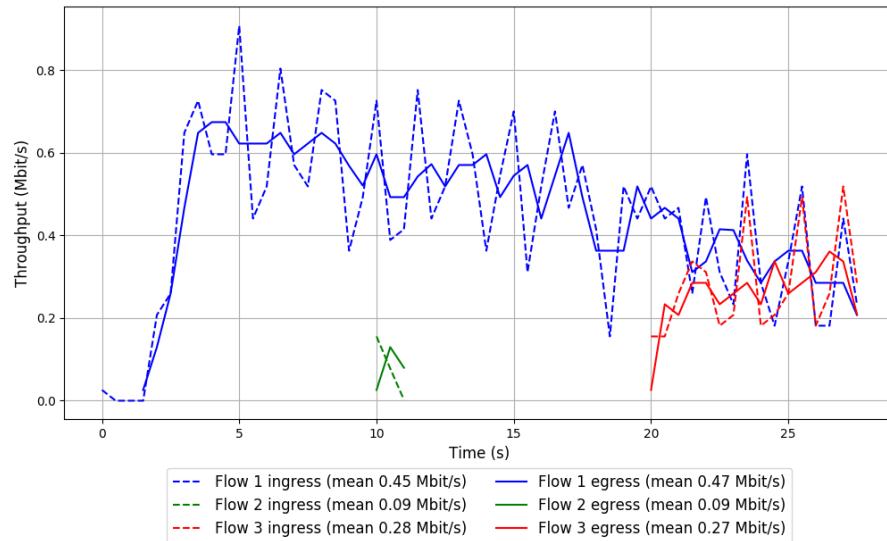


Run 2: Statistics of Copa

```
Start at: 2017-12-20 18:25:11
End at: 2017-12-20 18:25:41
Local clock offset: -0.047 ms
Remote clock offset: 11.775 ms

# Below is generated by plot.py at 2017-12-20 19:45:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 418.230 ms
Loss rate: 2.00%
-- Flow 1:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 393.209 ms
Loss rate: 1.03%
-- Flow 2:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 356.404 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 501.883 ms
Loss rate: 7.51%
```

## Run 2: Report of Copa — Data Link

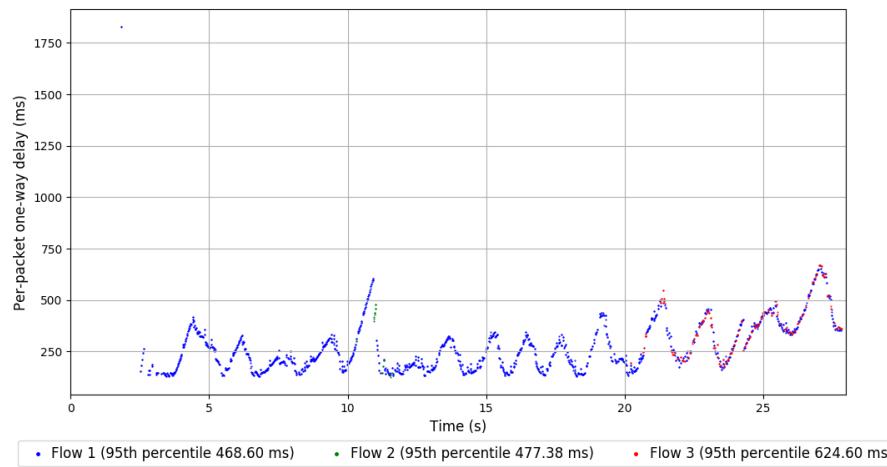
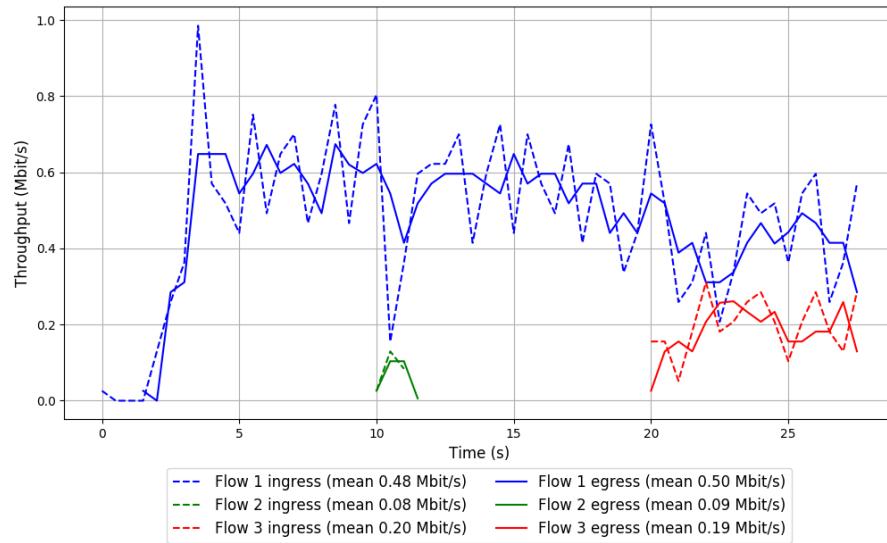


Run 3: Statistics of Copa

```
Start at: 2017-12-20 18:43:58
End at: 2017-12-20 18:44:28
Local clock offset: -0.078 ms
Remote clock offset: 11.664 ms

# Below is generated by plot.py at 2017-12-20 19:45:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 505.309 ms
Loss rate: 2.92%
-- Flow 1:
Average throughput: 0.50 Mbit/s
95th percentile per-packet one-way delay: 468.597 ms
Loss rate: 2.22%
-- Flow 2:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 477.380 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 624.598 ms
Loss rate: 8.94%
```

### Run 3: Report of Copa — Data Link

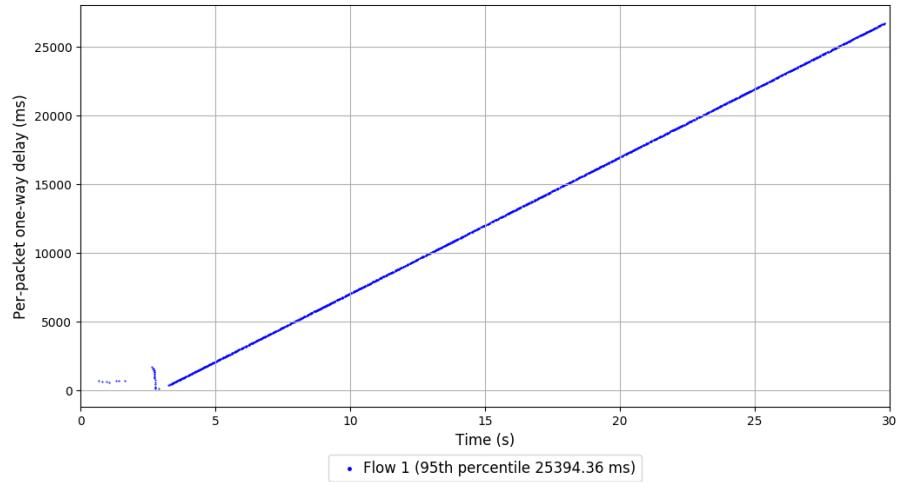
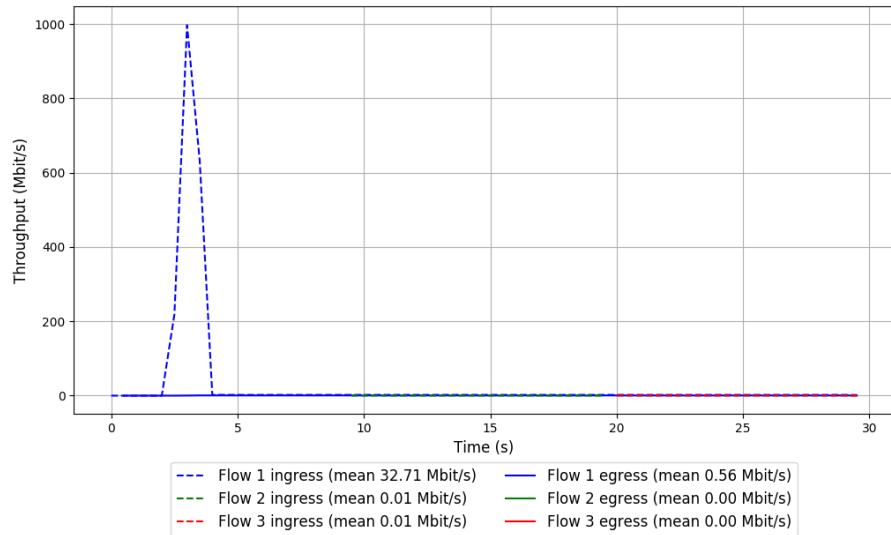


```
Run 1: Statistics of FillP

Start at: 2017-12-20 18:03:48
End at: 2017-12-20 18:04:18
Local clock offset: -0.093 ms
Remote clock offset: 11.797 ms

# Below is generated by plot.py at 2017-12-20 19:45:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 25394.361 ms
Loss rate: 98.32%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 25394.361 ms
Loss rate: 98.32%
-- Flow 2:
Average throughput: 0.00 Mbit/s
-- Flow 3:
Average throughput: 0.00 Mbit/s
```

## Run 1: Report of FillP — Data Link

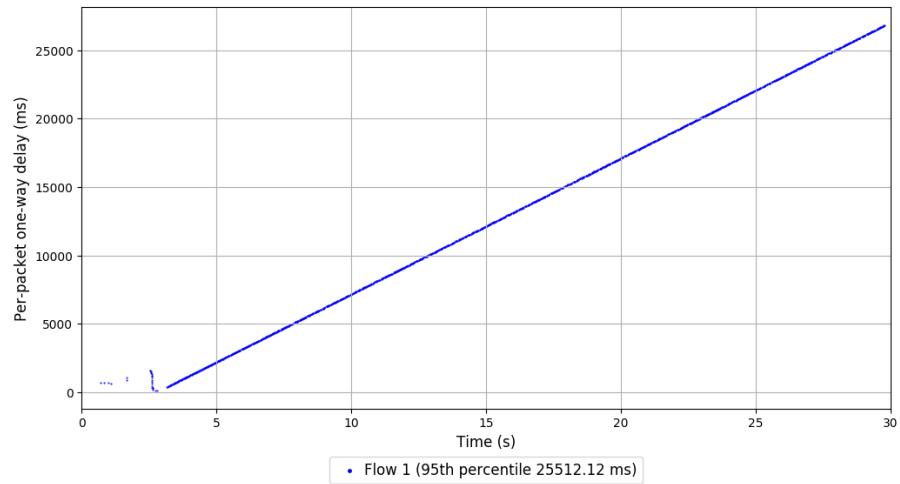
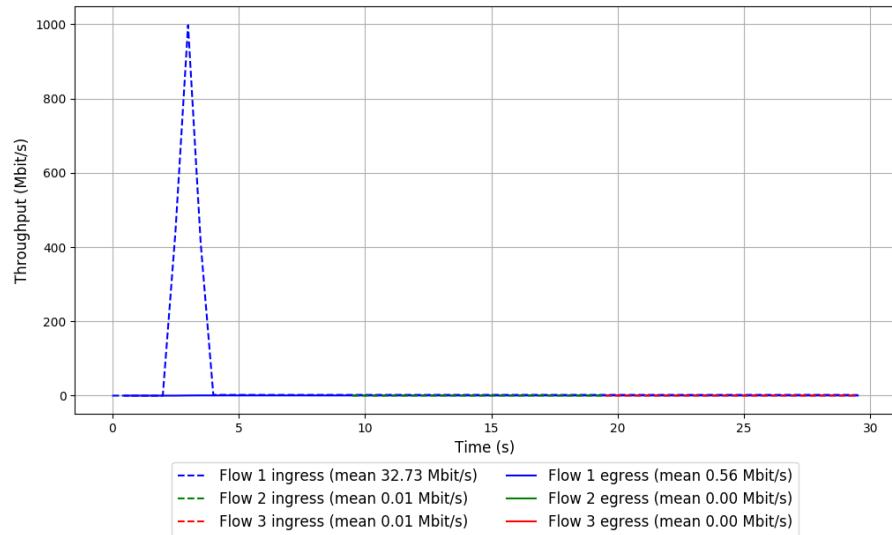


Run 2: Statistics of FillP

```
Start at: 2017-12-20 18:22:37
End at: 2017-12-20 18:23:07
Local clock offset: -0.026 ms
Remote clock offset: 11.525 ms

# Below is generated by plot.py at 2017-12-20 19:45:31
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 25512.124 ms
Loss rate: 98.35%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 25512.124 ms
Loss rate: 98.35%
-- Flow 2:
Average throughput: 0.00 Mbit/s
-- Flow 3:
Average throughput: 0.00 Mbit/s
```

## Run 2: Report of FillP — Data Link

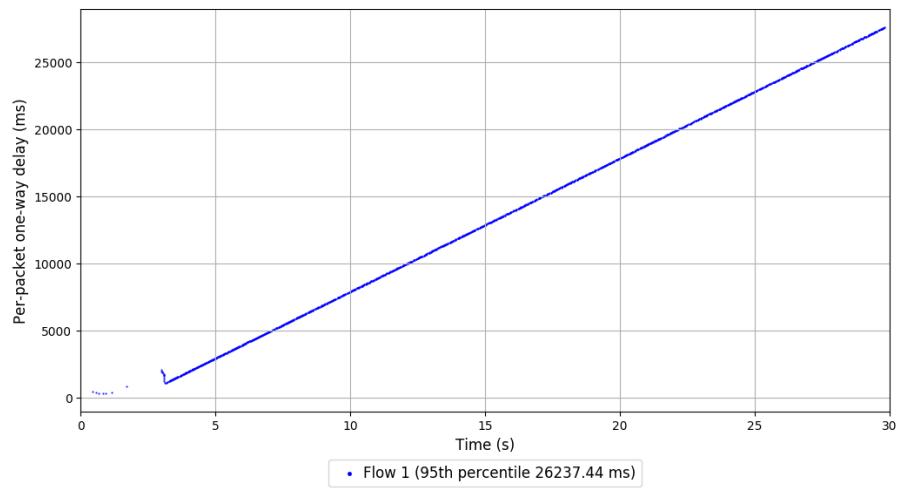
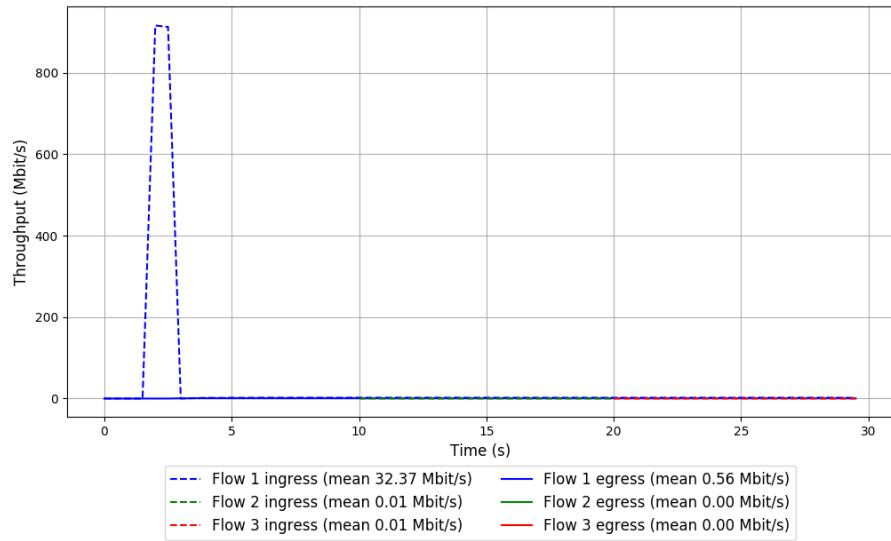


Run 3: Statistics of FillP

```
Start at: 2017-12-20 18:41:25
End at: 2017-12-20 18:41:55
Local clock offset: -0.044 ms
Remote clock offset: 10.795 ms

# Below is generated by plot.py at 2017-12-20 19:45:31
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 26237.443 ms
Loss rate: 98.31%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 26237.443 ms
Loss rate: 98.31%
-- Flow 2:
Average throughput: 0.00 Mbit/s
-- Flow 3:
Average throughput: 0.00 Mbit/s
```

### Run 3: Report of FillP — Data Link

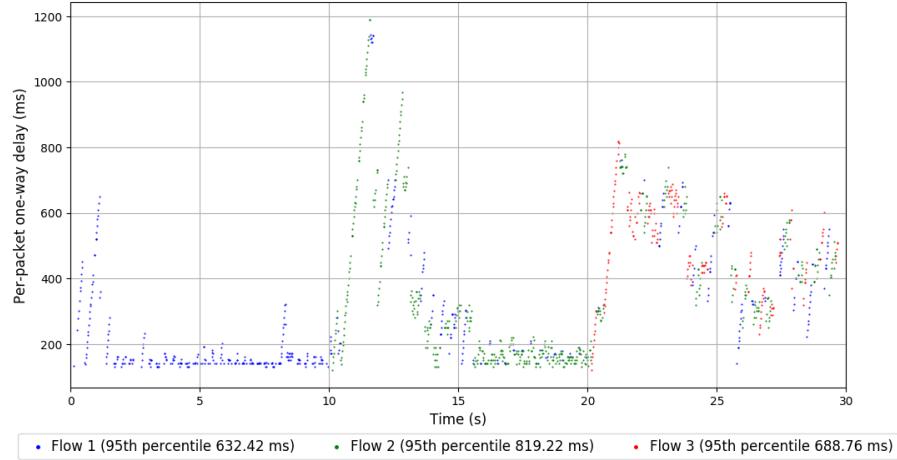
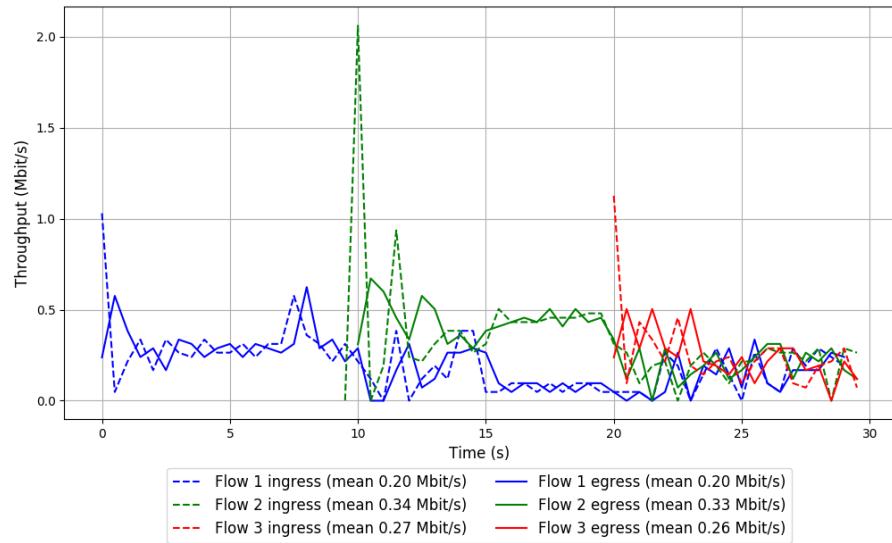


Run 1: Statistics of Indigo

```
Start at: 2017-12-20 17:52:33
End at: 2017-12-20 17:53:03
Local clock offset: -0.034 ms
Remote clock offset: 15.545 ms

# Below is generated by plot.py at 2017-12-20 19:45:31
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.50 Mbit/s
95th percentile per-packet one-way delay: 739.754 ms
Loss rate: 4.22%
-- Flow 1:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 632.422 ms
Loss rate: 2.22%
-- Flow 2:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 819.223 ms
Loss rate: 5.13%
-- Flow 3:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 688.761 ms
Loss rate: 6.37%
```

Run 1: Report of Indigo — Data Link

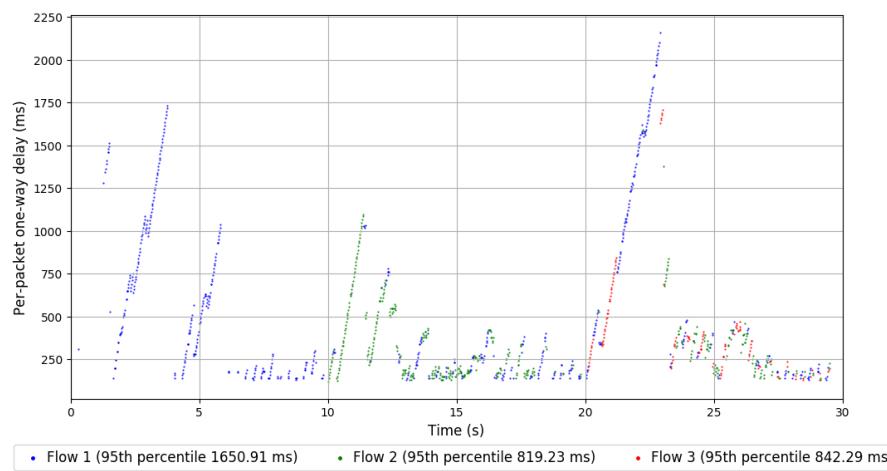
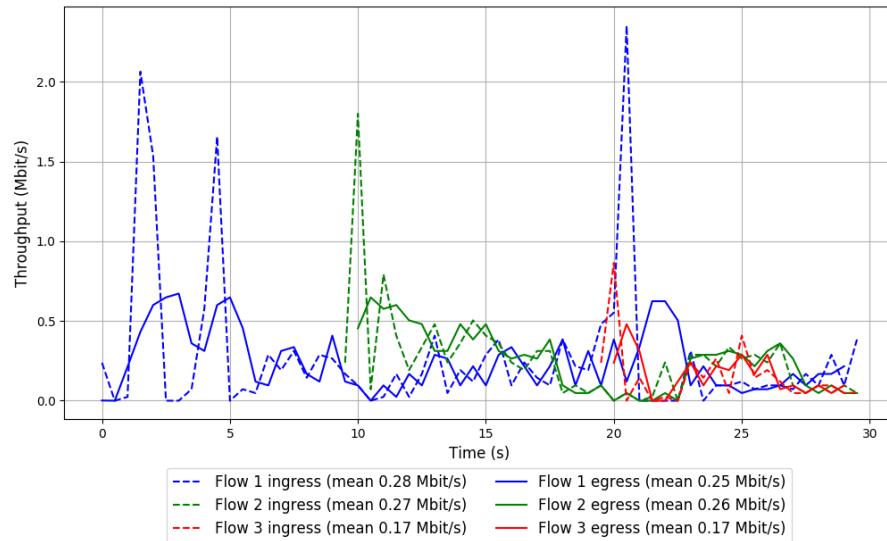


Run 2: Statistics of Indigo

```
Start at: 2017-12-20 18:11:22
End at: 2017-12-20 18:11:52
Local clock offset: -0.033 ms
Remote clock offset: 17.693 ms

# Below is generated by plot.py at 2017-12-20 19:45:31
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 1540.485 ms
Loss rate: 9.64%
-- Flow 1:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 1650.908 ms
Loss rate: 13.87%
-- Flow 2:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 819.234 ms
Loss rate: 4.77%
-- Flow 3:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 842.286 ms
Loss rate: 3.73%
```

## Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

```
Start at: 2017-12-20 18:30:11
End at: 2017-12-20 18:30:41
Local clock offset: -0.101 ms
Remote clock offset: 18.592 ms

# Below is generated by plot.py at 2017-12-20 19:45:31
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 1387.225 ms
Loss rate: 10.69%
-- Flow 1:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 1450.804 ms
Loss rate: 13.17%
-- Flow 2:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 1289.378 ms
Loss rate: 9.06%
-- Flow 3:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 958.910 ms
Loss rate: 5.48%
```

### Run 3: Report of Indigo — Data Link

