

Pantheon Report

Generated at 2018-07-18 08:36:55 (UTC).

Data path: Colombia ppp0 ppp0 (*remote*) → AWS Brazil 2 Ethernet (*local*).

Repeated the test of 17 congestion control schemes 3 times.

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

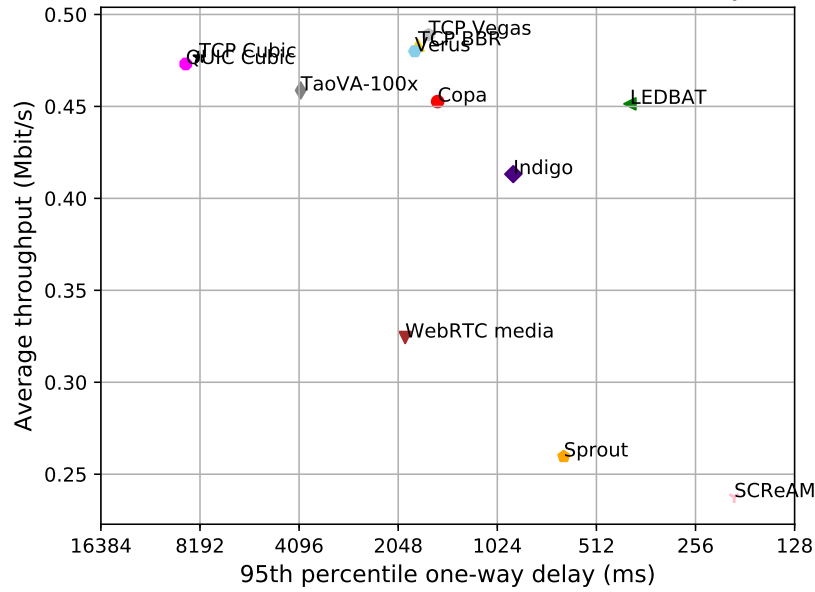
Increased UDP receive buffer to 16 MB (default) and 32 MB (max).

NTP offsets were measured against `gps.ntp.br` and have been applied to correct the timestamps in logs.

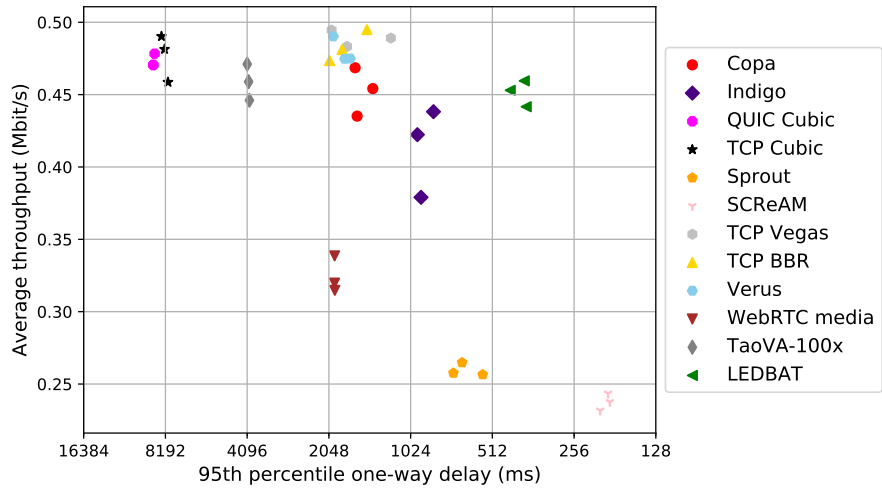
Git summary:

```
branch: master @ f7befc2d8410f41949e0ad8143a9aab40bab7edb
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ 6f038ed31259d366f9840f65b82cbe8f464b1b39
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
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
M src/verus.hpp
M tools/plot.py
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webRTC @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```

test from Colombia ppp0 to AWS Brazil 2, 3 runs of 30s each per scheme
 3 flows with 10s interval between flows (mean of all runs by scheme)



test from Colombia ppp0 to AWS Brazil 2, 3 runs of 30s each per scheme
 3 flows with 10s interval between flows



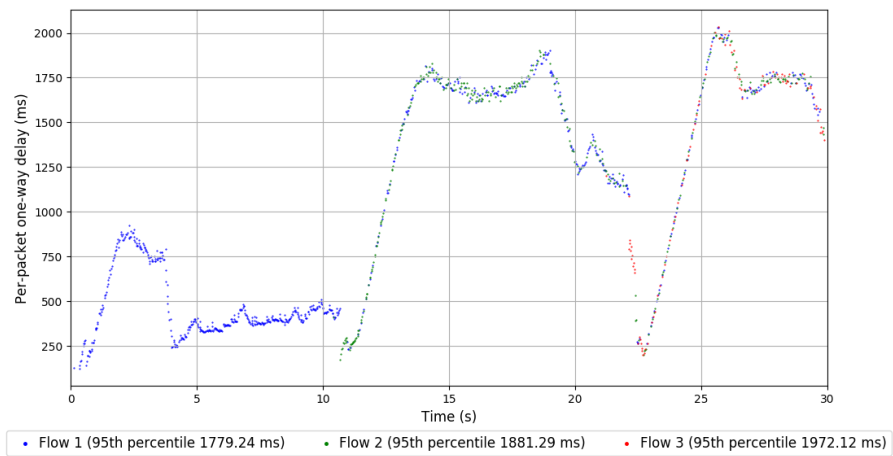
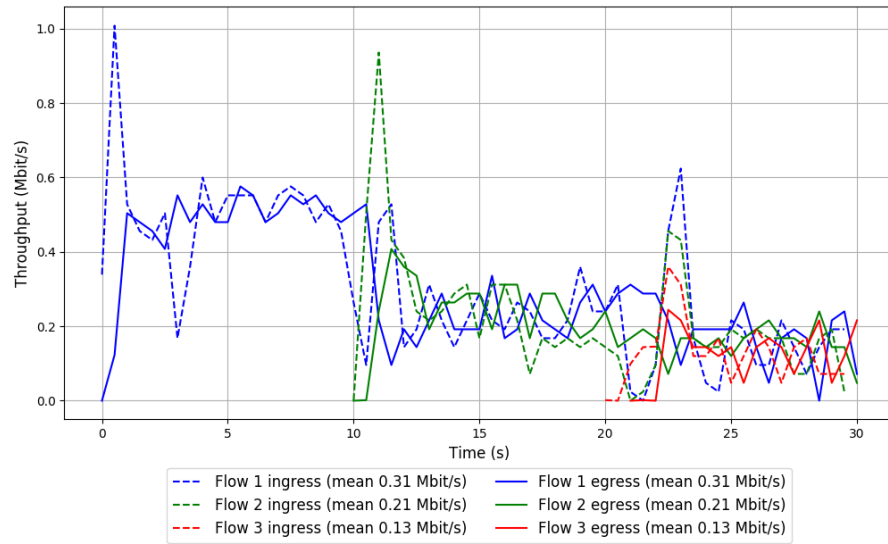
scheme	# runs	mean avg tput (Mbit/s)			mean 95th-%ile delay (ms)			mean loss rate (%)		
		flow 1	flow 2	flow 3	flow 1	flow 2	flow 3	flow 1	flow 2	flow 3
TCP BBR	3	0.31	0.20	0.15	1732.92	1804.84	1880.99	2.99	5.18	11.98
Copa	3	0.30	0.20	0.09	1522.32	1572.23	1587.75	4.81	7.62	14.36
TCP Cubic	3	0.47	0.02	0.00	8253.98	6971.12	8448.09	31.52	53.05	92.36
FillP	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
FillP-Sheep	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Indigo	3	0.22	0.19	0.19	795.64	895.85	992.56	0.70	1.00	1.91
LEDBAT	3	0.19	0.29	0.24	351.62	405.46	428.52	0.14	0.89	6.18
PCC-Allegro	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PCC-Expr	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
QUIC Cubic	3	0.47	0.00	0.01	9033.29	6293.35	9453.19	32.94	0.00	66.67
SCReAM	3	0.08	0.15	0.16	196.74	183.19	216.14	0.66	0.84	1.86
Sprout	3	0.13	0.13	0.14	603.94	623.41	714.98	0.42	1.54	2.74
TaoVA-100x	3	0.28	0.21	0.19	3166.24	3963.44	4620.15	5.26	10.43	32.85
TCP Vegas	3	0.28	0.23	0.21	1449.48	1676.06	1726.09	1.58	4.68	17.37
Verus	3	0.47	0.01	0.01	1823.64	1774.36	1816.59	3.90	6.35	12.73
PCC-Vivace	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WebRTC media	3	0.15	0.12	0.06	1923.84	1988.78	1912.93	0.59	1.13	14.08

Run 1: Statistics of TCP BBR

Start at: 2018-07-18 07:41:17
End at: 2018-07-18 07:41:47
Local clock offset: -2.634 ms
Remote clock offset: 16.346 ms

Below is generated by plot.py at 2018-07-18 08:36:24
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.48 Mbit/s
95th percentile per-packet one-way delay: 1831.402 ms
Loss rate: 3.87%
-- Flow 1:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 1779.242 ms
Loss rate: 2.83%
-- Flow 2:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 1881.292 ms
Loss rate: 4.76%
-- Flow 3:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 1972.115 ms
Loss rate: 8.47%

Run 1: Report of TCP BBR — Data Link

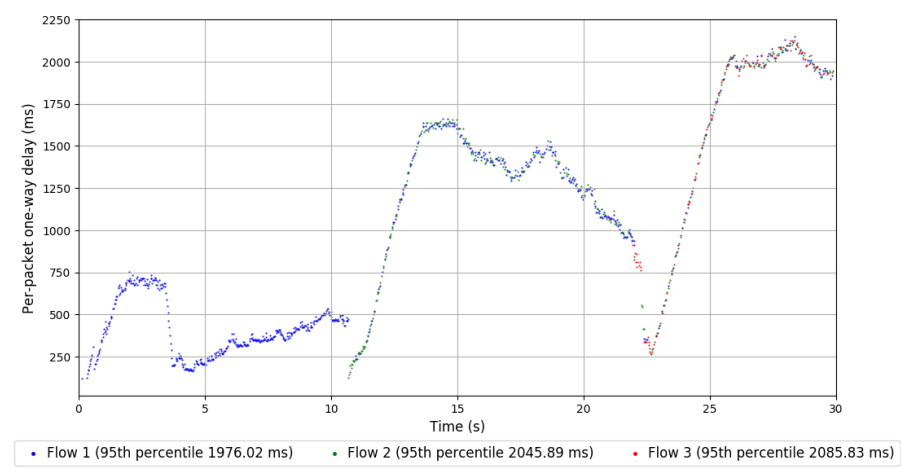
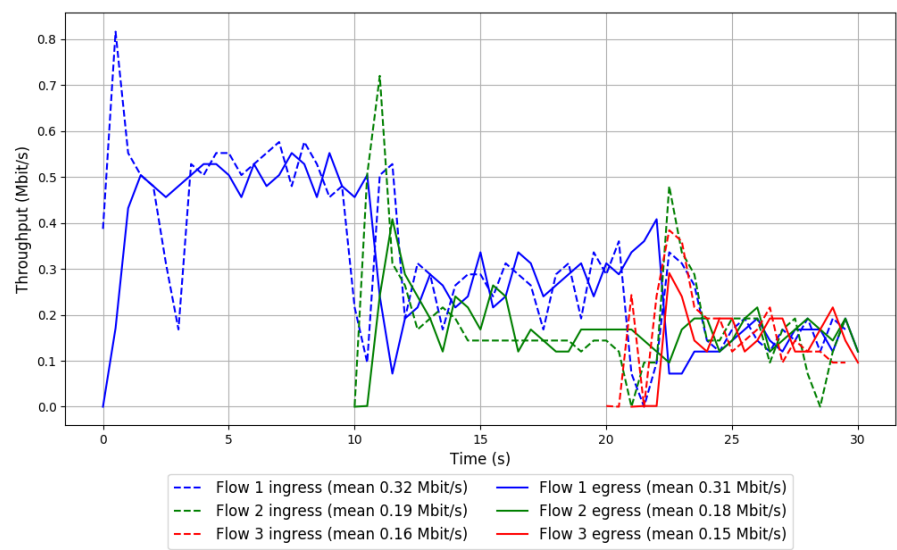


Run 2: Statistics of TCP BBR

Start at: 2018-07-18 08:01:52
End at: 2018-07-18 08:02:22
Local clock offset: -5.456 ms
Remote clock offset: 12.834 ms

Below is generated by plot.py at 2018-07-18 08:36:24
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 2035.900 ms
Loss rate: 5.25%
-- Flow 1:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 1976.016 ms
Loss rate: 3.50%
-- Flow 2:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 2045.888 ms
Loss rate: 5.84%
-- Flow 3:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 2085.829 ms
Loss rate: 14.48%

Run 2: Report of TCP BBR — Data Link

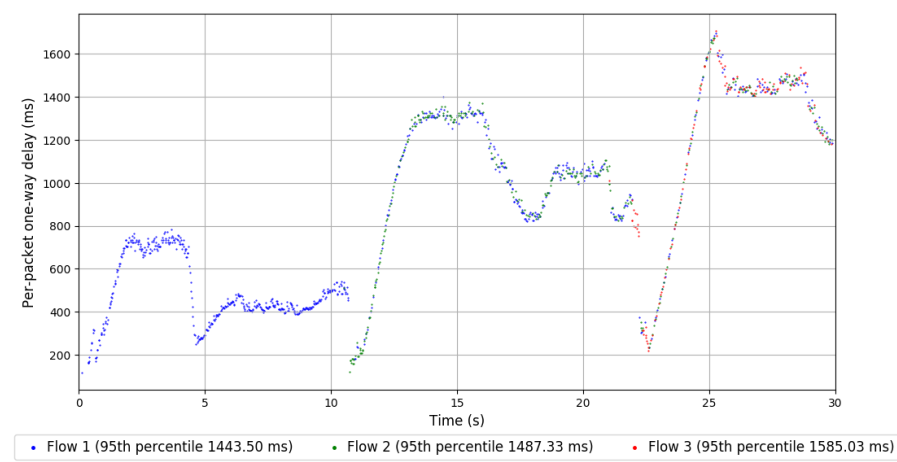
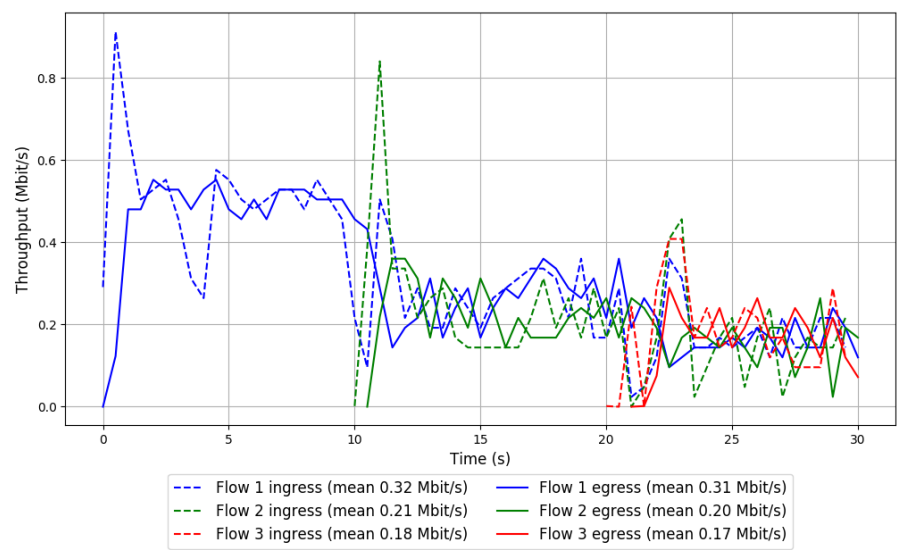


Run 3: Statistics of TCP BBR

Start at: 2018-07-18 08:22:26
End at: 2018-07-18 08:22:56
Local clock offset: -8.508 ms
Remote clock offset: 15.384 ms

Below is generated by plot.py at 2018-07-18 08:36:24
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 1483.419 ms
Loss rate: 4.44%
-- Flow 1:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 1443.502 ms
Loss rate: 2.64%
-- Flow 2:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 1487.334 ms
Loss rate: 4.94%
-- Flow 3:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 1585.028 ms
Loss rate: 12.99%

Run 3: Report of TCP BBR — Data Link

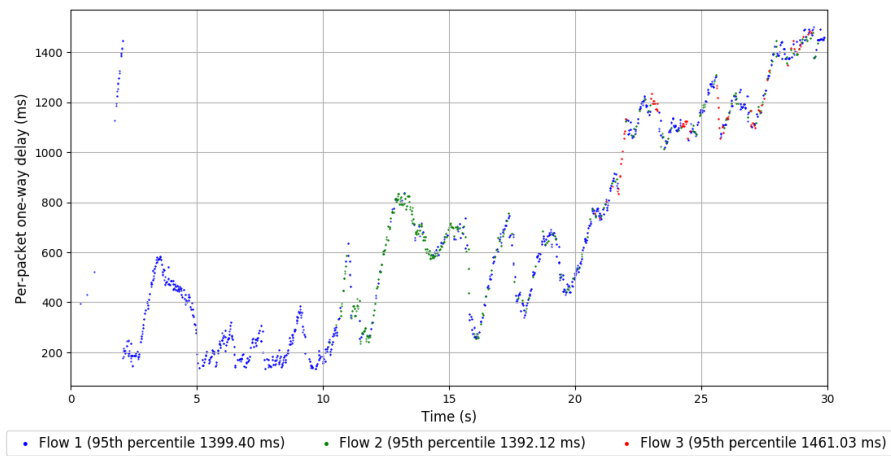
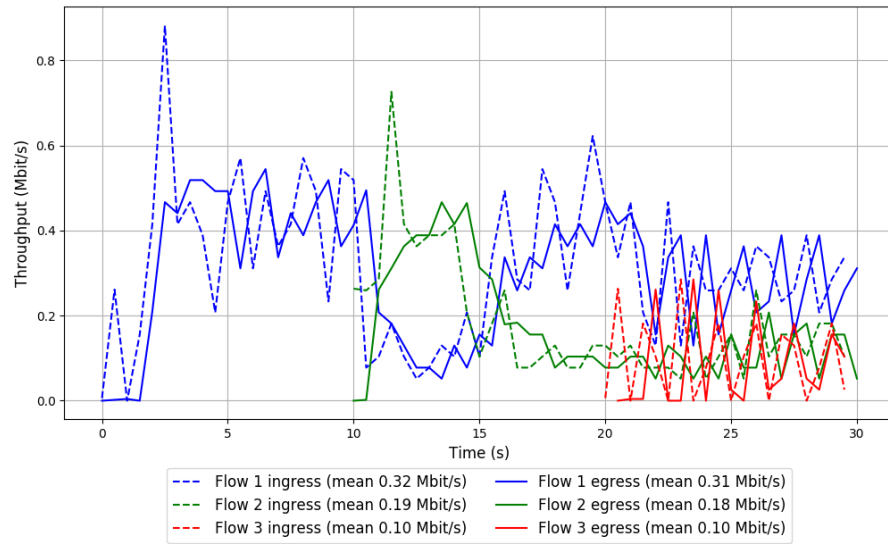


Run 1: Statistics of Copa

Start at: 2018-07-18 07:46:07
End at: 2018-07-18 07:46:37
Local clock offset: -2.922 ms
Remote clock offset: 16.826 ms

Below is generated by plot.py at 2018-07-18 08:36:25
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 1411.365 ms
Loss rate: 5.83%
-- Flow 1:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 1399.396 ms
Loss rate: 4.62%
-- Flow 2:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 1392.125 ms
Loss rate: 6.66%
-- Flow 3:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 1461.031 ms
Loss rate: 14.59%

Run 1: Report of Copa — Data Link

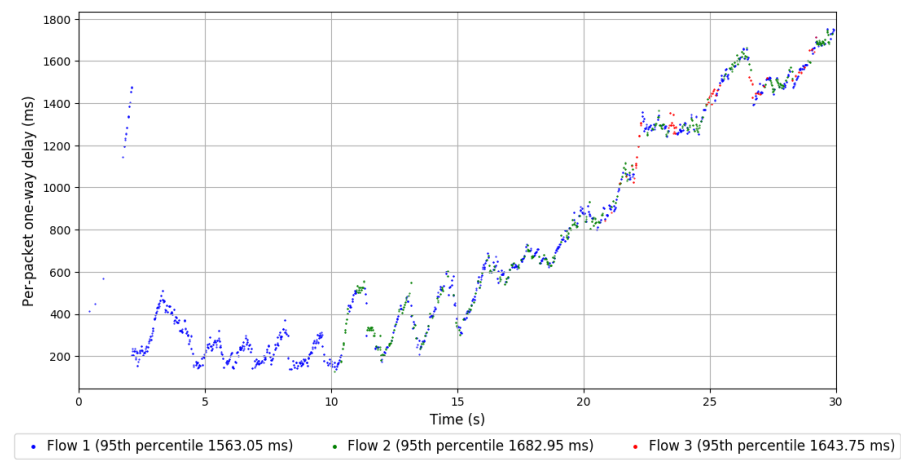
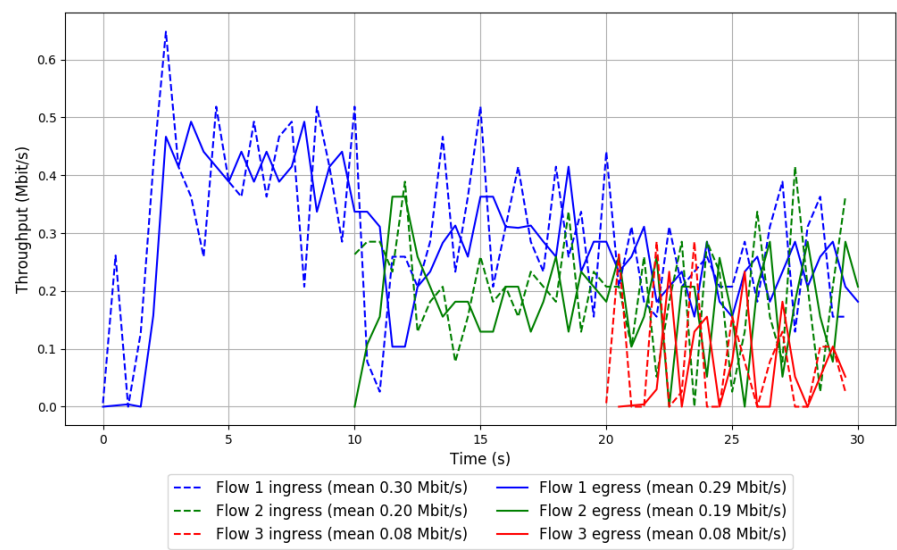


Run 2: Statistics of Copa

Start at: 2018-07-18 08:06:43
End at: 2018-07-18 08:07:13
Local clock offset: -6.541 ms
Remote clock offset: 13.134 ms

Below is generated by plot.py at 2018-07-18 08:36:25
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 1612.015 ms
Loss rate: 6.60%
-- Flow 1:
Average throughput: 0.29 Mbit/s
95th percentile per-packet one-way delay: 1563.051 ms
Loss rate: 4.79%
-- Flow 2:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 1682.946 ms
Loss rate: 8.97%
-- Flow 3:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 1643.754 ms
Loss rate: 15.15%

Run 2: Report of Copa — Data Link

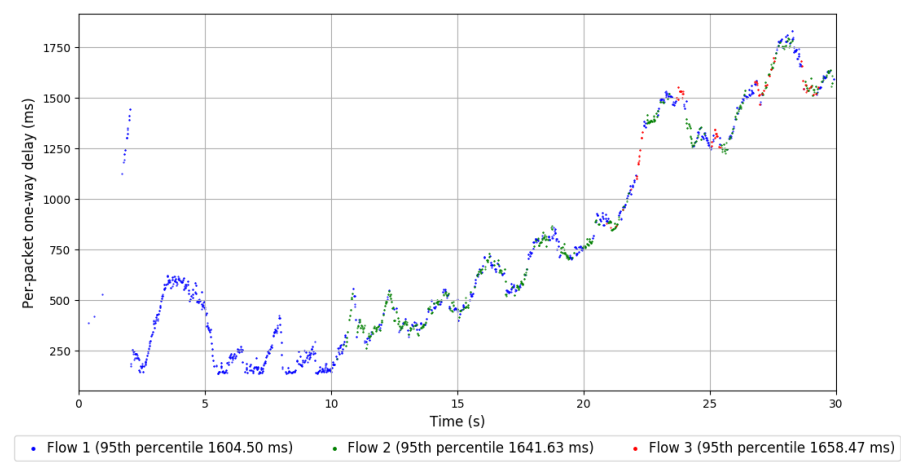
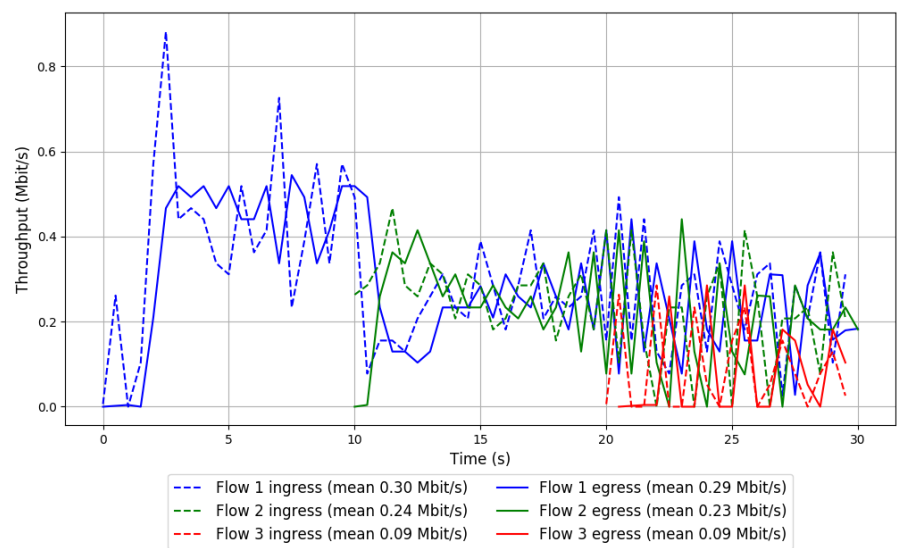


Run 3: Statistics of Copa

Start at: 2018-07-18 08:27:19
End at: 2018-07-18 08:27:49
Local clock offset: -7.471 ms
Remote clock offset: 13.769 ms

Below is generated by plot.py at 2018-07-18 08:36:25
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 1639.979 ms
Loss rate: 6.24%
-- Flow 1:
Average throughput: 0.29 Mbit/s
95th percentile per-packet one-way delay: 1604.501 ms
Loss rate: 5.02%
-- Flow 2:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 1641.626 ms
Loss rate: 7.24%
-- Flow 3:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 1658.467 ms
Loss rate: 13.35%

Run 3: Report of Copa — Data Link

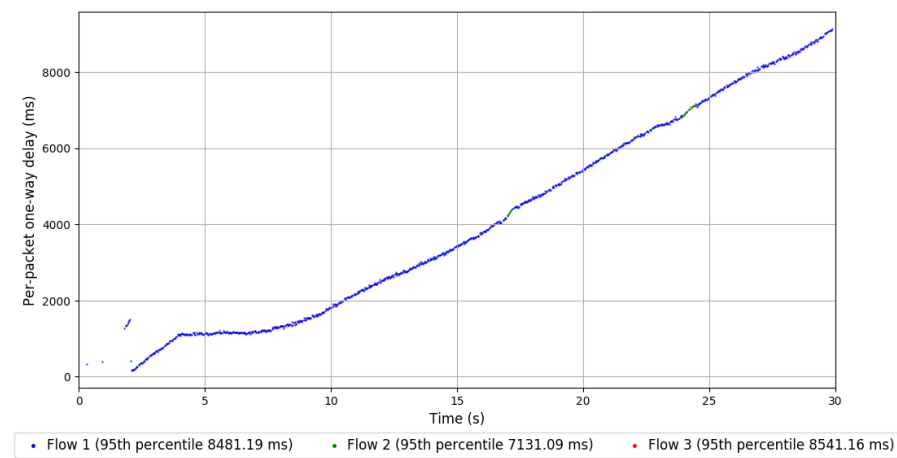
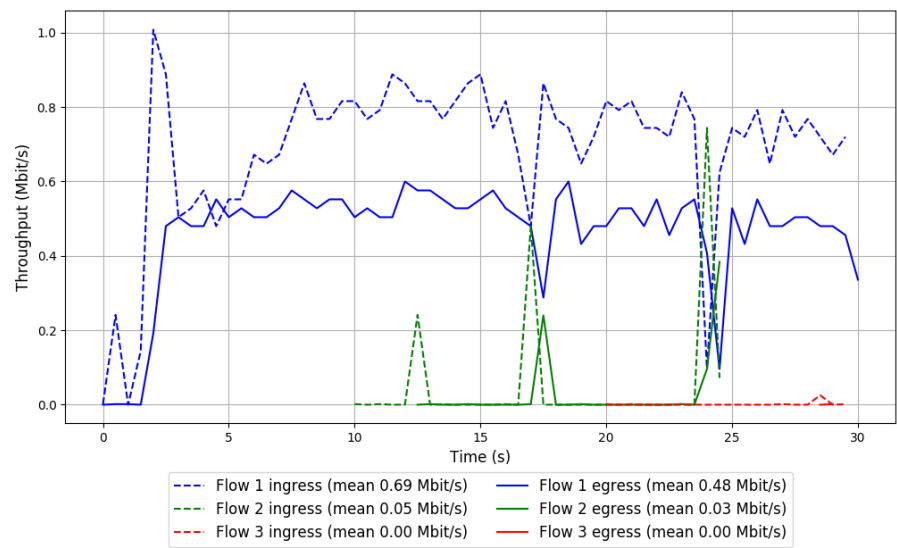


Run 1: Statistics of TCP Cubic

Start at: 2018-07-18 07:42:28
End at: 2018-07-18 07:42:58
Local clock offset: -2.701 ms
Remote clock offset: 16.006 ms

Below is generated by plot.py at 2018-07-18 08:36:25
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 8471.105 ms
Loss rate: 32.35%
-- Flow 1:
Average throughput: 0.48 Mbit/s
95th percentile per-packet one-way delay: 8481.195 ms
Loss rate: 31.53%
-- Flow 2:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 7131.087 ms
Loss rate: 52.87%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 8541.156 ms
Loss rate: 95.34%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2018-07-18 08:03:04

End at: 2018-07-18 08:03:34

Local clock offset: -5.808 ms

Remote clock offset: 15.91 ms

Below is generated by plot.py at 2018-07-18 08:36:25

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.46 Mbit/s

95th percentile per-packet one-way delay: 8018.408 ms

Loss rate: 31.76%

-- Flow 1:

Average throughput: 0.46 Mbit/s

95th percentile per-packet one-way delay: 8018.408 ms

Loss rate: 31.61%

-- Flow 2:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 6649.758 ms

Loss rate: 53.44%

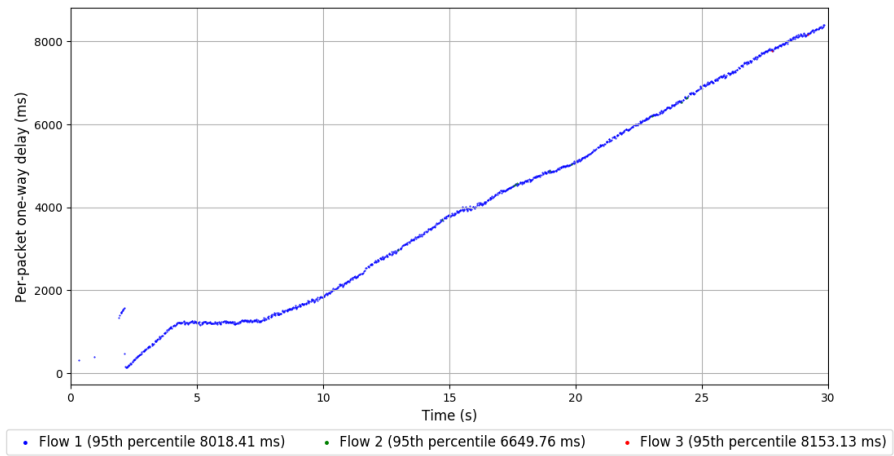
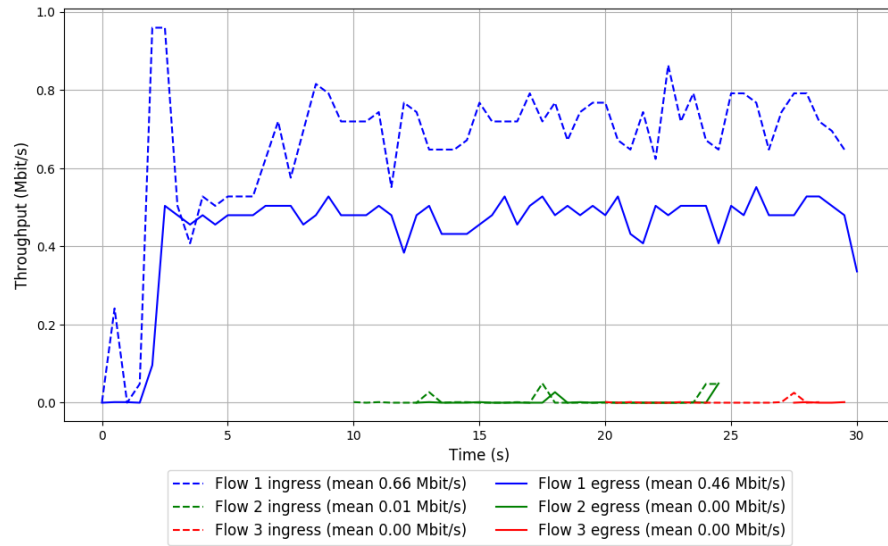
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 8153.127 ms

Loss rate: 90.68%

Run 2: Report of TCP Cubic — Data Link



Run 3: Statistics of TCP Cubic

Start at: 2018-07-18 08:23:38

End at: 2018-07-18 08:24:08

Local clock offset: -8.533 ms

Remote clock offset: 11.25 ms

Below is generated by plot.py at 2018-07-18 08:36:27

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.48 Mbit/s

95th percentile per-packet one-way delay: 8252.580 ms

Loss rate: 32.27%

-- Flow 1:

Average throughput: 0.47 Mbit/s

95th percentile per-packet one-way delay: 8262.346 ms

Loss rate: 31.43%

-- Flow 2:

Average throughput: 0.03 Mbit/s

95th percentile per-packet one-way delay: 7132.527 ms

Loss rate: 52.83%

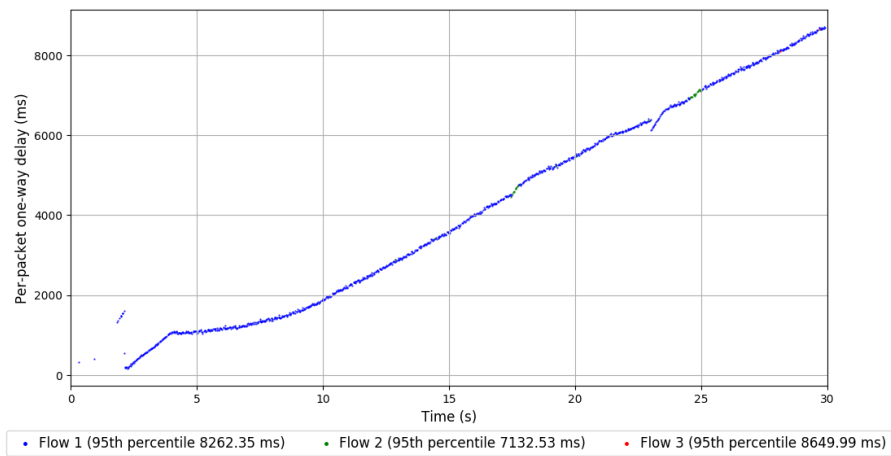
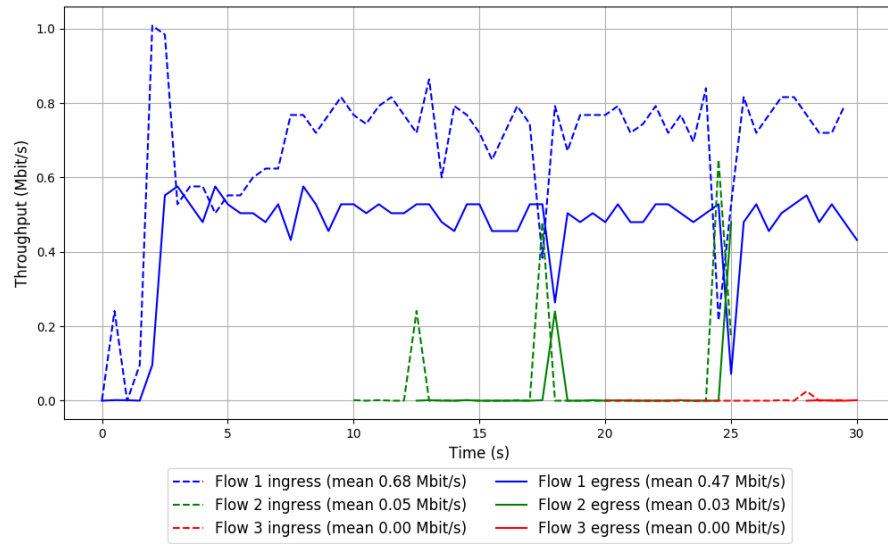
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 8649.987 ms

Loss rate: 91.06%

Run 3: Report of TCP Cubic — Data Link



Run 1: Statistics of FillP

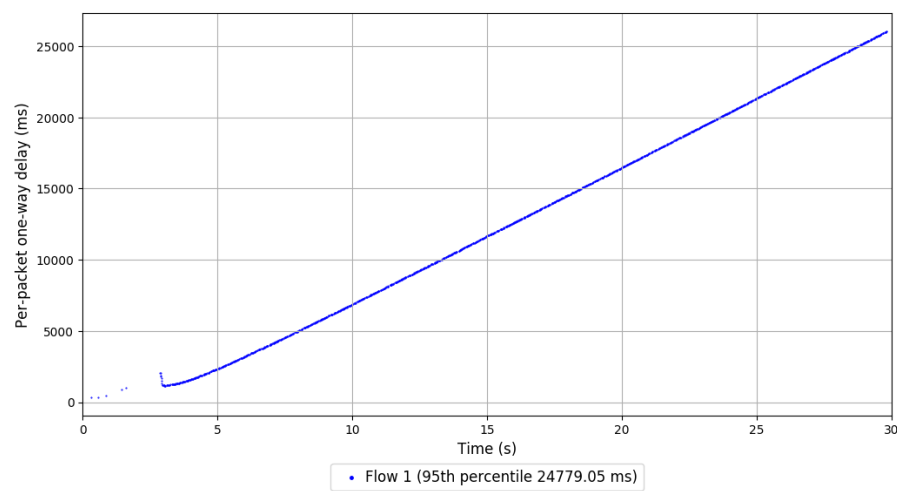
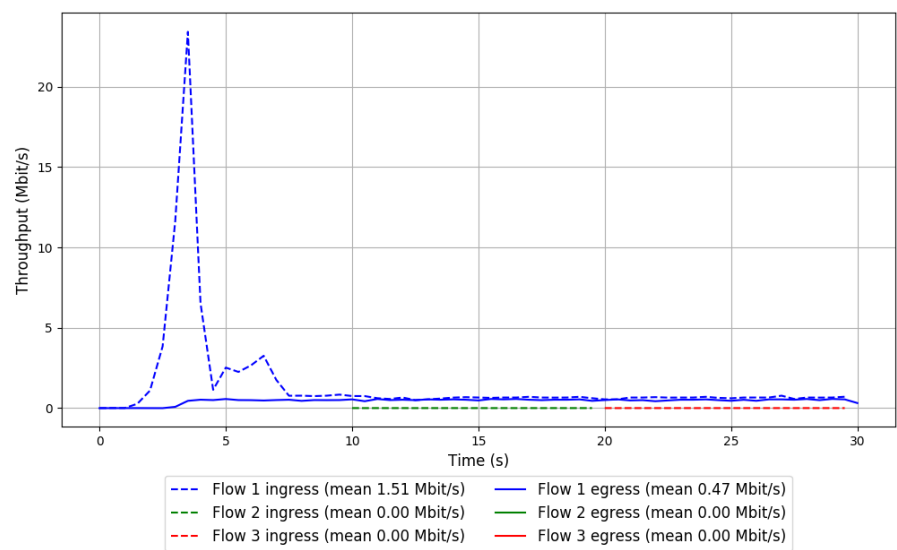
Start at: 2018-07-18 07:40:03

End at: 2018-07-18 07:40:33

Local clock offset: -2.617 ms

Remote clock offset: 16.449 ms

Run 1: Report of FillP — Data Link



Run 2: Statistics of FillP

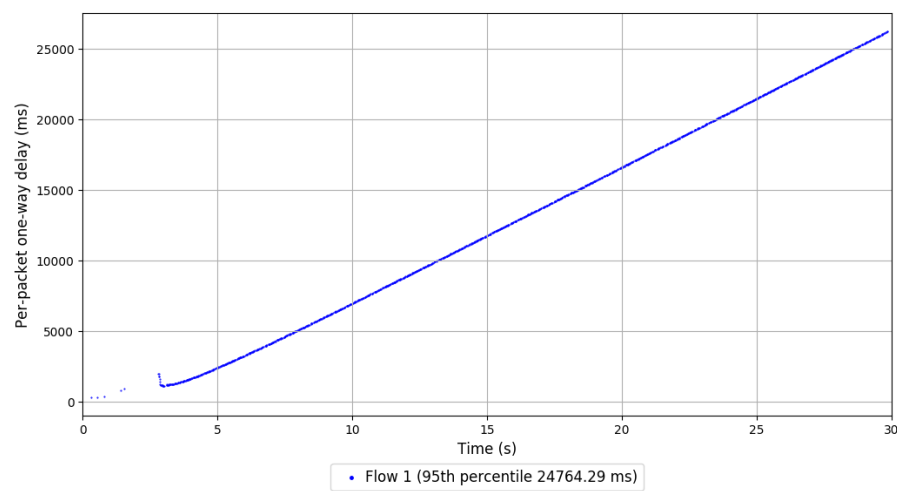
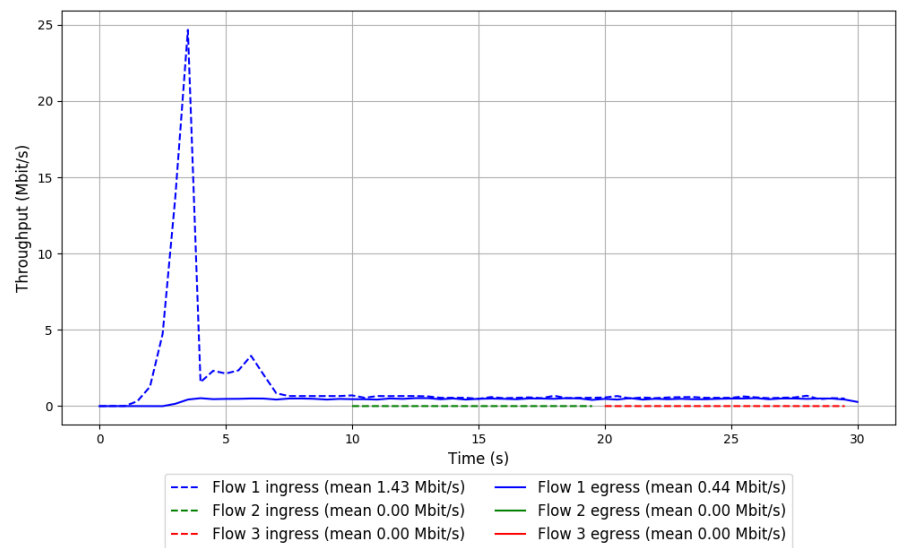
Start at: 2018-07-18 08:00:34

End at: 2018-07-18 08:01:04

Local clock offset: -5.091 ms

Remote clock offset: 17.822 ms

Run 2: Report of FillP — Data Link



Run 3: Statistics of FillP

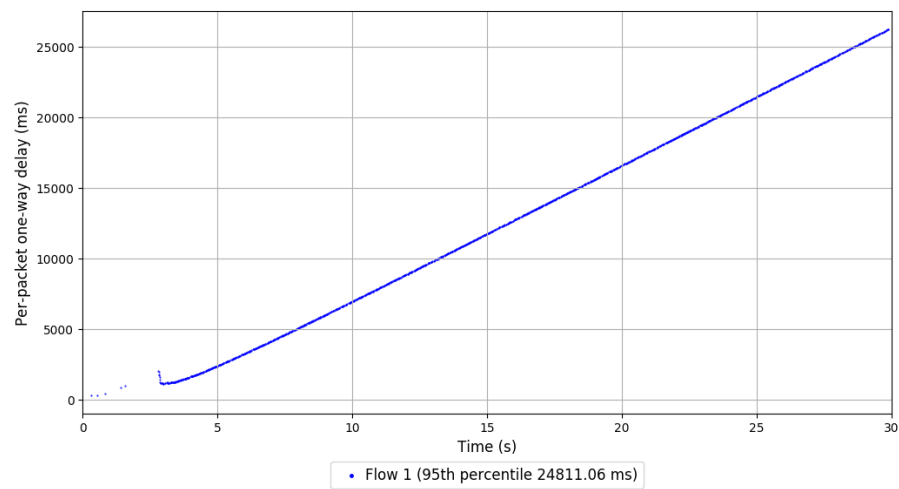
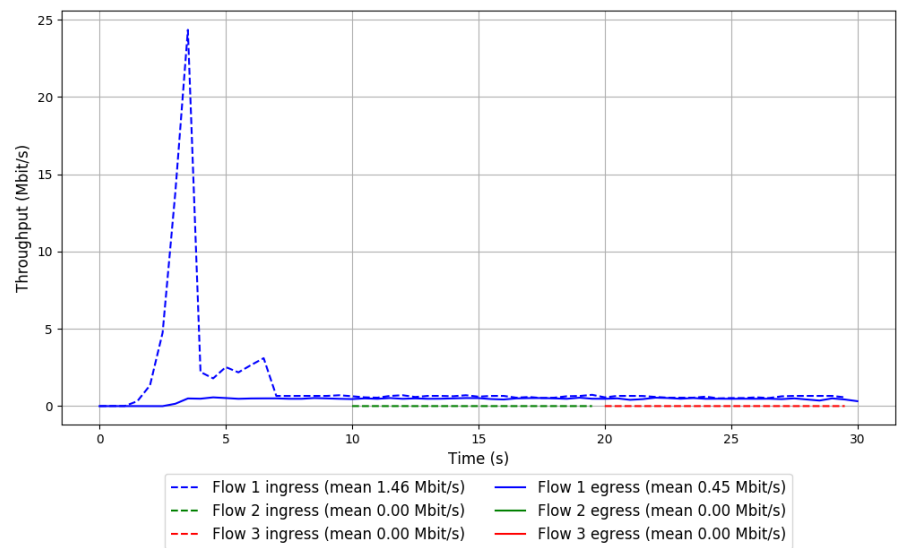
Start at: 2018-07-18 08:21:09

End at: 2018-07-18 08:21:39

Local clock offset: -8.362 ms

Remote clock offset: 11.563 ms

Run 3: Report of FillP — Data Link



Run 1: Statistics of FillP-Sheep

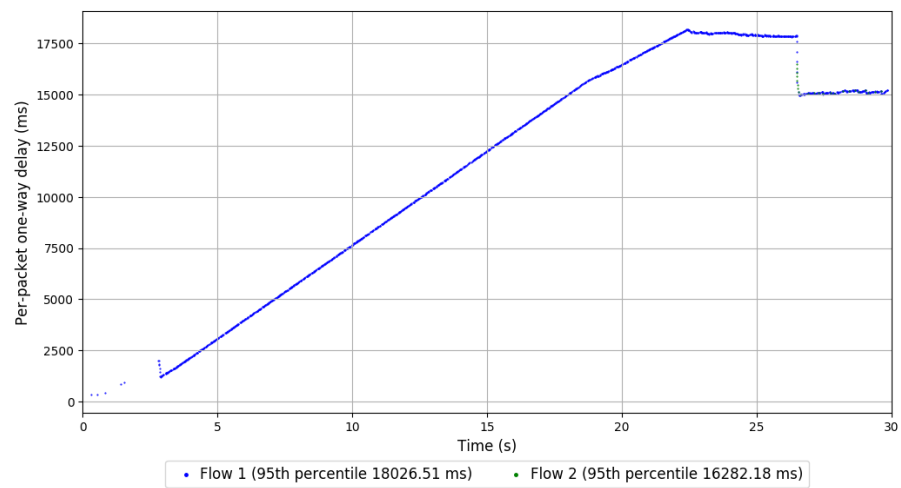
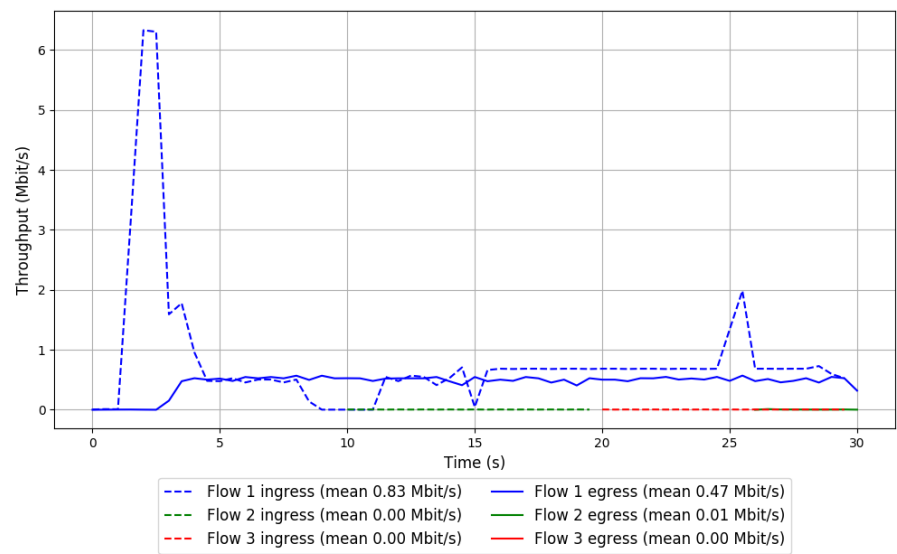
Start at: 2018-07-18 07:49:42

End at: 2018-07-18 07:50:12

Local clock offset: -2.993 ms

Remote clock offset: 12.628 ms

Run 1: Report of FillP-Sheep — Data Link



Run 2: Statistics of FillP-Sheep

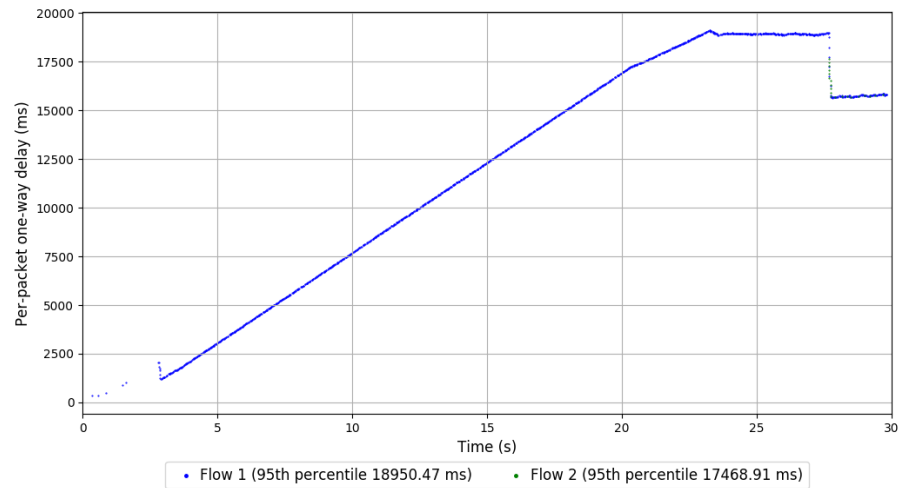
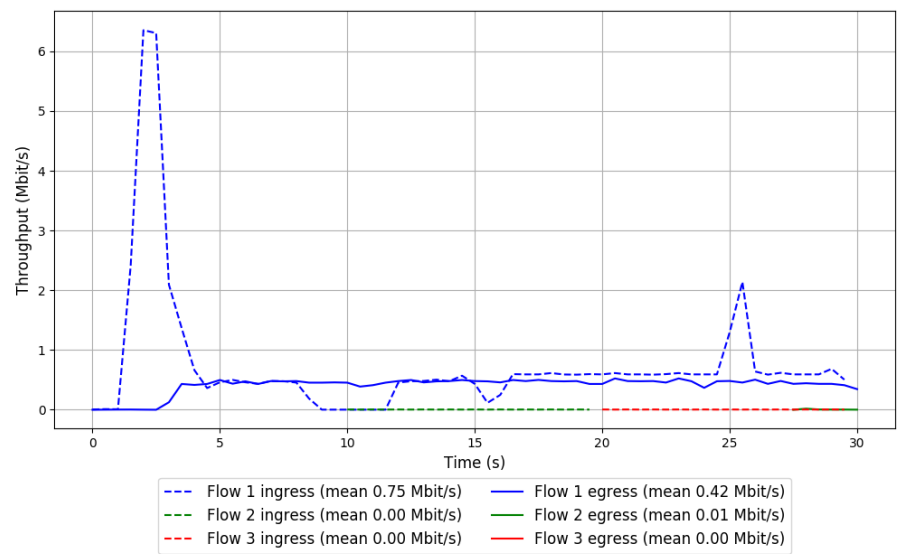
Start at: 2018-07-18 08:10:20

End at: 2018-07-18 08:10:50

Local clock offset: -7.11 ms

Remote clock offset: 13.336 ms

Run 2: Report of FillP-Sheep — Data Link



Run 3: Statistics of FillP-Sheep

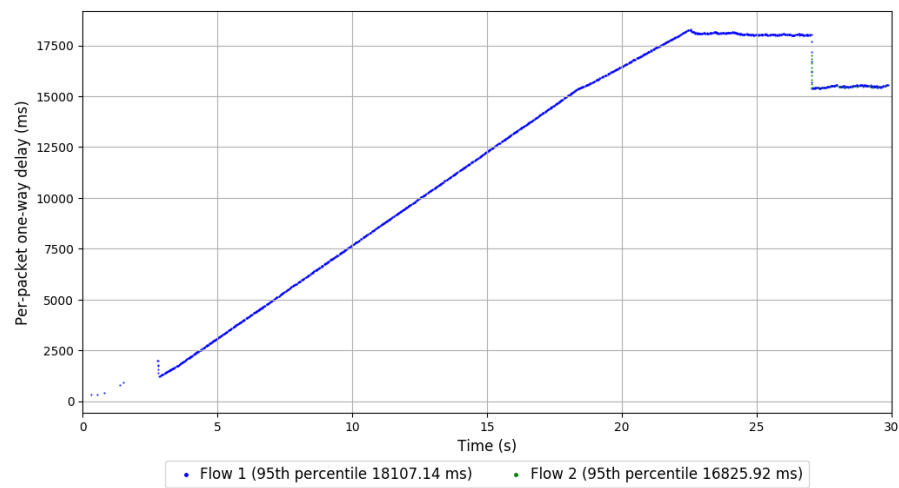
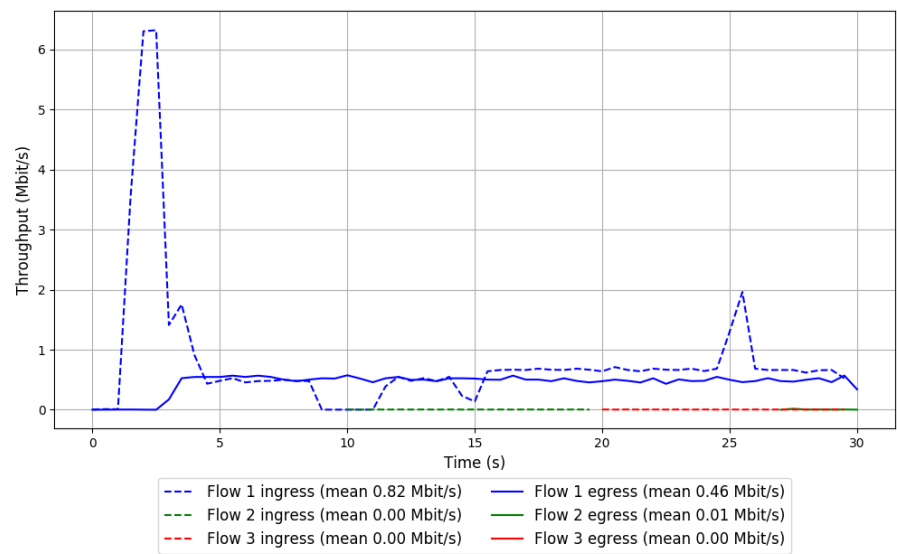
Start at: 2018-07-18 08:30:55

End at: 2018-07-18 08:31:25

Local clock offset: -5.708 ms

Remote clock offset: 14.745 ms

Run 3: Report of FillP-Sheep — Data Link

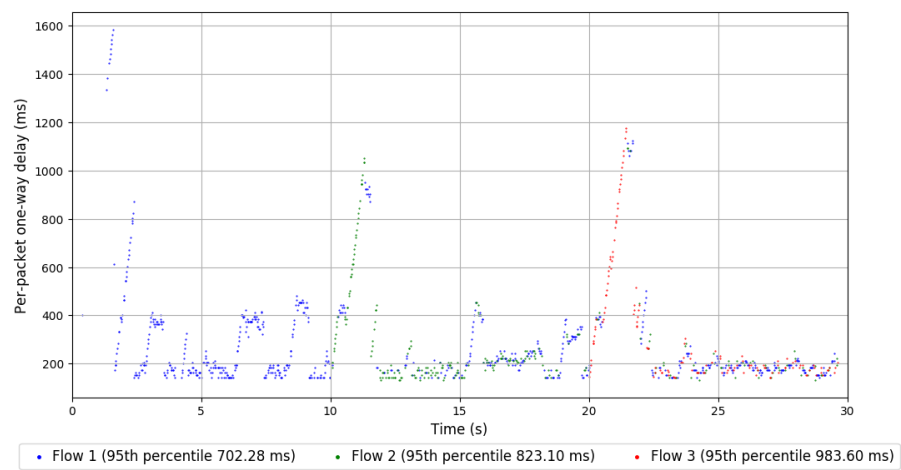
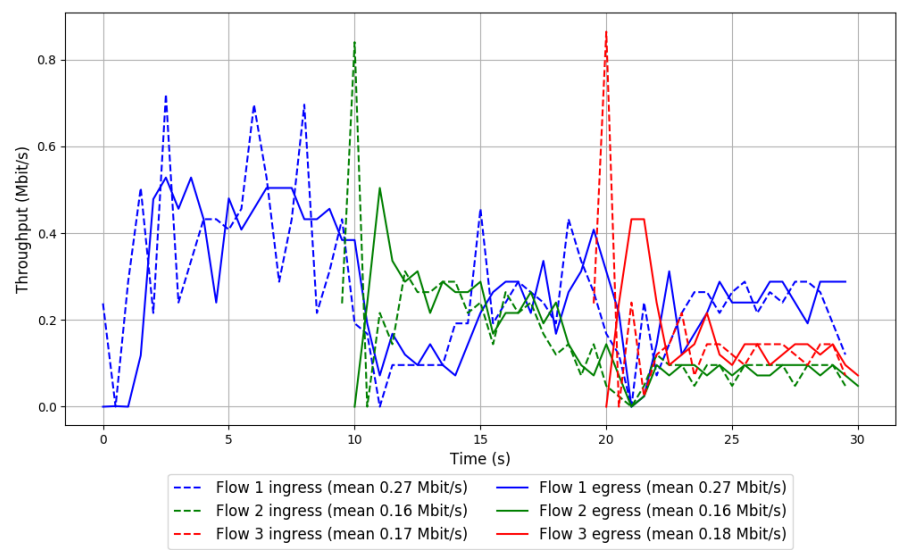


Run 1: Statistics of Indigo

Start at: 2018-07-18 07:50:54
End at: 2018-07-18 07:51:24
Local clock offset: -3.027 ms
Remote clock offset: 11.538 ms

Below is generated by plot.py at 2018-07-18 08:36:31
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 843.531 ms
Loss rate: 1.02%
-- Flow 1:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 702.283 ms
Loss rate: 0.89%
-- Flow 2:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 823.100 ms
Loss rate: 0.76%
-- Flow 3:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 983.595 ms
Loss rate: 2.10%

Run 1: Report of Indigo — Data Link

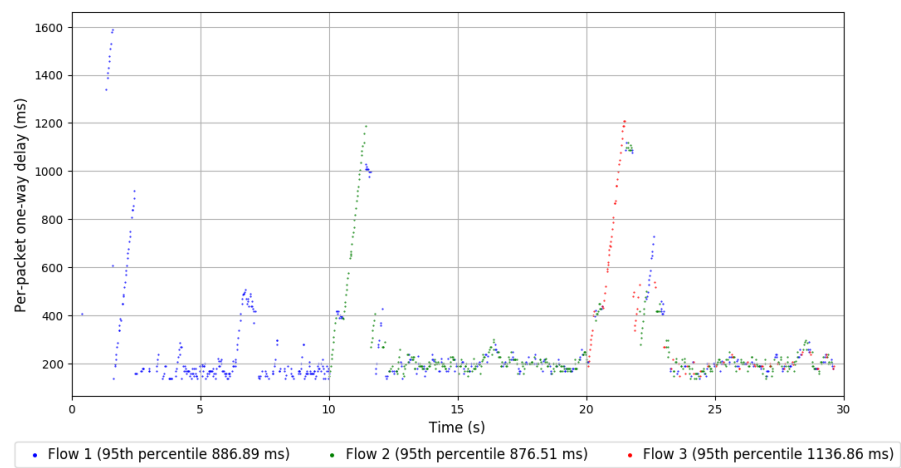
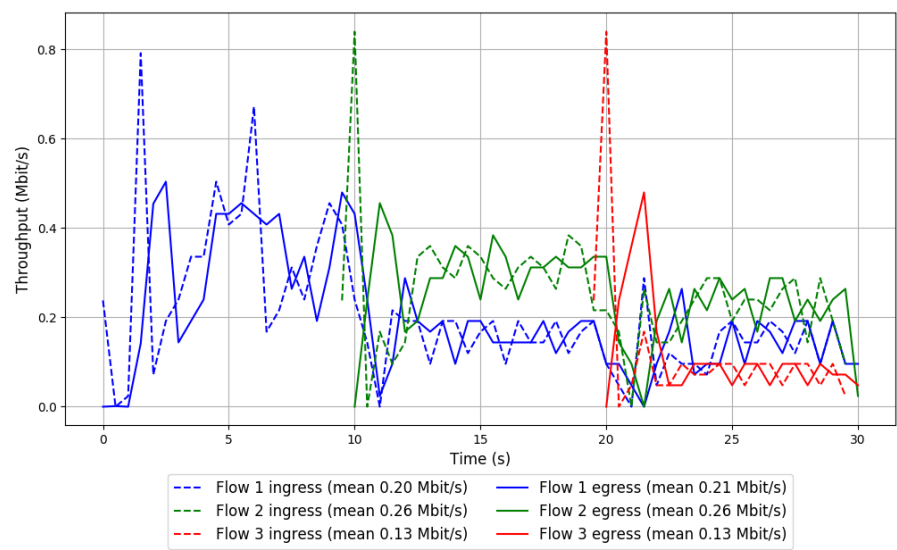


Run 2: Statistics of Indigo

Start at: 2018-07-18 08:11:31
End at: 2018-07-18 08:12:02
Local clock offset: -7.309 ms
Remote clock offset: 17.452 ms

Below is generated by plot.py at 2018-07-18 08:36:32
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 967.014 ms
Loss rate: 1.06%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 886.890 ms
Loss rate: 0.79%
-- Flow 2:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 876.510 ms
Loss rate: 1.40%
-- Flow 3:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 1136.863 ms
Loss rate: 0.97%

Run 2: Report of Indigo — Data Link

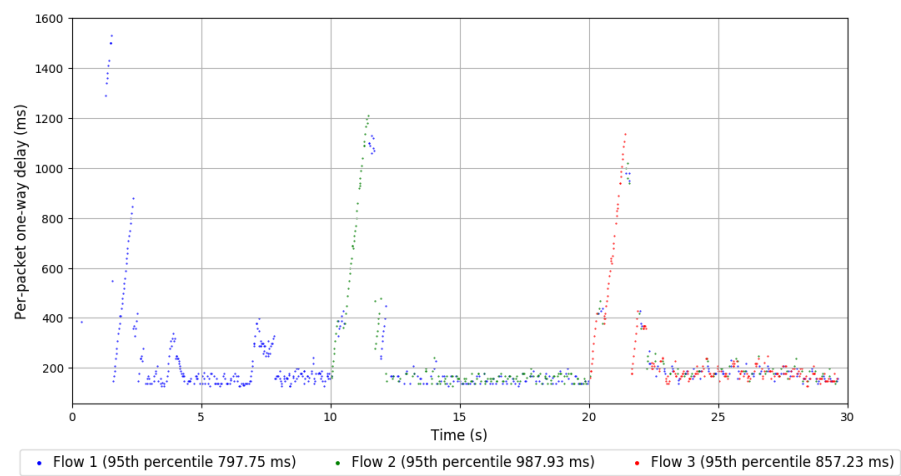
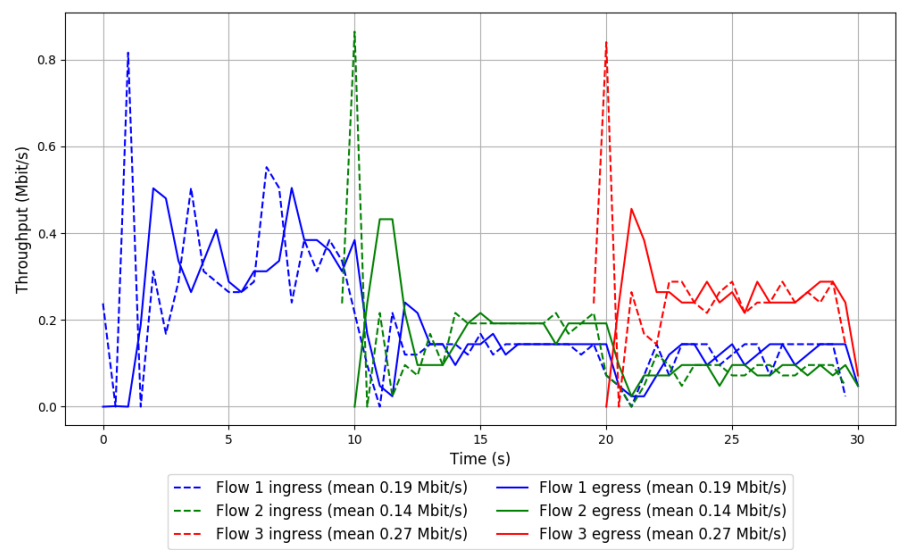


Run 3: Statistics of Indigo

Start at: 2018-07-18 08:32:07
End at: 2018-07-18 08:32:37
Local clock offset: -5.23 ms
Remote clock offset: 10.685 ms

Below is generated by plot.py at 2018-07-18 08:36:33
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 937.563 ms
Loss rate: 1.07%
-- Flow 1:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 797.745 ms
Loss rate: 0.42%
-- Flow 2:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 987.932 ms
Loss rate: 0.85%
-- Flow 3:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 857.234 ms
Loss rate: 2.67%

Run 3: Report of Indigo — Data Link



Run 1: Statistics of LEDBAT

Start at: 2018-07-18 07:36:24

End at: 2018-07-18 07:36:54

Local clock offset: -2.282 ms

Remote clock offset: 12.49 ms

Below is generated by plot.py at 2018-07-18 08:36:34

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.46 Mbit/s

95th percentile per-packet one-way delay: 390.667 ms

Loss rate: 1.45%

-- Flow 1:

Average throughput: 0.19 Mbit/s

95th percentile per-packet one-way delay: 350.366 ms

Loss rate: 0.21%

-- Flow 2:

Average throughput: 0.30 Mbit/s

95th percentile per-packet one-way delay: 390.546 ms

Loss rate: 0.80%

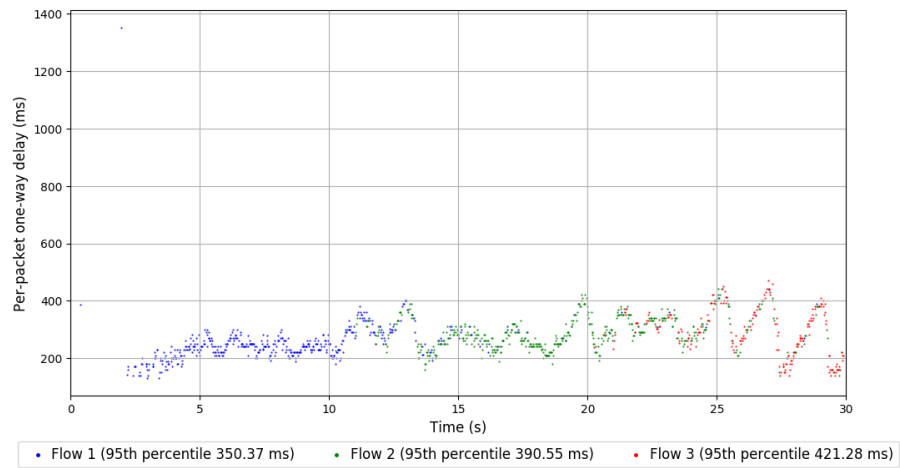
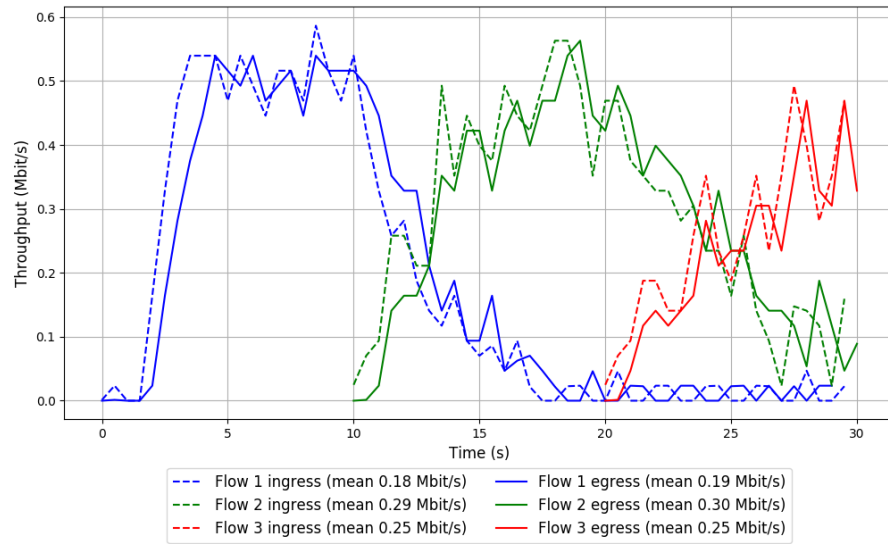
-- Flow 3:

Average throughput: 0.25 Mbit/s

95th percentile per-packet one-way delay: 421.278 ms

Loss rate: 5.55%

Run 1: Report of LEDBAT — Data Link

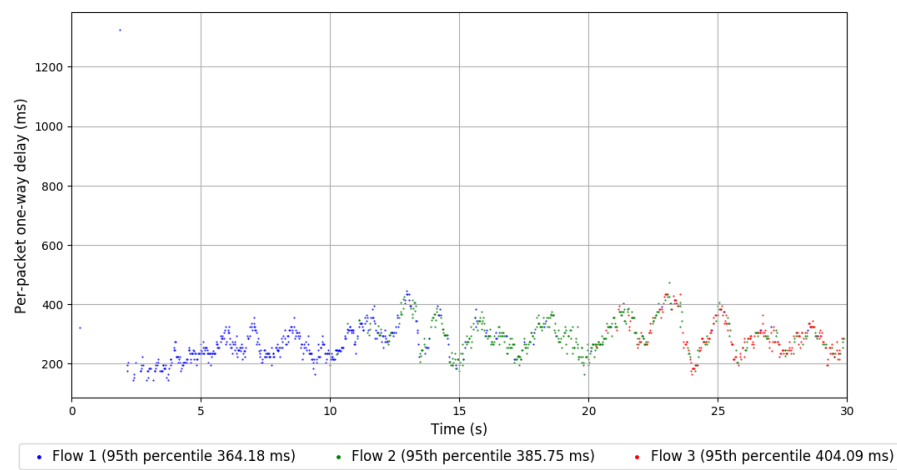
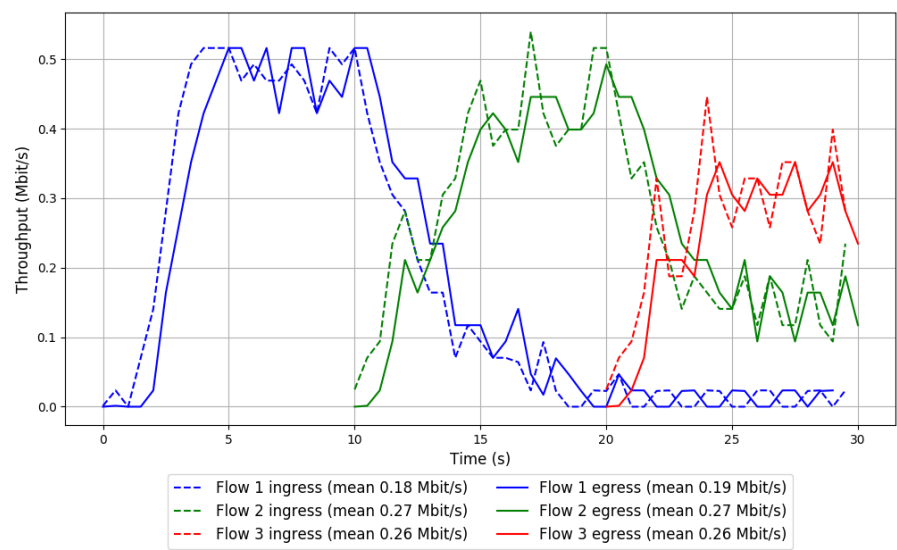


Run 2: Statistics of LEDBAT

Start at: 2018-07-18 07:56:52
End at: 2018-07-18 07:57:22
Local clock offset: -3.881 ms
Remote clock offset: 11.613 ms

Below is generated by plot.py at 2018-07-18 08:36:34
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 384.342 ms
Loss rate: 1.50%
-- Flow 1:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 364.178 ms
Loss rate: 0.22%
-- Flow 2:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 385.746 ms
Loss rate: 1.09%
-- Flow 3:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 404.090 ms
Loss rate: 5.00%

Run 2: Report of LEDBAT — Data Link

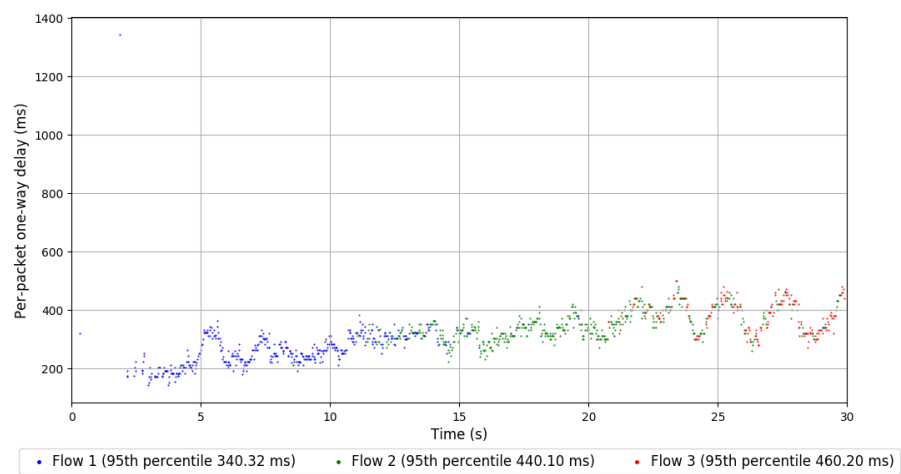
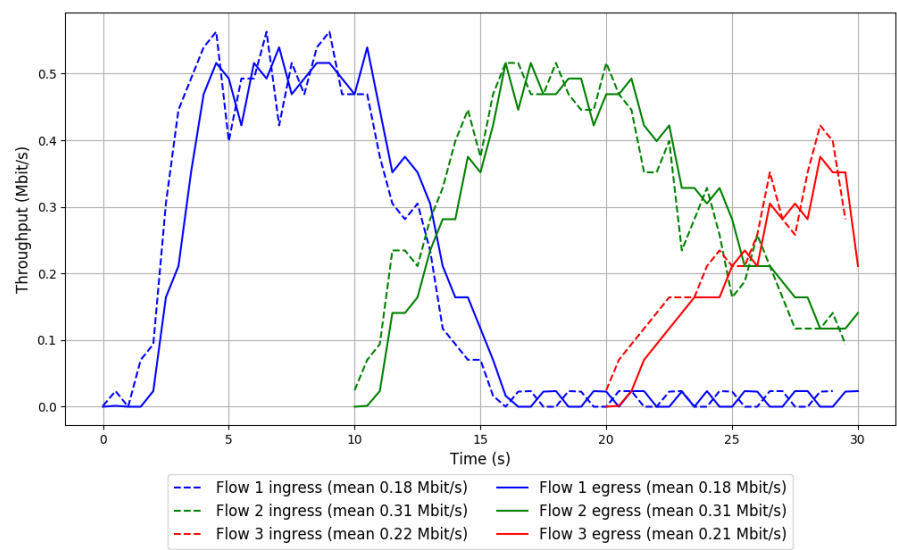


Run 3: Statistics of LEDBAT

Start at: 2018-07-18 08:17:30
End at: 2018-07-18 08:18:00
Local clock offset: -7.99 ms
Remote clock offset: 16.377 ms

Below is generated by plot.py at 2018-07-18 08:36:35
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 440.126 ms
Loss rate: 1.64%
-- Flow 1:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 340.319 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 440.100 ms
Loss rate: 0.77%
-- Flow 3:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 460.200 ms
Loss rate: 7.98%

Run 3: Report of LEDBAT — Data Link



Run 1: Statistics of PCC-Allegro

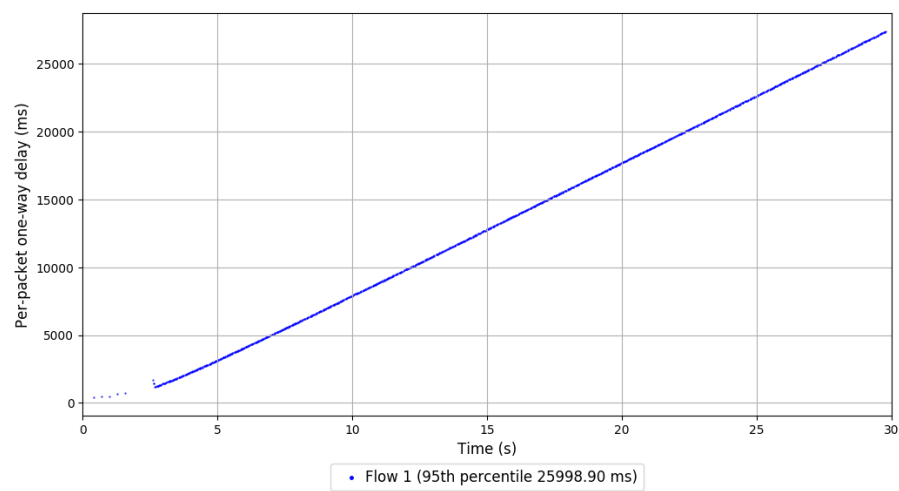
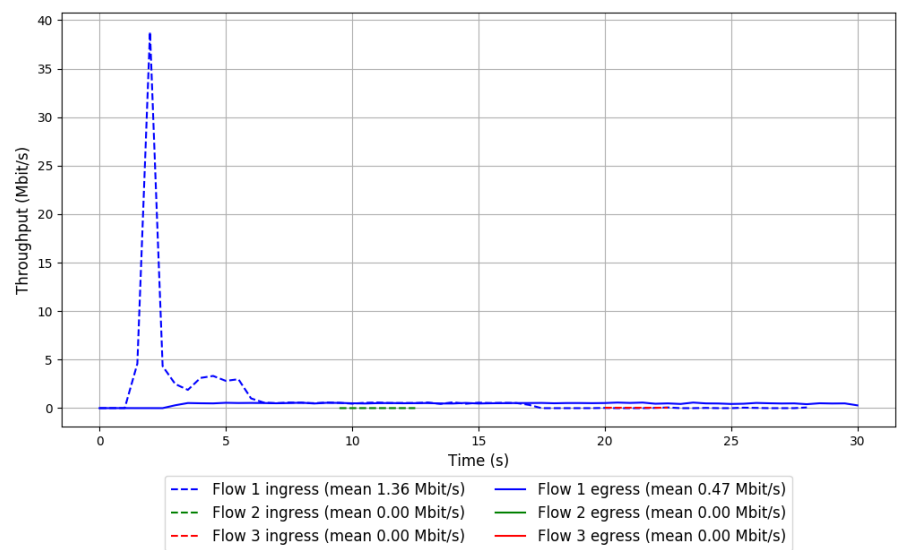
Start at: 2018-07-18 07:48:30

End at: 2018-07-18 07:49:00

Local clock offset: -2.965 ms

Remote clock offset: 17.708 ms

Run 1: Report of PCC-Allegro — Data Link



Run 2: Statistics of PCC-Allegro

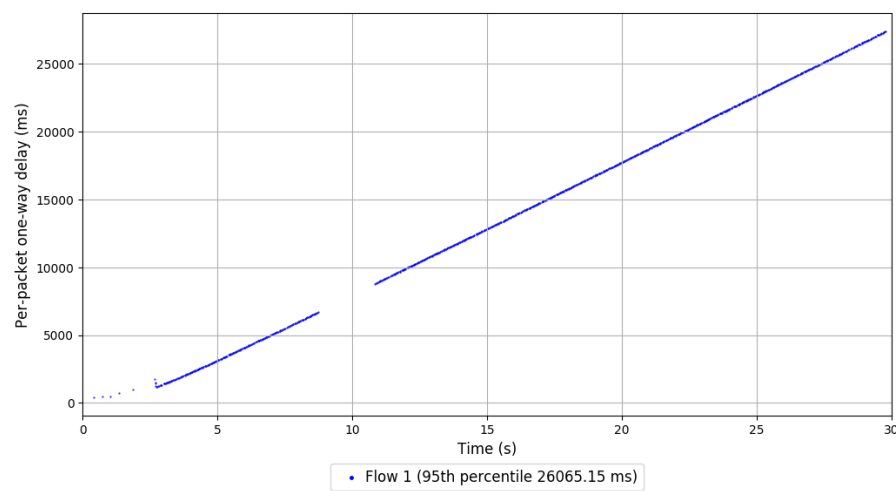
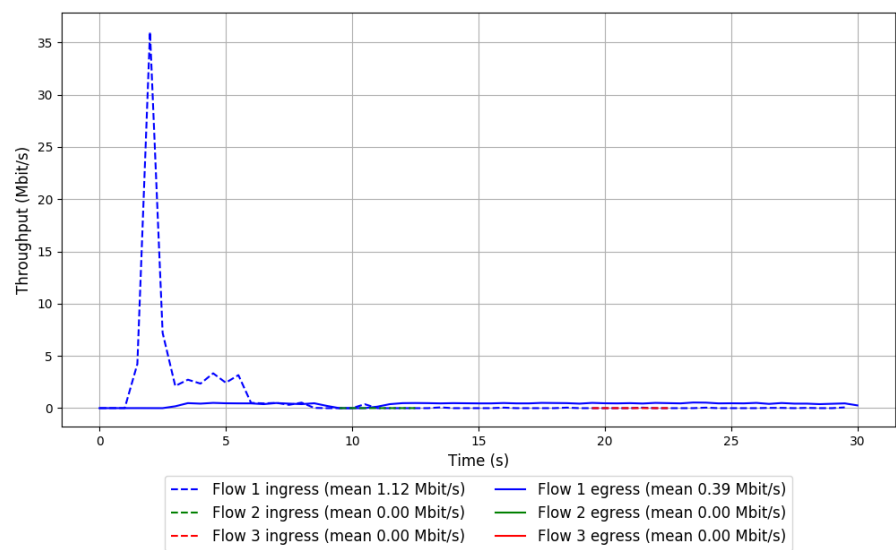
Start at: 2018-07-18 08:09:07

End at: 2018-07-18 08:09:37

Local clock offset: -6.983 ms

Remote clock offset: 16.205 ms

Run 2: Report of PCC-Allegro — Data Link



Run 3: Statistics of PCC-Allegro

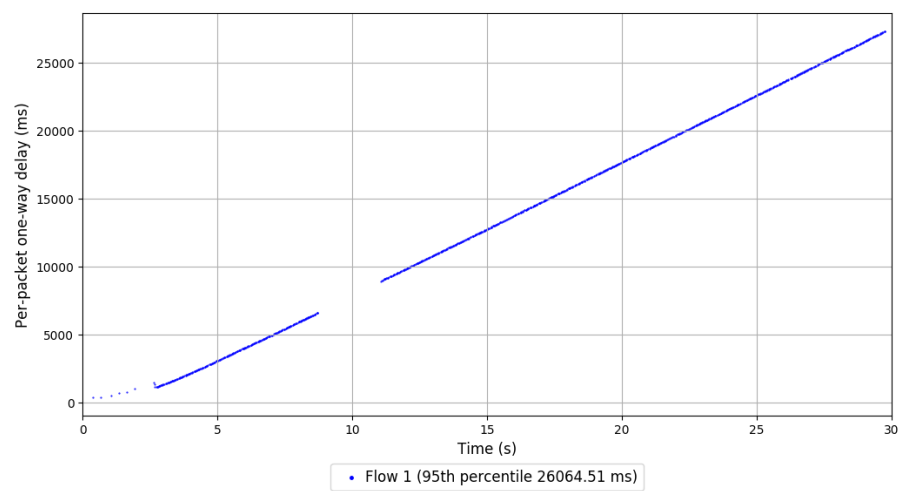
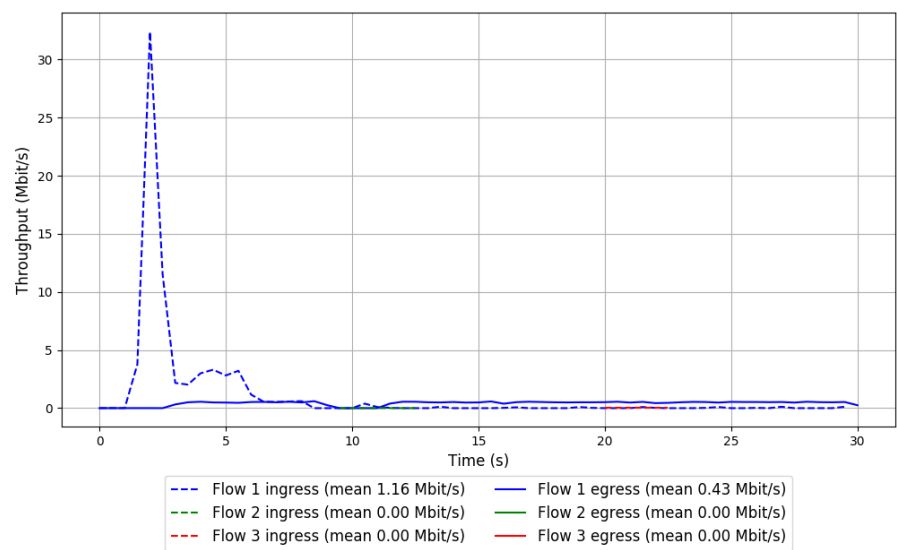
Start at: 2018-07-18 08:29:43

End at: 2018-07-18 08:30:13

Local clock offset: -6.137 ms

Remote clock offset: 9.679 ms

Run 3: Report of PCC-Allegro — Data Link



Run 1: Statistics of PCC-Expr

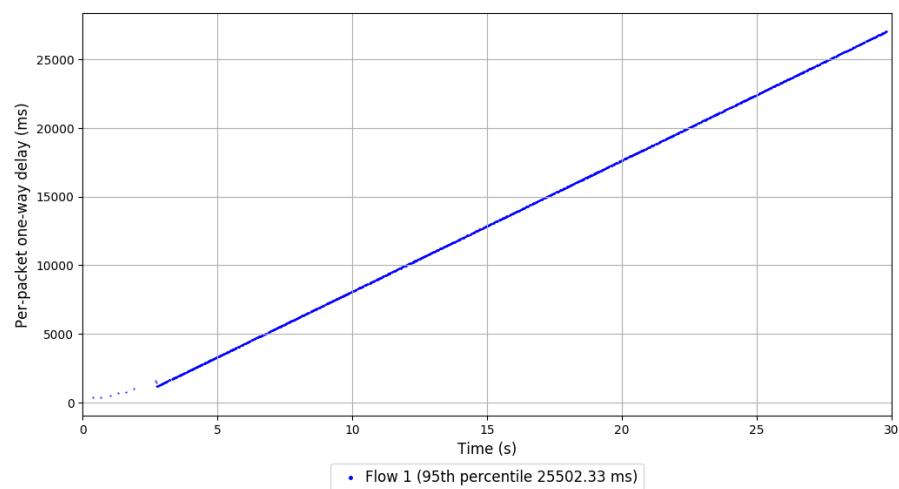
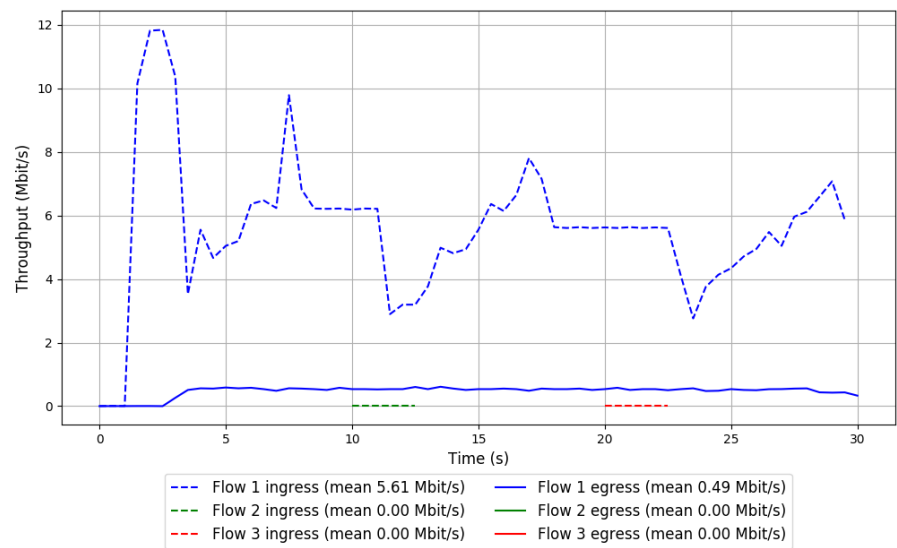
Start at: 2018-07-18 07:43:40

End at: 2018-07-18 07:44:10

Local clock offset: -2.75 ms

Remote clock offset: 13.163 ms

Run 1: Report of PCC-Expr — Data Link



Run 2: Statistics of PCC-Expr

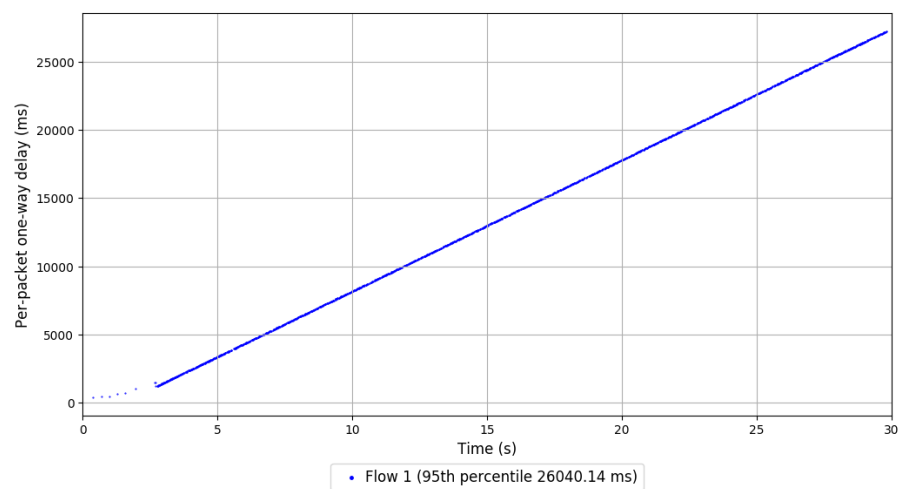
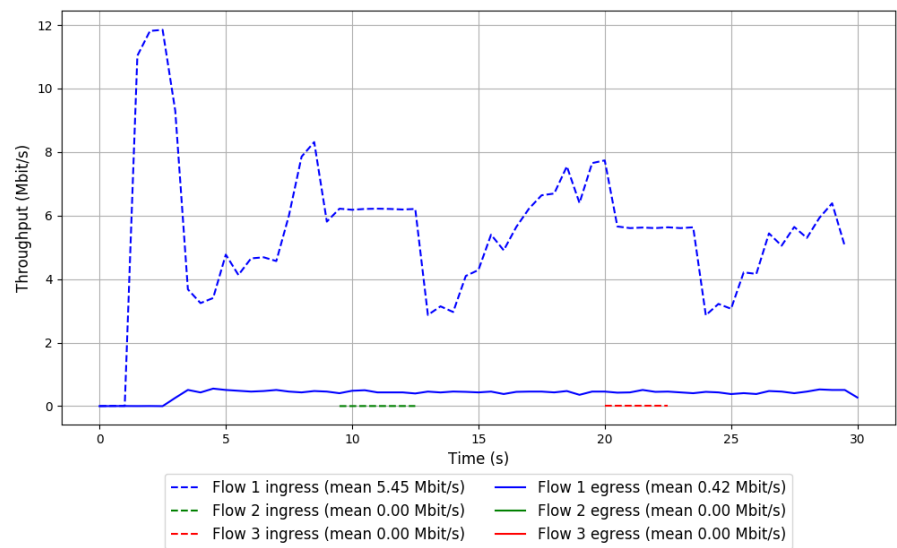
Start at: 2018-07-18 08:04:16

End at: 2018-07-18 08:04:46

Local clock offset: -6.139 ms

Remote clock offset: 11.937 ms

Run 2: Report of PCC-Expr — Data Link



Run 3: Statistics of PCC-Expr

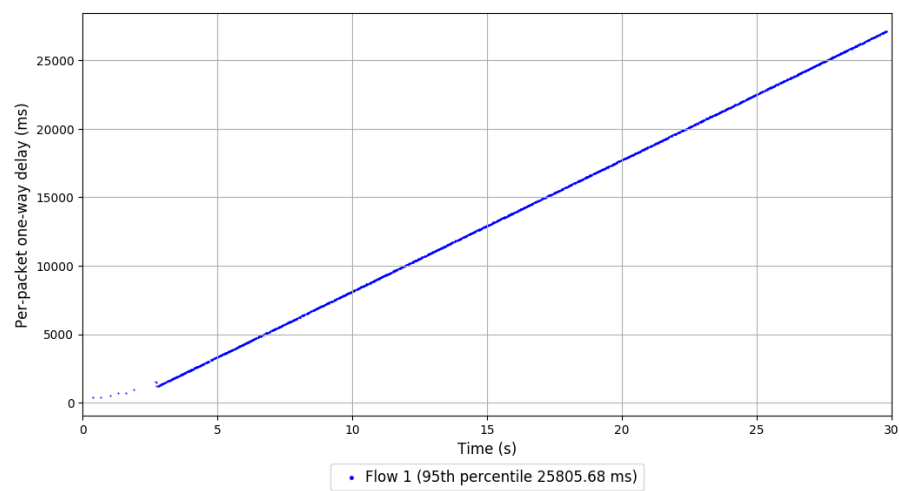
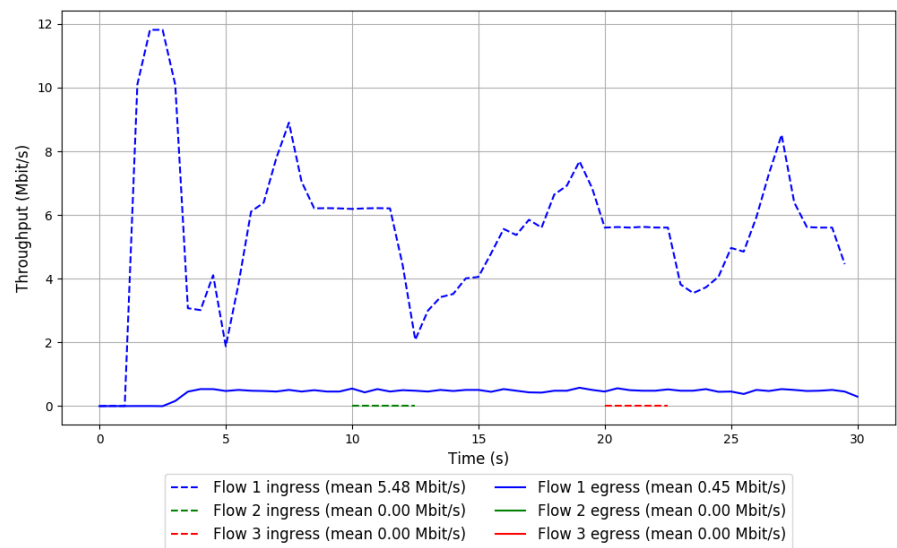
Start at: 2018-07-18 08:24:50

End at: 2018-07-18 08:25:20

Local clock offset: -8.635 ms

Remote clock offset: 15.02 ms

Run 3: Report of PCC-Expr — Data Link

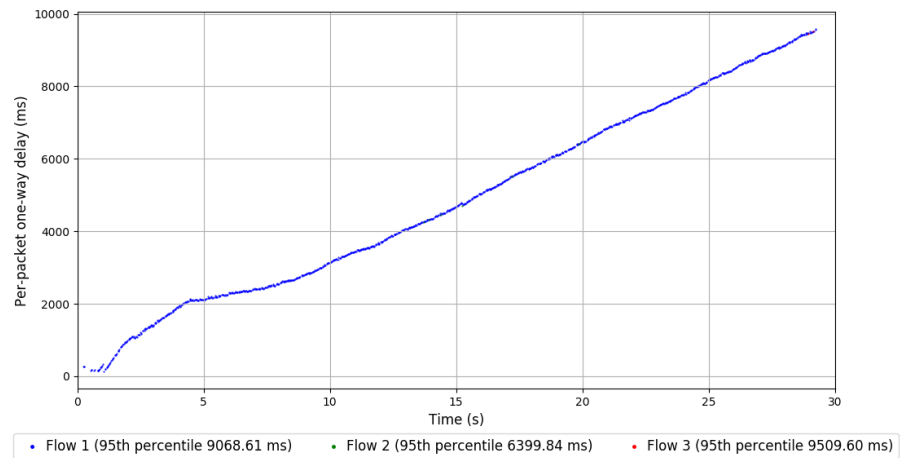
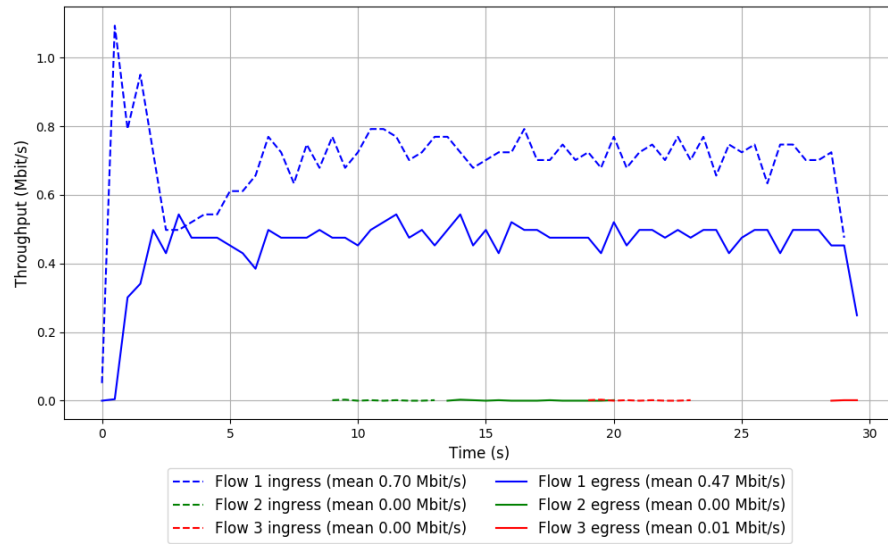


Run 1: Statistics of QUIC Cubic

Start at: 2018-07-18 07:53:17
End at: 2018-07-18 07:53:47
Local clock offset: -3.112 ms
Remote clock offset: 17.661 ms

Below is generated by plot.py at 2018-07-18 08:36:46
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 9076.080 ms
Loss rate: 33.78%
-- Flow 1:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 9068.614 ms
Loss rate: 33.78%
-- Flow 2:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 6399.837 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 9509.603 ms
Loss rate: 66.67%

Run 1: Report of QUIC Cubic — Data Link

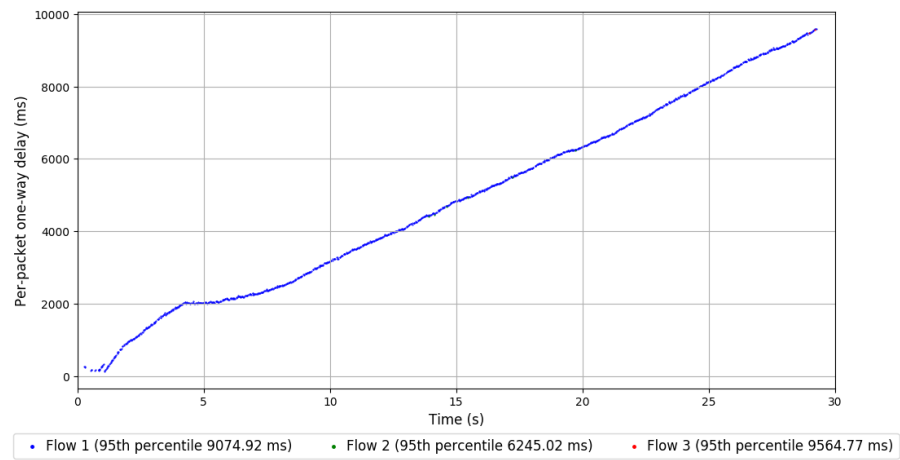
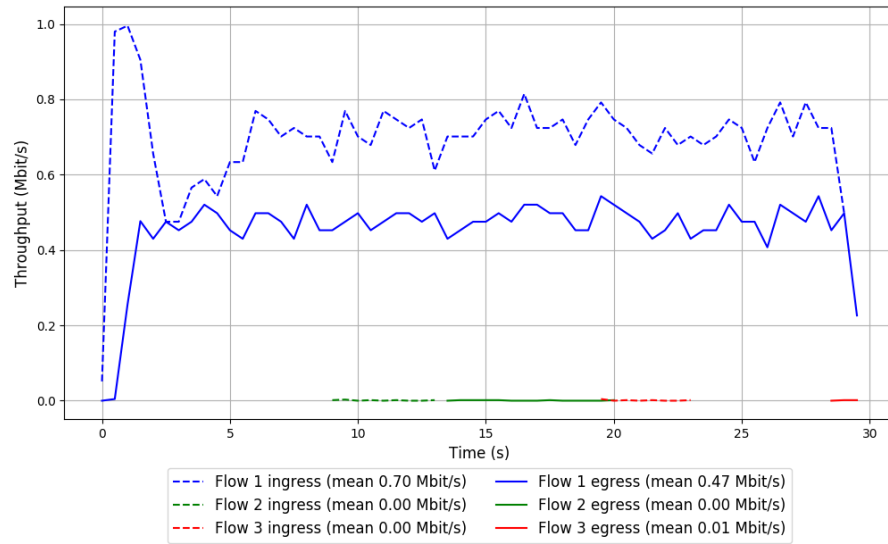


Run 2: Statistics of QUIC Cubic

Start at: 2018-07-18 08:13:55
End at: 2018-07-18 08:14:25
Local clock offset: -7.568 ms
Remote clock offset: 16.176 ms

Below is generated by plot.py at 2018-07-18 08:36:46
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 9090.242 ms
Loss rate: 33.76%
-- Flow 1:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 9074.916 ms
Loss rate: 33.76%
-- Flow 2:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 6245.016 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 9564.770 ms
Loss rate: 66.67%

Run 2: Report of QUIC Cubic — Data Link

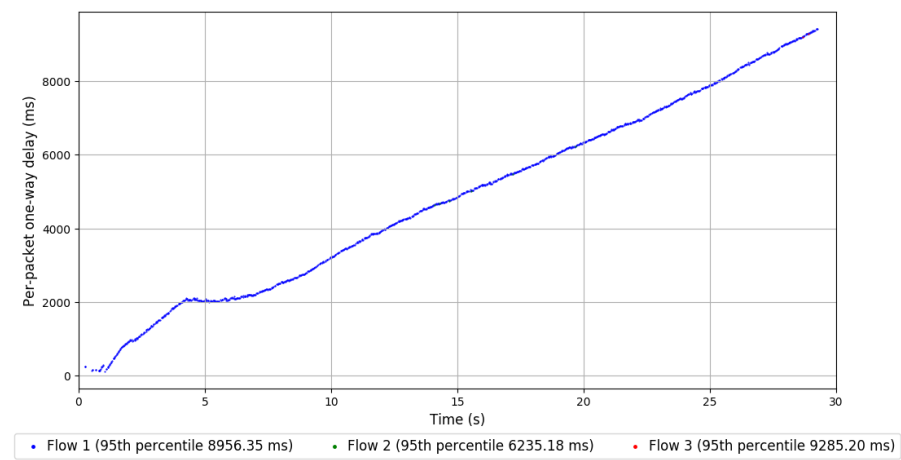
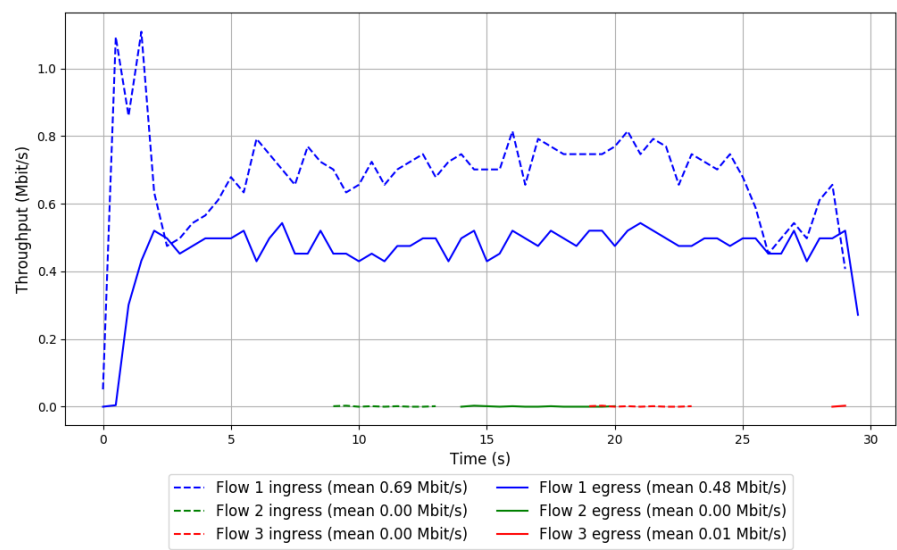


Run 3: Statistics of QUIC Cubic

Start at: 2018-07-18 08:34:30
End at: 2018-07-18 08:35:00
Local clock offset: -4.547 ms
Remote clock offset: 14.549 ms

Below is generated by plot.py at 2018-07-18 08:36:46
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.48 Mbit/s
95th percentile per-packet one-way delay: 8980.192 ms
Loss rate: 31.29%
-- Flow 1:
Average throughput: 0.48 Mbit/s
95th percentile per-packet one-way delay: 8956.348 ms
Loss rate: 31.29%
-- Flow 2:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 6235.184 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 9285.197 ms
Loss rate: 66.67%

Run 3: Report of QUIC Cubic — Data Link

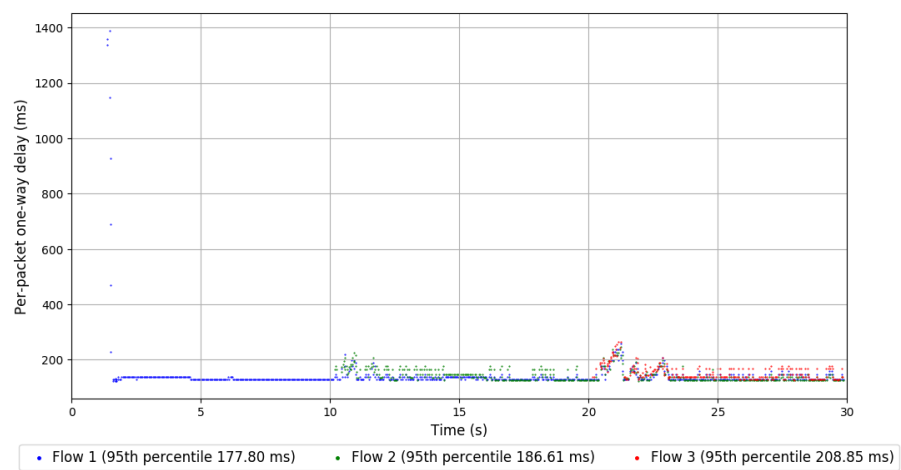
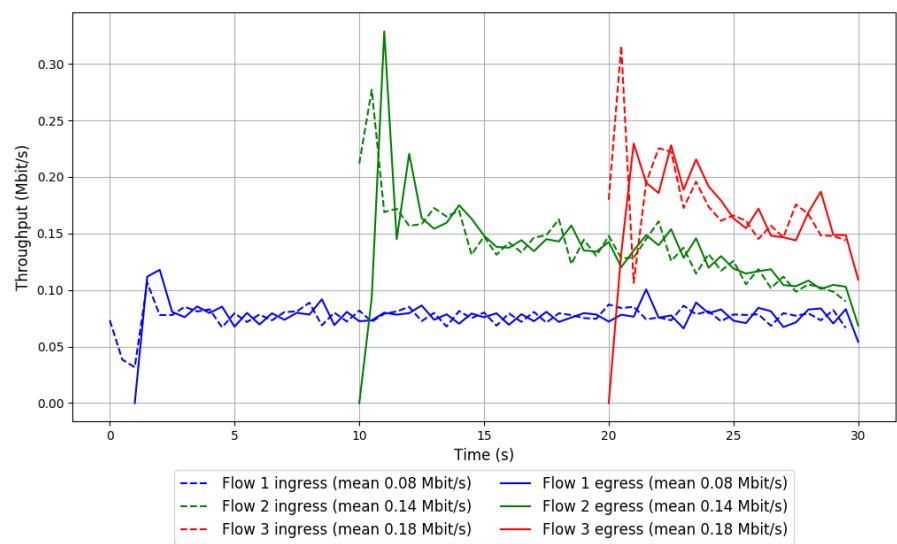


```
Run 1: Statistics of SCReAM

Start at: 2018-07-18 07:35:12
End at: 2018-07-18 07:35:42
Local clock offset: -2.219 ms
Remote clock offset: 13.344 ms

# Below is generated by plot.py at 2018-07-18 08:36:46
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.24 Mbit/s
95th percentile per-packet one-way delay: 188.943 ms
Loss rate: 1.04%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 177.801 ms
Loss rate: 0.66%
-- Flow 2:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 186.614 ms
Loss rate: 0.76%
-- Flow 3:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 208.846 ms
Loss rate: 2.01%
```

Run 1: Report of SReAM — Data Link

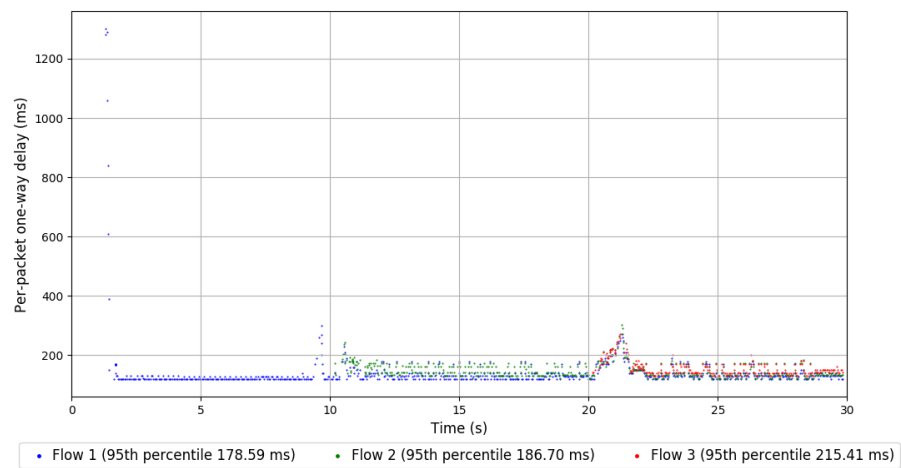
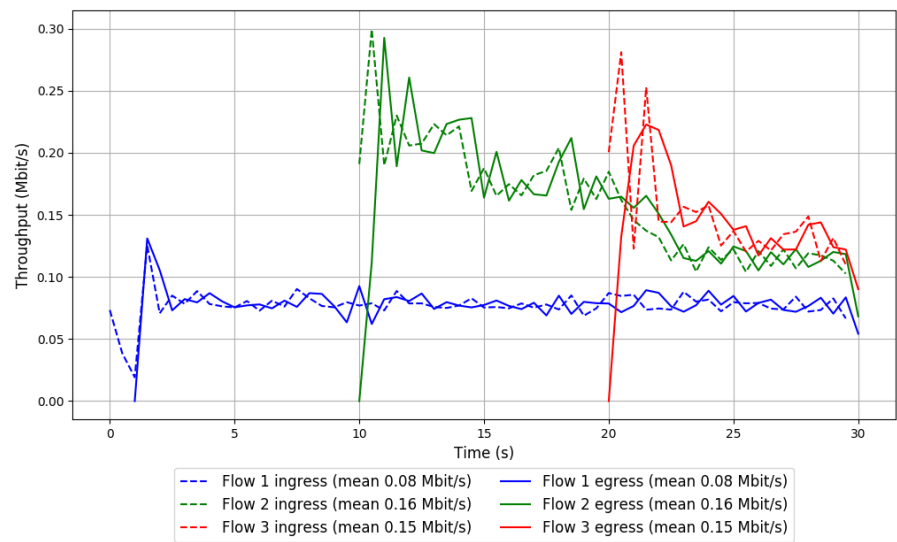


Run 2: Statistics of SReAM

Start at: 2018-07-18 07:55:41
End at: 2018-07-18 07:56:11
Local clock offset: -3.454 ms
Remote clock offset: 12.634 ms

Below is generated by plot.py at 2018-07-18 08:36:46
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.24 Mbit/s
95th percentile per-packet one-way delay: 191.937 ms
Loss rate: 1.05%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 178.585 ms
Loss rate: 0.65%
-- Flow 2:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 186.704 ms
Loss rate: 0.91%
-- Flow 3:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 215.412 ms
Loss rate: 1.95%

Run 2: Report of SReAM — Data Link

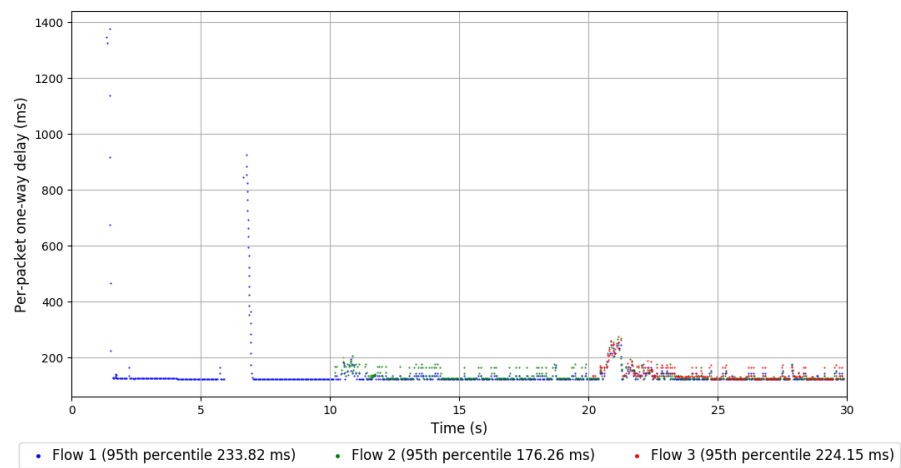
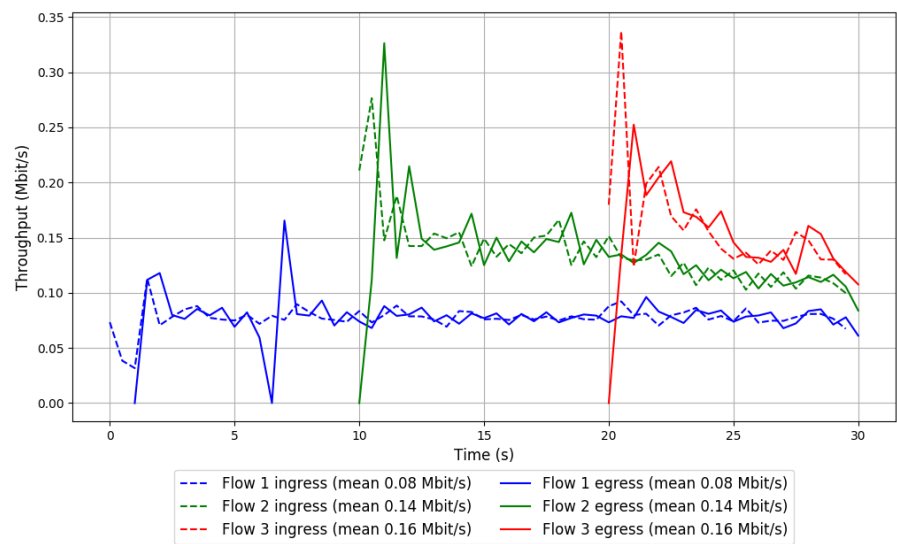


Run 3: Statistics of SCReAM

Start at: 2018-07-18 08:16:18
End at: 2018-07-18 08:16:48
Local clock offset: -7.856 ms
Remote clock offset: 11.472 ms

Below is generated by plot.py at 2018-07-18 08:36:46
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 205.168 ms
Loss rate: 0.97%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 233.824 ms
Loss rate: 0.66%
-- Flow 2:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 176.261 ms
Loss rate: 0.86%
-- Flow 3:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 224.149 ms
Loss rate: 1.63%

Run 3: Report of SReAM — Data Link

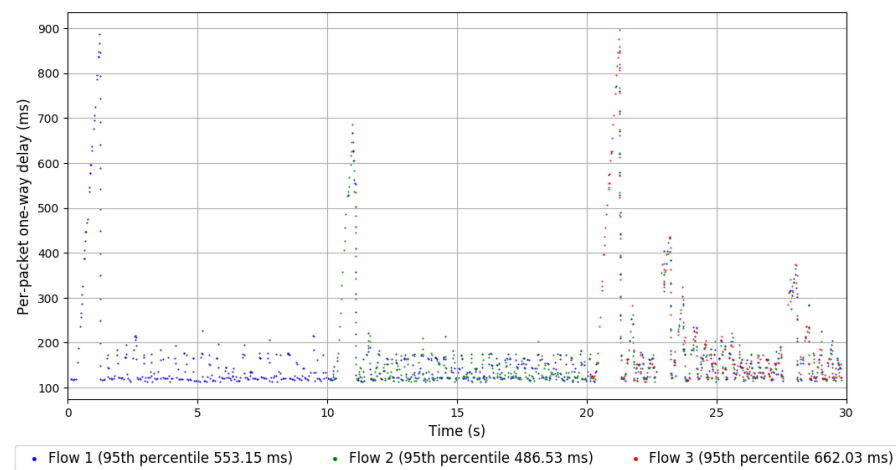
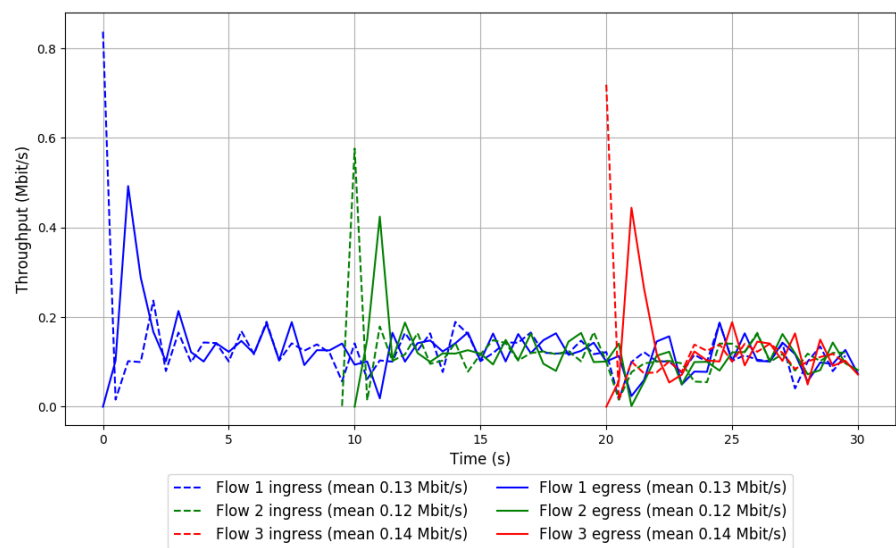


Run 1: Statistics of Sprout

Start at: 2018-07-18 07:44:55
End at: 2018-07-18 07:45:25
Local clock offset: -2.888 ms
Remote clock offset: 16.841 ms

Below is generated by plot.py at 2018-07-18 08:36:46
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 555.666 ms
Loss rate: 1.19%
-- Flow 1:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 553.147 ms
Loss rate: 0.58%
-- Flow 2:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 486.528 ms
Loss rate: 1.42%
-- Flow 3:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 662.026 ms
Loss rate: 2.55%

Run 1: Report of Sprout — Data Link

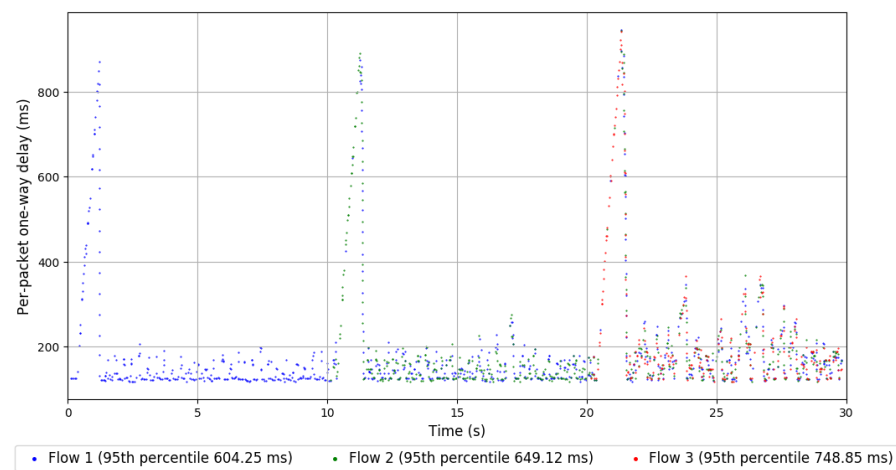
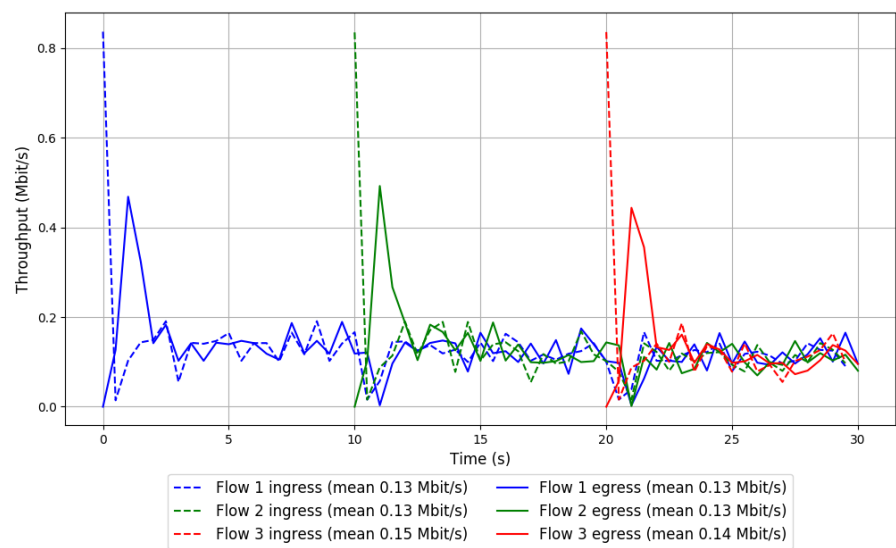


Run 2: Statistics of Sprout

Start at: 2018-07-18 08:05:32
End at: 2018-07-18 08:06:02
Local clock offset: -6.371 ms
Remote clock offset: 13.132 ms

Below is generated by plot.py at 2018-07-18 08:36:46
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 661.762 ms
Loss rate: 1.18%
-- Flow 1:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 604.248 ms
Loss rate: 0.30%
-- Flow 2:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 649.119 ms
Loss rate: 1.37%
-- Flow 3:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 748.847 ms
Loss rate: 3.27%

Run 2: Report of Sprout — Data Link

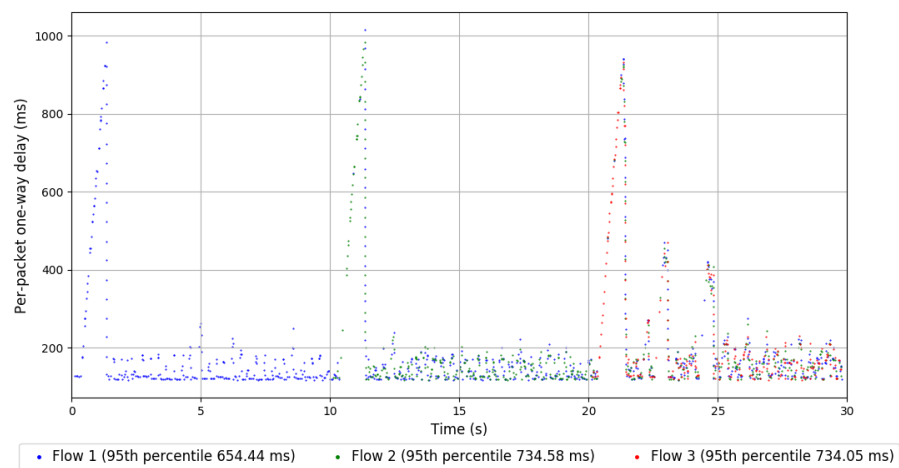
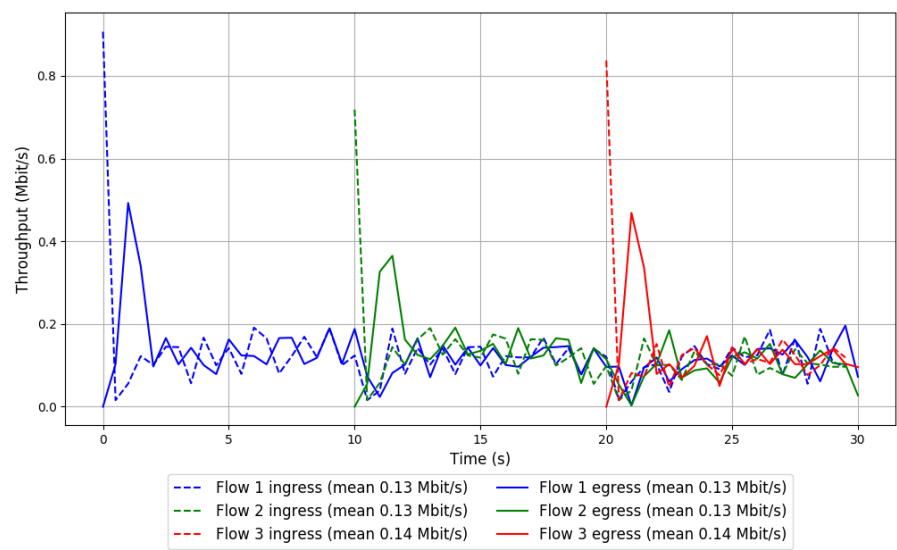


Run 3: Statistics of Sprout

Start at: 2018-07-18 08:26:07
End at: 2018-07-18 08:26:37
Local clock offset: -8.101 ms
Remote clock offset: 11.017 ms

```
# Below is generated by plot.py at 2018-07-18 08:36:46
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 712.284 ms
Loss rate: 1.22%
-- Flow 1:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 654.438 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 734.576 ms
Loss rate: 1.83%
-- Flow 3:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 734.055 ms
Loss rate: 2.41%
```

Run 3: Report of Sprout — Data Link

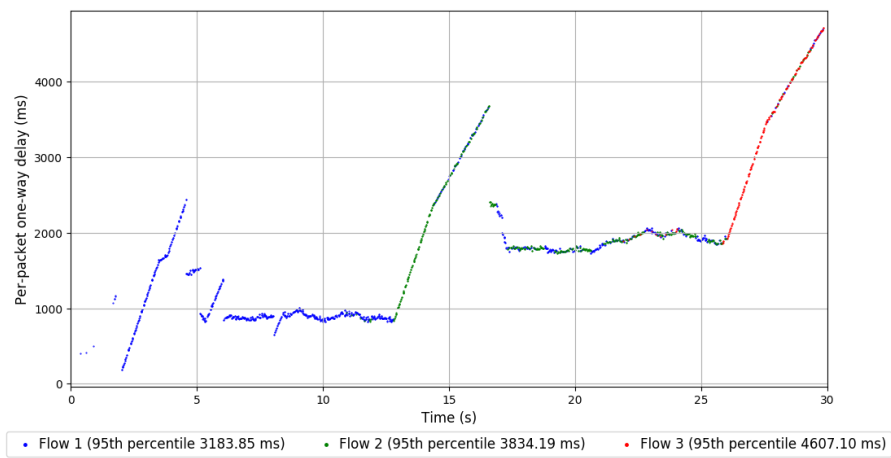
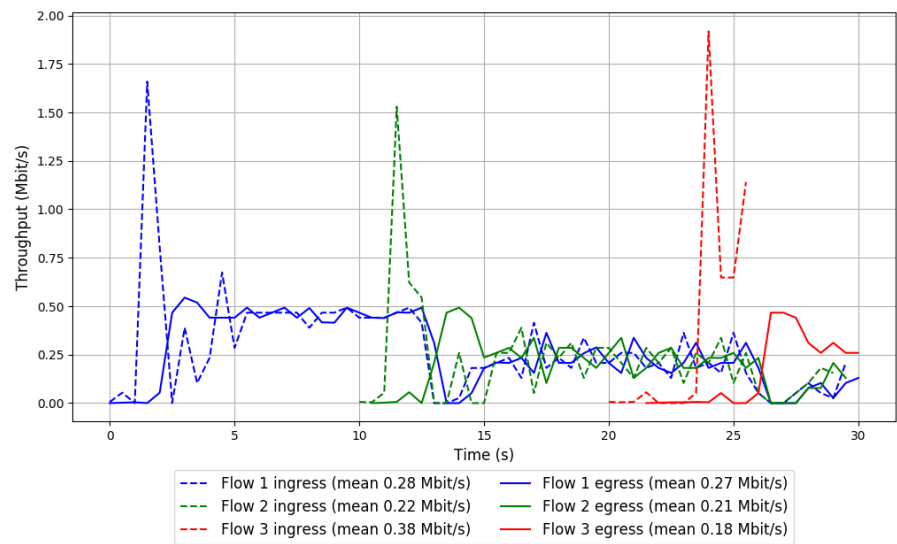


Run 1: Statistics of TaoVA-100x

Start at: 2018-07-18 07:54:29
End at: 2018-07-18 07:54:59
Local clock offset: -3.199 ms
Remote clock offset: 11.582 ms

Below is generated by plot.py at 2018-07-18 08:36:46
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 4017.385 ms
Loss rate: 11.45%
-- Flow 1:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 3183.849 ms
Loss rate: 5.42%
-- Flow 2:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 3834.192 ms
Loss rate: 10.72%
-- Flow 3:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 4607.097 ms
Loss rate: 35.30%

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

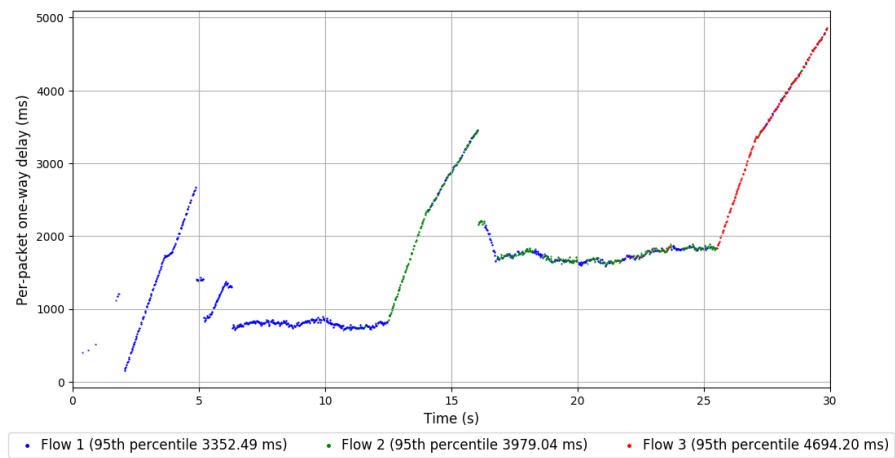
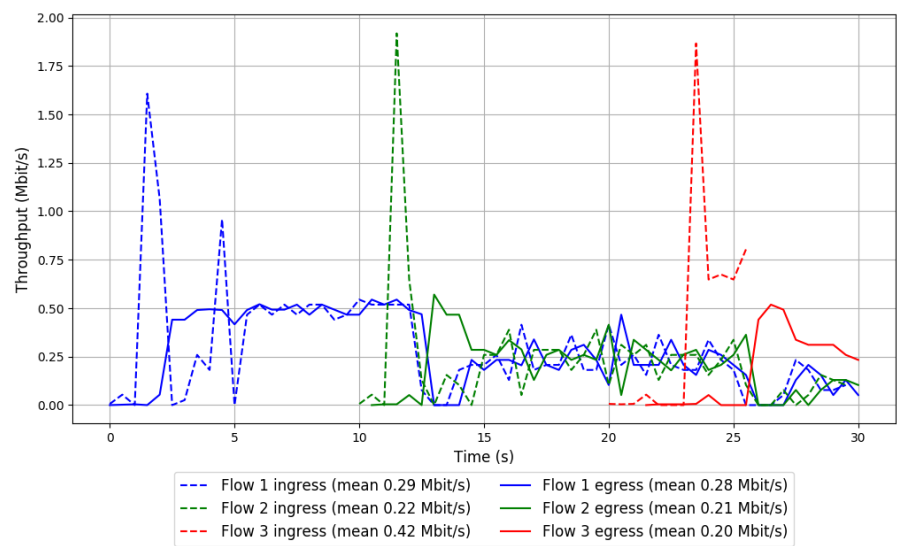


Run 2: Statistics of TaoVA-100x

Start at: 2018-07-18 08:15:07
End at: 2018-07-18 08:15:37
Local clock offset: -7.748 ms
Remote clock offset: 15.983 ms

Below is generated by plot.py at 2018-07-18 08:36:47
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 4094.334 ms
Loss rate: 10.45%
-- Flow 1:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 3352.490 ms
Loss rate: 5.21%
-- Flow 2:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 3979.039 ms
Loss rate: 10.19%
-- Flow 3:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 4694.204 ms
Loss rate: 30.27%

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

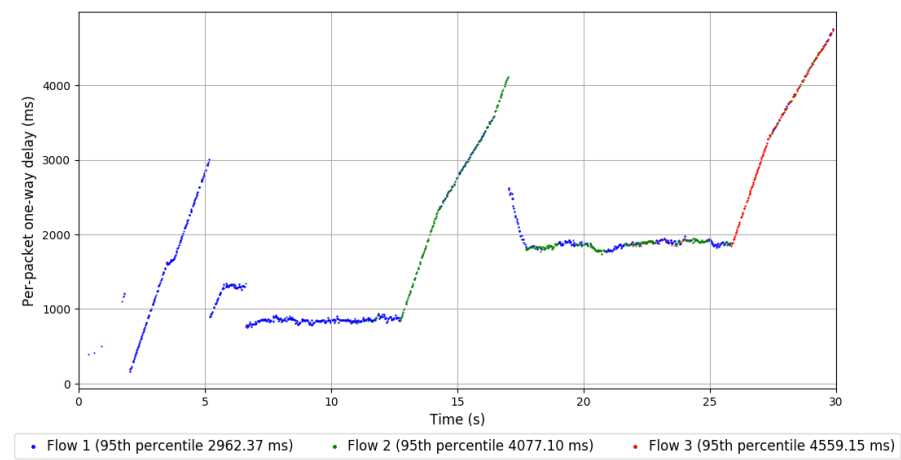
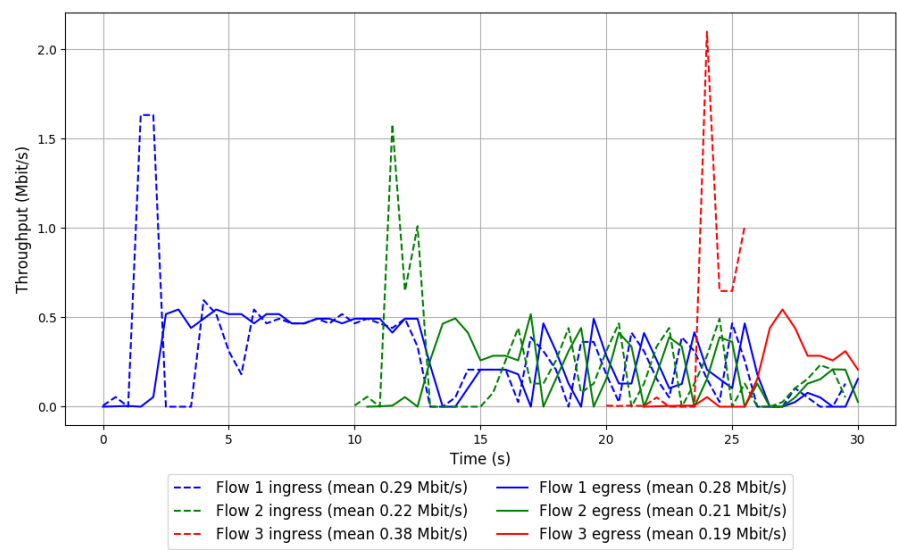


Run 3: Statistics of TaoVA-100x

Start at: 2018-07-18 08:35:42
End at: 2018-07-18 08:36:12
Local clock offset: -4.278 ms
Remote clock offset: 10.605 ms

Below is generated by plot.py at 2018-07-18 08:36:48
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.46 Mbit/s
95th percentile per-packet one-way delay: 4045.325 ms
Loss rate: 10.76%
-- Flow 1:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 2962.369 ms
Loss rate: 5.15%
-- Flow 2:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 4077.098 ms
Loss rate: 10.37%
-- Flow 3:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 4559.155 ms
Loss rate: 32.99%

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



Run 1: Statistics of TCP Vegas

Start at: 2018-07-18 07:38:51

End at: 2018-07-18 07:39:21

Local clock offset: -2.54 ms

Remote clock offset: 12.78 ms

Below is generated by plot.py at 2018-07-18 08:36:48

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.49 Mbit/s

95th percentile per-packet one-way delay: 2001.422 ms

Loss rate: 5.76%

-- Flow 1:

Average throughput: 0.32 Mbit/s

95th percentile per-packet one-way delay: 1861.451 ms

Loss rate: 2.51%

-- Flow 2:

Average throughput: 0.21 Mbit/s

95th percentile per-packet one-way delay: 2071.650 ms

Loss rate: 6.16%

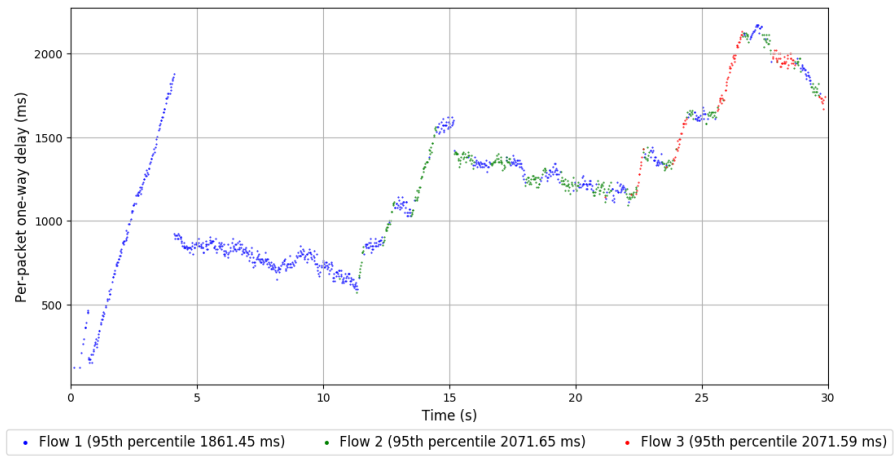
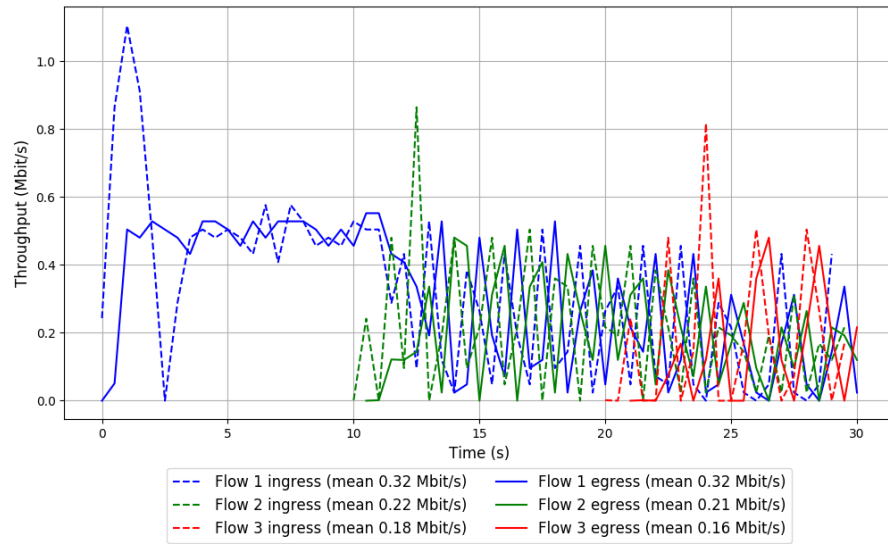
-- Flow 3:

Average throughput: 0.16 Mbit/s

95th percentile per-packet one-way delay: 2071.587 ms

Loss rate: 22.26%

Run 1: Report of TCP Vegas — Data Link

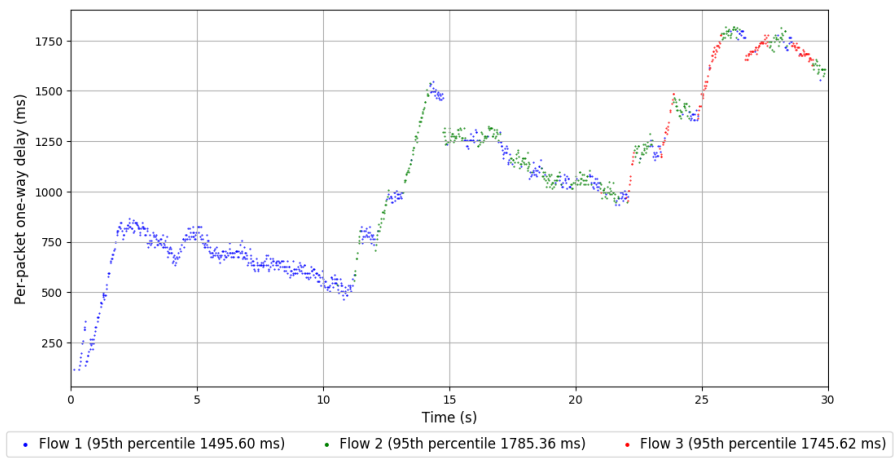
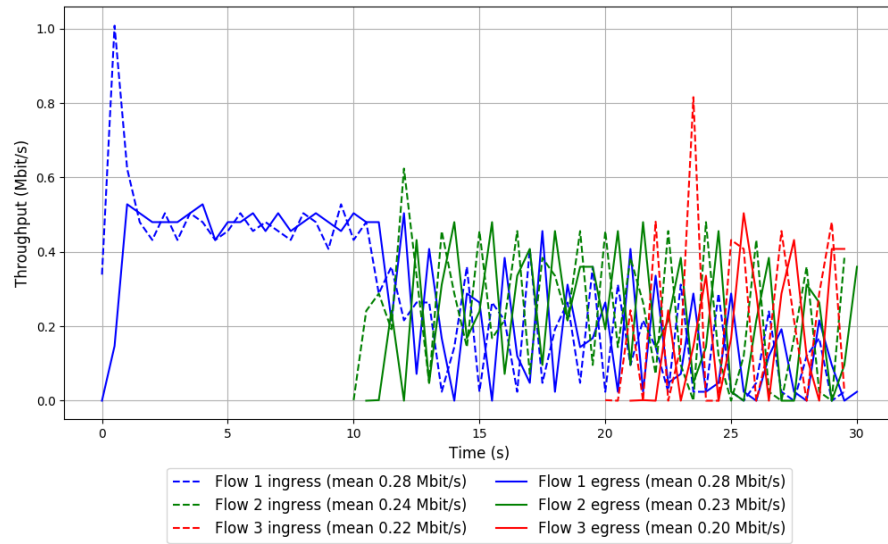


Run 2: Statistics of TCP Vegas

Start at: 2018-07-18 07:59:22
End at: 2018-07-18 07:59:52
Local clock offset: -4.749 ms
Remote clock offset: 17.807 ms

Below is generated by plot.py at 2018-07-18 08:36:49
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.48 Mbit/s
95th percentile per-packet one-way delay: 1755.353 ms
Loss rate: 5.14%
-- Flow 1:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 1495.604 ms
Loss rate: 1.72%
-- Flow 2:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 1785.361 ms
Loss rate: 5.07%
-- Flow 3:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 1745.625 ms
Loss rate: 19.16%

Run 2: Report of TCP Vegas — Data Link

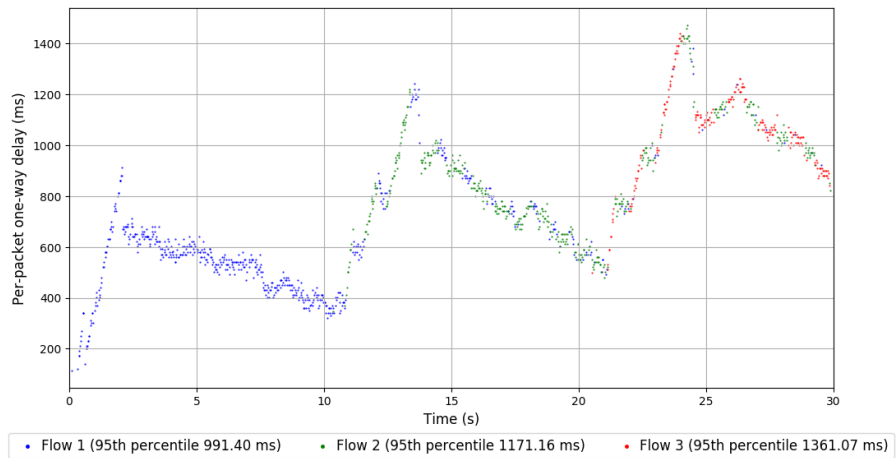
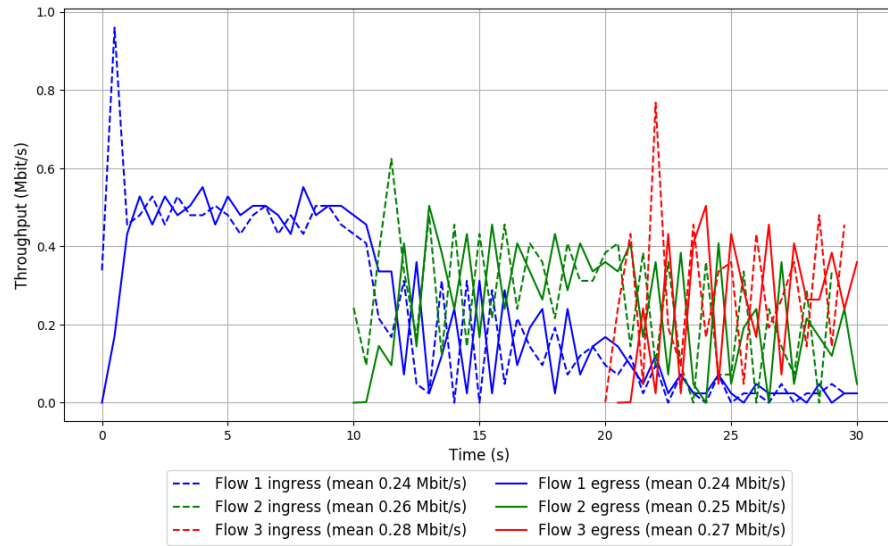


Run 3: Statistics of TCP Vegas

Start at: 2018-07-18 08:19:58
End at: 2018-07-18 08:20:28
Local clock offset: -8.212 ms
Remote clock offset: 16.805 ms

Below is generated by plot.py at 2018-07-18 08:36:49
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 1211.045 ms
Loss rate: 3.19%
-- Flow 1:
Average throughput: 0.24 Mbit/s
95th percentile per-packet one-way delay: 991.399 ms
Loss rate: 0.50%
-- Flow 2:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 1171.161 ms
Loss rate: 2.82%
-- Flow 3:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 1361.066 ms
Loss rate: 10.68%

Run 3: Report of TCP Vegas — Data Link

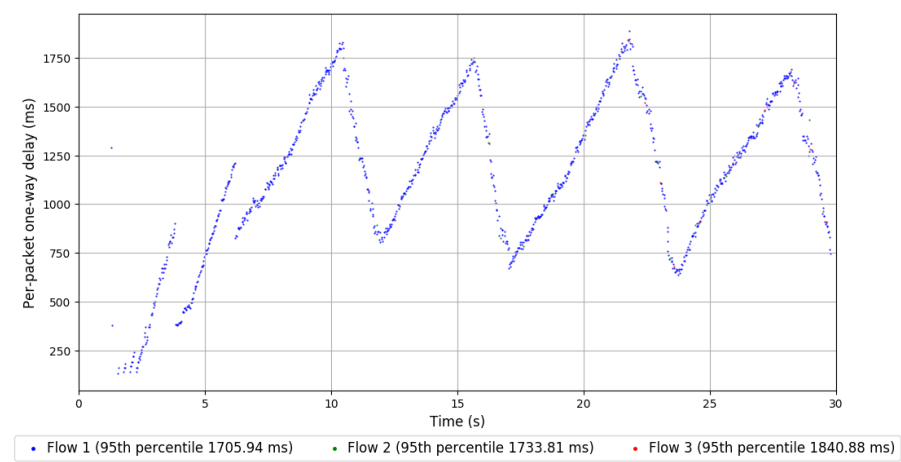
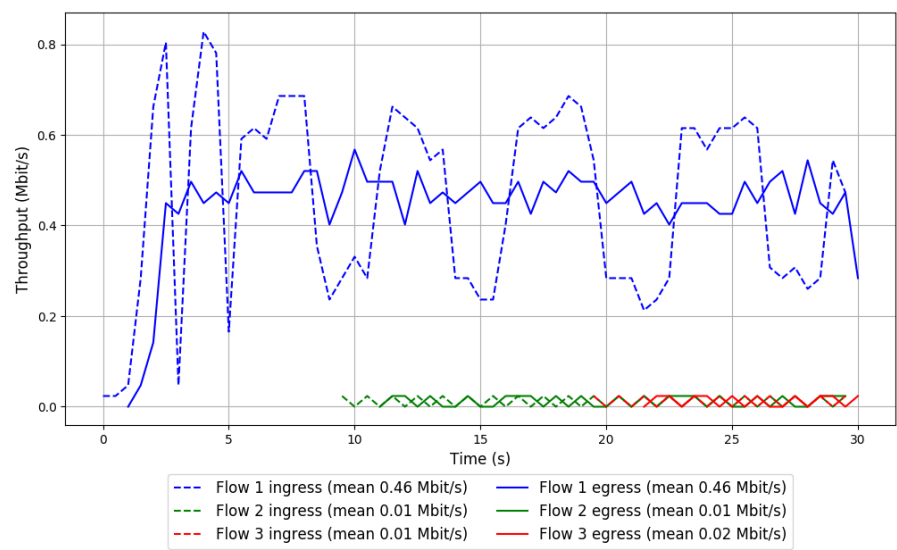


Run 1: Statistics of Verus

Start at: 2018-07-18 07:52:06
End at: 2018-07-18 07:52:36
Local clock offset: -3.067 ms
Remote clock offset: 12.542 ms

Below is generated by plot.py at 2018-07-18 08:36:50
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 1707.947 ms
Loss rate: 3.70%
-- Flow 1:
Average throughput: 0.46 Mbit/s
95th percentile per-packet one-way delay: 1705.936 ms
Loss rate: 3.63%
-- Flow 2:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1733.811 ms
Loss rate: 4.76%
-- Flow 3:
Average throughput: 0.02 Mbit/s
95th percentile per-packet one-way delay: 1840.885 ms
Loss rate: 9.09%

Run 1: Report of Verus — Data Link

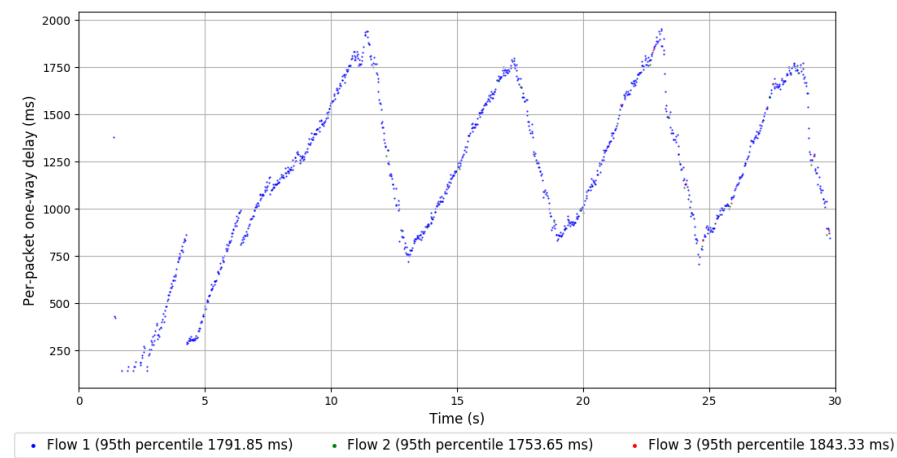
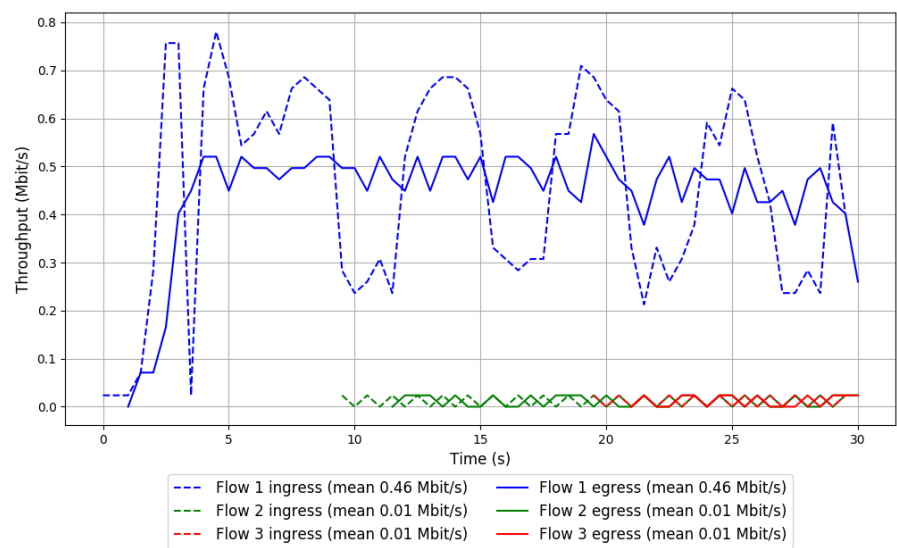


Run 2: Statistics of Verus

Start at: 2018-07-18 08:12:43
End at: 2018-07-18 08:13:13
Local clock offset: -7.436 ms
Remote clock offset: 12.416 ms

Below is generated by plot.py at 2018-07-18 08:36:50
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 1791.308 ms
Loss rate: 3.80%
-- Flow 1:
Average throughput: 0.46 Mbit/s
95th percentile per-packet one-way delay: 1791.845 ms
Loss rate: 3.73%
-- Flow 2:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1753.653 ms
Loss rate: 4.76%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1843.326 ms
Loss rate: 9.09%

Run 2: Report of Verus — Data Link

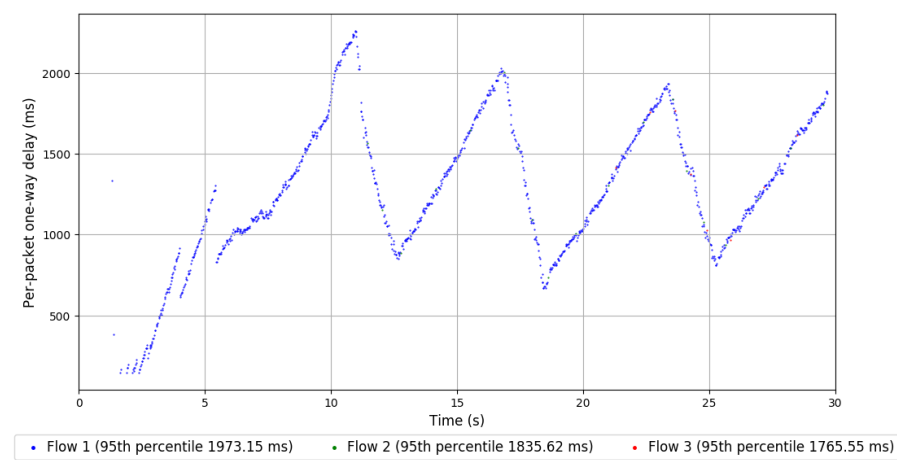
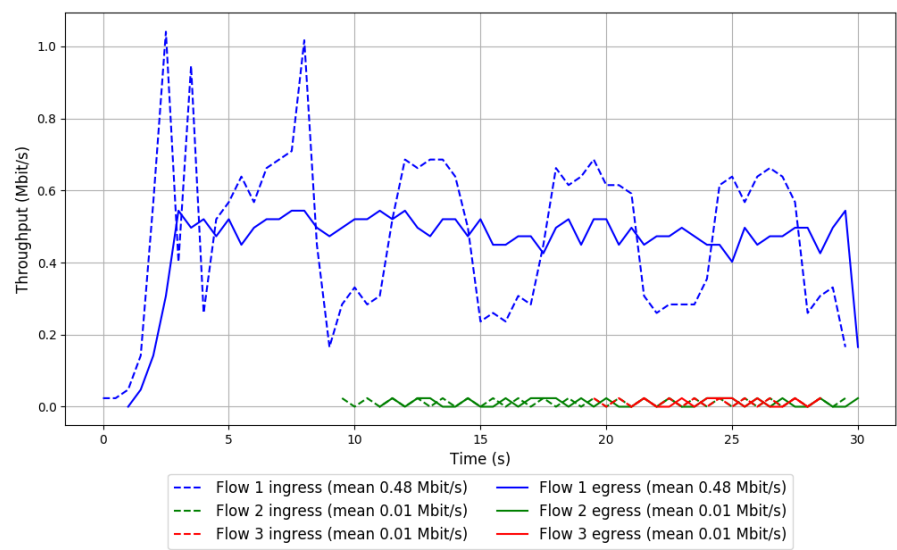


Run 3: Statistics of Verus

Start at: 2018-07-18 08:33:18
End at: 2018-07-18 08:33:48
Local clock offset: -4.848 ms
Remote clock offset: 10.744 ms

Below is generated by plot.py at 2018-07-18 08:36:51
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 1972.497 ms
Loss rate: 4.55%
-- Flow 1:
Average throughput: 0.48 Mbit/s
95th percentile per-packet one-way delay: 1973.147 ms
Loss rate: 4.33%
-- Flow 2:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1835.622 ms
Loss rate: 9.52%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1765.550 ms
Loss rate: 20.00%

Run 3: Report of Verus — Data Link



Run 1: Statistics of PCC-Vivace

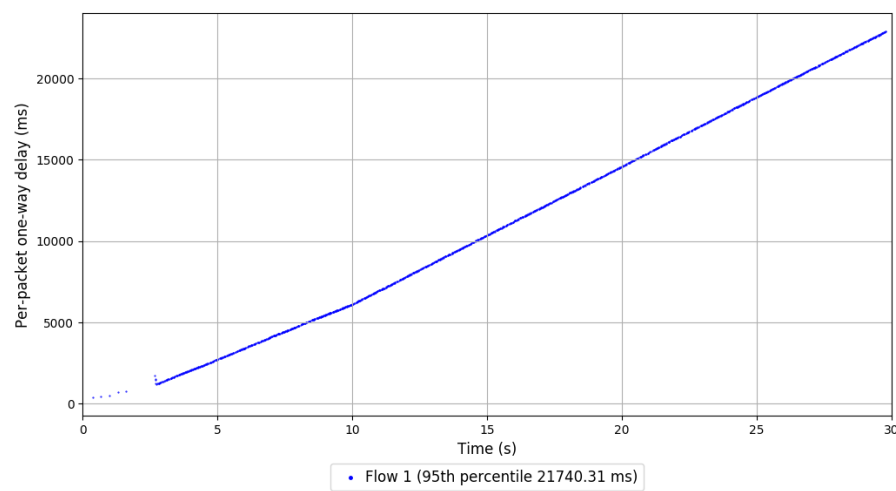
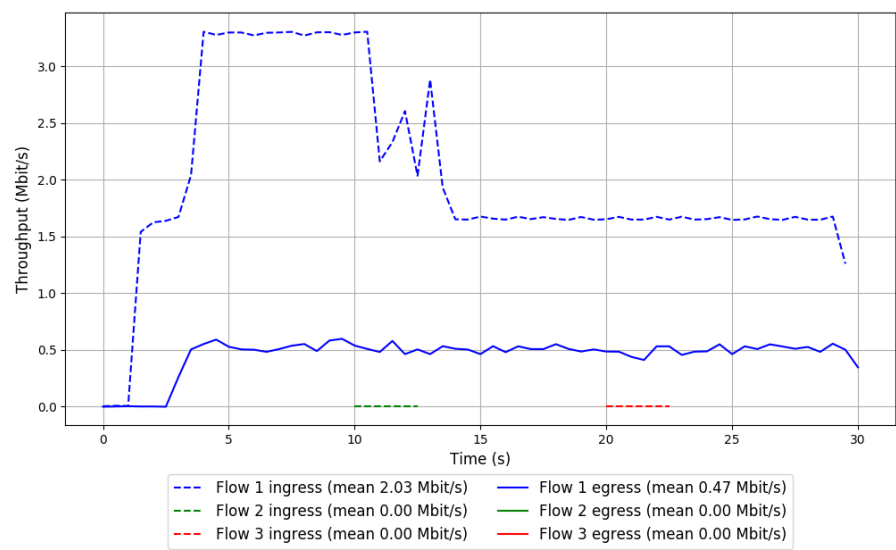
Start at: 2018-07-18 07:37:35

End at: 2018-07-18 07:38:05

Local clock offset: -2.375 ms

Remote clock offset: 17.584 ms

Run 1: Report of PCC-Vivace — Data Link



Run 2: Statistics of PCC-Vivace

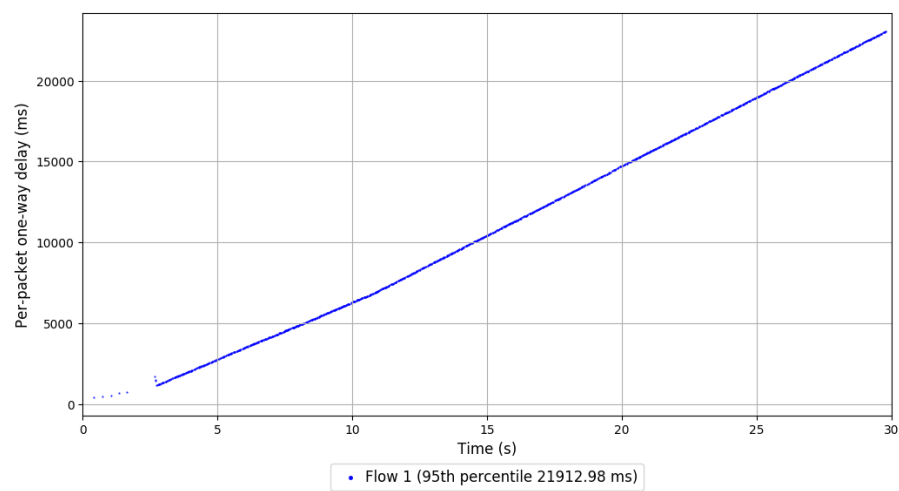
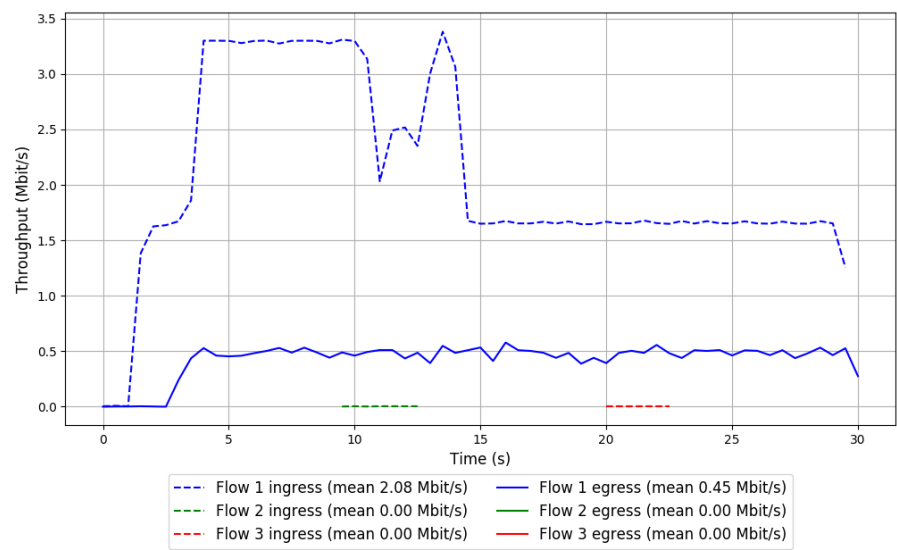
Start at: 2018-07-18 07:58:04

End at: 2018-07-18 07:58:34

Local clock offset: -4.282 ms

Remote clock offset: 11.564 ms

Run 2: Report of PCC-Vivace — Data Link



Run 3: Statistics of PCC-Vivace

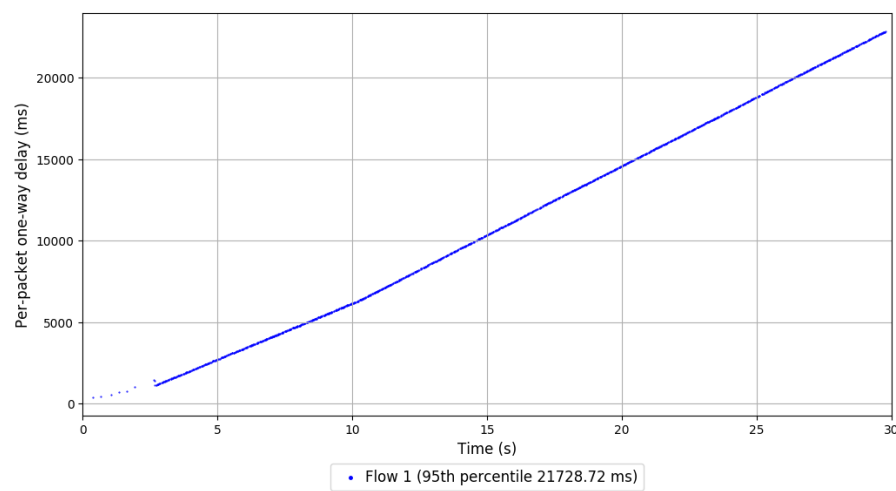
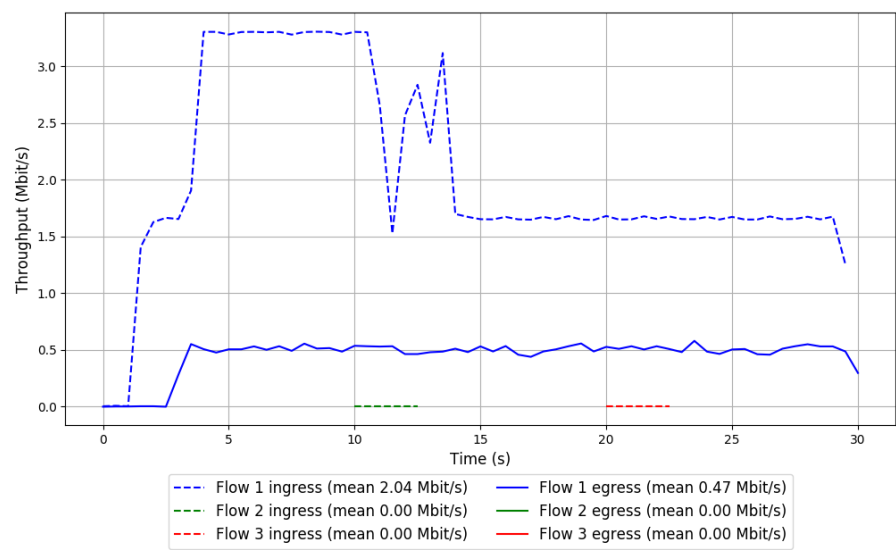
Start at: 2018-07-18 08:18:41

End at: 2018-07-18 08:19:11

Local clock offset: -8.153 ms

Remote clock offset: 16.015 ms

Run 3: Report of PCC-Vivace — Data Link

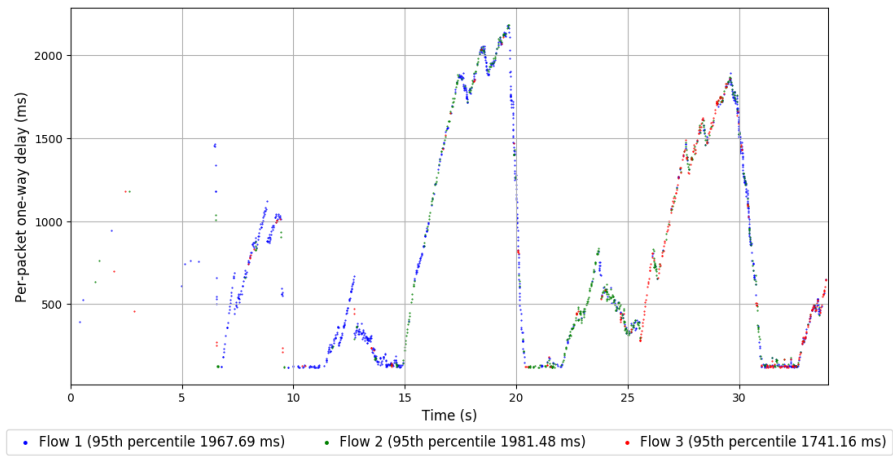
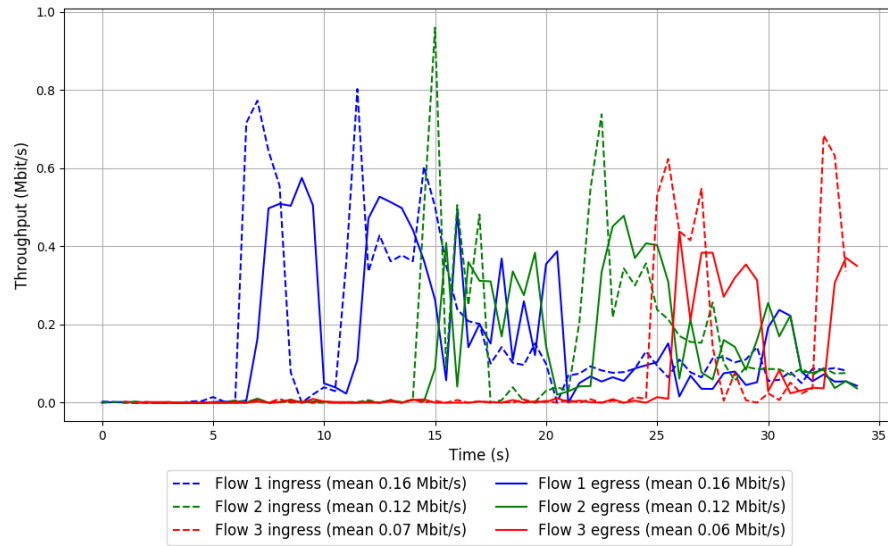


Run 1: Statistics of WebRTC media

Start at: 2018-07-18 07:47:19
End at: 2018-07-18 07:47:49
Local clock offset: -2.91 ms
Remote clock offset: 11.602 ms

Below is generated by plot.py at 2018-07-18 08:36:53
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 1951.214 ms
Loss rate: 3.73%
-- Flow 1:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 1967.689 ms
Loss rate: 1.16%
-- Flow 2:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 1981.485 ms
Loss rate: 1.45%
-- Flow 3:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 1741.163 ms
Loss rate: 13.52%

Run 1: Report of WebRTC media — Data Link

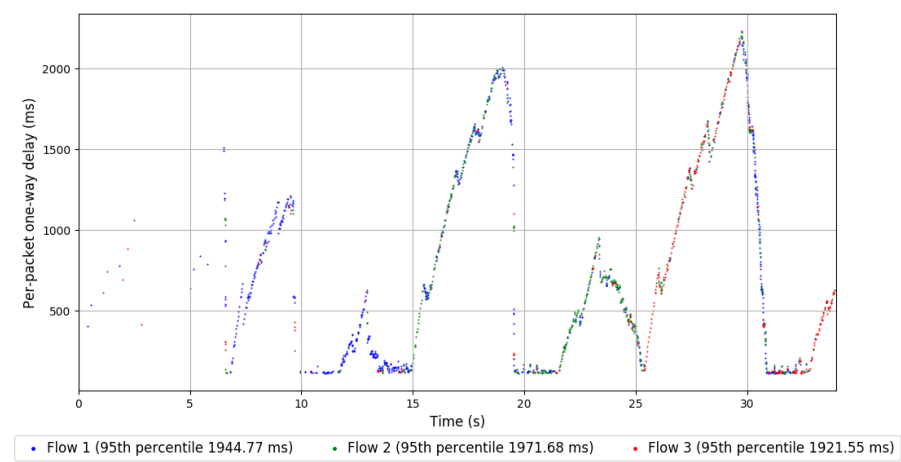
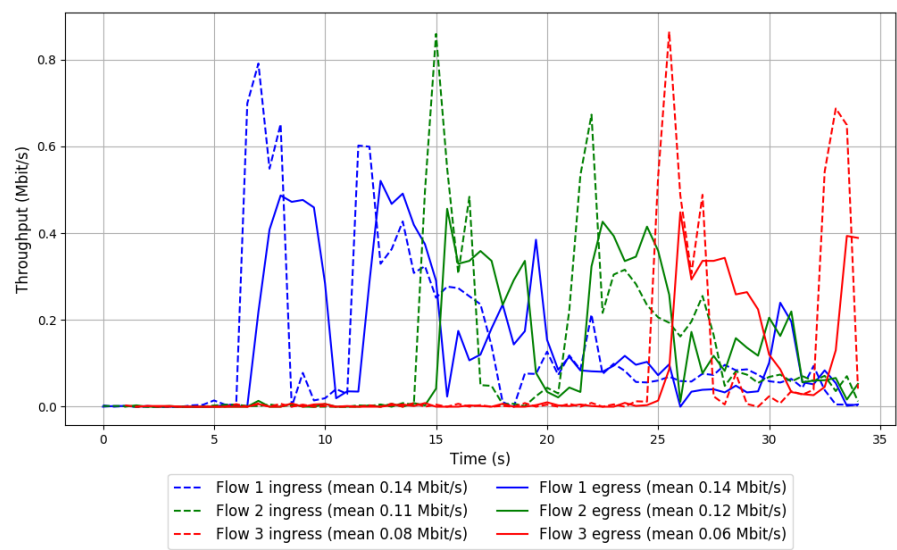


Run 2: Statistics of WebRTC media

Start at: 2018-07-18 08:07:55
End at: 2018-07-18 08:08:25
Local clock offset: -6.777 ms
Remote clock offset: 17.223 ms

Below is generated by plot.py at 2018-07-18 08:36:53
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 1947.715 ms
Loss rate: 4.95%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 1944.771 ms
Loss rate: 0.08%
-- Flow 2:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 1971.685 ms
Loss rate: 1.07%
-- Flow 3:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 1921.548 ms
Loss rate: 20.31%

Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

Start at: 2018-07-18 08:28:31
End at: 2018-07-18 08:29:01
Local clock offset: -6.684 ms
Remote clock offset: 14.716 ms

Below is generated by plot.py at 2018-07-18 08:36:54
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 1952.554 ms
Loss rate: 2.24%
-- Flow 1:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 1859.065 ms
Loss rate: 0.53%
-- Flow 2:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 2013.173 ms
Loss rate: 0.86%
-- Flow 3:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 2076.069 ms
Loss rate: 8.42%

Run 3: Report of WebRTC media — Data Link

