

Pantheon Report

Generated at 2018-08-28 05:04:47 (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.

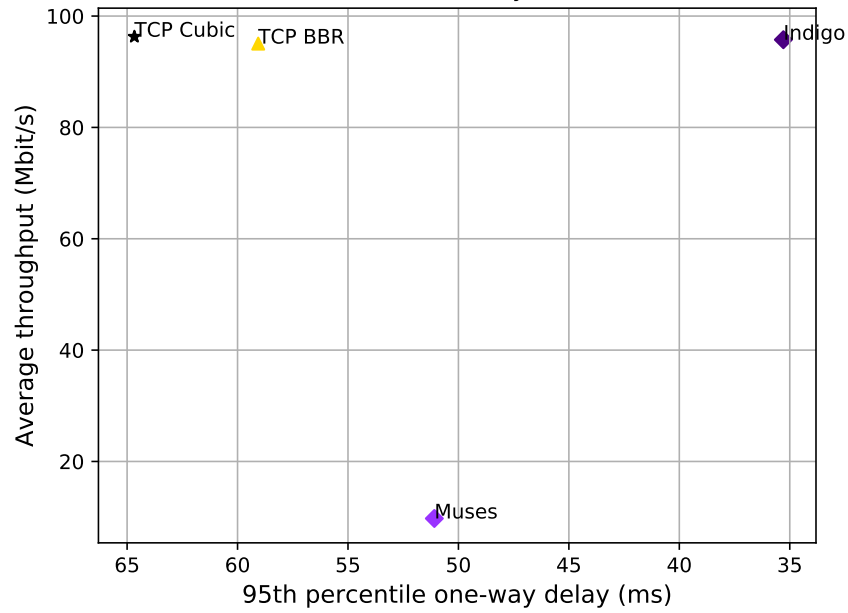
System info:

```
Linux 4.15.0-1019-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
```

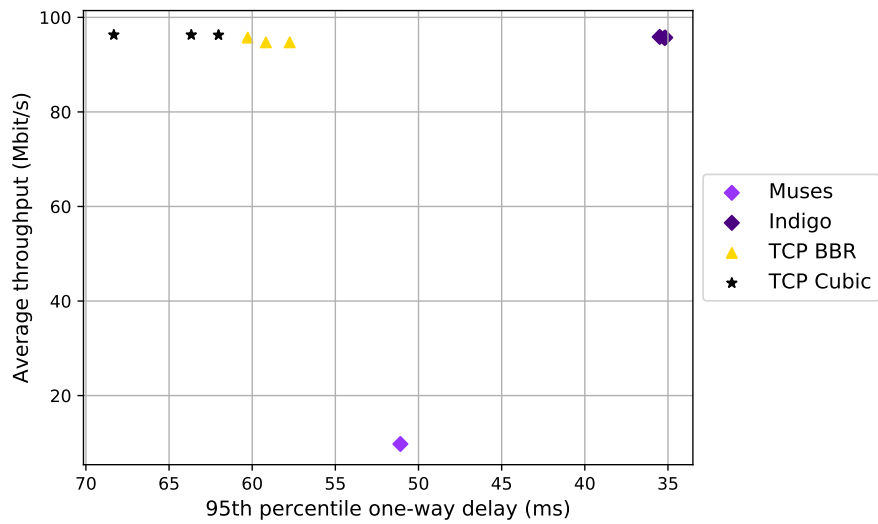
Git summary:

```
branch: muses @ 86ef433b09b2f4ecae1186d6940af93bcf0969cd
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 @ 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 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



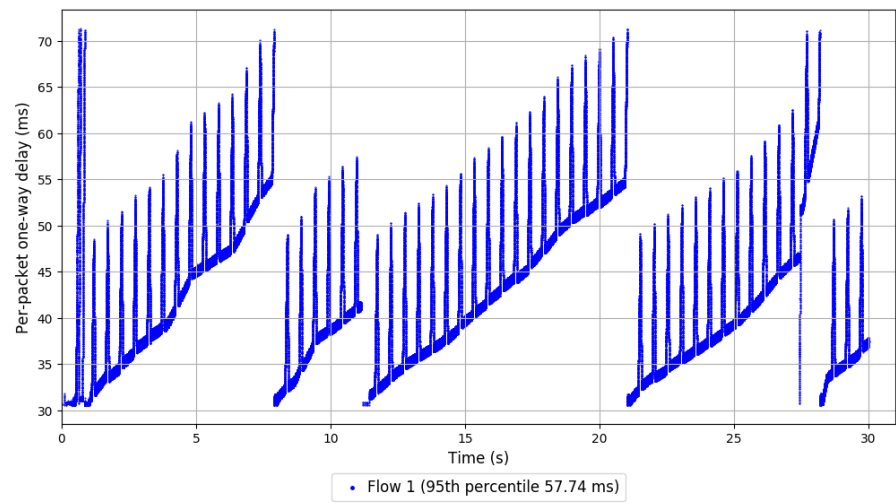
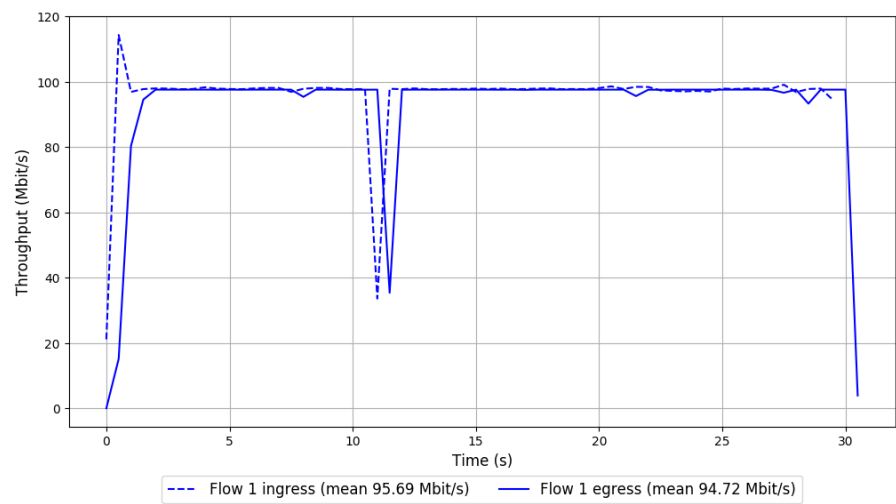
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	95.05	59.06	1.04
TCP Cubic	3	96.29	64.67	0.42
Indigo	3	95.75	35.29	0.01
Muses	1	9.76	51.09	48.78

Run 1: Statistics of TCP BBR

Start at: 2018-08-28 04:51:01
End at: 2018-08-28 04:51:31
Local clock offset: 0.358 ms
Remote clock offset: -1.407 ms

Below is generated by plot.py at 2018-08-28 05:04:37
Datalink statistics
-- Total of 1 flow:
Average throughput: 94.72 Mbit/s
95th percentile per-packet one-way delay: 57.742 ms
Loss rate: 0.98%
-- Flow 1:
Average throughput: 94.72 Mbit/s
95th percentile per-packet one-way delay: 57.742 ms
Loss rate: 0.98%

Run 1: Report of TCP BBR — Data Link

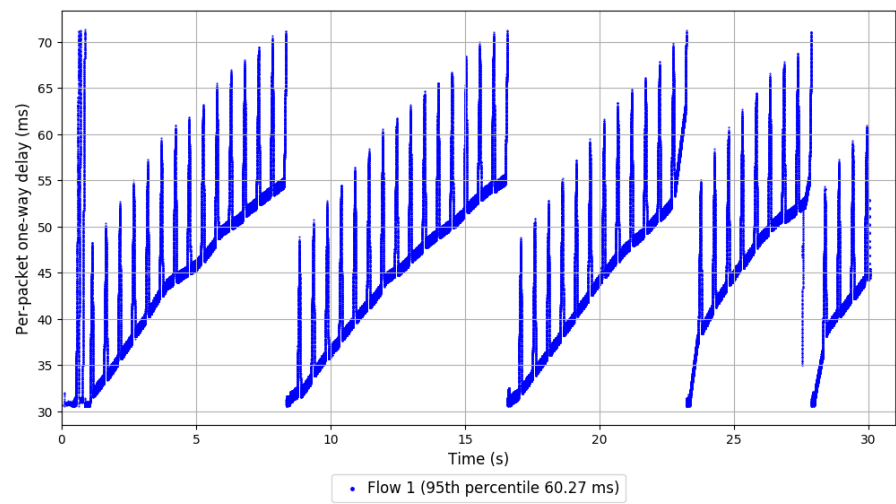
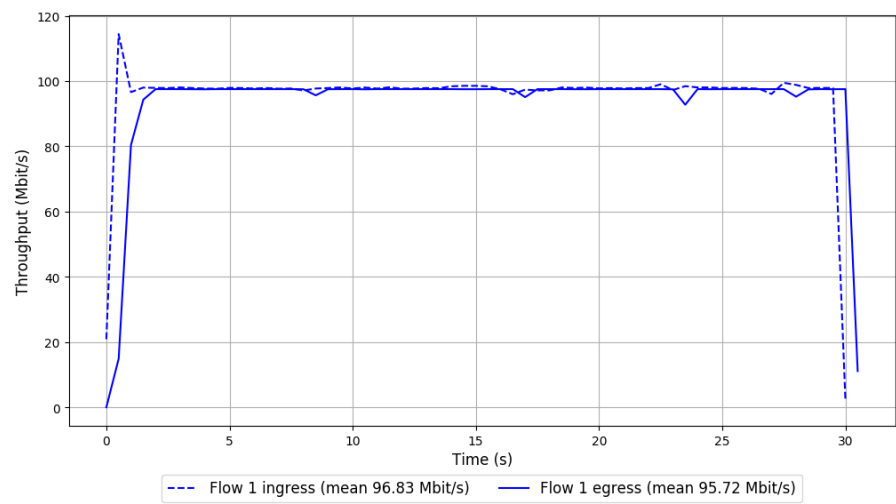


Run 2: Statistics of TCP BBR

Start at: 2018-08-28 04:56:15
End at: 2018-08-28 04:56:45
Local clock offset: 0.343 ms
Remote clock offset: -1.278 ms

Below is generated by plot.py at 2018-08-28 05:04:41
Datalink statistics
-- Total of 1 flow:
Average throughput: 95.72 Mbit/s
95th percentile per-packet one-way delay: 60.275 ms
Loss rate: 1.10%
-- Flow 1:
Average throughput: 95.72 Mbit/s
95th percentile per-packet one-way delay: 60.275 ms
Loss rate: 1.10%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-08-28 05:01:29

End at: 2018-08-28 05:01:59

Local clock offset: 0.359 ms

Remote clock offset: -1.188 ms

Below is generated by plot.py at 2018-08-28 05:04:41

Datalink statistics

-- Total of 1 flow:

Average throughput: 94.72 Mbit/s

95th percentile per-packet one-way delay: 59.176 ms

Loss rate: 1.05%

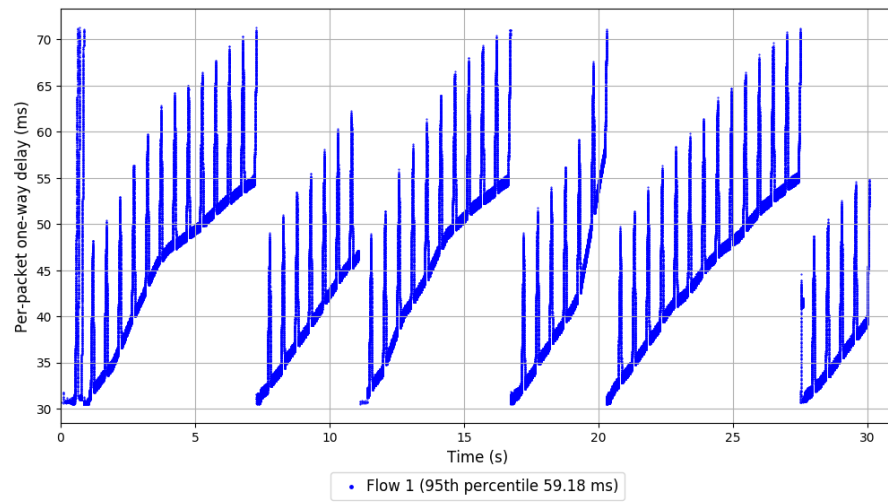
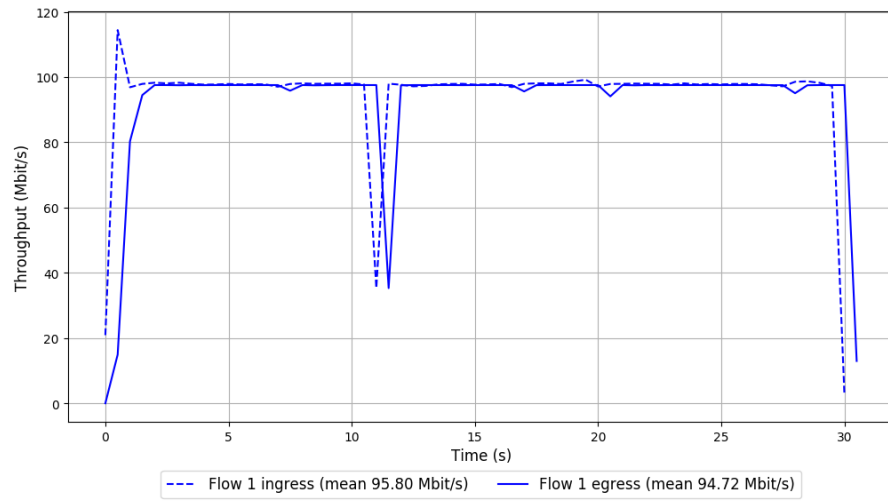
-- Flow 1:

Average throughput: 94.72 Mbit/s

95th percentile per-packet one-way delay: 59.176 ms

Loss rate: 1.05%

Run 3: Report of TCP BBR — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2018-08-28 04:48:22

End at: 2018-08-28 04:48:52

Local clock offset: 0.359 ms

Remote clock offset: -1.572 ms

Below is generated by plot.py at 2018-08-28 05:04:41

Datalink statistics

-- Total of 1 flow:

Average throughput: 96.30 Mbit/s

95th percentile per-packet one-way delay: 68.322 ms

Loss rate: 0.32%

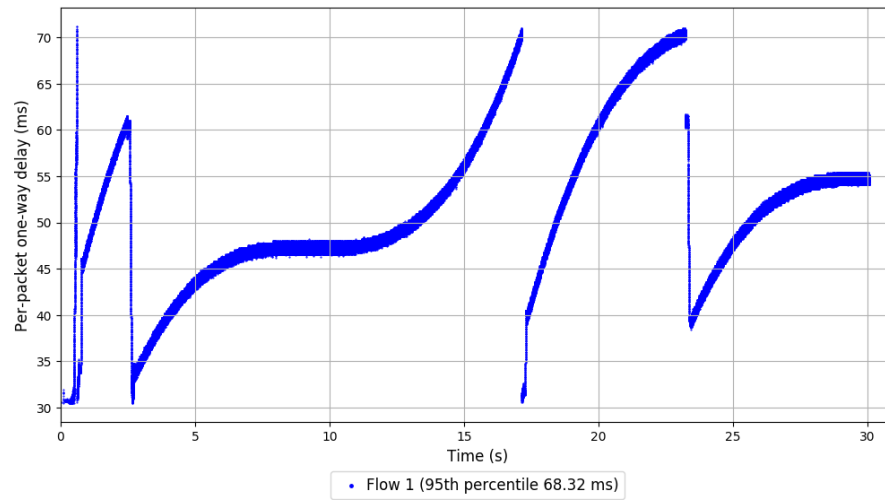
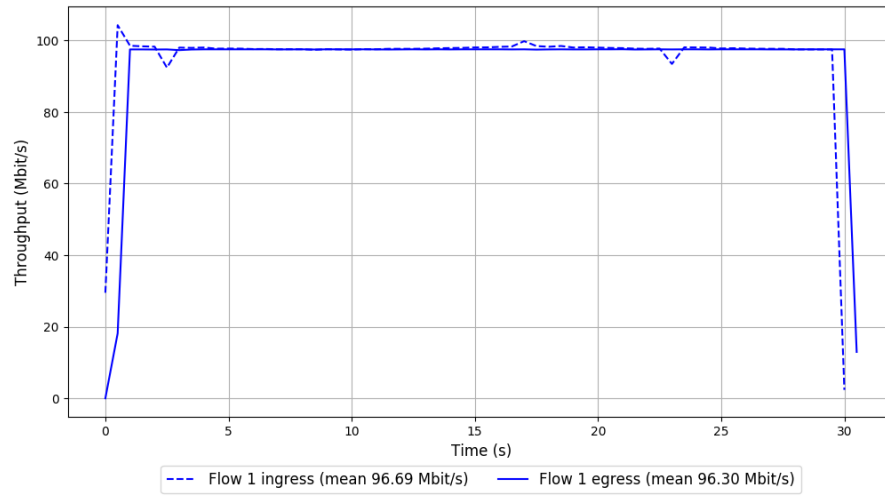
-- Flow 1:

Average throughput: 96.30 Mbit/s

95th percentile per-packet one-way delay: 68.322 ms

Loss rate: 0.32%

Run 1: Report of TCP Cubic — Data Link

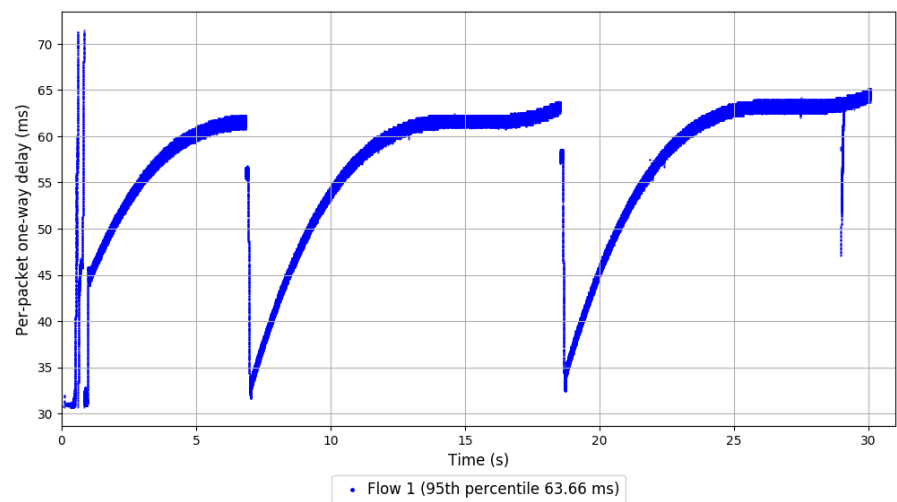
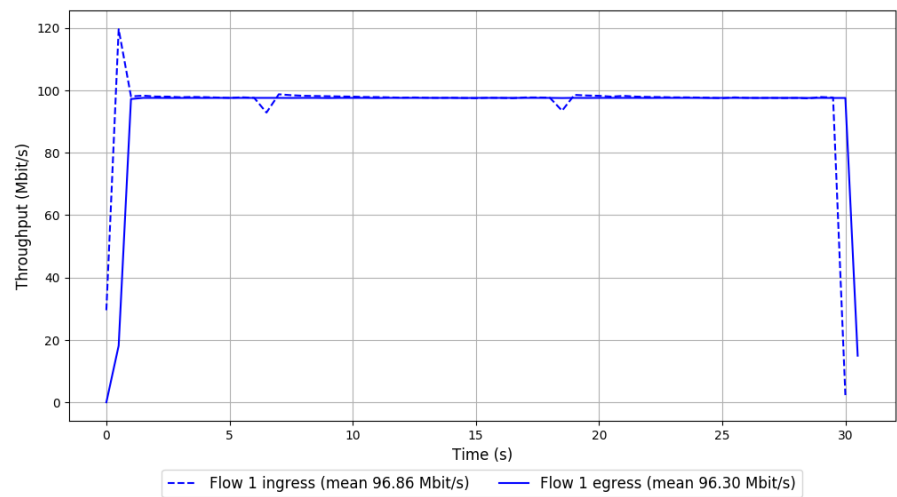


Run 2: Statistics of TCP Cubic

Start at: 2018-08-28 04:53:36
End at: 2018-08-28 04:54:06
Local clock offset: 0.259 ms
Remote clock offset: -1.291 ms

Below is generated by plot.py at 2018-08-28 05:04:42
Datalink statistics
-- Total of 1 flow:
Average throughput: 96.30 Mbit/s
95th percentile per-packet one-way delay: 63.662 ms
Loss rate: 0.47%
-- Flow 1:
Average throughput: 96.30 Mbit/s
95th percentile per-packet one-way delay: 63.662 ms
Loss rate: 0.47%

Run 2: Report of TCP Cubic — Data Link

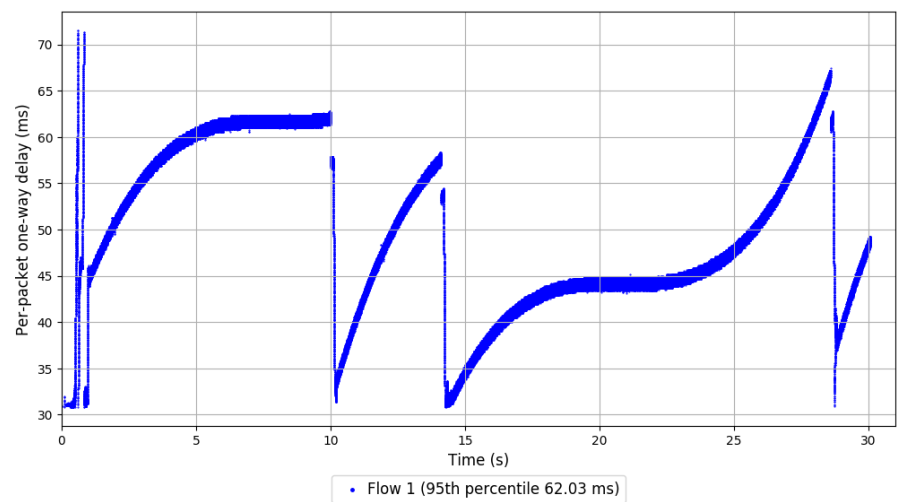
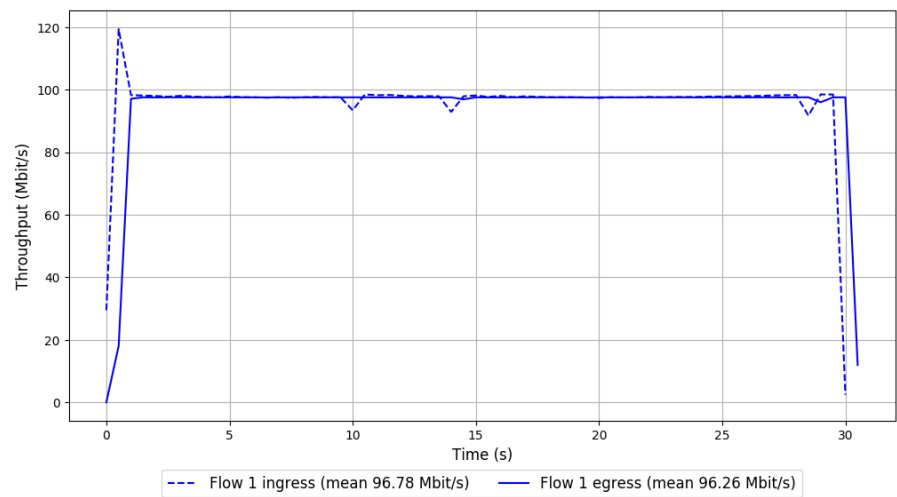


Run 3: Statistics of TCP Cubic

Start at: 2018-08-28 04:58:50
End at: 2018-08-28 04:59:20
Local clock offset: 0.258 ms
Remote clock offset: -1.097 ms

Below is generated by plot.py at 2018-08-28 05:04:42
Datalink statistics
-- Total of 1 flow:
Average throughput: 96.26 Mbit/s
95th percentile per-packet one-way delay: 62.026 ms
Loss rate: 0.48%
-- Flow 1:
Average throughput: 96.26 Mbit/s
95th percentile per-packet one-way delay: 62.026 ms
Loss rate: 0.48%

Run 3: Report of TCP Cubic — Data Link

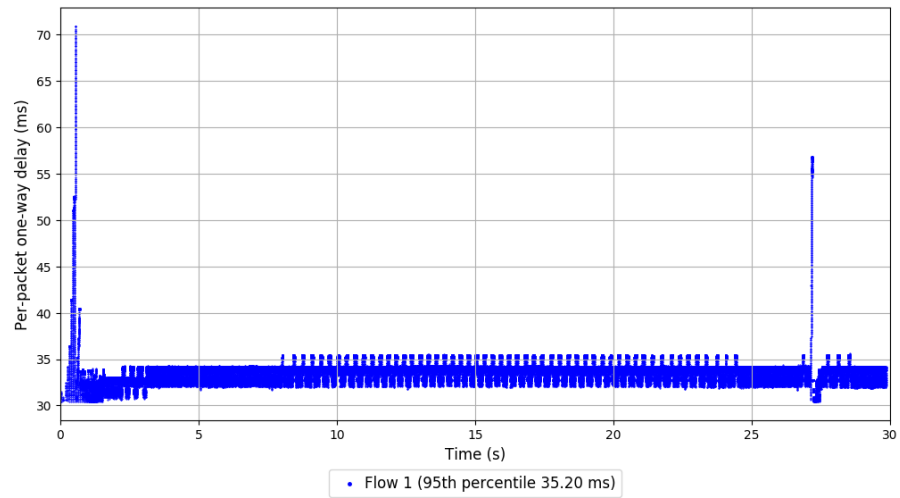
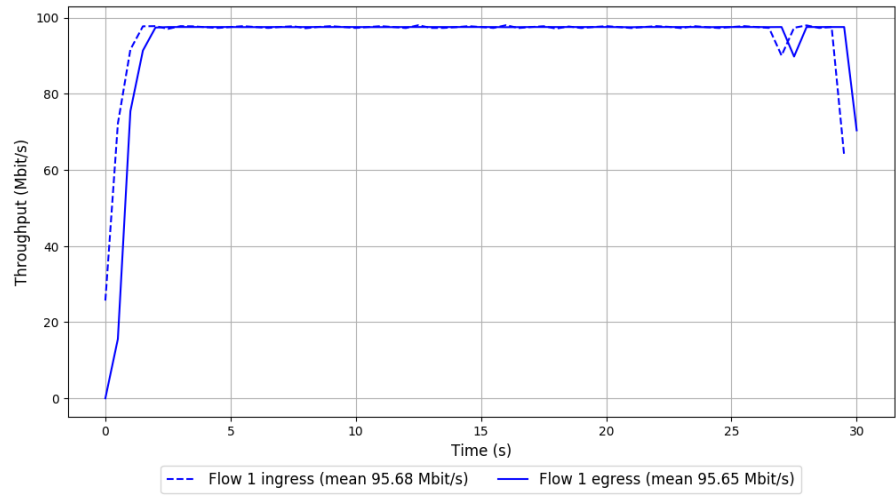


```
Run 1: Statistics of Indigo

Start at: 2018-08-28 04:49:41
End at: 2018-08-28 04:50:11
Local clock offset: 0.354 ms
Remote clock offset: -1.552 ms

# Below is generated by plot.py at 2018-08-28 05:04:42
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.65 Mbit/s
95th percentile per-packet one-way delay: 35.203 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 95.65 Mbit/s
95th percentile per-packet one-way delay: 35.203 ms
Loss rate: 0.02%
```


Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2018-08-28 04:54:55

End at: 2018-08-28 04:55:25

Local clock offset: 0.353 ms

Remote clock offset: -1.279 ms

Below is generated by plot.py at 2018-08-28 05:04:42

Datalink statistics

-- Total of 1 flow:

Average throughput: 95.87 Mbit/s

95th percentile per-packet one-way delay: 35.498 ms

Loss rate: 0.00%

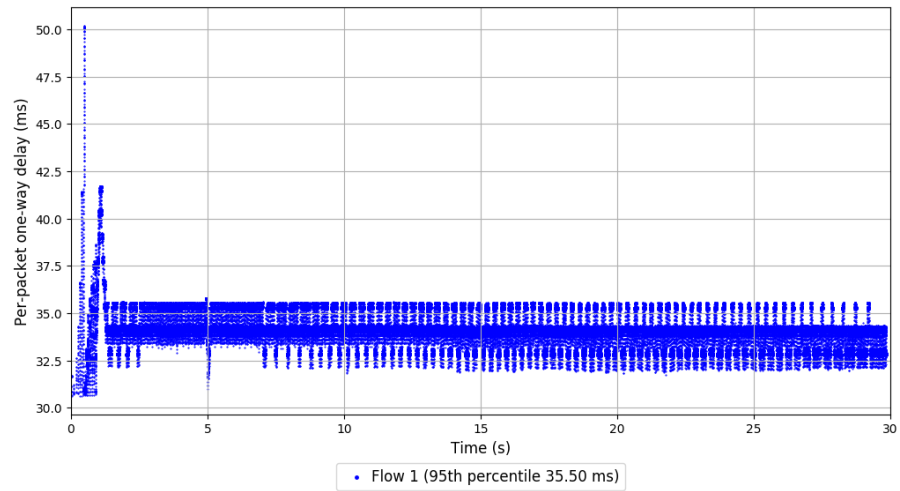
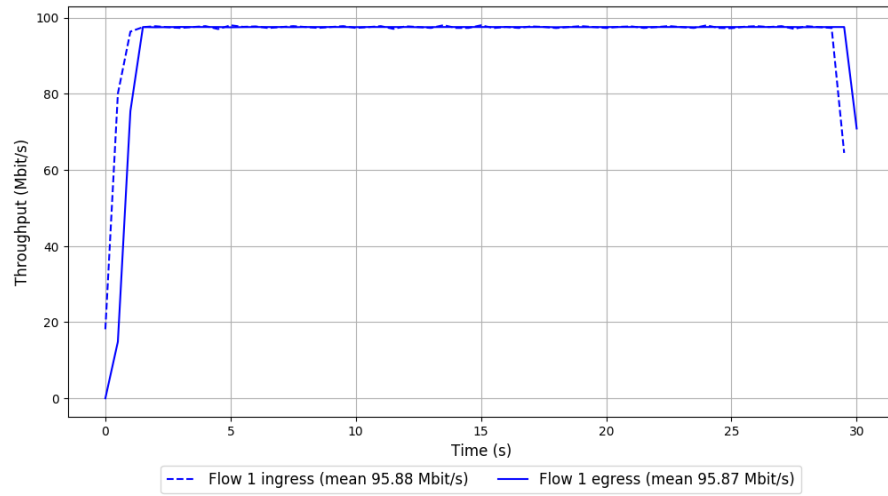
-- Flow 1:

Average throughput: 95.87 Mbit/s

95th percentile per-packet one-way delay: 35.498 ms

Loss rate: 0.00%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2018-08-28 05:00:09

End at: 2018-08-28 05:00:39

Local clock offset: 0.352 ms

Remote clock offset: -1.351 ms

Below is generated by plot.py at 2018-08-28 05:04:46

Datalink statistics

-- Total of 1 flow:

Average throughput: 95.73 Mbit/s

95th percentile per-packet one-way delay: 35.167 ms

Loss rate: 0.01%

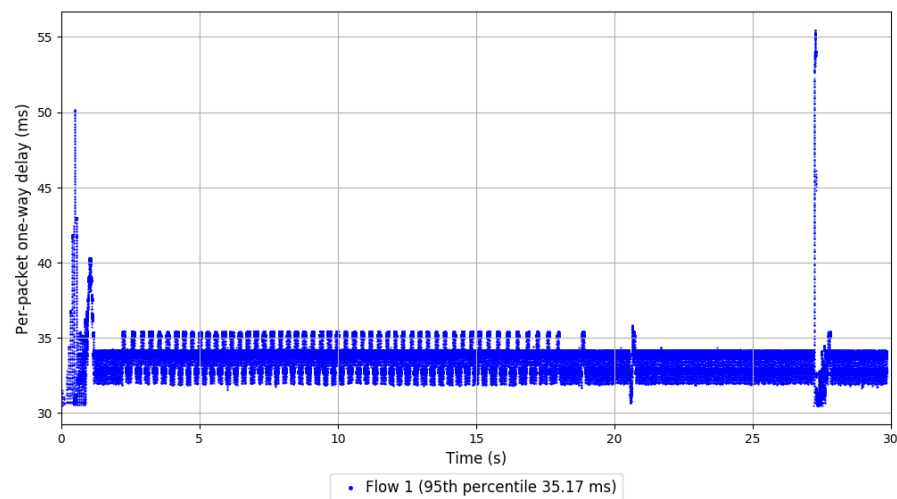
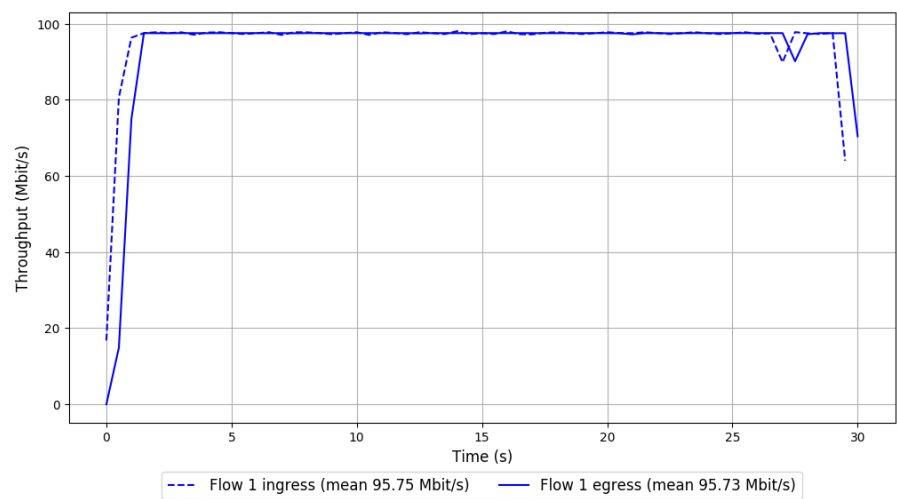
-- Flow 1:

Average throughput: 95.73 Mbit/s

95th percentile per-packet one-way delay: 35.167 ms

Loss rate: 0.01%

Run 3: Report of Indigo — Data Link



Run 1: Statistics of Muses

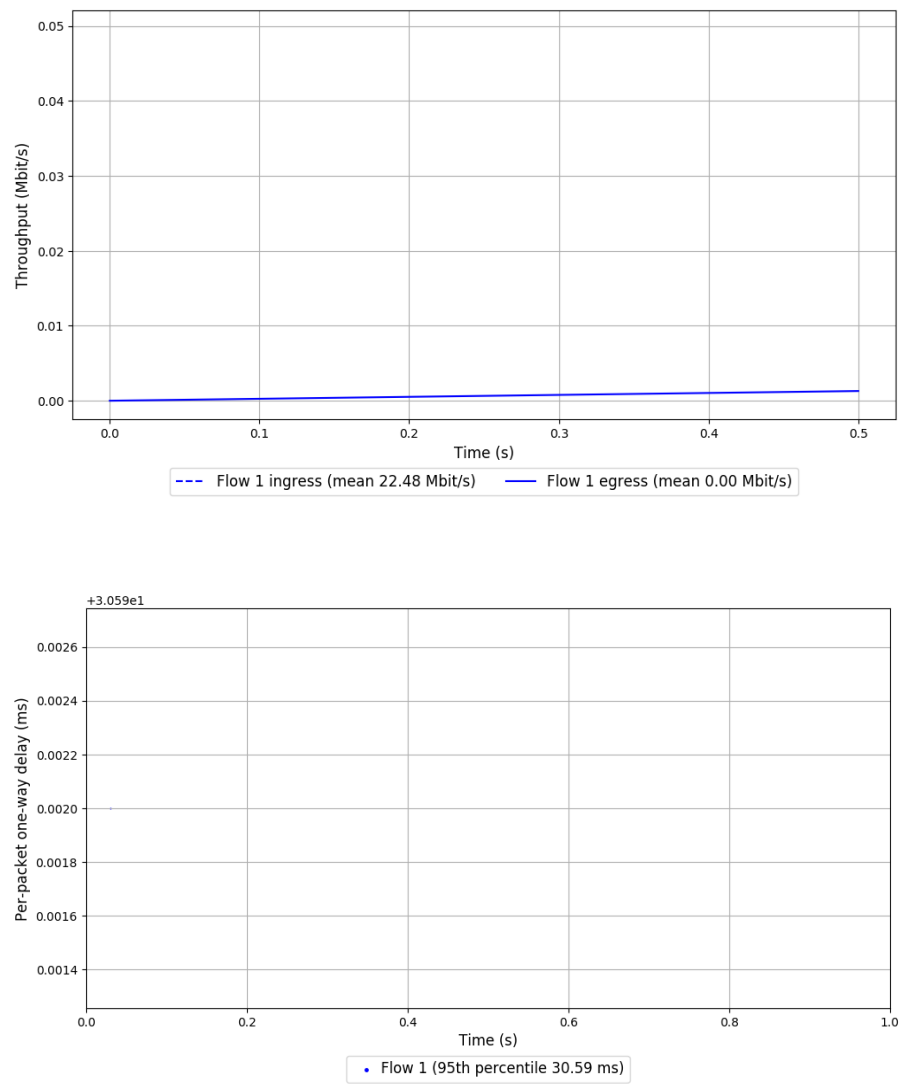
Start at: 2018-08-28 04:52:21

End at: 2018-08-28 04:52:51

Local clock offset: 0.268 ms

Remote clock offset: -1.502 ms

Run 1: Report of Muses — Data Link

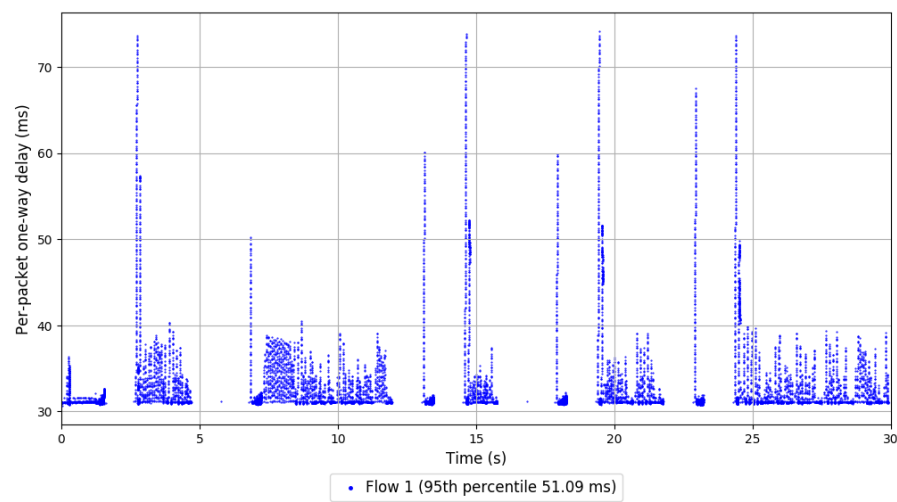
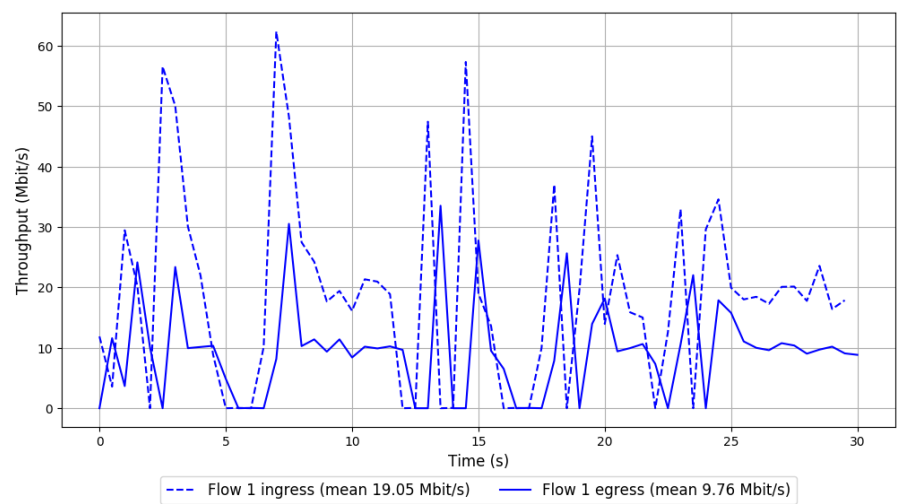


Run 2: Statistics of Muses

Start at: 2018-08-28 04:57:34
End at: 2018-08-28 04:58:04
Local clock offset: 0.344 ms
Remote clock offset: -1.221 ms

Below is generated by plot.py at 2018-08-28 05:04:46
Datalink statistics
-- Total of 1 flow:
Average throughput: 9.76 Mbit/s
95th percentile per-packet one-way delay: 51.090 ms
Loss rate: 48.78%
-- Flow 1:
Average throughput: 9.76 Mbit/s
95th percentile per-packet one-way delay: 51.090 ms
Loss rate: 48.78%

Run 2: Report of Muses — Data Link



Run 3: Statistics of Muses

Start at: 2018-08-28 05:02:48

End at: 2018-08-28 05:03:18

Local clock offset: 0.339 ms

Remote clock offset: -1.15 ms

Run 3: Report of Muses — Data Link

