

Pantheon Report

Generated at 2018-08-28 10:04:38 (UTC).

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

Repeated the test of 4 congestion control schemes 3 times.

Each test lasted for 30 seconds running 1 flow.

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

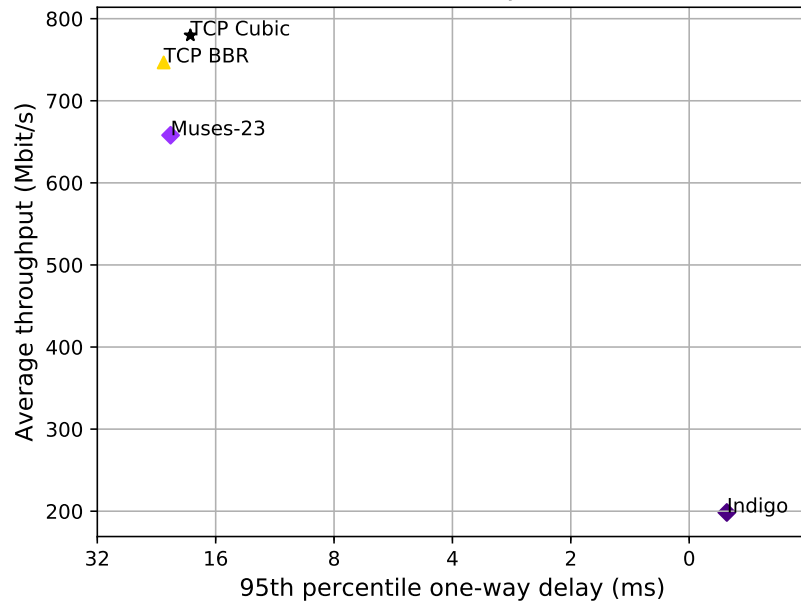
System info:

```
Linux 4.15.0-1020-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
```

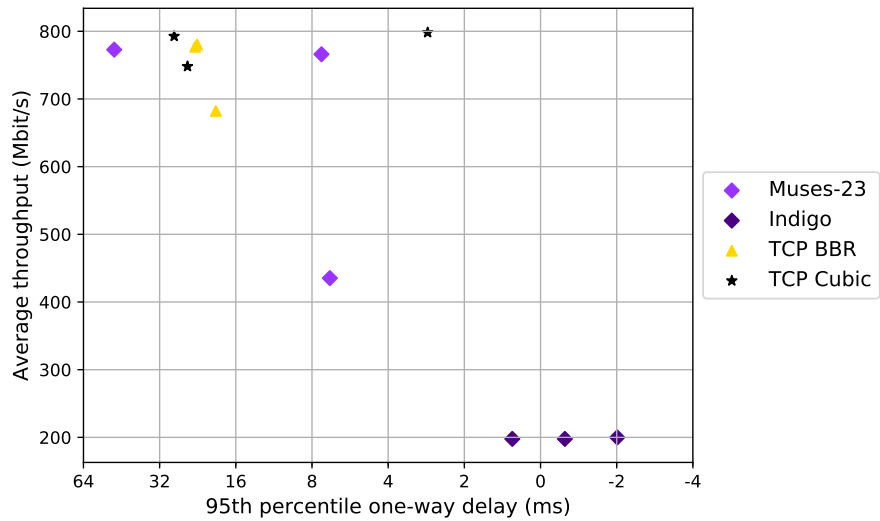
Git summary:

```
branch: muses-23 @ 88af05c5b0b7531637ca401951507a2fde628df6
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ b261c9e99c63be452bc16f94ce0caa99a4c9d39a
third_party/pantheon-tunnel @ cbfce6db5ff5740dafe1771f813cd646339e1952
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-quic @ 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 Stanford to AWS California 1, 3 runs of 30s each per scheme
(mean of all runs by scheme)



test from Stanford to AWS California 1, 3 runs of 30s each per scheme



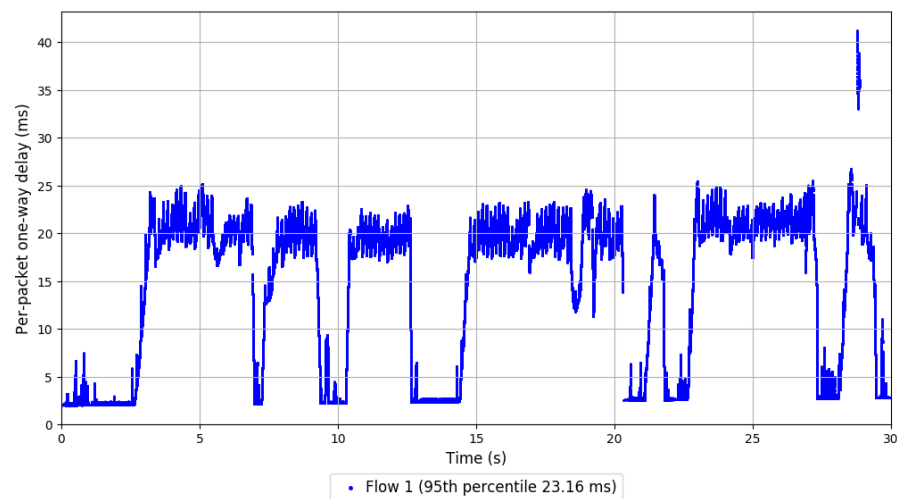
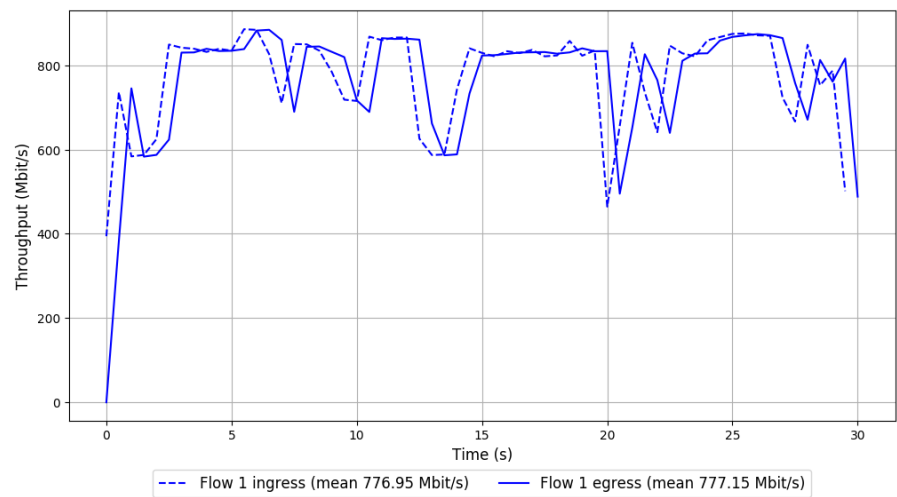
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	746.68	21.69	0.09
TCP Cubic	3	779.66	18.55	0.09
Indigo	3	198.44	-0.64	0.07
Muses-23	3	658.04	20.83	1.19

Run 1: Statistics of TCP BBR

Start at: 2018-08-28 09:35:28
End at: 2018-08-28 09:35:58
Local clock offset: -48.159 ms
Remote clock offset: -0.425 ms

Below is generated by plot.py at 2018-08-28 10:02:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 777.15 Mbit/s
95th percentile per-packet one-way delay: 23.159 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 777.15 Mbit/s
95th percentile per-packet one-way delay: 23.159 ms
Loss rate: 0.04%

Run 1: Report of TCP BBR — Data Link

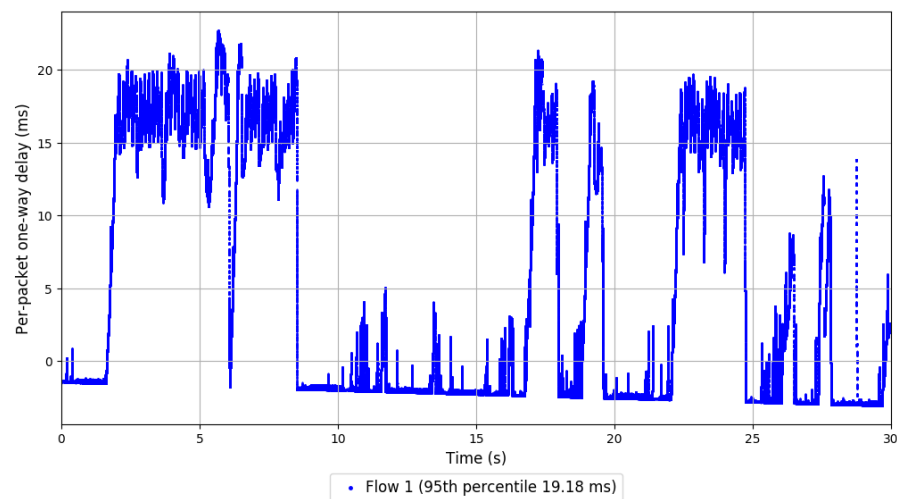
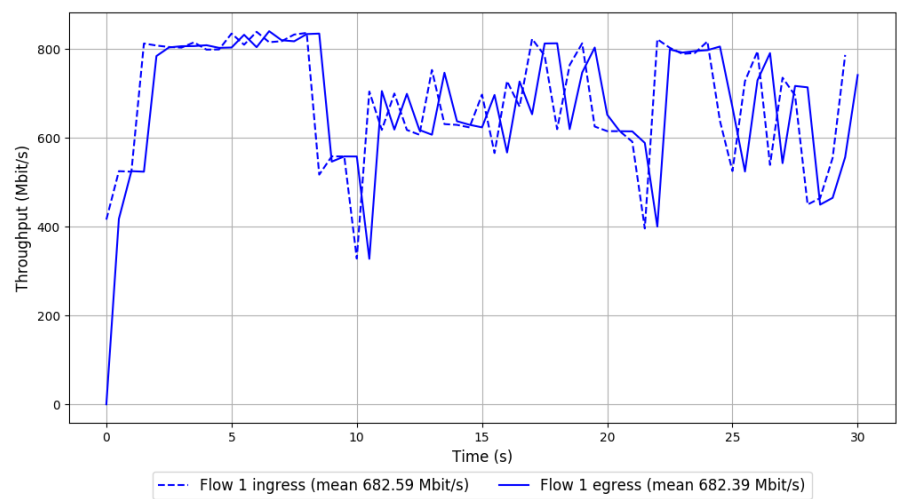


Run 2: Statistics of TCP BBR

Start at: 2018-08-28 09:41:51
End at: 2018-08-28 09:42:21
Local clock offset: -39.716 ms
Remote clock offset: -0.624 ms

Below is generated by plot.py at 2018-08-28 10:02:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 682.39 Mbit/s
95th percentile per-packet one-way delay: 19.181 ms
Loss rate: 0.10%
-- Flow 1:
Average throughput: 682.39 Mbit/s
95th percentile per-packet one-way delay: 19.181 ms
Loss rate: 0.10%

Run 2: Report of TCP BBR — Data Link

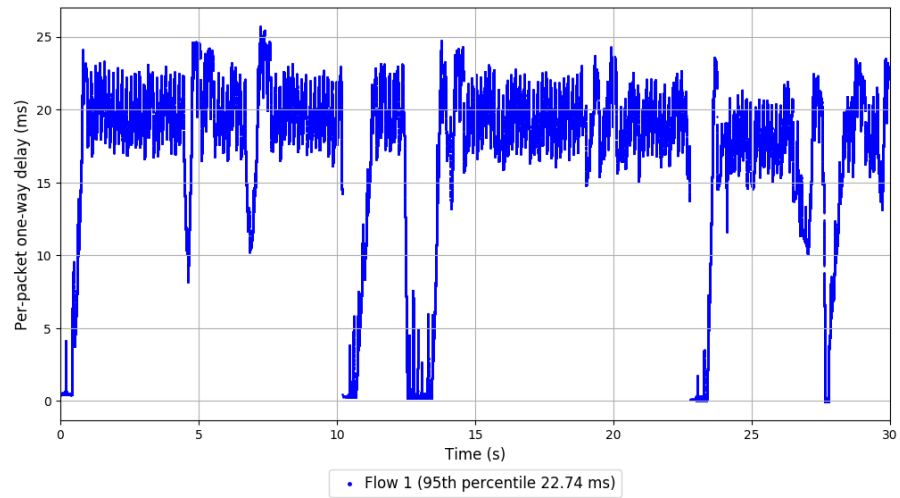
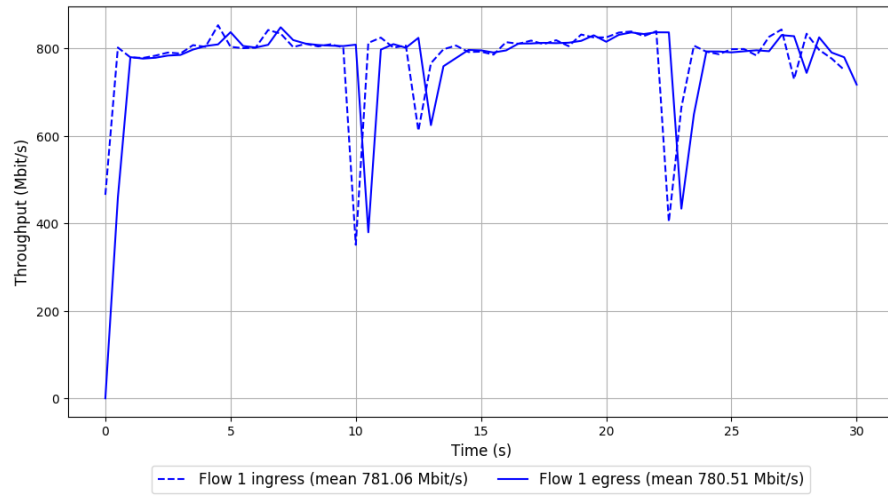


Run 3: Statistics of TCP BBR

Start at: 2018-08-28 09:48:22
End at: 2018-08-28 09:48:52
Local clock offset: -24.441 ms
Remote clock offset: -0.795 ms

Below is generated by plot.py at 2018-08-28 10:02:51
Datalink statistics
-- Total of 1 flow:
Average throughput: 780.51 Mbit/s
95th percentile per-packet one-way delay: 22.743 ms
Loss rate: 0.14%
-- Flow 1:
Average throughput: 780.51 Mbit/s
95th percentile per-packet one-way delay: 22.743 ms
Loss rate: 0.14%

Run 3: Report of TCP BBR — Data Link

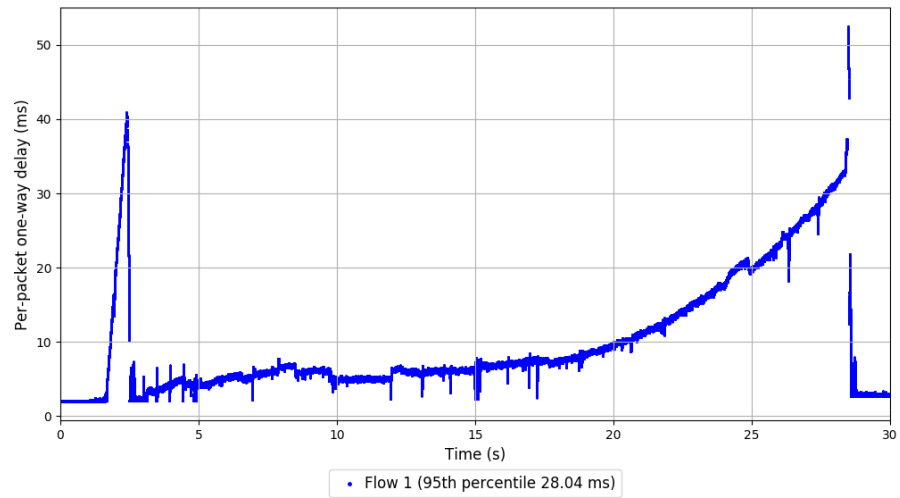
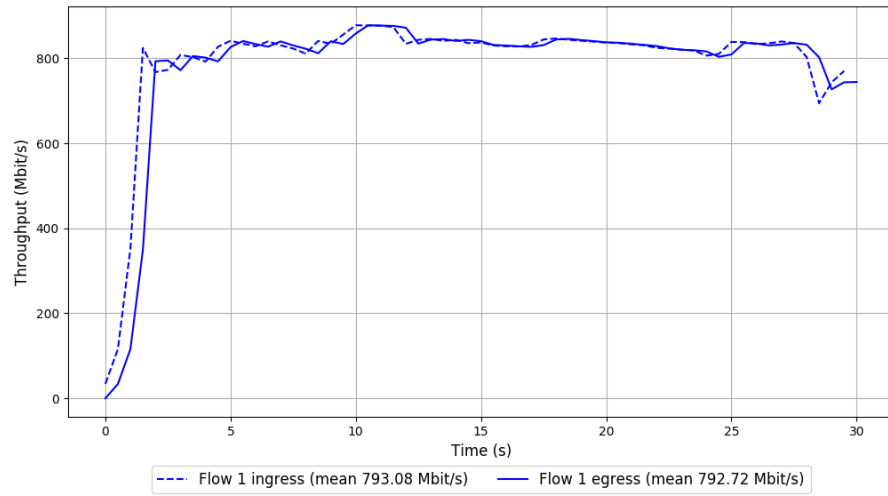


Run 1: Statistics of TCP Cubic

Start at: 2018-08-28 09:33:45
End at: 2018-08-28 09:34:15
Local clock offset: -45.499 ms
Remote clock offset: -0.359 ms

Below is generated by plot.py at 2018-08-28 10:02:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 792.72 Mbit/s
95th percentile per-packet one-way delay: 28.039 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 792.72 Mbit/s
95th percentile per-packet one-way delay: 28.039 ms
Loss rate: 0.11%

Run 1: Report of TCP Cubic — Data Link

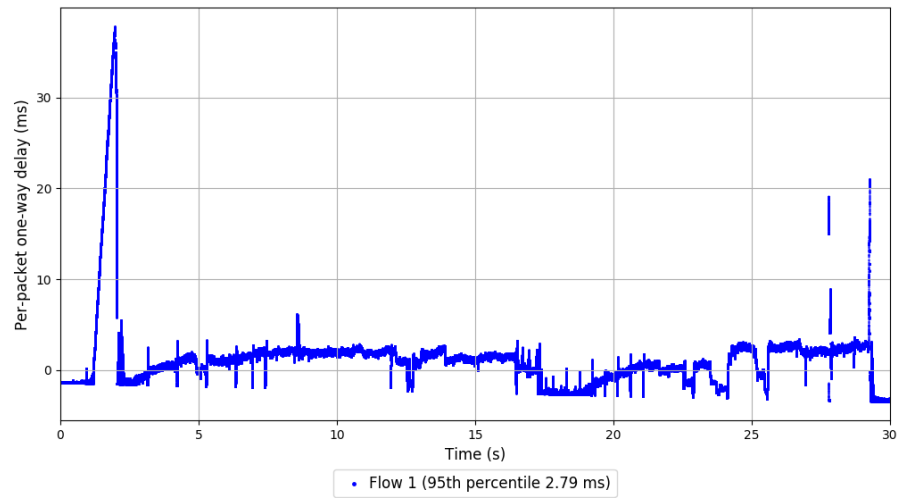
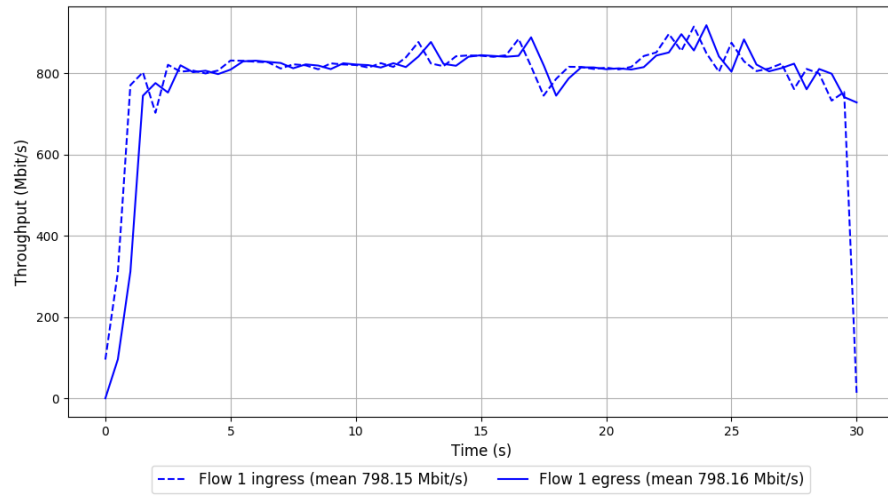


Run 2: Statistics of TCP Cubic

Start at: 2018-08-28 09:40:08
End at: 2018-08-28 09:40:38
Local clock offset: -46.228 ms
Remote clock offset: -0.629 ms

Below is generated by plot.py at 2018-08-28 10:02:59
Datalink statistics
-- Total of 1 flow:
Average throughput: 798.16 Mbit/s
95th percentile per-packet one-way delay: 2.793 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 798.16 Mbit/s
95th percentile per-packet one-way delay: 2.793 ms
Loss rate: 0.07%

Run 2: Report of TCP Cubic — Data Link

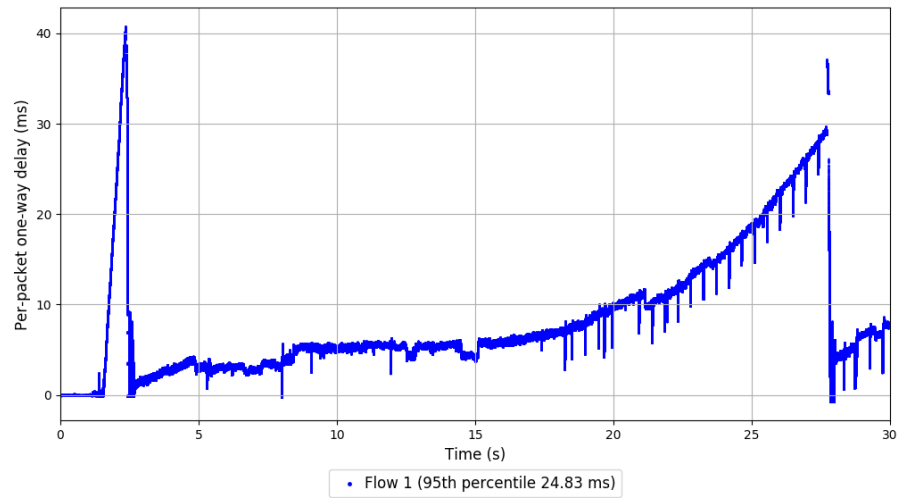
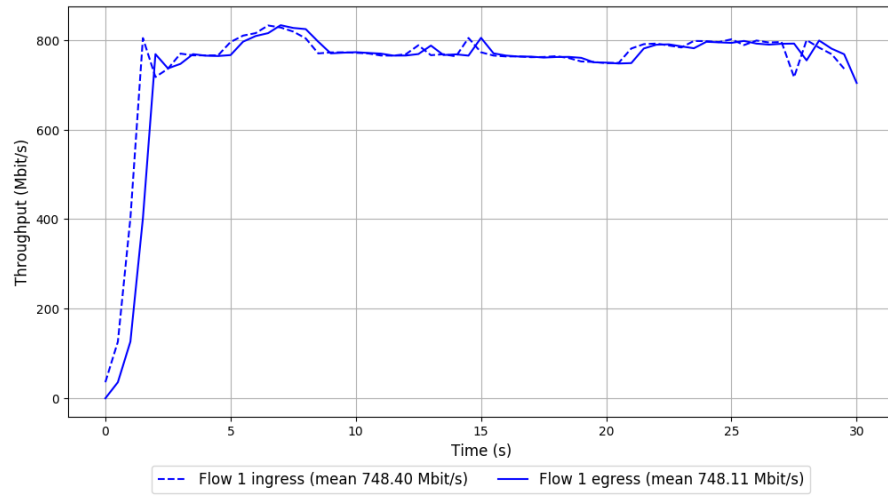


Run 3: Statistics of TCP Cubic

Start at: 2018-08-28 09:46:41
End at: 2018-08-28 09:47:11
Local clock offset: -27.089 ms
Remote clock offset: -0.783 ms

Below is generated by plot.py at 2018-08-28 10:02:59
Datalink statistics
-- Total of 1 flow:
Average throughput: 748.11 Mbit/s
95th percentile per-packet one-way delay: 24.833 ms
Loss rate: 0.10%
-- Flow 1:
Average throughput: 748.11 Mbit/s
95th percentile per-packet one-way delay: 24.833 ms
Loss rate: 0.10%

Run 3: Report of TCP Cubic — Data Link

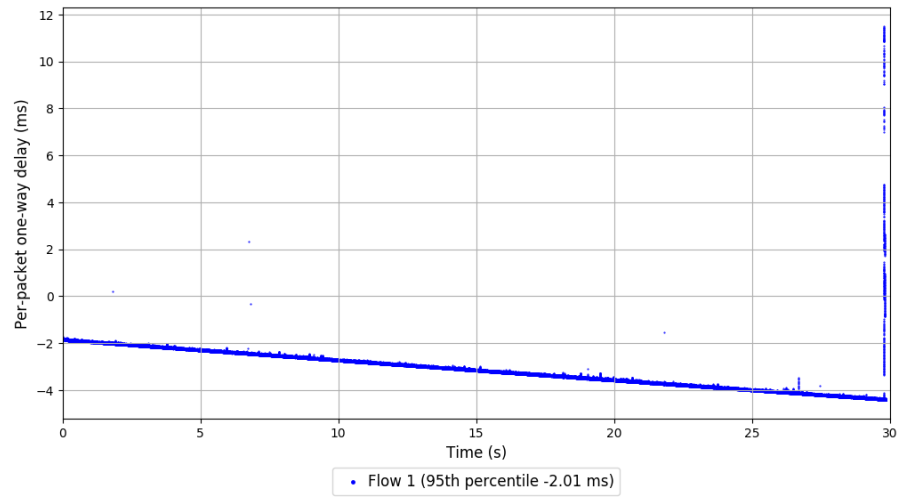
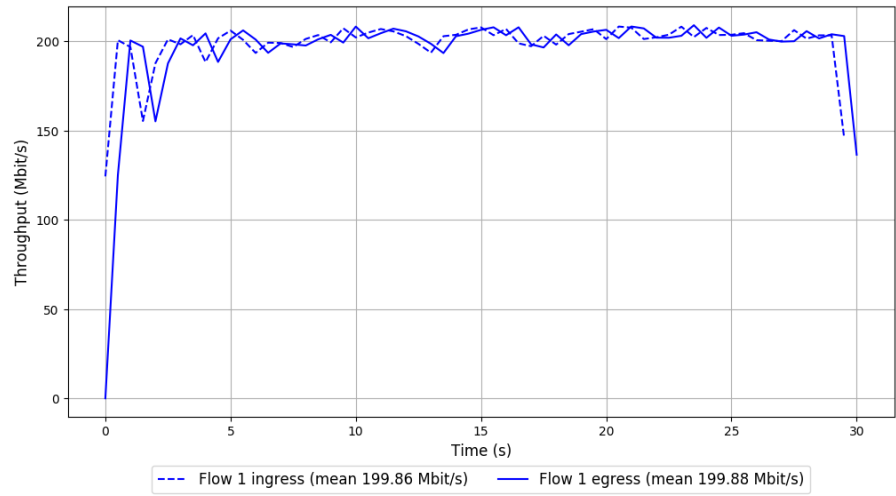


Run 1: Statistics of Indigo

Start at: 2018-08-28 09:38:43
End at: 2018-08-28 09:39:13
Local clock offset: -53.495 ms
Remote clock offset: -0.583 ms

Below is generated by plot.py at 2018-08-28 10:02:59
Datalink statistics
-- Total of 1 flow:
Average throughput: 199.88 Mbit/s
95th percentile per-packet one-way delay: -2.010 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 199.88 Mbit/s
95th percentile per-packet one-way delay: -2.010 ms
Loss rate: 0.07%

Run 1: Report of Indigo — Data Link

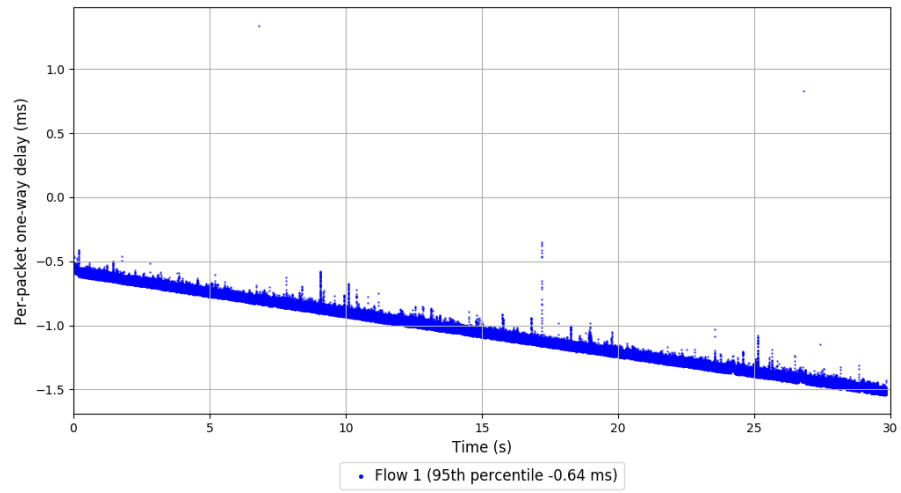
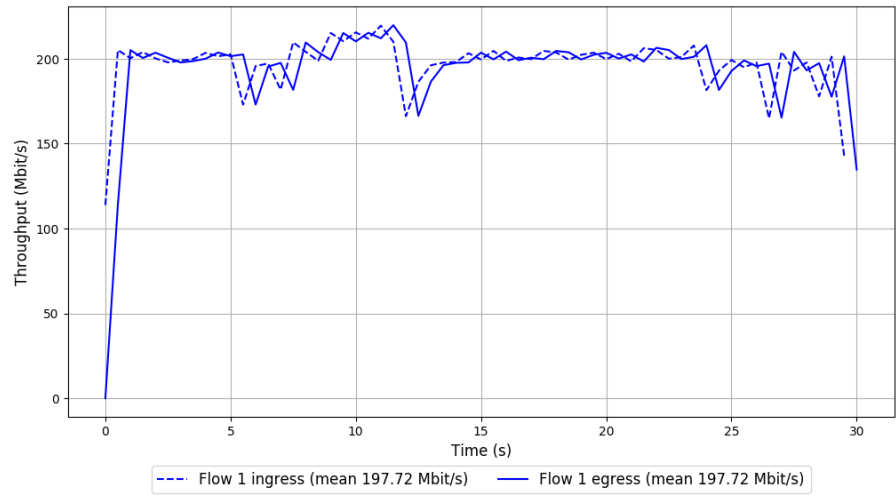


Run 2: Statistics of Indigo

Start at: 2018-08-28 09:45:16
End at: 2018-08-28 09:45:46
Local clock offset: -29.952 ms
Remote clock offset: -0.642 ms

Below is generated by plot.py at 2018-08-28 10:02:59
Datalink statistics
-- Total of 1 flow:
Average throughput: 197.72 Mbit/s
95th percentile per-packet one-way delay: -0.639 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 197.72 Mbit/s
95th percentile per-packet one-way delay: -0.639 ms
Loss rate: 0.07%

Run 2: Report of Indigo — Data Link

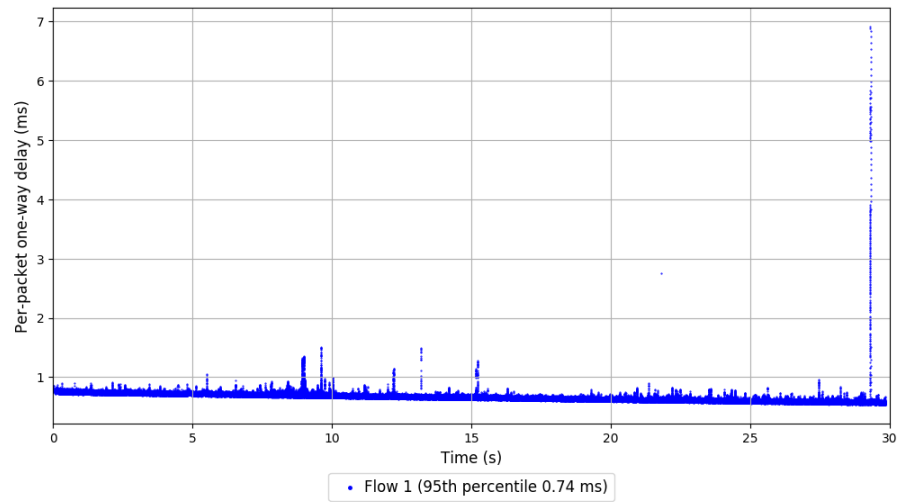
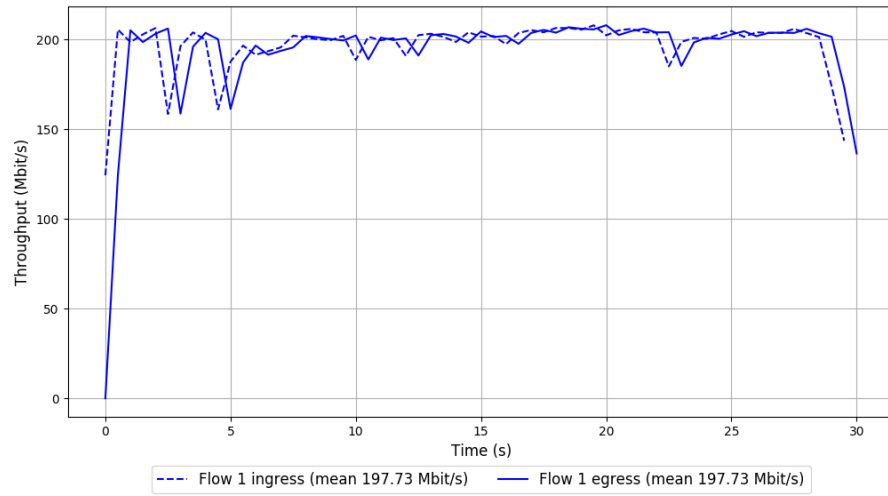


Run 3: Statistics of Indigo

Start at: 2018-08-28 09:51:50
End at: 2018-08-28 09:52:20
Local clock offset: -21.715 ms
Remote clock offset: -0.842 ms

Below is generated by plot.py at 2018-08-28 10:02:59
Datalink statistics
-- Total of 1 flow:
Average throughput: 197.73 Mbit/s
95th percentile per-packet one-way delay: 0.741 ms
Loss rate: 0.06%
-- Flow 1:
Average throughput: 197.73 Mbit/s
95th percentile per-packet one-way delay: 0.741 ms
Loss rate: 0.06%

Run 3: Report of Indigo — Data Link

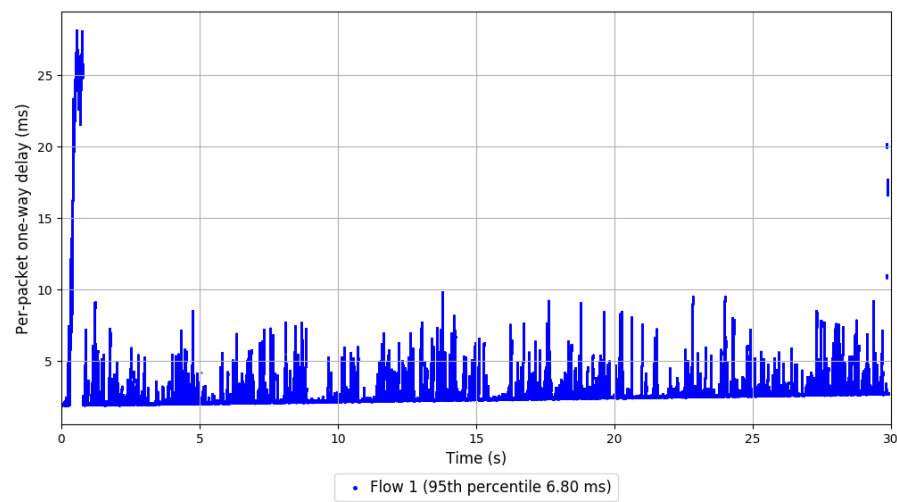
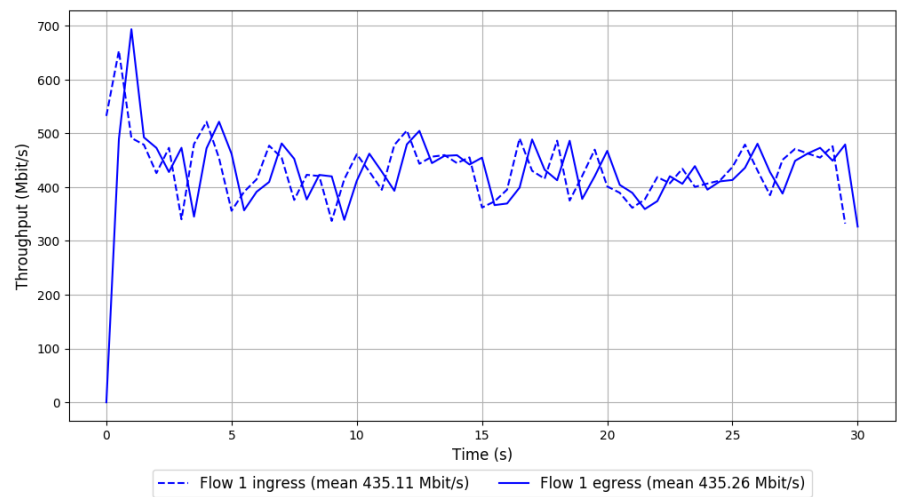


Run 1: Statistics of Muses-23

Start at: 2018-08-28 09:37:10
End at: 2018-08-28 09:37:40
Local clock offset: -51.021 ms
Remote clock offset: -0.422 ms

Below is generated by plot.py at 2018-08-28 10:03:05
Datalink statistics
-- Total of 1 flow:
Average throughput: 435.26 Mbit/s
95th percentile per-packet one-way delay: 6.799 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 435.26 Mbit/s
95th percentile per-packet one-way delay: 6.799 ms
Loss rate: 0.03%

Run 1: Report of Muses-23 — Data Link

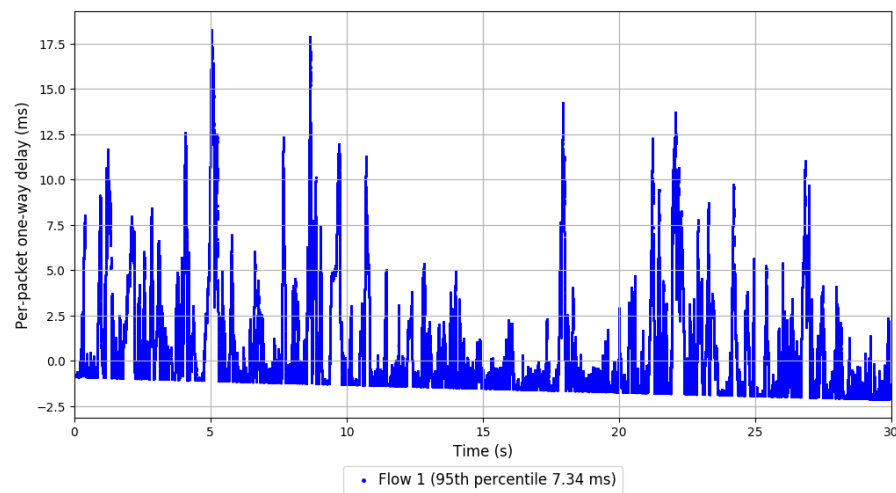
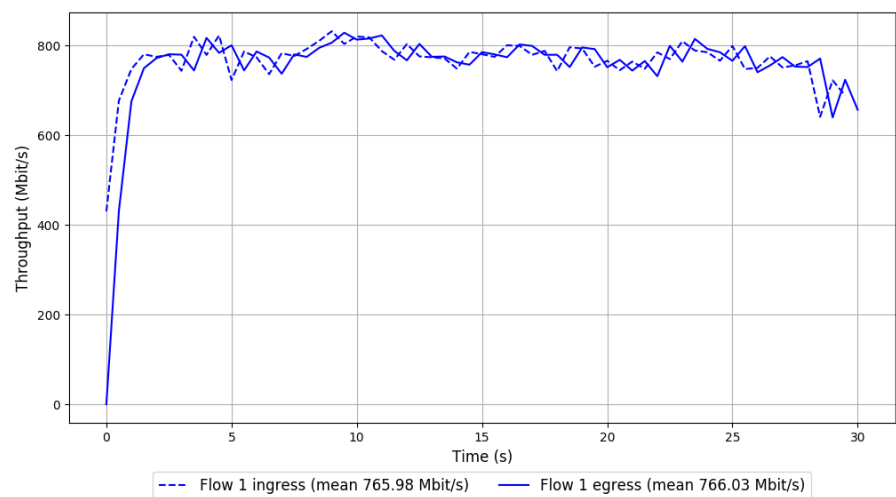


Run 2: Statistics of Muses-23

Start at: 2018-08-28 09:43:31
End at: 2018-08-28 09:44:01
Local clock offset: -34.25 ms
Remote clock offset: -0.719 ms

Below is generated by plot.py at 2018-08-28 10:04:11
Datalink statistics
-- Total of 1 flow:
Average throughput: 766.03 Mbit/s
95th percentile per-packet one-way delay: 7.338 ms
Loss rate: 0.06%
-- Flow 1:
Average throughput: 766.03 Mbit/s
95th percentile per-packet one-way delay: 7.338 ms
Loss rate: 0.06%

Run 2: Report of Muses-23 — Data Link



Run 3: Statistics of Muses-23

Start at: 2018-08-28 09:50:04
End at: 2018-08-28 09:50:34
Local clock offset: -22.743 ms
Remote clock offset: -0.799 ms

Below is generated by plot.py at 2018-08-28 10:04:36
Datalink statistics
-- Total of 1 flow:
Average throughput: 772.83 Mbit/s
95th percentile per-packet one-way delay: 48.365 ms
Loss rate: 3.49%
-- Flow 1:
Average throughput: 772.83 Mbit/s
95th percentile per-packet one-way delay: 48.365 ms
Loss rate: 3.49%

Run 3: Report of Muses-23 — Data Link

