

Pantheon Report

Generated at 2018-08-31 07:30:02 (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.

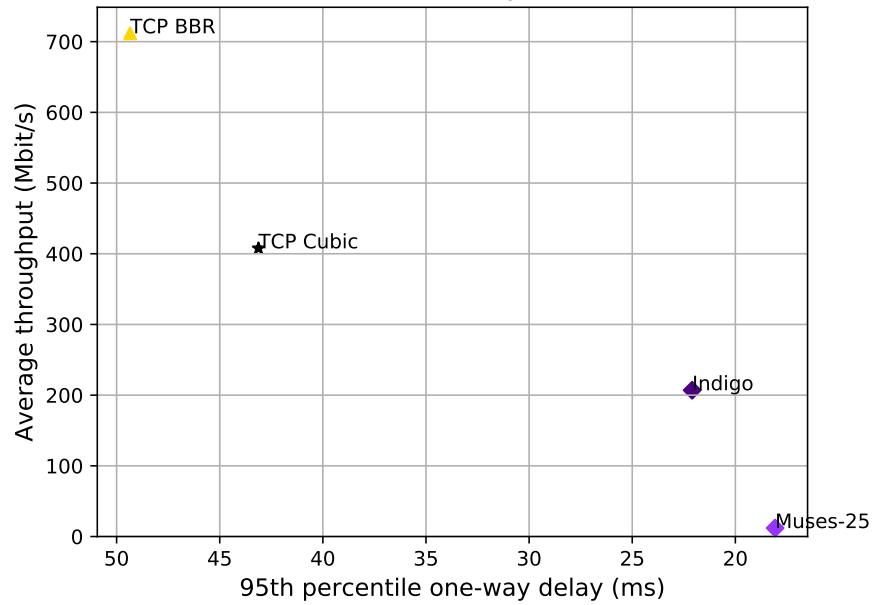
System info:

```
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
```

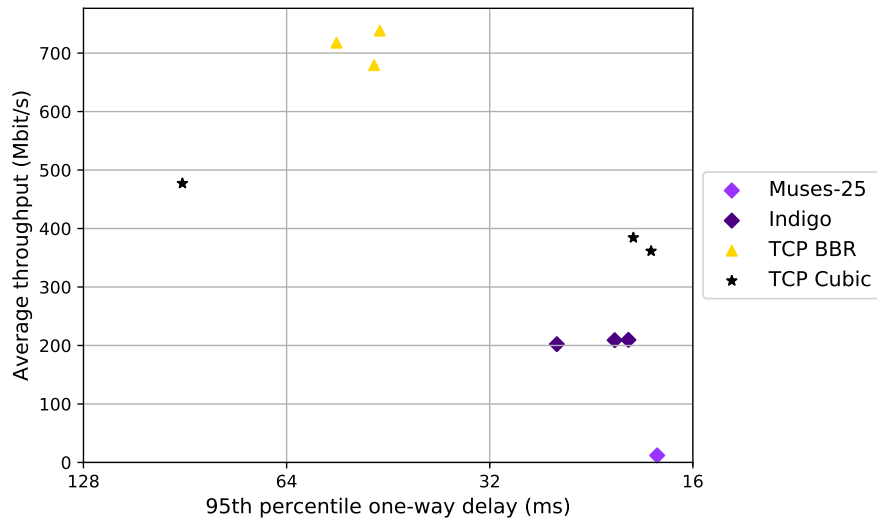
Git summary:

```
branch: muses @ e3c5aa19ca94c3066828fb83f16a8fb6b2731e7a
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecd90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ b59e0d118c50af3579569c462d33045741c85981
third_party/pantheon-tunnel @ cbfce6db5ff5740dafa1771f813cd646339e1952
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



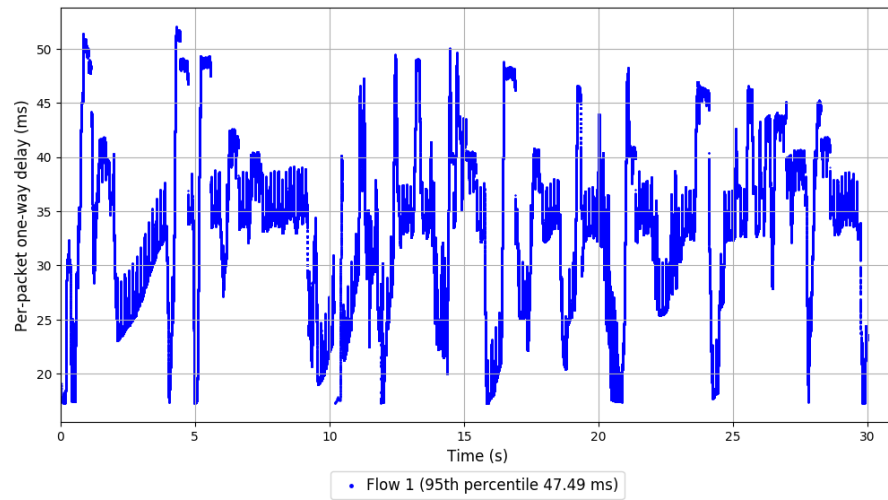
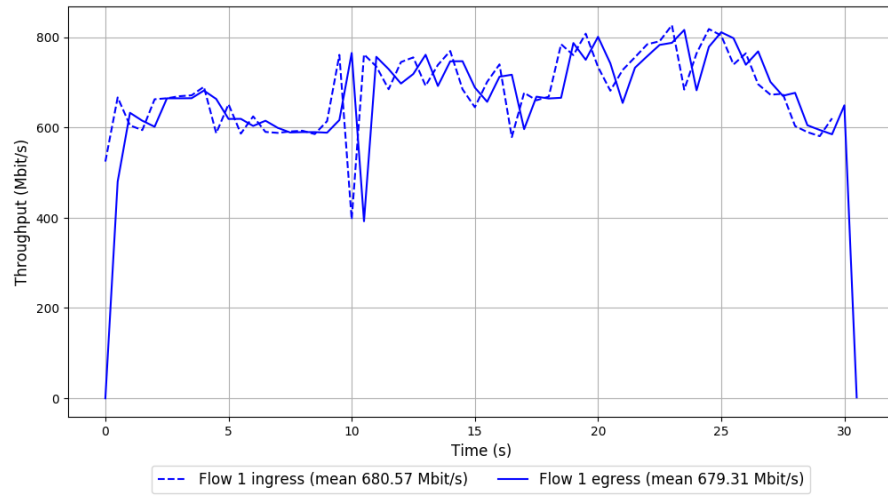
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	711.81	49.34	0.48
TCP Cubic	3	407.67	43.12	0.02
Indigo	3	206.95	22.09	0.00
Muses-25	1	11.97	18.07	4.39

Run 1: Statistics of TCP BBR

Start at: 2018-08-31 07:06:41
End at: 2018-08-31 07:07:11
Local clock offset: -0.96 ms
Remote clock offset: -0.096 ms

Below is generated by plot.py at 2018-08-31 07:29:55
Datalink statistics
-- Total of 1 flow:
Average throughput: 679.31 Mbit/s
95th percentile per-packet one-way delay: 47.488 ms
Loss rate: 0.18%
-- Flow 1:
Average throughput: 679.31 Mbit/s
95th percentile per-packet one-way delay: 47.488 ms
Loss rate: 0.18%

Run 1: Report of TCP BBR — Data Link

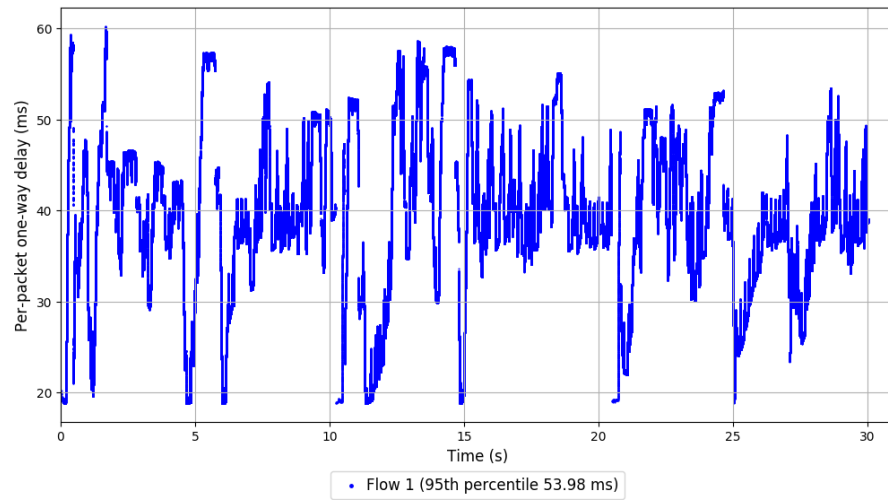
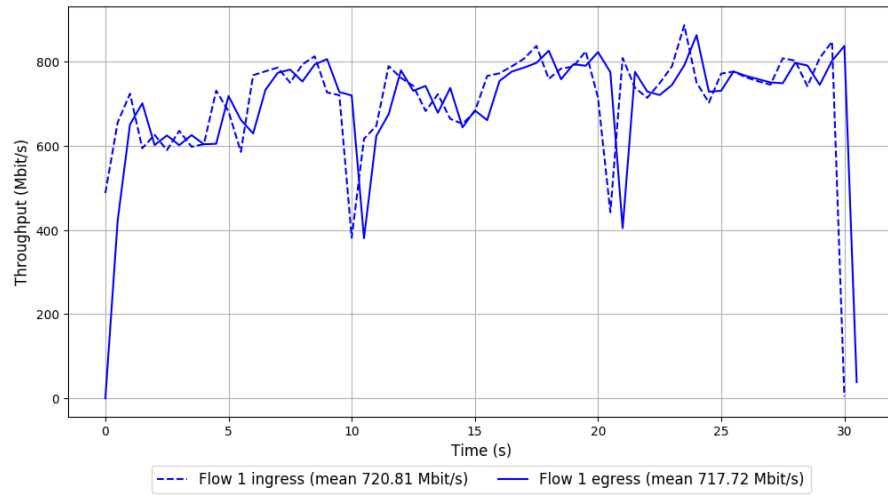


Run 2: Statistics of TCP BBR

Start at: 2018-08-31 07:12:33
End at: 2018-08-31 07:13:03
Local clock offset: -0.782 ms
Remote clock offset: -0.073 ms

Below is generated by plot.py at 2018-08-31 07:29:59
Datalink statistics
-- Total of 1 flow:
Average throughput: 717.72 Mbit/s
95th percentile per-packet one-way delay: 53.981 ms
Loss rate: 0.43%
-- Flow 1:
Average throughput: 717.72 Mbit/s
95th percentile per-packet one-way delay: 53.981 ms
Loss rate: 0.43%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-08-31 07:18:26

End at: 2018-08-31 07:18:56

Local clock offset: -0.955 ms

Remote clock offset: -0.18 ms

Below is generated by plot.py at 2018-08-31 07:30:01

Datalink statistics

-- Total of 1 flow:

Average throughput: 738.39 Mbit/s

95th percentile per-packet one-way delay: 46.563 ms

Loss rate: 0.83%

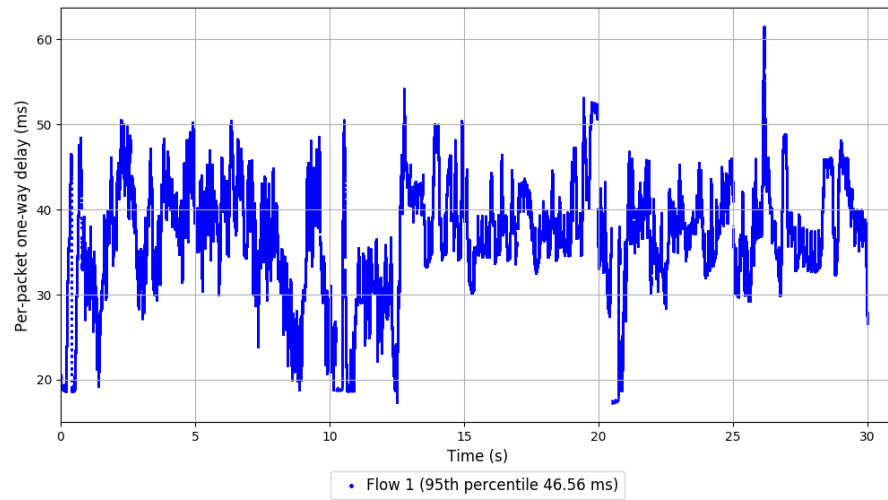
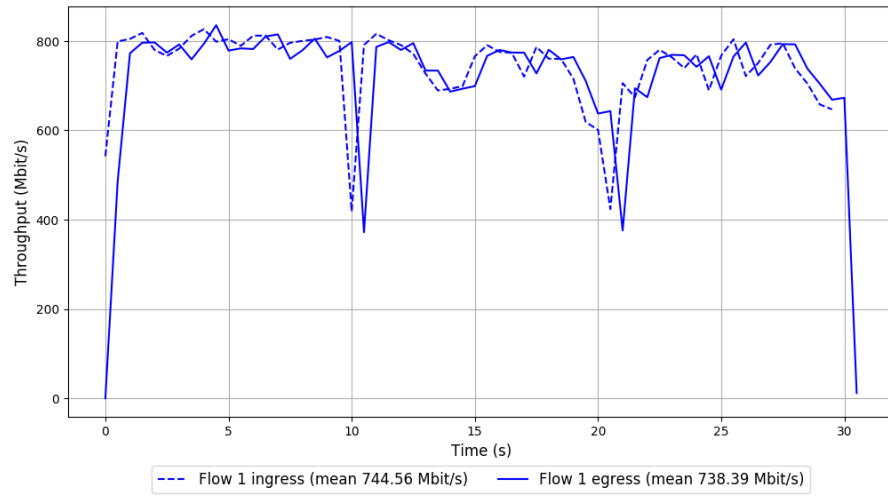
-- Flow 1:

Average throughput: 738.39 Mbit/s

95th percentile per-packet one-way delay: 46.563 ms

Loss rate: 0.83%

Run 3: Report of TCP BBR — Data Link

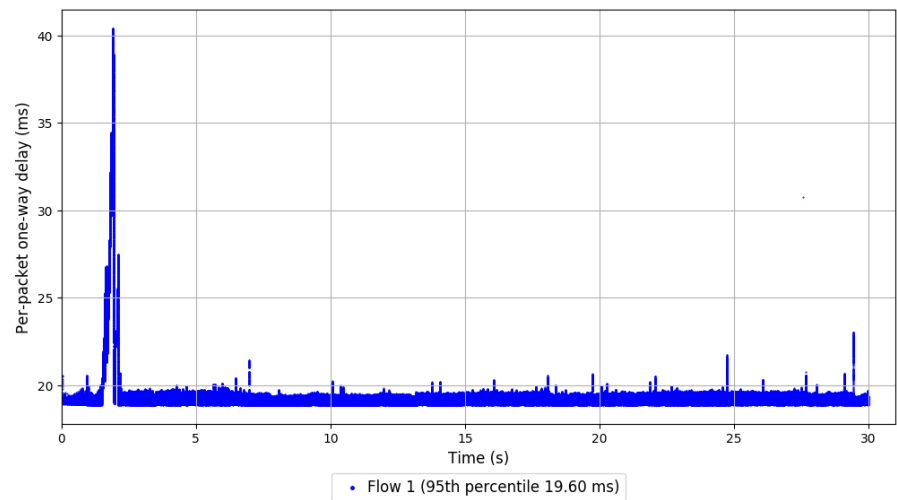
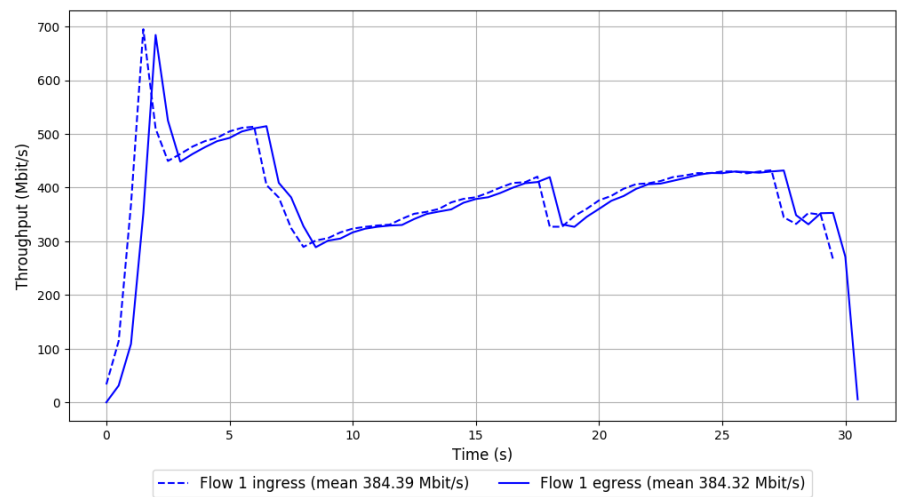


Run 1: Statistics of TCP Cubic

Start at: 2018-08-31 07:09:46
End at: 2018-08-31 07:10:16
Local clock offset: -0.873 ms
Remote clock offset: -0.074 ms

Below is generated by plot.py at 2018-08-31 07:30:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 384.32 Mbit/s
95th percentile per-packet one-way delay: 19.602 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 384.32 Mbit/s
95th percentile per-packet one-way delay: 19.602 ms
Loss rate: 0.02%

Run 1: Report of TCP Cubic — Data Link

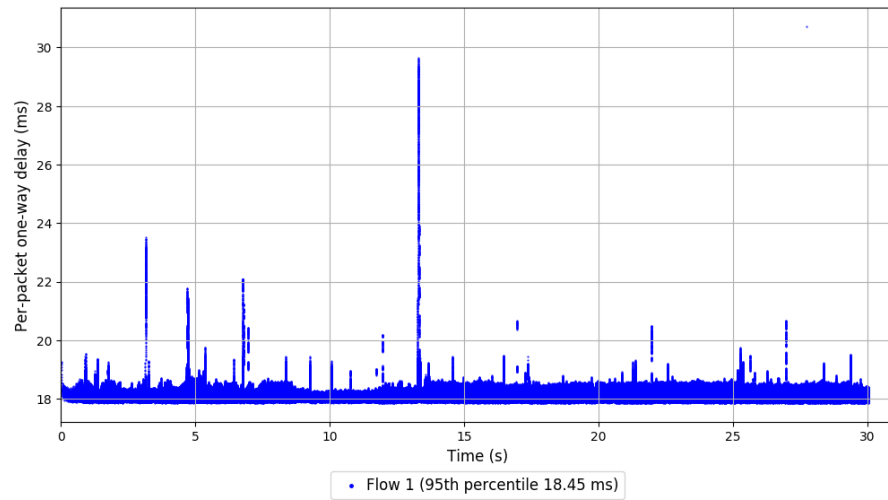
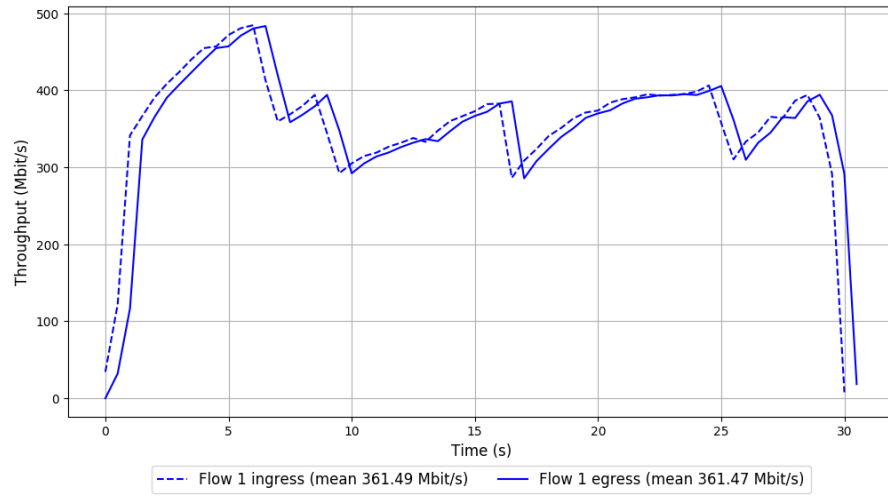


Run 2: Statistics of TCP Cubic

Start at: 2018-08-31 07:15:40
End at: 2018-08-31 07:16:10
Local clock offset: -0.849 ms
Remote clock offset: -0.198 ms

Below is generated by plot.py at 2018-08-31 07:30:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 361.47 Mbit/s
95th percentile per-packet one-way delay: 18.450 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 361.47 Mbit/s
95th percentile per-packet one-way delay: 18.450 ms
Loss rate: 0.00%

Run 2: Report of TCP Cubic — Data Link

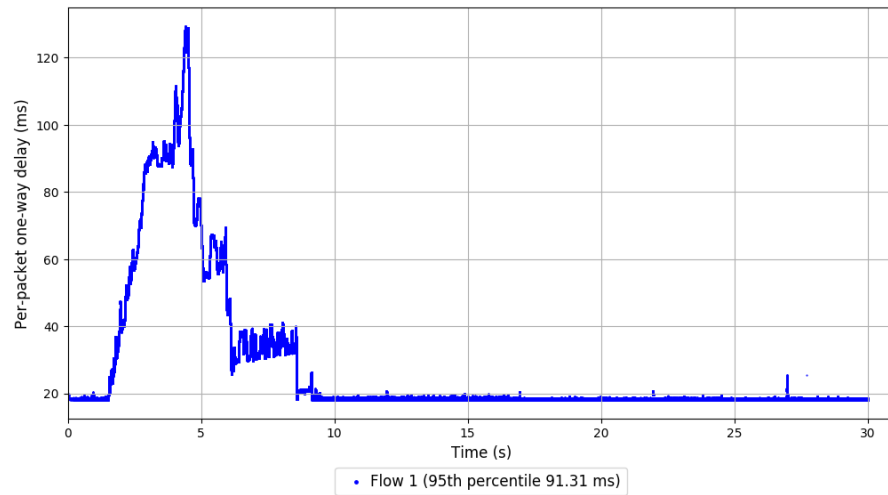
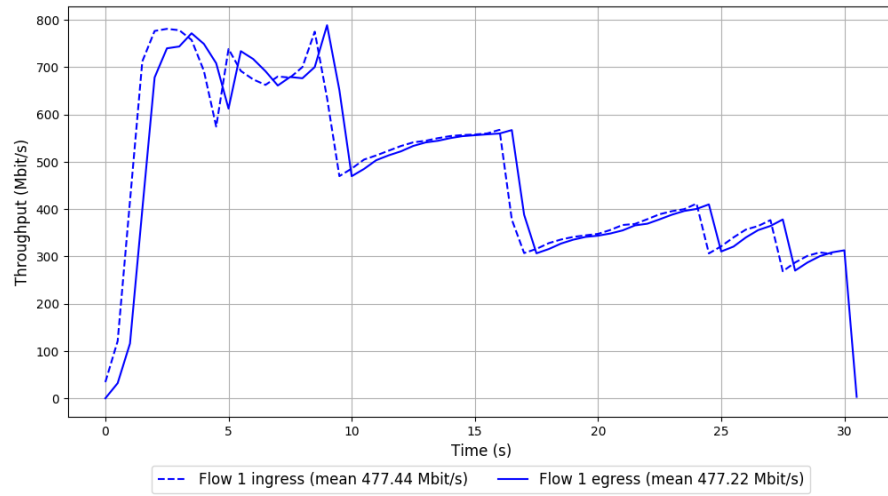


Run 3: Statistics of TCP Cubic

Start at: 2018-08-31 07:21:35
End at: 2018-08-31 07:22:05
Local clock offset: -1.181 ms
Remote clock offset: -0.196 ms

Below is generated by plot.py at 2018-08-31 07:30:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 477.22 Mbit/s
95th percentile per-packet one-way delay: 91.314 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 477.22 Mbit/s
95th percentile per-packet one-way delay: 91.314 ms
Loss rate: 0.05%

Run 3: Report of TCP Cubic — Data Link

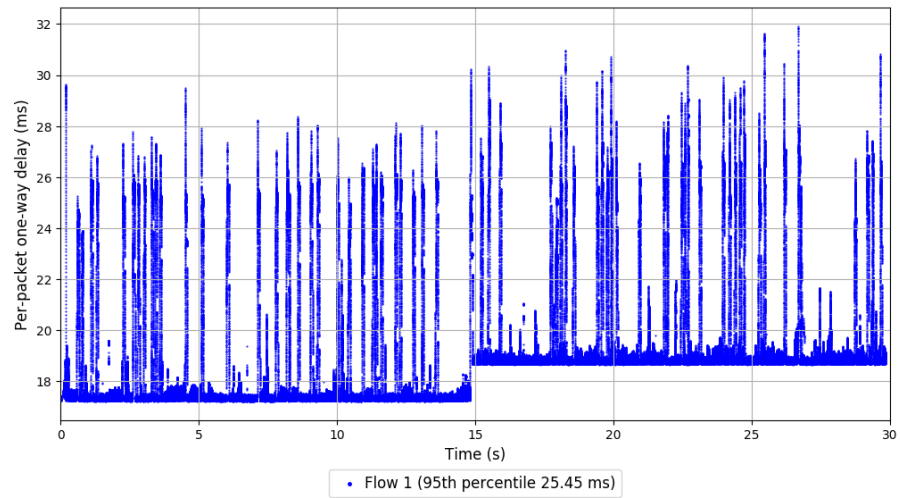
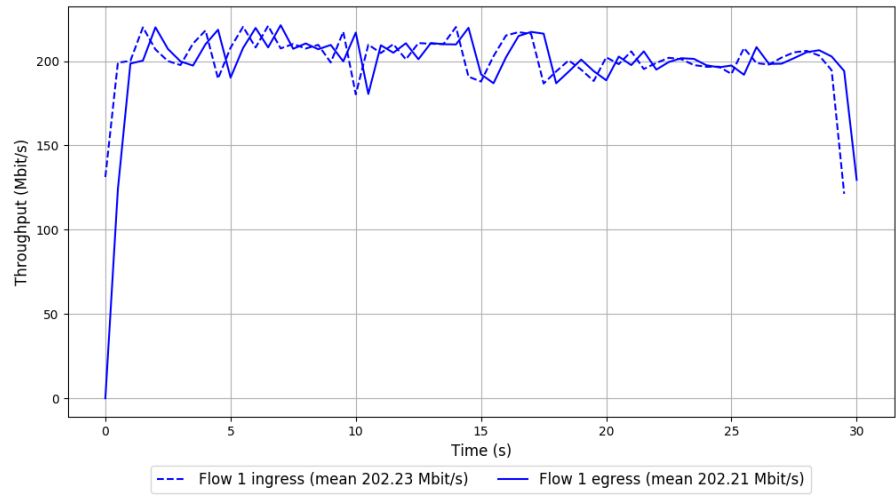


Run 1: Statistics of Indigo

Start at: 2018-08-31 07:08:20
End at: 2018-08-31 07:08:50
Local clock offset: -0.794 ms
Remote clock offset: -0.003 ms

Below is generated by plot.py at 2018-08-31 07:30:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 202.21 Mbit/s
95th percentile per-packet one-way delay: 25.452 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 202.21 Mbit/s
95th percentile per-packet one-way delay: 25.452 ms
Loss rate: 0.00%

Run 1: Report of Indigo — Data Link

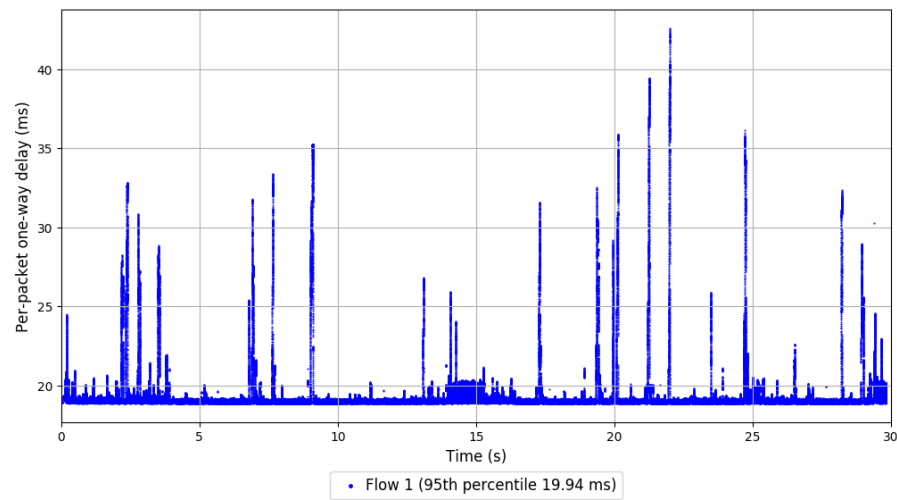
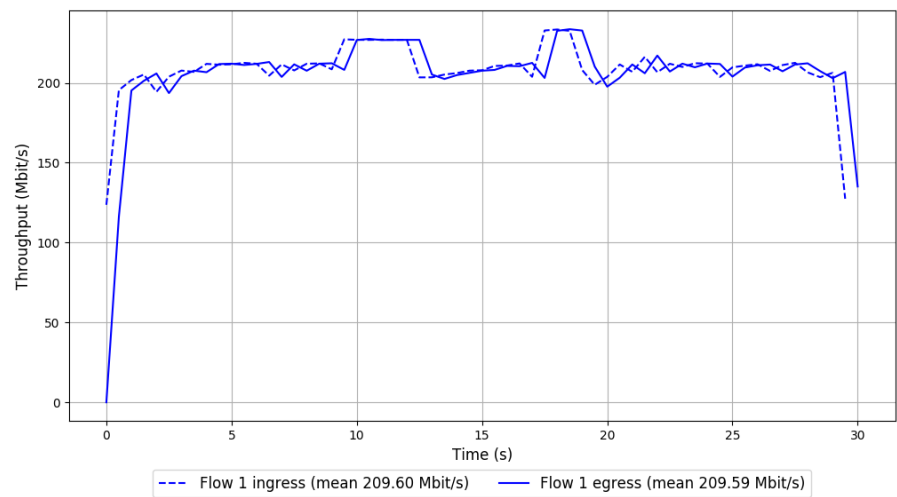


Run 2: Statistics of Indigo

Start at: 2018-08-31 07:14:14
End at: 2018-08-31 07:14:44
Local clock offset: -0.817 ms
Remote clock offset: -0.045 ms

Below is generated by plot.py at 2018-08-31 07:30:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 209.59 Mbit/s
95th percentile per-packet one-way delay: 19.938 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 209.59 Mbit/s
95th percentile per-packet one-way delay: 19.938 ms
Loss rate: 0.00%

Run 2: Report of Indigo — Data Link

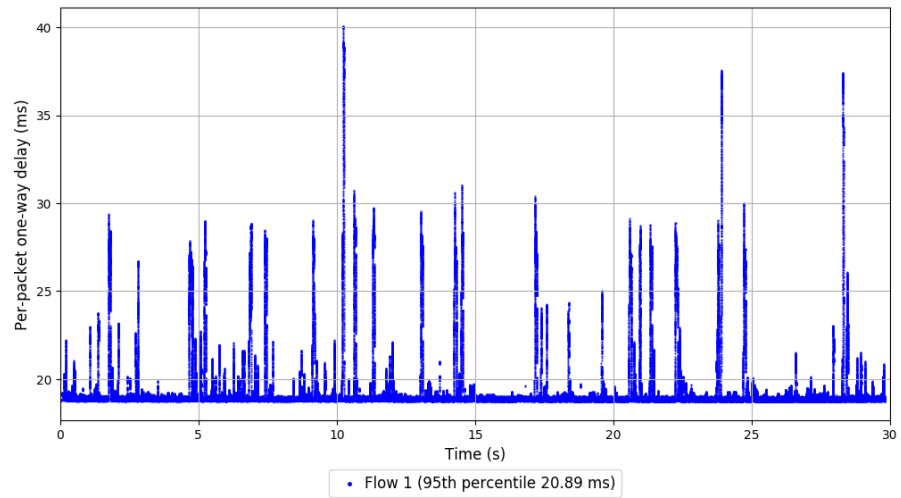
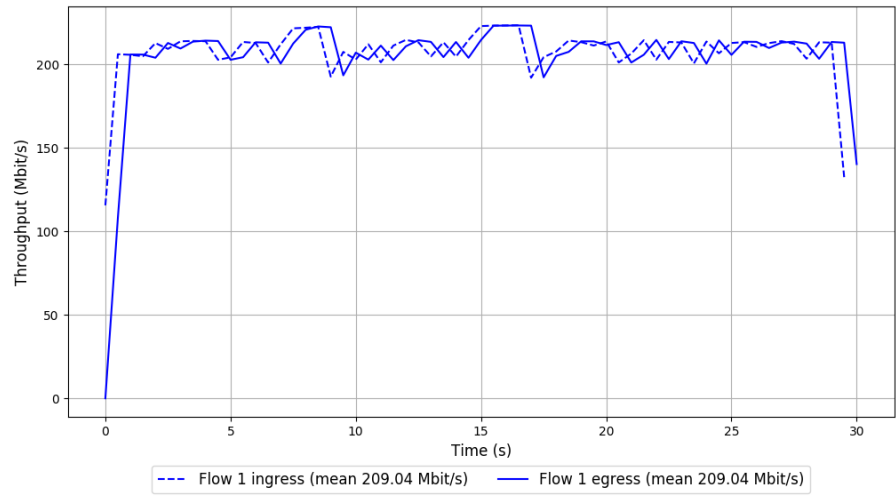


Run 3: Statistics of Indigo

Start at: 2018-08-31 07:20:08
End at: 2018-08-31 07:20:38
Local clock offset: -1.108 ms
Remote clock offset: -0.131 ms

Below is generated by plot.py at 2018-08-31 07:30:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 209.04 Mbit/s
95th percentile per-packet one-way delay: 20.892 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 209.04 Mbit/s
95th percentile per-packet one-way delay: 20.892 ms
Loss rate: 0.00%

Run 3: Report of Indigo — Data Link



Run 1: Statistics of Muses-25

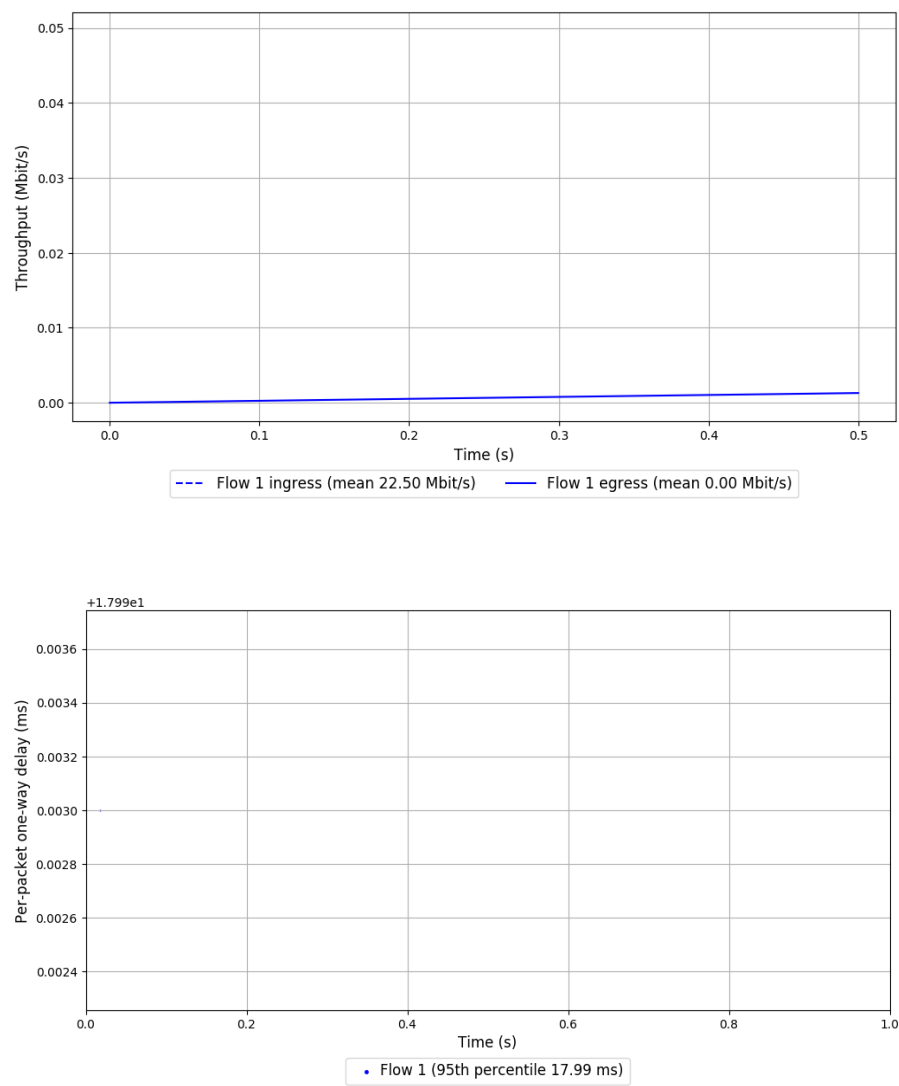
Start at: 2018-08-31 07:11:15

End at: 2018-08-31 07:11:45

Local clock offset: -0.855 ms

Remote clock offset: -0.091 ms

Run 1: Report of Muses-25 — Data Link

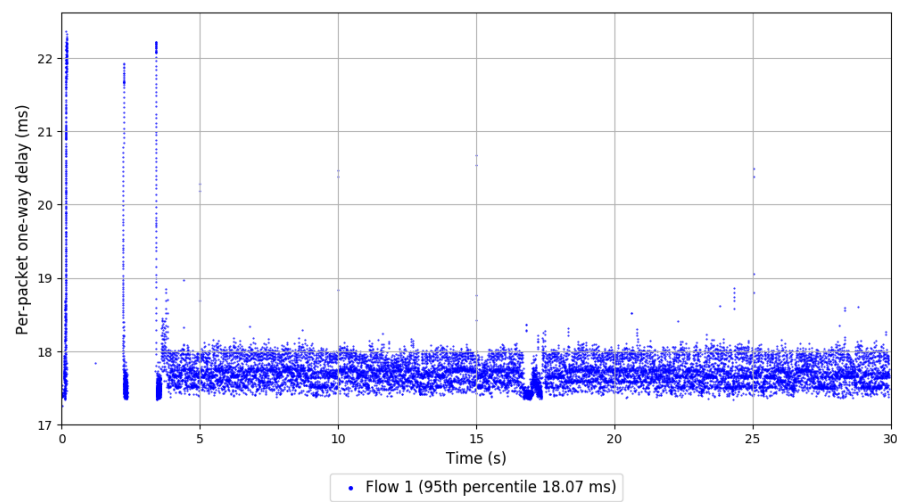
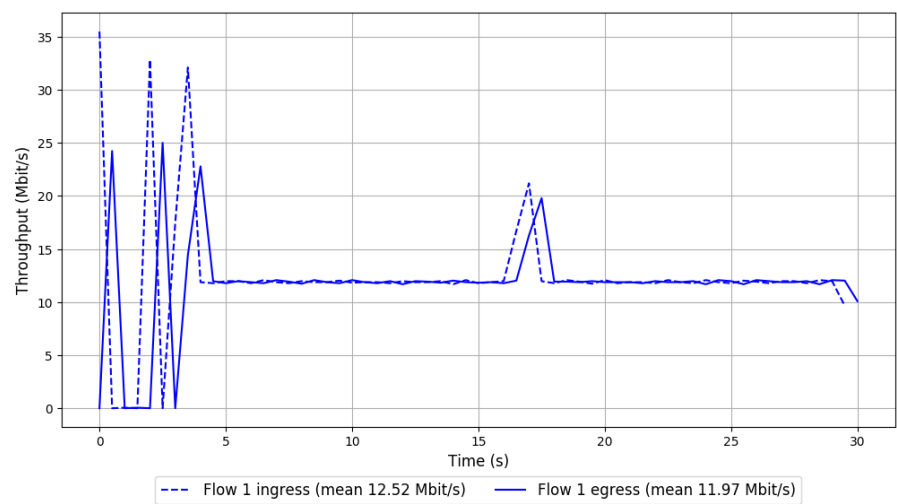


Run 2: Statistics of Muses-25

Start at: 2018-08-31 07:17:09
End at: 2018-08-31 07:17:39
Local clock offset: -0.994 ms
Remote clock offset: -0.114 ms

Below is generated by plot.py at 2018-08-31 07:30:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 11.97 Mbit/s
95th percentile per-packet one-way delay: 18.073 ms
Loss rate: 4.39%
-- Flow 1:
Average throughput: 11.97 Mbit/s
95th percentile per-packet one-way delay: 18.073 ms
Loss rate: 4.39%

Run 2: Report of Muses-25 — Data Link



Run 3: Statistics of Muses-25

Start at: 2018-08-31 07:23:07

End at: 2018-08-31 07:23:37

Local clock offset: -1.268 ms

Remote clock offset: -0.185 ms

Run 3: Report of Muses-25 — Data Link

