

## Pantheon Report

Generated at 2018-10-02 12:08:32 (UTC).

Data path: AWS Brazil 2 on **ens5** (*local*) → Colombia on **p4p1** (*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 **gps.ntp.br** and have been applied to correct the timestamps in logs.

### System info:

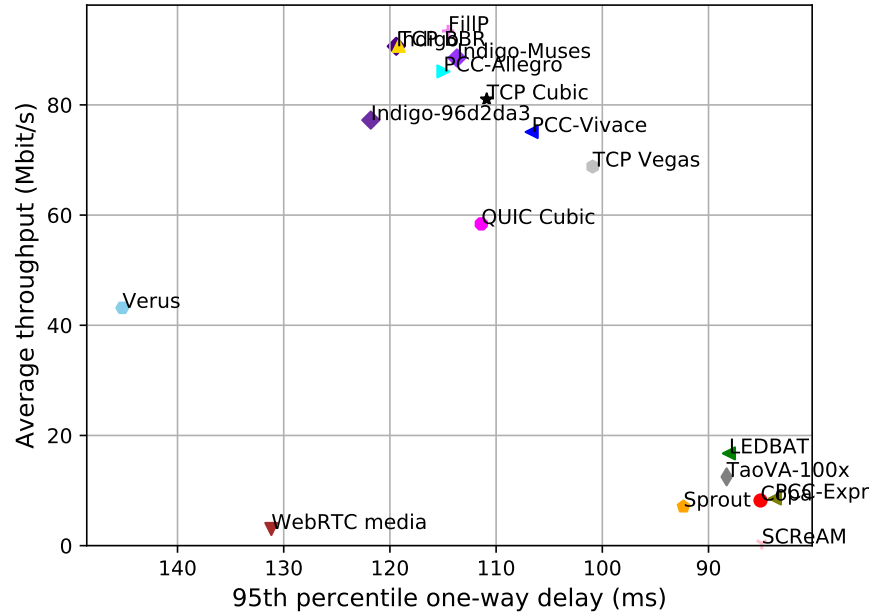
```
Linux 4.15.0-1021-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
```

### Git summary:

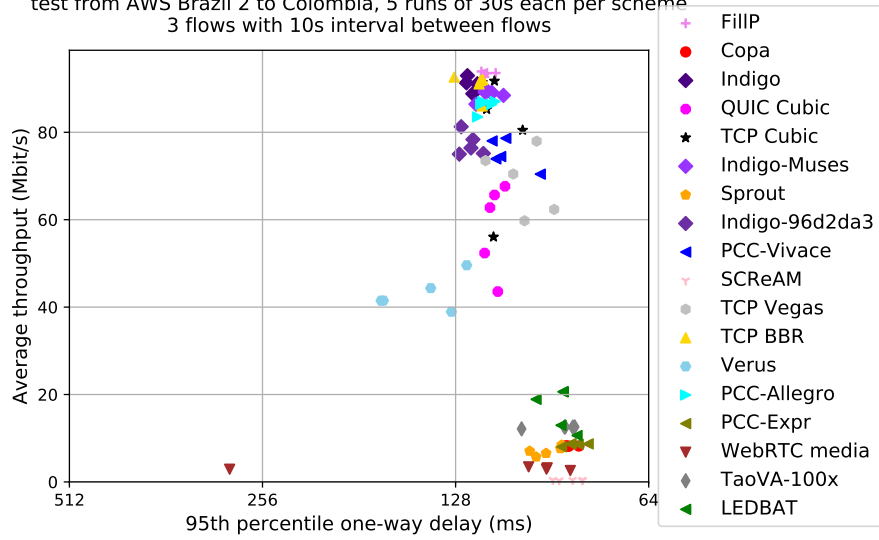
```
branch: muses @ 2e19c0464530faa92c63f8217c9971438a26a3be
third_party/fillp @ 5332fc9127c63565e13f4933b336c02d1aabdac6
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/indigo-96d2da3 @ 8413272d46f8aa0bcb967ed7048b6a8f994abb95
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 Brazil 2 to Colombia, 5 runs of 30s each per scheme  
 3 flows with 10s interval between flows (mean of all runs by scheme)



test from AWS Brazil 2 to Colombia, 5 runs of 30s each per scheme  
 3 flows with 10s interval between flows



scheme	# runs	mean avg tput (Mbit/s)			mean 95th-%ile delay (ms)			mean loss rate (%)		
		flow 1	flow 2	flow 3	flow 1	flow 2	flow 3	flow 1	flow 2	flow 3
TCP BBR	5	56.90	36.14	29.53	114.64	114.58	490.96	13.93	20.53	31.28
Copa	5	0.00	10.67	3.29	85.33	84.94	84.04	98.58	73.05	80.23
TCP Cubic	5	52.79	29.06	26.62	108.59	112.86	112.41	2.34	0.85	1.08
FillP	5	56.08	40.84	30.78	114.16	113.49	113.62	14.91	26.22	29.28
Indigo	5	62.85	30.56	23.57	114.09	116.01	120.78	8.11	21.67	47.12
Indigo-96d2da3	5	47.44	34.13	22.53	120.11	122.66	119.75	57.19	59.26	60.66
LEDBAT	5	10.34	7.83	3.63	87.74	86.41	86.60	0.19	0.26	0.44
Indigo-Muses	5	69.39	21.33	15.27	113.56	115.29	108.80	3.30	1.34	1.33
PCC-Allegro	5	77.52	8.89	8.00	114.93	116.99	114.49	3.36	5.96	8.67
PCC-Expr	5	0.01	8.48	8.82	84.24	83.39	83.41	85.71	59.49	43.02
QUIC Cubic	5	37.44	23.78	15.78	109.67	113.72	106.89	1.20	1.90	3.20
SCReAM	5	0.19	0.21	0.22	82.25	83.19	81.60	0.35	0.17	0.00
Sprout	5	3.44	3.87	3.24	92.89	89.54	90.93	0.19	0.25	0.64
TaoVA-100x	5	6.80	6.44	4.22	93.06	84.89	89.57	45.55	72.55	75.00
TCP Vegas	5	40.59	22.11	40.57	99.26	102.17	100.44	1.42	0.87	2.36
Verus	5	27.11	19.00	11.31	136.73	142.78	139.97	50.19	47.66	34.75
PCC-Vivace	5	63.51	13.49	7.91	106.71	105.19	105.84	0.39	0.49	0.58
WebRTC media	5	1.96	0.89	0.19	154.37	142.12	85.41	0.34	0.19	0.09

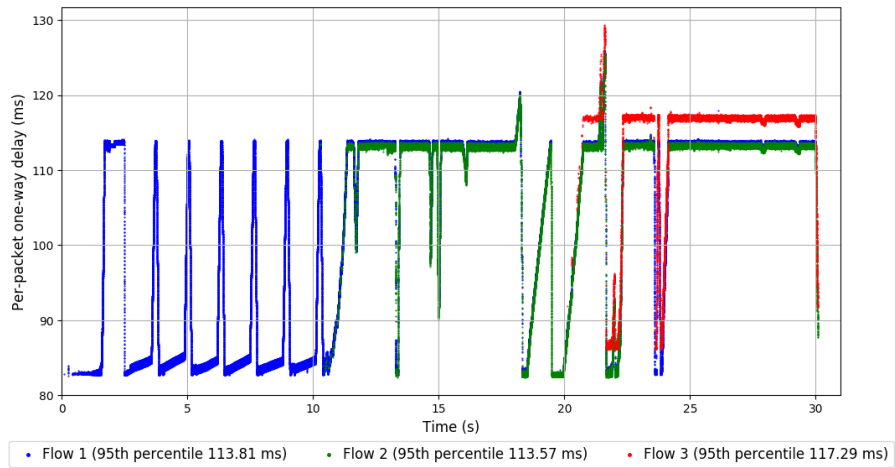
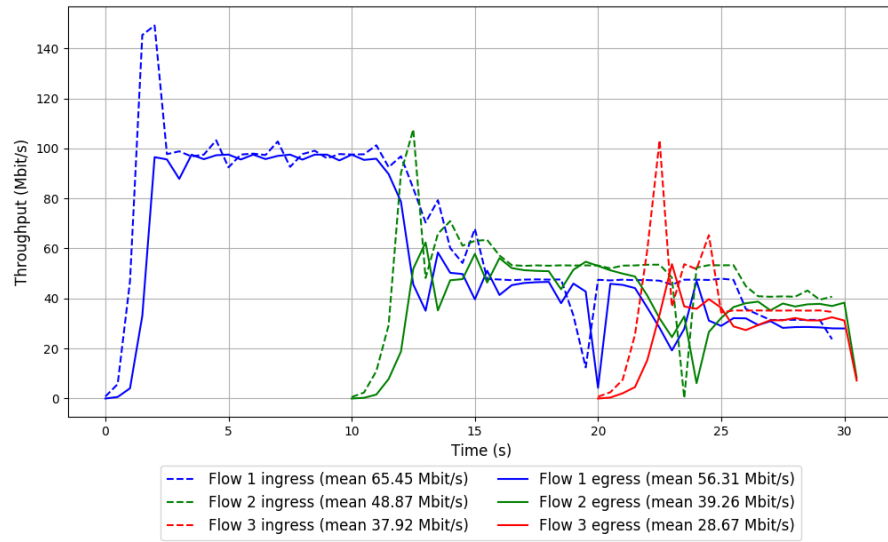


Run 1: Statistics of TCP BBR

Start at: 2018-10-02 10:21:49  
End at: 2018-10-02 10:22:19  
Local clock offset: -5.84 ms  
Remote clock offset: -3.248 ms

# Below is generated by plot.py at 2018-10-02 12:01:28  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 91.84 Mbit/s  
95th percentile per-packet one-way delay: 117.058 ms  
Loss rate: 16.80%  
-- Flow 1:  
Average throughput: 56.31 Mbit/s  
95th percentile per-packet one-way delay: 113.807 ms  
Loss rate: 13.89%  
-- Flow 2:  
Average throughput: 39.26 Mbit/s  
95th percentile per-packet one-way delay: 113.569 ms  
Loss rate: 19.67%  
-- Flow 3:  
Average throughput: 28.67 Mbit/s  
95th percentile per-packet one-way delay: 117.288 ms  
Loss rate: 24.42%

# Run 1: Report of TCP BBR — Data Link

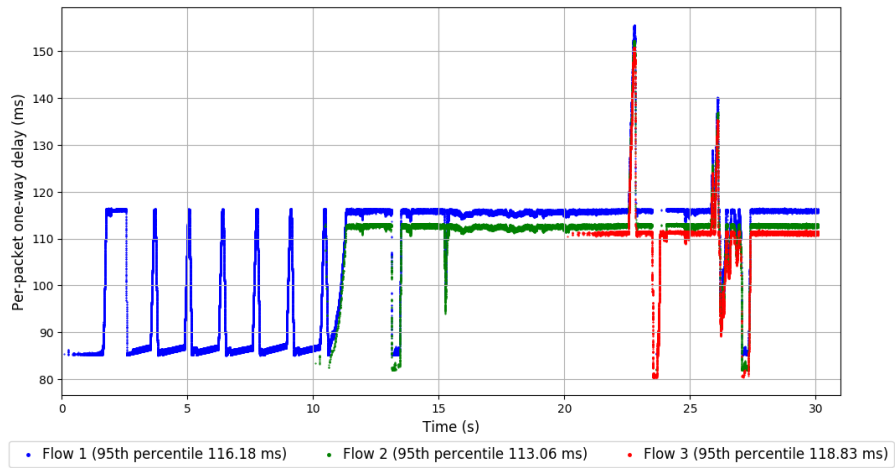
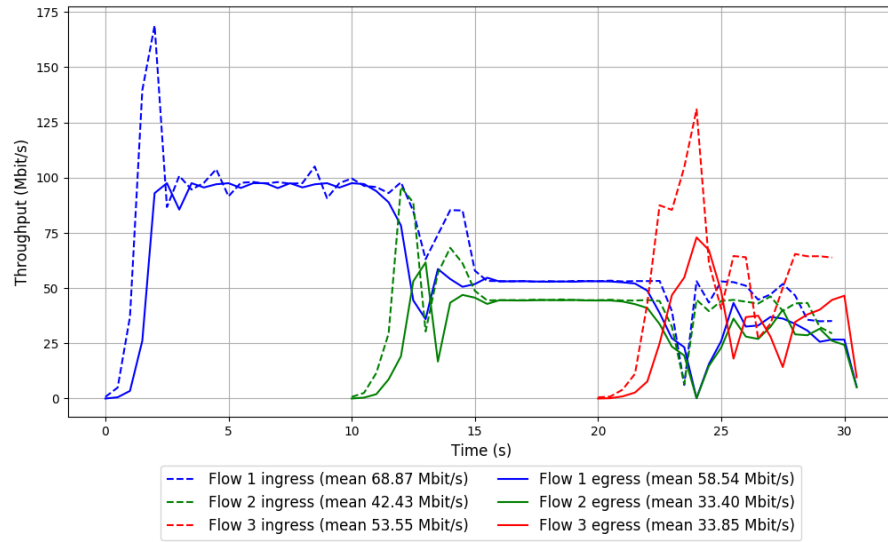


Run 2: Statistics of TCP BBR

Start at: 2018-10-02 10:44:45  
End at: 2018-10-02 10:45:15  
Local clock offset: -4.428 ms  
Remote clock offset: -4.161 ms

# Below is generated by plot.py at 2018-10-02 12:01:30  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 92.05 Mbit/s  
95th percentile per-packet one-way delay: 116.159 ms  
Loss rate: 19.85%  
-- Flow 1:  
Average throughput: 58.54 Mbit/s  
95th percentile per-packet one-way delay: 116.184 ms  
Loss rate: 14.93%  
-- Flow 2:  
Average throughput: 33.40 Mbit/s  
95th percentile per-packet one-way delay: 113.062 ms  
Loss rate: 21.19%  
-- Flow 3:  
Average throughput: 33.85 Mbit/s  
95th percentile per-packet one-way delay: 118.828 ms  
Loss rate: 36.77%

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



Run 3: Statistics of TCP BBR

Start at: 2018-10-02 11:07:33

End at: 2018-10-02 11:08:03

Local clock offset: -4.999 ms

Remote clock offset: 2.184 ms

# Below is generated by plot.py at 2018-10-02 12:01:31

# Datalink statistics

-- Total of 3 flows:

Average throughput: 92.63 Mbit/s

95th percentile per-packet one-way delay: 128.631 ms

Loss rate: 19.87%

-- Flow 1:

Average throughput: 59.97 Mbit/s

95th percentile per-packet one-way delay: 116.994 ms

Loss rate: 14.92%

-- Flow 2:

Average throughput: 34.67 Mbit/s

95th percentile per-packet one-way delay: 116.571 ms

Loss rate: 24.15%

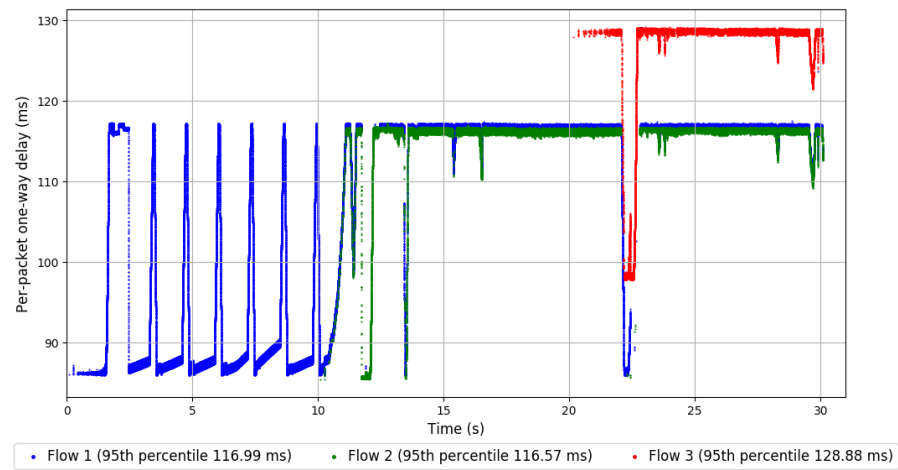
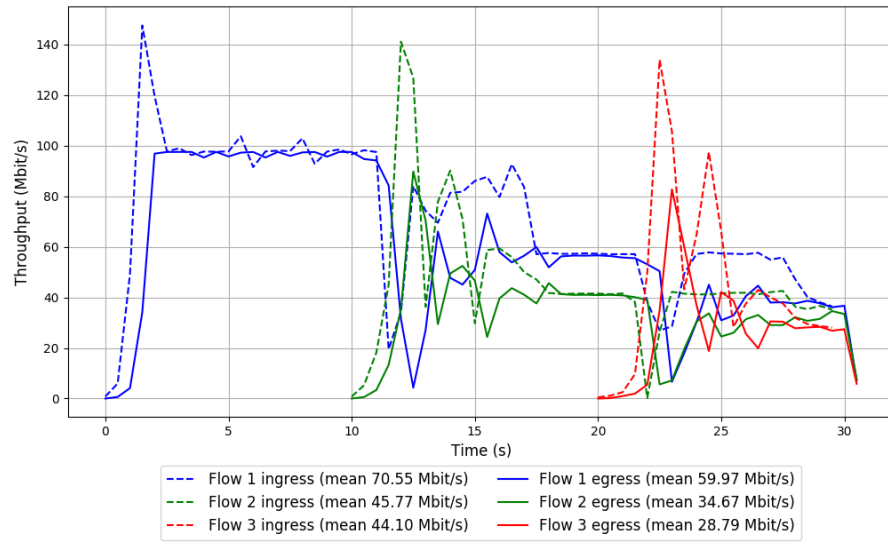
-- Flow 3:

Average throughput: 28.79 Mbit/s

95th percentile per-packet one-way delay: 128.880 ms

Loss rate: 34.82%

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



Run 4: Statistics of TCP BBR

Start at: 2018-10-02 11:30:14

End at: 2018-10-02 11:30:44

Local clock offset: -6.188 ms

Remote clock offset: 1.466 ms

# Below is generated by plot.py at 2018-10-02 12:01:31

# Datalink statistics

-- Total of 3 flows:

Average throughput: 86.03 Mbit/s

95th percentile per-packet one-way delay: 116.338 ms

Loss rate: 16.96%

-- Flow 1:

Average throughput: 53.84 Mbit/s

95th percentile per-packet one-way delay: 115.823 ms

Loss rate: 12.58%

-- Flow 2:

Average throughput: 34.02 Mbit/s

95th percentile per-packet one-way delay: 116.394 ms

Loss rate: 18.23%

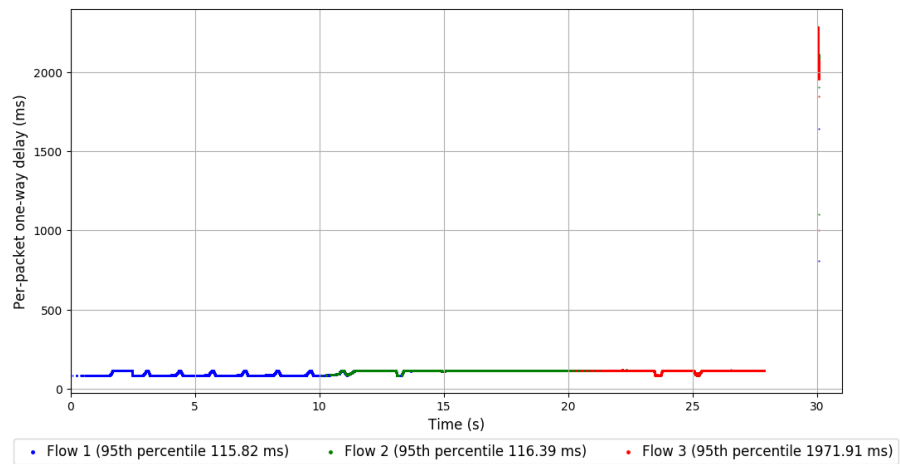
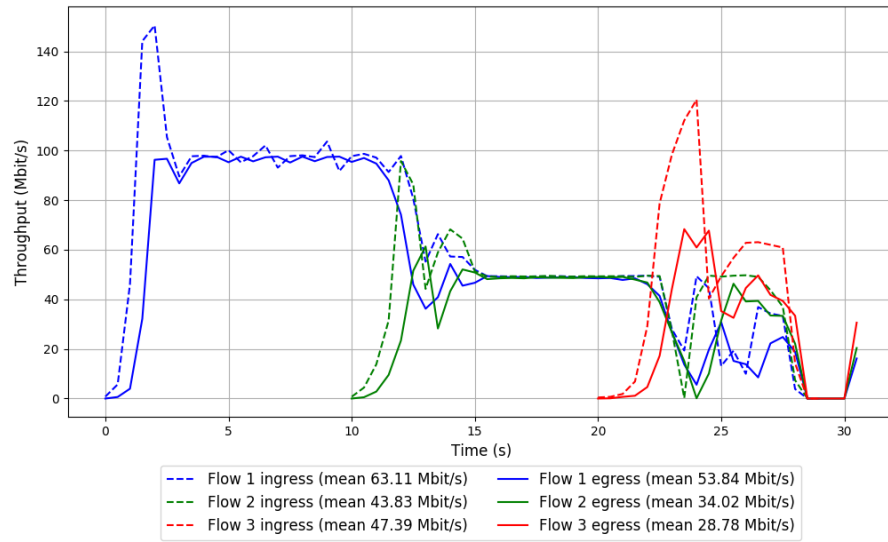
-- Flow 3:

Average throughput: 28.78 Mbit/s

95th percentile per-packet one-way delay: 1971.907 ms

Loss rate: 33.32%

# Run 4: Report of TCP BBR — Data Link



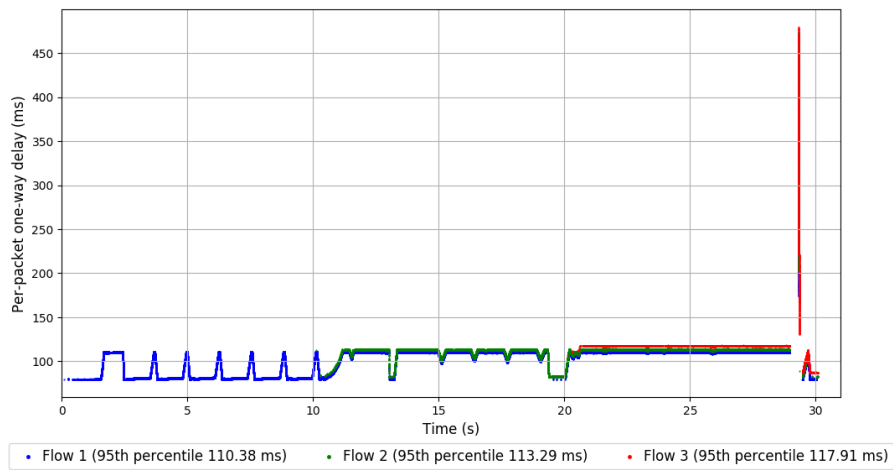
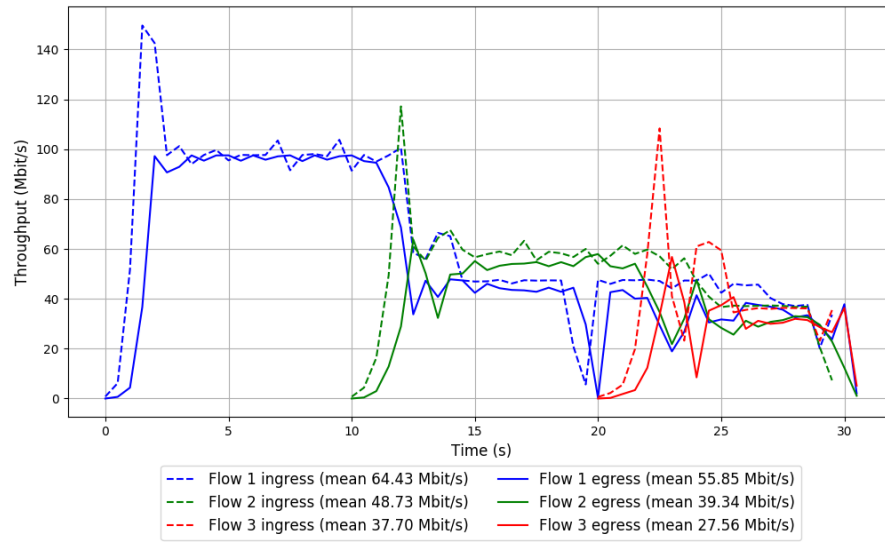


Run 5: Statistics of TCP BBR

Start at: 2018-10-02 11:53:13  
End at: 2018-10-02 11:53:43  
Local clock offset: -6.549 ms  
Remote clock offset: -3.085 ms

# Below is generated by plot.py at 2018-10-02 12:01:31  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 91.07 Mbit/s  
95th percentile per-packet one-way delay: 117.632 ms  
Loss rate: 16.71%  
-- Flow 1:  
Average throughput: 55.85 Mbit/s  
95th percentile per-packet one-way delay: 110.380 ms  
Loss rate: 13.33%  
-- Flow 2:  
Average throughput: 39.34 Mbit/s  
95th percentile per-packet one-way delay: 113.294 ms  
Loss rate: 19.39%  
-- Flow 3:  
Average throughput: 27.56 Mbit/s  
95th percentile per-packet one-way delay: 117.906 ms  
Loss rate: 27.08%

# Run 5: Report of TCP BBR — Data Link

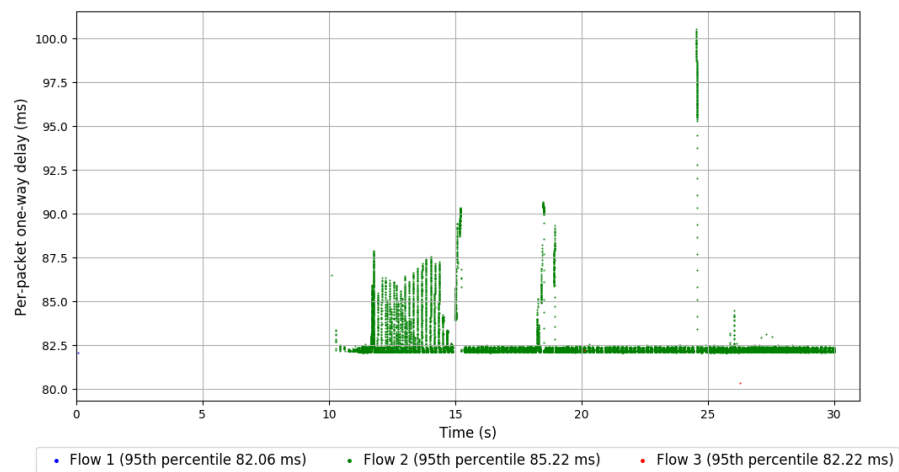
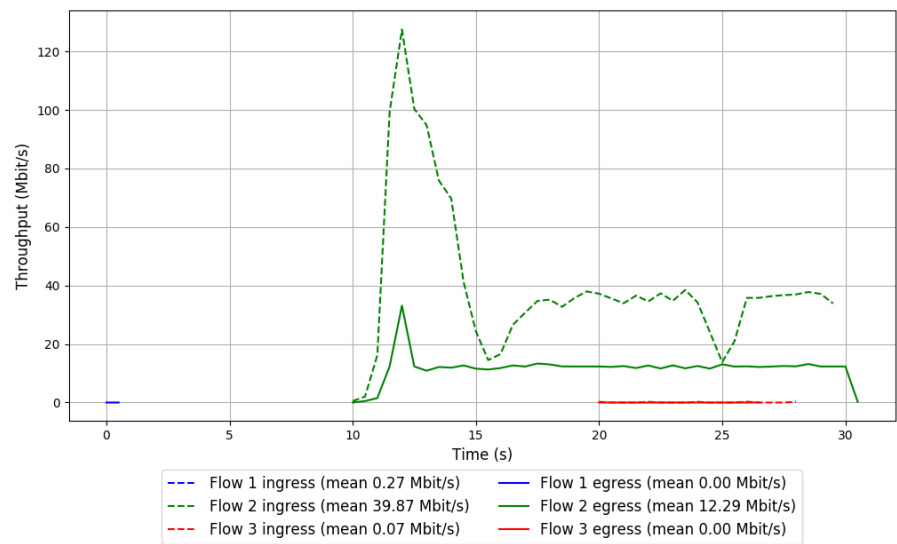


Run 1: Statistics of Copa

Start at: 2018-10-02 10:07:52  
End at: 2018-10-02 10:08:22  
Local clock offset: -6.821 ms  
Remote clock offset: -3.381 ms

# Below is generated by plot.py at 2018-10-02 12:01:31  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 8.18 Mbit/s  
95th percentile per-packet one-way delay: 85.220 ms  
Loss rate: 69.21%  
-- Flow 1:  
Average throughput: 0.00 Mbit/s  
95th percentile per-packet one-way delay: 82.064 ms  
Loss rate: 97.92%  
-- Flow 2:  
Average throughput: 12.29 Mbit/s  
95th percentile per-packet one-way delay: 85.220 ms  
Loss rate: 69.18%  
-- Flow 3:  
Average throughput: 0.00 Mbit/s  
95th percentile per-packet one-way delay: 82.221 ms  
Loss rate: 97.92%

Run 1: Report of Copa — Data Link



Run 2: Statistics of Copa

Start at: 2018-10-02 10:30:38

End at: 2018-10-02 10:31:08

Local clock offset: -4.986 ms

Remote clock offset: 0.943 ms

# Below is generated by plot.py at 2018-10-02 12:01:31

# Datalink statistics

-- Total of 3 flows:

Average throughput: 8.15 Mbit/s

95th percentile per-packet one-way delay: 85.813 ms

Loss rate: 76.54%

-- Flow 1:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 87.476 ms

Loss rate: 98.80%

-- Flow 2:

Average throughput: 9.36 Mbit/s

95th percentile per-packet one-way delay: 85.889 ms

Loss rate: 74.67%

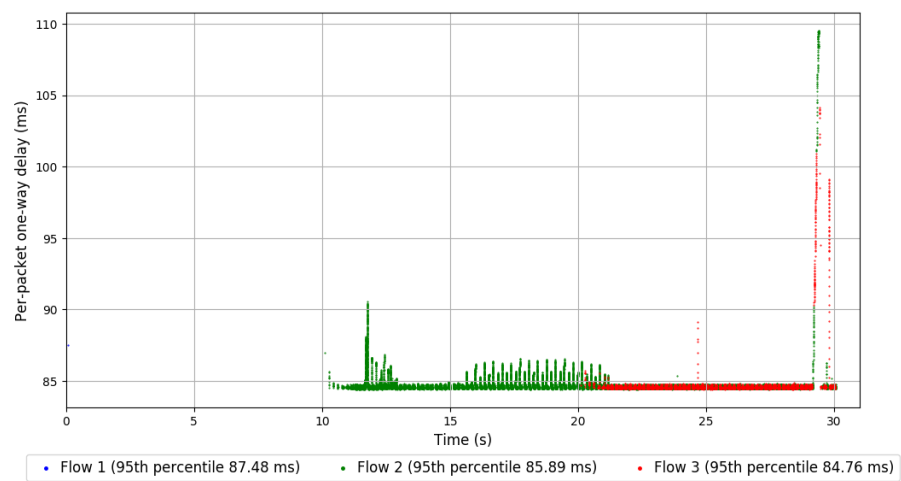
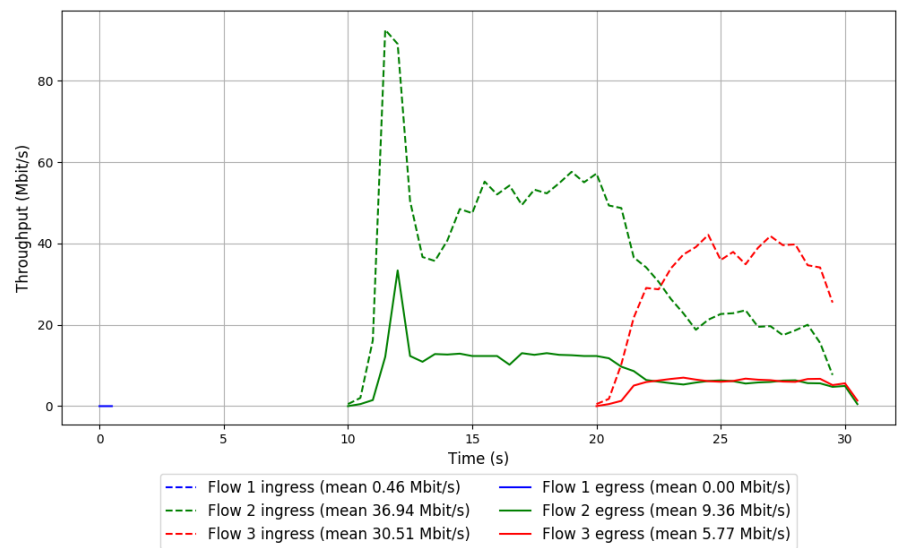
-- Flow 3:

Average throughput: 5.77 Mbit/s

95th percentile per-packet one-way delay: 84.759 ms

Loss rate: 81.10%

Run 2: Report of Copa — Data Link

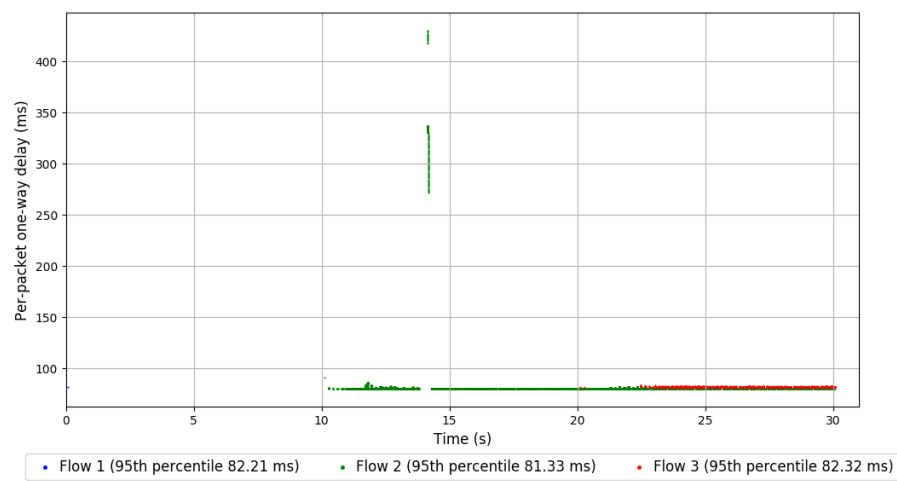
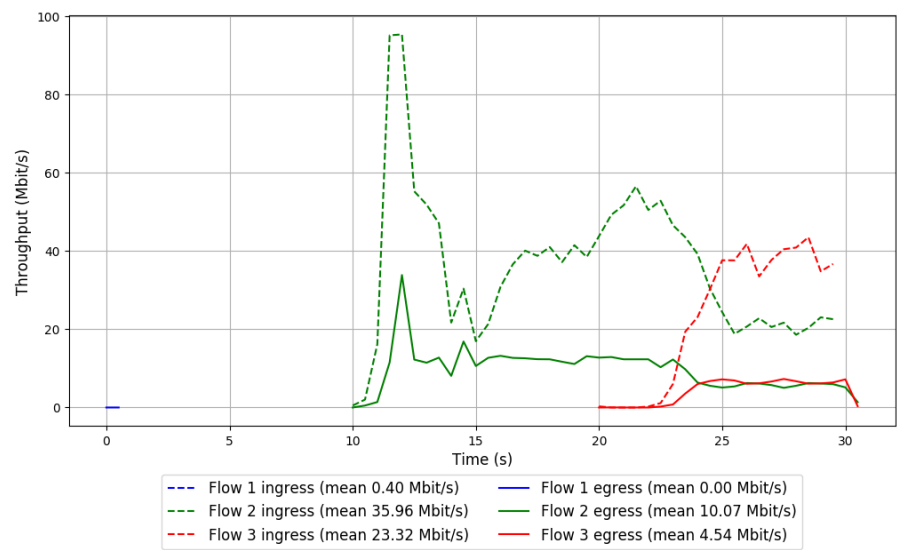


Run 3: Statistics of Copa

Start at: 2018-10-02 10:53:32  
End at: 2018-10-02 10:54:02  
Local clock offset: -4.748 ms  
Remote clock offset: -3.051 ms

# Below is generated by plot.py at 2018-10-02 12:01:31  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 8.21 Mbit/s  
95th percentile per-packet one-way delay: 82.230 ms  
Loss rate: 74.09%  
-- Flow 1:  
Average throughput: 0.00 Mbit/s  
95th percentile per-packet one-way delay: 82.210 ms  
Loss rate: 98.60%  
-- Flow 2:  
Average throughput: 10.07 Mbit/s  
95th percentile per-packet one-way delay: 81.327 ms  
Loss rate: 72.00%  
-- Flow 3:  
Average throughput: 4.54 Mbit/s  
95th percentile per-packet one-way delay: 82.318 ms  
Loss rate: 80.53%

Run 3: Report of Copa — Data Link





Run 4: Statistics of Copa

Start at: 2018-10-02 11:16:21

End at: 2018-10-02 11:16:51

Local clock offset: -4.999 ms

Remote clock offset: 1.39 ms

# Below is generated by plot.py at 2018-10-02 12:01:31

# Datalink statistics

-- Total of 3 flows:

Average throughput: 8.22 Mbit/s

95th percentile per-packet one-way delay: 85.868 ms

Loss rate: 74.92%

-- Flow 1:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 90.528 ms

Loss rate: 98.80%

-- Flow 2:

Average throughput: 11.96 Mbit/s

95th percentile per-packet one-way delay: 85.890 ms

Loss rate: 75.18%

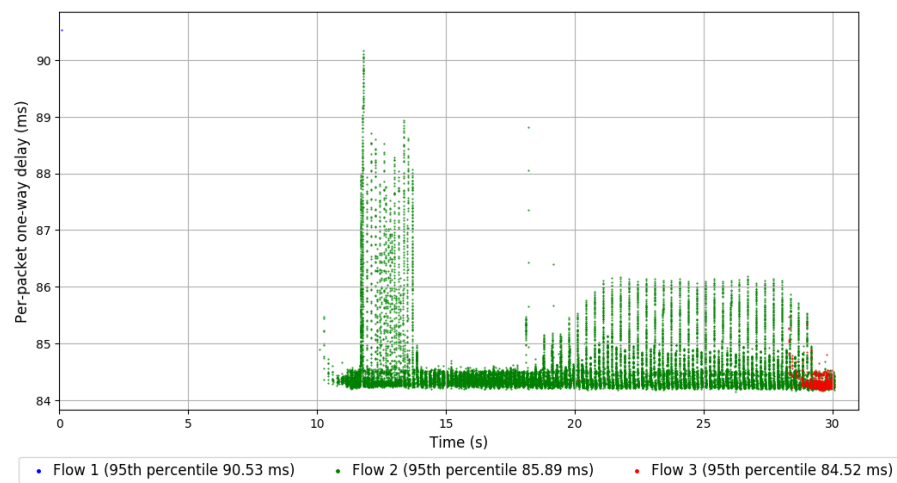
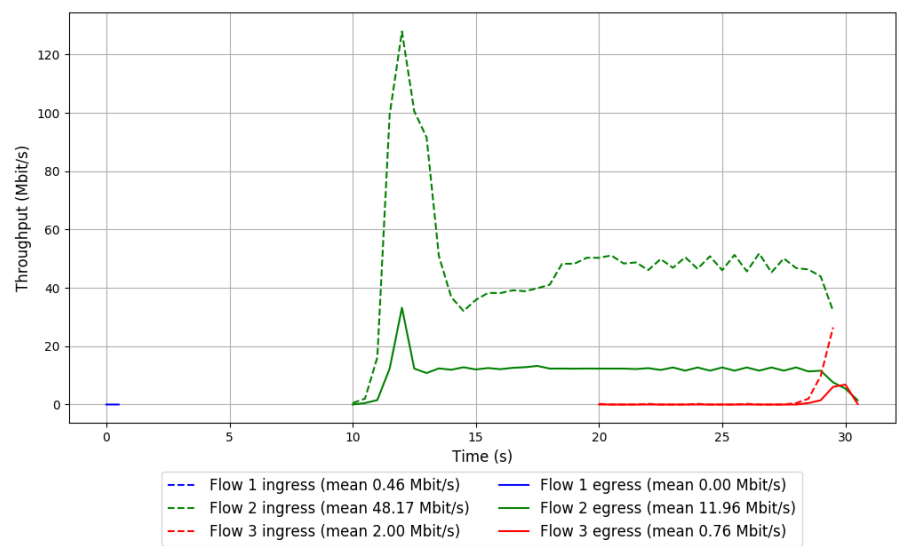
-- Flow 3:

Average throughput: 0.76 Mbit/s

95th percentile per-packet one-way delay: 84.517 ms

Loss rate: 62.12%

Run 4: Report of Copa — Data Link



Run 5: Statistics of Copa

Start at: 2018-10-02 11:39:12

End at: 2018-10-02 11:39:42

Local clock offset: -6.38 ms

Remote clock offset: 1.73 ms

# Below is generated by plot.py at 2018-10-02 12:01:31

# Datalink statistics

-- Total of 3 flows:

Average throughput: 8.22 Mbit/s

95th percentile per-packet one-way delay: 86.381 ms

Loss rate: 75.59%

-- Flow 1:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 84.377 ms

Loss rate: 98.80%

-- Flow 2:

Average throughput: 9.66 Mbit/s

95th percentile per-packet one-way delay: 86.350 ms

Loss rate: 74.23%

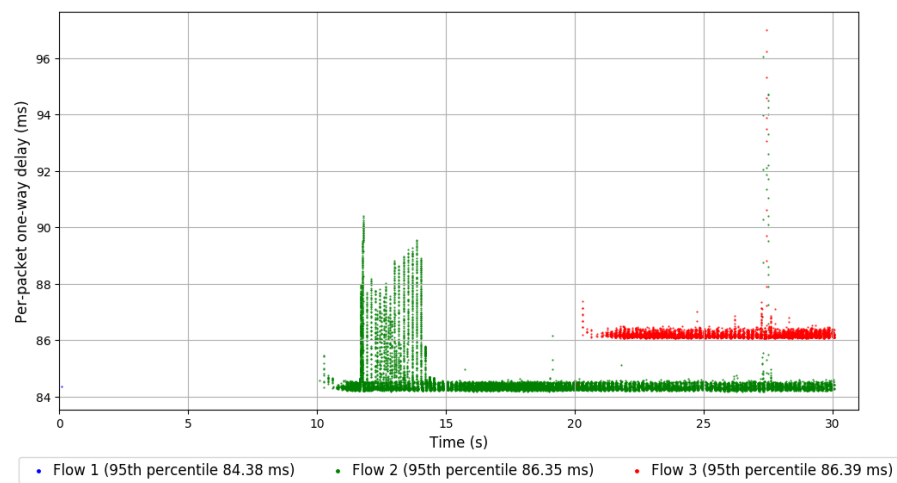
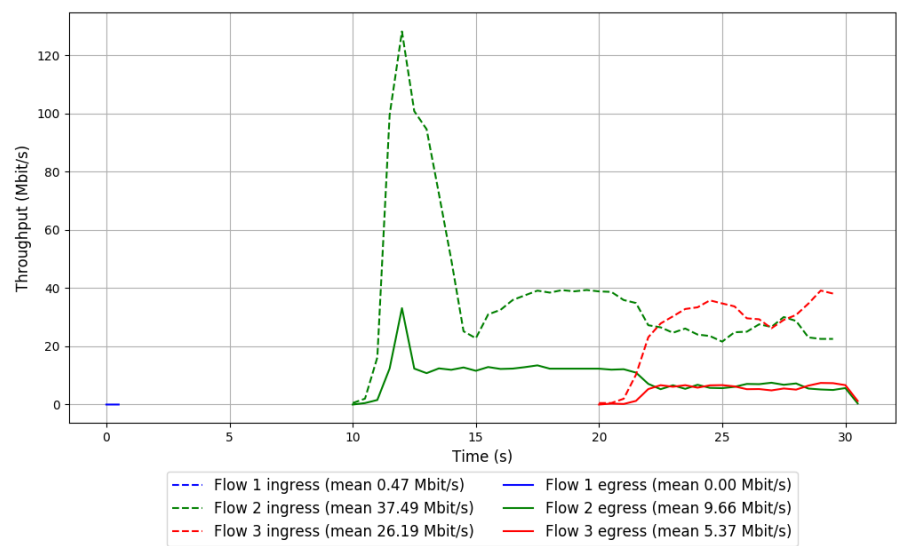
-- Flow 3:

Average throughput: 5.37 Mbit/s

95th percentile per-packet one-way delay: 86.386 ms

Loss rate: 79.49%

Run 5: Report of Copa — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2018-10-02 10:18:01

End at: 2018-10-02 10:18:31

Local clock offset: -6.458 ms

Remote clock offset: 0.655 ms

# Below is generated by plot.py at 2018-10-02 12:01:32

# Datalink statistics

-- Total of 3 flows:

Average throughput: 85.27 Mbit/s

95th percentile per-packet one-way delay: 114.486 ms

Loss rate: 1.68%

-- Flow 1:

Average throughput: 39.67 Mbit/s

95th percentile per-packet one-way delay: 113.544 ms

Loss rate: 2.60%

-- Flow 2:

Average throughput: 61.52 Mbit/s

95th percentile per-packet one-way delay: 114.939 ms

Loss rate: 0.93%

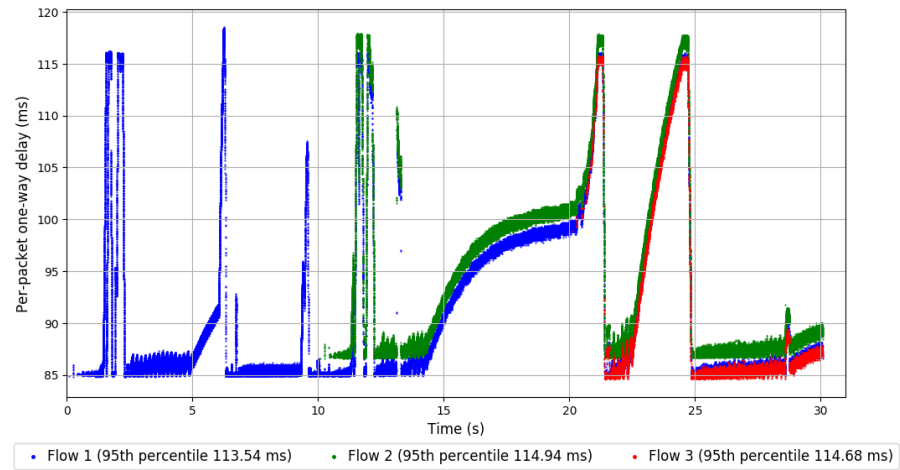
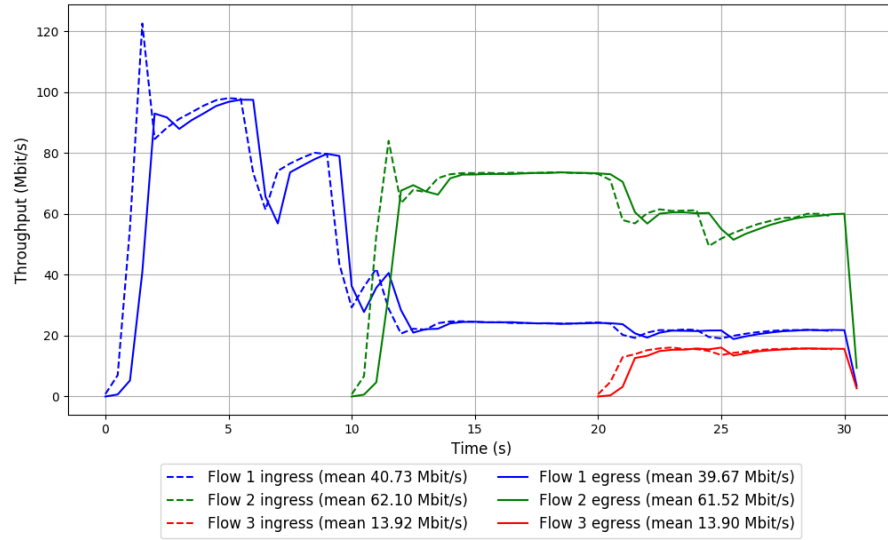
-- Flow 3:

Average throughput: 13.90 Mbit/s

95th percentile per-packet one-way delay: 114.679 ms

Loss rate: 0.22%

# Run 1: Report of TCP Cubic — Data Link

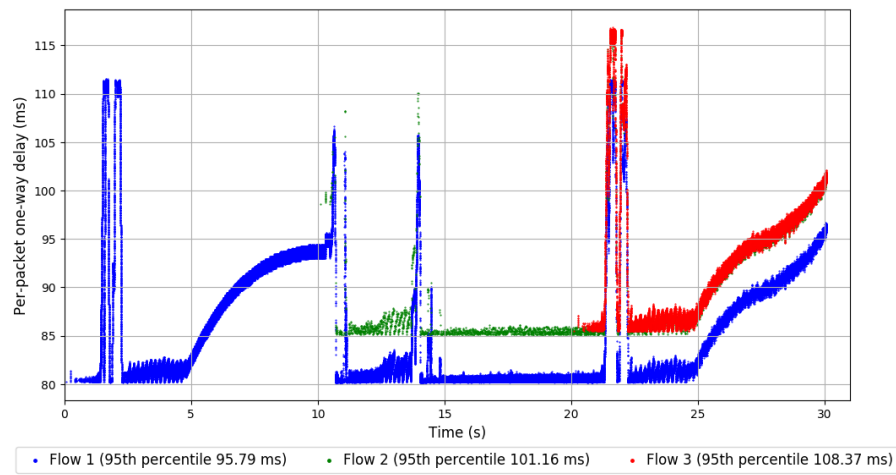
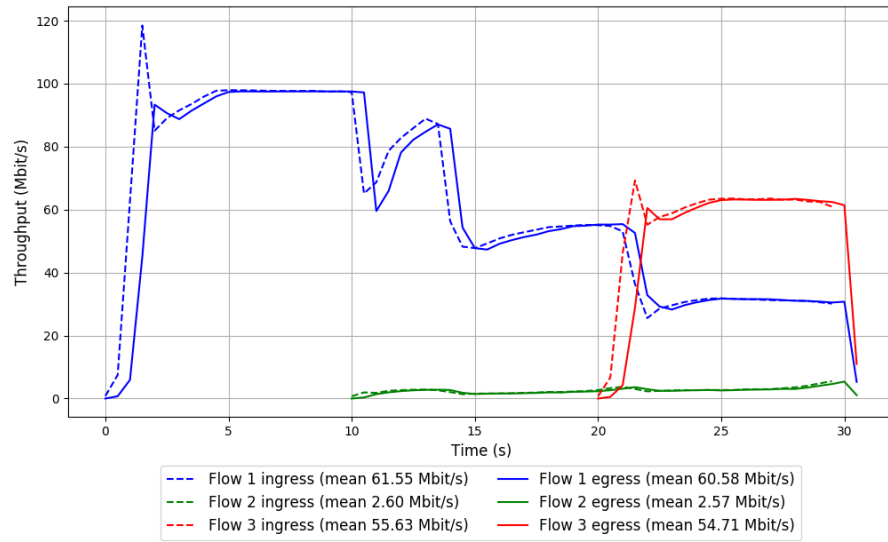


Run 2: Statistics of TCP Cubic

Start at: 2018-10-02 10:40:57  
End at: 2018-10-02 10:41:27  
Local clock offset: -4.525 ms  
Remote clock offset: -4.123 ms

# Below is generated by plot.py at 2018-10-02 12:01:38  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 80.49 Mbit/s  
95th percentile per-packet one-way delay: 100.623 ms  
Loss rate: 1.52%  
-- Flow 1:  
Average throughput: 60.58 Mbit/s  
95th percentile per-packet one-way delay: 95.787 ms  
Loss rate: 1.52%  
-- Flow 2:  
Average throughput: 2.57 Mbit/s  
95th percentile per-packet one-way delay: 101.160 ms  
Loss rate: 1.16%  
-- Flow 3:  
Average throughput: 54.71 Mbit/s  
95th percentile per-packet one-way delay: 108.371 ms  
Loss rate: 1.55%

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



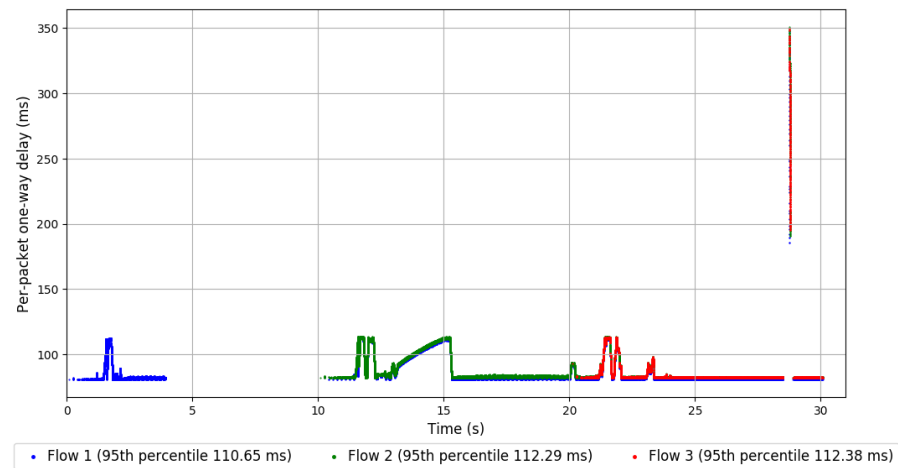
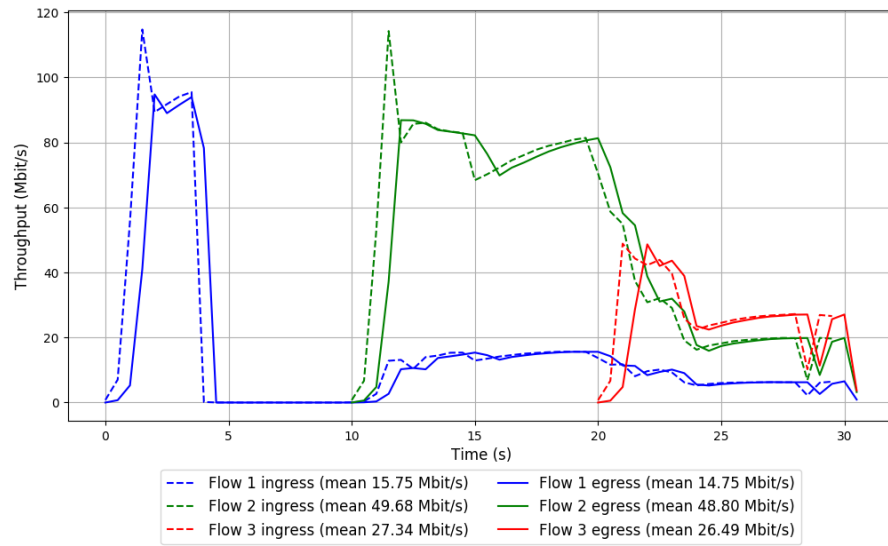


Run 3: Statistics of TCP Cubic

Start at: 2018-10-02 11:03:47  
End at: 2018-10-02 11:04:17  
Local clock offset: -4.941 ms  
Remote clock offset: -2.854 ms

# Below is generated by plot.py at 2018-10-02 12:01:38  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 56.06 Mbit/s  
95th percentile per-packet one-way delay: 111.718 ms  
Loss rate: 3.24%  
-- Flow 1:  
Average throughput: 14.75 Mbit/s  
95th percentile per-packet one-way delay: 110.646 ms  
Loss rate: 6.36%  
-- Flow 2:  
Average throughput: 48.80 Mbit/s  
95th percentile per-packet one-way delay: 112.287 ms  
Loss rate: 1.76%  
-- Flow 3:  
Average throughput: 26.49 Mbit/s  
95th percentile per-packet one-way delay: 112.382 ms  
Loss rate: 3.22%

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



Run 4: Statistics of TCP Cubic

Start at: 2018-10-02 11:26:26

End at: 2018-10-02 11:26:56

Local clock offset: -5.928 ms

Remote clock offset: 2.415 ms

# Below is generated by plot.py at 2018-10-02 12:02:19

# Datalink statistics

-- Total of 3 flows:

Average throughput: 91.44 Mbit/s

95th percentile per-packet one-way delay: 116.275 ms

Loss rate: 0.55%

-- Flow 1:

Average throughput: 74.05 Mbit/s

95th percentile per-packet one-way delay: 111.607 ms

Loss rate: 0.62%

-- Flow 2:

Average throughput: 16.71 Mbit/s

95th percentile per-packet one-way delay: 122.968 ms

Loss rate: 0.20%

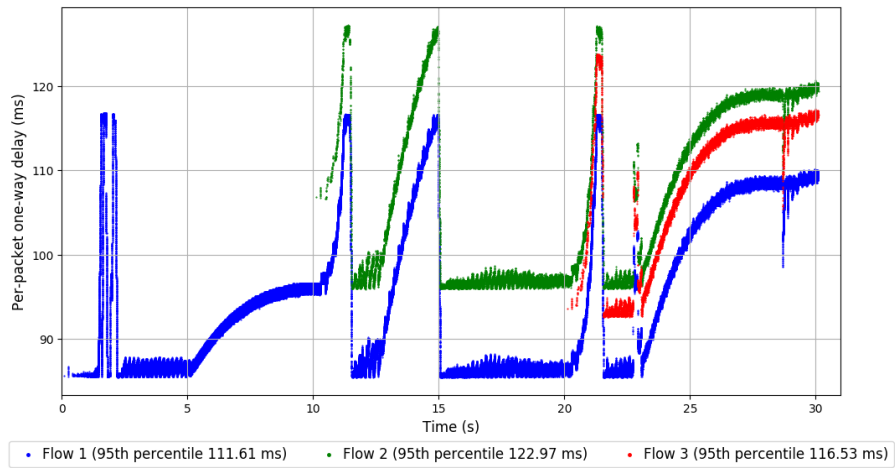
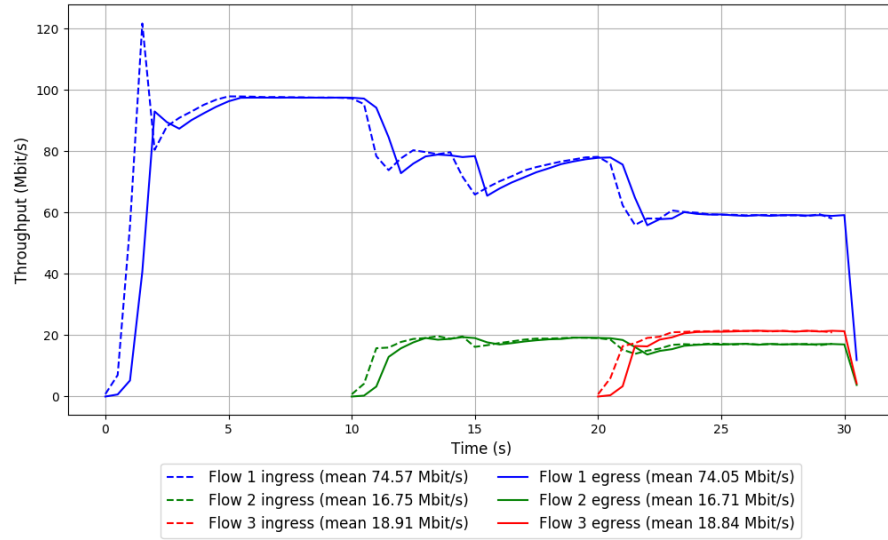
-- Flow 3:

Average throughput: 18.84 Mbit/s

95th percentile per-packet one-way delay: 116.525 ms

Loss rate: 0.25%

# Run 4: Report of TCP Cubic — Data Link

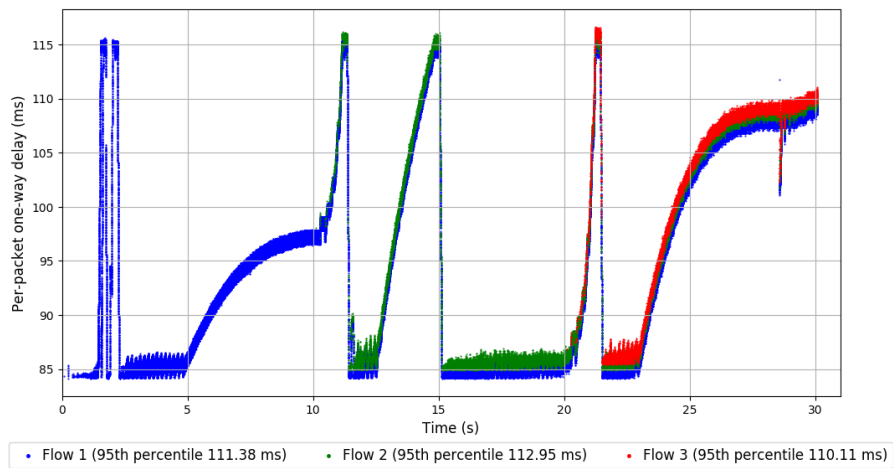
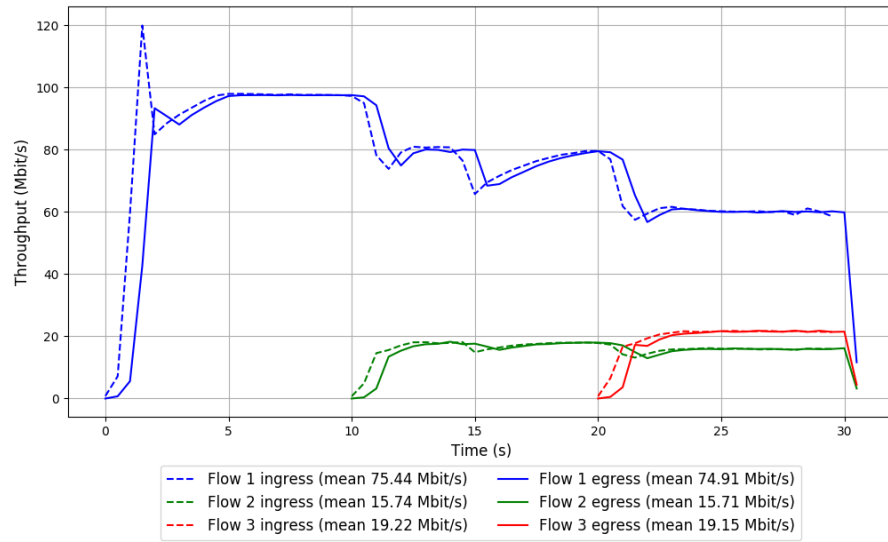


Run 5: Statistics of TCP Cubic

Start at: 2018-10-02 11:49:20  
End at: 2018-10-02 11:49:50  
Local clock offset: -6.494 ms  
Remote clock offset: 0.654 ms

# Below is generated by plot.py at 2018-10-02 12:02:21  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 91.75 Mbit/s  
95th percentile per-packet one-way delay: 111.336 ms  
Loss rate: 0.54%  
-- Flow 1:  
Average throughput: 74.91 Mbit/s  
95th percentile per-packet one-way delay: 111.377 ms  
Loss rate: 0.62%  
-- Flow 2:  
Average throughput: 15.71 Mbit/s  
95th percentile per-packet one-way delay: 112.946 ms  
Loss rate: 0.18%  
-- Flow 3:  
Average throughput: 19.15 Mbit/s  
95th percentile per-packet one-way delay: 110.109 ms  
Loss rate: 0.15%

# Run 5: Report of TCP Cubic — Data Link

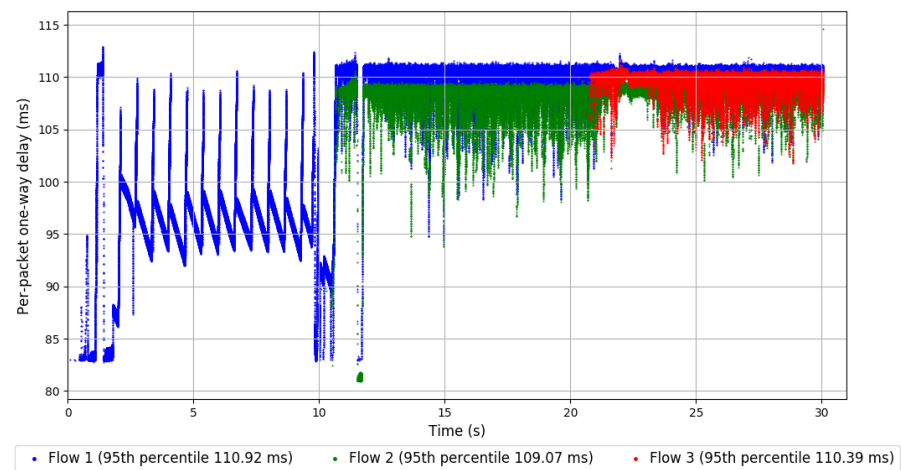
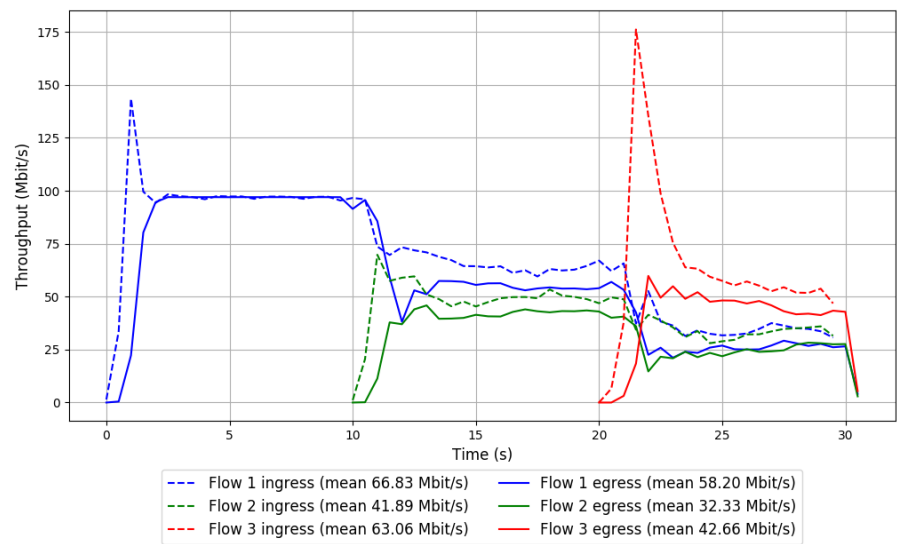


Run 1: Statistics of FillP

Start at: 2018-10-02 10:10:22  
End at: 2018-10-02 10:10:52  
Local clock offset: -6.961 ms  
Remote clock offset: -3.301 ms

# Below is generated by plot.py at 2018-10-02 12:02:52  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 93.57 Mbit/s  
95th percentile per-packet one-way delay: 110.840 ms  
Loss rate: 19.00%  
-- Flow 1:  
Average throughput: 58.20 Mbit/s  
95th percentile per-packet one-way delay: 110.920 ms  
Loss rate: 12.84%  
-- Flow 2:  
Average throughput: 32.33 Mbit/s  
95th percentile per-packet one-way delay: 109.072 ms  
Loss rate: 22.74%  
-- Flow 3:  
Average throughput: 42.66 Mbit/s  
95th percentile per-packet one-way delay: 110.393 ms  
Loss rate: 33.69%

Run 1: Report of FillP — Data Link



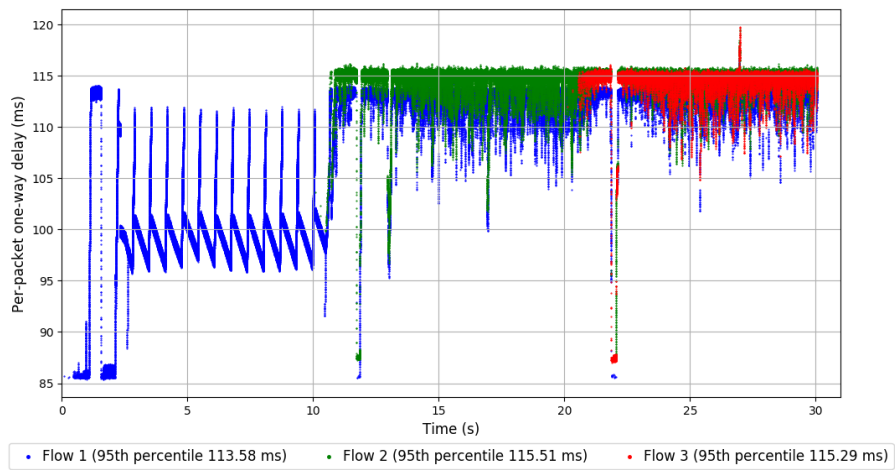
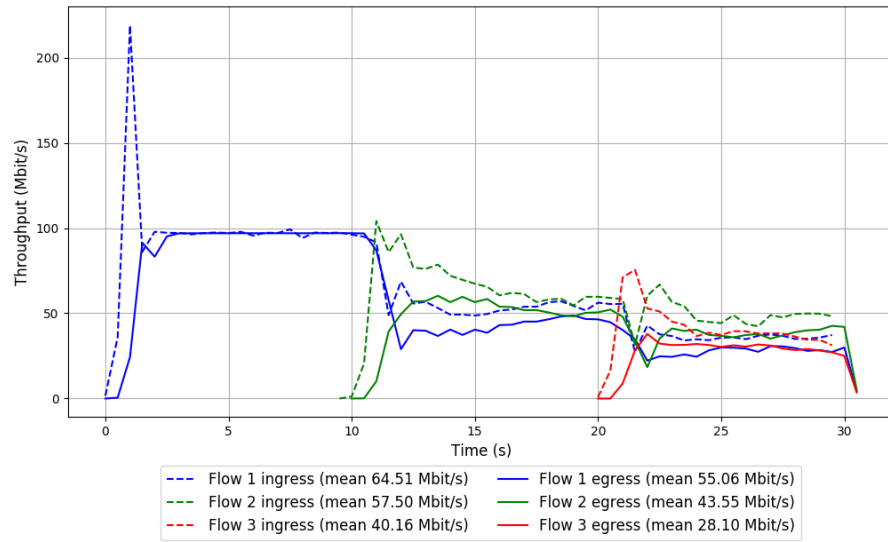


Run 2: Statistics of FillP

Start at: 2018-10-02 10:33:15  
End at: 2018-10-02 10:33:45  
Local clock offset: -4.836 ms  
Remote clock offset: 2.005 ms

# Below is generated by plot.py at 2018-10-02 12:02:53  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 93.38 Mbit/s  
95th percentile per-packet one-way delay: 115.356 ms  
Loss rate: 19.53%  
-- Flow 1:  
Average throughput: 55.06 Mbit/s  
95th percentile per-packet one-way delay: 113.580 ms  
Loss rate: 14.58%  
-- Flow 2:  
Average throughput: 43.55 Mbit/s  
95th percentile per-packet one-way delay: 115.513 ms  
Loss rate: 24.23%  
-- Flow 3:  
Average throughput: 28.10 Mbit/s  
95th percentile per-packet one-way delay: 115.287 ms  
Loss rate: 30.02%

## Run 2: Report of FillP — Data Link

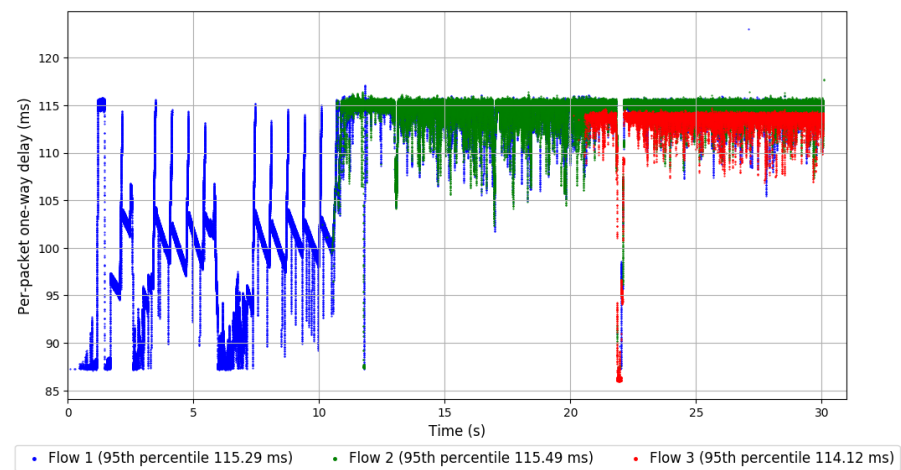
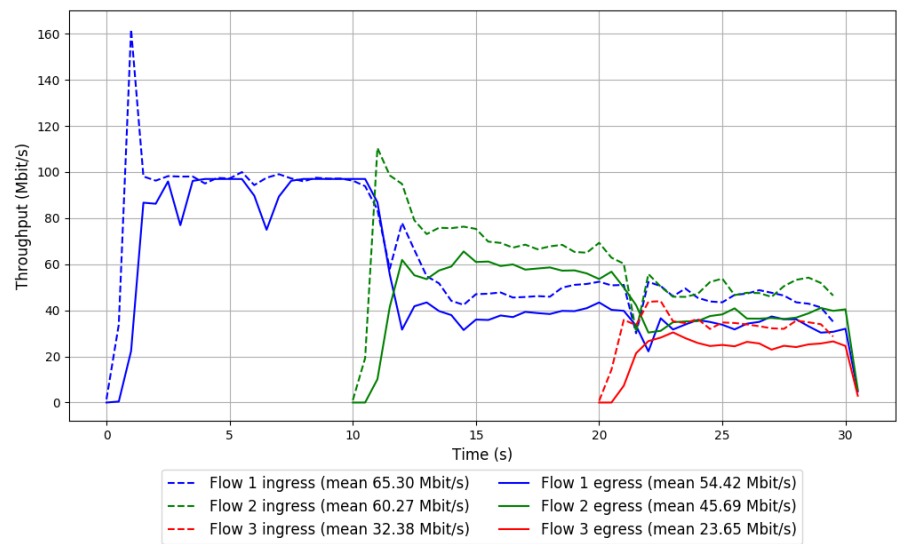


Run 3: Statistics of FillP

Start at: 2018-10-02 10:56:05  
End at: 2018-10-02 10:56:35  
Local clock offset: -4.828 ms  
Remote clock offset: 2.224 ms

# Below is generated by plot.py at 2018-10-02 12:02:54  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 92.67 Mbit/s  
95th percentile per-packet one-way delay: 115.406 ms  
Loss rate: 20.15%  
-- Flow 1:  
Average throughput: 54.42 Mbit/s  
95th percentile per-packet one-way delay: 115.287 ms  
Loss rate: 16.59%  
-- Flow 2:  
Average throughput: 45.69 Mbit/s  
95th percentile per-packet one-way delay: 115.487 ms  
Loss rate: 24.13%  
-- Flow 3:  
Average throughput: 23.65 Mbit/s  
95th percentile per-packet one-way delay: 114.116 ms  
Loss rate: 26.94%

Run 3: Report of FillP — Data Link

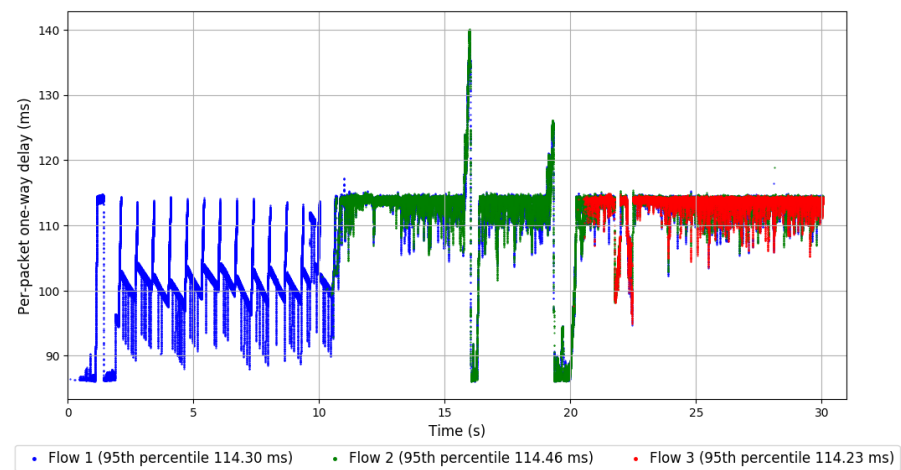
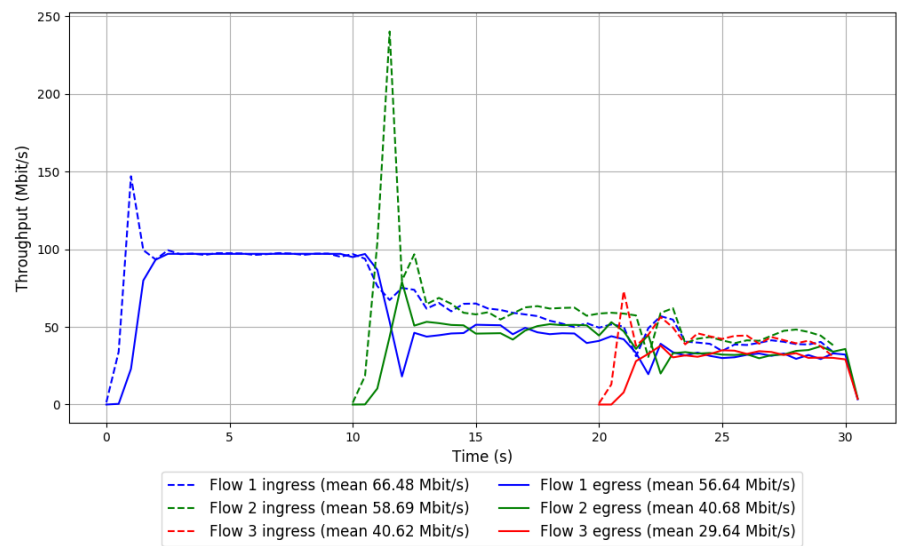


Run 4: Statistics of FillP

Start at: 2018-10-02 11:18:51  
End at: 2018-10-02 11:19:21  
Local clock offset: -5.386 ms  
Remote clock offset: 1.43 ms

# Below is generated by plot.py at 2018-10-02 12:02:56  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 93.55 Mbit/s  
95th percentile per-packet one-way delay: 114.341 ms  
Loss rate: 21.34%  
-- Flow 1:  
Average throughput: 56.64 Mbit/s  
95th percentile per-packet one-way delay: 114.303 ms  
Loss rate: 14.72%  
-- Flow 2:  
Average throughput: 40.68 Mbit/s  
95th percentile per-packet one-way delay: 114.457 ms  
Loss rate: 30.66%  
-- Flow 3:  
Average throughput: 29.64 Mbit/s  
95th percentile per-packet one-way delay: 114.233 ms  
Loss rate: 26.94%

Run 4: Report of FillP — Data Link

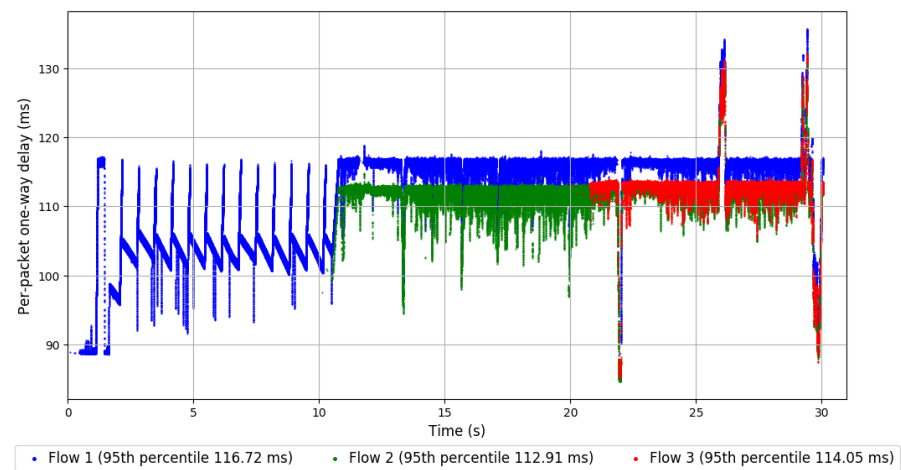
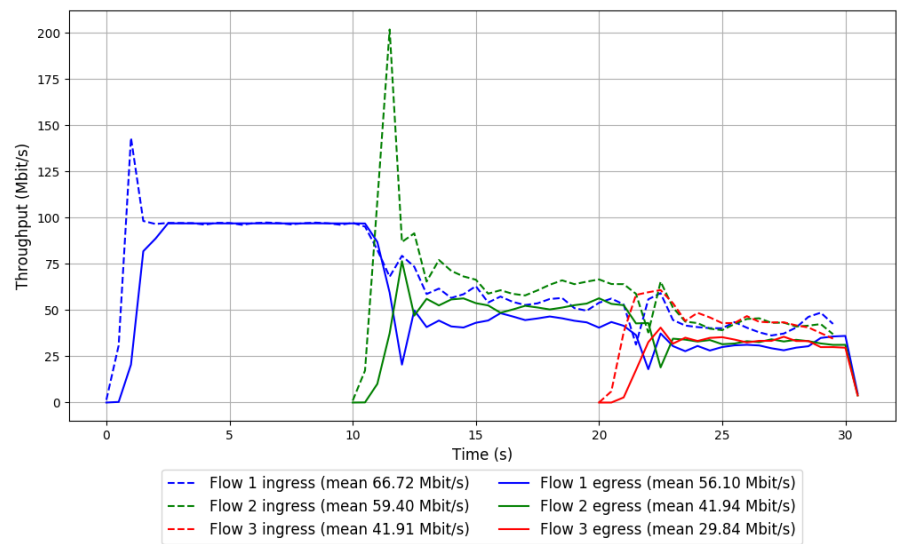


Run 5: Statistics of FillP

Start at: 2018-10-02 11:41:41  
End at: 2018-10-02 11:42:11  
Local clock offset: -6.444 ms  
Remote clock offset: 0.47 ms

# Below is generated by plot.py at 2018-10-02 12:02:58  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 93.92 Mbit/s  
95th percentile per-packet one-way delay: 116.667 ms  
Loss rate: 21.78%  
-- Flow 1:  
Average throughput: 56.10 Mbit/s  
95th percentile per-packet one-way delay: 116.715 ms  
Loss rate: 15.84%  
-- Flow 2:  
Average throughput: 41.94 Mbit/s  
95th percentile per-packet one-way delay: 112.905 ms  
Loss rate: 29.34%  
-- Flow 3:  
Average throughput: 29.84 Mbit/s  
95th percentile per-packet one-way delay: 114.050 ms  
Loss rate: 28.81%

Run 5: Report of FillP — Data Link



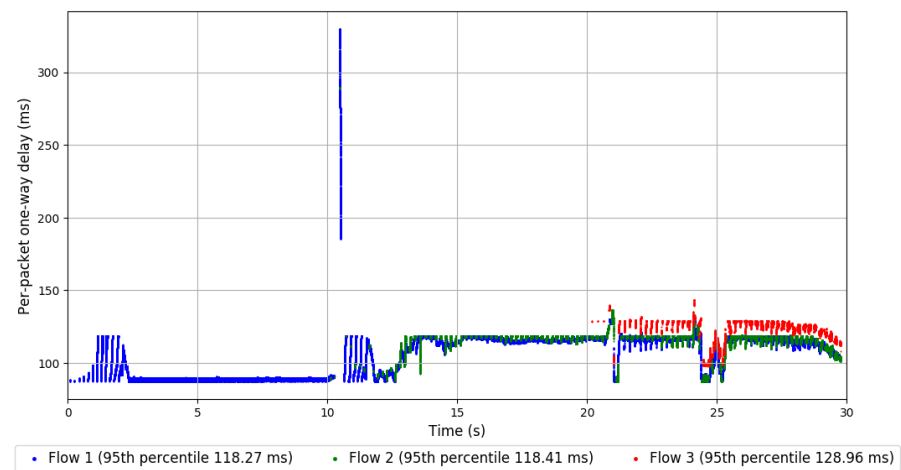
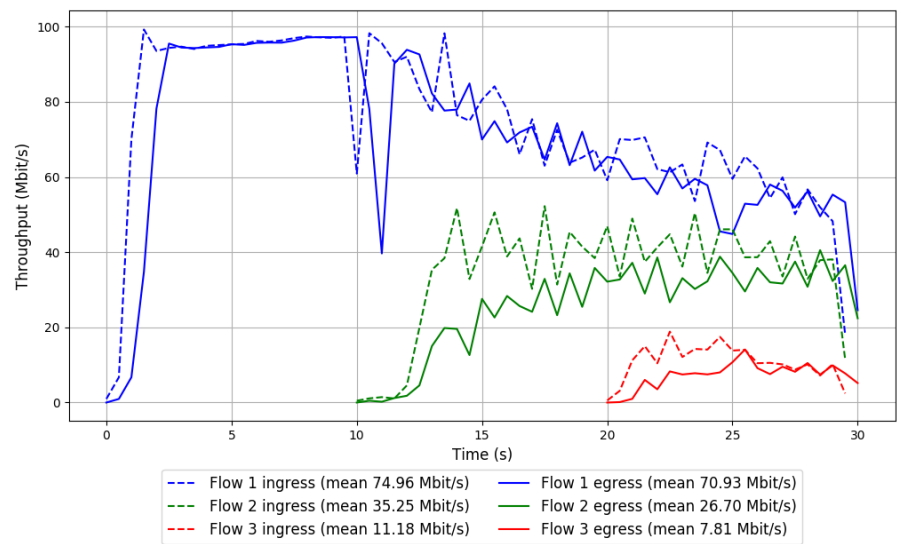


```
Run 1: Statistics of Indigo

Start at: 2018-10-02 10:26:46
End at: 2018-10-02 10:27:16
Local clock offset: -5.218 ms
Remote clock offset: 1.857 ms

# Below is generated by plot.py at 2018-10-02 12:02:58
# Datalink statistics
-- Total of 3 flows:
Average throughput: 91.10 Mbit/s
95th percentile per-packet one-way delay: 118.380 ms
Loss rate: 10.54%
-- Flow 1:
Average throughput: 70.93 Mbit/s
95th percentile per-packet one-way delay: 118.273 ms
Loss rate: 5.33%
-- Flow 2:
Average throughput: 26.70 Mbit/s
95th percentile per-packet one-way delay: 118.410 ms
Loss rate: 24.21%
-- Flow 3:
Average throughput: 7.81 Mbit/s
95th percentile per-packet one-way delay: 128.962 ms
Loss rate: 30.33%
```

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2018-10-02 10:49:40

End at: 2018-10-02 10:50:10

Local clock offset: -4.685 ms

Remote clock offset: -4.12 ms

# Below is generated by plot.py at 2018-10-02 12:03:34

# Datalink statistics

-- Total of 3 flows:

Average throughput: 89.02 Mbit/s

95th percentile per-packet one-way delay: 112.528 ms

Loss rate: 30.51%

-- Flow 1:

Average throughput: 56.59 Mbit/s

95th percentile per-packet one-way delay: 112.230 ms

Loss rate: 9.04%

-- Flow 2:

Average throughput: 35.10 Mbit/s

95th percentile per-packet one-way delay: 112.598 ms

Loss rate: 29.80%

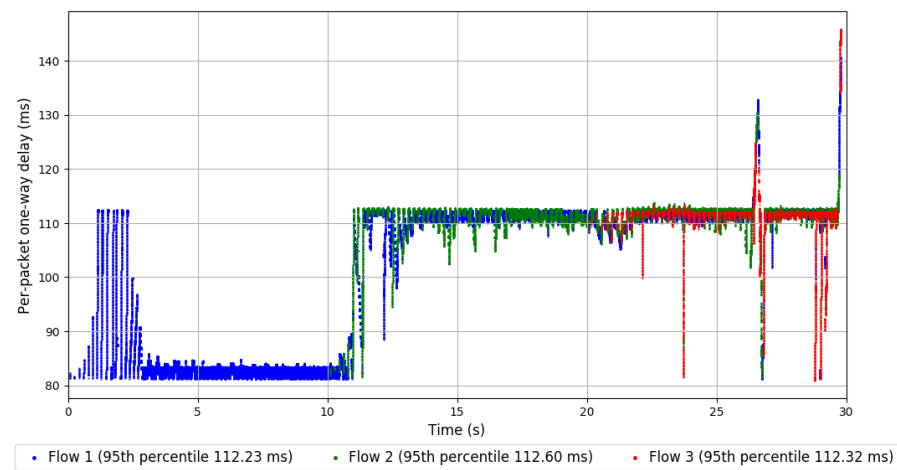
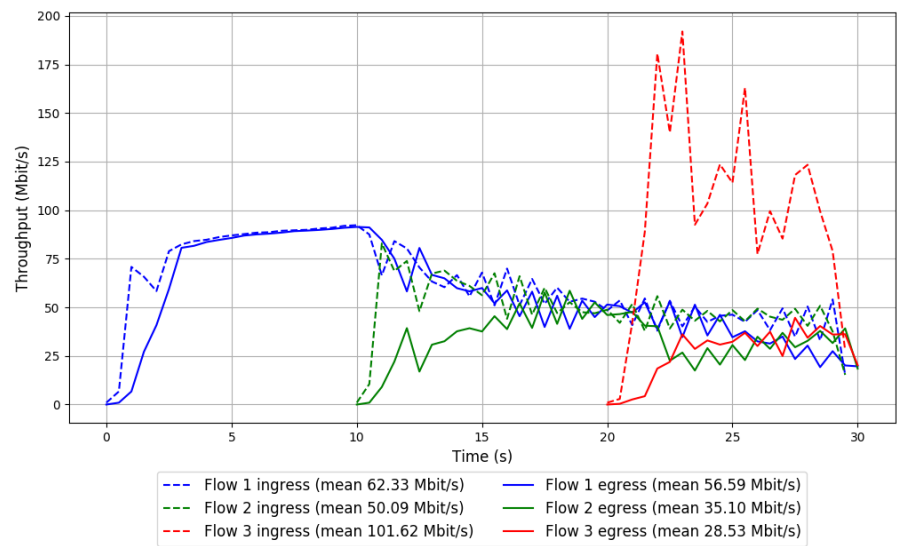
-- Flow 3:

Average throughput: 28.53 Mbit/s

95th percentile per-packet one-way delay: 112.322 ms

Loss rate: 71.85%

Run 2: Report of Indigo — Data Link

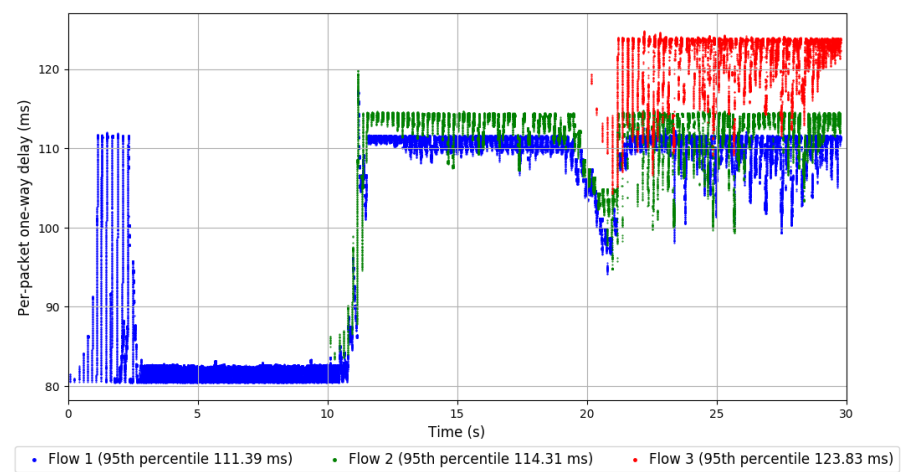
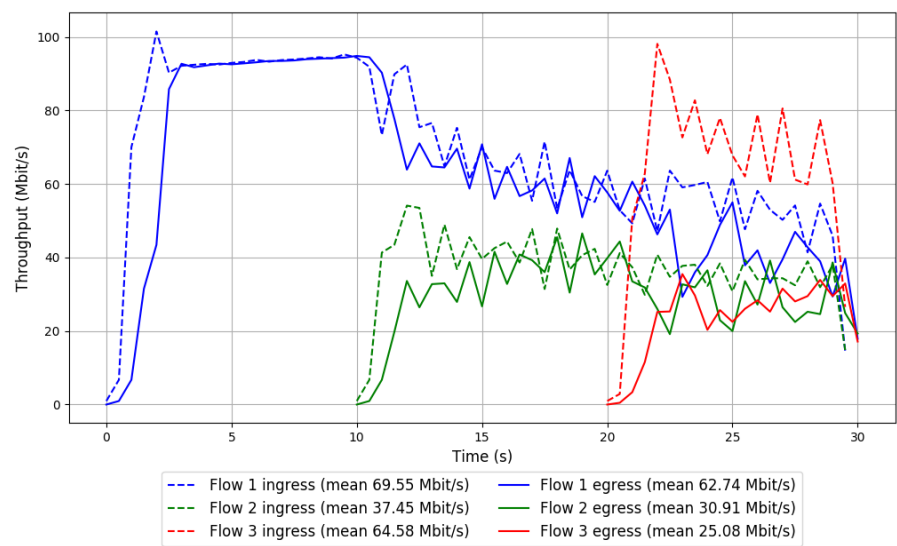


Run 3: Statistics of Indigo

Start at: 2018-10-02 11:12:29  
End at: 2018-10-02 11:12:59  
Local clock offset: -4.946 ms  
Remote clock offset: -2.586 ms

# Below is generated by plot.py at 2018-10-02 12:03:34  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 91.31 Mbit/s  
95th percentile per-packet one-way delay: 123.110 ms  
Loss rate: 20.68%  
-- Flow 1:  
Average throughput: 62.74 Mbit/s  
95th percentile per-packet one-way delay: 111.386 ms  
Loss rate: 9.71%  
-- Flow 2:  
Average throughput: 30.91 Mbit/s  
95th percentile per-packet one-way delay: 114.311 ms  
Loss rate: 17.34%  
-- Flow 3:  
Average throughput: 25.08 Mbit/s  
95th percentile per-packet one-way delay: 123.830 ms  
Loss rate: 61.15%

Run 3: Report of Indigo — Data Link



Run 4: Statistics of Indigo

Start at: 2018-10-02 11:35:19

End at: 2018-10-02 11:35:49

Local clock offset: -6.282 ms

Remote clock offset: 1.81 ms

# Below is generated by plot.py at 2018-10-02 12:03:40

# Datalink statistics

-- Total of 3 flows:

Average throughput: 88.83 Mbit/s

95th percentile per-packet one-way delay: 120.340 ms

Loss rate: 4.78%

-- Flow 1:

Average throughput: 58.68 Mbit/s

95th percentile per-packet one-way delay: 117.186 ms

Loss rate: 3.62%

-- Flow 2:

Average throughput: 35.18 Mbit/s

95th percentile per-packet one-way delay: 122.890 ms

Loss rate: 7.71%

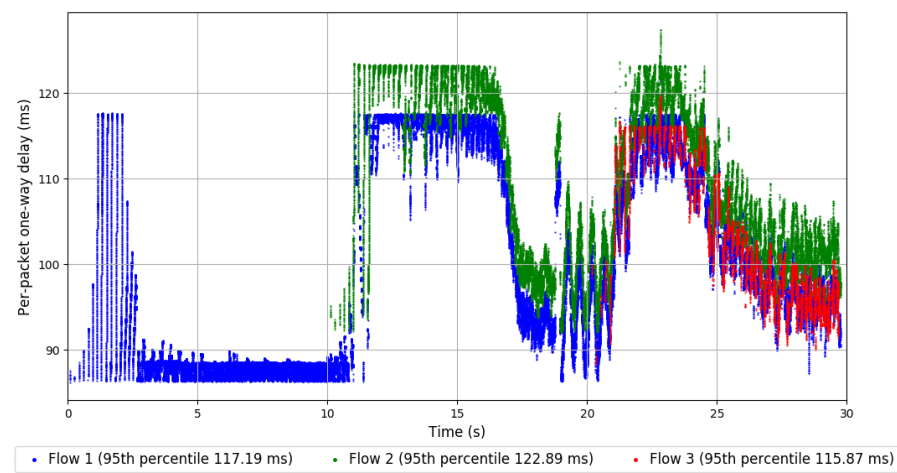
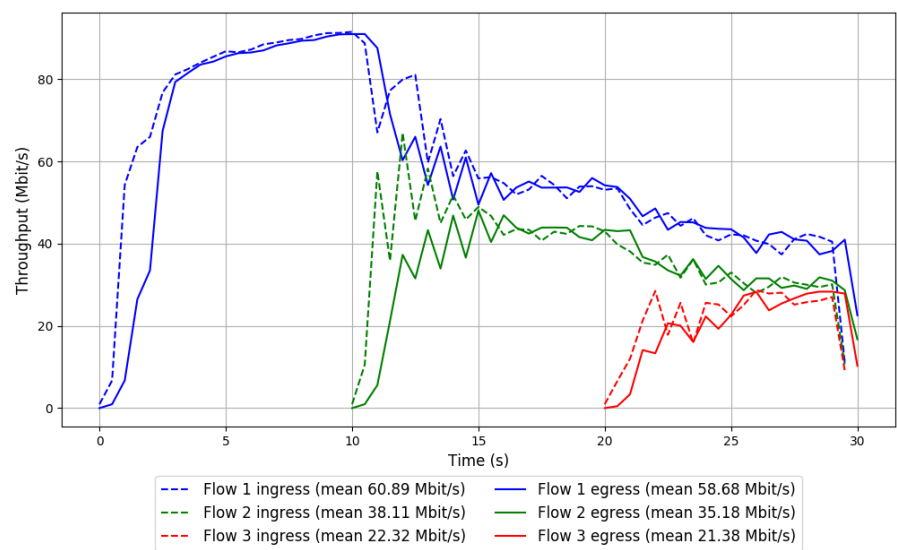
-- Flow 3:

Average throughput: 21.38 Mbit/s

95th percentile per-packet one-way delay: 115.872 ms

Loss rate: 4.28%

Run 4: Report of Indigo — Data Link



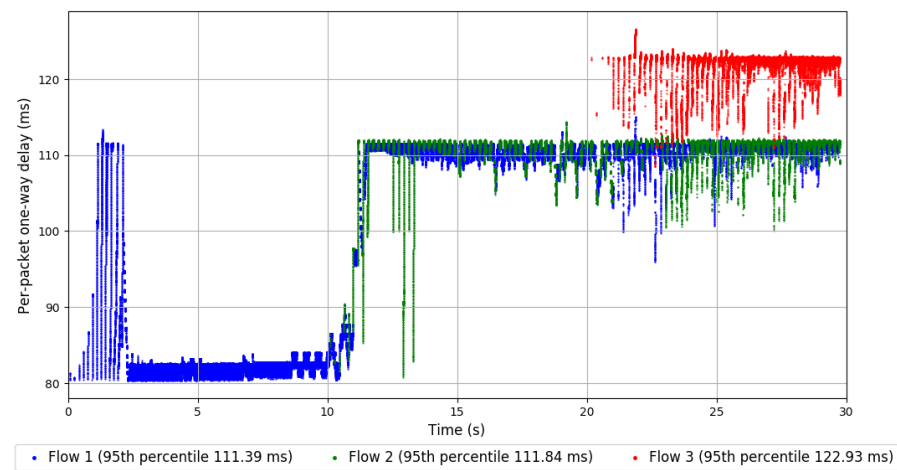
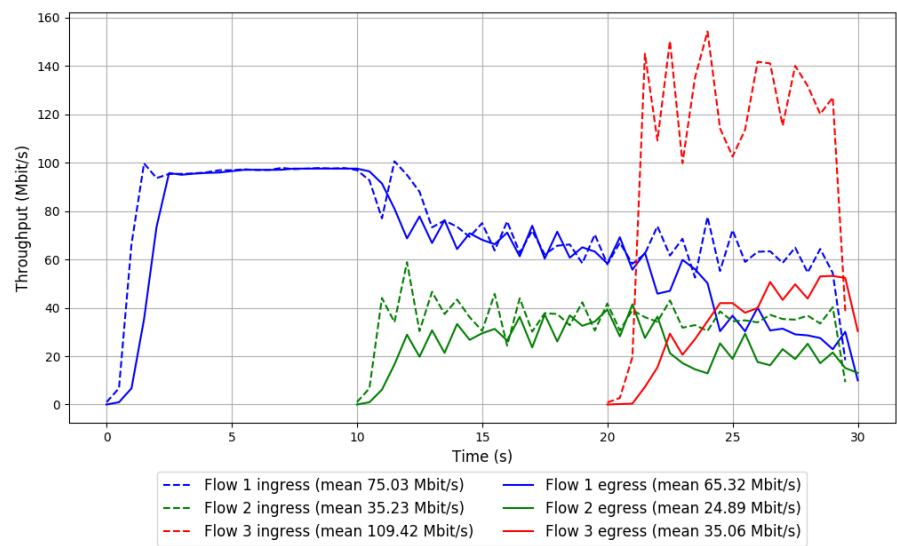


Run 5: Statistics of Indigo

Start at: 2018-10-02 11:58:13  
End at: 2018-10-02 11:58:43  
Local clock offset: -6.532 ms  
Remote clock offset: -2.977 ms

# Below is generated by plot.py at 2018-10-02 12:04:06  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 92.96 Mbit/s  
95th percentile per-packet one-way delay: 122.669 ms  
Loss rate: 30.34%  
-- Flow 1:  
Average throughput: 65.32 Mbit/s  
95th percentile per-packet one-way delay: 111.388 ms  
Loss rate: 12.84%  
-- Flow 2:  
Average throughput: 24.89 Mbit/s  
95th percentile per-packet one-way delay: 111.843 ms  
Loss rate: 29.27%  
-- Flow 3:  
Average throughput: 35.06 Mbit/s  
95th percentile per-packet one-way delay: 122.934 ms  
Loss rate: 68.01%

Run 5: Report of Indigo — Data Link

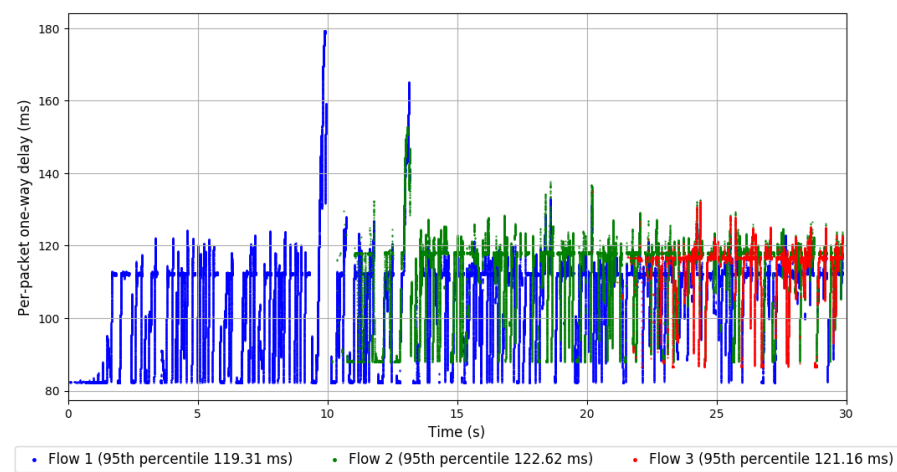
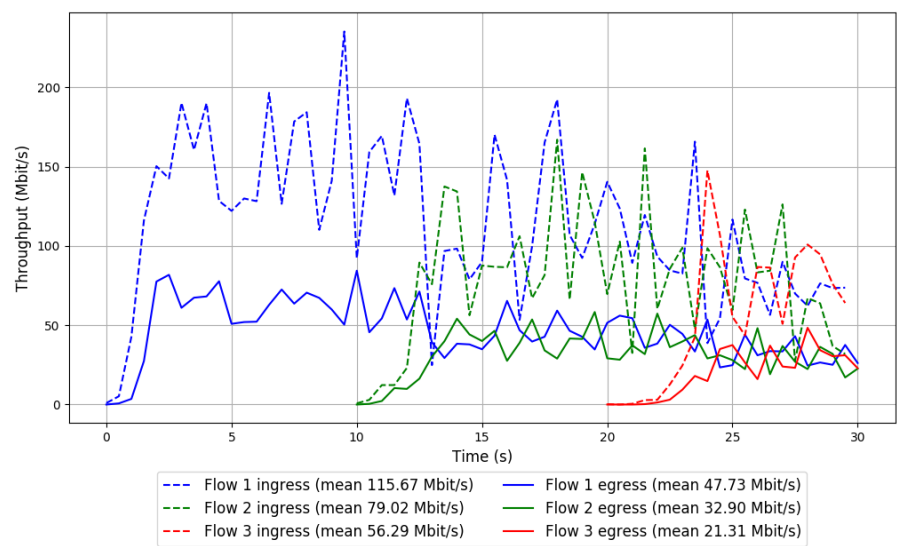


Run 1: Statistics of Indigo-96d2da3

Start at: 2018-10-02 10:12:57  
End at: 2018-10-02 10:13:27  
Local clock offset: -6.964 ms  
Remote clock offset: -3.332 ms

# Below is generated by plot.py at 2018-10-02 12:04:12  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 76.41 Mbit/s  
95th percentile per-packet one-way delay: 121.119 ms  
Loss rate: 58.92%  
-- Flow 1:  
Average throughput: 47.73 Mbit/s  
95th percentile per-packet one-way delay: 119.314 ms  
Loss rate: 58.69%  
-- Flow 2:  
Average throughput: 32.90 Mbit/s  
95th percentile per-packet one-way delay: 122.619 ms  
Loss rate: 58.28%  
-- Flow 3:  
Average throughput: 21.31 Mbit/s  
95th percentile per-packet one-way delay: 121.160 ms  
Loss rate: 62.15%

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



Run 2: Statistics of Indigo-96d2da3

Start at: 2018-10-02 10:35:53

End at: 2018-10-02 10:36:23

Local clock offset: -4.674 ms

Remote clock offset: 0.925 ms

# Below is generated by plot.py at 2018-10-02 12:04:17

# Datalink statistics

-- Total of 3 flows:

Average throughput: 81.28 Mbit/s

95th percentile per-packet one-way delay: 125.450 ms

Loss rate: 56.63%

-- Flow 1:

Average throughput: 50.83 Mbit/s

95th percentile per-packet one-way delay: 119.161 ms

Loss rate: 53.71%

-- Flow 2:

Average throughput: 33.78 Mbit/s

95th percentile per-packet one-way delay: 130.399 ms

Loss rate: 60.69%

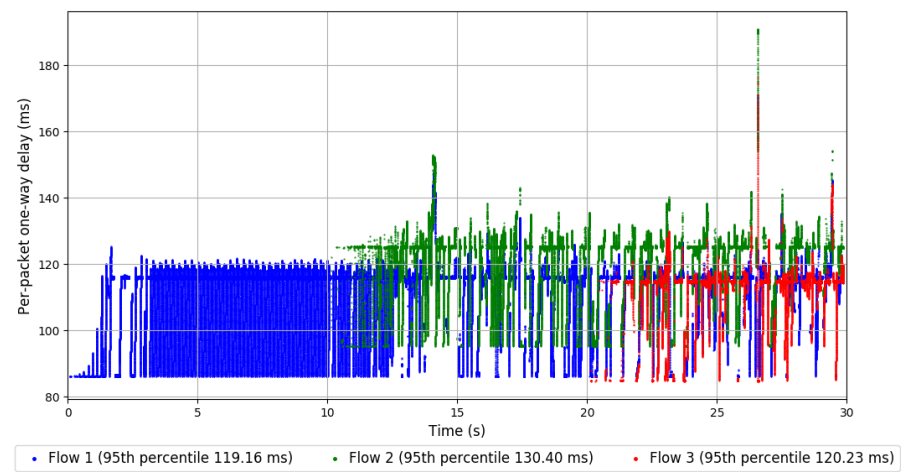
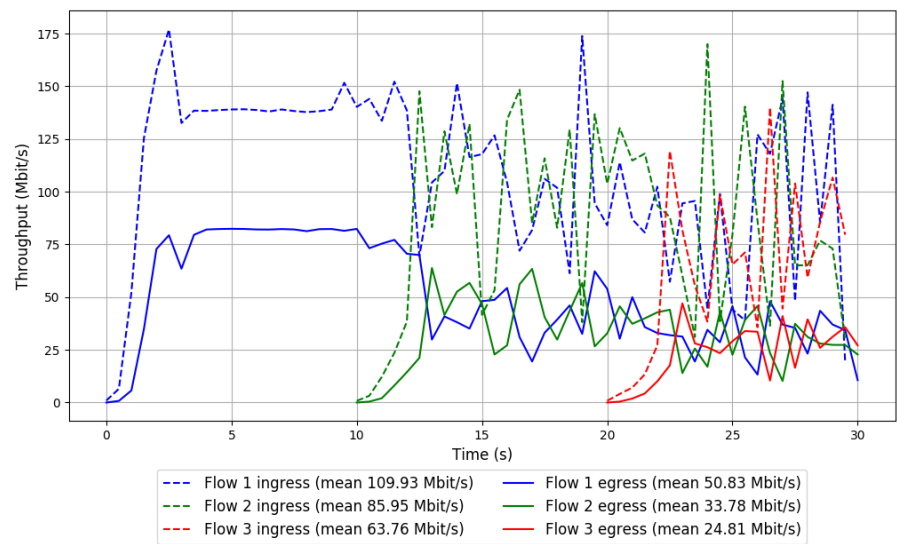
-- Flow 3:

Average throughput: 24.81 Mbit/s

95th percentile per-packet one-way delay: 120.232 ms

Loss rate: 60.99%

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

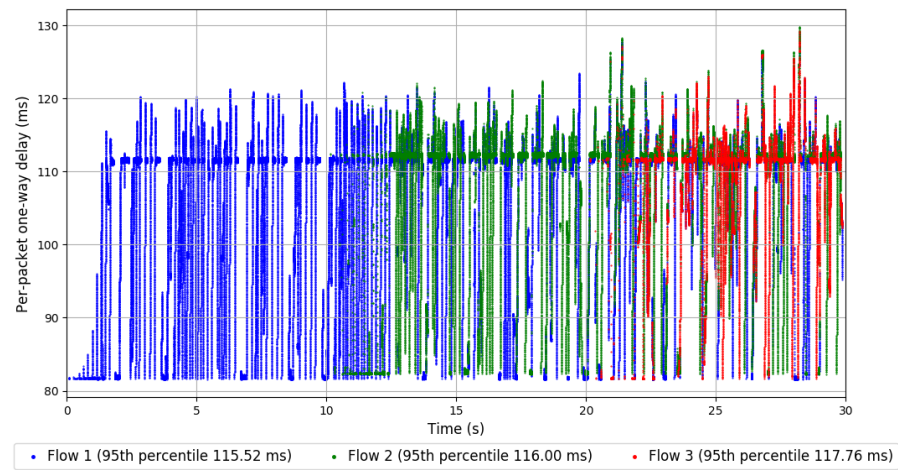
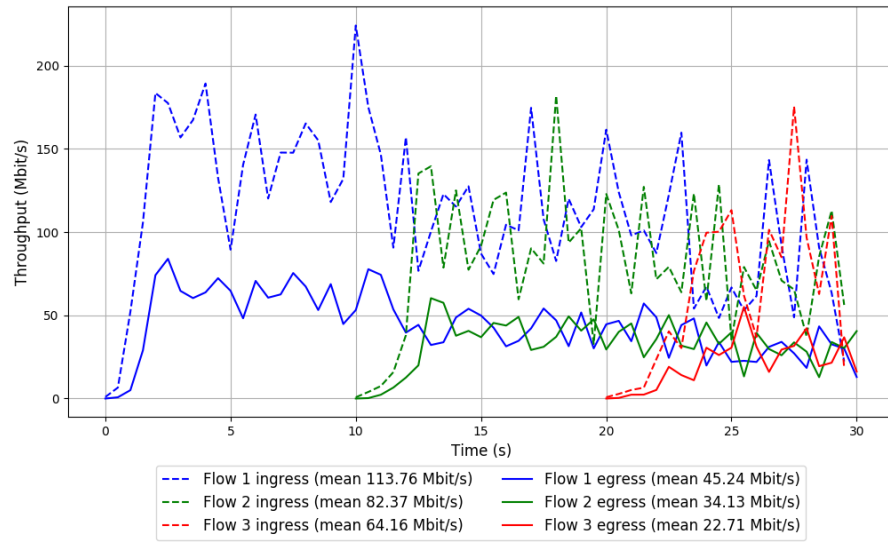


Run 3: Statistics of Indigo-96d2da3

Start at: 2018-10-02 10:58:46  
End at: 2018-10-02 10:59:16  
Local clock offset: -4.932 ms  
Remote clock offset: -4.031 ms

# Below is generated by plot.py at 2018-10-02 12:04:17  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 75.16 Mbit/s  
95th percentile per-packet one-way delay: 115.860 ms  
Loss rate: 60.24%  
-- Flow 1:  
Average throughput: 45.24 Mbit/s  
95th percentile per-packet one-way delay: 115.518 ms  
Loss rate: 60.21%  
-- Flow 2:  
Average throughput: 34.13 Mbit/s  
95th percentile per-packet one-way delay: 115.996 ms  
Loss rate: 58.61%  
-- Flow 3:  
Average throughput: 22.71 Mbit/s  
95th percentile per-packet one-way delay: 117.761 ms  
Loss rate: 64.64%

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





Run 4: Statistics of Indigo-96d2da3

Start at: 2018-10-02 11:21:27

End at: 2018-10-02 11:21:57

Local clock offset: -5.578 ms

Remote clock offset: 2.492 ms

# Below is generated by plot.py at 2018-10-02 12:04:17

# Datalink statistics

-- Total of 3 flows:

Average throughput: 75.00 Mbit/s

95th percentile per-packet one-way delay: 126.298 ms

Loss rate: 58.99%

-- Flow 1:

Average throughput: 45.11 Mbit/s

95th percentile per-packet one-way delay: 126.740 ms

Loss rate: 58.45%

-- Flow 2:

Average throughput: 33.99 Mbit/s

95th percentile per-packet one-way delay: 126.484 ms

Loss rate: 60.34%

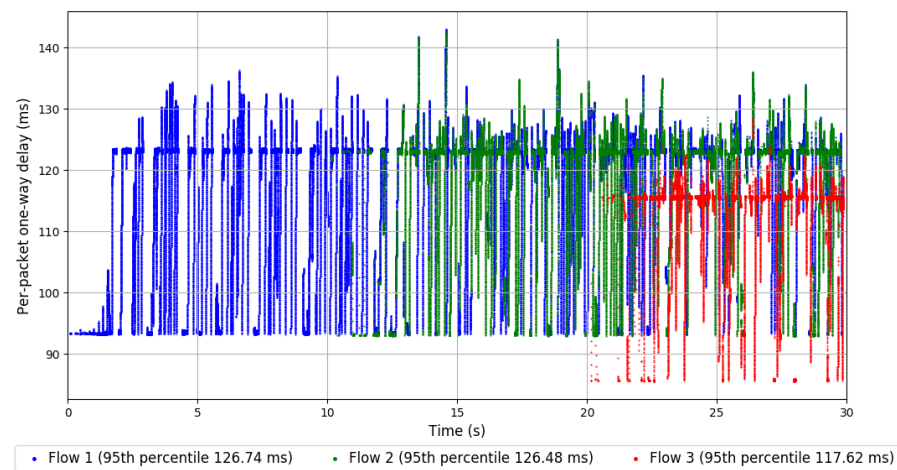
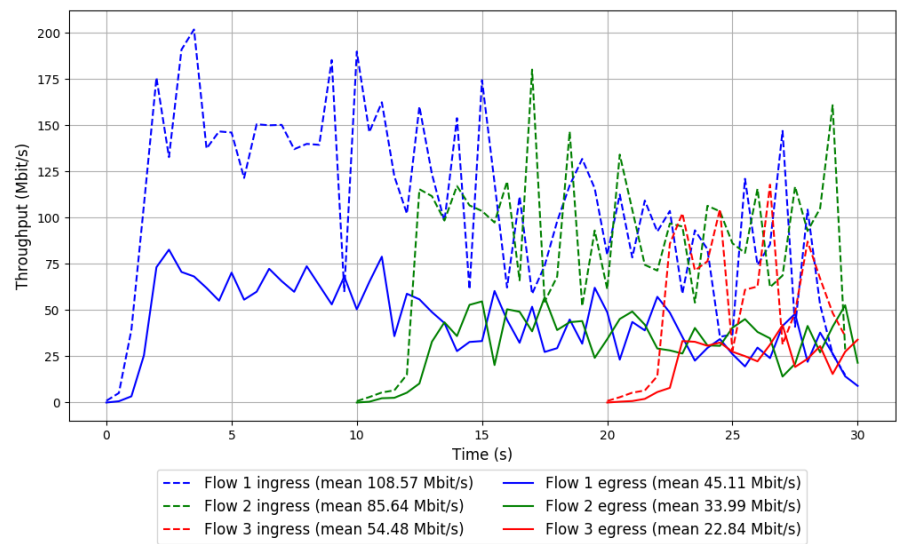
-- Flow 3:

Average throughput: 22.84 Mbit/s

95th percentile per-packet one-way delay: 117.625 ms

Loss rate: 58.02%

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



Run 5: Statistics of Indigo-96d2da3

Start at: 2018-10-02 11:44:17

End at: 2018-10-02 11:44:47

Local clock offset: -6.566 ms

Remote clock offset: 1.763 ms

# Below is generated by plot.py at 2018-10-02 12:04:54

# Datalink statistics

-- Total of 3 flows:

Average throughput: 78.36 Mbit/s

95th percentile per-packet one-way delay: 120.279 ms

Loss rate: 56.22%

-- Flow 1:

Average throughput: 48.27 Mbit/s

95th percentile per-packet one-way delay: 119.816 ms

Loss rate: 54.89%

-- Flow 2:

Average throughput: 35.83 Mbit/s

95th percentile per-packet one-way delay: 117.779 ms

Loss rate: 58.37%

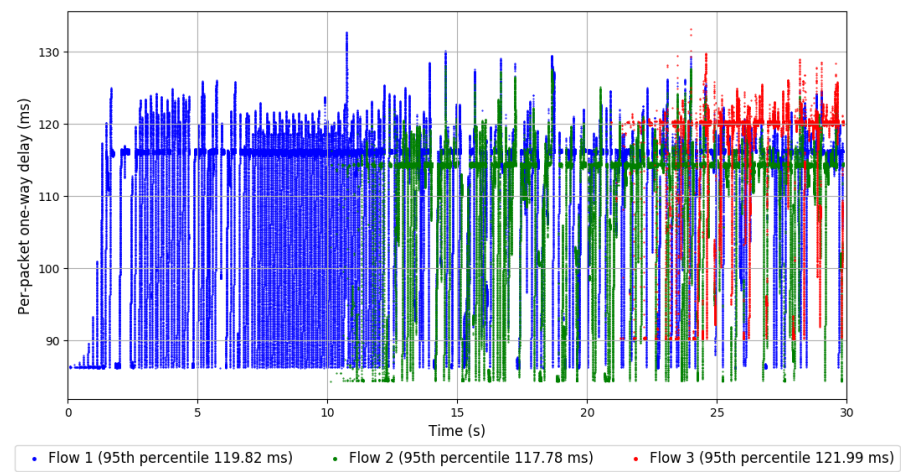
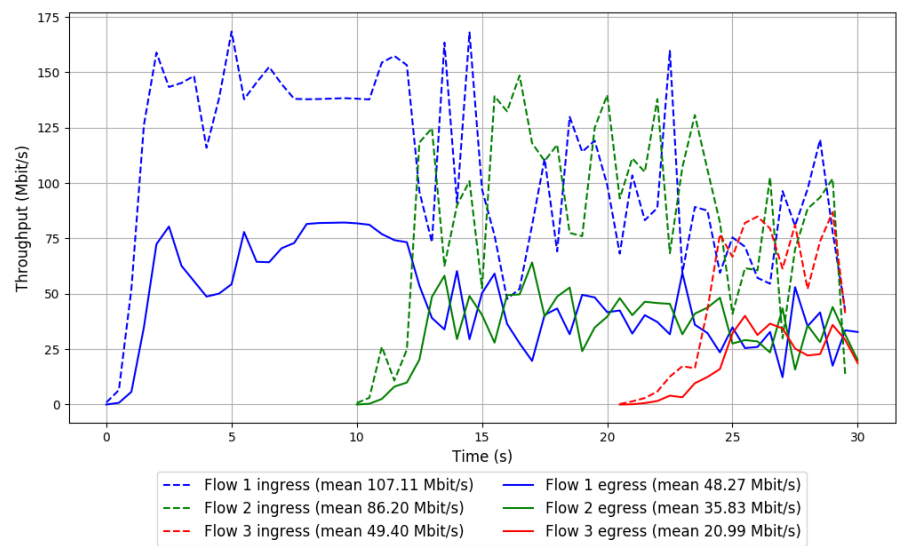
-- Flow 3:

Average throughput: 20.99 Mbit/s

95th percentile per-packet one-way delay: 121.987 ms

Loss rate: 57.52%

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

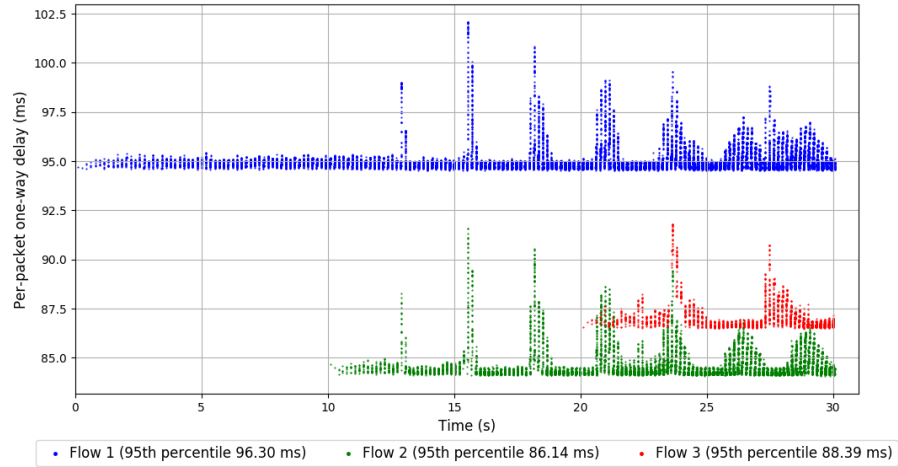
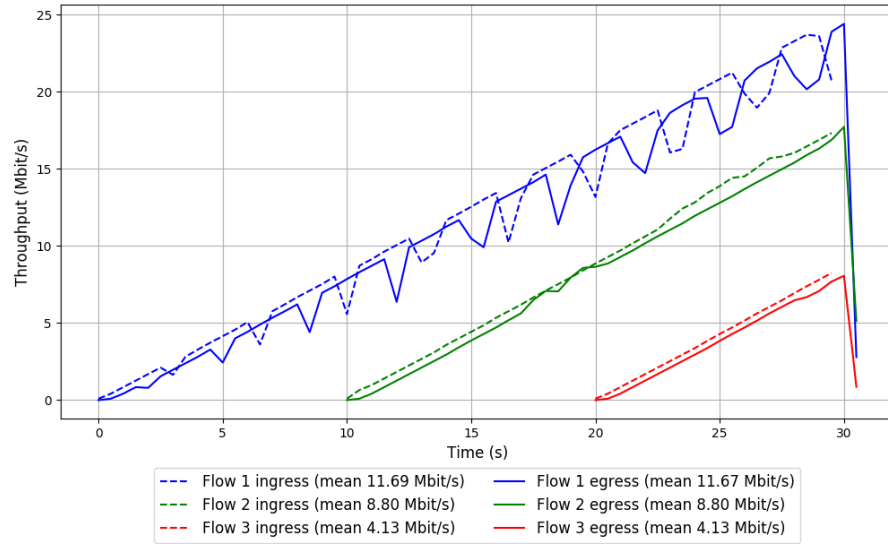


```
Run 1: Statistics of LEDBAT

Start at: 2018-10-02 10:14:16
End at: 2018-10-02 10:14:46
Local clock offset: -6.993 ms
Remote clock offset: 0.43 ms

# Below is generated by plot.py at 2018-10-02 12:04:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 18.90 Mbit/s
95th percentile per-packet one-way delay: 95.892 ms
Loss rate: 0.10%
-- Flow 1:
Average throughput: 11.67 Mbit/s
95th percentile per-packet one-way delay: 96.295 ms
Loss rate: 0.16%
-- Flow 2:
Average throughput: 8.80 Mbit/s
95th percentile per-packet one-way delay: 86.143 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 4.13 Mbit/s
95th percentile per-packet one-way delay: 88.391 ms
Loss rate: 0.00%
```

# Run 1: Report of LEDBAT — Data Link



Run 2: Statistics of LEDBAT

Start at: 2018-10-02 10:37:11

End at: 2018-10-02 10:37:41

Local clock offset: -4.69 ms

Remote clock offset: 0.894 ms

# Below is generated by plot.py at 2018-10-02 12:04:54

# Datalink statistics

-- Total of 3 flows:

Average throughput: 20.63 Mbit/s

95th percentile per-packet one-way delay: 87.086 ms

Loss rate: 0.03%

-- Flow 1:

Average throughput: 13.35 Mbit/s

95th percentile per-packet one-way delay: 86.638 ms

Loss rate: 0.04%

-- Flow 2:

Average throughput: 8.84 Mbit/s

95th percentile per-packet one-way delay: 87.919 ms

Loss rate: 0.00%

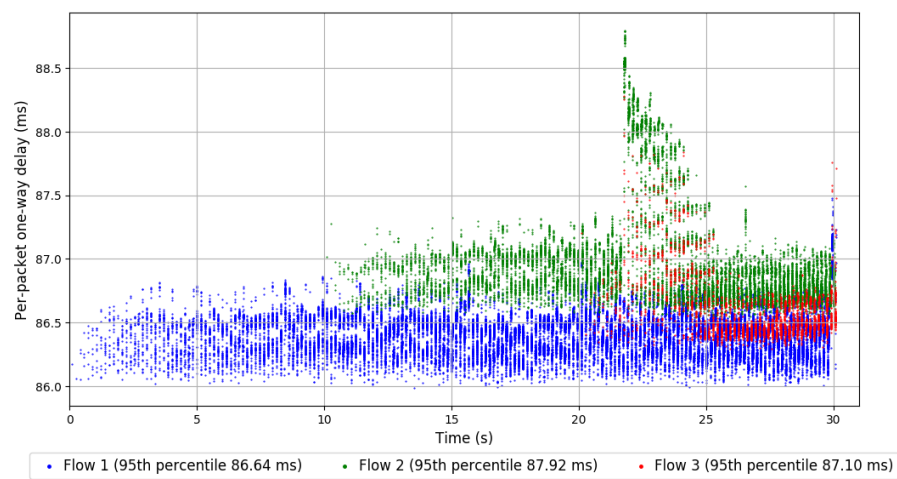
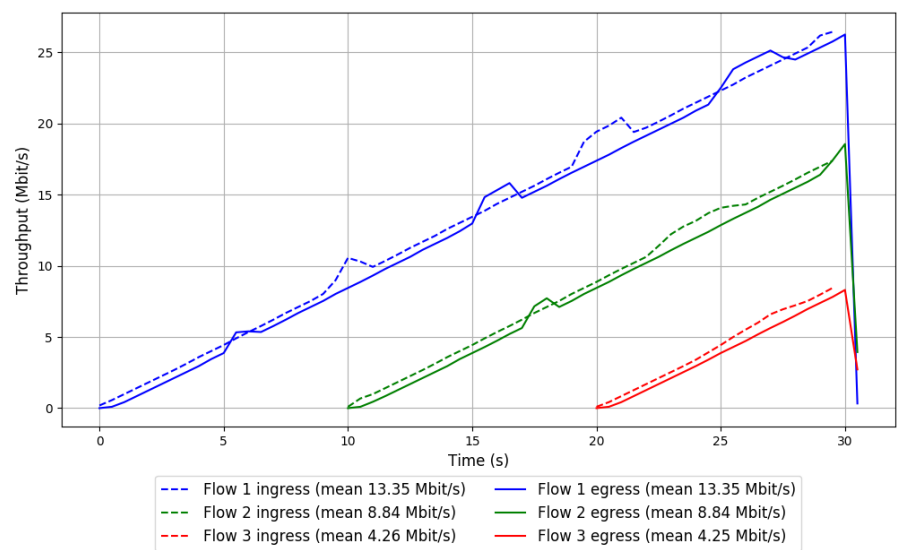
-- Flow 3:

Average throughput: 4.25 Mbit/s

95th percentile per-packet one-way delay: 87.103 ms

Loss rate: 0.17%

Run 2: Report of LEDBAT — Data Link





Run 3: Statistics of LEDBAT

Start at: 2018-10-02 11:00:04

End at: 2018-10-02 11:00:34

Local clock offset: -4.87 ms

Remote clock offset: 0.984 ms

# Below is generated by plot.py at 2018-10-02 12:04:54

# Datalink statistics

-- Total of 3 flows:

Average throughput: 12.96 Mbit/s

95th percentile per-packet one-way delay: 87.692 ms

Loss rate: 0.02%

-- Flow 1:

Average throughput: 5.82 Mbit/s

95th percentile per-packet one-way delay: 87.828 ms

Loss rate: 0.05%

-- Flow 2:

Average throughput: 8.58 Mbit/s

95th percentile per-packet one-way delay: 87.406 ms

Loss rate: 0.00%

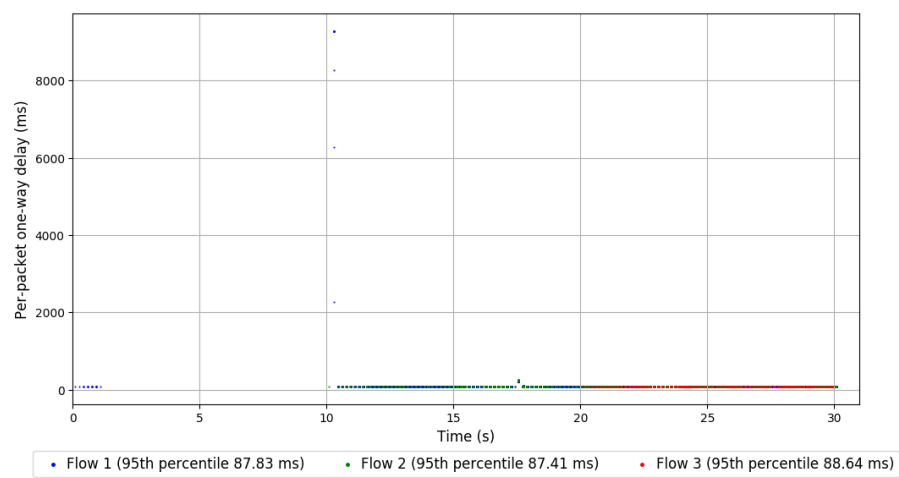
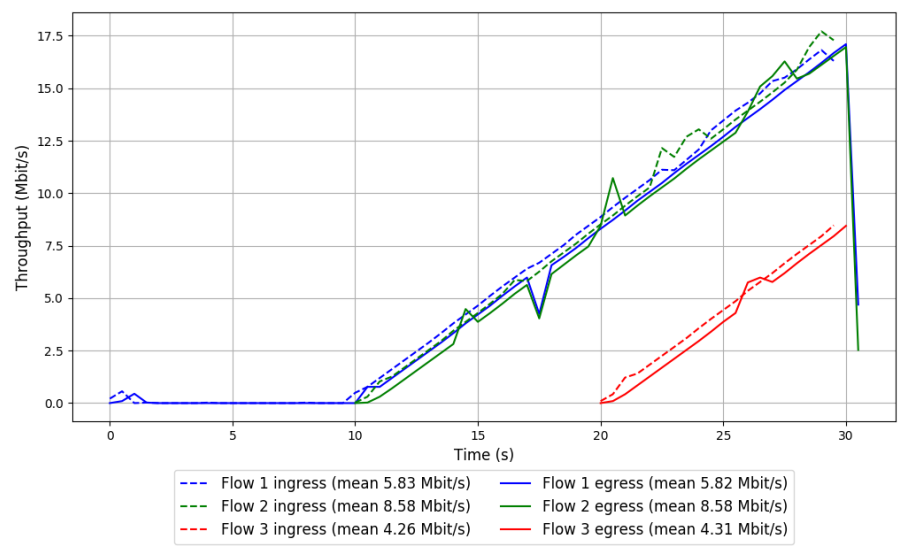
-- Flow 3:

Average throughput: 4.31 Mbit/s

95th percentile per-packet one-way delay: 88.638 ms

Loss rate: 0.03%

Run 3: Report of LEDBAT — Data Link

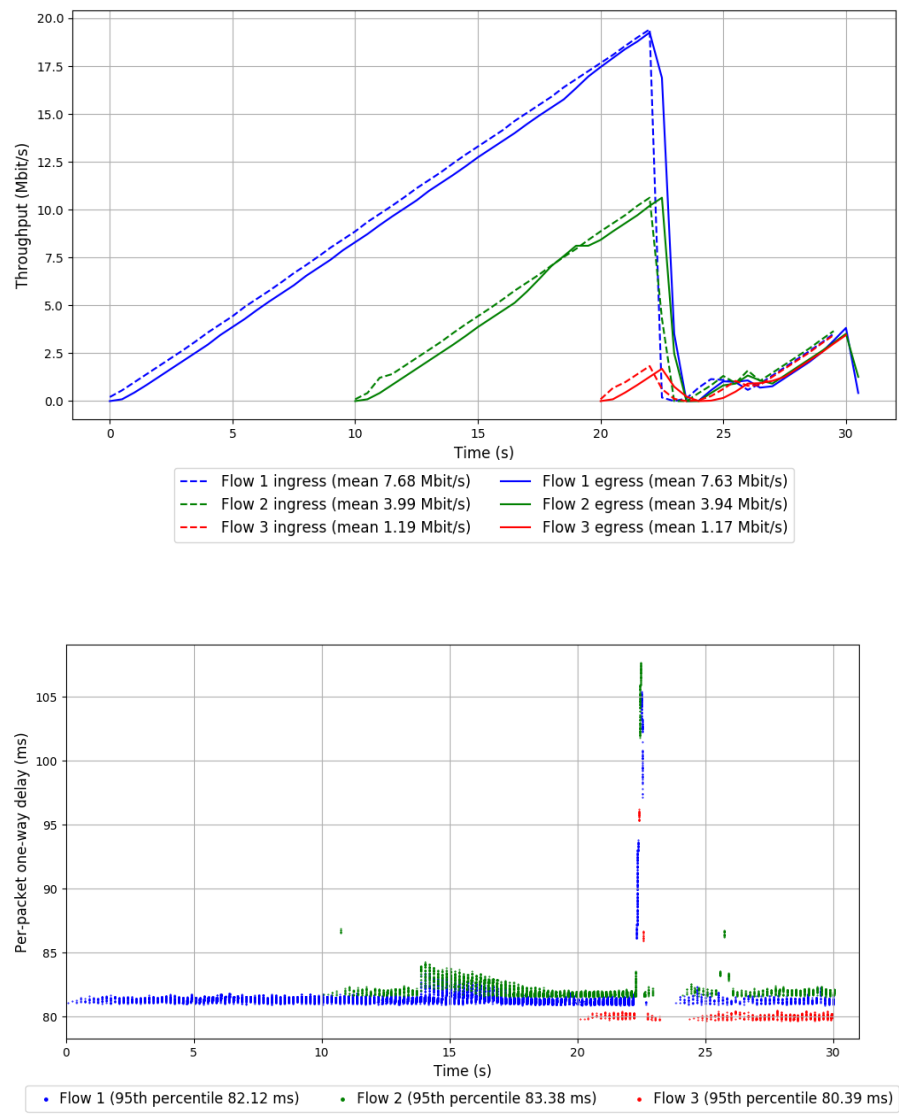


Run 4: Statistics of LEDBAT

Start at: 2018-10-02 11:22:45  
End at: 2018-10-02 11:23:15  
Local clock offset: -5.674 ms  
Remote clock offset: -3.673 ms

# Below is generated by plot.py at 2018-10-02 12:04:54  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 10.62 Mbit/s  
95th percentile per-packet one-way delay: 82.776 ms  
Loss rate: 0.90%  
-- Flow 1:  
Average throughput: 7.63 Mbit/s  
95th percentile per-packet one-way delay: 82.121 ms  
Loss rate: 0.70%  
-- Flow 2:  
Average throughput: 3.94 Mbit/s  
95th percentile per-packet one-way delay: 83.375 ms  
Loss rate: 1.31%  
-- Flow 3:  
Average throughput: 1.17 Mbit/s  
95th percentile per-packet one-way delay: 80.387 ms  
Loss rate: 2.00%

Run 4: Report of LEDBAT — Data Link



Run 5: Statistics of LEDBAT

Start at: 2018-10-02 11:45:35

End at: 2018-10-02 11:46:06

Local clock offset: -6.514 ms

Remote clock offset: 1.844 ms

# Below is generated by plot.py at 2018-10-02 12:04:54

# Datalink statistics

-- Total of 3 flows:

Average throughput: 20.62 Mbit/s

95th percentile per-packet one-way delay: 86.944 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 13.24 Mbit/s

95th percentile per-packet one-way delay: 85.809 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 8.97 Mbit/s

95th percentile per-packet one-way delay: 87.186 ms

Loss rate: 0.00%

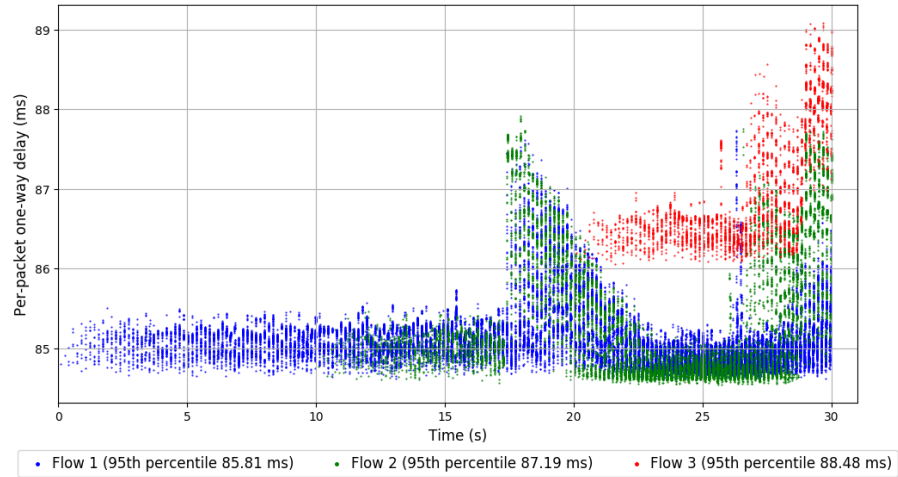
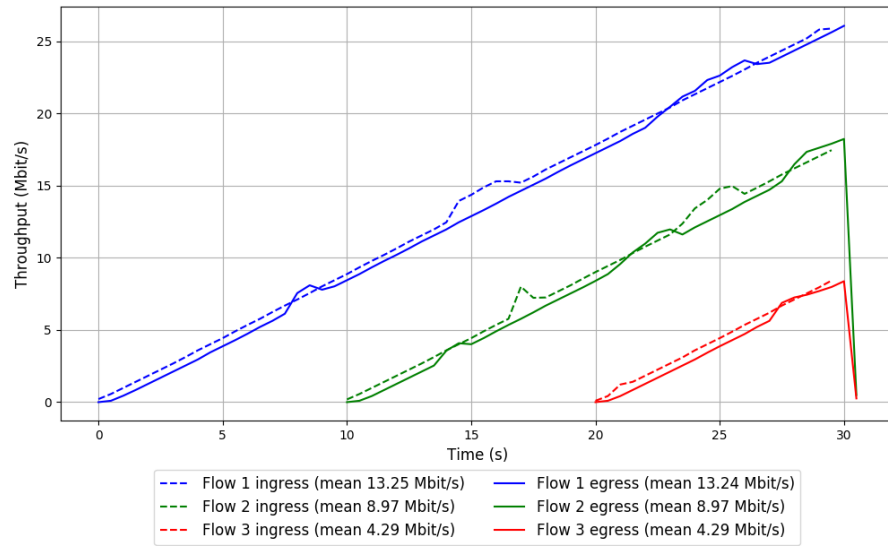
-- Flow 3:

Average throughput: 4.29 Mbit/s

95th percentile per-packet one-way delay: 88.479 ms

Loss rate: 0.00%

## Run 5: Report of LEDBAT — Data Link

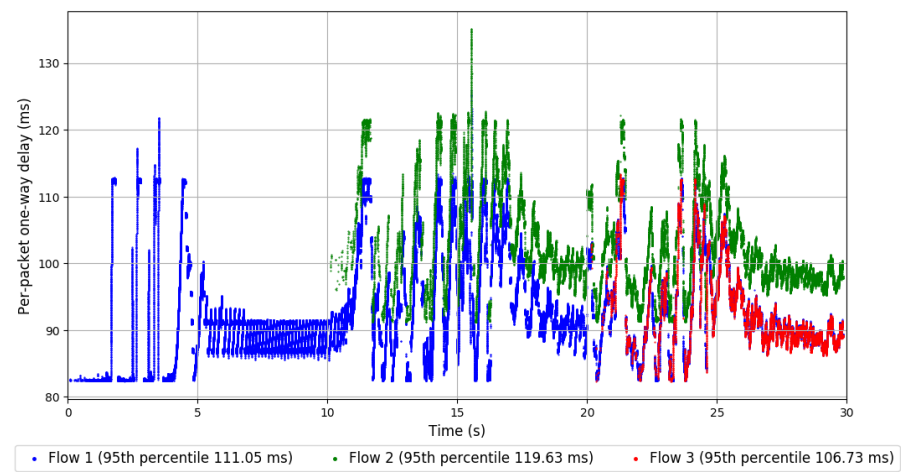
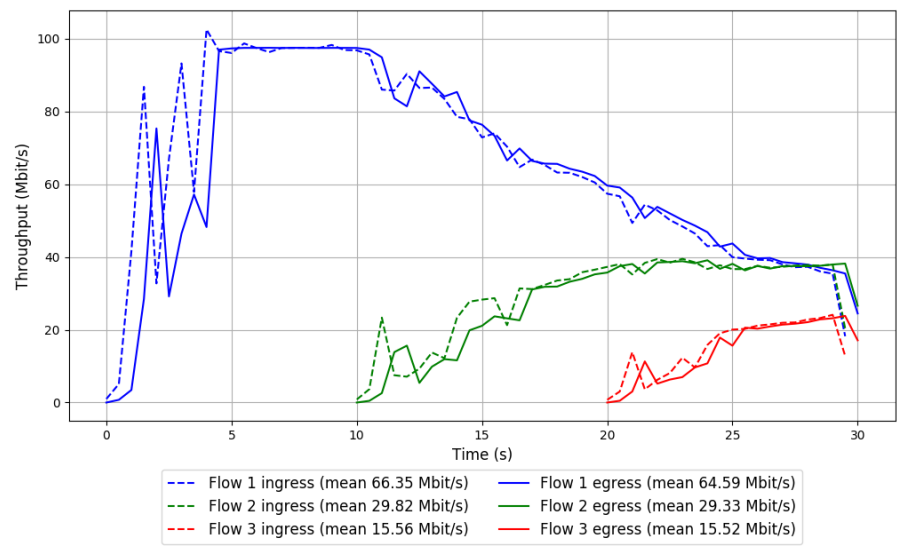


Run 1: Statistics of Indigo-Muses

Start at: 2018-10-02 10:20:31  
End at: 2018-10-02 10:21:01  
Local clock offset: -5.988 ms  
Remote clock offset: -3.242 ms

# Below is generated by plot.py at 2018-10-02 12:05:14  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 89.08 Mbit/s  
95th percentile per-packet one-way delay: 112.308 ms  
Loss rate: 2.31%  
-- Flow 1:  
Average throughput: 64.59 Mbit/s  
95th percentile per-packet one-way delay: 111.047 ms  
Loss rate: 2.63%  
-- Flow 2:  
Average throughput: 29.33 Mbit/s  
95th percentile per-packet one-way delay: 119.631 ms  
Loss rate: 1.71%  
-- Flow 3:  
Average throughput: 15.52 Mbit/s  
95th percentile per-packet one-way delay: 106.728 ms  
Loss rate: 0.37%

Run 1: Report of Indigo-Muses — Data Link





Run 2: Statistics of Indigo-Muses

Start at: 2018-10-02 10:43:27

End at: 2018-10-02 10:43:57

Local clock offset: -4.468 ms

Remote clock offset: -3.0 ms

# Below is generated by plot.py at 2018-10-02 12:05:17

# Datalink statistics

-- Total of 3 flows:

Average throughput: 88.44 Mbit/s

95th percentile per-packet one-way delay: 107.795 ms

Loss rate: 2.61%

-- Flow 1:

Average throughput: 73.26 Mbit/s

95th percentile per-packet one-way delay: 108.575 ms

Loss rate: 3.03%

-- Flow 2:

Average throughput: 16.47 Mbit/s

95th percentile per-packet one-way delay: 104.579 ms

Loss rate: 0.40%

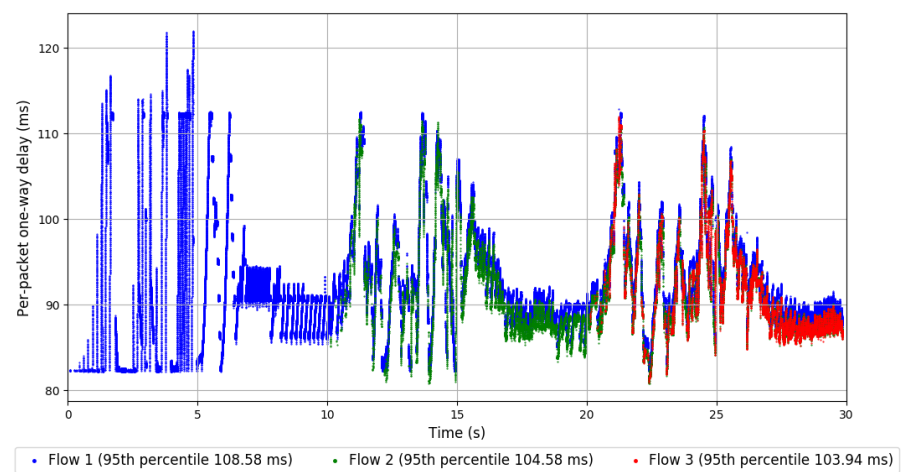
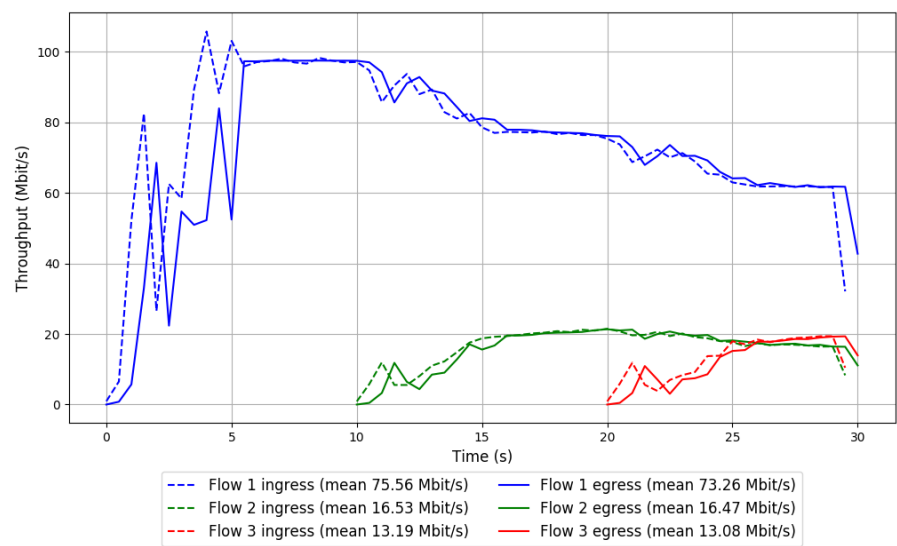
-- Flow 3:

Average throughput: 13.08 Mbit/s

95th percentile per-packet one-way delay: 103.937 ms

Loss rate: 0.86%

Run 2: Report of Indigo-Muses — Data Link



Run 3: Statistics of Indigo-Muses

Start at: 2018-10-02 11:06:16

End at: 2018-10-02 11:06:46

Local clock offset: -4.941 ms

Remote clock offset: 0.138 ms

# Below is generated by plot.py at 2018-10-02 12:05:19

# Datalink statistics

-- Total of 3 flows:

Average throughput: 89.44 Mbit/s

95th percentile per-packet one-way delay: 114.205 ms

Loss rate: 2.59%

-- Flow 1:

Average throughput: 71.00 Mbit/s

95th percentile per-packet one-way delay: 112.729 ms

Loss rate: 3.17%

-- Flow 2:

Average throughput: 21.10 Mbit/s

95th percentile per-packet one-way delay: 118.060 ms

Loss rate: 0.39%

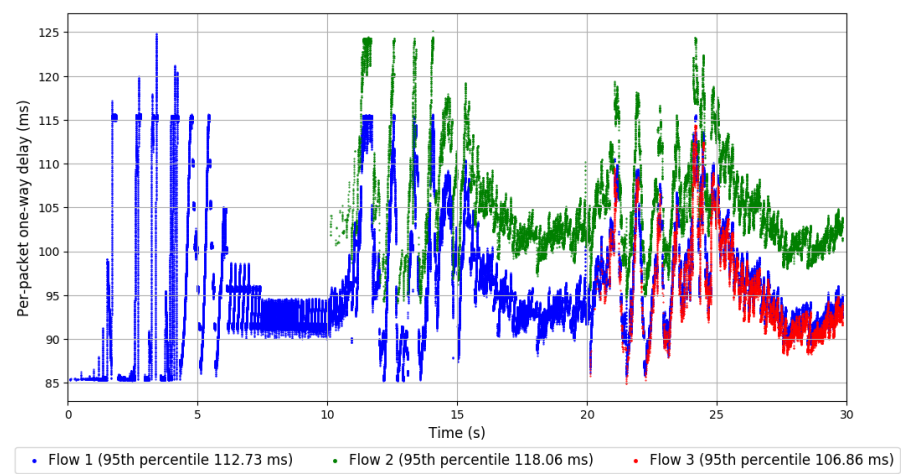
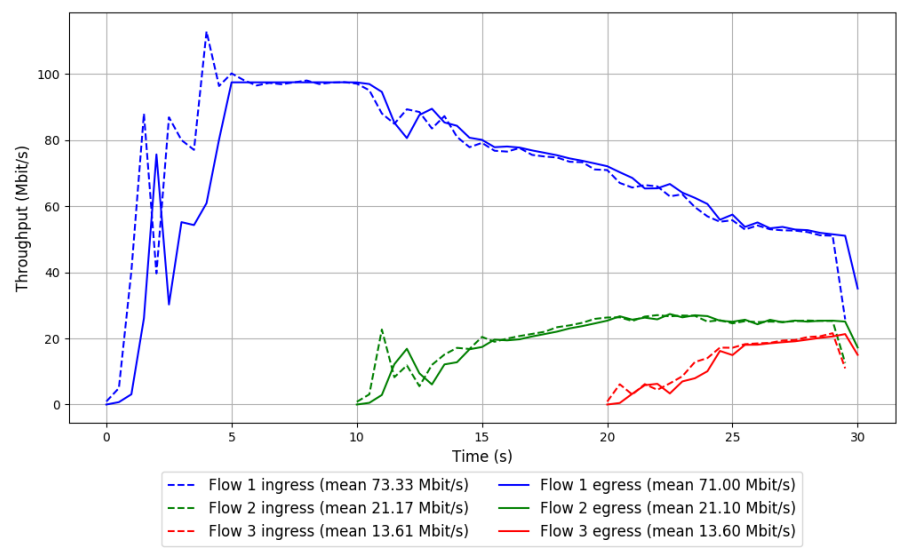
-- Flow 3:

Average throughput: 13.60 Mbit/s

95th percentile per-packet one-way delay: 106.865 ms

Loss rate: 0.01%

Run 3: Report of Indigo-Muses — Data Link



Run 4: Statistics of Indigo-Muses

Start at: 2018-10-02 11:28:57

End at: 2018-10-02 11:29:27

Local clock offset: -6.059 ms

Remote clock offset: 2.556 ms

# Below is generated by plot.py at 2018-10-02 12:05:21

# Datalink statistics

-- Total of 3 flows:

Average throughput: 86.43 Mbit/s

95th percentile per-packet one-way delay: 118.997 ms

Loss rate: 3.49%

-- Flow 1:

Average throughput: 66.94 Mbit/s

95th percentile per-packet one-way delay: 118.965 ms

Loss rate: 3.94%

-- Flow 2:

Average throughput: 20.63 Mbit/s

95th percentile per-packet one-way delay: 120.595 ms

Loss rate: 1.70%

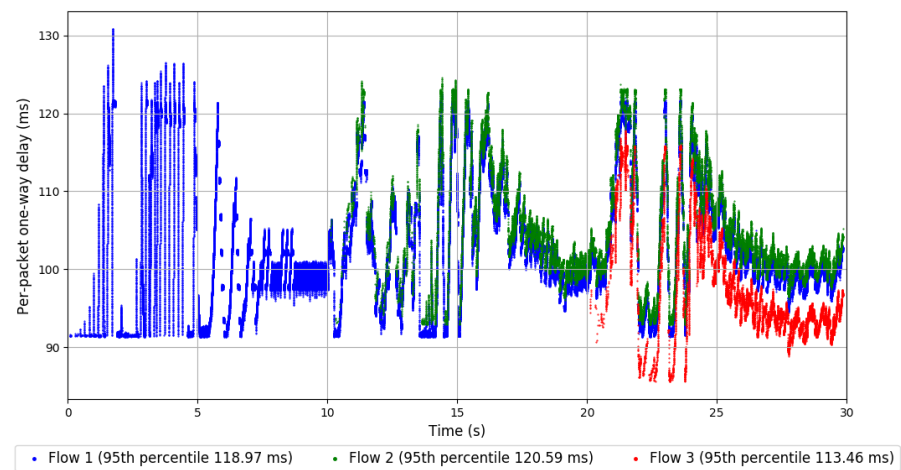
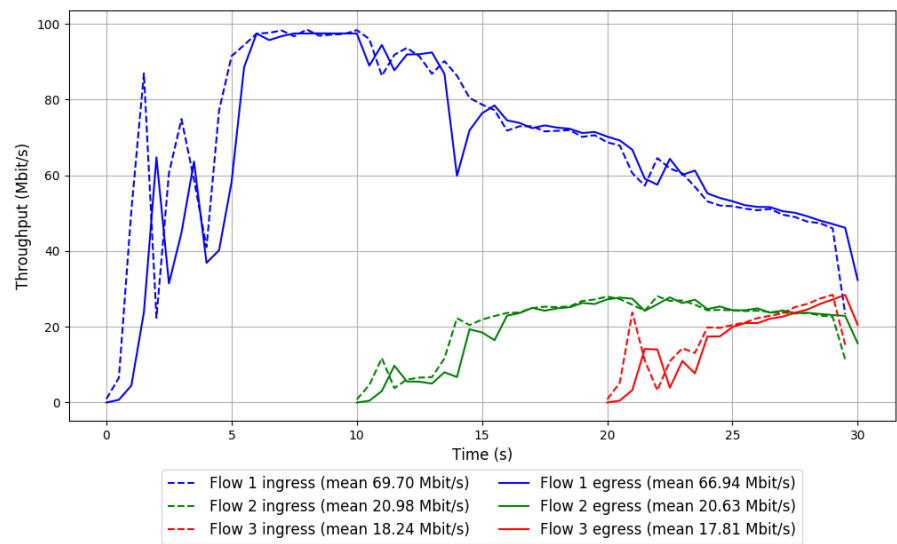
-- Flow 3:

Average throughput: 17.81 Mbit/s

95th percentile per-packet one-way delay: 113.456 ms

Loss rate: 2.35%

Run 4: Report of Indigo-Muses — Data Link

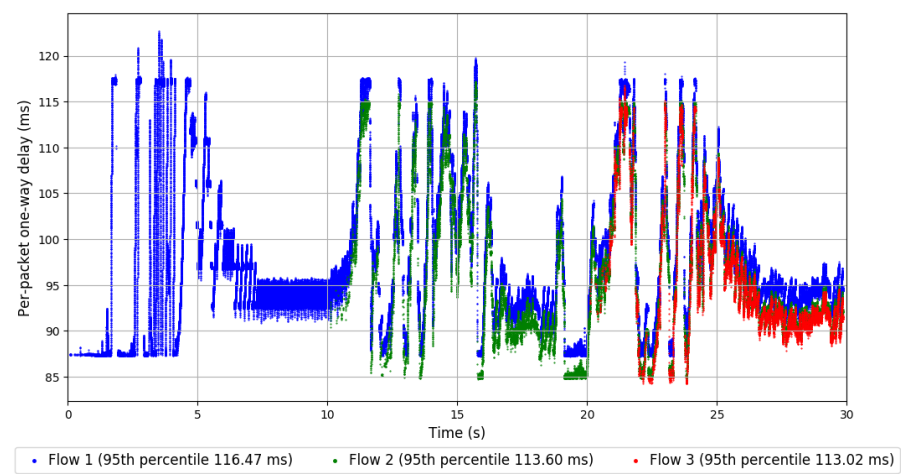
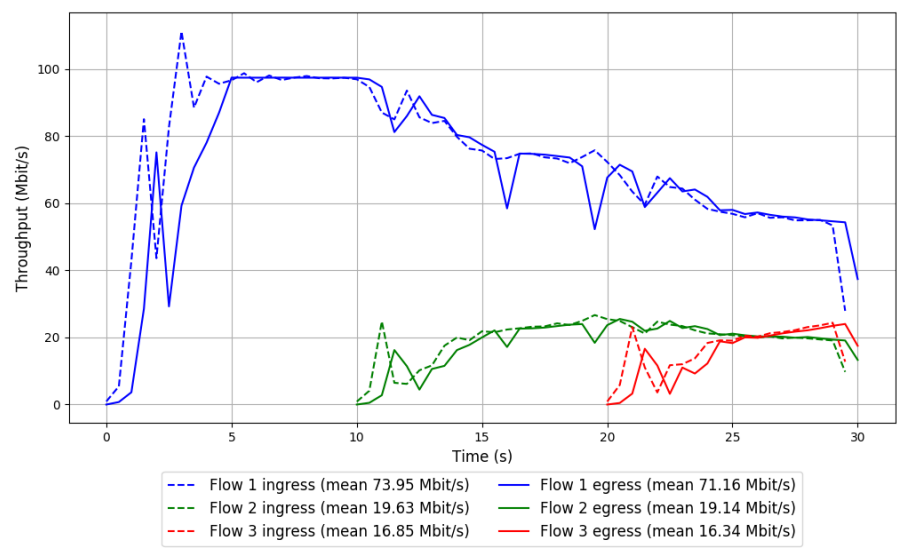


Run 5: Statistics of Indigo-Muses

Start at: 2018-10-02 11:51:51  
End at: 2018-10-02 11:52:21  
Local clock offset: -6.521 ms  
Remote clock offset: 1.904 ms

# Below is generated by plot.py at 2018-10-02 12:05:24  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 89.20 Mbit/s  
95th percentile per-packet one-way delay: 115.150 ms  
Loss rate: 3.54%  
-- Flow 1:  
Average throughput: 71.16 Mbit/s  
95th percentile per-packet one-way delay: 116.471 ms  
Loss rate: 3.75%  
-- Flow 2:  
Average throughput: 19.14 Mbit/s  
95th percentile per-packet one-way delay: 113.601 ms  
Loss rate: 2.52%  
-- Flow 3:  
Average throughput: 16.34 Mbit/s  
95th percentile per-packet one-way delay: 113.019 ms  
Loss rate: 3.05%

Run 5: Report of Indigo-Muses — Data Link



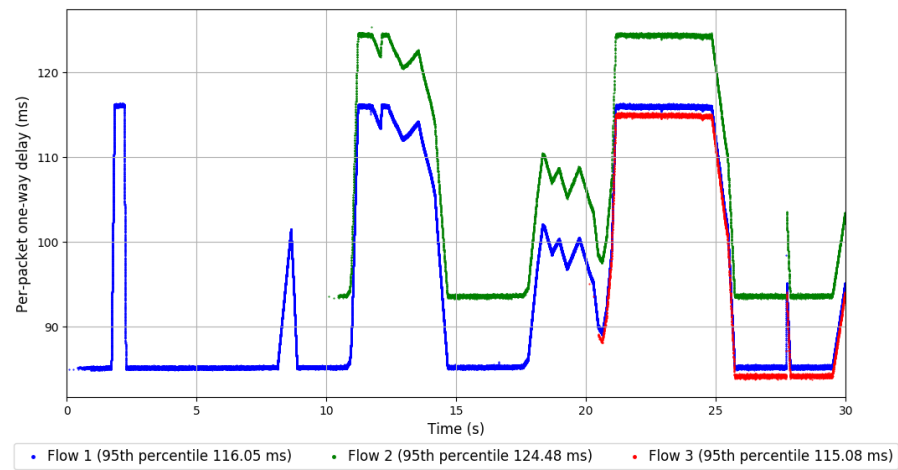
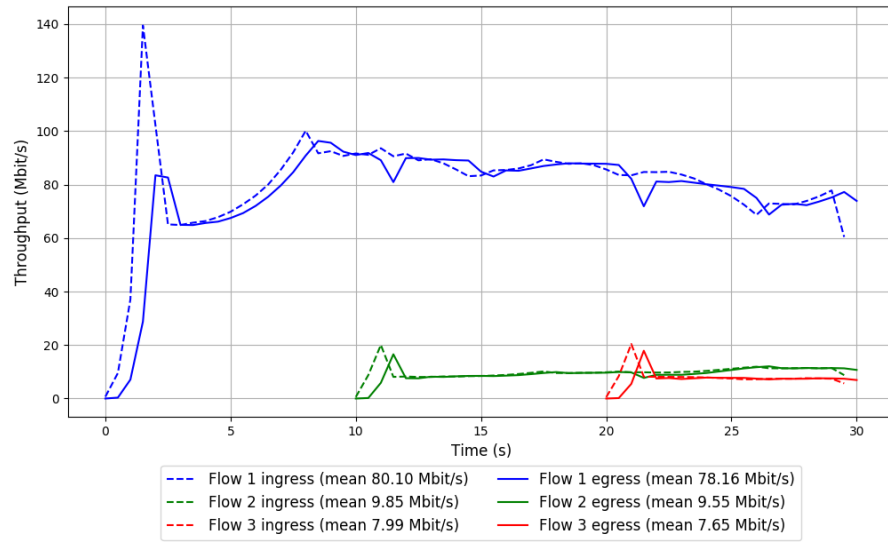


Run 1: Statistics of PCC-Allegro

Start at: 2018-10-02 10:05:19  
End at: 2018-10-02 10:05:49  
Local clock offset: -6.737 ms  
Remote clock offset: -0.566 ms

# Below is generated by plot.py at 2018-10-02 12:05:24  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 87.03 Mbit/s  
95th percentile per-packet one-way delay: 116.096 ms  
Loss rate: 2.50%  
-- Flow 1:  
Average throughput: 78.16 Mbit/s  
95th percentile per-packet one-way delay: 116.051 ms  
Loss rate: 2.40%  
-- Flow 2:  
Average throughput: 9.55 Mbit/s  
95th percentile per-packet one-way delay: 124.480 ms  
Loss rate: 3.08%  
-- Flow 3:  
Average throughput: 7.65 Mbit/s  
95th percentile per-packet one-way delay: 115.084 ms  
Loss rate: 4.28%

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



Run 2: Statistics of PCC-Allegro

Start at: 2018-10-02 10:28:05

End at: 2018-10-02 10:28:35

Local clock offset: -5.114 ms

Remote clock offset: 0.745 ms

# Below is generated by plot.py at 2018-10-02 12:05:24

# Datalink statistics

-- Total of 3 flows:

Average throughput: 83.52 Mbit/s

95th percentile per-packet one-way delay: 118.247 ms

Loss rate: 3.54%

-- Flow 1:

Average throughput: 69.31 Mbit/s

95th percentile per-packet one-way delay: 118.269 ms

Loss rate: 3.47%

-- Flow 2:

Average throughput: 17.35 Mbit/s

95th percentile per-packet one-way delay: 115.673 ms

Loss rate: 3.26%

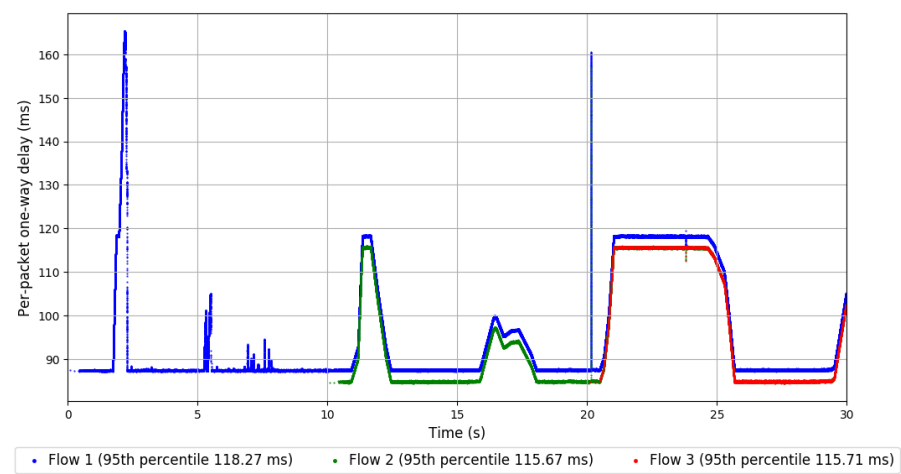
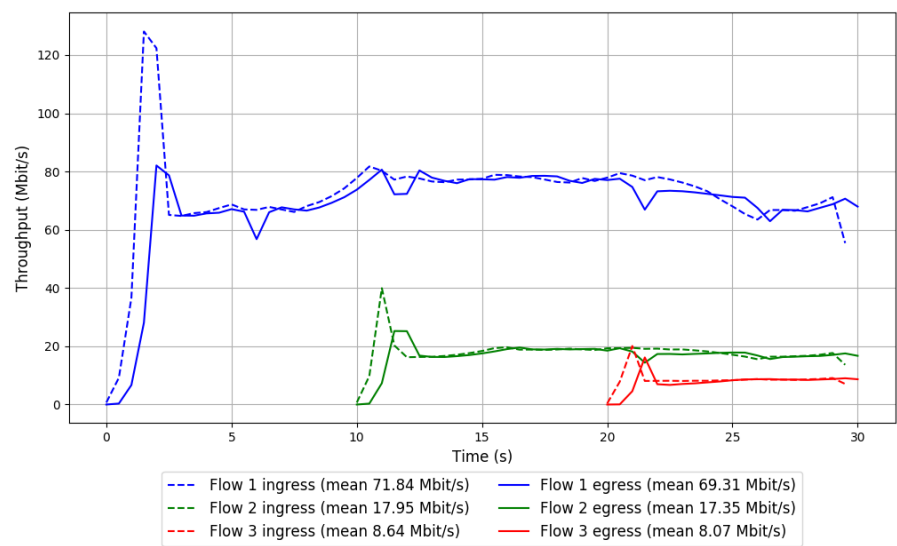
-- Flow 3:

Average throughput: 8.07 Mbit/s

95th percentile per-packet one-way delay: 115.711 ms

Loss rate: 6.38%

Run 2: Report of PCC-Allegro — Data Link

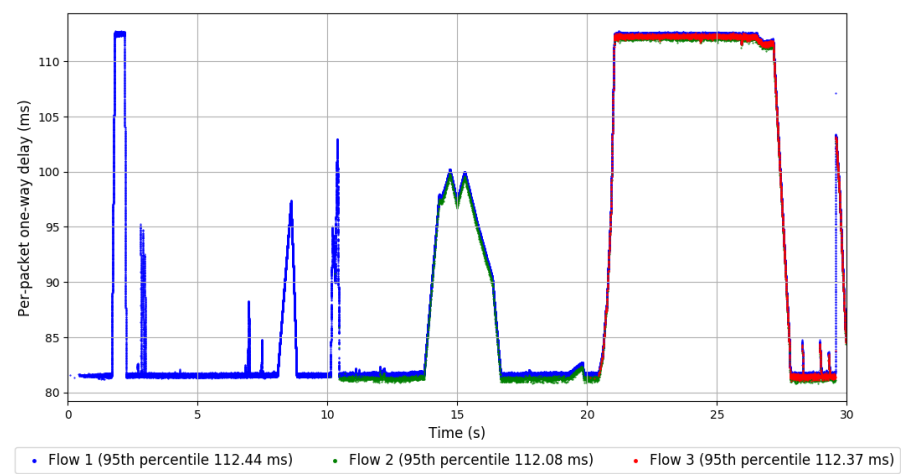
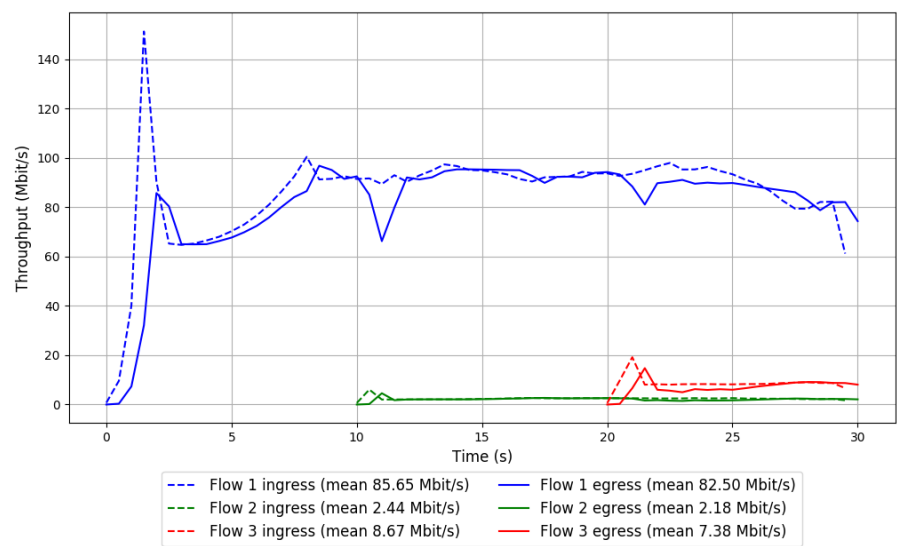


Run 3: Statistics of PCC-Allegro

Start at: 2018-10-02 10:51:00  
End at: 2018-10-02 10:51:30  
Local clock offset: -4.67 ms  
Remote clock offset: -4.281 ms

# Below is generated by plot.py at 2018-10-02 12:06:12  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 86.38 Mbit/s  
95th percentile per-packet one-way delay: 112.440 ms  
Loss rate: 4.16%  
-- Flow 1:  
Average throughput: 82.50 Mbit/s  
95th percentile per-packet one-way delay: 112.443 ms  
Loss rate: 3.68%  
-- Flow 2:  
Average throughput: 2.18 Mbit/s  
95th percentile per-packet one-way delay: 112.077 ms  
Loss rate: 10.67%  
-- Flow 3:  
Average throughput: 7.38 Mbit/s  
95th percentile per-packet one-way delay: 112.371 ms  
Loss rate: 14.93%

Run 3: Report of PCC-Allegro — Data Link



Run 4: Statistics of PCC-Allegro

Start at: 2018-10-02 11:13:48

End at: 2018-10-02 11:14:18

Local clock offset: -4.957 ms

Remote clock offset: 1.223 ms

# Below is generated by plot.py at 2018-10-02 12:06:31

# Datalink statistics

-- Total of 3 flows:

Average throughput: 86.39 Mbit/s

95th percentile per-packet one-way delay: 116.951 ms

Loss rate: 3.40%

-- Flow 1:

Average throughput: 78.11 Mbit/s

95th percentile per-packet one-way delay: 116.950 ms

Loss rate: 3.28%

-- Flow 2:

Average throughput: 7.66 Mbit/s

95th percentile per-packet one-way delay: 116.442 ms

Loss rate: 4.41%

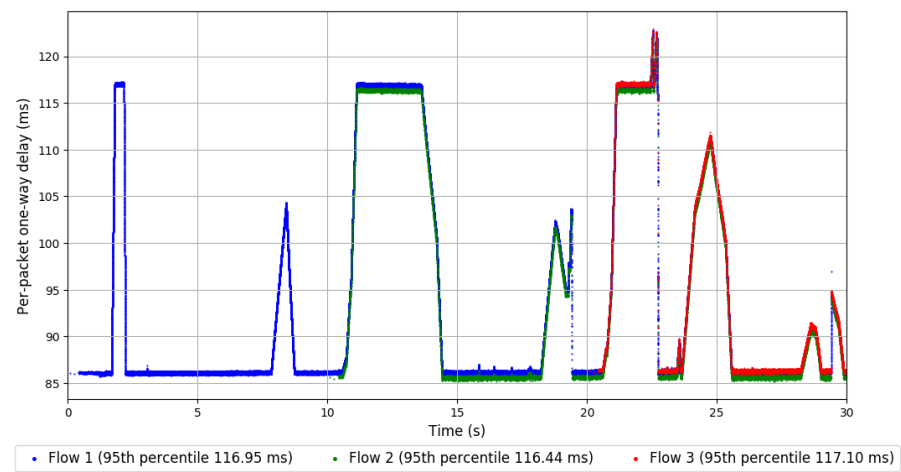
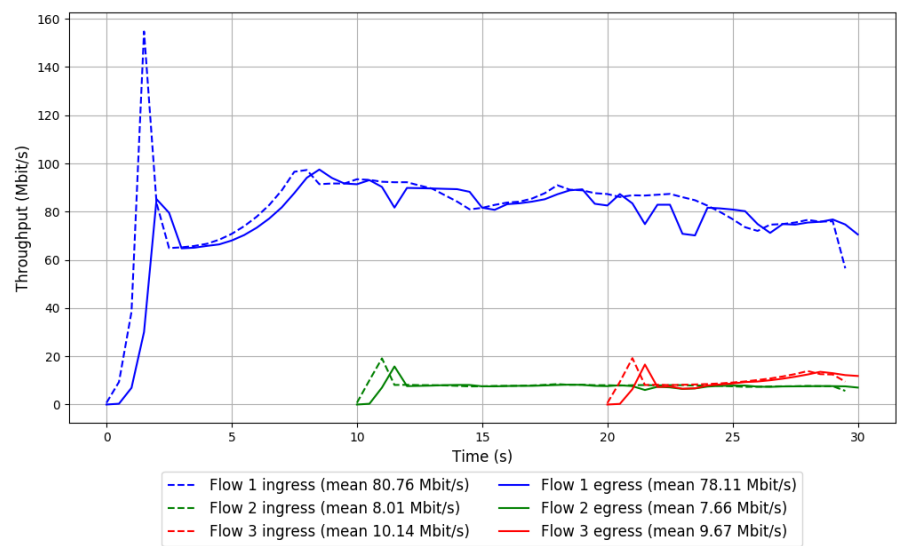
-- Flow 3:

Average throughput: 9.67 Mbit/s

95th percentile per-packet one-way delay: 117.101 ms

Loss rate: 4.67%

Run 4: Report of PCC-Allegro — Data Link



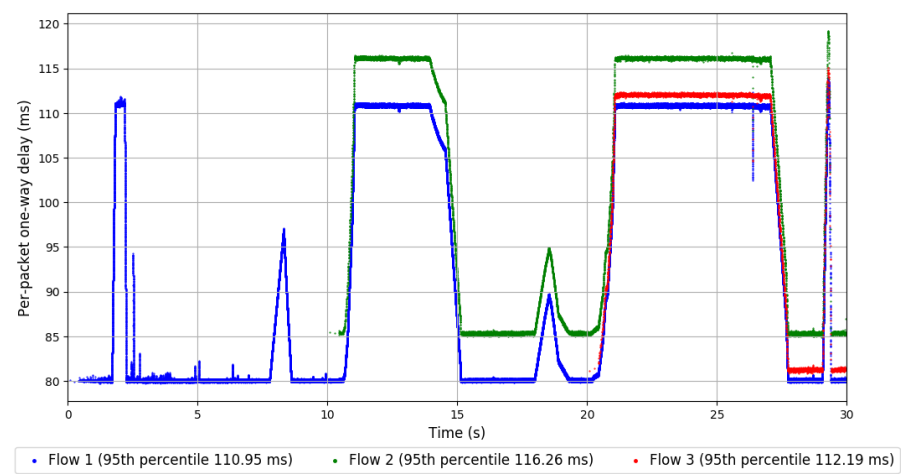
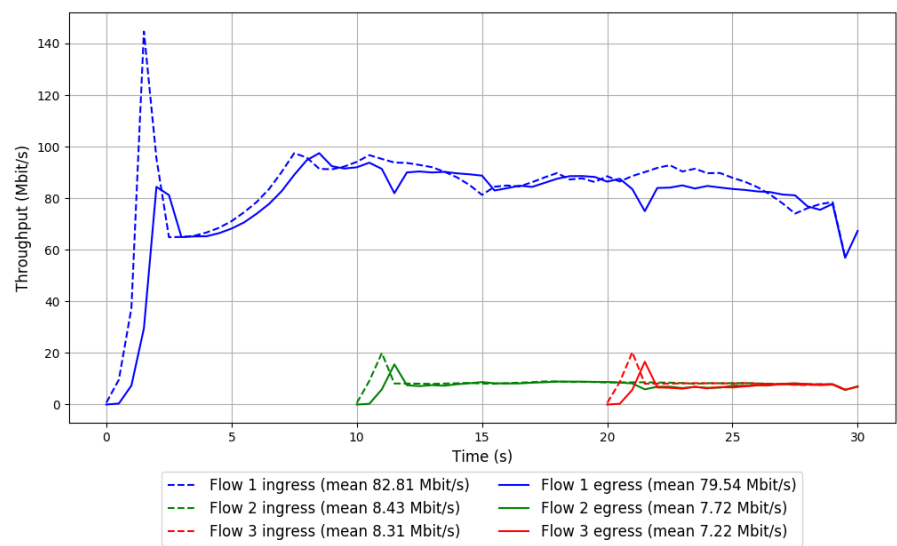


Run 5: Statistics of PCC-Allegro

Start at: 2018-10-02 11:36:38  
End at: 2018-10-02 11:37:08  
Local clock offset: -6.322 ms  
Remote clock offset: -3.306 ms

# Below is generated by plot.py at 2018-10-02 12:06:34  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 87.05 Mbit/s  
95th percentile per-packet one-way delay: 111.075 ms  
Loss rate: 4.50%  
-- Flow 1:  
Average throughput: 79.54 Mbit/s  
95th percentile per-packet one-way delay: 110.946 ms  
Loss rate: 3.95%  
-- Flow 2:  
Average throughput: 7.72 Mbit/s  
95th percentile per-packet one-way delay: 116.258 ms  
Loss rate: 8.39%  
-- Flow 3:  
Average throughput: 7.22 Mbit/s  
95th percentile per-packet one-way delay: 112.189 ms  
Loss rate: 13.10%

Run 5: Report of PCC-Allegro — Data Link

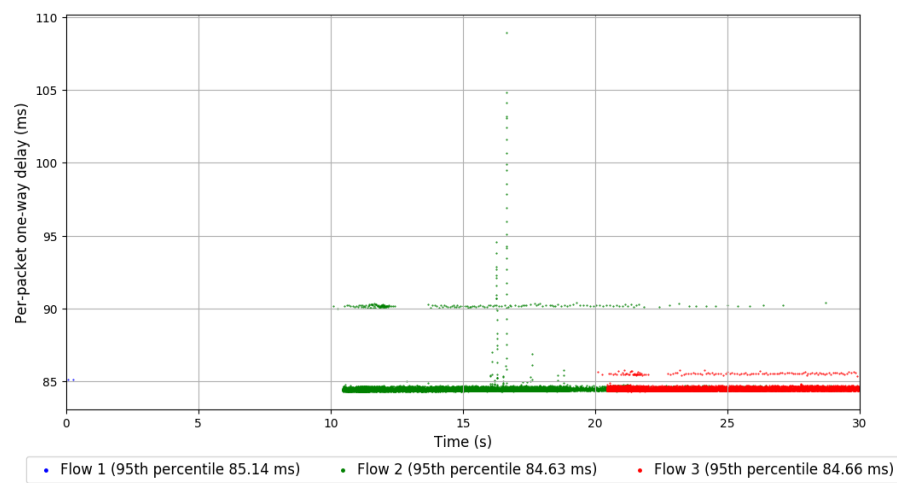
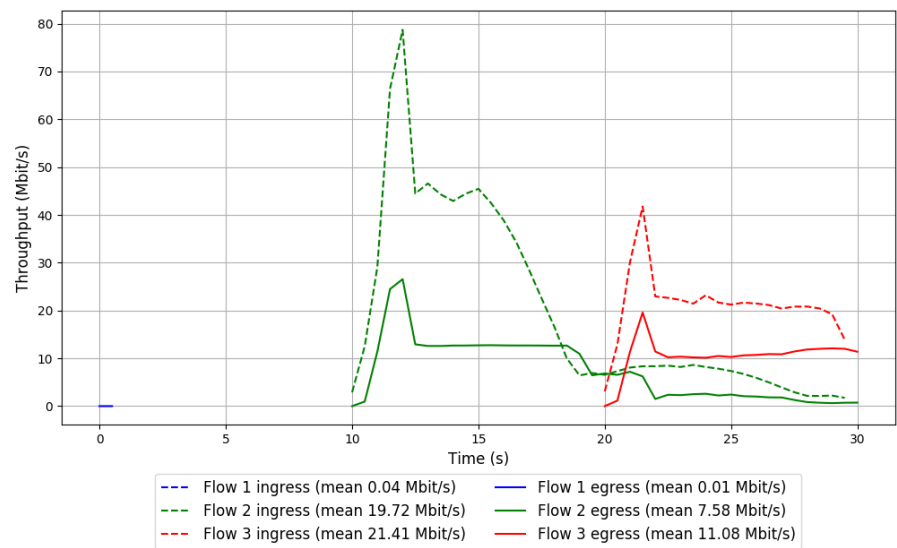


```
Run 1: Statistics of PCC-Expr

Start at: 2018-10-02 10:19:18
End at: 2018-10-02 10:19:48
Local clock offset: -6.193 ms
Remote clock offset: 0.688 ms

# Below is generated by plot.py at 2018-10-02 12:06:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.70 Mbit/s
95th percentile per-packet one-way delay: 84.644 ms
Loss rate: 56.92%
-- Flow 1:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 85.145 ms
Loss rate: 85.71%
-- Flow 2:
Average throughput: 7.58 Mbit/s
95th percentile per-packet one-way delay: 84.630 ms
Loss rate: 61.60%
-- Flow 3:
Average throughput: 11.08 Mbit/s
95th percentile per-packet one-way delay: 84.656 ms
Loss rate: 48.23%
```

Run 1: Report of PCC-Expr — Data Link



Run 2: Statistics of PCC-Expr

Start at: 2018-10-02 10:42:14

End at: 2018-10-02 10:42:44

Local clock offset: -4.49 ms

Remote clock offset: -4.13 ms

# Below is generated by plot.py at 2018-10-02 12:06:34

# Datalink statistics

-- Total of 3 flows:

Average throughput: 8.70 Mbit/s

95th percentile per-packet one-way delay: 79.529 ms

Loss rate: 56.77%

-- Flow 1:

Average throughput: 0.01 Mbit/s

95th percentile per-packet one-way delay: 81.250 ms

Loss rate: 85.71%

-- Flow 2:

Average throughput: 7.57 Mbit/s

95th percentile per-packet one-way delay: 79.528 ms

Loss rate: 61.44%

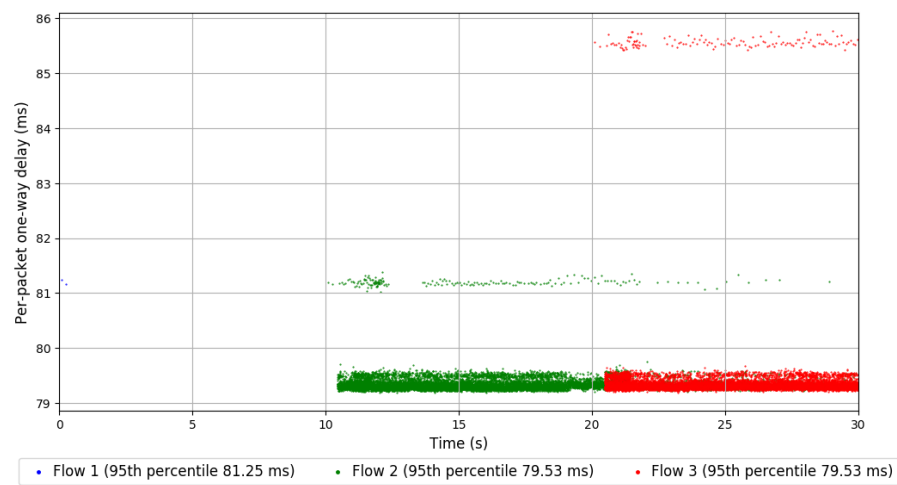
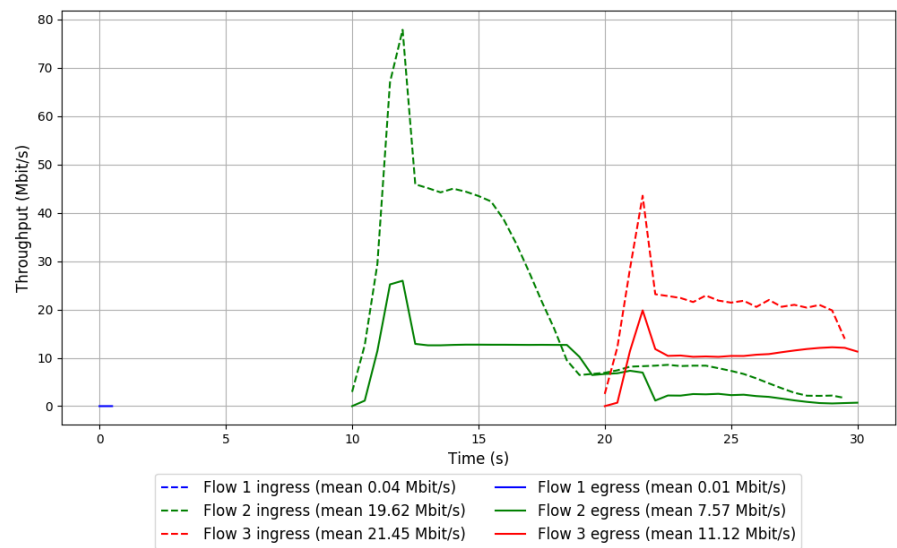
-- Flow 3:

Average throughput: 11.12 Mbit/s

95th percentile per-packet one-way delay: 79.531 ms

Loss rate: 48.16%

Run 2: Report of PCC-Expr — Data Link



Run 3: Statistics of PCC-Expr

Start at: 2018-10-02 11:05:03

End at: 2018-10-02 11:05:33

Local clock offset: -4.921 ms

Remote clock offset: 1.239 ms

# Below is generated by plot.py at 2018-10-02 12:06:34

# Datalink statistics

-- Total of 3 flows:

Average throughput: 8.70 Mbit/s

95th percentile per-packet one-way delay: 84.640 ms

Loss rate: 52.48%

-- Flow 1:

Average throughput: 0.01 Mbit/s

95th percentile per-packet one-way delay: 85.491 ms

Loss rate: 85.71%

-- Flow 2:

Average throughput: 11.35 Mbit/s

95th percentile per-packet one-way delay: 84.639 ms

Loss rate: 54.97%

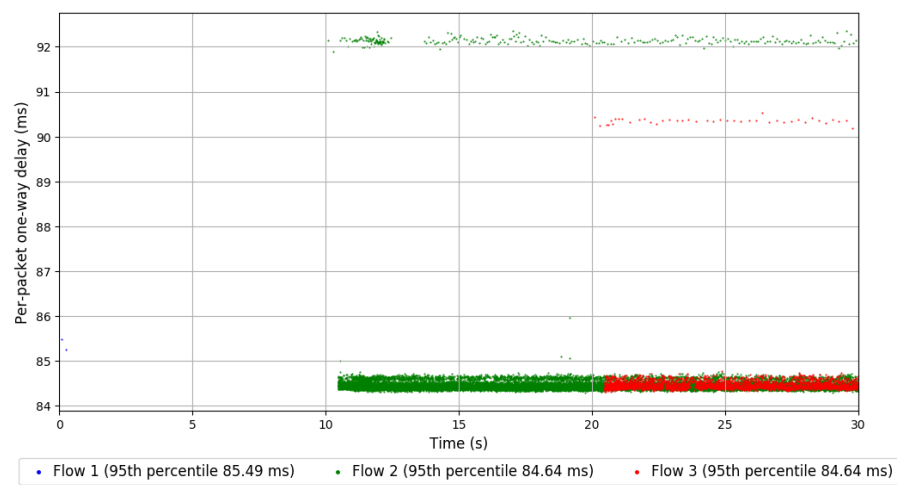
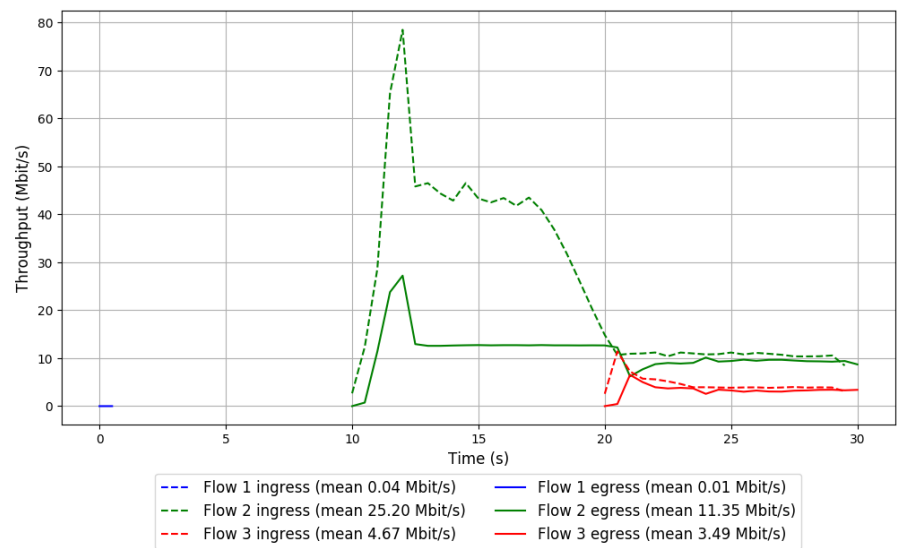
-- Flow 3:

Average throughput: 3.49 Mbit/s

95th percentile per-packet one-way delay: 84.644 ms

Loss rate: 25.41%

Run 3: Report of PCC-Expr — Data Link





Run 4: Statistics of PCC-Expr

Start at: 2018-10-02 11:27:44

End at: 2018-10-02 11:28:14

Local clock offset: -6.005 ms

Remote clock offset: 2.649 ms

# Below is generated by plot.py at 2018-10-02 12:06:34

# Datalink statistics

-- Total of 3 flows:

Average throughput: 8.03 Mbit/s

95th percentile per-packet one-way delay: 87.493 ms

Loss rate: 54.38%

-- Flow 1:

Average throughput: 0.01 Mbit/s

95th percentile per-packet one-way delay: 88.537 ms

Loss rate: 85.71%

-- Flow 2:

Average throughput: 8.35 Mbit/s

95th percentile per-packet one-way delay: 85.688 ms

Loss rate: 57.86%

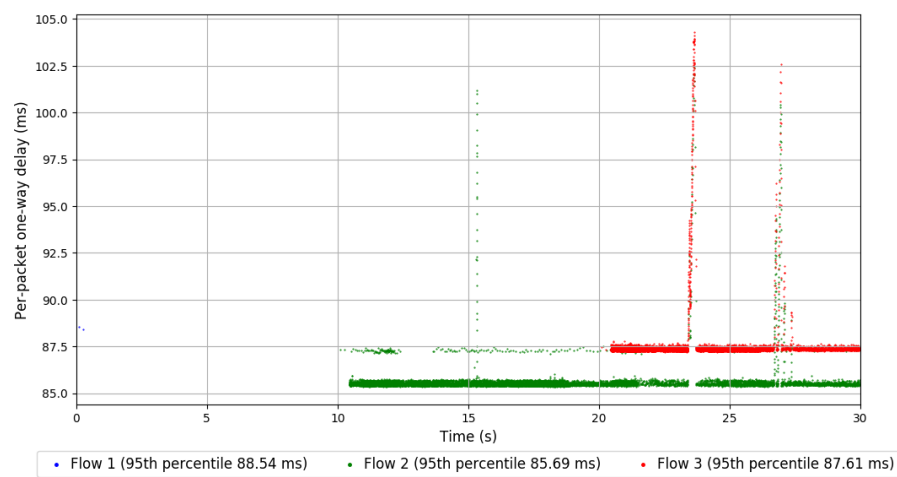
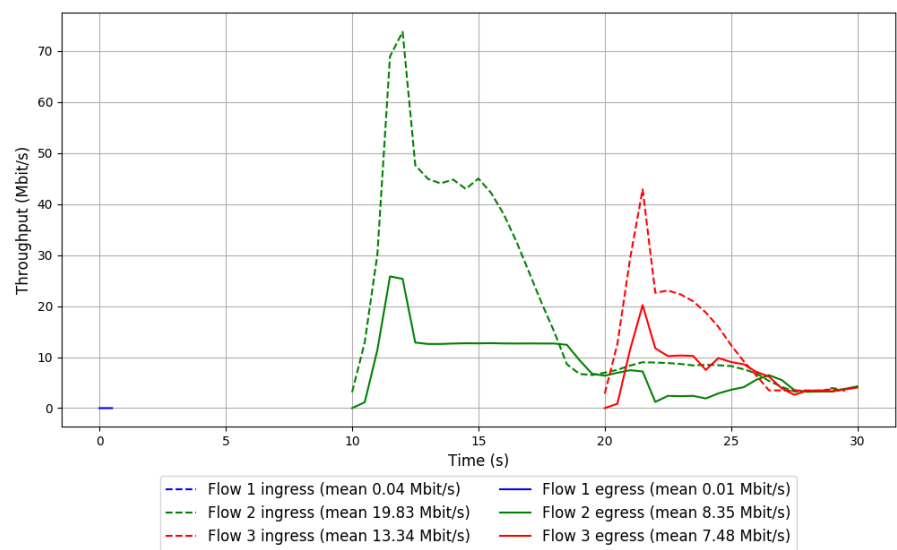
-- Flow 3:

Average throughput: 7.48 Mbit/s

95th percentile per-packet one-way delay: 87.612 ms

Loss rate: 43.94%

Run 4: Report of PCC-Expr — Data Link

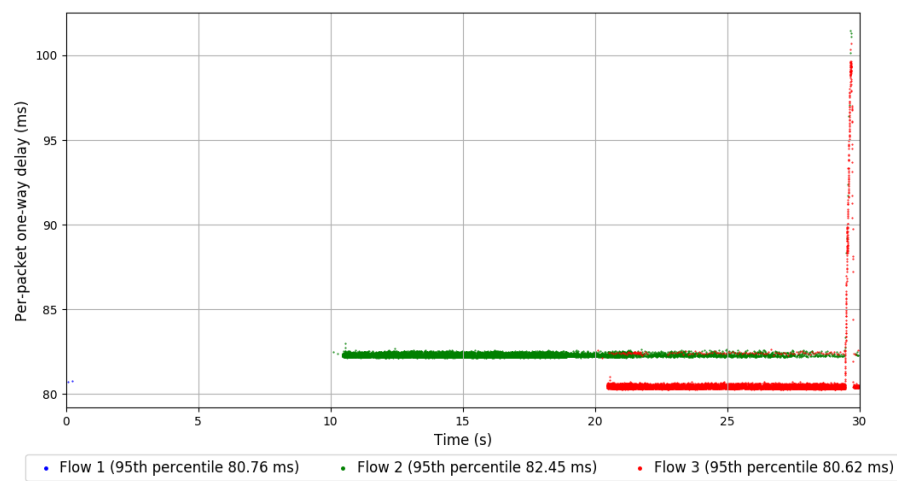
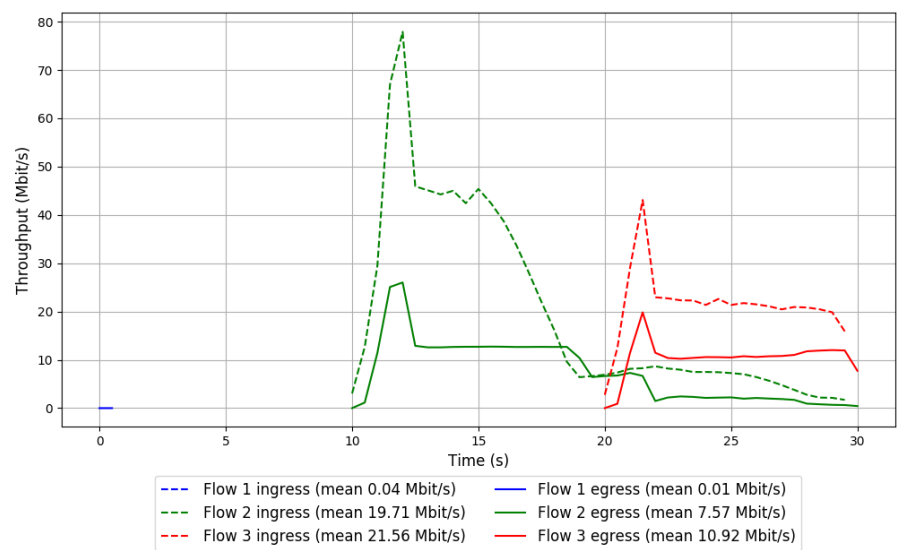


Run 5: Statistics of PCC-Expr

Start at: 2018-10-02 11:50:37  
End at: 2018-10-02 11:51:07  
Local clock offset: -6.542 ms  
Remote clock offset: -2.076 ms

# Below is generated by plot.py at 2018-10-02 12:06:34  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 8.64 Mbit/s  
95th percentile per-packet one-way delay: 82.435 ms  
Loss rate: 57.29%  
-- Flow 1:  
Average throughput: 0.01 Mbit/s  
95th percentile per-packet one-way delay: 80.761 ms  
Loss rate: 85.71%  
-- Flow 2:  
Average throughput: 7.57 Mbit/s  
95th percentile per-packet one-way delay: 82.449 ms  
Loss rate: 61.59%  
-- Flow 3:  
Average throughput: 10.92 Mbit/s  
95th percentile per-packet one-way delay: 80.623 ms  
Loss rate: 49.38%

Run 5: Report of PCC-Expr — Data Link

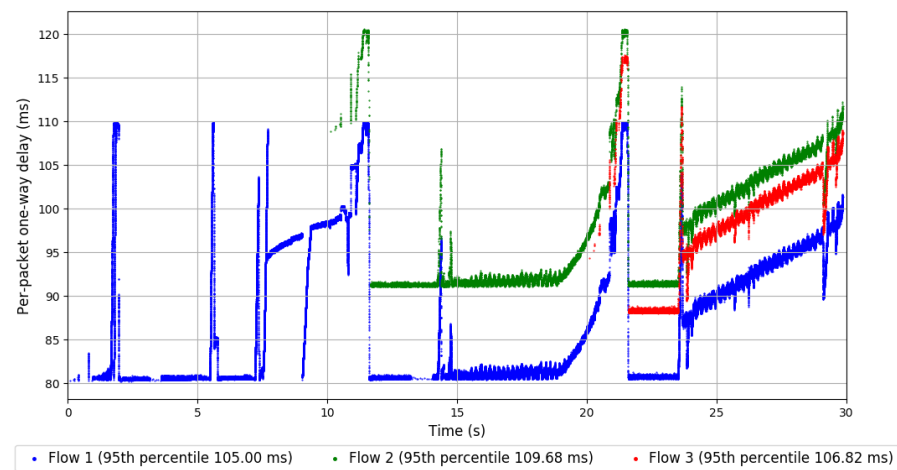
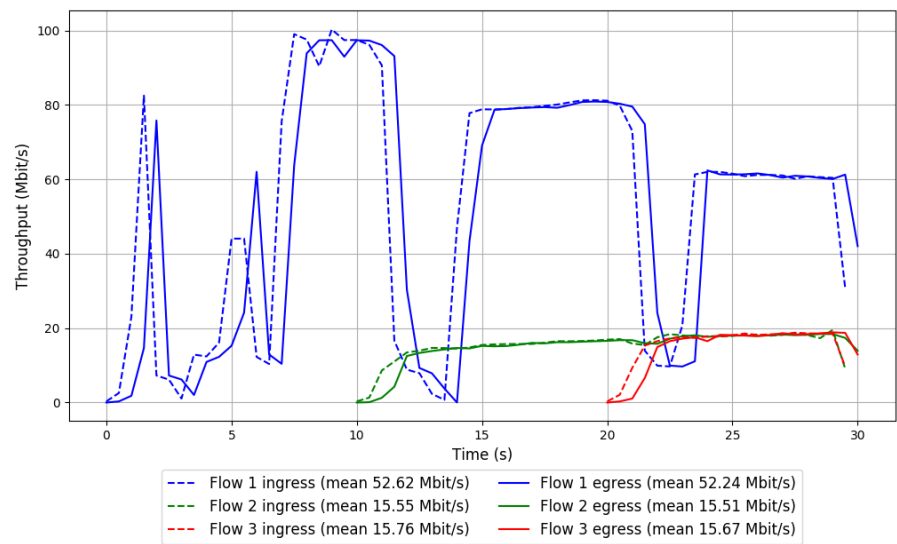


Run 1: Statistics of QUIC Cubic

Start at: 2018-10-02 10:15:30  
End at: 2018-10-02 10:16:00  
Local clock offset: -7.035 ms  
Remote clock offset: -3.317 ms

# Below is generated by plot.py at 2018-10-02 12:06:34  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 67.65 Mbit/s  
95th percentile per-packet one-way delay: 107.202 ms  
Loss rate: 0.57%  
-- Flow 1:  
Average throughput: 52.24 Mbit/s  
95th percentile per-packet one-way delay: 105.001 ms  
Loss rate: 0.64%  
-- Flow 2:  
Average throughput: 15.51 Mbit/s  
95th percentile per-packet one-way delay: 109.676 ms  
Loss rate: 0.24%  
-- Flow 3:  
Average throughput: 15.67 Mbit/s  
95th percentile per-packet one-way delay: 106.816 ms  
Loss rate: 0.47%

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2018-10-02 10:38:25

End at: 2018-10-02 10:38:55

Local clock offset: -4.599 ms

Remote clock offset: 1.05 ms

# Below is generated by plot.py at 2018-10-02 12:06:34

# Datalink statistics

-- Total of 3 flows:

Average throughput: 65.66 Mbit/s

95th percentile per-packet one-way delay: 111.299 ms

Loss rate: 0.69%

-- Flow 1:

Average throughput: 52.04 Mbit/s

95th percentile per-packet one-way delay: 111.080 ms

Loss rate: 0.75%

-- Flow 2:

Average throughput: 11.63 Mbit/s

95th percentile per-packet one-way delay: 112.071 ms

Loss rate: 0.38%

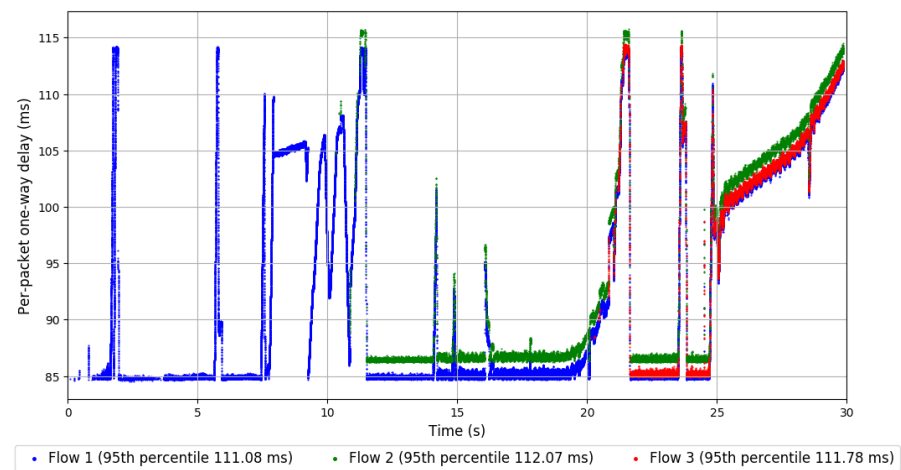
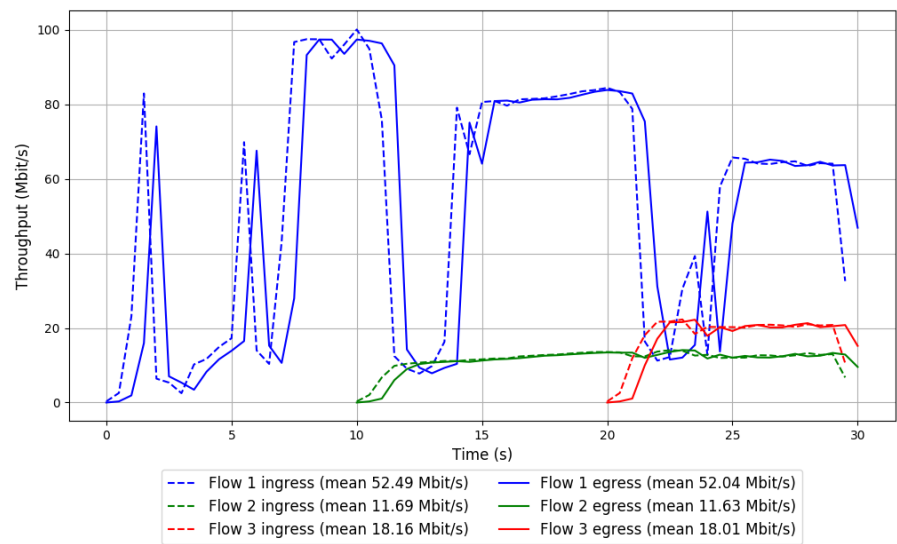
-- Flow 3:

Average throughput: 18.01 Mbit/s

95th percentile per-packet one-way delay: 111.783 ms

Loss rate: 0.54%

Run 2: Report of QUIC Cubic — Data Link





Run 3: Statistics of QUIC Cubic

Start at: 2018-10-02 11:01:18

End at: 2018-10-02 11:01:48

Local clock offset: -4.97 ms

Remote clock offset: 2.23 ms

# Below is generated by plot.py at 2018-10-02 12:06:34

# Datalink statistics

-- Total of 3 flows:

Average throughput: 43.56 Mbit/s

95th percentile per-packet one-way delay: 110.007 ms

Loss rate: 1.27%

-- Flow 1:

Average throughput: 10.05 Mbit/s

95th percentile per-packet one-way delay: 107.796 ms

Loss rate: 0.46%

-- Flow 2:

Average throughput: 36.76 Mbit/s

95th percentile per-packet one-way delay: 111.955 ms

Loss rate: 1.83%

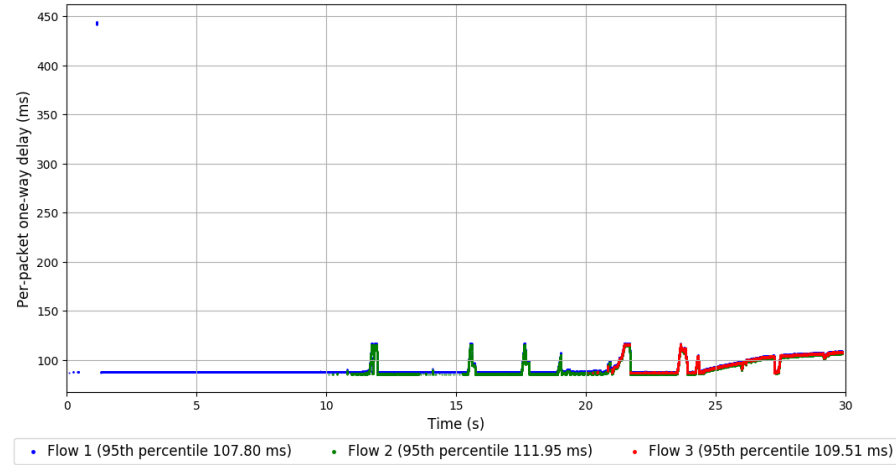
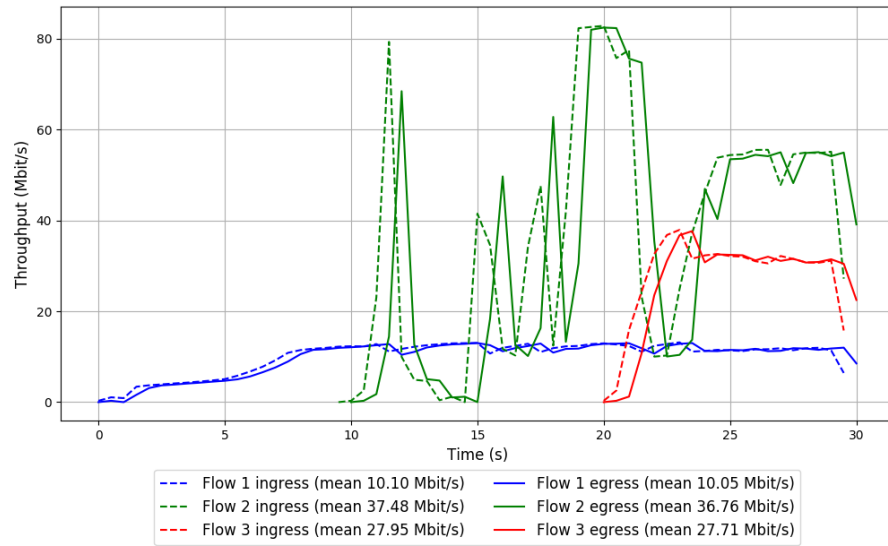
-- Flow 3:

Average throughput: 27.71 Mbit/s

95th percentile per-packet one-way delay: 109.512 ms

Loss rate: 0.64%

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



Run 4: Statistics of QUIC Cubic

Start at: 2018-10-02 11:23:58

End at: 2018-10-02 11:24:28

Local clock offset: -5.775 ms

Remote clock offset: 1.348 ms

# Below is generated by plot.py at 2018-10-02 12:06:34

# Datalink statistics

-- Total of 3 flows:

Average throughput: 52.37 Mbit/s

95th percentile per-packet one-way delay: 115.333 ms

Loss rate: 4.57%

-- Flow 1:

Average throughput: 29.49 Mbit/s

95th percentile per-packet one-way delay: 111.651 ms

Loss rate: 3.11%

-- Flow 2:

Average throughput: 28.21 Mbit/s

95th percentile per-packet one-way delay: 120.962 ms

Loss rate: 4.50%

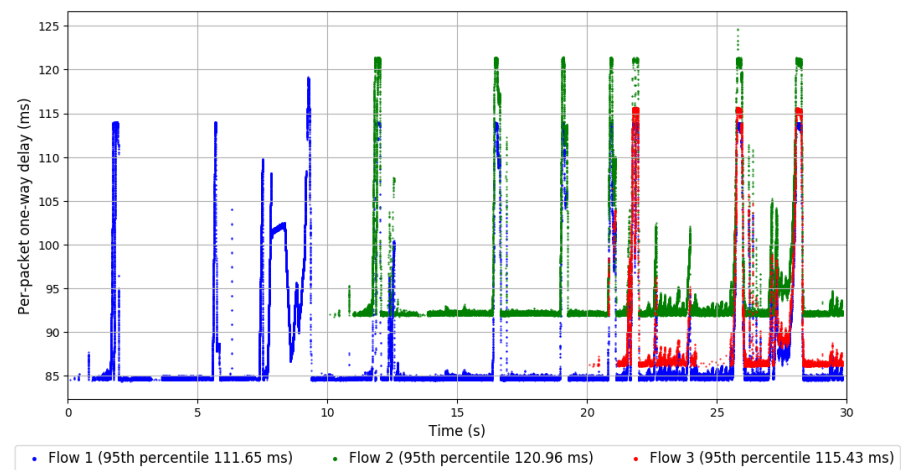
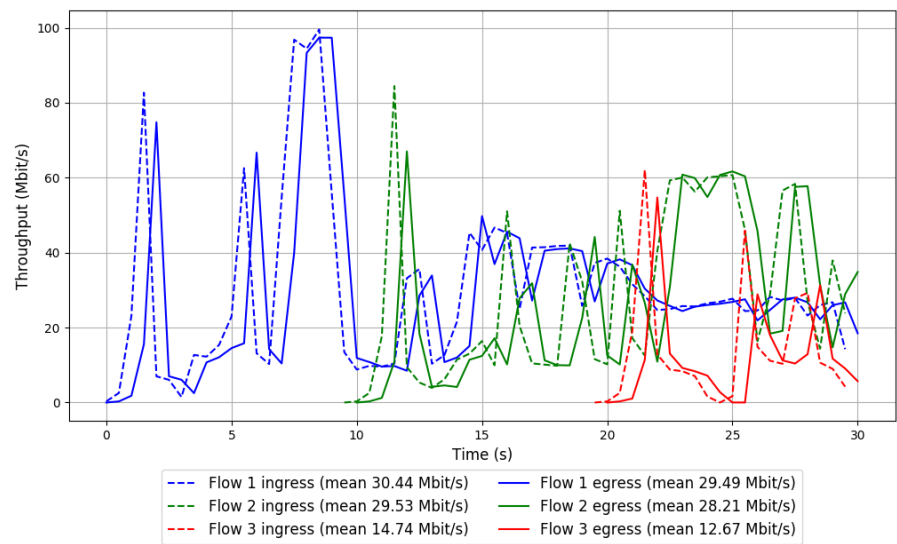
-- Flow 3:

Average throughput: 12.67 Mbit/s

95th percentile per-packet one-way delay: 115.434 ms

Loss rate: 13.99%

Run 4: Report of QUIC Cubic — Data Link



Run 5: Statistics of QUIC Cubic

Start at: 2018-10-02 11:46:50

End at: 2018-10-02 11:47:20

Local clock offset: -6.526 ms

Remote clock offset: 1.894 ms

# Below is generated by plot.py at 2018-10-02 12:06:34

# Datalink statistics

-- Total of 3 flows:

Average throughput: 62.77 Mbit/s

95th percentile per-packet one-way delay: 113.138 ms

Loss rate: 1.44%

-- Flow 1:

Average throughput: 43.40 Mbit/s

95th percentile per-packet one-way delay: 112.803 ms

Loss rate: 1.02%

-- Flow 2:

Average throughput: 26.79 Mbit/s

95th percentile per-packet one-way delay: 113.914 ms

Loss rate: 2.55%

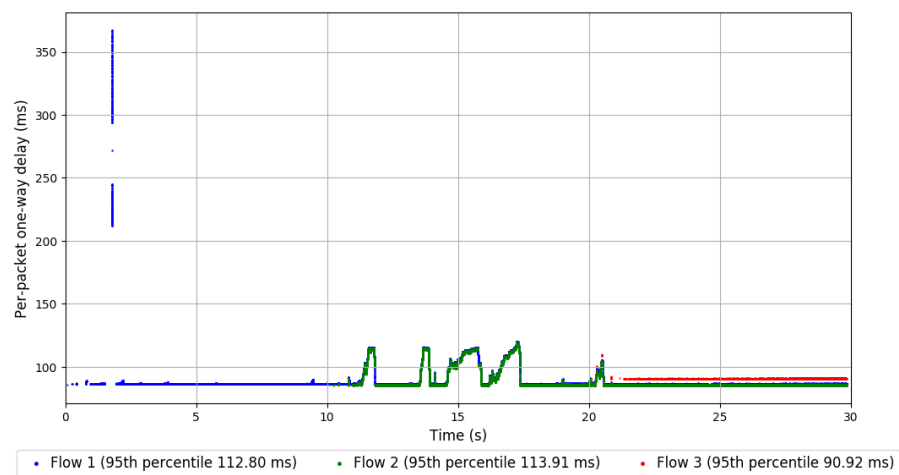
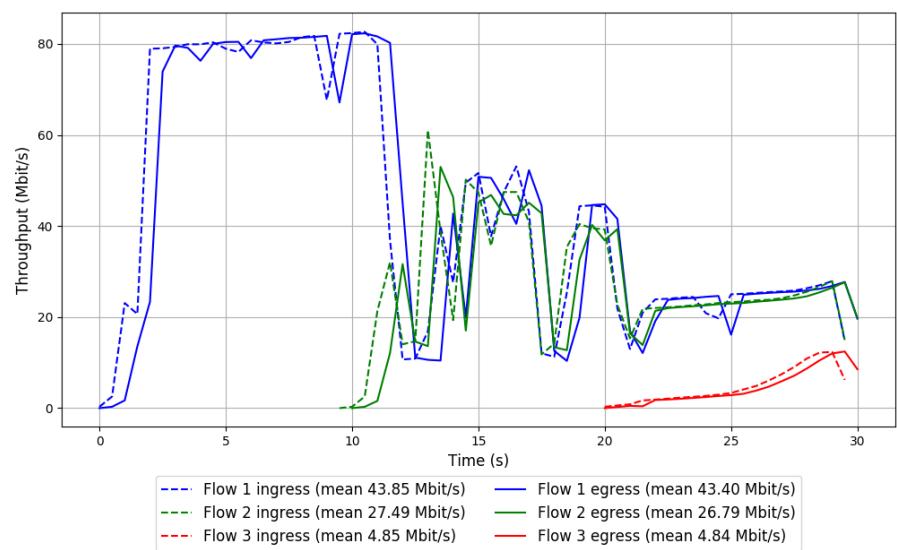
-- Flow 3:

Average throughput: 4.84 Mbit/s

95th percentile per-packet one-way delay: 90.915 ms

Loss rate: 0.34%

Run 5: Report of QUIC Cubic — Data Link

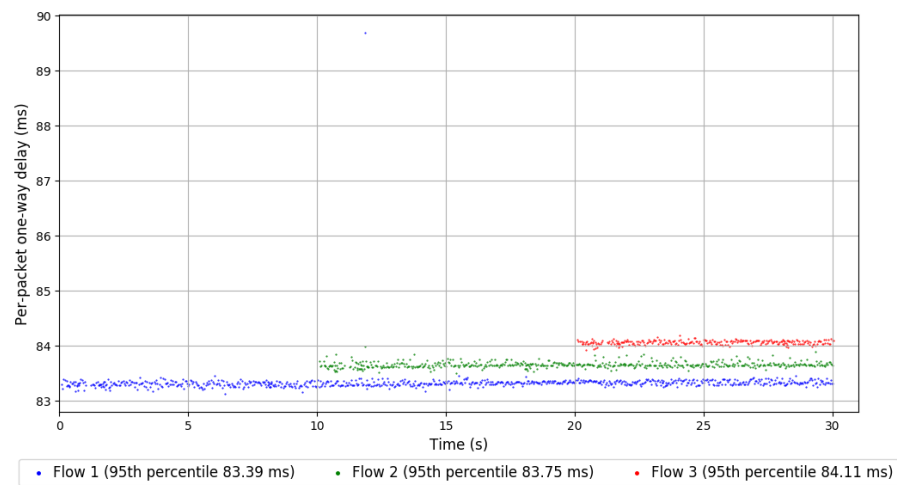
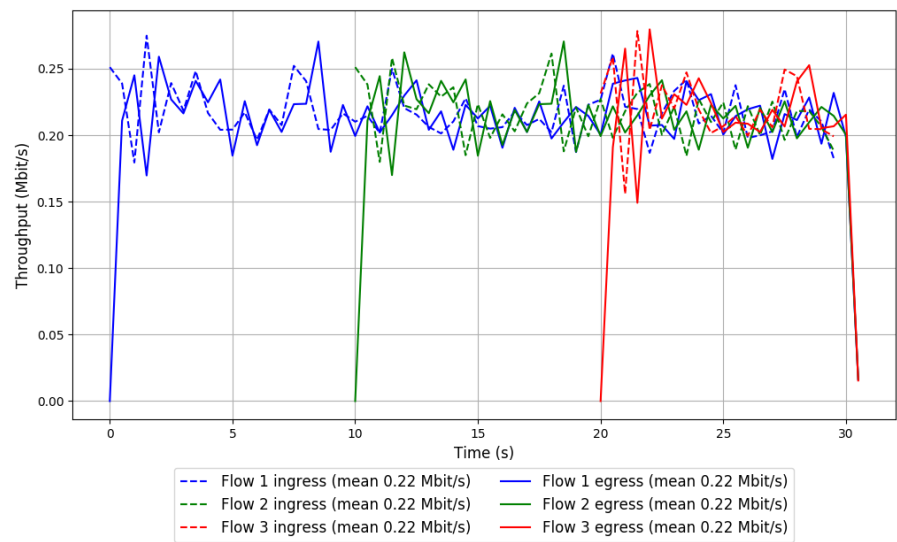


Run 1: Statistics of SReAM

Start at: 2018-10-02 10:25:34  
End at: 2018-10-02 10:26:04  
Local clock offset: -5.371 ms  
Remote clock offset: -0.424 ms

# Below is generated by plot.py at 2018-10-02 12:06:34  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 0.44 Mbit/s  
95th percentile per-packet one-way delay: 84.085 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 83.392 ms  
Loss rate: 0.00%  
-- Flow 2:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 83.755 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 84.115 ms  
Loss rate: 0.00%

Run 1: Report of SCReAM — Data Link



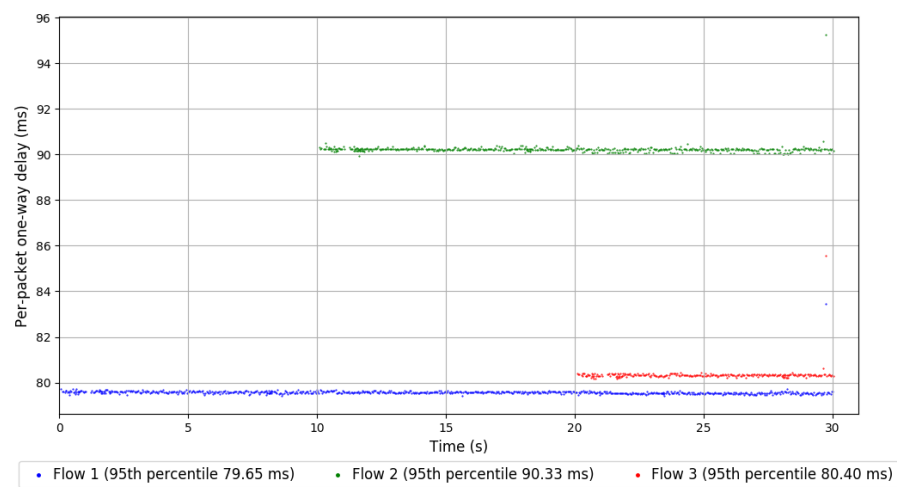
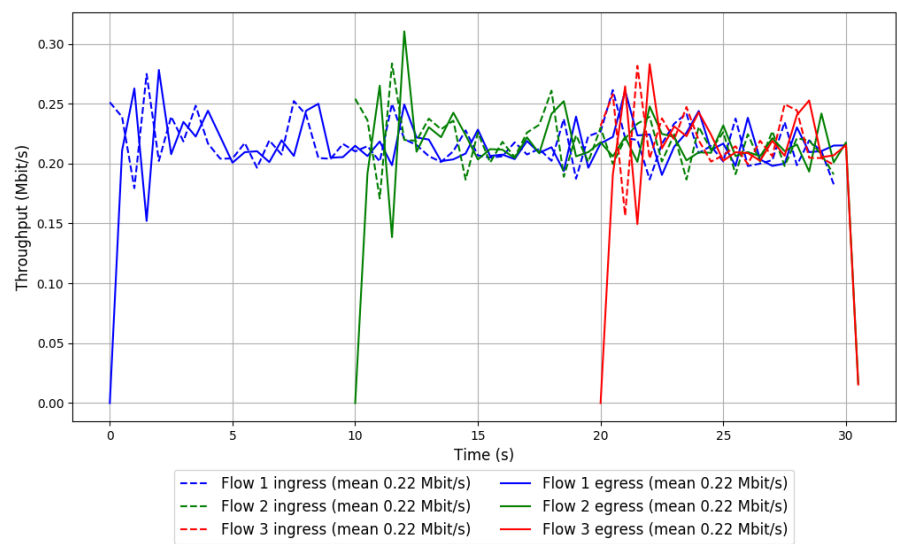


Run 2: Statistics of SReAM

Start at: 2018-10-02 10:48:28  
End at: 2018-10-02 10:48:58  
Local clock offset: -4.57 ms  
Remote clock offset: -4.181 ms

# Below is generated by plot.py at 2018-10-02 12:06:34  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 0.44 Mbit/s  
95th percentile per-packet one-way delay: 90.265 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 79.646 ms  
Loss rate: 0.00%  
-- Flow 2:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 90.332 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 80.398 ms  
Loss rate: 0.00%

Run 2: Report of SReAM — Data Link

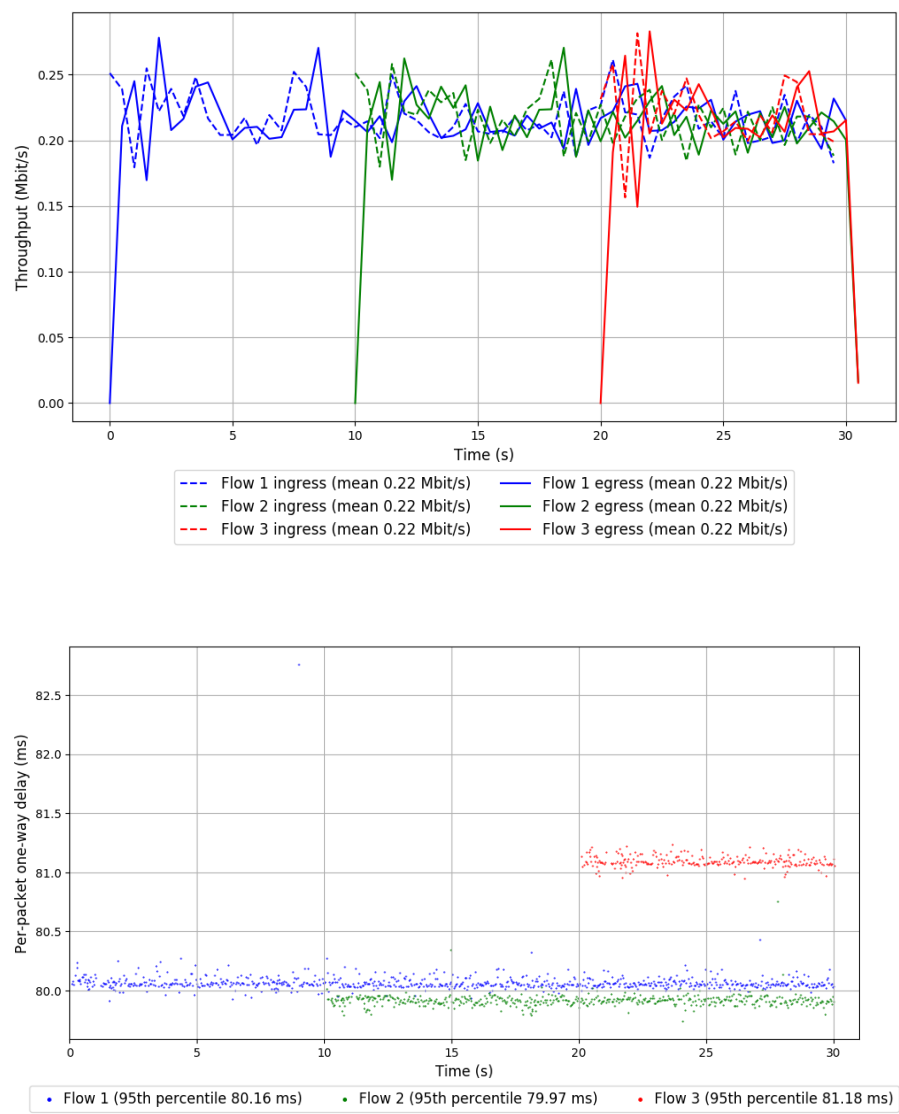


Run 3: Statistics of SReAM

Start at: 2018-10-02 11:11:17  
End at: 2018-10-02 11:11:47  
Local clock offset: -4.986 ms  
Remote clock offset: -3.902 ms

# Below is generated by plot.py at 2018-10-02 12:06:34  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 0.44 Mbit/s  
95th percentile per-packet one-way delay: 81.108 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 80.156 ms  
Loss rate: 0.00%  
-- Flow 2:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 79.967 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 81.180 ms  
Loss rate: 0.00%

Run 3: Report of SReAM — Data Link

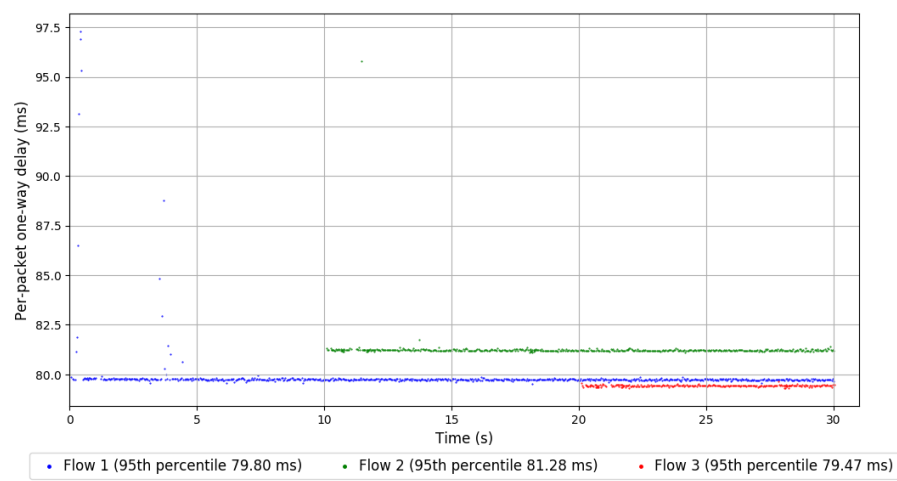
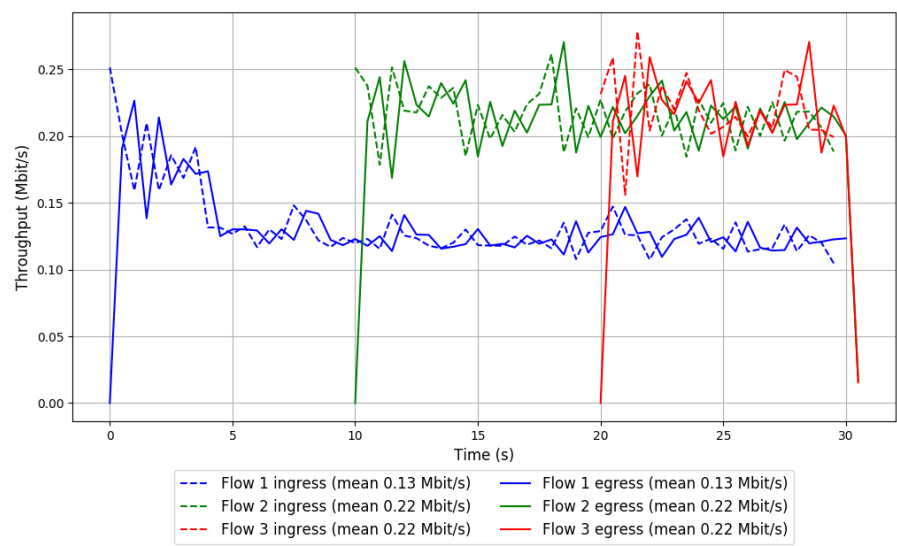


Run 4: Statistics of SReAM

Start at: 2018-10-02 11:34:07  
End at: 2018-10-02 11:34:37  
Local clock offset: -6.25 ms  
Remote clock offset: -3.376 ms

# Below is generated by plot.py at 2018-10-02 12:06:34  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 0.35 Mbit/s  
95th percentile per-packet one-way delay: 81.255 ms  
Loss rate: 0.24%  
-- Flow 1:  
Average throughput: 0.13 Mbit/s  
95th percentile per-packet one-way delay: 79.803 ms  
Loss rate: 0.63%  
-- Flow 2:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 81.281 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 79.474 ms  
Loss rate: 0.00%

Run 4: Report of SReAM — Data Link

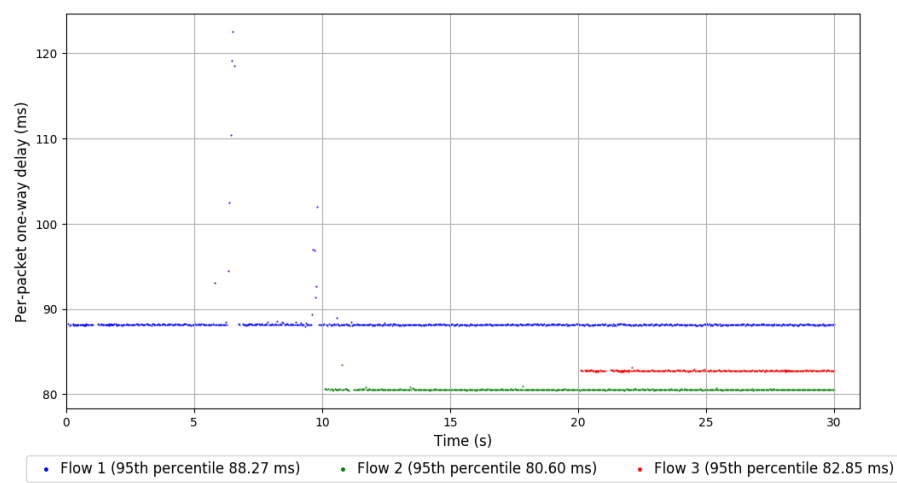
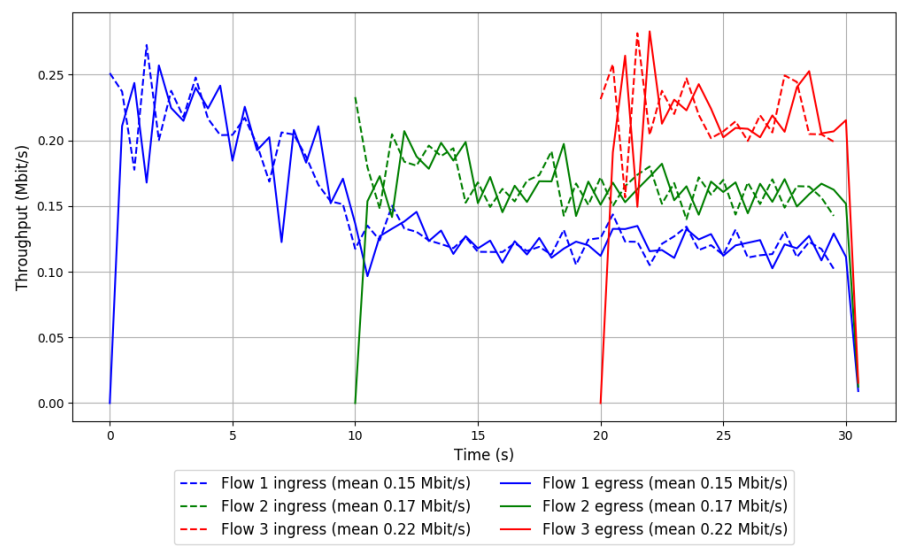


Run 5: Statistics of SReAM

Start at: 2018-10-02 11:57:01  
End at: 2018-10-02 11:57:31  
Local clock offset: -6.548 ms  
Remote clock offset: -1.955 ms

# Below is generated by plot.py at 2018-10-02 12:06:34  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 0.33 Mbit/s  
95th percentile per-packet one-way delay: 88.229 ms  
Loss rate: 0.79%  
-- Flow 1:  
Average throughput: 0.15 Mbit/s  
95th percentile per-packet one-way delay: 88.265 ms  
Loss rate: 1.14%  
-- Flow 2:  
Average throughput: 0.17 Mbit/s  
95th percentile per-packet one-way delay: 80.602 ms  
Loss rate: 0.85%  
-- Flow 3:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 82.852 ms  
Loss rate: 0.00%

Run 5: Report of SReAM — Data Link





Run 1: Statistics of Sprout

Start at: 2018-10-02 10:23:08

End at: 2018-10-02 10:23:38

Local clock offset: -5.596 ms

Remote clock offset: 1.883 ms

# Below is generated by plot.py at 2018-10-02 12:06:34

# Datalink statistics

-- Total of 3 flows:

Average throughput: 7.06 Mbit/s

95th percentile per-packet one-way delay: 98.100 ms

Loss rate: 0.03%

-- Flow 1:

Average throughput: 3.41 Mbit/s

95th percentile per-packet one-way delay: 99.040 ms

Loss rate: 0.07%

-- Flow 2:

Average throughput: 4.05 Mbit/s

95th percentile per-packet one-way delay: 94.194 ms

Loss rate: 0.00%

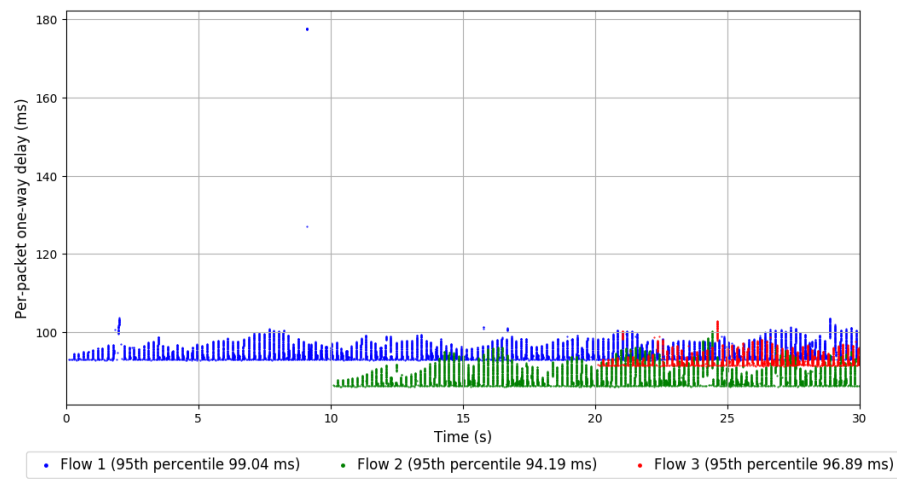
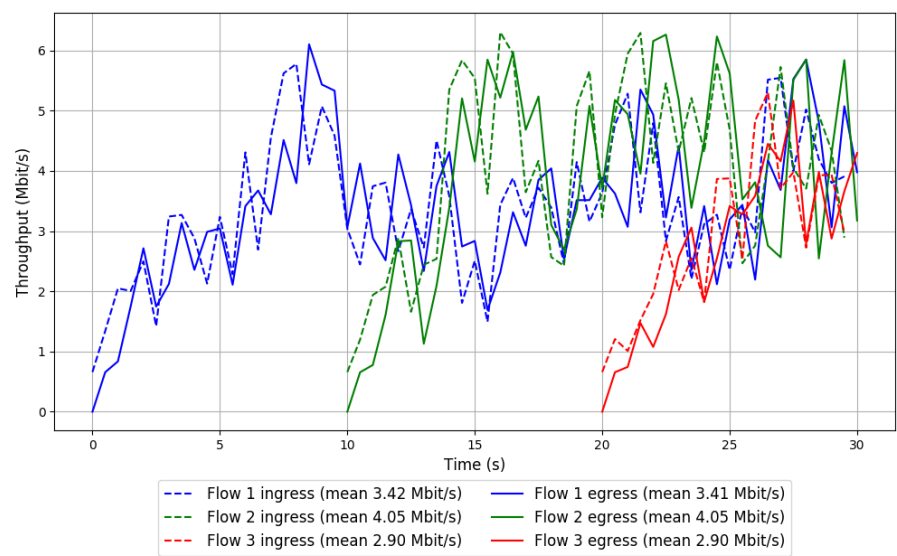
-- Flow 3:

Average throughput: 2.90 Mbit/s

95th percentile per-packet one-way delay: 96.892 ms

Loss rate: 0.00%

Run 1: Report of Sprout — Data Link

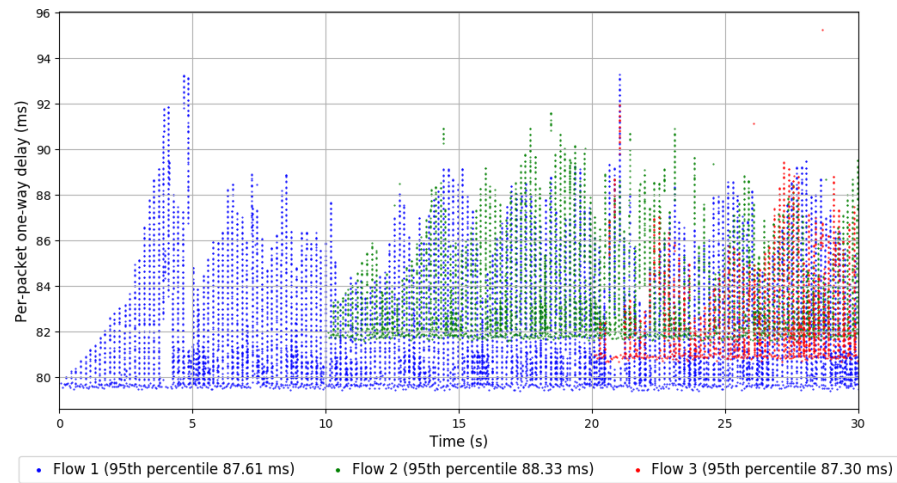
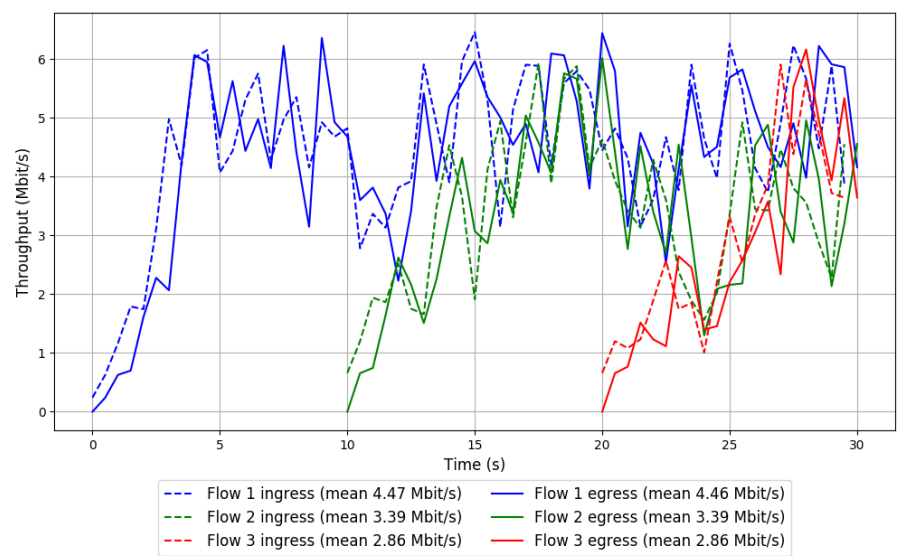


Run 2: Statistics of Sprout

Start at: 2018-10-02 10:46:03  
End at: 2018-10-02 10:46:33  
Local clock offset: -4.408 ms  
Remote clock offset: -4.278 ms

# Below is generated by plot.py at 2018-10-02 12:06:34  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 7.66 Mbit/s  
95th percentile per-packet one-way delay: 87.852 ms  
Loss rate: 0.12%  
-- Flow 1:  
Average throughput: 4.46 Mbit/s  
95th percentile per-packet one-way delay: 87.608 ms  
Loss rate: 0.20%  
-- Flow 2:  
Average throughput: 3.39 Mbit/s  
95th percentile per-packet one-way delay: 88.332 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 2.86 Mbit/s  
95th percentile per-packet one-way delay: 87.301 ms  
Loss rate: 0.00%

Run 2: Report of Sprout — Data Link

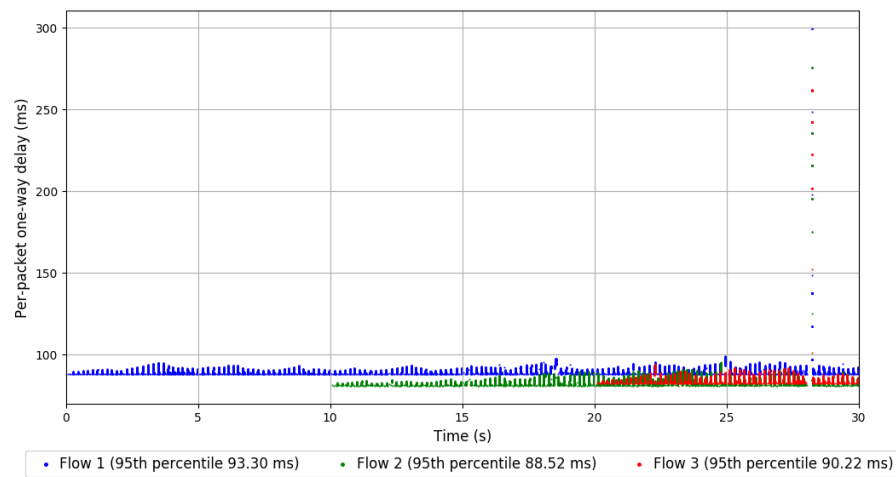
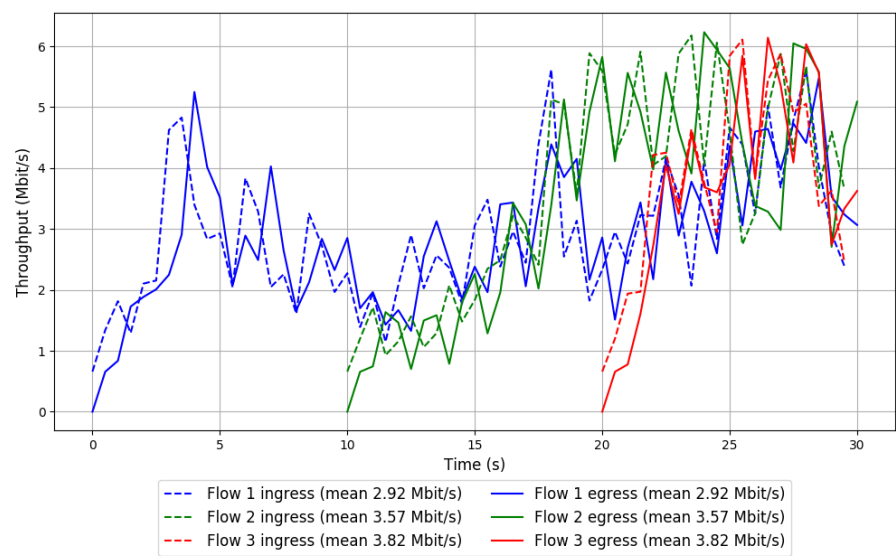


### Run 3: Statistics of Sprout

Start at: 2018-10-02 11:08:52  
End at: 2018-10-02 11:09:22  
Local clock offset: -4.995 ms  
Remote clock offset: -2.761 ms

```
# Below is generated by plot.py at 2018-10-02 12:06:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 6.56 Mbit/s
95th percentile per-packet one-way delay: 92.485 ms
Loss rate: 0.12%
-- Flow 1:
Average throughput: 2.92 Mbit/s
95th percentile per-packet one-way delay: 93.299 ms
Loss rate: 0.12%
-- Flow 2:
Average throughput: 3.57 Mbit/s
95th percentile per-packet one-way delay: 88.522 ms
Loss rate: 0.17%
-- Flow 3:
Average throughput: 3.82 Mbit/s
95th percentile per-packet one-way delay: 90.216 ms
Loss rate: 0.00%
```

Run 3: Report of Sprout — Data Link

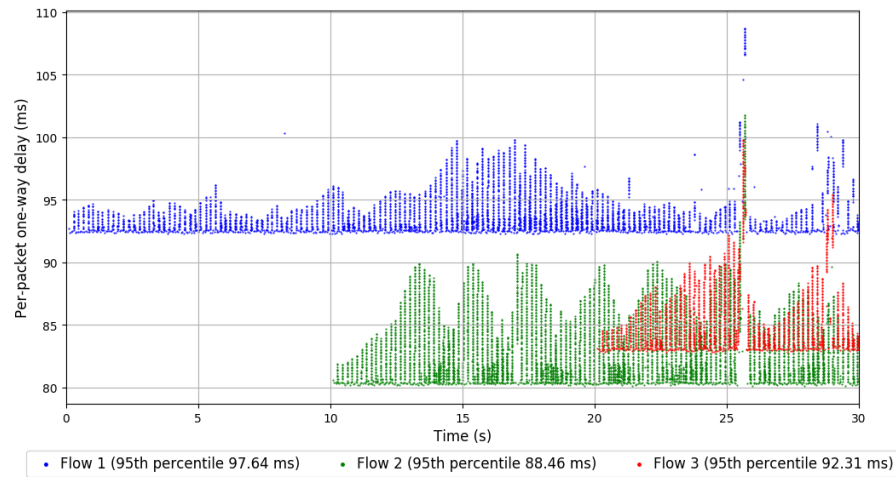
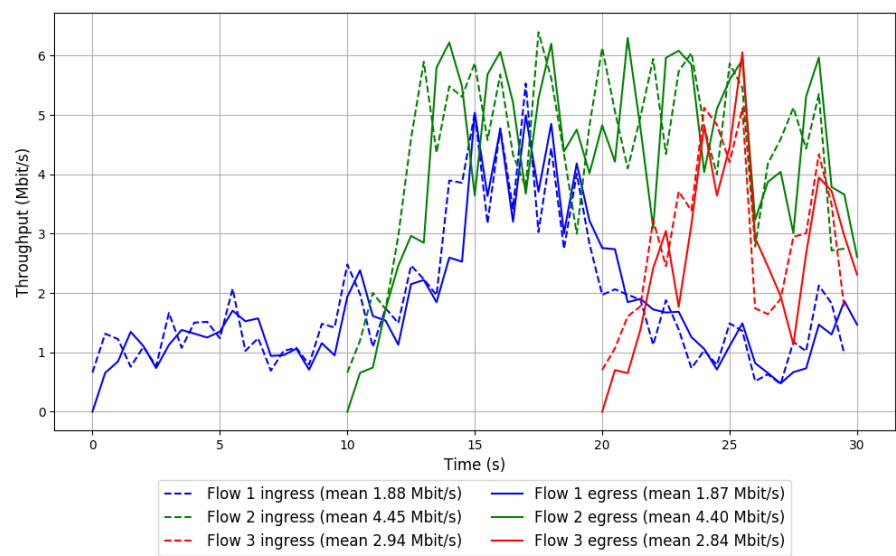


#### Run 4: Statistics of Sprout

Start at: 2018-10-02 11:31:42  
End at: 2018-10-02 11:32:12  
Local clock offset: -6.173 ms  
Remote clock offset: -2.465 ms

```
# Below is generated by plot.py at 2018-10-02 12:06:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 5.73 Mbit/s
95th percentile per-packet one-way delay: 95.871 ms
Loss rate: 1.28%
-- Flow 1:
Average throughput: 1.87 Mbit/s
95th percentile per-packet one-way delay: 97.638 ms
Loss rate: 0.58%
-- Flow 2:
Average throughput: 4.40 Mbit/s
95th percentile per-packet one-way delay: 88.464 ms
Loss rate: 1.10%
-- Flow 3:
Average throughput: 2.84 Mbit/s
95th percentile per-packet one-way delay: 92.313 ms
Loss rate: 3.21%
```

Run 4: Report of Sprout — Data Link



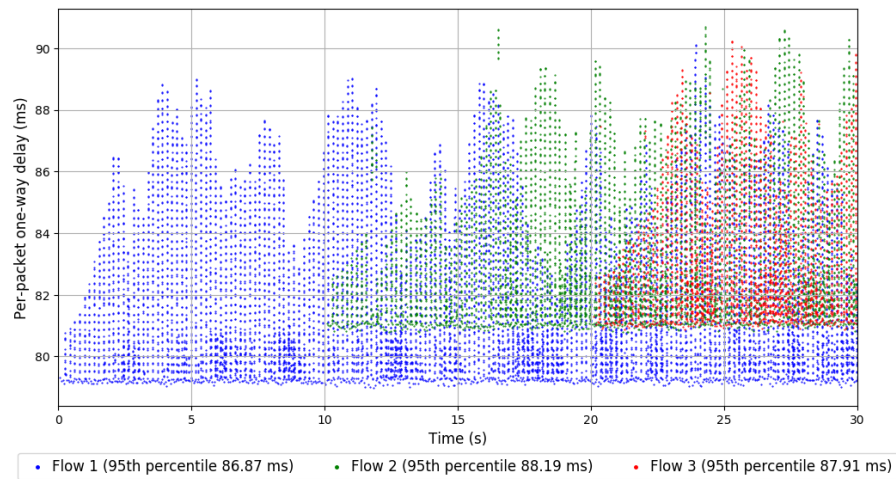
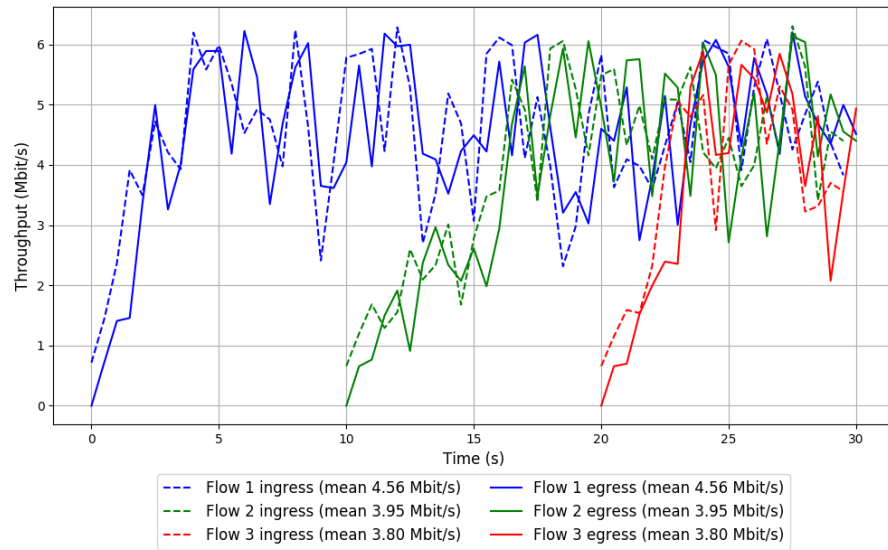


Run 5: Statistics of Sprout

Start at: 2018-10-02 11:54:34  
End at: 2018-10-02 11:55:04  
Local clock offset: -6.534 ms  
Remote clock offset: -3.125 ms

# Below is generated by plot.py at 2018-10-02 12:06:34  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 8.44 Mbit/s  
95th percentile per-packet one-way delay: 87.484 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 4.56 Mbit/s  
95th percentile per-packet one-way delay: 86.867 ms  
Loss rate: 0.00%  
-- Flow 2:  
Average throughput: 3.95 Mbit/s  
95th percentile per-packet one-way delay: 88.187 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 3.80 Mbit/s  
95th percentile per-packet one-way delay: 87.906 ms  
Loss rate: 0.00%

## Run 5: Report of Sprout — Data Link

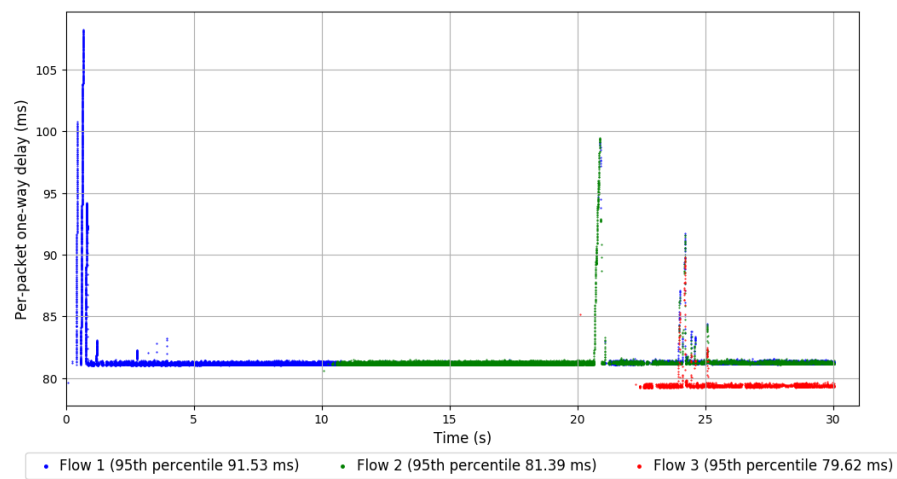
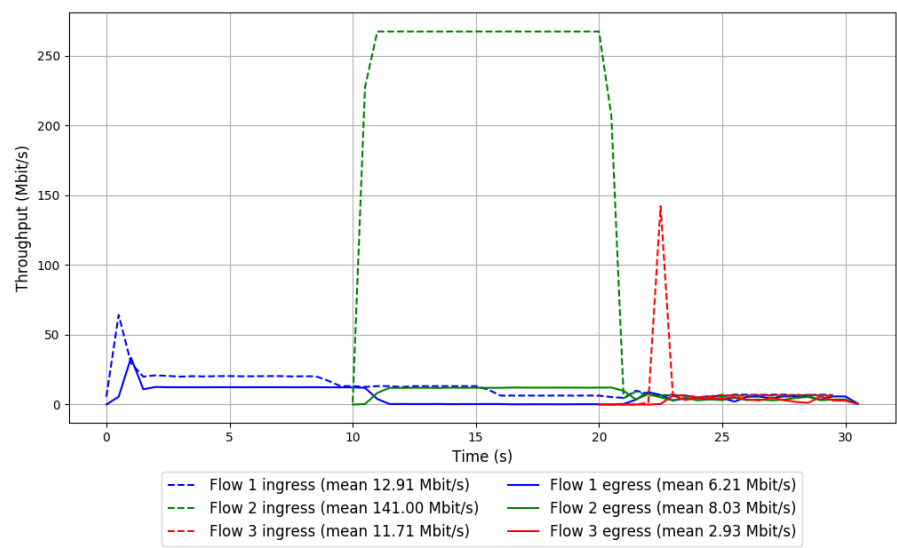


```
Run 1: Statistics of TaoVA-100x

Start at: 2018-10-02 10:16:46
End at: 2018-10-02 10:17:16
Local clock offset: -6.752 ms
Remote clock offset: -4.506 ms

# Below is generated by plot.py at 2018-10-02 12:06:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.53 Mbit/s
95th percentile per-packet one-way delay: 84.050 ms
Loss rate: 88.68%
-- Flow 1:
Average throughput: 6.21 Mbit/s
95th percentile per-packet one-way delay: 91.535 ms
Loss rate: 51.87%
-- Flow 2:
Average throughput: 8.03 Mbit/s
95th percentile per-packet one-way delay: 81.393 ms
Loss rate: 94.31%
-- Flow 3:
Average throughput: 2.93 Mbit/s
95th percentile per-packet one-way delay: 79.618 ms
Loss rate: 75.02%
```

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



Run 2: Statistics of TaoVA-100x

Start at: 2018-10-02 10:39:42

End at: 2018-10-02 10:40:12

Local clock offset: -4.548 ms

Remote clock offset: 2.162 ms

# Below is generated by plot.py at 2018-10-02 12:06:56

# Datalink statistics

-- Total of 3 flows:

Average throughput: 12.14 Mbit/s

95th percentile per-packet one-way delay: 101.003 ms

Loss rate: 89.04%

-- Flow 1:

Average throughput: 5.83 Mbit/s

95th percentile per-packet one-way delay: 98.341 ms

Loss rate: 51.89%

-- Flow 2:

Average throughput: 7.90 Mbit/s

95th percentile per-packet one-way delay: 89.744 ms

Loss rate: 94.51%

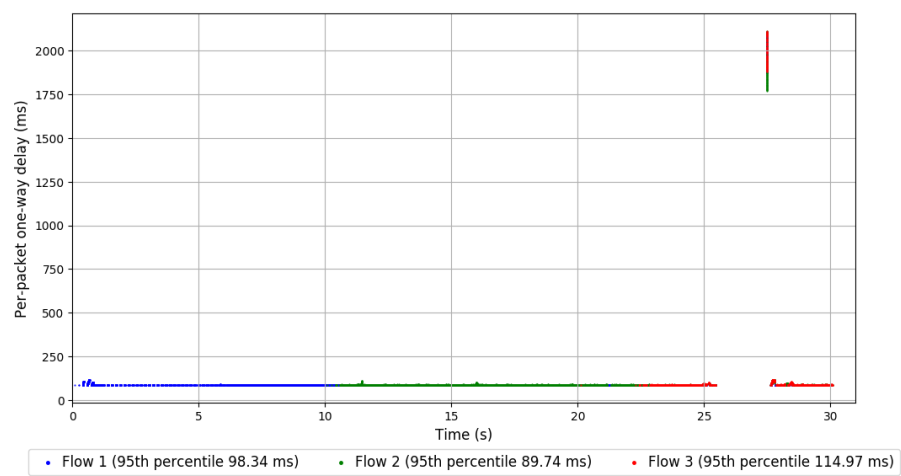
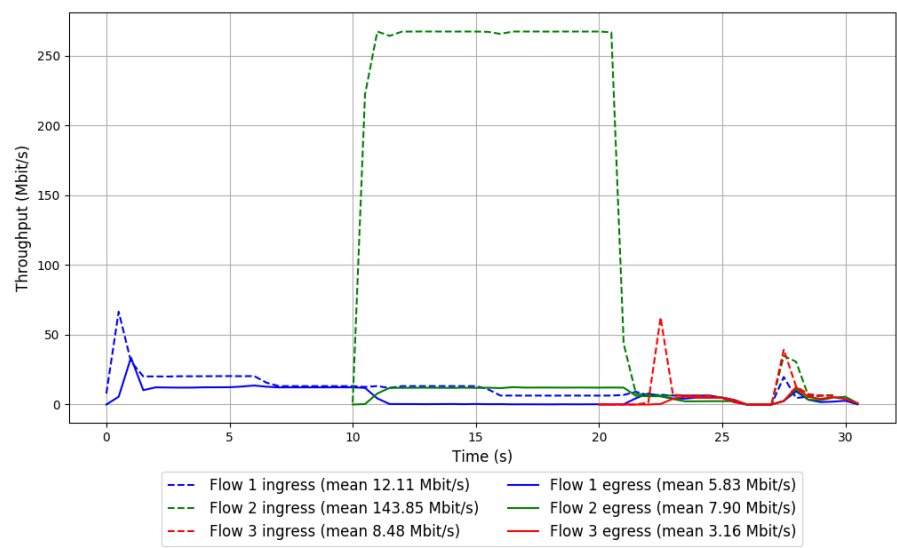
-- Flow 3:

Average throughput: 3.16 Mbit/s

95th percentile per-packet one-way delay: 114.970 ms

Loss rate: 62.79%

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



Run 3: Statistics of TaoVA-100x

Start at: 2018-10-02 11:02:33

End at: 2018-10-02 11:03:03

Local clock offset: -4.972 ms

Remote clock offset: 1.015 ms

# Below is generated by plot.py at 2018-10-02 12:06:57

# Datalink statistics

-- Total of 3 flows:

Average throughput: 12.60 Mbit/s

95th percentile per-packet one-way delay: 86.374 ms

Loss rate: 88.47%

-- Flow 1:

Average throughput: 7.17 Mbit/s

95th percentile per-packet one-way delay: 92.642 ms

Loss rate: 45.87%

-- Flow 2:

Average throughput: 7.40 Mbit/s

95th percentile per-packet one-way delay: 86.350 ms

Loss rate: 94.79%

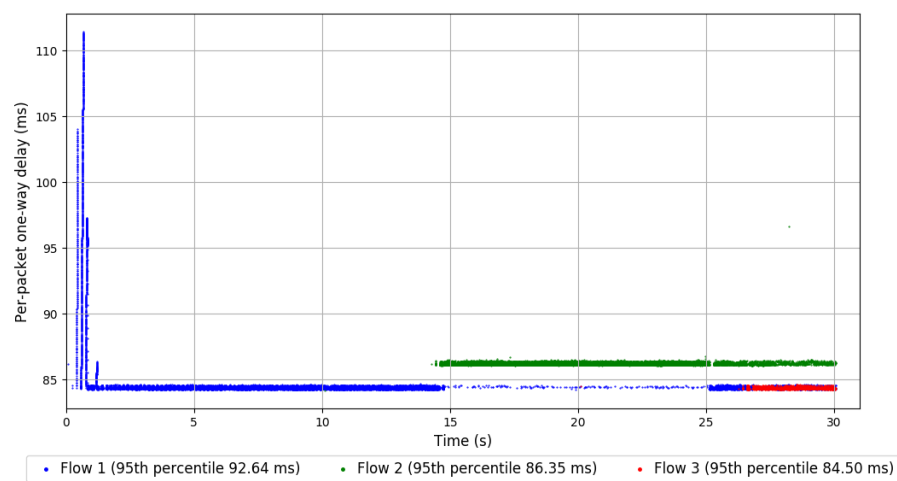
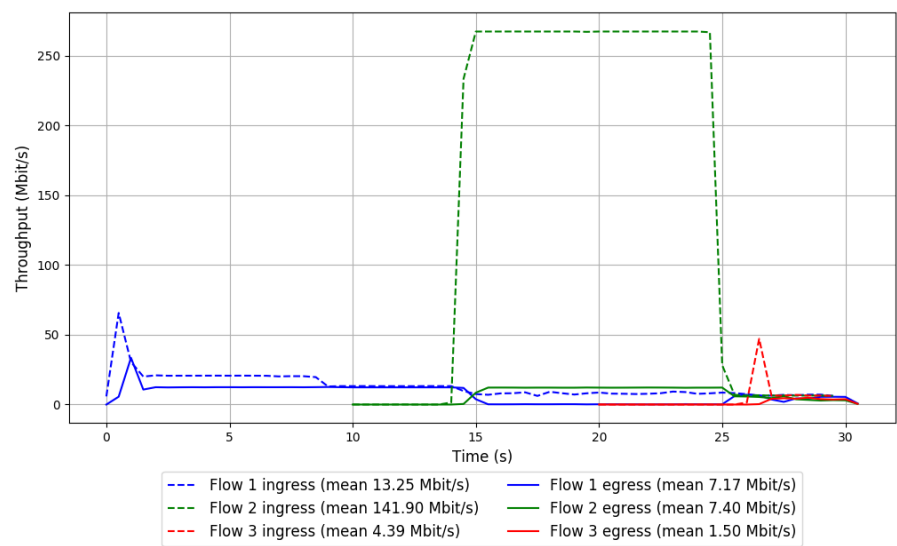
-- Flow 3:

Average throughput: 1.50 Mbit/s

95th percentile per-packet one-way delay: 84.502 ms

Loss rate: 65.97%

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



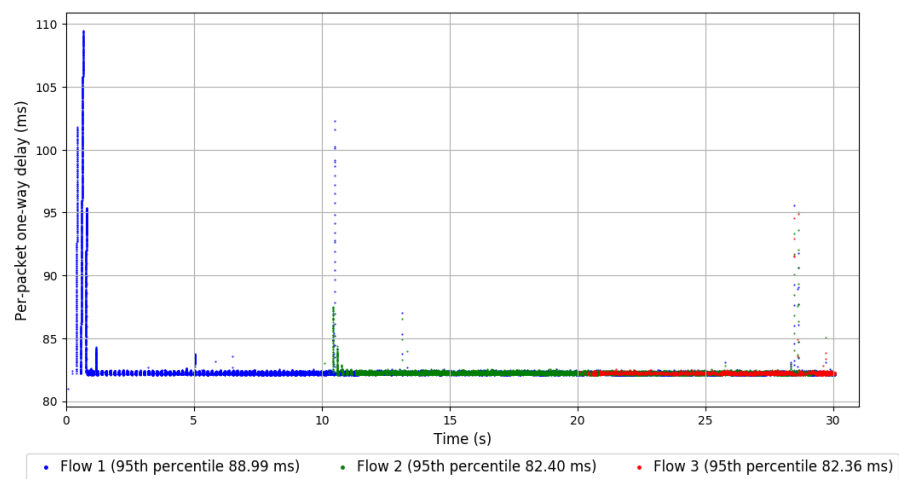
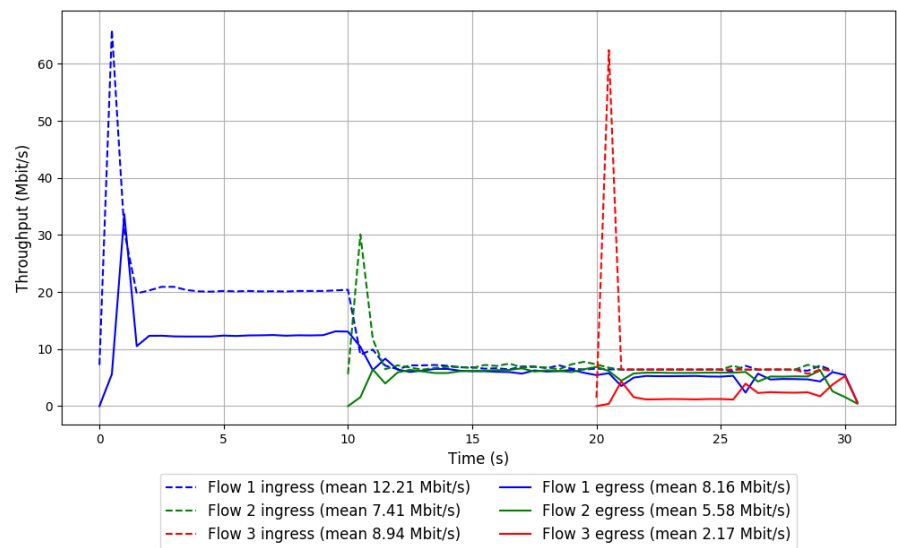


Run 4: Statistics of TaoVA-100x

Start at: 2018-10-02 11:25:13  
End at: 2018-10-02 11:25:43  
Local clock offset: -5.944 ms  
Remote clock offset: -2.633 ms

# Below is generated by plot.py at 2018-10-02 12:06:57  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 12.60 Mbit/s  
95th percentile per-packet one-way delay: 83.484 ms  
Loss rate: 37.38%  
-- Flow 1:  
Average throughput: 8.16 Mbit/s  
95th percentile per-packet one-way delay: 88.989 ms  
Loss rate: 33.15%  
-- Flow 2:  
Average throughput: 5.58 Mbit/s  
95th percentile per-packet one-way delay: 82.397 ms  
Loss rate: 24.76%  
-- Flow 3:  
Average throughput: 2.17 Mbit/s  
95th percentile per-packet one-way delay: 82.364 ms  
Loss rate: 75.73%

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



Run 5: Statistics of TaoVA-100x

Start at: 2018-10-02 11:48:06

End at: 2018-10-02 11:48:36

Local clock offset: -6.504 ms

Remote clock offset: 1.886 ms

# Below is generated by plot.py at 2018-10-02 12:06:57

# Datalink statistics

-- Total of 3 flows:

Average throughput: 12.56 Mbit/s

95th percentile per-packet one-way delay: 86.564 ms

Loss rate: 87.54%

-- Flow 1:

Average throughput: 6.62 Mbit/s

95th percentile per-packet one-way delay: 93.791 ms

Loss rate: 44.99%

-- Flow 2:

Average throughput: 3.28 Mbit/s

95th percentile per-packet one-way delay: 84.587 ms

Loss rate: 54.37%

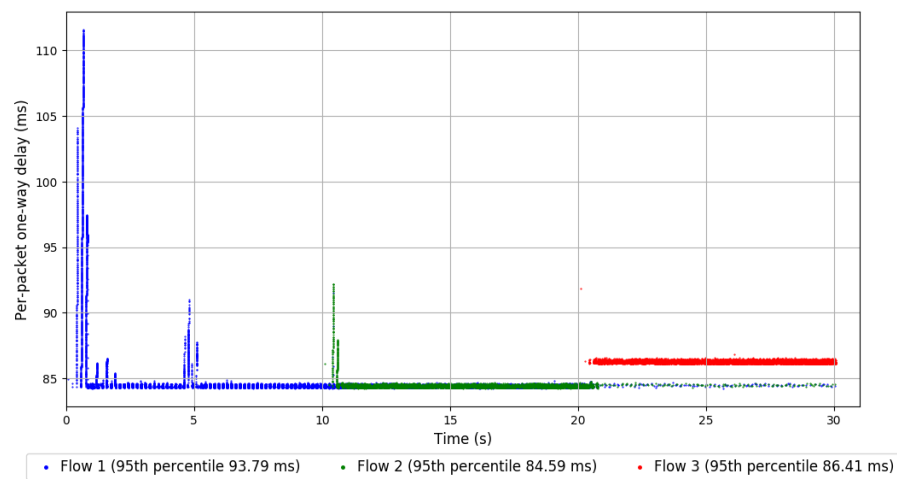
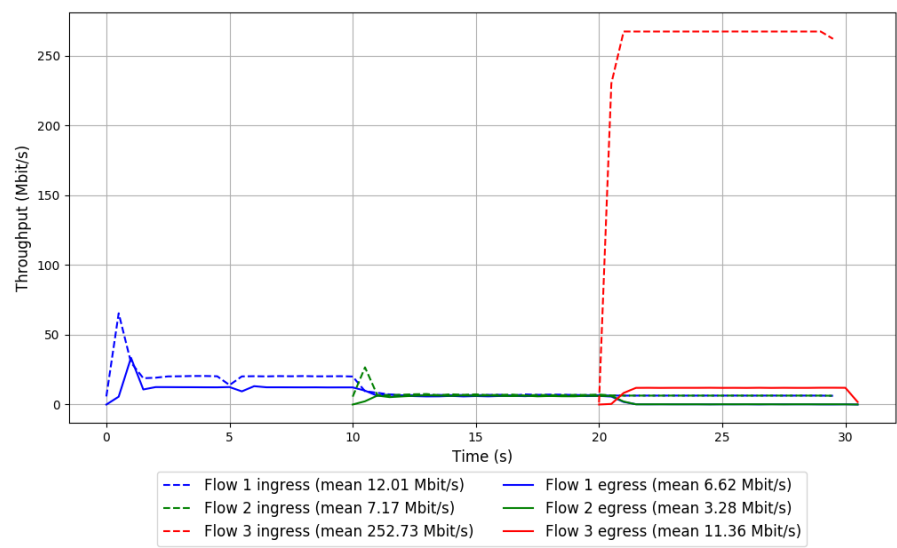
-- Flow 3:

Average throughput: 11.36 Mbit/s

95th percentile per-packet one-way delay: 86.406 ms

Loss rate: 95.51%

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

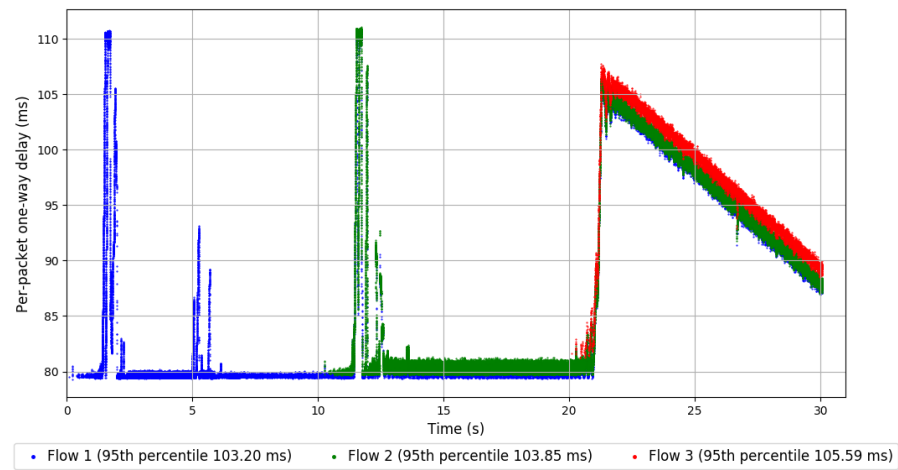
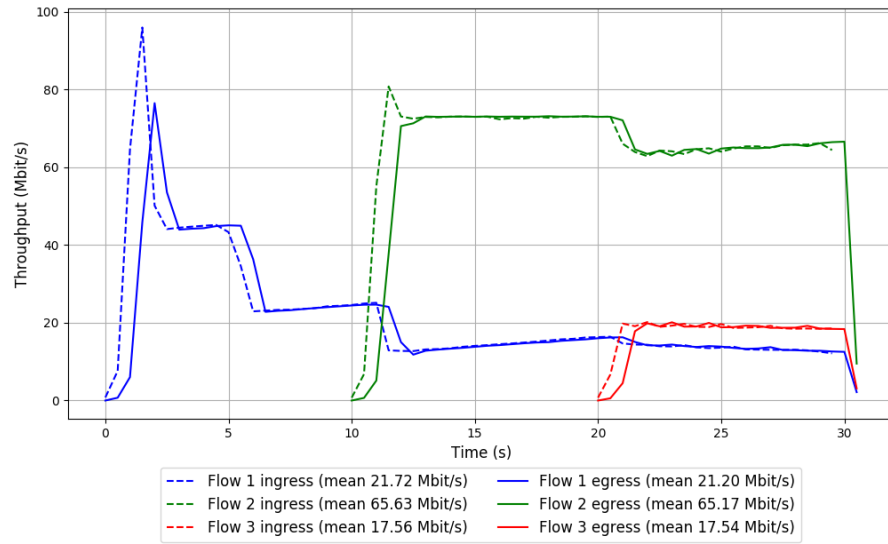


Run 1: Statistics of TCP Vegas

Start at: 2018-10-02 10:09:05  
End at: 2018-10-02 10:09:35  
Local clock offset: -6.855 ms  
Remote clock offset: -4.558 ms

# Below is generated by plot.py at 2018-10-02 12:07:20  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 70.45 Mbit/s  
95th percentile per-packet one-way delay: 104.079 ms  
Loss rate: 1.14%  
-- Flow 1:  
Average throughput: 21.20 Mbit/s  
95th percentile per-packet one-way delay: 103.198 ms  
Loss rate: 2.40%  
-- Flow 2:  
Average throughput: 65.17 Mbit/s  
95th percentile per-packet one-way delay: 103.848 ms  
Loss rate: 0.66%  
-- Flow 3:  
Average throughput: 17.54 Mbit/s  
95th percentile per-packet one-way delay: 105.589 ms  
Loss rate: 0.03%

# Run 1: Report of TCP Vegas — Data Link



Run 2: Statistics of TCP Vegas

Start at: 2018-10-02 10:31:52

End at: 2018-10-02 10:32:22

Local clock offset: -4.921 ms

Remote clock offset: 1.926 ms

# Below is generated by plot.py at 2018-10-02 12:07:23

# Datalink statistics

-- Total of 3 flows:

Average throughput: 73.52 Mbit/s

95th percentile per-packet one-way delay: 114.962 ms

Loss rate: 1.45%

-- Flow 1:

Average throughput: 44.80 Mbit/s

95th percentile per-packet one-way delay: 113.690 ms

Loss rate: 1.48%

-- Flow 2:

Average throughput: 7.71 Mbit/s

95th percentile per-packet one-way delay: 119.725 ms

Loss rate: 1.82%

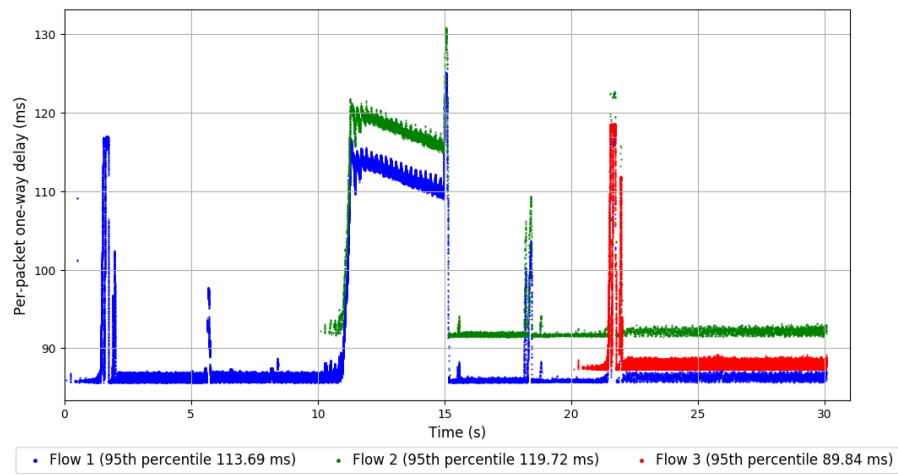
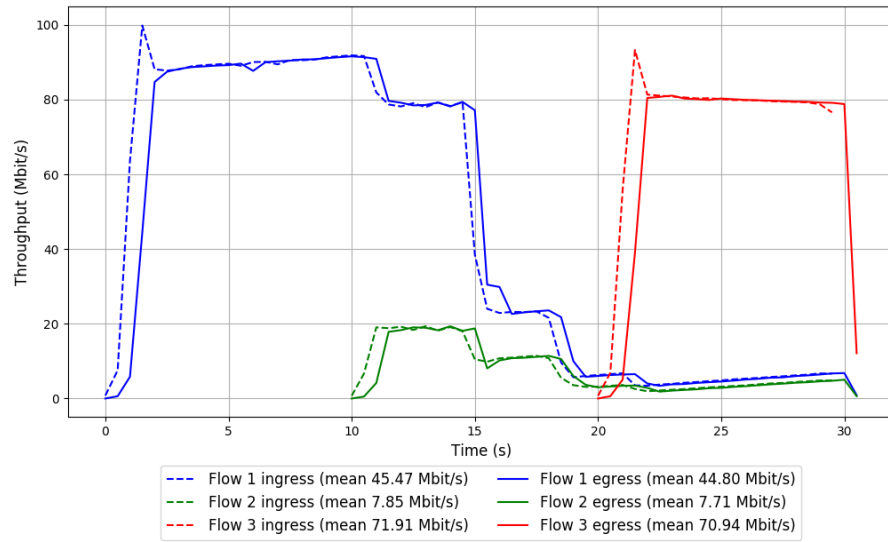
-- Flow 3:

Average throughput: 70.94 Mbit/s

95th percentile per-packet one-way delay: 89.837 ms

Loss rate: 1.33%

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



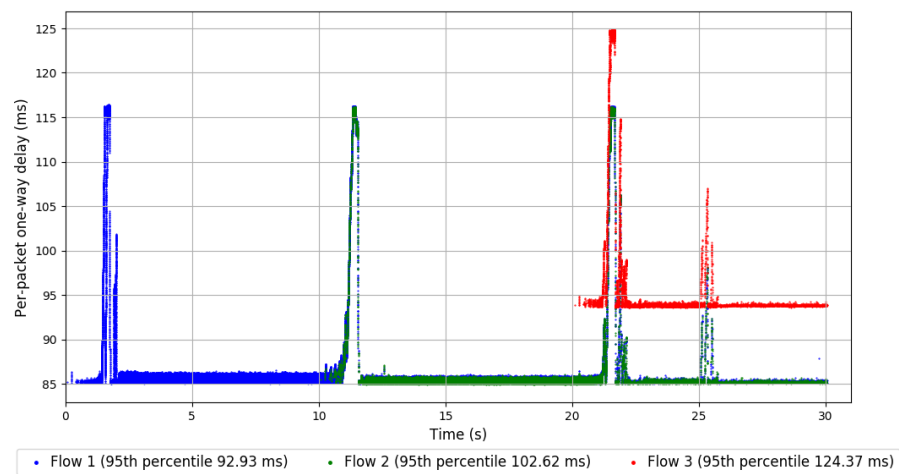
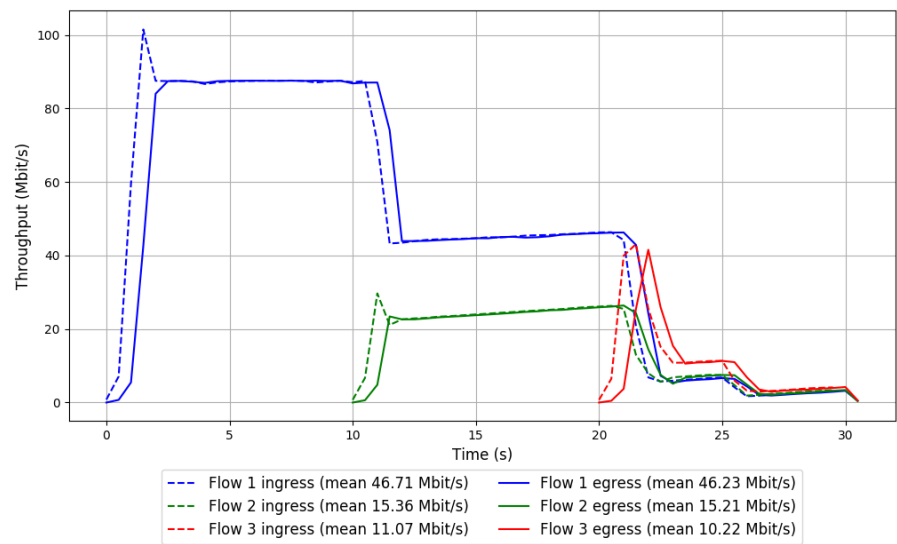


Run 3: Statistics of TCP Vegas

Start at: 2018-10-02 10:54:45  
End at: 2018-10-02 10:55:15  
Local clock offset: -4.85 ms  
Remote clock offset: -0.187 ms

# Below is generated by plot.py at 2018-10-02 12:07:23  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 59.75 Mbit/s  
95th percentile per-packet one-way delay: 99.950 ms  
Loss rate: 1.46%  
-- Flow 1:  
Average throughput: 46.23 Mbit/s  
95th percentile per-packet one-way delay: 92.932 ms  
Loss rate: 1.05%  
-- Flow 2:  
Average throughput: 15.21 Mbit/s  
95th percentile per-packet one-way delay: 102.623 ms  
Loss rate: 1.06%  
-- Flow 3:  
Average throughput: 10.22 Mbit/s  
95th percentile per-packet one-way delay: 124.373 ms  
Loss rate: 7.76%

Run 3: Report of TCP Vegas — Data Link



Run 4: Statistics of TCP Vegas

Start at: 2018-10-02 11:17:34

End at: 2018-10-02 11:18:04

Local clock offset: -5.199 ms

Remote clock offset: 2.215 ms

# Below is generated by plot.py at 2018-10-02 12:07:35

# Datalink statistics

-- Total of 3 flows:

Average throughput: 77.96 Mbit/s

95th percentile per-packet one-way delay: 95.692 ms

Loss rate: 0.86%

-- Flow 1:

Average throughput: 52.31 Mbit/s

95th percentile per-packet one-way delay: 95.763 ms

Loss rate: 0.85%

-- Flow 2:

Average throughput: 19.19 Mbit/s

95th percentile per-packet one-way delay: 96.031 ms

Loss rate: 0.46%

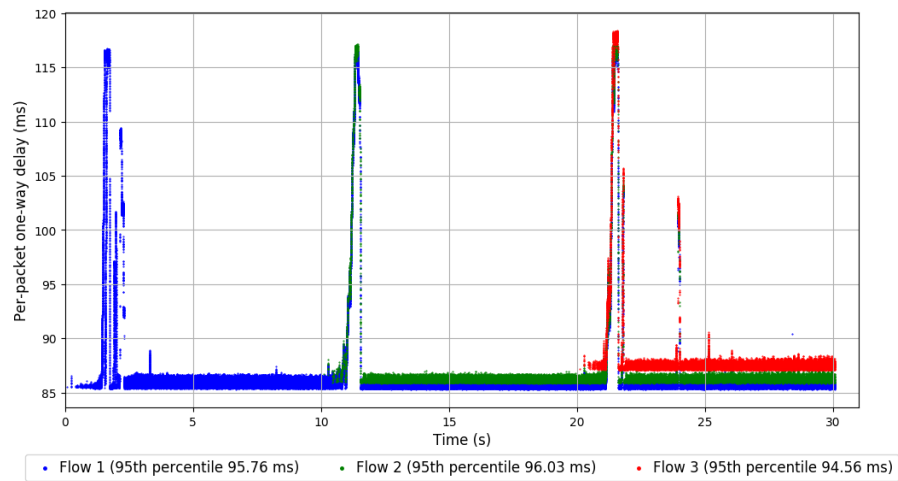
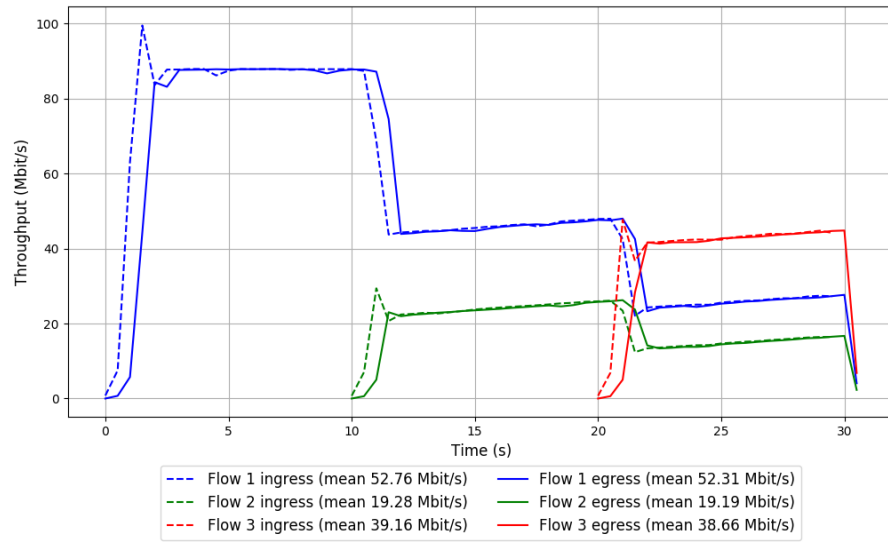
-- Flow 3:

Average throughput: 38.66 Mbit/s

95th percentile per-packet one-way delay: 94.559 ms

Loss rate: 1.27%

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



Run 5: Statistics of TCP Vegas

Start at: 2018-10-02 11:40:25

End at: 2018-10-02 11:40:55

Local clock offset: -6.412 ms

Remote clock offset: 1.836 ms

# Below is generated by plot.py at 2018-10-02 12:07:40

# Datalink statistics

-- Total of 3 flows:

Average throughput: 62.35 Mbit/s

95th percentile per-packet one-way delay: 89.853 ms

Loss rate: 1.32%

-- Flow 1:

Average throughput: 38.39 Mbit/s

95th percentile per-packet one-way delay: 90.734 ms

Loss rate: 1.34%

-- Flow 2:

Average throughput: 3.28 Mbit/s

95th percentile per-packet one-way delay: 88.642 ms

Loss rate: 0.37%

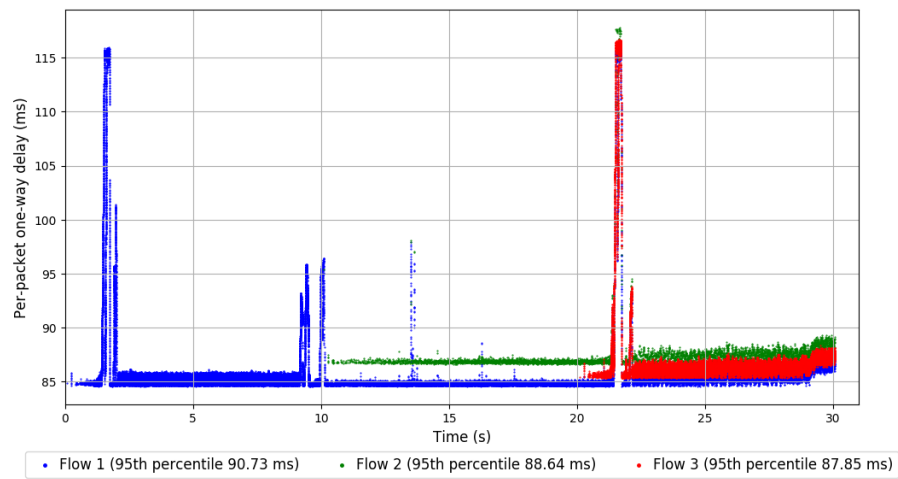
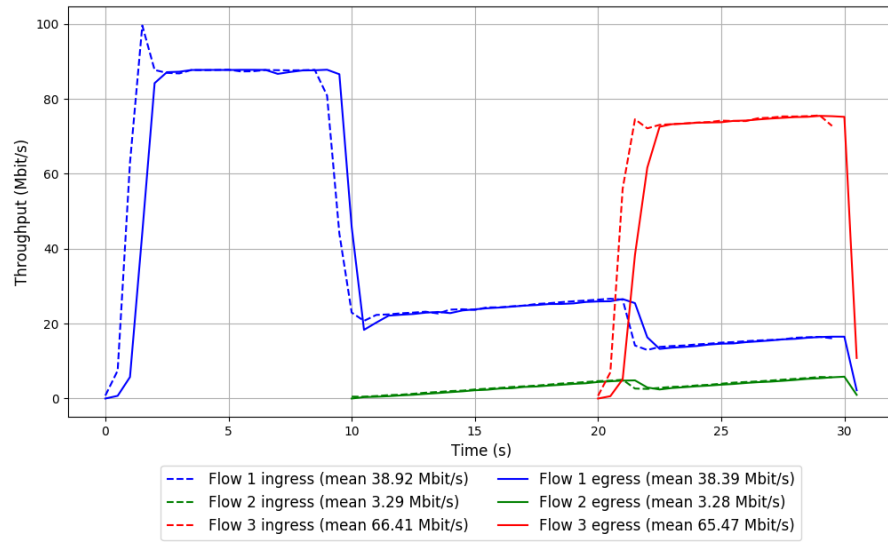
-- Flow 3:

Average throughput: 65.47 Mbit/s

95th percentile per-packet one-way delay: 87.846 ms

Loss rate: 1.39%

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



Run 1: Statistics of Verus

Start at: 2018-10-02 10:06:35

End at: 2018-10-02 10:07:05

Local clock offset: -6.845 ms

Remote clock offset: 0.572 ms

# Below is generated by plot.py at 2018-10-02 12:07:52

# Datalink statistics

-- Total of 3 flows:

Average throughput: 41.49 Mbit/s

95th percentile per-packet one-way delay: 165.860 ms

Loss rate: 73.47%

-- Flow 1:

Average throughput: 31.50 Mbit/s

95th percentile per-packet one-way delay: 167.482 ms

Loss rate: 78.20%

-- Flow 2:

Average throughput: 13.42 Mbit/s

95th percentile per-packet one-way delay: 115.175 ms

Loss rate: 18.08%

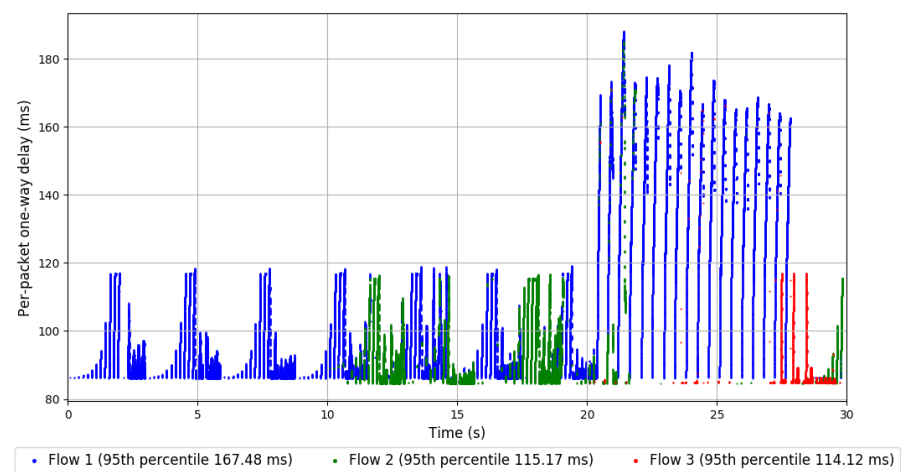
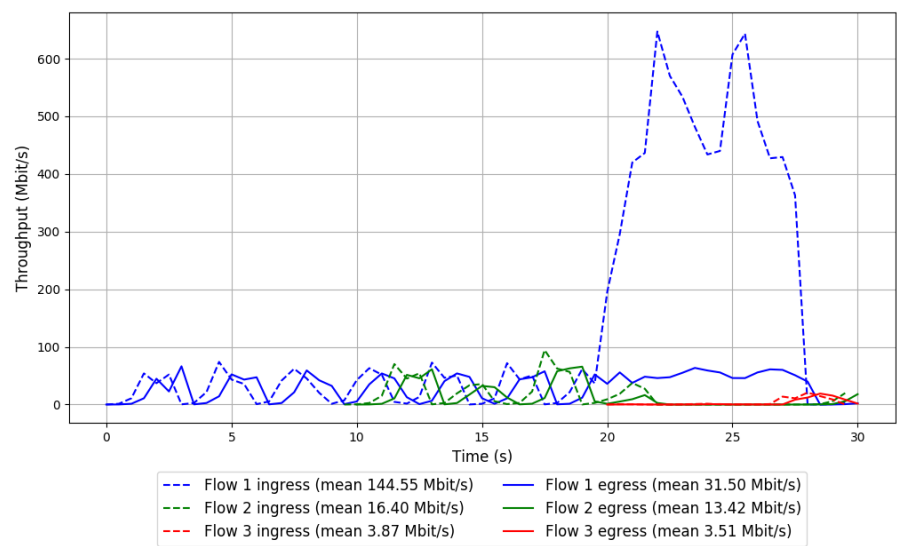
-- Flow 3:

Average throughput: 3.51 Mbit/s

95th percentile per-packet one-way delay: 114.125 ms

Loss rate: 9.16%

Run 1: Report of Verus — Data Link





Run 2: Statistics of Verus

Start at: 2018-10-02 10:29:21

End at: 2018-10-02 10:29:51

Local clock offset: -5.014 ms

Remote clock offset: 0.854 ms

# Below is generated by plot.py at 2018-10-02 12:07:52

# Datalink statistics

-- Total of 3 flows:

Average throughput: 49.58 Mbit/s

95th percentile per-packet one-way delay: 122.987 ms

Loss rate: 50.75%

-- Flow 1:

Average throughput: 33.19 Mbit/s

95th percentile per-packet one-way delay: 125.365 ms

Loss rate: 58.75%

-- Flow 2:

Average throughput: 16.51 Mbit/s

95th percentile per-packet one-way delay: 115.426 ms

Loss rate: 18.70%

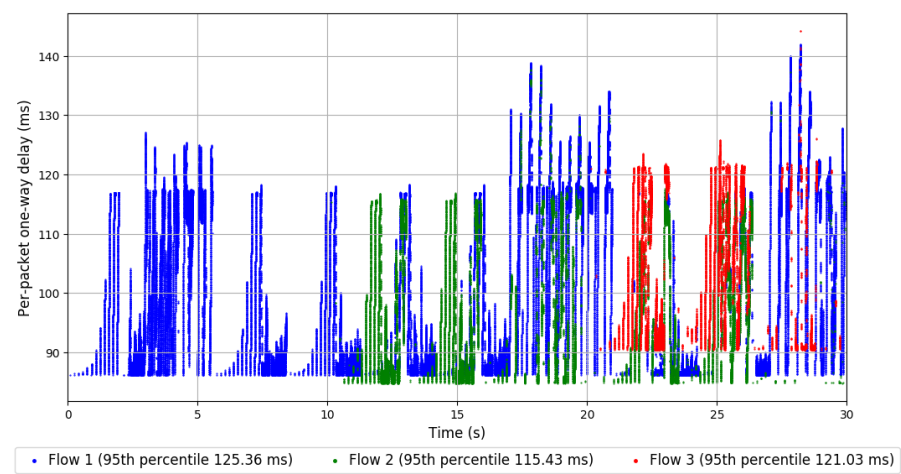
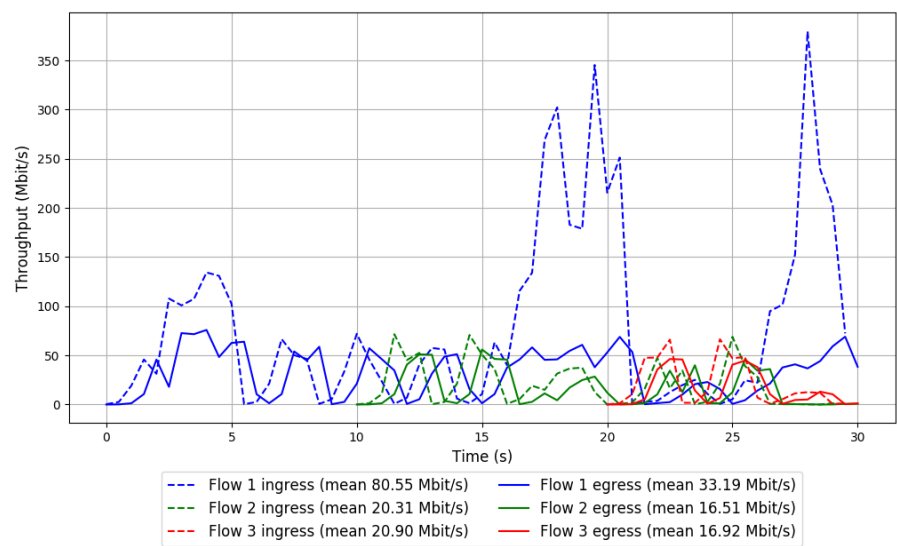
-- Flow 3:

Average throughput: 16.92 Mbit/s

95th percentile per-packet one-way delay: 121.026 ms

Loss rate: 19.30%

Run 2: Report of Verus — Data Link

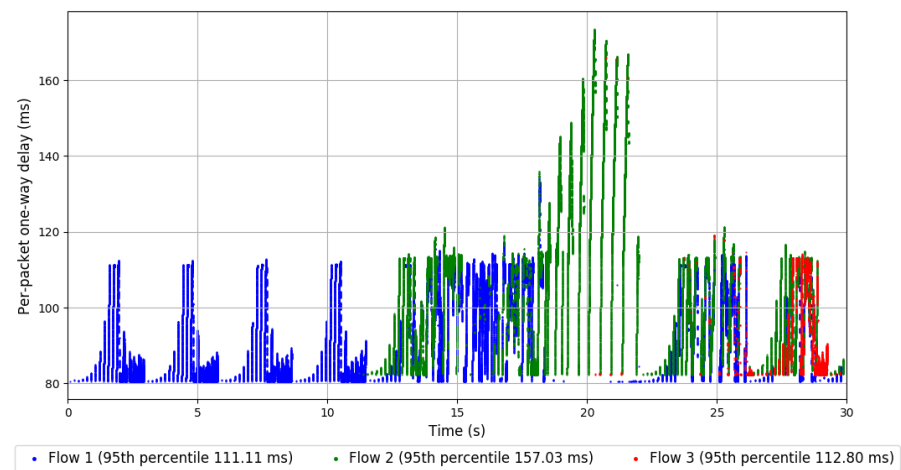
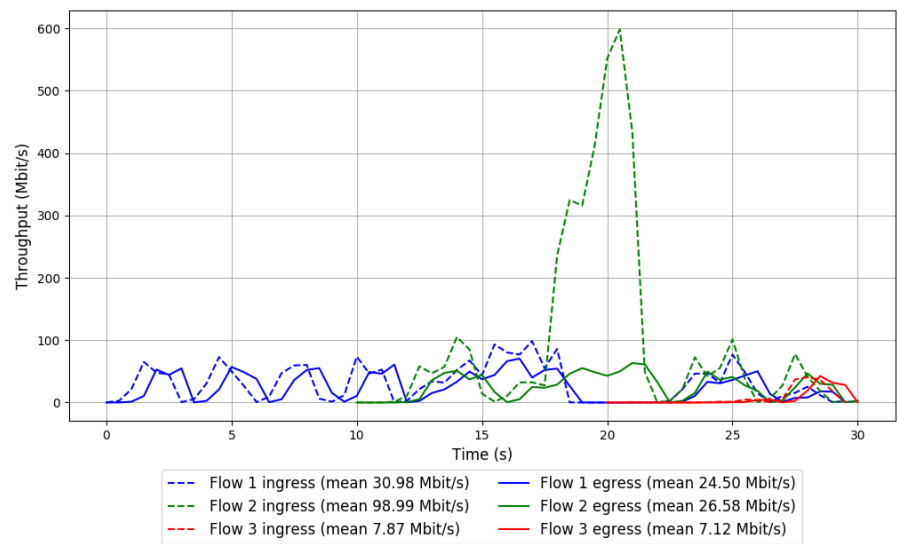


Run 3: Statistics of Verus

Start at: 2018-10-02 10:52:16  
End at: 2018-10-02 10:52:46  
Local clock offset: -4.719 ms  
Remote clock offset: -2.987 ms

# Below is generated by plot.py at 2018-10-02 12:07:52  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 44.34 Mbit/s  
95th percentile per-packet one-way delay: 139.947 ms  
Loss rate: 55.27%  
-- Flow 1:  
Average throughput: 24.50 Mbit/s  
95th percentile per-packet one-way delay: 111.107 ms  
Loss rate: 20.93%  
-- Flow 2:  
Average throughput: 26.58 Mbit/s  
95th percentile per-packet one-way delay: 157.025 ms  
Loss rate: 73.17%  
-- Flow 3:  
Average throughput: 7.12 Mbit/s  
95th percentile per-packet one-way delay: 112.798 ms  
Loss rate: 10.06%

Run 3: Report of Verus — Data Link

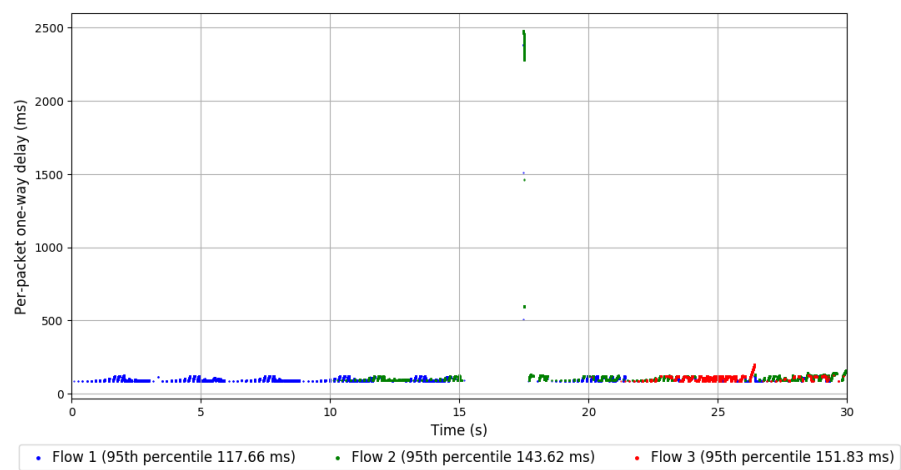
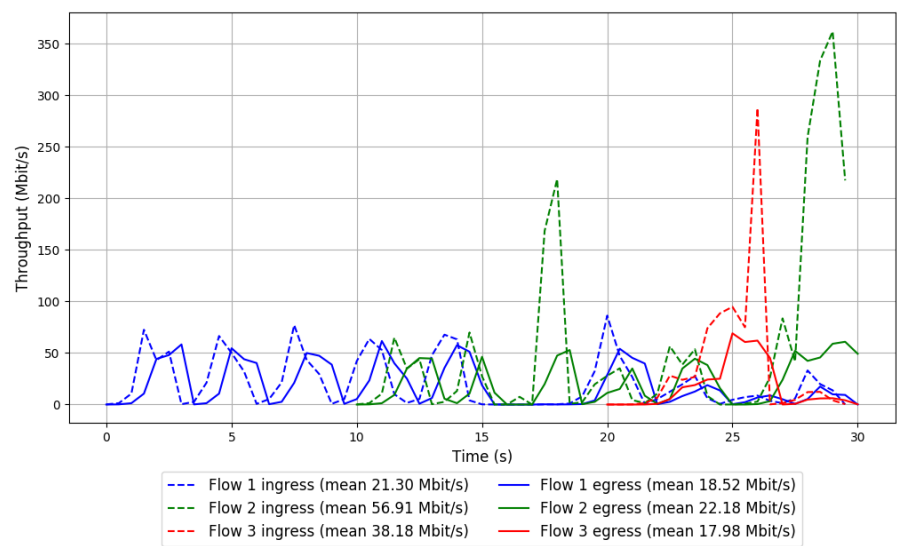


Run 4: Statistics of Verus

Start at: 2018-10-02 11:15:05  
End at: 2018-10-02 11:15:35  
Local clock offset: -4.94 ms  
Remote clock offset: 1.295 ms

```
# Below is generated by plot.py at 2018-10-02 12:07:52
# Datalink statistics
-- Total of 3 flows:
Average throughput: 38.94 Mbit/s
95th percentile per-packet one-way delay: 129.943 ms
Loss rate: 45.40%
-- Flow 1:
Average throughput: 18.52 Mbit/s
95th percentile per-packet one-way delay: 117.658 ms
Loss rate: 13.50%
-- Flow 2:
Average throughput: 22.18 Mbit/s
95th percentile per-packet one-way delay: 143.616 ms
Loss rate: 60.90%
-- Flow 3:
Average throughput: 17.98 Mbit/s
95th percentile per-packet one-way delay: 151.832 ms
Loss rate: 52.84%
```

Run 4: Report of Verus — Data Link

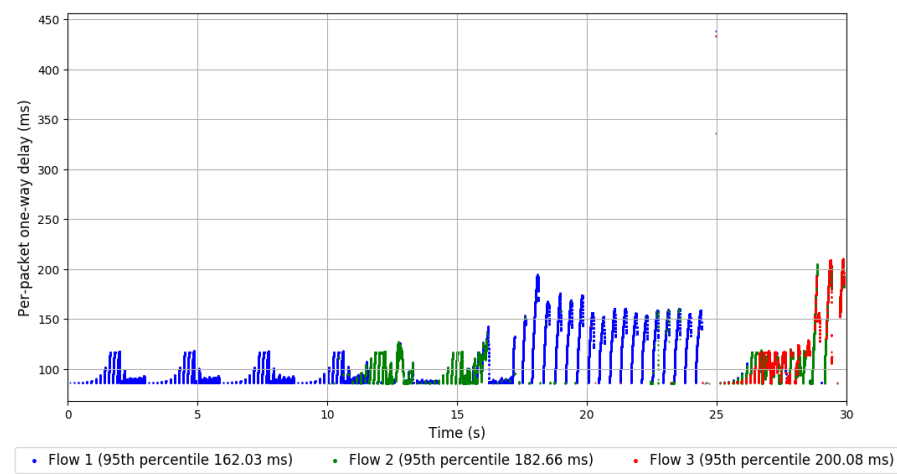
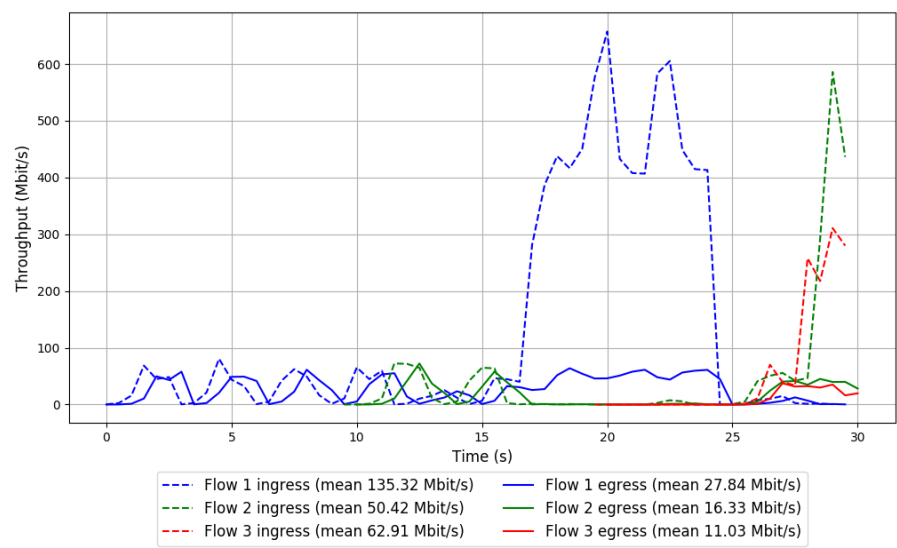


Run 5: Statistics of Verus

Start at: 2018-10-02 11:37:54  
End at: 2018-10-02 11:38:24  
Local clock offset: -6.347 ms  
Remote clock offset: 2.695 ms

```
# Below is generated by plot.py at 2018-10-02 12:08:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 41.48 Mbit/s
95th percentile per-packet one-way delay: 167.227 ms
Loss rate: 77.71%
-- Flow 1:
Average throughput: 27.84 Mbit/s
95th percentile per-packet one-way delay: 162.027 ms
Loss rate: 79.56%
-- Flow 2:
Average throughput: 16.33 Mbit/s
95th percentile per-packet one-way delay: 182.660 ms
Loss rate: 67.47%
-- Flow 3:
Average throughput: 11.03 Mbit/s
95th percentile per-packet one-way delay: 200.080 ms
Loss rate: 82.40%
```

Run 5: Report of Verus — Data Link



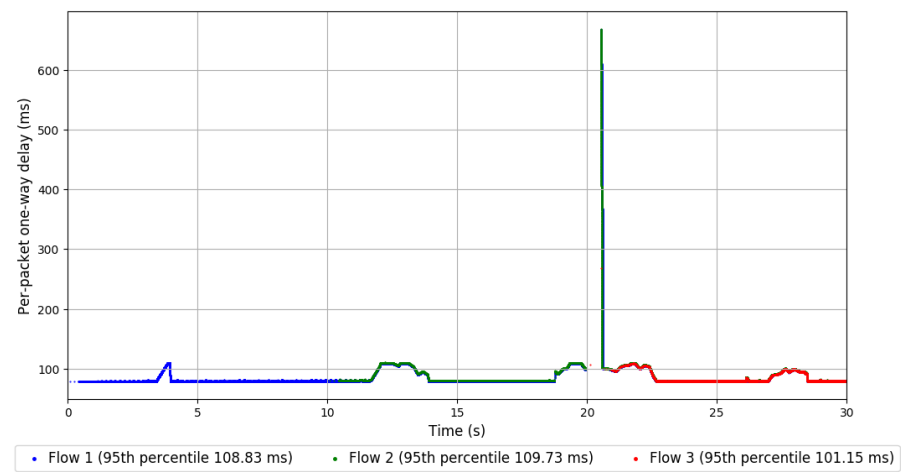
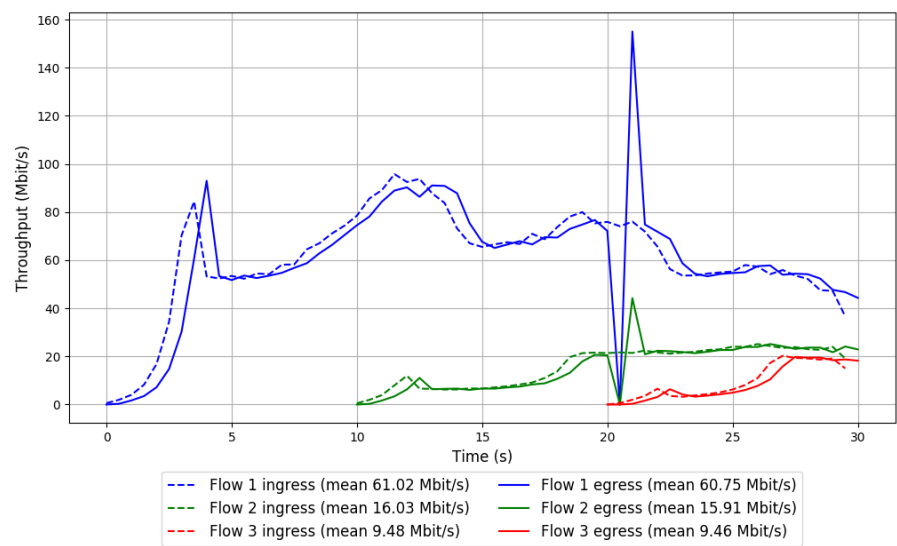


Run 1: Statistics of PCC-Vivace

Start at: 2018-10-02 10:11:39  
End at: 2018-10-02 10:12:09  
Local clock offset: -6.93 ms  
Remote clock offset: -4.535 ms

# Below is generated by plot.py at 2018-10-02 12:08:20  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 74.45 Mbit/s  
95th percentile per-packet one-way delay: 108.863 ms  
Loss rate: 0.49%  
-- Flow 1:  
Average throughput: 60.75 Mbit/s  
95th percentile per-packet one-way delay: 108.835 ms  
Loss rate: 0.44%  
-- Flow 2:  
Average throughput: 15.91 Mbit/s  
95th percentile per-packet one-way delay: 109.728 ms  
Loss rate: 0.75%  
-- Flow 3:  
Average throughput: 9.46 Mbit/s  
95th percentile per-packet one-way delay: 101.153 ms  
Loss rate: 0.49%

Run 1: Report of PCC-Vivace — Data Link

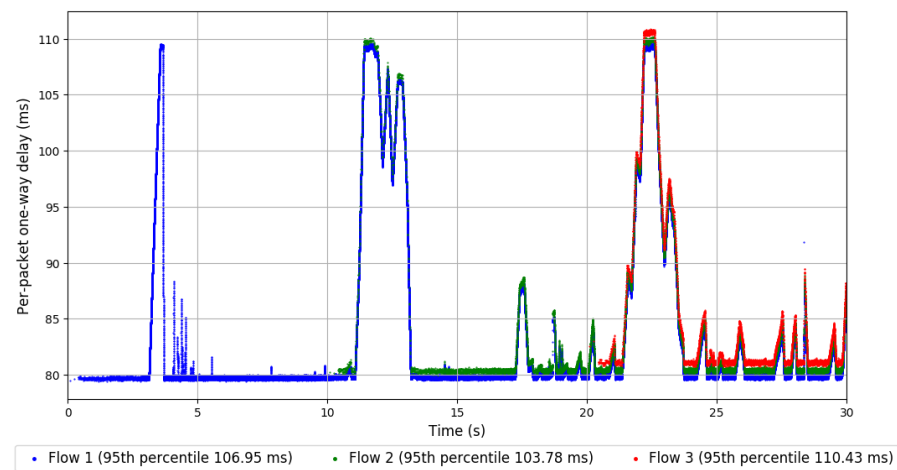
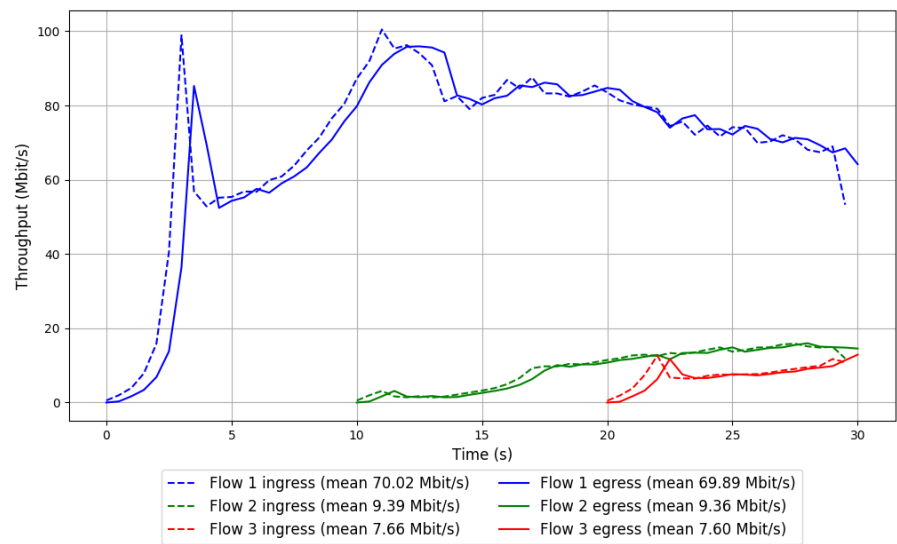


Run 2: Statistics of PCC-Vivace

Start at: 2018-10-02 10:34:34  
End at: 2018-10-02 10:35:04  
Local clock offset: -4.714 ms  
Remote clock offset: -4.163 ms

# Below is generated by plot.py at 2018-10-02 12:08:30  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 78.62 Mbit/s  
95th percentile per-packet one-way delay: 106.888 ms  
Loss rate: 0.19%  
-- Flow 1:  
Average throughput: 69.89 Mbit/s  
95th percentile per-packet one-way delay: 106.954 ms  
Loss rate: 0.17%  
-- Flow 2:  
Average throughput: 9.36 Mbit/s  
95th percentile per-packet one-way delay: 103.777 ms  
Loss rate: 0.28%  
-- Flow 3:  
Average throughput: 7.60 Mbit/s  
95th percentile per-packet one-way delay: 110.433 ms  
Loss rate: 0.66%

Run 2: Report of PCC-Vivace — Data Link



Run 3: Statistics of PCC-Vivace

Start at: 2018-10-02 10:57:26

End at: 2018-10-02 10:57:56

Local clock offset: -4.83 ms

Remote clock offset: -2.94 ms

# Below is generated by plot.py at 2018-10-02 12:08:31

# Datalink statistics

-- Total of 3 flows:

Average throughput: 78.03 Mbit/s

95th percentile per-packet one-way delay: 112.290 ms

Loss rate: 0.34%

-- Flow 1:

Average throughput: 65.06 Mbit/s

95th percentile per-packet one-way delay: 112.347 ms

Loss rate: 0.30%

-- Flow 2:

Average throughput: 15.13 Mbit/s

95th percentile per-packet one-way delay: 110.418 ms

Loss rate: 0.57%

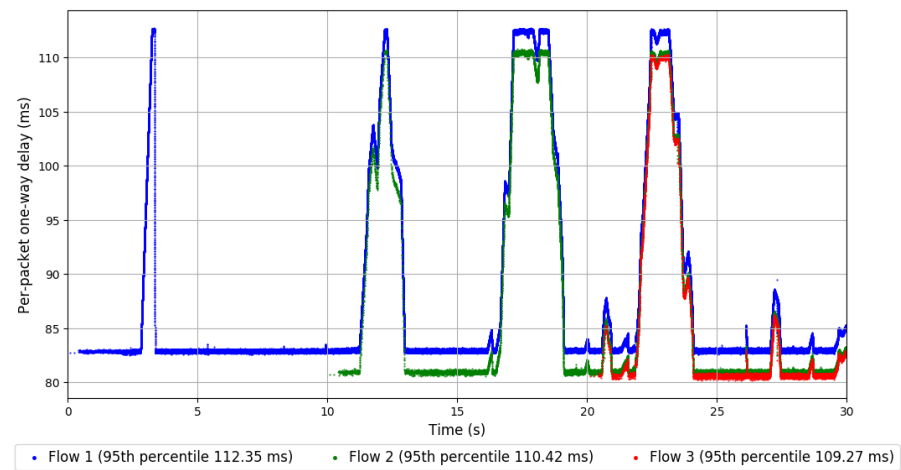
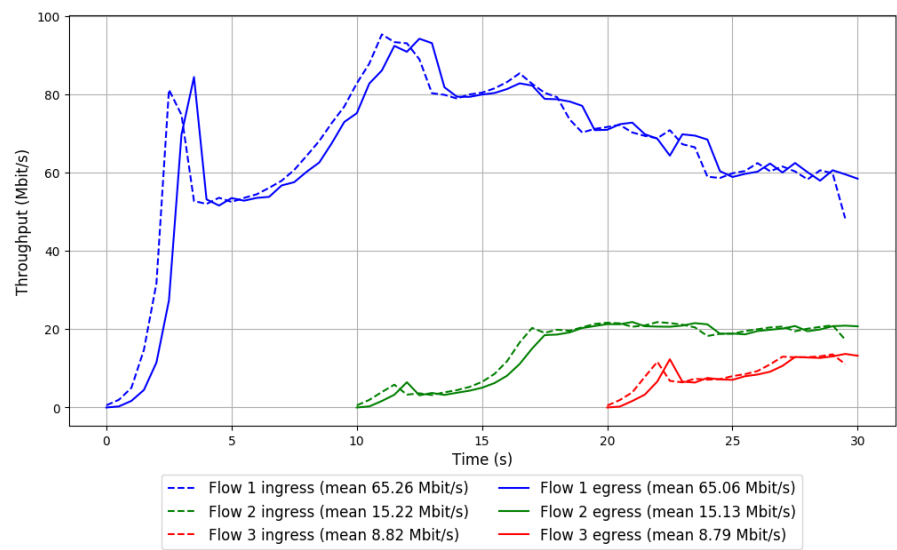
-- Flow 3:

Average throughput: 8.79 Mbit/s

95th percentile per-packet one-way delay: 109.265 ms

Loss rate: 0.30%

Run 3: Report of PCC-Vivace — Data Link

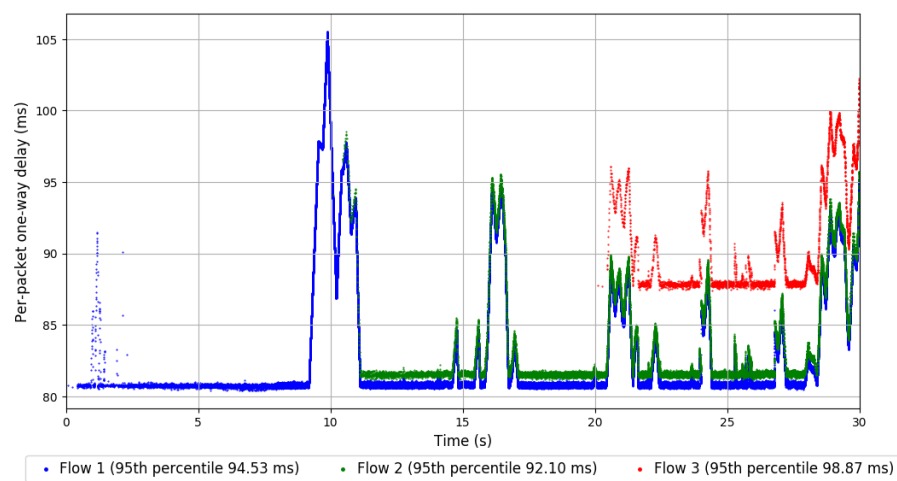
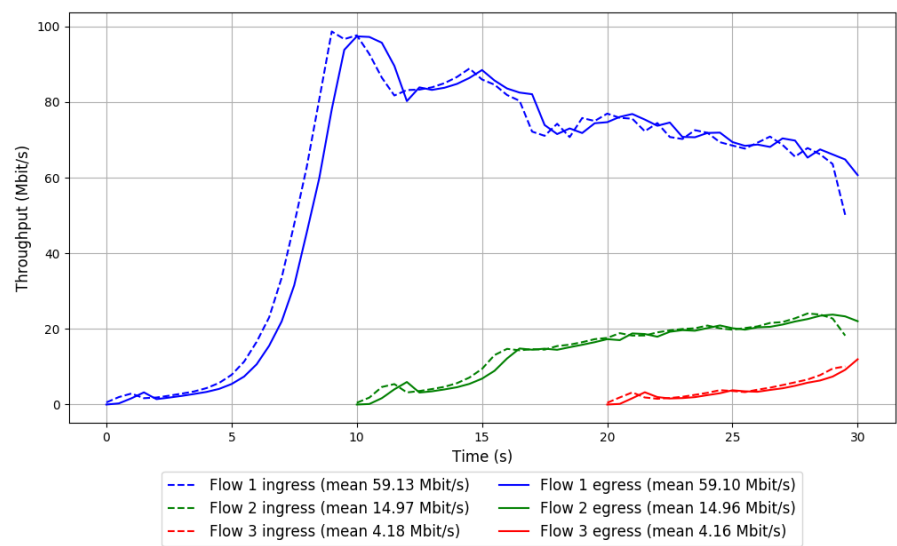


Run 4: Statistics of PCC-Vivace

Start at: 2018-10-02 11:20:09  
End at: 2018-10-02 11:20:39  
Local clock offset: -5.53 ms  
Remote clock offset: -2.721 ms

# Below is generated by plot.py at 2018-10-02 12:08:31  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 70.43 Mbit/s  
95th percentile per-packet one-way delay: 94.454 ms  
Loss rate: 0.01%  
-- Flow 1:  
Average throughput: 59.10 Mbit/s  
95th percentile per-packet one-way delay: 94.529 ms  
Loss rate: 0.01%  
-- Flow 2:  
Average throughput: 14.96 Mbit/s  
95th percentile per-packet one-way delay: 92.099 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 4.16 Mbit/s  
95th percentile per-packet one-way delay: 98.874 ms  
Loss rate: 0.25%

Run 4: Report of PCC-Vivace — Data Link



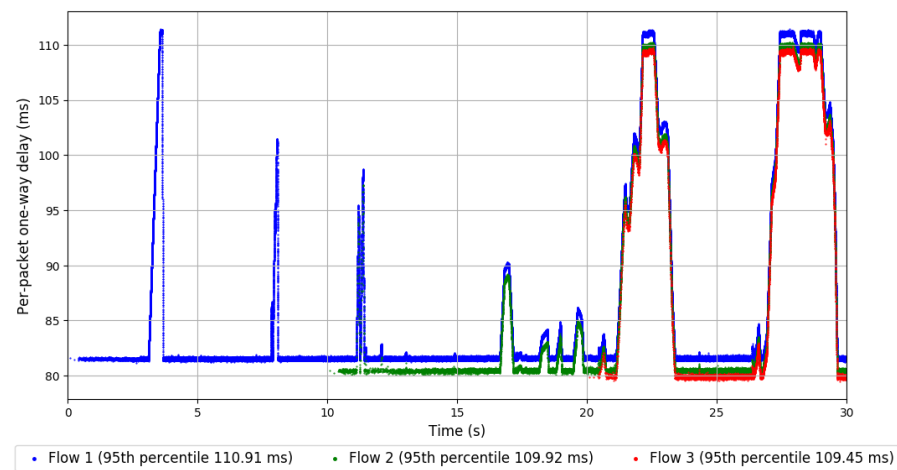
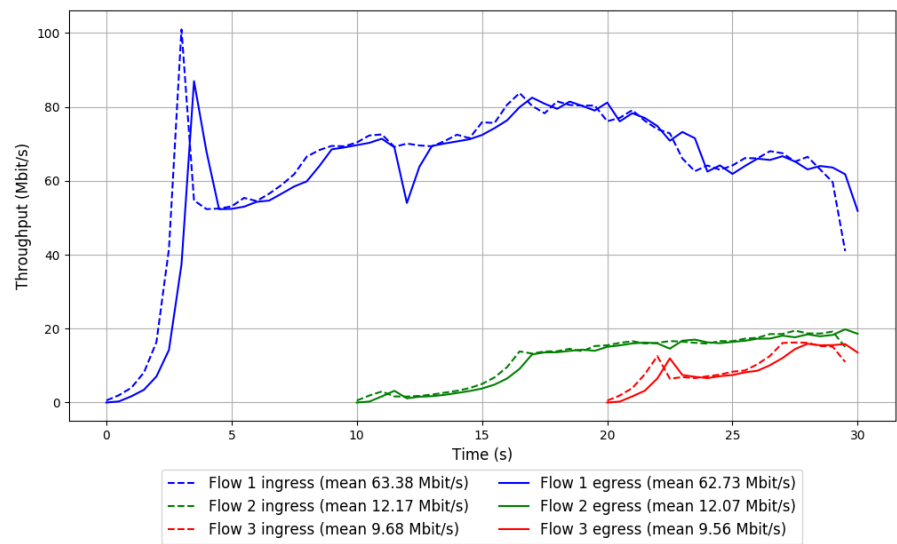


Run 5: Statistics of PCC-Vivace

Start at: 2018-10-02 11:42:59  
End at: 2018-10-02 11:43:29  
Local clock offset: -6.486 ms  
Remote clock offset: -3.244 ms

# Below is generated by plot.py at 2018-10-02 12:08:31  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 73.92 Mbit/s  
95th percentile per-packet one-way delay: 110.776 ms  
Loss rate: 1.02%  
-- Flow 1:  
Average throughput: 62.73 Mbit/s  
95th percentile per-packet one-way delay: 110.905 ms  
Loss rate: 1.03%  
-- Flow 2:  
Average throughput: 12.07 Mbit/s  
95th percentile per-packet one-way delay: 109.915 ms  
Loss rate: 0.84%  
-- Flow 3:  
Average throughput: 9.56 Mbit/s  
95th percentile per-packet one-way delay: 109.455 ms  
Loss rate: 1.21%

Run 5: Report of PCC-Vivace — Data Link



Run 1: Statistics of WebRTC media

Start at: 2018-10-02 10:24:21

End at: 2018-10-02 10:24:51

Local clock offset: -5.453 ms

Remote clock offset: 2.041 ms

# Below is generated by plot.py at 2018-10-02 12:08:31

# Datalink statistics

-- Total of 3 flows:

Average throughput: 2.94 Mbit/s

95th percentile per-packet one-way delay: 92.377 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 1.71 Mbit/s

95th percentile per-packet one-way delay: 92.457 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 1.02 Mbit/s

95th percentile per-packet one-way delay: 89.717 ms

Loss rate: 0.00%

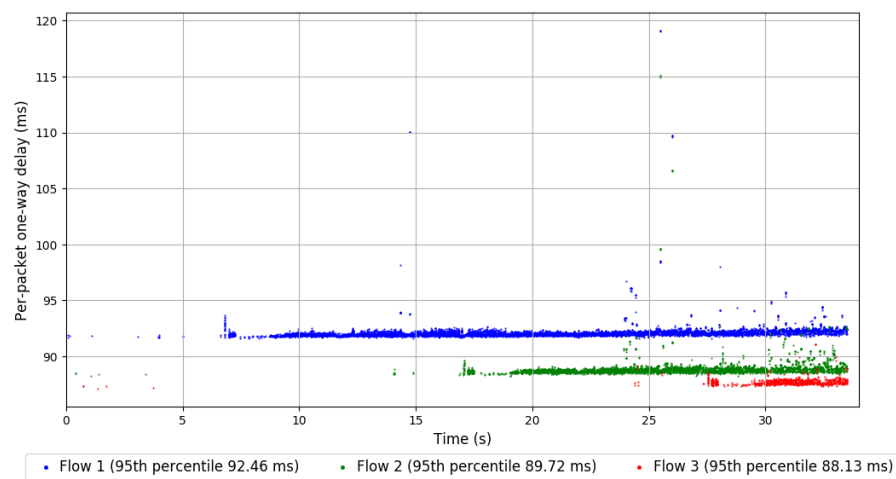
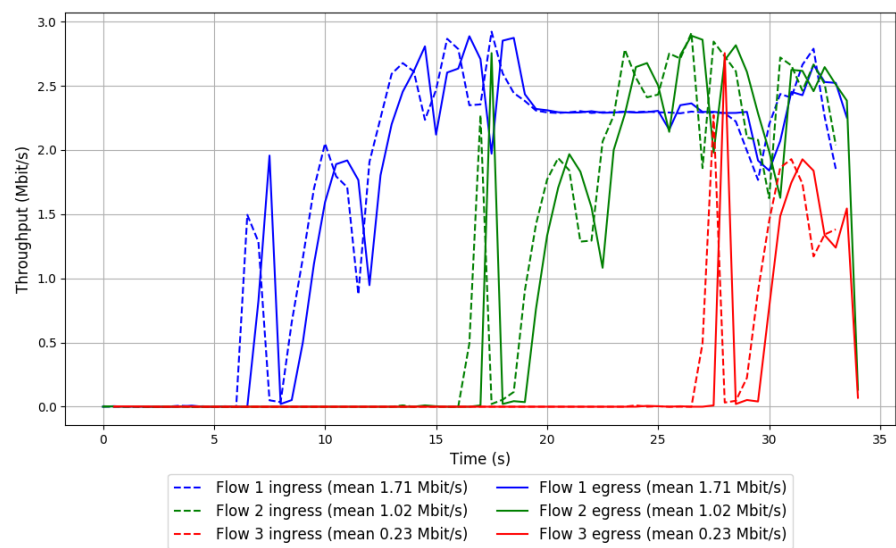
-- Flow 3:

Average throughput: 0.23 Mbit/s

95th percentile per-packet one-way delay: 88.134 ms

Loss rate: 0.00%

Run 1: Report of WebRTC media — Data Link

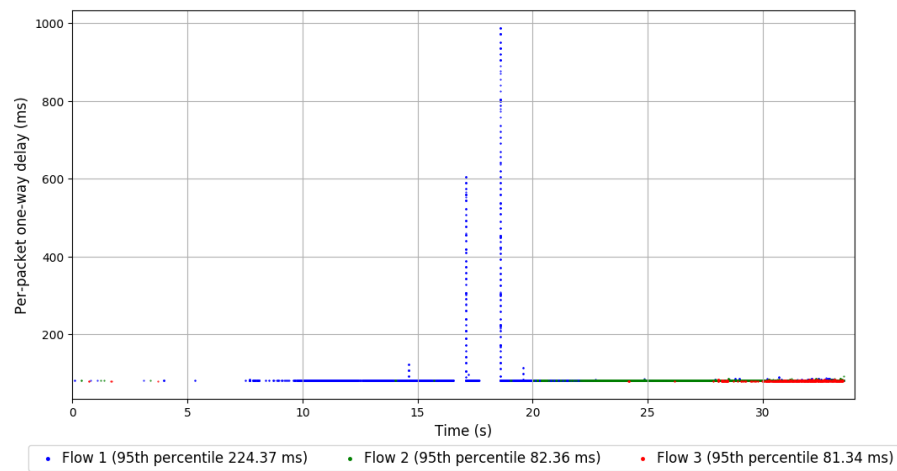
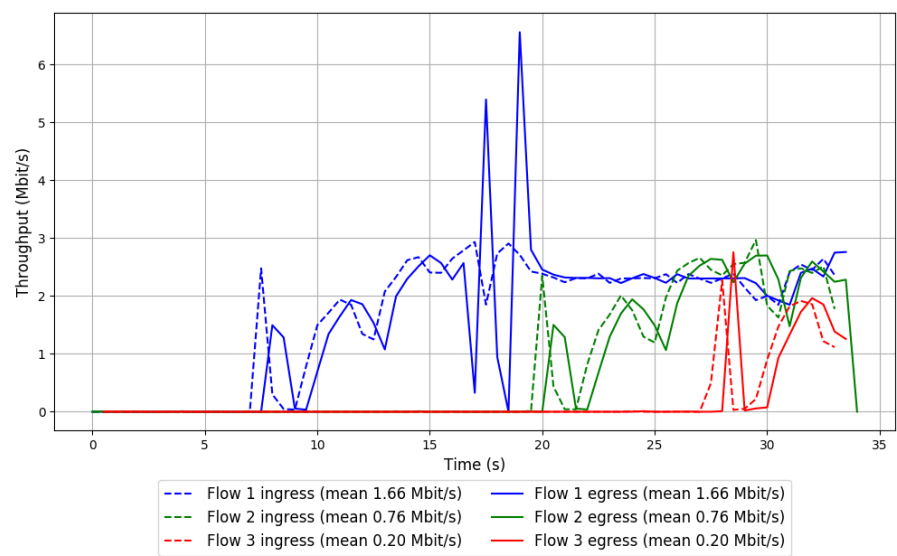


Run 2: Statistics of WebRTC media

Start at: 2018-10-02 10:47:16  
End at: 2018-10-02 10:47:46  
Local clock offset: -4.569 ms  
Remote clock offset: -4.164 ms

# Below is generated by plot.py at 2018-10-02 12:08:31  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 2.61 Mbit/s  
95th percentile per-packet one-way delay: 84.788 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 1.66 Mbit/s  
95th percentile per-packet one-way delay: 224.366 ms  
Loss rate: 0.00%  
-- Flow 2:  
Average throughput: 0.76 Mbit/s  
95th percentile per-packet one-way delay: 82.360 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 0.20 Mbit/s  
95th percentile per-packet one-way delay: 81.342 ms  
Loss rate: 0.00%

Run 2: Report of WebRTC media — Data Link

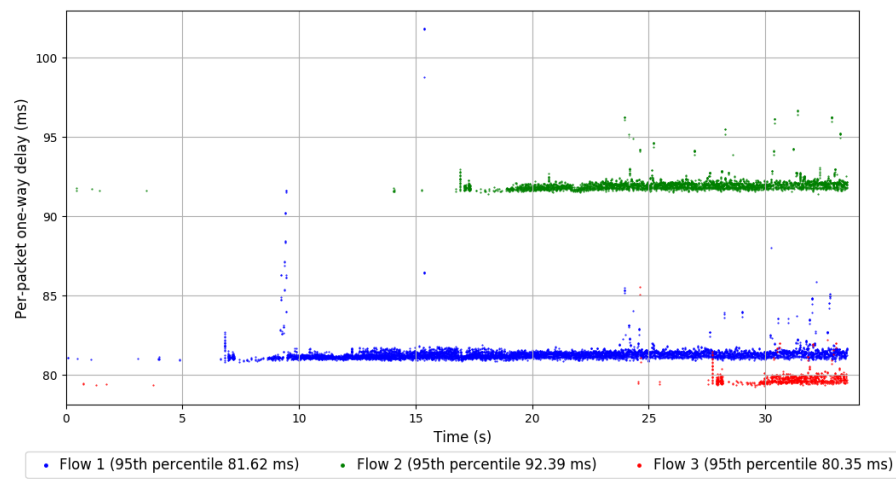
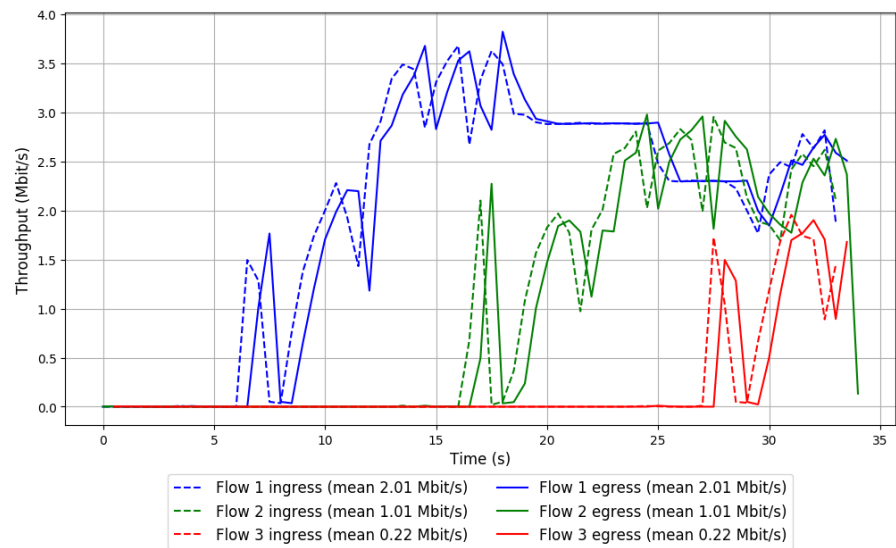


Run 3: Statistics of WebRTC media

Start at: 2018-10-02 11:10:05  
End at: 2018-10-02 11:10:35  
Local clock offset: -4.94 ms  
Remote clock offset: -3.874 ms

# Below is generated by plot.py at 2018-10-02 12:08:31  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 3.22 Mbit/s  
95th percentile per-packet one-way delay: 92.124 ms  
Loss rate: 0.01%  
-- Flow 1:  
Average throughput: 2.01 Mbit/s  
95th percentile per-packet one-way delay: 81.624 ms  
Loss rate: 0.01%  
-- Flow 2:  
Average throughput: 1.01 Mbit/s  
95th percentile per-packet one-way delay: 92.389 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 80.350 ms  
Loss rate: 0.00%

Run 3: Report of WebRTC media — Data Link





Run 4: Statistics of WebRTC media

Start at: 2018-10-02 11:32:54

End at: 2018-10-02 11:33:24

Local clock offset: -6.273 ms

Remote clock offset: 0.379 ms

# Below is generated by plot.py at 2018-10-02 12:08:31

# Datalink statistics

-- Total of 3 flows:

Average throughput: 3.44 Mbit/s

95th percentile per-packet one-way delay: 98.483 ms

Loss rate: 0.86%

-- Flow 1:

Average throughput: 2.62 Mbit/s

95th percentile per-packet one-way delay: 106.474 ms

Loss rate: 1.09%

-- Flow 2:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 85.991 ms

Loss rate: 0.00%

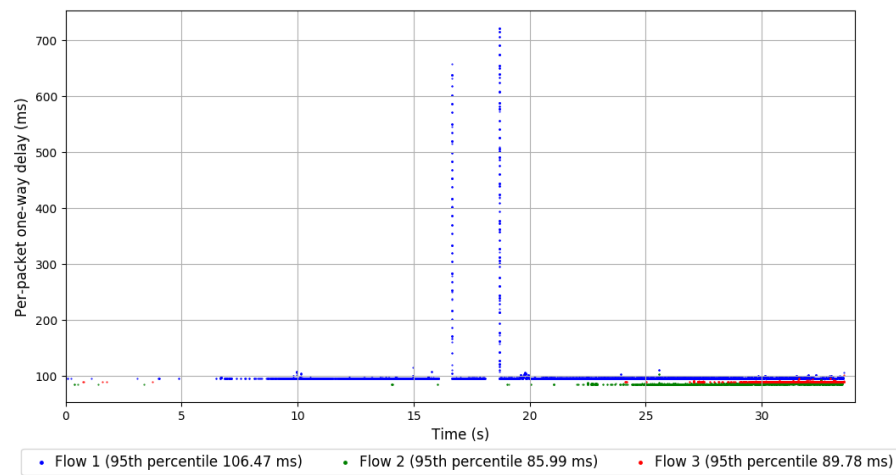
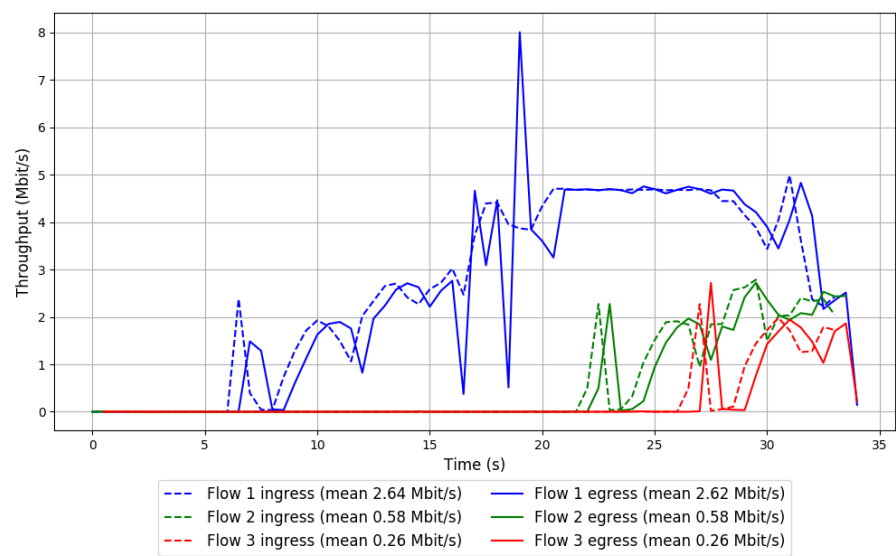
-- Flow 3:

Average throughput: 0.26 Mbit/s

95th percentile per-packet one-way delay: 89.776 ms

Loss rate: 0.35%

Run 4: Report of WebRTC media — Data Link



Run 5: Statistics of WebRTC media

Start at: 2018-10-02 11:55:48  
End at: 2018-10-02 11:56:18  
Local clock offset: -6.479 ms  
Remote clock offset: -3.067 ms

# Below is generated by plot.py at 2018-10-02 12:08:31  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 2.90 Mbit/s  
95th percentile per-packet one-way delay: 288.058 ms  
Loss rate: 0.74%  
-- Flow 1:  
Average throughput: 1.79 Mbit/s  
95th percentile per-packet one-way delay: 266.927 ms  
Loss rate: 0.61%  
-- Flow 2:  
Average throughput: 1.08 Mbit/s  
95th percentile per-packet one-way delay: 360.132 ms  
Loss rate: 0.96%  
-- Flow 3:  
Average throughput: 0.04 Mbit/s  
95th percentile per-packet one-way delay: 87.450 ms  
Loss rate: 0.12%

Run 5: Report of WebRTC media — Data Link

