

Pantheon Report

Generated at 2018-09-05 21:24:06 (UTC).

Data path: GCE Sydney on `ens4` (*local*) → GCE Iowa on `ens4` (*remote*).

Repeated the test of 4 congestion control schemes twice.

Each test lasted for 30 seconds running 1 flow.

NTP offsets were measured against `time.google.com` and have been applied to correct the timestamps in logs.

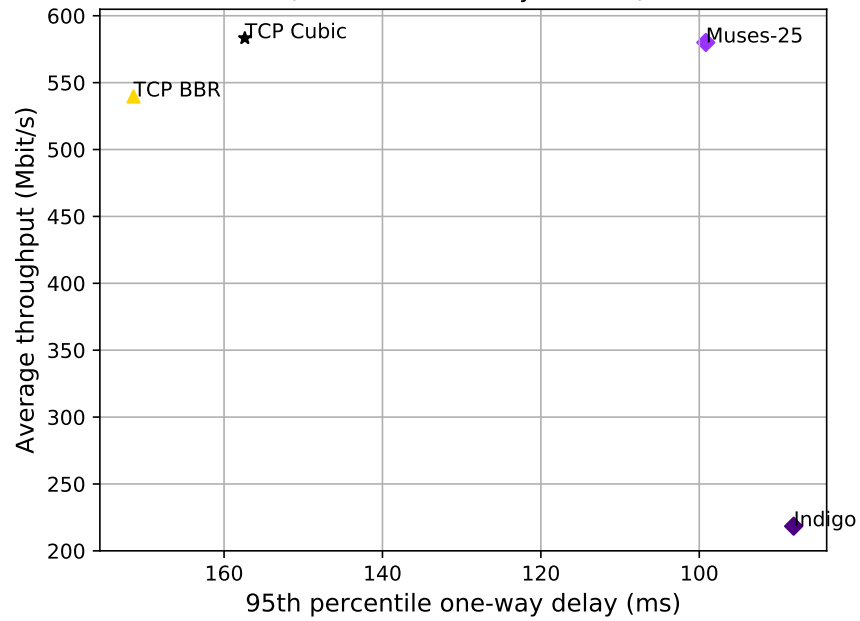
System info:

```
Linux 4.15.0-1018-gcp
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
```

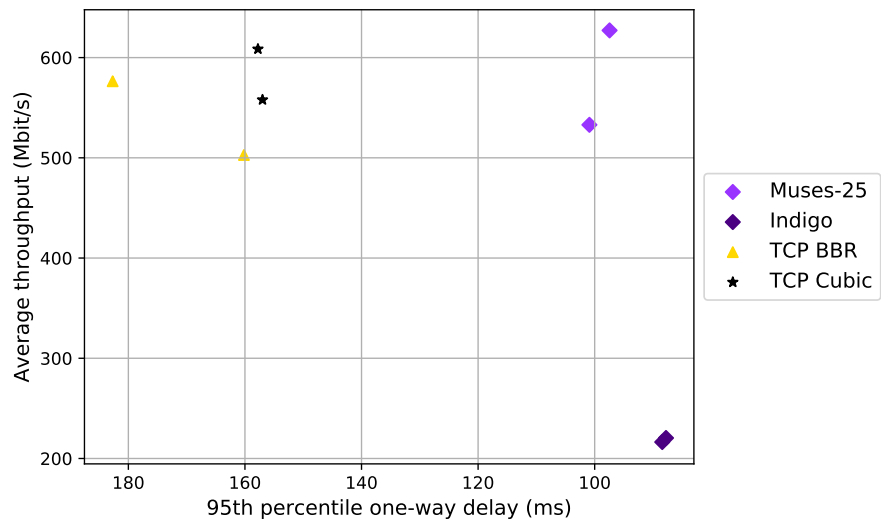
Git summary:

```
branch: muses @ 18b9165265c8ba2915c862e8713fd9ad82c1ac21
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf5e58e562f4
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 GCE Sydney to GCE Iowa, 2 runs of 30s each per scheme
(mean of all runs by scheme)



test from GCE Sydney to GCE Iowa, 2 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	2	539.63	171.43	0.81
TCP Cubic	2	583.22	157.38	0.14
Indigo	2	218.43	88.09	0.00
Muses-25	2	580.03	99.17	0.06

Run 1: Statistics of TCP BBR

Start at: 2018-09-05 21:01:35

End at: 2018-09-05 21:02:05

Local clock offset: 2.163 ms

Remote clock offset: 16.792 ms

Below is generated by plot.py at 2018-09-05 21:23:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 576.41 Mbit/s

95th percentile per-packet one-way delay: 182.693 ms

Loss rate: 1.51%

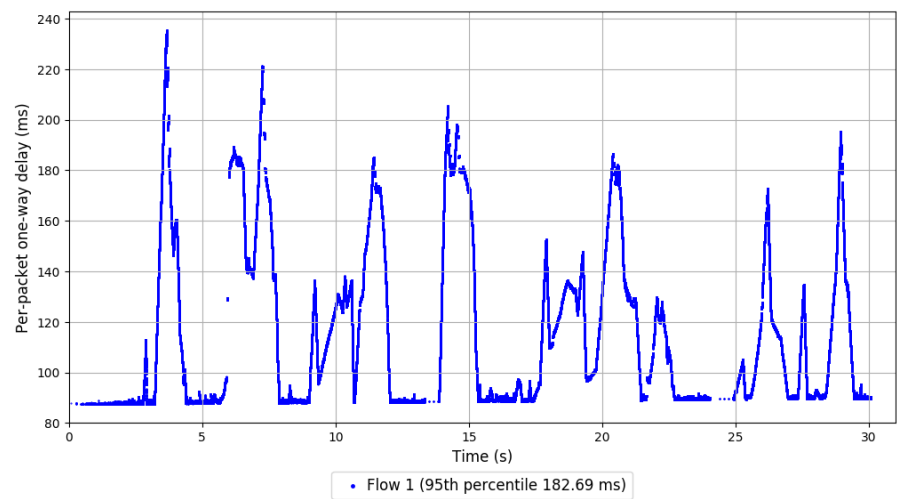
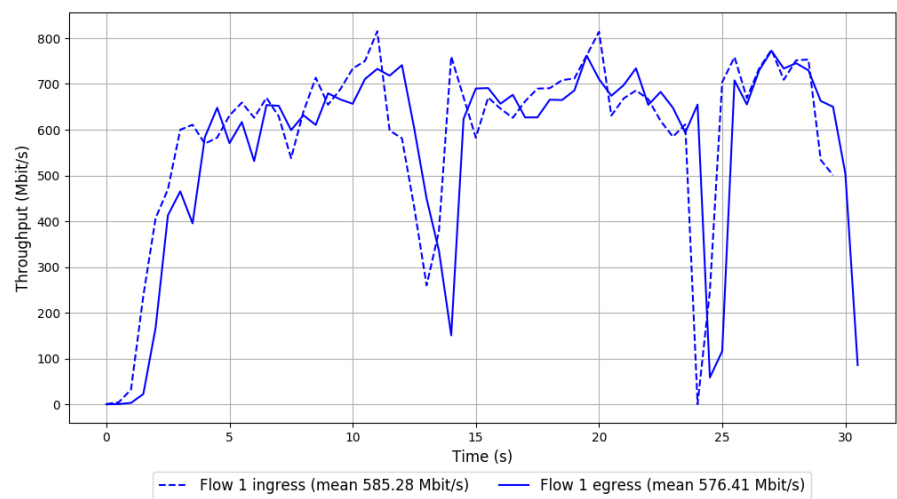
-- Flow 1:

Average throughput: 576.41 Mbit/s

95th percentile per-packet one-way delay: 182.693 ms

Loss rate: 1.51%

Run 1: Report of TCP BBR — Data Link

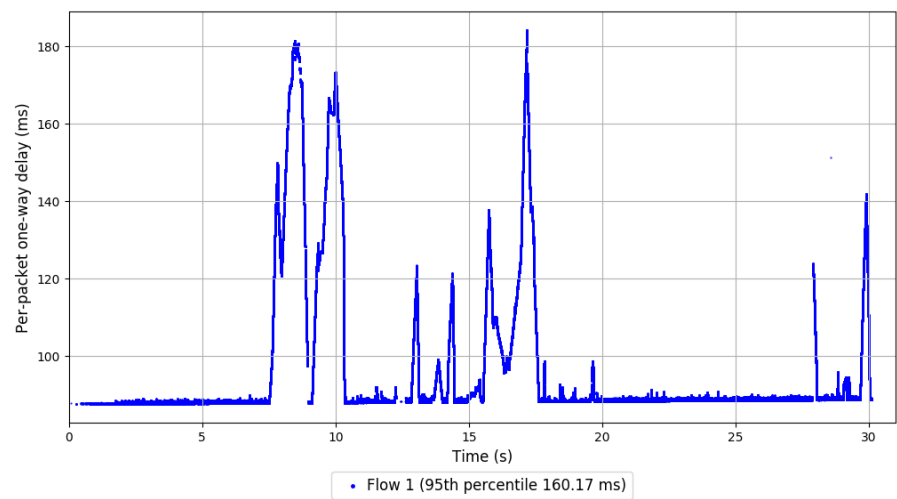
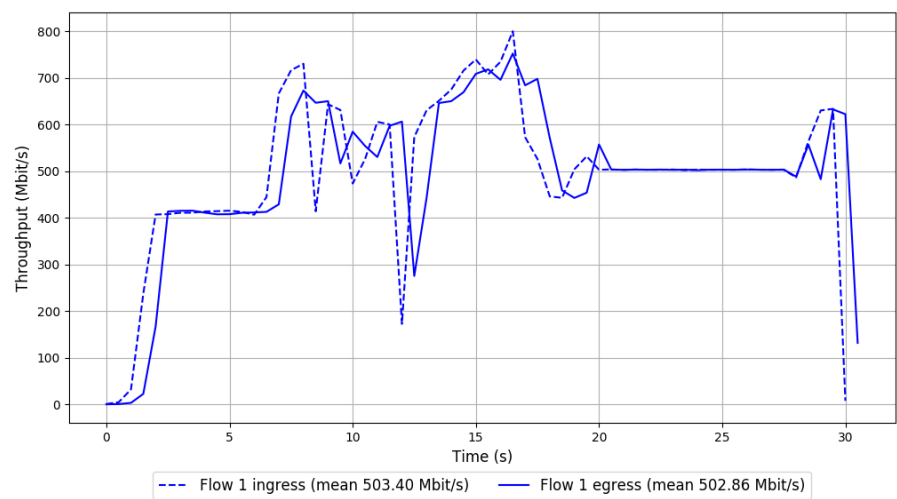


Run 2: Statistics of TCP BBR

Start at: 2018-09-05 21:07:54
End at: 2018-09-05 21:08:24
Local clock offset: 9.671 ms
Remote clock offset: 17.244 ms

Below is generated by plot.py at 2018-09-05 21:23:59
Datalink statistics
-- Total of 1 flow:
Average throughput: 502.86 Mbit/s
95th percentile per-packet one-way delay: 160.172 ms
Loss rate: 0.10%
-- Flow 1:
Average throughput: 502.86 Mbit/s
95th percentile per-packet one-way delay: 160.172 ms
Loss rate: 0.10%

Run 2: Report of TCP BBR — Data Link

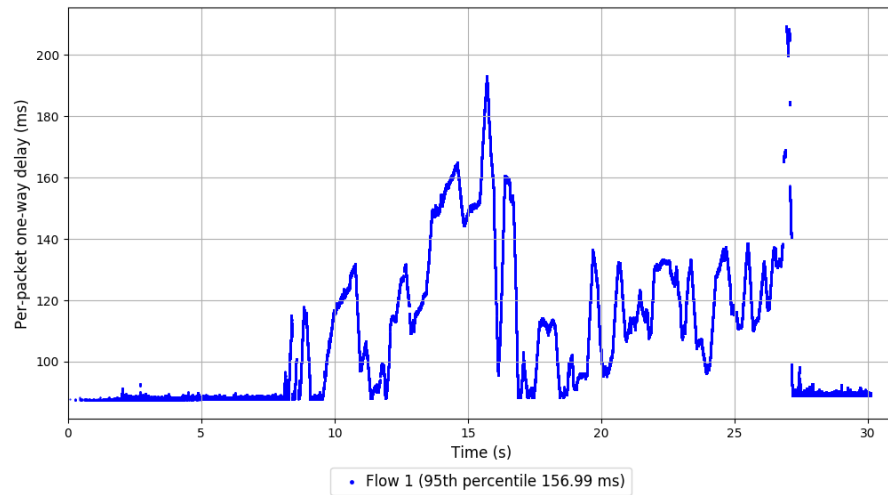
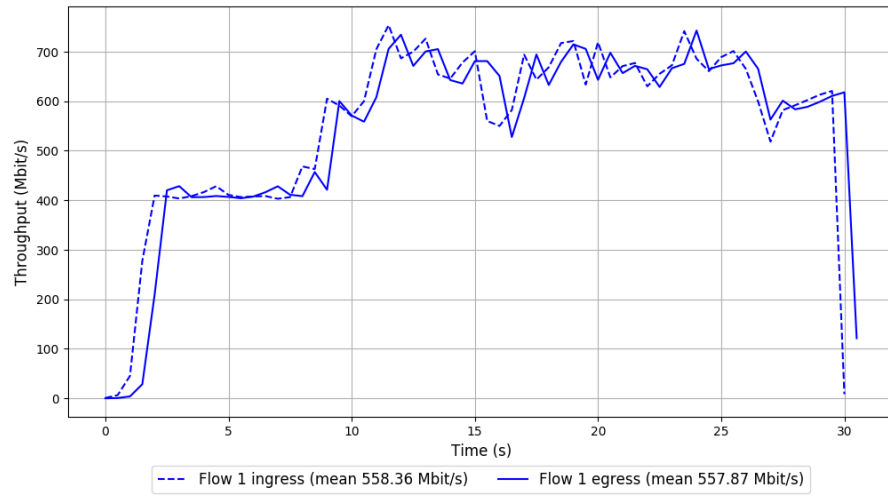


Run 1: Statistics of TCP Cubic

Start at: 2018-09-05 21:03:18
End at: 2018-09-05 21:03:48
Local clock offset: 4.357 ms
Remote clock offset: 16.628 ms

Below is generated by plot.py at 2018-09-05 21:23:59
Datalink statistics
-- Total of 1 flow:
Average throughput: 557.87 Mbit/s
95th percentile per-packet one-way delay: 156.987 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 557.87 Mbit/s
95th percentile per-packet one-way delay: 156.987 ms
Loss rate: 0.08%

Run 1: Report of TCP Cubic — Data Link

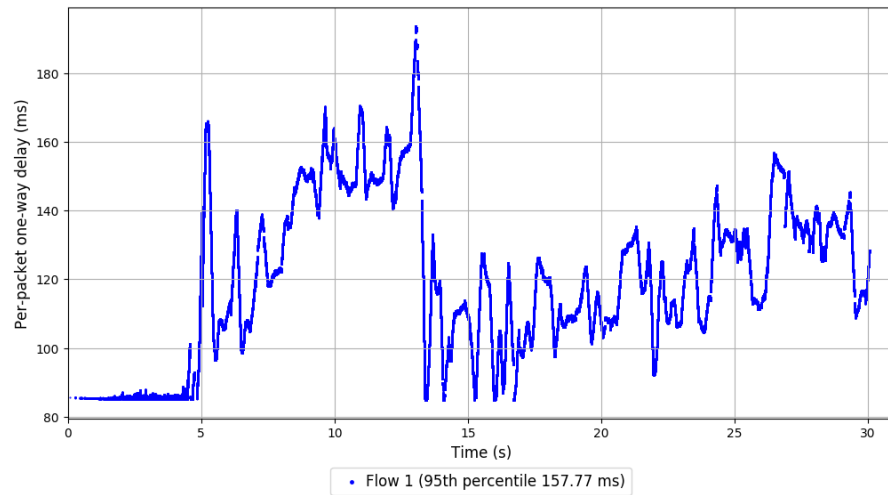
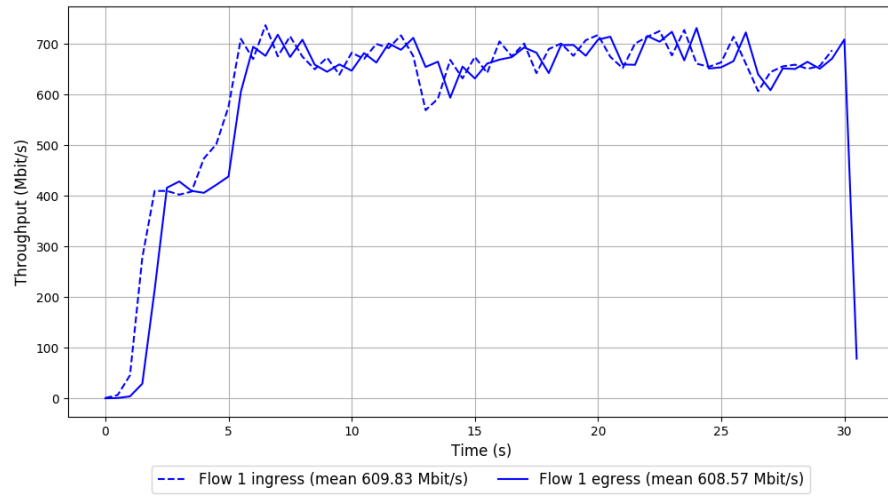


Run 2: Statistics of TCP Cubic

Start at: 2018-09-05 21:09:30
End at: 2018-09-05 21:10:00
Local clock offset: 10.83 ms
Remote clock offset: 17.718 ms

Below is generated by plot.py at 2018-09-05 21:24:03
Datalink statistics
-- Total of 1 flow:
Average throughput: 608.57 Mbit/s
95th percentile per-packet one-way delay: 157.772 ms
Loss rate: 0.21%
-- Flow 1:
Average throughput: 608.57 Mbit/s
95th percentile per-packet one-way delay: 157.772 ms
Loss rate: 0.21%

Run 2: Report of TCP Cubic — Data Link

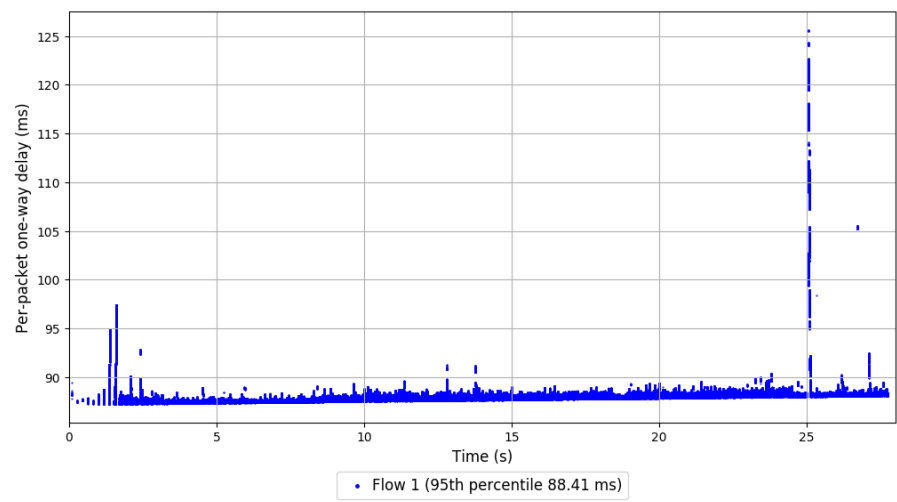
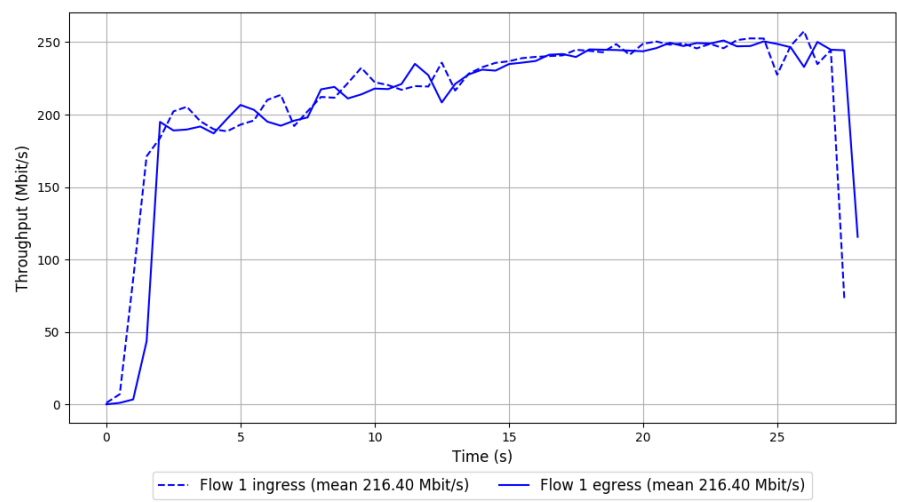


Run 1: Statistics of Indigo

Start at: 2018-09-05 21:06:27
End at: 2018-09-05 21:06:57
Local clock offset: 6.571 ms
Remote clock offset: 16.921 ms

Below is generated by plot.py at 2018-09-05 21:24:03
Datalink statistics
-- Total of 1 flow:
Average throughput: 216.40 Mbit/s
95th percentile per-packet one-way delay: 88.408 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 216.40 Mbit/s
95th percentile per-packet one-way delay: 88.408 ms
Loss rate: 0.00%

Run 1: Report of Indigo — Data Link

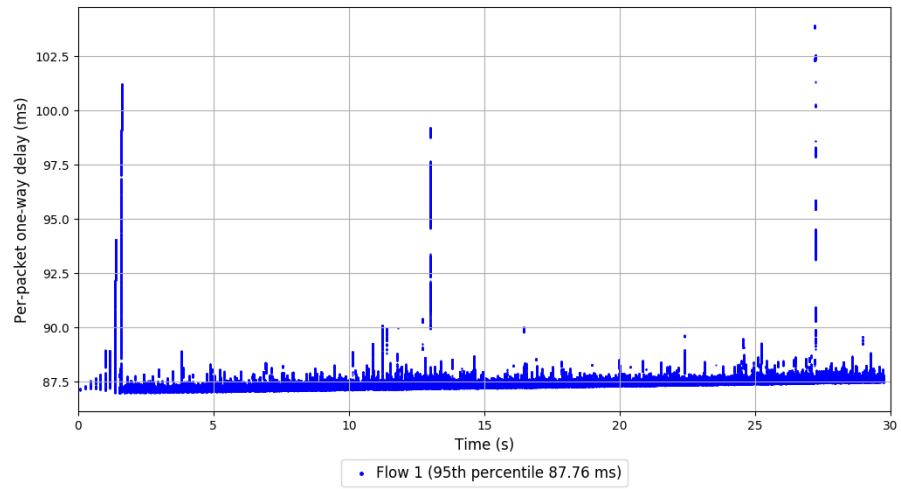
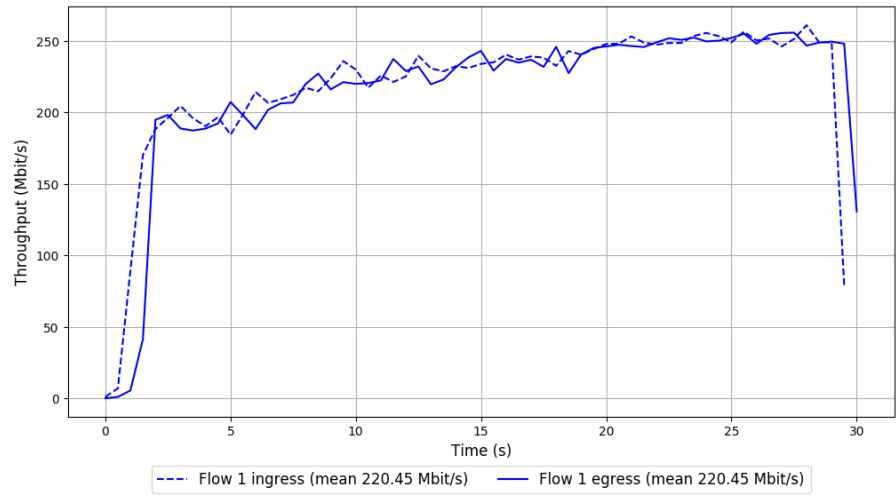


Run 2: Statistics of Indigo

Start at: 2018-09-05 21:12:47
End at: 2018-09-05 21:13:17
Local clock offset: 10.342 ms
Remote clock offset: 18.985 ms

Below is generated by plot.py at 2018-09-05 21:24:03
Datalink statistics
-- Total of 1 flow:
Average throughput: 220.45 Mbit/s
95th percentile per-packet one-way delay: 87.764 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 220.45 Mbit/s
95th percentile per-packet one-way delay: 87.764 ms
Loss rate: 0.00%

Run 2: Report of Indigo — Data Link



Run 1: Statistics of Muses-25

Start at: 2018-09-05 21:04:54

End at: 2018-09-05 21:05:24

Local clock offset: 7.455 ms

Remote clock offset: 16.676 ms

Below is generated by plot.py at 2018-09-05 21:24:03

Datalink statistics

-- Total of 1 flow:

Average throughput: 532.93 Mbit/s

95th percentile per-packet one-way delay: 100.904 ms

Loss rate: 0.12%

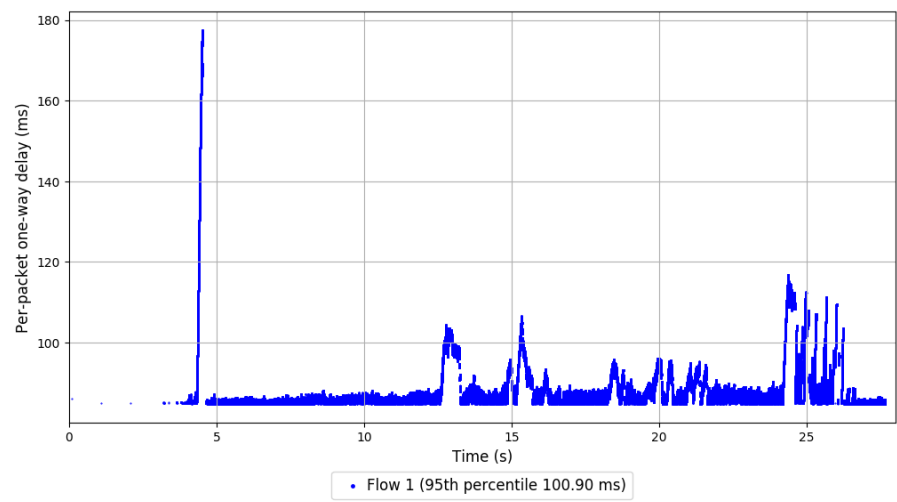
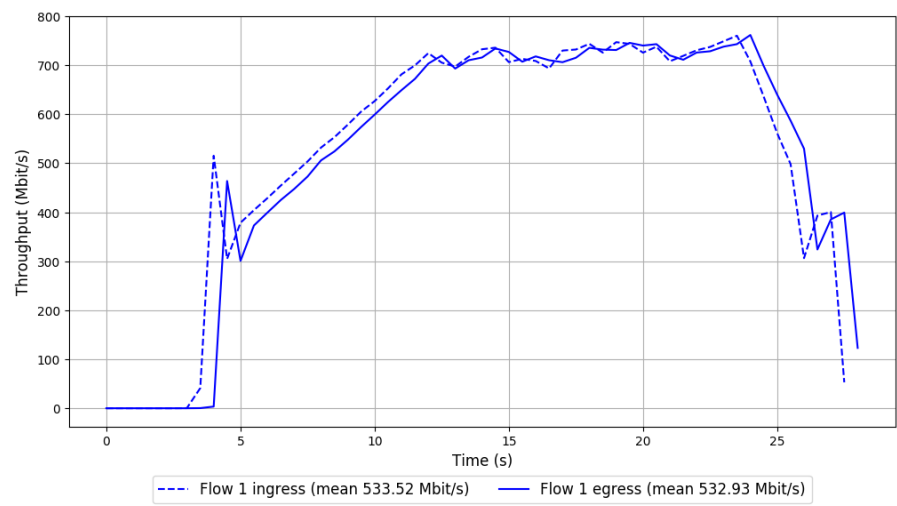
-- Flow 1:

Average throughput: 532.93 Mbit/s

95th percentile per-packet one-way delay: 100.904 ms

Loss rate: 0.12%

Run 1: Report of Muses-25 — Data Link



Run 2: Statistics of Muses-25

Start at: 2018-09-05 21:11:09
End at: 2018-09-05 21:11:39
Local clock offset: 8.985 ms
Remote clock offset: 18.318 ms

Below is generated by plot.py at 2018-09-05 21:24:05
Datalink statistics
-- Total of 1 flow:
Average throughput: 627.14 Mbit/s
95th percentile per-packet one-way delay: 97.444 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 627.14 Mbit/s
95th percentile per-packet one-way delay: 97.444 ms
Loss rate: 0.00%

Run 2: Report of Muses-25 — Data Link

