

Pantheon Report

Generated at 2018-08-31 06:59:48 (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.

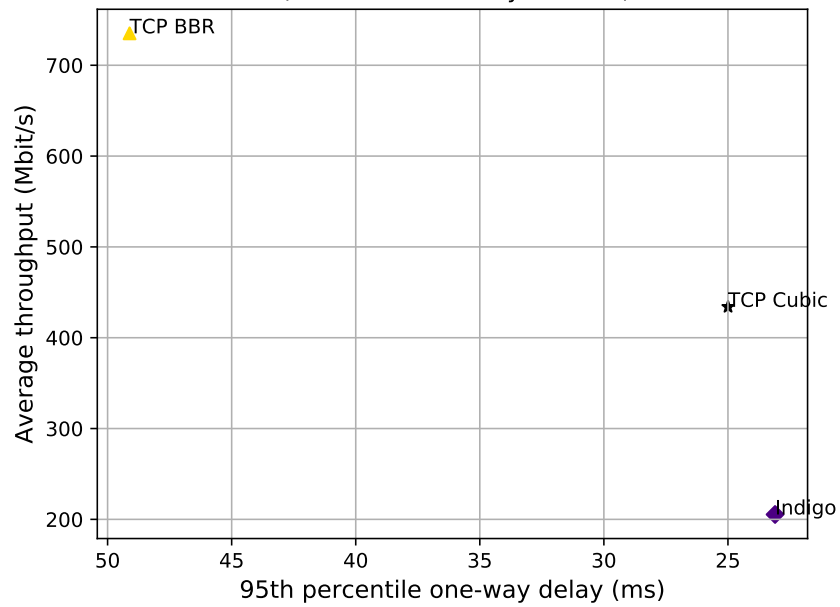
System info:

```
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
```

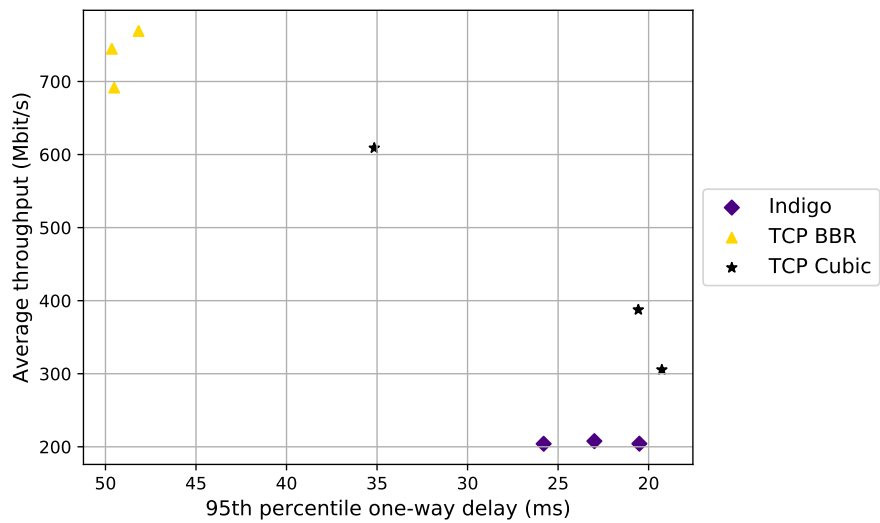
Git summary:

```
branch: muses @ 2de97ca91a065473c29a25fffe63fb137c97a67c
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf5e562f4
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



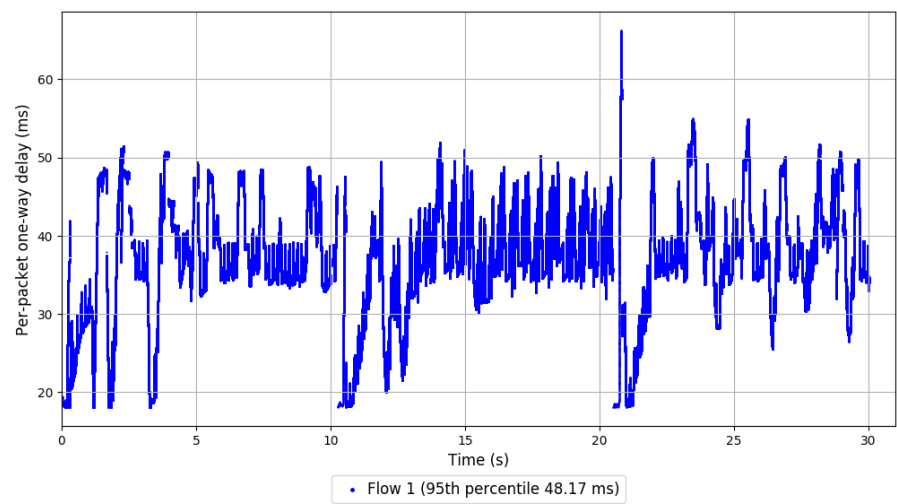
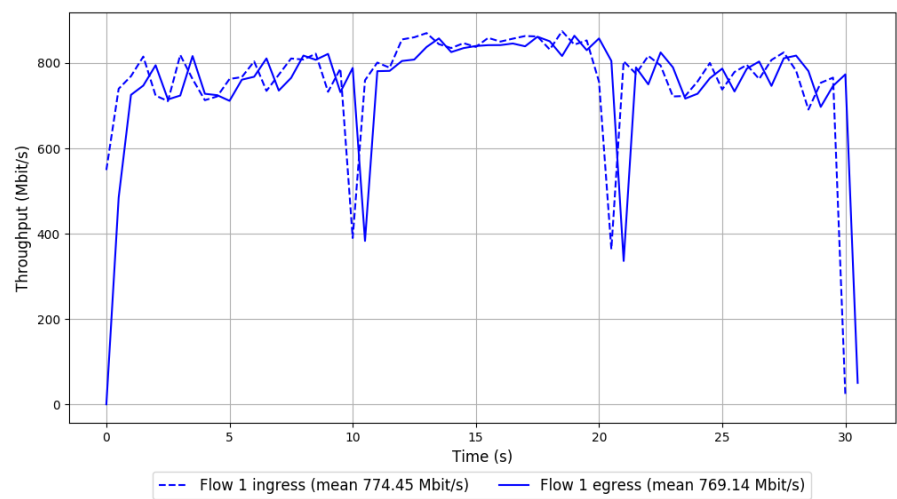
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	735.15	49.11	0.37
TCP Cubic	3	433.98	25.00	0.02
Indigo	3	205.38	23.10	0.00
Muses-25	0	N/A	N/A	N/A

Run 1: Statistics of TCP BBR

Start at: 2018-08-31 06:40:32
End at: 2018-08-31 06:41:02
Local clock offset: -0.153 ms
Remote clock offset: -0.526 ms

Below is generated by plot.py at 2018-08-31 06:59:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 769.14 Mbit/s
95th percentile per-packet one-way delay: 48.171 ms
Loss rate: 0.68%
-- Flow 1:
Average throughput: 769.14 Mbit/s
95th percentile per-packet one-way delay: 48.171 ms
Loss rate: 0.68%

Run 1: Report of TCP BBR — Data Link

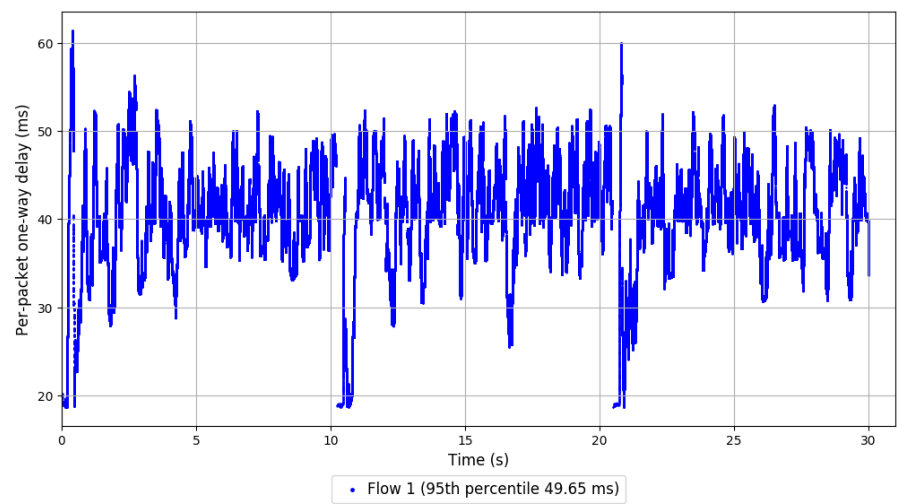
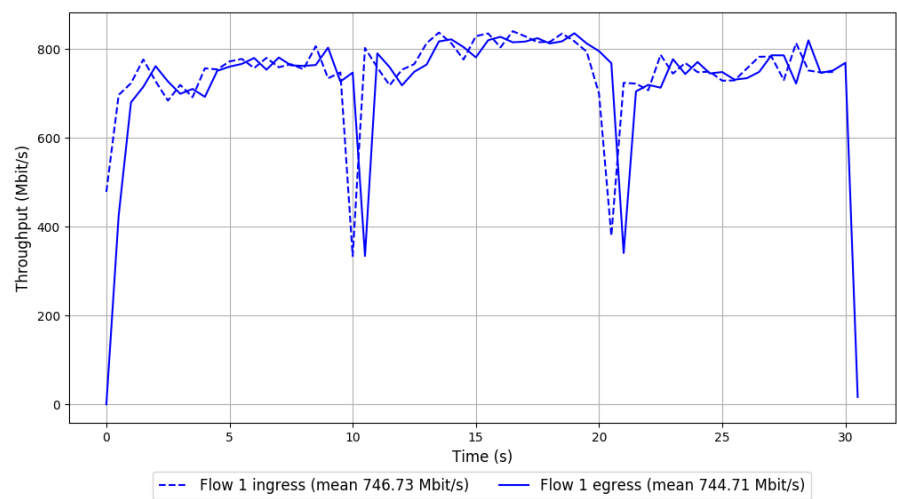


Run 2: Statistics of TCP BBR

Start at: 2018-08-31 06:46:28
End at: 2018-08-31 06:46:58
Local clock offset: -0.181 ms
Remote clock offset: -0.229 ms

Below is generated by plot.py at 2018-08-31 06:59:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 744.71 Mbit/s
95th percentile per-packet one-way delay: 49.651 ms
Loss rate: 0.27%
-- Flow 1:
Average throughput: 744.71 Mbit/s
95th percentile per-packet one-way delay: 49.651 ms
Loss rate: 0.27%

Run 2: Report of TCP BBR — Data Link

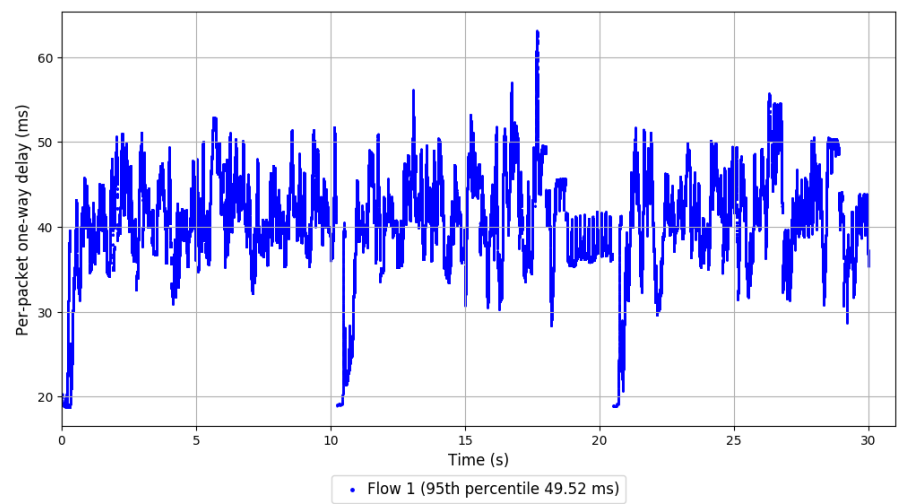
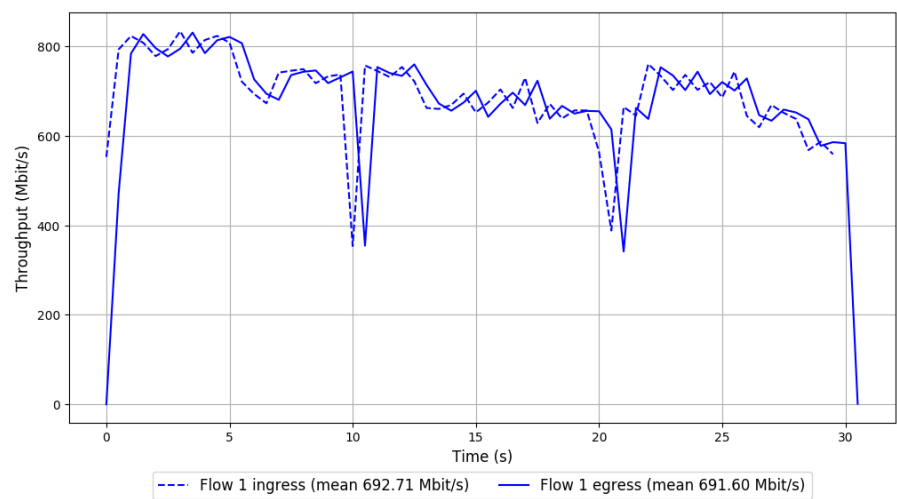


Run 3: Statistics of TCP BBR

Start at: 2018-08-31 06:52:20
End at: 2018-08-31 06:52:50
Local clock offset: -0.722 ms
Remote clock offset: -0.113 ms

Below is generated by plot.py at 2018-08-31 06:59:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 691.60 Mbit/s
95th percentile per-packet one-way delay: 49.519 ms
Loss rate: 0.16%
-- Flow 1:
Average throughput: 691.60 Mbit/s
95th percentile per-packet one-way delay: 49.519 ms
Loss rate: 0.16%

Run 3: Report of TCP BBR — Data Link

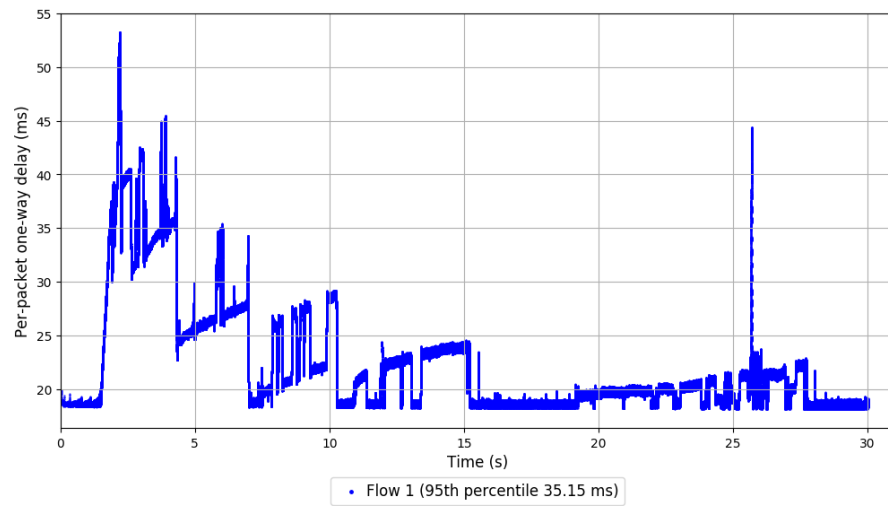
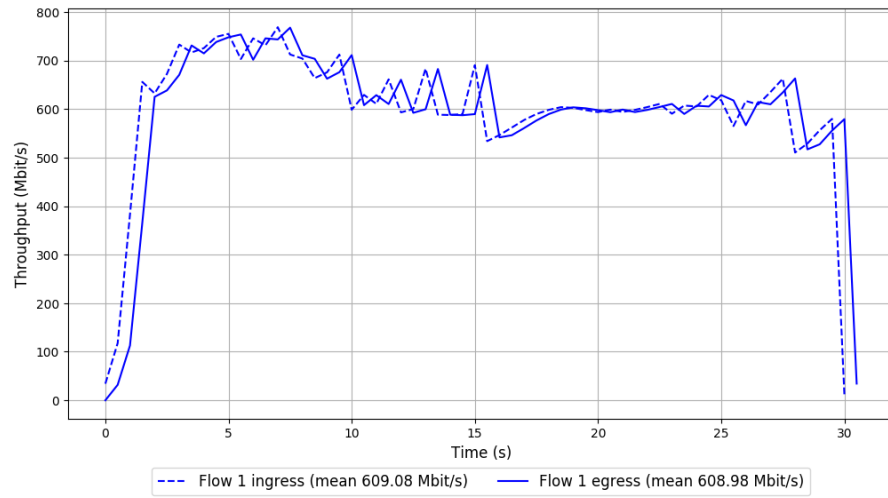


Run 1: Statistics of TCP Cubic

Start at: 2018-08-31 06:37:30
End at: 2018-08-31 06:38:00
Local clock offset: 0.56 ms
Remote clock offset: -0.643 ms

Below is generated by plot.py at 2018-08-31 06:59:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 608.98 Mbit/s
95th percentile per-packet one-way delay: 35.152 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 608.98 Mbit/s
95th percentile per-packet one-way delay: 35.152 ms
Loss rate: 0.02%

Run 1: Report of TCP Cubic — Data Link

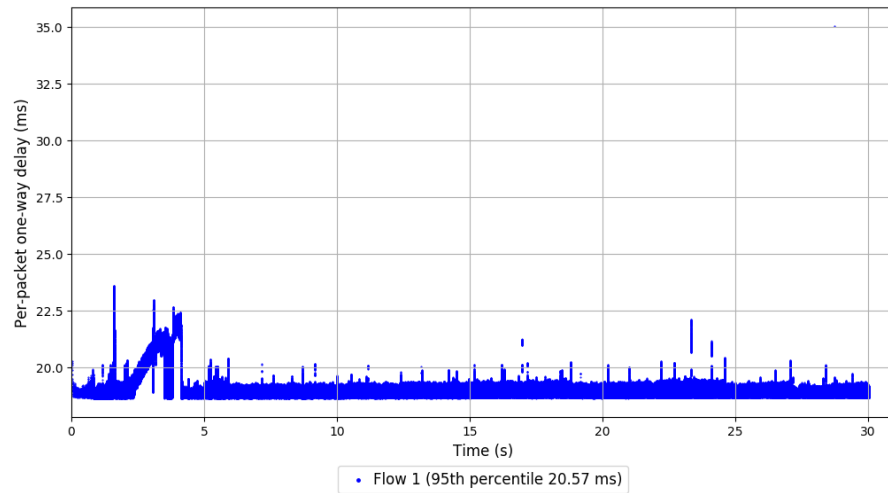
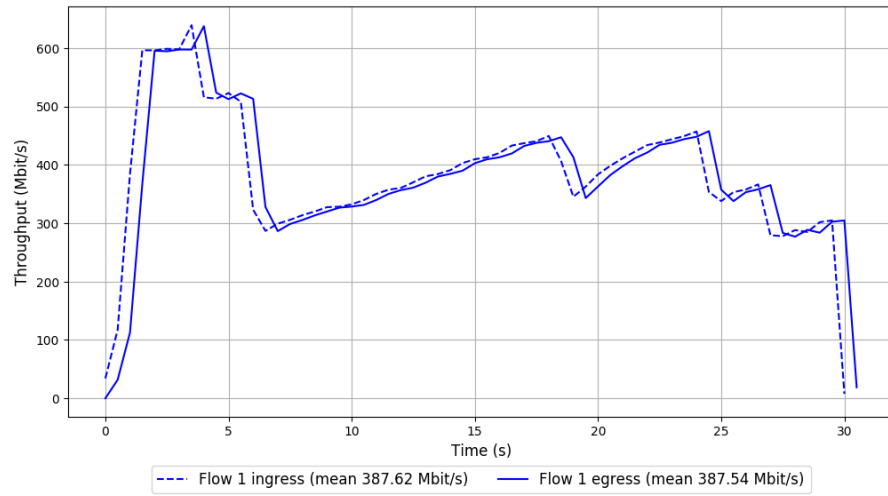


Run 2: Statistics of TCP Cubic

Start at: 2018-08-31 06:43:32
End at: 2018-08-31 06:44:02
Local clock offset: -0.319 ms
Remote clock offset: -0.362 ms

Below is generated by plot.py at 2018-08-31 06:59:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 387.54 Mbit/s
95th percentile per-packet one-way delay: 20.568 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 387.54 Mbit/s
95th percentile per-packet one-way delay: 20.568 ms
Loss rate: 0.02%

Run 2: Report of TCP Cubic — Data Link

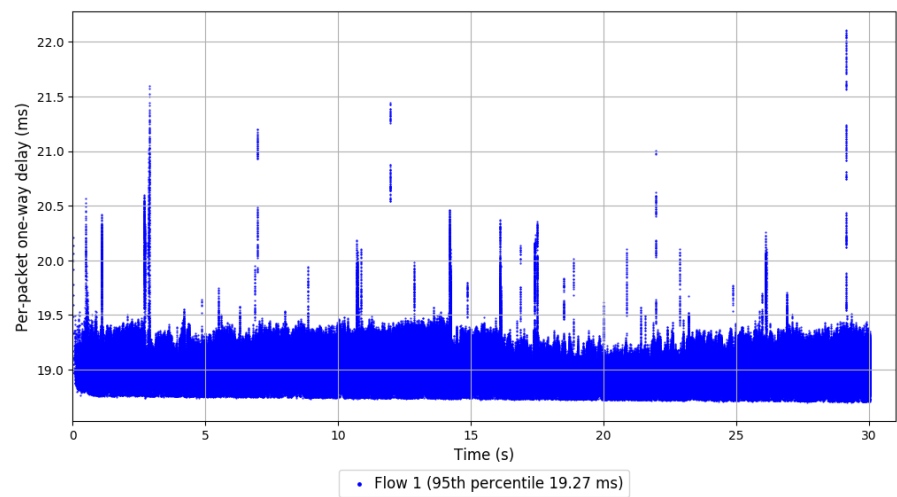
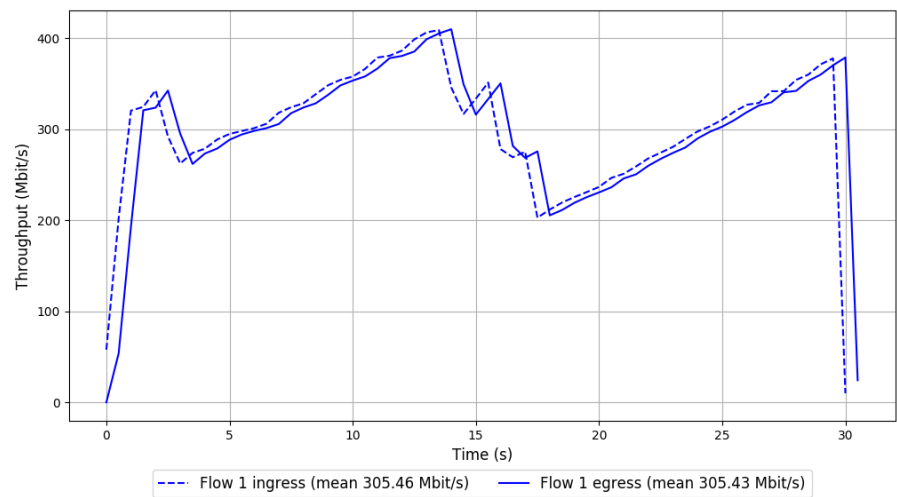


Run 3: Statistics of TCP Cubic

Start at: 2018-08-31 06:49:27
End at: 2018-08-31 06:49:57
Local clock offset: -0.382 ms
Remote clock offset: -0.211 ms

Below is generated by plot.py at 2018-08-31 06:59:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 305.43 Mbit/s
95th percentile per-packet one-way delay: 19.269 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 305.43 Mbit/s
95th percentile per-packet one-way delay: 19.269 ms
Loss rate: 0.01%

Run 3: Report of TCP Cubic — Data Link

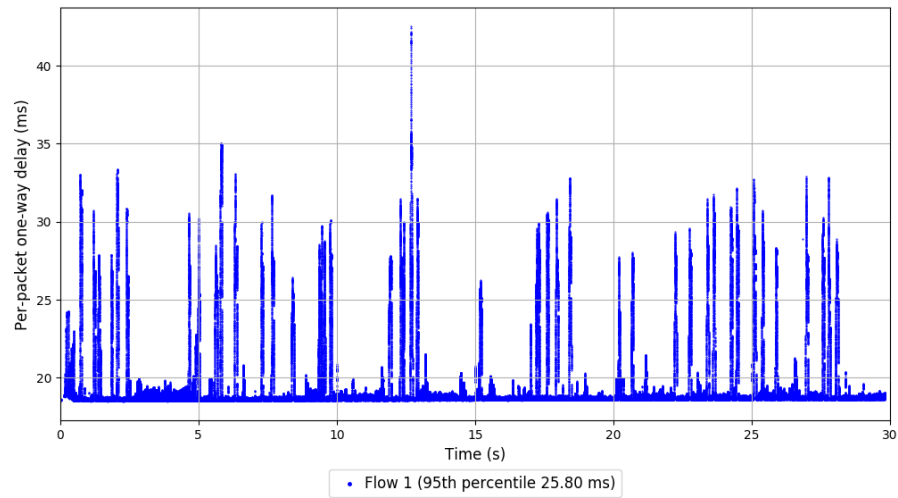
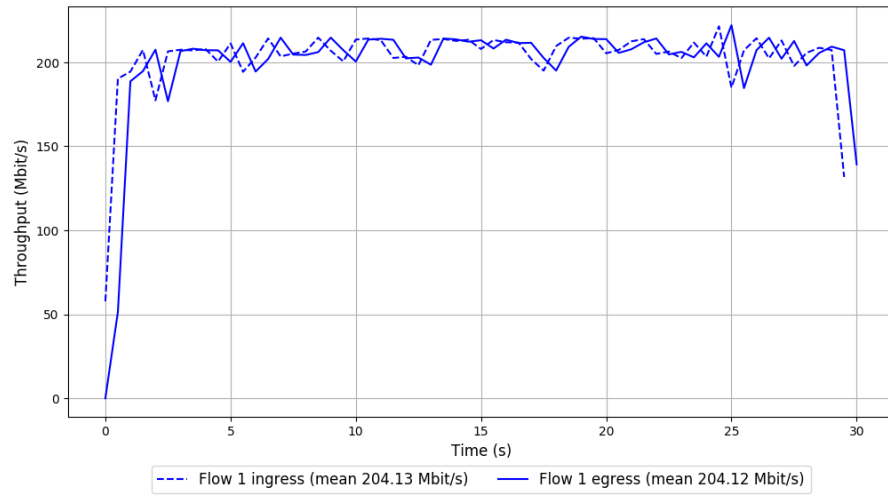


Run 1: Statistics of Indigo

Start at: 2018-08-31 06:39:06
End at: 2018-08-31 06:39:36
Local clock offset: -0.177 ms
Remote clock offset: -0.641 ms

Below is generated by plot.py at 2018-08-31 06:59:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 204.12 Mbit/s
95th percentile per-packet one-way delay: 25.797 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 204.12 Mbit/s
95th percentile per-packet one-way delay: 25.797 ms
Loss rate: 0.00%

Run 1: Report of Indigo — Data Link

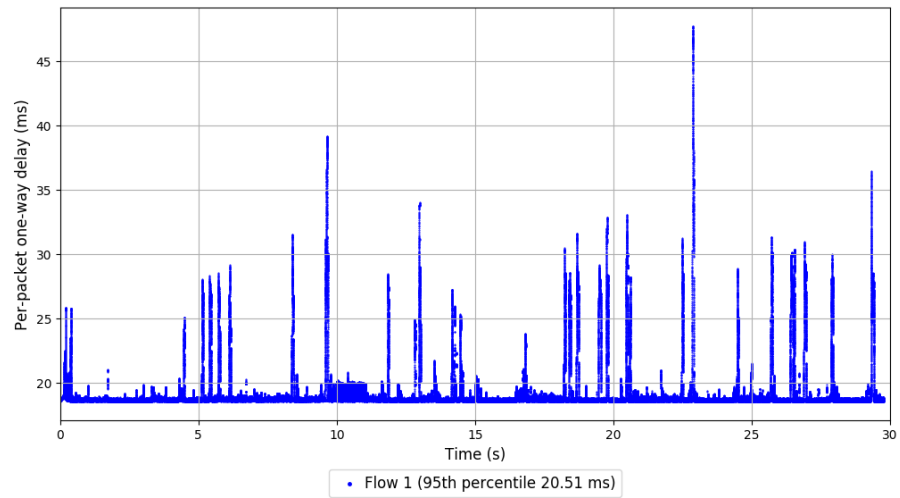
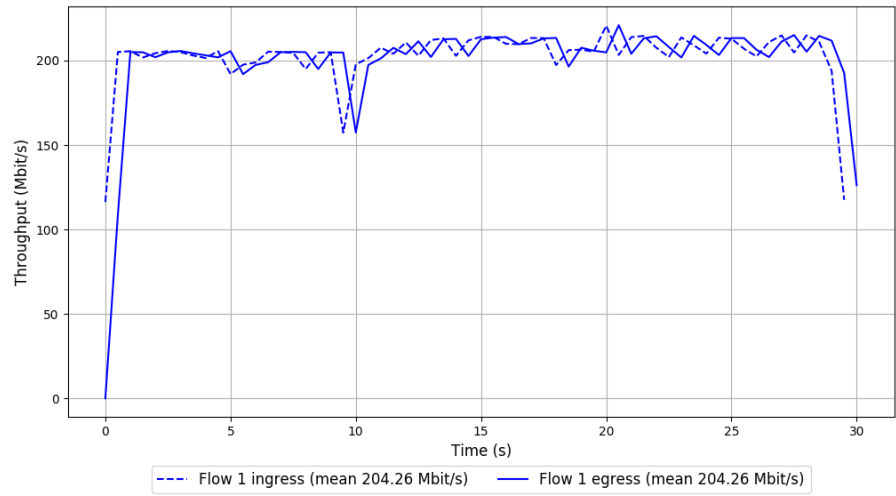


Run 2: Statistics of Indigo

Start at: 2018-08-31 06:45:02
End at: 2018-08-31 06:45:32
Local clock offset: -0.19 ms
Remote clock offset: -0.353 ms

Below is generated by plot.py at 2018-08-31 06:59:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 204.26 Mbit/s
95th percentile per-packet one-way delay: 20.511 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 204.26 Mbit/s
95th percentile per-packet one-way delay: 20.511 ms
Loss rate: 0.00%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2018-08-31 06:50:54

End at: 2018-08-31 06:51:24

Local clock offset: -0.52 ms

Remote clock offset: -0.185 ms

Below is generated by plot.py at 2018-08-31 06:59:48

Datalink statistics

-- Total of 1 flow:

Average throughput: 207.76 Mbit/s

95th percentile per-packet one-way delay: 22.996 ms

Loss rate: 0.00%

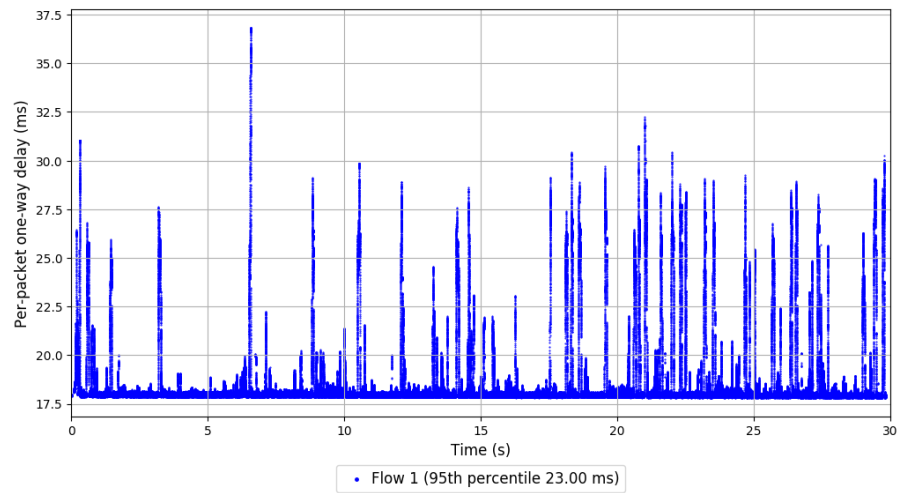
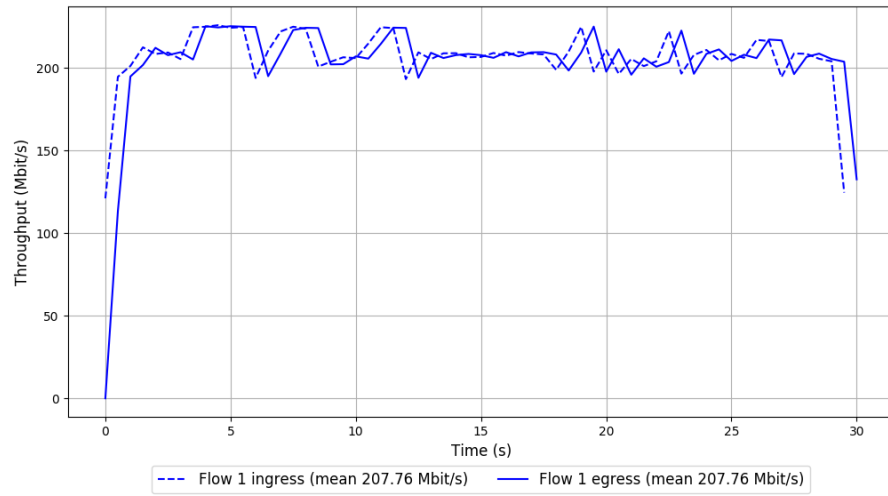
-- Flow 1:

Average throughput: 207.76 Mbit/s

95th percentile per-packet one-way delay: 22.996 ms

Loss rate: 0.00%

Run 3: Report of Indigo — Data Link



Run 1: Statistics of Muses-25

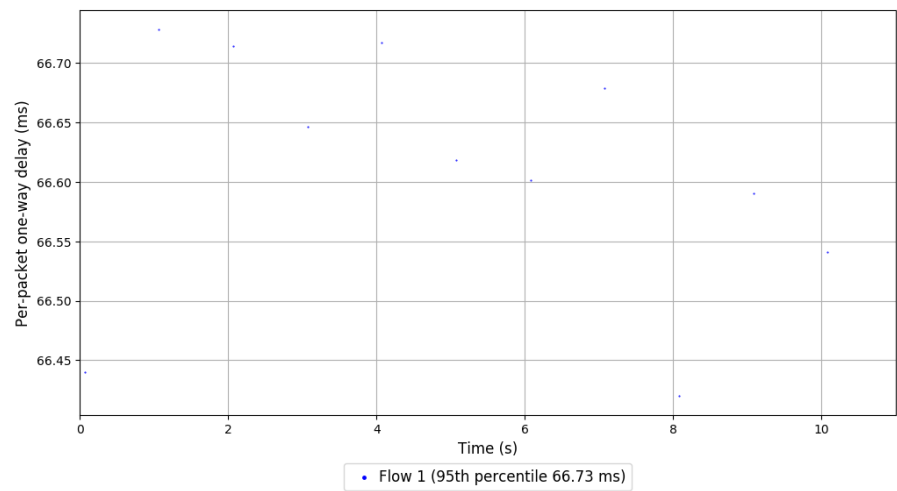
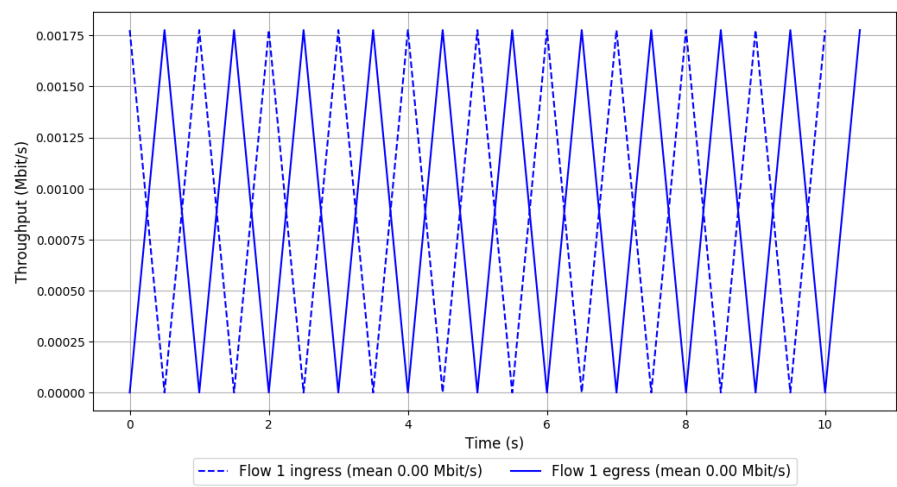
Start at: 2018-08-31 06:36:12

End at: 2018-08-31 06:36:42

Local clock offset: -46.888 ms

Remote clock offset: -0.766 ms

Run 1: Report of Muses-25 — Data Link



Run 2: Statistics of Muses-25

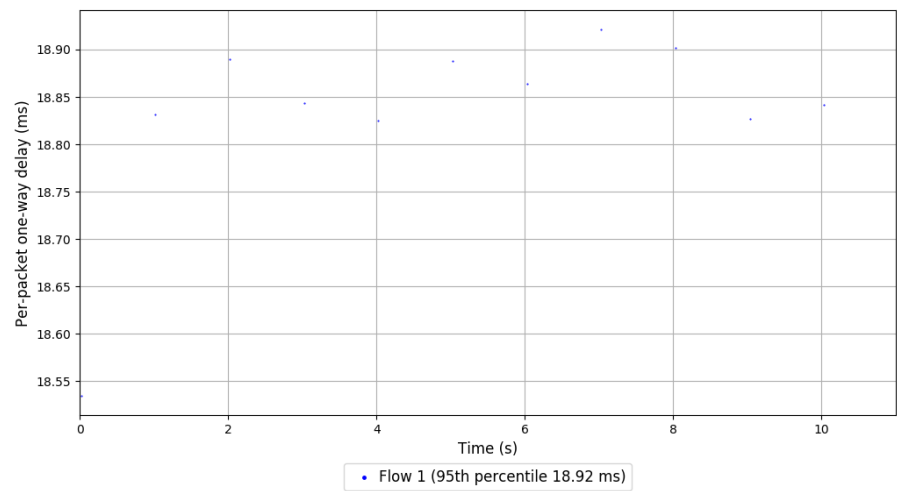
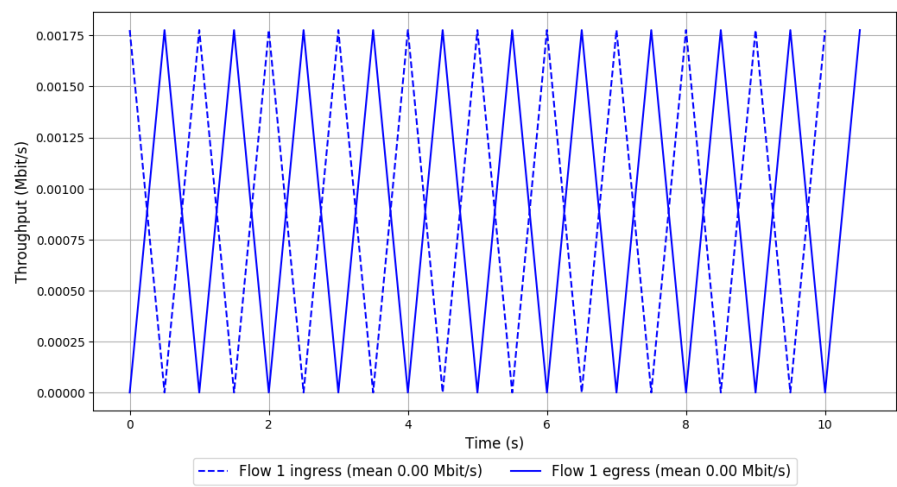
Start at: 2018-08-31 06:42:15

End at: 2018-08-31 06:42:45

Local clock offset: -0.093 ms

Remote clock offset: -0.45 ms

Run 2: Report of Muses-25 — Data Link



Run 3: Statistics of Muses-25

Start at: 2018-08-31 06:48:09

End at: 2018-08-31 06:48:39

Local clock offset: -0.361 ms

Remote clock offset: -0.153 ms

Run 3: Report of Muses-25 — Data Link

