

Pantheon Report

Generated at 2018-08-31 09:46:59 (UTC).

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

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.

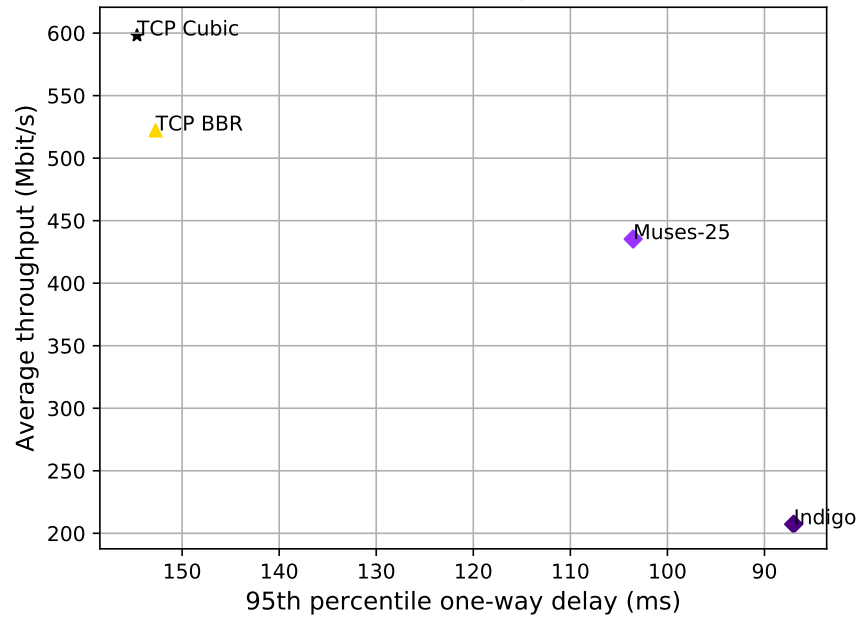
System info:

```
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
```

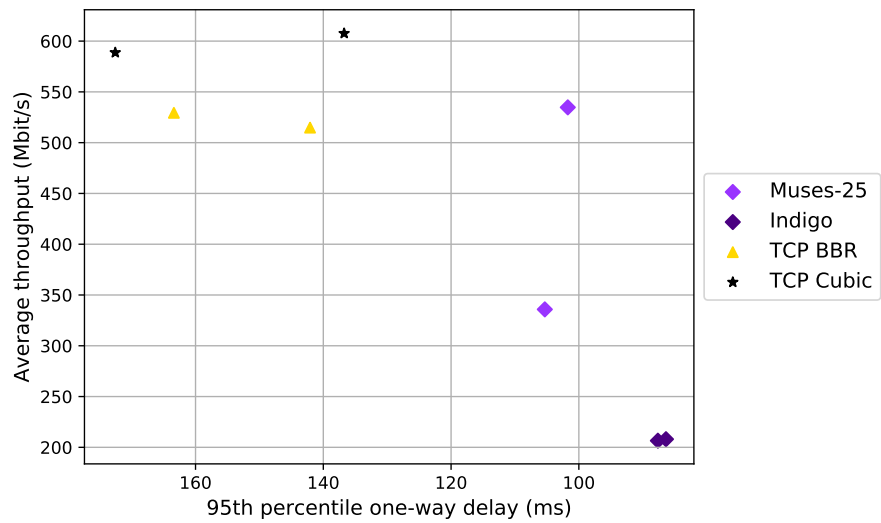
Git summary:

```
branch: muses @ e3c5aa19ca94c3066828fb83f16a8fb6b2731e7a
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ b59e0d118c50af3579569c462d33045741c85981
third_party/pantheon-tunnel @ cbfce6db5ff5740dafe1771f813cd646339e1952
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 Iowa to GCE Sydney, 2 runs of 30s each per scheme
(mean of all runs by scheme)



test from GCE Iowa to GCE Sydney, 2 runs of 30s each per scheme



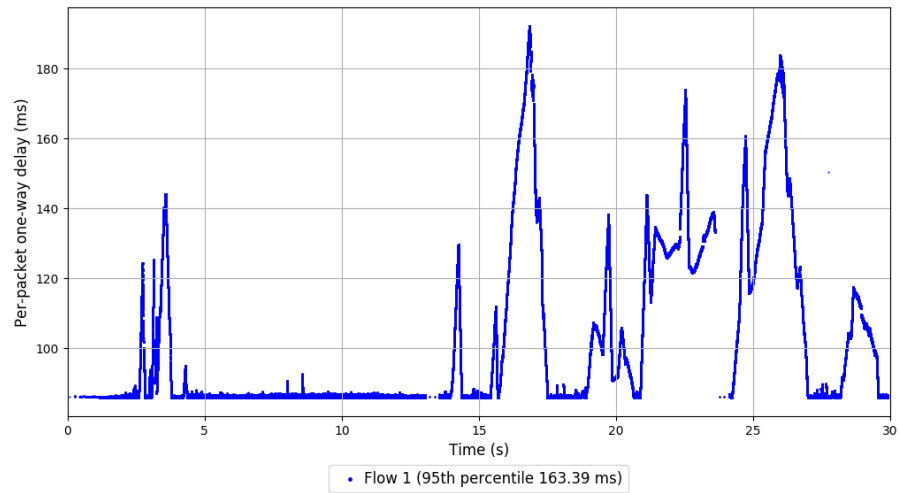
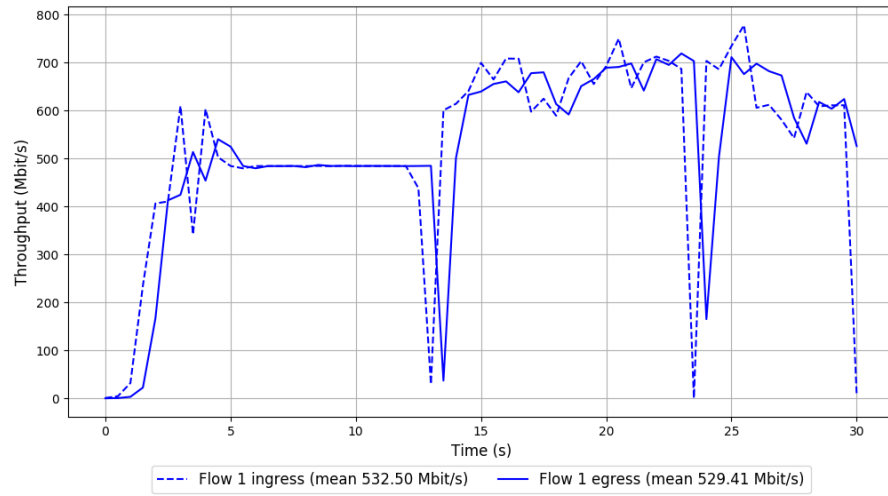
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	2	522.12	152.73	1.37
TCP Cubic	2	598.14	154.65	0.80
Indigo	2	207.28	87.00	0.65
Muses-25	2	435.29	103.53	0.64

Run 1: Statistics of TCP BBR

Start at: 2018-08-31 09:30:04
End at: 2018-08-31 09:30:34
Local clock offset: 32.016 ms
Remote clock offset: 40.064 ms

Below is generated by plot.py at 2018-08-31 09:46:17
Datalink statistics
-- Total of 1 flow:
Average throughput: 529.41 Mbit/s
95th percentile per-packet one-way delay: 163.386 ms
Loss rate: 1.15%
-- Flow 1:
Average throughput: 529.41 Mbit/s
95th percentile per-packet one-way delay: 163.386 ms
Loss rate: 1.15%

Run 1: Report of TCP BBR — Data Link

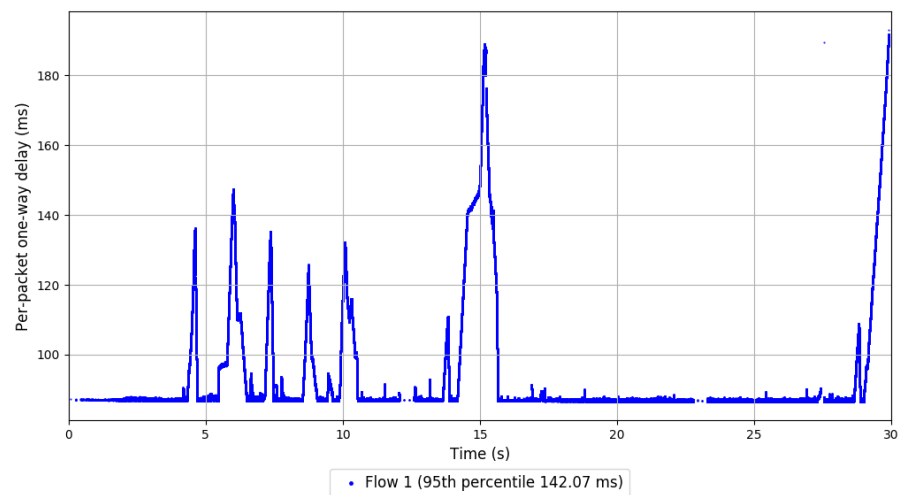
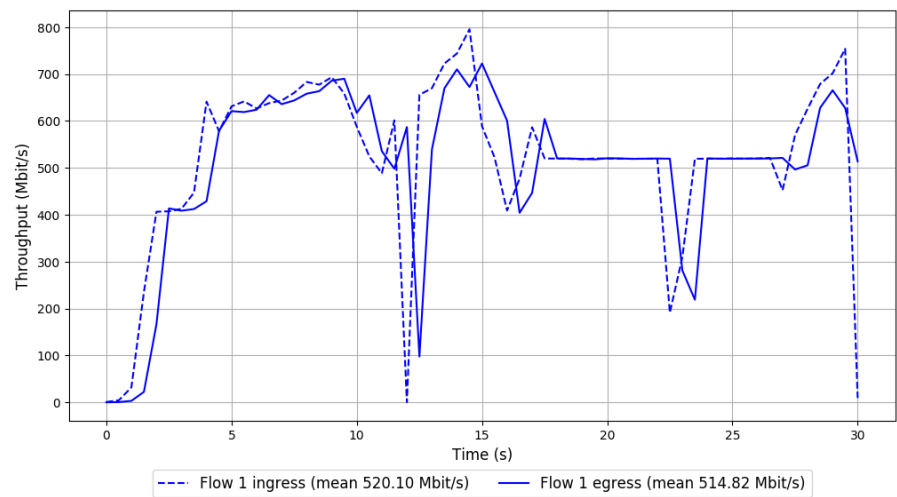


Run 2: Statistics of TCP BBR

Start at: 2018-08-31 09:36:18
End at: 2018-08-31 09:36:48
Local clock offset: 23.181 ms
Remote clock offset: 27.267 ms

Below is generated by plot.py at 2018-08-31 09:46:17
Datalink statistics
-- Total of 1 flow:
Average throughput: 514.82 Mbit/s
95th percentile per-packet one-way delay: 142.075 ms
Loss rate: 1.59%
-- Flow 1:
Average throughput: 514.82 Mbit/s
95th percentile per-packet one-way delay: 142.075 ms
Loss rate: 1.59%

Run 2: Report of TCP BBR — Data Link

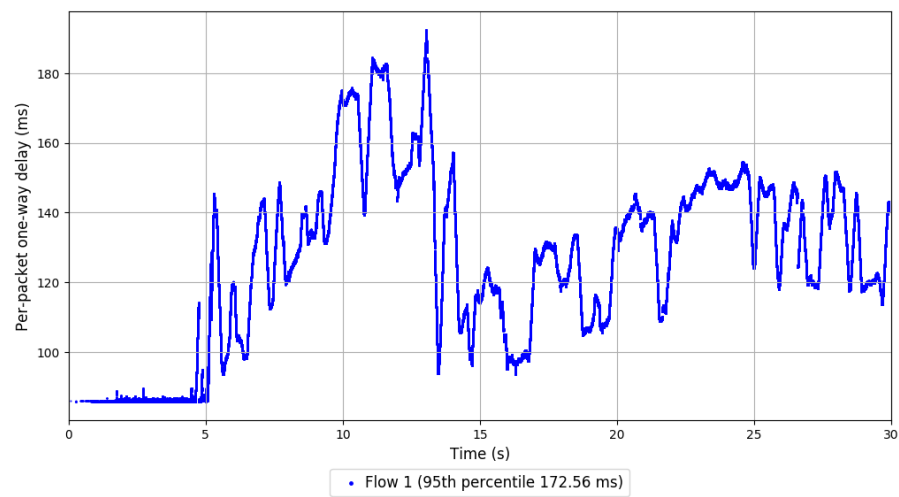
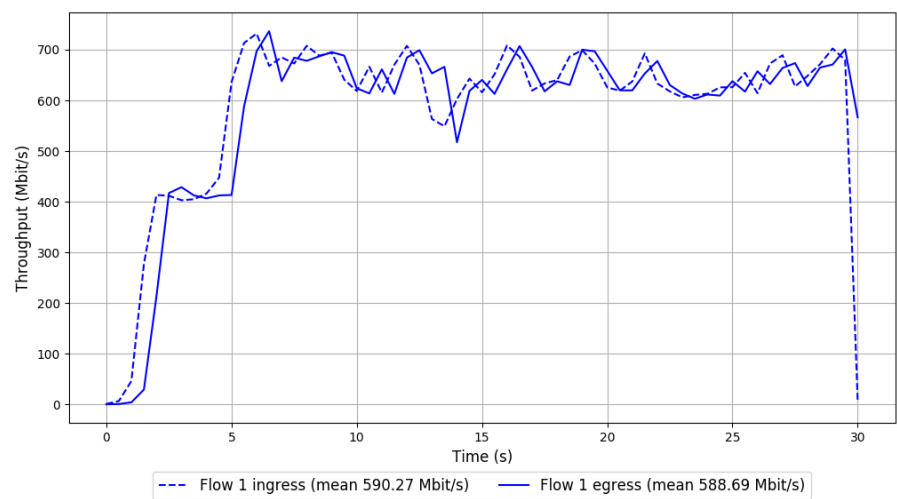


Run 1: Statistics of TCP Cubic

Start at: 2018-08-31 09:27:01
End at: 2018-08-31 09:27:31
Local clock offset: 29.324 ms
Remote clock offset: 36.598 ms

Below is generated by plot.py at 2018-08-31 09:46:51
Datalink statistics
-- Total of 1 flow:
Average throughput: 588.69 Mbit/s
95th percentile per-packet one-way delay: 172.562 ms
Loss rate: 0.84%
-- Flow 1:
Average throughput: 588.69 Mbit/s
95th percentile per-packet one-way delay: 172.562 ms
Loss rate: 0.84%

Run 1: Report of TCP Cubic — Data Link

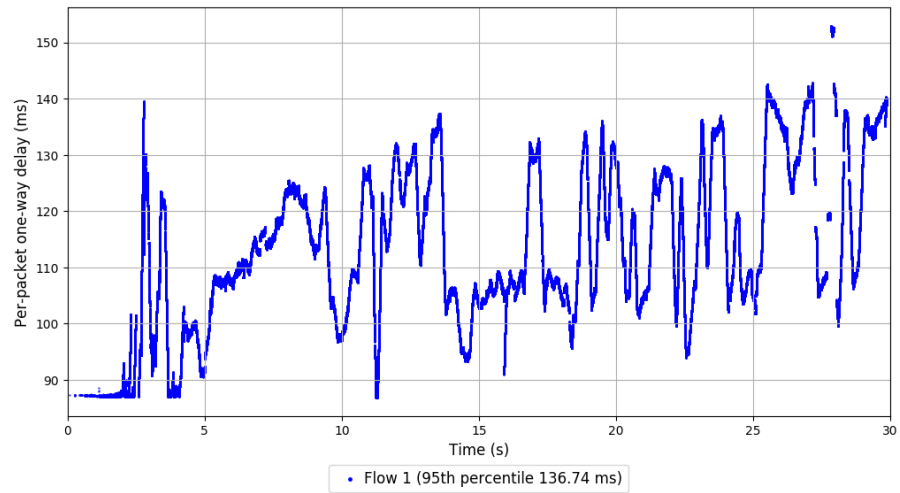
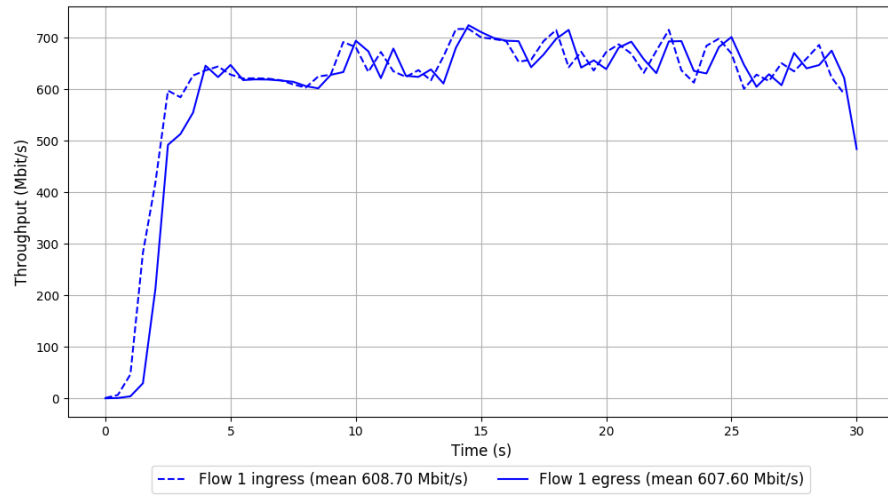


Run 2: Statistics of TCP Cubic

Start at: 2018-08-31 09:33:15
End at: 2018-08-31 09:33:45
Local clock offset: 30.811 ms
Remote clock offset: 37.263 ms

Below is generated by plot.py at 2018-08-31 09:46:53
Datalink statistics
-- Total of 1 flow:
Average throughput: 607.60 Mbit/s
95th percentile per-packet one-way delay: 136.738 ms
Loss rate: 0.76%
-- Flow 1:
Average throughput: 607.60 Mbit/s
95th percentile per-packet one-way delay: 136.738 ms
Loss rate: 0.76%

Run 2: Report of TCP Cubic — Data Link

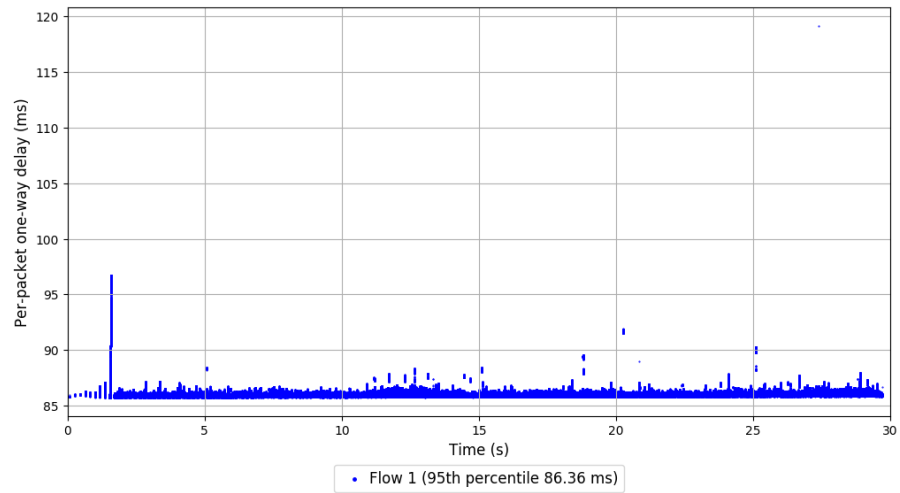
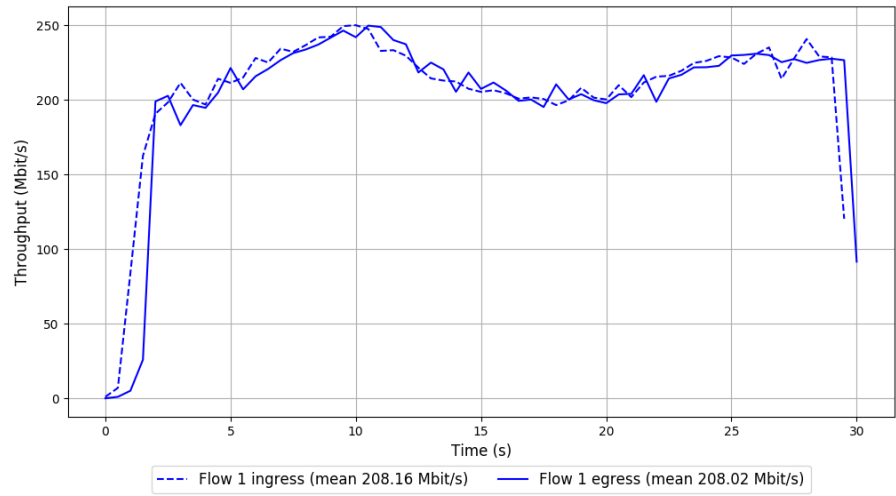


Run 1: Statistics of Indigo

Start at: 2018-08-31 09:28:38
End at: 2018-08-31 09:29:08
Local clock offset: 30.801 ms
Remote clock offset: 38.337 ms

Below is generated by plot.py at 2018-08-31 09:46:53
Datalink statistics
-- Total of 1 flow:
Average throughput: 208.02 Mbit/s
95th percentile per-packet one-way delay: 86.363 ms
Loss rate: 0.65%
-- Flow 1:
Average throughput: 208.02 Mbit/s
95th percentile per-packet one-way delay: 86.363 ms
Loss rate: 0.65%

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2018-08-31 09:34:52

End at: 2018-08-31 09:35:22

Local clock offset: 26.174 ms

Remote clock offset: 31.35 ms

Below is generated by plot.py at 2018-08-31 09:46:53

Datalink statistics

-- Total of 1 flow:

Average throughput: 206.54 Mbit/s

95th percentile per-packet one-way delay: 87.630 ms

Loss rate: 0.65%

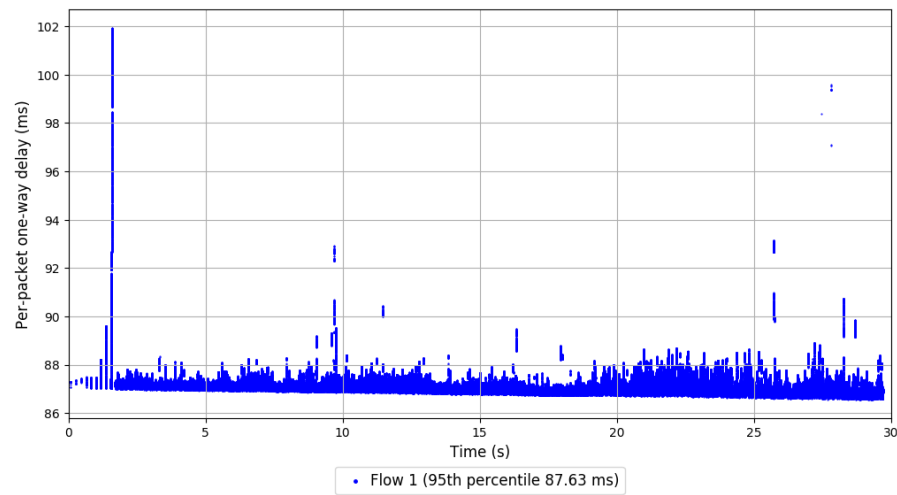
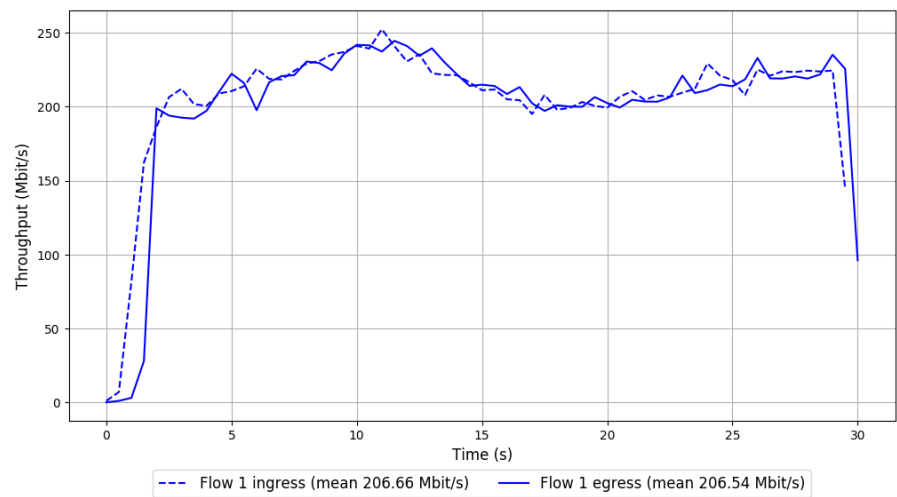
-- Flow 1:

Average throughput: 206.54 Mbit/s

95th percentile per-packet one-way delay: 87.630 ms

Loss rate: 0.65%

Run 2: Report of Indigo — Data Link

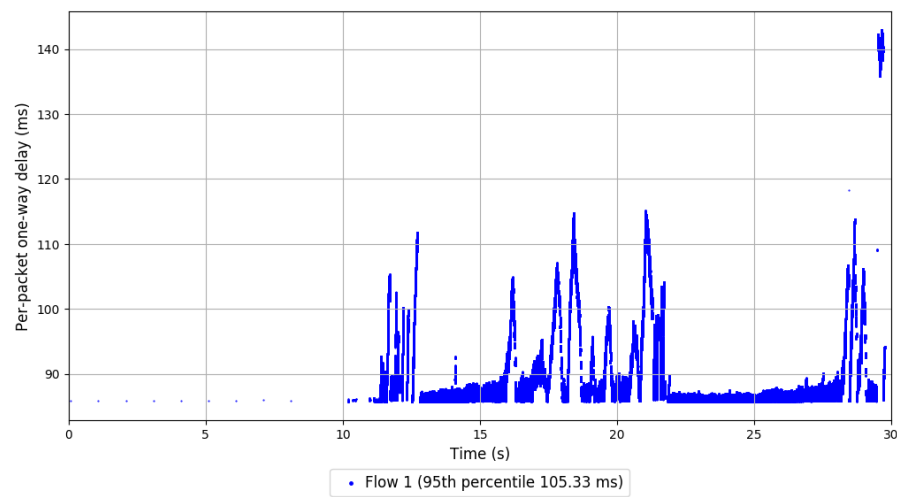
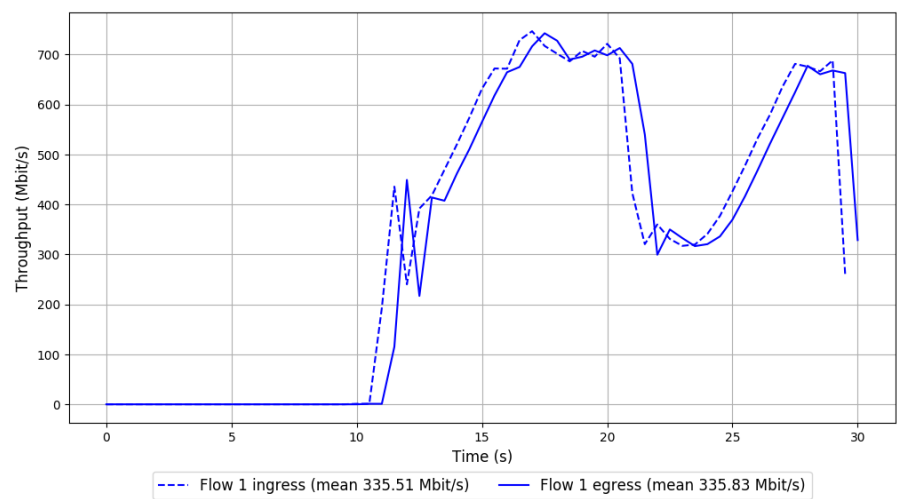


Run 1: Statistics of Muses-25

Start at: 2018-08-31 09:25:36
End at: 2018-08-31 09:26:06
Local clock offset: 27.878 ms
Remote clock offset: 34.886 ms

Below is generated by plot.py at 2018-08-31 09:46:53
Datalink statistics
-- Total of 1 flow:
Average throughput: 335.83 Mbit/s
95th percentile per-packet one-way delay: 105.327 ms
Loss rate: 0.45%
-- Flow 1:
Average throughput: 335.83 Mbit/s
95th percentile per-packet one-way delay: 105.327 ms
Loss rate: 0.45%

Run 1: Report of Muses-25 — Data Link



Run 2: Statistics of Muses-25

Start at: 2018-08-31 09:31:39
End at: 2018-08-31 09:32:09
Local clock offset: 33.551 ms
Remote clock offset: 41.895 ms

Below is generated by plot.py at 2018-08-31 09:46:58
Datalink statistics
-- Total of 1 flow:
Average throughput: 534.76 Mbit/s
95th percentile per-packet one-way delay: 101.730 ms
Loss rate: 0.82%
-- Flow 1:
Average throughput: 534.76 Mbit/s
95th percentile per-packet one-way delay: 101.730 ms
Loss rate: 0.82%

Run 2: Report of Muses-25 — Data Link

