

Pantheon Report

Generated at 2018-09-05 22:09:34 (UTC).

Data path: Brazil on **p4p1** (*remote*) → AWS Brazil 1 on **ens5** (*local*).

Repeated the test of 4 congestion control schemes 3 times.

Each test lasted for 30 seconds running 1 flow.

NTP offsets were measured against **gps.ntp.br** and have been applied to correct the timestamps in logs.

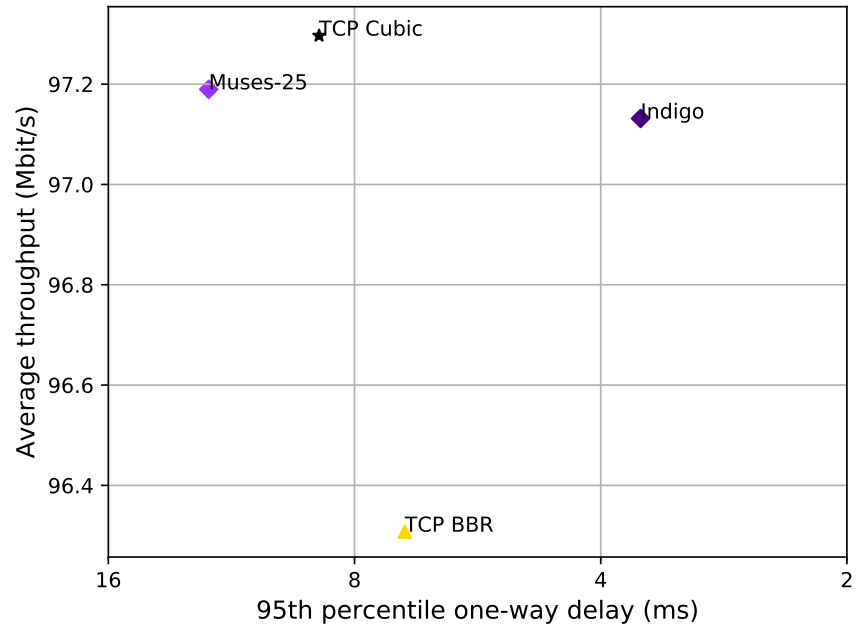
System info:

```
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
```

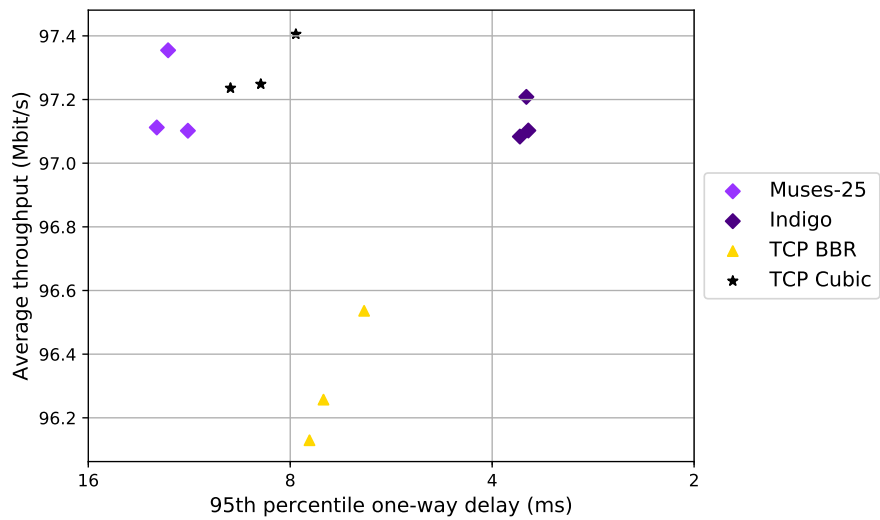
Git summary:

```
branch: muses @ 18b9165265c8ba2915c862e8713fd9ad82c1ac21
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
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 Brazil to AWS Brazil 1, 3 runs of 30s each per scheme
(mean of all runs by scheme)



test from Brazil to AWS Brazil 1, 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	96.31	6.94	0.02
TCP Cubic	3	97.30	8.84	0.05
Indigo	3	97.13	3.58	0.01
Muses-25	3	97.19	12.06	0.03

Run 1: Statistics of TCP BBR

Start at: 2018-09-05 21:56:43

End at: 2018-09-05 21:57:13

Local clock offset: 20.201 ms

Remote clock offset: 0.455 ms

Below is generated by plot.py at 2018-09-05 22:08:56

Datalink statistics

-- Total of 1 flow:

Average throughput: 96.13 Mbit/s

95th percentile per-packet one-way delay: 7.488 ms

Loss rate: 0.03%

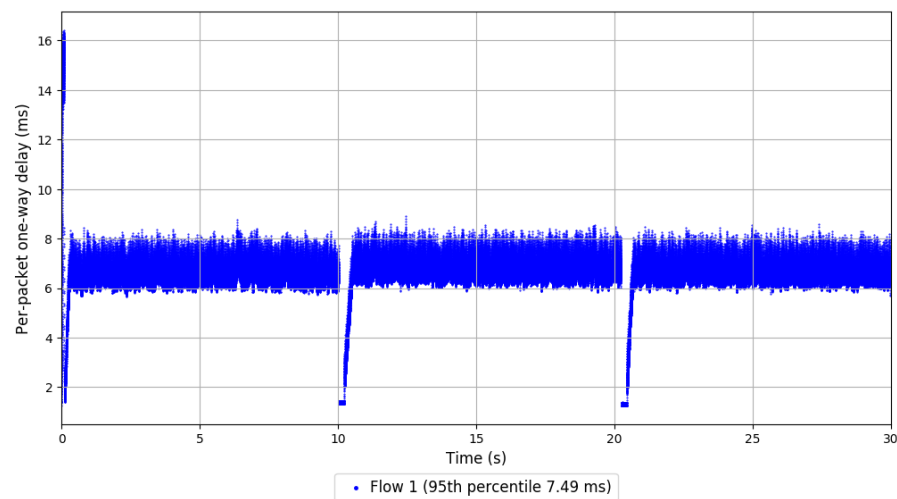
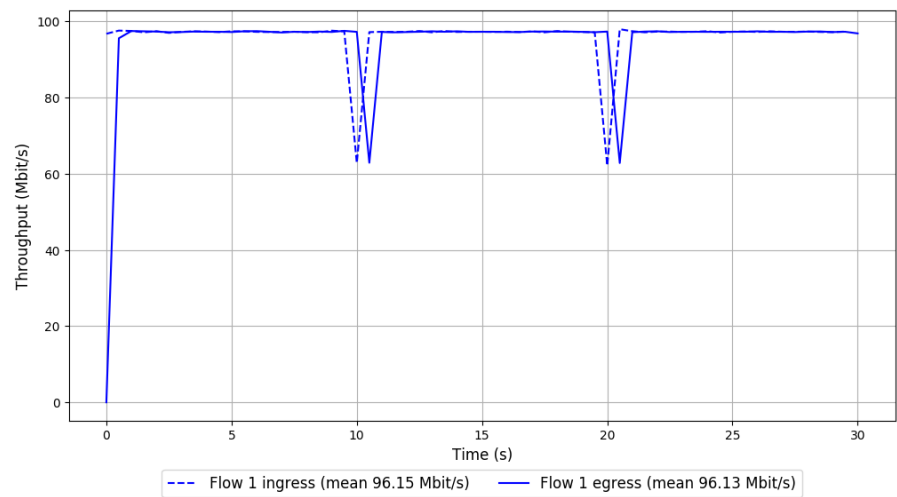
-- Flow 1:

Average throughput: 96.13 Mbit/s

95th percentile per-packet one-way delay: 7.488 ms

Loss rate: 0.03%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-09-05 22:01:16

End at: 2018-09-05 22:01:46

Local clock offset: 20.712 ms

Remote clock offset: 0.387 ms

Below is generated by plot.py at 2018-09-05 22:08:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 96.26 Mbit/s

95th percentile per-packet one-way delay: 7.137 ms

Loss rate: 0.02%

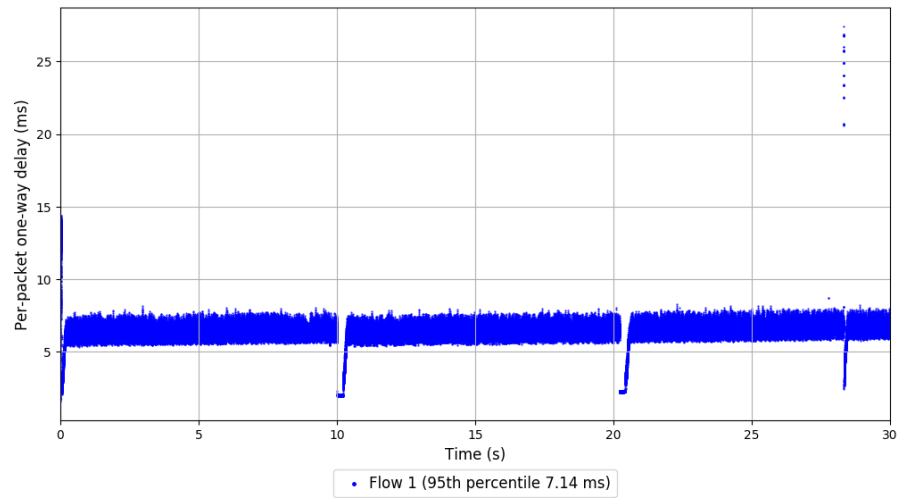
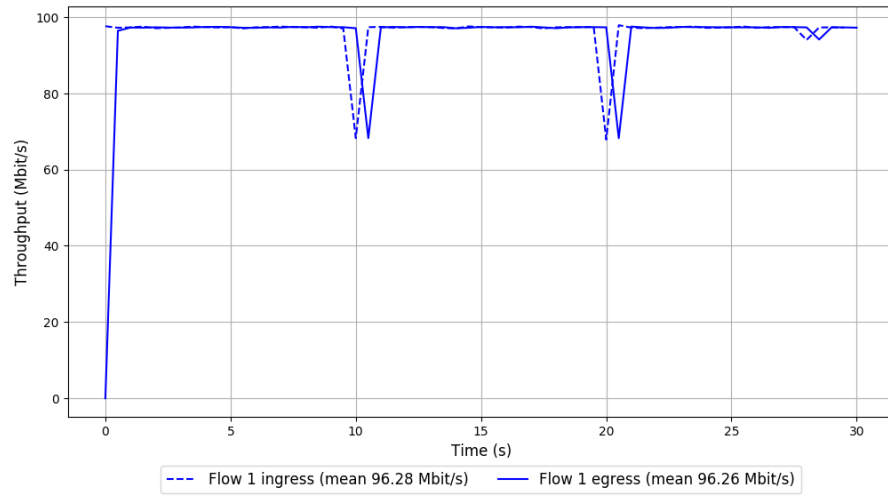
-- Flow 1:

Average throughput: 96.26 Mbit/s

95th percentile per-packet one-way delay: 7.137 ms

Loss rate: 0.02%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-09-05 22:05:50

End at: 2018-09-05 22:06:20

Local clock offset: 15.235 ms

Remote clock offset: 0.473 ms

Below is generated by plot.py at 2018-09-05 22:08:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 96.54 Mbit/s

95th percentile per-packet one-way delay: 6.208 ms

Loss rate: 0.02%

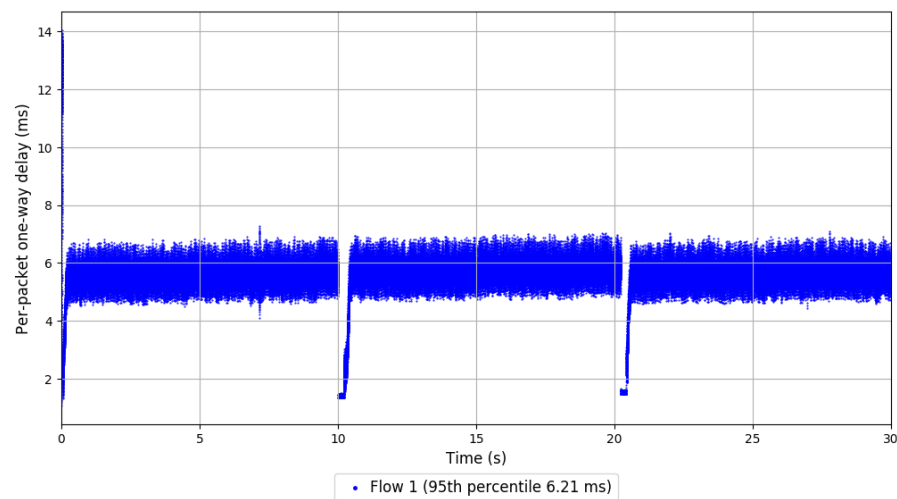
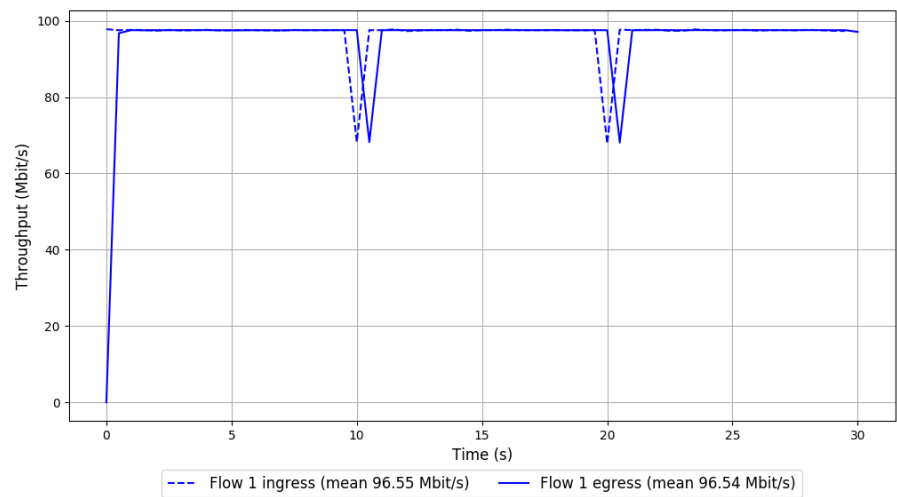
-- Flow 1:

Average throughput: 96.54 Mbit/s

95th percentile per-packet one-way delay: 6.208 ms

Loss rate: 0.02%

Run 3: Report of TCP BBR — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2018-09-05 21:54:25

End at: 2018-09-05 21:54:55

Local clock offset: 18.426 ms

Remote clock offset: 0.427 ms

Below is generated by plot.py at 2018-09-05 22:08:58

Datalink statistics

-- Total of 1 flow:

Average throughput: 97.41 Mbit/s

95th percentile per-packet one-way delay: 7.847 ms

Loss rate: 0.05%

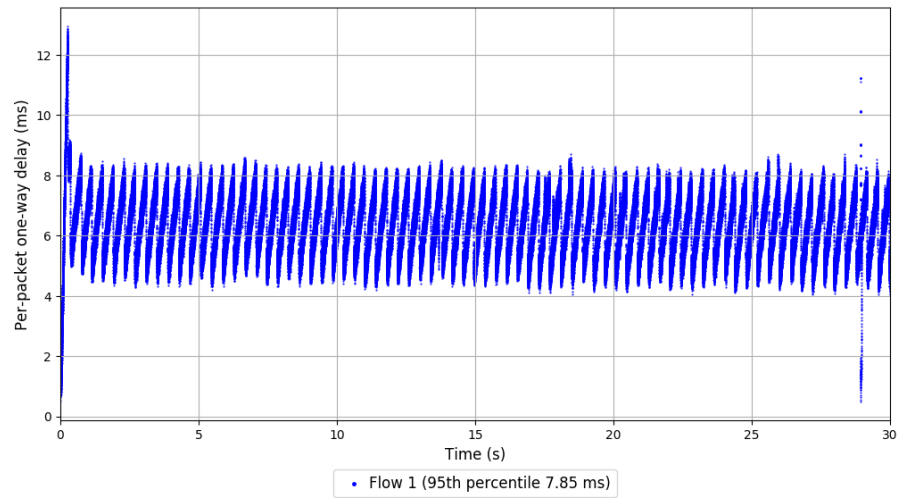
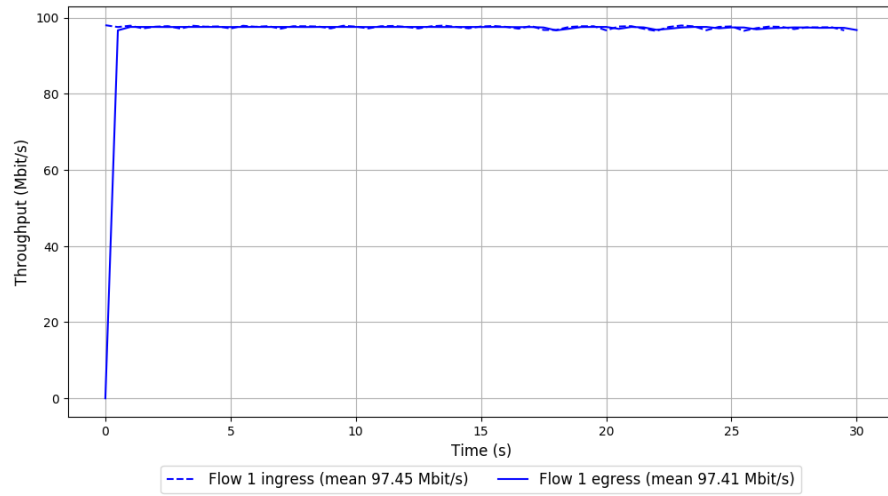
-- Flow 1:

Average throughput: 97.41 Mbit/s

95th percentile per-packet one-way delay: 7.847 ms

Loss rate: 0.05%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2018-09-05 21:58:59

End at: 2018-09-05 21:59:29

Local clock offset: 21.326 ms

Remote clock offset: 0.458 ms

Below is generated by plot.py at 2018-09-05 22:08:58

Datalink statistics

-- Total of 1 flow:

Average throughput: 97.25 Mbit/s

95th percentile per-packet one-way delay: 8.851 ms

Loss rate: 0.05%

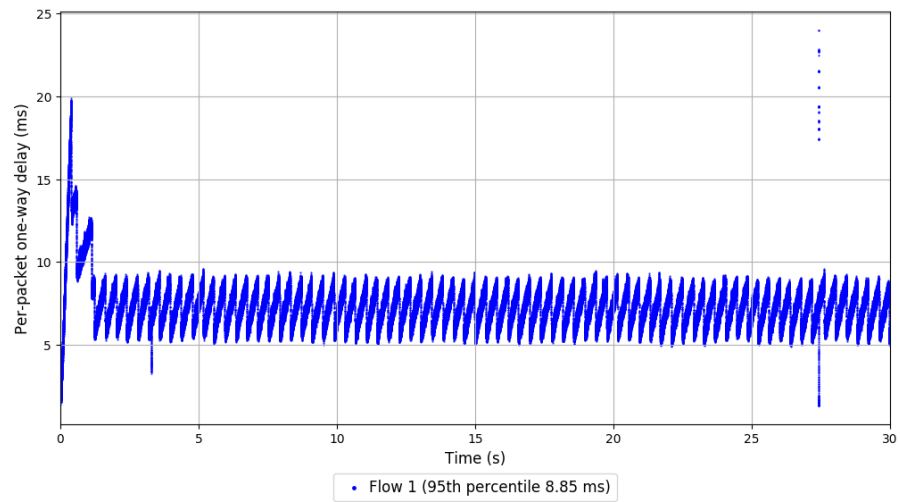
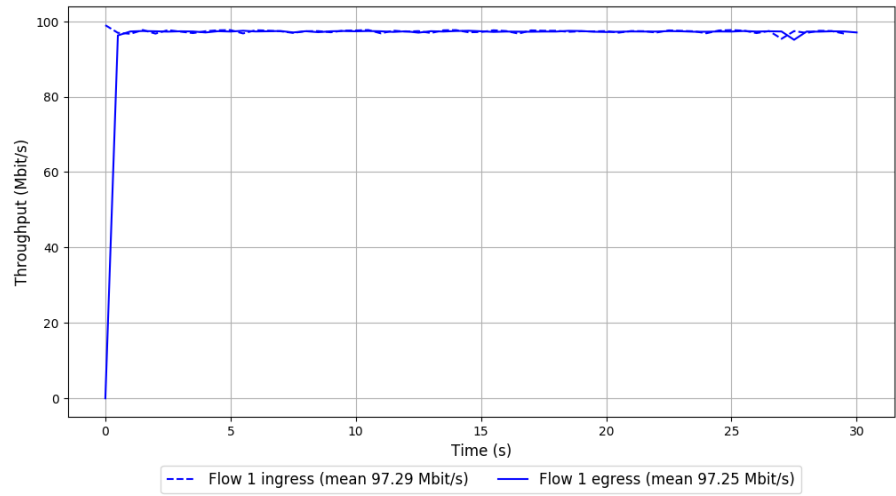
-- Flow 1:

Average throughput: 97.25 Mbit/s

95th percentile per-packet one-way delay: 8.851 ms

Loss rate: 0.05%

Run 2: Report of TCP Cubic — Data Link



Run 3: Statistics of TCP Cubic

Start at: 2018-09-05 22:03:32

End at: 2018-09-05 22:04:02

Local clock offset: 18.443 ms

Remote clock offset: 0.475 ms

Below is generated by plot.py at 2018-09-05 22:08:58

Datalink statistics

-- Total of 1 flow:

Average throughput: 97.24 Mbit/s

95th percentile per-packet one-way delay: 9.821 ms

Loss rate: 0.06%

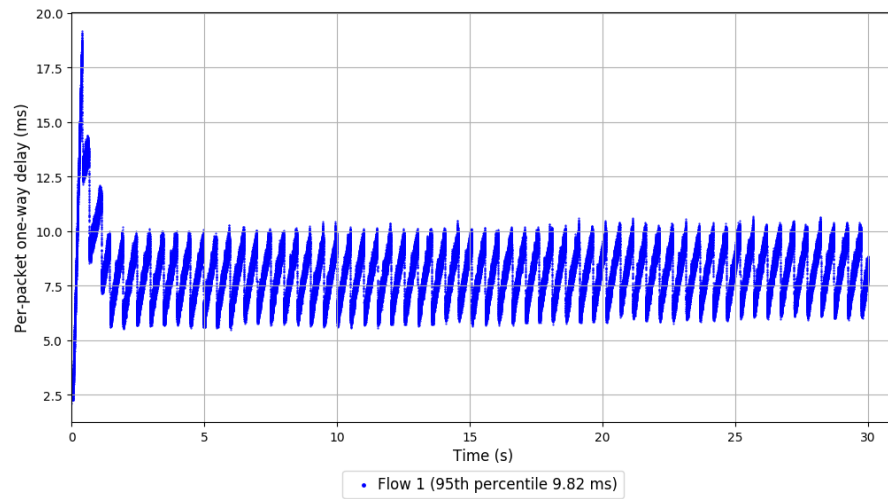
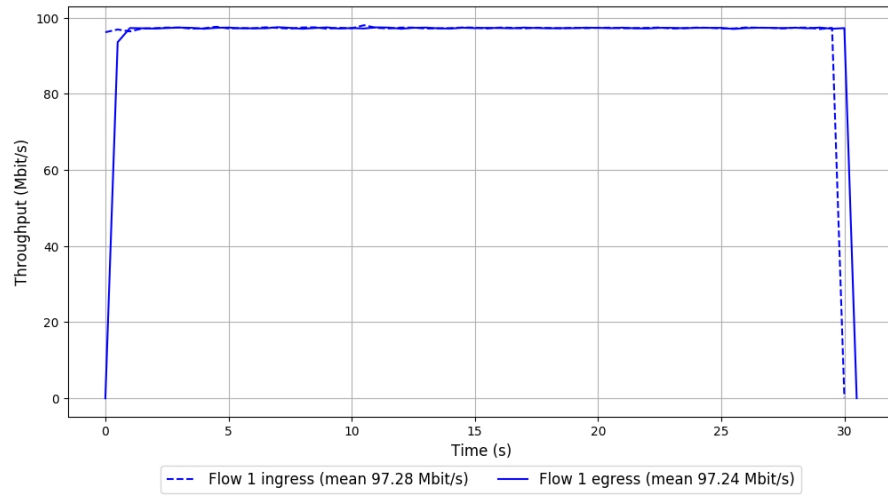
-- Flow 1:

Average throughput: 97.24 Mbit/s

95th percentile per-packet one-way delay: 9.821 ms

Loss rate: 0.06%

Run 3: Report of TCP Cubic — Data Link

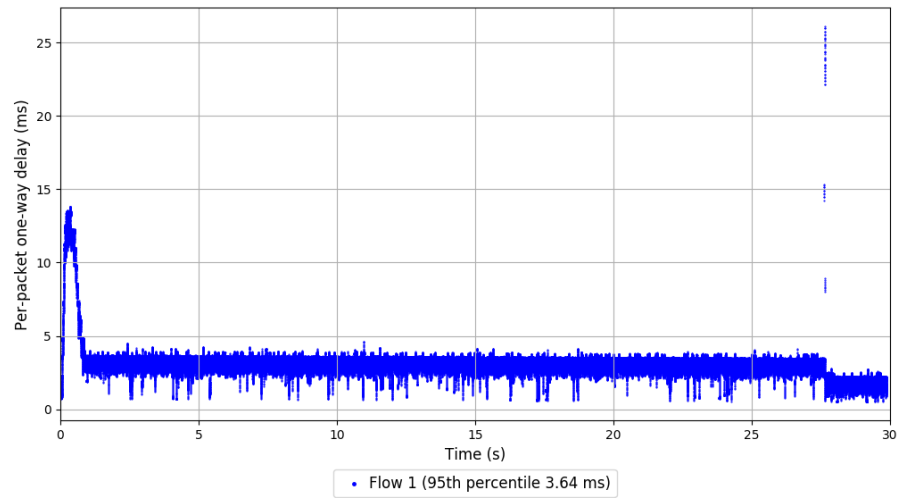
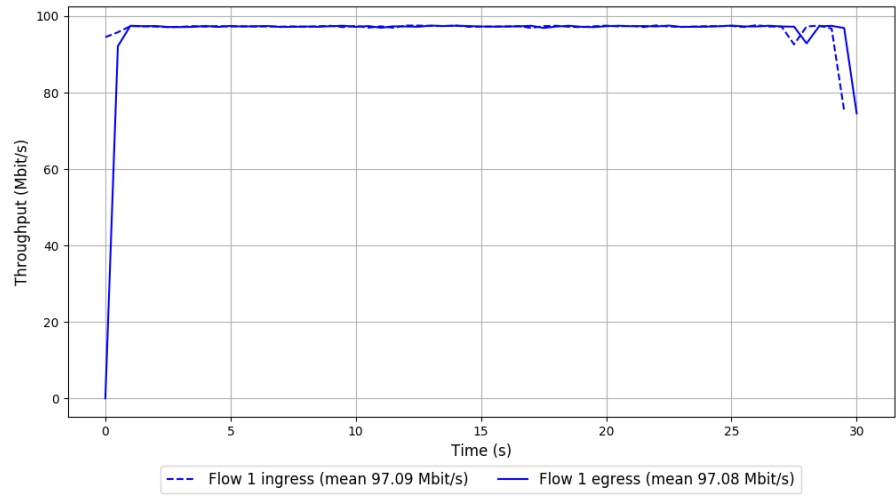


```
Run 1: Statistics of Indigo

Start at: 2018-09-05 21:55:33
End at: 2018-09-05 21:56:03
Local clock offset: 18.995 ms
Remote clock offset: 0.447 ms

# Below is generated by plot.py at 2018-09-05 22:08:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 97.08 Mbit/s
95th percentile per-packet one-way delay: 3.637 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 97.08 Mbit/s
95th percentile per-packet one-way delay: 3.637 ms
Loss rate: 0.02%
```

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2018-09-05 22:00:07

End at: 2018-09-05 22:00:37

Local clock offset: 21.79 ms

Remote clock offset: 0.454 ms

Below is generated by plot.py at 2018-09-05 22:08:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 97.10 Mbit/s

95th percentile per-packet one-way delay: 3.533 ms

Loss rate: 0.01%

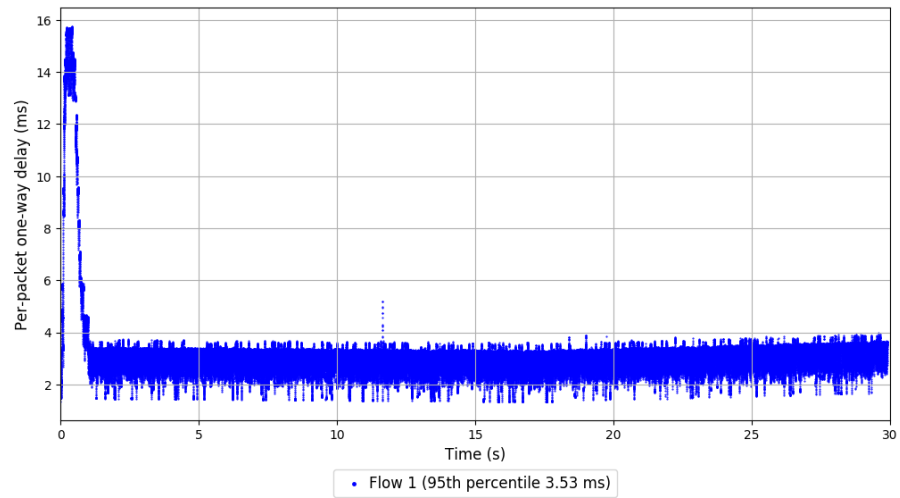
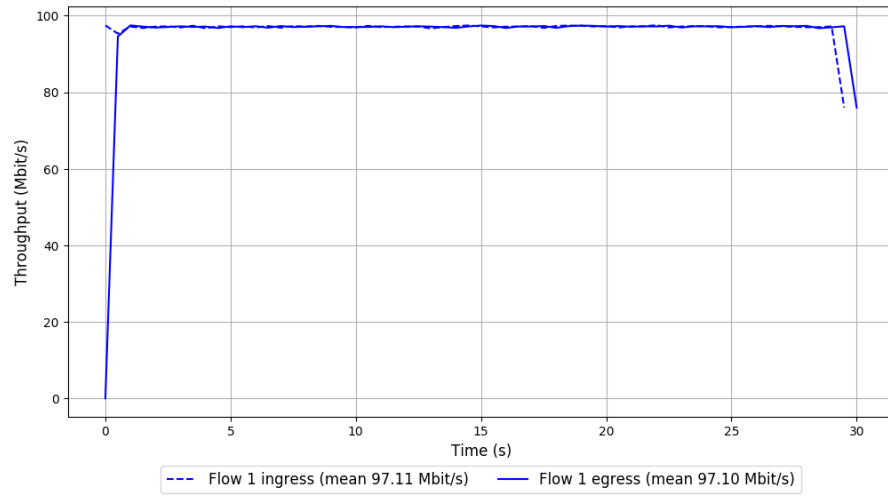
-- Flow 1:

Average throughput: 97.10 Mbit/s

95th percentile per-packet one-way delay: 3.533 ms

Loss rate: 0.01%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2018-09-05 22:04:40

End at: 2018-09-05 22:05:10

Local clock offset: 16.277 ms

Remote clock offset: 0.468 ms

Below is generated by plot.py at 2018-09-05 22:09:32

Datalink statistics

-- Total of 1 flow:

Average throughput: 97.21 Mbit/s

95th percentile per-packet one-way delay: 3.557 ms

Loss rate: 0.01%

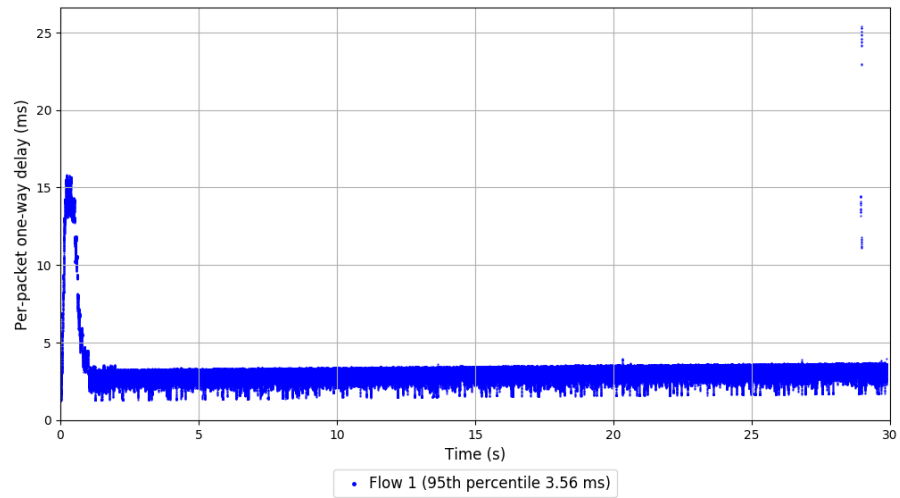
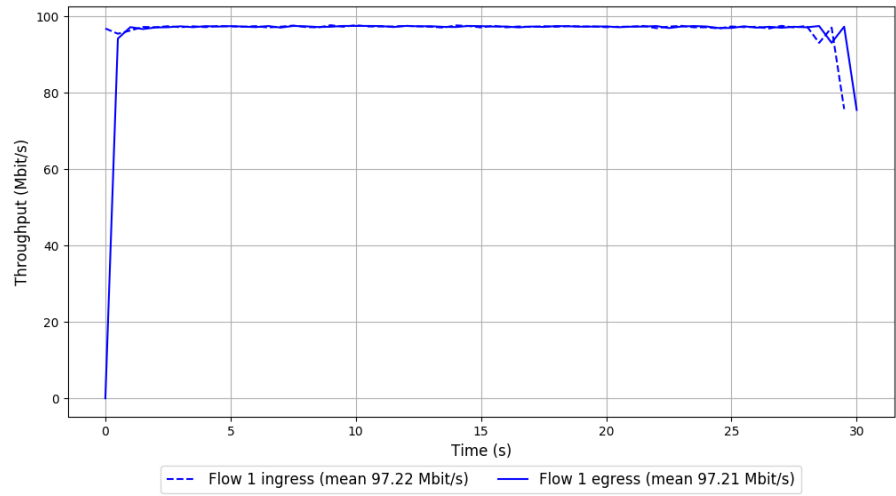
-- Flow 1:

Average throughput: 97.21 Mbit/s

95th percentile per-packet one-way delay: 3.557 ms

Loss rate: 0.01%

Run 3: Report of Indigo — Data Link



Run 1: Statistics of Muses-25

Start at: 2018-09-05 21:57:51

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

Local clock offset: 20.698 ms

Remote clock offset: 0.394 ms

Below is generated by plot.py at 2018-09-05 22:09:33

Datalink statistics

-- Total of 1 flow:

Average throughput: 97.10 Mbit/s

95th percentile per-packet one-way delay: 11.367 ms

Loss rate: 0.04%

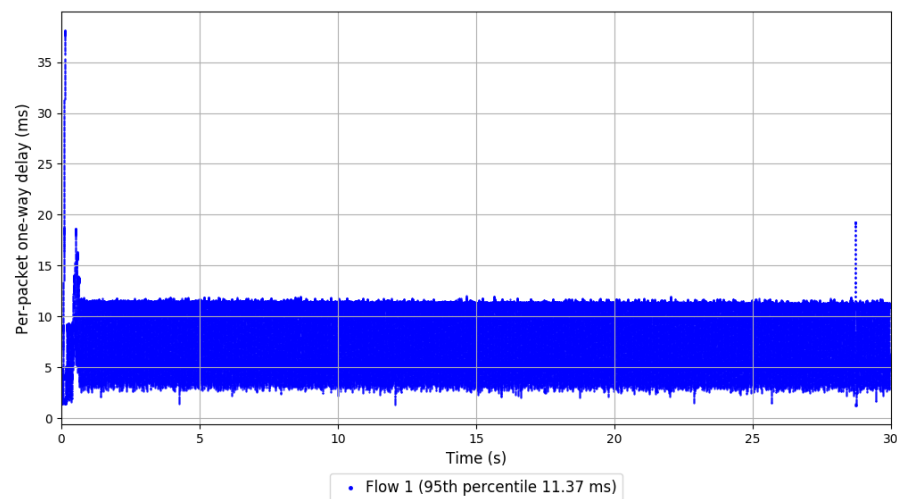
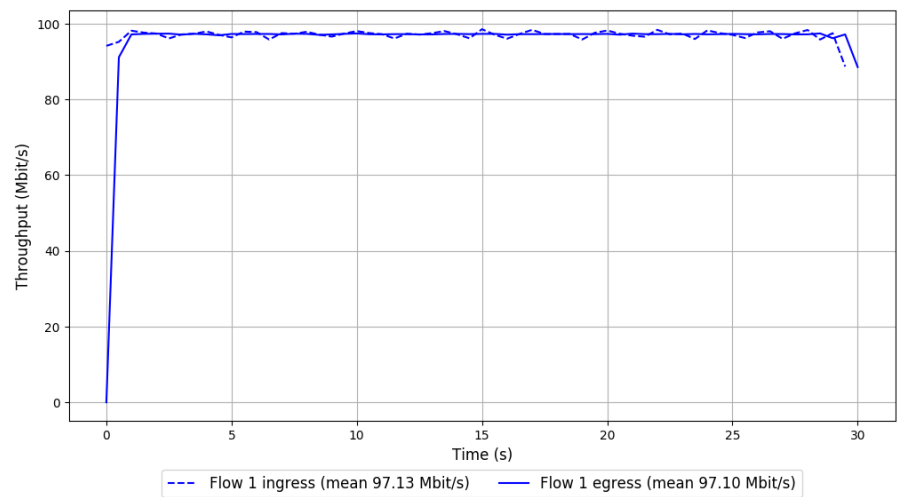
-- Flow 1:

Average throughput: 97.10 Mbit/s

95th percentile per-packet one-way delay: 11.367 ms

Loss rate: 0.04%

Run 1: Report of Muses-25 — Data Link



Run 2: Statistics of Muses-25

Start at: 2018-09-05 22:02:24

End at: 2018-09-05 22:02:54

Local clock offset: 19.663 ms

Remote clock offset: 0.376 ms

Below is generated by plot.py at 2018-09-05 22:09:33

Datalink statistics

-- Total of 1 flow:

Average throughput: 97.11 Mbit/s

95th percentile per-packet one-way delay: 12.648 ms

Loss rate: 0.04%

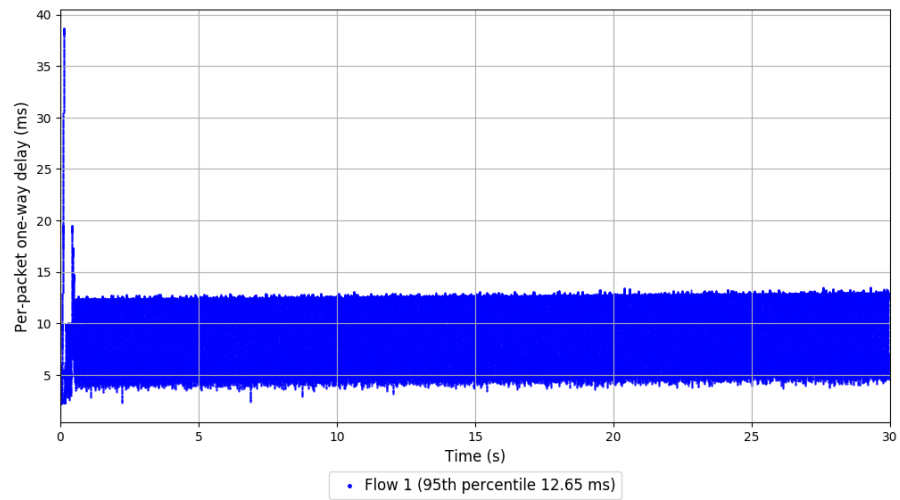
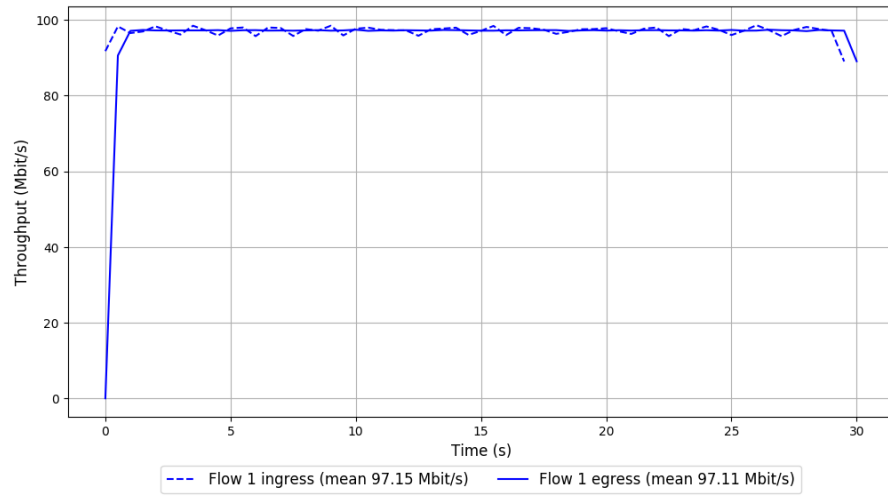
-- Flow 1:

Average throughput: 97.11 Mbit/s

95th percentile per-packet one-way delay: 12.648 ms

Loss rate: 0.04%

Run 2: Report of Muses-25 — Data Link



Run 3: Statistics of Muses-25

Start at: 2018-09-05 22:06:57

End at: 2018-09-05 22:07:28

Local clock offset: 15.128 ms

Remote clock offset: 0.388 ms

Below is generated by plot.py at 2018-09-05 22:09:33

Datalink statistics

-- Total of 1 flow:

Average throughput: 97.35 Mbit/s

95th percentile per-packet one-way delay: 12.166 ms

Loss rate: 0.02%

-- Flow 1:

Average throughput: 97.35 Mbit/s

95th percentile per-packet one-way delay: 12.166 ms

Loss rate: 0.02%

Run 3: Report of Muses-25 — Data Link

