

## Pantheon Report

Generated at 2018-10-10 00:00:40 (UTC).

Data path: AWS California 1 on **ens5** (*local*) → Stanford on **eno1** (*remote*).

Repeated the test of 18 congestion control schemes 5 times.

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

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

### System info:

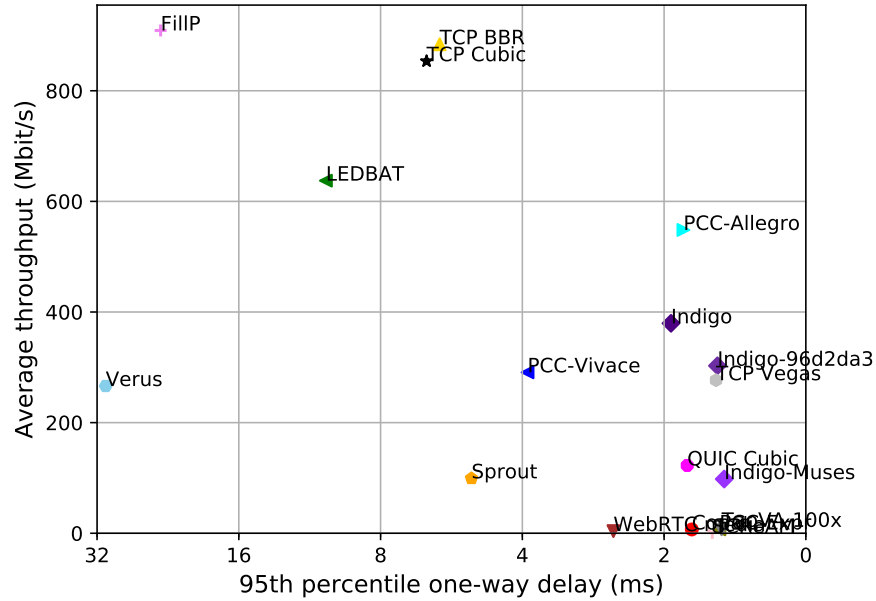
```
Linux 4.15.0-1023-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
```

### Git summary:

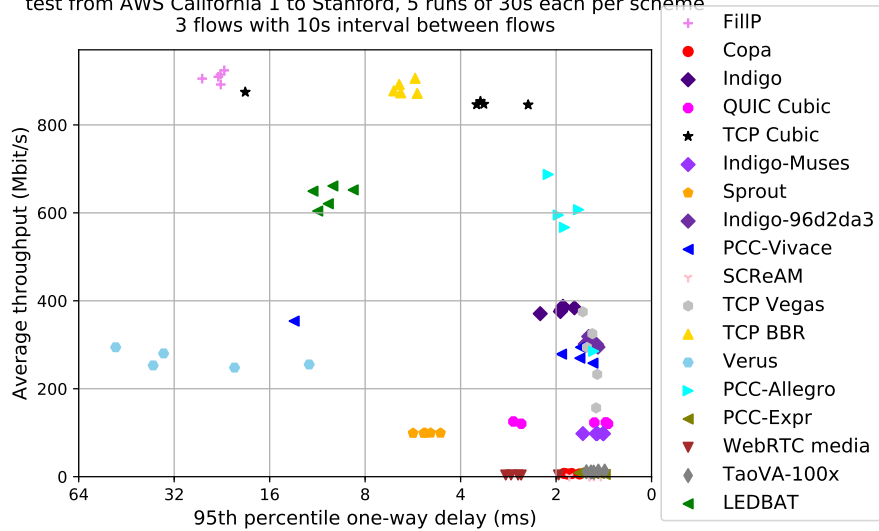
```
branch: muses @ 2e19c0464530faa92c63f8217c9971438a26a3be
third_party/fillp @ 5332fc9127c63565e13f4933b336c02d1aabdac6
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/indigo-96d2da3 @ 8413272d46f8aa0bcb967ed7048b6a8f994abb95
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 65ac1b19bbefed0c6349ae986009b4fa8643c40a
third_party/pantheon-tunnel @ f866d3f58d27afd942717625ee3a354cc2e802bd
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
M receiver/src/buffer.h
M receiver/src/core.cpp
M sender/src/buffer.h
M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quick @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
M src/ScreamClient
M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
M src/examples/cellsim.cc
M src/examples/sproutbt2.cc
M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
M src/verus.hpp
M tools/plot.py
```

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

test from AWS California 1 to Stanford, 5 runs of 30s each per scheme  
3 flows with 10s interval between flows (mean of all runs by scheme)



test from AWS California 1 to Stanford, 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	500.72	416.11	319.10	5.85	6.23	4.29	5.70	9.49	12.81
Copa	5	0.83	7.30	6.91	1.19	1.60	1.64	95.80	45.14	47.21
TCP Cubic	5	486.80	400.67	299.86	11.05	2.18	2.22	0.07	0.07	0.11
FillP	5	599.15	302.05	328.35	24.55	8.21	19.02	15.82	24.87	27.37
Indigo	5	195.15	188.60	183.21	1.71	1.95	2.19	0.01	0.01	0.01
Indigo-96d2da3	5	150.12	148.29	164.28	1.28	1.23	1.17	0.01	0.02	0.02
LEDBAT	5	399.39	265.01	204.97	11.28	6.75	5.39	0.14	0.36	0.51
Indigo-Muses	5	48.93	48.90	50.43	1.15	1.16	1.11	0.00	0.00	0.01
PCC-Allegro	5	337.38	289.33	56.35	1.72	1.65	1.69	0.13	0.13	0.16
PCC-Expr	5	3.07	7.07	6.26	1.19	1.23	1.19	51.55	32.37	36.75
QUIC Cubic	5	65.16	61.04	51.28	1.00	1.94	3.59	0.01	0.01	0.03
SCReAM	5	0.22	0.22	0.22	1.32	1.32	1.32	0.00	0.00	0.00
Sprout	5	49.89	49.74	49.34	5.01	5.11	5.51	0.12	0.14	0.26
TaoVA-100x	5	5.76	6.16	6.08	1.22	1.18	1.09	51.65	67.35	86.32
TCP Vegas	5	77.25	206.50	185.86	1.25	1.26	1.28	0.02	0.01	0.04
Verus	5	142.97	119.52	132.84	21.72	29.91	51.39	4.33	6.47	6.95
PCC-Vivace	5	161.99	139.85	108.80	2.03	5.23	1.26	0.03	0.07	0.06
WebRTC media	5	2.01	1.37	0.49	2.42	2.50	3.21	0.00	0.00	0.00



Run 1: Statistics of TCP BBR

Start at: 2018-10-09 21:05:29

End at: 2018-10-09 21:05:59

Local clock offset: -3.379 ms

Remote clock offset: 3.138 ms

# Below is generated by plot.py at 2018-10-09 23:26:05

# Datalink statistics

-- Total of 3 flows:

Average throughput: 871.73 Mbit/s

95th percentile per-packet one-way delay: 5.480 ms

Loss rate: 8.24%

-- Flow 1:

Average throughput: 484.03 Mbit/s

95th percentile per-packet one-way delay: 5.486 ms

Loss rate: 6.43%

-- Flow 2:

Average throughput: 431.95 Mbit/s

95th percentile per-packet one-way delay: 5.581 ms

Loss rate: 9.60%

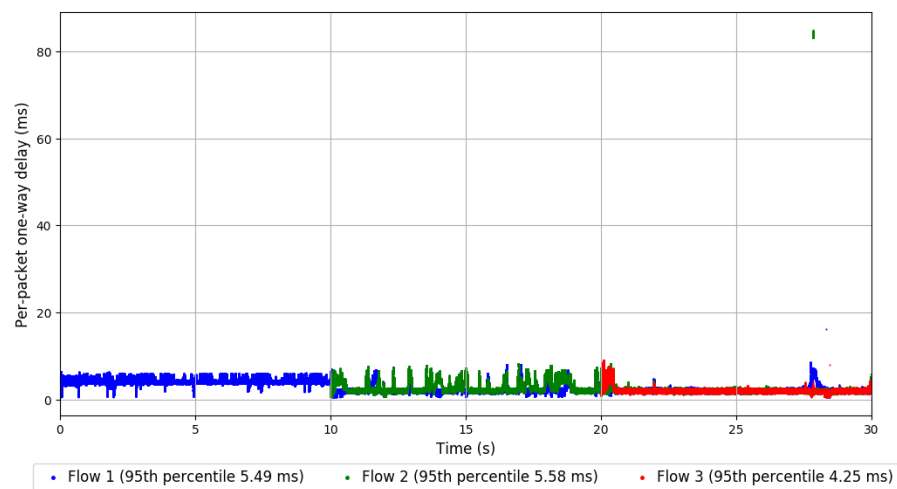
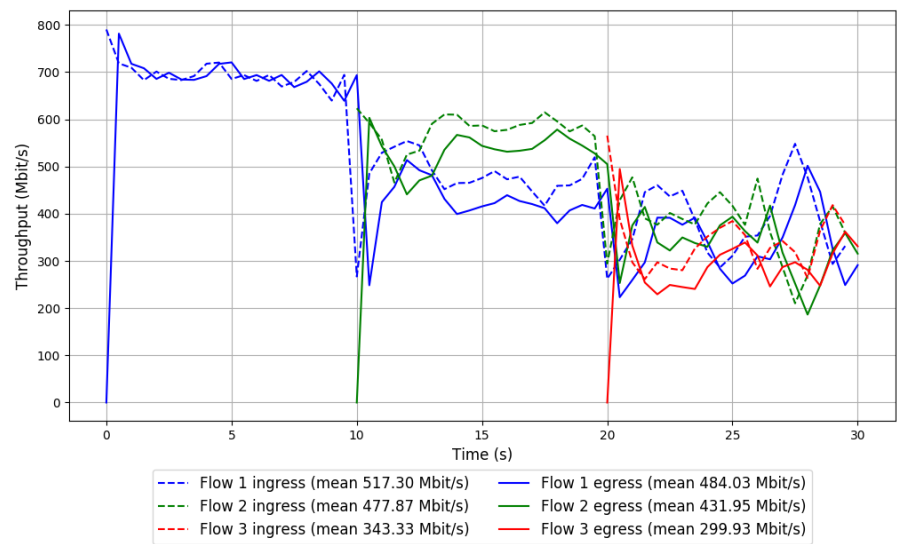
-- Flow 3:

Average throughput: 299.93 Mbit/s

95th percentile per-packet one-way delay: 4.255 ms

Loss rate: 12.64%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-10-09 21:32:39

End at: 2018-10-09 21:33:09

Local clock offset: -3.797 ms

Remote clock offset: 3.225 ms

# Below is generated by plot.py at 2018-10-09 23:26:30

# Datalink statistics

-- Total of 3 flows:

Average throughput: 906.16 Mbit/s

95th percentile per-packet one-way delay: 5.564 ms

Loss rate: 7.86%

-- Flow 1:

Average throughput: 552.92 Mbit/s

95th percentile per-packet one-way delay: 5.584 ms

Loss rate: 5.34%

-- Flow 2:

Average throughput: 418.62 Mbit/s

95th percentile per-packet one-way delay: 5.651 ms

Loss rate: 10.61%

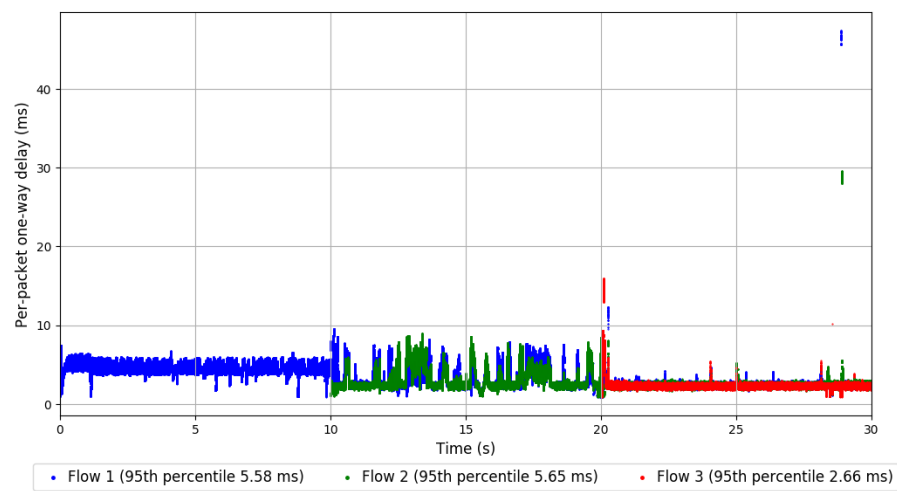
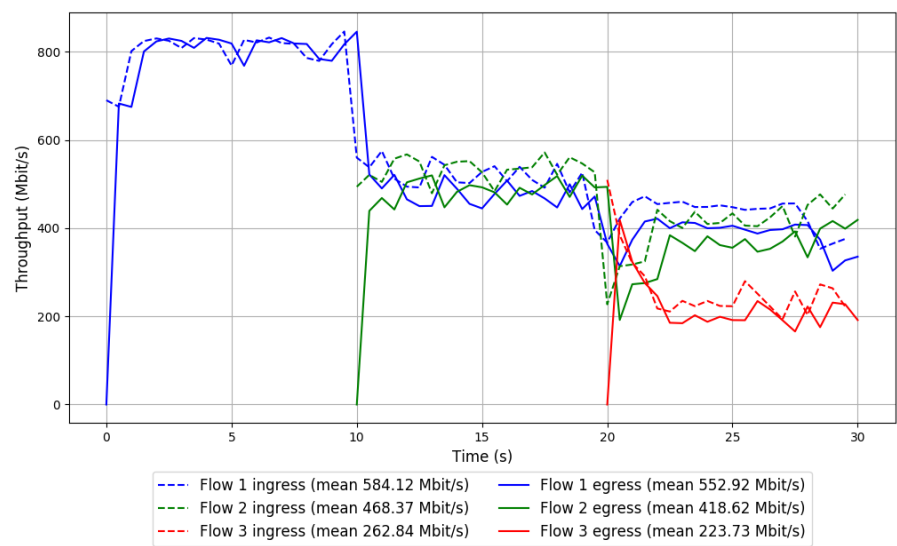
-- Flow 3:

Average throughput: 223.73 Mbit/s

95th percentile per-packet one-way delay: 2.659 ms

Loss rate: 14.87%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-10-09 22:00:06

End at: 2018-10-09 22:00:36

Local clock offset: -3.334 ms

Remote clock offset: 0.618 ms

# Below is generated by plot.py at 2018-10-09 23:26:30

# Datalink statistics

-- Total of 3 flows:

Average throughput: 892.11 Mbit/s

95th percentile per-packet one-way delay: 6.246 ms

Loss rate: 7.90%

-- Flow 1:

Average throughput: 518.58 Mbit/s

95th percentile per-packet one-way delay: 6.001 ms

Loss rate: 5.53%

-- Flow 2:

Average throughput: 395.81 Mbit/s

95th percentile per-packet one-way delay: 6.664 ms

Loss rate: 10.24%

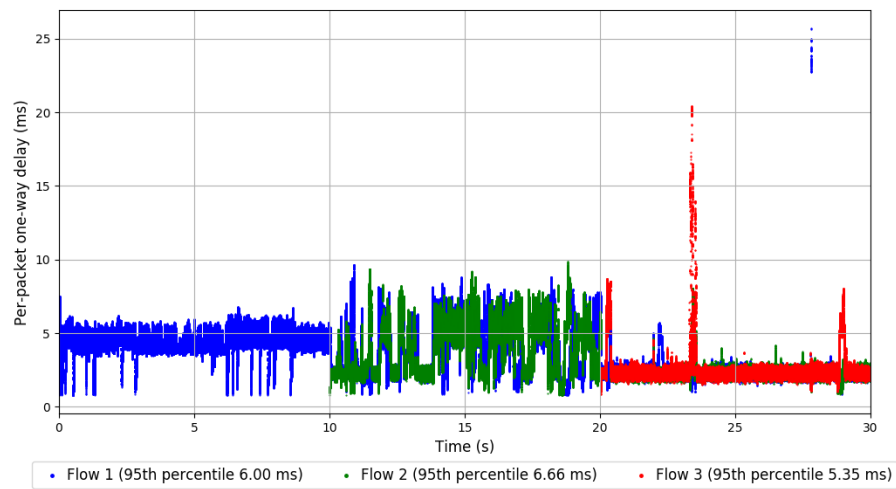
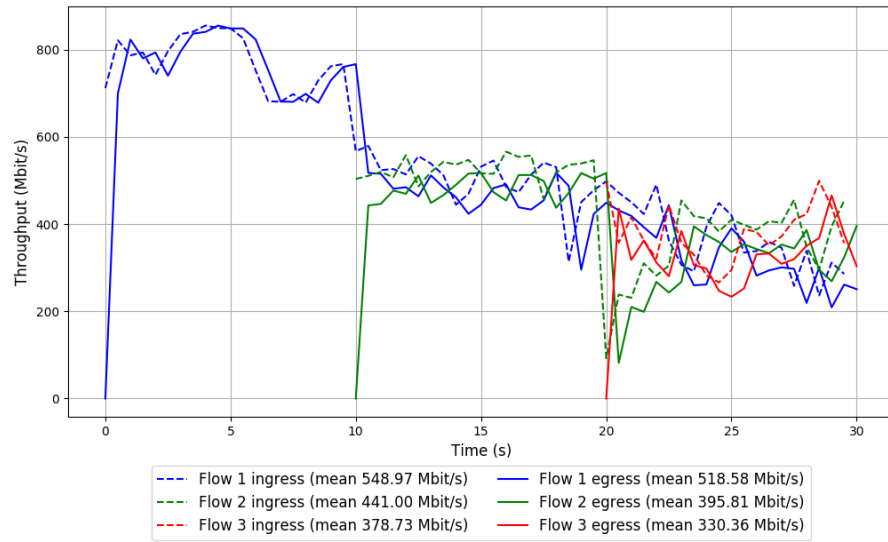
-- Flow 3:

Average throughput: 330.36 Mbit/s

95th percentile per-packet one-way delay: 5.346 ms

Loss rate: 12.77%

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

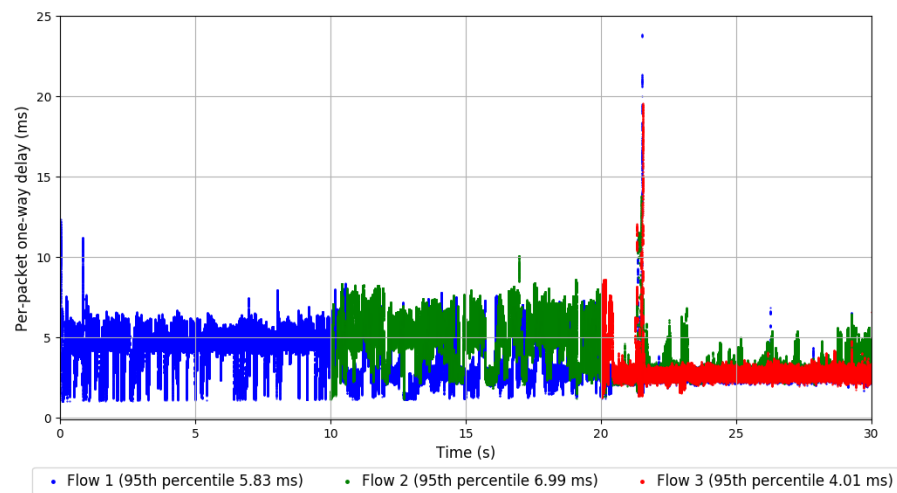
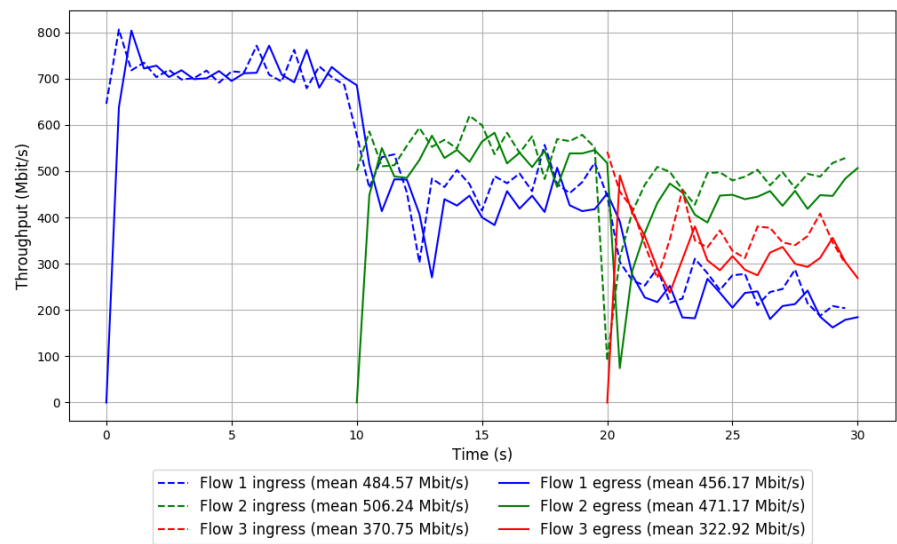


Run 4: Statistics of TCP BBR

Start at: 2018-10-09 22:27:08  
End at: 2018-10-09 22:27:38  
Local clock offset: -2.602 ms  
Remote clock offset: -1.847 ms

# Below is generated by plot.py at 2018-10-09 23:26:30  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 877.42 Mbit/s  
95th percentile per-packet one-way delay: 6.496 ms  
Loss rate: 7.15%  
-- Flow 1:  
Average throughput: 456.17 Mbit/s  
95th percentile per-packet one-way delay: 5.828 ms  
Loss rate: 5.86%  
-- Flow 2:  
Average throughput: 471.17 Mbit/s  
95th percentile per-packet one-way delay: 6.990 ms  
Loss rate: 6.92%  
-- Flow 3:  
Average throughput: 322.92 Mbit/s  
95th percentile per-packet one-way delay: 4.012 ms  
Loss rate: 12.87%

Run 4: Report of TCP BBR — Data Link



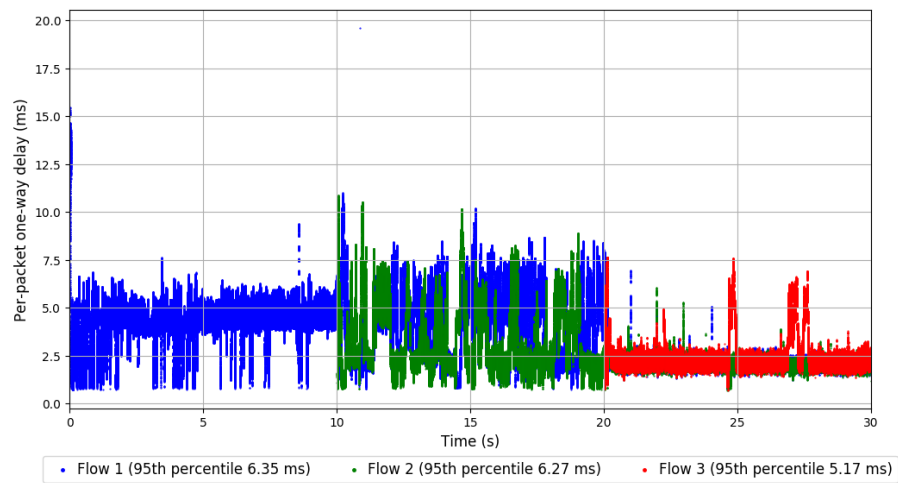
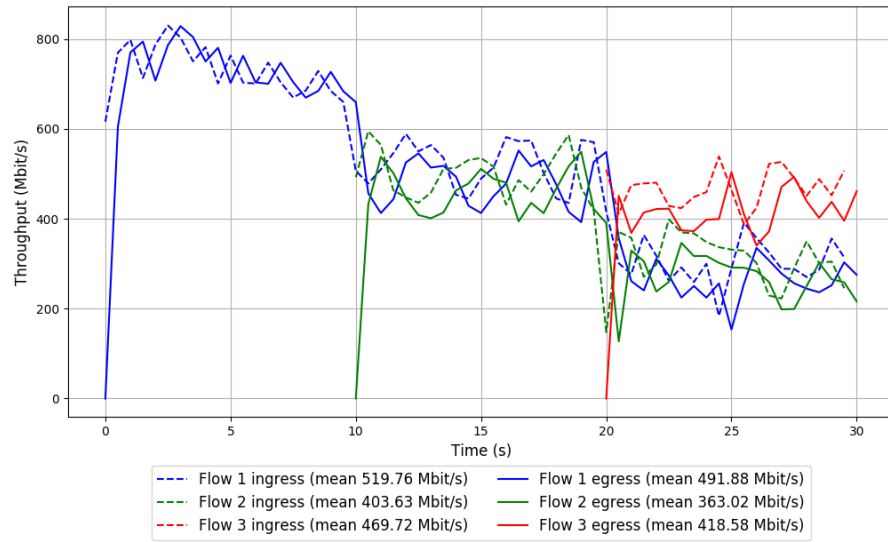


Run 5: Statistics of TCP BBR

Start at: 2018-10-09 22:54:19  
End at: 2018-10-09 22:54:49  
Local clock offset: 0.876 ms  
Remote clock offset: -4.554 ms

# Below is generated by plot.py at 2018-10-09 23:26:30  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 872.90 Mbit/s  
95th percentile per-packet one-way delay: 6.179 ms  
Loss rate: 7.61%  
-- Flow 1:  
Average throughput: 491.88 Mbit/s  
95th percentile per-packet one-way delay: 6.347 ms  
Loss rate: 5.36%  
-- Flow 2:  
Average throughput: 363.02 Mbit/s  
95th percentile per-packet one-way delay: 6.267 ms  
Loss rate: 10.06%  
-- Flow 3:  
Average throughput: 418.58 Mbit/s  
95th percentile per-packet one-way delay: 5.175 ms  
Loss rate: 10.89%

# Run 5: Report of TCP BBR — Data Link



Run 1: Statistics of Copa

Start at: 2018-10-09 20:57:25

End at: 2018-10-09 20:57:55

Local clock offset: -2.709 ms

Remote clock offset: 3.106 ms

# Below is generated by plot.py at 2018-10-09 23:26:30

# Datalink statistics

-- Total of 3 flows:

Average throughput: 7.36 Mbit/s

95th percentile per-packet one-way delay: 1.265 ms

Loss rate: 50.27%

-- Flow 1:

Average throughput: 4.16 Mbit/s

95th percentile per-packet one-way delay: 1.268 ms

Loss rate: 84.68%

-- Flow 2:

Average throughput: 8.44 Mbit/s

95th percentile per-packet one-way delay: 1.209 ms

Loss rate: 51.02%

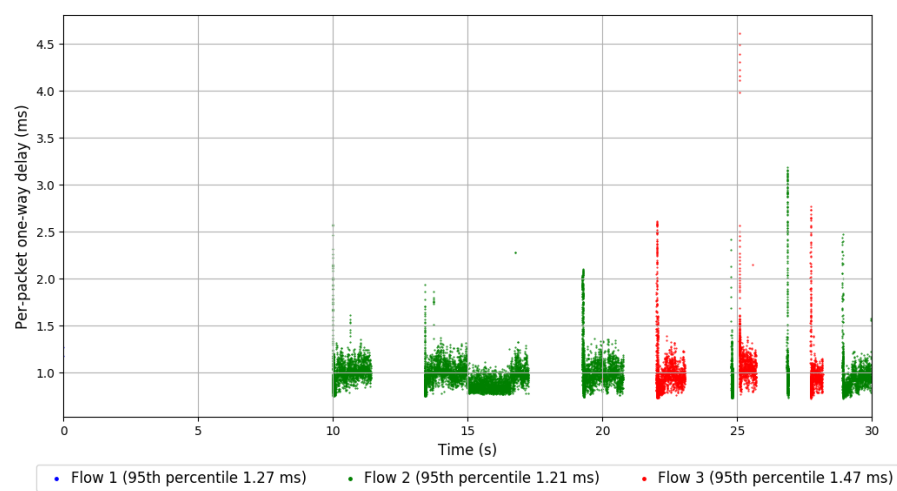
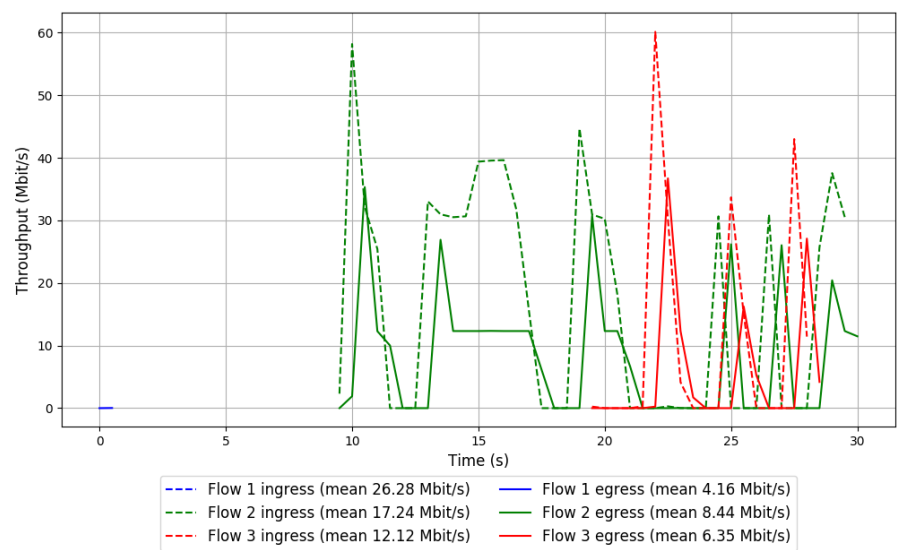
-- Flow 3:

Average throughput: 6.35 Mbit/s

95th percentile per-packet one-way delay: 1.467 ms

Loss rate: 47.63%

Run 1: Report of Copa — Data Link



Run 2: Statistics of Copa

Start at: 2018-10-09 21:24:34

End at: 2018-10-09 21:25:04

Local clock offset: -4.986 ms

Remote clock offset: 3.098 ms

# Below is generated by plot.py at 2018-10-09 23:26:30

# Datalink statistics

-- Total of 3 flows:

Average throughput: 6.09 Mbit/s

95th percentile per-packet one-way delay: 1.764 ms

Loss rate: 31.81%

-- Flow 1:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 1.083 ms

Loss rate: 98.80%

-- Flow 2:

Average throughput: 6.42 Mbit/s

95th percentile per-packet one-way delay: 1.781 ms

Loss rate: 35.68%

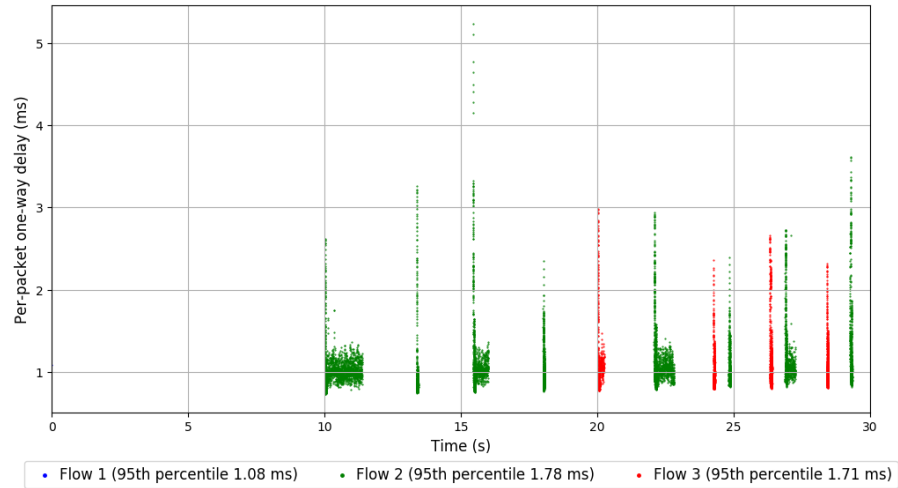
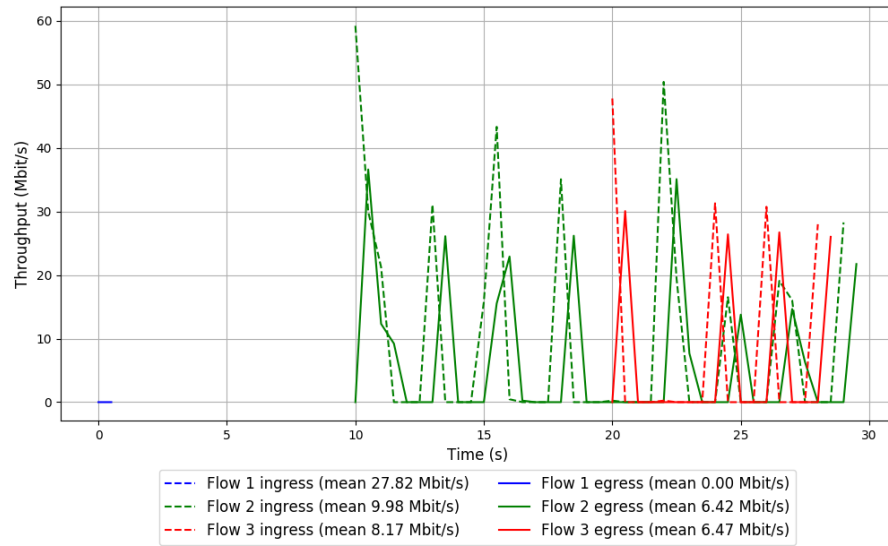
-- Flow 3:

Average throughput: 6.47 Mbit/s

95th percentile per-packet one-way delay: 1.714 ms

Loss rate: 20.89%

## Run 2: Report of Copa — Data Link

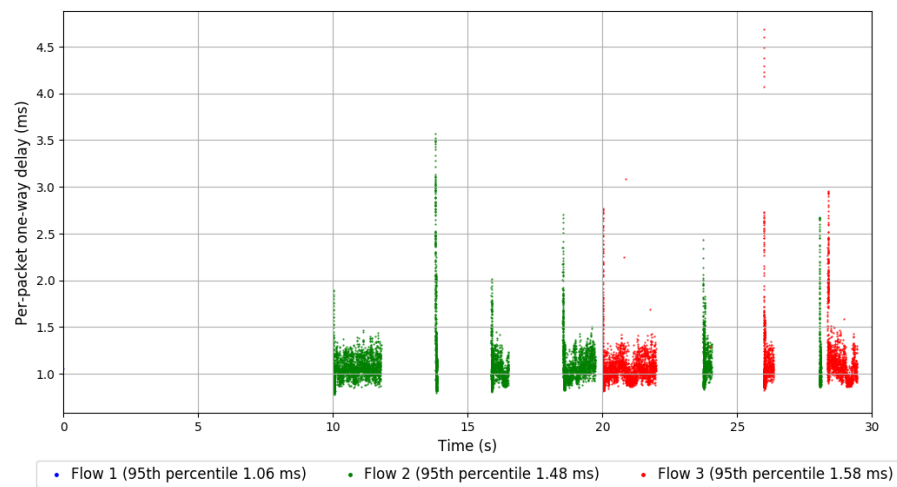
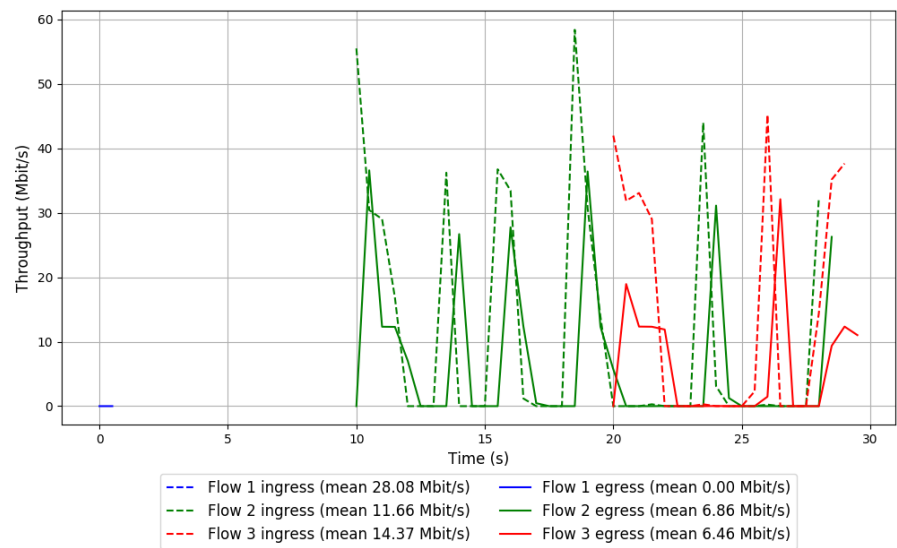


Run 3: Statistics of Copa

Start at: 2018-10-09 21:52:00  
End at: 2018-10-09 21:52:30  
Local clock offset: -3.644 ms  
Remote clock offset: 2.12 ms

# Below is generated by plot.py at 2018-10-09 23:26:30  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 6.29 Mbit/s  
95th percentile per-packet one-way delay: 1.509 ms  
Loss rate: 46.57%  
-- Flow 1:  
Average throughput: 0.00 Mbit/s  
95th percentile per-packet one-way delay: 1.056 ms  
Loss rate: 98.60%  
-- Flow 2:  
Average throughput: 6.86 Mbit/s  
95th percentile per-packet one-way delay: 1.477 ms  
Loss rate: 41.12%  
-- Flow 3:  
Average throughput: 6.46 Mbit/s  
95th percentile per-packet one-way delay: 1.585 ms  
Loss rate: 55.04%

Run 3: Report of Copa — Data Link



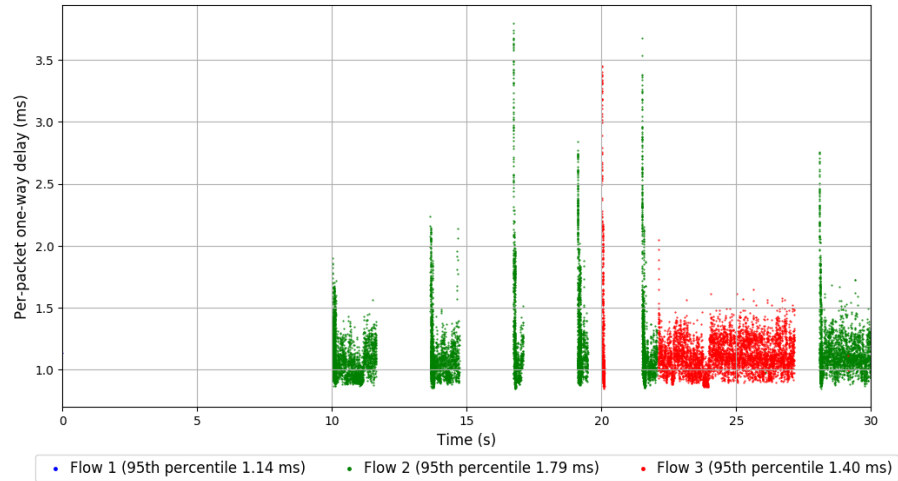
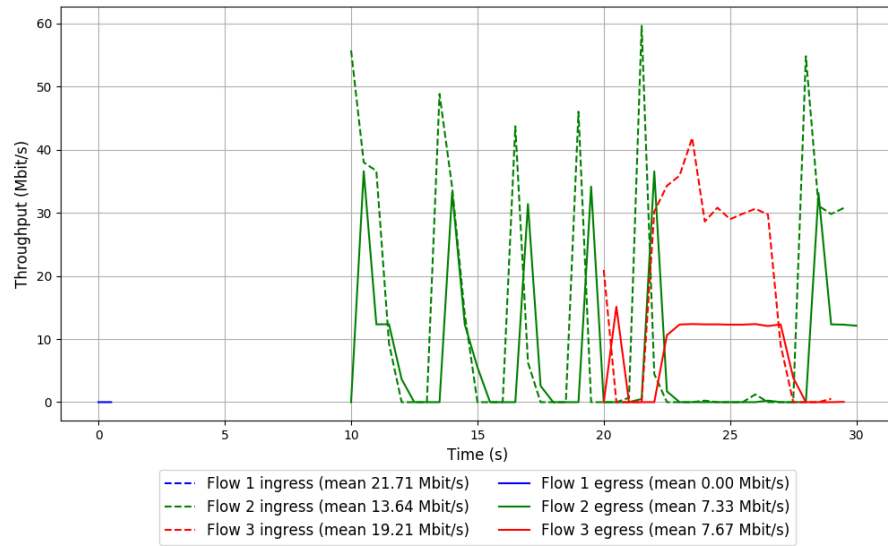


Run 4: Statistics of Copa

Start at: 2018-10-09 22:19:06  
End at: 2018-10-09 22:19:36  
Local clock offset: -3.266 ms  
Remote clock offset: -0.612 ms

# Below is generated by plot.py at 2018-10-09 23:26:30  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 7.22 Mbit/s  
95th percentile per-packet one-way delay: 1.673 ms  
Loss rate: 51.68%  
-- Flow 1:  
Average throughput: 0.00 Mbit/s  
95th percentile per-packet one-way delay: 1.139 ms  
Loss rate: 98.33%  
-- Flow 2:  
Average throughput: 7.33 Mbit/s  
95th percentile per-packet one-way delay: 1.789 ms  
Loss rate: 46.26%  
-- Flow 3:  
Average throughput: 7.67 Mbit/s  
95th percentile per-packet one-way delay: 1.397 ms  
Loss rate: 60.08%

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

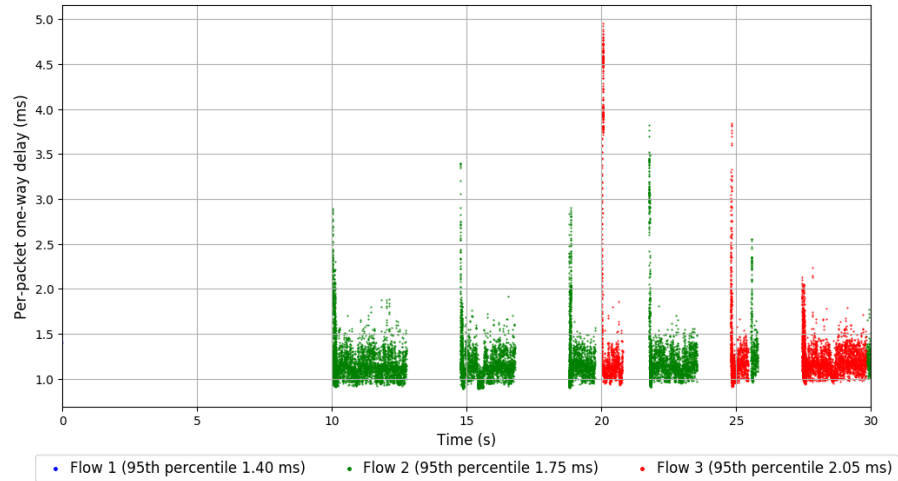
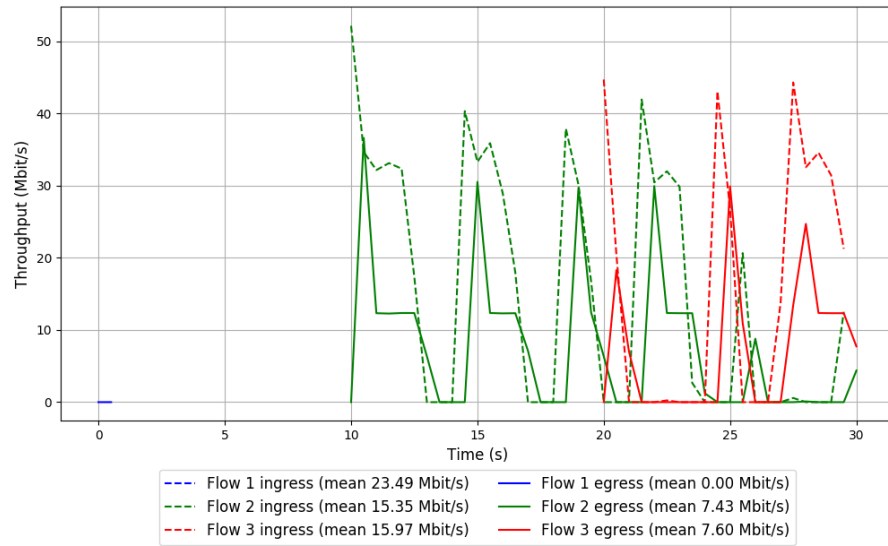


Run 5: Statistics of Copa

Start at: 2018-10-09 22:46:14  
End at: 2018-10-09 22:46:44  
Local clock offset: 0.501 ms  
Remote clock offset: -3.902 ms

# Below is generated by plot.py at 2018-10-09 23:26:30  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 7.43 Mbit/s  
95th percentile per-packet one-way delay: 1.833 ms  
Loss rate: 51.91%  
-- Flow 1:  
Average throughput: 0.00 Mbit/s  
95th percentile per-packet one-way delay: 1.404 ms  
Loss rate: 98.60%  
-- Flow 2:  
Average throughput: 7.43 Mbit/s  
95th percentile per-packet one-way delay: 1.750 ms  
Loss rate: 51.64%  
-- Flow 3:  
Average throughput: 7.60 Mbit/s  
95th percentile per-packet one-way delay: 2.046 ms  
Loss rate: 52.42%

## Run 5: Report of Copa — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2018-10-09 20:58:44

End at: 2018-10-09 20:59:14

Local clock offset: -2.829 ms

Remote clock offset: 3.0 ms

# Below is generated by plot.py at 2018-10-09 23:26:30

# Datalink statistics

-- Total of 3 flows:

Average throughput: 845.71 Mbit/s

95th percentile per-packet one-way delay: 2.449 ms

Loss rate: 0.06%

-- Flow 1:

Average throughput: 490.25 Mbit/s

95th percentile per-packet one-way delay: 2.809 ms

Loss rate: 0.05%

-- Flow 2:

Average throughput: 385.47 Mbit/s

95th percentile per-packet one-way delay: 1.955 ms

Loss rate: 0.07%

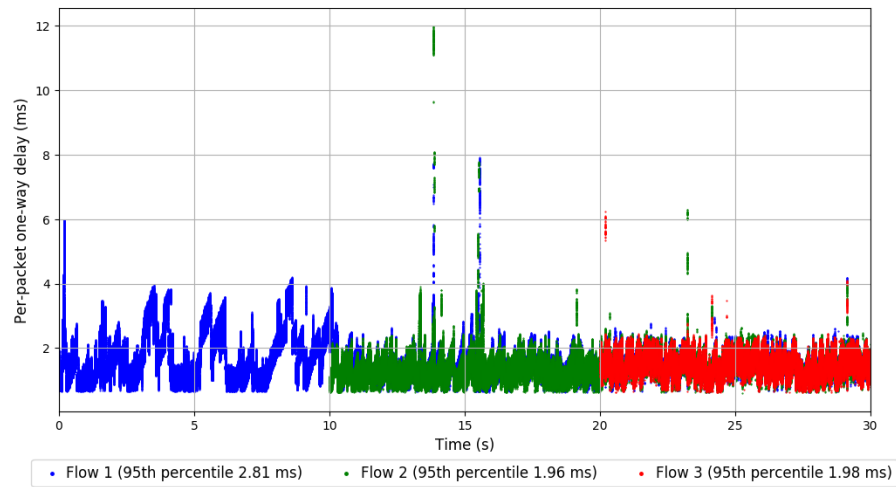
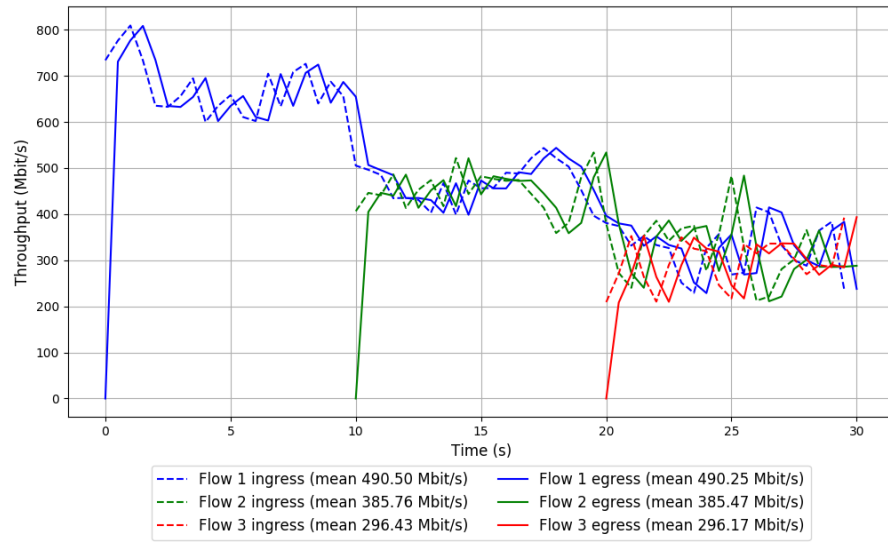
-- Flow 3:

Average throughput: 296.17 Mbit/s

95th percentile per-packet one-way delay: 1.983 ms

Loss rate: 0.08%

# Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2018-10-09 21:25:53

End at: 2018-10-09 21:26:23

Local clock offset: -4.832 ms

Remote clock offset: 3.113 ms

# Below is generated by plot.py at 2018-10-09 23:26:30

# Datalink statistics

-- Total of 3 flows:

Average throughput: 874.63 Mbit/s

95th percentile per-packet one-way delay: 19.094 ms

Loss rate: 0.08%

-- Flow 1:

Average throughput: 513.44 Mbit/s

95th percentile per-packet one-way delay: 36.578 ms

Loss rate: 0.09%

-- Flow 2:

Average throughput: 400.90 Mbit/s

95th percentile per-packet one-way delay: 2.341 ms

Loss rate: 0.07%

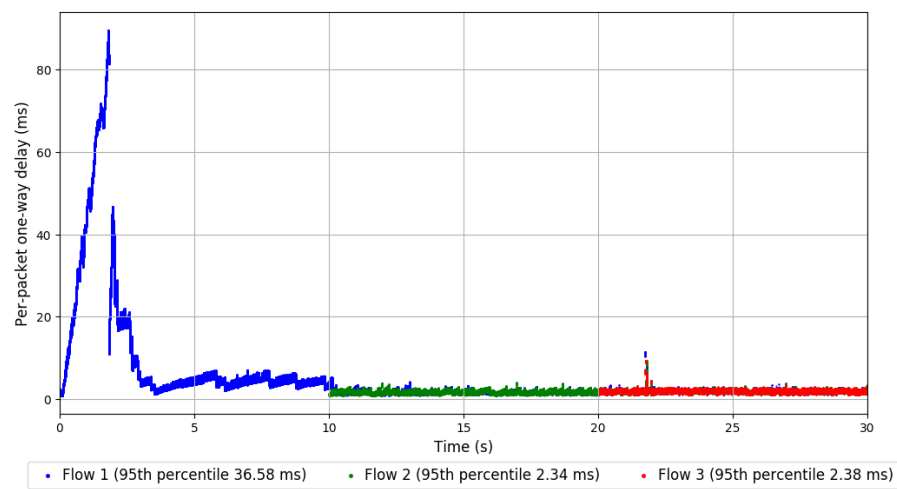
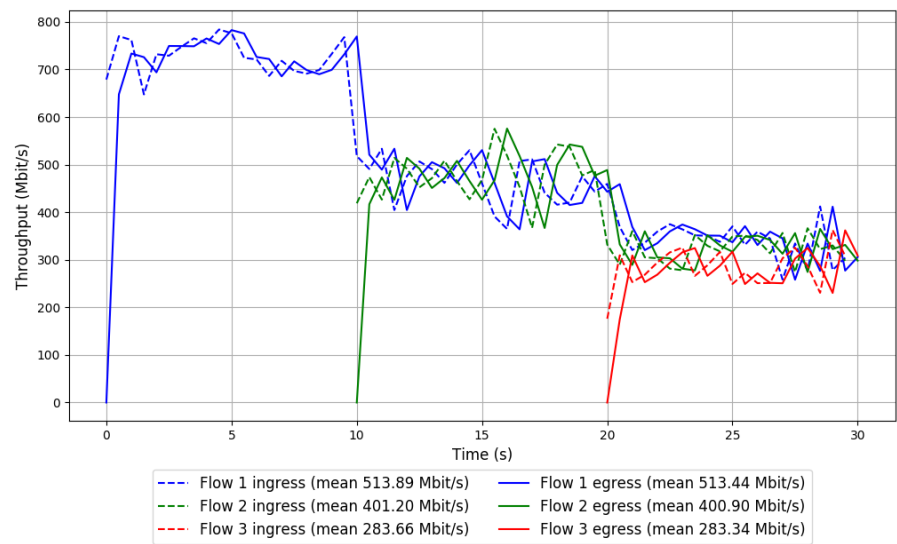
-- Flow 3:

Average throughput: 283.34 Mbit/s

95th percentile per-packet one-way delay: 2.381 ms

Loss rate: 0.10%

Run 2: Report of TCP Cubic — Data Link





Run 3: Statistics of TCP Cubic

Start at: 2018-10-09 21:53:20

End at: 2018-10-09 21:53:50

Local clock offset: -3.681 ms

Remote clock offset: 1.76 ms

# Below is generated by plot.py at 2018-10-09 23:26:30

# Datalink statistics

-- Total of 3 flows:

Average throughput: 847.27 Mbit/s

95th percentile per-packet one-way delay: 3.380 ms

Loss rate: 0.08%

-- Flow 1:

Average throughput: 472.01 Mbit/s

95th percentile per-packet one-way delay: 7.164 ms

Loss rate: 0.07%

-- Flow 2:

Average throughput: 406.02 Mbit/s

95th percentile per-packet one-way delay: 2.167 ms

Loss rate: 0.09%

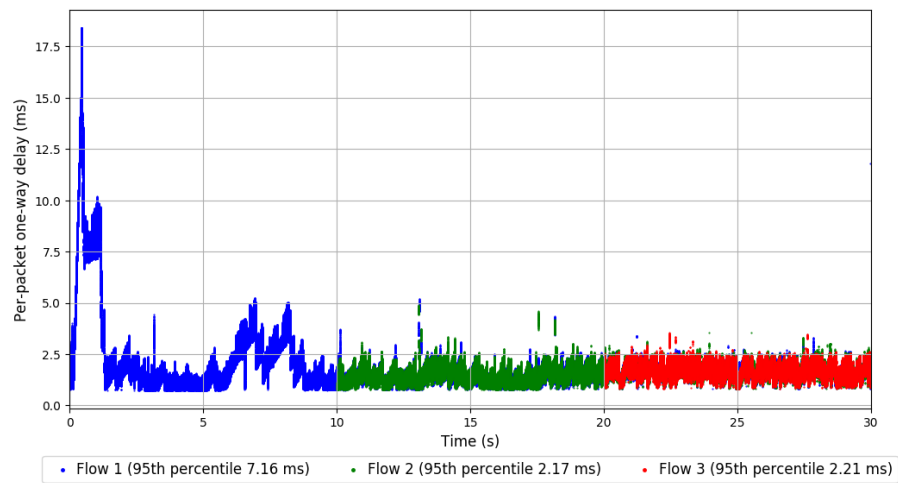
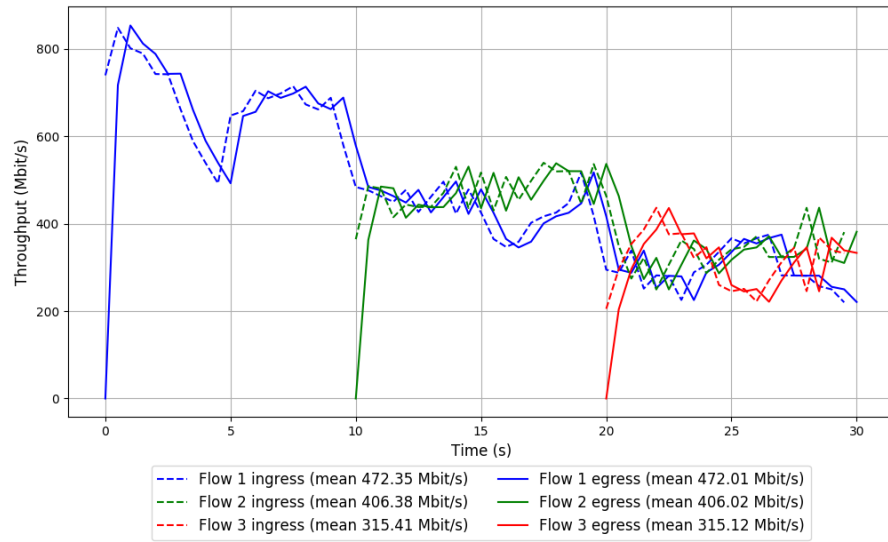
-- Flow 3:

Average throughput: 315.12 Mbit/s

95th percentile per-packet one-way delay: 2.212 ms

Loss rate: 0.10%

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

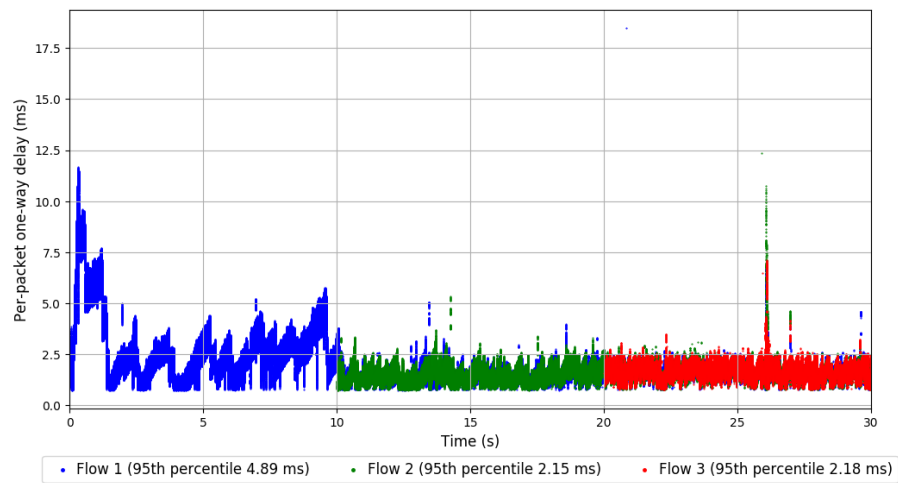
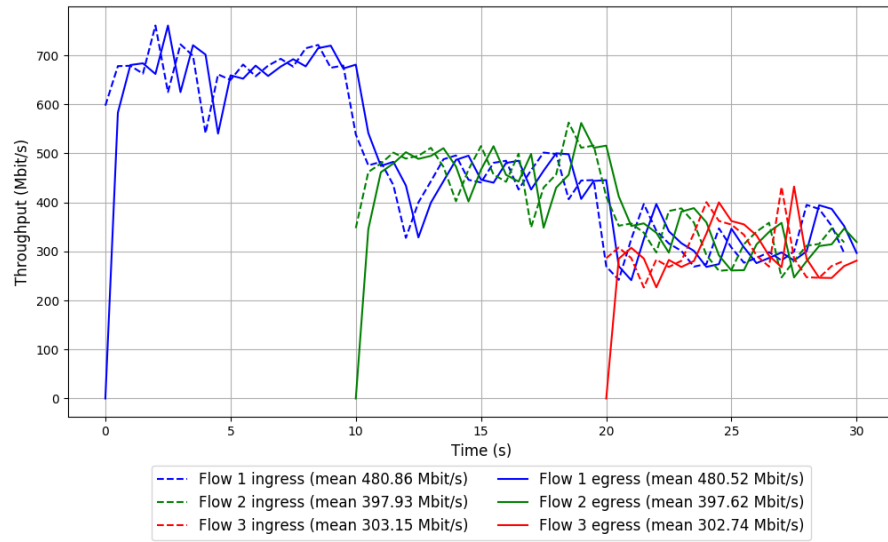


Run 4: Statistics of TCP Cubic

Start at: 2018-10-09 22:20:25  
End at: 2018-10-09 22:20:55  
Local clock offset: -3.293 ms  
Remote clock offset: -0.761 ms

# Below is generated by plot.py at 2018-10-09 23:33:57  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 846.17 Mbit/s  
95th percentile per-packet one-way delay: 3.558 ms  
Loss rate: 0.08%  
-- Flow 1:  
Average throughput: 480.52 Mbit/s  
95th percentile per-packet one-way delay: 4.891 ms  
Loss rate: 0.07%  
-- Flow 2:  
Average throughput: 397.62 Mbit/s  
95th percentile per-packet one-way delay: 2.145 ms  
Loss rate: 0.07%  
-- Flow 3:  
Average throughput: 302.74 Mbit/s  
95th percentile per-packet one-way delay: 2.177 ms  
Loss rate: 0.14%

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

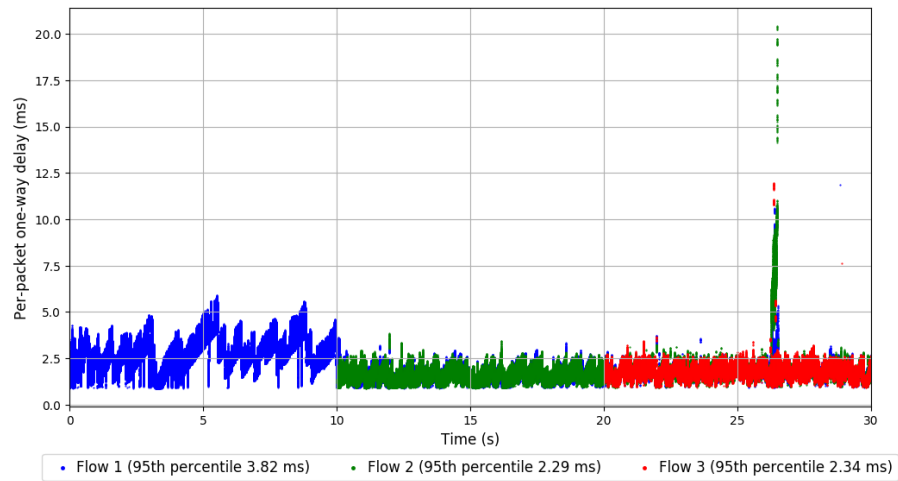
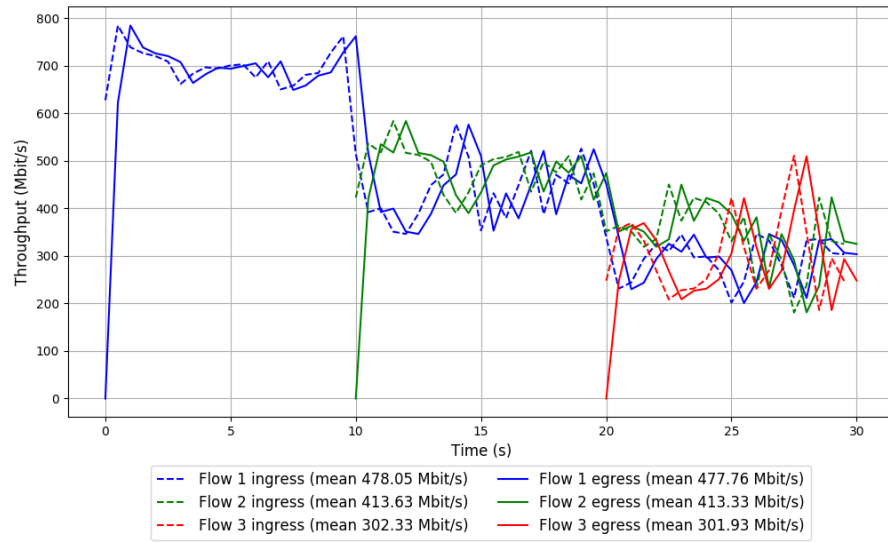


Run 5: Statistics of TCP Cubic

Start at: 2018-10-09 22:47:33  
End at: 2018-10-09 22:48:03  
Local clock offset: 0.575 ms  
Remote clock offset: -3.983 ms

# Below is generated by plot.py at 2018-10-09 23:34:04  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 853.46 Mbit/s  
95th percentile per-packet one-way delay: 3.463 ms  
Loss rate: 0.07%  
-- Flow 1:  
Average throughput: 477.76 Mbit/s  
95th percentile per-packet one-way delay: 3.823 ms  
Loss rate: 0.06%  
-- Flow 2:  
Average throughput: 413.33 Mbit/s  
95th percentile per-packet one-way delay: 2.287 ms  
Loss rate: 0.07%  
-- Flow 3:  
Average throughput: 301.93 Mbit/s  
95th percentile per-packet one-way delay: 2.338 ms  
Loss rate: 0.13%

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

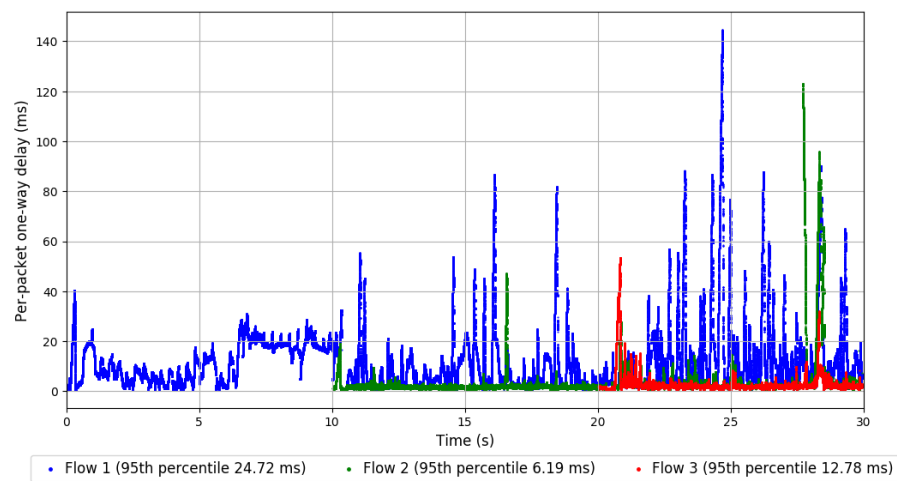
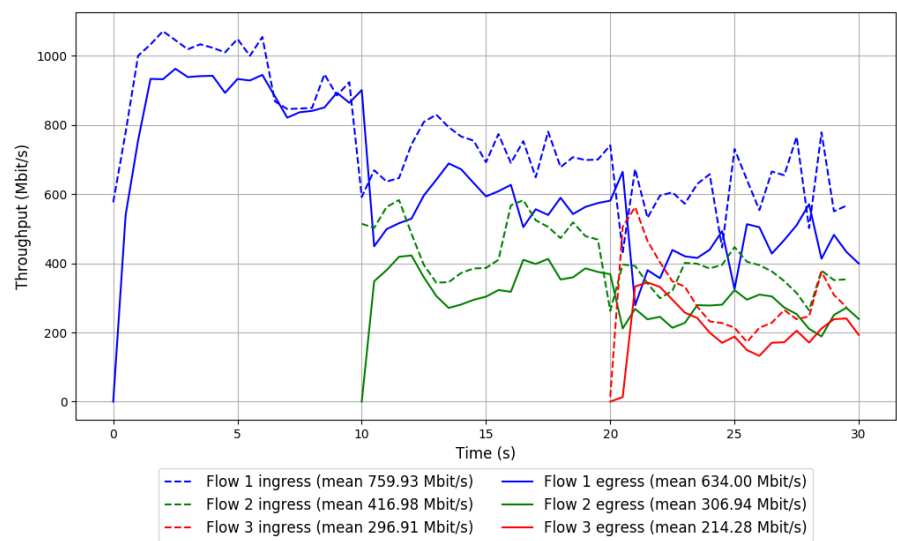


```
Run 1: Statistics of FillP

Start at: 2018-10-09 21:02:01
End at: 2018-10-09 21:02:31
Local clock offset: -3.09 ms
Remote clock offset: 3.093 ms

# Below is generated by plot.py at 2018-10-09 23:39:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 909.39 Mbit/s
95th percentile per-packet one-way delay: 23.231 ms
Loss rate: 19.94%
-- Flow 1:
Average throughput: 634.00 Mbit/s
95th percentile per-packet one-way delay: 24.716 ms
Loss rate: 16.57%
-- Flow 2:
Average throughput: 306.94 Mbit/s
95th percentile per-packet one-way delay: 6.191 ms
Loss rate: 26.37%
-- Flow 3:
Average throughput: 214.28 Mbit/s
95th percentile per-packet one-way delay: 12.784 ms
Loss rate: 27.83%
```

Run 1: Report of FillP — Data Link





Run 2: Statistics of FillP

Start at: 2018-10-09 21:29:11

End at: 2018-10-09 21:29:41

Local clock offset: -4.214 ms

Remote clock offset: 3.094 ms

# Below is generated by plot.py at 2018-10-09 23:40:01

# Datalink statistics

-- Total of 3 flows:

Average throughput: 914.55 Mbit/s

95th percentile per-packet one-way delay: 22.852 ms

Loss rate: 19.09%

-- Flow 1:

Average throughput: 623.82 Mbit/s

95th percentile per-packet one-way delay: 23.896 ms

Loss rate: 15.80%

-- Flow 2:

Average throughput: 281.10 Mbit/s

95th percentile per-packet one-way delay: 4.107 ms

Loss rate: 24.11%

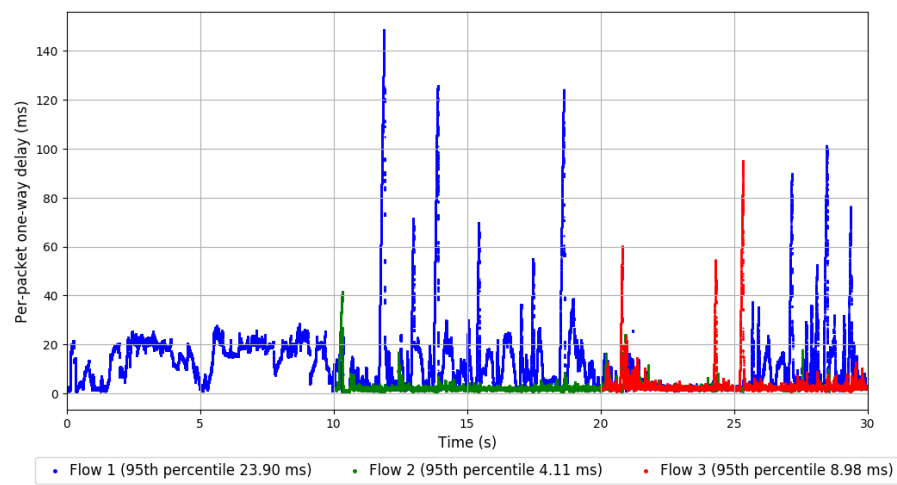
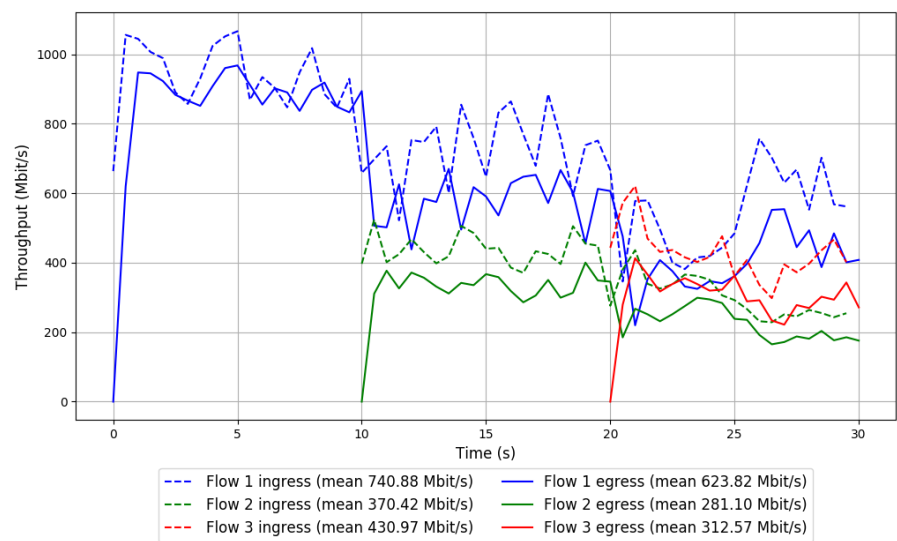
-- Flow 3:

Average throughput: 312.57 Mbit/s

95th percentile per-packet one-way delay: 8.979 ms

Loss rate: 27.47%

Run 2: Report of FillP — Data Link



Run 3: Statistics of FillP

Start at: 2018-10-09 21:56:39

End at: 2018-10-09 21:57:09

Local clock offset: -3.606 ms

Remote clock offset: 1.099 ms

# Below is generated by plot.py at 2018-10-09 23:40:09

# Datalink statistics

-- Total of 3 flows:

Average throughput: 924.13 Mbit/s

95th percentile per-packet one-way delay: 22.247 ms

Loss rate: 18.22%

-- Flow 1:

Average throughput: 569.73 Mbit/s

95th percentile per-packet one-way delay: 23.066 ms

Loss rate: 14.87%

-- Flow 2:

Average throughput: 355.27 Mbit/s

95th percentile per-packet one-way delay: 19.435 ms

Loss rate: 22.30%

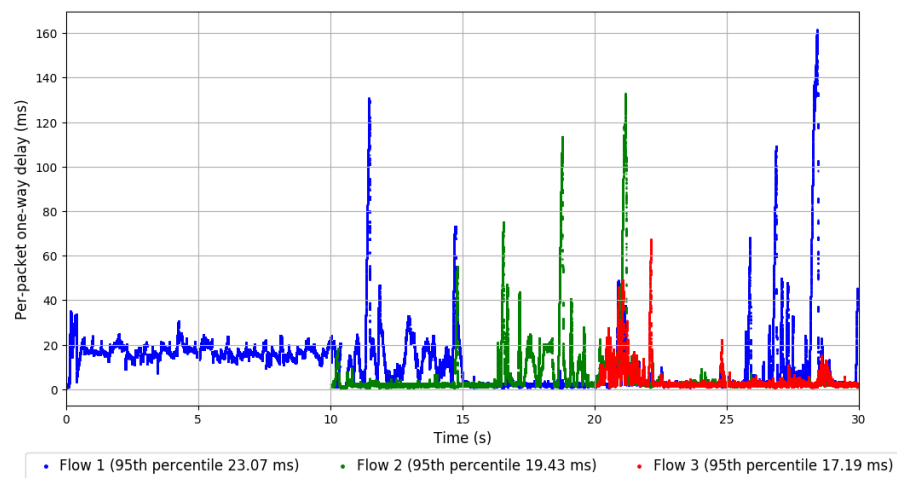
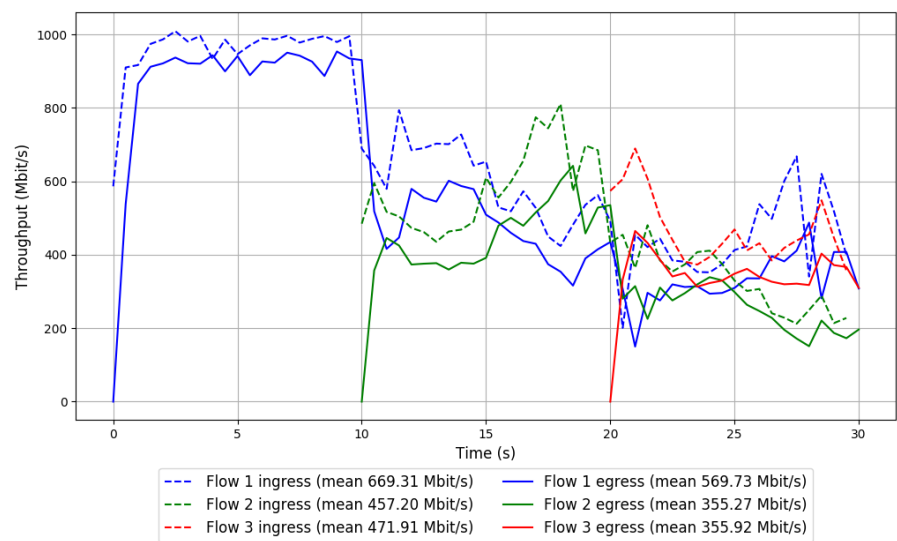
-- Flow 3:

Average throughput: 355.92 Mbit/s

95th percentile per-packet one-way delay: 17.186 ms

Loss rate: 24.57%

Run 3: Report of FillP — Data Link

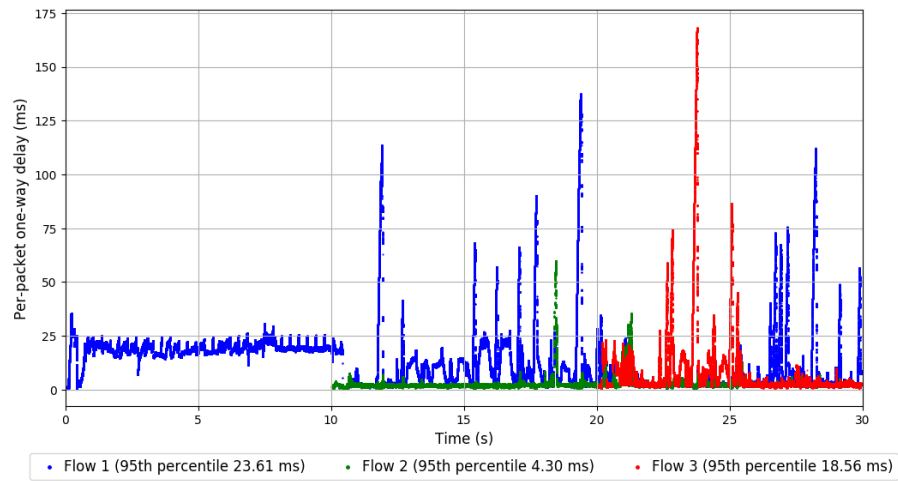
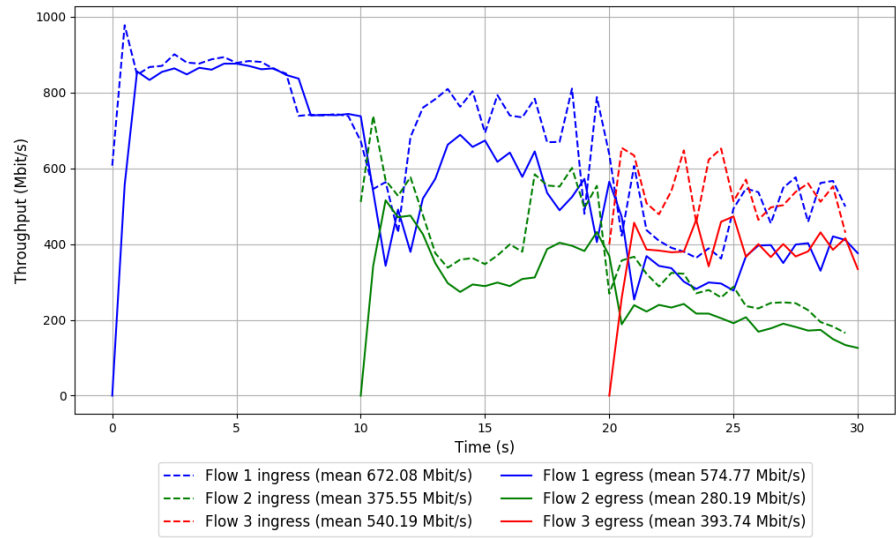


Run 4: Statistics of FillP

Start at: 2018-10-09 22:23:41  
End at: 2018-10-09 22:24:11  
Local clock offset: -3.356 ms  
Remote clock offset: -1.069 ms

# Below is generated by plot.py at 2018-10-09 23:40:09  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 891.90 Mbit/s  
95th percentile per-packet one-way delay: 22.822 ms  
Loss rate: 19.01%  
-- Flow 1:  
Average throughput: 574.77 Mbit/s  
95th percentile per-packet one-way delay: 23.611 ms  
Loss rate: 14.47%  
-- Flow 2:  
Average throughput: 280.19 Mbit/s  
95th percentile per-packet one-way delay: 4.305 ms  
Loss rate: 25.39%  
-- Flow 3:  
Average throughput: 393.74 Mbit/s  
95th percentile per-packet one-way delay: 18.560 ms  
Loss rate: 27.10%

# Run 4: Report of FillP — Data Link



Run 5: Statistics of FillP

Start at: 2018-10-09 22:50:52

End at: 2018-10-09 22:51:22

Local clock offset: 0.722 ms

Remote clock offset: -4.33 ms

# Below is generated by plot.py at 2018-10-09 23:40:13

# Datalink statistics

-- Total of 3 flows:

Average throughput: 905.22 Mbit/s

95th percentile per-packet one-way delay: 26.115 ms

Loss rate: 21.23%

-- Flow 1:

Average throughput: 593.44 Mbit/s

95th percentile per-packet one-way delay: 27.450 ms

Loss rate: 17.38%

-- Flow 2:

Average throughput: 286.75 Mbit/s

95th percentile per-packet one-way delay: 7.020 ms

Loss rate: 26.18%

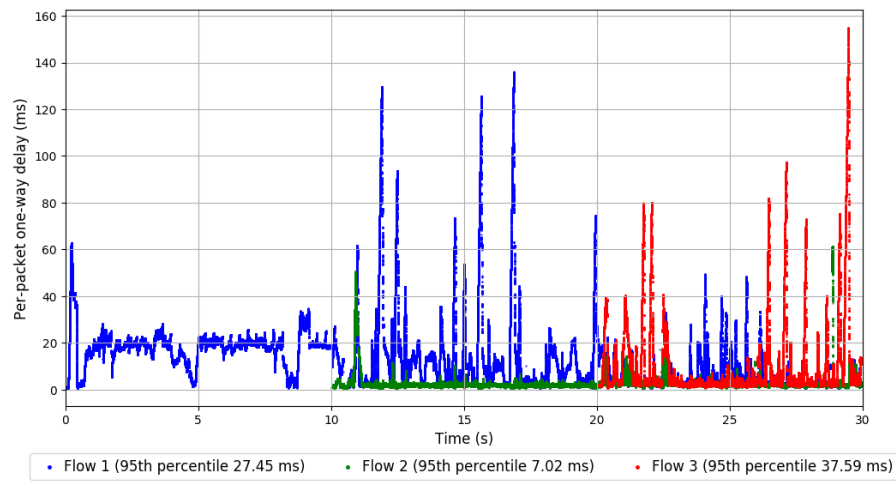
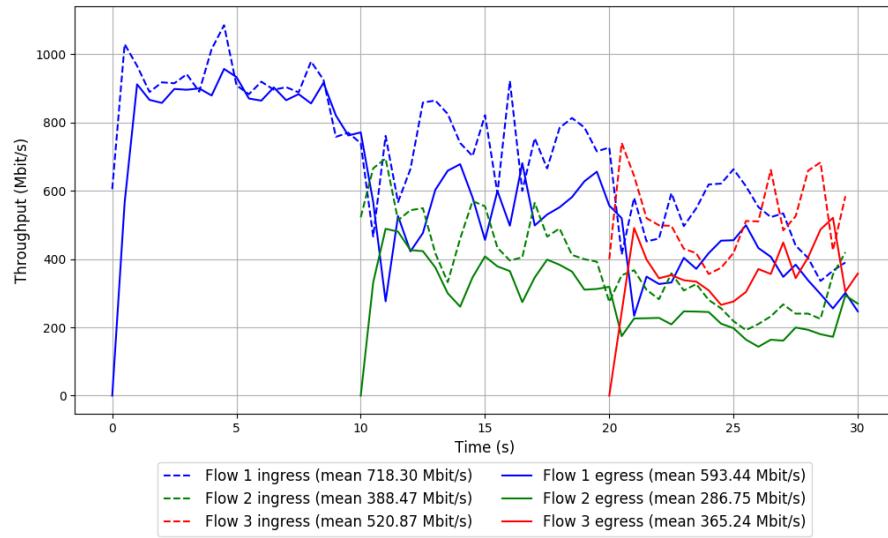
-- Flow 3:

Average throughput: 365.24 Mbit/s

95th percentile per-packet one-way delay: 37.592 ms

Loss rate: 29.87%

## Run 5: Report of FillP — Data Link



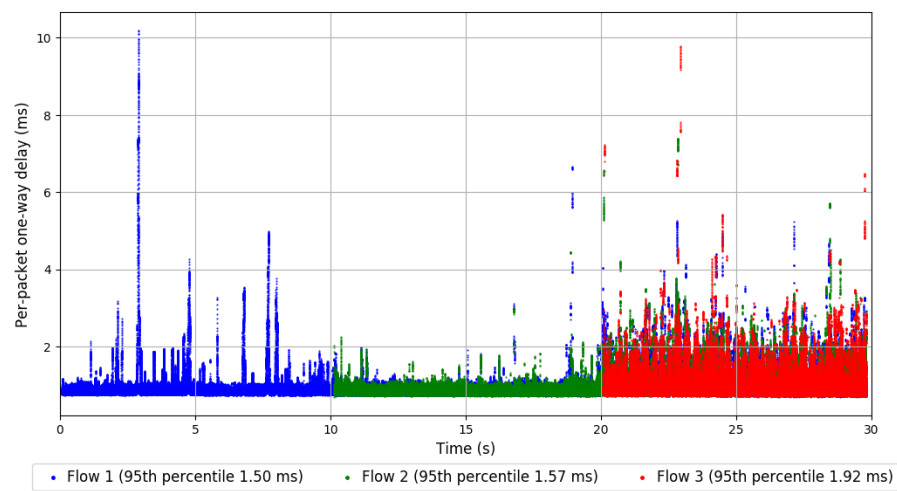
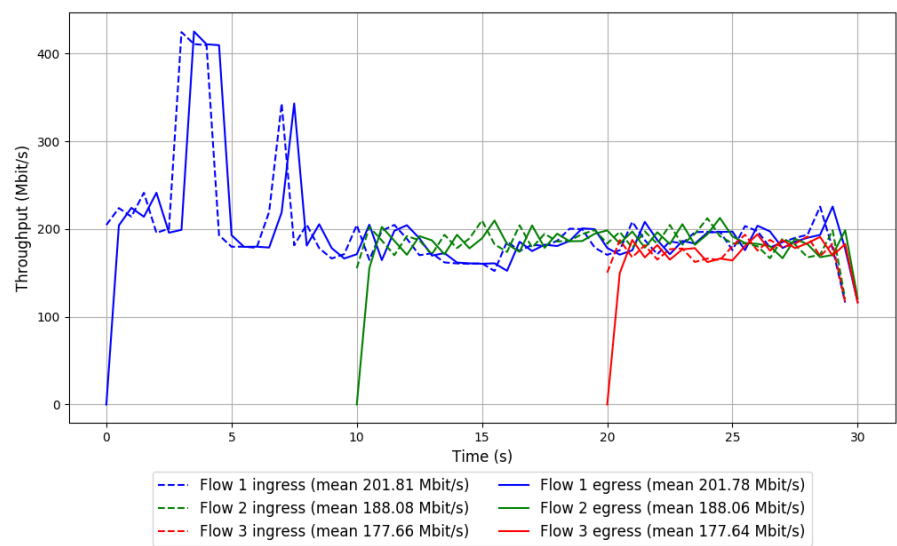


```
Run 1: Statistics of Indigo

Start at: 2018-10-09 21:03:54
End at: 2018-10-09 21:04:24
Local clock offset: -3.259 ms
Remote clock offset: 3.194 ms

# Below is generated by plot.py at 2018-10-09 23:40:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 384.05 Mbit/s
95th percentile per-packet one-way delay: 1.616 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 201.78 Mbit/s
95th percentile per-packet one-way delay: 1.495 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 188.06 Mbit/s
95th percentile per-packet one-way delay: 1.566 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 177.64 Mbit/s
95th percentile per-packet one-way delay: 1.915 ms
Loss rate: 0.01%
```

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2018-10-09 21:31:03

End at: 2018-10-09 21:31:33

Local clock offset: -3.969 ms

Remote clock offset: 3.087 ms

# Below is generated by plot.py at 2018-10-09 23:40:13

# Datalink statistics

-- Total of 3 flows:

Average throughput: 387.45 Mbit/s

95th percentile per-packet one-way delay: 1.856 ms

Loss rate: 0.01%

-- Flow 1:

Average throughput: 198.36 Mbit/s

95th percentile per-packet one-way delay: 1.639 ms

Loss rate: 0.01%

-- Flow 2:

Average throughput: 194.31 Mbit/s

95th percentile per-packet one-way delay: 1.901 ms

Loss rate: 0.00%

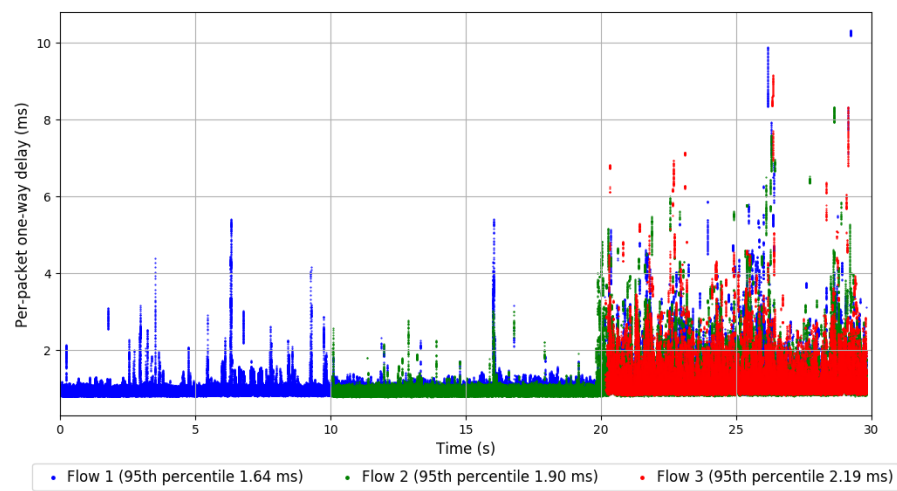
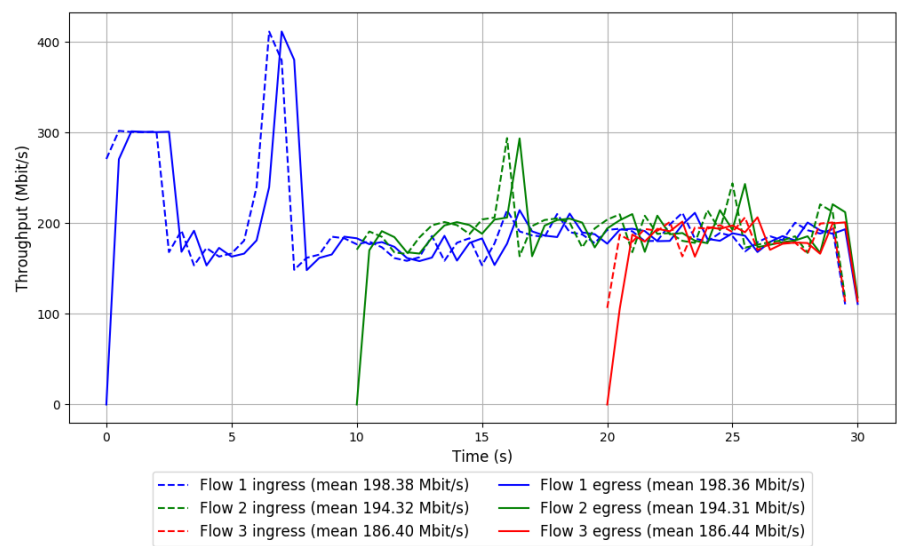
-- Flow 3:

Average throughput: 186.44 Mbit/s

95th percentile per-packet one-way delay: 2.195 ms

Loss rate: 0.00%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2018-10-09 21:58:31

End at: 2018-10-09 21:59:01

Local clock offset: -3.453 ms

Remote clock offset: 0.868 ms

# Below is generated by plot.py at 2018-10-09 23:40:13

# Datalink statistics

-- Total of 3 flows:

Average throughput: 379.97 Mbit/s

95th percentile per-packet one-way delay: 1.889 ms

Loss rate: 0.01%

-- Flow 1:

Average throughput: 195.30 Mbit/s

95th percentile per-packet one-way delay: 1.701 ms

Loss rate: 0.01%

-- Flow 2:

Average throughput: 187.67 Mbit/s

95th percentile per-packet one-way delay: 1.959 ms

Loss rate: 0.01%

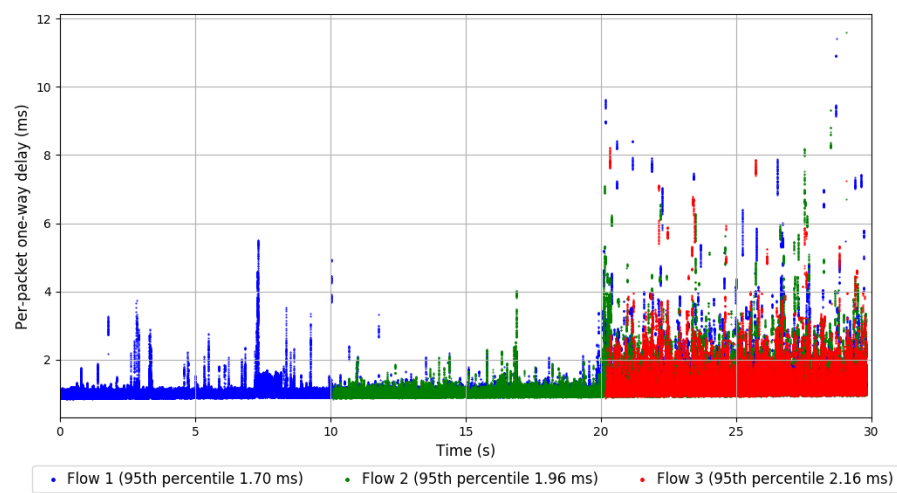
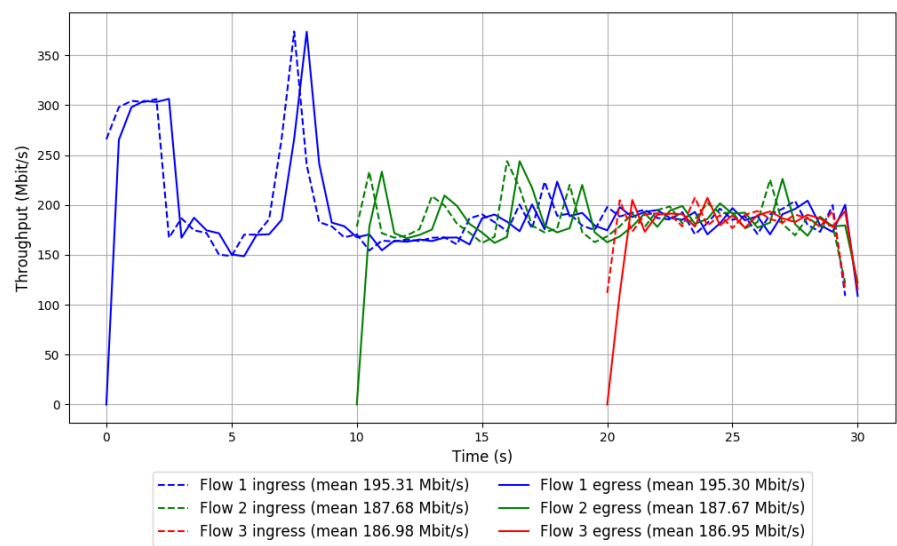
-- Flow 3:

Average throughput: 186.95 Mbit/s

95th percentile per-packet one-way delay: 2.164 ms

Loss rate: 0.01%

Run 3: Report of Indigo — Data Link

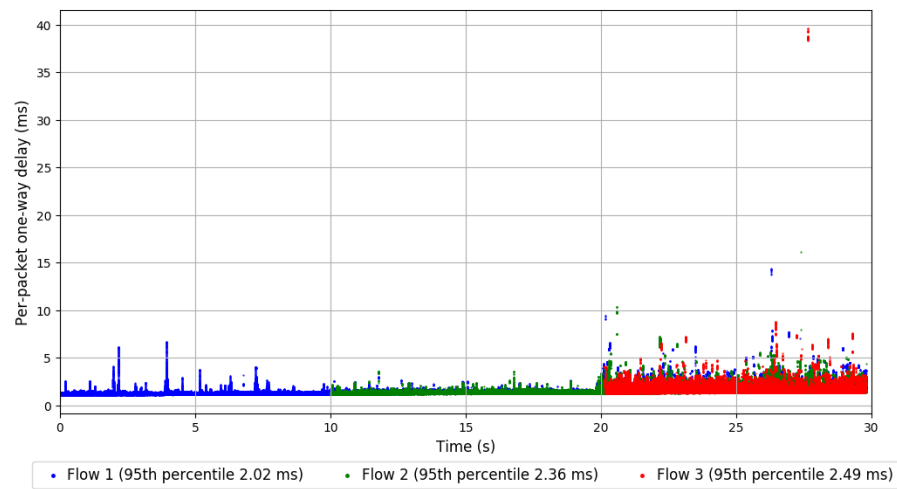
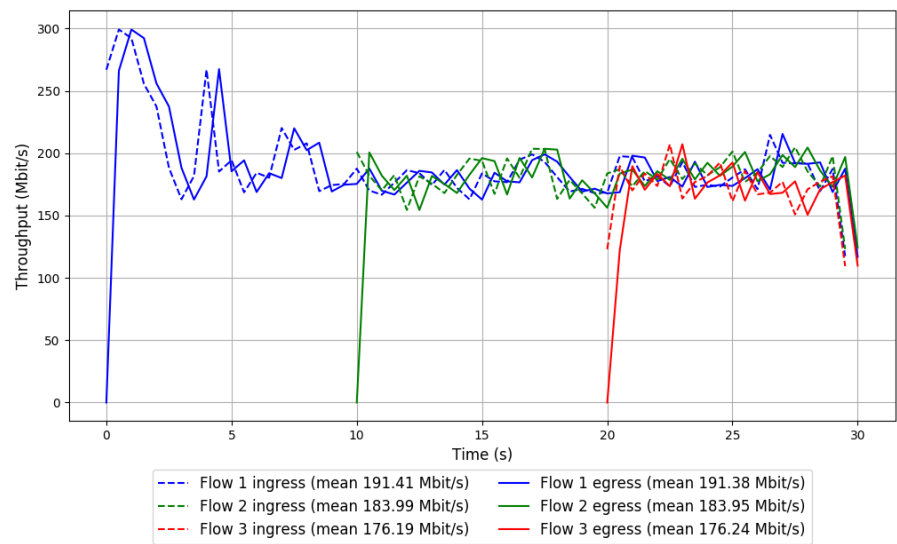


Run 4: Statistics of Indigo

Start at: 2018-10-09 22:25:33  
End at: 2018-10-09 22:26:03  
Local clock offset: -3.176 ms  
Remote clock offset: -1.459 ms

# Below is generated by plot.py at 2018-10-09 23:40:13  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 370.76 Mbit/s  
95th percentile per-packet one-way delay: 2.244 ms  
Loss rate: 0.01%  
-- Flow 1:  
Average throughput: 191.38 Mbit/s  
95th percentile per-packet one-way delay: 2.016 ms  
Loss rate: 0.01%  
-- Flow 2:  
Average throughput: 183.95 Mbit/s  
95th percentile per-packet one-way delay: 2.357 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 176.24 Mbit/s  
95th percentile per-packet one-way delay: 2.486 ms  
Loss rate: 0.01%

Run 4: Report of Indigo — Data Link



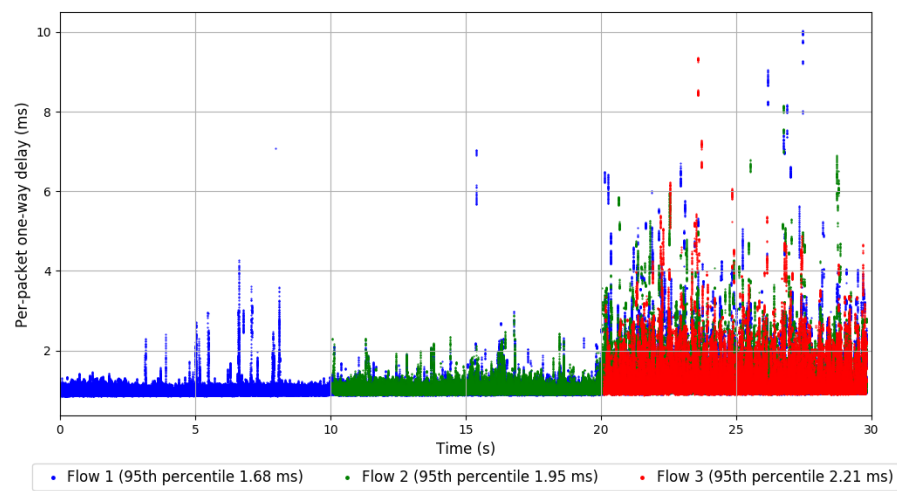
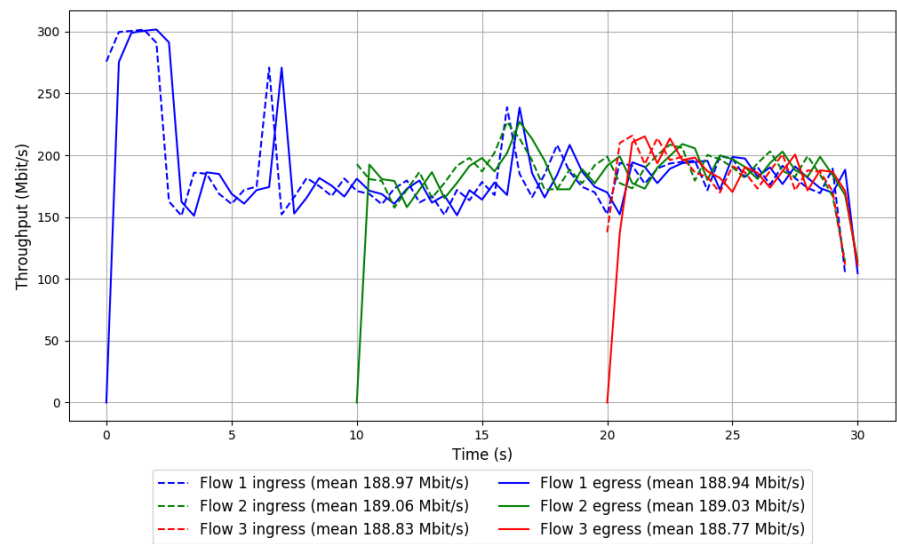


Run 5: Statistics of Indigo

Start at: 2018-10-09 22:52:44  
End at: 2018-10-09 22:53:14  
Local clock offset: 0.806 ms  
Remote clock offset: -4.326 ms

# Below is generated by plot.py at 2018-10-09 23:40:13  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 375.62 Mbit/s  
95th percentile per-packet one-way delay: 1.909 ms  
Loss rate: 0.01%  
-- Flow 1:  
Average throughput: 188.94 Mbit/s  
95th percentile per-packet one-way delay: 1.684 ms  
Loss rate: 0.01%  
-- Flow 2:  
Average throughput: 189.03 Mbit/s  
95th percentile per-packet one-way delay: 1.951 ms  
Loss rate: 0.01%  
-- Flow 3:  
Average throughput: 188.77 Mbit/s  
95th percentile per-packet one-way delay: 2.215 ms  
Loss rate: 0.03%

Run 5: Report of Indigo — Data Link



Run 1: Statistics of Indigo-96d2da3

Start at: 2018-10-09 21:18:20

End at: 2018-10-09 21:18:50

Local clock offset: -4.463 ms

Remote clock offset: 3.177 ms

# Below is generated by plot.py at 2018-10-09 23:43:02

# Datalink statistics

-- Total of 3 flows:

Average throughput: 300.67 Mbit/s

95th percentile per-packet one-way delay: 1.151 ms

Loss rate: 0.01%

-- Flow 1:

Average throughput: 151.24 Mbit/s

95th percentile per-packet one-way delay: 1.206 ms

Loss rate: 0.01%

-- Flow 2:

Average throughput: 150.11 Mbit/s

95th percentile per-packet one-way delay: 1.154 ms

Loss rate: 0.01%

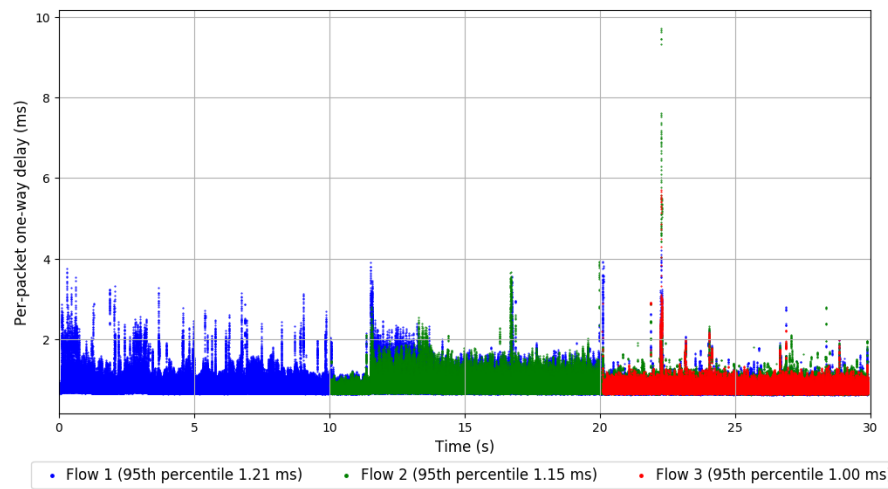
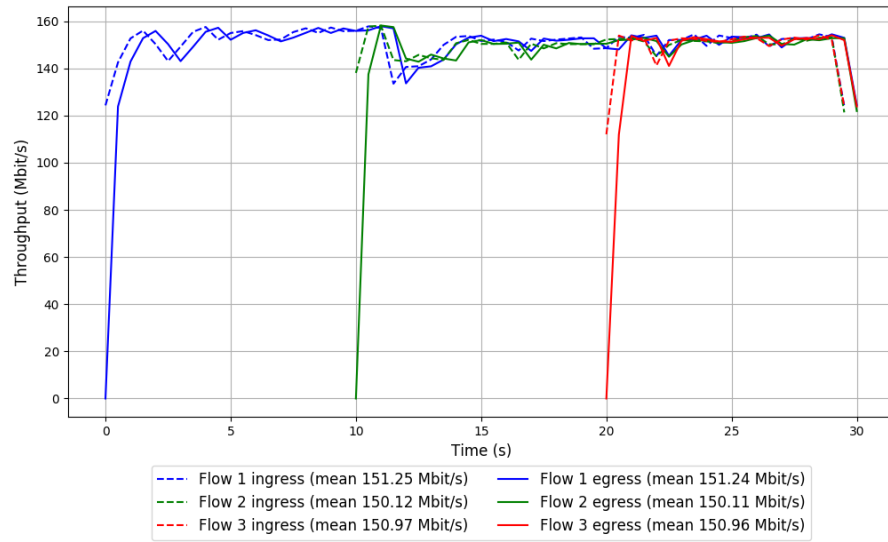
-- Flow 3:

Average throughput: 150.96 Mbit/s

95th percentile per-packet one-way delay: 0.998 ms

Loss rate: 0.02%

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



Run 2: Statistics of Indigo-96d2da3

Start at: 2018-10-09 21:45:36

End at: 2018-10-09 21:46:06

Local clock offset: -3.491 ms

Remote clock offset: 3.275 ms

# Below is generated by plot.py at 2018-10-09 23:43:02

# Datalink statistics

-- Total of 3 flows:

Average throughput: 298.24 Mbit/s

95th percentile per-packet one-way delay: 1.260 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 149.52 Mbit/s

95th percentile per-packet one-way delay: 1.314 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 149.22 Mbit/s

95th percentile per-packet one-way delay: 1.258 ms

Loss rate: 0.00%

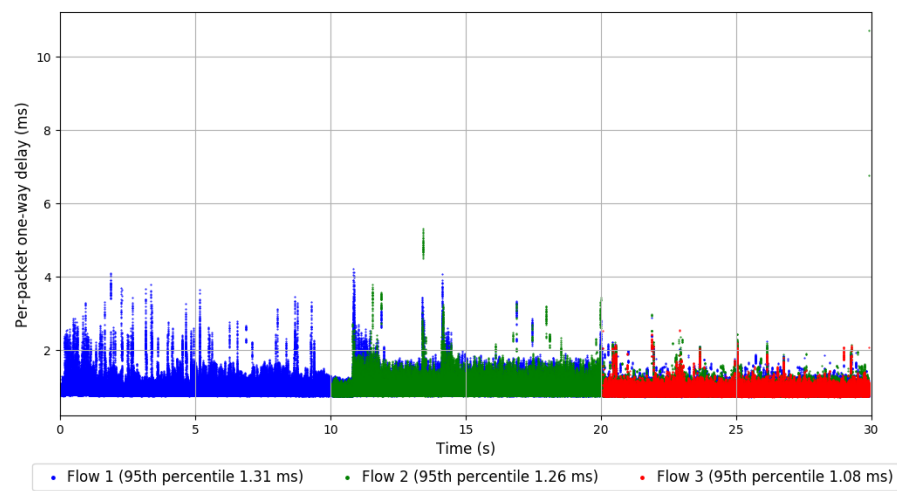
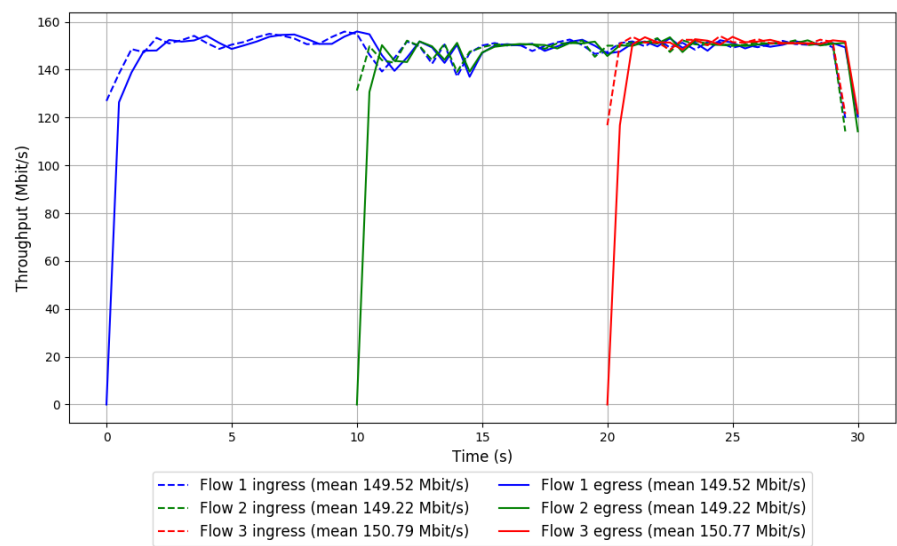
-- Flow 3:

Average throughput: 150.77 Mbit/s

95th percentile per-packet one-way delay: 1.085 ms

Loss rate: 0.00%

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

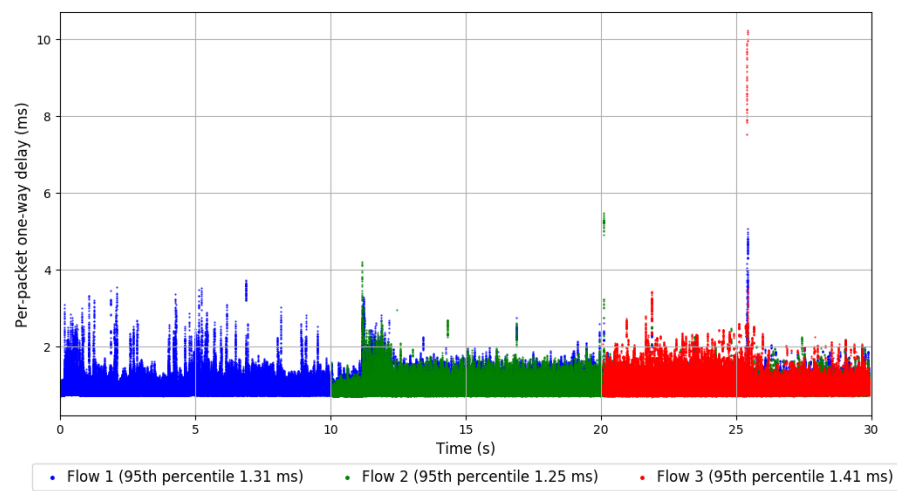
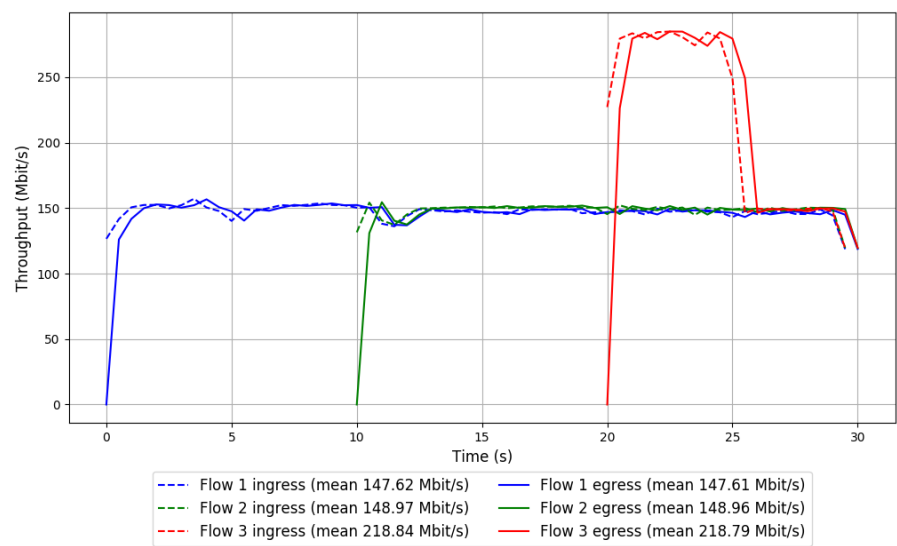


Run 3: Statistics of Indigo-96d2da3

Start at: 2018-10-09 22:12:56  
End at: 2018-10-09 22:13:26  
Local clock offset: -3.164 ms  
Remote clock offset: -0.449 ms

# Below is generated by plot.py at 2018-10-09 23:43:25  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 318.71 Mbit/s  
95th percentile per-packet one-way delay: 1.316 ms  
Loss rate: 0.01%  
-- Flow 1:  
Average throughput: 147.61 Mbit/s  
95th percentile per-packet one-way delay: 1.308 ms  
Loss rate: 0.01%  
-- Flow 2:  
Average throughput: 148.96 Mbit/s  
95th percentile per-packet one-way delay: 1.246 ms  
Loss rate: 0.01%  
-- Flow 3:  
Average throughput: 218.79 Mbit/s  
95th percentile per-packet one-way delay: 1.410 ms  
Loss rate: 0.03%

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



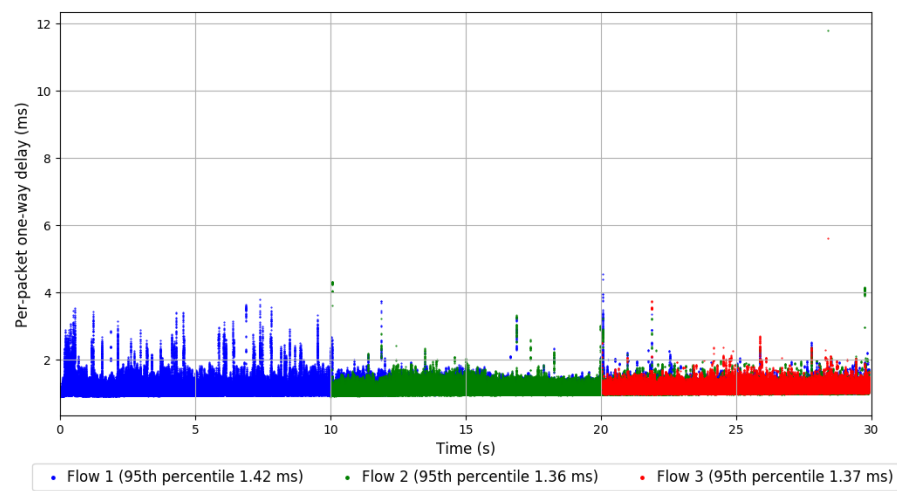
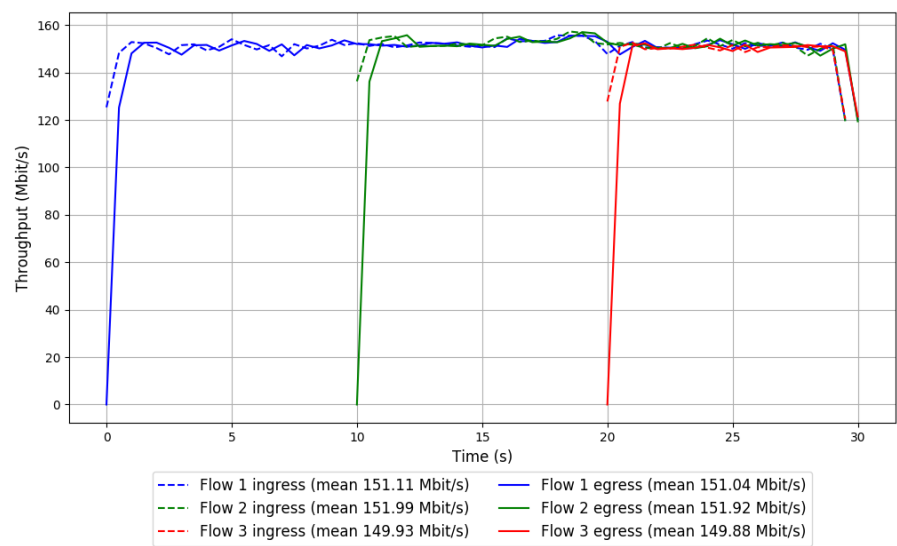


Run 4: Statistics of Indigo-96d2da3

Start at: 2018-10-09 22:39:59  
End at: 2018-10-09 22:40:29  
Local clock offset: 0.002 ms  
Remote clock offset: -3.398 ms

# Below is generated by plot.py at 2018-10-09 23:43:25  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 301.56 Mbit/s  
95th percentile per-packet one-way delay: 1.388 ms  
Loss rate: 0.05%  
-- Flow 1:  
Average throughput: 151.04 Mbit/s  
95th percentile per-packet one-way delay: 1.416 ms  
Loss rate: 0.04%  
-- Flow 2:  
Average throughput: 151.92 Mbit/s  
95th percentile per-packet one-way delay: 1.360 ms  
Loss rate: 0.05%  
-- Flow 3:  
Average throughput: 149.88 Mbit/s  
95th percentile per-packet one-way delay: 1.371 ms  
Loss rate: 0.04%

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

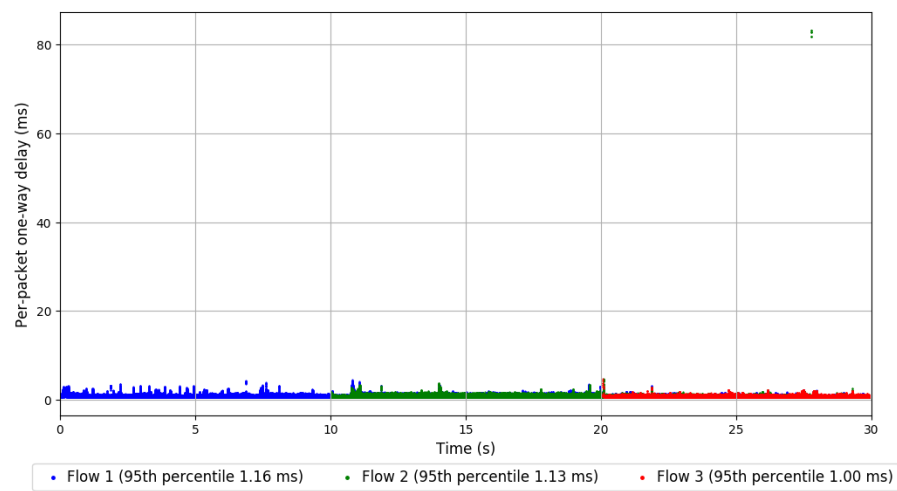
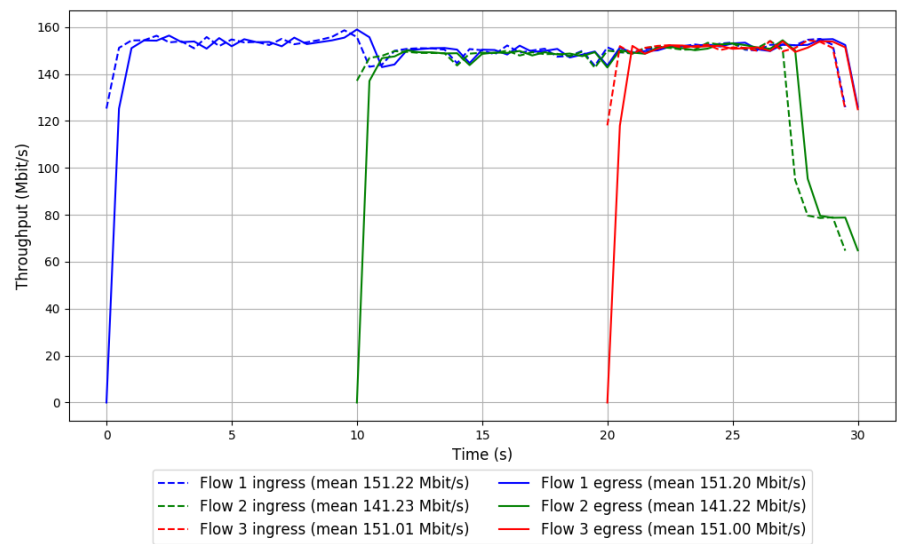


Run 5: Statistics of Indigo-96d2da3

Start at: 2018-10-09 23:07:08  
End at: 2018-10-09 23:07:38  
Local clock offset: -2.024 ms  
Remote clock offset: -5.361 ms

# Below is generated by plot.py at 2018-10-09 23:43:25  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 294.78 Mbit/s  
95th percentile per-packet one-way delay: 1.123 ms  
Loss rate: 0.01%  
-- Flow 1:  
Average throughput: 151.20 Mbit/s  
95th percentile per-packet one-way delay: 1.160 ms  
Loss rate: 0.01%  
-- Flow 2:  
Average throughput: 141.22 Mbit/s  
95th percentile per-packet one-way delay: 1.126 ms  
Loss rate: 0.01%  
-- Flow 3:  
Average throughput: 151.00 Mbit/s  
95th percentile per-packet one-way delay: 1.002 ms  
Loss rate: 0.01%

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

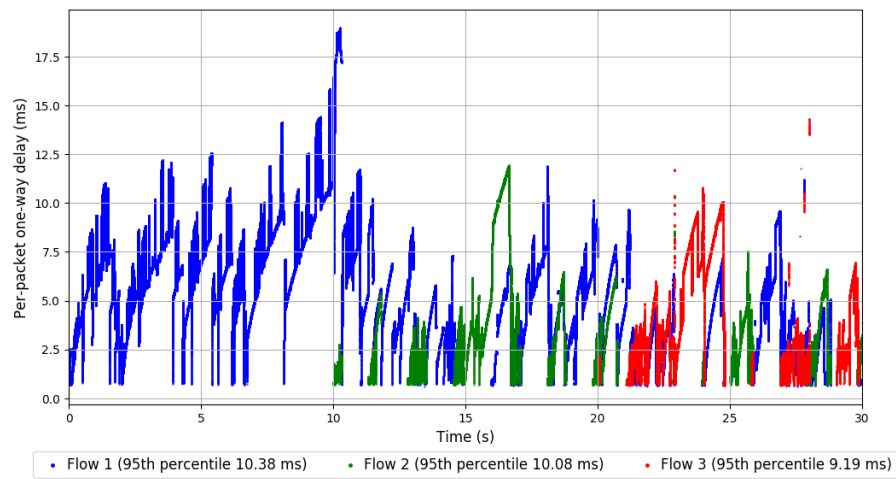
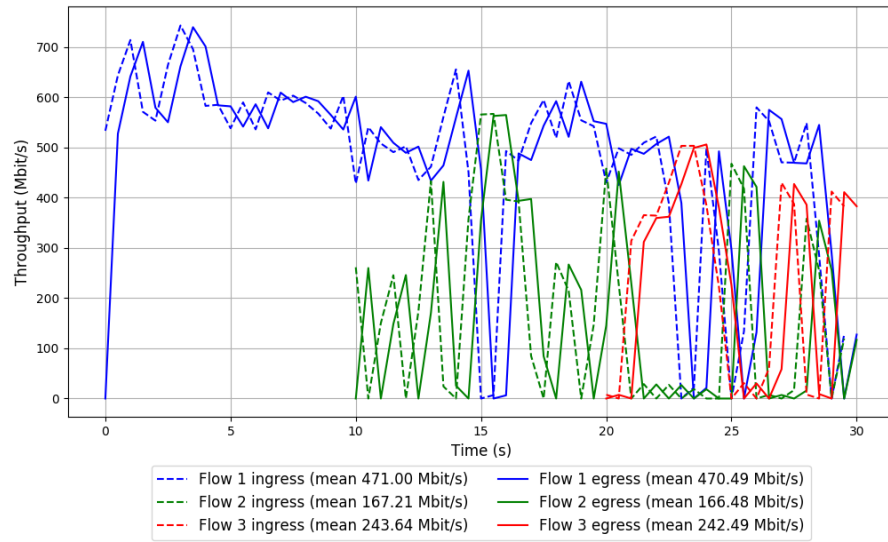


```
Run 1: Statistics of LEDBAT

Start at: 2018-10-09 20:55:37
End at: 2018-10-09 20:56:07
Local clock offset: -2.554 ms
Remote clock offset: 3.025 ms

# Below is generated by plot.py at 2018-10-09 23:47:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 661.13 Mbit/s
95th percentile per-packet one-way delay: 10.112 ms
Loss rate: 0.21%
-- Flow 1:
Average throughput: 470.49 Mbit/s
95th percentile per-packet one-way delay: 10.377 ms
Loss rate: 0.11%
-- Flow 2:
Average throughput: 166.48 Mbit/s
95th percentile per-packet one-way delay: 10.081 ms
Loss rate: 0.43%
-- Flow 3:
Average throughput: 242.49 Mbit/s
95th percentile per-packet one-way delay: 9.187 ms
Loss rate: 0.47%
```

# Run 1: Report of LEDBAT — Data Link



Run 2: Statistics of LEDBAT

Start at: 2018-10-09 21:22:47

End at: 2018-10-09 21:23:17

Local clock offset: -4.846 ms

Remote clock offset: 3.199 ms

# Below is generated by plot.py at 2018-10-09 23:47:36

# Datalink statistics

-- Total of 3 flows:

Average throughput: 649.33 Mbit/s

95th percentile per-packet one-way delay: 11.685 ms

Loss rate: 0.21%

-- Flow 1:

Average throughput: 447.56 Mbit/s

95th percentile per-packet one-way delay: 12.415 ms

Loss rate: 0.11%

-- Flow 2:

Average throughput: 137.32 Mbit/s

95th percentile per-packet one-way delay: 4.461 ms

Loss rate: 0.56%

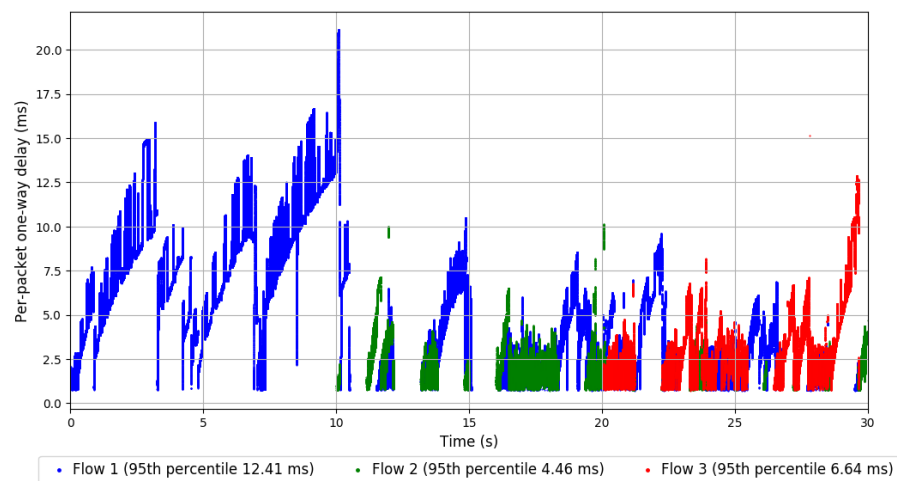
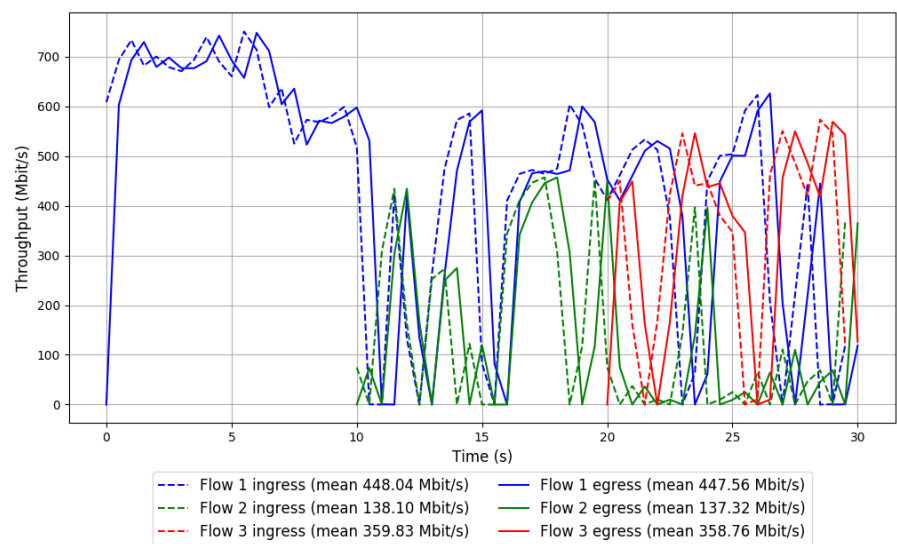
-- Flow 3:

Average throughput: 358.76 Mbit/s

95th percentile per-packet one-way delay: 6.636 ms

Loss rate: 0.30%

Run 2: Report of LEDBAT — Data Link





Run 3: Statistics of LEDBAT

Start at: 2018-10-09 21:50:13

End at: 2018-10-09 21:50:43

Local clock offset: -3.572 ms

Remote clock offset: 2.807 ms

# Below is generated by plot.py at 2018-10-09 23:47:37

# Datalink statistics

-- Total of 3 flows:

Average throughput: 652.20 Mbit/s

95th percentile per-packet one-way delay: 8.726 ms

Loss rate: 0.23%

-- Flow 1:

Average throughput: 389.27 Mbit/s

95th percentile per-packet one-way delay: 9.508 ms

Loss rate: 0.18%

-- Flow 2:

Average throughput: 354.50 Mbit/s

95th percentile per-packet one-way delay: 6.050 ms

Loss rate: 0.26%

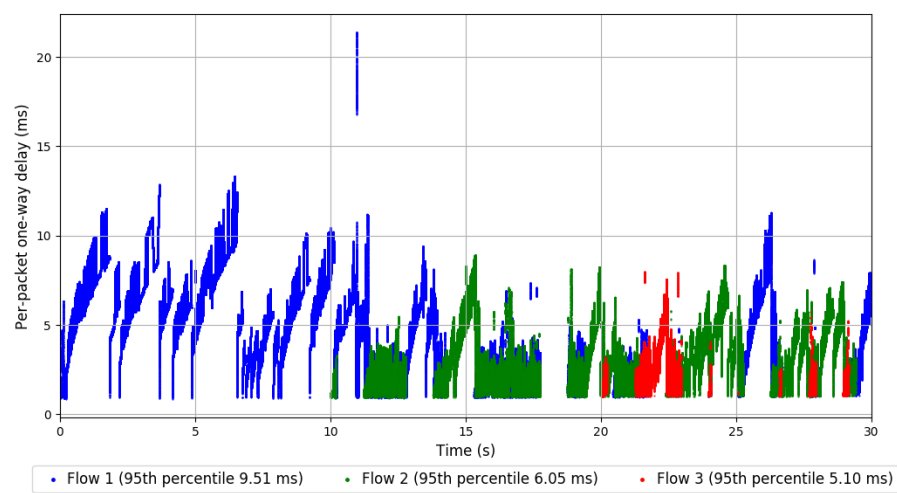
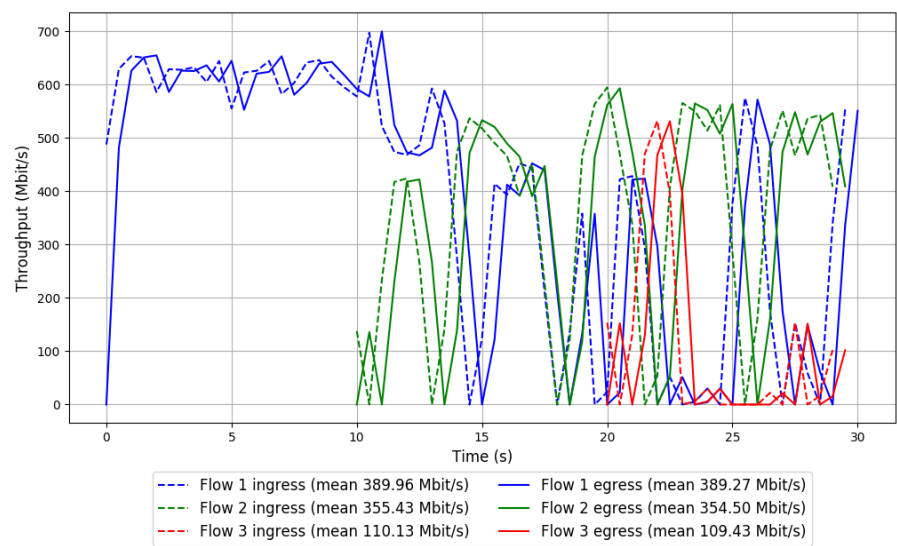
-- Flow 3:

Average throughput: 109.43 Mbit/s

95th percentile per-packet one-way delay: 5.096 ms

Loss rate: 0.63%

Run 3: Report of LEDBAT — Data Link



Run 4: Statistics of LEDBAT

Start at: 2018-10-09 22:17:20

End at: 2018-10-09 22:17:50

Local clock offset: -3.227 ms

Remote clock offset: -0.68 ms

# Below is generated by plot.py at 2018-10-09 23:50:36

# Datalink statistics

-- Total of 3 flows:

Average throughput: 620.67 Mbit/s

95th percentile per-packet one-way delay: 10.455 ms

Loss rate: 0.25%

-- Flow 1:

Average throughput: 324.49 Mbit/s

95th percentile per-packet one-way delay: 11.886 ms

Loss rate: 0.18%

-- Flow 2:

Average throughput: 360.03 Mbit/s

95th percentile per-packet one-way delay: 7.305 ms

Loss rate: 0.27%

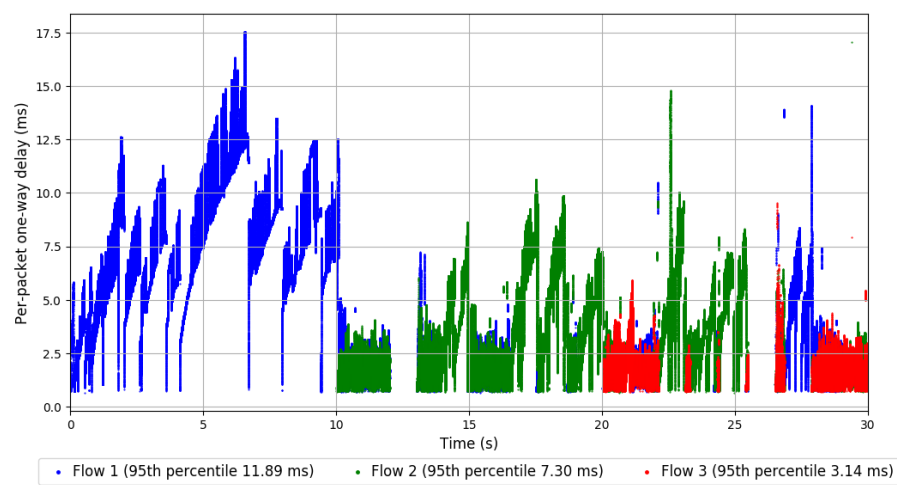
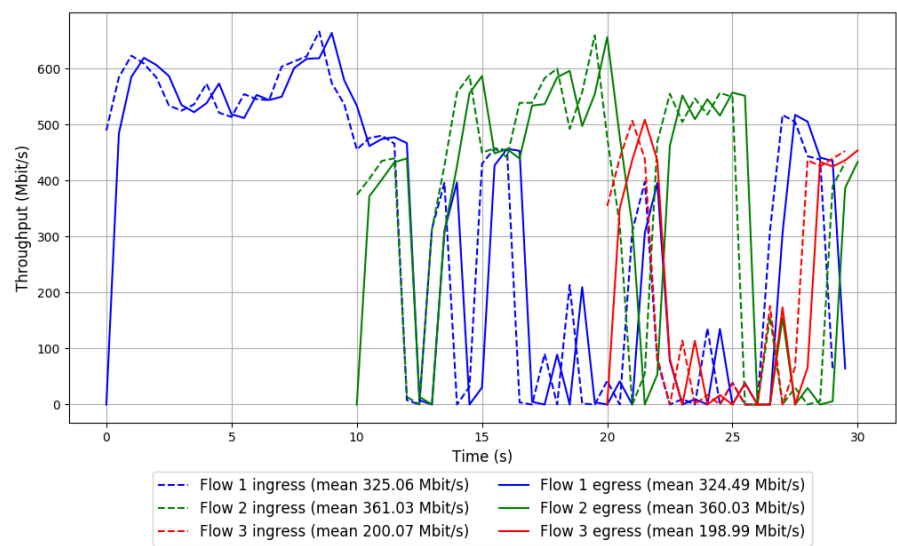
-- Flow 3:

Average throughput: 198.99 Mbit/s

95th percentile per-packet one-way delay: 3.142 ms

Loss rate: 0.54%

Run 4: Report of LEDBAT — Data Link

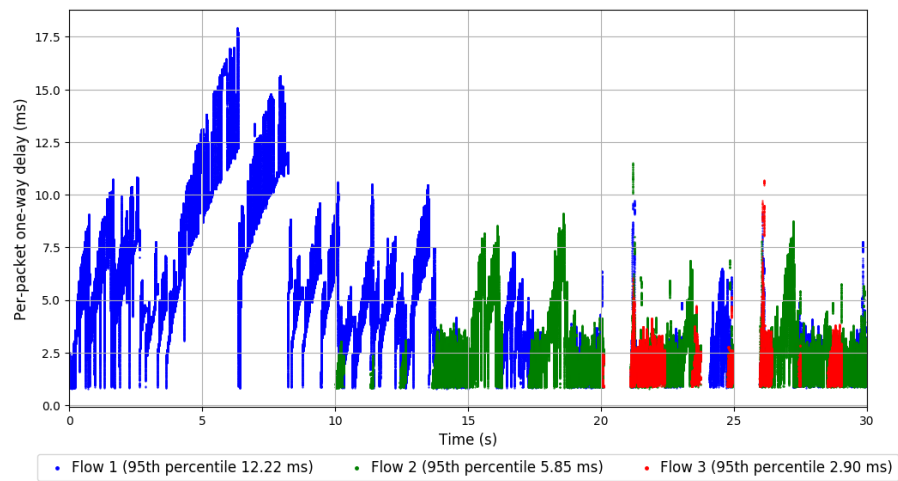
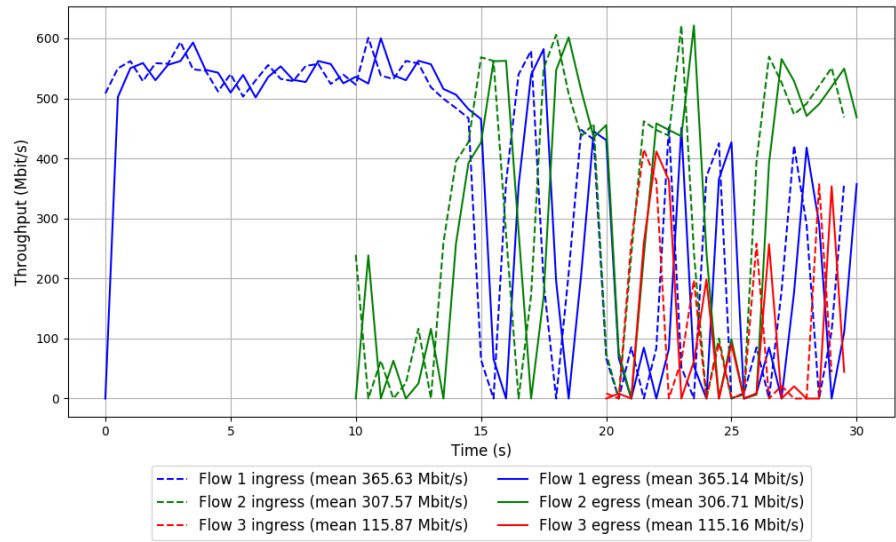


Run 5: Statistics of LEDBAT

Start at: 2018-10-09 22:44:29  
End at: 2018-10-09 22:44:59  
Local clock offset: 0.392 ms  
Remote clock offset: -3.815 ms

# Below is generated by plot.py at 2018-10-09 23:50:36  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 604.10 Mbit/s  
95th percentile per-packet one-way delay: 11.288 ms  
Loss rate: 0.21%  
-- Flow 1:  
Average throughput: 365.14 Mbit/s  
95th percentile per-packet one-way delay: 12.219 ms  
Loss rate: 0.13%  
-- Flow 2:  
Average throughput: 306.71 Mbit/s  
95th percentile per-packet one-way delay: 5.846 ms  
Loss rate: 0.27%  
-- Flow 3:  
Average throughput: 115.16 Mbit/s  
95th percentile per-packet one-way delay: 2.897 ms  
Loss rate: 0.63%

# Run 5: Report of LEDBAT — Data Link

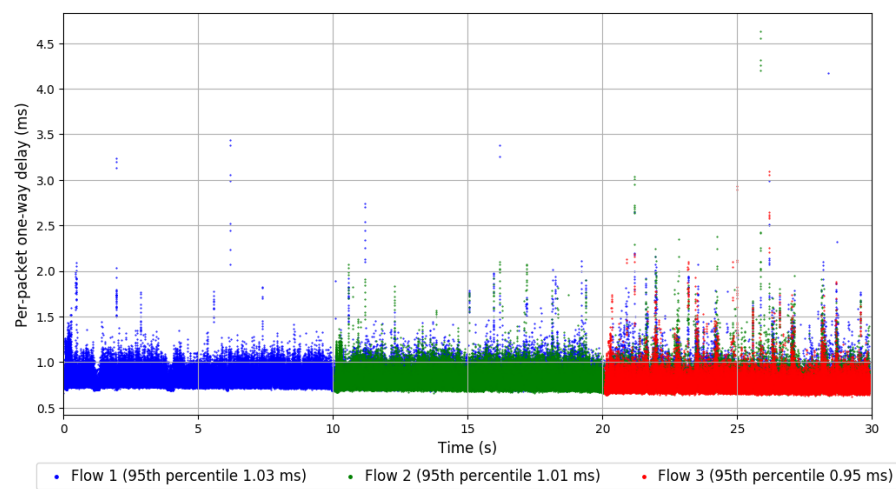
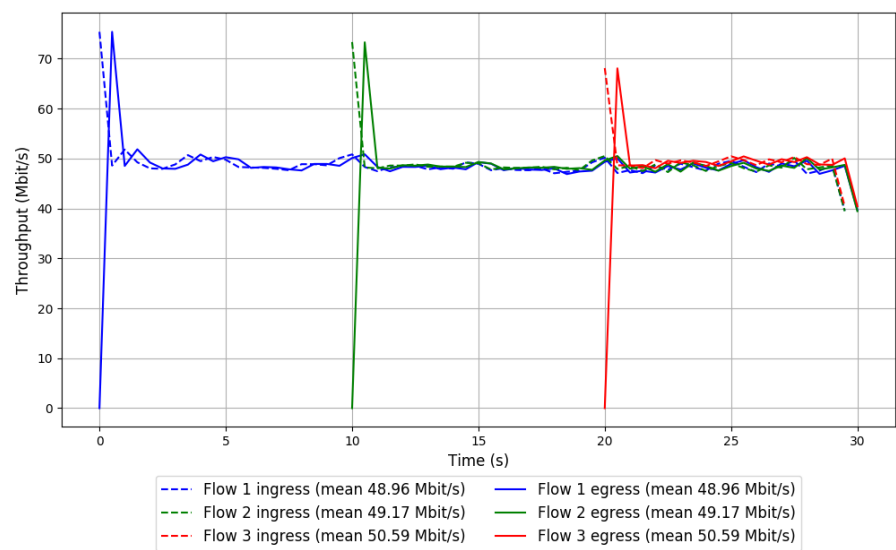


```
Run 1: Statistics of Indigo-Muses

Start at: 2018-10-09 21:12:55
End at: 2018-10-09 21:13:25
Local clock offset: -4.019 ms
Remote clock offset: 3.315 ms

# Below is generated by plot.py at 2018-10-09 23:50:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 98.26 Mbit/s
95th percentile per-packet one-way delay: 1.016 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 48.96 Mbit/s
95th percentile per-packet one-way delay: 1.032 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 49.17 Mbit/s
95th percentile per-packet one-way delay: 1.007 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 50.59 Mbit/s
95th percentile per-packet one-way delay: 0.954 ms
Loss rate: 0.00%
```

Run 1: Report of Indigo-Muses — Data Link





Run 2: Statistics of Indigo-Muses

Start at: 2018-10-09 21:40:11

End at: 2018-10-09 21:40:41

Local clock offset: -3.457 ms

Remote clock offset: 3.255 ms

# Below is generated by plot.py at 2018-10-09 23:50:36

# Datalink statistics

-- Total of 3 flows:

Average throughput: 97.83 Mbit/s

95th percentile per-packet one-way delay: 1.160 ms

Loss rate: 0.01%

-- Flow 1:

Average throughput: 48.63 Mbit/s

95th percentile per-packet one-way delay: 1.166 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 49.06 Mbit/s

95th percentile per-packet one-way delay: 1.173 ms

Loss rate: 0.01%

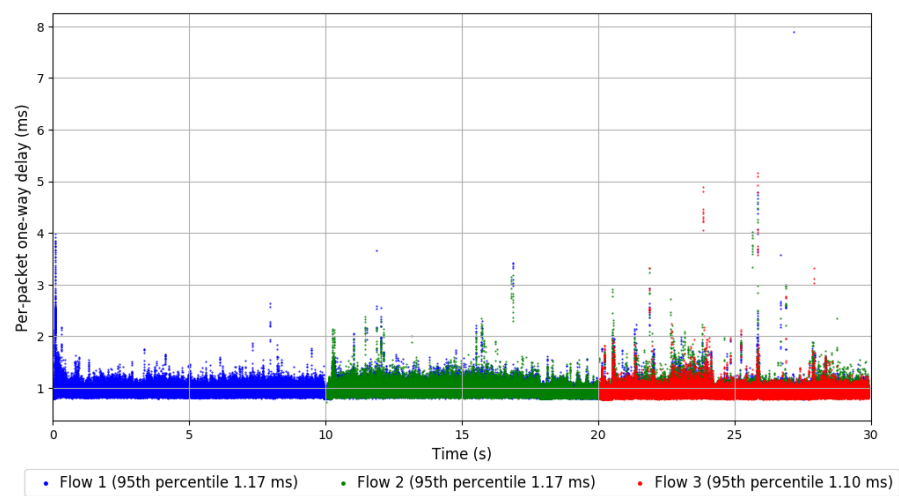
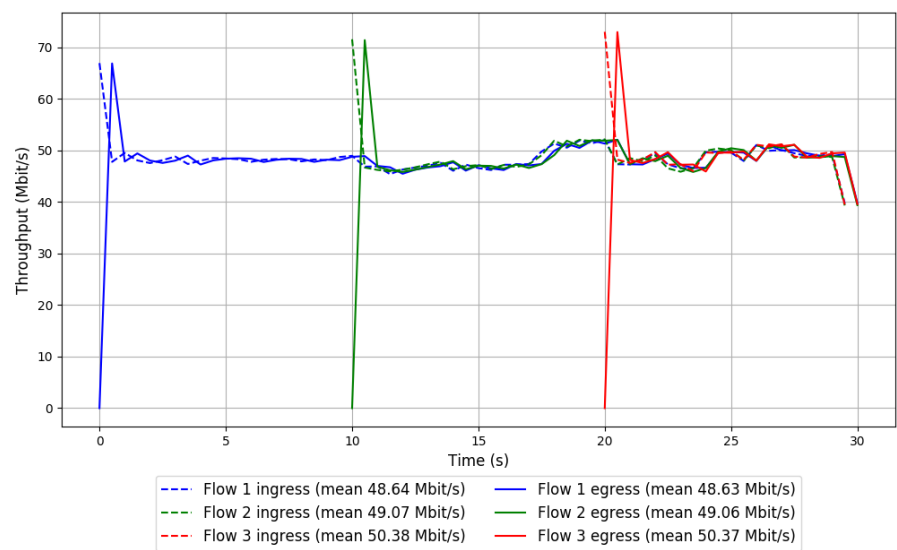
-- Flow 3:

Average throughput: 50.37 Mbit/s

95th percentile per-packet one-way delay: 1.101 ms

Loss rate: 0.02%

Run 2: Report of Indigo-Muses — Data Link

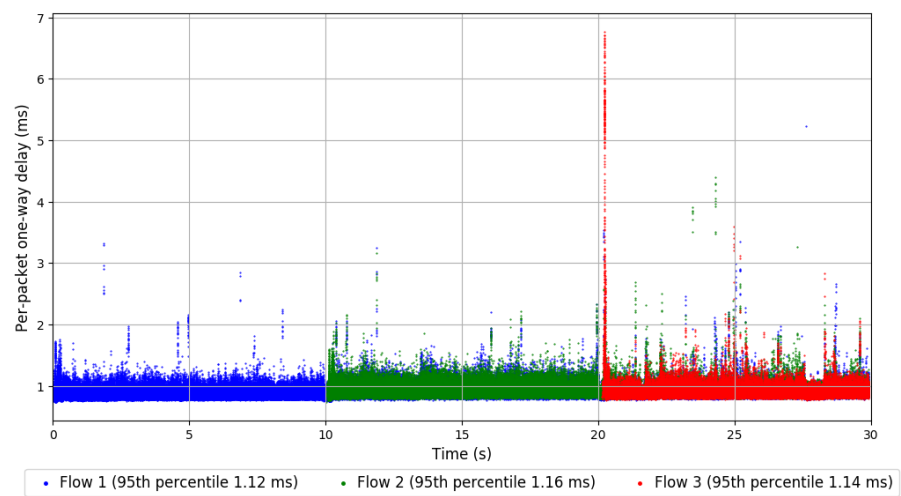
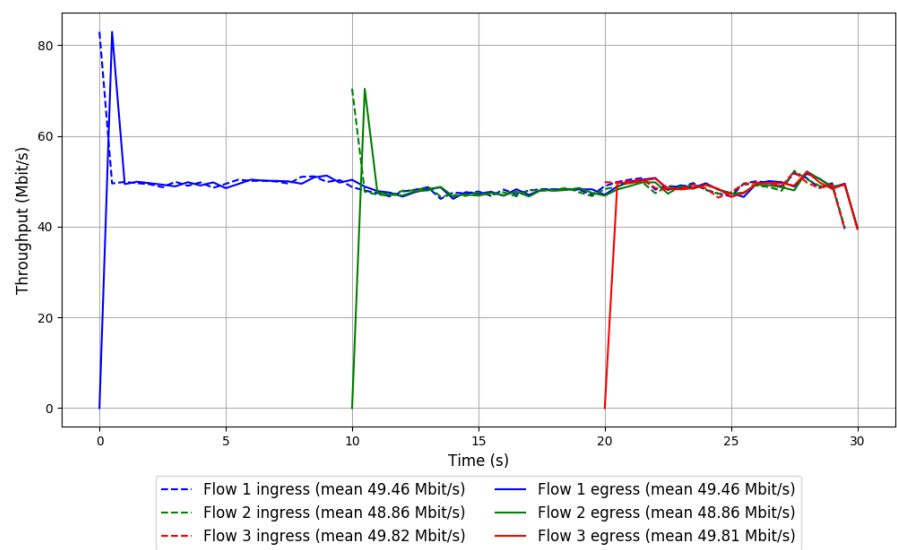


### Run 3: Statistics of Indigo-Muses

Start at: 2018-10-09 22:07:32  
End at: 2018-10-09 22:08:02  
Local clock offset: -3.164 ms  
Remote clock offset: -0.095 ms

```
# Below is generated by plot.py at 2018-10-09 23:50:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 98.20 Mbit/s
95th percentile per-packet one-way delay: 1.137 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 49.46 Mbit/s
95th percentile per-packet one-way delay: 1.122 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 48.86 Mbit/s
95th percentile per-packet one-way delay: 1.158 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 49.81 Mbit/s
95th percentile per-packet one-way delay: 1.136 ms
Loss rate: 0.01%
```

Run 3: Report of Indigo-Muses — Data Link

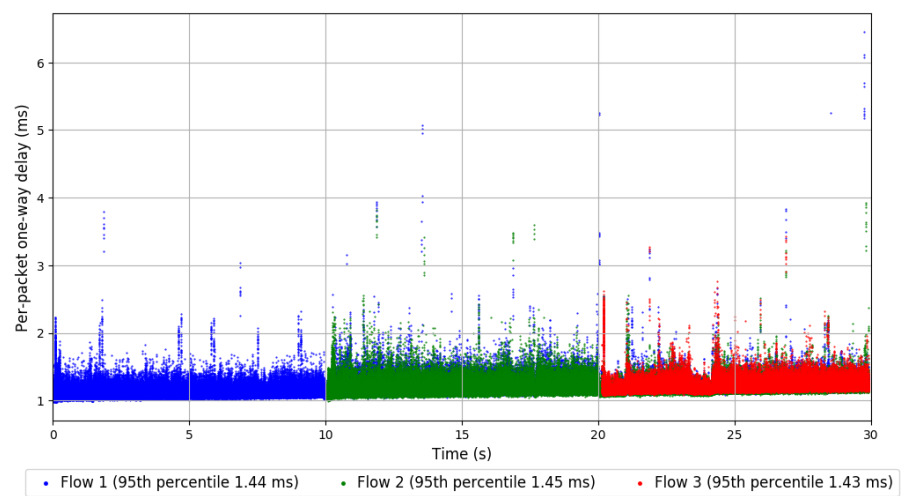
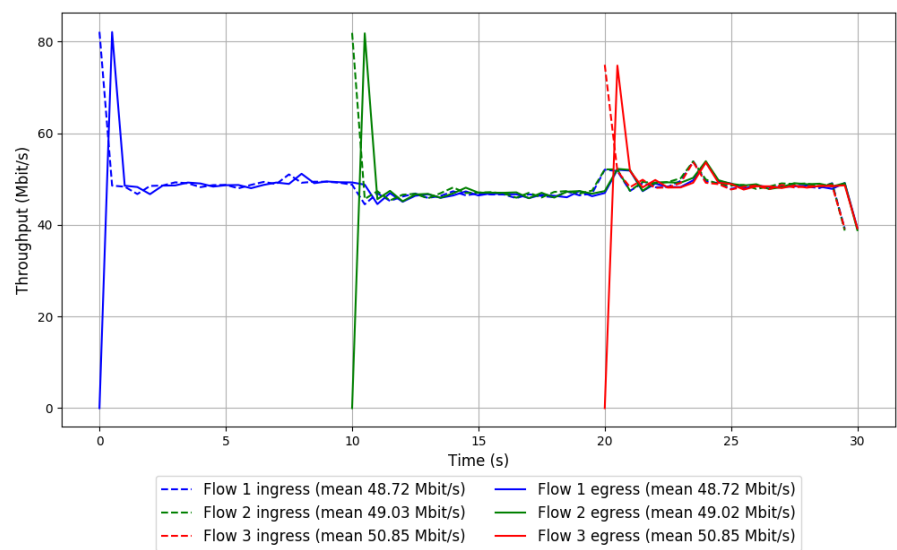


Run 4: Statistics of Indigo-Muses

Start at: 2018-10-09 22:34:36  
End at: 2018-10-09 22:35:06  
Local clock offset: -0.714 ms  
Remote clock offset: -2.831 ms

# Below is generated by plot.py at 2018-10-09 23:50:36  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 97.97 Mbit/s  
95th percentile per-packet one-way delay: 1.438 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 48.72 Mbit/s  
95th percentile per-packet one-way delay: 1.435 ms  
Loss rate: 0.00%  
-- Flow 2:  
Average throughput: 49.02 Mbit/s  
95th percentile per-packet one-way delay: 1.445 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 50.85 Mbit/s  
95th percentile per-packet one-way delay: 1.434 ms  
Loss rate: 0.00%

Run 4: Report of Indigo-Muses — Data Link

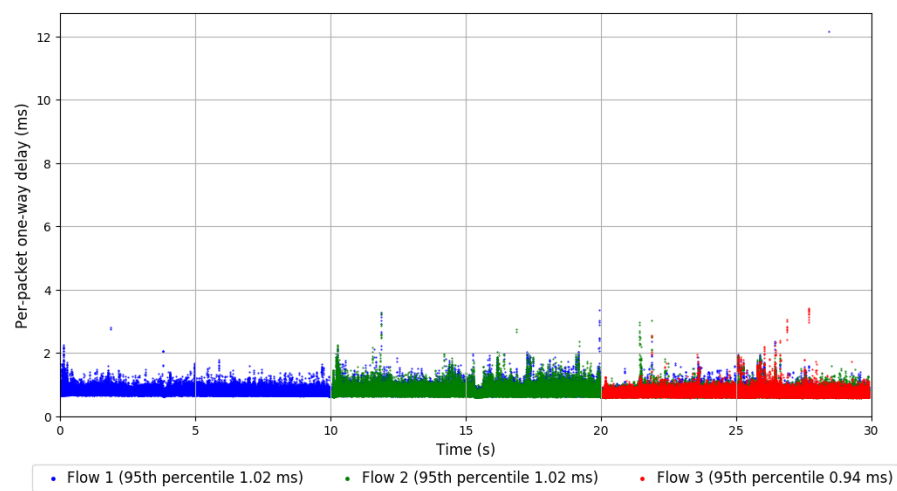
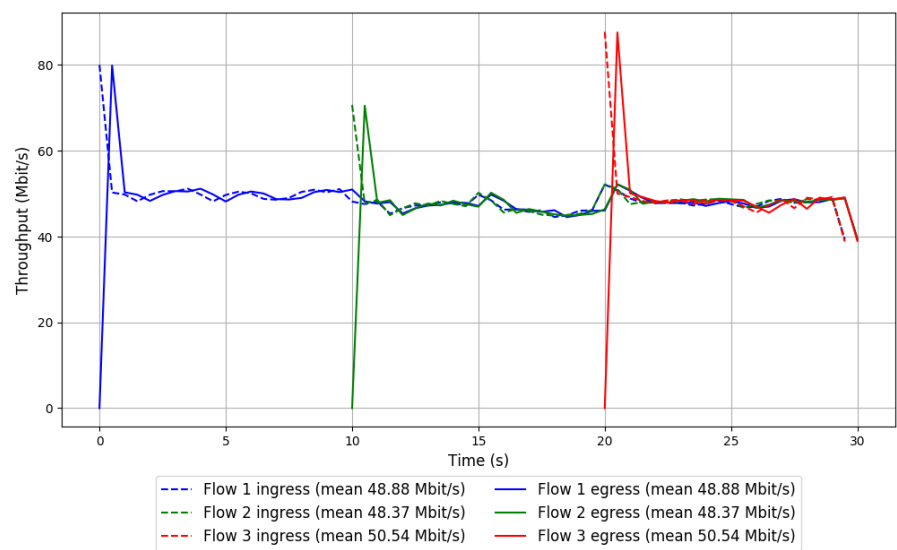


Run 5: Statistics of Indigo-Muses

Start at: 2018-10-09 23:01:44  
End at: 2018-10-09 23:02:14  
Local clock offset: -1.15 ms  
Remote clock offset: -4.977 ms

# Below is generated by plot.py at 2018-10-09 23:50:36  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 97.64 Mbit/s  
95th percentile per-packet one-way delay: 1.009 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 48.88 Mbit/s  
95th percentile per-packet one-way delay: 1.018 ms  
Loss rate: 0.00%  
-- Flow 2:  
Average throughput: 48.37 Mbit/s  
95th percentile per-packet one-way delay: 1.025 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 50.54 Mbit/s  
95th percentile per-packet one-way delay: 0.937 ms  
Loss rate: 0.00%

Run 5: Report of Indigo-Muses — Data Link



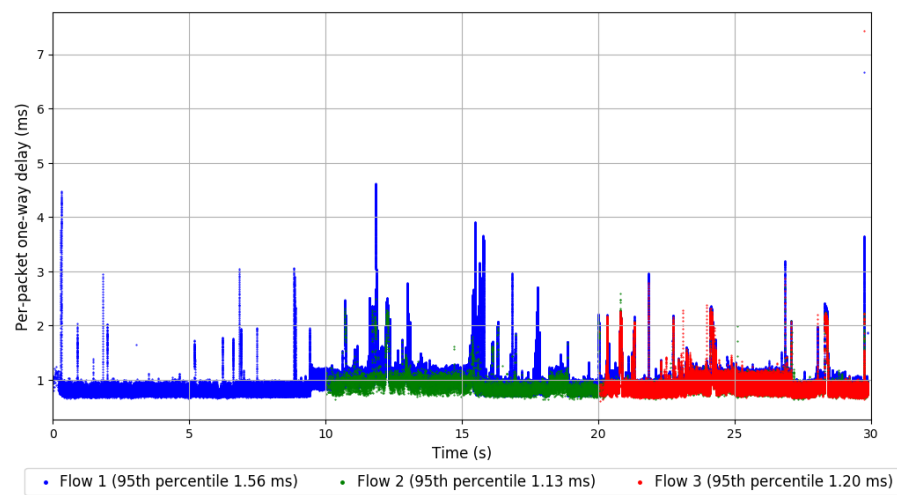
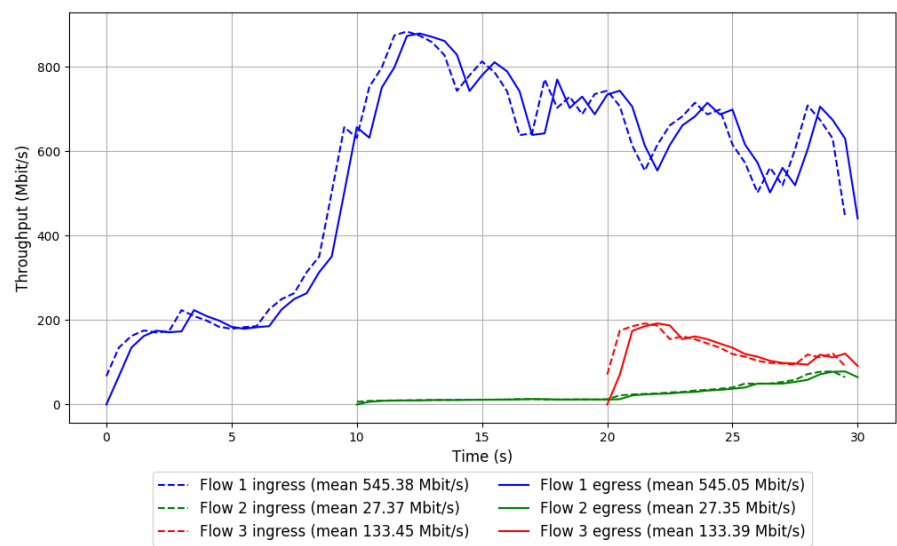


```
Run 1: Statistics of PCC-Allegro

Start at: 2018-10-09 21:19:49
End at: 2018-10-09 21:20:19
Local clock offset: -4.594 ms
Remote clock offset: 3.168 ms

# Below is generated by plot.py at 2018-10-09 23:52:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 607.22 Mbit/s
95th percentile per-packet one-way delay: 1.530 ms
Loss rate: 0.06%
-- Flow 1:
Average throughput: 545.05 Mbit/s
95th percentile per-packet one-way delay: 1.562 ms
Loss rate: 0.06%
-- Flow 2:
Average throughput: 27.35 Mbit/s
95th percentile per-packet one-way delay: 1.131 ms
Loss rate: 0.08%
-- Flow 3:
Average throughput: 133.39 Mbit/s
95th percentile per-packet one-way delay: 1.202 ms
Loss rate: 0.07%
```

Run 1: Report of PCC-Allegro — Data Link



Run 2: Statistics of PCC-Allegro

Start at: 2018-10-09 21:47:06

End at: 2018-10-09 21:47:36

Local clock offset: -3.517 ms

Remote clock offset: 3.318 ms

# Below is generated by plot.py at 2018-10-09 23:54:12

# Datalink statistics

-- Total of 3 flows:

Average throughput: 687.31 Mbit/s

95th percentile per-packet one-way delay: 2.117 ms

Loss rate: 0.20%

-- Flow 1:

Average throughput: 464.38 Mbit/s

95th percentile per-packet one-way delay: 2.070 ms

Loss rate: 0.21%

-- Flow 2:

Average throughput: 332.88 Mbit/s

95th percentile per-packet one-way delay: 2.157 ms

Loss rate: 0.20%

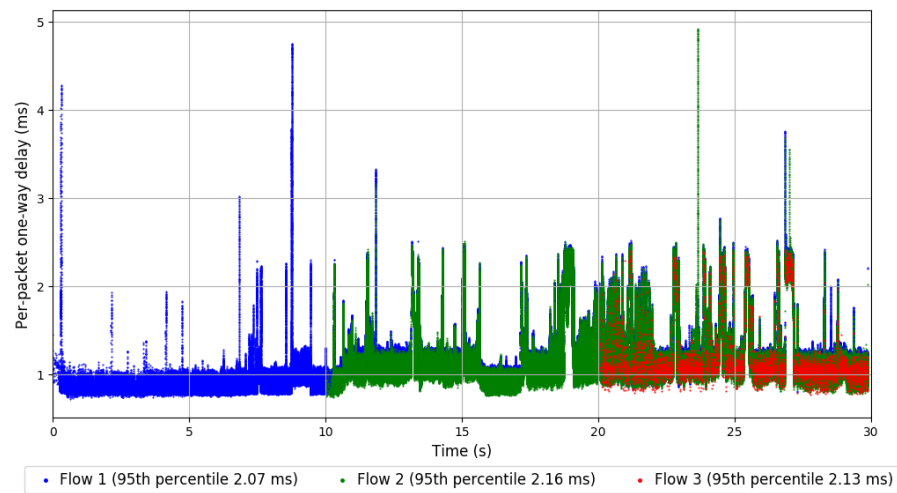
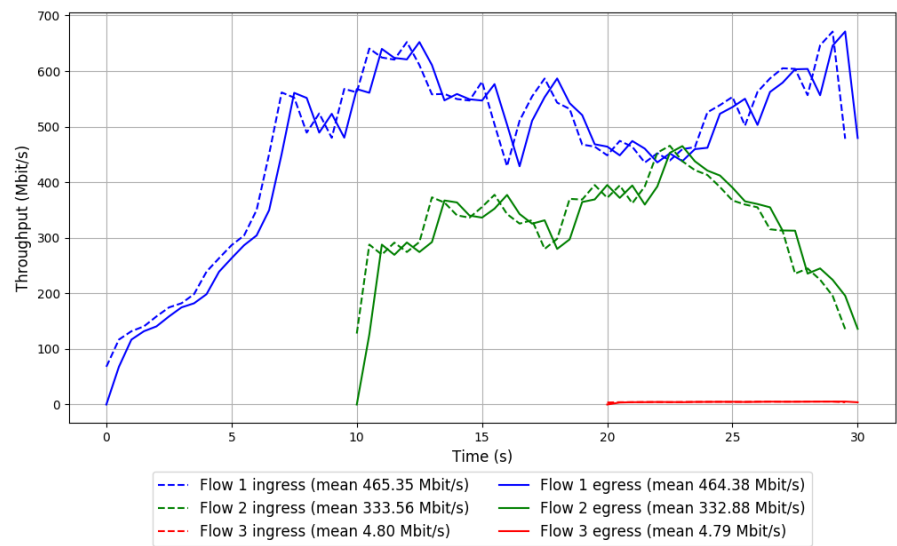
-- Flow 3:

Average throughput: 4.79 Mbit/s

95th percentile per-packet one-way delay: 2.132 ms

Loss rate: 0.30%

Run 2: Report of PCC-Allegro — Data Link

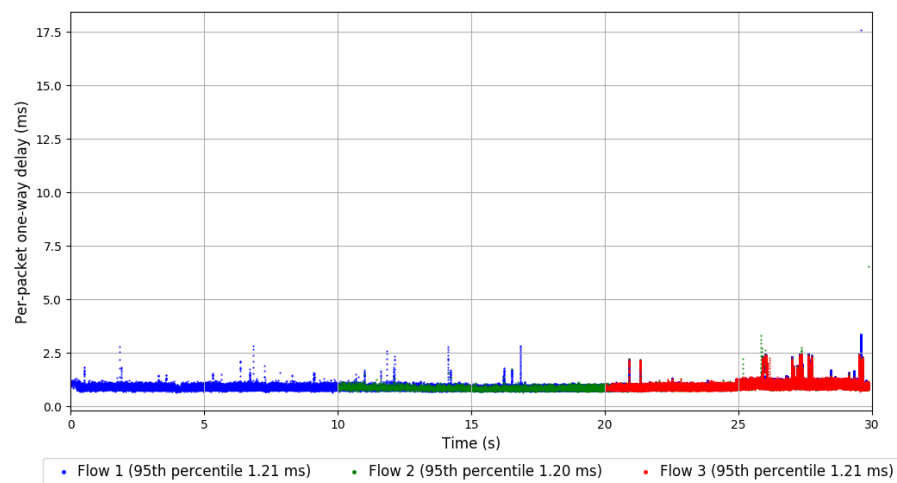
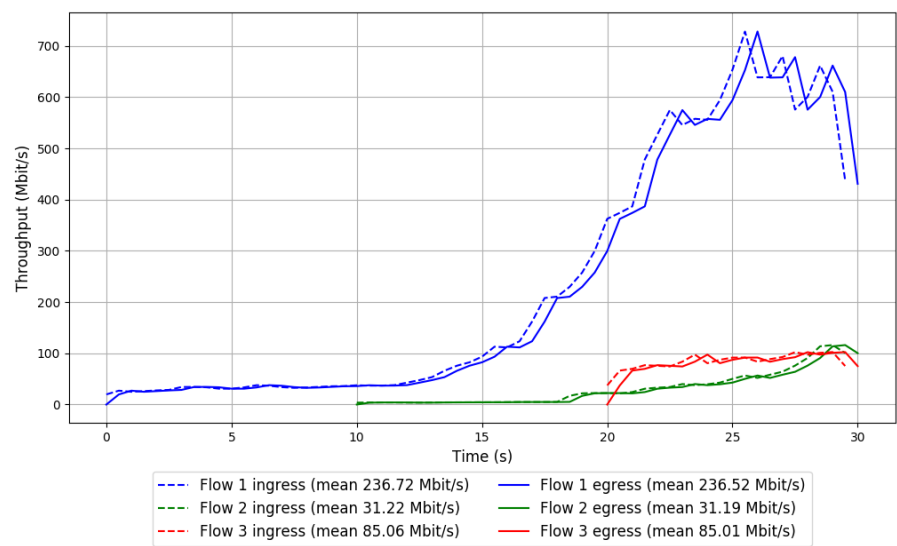


Run 3: Statistics of PCC-Allegro

Start at: 2018-10-09 22:14:25  
End at: 2018-10-09 22:14:55  
Local clock offset: -3.192 ms  
Remote clock offset: -0.495 ms

# Below is generated by plot.py at 2018-10-09 23:54:12  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 285.26 Mbit/s  
95th percentile per-packet one-way delay: 1.212 ms  
Loss rate: 0.08%  
-- Flow 1:  
Average throughput: 236.52 Mbit/s  
95th percentile per-packet one-way delay: 1.213 ms  
Loss rate: 0.09%  
-- Flow 2:  
Average throughput: 31.19 Mbit/s  
95th percentile per-packet one-way delay: 1.195 ms  
Loss rate: 0.07%  
-- Flow 3:  
Average throughput: 85.01 Mbit/s  
95th percentile per-packet one-way delay: 1.211 ms  
Loss rate: 0.06%

Run 3: Report of PCC-Allegro — Data Link

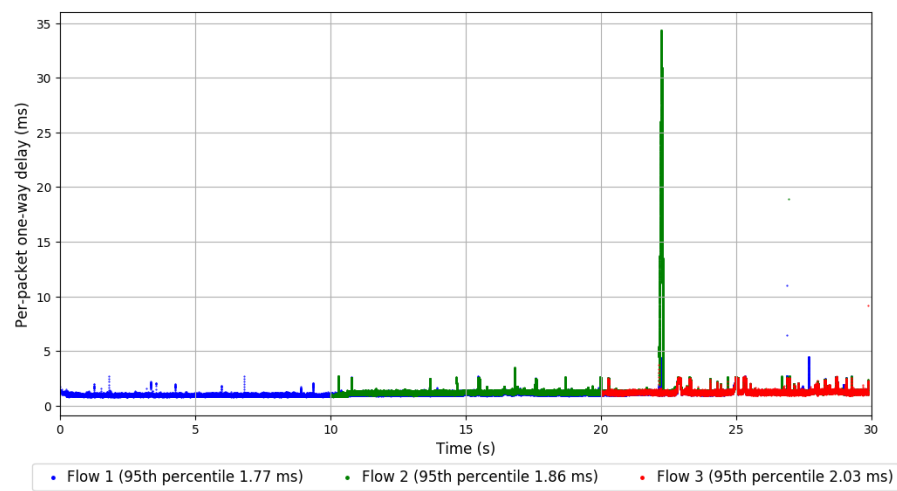
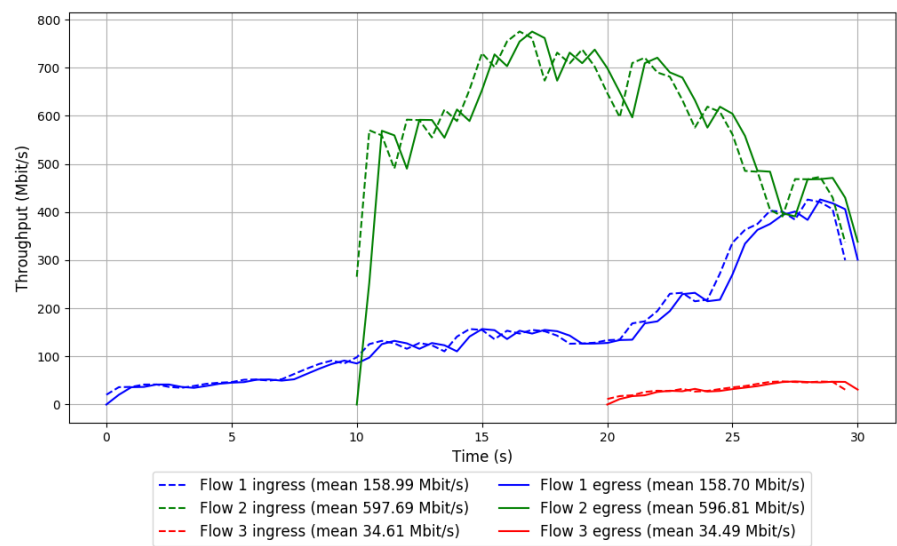


Run 4: Statistics of PCC-Allegro

Start at: 2018-10-09 22:41:28  
End at: 2018-10-09 22:41:58  
Local clock offset: 0.141 ms  
Remote clock offset: -3.558 ms

# Below is generated by plot.py at 2018-10-09 23:54:56  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 566.88 Mbit/s  
95th percentile per-packet one-way delay: 1.825 ms  
Loss rate: 0.16%  
-- Flow 1:  
Average throughput: 158.70 Mbit/s  
95th percentile per-packet one-way delay: 1.773 ms  
Loss rate: 0.18%  
-- Flow 2:  
Average throughput: 596.81 Mbit/s  
95th percentile per-packet one-way delay: 1.859 ms  
Loss rate: 0.14%  
-- Flow 3:  
Average throughput: 34.49 Mbit/s  
95th percentile per-packet one-way delay: 2.030 ms  
Loss rate: 0.25%

Run 4: Report of PCC-Allegro — Data Link



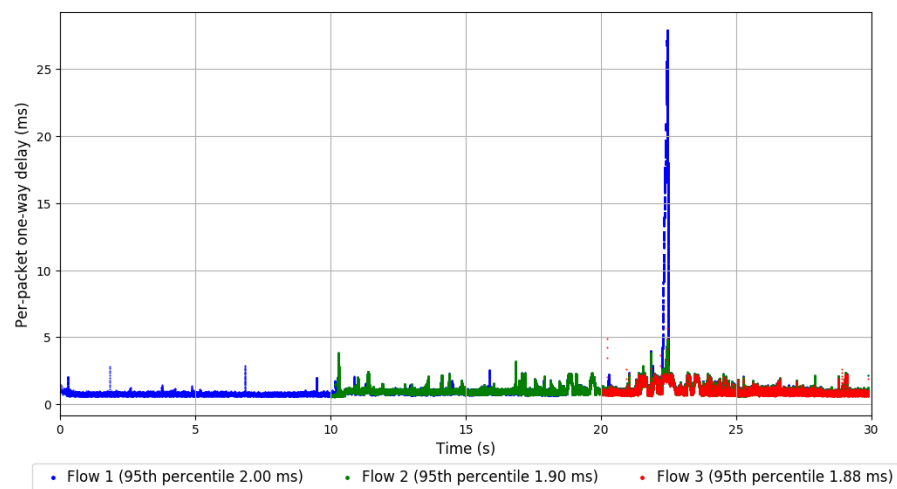
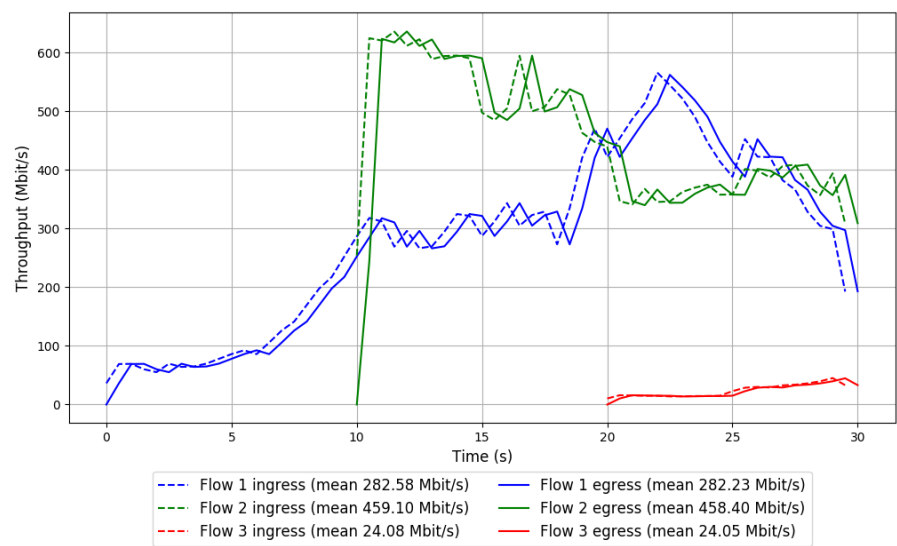


Run 5: Statistics of PCC-Allegro

Start at: 2018-10-09 23:08:37  
End at: 2018-10-09 23:09:07  
Local clock offset: -2.177 ms  
Remote clock offset: -5.444 ms

# Below is generated by plot.py at 2018-10-09 23:55:13  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 595.02 Mbit/s  
95th percentile per-packet one-way delay: 1.953 ms  
Loss rate: 0.13%  
-- Flow 1:  
Average throughput: 282.23 Mbit/s  
95th percentile per-packet one-way delay: 2.003 ms  
Loss rate: 0.12%  
-- Flow 2:  
Average throughput: 458.40 Mbit/s  
95th percentile per-packet one-way delay: 1.898 ms  
Loss rate: 0.14%  
-- Flow 3:  
Average throughput: 24.05 Mbit/s  
95th percentile per-packet one-way delay: 1.877 ms  
Loss rate: 0.13%

Run 5: Report of PCC-Allegro — Data Link

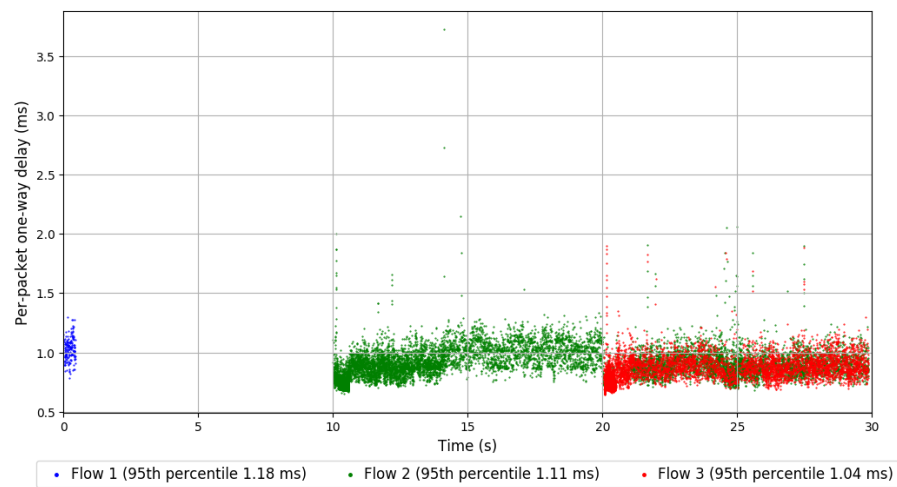
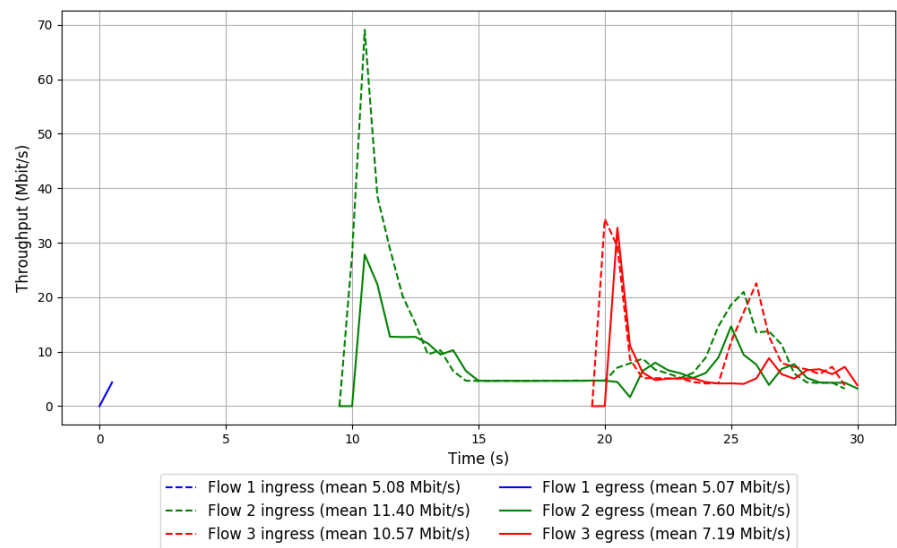


```
Run 1: Statistics of PCC-Expr

Start at: 2018-10-09 21:07:24
End at: 2018-10-09 21:07:54
Local clock offset: -3.533 ms
Remote clock offset: 3.24 ms

# Below is generated by plot.py at 2018-10-09 23:55:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 7.51 Mbit/s
95th percentile per-packet one-way delay: 1.097 ms
Loss rate: 32.71%
-- Flow 1:
Average throughput: 5.07 Mbit/s
95th percentile per-packet one-way delay: 1.181 ms
Loss rate: 0.56%
-- Flow 2:
Average throughput: 7.60 Mbit/s
95th percentile per-packet one-way delay: 1.109 ms
Loss rate: 33.37%
-- Flow 3:
Average throughput: 7.19 Mbit/s
95th percentile per-packet one-way delay: 1.043 ms
Loss rate: 31.98%
```

Run 1: Report of PCC-Expr — Data Link

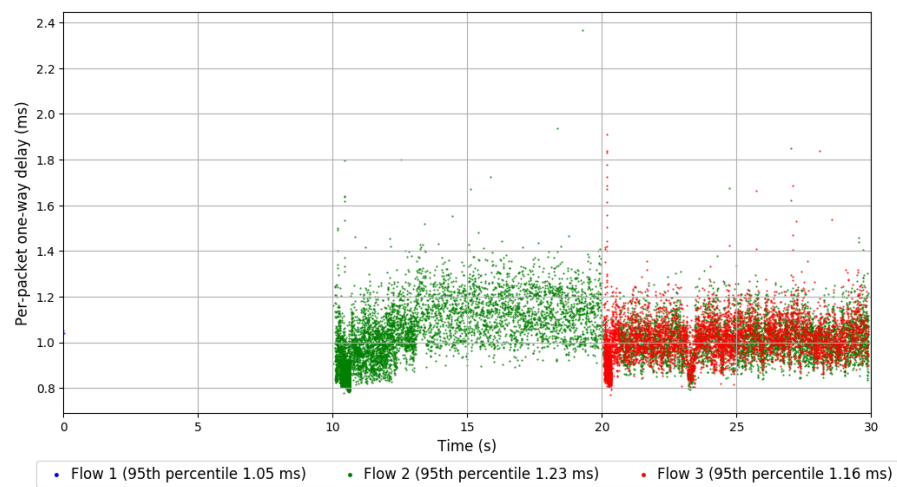
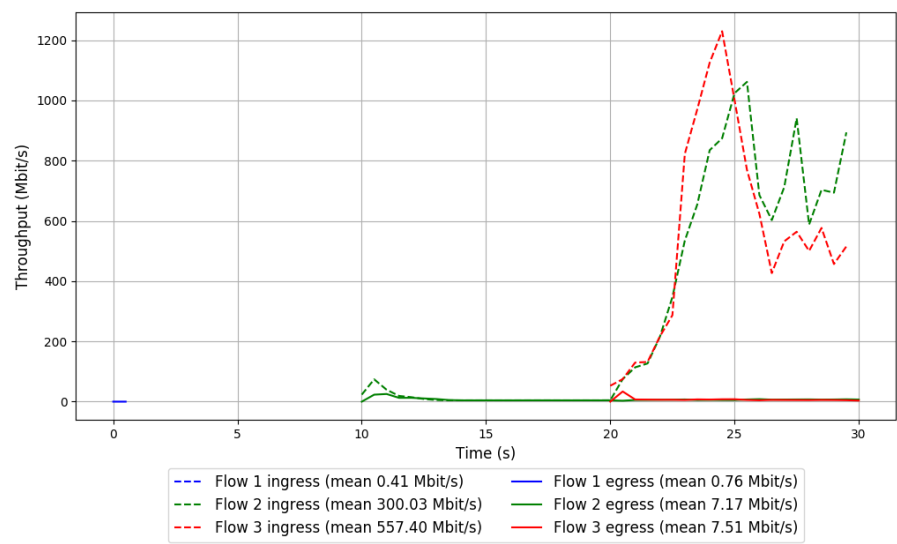


```
Run 2: Statistics of PCC-Expr

Start at: 2018-10-09 21:34:36
End at: 2018-10-09 21:35:06
Local clock offset: -3.653 ms
Remote clock offset: 3.164 ms

# Below is generated by plot.py at 2018-10-09 23:55:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 7.25 Mbit/s
95th percentile per-packet one-way delay: 1.211 ms
Loss rate: 98.11%
-- Flow 1:
Average throughput: 0.76 Mbit/s
95th percentile per-packet one-way delay: 1.052 ms
Loss rate: 85.71%
-- Flow 2:
Average throughput: 7.17 Mbit/s
95th percentile per-packet one-way delay: 1.228 ms
Loss rate: 97.61%
-- Flow 3:
Average throughput: 7.51 Mbit/s
95th percentile per-packet one-way delay: 1.157 ms
Loss rate: 98.65%
```

Run 2: Report of PCC-Expr — Data Link



Run 3: Statistics of PCC-Expr

Start at: 2018-10-09 22:02:01

End at: 2018-10-09 22:02:31

Local clock offset: -3.27 ms

Remote clock offset: 0.451 ms

# Below is generated by plot.py at 2018-10-09 23:55:13

# Datalink statistics

-- Total of 3 flows:

Average throughput: 6.27 Mbit/s

95th percentile per-packet one-way delay: 1.297 ms

Loss rate: 0.01%

-- Flow 1:

Average throughput: 0.78 Mbit/s

95th percentile per-packet one-way delay: 1.288 ms

Loss rate: 85.71%

-- Flow 2:

Average throughput: 6.11 Mbit/s

95th percentile per-packet one-way delay: 1.305 ms

Loss rate: 0.00%

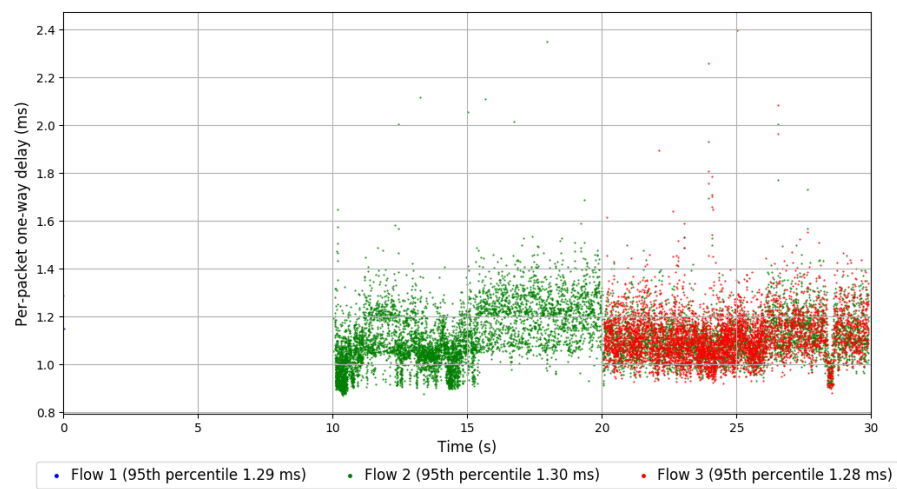
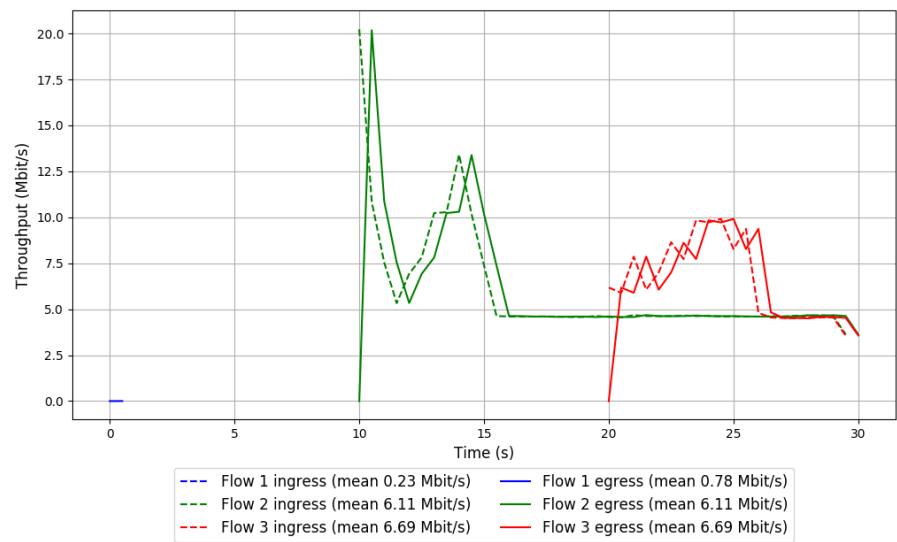
-- Flow 3:

Average throughput: 6.69 Mbit/s

95th percentile per-packet one-way delay: 1.280 ms

Loss rate: 0.00%

Run 3: Report of PCC-Expr — Data Link





Run 4: Statistics of PCC-Expr

Start at: 2018-10-09 22:29:02

End at: 2018-10-09 22:29:32

Local clock offset: -1.978 ms

Remote clock offset: -2.16 ms

# Below is generated by plot.py at 2018-10-09 23:55:13

# Datalink statistics

-- Total of 3 flows:

Average throughput: 8.68 Mbit/s

95th percentile per-packet one-way delay: 1.524 ms

Loss rate: 34.92%

-- Flow 1:

Average throughput: 7.94 Mbit/s

95th percentile per-packet one-way delay: 1.440 ms

Loss rate: 0.04%

-- Flow 2:

Average throughput: 8.96 Mbit/s

95th percentile per-packet one-way delay: 1.521 ms

Loss rate: 30.85%

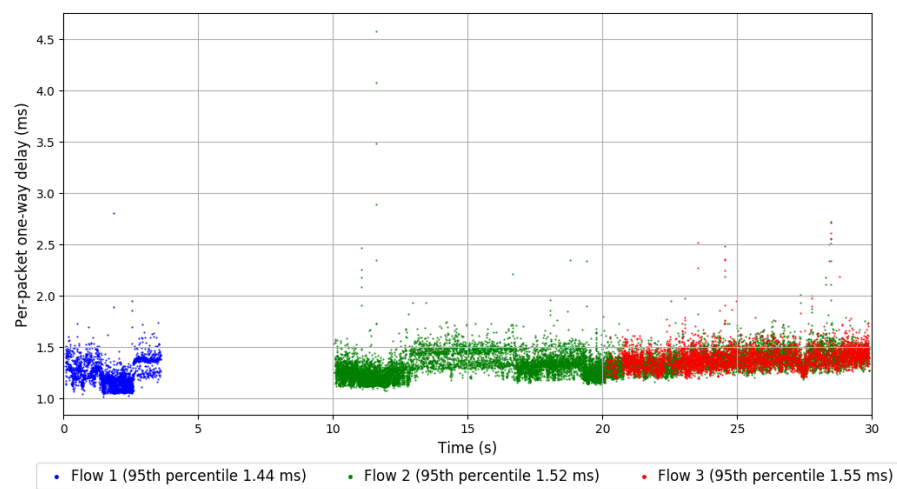
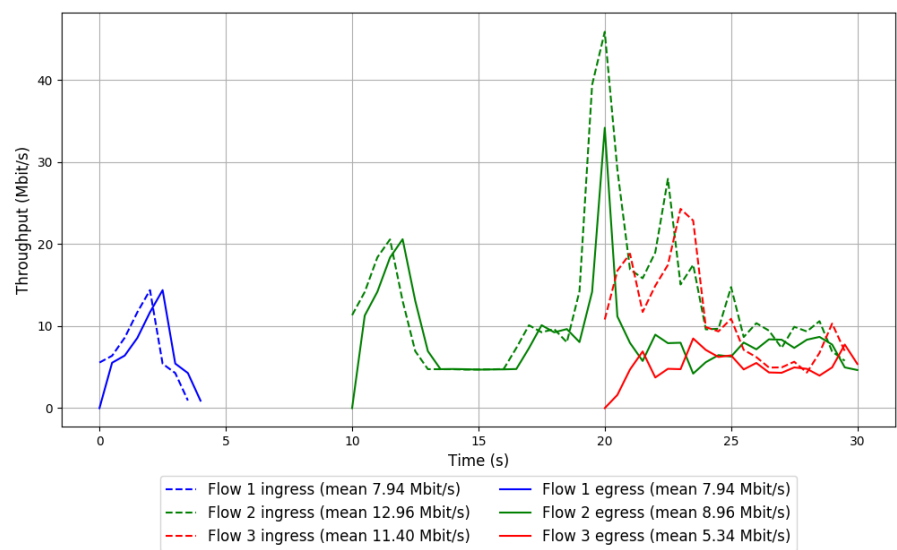
-- Flow 3:

Average throughput: 5.34 Mbit/s

95th percentile per-packet one-way delay: 1.549 ms

Loss rate: 53.11%

Run 4: Report of PCC-Expr — Data Link

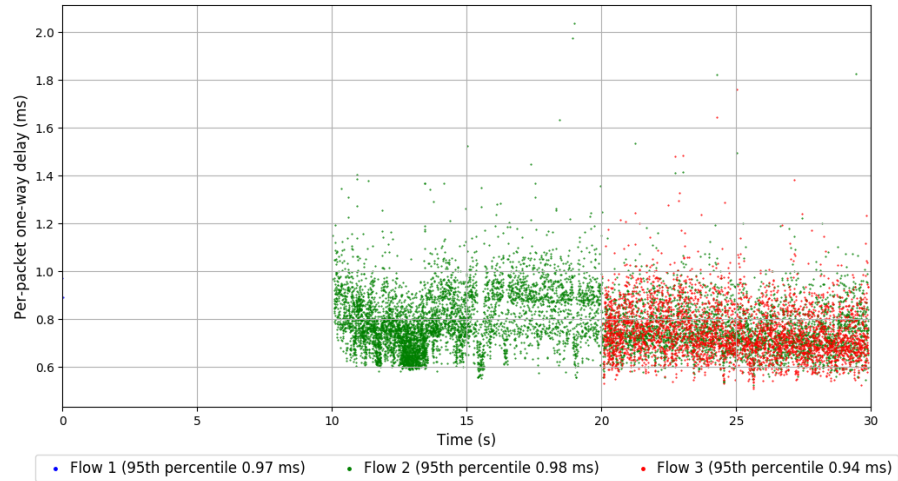
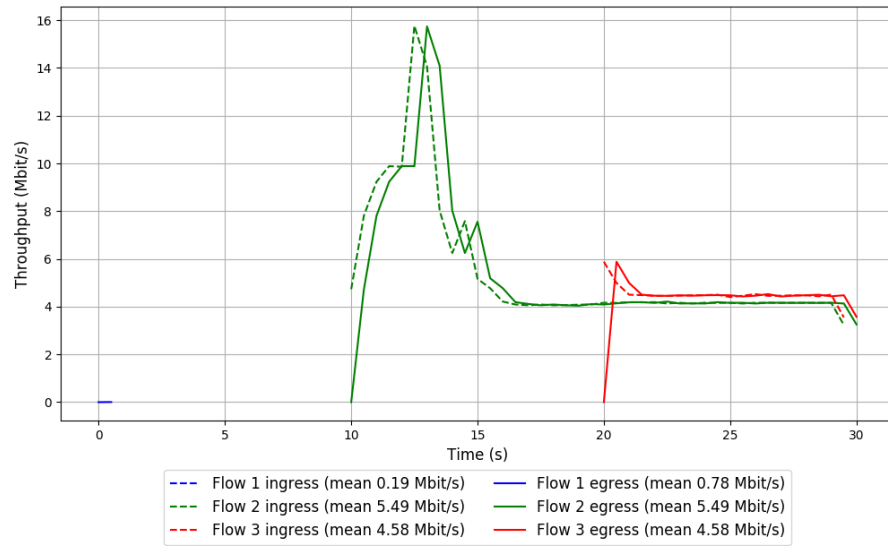


Run 5: Statistics of PCC-Expr

Start at: 2018-10-09 22:56:14  
End at: 2018-10-09 22:56:44  
Local clock offset: 0.439 ms  
Remote clock offset: -4.562 ms

# Below is generated by plot.py at 2018-10-09 23:55:13  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 5.16 Mbit/s  
95th percentile per-packet one-way delay: 0.971 ms  
Loss rate: 0.01%  
-- Flow 1:  
Average throughput: 0.78 Mbit/s  
95th percentile per-packet one-way delay: 0.969 ms  
Loss rate: 85.71%  
-- Flow 2:  
Average throughput: 5.49 Mbit/s  
95th percentile per-packet one-way delay: 0.982 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 4.58 Mbit/s  
95th percentile per-packet one-way delay: 0.943 ms  
Loss rate: 0.00%

## Run 5: Report of PCC-Expr — Data Link



Run 1: Statistics of QUIC Cubic

Start at: 2018-10-09 21:16:57

End at: 2018-10-09 21:17:27

Local clock offset: -4.334 ms

Remote clock offset: 3.239 ms

# Below is generated by plot.py at 2018-10-09 23:55:13

# Datalink statistics

-- Total of 3 flows:

Average throughput: 120.26 Mbit/s

95th percentile per-packet one-way delay: 0.912 ms

Loss rate: 0.03%

-- Flow 1:

Average throughput: 65.85 Mbit/s

95th percentile per-packet one-way delay: 0.904 ms

Loss rate: 0.02%

-- Flow 2:

Average throughput: 56.82 Mbit/s

95th percentile per-packet one-way delay: 0.898 ms

Loss rate: 0.00%

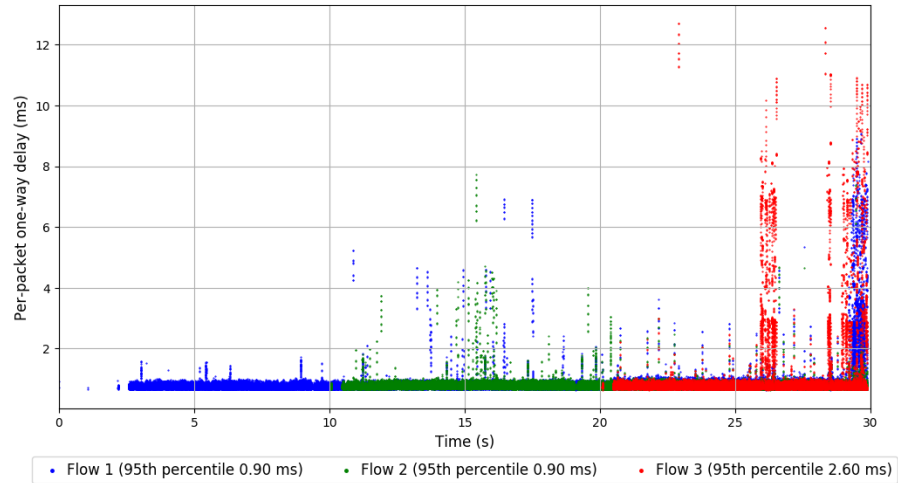
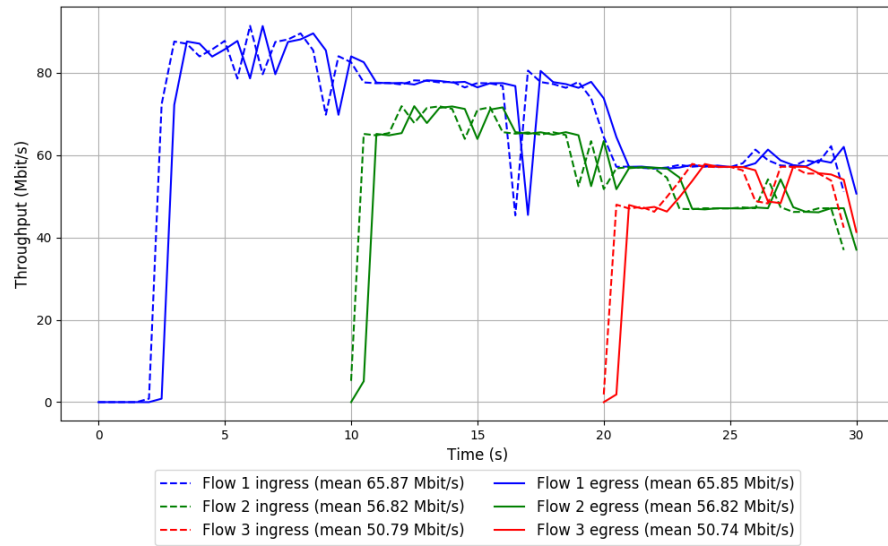
-- Flow 3:

Average throughput: 50.74 Mbit/s

95th percentile per-packet one-way delay: 2.601 ms

Loss rate: 0.11%

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



Run 2: Statistics of QUIC Cubic

Start at: 2018-10-09 21:44:13

End at: 2018-10-09 21:44:43

Local clock offset: -3.465 ms

Remote clock offset: 3.231 ms

# Below is generated by plot.py at 2018-10-09 23:55:13

# Datalink statistics

-- Total of 3 flows:

Average throughput: 123.53 Mbit/s

95th percentile per-packet one-way delay: 0.957 ms

Loss rate: 0.01%

-- Flow 1:

Average throughput: 68.07 Mbit/s

95th percentile per-packet one-way delay: 0.934 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 60.14 Mbit/s

95th percentile per-packet one-way delay: 1.004 ms

Loss rate: 0.01%

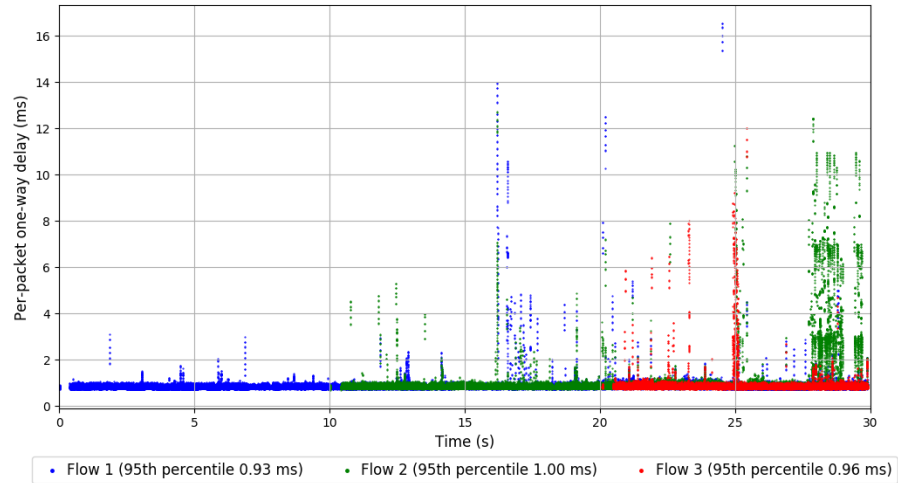
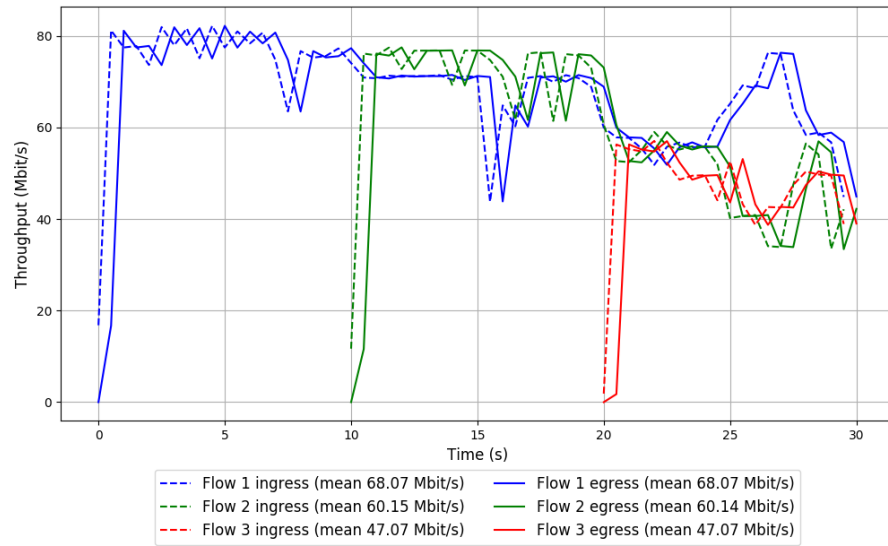
-- Flow 3:

Average throughput: 47.07 Mbit/s

95th percentile per-packet one-way delay: 0.964 ms

Loss rate: 0.01%

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



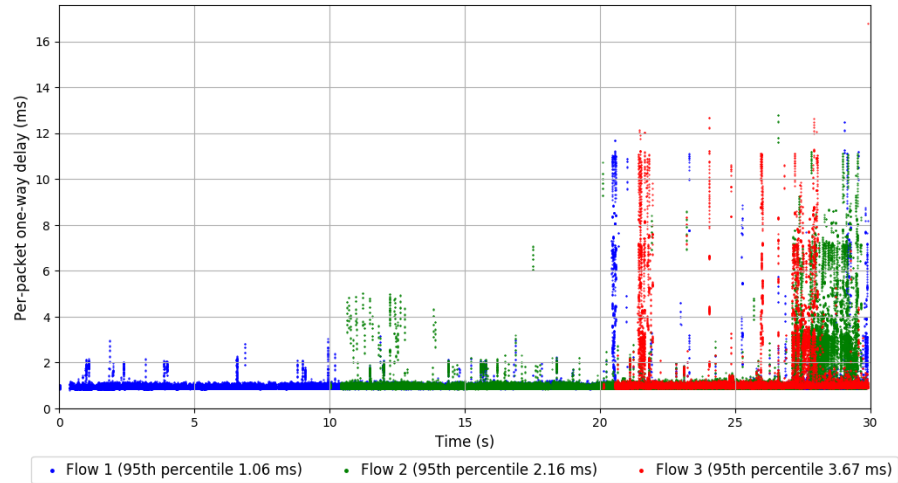
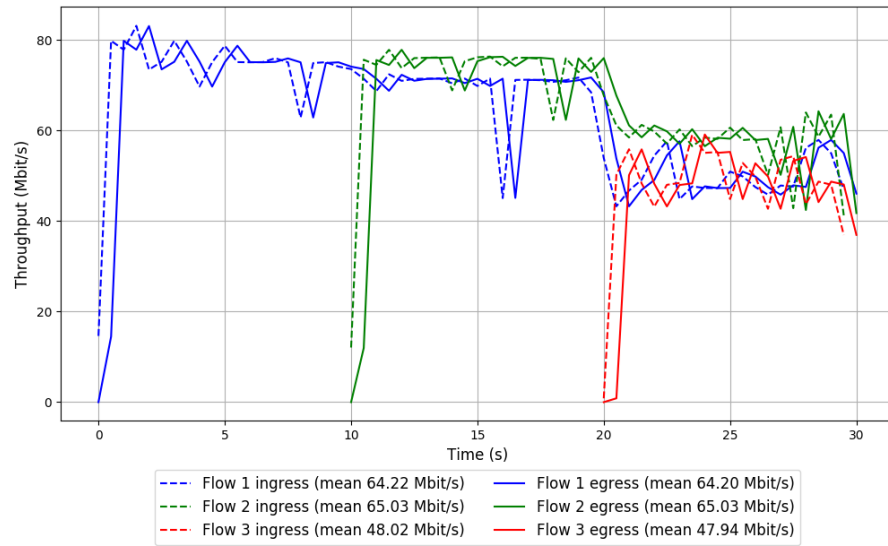


Run 3: Statistics of QUIC Cubic

Start at: 2018-10-09 22:11:33  
End at: 2018-10-09 22:12:03  
Local clock offset: -3.162 ms  
Remote clock offset: -0.237 ms

# Below is generated by plot.py at 2018-10-09 23:55:13  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 123.09 Mbit/s  
95th percentile per-packet one-way delay: 1.198 ms  
Loss rate: 0.02%  
-- Flow 1:  
Average throughput: 64.20 Mbit/s  
95th percentile per-packet one-way delay: 1.062 ms  
Loss rate: 0.03%  
-- Flow 2:  
Average throughput: 65.03 Mbit/s  
95th percentile per-packet one-way delay: 2.159 ms  
Loss rate: 0.01%  
-- Flow 3:  
Average throughput: 47.94 Mbit/s  
95th percentile per-packet one-way delay: 3.666 ms  
Loss rate: 0.02%

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

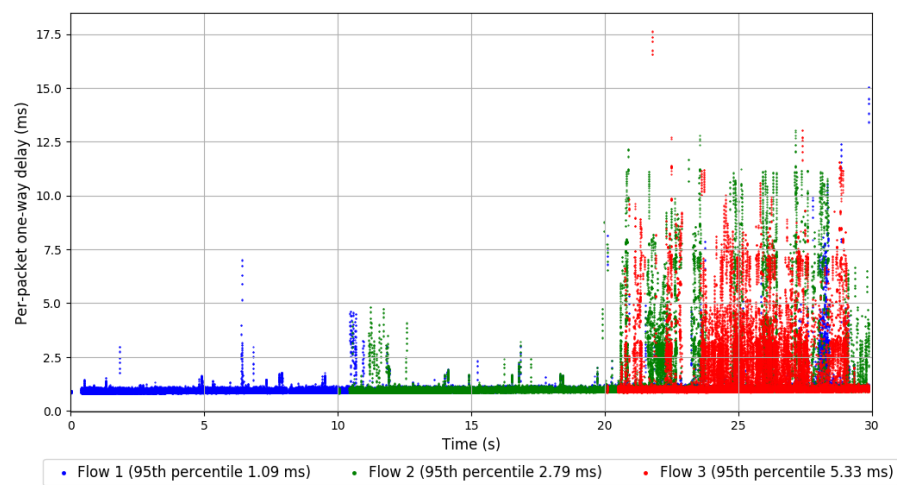
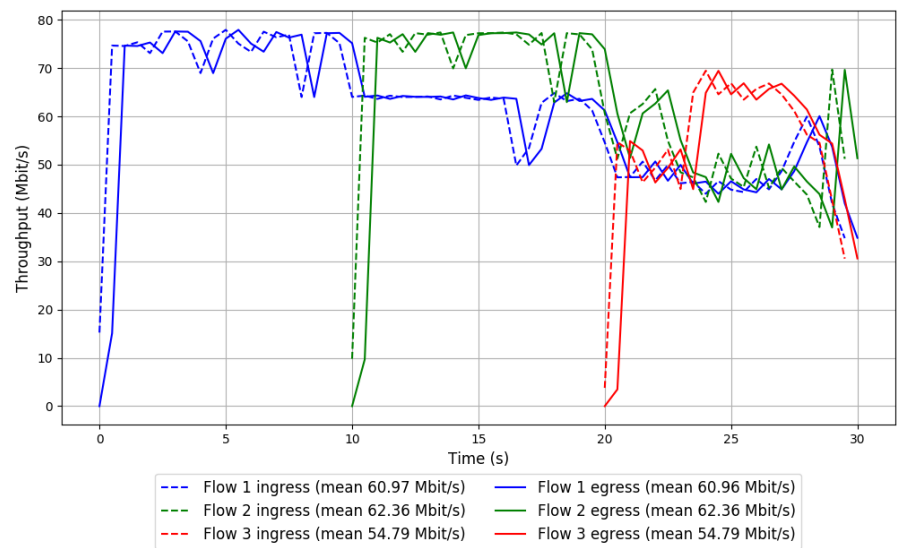


Run 4: Statistics of QUIC Cubic

Start at: 2018-10-09 22:38:36  
End at: 2018-10-09 22:39:06  
Local clock offset: -0.139 ms  
Remote clock offset: -3.373 ms

# Below is generated by plot.py at 2018-10-09 23:55:13  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 120.42 Mbit/s  
95th percentile per-packet one-way delay: 2.576 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 60.96 Mbit/s  
95th percentile per-packet one-way delay: 1.094 ms  
Loss rate: 0.01%  
-- Flow 2:  
Average throughput: 62.36 Mbit/s  
95th percentile per-packet one-way delay: 2.791 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 54.79 Mbit/s  
95th percentile per-packet one-way delay: 5.333 ms  
Loss rate: 0.00%

Run 4: Report of QUIC Cubic — Data Link

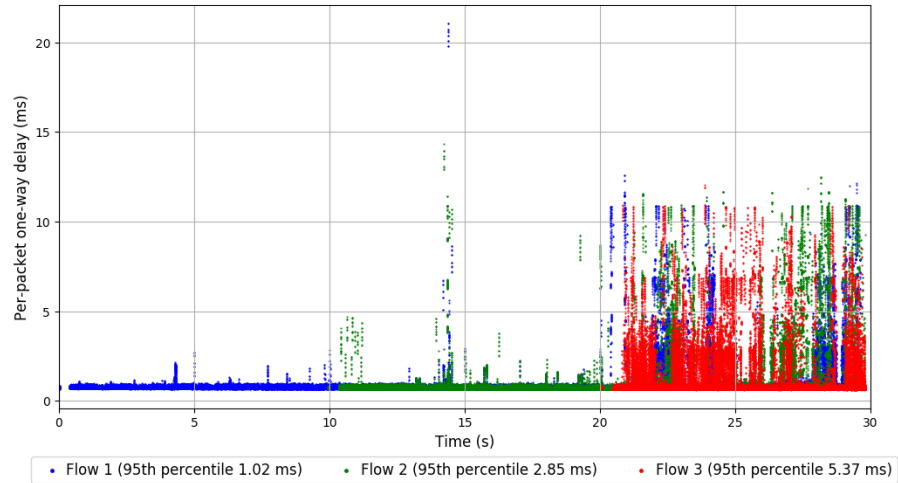
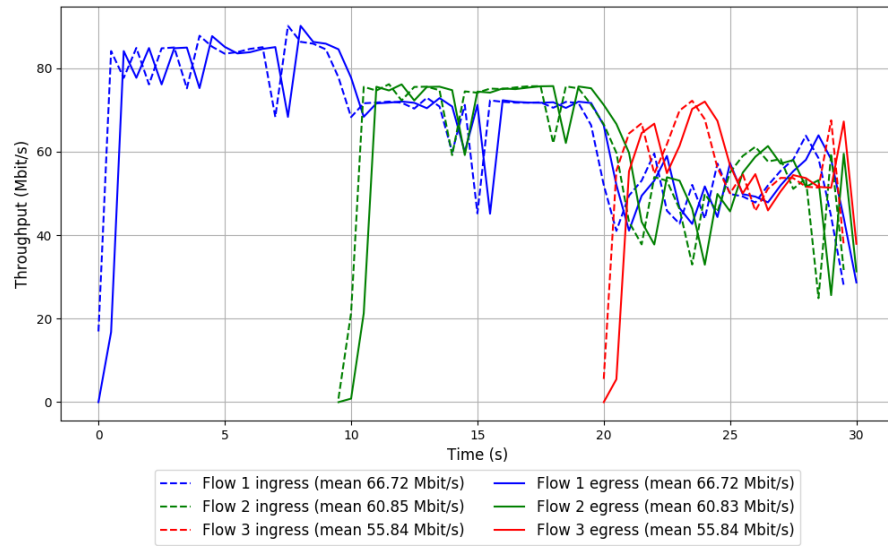


Run 5: Statistics of QUIC Cubic

Start at: 2018-10-09 23:05:45  
End at: 2018-10-09 23:06:15  
Local clock offset: -1.844 ms  
Remote clock offset: -5.237 ms

# Below is generated by plot.py at 2018-10-09 23:55:13  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 125.56 Mbit/s  
95th percentile per-packet one-way delay: 2.726 ms  
Loss rate: 0.01%  
-- Flow 1:  
Average throughput: 66.72 Mbit/s  
95th percentile per-packet one-way delay: 1.019 ms  
Loss rate: 0.00%  
-- Flow 2:  
Average throughput: 60.83 Mbit/s  
95th percentile per-packet one-way delay: 2.850 ms  
Loss rate: 0.02%  
-- Flow 3:  
Average throughput: 55.84 Mbit/s  
95th percentile per-packet one-way delay: 5.365 ms  
Loss rate: 0.00%

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

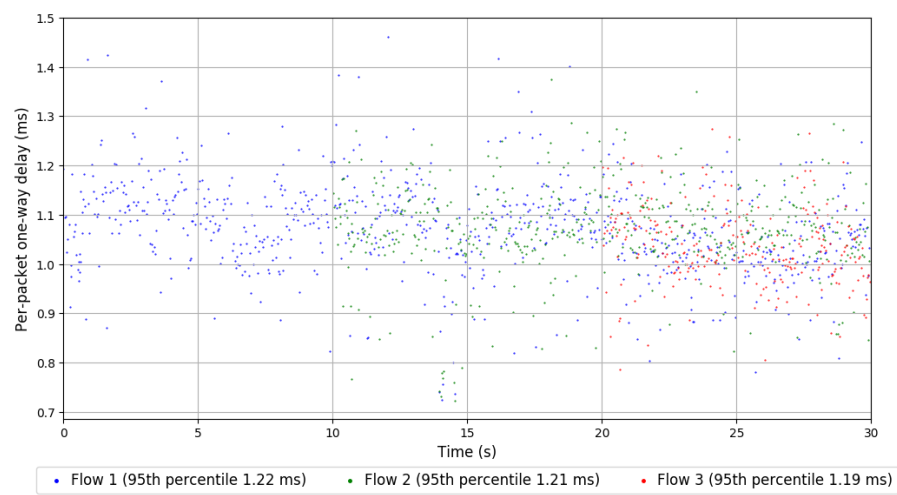
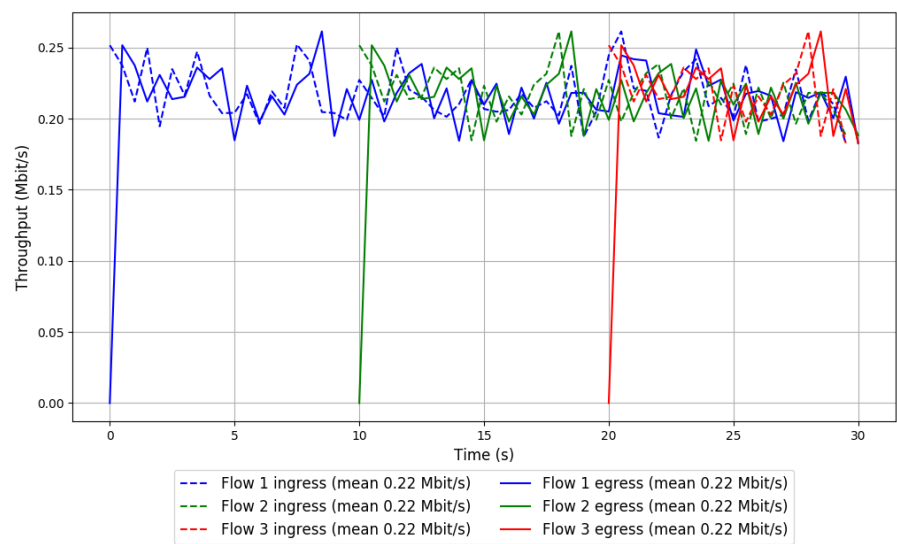


```
Run 1: Statistics of SReAM

Start at: 2018-10-09 21:10:15
End at: 2018-10-09 21:10:45
Local clock offset: -3.787 ms
Remote clock offset: 3.272 ms

# Below is generated by plot.py at 2018-10-09 23:55:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 1.208 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.215 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.208 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.189 ms
Loss rate: 0.00%
```

Run 1: Report of SReAM — Data Link



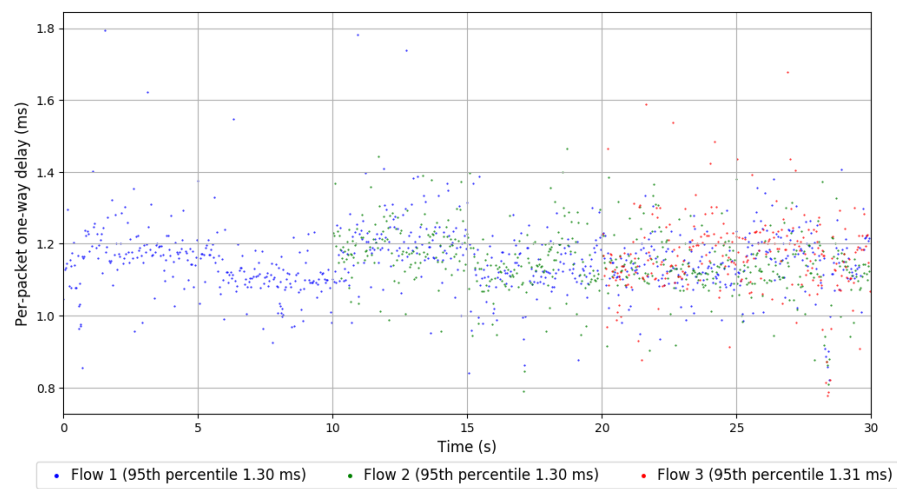
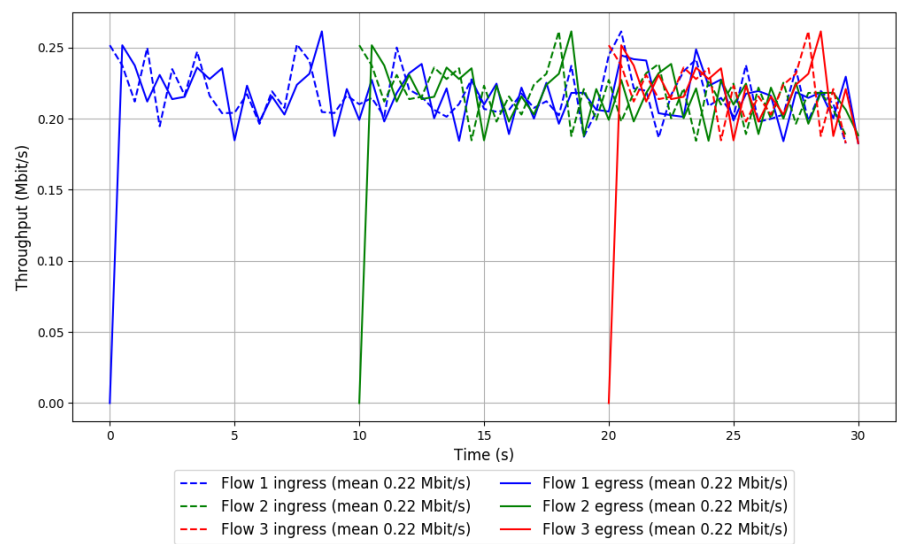


Run 2: Statistics of SReAM

Start at: 2018-10-09 21:37:31  
End at: 2018-10-09 21:38:01  
Local clock offset: -3.518 ms  
Remote clock offset: 3.193 ms

# Below is generated by plot.py at 2018-10-09 23:55:13  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 0.44 Mbit/s  
95th percentile per-packet one-way delay: 1.300 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 1.297 ms  
Loss rate: 0.00%  
-- Flow 2:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 1.299 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 1.307 ms  
Loss rate: 0.00%

Run 2: Report of SReAM — Data Link



Run 3: Statistics of SReAM

Start at: 2018-10-09 22:04:52

End at: 2018-10-09 22:05:22

Local clock offset: -3.2 ms

Remote clock offset: 0.126 ms

# Below is generated by plot.py at 2018-10-09 23:55:13

# Datalink statistics

-- Total of 3 flows:

Average throughput: 0.44 Mbit/s

95th percentile per-packet one-way delay: 1.304 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 1.301 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 1.322 ms

Loss rate: 0.00%

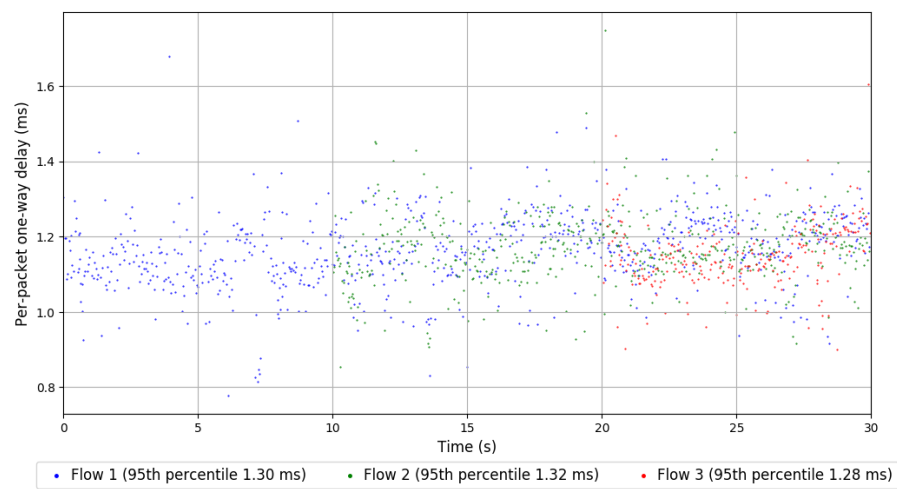
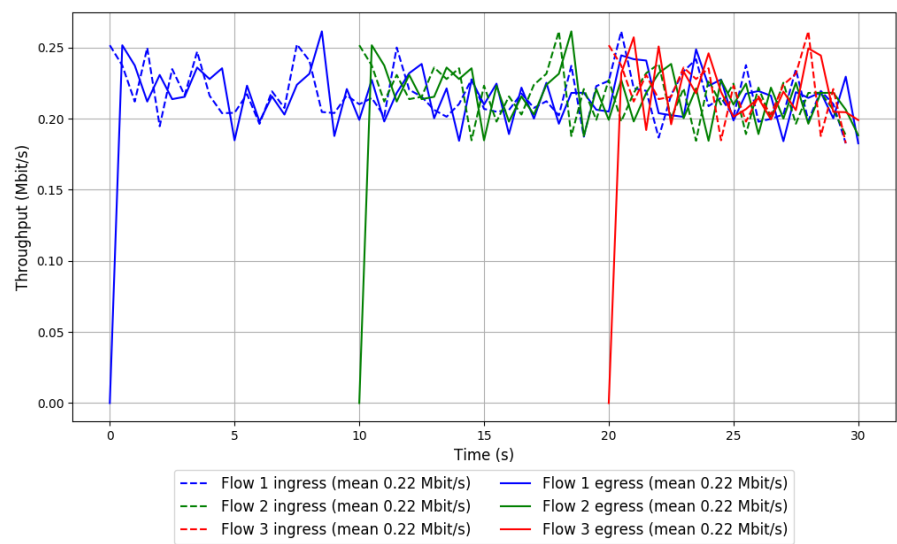
-- Flow 3:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 1.282 ms

Loss rate: 0.00%

Run 3: Report of SReAM — Data Link

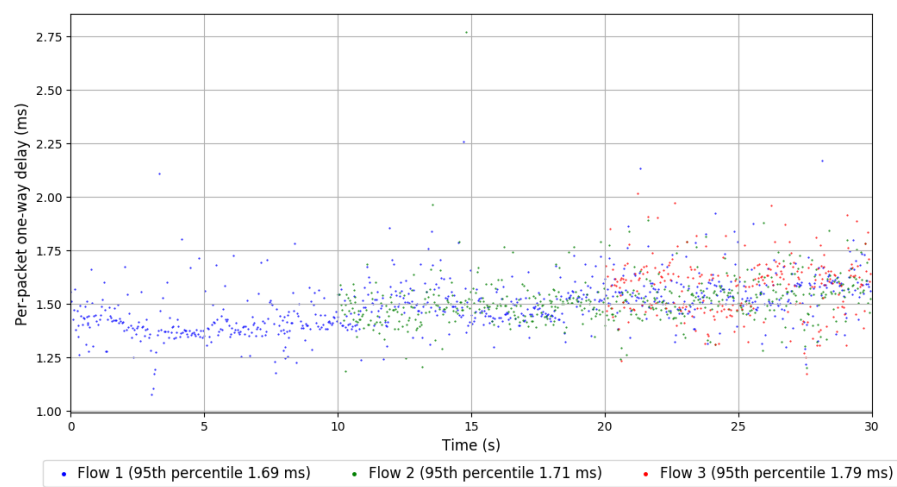
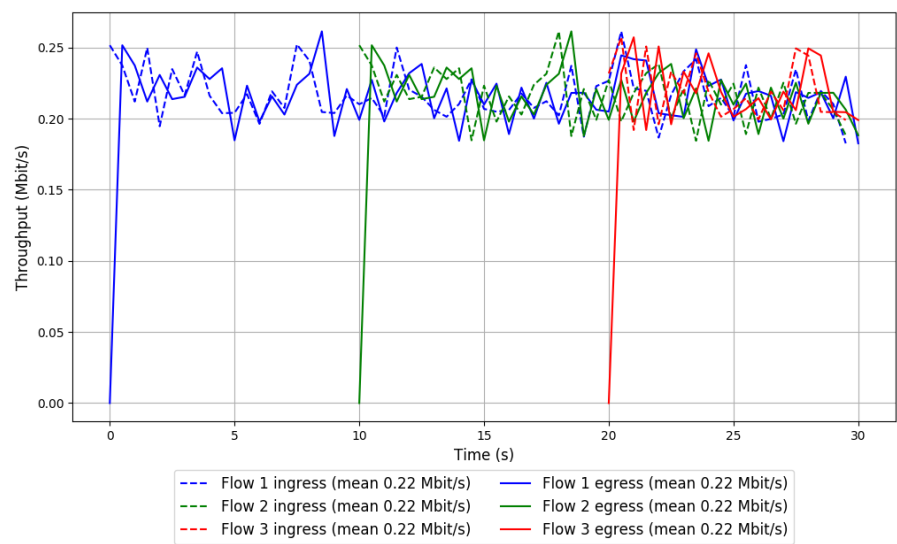


Run 4: Statistics of SReAM

Start at: 2018-10-09 22:31:56  
End at: 2018-10-09 22:32:26  
Local clock offset: -1.242 ms  
Remote clock offset: -2.513 ms

# Below is generated by plot.py at 2018-10-09 23:55:14  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 0.44 Mbit/s  
95th percentile per-packet one-way delay: 1.723 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 1.692 ms  
Loss rate: 0.00%  
-- Flow 2:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 1.708 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 1.793 ms  
Loss rate: 0.00%

Run 4: Report of SReAM — Data Link

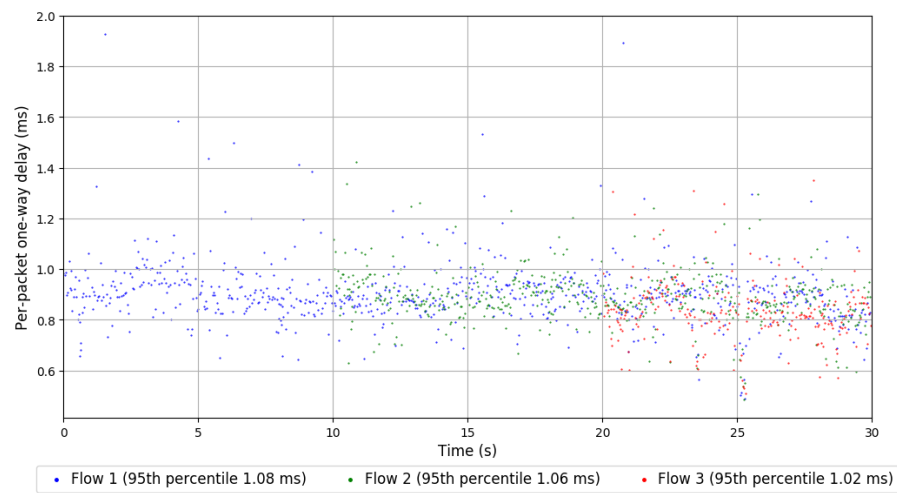
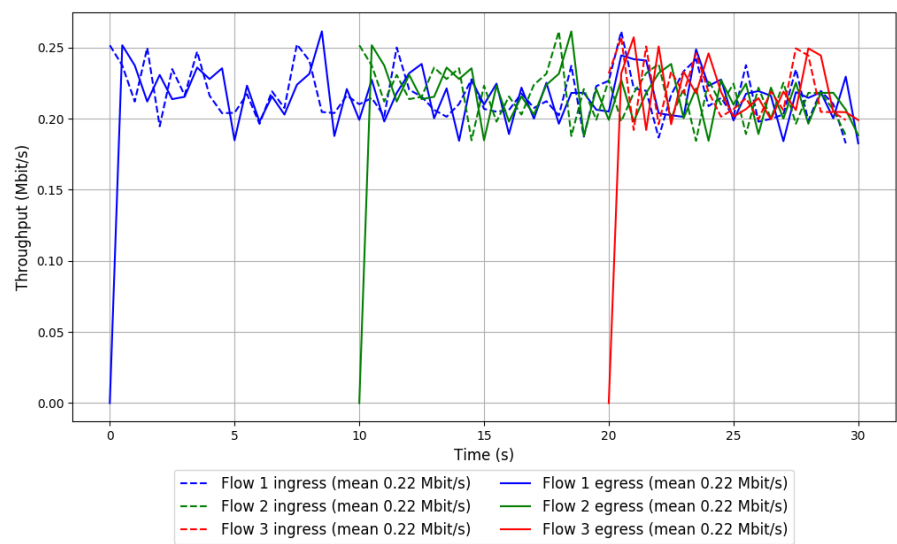


Run 5: Statistics of SReAM

Start at: 2018-10-09 22:59:04  
End at: 2018-10-09 22:59:34  
Local clock offset: -0.451 ms  
Remote clock offset: -4.816 ms

# Below is generated by plot.py at 2018-10-09 23:55:14  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 0.44 Mbit/s  
95th percentile per-packet one-way delay: 1.064 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 1.083 ms  
Loss rate: 0.00%  
-- Flow 2:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 1.060 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 1.016 ms  
Loss rate: 0.00%

Run 5: Report of SReAM — Data Link





Run 1: Statistics of Sprout

Start at: 2018-10-09 21:11:34

End at: 2018-10-09 21:12:04

Local clock offset: -3.9 ms

Remote clock offset: 3.342 ms

# Below is generated by plot.py at 2018-10-09 23:55:14

# Datalink statistics

-- Total of 3 flows:

Average throughput: 99.38 Mbit/s

95th percentile per-packet one-way delay: 4.629 ms

Loss rate: 0.24%

-- Flow 1:

Average throughput: 50.02 Mbit/s

95th percentile per-packet one-way delay: 4.561 ms

Loss rate: 0.11%

-- Flow 2:

Average throughput: 49.72 Mbit/s

95th percentile per-packet one-way delay: 4.501 ms

Loss rate: 0.28%

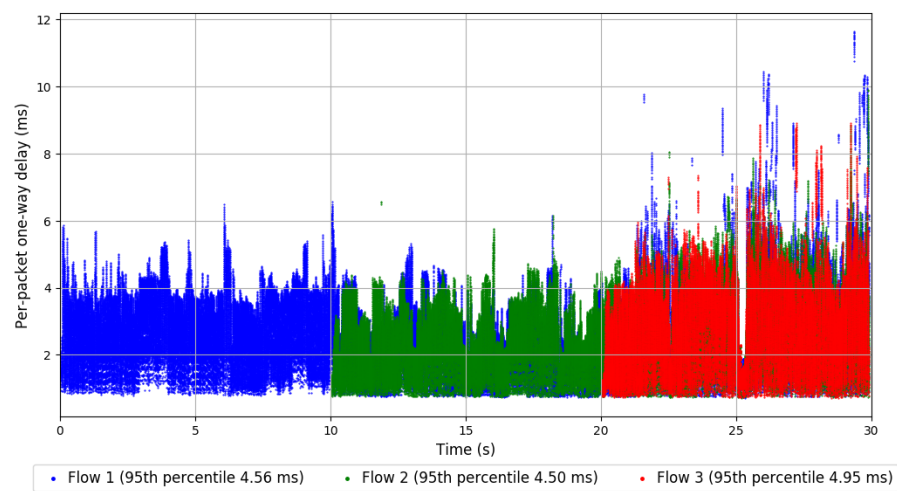
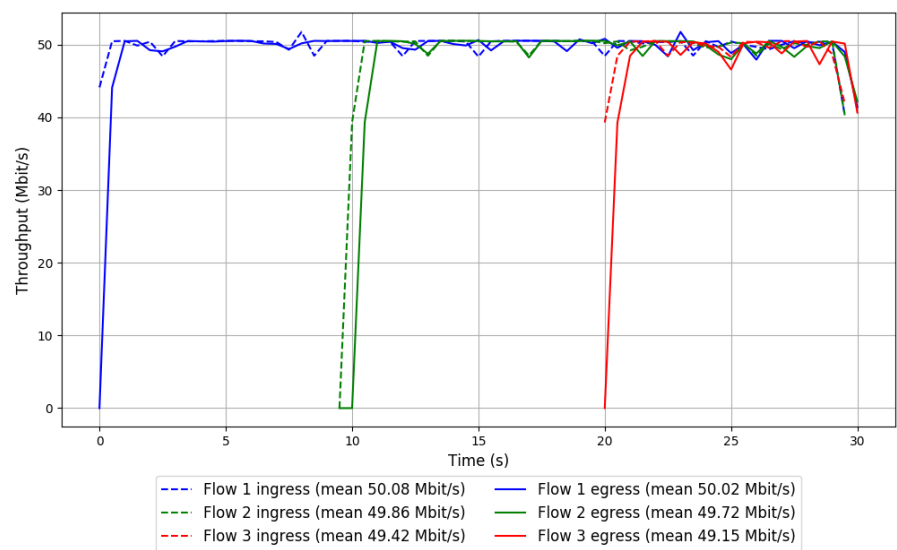
-- Flow 3:

Average throughput: 49.15 Mbit/s

95th percentile per-packet one-way delay: 4.948 ms

Loss rate: 0.55%

Run 1: Report of Sprout — Data Link

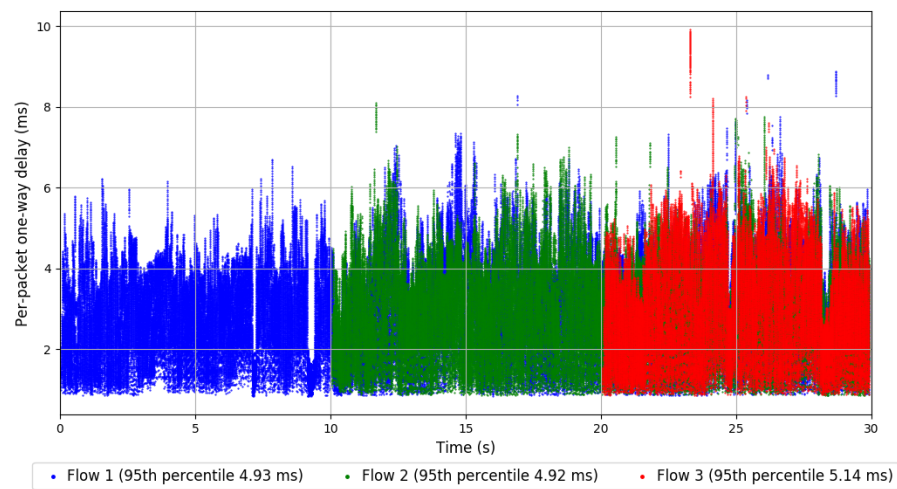
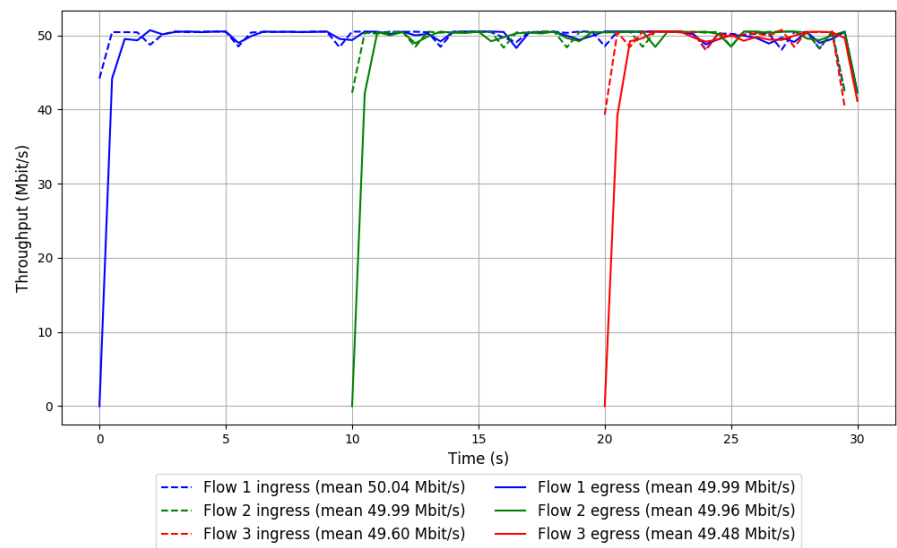


## Run 2: Statistics of Sprout

Start at: 2018-10-09 21:38:50  
End at: 2018-10-09 21:39:20  
Local clock offset: -3.503 ms  
Remote clock offset: 3.244 ms

```
# Below is generated by plot.py at 2018-10-09 23:55:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 99.57 Mbit/s
95th percentile per-packet one-way delay: 4.973 ms
Loss rate: 0.10%
-- Flow 1:
Average throughput: 49.99 Mbit/s
95th percentile per-packet one-way delay: 4.931 ms
Loss rate: 0.09%
-- Flow 2:
Average throughput: 49.96 Mbit/s
95th percentile per-packet one-way delay: 4.918 ms
Loss rate: 0.05%
-- Flow 3:
Average throughput: 49.48 Mbit/s
95th percentile per-packet one-way delay: 5.143 ms
Loss rate: 0.21%
```

Run 2: Report of Sprout — Data Link

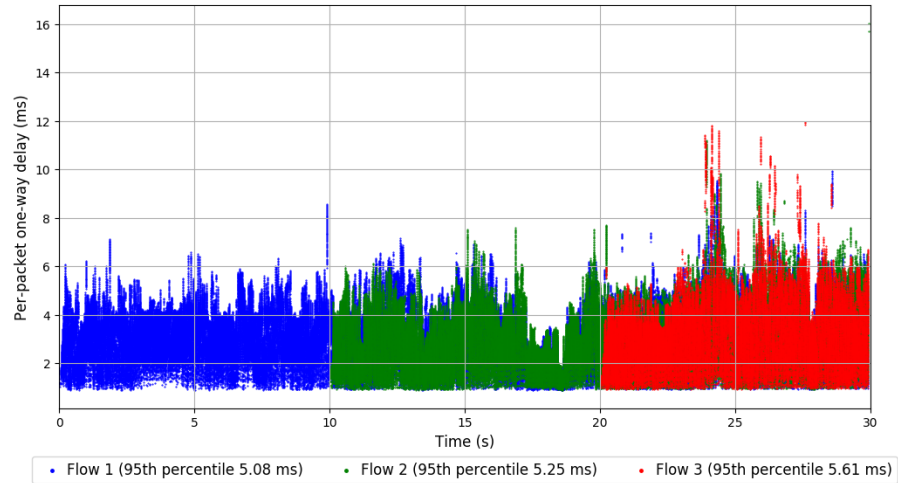
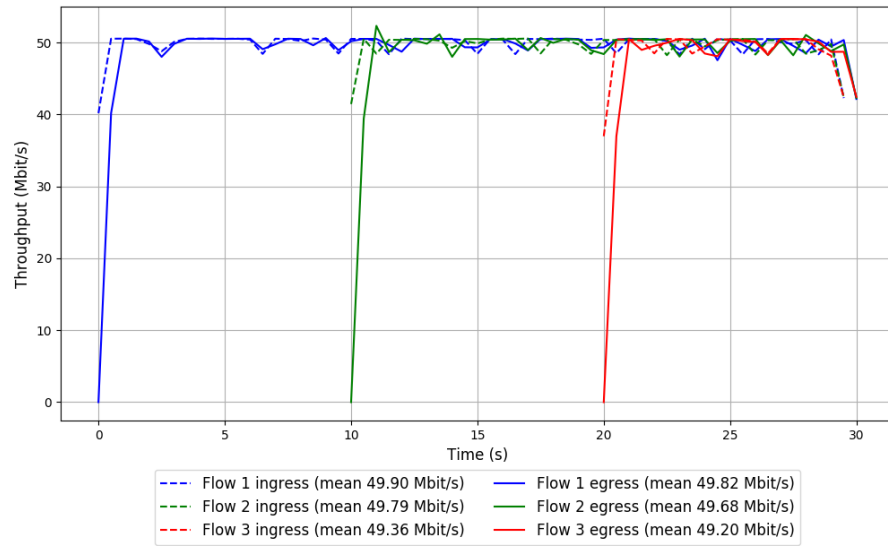


### Run 3: Statistics of Sprout

Start at: 2018-10-09 22:06:11  
End at: 2018-10-09 22:06:41  
Local clock offset: -3.162 ms  
Remote clock offset: 0.117 ms

```
# Below is generated by plot.py at 2018-10-09 23:55:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 99.13 Mbit/s
95th percentile per-packet one-way delay: 5.228 ms
Loss rate: 0.17%
-- Flow 1:
Average throughput: 49.82 Mbit/s
95th percentile per-packet one-way delay: 5.082 ms
Loss rate: 0.15%
-- Flow 2:
Average throughput: 49.68 Mbit/s
95th percentile per-packet one-way delay: 5.251 ms
Loss rate: 0.14%
-- Flow 3:
Average throughput: 49.20 Mbit/s
95th percentile per-packet one-way delay: 5.610 ms
Loss rate: 0.27%
```

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

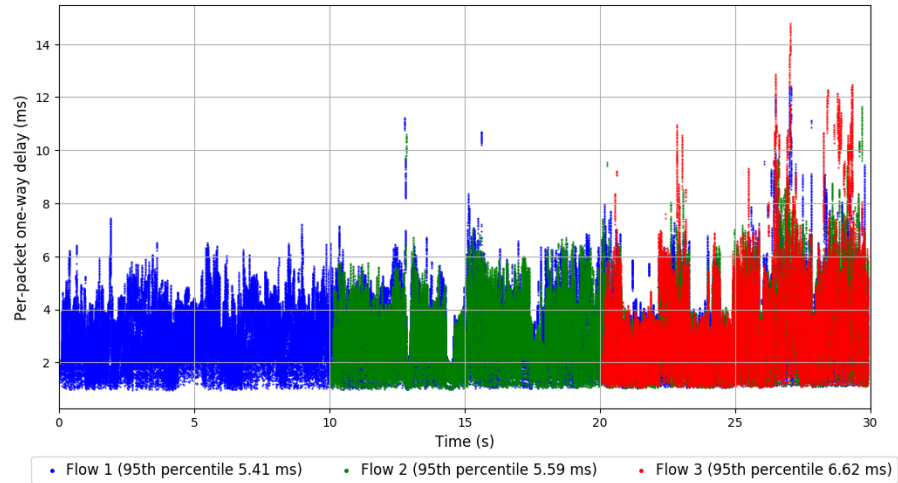
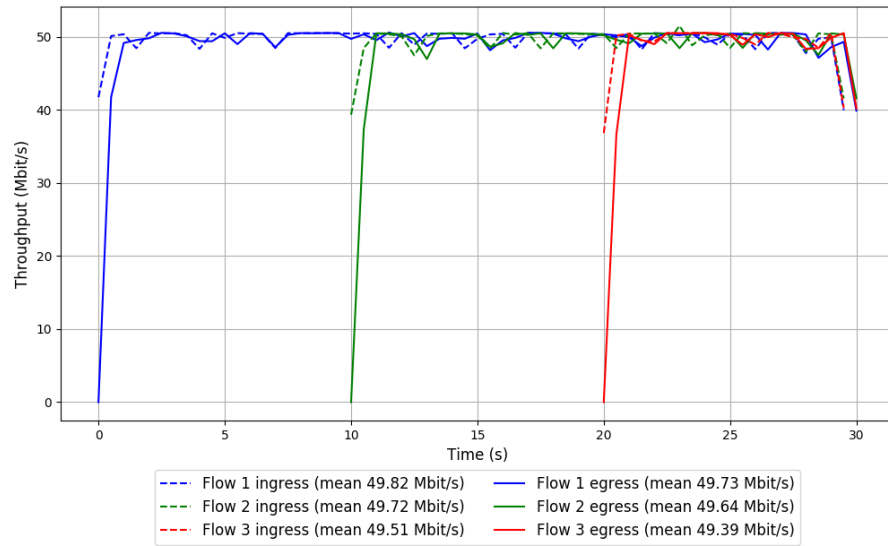


#### Run 4: Statistics of Sprout

Start at: 2018-10-09 22:33:15  
End at: 2018-10-09 22:33:45  
Local clock offset: -0.968 ms  
Remote clock offset: -2.774 ms

```
# Below is generated by plot.py at 2018-10-09 23:55:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 99.05 Mbit/s
95th percentile per-packet one-way delay: 5.648 ms
Loss rate: 0.17%
-- Flow 1:
Average throughput: 49.73 Mbit/s
95th percentile per-packet one-way delay: 5.405 ms
Loss rate: 0.18%
-- Flow 2:
Average throughput: 49.64 Mbit/s
95th percentile per-packet one-way delay: 5.589 ms
Loss rate: 0.15%
-- Flow 3:
Average throughput: 49.39 Mbit/s
95th percentile per-packet one-way delay: 6.623 ms
Loss rate: 0.20%
```

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



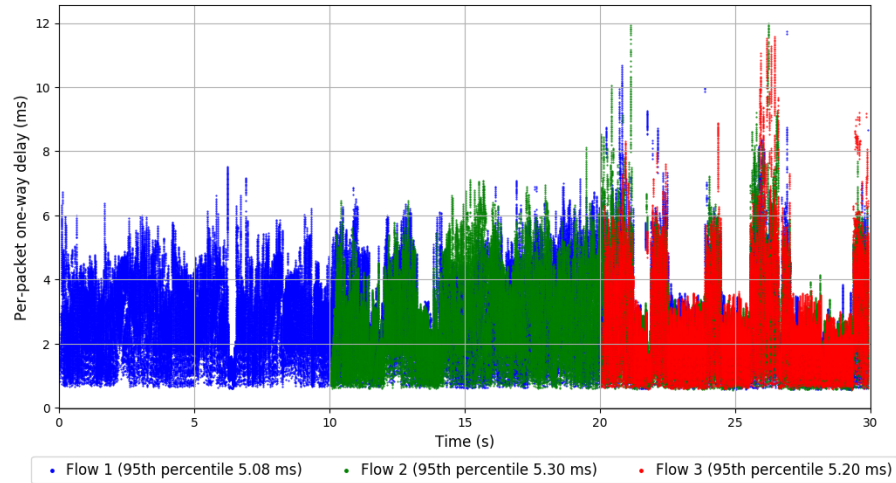
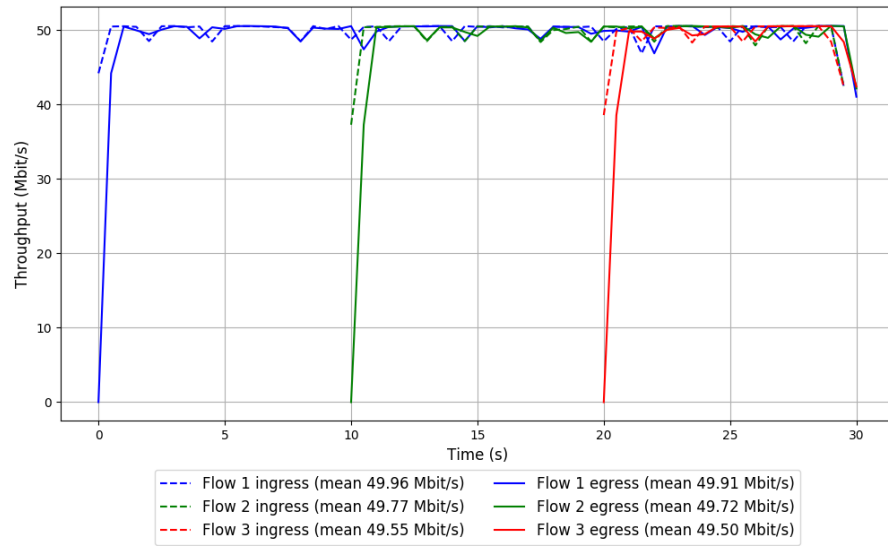


Run 5: Statistics of Sprout

Start at: 2018-10-09 23:00:23  
End at: 2018-10-09 23:00:53  
Local clock offset: -0.816 ms  
Remote clock offset: -4.883 ms

```
# Below is generated by plot.py at 2018-10-09 23:55:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 99.36 Mbit/s
95th percentile per-packet one-way delay: 5.171 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 49.91 Mbit/s
95th percentile per-packet one-way delay: 5.078 ms
Loss rate: 0.09%
-- Flow 2:
Average throughput: 49.72 Mbit/s
95th percentile per-packet one-way delay: 5.303 ms
Loss rate: 0.08%
-- Flow 3:
Average throughput: 49.50 Mbit/s
95th percentile per-packet one-way delay: 5.202 ms
Loss rate: 0.05%
```

# Run 5: Report of Sprout — Data Link

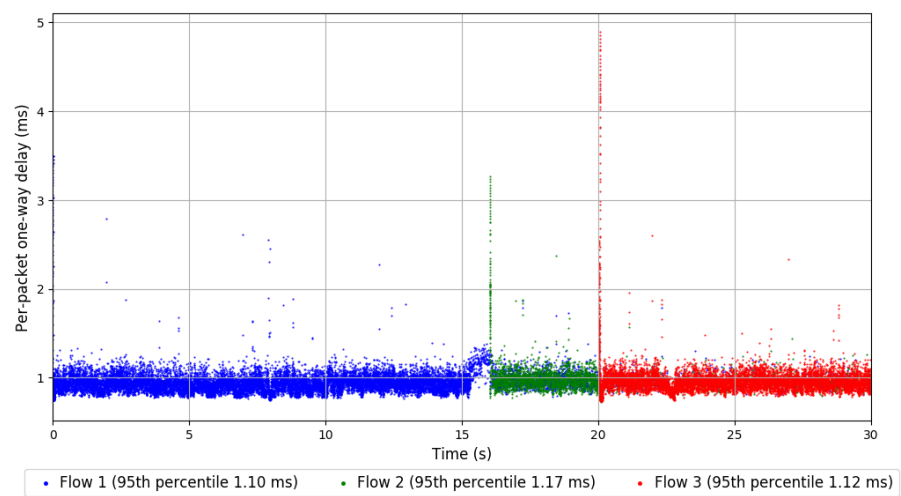
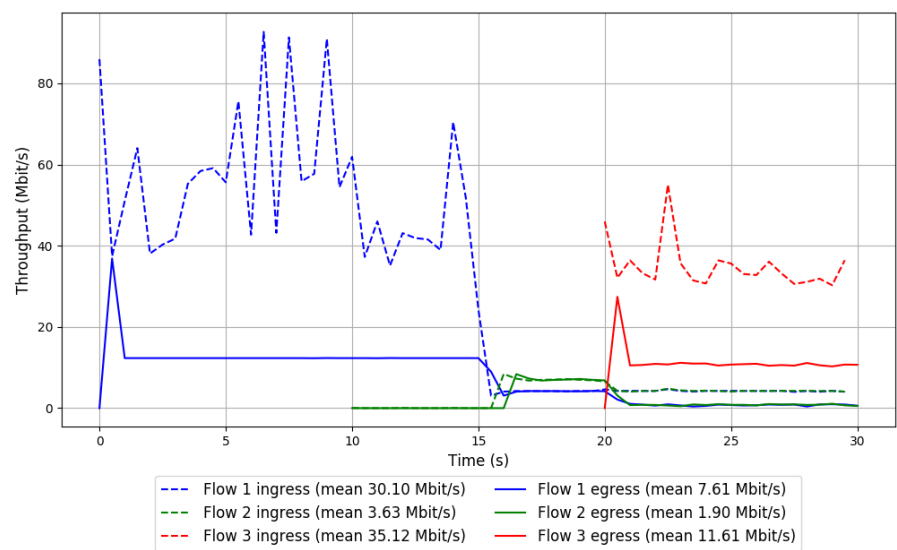


```
Run 1: Statistics of TaoVA-100x

Start at: 2018-10-09 21:15:37
End at: 2018-10-09 21:16:07
Local clock offset: -4.227 ms
Remote clock offset: 3.348 ms

# Below is generated by plot.py at 2018-10-09 23:55:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.73 Mbit/s
95th percentile per-packet one-way delay: 1.114 ms
Loss rate: 71.19%
-- Flow 1:
Average throughput: 7.61 Mbit/s
95th percentile per-packet one-way delay: 1.100 ms
Loss rate: 74.72%
-- Flow 2:
Average throughput: 1.90 Mbit/s
95th percentile per-packet one-way delay: 1.172 ms
Loss rate: 47.75%
-- Flow 3:
Average throughput: 11.61 Mbit/s
95th percentile per-packet one-way delay: 1.120 ms
Loss rate: 66.94%
```

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



Run 2: Statistics of TaoVA-100x

Start at: 2018-10-09 21:42:53

End at: 2018-10-09 21:43:23

Local clock offset: -3.466 ms

Remote clock offset: 3.261 ms

# Below is generated by plot.py at 2018-10-09 23:55:14

# Datalink statistics

-- Total of 3 flows:

Average throughput: 10.46 Mbit/s

95th percentile per-packet one-way delay: 1.213 ms

Loss rate: 67.43%

-- Flow 1:

Average throughput: 2.39 Mbit/s

95th percentile per-packet one-way delay: 1.309 ms

Loss rate: 49.04%

-- Flow 2:

Average throughput: 12.12 Mbit/s

95th percentile per-packet one-way delay: 1.137 ms

Loss rate: 70.57%

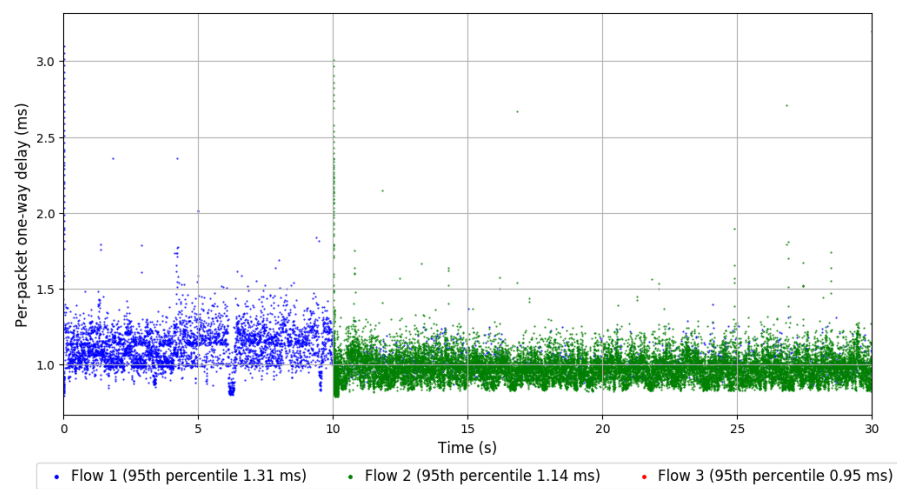
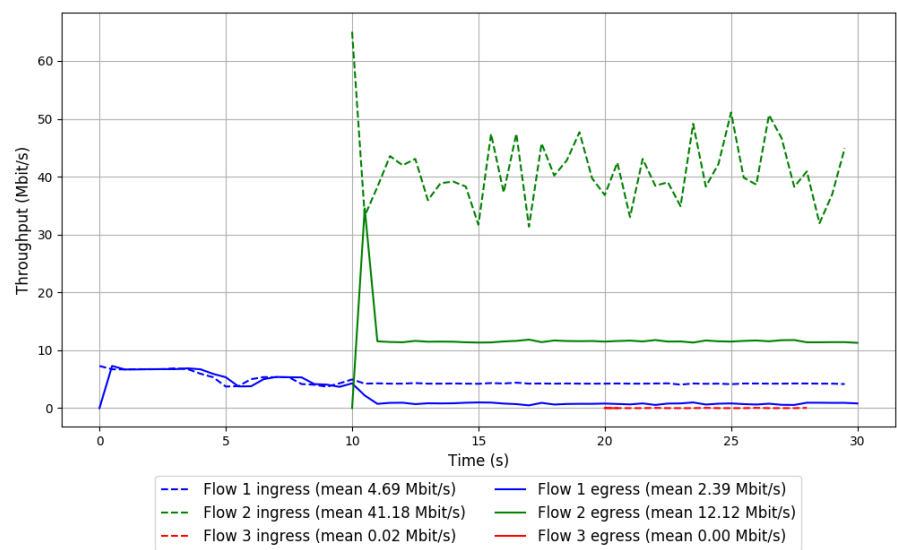
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 0.949 ms

Loss rate: 99.16%

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

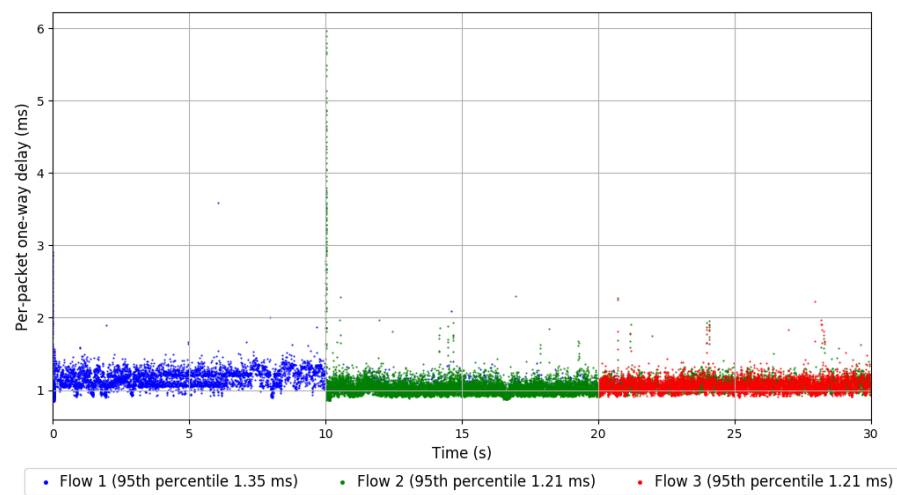
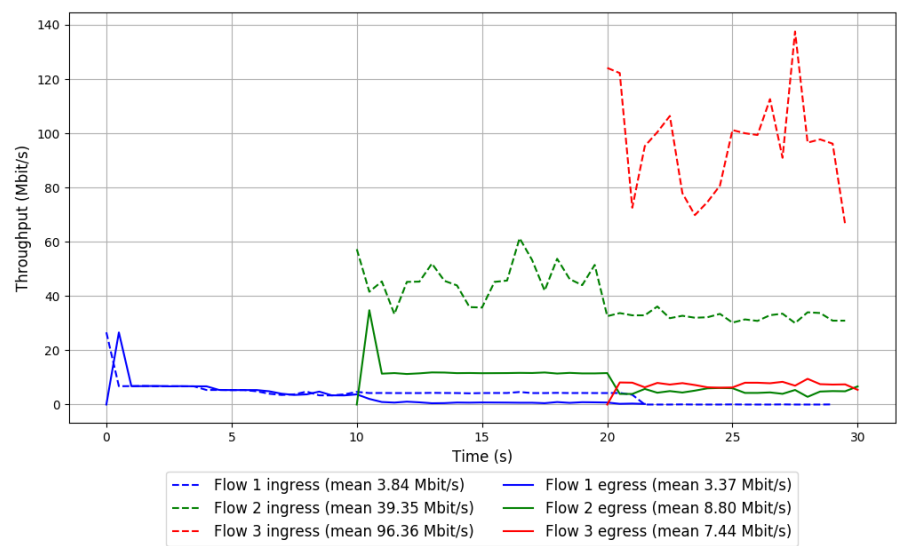


Run 3: Statistics of TaoVA-100x

Start at: 2018-10-09 22:10:13  
End at: 2018-10-09 22:10:43  
Local clock offset: -3.168 ms  
Remote clock offset: -0.189 ms

# Below is generated by plot.py at 2018-10-09 23:55:14  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 10.74 Mbit/s  
95th percentile per-packet one-way delay: 1.269 ms  
Loss rate: 82.69%  
-- Flow 1:  
Average throughput: 3.37 Mbit/s  
95th percentile per-packet one-way delay: 1.351 ms  
Loss rate: 36.05%  
-- Flow 2:  
Average throughput: 8.80 Mbit/s  
95th percentile per-packet one-way delay: 1.205 ms  
Loss rate: 77.63%  
-- Flow 3:  
Average throughput: 7.44 Mbit/s  
95th percentile per-packet one-way delay: 1.205 ms  
Loss rate: 92.29%

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



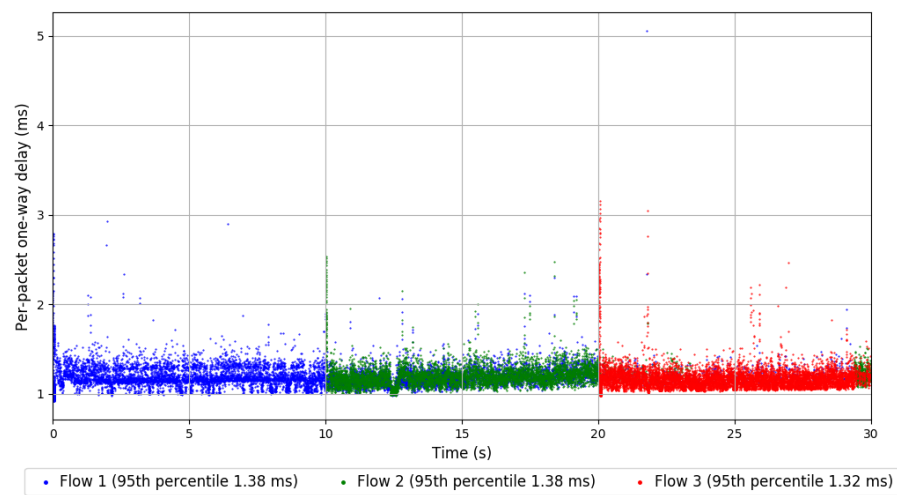
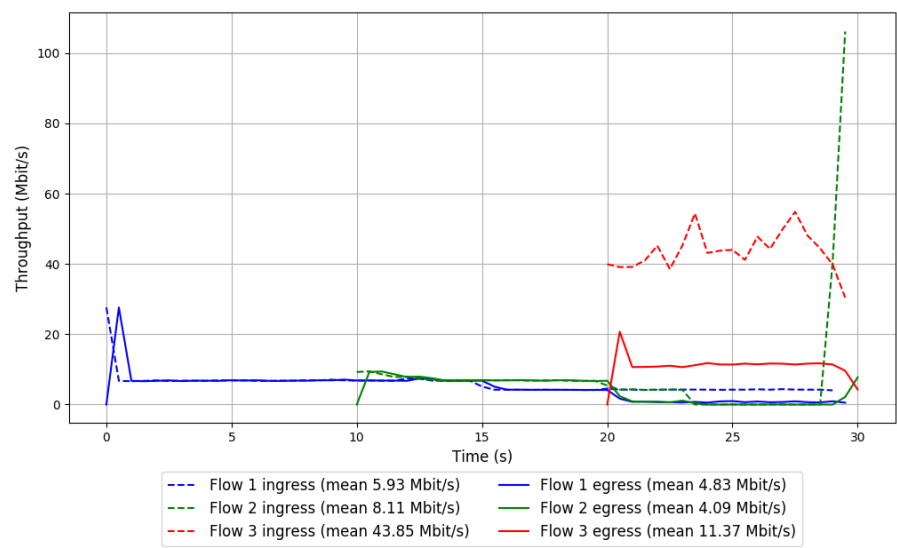


Run 4: Statistics of TaoVA-100x

Start at: 2018-10-09 22:37:17  
End at: 2018-10-09 22:37:47  
Local clock offset: -0.298 ms  
Remote clock offset: -3.141 ms

# Below is generated by plot.py at 2018-10-09 23:55:14  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 11.24 Mbit/s  
95th percentile per-packet one-way delay: 1.364 ms  
Loss rate: 56.46%  
-- Flow 1:  
Average throughput: 4.83 Mbit/s  
95th percentile per-packet one-way delay: 1.378 ms  
Loss rate: 18.85%  
-- Flow 2:  
Average throughput: 4.09 Mbit/s  
95th percentile per-packet one-way delay: 1.381 ms  
Loss rate: 49.56%  
-- Flow 3:  
Average throughput: 11.37 Mbit/s  
95th percentile per-packet one-way delay: 1.320 ms  
Loss rate: 74.06%

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

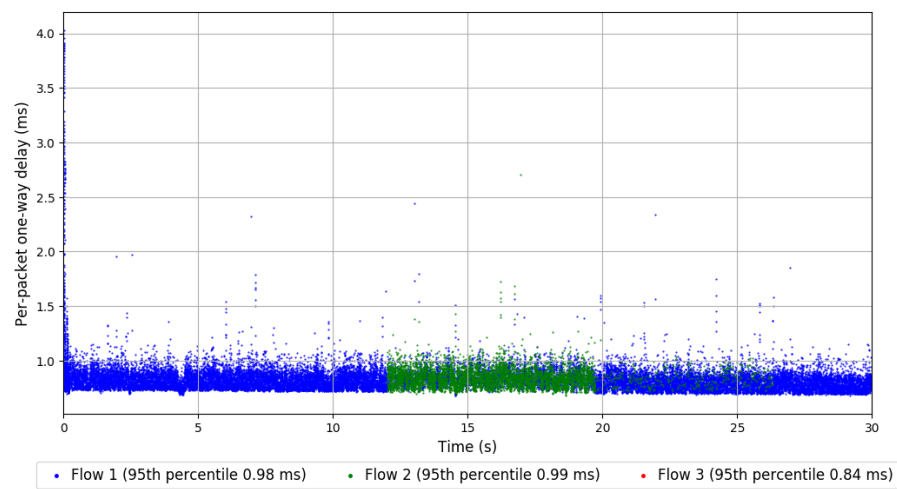
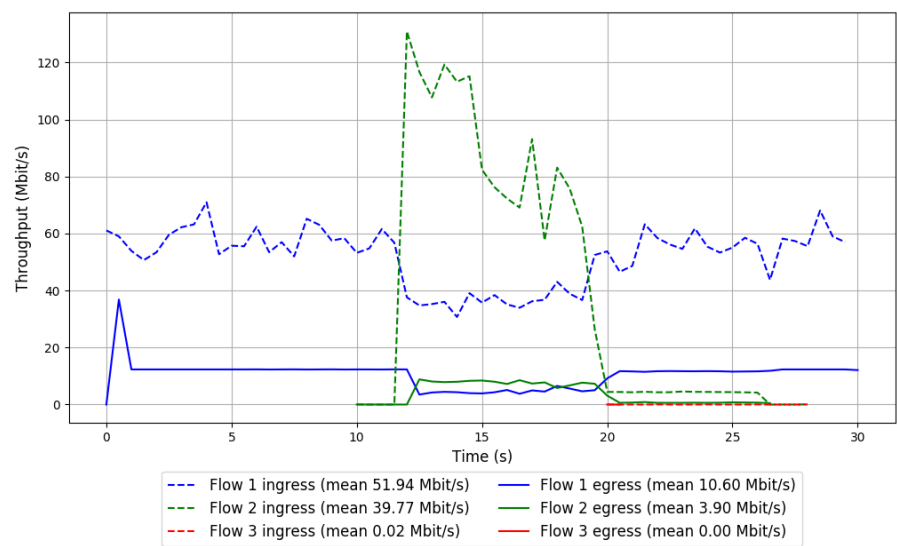


Run 5: Statistics of TaoVA-100x

Start at: 2018-10-09 23:04:25  
End at: 2018-10-09 23:04:55  
Local clock offset: -1.648 ms  
Remote clock offset: -5.149 ms

# Below is generated by plot.py at 2018-10-09 23:55:14  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 12.73 Mbit/s  
95th percentile per-packet one-way delay: 0.982 ms  
Loss rate: 83.31%  
-- Flow 1:  
Average throughput: 10.60 Mbit/s  
95th percentile per-packet one-way delay: 0.978 ms  
Loss rate: 79.59%  
-- Flow 2:  
Average throughput: 3.90 Mbit/s  
95th percentile per-packet one-way delay: 0.991 ms  
Loss rate: 91.26%  
-- Flow 3:  
Average throughput: 0.00 Mbit/s  
95th percentile per-packet one-way delay: 0.842 ms  
Loss rate: 99.16%

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



Run 1: Statistics of TCP Vegas

Start at: 2018-10-09 20:54:10

End at: 2018-10-09 20:54:40

Local clock offset: -2.442 ms

Remote clock offset: 2.991 ms

# Below is generated by plot.py at 2018-10-09 23:56:06

# Datalink statistics

-- Total of 3 flows:

Average throughput: 232.74 Mbit/s

95th percentile per-packet one-way delay: 1.138 ms

Loss rate: 0.02%

-- Flow 1:

Average throughput: 65.92 Mbit/s

95th percentile per-packet one-way delay: 1.179 ms

Loss rate: 0.02%

-- Flow 2:

Average throughput: 186.74 Mbit/s

95th percentile per-packet one-way delay: 1.138 ms

Loss rate: 0.01%

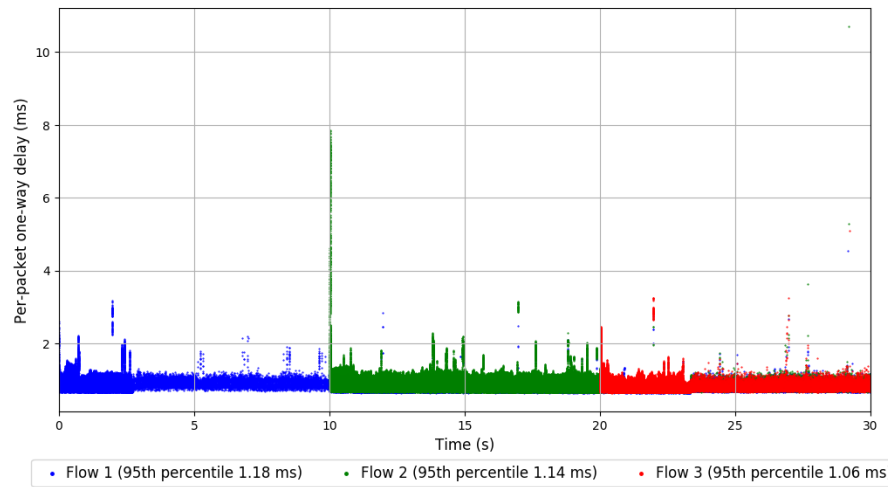
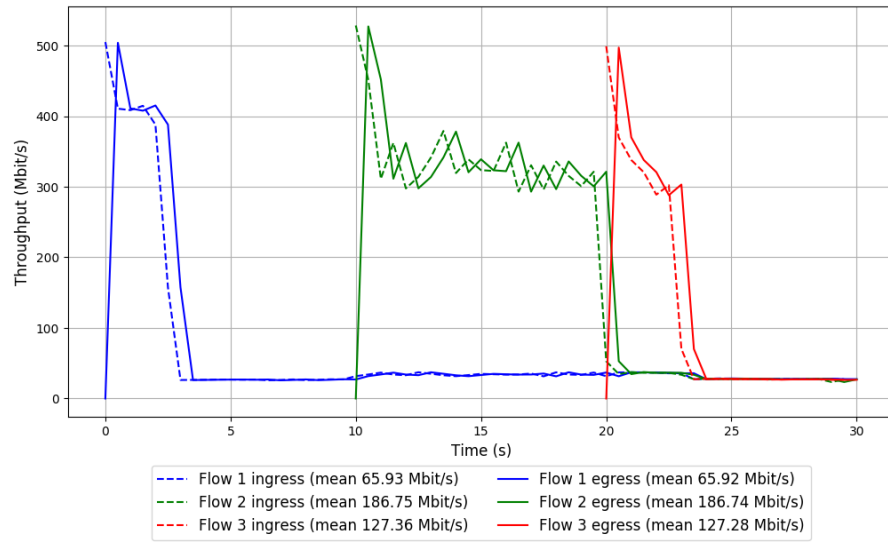
-- Flow 3:

Average throughput: 127.28 Mbit/s

95th percentile per-packet one-way delay: 1.062 ms

Loss rate: 0.06%

# Run 1: Report of TCP Vegas — Data Link

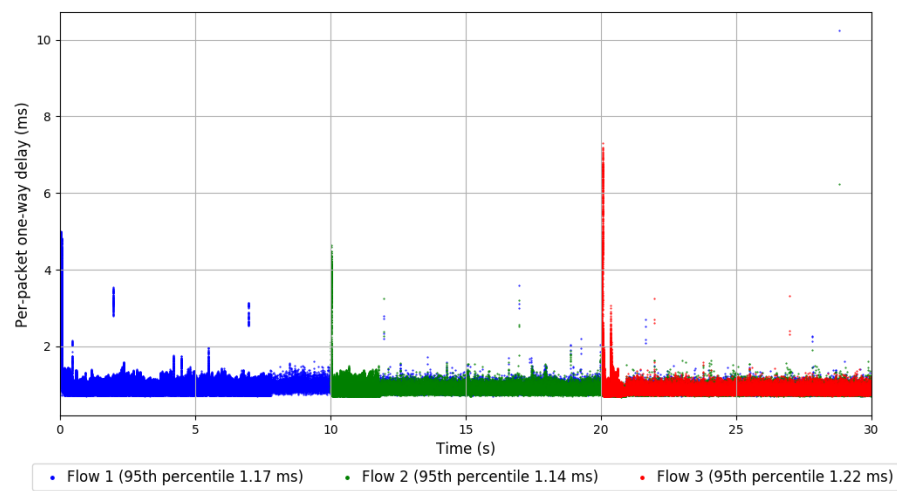
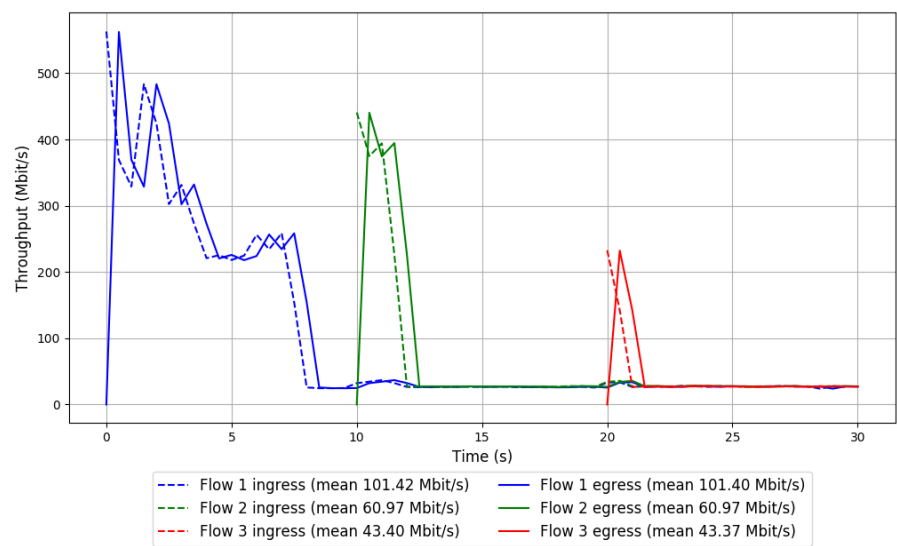


Run 2: Statistics of TCP Vegas

Start at: 2018-10-09 21:21:23  
End at: 2018-10-09 21:21:53  
Local clock offset: -4.706 ms  
Remote clock offset: 3.181 ms

# Below is generated by plot.py at 2018-10-09 23:56:06  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 156.43 Mbit/s  
95th percentile per-packet one-way delay: 1.161 ms  
Loss rate: 0.02%  
-- Flow 1:  
Average throughput: 101.40 Mbit/s  
95th percentile per-packet one-way delay: 1.169 ms  
Loss rate: 0.02%  
-- Flow 2:  
Average throughput: 60.97 Mbit/s  
95th percentile per-packet one-way delay: 1.135 ms  
Loss rate: 0.01%  
-- Flow 3:  
Average throughput: 43.37 Mbit/s  
95th percentile per-packet one-way delay: 1.223 ms  
Loss rate: 0.07%

Run 2: Report of TCP Vegas — Data Link





Run 3: Statistics of TCP Vegas

Start at: 2018-10-09 21:48:41

End at: 2018-10-09 21:49:11

Local clock offset: -3.547 ms

Remote clock offset: 3.286 ms

# Below is generated by plot.py at 2018-10-09 23:58:03

# Datalink statistics

-- Total of 3 flows:

Average throughput: 374.94 Mbit/s

95th percentile per-packet one-way delay: 1.441 ms

Loss rate: 0.01%

-- Flow 1:

Average throughput: 69.29 Mbit/s

95th percentile per-packet one-way delay: 1.325 ms

Loss rate: 0.02%

-- Flow 2:

Average throughput: 313.91 Mbit/s

95th percentile per-packet one-way delay: 1.430 ms

Loss rate: 0.01%

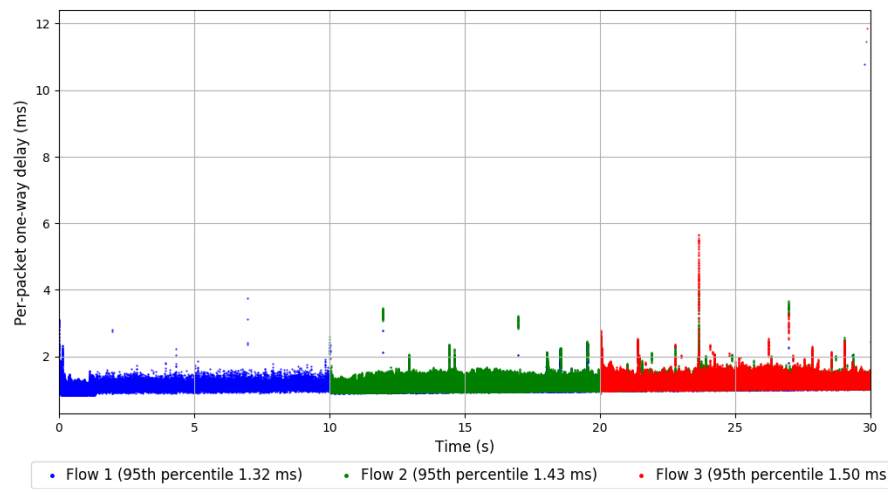
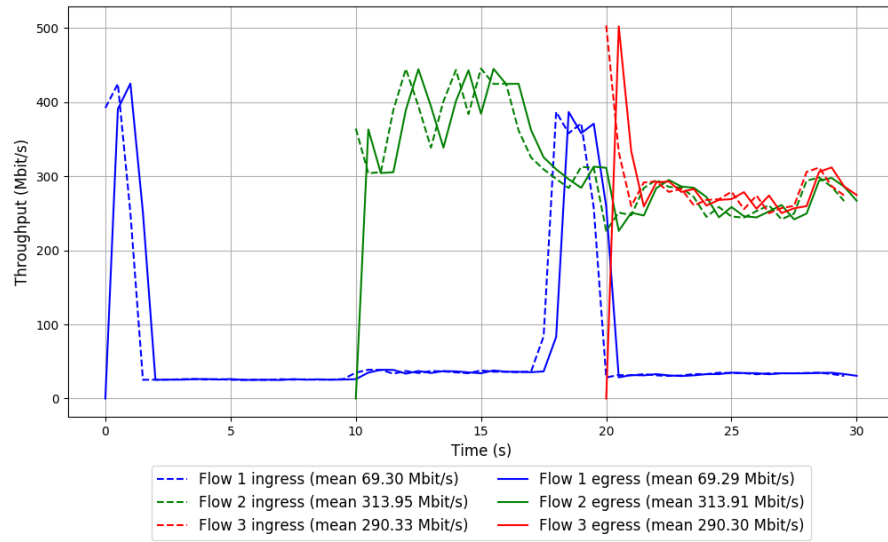
-- Flow 3:

Average throughput: 290.30 Mbit/s

95th percentile per-packet one-way delay: 1.497 ms

Loss rate: 0.01%

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



Run 4: Statistics of TCP Vegas

Start at: 2018-10-09 22:15:51

End at: 2018-10-09 22:16:21

Local clock offset: -3.201 ms

Remote clock offset: -0.56 ms

# Below is generated by plot.py at 2018-10-09 23:58:03

# Datalink statistics

-- Total of 3 flows:

Average throughput: 325.27 Mbit/s

95th percentile per-packet one-way delay: 1.241 ms

Loss rate: 0.01%

-- Flow 1:

Average throughput: 89.15 Mbit/s

95th percentile per-packet one-way delay: 1.212 ms

Loss rate: 0.01%

-- Flow 2:

Average throughput: 196.68 Mbit/s

95th percentile per-packet one-way delay: 1.252 ms

Loss rate: 0.01%

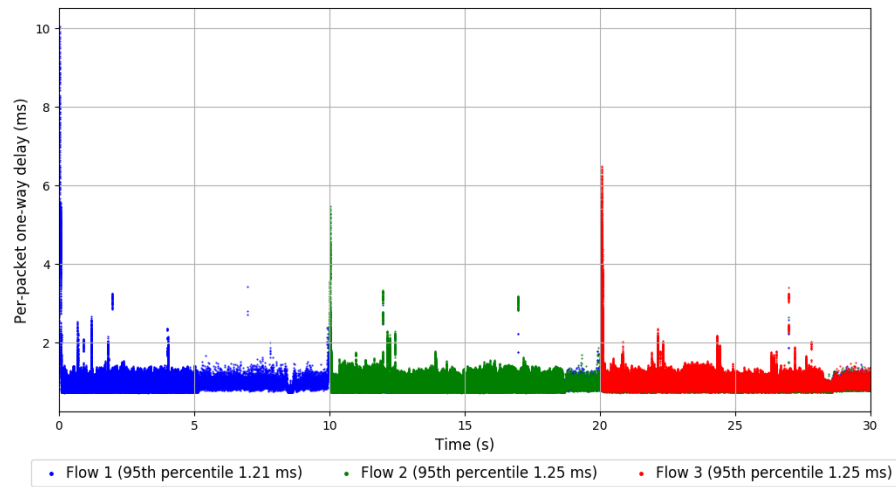
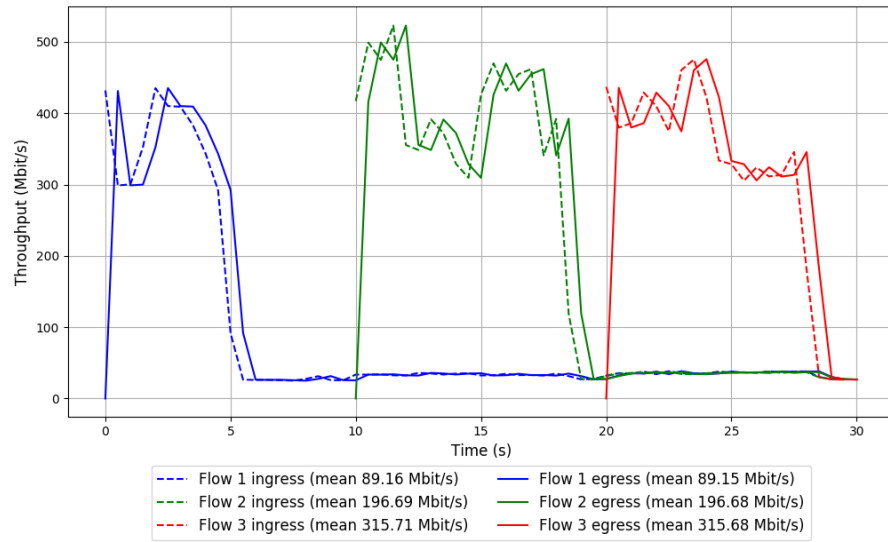
-- Flow 3:

Average throughput: 315.68 Mbit/s

95th percentile per-packet one-way delay: 1.247 ms

Loss rate: 0.01%

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

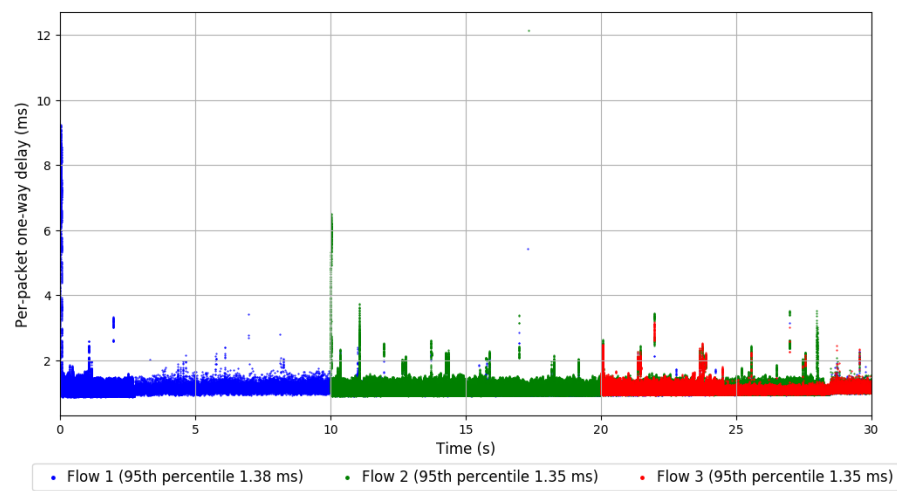
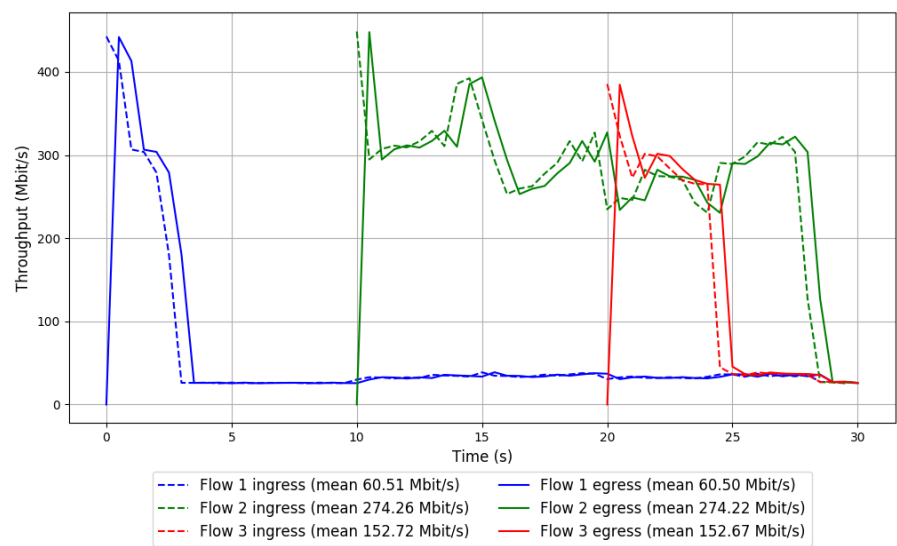


Run 5: Statistics of TCP Vegas

Start at: 2018-10-09 22:43:01  
End at: 2018-10-09 22:43:31  
Local clock offset: 0.264 ms  
Remote clock offset: -3.651 ms

# Below is generated by plot.py at 2018-10-09 23:58:03  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 294.03 Mbit/s  
95th percentile per-packet one-way delay: 1.354 ms  
Loss rate: 0.02%  
-- Flow 1:  
Average throughput: 60.50 Mbit/s  
95th percentile per-packet one-way delay: 1.377 ms  
Loss rate: 0.02%  
-- Flow 2:  
Average throughput: 274.22 Mbit/s  
95th percentile per-packet one-way delay: 1.347 ms  
Loss rate: 0.01%  
-- Flow 3:  
Average throughput: 152.67 Mbit/s  
95th percentile per-packet one-way delay: 1.351 ms  
Loss rate: 0.03%

Run 5: Report of TCP Vegas — Data Link



Run 1: Statistics of Verus

Start at: 2018-10-09 21:00:31

End at: 2018-10-09 21:01:01

Local clock offset: -2.968 ms

Remote clock offset: 3.114 ms

# Below is generated by plot.py at 2018-10-09 23:58:03

# Datalink statistics

-- Total of 3 flows:

Average throughput: 253.04 Mbit/s

95th percentile per-packet one-way delay: 37.280 ms

Loss rate: 4.02%

-- Flow 1:

Average throughput: 134.25 Mbit/s

95th percentile per-packet one-way delay: 15.633 ms

Loss rate: 2.85%

-- Flow 2:

Average throughput: 112.45 Mbit/s

95th percentile per-packet one-way delay: 51.849 ms

Loss rate: 5.25%

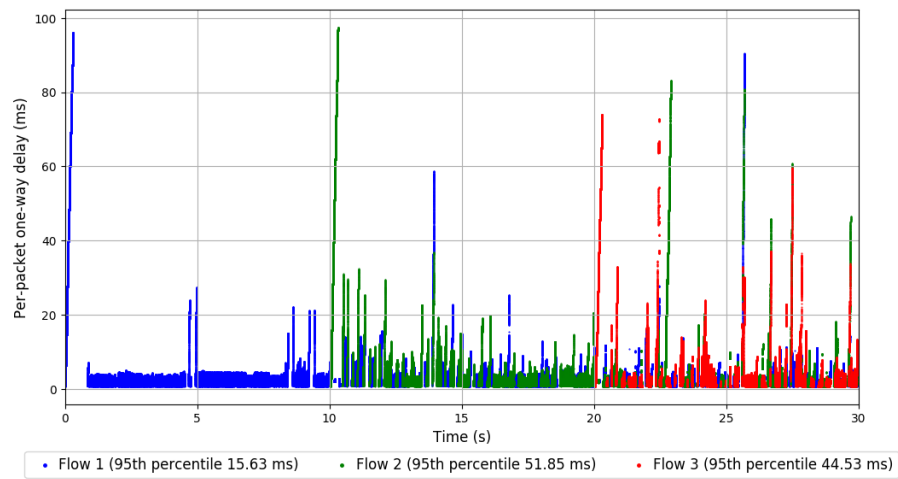
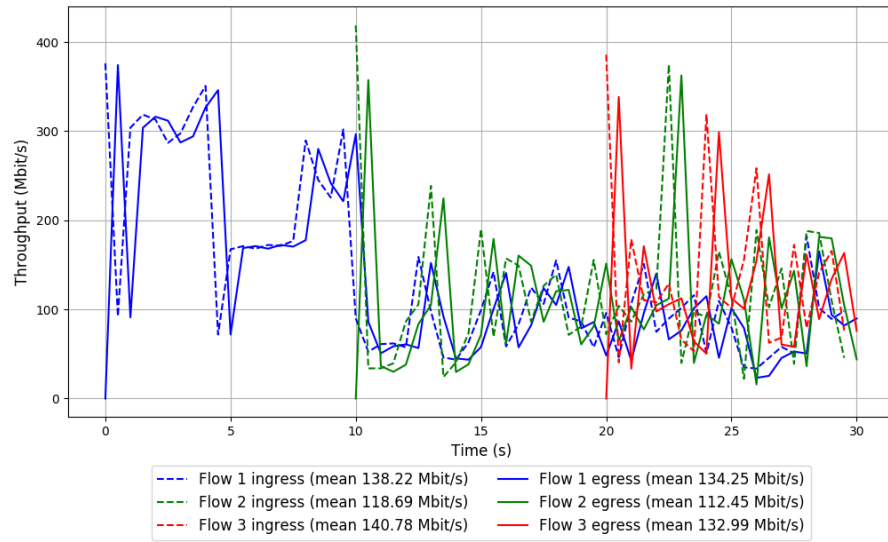
-- Flow 3:

Average throughput: 132.99 Mbit/s

95th percentile per-packet one-way delay: 44.529 ms

Loss rate: 5.43%

# Run 1: Report of Verus — Data Link



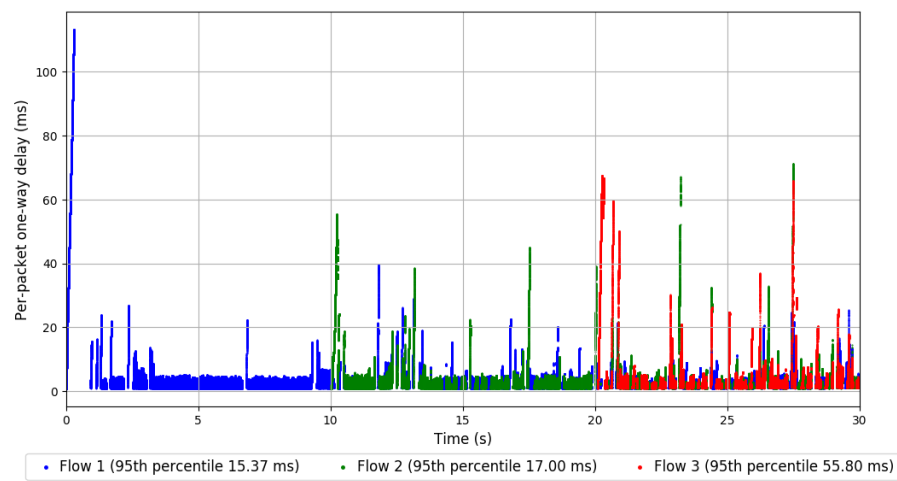
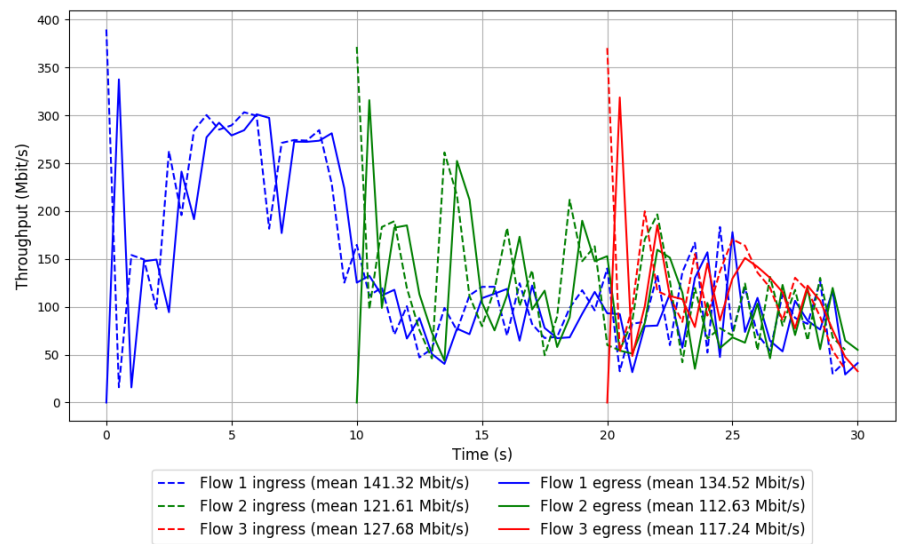


Run 2: Statistics of Verus

Start at: 2018-10-09 21:27:41  
End at: 2018-10-09 21:28:11  
Local clock offset: -4.489 ms  
Remote clock offset: 3.117 ms

# Below is generated by plot.py at 2018-10-09 23:58:03  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 248.09 Mbit/s  
95th percentile per-packet one-way delay: 20.646 ms  
Loss rate: 6.13%  
-- Flow 1:  
Average throughput: 134.52 Mbit/s  
95th percentile per-packet one-way delay: 15.374 ms  
Loss rate: 4.81%  
-- Flow 2:  
Average throughput: 112.63 Mbit/s  
95th percentile per-packet one-way delay: 17.000 ms  
Loss rate: 7.38%  
-- Flow 3:  
Average throughput: 117.24 Mbit/s  
95th percentile per-packet one-way delay: 55.797 ms  
Loss rate: 8.17%

Run 2: Report of Verus — Data Link



Run 3: Statistics of Verus

Start at: 2018-10-09 21:55:07

End at: 2018-10-09 21:55:37

Local clock offset: -3.699 ms

Remote clock offset: 1.494 ms

# Below is generated by plot.py at 2018-10-09 23:58:57

# Datalink statistics

-- Total of 3 flows:

Average throughput: 294.33 Mbit/s

95th percentile per-packet one-way delay: 48.924 ms

Loss rate: 5.47%

-- Flow 1:

Average throughput: 161.01 Mbit/s

95th percentile per-packet one-way delay: 42.515 ms

Loss rate: 4.53%

-- Flow 2:

Average throughput: 125.13 Mbit/s

95th percentile per-packet one-way delay: 24.890 ms

Loss rate: 6.77%

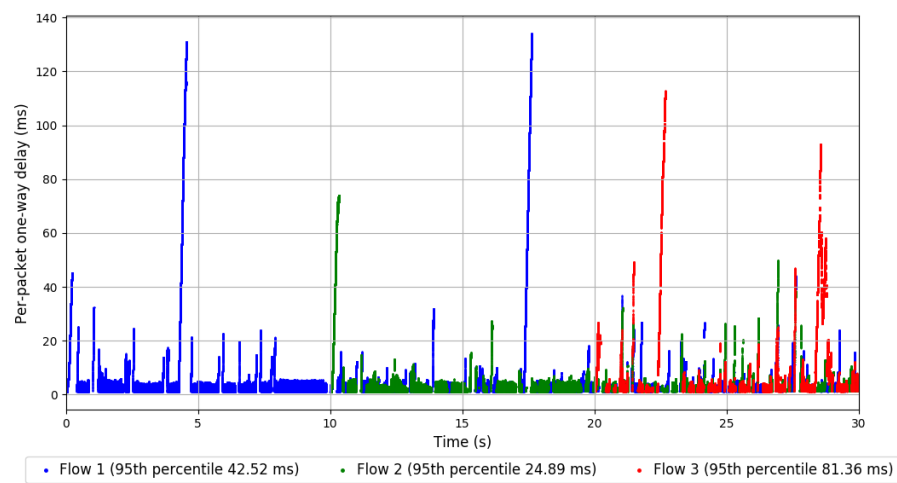
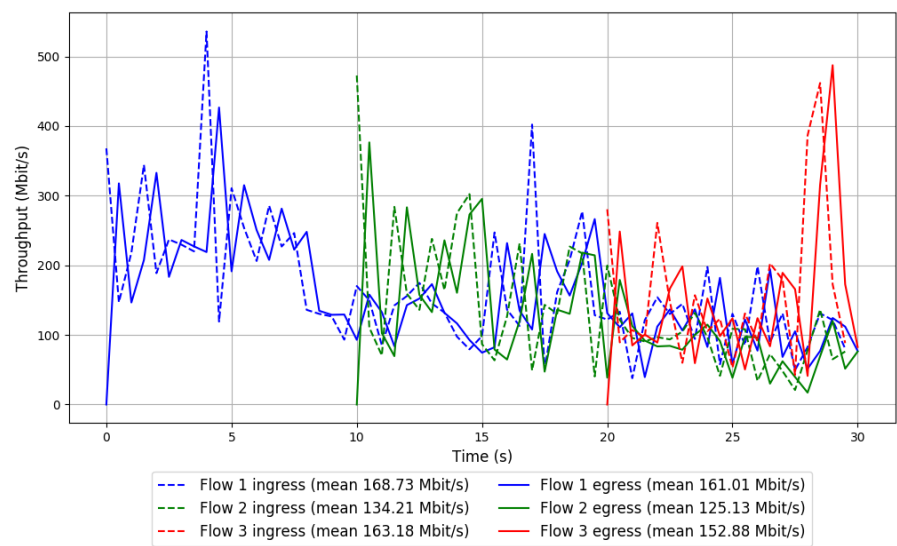
-- Flow 3:

Average throughput: 152.88 Mbit/s

95th percentile per-packet one-way delay: 81.356 ms

Loss rate: 6.26%

Run 3: Report of Verus — Data Link

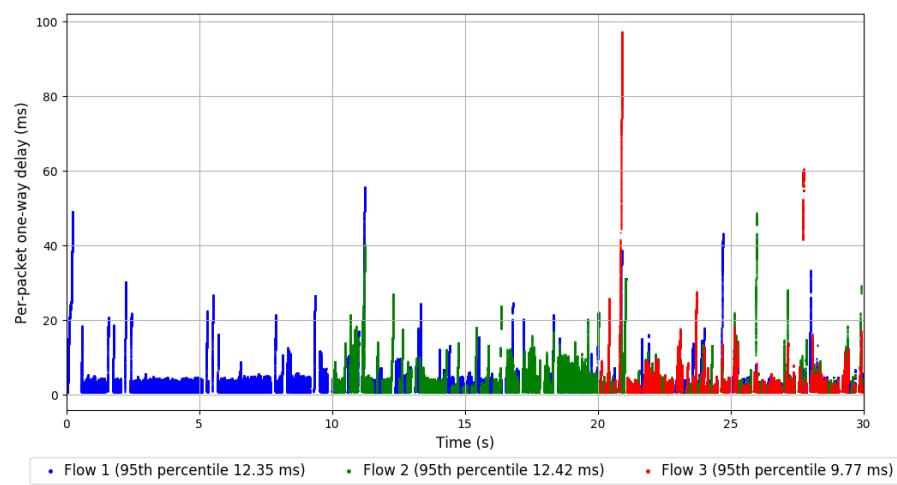
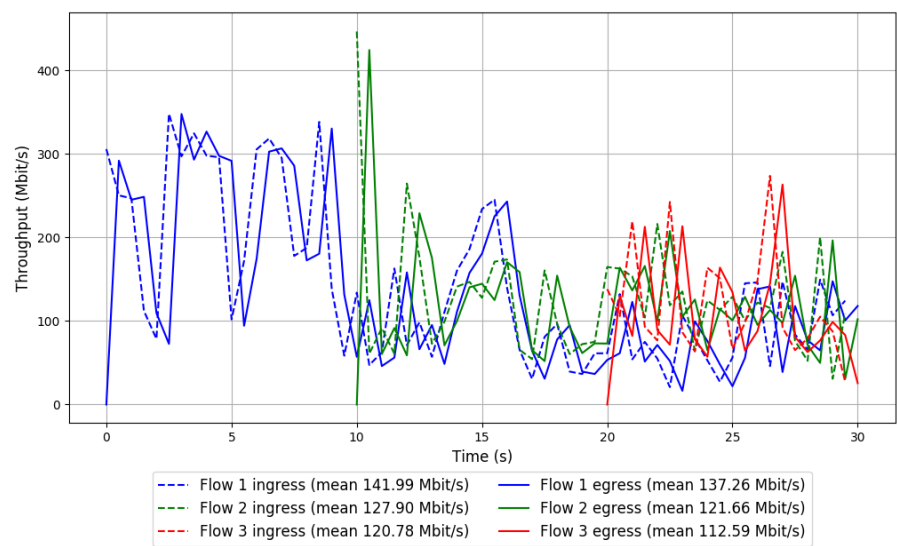


Run 4: Statistics of Verus

Start at: 2018-10-09 22:22:11  
End at: 2018-10-09 22:22:41  
Local clock offset: -3.318 ms  
Remote clock offset: -0.796 ms

# Below is generated by plot.py at 2018-10-09 23:58:57  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 255.23 Mbit/s  
95th percentile per-packet one-way delay: 12.006 ms  
Loss rate: 4.33%  
-- Flow 1:  
Average throughput: 137.26 Mbit/s  
95th percentile per-packet one-way delay: 12.349 ms  
Loss rate: 3.33%  
-- Flow 2:  
Average throughput: 121.66 Mbit/s  
95th percentile per-packet one-way delay: 12.419 ms  
Loss rate: 4.87%  
-- Flow 3:  
Average throughput: 112.59 Mbit/s  
95th percentile per-packet one-way delay: 9.771 ms  
Loss rate: 6.77%

Run 4: Report of Verus — Data Link

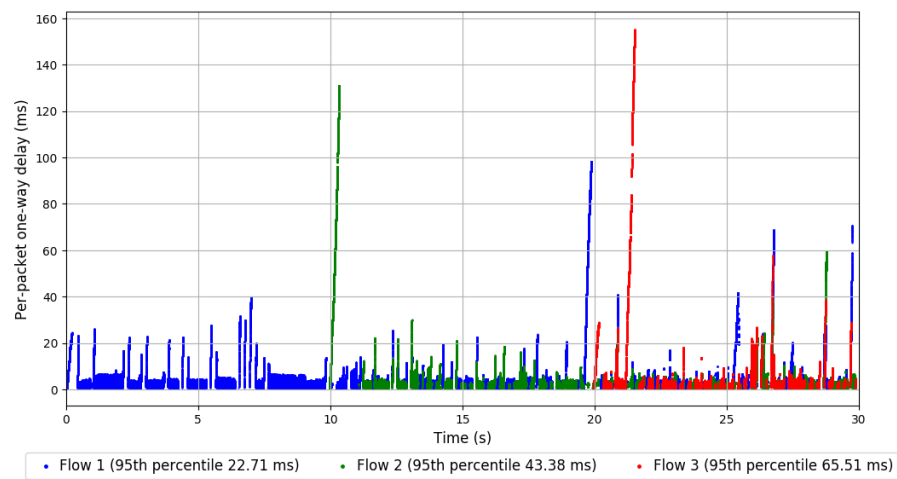
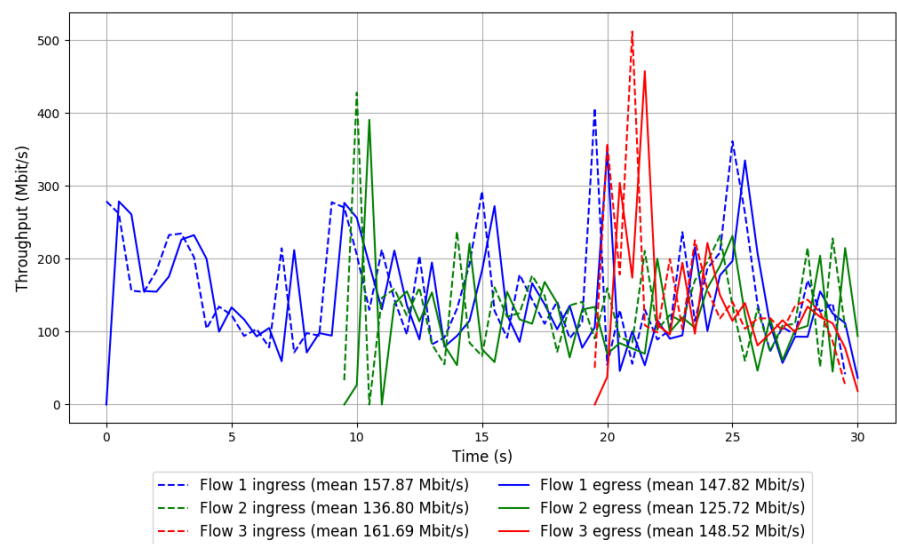


Run 5: Statistics of Verus

Start at: 2018-10-09 22:49:20  
End at: 2018-10-09 22:49:50  
Local clock offset: 0.668 ms  
Remote clock offset: -4.236 ms

# Below is generated by plot.py at 2018-10-09 23:59:35  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 280.31 Mbit/s  
95th percentile per-packet one-way delay: 34.552 ms  
Loss rate: 7.08%  
-- Flow 1:  
Average throughput: 147.82 Mbit/s  
95th percentile per-packet one-way delay: 22.707 ms  
Loss rate: 6.15%  
-- Flow 2:  
Average throughput: 125.72 Mbit/s  
95th percentile per-packet one-way delay: 43.385 ms  
Loss rate: 8.09%  
-- Flow 3:  
Average throughput: 148.52 Mbit/s  
95th percentile per-packet one-way delay: 65.512 ms  
Loss rate: 8.11%

Run 5: Report of Verus — Data Link





Run 1: Statistics of PCC-Vivace

Start at: 2018-10-09 21:08:43

End at: 2018-10-09 21:09:13

Local clock offset: -3.654 ms

Remote clock offset: 3.235 ms

# Below is generated by plot.py at 2018-10-10 00:00:13

# Datalink statistics

-- Total of 3 flows:

Average throughput: 278.74 Mbit/s

95th percentile per-packet one-way delay: 1.886 ms

Loss rate: 0.05%

-- Flow 1:

Average throughput: 164.04 Mbit/s

95th percentile per-packet one-way delay: 3.138 ms

Loss rate: 0.06%

-- Flow 2:

Average throughput: 86.34 Mbit/s

95th percentile per-packet one-way delay: 1.056 ms

Loss rate: 0.01%

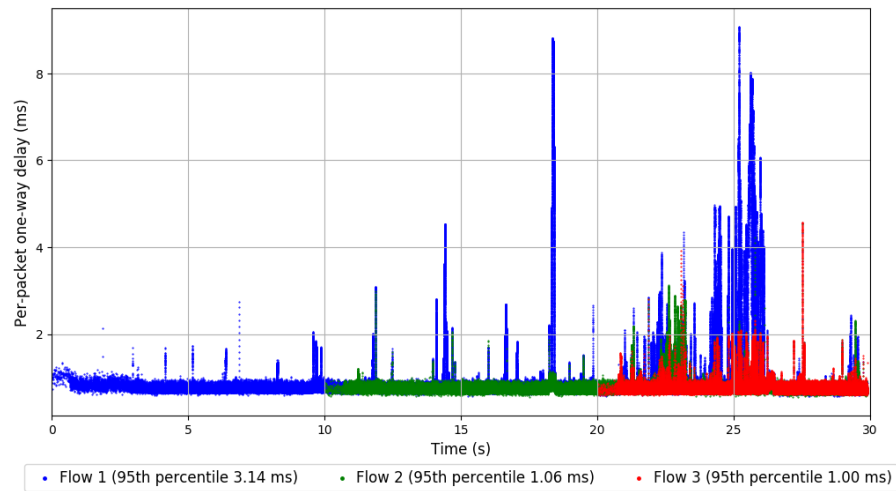
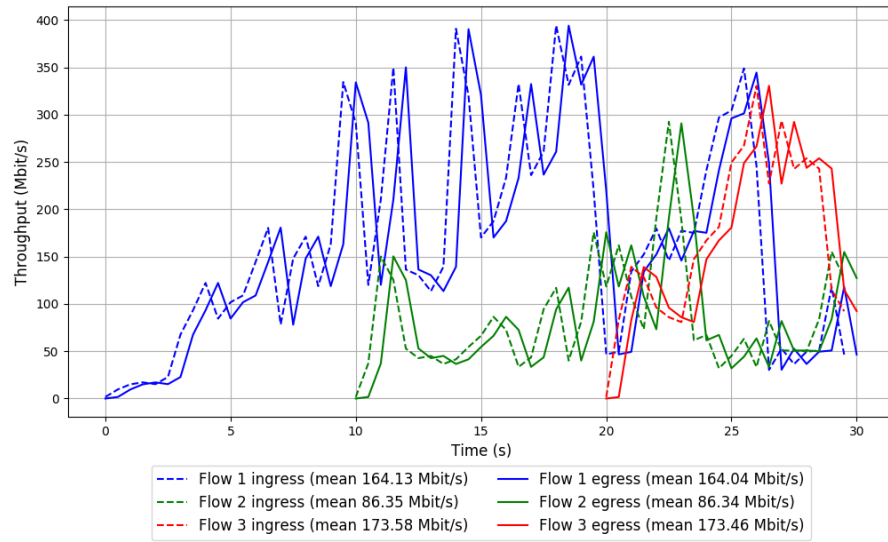
-- Flow 3:

Average throughput: 173.46 Mbit/s

95th percentile per-packet one-way delay: 0.998 ms

Loss rate: 0.06%

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



Run 2: Statistics of PCC-Vivace

Start at: 2018-10-09 21:36:00

End at: 2018-10-09 21:36:30

Local clock offset: -3.568 ms

Remote clock offset: 3.249 ms

# Below is generated by plot.py at 2018-10-10 00:00:13

# Datalink statistics

-- Total of 3 flows:

Average throughput: 258.23 Mbit/s

95th percentile per-packet one-way delay: 1.228 ms

Loss rate: 0.03%

-- Flow 1:

Average throughput: 147.88 Mbit/s

95th percentile per-packet one-way delay: 1.300 ms

Loss rate: 0.01%

-- Flow 2:

Average throughput: 104.25 Mbit/s

95th percentile per-packet one-way delay: 1.199 ms

Loss rate: 0.06%

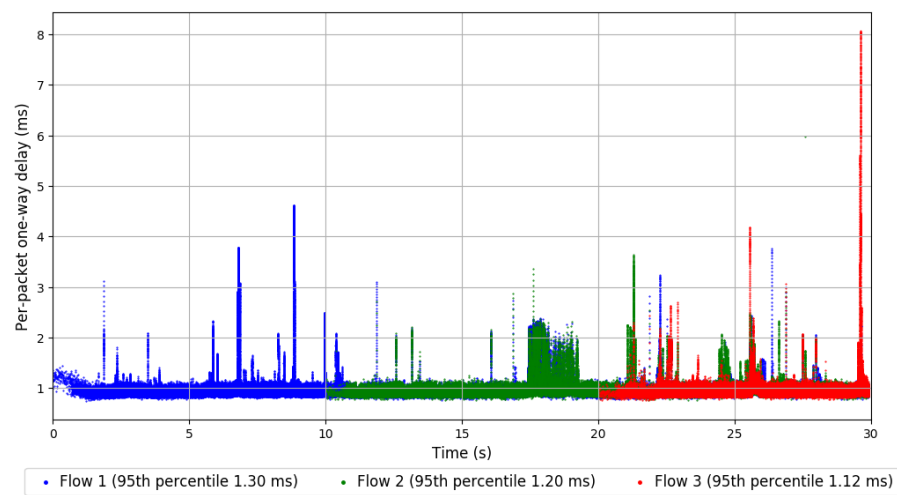
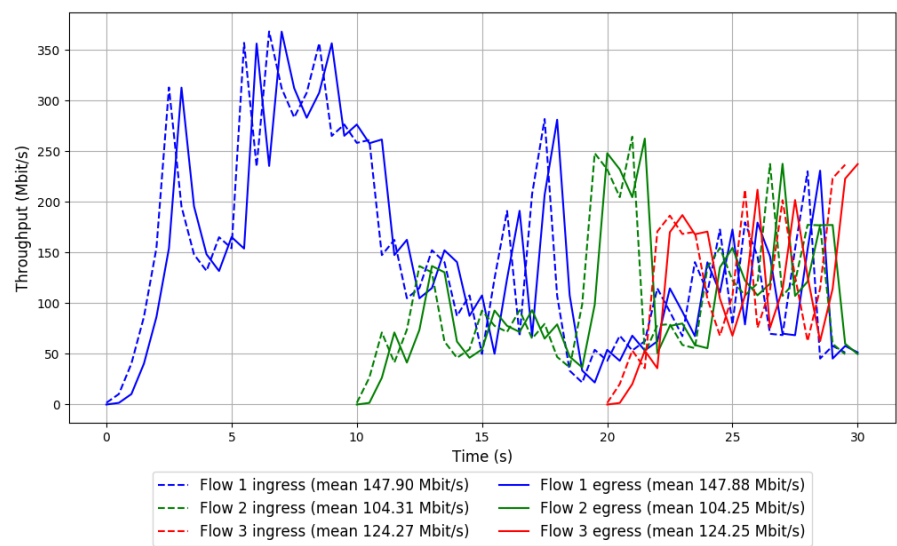
-- Flow 3:

Average throughput: 124.25 Mbit/s

95th percentile per-packet one-way delay: 1.120 ms

Loss rate: 0.01%

Run 2: Report of PCC-Vivace — Data Link



Run 3: Statistics of PCC-Vivace

Start at: 2018-10-09 22:03:20

End at: 2018-10-09 22:03:50

Local clock offset: -3.257 ms

Remote clock offset: 0.362 ms

# Below is generated by plot.py at 2018-10-10 00:00:31

# Datalink statistics

-- Total of 3 flows:

Average throughput: 294.32 Mbit/s

95th percentile per-packet one-way delay: 1.488 ms

Loss rate: 0.02%

-- Flow 1:

Average throughput: 162.06 Mbit/s

95th percentile per-packet one-way delay: 2.441 ms

Loss rate: 0.02%

-- Flow 2:

Average throughput: 155.90 Mbit/s

95th percentile per-packet one-way delay: 1.328 ms

Loss rate: 0.03%

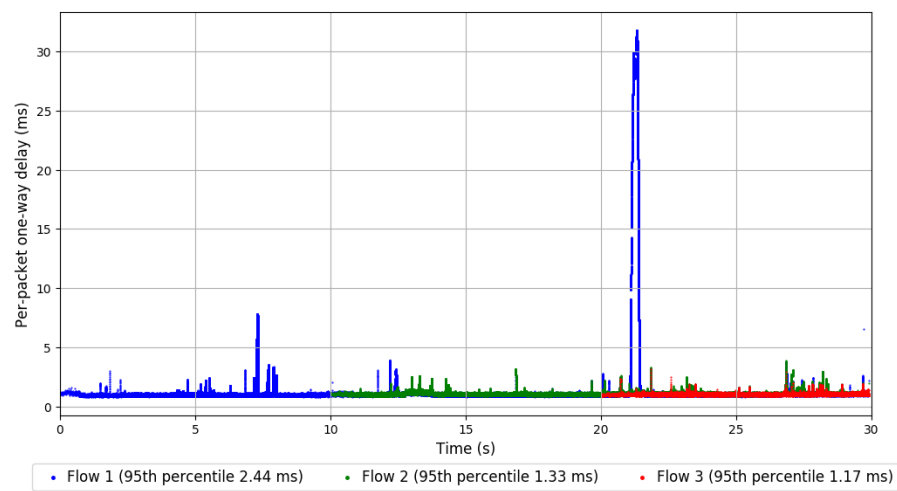
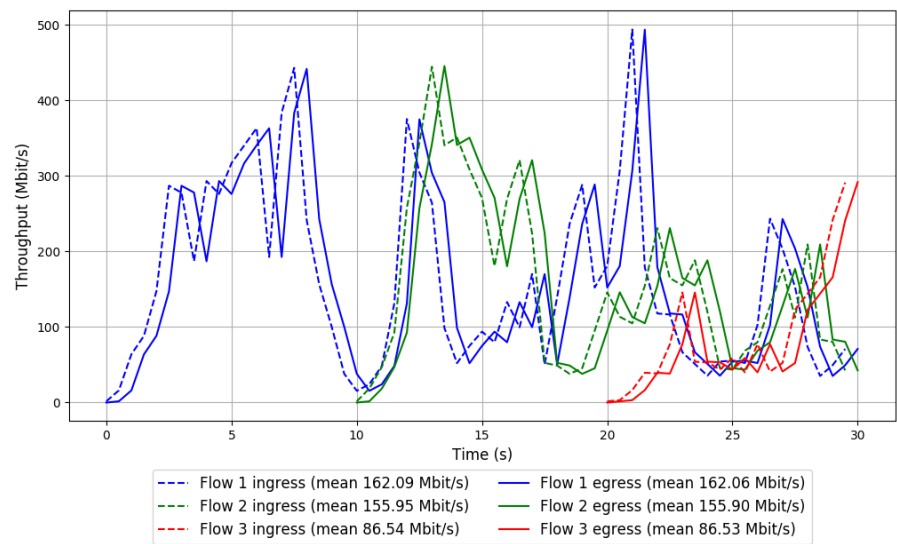
-- Flow 3:

Average throughput: 86.53 Mbit/s

95th percentile per-packet one-way delay: 1.166 ms

Loss rate: 0.02%

Run 3: Report of PCC-Vivace — Data Link

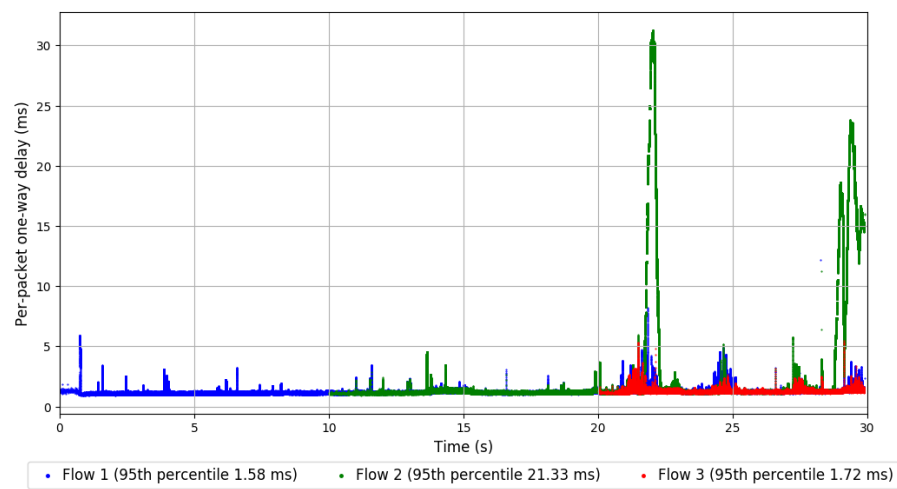
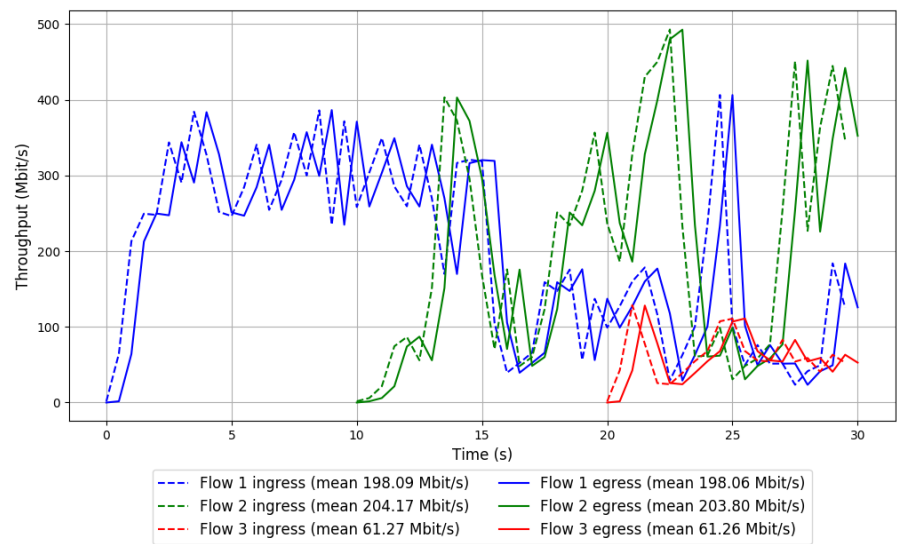


Run 4: Statistics of PCC-Vivace

Start at: 2018-10-09 22:30:21  
End at: 2018-10-09 22:30:51  
Local clock offset: -1.612 ms  
Remote clock offset: -2.368 ms

# Below is generated by plot.py at 2018-10-10 00:00:38  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 353.85 Mbit/s  
95th percentile per-packet one-way delay: 13.395 ms  
Loss rate: 0.08%  
-- Flow 1:  
Average throughput: 198.06 Mbit/s  
95th percentile per-packet one-way delay: 1.583 ms  
Loss rate: 0.01%  
-- Flow 2:  
Average throughput: 203.80 Mbit/s  
95th percentile per-packet one-way delay: 21.327 ms  
Loss rate: 0.18%  
-- Flow 3:  
Average throughput: 61.26 Mbit/s  
95th percentile per-packet one-way delay: 1.721 ms  
Loss rate: 0.02%

Run 4: Report of PCC-Vivace — Data Link



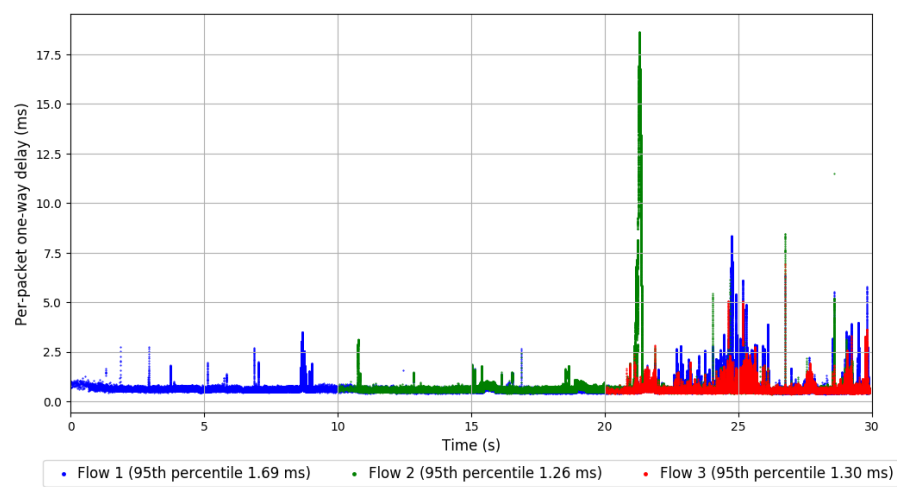
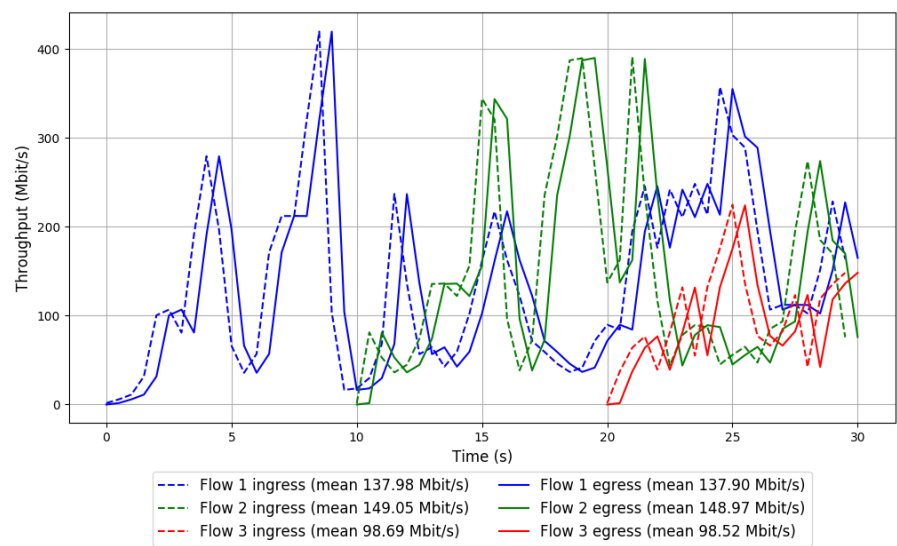


Run 5: Statistics of PCC-Vivace

Start at: 2018-10-09 22:57:33  
End at: 2018-10-09 22:58:03  
Local clock offset: 0.049 ms  
Remote clock offset: -4.665 ms

# Below is generated by plot.py at 2018-10-10 00:00:38  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 269.52 Mbit/s  
95th percentile per-packet one-way delay: 1.502 ms  
Loss rate: 0.07%  
-- Flow 1:  
Average throughput: 137.90 Mbit/s  
95th percentile per-packet one-way delay: 1.688 ms  
Loss rate: 0.06%  
-- Flow 2:  
Average throughput: 148.97 Mbit/s  
95th percentile per-packet one-way delay: 1.257 ms  
Loss rate: 0.06%  
-- Flow 3:  
Average throughput: 98.52 Mbit/s  
95th percentile per-packet one-way delay: 1.303 ms  
Loss rate: 0.18%

Run 5: Report of PCC-Vivace — Data Link

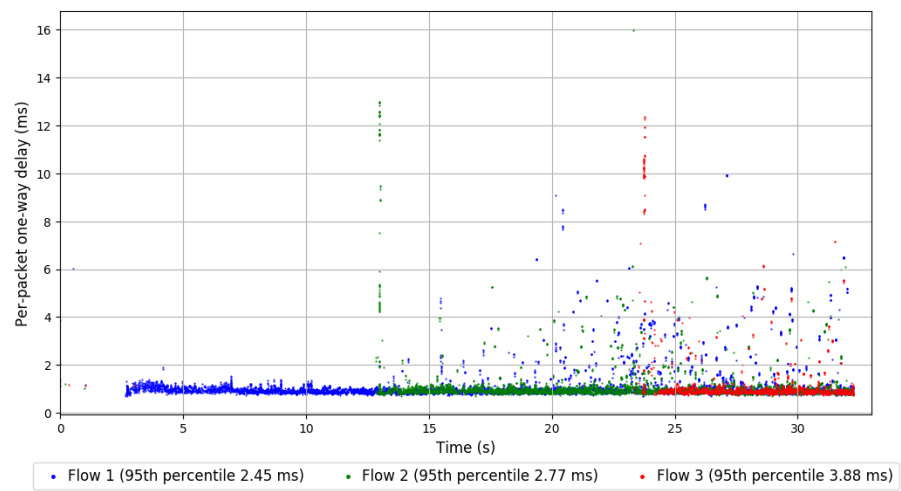
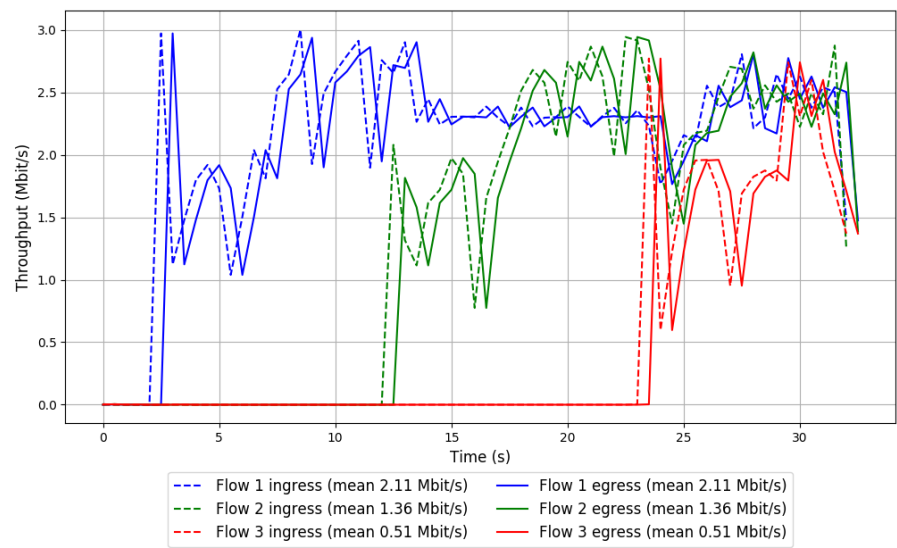


```
Run 1: Statistics of WebRTC media

Start at: 2018-10-09 21:14:18
End at: 2018-10-09 21:14:48
Local clock offset: -4.138 ms
Remote clock offset: 3.4 ms

# Below is generated by plot.py at 2018-10-10 00:00:38
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.98 Mbit/s
95th percentile per-packet one-way delay: 2.772 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.11 Mbit/s
95th percentile per-packet one-way delay: 2.451 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 1.36 Mbit/s
95th percentile per-packet one-way delay: 2.767 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.51 Mbit/s
95th percentile per-packet one-way delay: 3.885 ms
Loss rate: 0.00%
```

Run 1: Report of WebRTC media — Data Link



Run 2: Statistics of WebRTC media

Start at: 2018-10-09 21:41:34

End at: 2018-10-09 21:42:04

Local clock offset: -3.463 ms

Remote clock offset: 3.189 ms

# Below is generated by plot.py at 2018-10-10 00:00:38

# Datalink statistics

-- Total of 3 flows:

Average throughput: 3.78 Mbit/s

95th percentile per-packet one-way delay: 2.634 ms

Loss rate: 0.01%

-- Flow 1:

Average throughput: 1.94 Mbit/s

95th percentile per-packet one-way delay: 2.557 ms

Loss rate: 0.01%

-- Flow 2:

Average throughput: 1.37 Mbit/s

95th percentile per-packet one-way delay: 2.713 ms

Loss rate: 0.00%

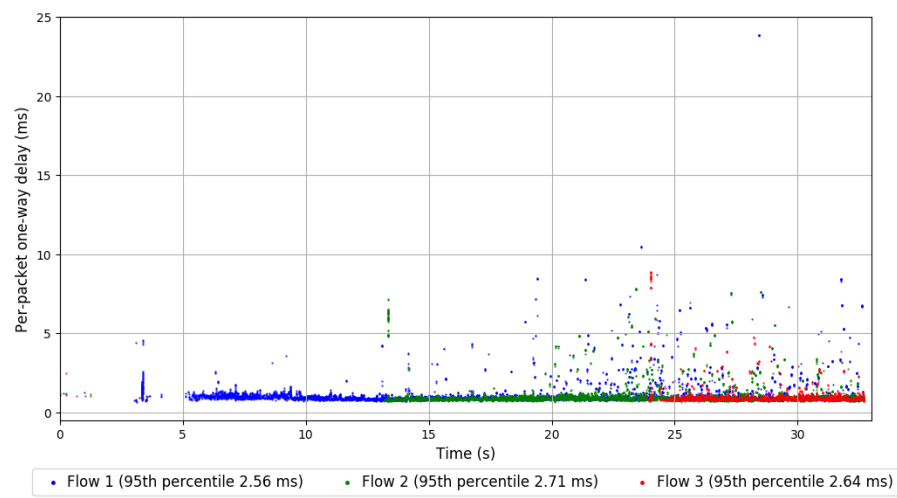
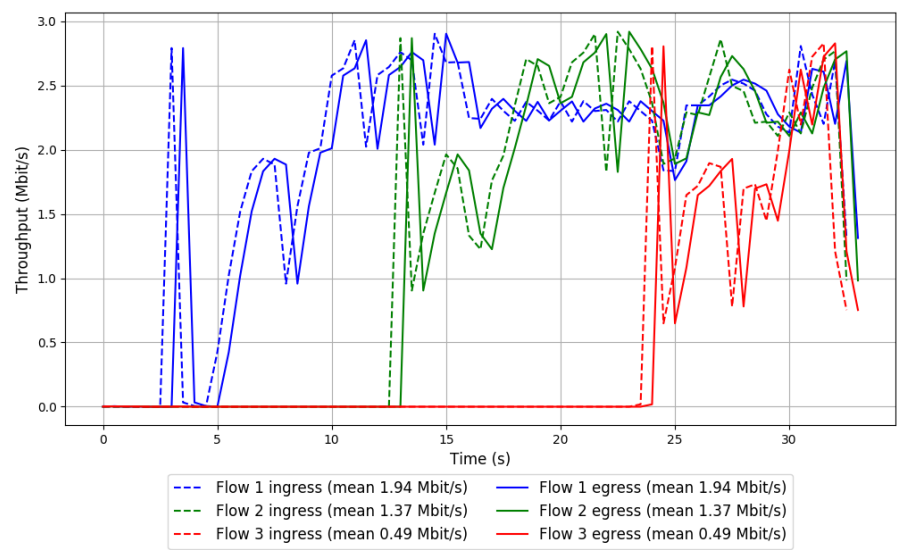
-- Flow 3:

Average throughput: 0.49 Mbit/s

95th percentile per-packet one-way delay: 2.637 ms

Loss rate: 0.00%

Run 2: Report of WebRTC media — Data Link

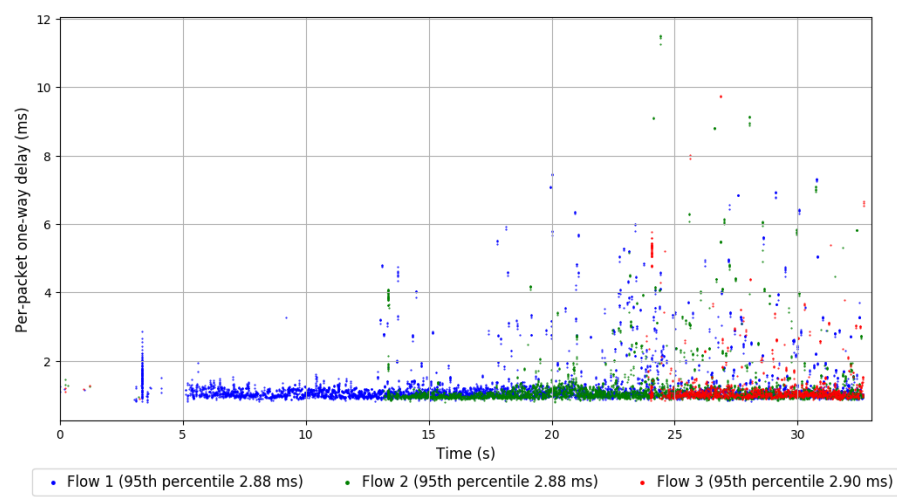
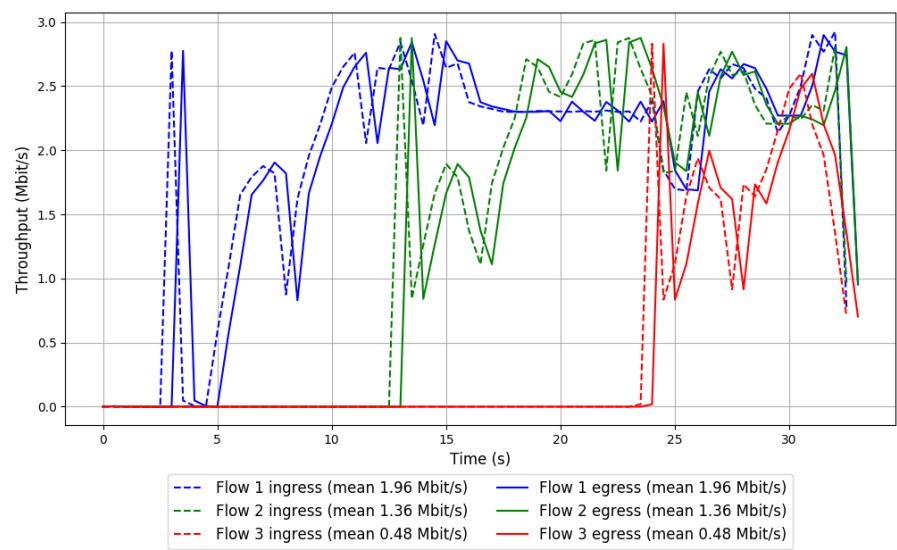


Run 3: Statistics of WebRTC media

Start at: 2018-10-09 22:08:54  
End at: 2018-10-09 22:09:24  
Local clock offset: -3.174 ms  
Remote clock offset: -0.125 ms

# Below is generated by plot.py at 2018-10-10 00:00:38  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 3.79 Mbit/s  
95th percentile per-packet one-way delay: 2.883 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 1.96 Mbit/s  
95th percentile per-packet one-way delay: 2.880 ms  
Loss rate: 0.00%  
-- Flow 2:  
Average throughput: 1.36 Mbit/s  
95th percentile per-packet one-way delay: 2.877 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 0.48 Mbit/s  
95th percentile per-packet one-way delay: 2.900 ms  
Loss rate: 0.00%

Run 3: Report of WebRTC media — Data Link



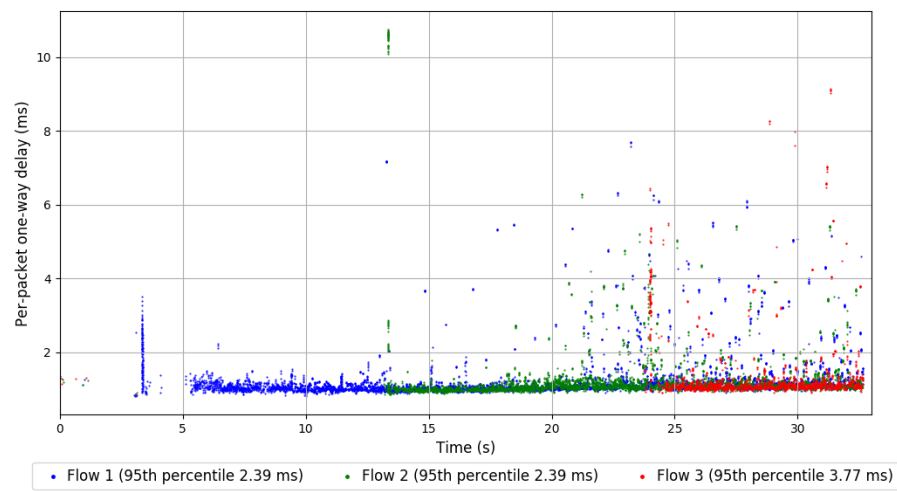
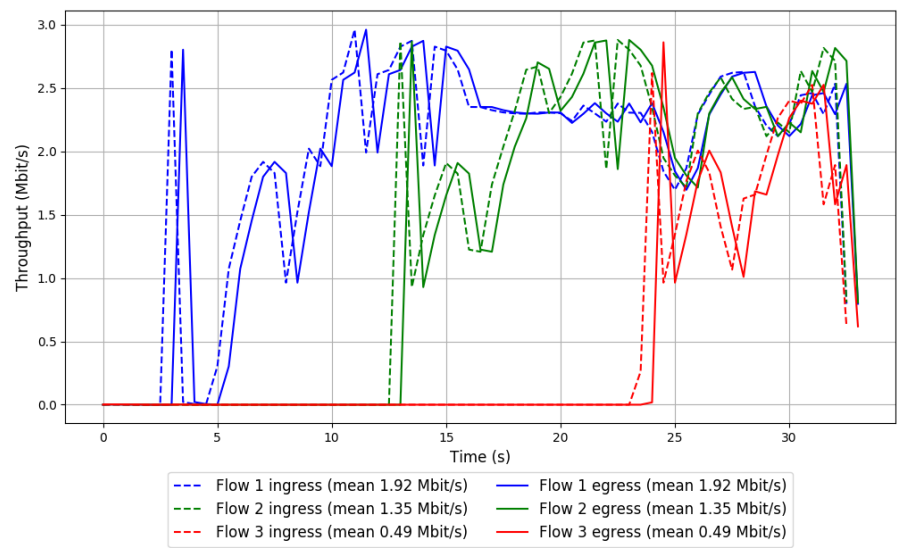


Run 4: Statistics of WebRTC media

Start at: 2018-10-09 22:35:58  
End at: 2018-10-09 22:36:28  
Local clock offset: -0.505 ms  
Remote clock offset: -3.119 ms

```
# Below is generated by plot.py at 2018-10-10 00:00:38
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.76 Mbit/s
95th percentile per-packet one-way delay: 2.577 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.92 Mbit/s
95th percentile per-packet one-way delay: 2.387 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 1.35 Mbit/s
95th percentile per-packet one-way delay: 2.389 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 3.773 ms
Loss rate: 0.00%
```

Run 4: Report of WebRTC media — Data Link



Run 5: Statistics of WebRTC media

Start at: 2018-10-09 23:03:06  
End at: 2018-10-09 23:03:36  
Local clock offset: -1.37 ms  
Remote clock offset: -5.057 ms

# Below is generated by plot.py at 2018-10-10 00:00:38  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 3.97 Mbit/s  
95th percentile per-packet one-way delay: 1.948 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 2.10 Mbit/s  
95th percentile per-packet one-way delay: 1.823 ms  
Loss rate: 0.00%  
-- Flow 2:  
Average throughput: 1.39 Mbit/s  
95th percentile per-packet one-way delay: 1.737 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 0.48 Mbit/s  
95th percentile per-packet one-way delay: 2.833 ms  
Loss rate: 0.00%

Run 5: Report of WebRTC media — Data Link

