

## Pantheon Report

Generated at 2018-11-30 01:53:29 (UTC).

Data path: AWS Korea on `ens5` (*local*) → China on `eno1` (*remote*).

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 `ntp.nict.jp` and have been applied to correct the timestamps in logs.

### System info:

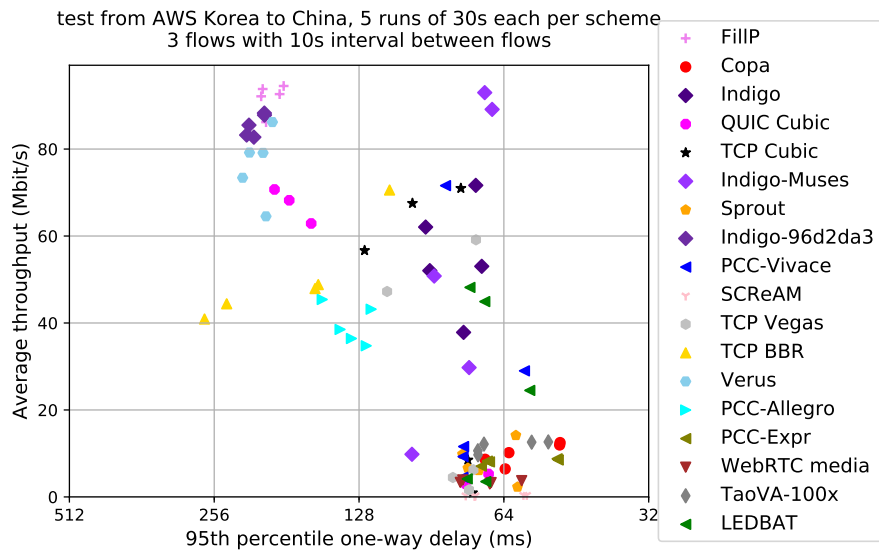
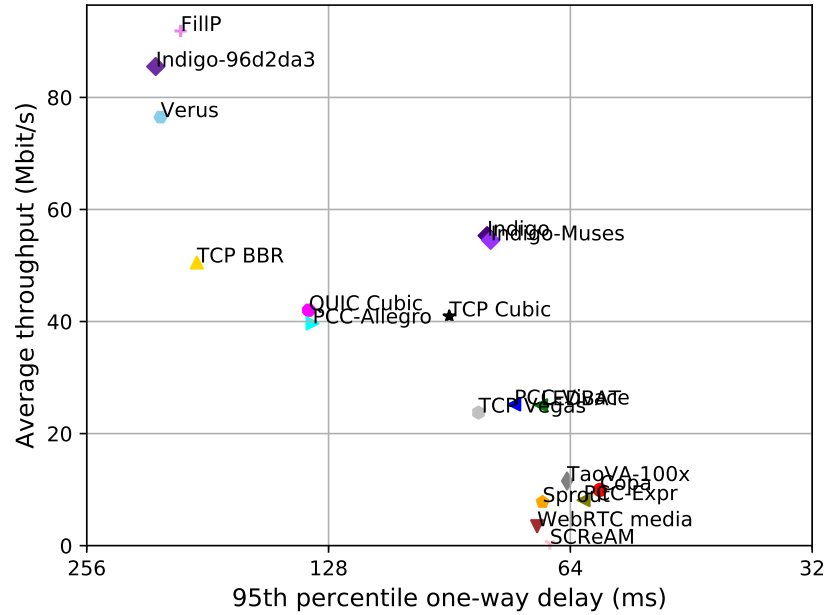
```
Linux 4.15.0-1027-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
```

### Git summary:

```
branch: muses @ 794ca3866981572cb73700a276691acf79c60f2b
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecd90c077e64d
third_party/indigo-96d2da3 @ 8413272d46f8aa0bcb967ed7048b6a8f994abb95
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 65ac1b19bbefed0c6349ae986009b4fa8643c40a
third_party/pantheon-tunnel @ f866d3f58d27afd942717625ee3a354cc2e802bd
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 AWS Korea to China, 5 runs of 30s each per scheme  
 3 flows with 10s interval between flows (mean of all runs by scheme)



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	37.24	15.05	9.83	164.41	224.91	174.65	20.13	25.61	28.53
Copa	5	5.87	4.61	3.02	59.05	58.50	58.98	19.54	23.00	31.60
TCP Cubic	5	25.77	12.27	21.01	86.43	90.71	91.61	1.96	1.49	2.19
FillP	5	58.84	39.78	19.84	192.22	195.03	193.87	11.16	20.66	22.67
Indigo	5	31.32	21.31	30.77	75.13	80.18	85.51	2.67	3.61	6.25
Indigo-96d2da3	5	56.33	31.84	25.75	210.07	205.29	211.84	26.96	42.36	40.00
LEDBAT	5	16.67	9.90	5.41	66.30	70.33	70.64	0.39	0.35	0.34
Indigo-Muses	5	28.60	28.91	20.60	74.03	88.70	75.98	0.82	0.86	0.74
PCC-Allegro	5	51.50	26.33	6.72	130.70	128.51	132.38	21.66	42.29	72.32
PCC-Expr	5	0.02	9.05	6.37	61.46	61.59	61.57	85.71	45.04	52.64
QUIC Cubic	5	25.77	17.56	14.16	128.52	134.14	138.99	1.01	0.83	0.99
SCReAM	5	0.16	0.18	0.19	66.74	66.35	61.74	1.05	0.67	1.22
Sprout	5	4.03	4.09	3.17	67.63	66.36	68.43	0.71	0.69	0.62
TaoVA-100x	5	6.29	5.47	4.82	64.72	65.01	63.35	17.58	17.49	23.74
TCP Vegas	5	16.94	7.02	6.40	77.58	85.44	89.34	1.08	0.71	0.43
Verus	5	48.07	33.63	19.46	201.18	203.00	211.31	16.75	12.88	22.38
PCC-Vivace	5	15.92	12.10	3.71	72.36	73.01	74.03	0.25	0.26	0.46
WebRTC media	5	2.05	0.98	0.45	70.95	69.85	67.62	0.42	0.54	0.49



Run 1: Statistics of TCP BBR

Start at: 2018-11-30 00:01:57

End at: 2018-11-30 00:02:27

Local clock offset: 5.151 ms

Remote clock offset: 0.473 ms

# Below is generated by plot.py at 2018-11-30 01:47:56

# Datalink statistics

-- Total of 3 flows:

Average throughput: 40.92 Mbit/s

95th percentile per-packet one-way delay: 268.171 ms

Loss rate: 19.86%

-- Flow 1:

Average throughput: 34.70 Mbit/s

95th percentile per-packet one-way delay: 204.283 ms

Loss rate: 18.46%

-- Flow 2:

Average throughput: 9.29 Mbit/s

95th percentile per-packet one-way delay: 409.853 ms

Loss rate: 26.79%

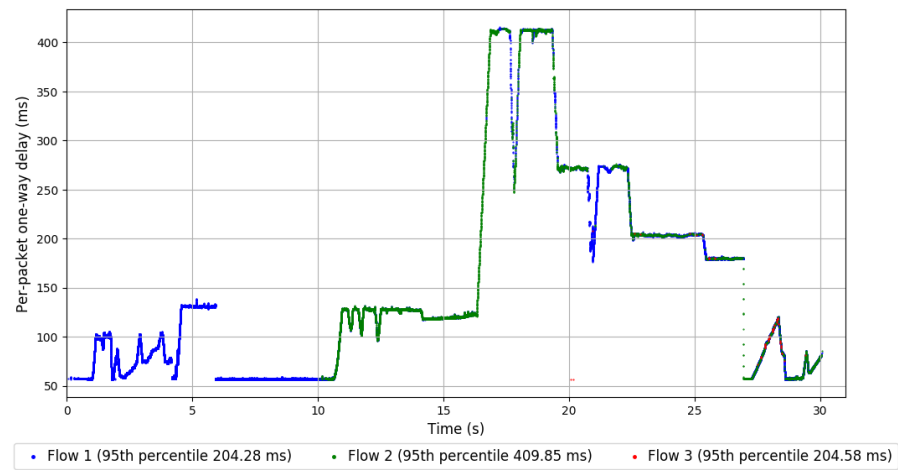
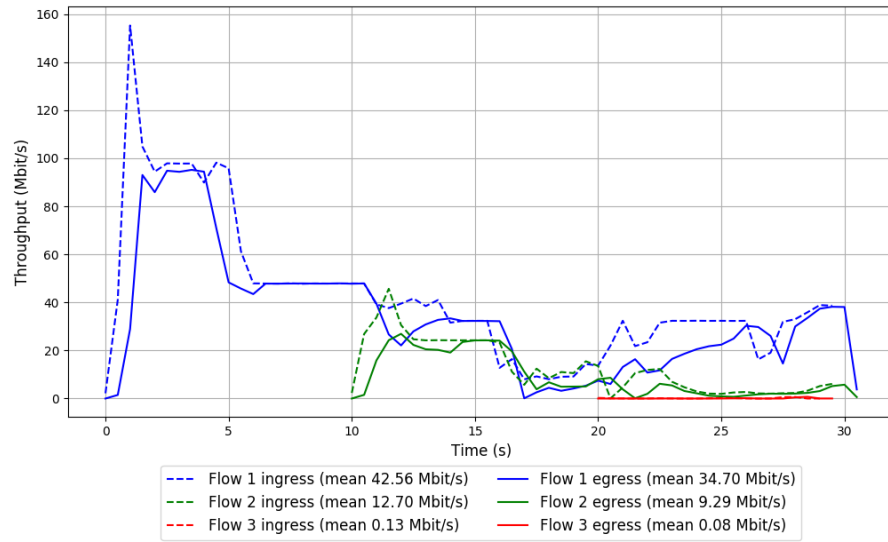
-- Flow 3:

Average throughput: 0.08 Mbit/s

95th percentile per-packet one-way delay: 204.584 ms

Loss rate: 33.29%

# Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-11-30 00:25:21

End at: 2018-11-30 00:25:51

Local clock offset: 12.863 ms

Remote clock offset: 0.914 ms

# Below is generated by plot.py at 2018-11-30 01:48:03

# Datalink statistics

-- Total of 3 flows:

Average throughput: 48.84 Mbit/s

95th percentile per-packet one-way delay: 155.596 ms

Loss rate: 25.93%

-- Flow 1:

Average throughput: 39.43 Mbit/s

95th percentile per-packet one-way delay: 162.673 ms

Loss rate: 24.77%

-- Flow 2:

Average throughput: 9.92 Mbit/s

95th percentile per-packet one-way delay: 155.077 ms

Loss rate: 33.59%

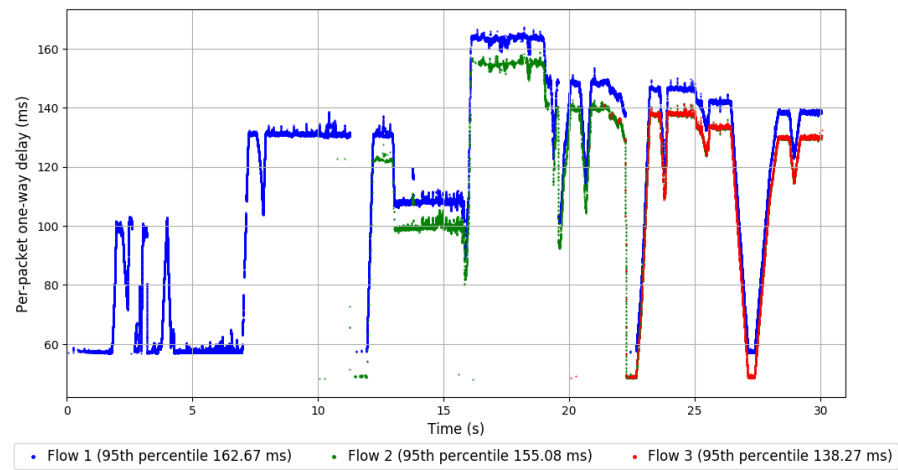
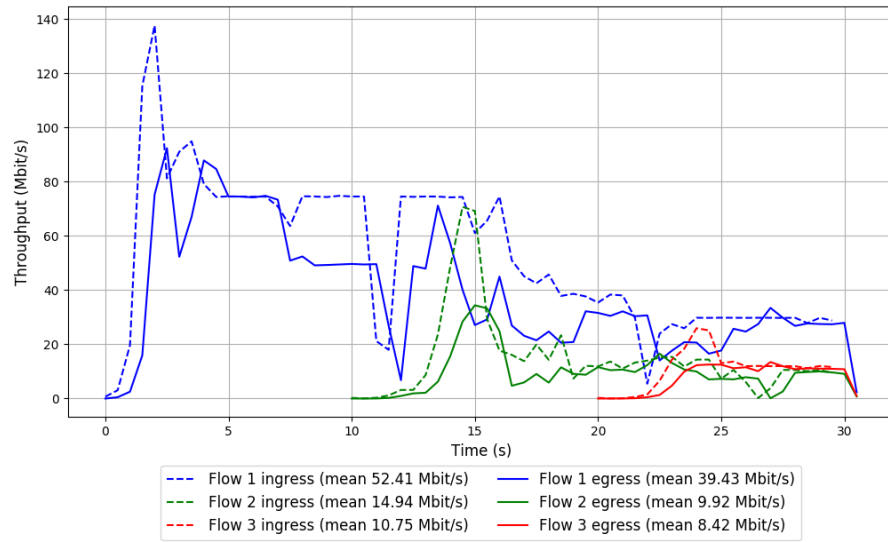
-- Flow 3:

Average throughput: 8.42 Mbit/s

95th percentile per-packet one-way delay: 138.266 ms

Loss rate: 21.61%

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

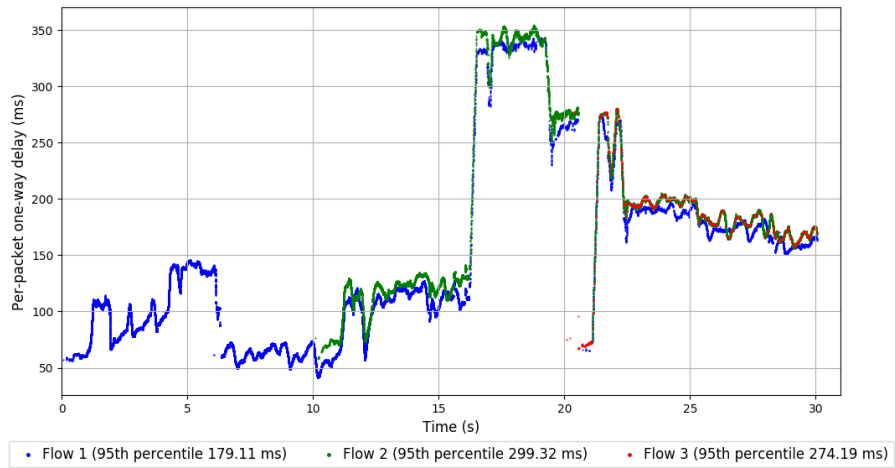
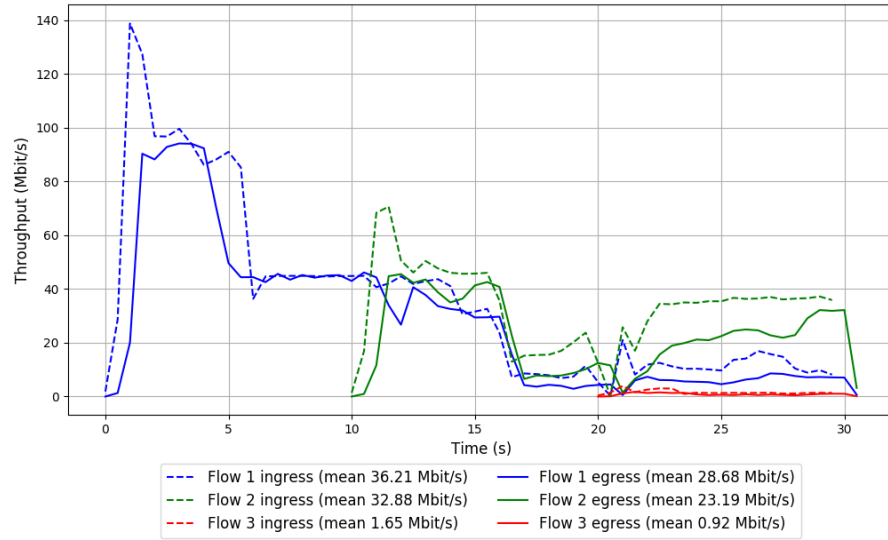


Run 3: Statistics of TCP BBR

Start at: 2018-11-30 00:50:33  
End at: 2018-11-30 00:51:03  
Local clock offset: 8.371 ms  
Remote clock offset: -6.284 ms

# Below is generated by plot.py at 2018-11-30 01:48:03  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 44.42 Mbit/s  
95th percentile per-packet one-way delay: 241.182 ms  
Loss rate: 24.26%  
-- Flow 1:  
Average throughput: 28.68 Mbit/s  
95th percentile per-packet one-way delay: 179.113 ms  
Loss rate: 20.78%  
-- Flow 2:  
Average throughput: 23.19 Mbit/s  
95th percentile per-packet one-way delay: 299.322 ms  
Loss rate: 29.51%  
-- Flow 3:  
Average throughput: 0.92 Mbit/s  
95th percentile per-packet one-way delay: 274.192 ms  
Loss rate: 44.30%

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

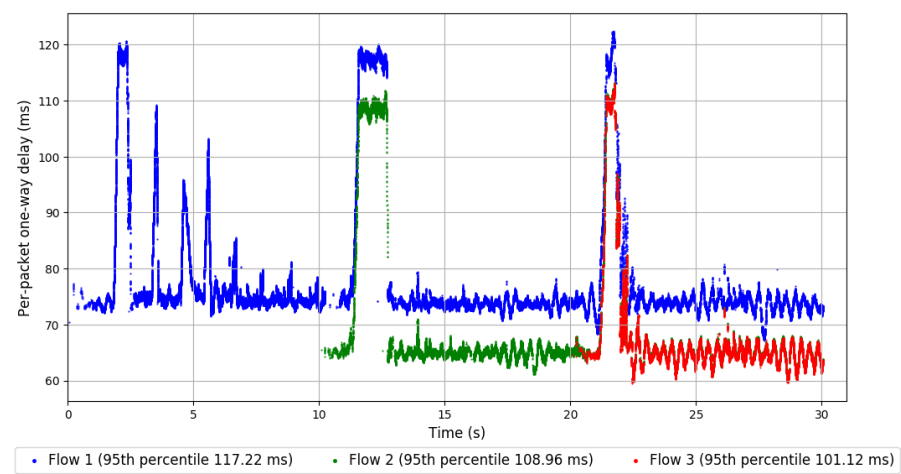
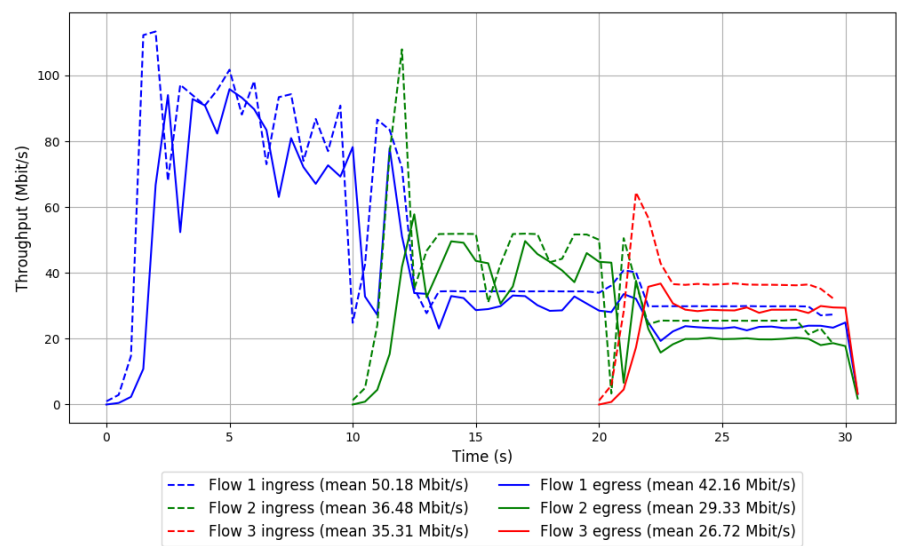


Run 4: Statistics of TCP BBR

Start at: 2018-11-30 01:14:20  
End at: 2018-11-30 01:14:50  
Local clock offset: -3.137 ms  
Remote clock offset: -15.401 ms

# Below is generated by plot.py at 2018-11-30 01:48:21  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 70.58 Mbit/s  
95th percentile per-packet one-way delay: 110.596 ms  
Loss rate: 18.13%  
-- Flow 1:  
Average throughput: 42.16 Mbit/s  
95th percentile per-packet one-way delay: 117.222 ms  
Loss rate: 15.97%  
-- Flow 2:  
Average throughput: 29.33 Mbit/s  
95th percentile per-packet one-way delay: 108.962 ms  
Loss rate: 19.60%  
-- Flow 3:  
Average throughput: 26.72 Mbit/s  
95th percentile per-packet one-way delay: 101.118 ms  
Loss rate: 24.33%

Run 4: Report of TCP BBR — Data Link



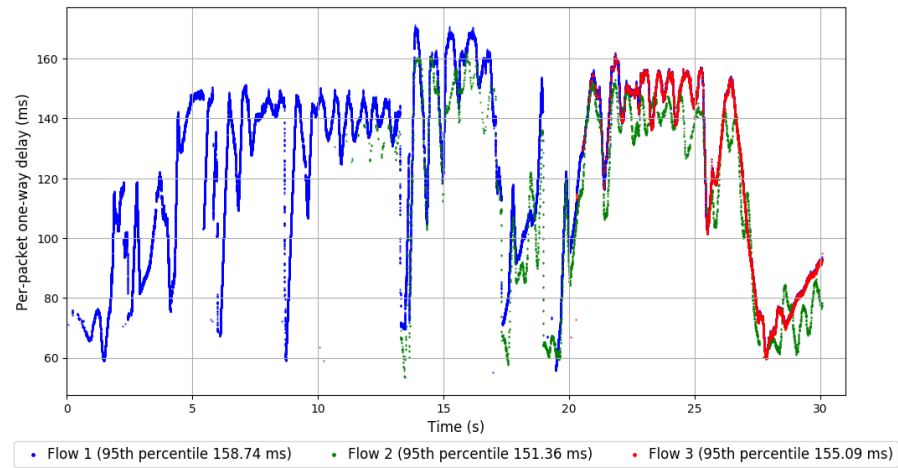
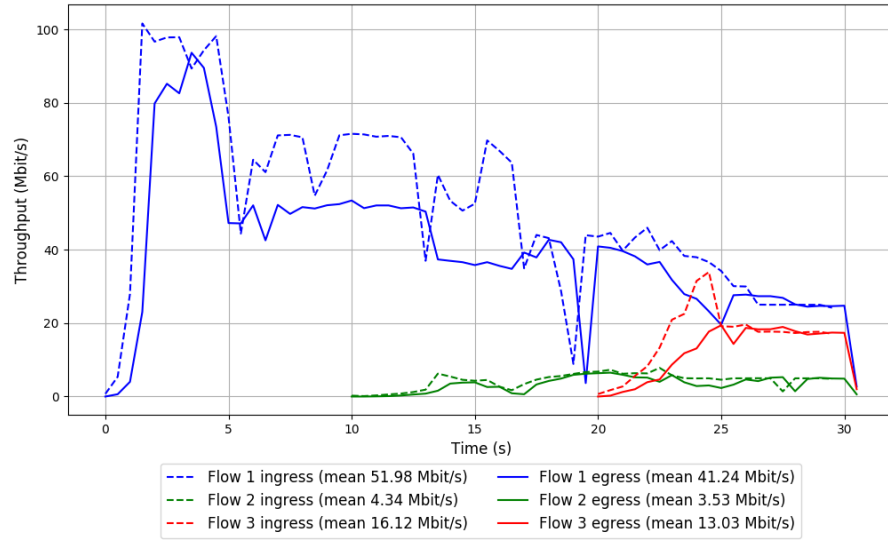


Run 5: Statistics of TCP BBR

Start at: 2018-11-30 01:37:53  
End at: 2018-11-30 01:38:23  
Local clock offset: -3.439 ms  
Remote clock offset: -4.937 ms

# Below is generated by plot.py at 2018-11-30 01:48:21  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 47.92 Mbit/s  
95th percentile per-packet one-way delay: 158.004 ms  
Loss rate: 20.42%  
-- Flow 1:  
Average throughput: 41.24 Mbit/s  
95th percentile per-packet one-way delay: 158.735 ms  
Loss rate: 20.65%  
-- Flow 2:  
Average throughput: 3.53 Mbit/s  
95th percentile per-packet one-way delay: 151.360 ms  
Loss rate: 18.56%  
-- Flow 3:  
Average throughput: 13.03 Mbit/s  
95th percentile per-packet one-way delay: 155.086 ms  
Loss rate: 19.13%

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

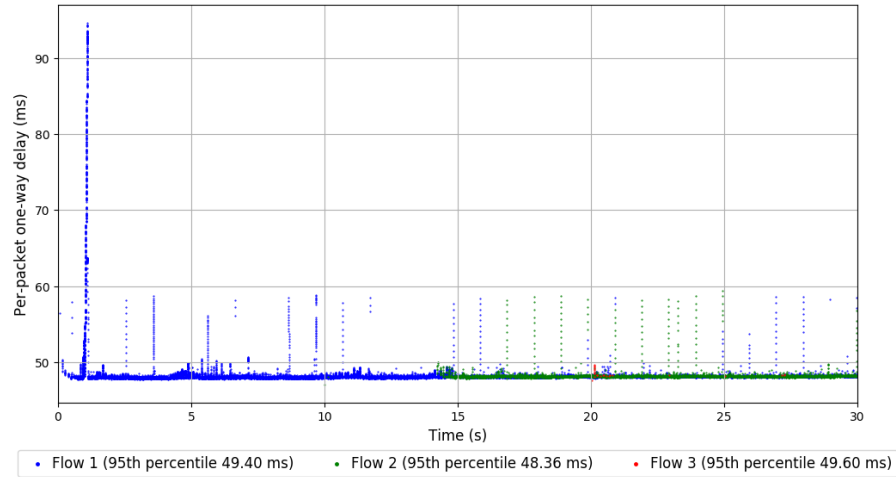
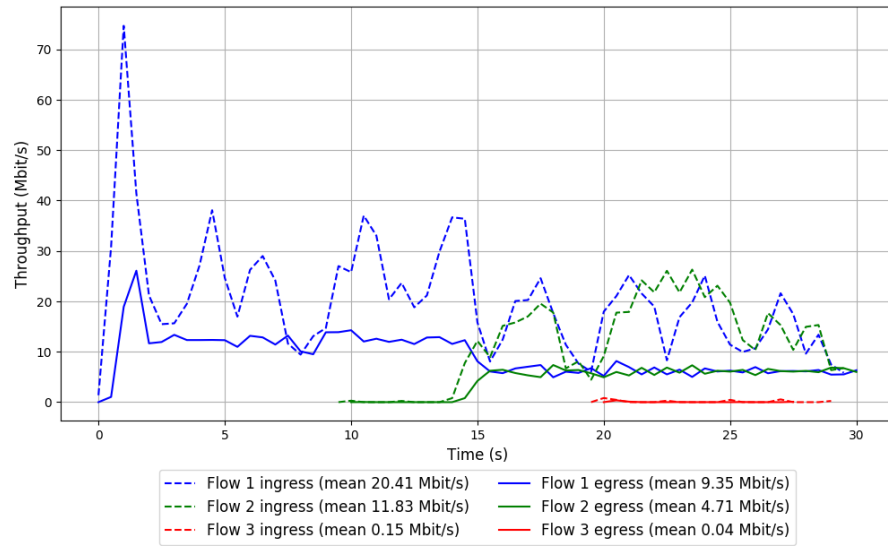


Run 1: Statistics of Copa

Start at: 2018-11-29 23:52:55  
End at: 2018-11-29 23:53:25  
Local clock offset: 2.405 ms  
Remote clock offset: -0.435 ms

# Below is generated by plot.py at 2018-11-30 01:48:21  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 12.50 Mbit/s  
95th percentile per-packet one-way delay: 48.903 ms  
Loss rate: 55.90%  
-- Flow 1:  
Average throughput: 9.35 Mbit/s  
95th percentile per-packet one-way delay: 49.397 ms  
Loss rate: 54.19%  
-- Flow 2:  
Average throughput: 4.71 Mbit/s  
95th percentile per-packet one-way delay: 48.358 ms  
Loss rate: 60.18%  
-- Flow 3:  
Average throughput: 0.04 Mbit/s  
95th percentile per-packet one-way delay: 49.598 ms  
Loss rate: 79.43%

## Run 1: Report of Copa — Data Link



Run 2: Statistics of Copa

Start at: 2018-11-30 00:16:17

End at: 2018-11-30 00:16:47

Local clock offset: 7.53 ms

Remote clock offset: 0.359 ms

# Below is generated by plot.py at 2018-11-30 01:48:21

# Datalink statistics

-- Total of 3 flows:

Average throughput: 11.95 Mbit/s

95th percentile per-packet one-way delay: 49.007 ms

Loss rate: 34.04%

-- Flow 1:

Average throughput: 7.47 Mbit/s

95th percentile per-packet one-way delay: 49.241 ms

Loss rate: 30.42%

-- Flow 2:

Average throughput: 6.29 Mbit/s

95th percentile per-packet one-way delay: 48.883 ms

Loss rate: 38.76%

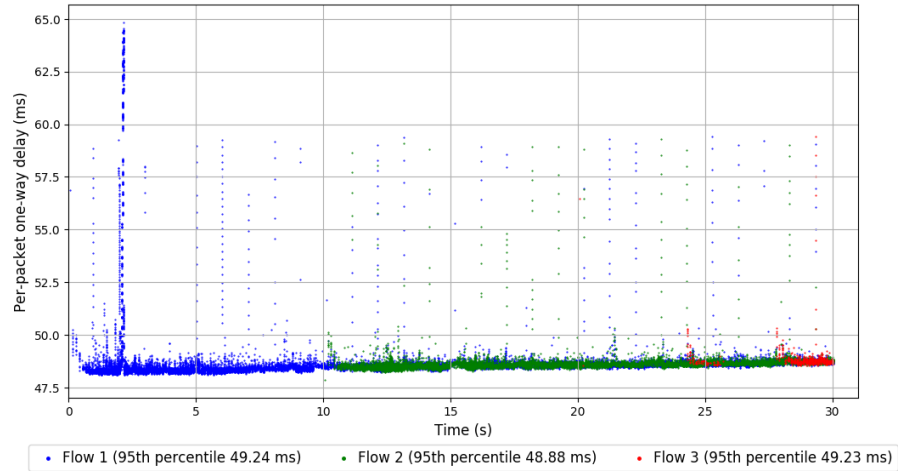
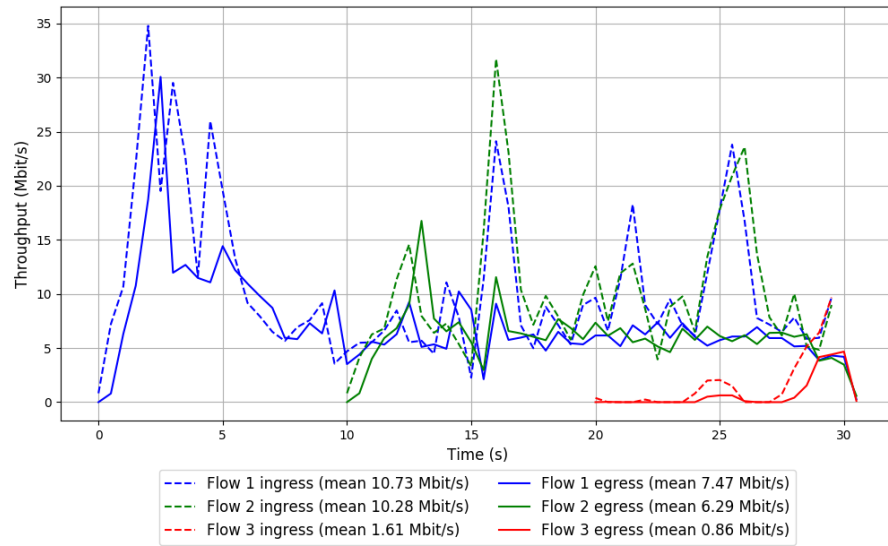
-- Flow 3:

Average throughput: 0.86 Mbit/s

95th percentile per-packet one-way delay: 49.231 ms

Loss rate: 46.39%

## Run 2: Report of Copa — Data Link

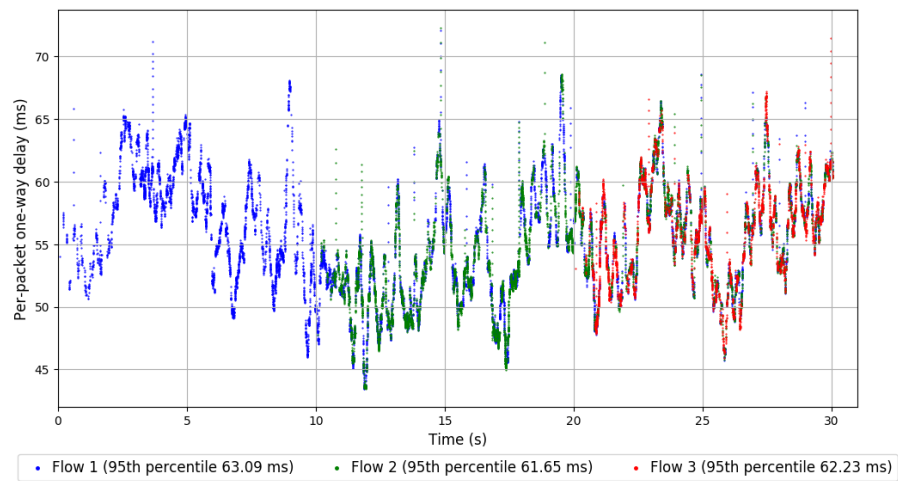
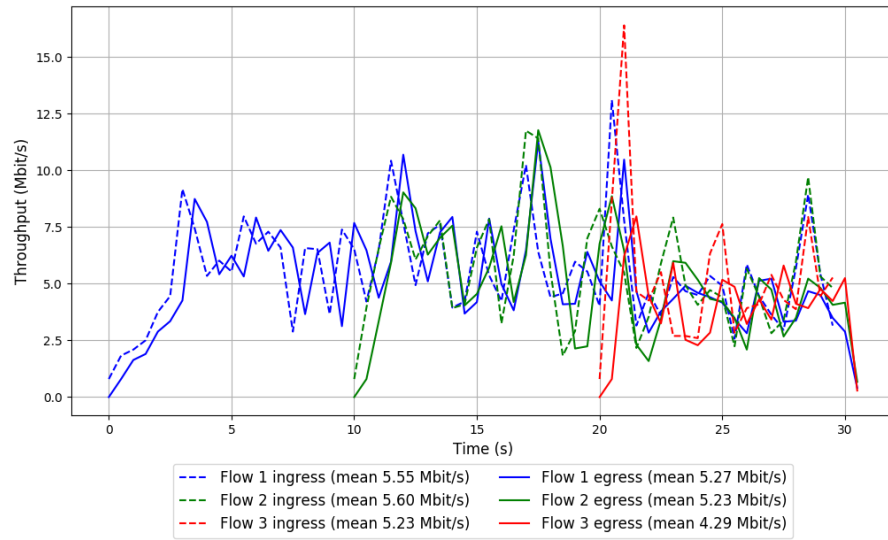


Run 3: Statistics of Copa

Start at: 2018-11-30 00:41:28  
End at: 2018-11-30 00:41:58  
Local clock offset: 16.733 ms  
Remote clock offset: -3.971 ms

# Below is generated by plot.py at 2018-11-30 01:48:21  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 10.18 Mbit/s  
95th percentile per-packet one-way delay: 62.482 ms  
Loss rate: 7.57%  
-- Flow 1:  
Average throughput: 5.27 Mbit/s  
95th percentile per-packet one-way delay: 63.088 ms  
Loss rate: 5.06%  
-- Flow 2:  
Average throughput: 5.23 Mbit/s  
95th percentile per-packet one-way delay: 61.646 ms  
Loss rate: 6.49%  
-- Flow 3:  
Average throughput: 4.29 Mbit/s  
95th percentile per-packet one-way delay: 62.228 ms  
Loss rate: 17.91%

### Run 3: Report of Copa — Data Link



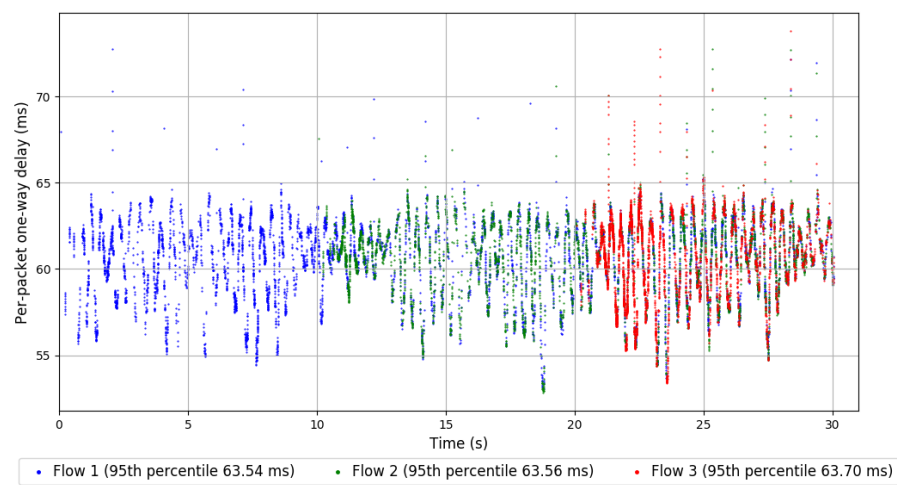
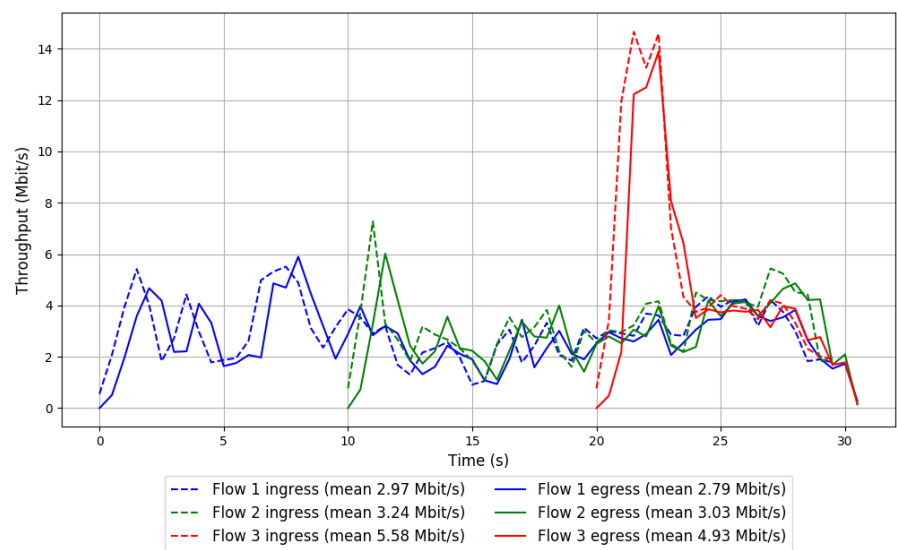


Run 4: Statistics of Copa

Start at: 2018-11-30 01:05:04  
End at: 2018-11-30 01:05:34  
Local clock offset: -0.776 ms  
Remote clock offset: -17.924 ms

# Below is generated by plot.py at 2018-11-30 01:48:21  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 6.44 Mbit/s  
95th percentile per-packet one-way delay: 63.596 ms  
Loss rate: 7.73%  
-- Flow 1:  
Average throughput: 2.79 Mbit/s  
95th percentile per-packet one-way delay: 63.543 ms  
Loss rate: 6.03%  
-- Flow 2:  
Average throughput: 3.03 Mbit/s  
95th percentile per-packet one-way delay: 63.559 ms  
Loss rate: 6.77%  
-- Flow 3:  
Average throughput: 4.93 Mbit/s  
95th percentile per-packet one-way delay: 63.703 ms  
Loss rate: 11.58%

Run 4: Report of Copa — Data Link

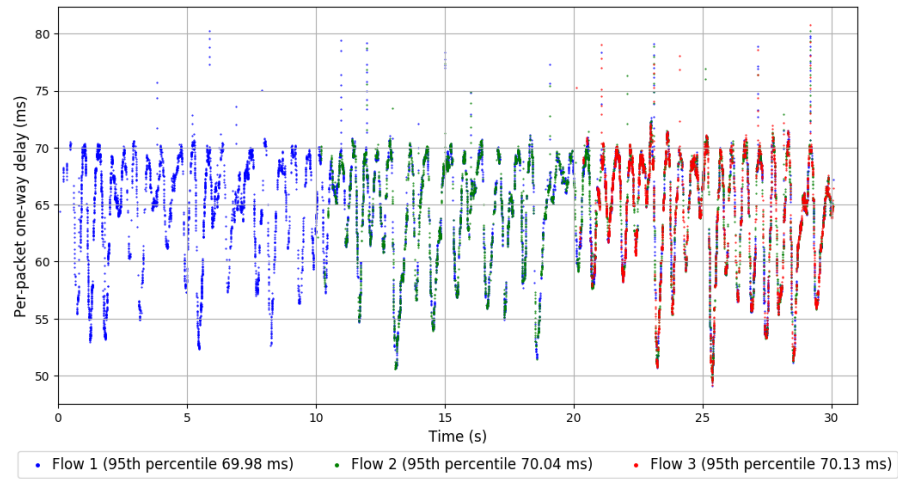
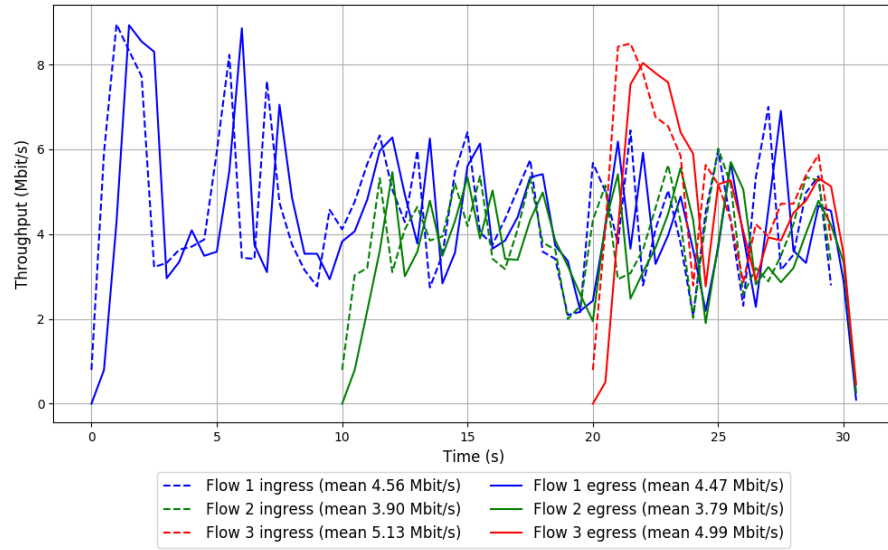


Run 5: Statistics of Copa

Start at: 2018-11-30 01:28:40  
End at: 2018-11-30 01:29:10  
Local clock offset: -2.841 ms  
Remote clock offset: -4.526 ms

# Below is generated by plot.py at 2018-11-30 01:48:21  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 8.66 Mbit/s  
95th percentile per-packet one-way delay: 70.018 ms  
Loss rate: 2.38%  
-- Flow 1:  
Average throughput: 4.47 Mbit/s  
95th percentile per-packet one-way delay: 69.976 ms  
Loss rate: 2.02%  
-- Flow 2:  
Average throughput: 3.79 Mbit/s  
95th percentile per-packet one-way delay: 70.036 ms  
Loss rate: 2.78%  
-- Flow 3:  
Average throughput: 4.99 Mbit/s  
95th percentile per-packet one-way delay: 70.129 ms  
Loss rate: 2.70%

## Run 5: Report of Copa — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2018-11-30 00:00:38

End at: 2018-11-30 00:01:08

Local clock offset: 4.928 ms

Remote clock offset: 0.178 ms

# Below is generated by plot.py at 2018-11-30 01:48:21

# Datalink statistics

-- Total of 3 flows:

Average throughput: 56.68 Mbit/s

95th percentile per-packet one-way delay: 124.647 ms

Loss rate: 1.61%

-- Flow 1:

Average throughput: 46.16 Mbit/s

95th percentile per-packet one-way delay: 124.292 ms

Loss rate: 1.81%

-- Flow 2:

Average throughput: 10.98 Mbit/s

95th percentile per-packet one-way delay: 128.408 ms

Loss rate: 0.55%

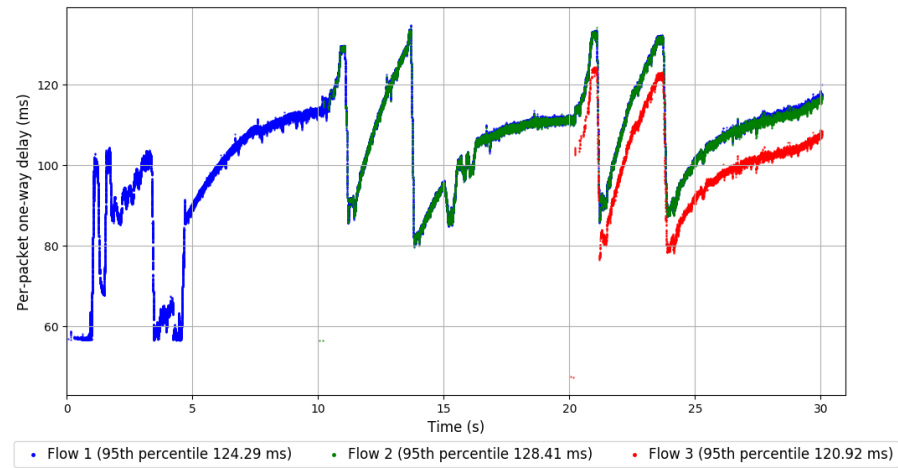
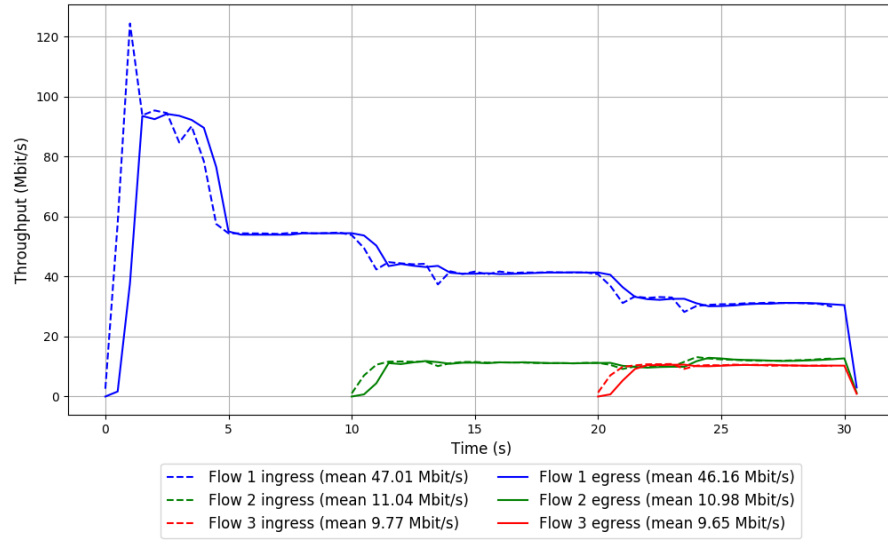
-- Flow 3:

Average throughput: 9.65 Mbit/s

95th percentile per-packet one-way delay: 120.922 ms

Loss rate: 1.16%

# Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2018-11-30 00:24:01

End at: 2018-11-30 00:24:31

Local clock offset: 12.162 ms

Remote clock offset: 0.289 ms

# Below is generated by plot.py at 2018-11-30 01:48:29

# Datalink statistics

-- Total of 3 flows:

Average throughput: 70.98 Mbit/s

95th percentile per-packet one-way delay: 78.636 ms

Loss rate: 1.43%

-- Flow 1:

Average throughput: 42.82 Mbit/s

95th percentile per-packet one-way delay: 74.285 ms

Loss rate: 1.25%

-- Flow 2:

Average throughput: 19.07 Mbit/s

95th percentile per-packet one-way delay: 83.539 ms

Loss rate: 1.34%

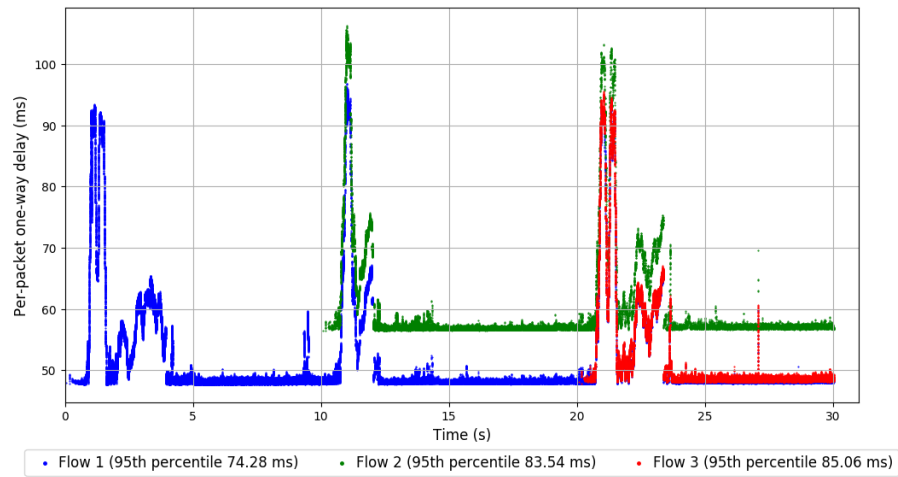
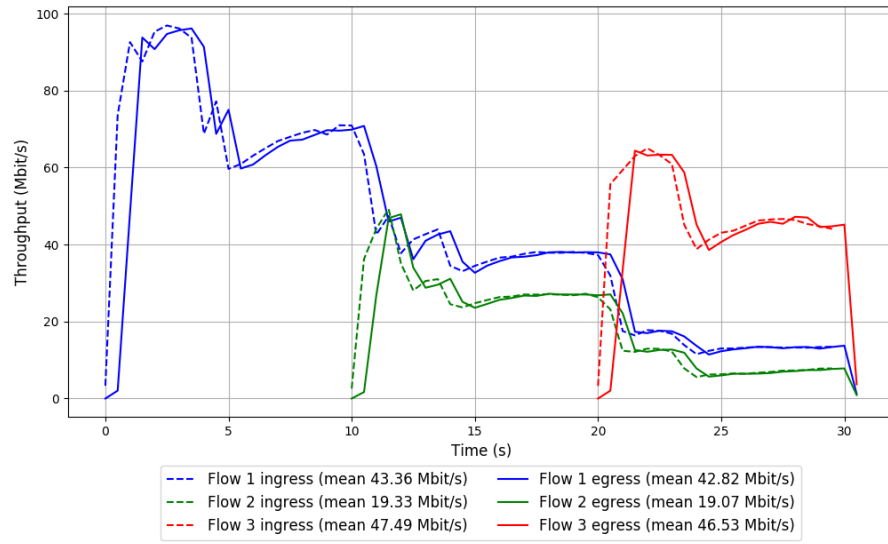
-- Flow 3:

Average throughput: 46.53 Mbit/s

95th percentile per-packet one-way delay: 85.055 ms

Loss rate: 2.00%

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



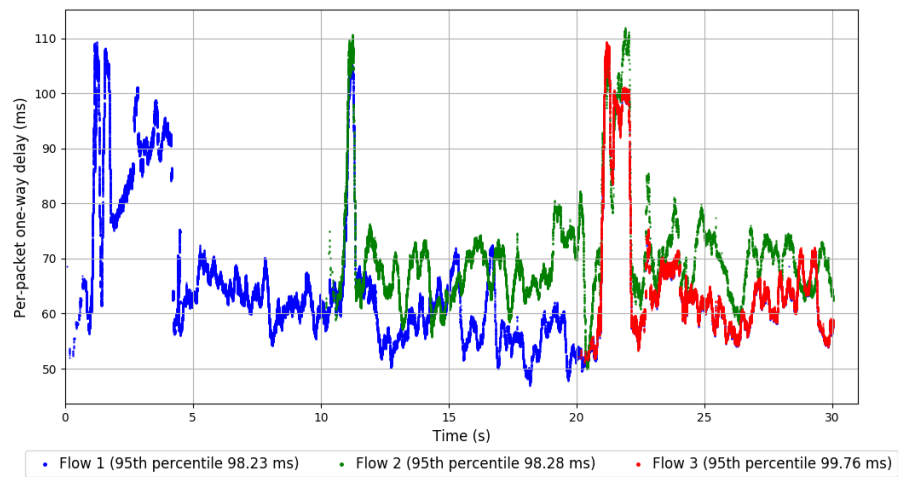
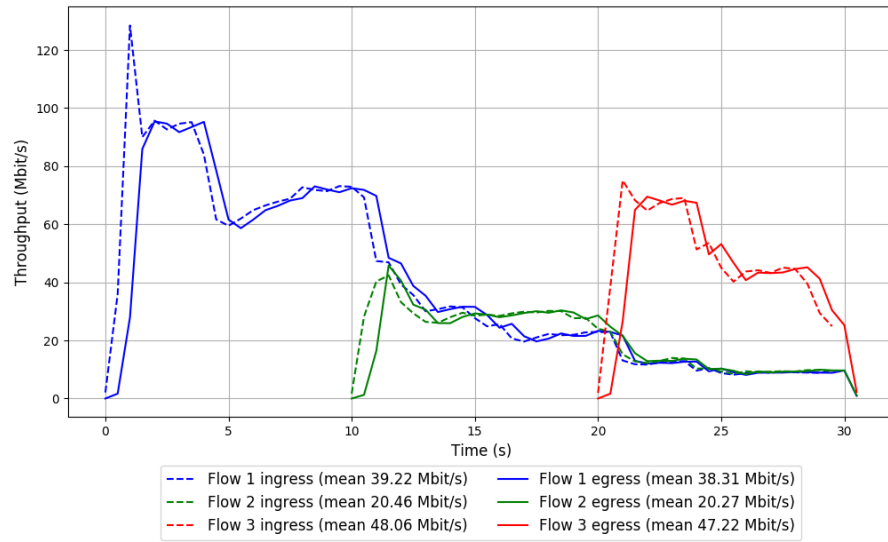


Run 3: Statistics of TCP Cubic

Start at: 2018-11-30 00:49:11  
End at: 2018-11-30 00:49:41  
Local clock offset: 10.181 ms  
Remote clock offset: -5.433 ms

# Below is generated by plot.py at 2018-11-30 01:48:30  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 67.53 Mbit/s  
95th percentile per-packet one-way delay: 99.128 ms  
Loss rate: 1.91%  
-- Flow 1:  
Average throughput: 38.31 Mbit/s  
95th percentile per-packet one-way delay: 98.226 ms  
Loss rate: 2.34%  
-- Flow 2:  
Average throughput: 20.27 Mbit/s  
95th percentile per-packet one-way delay: 98.282 ms  
Loss rate: 0.92%  
-- Flow 3:  
Average throughput: 47.22 Mbit/s  
95th percentile per-packet one-way delay: 99.764 ms  
Loss rate: 1.69%

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

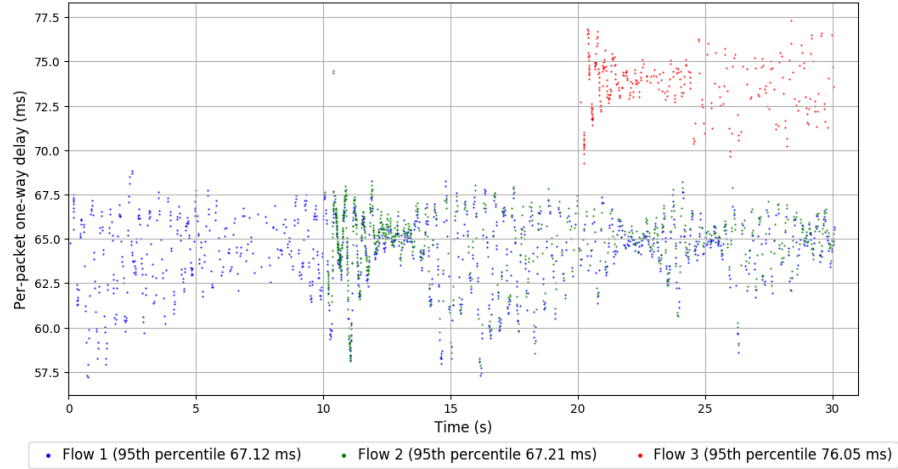
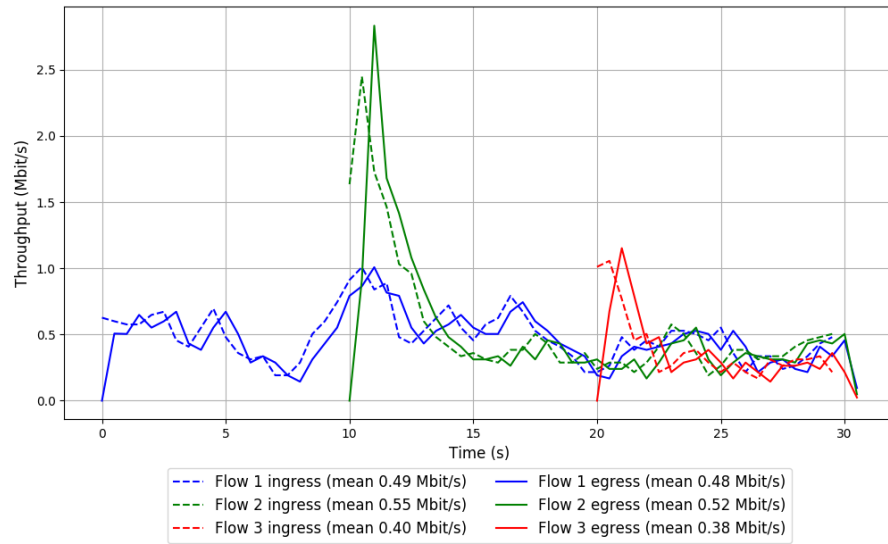


Run 4: Statistics of TCP Cubic

Start at: 2018-11-30 01:13:05  
End at: 2018-11-30 01:13:35  
Local clock offset: -2.913 ms  
Remote clock offset: -14.946 ms

# Below is generated by plot.py at 2018-11-30 01:48:30  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 0.95 Mbit/s  
95th percentile per-packet one-way delay: 74.348 ms  
Loss rate: 4.15%  
-- Flow 1:  
Average throughput: 0.48 Mbit/s  
95th percentile per-packet one-way delay: 67.117 ms  
Loss rate: 3.56%  
-- Flow 2:  
Average throughput: 0.52 Mbit/s  
95th percentile per-packet one-way delay: 67.208 ms  
Loss rate: 4.38%  
-- Flow 3:  
Average throughput: 0.38 Mbit/s  
95th percentile per-packet one-way delay: 76.049 ms  
Loss rate: 5.74%

#### Run 4: Report of TCP Cubic — Data Link

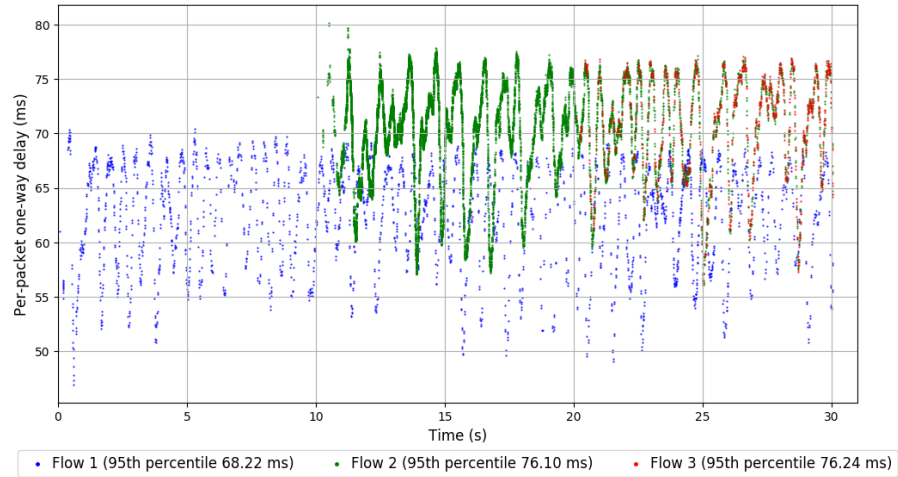
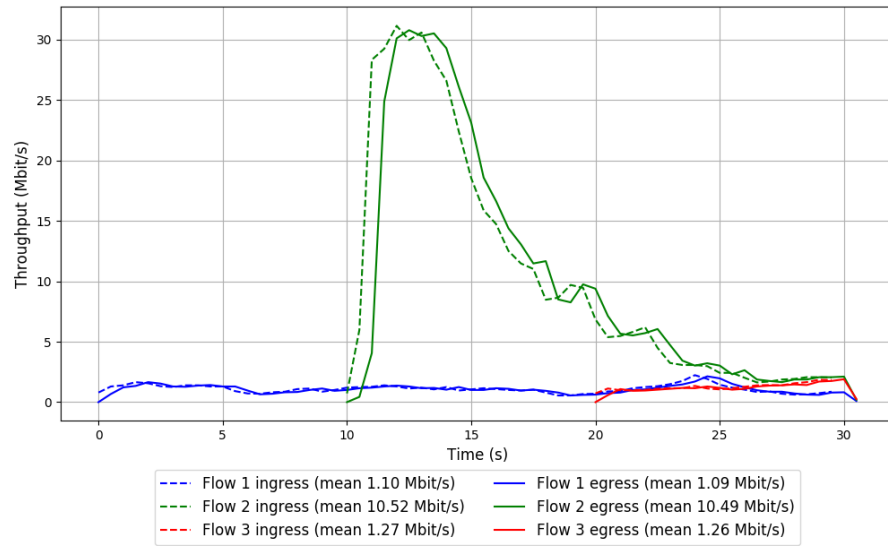


Run 5: Statistics of TCP Cubic

Start at: 2018-11-30 01:36:36  
End at: 2018-11-30 01:37:06  
Local clock offset: -3.11 ms  
Remote clock offset: -4.313 ms

# Below is generated by plot.py at 2018-11-30 01:48:30  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 8.50 Mbit/s  
95th percentile per-packet one-way delay: 76.023 ms  
Loss rate: 0.36%  
-- Flow 1:  
Average throughput: 1.09 Mbit/s  
95th percentile per-packet one-way delay: 68.220 ms  
Loss rate: 0.83%  
-- Flow 2:  
Average throughput: 10.49 Mbit/s  
95th percentile per-packet one-way delay: 76.104 ms  
Loss rate: 0.28%  
-- Flow 3:  
Average throughput: 1.26 Mbit/s  
95th percentile per-packet one-way delay: 76.237 ms  
Loss rate: 0.38%

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



Run 1: Statistics of FillP

Start at: 2018-11-30 00:05:48

End at: 2018-11-30 00:06:18

Local clock offset: 5.711 ms

Remote clock offset: 0.707 ms

# Below is generated by plot.py at 2018-11-30 01:49:32

# Datalink statistics

-- Total of 3 flows:

Average throughput: 94.51 Mbit/s

95th percentile per-packet one-way delay: 183.612 ms

Loss rate: 16.15%

-- Flow 1:

Average throughput: 56.06 Mbit/s

95th percentile per-packet one-way delay: 177.933 ms

Loss rate: 13.79%

-- Flow 2:

Average throughput: 37.56 Mbit/s

95th percentile per-packet one-way delay: 178.324 ms

Loss rate: 23.38%

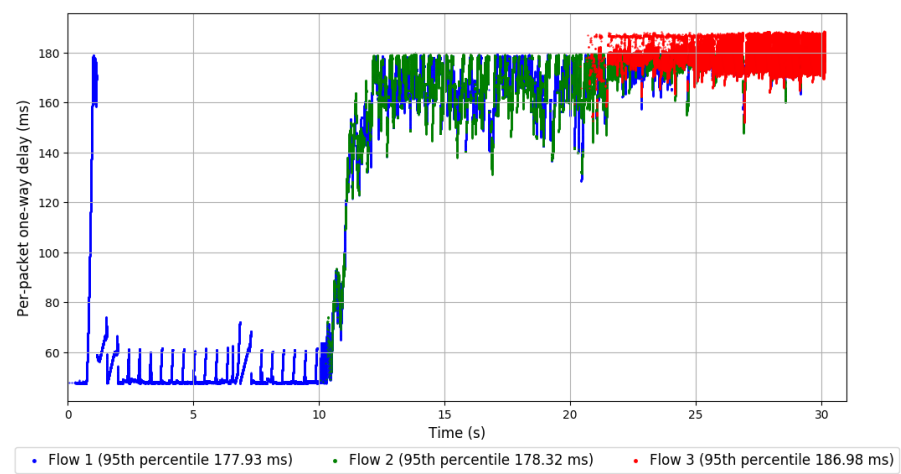
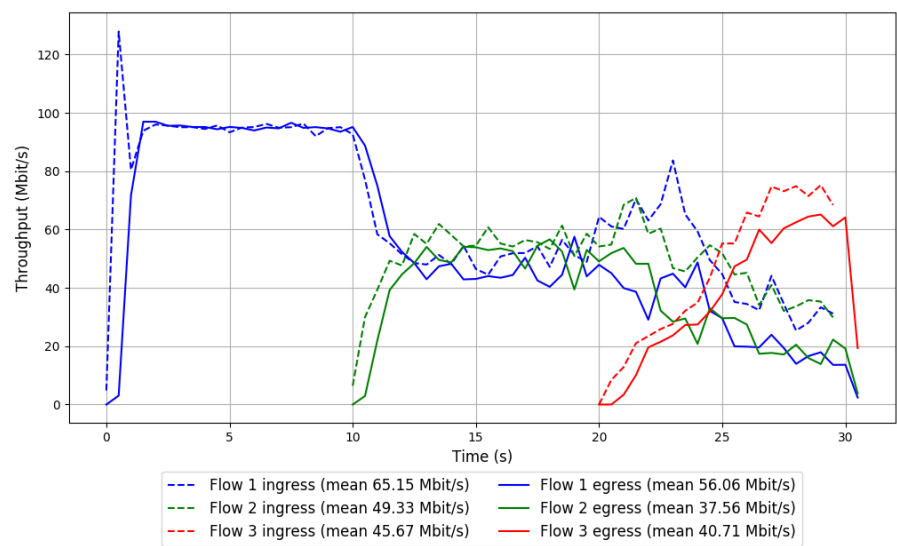
-- Flow 3:

Average throughput: 40.71 Mbit/s

95th percentile per-packet one-way delay: 186.976 ms

Loss rate: 10.60%

Run 1: Report of FillP — Data Link





Run 2: Statistics of FillP

Start at: 2018-11-30 00:29:48

End at: 2018-11-30 00:30:18

Local clock offset: 14.524 ms

Remote clock offset: 1.119 ms

# Below is generated by plot.py at 2018-11-30 01:49:32

# Datalink statistics

-- Total of 3 flows:

Average throughput: 92.63 Mbit/s

95th percentile per-packet one-way delay: 187.189 ms

Loss rate: 14.72%

-- Flow 1:

Average throughput: 69.48 Mbit/s

95th percentile per-packet one-way delay: 187.328 ms

Loss rate: 8.22%

-- Flow 2:

Average throughput: 29.37 Mbit/s

95th percentile per-packet one-way delay: 181.125 ms

Loss rate: 29.58%

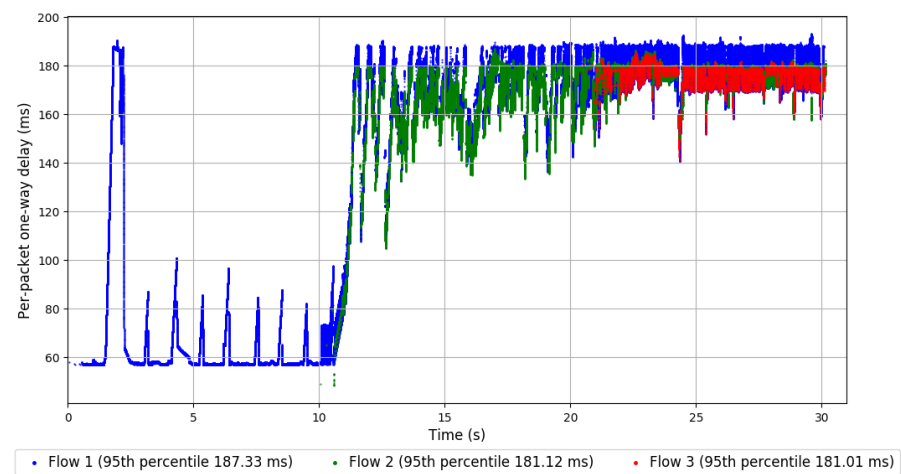
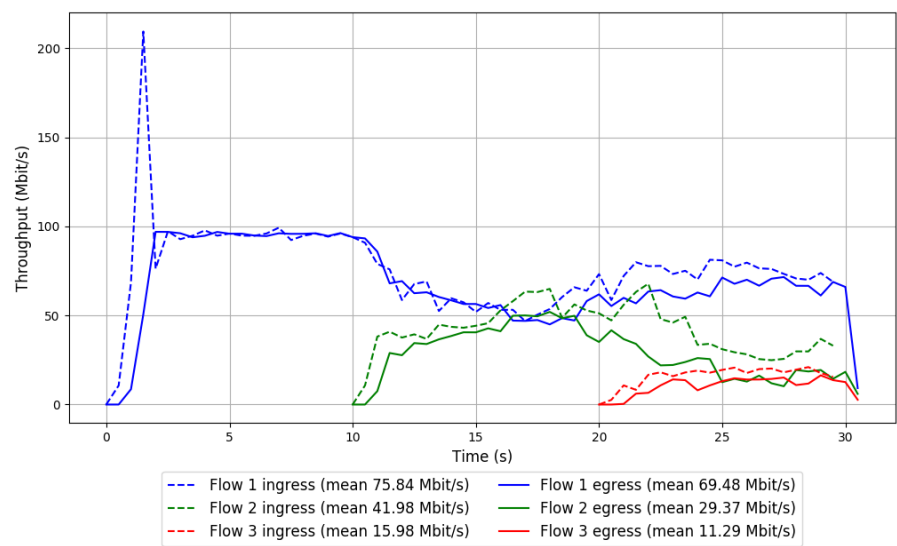
-- Flow 3:

Average throughput: 11.29 Mbit/s

95th percentile per-packet one-way delay: 181.011 ms

Loss rate: 29.40%

Run 2: Report of FillP — Data Link

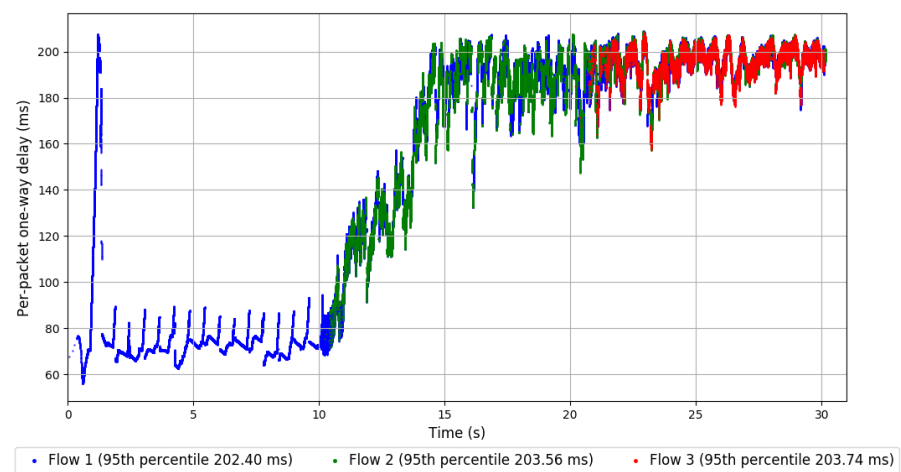
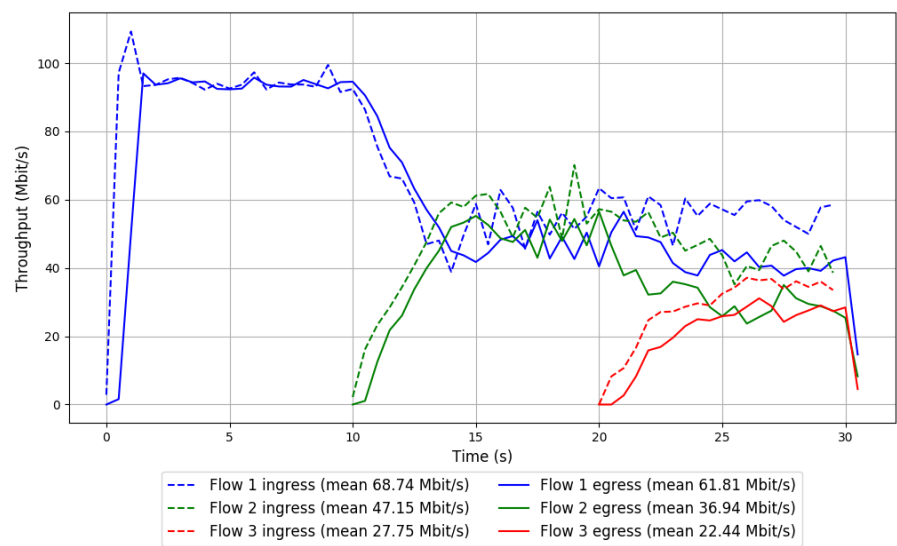


Run 3: Statistics of FillP

Start at: 2018-11-30 00:54:29  
End at: 2018-11-30 00:54:59  
Local clock offset: 4.538 ms  
Remote clock offset: -1.885 ms

# Below is generated by plot.py at 2018-11-30 01:49:34  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 93.81 Mbit/s  
95th percentile per-packet one-way delay: 202.997 ms  
Loss rate: 13.84%  
-- Flow 1:  
Average throughput: 61.81 Mbit/s  
95th percentile per-packet one-way delay: 202.395 ms  
Loss rate: 9.69%  
-- Flow 2:  
Average throughput: 36.94 Mbit/s  
95th percentile per-packet one-way delay: 203.559 ms  
Loss rate: 21.18%  
-- Flow 3:  
Average throughput: 22.44 Mbit/s  
95th percentile per-packet one-way delay: 203.738 ms  
Loss rate: 19.72%

Run 3: Report of FillP — Data Link

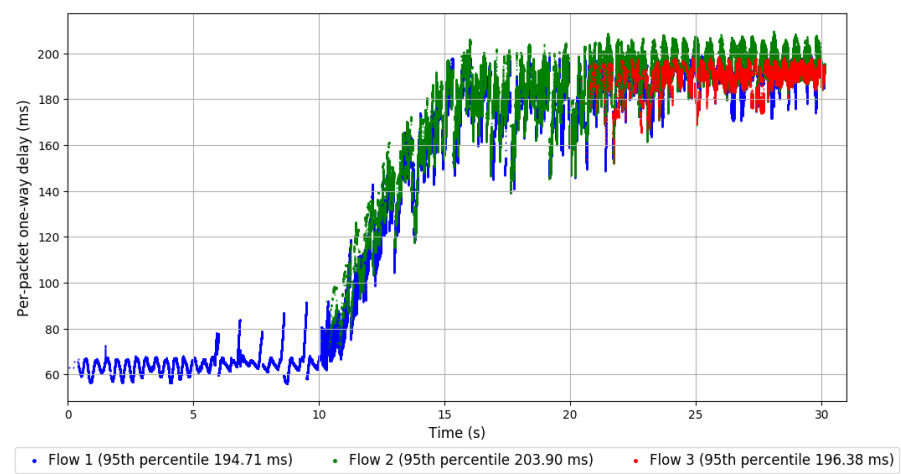
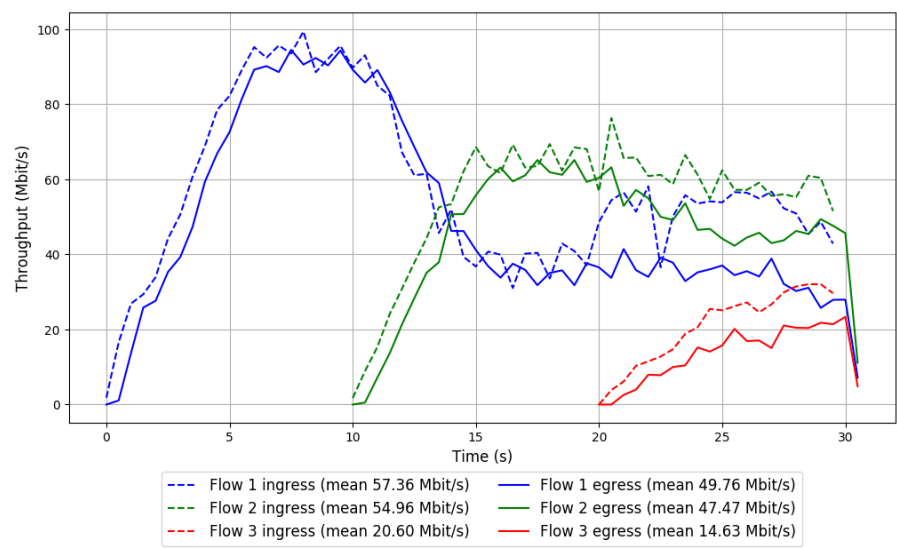


Run 4: Statistics of FillP

Start at: 2018-11-30 01:18:21  
End at: 2018-11-30 01:18:51  
Local clock offset: -3.03 ms  
Remote clock offset: -14.861 ms

# Below is generated by plot.py at 2018-11-30 01:49:34  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 86.19 Mbit/s  
95th percentile per-packet one-way delay: 199.761 ms  
Loss rate: 14.18%  
-- Flow 1:  
Average throughput: 49.76 Mbit/s  
95th percentile per-packet one-way delay: 194.706 ms  
Loss rate: 12.99%  
-- Flow 2:  
Average throughput: 47.47 Mbit/s  
95th percentile per-packet one-way delay: 203.902 ms  
Loss rate: 13.28%  
-- Flow 3:  
Average throughput: 14.63 Mbit/s  
95th percentile per-packet one-way delay: 196.379 ms  
Loss rate: 29.04%

Run 4: Report of FillP — Data Link



Run 5: Statistics of FillP

Start at: 2018-11-30 01:41:53

End at: 2018-11-30 01:42:23

Local clock offset: -3.597 ms

Remote clock offset: 1.974 ms

# Below is generated by plot.py at 2018-11-30 01:49:47

# Datalink statistics

-- Total of 3 flows:

Average throughput: 92.13 Mbit/s

95th percentile per-packet one-way delay: 204.491 ms

Loss rate: 13.35%

-- Flow 1:

Average throughput: 57.11 Mbit/s

95th percentile per-packet one-way delay: 198.758 ms

Loss rate: 11.09%

-- Flow 2:

Average throughput: 47.58 Mbit/s

95th percentile per-packet one-way delay: 208.218 ms

Loss rate: 15.88%

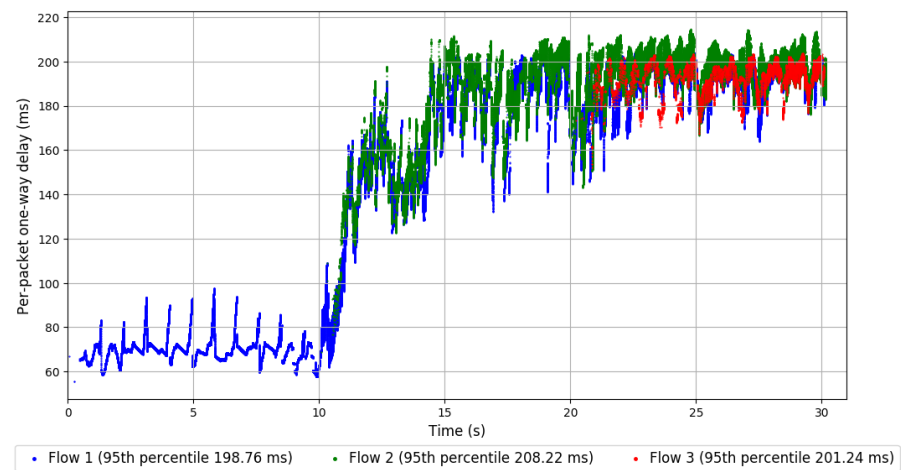
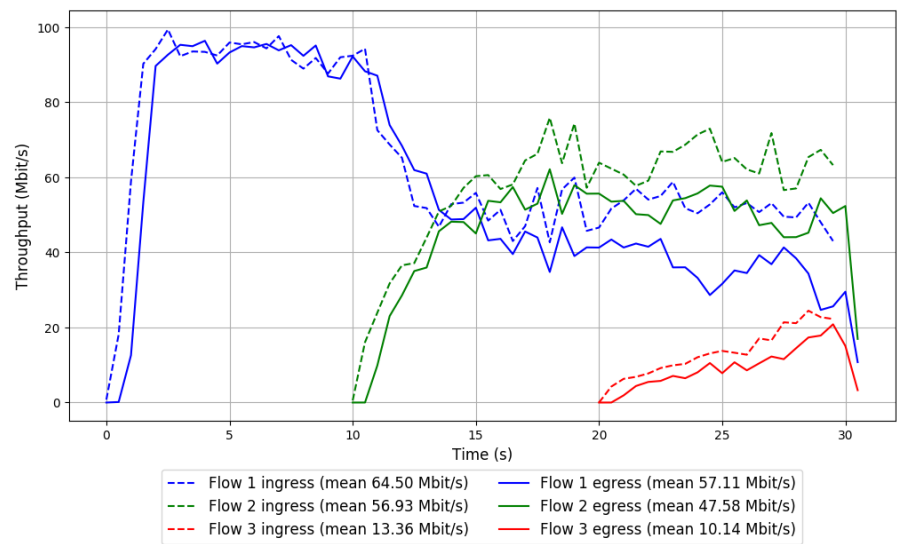
-- Flow 3:

Average throughput: 10.14 Mbit/s

95th percentile per-packet one-way delay: 201.241 ms

Loss rate: 24.58%

Run 5: Report of FillP — Data Link



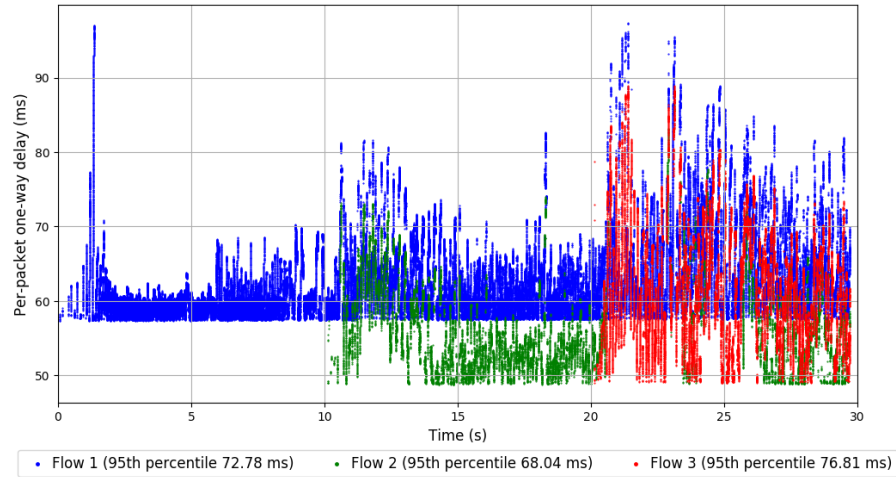
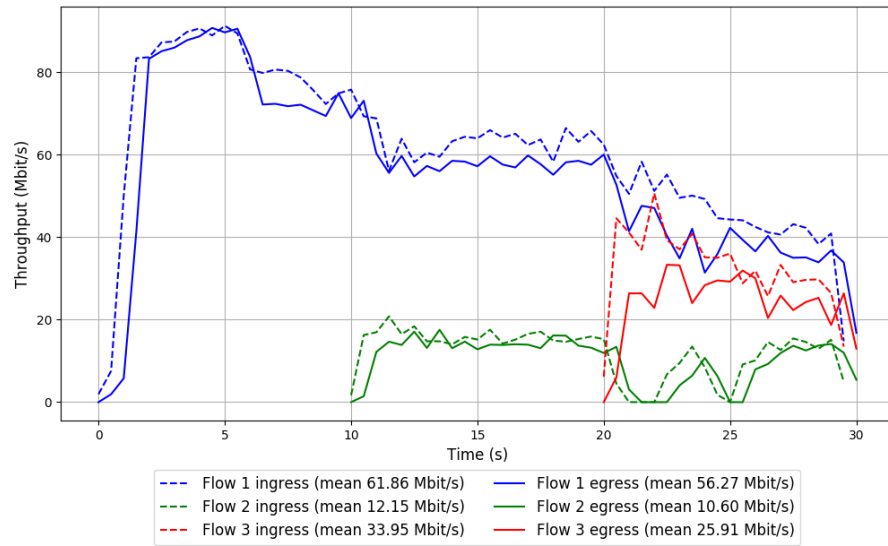


```
Run 1: Statistics of Indigo

Start at: 2018-11-29 23:51:35
End at: 2018-11-29 23:52:05
Local clock offset: 1.575 ms
Remote clock offset: 0.501 ms

# Below is generated by plot.py at 2018-11-30 01:49:47
# Datalink statistics
-- Total of 3 flows:
Average throughput: 71.65 Mbit/s
95th percentile per-packet one-way delay: 73.208 ms
Loss rate: 11.40%
-- Flow 1:
Average throughput: 56.27 Mbit/s
95th percentile per-packet one-way delay: 72.777 ms
Loss rate: 9.06%
-- Flow 2:
Average throughput: 10.60 Mbit/s
95th percentile per-packet one-way delay: 68.039 ms
Loss rate: 12.77%
-- Flow 3:
Average throughput: 25.91 Mbit/s
95th percentile per-packet one-way delay: 76.808 ms
Loss rate: 23.59%
```

# Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2018-11-30 00:14:59

End at: 2018-11-30 00:15:29

Local clock offset: 6.281 ms

Remote clock offset: 1.319 ms

# Below is generated by plot.py at 2018-11-30 01:49:47

# Datalink statistics

-- Total of 3 flows:

Average throughput: 52.04 Mbit/s

95th percentile per-packet one-way delay: 91.230 ms

Loss rate: 0.11%

-- Flow 1:

Average throughput: 26.60 Mbit/s

95th percentile per-packet one-way delay: 77.245 ms

Loss rate: 0.08%

-- Flow 2:

Average throughput: 27.72 Mbit/s

95th percentile per-packet one-way delay: 96.980 ms

Loss rate: 0.17%

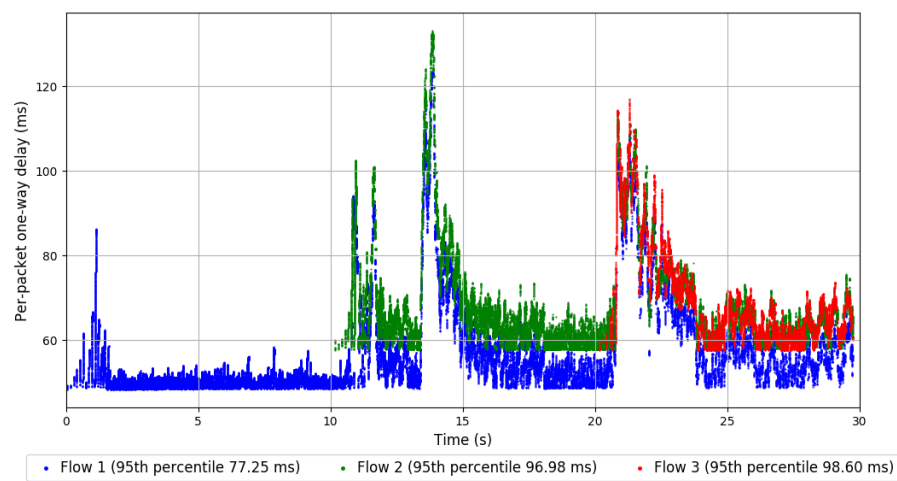
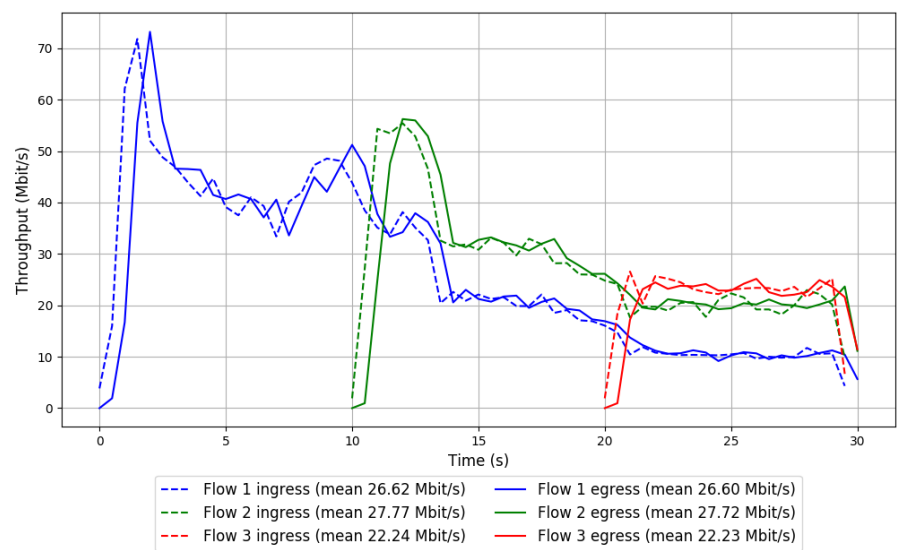
-- Flow 3:

Average throughput: 22.23 Mbit/s

95th percentile per-packet one-way delay: 98.596 ms

Loss rate: 0.06%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2018-11-30 00:40:06

End at: 2018-11-30 00:40:36

Local clock offset: 16.619 ms

Remote clock offset: 1.628 ms

# Below is generated by plot.py at 2018-11-30 01:49:47

# Datalink statistics

-- Total of 3 flows:

Average throughput: 53.03 Mbit/s

95th percentile per-packet one-way delay: 71.147 ms

Loss rate: 0.08%

-- Flow 1:

Average throughput: 26.23 Mbit/s

95th percentile per-packet one-way delay: 70.535 ms

Loss rate: 0.16%

-- Flow 2:

Average throughput: 24.31 Mbit/s

95th percentile per-packet one-way delay: 69.544 ms

Loss rate: 0.00%

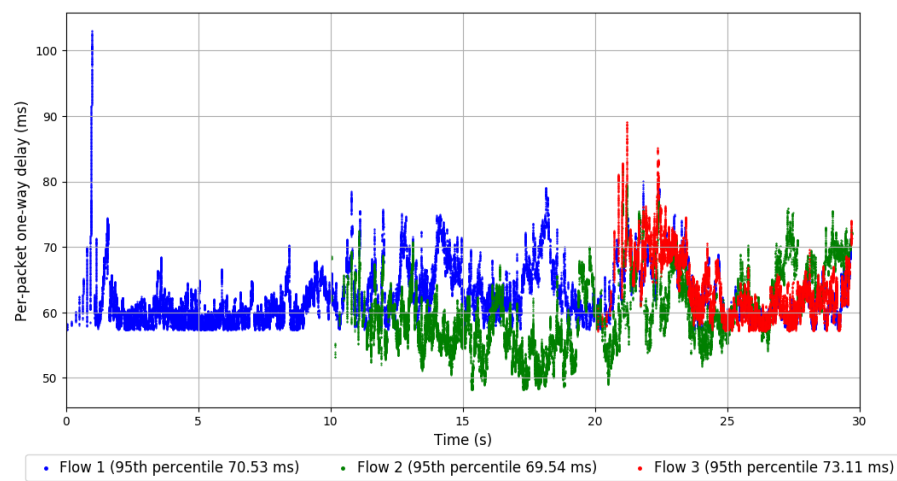
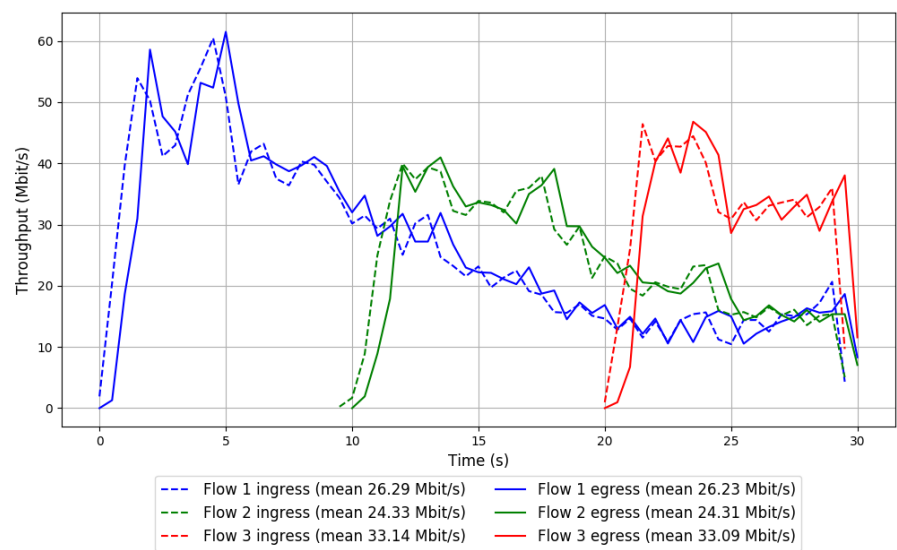
-- Flow 3:

Average throughput: 33.09 Mbit/s

95th percentile per-packet one-way delay: 73.109 ms

Loss rate: 0.00%

Run 3: Report of Indigo — Data Link

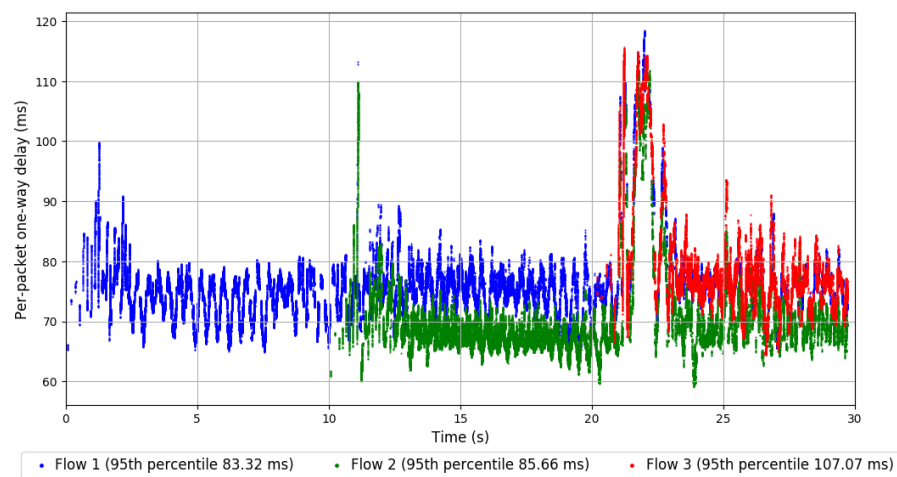
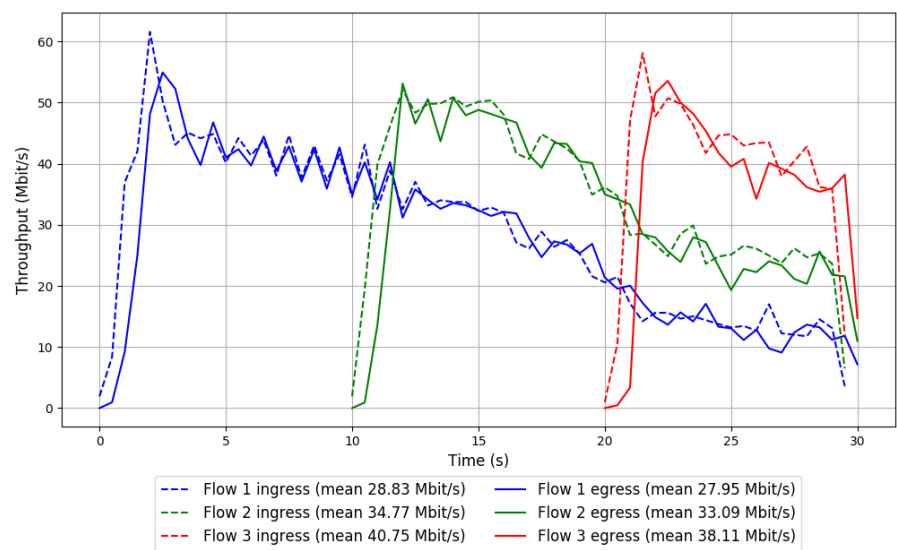


Run 4: Statistics of Indigo

Start at: 2018-11-30 01:03:31  
End at: 2018-11-30 01:04:01  
Local clock offset: -0.311 ms  
Remote clock offset: -13.383 ms

# Below is generated by plot.py at 2018-11-30 01:49:52  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 62.06 Mbit/s  
95th percentile per-packet one-way delay: 93.068 ms  
Loss rate: 4.35%  
-- Flow 1:  
Average throughput: 27.95 Mbit/s  
95th percentile per-packet one-way delay: 83.318 ms  
Loss rate: 3.04%  
-- Flow 2:  
Average throughput: 33.09 Mbit/s  
95th percentile per-packet one-way delay: 85.664 ms  
Loss rate: 4.79%  
-- Flow 3:  
Average throughput: 38.11 Mbit/s  
95th percentile per-packet one-way delay: 107.070 ms  
Loss rate: 6.46%

Run 4: Report of Indigo — Data Link



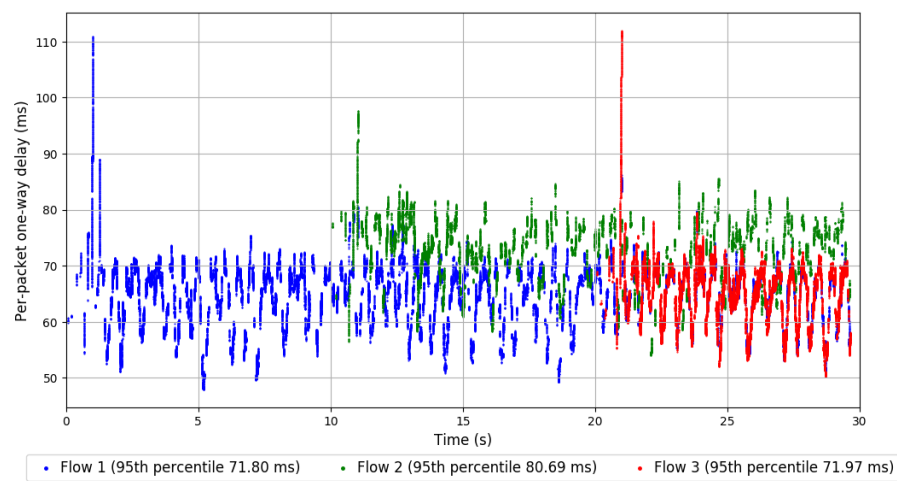
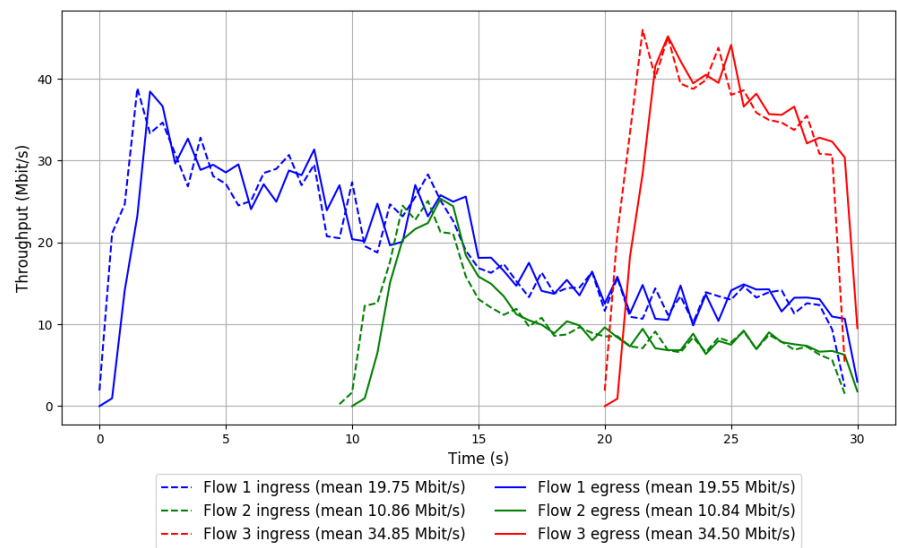


Run 5: Statistics of Indigo

Start at: 2018-11-30 01:27:19  
End at: 2018-11-30 01:27:49  
Local clock offset: -2.732 ms  
Remote clock offset: -6.337 ms

# Below is generated by plot.py at 2018-11-30 01:49:52  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 37.84 Mbit/s  
95th percentile per-packet one-way delay: 77.609 ms  
Loss rate: 0.91%  
-- Flow 1:  
Average throughput: 19.55 Mbit/s  
95th percentile per-packet one-way delay: 71.799 ms  
Loss rate: 1.01%  
-- Flow 2:  
Average throughput: 10.84 Mbit/s  
95th percentile per-packet one-way delay: 80.692 ms  
Loss rate: 0.30%  
-- Flow 3:  
Average throughput: 34.50 Mbit/s  
95th percentile per-packet one-way delay: 71.966 ms  
Loss rate: 1.13%

Run 5: Report of Indigo — Data Link



Run 1: Statistics of Indigo-96d2da3

Start at: 2018-11-29 23:54:09

End at: 2018-11-29 23:54:39

Local clock offset: 2.859 ms

Remote clock offset: 0.648 ms

# Below is generated by plot.py at 2018-11-30 01:50:32

# Datalink statistics

-- Total of 3 flows:

Average throughput: 88.28 Mbit/s

95th percentile per-packet one-way delay: 201.377 ms

Loss rate: 33.79%

-- Flow 1:

Average throughput: 58.95 Mbit/s

95th percentile per-packet one-way delay: 201.490 ms

Loss rate: 26.09%

-- Flow 2:

Average throughput: 36.45 Mbit/s

95th percentile per-packet one-way delay: 194.222 ms

Loss rate: 45.30%

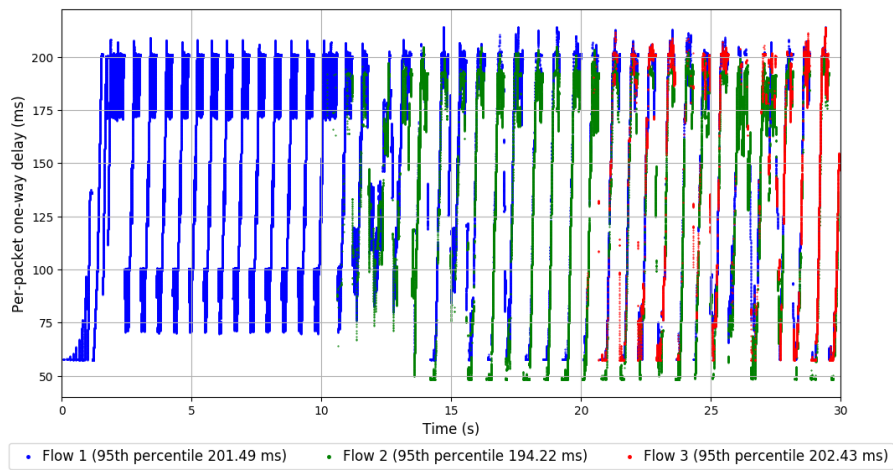
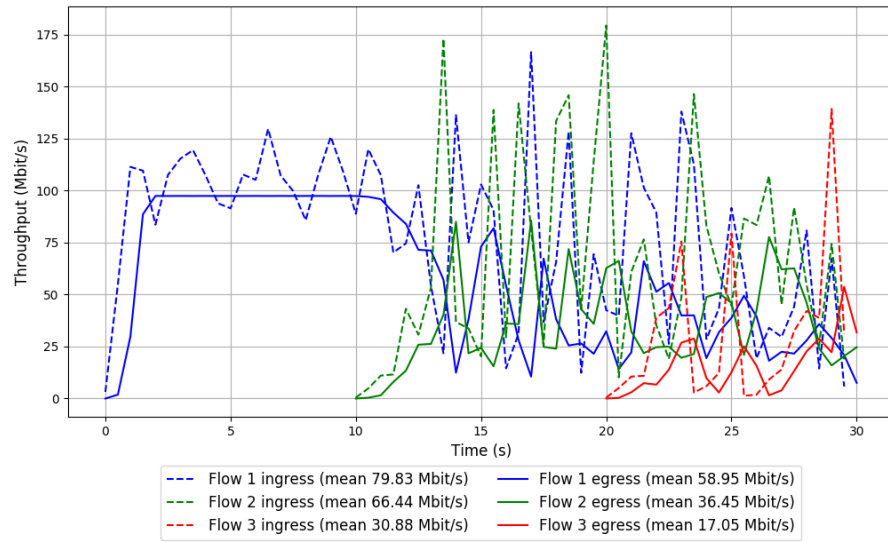
-- Flow 3:

Average throughput: 17.05 Mbit/s

95th percentile per-packet one-way delay: 202.426 ms

Loss rate: 44.39%

# Run 1: Report of Indigo-96d2da3 — Data Link



Run 2: Statistics of Indigo-96d2da3

Start at: 2018-11-30 00:17:31

End at: 2018-11-30 00:18:01

Local clock offset: 8.395 ms

Remote clock offset: 0.757 ms

# Below is generated by plot.py at 2018-11-30 01:50:42

# Datalink statistics

-- Total of 3 flows:

Average throughput: 87.81 Mbit/s

95th percentile per-packet one-way delay: 201.254 ms

Loss rate: 28.24%

-- Flow 1:

Average throughput: 59.42 Mbit/s

95th percentile per-packet one-way delay: 201.321 ms

Loss rate: 19.57%

-- Flow 2:

Average throughput: 32.98 Mbit/s

95th percentile per-packet one-way delay: 194.040 ms

Loss rate: 38.65%

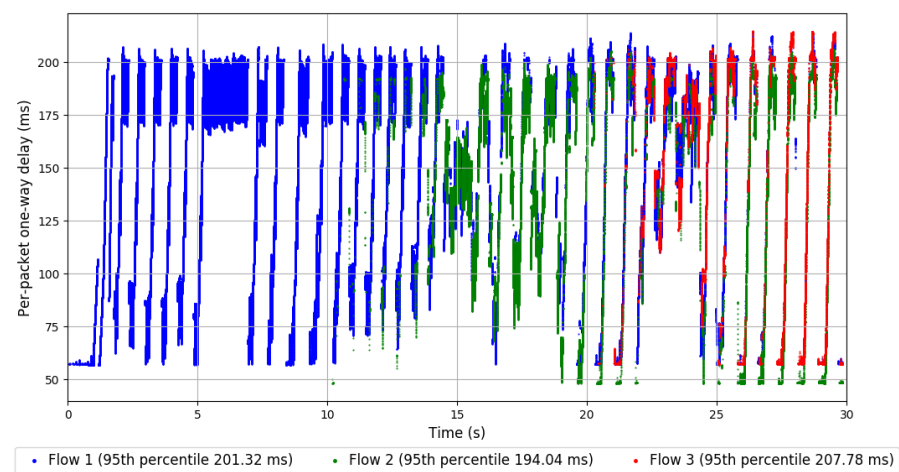
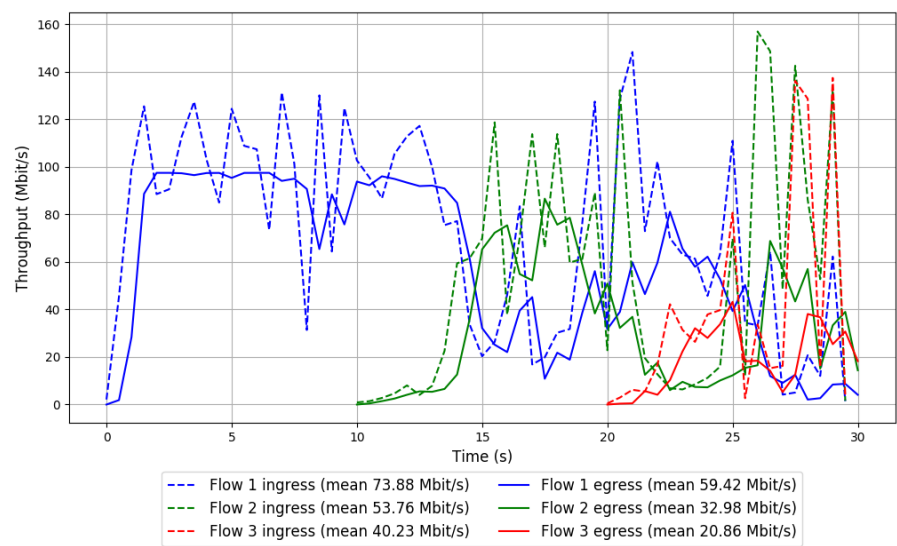
-- Flow 3:

Average throughput: 20.86 Mbit/s

95th percentile per-packet one-way delay: 207.775 ms

Loss rate: 48.92%

Run 2: Report of Indigo-96d2da3 — Data Link

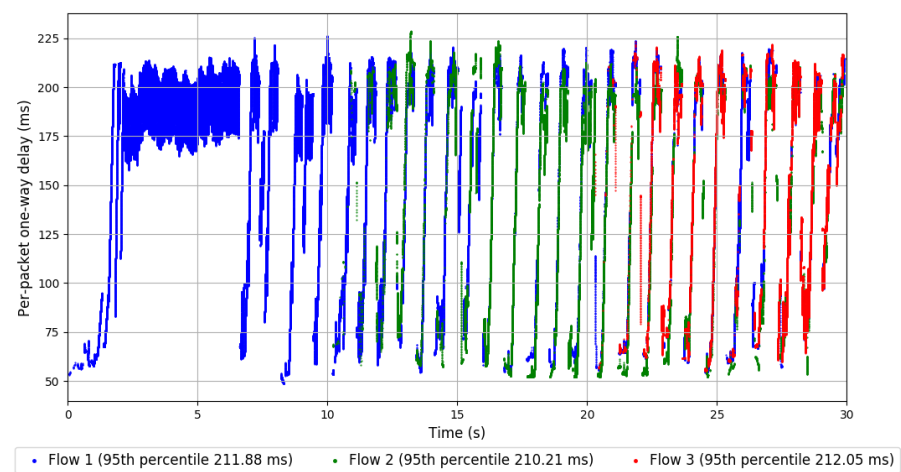
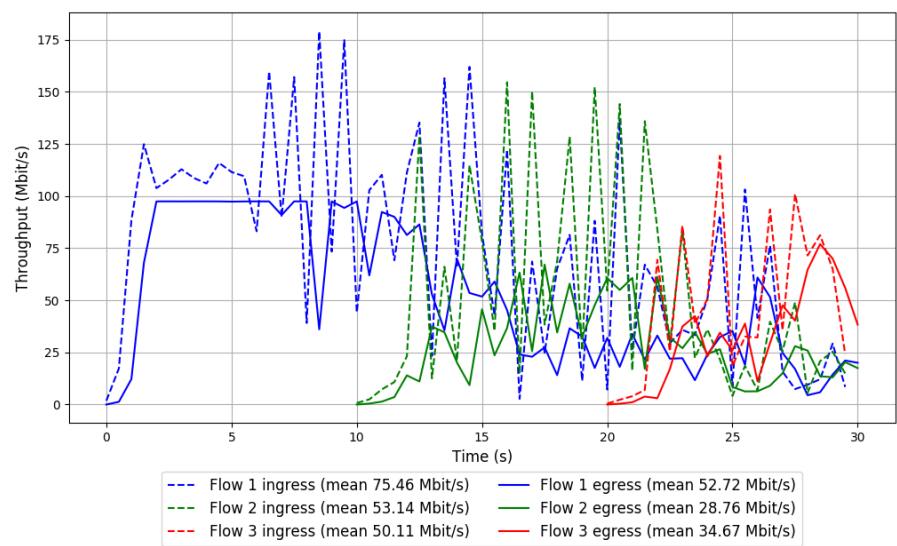


Run 3: Statistics of Indigo-96d2da3

Start at: 2018-11-30 00:42:43  
End at: 2018-11-30 00:43:13  
Local clock offset: 17.191 ms  
Remote clock offset: -3.332 ms

# Below is generated by plot.py at 2018-11-30 01:50:44  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 82.74 Mbit/s  
95th percentile per-packet one-way delay: 211.760 ms  
Loss rate: 34.25%  
-- Flow 1:  
Average throughput: 52.72 Mbit/s  
95th percentile per-packet one-way delay: 211.882 ms  
Loss rate: 29.75%  
-- Flow 2:  
Average throughput: 28.76 Mbit/s  
95th percentile per-packet one-way delay: 210.205 ms  
Loss rate: 45.50%  
-- Flow 3:  
Average throughput: 34.67 Mbit/s  
95th percentile per-packet one-way delay: 212.054 ms  
Loss rate: 30.92%

Run 3: Report of Indigo-96d2da3 — Data Link



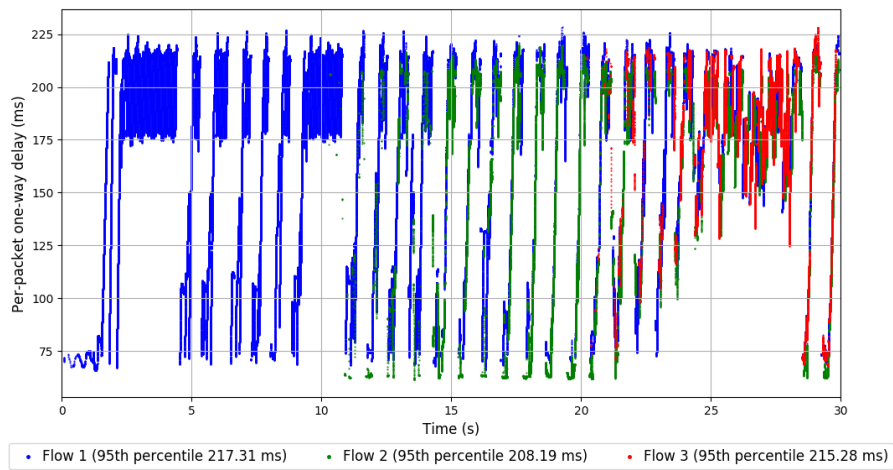
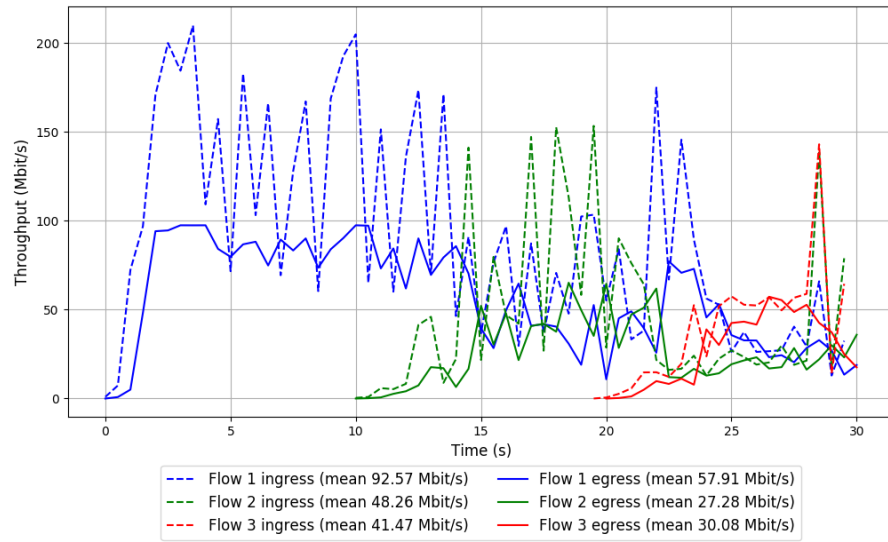


Run 4: Statistics of Indigo-96d2da3

Start at: 2018-11-30 01:06:23  
End at: 2018-11-30 01:06:53  
Local clock offset: -1.331 ms  
Remote clock offset: -16.679 ms

# Below is generated by plot.py at 2018-11-30 01:50:49  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 85.50 Mbit/s  
95th percentile per-packet one-way delay: 216.777 ms  
Loss rate: 37.72%  
-- Flow 1:  
Average throughput: 57.91 Mbit/s  
95th percentile per-packet one-way delay: 217.307 ms  
Loss rate: 37.13%  
-- Flow 2:  
Average throughput: 27.28 Mbit/s  
95th percentile per-packet one-way delay: 208.187 ms  
Loss rate: 43.38%  
-- Flow 3:  
Average throughput: 30.08 Mbit/s  
95th percentile per-packet one-way delay: 215.275 ms  
Loss rate: 28.40%

# Run 4: Report of Indigo-96d2da3 — Data Link

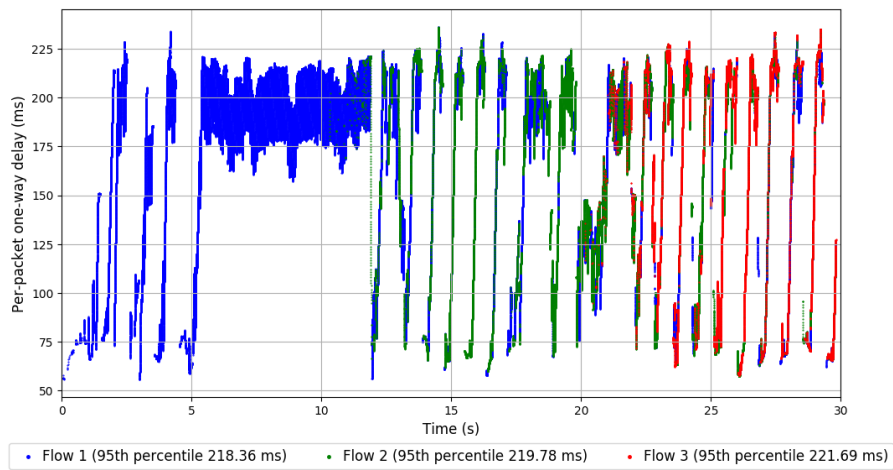
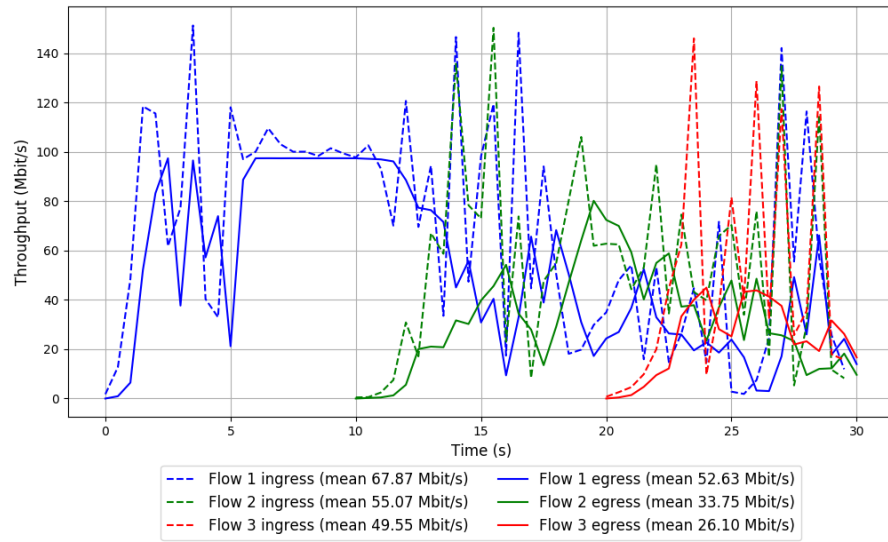


Run 5: Statistics of Indigo-96d2da3

Start at: 2018-11-30 01:29:56  
End at: 2018-11-30 01:30:26  
Local clock offset: -2.897 ms  
Remote clock offset: -5.014 ms

# Below is generated by plot.py at 2018-11-30 01:50:49  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 83.23 Mbit/s  
95th percentile per-packet one-way delay: 219.224 ms  
Loss rate: 30.69%  
-- Flow 1:  
Average throughput: 52.63 Mbit/s  
95th percentile per-packet one-way delay: 218.357 ms  
Loss rate: 22.28%  
-- Flow 2:  
Average throughput: 33.75 Mbit/s  
95th percentile per-packet one-way delay: 219.779 ms  
Loss rate: 38.97%  
-- Flow 3:  
Average throughput: 26.10 Mbit/s  
95th percentile per-packet one-way delay: 221.685 ms  
Loss rate: 47.38%

# Run 5: Report of Indigo-96d2da3 — Data Link

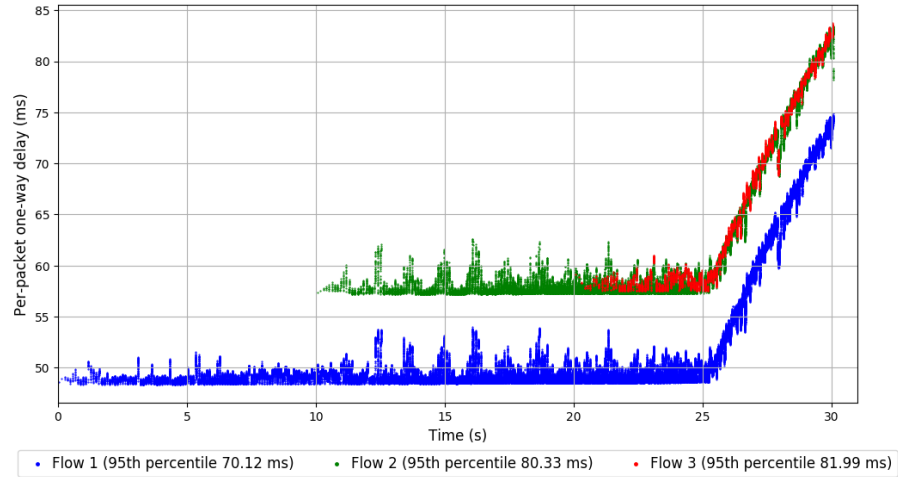
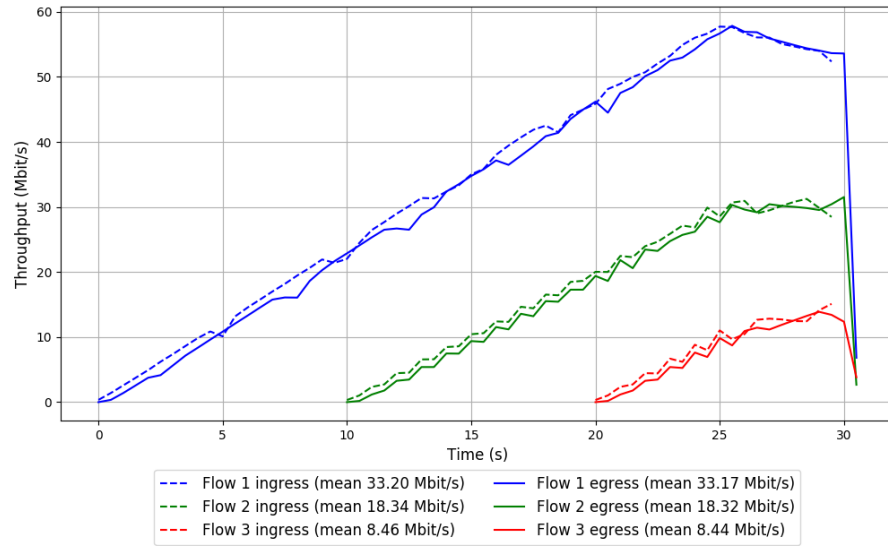


```
Run 1: Statistics of LEDBAT

Start at: 2018-11-29 23:49:04
End at: 2018-11-29 23:49:34
Local clock offset: 0.115 ms
Remote clock offset: 0.318 ms

# Below is generated by plot.py at 2018-11-30 01:50:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 48.18 Mbit/s
95th percentile per-packet one-way delay: 75.299 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 33.17 Mbit/s
95th percentile per-packet one-way delay: 70.125 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 18.32 Mbit/s
95th percentile per-packet one-way delay: 80.335 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 8.44 Mbit/s
95th percentile per-packet one-way delay: 81.987 ms
Loss rate: 0.00%
```

## Run 1: Report of LEDBAT — Data Link



Run 2: Statistics of LEDBAT

Start at: 2018-11-30 00:12:24

End at: 2018-11-30 00:12:54

Local clock offset: 6.289 ms

Remote clock offset: 0.502 ms

# Below is generated by plot.py at 2018-11-30 01:50:49

# Datalink statistics

-- Total of 3 flows:

Average throughput: 44.93 Mbit/s

95th percentile per-packet one-way delay: 70.131 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 30.56 Mbit/s

95th percentile per-packet one-way delay: 65.173 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 16.89 Mbit/s

95th percentile per-packet one-way delay: 75.355 ms

Loss rate: 0.00%

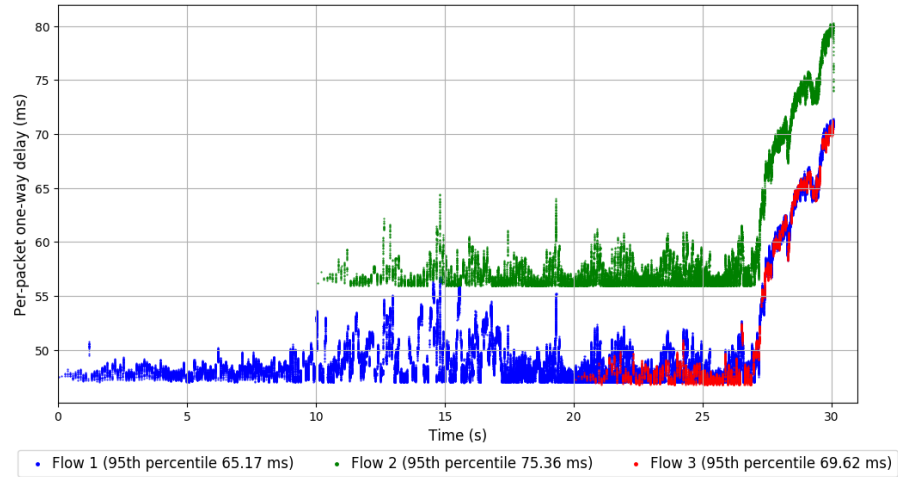
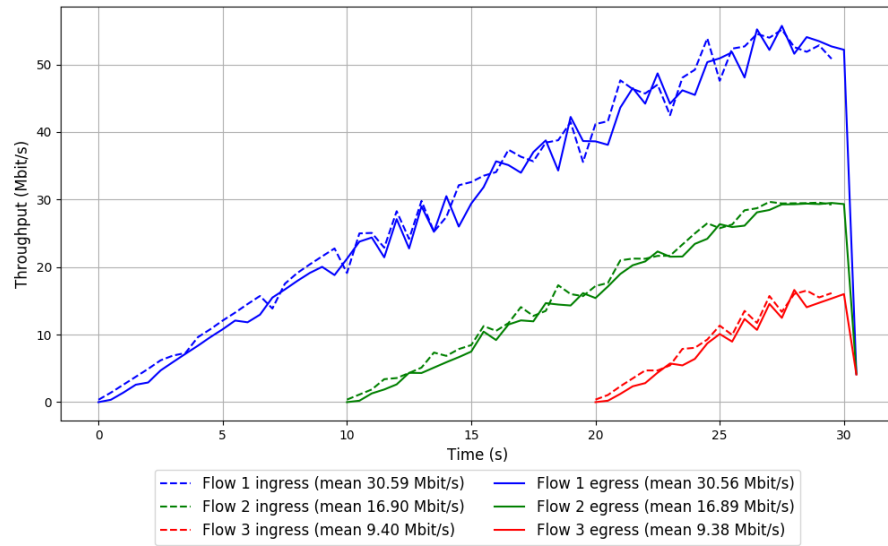
-- Flow 3:

Average throughput: 9.38 Mbit/s

95th percentile per-packet one-way delay: 69.616 ms

Loss rate: 0.00%

## Run 2: Report of LEDBAT — Data Link





Run 3: Statistics of LEDBAT

Start at: 2018-11-30 00:37:29

End at: 2018-11-30 00:37:59

Local clock offset: 16.247 ms

Remote clock offset: 0.237 ms

# Below is generated by plot.py at 2018-11-30 01:50:49

# Datalink statistics

-- Total of 3 flows:

Average throughput: 24.49 Mbit/s

95th percentile per-packet one-way delay: 56.543 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 15.72 Mbit/s

95th percentile per-packet one-way delay: 56.878 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 10.59 Mbit/s

95th percentile per-packet one-way delay: 56.882 ms

Loss rate: 0.00%

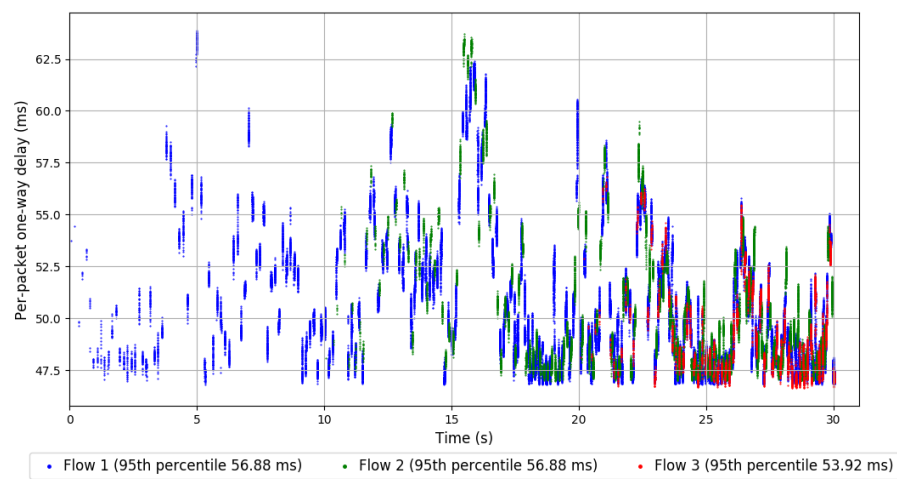
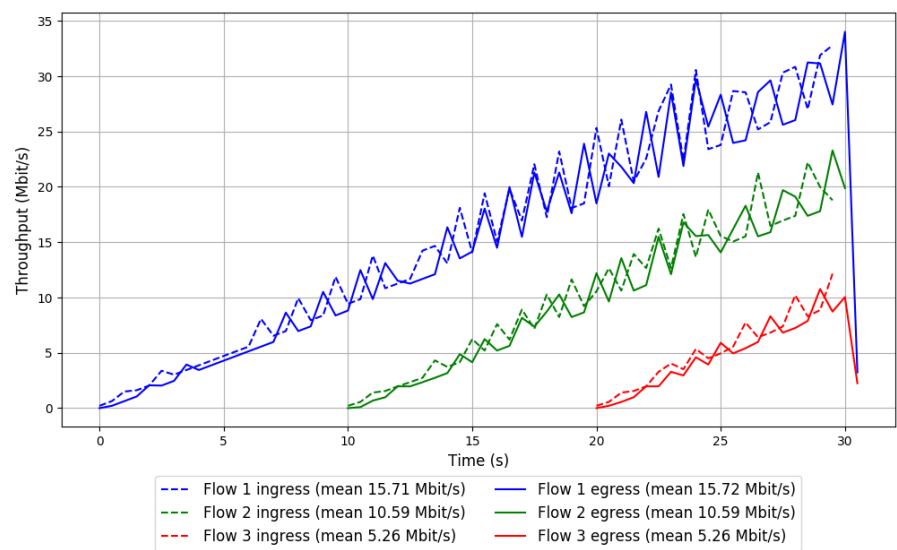
-- Flow 3:

Average throughput: 5.26 Mbit/s

95th percentile per-packet one-way delay: 53.920 ms

Loss rate: 0.00%

Run 3: Report of LEDBAT — Data Link

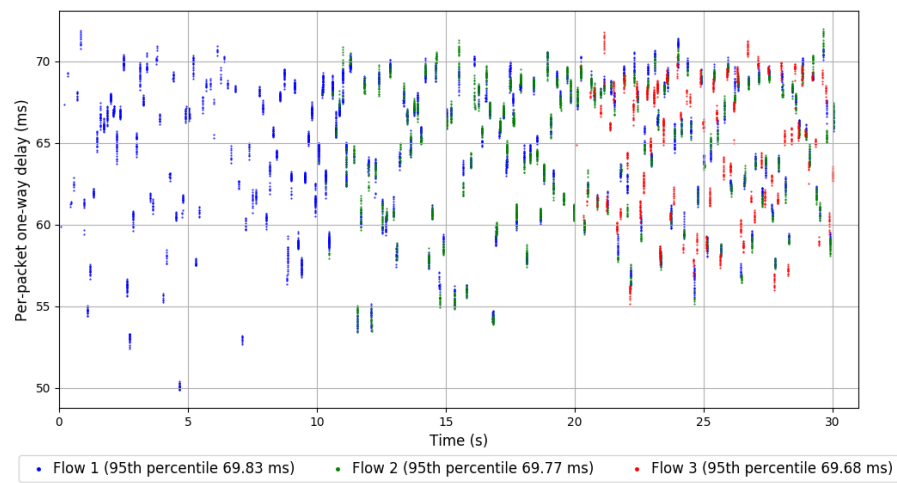
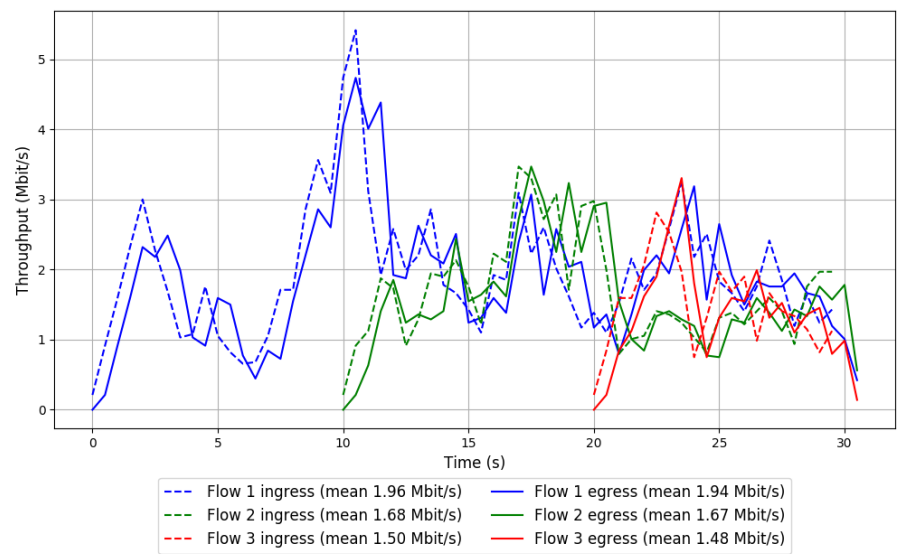


Run 4: Statistics of LEDBAT

Start at: 2018-11-30 01:00:58  
End at: 2018-11-30 01:01:28  
Local clock offset: 0.754 ms  
Remote clock offset: -10.455 ms

# Below is generated by plot.py at 2018-11-30 01:50:49  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 3.53 Mbit/s  
95th percentile per-packet one-way delay: 69.794 ms  
Loss rate: 1.11%  
-- Flow 1:  
Average throughput: 1.94 Mbit/s  
95th percentile per-packet one-way delay: 69.827 ms  
Loss rate: 1.04%  
-- Flow 2:  
Average throughput: 1.67 Mbit/s  
95th percentile per-packet one-way delay: 69.769 ms  
Loss rate: 1.08%  
-- Flow 3:  
Average throughput: 1.48 Mbit/s  
95th percentile per-packet one-way delay: 69.676 ms  
Loss rate: 1.42%

Run 4: Report of LEDBAT — Data Link

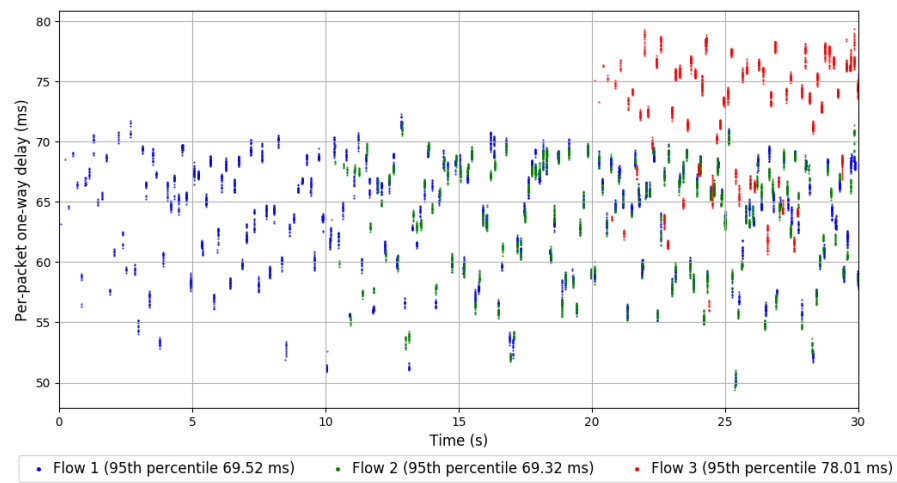
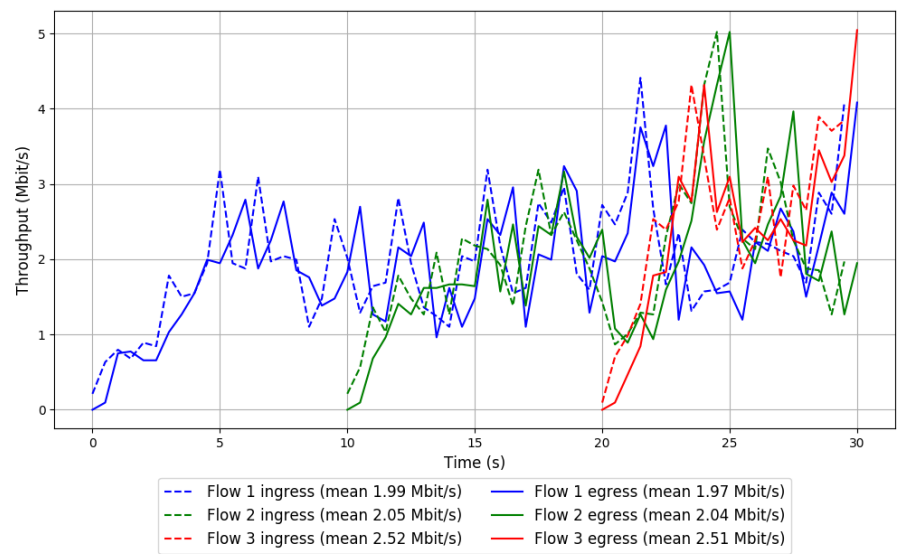


Run 5: Statistics of LEDBAT

Start at: 2018-11-30 01:24:49  
End at: 2018-11-30 01:25:19  
Local clock offset: -2.631 ms  
Remote clock offset: -7.207 ms

# Below is generated by plot.py at 2018-11-30 01:50:49  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 4.15 Mbit/s  
95th percentile per-packet one-way delay: 76.284 ms  
Loss rate: 0.71%  
-- Flow 1:  
Average throughput: 1.97 Mbit/s  
95th percentile per-packet one-way delay: 69.515 ms  
Loss rate: 0.93%  
-- Flow 2:  
Average throughput: 2.04 Mbit/s  
95th percentile per-packet one-way delay: 69.324 ms  
Loss rate: 0.66%  
-- Flow 3:  
Average throughput: 2.51 Mbit/s  
95th percentile per-packet one-way delay: 78.009 ms  
Loss rate: 0.28%

Run 5: Report of LEDBAT — Data Link

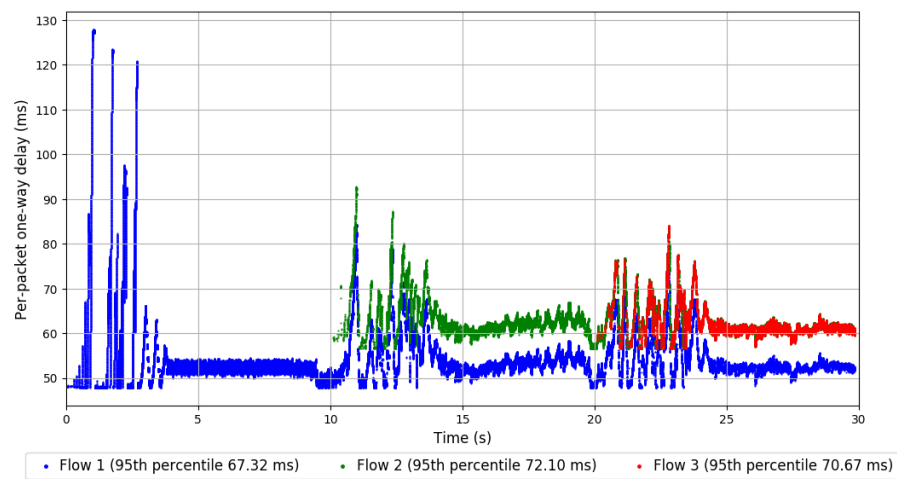
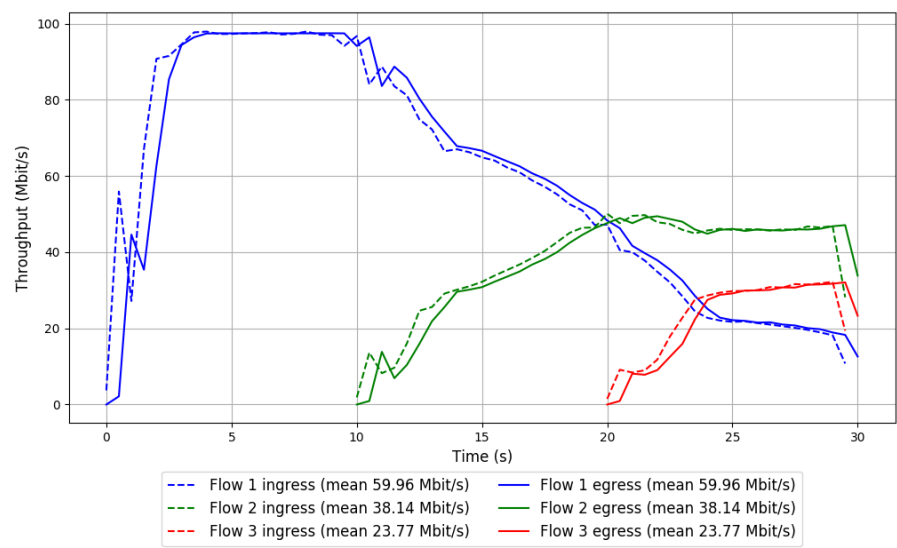


```
Run 1: Statistics of Indigo-Muses

Start at: 2018-11-29 23:55:30
End at: 2018-11-29 23:56:00
Local clock offset: 3.559 ms
Remote clock offset: 0.14 ms

# Below is generated by plot.py at 2018-11-30 01:51:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 92.98 Mbit/s
95th percentile per-packet one-way delay: 70.145 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 59.96 Mbit/s
95th percentile per-packet one-way delay: 67.321 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 38.14 Mbit/s
95th percentile per-packet one-way delay: 72.104 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 23.77 Mbit/s
95th percentile per-packet one-way delay: 70.673 ms
Loss rate: 0.00%
```

Run 1: Report of Indigo-Muses — Data Link





Run 2: Statistics of Indigo-Muses

Start at: 2018-11-30 00:18:52

End at: 2018-11-30 00:19:22

Local clock offset: 9.618 ms

Remote clock offset: 0.768 ms

# Below is generated by plot.py at 2018-11-30 01:51:32

# Datalink statistics

-- Total of 3 flows:

Average throughput: 89.12 Mbit/s

95th percentile per-packet one-way delay: 67.700 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 64.55 Mbit/s

95th percentile per-packet one-way delay: 63.436 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 23.89 Mbit/s

95th percentile per-packet one-way delay: 72.958 ms

Loss rate: 0.00%

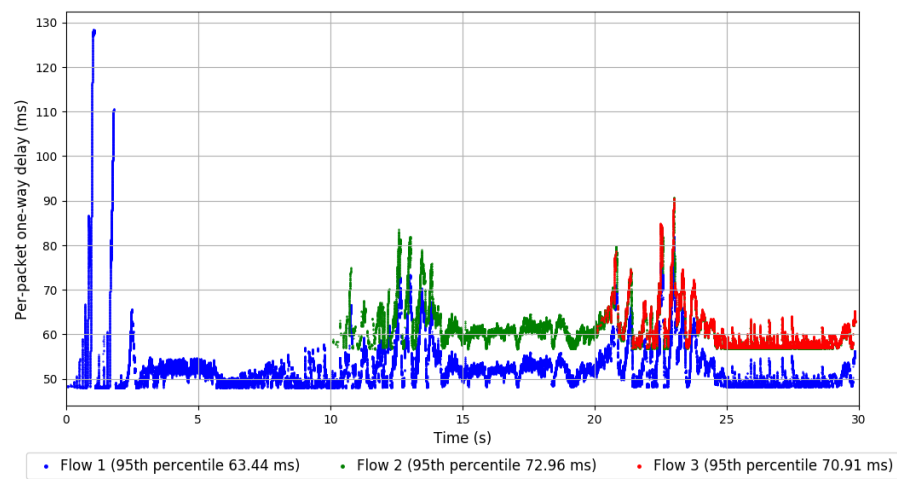
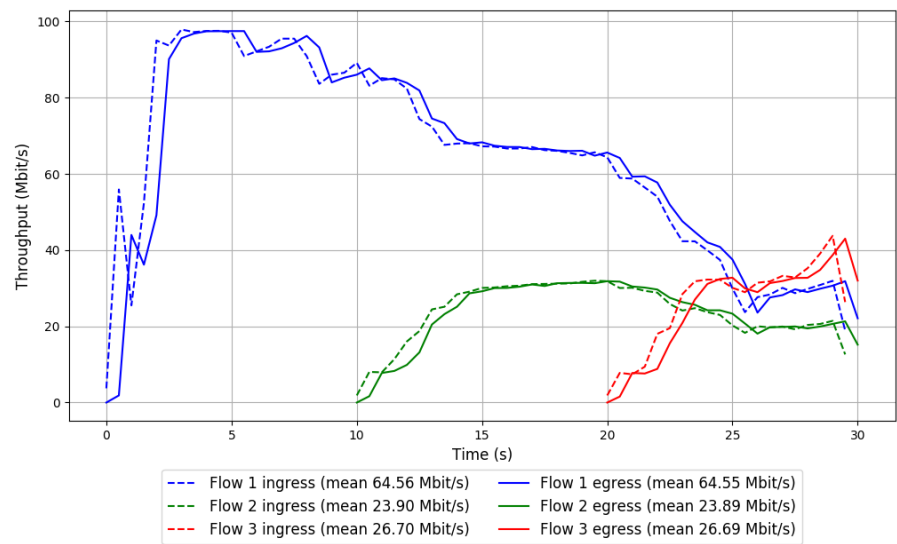
-- Flow 3:

Average throughput: 26.69 Mbit/s

95th percentile per-packet one-way delay: 70.908 ms

Loss rate: 0.00%

Run 2: Report of Indigo-Muses — Data Link

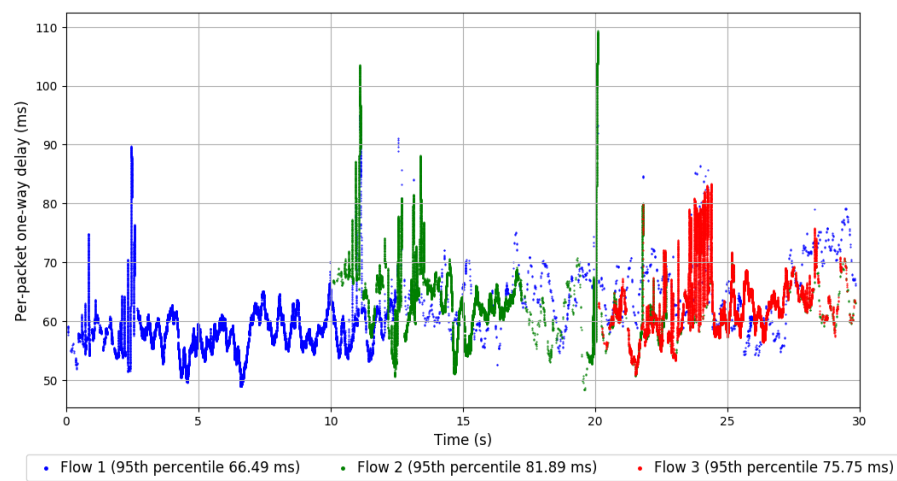
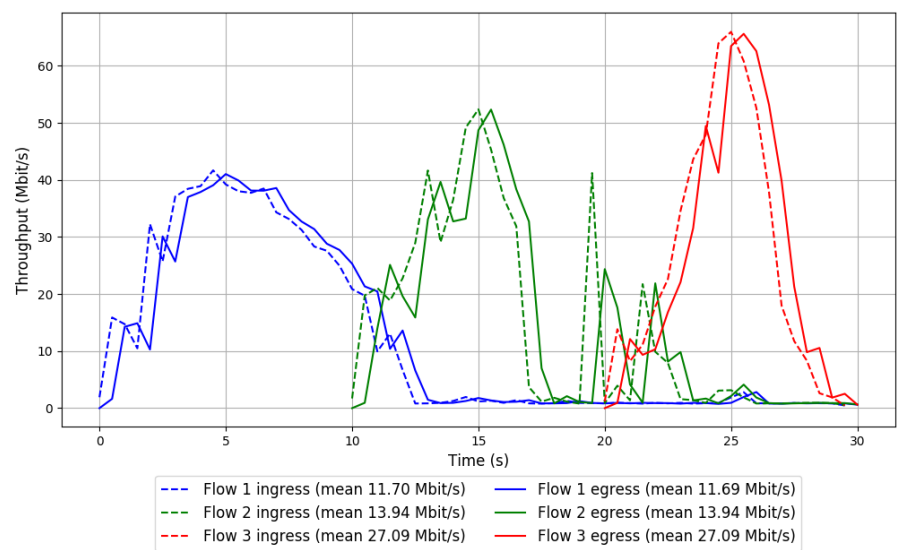


Run 3: Statistics of Indigo-Muses

Start at: 2018-11-30 00:44:03  
End at: 2018-11-30 00:44:33  
Local clock offset: 17.159 ms  
Remote clock offset: -6.608 ms

# Below is generated by plot.py at 2018-11-30 01:51:32  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 29.75 Mbit/s  
95th percentile per-packet one-way delay: 75.584 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 11.69 Mbit/s  
95th percentile per-packet one-way delay: 66.493 ms  
Loss rate: 0.00%  
-- Flow 2:  
Average throughput: 13.94 Mbit/s  
95th percentile per-packet one-way delay: 81.891 ms  
Loss rate: 0.01%  
-- Flow 3:  
Average throughput: 27.09 Mbit/s  
95th percentile per-packet one-way delay: 75.749 ms  
Loss rate: 0.00%

Run 3: Report of Indigo-Muses — Data Link

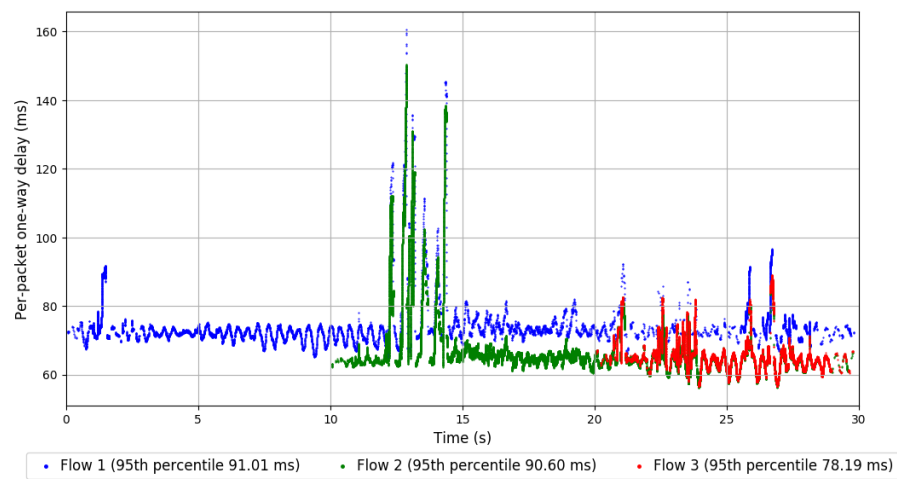
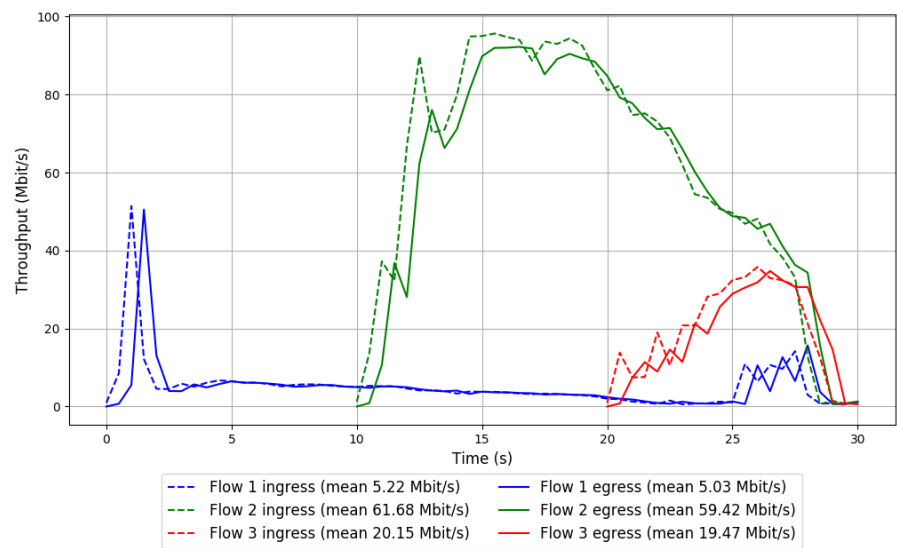


Run 4: Statistics of Indigo-Muses

Start at: 2018-11-30 01:07:47  
End at: 2018-11-30 01:08:17  
Local clock offset: -1.642 ms  
Remote clock offset: -15.61 ms

# Below is generated by plot.py at 2018-11-30 01:51:32  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 50.80 Mbit/s  
95th percentile per-packet one-way delay: 89.328 ms  
Loss rate: 3.68%  
-- Flow 1:  
Average throughput: 5.03 Mbit/s  
95th percentile per-packet one-way delay: 91.011 ms  
Loss rate: 3.80%  
-- Flow 2:  
Average throughput: 59.42 Mbit/s  
95th percentile per-packet one-way delay: 90.603 ms  
Loss rate: 3.71%  
-- Flow 3:  
Average throughput: 19.47 Mbit/s  
95th percentile per-packet one-way delay: 78.194 ms  
Loss rate: 3.39%

Run 4: Report of Indigo-Muses — Data Link

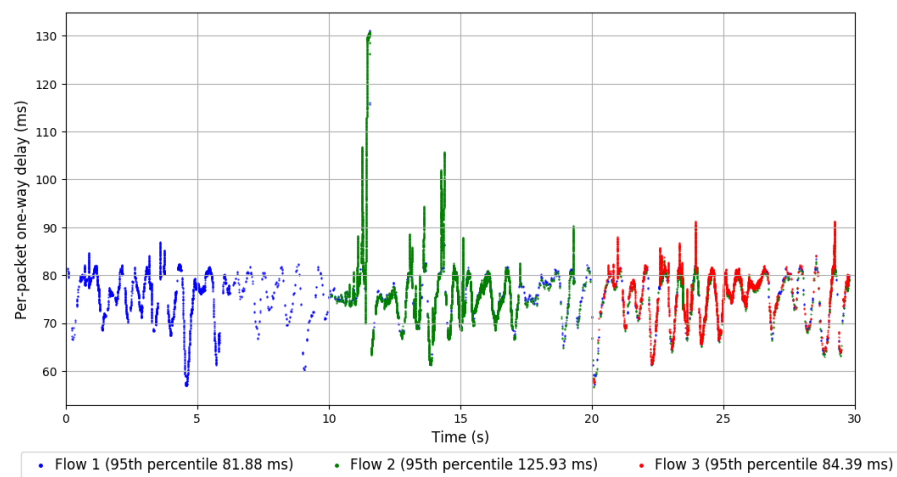
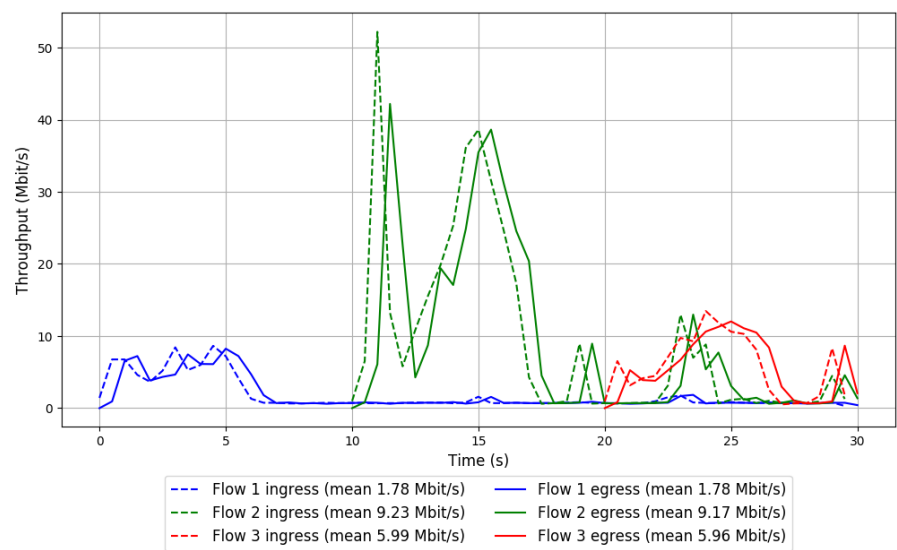


Run 5: Statistics of Indigo-Muses

Start at: 2018-11-30 01:31:20  
End at: 2018-11-30 01:31:50  
Local clock offset: -2.905 ms  
Remote clock offset: -0.574 ms

# Below is generated by plot.py at 2018-11-30 01:51:32  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 9.81 Mbit/s  
95th percentile per-packet one-way delay: 99.363 ms  
Loss rate: 0.49%  
-- Flow 1:  
Average throughput: 1.78 Mbit/s  
95th percentile per-packet one-way delay: 81.879 ms  
Loss rate: 0.29%  
-- Flow 2:  
Average throughput: 9.17 Mbit/s  
95th percentile per-packet one-way delay: 125.928 ms  
Loss rate: 0.60%  
-- Flow 3:  
Average throughput: 5.96 Mbit/s  
95th percentile per-packet one-way delay: 84.386 ms  
Loss rate: 0.30%

Run 5: Report of Indigo-Muses — Data Link



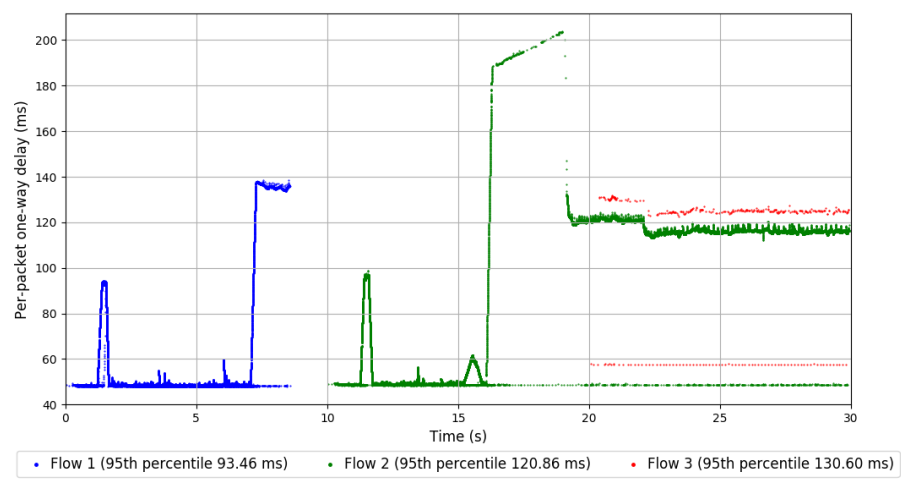
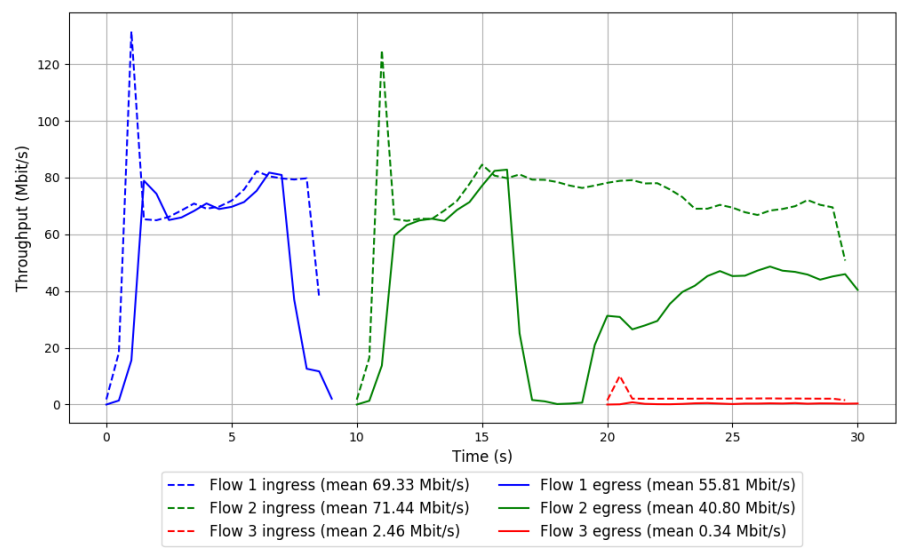


```
Run 1: Statistics of PCC-Allegro

Start at: 2018-11-29 23:47:48
End at: 2018-11-29 23:48:18
Local clock offset: -0.78 ms
Remote clock offset: 0.329 ms

# Below is generated by plot.py at 2018-11-30 01:51:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 43.17 Mbit/s
95th percentile per-packet one-way delay: 120.790 ms
Loss rate: 37.07%
-- Flow 1:
Average throughput: 55.81 Mbit/s
95th percentile per-packet one-way delay: 93.464 ms
Loss rate: 21.53%
-- Flow 2:
Average throughput: 40.80 Mbit/s
95th percentile per-packet one-way delay: 120.863 ms
Loss rate: 42.86%
-- Flow 3:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 130.601 ms
Loss rate: 86.05%
```

Run 1: Report of PCC-Allegro — Data Link



Run 2: Statistics of PCC-Allegro

Start at: 2018-11-30 00:11:05

End at: 2018-11-30 00:11:35

Local clock offset: 6.222 ms

Remote clock offset: 1.027 ms

# Below is generated by plot.py at 2018-11-30 01:51:32

# Datalink statistics

-- Total of 3 flows:

Average throughput: 36.43 Mbit/s

95th percentile per-packet one-way delay: 132.746 ms

Loss rate: 44.99%

-- Flow 1:

Average throughput: 58.20 Mbit/s

95th percentile per-packet one-way delay: 128.288 ms

Loss rate: 12.07%

-- Flow 2:

Average throughput: 28.72 Mbit/s

95th percentile per-packet one-way delay: 156.828 ms

Loss rate: 57.28%

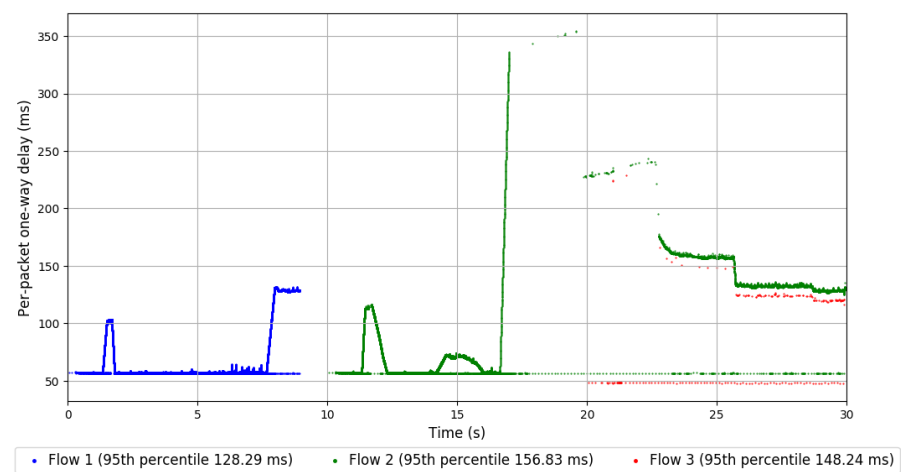
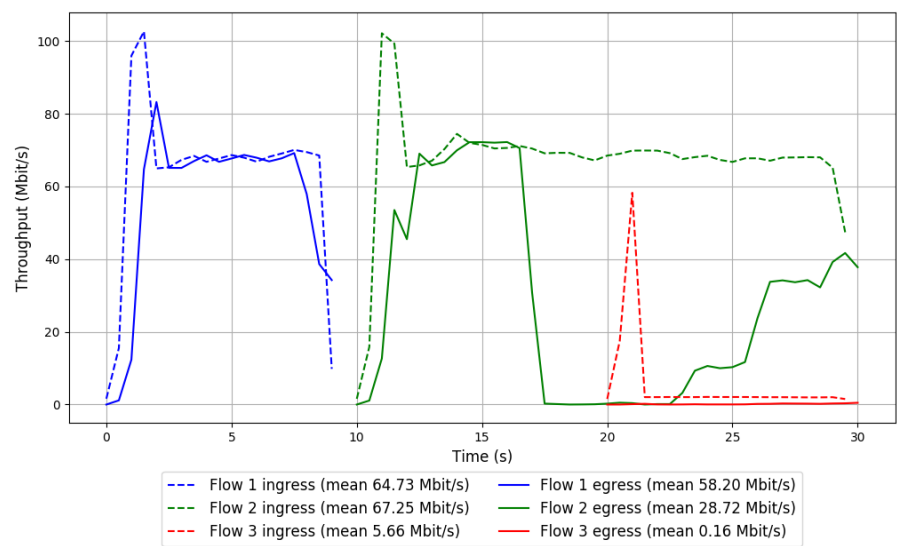
-- Flow 3:

Average throughput: 0.16 Mbit/s

95th percentile per-packet one-way delay: 148.239 ms

Loss rate: 97.22%

Run 2: Report of PCC-Allegro — Data Link

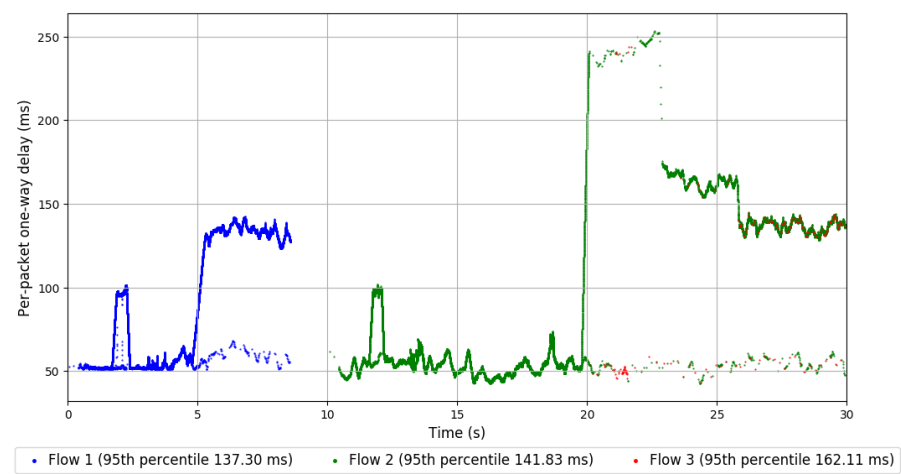
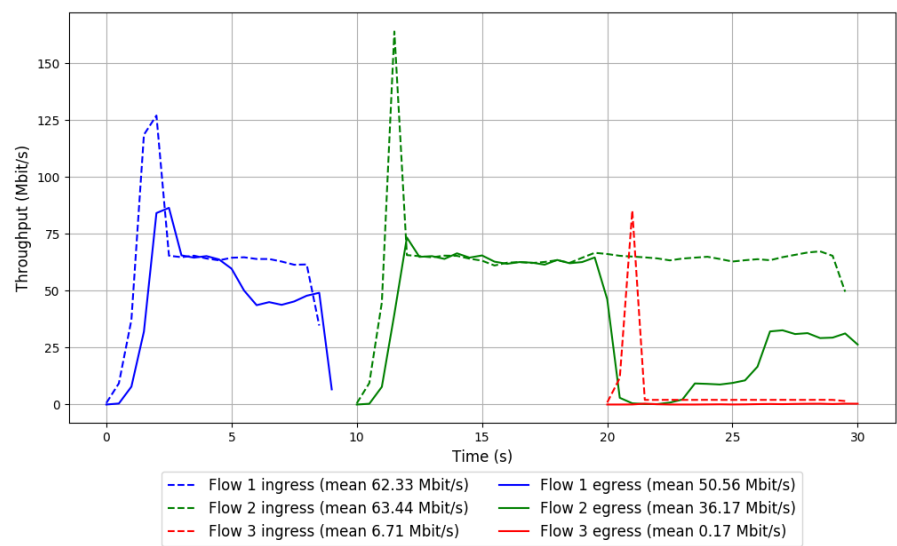


Run 3: Statistics of PCC-Allegro

Start at: 2018-11-30 00:36:08  
End at: 2018-11-30 00:36:38  
Local clock offset: 16.084 ms  
Remote clock offset: -3.954 ms

# Below is generated by plot.py at 2018-11-30 01:51:32  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 38.52 Mbit/s  
95th percentile per-packet one-way delay: 140.144 ms  
Loss rate: 38.57%  
-- Flow 1:  
Average throughput: 50.56 Mbit/s  
95th percentile per-packet one-way delay: 137.301 ms  
Loss rate: 21.25%  
-- Flow 2:  
Average throughput: 36.17 Mbit/s  
95th percentile per-packet one-way delay: 141.828 ms  
Loss rate: 43.00%  
-- Flow 3:  
Average throughput: 0.17 Mbit/s  
95th percentile per-packet one-way delay: 162.107 ms  
Loss rate: 97.48%

Run 3: Report of PCC-Allegro — Data Link

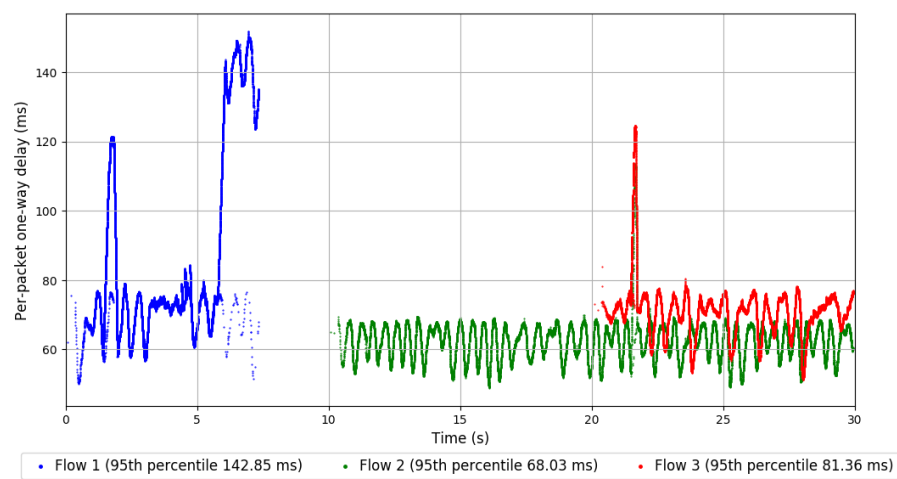
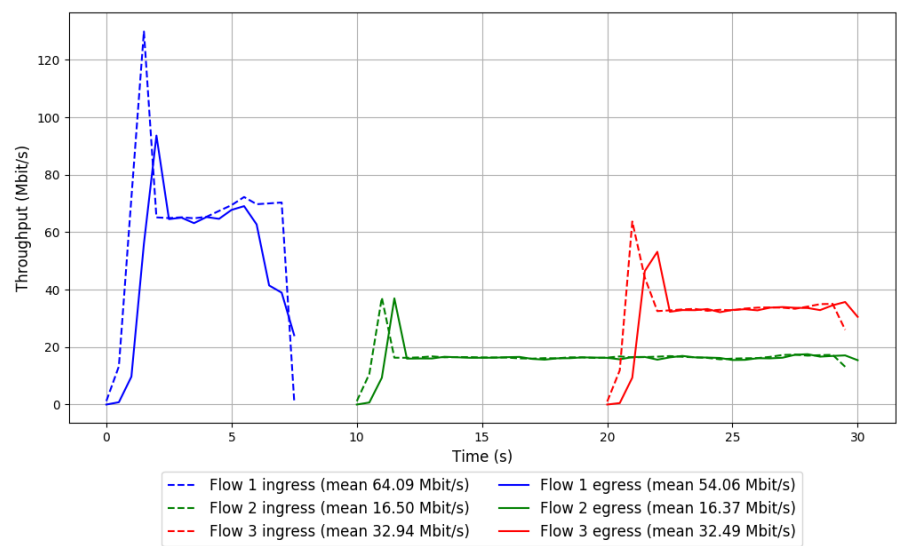


Run 4: Statistics of PCC-Allegro

Start at: 2018-11-30 00:59:37  
End at: 2018-11-30 01:00:07  
Local clock offset: 1.496 ms  
Remote clock offset: -10.798 ms

# Below is generated by plot.py at 2018-11-30 01:51:32  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 34.76 Mbit/s  
95th percentile per-packet one-way delay: 123.667 ms  
Loss rate: 8.36%  
-- Flow 1:  
Average throughput: 54.06 Mbit/s  
95th percentile per-packet one-way delay: 142.854 ms  
Loss rate: 18.22%  
-- Flow 2:  
Average throughput: 16.37 Mbit/s  
95th percentile per-packet one-way delay: 68.029 ms  
Loss rate: 0.83%  
-- Flow 3:  
Average throughput: 32.49 Mbit/s  
95th percentile per-packet one-way delay: 81.361 ms  
Loss rate: 1.33%

Run 4: Report of PCC-Allegro — Data Link



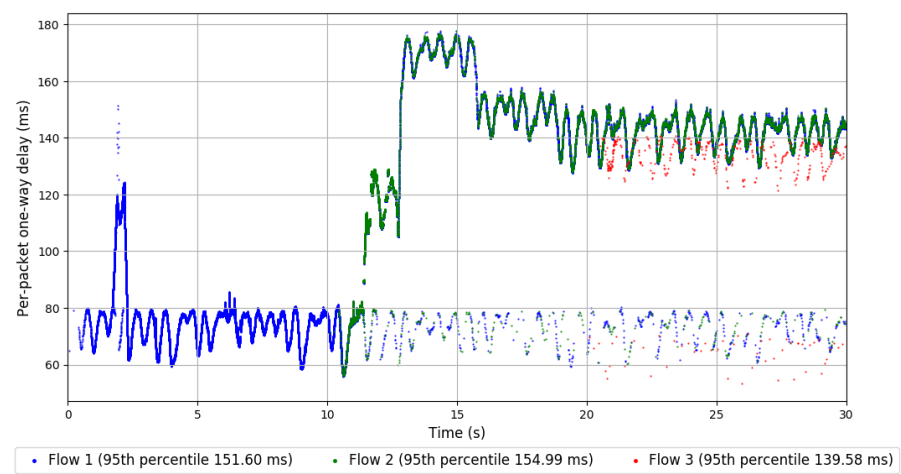
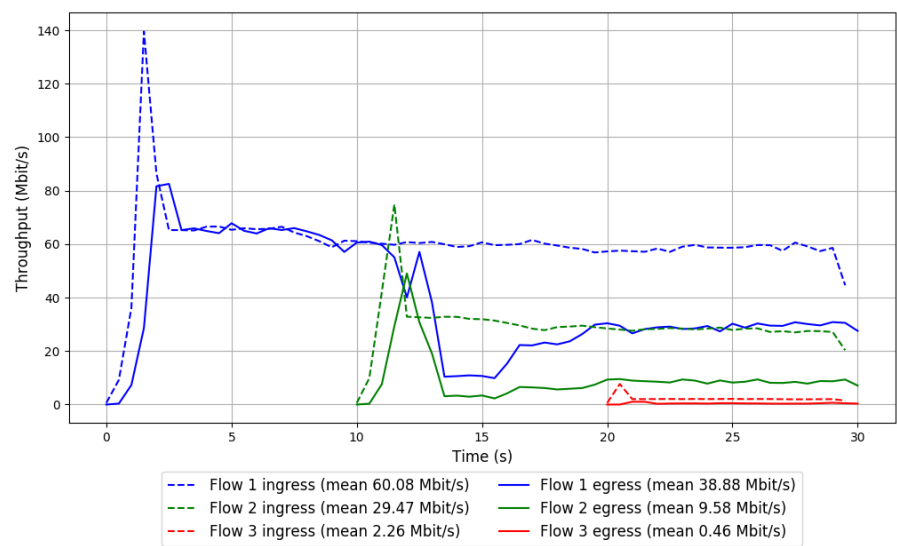


Run 5: Statistics of PCC-Allegro

Start at: 2018-11-30 01:23:30  
End at: 2018-11-30 01:24:00  
Local clock offset: -2.517 ms  
Remote clock offset: -6.862 ms

# Below is generated by plot.py at 2018-11-30 01:51:44  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 45.40 Mbit/s  
95th percentile per-packet one-way delay: 152.649 ms  
Loss rate: 43.52%  
-- Flow 1:  
Average throughput: 38.88 Mbit/s  
95th percentile per-packet one-way delay: 151.596 ms  
Loss rate: 35.25%  
-- Flow 2:  
Average throughput: 9.58 Mbit/s  
95th percentile per-packet one-way delay: 154.994 ms  
Loss rate: 67.48%  
-- Flow 3:  
Average throughput: 0.46 Mbit/s  
95th percentile per-packet one-way delay: 139.579 ms  
Loss rate: 79.53%

Run 5: Report of PCC-Allegro — Data Link

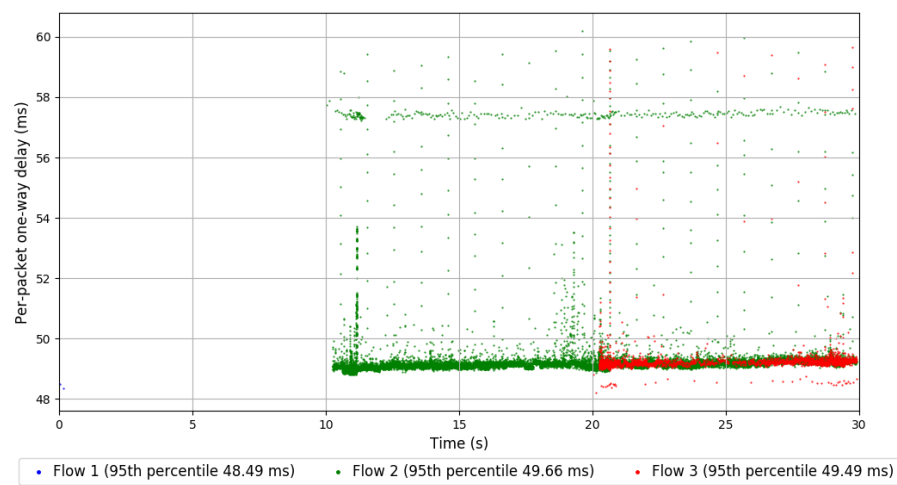
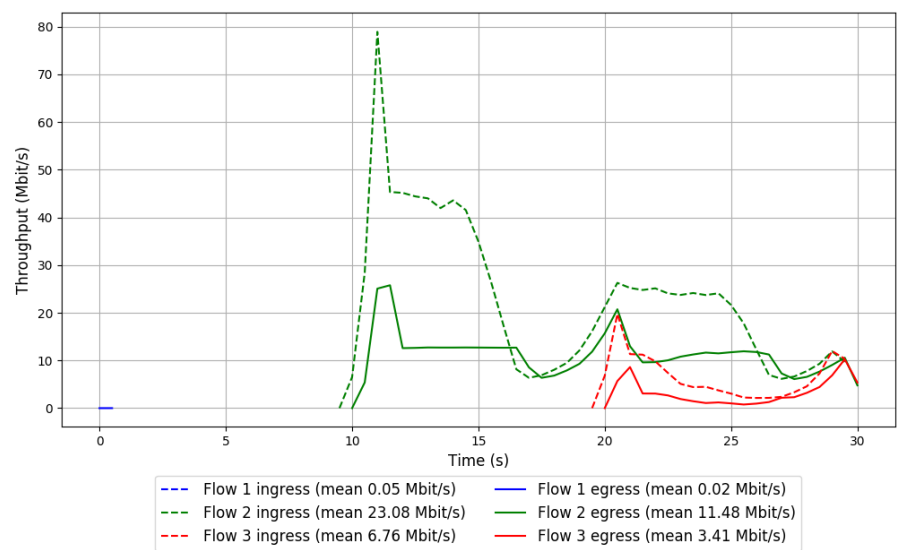


```
Run 1: Statistics of PCC-Expr

Start at: 2018-11-29 23:50:22
End at: 2018-11-29 23:50:52
Local clock offset: 0.92 ms
Remote clock offset: 0.313 ms

# Below is generated by plot.py at 2018-11-30 01:51:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.77 Mbit/s
95th percentile per-packet one-way delay: 49.607 ms
Loss rate: 50.20%
-- Flow 1:
Average throughput: 0.02 Mbit/s
95th percentile per-packet one-way delay: 48.489 ms
Loss rate: 85.71%
-- Flow 2:
Average throughput: 11.48 Mbit/s
95th percentile per-packet one-way delay: 49.660 ms
Loss rate: 50.29%
-- Flow 3:
Average throughput: 3.41 Mbit/s
95th percentile per-packet one-way delay: 49.494 ms
Loss rate: 49.54%
```

Run 1: Report of PCC-Expr — Data Link



Run 2: Statistics of PCC-Expr

Start at: 2018-11-30 00:13:45

End at: 2018-11-30 00:14:15

Local clock offset: 6.251 ms

Remote clock offset: 1.251 ms

# Below is generated by plot.py at 2018-11-30 01:51:44

# Datalink statistics

-- Total of 3 flows:

Average throughput: 8.49 Mbit/s

95th percentile per-packet one-way delay: 49.343 ms

Loss rate: 26.51%

-- Flow 1:

Average throughput: 0.02 Mbit/s

95th percentile per-packet one-way delay: 57.179 ms

Loss rate: 85.71%

-- Flow 2:

Average throughput: 8.76 Mbit/s

95th percentile per-packet one-way delay: 49.398 ms

Loss rate: 28.73%

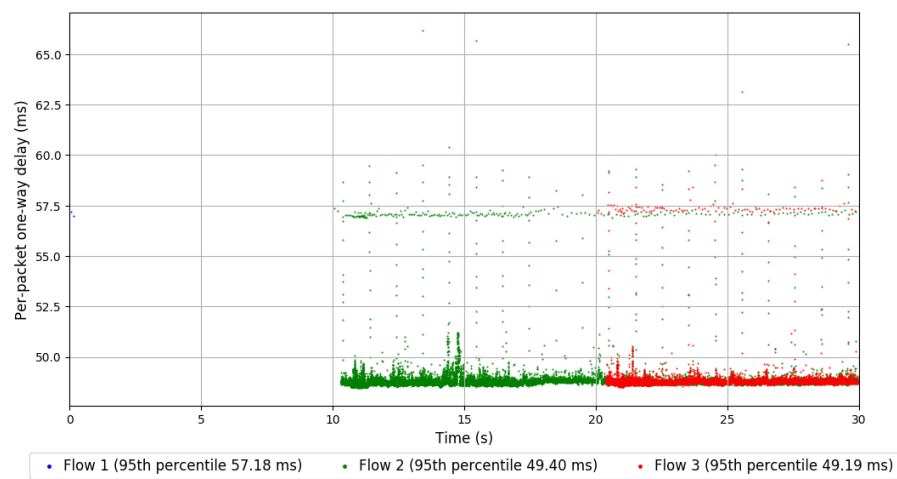
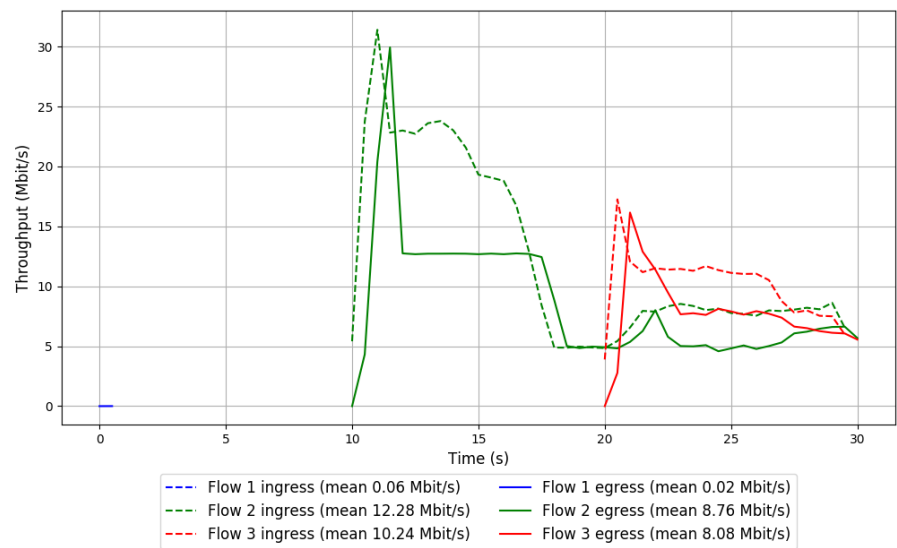
-- Flow 3:

Average throughput: 8.08 Mbit/s

95th percentile per-packet one-way delay: 49.192 ms

Loss rate: 21.14%

Run 2: Report of PCC-Expr — Data Link

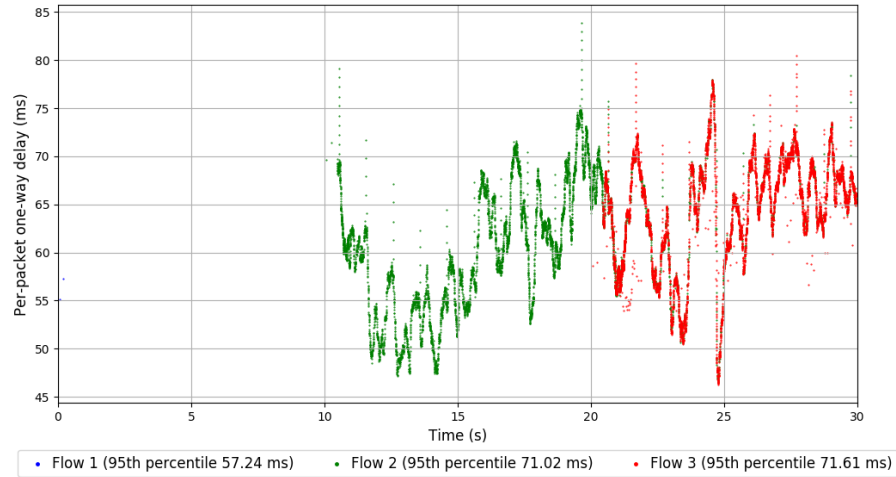
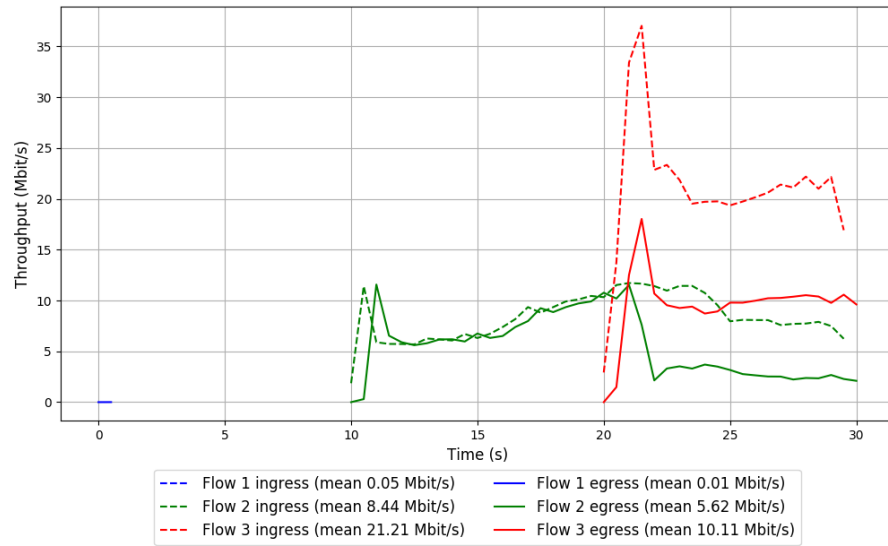


Run 3: Statistics of PCC-Expr

Start at: 2018-11-30 00:38:50  
End at: 2018-11-30 00:39:20  
Local clock offset: 16.378 ms  
Remote clock offset: -1.582 ms

# Below is generated by plot.py at 2018-11-30 01:51:44  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 7.07 Mbit/s  
95th percentile per-packet one-way delay: 71.299 ms  
Loss rate: 43.93%  
-- Flow 1:  
Average throughput: 0.01 Mbit/s  
95th percentile per-packet one-way delay: 57.239 ms  
Loss rate: 85.71%  
-- Flow 2:  
Average throughput: 5.62 Mbit/s  
95th percentile per-packet one-way delay: 71.022 ms  
Loss rate: 33.50%  
-- Flow 3:  
Average throughput: 10.11 Mbit/s  
95th percentile per-packet one-way delay: 71.611 ms  
Loss rate: 52.29%

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



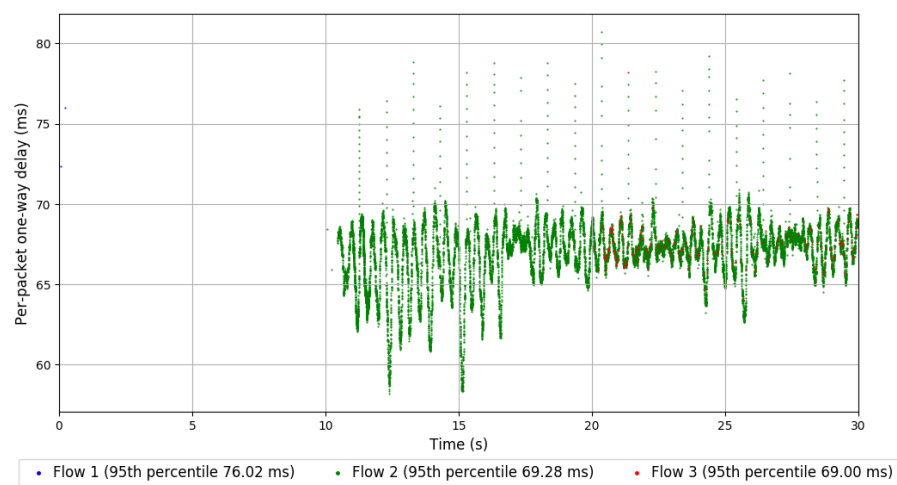
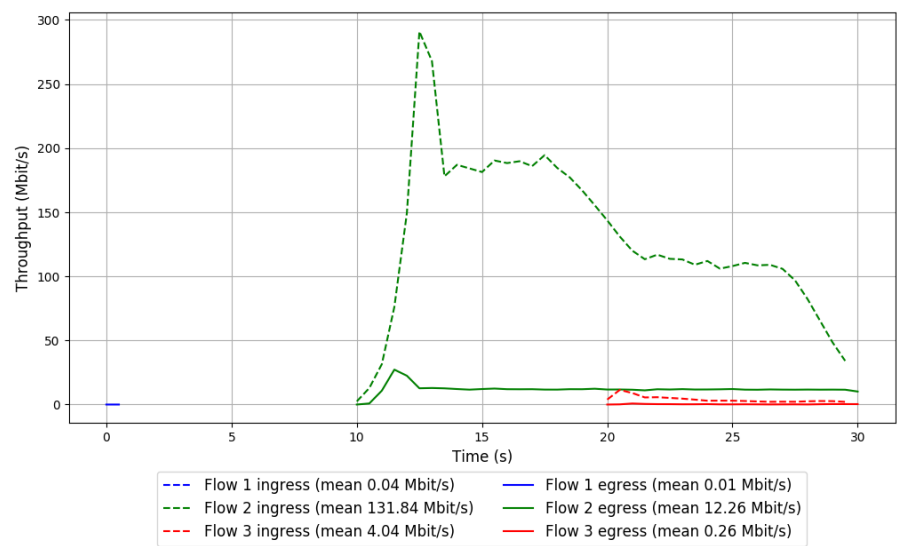


Run 4: Statistics of PCC-Expr

Start at: 2018-11-30 01:02:13  
End at: 2018-11-30 01:02:43  
Local clock offset: 0.325 ms  
Remote clock offset: -11.62 ms

# Below is generated by plot.py at 2018-11-30 01:51:55  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 8.24 Mbit/s  
95th percentile per-packet one-way delay: 69.283 ms  
Loss rate: 90.75%  
-- Flow 1:  
Average throughput: 0.01 Mbit/s  
95th percentile per-packet one-way delay: 76.023 ms  
Loss rate: 85.71%  
-- Flow 2:  
Average throughput: 12.26 Mbit/s  
95th percentile per-packet one-way delay: 69.285 ms  
Loss rate: 90.70%  
-- Flow 3:  
Average throughput: 0.26 Mbit/s  
95th percentile per-packet one-way delay: 68.996 ms  
Loss rate: 93.60%

Run 4: Report of PCC-Expr — Data Link

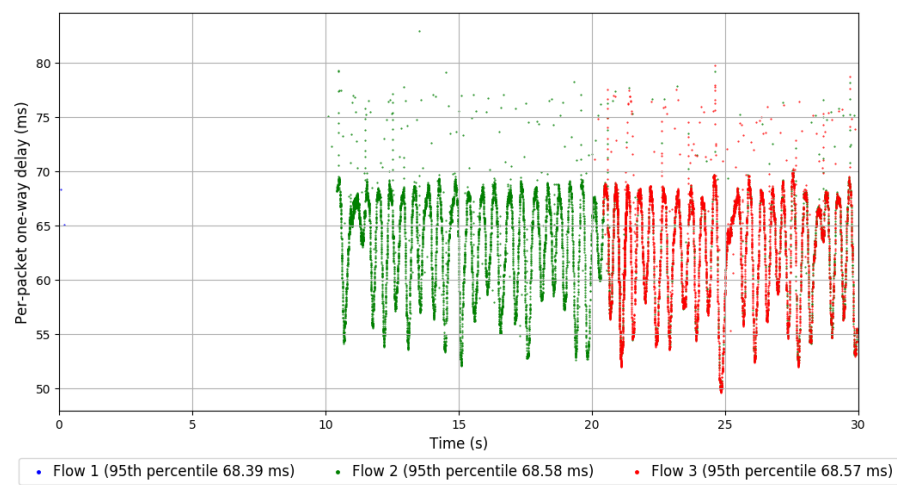
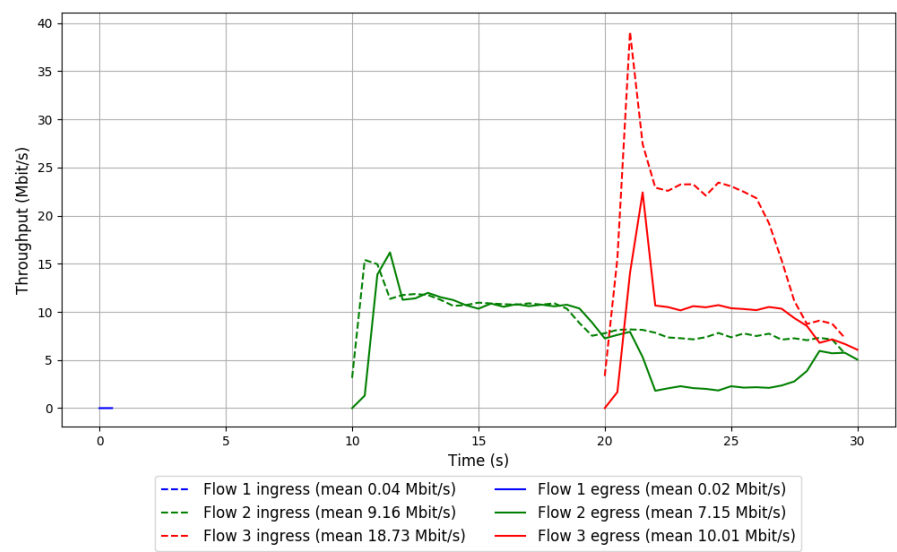


Run 5: Statistics of PCC-Expr

Start at: 2018-11-30 01:26:04  
End at: 2018-11-30 01:26:34  
Local clock offset: -2.787 ms  
Remote clock offset: -7.706 ms

# Below is generated by plot.py at 2018-11-30 01:51:55  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 8.06 Mbit/s  
95th percentile per-packet one-way delay: 68.572 ms  
Loss rate: 34.40%  
-- Flow 1:  
Average throughput: 0.02 Mbit/s  
95th percentile per-packet one-way delay: 68.386 ms  
Loss rate: 85.71%  
-- Flow 2:  
Average throughput: 7.15 Mbit/s  
95th percentile per-packet one-way delay: 68.576 ms  
Loss rate: 21.99%  
-- Flow 3:  
Average throughput: 10.01 Mbit/s  
95th percentile per-packet one-way delay: 68.567 ms  
Loss rate: 46.61%

Run 5: Report of PCC-Expr — Data Link



Run 1: Statistics of QUIC Cubic

Start at: 2018-11-30 00:03:14

End at: 2018-11-30 00:03:44

Local clock offset: 5.353 ms

Remote clock offset: 0.188 ms

# Below is generated by plot.py at 2018-11-30 01:52:32

# Datalink statistics

-- Total of 3 flows:

Average throughput: 70.71 Mbit/s

95th percentile per-packet one-way delay: 191.834 ms

Loss rate: 0.50%

-- Flow 1:

Average throughput: 40.42 Mbit/s

95th percentile per-packet one-way delay: 189.683 ms

Loss rate: 0.43%

-- Flow 2:

Average throughput: 38.33 Mbit/s

95th percentile per-packet one-way delay: 193.857 ms

Loss rate: 0.63%

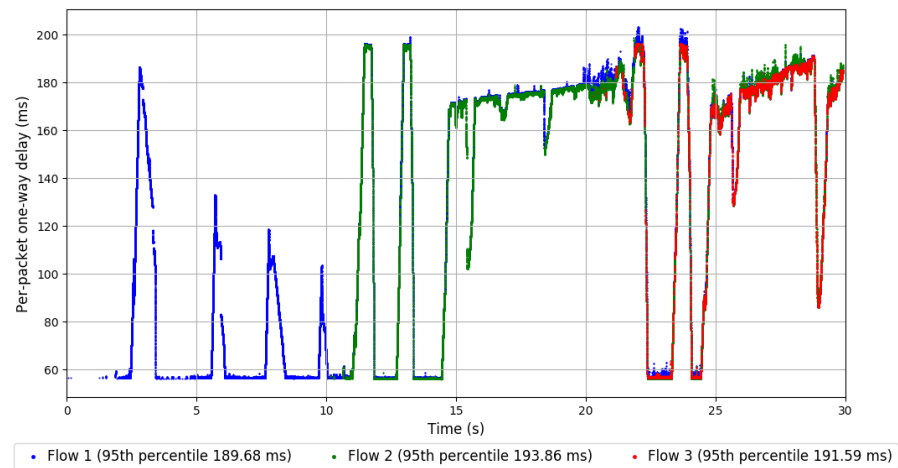
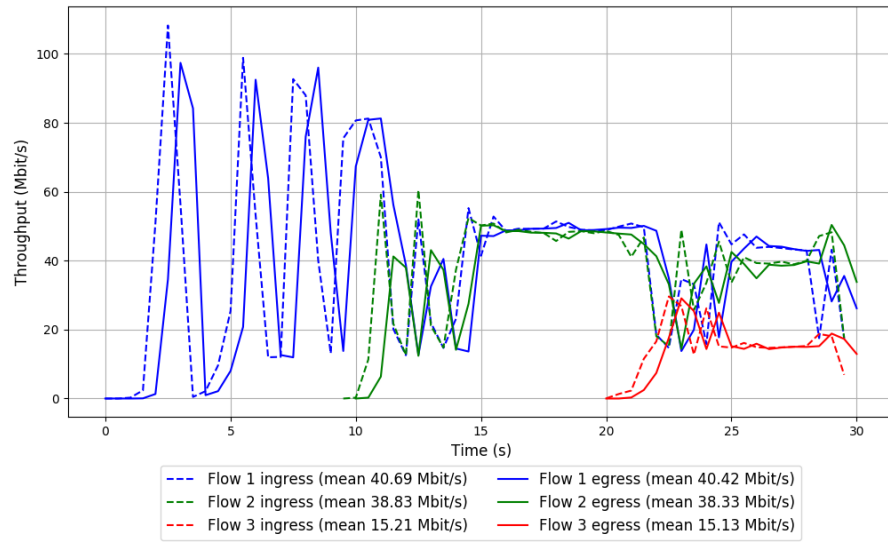
-- Flow 3:

Average throughput: 15.13 Mbit/s

95th percentile per-packet one-way delay: 191.587 ms

Loss rate: 0.41%

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



Run 2: Statistics of QUIC Cubic

Start at: 2018-11-30 00:26:50

End at: 2018-11-30 00:27:20

Local clock offset: 13.52 ms

Remote clock offset: 0.383 ms

# Below is generated by plot.py at 2018-11-30 01:52:32

# Datalink statistics

-- Total of 3 flows:

Average throughput: 68.22 Mbit/s

95th percentile per-packet one-way delay: 178.793 ms

Loss rate: 0.38%

-- Flow 1:

Average throughput: 43.80 Mbit/s

95th percentile per-packet one-way delay: 167.780 ms

Loss rate: 0.35%

-- Flow 2:

Average throughput: 29.85 Mbit/s

95th percentile per-packet one-way delay: 183.855 ms

Loss rate: 0.52%

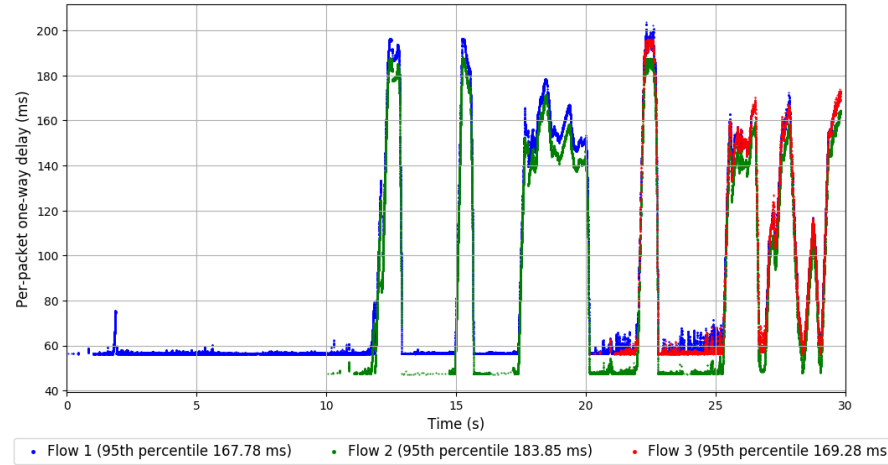
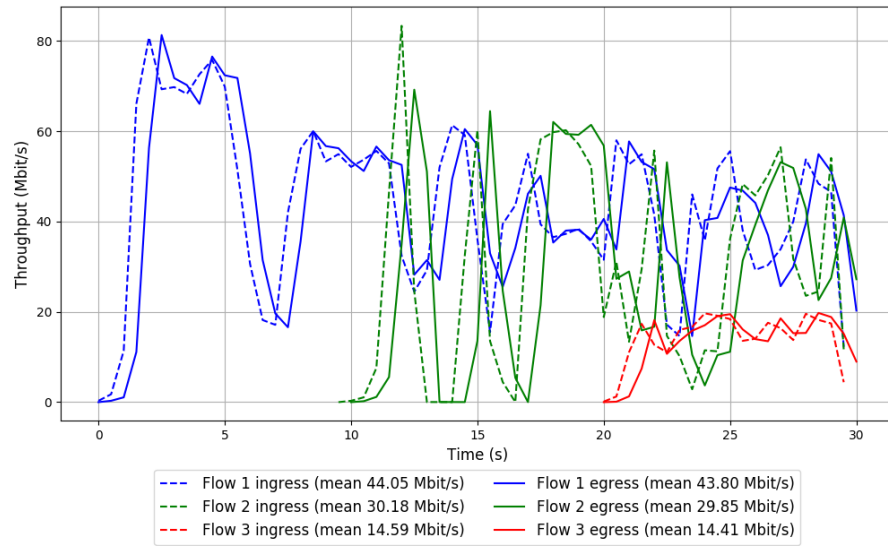
-- Flow 3:

Average throughput: 14.41 Mbit/s

95th percentile per-packet one-way delay: 169.281 ms

Loss rate: 0.11%

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



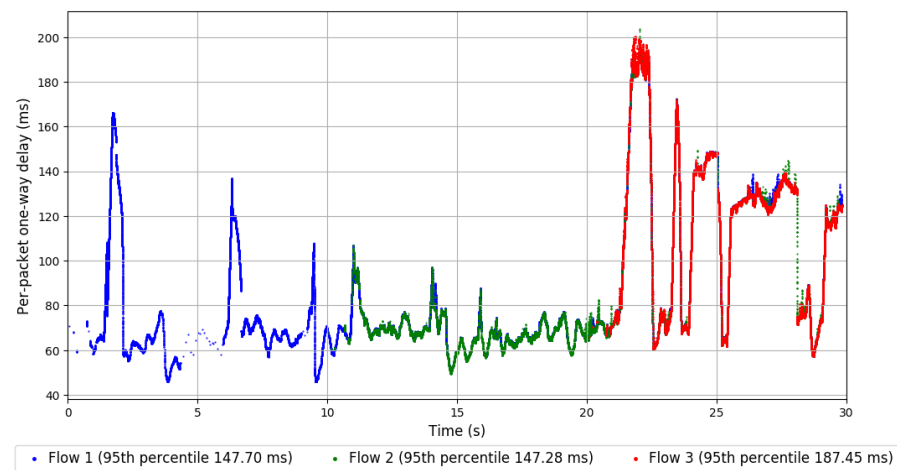
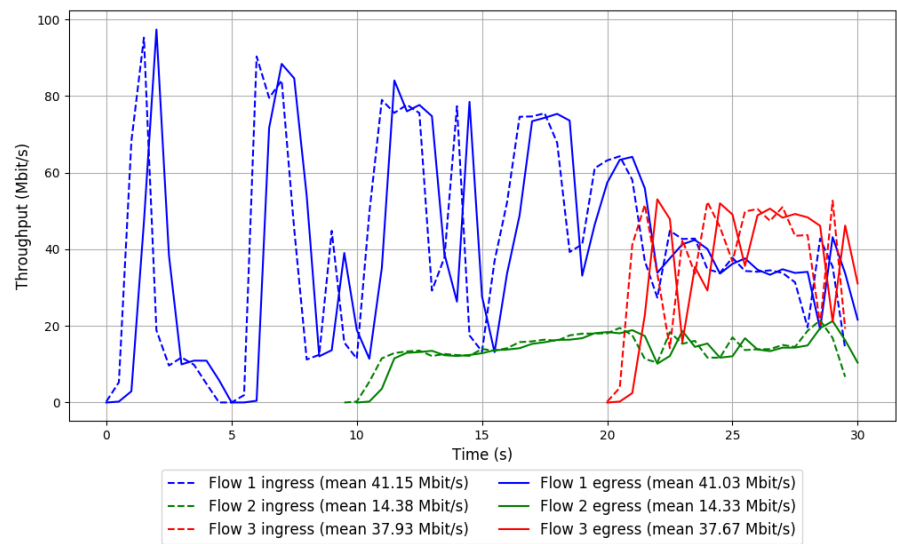


Run 3: Statistics of QUIC Cubic

Start at: 2018-11-30 00:51:53  
End at: 2018-11-30 00:52:23  
Local clock offset: 6.865 ms  
Remote clock offset: -10.075 ms

# Below is generated by plot.py at 2018-11-30 01:52:32  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 62.89 Mbit/s  
95th percentile per-packet one-way delay: 160.955 ms  
Loss rate: 0.10%  
-- Flow 1:  
Average throughput: 41.03 Mbit/s  
95th percentile per-packet one-way delay: 147.703 ms  
Loss rate: 0.12%  
-- Flow 2:  
Average throughput: 14.33 Mbit/s  
95th percentile per-packet one-way delay: 147.285 ms  
Loss rate: 0.06%  
-- Flow 3:  
Average throughput: 37.67 Mbit/s  
95th percentile per-packet one-way delay: 187.449 ms  
Loss rate: 0.10%

Run 3: Report of QUIC Cubic — Data Link

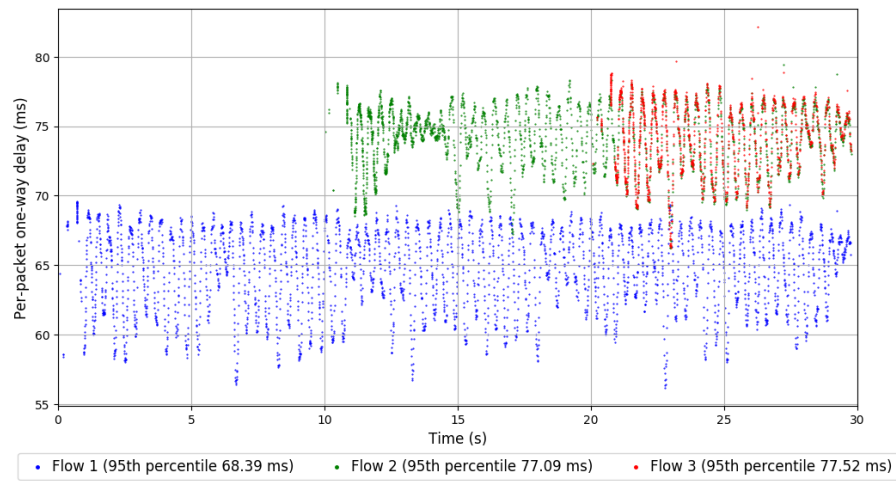
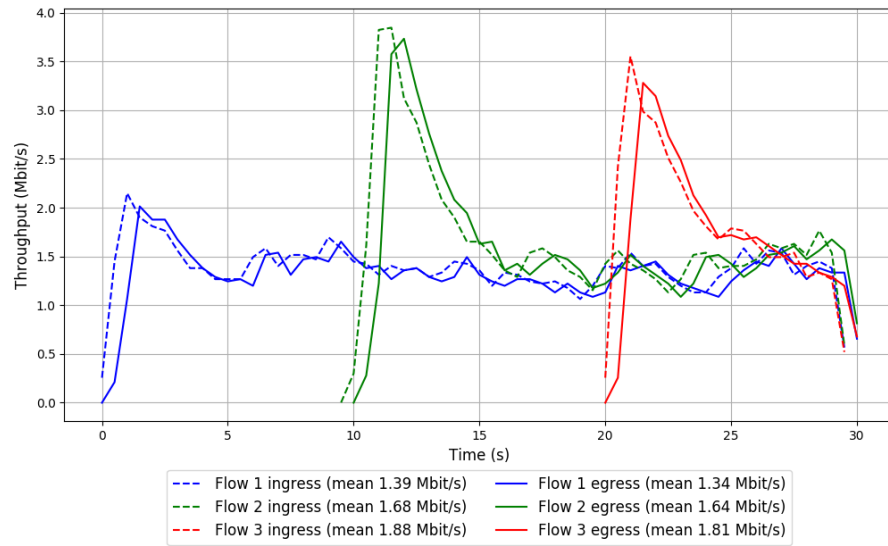


Run 4: Statistics of QUIC Cubic

Start at: 2018-11-30 01:15:50  
End at: 2018-11-30 01:16:20  
Local clock offset: -3.221 ms  
Remote clock offset: -13.56 ms

# Below is generated by plot.py at 2018-11-30 01:52:32  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 3.02 Mbit/s  
95th percentile per-packet one-way delay: 76.956 ms  
Loss rate: 3.12%  
-- Flow 1:  
Average throughput: 1.34 Mbit/s  
95th percentile per-packet one-way delay: 68.385 ms  
Loss rate: 3.45%  
-- Flow 2:  
Average throughput: 1.64 Mbit/s  
95th percentile per-packet one-way delay: 77.086 ms  
Loss rate: 2.42%  
-- Flow 3:  
Average throughput: 1.81 Mbit/s  
95th percentile per-packet one-way delay: 77.522 ms  
Loss rate: 3.66%

#### Run 4: Report of QUIC Cubic — Data Link

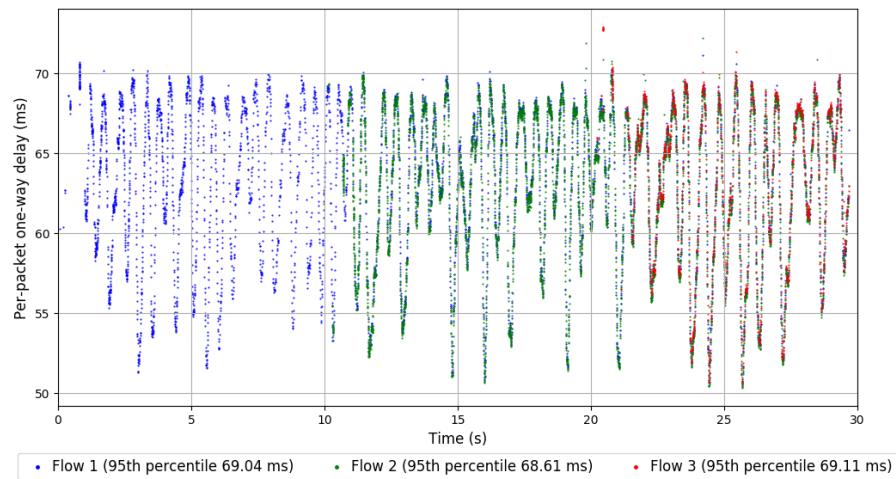
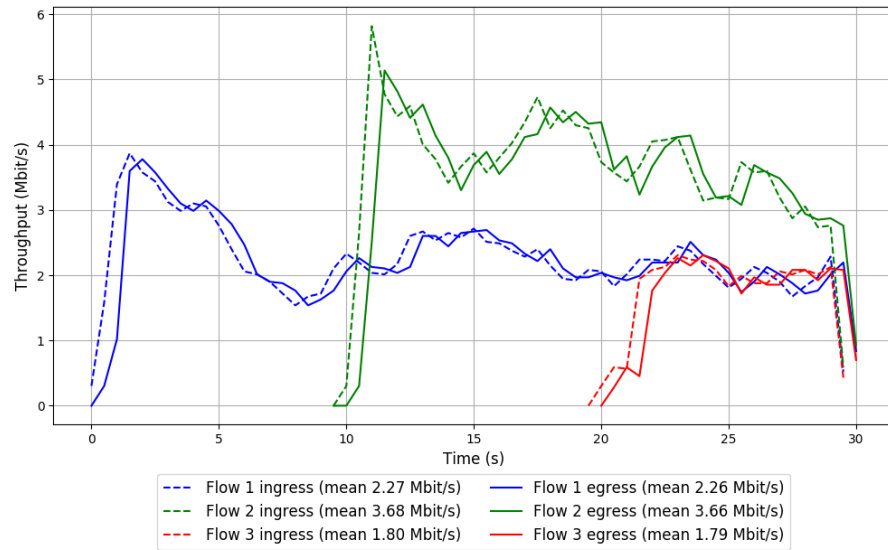


Run 5: Statistics of QUIC Cubic

Start at: 2018-11-30 01:39:17  
End at: 2018-11-30 01:39:47  
Local clock offset: -3.536 ms  
Remote clock offset: -2.546 ms

# Below is generated by plot.py at 2018-11-30 01:52:32  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 5.28 Mbit/s  
95th percentile per-packet one-way delay: 68.854 ms  
Loss rate: 0.60%  
-- Flow 1:  
Average throughput: 2.26 Mbit/s  
95th percentile per-packet one-way delay: 69.041 ms  
Loss rate: 0.69%  
-- Flow 2:  
Average throughput: 3.66 Mbit/s  
95th percentile per-packet one-way delay: 68.614 ms  
Loss rate: 0.50%  
-- Flow 3:  
Average throughput: 1.79 Mbit/s  
95th percentile per-packet one-way delay: 69.114 ms  
Loss rate: 0.65%

## Run 5: Report of QUIC Cubic — Data Link

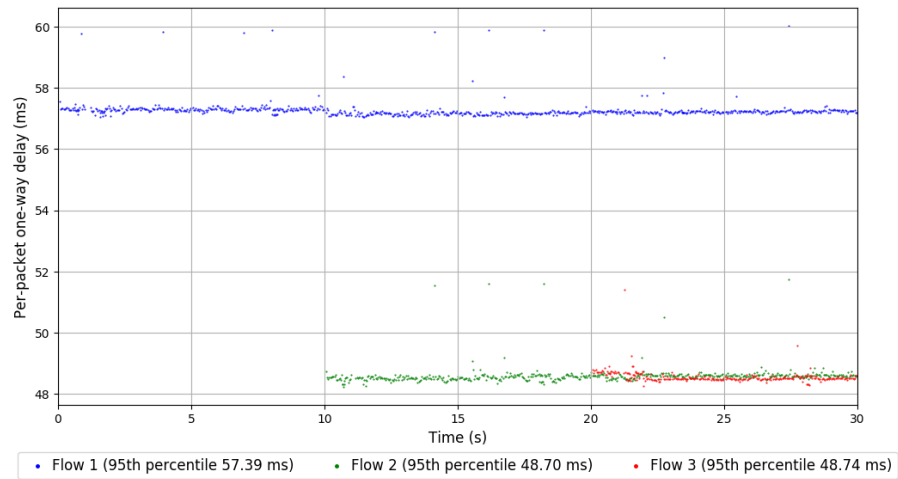
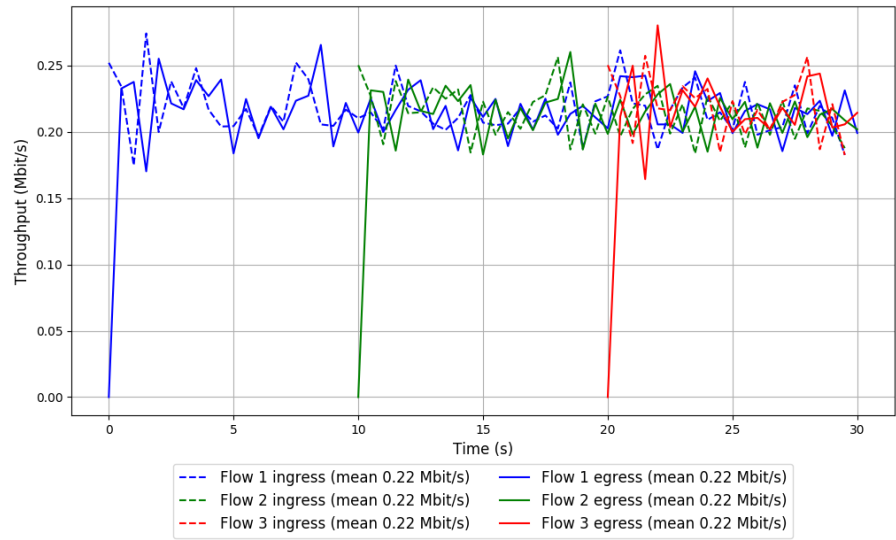


```
Run 1: Statistics of SReAM

Start at: 2018-11-29 23:59:26
End at: 2018-11-29 23:59:56
Local clock offset: 4.533 ms
Remote clock offset: 0.66 ms

# Below is generated by plot.py at 2018-11-30 01:52:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 57.334 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 57.386 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 48.704 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 48.742 ms
Loss rate: 0.00%
```

## Run 1: Report of SReAM — Data Link





Run 2: Statistics of SReAM

Start at: 2018-11-30 00:22:49

End at: 2018-11-30 00:23:19

Local clock offset: 11.941 ms

Remote clock offset: 0.977 ms

# Below is generated by plot.py at 2018-11-30 01:52:32

# Datalink statistics

-- Total of 3 flows:

Average throughput: 0.43 Mbit/s

95th percentile per-packet one-way delay: 58.284 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 58.352 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 58.455 ms

Loss rate: 0.00%

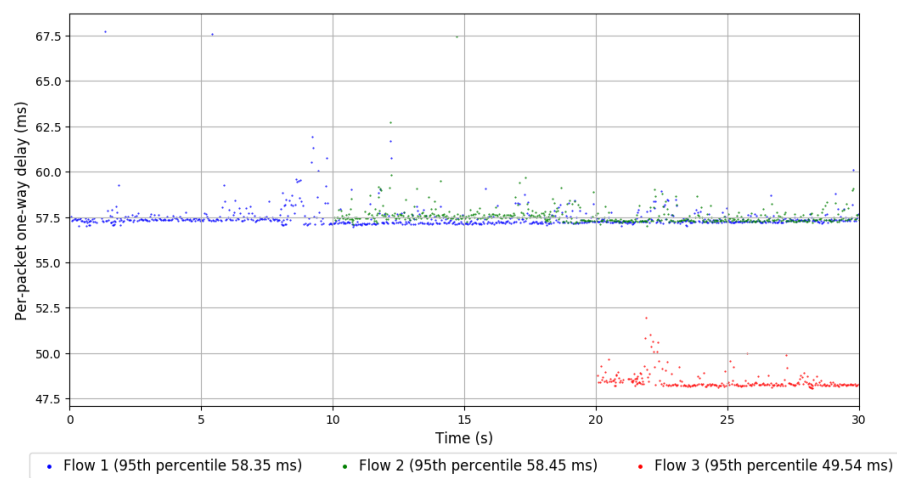
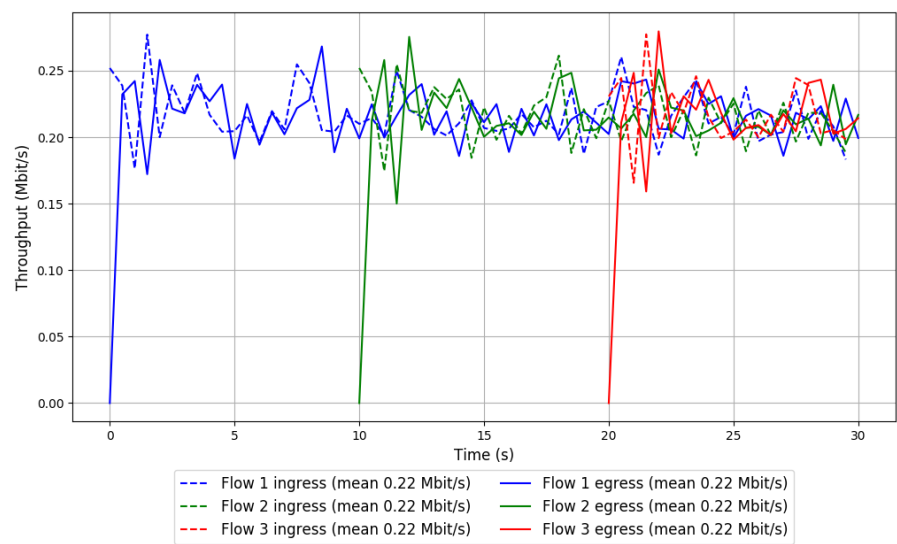
-- Flow 3:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 49.542 ms

Loss rate: 0.00%

Run 2: Report of SReAM — Data Link

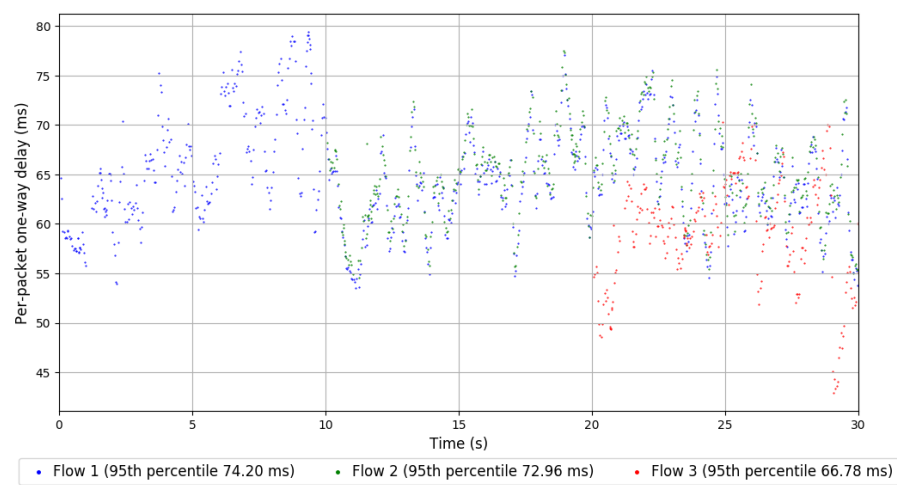
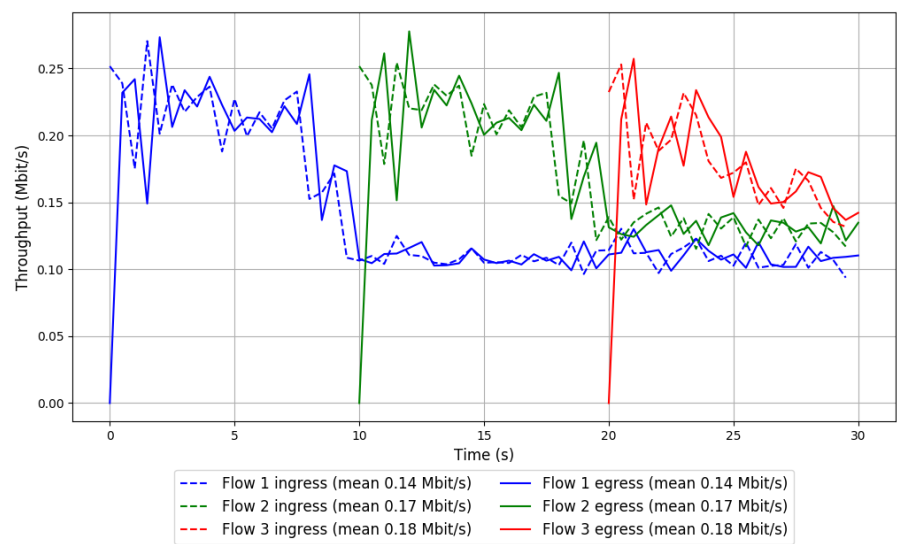


Run 3: Statistics of SCReAM

Start at: 2018-11-30 00:47:58  
End at: 2018-11-30 00:48:28  
Local clock offset: 11.896 ms  
Remote clock offset: -5.817 ms

# Below is generated by plot.py at 2018-11-30 01:52:32  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 0.32 Mbit/s  
95th percentile per-packet one-way delay: 73.339 ms  
Loss rate: 0.09%  
-- Flow 1:  
Average throughput: 0.14 Mbit/s  
95th percentile per-packet one-way delay: 74.200 ms  
Loss rate: 0.00%  
-- Flow 2:  
Average throughput: 0.17 Mbit/s  
95th percentile per-packet one-way delay: 72.963 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 0.18 Mbit/s  
95th percentile per-packet one-way delay: 66.781 ms  
Loss rate: 0.45%

Run 3: Report of SReAM — Data Link

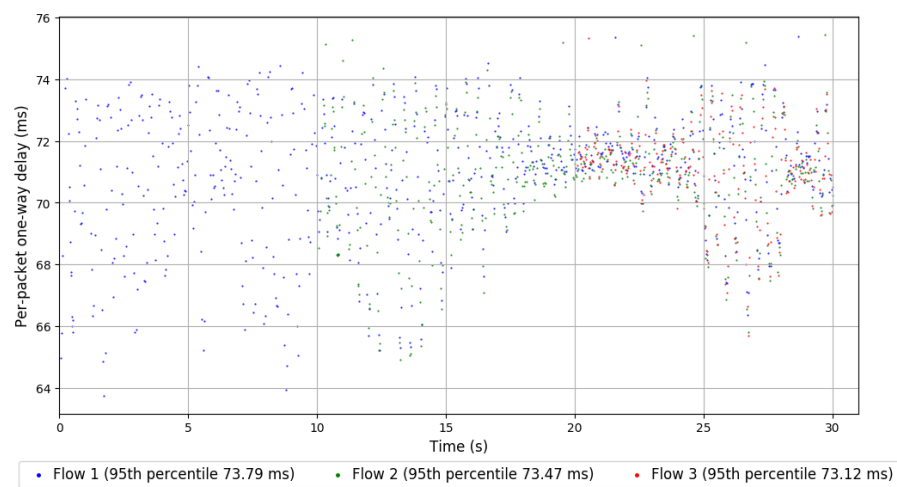
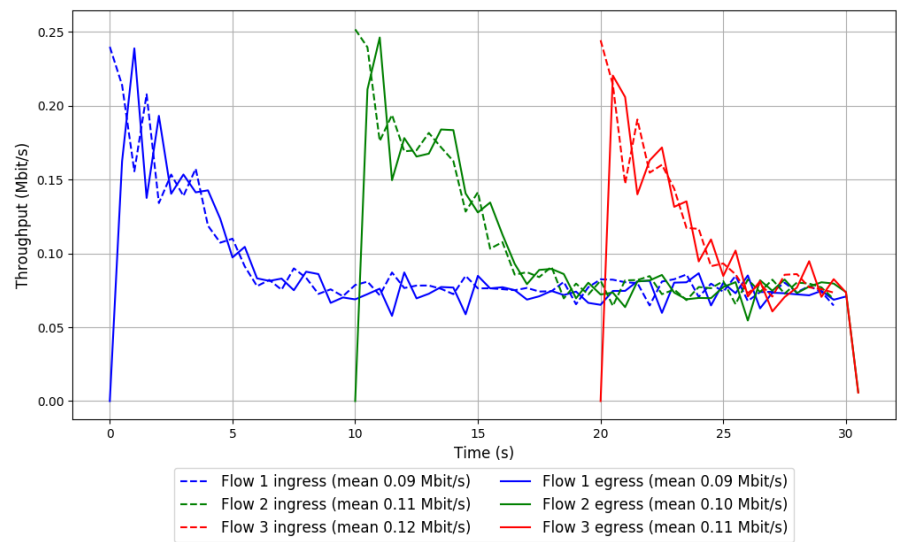


Run 4: Statistics of SCReAM

Start at: 2018-11-30 01:11:50  
End at: 2018-11-30 01:12:20  
Local clock offset: -2.703 ms  
Remote clock offset: -16.881 ms

# Below is generated by plot.py at 2018-11-30 01:52:32  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 0.20 Mbit/s  
95th percentile per-packet one-way delay: 73.627 ms  
Loss rate: 4.16%  
-- Flow 1:  
Average throughput: 0.09 Mbit/s  
95th percentile per-packet one-way delay: 73.787 ms  
Loss rate: 4.48%  
-- Flow 2:  
Average throughput: 0.10 Mbit/s  
95th percentile per-packet one-way delay: 73.470 ms  
Loss rate: 2.92%  
-- Flow 3:  
Average throughput: 0.11 Mbit/s  
95th percentile per-packet one-way delay: 73.121 ms  
Loss rate: 5.65%

Run 4: Report of SReAM — Data Link

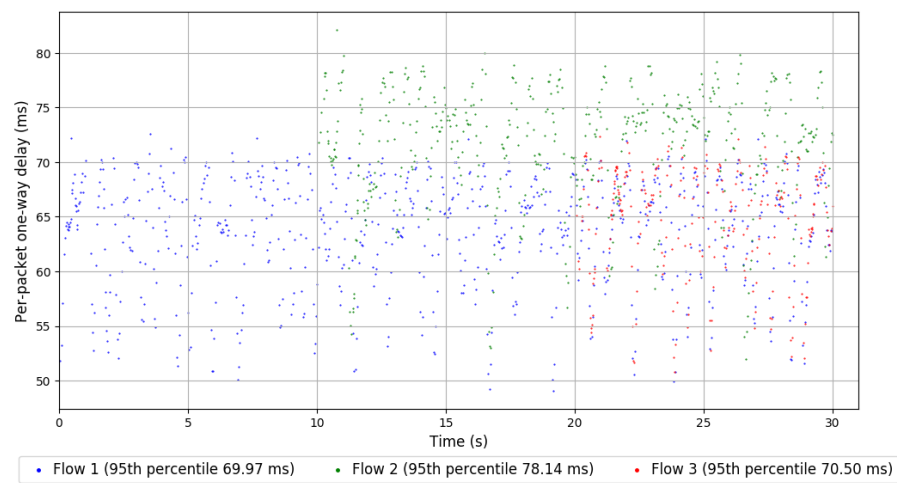
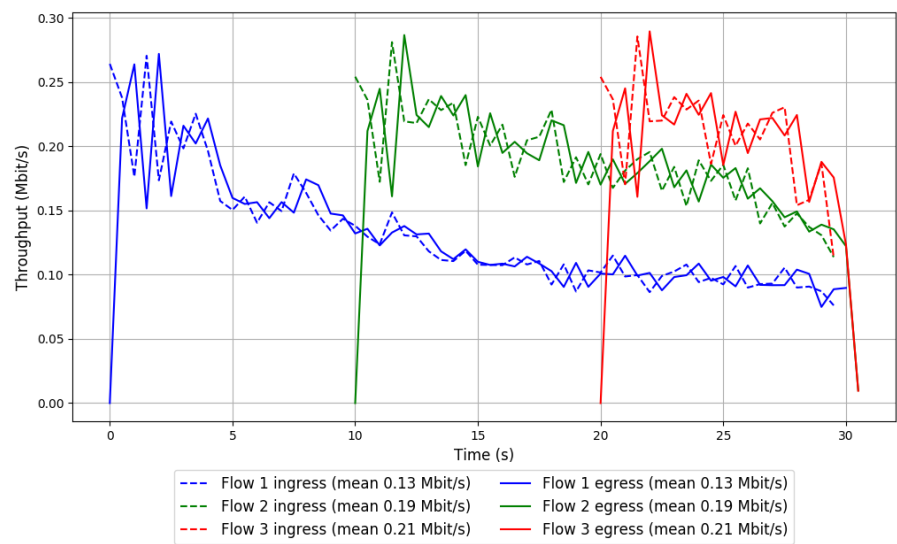


Run 5: Statistics of SReAM

Start at: 2018-11-30 01:35:21  
End at: 2018-11-30 01:35:51  
Local clock offset: -3.091 ms  
Remote clock offset: -1.993 ms

# Below is generated by plot.py at 2018-11-30 01:52:32  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 0.33 Mbit/s  
95th percentile per-packet one-way delay: 76.817 ms  
Loss rate: 0.48%  
-- Flow 1:  
Average throughput: 0.13 Mbit/s  
95th percentile per-packet one-way delay: 69.970 ms  
Loss rate: 0.79%  
-- Flow 2:  
Average throughput: 0.19 Mbit/s  
95th percentile per-packet one-way delay: 78.135 ms  
Loss rate: 0.41%  
-- Flow 3:  
Average throughput: 0.21 Mbit/s  
95th percentile per-packet one-way delay: 70.496 ms  
Loss rate: 0.00%

Run 5: Report of SReAM — Data Link



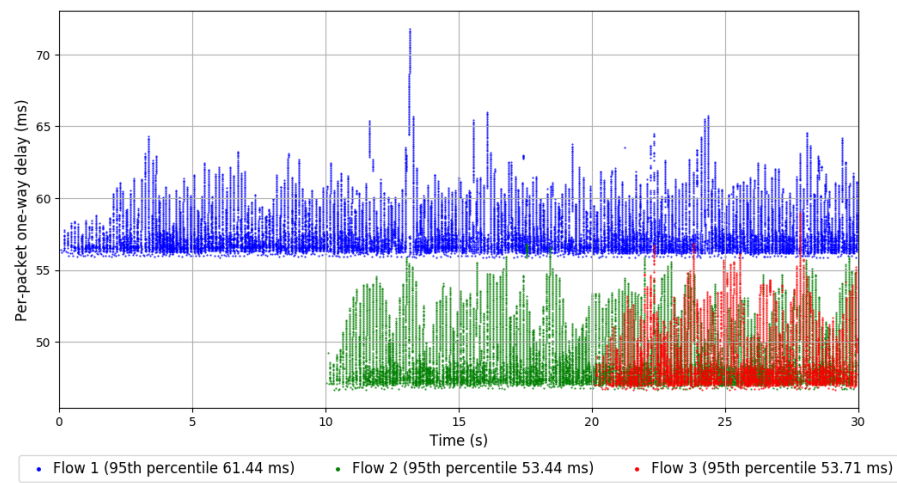
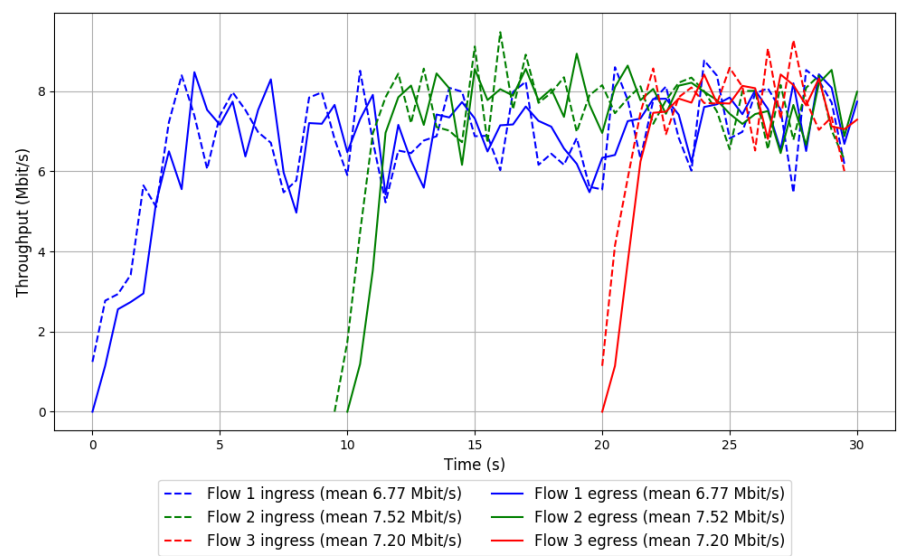


Run 1: Statistics of Sprout

Start at: 2018-11-30 00:04:35  
End at: 2018-11-30 00:05:05  
Local clock offset: 5.56 ms  
Remote clock offset: -0.011 ms

# Below is generated by plot.py at 2018-11-30 01:52:32  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 14.16 Mbit/s  
95th percentile per-packet one-way delay: 60.429 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 6.77 Mbit/s  
95th percentile per-packet one-way delay: 61.442 ms  
Loss rate: 0.00%  
-- Flow 2:  
Average throughput: 7.52 Mbit/s  
95th percentile per-packet one-way delay: 53.440 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 7.20 Mbit/s  
95th percentile per-packet one-way delay: 53.709 ms  
Loss rate: 0.00%

Run 1: Report of Sprout — Data Link

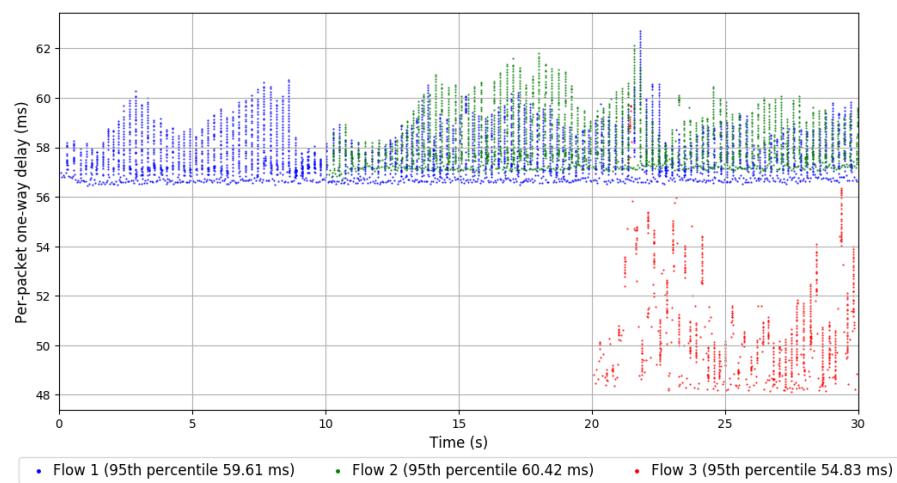
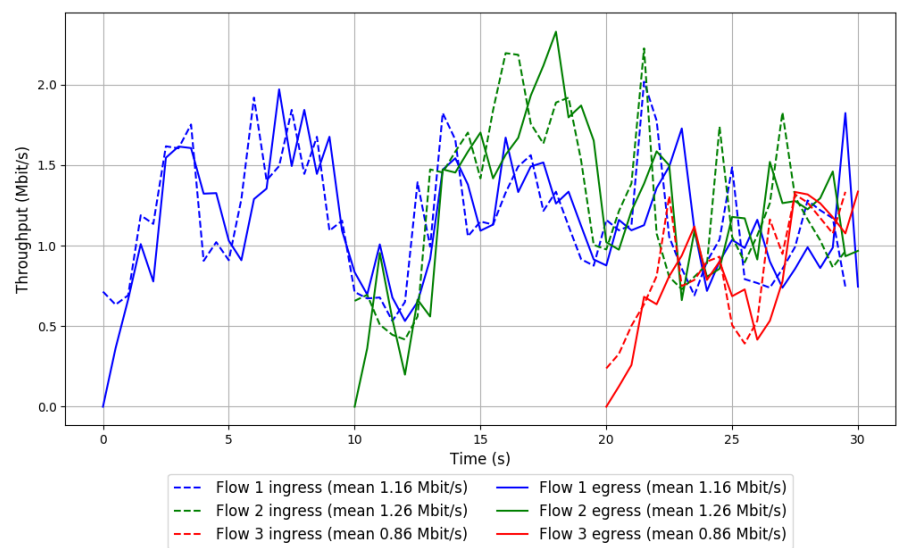


Run 2: Statistics of Sprout

Start at: 2018-11-30 00:28:29  
End at: 2018-11-30 00:28:59  
Local clock offset: 14.207 ms  
Remote clock offset: 1.107 ms

# Below is generated by plot.py at 2018-11-30 01:52:32  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 2.28 Mbit/s  
95th percentile per-packet one-way delay: 59.949 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 1.16 Mbit/s  
95th percentile per-packet one-way delay: 59.607 ms  
Loss rate: 0.00%  
-- Flow 2:  
Average throughput: 1.26 Mbit/s  
95th percentile per-packet one-way delay: 60.418 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 0.86 Mbit/s  
95th percentile per-packet one-way delay: 54.829 ms  
Loss rate: 0.00%

Run 2: Report of Sprout — Data Link

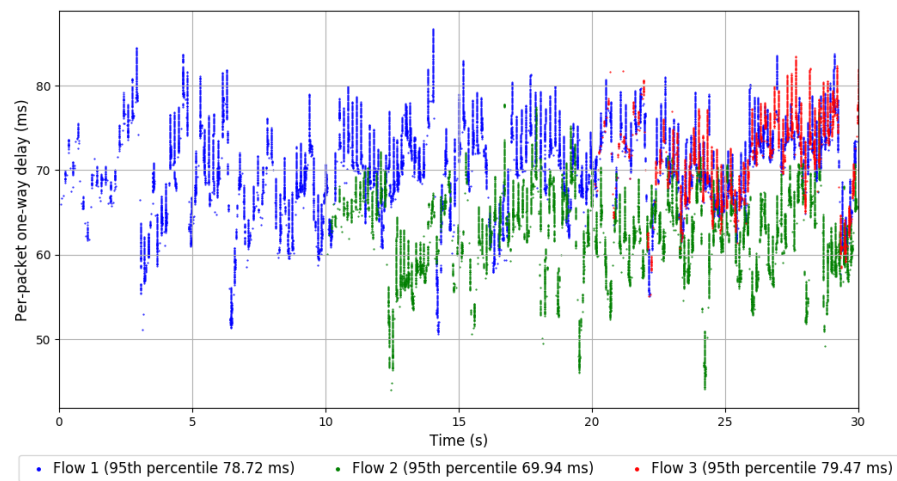
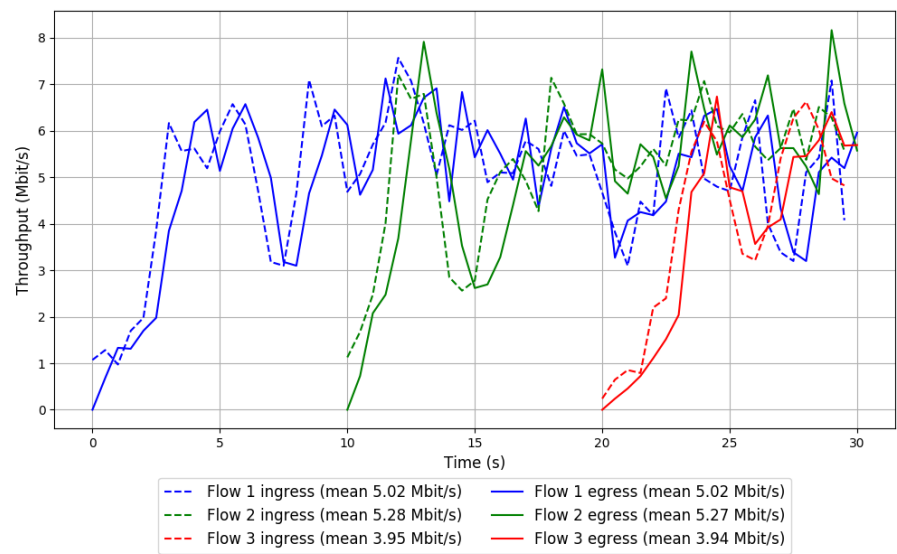


Run 3: Statistics of Sprout

Start at: 2018-11-30 00:53:14  
End at: 2018-11-30 00:53:44  
Local clock offset: 5.624 ms  
Remote clock offset: -8.447 ms

# Below is generated by plot.py at 2018-11-30 01:52:32  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 9.82 Mbit/s  
95th percentile per-packet one-way delay: 78.013 ms  
Loss rate: 0.03%  
-- Flow 1:  
Average throughput: 5.02 Mbit/s  
95th percentile per-packet one-way delay: 78.720 ms  
Loss rate: 0.02%  
-- Flow 2:  
Average throughput: 5.27 Mbit/s  
95th percentile per-packet one-way delay: 69.940 ms  
Loss rate: 0.07%  
-- Flow 3:  
Average throughput: 3.94 Mbit/s  
95th percentile per-packet one-way delay: 79.473 ms  
Loss rate: 0.00%

Run 3: Report of Sprout — Data Link

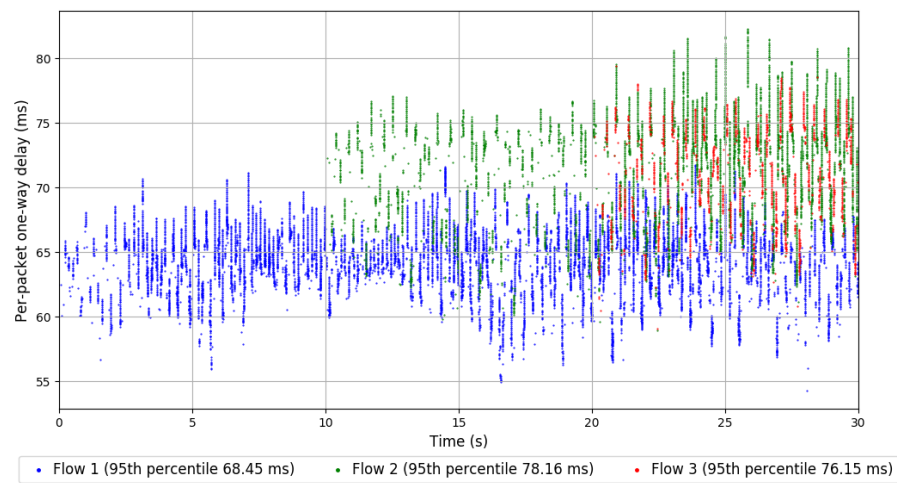
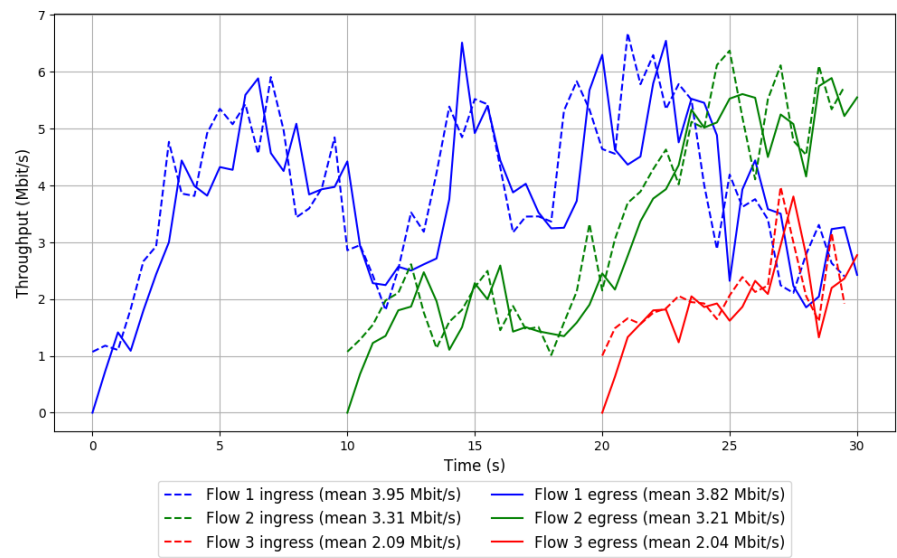


#### Run 4: Statistics of Sprout

Start at: 2018-11-30 01:17:04  
End at: 2018-11-30 01:17:34  
Local clock offset: -2.95 ms  
Remote clock offset: -16.132 ms

```
# Below is generated by plot.py at 2018-11-30 01:52:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 6.63 Mbit/s
95th percentile per-packet one-way delay: 76.027 ms
Loss rate: 3.07%
-- Flow 1:
Average throughput: 3.82 Mbit/s
95th percentile per-packet one-way delay: 68.448 ms
Loss rate: 3.14%
-- Flow 2:
Average throughput: 3.21 Mbit/s
95th percentile per-packet one-way delay: 78.160 ms
Loss rate: 3.04%
-- Flow 3:
Average throughput: 2.04 Mbit/s
95th percentile per-packet one-way delay: 76.151 ms
Loss rate: 2.73%
```

Run 4: Report of Sprout — Data Link



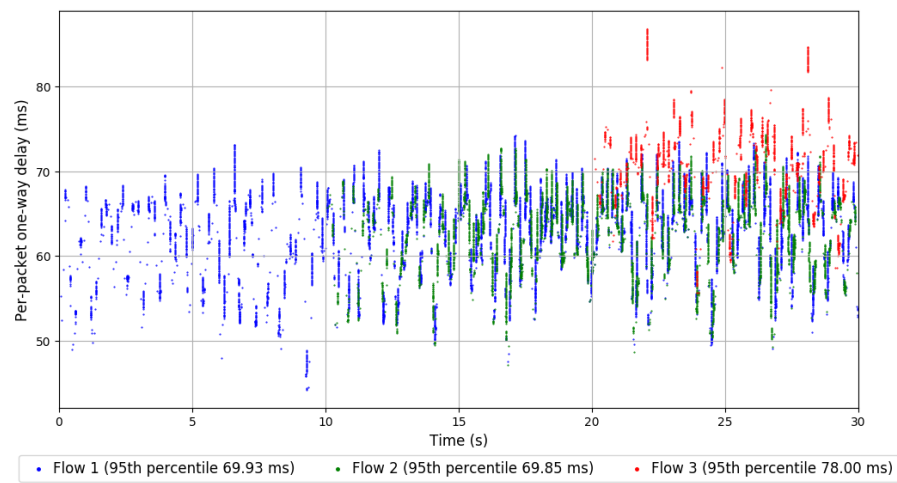
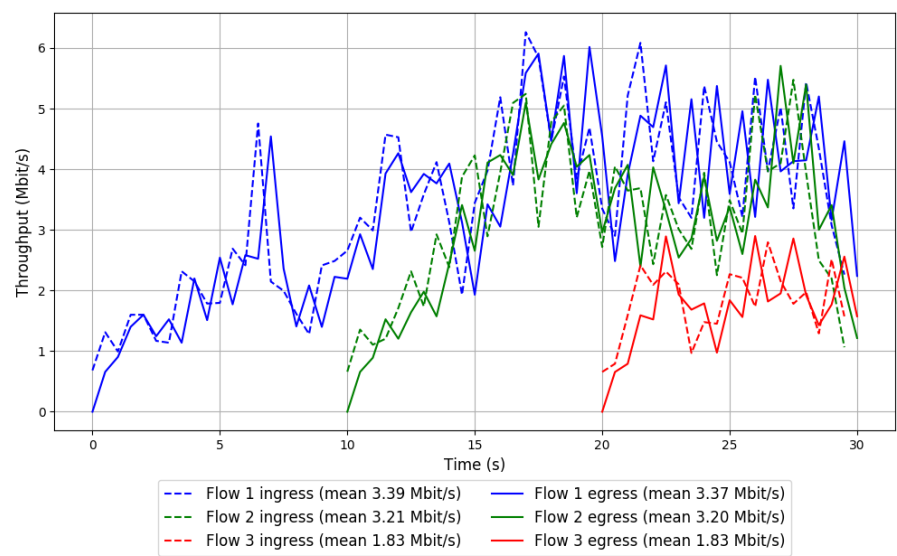


Run 5: Statistics of Sprout

Start at: 2018-11-30 01:40:35  
End at: 2018-11-30 01:41:05  
Local clock offset: -3.635 ms  
Remote clock offset: -4.07 ms

# Below is generated by plot.py at 2018-11-30 01:52:32  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 6.10 Mbit/s  
95th percentile per-packet one-way delay: 72.159 ms  
Loss rate: 0.37%  
-- Flow 1:  
Average throughput: 3.37 Mbit/s  
95th percentile per-packet one-way delay: 69.934 ms  
Loss rate: 0.38%  
-- Flow 2:  
Average throughput: 3.20 Mbit/s  
95th percentile per-packet one-way delay: 69.854 ms  
Loss rate: 0.34%  
-- Flow 3:  
Average throughput: 1.83 Mbit/s  
95th percentile per-packet one-way delay: 78.003 ms  
Loss rate: 0.39%

Run 5: Report of Sprout — Data Link

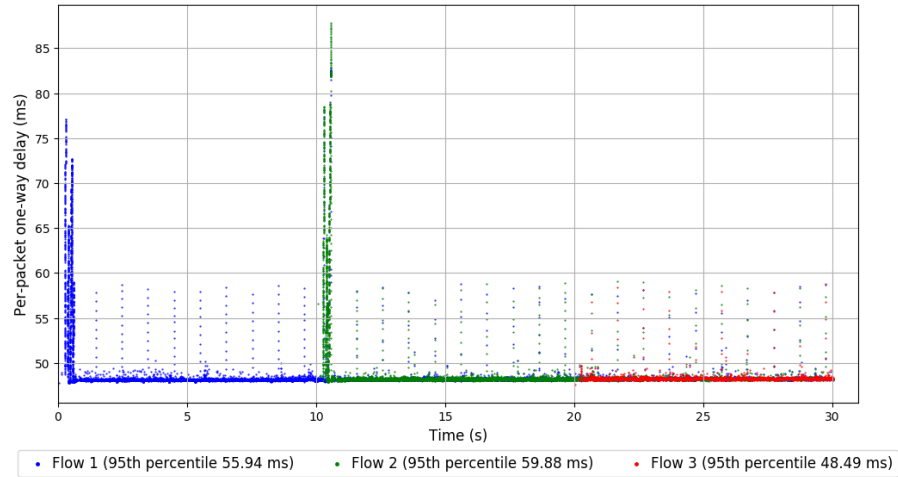
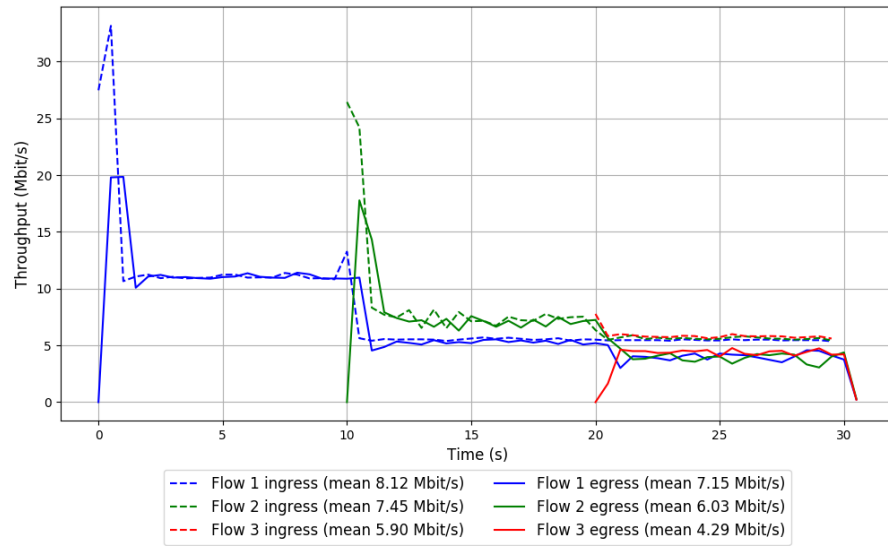


Run 1: Statistics of TaoVA-100x

Start at: 2018-11-29 23:56:51  
End at: 2018-11-29 23:57:21  
Local clock offset: 3.896 ms  
Remote clock offset: -0.156 ms

# Below is generated by plot.py at 2018-11-30 01:52:32  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 12.59 Mbit/s  
95th percentile per-packet one-way delay: 56.031 ms  
Loss rate: 16.34%  
-- Flow 1:  
Average throughput: 7.15 Mbit/s  
95th percentile per-packet one-way delay: 55.944 ms  
Loss rate: 11.96%  
-- Flow 2:  
Average throughput: 6.03 Mbit/s  
95th percentile per-packet one-way delay: 59.884 ms  
Loss rate: 19.17%  
-- Flow 3:  
Average throughput: 4.29 Mbit/s  
95th percentile per-packet one-way delay: 48.486 ms  
Loss rate: 27.33%

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



Run 2: Statistics of TaoVA-100x

Start at: 2018-11-30 00:20:12

End at: 2018-11-30 00:20:42

Local clock offset: 10.331 ms

Remote clock offset: 0.189 ms

# Below is generated by plot.py at 2018-11-30 01:52:32

# Datalink statistics

-- Total of 3 flows:

Average throughput: 12.65 Mbit/s

95th percentile per-packet one-way delay: 51.731 ms

Loss rate: 36.57%

-- Flow 1:

Average throughput: 7.58 Mbit/s

95th percentile per-packet one-way delay: 54.590 ms

Loss rate: 43.45%

-- Flow 2:

Average throughput: 5.54 Mbit/s

95th percentile per-packet one-way delay: 49.146 ms

Loss rate: 22.01%

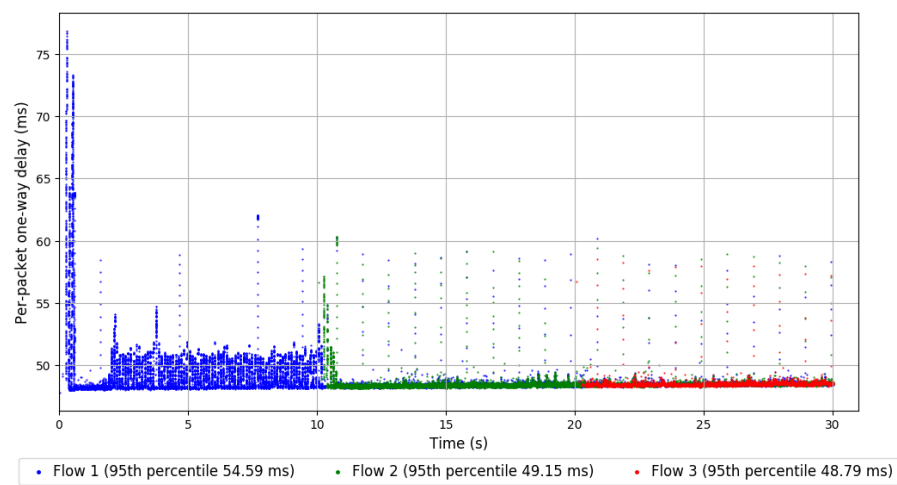
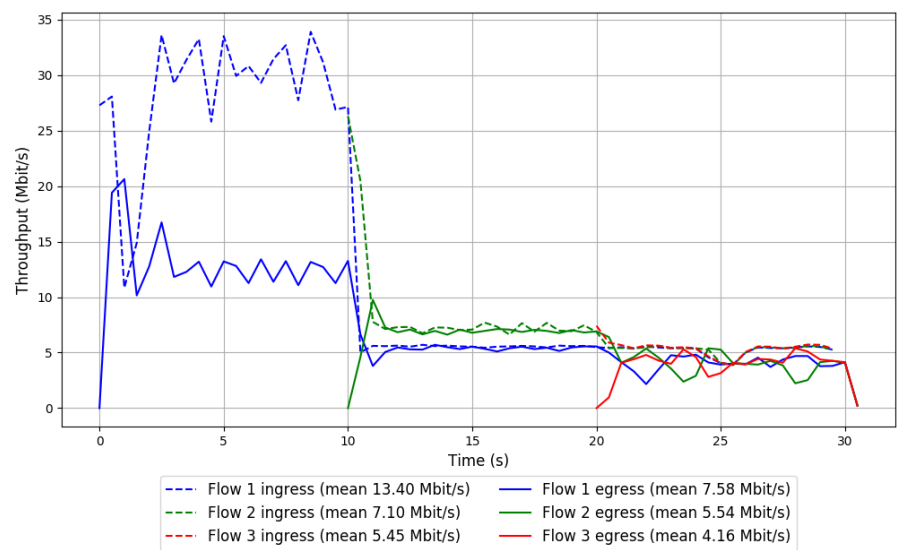
-- Flow 3:

Average throughput: 4.16 Mbit/s

95th percentile per-packet one-way delay: 48.788 ms

Loss rate: 23.67%

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

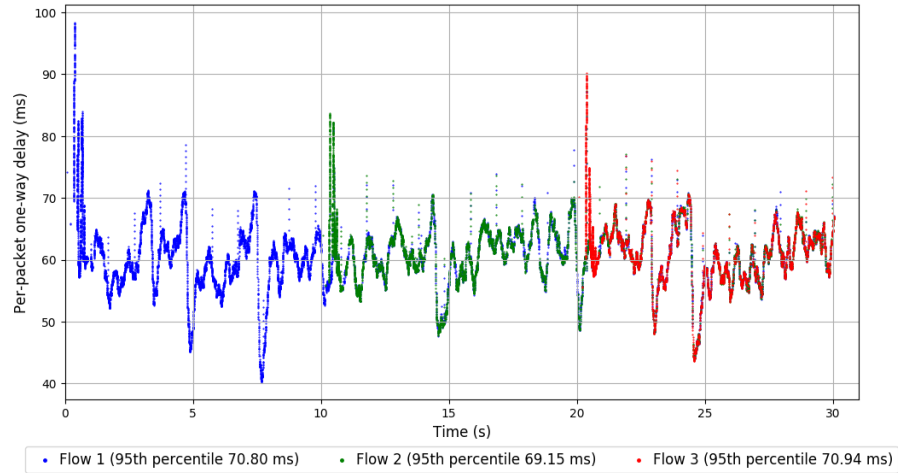
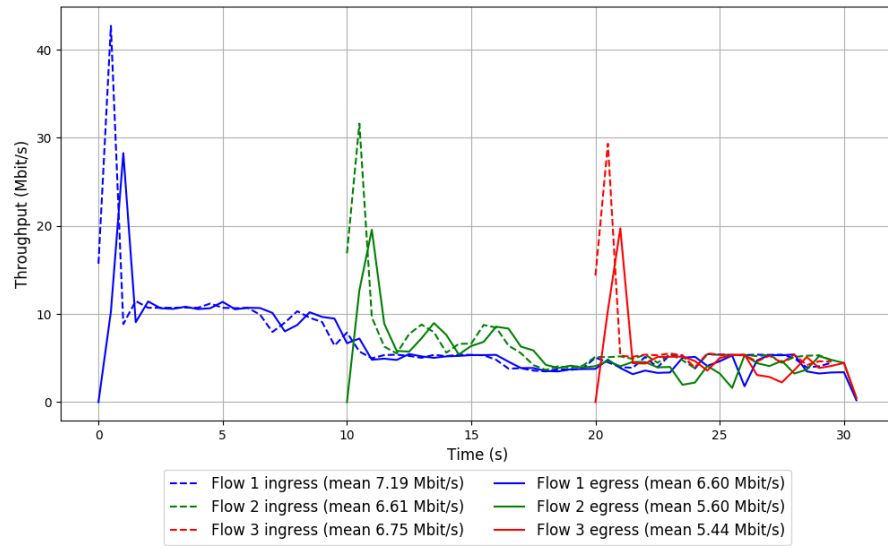


Run 3: Statistics of TaoVA-100x

Start at: 2018-11-30 00:45:20  
End at: 2018-11-30 00:45:50  
Local clock offset: 16.718 ms  
Remote clock offset: -6.565 ms

# Below is generated by plot.py at 2018-11-30 01:52:32  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 12.15 Mbit/s  
95th percentile per-packet one-way delay: 70.388 ms  
Loss rate: 12.23%  
-- Flow 1:  
Average throughput: 6.60 Mbit/s  
95th percentile per-packet one-way delay: 70.797 ms  
Loss rate: 8.20%  
-- Flow 2:  
Average throughput: 5.60 Mbit/s  
95th percentile per-packet one-way delay: 69.154 ms  
Loss rate: 15.15%  
-- Flow 3:  
Average throughput: 5.44 Mbit/s  
95th percentile per-packet one-way delay: 70.940 ms  
Loss rate: 19.41%

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



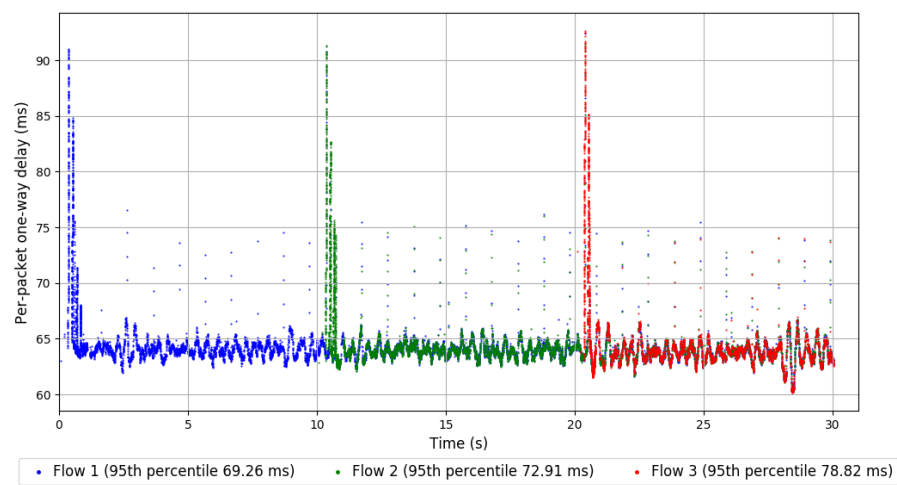
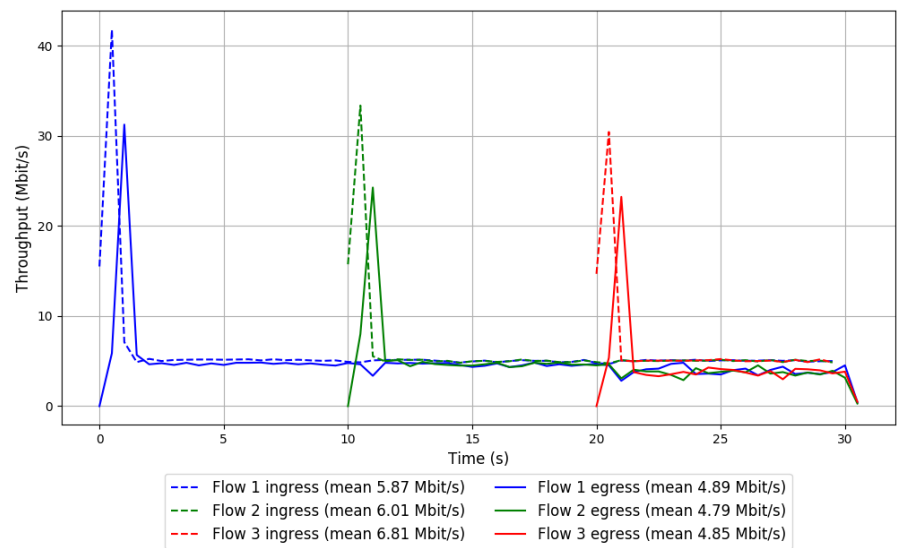


Run 4: Statistics of TaoVA-100x

Start at: 2018-11-30 01:09:08  
End at: 2018-11-30 01:09:38  
Local clock offset: -2.047 ms  
Remote clock offset: -16.285 ms

# Below is generated by plot.py at 2018-11-30 01:52:32  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 9.69 Mbit/s  
95th percentile per-packet one-way delay: 72.418 ms  
Loss rate: 20.18%  
-- Flow 1:  
Average throughput: 4.89 Mbit/s  
95th percentile per-packet one-way delay: 69.257 ms  
Loss rate: 16.74%  
-- Flow 2:  
Average throughput: 4.79 Mbit/s  
95th percentile per-packet one-way delay: 72.914 ms  
Loss rate: 20.31%  
-- Flow 3:  
Average throughput: 4.85 Mbit/s  
95th percentile per-packet one-way delay: 78.824 ms  
Loss rate: 28.88%

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

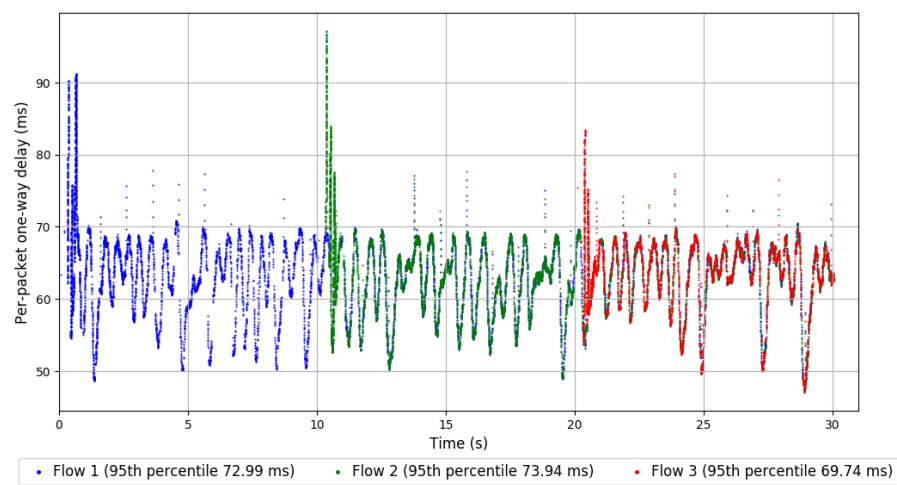
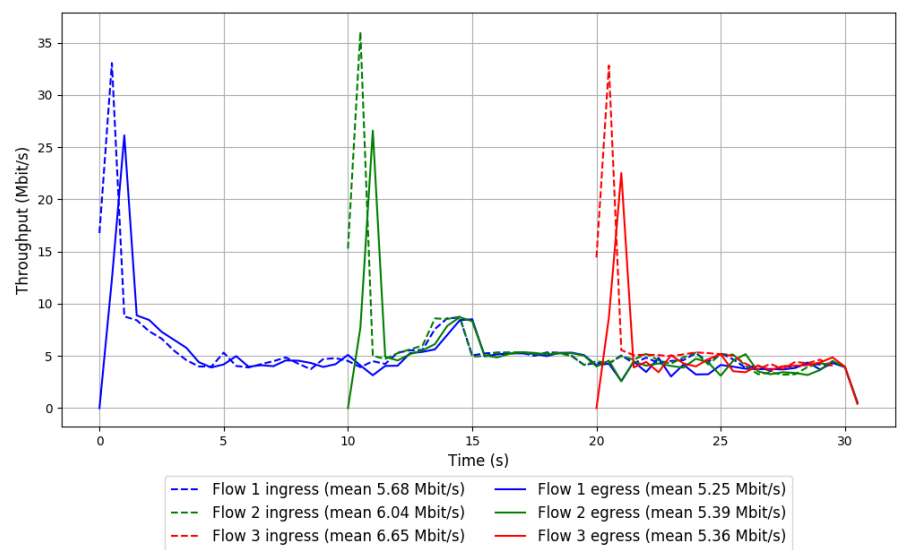


Run 5: Statistics of TaoVA-100x

Start at: 2018-11-30 01:32:36  
End at: 2018-11-30 01:33:06  
Local clock offset: -3.03 ms  
Remote clock offset: -4.191 ms

# Below is generated by plot.py at 2018-11-30 01:52:32  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 10.62 Mbit/s  
95th percentile per-packet one-way delay: 72.485 ms  
Loss rate: 10.86%  
-- Flow 1:  
Average throughput: 5.25 Mbit/s  
95th percentile per-packet one-way delay: 72.990 ms  
Loss rate: 7.57%  
-- Flow 2:  
Average throughput: 5.39 Mbit/s  
95th percentile per-packet one-way delay: 73.938 ms  
Loss rate: 10.81%  
-- Flow 3:  
Average throughput: 5.36 Mbit/s  
95th percentile per-packet one-way delay: 69.737 ms  
Loss rate: 19.41%

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



Run 1: Statistics of TCP Vegas

Start at: 2018-11-30 00:07:11

End at: 2018-11-30 00:07:41

Local clock offset: 5.745 ms

Remote clock offset: 0.379 ms

# Below is generated by plot.py at 2018-11-30 01:52:38

# Datalink statistics

-- Total of 3 flows:

Average throughput: 47.24 Mbit/s

95th percentile per-packet one-way delay: 111.917 ms

Loss rate: 1.43%

-- Flow 1:

Average throughput: 34.57 Mbit/s

95th percentile per-packet one-way delay: 90.627 ms

Loss rate: 1.62%

-- Flow 2:

Average throughput: 16.68 Mbit/s

95th percentile per-packet one-way delay: 130.495 ms

Loss rate: 1.03%

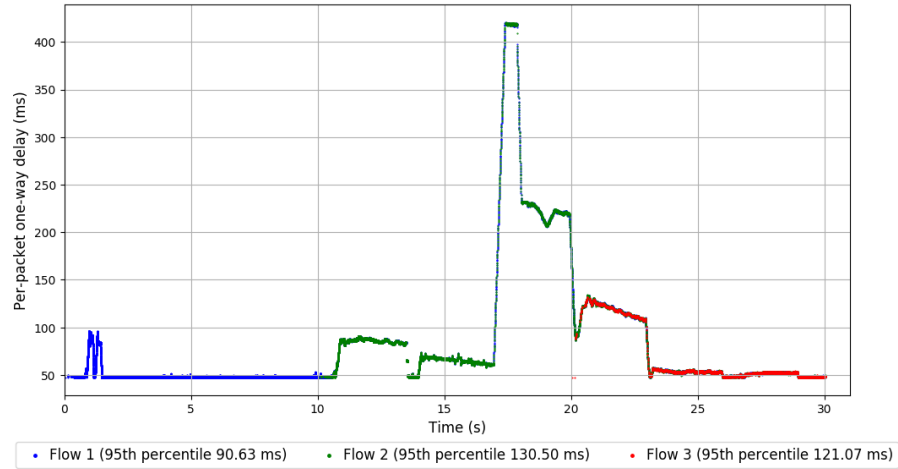
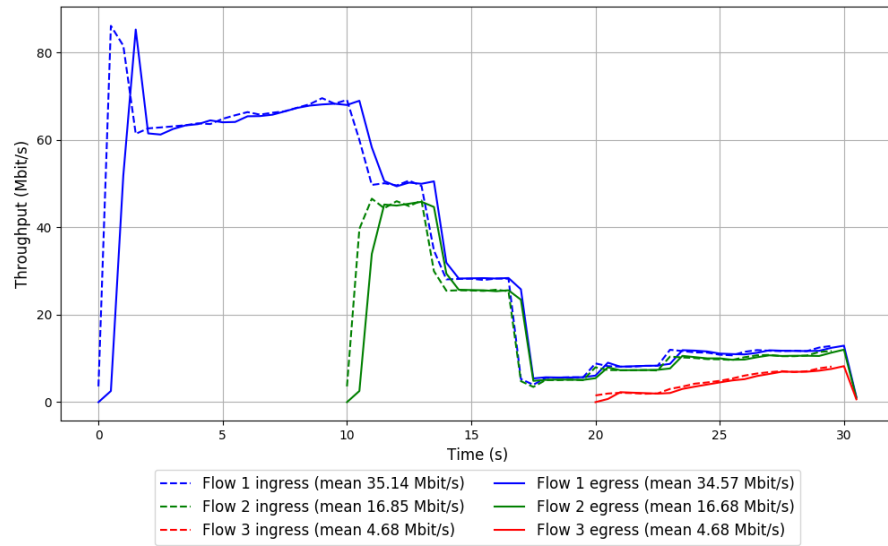
-- Flow 3:

Average throughput: 4.68 Mbit/s

95th percentile per-packet one-way delay: 121.072 ms

Loss rate: 0.00%

# Run 1: Report of TCP Vegas — Data Link



Run 2: Statistics of TCP Vegas

Start at: 2018-11-30 00:32:01

End at: 2018-11-30 00:32:31

Local clock offset: 14.893 ms

Remote clock offset: 0.607 ms

# Below is generated by plot.py at 2018-11-30 01:52:45

# Datalink statistics

-- Total of 3 flows:

Average throughput: 59.13 Mbit/s

95th percentile per-packet one-way delay: 73.137 ms

Loss rate: 1.26%

-- Flow 1:

Average throughput: 43.63 Mbit/s

95th percentile per-packet one-way delay: 71.780 ms

Loss rate: 1.68%

-- Flow 2:

Average throughput: 13.39 Mbit/s

95th percentile per-packet one-way delay: 63.163 ms

Loss rate: 0.03%

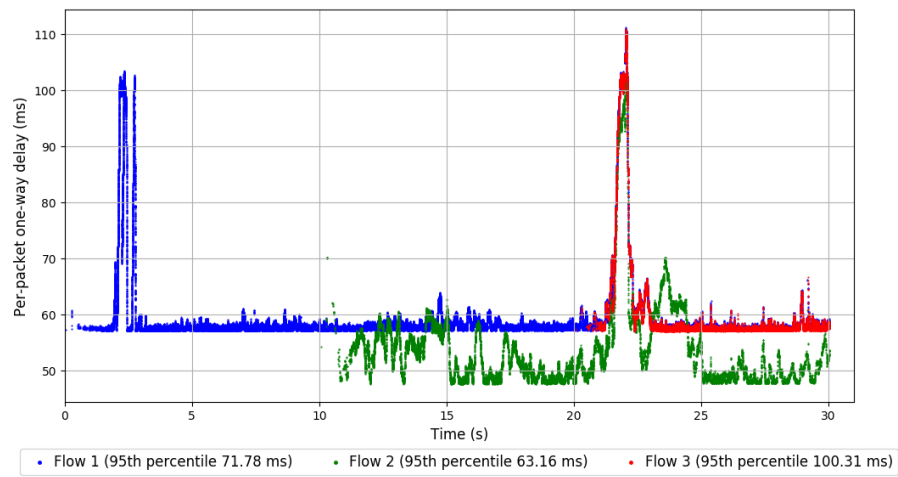
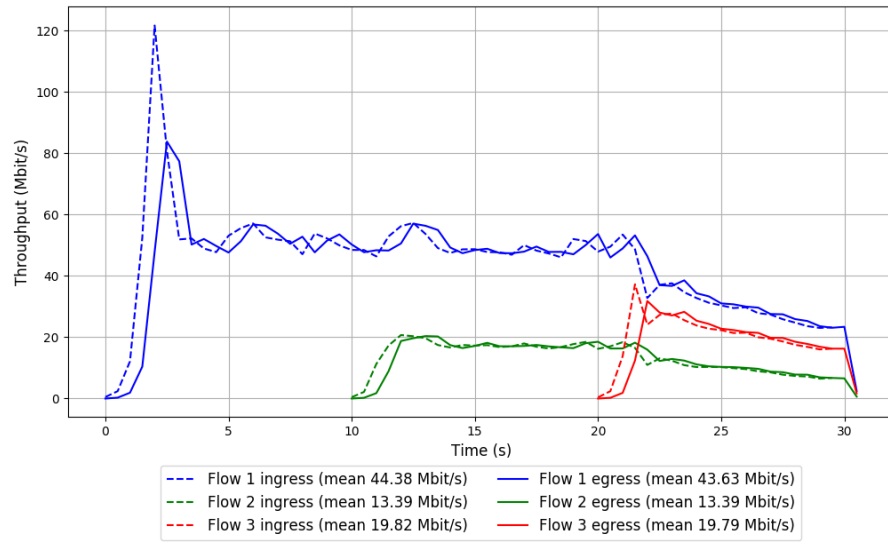
-- Flow 3:

Average throughput: 19.79 Mbit/s

95th percentile per-packet one-way delay: 100.314 ms

Loss rate: 0.10%

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



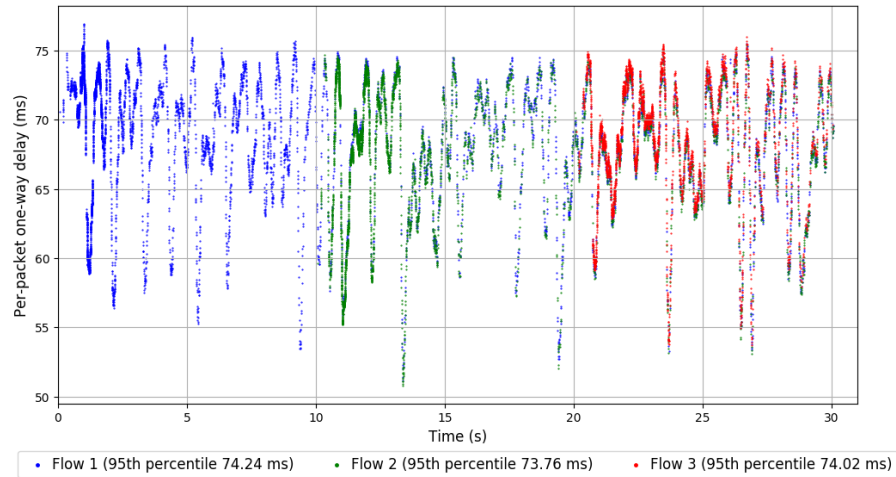
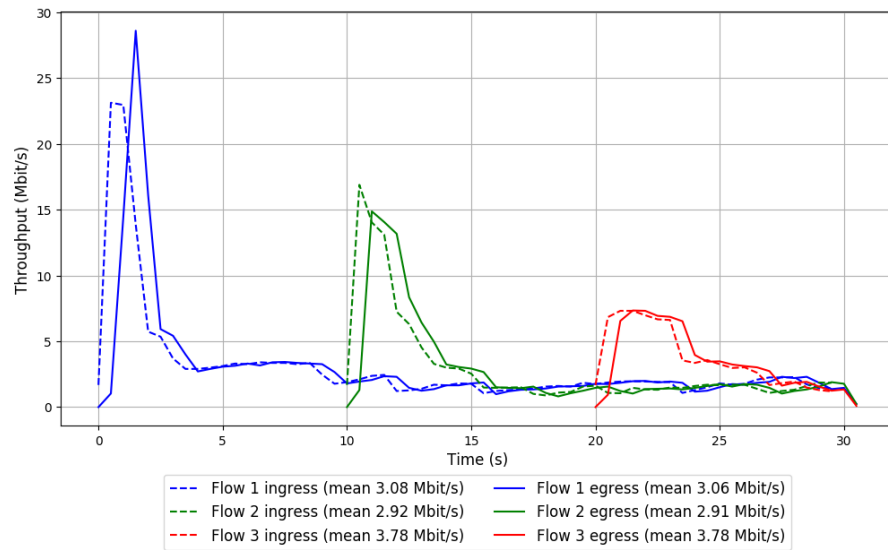


Run 3: Statistics of TCP Vegas

Start at: 2018-11-30 00:55:53  
End at: 2018-11-30 00:56:23  
Local clock offset: 3.365 ms  
Remote clock offset: -4.549 ms

# Below is generated by plot.py at 2018-11-30 01:52:45  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 6.26 Mbit/s  
95th percentile per-packet one-way delay: 74.032 ms  
Loss rate: 0.33%  
-- Flow 1:  
Average throughput: 3.06 Mbit/s  
95th percentile per-packet one-way delay: 74.238 ms  
Loss rate: 0.40%  
-- Flow 2:  
Average throughput: 2.91 Mbit/s  
95th percentile per-packet one-way delay: 73.762 ms  
Loss rate: 0.35%  
-- Flow 3:  
Average throughput: 3.78 Mbit/s  
95th percentile per-packet one-way delay: 74.020 ms  
Loss rate: 0.13%

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

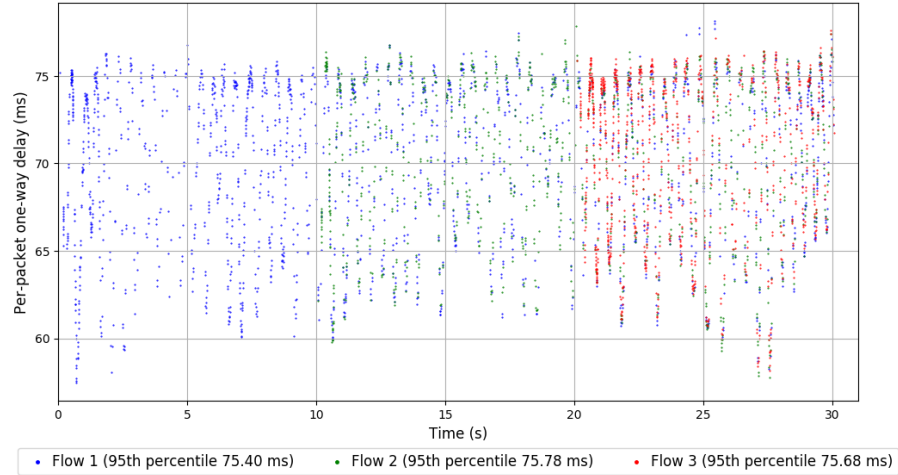
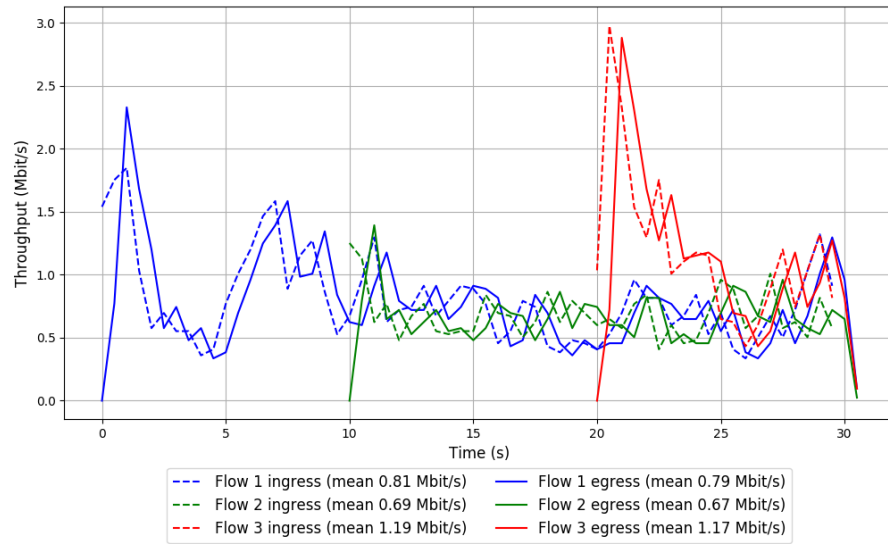


Run 4: Statistics of TCP Vegas

Start at: 2018-11-30 01:19:45  
End at: 2018-11-30 01:20:15  
Local clock offset: -2.693 ms  
Remote clock offset: -14.55 ms

# Below is generated by plot.py at 2018-11-30 01:52:45  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 1.63 Mbit/s  
95th percentile per-packet one-way delay: 75.623 ms  
Loss rate: 1.55%  
-- Flow 1:  
Average throughput: 0.79 Mbit/s  
95th percentile per-packet one-way delay: 75.404 ms  
Loss rate: 1.39%  
-- Flow 2:  
Average throughput: 0.67 Mbit/s  
95th percentile per-packet one-way delay: 75.781 ms  
Loss rate: 1.92%  
-- Flow 3:  
Average throughput: 1.17 Mbit/s  
95th percentile per-packet one-way delay: 75.676 ms  
Loss rate: 1.42%

#### Run 4: Report of TCP Vegas — Data Link



Run 5: Statistics of TCP Vegas

Start at: 2018-11-30 01:43:17

End at: 2018-11-30 01:43:47

Local clock offset: -3.683 ms

Remote clock offset: 4.994 ms

# Below is generated by plot.py at 2018-11-30 01:52:45

# Datalink statistics

-- Total of 3 flows:

Average throughput: 4.47 Mbit/s

95th percentile per-packet one-way delay: 81.683 ms

Loss rate: 0.33%

-- Flow 1:

Average throughput: 2.66 Mbit/s

95th percentile per-packet one-way delay: 75.868 ms

Loss rate: 0.32%

-- Flow 2:

Average throughput: 1.43 Mbit/s

95th percentile per-packet one-way delay: 83.983 ms

Loss rate: 0.21%

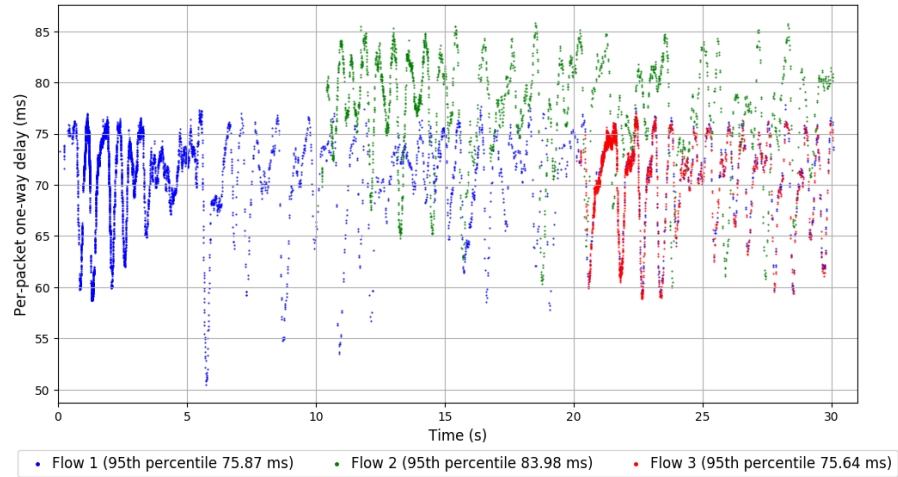
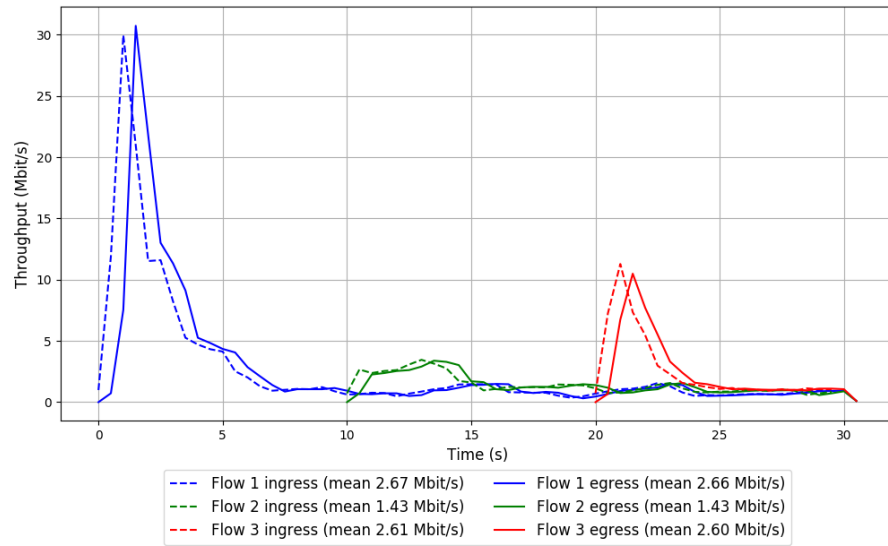
-- Flow 3:

Average throughput: 2.60 Mbit/s

95th percentile per-packet one-way delay: 75.635 ms

Loss rate: 0.51%

# Run 5: Report of TCP Vegas — Data Link



Run 1: Statistics of Verus

Start at: 2018-11-29 23:58:05

End at: 2018-11-29 23:58:35

Local clock offset: 4.379 ms

Remote clock offset: 0.632 ms

# Below is generated by plot.py at 2018-11-30 01:53:11

# Datalink statistics

-- Total of 3 flows:

Average throughput: 79.12 Mbit/s

95th percentile per-packet one-way delay: 202.663 ms

Loss rate: 16.70%

-- Flow 1:

Average throughput: 48.47 Mbit/s

95th percentile per-packet one-way delay: 202.754 ms

Loss rate: 16.12%

-- Flow 2:

Average throughput: 37.56 Mbit/s

95th percentile per-packet one-way delay: 194.008 ms

Loss rate: 19.56%

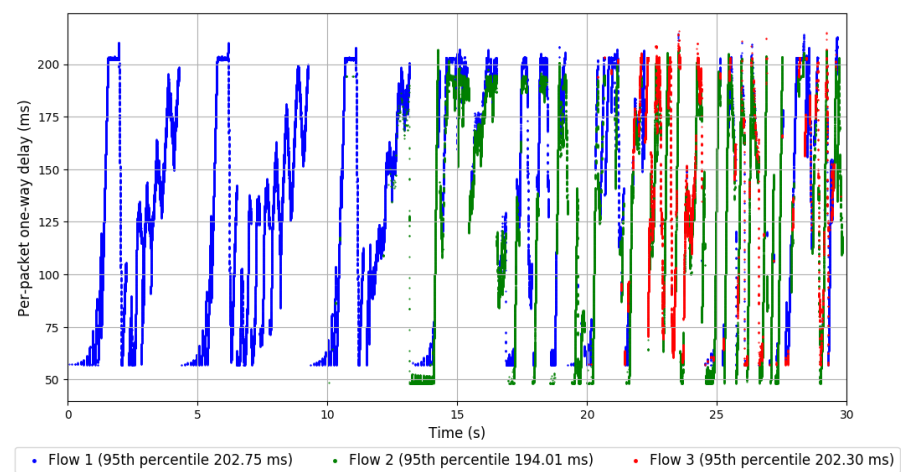
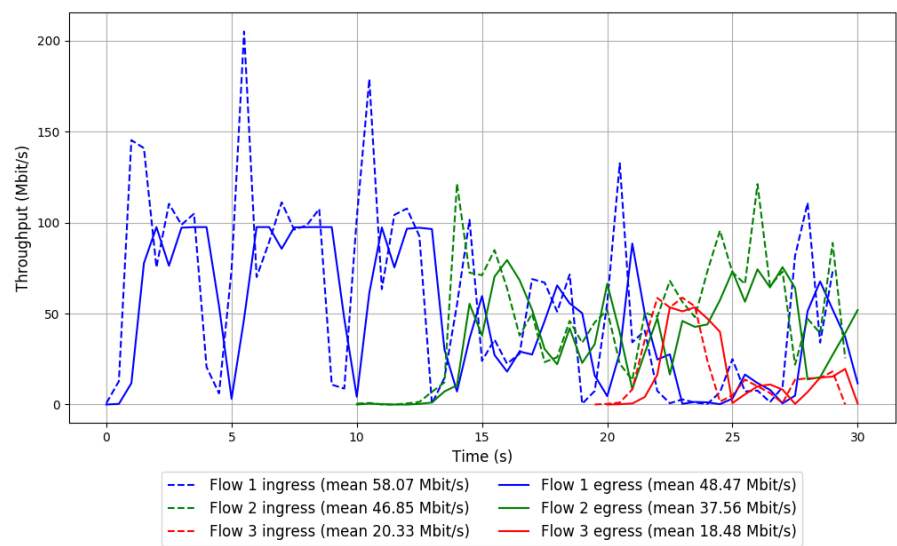
-- Flow 3:

Average throughput: 18.48 Mbit/s

95th percentile per-packet one-way delay: 202.302 ms

Loss rate: 8.35%

Run 1: Report of Verus — Data Link





Run 2: Statistics of Verus

Start at: 2018-11-30 00:21:27

End at: 2018-11-30 00:21:57

Local clock offset: 11.032 ms

Remote clock offset: 0.06 ms

# Below is generated by plot.py at 2018-11-30 01:53:23

# Datalink statistics

-- Total of 3 flows:

Average throughput: 86.20 Mbit/s

95th percentile per-packet one-way delay: 193.782 ms

Loss rate: 15.12%

-- Flow 1:

Average throughput: 49.38 Mbit/s

95th percentile per-packet one-way delay: 193.240 ms

Loss rate: 11.53%

-- Flow 2:

Average throughput: 46.40 Mbit/s

95th percentile per-packet one-way delay: 193.126 ms

Loss rate: 13.65%

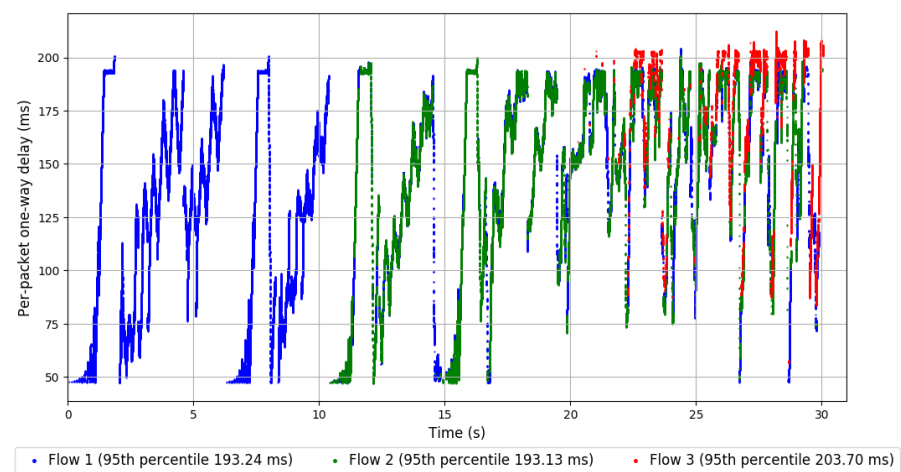
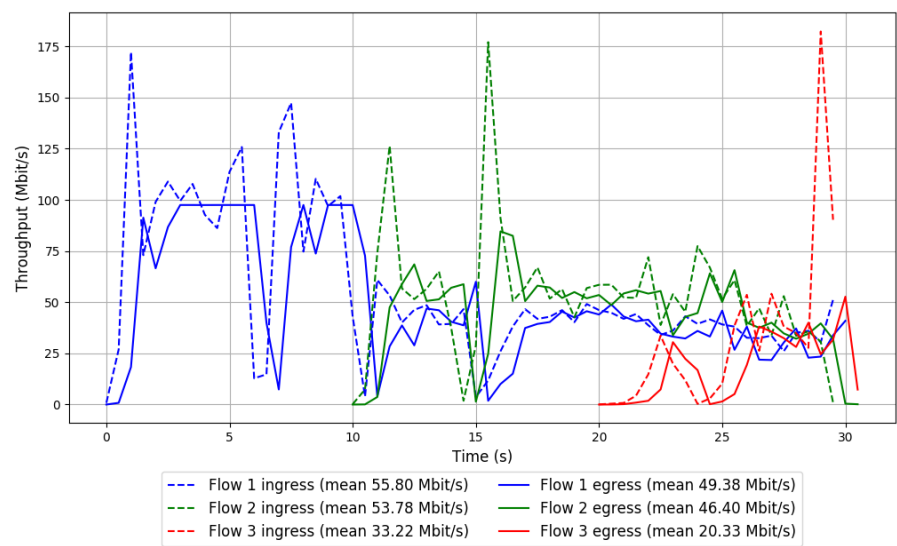
-- Flow 3:

Average throughput: 20.33 Mbit/s

95th percentile per-packet one-way delay: 203.700 ms

Loss rate: 38.52%

Run 2: Report of Verus — Data Link

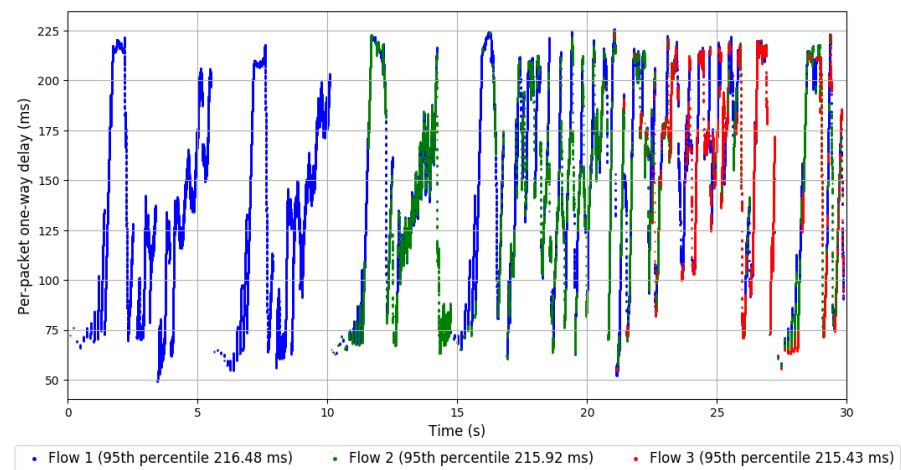
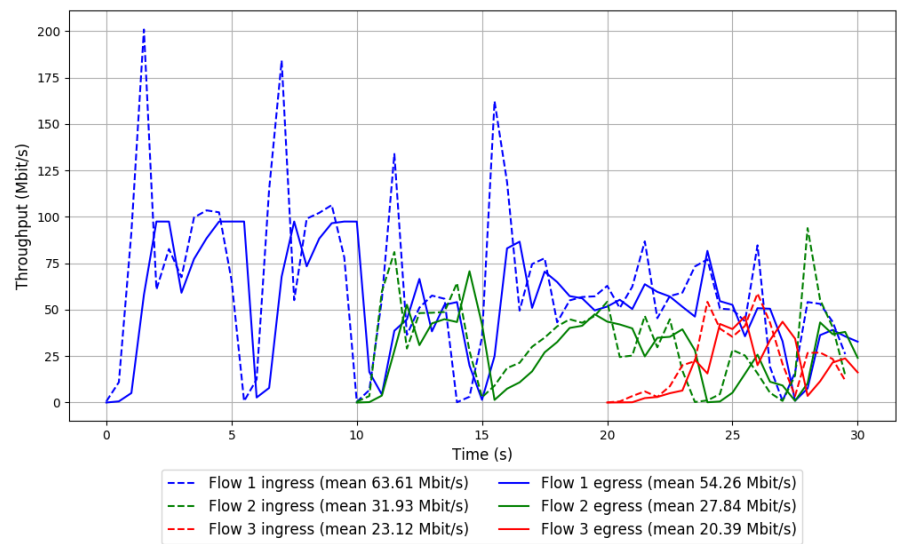


Run 3: Statistics of Verus

Start at: 2018-11-30 00:46:36  
End at: 2018-11-30 00:47:06  
Local clock offset: 14.444 ms  
Remote clock offset: -6.723 ms

# Below is generated by plot.py at 2018-11-30 01:53:23  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 79.19 Mbit/s  
95th percentile per-packet one-way delay: 216.224 ms  
Loss rate: 13.96%  
-- Flow 1:  
Average throughput: 54.26 Mbit/s  
95th percentile per-packet one-way delay: 216.479 ms  
Loss rate: 14.65%  
-- Flow 2:  
Average throughput: 27.84 Mbit/s  
95th percentile per-packet one-way delay: 215.919 ms  
Loss rate: 12.29%  
-- Flow 3:  
Average throughput: 20.39 Mbit/s  
95th percentile per-packet one-way delay: 215.429 ms  
Loss rate: 12.86%

Run 3: Report of Verus — Data Link

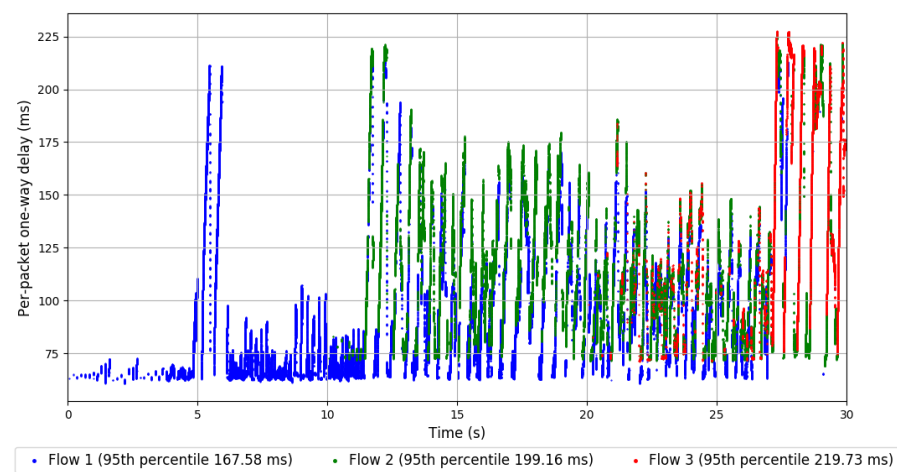
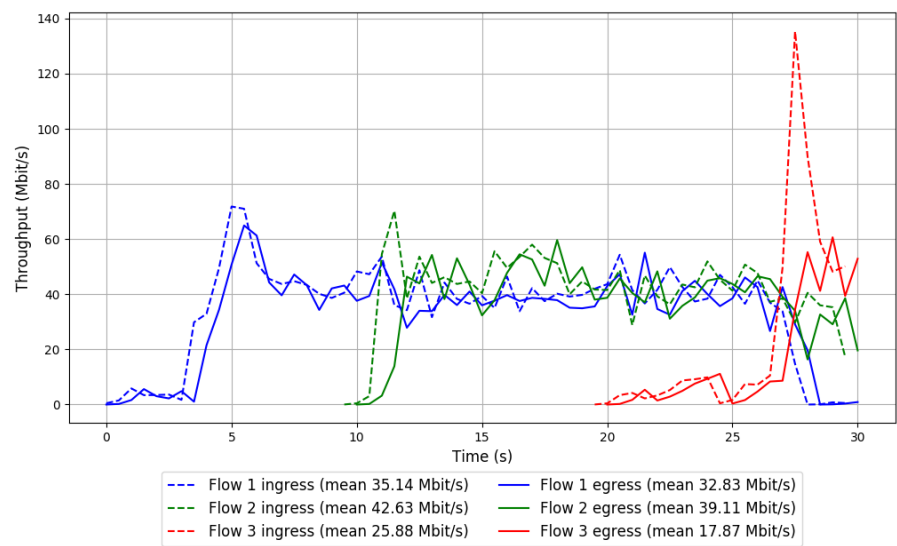


Run 4: Statistics of Verus

Start at: 2018-11-30 01:10:25  
End at: 2018-11-30 01:10:55  
Local clock offset: -2.29 ms  
Remote clock offset: -15.645 ms

# Below is generated by plot.py at 2018-11-30 01:53:24  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 64.53 Mbit/s  
95th percentile per-packet one-way delay: 199.807 ms  
Loss rate: 9.82%  
-- Flow 1:  
Average throughput: 32.83 Mbit/s  
95th percentile per-packet one-way delay: 167.584 ms  
Loss rate: 6.18%  
-- Flow 2:  
Average throughput: 39.11 Mbit/s  
95th percentile per-packet one-way delay: 199.164 ms  
Loss rate: 8.14%  
-- Flow 3:  
Average throughput: 17.87 Mbit/s  
95th percentile per-packet one-way delay: 219.731 ms  
Loss rate: 30.41%

Run 4: Report of Verus — Data Link

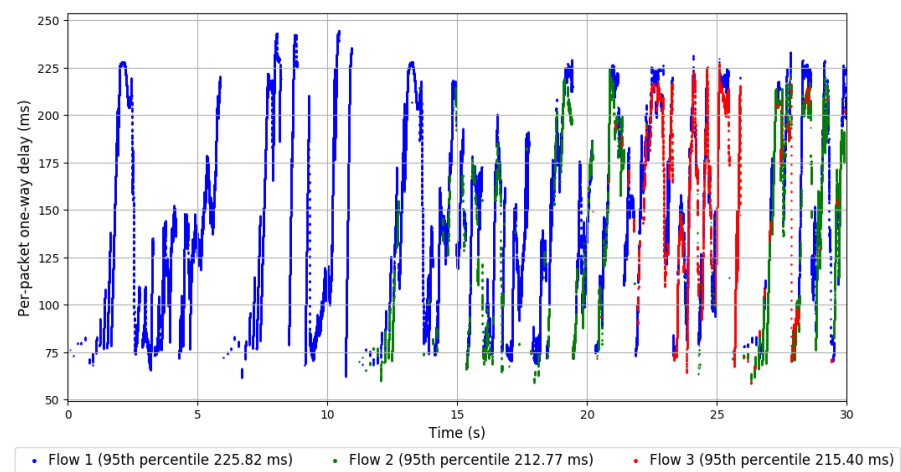
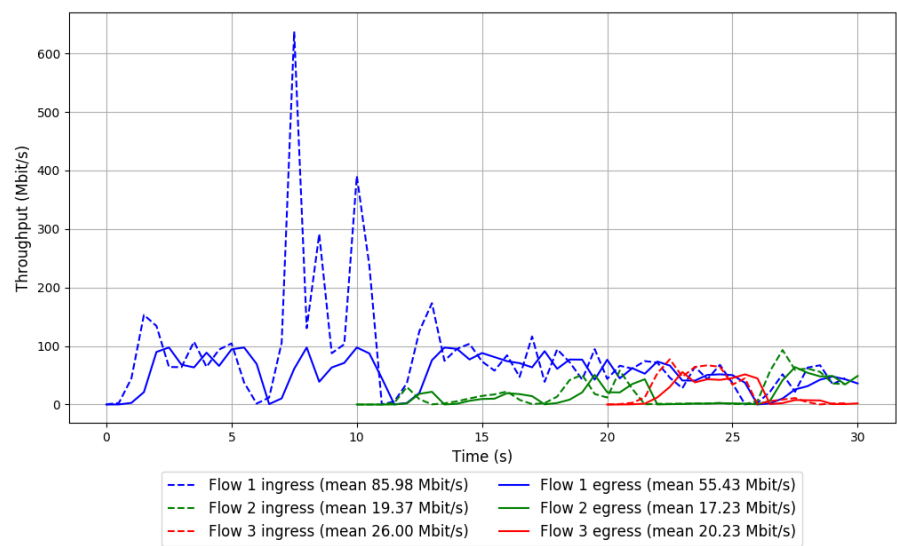


Run 5: Statistics of Verus

Start at: 2018-11-30 01:33:53  
End at: 2018-11-30 01:34:23  
Local clock offset: -2.948 ms  
Remote clock offset: 0.661 ms

```
# Below is generated by plot.py at 2018-11-30 01:53:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 73.40 Mbit/s
95th percentile per-packet one-way delay: 223.452 ms
Loss rate: 31.26%
-- Flow 1:
Average throughput: 55.43 Mbit/s
95th percentile per-packet one-way delay: 225.824 ms
Loss rate: 35.25%
-- Flow 2:
Average throughput: 17.23 Mbit/s
95th percentile per-packet one-way delay: 212.768 ms
Loss rate: 10.78%
-- Flow 3:
Average throughput: 20.23 Mbit/s
95th percentile per-packet one-way delay: 215.402 ms
Loss rate: 21.76%
```

Run 5: Report of Verus — Data Link





Run 1: Statistics of PCC-Vivace

Start at: 2018-11-30 00:09:42

End at: 2018-11-30 00:10:12

Local clock offset: 5.812 ms

Remote clock offset: 0.235 ms

# Below is generated by plot.py at 2018-11-30 01:53:27

# Datalink statistics

-- Total of 3 flows:

Average throughput: 71.59 Mbit/s

95th percentile per-packet one-way delay: 84.625 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 59.72 Mbit/s

95th percentile per-packet one-way delay: 85.592 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 14.61 Mbit/s

95th percentile per-packet one-way delay: 81.477 ms

Loss rate: 0.00%

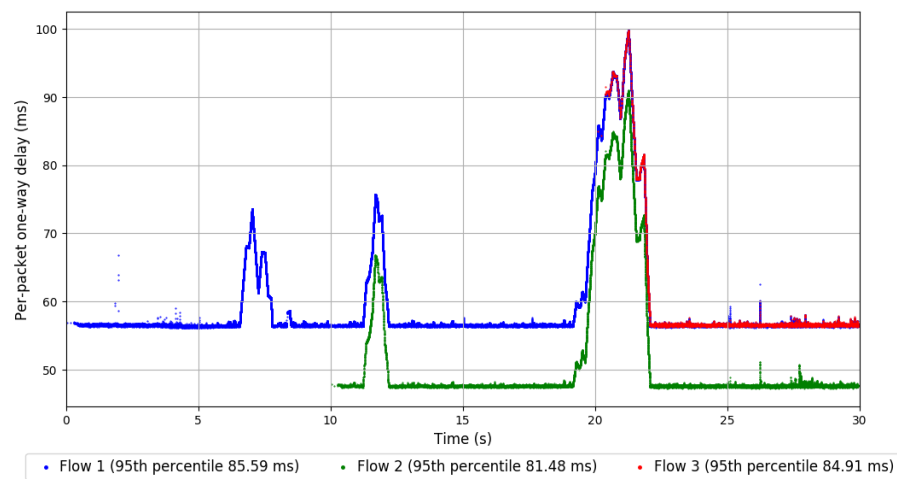
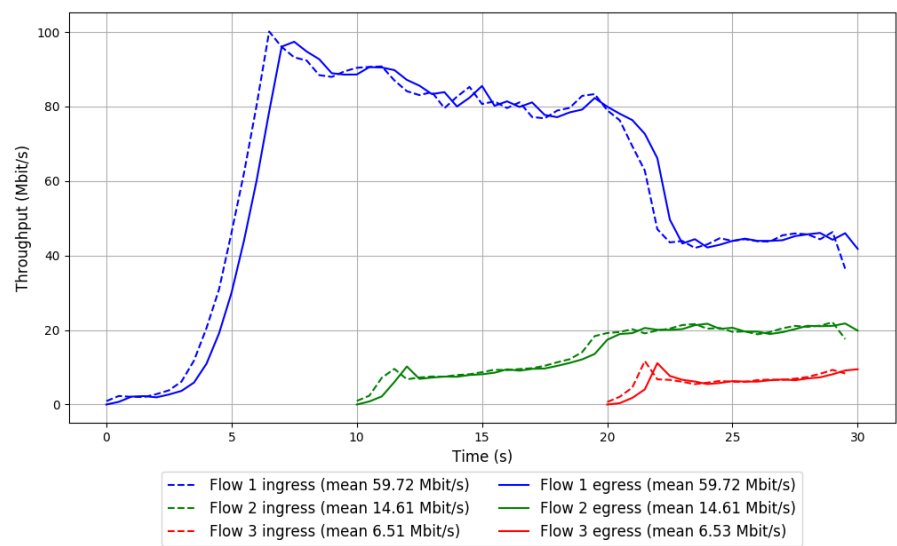
-- Flow 3:

Average throughput: 6.53 Mbit/s

95th percentile per-packet one-way delay: 84.913 ms

Loss rate: 0.00%

Run 1: Report of PCC-Vivace — Data Link

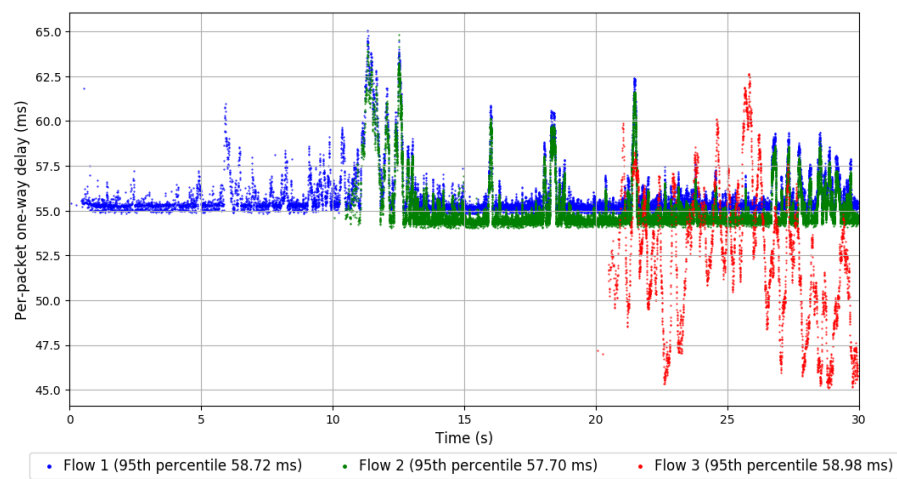
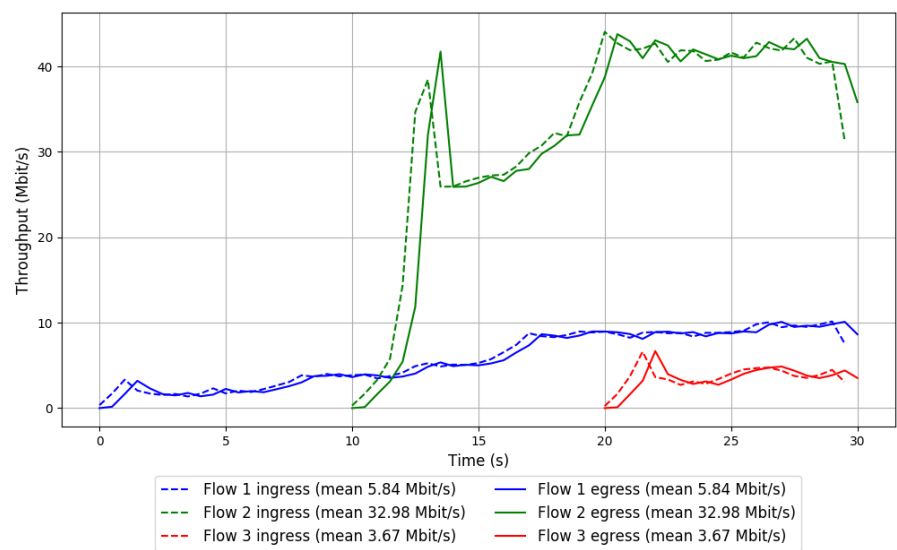


Run 2: Statistics of PCC-Vivace

Start at: 2018-11-30 00:34:48  
End at: 2018-11-30 00:35:18  
Local clock offset: 15.687 ms  
Remote clock offset: -1.104 ms

# Below is generated by plot.py at 2018-11-30 01:53:27  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 28.99 Mbit/s  
95th percentile per-packet one-way delay: 58.003 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 5.84 Mbit/s  
95th percentile per-packet one-way delay: 58.718 ms  
Loss rate: 0.00%  
-- Flow 2:  
Average throughput: 32.98 Mbit/s  
95th percentile per-packet one-way delay: 57.705 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 3.67 Mbit/s  
95th percentile per-packet one-way delay: 58.977 ms  
Loss rate: 0.00%

Run 2: Report of PCC-Vivace — Data Link

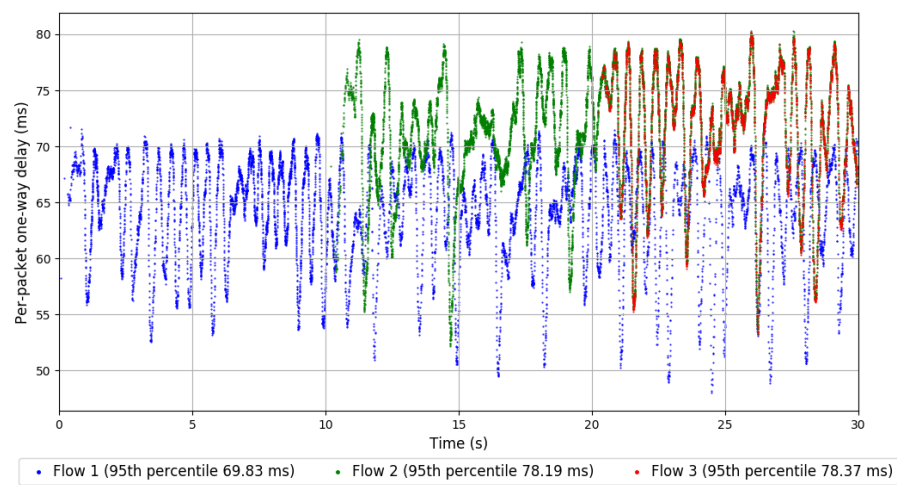
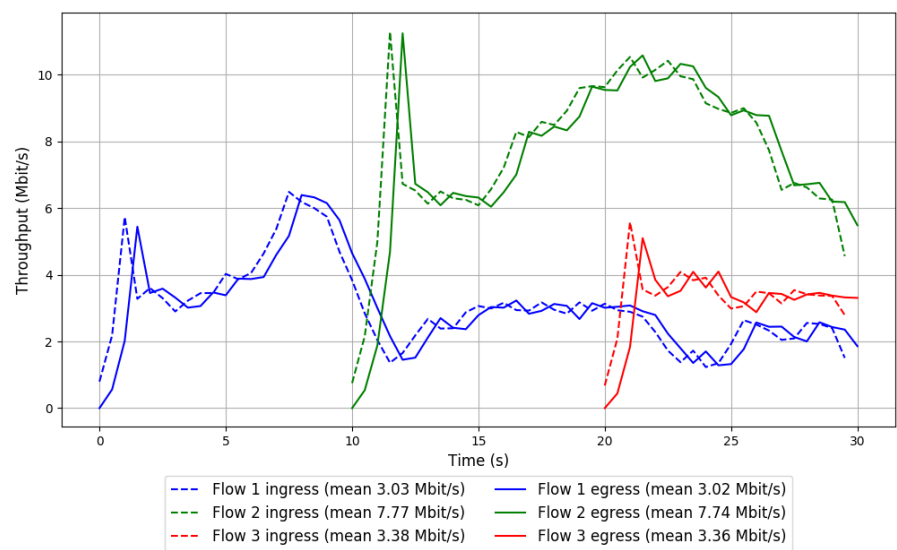


Run 3: Statistics of PCC-Vivace

Start at: 2018-11-30 00:58:21  
End at: 2018-11-30 00:58:51  
Local clock offset: 1.946 ms  
Remote clock offset: -8.712 ms

# Below is generated by plot.py at 2018-11-30 01:53:27  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 9.28 Mbit/s  
95th percentile per-packet one-way delay: 77.823 ms  
Loss rate: 0.42%  
-- Flow 1:  
Average throughput: 3.02 Mbit/s  
95th percentile per-packet one-way delay: 69.834 ms  
Loss rate: 0.47%  
-- Flow 2:  
Average throughput: 7.74 Mbit/s  
95th percentile per-packet one-way delay: 78.187 ms  
Loss rate: 0.33%  
-- Flow 3:  
Average throughput: 3.36 Mbit/s  
95th percentile per-packet one-way delay: 78.371 ms  
Loss rate: 0.68%

Run 3: Report of PCC-Vivace — Data Link

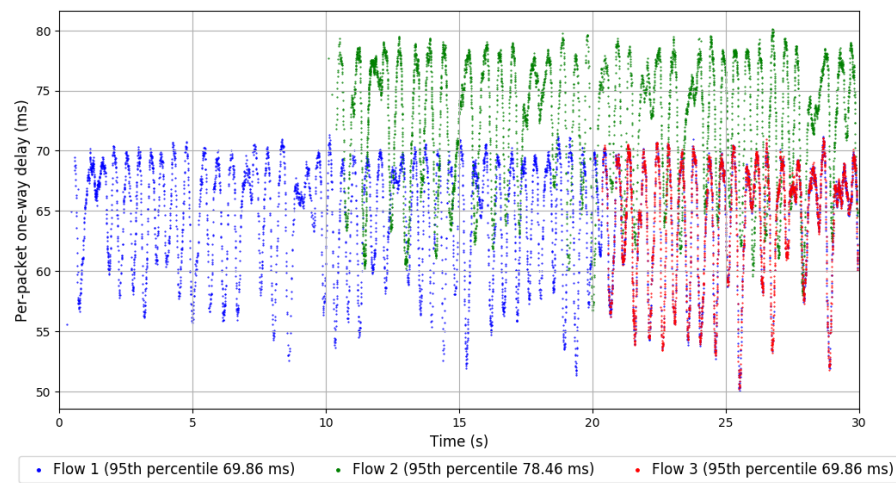
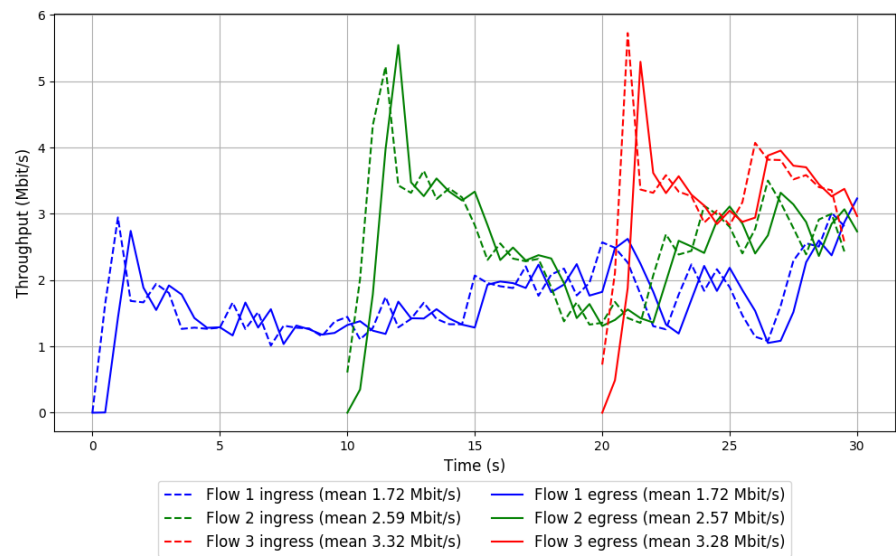


Run 4: Statistics of PCC-Vivace

Start at: 2018-11-30 01:22:14  
End at: 2018-11-30 01:22:44  
Local clock offset: -2.461 ms  
Remote clock offset: -8.015 ms

# Below is generated by plot.py at 2018-11-30 01:53:27  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 4.53 Mbit/s  
95th percentile per-packet one-way delay: 77.834 ms  
Loss rate: 0.85%  
-- Flow 1:  
Average throughput: 1.72 Mbit/s  
95th percentile per-packet one-way delay: 69.858 ms  
Loss rate: 0.68%  
-- Flow 2:  
Average throughput: 2.57 Mbit/s  
95th percentile per-packet one-way delay: 78.461 ms  
Loss rate: 0.70%  
-- Flow 3:  
Average throughput: 3.28 Mbit/s  
95th percentile per-packet one-way delay: 69.855 ms  
Loss rate: 1.35%

Run 4: Report of PCC-Vivace — Data Link



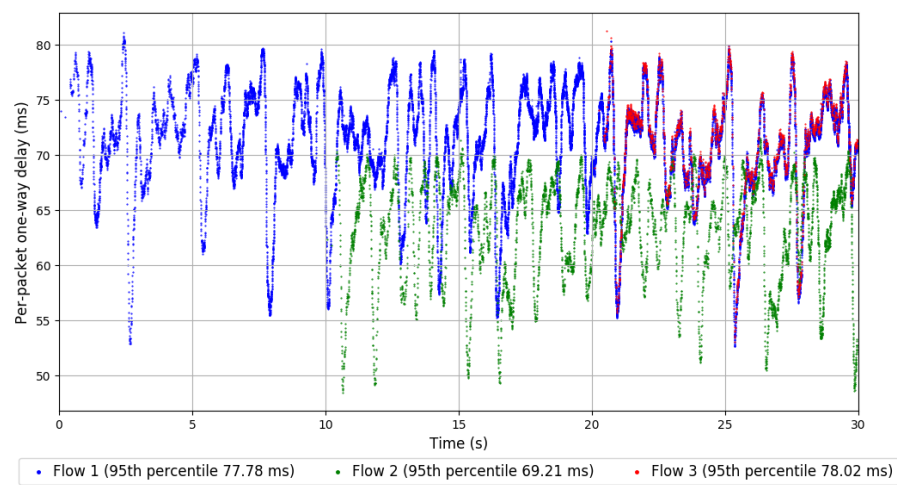
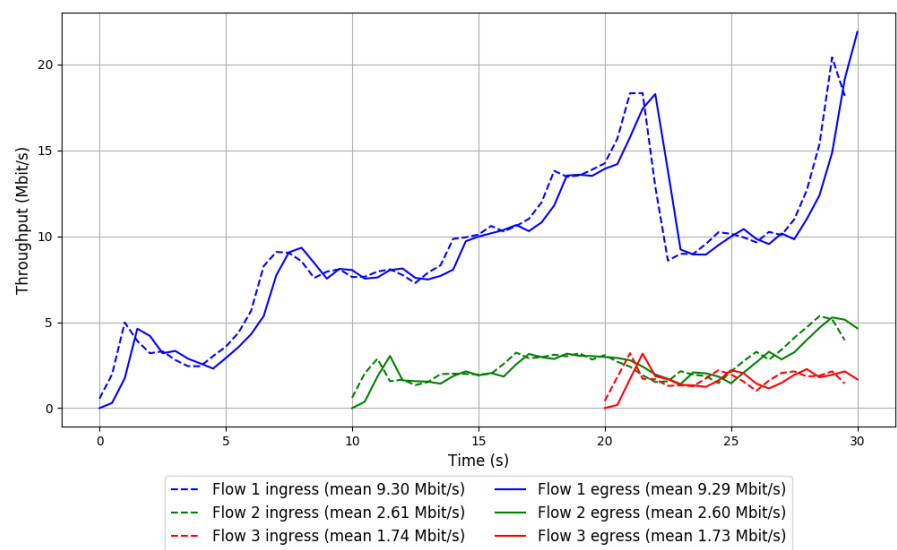


Run 5: Statistics of PCC-Vivace

Start at: 2018-11-30 01:45:49  
End at: 2018-11-30 01:46:19  
Local clock offset: -3.731 ms  
Remote clock offset: -0.162 ms

# Below is generated by plot.py at 2018-11-30 01:53:27  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 11.59 Mbit/s  
95th percentile per-packet one-way delay: 77.616 ms  
Loss rate: 0.15%  
-- Flow 1:  
Average throughput: 9.29 Mbit/s  
95th percentile per-packet one-way delay: 77.782 ms  
Loss rate: 0.12%  
-- Flow 2:  
Average throughput: 2.60 Mbit/s  
95th percentile per-packet one-way delay: 69.209 ms  
Loss rate: 0.25%  
-- Flow 3:  
Average throughput: 1.73 Mbit/s  
95th percentile per-packet one-way delay: 78.017 ms  
Loss rate: 0.27%

Run 5: Report of PCC-Vivace — Data Link



Run 1: Statistics of WebRTC media

Start at: 2018-11-30 00:08:29

End at: 2018-11-30 00:08:59

Local clock offset: 5.878 ms

Remote clock offset: 0.952 ms

# Below is generated by plot.py at 2018-11-30 01:53:27

# Datalink statistics

-- Total of 3 flows:

Average throughput: 3.75 Mbit/s

95th percentile per-packet one-way delay: 58.770 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 2.02 Mbit/s

95th percentile per-packet one-way delay: 59.034 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 1.28 Mbit/s

95th percentile per-packet one-way delay: 59.189 ms

Loss rate: 0.00%

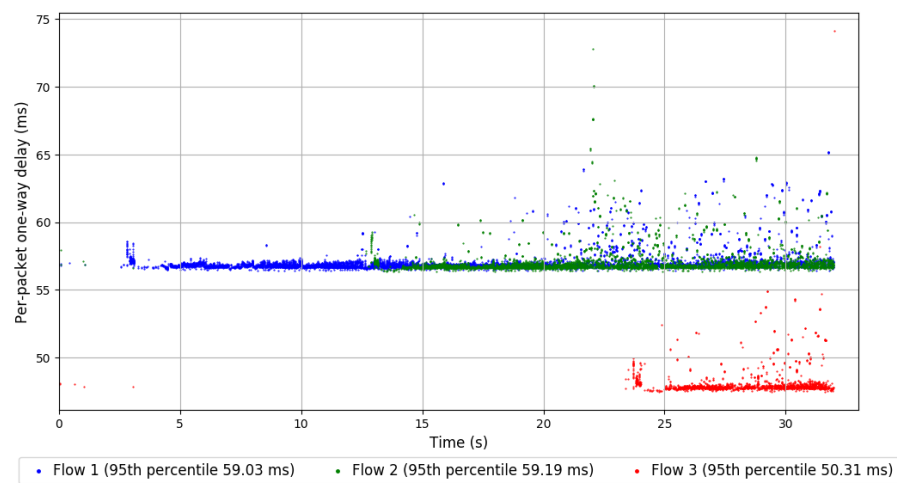
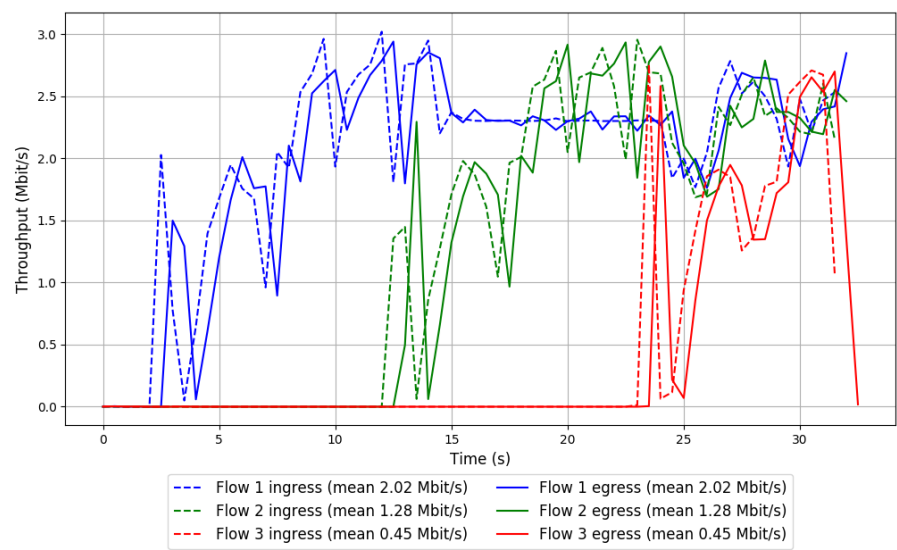
-- Flow 3:

Average throughput: 0.45 Mbit/s

95th percentile per-packet one-way delay: 50.312 ms

Loss rate: 0.00%

Run 1: Report of WebRTC media — Data Link



Run 2: Statistics of WebRTC media

Start at: 2018-11-30 00:33:31

End at: 2018-11-30 00:34:01

Local clock offset: 15.342 ms

Remote clock offset: 1.073 ms

# Below is generated by plot.py at 2018-11-30 01:53:27

# Datalink statistics

-- Total of 3 flows:

Average throughput: 3.30 Mbit/s

95th percentile per-packet one-way delay: 68.019 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 1.78 Mbit/s

95th percentile per-packet one-way delay: 70.593 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 1.16 Mbit/s

95th percentile per-packet one-way delay: 64.438 ms

Loss rate: 0.00%

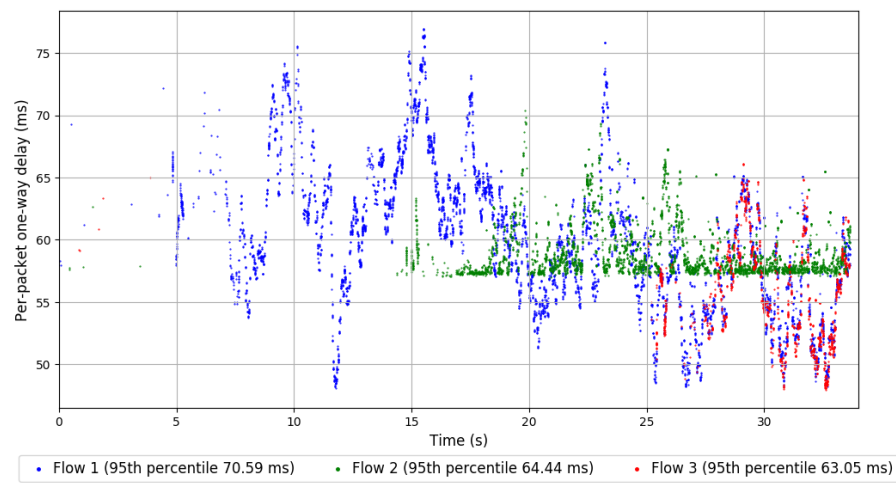
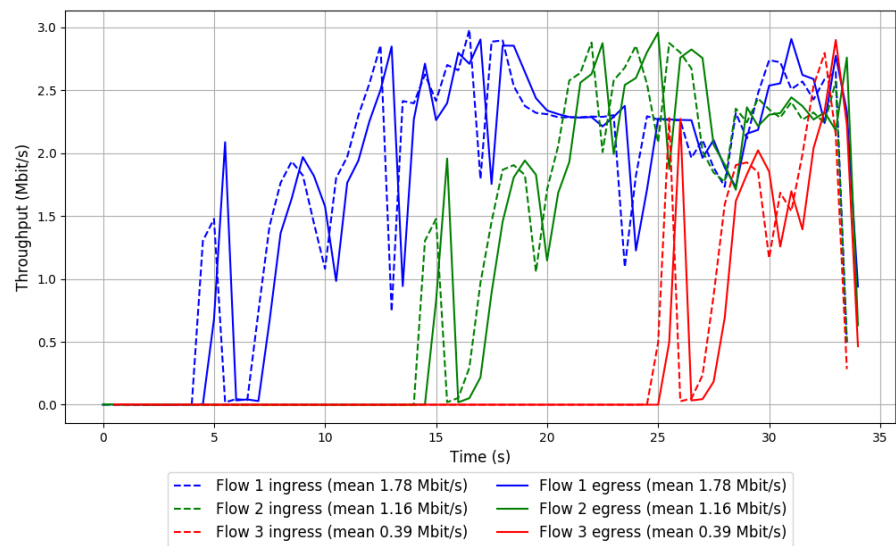
-- Flow 3:

Average throughput: 0.39 Mbit/s

95th percentile per-packet one-way delay: 63.050 ms

Loss rate: 0.00%

Run 2: Report of WebRTC media — Data Link

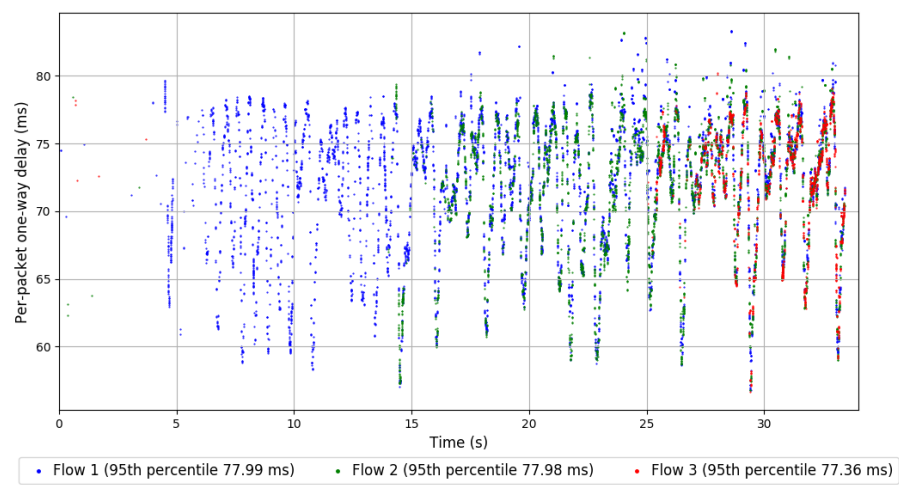
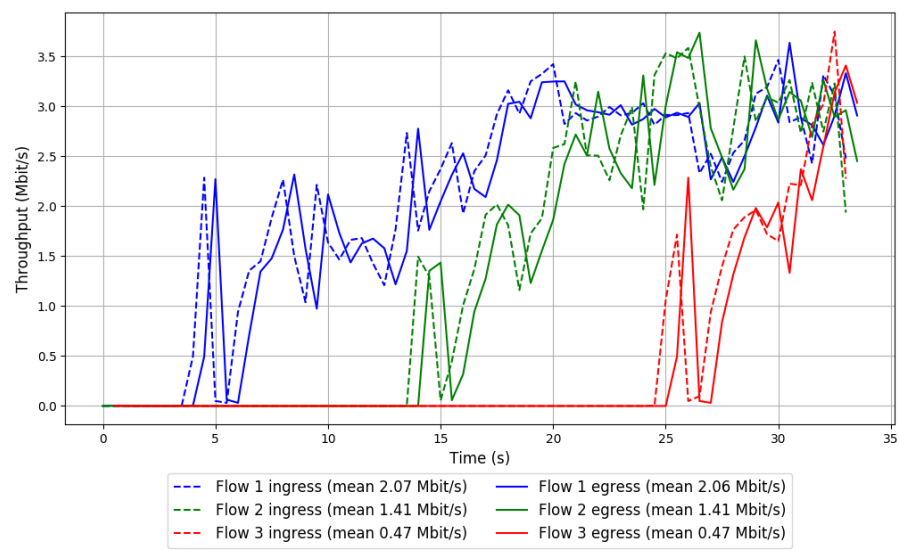


Run 3: Statistics of WebRTC media

Start at: 2018-11-30 00:57:07  
End at: 2018-11-30 00:57:37  
Local clock offset: 2.706 ms  
Remote clock offset: -9.725 ms

# Below is generated by plot.py at 2018-11-30 01:53:27  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 3.91 Mbit/s  
95th percentile per-packet one-way delay: 77.924 ms  
Loss rate: 0.38%  
-- Flow 1:  
Average throughput: 2.06 Mbit/s  
95th percentile per-packet one-way delay: 77.993 ms  
Loss rate: 0.35%  
-- Flow 2:  
Average throughput: 1.41 Mbit/s  
95th percentile per-packet one-way delay: 77.983 ms  
Loss rate: 0.44%  
-- Flow 3:  
Average throughput: 0.47 Mbit/s  
95th percentile per-packet one-way delay: 77.363 ms  
Loss rate: 0.30%

Run 3: Report of WebRTC media — Data Link



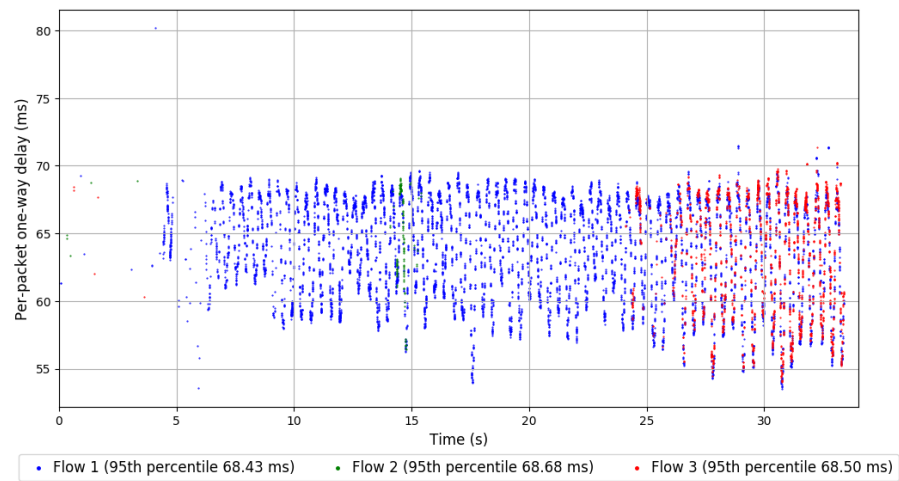
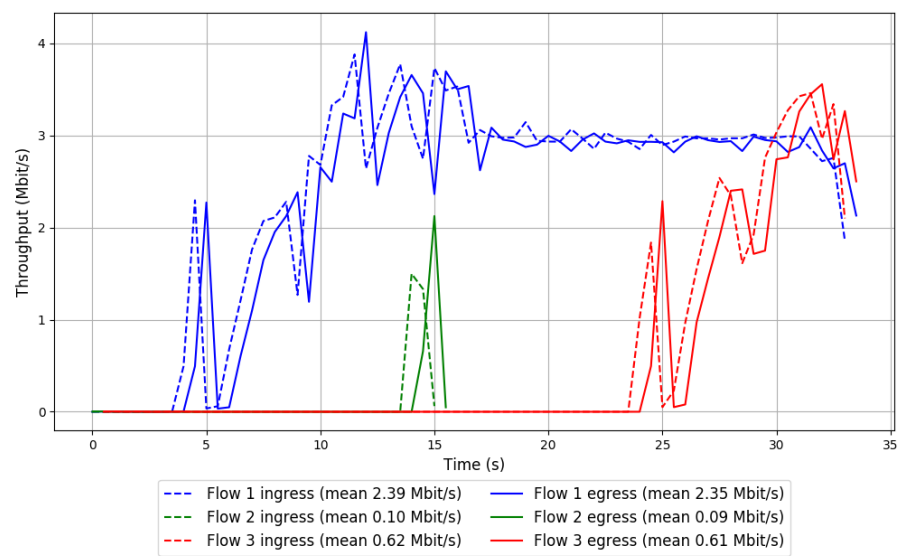


Run 4: Statistics of WebRTC media

Start at: 2018-11-30 01:21:00  
End at: 2018-11-30 01:21:30  
Local clock offset: -2.636 ms  
Remote clock offset: -11.406 ms

# Below is generated by plot.py at 2018-11-30 01:53:27  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 2.99 Mbit/s  
95th percentile per-packet one-way delay: 68.466 ms  
Loss rate: 1.63%  
-- Flow 1:  
Average throughput: 2.35 Mbit/s  
95th percentile per-packet one-way delay: 68.434 ms  
Loss rate: 1.58%  
-- Flow 2:  
Average throughput: 0.09 Mbit/s  
95th percentile per-packet one-way delay: 68.681 ms  
Loss rate: 2.10%  
-- Flow 3:  
Average throughput: 0.61 Mbit/s  
95th percentile per-packet one-way delay: 68.498 ms  
Loss rate: 1.77%

Run 4: Report of WebRTC media — Data Link



Run 5: Statistics of WebRTC media

Start at: 2018-11-30 01:44:34

End at: 2018-11-30 01:45:04

Local clock offset: -3.961 ms

Remote clock offset: 0.201 ms

# Below is generated by plot.py at 2018-11-30 01:53:27

# Datalink statistics

-- Total of 3 flows:

Average throughput: 3.35 Mbit/s

95th percentile per-packet one-way delay: 78.822 ms

Loss rate: 0.19%

-- Flow 1:

Average throughput: 2.06 Mbit/s

95th percentile per-packet one-way delay: 78.690 ms

Loss rate: 0.18%

-- Flow 2:

Average throughput: 0.96 Mbit/s

95th percentile per-packet one-way delay: 78.944 ms

Loss rate: 0.14%

-- Flow 3:

Average throughput: 0.35 Mbit/s

95th percentile per-packet one-way delay: 78.862 ms

Loss rate: 0.38%

Run 5: Report of WebRTC media — Data Link

