

## Pantheon Report

Generated at 2018-11-15 19:44:47 (UTC).

Data path: GCE Tokyo on `ens4` (*remote*) → GCE Iowa on `ens4` (*local*).

Repeated the test of 18 congestion control schemes 5 times.

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

NTP offsets were measured against `time.google.com` and have been applied to correct the timestamps in logs.

### System info:

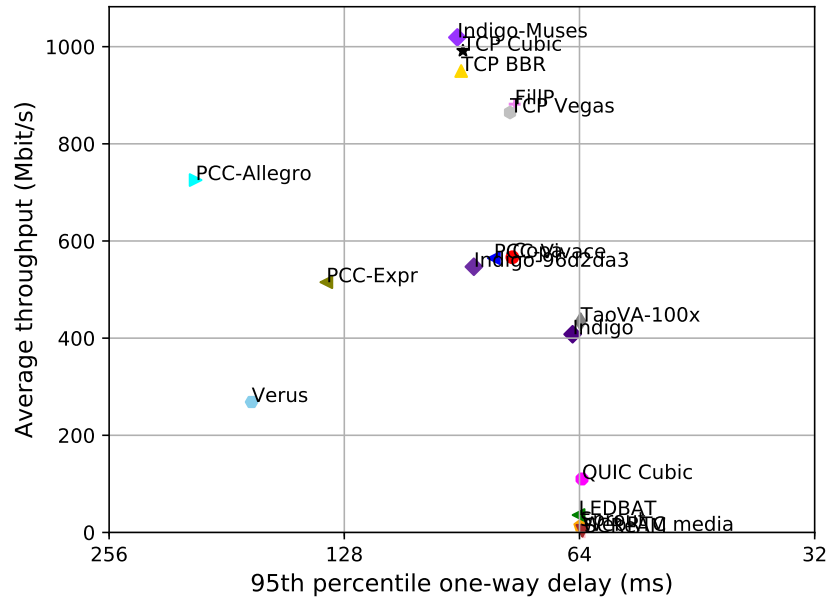
```
Linux 4.15.0-1021-gcp
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
```

### Git summary:

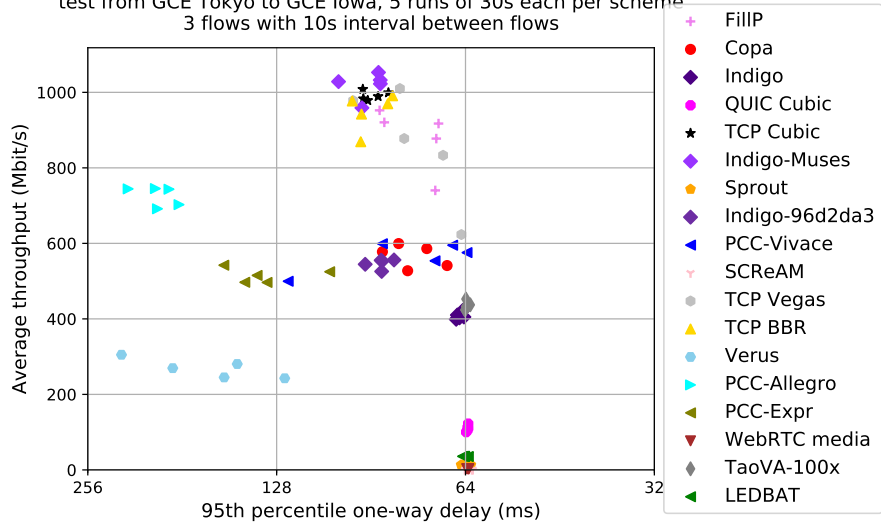
```
branch: muses @ 794ca3866981572cb73700a276691acf79c60f2b
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecd90c077e64d
third_party/indigo-96d2da3 @ 8413272d46f8aa0bcb967ed7048b6a8f994abb95
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 GCE Tokyo to GCE Iowa, 5 runs of 30s each per scheme  
 3 flows with 10s interval between flows (mean of all runs by scheme)



test from GCE Tokyo to GCE Iowa, 5 runs of 30s each per scheme  
 3 flows with 10s interval between flows



scheme	# runs	mean avg tput (Mbit/s)			mean 95th-%ile delay (ms)			mean loss rate (%)		
		flow 1	flow 2	flow 3	flow 1	flow 2	flow 3	flow 1	flow 2	flow 3
TCP BBR	5	498.55	453.57	454.69	90.96	89.82	89.34	0.48	0.79	1.55
Copa	5	289.12	289.75	257.27	76.03	85.80	75.35	0.44	0.68	1.47
TCP Cubic	5	514.62	500.17	438.51	85.74	86.89	94.80	0.46	0.71	1.62
FillP	5	548.31	368.31	270.43	84.34	68.76	66.73	0.34	0.59	1.46
Indigo	5	214.16	206.04	169.46	65.08	66.44	65.14	0.43	0.66	1.48
Indigo-96d2da3	5	282.31	275.85	250.61	86.61	87.58	91.43	0.42	0.71	1.39
LEDBAT	5	23.26	15.34	7.47	64.19	64.14	63.79	0.84	1.28	2.59
Indigo-Muses	5	568.19	495.24	376.01	92.14	91.94	87.73	0.40	0.75	1.82
PCC-Allegro	5	415.52	339.59	259.10	200.99	179.89	133.30	4.56	2.84	2.42
PCC-Expr	5	292.29	240.64	193.00	123.24	117.71	99.45	0.84	0.88	2.38
QUIC Cubic	5	59.89	51.22	47.00	63.43	63.48	63.45	0.48	0.78	1.09
SCReAM	5	0.22	0.22	0.22	63.10	62.98	62.90	0.38	0.65	1.09
Sprout	5	6.79	6.66	6.37	63.98	63.75	63.77	0.43	0.46	1.11
TaoVA-100x	5	224.60	211.92	208.23	63.52	63.88	64.45	0.41	0.58	1.20
TCP Vegas	5	440.98	460.60	356.23	80.54	75.49	73.69	0.37	0.61	1.30
Verus	5	143.02	159.96	59.72	152.02	152.30	71.49	1.86	1.15	1.85
PCC-Vivace	5	327.82	255.62	205.47	90.41	77.09	68.43	0.31	0.63	1.52
WebRTC media	5	1.74	1.14	0.42	63.47	63.38	63.26	0.50	0.73	1.77



Run 1: Statistics of TCP BBR

Start at: 2018-11-15 14:58:02

End at: 2018-11-15 14:58:32

Local clock offset: -0.028 ms

Remote clock offset: 0.547 ms

# Below is generated by plot.py at 2018-11-15 17:43:40

# Datalink statistics

-- Total of 3 flows:

Average throughput: 969.77 Mbit/s

95th percentile per-packet one-way delay: 85.142 ms

Loss rate: 0.73%

-- Flow 1:

Average throughput: 515.50 Mbit/s

95th percentile per-packet one-way delay: 86.033 ms

Loss rate: 0.46%

-- Flow 2:

Average throughput: 452.68 Mbit/s

95th percentile per-packet one-way delay: 87.255 ms

Loss rate: 0.77%

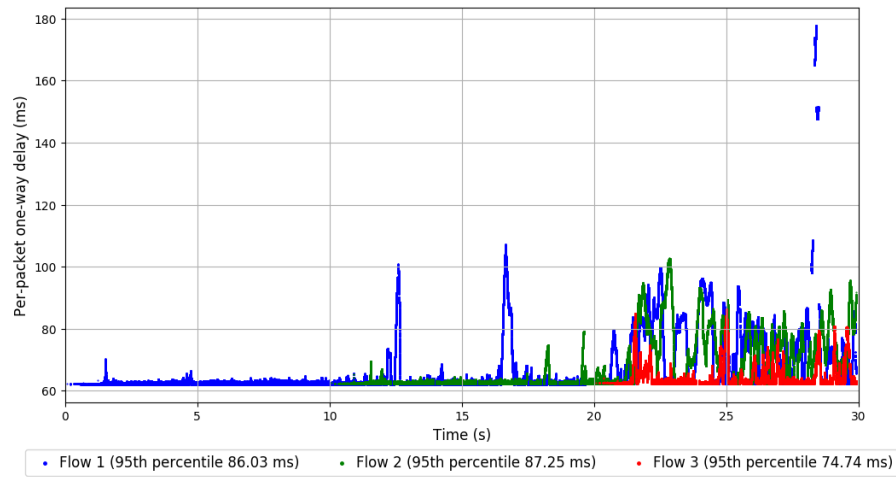
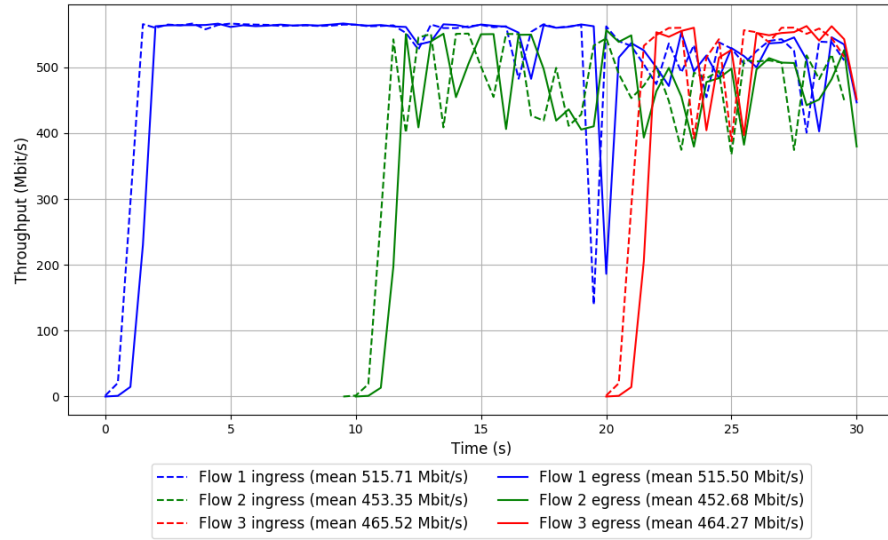
-- Flow 3:

Average throughput: 464.27 Mbit/s

95th percentile per-packet one-way delay: 74.740 ms

Loss rate: 1.53%

# Run 1: Report of TCP BBR — Data Link

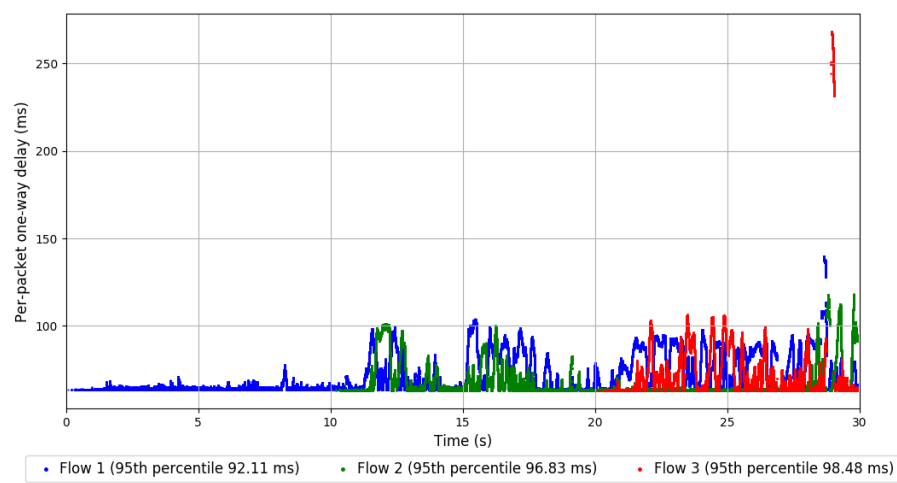
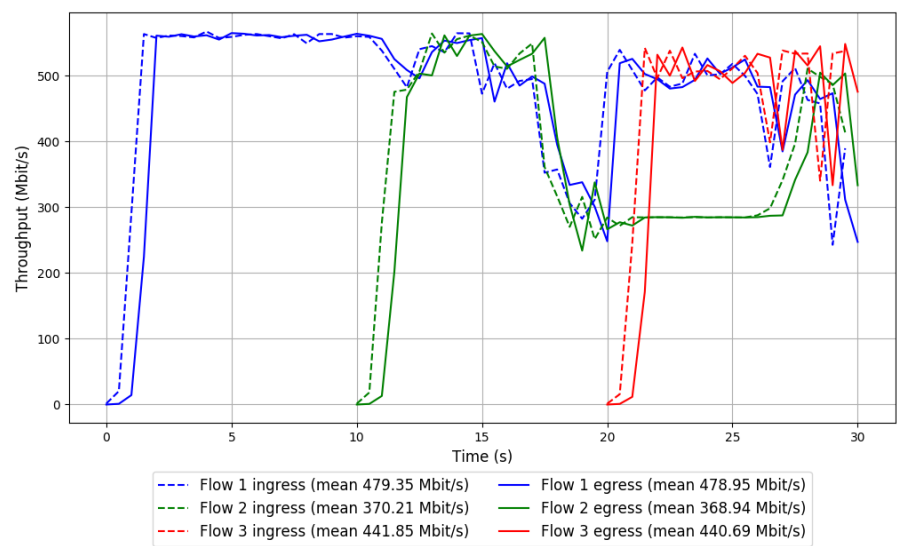


Run 2: Statistics of TCP BBR

Start at: 2018-11-15 15:29:23  
End at: 2018-11-15 15:29:53  
Local clock offset: 0.009 ms  
Remote clock offset: -0.517 ms

# Below is generated by plot.py at 2018-11-15 17:43:40  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 869.23 Mbit/s  
95th percentile per-packet one-way delay: 94.009 ms  
Loss rate: 0.81%  
-- Flow 1:  
Average throughput: 478.95 Mbit/s  
95th percentile per-packet one-way delay: 92.112 ms  
Loss rate: 0.50%  
-- Flow 2:  
Average throughput: 368.94 Mbit/s  
95th percentile per-packet one-way delay: 96.835 ms  
Loss rate: 0.97%  
-- Flow 3:  
Average throughput: 440.69 Mbit/s  
95th percentile per-packet one-way delay: 98.482 ms  
Loss rate: 1.53%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-11-15 16:00:50

End at: 2018-11-15 16:01:20

Local clock offset: -0.08 ms

Remote clock offset: 0.193 ms

# Below is generated by plot.py at 2018-11-15 17:43:40

# Datalink statistics

-- Total of 3 flows:

Average throughput: 942.48 Mbit/s

95th percentile per-packet one-way delay: 93.748 ms

Loss rate: 0.75%

-- Flow 1:

Average throughput: 488.56 Mbit/s

95th percentile per-packet one-way delay: 94.165 ms

Loss rate: 0.49%

-- Flow 2:

Average throughput: 455.36 Mbit/s

95th percentile per-packet one-way delay: 94.192 ms

Loss rate: 0.78%

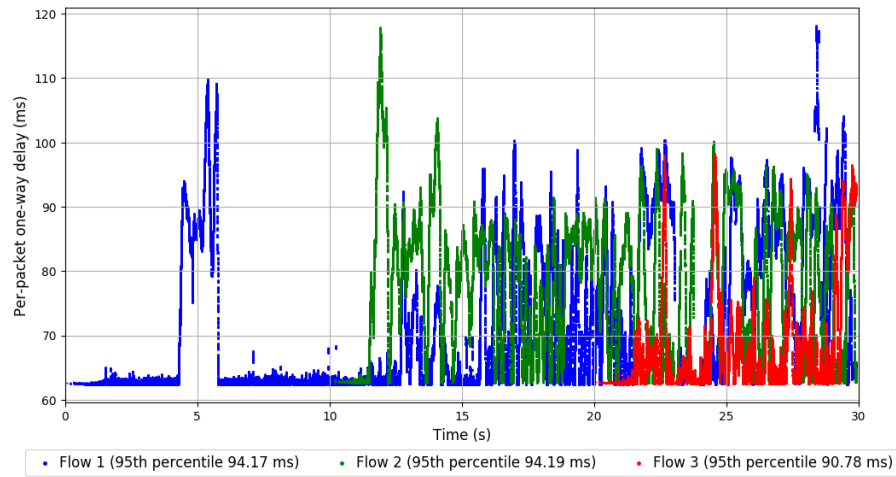
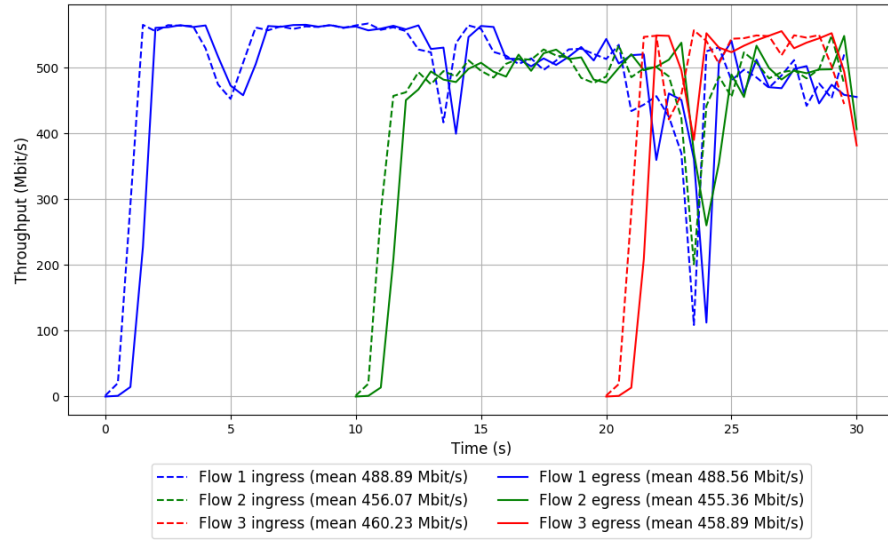
-- Flow 3:

Average throughput: 458.89 Mbit/s

95th percentile per-packet one-way delay: 90.782 ms

Loss rate: 1.55%

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

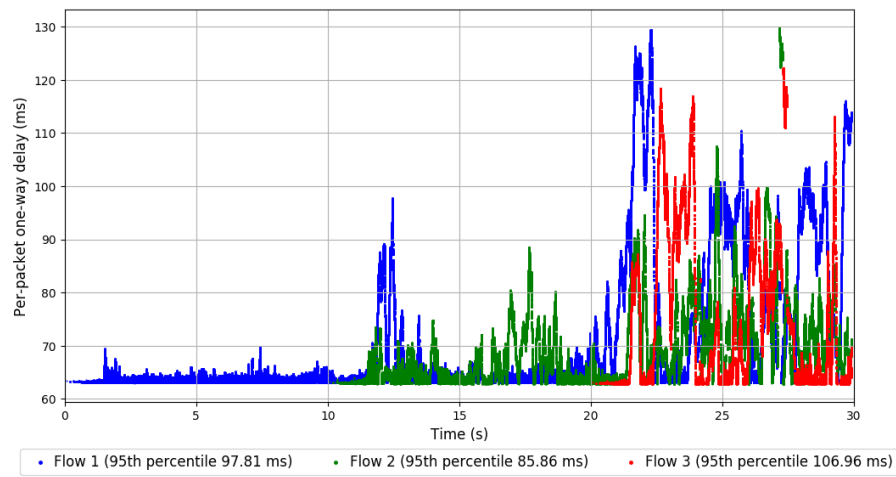
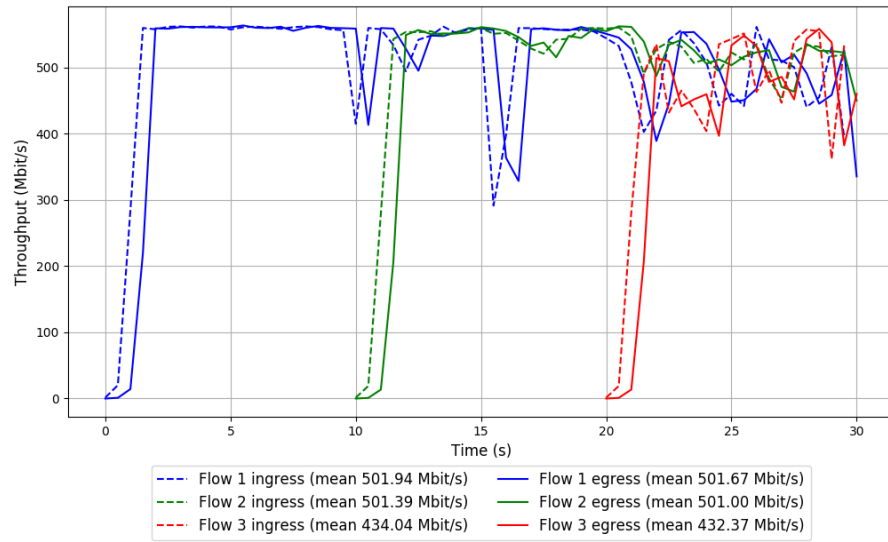


Run 4: Statistics of TCP BBR

Start at: 2018-11-15 16:32:19  
End at: 2018-11-15 16:32:49  
Local clock offset: -0.053 ms  
Remote clock offset: -0.125 ms

# Below is generated by plot.py at 2018-11-15 17:43:50  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 977.14 Mbit/s  
95th percentile per-packet one-way delay: 96.977 ms  
Loss rate: 0.73%  
-- Flow 1:  
Average throughput: 501.67 Mbit/s  
95th percentile per-packet one-way delay: 97.812 ms  
Loss rate: 0.48%  
-- Flow 2:  
Average throughput: 501.00 Mbit/s  
95th percentile per-packet one-way delay: 85.856 ms  
Loss rate: 0.71%  
-- Flow 3:  
Average throughput: 432.37 Mbit/s  
95th percentile per-packet one-way delay: 106.961 ms  
Loss rate: 1.64%

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





Run 5: Statistics of TCP BBR

Start at: 2018-11-15 17:03:44

End at: 2018-11-15 17:04:14

Local clock offset: -0.056 ms

Remote clock offset: 0.567 ms

# Below is generated by plot.py at 2018-11-15 17:44:02

# Datalink statistics

-- Total of 3 flows:

Average throughput: 990.93 Mbit/s

95th percentile per-packet one-way delay: 83.641 ms

Loss rate: 0.72%

-- Flow 1:

Average throughput: 508.06 Mbit/s

95th percentile per-packet one-way delay: 84.690 ms

Loss rate: 0.47%

-- Flow 2:

Average throughput: 489.89 Mbit/s

95th percentile per-packet one-way delay: 84.983 ms

Loss rate: 0.72%

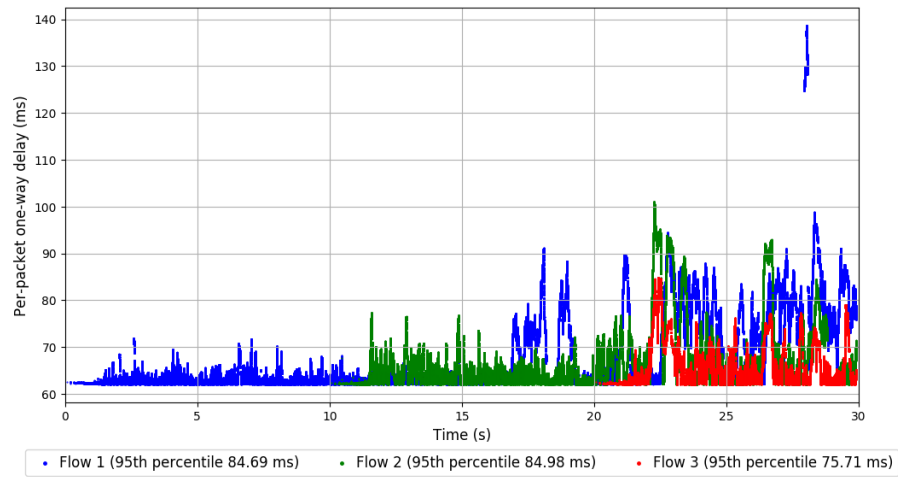
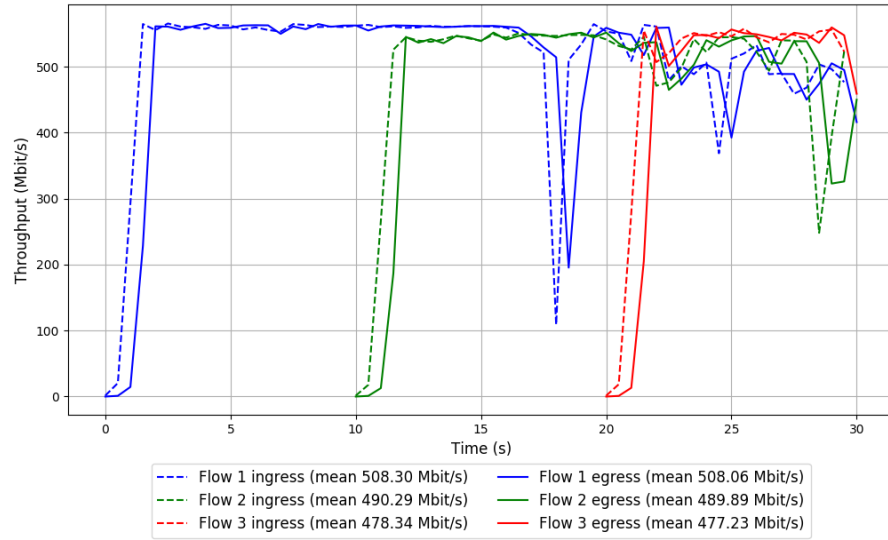
-- Flow 3:

Average throughput: 477.23 Mbit/s

95th percentile per-packet one-way delay: 75.711 ms

Loss rate: 1.50%

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

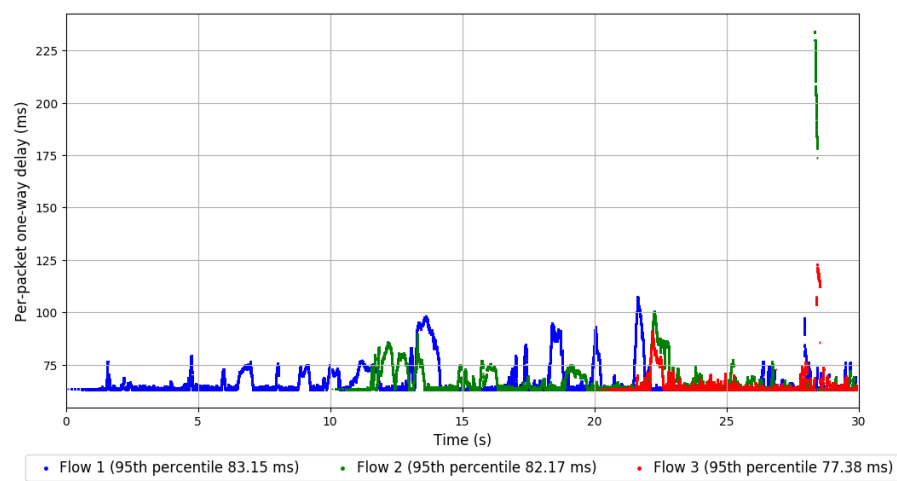
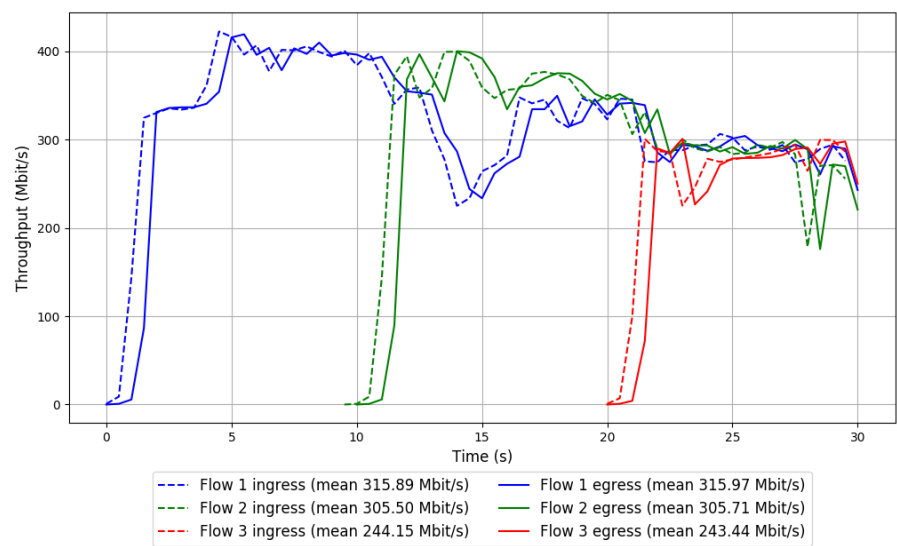


Run 1: Statistics of Copa

Start at: 2018-11-15 14:40:22  
End at: 2018-11-15 14:40:52  
Local clock offset: -0.037 ms  
Remote clock offset: -0.191 ms

# Below is generated by plot.py at 2018-11-15 17:45:59  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 599.47 Mbit/s  
95th percentile per-packet one-way delay: 81.797 ms  
Loss rate: 0.61%  
-- Flow 1:  
Average throughput: 315.97 Mbit/s  
95th percentile per-packet one-way delay: 83.154 ms  
Loss rate: 0.40%  
-- Flow 2:  
Average throughput: 305.71 Mbit/s  
95th percentile per-packet one-way delay: 82.173 ms  
Loss rate: 0.57%  
-- Flow 3:  
Average throughput: 243.44 Mbit/s  
95th percentile per-packet one-way delay: 77.383 ms  
Loss rate: 1.56%

Run 1: Report of Copa — Data Link

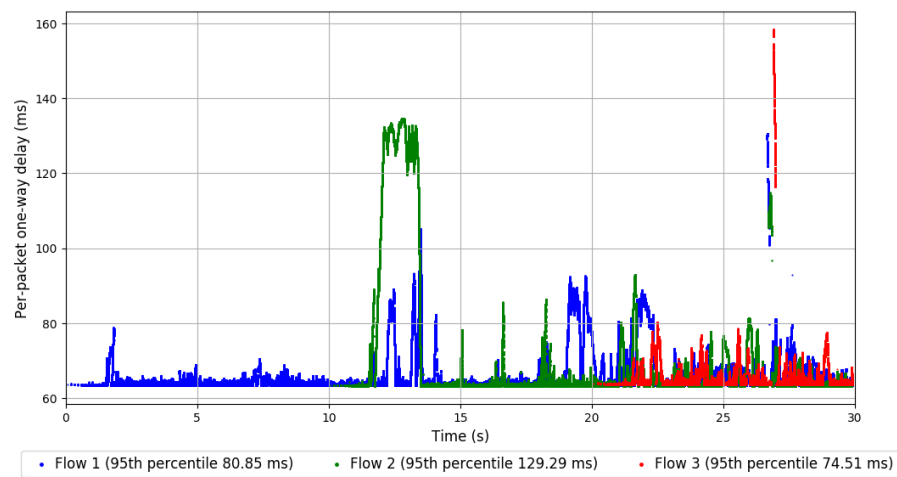
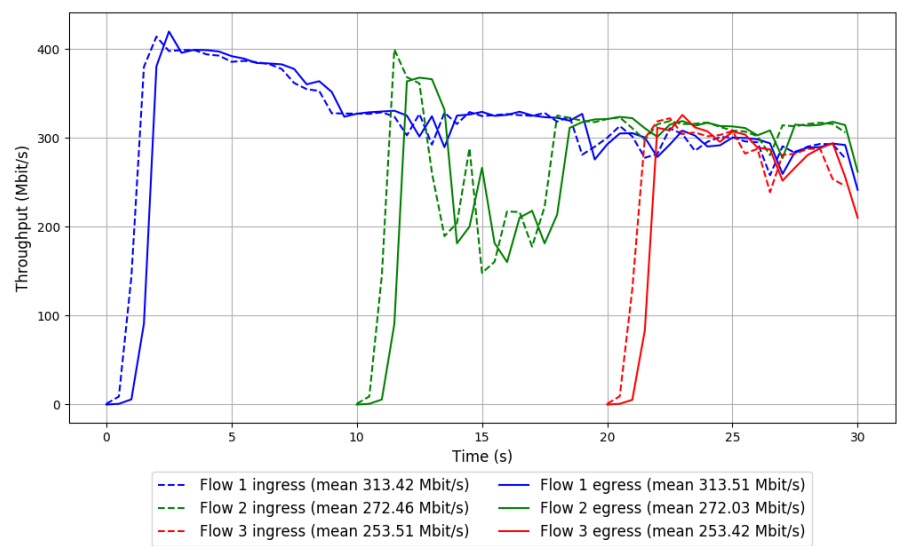


Run 2: Statistics of Copa

Start at: 2018-11-15 15:11:39  
End at: 2018-11-15 15:12:09  
Local clock offset: -0.03 ms  
Remote clock offset: -0.693 ms

# Below is generated by plot.py at 2018-11-15 17:45:59  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 577.82 Mbit/s  
95th percentile per-packet one-way delay: 86.824 ms  
Loss rate: 0.65%  
-- Flow 1:  
Average throughput: 313.51 Mbit/s  
95th percentile per-packet one-way delay: 80.847 ms  
Loss rate: 0.39%  
-- Flow 2:  
Average throughput: 272.03 Mbit/s  
95th percentile per-packet one-way delay: 129.288 ms  
Loss rate: 0.79%  
-- Flow 3:  
Average throughput: 253.42 Mbit/s  
95th percentile per-packet one-way delay: 74.506 ms  
Loss rate: 1.30%

Run 2: Report of Copa — Data Link



Run 3: Statistics of Copa

Start at: 2018-11-15 15:42:53

End at: 2018-11-15 15:43:23

Local clock offset: -0.054 ms

Remote clock offset: -0.12 ms

# Below is generated by plot.py at 2018-11-15 17:45:59

# Datalink statistics

-- Total of 3 flows:

Average throughput: 527.54 Mbit/s

95th percentile per-packet one-way delay: 79.140 ms

Loss rate: 0.75%

-- Flow 1:

Average throughput: 242.21 Mbit/s

95th percentile per-packet one-way delay: 70.438 ms

Loss rate: 0.49%

-- Flow 2:

Average throughput: 303.80 Mbit/s

95th percentile per-packet one-way delay: 80.374 ms

Loss rate: 0.74%

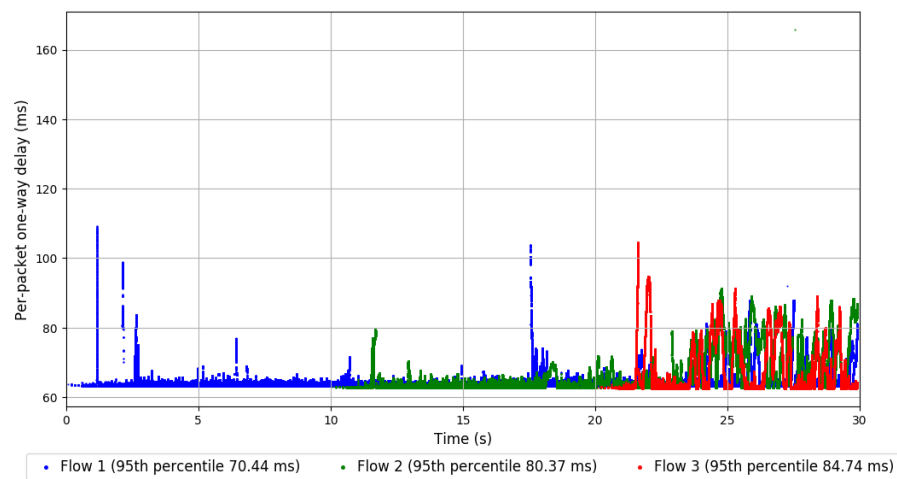
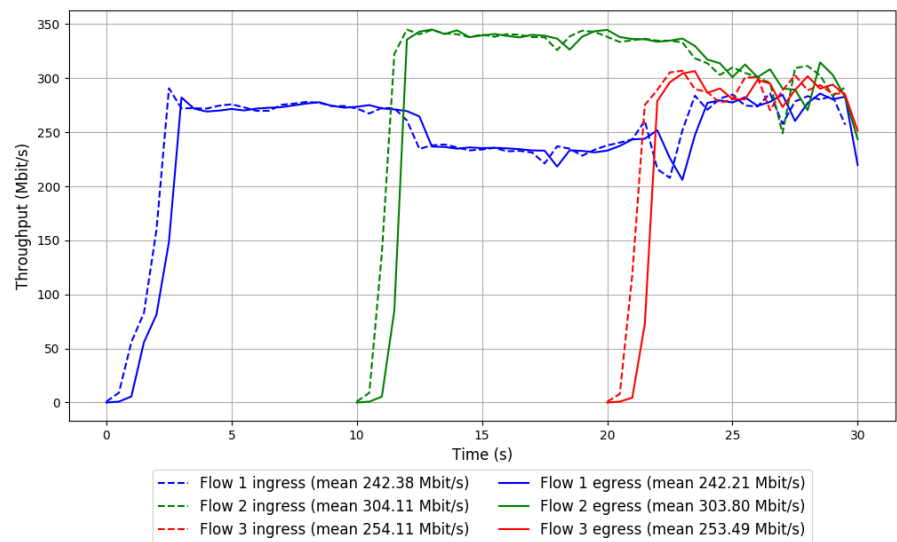
-- Flow 3:

Average throughput: 253.49 Mbit/s

95th percentile per-packet one-way delay: 84.740 ms

Loss rate: 1.51%

Run 3: Report of Copa — Data Link



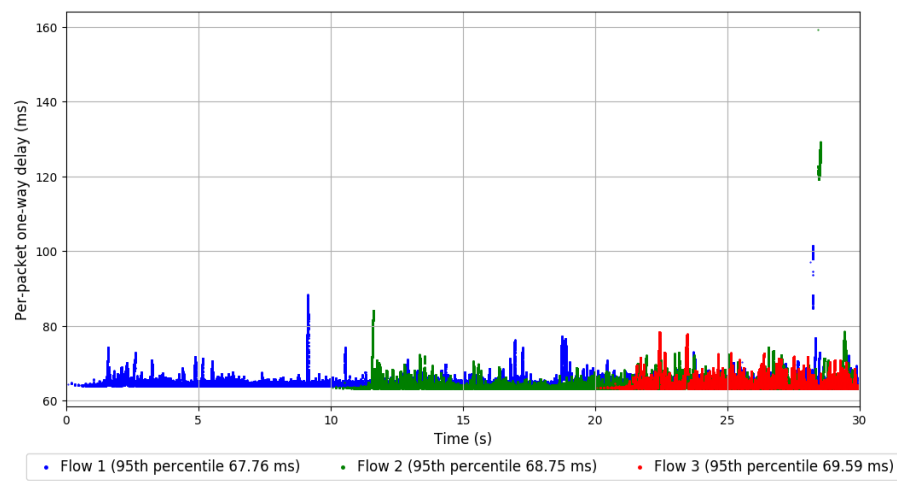
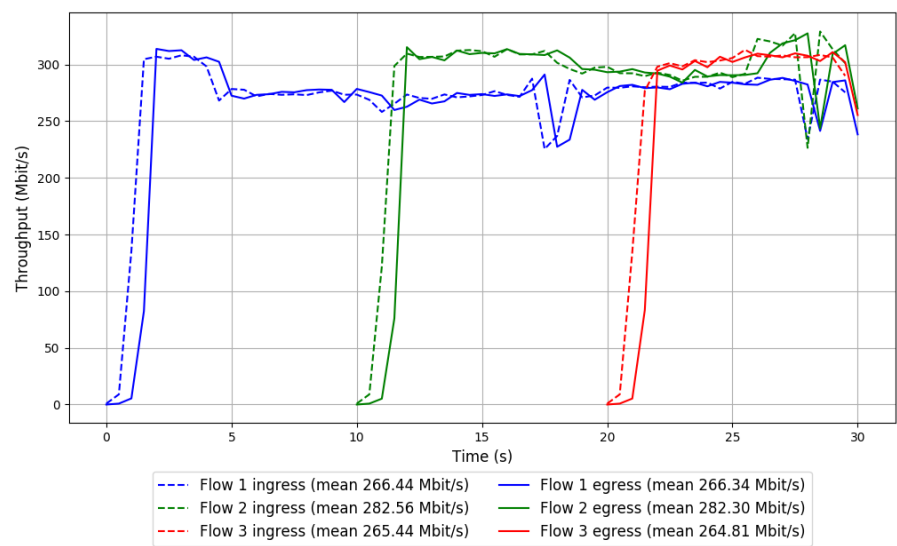


Run 4: Statistics of Copa

Start at: 2018-11-15 16:14:19  
End at: 2018-11-15 16:14:49  
Local clock offset: -0.1 ms  
Remote clock offset: -0.911 ms

```
# Below is generated by plot.py at 2018-11-15 18:00:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 541.29 Mbit/s
95th percentile per-packet one-way delay: 68.474 ms
Loss rate: 0.72%
-- Flow 1:
Average throughput: 266.34 Mbit/s
95th percentile per-packet one-way delay: 67.760 ms
Loss rate: 0.46%
-- Flow 2:
Average throughput: 282.30 Mbit/s
95th percentile per-packet one-way delay: 68.753 ms
Loss rate: 0.73%
-- Flow 3:
Average throughput: 264.81 Mbit/s
95th percentile per-packet one-way delay: 69.593 ms
Loss rate: 1.49%
```

Run 4: Report of Copa — Data Link

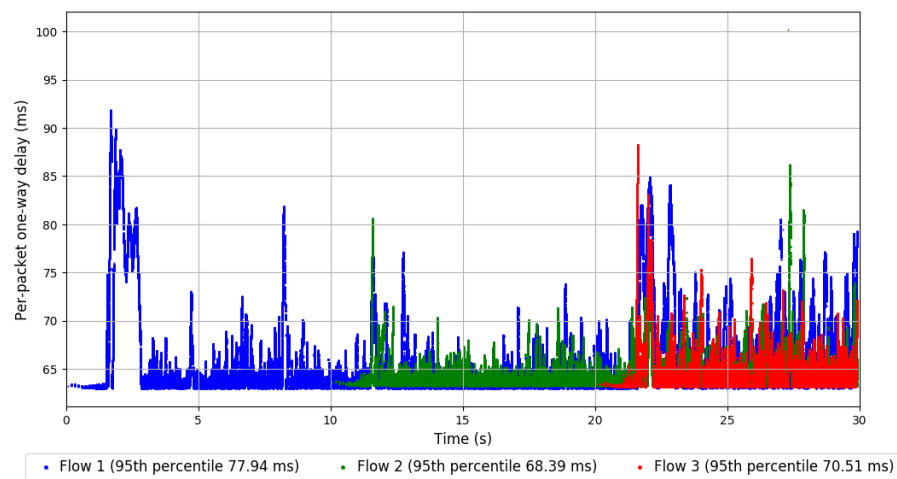
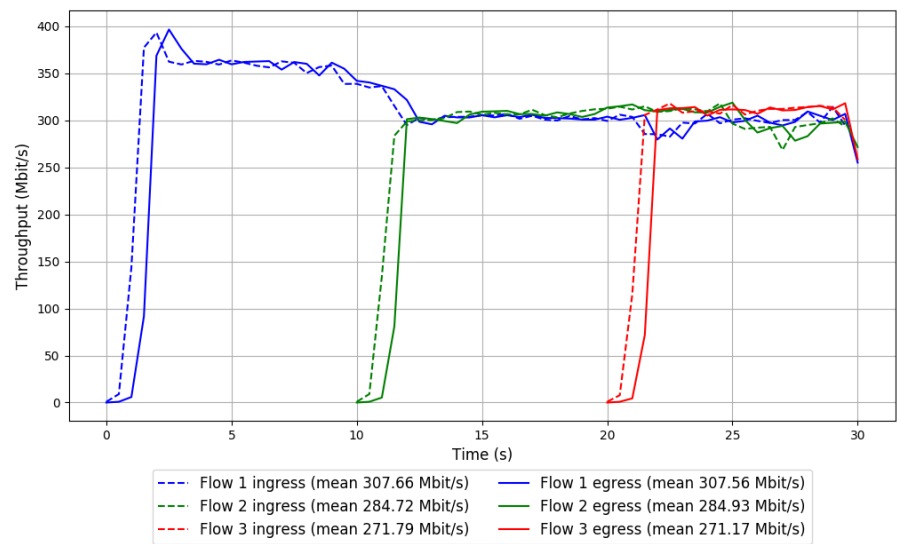


Run 5: Statistics of Copa

Start at: 2018-11-15 16:45:55  
End at: 2018-11-15 16:46:25  
Local clock offset: -0.008 ms  
Remote clock offset: -0.157 ms

# Below is generated by plot.py at 2018-11-15 18:03:27  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 586.21 Mbit/s  
95th percentile per-packet one-way delay: 73.772 ms  
Loss rate: 0.65%  
-- Flow 1:  
Average throughput: 307.56 Mbit/s  
95th percentile per-packet one-way delay: 77.943 ms  
Loss rate: 0.45%  
-- Flow 2:  
Average throughput: 284.93 Mbit/s  
95th percentile per-packet one-way delay: 68.390 ms  
Loss rate: 0.55%  
-- Flow 3:  
Average throughput: 271.17 Mbit/s  
95th percentile per-packet one-way delay: 70.506 ms  
Loss rate: 1.50%

Run 5: Report of Copa — Data Link

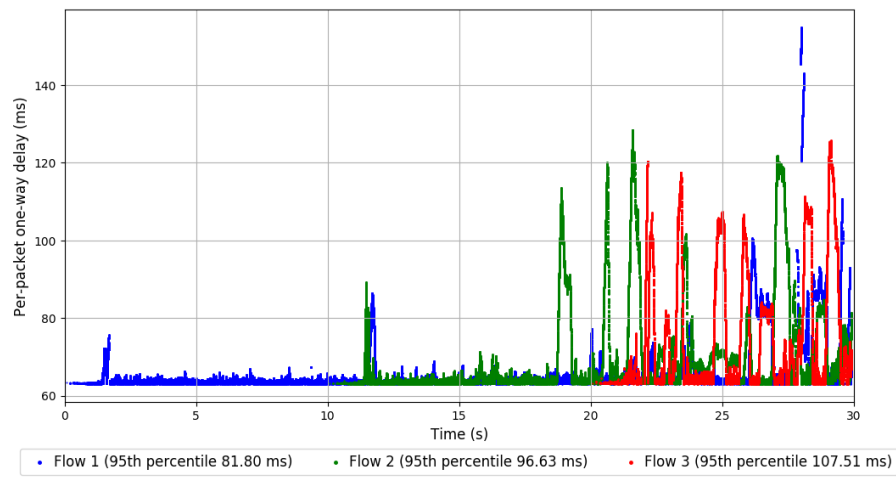
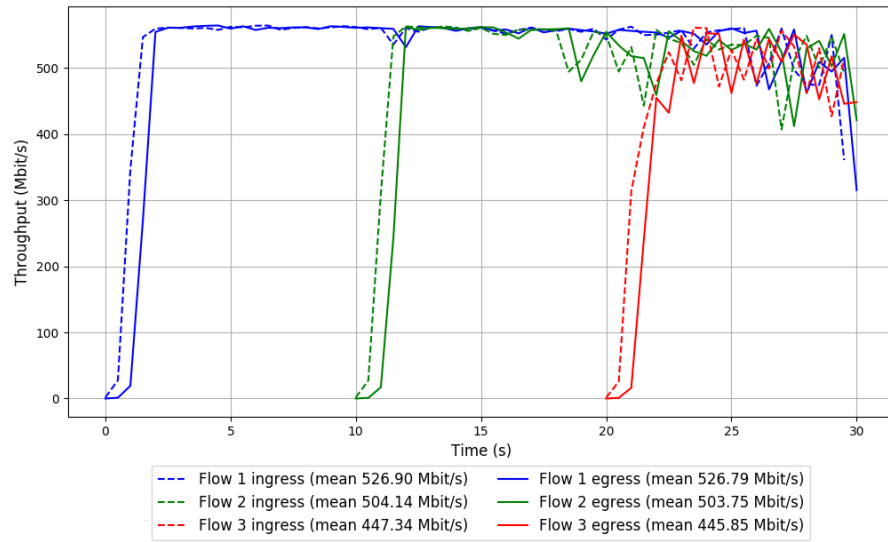


Run 1: Statistics of TCP Cubic

Start at: 2018-11-15 14:31:42  
End at: 2018-11-15 14:32:12  
Local clock offset: -0.059 ms  
Remote clock offset: -0.144 ms

# Below is generated by plot.py at 2018-11-15 18:03:27  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 1008.24 Mbit/s  
95th percentile per-packet one-way delay: 93.302 ms  
Loss rate: 0.70%  
-- Flow 1:  
Average throughput: 526.79 Mbit/s  
95th percentile per-packet one-way delay: 81.799 ms  
Loss rate: 0.44%  
-- Flow 2:  
Average throughput: 503.75 Mbit/s  
95th percentile per-packet one-way delay: 96.634 ms  
Loss rate: 0.70%  
-- Flow 3:  
Average throughput: 445.85 Mbit/s  
95th percentile per-packet one-way delay: 107.507 ms  
Loss rate: 1.59%

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

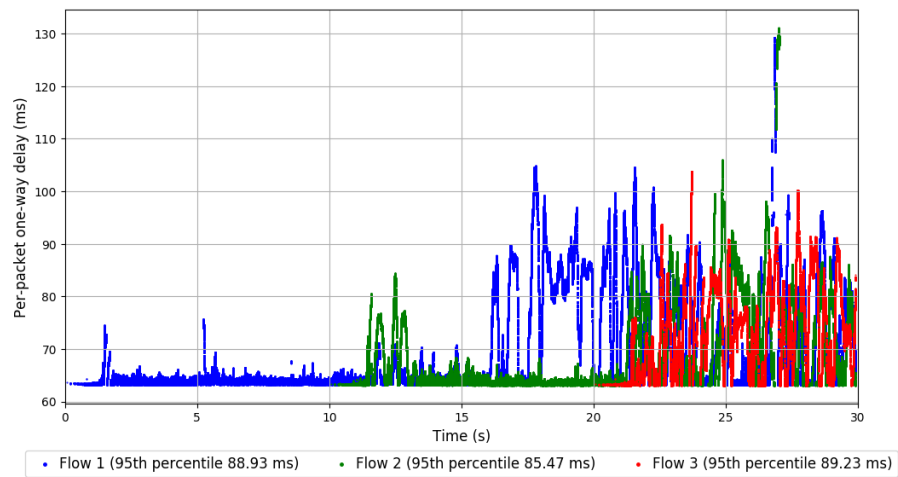
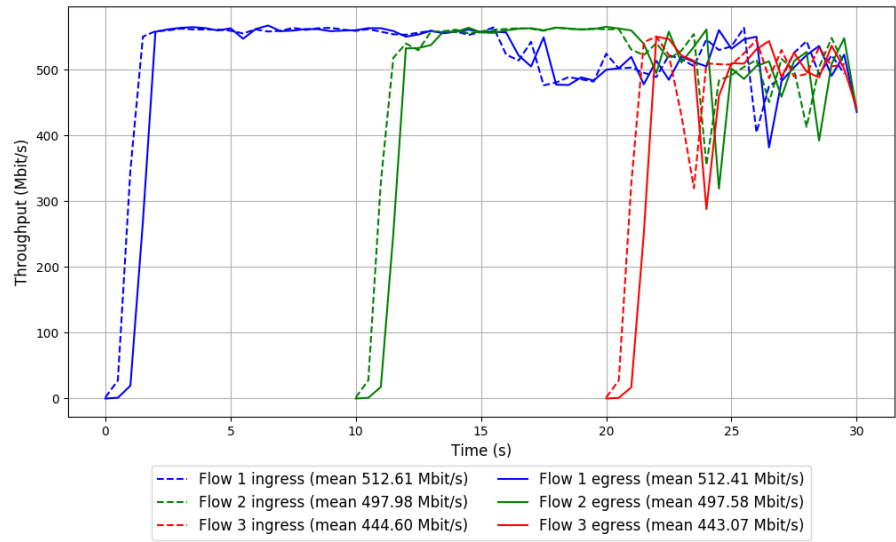


Run 2: Statistics of TCP Cubic

Start at: 2018-11-15 15:02:59  
End at: 2018-11-15 15:03:29  
Local clock offset: -0.051 ms  
Remote clock offset: -0.533 ms

# Below is generated by plot.py at 2018-11-15 18:03:27  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 989.08 Mbit/s  
95th percentile per-packet one-way delay: 88.209 ms  
Loss rate: 0.71%  
-- Flow 1:  
Average throughput: 512.41 Mbit/s  
95th percentile per-packet one-way delay: 88.929 ms  
Loss rate: 0.46%  
-- Flow 2:  
Average throughput: 497.58 Mbit/s  
95th percentile per-packet one-way delay: 85.474 ms  
Loss rate: 0.71%  
-- Flow 3:  
Average throughput: 443.07 Mbit/s  
95th percentile per-packet one-way delay: 89.230 ms  
Loss rate: 1.60%

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



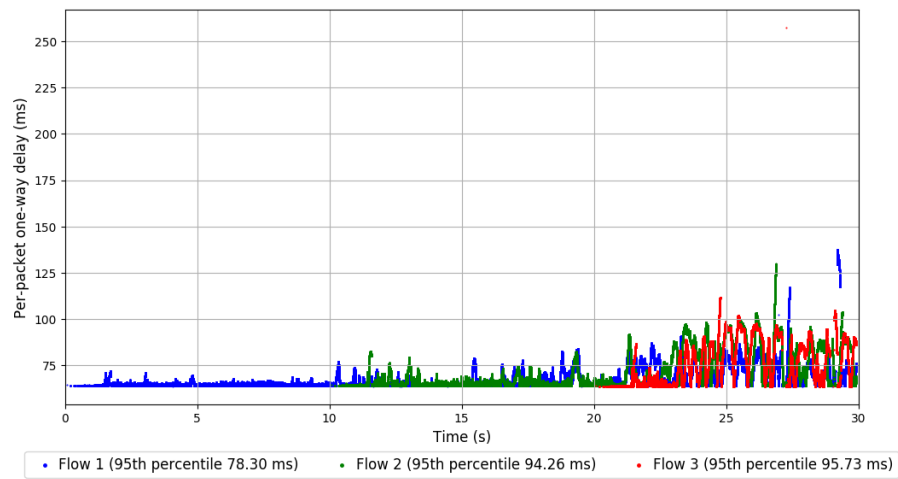
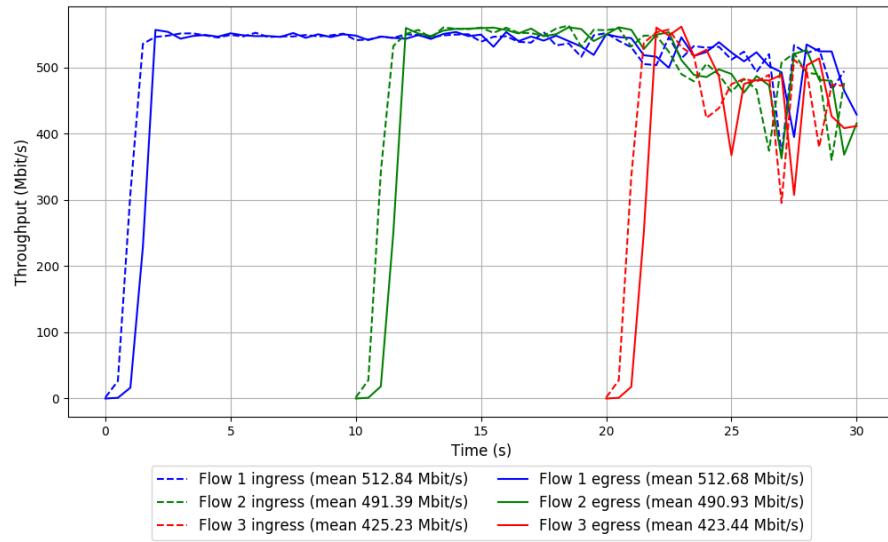


Run 3: Statistics of TCP Cubic

Start at: 2018-11-15 15:34:12  
End at: 2018-11-15 15:34:42  
Local clock offset: -0.042 ms  
Remote clock offset: -1.102 ms

# Below is generated by plot.py at 2018-11-15 18:03:27  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 978.60 Mbit/s  
95th percentile per-packet one-way delay: 91.623 ms  
Loss rate: 0.72%  
-- Flow 1:  
Average throughput: 512.68 Mbit/s  
95th percentile per-packet one-way delay: 78.299 ms  
Loss rate: 0.46%  
-- Flow 2:  
Average throughput: 490.93 Mbit/s  
95th percentile per-packet one-way delay: 94.256 ms  
Loss rate: 0.73%  
-- Flow 3:  
Average throughput: 423.44 Mbit/s  
95th percentile per-packet one-way delay: 95.735 ms  
Loss rate: 1.68%

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



Run 4: Statistics of TCP Cubic

Start at: 2018-11-15 16:05:42

End at: 2018-11-15 16:06:12

Local clock offset: -0.088 ms

Remote clock offset: 0.399 ms

# Below is generated by plot.py at 2018-11-15 18:03:27

# Datalink statistics

-- Total of 3 flows:

Average throughput: 999.10 Mbit/s

95th percentile per-packet one-way delay: 84.922 ms

Loss rate: 0.71%

-- Flow 1:

Average throughput: 508.79 Mbit/s

95th percentile per-packet one-way delay: 87.038 ms

Loss rate: 0.47%

-- Flow 2:

Average throughput: 509.67 Mbit/s

95th percentile per-packet one-way delay: 76.522 ms

Loss rate: 0.69%

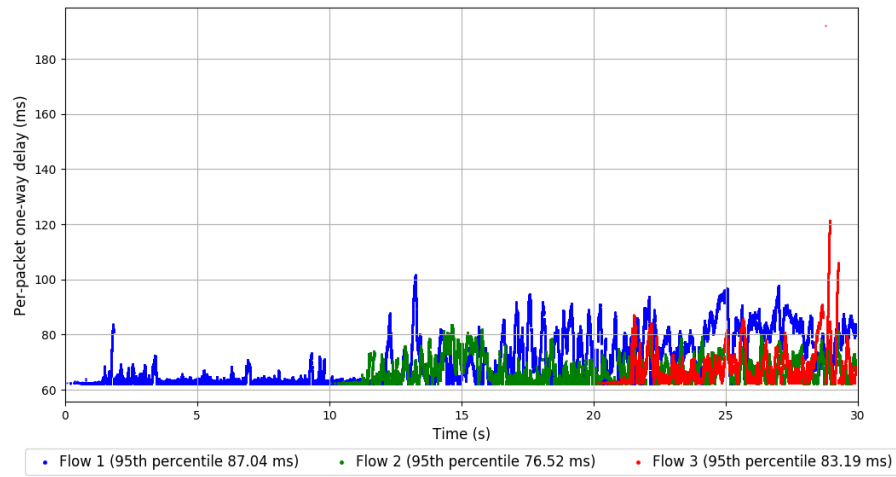
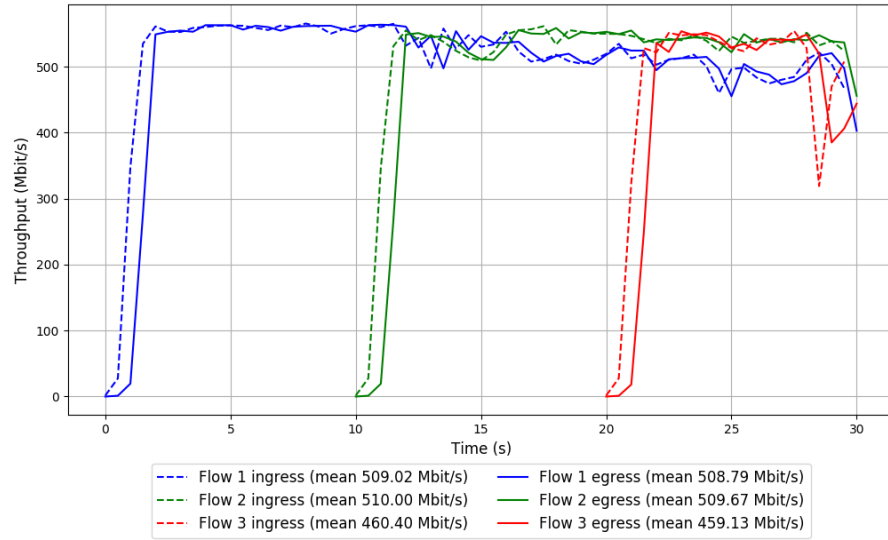
-- Flow 3:

Average throughput: 459.13 Mbit/s

95th percentile per-packet one-way delay: 83.186 ms

Loss rate: 1.54%

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



Run 5: Statistics of TCP Cubic

Start at: 2018-11-15 16:37:17

End at: 2018-11-15 16:37:47

Local clock offset: -0.064 ms

Remote clock offset: -0.72 ms

# Below is generated by plot.py at 2018-11-15 18:03:47

# Datalink statistics

-- Total of 3 flows:

Average throughput: 982.99 Mbit/s

95th percentile per-packet one-way delay: 93.107 ms

Loss rate: 0.72%

-- Flow 1:

Average throughput: 512.42 Mbit/s

95th percentile per-packet one-way delay: 92.615 ms

Loss rate: 0.46%

-- Flow 2:

Average throughput: 498.94 Mbit/s

95th percentile per-packet one-way delay: 81.540 ms

Loss rate: 0.71%

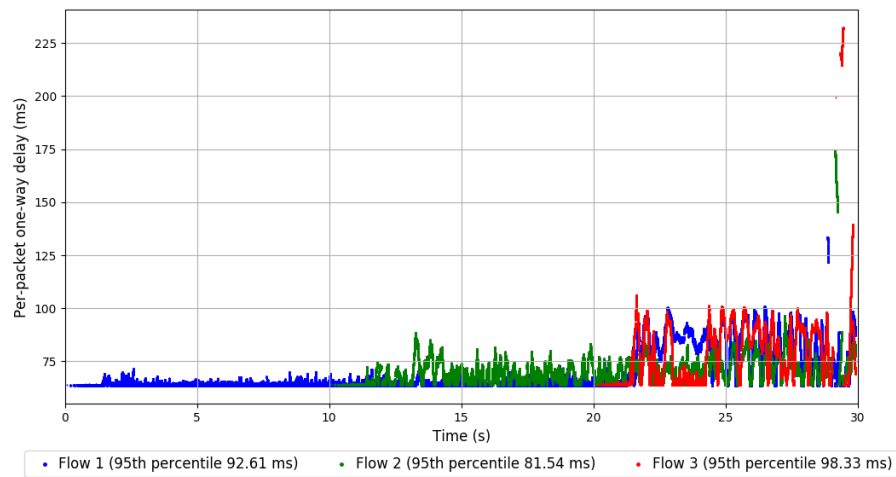
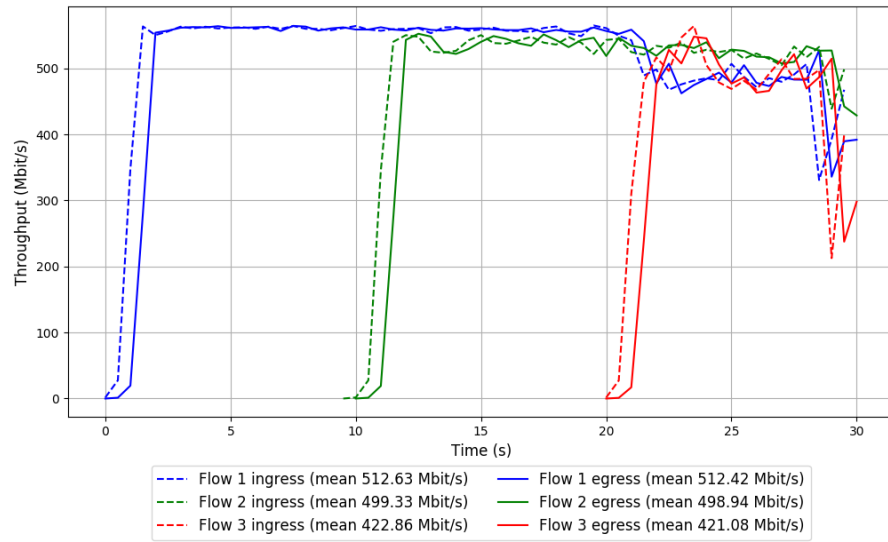
-- Flow 3:

Average throughput: 421.08 Mbit/s

95th percentile per-packet one-way delay: 98.327 ms

Loss rate: 1.69%

# Run 5: Report of TCP Cubic — Data Link



Run 1: Statistics of FillP

Start at: 2018-11-15 14:51:44

End at: 2018-11-15 14:52:14

Local clock offset: -0.031 ms

Remote clock offset: 0.242 ms

# Below is generated by plot.py at 2018-11-15 18:03:47

# Datalink statistics

-- Total of 3 flows:

Average throughput: 740.27 Mbit/s

95th percentile per-packet one-way delay: 71.508 ms

Loss rate: 0.55%

-- Flow 1:

Average throughput: 429.93 Mbit/s

95th percentile per-packet one-way delay: 74.423 ms

Loss rate: 0.31%

-- Flow 2:

Average throughput: 339.00 Mbit/s

95th percentile per-packet one-way delay: 67.369 ms

Loss rate: 0.76%

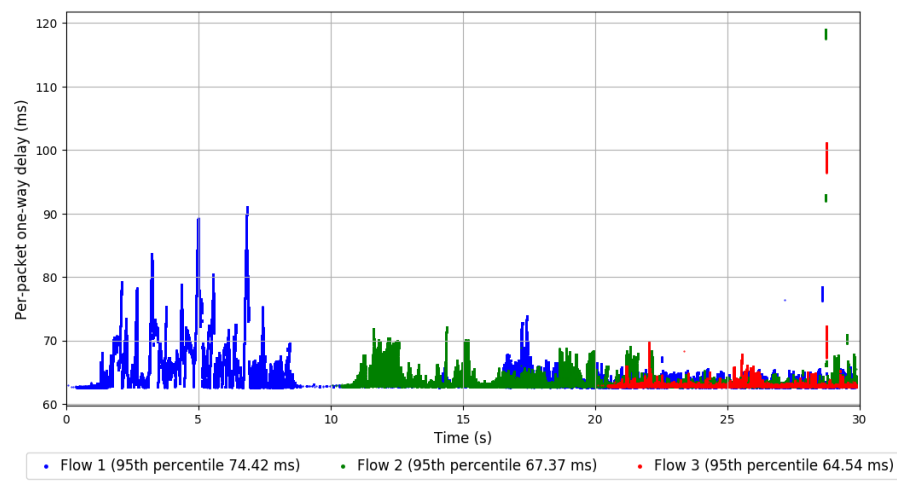
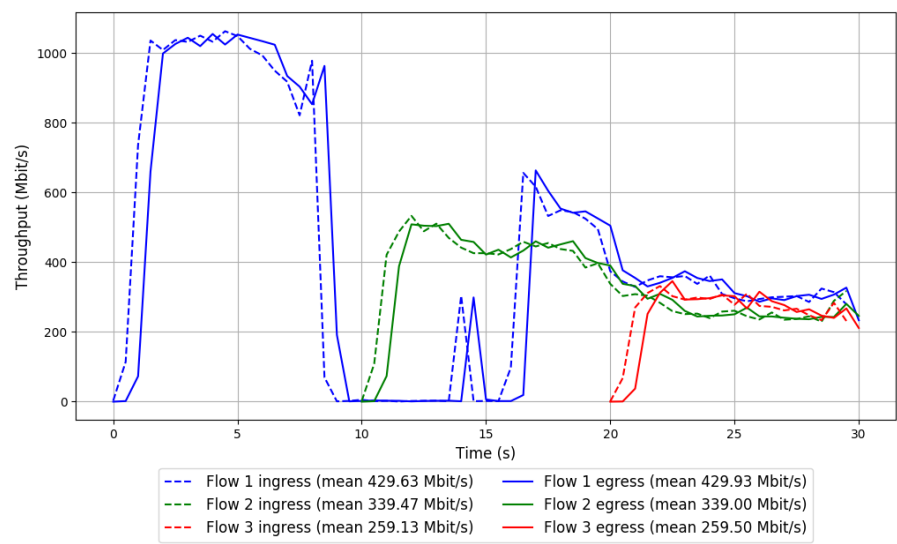
-- Flow 3:

Average throughput: 259.50 Mbit/s

95th percentile per-packet one-way delay: 64.541 ms

Loss rate: 1.20%

Run 1: Report of FillP — Data Link



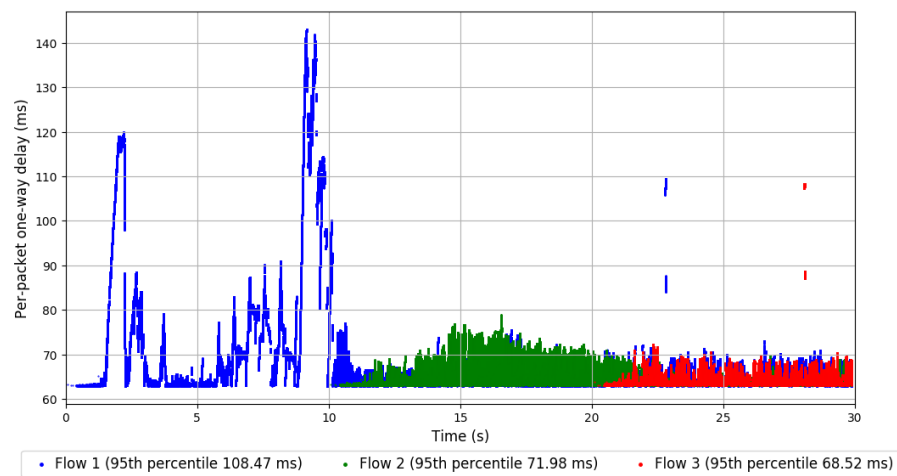
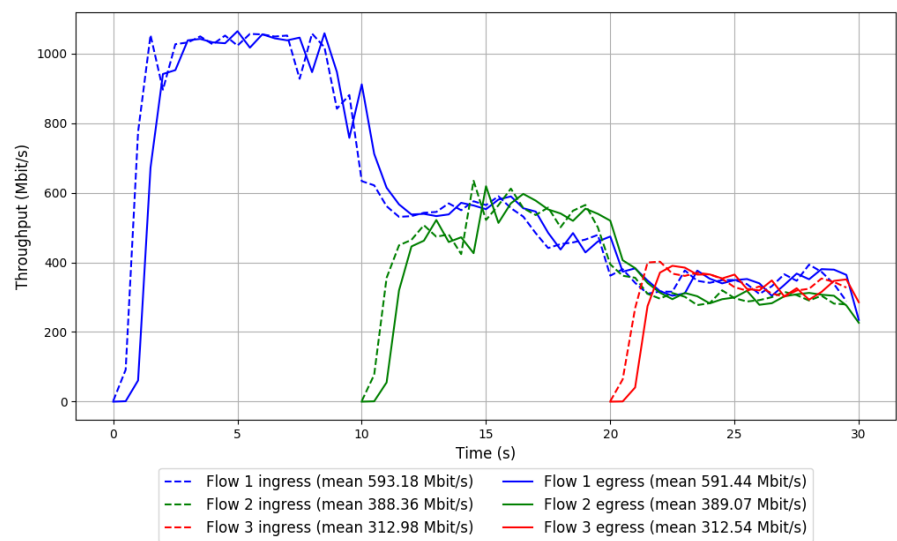


Run 2: Statistics of FillP

Start at: 2018-11-15 15:22:55  
End at: 2018-11-15 15:23:25  
Local clock offset: -0.016 ms  
Remote clock offset: -0.177 ms

# Below is generated by plot.py at 2018-11-15 18:21:30  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 952.37 Mbit/s  
95th percentile per-packet one-way delay: 87.721 ms  
Loss rate: 0.71%  
-- Flow 1:  
Average throughput: 591.44 Mbit/s  
95th percentile per-packet one-way delay: 108.473 ms  
Loss rate: 0.66%  
-- Flow 2:  
Average throughput: 389.07 Mbit/s  
95th percentile per-packet one-way delay: 71.979 ms  
Loss rate: 0.55%  
-- Flow 3:  
Average throughput: 312.54 Mbit/s  
95th percentile per-packet one-way delay: 68.523 ms  
Loss rate: 1.45%

Run 2: Report of FillP — Data Link

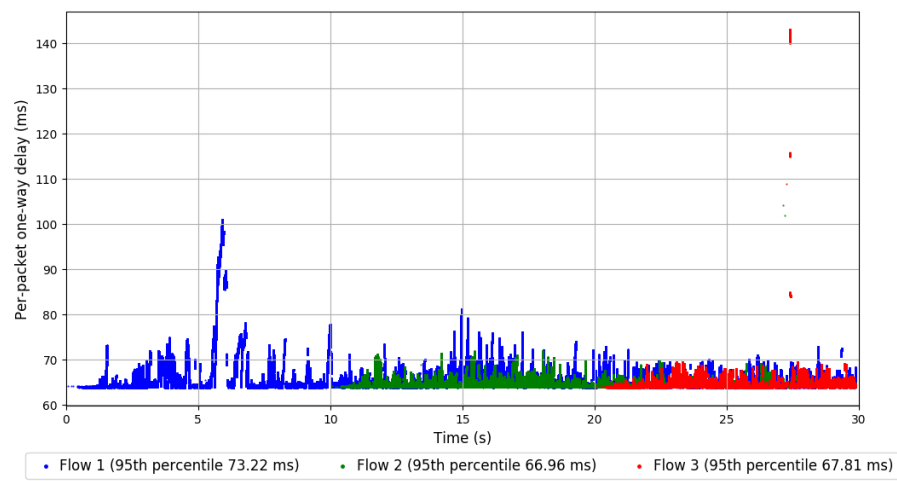
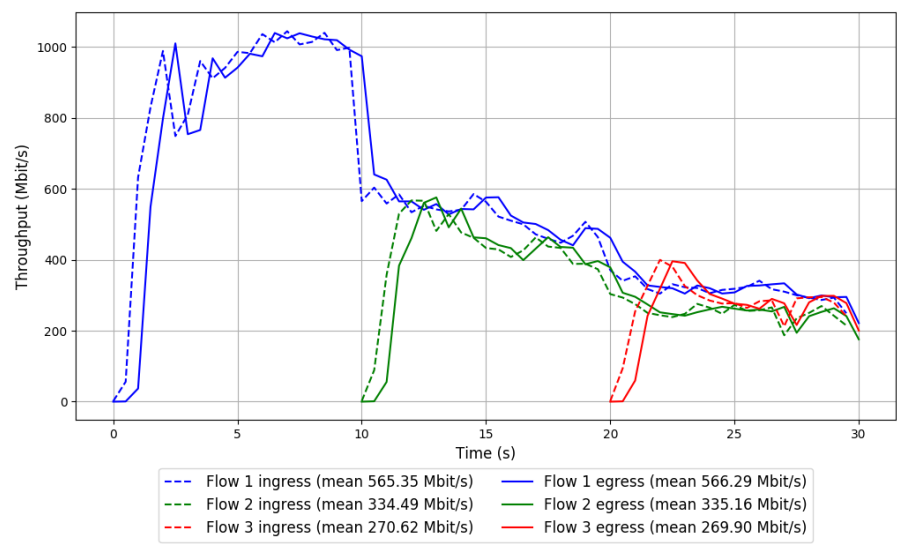


Run 3: Statistics of FillP

Start at: 2018-11-15 15:54:27  
End at: 2018-11-15 15:54:57  
Local clock offset: -0.057 ms  
Remote clock offset: -1.067 ms

# Below is generated by plot.py at 2018-11-15 18:21:30  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 877.54 Mbit/s  
95th percentile per-packet one-way delay: 71.241 ms  
Loss rate: 0.40%  
-- Flow 1:  
Average throughput: 566.29 Mbit/s  
95th percentile per-packet one-way delay: 73.215 ms  
Loss rate: 0.18%  
-- Flow 2:  
Average throughput: 335.16 Mbit/s  
95th percentile per-packet one-way delay: 66.961 ms  
Loss rate: 0.51%  
-- Flow 3:  
Average throughput: 269.90 Mbit/s  
95th percentile per-packet one-way delay: 67.805 ms  
Loss rate: 1.43%

Run 3: Report of FillP — Data Link

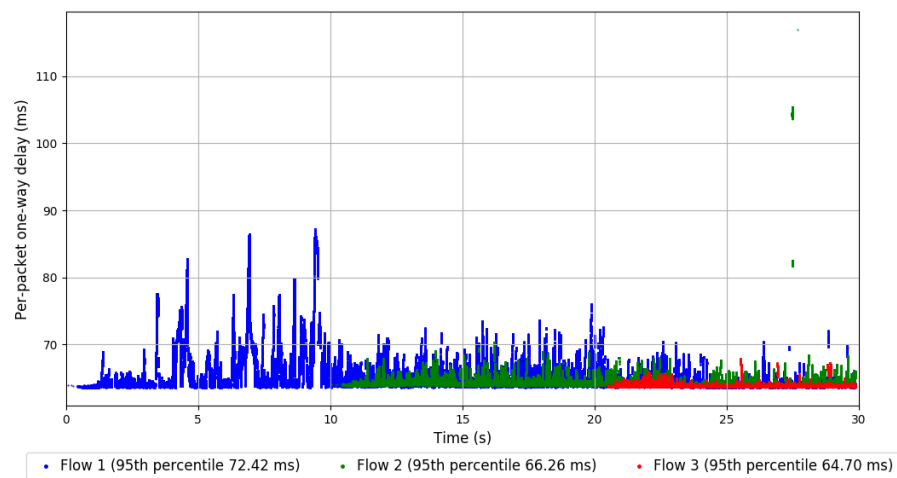
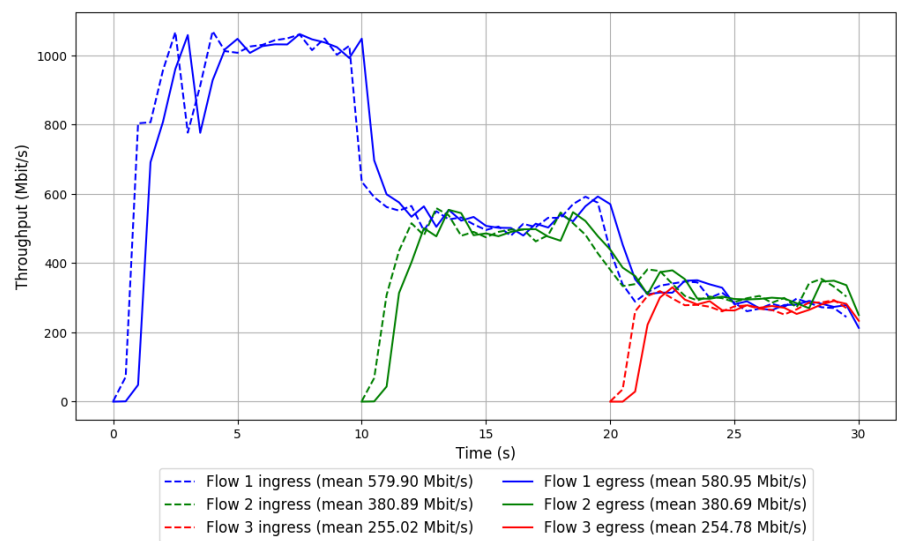


Run 4: Statistics of FillP

Start at: 2018-11-15 16:25:49  
End at: 2018-11-15 16:26:19  
Local clock offset: -0.05 ms  
Remote clock offset: -0.777 ms

# Below is generated by plot.py at 2018-11-15 18:22:10  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 917.36 Mbit/s  
95th percentile per-packet one-way delay: 70.659 ms  
Loss rate: 0.43%  
-- Flow 1:  
Average throughput: 580.95 Mbit/s  
95th percentile per-packet one-way delay: 72.415 ms  
Loss rate: 0.18%  
-- Flow 2:  
Average throughput: 380.69 Mbit/s  
95th percentile per-packet one-way delay: 66.257 ms  
Loss rate: 0.65%  
-- Flow 3:  
Average throughput: 254.78 Mbit/s  
95th percentile per-packet one-way delay: 64.699 ms  
Loss rate: 1.49%

Run 4: Report of FillP — Data Link

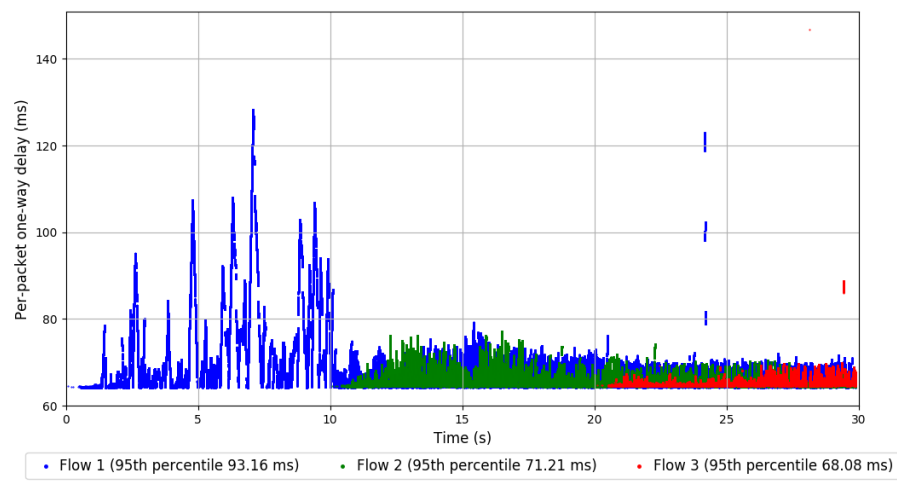
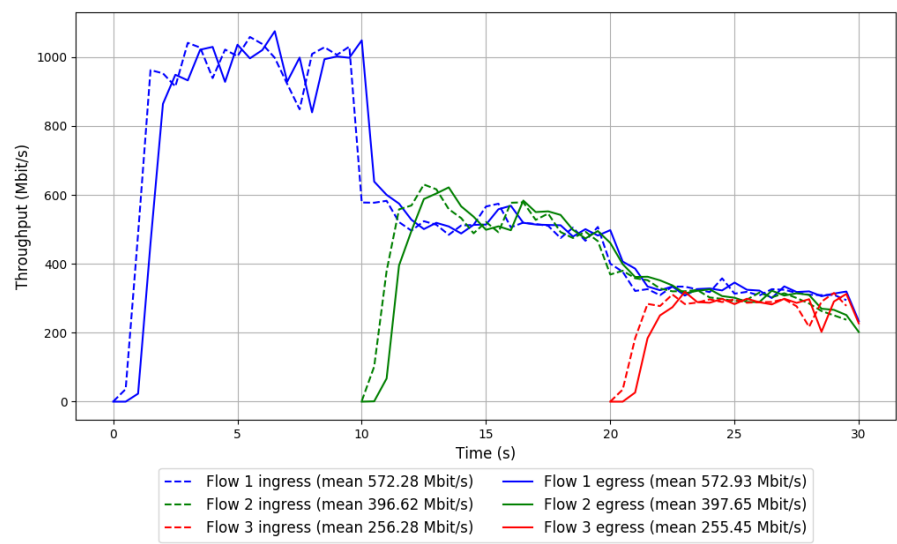


Run 5: Statistics of FillP

Start at: 2018-11-15 16:57:19  
End at: 2018-11-15 16:57:49  
Local clock offset: -0.012 ms  
Remote clock offset: -1.488 ms

# Below is generated by plot.py at 2018-11-15 18:22:20  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 920.53 Mbit/s  
95th percentile per-packet one-way delay: 86.214 ms  
Loss rate: 0.52%  
-- Flow 1:  
Average throughput: 572.93 Mbit/s  
95th percentile per-packet one-way delay: 93.157 ms  
Loss rate: 0.36%  
-- Flow 2:  
Average throughput: 397.65 Mbit/s  
95th percentile per-packet one-way delay: 71.213 ms  
Loss rate: 0.47%  
-- Flow 3:  
Average throughput: 255.45 Mbit/s  
95th percentile per-packet one-way delay: 68.080 ms  
Loss rate: 1.75%

Run 5: Report of FillP — Data Link



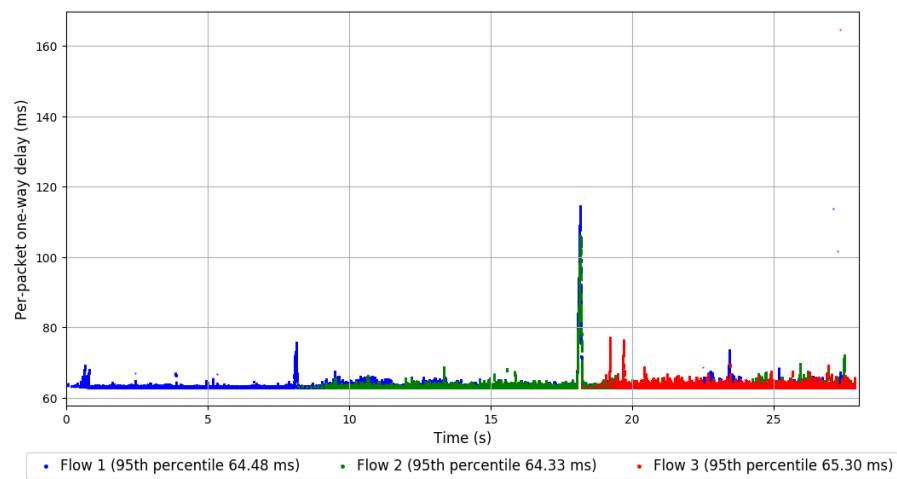
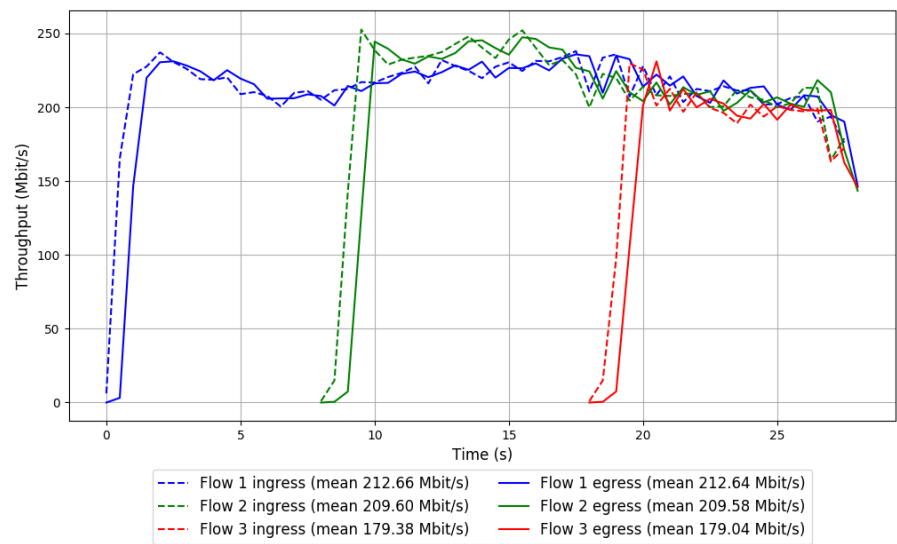


```
Run 1: Statistics of Indigo

Start at: 2018-11-15 14:49:53
End at: 2018-11-15 14:50:23
Local clock offset: -0.027 ms
Remote clock offset: -0.084 ms

# Below is generated by plot.py at 2018-11-15 18:22:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 422.83 Mbit/s
95th percentile per-packet one-way delay: 64.590 ms
Loss rate: 0.68%
-- Flow 1:
Average throughput: 212.64 Mbit/s
95th percentile per-packet one-way delay: 64.476 ms
Loss rate: 0.46%
-- Flow 2:
Average throughput: 209.58 Mbit/s
95th percentile per-packet one-way delay: 64.329 ms
Loss rate: 0.67%
-- Flow 3:
Average throughput: 179.04 Mbit/s
95th percentile per-packet one-way delay: 65.298 ms
Loss rate: 1.49%
```

Run 1: Report of Indigo — Data Link

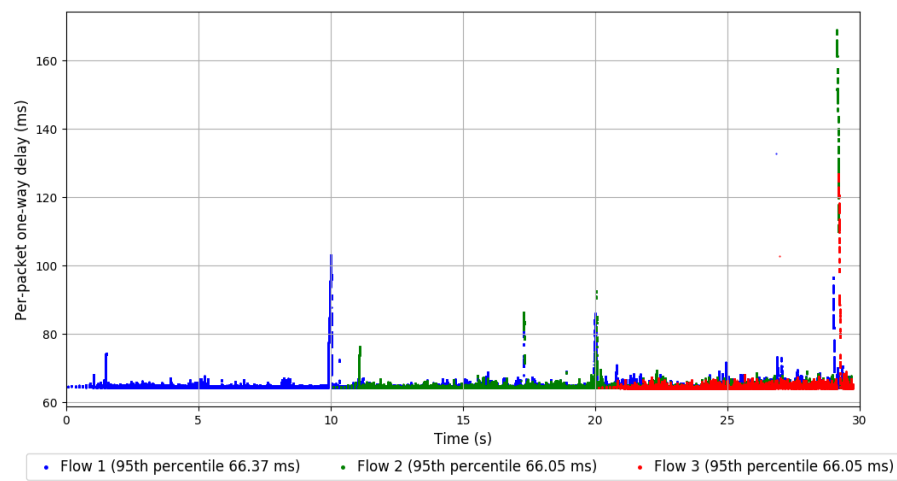
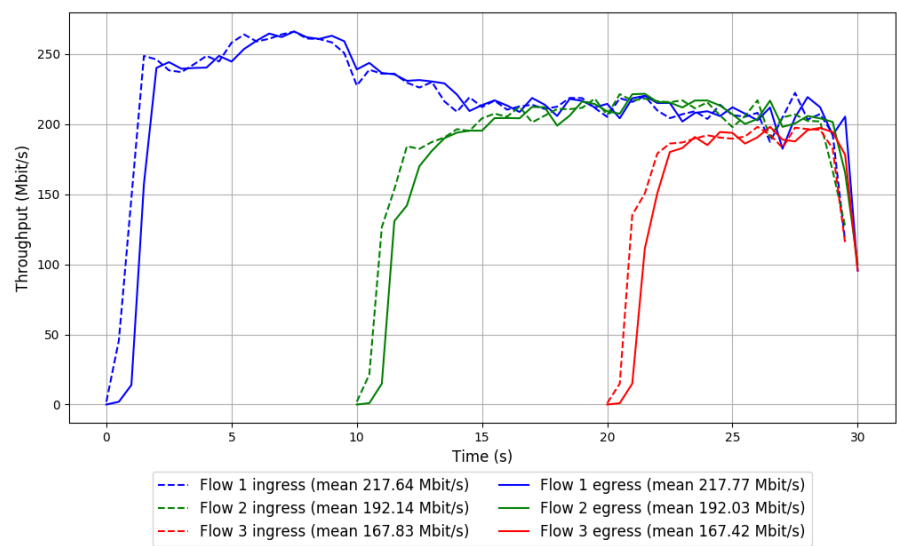


Run 2: Statistics of Indigo

Start at: 2018-11-15 15:21:04  
End at: 2018-11-15 15:21:34  
Local clock offset: -0.03 ms  
Remote clock offset: -1.557 ms

# Below is generated by plot.py at 2018-11-15 18:22:20  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 399.03 Mbit/s  
95th percentile per-packet one-way delay: 66.226 ms  
Loss rate: 0.63%  
-- Flow 1:  
Average throughput: 217.77 Mbit/s  
95th percentile per-packet one-way delay: 66.366 ms  
Loss rate: 0.37%  
-- Flow 2:  
Average throughput: 192.03 Mbit/s  
95th percentile per-packet one-way delay: 66.049 ms  
Loss rate: 0.70%  
-- Flow 3:  
Average throughput: 167.42 Mbit/s  
95th percentile per-packet one-way delay: 66.048 ms  
Loss rate: 1.53%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2018-11-15 15:52:35

End at: 2018-11-15 15:53:05

Local clock offset: -0.065 ms

Remote clock offset: 0.467 ms

# Below is generated by plot.py at 2018-11-15 18:22:20

# Datalink statistics

-- Total of 3 flows:

Average throughput: 410.23 Mbit/s

95th percentile per-packet one-way delay: 65.941 ms

Loss rate: 0.63%

-- Flow 1:

Average throughput: 217.14 Mbit/s

95th percentile per-packet one-way delay: 65.229 ms

Loss rate: 0.45%

-- Flow 2:

Average throughput: 210.35 Mbit/s

95th percentile per-packet one-way delay: 71.552 ms

Loss rate: 0.63%

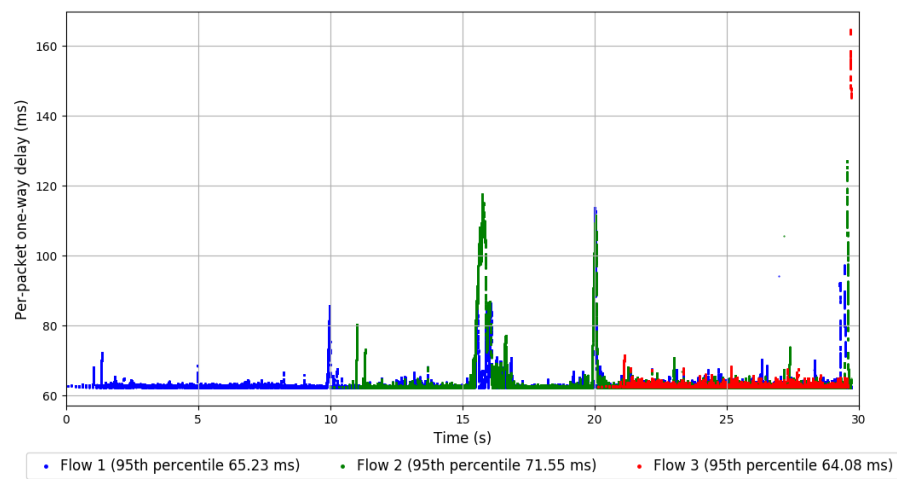
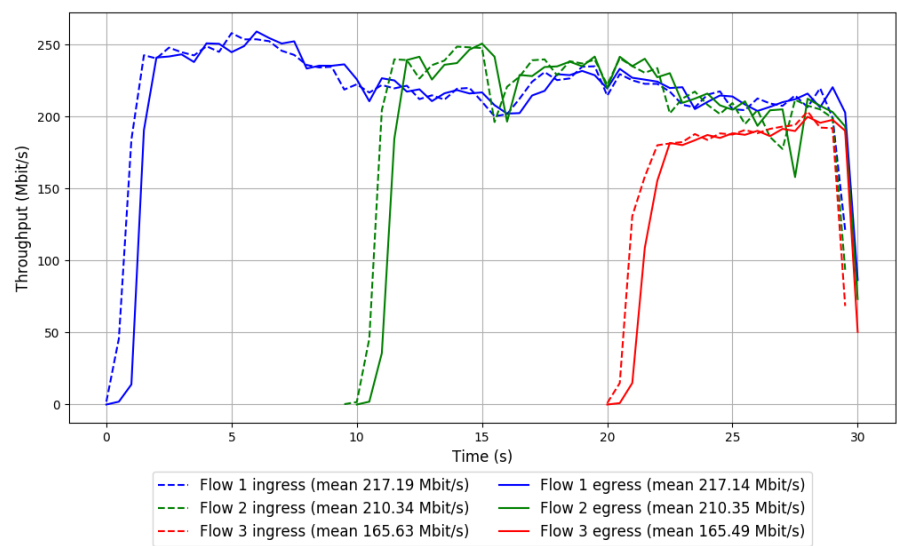
-- Flow 3:

Average throughput: 165.49 Mbit/s

95th percentile per-packet one-way delay: 64.082 ms

Loss rate: 1.39%

Run 3: Report of Indigo — Data Link



Run 4: Statistics of Indigo

Start at: 2018-11-15 16:23:56

End at: 2018-11-15 16:24:26

Local clock offset: -0.043 ms

Remote clock offset: 0.629 ms

# Below is generated by plot.py at 2018-11-15 18:22:20

# Datalink statistics

-- Total of 3 flows:

Average throughput: 405.06 Mbit/s

95th percentile per-packet one-way delay: 64.379 ms

Loss rate: 0.65%

-- Flow 1:

Average throughput: 212.25 Mbit/s

95th percentile per-packet one-way delay: 64.173 ms

Loss rate: 0.41%

-- Flow 2:

Average throughput: 208.68 Mbit/s

95th percentile per-packet one-way delay: 64.364 ms

Loss rate: 0.67%

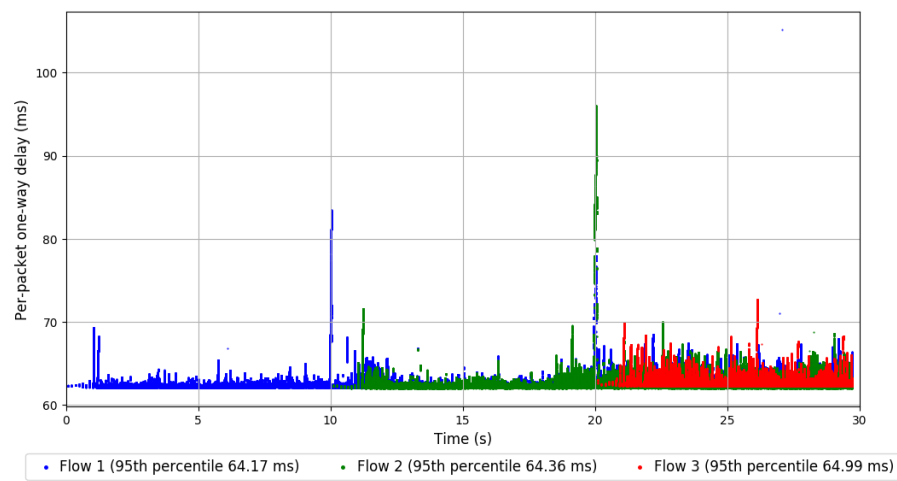
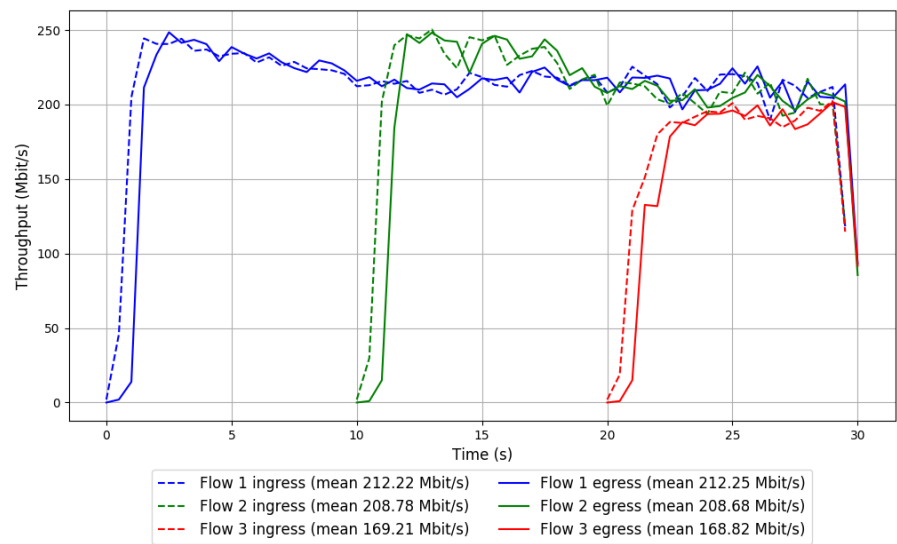
-- Flow 3:

Average throughput: 168.82 Mbit/s

95th percentile per-packet one-way delay: 64.989 ms

Loss rate: 1.52%

Run 4: Report of Indigo — Data Link



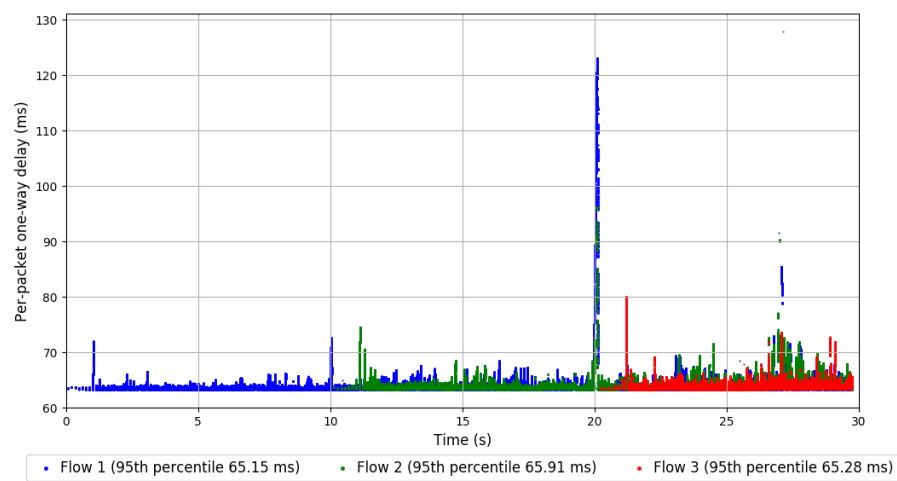
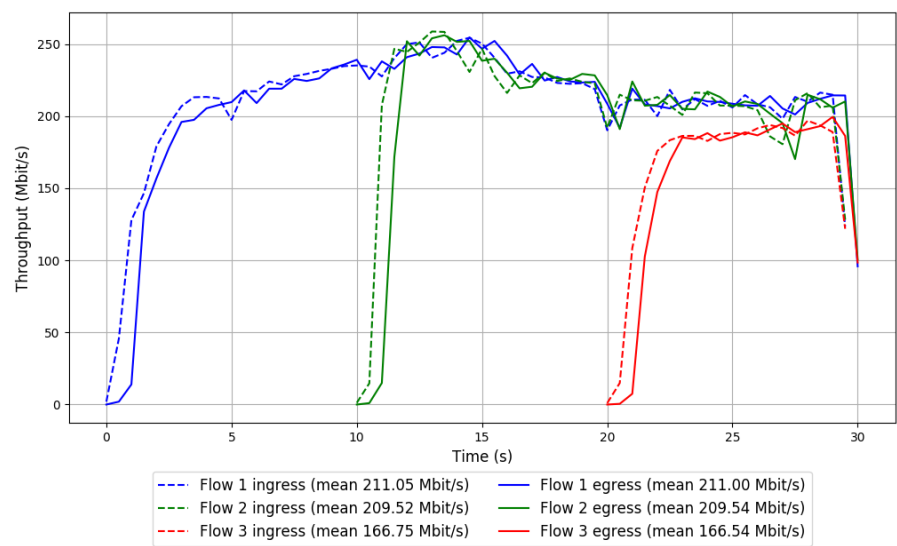


Run 5: Statistics of Indigo

Start at: 2018-11-15 16:55:27  
End at: 2018-11-15 16:55:57  
Local clock offset: -0.064 ms  
Remote clock offset: -0.704 ms

# Below is generated by plot.py at 2018-11-15 18:29:56  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 402.85 Mbit/s  
95th percentile per-packet one-way delay: 65.422 ms  
Loss rate: 0.65%  
-- Flow 1:  
Average throughput: 211.00 Mbit/s  
95th percentile per-packet one-way delay: 65.153 ms  
Loss rate: 0.45%  
-- Flow 2:  
Average throughput: 209.54 Mbit/s  
95th percentile per-packet one-way delay: 65.913 ms  
Loss rate: 0.64%  
-- Flow 3:  
Average throughput: 166.54 Mbit/s  
95th percentile per-packet one-way delay: 65.284 ms  
Loss rate: 1.45%

Run 5: Report of Indigo — Data Link



Run 1: Statistics of Indigo-96d2da3

Start at: 2018-11-15 14:46:17

End at: 2018-11-15 14:46:47

Local clock offset: -0.026 ms

Remote clock offset: 0.021 ms

# Below is generated by plot.py at 2018-11-15 18:29:56

# Datalink statistics

-- Total of 3 flows:

Average throughput: 555.26 Mbit/s

95th percentile per-packet one-way delay: 87.219 ms

Loss rate: 0.48%

-- Flow 1:

Average throughput: 280.07 Mbit/s

95th percentile per-packet one-way delay: 85.681 ms

Loss rate: 0.17%

-- Flow 2:

Average throughput: 292.24 Mbit/s

95th percentile per-packet one-way delay: 86.657 ms

Loss rate: 0.42%

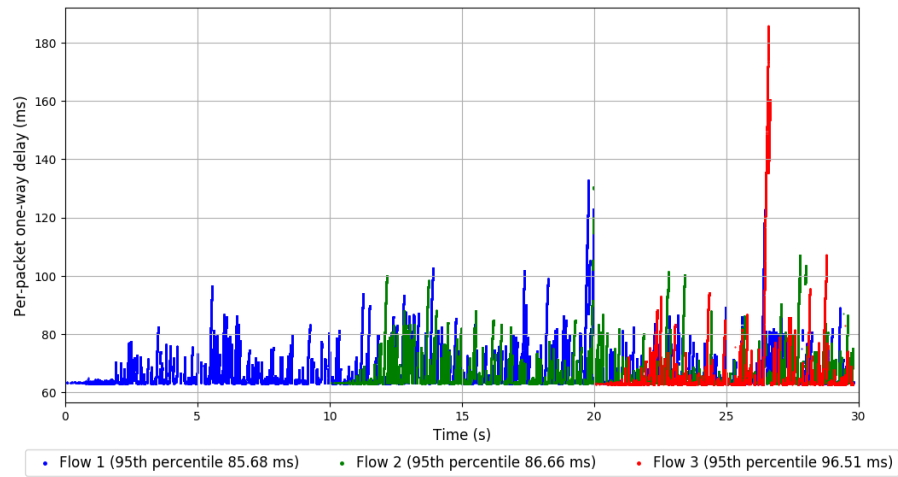
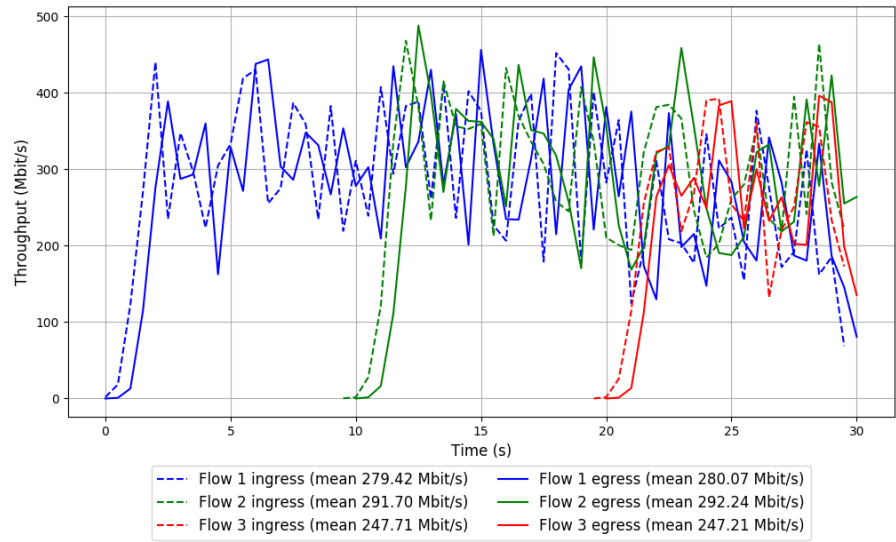
-- Flow 3:

Average throughput: 247.21 Mbit/s

95th percentile per-packet one-way delay: 96.507 ms

Loss rate: 1.66%

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



Run 2: Statistics of Indigo-96d2da3

Start at: 2018-11-15 15:17:38

End at: 2018-11-15 15:18:08

Local clock offset: 0.007 ms

Remote clock offset: 0.3 ms

# Below is generated by plot.py at 2018-11-15 18:29:56

# Datalink statistics

-- Total of 3 flows:

Average throughput: 553.13 Mbit/s

95th percentile per-packet one-way delay: 86.917 ms

Loss rate: 0.75%

-- Flow 1:

Average throughput: 287.86 Mbit/s

95th percentile per-packet one-way delay: 87.156 ms

Loss rate: 0.59%

-- Flow 2:

Average throughput: 273.34 Mbit/s

95th percentile per-packet one-way delay: 86.044 ms

Loss rate: 0.94%

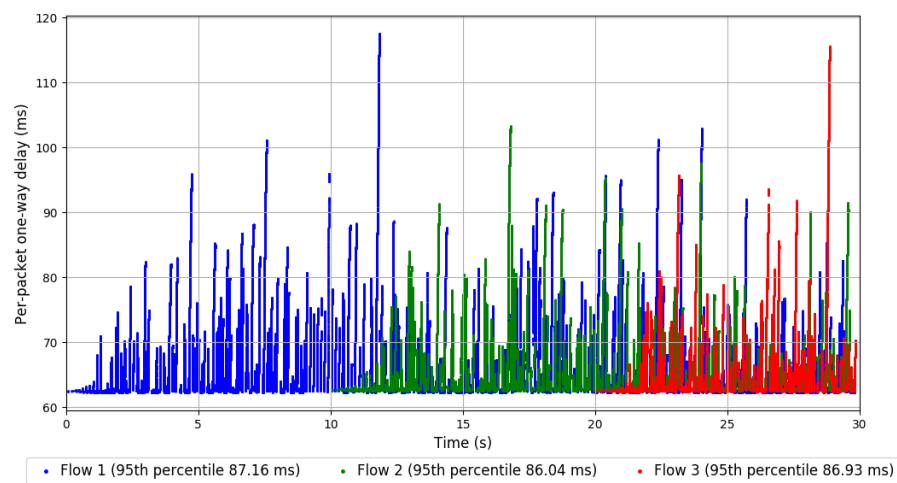
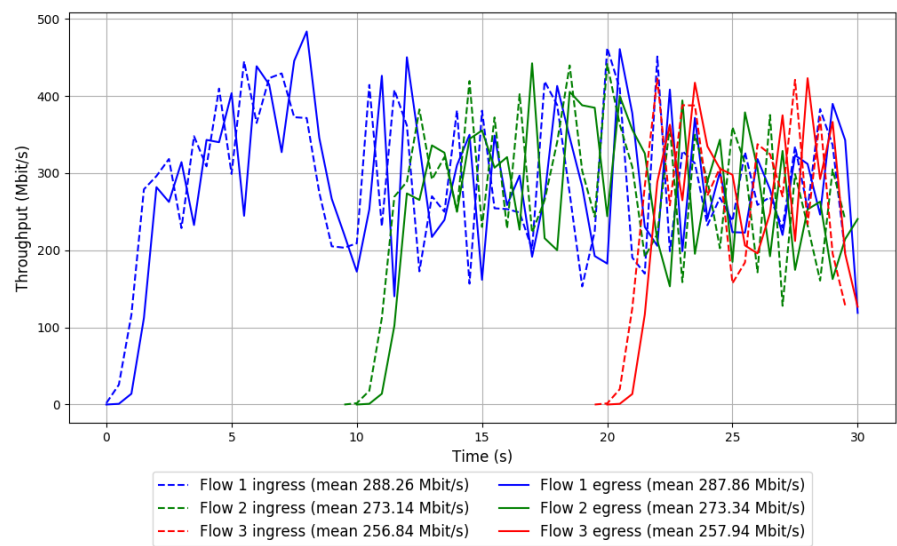
-- Flow 3:

Average throughput: 257.94 Mbit/s

95th percentile per-packet one-way delay: 86.930 ms

Loss rate: 0.86%

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



Run 3: Statistics of Indigo-96d2da3

Start at: 2018-11-15 15:48:47

End at: 2018-11-15 15:49:17

Local clock offset: -0.097 ms

Remote clock offset: 0.798 ms

# Below is generated by plot.py at 2018-11-15 18:29:56

# Datalink statistics

-- Total of 3 flows:

Average throughput: 544.58 Mbit/s

95th percentile per-packet one-way delay: 92.481 ms

Loss rate: 0.76%

-- Flow 1:

Average throughput: 287.44 Mbit/s

95th percentile per-packet one-way delay: 93.130 ms

Loss rate: 0.57%

-- Flow 2:

Average throughput: 276.81 Mbit/s

95th percentile per-packet one-way delay: 94.044 ms

Loss rate: 0.59%

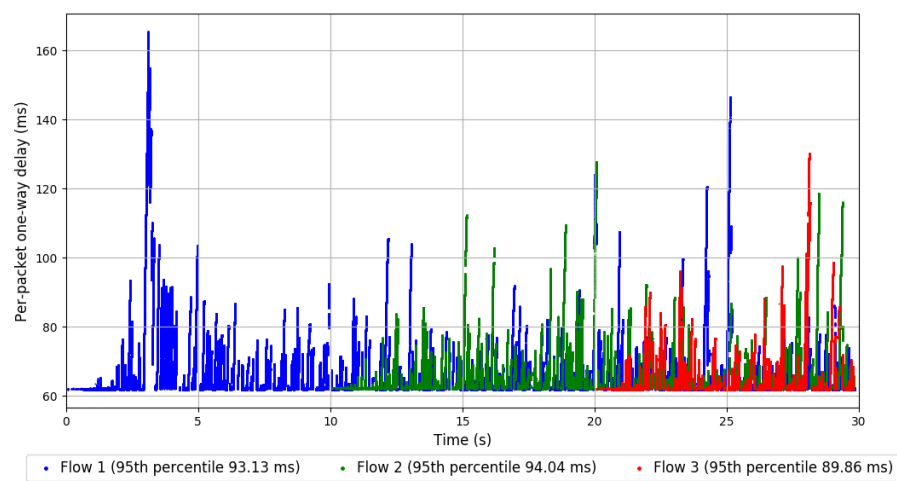
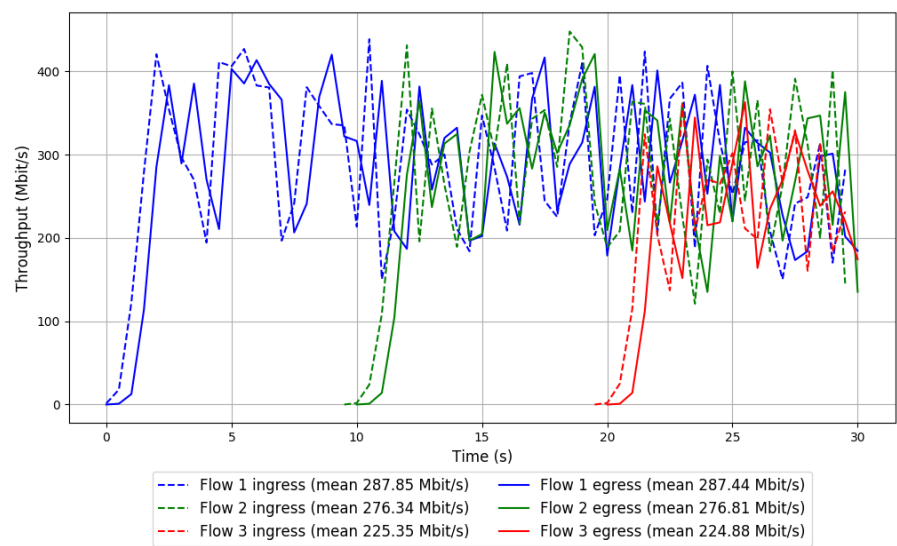
-- Flow 3:

Average throughput: 224.88 Mbit/s

95th percentile per-packet one-way delay: 89.855 ms

Loss rate: 1.89%

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



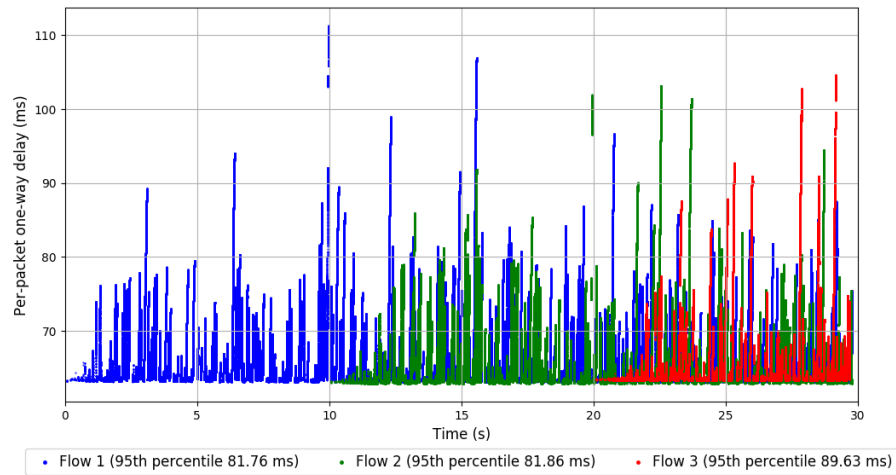
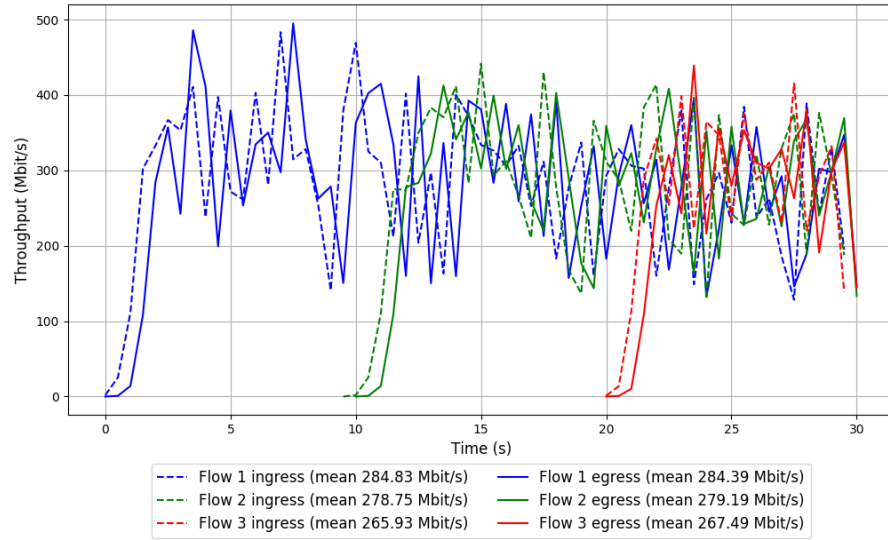


Run 4: Statistics of Indigo-96d2da3

Start at: 2018-11-15 16:20:11  
End at: 2018-11-15 16:20:41  
Local clock offset: -0.059 ms  
Remote clock offset: -0.269 ms

# Below is generated by plot.py at 2018-11-15 18:31:45  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 556.07 Mbit/s  
95th percentile per-packet one-way delay: 83.202 ms  
Loss rate: 0.49%  
-- Flow 1:  
Average throughput: 284.39 Mbit/s  
95th percentile per-packet one-way delay: 81.759 ms  
Loss rate: 0.38%  
-- Flow 2:  
Average throughput: 279.19 Mbit/s  
95th percentile per-packet one-way delay: 81.857 ms  
Loss rate: 0.49%  
-- Flow 3:  
Average throughput: 267.49 Mbit/s  
95th percentile per-packet one-way delay: 89.627 ms  
Loss rate: 0.86%

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



Run 5: Statistics of Indigo-96d2da3

Start at: 2018-11-15 16:51:47

End at: 2018-11-15 16:52:17

Local clock offset: -0.019 ms

Remote clock offset: 0.048 ms

# Below is generated by plot.py at 2018-11-15 18:31:45

# Datalink statistics

-- Total of 3 flows:

Average throughput: 525.68 Mbit/s

95th percentile per-packet one-way delay: 87.061 ms

Loss rate: 0.82%

-- Flow 1:

Average throughput: 271.80 Mbit/s

95th percentile per-packet one-way delay: 85.327 ms

Loss rate: 0.37%

-- Flow 2:

Average throughput: 257.66 Mbit/s

95th percentile per-packet one-way delay: 89.311 ms

Loss rate: 1.11%

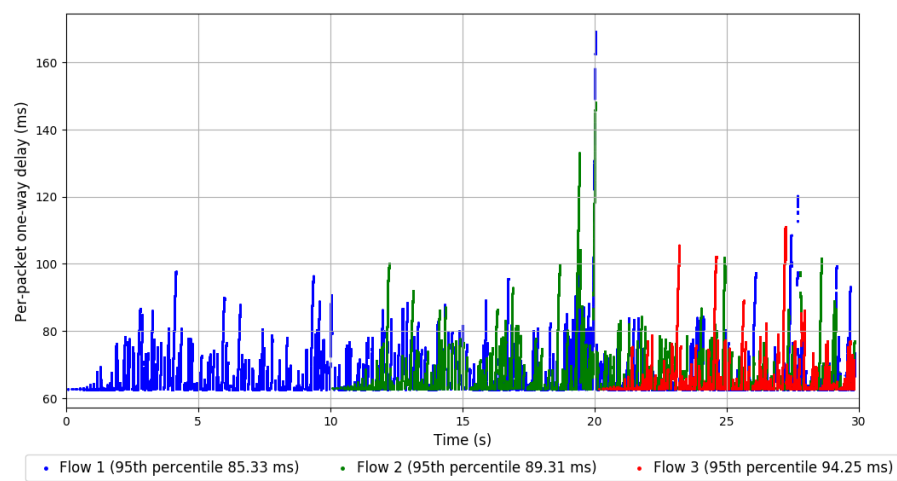
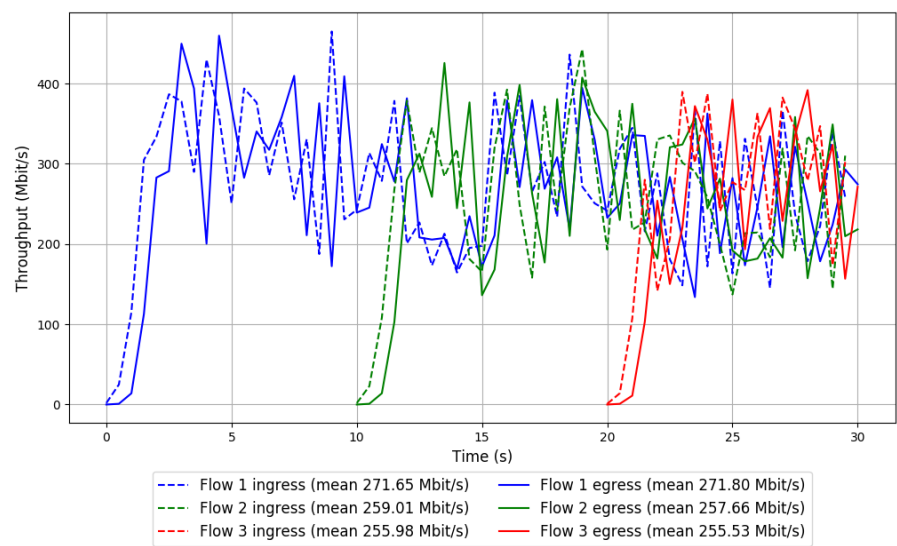
-- Flow 3:

Average throughput: 255.53 Mbit/s

95th percentile per-packet one-way delay: 94.252 ms

Loss rate: 1.67%

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

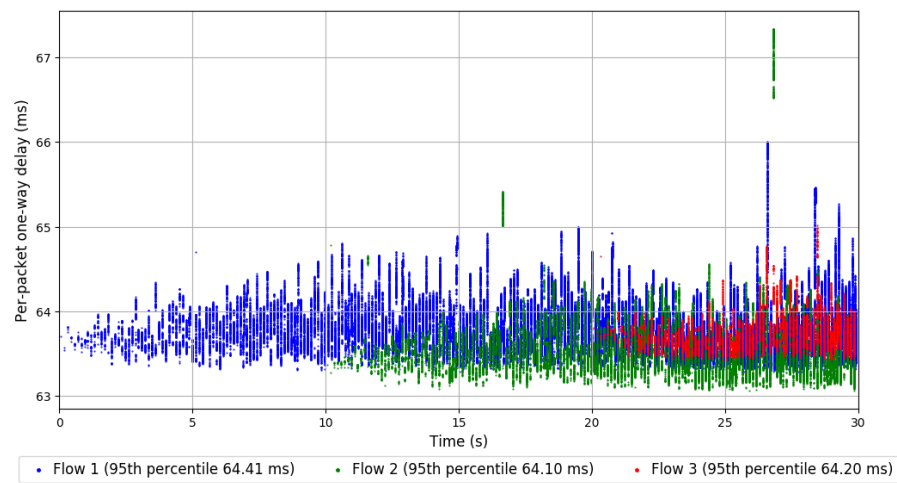
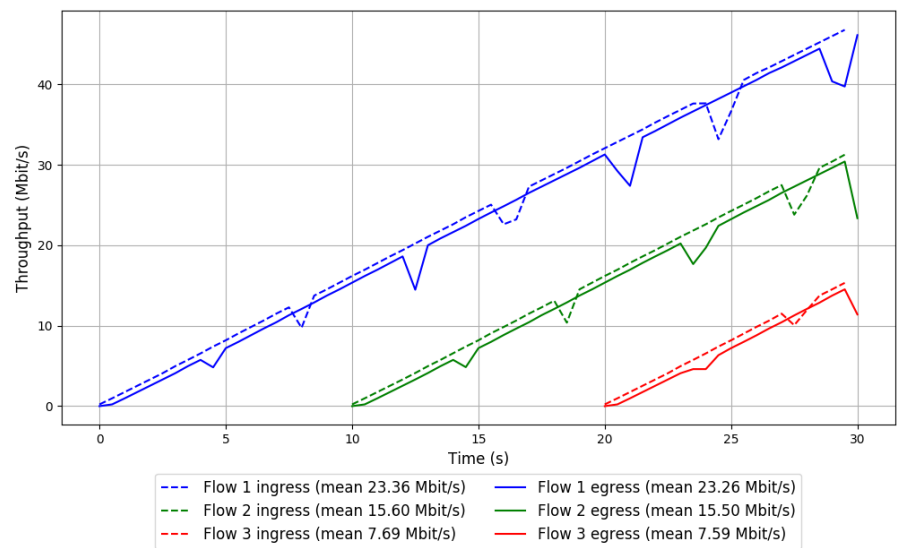


```
Run 1: Statistics of LEDBAT

Start at: 2018-11-15 14:39:05
End at: 2018-11-15 14:39:35
Local clock offset: -0.026 ms
Remote clock offset: -0.467 ms

# Below is generated by plot.py at 2018-11-15 18:31:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 36.02 Mbit/s
95th percentile per-packet one-way delay: 64.342 ms
Loss rate: 1.08%
-- Flow 1:
Average throughput: 23.26 Mbit/s
95th percentile per-packet one-way delay: 64.412 ms
Loss rate: 0.84%
-- Flow 2:
Average throughput: 15.50 Mbit/s
95th percentile per-packet one-way delay: 64.098 ms
Loss rate: 1.27%
-- Flow 3:
Average throughput: 7.59 Mbit/s
95th percentile per-packet one-way delay: 64.204 ms
Loss rate: 2.58%
```

Run 1: Report of LEDBAT — Data Link

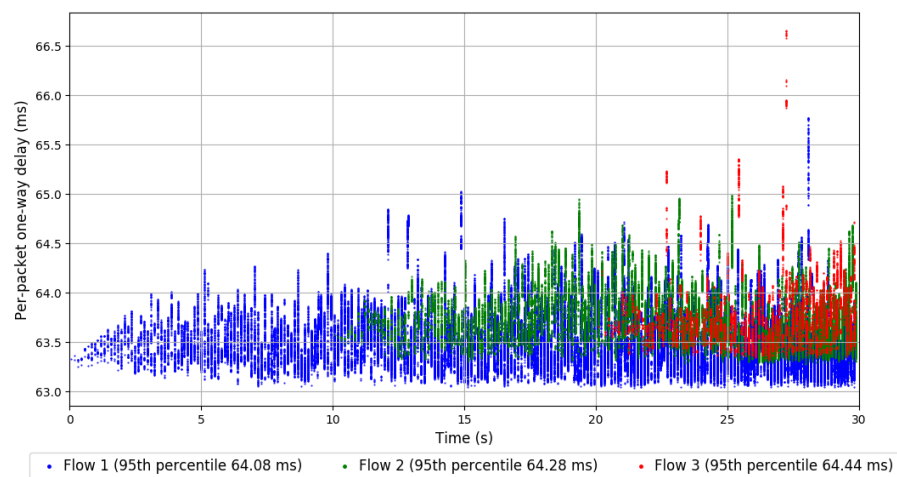
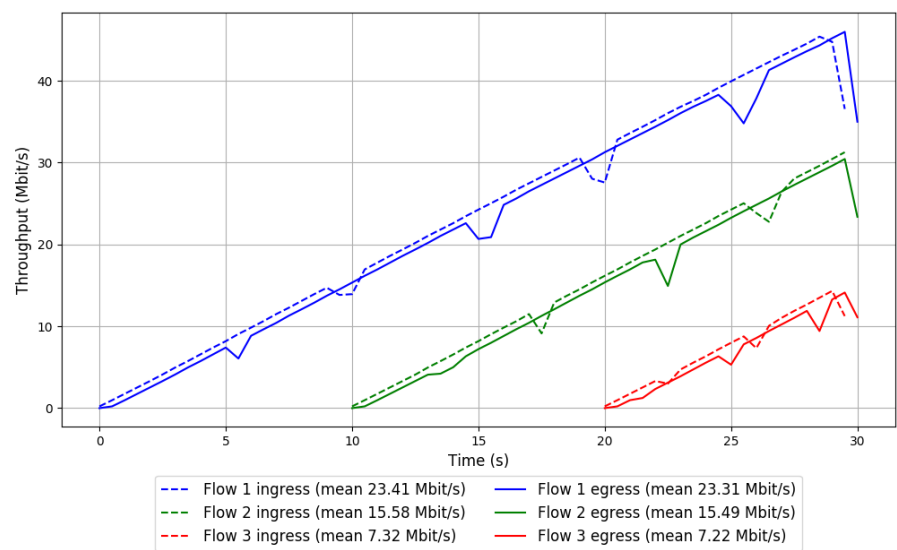


Run 2: Statistics of LEDBAT

Start at: 2018-11-15 15:10:23  
End at: 2018-11-15 15:10:53  
Local clock offset: -0.031 ms  
Remote clock offset: -0.419 ms

# Below is generated by plot.py at 2018-11-15 18:31:45  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 35.92 Mbit/s  
95th percentile per-packet one-way delay: 64.186 ms  
Loss rate: 1.08%  
-- Flow 1:  
Average throughput: 23.31 Mbit/s  
95th percentile per-packet one-way delay: 64.077 ms  
Loss rate: 0.84%  
-- Flow 2:  
Average throughput: 15.49 Mbit/s  
95th percentile per-packet one-way delay: 64.278 ms  
Loss rate: 1.27%  
-- Flow 3:  
Average throughput: 7.22 Mbit/s  
95th percentile per-packet one-way delay: 64.436 ms  
Loss rate: 2.63%

Run 2: Report of LEDBAT — Data Link



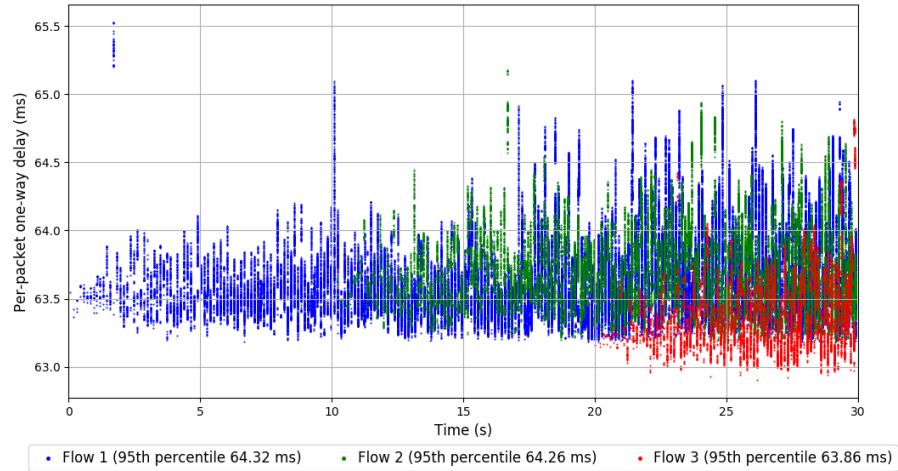
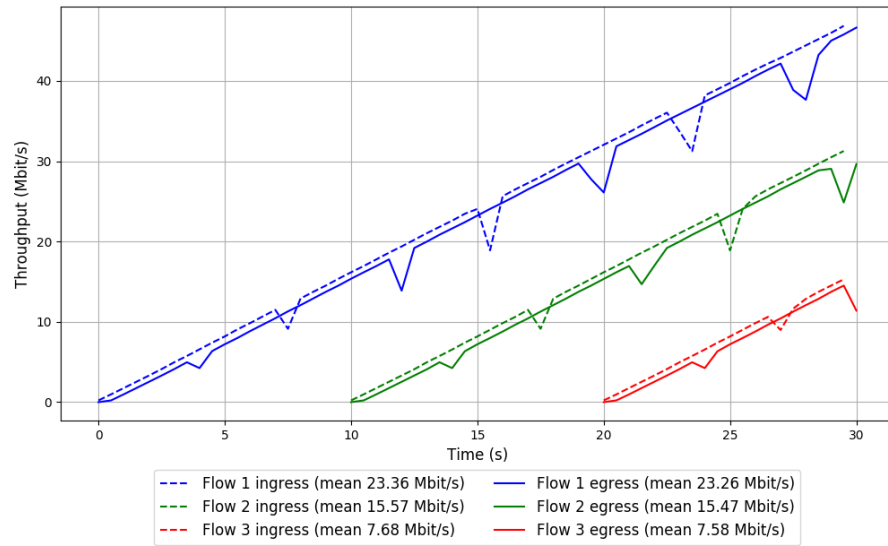


Run 3: Statistics of LEDBAT

Start at: 2018-11-15 15:41:36  
End at: 2018-11-15 15:42:06  
Local clock offset: -0.021 ms  
Remote clock offset: -0.373 ms

# Below is generated by plot.py at 2018-11-15 18:31:45  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 36.01 Mbit/s  
95th percentile per-packet one-way delay: 64.298 ms  
Loss rate: 1.08%  
-- Flow 1:  
Average throughput: 23.26 Mbit/s  
95th percentile per-packet one-way delay: 64.320 ms  
Loss rate: 0.84%  
-- Flow 2:  
Average throughput: 15.47 Mbit/s  
95th percentile per-packet one-way delay: 64.261 ms  
Loss rate: 1.27%  
-- Flow 3:  
Average throughput: 7.58 Mbit/s  
95th percentile per-packet one-way delay: 63.861 ms  
Loss rate: 2.56%

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



Run 4: Statistics of LEDBAT

Start at: 2018-11-15 16:13:03

End at: 2018-11-15 16:13:33

Local clock offset: -0.086 ms

Remote clock offset: 0.921 ms

# Below is generated by plot.py at 2018-11-15 18:31:45

# Datalink statistics

-- Total of 3 flows:

Average throughput: 35.48 Mbit/s

95th percentile per-packet one-way delay: 63.345 ms

Loss rate: 1.09%

-- Flow 1:

Average throughput: 23.17 Mbit/s

95th percentile per-packet one-way delay: 63.427 ms

Loss rate: 0.85%

-- Flow 2:

Average throughput: 14.93 Mbit/s

95th percentile per-packet one-way delay: 63.290 ms

Loss rate: 1.30%

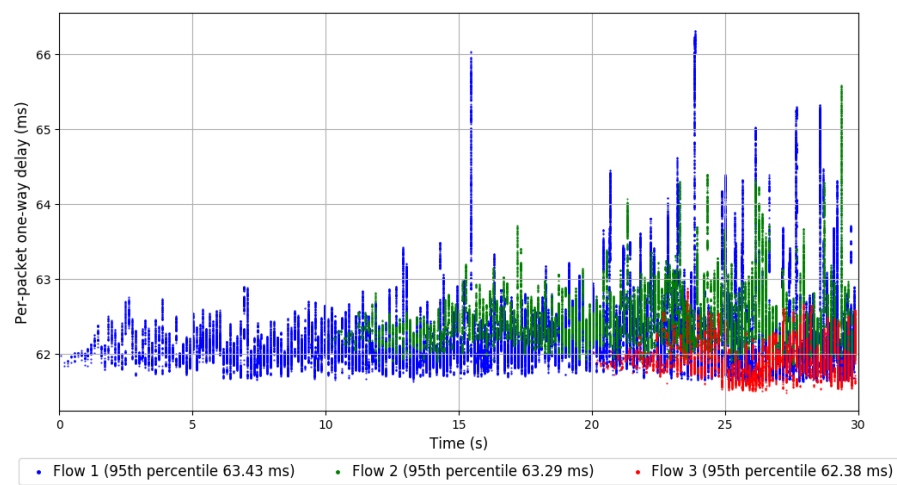
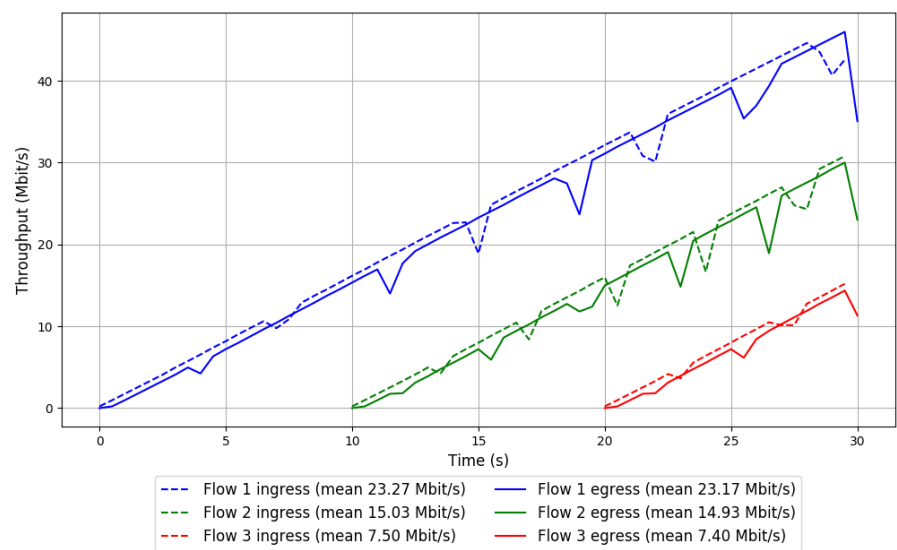
-- Flow 3:

Average throughput: 7.40 Mbit/s

95th percentile per-packet one-way delay: 62.376 ms

Loss rate: 2.60%

Run 4: Report of LEDBAT — Data Link

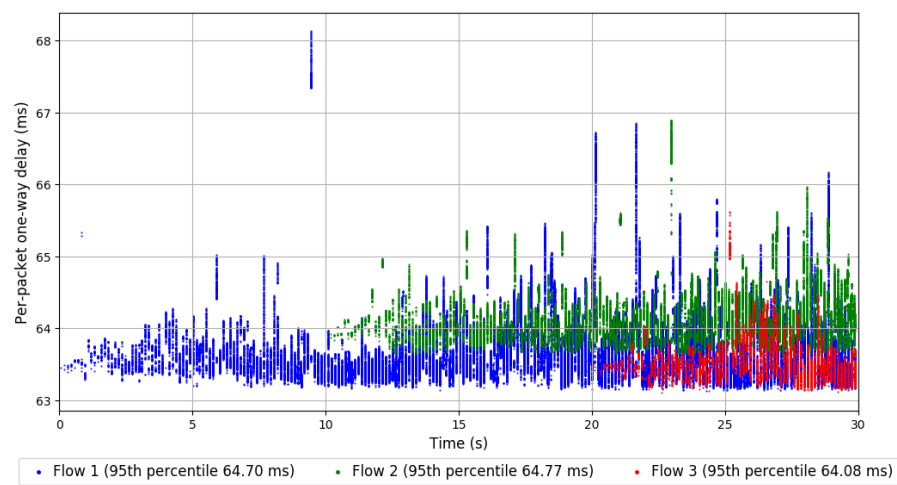
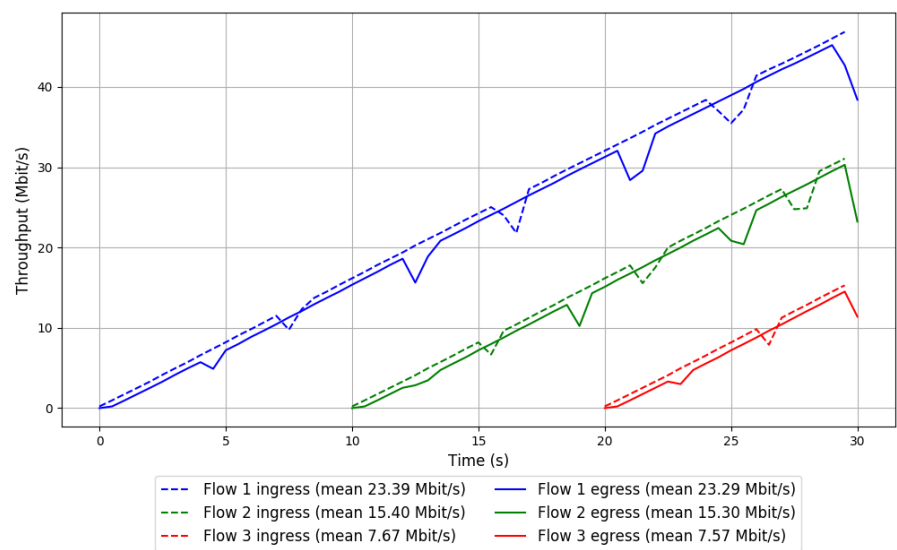


Run 5: Statistics of LEDBAT

Start at: 2018-11-15 16:44:38  
End at: 2018-11-15 16:45:08  
Local clock offset: -0.022 ms  
Remote clock offset: -0.443 ms

# Below is generated by plot.py at 2018-11-15 18:31:45  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 35.93 Mbit/s  
95th percentile per-packet one-way delay: 64.706 ms  
Loss rate: 1.09%  
-- Flow 1:  
Average throughput: 23.29 Mbit/s  
95th percentile per-packet one-way delay: 64.701 ms  
Loss rate: 0.84%  
-- Flow 2:  
Average throughput: 15.30 Mbit/s  
95th percentile per-packet one-way delay: 64.769 ms  
Loss rate: 1.28%  
-- Flow 3:  
Average throughput: 7.57 Mbit/s  
95th percentile per-packet one-way delay: 64.079 ms  
Loss rate: 2.56%

Run 5: Report of LEDBAT — Data Link



Run 1: Statistics of Indigo-Muses

Start at: 2018-11-15 14:36:59

End at: 2018-11-15 14:37:29

Local clock offset: -0.03 ms

Remote clock offset: 1.211 ms

# Below is generated by plot.py at 2018-11-15 18:44:09

# Datalink statistics

-- Total of 3 flows:

Average throughput: 1052.84 Mbit/s

95th percentile per-packet one-way delay: 88.083 ms

Loss rate: 0.67%

-- Flow 1:

Average throughput: 573.00 Mbit/s

95th percentile per-packet one-way delay: 85.839 ms

Loss rate: 0.44%

-- Flow 2:

Average throughput: 532.13 Mbit/s

95th percentile per-packet one-way delay: 93.594 ms

Loss rate: 0.63%

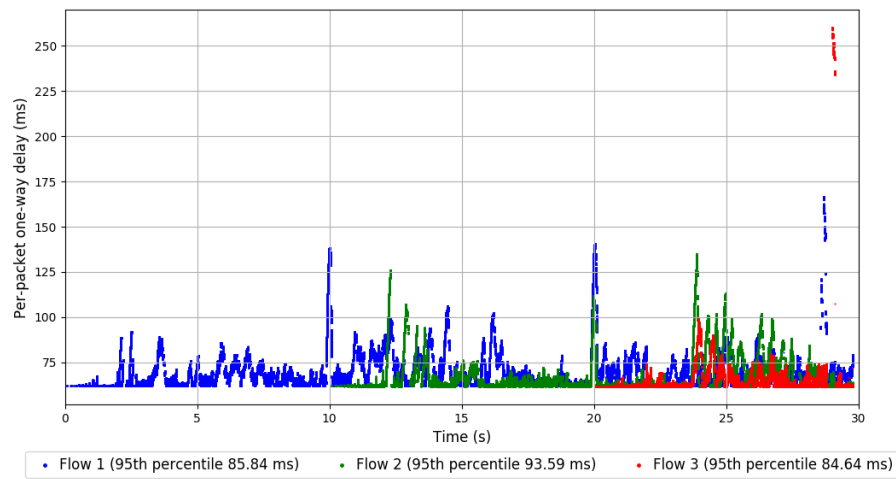
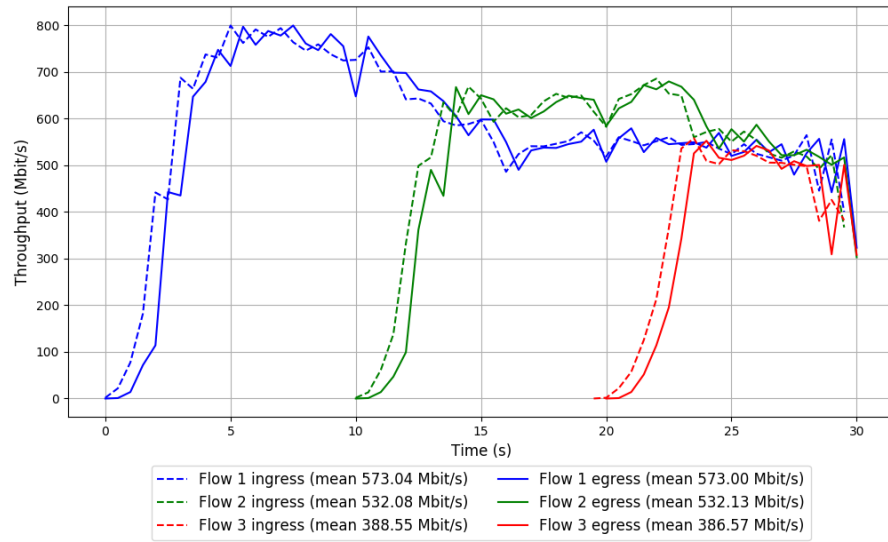
-- Flow 3:

Average throughput: 386.57 Mbit/s

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

Loss rate: 1.79%

# Run 1: Report of Indigo-Muses — Data Link





Run 2: Statistics of Indigo-Muses

Start at: 2018-11-15 15:08:18

End at: 2018-11-15 15:08:48

Local clock offset: -0.034 ms

Remote clock offset: 0.088 ms

# Below is generated by plot.py at 2018-11-15 18:45:02

# Datalink statistics

-- Total of 3 flows:

Average throughput: 1028.41 Mbit/s

95th percentile per-packet one-way delay: 101.989 ms

Loss rate: 0.64%

-- Flow 1:

Average throughput: 568.30 Mbit/s

95th percentile per-packet one-way delay: 103.185 ms

Loss rate: 0.38%

-- Flow 2:

Average throughput: 505.64 Mbit/s

95th percentile per-packet one-way delay: 101.458 ms

Loss rate: 0.64%

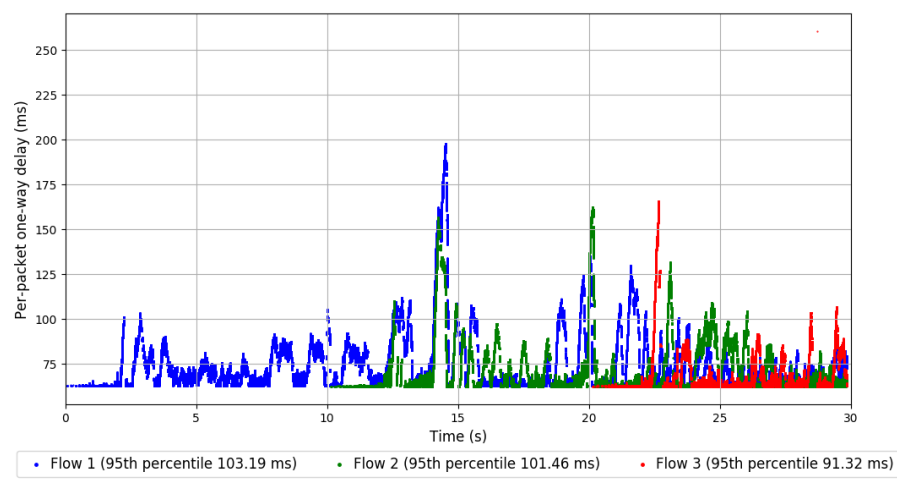
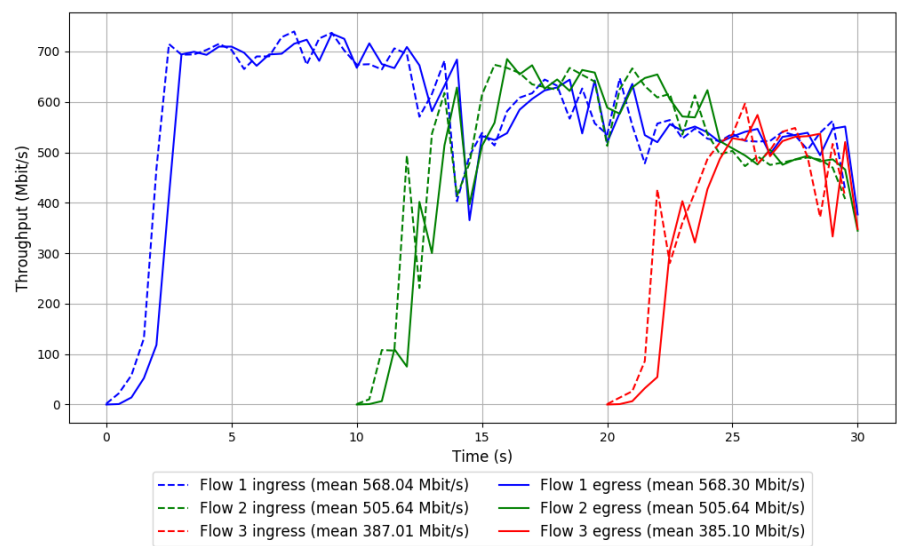
-- Flow 3:

Average throughput: 385.10 Mbit/s

95th percentile per-packet one-way delay: 91.317 ms

Loss rate: 1.77%

Run 2: Report of Indigo-Muses — Data Link



Run 3: Statistics of Indigo-Muses

Start at: 2018-11-15 15:39:30

End at: 2018-11-15 15:40:00

Local clock offset: 0.011 ms

Remote clock offset: 1.024 ms

# Below is generated by plot.py at 2018-11-15 18:45:22

# Datalink statistics

-- Total of 3 flows:

Average throughput: 1032.50 Mbit/s

95th percentile per-packet one-way delay: 87.511 ms

Loss rate: 0.77%

-- Flow 1:

Average throughput: 591.78 Mbit/s

95th percentile per-packet one-way delay: 90.022 ms

Loss rate: 0.40%

-- Flow 2:

Average throughput: 490.07 Mbit/s

95th percentile per-packet one-way delay: 86.359 ms

Loss rate: 1.00%

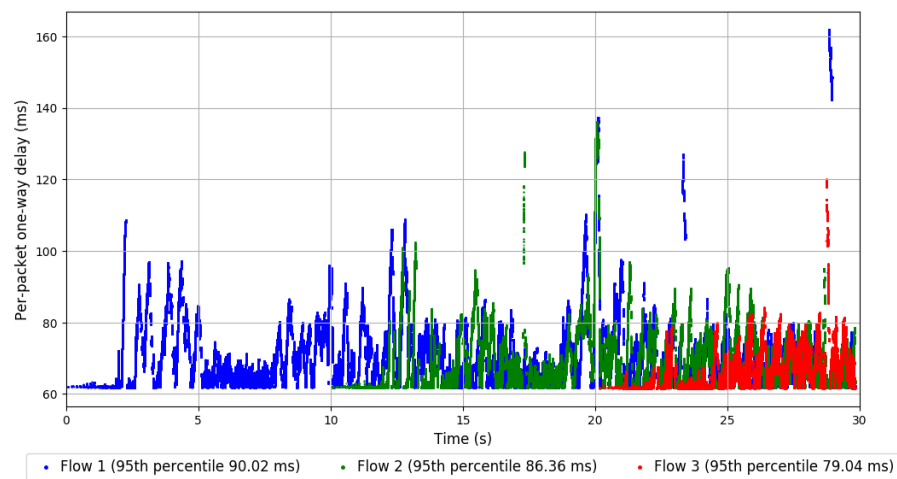
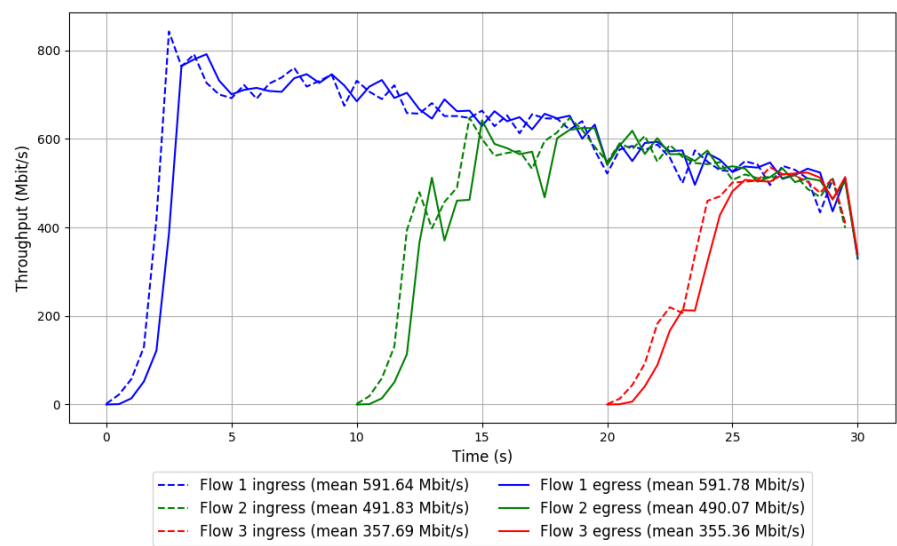
-- Flow 3:

Average throughput: 355.36 Mbit/s

95th percentile per-packet one-way delay: 79.038 ms

Loss rate: 2.00%

Run 3: Report of Indigo-Muses — Data Link

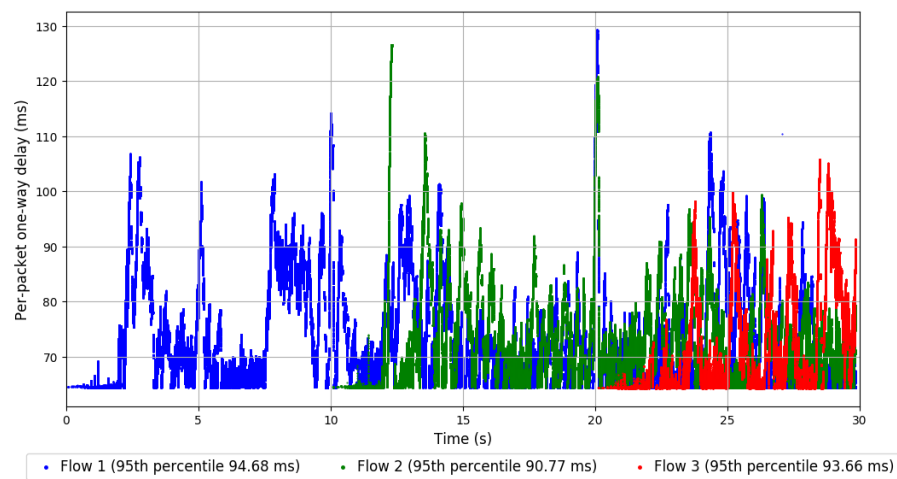
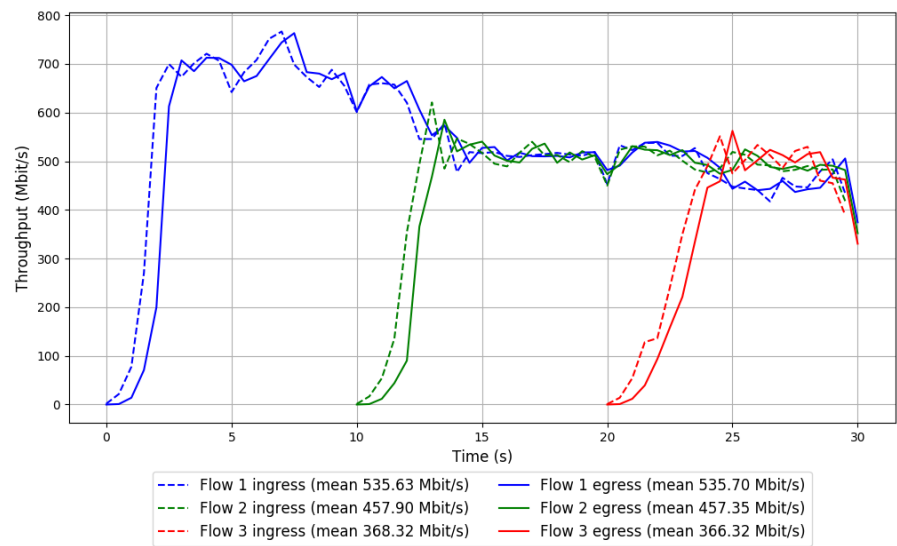


#### Run 4: Statistics of Indigo-Muses

Start at: 2018-11-15 16:11:00  
End at: 2018-11-15 16:11:30  
Local clock offset: -0.139 ms  
Remote clock offset: -1.612 ms

```
# Below is generated by plot.py at 2018-11-15 18:45:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 958.97 Mbit/s
95th percentile per-packet one-way delay: 93.604 ms
Loss rate: 0.70%
-- Flow 1:
Average throughput: 535.70 Mbit/s
95th percentile per-packet one-way delay: 94.679 ms
Loss rate: 0.41%
-- Flow 2:
Average throughput: 457.35 Mbit/s
95th percentile per-packet one-way delay: 90.773 ms
Loss rate: 0.76%
-- Flow 3:
Average throughput: 366.32 Mbit/s
95th percentile per-packet one-way delay: 93.662 ms
Loss rate: 1.86%
```

Run 4: Report of Indigo-Muses — Data Link



Run 5: Statistics of Indigo-Muses

Start at: 2018-11-15 16:42:33

End at: 2018-11-15 16:43:03

Local clock offset: 0.01 ms

Remote clock offset: 1.104 ms

# Below is generated by plot.py at 2018-11-15 18:46:05

# Datalink statistics

-- Total of 3 flows:

Average throughput: 1022.58 Mbit/s

95th percentile per-packet one-way delay: 87.480 ms

Loss rate: 0.64%

-- Flow 1:

Average throughput: 572.15 Mbit/s

95th percentile per-packet one-way delay: 86.960 ms

Loss rate: 0.37%

-- Flow 2:

Average throughput: 491.03 Mbit/s

95th percentile per-packet one-way delay: 87.495 ms

Loss rate: 0.71%

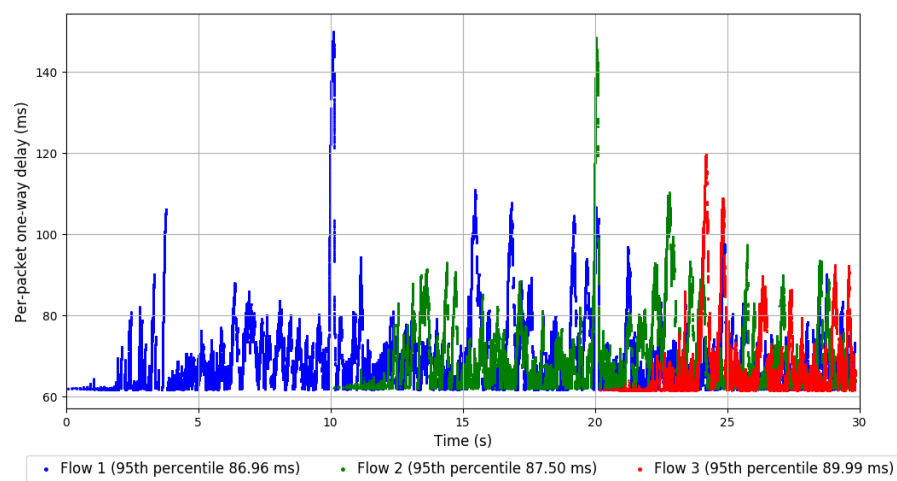
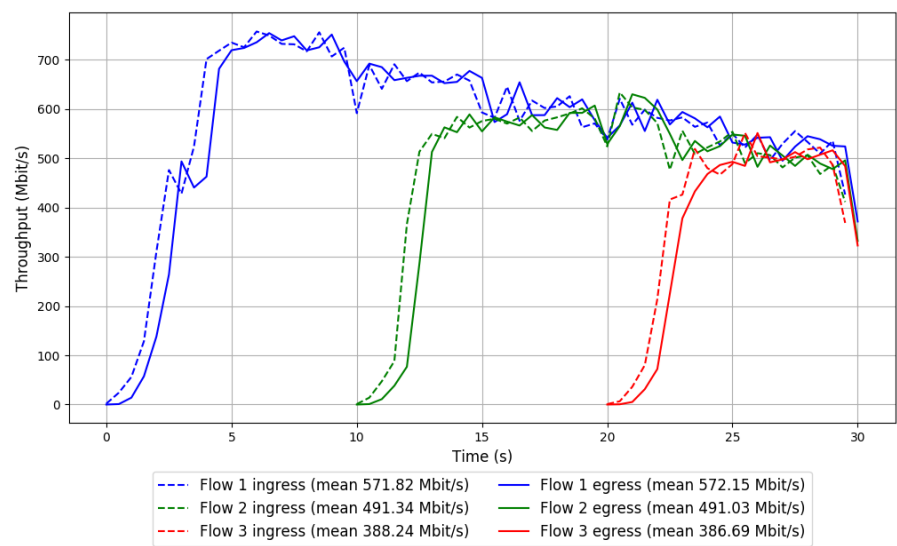
-- Flow 3:

Average throughput: 386.69 Mbit/s

95th percentile per-packet one-way delay: 89.992 ms

Loss rate: 1.70%

Run 5: Report of Indigo-Muses — Data Link



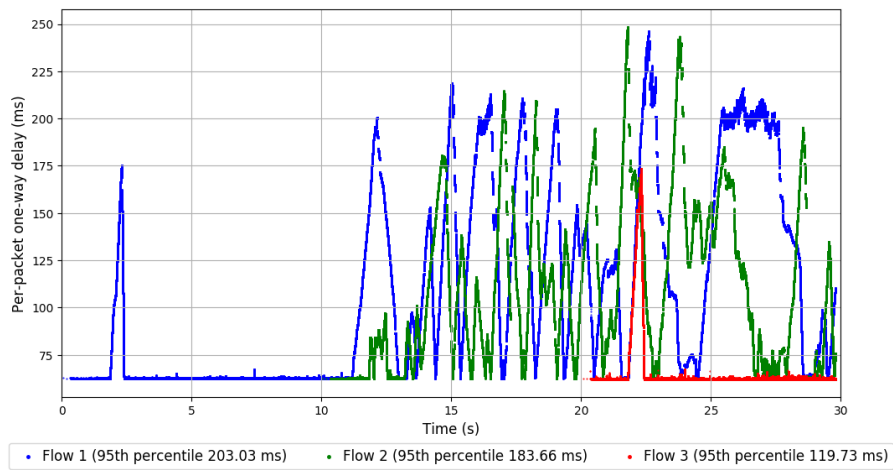
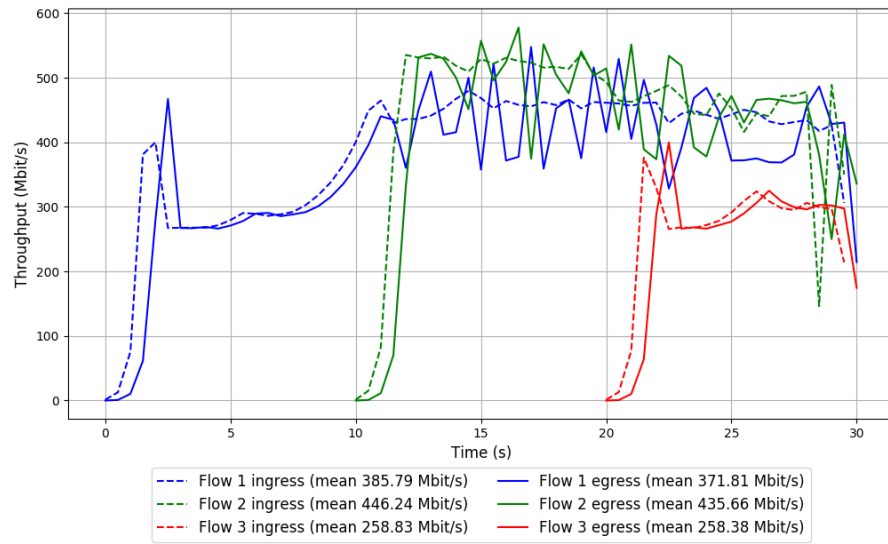


```
Run 1: Statistics of PCC-Allegro

Start at: 2018-11-15 14:54:41
End at: 2018-11-15 14:55:11
Local clock offset: -0.068 ms
Remote clock offset: 0.453 ms

# Below is generated by plot.py at 2018-11-15 18:55:38
# Datalink statistics
-- Total of 3 flows:
Average throughput: 745.17 Mbit/s
95th percentile per-packet one-way delay: 199.756 ms
Loss rate: 3.35%
-- Flow 1:
Average throughput: 371.81 Mbit/s
95th percentile per-packet one-way delay: 203.031 ms
Loss rate: 4.03%
-- Flow 2:
Average throughput: 435.66 Mbit/s
95th percentile per-packet one-way delay: 183.656 ms
Loss rate: 2.99%
-- Flow 3:
Average throughput: 258.38 Mbit/s
95th percentile per-packet one-way delay: 119.730 ms
Loss rate: 1.50%
```

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

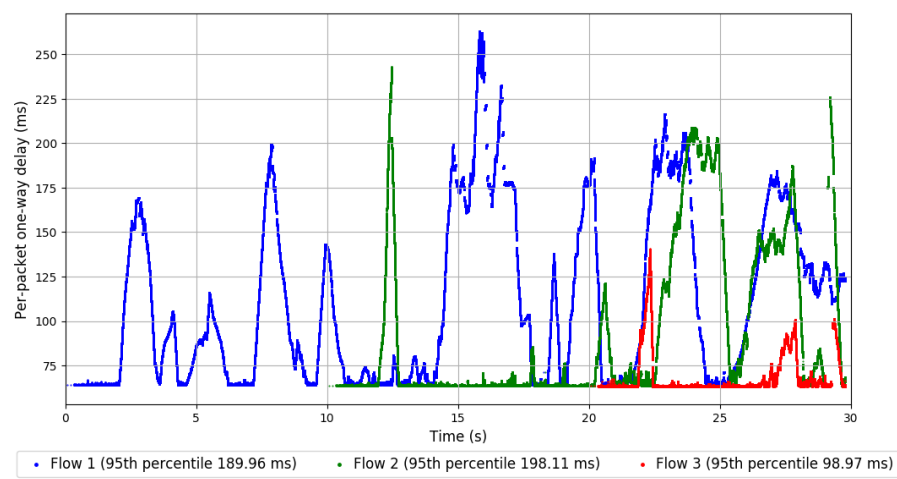
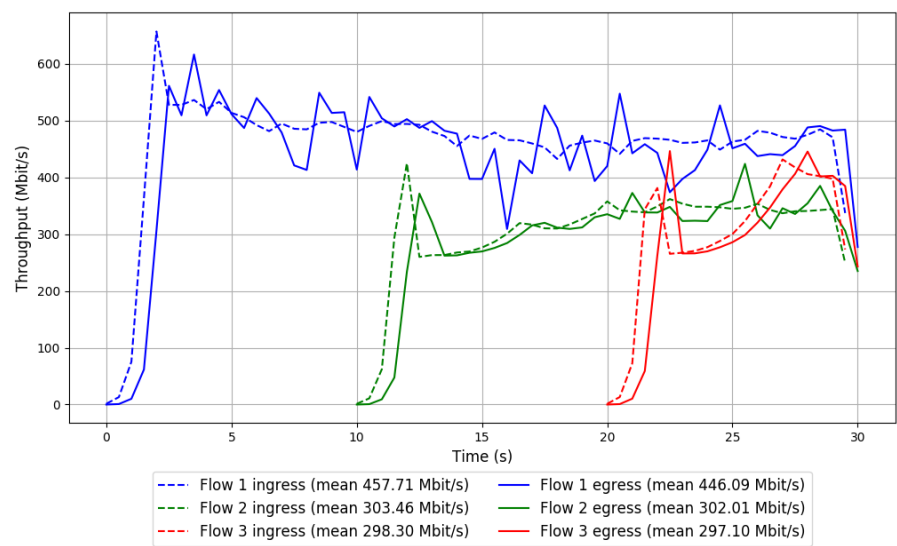


Run 2: Statistics of PCC-Allegro

Start at: 2018-11-15 15:26:01  
End at: 2018-11-15 15:26:31  
Local clock offset: 0.002 ms  
Remote clock offset: -0.838 ms

# Below is generated by plot.py at 2018-11-15 18:57:36  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 743.39 Mbit/s  
95th percentile per-packet one-way delay: 190.013 ms  
Loss rate: 2.30%  
-- Flow 1:  
Average throughput: 446.09 Mbit/s  
95th percentile per-packet one-way delay: 189.962 ms  
Loss rate: 2.95%  
-- Flow 2:  
Average throughput: 302.01 Mbit/s  
95th percentile per-packet one-way delay: 198.113 ms  
Loss rate: 1.12%  
-- Flow 3:  
Average throughput: 297.10 Mbit/s  
95th percentile per-packet one-way delay: 98.966 ms  
Loss rate: 1.66%

Run 2: Report of PCC-Allegro — Data Link

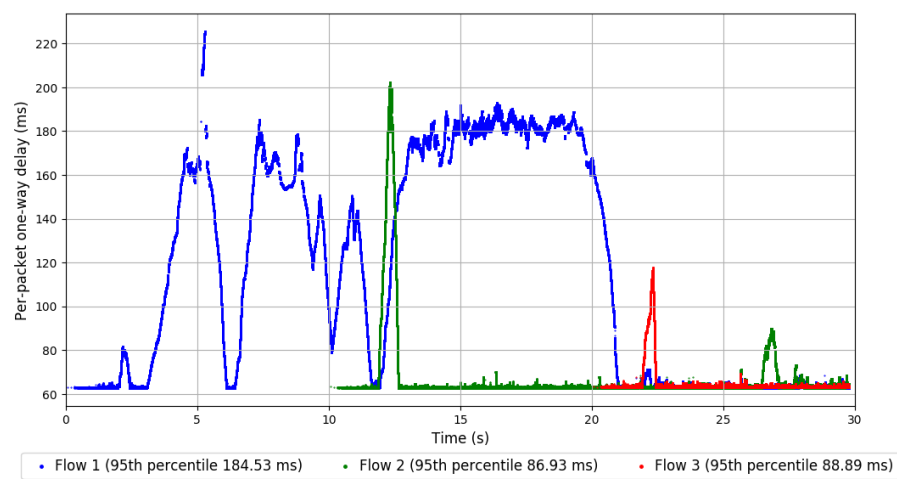
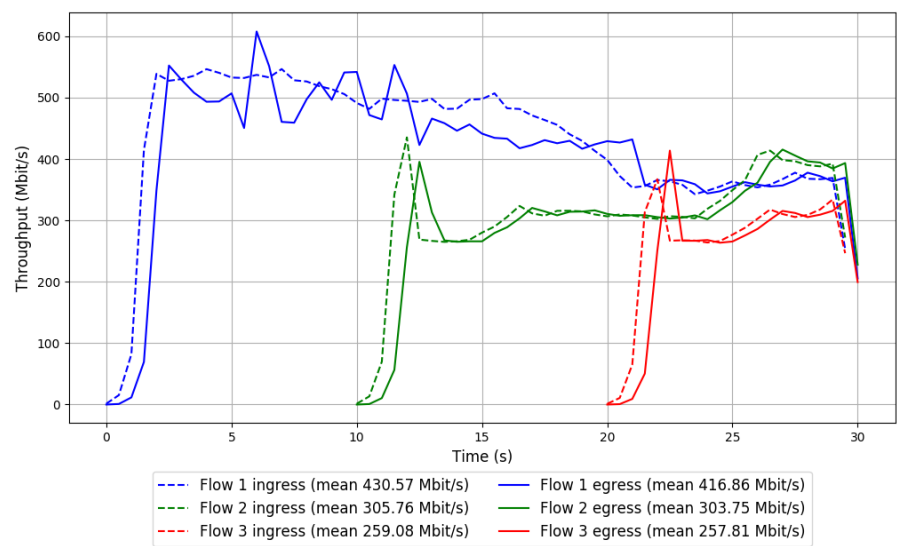


Run 3: Statistics of PCC-Allegro

Start at: 2018-11-15 15:57:30  
End at: 2018-11-15 15:58:00  
Local clock offset: -0.129 ms  
Remote clock offset: -0.271 ms

# Below is generated by plot.py at 2018-11-15 18:57:36  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 702.62 Mbit/s  
95th percentile per-packet one-way delay: 183.154 ms  
Loss rate: 2.73%  
-- Flow 1:  
Average throughput: 416.86 Mbit/s  
95th percentile per-packet one-way delay: 184.530 ms  
Loss rate: 3.60%  
-- Flow 2:  
Average throughput: 303.75 Mbit/s  
95th percentile per-packet one-way delay: 86.928 ms  
Loss rate: 1.30%  
-- Flow 3:  
Average throughput: 257.81 Mbit/s  
95th percentile per-packet one-way delay: 88.887 ms  
Loss rate: 1.78%

Run 3: Report of PCC-Allegro — Data Link

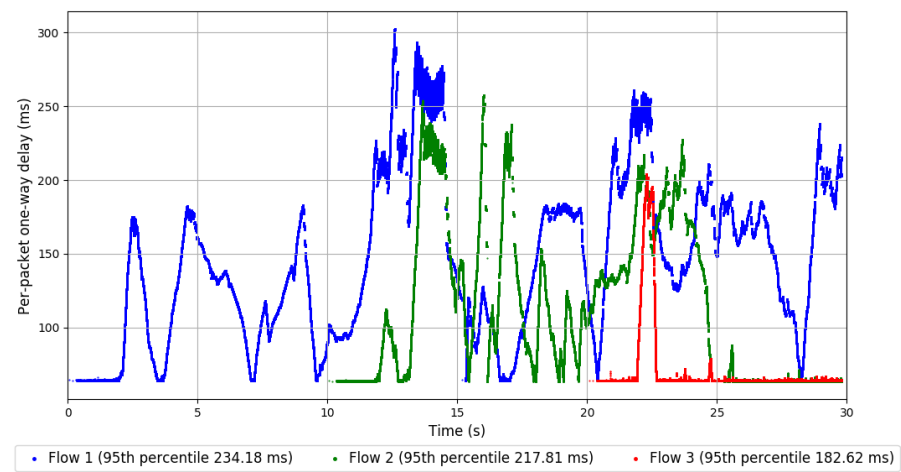
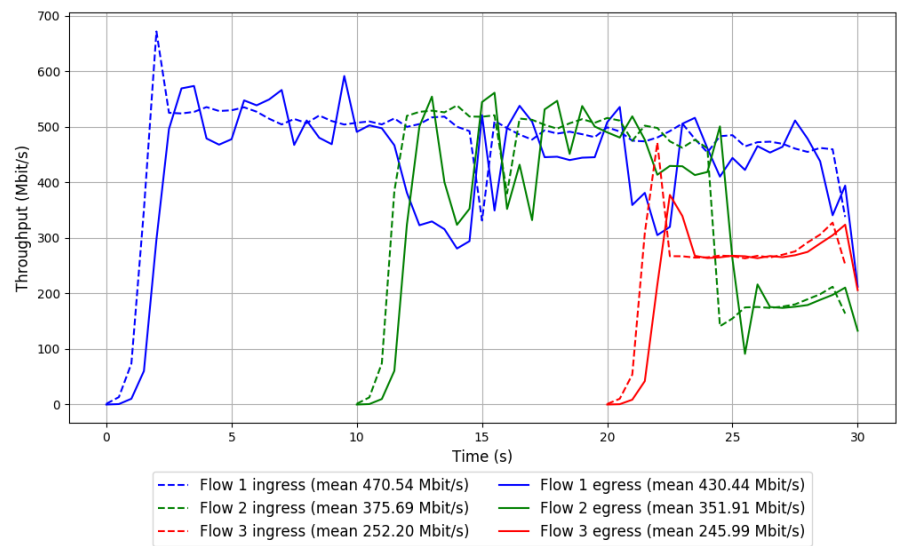


Run 4: Statistics of PCC-Allegro

Start at: 2018-11-15 16:28:53  
End at: 2018-11-15 16:29:23  
Local clock offset: -0.027 ms  
Remote clock offset: -0.922 ms

# Below is generated by plot.py at 2018-11-15 19:12:18  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 744.34 Mbit/s  
95th percentile per-packet one-way delay: 220.747 ms  
Loss rate: 7.75%  
-- Flow 1:  
Average throughput: 430.44 Mbit/s  
95th percentile per-packet one-way delay: 234.183 ms  
Loss rate: 8.91%  
-- Flow 2:  
Average throughput: 351.91 Mbit/s  
95th percentile per-packet one-way delay: 217.808 ms  
Loss rate: 6.92%  
-- Flow 3:  
Average throughput: 245.99 Mbit/s  
95th percentile per-packet one-way delay: 182.622 ms  
Loss rate: 3.72%

Run 4: Report of PCC-Allegro — Data Link



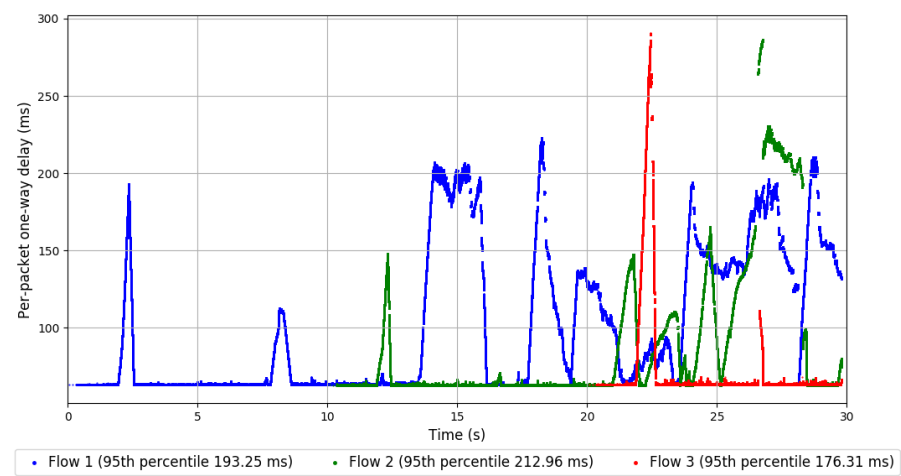
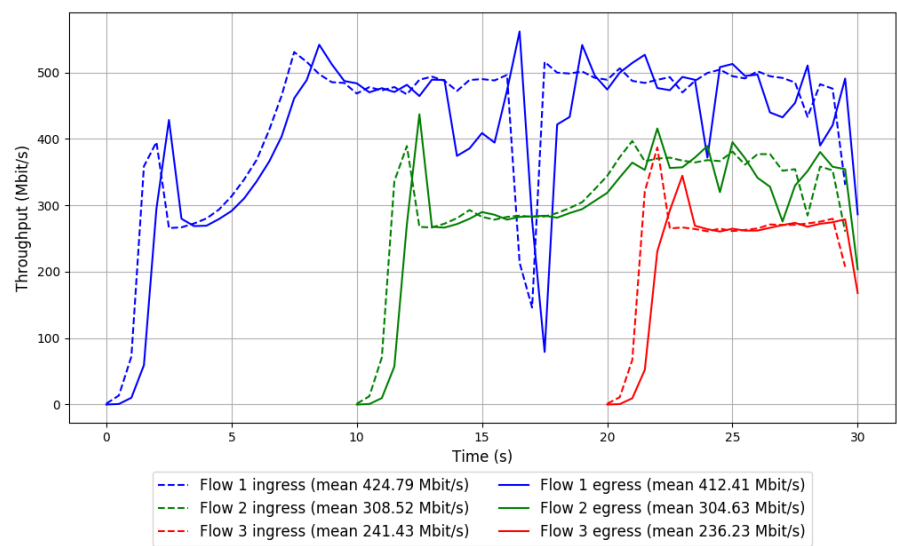


Run 5: Statistics of PCC-Allegro

Start at: 2018-11-15 17:00:23  
End at: 2018-11-15 17:00:53  
Local clock offset: -0.063 ms  
Remote clock offset: -0.331 ms

# Below is generated by plot.py at 2018-11-15 19:12:18  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 691.60 Mbit/s  
95th percentile per-packet one-way delay: 198.233 ms  
Loss rate: 2.92%  
-- Flow 1:  
Average throughput: 412.41 Mbit/s  
95th percentile per-packet one-way delay: 193.253 ms  
Loss rate: 3.33%  
-- Flow 2:  
Average throughput: 304.63 Mbit/s  
95th percentile per-packet one-way delay: 212.963 ms  
Loss rate: 1.89%  
-- Flow 3:  
Average throughput: 236.23 Mbit/s  
95th percentile per-packet one-way delay: 176.305 ms  
Loss rate: 3.42%

Run 5: Report of PCC-Allegro — Data Link

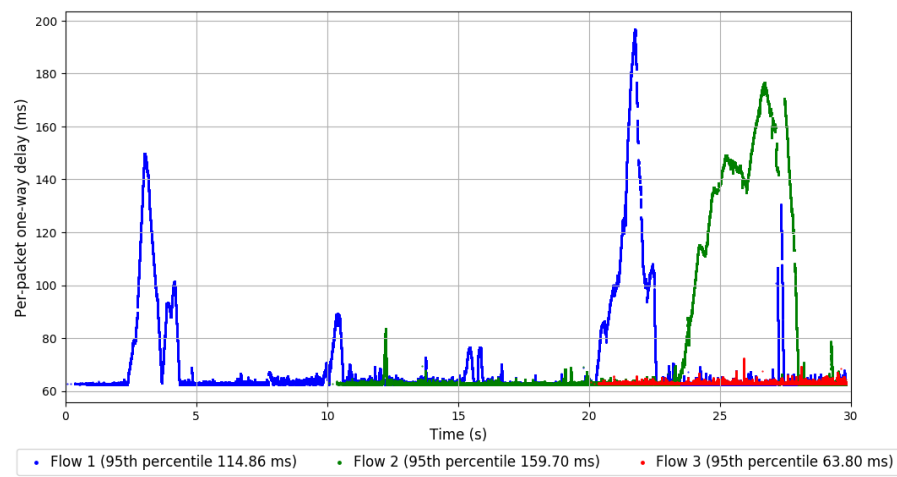
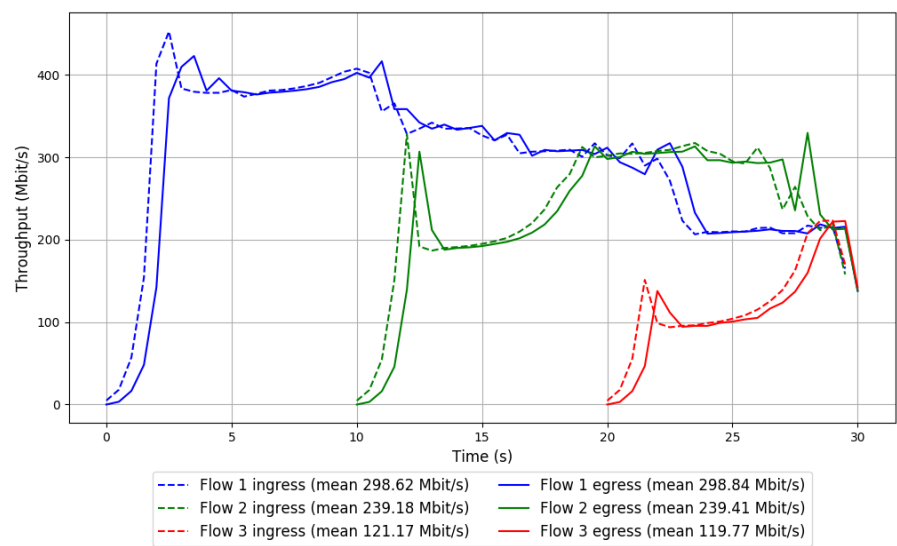


```
Run 1: Statistics of PCC-Expr

Start at: 2018-11-15 14:35:00
End at: 2018-11-15 14:35:30
Local clock offset: -0.041 ms
Remote clock offset: 0.106 ms

# Below is generated by plot.py at 2018-11-15 19:12:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 496.88 Mbit/s
95th percentile per-packet one-way delay: 143.892 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 298.84 Mbit/s
95th percentile per-packet one-way delay: 114.865 ms
Loss rate: 0.35%
-- Flow 2:
Average throughput: 239.41 Mbit/s
95th percentile per-packet one-way delay: 159.699 ms
Loss rate: 0.54%
-- Flow 3:
Average throughput: 119.77 Mbit/s
95th percentile per-packet one-way delay: 63.802 ms
Loss rate: 2.42%
```

Run 1: Report of PCC-Expr — Data Link

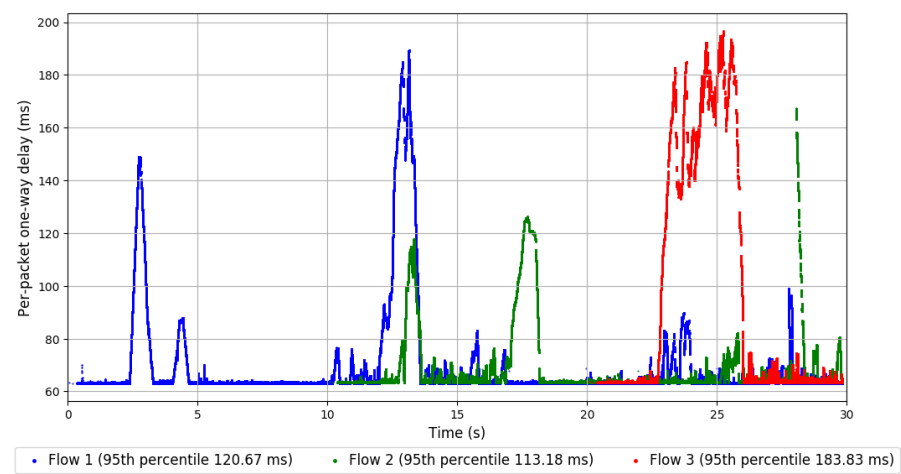
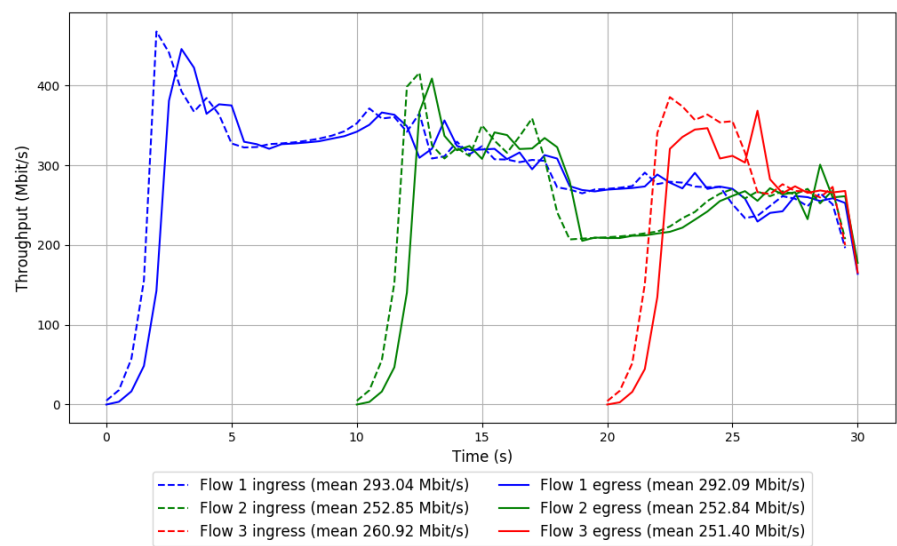


Run 2: Statistics of PCC-Expr

Start at: 2018-11-15 15:06:16  
End at: 2018-11-15 15:06:46  
Local clock offset: -0.058 ms  
Remote clock offset: -0.282 ms

# Below is generated by plot.py at 2018-11-15 19:12:18  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 542.11 Mbit/s  
95th percentile per-packet one-way delay: 155.403 ms  
Loss rate: 1.37%  
-- Flow 1:  
Average throughput: 292.09 Mbit/s  
95th percentile per-packet one-way delay: 120.674 ms  
Loss rate: 0.75%  
-- Flow 2:  
Average throughput: 252.84 Mbit/s  
95th percentile per-packet one-way delay: 113.179 ms  
Loss rate: 0.64%  
-- Flow 3:  
Average throughput: 251.40 Mbit/s  
95th percentile per-packet one-way delay: 183.831 ms  
Loss rate: 4.89%

Run 2: Report of PCC-Expr — Data Link

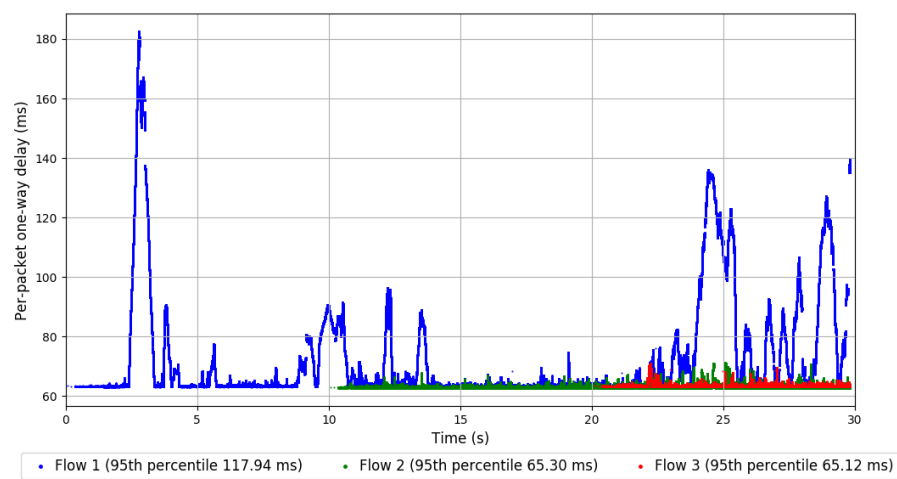
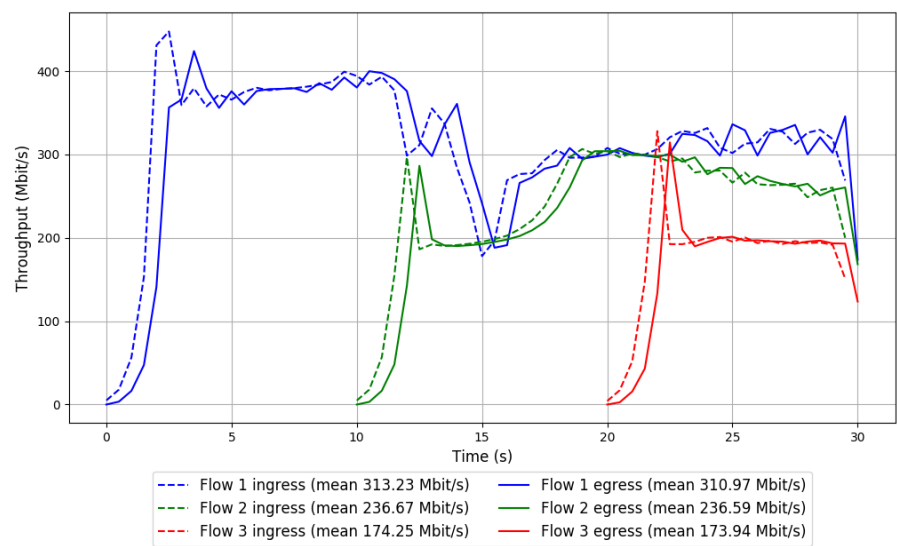


Run 3: Statistics of PCC-Expr

Start at: 2018-11-15 15:37:29  
End at: 2018-11-15 15:37:59  
Local clock offset: 0.006 ms  
Remote clock offset: -0.286 ms

# Below is generated by plot.py at 2018-11-15 19:12:18  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 524.88 Mbit/s  
95th percentile per-packet one-way delay: 105.371 ms  
Loss rate: 1.04%  
-- Flow 1:  
Average throughput: 310.97 Mbit/s  
95th percentile per-packet one-way delay: 117.937 ms  
Loss rate: 1.14%  
-- Flow 2:  
Average throughput: 236.59 Mbit/s  
95th percentile per-packet one-way delay: 65.299 ms  
Loss rate: 0.67%  
-- Flow 3:  
Average throughput: 173.94 Mbit/s  
95th percentile per-packet one-way delay: 65.123 ms  
Loss rate: 1.47%

Run 3: Report of PCC-Expr — Data Link



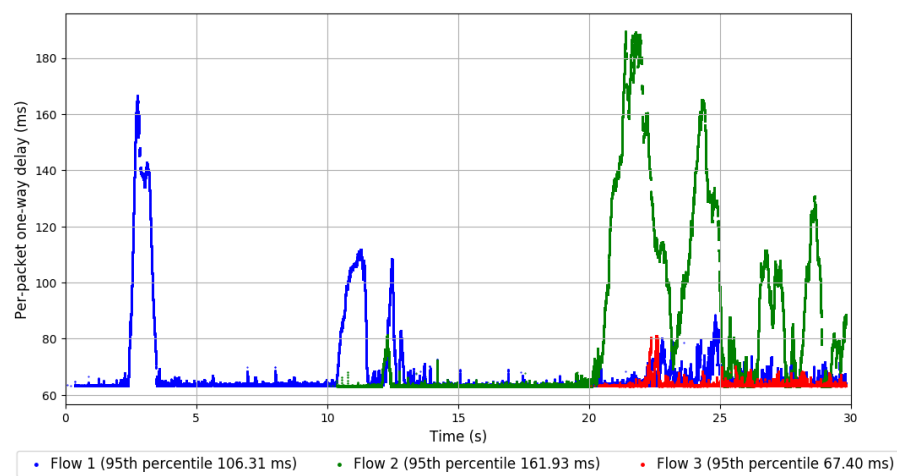
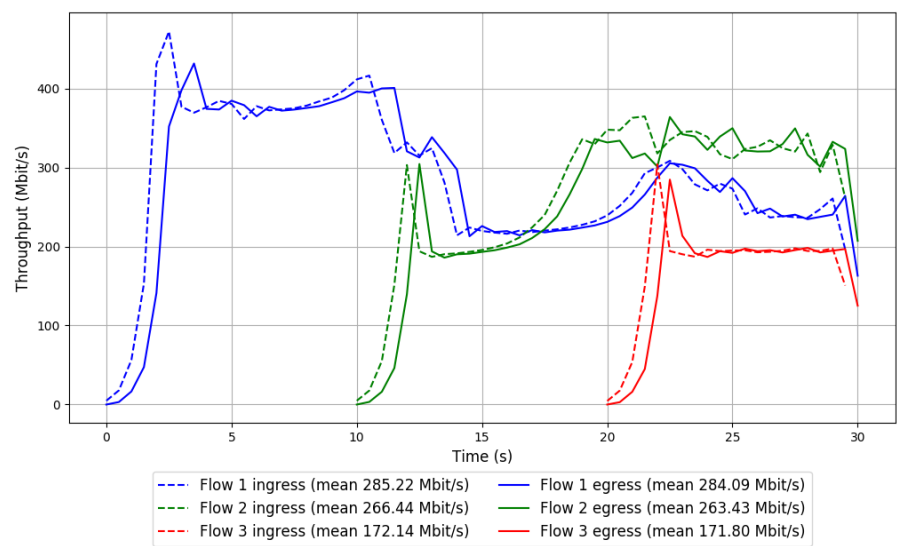


Run 4: Statistics of PCC-Expr

Start at: 2018-11-15 16:08:59  
End at: 2018-11-15 16:09:29  
Local clock offset: -0.103 ms  
Remote clock offset: -0.384 ms

# Below is generated by plot.py at 2018-11-15 19:14:59  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 515.16 Mbit/s  
95th percentile per-packet one-way delay: 137.535 ms  
Loss rate: 1.21%  
-- Flow 1:  
Average throughput: 284.09 Mbit/s  
95th percentile per-packet one-way delay: 106.309 ms  
Loss rate: 0.82%  
-- Flow 2:  
Average throughput: 263.43 Mbit/s  
95th percentile per-packet one-way delay: 161.930 ms  
Loss rate: 1.76%  
-- Flow 3:  
Average throughput: 171.80 Mbit/s  
95th percentile per-packet one-way delay: 67.397 ms  
Loss rate: 1.49%

Run 4: Report of PCC-Expr — Data Link



Run 5: Statistics of PCC-Expr

Start at: 2018-11-15 16:40:34

End at: 2018-11-15 16:41:04

Local clock offset: -0.041 ms

Remote clock offset: -0.08 ms

# Below is generated by plot.py at 2018-11-15 19:14:59

# Datalink statistics

-- Total of 3 flows:

Average throughput: 496.59 Mbit/s

95th percentile per-packet one-way delay: 132.609 ms

Loss rate: 1.11%

-- Flow 1:

Average throughput: 275.45 Mbit/s

95th percentile per-packet one-way delay: 156.425 ms

Loss rate: 1.12%

-- Flow 2:

Average throughput: 210.93 Mbit/s

95th percentile per-packet one-way delay: 88.442 ms

Loss rate: 0.78%

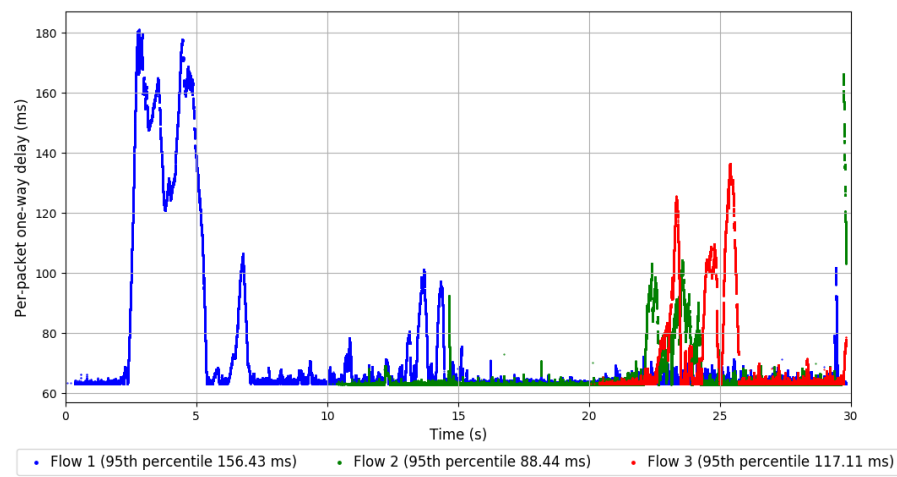
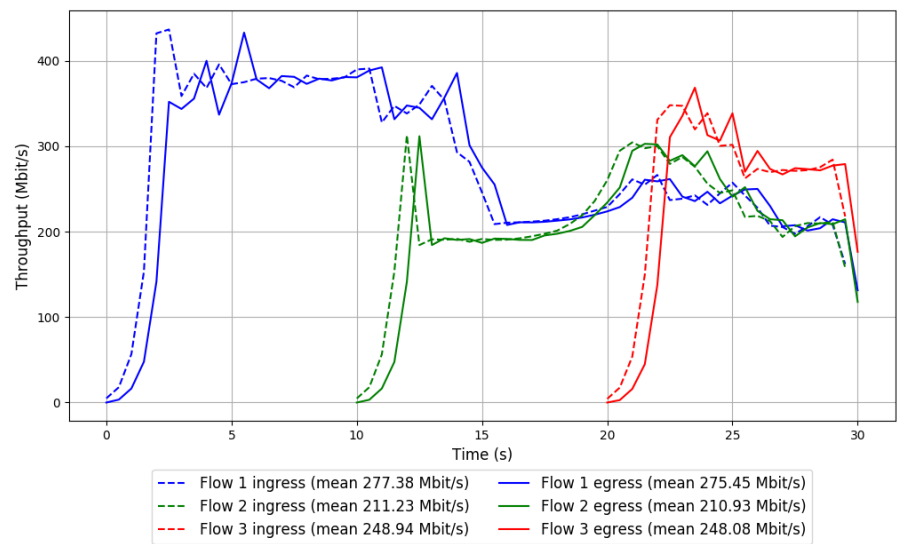
-- Flow 3:

Average throughput: 248.08 Mbit/s

95th percentile per-packet one-way delay: 117.111 ms

Loss rate: 1.62%

Run 5: Report of PCC-Expr — Data Link

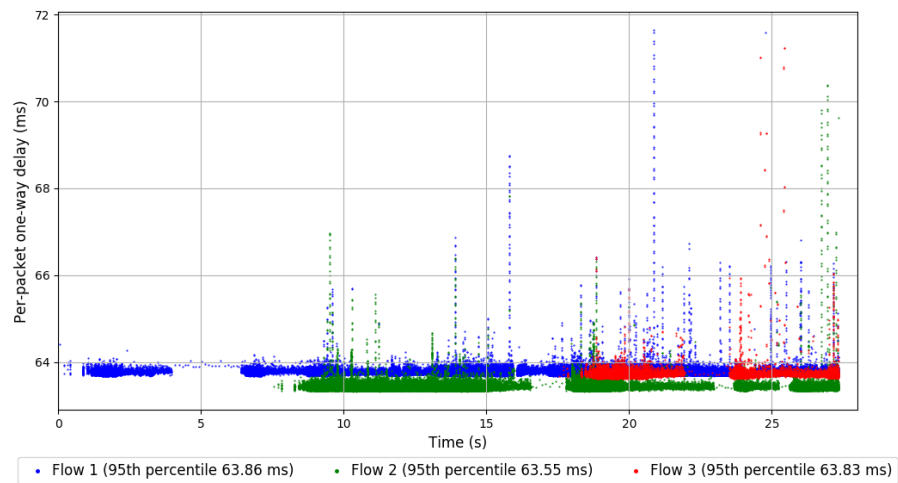
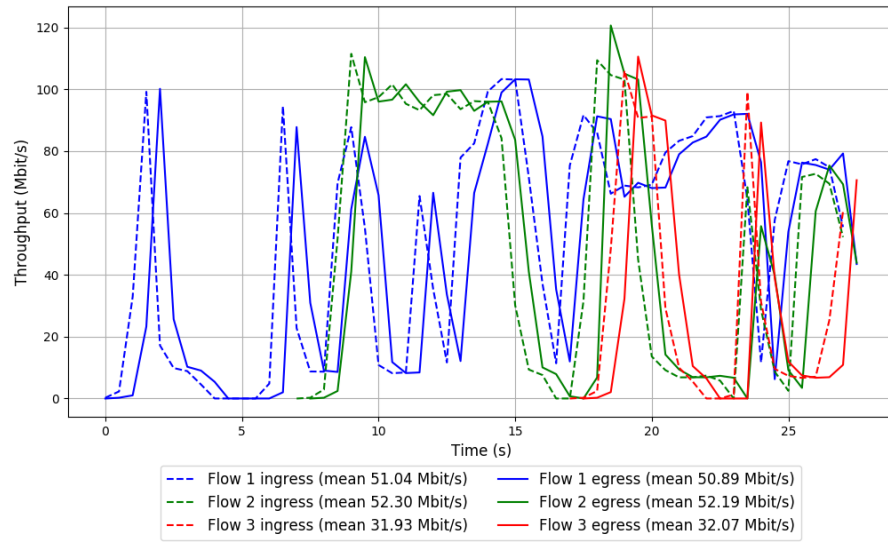


Run 1: Statistics of QUIC Cubic

Start at: 2018-11-15 14:56:44  
End at: 2018-11-15 14:57:14  
Local clock offset: -0.051 ms  
Remote clock offset: -0.804 ms

# Below is generated by plot.py at 2018-11-15 19:14:59  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 100.21 Mbit/s  
95th percentile per-packet one-way delay: 63.839 ms  
Loss rate: 0.78%  
-- Flow 1:  
Average throughput: 50.89 Mbit/s  
95th percentile per-packet one-way delay: 63.864 ms  
Loss rate: 0.74%  
-- Flow 2:  
Average throughput: 52.19 Mbit/s  
95th percentile per-packet one-way delay: 63.545 ms  
Loss rate: 0.81%  
-- Flow 3:  
Average throughput: 32.07 Mbit/s  
95th percentile per-packet one-way delay: 63.829 ms  
Loss rate: 0.86%

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

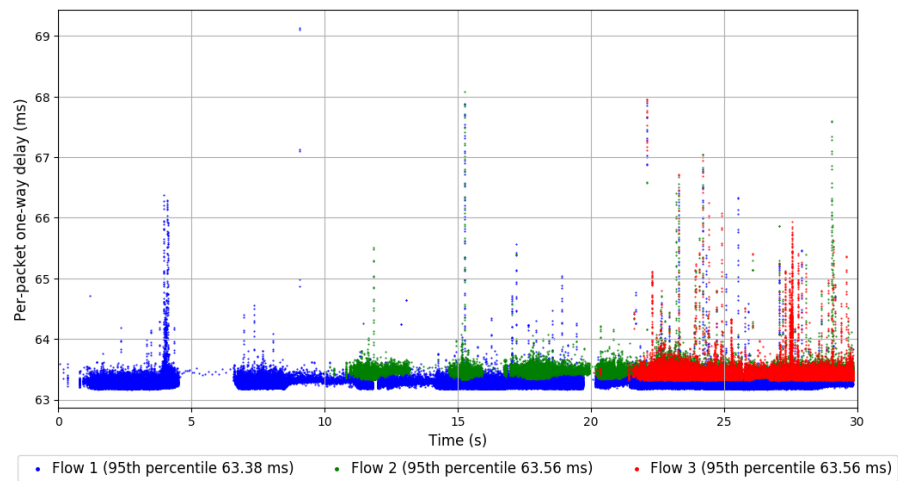
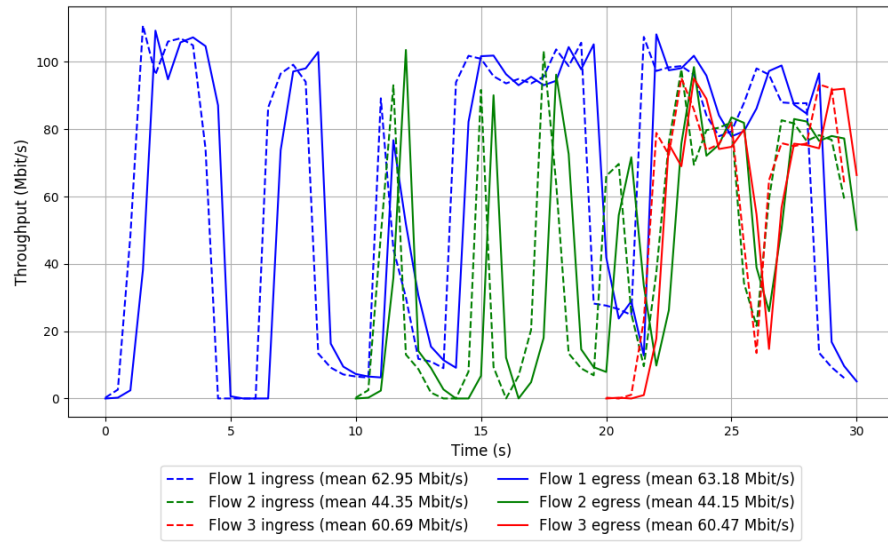


Run 2: Statistics of QUIC Cubic

Start at: 2018-11-15 15:28:04  
End at: 2018-11-15 15:28:34  
Local clock offset: -0.023 ms  
Remote clock offset: -0.753 ms

# Below is generated by plot.py at 2018-11-15 19:14:59  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 112.28 Mbit/s  
95th percentile per-packet one-way delay: 63.513 ms  
Loss rate: 0.47%  
-- Flow 1:  
Average throughput: 63.18 Mbit/s  
95th percentile per-packet one-way delay: 63.382 ms  
Loss rate: 0.05%  
-- Flow 2:  
Average throughput: 44.15 Mbit/s  
95th percentile per-packet one-way delay: 63.559 ms  
Loss rate: 1.07%  
-- Flow 3:  
Average throughput: 60.47 Mbit/s  
95th percentile per-packet one-way delay: 63.563 ms  
Loss rate: 0.87%

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



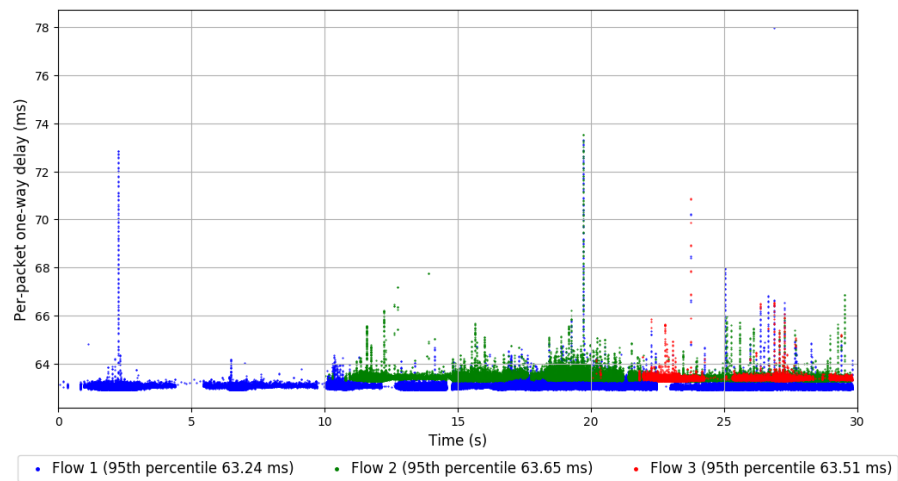
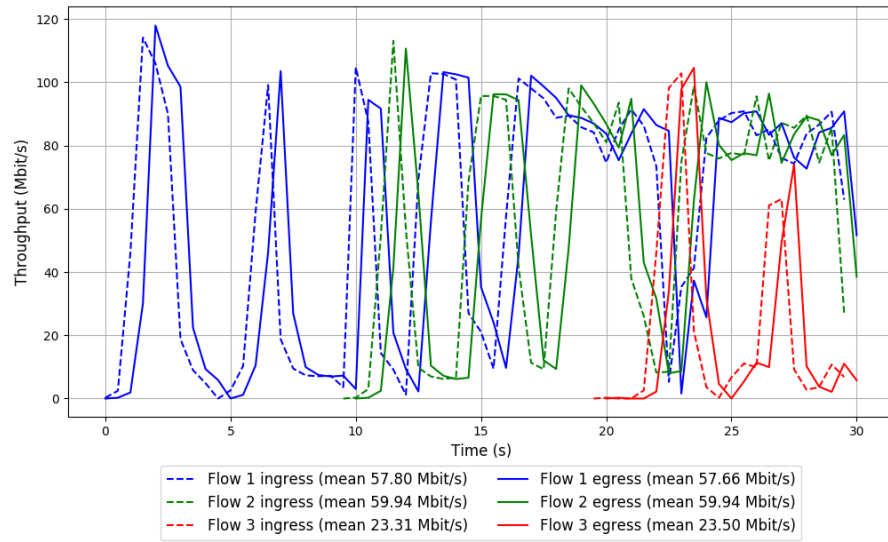


Run 3: Statistics of QUIC Cubic

Start at: 2018-11-15 15:59:31  
End at: 2018-11-15 16:00:01  
Local clock offset: -0.101 ms  
Remote clock offset: -0.522 ms

# Below is generated by plot.py at 2018-11-15 19:14:59  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 105.06 Mbit/s  
95th percentile per-packet one-way delay: 63.546 ms  
Loss rate: 0.40%  
-- Flow 1:  
Average throughput: 57.66 Mbit/s  
95th percentile per-packet one-way delay: 63.243 ms  
Loss rate: 0.65%  
-- Flow 2:  
Average throughput: 59.94 Mbit/s  
95th percentile per-packet one-way delay: 63.645 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 23.50 Mbit/s  
95th percentile per-packet one-way delay: 63.514 ms  
Loss rate: 0.50%

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

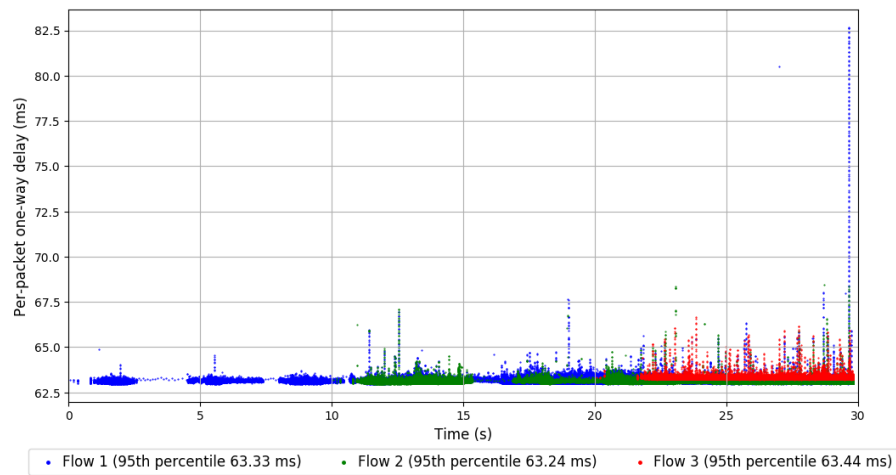
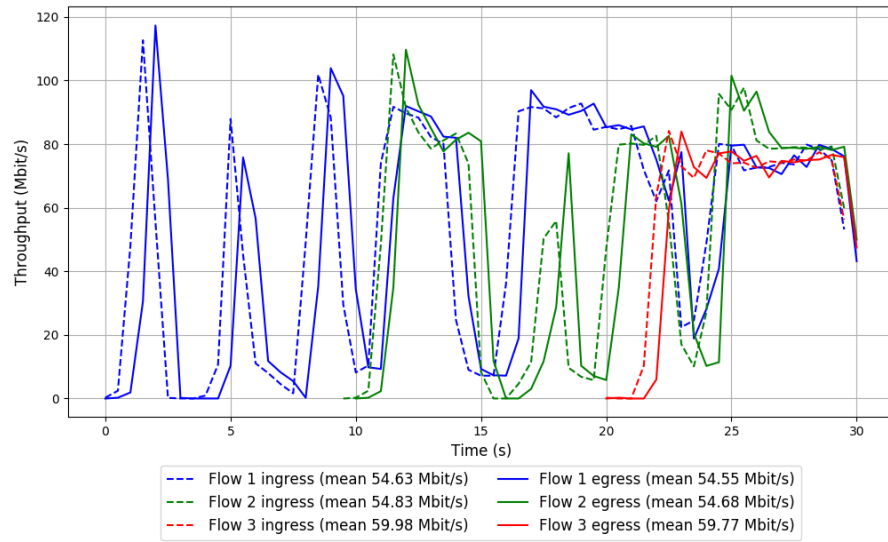


Run 4: Statistics of QUIC Cubic

Start at: 2018-11-15 16:30:59  
End at: 2018-11-15 16:31:29  
Local clock offset: -0.029 ms  
Remote clock offset: -0.305 ms

# Below is generated by plot.py at 2018-11-15 19:14:59  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 110.47 Mbit/s  
95th percentile per-packet one-way delay: 63.366 ms  
Loss rate: 0.85%  
-- Flow 1:  
Average throughput: 54.55 Mbit/s  
95th percentile per-packet one-way delay: 63.332 ms  
Loss rate: 0.57%  
-- Flow 2:  
Average throughput: 54.68 Mbit/s  
95th percentile per-packet one-way delay: 63.236 ms  
Loss rate: 0.91%  
-- Flow 3:  
Average throughput: 59.77 Mbit/s  
95th percentile per-packet one-way delay: 63.438 ms  
Loss rate: 1.54%

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

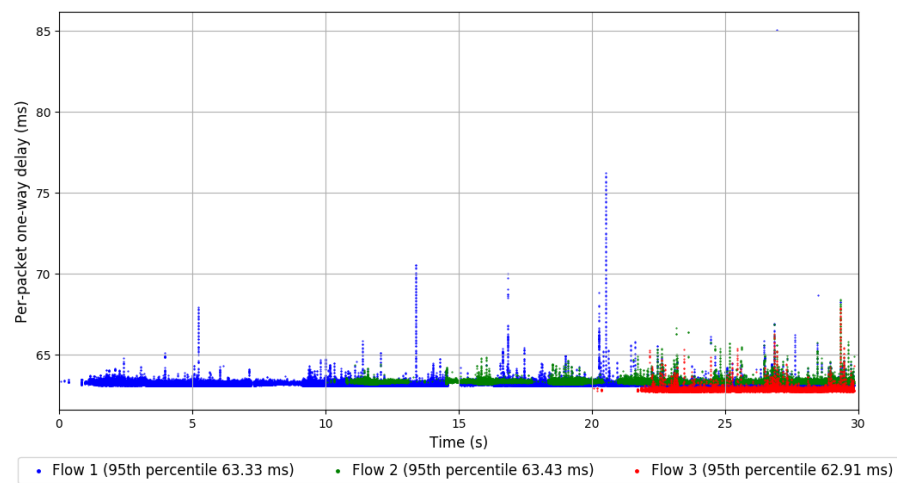
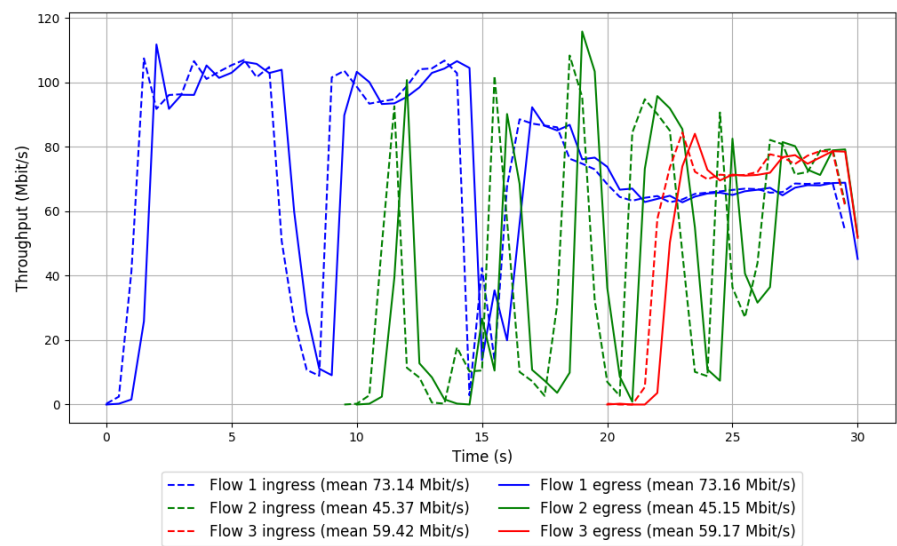


Run 5: Statistics of QUIC Cubic

Start at: 2018-11-15 17:02:24  
End at: 2018-11-15 17:02:54  
Local clock offset: -0.078 ms  
Remote clock offset: -0.136 ms

# Below is generated by plot.py at 2018-11-15 19:14:59  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 122.53 Mbit/s  
95th percentile per-packet one-way delay: 63.372 ms  
Loss rate: 0.78%  
-- Flow 1:  
Average throughput: 73.16 Mbit/s  
95th percentile per-packet one-way delay: 63.331 ms  
Loss rate: 0.40%  
-- Flow 2:  
Average throughput: 45.15 Mbit/s  
95th percentile per-packet one-way delay: 63.434 ms  
Loss rate: 1.11%  
-- Flow 3:  
Average throughput: 59.17 Mbit/s  
95th percentile per-packet one-way delay: 62.911 ms  
Loss rate: 1.68%

Run 5: Report of QUIC Cubic — Data Link

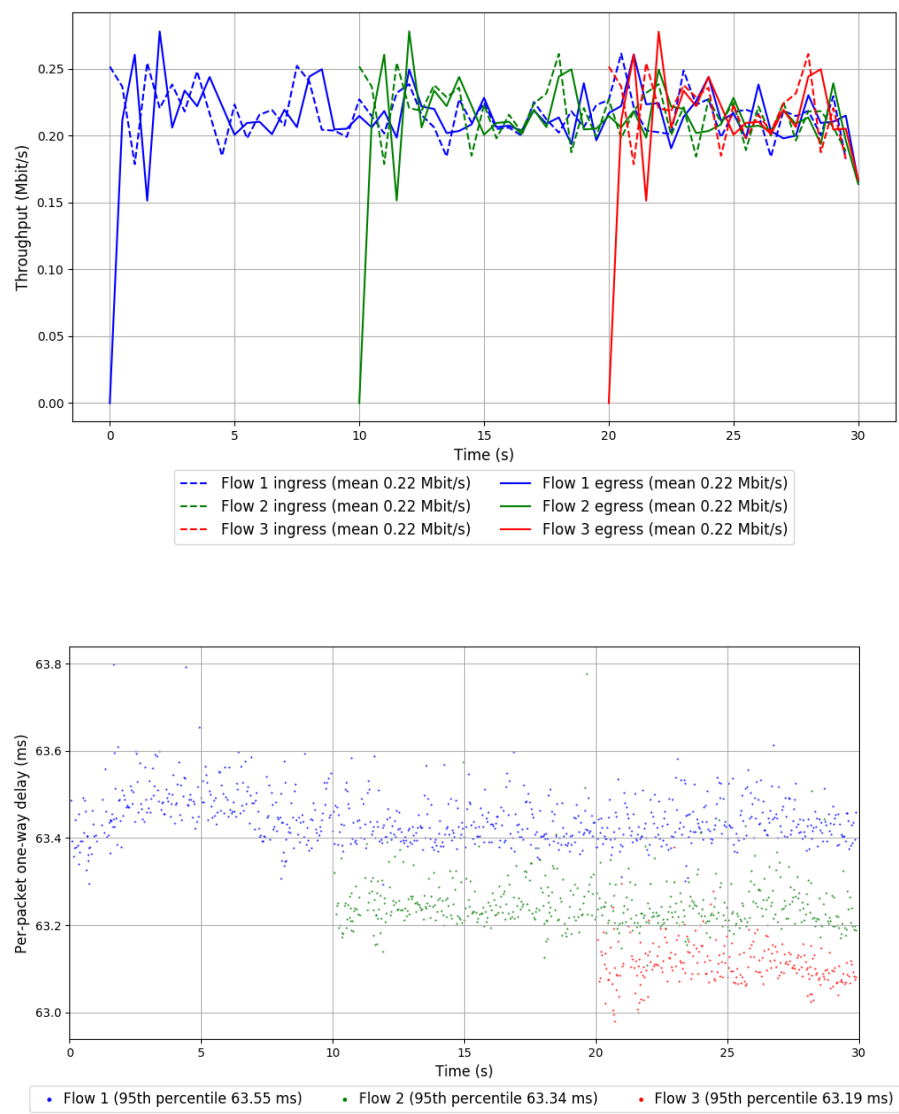


```
Run 1: Statistics of SCReAM

Start at: 2018-11-15 14:53:28
End at: 2018-11-15 14:53:58
Local clock offset: -0.086 ms
Remote clock offset: -0.158 ms

# Below is generated by plot.py at 2018-11-15 19:14:59
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 63.519 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 63.545 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 63.343 ms
Loss rate: 0.61%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 63.190 ms
Loss rate: 1.08%
```

Run 1: Report of SCReAM — Data Link





Run 2: Statistics of SReAM

Start at: 2018-11-15 15:24:48

End at: 2018-11-15 15:25:18

Local clock offset: 0.017 ms

Remote clock offset: -0.97 ms

# Below is generated by plot.py at 2018-11-15 19:14:59

# Datalink statistics

-- Total of 3 flows:

Average throughput: 0.43 Mbit/s

95th percentile per-packet one-way delay: 64.138 ms

Loss rate: 0.58%

-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 64.165 ms

Loss rate: 0.38%

-- Flow 2:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 63.888 ms

Loss rate: 0.61%

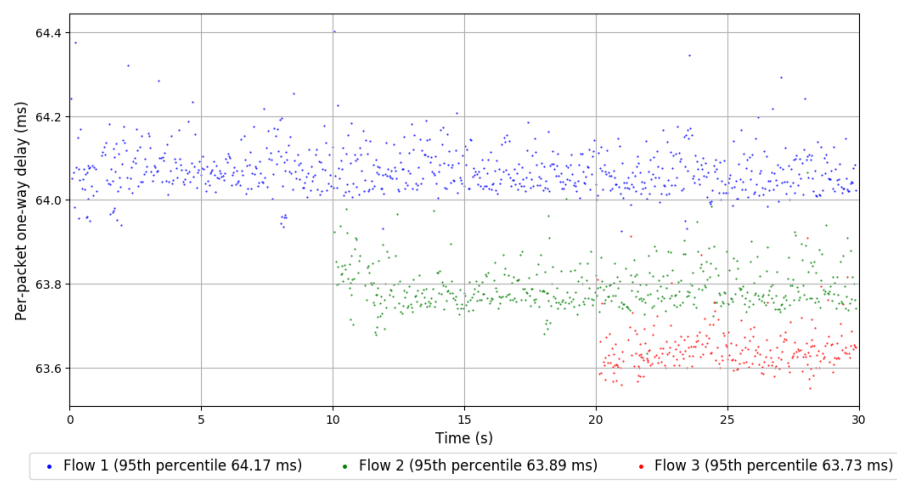
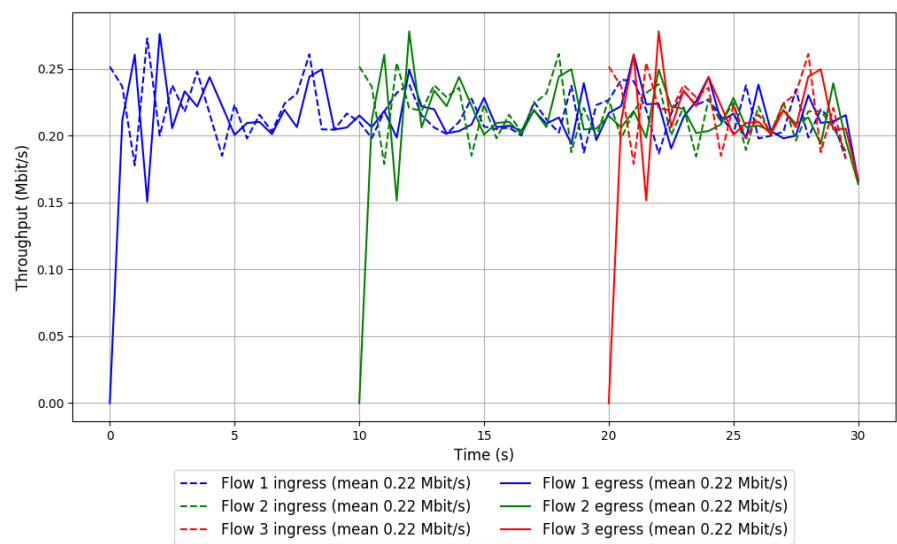
-- Flow 3:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 63.731 ms

Loss rate: 1.08%

Run 2: Report of SReAM — Data Link



Run 3: Statistics of SReAM

Start at: 2018-11-15 15:56:17

End at: 2018-11-15 15:56:47

Local clock offset: -0.039 ms

Remote clock offset: 0.993 ms

# Below is generated by plot.py at 2018-11-15 19:14:59

# Datalink statistics

-- Total of 3 flows:

Average throughput: 0.43 Mbit/s

95th percentile per-packet one-way delay: 62.508 ms

Loss rate: 0.65%

-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 62.416 ms

Loss rate: 0.38%

-- Flow 2:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 62.617 ms

Loss rate: 0.82%

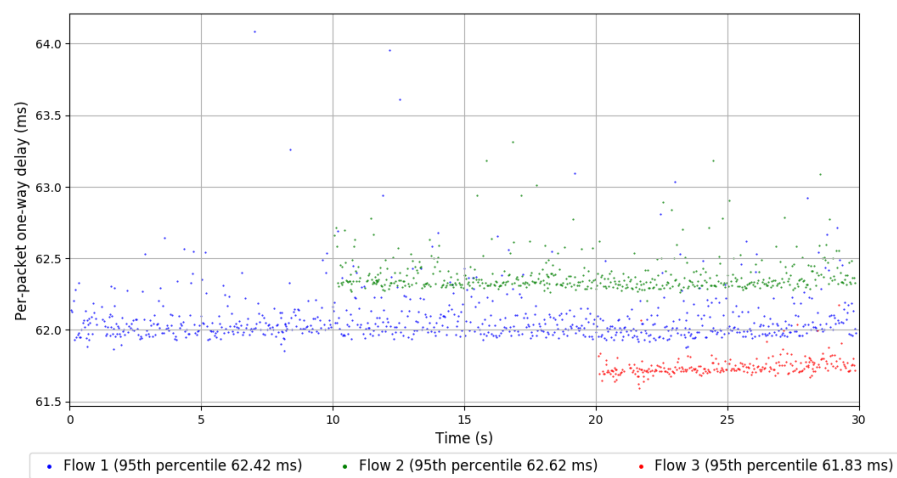
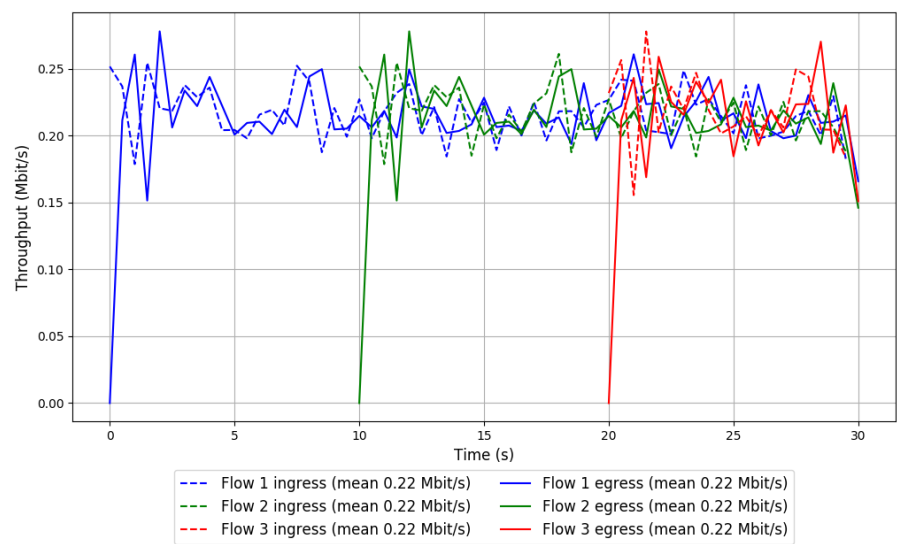
-- Flow 3:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 61.828 ms

Loss rate: 1.10%

Run 3: Report of SCReAM — Data Link

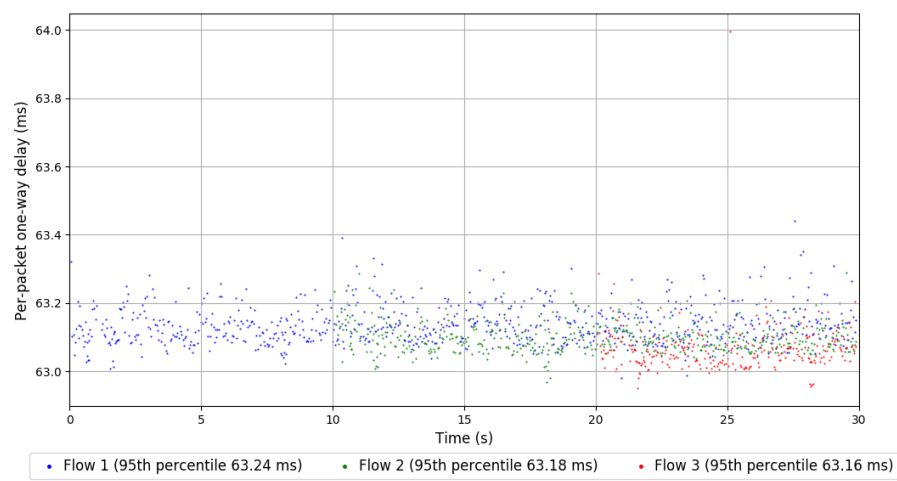
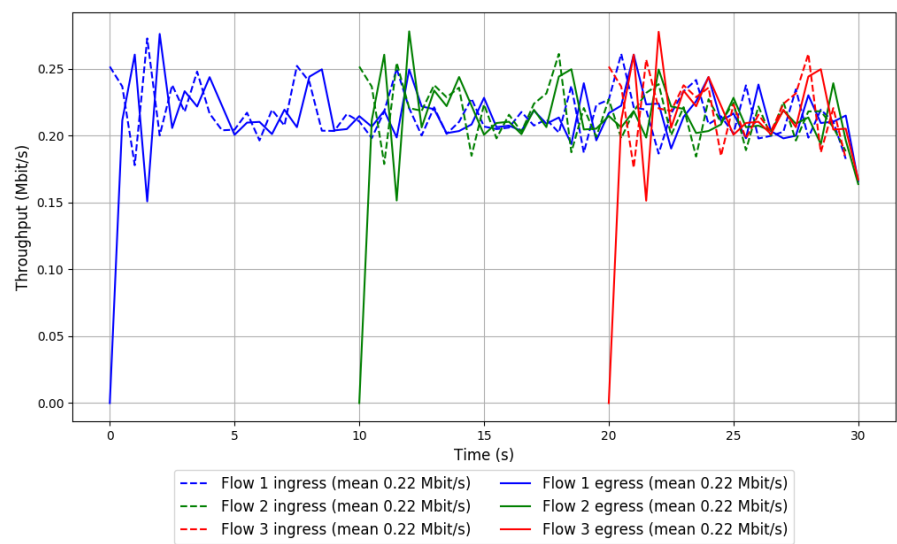


Run 4: Statistics of SReAM

Start at: 2018-11-15 16:27:41  
End at: 2018-11-15 16:28:11  
Local clock offset: -0.058 ms  
Remote clock offset: -0.215 ms

# Below is generated by plot.py at 2018-11-15 19:14:59  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 0.43 Mbit/s  
95th percentile per-packet one-way delay: 63.218 ms  
Loss rate: 0.58%  
-- Flow 1:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 63.237 ms  
Loss rate: 0.38%  
-- Flow 2:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 63.180 ms  
Loss rate: 0.61%  
-- Flow 3:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 63.160 ms  
Loss rate: 1.08%

Run 4: Report of SCReAM — Data Link

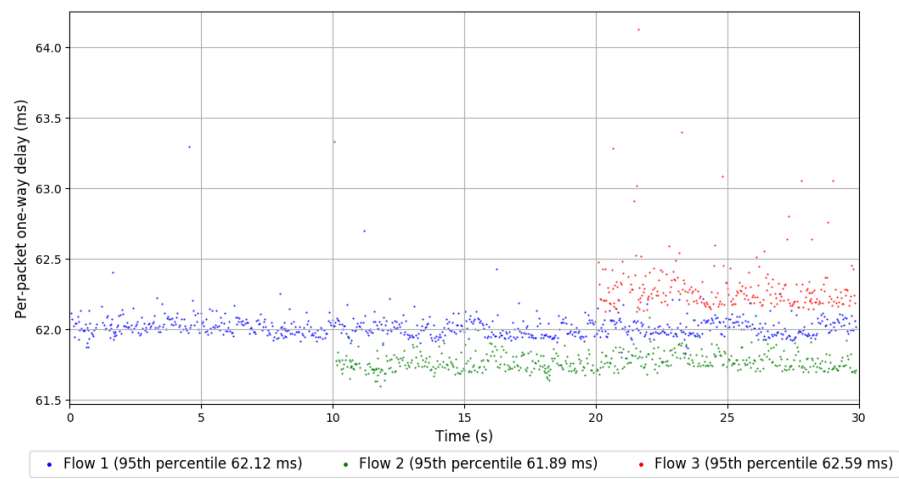
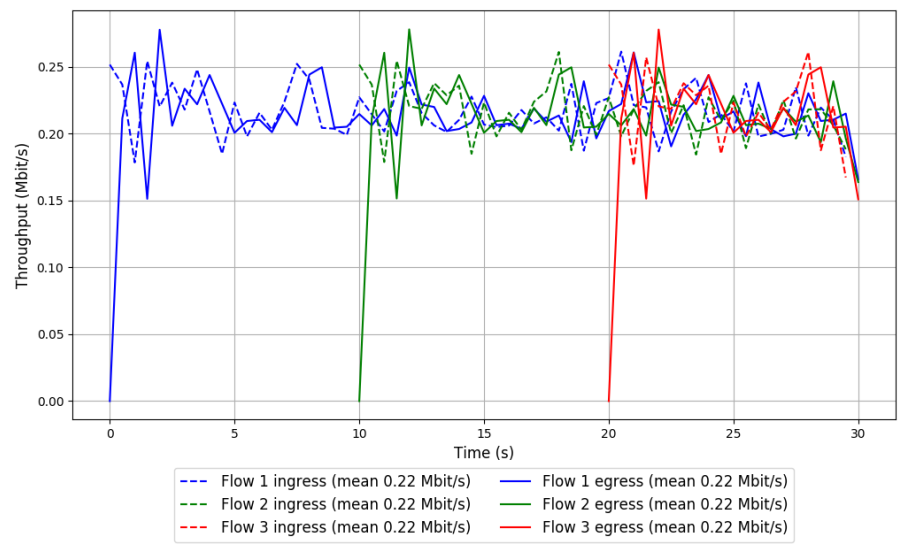


Run 5: Statistics of SReAM

Start at: 2018-11-15 16:59:11  
End at: 2018-11-15 16:59:41  
Local clock offset: -0.071 ms  
Remote clock offset: 1.214 ms

# Below is generated by plot.py at 2018-11-15 19:14:59  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 0.43 Mbit/s  
95th percentile per-packet one-way delay: 62.311 ms  
Loss rate: 0.58%  
-- Flow 1:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 62.119 ms  
Loss rate: 0.38%  
-- Flow 2:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 61.892 ms  
Loss rate: 0.61%  
-- Flow 3:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 62.586 ms  
Loss rate: 1.10%

Run 5: Report of SReAM — Data Link





Run 1: Statistics of Sprout

Start at: 2018-11-15 15:01:45

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

Local clock offset: -0.062 ms

Remote clock offset: 1.124 ms

# Below is generated by plot.py at 2018-11-15 19:14:59

# Datalink statistics

-- Total of 3 flows:

Average throughput: 13.25 Mbit/s

95th percentile per-packet one-way delay: 62.738 ms

Loss rate: 0.75%

-- Flow 1:

Average throughput: 6.74 Mbit/s

95th percentile per-packet one-way delay: 62.793 ms

Loss rate: 0.48%

-- Flow 2:

Average throughput: 6.66 Mbit/s

95th percentile per-packet one-way delay: 62.612 ms

Loss rate: 0.73%

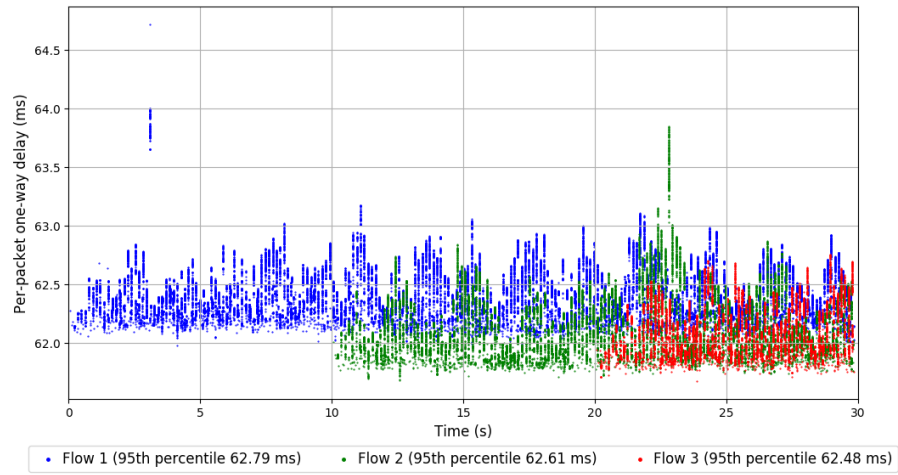
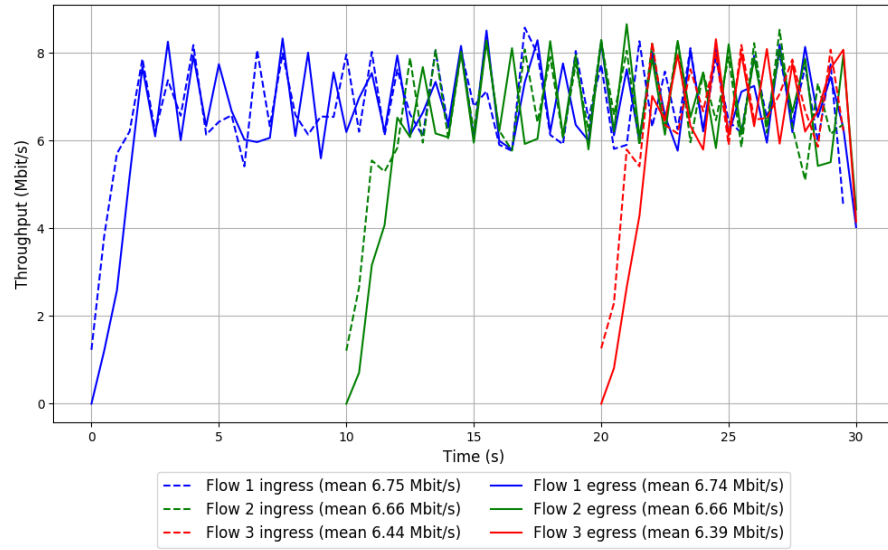
-- Flow 3:

Average throughput: 6.39 Mbit/s

95th percentile per-packet one-way delay: 62.482 ms

Loss rate: 1.64%

# Run 1: Report of Sprout — Data Link

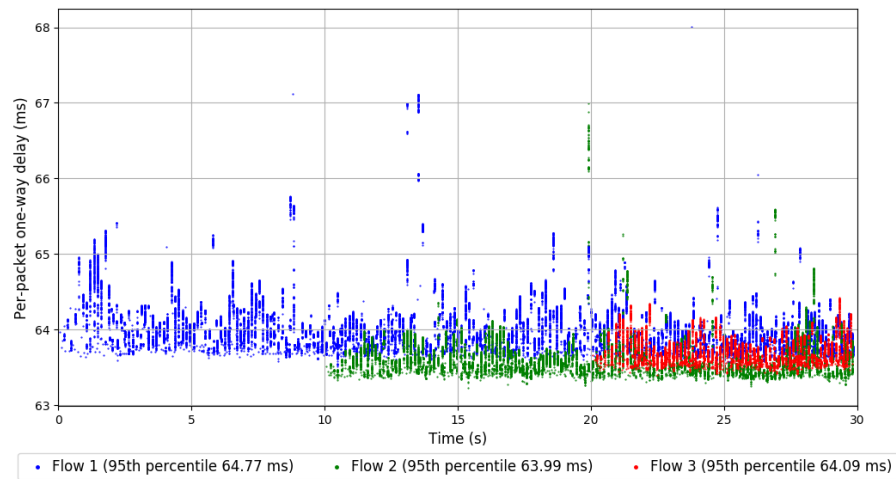
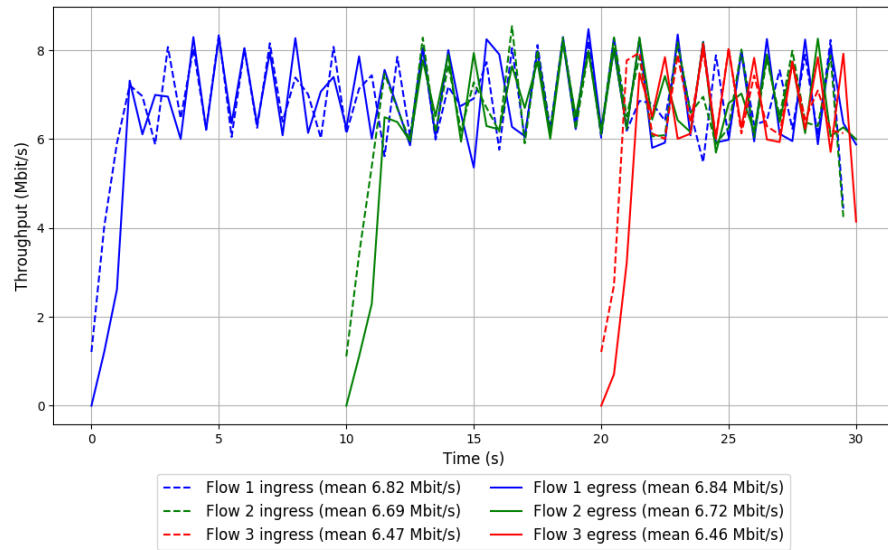


## Run 2: Statistics of Sprout

Start at: 2018-11-15 15:32:59  
End at: 2018-11-15 15:33:29  
Local clock offset: 0.016 ms  
Remote clock offset: -0.388 ms

```
# Below is generated by plot.py at 2018-11-15 19:14:59
# Datalink statistics
-- Total of 3 flows:
Average throughput: 13.41 Mbit/s
95th percentile per-packet one-way delay: 64.518 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 6.84 Mbit/s
95th percentile per-packet one-way delay: 64.772 ms
Loss rate: 0.11%
-- Flow 2:
Average throughput: 6.72 Mbit/s
95th percentile per-packet one-way delay: 63.992 ms
Loss rate: 0.10%
-- Flow 3:
Average throughput: 6.46 Mbit/s
95th percentile per-packet one-way delay: 64.093 ms
Loss rate: 1.60%
```

## Run 2: Report of Sprout — Data Link

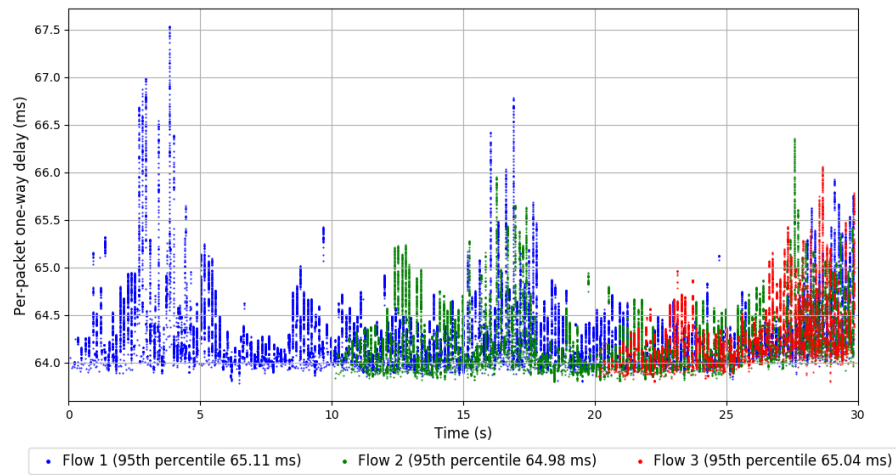
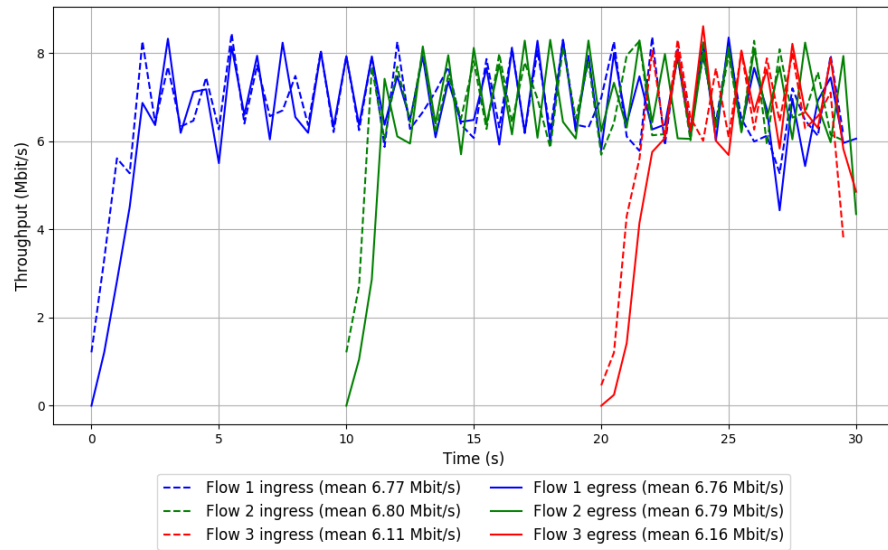


### Run 3: Statistics of Sprout

Start at: 2018-11-15 16:04:28  
End at: 2018-11-15 16:04:58  
Local clock offset: -0.129 ms  
Remote clock offset: -0.983 ms

```
# Below is generated by plot.py at 2018-11-15 19:14:59
# Datalink statistics
-- Total of 3 flows:
Average throughput: 13.28 Mbit/s
95th percentile per-packet one-way delay: 65.045 ms
Loss rate: 0.54%
-- Flow 1:
Average throughput: 6.76 Mbit/s
95th percentile per-packet one-way delay: 65.108 ms
Loss rate: 0.51%
-- Flow 2:
Average throughput: 6.79 Mbit/s
95th percentile per-packet one-way delay: 64.980 ms
Loss rate: 0.62%
-- Flow 3:
Average throughput: 6.16 Mbit/s
95th percentile per-packet one-way delay: 65.039 ms
Loss rate: 0.43%
```

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

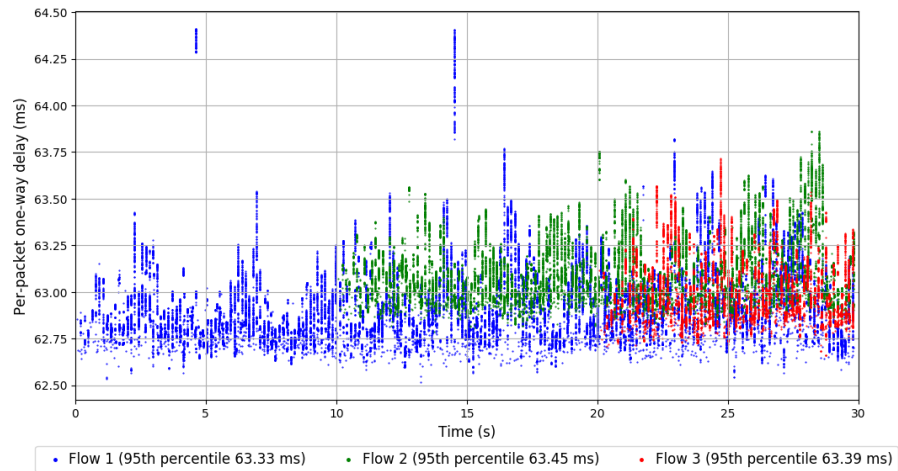
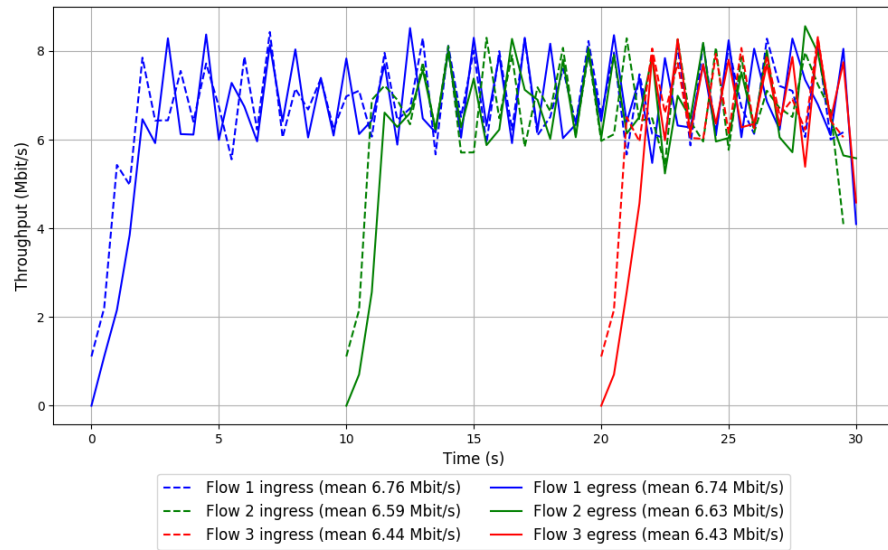


#### Run 4: Statistics of Sprout

Start at: 2018-11-15 16:36:03  
End at: 2018-11-15 16:36:33  
Local clock offset: -0.033 ms  
Remote clock offset: 0.346 ms

```
# Below is generated by plot.py at 2018-11-15 19:14:59
# Datalink statistics
-- Total of 3 flows:
Average throughput: 13.24 Mbit/s
95th percentile per-packet one-way delay: 63.395 ms
Loss rate: 0.55%
-- Flow 1:
Average throughput: 6.74 Mbit/s
95th percentile per-packet one-way delay: 63.326 ms
Loss rate: 0.51%
-- Flow 2:
Average throughput: 6.63 Mbit/s
95th percentile per-packet one-way delay: 63.455 ms
Loss rate: 0.11%
-- Flow 3:
Average throughput: 6.43 Mbit/s
95th percentile per-packet one-way delay: 63.389 ms
Loss rate: 1.59%
```

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



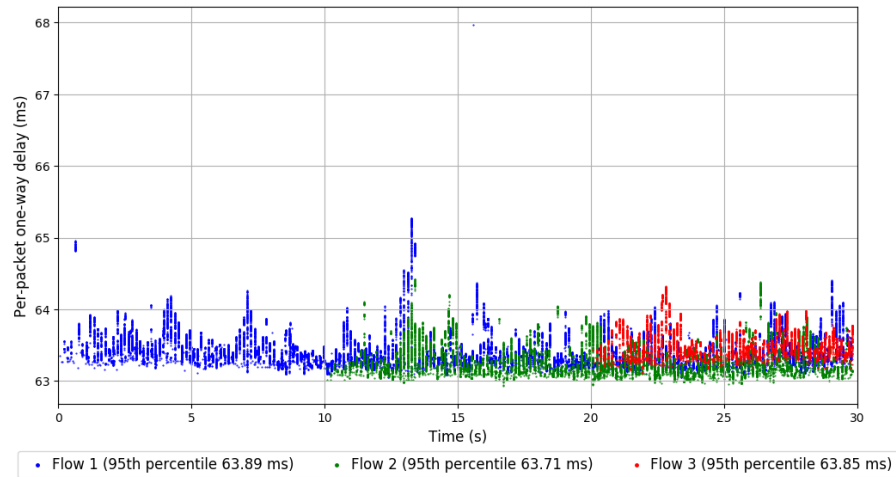
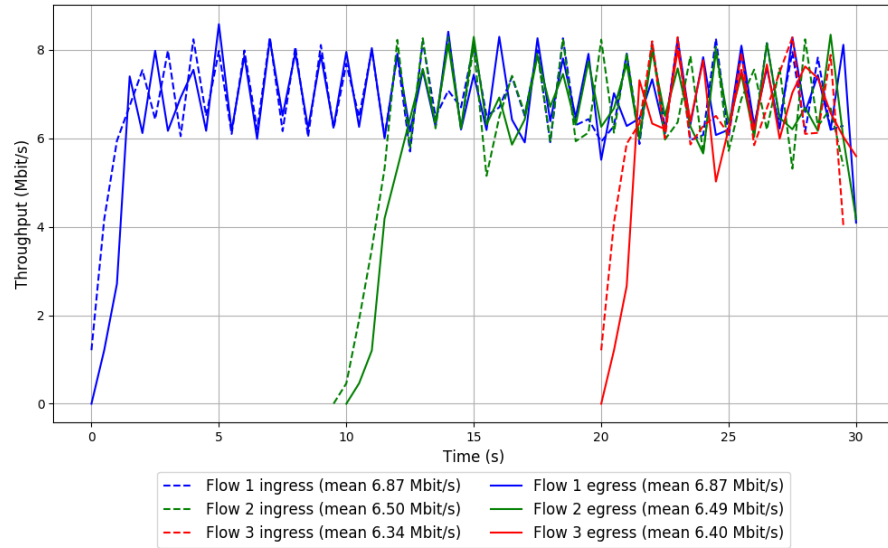


Run 5: Statistics of Sprout

Start at: 2018-11-15 17:07:32  
End at: 2018-11-15 17:08:02  
Local clock offset: -0.076 ms  
Remote clock offset: -0.26 ms

# Below is generated by plot.py at 2018-11-15 19:14:59  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 13.26 Mbit/s  
95th percentile per-packet one-way delay: 63.841 ms  
Loss rate: 0.56%  
-- Flow 1:  
Average throughput: 6.87 Mbit/s  
95th percentile per-packet one-way delay: 63.893 ms  
Loss rate: 0.54%  
-- Flow 2:  
Average throughput: 6.49 Mbit/s  
95th percentile per-packet one-way delay: 63.707 ms  
Loss rate: 0.73%  
-- Flow 3:  
Average throughput: 6.40 Mbit/s  
95th percentile per-packet one-way delay: 63.849 ms  
Loss rate: 0.31%

## Run 5: Report of Sprout — Data Link

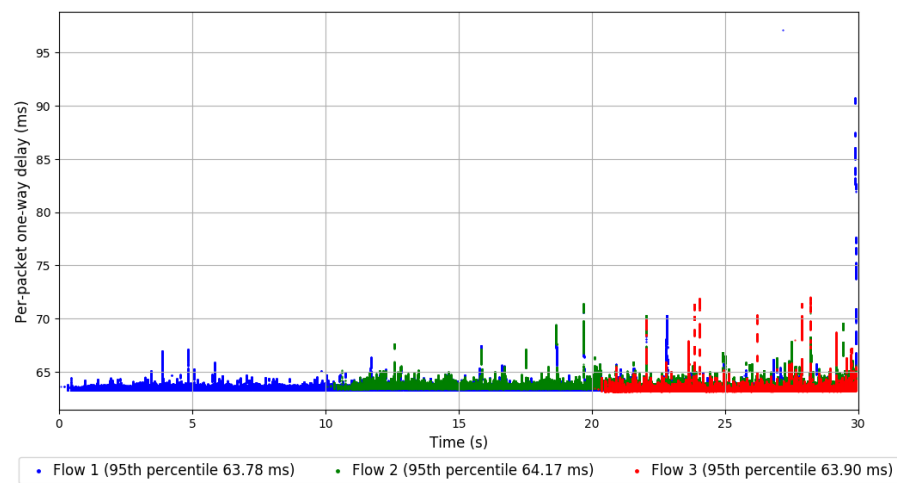
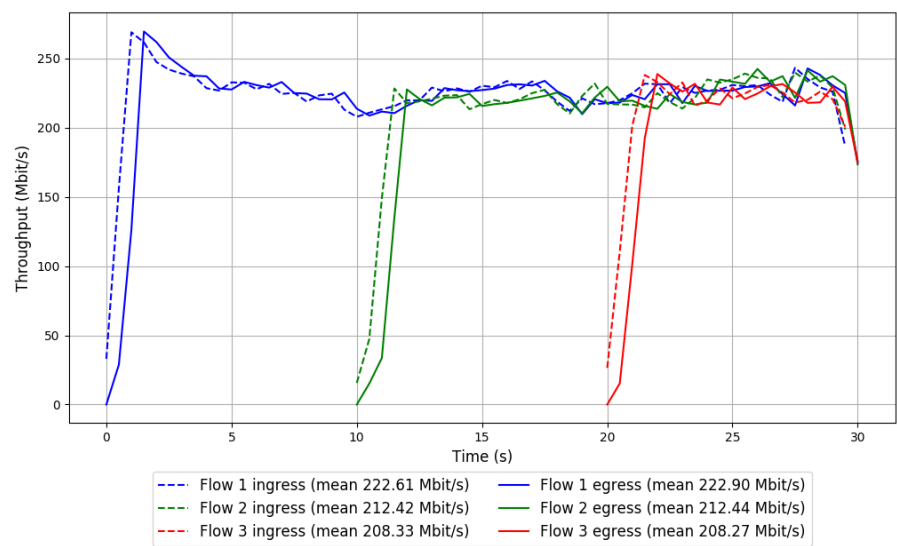


```
Run 1: Statistics of TaoVA-100x

Start at: 2018-11-15 14:42:31
End at: 2018-11-15 14:43:01
Local clock offset: 0.002 ms
Remote clock offset: -0.327 ms

# Below is generated by plot.py at 2018-11-15 19:22:03
# Datalink statistics
-- Total of 3 flows:
Average throughput: 432.66 Mbit/s
95th percentile per-packet one-way delay: 63.963 ms
Loss rate: 0.56%
-- Flow 1:
Average throughput: 222.90 Mbit/s
95th percentile per-packet one-way delay: 63.785 ms
Loss rate: 0.29%
-- Flow 2:
Average throughput: 212.44 Mbit/s
95th percentile per-packet one-way delay: 64.166 ms
Loss rate: 0.62%
-- Flow 3:
Average throughput: 208.27 Mbit/s
95th percentile per-packet one-way delay: 63.901 ms
Loss rate: 1.31%
```

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



Run 2: Statistics of TaoVA-100x

Start at: 2018-11-15 15:13:47

End at: 2018-11-15 15:14:17

Local clock offset: -0.019 ms

Remote clock offset: -0.29 ms

# Below is generated by plot.py at 2018-11-15 19:22:52

# Datalink statistics

-- Total of 3 flows:

Average throughput: 452.55 Mbit/s

95th percentile per-packet one-way delay: 63.899 ms

Loss rate: 0.70%

-- Flow 1:

Average throughput: 231.57 Mbit/s

95th percentile per-packet one-way delay: 63.750 ms

Loss rate: 0.46%

-- Flow 2:

Average throughput: 223.28 Mbit/s

95th percentile per-packet one-way delay: 63.649 ms

Loss rate: 0.70%

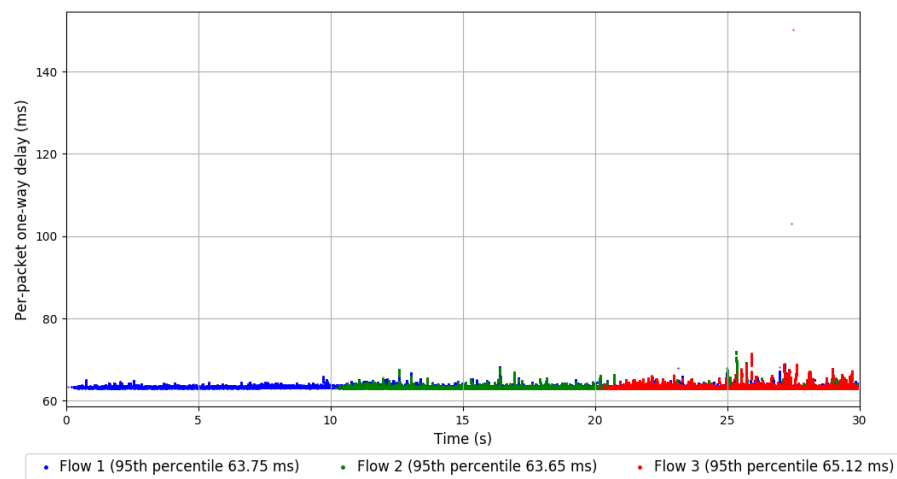
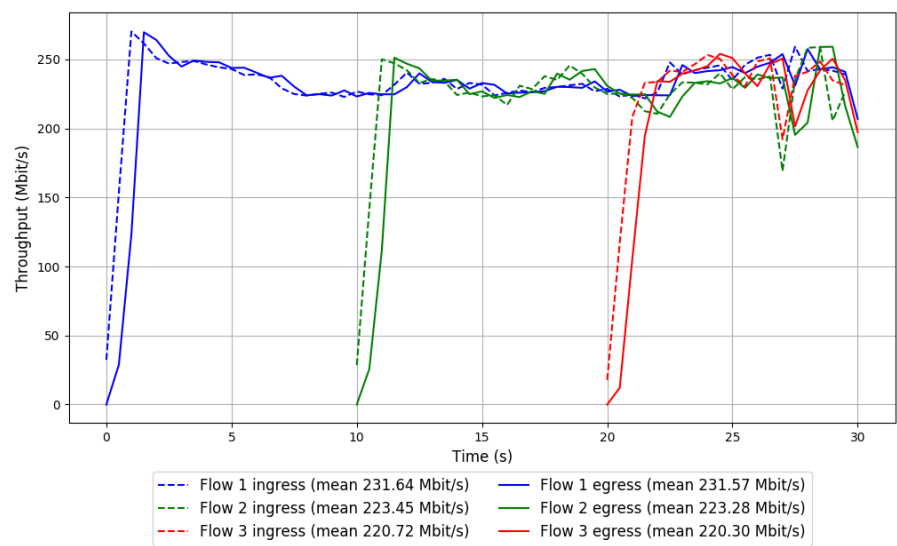
-- Flow 3:

Average throughput: 220.30 Mbit/s

95th percentile per-packet one-way delay: 65.117 ms

Loss rate: 1.46%

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



Run 3: Statistics of TaoVA-100x

Start at: 2018-11-15 15:44:57

End at: 2018-11-15 15:45:27

Local clock offset: -0.044 ms

Remote clock offset: 0.409 ms

# Below is generated by plot.py at 2018-11-15 19:22:52

# Datalink statistics

-- Total of 3 flows:

Average throughput: 437.26 Mbit/s

95th percentile per-packet one-way delay: 62.885 ms

Loss rate: 0.62%

-- Flow 1:

Average throughput: 227.62 Mbit/s

95th percentile per-packet one-way delay: 62.832 ms

Loss rate: 0.35%

-- Flow 2:

Average throughput: 219.21 Mbit/s

95th percentile per-packet one-way delay: 62.804 ms

Loss rate: 0.70%

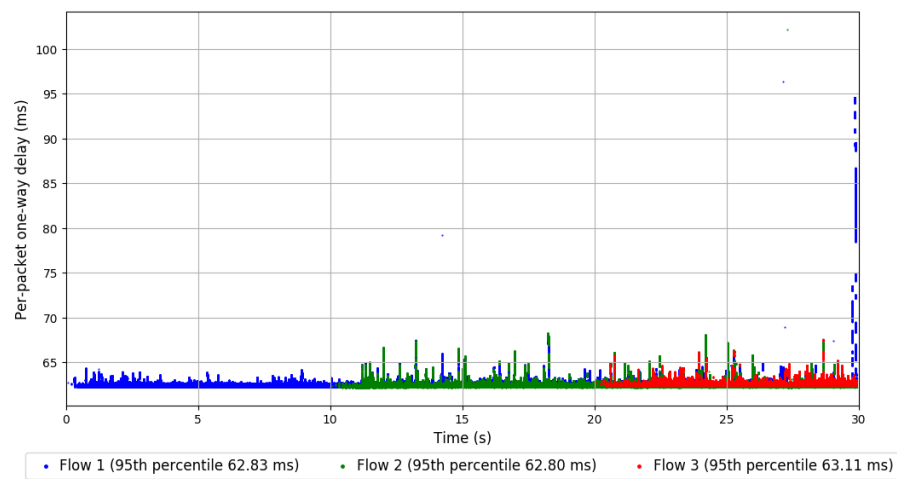
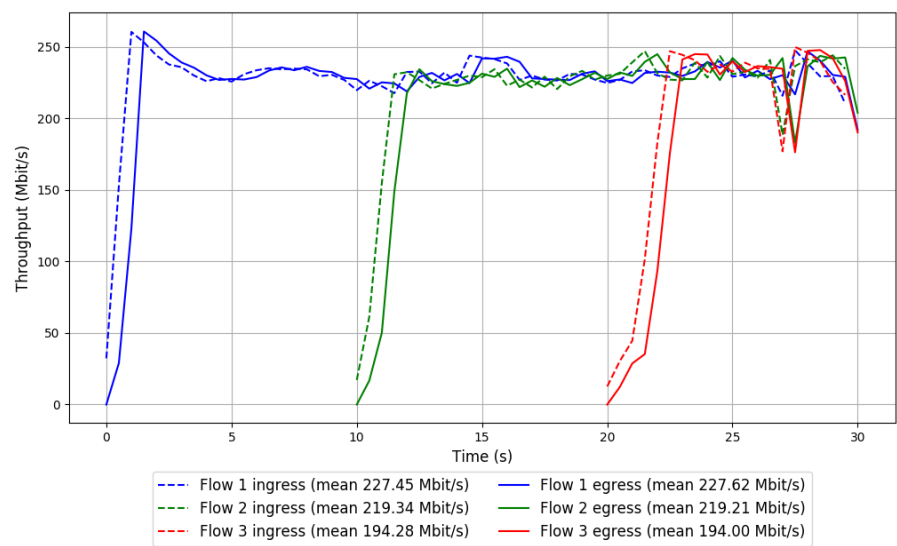
-- Flow 3:

Average throughput: 194.00 Mbit/s

95th percentile per-packet one-way delay: 63.113 ms

Loss rate: 1.42%

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



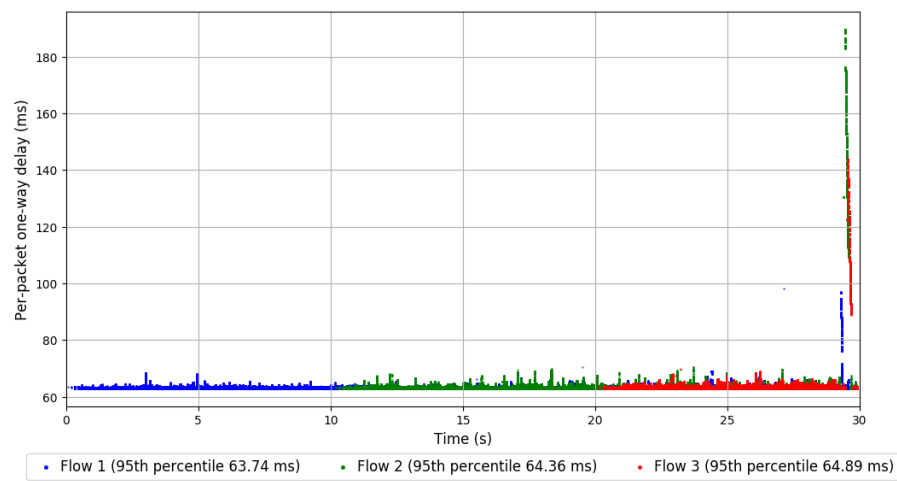
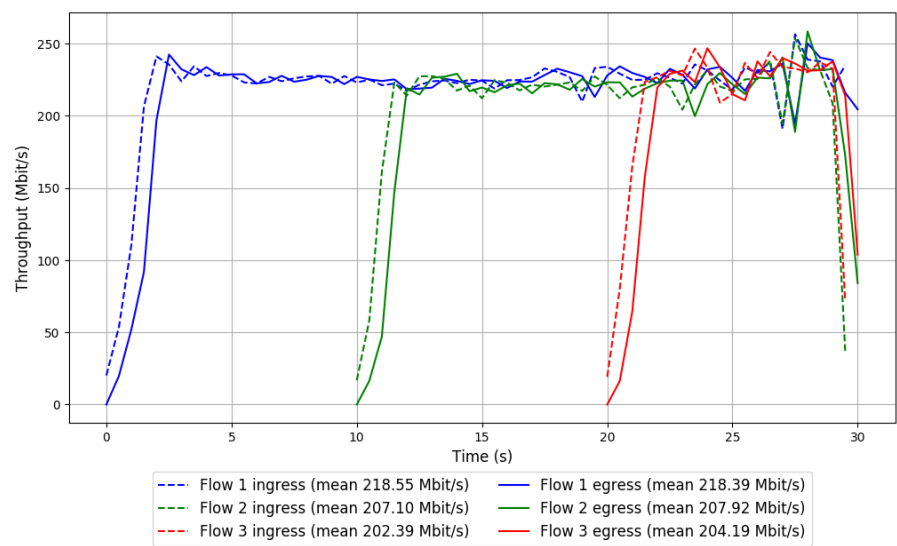


Run 4: Statistics of TaoVA-100x

Start at: 2018-11-15 16:16:24  
End at: 2018-11-15 16:16:54  
Local clock offset: -0.085 ms  
Remote clock offset: -0.216 ms

# Below is generated by plot.py at 2018-11-15 19:22:52  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 423.72 Mbit/s  
95th percentile per-packet one-way delay: 64.107 ms  
Loss rate: 0.39%  
-- Flow 1:  
Average throughput: 218.39 Mbit/s  
95th percentile per-packet one-way delay: 63.740 ms  
Loss rate: 0.50%  
-- Flow 2:  
Average throughput: 207.92 Mbit/s  
95th percentile per-packet one-way delay: 64.363 ms  
Loss rate: 0.22%  
-- Flow 3:  
Average throughput: 204.19 Mbit/s  
95th percentile per-packet one-way delay: 64.890 ms  
Loss rate: 0.39%

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

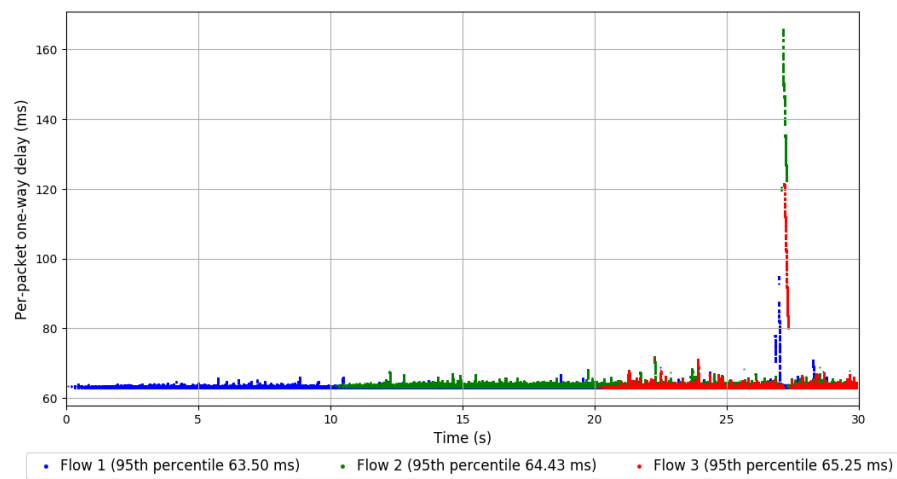
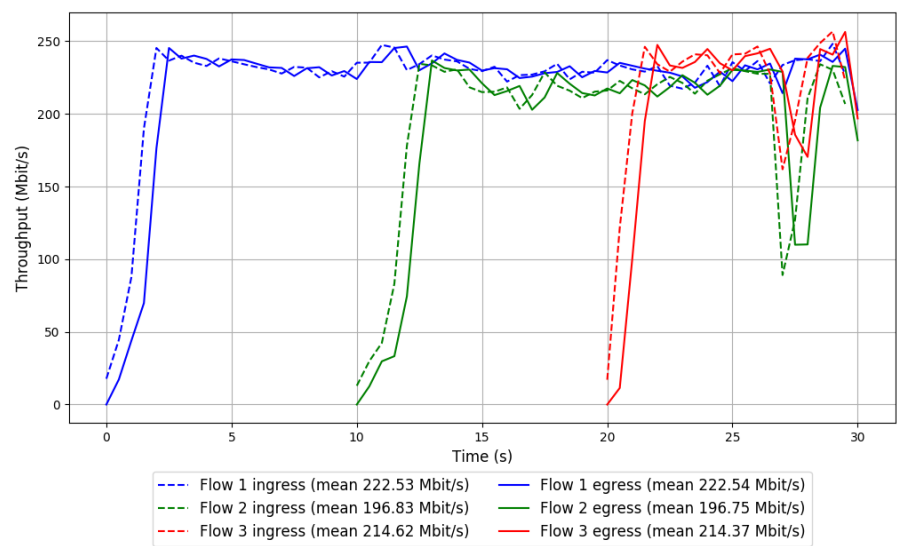


Run 5: Statistics of TaoVA-100x

Start at: 2018-11-15 16:48:04  
End at: 2018-11-15 16:48:34  
Local clock offset: 0.004 ms  
Remote clock offset: -0.083 ms

# Below is generated by plot.py at 2018-11-15 19:26:28  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 423.90 Mbit/s  
95th percentile per-packet one-way delay: 64.129 ms  
Loss rate: 0.67%  
-- Flow 1:  
Average throughput: 222.54 Mbit/s  
95th percentile per-packet one-way delay: 63.496 ms  
Loss rate: 0.43%  
-- Flow 2:  
Average throughput: 196.75 Mbit/s  
95th percentile per-packet one-way delay: 64.426 ms  
Loss rate: 0.68%  
-- Flow 3:  
Average throughput: 214.37 Mbit/s  
95th percentile per-packet one-way delay: 65.251 ms  
Loss rate: 1.41%

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

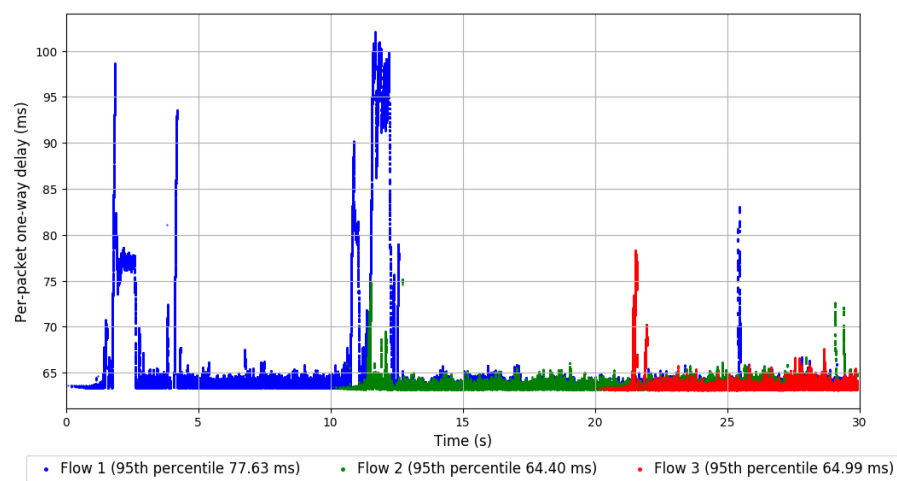
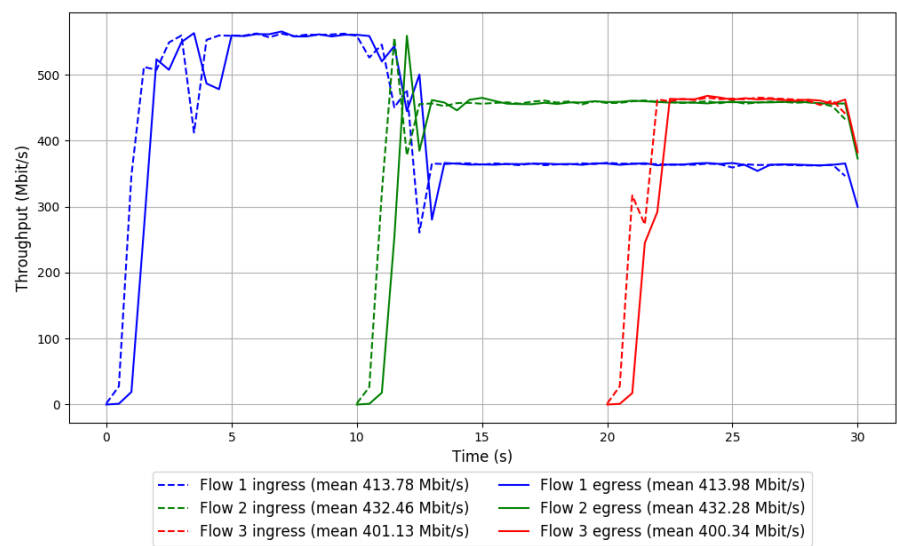


Run 1: Statistics of TCP Vegas

Start at: 2018-11-15 14:47:58  
End at: 2018-11-15 14:48:28  
Local clock offset: -0.051 ms  
Remote clock offset: -0.277 ms

# Below is generated by plot.py at 2018-11-15 19:28:53  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 833.26 Mbit/s  
95th percentile per-packet one-way delay: 69.486 ms  
Loss rate: 0.65%  
-- Flow 1:  
Average throughput: 413.98 Mbit/s  
95th percentile per-packet one-way delay: 77.626 ms  
Loss rate: 0.37%  
-- Flow 2:  
Average throughput: 432.28 Mbit/s  
95th percentile per-packet one-way delay: 64.404 ms  
Loss rate: 0.67%  
-- Flow 3:  
Average throughput: 400.34 Mbit/s  
95th percentile per-packet one-way delay: 64.993 ms  
Loss rate: 1.47%

Run 1: Report of TCP Vegas — Data Link



Run 2: Statistics of TCP Vegas

Start at: 2018-11-15 15:19:20

End at: 2018-11-15 15:19:50

Local clock offset: -0.003 ms

Remote clock offset: -0.0 ms

# Below is generated by plot.py at 2018-11-15 19:28:53

# Datalink statistics

-- Total of 3 flows:

Average throughput: 623.35 Mbit/s

95th percentile per-packet one-way delay: 64.977 ms

Loss rate: 0.39%

-- Flow 1:

Average throughput: 255.75 Mbit/s

95th percentile per-packet one-way delay: 63.474 ms

Loss rate: 0.20%

-- Flow 2:

Average throughput: 402.78 Mbit/s

95th percentile per-packet one-way delay: 65.915 ms

Loss rate: 0.35%

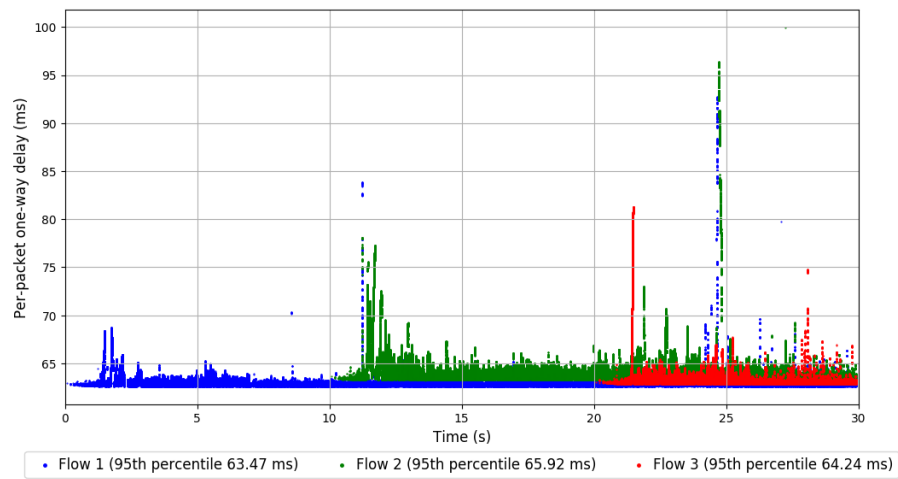
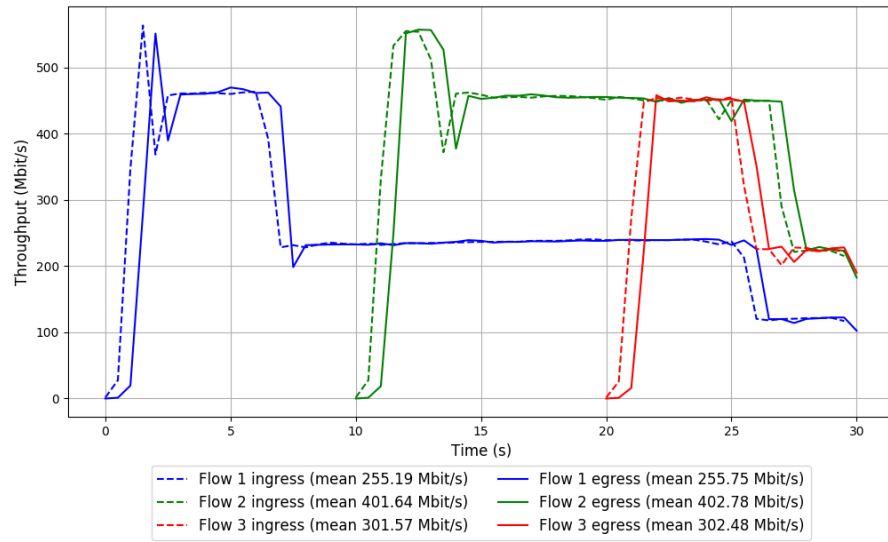
-- Flow 3:

Average throughput: 302.48 Mbit/s

95th percentile per-packet one-way delay: 64.241 ms

Loss rate: 0.97%

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



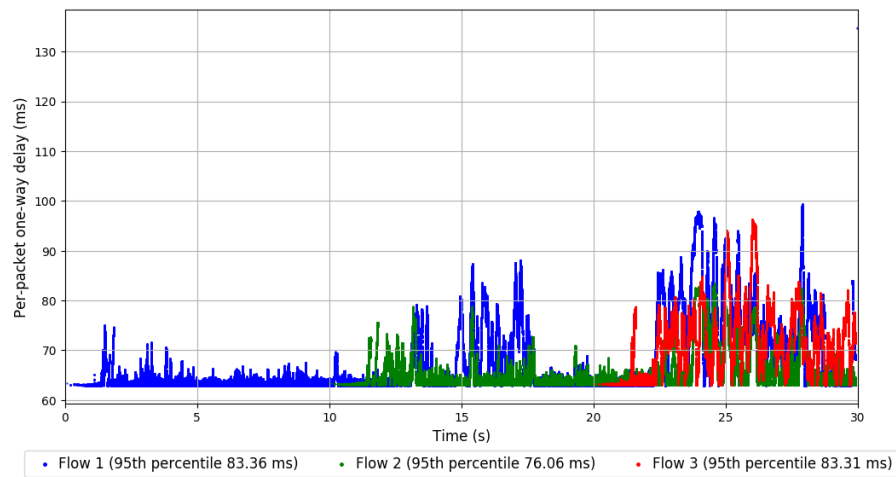
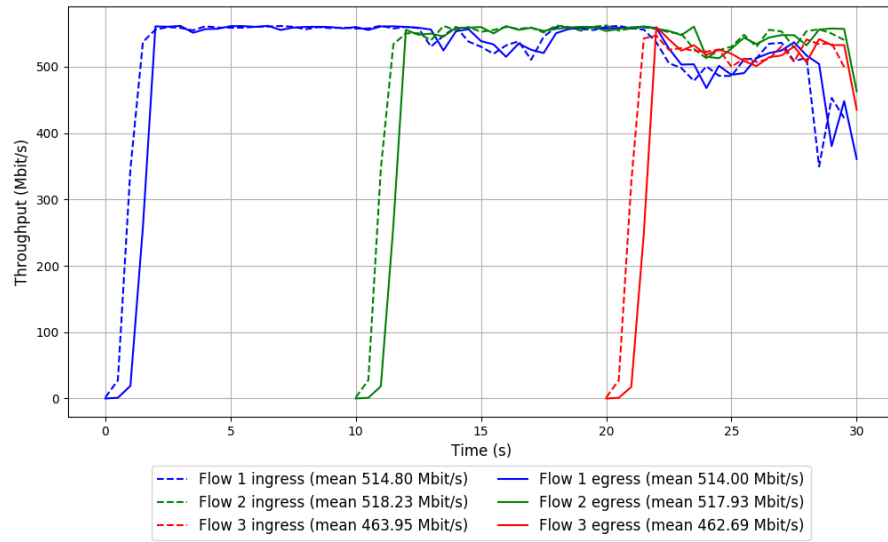


Run 3: Statistics of TCP Vegas

Start at: 2018-11-15 15:50:29  
End at: 2018-11-15 15:50:59  
Local clock offset: -0.081 ms  
Remote clock offset: -0.223 ms

# Below is generated by plot.py at 2018-11-15 19:35:57  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 1010.05 Mbit/s  
95th percentile per-packet one-way delay: 81.425 ms  
Loss rate: 0.66%  
-- Flow 1:  
Average throughput: 514.00 Mbit/s  
95th percentile per-packet one-way delay: 83.356 ms  
Loss rate: 0.37%  
-- Flow 2:  
Average throughput: 517.93 Mbit/s  
95th percentile per-packet one-way delay: 76.058 ms  
Loss rate: 0.69%  
-- Flow 3:  
Average throughput: 462.69 Mbit/s  
95th percentile per-packet one-way delay: 83.315 ms  
Loss rate: 1.54%

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

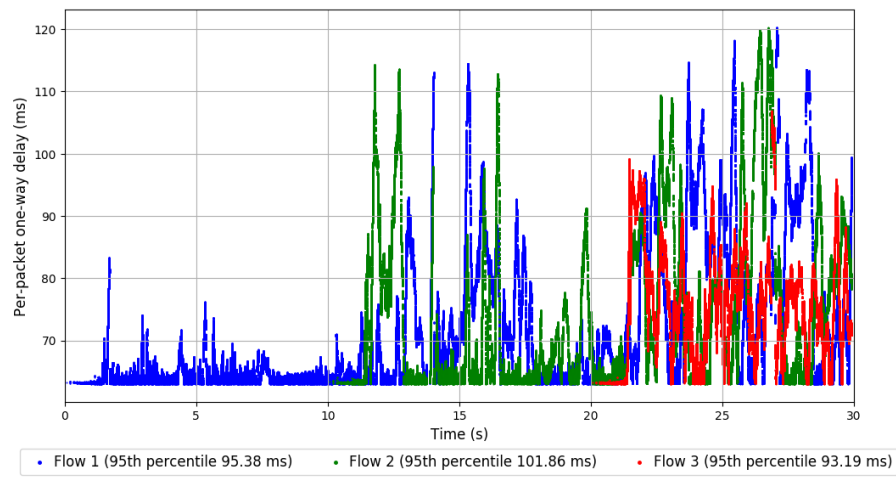
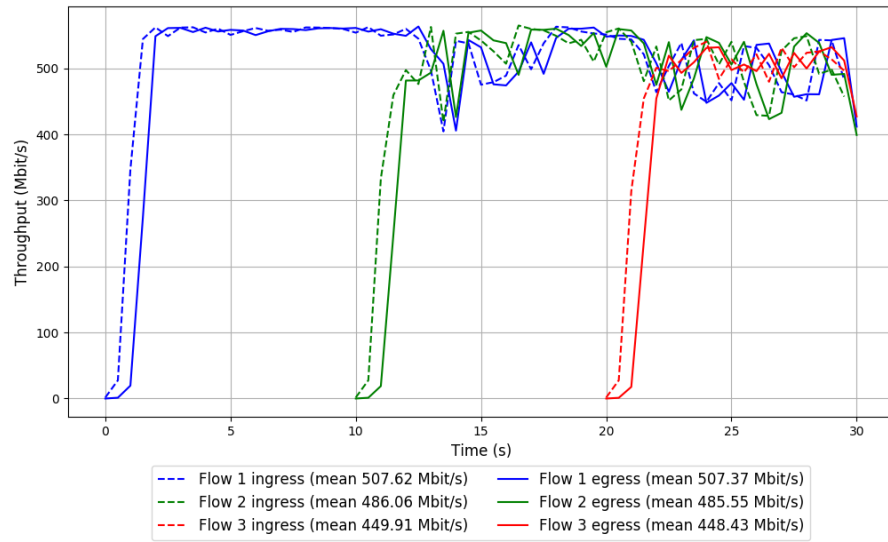


Run 4: Statistics of TCP Vegas

Start at: 2018-11-15 16:21:54  
End at: 2018-11-15 16:22:24  
Local clock offset: -0.063 ms  
Remote clock offset: -0.357 ms

# Below is generated by plot.py at 2018-11-15 19:41:44  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 977.97 Mbit/s  
95th percentile per-packet one-way delay: 96.659 ms  
Loss rate: 0.73%  
-- Flow 1:  
Average throughput: 507.37 Mbit/s  
95th percentile per-packet one-way delay: 95.381 ms  
Loss rate: 0.47%  
-- Flow 2:  
Average throughput: 485.55 Mbit/s  
95th percentile per-packet one-way delay: 101.862 ms  
Loss rate: 0.73%  
-- Flow 3:  
Average throughput: 448.43 Mbit/s  
95th percentile per-packet one-way delay: 93.186 ms  
Loss rate: 1.59%

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



Run 5: Statistics of TCP Vegas

Start at: 2018-11-15 16:53:28

End at: 2018-11-15 16:53:58

Local clock offset: -0.038 ms

Remote clock offset: 0.539 ms

# Below is generated by plot.py at 2018-11-15 19:41:44

# Datalink statistics

-- Total of 3 flows:

Average throughput: 877.69 Mbit/s

95th percentile per-packet one-way delay: 80.145 ms

Loss rate: 0.55%

-- Flow 1:

Average throughput: 513.78 Mbit/s

95th percentile per-packet one-way delay: 82.860 ms

Loss rate: 0.46%

-- Flow 2:

Average throughput: 464.44 Mbit/s

95th percentile per-packet one-way delay: 69.199 ms

Loss rate: 0.62%

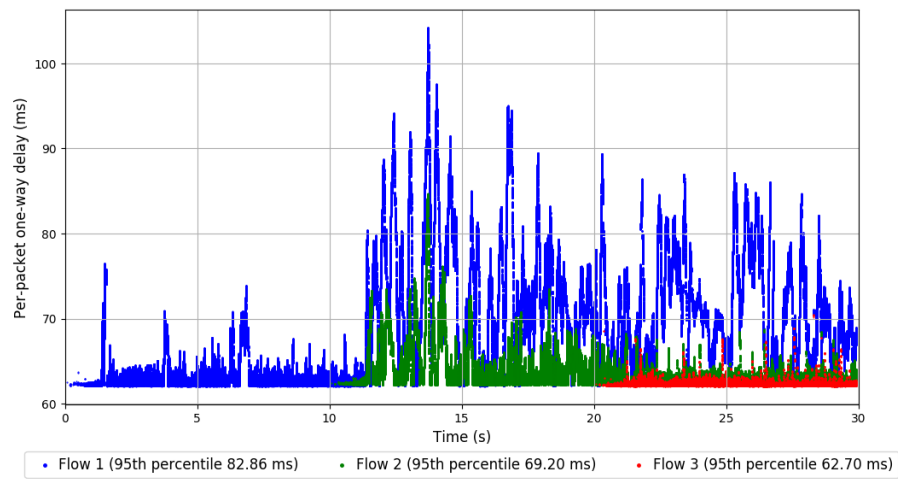
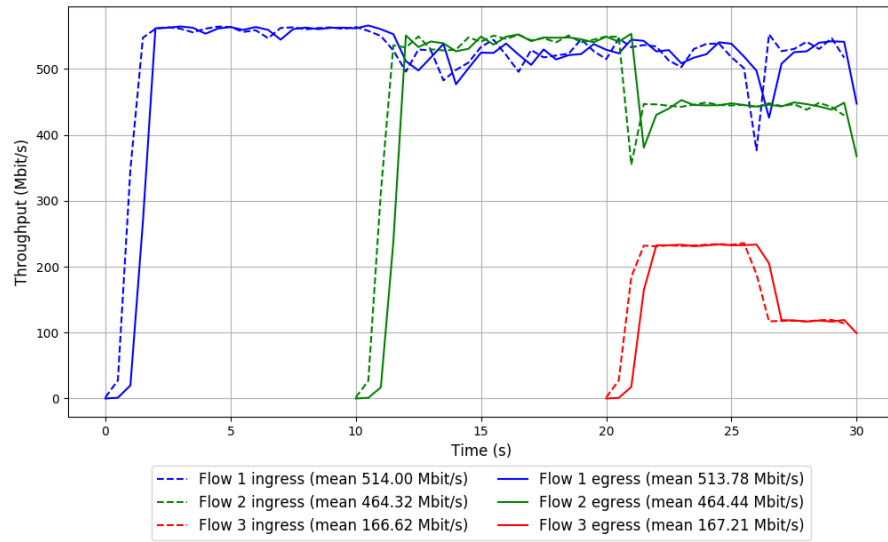
-- Flow 3:

Average throughput: 167.21 Mbit/s

95th percentile per-packet one-way delay: 62.695 ms

Loss rate: 0.91%

# Run 5: Report of TCP Vegas — Data Link

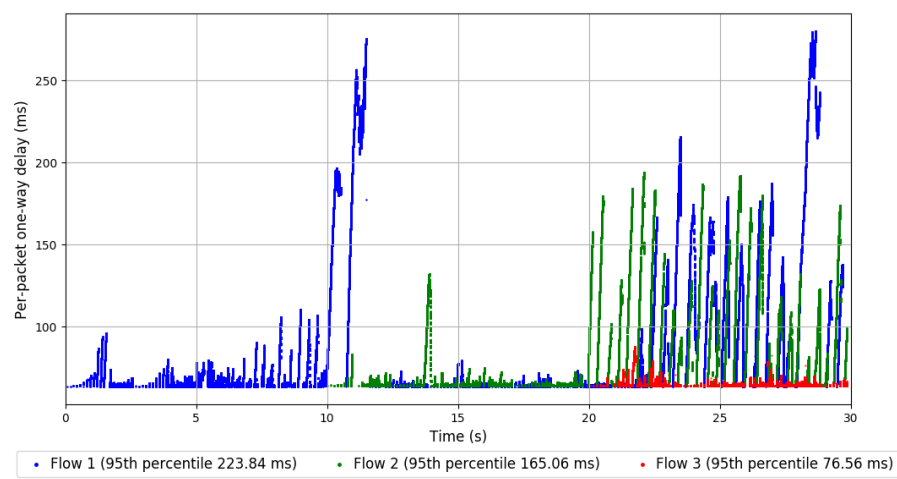
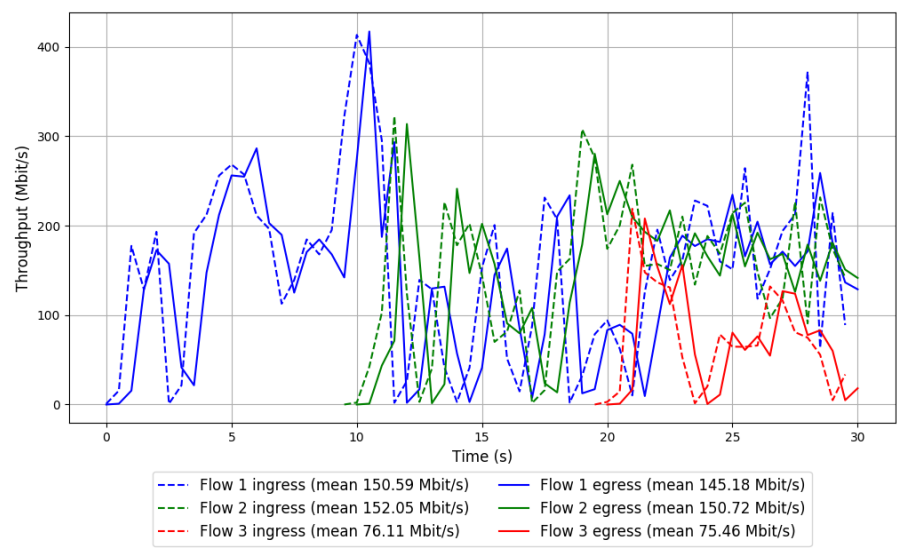


Run 1: Statistics of Verus

Start at: 2018-11-15 15:00:05  
End at: 2018-11-15 15:00:35  
Local clock offset: -0.083 ms  
Remote clock offset: -0.913 ms

# Below is generated by plot.py at 2018-11-15 19:41:45  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 269.55 Mbit/s  
95th percentile per-packet one-way delay: 187.418 ms  
Loss rate: 3.01%  
-- Flow 1:  
Average throughput: 145.18 Mbit/s  
95th percentile per-packet one-way delay: 223.842 ms  
Loss rate: 4.54%  
-- Flow 2:  
Average throughput: 150.72 Mbit/s  
95th percentile per-packet one-way delay: 165.065 ms  
Loss rate: 1.24%  
-- Flow 3:  
Average throughput: 75.46 Mbit/s  
95th percentile per-packet one-way delay: 76.564 ms  
Loss rate: 1.03%

Run 1: Report of Verus — Data Link



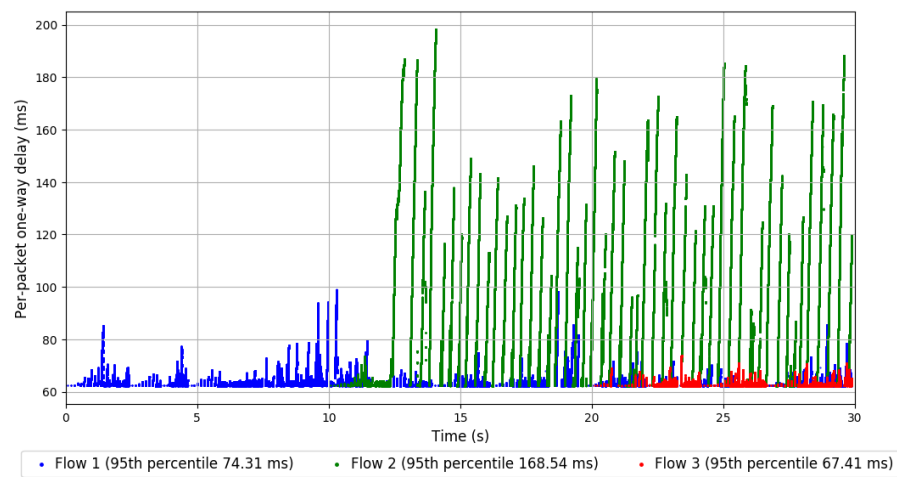
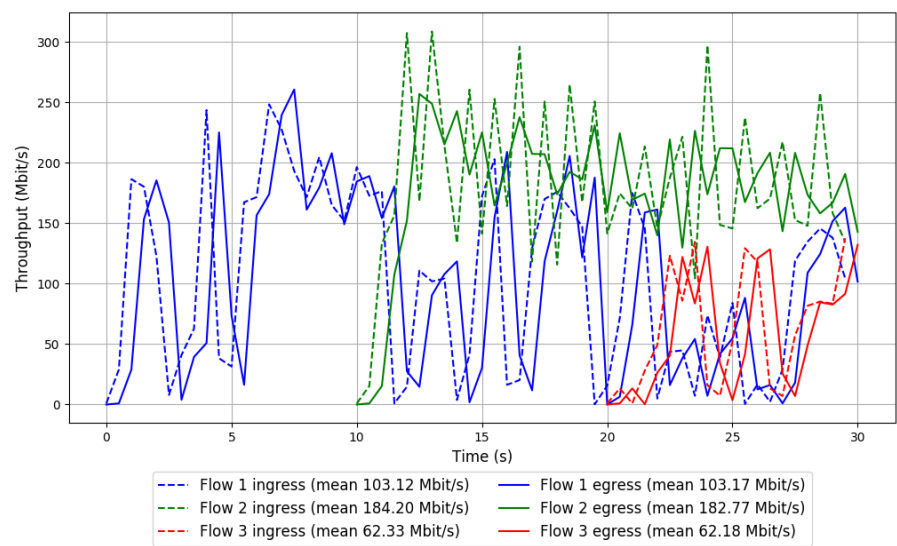


Run 2: Statistics of Verus

Start at: 2018-11-15 15:31:21  
End at: 2018-11-15 15:31:51  
Local clock offset: -0.012 ms  
Remote clock offset: 0.443 ms

# Below is generated by plot.py at 2018-11-15 19:41:45  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 245.04 Mbit/s  
95th percentile per-packet one-way delay: 155.190 ms  
Loss rate: 0.44%  
-- Flow 1:  
Average throughput: 103.17 Mbit/s  
95th percentile per-packet one-way delay: 74.308 ms  
Loss rate: 0.08%  
-- Flow 2:  
Average throughput: 182.77 Mbit/s  
95th percentile per-packet one-way delay: 168.542 ms  
Loss rate: 0.76%  
-- Flow 3:  
Average throughput: 62.18 Mbit/s  
95th percentile per-packet one-way delay: 67.405 ms  
Loss rate: 0.44%

Run 2: Report of Verus — Data Link

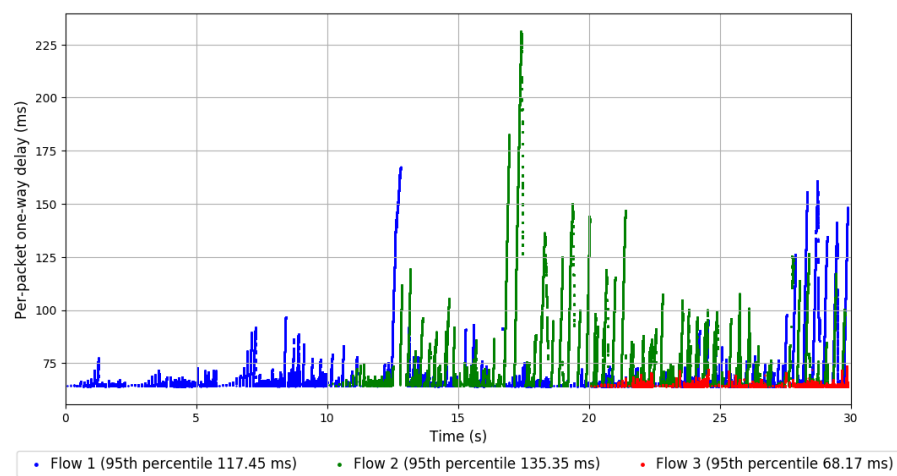
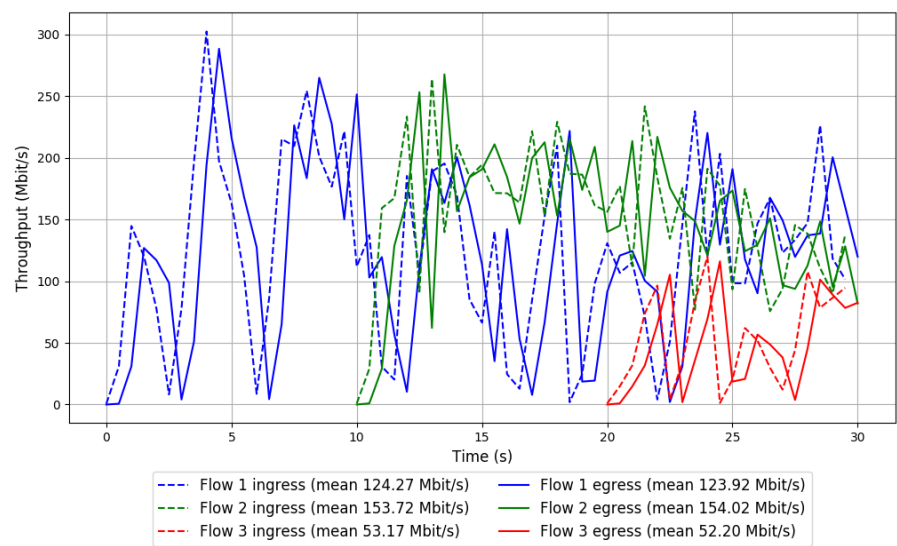


Run 3: Statistics of Verus

Start at: 2018-11-15 16:02:50  
End at: 2018-11-15 16:03:20  
Local clock offset: -0.072 ms  
Remote clock offset: -1.278 ms

# Below is generated by plot.py at 2018-11-15 19:41:45  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 242.72 Mbit/s  
95th percentile per-packet one-way delay: 124.270 ms  
Loss rate: 0.61%  
-- Flow 1:  
Average throughput: 123.92 Mbit/s  
95th percentile per-packet one-way delay: 117.454 ms  
Loss rate: 0.00%  
-- Flow 2:  
Average throughput: 154.02 Mbit/s  
95th percentile per-packet one-way delay: 135.348 ms  
Loss rate: 1.07%  
-- Flow 3:  
Average throughput: 52.20 Mbit/s  
95th percentile per-packet one-way delay: 68.170 ms  
Loss rate: 2.25%

Run 3: Report of Verus — Data Link

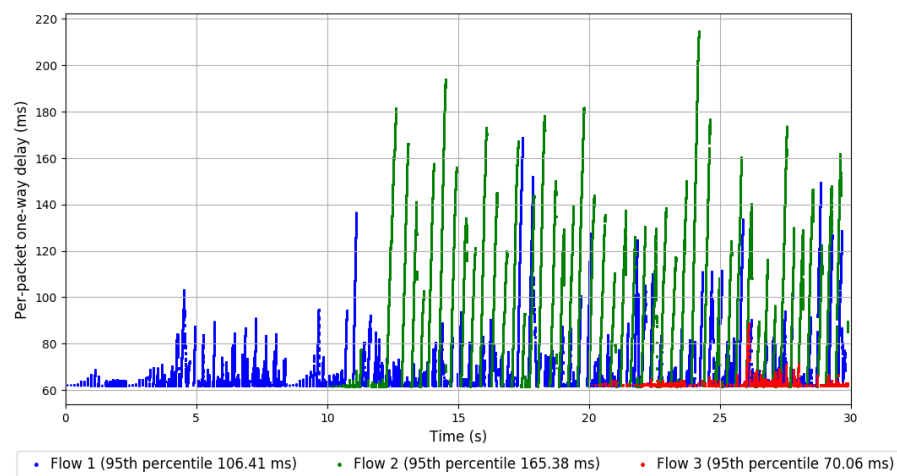
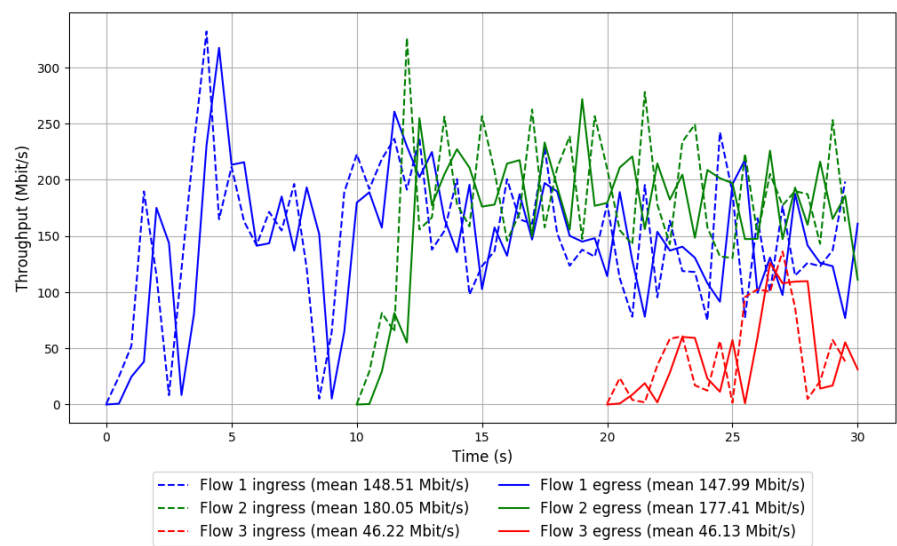


Run 4: Statistics of Verus

Start at: 2018-11-15 16:34:21  
End at: 2018-11-15 16:34:51  
Local clock offset: -0.032 ms  
Remote clock offset: 1.061 ms

# Below is generated by plot.py at 2018-11-15 19:41:45  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 280.50 Mbit/s  
95th percentile per-packet one-way delay: 147.921 ms  
Loss rate: 1.48%  
-- Flow 1:  
Average throughput: 147.99 Mbit/s  
95th percentile per-packet one-way delay: 106.414 ms  
Loss rate: 1.10%  
-- Flow 2:  
Average throughput: 177.41 Mbit/s  
95th percentile per-packet one-way delay: 165.375 ms  
Loss rate: 1.97%  
-- Flow 3:  
Average throughput: 46.13 Mbit/s  
95th percentile per-packet one-way delay: 70.059 ms  
Loss rate: 1.43%

Run 4: Report of Verus — Data Link

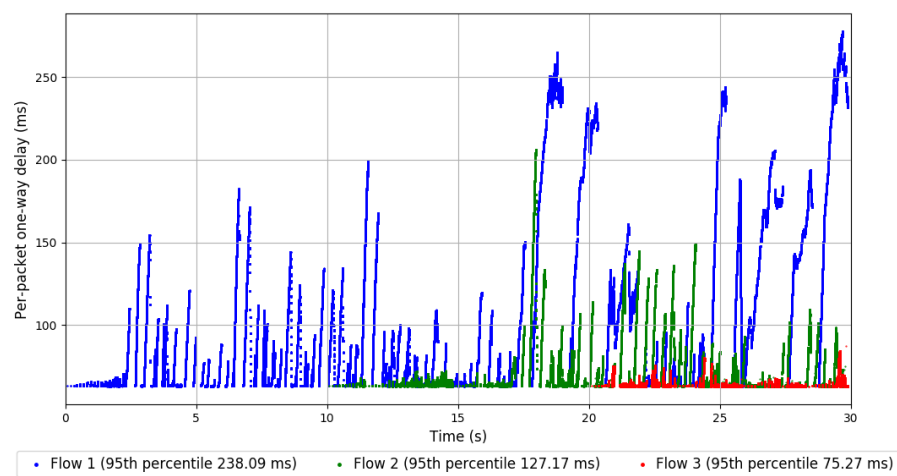
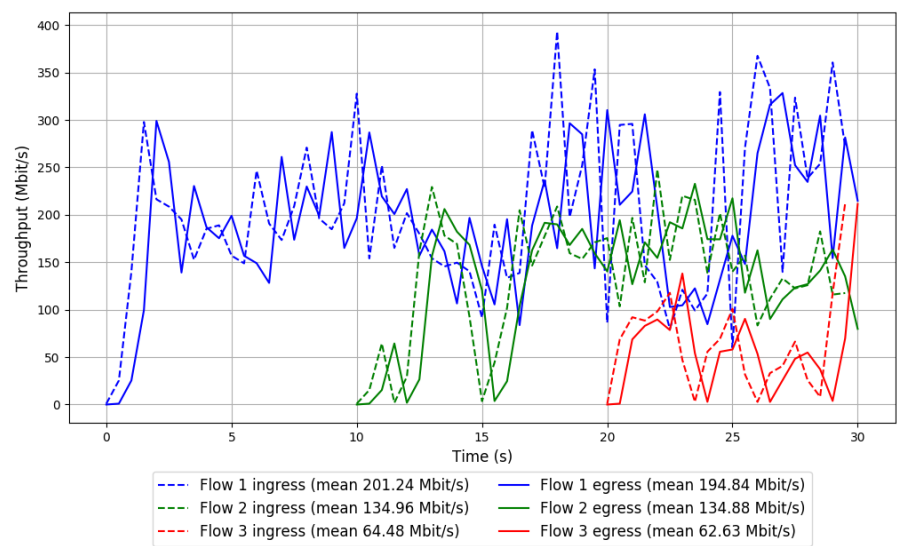


Run 5: Statistics of Verus

Start at: 2018-11-15 17:05:47  
End at: 2018-11-15 17:06:17  
Local clock offset: -0.071 ms  
Remote clock offset: -0.195 ms

# Below is generated by plot.py at 2018-11-15 19:41:45  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 305.02 Mbit/s  
95th percentile per-packet one-way delay: 226.219 ms  
Loss rate: 2.80%  
-- Flow 1:  
Average throughput: 194.84 Mbit/s  
95th percentile per-packet one-way delay: 238.095 ms  
Loss rate: 3.59%  
-- Flow 2:  
Average throughput: 134.88 Mbit/s  
95th percentile per-packet one-way delay: 127.165 ms  
Loss rate: 0.70%  
-- Flow 3:  
Average throughput: 62.63 Mbit/s  
95th percentile per-packet one-way delay: 75.269 ms  
Loss rate: 4.11%

Run 5: Report of Verus — Data Link



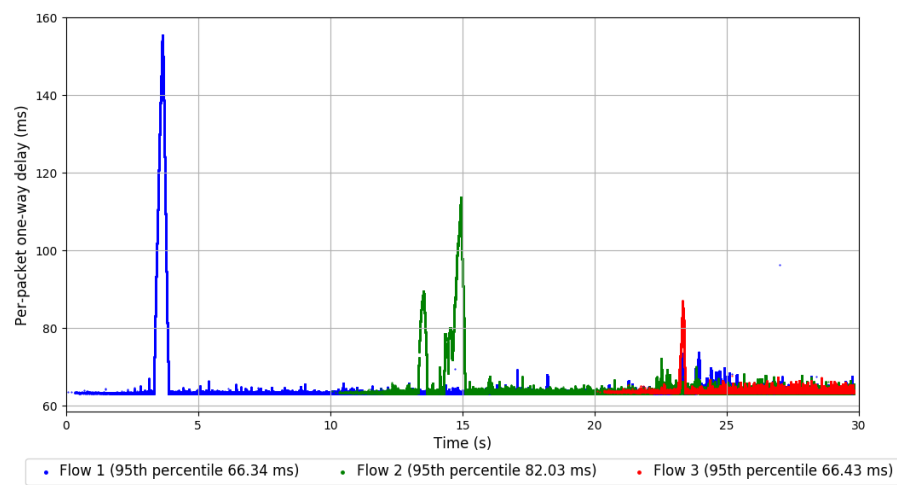
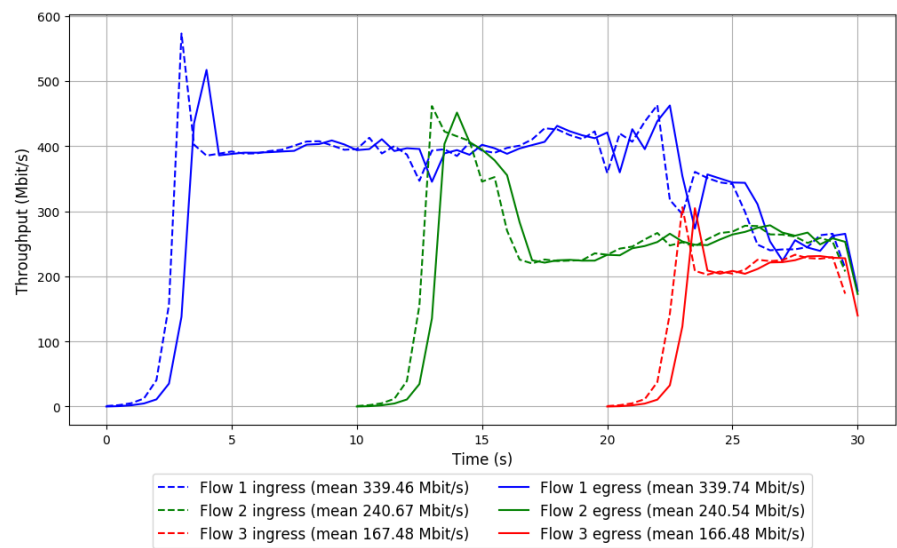


Run 1: Statistics of PCC-Vivace

Start at: 2018-11-15 14:44:25  
End at: 2018-11-15 14:44:55  
Local clock offset: -0.031 ms  
Remote clock offset: -0.181 ms

# Below is generated by plot.py at 2018-11-15 19:42:30  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 553.80 Mbit/s  
95th percentile per-packet one-way delay: 71.584 ms  
Loss rate: 0.60%  
-- Flow 1:  
Average throughput: 339.74 Mbit/s  
95th percentile per-packet one-way delay: 66.344 ms  
Loss rate: 0.34%  
-- Flow 2:  
Average throughput: 240.54 Mbit/s  
95th percentile per-packet one-way delay: 82.026 ms  
Loss rate: 0.70%  
-- Flow 3:  
Average throughput: 166.48 Mbit/s  
95th percentile per-packet one-way delay: 66.431 ms  
Loss rate: 1.90%

Run 1: Report of PCC-Vivace — Data Link

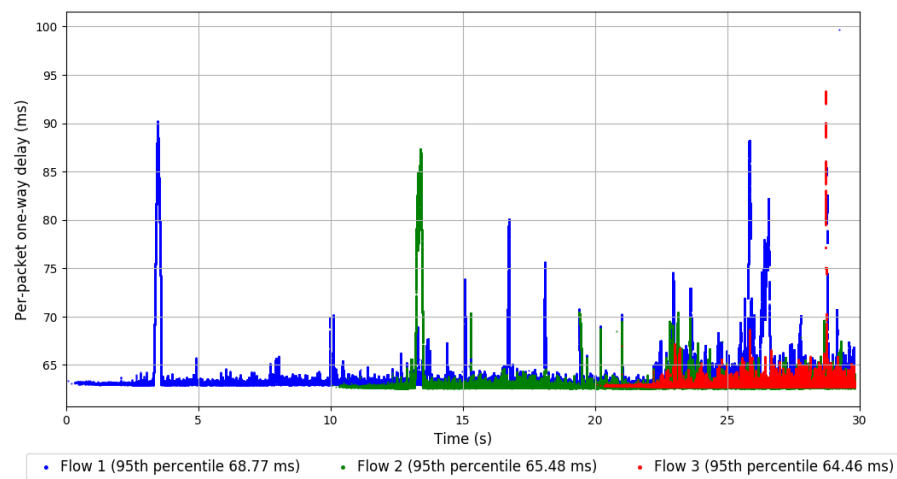
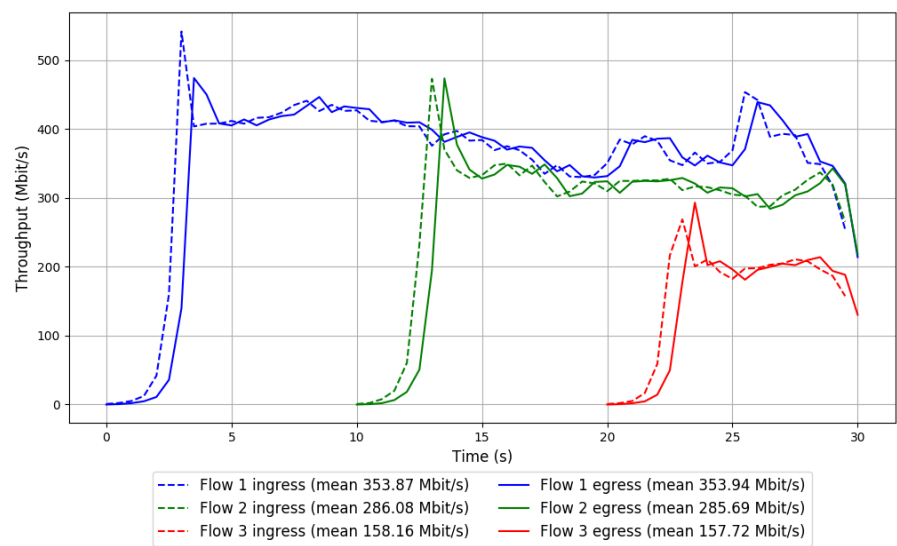


Run 2: Statistics of PCC-Vivace

Start at: 2018-11-15 15:15:43  
End at: 2018-11-15 15:16:13  
Local clock offset: -0.035 ms  
Remote clock offset: -0.106 ms

# Below is generated by plot.py at 2018-11-15 19:43:38  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 595.10 Mbit/s  
95th percentile per-packet one-way delay: 67.099 ms  
Loss rate: 0.63%  
-- Flow 1:  
Average throughput: 353.94 Mbit/s  
95th percentile per-packet one-way delay: 68.773 ms  
Loss rate: 0.41%  
-- Flow 2:  
Average throughput: 285.69 Mbit/s  
95th percentile per-packet one-way delay: 65.476 ms  
Loss rate: 0.77%  
-- Flow 3:  
Average throughput: 157.72 Mbit/s  
95th percentile per-packet one-way delay: 64.462 ms  
Loss rate: 1.58%

Run 2: Report of PCC-Vivace — Data Link

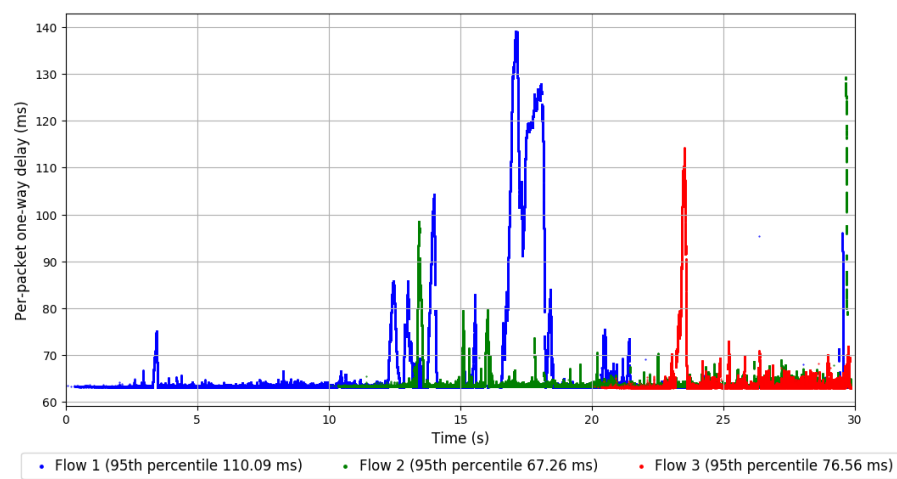
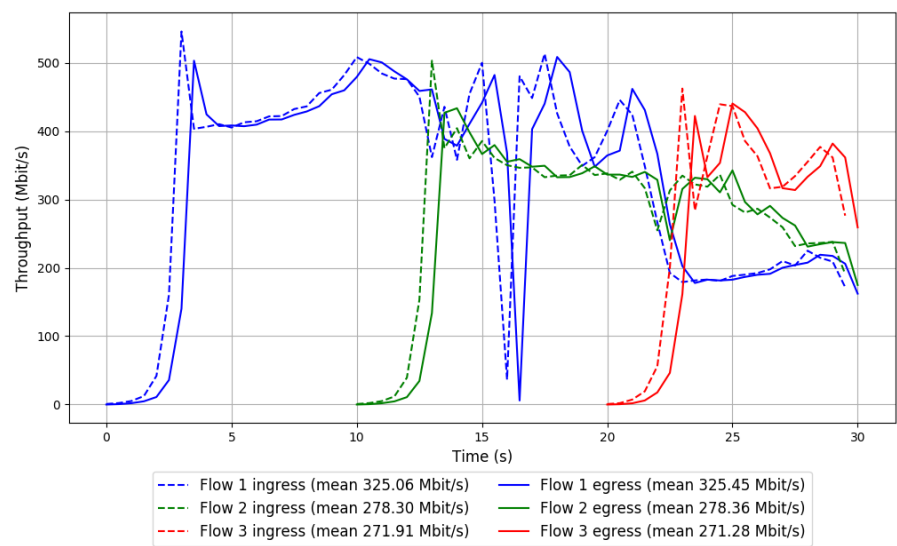


Run 3: Statistics of PCC-Vivace

Start at: 2018-11-15 15:46:52  
End at: 2018-11-15 15:47:22  
Local clock offset: -0.065 ms  
Remote clock offset: -0.349 ms

# Below is generated by plot.py at 2018-11-15 19:44:35  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 599.09 Mbit/s  
95th percentile per-packet one-way delay: 86.844 ms  
Loss rate: 0.42%  
-- Flow 1:  
Average throughput: 325.45 Mbit/s  
95th percentile per-packet one-way delay: 110.091 ms  
Loss rate: 0.21%  
-- Flow 2:  
Average throughput: 278.36 Mbit/s  
95th percentile per-packet one-way delay: 67.263 ms  
Loss rate: 0.44%  
-- Flow 3:  
Average throughput: 271.28 Mbit/s  
95th percentile per-packet one-way delay: 76.555 ms  
Loss rate: 1.17%

Run 3: Report of PCC-Vivace — Data Link



Run 4: Statistics of PCC-Vivace

Start at: 2018-11-15 16:18:18

End at: 2018-11-15 16:18:48

Local clock offset: -0.077 ms

Remote clock offset: 1.155 ms

# Below is generated by plot.py at 2018-11-15 19:44:35

# Datalink statistics

-- Total of 3 flows:

Average throughput: 575.60 Mbit/s

95th percentile per-packet one-way delay: 63.650 ms

Loss rate: 0.62%

-- Flow 1:

Average throughput: 328.09 Mbit/s

95th percentile per-packet one-way delay: 63.168 ms

Loss rate: 0.30%

-- Flow 2:

Average throughput: 236.65 Mbit/s

95th percentile per-packet one-way delay: 63.327 ms

Loss rate: 0.79%

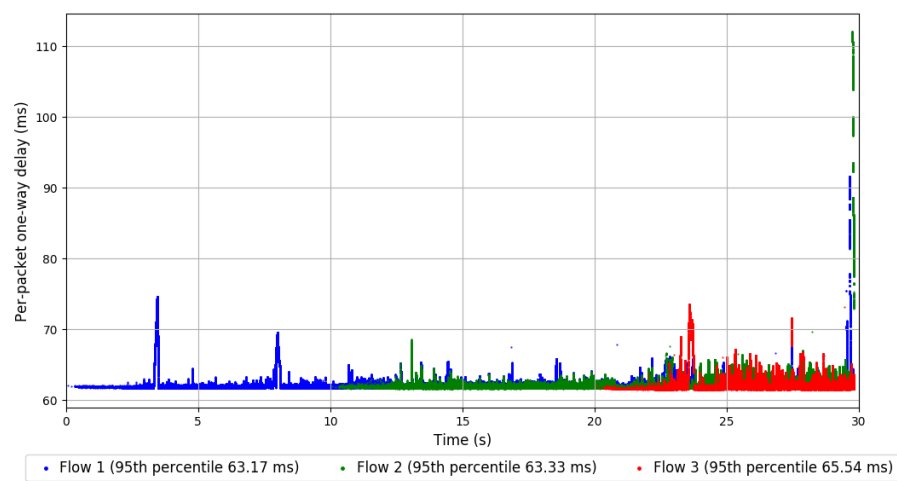
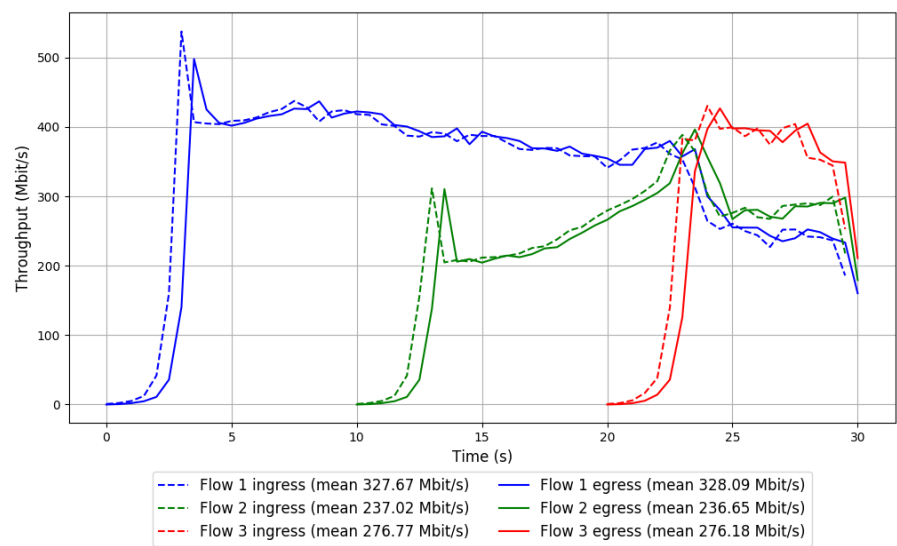
-- Flow 3:

Average throughput: 276.18 Mbit/s

95th percentile per-packet one-way delay: 65.543 ms

Loss rate: 1.50%

Run 4: Report of PCC-Vivace — Data Link



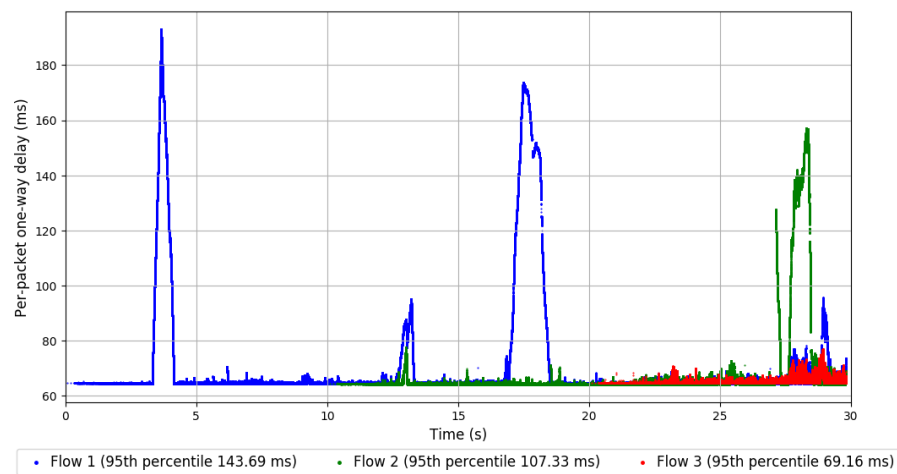
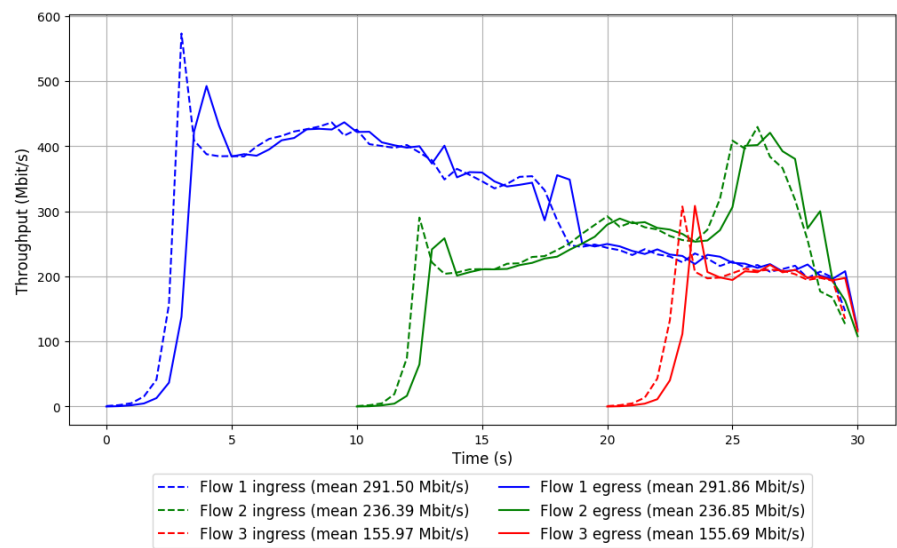


Run 5: Statistics of PCC-Vivace

Start at: 2018-11-15 16:49:59  
End at: 2018-11-15 16:50:29  
Local clock offset: -0.033 ms  
Remote clock offset: -1.429 ms

# Below is generated by plot.py at 2018-11-15 19:44:42  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 499.65 Mbit/s  
95th percentile per-packet one-way delay: 122.708 ms  
Loss rate: 0.47%  
-- Flow 1:  
Average throughput: 291.86 Mbit/s  
95th percentile per-packet one-way delay: 143.688 ms  
Loss rate: 0.31%  
-- Flow 2:  
Average throughput: 236.85 Mbit/s  
95th percentile per-packet one-way delay: 107.334 ms  
Loss rate: 0.45%  
-- Flow 3:  
Average throughput: 155.69 Mbit/s  
95th percentile per-packet one-way delay: 69.158 ms  
Loss rate: 1.44%

Run 5: Report of PCC-Vivace — Data Link

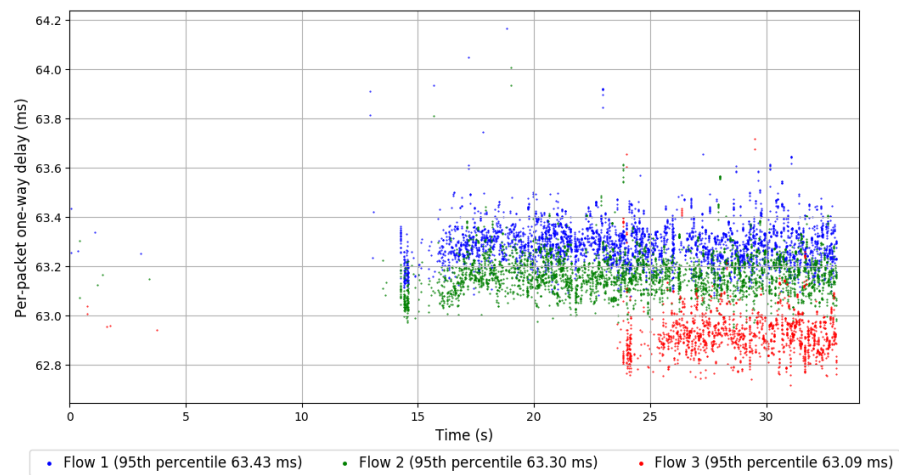
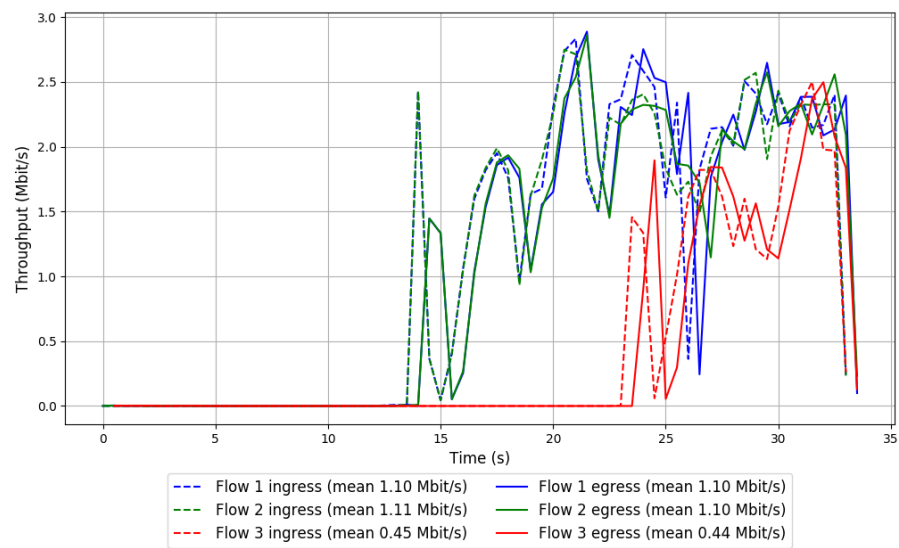


Run 1: Statistics of WebRTC media

Start at: 2018-11-15 14:33:47  
End at: 2018-11-15 14:34:17  
Local clock offset: -0.07 ms  
Remote clock offset: -0.102 ms

# Below is generated by plot.py at 2018-11-15 19:44:42  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 2.62 Mbit/s  
95th percentile per-packet one-way delay: 63.384 ms  
Loss rate: 0.84%  
-- Flow 1:  
Average throughput: 1.10 Mbit/s  
95th percentile per-packet one-way delay: 63.433 ms  
Loss rate: 0.66%  
-- Flow 2:  
Average throughput: 1.10 Mbit/s  
95th percentile per-packet one-way delay: 63.298 ms  
Loss rate: 0.64%  
-- Flow 3:  
Average throughput: 0.44 Mbit/s  
95th percentile per-packet one-way delay: 63.087 ms  
Loss rate: 1.80%

Run 1: Report of WebRTC media — Data Link



Run 2: Statistics of WebRTC media

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

End at: 2018-11-15 15:05:33

Local clock offset: -0.051 ms

Remote clock offset: 0.084 ms

# Below is generated by plot.py at 2018-11-15 19:44:42

# Datalink statistics

-- Total of 3 flows:

Average throughput: 3.47 Mbit/s

95th percentile per-packet one-way delay: 63.203 ms

Loss rate: 0.72%

-- Flow 1:

Average throughput: 1.90 Mbit/s

95th percentile per-packet one-way delay: 63.208 ms

Loss rate: 0.36%

-- Flow 2:

Average throughput: 1.15 Mbit/s

95th percentile per-packet one-way delay: 63.218 ms

Loss rate: 0.92%

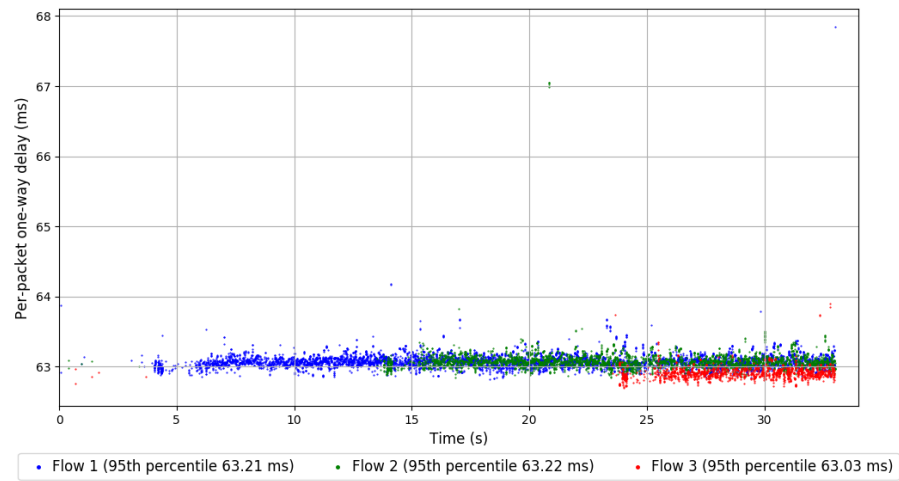
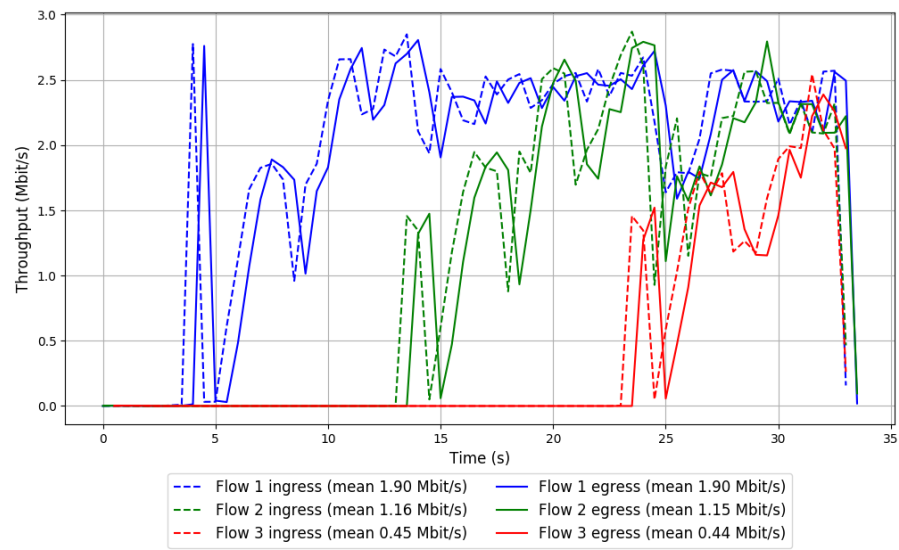
-- Flow 3:

Average throughput: 0.44 Mbit/s

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

Loss rate: 1.80%

Run 2: Report of WebRTC media — Data Link

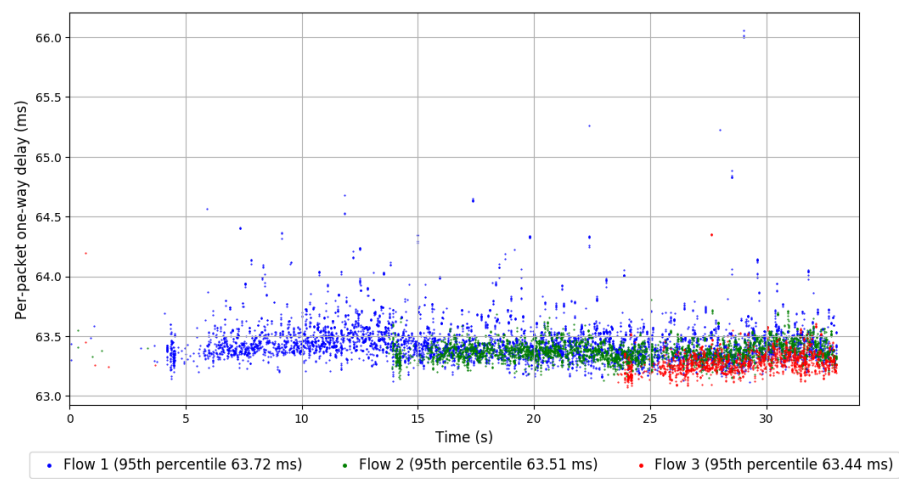
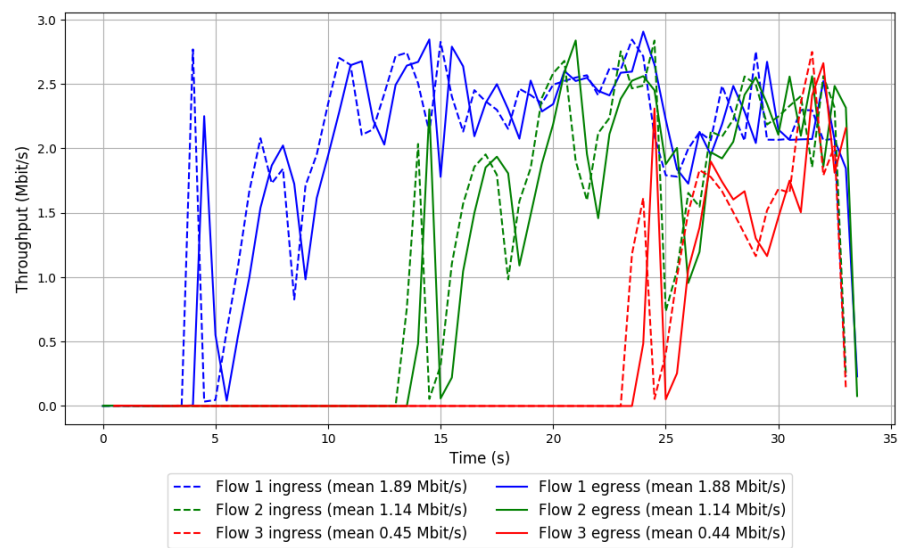


Run 3: Statistics of WebRTC media

Start at: 2018-11-15 15:36:16  
End at: 2018-11-15 15:36:46  
Local clock offset: 0.005 ms  
Remote clock offset: -0.304 ms

# Below is generated by plot.py at 2018-11-15 19:44:42  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 3.44 Mbit/s  
95th percentile per-packet one-way delay: 63.637 ms  
Loss rate: 0.52%  
-- Flow 1:  
Average throughput: 1.88 Mbit/s  
95th percentile per-packet one-way delay: 63.722 ms  
Loss rate: 0.37%  
-- Flow 2:  
Average throughput: 1.14 Mbit/s  
95th percentile per-packet one-way delay: 63.508 ms  
Loss rate: 0.62%  
-- Flow 3:  
Average throughput: 0.44 Mbit/s  
95th percentile per-packet one-way delay: 63.439 ms  
Loss rate: 0.93%

Run 3: Report of WebRTC media — Data Link



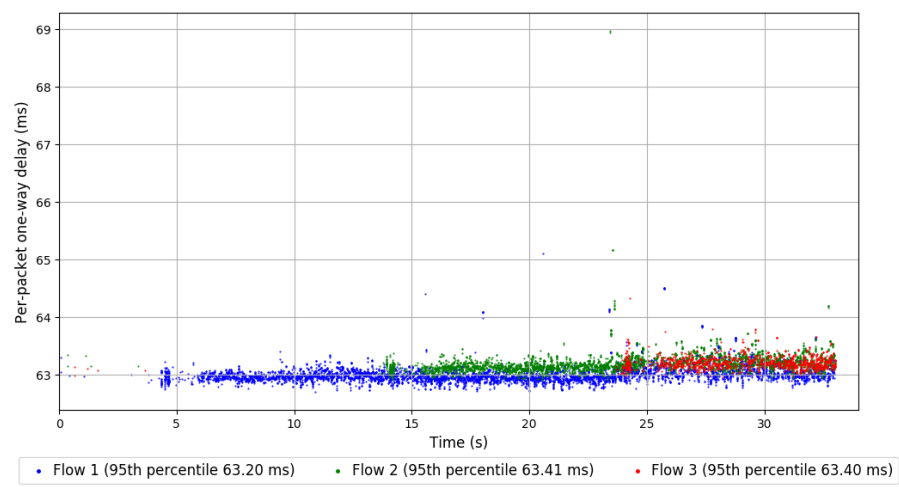
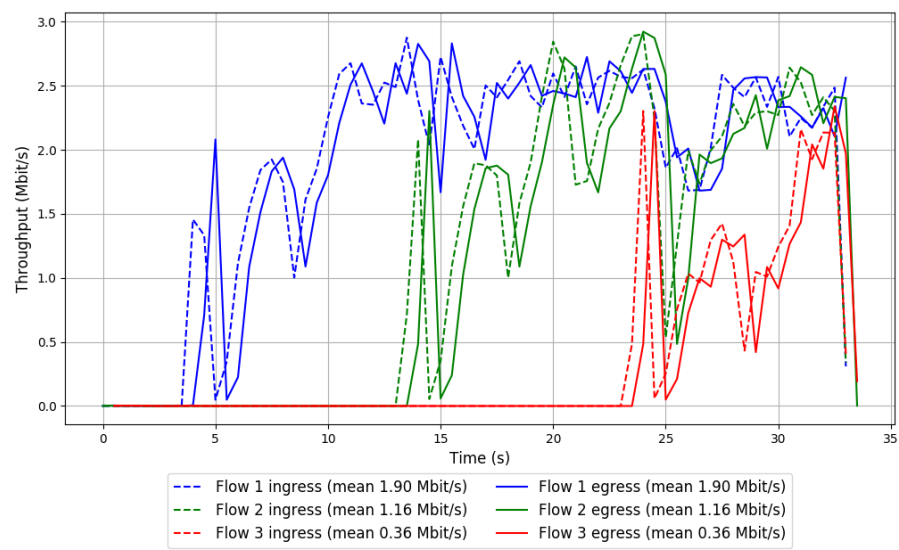


Run 4: Statistics of WebRTC media

Start at: 2018-11-15 16:07:46  
End at: 2018-11-15 16:08:16  
Local clock offset: -0.152 ms  
Remote clock offset: -0.217 ms

# Below is generated by plot.py at 2018-11-15 19:44:43  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 3.39 Mbit/s  
95th percentile per-packet one-way delay: 63.345 ms  
Loss rate: 0.73%  
-- Flow 1:  
Average throughput: 1.90 Mbit/s  
95th percentile per-packet one-way delay: 63.200 ms  
Loss rate: 0.55%  
-- Flow 2:  
Average throughput: 1.16 Mbit/s  
95th percentile per-packet one-way delay: 63.407 ms  
Loss rate: 0.63%  
-- Flow 3:  
Average throughput: 0.36 Mbit/s  
95th percentile per-packet one-way delay: 63.402 ms  
Loss rate: 2.05%

Run 4: Report of WebRTC media — Data Link



Run 5: Statistics of WebRTC media

Start at: 2018-11-15 16:39:21  
End at: 2018-11-15 16:39:51  
Local clock offset: -0.042 ms  
Remote clock offset: -0.143 ms

# Below is generated by plot.py at 2018-11-15 19:44:43  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 3.48 Mbit/s  
95th percentile per-packet one-way delay: 63.696 ms  
Loss rate: 0.85%  
-- Flow 1:  
Average throughput: 1.91 Mbit/s  
95th percentile per-packet one-way delay: 63.802 ms  
Loss rate: 0.54%  
-- Flow 2:  
Average throughput: 1.15 Mbit/s  
95th percentile per-packet one-way delay: 63.454 ms  
Loss rate: 0.84%  
-- Flow 3:  
Average throughput: 0.44 Mbit/s  
95th percentile per-packet one-way delay: 63.338 ms  
Loss rate: 2.25%

Run 5: Report of WebRTC media — Data Link

