

## Pantheon Report

Generated at 2018-09-08 02:46:55 (UTC).

Data path: Mexico on **em1** (*remote*) → AWS California 2 on **ens5** (*local*).

Repeated the test of 18 congestion control schemes 5 times.

Each test lasted for 30 seconds running 3 flows with 10-second interval between two flows.

NTP offsets were measured against **time.stanford.edu** and have been applied to correct the timestamps in logs.

### System info:

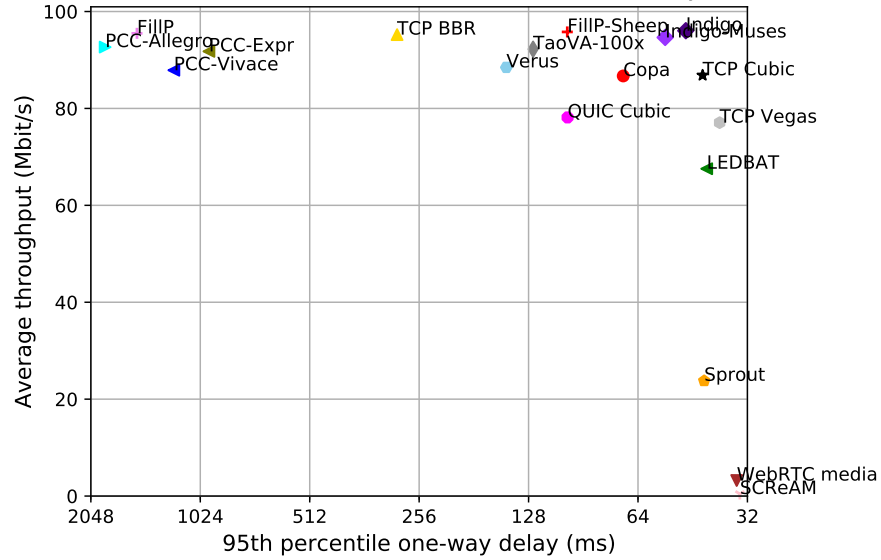
```
Linux 4.15.0-1020-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
net.ipv4.tcp_mem = 536870912 536870912 536870912
```

### Git summary:

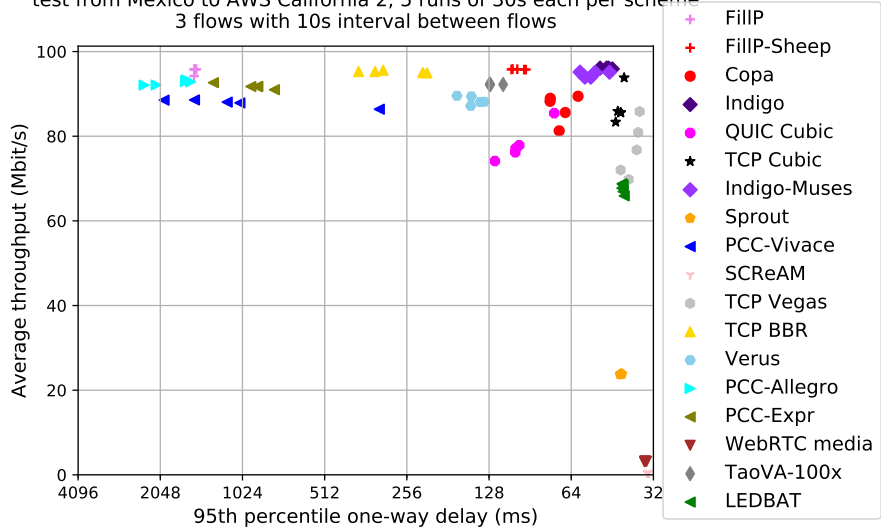
```
branch: muses @ e0a9b05ad97d268013b7cc9a9c95637b593a1b4c
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 7631aea3923a3598767c87765ae5103aca0678d3
third_party/pantheon-tunnel @ cbfce6db5ff5740dafa1771f813cd646339e1952
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/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quick @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
  M src/ScreamClient
  M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
  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/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```

test from Mexico to AWS California 2, 5 runs of 30s each per scheme  
 3 flows with 10s interval between flows (mean of all runs by scheme)



test from Mexico to AWS California 2, 5 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	5	57.49	38.94	35.74	176.76	202.59	483.51	0.77	1.22	3.11
Copa	5	51.27	40.42	25.75	102.98	48.31	43.53	0.17	0.24	0.60
TCP Cubic	5	50.02	40.58	29.65	45.49	41.34	50.33	0.16	0.31	0.66
FillP	5	57.26	40.08	35.10	1016.00	1345.30	739.92	6.15	11.36	8.52
FillP-Sheep	5	57.69	40.73	33.34	88.74	101.34	179.43	0.86	0.79	0.90
Indigo	5	58.47	39.44	34.72	47.16	48.61	44.40	0.23	0.40	0.73
LEDBAT	5	40.51	30.96	19.46	41.60	41.29	43.40	0.18	0.41	0.84
Indigo-Muses	5	56.35	36.12	43.33	53.08	50.79	61.55	0.16	0.31	0.70
PCC-Allegro	5	59.51	36.82	26.43	1873.67	1872.39	272.81	13.61	13.29	2.53
PCC-Expr	5	55.51	39.07	31.31	942.75	735.31	201.68	32.54	9.61	1.93
QUIC Cubic	5	44.10	36.00	30.71	88.32	116.50	123.91	0.19	0.40	1.03
SCReAM	5	0.21	0.21	0.22	33.54	33.55	33.54	0.21	0.40	0.71
Sprout	5	11.99	11.95	11.71	41.70	42.27	42.70	0.26	0.28	0.67
TaoVA-100x	5	55.22	38.53	34.31	122.49	128.67	123.23	0.71	1.55	3.14
TCP Vegas	5	42.56	33.96	35.94	48.16	36.17	38.84	0.27	0.27	0.71
Verus	5	53.91	37.44	29.24	141.97	117.35	233.37	0.36	0.67	1.36
PCC-Vivace	5	56.31	32.69	29.90	1263.99	606.69	84.01	3.99	3.75	0.96
WebRTC media	5	1.79	1.01	0.42	34.21	34.23	34.38	0.13	0.21	0.68

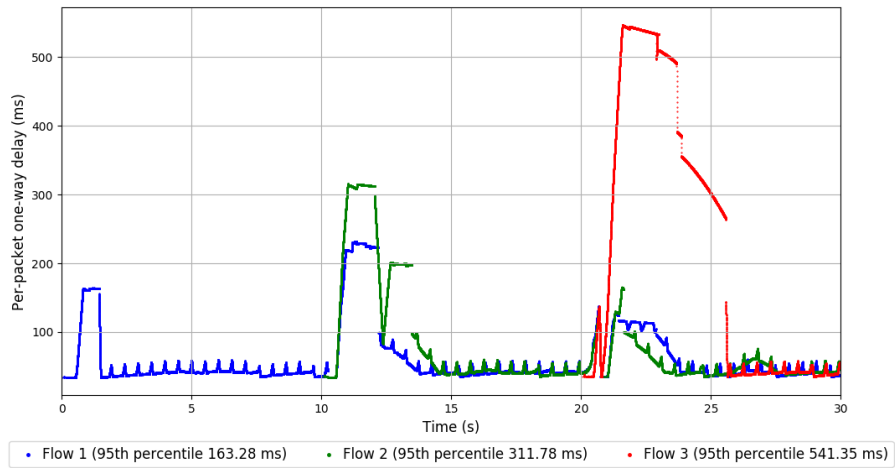
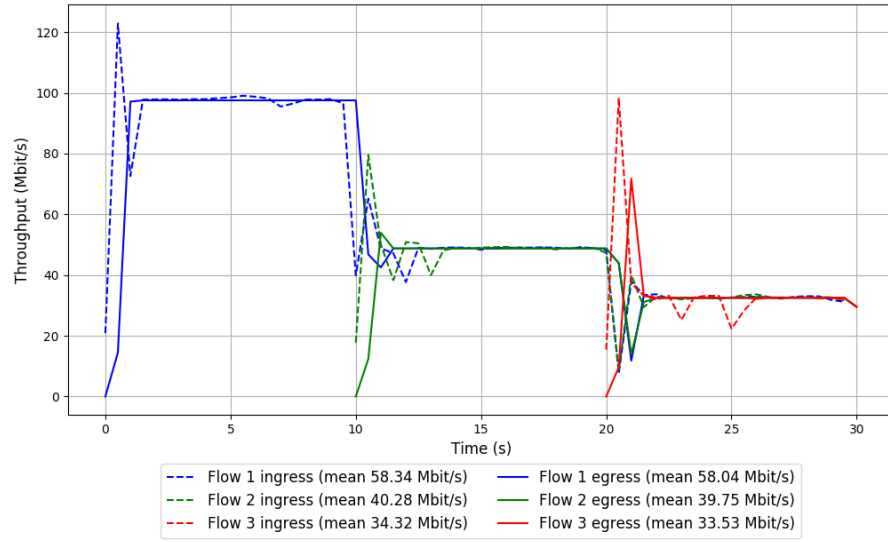


Run 1: Statistics of TCP BBR

Start at: 2018-09-08 00:37:34  
End at: 2018-09-08 00:38:04  
Local clock offset: -3.092 ms  
Remote clock offset: -3.835 ms

# Below is generated by plot.py at 2018-09-08 02:35:15  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 95.59 Mbit/s  
95th percentile per-packet one-way delay: 312.651 ms  
Loss rate: 1.24%  
-- Flow 1:  
Average throughput: 58.04 Mbit/s  
95th percentile per-packet one-way delay: 163.278 ms  
Loss rate: 0.73%  
-- Flow 2:  
Average throughput: 39.75 Mbit/s  
95th percentile per-packet one-way delay: 311.776 ms  
Loss rate: 1.63%  
-- Flow 3:  
Average throughput: 33.53 Mbit/s  
95th percentile per-packet one-way delay: 541.348 ms  
Loss rate: 2.93%

# Run 1: Report of TCP BBR — Data Link

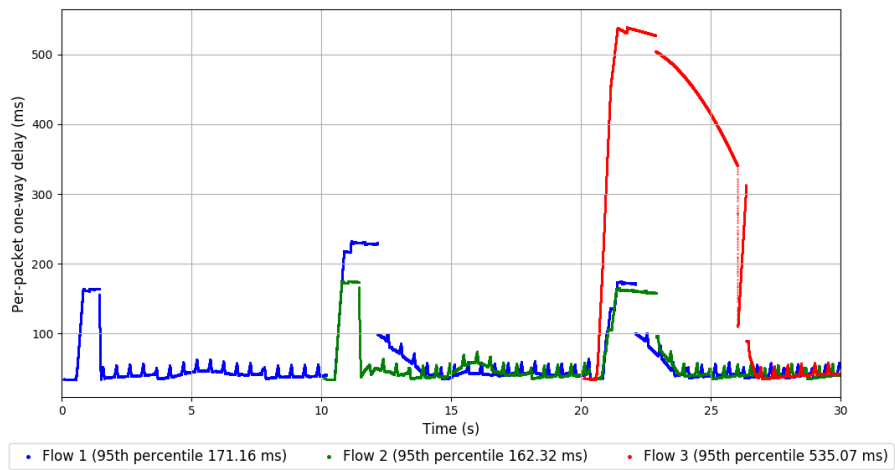
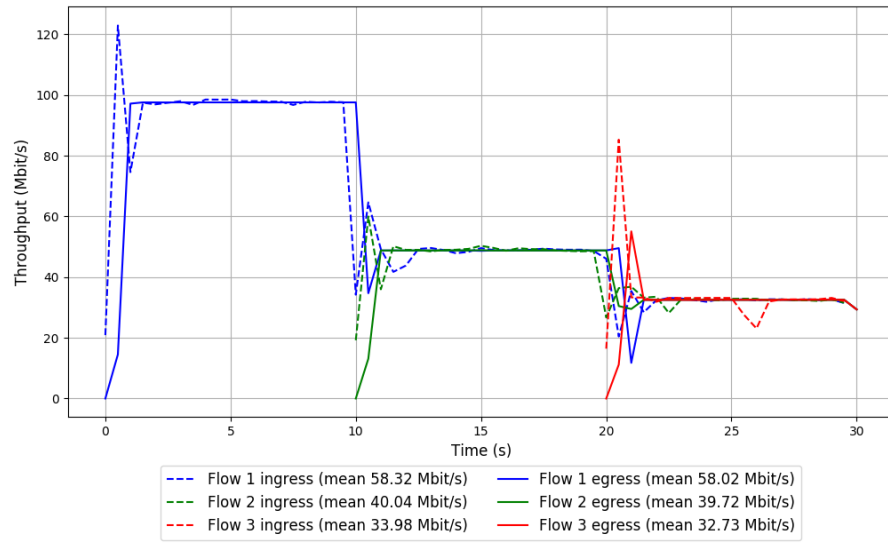


Run 2: Statistics of TCP BBR

Start at: 2018-09-08 01:02:48  
End at: 2018-09-08 01:03:18  
Local clock offset: 0.368 ms  
Remote clock offset: -2.364 ms

# Below is generated by plot.py at 2018-09-08 02:35:15  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 95.29 Mbit/s  
95th percentile per-packet one-way delay: 384.612 ms  
Loss rate: 1.25%  
-- Flow 1:  
Average throughput: 58.02 Mbit/s  
95th percentile per-packet one-way delay: 171.164 ms  
Loss rate: 0.72%  
-- Flow 2:  
Average throughput: 39.72 Mbit/s  
95th percentile per-packet one-way delay: 162.325 ms  
Loss rate: 1.12%  
-- Flow 3:  
Average throughput: 32.73 Mbit/s  
95th percentile per-packet one-way delay: 535.074 ms  
Loss rate: 4.30%

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

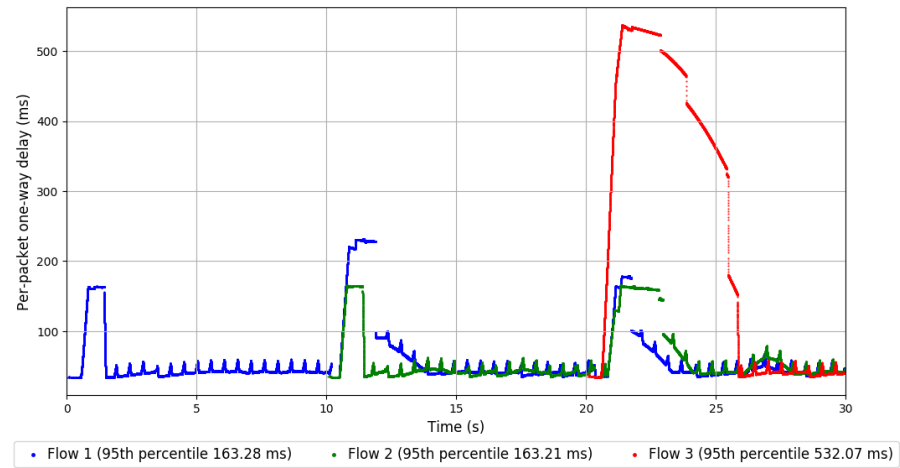
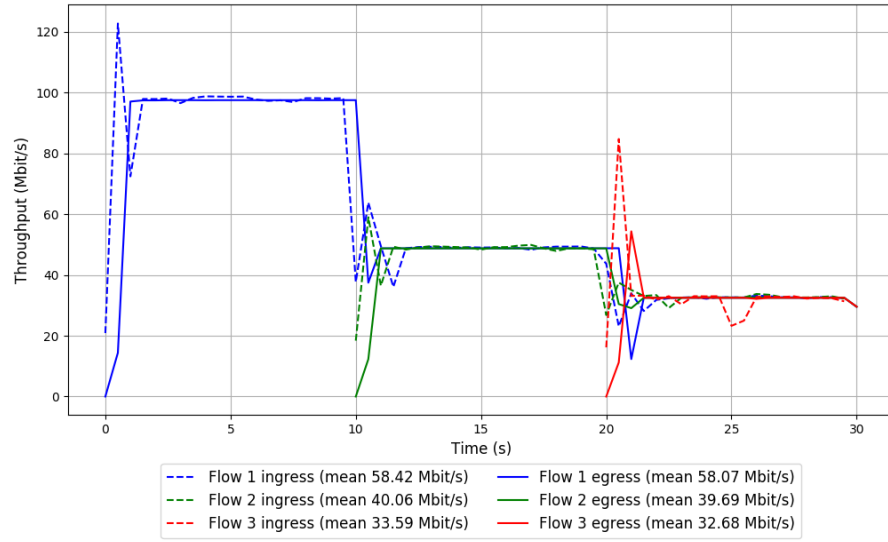


Run 3: Statistics of TCP BBR

Start at: 2018-09-08 01:27:43  
End at: 2018-09-08 01:28:13  
Local clock offset: 0.739 ms  
Remote clock offset: -1.039 ms

# Below is generated by plot.py at 2018-09-08 02:35:16  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 95.30 Mbit/s  
95th percentile per-packet one-way delay: 334.740 ms  
Loss rate: 1.23%  
-- Flow 1:  
Average throughput: 58.07 Mbit/s  
95th percentile per-packet one-way delay: 163.284 ms  
Loss rate: 0.82%  
-- Flow 2:  
Average throughput: 39.69 Mbit/s  
95th percentile per-packet one-way delay: 163.205 ms  
Loss rate: 1.24%  
-- Flow 3:  
Average throughput: 32.68 Mbit/s  
95th percentile per-packet one-way delay: 532.074 ms  
Loss rate: 3.33%

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



Run 4: Statistics of TCP BBR

Start at: 2018-09-08 01:52:50

End at: 2018-09-08 01:53:20

Local clock offset: 0.675 ms

Remote clock offset: 0.274 ms

# Below is generated by plot.py at 2018-09-08 02:35:16

# Datalink statistics

-- Total of 3 flows:

Average throughput: 95.04 Mbit/s

95th percentile per-packet one-way delay: 223.872 ms

Loss rate: 1.19%

-- Flow 1:

Average throughput: 55.41 Mbit/s

95th percentile per-packet one-way delay: 222.866 ms

Loss rate: 0.94%

-- Flow 2:

Average throughput: 35.92 Mbit/s

95th percentile per-packet one-way delay: 214.361 ms

Loss rate: 1.18%

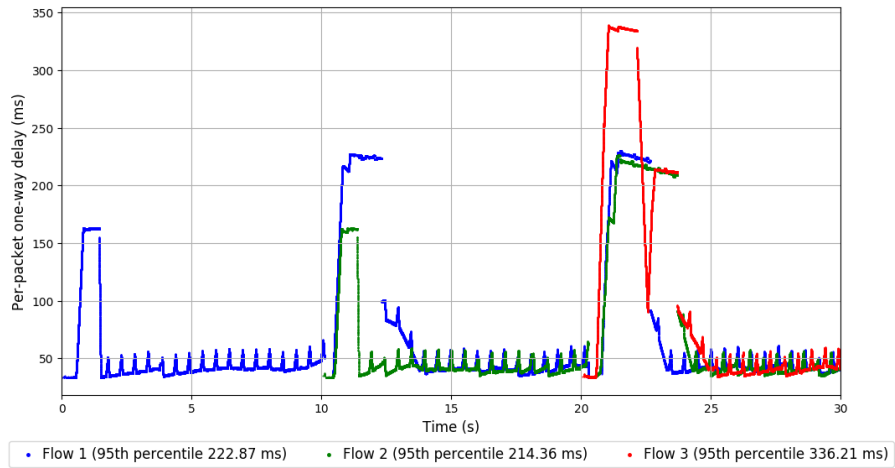
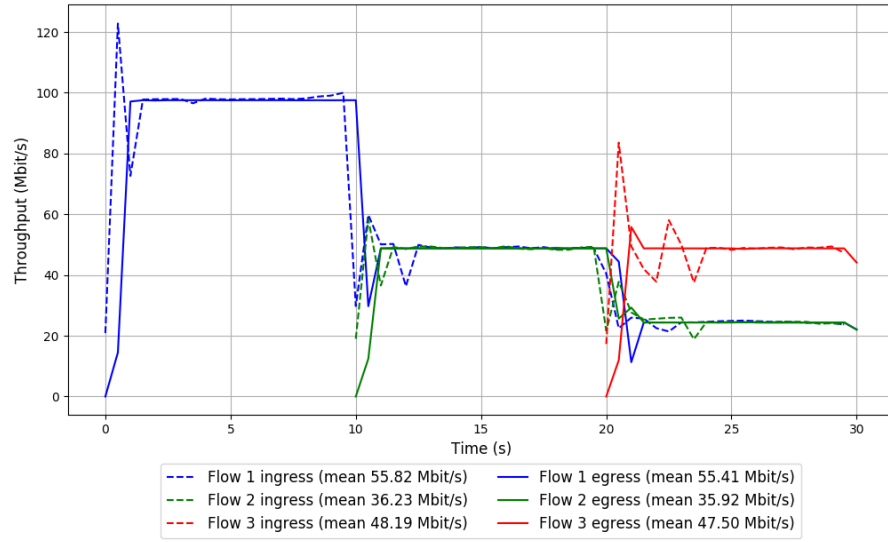
-- Flow 3:

Average throughput: 47.50 Mbit/s

95th percentile per-packet one-way delay: 336.215 ms

Loss rate: 2.07%

# Run 4: Report of TCP BBR — Data Link





Run 5: Statistics of TCP BBR

Start at: 2018-09-08 02:17:40

End at: 2018-09-08 02:18:10

Local clock offset: 0.544 ms

Remote clock offset: 1.151 ms

# Below is generated by plot.py at 2018-09-08 02:35:16

# Datalink statistics

-- Total of 3 flows:

Average throughput: 94.97 Mbit/s

95th percentile per-packet one-way delay: 216.040 ms

Loss rate: 0.98%

-- Flow 1:

Average throughput: 57.91 Mbit/s

95th percentile per-packet one-way delay: 163.198 ms

Loss rate: 0.63%

-- Flow 2:

Average throughput: 39.64 Mbit/s

95th percentile per-packet one-way delay: 161.298 ms

Loss rate: 0.95%

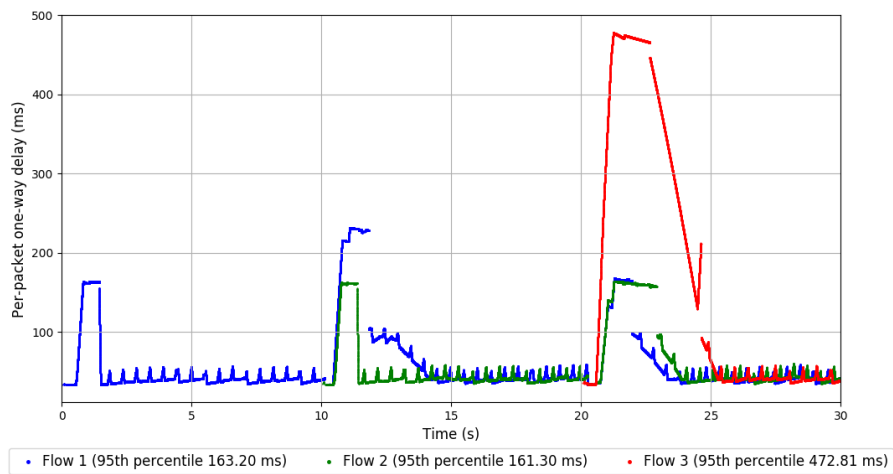
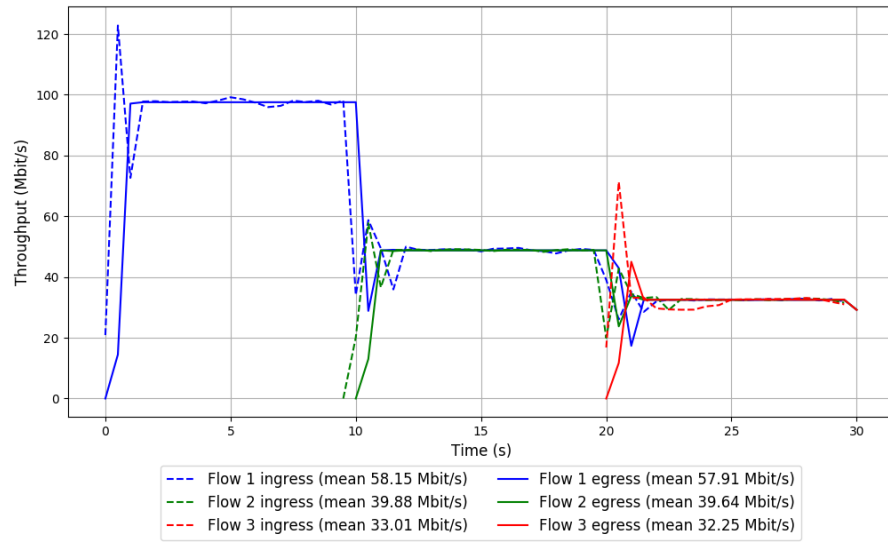
-- Flow 3:

Average throughput: 32.25 Mbit/s

95th percentile per-packet one-way delay: 472.815 ms

Loss rate: 2.93%

## Run 5: Report of TCP BBR — Data Link

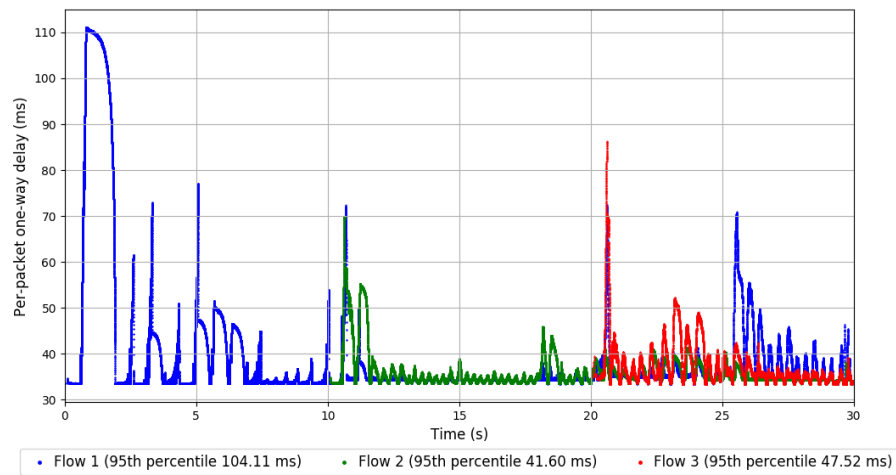
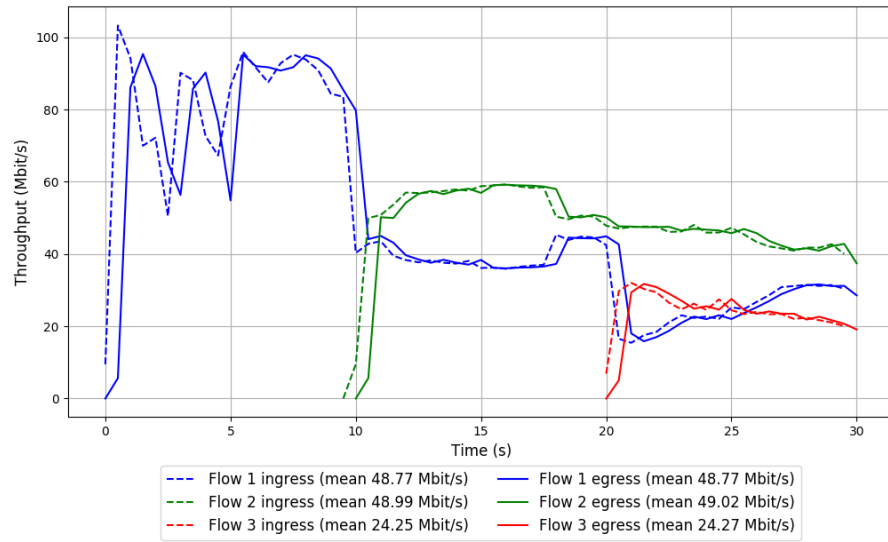


Run 1: Statistics of Copa

Start at: 2018-09-08 00:45:47  
End at: 2018-09-08 00:46:17  
Local clock offset: -2.9 ms  
Remote clock offset: -3.506 ms

# Below is generated by plot.py at 2018-09-08 02:36:13  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 89.44 Mbit/s  
95th percentile per-packet one-way delay: 60.410 ms  
Loss rate: 0.26%  
-- Flow 1:  
Average throughput: 48.77 Mbit/s  
95th percentile per-packet one-way delay: 104.111 ms  
Loss rate: 0.20%  
-- Flow 2:  
Average throughput: 49.02 Mbit/s  
95th percentile per-packet one-way delay: 41.605 ms  
Loss rate: 0.27%  
-- Flow 3:  
Average throughput: 24.27 Mbit/s  
95th percentile per-packet one-way delay: 47.522 ms  
Loss rate: 0.57%

## Run 1: Report of Copa — Data Link



Run 2: Statistics of Copa

Start at: 2018-09-08 01:11:00

End at: 2018-09-08 01:11:30

Local clock offset: 1.023 ms

Remote clock offset: -1.79 ms

# Below is generated by plot.py at 2018-09-08 02:36:13

# Datalink statistics

-- Total of 3 flows:

Average throughput: 81.27 Mbit/s

95th percentile per-packet one-way delay: 70.840 ms

Loss rate: 0.23%

-- Flow 1:

Average throughput: 49.89 Mbit/s

95th percentile per-packet one-way delay: 103.397 ms

Loss rate: 0.12%

-- Flow 2:

Average throughput: 37.74 Mbit/s

95th percentile per-packet one-way delay: 48.830 ms

Loss rate: 0.33%

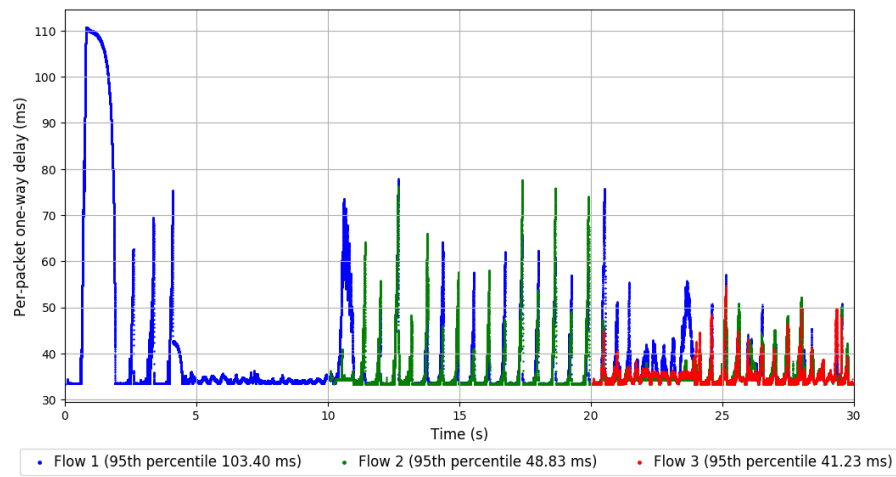
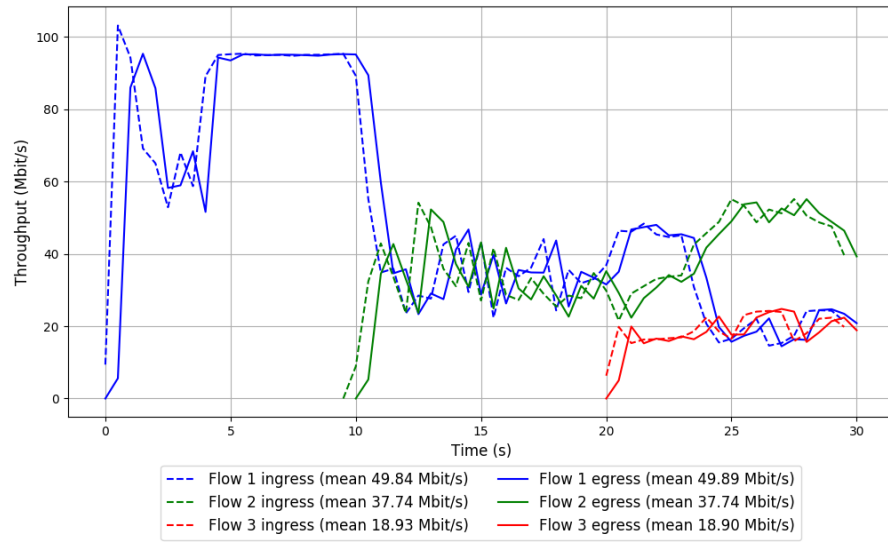
-- Flow 3:

Average throughput: 18.90 Mbit/s

95th percentile per-packet one-way delay: 41.230 ms

Loss rate: 0.74%

## Run 2: Report of Copa — Data Link

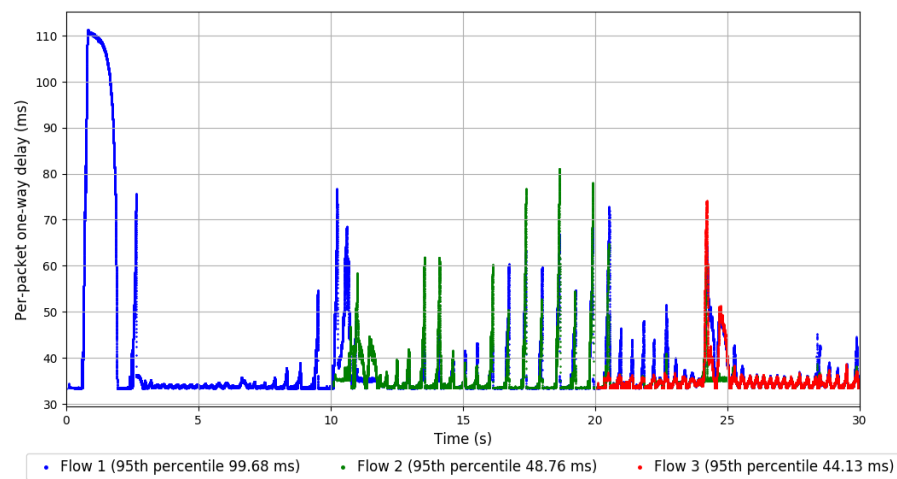
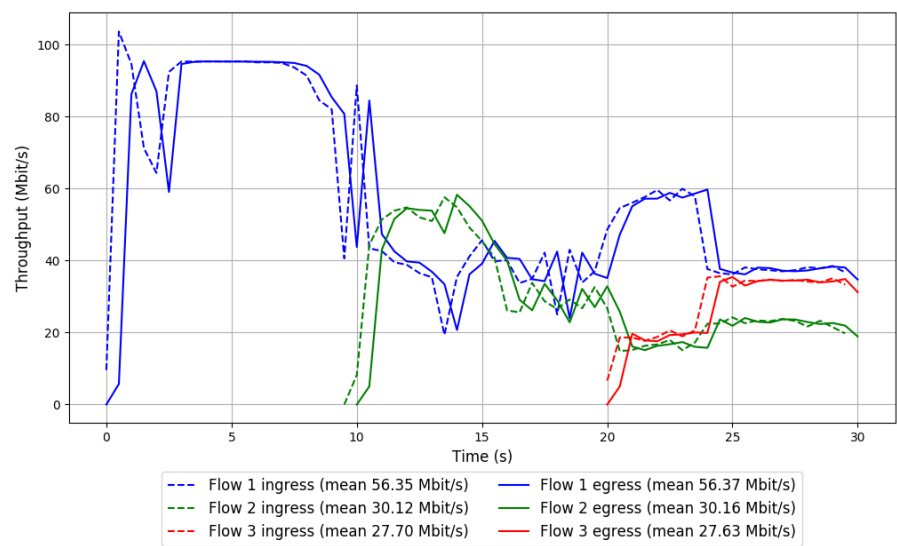


Run 3: Statistics of Copa

Start at: 2018-09-08 01:36:14  
End at: 2018-09-08 01:36:44  
Local clock offset: 0.759 ms  
Remote clock offset: -0.353 ms

# Below is generated by plot.py at 2018-09-08 02:36:13  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 85.60 Mbit/s  
95th percentile per-packet one-way delay: 67.280 ms  
Loss rate: 0.26%  
-- Flow 1:  
Average throughput: 56.37 Mbit/s  
95th percentile per-packet one-way delay: 99.683 ms  
Loss rate: 0.19%  
-- Flow 2:  
Average throughput: 30.16 Mbit/s  
95th percentile per-packet one-way delay: 48.755 ms  
Loss rate: 0.19%  
-- Flow 3:  
Average throughput: 27.63 Mbit/s  
95th percentile per-packet one-way delay: 44.129 ms  
Loss rate: 0.88%

Run 3: Report of Copa — Data Link





Run 4: Statistics of Copa

Start at: 2018-09-08 02:01:04

End at: 2018-09-08 02:01:34

Local clock offset: 0.663 ms

Remote clock offset: 0.644 ms

# Below is generated by plot.py at 2018-09-08 02:37:15

# Datalink statistics

-- Total of 3 flows:

Average throughput: 88.25 Mbit/s

95th percentile per-packet one-way delay: 76.492 ms

Loss rate: 0.15%

-- Flow 1:

Average throughput: 52.66 Mbit/s

95th percentile per-packet one-way delay: 103.168 ms

Loss rate: 0.14%

-- Flow 2:

Average throughput: 39.12 Mbit/s

95th percentile per-packet one-way delay: 59.471 ms

Loss rate: 0.12%

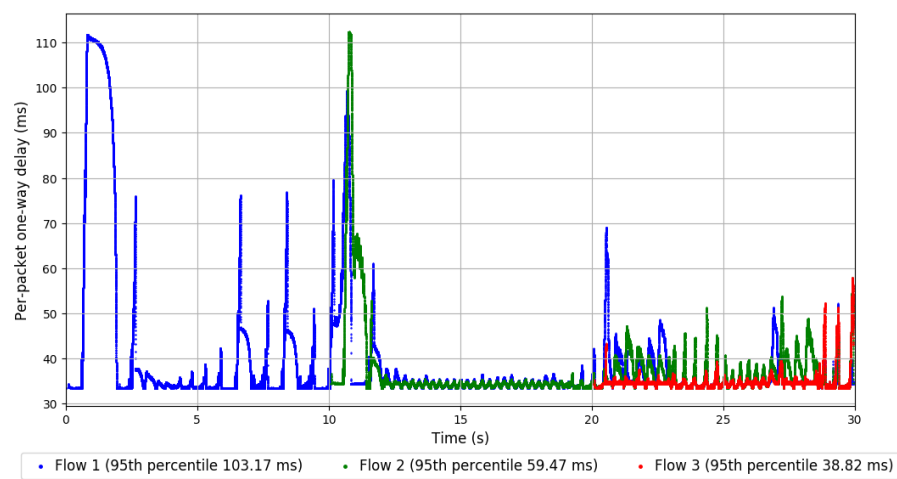
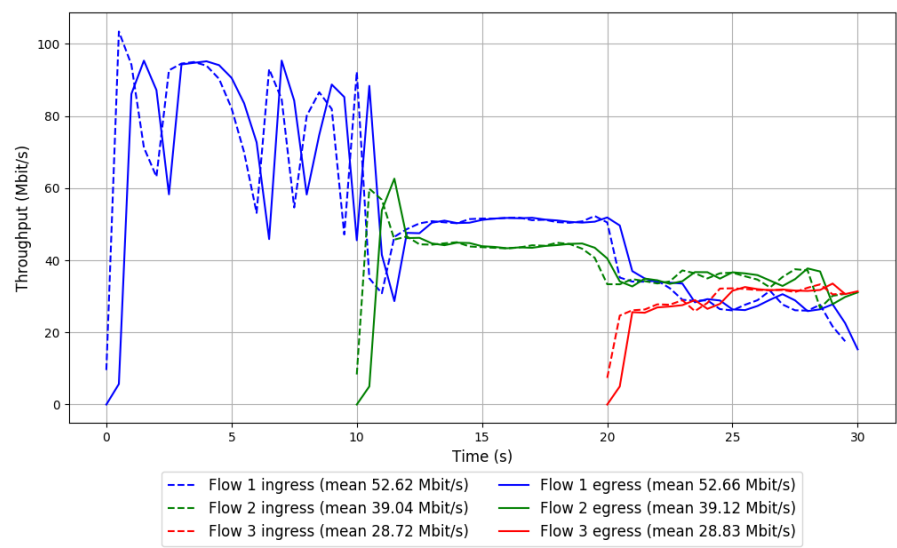
-- Flow 3:

Average throughput: 28.83 Mbit/s

95th percentile per-packet one-way delay: 38.818 ms

Loss rate: 0.28%

Run 4: Report of Copa — Data Link



Run 5: Statistics of Copa

Start at: 2018-09-08 02:25:53

End at: 2018-09-08 02:26:23

Local clock offset: 0.381 ms

Remote clock offset: 1.385 ms

# Below is generated by plot.py at 2018-09-08 02:37:21

# Datalink statistics

-- Total of 3 flows:

Average throughput: 88.96 Mbit/s

95th percentile per-packet one-way delay: 76.364 ms

Loss rate: 0.27%

-- Flow 1:

Average throughput: 48.66 Mbit/s

95th percentile per-packet one-way delay: 104.521 ms

Loss rate: 0.20%

-- Flow 2:

Average throughput: 46.05 Mbit/s

95th percentile per-packet one-way delay: 42.874 ms

Loss rate: 0.28%

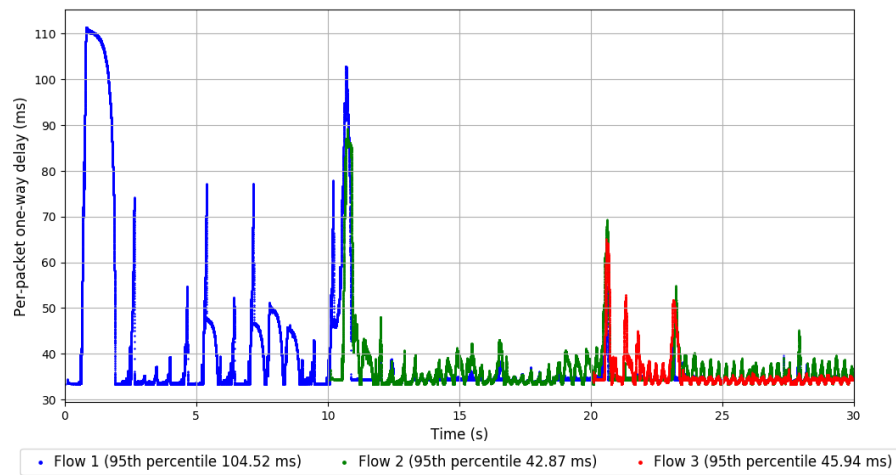
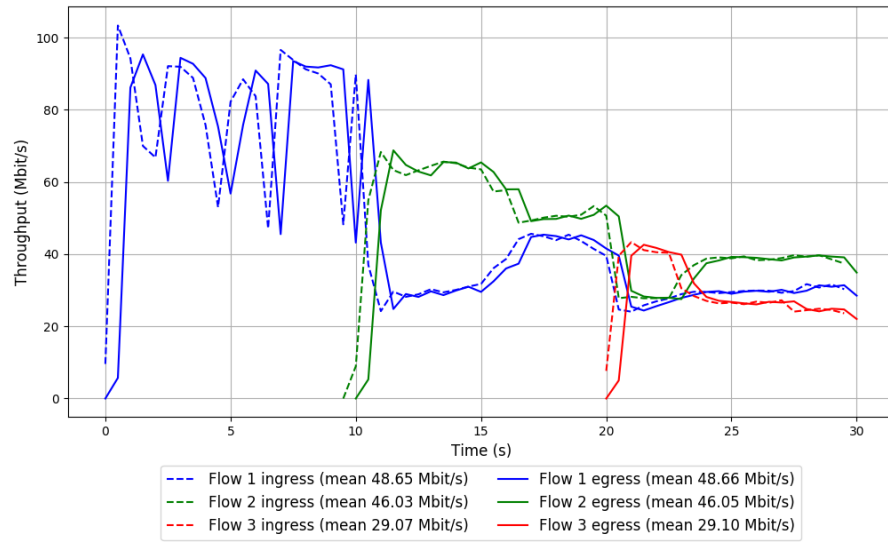
-- Flow 3:

Average throughput: 29.10 Mbit/s

95th percentile per-packet one-way delay: 45.938 ms

Loss rate: 0.55%

## Run 5: Report of Copa — Data Link

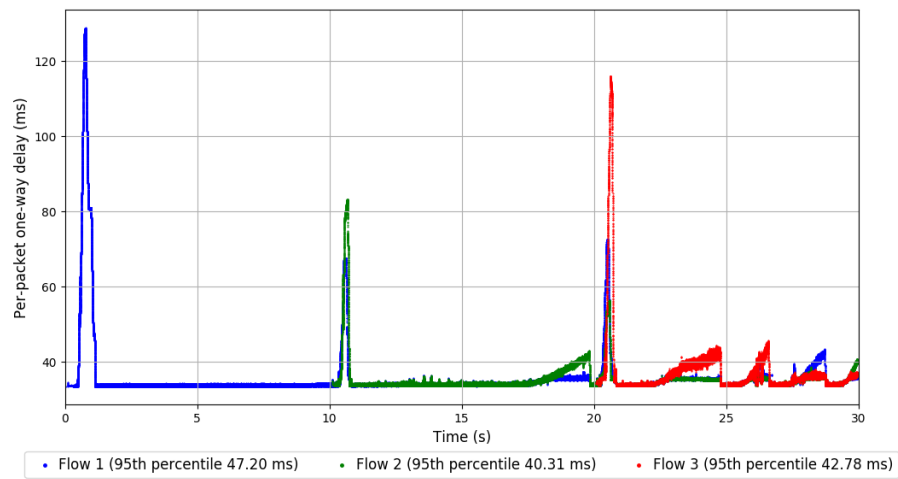
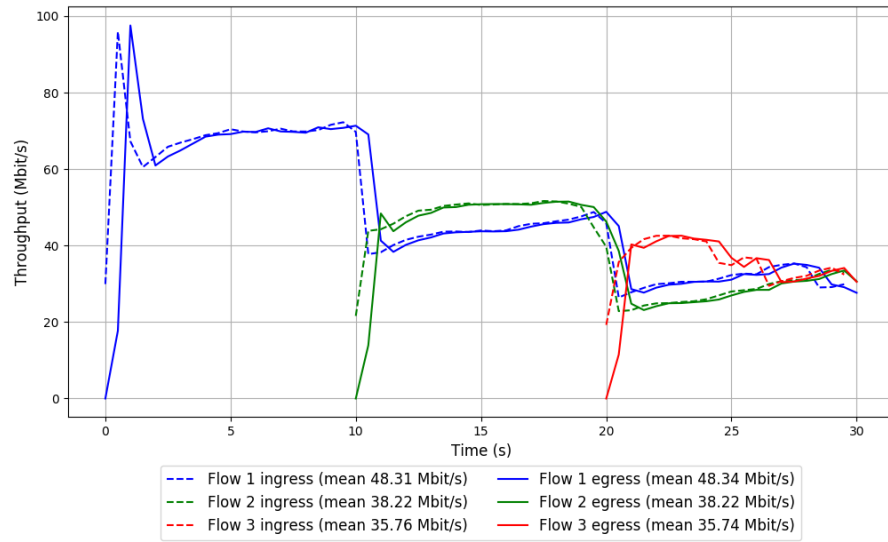


Run 1: Statistics of TCP Cubic

Start at: 2018-09-08 00:36:11  
End at: 2018-09-08 00:36:41  
Local clock offset: -2.988 ms  
Remote clock offset: -3.811 ms

# Below is generated by plot.py at 2018-09-08 02:37:21  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 85.61 Mbit/s  
95th percentile per-packet one-way delay: 42.183 ms  
Loss rate: 0.28%  
-- Flow 1:  
Average throughput: 48.34 Mbit/s  
95th percentile per-packet one-way delay: 47.197 ms  
Loss rate: 0.16%  
-- Flow 2:  
Average throughput: 38.22 Mbit/s  
95th percentile per-packet one-way delay: 40.308 ms  
Loss rate: 0.32%  
-- Flow 3:  
Average throughput: 35.74 Mbit/s  
95th percentile per-packet one-way delay: 42.777 ms  
Loss rate: 0.71%

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

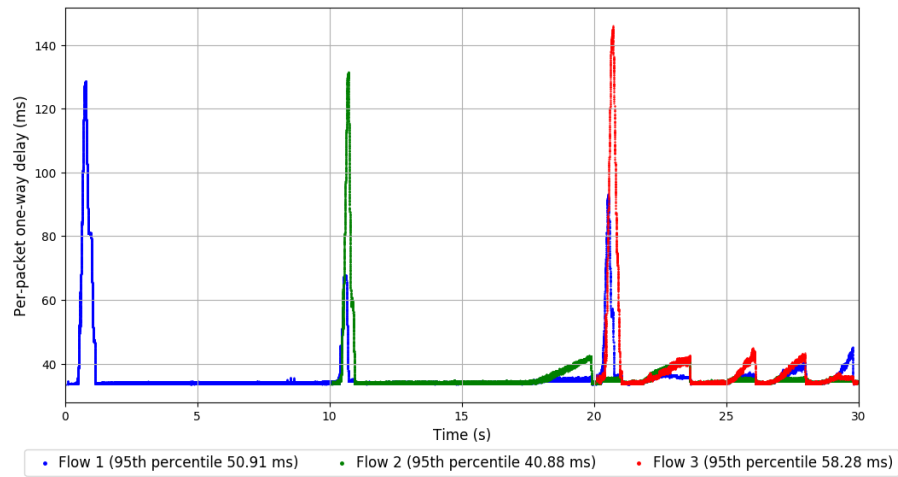
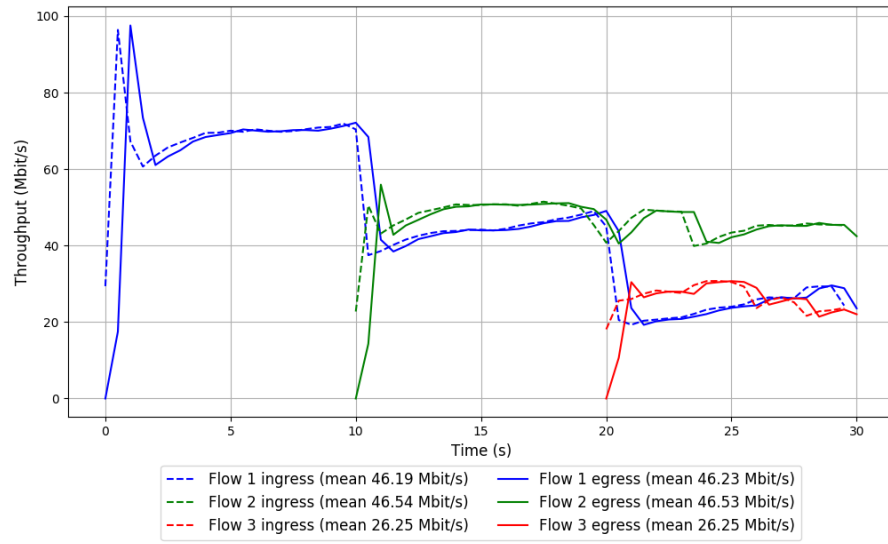


Run 2: Statistics of TCP Cubic

Start at: 2018-09-08 01:01:25  
End at: 2018-09-08 01:01:55  
Local clock offset: 0.232 ms  
Remote clock offset: -2.555 ms

# Below is generated by plot.py at 2018-09-08 02:37:21  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 85.90 Mbit/s  
95th percentile per-packet one-way delay: 43.227 ms  
Loss rate: 0.26%  
-- Flow 1:  
Average throughput: 46.23 Mbit/s  
95th percentile per-packet one-way delay: 50.915 ms  
Loss rate: 0.13%  
-- Flow 2:  
Average throughput: 46.53 Mbit/s  
95th percentile per-packet one-way delay: 40.879 ms  
Loss rate: 0.34%  
-- Flow 3:  
Average throughput: 26.25 Mbit/s  
95th percentile per-packet one-way delay: 58.277 ms  
Loss rate: 0.66%

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



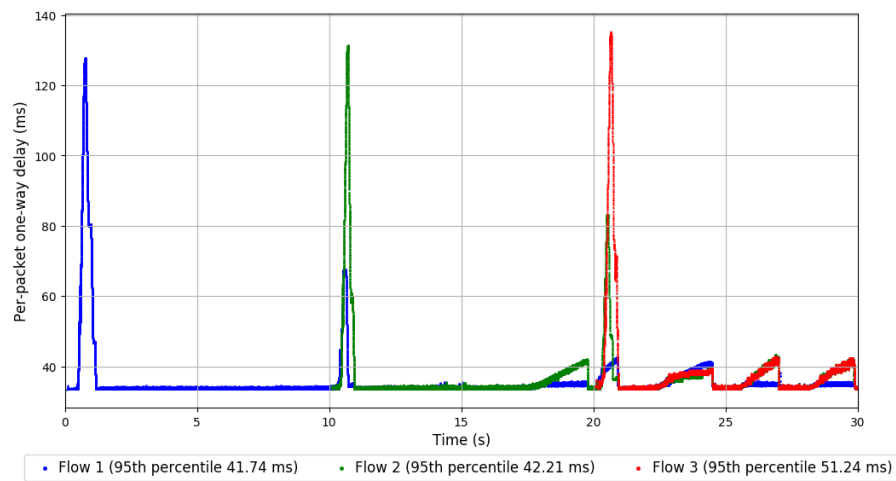
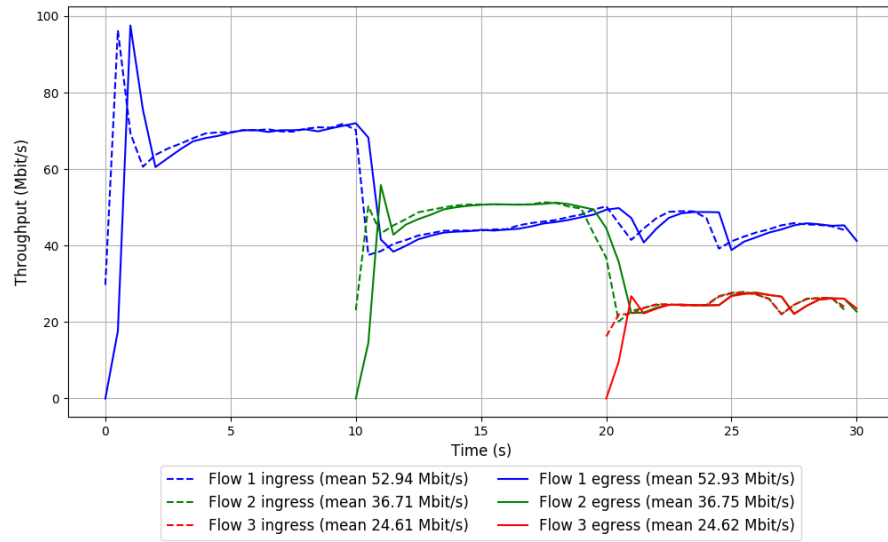


Run 3: Statistics of TCP Cubic

Start at: 2018-09-08 01:26:21  
End at: 2018-09-08 01:26:51  
Local clock offset: 0.765 ms  
Remote clock offset: -0.932 ms

# Below is generated by plot.py at 2018-09-08 02:37:21  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 85.55 Mbit/s  
95th percentile per-packet one-way delay: 42.155 ms  
Loss rate: 0.25%  
-- Flow 1:  
Average throughput: 52.93 Mbit/s  
95th percentile per-packet one-way delay: 41.741 ms  
Loss rate: 0.22%  
-- Flow 2:  
Average throughput: 36.75 Mbit/s  
95th percentile per-packet one-way delay: 42.213 ms  
Loss rate: 0.21%  
-- Flow 3:  
Average throughput: 24.62 Mbit/s  
95th percentile per-packet one-way delay: 51.236 ms  
Loss rate: 0.59%

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



Run 4: Statistics of TCP Cubic

Start at: 2018-09-08 01:51:28

End at: 2018-09-08 01:51:58

Local clock offset: 0.587 ms

Remote clock offset: 0.032 ms

# Below is generated by plot.py at 2018-09-08 02:37:21

# Datalink statistics

-- Total of 3 flows:

Average throughput: 83.36 Mbit/s

95th percentile per-packet one-way delay: 43.998 ms

Loss rate: 0.29%

-- Flow 1:

Average throughput: 48.43 Mbit/s

95th percentile per-packet one-way delay: 47.339 ms

Loss rate: 0.16%

-- Flow 2:

Average throughput: 34.89 Mbit/s

95th percentile per-packet one-way delay: 42.976 ms

Loss rate: 0.36%

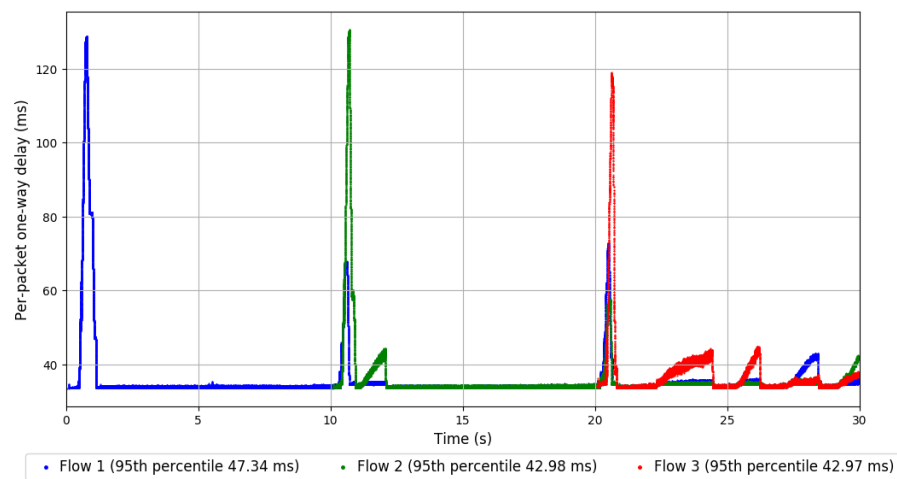
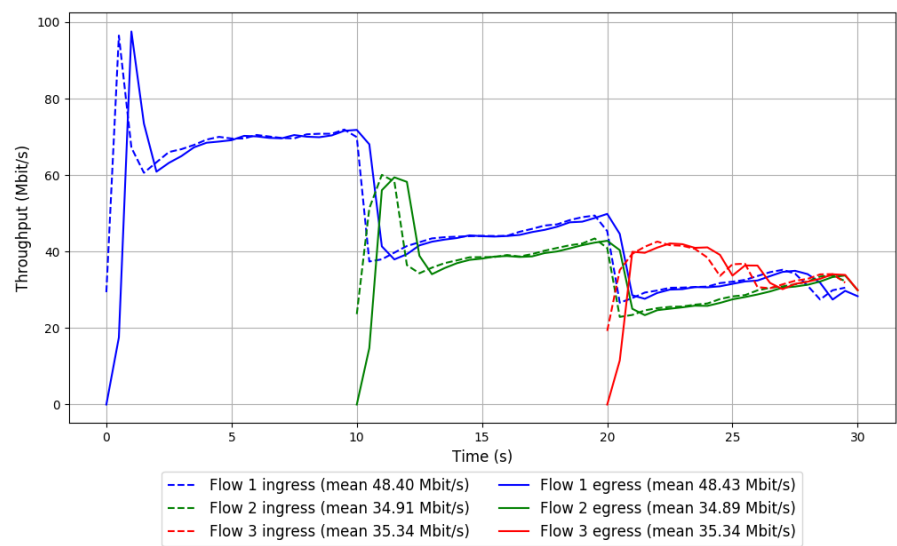
-- Flow 3:

Average throughput: 35.34 Mbit/s

95th percentile per-packet one-way delay: 42.972 ms

Loss rate: 0.66%

Run 4: Report of TCP Cubic — Data Link



Run 5: Statistics of TCP Cubic

Start at: 2018-09-08 02:16:17

End at: 2018-09-08 02:16:47

Local clock offset: 0.589 ms

Remote clock offset: 1.1 ms

# Below is generated by plot.py at 2018-09-08 02:37:21

# Datalink statistics

-- Total of 3 flows:

Average throughput: 93.82 Mbit/s

95th percentile per-packet one-way delay: 40.956 ms

Loss rate: 0.24%

-- Flow 1:

Average throughput: 54.17 Mbit/s

95th percentile per-packet one-way delay: 40.237 ms

Loss rate: 0.11%

-- Flow 2:

Average throughput: 46.51 Mbit/s

95th percentile per-packet one-way delay: 40.317 ms

Loss rate: 0.34%

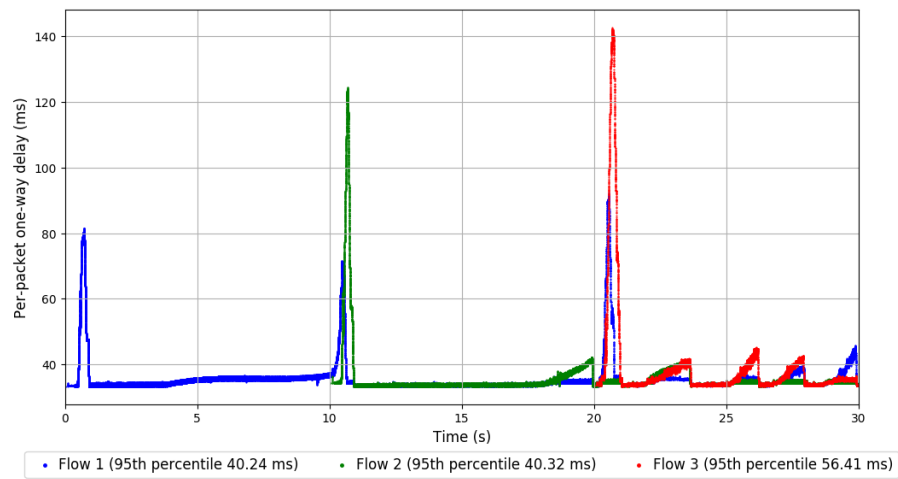
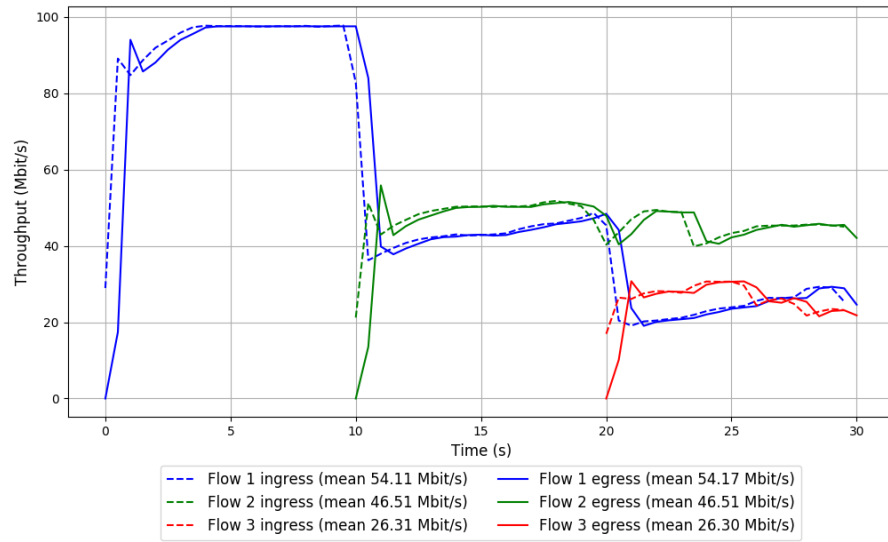
-- Flow 3:

Average throughput: 26.30 Mbit/s

95th percentile per-packet one-way delay: 56.412 ms

Loss rate: 0.66%

# Run 5: Report of TCP Cubic — Data Link

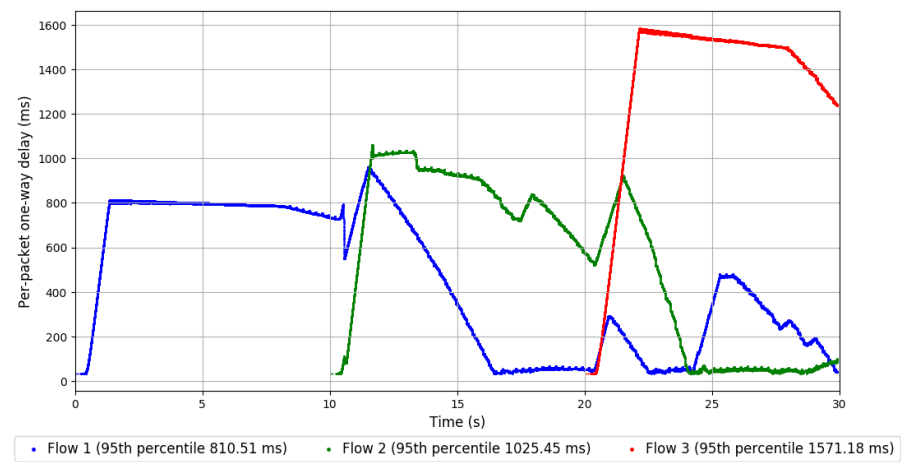
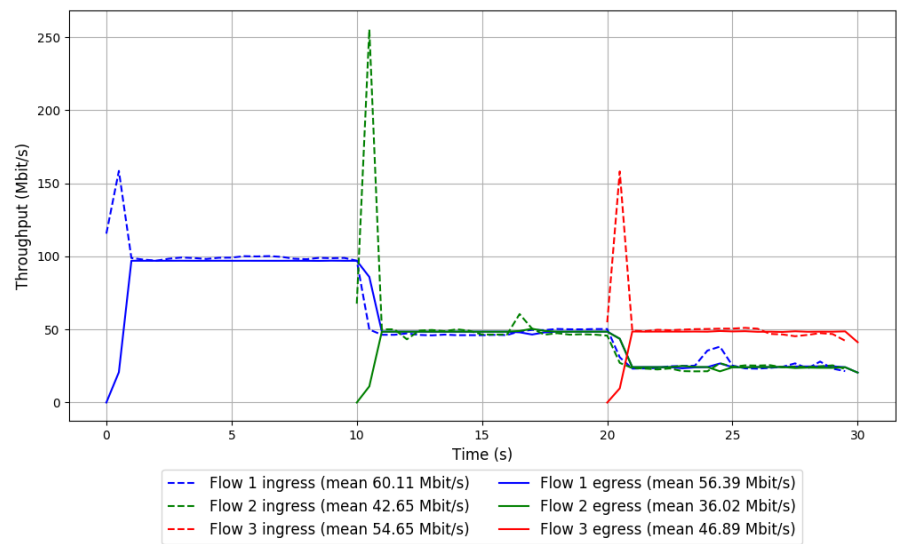


Run 1: Statistics of FillP

Start at: 2018-09-08 00:50:02  
End at: 2018-09-08 00:50:32  
Local clock offset: -1.482 ms  
Remote clock offset: -2.993 ms

# Below is generated by plot.py at 2018-09-08 02:37:39  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 95.81 Mbit/s  
95th percentile per-packet one-way delay: 1534.967 ms  
Loss rate: 10.32%  
-- Flow 1:  
Average throughput: 56.39 Mbit/s  
95th percentile per-packet one-way delay: 810.506 ms  
Loss rate: 6.39%  
-- Flow 2:  
Average throughput: 36.02 Mbit/s  
95th percentile per-packet one-way delay: 1025.451 ms  
Loss rate: 15.83%  
-- Flow 3:  
Average throughput: 46.89 Mbit/s  
95th percentile per-packet one-way delay: 1571.182 ms  
Loss rate: 14.75%

Run 1: Report of FillP — Data Link



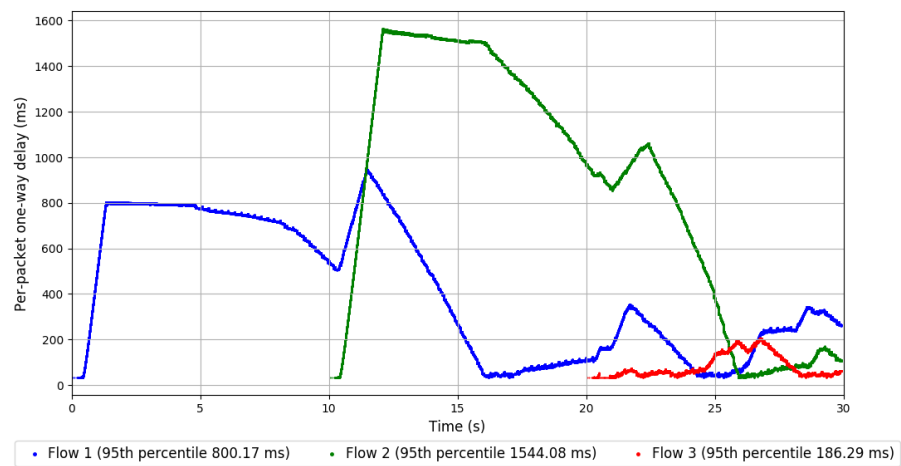
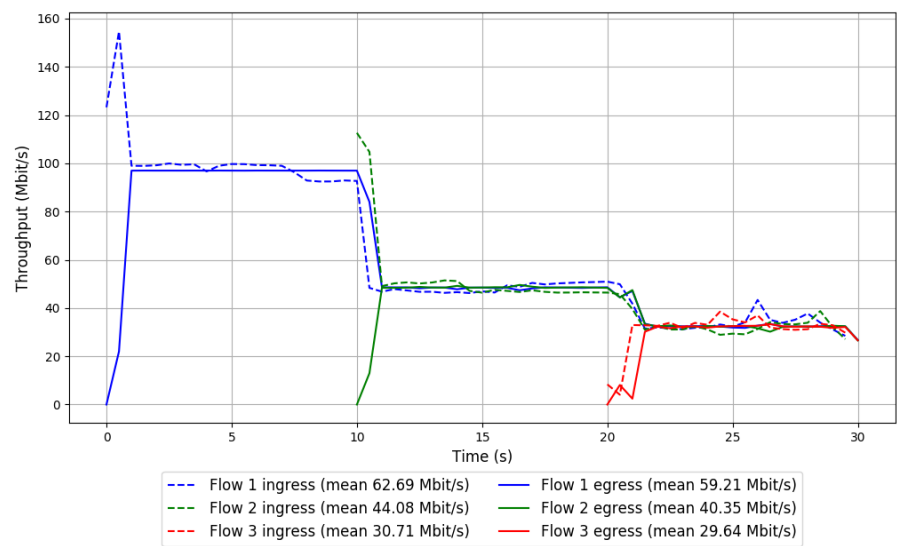


Run 2: Statistics of FillP

Start at: 2018-09-08 01:15:05  
End at: 2018-09-08 01:15:35  
Local clock offset: 1.255 ms  
Remote clock offset: -1.681 ms

# Below is generated by plot.py at 2018-09-08 02:37:43  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 95.83 Mbit/s  
95th percentile per-packet one-way delay: 1511.193 ms  
Loss rate: 6.45%  
-- Flow 1:  
Average throughput: 59.21 Mbit/s  
95th percentile per-packet one-way delay: 800.175 ms  
Loss rate: 5.75%  
-- Flow 2:  
Average throughput: 40.35 Mbit/s  
95th percentile per-packet one-way delay: 1544.075 ms  
Loss rate: 8.76%  
-- Flow 3:  
Average throughput: 29.64 Mbit/s  
95th percentile per-packet one-way delay: 186.292 ms  
Loss rate: 4.12%

Run 2: Report of FillP — Data Link

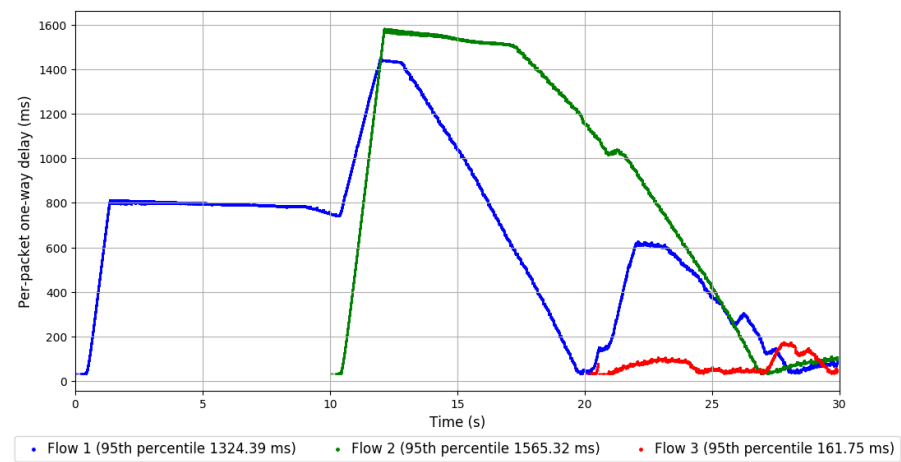
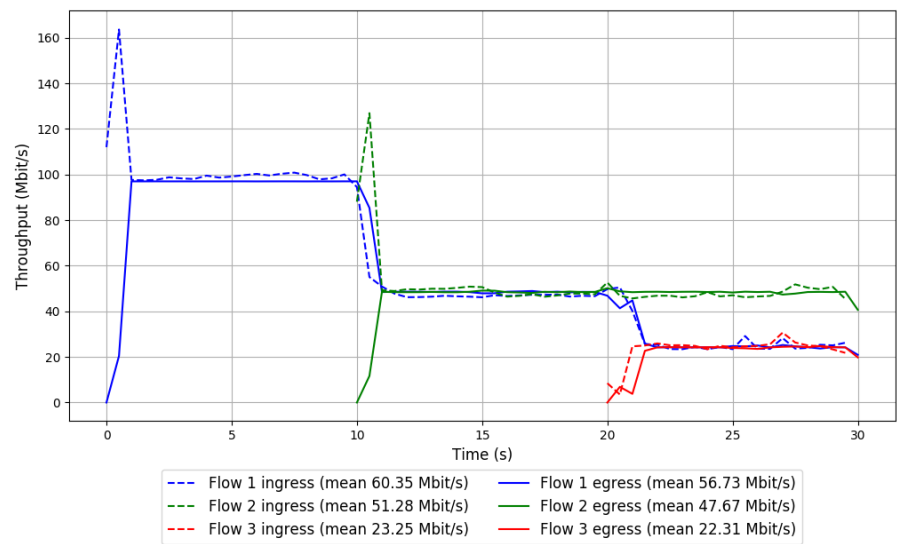


Run 3: Statistics of FillP

Start at: 2018-09-08 01:40:20  
End at: 2018-09-08 01:40:50  
Local clock offset: 0.772 ms  
Remote clock offset: -0.178 ms

# Below is generated by plot.py at 2018-09-08 02:37:44  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 95.80 Mbit/s  
95th percentile per-packet one-way delay: 1536.406 ms  
Loss rate: 6.46%  
-- Flow 1:  
Average throughput: 56.73 Mbit/s  
95th percentile per-packet one-way delay: 1324.393 ms  
Loss rate: 6.19%  
-- Flow 2:  
Average throughput: 47.67 Mbit/s  
95th percentile per-packet one-way delay: 1565.320 ms  
Loss rate: 7.33%  
-- Flow 3:  
Average throughput: 22.31 Mbit/s  
95th percentile per-packet one-way delay: 161.755 ms  
Loss rate: 4.68%

Run 3: Report of FillP — Data Link



Run 4: Statistics of FillP

Start at: 2018-09-08 02:05:10

End at: 2018-09-08 02:05:40

Local clock offset: 0.668 ms

Remote clock offset: 0.795 ms

# Below is generated by plot.py at 2018-09-08 02:37:44

# Datalink statistics

-- Total of 3 flows:

Average throughput: 94.22 Mbit/s

95th percentile per-packet one-way delay: 1539.727 ms

Loss rate: 6.60%

-- Flow 1:

Average throughput: 57.58 Mbit/s

95th percentile per-packet one-way delay: 1336.586 ms

Loss rate: 5.79%

-- Flow 2:

Average throughput: 40.32 Mbit/s

95th percentile per-packet one-way delay: 1565.544 ms

Loss rate: 8.98%

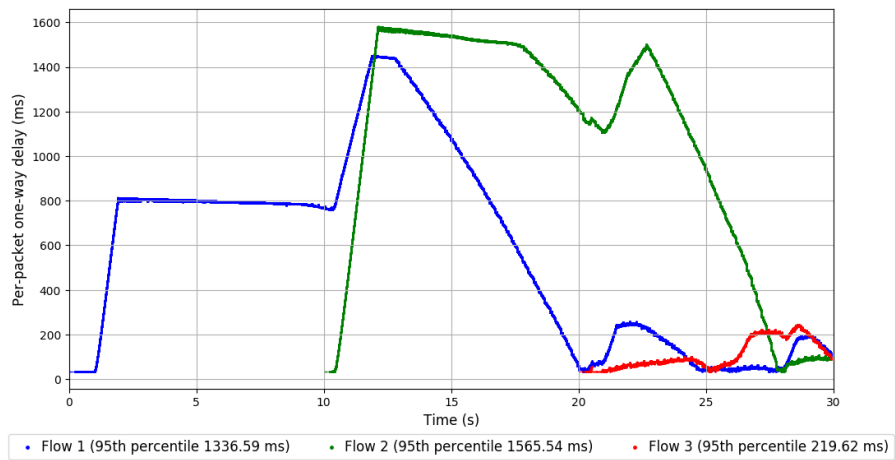
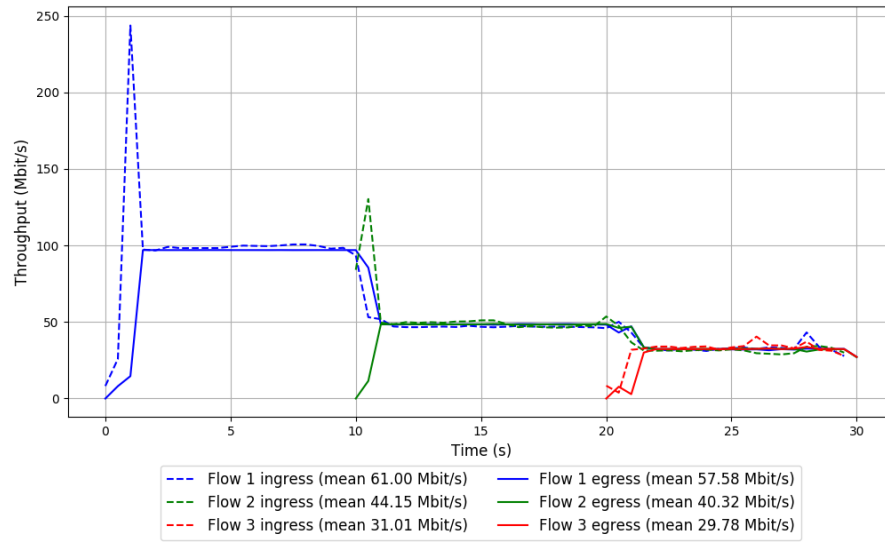
-- Flow 3:

Average throughput: 29.78 Mbit/s

95th percentile per-packet one-way delay: 219.625 ms

Loss rate: 4.59%

# Run 4: Report of FillP — Data Link



Run 5: Statistics of FillP

Start at: 2018-09-08 02:30:06

End at: 2018-09-08 02:30:36

Local clock offset: 0.423 ms

Remote clock offset: 1.613 ms

# Below is generated by plot.py at 2018-09-08 02:38:26

# Datalink statistics

-- Total of 3 flows:

Average throughput: 95.82 Mbit/s

95th percentile per-packet one-way delay: 1523.341 ms

Loss rate: 10.41%

-- Flow 1:

Average throughput: 56.37 Mbit/s

95th percentile per-packet one-way delay: 808.362 ms

Loss rate: 6.61%

-- Flow 2:

Average throughput: 36.04 Mbit/s

95th percentile per-packet one-way delay: 1026.130 ms

Loss rate: 15.90%

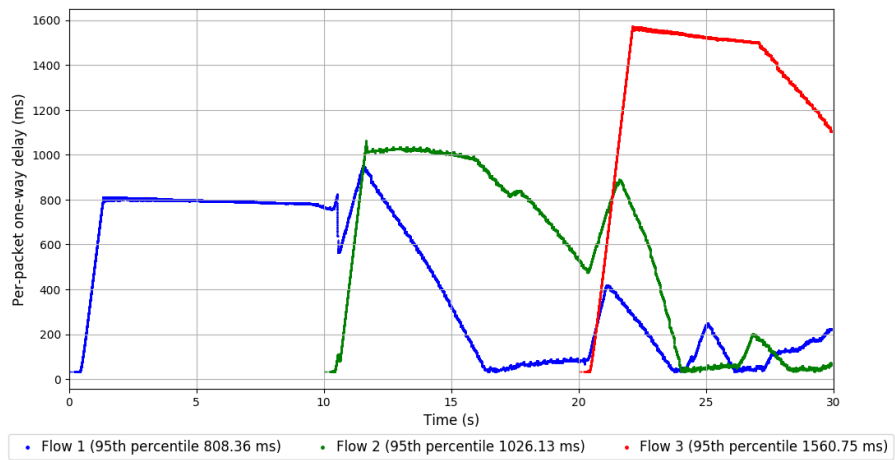
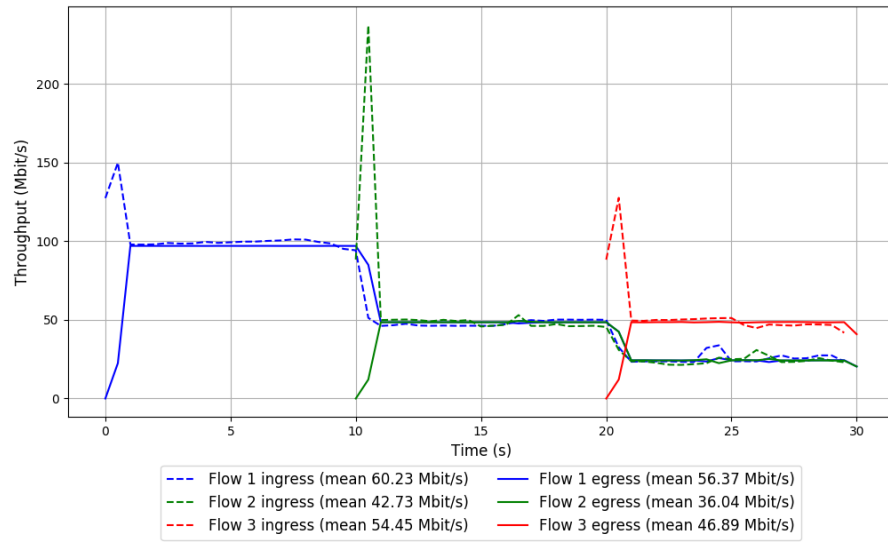
-- Flow 3:

Average throughput: 46.89 Mbit/s

95th percentile per-packet one-way delay: 1560.752 ms

Loss rate: 14.44%

# Run 5: Report of FillP — Data Link



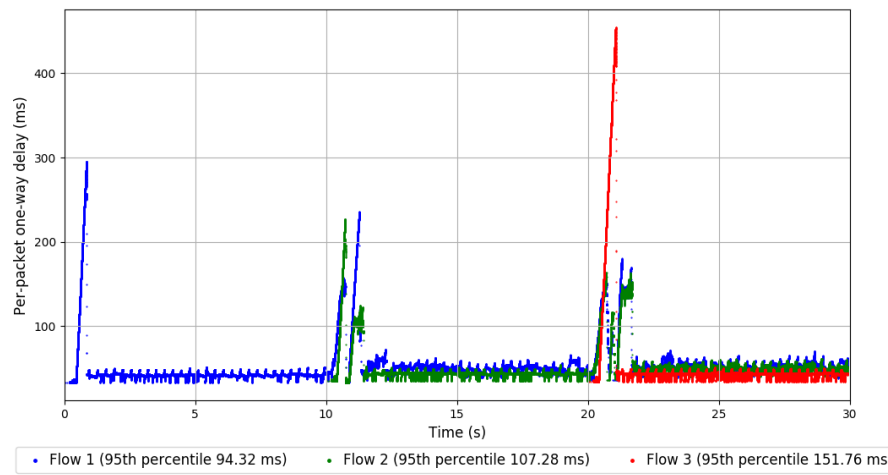
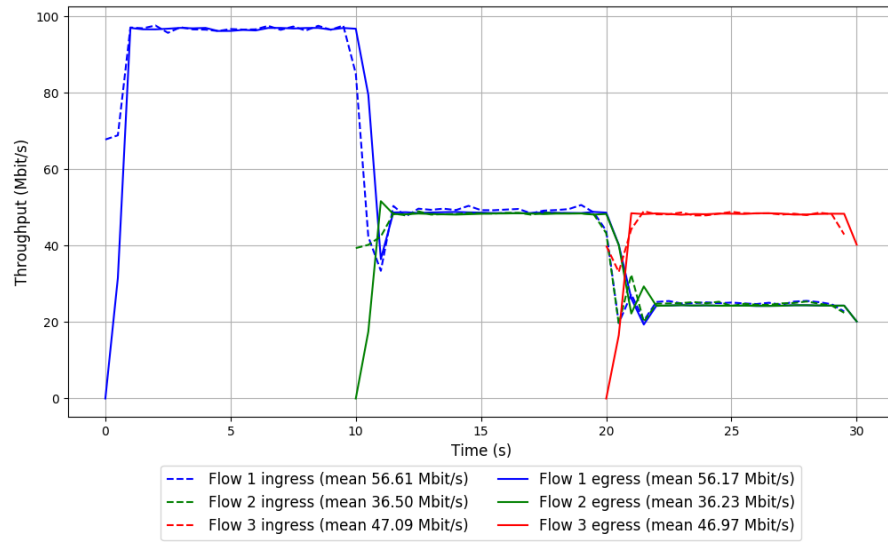


Run 1: Statistics of FillP-Sheep

Start at: 2018-09-08 00:47:22  
End at: 2018-09-08 00:47:52  
Local clock offset: -2.24 ms  
Remote clock offset: -3.209 ms

# Below is generated by plot.py at 2018-09-08 02:38:36  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 95.77 Mbit/s  
95th percentile per-packet one-way delay: 105.923 ms  
Loss rate: 0.99%  
-- Flow 1:  
Average throughput: 56.17 Mbit/s  
95th percentile per-packet one-way delay: 94.316 ms  
Loss rate: 1.01%  
-- Flow 2:  
Average throughput: 36.23 Mbit/s  
95th percentile per-packet one-way delay: 107.279 ms  
Loss rate: 1.04%  
-- Flow 3:  
Average throughput: 46.97 Mbit/s  
95th percentile per-packet one-way delay: 151.760 ms  
Loss rate: 0.82%

## Run 1: Report of FillP-Sheep — Data Link

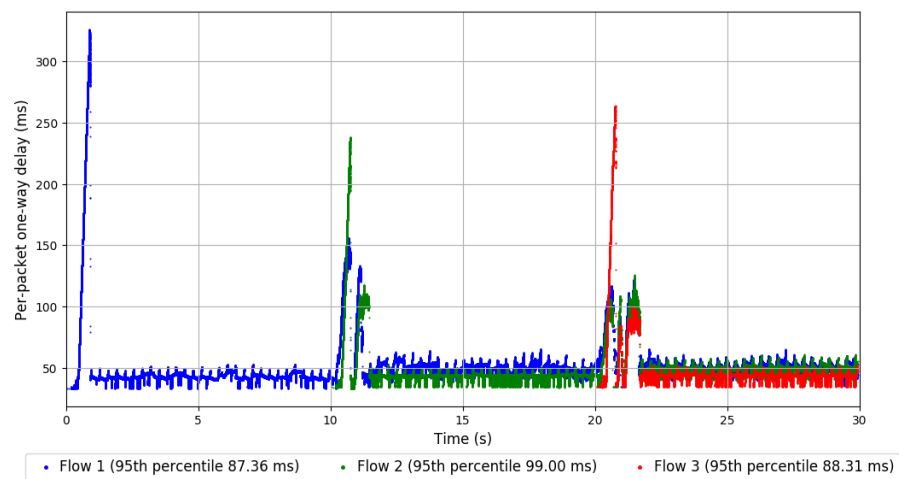
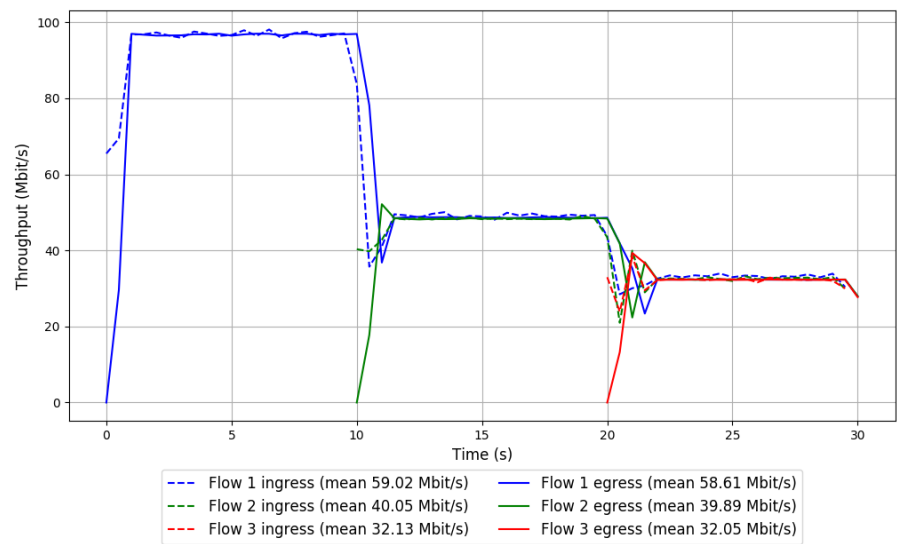


Run 2: Statistics of FillP-Sheep

Start at: 2018-09-08 01:12:25  
End at: 2018-09-08 01:12:55  
Local clock offset: 1.006 ms  
Remote clock offset: -1.783 ms

# Below is generated by plot.py at 2018-09-08 02:38:42  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 95.74 Mbit/s  
95th percentile per-packet one-way delay: 93.837 ms  
Loss rate: 0.85%  
-- Flow 1:  
Average throughput: 58.61 Mbit/s  
95th percentile per-packet one-way delay: 87.358 ms  
Loss rate: 0.90%  
-- Flow 2:  
Average throughput: 39.89 Mbit/s  
95th percentile per-packet one-way delay: 99.000 ms  
Loss rate: 0.72%  
-- Flow 3:  
Average throughput: 32.05 Mbit/s  
95th percentile per-packet one-way delay: 88.312 ms  
Loss rate: 0.89%

Run 2: Report of FillP-Sheep — Data Link

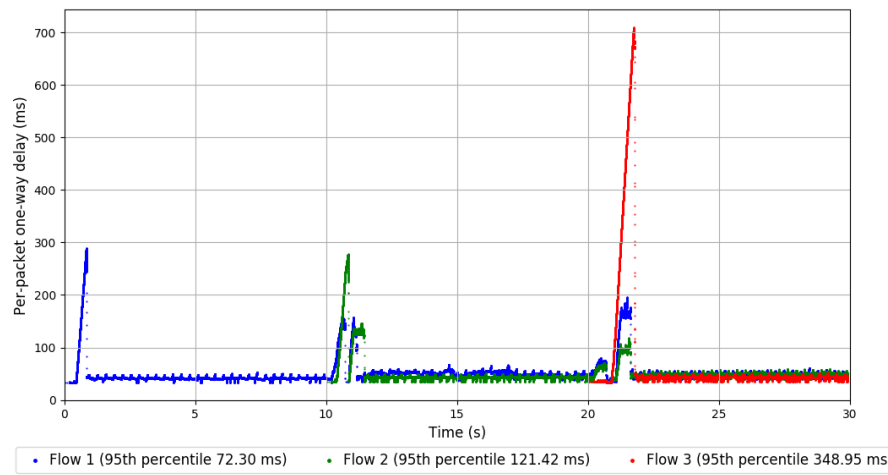
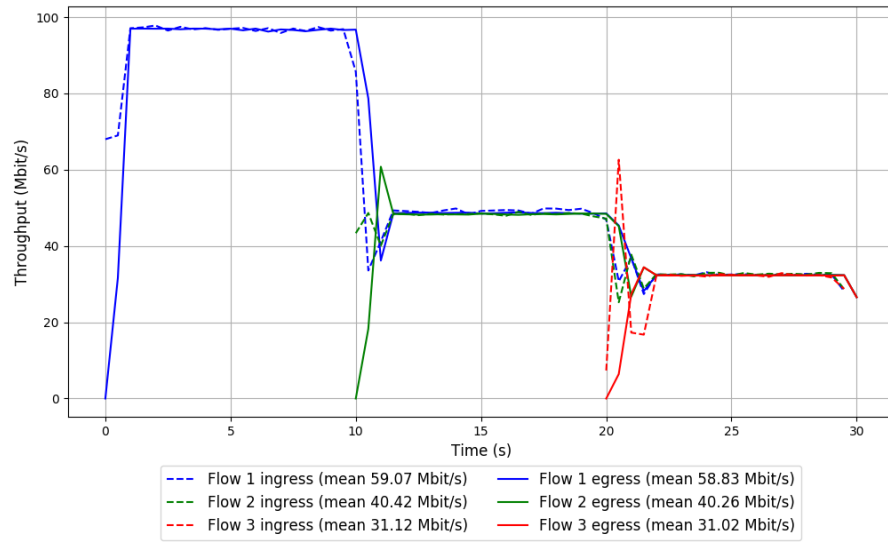


Run 3: Statistics of FillP-Sheep

Start at: 2018-09-08 01:37:39  
End at: 2018-09-08 01:38:09  
Local clock offset: 0.677 ms  
Remote clock offset: -0.253 ms

# Below is generated by plot.py at 2018-09-08 02:38:44  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 95.83 Mbit/s  
95th percentile per-packet one-way delay: 100.862 ms  
Loss rate: 0.67%  
-- Flow 1:  
Average throughput: 58.83 Mbit/s  
95th percentile per-packet one-way delay: 72.303 ms  
Loss rate: 0.60%  
-- Flow 2:  
Average throughput: 40.26 Mbit/s  
95th percentile per-packet one-way delay: 121.418 ms  
Loss rate: 0.73%  
-- Flow 3:  
Average throughput: 31.02 Mbit/s  
95th percentile per-packet one-way delay: 348.950 ms  
Loss rate: 0.90%

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



Run 4: Statistics of FillP-Sheep

Start at: 2018-09-08 02:02:30

End at: 2018-09-08 02:03:00

Local clock offset: 0.662 ms

Remote clock offset: 0.751 ms

# Below is generated by plot.py at 2018-09-08 02:39:04

# Datalink statistics

-- Total of 3 flows:

Average throughput: 95.74 Mbit/s

95th percentile per-packet one-way delay: 95.176 ms

Loss rate: 0.95%

-- Flow 1:

Average throughput: 58.69 Mbit/s

95th percentile per-packet one-way delay: 99.670 ms

Loss rate: 1.07%

-- Flow 2:

Average throughput: 39.74 Mbit/s

95th percentile per-packet one-way delay: 81.757 ms

Loss rate: 0.68%

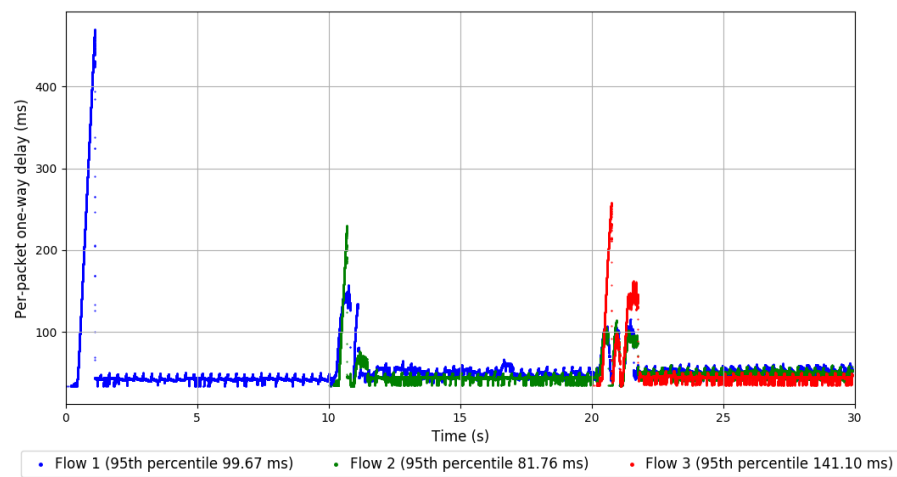
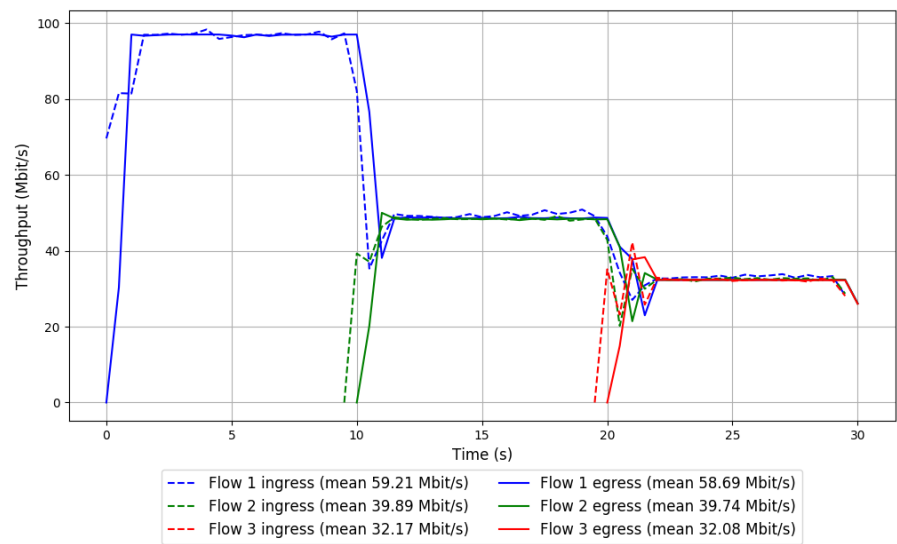
-- Flow 3:

Average throughput: 32.08 Mbit/s

95th percentile per-packet one-way delay: 141.097 ms

Loss rate: 0.92%

Run 4: Report of FillP-Sheep — Data Link





Run 5: Statistics of FillP-Sheep

Start at: 2018-09-08 02:27:19

End at: 2018-09-08 02:27:49

Local clock offset: 0.461 ms

Remote clock offset: 1.477 ms

# Below is generated by plot.py at 2018-09-08 02:39:08

# Datalink statistics

-- Total of 3 flows:

Average throughput: 95.87 Mbit/s

95th percentile per-packet one-way delay: 104.971 ms

Loss rate: 0.76%

-- Flow 1:

Average throughput: 56.14 Mbit/s

95th percentile per-packet one-way delay: 90.033 ms

Loss rate: 0.71%

-- Flow 2:

Average throughput: 47.55 Mbit/s

95th percentile per-packet one-way delay: 97.224 ms

Loss rate: 0.78%

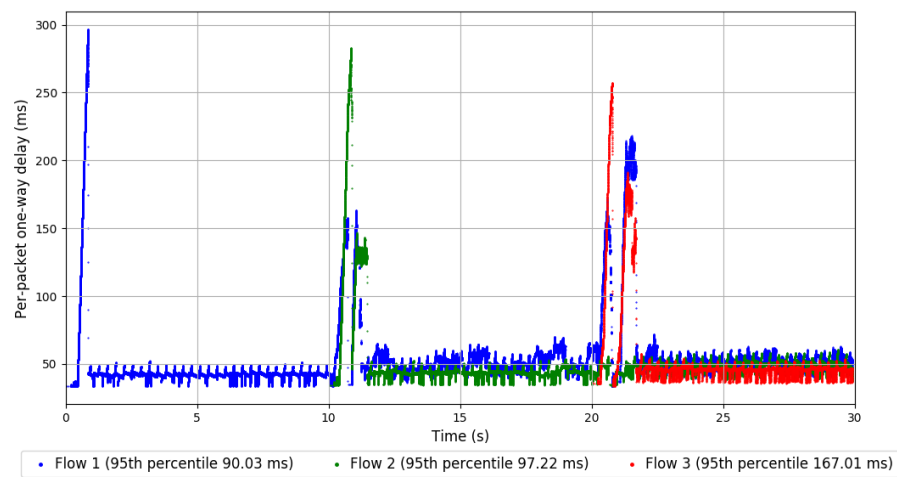
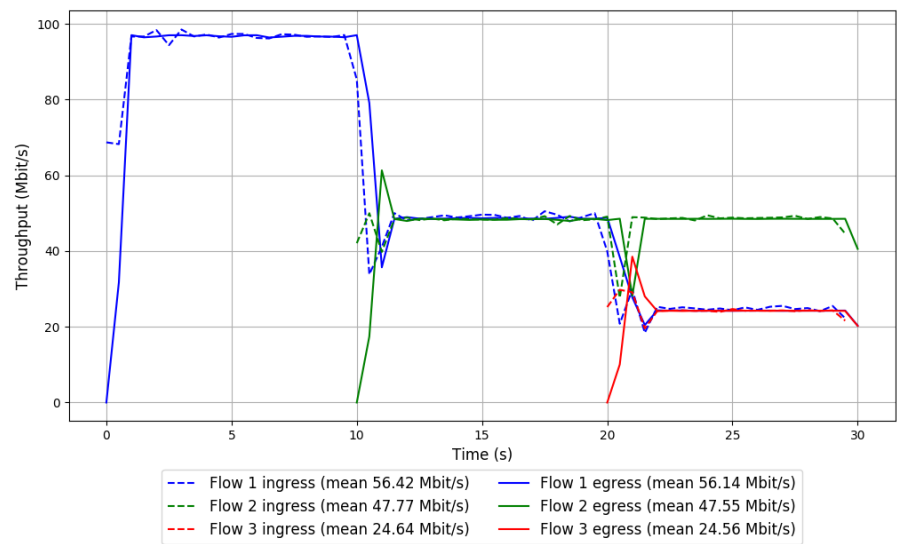
-- Flow 3:

Average throughput: 24.56 Mbit/s

95th percentile per-packet one-way delay: 167.014 ms

Loss rate: 0.98%

Run 5: Report of FillP-Sheep — Data Link

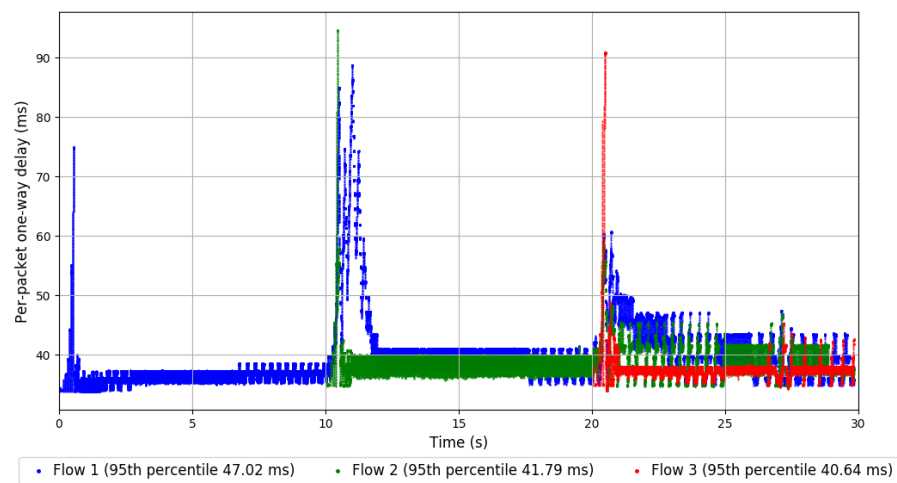
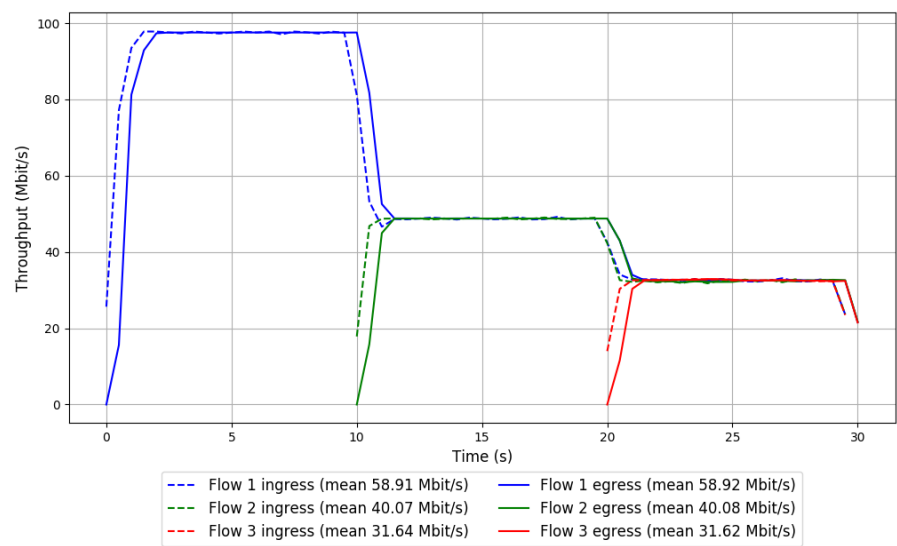


Run 1: Statistics of Indigo

Start at: 2018-09-08 00:41:42  
End at: 2018-09-08 00:42:12  
Local clock offset: -3.056 ms  
Remote clock offset: -3.667 ms

# Below is generated by plot.py at 2018-09-08 02:39:08  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 95.90 Mbit/s  
95th percentile per-packet one-way delay: 45.253 ms  
Loss rate: 0.27%  
-- Flow 1:  
Average throughput: 58.92 Mbit/s  
95th percentile per-packet one-way delay: 47.020 ms  
Loss rate: 0.19%  
-- Flow 2:  
Average throughput: 40.08 Mbit/s  
95th percentile per-packet one-way delay: 41.786 ms  
Loss rate: 0.28%  
-- Flow 3:  
Average throughput: 31.62 Mbit/s  
95th percentile per-packet one-way delay: 40.643 ms  
Loss rate: 0.71%

Run 1: Report of Indigo — Data Link

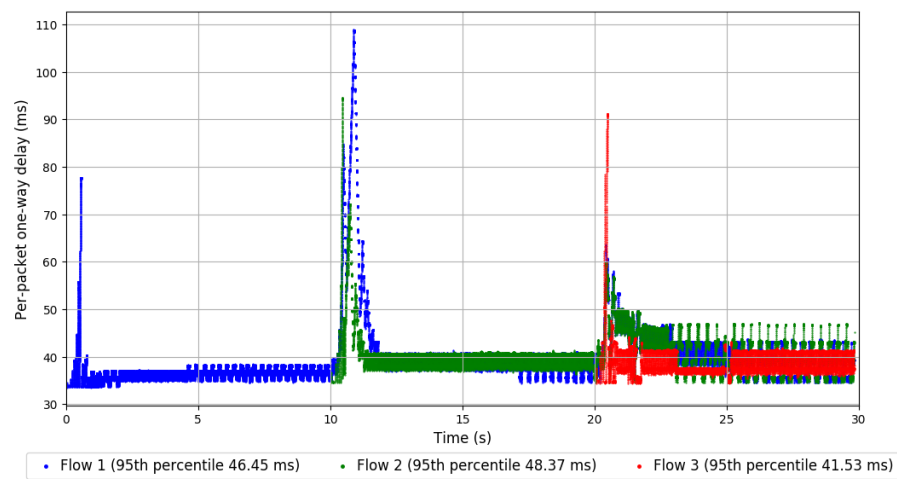
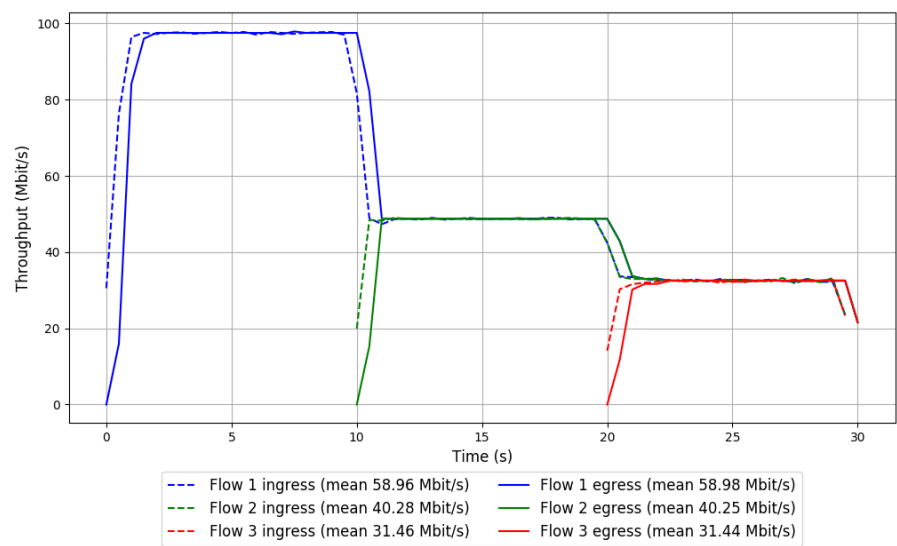


Run 2: Statistics of Indigo

Start at: 2018-09-08 01:06:56  
End at: 2018-09-08 01:07:26  
Local clock offset: 0.767 ms  
Remote clock offset: -2.102 ms

# Below is generated by plot.py at 2018-09-08 02:39:08  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 96.01 Mbit/s  
95th percentile per-packet one-way delay: 46.738 ms  
Loss rate: 0.30%  
-- Flow 1:  
Average throughput: 58.98 Mbit/s  
95th percentile per-packet one-way delay: 46.454 ms  
Loss rate: 0.18%  
-- Flow 2:  
Average throughput: 40.25 Mbit/s  
95th percentile per-packet one-way delay: 48.370 ms  
Loss rate: 0.39%  
-- Flow 3:  
Average throughput: 31.44 Mbit/s  
95th percentile per-packet one-way delay: 41.528 ms  
Loss rate: 0.71%

Run 2: Report of Indigo — Data Link

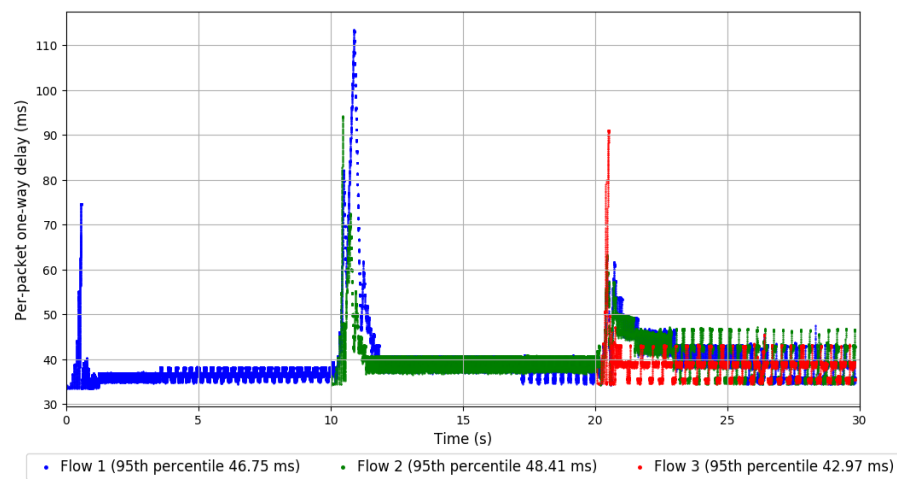
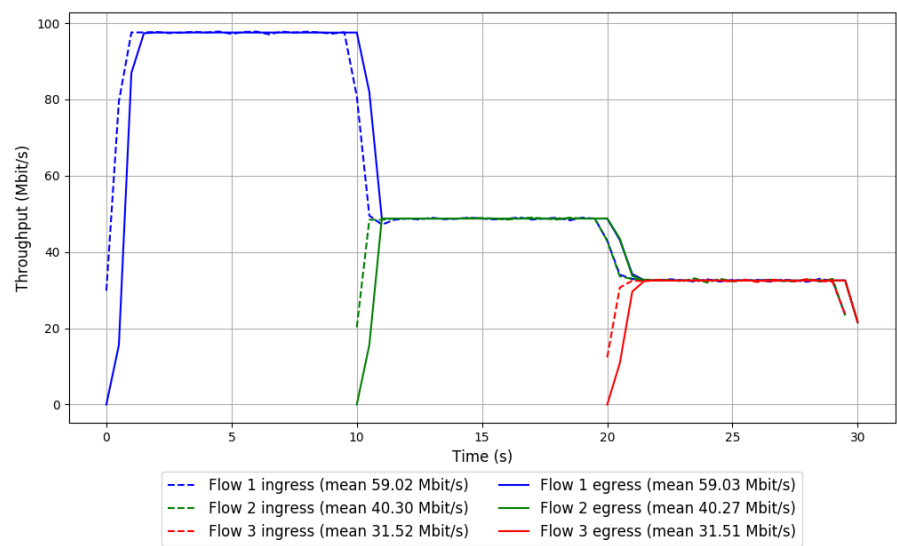


Run 3: Statistics of Indigo

Start at: 2018-09-08 01:32:08  
End at: 2018-09-08 01:32:38  
Local clock offset: 0.748 ms  
Remote clock offset: -0.566 ms

# Below is generated by plot.py at 2018-09-08 02:39:44  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 96.08 Mbit/s  
95th percentile per-packet one-way delay: 46.739 ms  
Loss rate: 0.31%  
-- Flow 1:  
Average throughput: 59.03 Mbit/s  
95th percentile per-packet one-way delay: 46.752 ms  
Loss rate: 0.20%  
-- Flow 2:  
Average throughput: 40.27 Mbit/s  
95th percentile per-packet one-way delay: 48.415 ms  
Loss rate: 0.41%  
-- Flow 3:  
Average throughput: 31.51 Mbit/s  
95th percentile per-packet one-way delay: 42.972 ms  
Loss rate: 0.69%

Run 3: Report of Indigo — Data Link





Run 4: Statistics of Indigo

Start at: 2018-09-08 01:57:00

End at: 2018-09-08 01:57:30

Local clock offset: 0.65 ms

Remote clock offset: 0.409 ms

# Below is generated by plot.py at 2018-09-08 02:39:51

# Datalink statistics

-- Total of 3 flows:

Average throughput: 96.10 Mbit/s

95th percentile per-packet one-way delay: 47.485 ms

Loss rate: 0.46%

-- Flow 1:

Average throughput: 58.98 Mbit/s

95th percentile per-packet one-way delay: 46.441 ms

Loss rate: 0.40%

-- Flow 2:

Average throughput: 40.21 Mbit/s

95th percentile per-packet one-way delay: 49.089 ms

Loss rate: 0.47%

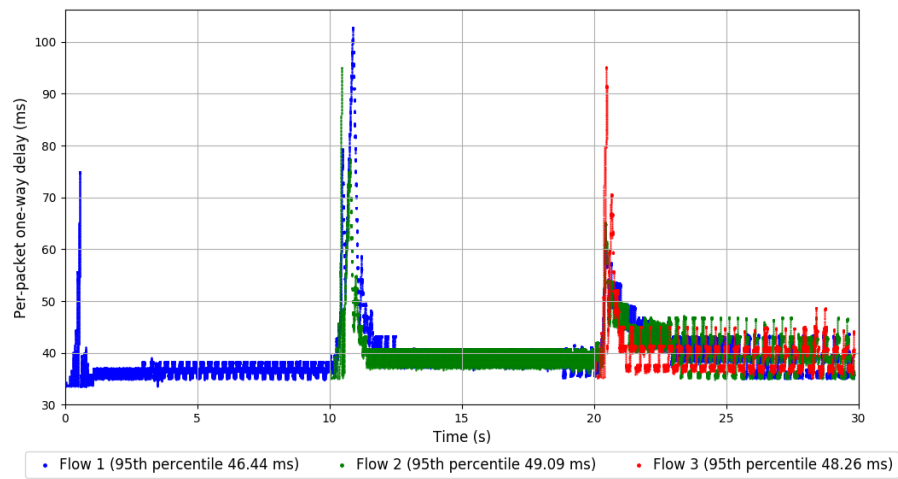
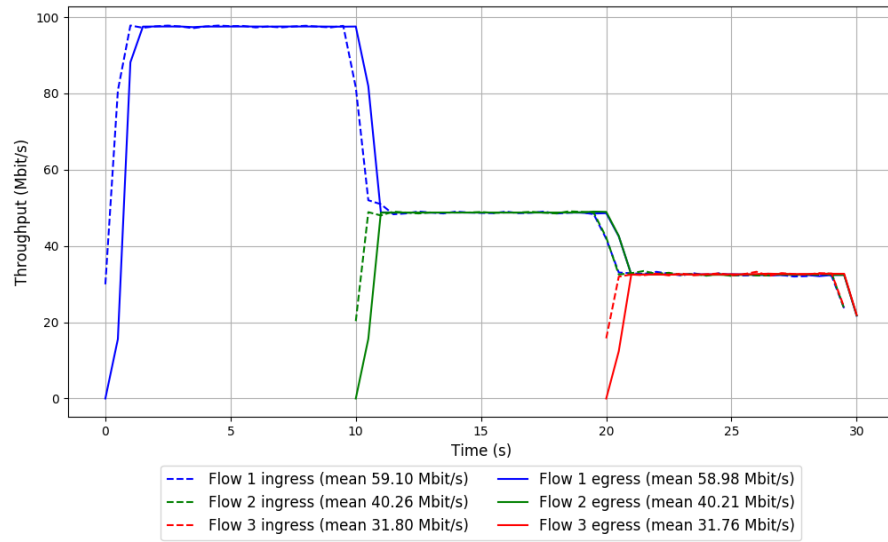
-- Flow 3:

Average throughput: 31.76 Mbit/s

95th percentile per-packet one-way delay: 48.262 ms

Loss rate: 0.79%

#### Run 4: Report of Indigo — Data Link



Run 5: Statistics of Indigo

Start at: 2018-09-08 02:21:48

End at: 2018-09-08 02:22:18

Local clock offset: 0.547 ms

Remote clock offset: 1.315 ms

# Below is generated by plot.py at 2018-09-08 02:39:55

# Datalink statistics

-- Total of 3 flows:

Average throughput: 96.09 Mbit/s

95th percentile per-packet one-way delay: 50.176 ms

Loss rate: 0.35%

-- Flow 1:

Average throughput: 56.42 Mbit/s

95th percentile per-packet one-way delay: 49.117 ms

Loss rate: 0.19%

-- Flow 2:

Average throughput: 36.38 Mbit/s

95th percentile per-packet one-way delay: 55.382 ms

Loss rate: 0.46%

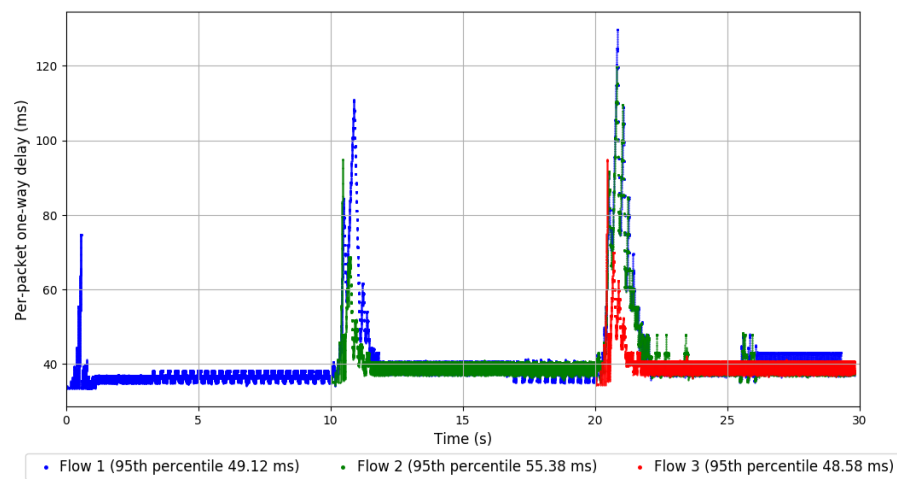
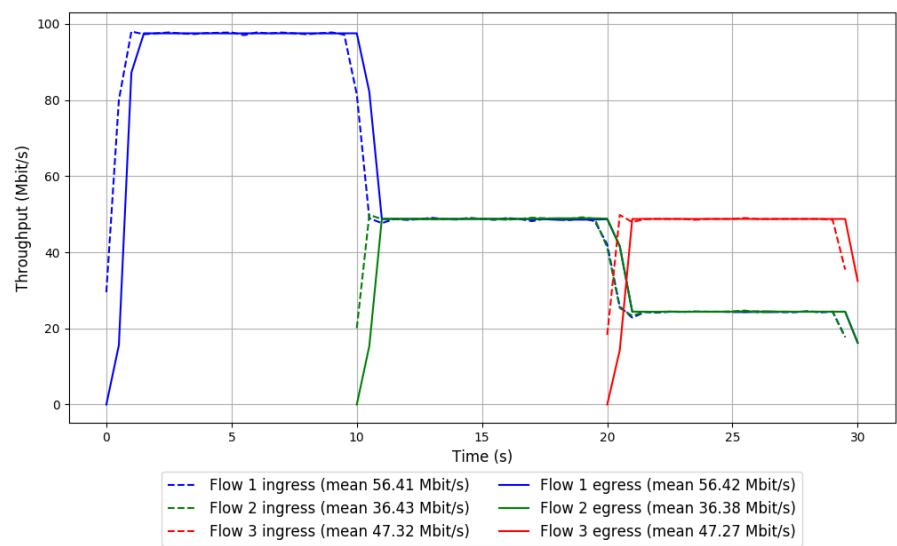
-- Flow 3:

Average throughput: 47.27 Mbit/s

95th percentile per-packet one-way delay: 48.580 ms

Loss rate: 0.75%

Run 5: Report of Indigo — Data Link

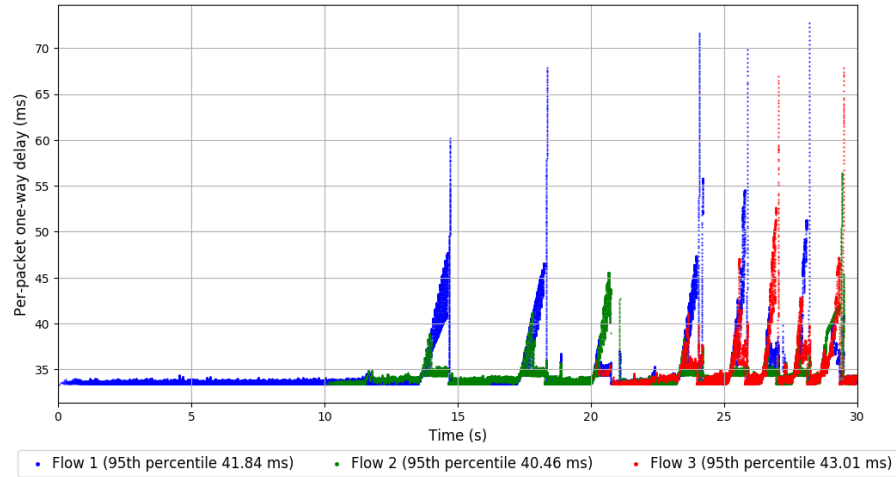
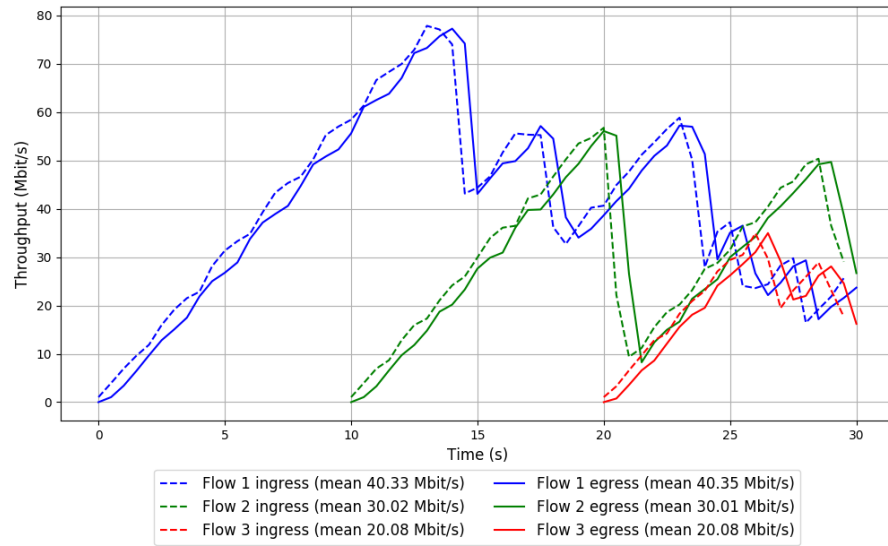


```
Run 1: Statistics of LEDBAT

Start at: 2018-09-08 00:34:49
End at: 2018-09-08 00:35:19
Local clock offset: -3.07 ms
Remote clock offset: -4.03 ms

# Below is generated by plot.py at 2018-09-08 02:39:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 66.94 Mbit/s
95th percentile per-packet one-way delay: 41.365 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 40.35 Mbit/s
95th percentile per-packet one-way delay: 41.842 ms
Loss rate: 0.15%
-- Flow 2:
Average throughput: 30.01 Mbit/s
95th percentile per-packet one-way delay: 40.461 ms
Loss rate: 0.36%
-- Flow 3:
Average throughput: 20.08 Mbit/s
95th percentile per-packet one-way delay: 43.010 ms
Loss rate: 0.64%
```

# Run 1: Report of LEDBAT — Data Link

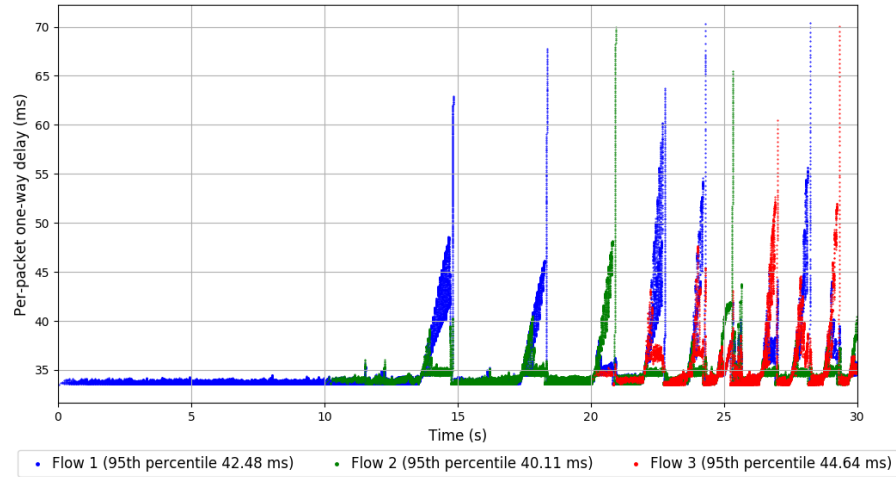
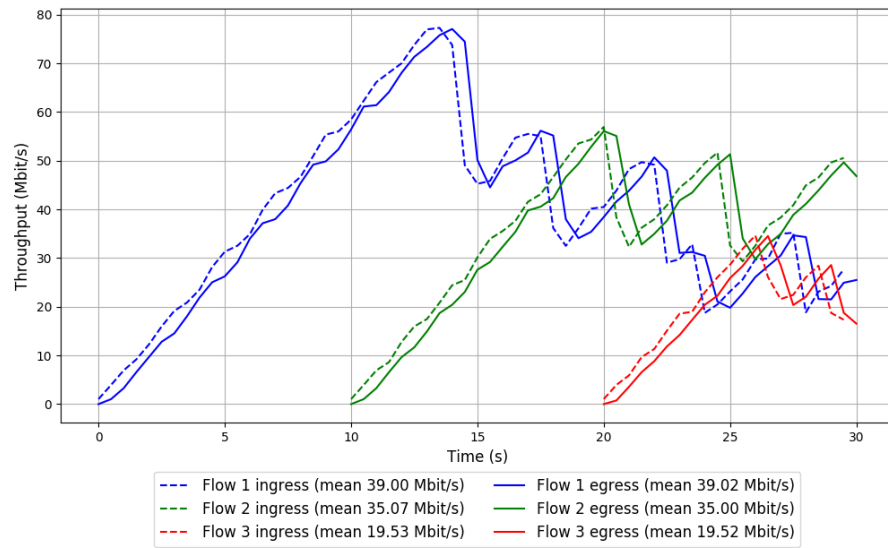


Run 2: Statistics of LEDBAT

Start at: 2018-09-08 01:00:00  
End at: 2018-09-08 01:00:30  
Local clock offset: 0.206 ms  
Remote clock offset: -2.451 ms

# Below is generated by plot.py at 2018-09-08 02:39:55  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 68.77 Mbit/s  
95th percentile per-packet one-way delay: 41.720 ms  
Loss rate: 0.33%  
-- Flow 1:  
Average throughput: 39.02 Mbit/s  
95th percentile per-packet one-way delay: 42.479 ms  
Loss rate: 0.17%  
-- Flow 2:  
Average throughput: 35.00 Mbit/s  
95th percentile per-packet one-way delay: 40.106 ms  
Loss rate: 0.50%  
-- Flow 3:  
Average throughput: 19.52 Mbit/s  
95th percentile per-packet one-way delay: 44.639 ms  
Loss rate: 0.66%

## Run 2: Report of LEDBAT — Data Link





Run 3: Statistics of LEDBAT

Start at: 2018-09-08 01:24:58

End at: 2018-09-08 01:25:28

Local clock offset: 0.771 ms

Remote clock offset: -1.15 ms

# Below is generated by plot.py at 2018-09-08 02:39:55

# Datalink statistics

-- Total of 3 flows:

Average throughput: 67.73 Mbit/s

95th percentile per-packet one-way delay: 41.763 ms

Loss rate: 0.34%

-- Flow 1:

Average throughput: 42.59 Mbit/s

95th percentile per-packet one-way delay: 41.759 ms

Loss rate: 0.19%

-- Flow 2:

Average throughput: 27.62 Mbit/s

95th percentile per-packet one-way delay: 42.724 ms

Loss rate: 0.35%

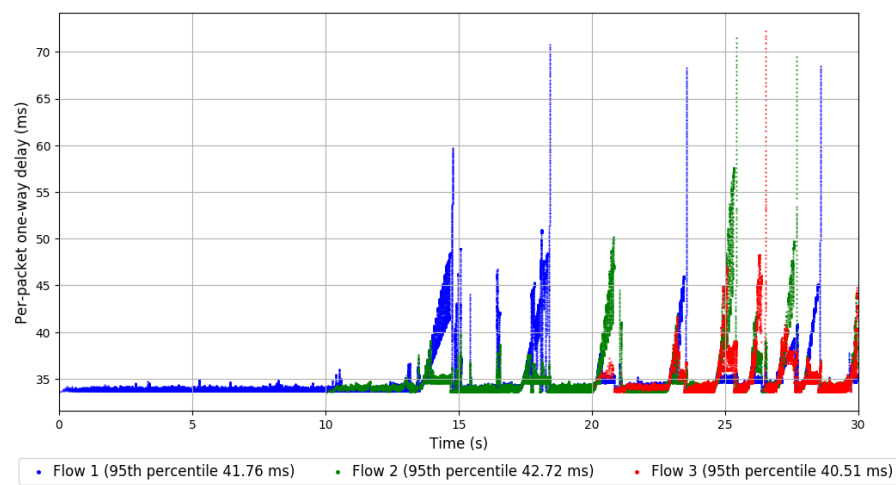
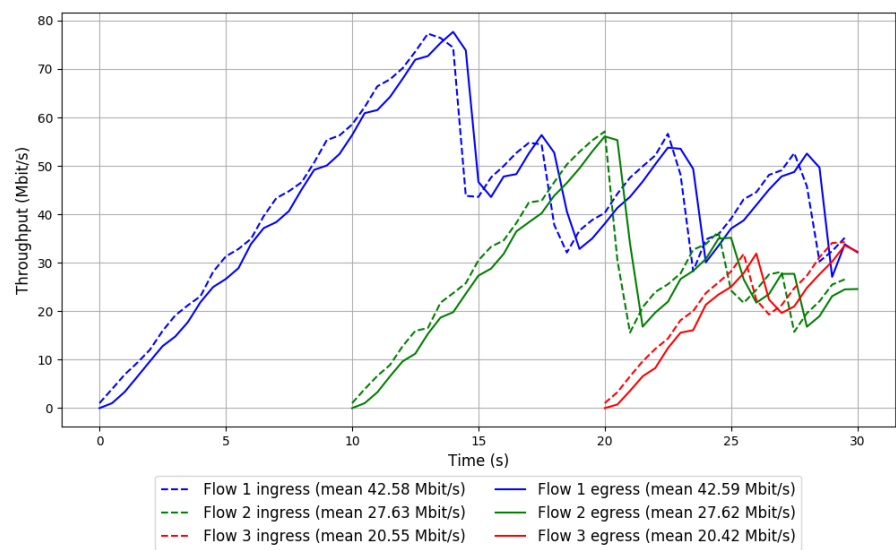
-- Flow 3:

Average throughput: 20.42 Mbit/s

95th percentile per-packet one-way delay: 40.510 ms

Loss rate: 1.25%

Run 3: Report of LEDBAT — Data Link



Run 4: Statistics of LEDBAT

Start at: 2018-09-08 01:50:06

End at: 2018-09-08 01:50:36

Local clock offset: 0.706 ms

Remote clock offset: 0.158 ms

# Below is generated by plot.py at 2018-09-08 02:39:57

# Datalink statistics

-- Total of 3 flows:

Average throughput: 65.91 Mbit/s

95th percentile per-packet one-way delay: 40.944 ms

Loss rate: 0.32%

-- Flow 1:

Average throughput: 41.34 Mbit/s

95th percentile per-packet one-way delay: 40.123 ms

Loss rate: 0.25%

-- Flow 2:

Average throughput: 27.25 Mbit/s

95th percentile per-packet one-way delay: 42.396 ms

Loss rate: 0.35%

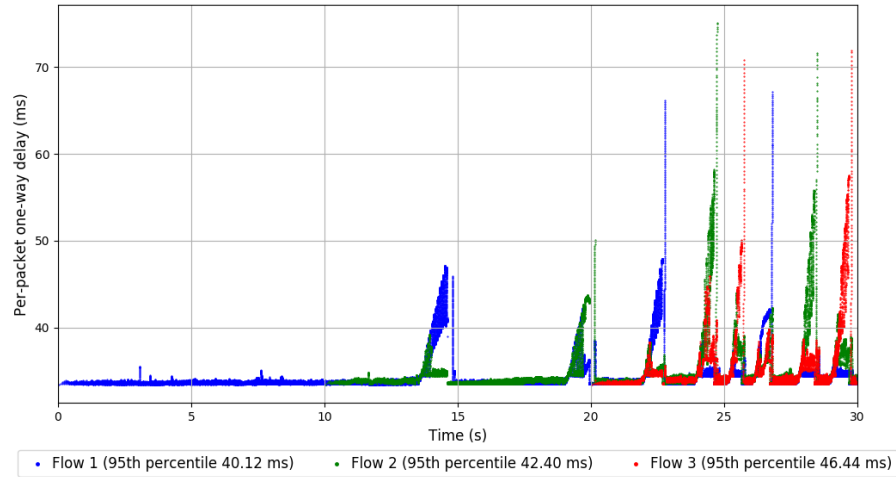
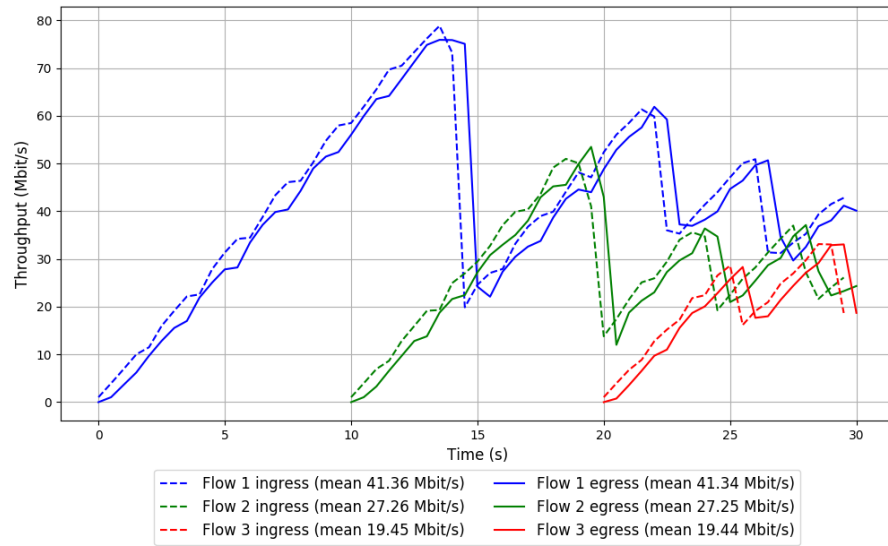
-- Flow 3:

Average throughput: 19.44 Mbit/s

95th percentile per-packet one-way delay: 46.444 ms

Loss rate: 0.68%

#### Run 4: Report of LEDBAT — Data Link



Run 5: Statistics of LEDBAT

Start at: 2018-09-08 02:14:55

End at: 2018-09-08 02:15:25

Local clock offset: 0.638 ms

Remote clock offset: 1.05 ms

# Below is generated by plot.py at 2018-09-08 02:40:03

# Datalink statistics

-- Total of 3 flows:

Average throughput: 68.42 Mbit/s

95th percentile per-packet one-way delay: 41.310 ms

Loss rate: 0.35%

-- Flow 1:

Average throughput: 39.27 Mbit/s

95th percentile per-packet one-way delay: 41.792 ms

Loss rate: 0.16%

-- Flow 2:

Average throughput: 34.93 Mbit/s

95th percentile per-packet one-way delay: 40.742 ms

Loss rate: 0.50%

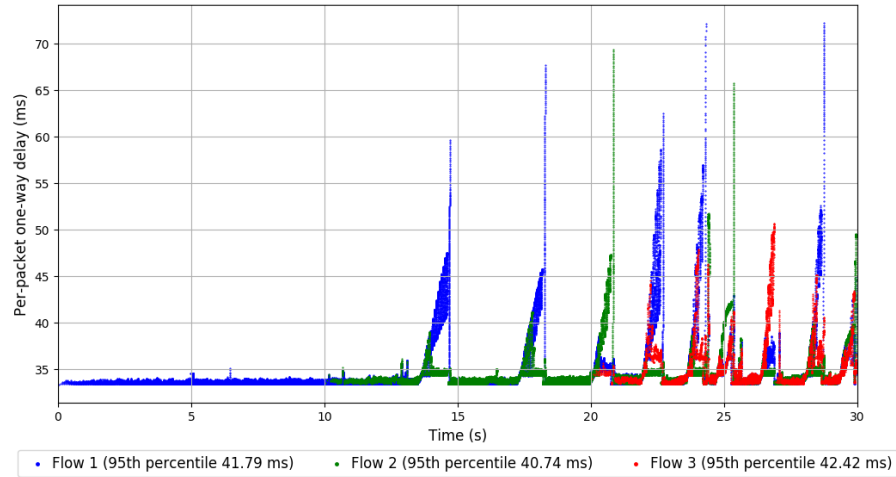
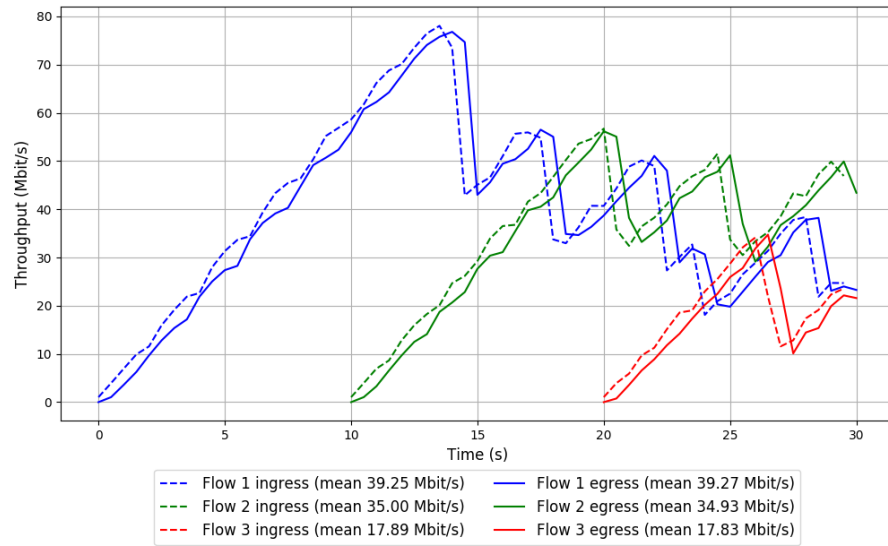
-- Flow 3:

Average throughput: 17.83 Mbit/s

95th percentile per-packet one-way delay: 42.421 ms

Loss rate: 0.99%

# Run 5: Report of LEDBAT — Data Link



Run 1: Statistics of Indigo-Muses

Start at: 2018-09-08 00:38:57

End at: 2018-09-08 00:39:27

Local clock offset: -2.996 ms

Remote clock offset: -3.71 ms

# Below is generated by plot.py at 2018-09-08 02:40:43

# Datalink statistics

-- Total of 3 flows:

Average throughput: 93.94 Mbit/s

95th percentile per-packet one-way delay: 54.289 ms

Loss rate: 0.18%

-- Flow 1:

Average throughput: 53.88 Mbit/s

95th percentile per-packet one-way delay: 55.808 ms

Loss rate: 0.08%

-- Flow 2:

Average throughput: 30.63 Mbit/s

95th percentile per-packet one-way delay: 46.963 ms

Loss rate: 0.11%

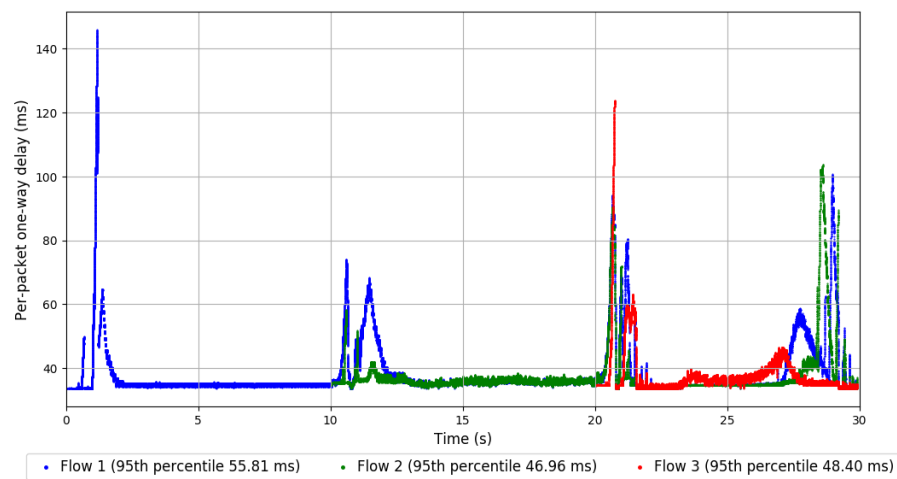
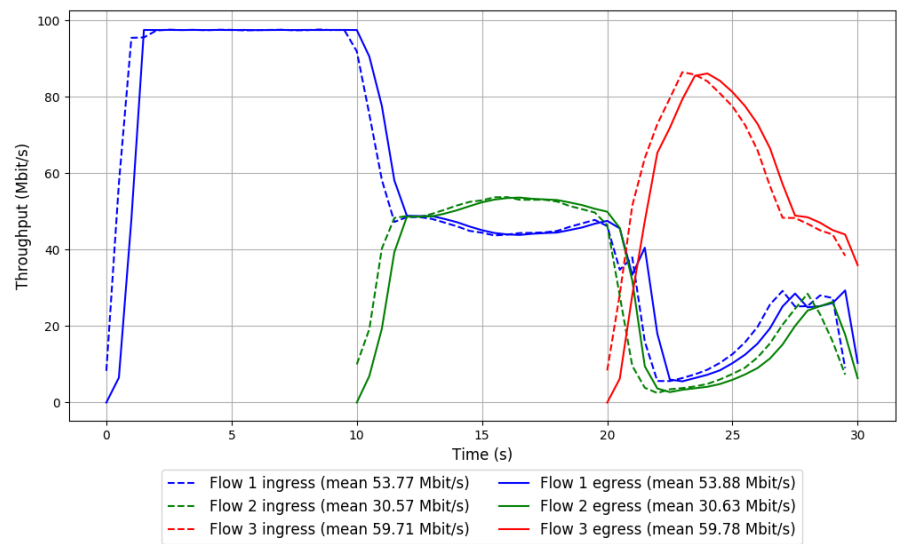
-- Flow 3:

Average throughput: 59.78 Mbit/s

95th percentile per-packet one-way delay: 48.403 ms

Loss rate: 0.53%

Run 1: Report of Indigo-Muses — Data Link



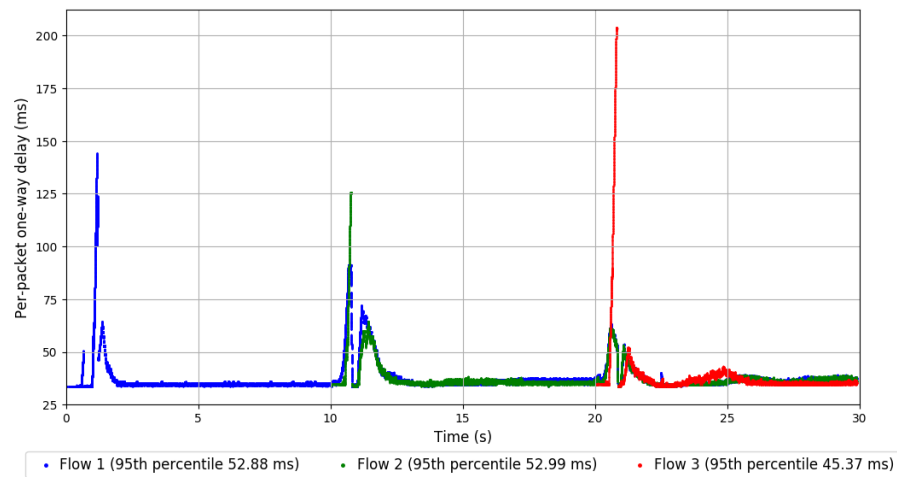
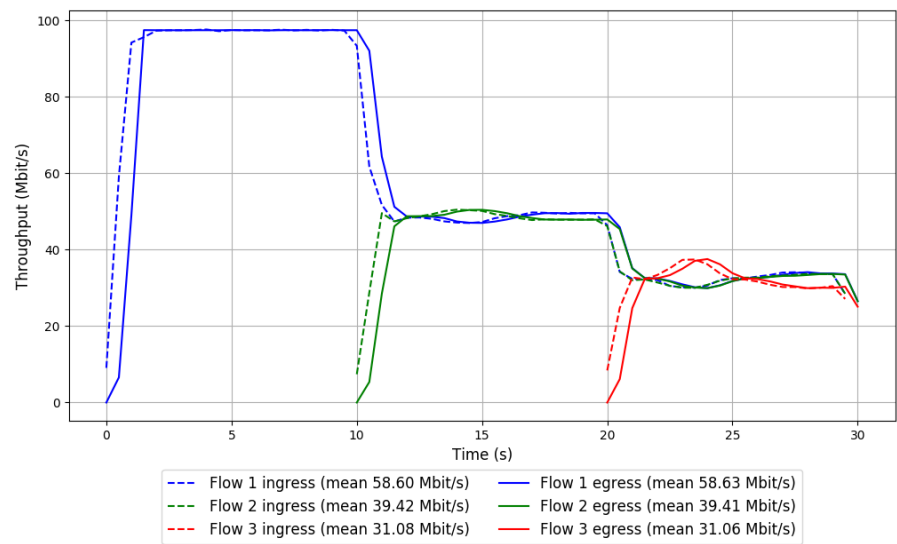


Run 2: Statistics of Indigo-Muses

Start at: 2018-09-08 01:04:12  
End at: 2018-09-08 01:04:42  
Local clock offset: 0.488 ms  
Remote clock offset: -2.418 ms

# Below is generated by plot.py at 2018-09-08 02:40:54  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 95.08 Mbit/s  
95th percentile per-packet one-way delay: 52.315 ms  
Loss rate: 0.28%  
-- Flow 1:  
Average throughput: 58.63 Mbit/s  
95th percentile per-packet one-way delay: 52.884 ms  
Loss rate: 0.17%  
-- Flow 2:  
Average throughput: 39.41 Mbit/s  
95th percentile per-packet one-way delay: 52.991 ms  
Loss rate: 0.33%  
-- Flow 3:  
Average throughput: 31.06 Mbit/s  
95th percentile per-packet one-way delay: 45.370 ms  
Loss rate: 0.71%

Run 2: Report of Indigo-Muses — Data Link

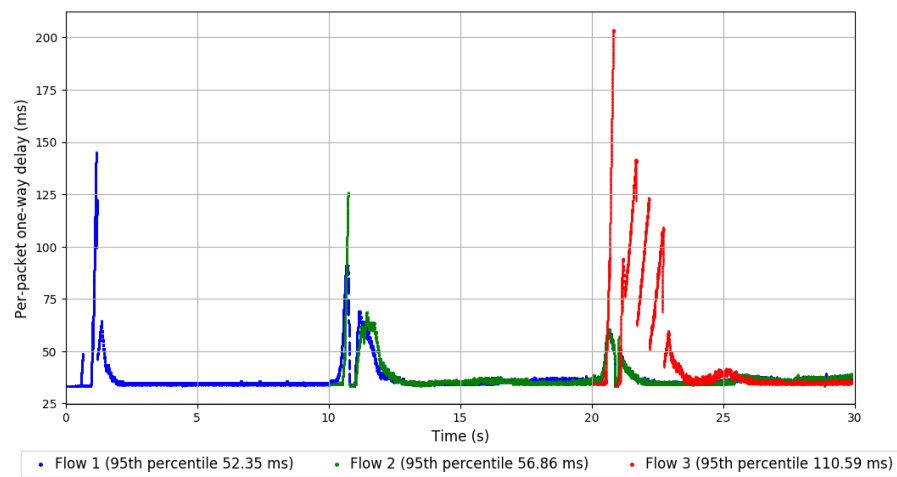
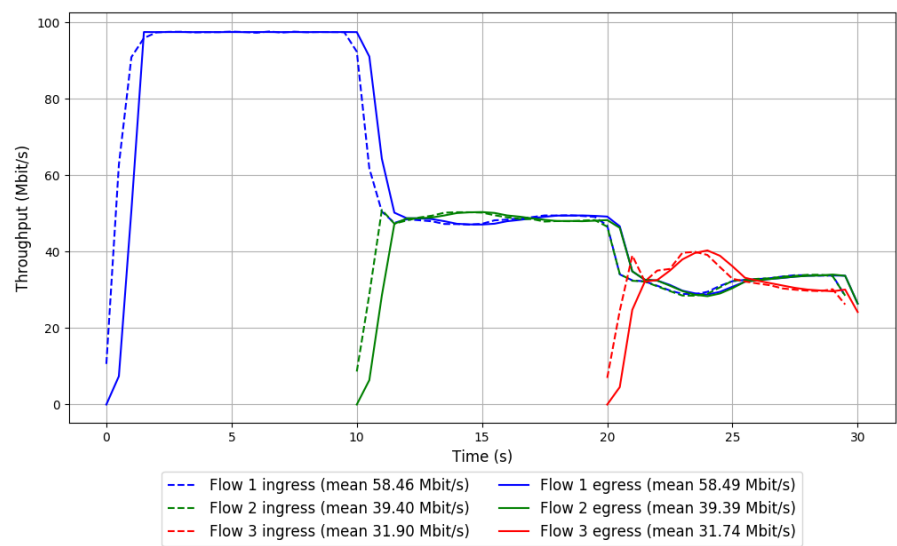


Run 3: Statistics of Indigo-Muses

Start at: 2018-09-08 01:29:17  
End at: 2018-09-08 01:29:47  
Local clock offset: 0.728 ms  
Remote clock offset: -0.637 ms

# Below is generated by plot.py at 2018-09-08 02:40:54  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 95.15 Mbit/s  
95th percentile per-packet one-way delay: 59.422 ms  
Loss rate: 0.32%  
-- Flow 1:  
Average throughput: 58.49 Mbit/s  
95th percentile per-packet one-way delay: 52.347 ms  
Loss rate: 0.16%  
-- Flow 2:  
Average throughput: 39.39 Mbit/s  
95th percentile per-packet one-way delay: 56.861 ms  
Loss rate: 0.35%  
-- Flow 3:  
Average throughput: 31.74 Mbit/s  
95th percentile per-packet one-way delay: 110.591 ms  
Loss rate: 1.15%

Run 3: Report of Indigo-Muses — Data Link



#### Run 4: Statistics of Indigo-Muses

Start at: 2018-09-08 01:54:14

End at: 2018-09-08 01:54:44

Local clock offset: 0.65 ms

Remote clock offset: 0.284 ms

# Below is generated by plot.py at 2018-09-08 02:40:55

# Datalink statistics

-- Total of 3 flows:

Average throughput: 95.12 Mbit/s

95th percentile per-packet one-way delay: 46.343 ms

Loss rate: 0.26%

-- Flow 1:

Average throughput: 58.11 Mbit/s

95th percentile per-packet one-way delay: 49.437 ms

Loss rate: 0.16%

-- Flow 2:

Average throughput: 40.29 Mbit/s

95th percentile per-packet one-way delay: 39.921 ms

Loss rate: 0.35%

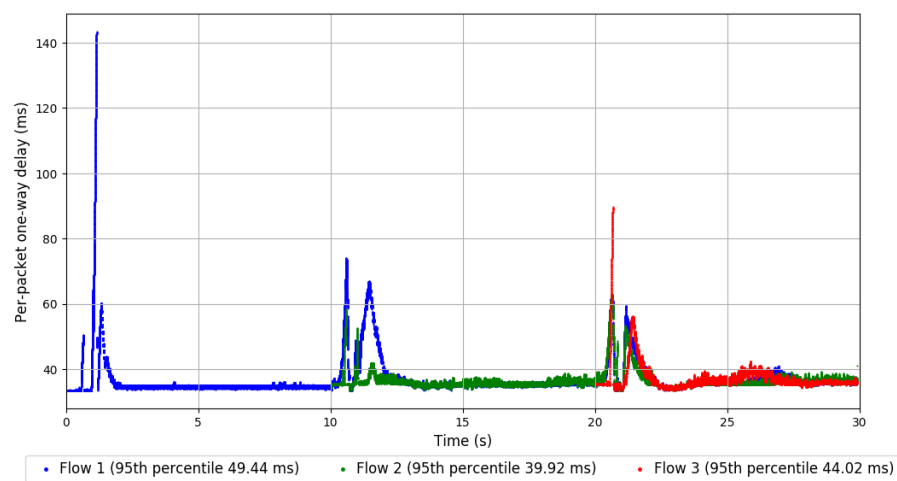
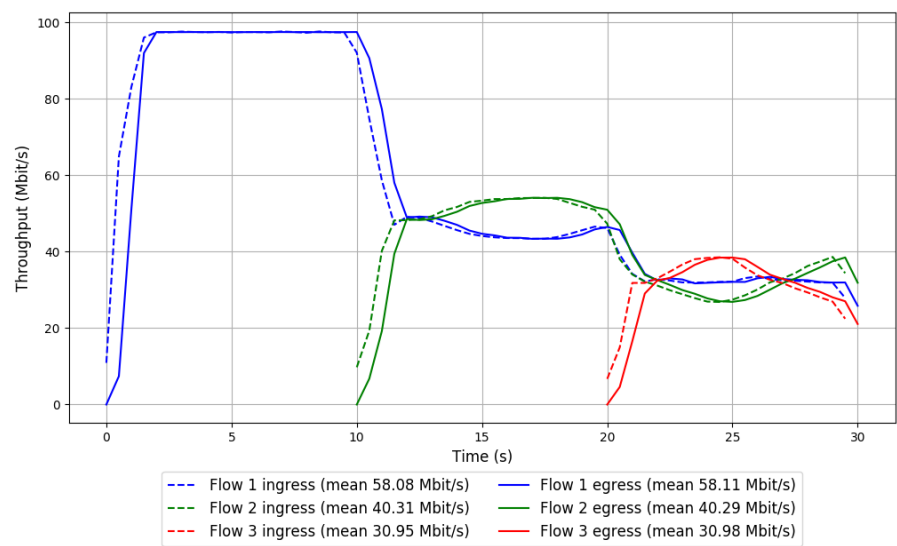
-- Flow 3:

Average throughput: 30.98 Mbit/s

95th percentile per-packet one-way delay: 44.018 ms

Loss rate: 0.57%

Run 4: Report of Indigo-Muses — Data Link



Run 5: Statistics of Indigo-Muses

Start at: 2018-09-08 02:19:03

End at: 2018-09-08 02:19:33

Local clock offset: 0.614 ms

Remote clock offset: 0.998 ms

# Below is generated by plot.py at 2018-09-08 02:40:59

# Datalink statistics

-- Total of 3 flows:

Average throughput: 93.96 Mbit/s

95th percentile per-packet one-way delay: 57.044 ms

Loss rate: 0.34%

-- Flow 1:

Average throughput: 52.62 Mbit/s

95th percentile per-packet one-way delay: 54.920 ms

Loss rate: 0.24%

-- Flow 2:

Average throughput: 30.88 Mbit/s

95th percentile per-packet one-way delay: 57.218 ms

Loss rate: 0.40%

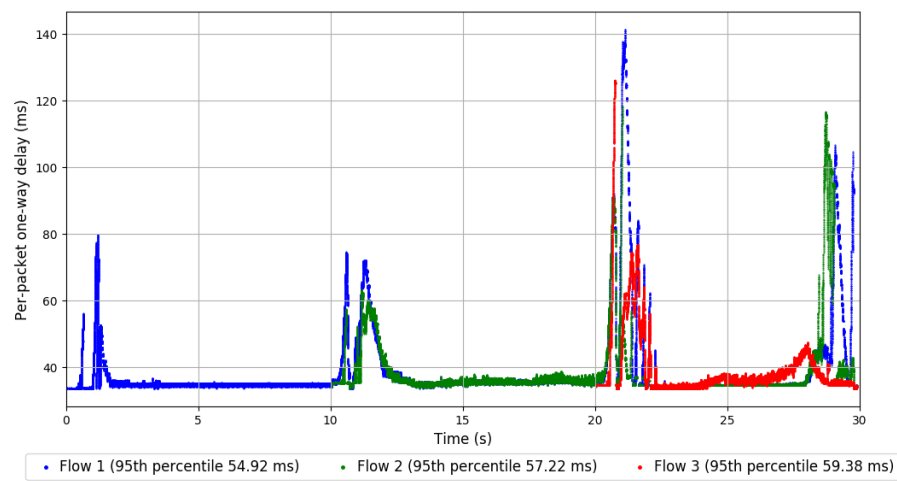
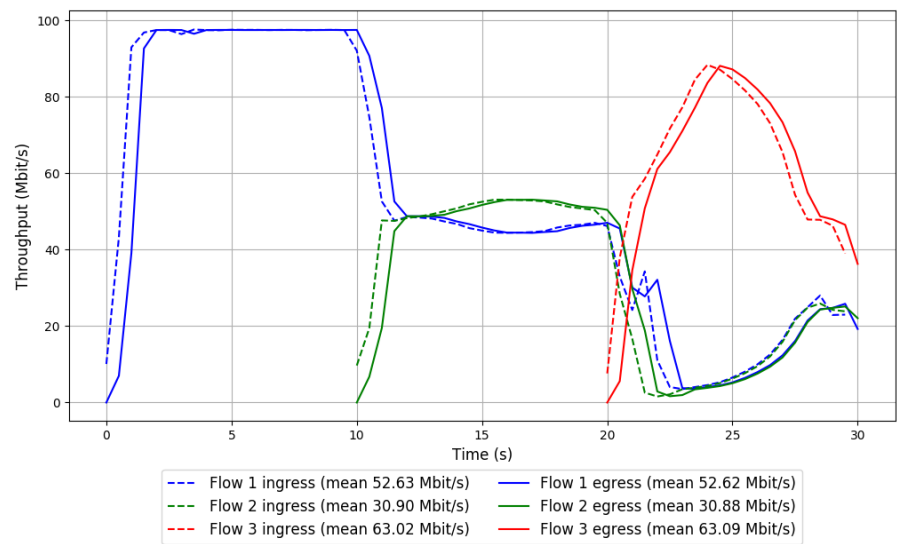
-- Flow 3:

Average throughput: 63.09 Mbit/s

95th percentile per-packet one-way delay: 59.385 ms

Loss rate: 0.53%

Run 5: Report of Indigo-Muses — Data Link



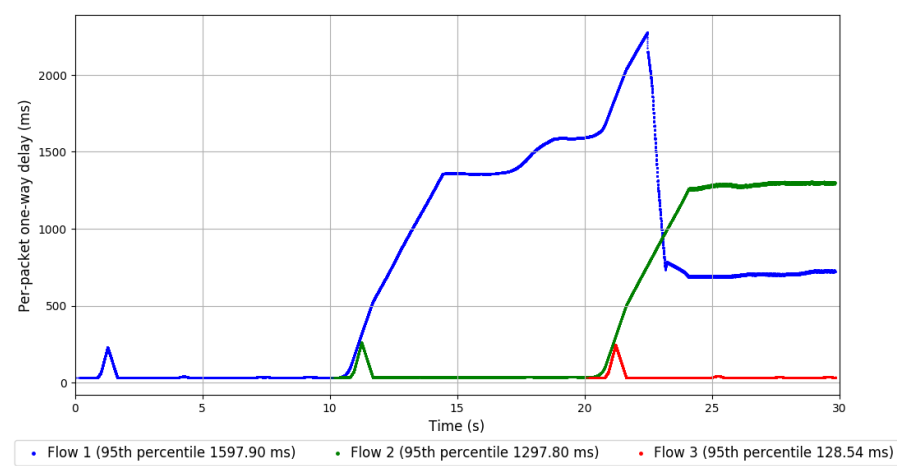
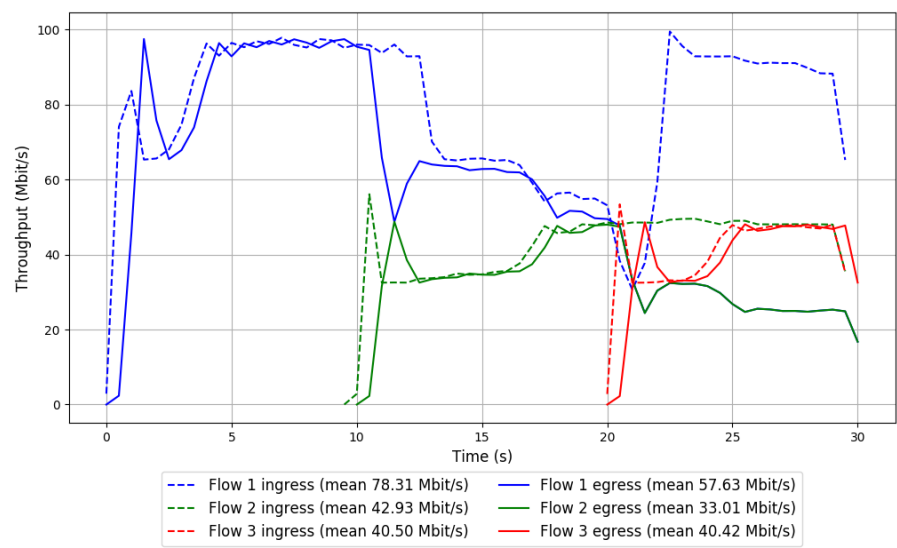


```
Run 1: Statistics of PCC-Allegro

Start at: 2018-09-08 00:27:51
End at: 2018-09-08 00:28:21
Local clock offset: -3.053 ms
Remote clock offset: -4.517 ms

# Below is generated by plot.py at 2018-09-08 02:41:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 92.85 Mbit/s
95th percentile per-packet one-way delay: 1586.172 ms
Loss rate: 22.94%
-- Flow 1:
Average throughput: 57.63 Mbit/s
95th percentile per-packet one-way delay: 1597.903 ms
Loss rate: 26.56%
-- Flow 2:
Average throughput: 33.01 Mbit/s
95th percentile per-packet one-way delay: 1297.802 ms
Loss rate: 23.37%
-- Flow 3:
Average throughput: 40.42 Mbit/s
95th percentile per-packet one-way delay: 128.539 ms
Loss rate: 0.84%
```

Run 1: Report of PCC-Allegro — Data Link

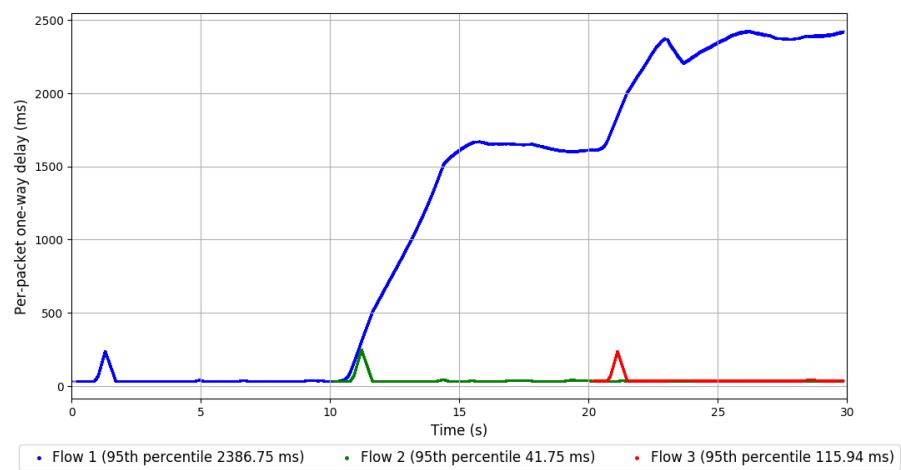
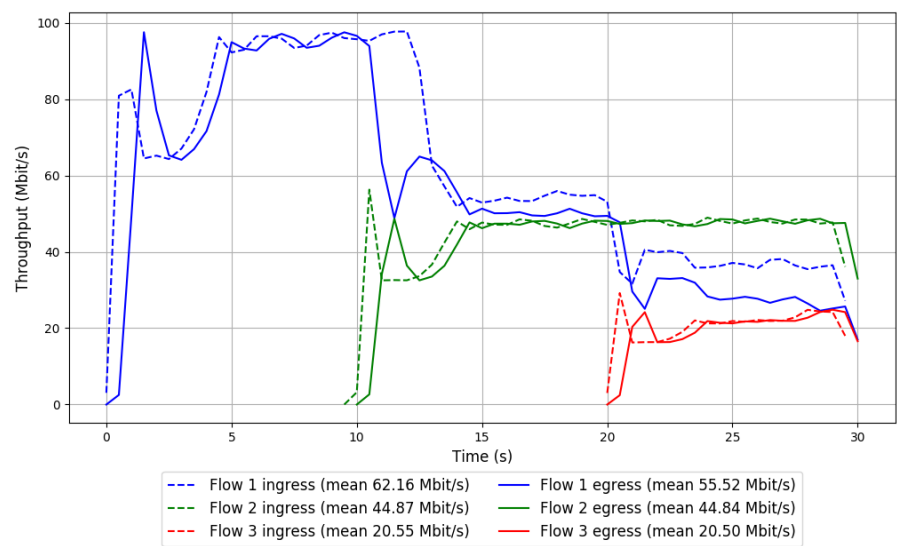


Run 2: Statistics of PCC-Allegro

Start at: 2018-09-08 00:52:49  
End at: 2018-09-08 00:53:19  
Local clock offset: -0.874 ms  
Remote clock offset: -2.857 ms

# Below is generated by plot.py at 2018-09-08 02:41:10  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 92.07 Mbit/s  
95th percentile per-packet one-way delay: 2347.488 ms  
Loss rate: 7.01%  
-- Flow 1:  
Average throughput: 55.52 Mbit/s  
95th percentile per-packet one-way delay: 2386.747 ms  
Loss rate: 10.86%  
-- Flow 2:  
Average throughput: 44.84 Mbit/s  
95th percentile per-packet one-way delay: 41.753 ms  
Loss rate: 0.39%  
-- Flow 3:  
Average throughput: 20.50 Mbit/s  
95th percentile per-packet one-way delay: 115.942 ms  
Loss rate: 0.89%

Run 2: Report of PCC-Allegro — Data Link



Run 3: Statistics of PCC-Allegro

Start at: 2018-09-08 01:17:54

End at: 2018-09-08 01:18:24

Local clock offset: 1.042 ms

Remote clock offset: -1.4 ms

# Below is generated by plot.py at 2018-09-08 02:41:16

# Datalink statistics

-- Total of 3 flows:

Average throughput: 92.11 Mbit/s

95th percentile per-packet one-way delay: 2120.345 ms

Loss rate: 11.58%

-- Flow 1:

Average throughput: 57.31 Mbit/s

95th percentile per-packet one-way delay: 2131.363 ms

Loss rate: 11.17%

-- Flow 2:

Average throughput: 37.24 Mbit/s

95th percentile per-packet one-way delay: 2130.108 ms

Loss rate: 13.50%

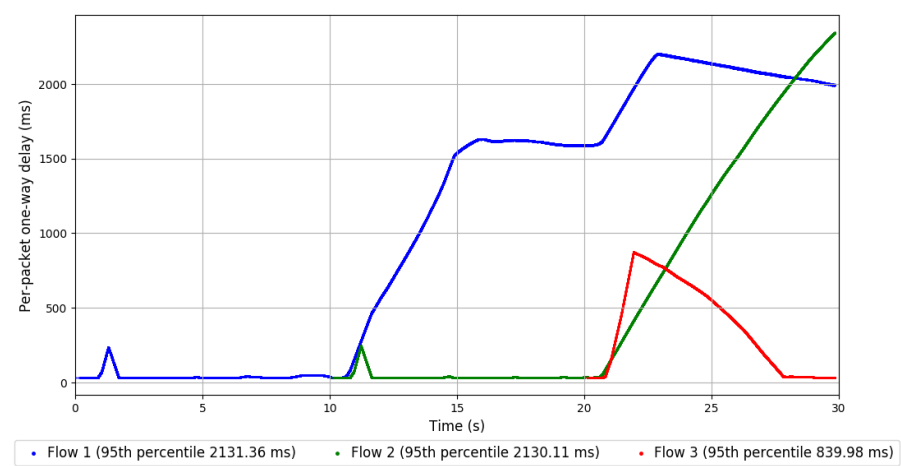
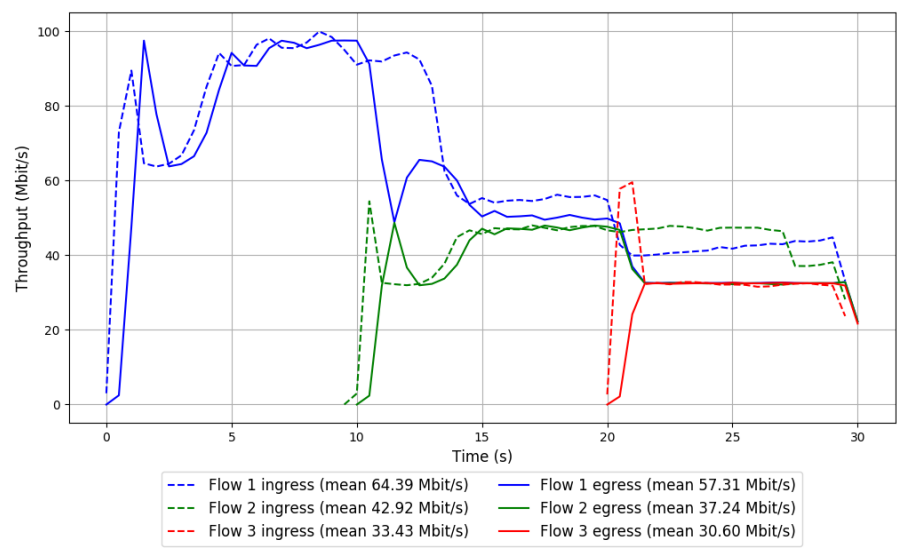
-- Flow 3:

Average throughput: 30.60 Mbit/s

95th percentile per-packet one-way delay: 839.983 ms

Loss rate: 9.05%

Run 3: Report of PCC-Allegro — Data Link

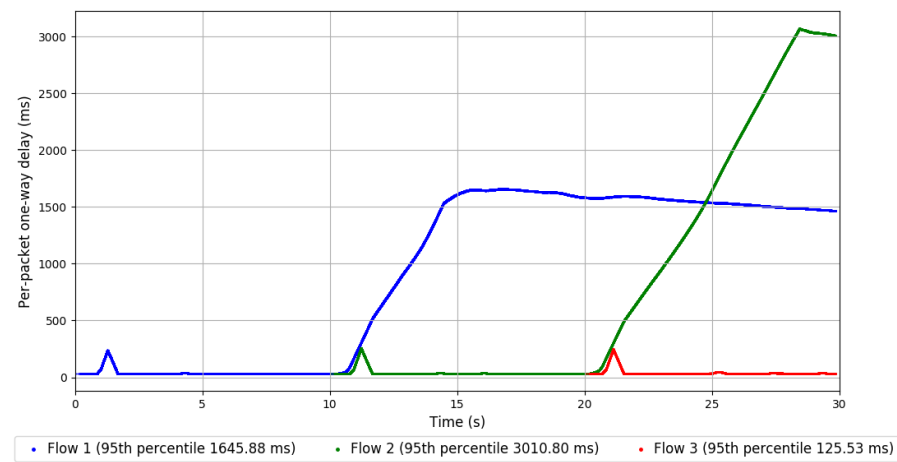
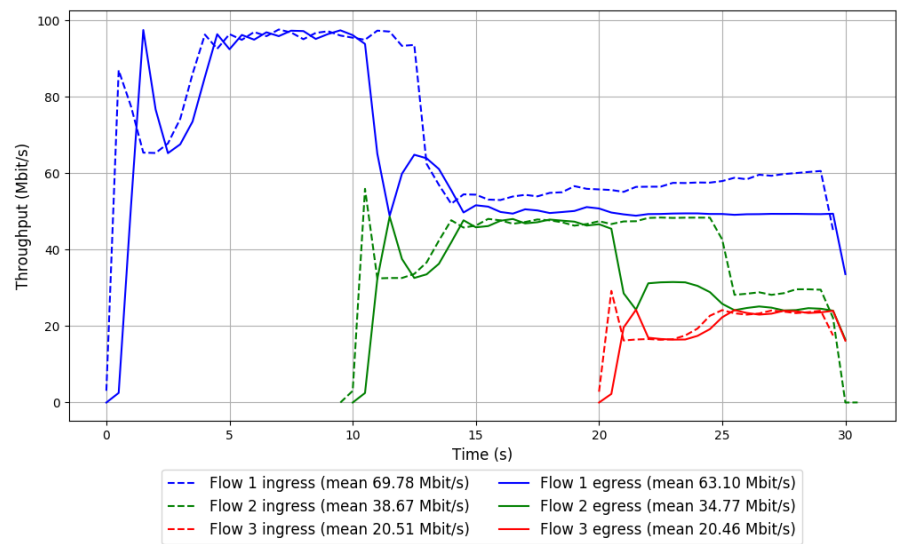


Run 4: Statistics of PCC-Allegro

Start at: 2018-09-08 01:43:07  
End at: 2018-09-08 01:43:37  
Local clock offset: 0.819 ms  
Remote clock offset: -0.315 ms

# Below is generated by plot.py at 2018-09-08 02:41:51  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 92.92 Mbit/s  
95th percentile per-packet one-way delay: 1654.767 ms  
Loss rate: 10.41%  
-- Flow 1:  
Average throughput: 63.10 Mbit/s  
95th percentile per-packet one-way delay: 1645.883 ms  
Loss rate: 9.77%  
-- Flow 2:  
Average throughput: 34.77 Mbit/s  
95th percentile per-packet one-way delay: 3010.805 ms  
Loss rate: 14.47%  
-- Flow 3:  
Average throughput: 20.46 Mbit/s  
95th percentile per-packet one-way delay: 125.532 ms  
Loss rate: 0.90%

Run 4: Report of PCC-Allegro — Data Link





Run 5: Statistics of PCC-Allegro

Start at: 2018-09-08 02:07:57

End at: 2018-09-08 02:08:27

Local clock offset: 0.596 ms

Remote clock offset: 0.84 ms

# Below is generated by plot.py at 2018-09-08 02:41:55

# Datalink statistics

-- Total of 3 flows:

Average throughput: 93.34 Mbit/s

95th percentile per-packet one-way delay: 1643.497 ms

Loss rate: 10.43%

-- Flow 1:

Average throughput: 63.97 Mbit/s

95th percentile per-packet one-way delay: 1606.432 ms

Loss rate: 9.70%

-- Flow 2:

Average throughput: 34.22 Mbit/s

95th percentile per-packet one-way delay: 2881.463 ms

Loss rate: 14.72%

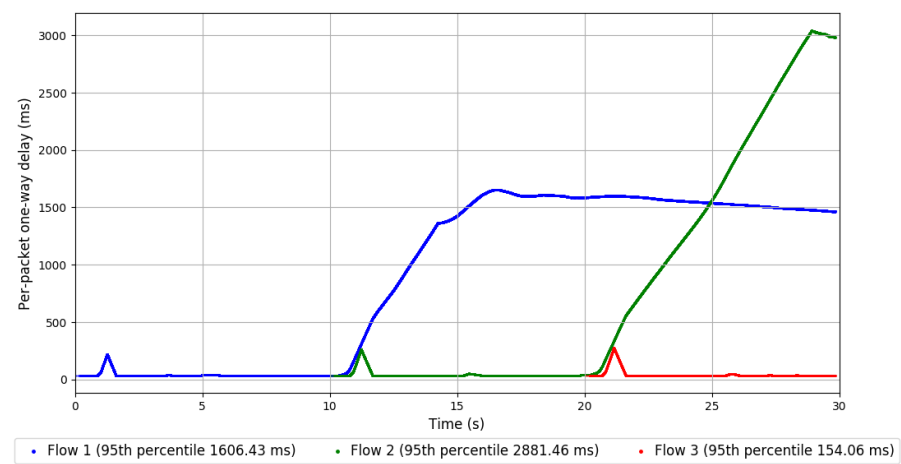
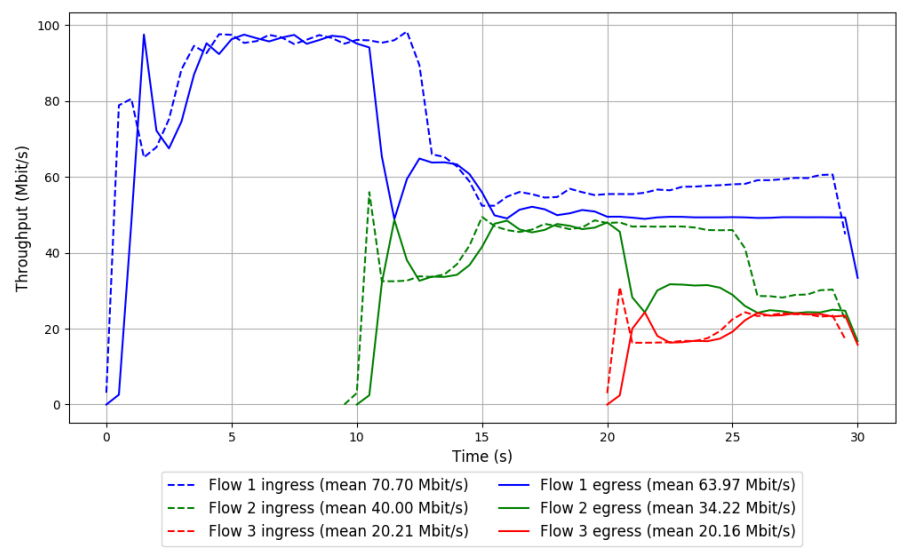
-- Flow 3:

Average throughput: 20.16 Mbit/s

95th percentile per-packet one-way delay: 154.061 ms

Loss rate: 0.95%

Run 5: Report of PCC-Allegro — Data Link

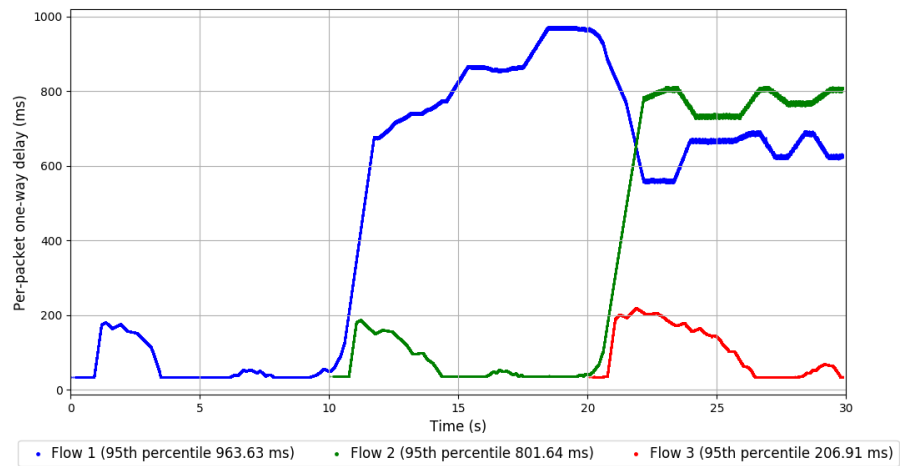
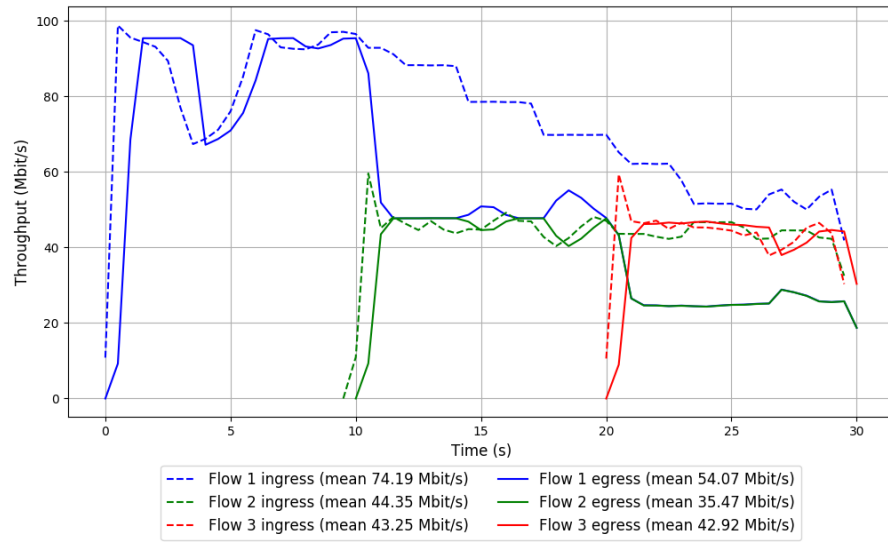


```
Run 1: Statistics of PCC-Expr

Start at: 2018-09-08 00:29:14
End at: 2018-09-08 00:29:44
Local clock offset: -3.065 ms
Remote clock offset: -4.69 ms

# Below is generated by plot.py at 2018-09-08 02:43:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 91.76 Mbit/s
95th percentile per-packet one-way delay: 899.610 ms
Loss rate: 22.40%
-- Flow 1:
Average throughput: 54.07 Mbit/s
95th percentile per-packet one-way delay: 963.631 ms
Loss rate: 27.28%
-- Flow 2:
Average throughput: 35.47 Mbit/s
95th percentile per-packet one-way delay: 801.645 ms
Loss rate: 20.29%
-- Flow 3:
Average throughput: 42.92 Mbit/s
95th percentile per-packet one-way delay: 206.909 ms
Loss rate: 1.40%
```

# Run 1: Report of PCC-Expr — Data Link

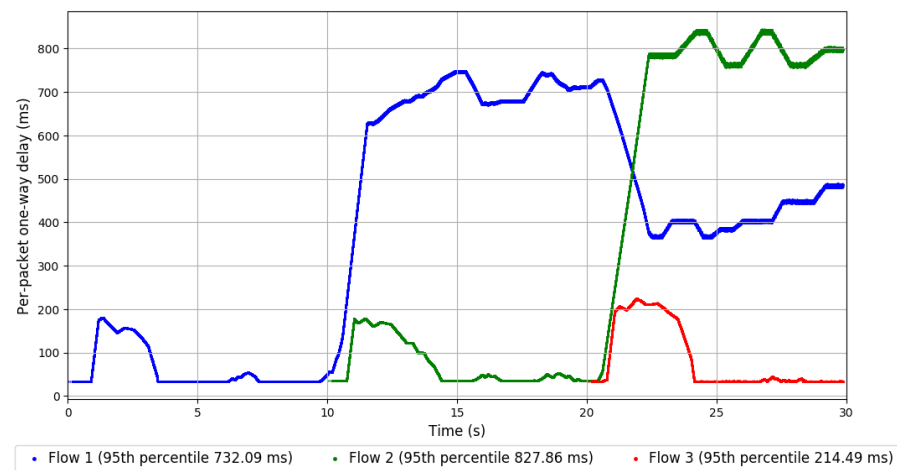
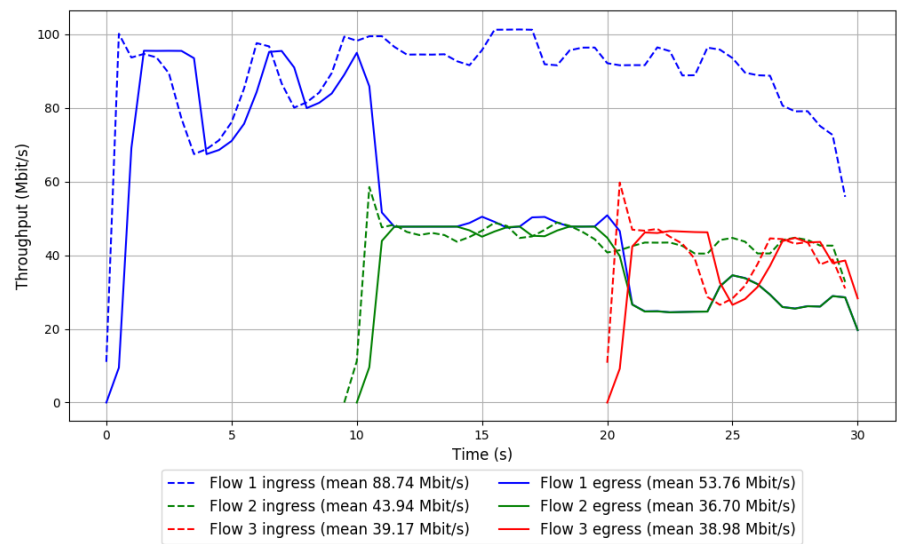


Run 2: Statistics of PCC-Expr

Start at: 2018-09-08 00:54:11  
End at: 2018-09-08 00:54:41  
Local clock offset: -0.624 ms  
Remote clock offset: -2.739 ms

# Below is generated by plot.py at 2018-09-08 02:43:10  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 90.99 Mbit/s  
95th percentile per-packet one-way delay: 782.263 ms  
Loss rate: 30.65%  
-- Flow 1:  
Average throughput: 53.76 Mbit/s  
95th percentile per-packet one-way delay: 732.085 ms  
Loss rate: 39.54%  
-- Flow 2:  
Average throughput: 36.70 Mbit/s  
95th percentile per-packet one-way delay: 827.859 ms  
Loss rate: 16.76%  
-- Flow 3:  
Average throughput: 38.98 Mbit/s  
95th percentile per-packet one-way delay: 214.493 ms  
Loss rate: 1.14%

Run 2: Report of PCC-Expr — Data Link

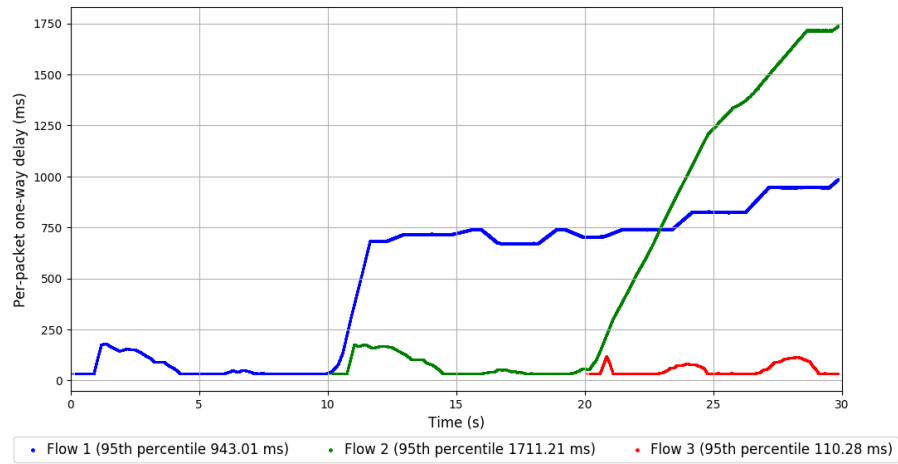
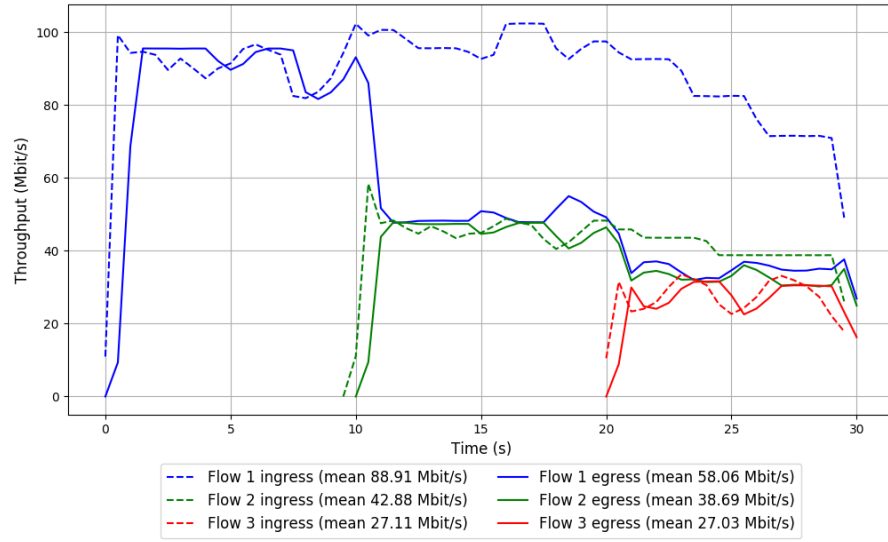


Run 3: Statistics of PCC-Expr

Start at: 2018-09-08 01:19:16  
End at: 2018-09-08 01:19:46  
Local clock offset: 0.949 ms  
Remote clock offset: -1.395 ms

# Below is generated by plot.py at 2018-09-08 02:43:12  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 92.65 Mbit/s  
95th percentile per-packet one-way delay: 1308.762 ms  
Loss rate: 26.84%  
-- Flow 1:  
Average throughput: 58.06 Mbit/s  
95th percentile per-packet one-way delay: 943.012 ms  
Loss rate: 34.84%  
-- Flow 2:  
Average throughput: 38.69 Mbit/s  
95th percentile per-packet one-way delay: 1711.210 ms  
Loss rate: 10.03%  
-- Flow 3:  
Average throughput: 27.03 Mbit/s  
95th percentile per-packet one-way delay: 110.285 ms  
Loss rate: 0.96%

### Run 3: Report of PCC-Expr — Data Link



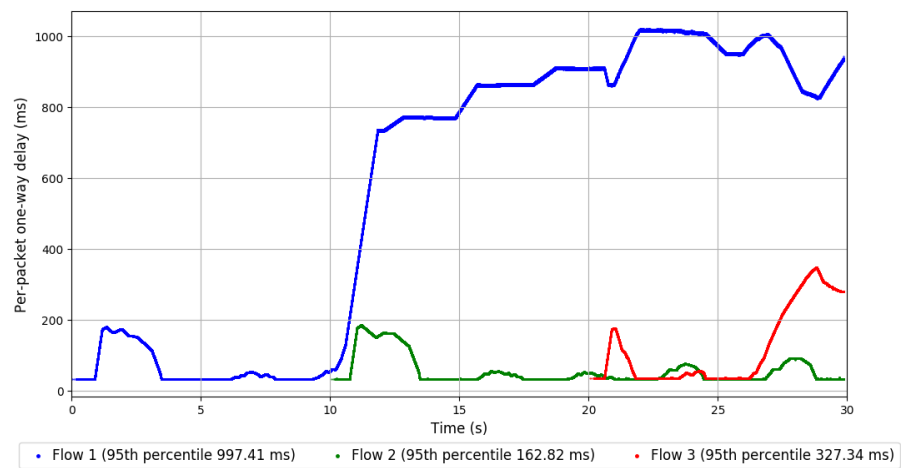
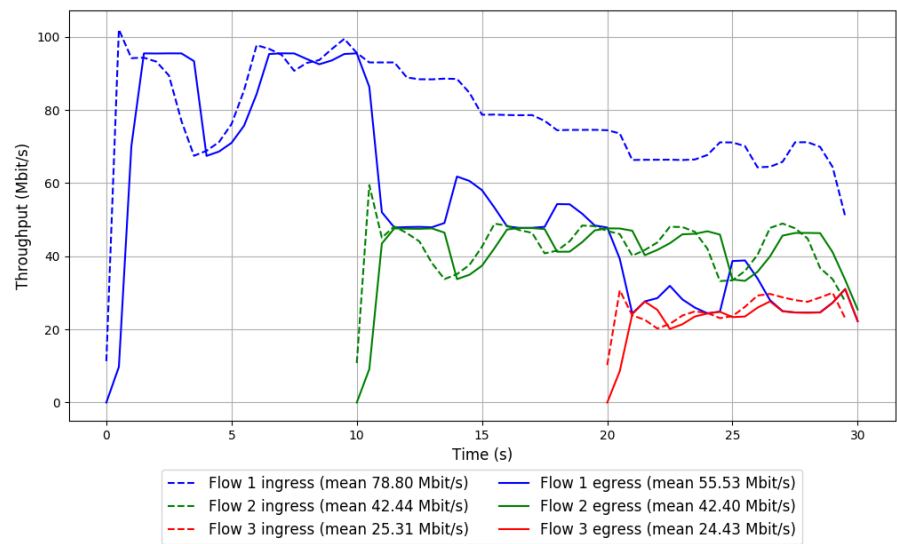


Run 4: Statistics of PCC-Expr

Start at: 2018-09-08 01:44:29  
End at: 2018-09-08 01:44:59  
Local clock offset: 0.823 ms  
Remote clock offset: -0.108 ms

# Below is generated by plot.py at 2018-09-08 02:43:17  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 91.74 Mbit/s  
95th percentile per-packet one-way delay: 954.641 ms  
Loss rate: 20.66%  
-- Flow 1:  
Average throughput: 55.53 Mbit/s  
95th percentile per-packet one-way delay: 997.415 ms  
Loss rate: 29.66%  
-- Flow 2:  
Average throughput: 42.40 Mbit/s  
95th percentile per-packet one-way delay: 162.822 ms  
Loss rate: 0.44%  
-- Flow 3:  
Average throughput: 24.43 Mbit/s  
95th percentile per-packet one-way delay: 327.341 ms  
Loss rate: 4.12%

Run 4: Report of PCC-Expr — Data Link



Run 5: Statistics of PCC-Expr

Start at: 2018-09-08 02:09:19

End at: 2018-09-08 02:09:49

Local clock offset: 0.686 ms

Remote clock offset: 0.903 ms

# Below is generated by plot.py at 2018-09-08 02:43:24

# Datalink statistics

-- Total of 3 flows:

Average throughput: 91.72 Mbit/s

95th percentile per-packet one-way delay: 903.357 ms

Loss rate: 22.06%

-- Flow 1:

Average throughput: 56.13 Mbit/s

95th percentile per-packet one-way delay: 1077.616 ms

Loss rate: 31.37%

-- Flow 2:

Average throughput: 42.07 Mbit/s

95th percentile per-packet one-way delay: 172.992 ms

Loss rate: 0.52%

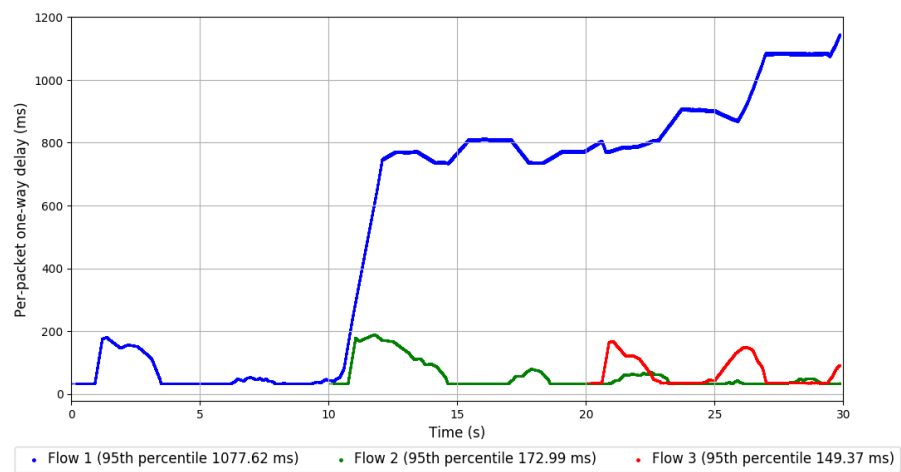
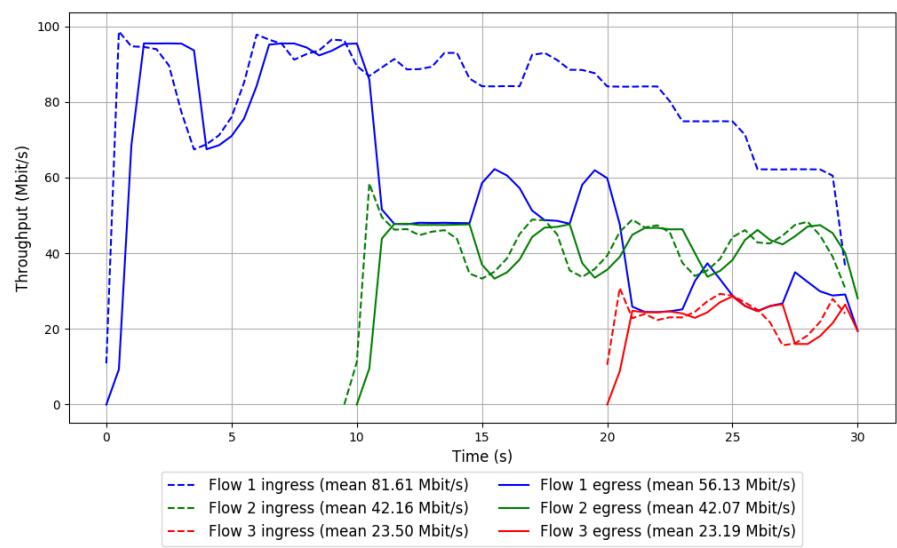
-- Flow 3:

Average throughput: 23.19 Mbit/s

95th percentile per-packet one-way delay: 149.368 ms

Loss rate: 2.01%

Run 5: Report of PCC-Expr — Data Link

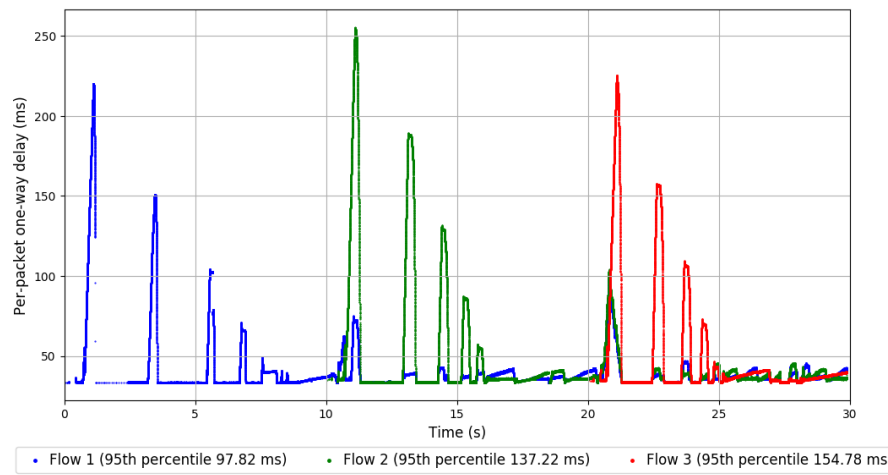
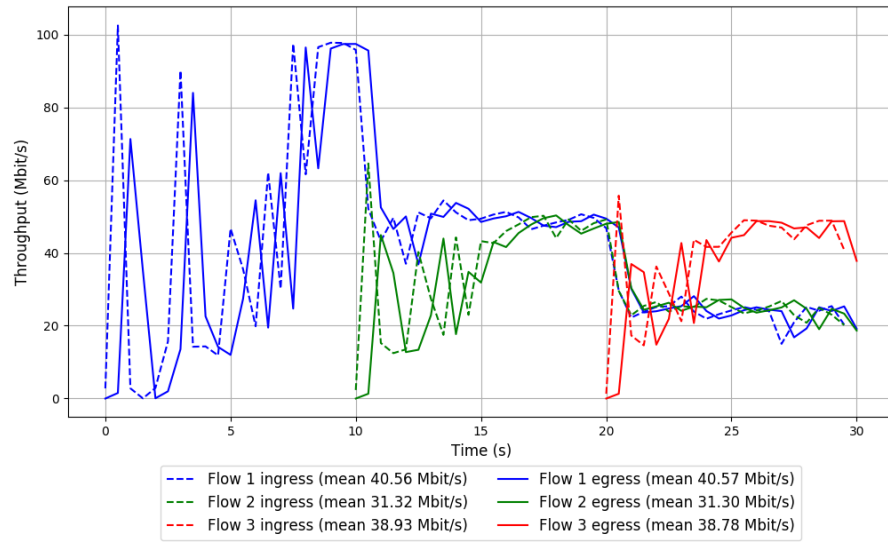


Run 1: Statistics of QUIC Cubic

Start at: 2018-09-08 00:40:20  
End at: 2018-09-08 00:40:50  
Local clock offset: -3.13 ms  
Remote clock offset: -3.564 ms

# Below is generated by plot.py at 2018-09-08 02:43:24  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 74.14 Mbit/s  
95th percentile per-packet one-way delay: 121.865 ms  
Loss rate: 0.37%  
-- Flow 1:  
Average throughput: 40.57 Mbit/s  
95th percentile per-packet one-way delay: 97.823 ms  
Loss rate: 0.17%  
-- Flow 2:  
Average throughput: 31.30 Mbit/s  
95th percentile per-packet one-way delay: 137.216 ms  
Loss rate: 0.37%  
-- Flow 3:  
Average throughput: 38.78 Mbit/s  
95th percentile per-packet one-way delay: 154.781 ms  
Loss rate: 1.02%

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

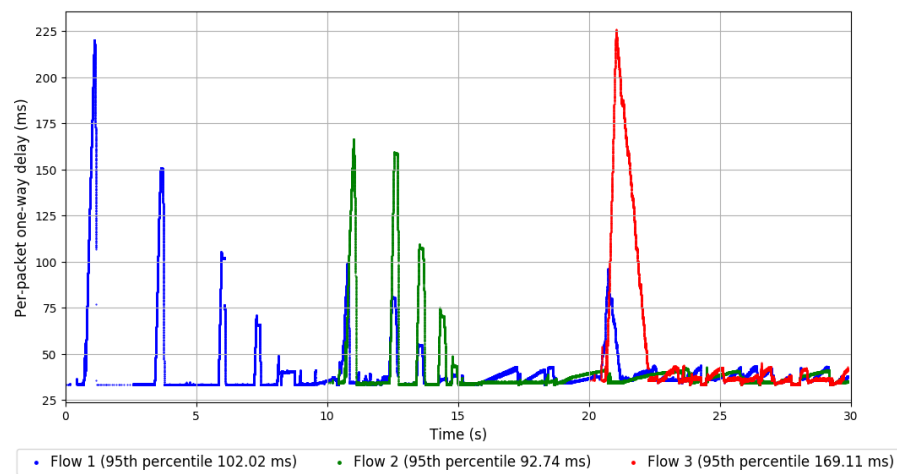
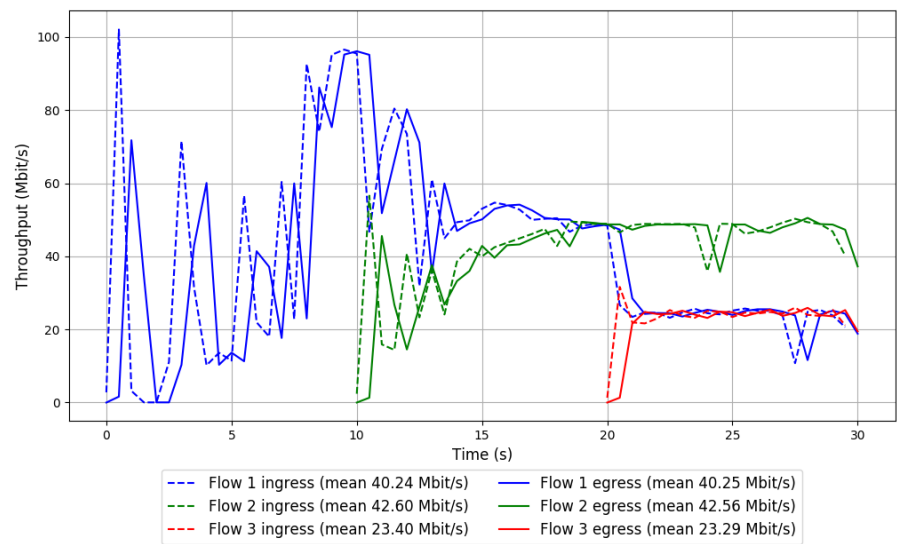


Run 2: Statistics of QUIC Cubic

Start at: 2018-09-08 01:05:34  
End at: 2018-09-08 01:06:04  
Local clock offset: 0.674 ms  
Remote clock offset: -2.188 ms

# Below is generated by plot.py at 2018-09-08 02:43:24  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 76.20 Mbit/s  
95th percentile per-packet one-way delay: 102.568 ms  
Loss rate: 0.37%  
-- Flow 1:  
Average throughput: 40.25 Mbit/s  
95th percentile per-packet one-way delay: 102.018 ms  
Loss rate: 0.19%  
-- Flow 2:  
Average throughput: 42.56 Mbit/s  
95th percentile per-packet one-way delay: 92.736 ms  
Loss rate: 0.42%  
-- Flow 3:  
Average throughput: 23.29 Mbit/s  
95th percentile per-packet one-way delay: 169.107 ms  
Loss rate: 1.13%

Run 2: Report of QUIC Cubic — Data Link



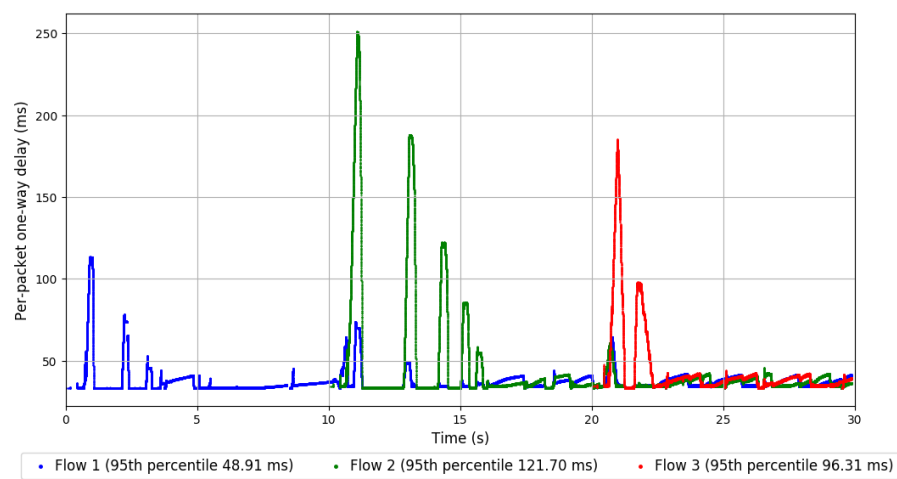
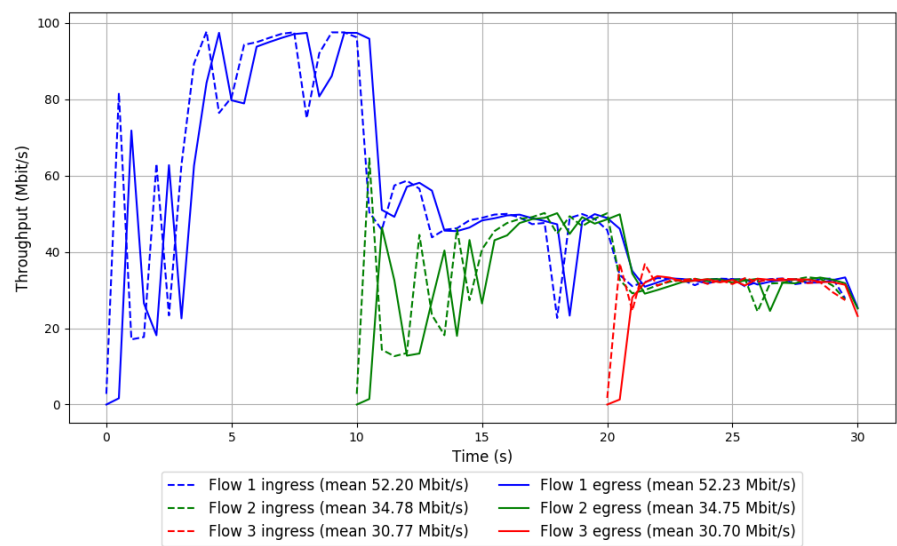


Run 3: Statistics of QUIC Cubic

Start at: 2018-09-08 01:30:44  
End at: 2018-09-08 01:31:14  
Local clock offset: 0.648 ms  
Remote clock offset: -0.622 ms

# Below is generated by plot.py at 2018-09-08 02:43:24  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 85.44 Mbit/s  
95th percentile per-packet one-way delay: 73.850 ms  
Loss rate: 0.32%  
-- Flow 1:  
Average throughput: 52.23 Mbit/s  
95th percentile per-packet one-way delay: 48.909 ms  
Loss rate: 0.17%  
-- Flow 2:  
Average throughput: 34.75 Mbit/s  
95th percentile per-packet one-way delay: 121.705 ms  
Loss rate: 0.40%  
-- Flow 3:  
Average throughput: 30.70 Mbit/s  
95th percentile per-packet one-way delay: 96.306 ms  
Loss rate: 0.88%

Run 3: Report of QUIC Cubic — Data Link



Run 4: Statistics of QUIC Cubic

Start at: 2018-09-08 01:55:37

End at: 2018-09-08 01:56:07

Local clock offset: 0.55 ms

Remote clock offset: 0.452 ms

# Below is generated by plot.py at 2018-09-08 02:43:24

# Datalink statistics

-- Total of 3 flows:

Average throughput: 77.85 Mbit/s

95th percentile per-packet one-way delay: 99.272 ms

Loss rate: 0.41%

-- Flow 1:

Average throughput: 43.74 Mbit/s

95th percentile per-packet one-way delay: 99.345 ms

Loss rate: 0.22%

-- Flow 2:

Average throughput: 36.36 Mbit/s

95th percentile per-packet one-way delay: 106.090 ms

Loss rate: 0.40%

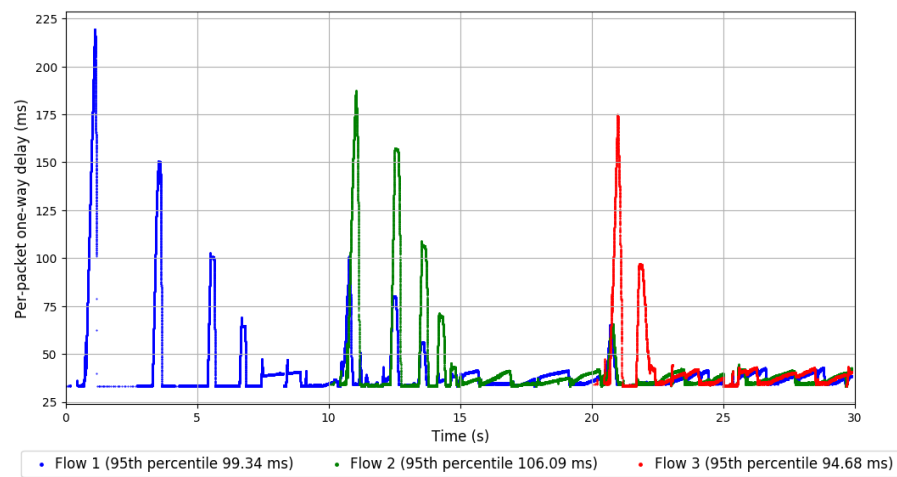
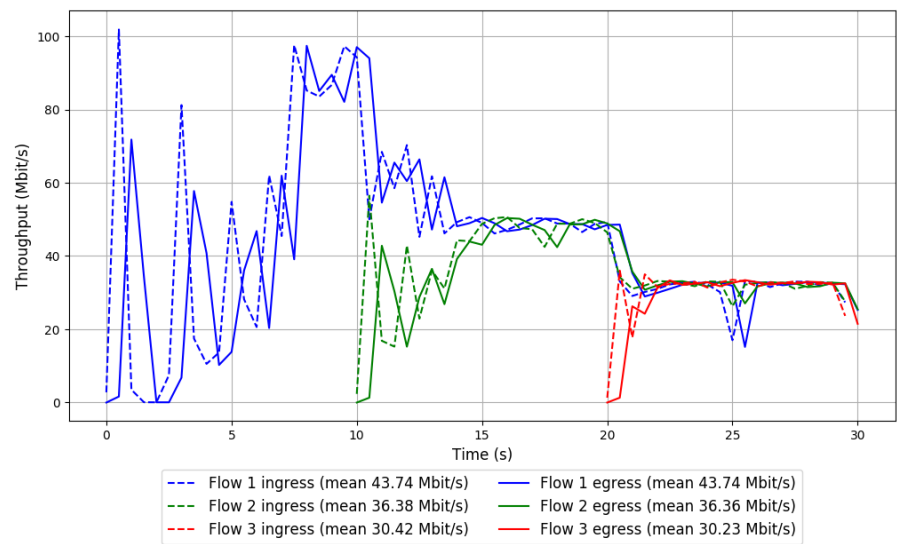
-- Flow 3:

Average throughput: 30.23 Mbit/s

95th percentile per-packet one-way delay: 94.679 ms

Loss rate: 1.28%

Run 4: Report of QUIC Cubic — Data Link



Run 5: Statistics of QUIC Cubic

Start at: 2018-09-08 02:20:26

End at: 2018-09-08 02:20:56

Local clock offset: 0.558 ms

Remote clock offset: 1.25 ms

# Below is generated by plot.py at 2018-09-08 02:43:57

# Datalink statistics

-- Total of 3 flows:

Average throughput: 77.09 Mbit/s

95th percentile per-packet one-way delay: 102.357 ms

Loss rate: 0.35%

-- Flow 1:

Average throughput: 43.73 Mbit/s

95th percentile per-packet one-way delay: 93.527 ms

Loss rate: 0.20%

-- Flow 2:

Average throughput: 35.05 Mbit/s

95th percentile per-packet one-way delay: 124.732 ms

Loss rate: 0.41%

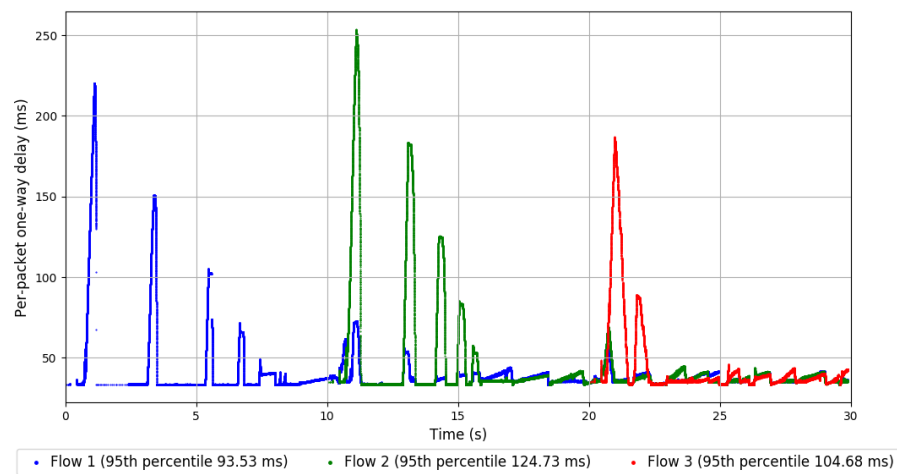
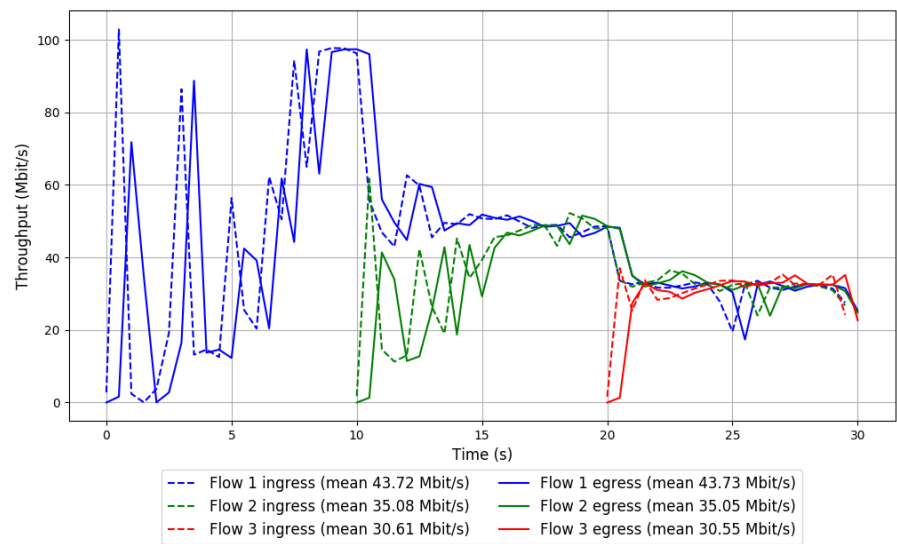
-- Flow 3:

Average throughput: 30.55 Mbit/s

95th percentile per-packet one-way delay: 104.681 ms

Loss rate: 0.85%

Run 5: Report of QUIC Cubic — Data Link

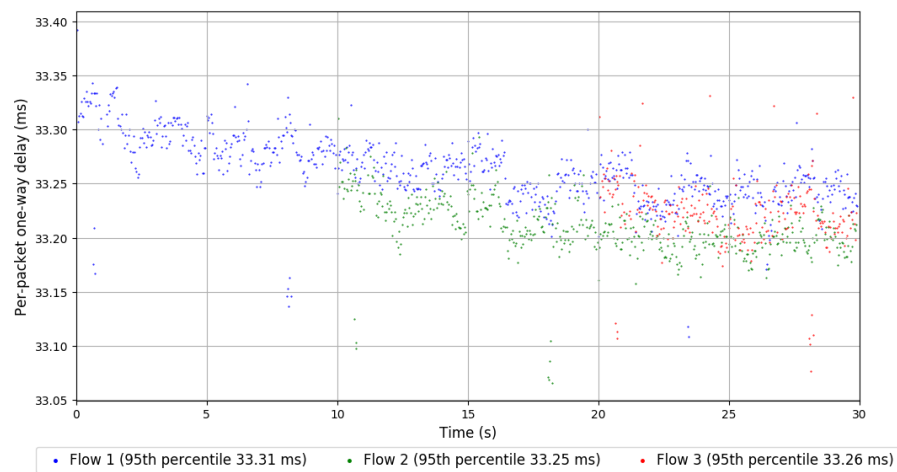
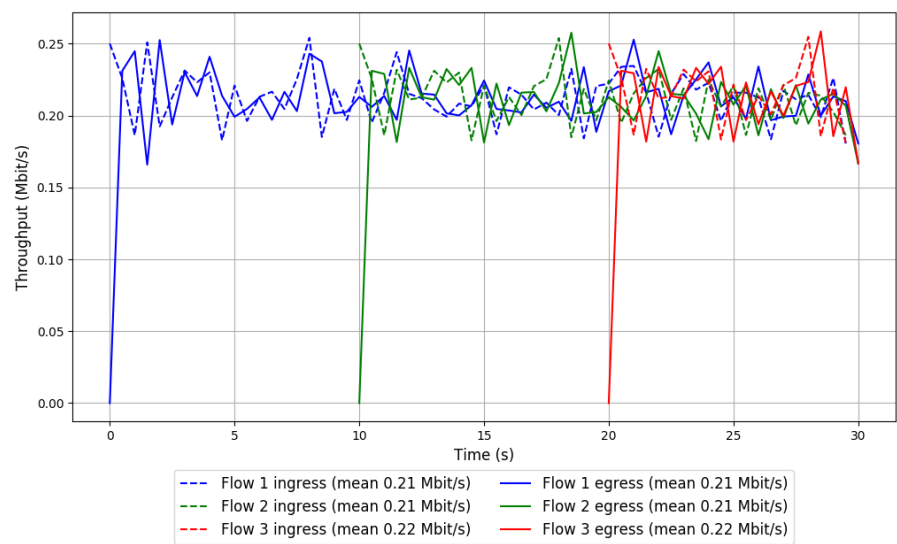


Run 1: Statistics of SReAM

Start at: 2018-09-08 00:48:44  
End at: 2018-09-08 00:49:14  
Local clock offset: -1.953 ms  
Remote clock offset: -3.046 ms

# Below is generated by plot.py at 2018-09-08 02:43:57  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 0.43 Mbit/s  
95th percentile per-packet one-way delay: 33.304 ms  
Loss rate: 0.31%  
-- Flow 1:  
Average throughput: 0.21 Mbit/s  
95th percentile per-packet one-way delay: 33.313 ms  
Loss rate: 0.13%  
-- Flow 2:  
Average throughput: 0.21 Mbit/s  
95th percentile per-packet one-way delay: 33.251 ms  
Loss rate: 0.40%  
-- Flow 3:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 33.259 ms  
Loss rate: 0.71%

Run 1: Report of SReAM — Data Link



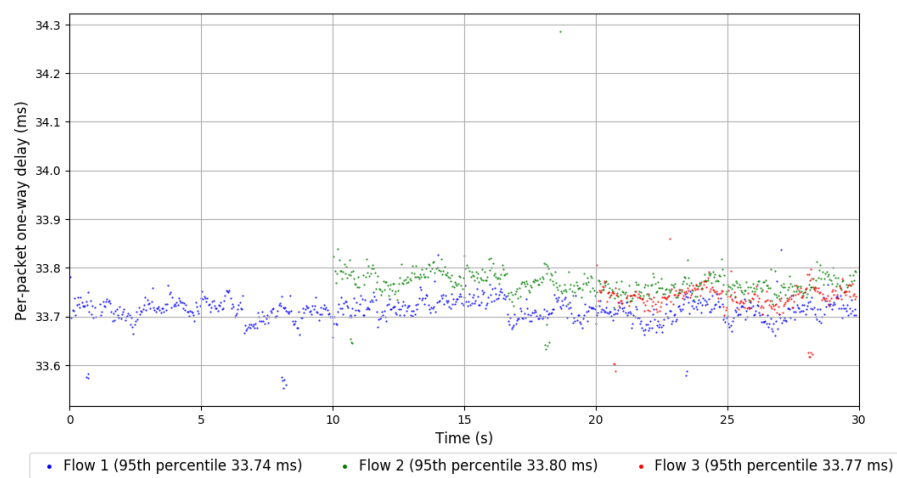
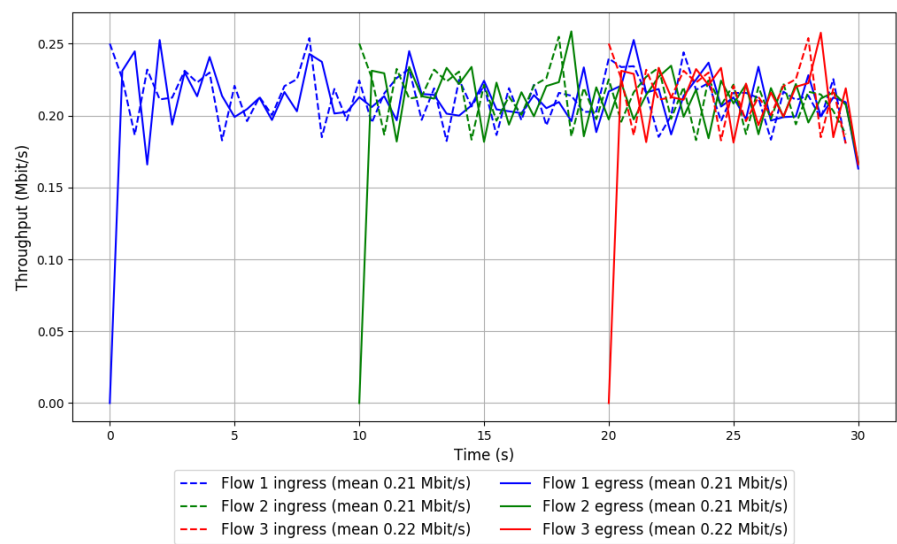


Run 2: Statistics of SReAM

Start at: 2018-09-08 01:13:47  
End at: 2018-09-08 01:14:17  
Local clock offset: 1.181 ms  
Remote clock offset: -1.885 ms

# Below is generated by plot.py at 2018-09-08 02:43:57  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 0.43 Mbit/s  
95th percentile per-packet one-way delay: 33.791 ms  
Loss rate: 0.38%  
-- Flow 1:  
Average throughput: 0.21 Mbit/s  
95th percentile per-packet one-way delay: 33.745 ms  
Loss rate: 0.26%  
-- Flow 2:  
Average throughput: 0.21 Mbit/s  
95th percentile per-packet one-way delay: 33.805 ms  
Loss rate: 0.40%  
-- Flow 3:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 33.772 ms  
Loss rate: 0.71%

Run 2: Report of SReAM — Data Link

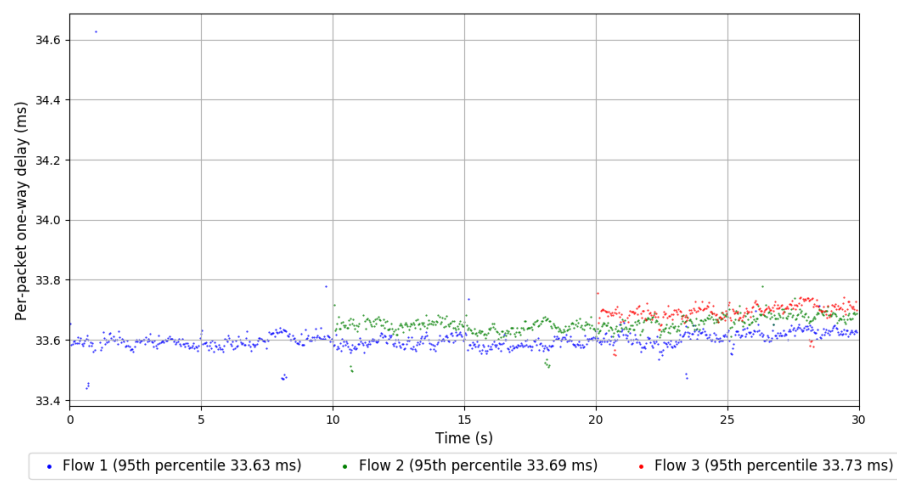
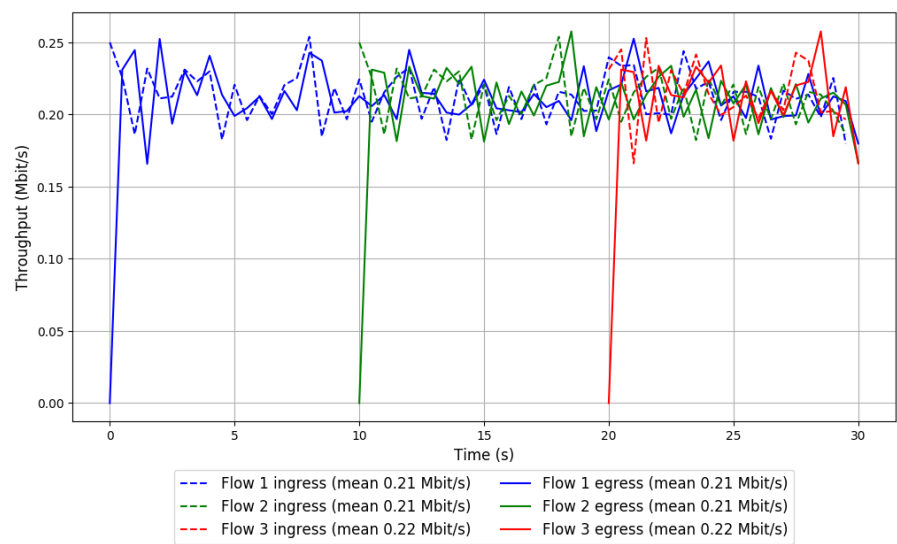


Run 3: Statistics of SReAM

Start at: 2018-09-08 01:39:02  
End at: 2018-09-08 01:39:32  
Local clock offset: 0.782 ms  
Remote clock offset: -0.401 ms

# Below is generated by plot.py at 2018-09-08 02:43:57  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 0.43 Mbit/s  
95th percentile per-packet one-way delay: 33.709 ms  
Loss rate: 0.31%  
-- Flow 1:  
Average throughput: 0.21 Mbit/s  
95th percentile per-packet one-way delay: 33.635 ms  
Loss rate: 0.13%  
-- Flow 2:  
Average throughput: 0.21 Mbit/s  
95th percentile per-packet one-way delay: 33.691 ms  
Loss rate: 0.40%  
-- Flow 3:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 33.731 ms  
Loss rate: 0.71%

Run 3: Report of SReAM — Data Link



Run 4: Statistics of SReAM

Start at: 2018-09-08 02:03:52

End at: 2018-09-08 02:04:22

Local clock offset: 0.577 ms

Remote clock offset: 0.769 ms

# Below is generated by plot.py at 2018-09-08 02:43:57

# Datalink statistics

-- Total of 3 flows:

Average throughput: 0.43 Mbit/s

95th percentile per-packet one-way delay: 33.468 ms

Loss rate: 0.38%

-- Flow 1:

Average throughput: 0.21 Mbit/s

95th percentile per-packet one-way delay: 33.455 ms

Loss rate: 0.26%

-- Flow 2:

Average throughput: 0.21 Mbit/s

95th percentile per-packet one-way delay: 33.474 ms

Loss rate: 0.40%

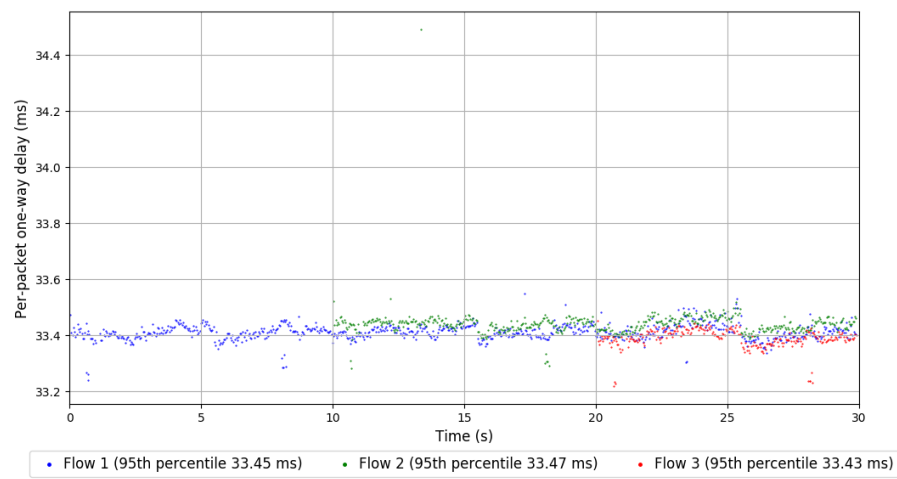
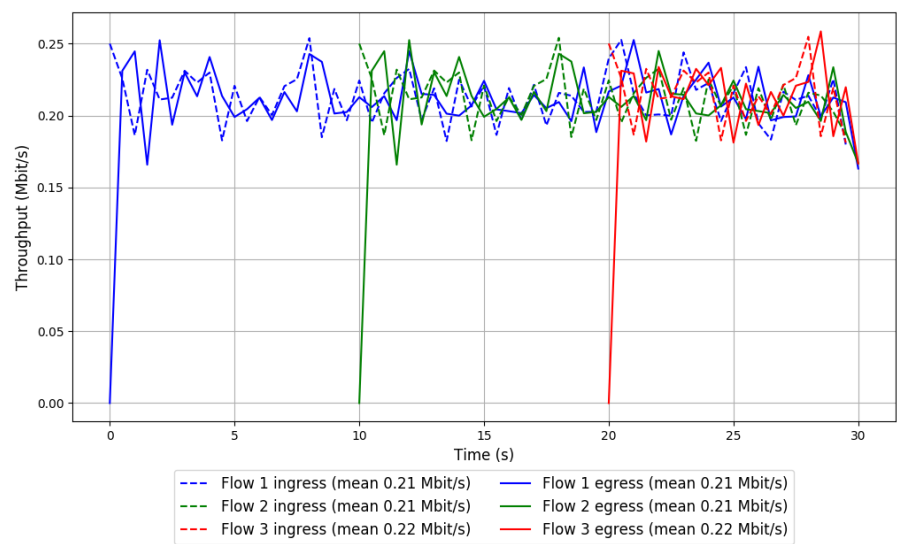
-- Flow 3:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 33.430 ms

Loss rate: 0.71%

Run 4: Report of SReAM — Data Link



Run 5: Statistics of SReAM

Start at: 2018-09-08 02:28:48

End at: 2018-09-08 02:29:18

Local clock offset: 0.437 ms

Remote clock offset: 1.472 ms

# Below is generated by plot.py at 2018-09-08 02:43:57

# Datalink statistics

-- Total of 3 flows:

Average throughput: 0.43 Mbit/s

95th percentile per-packet one-way delay: 33.561 ms

Loss rate: 0.38%

-- Flow 1:

Average throughput: 0.21 Mbit/s

95th percentile per-packet one-way delay: 33.569 ms

Loss rate: 0.26%

-- Flow 2:

Average throughput: 0.21 Mbit/s

95th percentile per-packet one-way delay: 33.508 ms

Loss rate: 0.40%

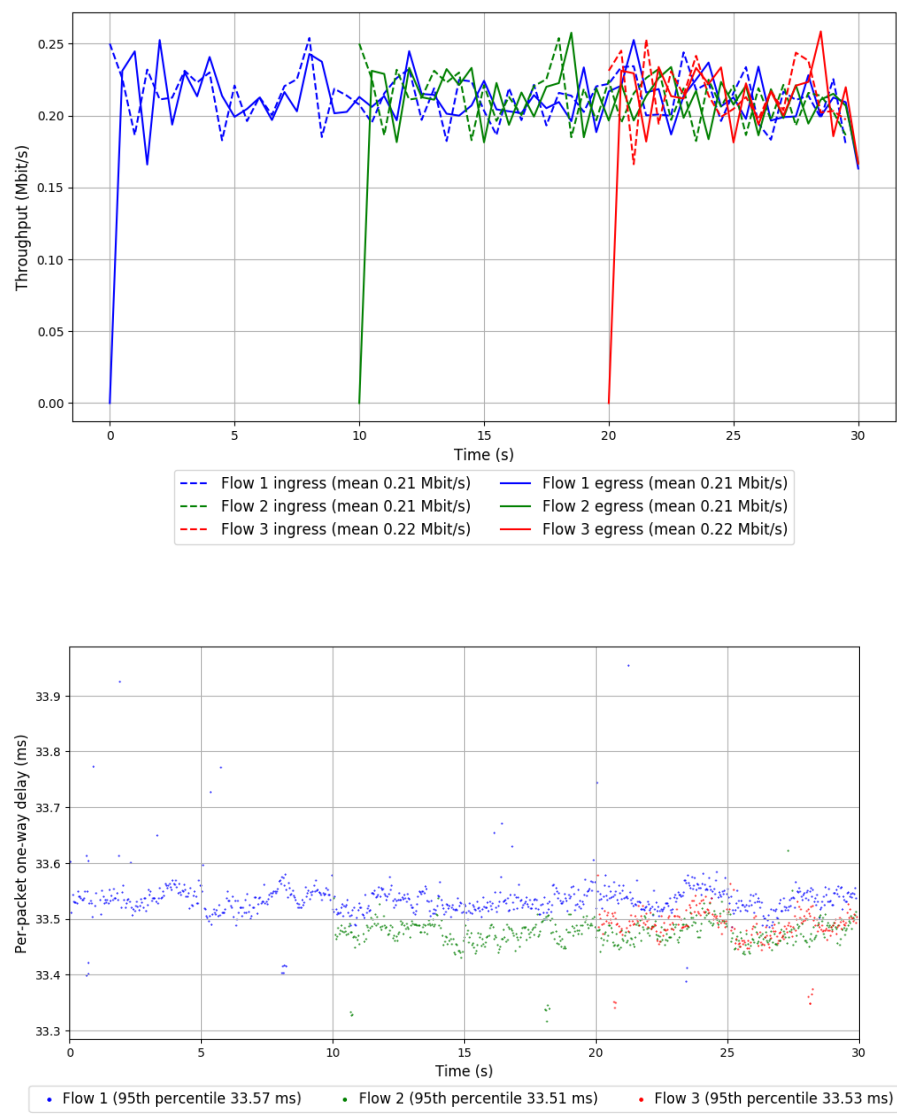
-- Flow 3:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 33.527 ms

Loss rate: 0.71%

Run 5: Report of SCReAM — Data Link





Run 1: Statistics of Sprout

Start at: 2018-09-08 00:44:28

End at: 2018-09-08 00:44:58

Local clock offset: -3.119 ms

Remote clock offset: -3.35 ms

# Below is generated by plot.py at 2018-09-08 02:43:57

# Datalink statistics

-- Total of 3 flows:

Average throughput: 23.70 Mbit/s

95th percentile per-packet one-way delay: 42.354 ms

Loss rate: 0.41%

-- Flow 1:

Average throughput: 11.98 Mbit/s

95th percentile per-packet one-way delay: 42.207 ms

Loss rate: 0.27%

-- Flow 2:

Average throughput: 11.91 Mbit/s

95th percentile per-packet one-way delay: 42.759 ms

Loss rate: 0.42%

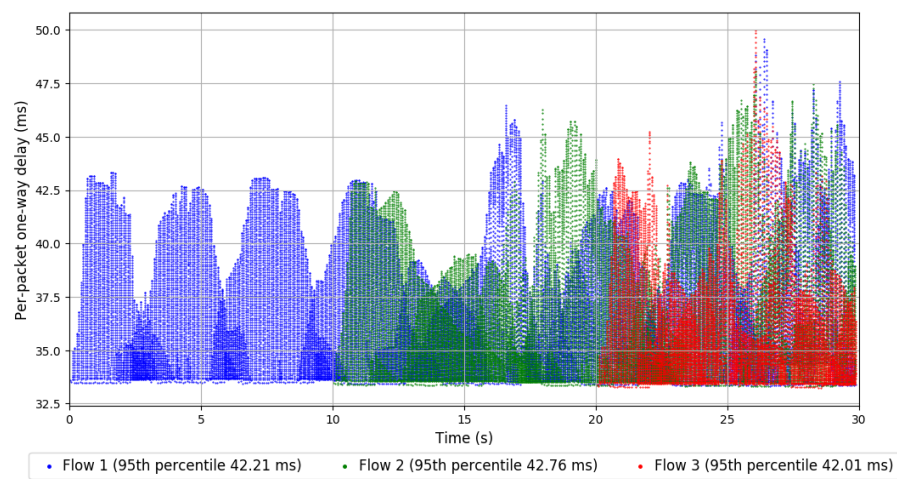
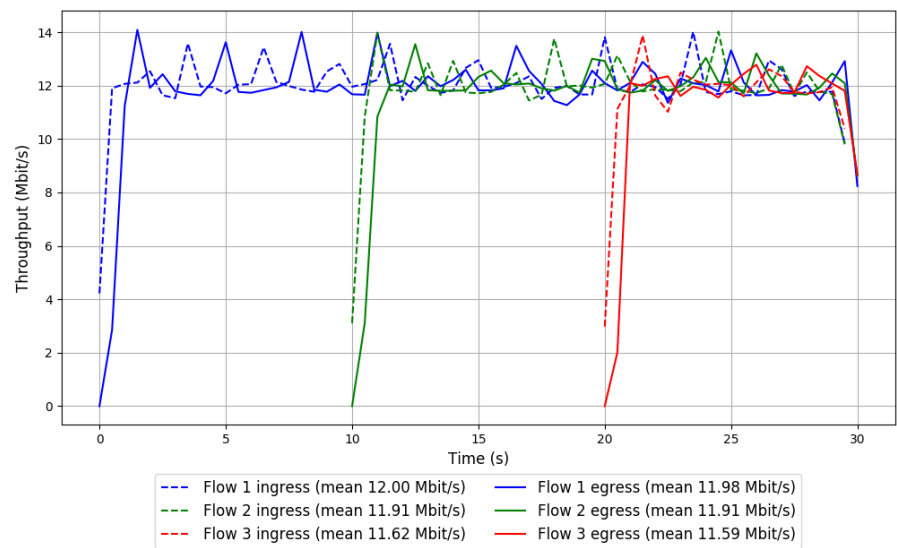
-- Flow 3:

Average throughput: 11.59 Mbit/s

95th percentile per-packet one-way delay: 42.012 ms

Loss rate: 0.82%

Run 1: Report of Sprout — Data Link

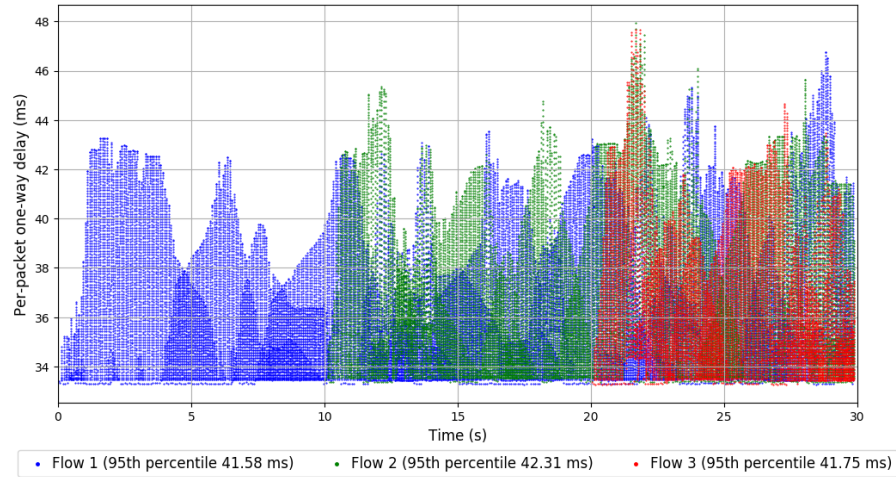
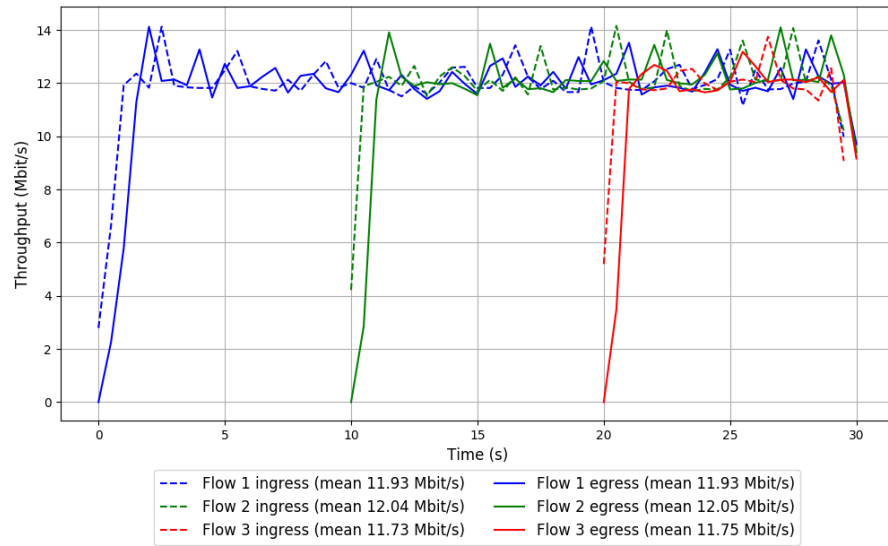


## Run 2: Statistics of Sprout

Start at: 2018-09-08 01:09:41  
End at: 2018-09-08 01:10:11  
Local clock offset: 0.865 ms  
Remote clock offset: -1.932 ms

```
# Below is generated by plot.py at 2018-09-08 02:43:57
# Datalink statistics
-- Total of 3 flows:
Average throughput: 23.80 Mbit/s
95th percentile per-packet one-way delay: 41.904 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 11.93 Mbit/s
95th percentile per-packet one-way delay: 41.578 ms
Loss rate: 0.28%
-- Flow 2:
Average throughput: 12.05 Mbit/s
95th percentile per-packet one-way delay: 42.309 ms
Loss rate: 0.17%
-- Flow 3:
Average throughput: 11.75 Mbit/s
95th percentile per-packet one-way delay: 41.746 ms
Loss rate: 0.40%
```

## Run 2: Report of Sprout — Data Link

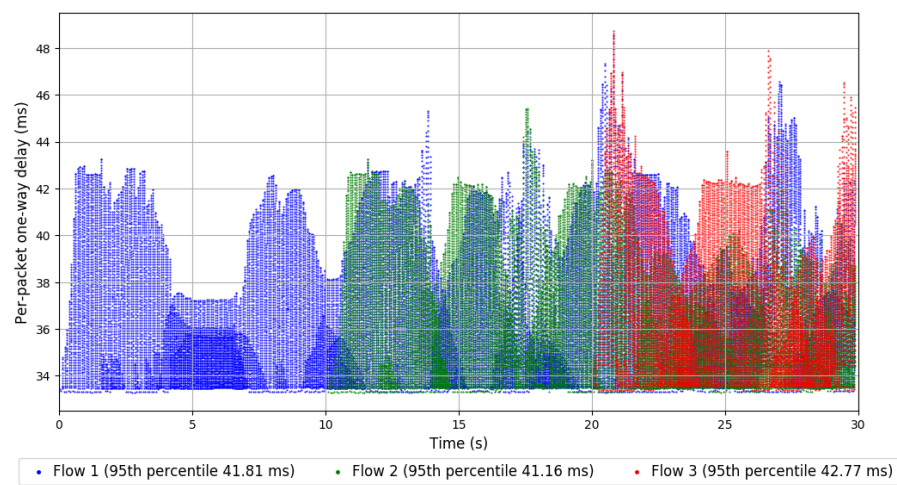
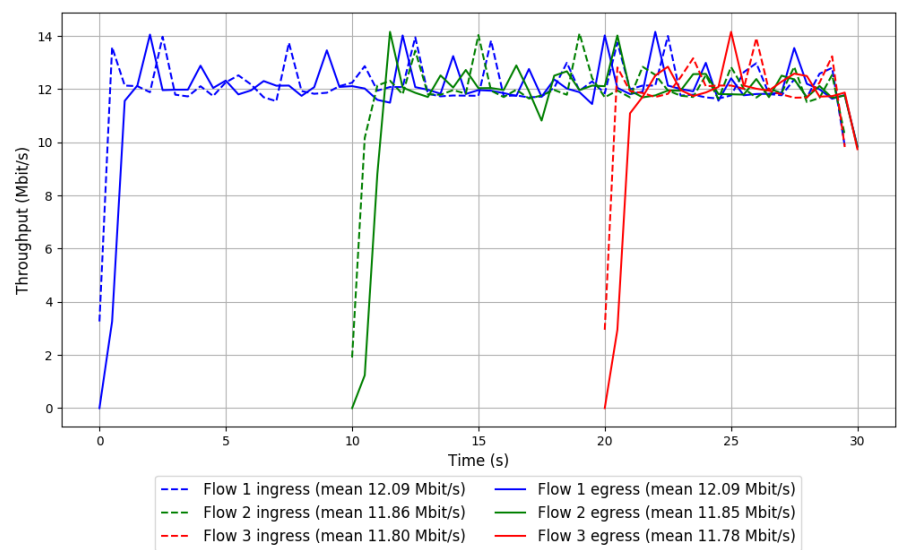


### Run 3: Statistics of Sprout

Start at: 2018-09-08 01:34:55  
End at: 2018-09-08 01:35:25  
Local clock offset: 0.733 ms  
Remote clock offset: -0.382 ms

```
# Below is generated by plot.py at 2018-09-08 02:43:57
# Datalink statistics
-- Total of 3 flows:
Average throughput: 23.84 Mbit/s
95th percentile per-packet one-way delay: 41.781 ms
Loss rate: 0.41%
-- Flow 1:
Average throughput: 12.09 Mbit/s
95th percentile per-packet one-way delay: 41.812 ms
Loss rate: 0.27%
-- Flow 2:
Average throughput: 11.85 Mbit/s
95th percentile per-packet one-way delay: 41.161 ms
Loss rate: 0.41%
-- Flow 3:
Average throughput: 11.78 Mbit/s
95th percentile per-packet one-way delay: 42.768 ms
Loss rate: 0.84%
```

Run 3: Report of Sprout — Data Link



#### Run 4: Statistics of Sprout

Start at: 2018-09-08 01:59:45

End at: 2018-09-08 02:00:15

Local clock offset: 0.565 ms

Remote clock offset: 0.439 ms

# Below is generated by plot.py at 2018-09-08 02:43:57

# Datalink statistics

-- Total of 3 flows:

Average throughput: 23.77 Mbit/s

95th percentile per-packet one-way delay: 42.207 ms

Loss rate: 0.32%

-- Flow 1:

Average throughput: 11.97 Mbit/s

95th percentile per-packet one-way delay: 41.160 ms

Loss rate: 0.25%

-- Flow 2:

Average throughput: 11.94 Mbit/s

95th percentile per-packet one-way delay: 42.784 ms

Loss rate: 0.18%

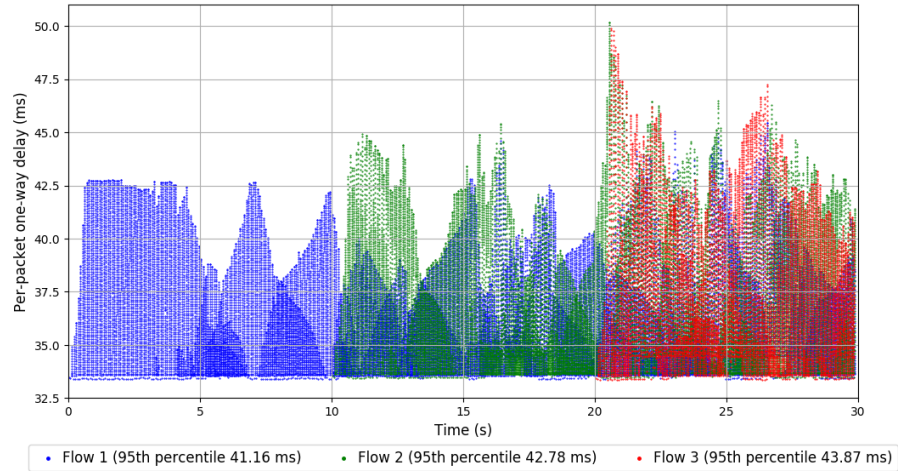
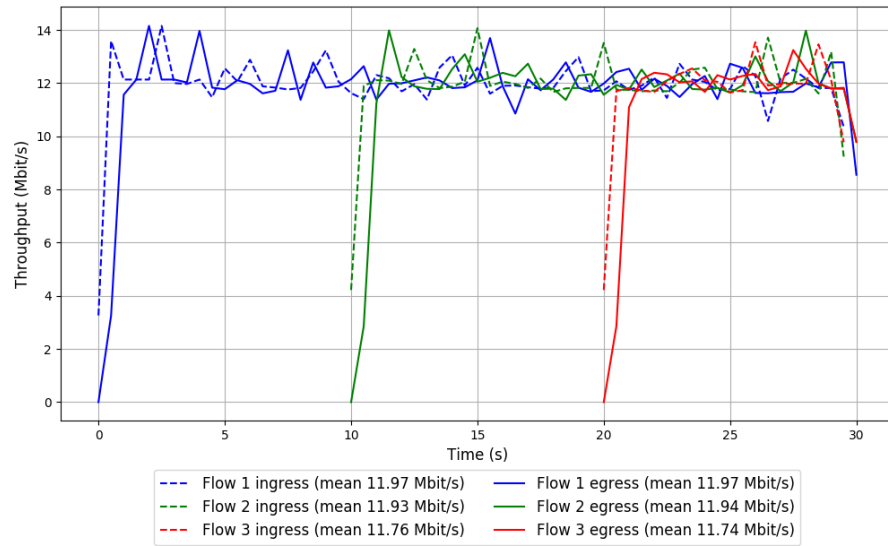
-- Flow 3:

Average throughput: 11.74 Mbit/s

95th percentile per-packet one-way delay: 43.867 ms

Loss rate: 0.84%

#### Run 4: Report of Sprout — Data Link





Run 5: Statistics of Sprout

Start at: 2018-09-08 02:24:34

End at: 2018-09-08 02:25:04

Local clock offset: 0.481 ms

Remote clock offset: 1.385 ms

# Below is generated by plot.py at 2018-09-08 02:43:57

# Datalink statistics

-- Total of 3 flows:

Average throughput: 23.81 Mbit/s

95th percentile per-packet one-way delay: 42.182 ms

Loss rate: 0.26%

-- Flow 1:

Average throughput: 12.00 Mbit/s

95th percentile per-packet one-way delay: 41.724 ms

Loss rate: 0.21%

-- Flow 2:

Average throughput: 11.98 Mbit/s

95th percentile per-packet one-way delay: 42.349 ms

Loss rate: 0.24%

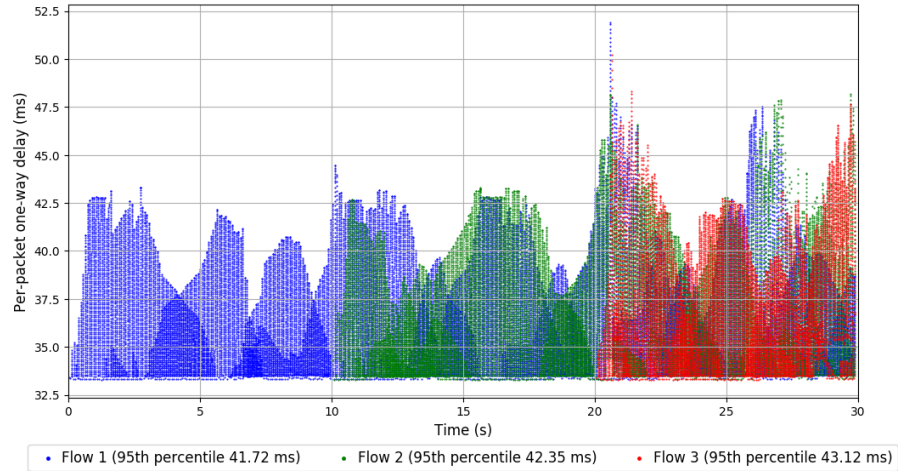
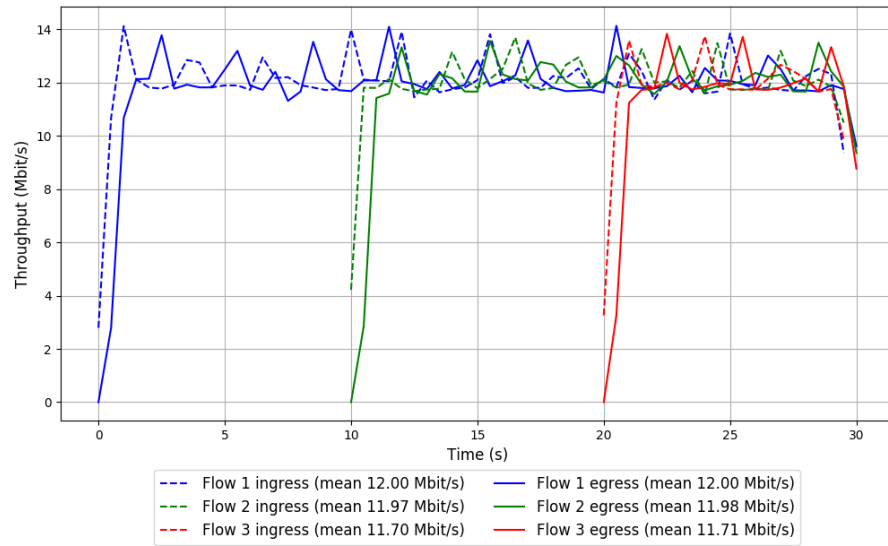
-- Flow 3:

Average throughput: 11.71 Mbit/s

95th percentile per-packet one-way delay: 43.117 ms

Loss rate: 0.47%

## Run 5: Report of Sprout — Data Link

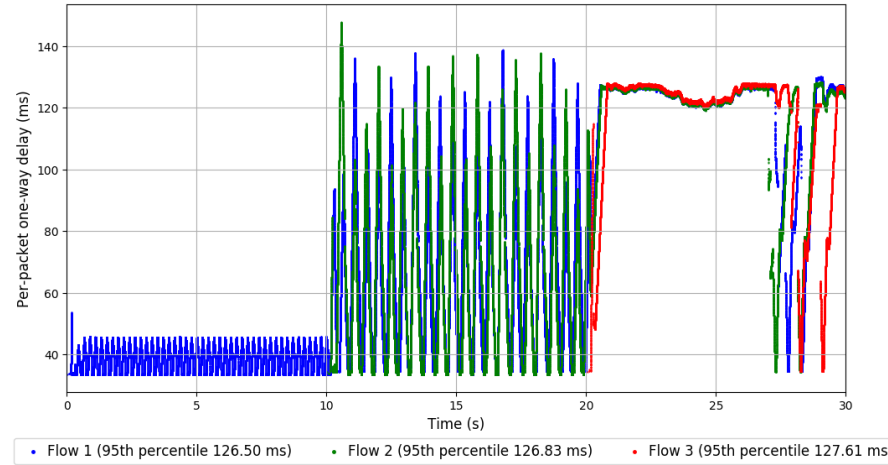
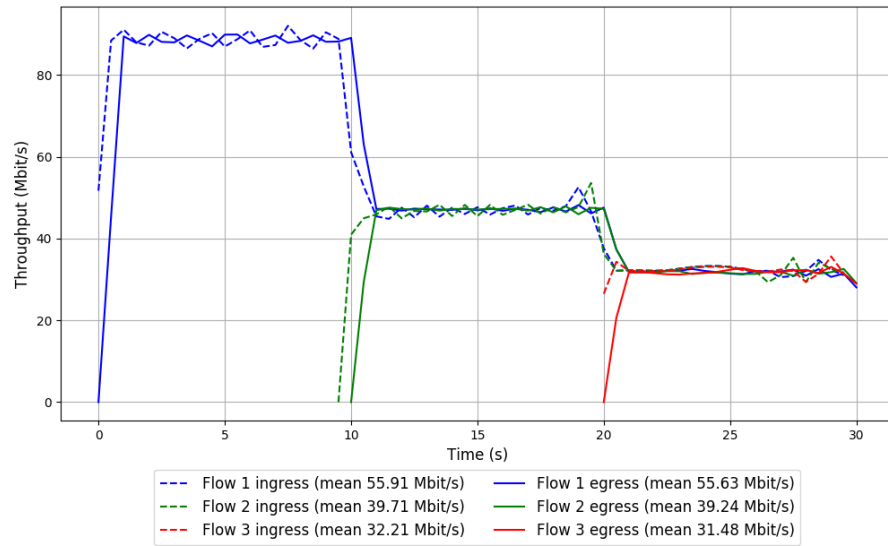


Run 1: Statistics of TaoVA-100x

Start at: 2018-09-08 00:31:59  
End at: 2018-09-08 00:32:29  
Local clock offset: -2.969 ms  
Remote clock offset: -4.278 ms

# Below is generated by plot.py at 2018-09-08 02:45:23  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 92.18 Mbit/s  
95th percentile per-packet one-way delay: 127.013 ms  
Loss rate: 1.18%  
-- Flow 1:  
Average throughput: 55.63 Mbit/s  
95th percentile per-packet one-way delay: 126.499 ms  
Loss rate: 0.71%  
-- Flow 2:  
Average throughput: 39.24 Mbit/s  
95th percentile per-packet one-way delay: 126.835 ms  
Loss rate: 1.50%  
-- Flow 3:  
Average throughput: 31.48 Mbit/s  
95th percentile per-packet one-way delay: 127.611 ms  
Loss rate: 2.89%

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



Run 2: Statistics of TaoVA-100x

Start at: 2018-09-08 00:56:57

End at: 2018-09-08 00:57:27

Local clock offset: -0.28 ms

Remote clock offset: -2.61 ms

# Below is generated by plot.py at 2018-09-08 02:45:28

# Datalink statistics

-- Total of 3 flows:

Average throughput: 92.22 Mbit/s

95th percentile per-packet one-way delay: 127.230 ms

Loss rate: 1.67%

-- Flow 1:

Average throughput: 55.65 Mbit/s

95th percentile per-packet one-way delay: 126.612 ms

Loss rate: 1.09%

-- Flow 2:

Average throughput: 39.07 Mbit/s

95th percentile per-packet one-way delay: 127.086 ms

Loss rate: 2.38%

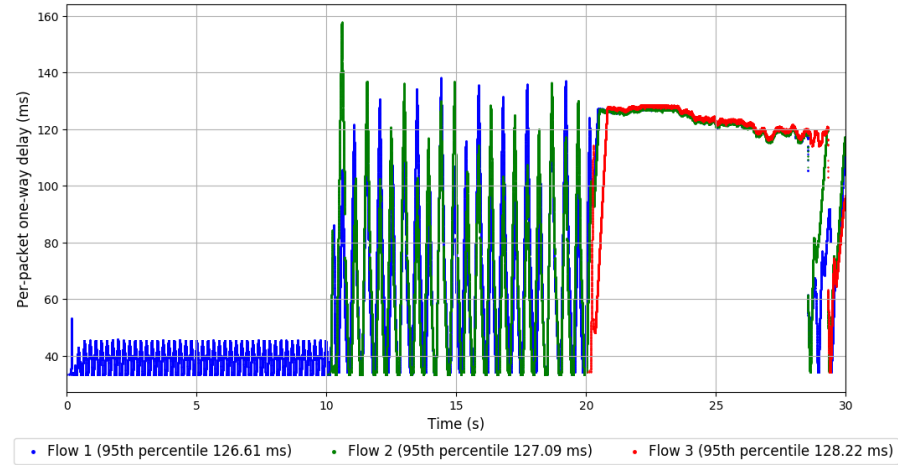
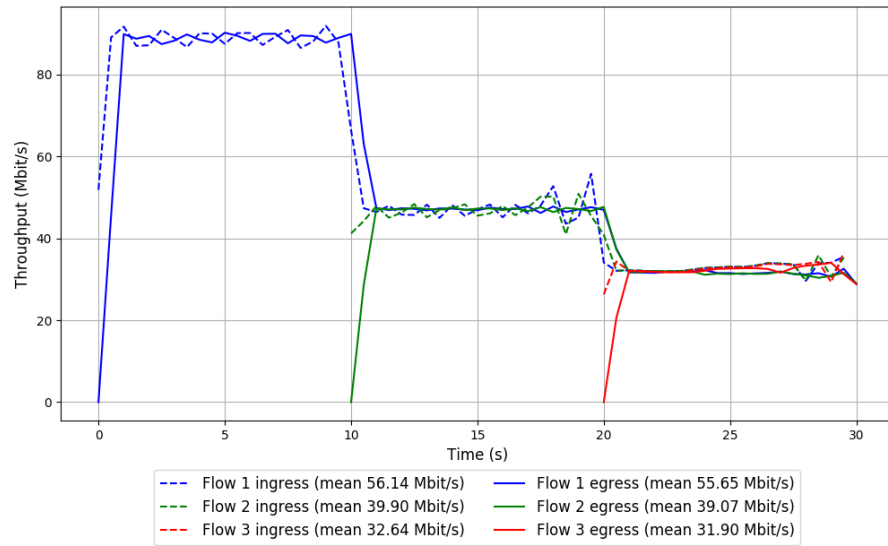
-- Flow 3:

Average throughput: 31.90 Mbit/s

95th percentile per-packet one-way delay: 128.225 ms

Loss rate: 2.91%

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

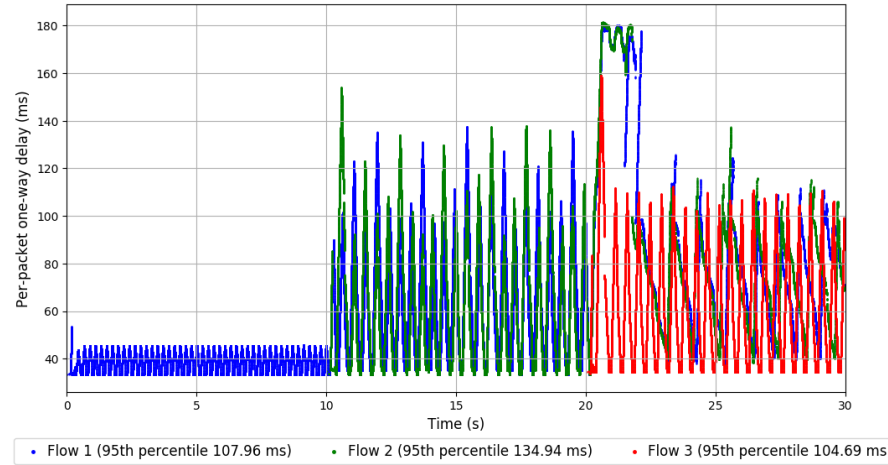
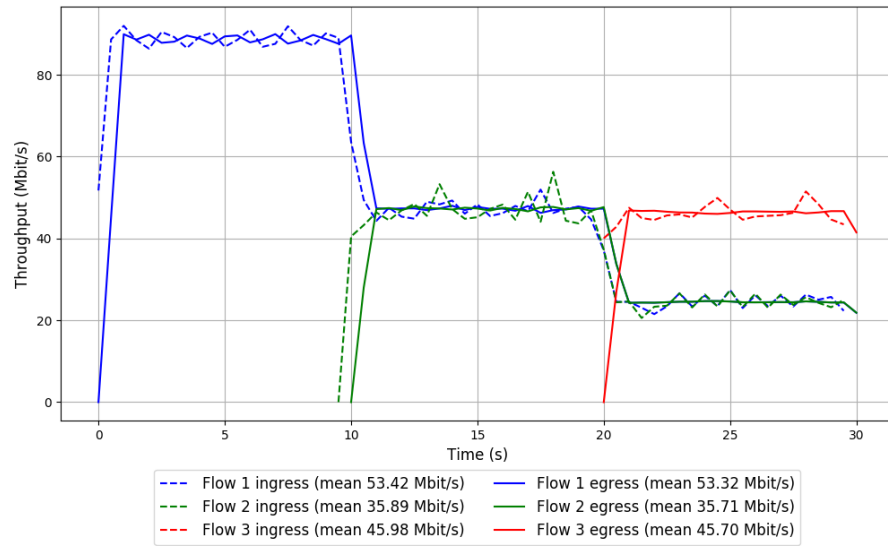


Run 3: Statistics of TaoVA-100x

Start at: 2018-09-08 01:22:06  
End at: 2018-09-08 01:22:36  
Local clock offset: 0.759 ms  
Remote clock offset: -1.213 ms

# Below is generated by plot.py at 2018-09-08 02:45:33  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 92.22 Mbit/s  
95th percentile per-packet one-way delay: 113.648 ms  
Loss rate: 0.64%  
-- Flow 1:  
Average throughput: 53.32 Mbit/s  
95th percentile per-packet one-way delay: 107.961 ms  
Loss rate: 0.40%  
-- Flow 2:  
Average throughput: 35.71 Mbit/s  
95th percentile per-packet one-way delay: 134.940 ms  
Loss rate: 0.81%  
-- Flow 3:  
Average throughput: 45.70 Mbit/s  
95th percentile per-packet one-way delay: 104.690 ms  
Loss rate: 1.25%

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





Run 4: Statistics of TaoVA-100x

Start at: 2018-09-08 01:47:15

End at: 2018-09-08 01:47:45

Local clock offset: 0.67 ms

Remote clock offset: 0.034 ms

# Below is generated by plot.py at 2018-09-08 02:45:35

# Datalink statistics

-- Total of 3 flows:

Average throughput: 92.22 Mbit/s

95th percentile per-packet one-way delay: 126.746 ms

Loss rate: 1.68%

-- Flow 1:

Average throughput: 55.75 Mbit/s

95th percentile per-packet one-way delay: 124.999 ms

Loss rate: 0.79%

-- Flow 2:

Average throughput: 39.32 Mbit/s

95th percentile per-packet one-way delay: 126.888 ms

Loss rate: 1.84%

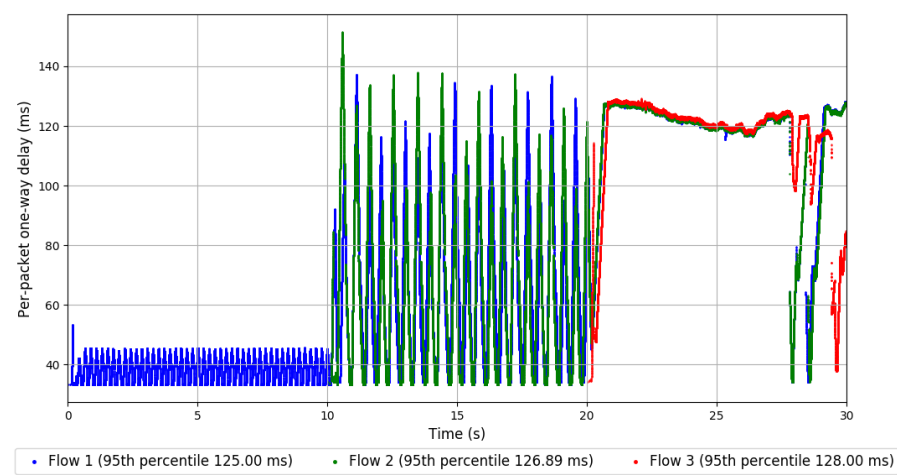
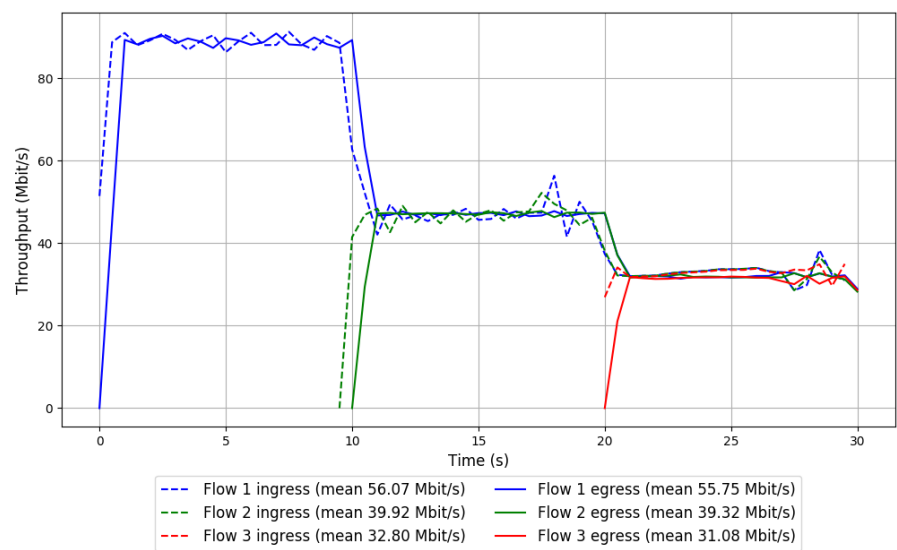
-- Flow 3:

Average throughput: 31.08 Mbit/s

95th percentile per-packet one-way delay: 127.999 ms

Loss rate: 5.86%

Run 4: Report of TaoVA-100x — Data Link



Run 5: Statistics of TaoVA-100x

Start at: 2018-09-08 02:12:04

End at: 2018-09-08 02:12:34

Local clock offset: 0.699 ms

Remote clock offset: 1.042 ms

# Below is generated by plot.py at 2018-09-08 02:45:35

# Datalink statistics

-- Total of 3 flows:

Average throughput: 92.29 Mbit/s

95th percentile per-packet one-way delay: 127.275 ms

Loss rate: 1.02%

-- Flow 1:

Average throughput: 55.73 Mbit/s

95th percentile per-packet one-way delay: 126.399 ms

Loss rate: 0.58%

-- Flow 2:

Average throughput: 39.29 Mbit/s

95th percentile per-packet one-way delay: 127.604 ms

Loss rate: 1.23%

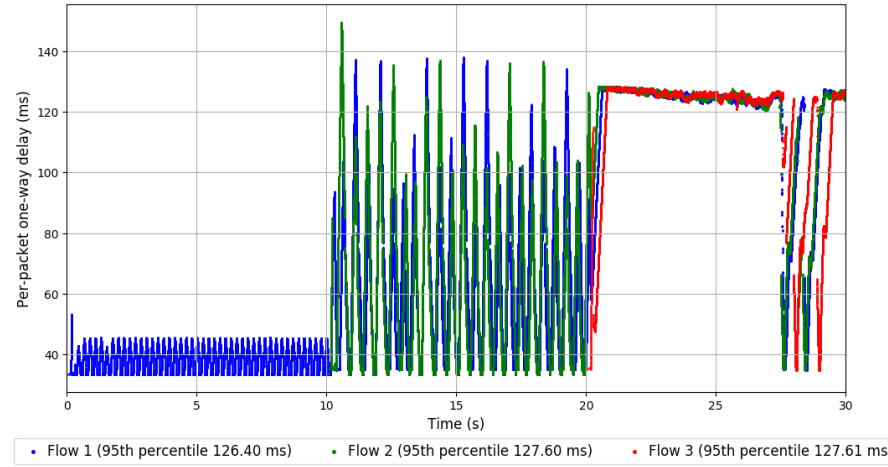
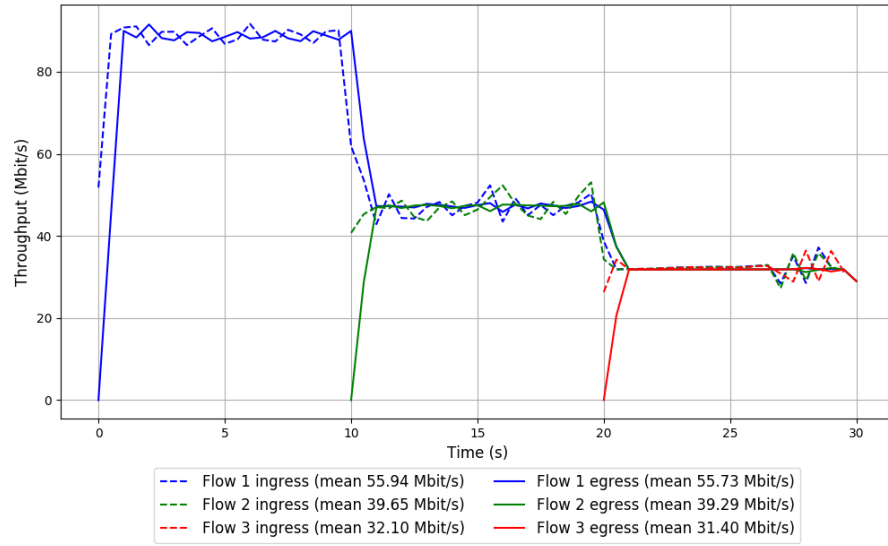
-- Flow 3:

Average throughput: 31.40 Mbit/s

95th percentile per-packet one-way delay: 127.611 ms

Loss rate: 2.81%

# Run 5: Report of TaoVA-100x — Data Link

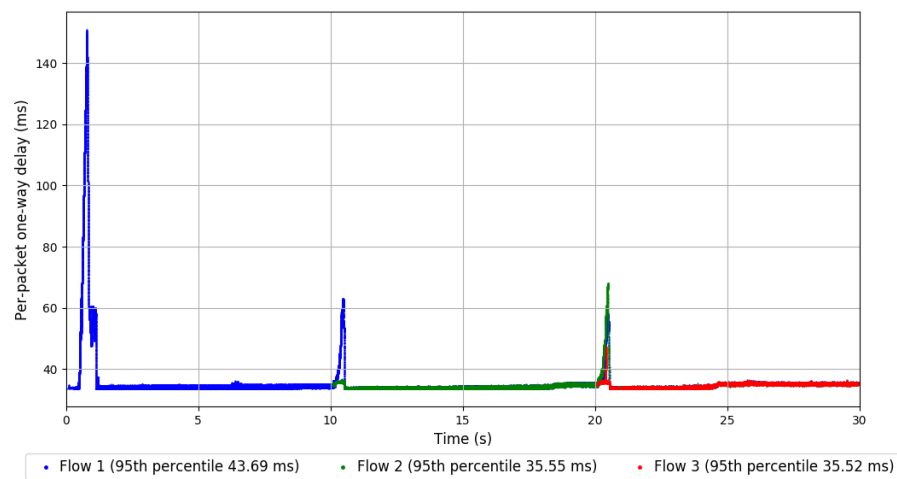
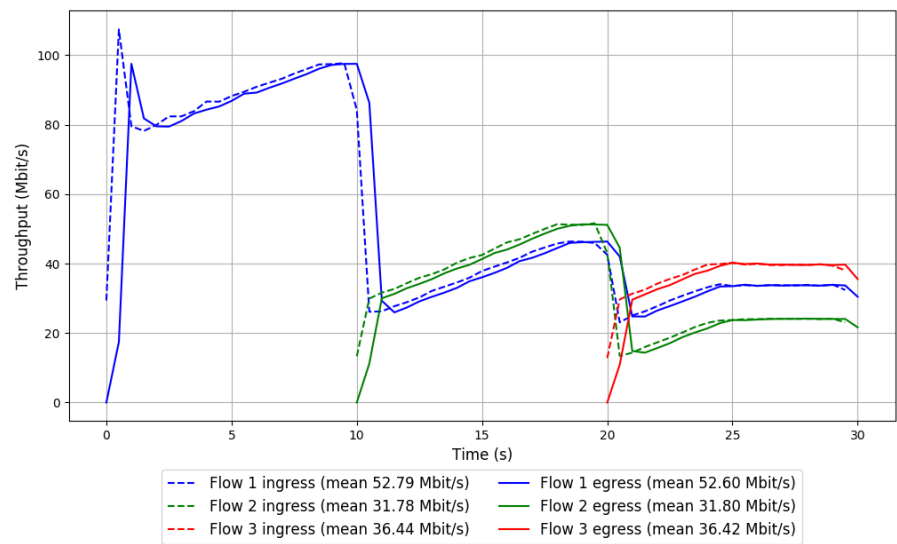


Run 1: Statistics of TCP Vegas

Start at: 2018-09-08 00:43:05  
End at: 2018-09-08 00:43:35  
Local clock offset: -3.097 ms  
Remote clock offset: -3.585 ms

# Below is generated by plot.py at 2018-09-08 02:45:35  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 85.82 Mbit/s  
95th percentile per-packet one-way delay: 35.937 ms  
Loss rate: 0.51%  
-- Flow 1:  
Average throughput: 52.60 Mbit/s  
95th percentile per-packet one-way delay: 43.694 ms  
Loss rate: 0.57%  
-- Flow 2:  
Average throughput: 31.80 Mbit/s  
95th percentile per-packet one-way delay: 35.545 ms  
Loss rate: 0.25%  
-- Flow 3:  
Average throughput: 36.42 Mbit/s  
95th percentile per-packet one-way delay: 35.522 ms  
Loss rate: 0.71%

Run 1: Report of TCP Vegas — Data Link

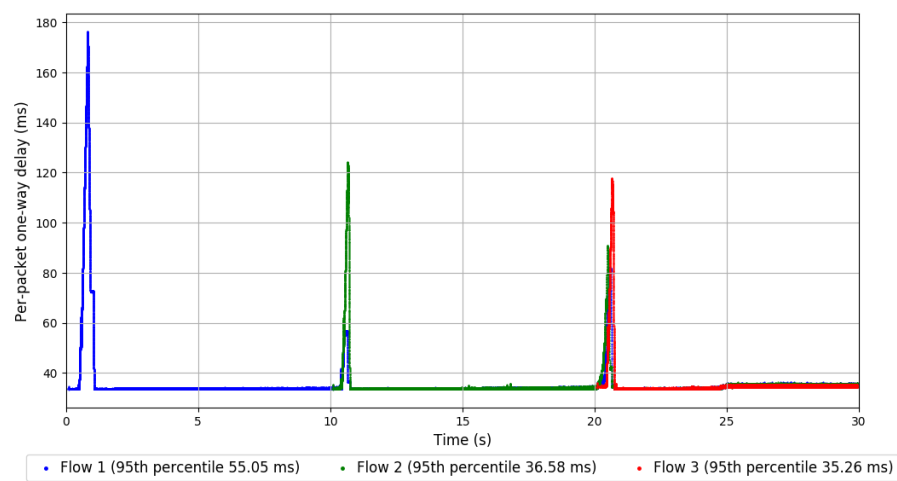
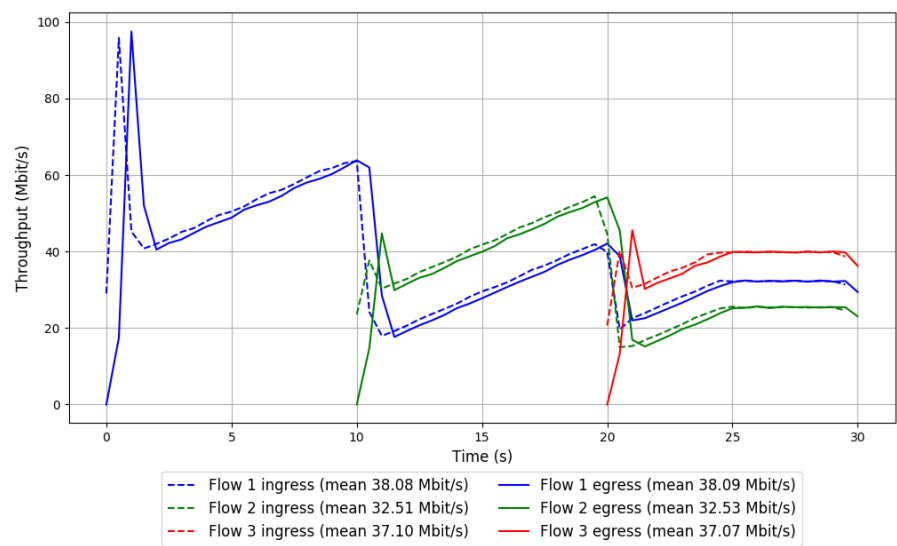


Run 2: Statistics of TCP Vegas

Start at: 2018-09-08 01:08:20  
End at: 2018-09-08 01:08:50  
Local clock offset: 0.866 ms  
Remote clock offset: -2.01 ms

# Below is generated by plot.py at 2018-09-08 02:45:35  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 72.02 Mbit/s  
95th percentile per-packet one-way delay: 42.201 ms  
Loss rate: 0.31%  
-- Flow 1:  
Average throughput: 38.09 Mbit/s  
95th percentile per-packet one-way delay: 55.052 ms  
Loss rate: 0.21%  
-- Flow 2:  
Average throughput: 32.53 Mbit/s  
95th percentile per-packet one-way delay: 36.580 ms  
Loss rate: 0.27%  
-- Flow 3:  
Average throughput: 37.07 Mbit/s  
95th percentile per-packet one-way delay: 35.261 ms  
Loss rate: 0.72%

Run 2: Report of TCP Vegas — Data Link



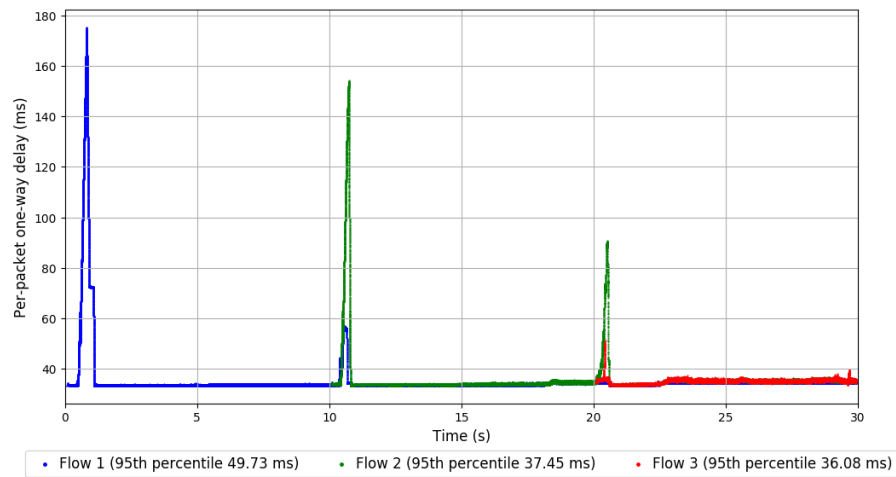
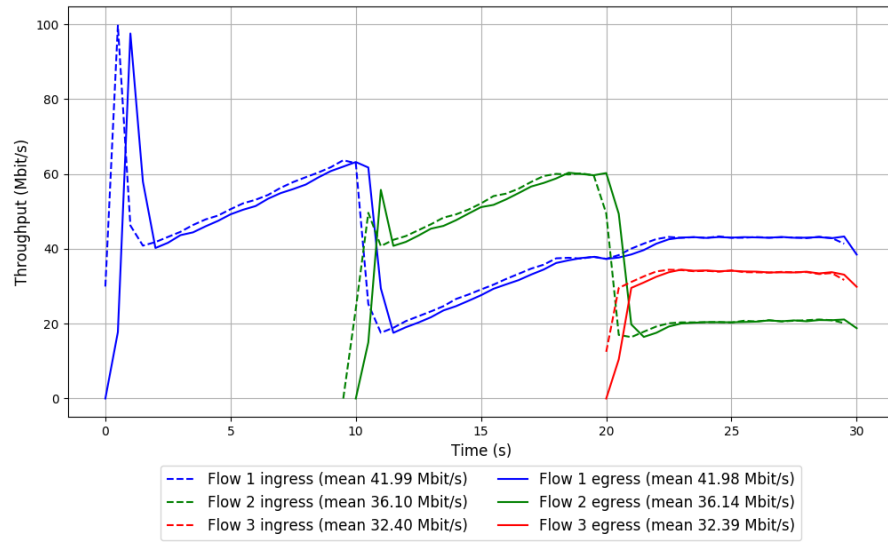


Run 3: Statistics of TCP Vegas

Start at: 2018-09-08 01:33:33  
End at: 2018-09-08 01:34:03  
Local clock offset: 0.723 ms  
Remote clock offset: -0.468 ms

# Below is generated by plot.py at 2018-09-08 02:45:35  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 76.76 Mbit/s  
95th percentile per-packet one-way delay: 36.851 ms  
Loss rate: 0.29%  
-- Flow 1:  
Average throughput: 41.98 Mbit/s  
95th percentile per-packet one-way delay: 49.728 ms  
Loss rate: 0.24%  
-- Flow 2:  
Average throughput: 36.14 Mbit/s  
95th percentile per-packet one-way delay: 37.447 ms  
Loss rate: 0.21%  
-- Flow 3:  
Average throughput: 32.39 Mbit/s  
95th percentile per-packet one-way delay: 36.081 ms  
Loss rate: 0.68%

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



Run 4: Statistics of TCP Vegas

Start at: 2018-09-08 01:58:23

End at: 2018-09-08 01:58:53

Local clock offset: 0.636 ms

Remote clock offset: 0.477 ms

# Below is generated by plot.py at 2018-09-08 02:45:35

# Datalink statistics

-- Total of 3 flows:

Average throughput: 69.80 Mbit/s

95th percentile per-packet one-way delay: 39.437 ms

Loss rate: 0.32%

-- Flow 1:

Average throughput: 35.14 Mbit/s

95th percentile per-packet one-way delay: 55.040 ms

Loss rate: 0.18%

-- Flow 2:

Average throughput: 32.94 Mbit/s

95th percentile per-packet one-way delay: 35.662 ms

Loss rate: 0.30%

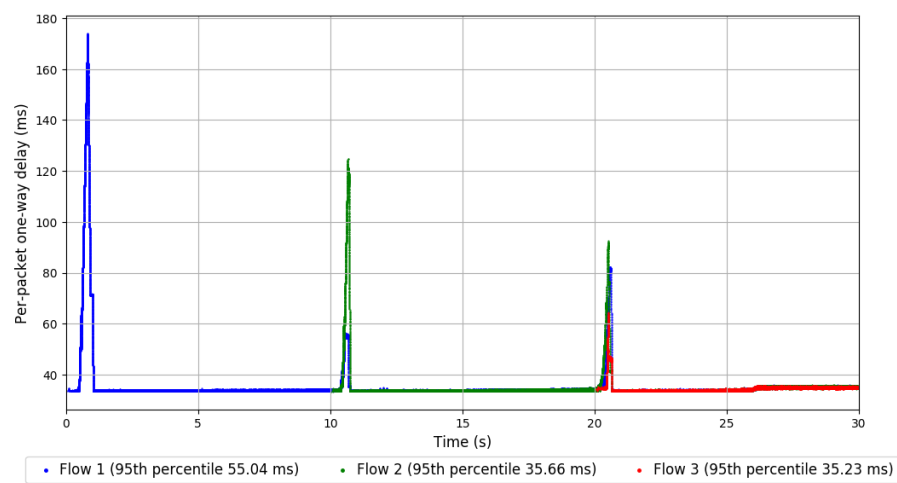
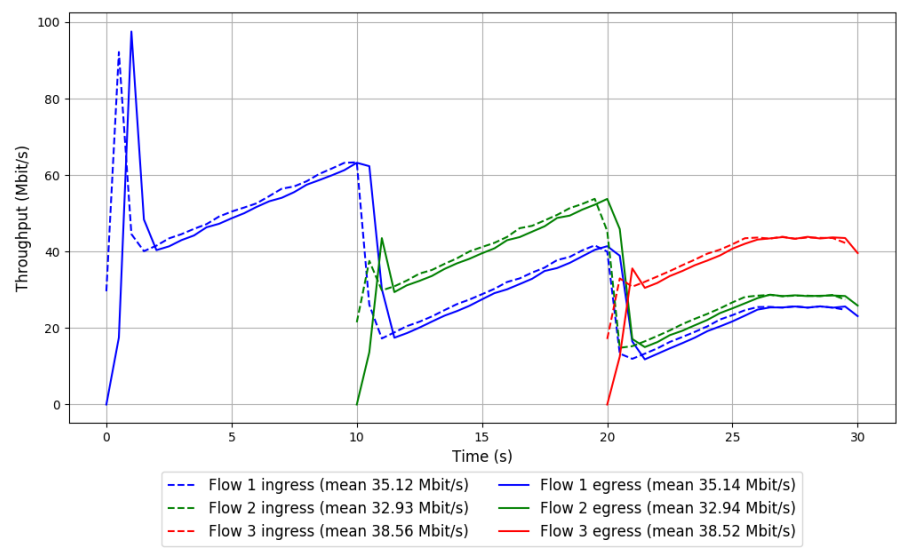
-- Flow 3:

Average throughput: 38.52 Mbit/s

95th percentile per-packet one-way delay: 35.234 ms

Loss rate: 0.75%

Run 4: Report of TCP Vegas — Data Link



Run 5: Statistics of TCP Vegas

Start at: 2018-09-08 02:23:12

End at: 2018-09-08 02:23:42

Local clock offset: 0.513 ms

Remote clock offset: 1.285 ms

# Below is generated by plot.py at 2018-09-08 02:45:35

# Datalink statistics

-- Total of 3 flows:

Average throughput: 80.91 Mbit/s

95th percentile per-packet one-way delay: 36.383 ms

Loss rate: 0.27%

-- Flow 1:

Average throughput: 45.00 Mbit/s

95th percentile per-packet one-way delay: 37.310 ms

Loss rate: 0.15%

-- Flow 2:

Average throughput: 36.41 Mbit/s

95th percentile per-packet one-way delay: 35.607 ms

Loss rate: 0.30%

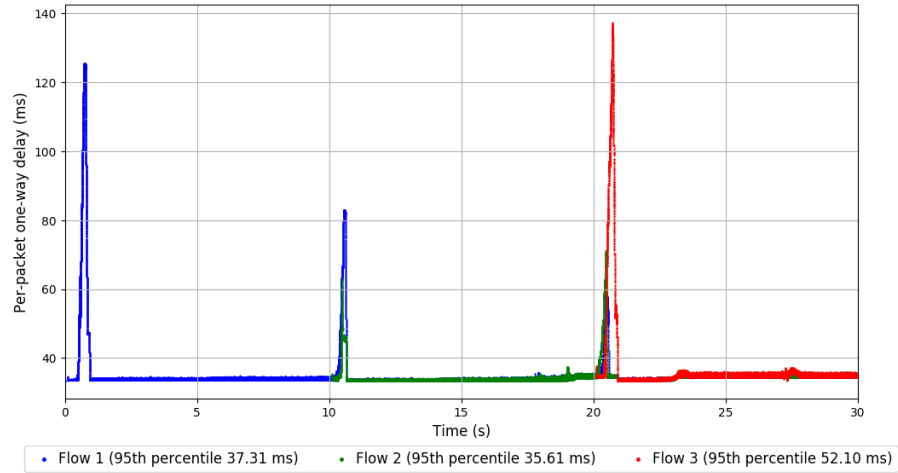
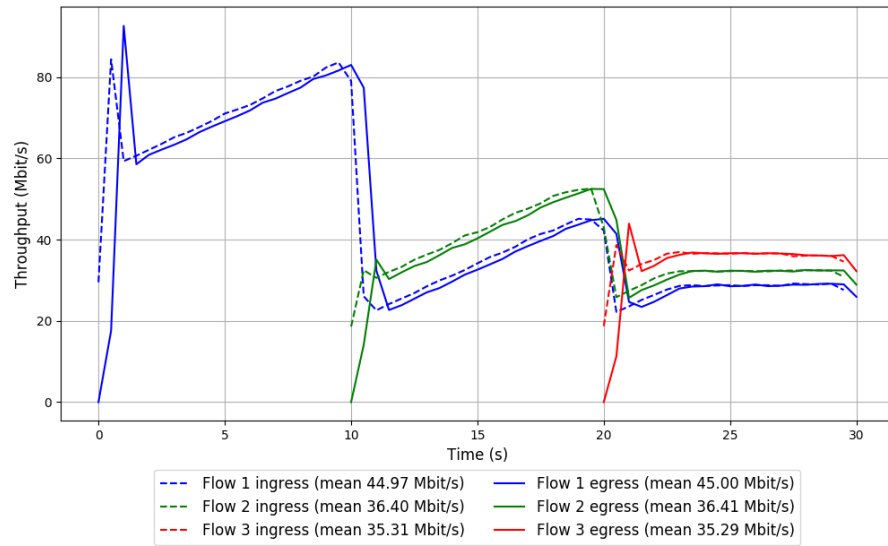
-- Flow 3:

Average throughput: 35.29 Mbit/s

95th percentile per-packet one-way delay: 52.096 ms

Loss rate: 0.70%

# Run 5: Report of TCP Vegas — Data Link

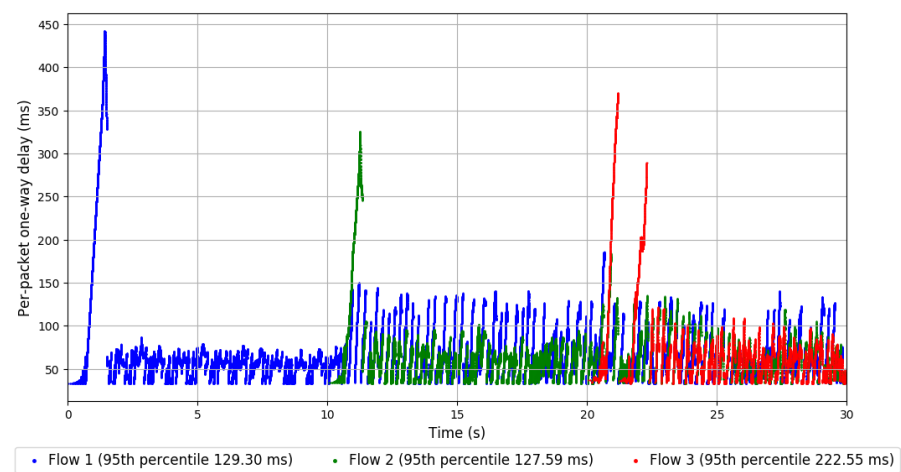
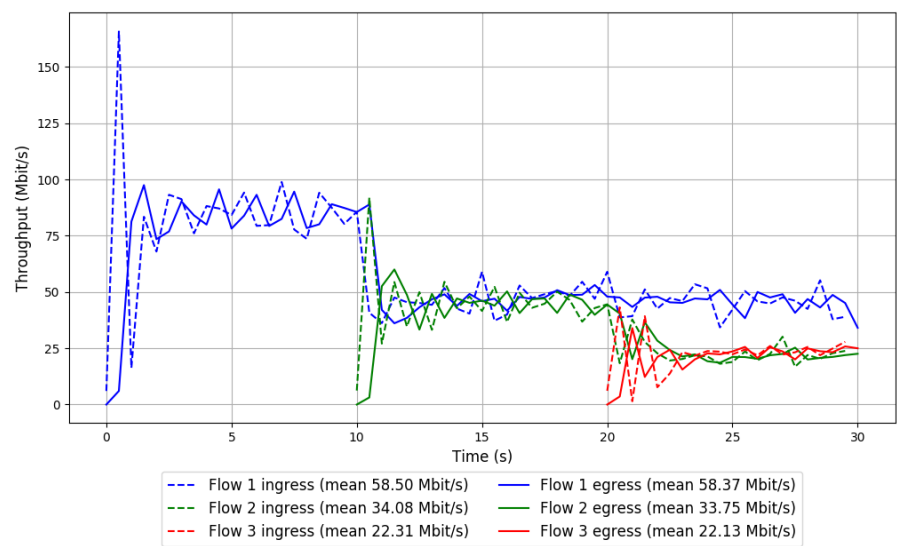


Run 1: Statistics of Verus

Start at: 2018-09-08 00:51:25  
End at: 2018-09-08 00:51:55  
Local clock offset: -1.131 ms  
Remote clock offset: -2.948 ms

# Below is generated by plot.py at 2018-09-08 02:46:01  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 88.14 Mbit/s  
95th percentile per-packet one-way delay: 133.333 ms  
Loss rate: 0.72%  
-- Flow 1:  
Average throughput: 58.37 Mbit/s  
95th percentile per-packet one-way delay: 129.304 ms  
Loss rate: 0.43%  
-- Flow 2:  
Average throughput: 33.75 Mbit/s  
95th percentile per-packet one-way delay: 127.592 ms  
Loss rate: 1.25%  
-- Flow 3:  
Average throughput: 22.13 Mbit/s  
95th percentile per-packet one-way delay: 222.553 ms  
Loss rate: 1.43%

Run 1: Report of Verus — Data Link



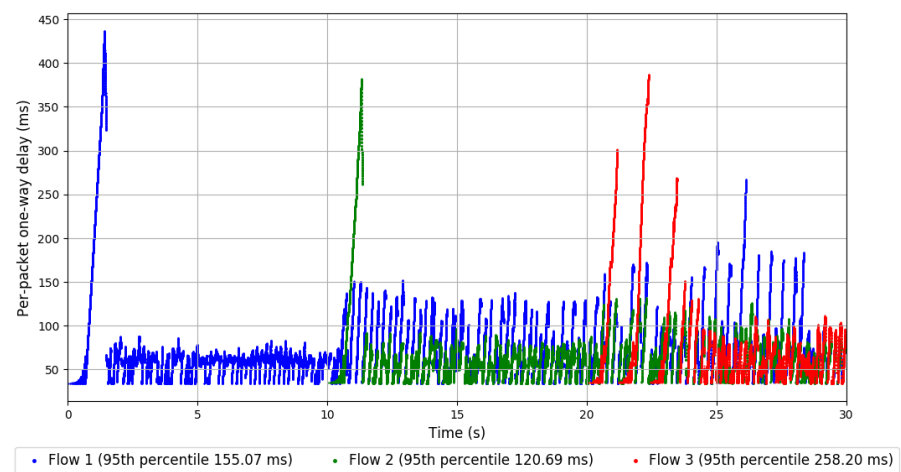
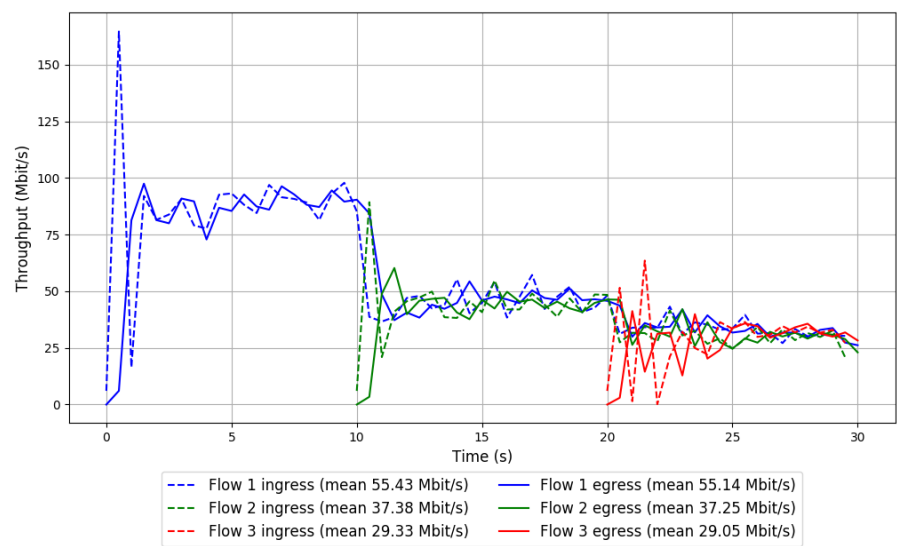


Run 2: Statistics of Verus

Start at: 2018-09-08 01:16:29  
End at: 2018-09-08 01:16:59  
Local clock offset: 1.135 ms  
Remote clock offset: -1.764 ms

# Below is generated by plot.py at 2018-09-08 02:46:22  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 89.54 Mbit/s  
95th percentile per-packet one-way delay: 167.760 ms  
Loss rate: 0.52%  
-- Flow 1:  
Average throughput: 55.14 Mbit/s  
95th percentile per-packet one-way delay: 155.075 ms  
Loss rate: 0.44%  
-- Flow 2:  
Average throughput: 37.25 Mbit/s  
95th percentile per-packet one-way delay: 120.695 ms  
Loss rate: 0.37%  
-- Flow 3:  
Average throughput: 29.05 Mbit/s  
95th percentile per-packet one-way delay: 258.204 ms  
Loss rate: 1.32%

Run 2: Report of Verus — Data Link

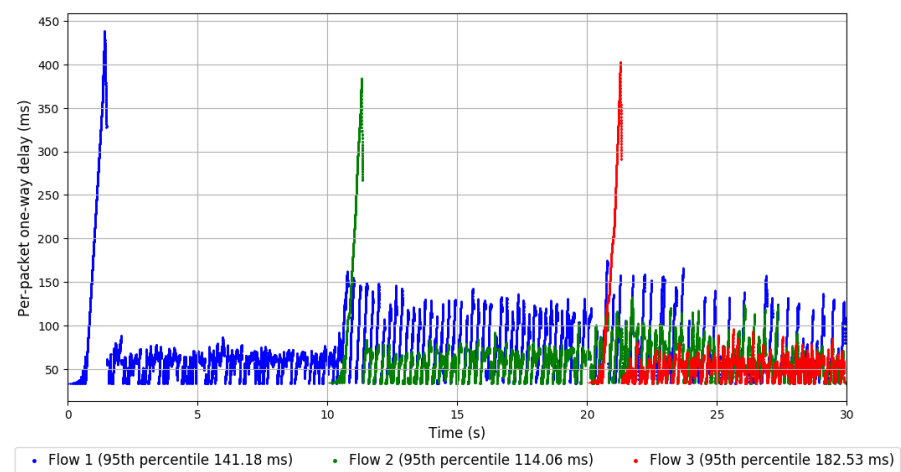
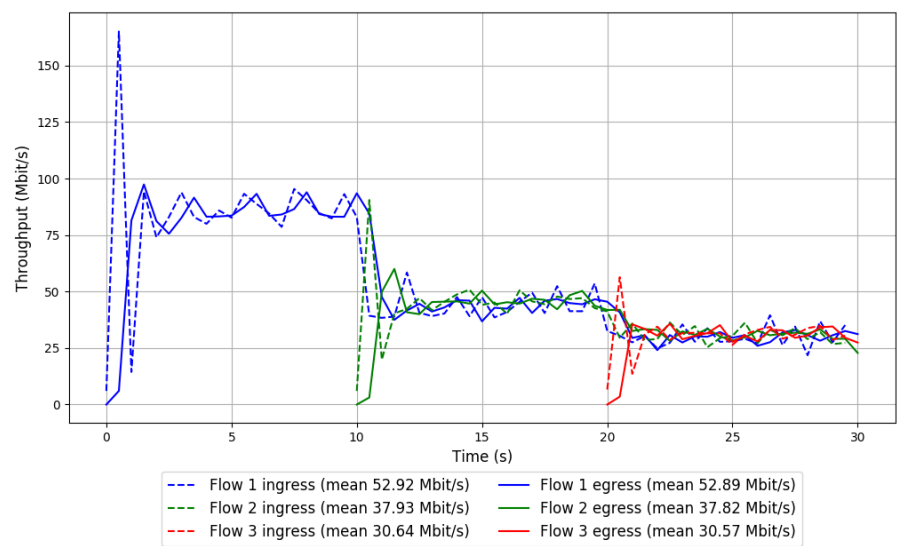


Run 3: Statistics of Verus

Start at: 2018-09-08 01:41:43  
End at: 2018-09-08 01:42:13  
Local clock offset: 0.788 ms  
Remote clock offset: -0.212 ms

# Below is generated by plot.py at 2018-09-08 02:46:28  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 88.08 Mbit/s  
95th percentile per-packet one-way delay: 137.758 ms  
Loss rate: 0.51%  
-- Flow 1:  
Average throughput: 52.89 Mbit/s  
95th percentile per-packet one-way delay: 141.180 ms  
Loss rate: 0.34%  
-- Flow 2:  
Average throughput: 37.82 Mbit/s  
95th percentile per-packet one-way delay: 114.061 ms  
Loss rate: 0.59%  
-- Flow 3:  
Average throughput: 30.57 Mbit/s  
95th percentile per-packet one-way delay: 182.532 ms  
Loss rate: 1.20%

Run 3: Report of Verus — Data Link



Run 4: Statistics of Verus

Start at: 2018-09-08 02:06:33

End at: 2018-09-08 02:07:03

Local clock offset: 0.676 ms

Remote clock offset: 0.621 ms

# Below is generated by plot.py at 2018-09-08 02:46:33

# Datalink statistics

-- Total of 3 flows:

Average throughput: 89.40 Mbit/s

95th percentile per-packet one-way delay: 148.573 ms

Loss rate: 0.53%

-- Flow 1:

Average throughput: 51.97 Mbit/s

95th percentile per-packet one-way delay: 152.407 ms

Loss rate: 0.31%

-- Flow 2:

Average throughput: 45.30 Mbit/s

95th percentile per-packet one-way delay: 87.882 ms

Loss rate: 0.64%

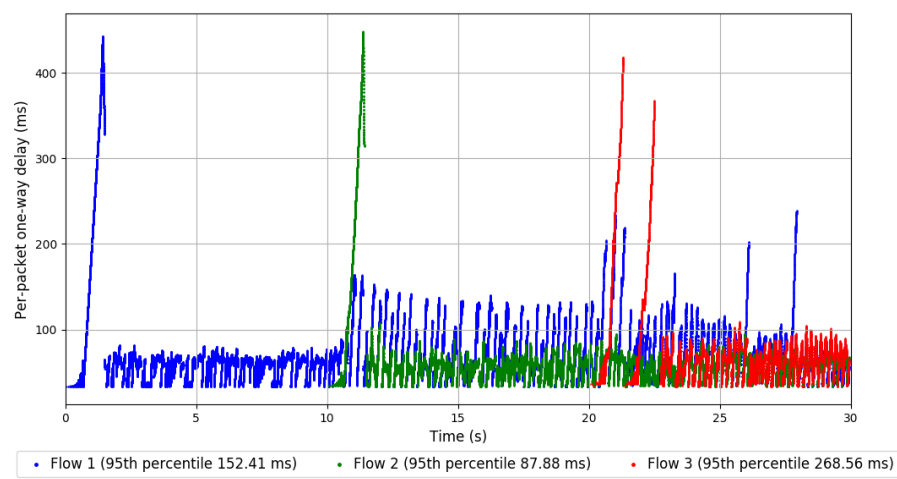
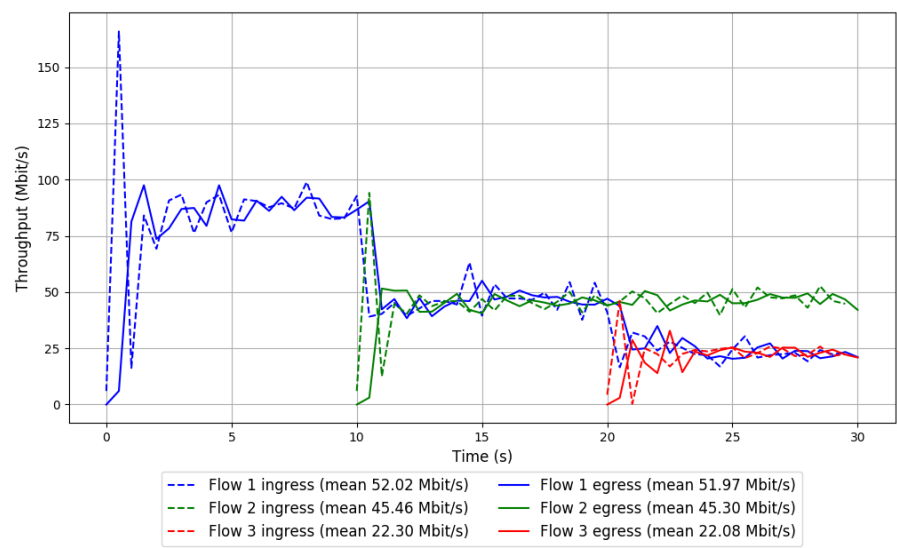
-- Flow 3:

Average throughput: 22.08 Mbit/s

95th percentile per-packet one-way delay: 268.563 ms

Loss rate: 1.57%

Run 4: Report of Verus — Data Link



Run 5: Statistics of Verus

Start at: 2018-09-08 02:31:32

End at: 2018-09-08 02:32:02

Local clock offset: 0.327 ms

Remote clock offset: 1.345 ms

# Below is generated by plot.py at 2018-09-08 02:46:33

# Datalink statistics

-- Total of 3 flows:

Average throughput: 87.19 Mbit/s

95th percentile per-packet one-way delay: 149.380 ms

Loss rate: 0.51%

-- Flow 1:

Average throughput: 51.17 Mbit/s

95th percentile per-packet one-way delay: 131.885 ms

Loss rate: 0.30%

-- Flow 2:

Average throughput: 33.10 Mbit/s

95th percentile per-packet one-way delay: 136.534 ms

Loss rate: 0.50%

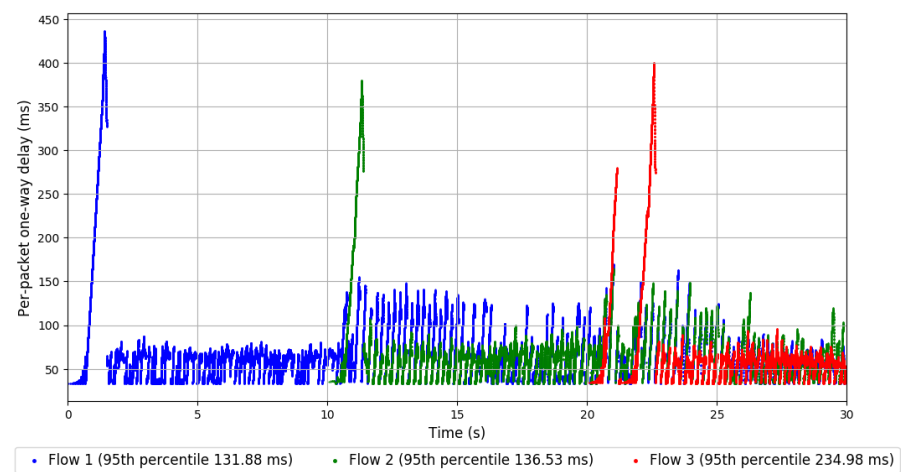
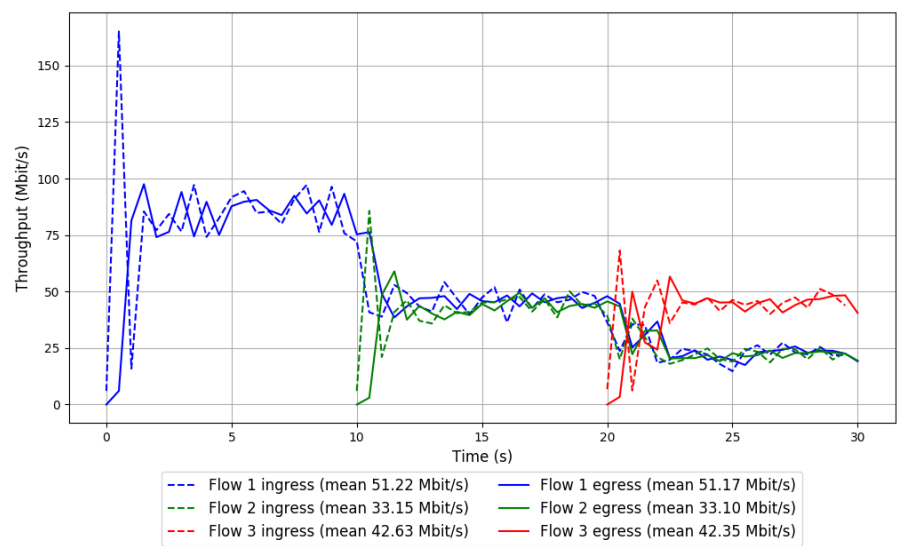
-- Flow 3:

Average throughput: 42.35 Mbit/s

95th percentile per-packet one-way delay: 234.984 ms

Loss rate: 1.30%

Run 5: Report of Verus — Data Link



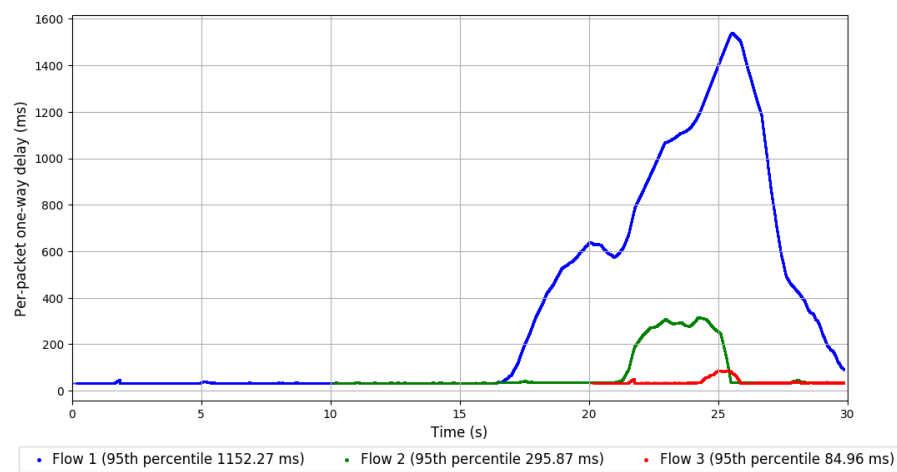
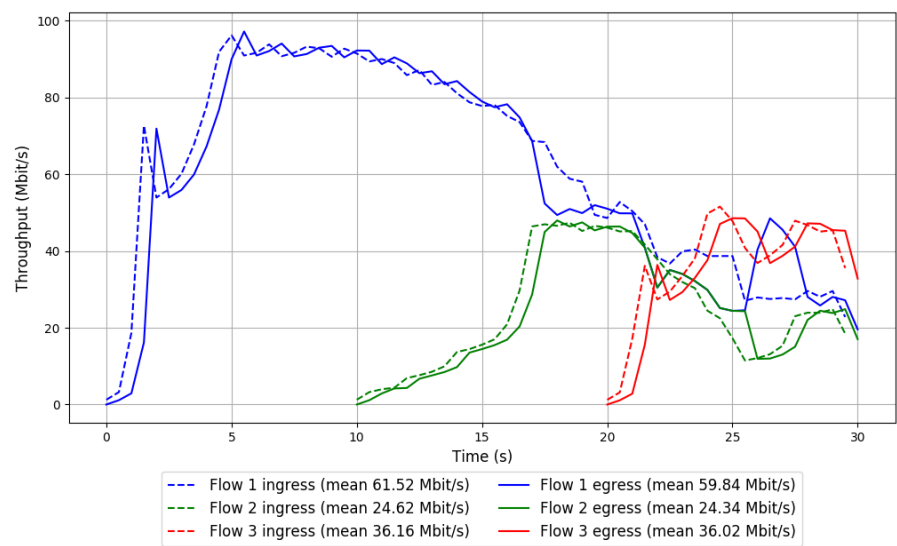


Run 1: Statistics of PCC-Vivace

Start at: 2018-09-08 00:33:25  
End at: 2018-09-08 00:33:55  
Local clock offset: -2.95 ms  
Remote clock offset: -4.374 ms

# Below is generated by plot.py at 2018-09-08 02:46:44  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 87.87 Mbit/s  
95th percentile per-packet one-way delay: 1046.754 ms  
Loss rate: 2.41%  
-- Flow 1:  
Average throughput: 59.84 Mbit/s  
95th percentile per-packet one-way delay: 1152.265 ms  
Loss rate: 2.93%  
-- Flow 2:  
Average throughput: 24.34 Mbit/s  
95th percentile per-packet one-way delay: 295.874 ms  
Loss rate: 1.46%  
-- Flow 3:  
Average throughput: 36.02 Mbit/s  
95th percentile per-packet one-way delay: 84.959 ms  
Loss rate: 1.02%

Run 1: Report of PCC-Vivace — Data Link

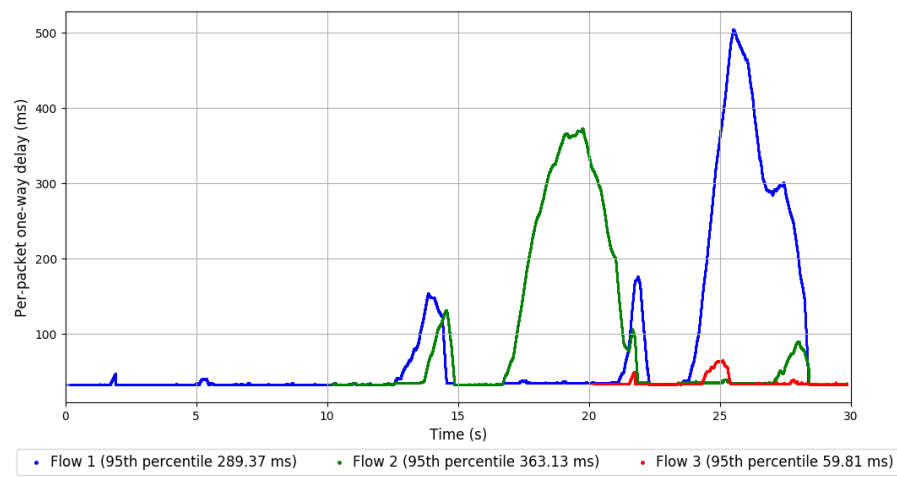
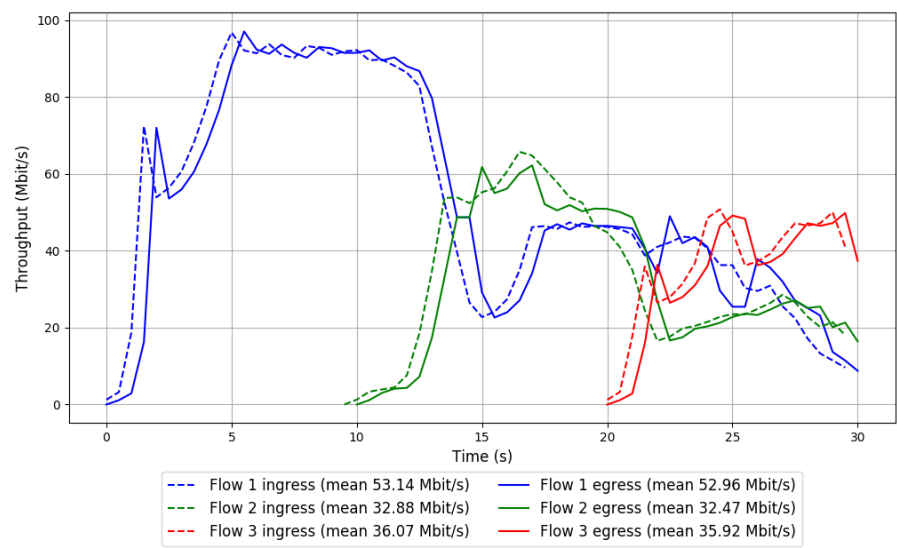


Run 2: Statistics of PCC-Vivace

Start at: 2018-09-08 00:58:34  
End at: 2018-09-08 00:59:04  
Local clock offset: 0.017 ms  
Remote clock offset: -2.396 ms

# Below is generated by plot.py at 2018-09-08 02:46:44  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 86.38 Mbit/s  
95th percentile per-packet one-way delay: 323.050 ms  
Loss rate: 0.86%  
-- Flow 1:  
Average throughput: 52.96 Mbit/s  
95th percentile per-packet one-way delay: 289.372 ms  
Loss rate: 0.53%  
-- Flow 2:  
Average throughput: 32.47 Mbit/s  
95th percentile per-packet one-way delay: 363.135 ms  
Loss rate: 1.54%  
-- Flow 3:  
Average throughput: 35.92 Mbit/s  
95th percentile per-packet one-way delay: 59.814 ms  
Loss rate: 1.07%

Run 2: Report of PCC-Vivace — Data Link

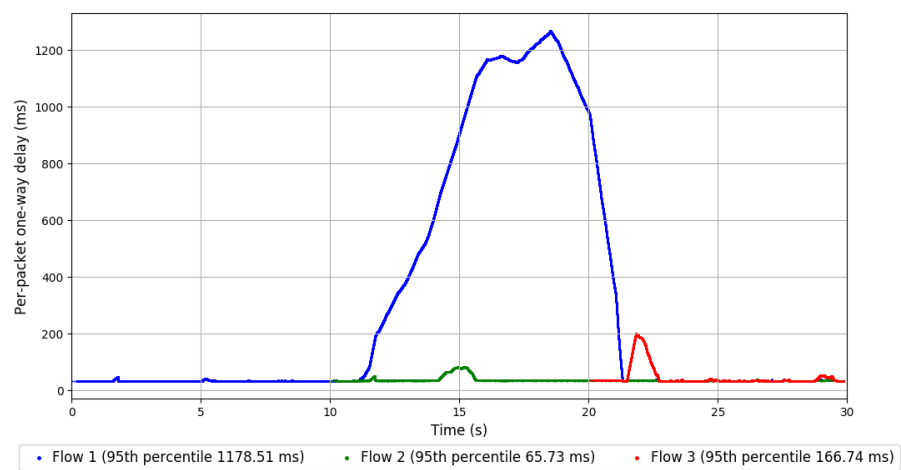
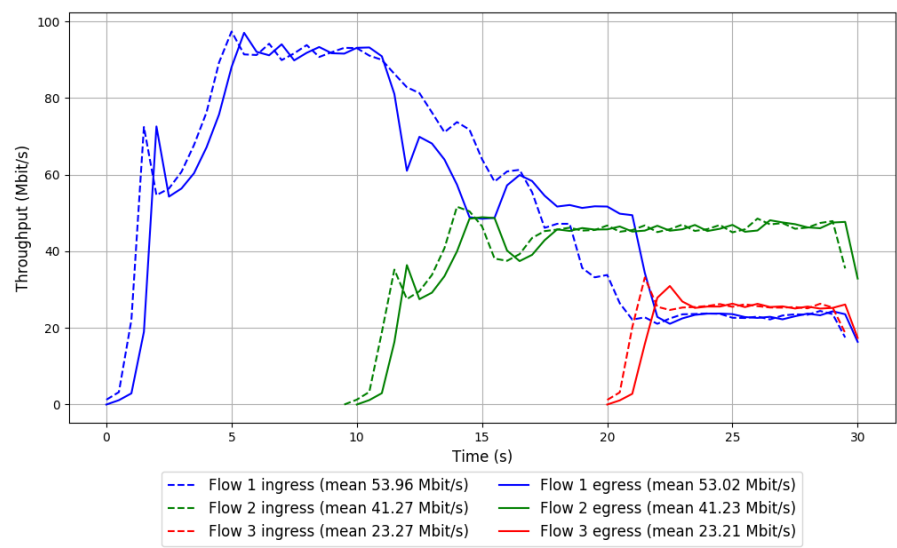


Run 3: Statistics of PCC-Vivace

Start at: 2018-09-08 01:23:34  
End at: 2018-09-08 01:24:04  
Local clock offset: 0.815 ms  
Remote clock offset: -1.168 ms

# Below is generated by plot.py at 2018-09-08 02:46:45  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 88.06 Mbit/s  
95th percentile per-packet one-way delay: 1165.105 ms  
Loss rate: 1.39%  
-- Flow 1:  
Average throughput: 53.02 Mbit/s  
95th percentile per-packet one-way delay: 1178.512 ms  
Loss rate: 1.94%  
-- Flow 2:  
Average throughput: 41.23 Mbit/s  
95th percentile per-packet one-way delay: 65.729 ms  
Loss rate: 0.44%  
-- Flow 3:  
Average throughput: 23.21 Mbit/s  
95th percentile per-packet one-way delay: 166.738 ms  
Loss rate: 0.92%

Run 3: Report of PCC-Vivace — Data Link

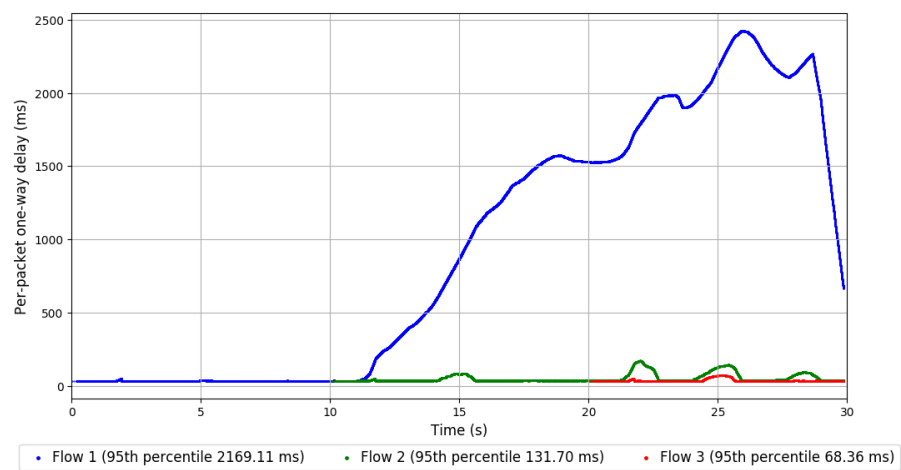
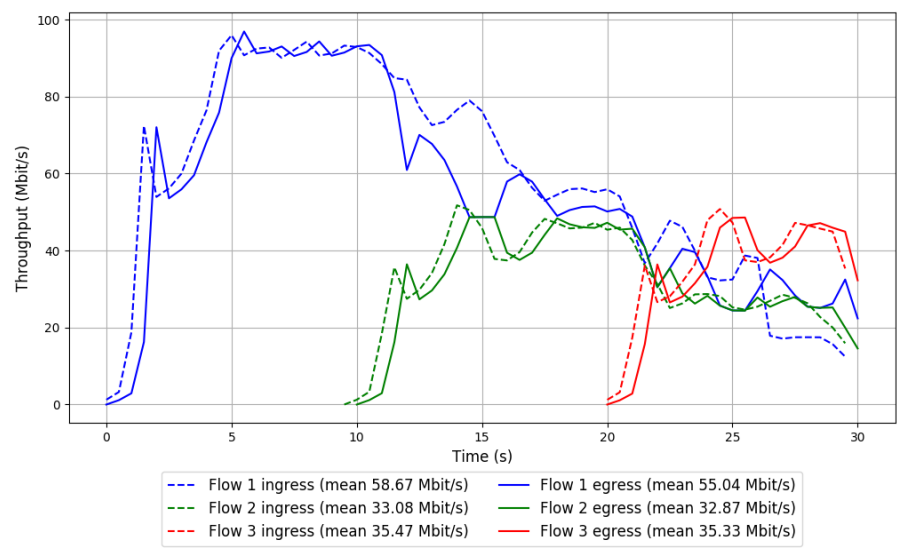


Run 4: Statistics of PCC-Vivace

Start at: 2018-09-08 01:48:41  
End at: 2018-09-08 01:49:11  
Local clock offset: 0.629 ms  
Remote clock offset: -0.101 ms

# Below is generated by plot.py at 2018-09-08 02:46:50  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 88.52 Mbit/s  
95th percentile per-packet one-way delay: 1984.135 ms  
Loss rate: 4.39%  
-- Flow 1:  
Average throughput: 55.04 Mbit/s  
95th percentile per-packet one-way delay: 2169.114 ms  
Loss rate: 6.37%  
-- Flow 2:  
Average throughput: 32.87 Mbit/s  
95th percentile per-packet one-way delay: 131.696 ms  
Loss rate: 0.95%  
-- Flow 3:  
Average throughput: 35.33 Mbit/s  
95th percentile per-packet one-way delay: 68.364 ms  
Loss rate: 0.99%

Run 4: Report of PCC-Vivace — Data Link





Run 5: Statistics of PCC-Vivace

Start at: 2018-09-08 02:13:30

End at: 2018-09-08 02:14:00

Local clock offset: 0.624 ms

Remote clock offset: 0.983 ms

# Below is generated by plot.py at 2018-09-08 02:46:53

# Datalink statistics

-- Total of 3 flows:

Average throughput: 88.57 Mbit/s

95th percentile per-packet one-way delay: 1535.327 ms

Loss rate: 9.29%

-- Flow 1:

Average throughput: 60.69 Mbit/s

95th percentile per-packet one-way delay: 1530.665 ms

Loss rate: 8.16%

-- Flow 2:

Average throughput: 32.53 Mbit/s

95th percentile per-packet one-way delay: 2177.029 ms

Loss rate: 14.36%

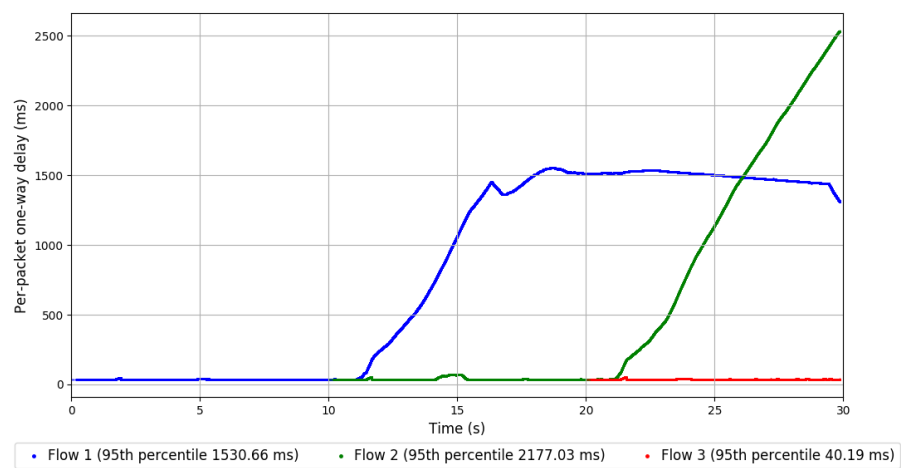
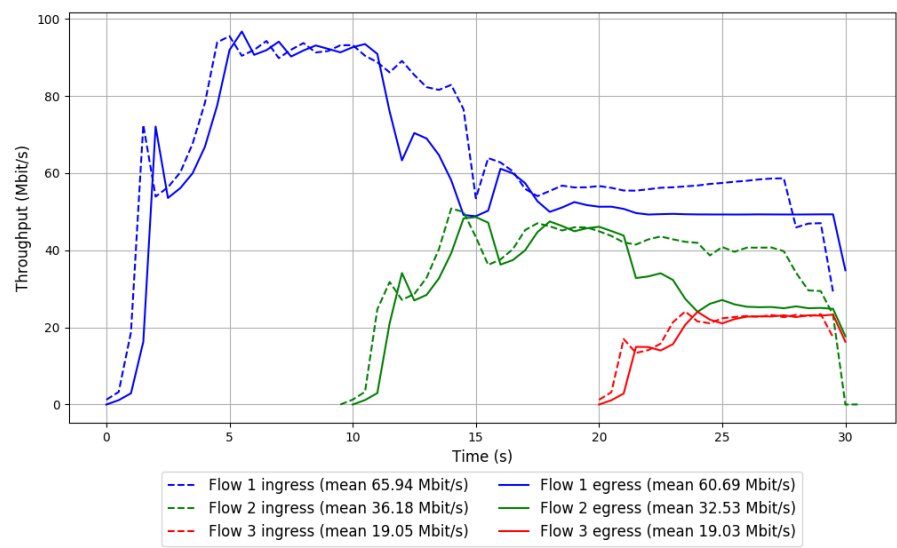
-- Flow 3:

Average throughput: 19.03 Mbit/s

95th percentile per-packet one-way delay: 40.194 ms

Loss rate: 0.79%

Run 5: Report of PCC-Vivace — Data Link

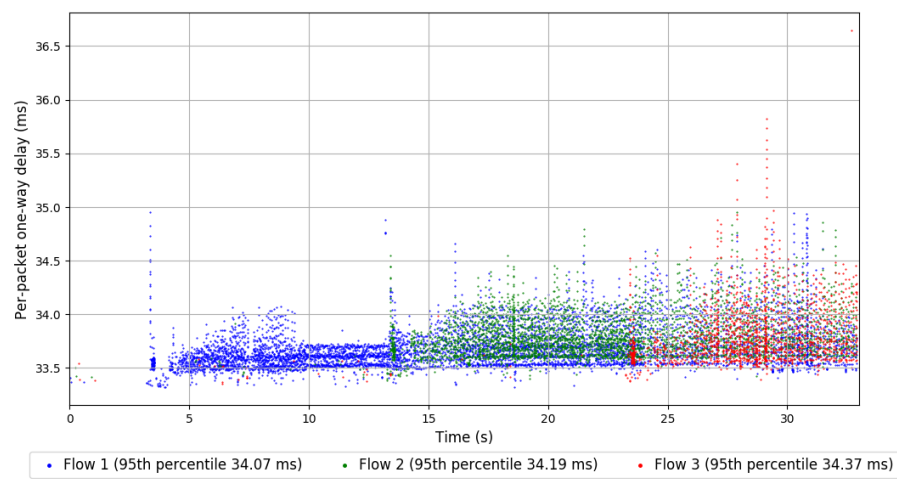
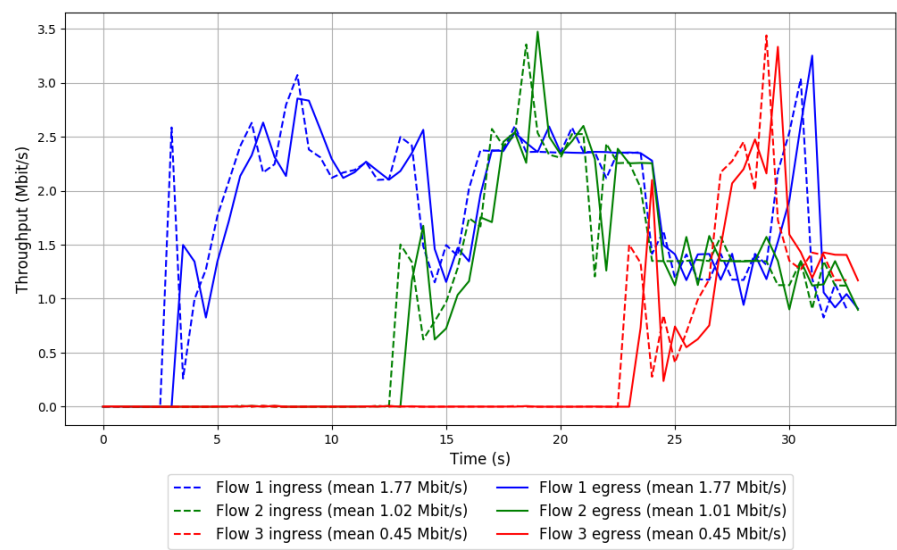


Run 1: Statistics of WebRTC media

Start at: 2018-09-08 00:30:40  
End at: 2018-09-08 00:31:10  
Local clock offset: -2.995 ms  
Remote clock offset: -4.338 ms

# Below is generated by plot.py at 2018-09-08 02:46:53  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 3.22 Mbit/s  
95th percentile per-packet one-way delay: 34.172 ms  
Loss rate: 0.17%  
-- Flow 1:  
Average throughput: 1.77 Mbit/s  
95th percentile per-packet one-way delay: 34.068 ms  
Loss rate: 0.11%  
-- Flow 2:  
Average throughput: 1.01 Mbit/s  
95th percentile per-packet one-way delay: 34.188 ms  
Loss rate: 0.34%  
-- Flow 3:  
Average throughput: 0.45 Mbit/s  
95th percentile per-packet one-way delay: 34.370 ms  
Loss rate: 0.01%

Run 1: Report of WebRTC media — Data Link

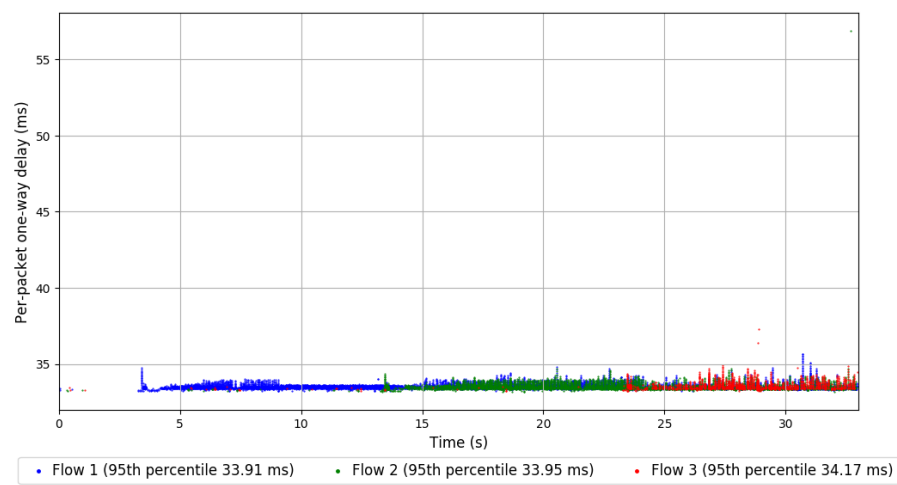
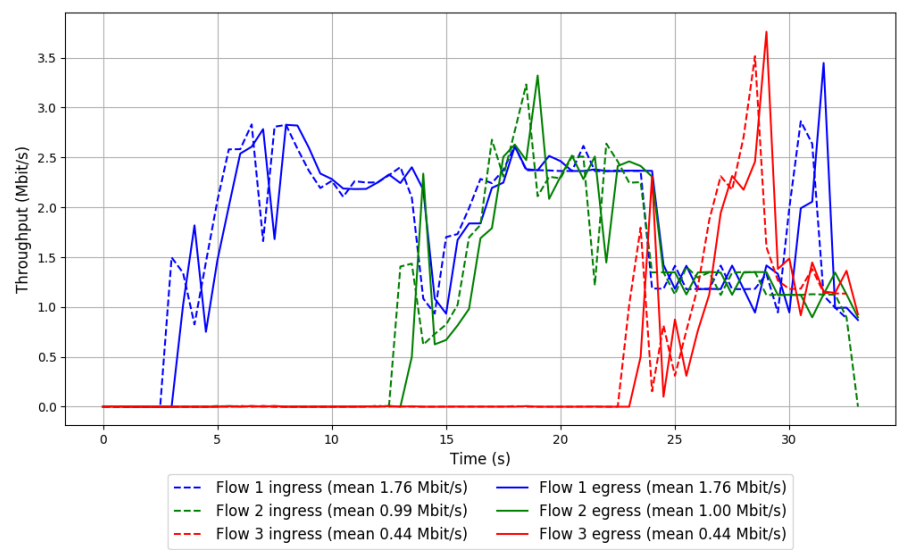


Run 2: Statistics of WebRTC media

Start at: 2018-09-08 00:55:38  
End at: 2018-09-08 00:56:08  
Local clock offset: -0.477 ms  
Remote clock offset: -2.677 ms

# Below is generated by plot.py at 2018-09-08 02:46:53  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 3.18 Mbit/s  
95th percentile per-packet one-way delay: 33.960 ms  
Loss rate: 0.17%  
-- Flow 1:  
Average throughput: 1.76 Mbit/s  
95th percentile per-packet one-way delay: 33.915 ms  
Loss rate: 0.12%  
-- Flow 2:  
Average throughput: 1.00 Mbit/s  
95th percentile per-packet one-way delay: 33.954 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 0.44 Mbit/s  
95th percentile per-packet one-way delay: 34.169 ms  
Loss rate: 0.72%

Run 2: Report of WebRTC media — Data Link

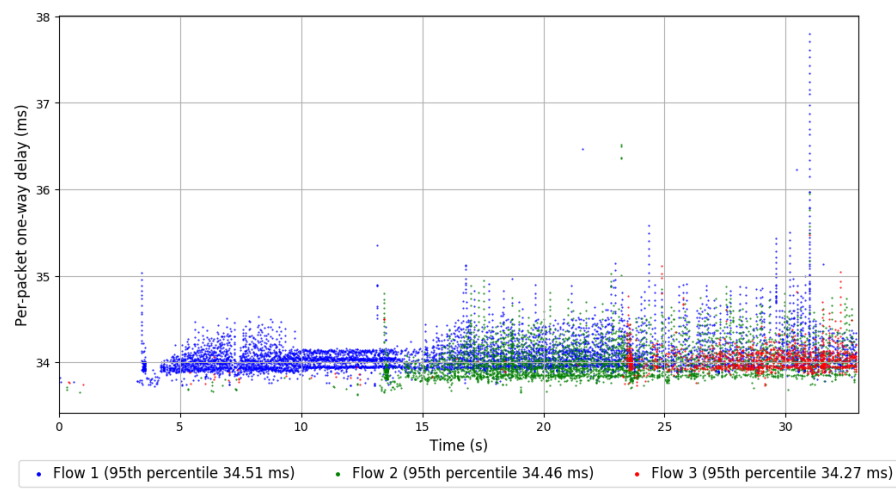
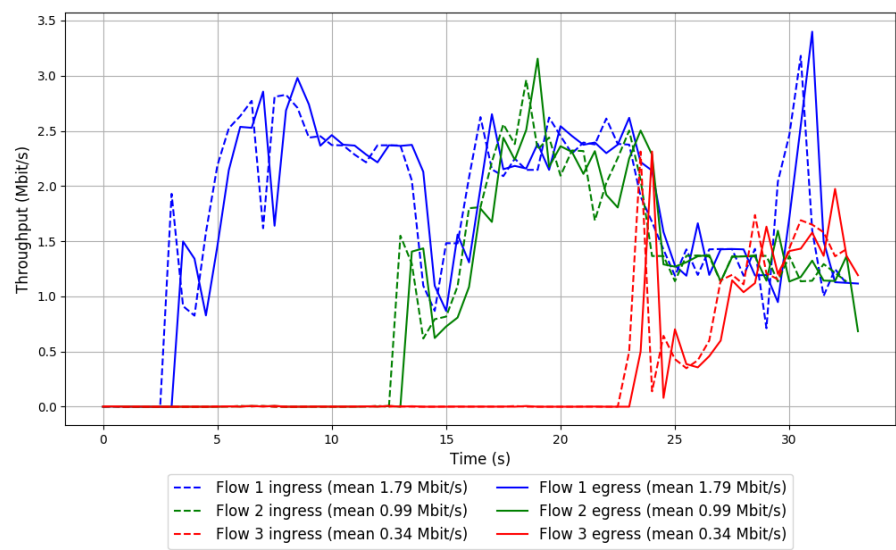


Run 3: Statistics of WebRTC media

Start at: 2018-09-08 01:20:48  
End at: 2018-09-08 01:21:18  
Local clock offset: 0.897 ms  
Remote clock offset: -1.558 ms

# Below is generated by plot.py at 2018-09-08 02:46:53  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 3.10 Mbit/s  
95th percentile per-packet one-way delay: 34.484 ms  
Loss rate: 0.40%  
-- Flow 1:  
Average throughput: 1.79 Mbit/s  
95th percentile per-packet one-way delay: 34.513 ms  
Loss rate: 0.11%  
-- Flow 2:  
Average throughput: 0.99 Mbit/s  
95th percentile per-packet one-way delay: 34.461 ms  
Loss rate: 0.70%  
-- Flow 3:  
Average throughput: 0.34 Mbit/s  
95th percentile per-packet one-way delay: 34.275 ms  
Loss rate: 1.07%

Run 3: Report of WebRTC media — Data Link



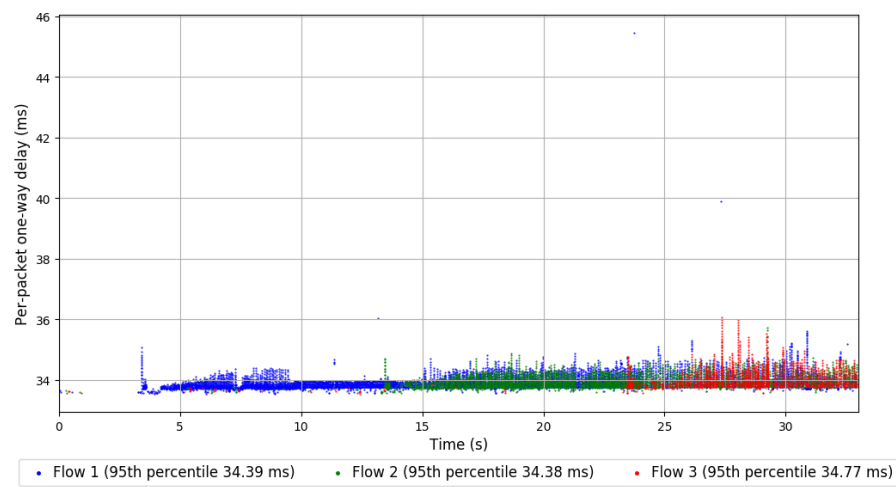
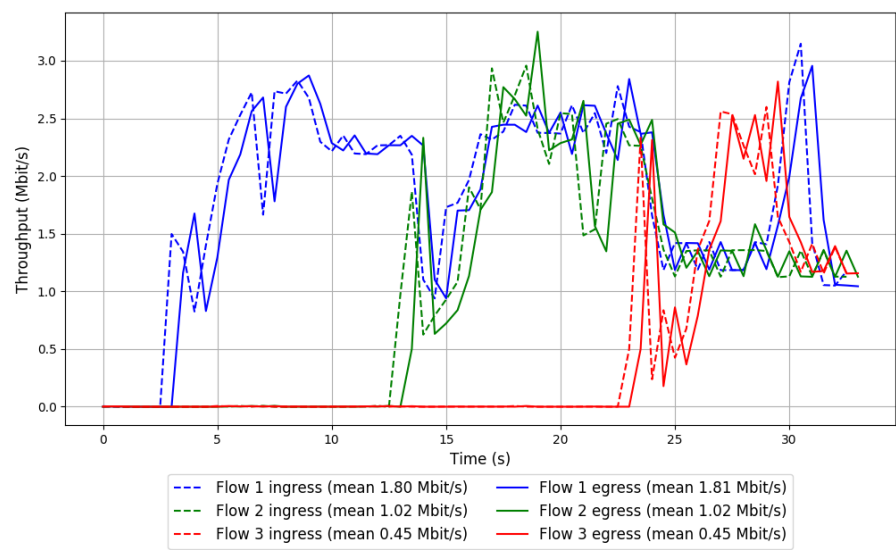


Run 4: Statistics of WebRTC media

Start at: 2018-09-08 01:45:56  
End at: 2018-09-08 01:46:27  
Local clock offset: 0.806 ms  
Remote clock offset: -0.157 ms

# Below is generated by plot.py at 2018-09-08 02:46:53  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 3.26 Mbit/s  
95th percentile per-packet one-way delay: 34.455 ms  
Loss rate: 0.23%  
-- Flow 1:  
Average throughput: 1.81 Mbit/s  
95th percentile per-packet one-way delay: 34.392 ms  
Loss rate: 0.22%  
-- Flow 2:  
Average throughput: 1.02 Mbit/s  
95th percentile per-packet one-way delay: 34.384 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 0.45 Mbit/s  
95th percentile per-packet one-way delay: 34.773 ms  
Loss rate: 0.78%

Run 4: Report of WebRTC media — Data Link



Run 5: Statistics of WebRTC media

Start at: 2018-09-08 02:10:46

End at: 2018-09-08 02:11:16

Local clock offset: 0.69 ms

Remote clock offset: 0.823 ms

# Below is generated by plot.py at 2018-09-08 02:46:53

# Datalink statistics

-- Total of 3 flows:

Average throughput: 3.25 Mbit/s

95th percentile per-packet one-way delay: 34.187 ms

Loss rate: 0.17%

-- Flow 1:

Average throughput: 1.81 Mbit/s

95th percentile per-packet one-way delay: 34.183 ms

Loss rate: 0.11%

-- Flow 2:

Average throughput: 1.02 Mbit/s

95th percentile per-packet one-way delay: 34.147 ms

Loss rate: 0.00%

-- Flow 3:

Average throughput: 0.43 Mbit/s

95th percentile per-packet one-way delay: 34.328 ms

Loss rate: 0.81%

Run 5: Report of WebRTC media — Data Link

