

## Pantheon Report

Generated at 2018-11-15 07:01:47 (UTC).

Data path: AWS California 2 on **ens5** (*local*) → Mexico on **em1** (*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 **time.stanford.edu** and have been applied to correct the timestamps in logs.

### System info:

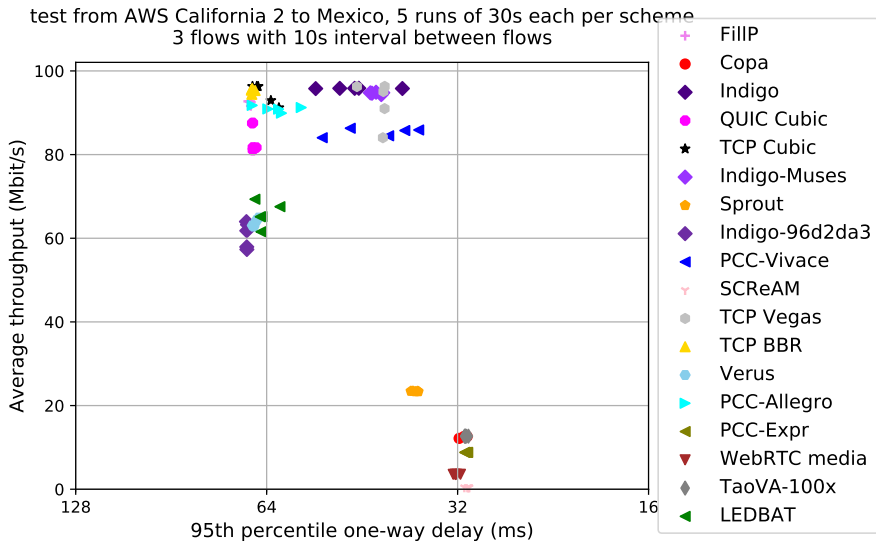
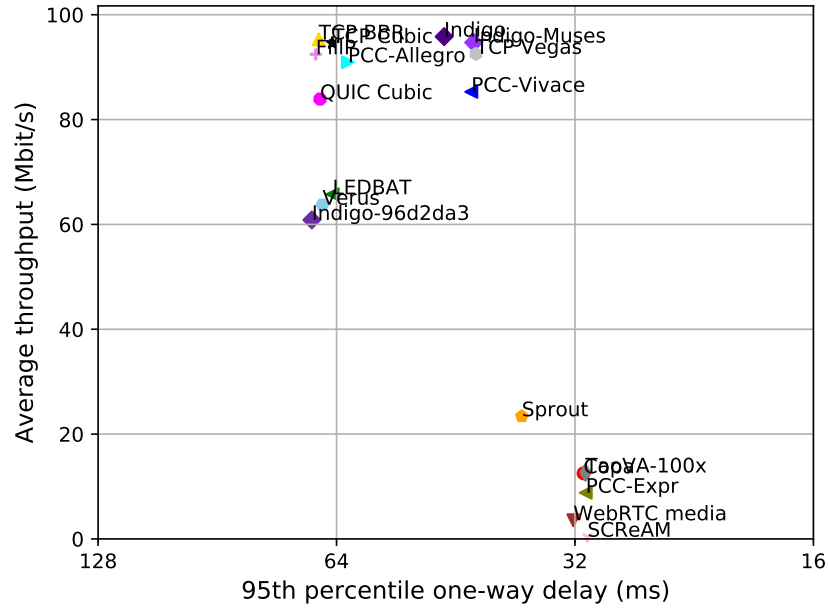
```
Linux 4.15.0-1023-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
```

### Git summary:

```
branch: muses @ 794ca3866981572cb73700a276691acf79c60f2b
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecd90c077e64d
third_party/indigo-96d2da3 @ 8413272d46f8aa0bcb967ed7048b6a8f994abb95
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 65ac1b19bbefed0c6349ae986009b4fa8643c40a
third_party/pantheon-tunnel @ f866d3f58d27afd942717625ee3a354cc2e802bd
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
M receiver/src/buffer.h
M receiver/src/core.cpp
M sender/src/buffer.h
M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quick @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
M src/ScreamClient
M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
M src/examples/cellsim.cc
M src/examples/sproutbt2.cc
M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
M src/verus.hpp
M tools/plot.py
```

third\_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4  
third\_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851

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



scheme	# runs	mean avg tput (Mbit/s)			mean 95th-%ile delay (ms)			mean loss rate (%)		
		flow 1	flow 2	flow 3	flow 1	flow 2	flow 3	flow 1	flow 2	flow 3
TCP BBR	5	61.64	33.00	35.20	66.73	68.26	67.76	6.90	10.38	10.30
Copa	5	10.31	6.36	0.86	31.23	31.27	31.20	68.55	70.93	82.99
TCP Cubic	5	67.18	28.73	24.94	63.93	65.36	65.22	0.99	0.69	0.72
FillP	5	58.55	41.05	20.16	66.76	69.09	68.54	28.93	47.19	53.38
Indigo	5	66.39	30.41	28.34	44.09	48.98	50.63	0.07	0.09	0.03
Indigo-96d2da3	5	49.99	10.56	18.77	68.76	67.29	66.46	58.72	61.16	57.11
LEDBAT	5	40.35	28.78	19.03	64.10	65.59	61.65	0.14	0.22	0.06
Indigo-Muses	5	57.22	35.52	42.05	43.25	43.69	40.53	0.47	0.00	0.00
PCC-Allegro	5	81.03	9.81	10.28	61.50	63.02	63.14	2.00	1.95	3.76
PCC-Expr	5	0.03	10.17	6.18	30.88	31.01	31.04	85.71	47.25	35.95
QUIC Cubic	5	60.70	27.75	14.56	66.86	67.56	67.89	2.47	1.12	1.22
SCReAM	5	0.21	0.21	0.22	30.84	30.83	30.87	0.00	0.00	0.00
Sprout	5	11.80	11.72	11.53	37.12	37.66	37.31	0.03	0.05	0.00
TaoVA-100x	5	7.49	6.07	3.94	31.59	30.99	30.91	84.67	63.71	76.62
TCP Vegas	5	68.99	26.02	18.67	43.10	40.39	38.46	0.42	0.10	0.01
Verus	5	38.67	30.27	18.12	66.39	66.41	67.17	30.96	32.83	42.22
PCC-Vivace	5	64.21	24.68	14.16	43.74	43.09	44.17	0.02	0.06	0.08
WebRTC media	5	1.93	1.24	0.41	31.84	32.35	32.98	0.00	0.00	0.00



Run 1: Statistics of TCP BBR

Start at: 2018-11-15 04:54:46

End at: 2018-11-15 04:55:16

Local clock offset: 0.682 ms

Remote clock offset: 1.137 ms

# Below is generated by plot.py at 2018-11-15 06:53:09

# Datalink statistics

-- Total of 3 flows:

Average throughput: 95.79 Mbit/s

95th percentile per-packet one-way delay: 67.451 ms

Loss rate: 7.48%

-- Flow 1:

Average throughput: 59.05 Mbit/s

95th percentile per-packet one-way delay: 66.789 ms

Loss rate: 6.08%

-- Flow 2:

Average throughput: 33.74 Mbit/s

95th percentile per-packet one-way delay: 68.311 ms

Loss rate: 9.55%

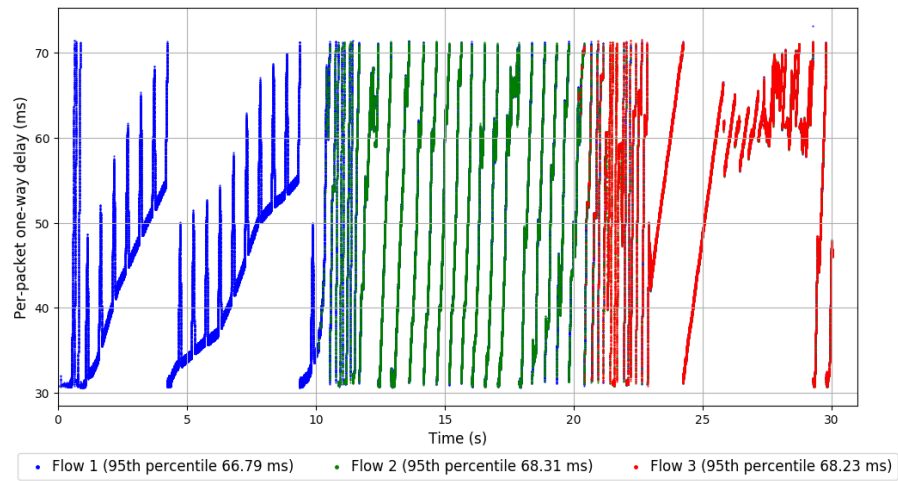
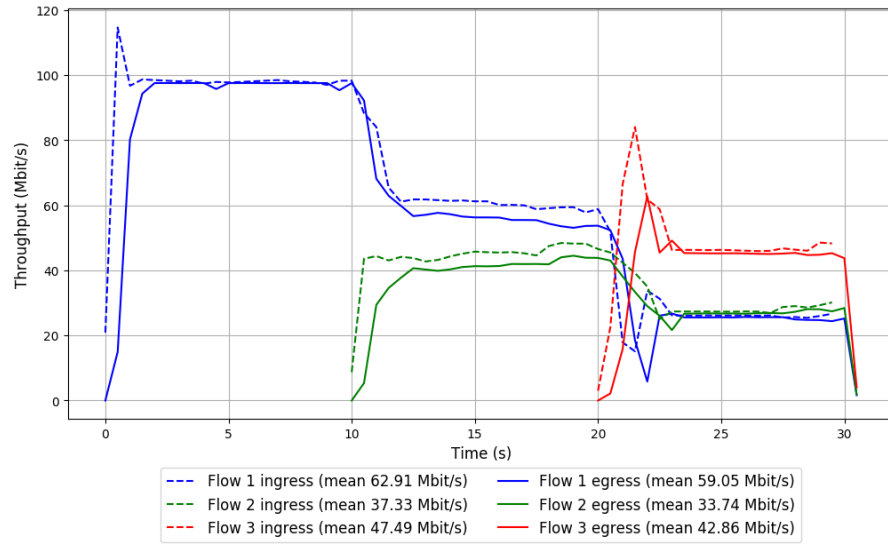
-- Flow 3:

Average throughput: 42.86 Mbit/s

95th percentile per-packet one-way delay: 68.228 ms

Loss rate: 9.76%

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



Run 2: Statistics of TCP BBR

Start at: 2018-11-15 05:19:26

End at: 2018-11-15 05:19:56

Local clock offset: 0.287 ms

Remote clock offset: 1.192 ms

# Below is generated by plot.py at 2018-11-15 06:53:09

# Datalink statistics

-- Total of 3 flows:

Average throughput: 95.33 Mbit/s

95th percentile per-packet one-way delay: 66.740 ms

Loss rate: 7.84%

-- Flow 1:

Average throughput: 63.40 Mbit/s

95th percentile per-packet one-way delay: 66.429 ms

Loss rate: 6.97%

-- Flow 2:

Average throughput: 28.59 Mbit/s

95th percentile per-packet one-way delay: 67.894 ms

Loss rate: 9.95%

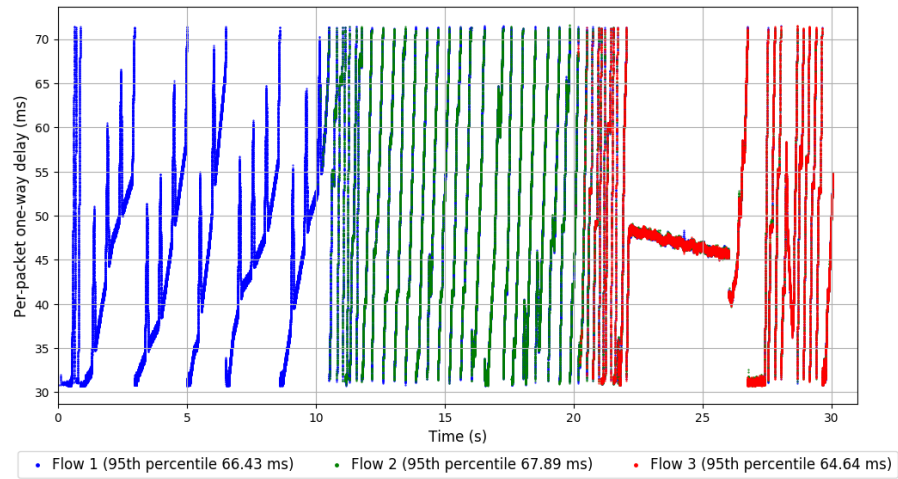
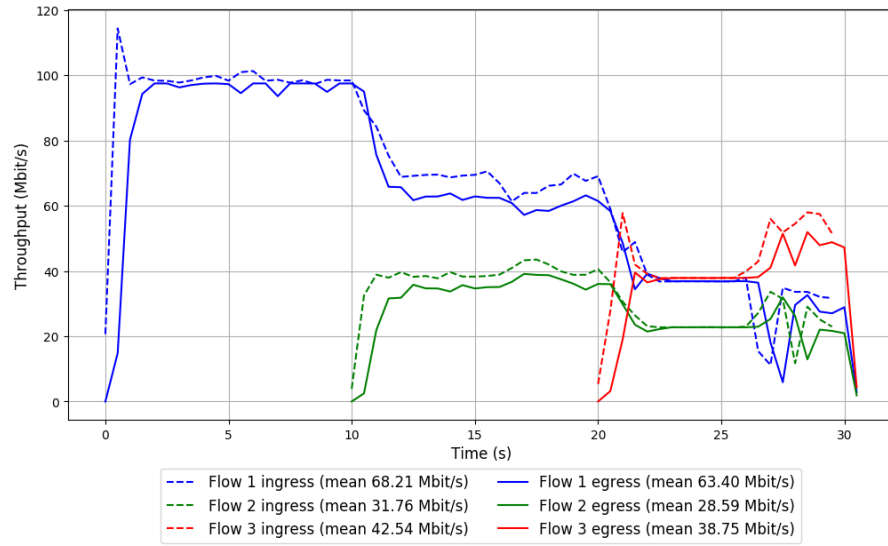
-- Flow 3:

Average throughput: 38.75 Mbit/s

95th percentile per-packet one-way delay: 64.637 ms

Loss rate: 8.89%

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



Run 3: Statistics of TCP BBR

Start at: 2018-11-15 05:44:25

End at: 2018-11-15 05:44:55

Local clock offset: 0.233 ms

Remote clock offset: 0.022 ms

# Below is generated by plot.py at 2018-11-15 06:53:09

# Datalink statistics

-- Total of 3 flows:

Average throughput: 95.56 Mbit/s

95th percentile per-packet one-way delay: 67.606 ms

Loss rate: 8.72%

-- Flow 1:

Average throughput: 62.55 Mbit/s

95th percentile per-packet one-way delay: 66.880 ms

Loss rate: 7.23%

-- Flow 2:

Average throughput: 36.79 Mbit/s

95th percentile per-packet one-way delay: 68.573 ms

Loss rate: 11.54%

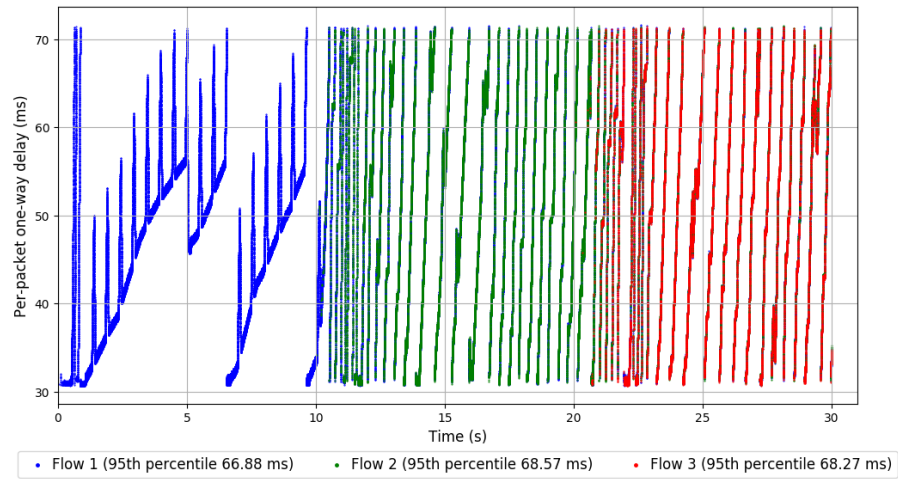
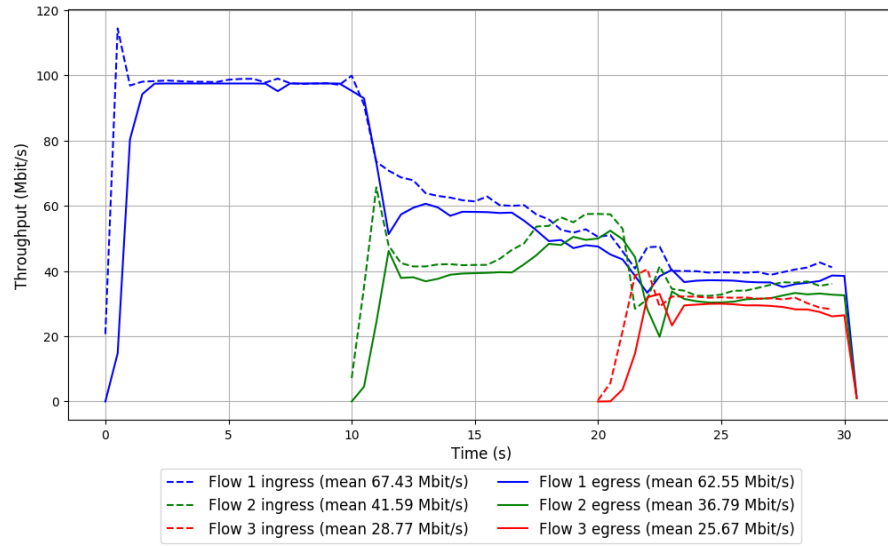
-- Flow 3:

Average throughput: 25.67 Mbit/s

95th percentile per-packet one-way delay: 68.273 ms

Loss rate: 11.01%

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

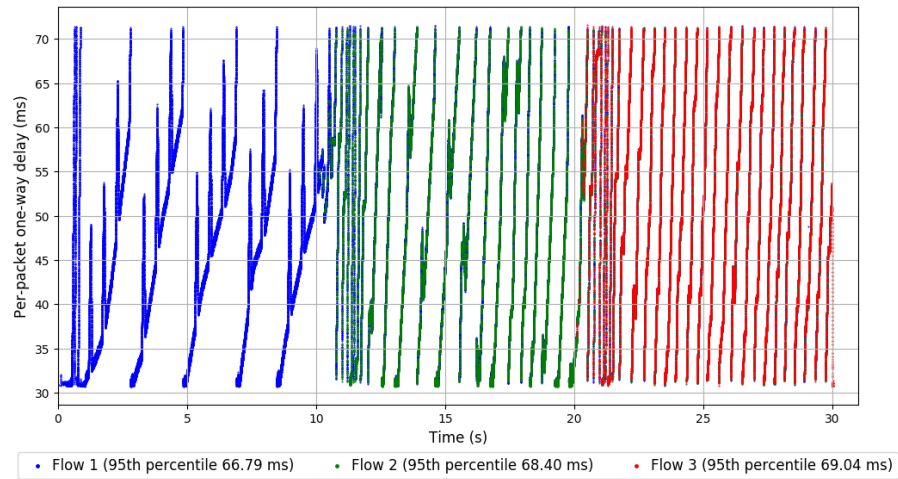
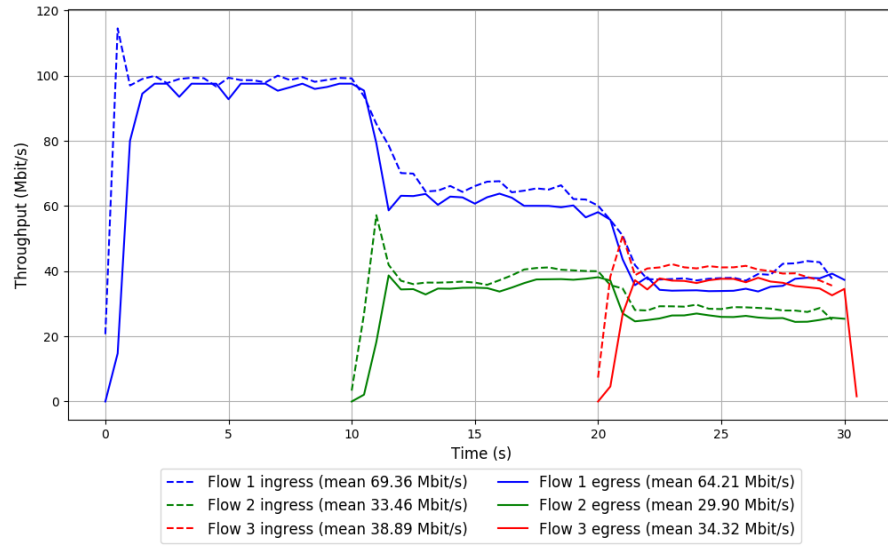


Run 4: Statistics of TCP BBR

Start at: 2018-11-15 06:09:06  
End at: 2018-11-15 06:09:36  
Local clock offset: -2.438 ms  
Remote clock offset: -1.851 ms

# Below is generated by plot.py at 2018-11-15 06:53:09  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 95.41 Mbit/s  
95th percentile per-packet one-way delay: 67.659 ms  
Loss rate: 8.61%  
-- Flow 1:  
Average throughput: 64.21 Mbit/s  
95th percentile per-packet one-way delay: 66.794 ms  
Loss rate: 7.36%  
-- Flow 2:  
Average throughput: 29.90 Mbit/s  
95th percentile per-packet one-way delay: 68.398 ms  
Loss rate: 10.66%  
-- Flow 3:  
Average throughput: 34.32 Mbit/s  
95th percentile per-packet one-way delay: 69.038 ms  
Loss rate: 11.77%

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





Run 5: Statistics of TCP BBR

Start at: 2018-11-15 06:33:39

End at: 2018-11-15 06:34:09

Local clock offset: -1.404 ms

Remote clock offset: -3.11 ms

# Below is generated by plot.py at 2018-11-15 06:53:09

# Datalink statistics

-- Total of 3 flows:

Average throughput: 94.42 Mbit/s

95th percentile per-packet one-way delay: 67.540 ms

Loss rate: 8.14%

-- Flow 1:

Average throughput: 59.00 Mbit/s

95th percentile per-packet one-way delay: 66.740 ms

Loss rate: 6.88%

-- Flow 2:

Average throughput: 36.00 Mbit/s

95th percentile per-packet one-way delay: 68.139 ms

Loss rate: 10.22%

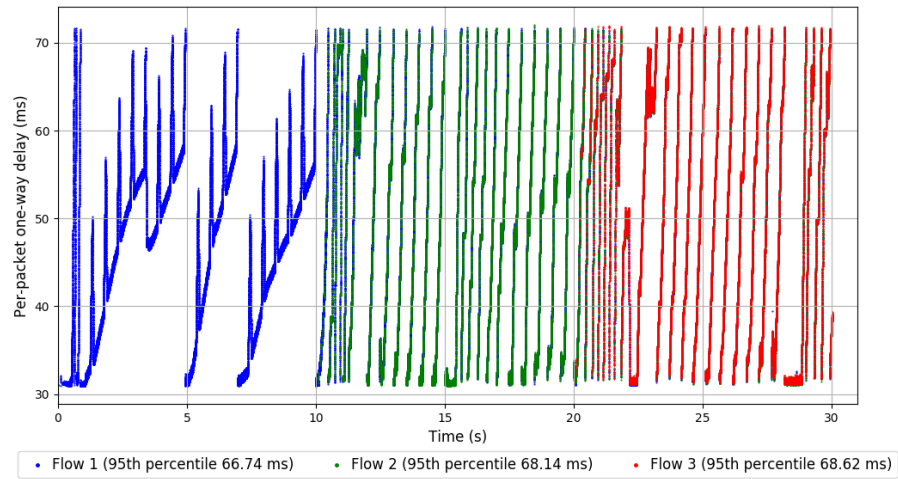
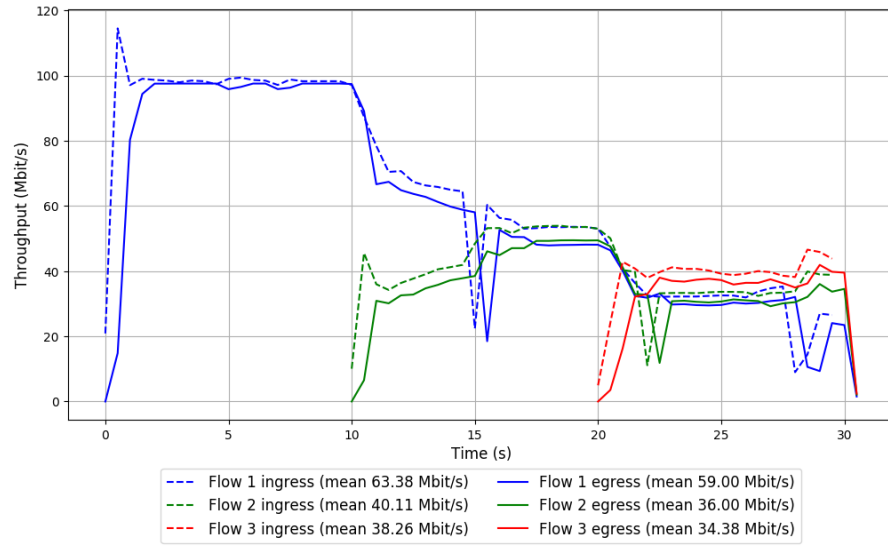
-- Flow 3:

Average throughput: 34.38 Mbit/s

95th percentile per-packet one-way delay: 68.621 ms

Loss rate: 10.06%

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



Run 1: Statistics of Copa

Start at: 2018-11-15 05:09:58

End at: 2018-11-15 05:10:28

Local clock offset: 0.316 ms

Remote clock offset: 1.586 ms

# Below is generated by plot.py at 2018-11-15 06:53:09

# Datalink statistics

-- Total of 3 flows:

Average throughput: 12.60 Mbit/s

95th percentile per-packet one-way delay: 31.046 ms

Loss rate: 70.69%

-- Flow 1:

Average throughput: 8.89 Mbit/s

95th percentile per-packet one-way delay: 31.108 ms

Loss rate: 70.22%

-- Flow 2:

Average throughput: 5.86 Mbit/s

95th percentile per-packet one-way delay: 31.004 ms

Loss rate: 71.65%

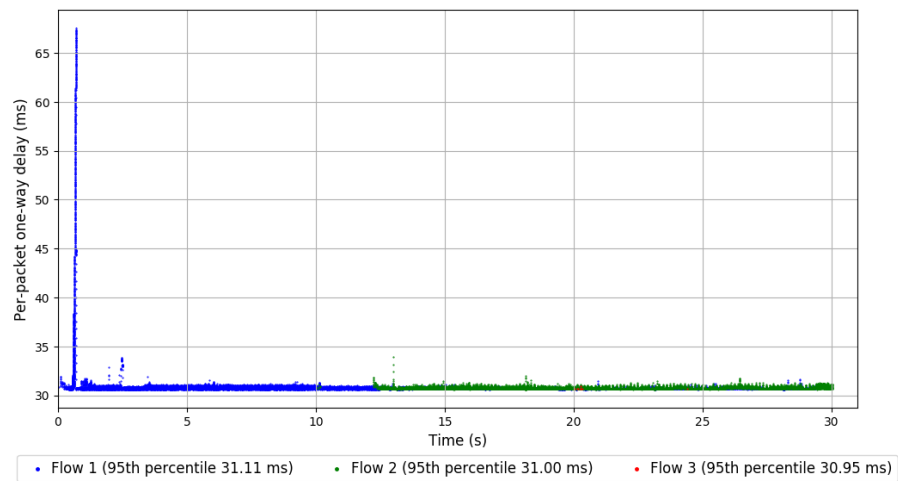
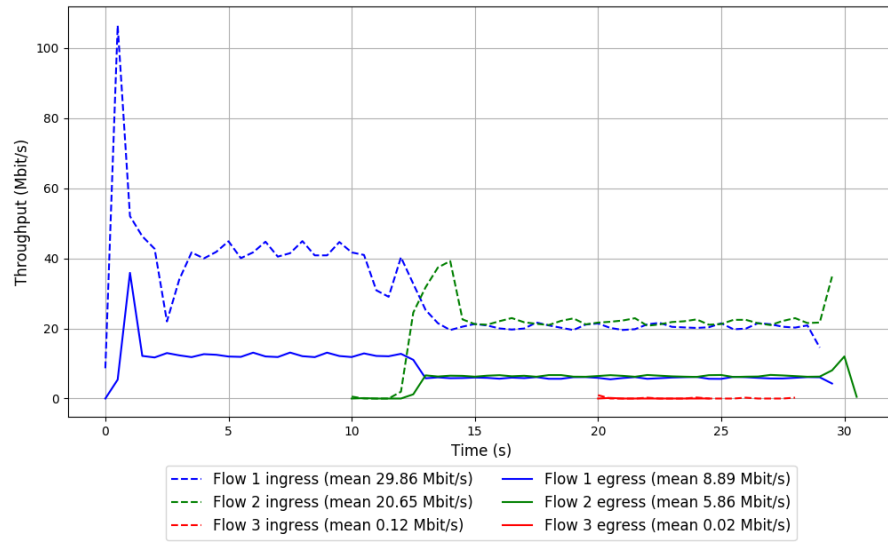
-- Flow 3:

Average throughput: 0.02 Mbit/s

95th percentile per-packet one-way delay: 30.955 ms

Loss rate: 90.15%

## Run 1: Report of Copa — Data Link



Run 2: Statistics of Copa

Start at: 2018-11-15 05:34:56

End at: 2018-11-15 05:35:26

Local clock offset: 0.25 ms

Remote clock offset: 0.457 ms

# Below is generated by plot.py at 2018-11-15 06:53:09

# Datalink statistics

-- Total of 3 flows:

Average throughput: 12.15 Mbit/s

95th percentile per-packet one-way delay: 31.826 ms

Loss rate: 68.00%

-- Flow 1:

Average throughput: 12.86 Mbit/s

95th percentile per-packet one-way delay: 31.466 ms

Loss rate: 67.65%

-- Flow 2:

Average throughput: 9.05 Mbit/s

95th percentile per-packet one-way delay: 32.651 ms

Loss rate: 68.33%

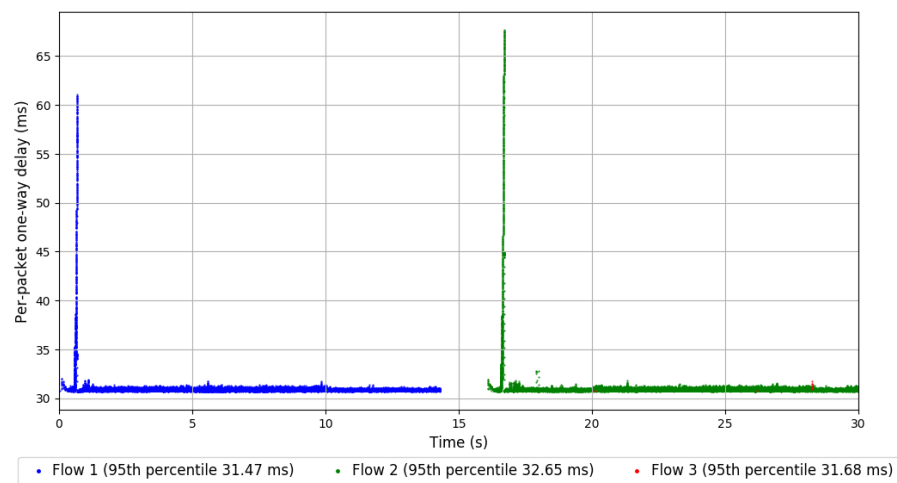
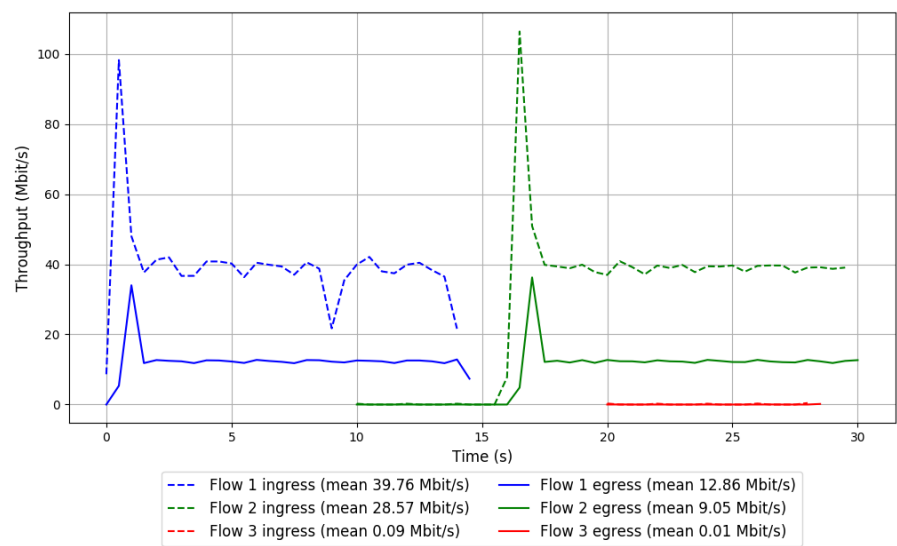
-- Flow 3:

Average throughput: 0.01 Mbit/s

95th percentile per-packet one-way delay: 31.684 ms

Loss rate: 85.37%

Run 2: Report of Copa — Data Link

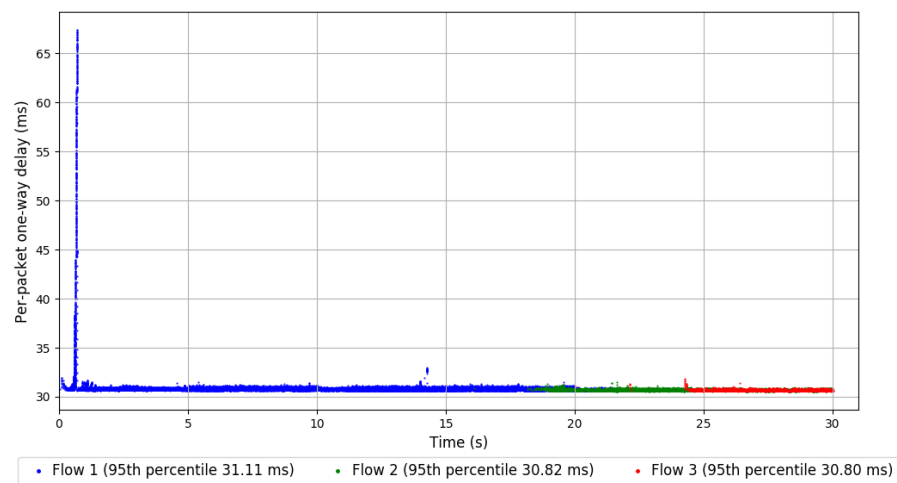
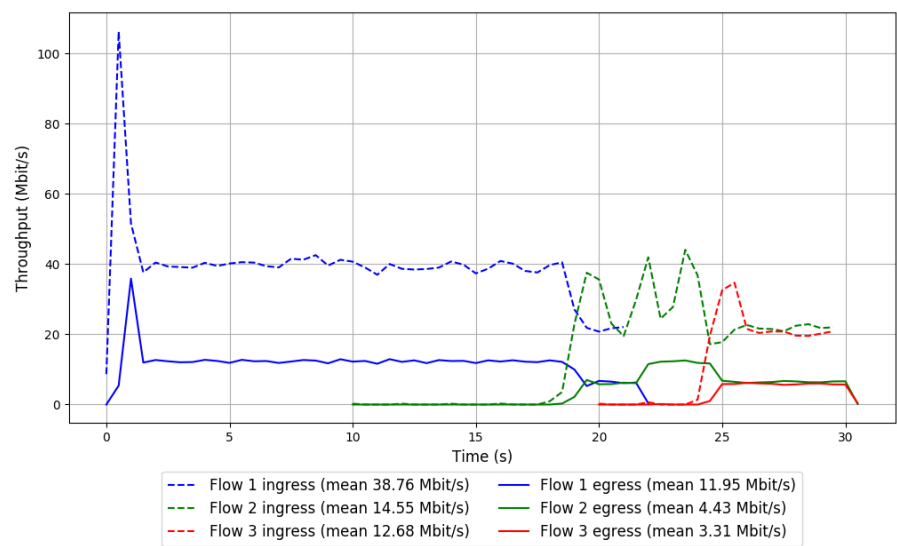


Run 3: Statistics of Copa

Start at: 2018-11-15 05:59:40  
End at: 2018-11-15 06:00:10  
Local clock offset: -0.716 ms  
Remote clock offset: -1.124 ms

# Below is generated by plot.py at 2018-11-15 06:53:09  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 12.61 Mbit/s  
95th percentile per-packet one-way delay: 31.025 ms  
Loss rate: 69.74%  
-- Flow 1:  
Average throughput: 11.95 Mbit/s  
95th percentile per-packet one-way delay: 31.112 ms  
Loss rate: 69.18%  
-- Flow 2:  
Average throughput: 4.43 Mbit/s  
95th percentile per-packet one-way delay: 30.823 ms  
Loss rate: 69.54%  
-- Flow 3:  
Average throughput: 3.31 Mbit/s  
95th percentile per-packet one-way delay: 30.799 ms  
Loss rate: 73.89%

Run 3: Report of Copa — Data Link



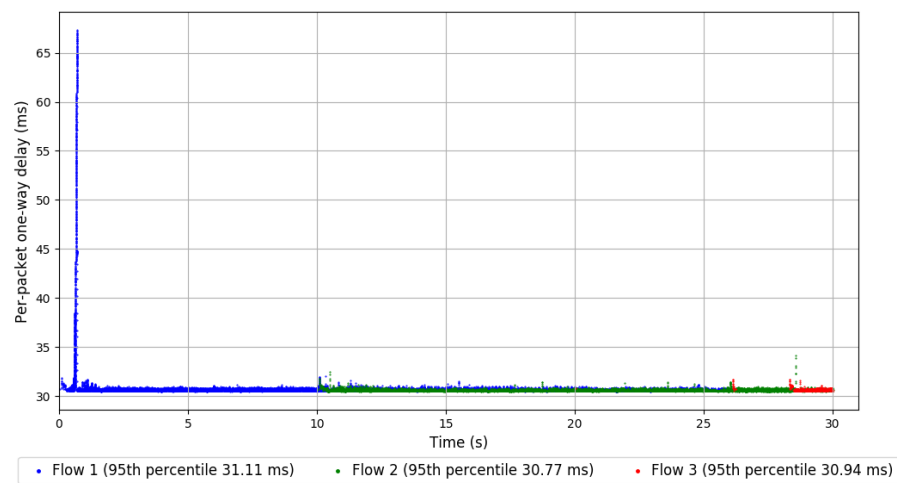
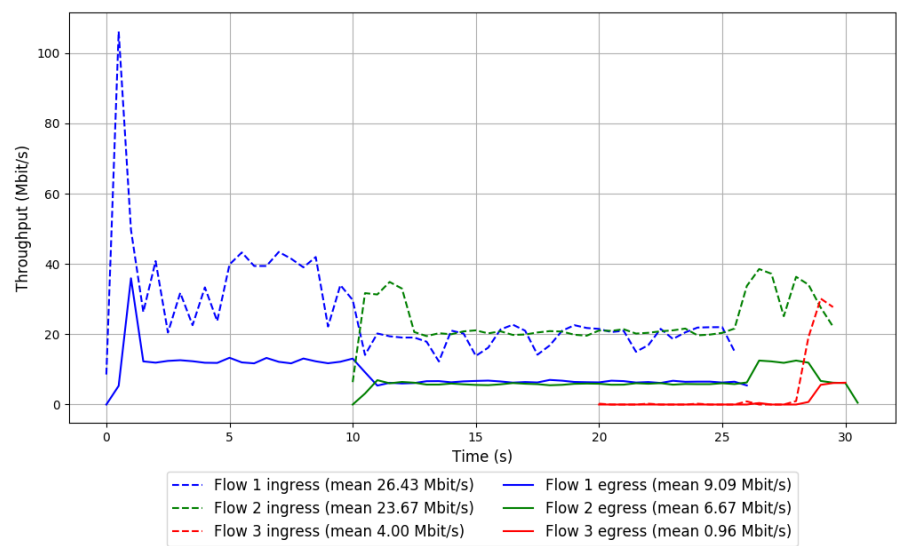


Run 4: Statistics of Copa

Start at: 2018-11-15 06:24:12  
End at: 2018-11-15 06:24:42  
Local clock offset: -3.572 ms  
Remote clock offset: -3.161 ms

# Below is generated by plot.py at 2018-11-15 06:53:09  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 12.61 Mbit/s  
95th percentile per-packet one-way delay: 30.906 ms  
Loss rate: 68.40%  
-- Flow 1:  
Average throughput: 9.09 Mbit/s  
95th percentile per-packet one-way delay: 31.113 ms  
Loss rate: 65.60%  
-- Flow 2:  
Average throughput: 6.67 Mbit/s  
95th percentile per-packet one-way delay: 30.774 ms  
Loss rate: 71.81%  
-- Flow 3:  
Average throughput: 0.96 Mbit/s  
95th percentile per-packet one-way delay: 30.938 ms  
Loss rate: 76.01%

Run 4: Report of Copa — Data Link



Run 5: Statistics of Copa

Start at: 2018-11-15 06:48:40

End at: 2018-11-15 06:49:10

Local clock offset: 0.279 ms

Remote clock offset: -3.29 ms

# Below is generated by plot.py at 2018-11-15 06:53:09

# Datalink statistics

-- Total of 3 flows:

Average throughput: 12.61 Mbit/s

95th percentile per-packet one-way delay: 31.256 ms

Loss rate: 71.19%

-- Flow 1:

Average throughput: 8.75 Mbit/s

95th percentile per-packet one-way delay: 31.327 ms

Loss rate: 70.12%

-- Flow 2:

Average throughput: 5.81 Mbit/s

95th percentile per-packet one-way delay: 31.085 ms

Loss rate: 73.30%

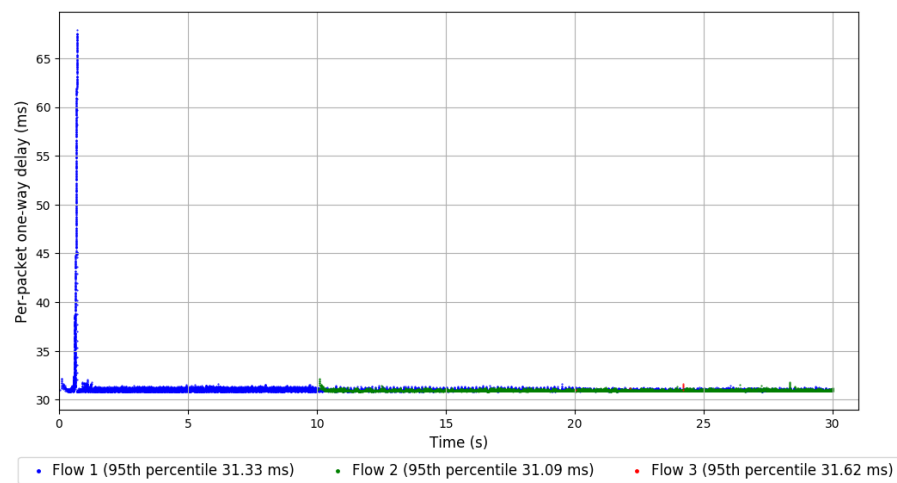
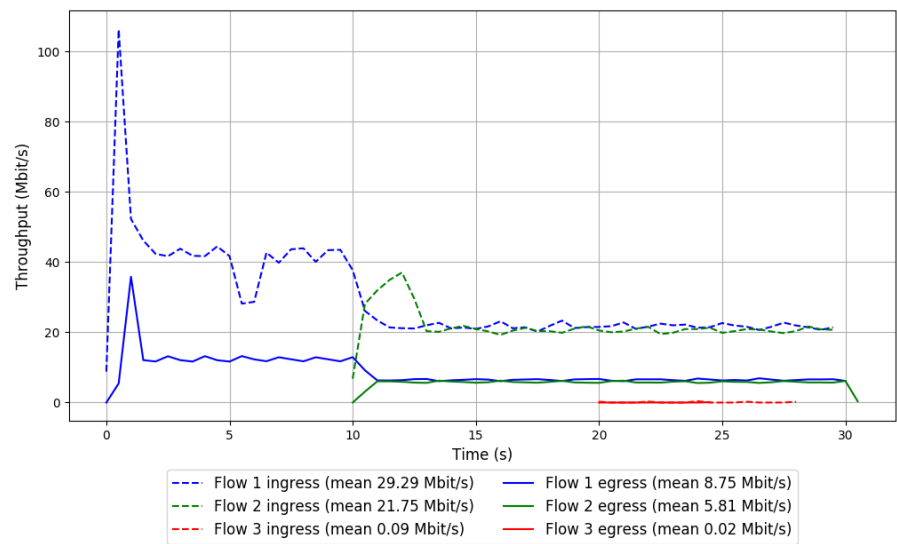
-- Flow 3:

Average throughput: 0.02 Mbit/s

95th percentile per-packet one-way delay: 31.622 ms

Loss rate: 89.52%

Run 5: Report of Copa — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2018-11-15 04:56:09

End at: 2018-11-15 04:56:39

Local clock offset: 0.696 ms

Remote clock offset: 1.207 ms

# Below is generated by plot.py at 2018-11-15 06:53:24

# Datalink statistics

-- Total of 3 flows:

Average throughput: 96.30 Mbit/s

95th percentile per-packet one-way delay: 67.376 ms

Loss rate: 0.85%

-- Flow 1:

Average throughput: 72.80 Mbit/s

95th percentile per-packet one-way delay: 67.578 ms

Loss rate: 0.87%

-- Flow 2:

Average throughput: 24.24 Mbit/s

95th percentile per-packet one-way delay: 66.752 ms

Loss rate: 0.69%

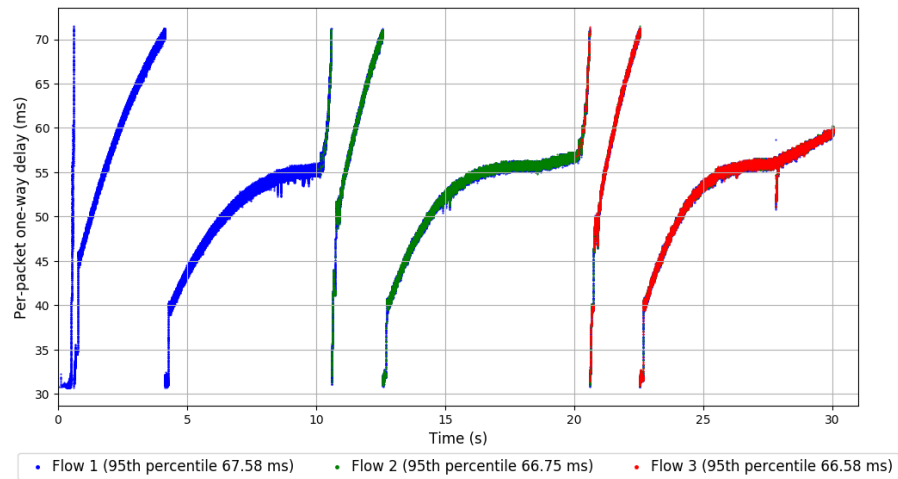
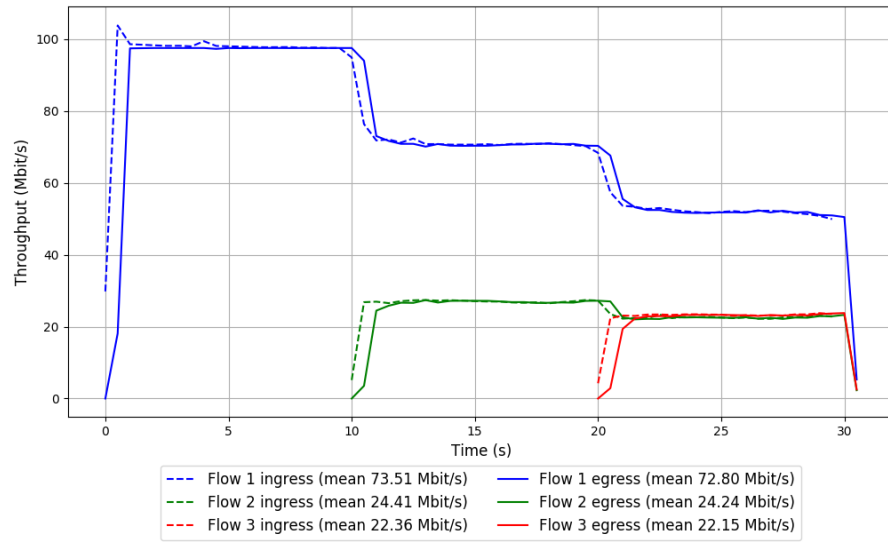
-- Flow 3:

Average throughput: 22.15 Mbit/s

95th percentile per-packet one-way delay: 66.577 ms

Loss rate: 0.94%

# Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2018-11-15 05:20:50

End at: 2018-11-15 05:21:20

Local clock offset: 0.254 ms

Remote clock offset: 0.962 ms

# Below is generated by plot.py at 2018-11-15 06:53:34

# Datalink statistics

-- Total of 3 flows:

Average throughput: 92.93 Mbit/s

95th percentile per-packet one-way delay: 63.027 ms

Loss rate: 0.96%

-- Flow 1:

Average throughput: 62.07 Mbit/s

95th percentile per-packet one-way delay: 62.425 ms

Loss rate: 1.06%

-- Flow 2:

Average throughput: 35.01 Mbit/s

95th percentile per-packet one-way delay: 63.584 ms

Loss rate: 0.69%

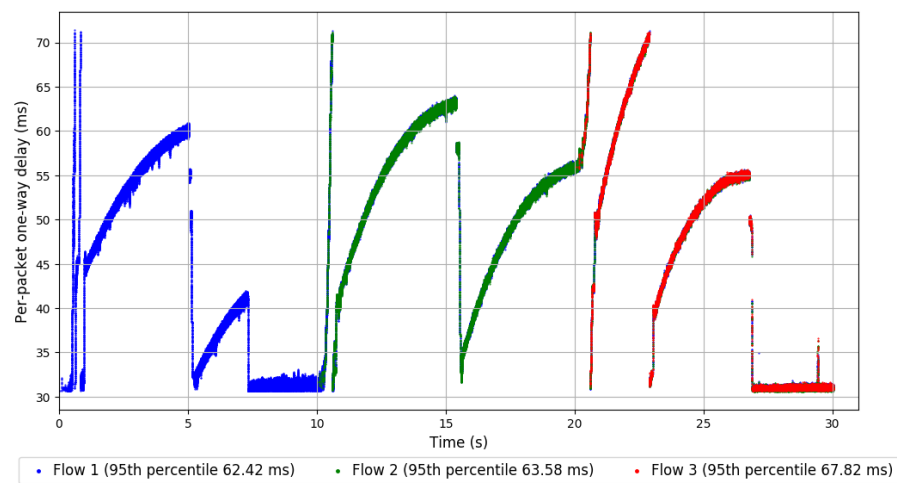
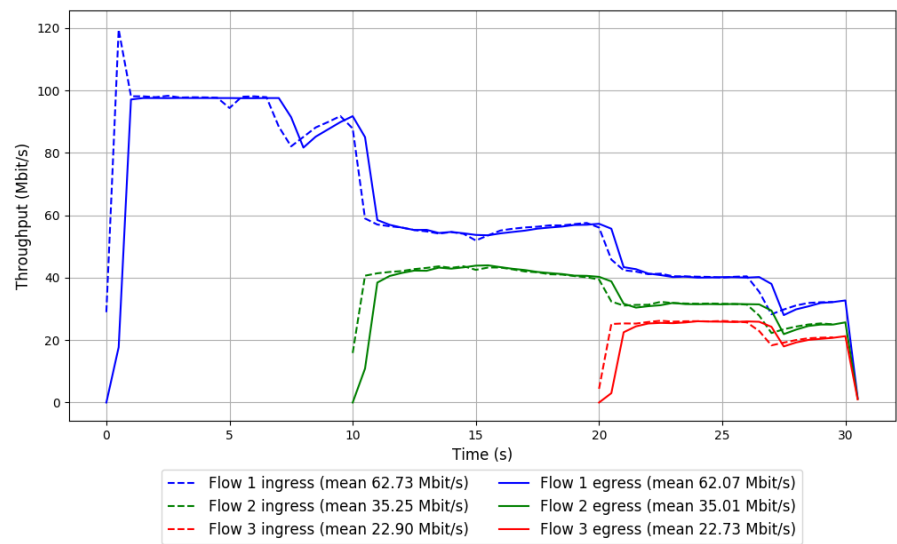
-- Flow 3:

Average throughput: 22.73 Mbit/s

95th percentile per-packet one-way delay: 67.822 ms

Loss rate: 0.97%

Run 2: Report of TCP Cubic — Data Link





Run 3: Statistics of TCP Cubic

Start at: 2018-11-15 05:45:49

End at: 2018-11-15 05:46:19

Local clock offset: 0.22 ms

Remote clock offset: -0.06 ms

# Below is generated by plot.py at 2018-11-15 06:53:38

# Datalink statistics

-- Total of 3 flows:

Average throughput: 96.28 Mbit/s

95th percentile per-packet one-way delay: 66.013 ms

Loss rate: 1.00%

-- Flow 1:

Average throughput: 78.51 Mbit/s

95th percentile per-packet one-way delay: 65.561 ms

Loss rate: 1.05%

-- Flow 2:

Average throughput: 15.93 Mbit/s

95th percentile per-packet one-way delay: 67.595 ms

Loss rate: 0.64%

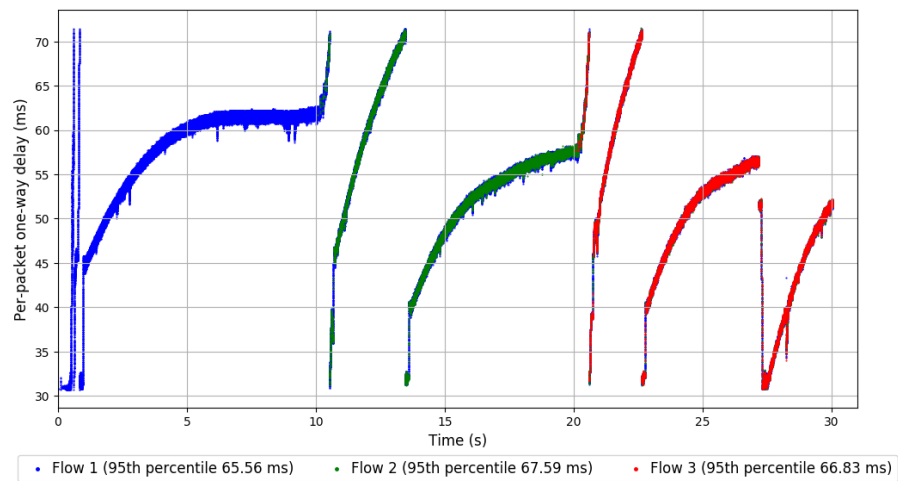
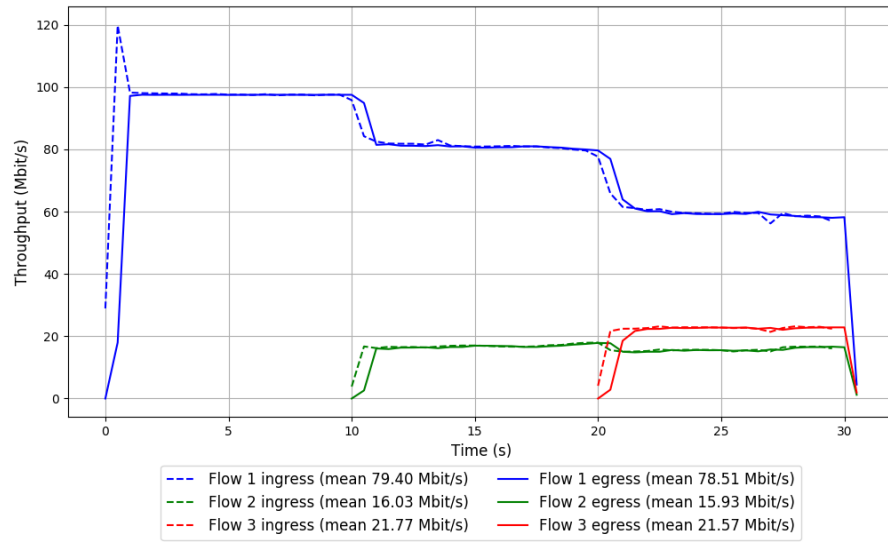
-- Flow 3:

Average throughput: 21.57 Mbit/s

95th percentile per-packet one-way delay: 66.835 ms

Loss rate: 0.96%

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

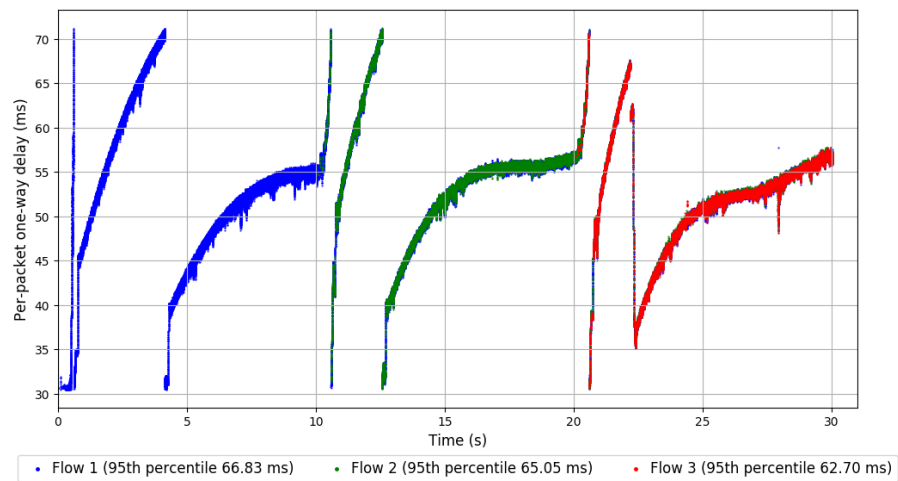
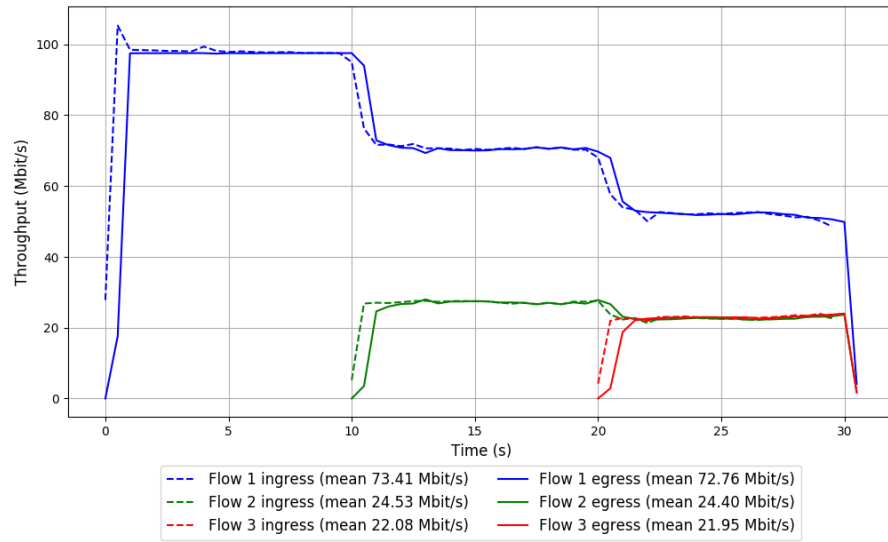


Run 4: Statistics of TCP Cubic

Start at: 2018-11-15 06:10:29  
End at: 2018-11-15 06:10:59  
Local clock offset: -2.569 ms  
Remote clock offset: -2.204 ms

# Below is generated by plot.py at 2018-11-15 06:54:11  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 96.29 Mbit/s  
95th percentile per-packet one-way delay: 66.344 ms  
Loss rate: 0.73%  
-- Flow 1:  
Average throughput: 72.76 Mbit/s  
95th percentile per-packet one-way delay: 66.827 ms  
Loss rate: 0.79%  
-- Flow 2:  
Average throughput: 24.40 Mbit/s  
95th percentile per-packet one-way delay: 65.051 ms  
Loss rate: 0.53%  
-- Flow 3:  
Average throughput: 21.95 Mbit/s  
95th percentile per-packet one-way delay: 62.701 ms  
Loss rate: 0.59%

# Run 4: Report of TCP Cubic — Data Link

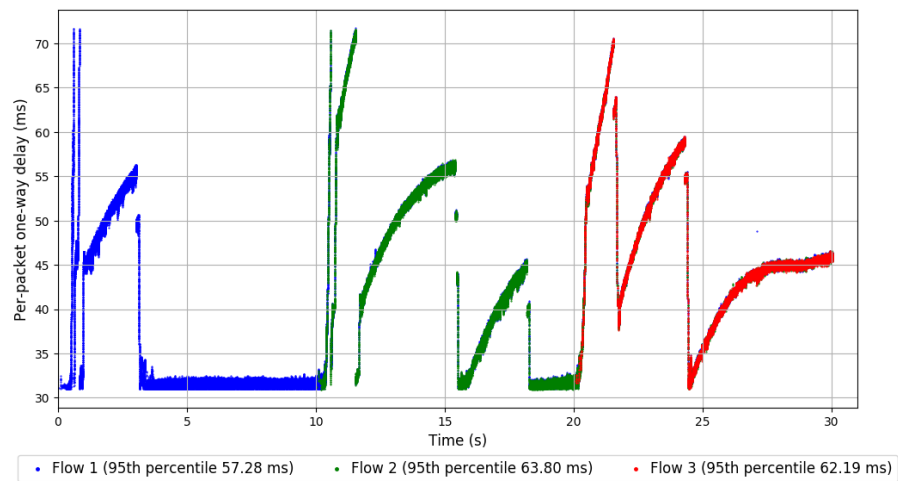
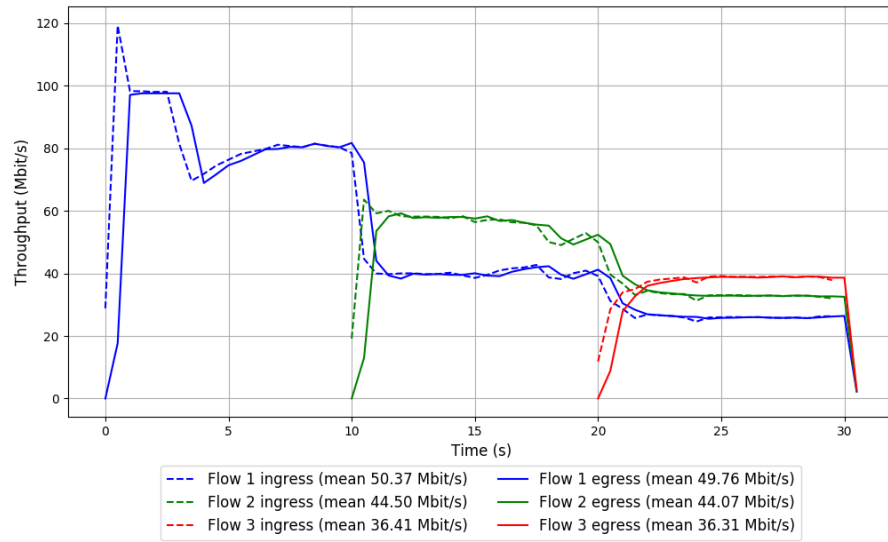


Run 5: Statistics of TCP Cubic

Start at: 2018-11-15 06:35:03  
End at: 2018-11-15 06:35:33  
Local clock offset: -1.182 ms  
Remote clock offset: -3.225 ms

# Below is generated by plot.py at 2018-11-15 06:54:11  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 91.21 Mbit/s  
95th percentile per-packet one-way delay: 61.220 ms  
Loss rate: 0.94%  
-- Flow 1:  
Average throughput: 49.76 Mbit/s  
95th percentile per-packet one-way delay: 57.279 ms  
Loss rate: 1.17%  
-- Flow 2:  
Average throughput: 44.07 Mbit/s  
95th percentile per-packet one-way delay: 63.803 ms  
Loss rate: 0.88%  
-- Flow 3:  
Average throughput: 36.31 Mbit/s  
95th percentile per-packet one-way delay: 62.186 ms  
Loss rate: 0.12%

# Run 5: Report of TCP Cubic — Data Link



Run 1: Statistics of FillP

Start at: 2018-11-15 04:59:04

End at: 2018-11-15 04:59:34

Local clock offset: 0.578 ms

Remote clock offset: 1.34 ms

# Below is generated by plot.py at 2018-11-15 06:54:45

# Datalink statistics

-- Total of 3 flows:

Average throughput: 92.68 Mbit/s

95th percentile per-packet one-way delay: 68.037 ms

Loss rate: 38.92%

-- Flow 1:

Average throughput: 57.80 Mbit/s

95th percentile per-packet one-way delay: 67.094 ms

Loss rate: 30.30%

-- Flow 2:

Average throughput: 41.99 Mbit/s

95th percentile per-packet one-way delay: 68.938 ms

Loss rate: 46.43%

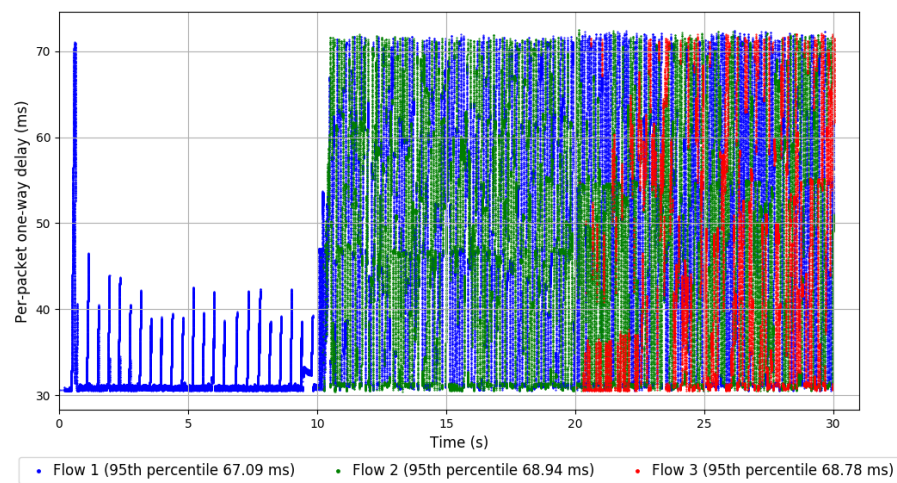
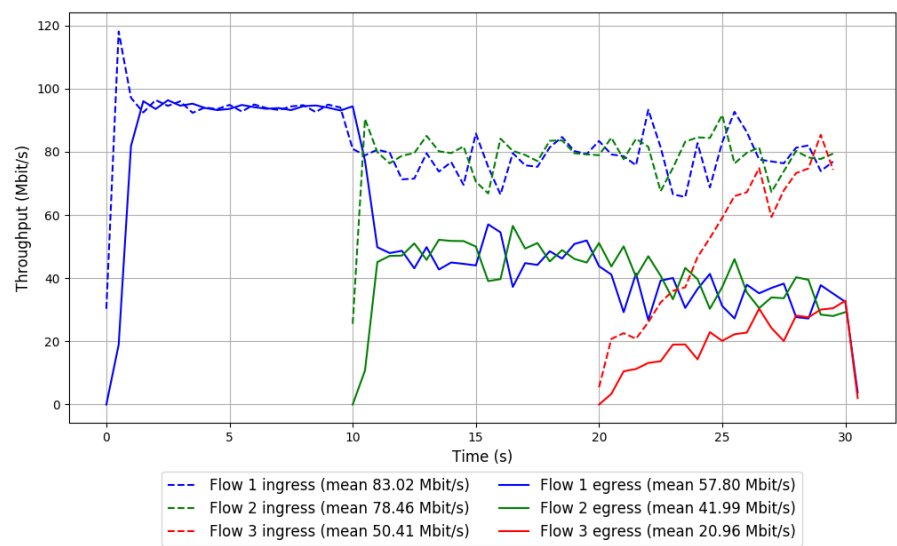
-- Flow 3:

Average throughput: 20.96 Mbit/s

95th percentile per-packet one-way delay: 68.784 ms

Loss rate: 58.27%

Run 1: Report of FillP — Data Link





Run 2: Statistics of FillP

Start at: 2018-11-15 05:23:45

End at: 2018-11-15 05:24:15

Local clock offset: 0.308 ms

Remote clock offset: 0.948 ms

# Below is generated by plot.py at 2018-11-15 06:54:45

# Datalink statistics

-- Total of 3 flows:

Average throughput: 92.52 Mbit/s

95th percentile per-packet one-way delay: 67.778 ms

Loss rate: 35.72%

-- Flow 1:

Average throughput: 59.18 Mbit/s

95th percentile per-packet one-way delay: 66.273 ms

Loss rate: 27.02%

-- Flow 2:

Average throughput: 41.45 Mbit/s

95th percentile per-packet one-way delay: 69.261 ms

Loss rate: 46.24%

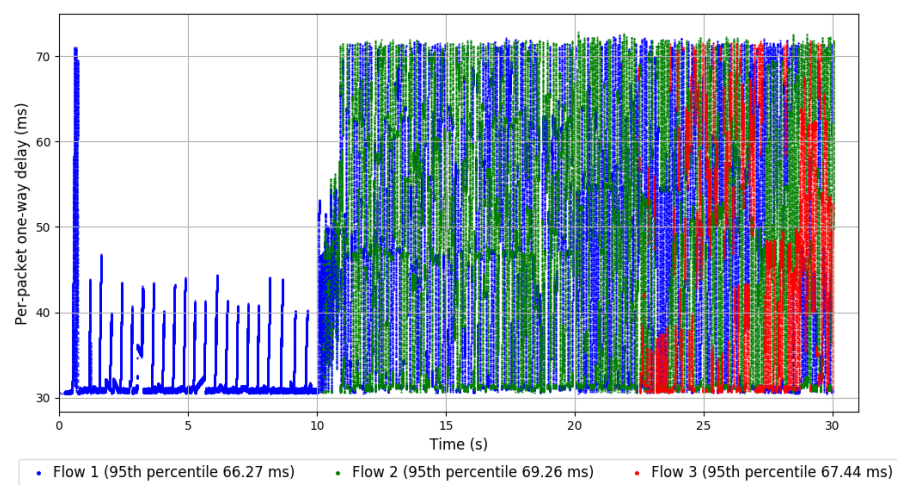
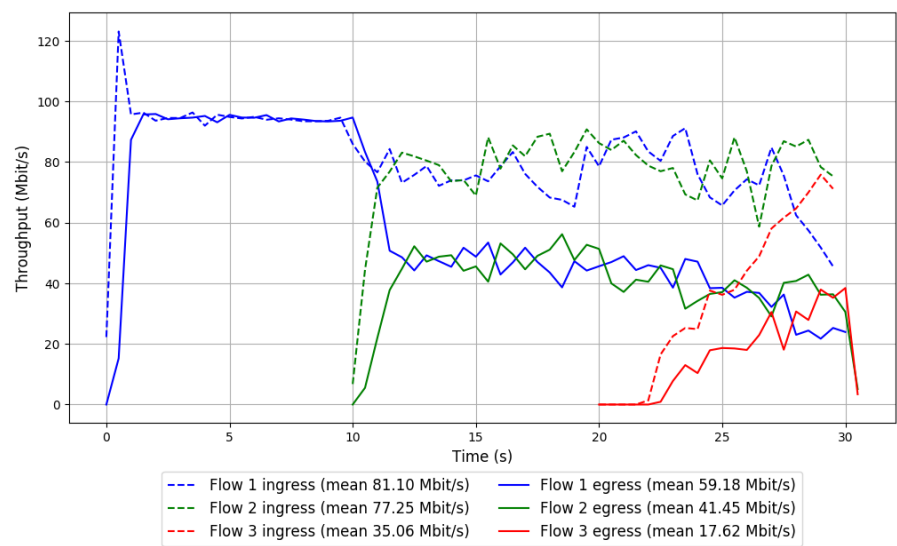
-- Flow 3:

Average throughput: 17.62 Mbit/s

95th percentile per-packet one-way delay: 67.445 ms

Loss rate: 49.73%

Run 2: Report of FillP — Data Link

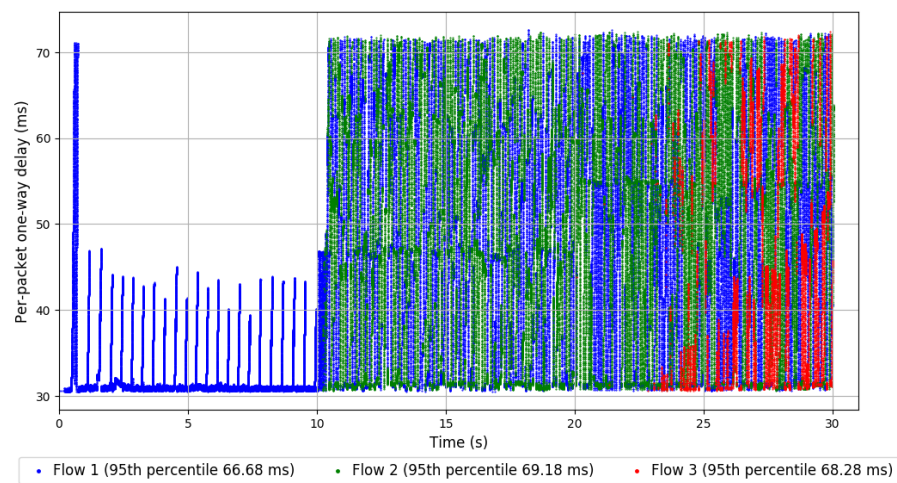
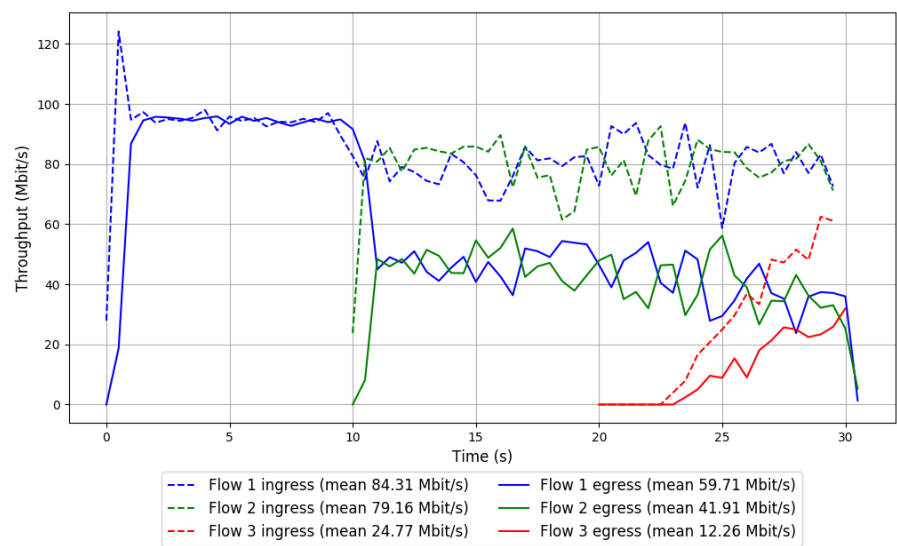


Run 3: Statistics of FillP

Start at: 2018-11-15 05:48:38  
End at: 2018-11-15 05:49:08  
Local clock offset: 0.223 ms  
Remote clock offset: -0.314 ms

# Below is generated by plot.py at 2018-11-15 06:54:45  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 91.65 Mbit/s  
95th percentile per-packet one-way delay: 67.796 ms  
Loss rate: 36.83%  
-- Flow 1:  
Average throughput: 59.71 Mbit/s  
95th percentile per-packet one-way delay: 66.683 ms  
Loss rate: 29.16%  
-- Flow 2:  
Average throughput: 41.91 Mbit/s  
95th percentile per-packet one-way delay: 69.180 ms  
Loss rate: 46.97%  
-- Flow 3:  
Average throughput: 12.26 Mbit/s  
95th percentile per-packet one-way delay: 68.280 ms  
Loss rate: 50.51%

Run 3: Report of FillP — Data Link

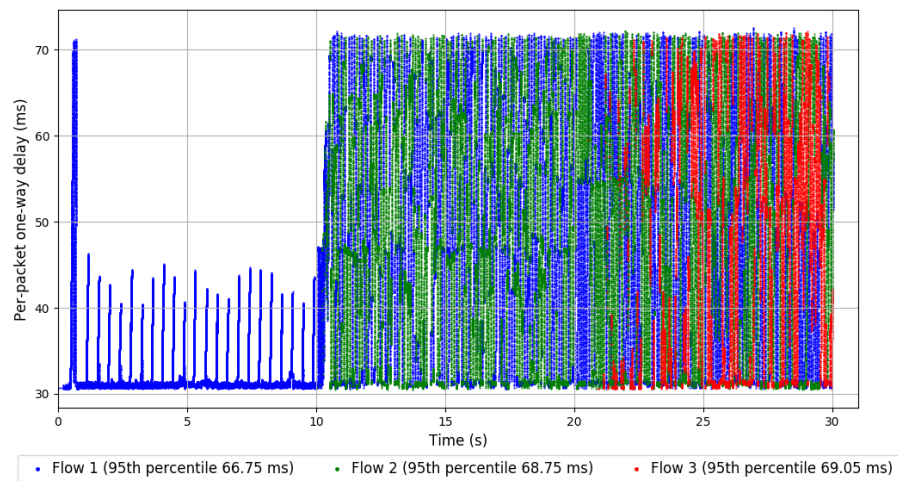
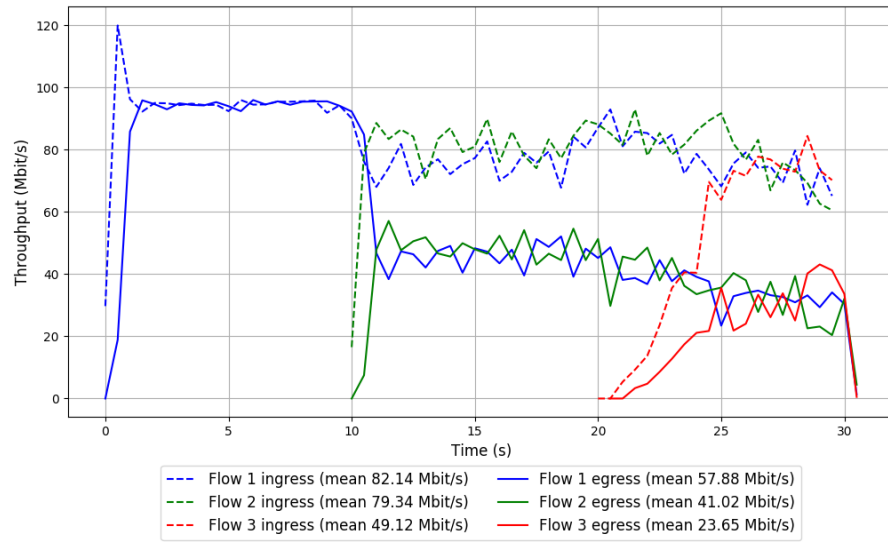


Run 4: Statistics of FillP

Start at: 2018-11-15 06:13:14  
End at: 2018-11-15 06:13:44  
Local clock offset: -2.829 ms  
Remote clock offset: -2.216 ms

# Below is generated by plot.py at 2018-11-15 06:55:01  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 92.67 Mbit/s  
95th percentile per-packet one-way delay: 67.918 ms  
Loss rate: 38.67%  
-- Flow 1:  
Average throughput: 57.88 Mbit/s  
95th percentile per-packet one-way delay: 66.752 ms  
Loss rate: 29.48%  
-- Flow 2:  
Average throughput: 41.02 Mbit/s  
95th percentile per-packet one-way delay: 68.754 ms  
Loss rate: 48.22%  
-- Flow 3:  
Average throughput: 23.65 Mbit/s  
95th percentile per-packet one-way delay: 69.047 ms  
Loss rate: 54.08%

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

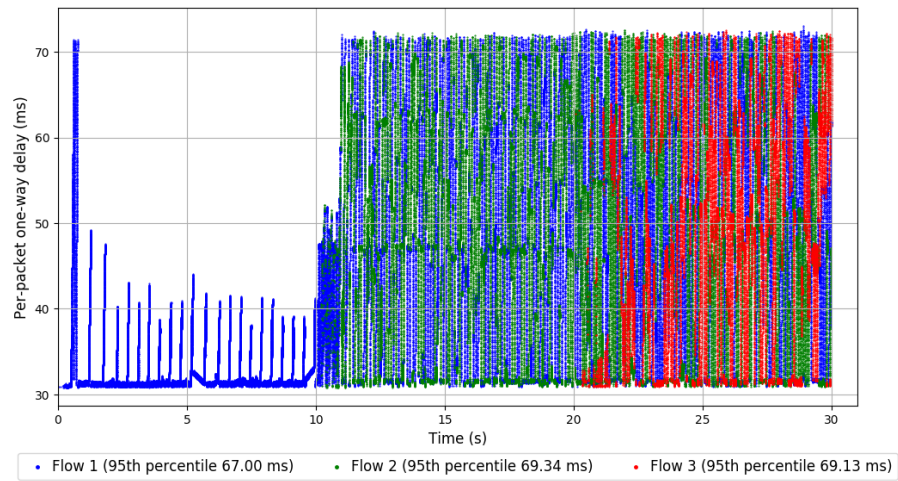
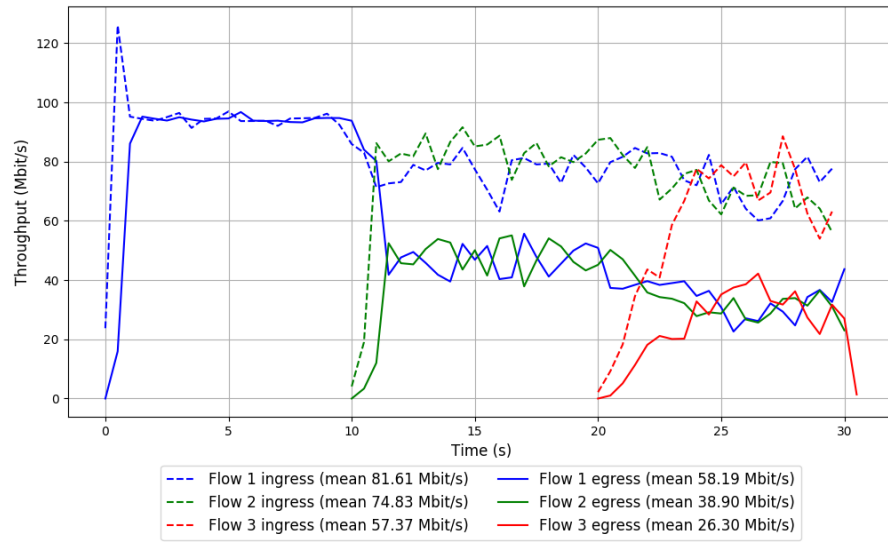


Run 5: Statistics of FillP

Start at: 2018-11-15 06:37:48  
End at: 2018-11-15 06:38:18  
Local clock offset: -0.674 ms  
Remote clock offset: -3.193 ms

# Below is generated by plot.py at 2018-11-15 06:55:16  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 92.73 Mbit/s  
95th percentile per-packet one-way delay: 68.427 ms  
Loss rate: 38.37%  
-- Flow 1:  
Average throughput: 58.19 Mbit/s  
95th percentile per-packet one-way delay: 66.995 ms  
Loss rate: 28.71%  
-- Flow 2:  
Average throughput: 38.90 Mbit/s  
95th percentile per-packet one-way delay: 69.339 ms  
Loss rate: 48.09%  
-- Flow 3:  
Average throughput: 26.30 Mbit/s  
95th percentile per-packet one-way delay: 69.133 ms  
Loss rate: 54.30%

# Run 5: Report of FillP — Data Link



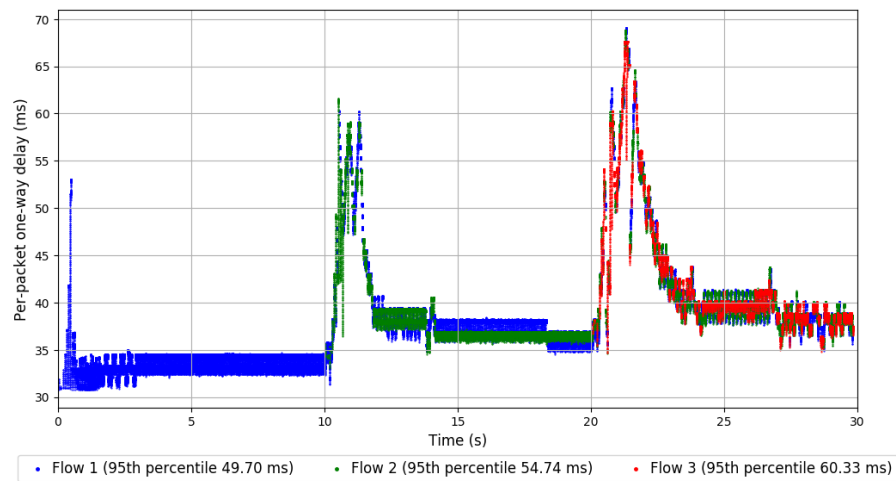
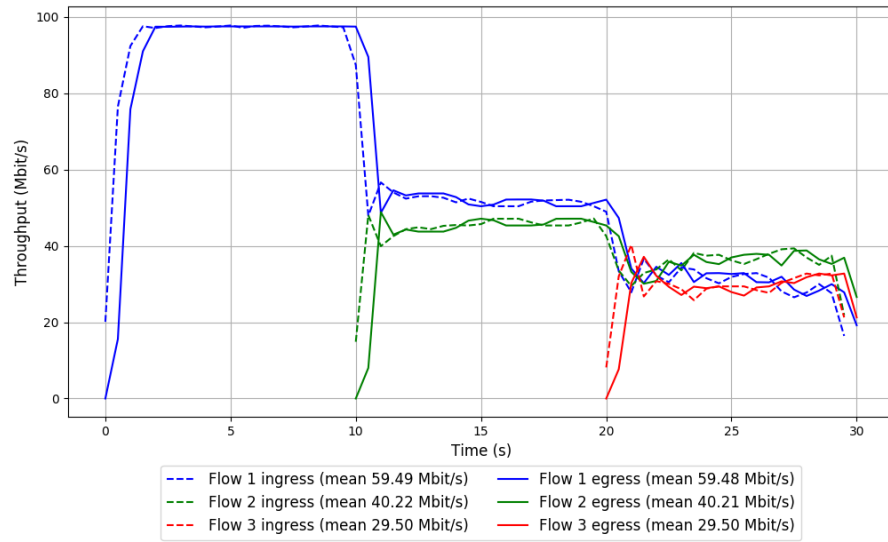


```
Run 1: Statistics of Indigo

Start at: 2018-11-15 04:53:22
End at: 2018-11-15 04:53:52
Local clock offset: 0.651 ms
Remote clock offset: 1.127 ms

# Below is generated by plot.py at 2018-11-15 06:55:16
# Datalink statistics
-- Total of 3 flows:
Average throughput: 95.78 Mbit/s
95th percentile per-packet one-way delay: 53.566 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 59.48 Mbit/s
95th percentile per-packet one-way delay: 49.700 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 40.21 Mbit/s
95th percentile per-packet one-way delay: 54.745 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 29.50 Mbit/s
95th percentile per-packet one-way delay: 60.331 ms
Loss rate: 0.00%
```

# Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2018-11-15 05:18:01

End at: 2018-11-15 05:18:31

Local clock offset: 0.282 ms

Remote clock offset: 1.306 ms

# Below is generated by plot.py at 2018-11-15 06:55:23

# Datalink statistics

-- Total of 3 flows:

Average throughput: 95.84 Mbit/s

95th percentile per-packet one-way delay: 46.498 ms

Loss rate: 0.29%

-- Flow 1:

Average throughput: 64.72 Mbit/s

95th percentile per-packet one-way delay: 44.227 ms

Loss rate: 0.27%

-- Flow 2:

Average throughput: 34.56 Mbit/s

95th percentile per-packet one-way delay: 47.993 ms

Loss rate: 0.43%

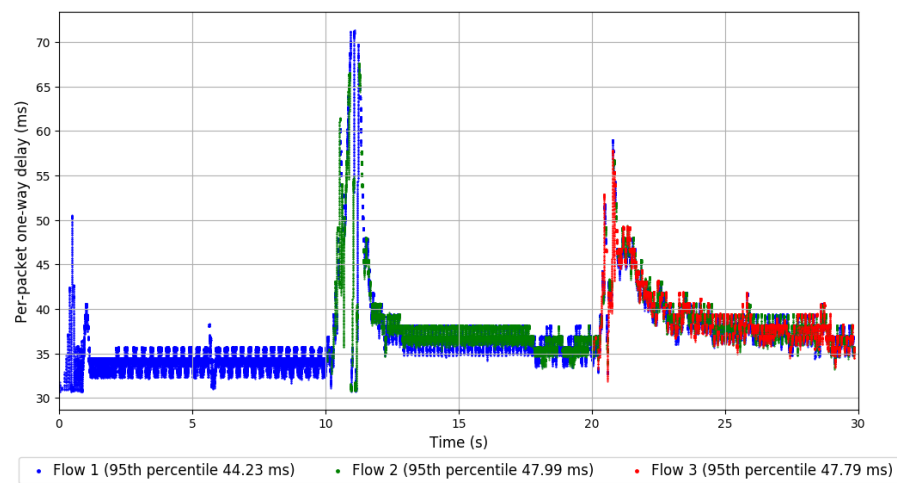
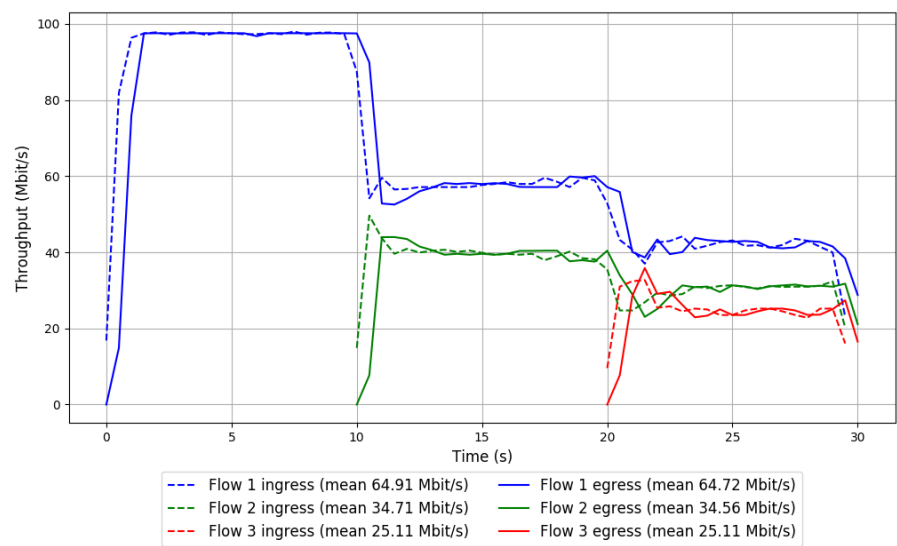
-- Flow 3:

Average throughput: 25.11 Mbit/s

95th percentile per-packet one-way delay: 47.794 ms

Loss rate: 0.00%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2018-11-15 05:42:59

End at: 2018-11-15 05:43:29

Local clock offset: 0.233 ms

Remote clock offset: 0.146 ms

# Below is generated by plot.py at 2018-11-15 06:55:26

# Datalink statistics

-- Total of 3 flows:

Average throughput: 95.84 Mbit/s

95th percentile per-packet one-way delay: 49.081 ms

Loss rate: 0.06%

-- Flow 1:

Average throughput: 66.84 Mbit/s

95th percentile per-packet one-way delay: 44.202 ms

Loss rate: 0.06%

-- Flow 2:

Average throughput: 27.58 Mbit/s

95th percentile per-packet one-way delay: 51.361 ms

Loss rate: 0.00%

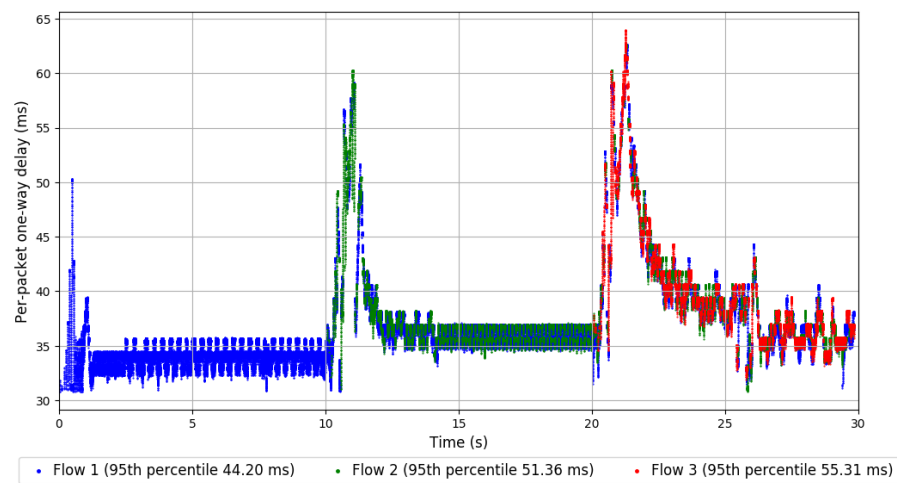
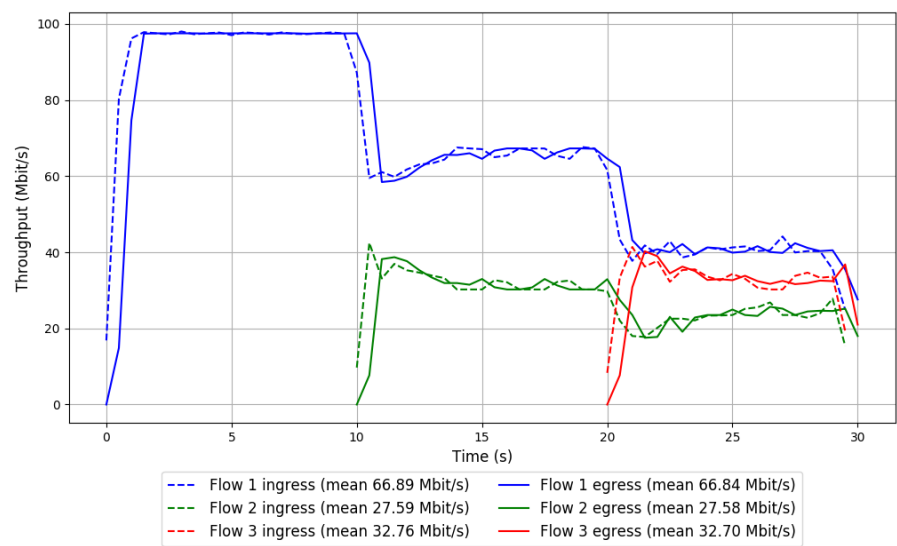
-- Flow 3:

Average throughput: 32.70 Mbit/s

95th percentile per-packet one-way delay: 55.314 ms

Loss rate: 0.16%

Run 3: Report of Indigo — Data Link



Run 4: Statistics of Indigo

Start at: 2018-11-15 06:07:42

End at: 2018-11-15 06:08:12

Local clock offset: -2.214 ms

Remote clock offset: -1.96 ms

# Below is generated by plot.py at 2018-11-15 06:55:53

# Datalink statistics

-- Total of 3 flows:

Average throughput: 95.80 Mbit/s

95th percentile per-packet one-way delay: 39.102 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 72.16 Mbit/s

95th percentile per-packet one-way delay: 38.069 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 22.90 Mbit/s

95th percentile per-packet one-way delay: 41.440 ms

Loss rate: 0.00%

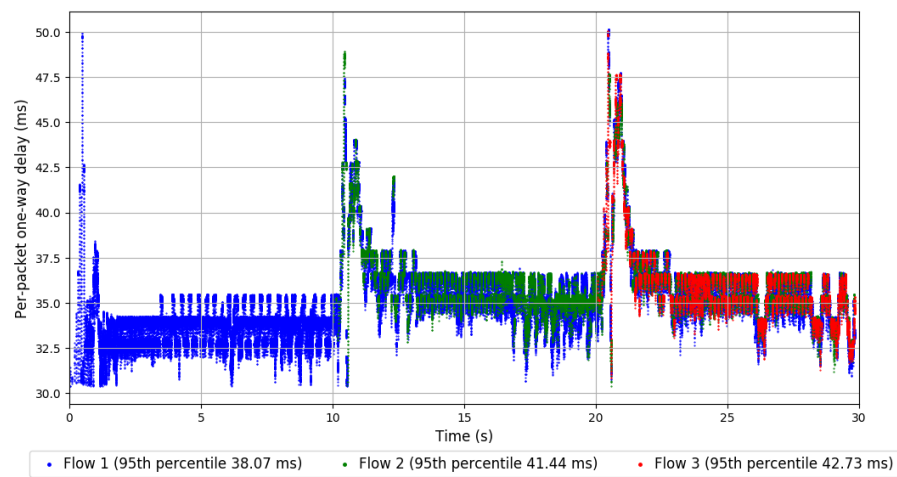
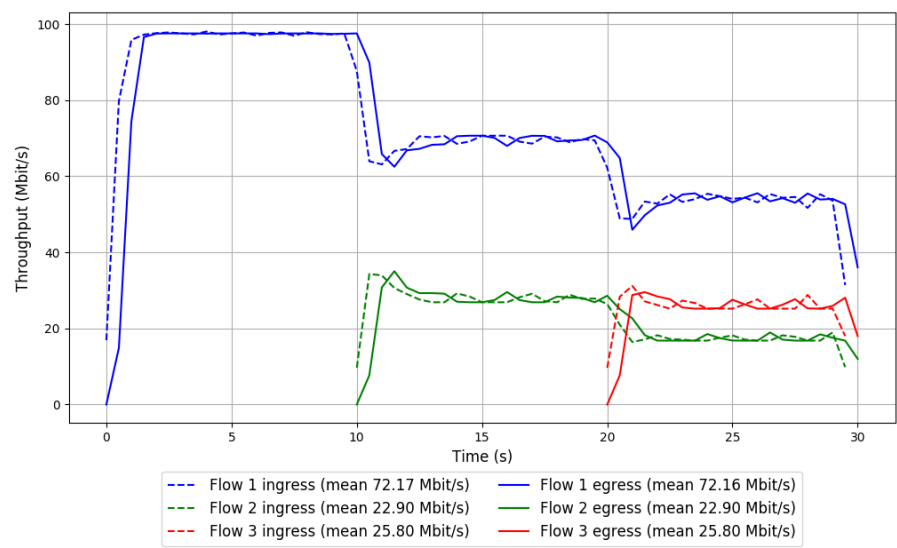
-- Flow 3:

Average throughput: 25.80 Mbit/s

95th percentile per-packet one-way delay: 42.725 ms

Loss rate: 0.00%

Run 4: Report of Indigo — Data Link



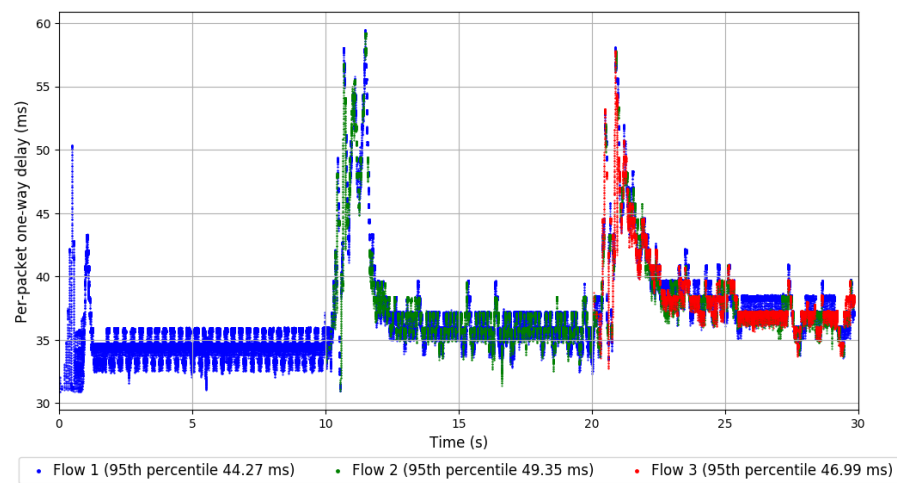
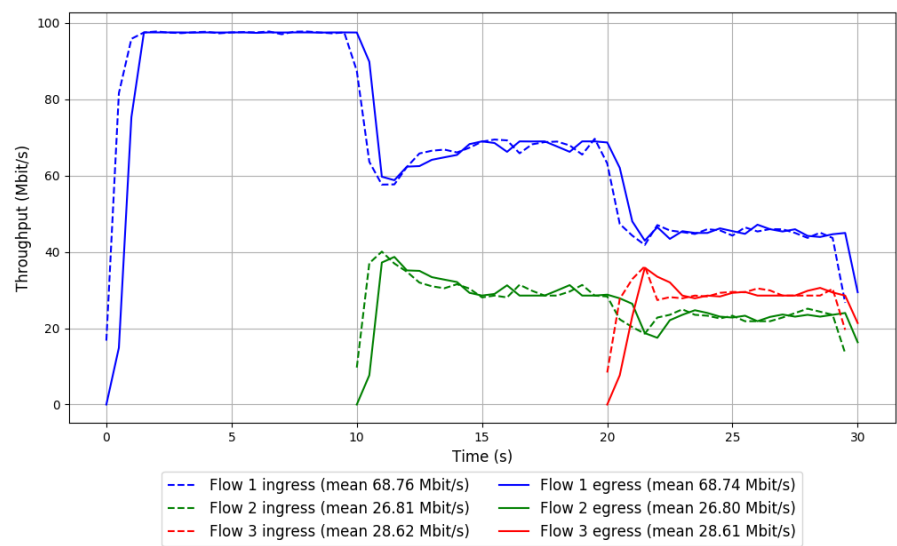


Run 5: Statistics of Indigo

Start at: 2018-11-15 06:32:14  
End at: 2018-11-15 06:32:44  
Local clock offset: -1.767 ms  
Remote clock offset: -3.183 ms

# Below is generated by plot.py at 2018-11-15 06:55:55  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 95.86 Mbit/s  
95th percentile per-packet one-way delay: 45.808 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 68.74 Mbit/s  
95th percentile per-packet one-way delay: 44.275 ms  
Loss rate: 0.00%  
-- Flow 2:  
Average throughput: 26.80 Mbit/s  
95th percentile per-packet one-way delay: 49.350 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 28.61 Mbit/s  
95th percentile per-packet one-way delay: 46.992 ms  
Loss rate: 0.00%

Run 5: Report of Indigo — Data Link



Run 1: Statistics of Indigo-96d2da3

Start at: 2018-11-15 05:05:51

End at: 2018-11-15 05:06:21

Local clock offset: 0.345 ms

Remote clock offset: 1.547 ms

# Below is generated by plot.py at 2018-11-15 06:55:55

# Datalink statistics

-- Total of 3 flows:

Average throughput: 57.31 Mbit/s

95th percentile per-packet one-way delay: 68.768 ms

Loss rate: 59.77%

-- Flow 1:

Average throughput: 48.42 Mbit/s

95th percentile per-packet one-way delay: 68.796 ms

Loss rate: 59.30%

-- Flow 2:

Average throughput: 14.68 Mbit/s

95th percentile per-packet one-way delay: 68.699 ms

Loss rate: 62.51%

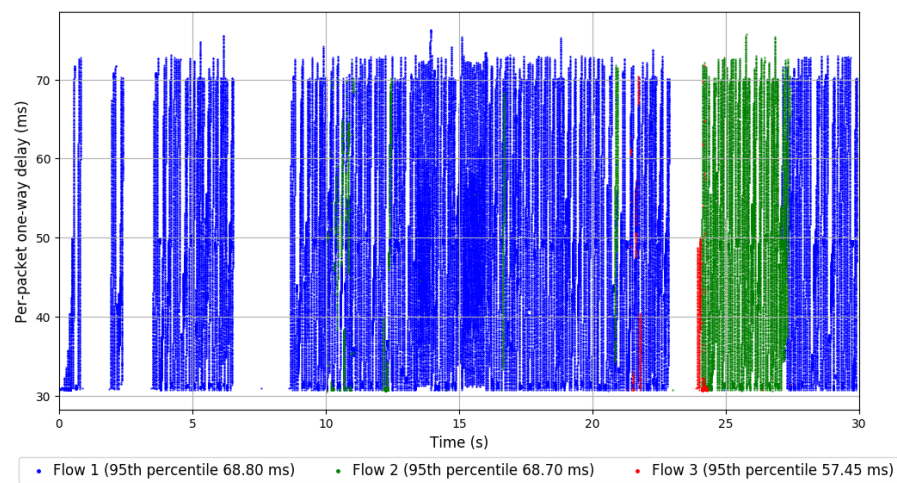
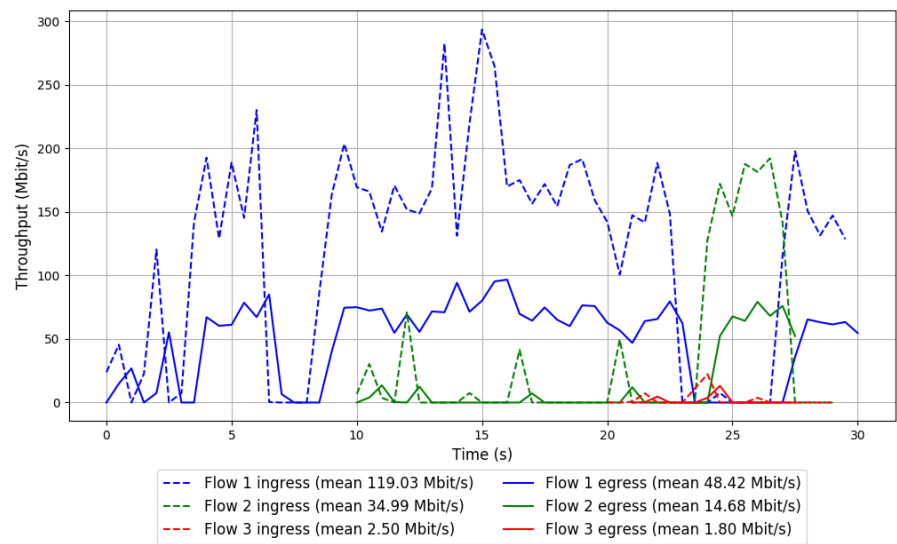
-- Flow 3:

Average throughput: 1.80 Mbit/s

95th percentile per-packet one-way delay: 57.452 ms

Loss rate: 51.77%

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



Run 2: Statistics of Indigo-96d2da3

Start at: 2018-11-15 05:30:42

End at: 2018-11-15 05:31:12

Local clock offset: 0.27 ms

Remote clock offset: 0.661 ms

# Below is generated by plot.py at 2018-11-15 06:55:55

# Datalink statistics

-- Total of 3 flows:

Average throughput: 57.93 Mbit/s

95th percentile per-packet one-way delay: 68.794 ms

Loss rate: 59.36%

-- Flow 1:

Average throughput: 50.08 Mbit/s

95th percentile per-packet one-way delay: 68.851 ms

Loss rate: 59.40%

-- Flow 2:

Average throughput: 3.95 Mbit/s

95th percentile per-packet one-way delay: 67.068 ms

Loss rate: 60.50%

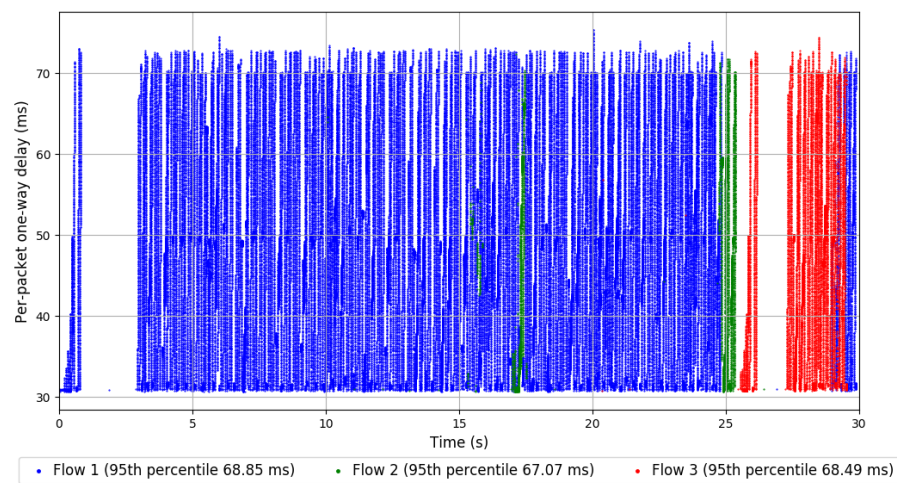
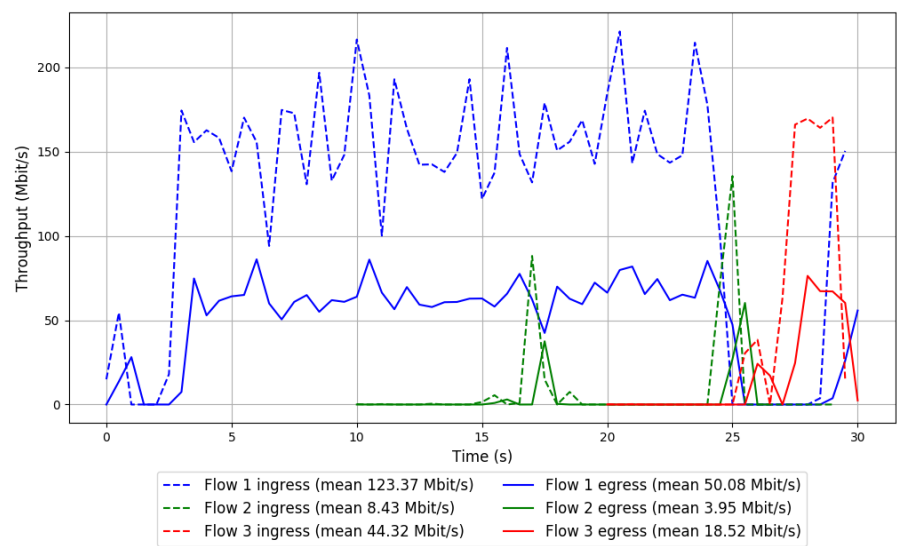
-- Flow 3:

Average throughput: 18.52 Mbit/s

95th percentile per-packet one-way delay: 68.488 ms

Loss rate: 58.51%

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

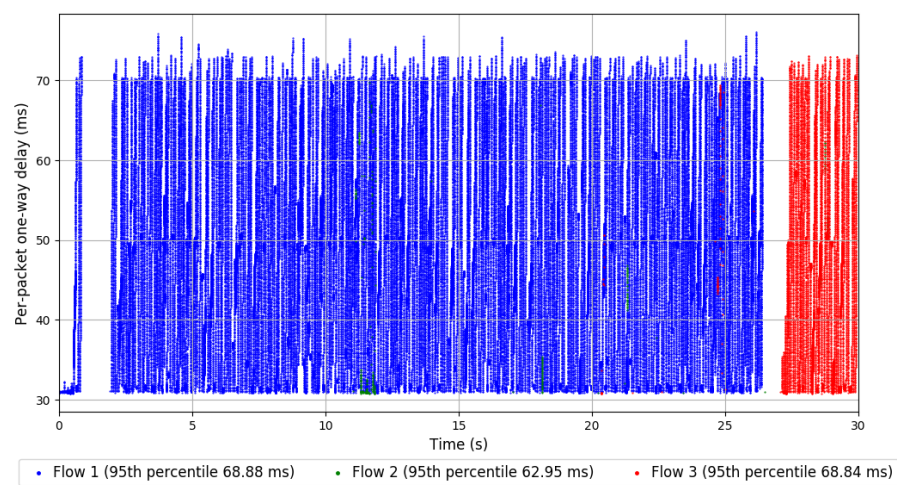
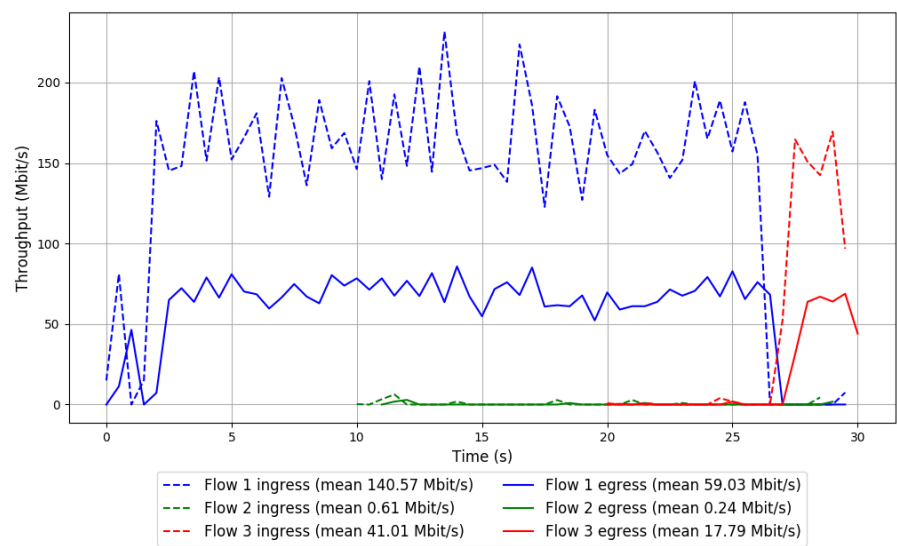


Run 3: Statistics of Indigo-96d2da3

Start at: 2018-11-15 05:55:33  
End at: 2018-11-15 05:56:03  
Local clock offset: 0.227 ms  
Remote clock offset: -0.768 ms

# Below is generated by plot.py at 2018-11-15 06:56:12  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 63.98 Mbit/s  
95th percentile per-packet one-way delay: 68.875 ms  
Loss rate: 57.98%  
-- Flow 1:  
Average throughput: 59.03 Mbit/s  
95th percentile per-packet one-way delay: 68.882 ms  
Loss rate: 58.10%  
-- Flow 2:  
Average throughput: 0.24 Mbit/s  
95th percentile per-packet one-way delay: 62.946 ms  
Loss rate: 62.82%  
-- Flow 3:  
Average throughput: 17.79 Mbit/s  
95th percentile per-packet one-way delay: 68.843 ms  
Loss rate: 56.52%

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



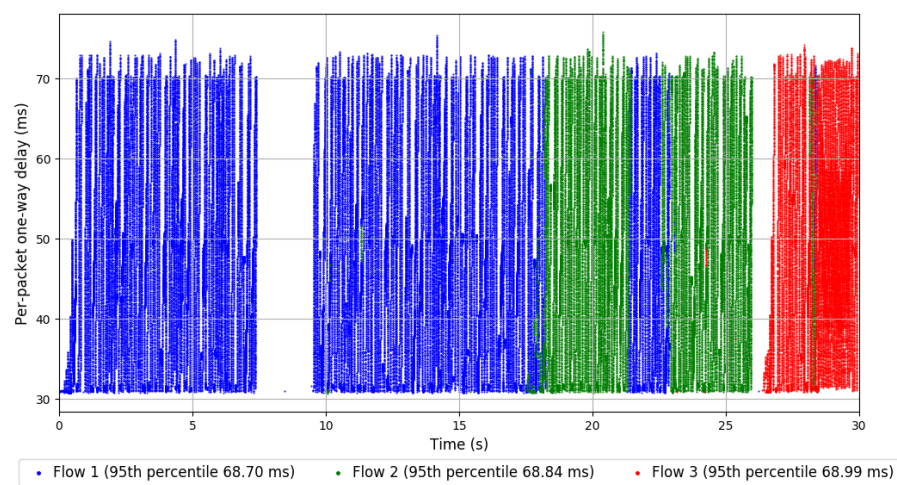
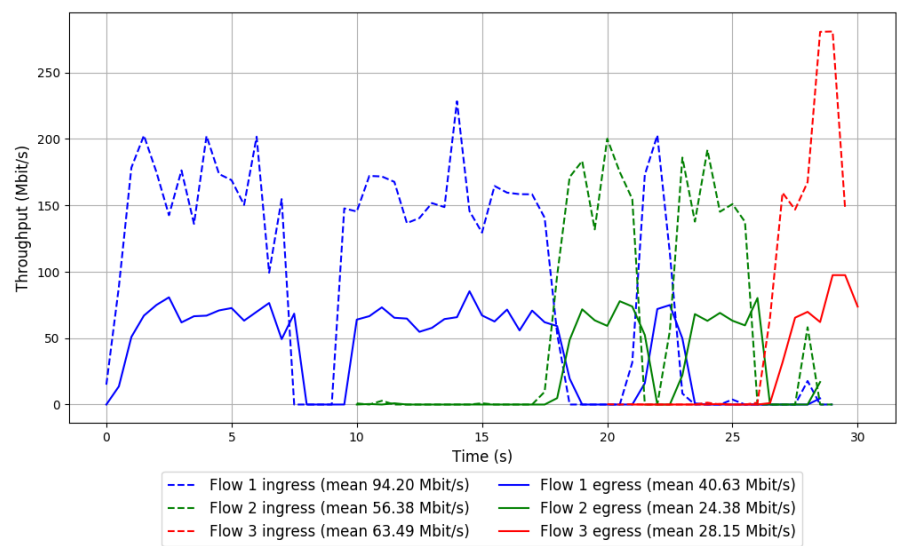


Run 4: Statistics of Indigo-96d2da3

Start at: 2018-11-15 06:20:04  
End at: 2018-11-15 06:20:34  
Local clock offset: -3.302 ms  
Remote clock offset: -2.573 ms

# Below is generated by plot.py at 2018-11-15 06:56:25  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 61.80 Mbit/s  
95th percentile per-packet one-way delay: 68.789 ms  
Loss rate: 58.83%  
-- Flow 1:  
Average throughput: 40.63 Mbit/s  
95th percentile per-packet one-way delay: 68.699 ms  
Loss rate: 58.44%  
-- Flow 2:  
Average throughput: 24.38 Mbit/s  
95th percentile per-packet one-way delay: 68.841 ms  
Loss rate: 59.12%  
-- Flow 3:  
Average throughput: 28.15 Mbit/s  
95th percentile per-packet one-way delay: 68.986 ms  
Loss rate: 60.08%

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

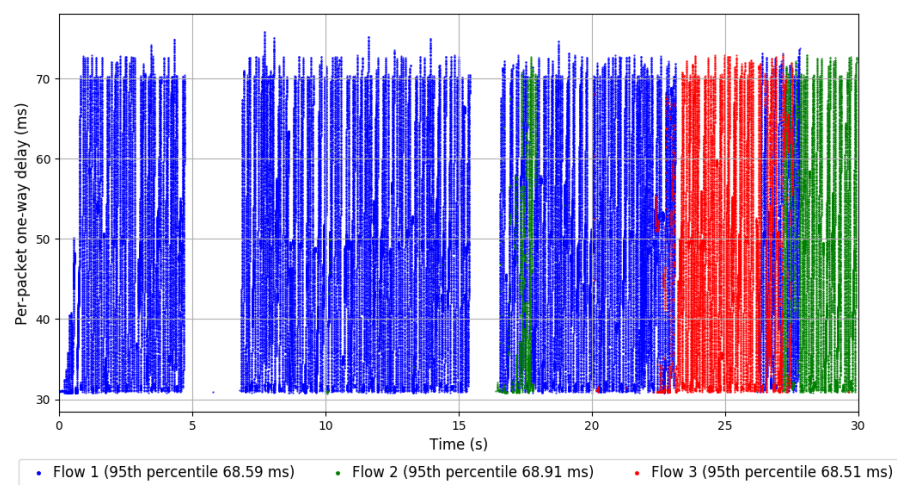
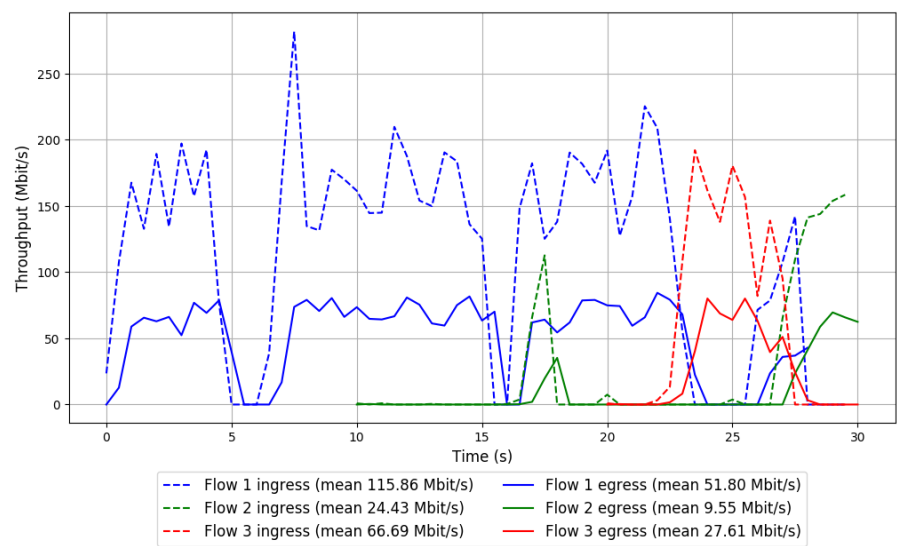


Run 5: Statistics of Indigo-96d2da3

Start at: 2018-11-15 06:44:34  
End at: 2018-11-15 06:45:04  
Local clock offset: 0.017 ms  
Remote clock offset: -3.248 ms

# Below is generated by plot.py at 2018-11-15 06:56:37  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 63.25 Mbit/s  
95th percentile per-packet one-way delay: 68.616 ms  
Loss rate: 58.69%  
-- Flow 1:  
Average throughput: 51.80 Mbit/s  
95th percentile per-packet one-way delay: 68.593 ms  
Loss rate: 58.38%  
-- Flow 2:  
Average throughput: 9.55 Mbit/s  
95th percentile per-packet one-way delay: 68.907 ms  
Loss rate: 60.85%  
-- Flow 3:  
Average throughput: 27.61 Mbit/s  
95th percentile per-packet one-way delay: 68.508 ms  
Loss rate: 58.68%

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

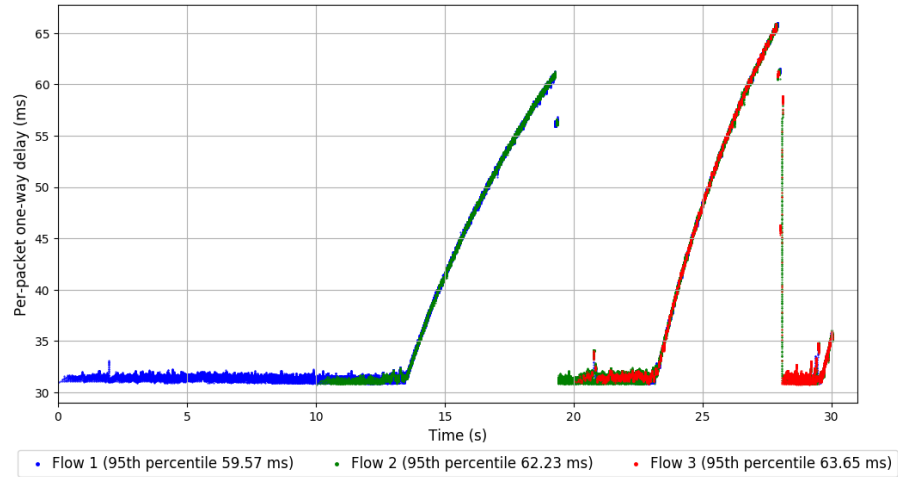
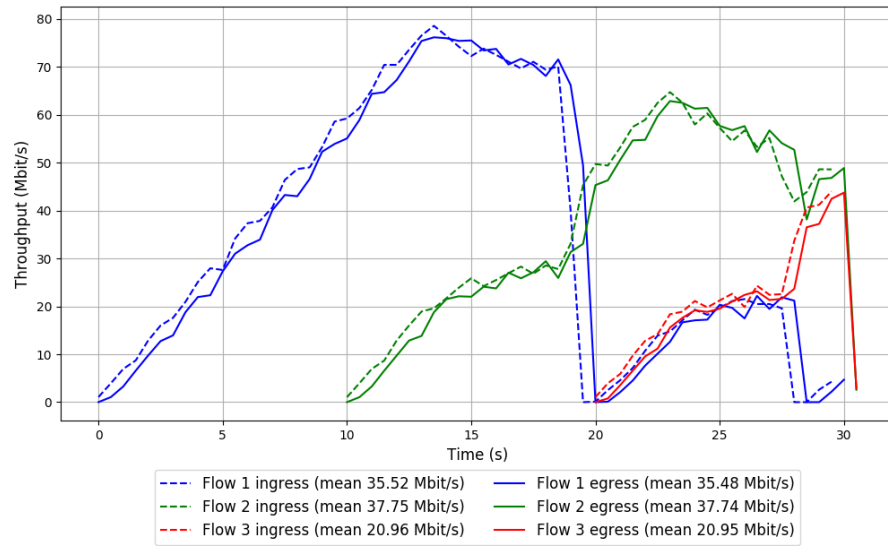


```
Run 1: Statistics of LEDBAT

Start at: 2018-11-15 05:04:29
End at: 2018-11-15 05:04:59
Local clock offset: 0.367 ms
Remote clock offset: 1.63 ms

# Below is generated by plot.py at 2018-11-15 06:56:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 67.55 Mbit/s
95th percentile per-packet one-way delay: 60.996 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 35.48 Mbit/s
95th percentile per-packet one-way delay: 59.571 ms
Loss rate: 0.09%
-- Flow 2:
Average throughput: 37.74 Mbit/s
95th percentile per-packet one-way delay: 62.235 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 20.95 Mbit/s
95th percentile per-packet one-way delay: 63.648 ms
Loss rate: 0.00%
```

## Run 1: Report of LEDBAT — Data Link



Run 2: Statistics of LEDBAT

Start at: 2018-11-15 05:29:16

End at: 2018-11-15 05:29:46

Local clock offset: 0.277 ms

Remote clock offset: 0.759 ms

# Below is generated by plot.py at 2018-11-15 06:56:39

# Datalink statistics

-- Total of 3 flows:

Average throughput: 61.55 Mbit/s

95th percentile per-packet one-way delay: 65.342 ms

Loss rate: 0.21%

-- Flow 1:

Average throughput: 41.14 Mbit/s

95th percentile per-packet one-way delay: 65.372 ms

Loss rate: 0.08%

-- Flow 2:

Average throughput: 18.95 Mbit/s

95th percentile per-packet one-way delay: 66.869 ms

Loss rate: 0.75%

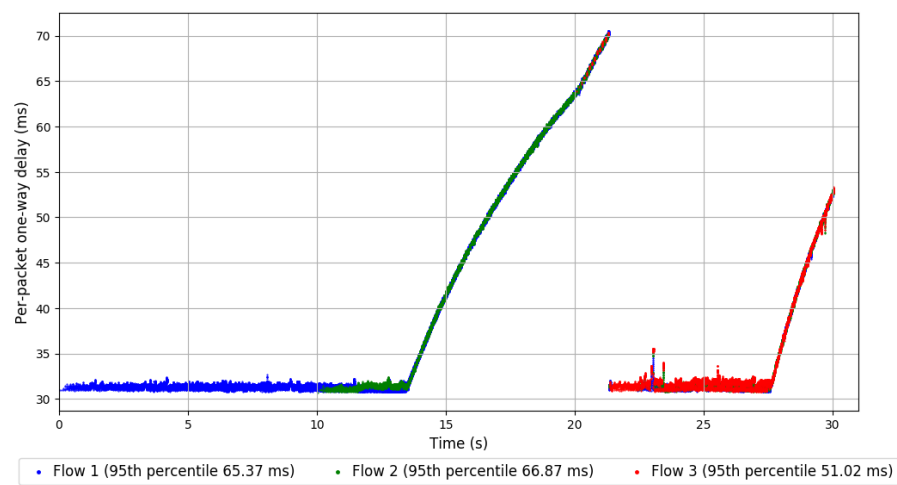
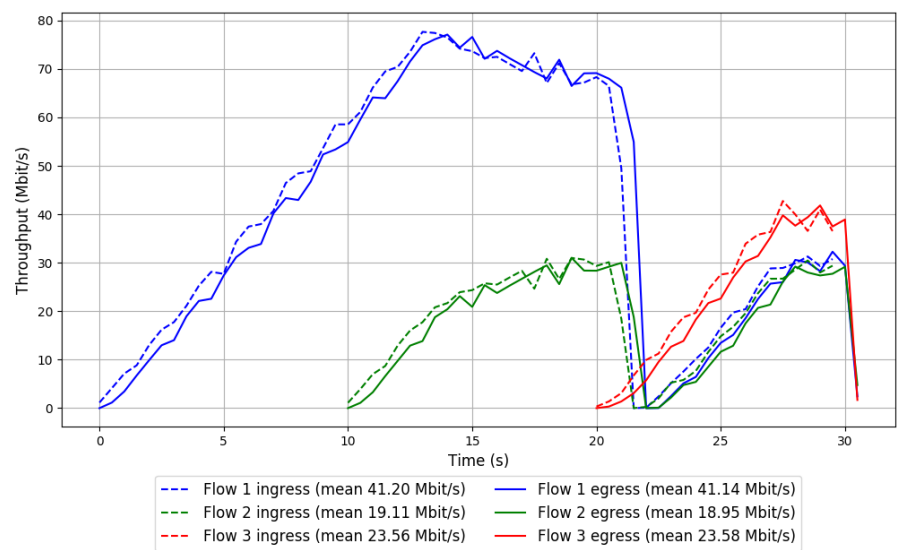
-- Flow 3:

Average throughput: 23.58 Mbit/s

95th percentile per-packet one-way delay: 51.021 ms

Loss rate: 0.00%

Run 2: Report of LEDBAT — Data Link



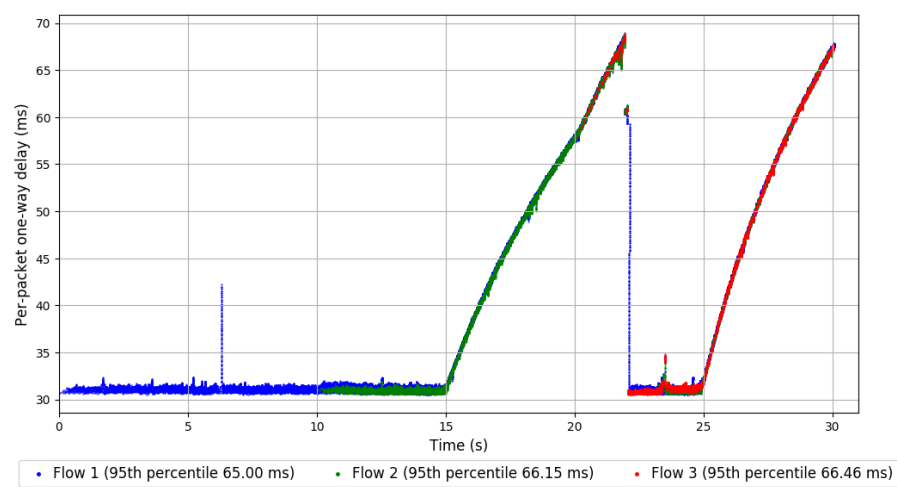
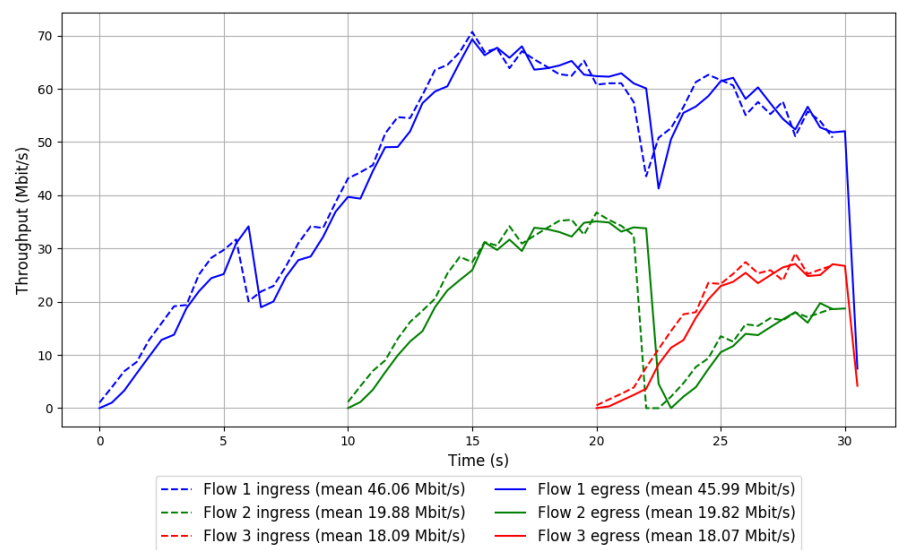


Run 3: Statistics of LEDBAT

Start at: 2018-11-15 05:54:09  
End at: 2018-11-15 05:54:39  
Local clock offset: 0.222 ms  
Remote clock offset: -0.908 ms

# Below is generated by plot.py at 2018-11-15 06:56:46  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 65.14 Mbit/s  
95th percentile per-packet one-way delay: 65.520 ms  
Loss rate: 0.04%  
-- Flow 1:  
Average throughput: 45.99 Mbit/s  
95th percentile per-packet one-way delay: 65.005 ms  
Loss rate: 0.03%  
-- Flow 2:  
Average throughput: 19.82 Mbit/s  
95th percentile per-packet one-way delay: 66.149 ms  
Loss rate: 0.12%  
-- Flow 3:  
Average throughput: 18.07 Mbit/s  
95th percentile per-packet one-way delay: 66.457 ms  
Loss rate: 0.00%

Run 3: Report of LEDBAT — Data Link

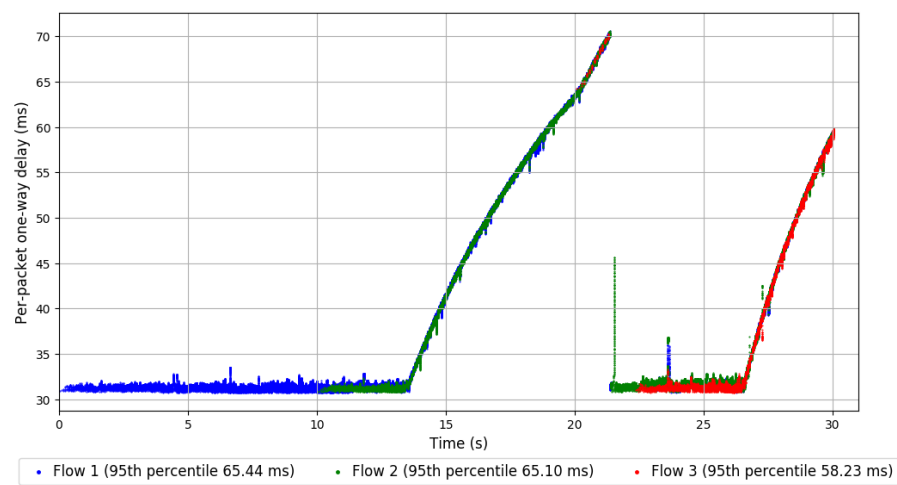
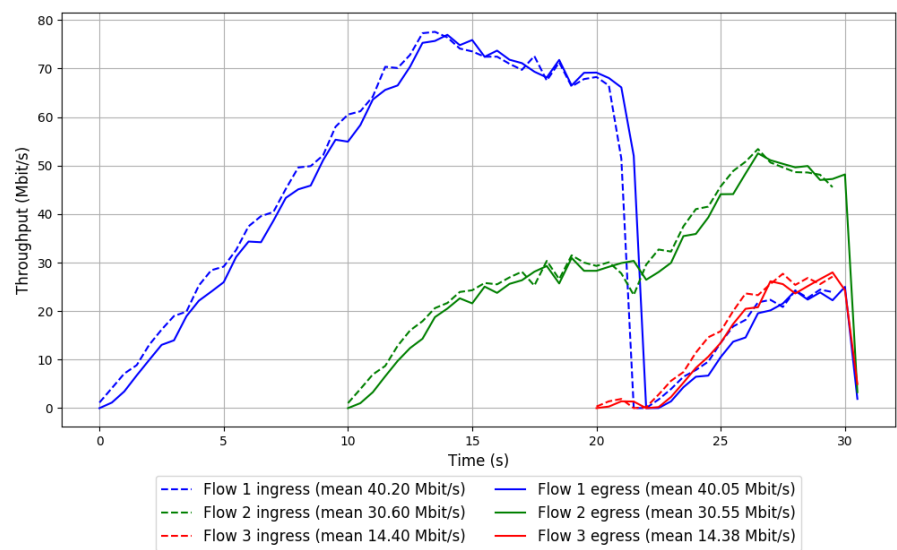


Run 4: Statistics of LEDBAT

Start at: 2018-11-15 06:18:41  
End at: 2018-11-15 06:19:11  
Local clock offset: -3.244 ms  
Remote clock offset: -2.514 ms

# Below is generated by plot.py at 2018-11-15 06:56:47  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 65.18 Mbit/s  
95th percentile per-packet one-way delay: 65.113 ms  
Loss rate: 0.20%  
-- Flow 1:  
Average throughput: 40.05 Mbit/s  
95th percentile per-packet one-way delay: 65.445 ms  
Loss rate: 0.28%  
-- Flow 2:  
Average throughput: 30.55 Mbit/s  
95th percentile per-packet one-way delay: 65.099 ms  
Loss rate: 0.03%  
-- Flow 3:  
Average throughput: 14.38 Mbit/s  
95th percentile per-packet one-way delay: 58.232 ms  
Loss rate: 0.19%

Run 4: Report of LEDBAT — Data Link

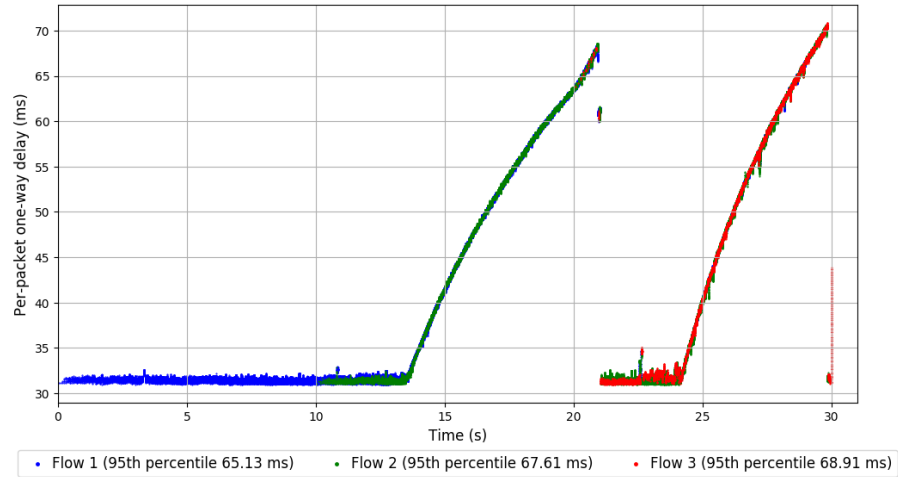
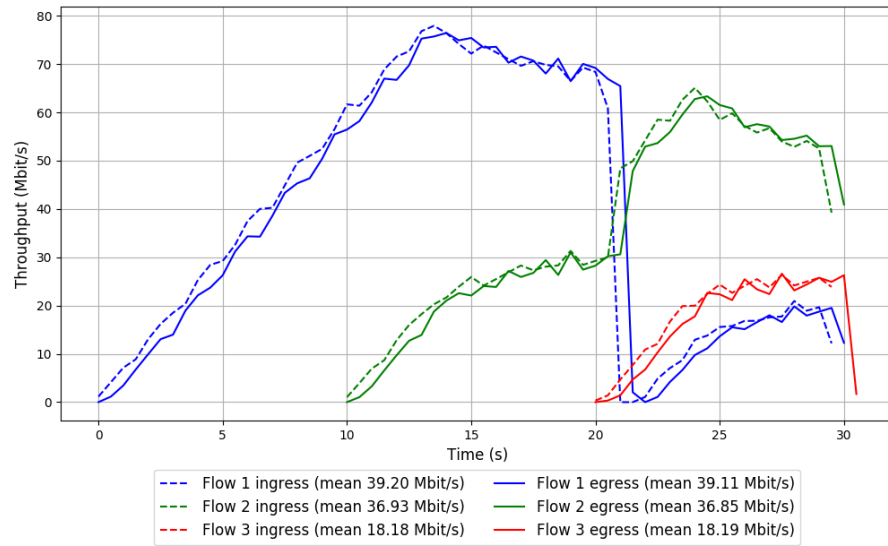


Run 5: Statistics of LEDBAT

Start at: 2018-11-15 06:43:12  
End at: 2018-11-15 06:43:42  
Local clock offset: -0.121 ms  
Remote clock offset: -3.192 ms

# Below is generated by plot.py at 2018-11-15 06:56:50  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 69.33 Mbit/s  
95th percentile per-packet one-way delay: 66.797 ms  
Loss rate: 0.22%  
-- Flow 1:  
Average throughput: 39.11 Mbit/s  
95th percentile per-packet one-way delay: 65.129 ms  
Loss rate: 0.23%  
-- Flow 2:  
Average throughput: 36.85 Mbit/s  
95th percentile per-packet one-way delay: 67.607 ms  
Loss rate: 0.22%  
-- Flow 3:  
Average throughput: 18.19 Mbit/s  
95th percentile per-packet one-way delay: 68.906 ms  
Loss rate: 0.12%

## Run 5: Report of LEDBAT — Data Link



Run 1: Statistics of Indigo-Muses

Start at: 2018-11-15 05:07:14

End at: 2018-11-15 05:07:44

Local clock offset: 0.312 ms

Remote clock offset: 1.553 ms

# Below is generated by plot.py at 2018-11-15 06:57:25

# Datalink statistics

-- Total of 3 flows:

Average throughput: 94.67 Mbit/s

95th percentile per-packet one-way delay: 43.664 ms

Loss rate: 0.12%

-- Flow 1:

Average throughput: 54.35 Mbit/s

95th percentile per-packet one-way delay: 44.470 ms

Loss rate: 0.21%

-- Flow 2:

Average throughput: 38.65 Mbit/s

95th percentile per-packet one-way delay: 43.567 ms

Loss rate: 0.00%

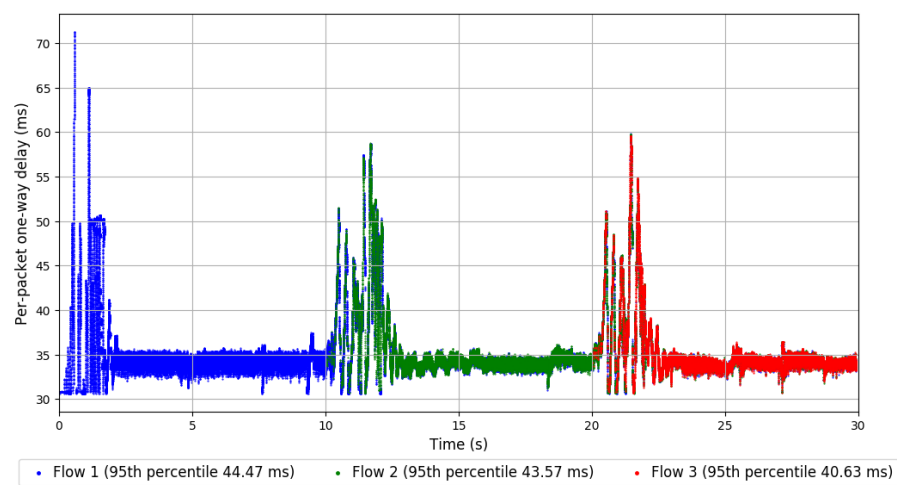
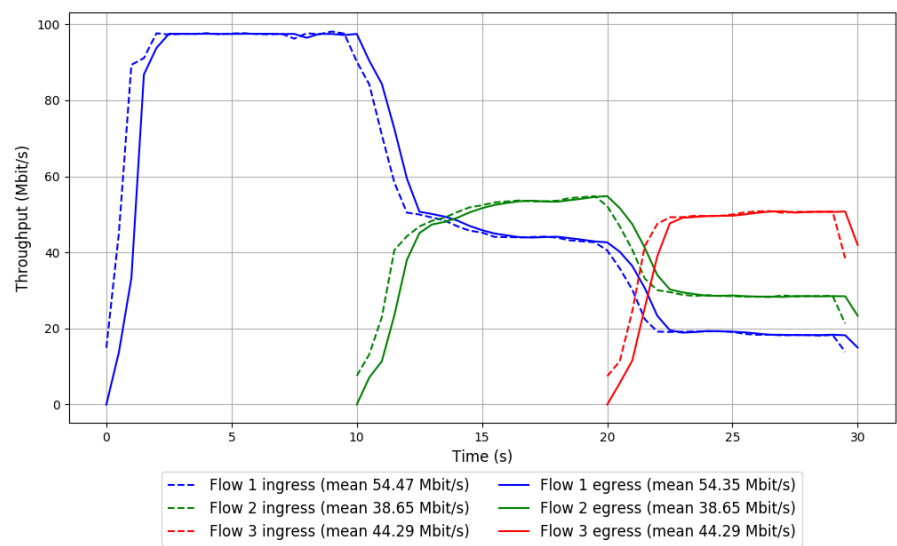
-- Flow 3:

Average throughput: 44.29 Mbit/s

95th percentile per-packet one-way delay: 40.627 ms

Loss rate: 0.00%

Run 1: Report of Indigo-Muses — Data Link





Run 2: Statistics of Indigo-Muses

Start at: 2018-11-15 05:32:10

End at: 2018-11-15 05:32:40

Local clock offset: 0.27 ms

Remote clock offset: 0.642 ms

# Below is generated by plot.py at 2018-11-15 06:57:33

# Datalink statistics

-- Total of 3 flows:

Average throughput: 94.79 Mbit/s

95th percentile per-packet one-way delay: 41.988 ms

Loss rate: 0.14%

-- Flow 1:

Average throughput: 56.44 Mbit/s

95th percentile per-packet one-way delay: 42.928 ms

Loss rate: 0.23%

-- Flow 2:

Average throughput: 42.32 Mbit/s

95th percentile per-packet one-way delay: 41.334 ms

Loss rate: 0.01%

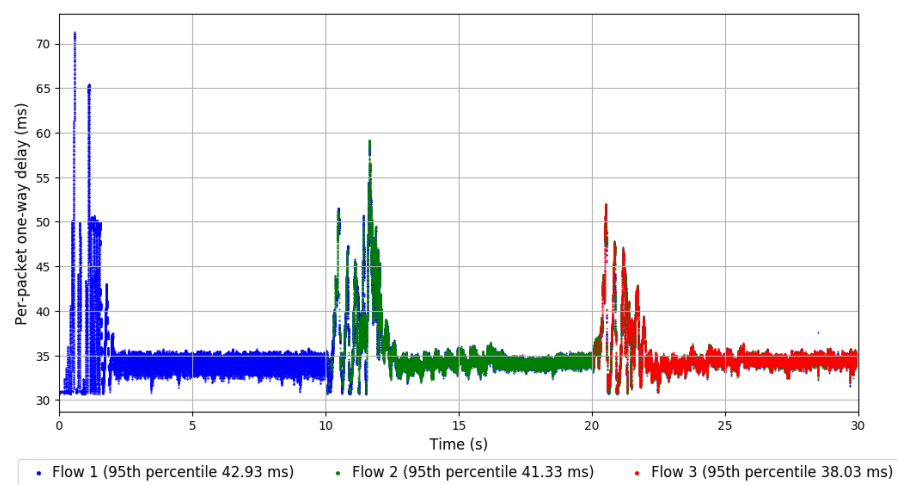
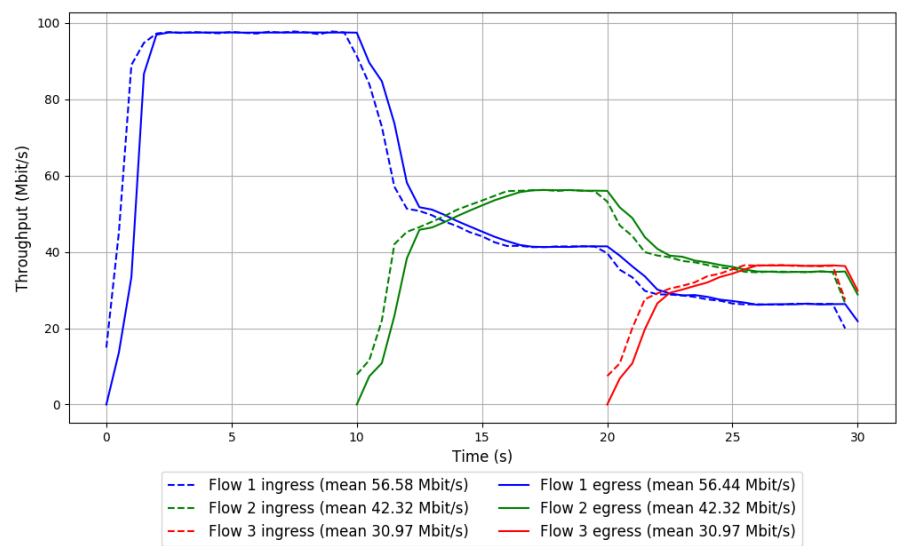
-- Flow 3:

Average throughput: 30.97 Mbit/s

95th percentile per-packet one-way delay: 38.033 ms

Loss rate: 0.01%

Run 2: Report of Indigo-Muses — Data Link

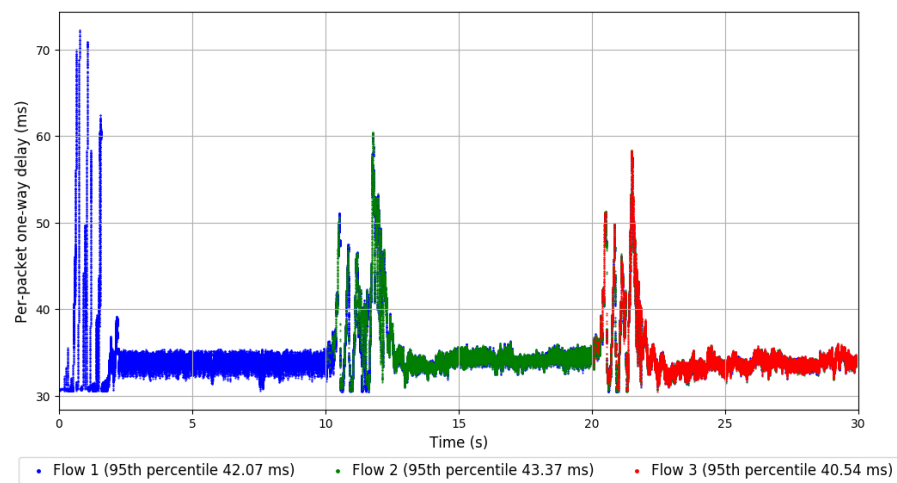
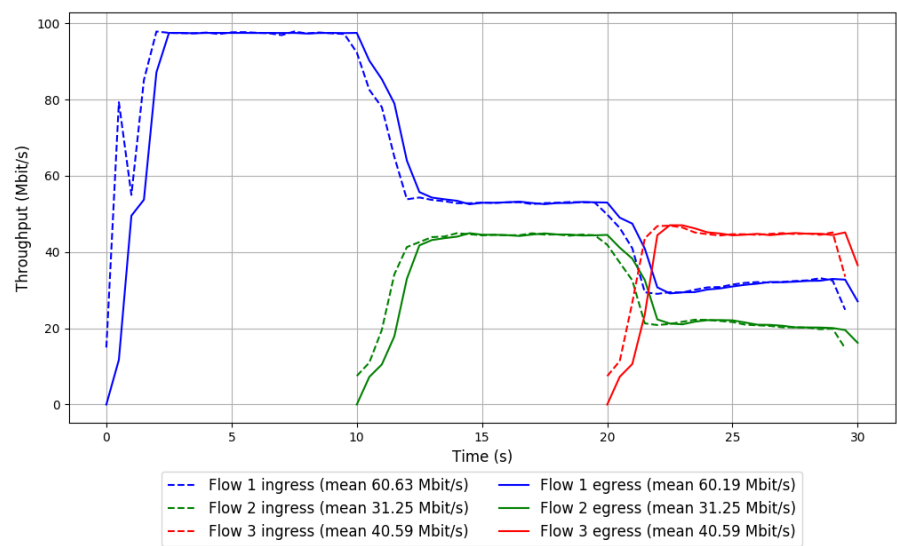


Run 3: Statistics of Indigo-Muses

Start at: 2018-11-15 05:56:56  
End at: 2018-11-15 05:57:26  
Local clock offset: 0.185 ms  
Remote clock offset: -0.897 ms

# Below is generated by plot.py at 2018-11-15 06:57:41  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 94.34 Mbit/s  
95th percentile per-packet one-way delay: 42.217 ms  
Loss rate: 0.46%  
-- Flow 1:  
Average throughput: 60.19 Mbit/s  
95th percentile per-packet one-way delay: 42.070 ms  
Loss rate: 0.72%  
-- Flow 2:  
Average throughput: 31.25 Mbit/s  
95th percentile per-packet one-way delay: 43.368 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 40.59 Mbit/s  
95th percentile per-packet one-way delay: 40.538 ms  
Loss rate: 0.00%

Run 3: Report of Indigo-Muses — Data Link

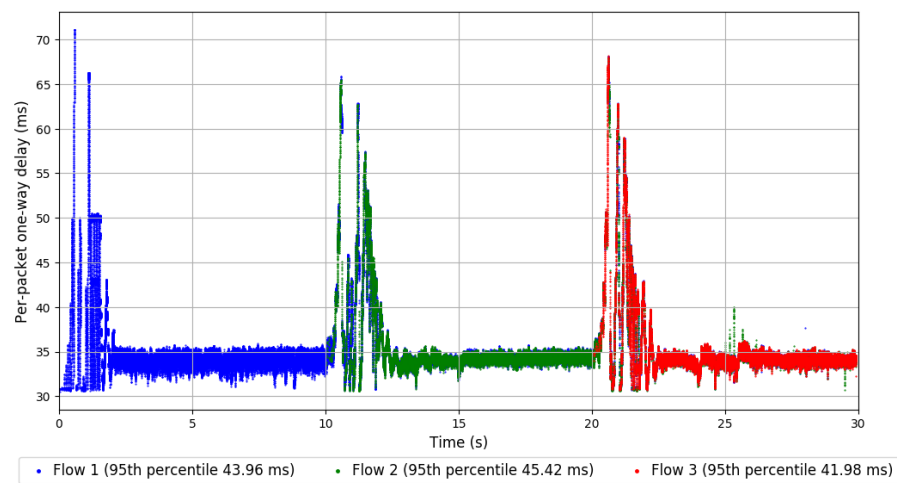
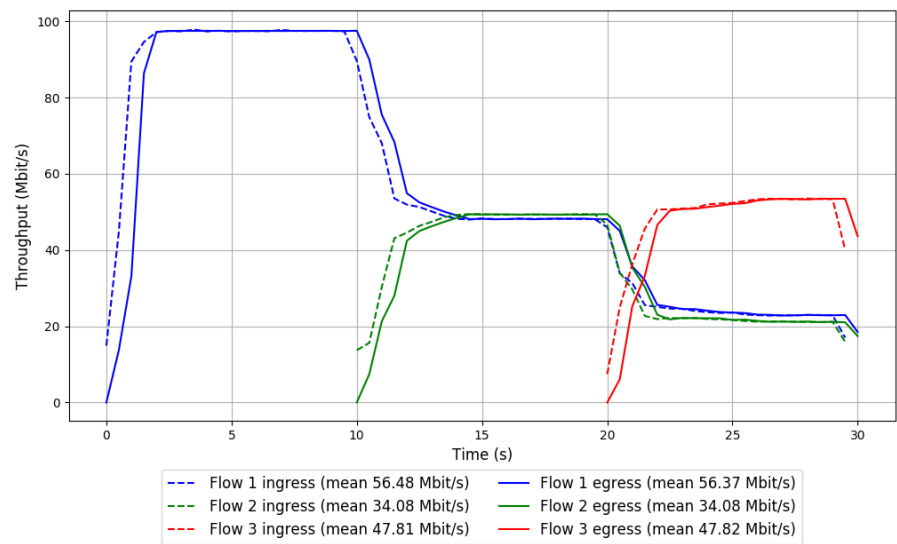


#### Run 4: Statistics of Indigo-Muses

Start at: 2018-11-15 06:21:26  
End at: 2018-11-15 06:21:56  
Local clock offset: -3.399 ms  
Remote clock offset: -2.834 ms

```
# Below is generated by plot.py at 2018-11-15 06:57:52
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.76 Mbit/s
95th percentile per-packet one-way delay: 43.921 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 56.37 Mbit/s
95th percentile per-packet one-way delay: 43.957 ms
Loss rate: 0.19%
-- Flow 2:
Average throughput: 34.08 Mbit/s
95th percentile per-packet one-way delay: 45.425 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 47.82 Mbit/s
95th percentile per-packet one-way delay: 41.979 ms
Loss rate: 0.00%
```

Run 4: Report of Indigo-Muses — Data Link

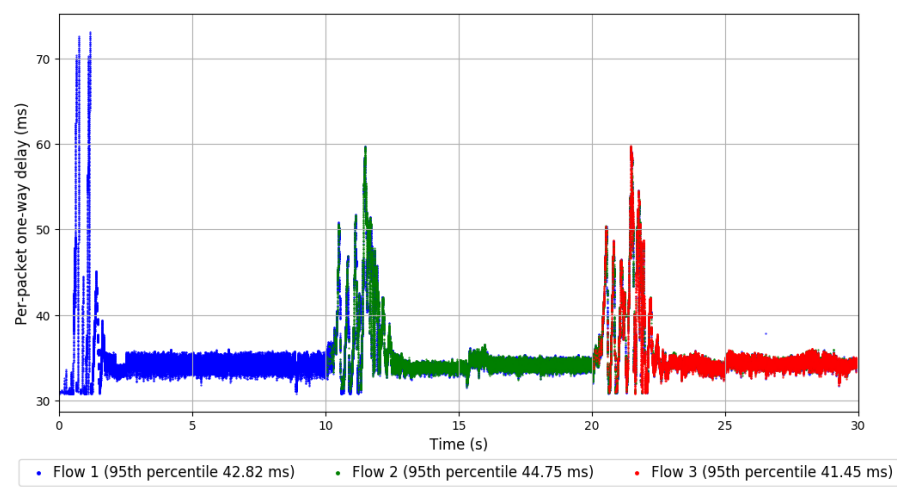
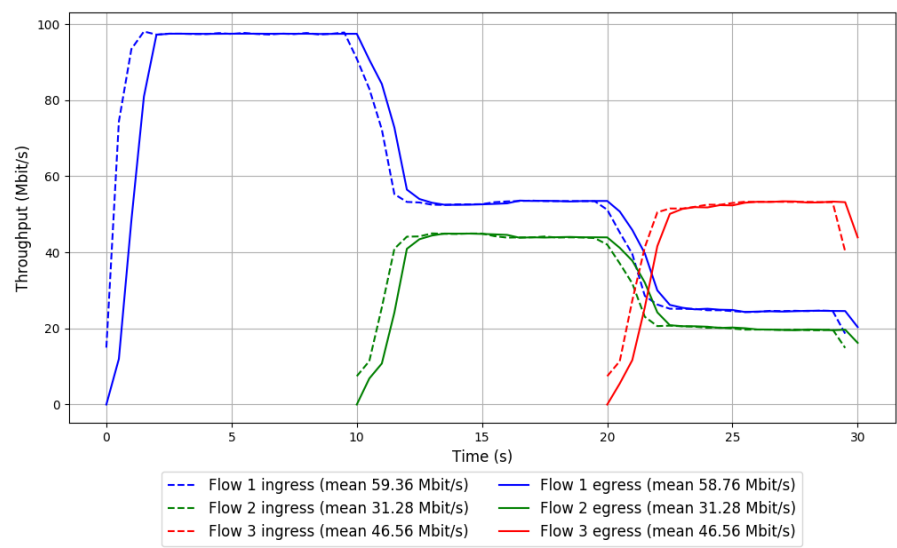


Run 5: Statistics of Indigo-Muses

Start at: 2018-11-15 06:45:56  
End at: 2018-11-15 06:46:26  
Local clock offset: 0.117 ms  
Remote clock offset: -3.274 ms

# Below is generated by plot.py at 2018-11-15 06:57:54  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 94.91 Mbit/s  
95th percentile per-packet one-way delay: 43.024 ms  
Loss rate: 0.62%  
-- Flow 1:  
Average throughput: 58.76 Mbit/s  
95th percentile per-packet one-way delay: 42.823 ms  
Loss rate: 1.00%  
-- Flow 2:  
Average throughput: 31.28 Mbit/s  
95th percentile per-packet one-way delay: 44.751 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 46.56 Mbit/s  
95th percentile per-packet one-way delay: 41.452 ms  
Loss rate: 0.00%

Run 5: Report of Indigo-Muses — Data Link



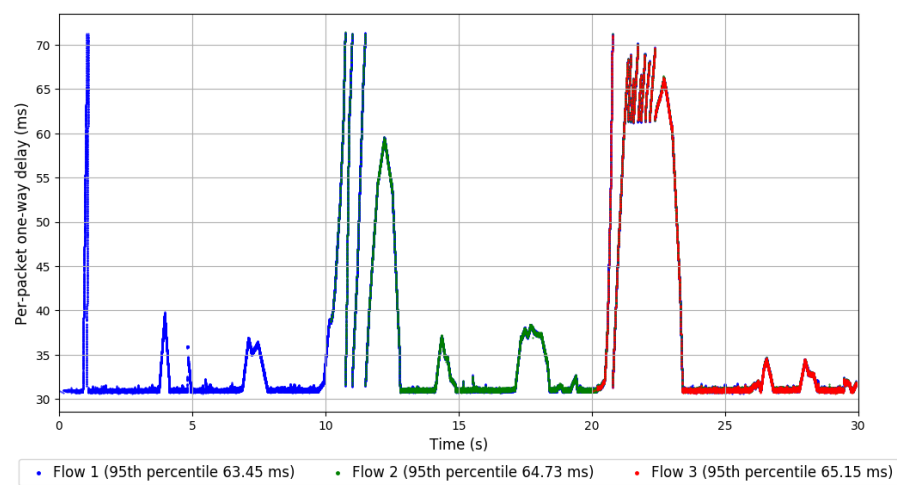
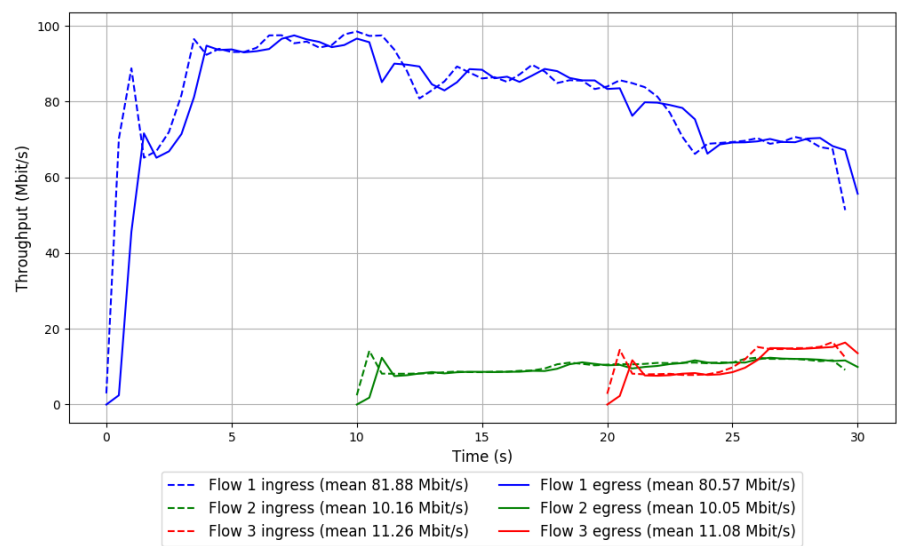


```
Run 1: Statistics of PCC-Allegro

Start at: 2018-11-15 05:08:37
End at: 2018-11-15 05:09:07
Local clock offset: 0.3 ms
Remote clock offset: 1.651 ms

# Below is generated by plot.py at 2018-11-15 06:58:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.91 Mbit/s
95th percentile per-packet one-way delay: 63.724 ms
Loss rate: 1.56%
-- Flow 1:
Average throughput: 80.57 Mbit/s
95th percentile per-packet one-way delay: 63.445 ms
Loss rate: 1.59%
-- Flow 2:
Average throughput: 10.05 Mbit/s
95th percentile per-packet one-way delay: 64.733 ms
Loss rate: 1.14%
-- Flow 3:
Average throughput: 11.08 Mbit/s
95th percentile per-packet one-way delay: 65.151 ms
Loss rate: 1.53%
```

Run 1: Report of PCC-Allegro — Data Link



Run 2: Statistics of PCC-Allegro

Start at: 2018-11-15 05:33:35

End at: 2018-11-15 05:34:05

Local clock offset: 0.253 ms

Remote clock offset: 0.388 ms

# Below is generated by plot.py at 2018-11-15 06:58:03

# Datalink statistics

-- Total of 3 flows:

Average throughput: 91.76 Mbit/s

95th percentile per-packet one-way delay: 67.443 ms

Loss rate: 4.95%

-- Flow 1:

Average throughput: 81.22 Mbit/s

95th percentile per-packet one-way delay: 67.084 ms

Loss rate: 4.45%

-- Flow 2:

Average throughput: 9.13 Mbit/s

95th percentile per-packet one-way delay: 68.325 ms

Loss rate: 5.88%

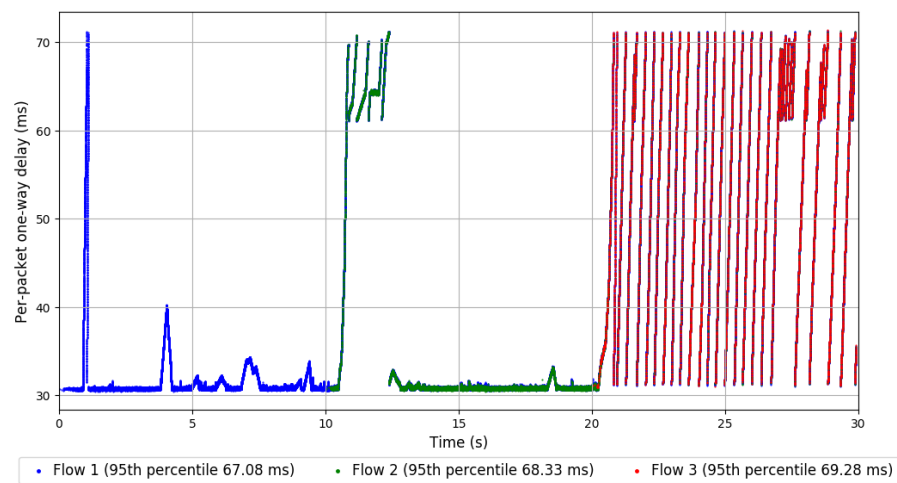
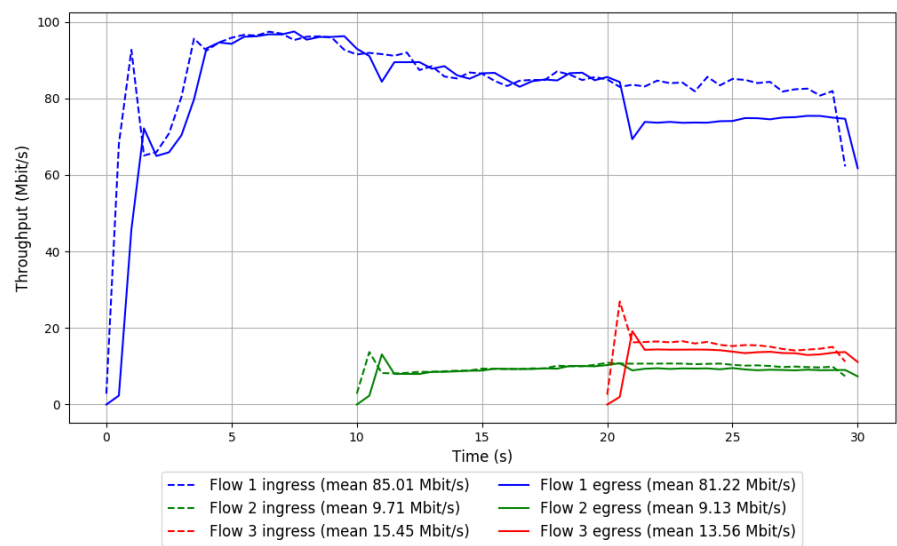
-- Flow 3:

Average throughput: 13.56 Mbit/s

95th percentile per-packet one-way delay: 69.279 ms

Loss rate: 12.19%

Run 2: Report of PCC-Allegro — Data Link

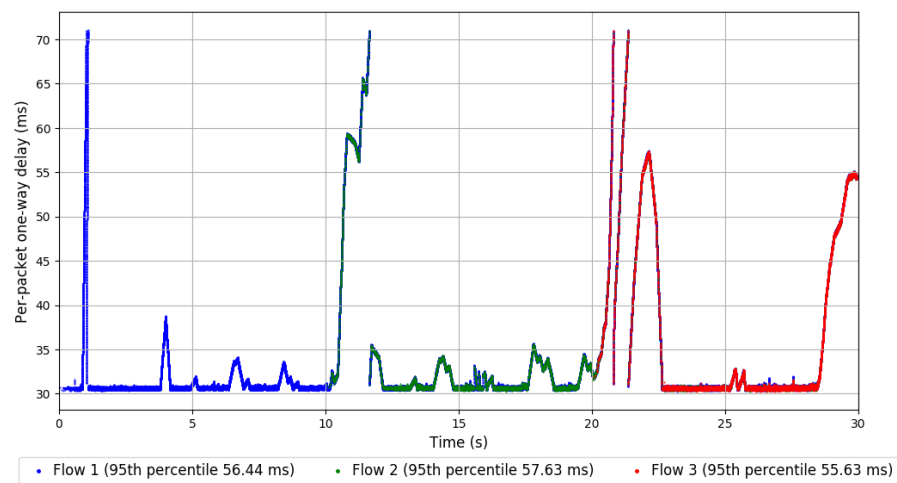
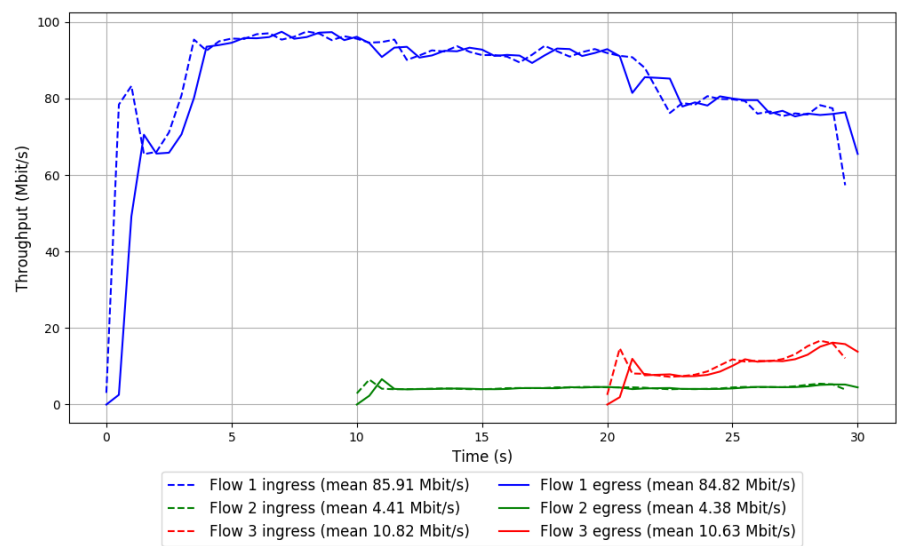


Run 3: Statistics of PCC-Allegro

Start at: 2018-11-15 05:58:19  
End at: 2018-11-15 05:58:49  
Local clock offset: -0.22 ms  
Remote clock offset: -1.061 ms

# Below is generated by plot.py at 2018-11-15 06:58:06  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 91.25 Mbit/s  
95th percentile per-packet one-way delay: 56.447 ms  
Loss rate: 1.18%  
-- Flow 1:  
Average throughput: 84.82 Mbit/s  
95th percentile per-packet one-way delay: 56.440 ms  
Loss rate: 1.19%  
-- Flow 2:  
Average throughput: 4.38 Mbit/s  
95th percentile per-packet one-way delay: 57.626 ms  
Loss rate: 0.60%  
-- Flow 3:  
Average throughput: 10.63 Mbit/s  
95th percentile per-packet one-way delay: 55.634 ms  
Loss rate: 1.51%

Run 3: Report of PCC-Allegro — Data Link

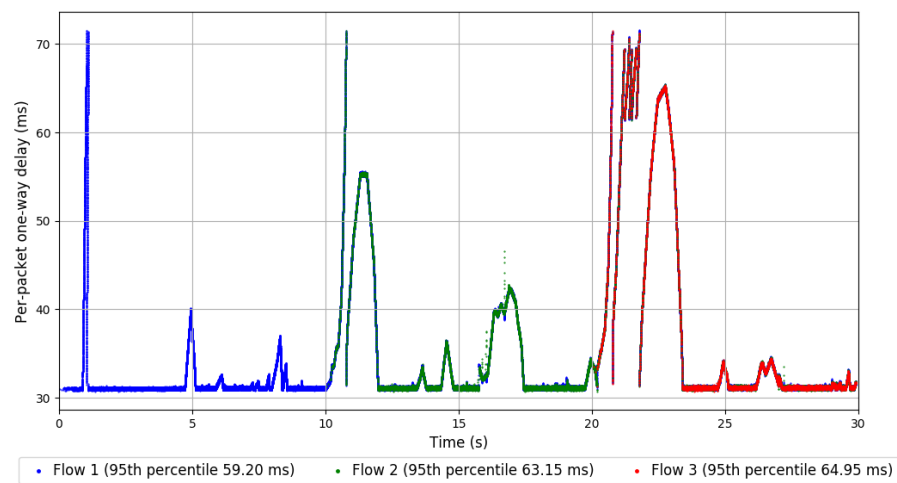
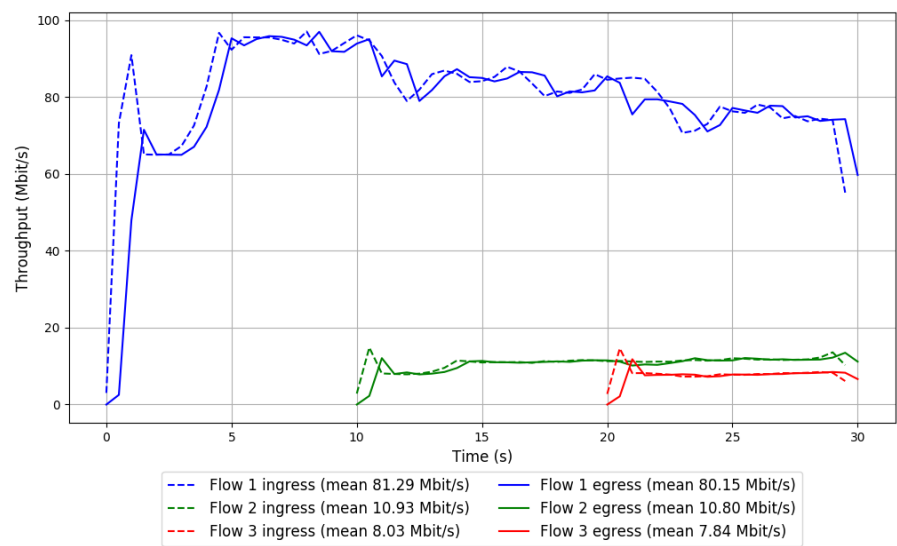


Run 4: Statistics of PCC-Allegro

Start at: 2018-11-15 06:22:50  
End at: 2018-11-15 06:23:20  
Local clock offset: -3.504 ms  
Remote clock offset: -2.808 ms

# Below is generated by plot.py at 2018-11-15 06:58:43  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 89.91 Mbit/s  
95th percentile per-packet one-way delay: 60.651 ms  
Loss rate: 1.42%  
-- Flow 1:  
Average throughput: 80.15 Mbit/s  
95th percentile per-packet one-way delay: 59.204 ms  
Loss rate: 1.40%  
-- Flow 2:  
Average throughput: 10.80 Mbit/s  
95th percentile per-packet one-way delay: 63.146 ms  
Loss rate: 1.20%  
-- Flow 3:  
Average throughput: 7.84 Mbit/s  
95th percentile per-packet one-way delay: 64.947 ms  
Loss rate: 2.38%

Run 4: Report of PCC-Allegro — Data Link



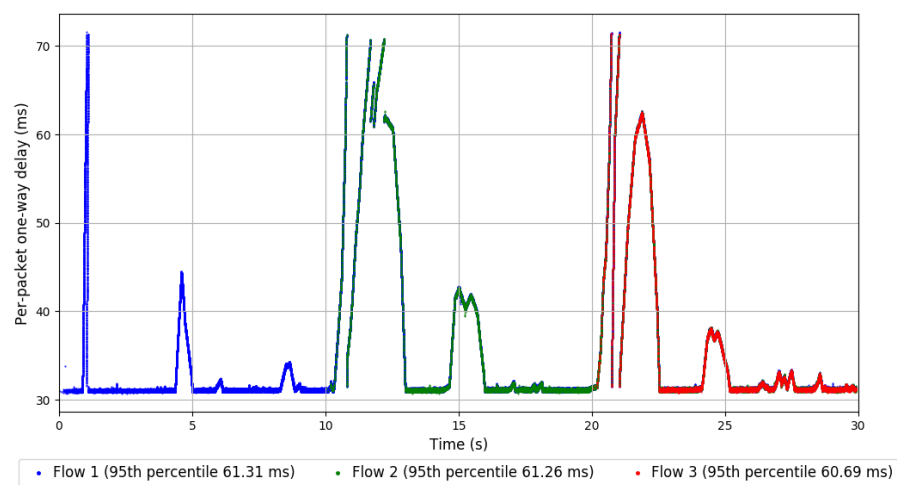
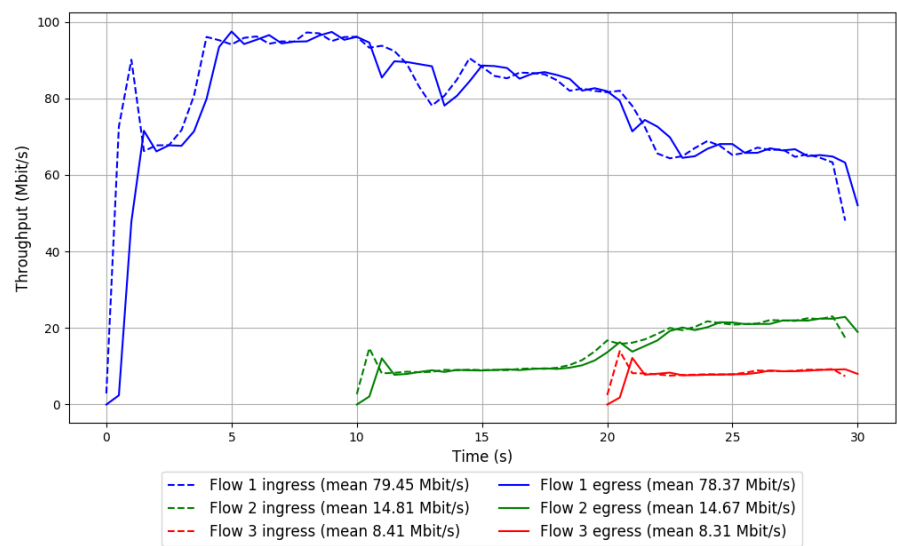


Run 5: Statistics of PCC-Allegro

Start at: 2018-11-15 06:47:19  
End at: 2018-11-15 06:47:49  
Local clock offset: 0.22 ms  
Remote clock offset: -3.271 ms

# Below is generated by plot.py at 2018-11-15 06:58:56  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 90.86 Mbit/s  
95th percentile per-packet one-way delay: 61.283 ms  
Loss rate: 1.31%  
-- Flow 1:  
Average throughput: 78.37 Mbit/s  
95th percentile per-packet one-way delay: 61.310 ms  
Loss rate: 1.36%  
-- Flow 2:  
Average throughput: 14.67 Mbit/s  
95th percentile per-packet one-way delay: 61.255 ms  
Loss rate: 0.94%  
-- Flow 3:  
Average throughput: 8.31 Mbit/s  
95th percentile per-packet one-way delay: 60.689 ms  
Loss rate: 1.17%

Run 5: Report of PCC-Allegro — Data Link

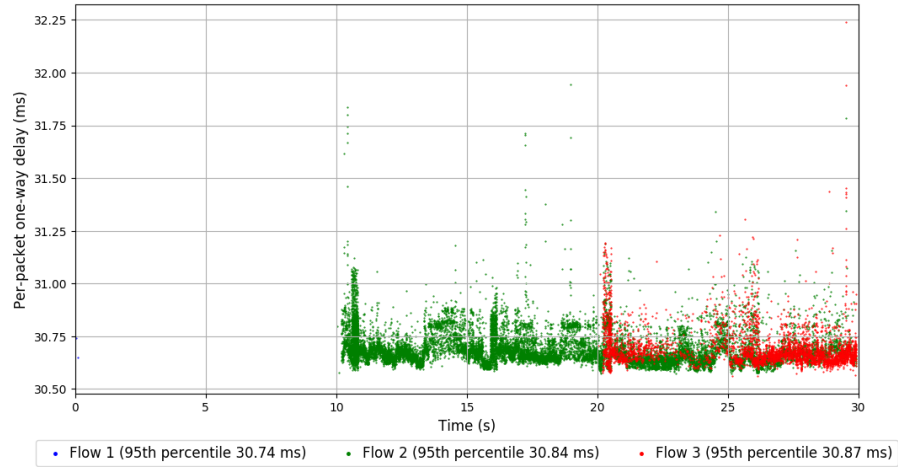
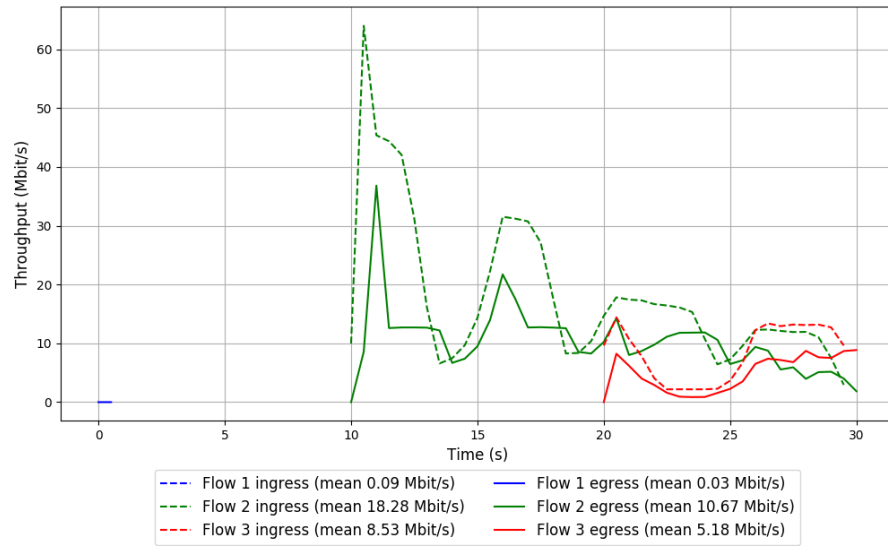


```
Run 1: Statistics of PCC-Expr

Start at: 2018-11-15 05:00:27
End at: 2018-11-15 05:00:57
Local clock offset: 0.517 ms
Remote clock offset: 1.345 ms

# Below is generated by plot.py at 2018-11-15 06:58:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.80 Mbit/s
95th percentile per-packet one-way delay: 30.848 ms
Loss rate: 41.20%
-- Flow 1:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 30.740 ms
Loss rate: 85.71%
-- Flow 2:
Average throughput: 10.67 Mbit/s
95th percentile per-packet one-way delay: 30.844 ms
Loss rate: 41.64%
-- Flow 3:
Average throughput: 5.18 Mbit/s
95th percentile per-packet one-way delay: 30.867 ms
Loss rate: 39.31%
```

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



Run 2: Statistics of PCC-Expr

Start at: 2018-11-15 05:25:10

End at: 2018-11-15 05:25:40

Local clock offset: 0.311 ms

Remote clock offset: 0.893 ms

# Below is generated by plot.py at 2018-11-15 06:58:56

# Datalink statistics

-- Total of 3 flows:

Average throughput: 8.80 Mbit/s

95th percentile per-packet one-way delay: 30.997 ms

Loss rate: 37.72%

-- Flow 1:

Average throughput: 0.03 Mbit/s

95th percentile per-packet one-way delay: 30.861 ms

Loss rate: 85.71%

-- Flow 2:

Average throughput: 9.36 Mbit/s

95th percentile per-packet one-way delay: 30.983 ms

Loss rate: 41.45%

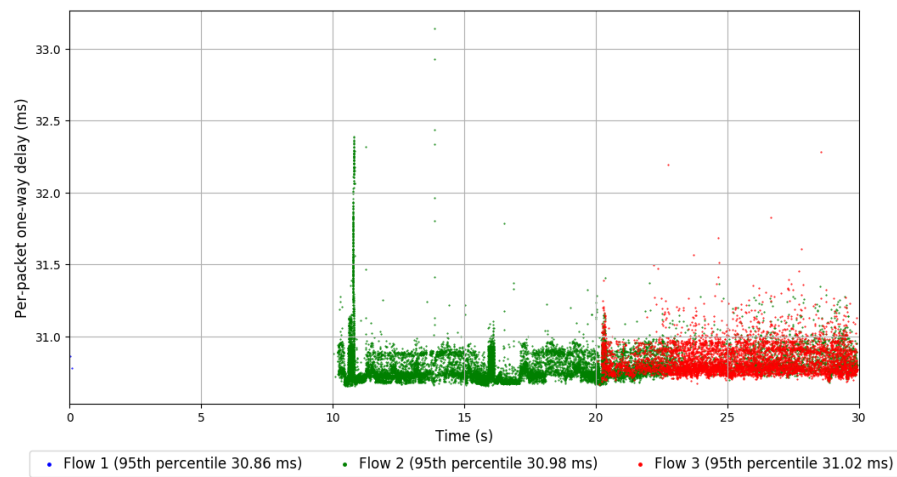
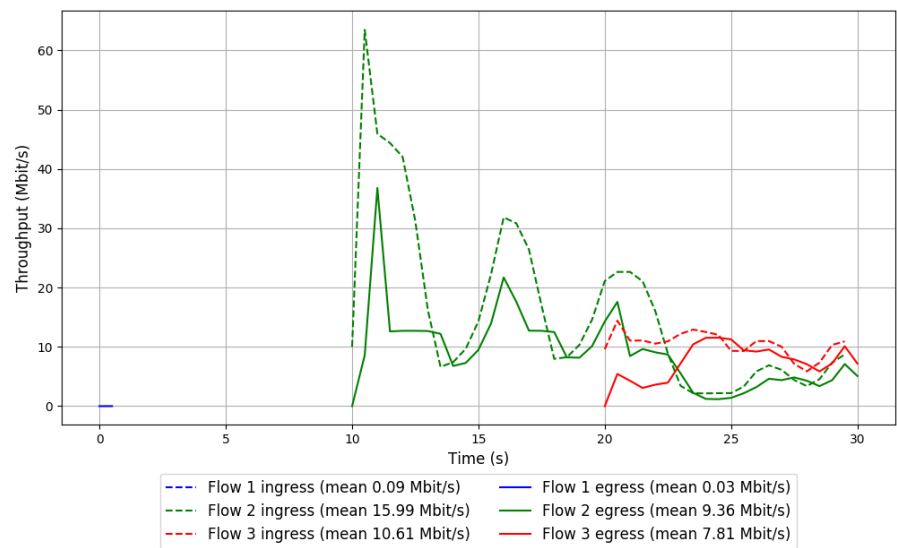
-- Flow 3:

Average throughput: 7.81 Mbit/s

95th percentile per-packet one-way delay: 31.016 ms

Loss rate: 26.40%

Run 2: Report of PCC-Expr — Data Link

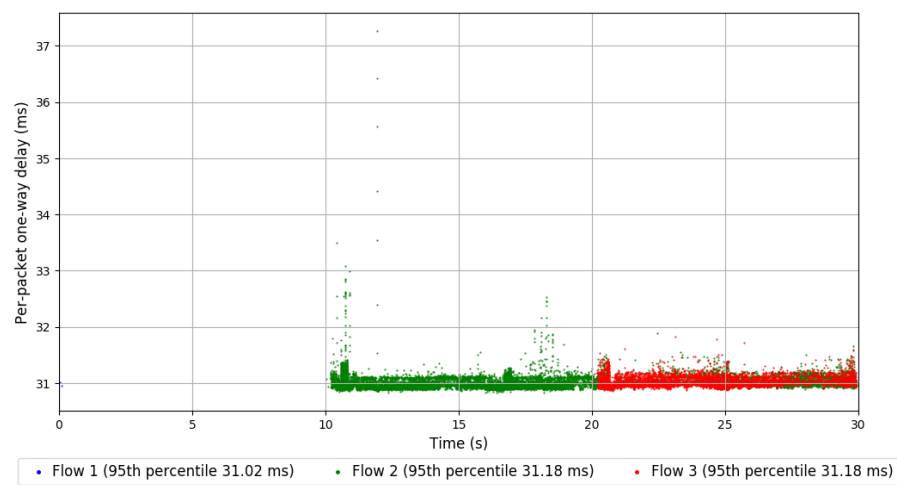
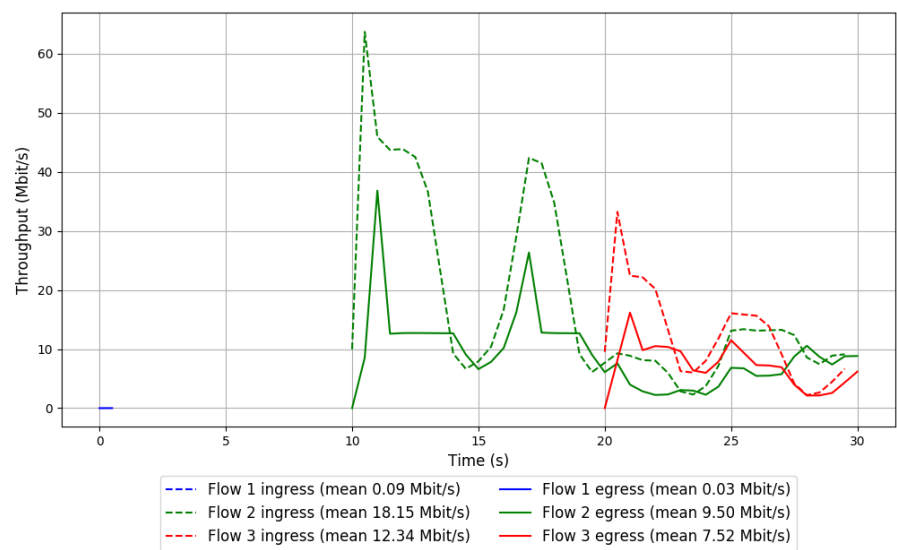


Run 3: Statistics of PCC-Expr

Start at: 2018-11-15 05:50:02  
End at: 2018-11-15 05:50:32  
Local clock offset: 0.199 ms  
Remote clock offset: -0.284 ms

# Below is generated by plot.py at 2018-11-15 06:58:56  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 8.80 Mbit/s  
95th percentile per-packet one-way delay: 31.180 ms  
Loss rate: 45.47%  
-- Flow 1:  
Average throughput: 0.03 Mbit/s  
95th percentile per-packet one-way delay: 31.020 ms  
Loss rate: 85.71%  
-- Flow 2:  
Average throughput: 9.50 Mbit/s  
95th percentile per-packet one-way delay: 31.179 ms  
Loss rate: 47.65%  
-- Flow 3:  
Average throughput: 7.52 Mbit/s  
95th percentile per-packet one-way delay: 31.183 ms  
Loss rate: 39.04%

Run 3: Report of PCC-Expr — Data Link



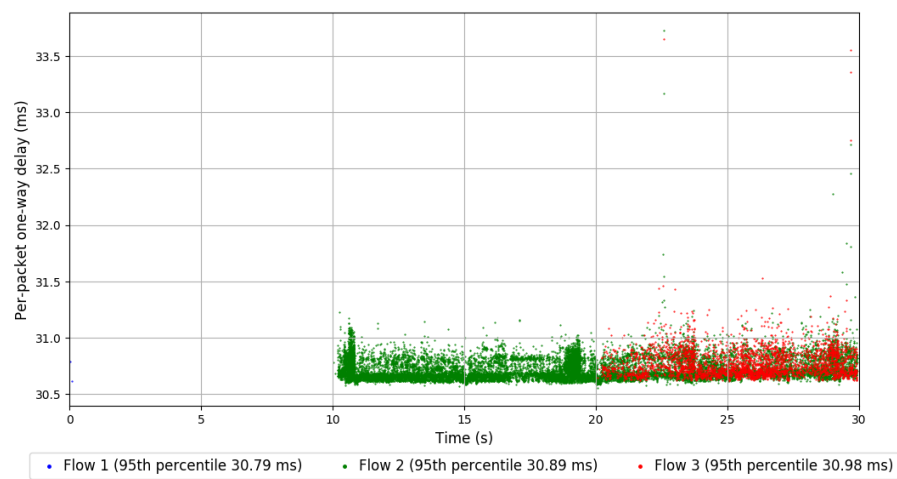
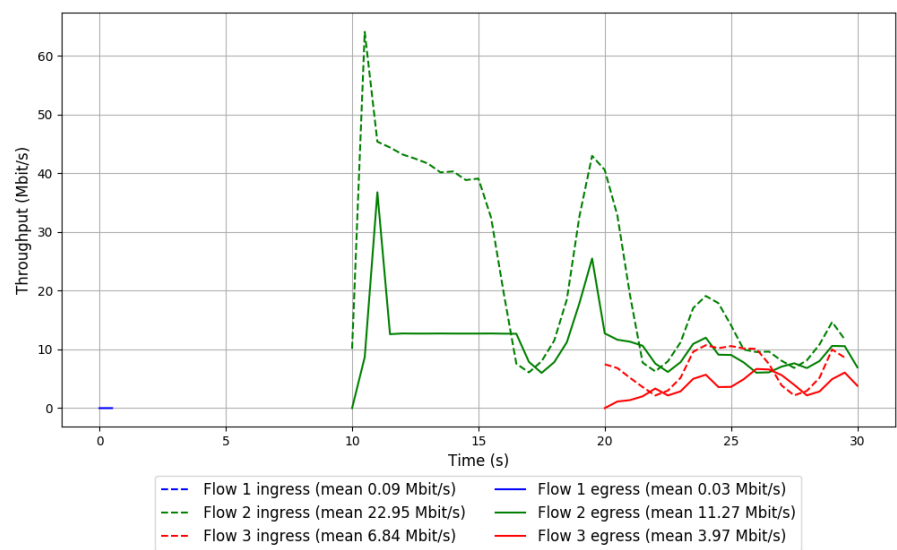


Run 4: Statistics of PCC-Expr

Start at: 2018-11-15 06:14:38  
End at: 2018-11-15 06:15:08  
Local clock offset: -2.963 ms  
Remote clock offset: -2.372 ms

# Below is generated by plot.py at 2018-11-15 06:58:56  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 8.81 Mbit/s  
95th percentile per-packet one-way delay: 30.906 ms  
Loss rate: 49.75%  
-- Flow 1:  
Average throughput: 0.03 Mbit/s  
95th percentile per-packet one-way delay: 30.789 ms  
Loss rate: 85.71%  
-- Flow 2:  
Average throughput: 11.27 Mbit/s  
95th percentile per-packet one-way delay: 30.892 ms  
Loss rate: 50.91%  
-- Flow 3:  
Average throughput: 3.97 Mbit/s  
95th percentile per-packet one-way delay: 30.982 ms  
Loss rate: 41.93%

Run 4: Report of PCC-Expr — Data Link

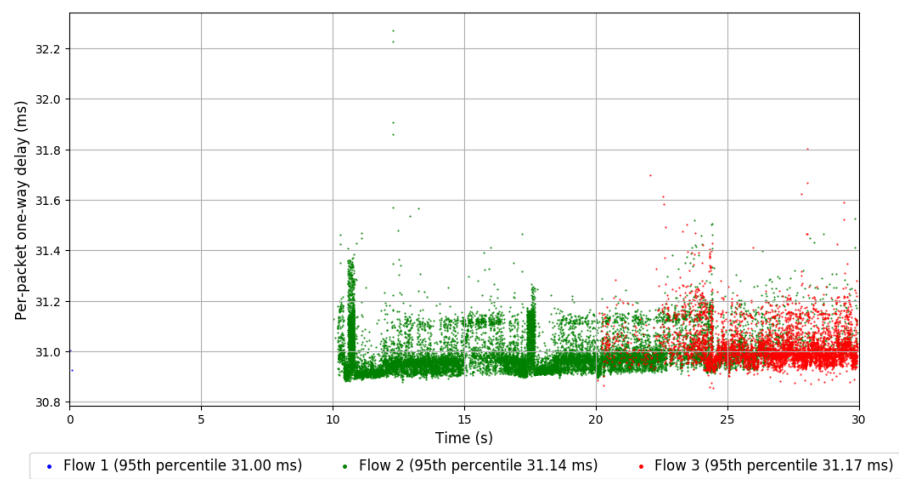
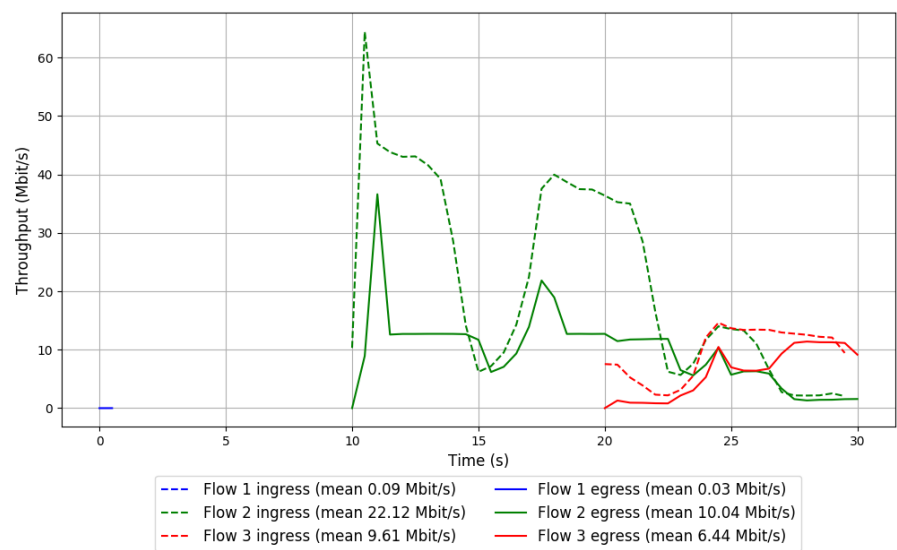


Run 5: Statistics of PCC-Expr

Start at: 2018-11-15 06:39:11  
End at: 2018-11-15 06:39:41  
Local clock offset: -0.511 ms  
Remote clock offset: -3.211 ms

# Below is generated by plot.py at 2018-11-15 06:58:56  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 8.81 Mbit/s  
95th percentile per-packet one-way delay: 31.151 ms  
Loss rate: 50.79%  
-- Flow 1:  
Average throughput: 0.03 Mbit/s  
95th percentile per-packet one-way delay: 31.005 ms  
Loss rate: 85.71%  
-- Flow 2:  
Average throughput: 10.04 Mbit/s  
95th percentile per-packet one-way delay: 31.145 ms  
Loss rate: 54.61%  
-- Flow 3:  
Average throughput: 6.44 Mbit/s  
95th percentile per-packet one-way delay: 31.168 ms  
Loss rate: 33.06%

Run 5: Report of PCC-Expr — Data Link



Run 1: Statistics of QUIC Cubic

Start at: 2018-11-15 04:57:40

End at: 2018-11-15 04:58:10

Local clock offset: 0.659 ms

Remote clock offset: 1.071 ms

# Below is generated by plot.py at 2018-11-15 06:59:19

# Datalink statistics

-- Total of 3 flows:

Average throughput: 87.50 Mbit/s

95th percentile per-packet one-way delay: 67.446 ms

Loss rate: 1.64%

-- Flow 1:

Average throughput: 67.37 Mbit/s

95th percentile per-packet one-way delay: 67.393 ms

Loss rate: 1.81%

-- Flow 2:

Average throughput: 25.54 Mbit/s

95th percentile per-packet one-way delay: 67.594 ms

Loss rate: 1.02%

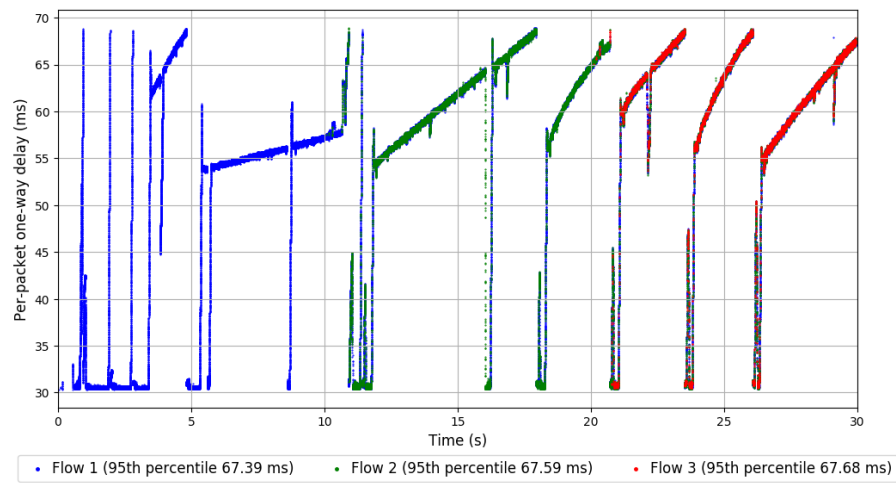
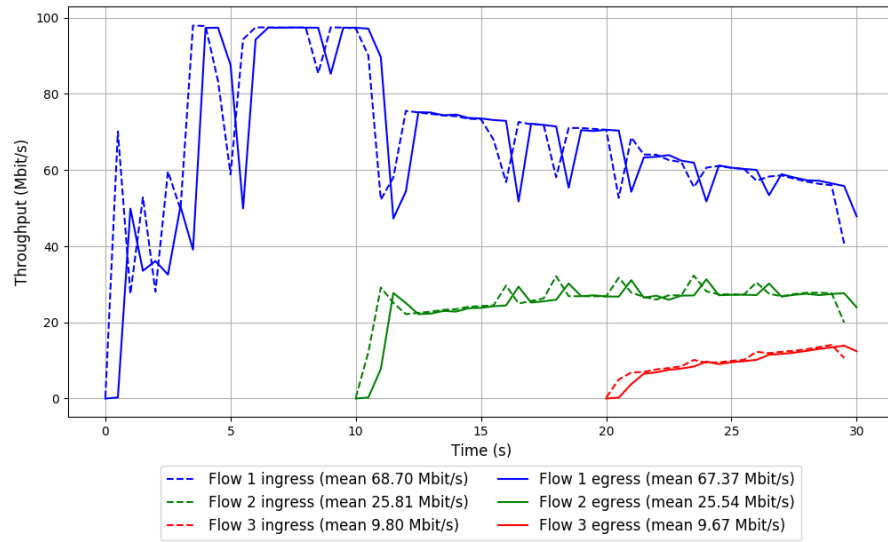
-- Flow 3:

Average throughput: 9.67 Mbit/s

95th percentile per-packet one-way delay: 67.677 ms

Loss rate: 1.25%

# Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2018-11-15 05:22:21

End at: 2018-11-15 05:22:51

Local clock offset: 0.296 ms

Remote clock offset: 0.928 ms

# Below is generated by plot.py at 2018-11-15 06:59:19

# Datalink statistics

-- Total of 3 flows:

Average throughput: 81.06 Mbit/s

95th percentile per-packet one-way delay: 67.286 ms

Loss rate: 2.36%

-- Flow 1:

Average throughput: 56.51 Mbit/s

95th percentile per-packet one-way delay: 67.226 ms

Loss rate: 2.91%

-- Flow 2:

Average throughput: 30.87 Mbit/s

95th percentile per-packet one-way delay: 67.504 ms

Loss rate: 1.11%

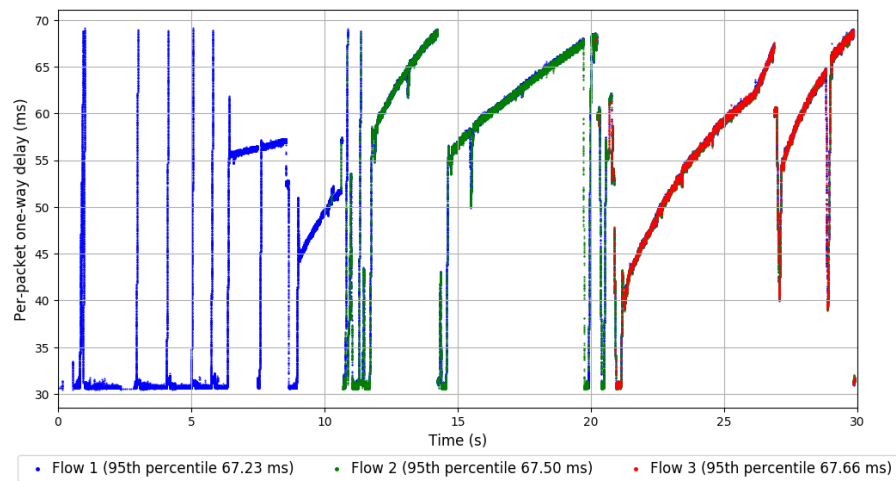
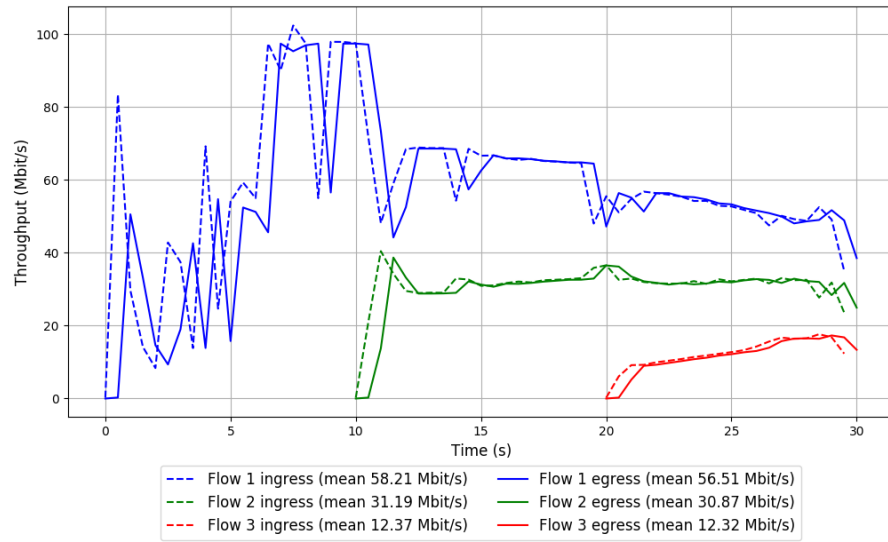
-- Flow 3:

Average throughput: 12.32 Mbit/s

95th percentile per-packet one-way delay: 67.664 ms

Loss rate: 0.75%

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



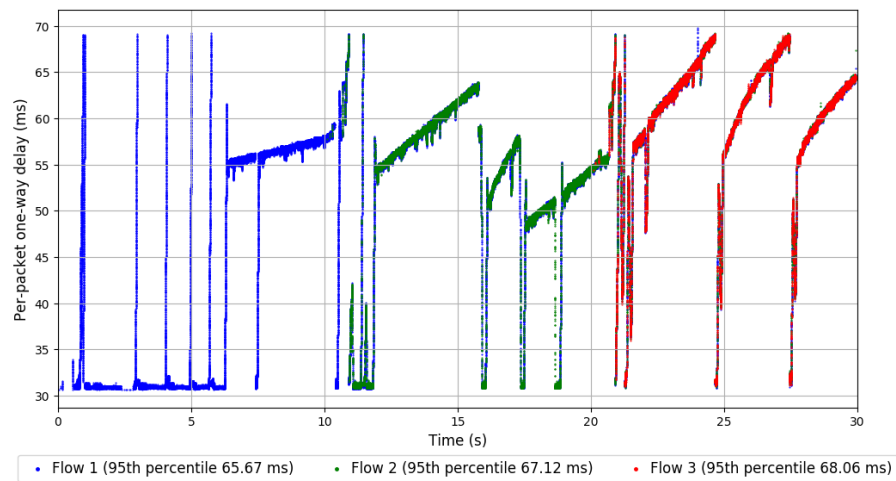
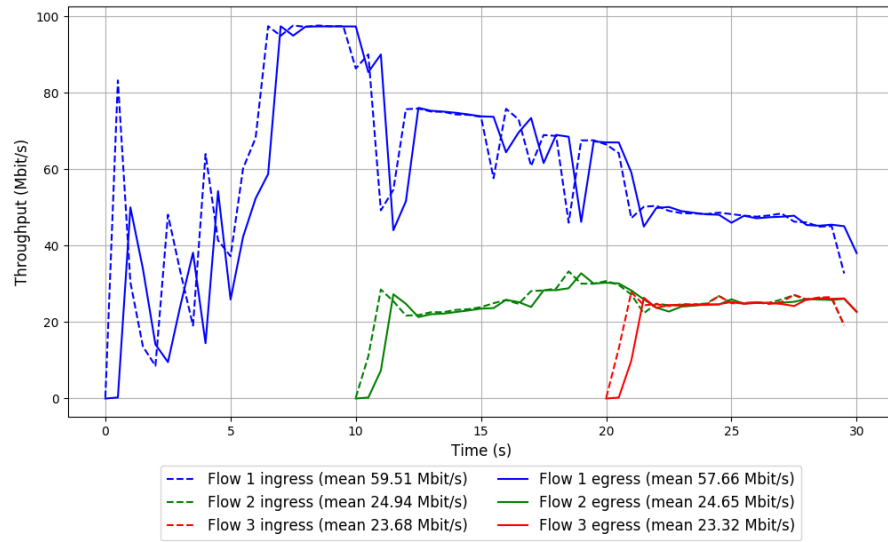


Run 3: Statistics of QUIC Cubic

Start at: 2018-11-15 05:47:14  
End at: 2018-11-15 05:47:44  
Local clock offset: 0.224 ms  
Remote clock offset: -0.148 ms

# Below is generated by plot.py at 2018-11-15 06:59:19  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 81.68 Mbit/s  
95th percentile per-packet one-way delay: 66.438 ms  
Loss rate: 2.49%  
-- Flow 1:  
Average throughput: 57.66 Mbit/s  
95th percentile per-packet one-way delay: 65.672 ms  
Loss rate: 3.01%  
-- Flow 2:  
Average throughput: 24.65 Mbit/s  
95th percentile per-packet one-way delay: 67.119 ms  
Loss rate: 1.14%  
-- Flow 3:  
Average throughput: 23.32 Mbit/s  
95th percentile per-packet one-way delay: 68.057 ms  
Loss rate: 1.43%

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

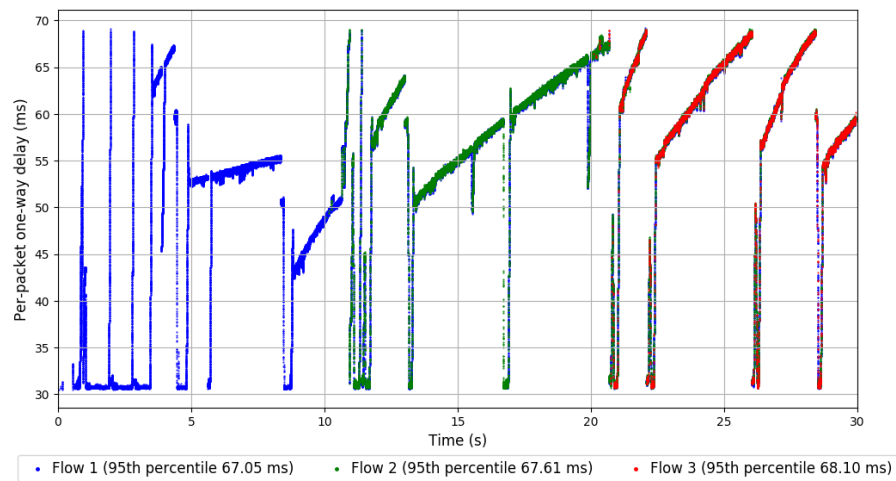
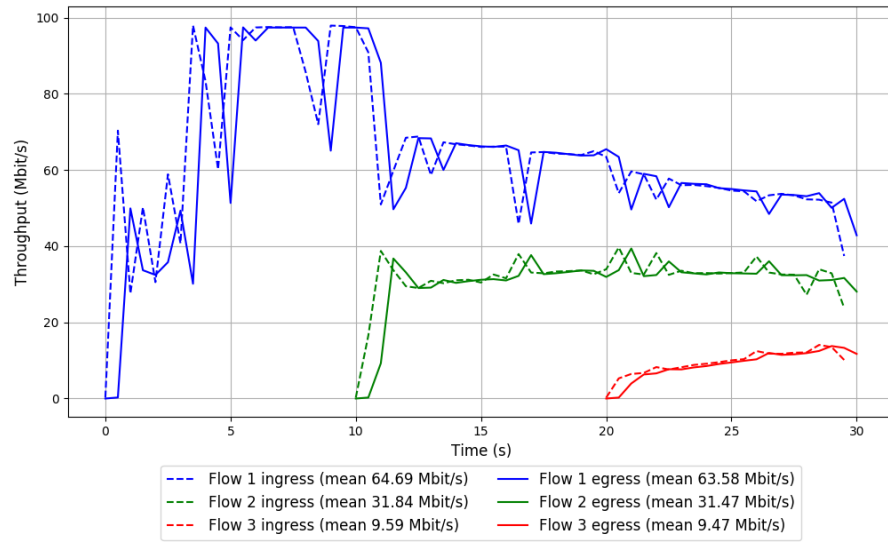


Run 4: Statistics of QUIC Cubic

Start at: 2018-11-15 06:11:52  
End at: 2018-11-15 06:12:22  
Local clock offset: -2.72 ms  
Remote clock offset: -2.109 ms

# Below is generated by plot.py at 2018-11-15 06:59:22  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 87.60 Mbit/s  
95th percentile per-packet one-way delay: 67.274 ms  
Loss rate: 1.49%  
-- Flow 1:  
Average throughput: 63.58 Mbit/s  
95th percentile per-packet one-way delay: 67.046 ms  
Loss rate: 1.62%  
-- Flow 2:  
Average throughput: 31.47 Mbit/s  
95th percentile per-packet one-way delay: 67.609 ms  
Loss rate: 1.12%  
-- Flow 3:  
Average throughput: 9.47 Mbit/s  
95th percentile per-packet one-way delay: 68.099 ms  
Loss rate: 1.25%

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

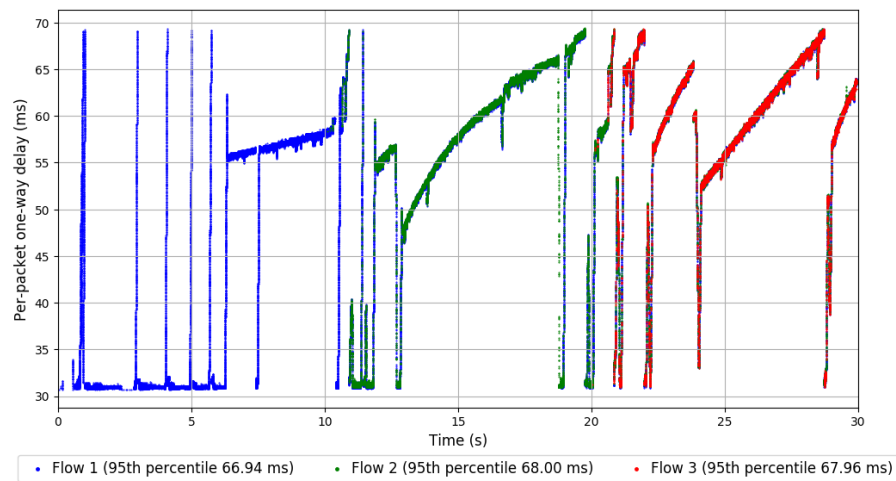
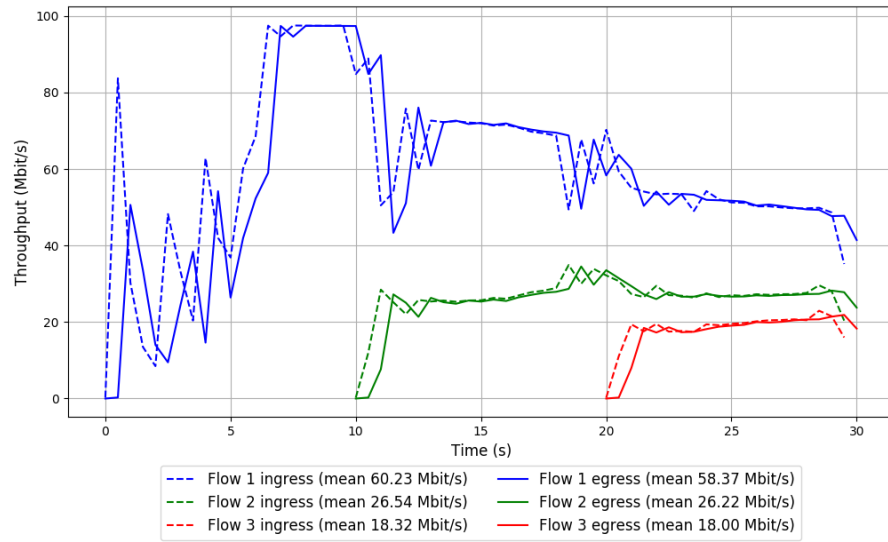


Run 5: Statistics of QUIC Cubic

Start at: 2018-11-15 06:36:26  
End at: 2018-11-15 06:36:56  
Local clock offset: -0.879 ms  
Remote clock offset: -3.243 ms

```
# Below is generated by plot.py at 2018-11-15 06:59:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 81.71 Mbit/s
95th percentile per-packet one-way delay: 67.290 ms
Loss rate: 2.50%
-- Flow 1:
Average throughput: 58.37 Mbit/s
95th percentile per-packet one-way delay: 66.941 ms
Loss rate: 2.99%
-- Flow 2:
Average throughput: 26.22 Mbit/s
95th percentile per-packet one-way delay: 67.998 ms
Loss rate: 1.20%
-- Flow 3:
Average throughput: 18.00 Mbit/s
95th percentile per-packet one-way delay: 67.957 ms
Loss rate: 1.43%
```

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

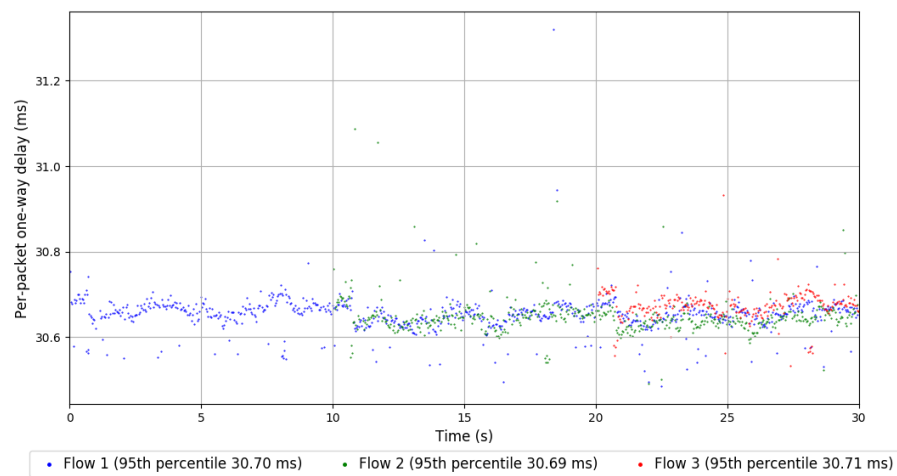
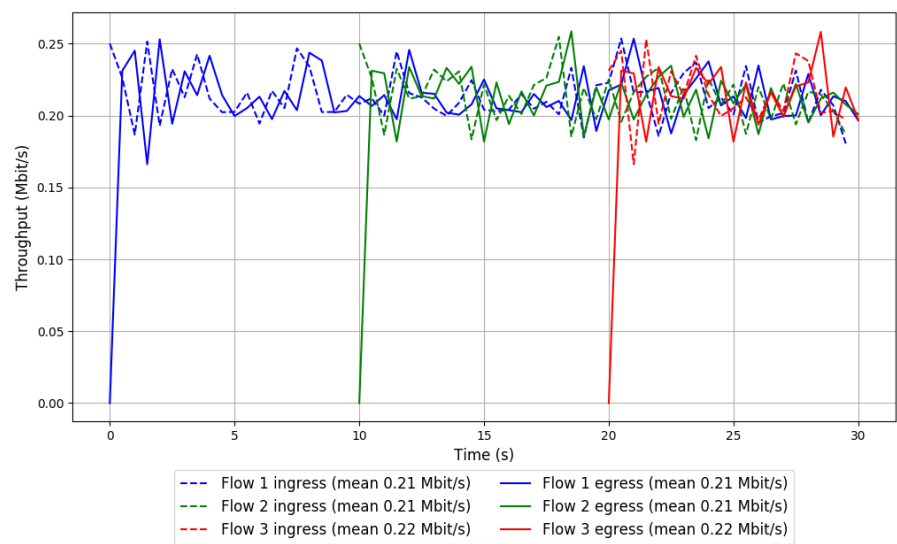


```
Run 1: Statistics of SReAM

Start at: 2018-11-15 04:50:41
End at: 2018-11-15 04:51:11
Local clock offset: 0.622 ms
Remote clock offset: 0.786 ms

# Below is generated by plot.py at 2018-11-15 06:59:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 30.702 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.696 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.694 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 30.712 ms
Loss rate: 0.00%
```

Run 1: Report of SReAM — Data Link





Run 2: Statistics of SReAM

Start at: 2018-11-15 05:15:20

End at: 2018-11-15 05:15:50

Local clock offset: 0.282 ms

Remote clock offset: 1.354 ms

# Below is generated by plot.py at 2018-11-15 06:59:22

# Datalink statistics

-- Total of 3 flows:

Average throughput: 0.43 Mbit/s

95th percentile per-packet one-way delay: 30.884 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 0.21 Mbit/s

95th percentile per-packet one-way delay: 30.882 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 0.21 Mbit/s

95th percentile per-packet one-way delay: 30.889 ms

Loss rate: 0.00%

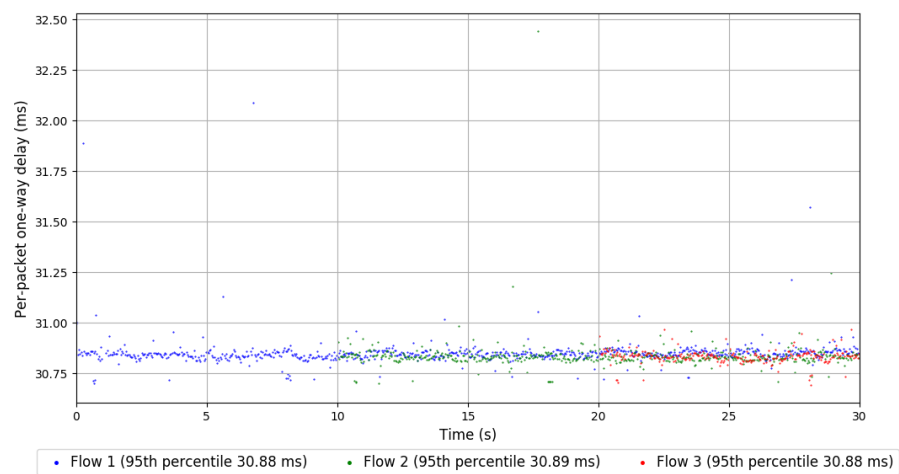
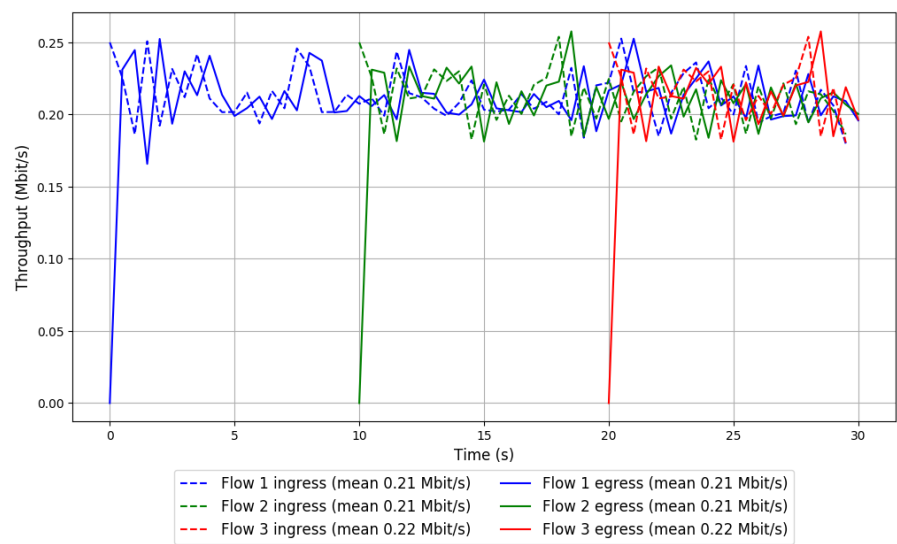
-- Flow 3:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 30.879 ms

Loss rate: 0.00%

Run 2: Report of SReAM — Data Link



Run 3: Statistics of SReAM

Start at: 2018-11-15 05:40:18

End at: 2018-11-15 05:40:48

Local clock offset: 0.24 ms

Remote clock offset: 0.04 ms

# Below is generated by plot.py at 2018-11-15 06:59:22

# Datalink statistics

-- Total of 3 flows:

Average throughput: 0.43 Mbit/s

95th percentile per-packet one-way delay: 30.792 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 0.21 Mbit/s

95th percentile per-packet one-way delay: 30.803 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 0.21 Mbit/s

95th percentile per-packet one-way delay: 30.792 ms

Loss rate: 0.00%

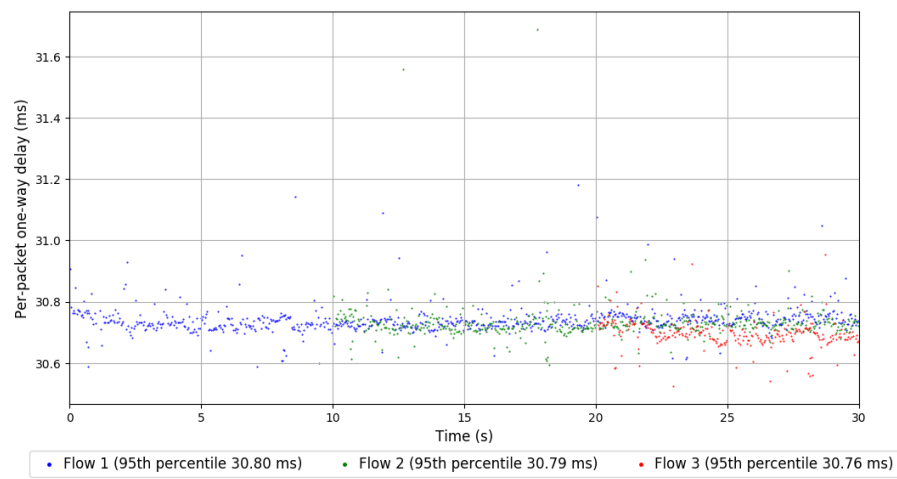
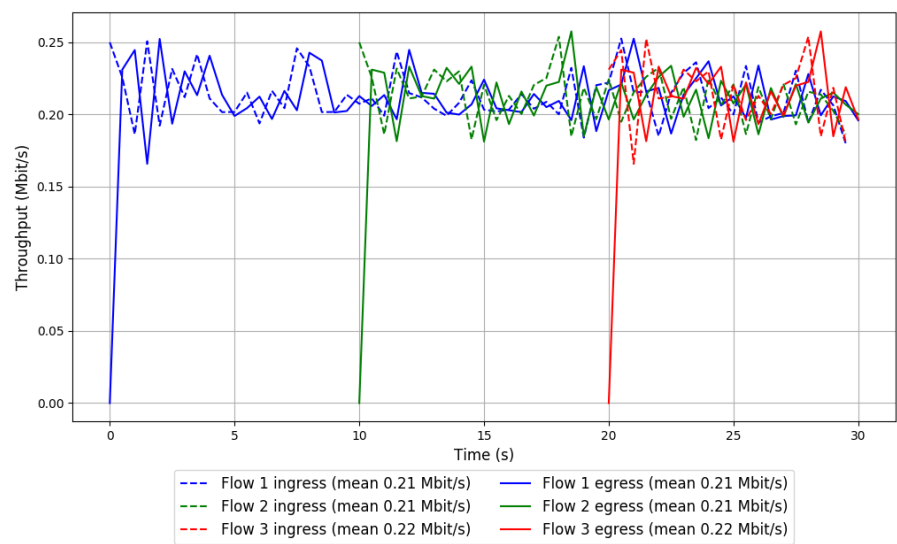
-- Flow 3:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 30.756 ms

Loss rate: 0.00%

Run 3: Report of SReAM — Data Link

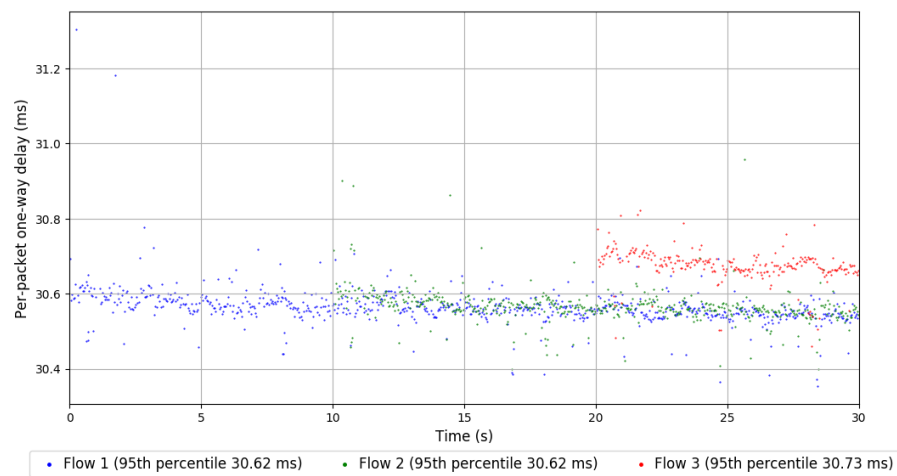
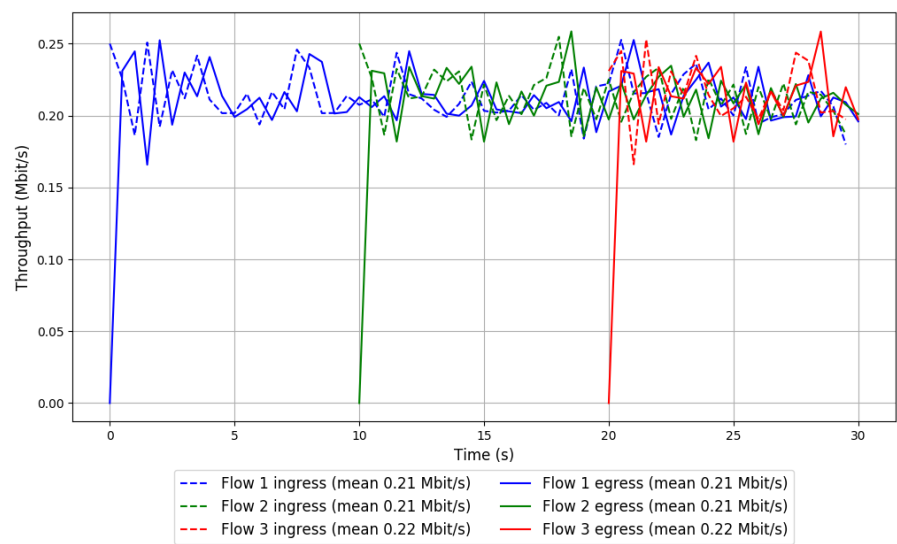


Run 4: Statistics of SReAM

Start at: 2018-11-15 06:05:01  
End at: 2018-11-15 06:05:31  
Local clock offset: -1.855 ms  
Remote clock offset: -1.74 ms

# Below is generated by plot.py at 2018-11-15 06:59:22  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 0.43 Mbit/s  
95th percentile per-packet one-way delay: 30.695 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 0.21 Mbit/s  
95th percentile per-packet one-way delay: 30.622 ms  
Loss rate: 0.00%  
-- Flow 2:  
Average throughput: 0.21 Mbit/s  
95th percentile per-packet one-way delay: 30.616 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 30.728 ms  
Loss rate: 0.00%

Run 4: Report of SReAM — Data Link

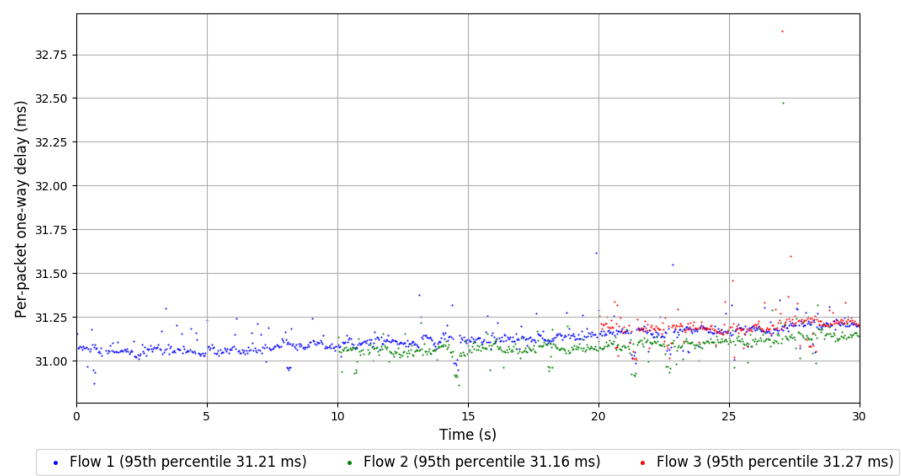
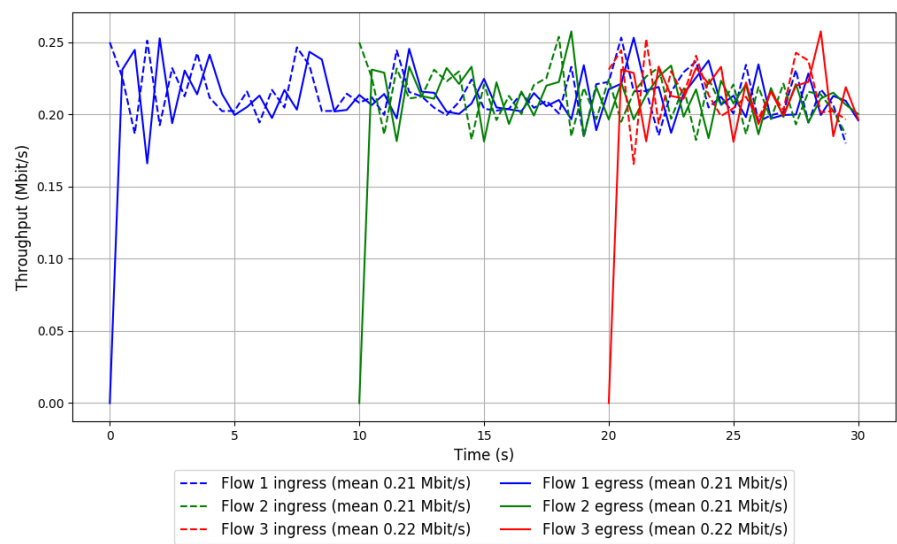


Run 5: Statistics of SReAM

Start at: 2018-11-15 06:29:33  
End at: 2018-11-15 06:30:03  
Local clock offset: -2.573 ms  
Remote clock offset: -3.182 ms

# Below is generated by plot.py at 2018-11-15 06:59:22  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 0.43 Mbit/s  
95th percentile per-packet one-way delay: 31.229 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 0.21 Mbit/s  
95th percentile per-packet one-way delay: 31.215 ms  
Loss rate: 0.00%  
-- Flow 2:  
Average throughput: 0.21 Mbit/s  
95th percentile per-packet one-way delay: 31.158 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 31.274 ms  
Loss rate: 0.00%

Run 5: Report of SReAM — Data Link





Run 1: Statistics of Sprout

Start at: 2018-11-15 04:49:22

End at: 2018-11-15 04:49:52

Local clock offset: 0.606 ms

Remote clock offset: 0.9 ms

# Below is generated by plot.py at 2018-11-15 06:59:22

# Datalink statistics

-- Total of 3 flows:

Average throughput: 23.43 Mbit/s

95th percentile per-packet one-way delay: 36.998 ms

Loss rate: 0.03%

-- Flow 1:

Average throughput: 11.85 Mbit/s

95th percentile per-packet one-way delay: 37.018 ms

Loss rate: 0.05%

-- Flow 2:

Average throughput: 11.71 Mbit/s

95th percentile per-packet one-way delay: 36.999 ms

Loss rate: 0.00%

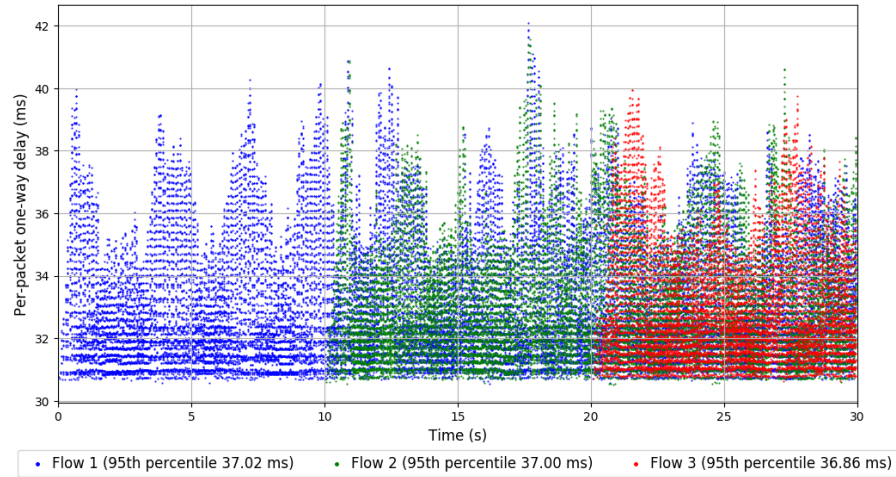
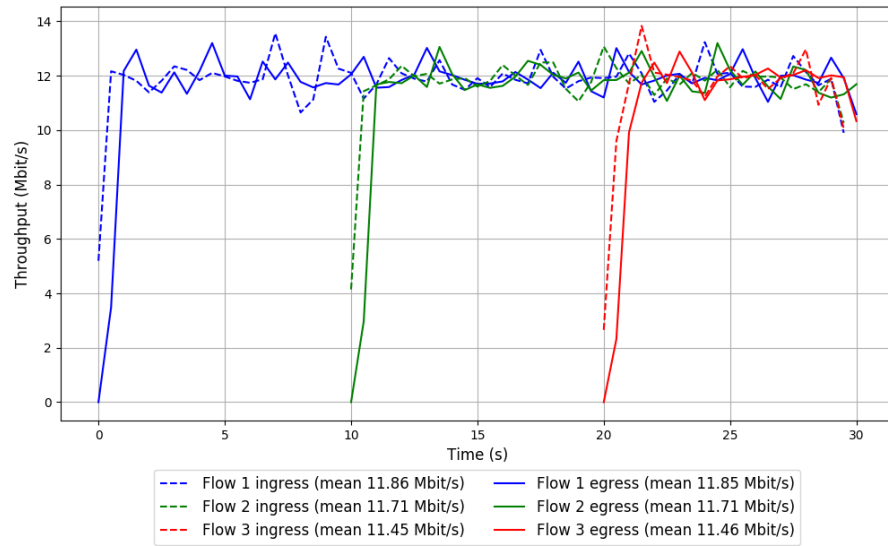
-- Flow 3:

Average throughput: 11.46 Mbit/s

95th percentile per-packet one-way delay: 36.863 ms

Loss rate: 0.00%

## Run 1: Report of Sprout — Data Link

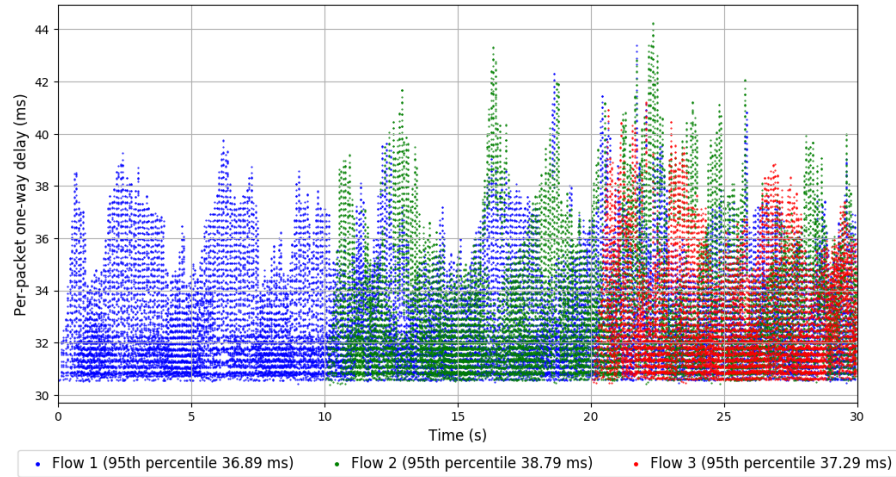
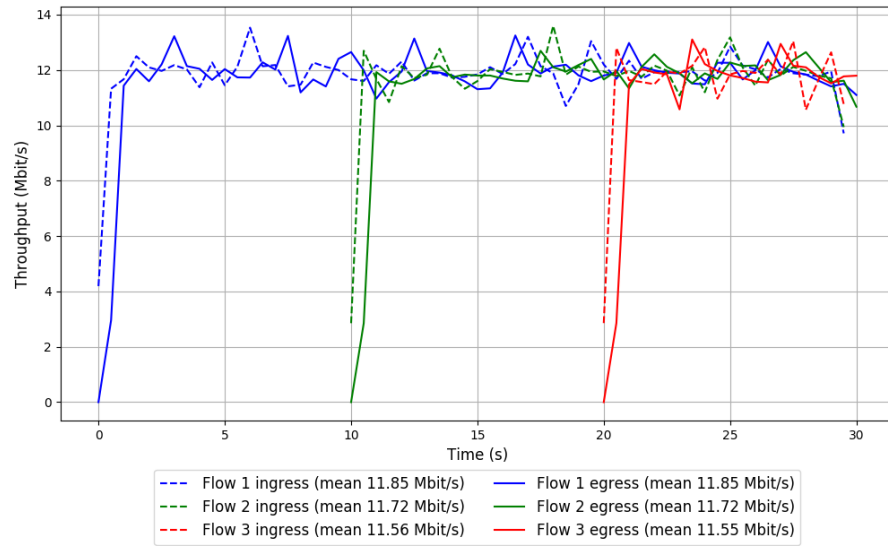


Run 2: Statistics of Sprout

Start at: 2018-11-15 05:14:01  
End at: 2018-11-15 05:14:31  
Local clock offset: 0.286 ms  
Remote clock offset: 1.239 ms

# Below is generated by plot.py at 2018-11-15 06:59:22  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 23.46 Mbit/s  
95th percentile per-packet one-way delay: 37.634 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 11.85 Mbit/s  
95th percentile per-packet one-way delay: 36.888 ms  
Loss rate: 0.00%  
-- Flow 2:  
Average throughput: 11.72 Mbit/s  
95th percentile per-packet one-way delay: 38.791 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 11.55 Mbit/s  
95th percentile per-packet one-way delay: 37.290 ms  
Loss rate: 0.00%

## Run 2: Report of Sprout — Data Link



### Run 3: Statistics of Sprout

Start at: 2018-11-15 05:38:58

End at: 2018-11-15 05:39:28

Local clock offset: 0.262 ms

Remote clock offset: 0.324 ms

# Below is generated by plot.py at 2018-11-15 06:59:22

# Datalink statistics

-- Total of 3 flows:

Average throughput: 23.34 Mbit/s

95th percentile per-packet one-way delay: 37.293 ms

Loss rate: 0.14%

-- Flow 1:

Average throughput: 11.77 Mbit/s

95th percentile per-packet one-way delay: 37.095 ms

Loss rate: 0.11%

-- Flow 2:

Average throughput: 11.68 Mbit/s

95th percentile per-packet one-way delay: 37.468 ms

Loss rate: 0.24%

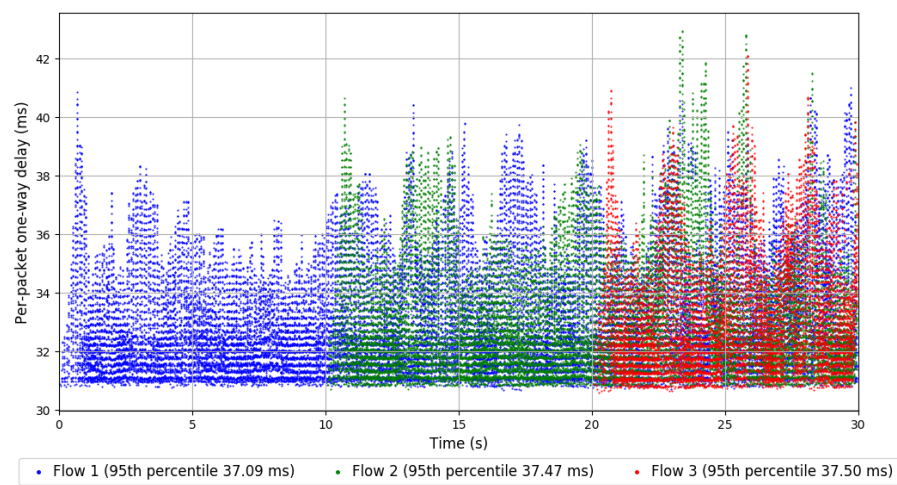
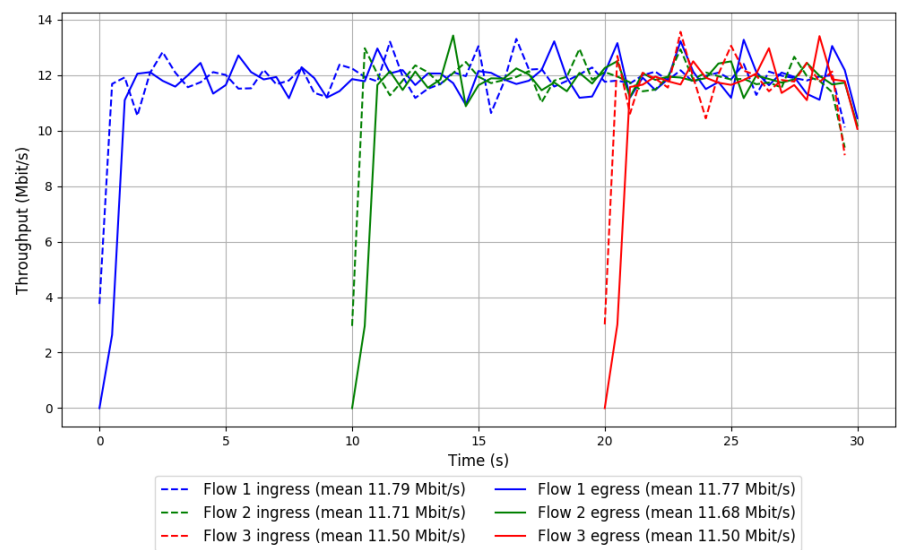
-- Flow 3:

Average throughput: 11.50 Mbit/s

95th percentile per-packet one-way delay: 37.504 ms

Loss rate: 0.00%

Run 3: Report of Sprout — Data Link

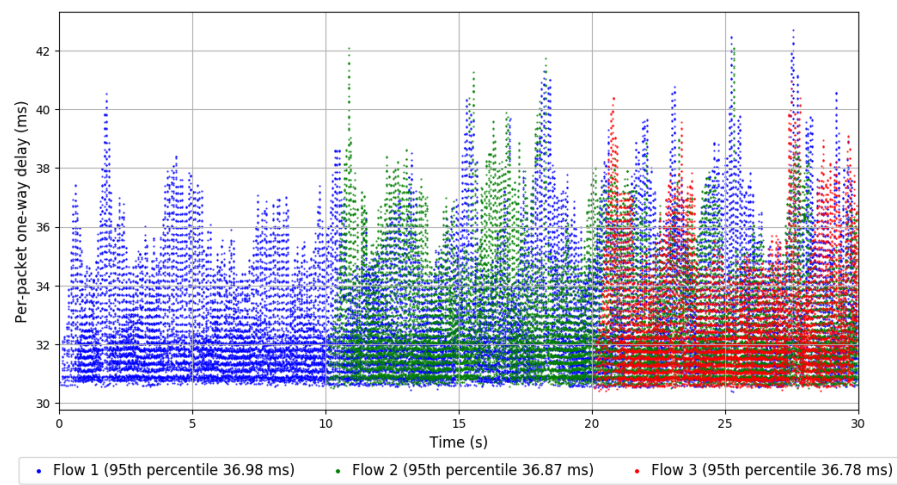
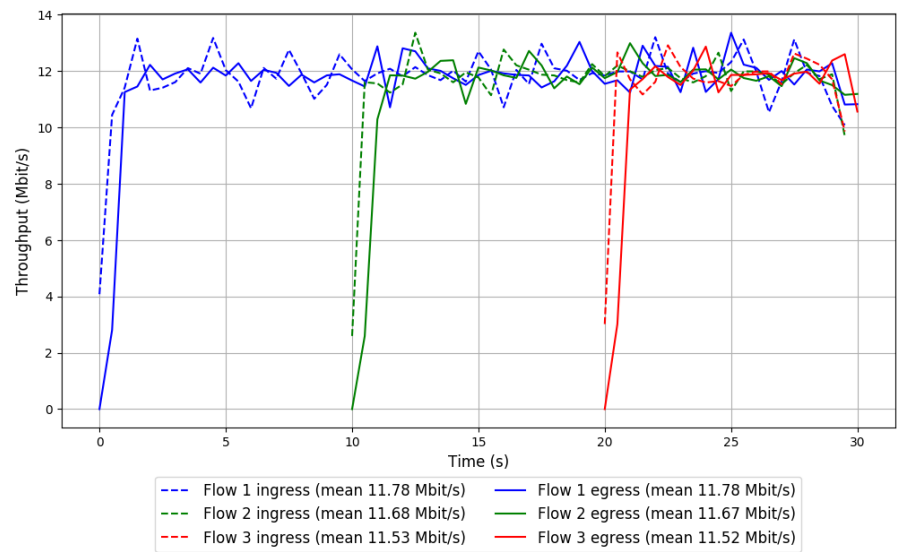


#### Run 4: Statistics of Sprout

Start at: 2018-11-15 06:03:42  
End at: 2018-11-15 06:04:12  
Local clock offset: -1.62 ms  
Remote clock offset: -1.504 ms

```
# Below is generated by plot.py at 2018-11-15 06:59:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 23.35 Mbit/s
95th percentile per-packet one-way delay: 36.910 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 11.78 Mbit/s
95th percentile per-packet one-way delay: 36.977 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 11.67 Mbit/s
95th percentile per-packet one-way delay: 36.871 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 11.52 Mbit/s
95th percentile per-packet one-way delay: 36.777 ms
Loss rate: 0.01%
```

Run 4: Report of Sprout — Data Link



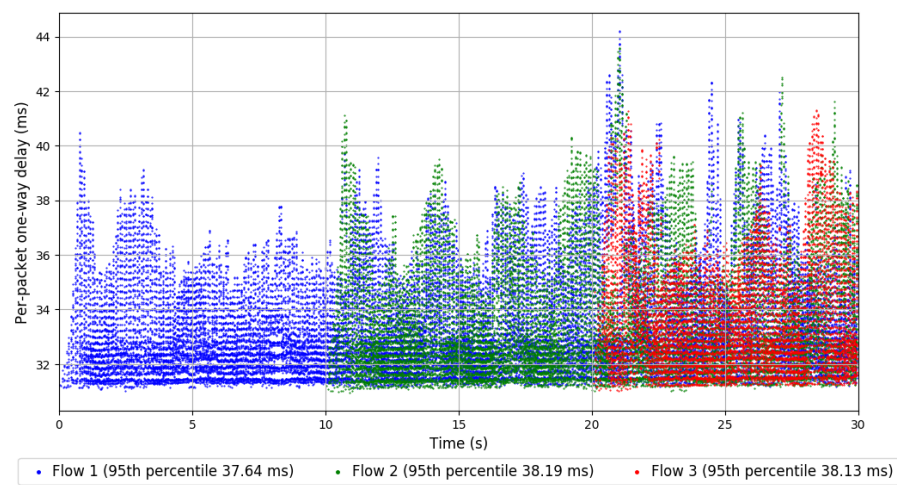
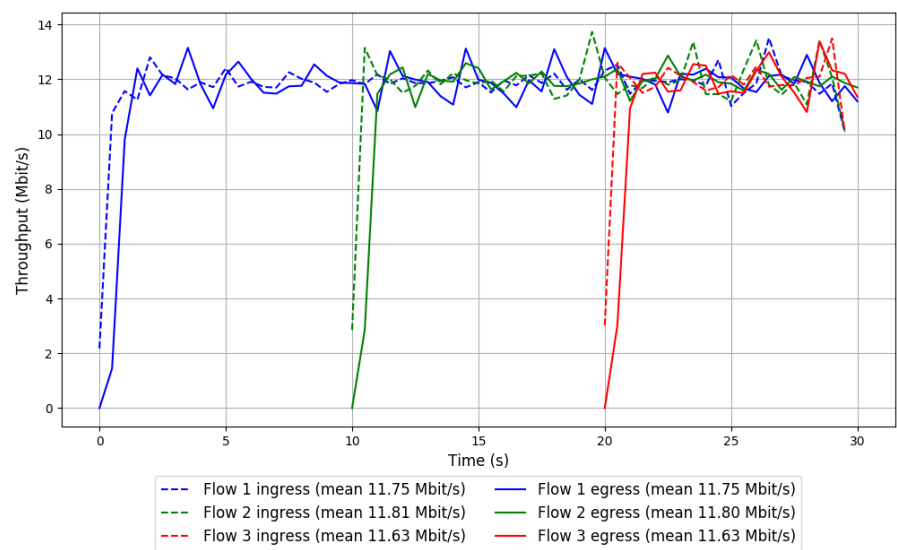


Run 5: Statistics of Sprout

Start at: 2018-11-15 06:28:14  
End at: 2018-11-15 06:28:44  
Local clock offset: -3.113 ms  
Remote clock offset: -3.041 ms

```
# Below is generated by plot.py at 2018-11-15 06:59:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 23.44 Mbit/s
95th percentile per-packet one-way delay: 37.915 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 11.75 Mbit/s
95th percentile per-packet one-way delay: 37.644 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 11.80 Mbit/s
95th percentile per-packet one-way delay: 38.187 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 11.63 Mbit/s
95th percentile per-packet one-way delay: 38.127 ms
Loss rate: 0.00%
```

Run 5: Report of Sprout — Data Link



Run 1: Statistics of TaoVA-100x

Start at: 2018-11-15 05:03:09

End at: 2018-11-15 05:03:39

Local clock offset: 0.382 ms

Remote clock offset: 1.521 ms

# Below is generated by plot.py at 2018-11-15 06:59:31

# Datalink statistics

-- Total of 3 flows:

Average throughput: 12.68 Mbit/s

95th percentile per-packet one-way delay: 31.055 ms

Loss rate: 78.69%

-- Flow 1:

Average throughput: 8.50 Mbit/s

95th percentile per-packet one-way delay: 31.104 ms

Loss rate: 83.88%

-- Flow 2:

Average throughput: 4.21 Mbit/s

95th percentile per-packet one-way delay: 31.023 ms

Loss rate: 32.29%

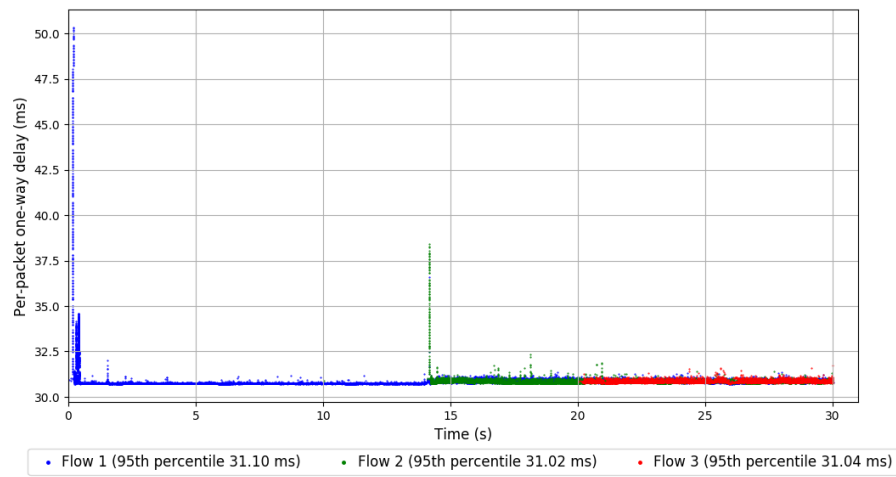
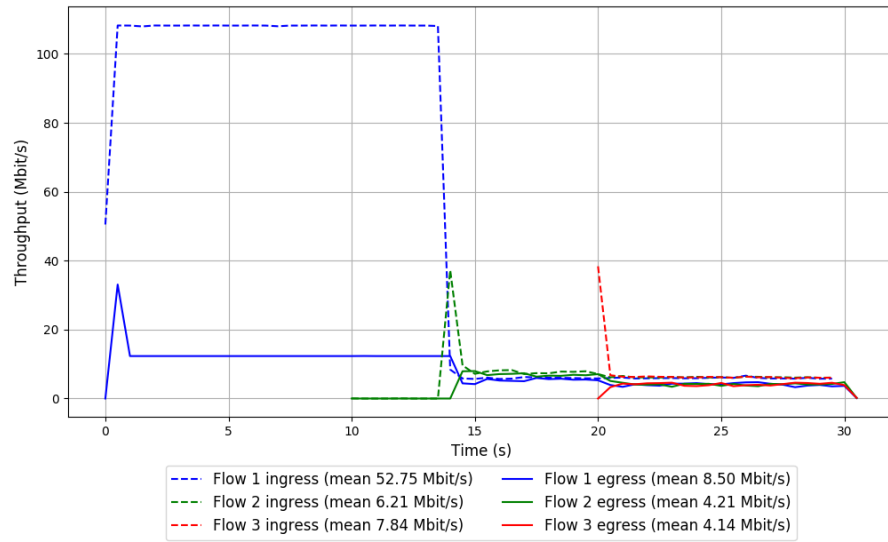
-- Flow 3:

Average throughput: 4.14 Mbit/s

95th percentile per-packet one-way delay: 31.039 ms

Loss rate: 47.25%

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



Run 2: Statistics of TaoVA-100x

Start at: 2018-11-15 05:27:53

End at: 2018-11-15 05:28:23

Local clock offset: 0.312 ms

Remote clock offset: 0.838 ms

# Below is generated by plot.py at 2018-11-15 06:59:33

# Datalink statistics

-- Total of 3 flows:

Average throughput: 12.68 Mbit/s

95th percentile per-packet one-way delay: 31.060 ms

Loss rate: 78.55%

-- Flow 1:

Average throughput: 8.48 Mbit/s

95th percentile per-packet one-way delay: 31.103 ms

Loss rate: 83.92%

-- Flow 2:

Average throughput: 4.16 Mbit/s

95th percentile per-packet one-way delay: 31.047 ms

Loss rate: 26.85%

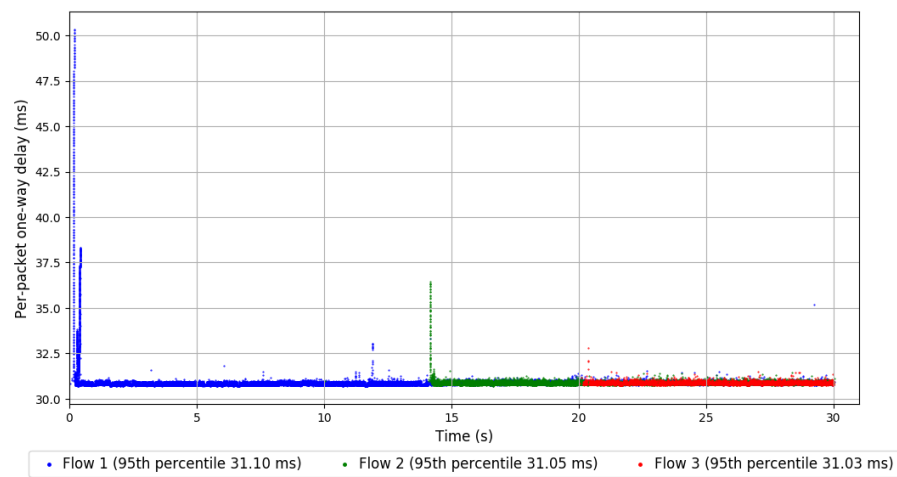
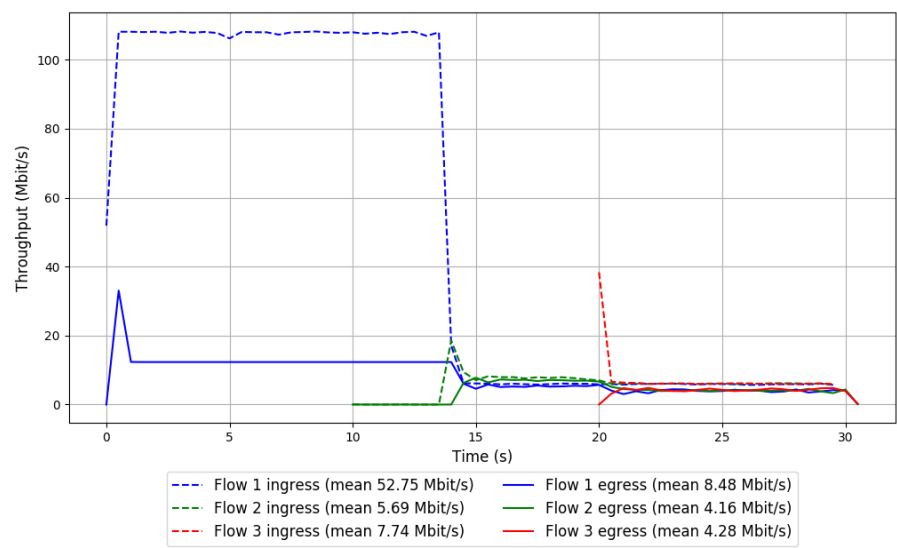
-- Flow 3:

Average throughput: 4.28 Mbit/s

95th percentile per-packet one-way delay: 31.030 ms

Loss rate: 44.70%

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

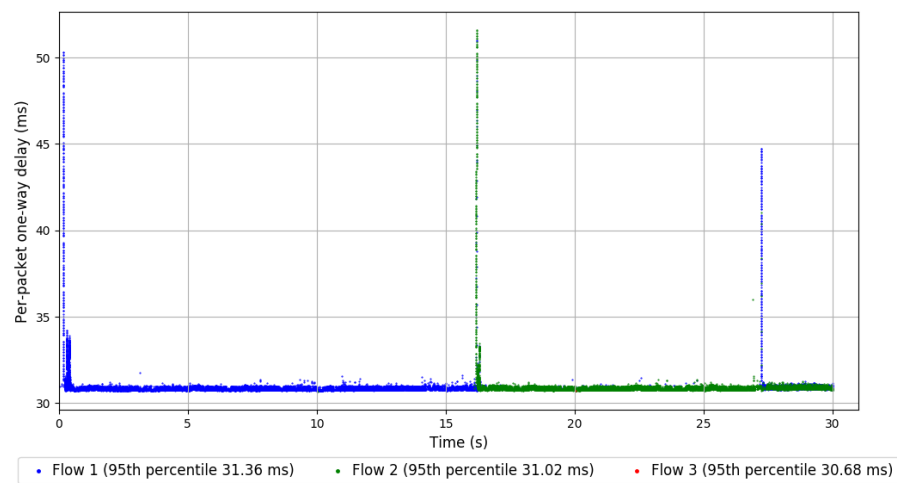
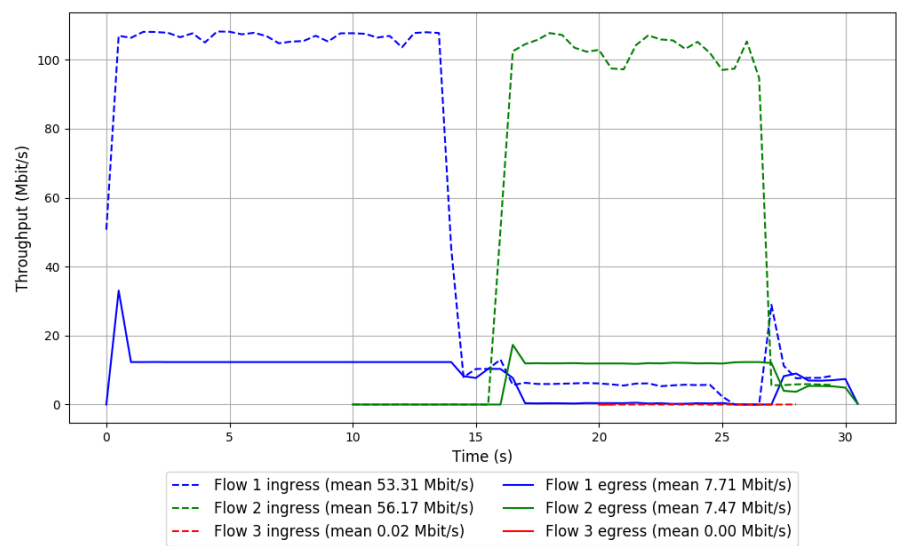


Run 3: Statistics of TaoVA-100x

Start at: 2018-11-15 05:52:48  
End at: 2018-11-15 05:53:18  
Local clock offset: 0.22 ms  
Remote clock offset: -0.623 ms

# Below is generated by plot.py at 2018-11-15 06:59:41  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 12.68 Mbit/s  
95th percentile per-packet one-way delay: 31.157 ms  
Loss rate: 86.02%  
-- Flow 1:  
Average throughput: 7.71 Mbit/s  
95th percentile per-packet one-way delay: 31.357 ms  
Loss rate: 85.54%  
-- Flow 2:  
Average throughput: 7.47 Mbit/s  
95th percentile per-packet one-way delay: 31.022 ms  
Loss rate: 86.71%  
-- Flow 3:  
Average throughput: 0.00 Mbit/s  
95th percentile per-packet one-way delay: 30.685 ms  
Loss rate: 99.16%

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



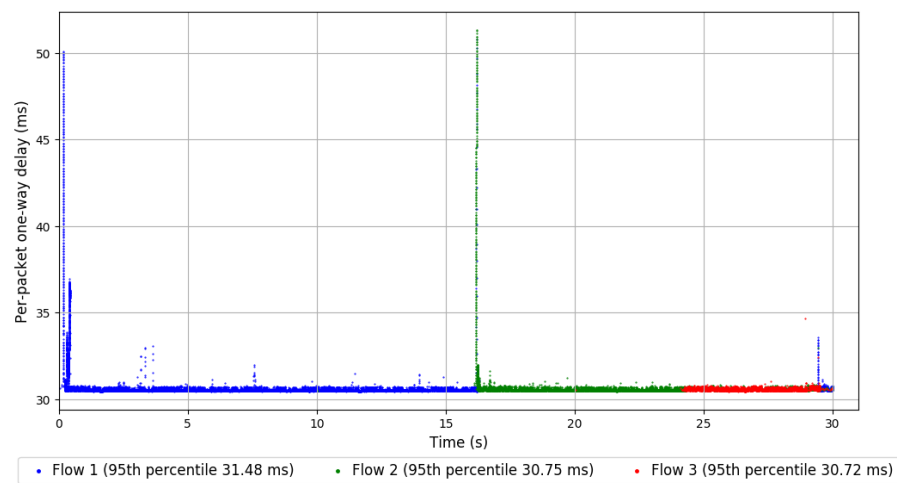
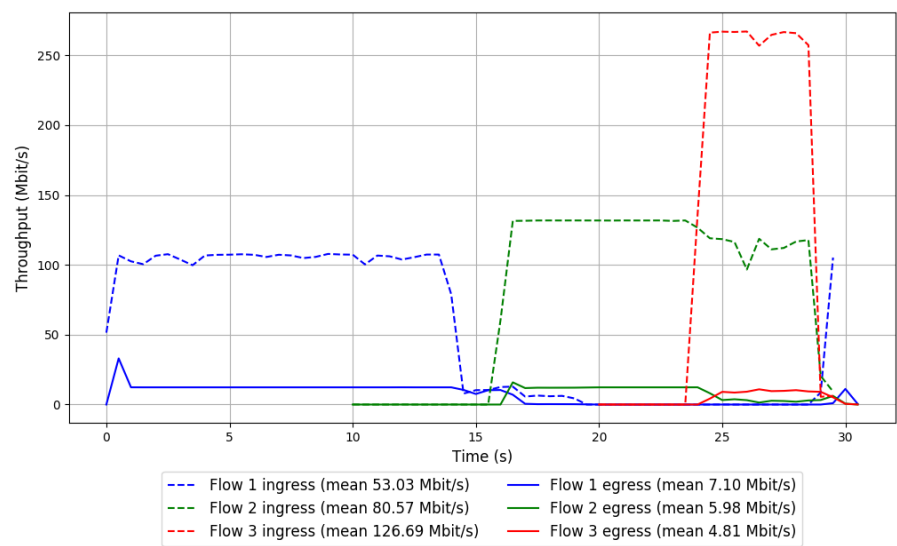


Run 4: Statistics of TaoVA-100x

Start at: 2018-11-15 06:17:20  
End at: 2018-11-15 06:17:50  
Local clock offset: -3.134 ms  
Remote clock offset: -2.663 ms

# Below is generated by plot.py at 2018-11-15 06:59:53  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 12.68 Mbit/s  
95th percentile per-packet one-way delay: 30.772 ms  
Loss rate: 91.48%  
-- Flow 1:  
Average throughput: 7.10 Mbit/s  
95th percentile per-packet one-way delay: 31.478 ms  
Loss rate: 86.61%  
-- Flow 2:  
Average throughput: 5.98 Mbit/s  
95th percentile per-packet one-way delay: 30.751 ms  
Loss rate: 92.58%  
-- Flow 3:  
Average throughput: 4.81 Mbit/s  
95th percentile per-packet one-way delay: 30.716 ms  
Loss rate: 96.21%

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

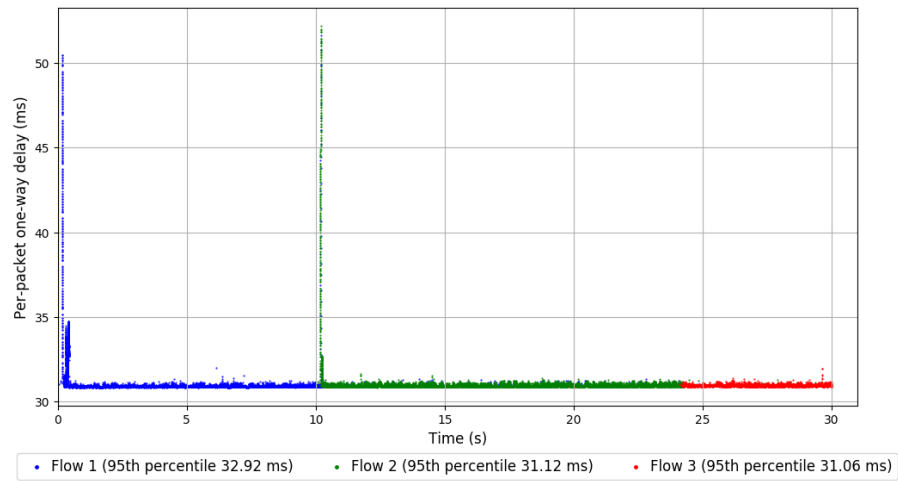
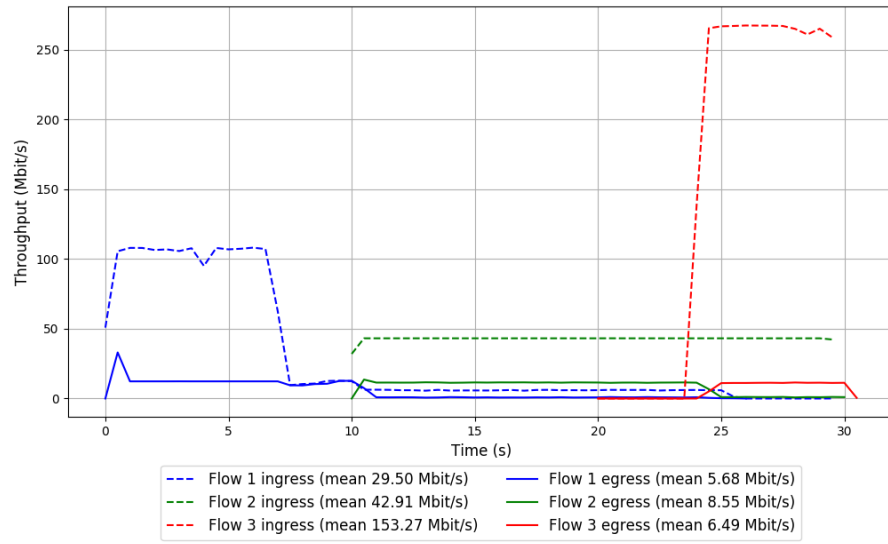


Run 5: Statistics of TaoVA-100x

Start at: 2018-11-15 06:41:52  
End at: 2018-11-15 06:42:22  
Local clock offset: -0.174 ms  
Remote clock offset: -3.174 ms

# Below is generated by plot.py at 2018-11-15 06:59:53  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 12.68 Mbit/s  
95th percentile per-packet one-way delay: 31.190 ms  
Loss rate: 88.33%  
-- Flow 1:  
Average throughput: 5.68 Mbit/s  
95th percentile per-packet one-way delay: 32.916 ms  
Loss rate: 83.38%  
-- Flow 2:  
Average throughput: 8.55 Mbit/s  
95th percentile per-packet one-way delay: 31.117 ms  
Loss rate: 80.10%  
-- Flow 3:  
Average throughput: 6.49 Mbit/s  
95th percentile per-packet one-way delay: 31.058 ms  
Loss rate: 95.77%

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



Run 1: Statistics of TCP Vegas

Start at: 2018-11-15 04:51:59

End at: 2018-11-15 04:52:29

Local clock offset: 0.645 ms

Remote clock offset: 1.193 ms

# Below is generated by plot.py at 2018-11-15 07:00:30

# Datalink statistics

-- Total of 3 flows:

Average throughput: 96.30 Mbit/s

95th percentile per-packet one-way delay: 41.696 ms

Loss rate: 0.27%

-- Flow 1:

Average throughput: 76.65 Mbit/s

95th percentile per-packet one-way delay: 42.001 ms

Loss rate: 0.34%

-- Flow 2:

Average throughput: 19.68 Mbit/s

95th percentile per-packet one-way delay: 39.792 ms

Loss rate: 0.00%

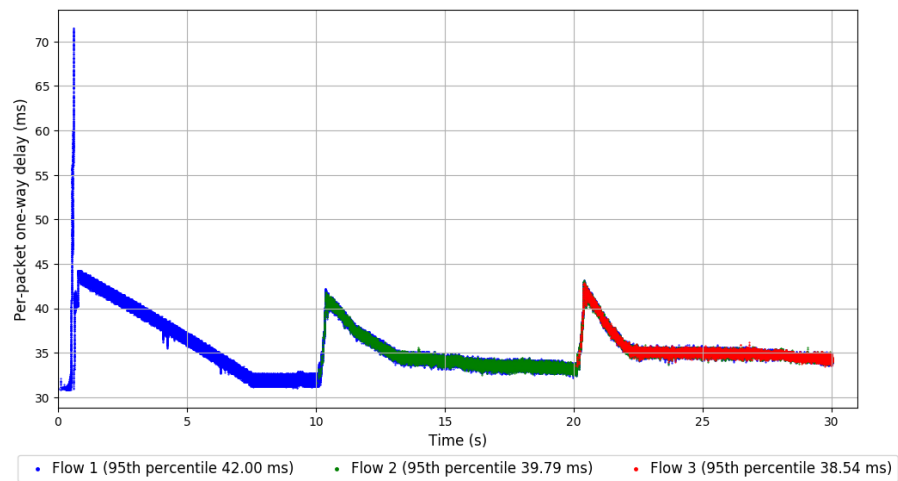
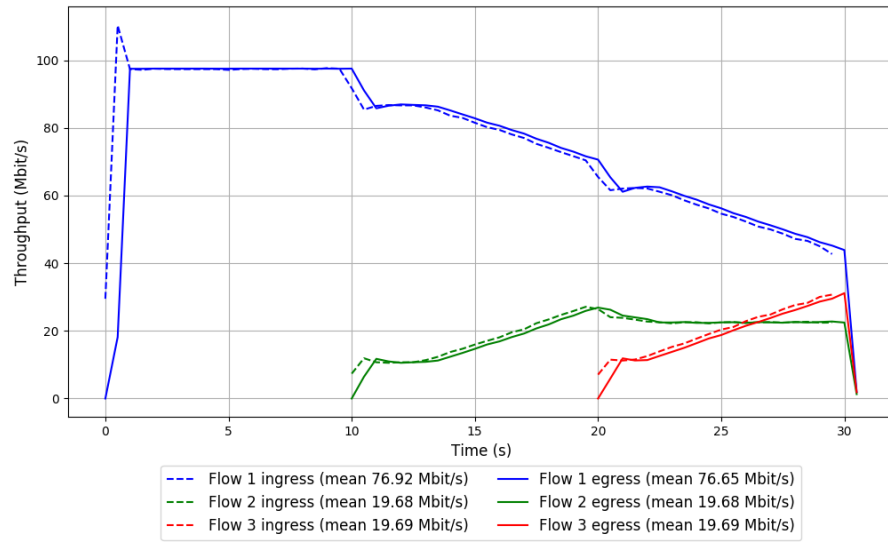
-- Flow 3:

Average throughput: 19.69 Mbit/s

95th percentile per-packet one-way delay: 38.540 ms

Loss rate: 0.00%

# Run 1: Report of TCP Vegas — Data Link



Run 2: Statistics of TCP Vegas

Start at: 2018-11-15 05:16:38

End at: 2018-11-15 05:17:08

Local clock offset: 0.277 ms

Remote clock offset: 1.352 ms

# Below is generated by plot.py at 2018-11-15 07:00:30

# Datalink statistics

-- Total of 3 flows:

Average throughput: 84.03 Mbit/s

95th percentile per-packet one-way delay: 41.973 ms

Loss rate: 0.55%

-- Flow 1:

Average throughput: 47.49 Mbit/s

95th percentile per-packet one-way delay: 42.892 ms

Loss rate: 0.68%

-- Flow 2:

Average throughput: 47.04 Mbit/s

95th percentile per-packet one-way delay: 37.659 ms

Loss rate: 0.44%

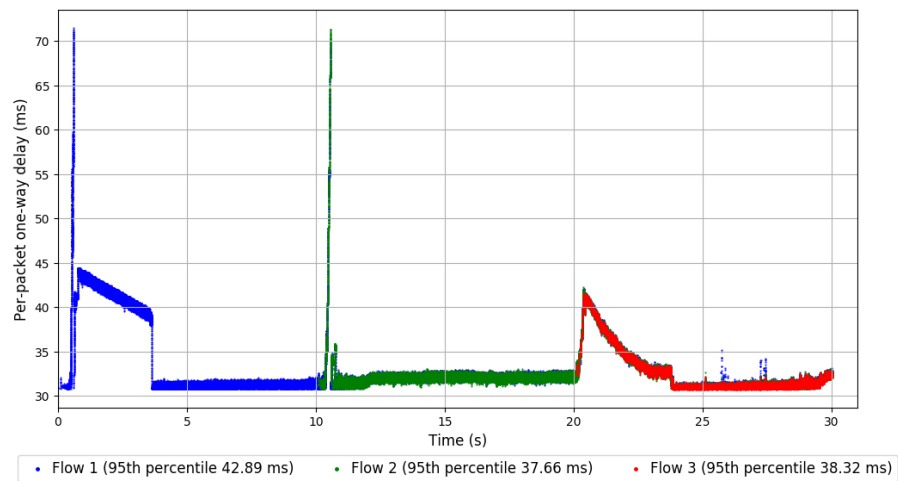
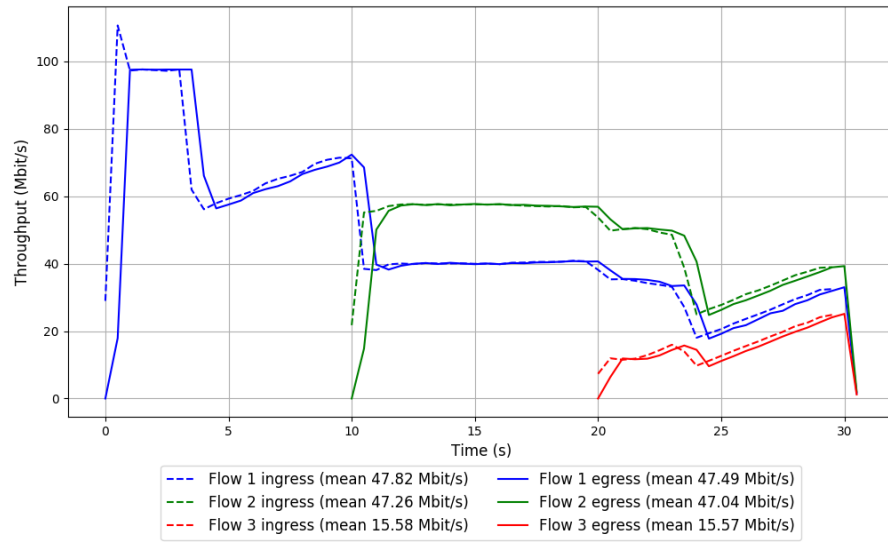
-- Flow 3:

Average throughput: 15.57 Mbit/s

95th percentile per-packet one-way delay: 38.323 ms

Loss rate: 0.04%

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





Run 3: Statistics of TCP Vegas

Start at: 2018-11-15 05:41:36

End at: 2018-11-15 05:42:06

Local clock offset: 0.245 ms

Remote clock offset: 0.19 ms

# Below is generated by plot.py at 2018-11-15 07:00:30

# Datalink statistics

-- Total of 3 flows:

Average throughput: 91.00 Mbit/s

95th percentile per-packet one-way delay: 41.712 ms

Loss rate: 0.32%

-- Flow 1:

Average throughput: 70.05 Mbit/s

95th percentile per-packet one-way delay: 42.204 ms

Loss rate: 0.41%

-- Flow 2:

Average throughput: 21.20 Mbit/s

95th percentile per-packet one-way delay: 37.403 ms

Loss rate: 0.04%

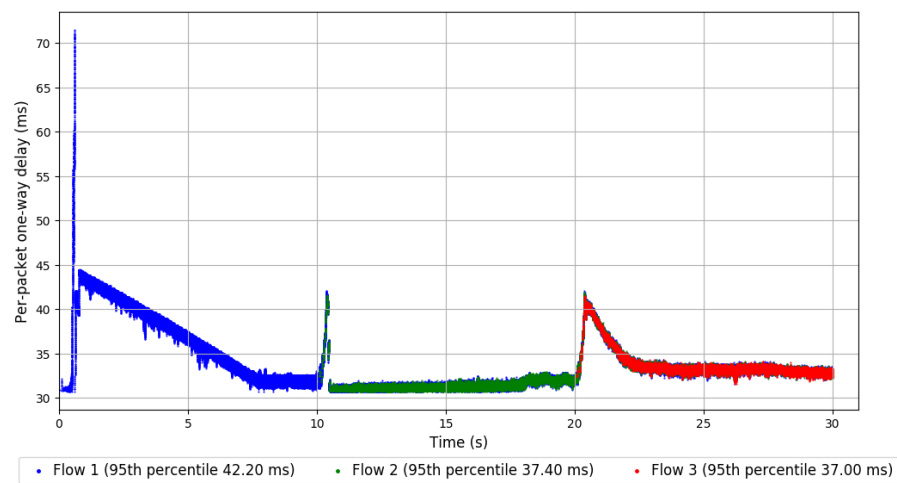
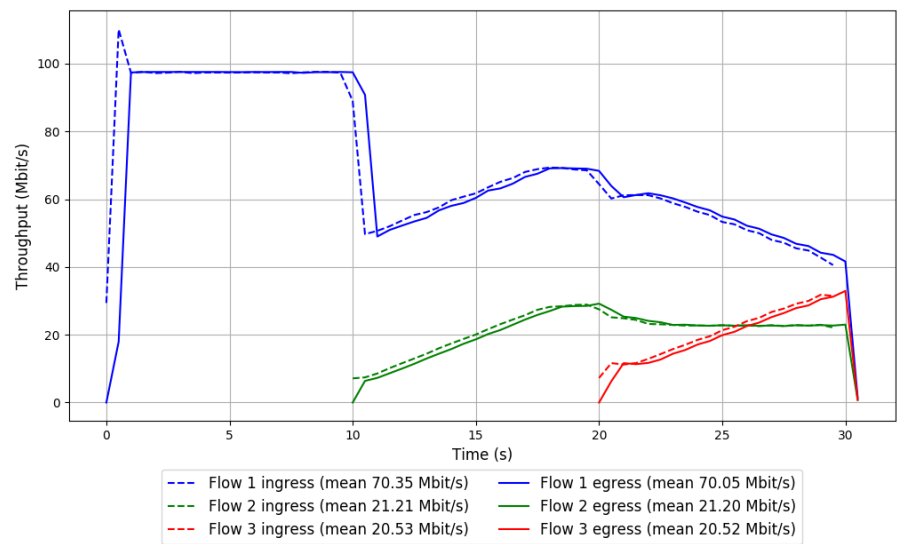
-- Flow 3:

Average throughput: 20.52 Mbit/s

95th percentile per-packet one-way delay: 36.998 ms

Loss rate: 0.01%

Run 3: Report of TCP Vegas — Data Link



Run 4: Statistics of TCP Vegas

Start at: 2018-11-15 06:06:19

End at: 2018-11-15 06:06:49

Local clock offset: -2.079 ms

Remote clock offset: -1.64 ms

# Below is generated by plot.py at 2018-11-15 07:00:43

# Datalink statistics

-- Total of 3 flows:

Average throughput: 96.26 Mbit/s

95th percentile per-packet one-way delay: 46.114 ms

Loss rate: 0.26%

-- Flow 1:

Average throughput: 76.24 Mbit/s

95th percentile per-packet one-way delay: 46.179 ms

Loss rate: 0.33%

-- Flow 2:

Average throughput: 21.26 Mbit/s

95th percentile per-packet one-way delay: 47.110 ms

Loss rate: 0.00%

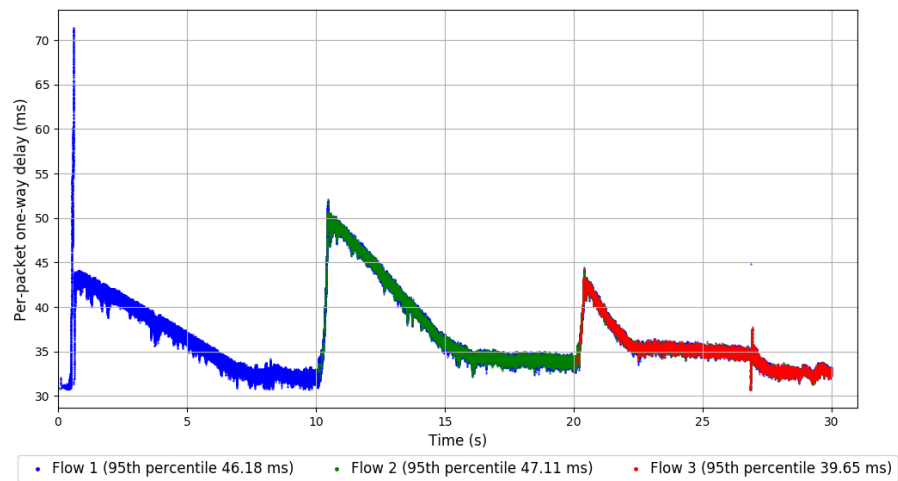
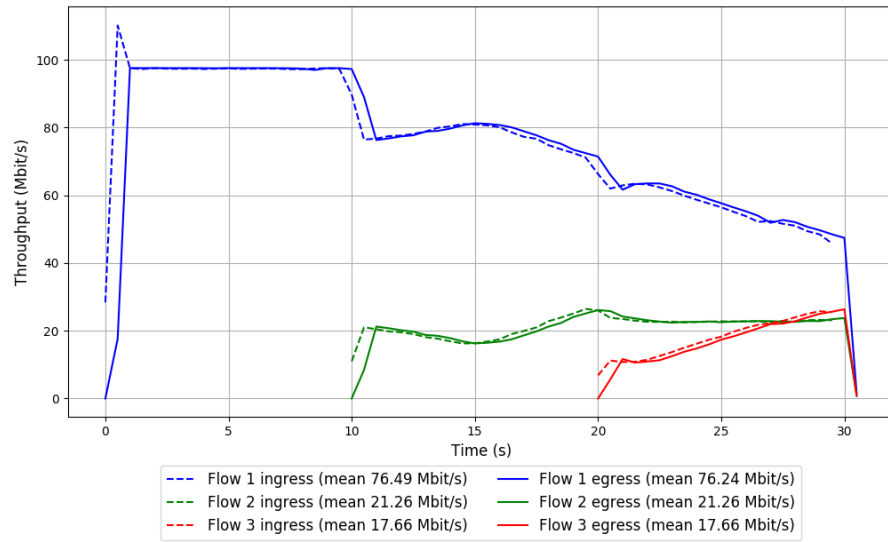
-- Flow 3:

Average throughput: 17.66 Mbit/s

95th percentile per-packet one-way delay: 39.651 ms

Loss rate: 0.00%

# Run 4: Report of TCP Vegas — Data Link

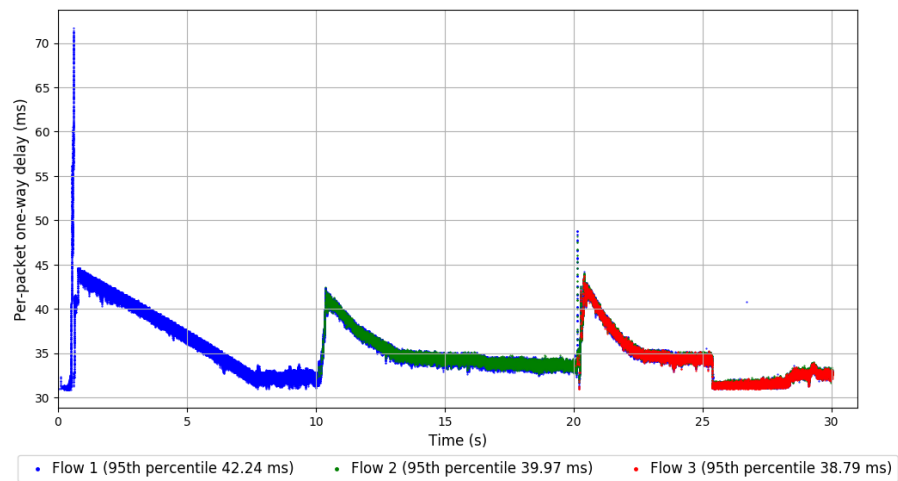
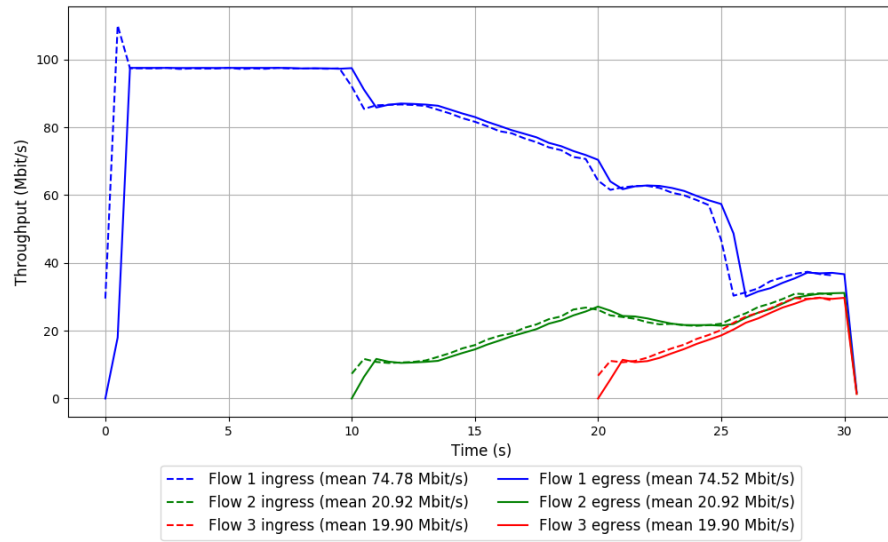


Run 5: Statistics of TCP Vegas

Start at: 2018-11-15 06:30:51  
End at: 2018-11-15 06:31:21  
Local clock offset: -2.201 ms  
Remote clock offset: -3.202 ms

# Below is generated by plot.py at 2018-11-15 07:00:46  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 95.07 Mbit/s  
95th percentile per-packet one-way delay: 41.889 ms  
Loss rate: 0.27%  
-- Flow 1:  
Average throughput: 74.52 Mbit/s  
95th percentile per-packet one-way delay: 42.244 ms  
Loss rate: 0.35%  
-- Flow 2:  
Average throughput: 20.92 Mbit/s  
95th percentile per-packet one-way delay: 39.970 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 19.90 Mbit/s  
95th percentile per-packet one-way delay: 38.794 ms  
Loss rate: 0.00%

# Run 5: Report of TCP Vegas — Data Link



Run 1: Statistics of Verus

Start at: 2018-11-15 05:01:46

End at: 2018-11-15 05:02:17

Local clock offset: 0.447 ms

Remote clock offset: 1.401 ms

# Below is generated by plot.py at 2018-11-15 07:00:46

# Datalink statistics

-- Total of 3 flows:

Average throughput: 64.39 Mbit/s

95th percentile per-packet one-way delay: 66.376 ms

Loss rate: 37.39%

-- Flow 1:

Average throughput: 43.77 Mbit/s

95th percentile per-packet one-way delay: 66.511 ms

Loss rate: 38.93%

-- Flow 2:

Average throughput: 28.25 Mbit/s

95th percentile per-packet one-way delay: 66.334 ms

Loss rate: 35.63%

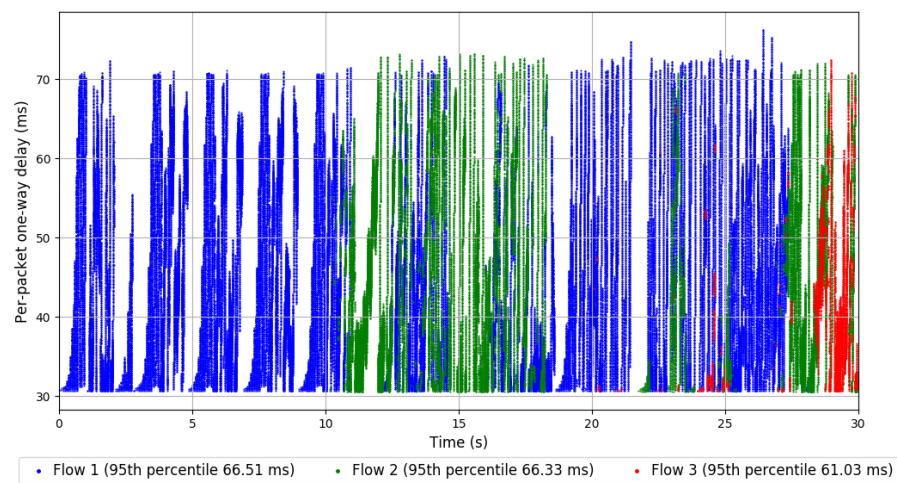
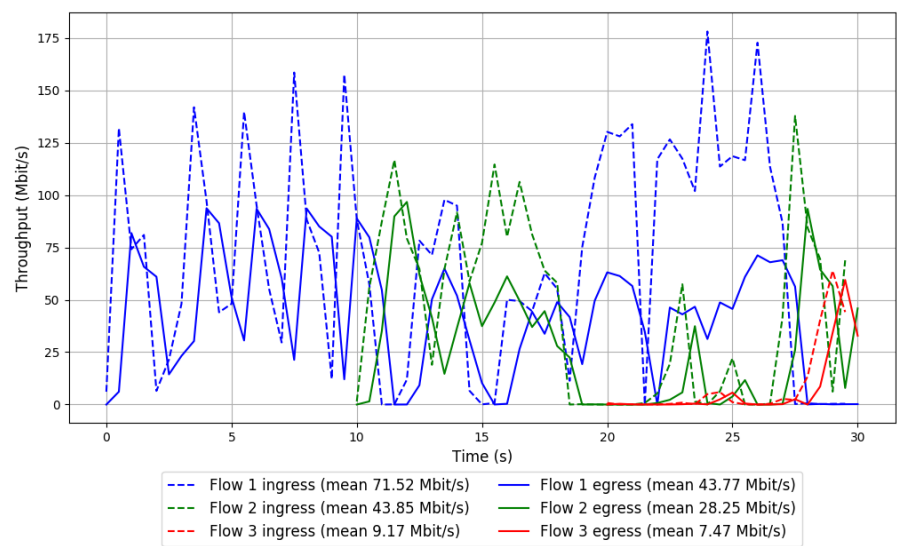
-- Flow 3:

Average throughput: 7.47 Mbit/s

95th percentile per-packet one-way delay: 61.031 ms

Loss rate: 18.57%

Run 1: Report of Verus — Data Link





Run 2: Statistics of Verus

Start at: 2018-11-15 05:26:30

End at: 2018-11-15 05:27:00

Local clock offset: 0.313 ms

Remote clock offset: 0.66 ms

# Below is generated by plot.py at 2018-11-15 07:00:46

# Datalink statistics

-- Total of 3 flows:

Average throughput: 64.94 Mbit/s

95th percentile per-packet one-way delay: 65.850 ms

Loss rate: 27.80%

-- Flow 1:

Average throughput: 33.57 Mbit/s

95th percentile per-packet one-way delay: 65.950 ms

Loss rate: 26.08%

-- Flow 2:

Average throughput: 35.07 Mbit/s

95th percentile per-packet one-way delay: 65.898 ms

Loss rate: 30.90%

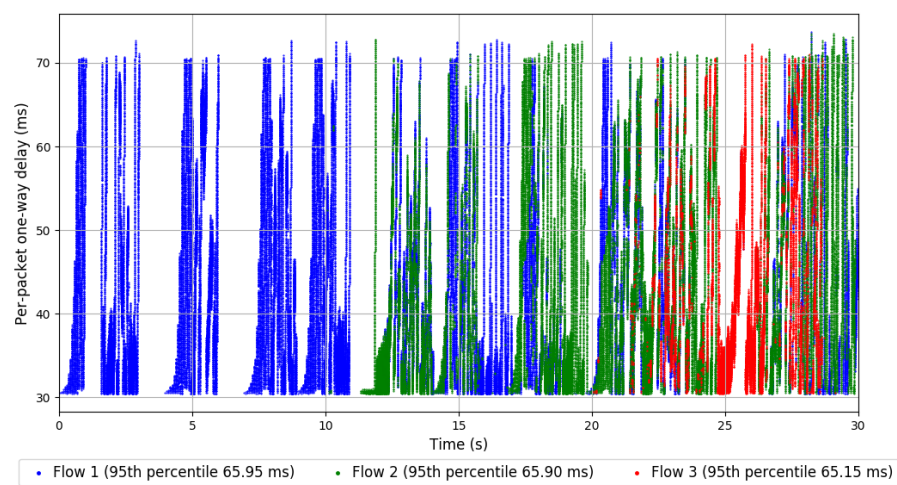
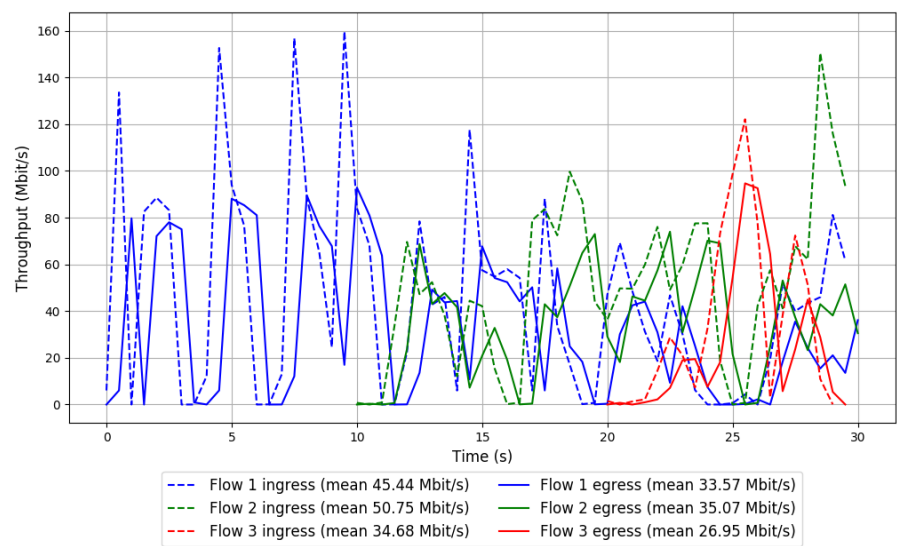
-- Flow 3:

Average throughput: 26.95 Mbit/s

95th percentile per-packet one-way delay: 65.151 ms

Loss rate: 25.45%

Run 2: Report of Verus — Data Link

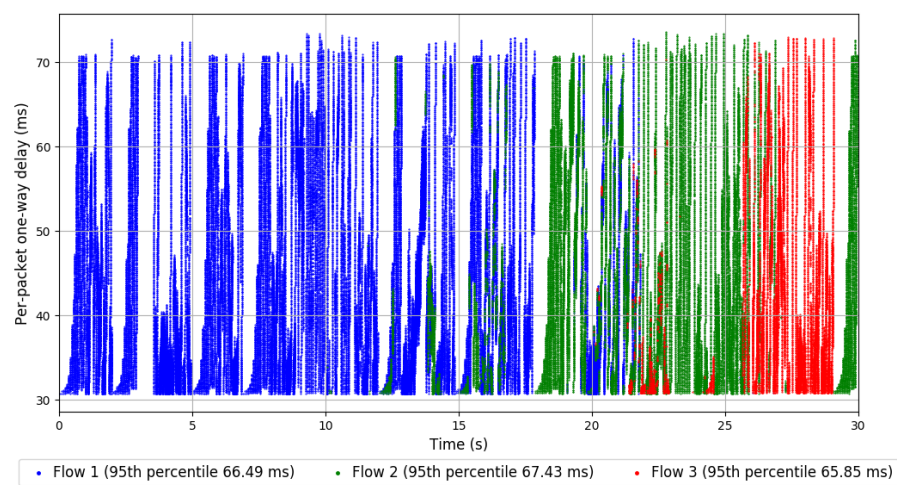
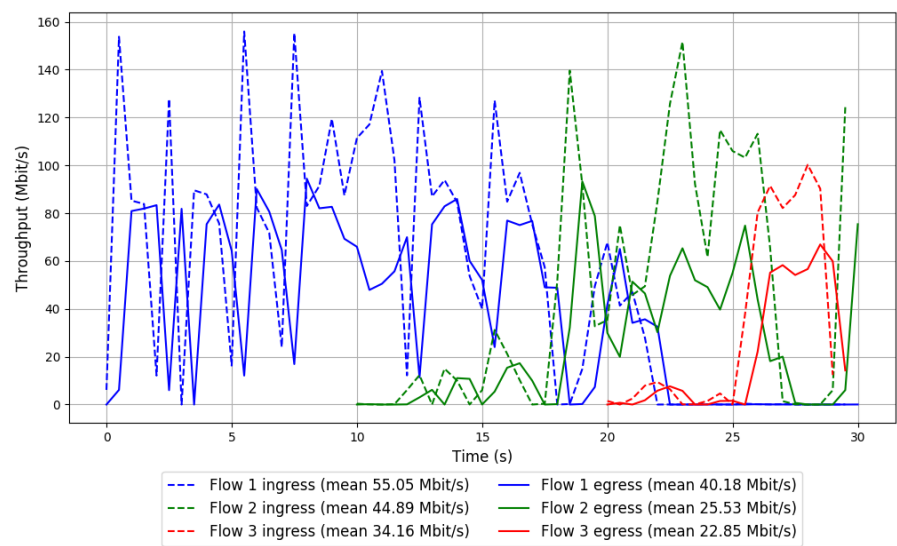


Run 3: Statistics of Verus

Start at: 2018-11-15 05:51:21  
End at: 2018-11-15 05:51:51  
Local clock offset: 0.222 ms  
Remote clock offset: -0.497 ms

# Below is generated by plot.py at 2018-11-15 07:00:52  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 63.64 Mbit/s  
95th percentile per-packet one-way delay: 66.707 ms  
Loss rate: 32.83%  
-- Flow 1:  
Average throughput: 40.18 Mbit/s  
95th percentile per-packet one-way delay: 66.487 ms  
Loss rate: 27.17%  
-- Flow 2:  
Average throughput: 25.53 Mbit/s  
95th percentile per-packet one-way delay: 67.431 ms  
Loss rate: 43.09%  
-- Flow 3:  
Average throughput: 22.85 Mbit/s  
95th percentile per-packet one-way delay: 65.853 ms  
Loss rate: 33.12%

Run 3: Report of Verus — Data Link

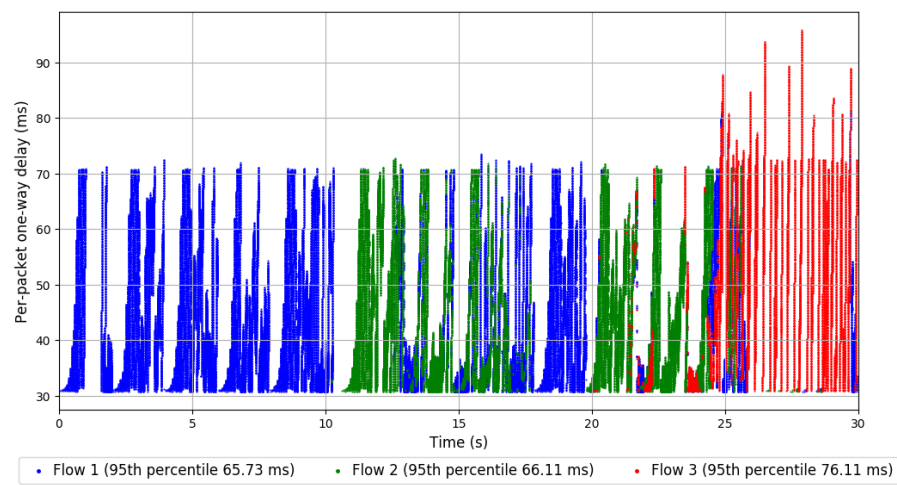
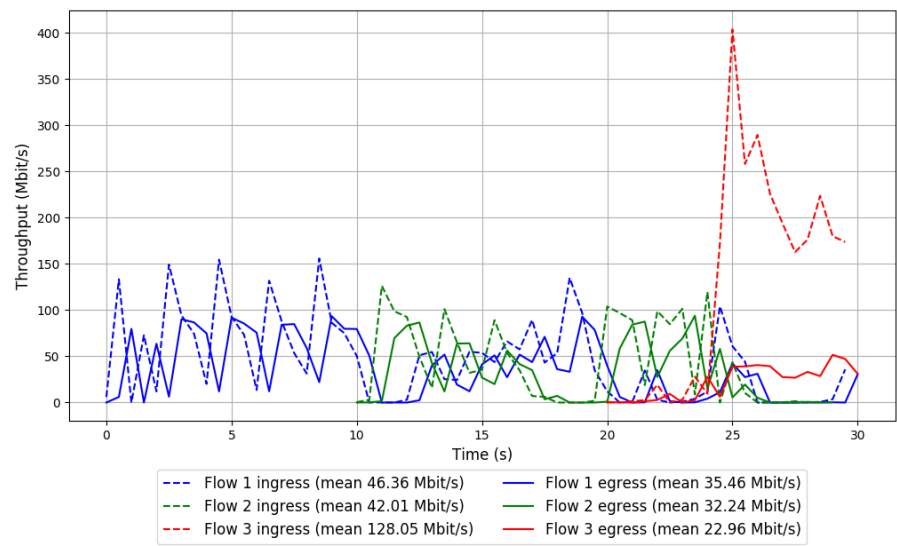


Run 4: Statistics of Verus

Start at: 2018-11-15 06:15:57  
End at: 2018-11-15 06:16:27  
Local clock offset: -3.053 ms  
Remote clock offset: -2.356 ms

# Below is generated by plot.py at 2018-11-15 07:01:21  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 63.06 Mbit/s  
95th percentile per-packet one-way delay: 67.420 ms  
Loss rate: 45.25%  
-- Flow 1:  
Average throughput: 35.46 Mbit/s  
95th percentile per-packet one-way delay: 65.727 ms  
Loss rate: 23.50%  
-- Flow 2:  
Average throughput: 32.24 Mbit/s  
95th percentile per-packet one-way delay: 66.109 ms  
Loss rate: 24.82%  
-- Flow 3:  
Average throughput: 22.96 Mbit/s  
95th percentile per-packet one-way delay: 76.111 ms  
Loss rate: 82.01%

Run 4: Report of Verus — Data Link

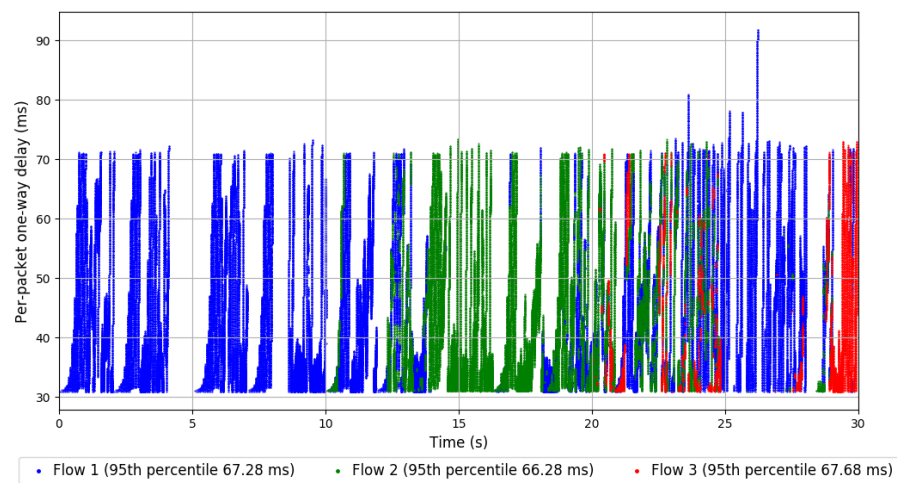
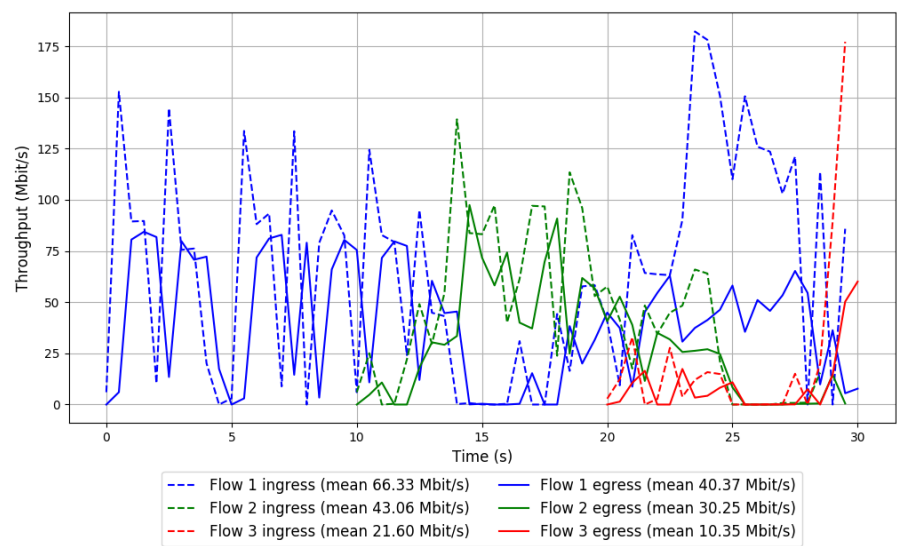


Run 5: Statistics of Verus

Start at: 2018-11-15 06:40:30  
End at: 2018-11-15 06:41:00  
Local clock offset: -0.36 ms  
Remote clock offset: -3.204 ms

# Below is generated by plot.py at 2018-11-15 07:01:24  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 62.78 Mbit/s  
95th percentile per-packet one-way delay: 67.037 ms  
Loss rate: 37.46%  
-- Flow 1:  
Average throughput: 40.37 Mbit/s  
95th percentile per-packet one-way delay: 67.279 ms  
Loss rate: 39.11%  
-- Flow 2:  
Average throughput: 30.25 Mbit/s  
95th percentile per-packet one-way delay: 66.284 ms  
Loss rate: 29.70%  
-- Flow 3:  
Average throughput: 10.35 Mbit/s  
95th percentile per-packet one-way delay: 67.680 ms  
Loss rate: 51.95%

Run 5: Report of Verus — Data Link





Run 1: Statistics of PCC-Vivace

Start at: 2018-11-15 04:47:57

End at: 2018-11-15 04:48:27

Local clock offset: 0.601 ms

Remote clock offset: 0.889 ms

# Below is generated by plot.py at 2018-11-15 07:01:38

# Datalink statistics

-- Total of 3 flows:

Average throughput: 85.76 Mbit/s

95th percentile per-packet one-way delay: 38.765 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 66.30 Mbit/s

95th percentile per-packet one-way delay: 41.659 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 21.28 Mbit/s

95th percentile per-packet one-way delay: 34.753 ms

Loss rate: 0.00%

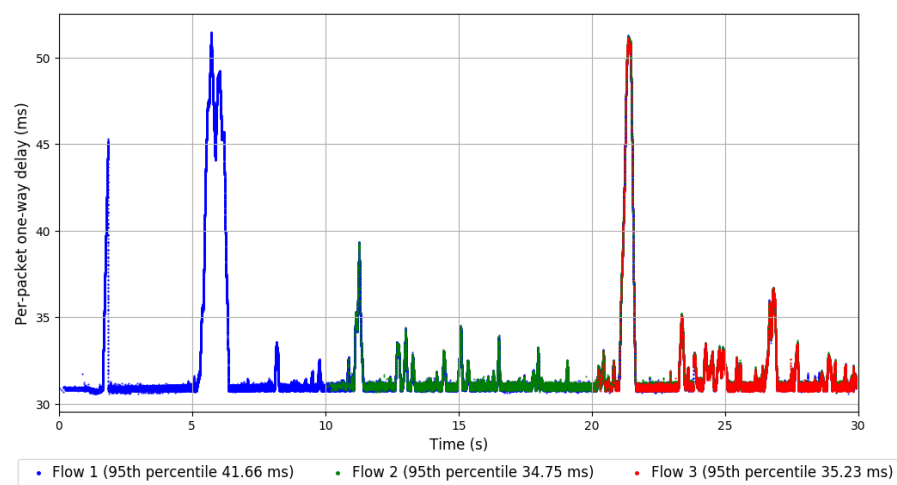
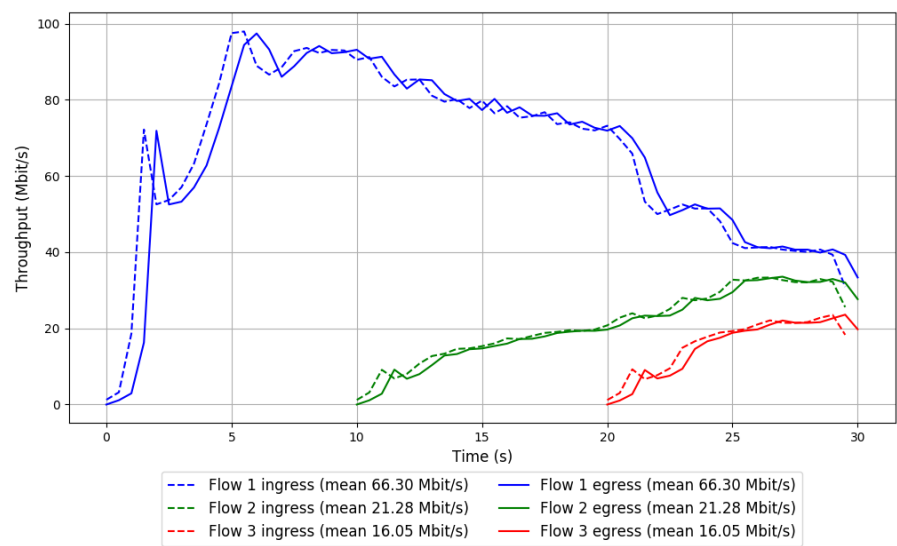
-- Flow 3:

Average throughput: 16.05 Mbit/s

95th percentile per-packet one-way delay: 35.227 ms

Loss rate: 0.00%

Run 1: Report of PCC-Vivace — Data Link



Run 2: Statistics of PCC-Vivace

Start at: 2018-11-15 05:12:36

End at: 2018-11-15 05:13:06

Local clock offset: 0.291 ms

Remote clock offset: 1.33 ms

# Below is generated by plot.py at 2018-11-15 07:01:43

# Datalink statistics

-- Total of 3 flows:

Average throughput: 84.50 Mbit/s

95th percentile per-packet one-way delay: 41.101 ms

Loss rate: 0.15%

-- Flow 1:

Average throughput: 62.85 Mbit/s

95th percentile per-packet one-way delay: 42.437 ms

Loss rate: 0.09%

-- Flow 2:

Average throughput: 25.46 Mbit/s

95th percentile per-packet one-way delay: 39.147 ms

Loss rate: 0.31%

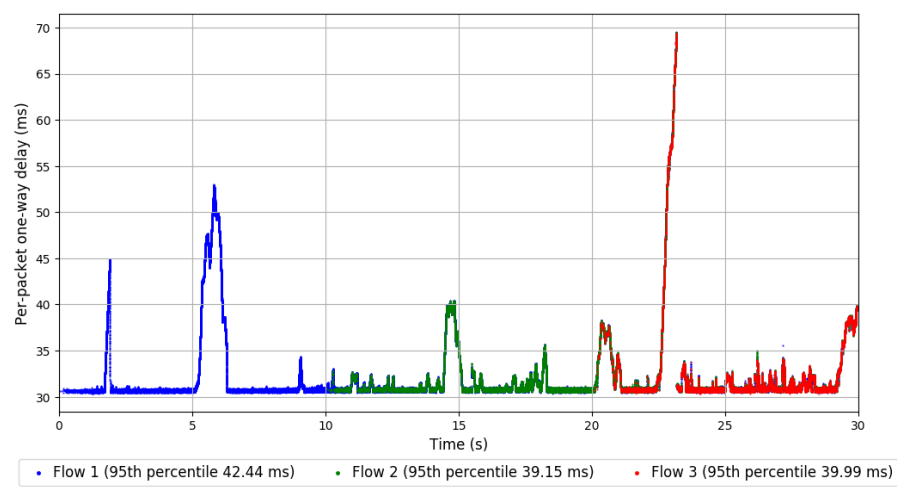
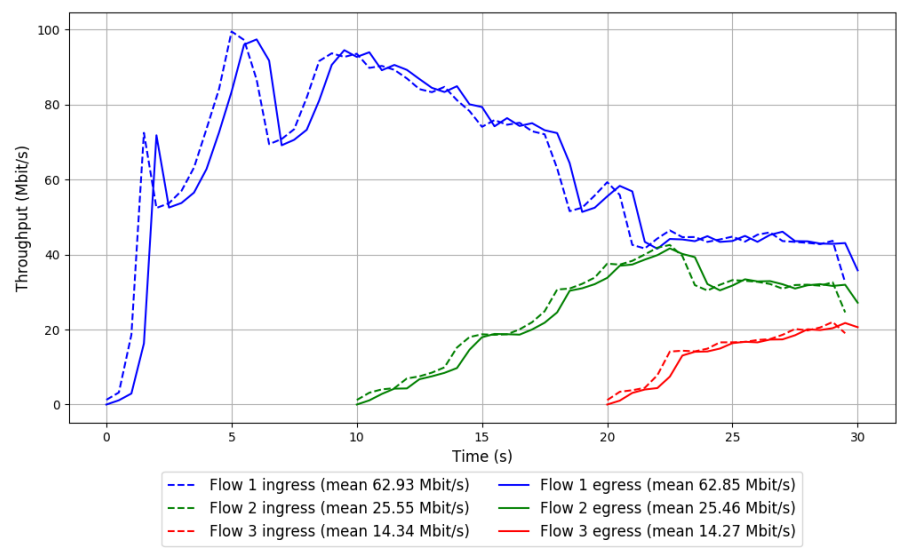
-- Flow 3:

Average throughput: 14.27 Mbit/s

95th percentile per-packet one-way delay: 39.986 ms

Loss rate: 0.39%

Run 2: Report of PCC-Vivace — Data Link



Run 3: Statistics of PCC-Vivace

Start at: 2018-11-15 05:37:34

End at: 2018-11-15 05:38:04

Local clock offset: 0.239 ms

Remote clock offset: 0.489 ms

# Below is generated by plot.py at 2018-11-15 07:01:44

# Datalink statistics

-- Total of 3 flows:

Average throughput: 84.03 Mbit/s

95th percentile per-packet one-way delay: 52.318 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 61.67 Mbit/s

95th percentile per-packet one-way delay: 50.790 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 24.86 Mbit/s

95th percentile per-packet one-way delay: 57.356 ms

Loss rate: 0.00%

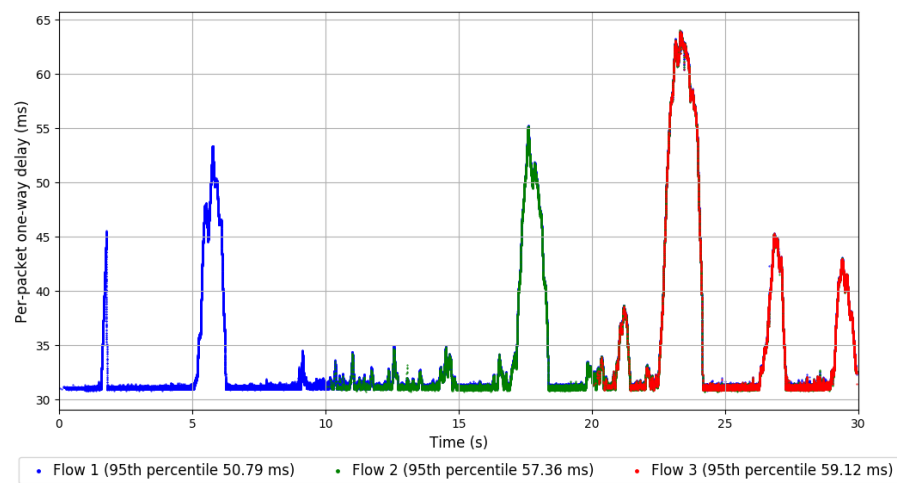
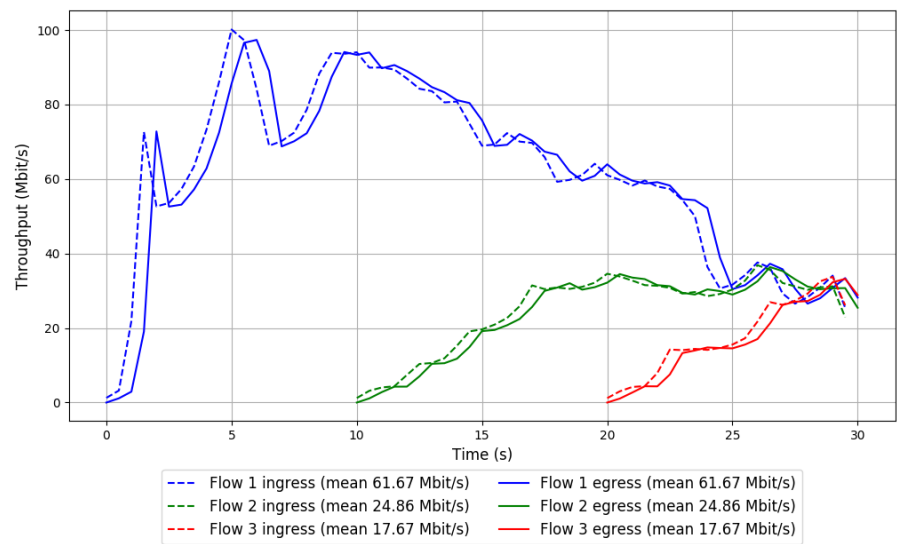
-- Flow 3:

Average throughput: 17.67 Mbit/s

95th percentile per-packet one-way delay: 59.117 ms

Loss rate: 0.00%

Run 3: Report of PCC-Vivace — Data Link



Run 4: Statistics of PCC-Vivace

Start at: 2018-11-15 06:02:18

End at: 2018-11-15 06:02:48

Local clock offset: -1.36 ms

Remote clock offset: -1.39 ms

# Below is generated by plot.py at 2018-11-15 07:01:45

# Datalink statistics

-- Total of 3 flows:

Average throughput: 86.30 Mbit/s

95th percentile per-packet one-way delay: 47.257 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 62.73 Mbit/s

95th percentile per-packet one-way delay: 46.761 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 28.57 Mbit/s

95th percentile per-packet one-way delay: 47.937 ms

Loss rate: 0.00%

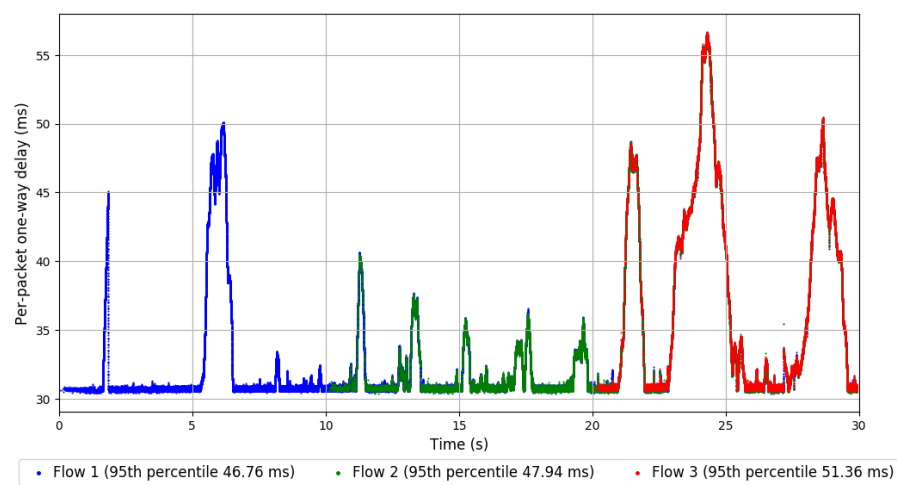
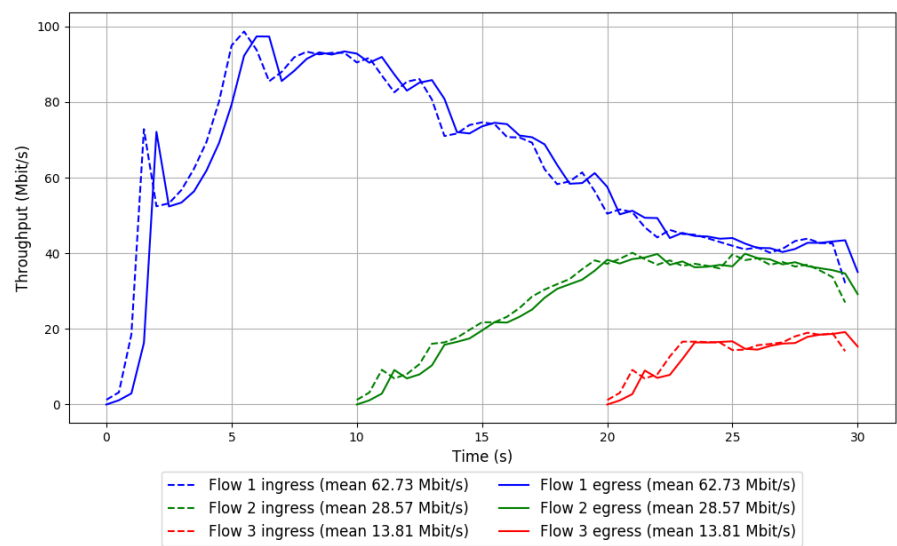
-- Flow 3:

Average throughput: 13.81 Mbit/s

95th percentile per-packet one-way delay: 51.359 ms

Loss rate: 0.00%

Run 4: Report of PCC-Vivace — Data Link



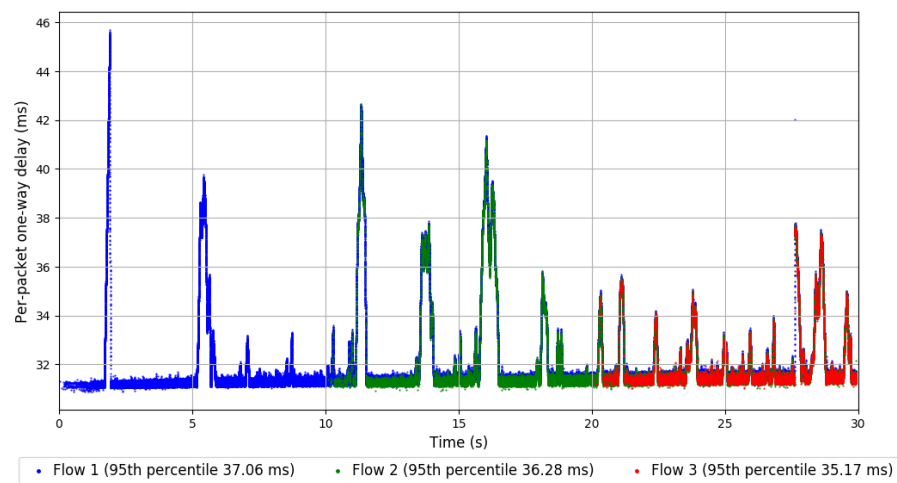
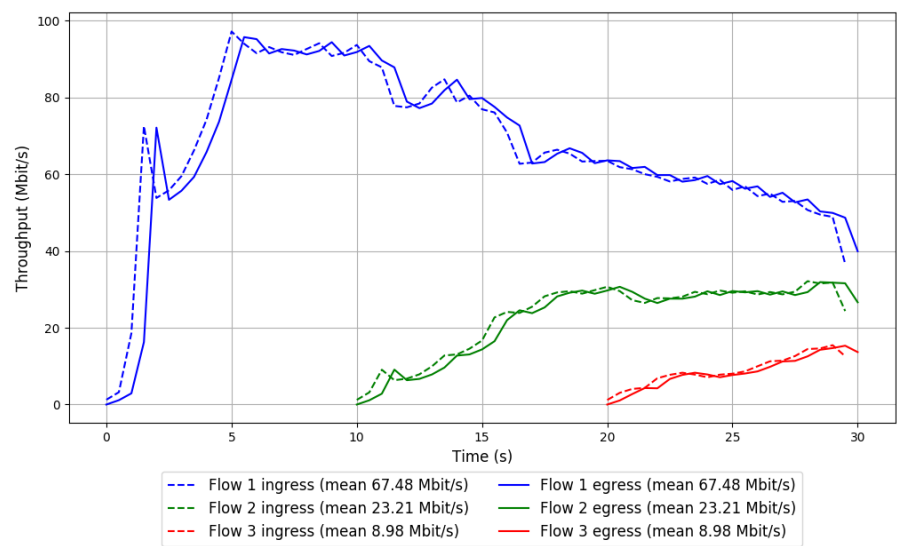


Run 5: Statistics of PCC-Vivace

Start at: 2018-11-15 06:26:49  
End at: 2018-11-15 06:27:19  
Local clock offset: -3.679 ms  
Remote clock offset: -3.035 ms

# Below is generated by plot.py at 2018-11-15 07:01:45  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 85.88 Mbit/s  
95th percentile per-packet one-way delay: 36.859 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 67.48 Mbit/s  
95th percentile per-packet one-way delay: 37.062 ms  
Loss rate: 0.00%  
-- Flow 2:  
Average throughput: 23.21 Mbit/s  
95th percentile per-packet one-way delay: 36.282 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 8.98 Mbit/s  
95th percentile per-packet one-way delay: 35.167 ms  
Loss rate: 0.00%

Run 5: Report of PCC-Vivace — Data Link



Run 1: Statistics of WebRTC media

Start at: 2018-11-15 05:11:18

End at: 2018-11-15 05:11:48

Local clock offset: 0.299 ms

Remote clock offset: 1.62 ms

# Below is generated by plot.py at 2018-11-15 07:01:45

# Datalink statistics

-- Total of 3 flows:

Average throughput: 3.50 Mbit/s

95th percentile per-packet one-way delay: 32.242 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 1.93 Mbit/s

95th percentile per-packet one-way delay: 31.887 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 1.22 Mbit/s

95th percentile per-packet one-way delay: 32.417 ms

Loss rate: 0.00%

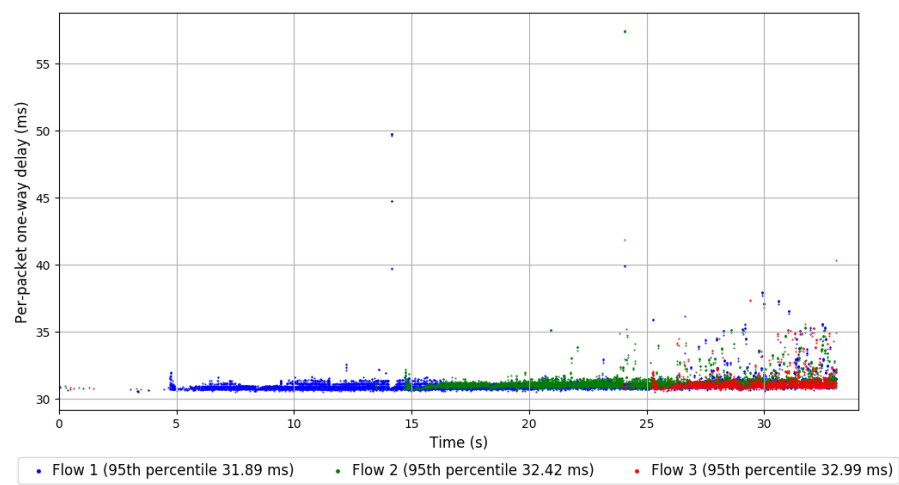
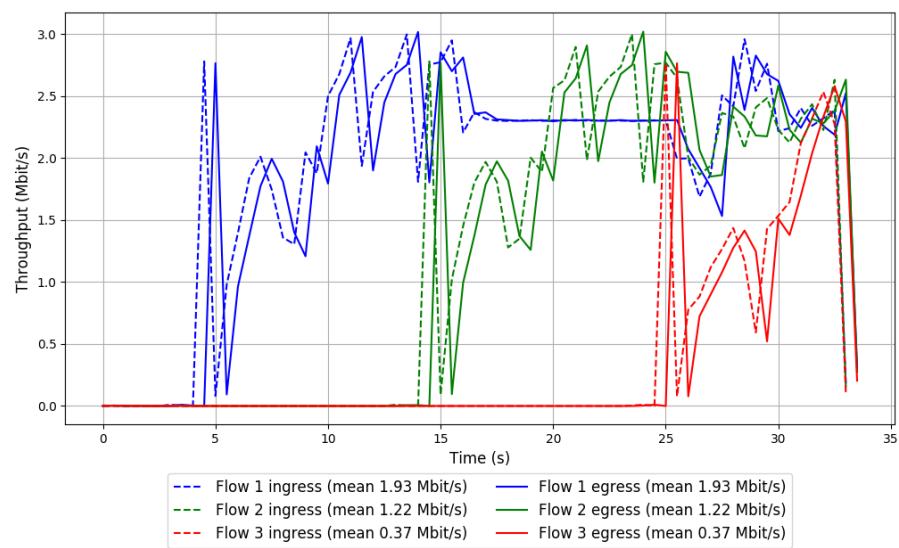
-- Flow 3:

Average throughput: 0.37 Mbit/s

95th percentile per-packet one-way delay: 32.989 ms

Loss rate: 0.00%

Run 1: Report of WebRTC media — Data Link



Run 2: Statistics of WebRTC media

Start at: 2018-11-15 05:36:16

End at: 2018-11-15 05:36:46

Local clock offset: 0.241 ms

Remote clock offset: 0.368 ms

# Below is generated by plot.py at 2018-11-15 07:01:45

# Datalink statistics

-- Total of 3 flows:

Average throughput: 3.58 Mbit/s

95th percentile per-packet one-way delay: 31.672 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 1.93 Mbit/s

95th percentile per-packet one-way delay: 31.557 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 1.24 Mbit/s

95th percentile per-packet one-way delay: 31.857 ms

Loss rate: 0.00%

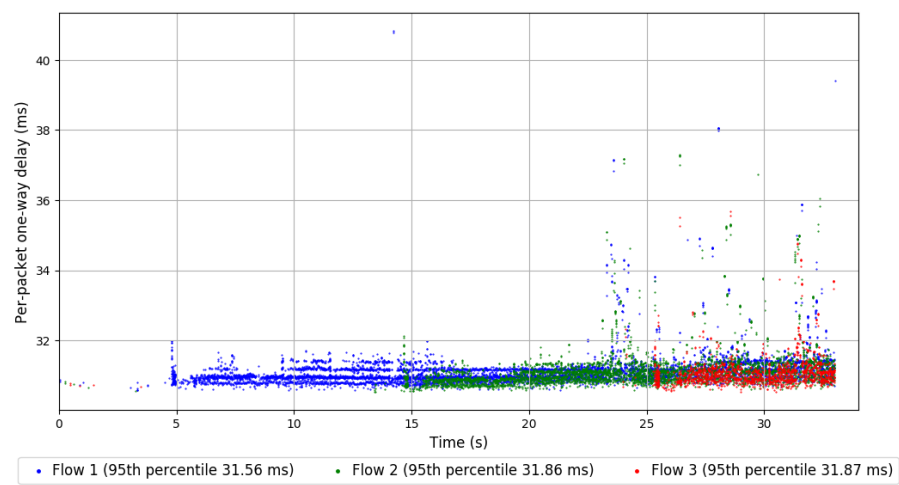
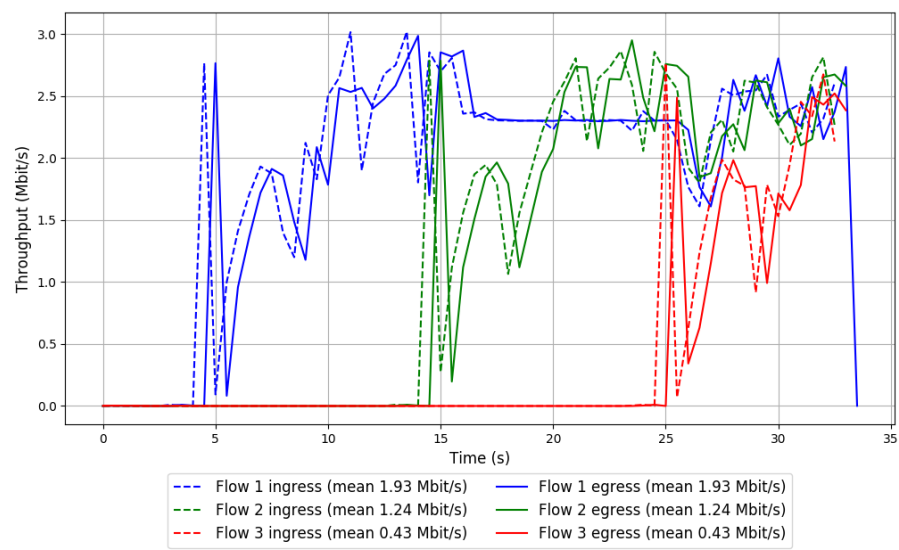
-- Flow 3:

Average throughput: 0.43 Mbit/s

95th percentile per-packet one-way delay: 31.872 ms

Loss rate: 0.00%

Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

Start at: 2018-11-15 06:01:00

End at: 2018-11-15 06:01:30

Local clock offset: -1.046 ms

Remote clock offset: -1.27 ms

# Below is generated by plot.py at 2018-11-15 07:01:45

# Datalink statistics

-- Total of 3 flows:

Average throughput: 3.56 Mbit/s

95th percentile per-packet one-way delay: 32.075 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 1.93 Mbit/s

95th percentile per-packet one-way delay: 31.649 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 1.25 Mbit/s

95th percentile per-packet one-way delay: 32.396 ms

Loss rate: 0.00%

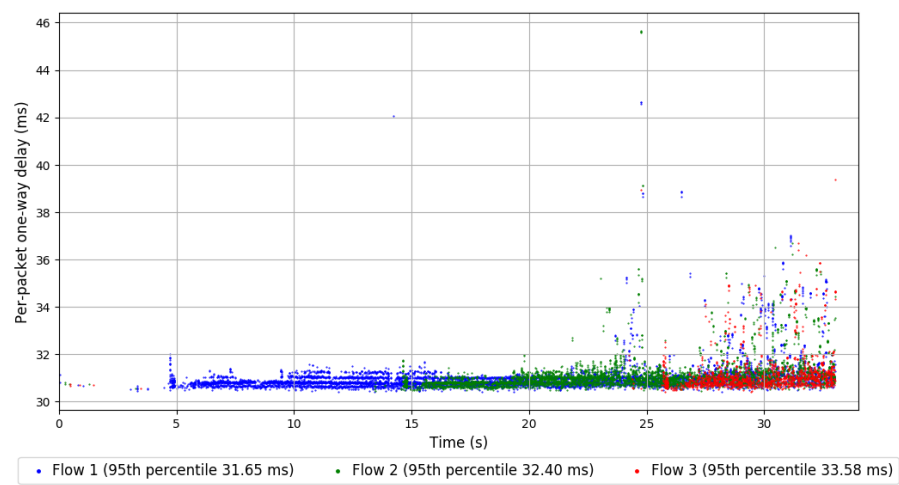
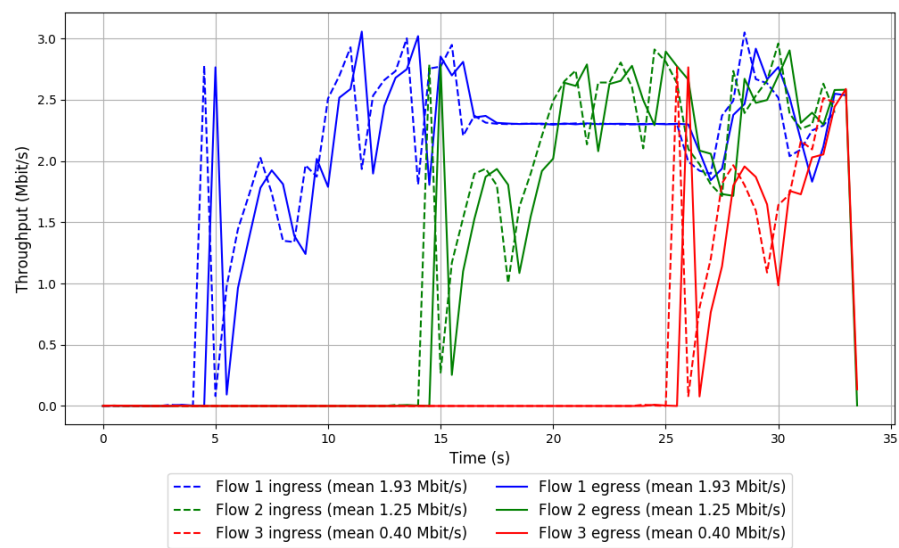
-- Flow 3:

Average throughput: 0.40 Mbit/s

95th percentile per-packet one-way delay: 33.581 ms

Loss rate: 0.00%

Run 3: Report of WebRTC media — Data Link





Run 4: Statistics of WebRTC media

Start at: 2018-11-15 06:25:31

End at: 2018-11-15 06:26:01

Local clock offset: -3.634 ms

Remote clock offset: -2.92 ms

# Below is generated by plot.py at 2018-11-15 07:01:45

# Datalink statistics

-- Total of 3 flows:

Average throughput: 3.59 Mbit/s

95th percentile per-packet one-way delay: 32.276 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 1.93 Mbit/s

95th percentile per-packet one-way delay: 32.111 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 1.24 Mbit/s

95th percentile per-packet one-way delay: 32.269 ms

Loss rate: 0.00%

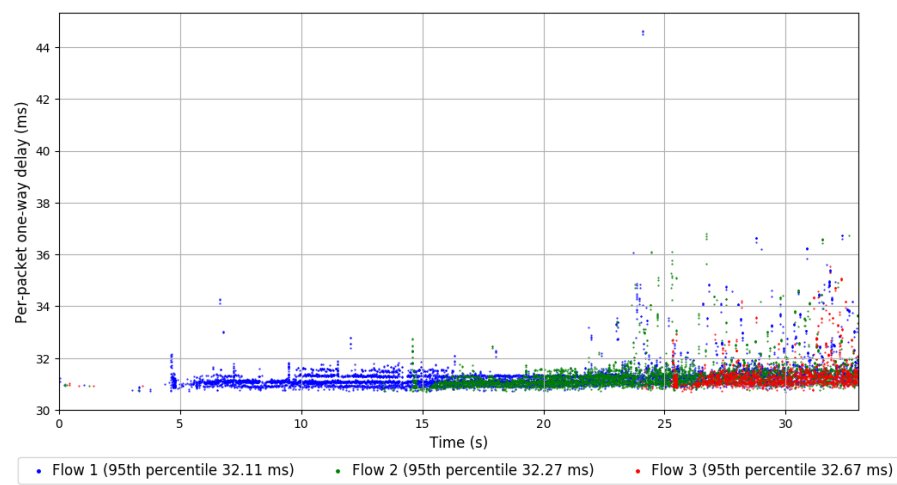
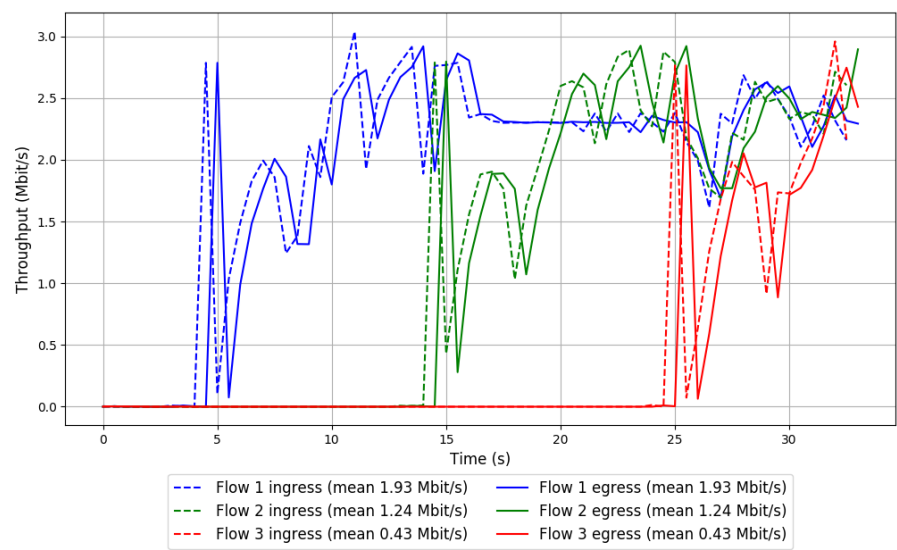
-- Flow 3:

Average throughput: 0.43 Mbit/s

95th percentile per-packet one-way delay: 32.669 ms

Loss rate: 0.00%

Run 4: Report of WebRTC media — Data Link



Run 5: Statistics of WebRTC media

Start at: 2018-11-15 06:50:00  
End at: 2018-11-15 06:50:30  
Local clock offset: 0.351 ms  
Remote clock offset: -3.368 ms

# Below is generated by plot.py at 2018-11-15 07:01:45  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 3.57 Mbit/s  
95th percentile per-packet one-way delay: 32.510 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 1.92 Mbit/s  
95th percentile per-packet one-way delay: 31.988 ms  
Loss rate: 0.00%  
-- Flow 2:  
Average throughput: 1.24 Mbit/s  
95th percentile per-packet one-way delay: 32.808 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 0.41 Mbit/s  
95th percentile per-packet one-way delay: 33.792 ms  
Loss rate: 0.00%

Run 5: Report of WebRTC media — Data Link

