

Pantheon Report

Generated at 2018-09-05 21:19:14 (UTC).

Data path: AWS California 2 on **ens5** (*local*) → Mexico on **em1** (*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.

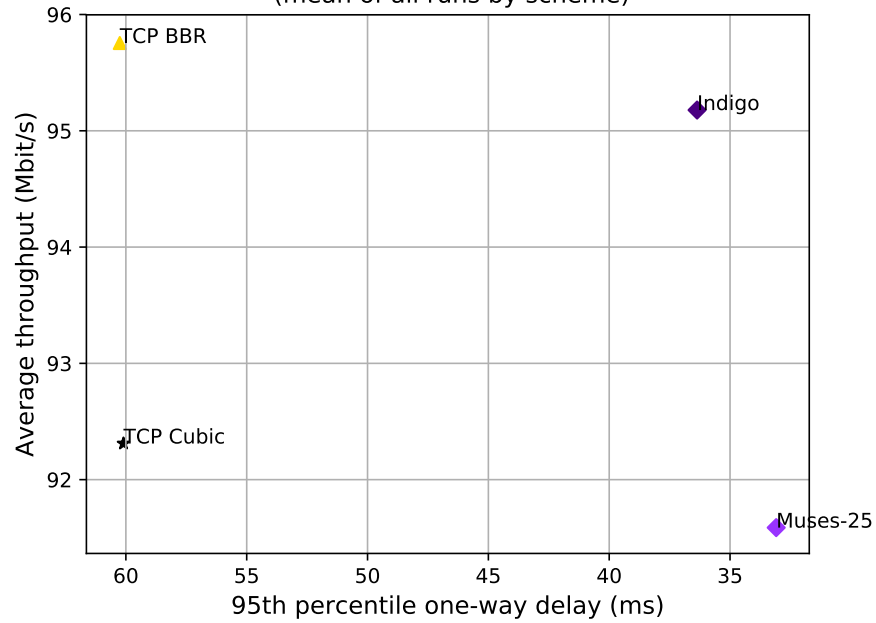
System info:

```
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
```

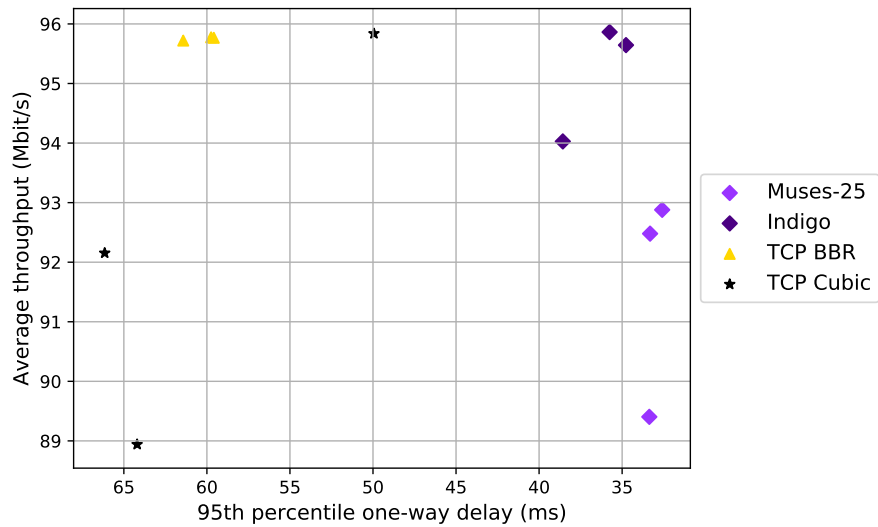
Git summary:

```
branch: muses @ 18b9165265c8ba2915c862e8713fd9ad82c1ac21
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf5e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecd90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ a28d20fb82a95a965a3da65fd1eb71b8994e9b84
third_party/pantheon-tunnel @ cbfce6db5ff5740d4fe1771f813cd646339e1952
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 2 to Mexico, 3 runs of 30s each per scheme
(mean of all runs by scheme)



test from AWS California 2 to Mexico, 3 runs of 30s each per scheme



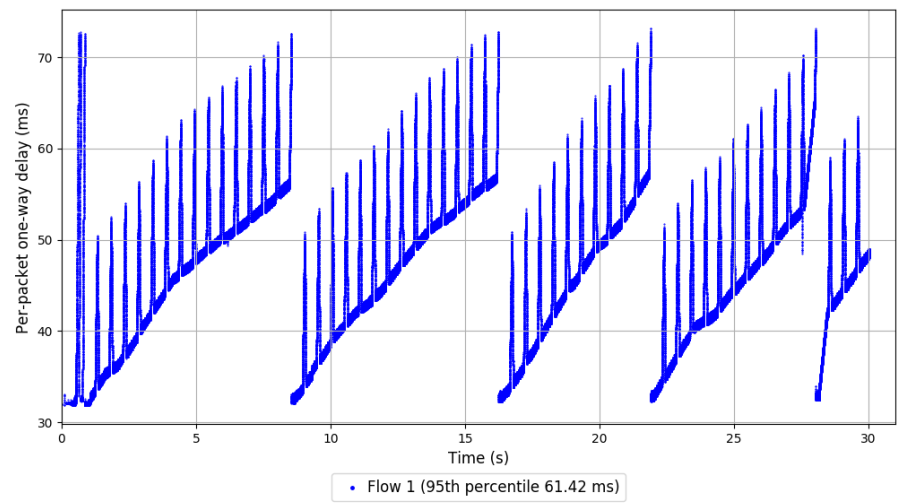
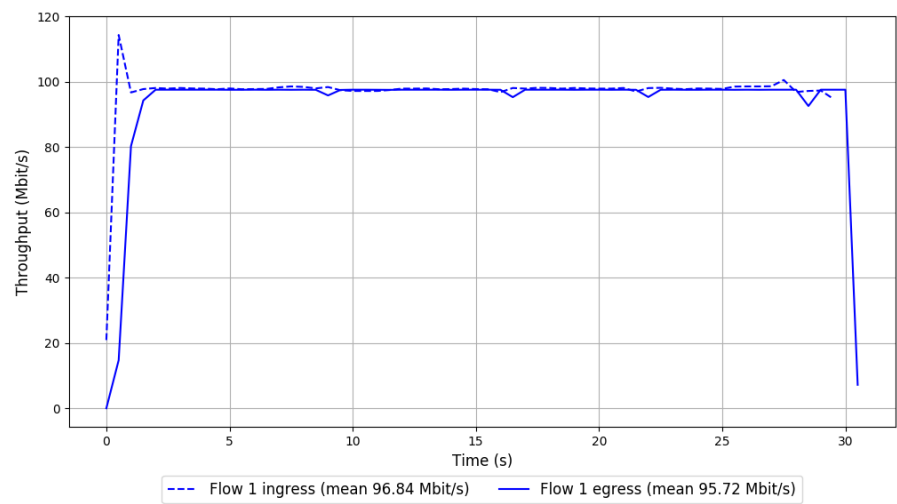
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	95.76	60.25	1.06
TCP Cubic	3	92.31	60.10	0.42
Indigo	3	95.18	36.36	0.01
Muses-25	3	91.59	33.09	0.24

Run 1: Statistics of TCP BBR

Start at: 2018-09-05 21:03:10
End at: 2018-09-05 21:03:40
Local clock offset: -0.604 ms
Remote clock offset: -0.407 ms

Below is generated by plot.py at 2018-09-05 21:18:39
Datalink statistics
-- Total of 1 flow:
Average throughput: 95.72 Mbit/s
95th percentile per-packet one-way delay: 61.425 ms
Loss rate: 1.10%
-- Flow 1:
Average throughput: 95.72 Mbit/s
95th percentile per-packet one-way delay: 61.425 ms
Loss rate: 1.10%

Run 1: Report of TCP BBR — Data Link

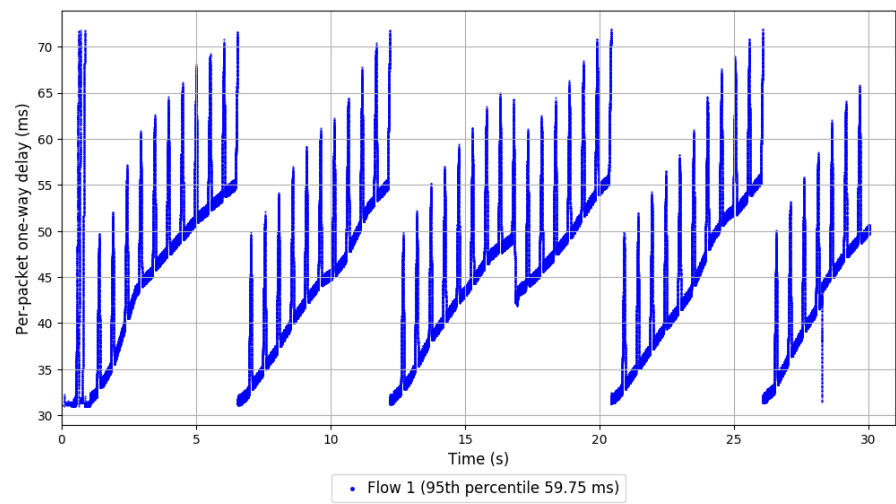
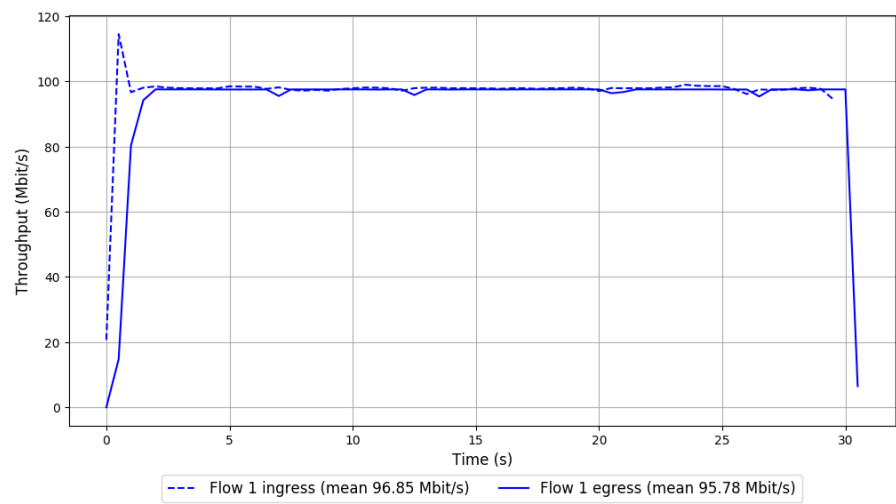


Run 2: Statistics of TCP BBR

Start at: 2018-09-05 21:08:37
End at: 2018-09-05 21:09:07
Local clock offset: -1.063 ms
Remote clock offset: -0.418 ms

Below is generated by plot.py at 2018-09-05 21:18:41
Datalink statistics
-- Total of 1 flow:
Average throughput: 95.78 Mbit/s
95th percentile per-packet one-way delay: 59.747 ms
Loss rate: 1.04%
-- Flow 1:
Average throughput: 95.78 Mbit/s
95th percentile per-packet one-way delay: 59.747 ms
Loss rate: 1.04%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-09-05 21:14:00

End at: 2018-09-05 21:14:30

Local clock offset: 2.305 ms

Remote clock offset: -0.304 ms

Below is generated by plot.py at 2018-09-05 21:18:41

Datalink statistics

-- Total of 1 flow:

Average throughput: 95.77 Mbit/s

95th percentile per-packet one-way delay: 59.584 ms

Loss rate: 1.03%

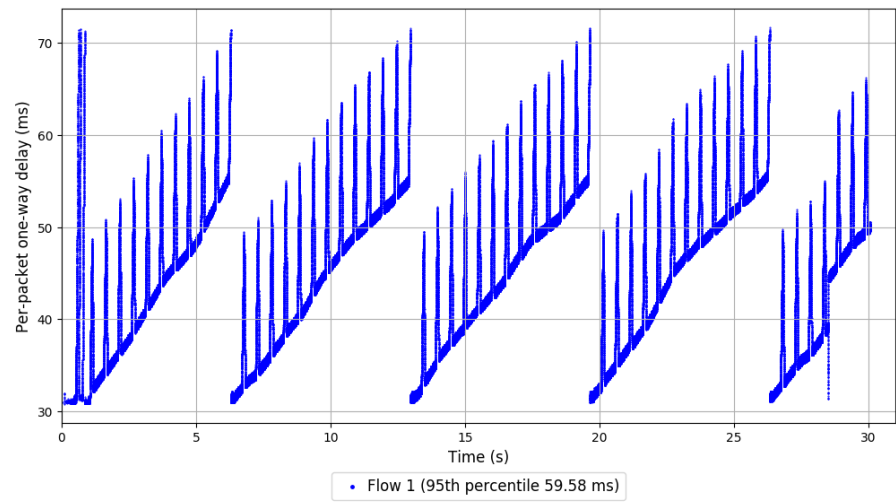
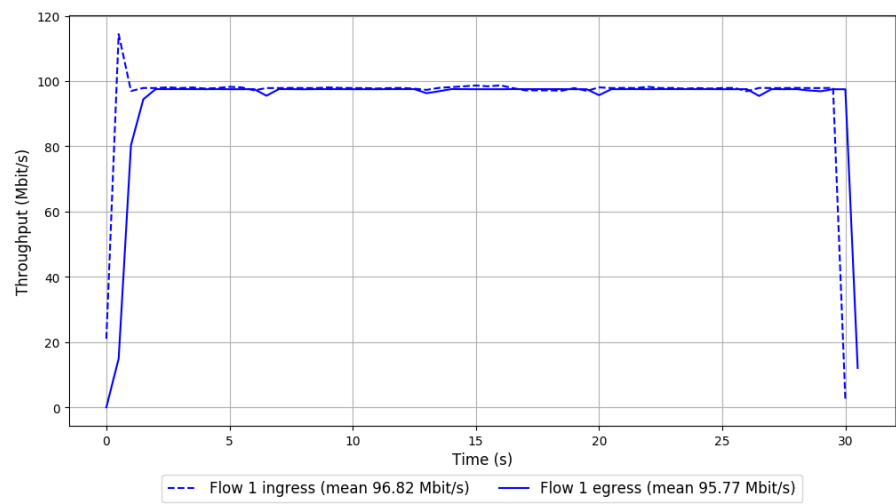
-- Flow 1:

Average throughput: 95.77 Mbit/s

95th percentile per-packet one-way delay: 59.584 ms

Loss rate: 1.03%

Run 3: Report of TCP BBR — Data Link

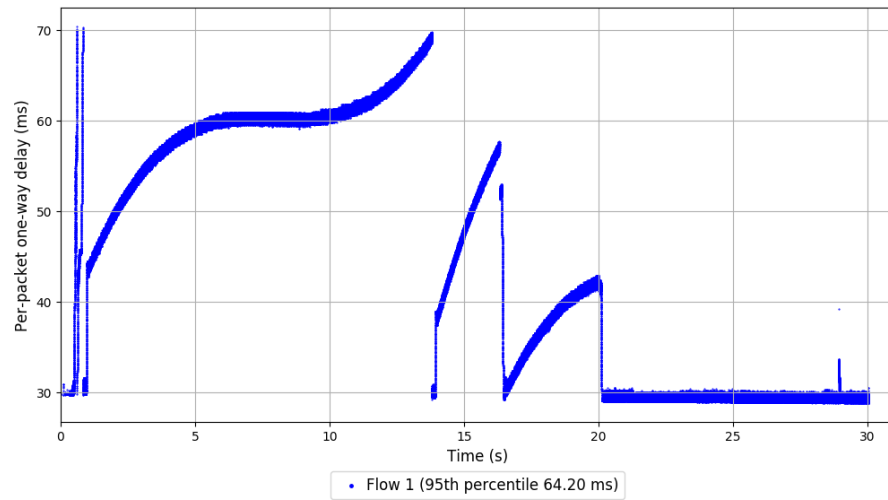
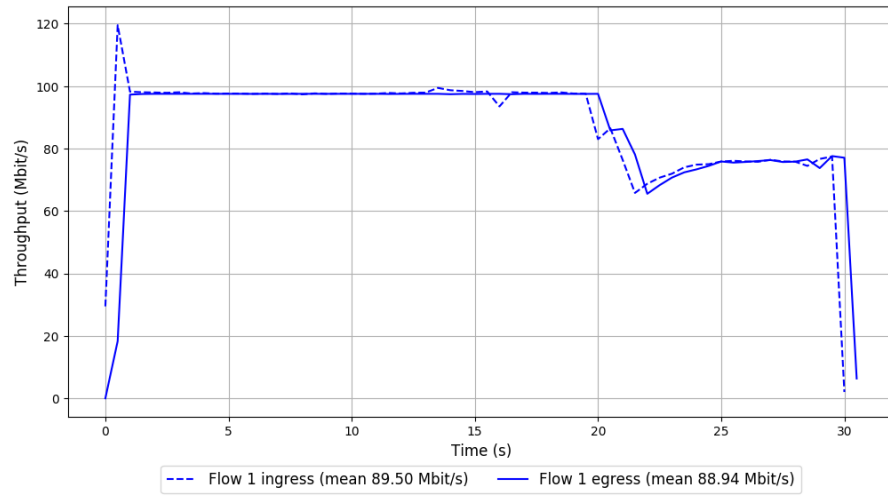


Run 1: Statistics of TCP Cubic

Start at: 2018-09-05 21:04:30
End at: 2018-09-05 21:05:00
Local clock offset: 1.422 ms
Remote clock offset: -0.467 ms

Below is generated by plot.py at 2018-09-05 21:18:41
Datalink statistics
-- Total of 1 flow:
Average throughput: 88.94 Mbit/s
95th percentile per-packet one-way delay: 64.201 ms
Loss rate: 0.63%
-- Flow 1:
Average throughput: 88.94 Mbit/s
95th percentile per-packet one-way delay: 64.201 ms
Loss rate: 0.63%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2018-09-05 21:09:58

End at: 2018-09-05 21:10:28

Local clock offset: -0.106 ms

Remote clock offset: -0.27 ms

Below is generated by plot.py at 2018-09-05 21:18:41

Datalink statistics

-- Total of 1 flow:

Average throughput: 92.15 Mbit/s

95th percentile per-packet one-way delay: 66.154 ms

Loss rate: 0.46%

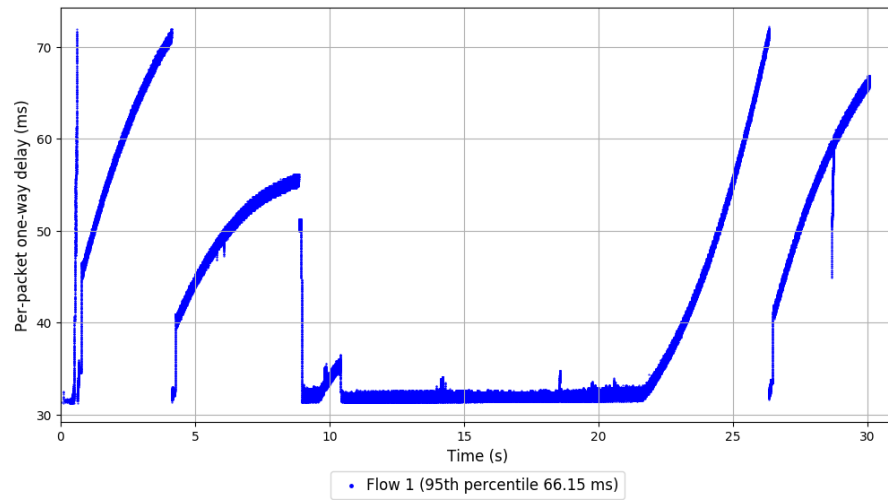
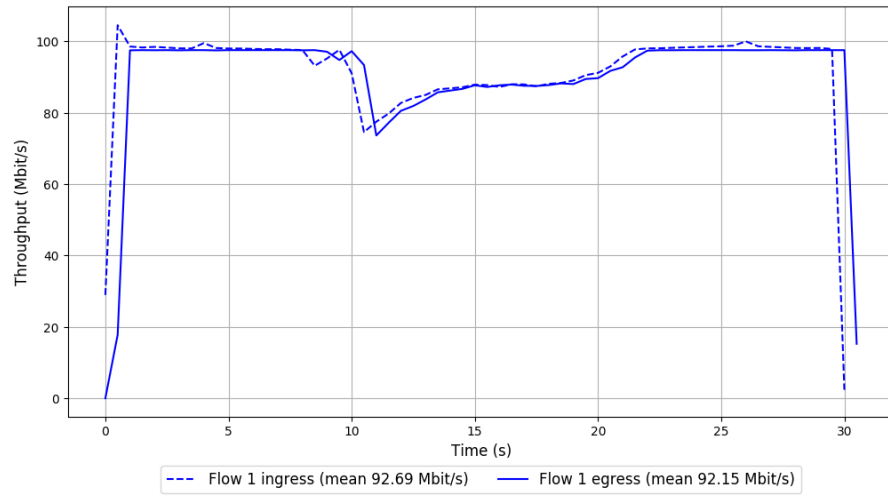
-- Flow 1:

Average throughput: 92.15 Mbit/s

95th percentile per-packet one-way delay: 66.154 ms

Loss rate: 0.46%

Run 2: Report of TCP Cubic — Data Link

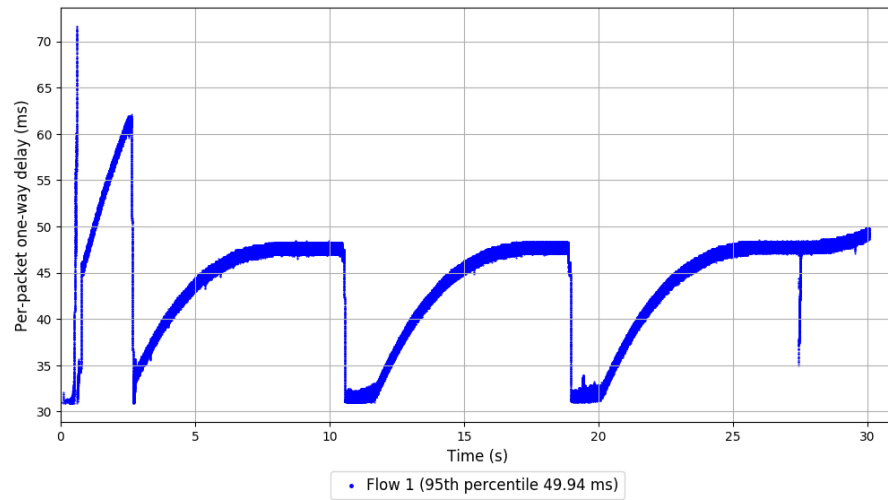
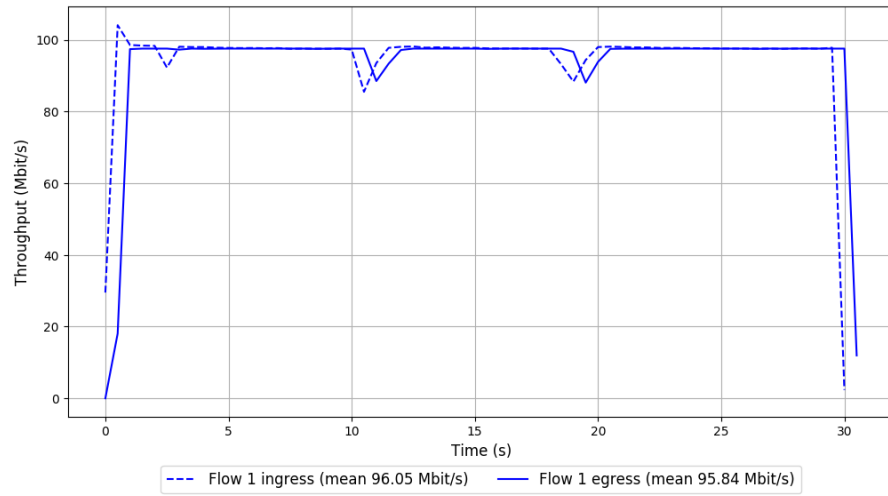


Run 3: Statistics of TCP Cubic

Start at: 2018-09-05 21:15:20
End at: 2018-09-05 21:15:50
Local clock offset: 2.789 ms
Remote clock offset: -0.315 ms

Below is generated by plot.py at 2018-09-05 21:18:41
Datalink statistics
-- Total of 1 flow:
Average throughput: 95.84 Mbit/s
95th percentile per-packet one-way delay: 49.942 ms
Loss rate: 0.16%
-- Flow 1:
Average throughput: 95.84 Mbit/s
95th percentile per-packet one-way delay: 49.942 ms
Loss rate: 0.16%

Run 3: Report of TCP Cubic — Data Link

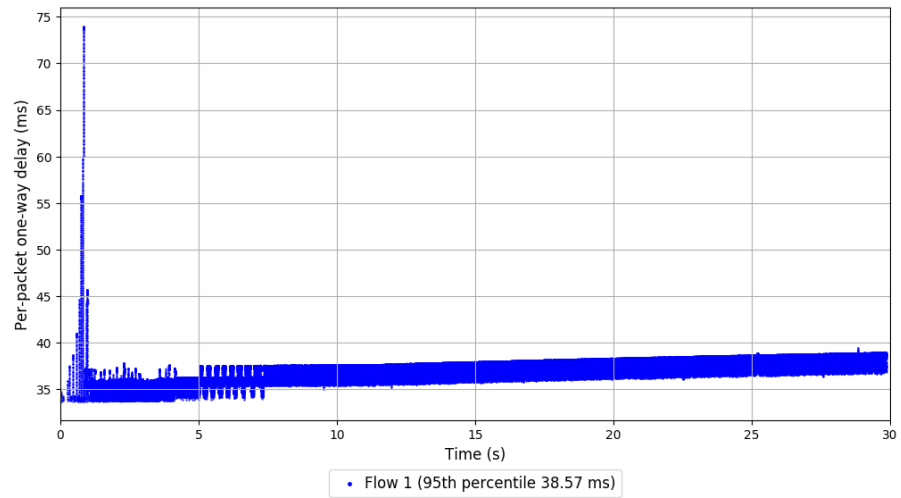
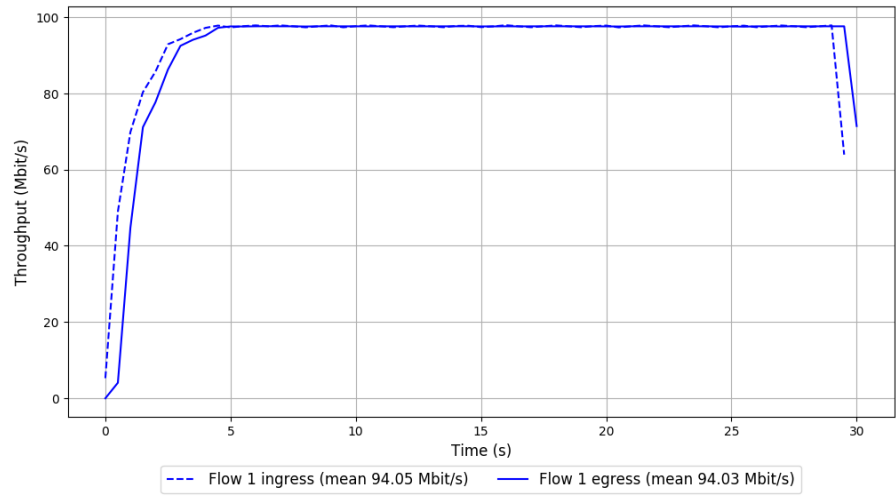


```
Run 1: Statistics of Indigo

Start at: 2018-09-05 21:01:48
End at: 2018-09-05 21:02:18
Local clock offset: -5.802 ms
Remote clock offset: -0.401 ms

# Below is generated by plot.py at 2018-09-05 21:18:41
# Datalink statistics
-- Total of 1 flow:
Average throughput: 94.03 Mbit/s
95th percentile per-packet one-way delay: 38.571 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 94.03 Mbit/s
95th percentile per-packet one-way delay: 38.571 ms
Loss rate: 0.01%
```

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2018-09-05 21:07:12

End at: 2018-09-05 21:07:42

Local clock offset: -1.293 ms

Remote clock offset: -0.41 ms

Below is generated by plot.py at 2018-09-05 21:18:41

Datalink statistics

-- Total of 1 flow:

Average throughput: 95.86 Mbit/s

95th percentile per-packet one-way delay: 35.753 ms

Loss rate: 0.03%

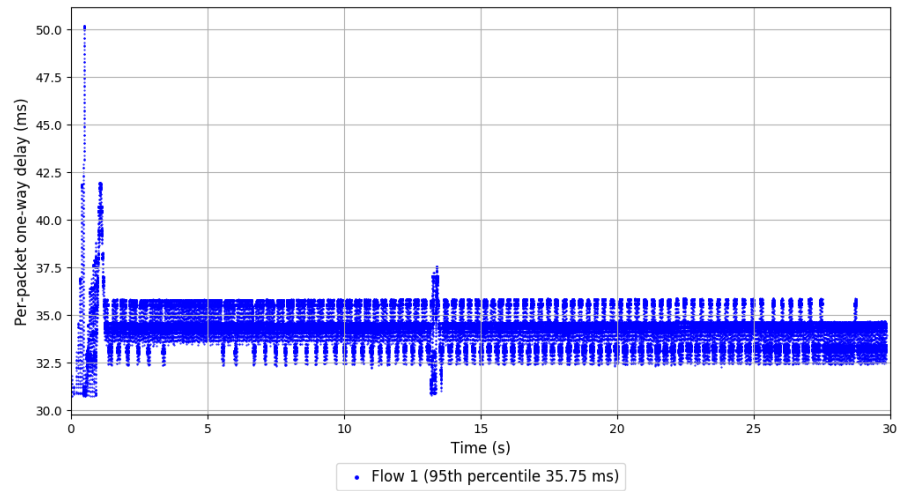
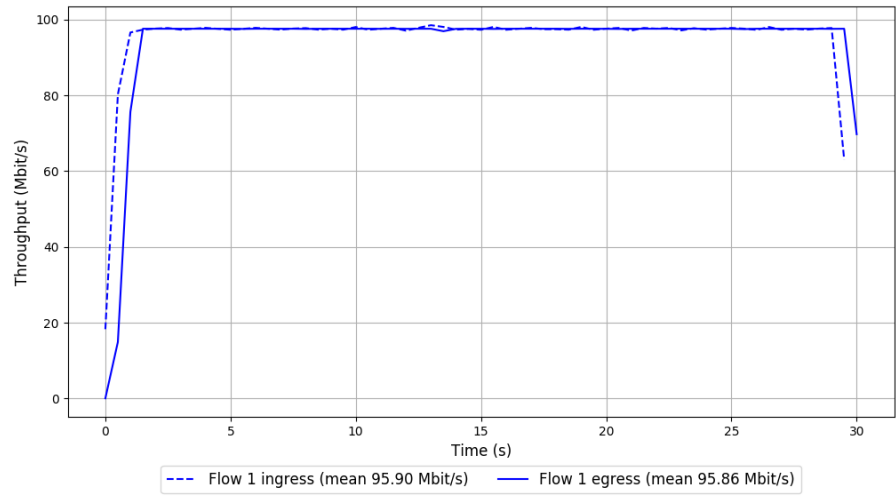
-- Flow 1:

Average throughput: 95.86 Mbit/s

95th percentile per-packet one-way delay: 35.753 ms

Loss rate: 0.03%

Run 2: Report of Indigo — Data Link

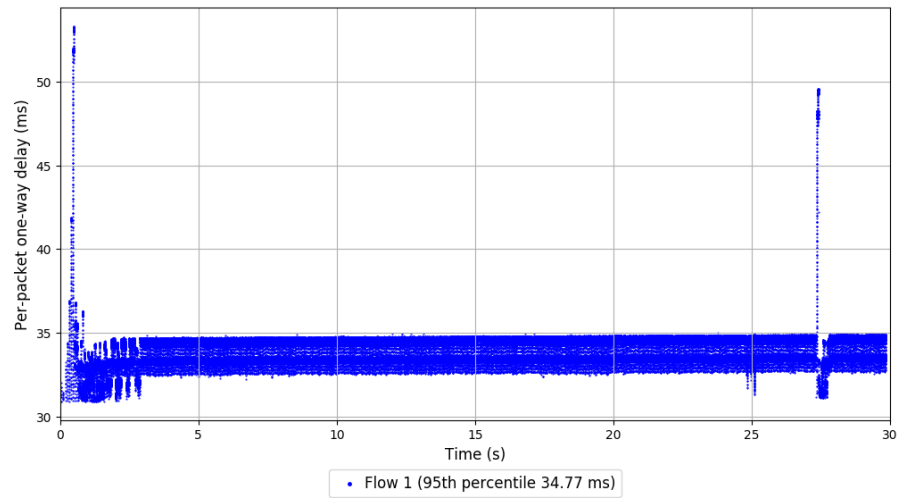
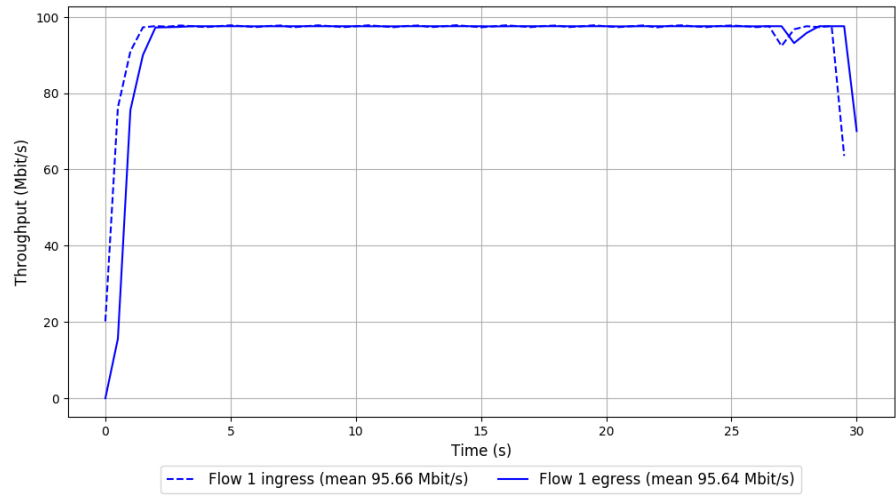


Run 3: Statistics of Indigo

Start at: 2018-09-05 21:12:39
End at: 2018-09-05 21:13:09
Local clock offset: 1.615 ms
Remote clock offset: -0.296 ms

Below is generated by plot.py at 2018-09-05 21:19:11
Datalink statistics
-- Total of 1 flow:
Average throughput: 95.64 Mbit/s
95th percentile per-packet one-way delay: 34.767 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 95.64 Mbit/s
95th percentile per-packet one-way delay: 34.767 ms
Loss rate: 0.00%

Run 3: Report of Indigo — Data Link

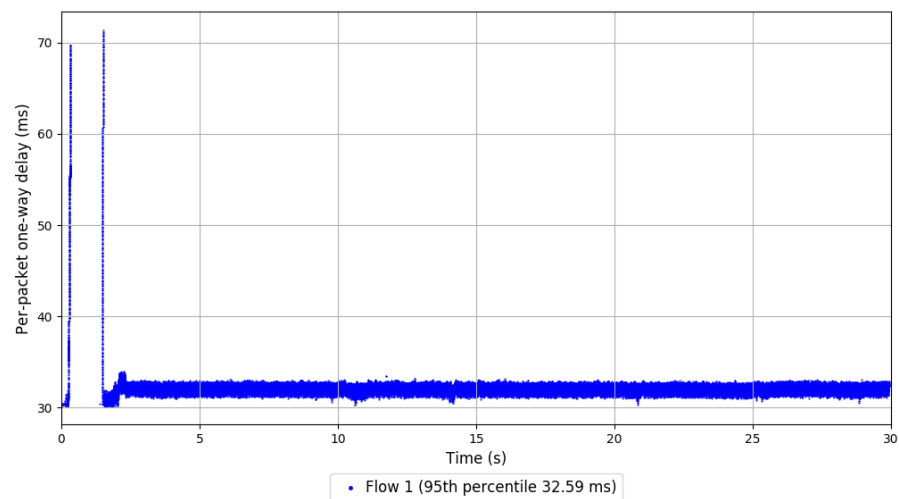
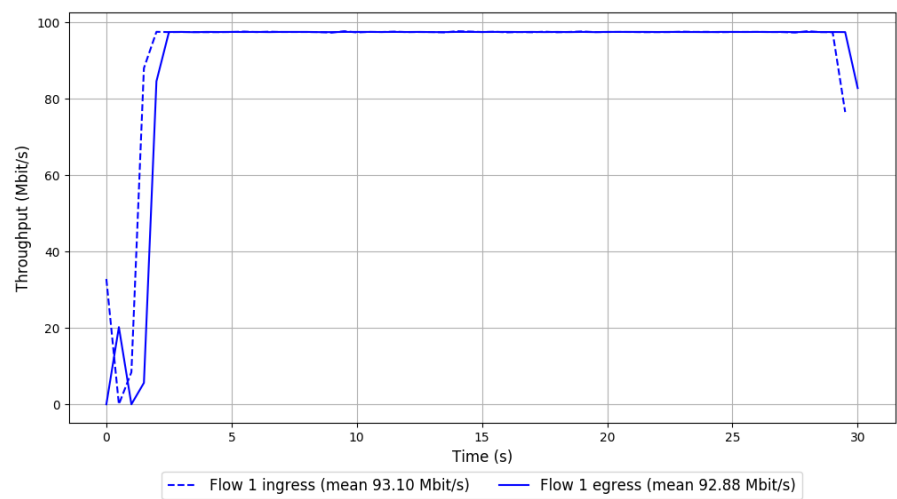


Run 1: Statistics of Muses-25

Start at: 2018-09-05 21:05:50
End at: 2018-09-05 21:06:20
Local clock offset: -0.686 ms
Remote clock offset: -0.473 ms

Below is generated by plot.py at 2018-09-05 21:19:12
Datalink statistics
-- Total of 1 flow:
Average throughput: 92.88 Mbit/s
95th percentile per-packet one-way delay: 32.589 ms
Loss rate: 0.23%
-- Flow 1:
Average throughput: 92.88 Mbit/s
95th percentile per-packet one-way delay: 32.589 ms
Loss rate: 0.23%

Run 1: Report of Muses-25 — Data Link

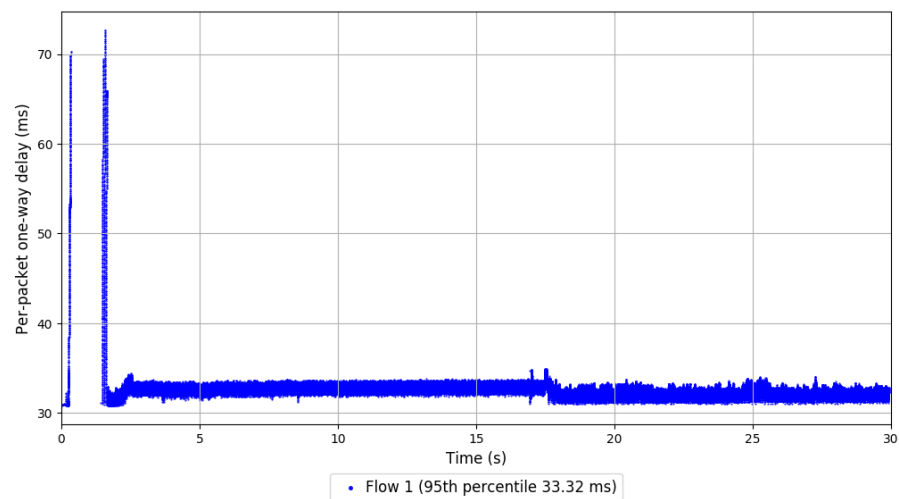
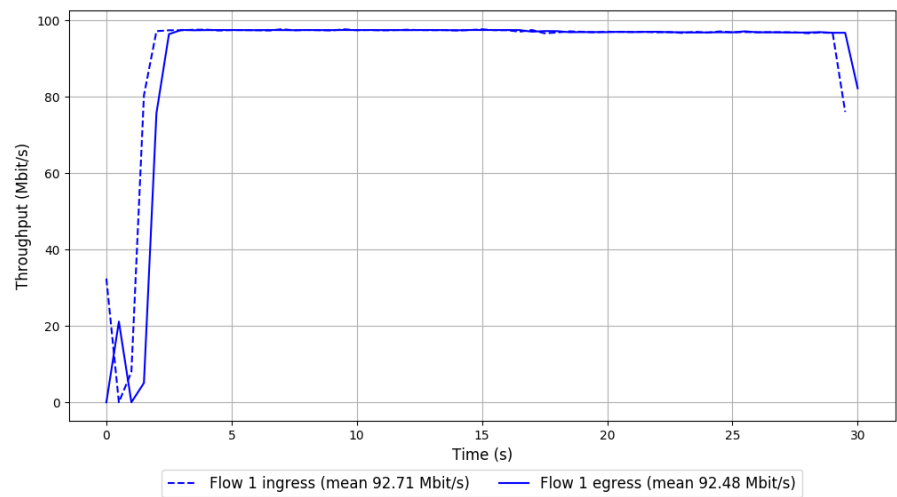


Run 2: Statistics of Muses-25

Start at: 2018-09-05 21:11:19
End at: 2018-09-05 21:11:49
Local clock offset: 0.814 ms
Remote clock offset: -0.578 ms

Below is generated by plot.py at 2018-09-05 21:19:13
Datalink statistics
-- Total of 1 flow:
Average throughput: 92.48 Mbit/s
95th percentile per-packet one-way delay: 33.317 ms
Loss rate: 0.24%
-- Flow 1:
Average throughput: 92.48 Mbit/s
95th percentile per-packet one-way delay: 33.317 ms
Loss rate: 0.24%

Run 2: Report of Muses-25 — Data Link



Run 3: Statistics of Muses-25

Start at: 2018-09-05 21:16:40
End at: 2018-09-05 21:17:10
Local clock offset: 3.36 ms
Remote clock offset: -0.541 ms

Below is generated by plot.py at 2018-09-05 21:19:13
Datalink statistics
-- Total of 1 flow:
Average throughput: 89.40 Mbit/s
95th percentile per-packet one-way delay: 33.363 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 89.40 Mbit/s
95th percentile per-packet one-way delay: 33.363 ms
Loss rate: 0.26%

Run 3: Report of Muses-25 — Data Link

