

Pantheon Report

Generated at 2018-09-03 08:47:38 (UTC).

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

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.

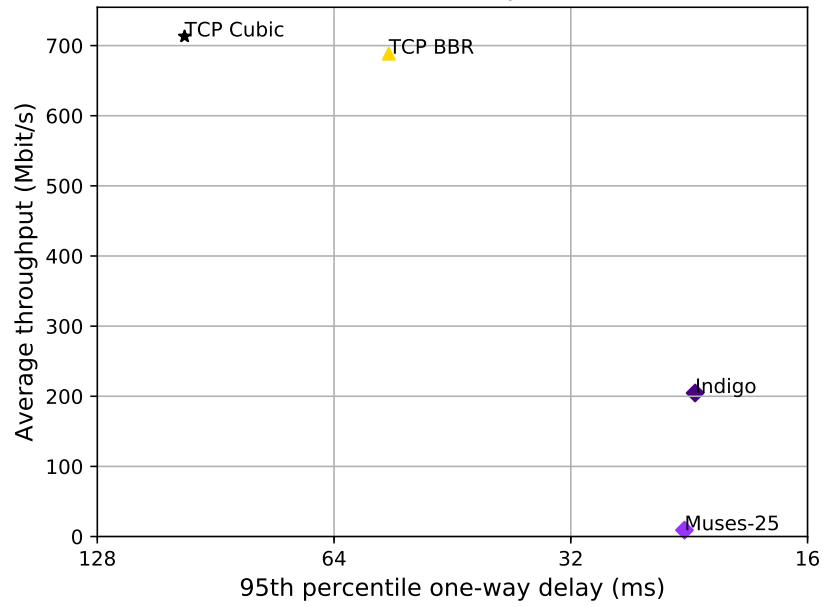
System info:

```
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
net.ipv4.tcp_mem = 536870912 536870912 536870912
```

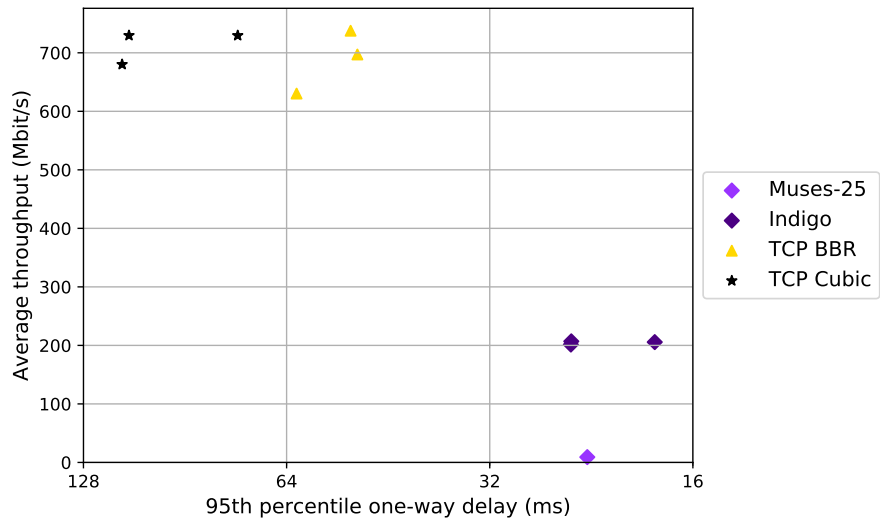
Git summary:

```
branch: muses @ f309f5459e2c5237279a184e52ece7a2b47ef1c9
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecd90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ b8d5019b83a3a678804d830fcfe1da7b3a63421b
third_party/pantheon-tunnel @ cbfce6db5ff5740dfe1771f813cd646339e1952
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 AWS California 1 to Stanford, 3 runs of 30s each per scheme
(mean of all runs by scheme)



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



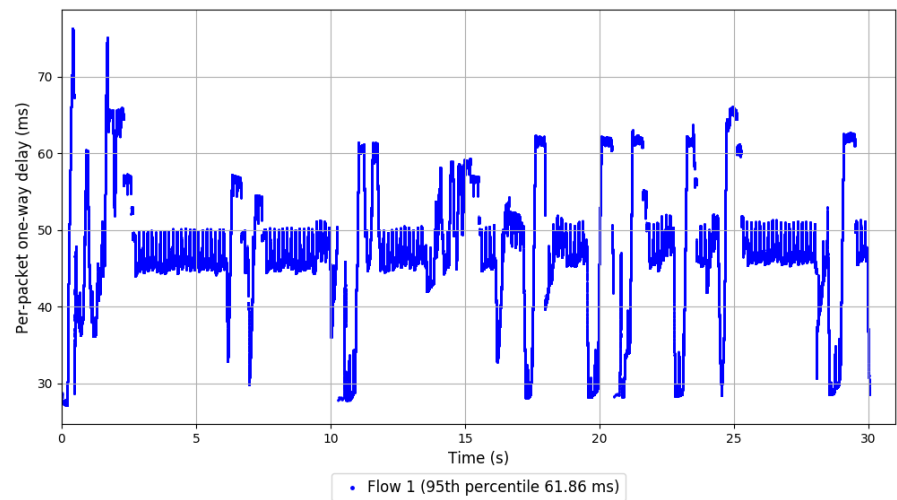
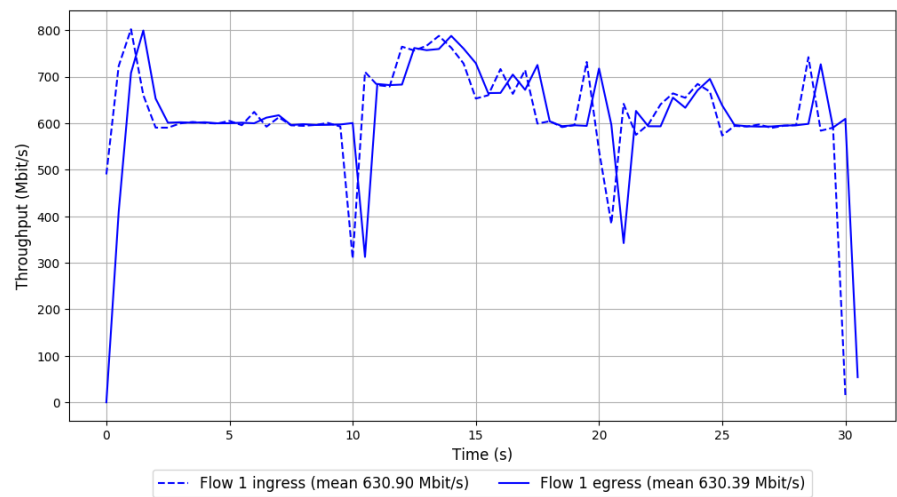
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	688.44	54.52	0.18
TCP Cubic	3	713.04	99.12	0.14
Indigo	3	204.66	22.24	0.00
Muses-25	1	9.10	22.94	18.33

Run 1: Statistics of TCP BBR

Start at: 2018-09-03 08:22:36
End at: 2018-09-03 08:23:06
Local clock offset: -8.028 ms
Remote clock offset: -0.889 ms

Below is generated by plot.py at 2018-09-03 08:47:08
Datalink statistics
-- Total of 1 flow:
Average throughput: 630.39 Mbit/s
95th percentile per-packet one-way delay: 61.856 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 630.39 Mbit/s
95th percentile per-packet one-way delay: 61.856 ms
Loss rate: 0.08%

Run 1: Report of TCP BBR — Data Link

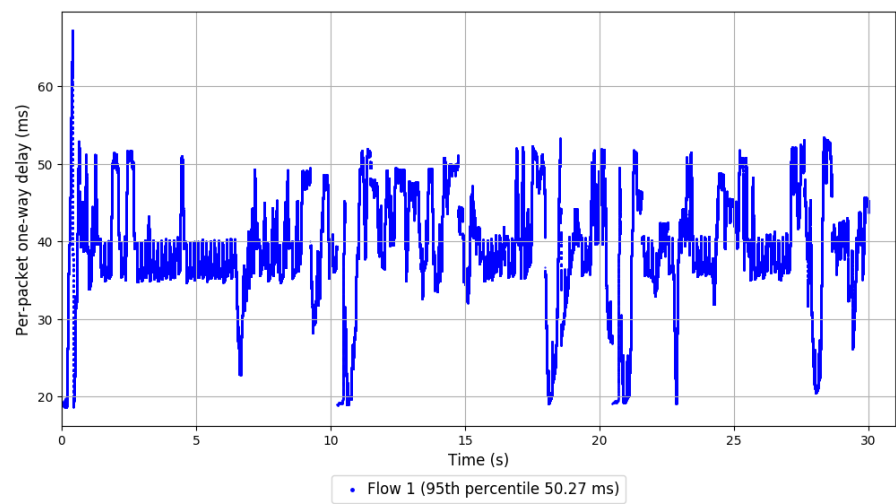
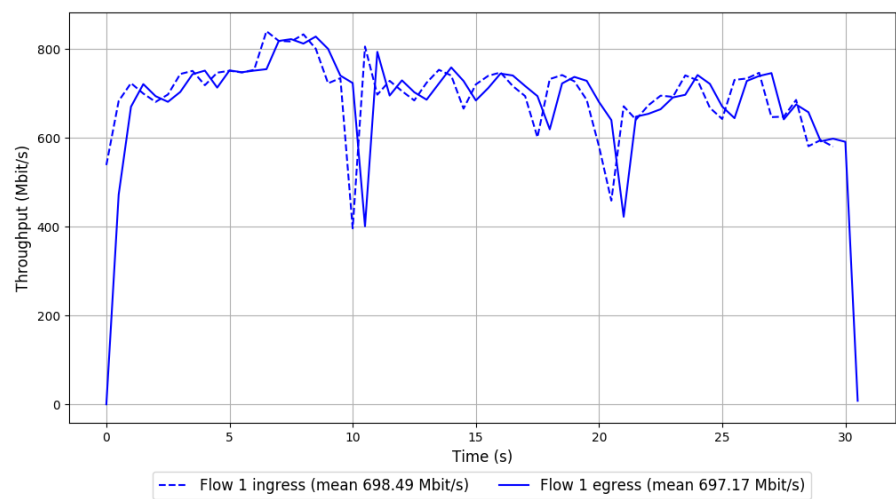


Run 2: Statistics of TCP BBR

Start at: 2018-09-03 08:28:37
End at: 2018-09-03 08:29:07
Local clock offset: 5.933 ms
Remote clock offset: -1.178 ms

Below is generated by plot.py at 2018-09-03 08:47:28
Datalink statistics
-- Total of 1 flow:
Average throughput: 697.17 Mbit/s
95th percentile per-packet one-way delay: 50.266 ms
Loss rate: 0.19%
-- Flow 1:
Average throughput: 697.17 Mbit/s
95th percentile per-packet one-way delay: 50.266 ms
Loss rate: 0.19%

Run 2: Report of TCP BBR — Data Link

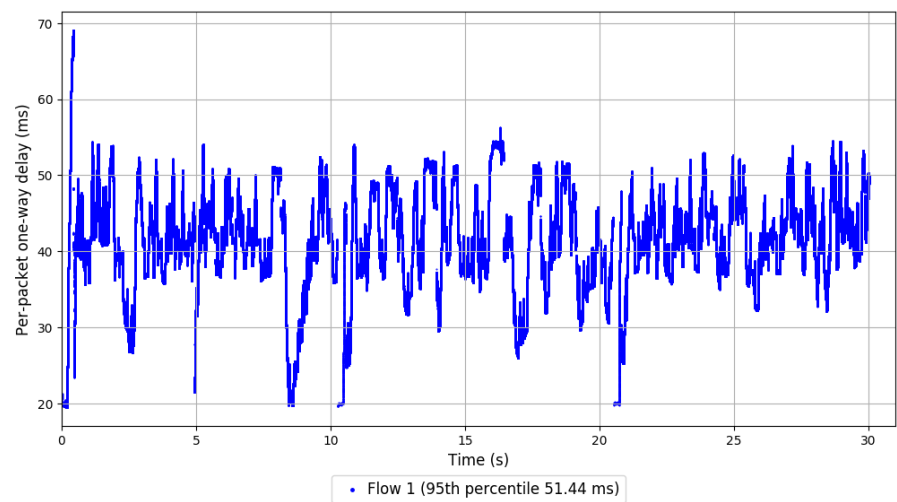
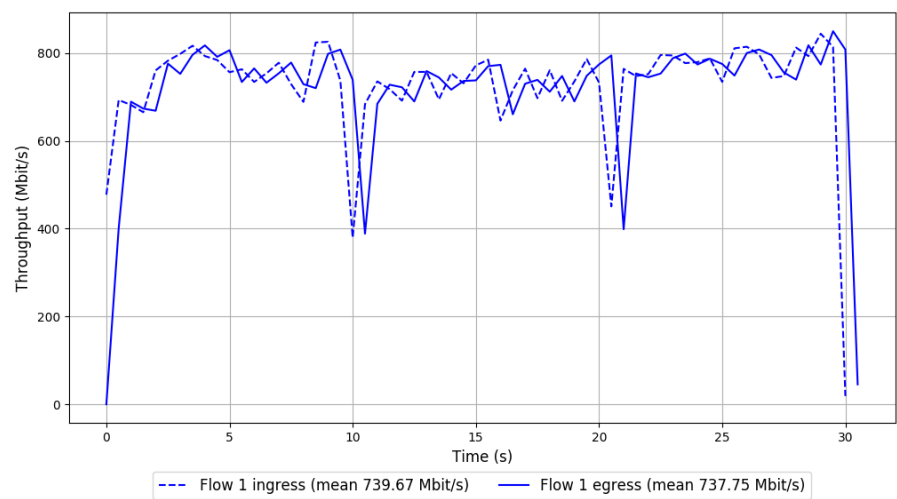


Run 3: Statistics of TCP BBR

Start at: 2018-09-03 08:34:39
End at: 2018-09-03 08:35:09
Local clock offset: 12.863 ms
Remote clock offset: -1.015 ms

Below is generated by plot.py at 2018-09-03 08:47:35
Datalink statistics
-- Total of 1 flow:
Average throughput: 737.75 Mbit/s
95th percentile per-packet one-way delay: 51.444 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 737.75 Mbit/s
95th percentile per-packet one-way delay: 51.444 ms
Loss rate: 0.26%

Run 3: Report of TCP BBR — Data Link

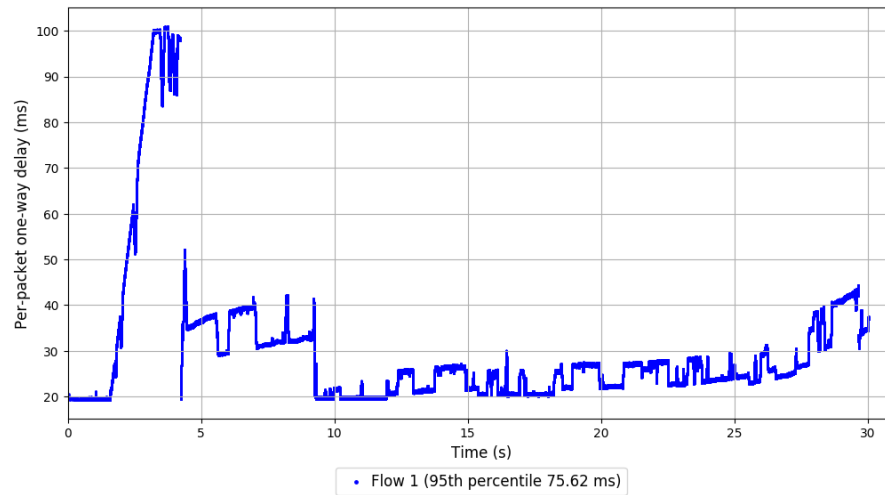
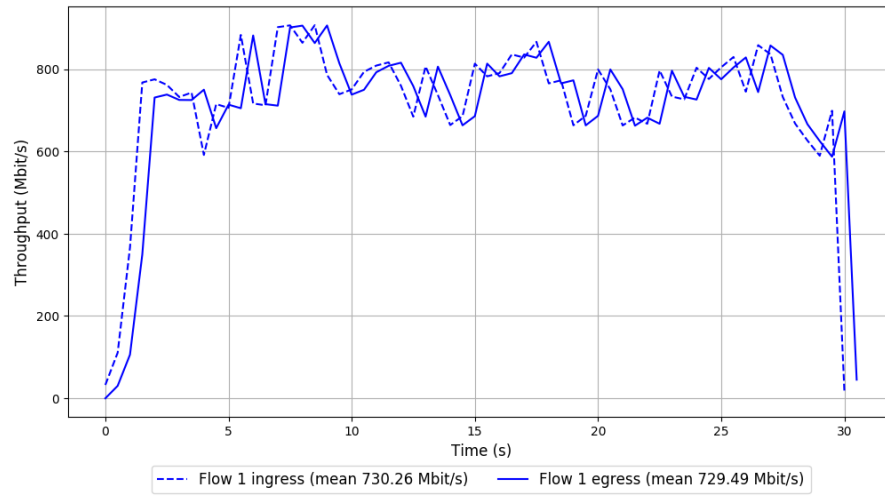


Run 1: Statistics of TCP Cubic

Start at: 2018-09-03 08:25:30
End at: 2018-09-03 08:26:00
Local clock offset: 2.13 ms
Remote clock offset: -1.009 ms

Below is generated by plot.py at 2018-09-03 08:47:35
Datalink statistics
-- Total of 1 flow:
Average throughput: 729.49 Mbit/s
95th percentile per-packet one-way delay: 75.618 ms
Loss rate: 0.10%
-- Flow 1:
Average throughput: 729.49 Mbit/s
95th percentile per-packet one-way delay: 75.618 ms
Loss rate: 0.10%

Run 1: Report of TCP Cubic — Data Link

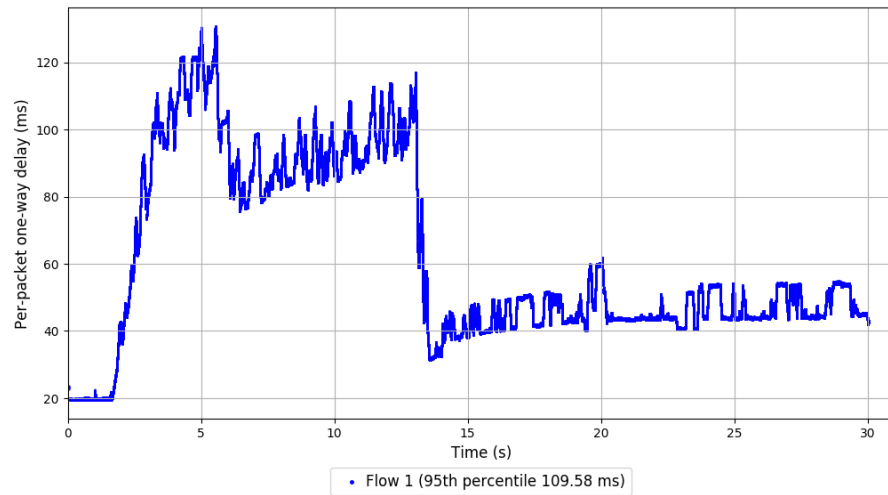
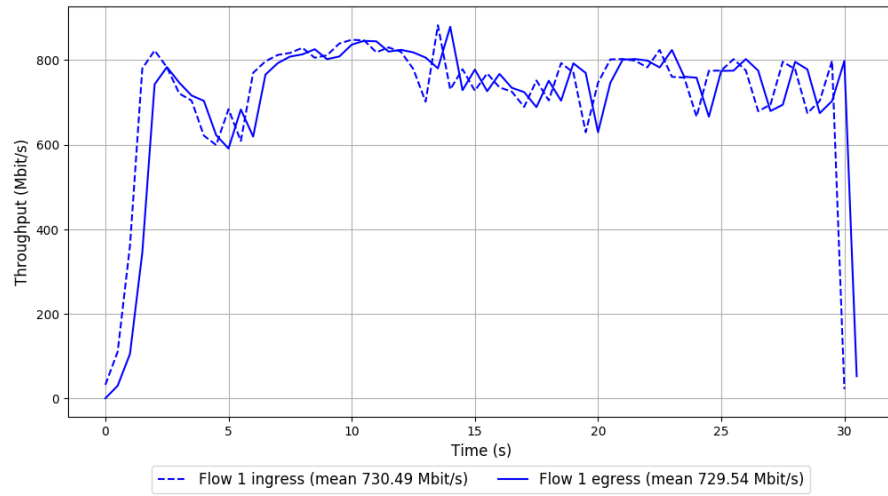


Run 2: Statistics of TCP Cubic

Start at: 2018-09-03 08:31:34
End at: 2018-09-03 08:32:04
Local clock offset: 9.284 ms
Remote clock offset: -1.276 ms

Below is generated by plot.py at 2018-09-03 08:47:37
Datalink statistics
-- Total of 1 flow:
Average throughput: 729.54 Mbit/s
95th percentile per-packet one-way delay: 109.579 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 729.54 Mbit/s
95th percentile per-packet one-way delay: 109.579 ms
Loss rate: 0.13%

Run 2: Report of TCP Cubic — Data Link



Run 3: Statistics of TCP Cubic

Start at: 2018-09-03 08:37:37

End at: 2018-09-03 08:38:07

Local clock offset: 16.265 ms

Remote clock offset: 0.248 ms

Below is generated by plot.py at 2018-09-03 08:47:37

Datalink statistics

-- Total of 1 flow:

Average throughput: 680.09 Mbit/s

95th percentile per-packet one-way delay: 112.177 ms

Loss rate: 0.20%

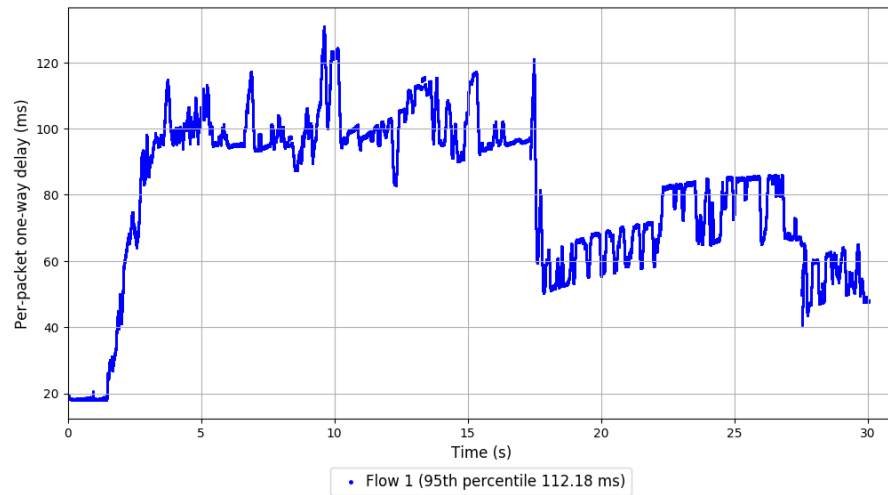
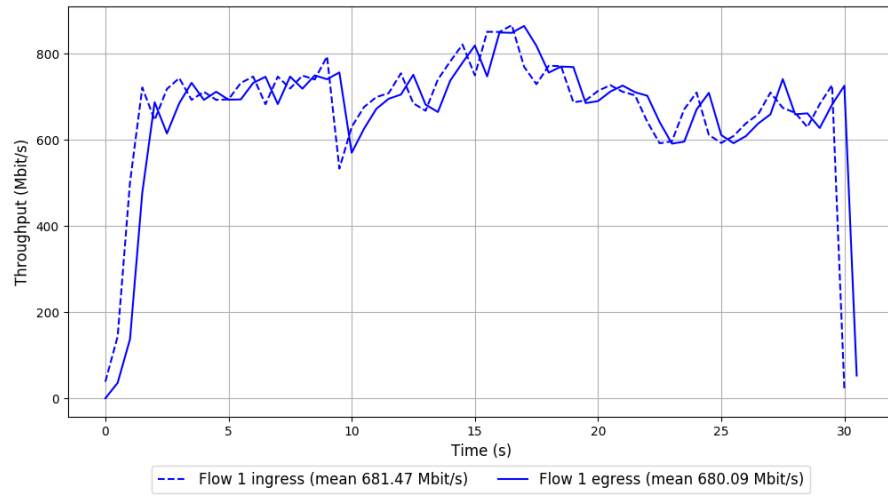
-- Flow 1:

Average throughput: 680.09 Mbit/s

95th percentile per-packet one-way delay: 112.177 ms

Loss rate: 0.20%

Run 3: Report of TCP Cubic — Data Link

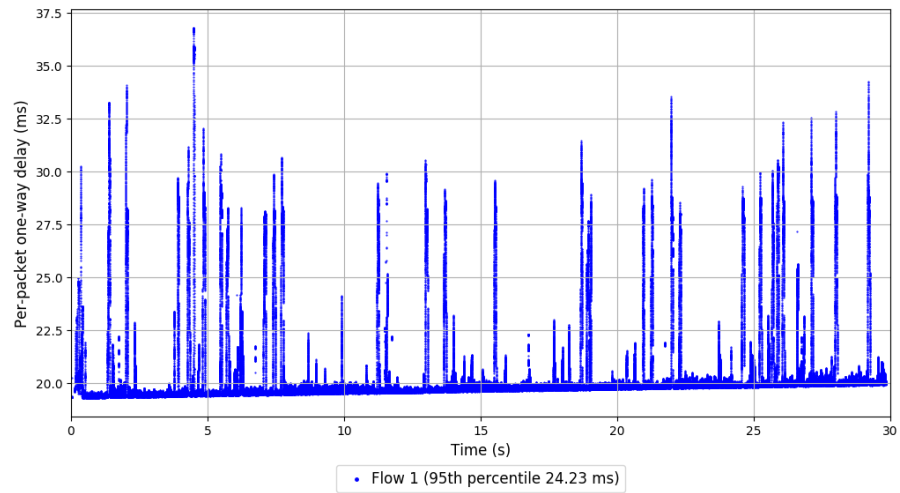
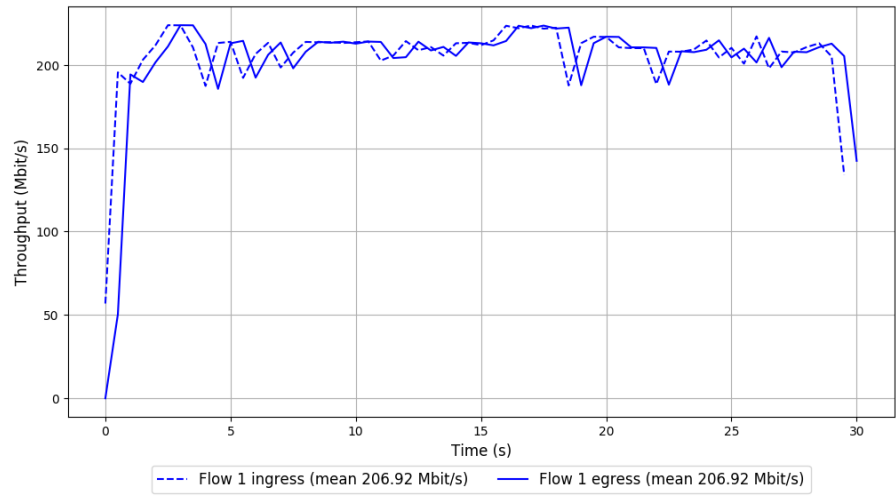


Run 1: Statistics of Indigo

Start at: 2018-09-03 08:27:11
End at: 2018-09-03 08:27:41
Local clock offset: 4.29 ms
Remote clock offset: -1.076 ms

Below is generated by plot.py at 2018-09-03 08:47:37
Datalink statistics
-- Total of 1 flow:
Average throughput: 206.92 Mbit/s
95th percentile per-packet one-way delay: 24.228 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 206.92 Mbit/s
95th percentile per-packet one-way delay: 24.228 ms
Loss rate: 0.00%

Run 1: Report of Indigo — Data Link

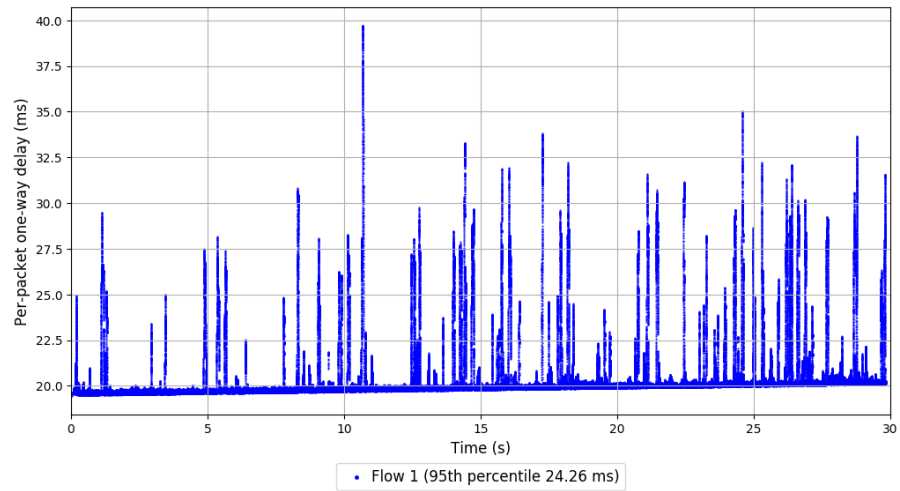
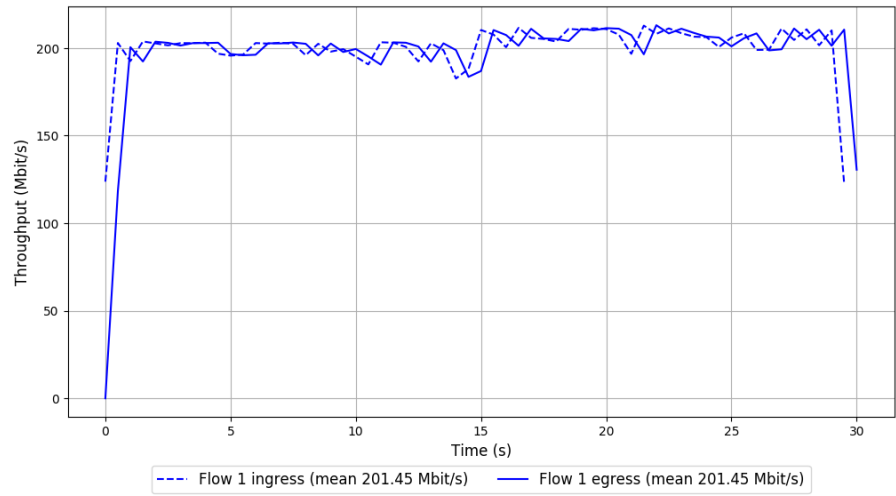


Run 2: Statistics of Indigo

Start at: 2018-09-03 08:33:14
End at: 2018-09-03 08:33:44
Local clock offset: 11.389 ms
Remote clock offset: -1.272 ms

Below is generated by plot.py at 2018-09-03 08:47:37
Datalink statistics
-- Total of 1 flow:
Average throughput: 201.45 Mbit/s
95th percentile per-packet one-way delay: 24.263 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 201.45 Mbit/s
95th percentile per-packet one-way delay: 24.263 ms
Loss rate: 0.00%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2018-09-03 08:39:16

End at: 2018-09-03 08:39:46

Local clock offset: 15.969 ms

Remote clock offset: 0.823 ms

Below is generated by plot.py at 2018-09-03 08:47:37

Datalink statistics

-- Total of 1 flow:

Average throughput: 205.62 Mbit/s

95th percentile per-packet one-way delay: 18.224 ms

Loss rate: 0.00%

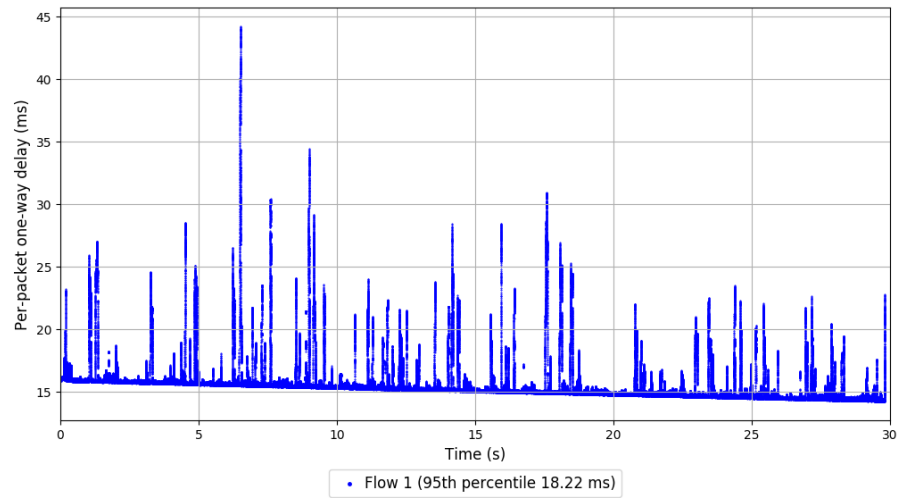
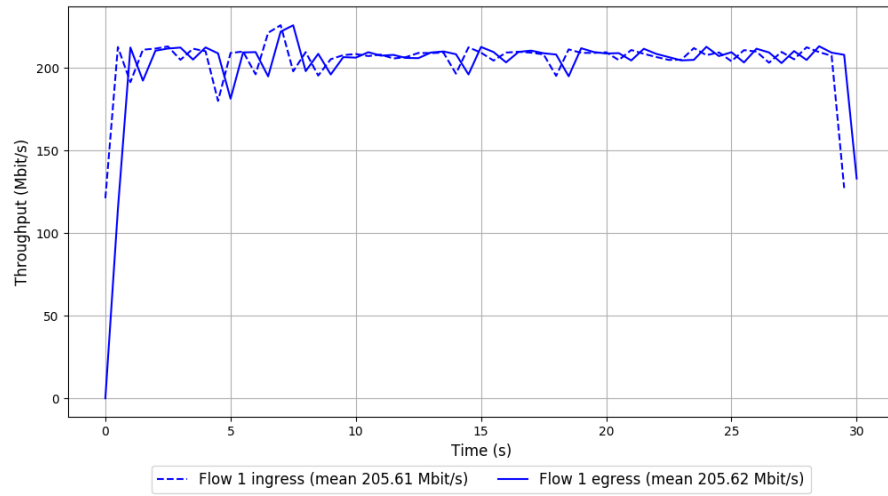
-- Flow 1:

Average throughput: 205.62 Mbit/s

95th percentile per-packet one-way delay: 18.224 ms

Loss rate: 0.00%

Run 3: Report of Indigo — Data Link



Run 1: Statistics of Muses-25

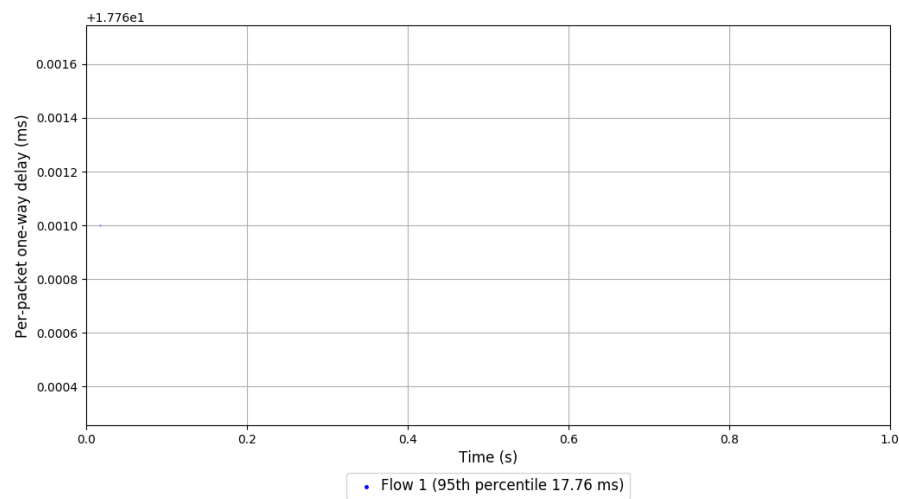
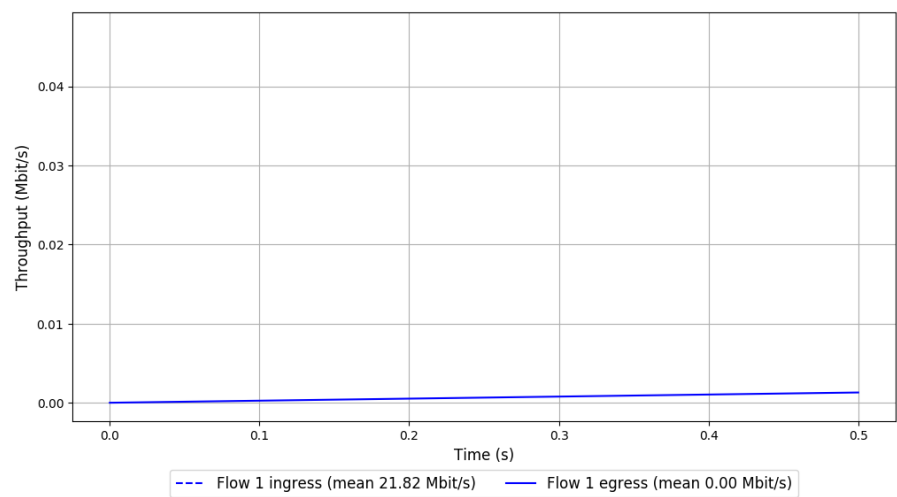
Start at: 2018-09-03 08:24:13

End at: 2018-09-03 08:24:43

Local clock offset: 1.676 ms

Remote clock offset: -0.958 ms

Run 1: Report of Muses-25 — Data Link

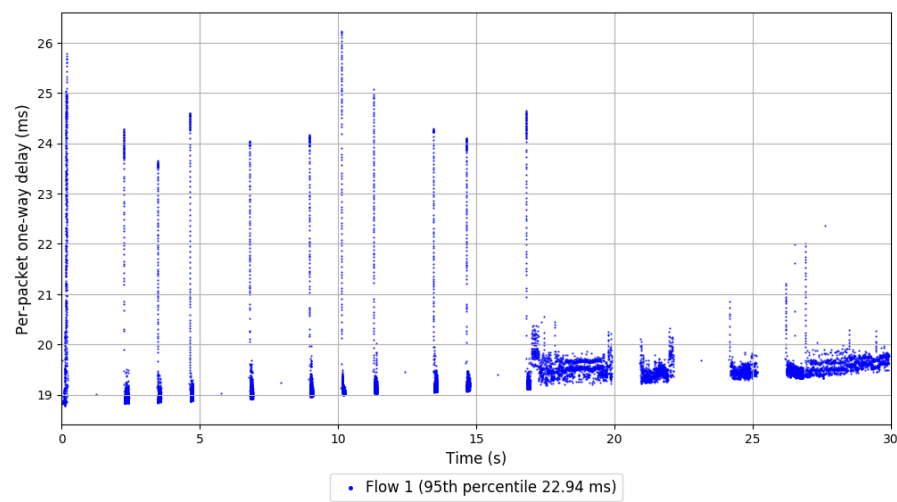
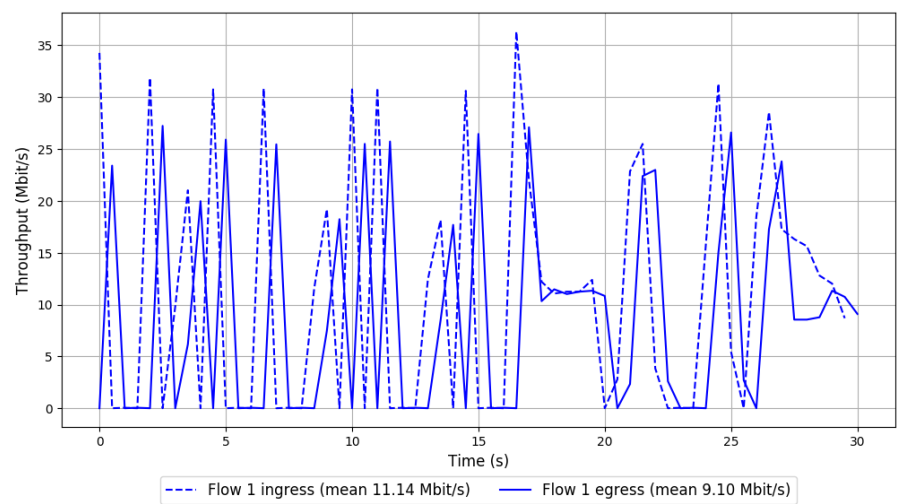


Run 2: Statistics of Muses-25

Start at: 2018-09-03 08:30:16
End at: 2018-09-03 08:30:46
Local clock offset: 7.773 ms
Remote clock offset: -1.197 ms

Below is generated by plot.py at 2018-09-03 08:47:37
Datalink statistics
-- Total of 1 flow:
Average throughput: 9.10 Mbit/s
95th percentile per-packet one-way delay: 22.940 ms
Loss rate: 18.33%
-- Flow 1:
Average throughput: 9.10 Mbit/s
95th percentile per-packet one-way delay: 22.940 ms
Loss rate: 18.33%

Run 2: Report of Muses-25 — Data Link



Run 3: Statistics of Muses-25

Start at: 2018-09-03 08:36:20

End at: 2018-09-03 08:36:50

Local clock offset: 14.897 ms

Remote clock offset: -0.202 ms

Run 3: Report of Muses-25 — Data Link

