

Pantheon Report

Generated at 2019-01-18 18:43:09 (UTC).

Data path: AWS Brazil 2 on `ens5` (*local*) → Colombia cellular on `ppp0` (*remote*).

Repeated the test of 21 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:

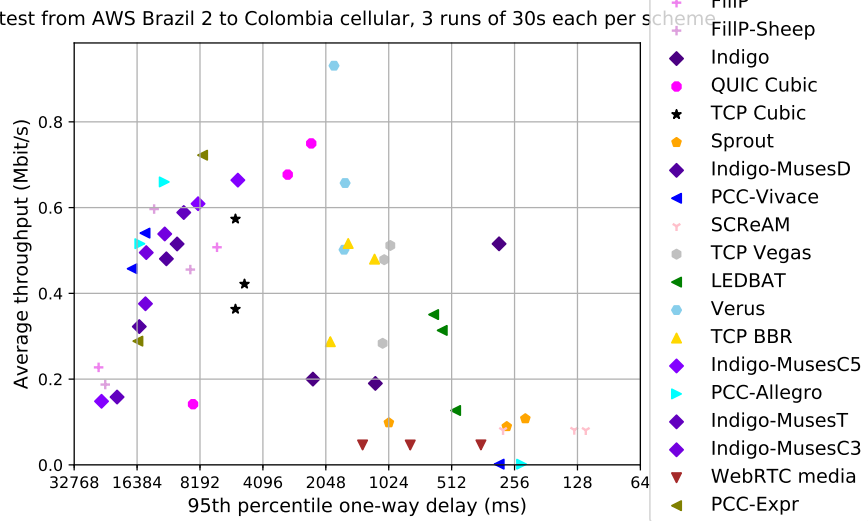
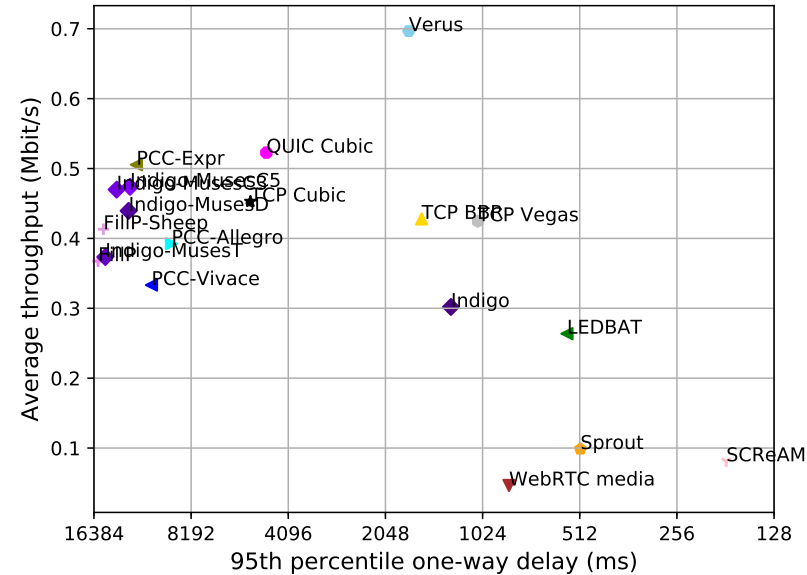
```
Linux 4.15.0-1031-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
```

Git summary:

```
branch: muses @ c80a283586bf7b0cc1fe08c69c8f60d56498f81c
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecd90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ c3eee875824760ec5b2fd207fefe166e1afe2170
third_party/pantheon-tunnel @ f866d3f58d27afd942717625ee3a354cc2e802bd
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-quick @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
M src/ScreamClient
M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
M src/examples/cellsim.cc
M src/examples/sproutbt2.cc
M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
M src/verus.hpp
M tools/plot.py
```

third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851

test from AWS Brazil 2 to Colombia cellular, 3 runs of 30s each per scheme
(mean of all runs by 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	0.43	1582.05	2.19
Copa	0	N/A	N/A	N/A
TCP Cubic	3	0.45	5366.16	24.47
FillP	2	0.37	15910.15	53.67
FillP-Sheep	3	0.42	15320.06	39.25
Indigo	3	0.30	1283.66	0.36
Indigo-MusesC3	3	0.47	13942.56	71.07
Indigo-MusesC5	3	0.47	12668.35	47.28
Indigo-MusesD	3	0.44	12797.20	53.63
Indigo-MusesT	2	0.38	15109.35	59.86
LEDBAT	3	0.26	561.01	0.61
PCC-Allegro	3	0.39	9423.33	65.47
PCC-Expr	2	0.51	12103.99	91.15
QUIC Cubic	3	0.52	4788.63	16.06
SCReAM	3	0.08	179.99	0.26
Sprout	3	0.10	509.60	0.30
TaoVA-100x	0	N/A	N/A	N/A
TCP Vegas	3	0.42	1059.17	0.71
Verus	3	0.70	1734.18	9.84
PCC-Vivace	3	0.33	10872.58	41.40
WebRTC media	3	0.05	848.14	0.00

Run 1: Statistics of TCP BBR

Start at: 2019-01-18 17:48:04

End at: 2019-01-18 17:48:34

Local clock offset: -9.093 ms

Remote clock offset: 0.277 ms

Below is generated by plot.py at 2019-01-18 18:42:35

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.29 Mbit/s

95th percentile per-packet one-way delay: 1948.495 ms

Loss rate: 2.19%

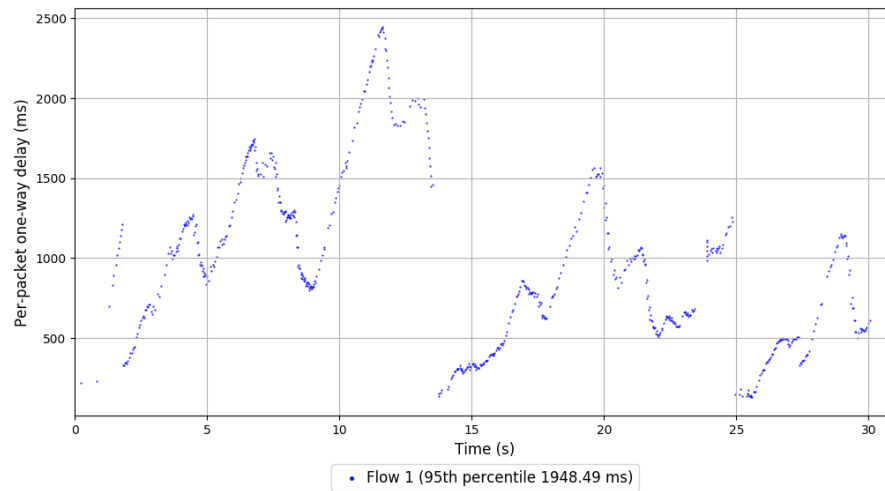
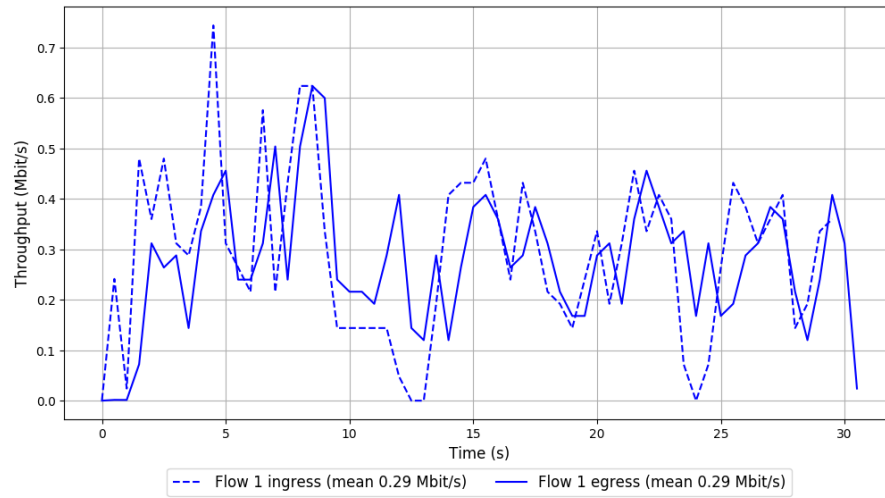
-- Flow 1:

Average throughput: 0.29 Mbit/s

95th percentile per-packet one-way delay: 1948.495 ms

Loss rate: 2.19%

Run 1: Report of TCP BBR — Data Link

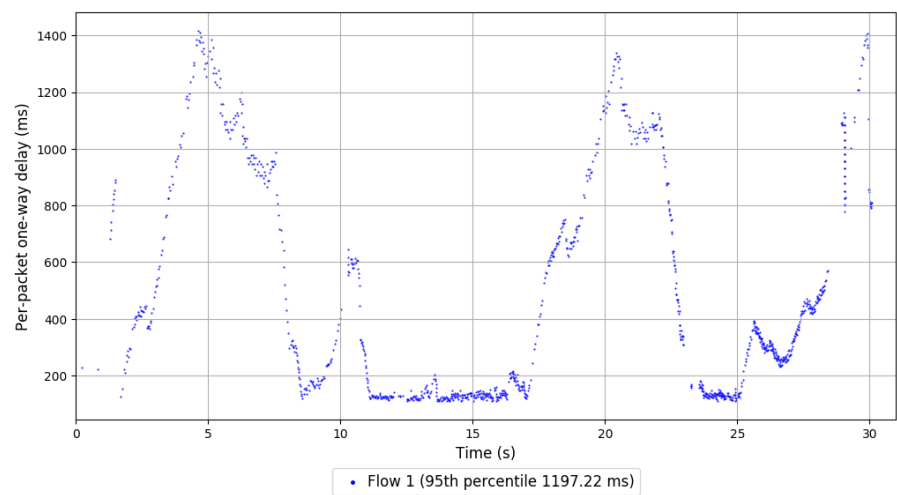
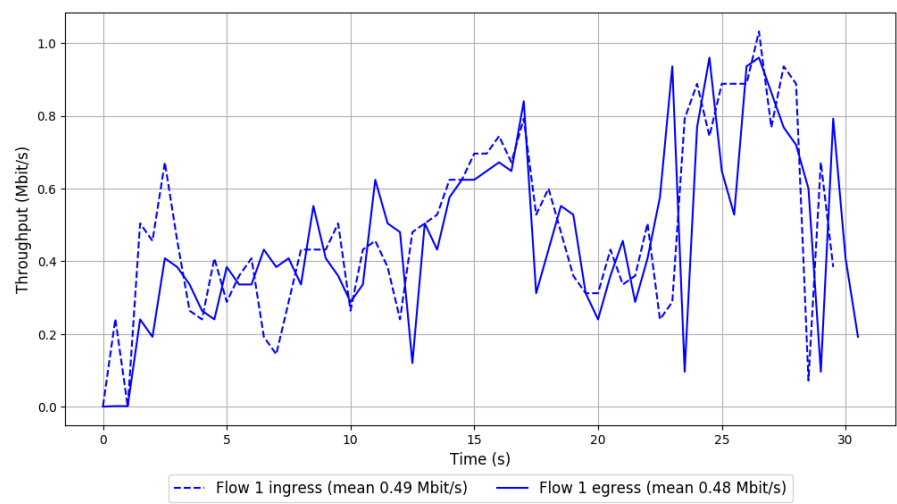


Run 2: Statistics of TCP BBR

Start at: 2019-01-18 18:12:18
End at: 2019-01-18 18:12:48
Local clock offset: -8.737 ms
Remote clock offset: -1.032 ms

Below is generated by plot.py at 2019-01-18 18:42:35
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.48 Mbit/s
95th percentile per-packet one-way delay: 1197.217 ms
Loss rate: 2.69%
-- Flow 1:
Average throughput: 0.48 Mbit/s
95th percentile per-packet one-way delay: 1197.217 ms
Loss rate: 2.69%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2019-01-18 18:36:11

End at: 2019-01-18 18:36:41

Local clock offset: -7.139 ms

Remote clock offset: 7.702 ms

Below is generated by plot.py at 2019-01-18 18:42:36

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.52 Mbit/s

95th percentile per-packet one-way delay: 1600.425 ms

Loss rate: 1.68%

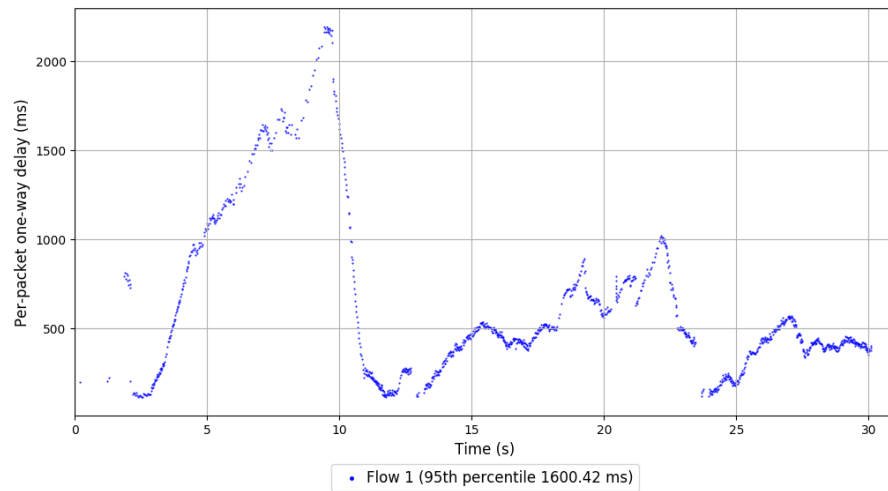
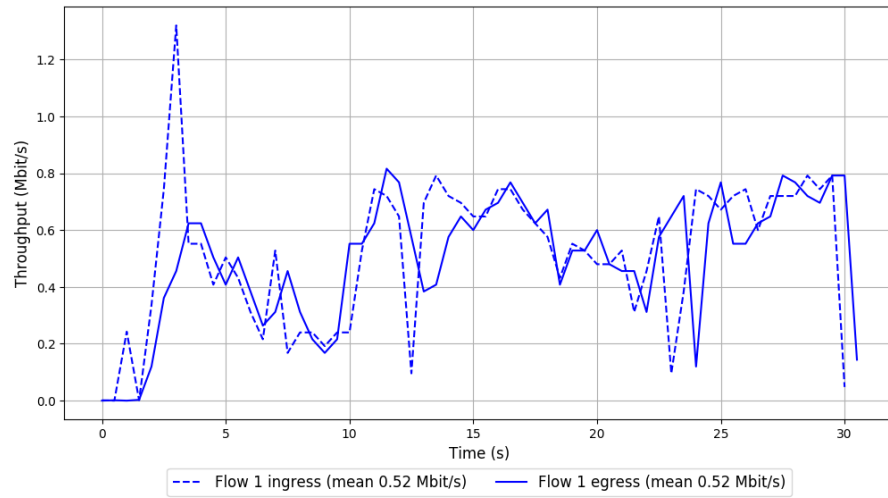
-- Flow 1:

Average throughput: 0.52 Mbit/s

95th percentile per-packet one-way delay: 1600.425 ms

Loss rate: 1.68%

Run 3: Report of TCP BBR — Data Link



Run 1: Statistics of Copa

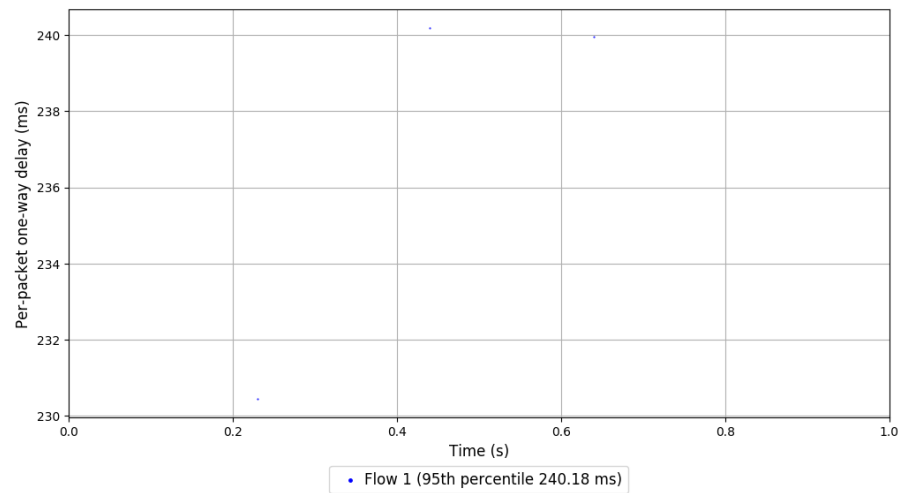
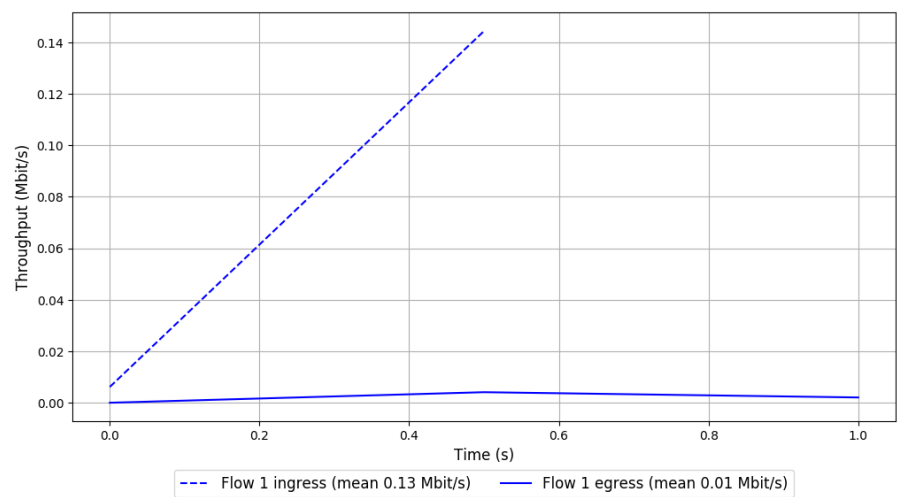
Start at: 2019-01-18 17:51:28

End at: 2019-01-18 17:51:58

Local clock offset: -8.8 ms

Remote clock offset: 5.354 ms

Run 1: Report of Copa — Data Link



Run 2: Statistics of Copa

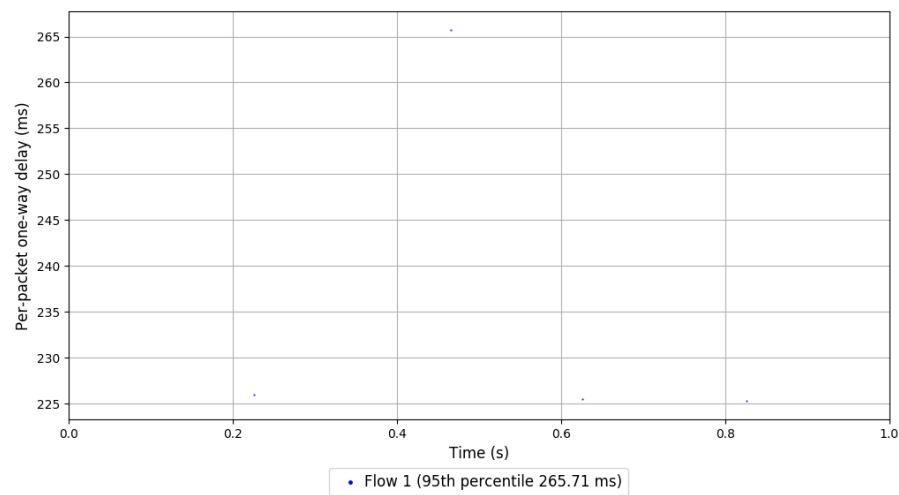
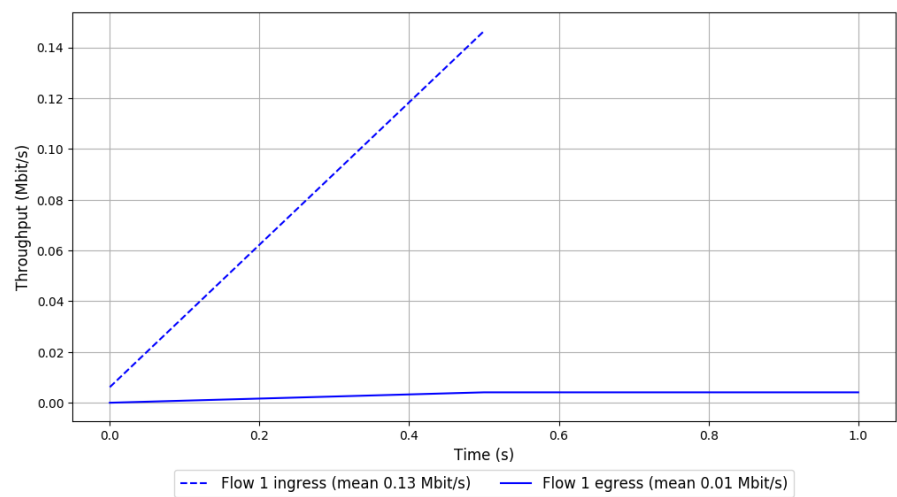
Start at: 2019-01-18 18:15:43

End at: 2019-01-18 18:16:13

Local clock offset: -8.796 ms

Remote clock offset: 0.293 ms

Run 2: Report of Copa — Data Link



Run 3: Statistics of Copa

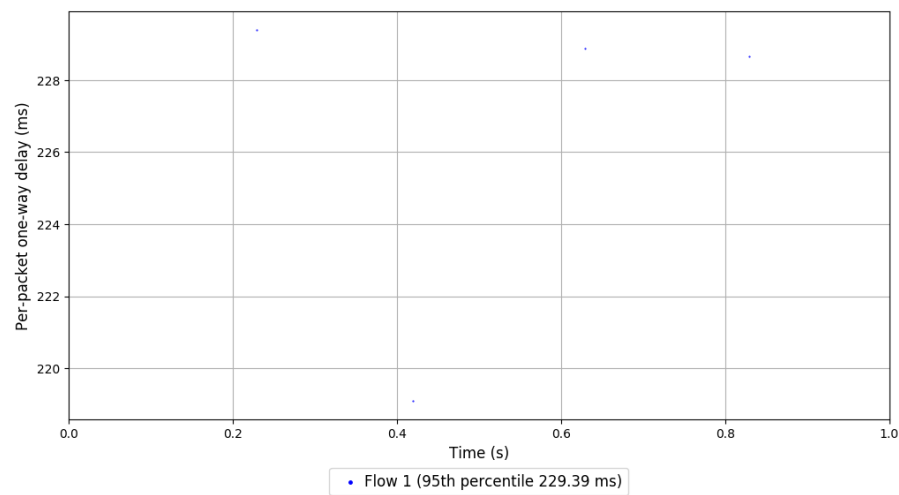
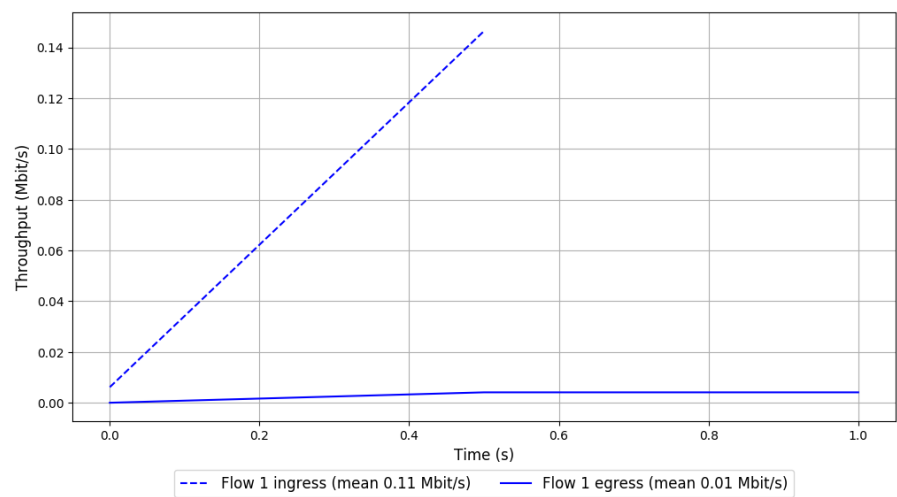
Start at: 2019-01-18 18:39:37

End at: 2019-01-18 18:40:07

Local clock offset: -6.983 ms

Remote clock offset: 3.187 ms

Run 3: Report of Copa — Data Link

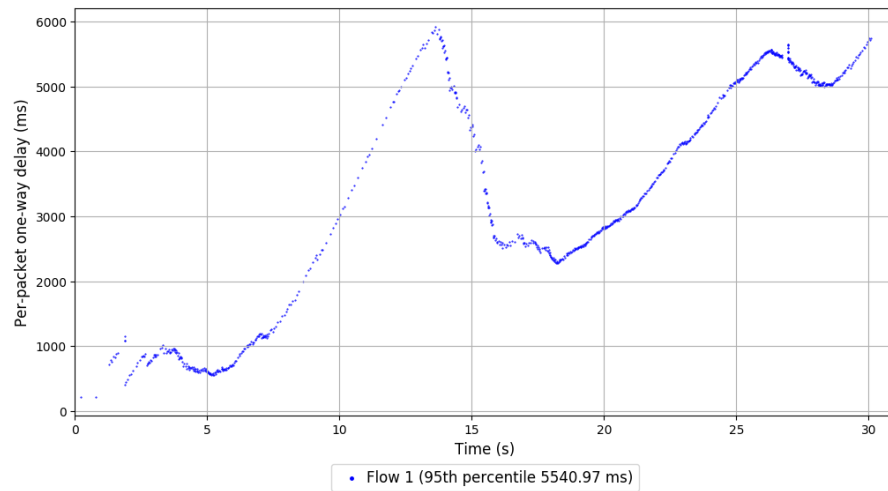
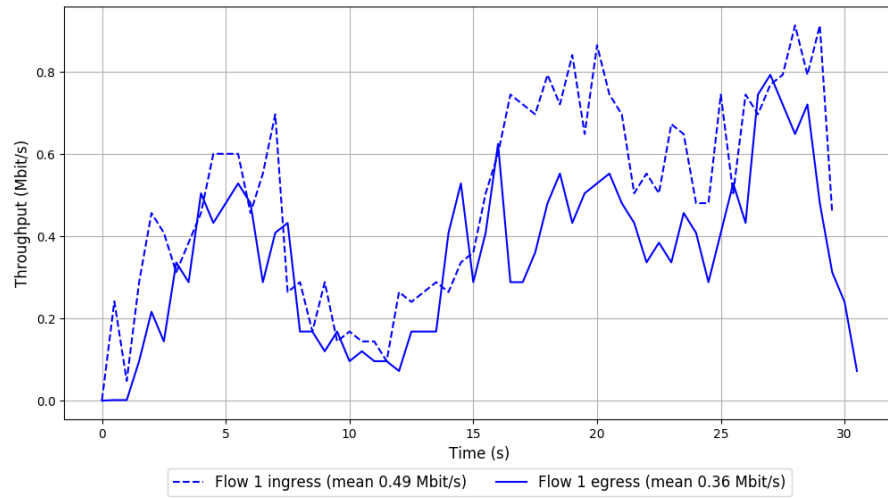


Run 1: Statistics of TCP Cubic

Start at: 2019-01-18 17:38:59
End at: 2019-01-18 17:39:29
Local clock offset: -8.114 ms
Remote clock offset: -0.773 ms

Below is generated by plot.py at 2019-01-18 18:42:36
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 5540.969 ms
Loss rate: 26.56%
-- Flow 1:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 5540.969 ms
Loss rate: 26.56%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2019-01-18 18:03:12

End at: 2019-01-18 18:03:42

Local clock offset: -7.829 ms

Remote clock offset: 0.301 ms

Below is generated by plot.py at 2019-01-18 18:42:36

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.42 Mbit/s

95th percentile per-packet one-way delay: 5016.212 ms

Loss rate: 25.97%

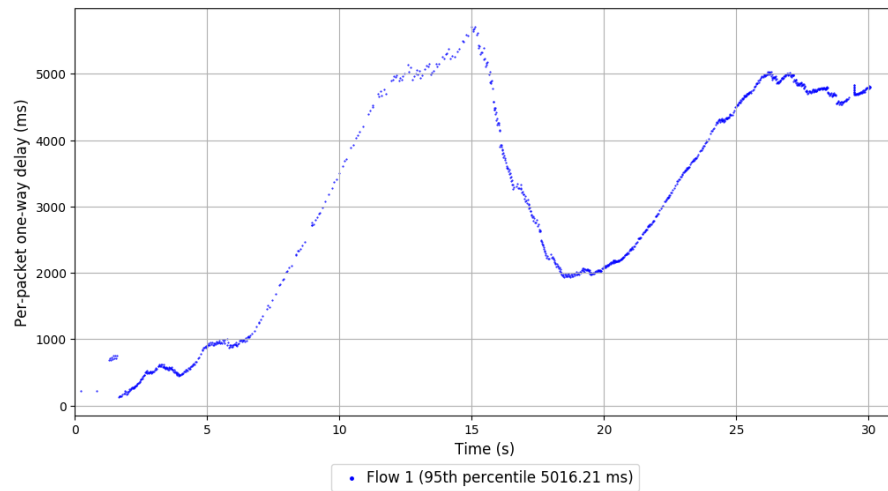
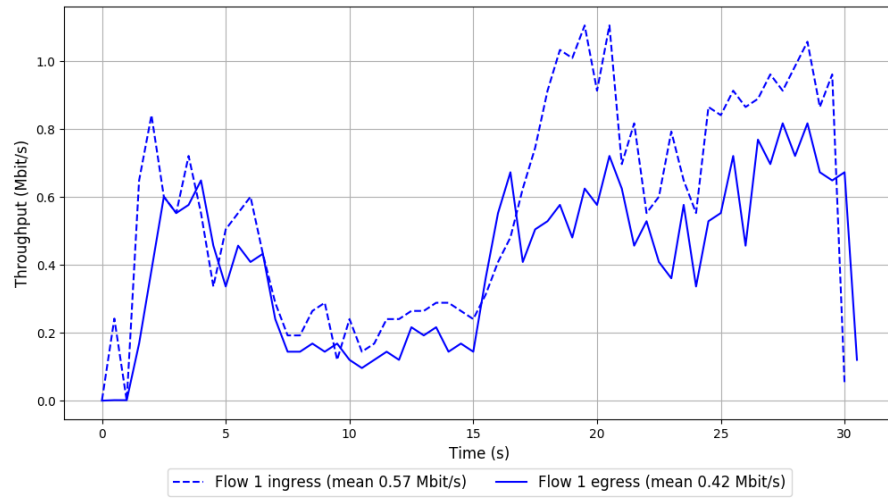
-- Flow 1:

Average throughput: 0.42 Mbit/s

95th percentile per-packet one-way delay: 5016.212 ms

Loss rate: 25.97%

Run 2: Report of TCP Cubic — Data Link



Run 3: Statistics of TCP Cubic

Start at: 2019-01-18 18:27:05

End at: 2019-01-18 18:27:35

Local clock offset: -7.5 ms

Remote clock offset: 2.691 ms

Below is generated by plot.py at 2019-01-18 18:42:38

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 5541.288 ms

Loss rate: 20.88%

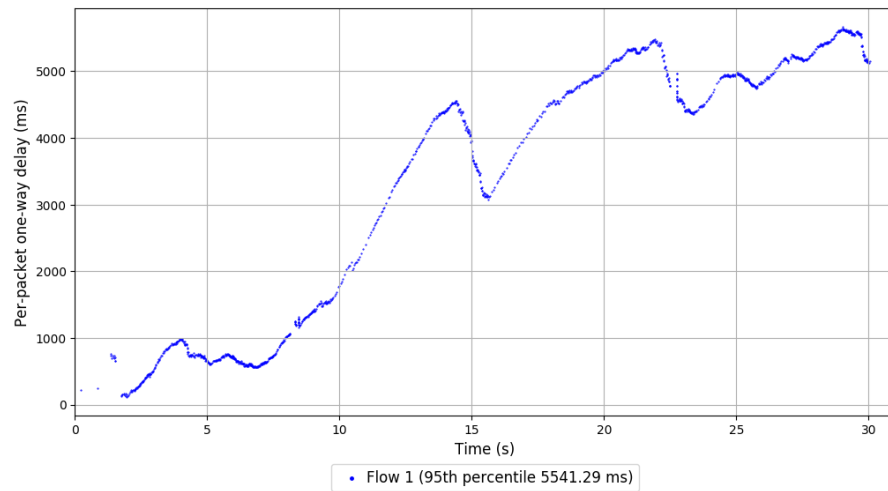
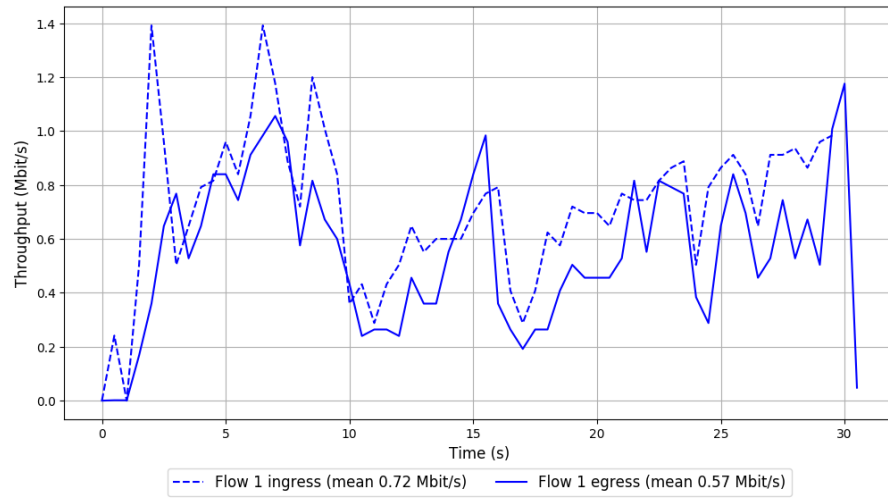
-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 5541.288 ms

Loss rate: 20.88%

Run 3: Report of TCP Cubic — Data Link



Run 1: Statistics of FillP

Start at: 2019-01-18 17:36:42

End at: 2019-01-18 17:37:12

Local clock offset: -7.954 ms

Remote clock offset: 3.169 ms

Below is generated by plot.py at 2019-01-18 18:42:39

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.23 Mbit/s

95th percentile per-packet one-way delay: 25029.400 ms

Loss rate: 77.68%

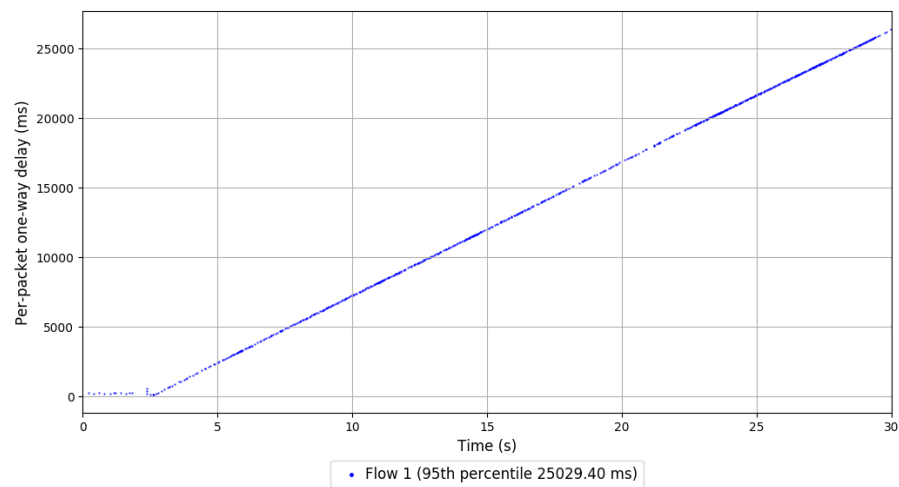
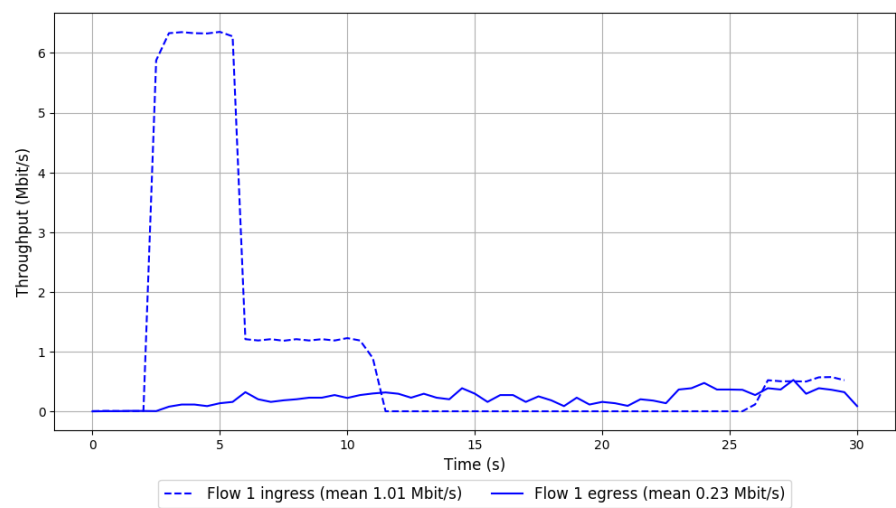
-- Flow 1:

Average throughput: 0.23 Mbit/s

95th percentile per-packet one-way delay: 25029.400 ms

Loss rate: 77.68%

Run 1: Report of FillP — Data Link



Run 2: Statistics of FillP

/home/ubuntu/pantheon/data/2019-01-18T17-30-AWS-Brazil-2-to-Colombia-cellular-3-runs/fillp_s

Run 2: Report of FillP — Data Link

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Figure is missing

Run 3: Statistics of FillP

Start at: 2019-01-18 18:24:49

End at: 2019-01-18 18:25:19

Local clock offset: -6.937 ms

Remote clock offset: 2.414 ms

Below is generated by plot.py at 2019-01-18 18:42:39

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.51 Mbit/s

95th percentile per-packet one-way delay: 6790.896 ms

Loss rate: 29.66%

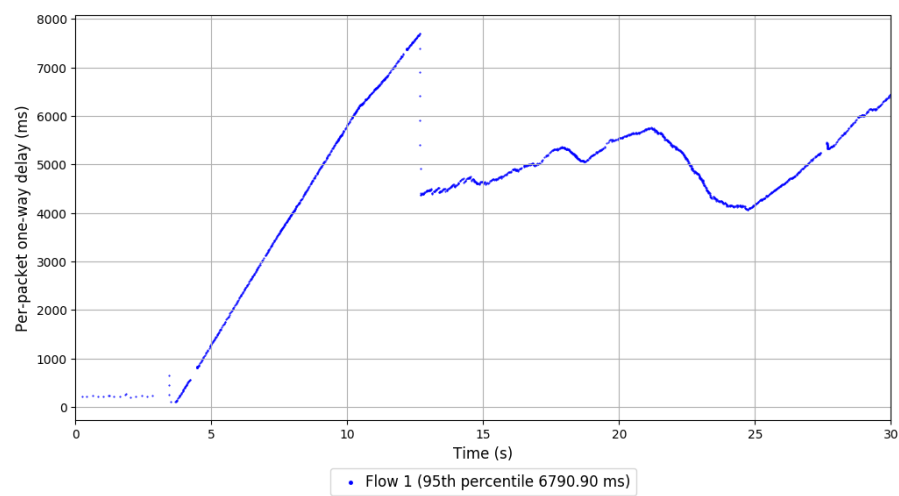
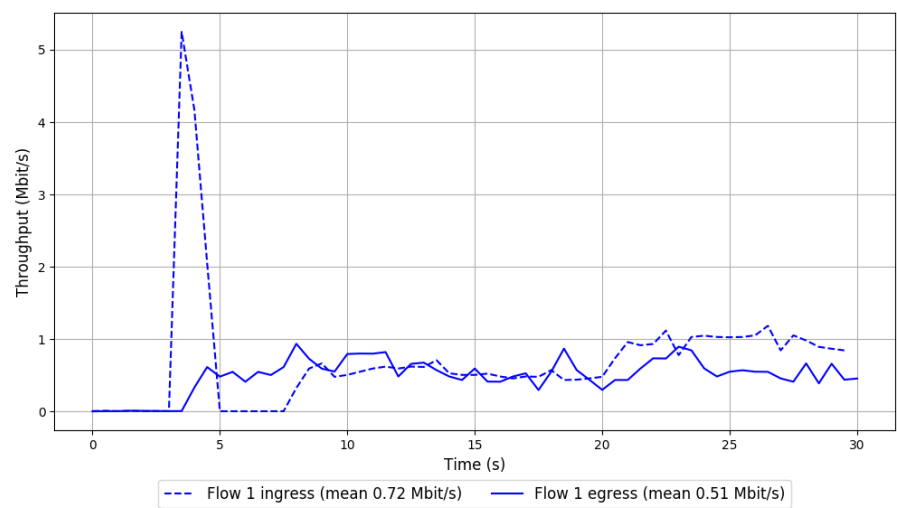
-- Flow 1:

Average throughput: 0.51 Mbit/s

95th percentile per-packet one-way delay: 6790.896 ms

Loss rate: 29.66%

Run 3: Report of FillP — Data Link



Run 1: Statistics of FillP-Sheep

Start at: 2019-01-18 17:34:26

End at: 2019-01-18 17:34:56

Local clock offset: -8.694 ms

Remote clock offset: 4.232 ms

Below is generated by plot.py at 2019-01-18 18:42:39

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.46 Mbit/s

95th percentile per-packet one-way delay: 9112.546 ms

Loss rate: 15.77%

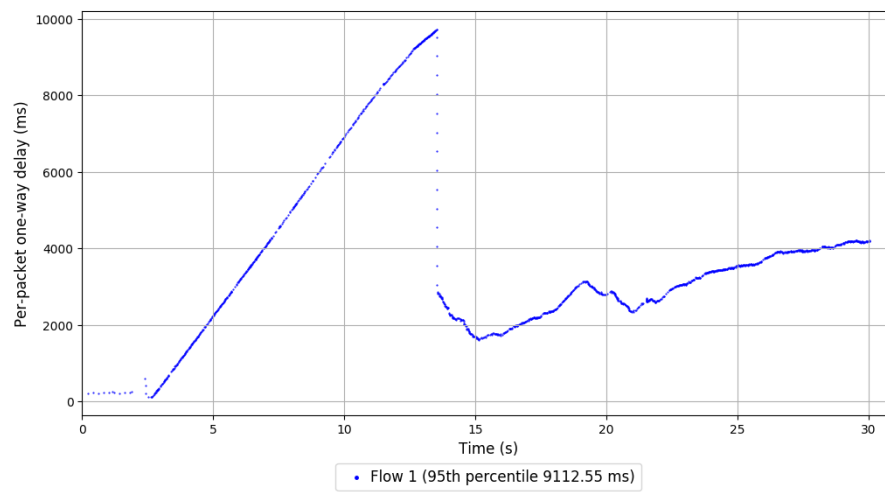
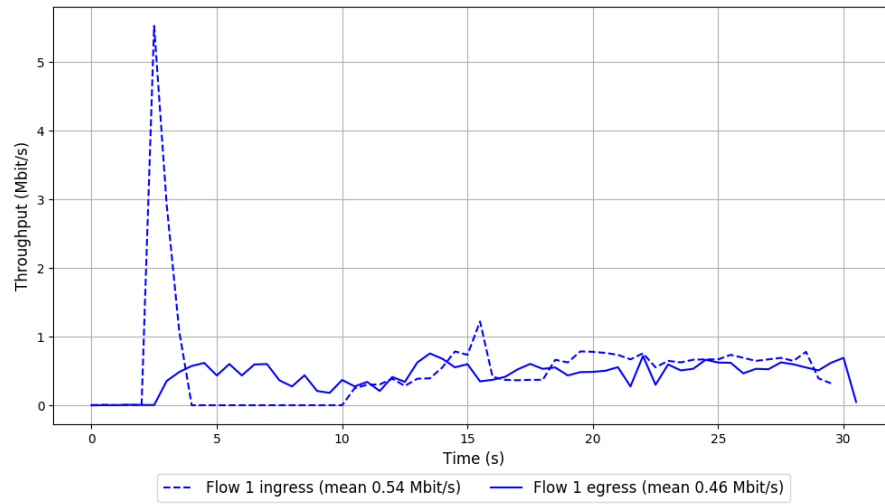
-- Flow 1:

Average throughput: 0.46 Mbit/s

95th percentile per-packet one-way delay: 9112.546 ms

Loss rate: 15.77%

Run 1: Report of FillP-Sheep — Data Link



Run 2: Statistics of FillP-Sheep

Start at: 2019-01-18 17:58:17

End at: 2019-01-18 17:58:47

Local clock offset: -7.951 ms

Remote clock offset: 4.138 ms

Below is generated by plot.py at 2019-01-18 18:42:40

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.19 Mbit/s

95th percentile per-packet one-way delay: 23269.610 ms

Loss rate: 92.70%

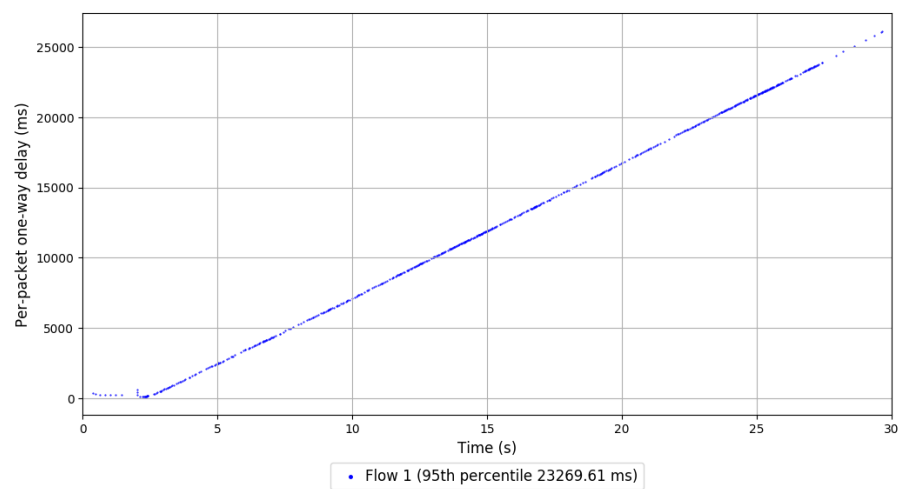
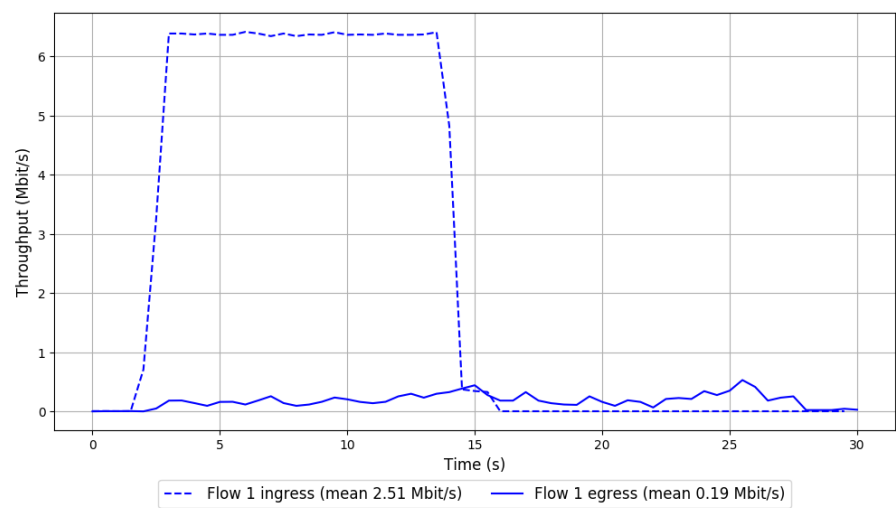
-- Flow 1:

Average throughput: 0.19 Mbit/s

95th percentile per-packet one-way delay: 23269.610 ms

Loss rate: 92.70%

Run 2: Report of FillP-Sheep — Data Link



Run 3: Statistics of FillP-Sheep

Start at: 2019-01-18 18:22:32

End at: 2019-01-18 18:23:02

Local clock offset: -7.163 ms

Remote clock offset: 4.219 ms

Below is generated by plot.py at 2019-01-18 18:42:40

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.60 Mbit/s

95th percentile per-packet one-way delay: 13578.027 ms

Loss rate: 9.28%

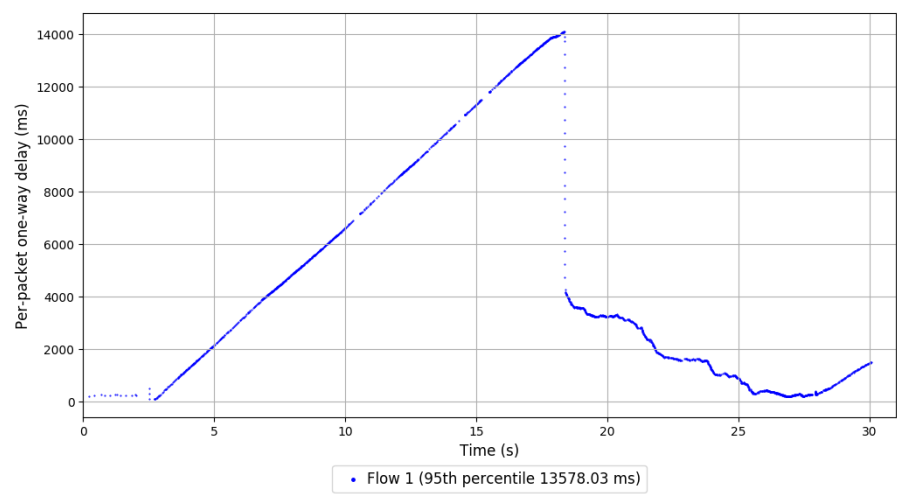
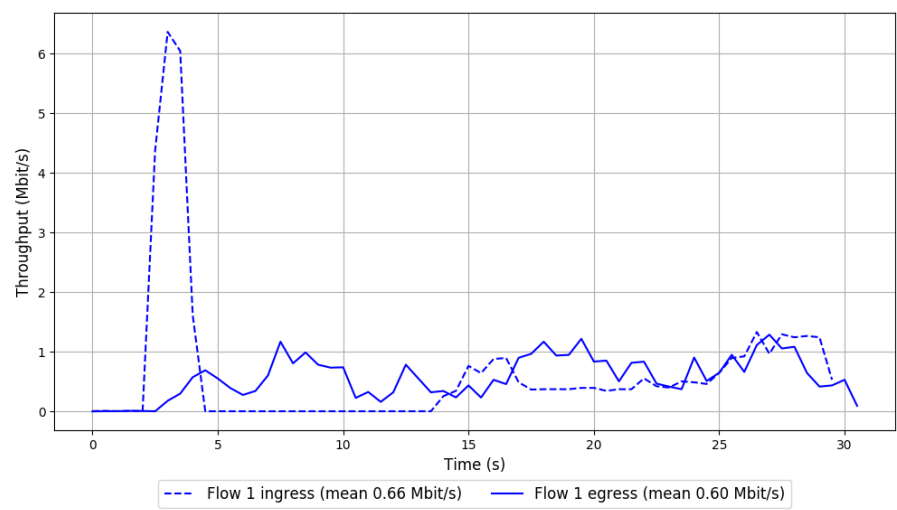
-- Flow 1:

Average throughput: 0.60 Mbit/s

95th percentile per-packet one-way delay: 13578.027 ms

Loss rate: 9.28%

Run 3: Report of FillP-Sheep — Data Link

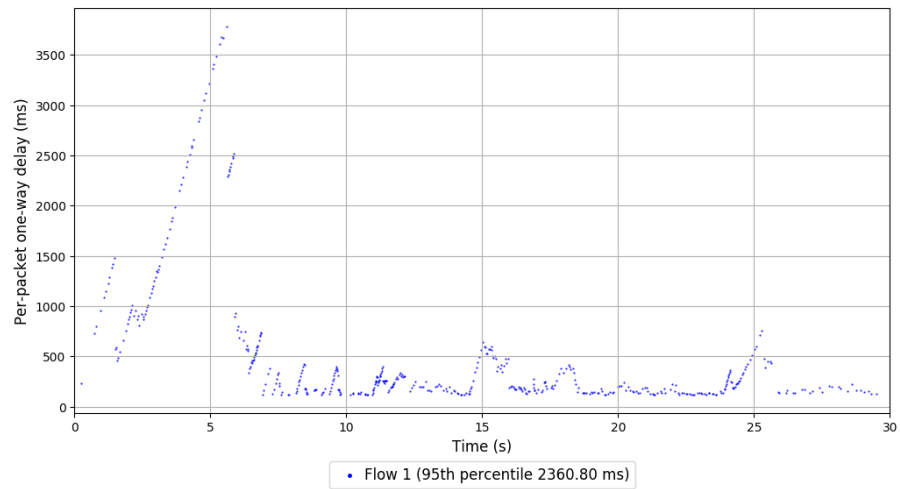
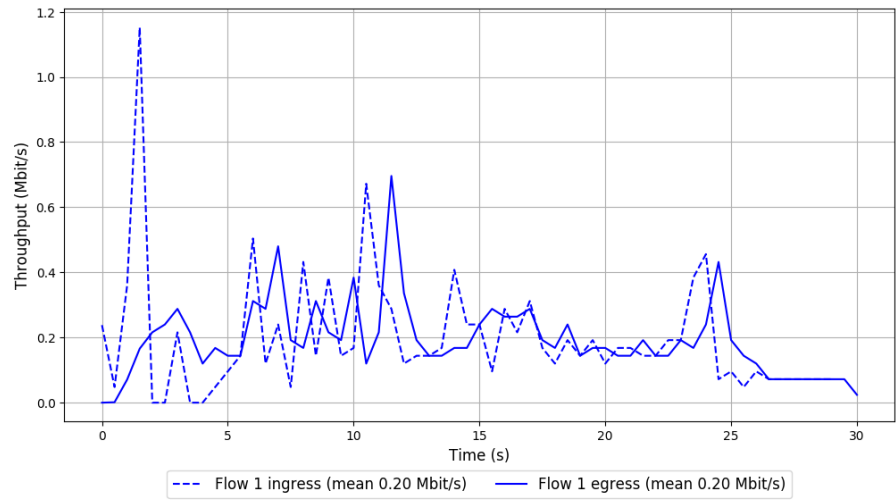


Run 1: Statistics of Indigo

Start at: 2019-01-18 17:37:51
End at: 2019-01-18 17:38:21
Local clock offset: -8.018 ms
Remote clock offset: -0.555 ms

Below is generated by plot.py at 2019-01-18 18:42:40
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 2360.796 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 2360.796 ms
Loss rate: 0.00%

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2019-01-18 18:02:04

End at: 2019-01-18 18:02:34

Local clock offset: -7.904 ms

Remote clock offset: 4.148 ms

Below is generated by plot.py at 2019-01-18 18:42:40

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.19 Mbit/s

95th percentile per-packet one-way delay: 1186.564 ms

Loss rate: 0.22%

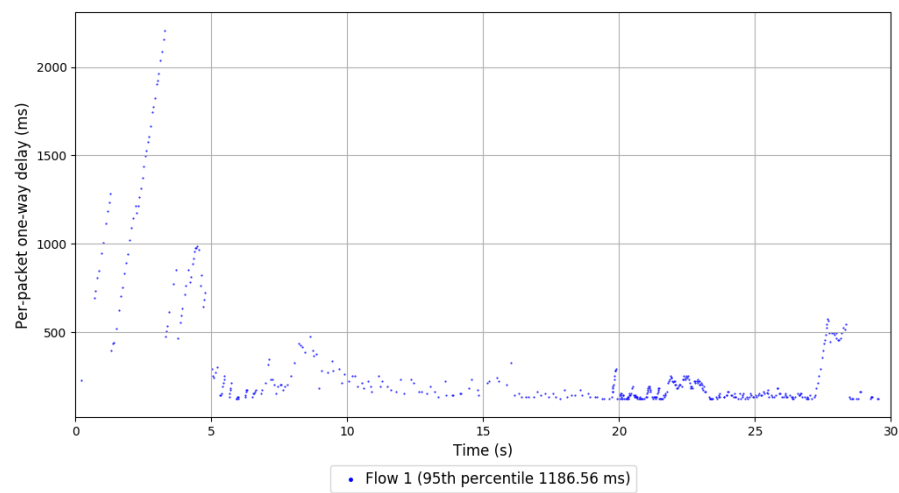
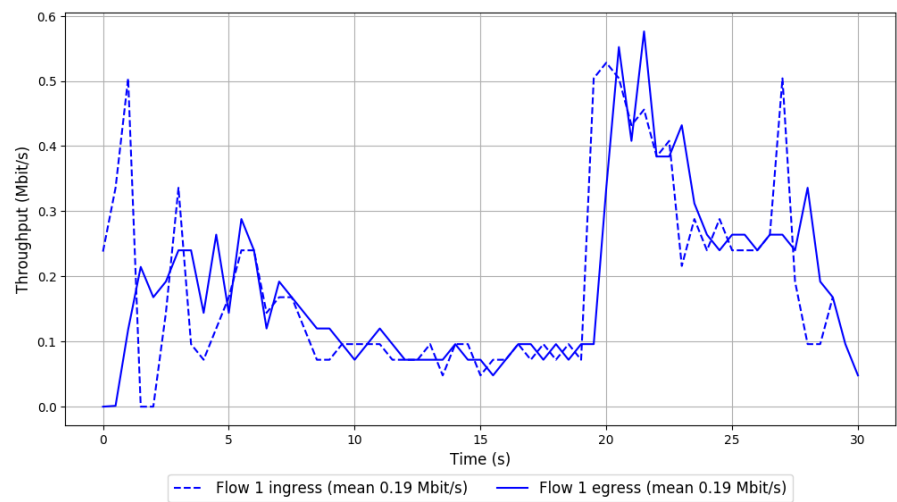
-- Flow 1:

Average throughput: 0.19 Mbit/s

95th percentile per-packet one-way delay: 1186.564 ms

Loss rate: 0.22%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2019-01-18 18:25:57

End at: 2019-01-18 18:26:27

Local clock offset: -7.65 ms

Remote clock offset: 6.366 ms

Below is generated by plot.py at 2019-01-18 18:42:42

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.52 Mbit/s

95th percentile per-packet one-way delay: 303.618 ms

Loss rate: 0.87%

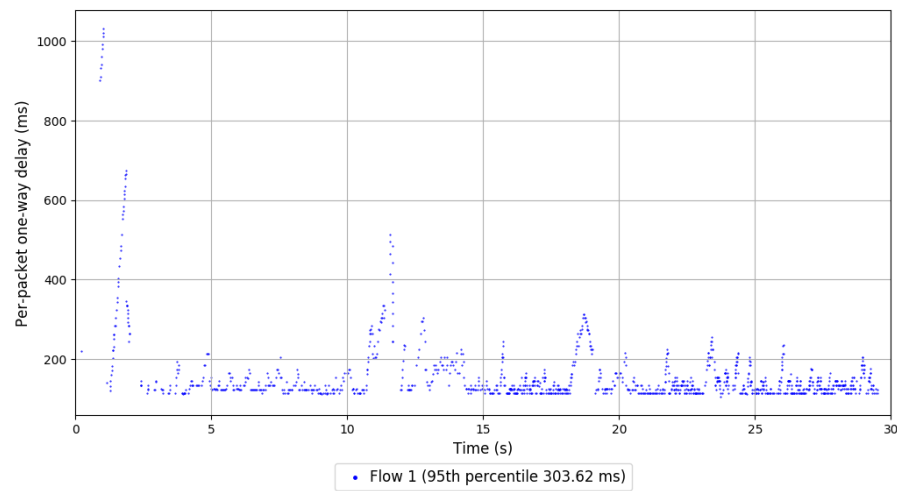
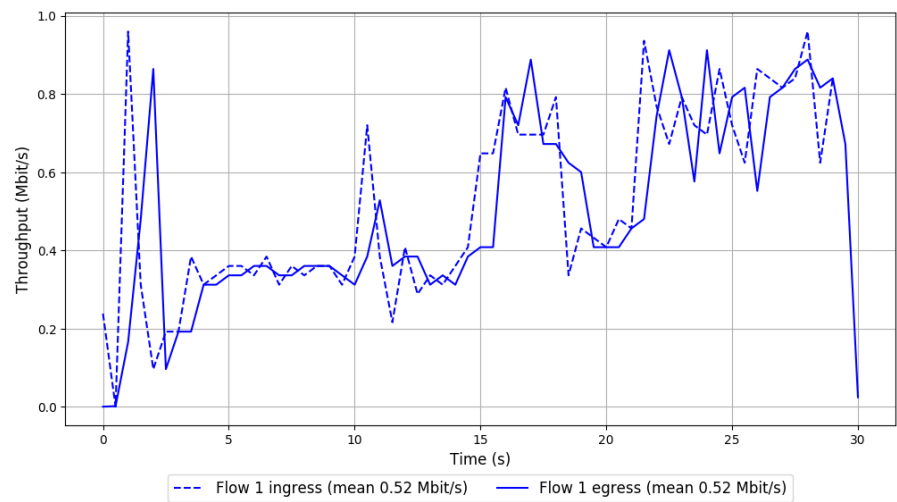
-- Flow 1:

Average throughput: 0.52 Mbit/s

95th percentile per-packet one-way delay: 303.618 ms

Loss rate: 0.87%

Run 3: Report of Indigo — Data Link



Run 1: Statistics of Indigo-MusesC3

Start at: 2019-01-18 17:42:23

End at: 2019-01-18 17:42:53

Local clock offset: -9.016 ms

Remote clock offset: 3.15 ms

Below is generated by plot.py at 2019-01-18 18:42:43

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.50 Mbit/s

95th percentile per-packet one-way delay: 14807.767 ms

Loss rate: 57.26%

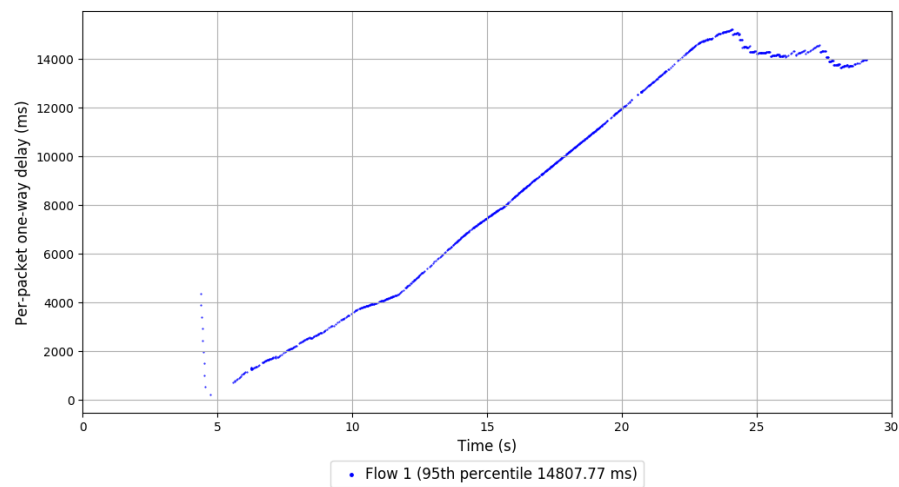
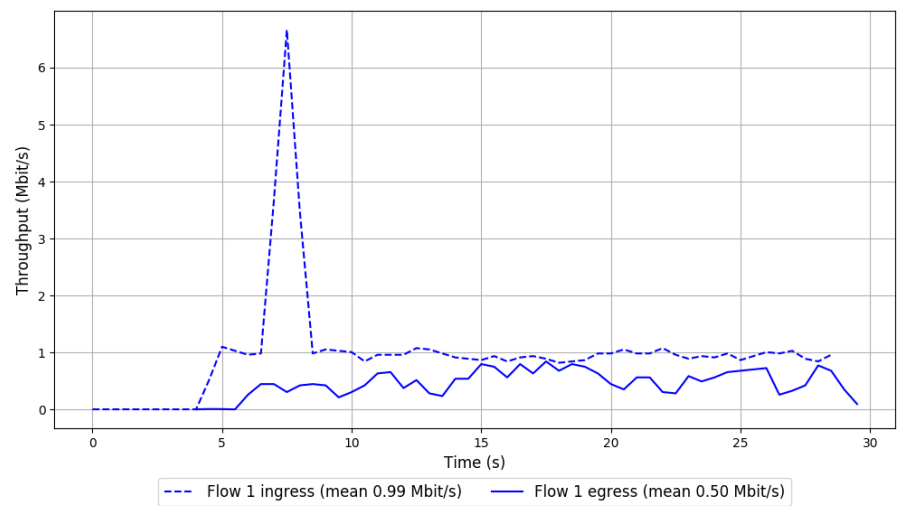
-- Flow 1:

Average throughput: 0.50 Mbit/s

95th percentile per-packet one-way delay: 14807.767 ms

Loss rate: 57.26%

Run 1: Report of Indigo-MusesC3 — Data Link



Run 2: Statistics of Indigo-MusesC3

Start at: 2019-01-18 18:06:36

End at: 2019-01-18 18:07:06

Local clock offset: -7.866 ms

Remote clock offset: -0.74 ms

Below is generated by plot.py at 2019-01-18 18:42:47

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.54 Mbit/s

95th percentile per-packet one-way delay: 12081.444 ms

Loss rate: 94.25%

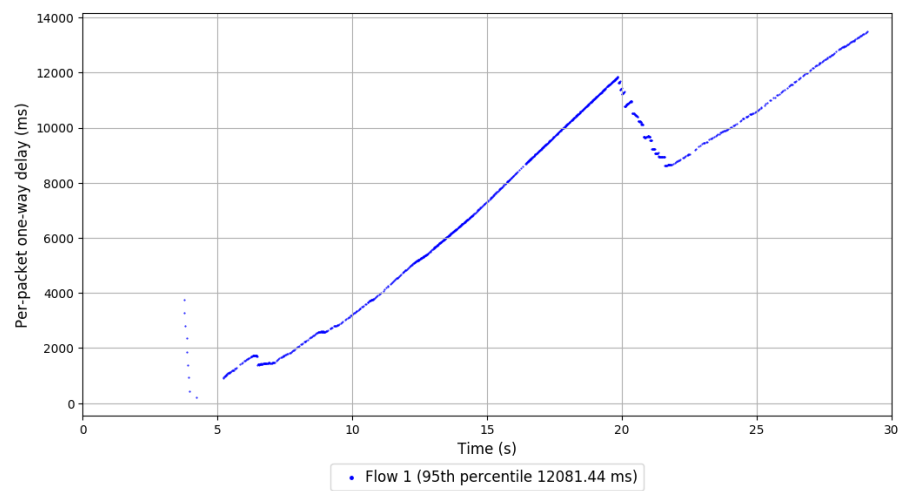
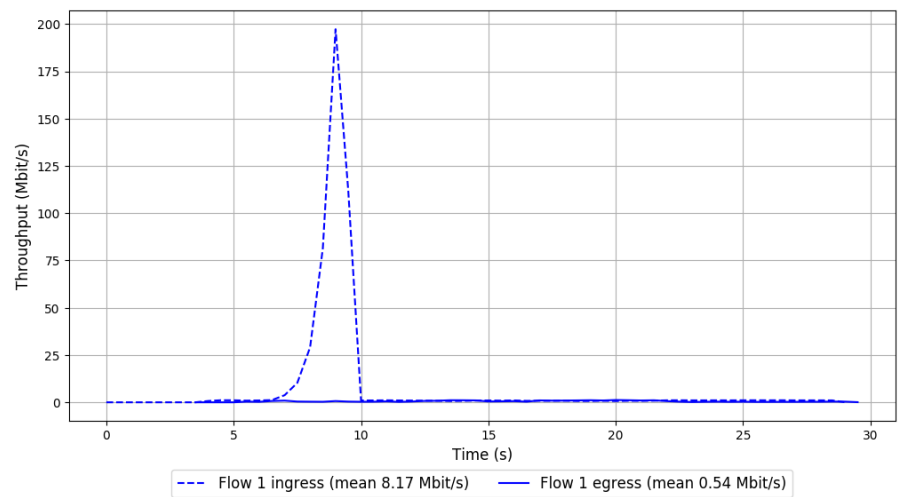
-- Flow 1:

Average throughput: 0.54 Mbit/s

95th percentile per-packet one-way delay: 12081.444 ms

Loss rate: 94.25%

Run 2: Report of Indigo-MusesC3 — Data Link



Run 3: Statistics of Indigo-MusesC3

Start at: 2019-01-18 18:30:29

End at: 2019-01-18 18:30:59

Local clock offset: -6.61 ms

Remote clock offset: 7.248 ms

Below is generated by plot.py at 2019-01-18 18:42:47

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.38 Mbit/s

95th percentile per-packet one-way delay: 14938.454 ms

Loss rate: 61.71%

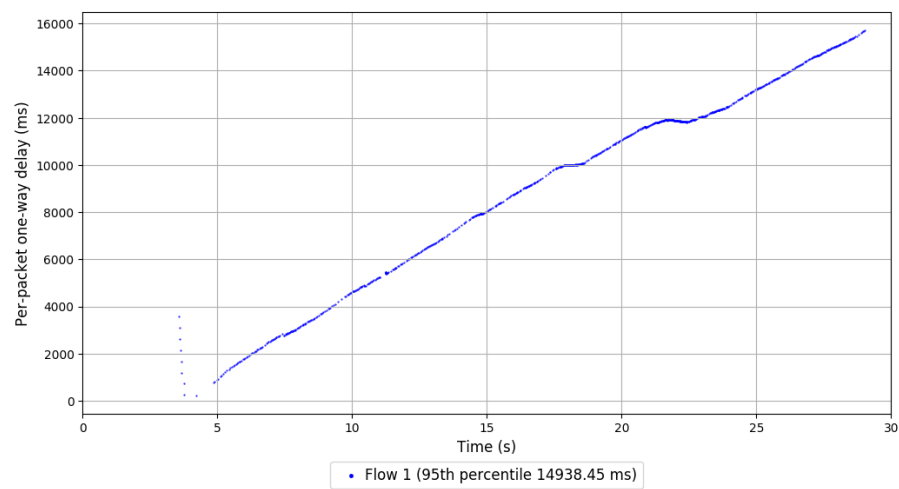
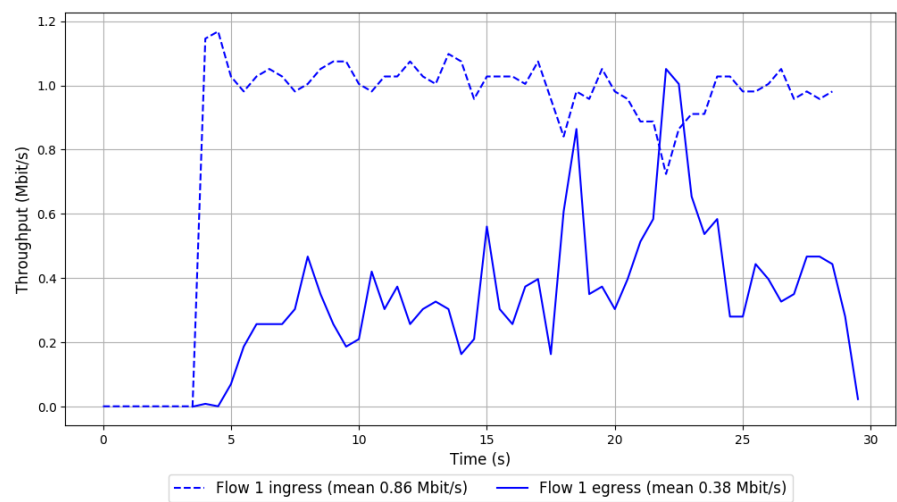
-- Flow 1:

Average throughput: 0.38 Mbit/s

95th percentile per-packet one-way delay: 14938.454 ms

Loss rate: 61.71%

Run 3: Report of Indigo-MusesC3 — Data Link



Run 1: Statistics of Indigo-MusesC5

Start at: 2019-01-18 17:46:56

End at: 2019-01-18 17:47:26

Local clock offset: -8.391 ms

Remote clock offset: 0.283 ms

Below is generated by plot.py at 2019-01-18 18:42:47

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.15 Mbit/s

95th percentile per-packet one-way delay: 24239.660 ms

Loss rate: 86.39%

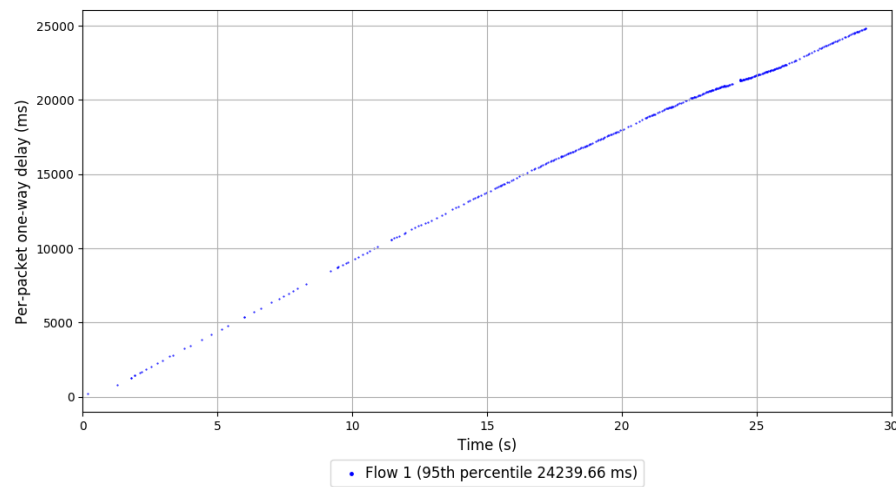
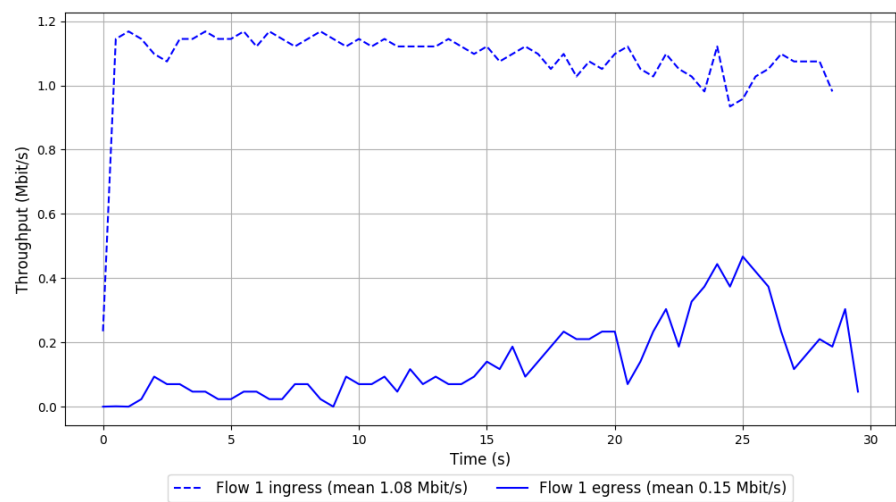
-- Flow 1:

Average throughput: 0.15 Mbit/s

95th percentile per-packet one-way delay: 24239.660 ms

Loss rate: 86.39%

Run 1: Report of Indigo-MusesC5 — Data Link



Run 2: Statistics of Indigo-MusesC5

Start at: 2019-01-18 18:11:10

End at: 2019-01-18 18:11:40

Local clock offset: -8.705 ms

Remote clock offset: 4.03 ms

Below is generated by plot.py at 2019-01-18 18:42:47

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.66 Mbit/s

95th percentile per-packet one-way delay: 5398.054 ms

Loss rate: 23.60%

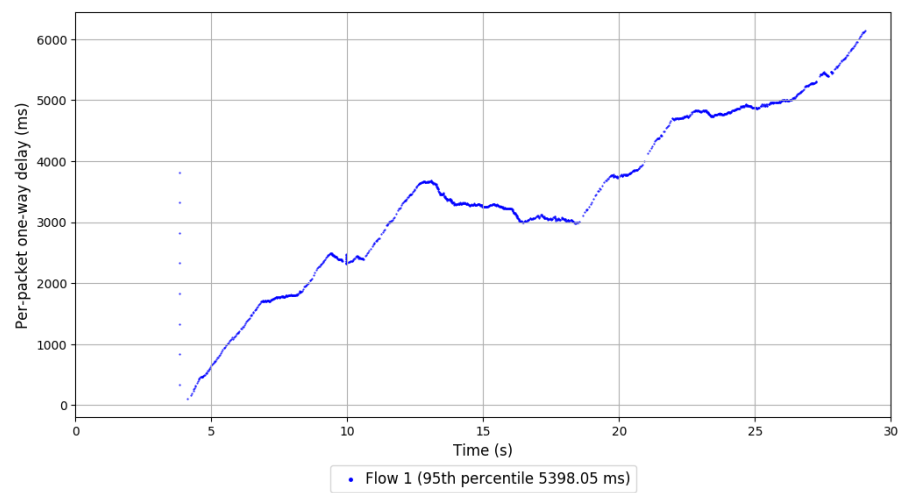
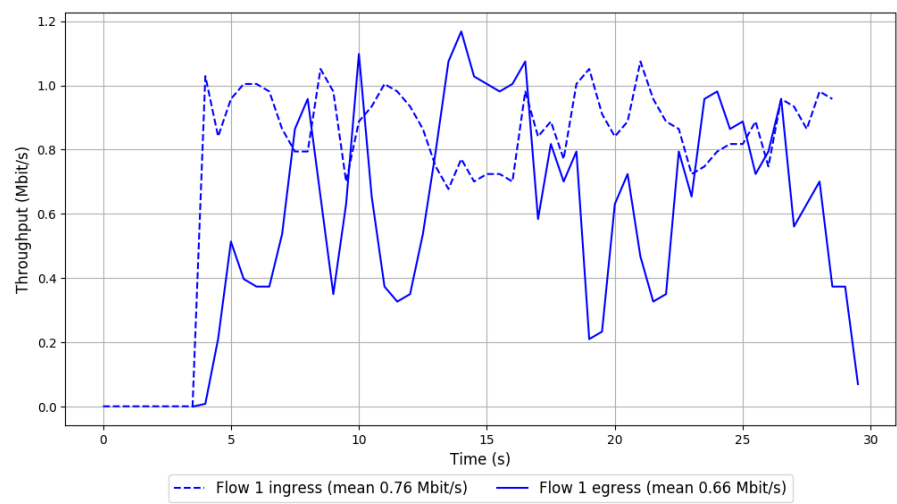
-- Flow 1:

Average throughput: 0.66 Mbit/s

95th percentile per-packet one-way delay: 5398.054 ms

Loss rate: 23.60%

Run 2: Report of Indigo-MusesC5 — Data Link



Run 3: Statistics of Indigo-MusesC5

Start at: 2019-01-18 18:35:02

End at: 2019-01-18 18:35:32

Local clock offset: -7.09 ms

Remote clock offset: 3.65 ms

Below is generated by plot.py at 2019-01-18 18:42:47

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.61 Mbit/s

95th percentile per-packet one-way delay: 8367.341 ms

Loss rate: 31.84%

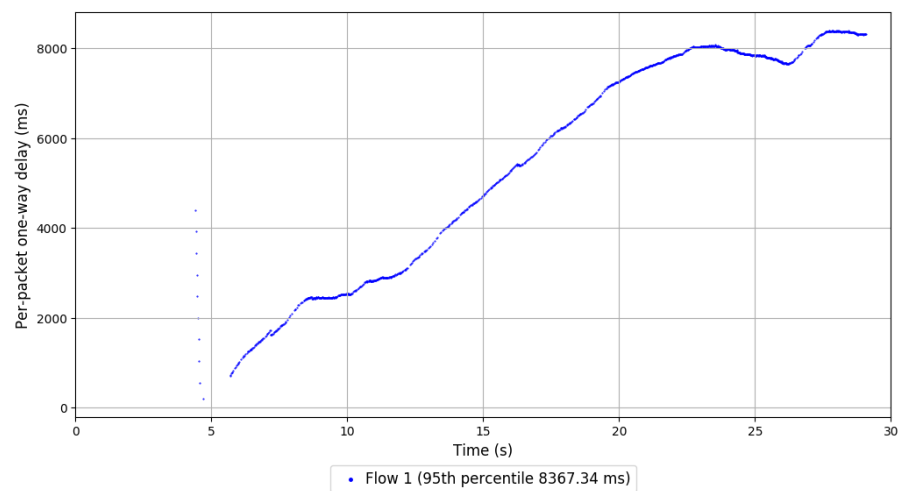
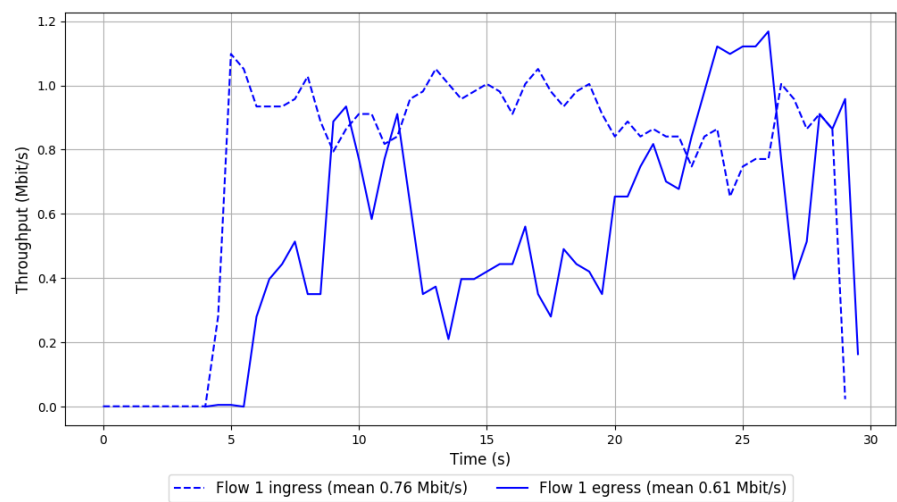
-- Flow 1:

Average throughput: 0.61 Mbit/s

95th percentile per-packet one-way delay: 8367.341 ms

Loss rate: 31.84%

Run 3: Report of Indigo-MusesC5 — Data Link



Run 1: Statistics of Indigo-MusesD

Start at: 2019-01-18 17:35:34

End at: 2019-01-18 17:36:04

Local clock offset: -7.932 ms

Remote clock offset: -0.593 ms

Below is generated by plot.py at 2019-01-18 18:42:47

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.48 Mbit/s

95th percentile per-packet one-way delay: 11862.222 ms

Loss rate: 49.42%

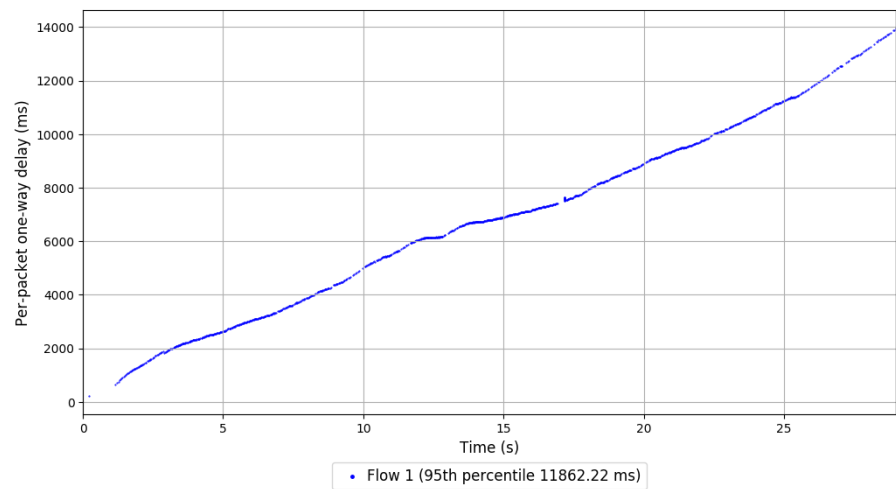
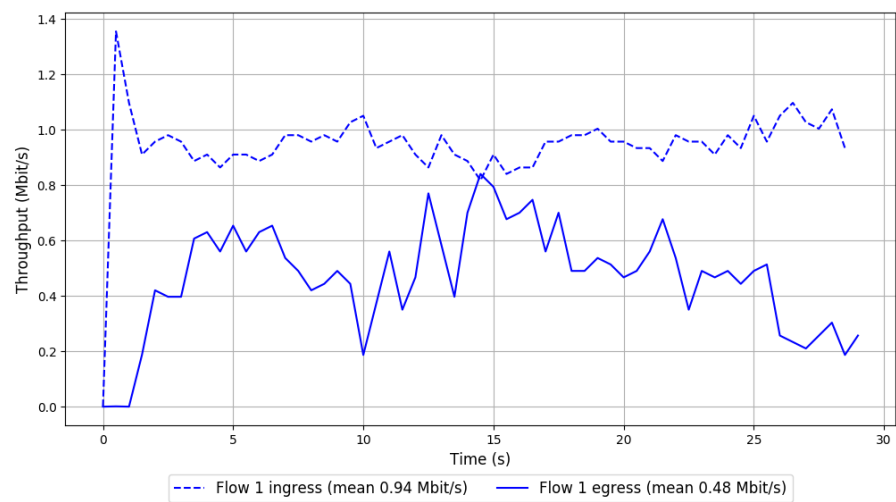
-- Flow 1:

Average throughput: 0.48 Mbit/s

95th percentile per-packet one-way delay: 11862.222 ms

Loss rate: 49.42%

Run 1: Report of Indigo-MusesD — Data Link

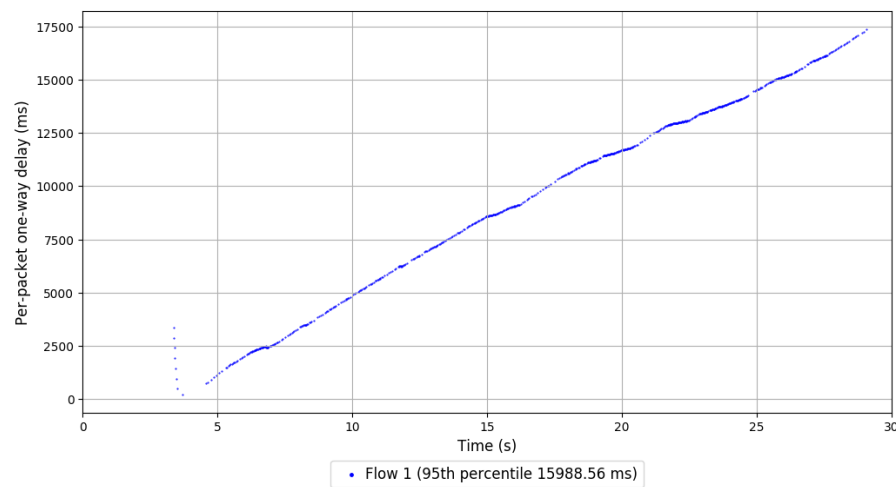
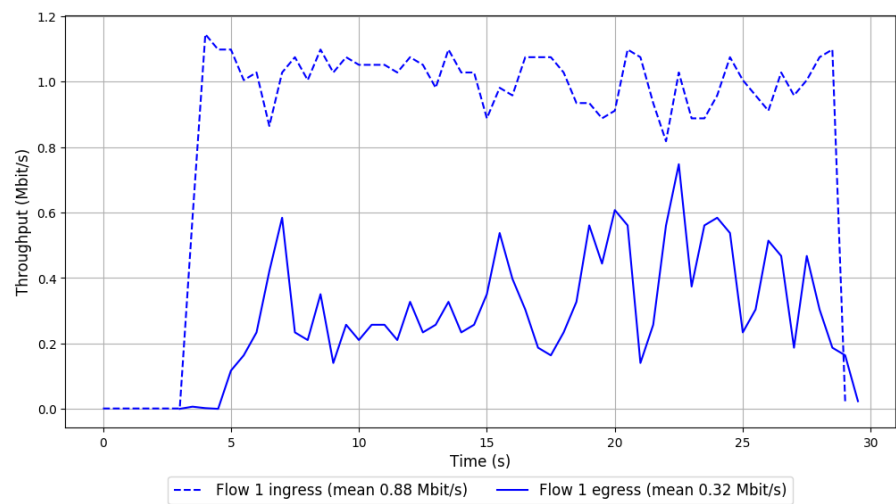


Run 2: Statistics of Indigo-MusesD

Start at: 2019-01-18 17:59:25
End at: 2019-01-18 17:59:55
Local clock offset: -7.839 ms
Remote clock offset: -0.734 ms

Below is generated by plot.py at 2019-01-18 18:42:47
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 15988.563 ms
Loss rate: 67.60%
-- Flow 1:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 15988.563 ms
Loss rate: 67.60%

Run 2: Report of Indigo-MusesD — Data Link



Run 3: Statistics of Indigo-MusesD

Start at: 2019-01-18 18:23:41

End at: 2019-01-18 18:24:11

Local clock offset: -7.792 ms

Remote clock offset: 2.07 ms

Below is generated by plot.py at 2019-01-18 18:42:47

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.52 Mbit/s

95th percentile per-packet one-way delay: 10540.824 ms

Loss rate: 43.87%

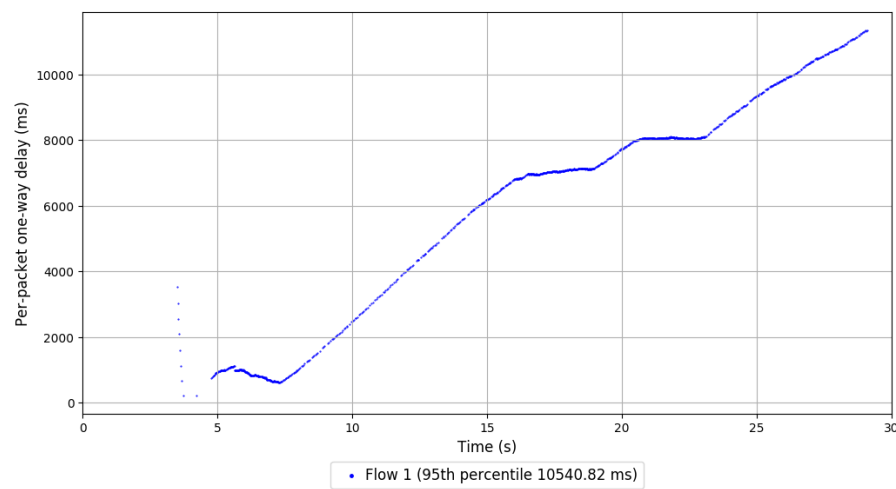
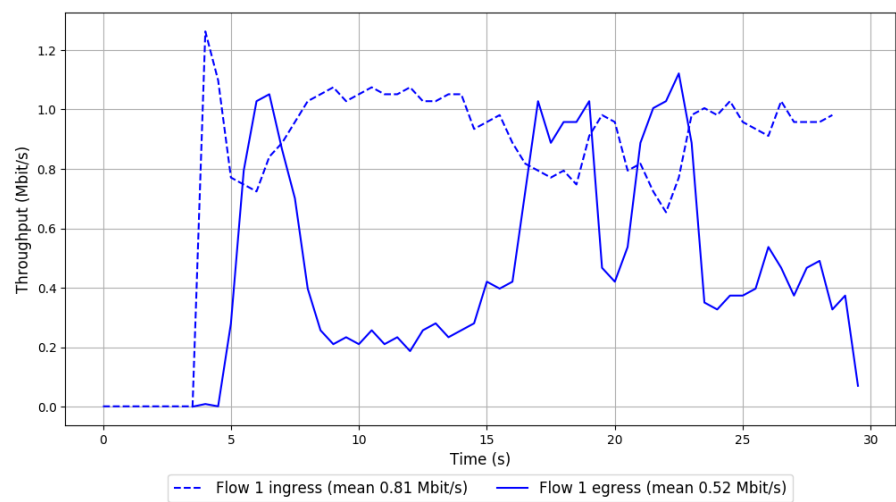
-- Flow 1:

Average throughput: 0.52 Mbit/s

95th percentile per-packet one-way delay: 10540.824 ms

Loss rate: 43.87%

Run 3: Report of Indigo-MusesD — Data Link



Run 1: Statistics of Indigo-MusesT

Start at: 2019-01-18 17:53:44

End at: 2019-01-18 17:54:14

Local clock offset: -7.962 ms

Remote clock offset: 5.239 ms

Below is generated by plot.py at 2019-01-18 18:42:48

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.16 Mbit/s

95th percentile per-packet one-way delay: 20422.187 ms

Loss rate: 85.22%

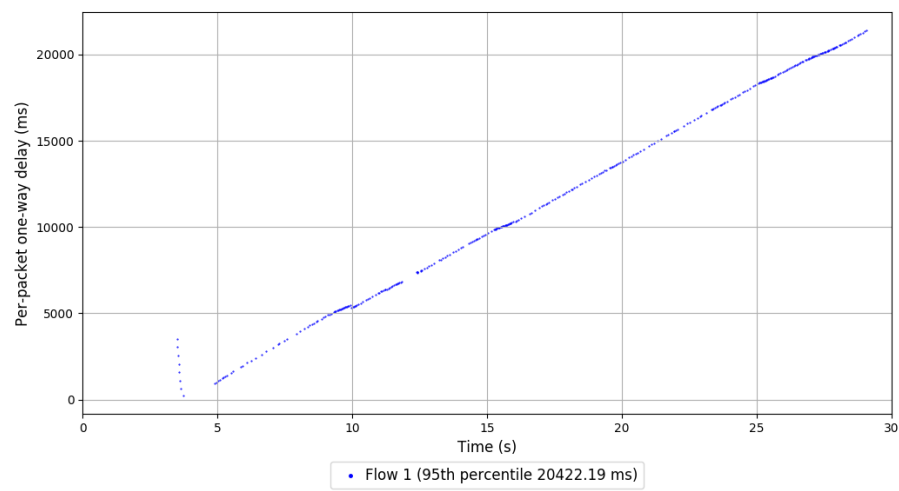
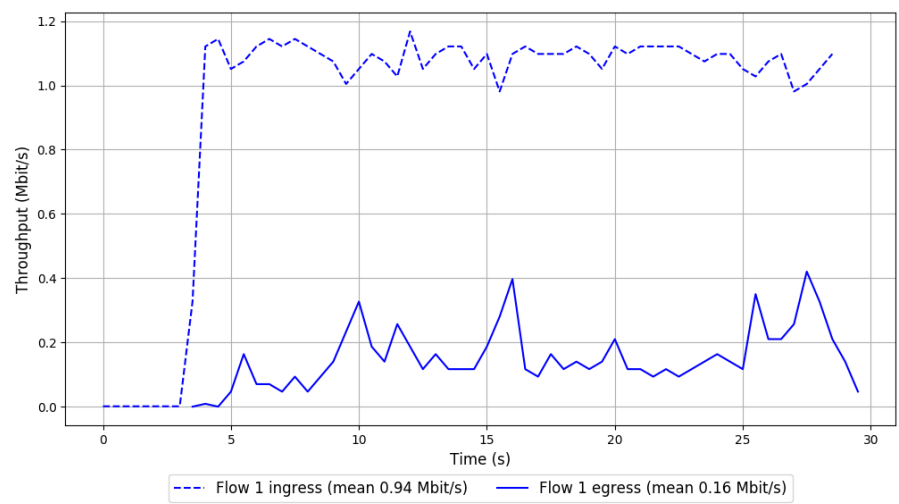
-- Flow 1:

Average throughput: 0.16 Mbit/s

95th percentile per-packet one-way delay: 20422.187 ms

Loss rate: 85.22%

Run 1: Report of Indigo-MusesT — Data Link



Run 2: Statistics of Indigo-MusesT

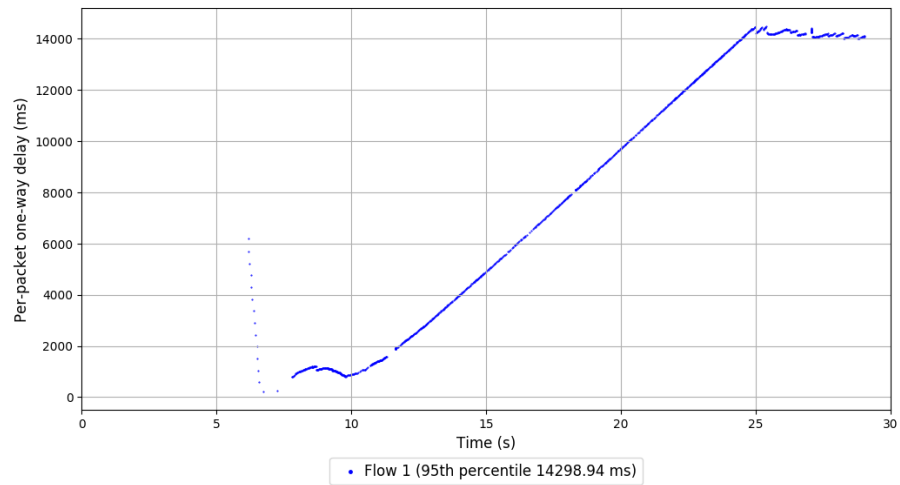
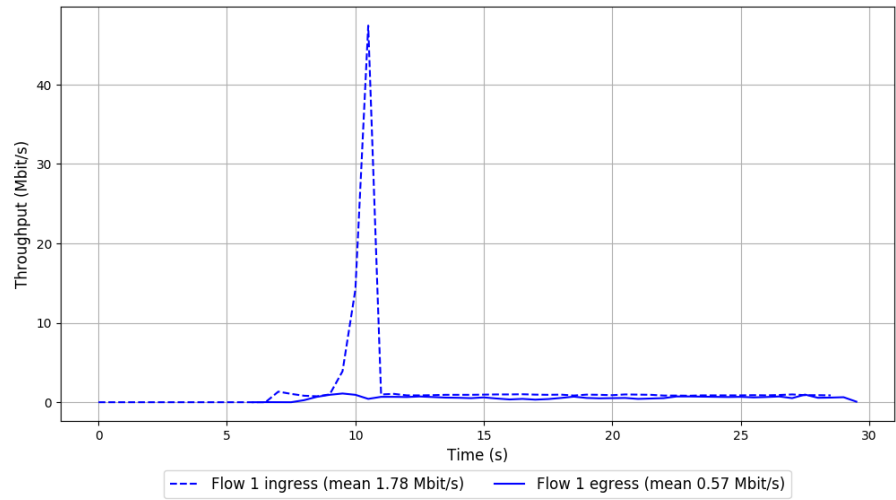
Start at: 2019-01-18 18:17:59

End at: 2019-01-18 18:18:30

Local clock offset: -7.938 ms

Remote clock offset: 0.217 ms

Run 2: Report of Indigo-MusesT — Data Link



Run 3: Statistics of Indigo-MusesT

Start at: 2019-01-18 18:41:56

End at: 2019-01-18 18:42:26

Local clock offset: -6.194 ms

Remote clock offset: 6.926 ms

Below is generated by plot.py at 2019-01-18 18:42:49

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.59 Mbit/s

95th percentile per-packet one-way delay: 9796.508 ms

Loss rate: 34.50%

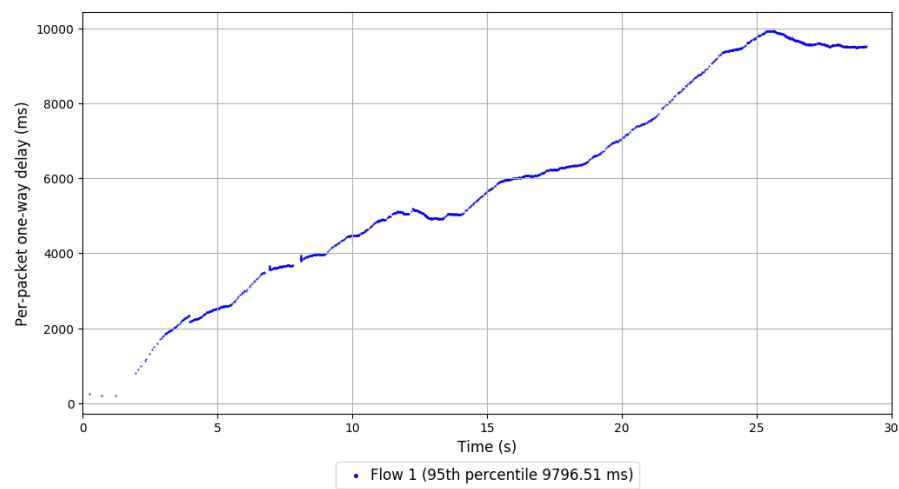
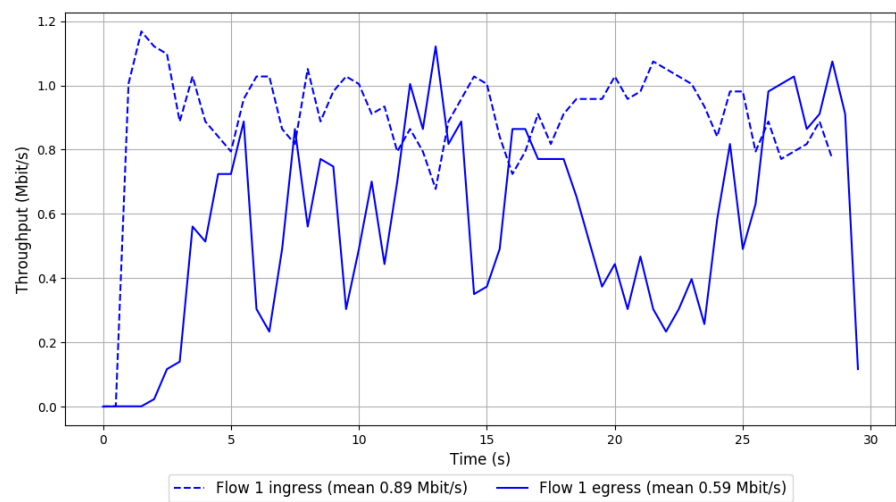
-- Flow 1:

Average throughput: 0.59 Mbit/s

95th percentile per-packet one-way delay: 9796.508 ms

Loss rate: 34.50%

Run 3: Report of Indigo-MusesT — Data Link

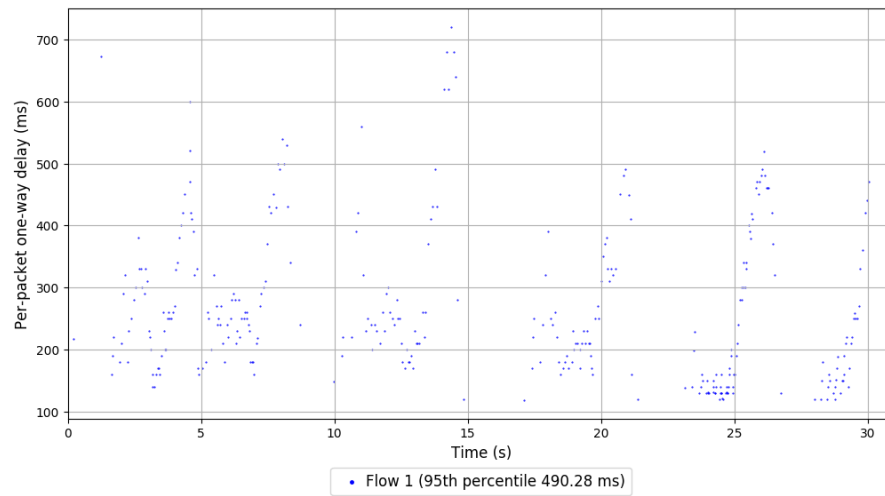
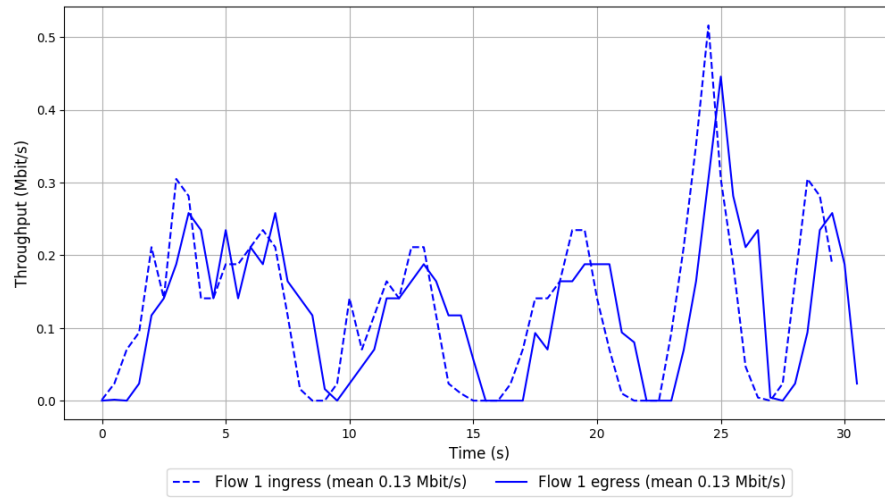


Run 1: Statistics of LEDBAT

Start at: 2019-01-18 17:32:07
End at: 2019-01-18 17:32:37
Local clock offset: -7.784 ms
Remote clock offset: -0.712 ms

Below is generated by plot.py at 2019-01-18 18:42:49
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 490.276 ms
Loss rate: 1.83%
-- Flow 1:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 490.276 ms
Loss rate: 1.83%

Run 1: Report of LEDBAT — Data Link

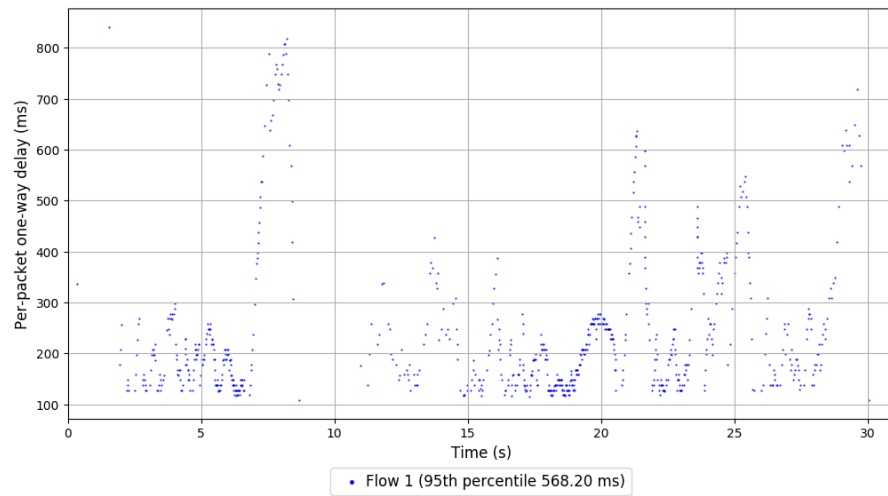
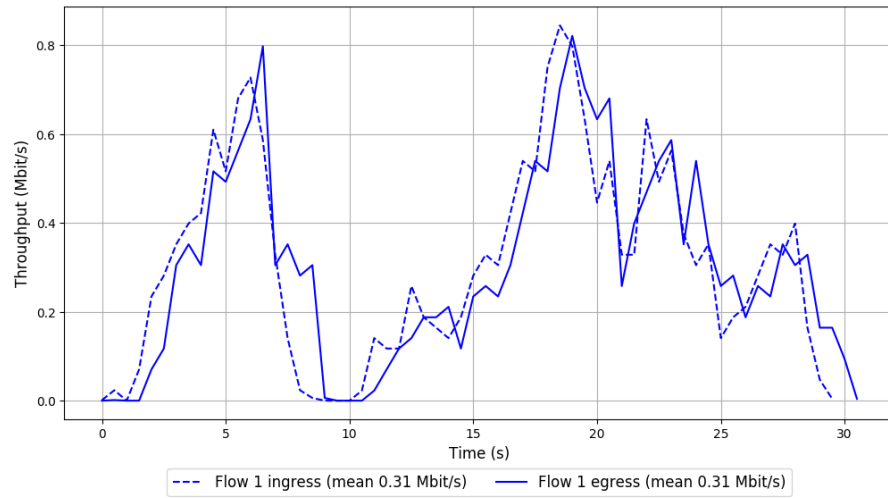


Run 2: Statistics of LEDBAT

Start at: 2019-01-18 17:56:00
End at: 2019-01-18 17:56:30
Local clock offset: -7.911 ms
Remote clock offset: -0.786 ms

Below is generated by plot.py at 2019-01-18 18:42:49
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 568.202 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 568.202 ms
Loss rate: 0.00%

Run 2: Report of LEDBAT — Data Link

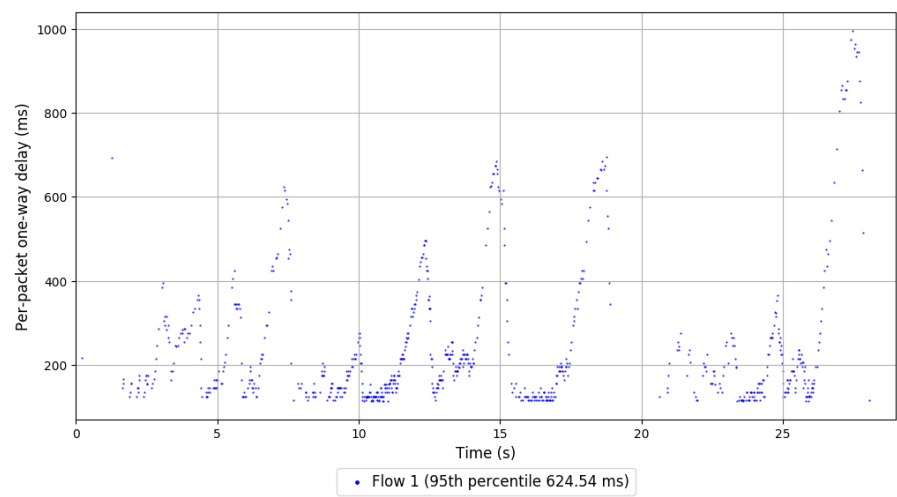
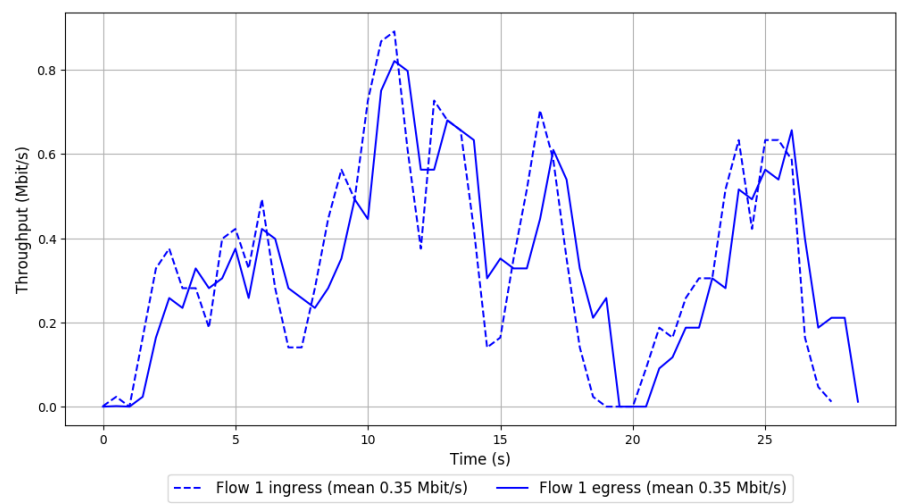


Run 3: Statistics of LEDBAT

Start at: 2019-01-18 18:20:16
End at: 2019-01-18 18:20:46
Local clock offset: -8.233 ms
Remote clock offset: -0.006 ms

Below is generated by plot.py at 2019-01-18 18:42:50
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 624.539 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 624.539 ms
Loss rate: 0.00%

Run 3: Report of LEDBAT — Data Link



Run 1: Statistics of PCC-Allegro

Start at: 2019-01-18 17:40:07

End at: 2019-01-18 17:40:37

Local clock offset: -8.179 ms

Remote clock offset: 3.962 ms

Below is generated by plot.py at 2019-01-18 18:43:07

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.52 Mbit/s

95th percentile per-packet one-way delay: 15889.531 ms

Loss rate: 98.44%

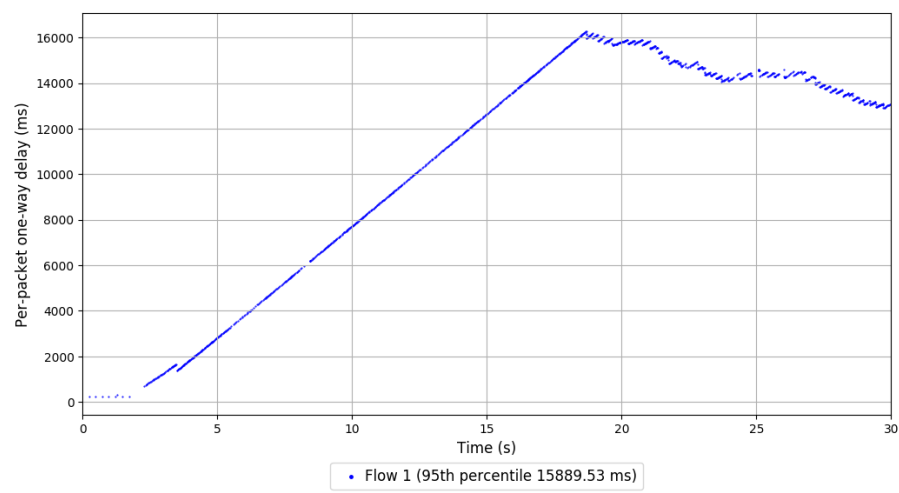
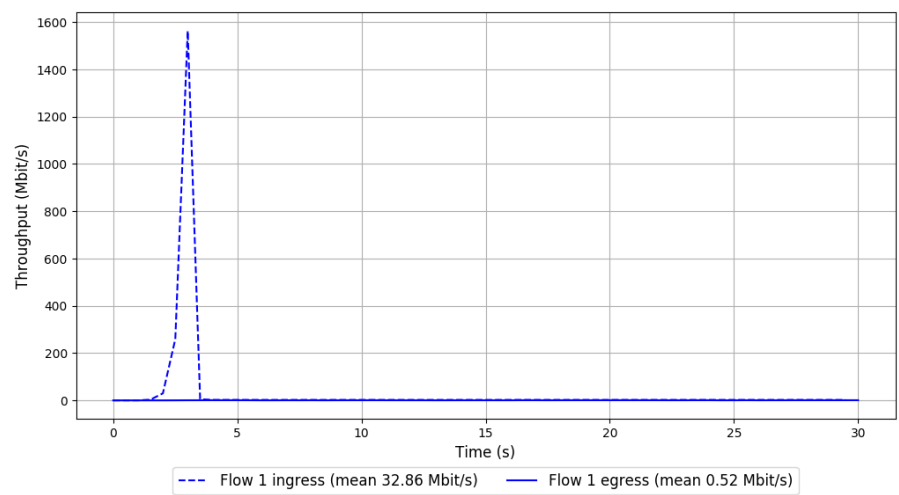
-- Flow 1:

Average throughput: 0.52 Mbit/s

95th percentile per-packet one-way delay: 15889.531 ms

Loss rate: 98.44%

Run 1: Report of PCC-Allegro — Data Link



Run 2: Statistics of PCC-Allegro

Start at: 2019-01-18 18:04:20

End at: 2019-01-18 18:04:50

Local clock offset: -8.614 ms

Remote clock offset: 0.524 ms

Below is generated by plot.py at 2019-01-18 18:43:07

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 236.786 ms

Loss rate: 0.00%

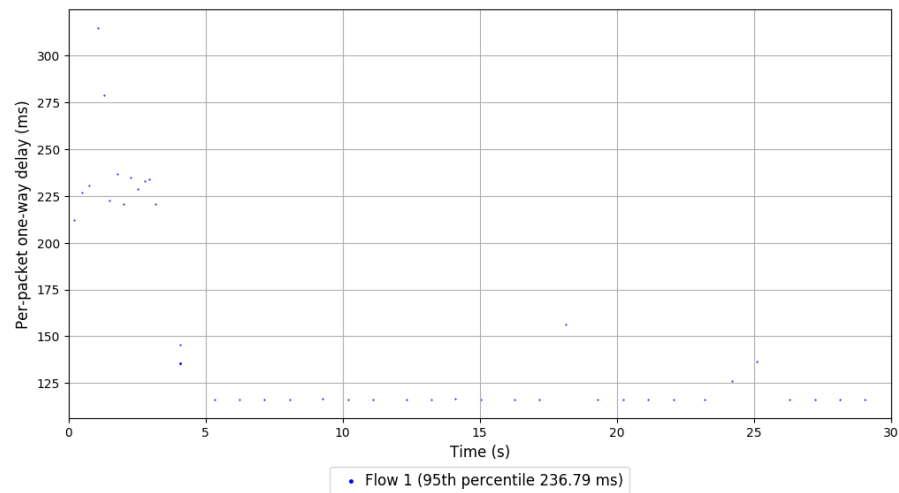
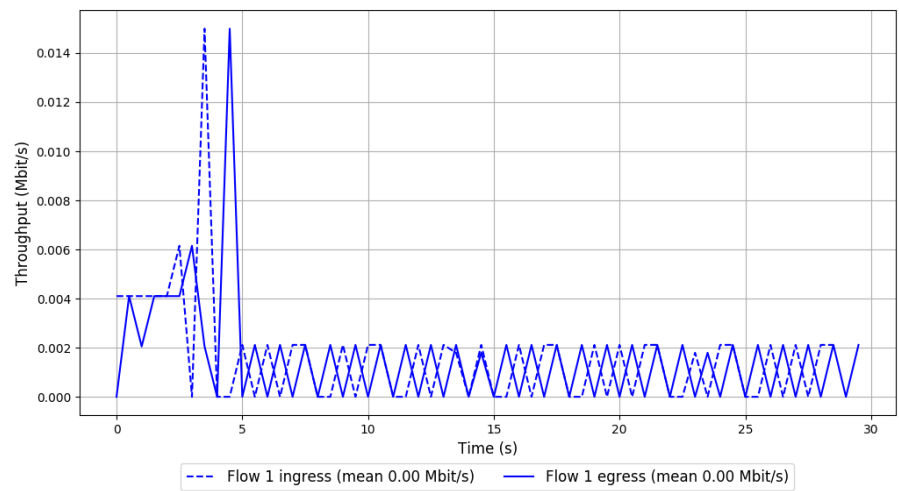
-- Flow 1:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 236.786 ms

Loss rate: 0.00%

Run 2: Report of PCC-Allegro — Data Link



Run 3: Statistics of PCC-Allegro

Start at: 2019-01-18 18:28:13

End at: 2019-01-18 18:28:43

Local clock offset: -6.639 ms

Remote clock offset: 6.86 ms

Below is generated by plot.py at 2019-01-18 18:43:07

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.66 Mbit/s

95th percentile per-packet one-way delay: 12143.667 ms

Loss rate: 97.98%

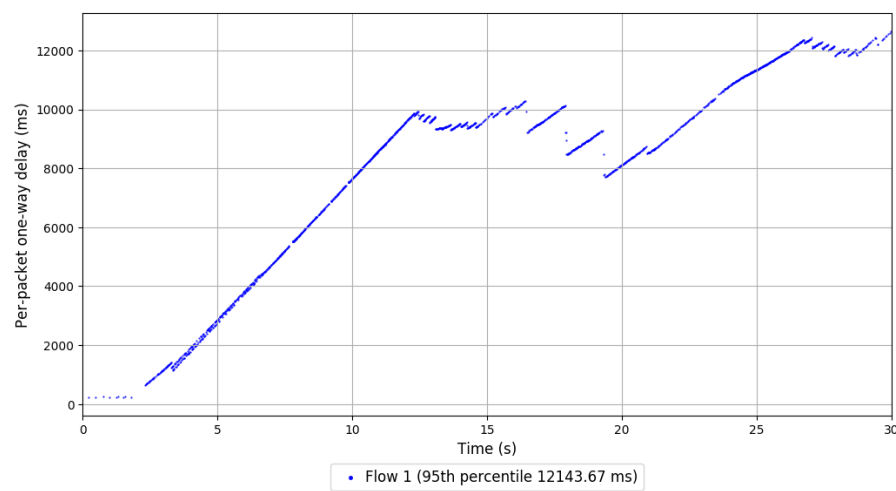
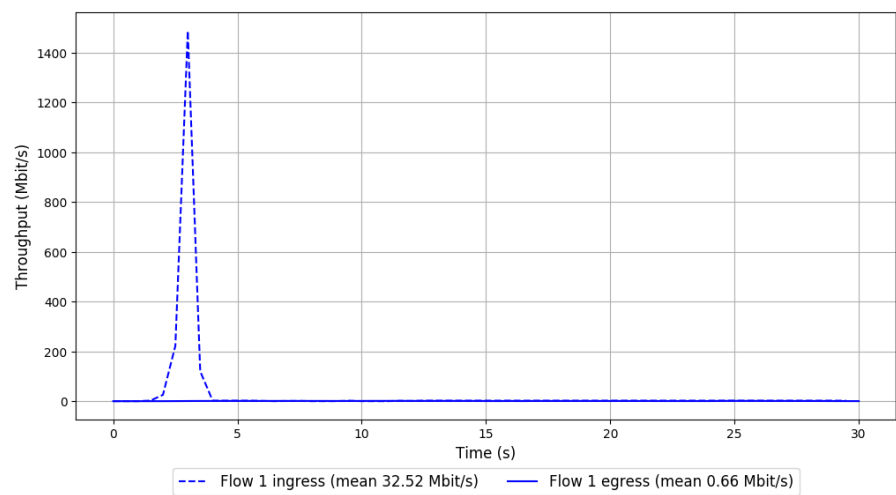
-- Flow 1:

Average throughput: 0.66 Mbit/s

95th percentile per-packet one-way delay: 12143.667 ms

Loss rate: 97.98%

Run 3: Report of PCC-Allegro — Data Link



Run 1: Statistics of PCC-Expr

Start at: 2019-01-18 17:52:36

End at: 2019-01-18 17:53:06

Local clock offset: -8.081 ms

Remote clock offset: 0.377 ms

Below is generated by plot.py at 2019-01-18 18:43:07

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.29 Mbit/s

95th percentile per-packet one-way delay: 16244.292 ms

Loss rate: 94.96%

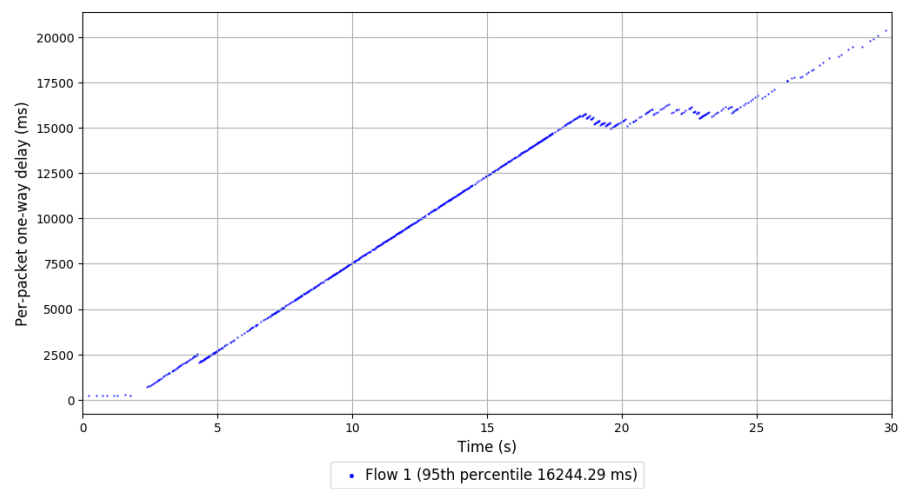
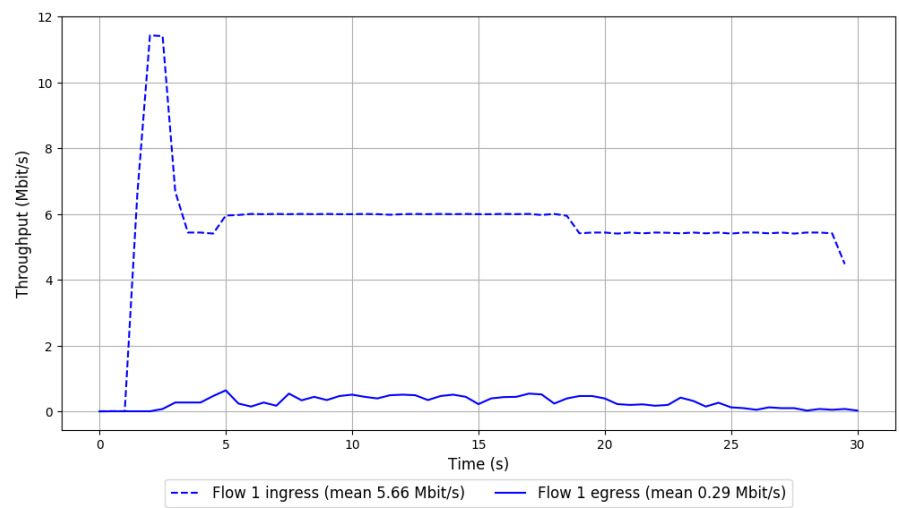
-- Flow 1:

Average throughput: 0.29 Mbit/s

95th percentile per-packet one-way delay: 16244.292 ms

Loss rate: 94.96%

Run 1: Report of PCC-Expr — Data Link



Run 2: Statistics of PCC-Expr

Start at: 2019-01-18 18:16:51

End at: 2019-01-18 18:17:21

Local clock offset: -8.035 ms

Remote clock offset: 4.014 ms

Below is generated by plot.py at 2019-01-18 18:43:07

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.72 Mbit/s

95th percentile per-packet one-way delay: 7963.681 ms

Loss rate: 87.34%

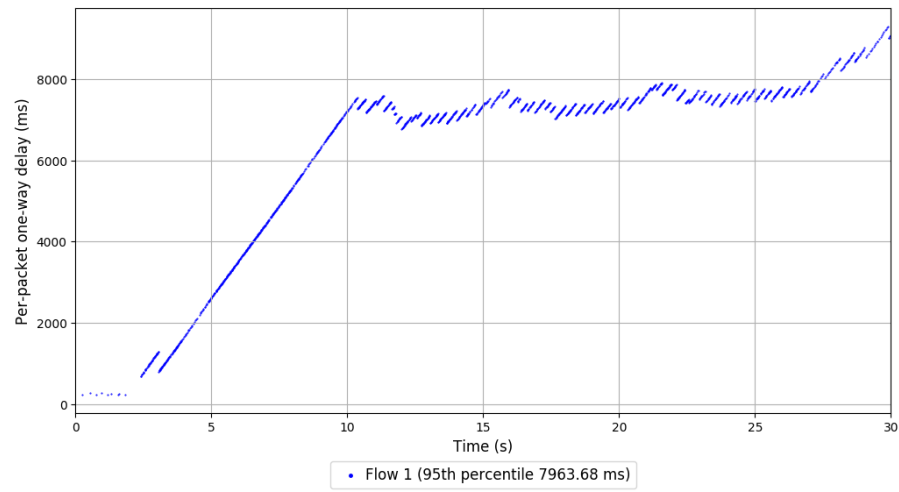
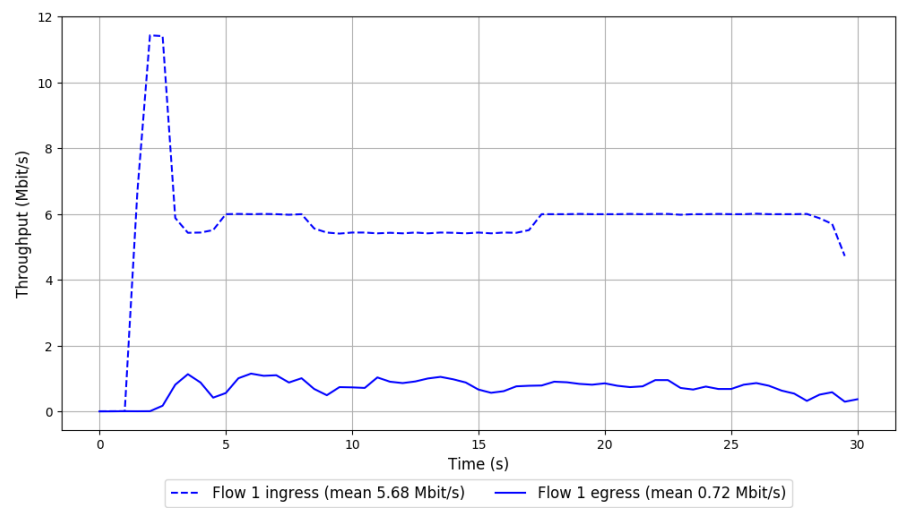
-- Flow 1:

Average throughput: 0.72 Mbit/s

95th percentile per-packet one-way delay: 7963.681 ms

Loss rate: 87.34%

Run 2: Report of PCC-Expr — Data Link



Run 3: Statistics of PCC-Expr

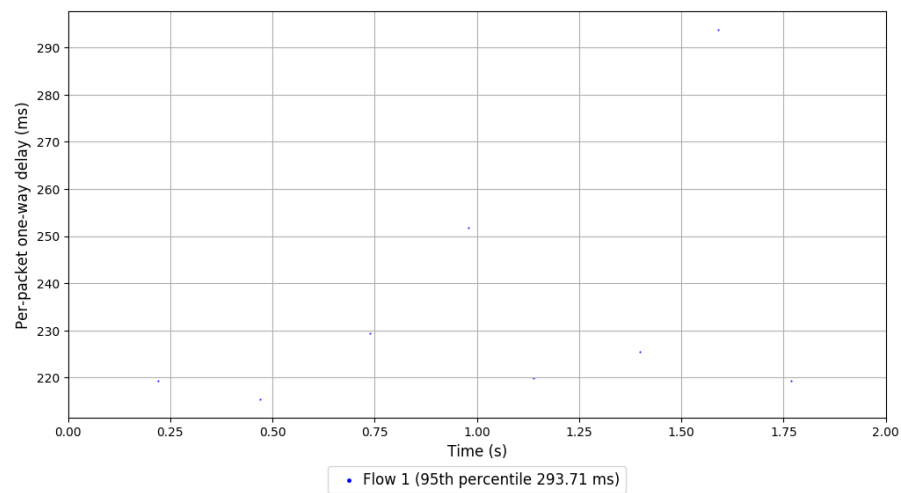
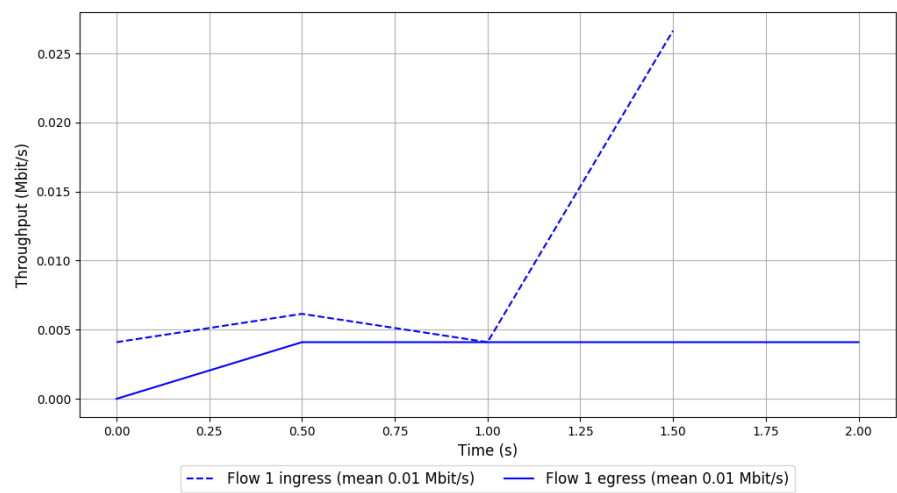
Start at: 2019-01-18 18:40:45

End at: 2019-01-18 18:41:15

Local clock offset: -7.018 ms

Remote clock offset: 3.317 ms

Run 3: Report of PCC-Expr — Data Link



Run 1: Statistics of QUIC Cubic

Start at: 2019-01-18 17:49:12

End at: 2019-01-18 17:49:42

Local clock offset: -9.045 ms

Remote clock offset: 0.25 ms

Below is generated by plot.py at 2019-01-18 18:43:07

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.14 Mbit/s

95th percentile per-packet one-way delay: 8844.608 ms

Loss rate: 30.94%

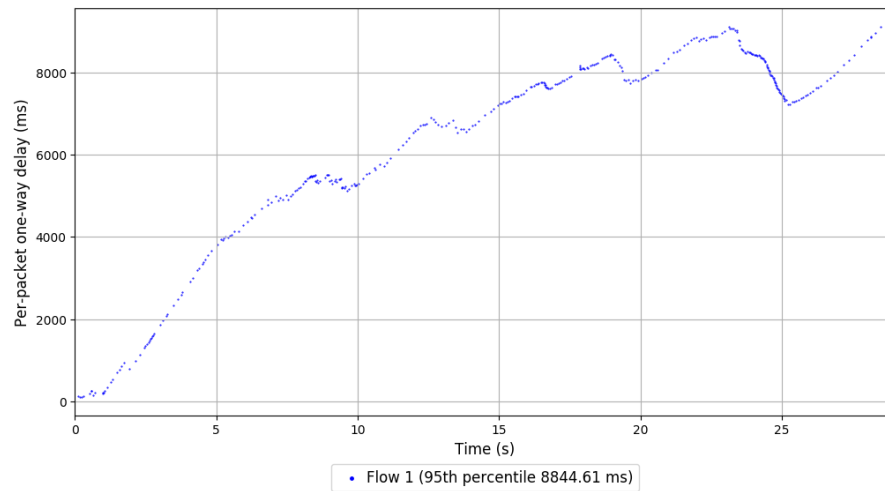
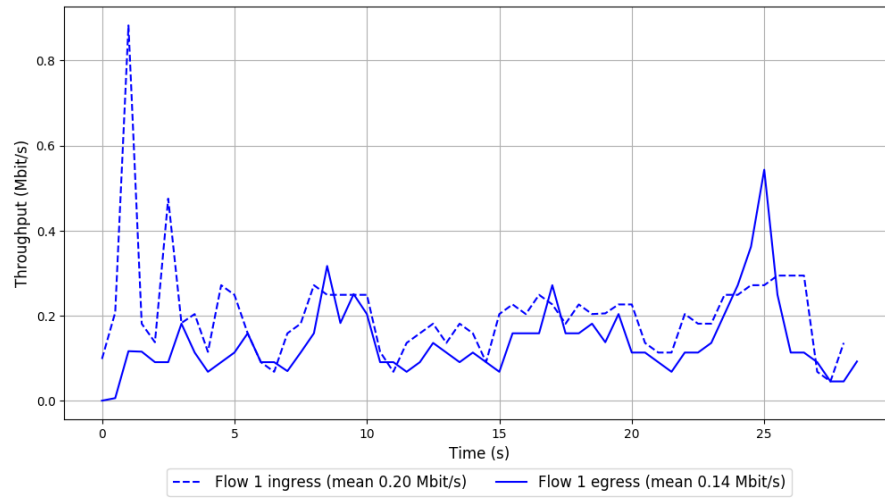
-- Flow 1:

Average throughput: 0.14 Mbit/s

95th percentile per-packet one-way delay: 8844.608 ms

Loss rate: 30.94%

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2019-01-18 18:13:26

End at: 2019-01-18 18:13:56

Local clock offset: -8.059 ms

Remote clock offset: 2.942 ms

Below is generated by plot.py at 2019-01-18 18:43:07

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.68 Mbit/s

95th percentile per-packet one-way delay: 3116.362 ms

Loss rate: 8.23%

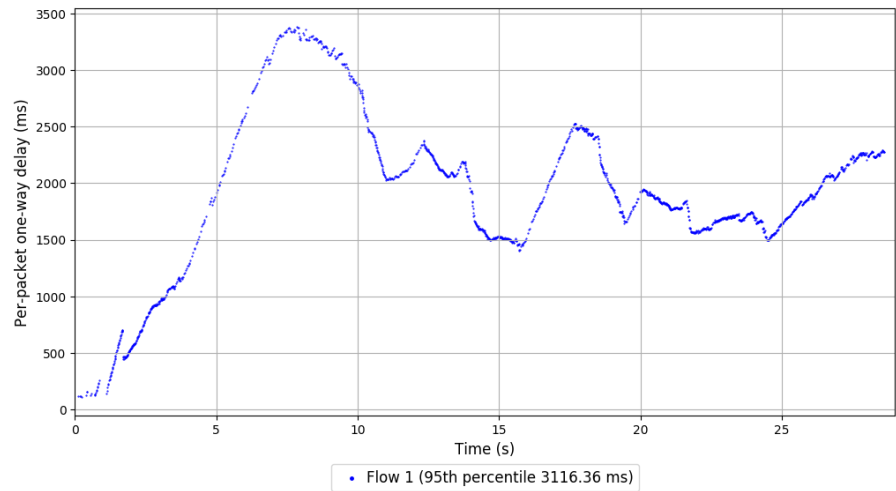
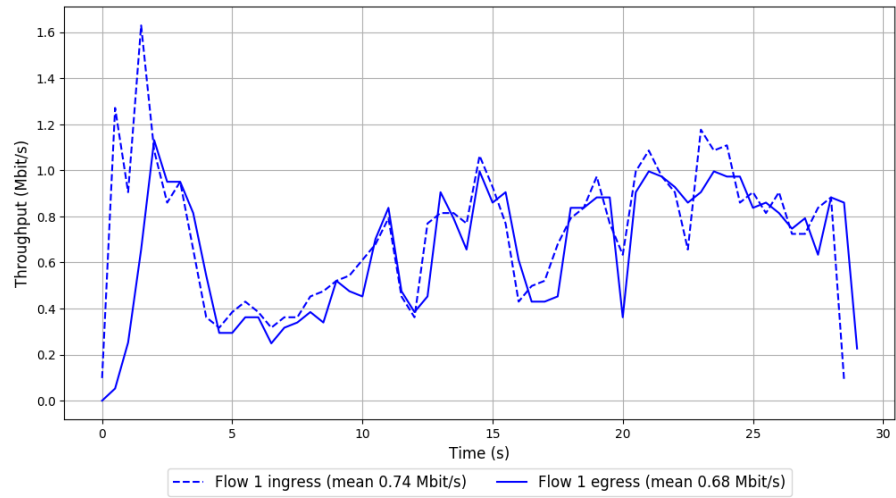
-- Flow 1:

Average throughput: 0.68 Mbit/s

95th percentile per-packet one-way delay: 3116.362 ms

Loss rate: 8.23%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2019-01-18 18:37:19

End at: 2019-01-18 18:37:49

Local clock offset: -6.276 ms

Remote clock offset: 4.128 ms

Below is generated by plot.py at 2019-01-18 18:43:07

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.75 Mbit/s

95th percentile per-packet one-way delay: 2404.928 ms

Loss rate: 9.01%

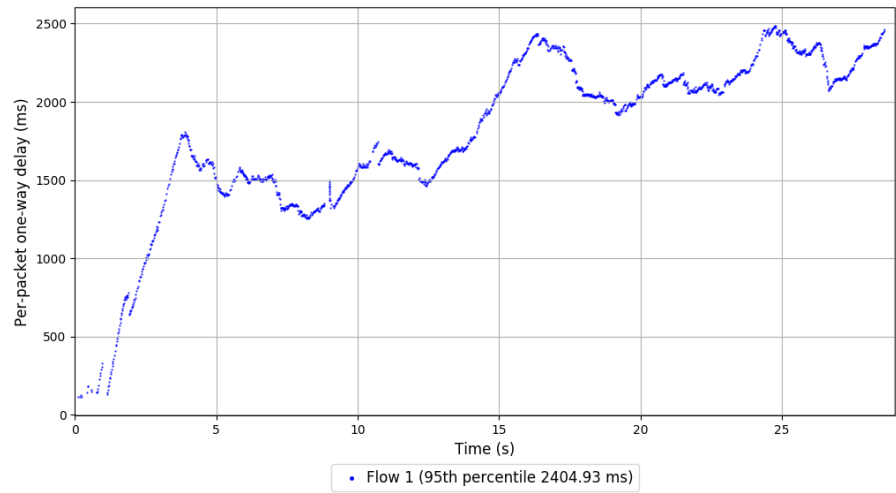
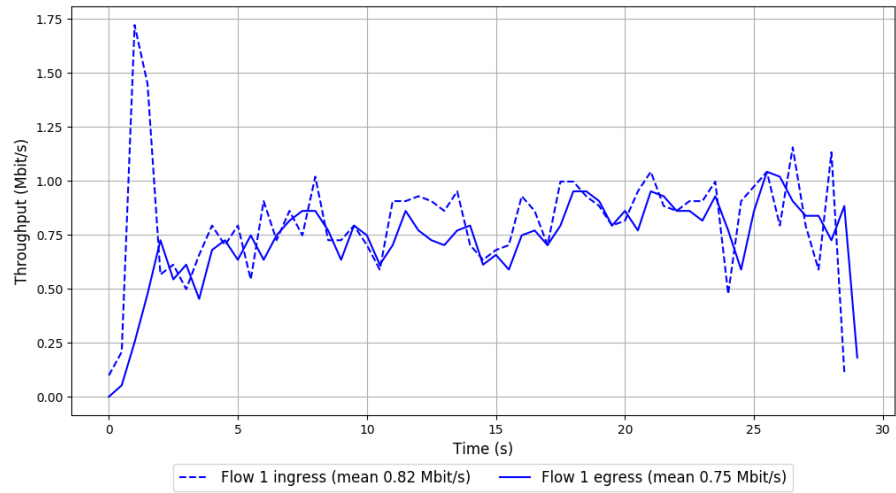
-- Flow 1:

Average throughput: 0.75 Mbit/s

95th percentile per-packet one-way delay: 2404.928 ms

Loss rate: 9.01%

Run 3: Report of QUIC Cubic — Data Link

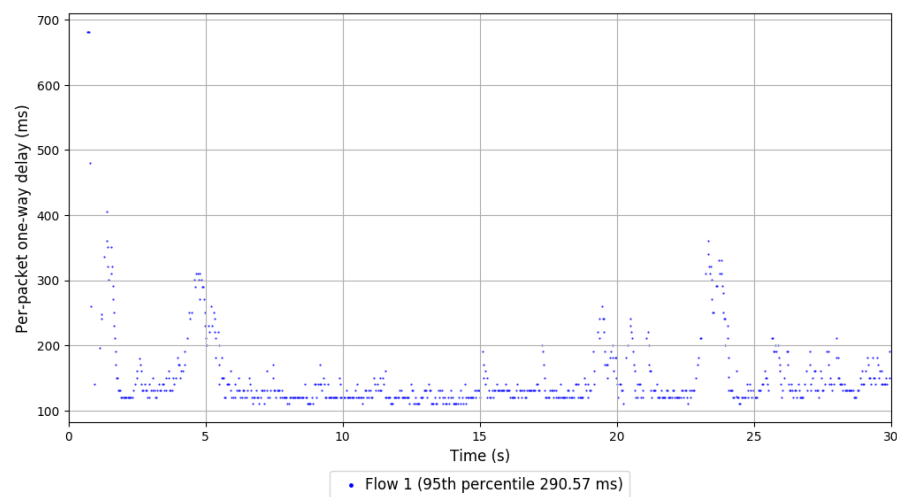
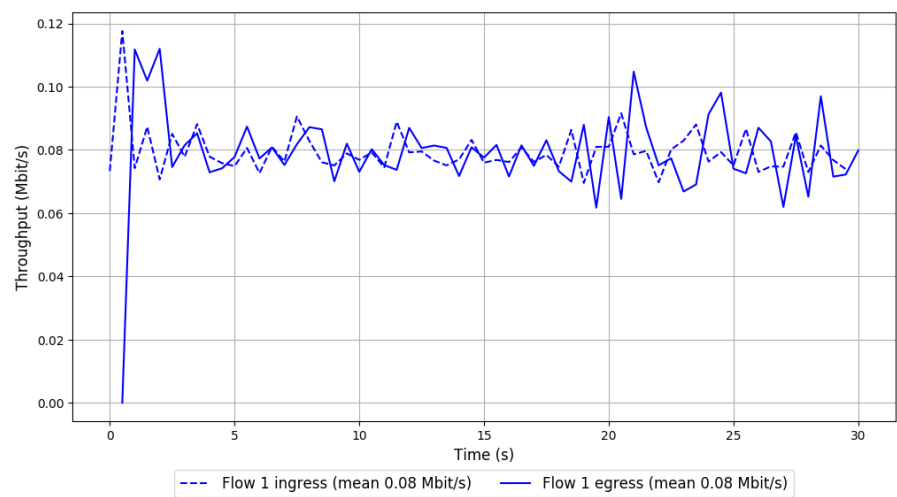


```
Run 1: Statistics of SCReAM

Start at: 2019-01-18 17:50:20
End at: 2019-01-18 17:50:50
Local clock offset: -8.126 ms
Remote clock offset: 4.23 ms

# Below is generated by plot.py at 2019-01-18 18:43:07
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 290.571 ms
Loss rate: 0.52%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 290.571 ms
Loss rate: 0.52%
```

Run 1: Report of SReAM — Data Link



Run 2: Statistics of SCReAM

Start at: 2019-01-18 18:14:35

End at: 2019-01-18 18:15:05

Local clock offset: -8.778 ms

Remote clock offset: 5.396 ms

Below is generated by plot.py at 2019-01-18 18:43:07

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.08 Mbit/s

95th percentile per-packet one-way delay: 132.606 ms

Loss rate: 0.13%

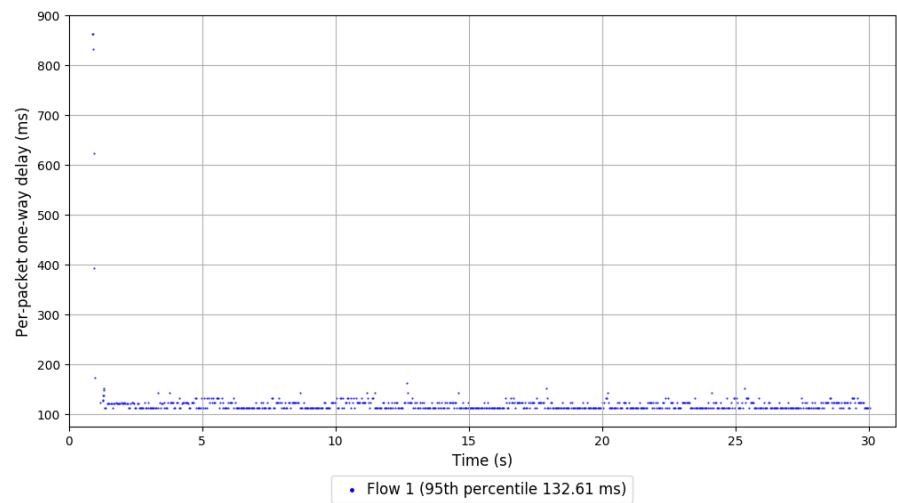
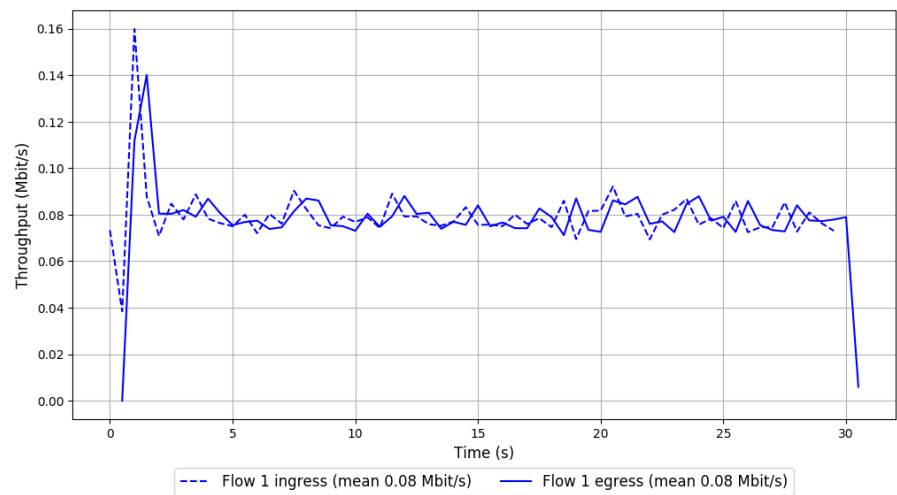
-- Flow 1:

Average throughput: 0.08 Mbit/s

95th percentile per-packet one-way delay: 132.606 ms

Loss rate: 0.13%

Run 2: Report of SReAM — Data Link



Run 3: Statistics of SCReAM

Start at: 2019-01-18 18:38:28

End at: 2019-01-18 18:38:58

Local clock offset: -7.014 ms

Remote clock offset: 9.169 ms

Below is generated by plot.py at 2019-01-18 18:43:07

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.08 Mbit/s

95th percentile per-packet one-way delay: 116.798 ms

Loss rate: 0.13%

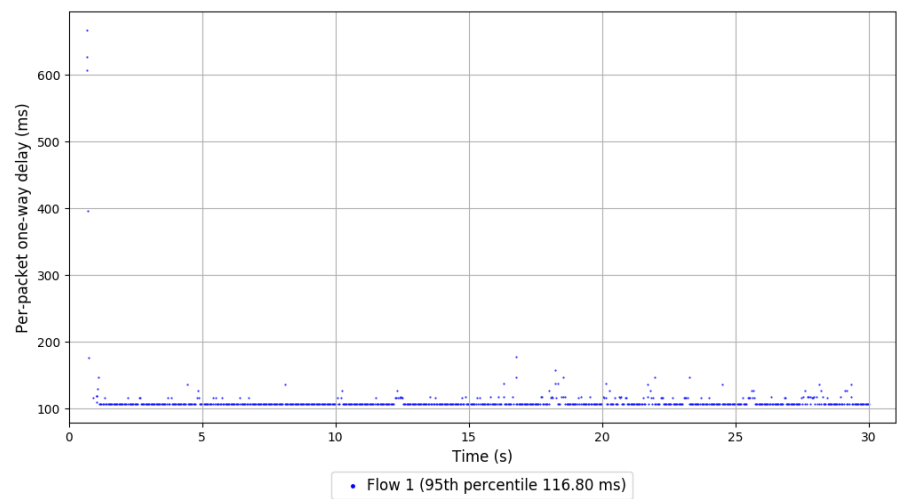
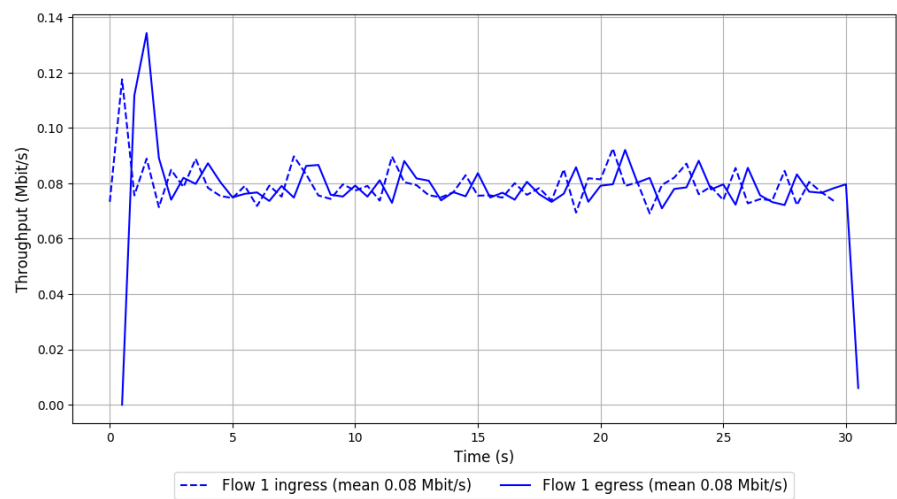
-- Flow 1:

Average throughput: 0.08 Mbit/s

95th percentile per-packet one-way delay: 116.798 ms

Loss rate: 0.13%

Run 3: Report of SReAM — Data Link

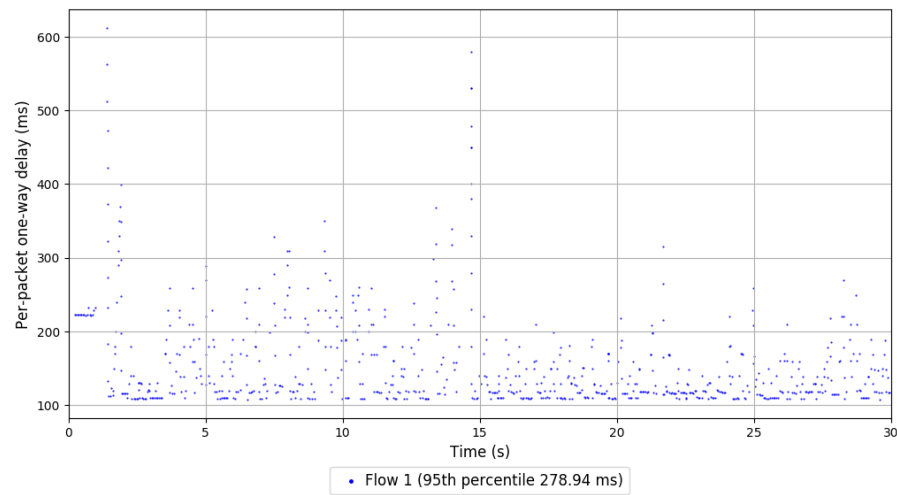
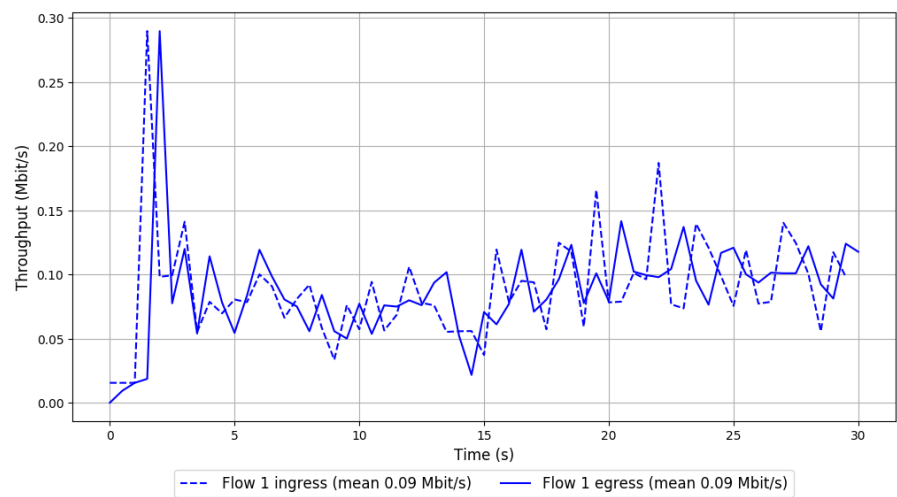


Run 1: Statistics of Sprout

Start at: 2019-01-18 17:30:59
End at: 2019-01-18 17:31:29
Local clock offset: -8.515 ms
Remote clock offset: -0.731 ms

Below is generated by plot.py at 2019-01-18 18:43:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 278.941 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 278.941 ms
Loss rate: 0.03%

Run 1: Report of Sprout — Data Link

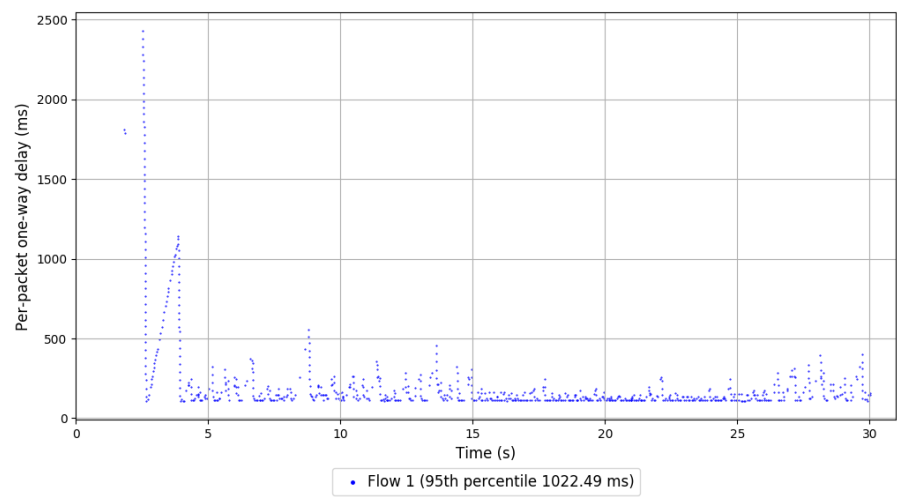
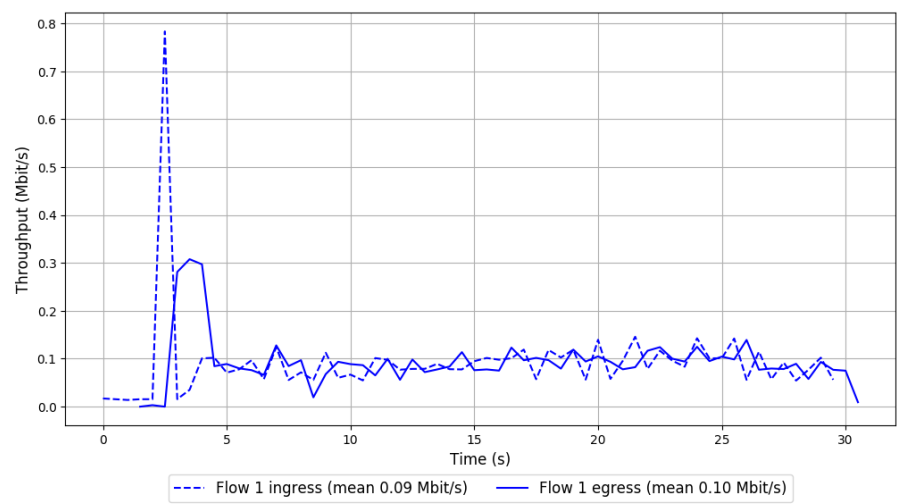


Run 2: Statistics of Sprout

Start at: 2019-01-18 17:54:52
End at: 2019-01-18 17:55:22
Local clock offset: -8.758 ms
Remote clock offset: 4.045 ms

Below is generated by plot.py at 2019-01-18 18:43:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 1022.490 ms
Loss rate: 0.46%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 1022.490 ms
Loss rate: 0.46%

Run 2: Report of Sprout — Data Link

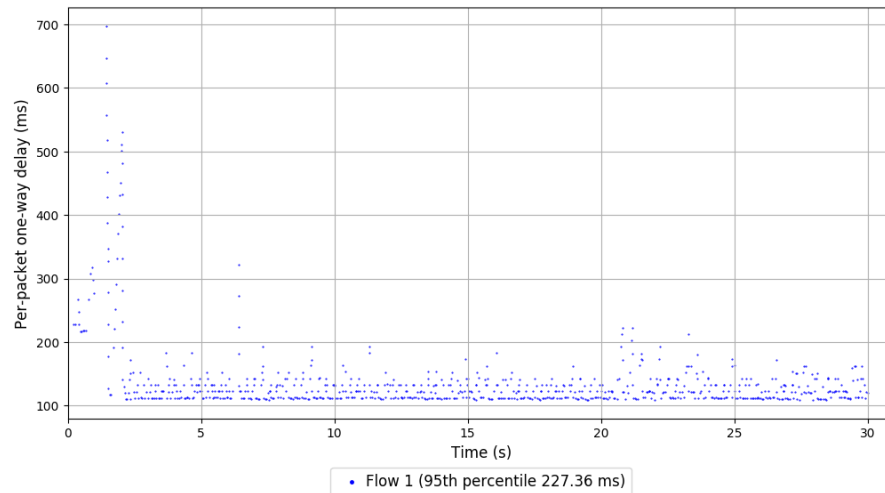
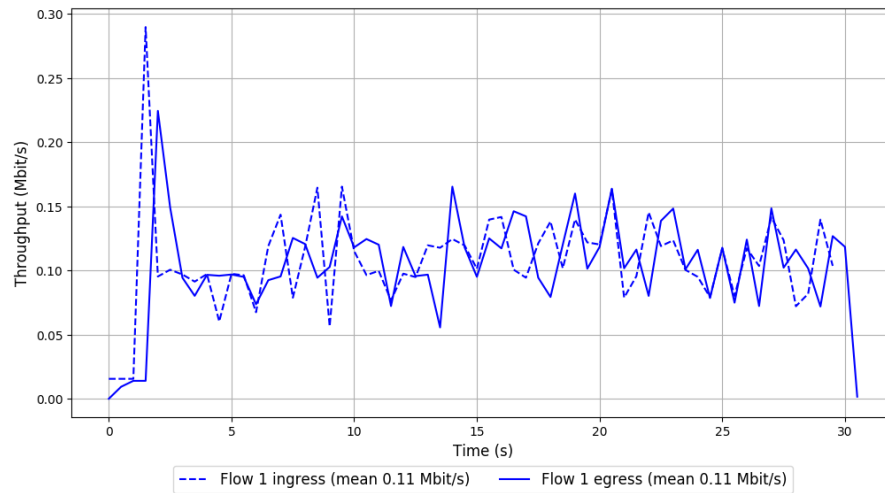


Run 3: Statistics of Sprout

Start at: 2019-01-18 18:19:08
End at: 2019-01-18 18:19:38
Local clock offset: -8.444 ms
Remote clock offset: 4.606 ms

Below is generated by plot.py at 2019-01-18 18:43:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 227.358 ms
Loss rate: 0.41%
-- Flow 1:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 227.358 ms
Loss rate: 0.41%

Run 3: Report of Sprout — Data Link



Run 1: Statistics of TaoVA-100x

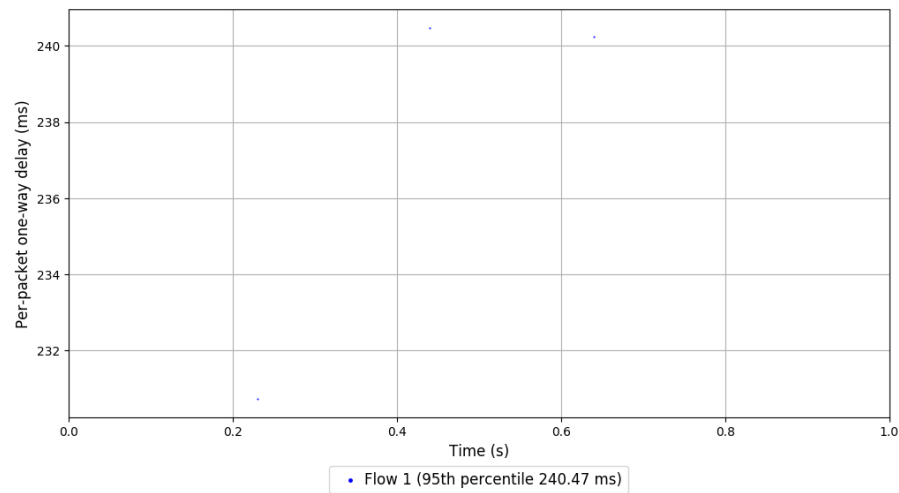
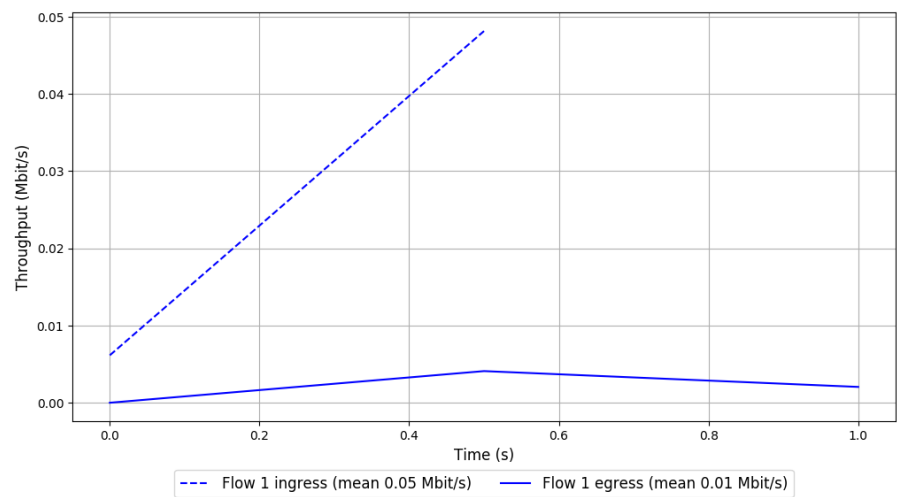
Start at: 2019-01-18 17:41:15

End at: 2019-01-18 17:41:45

Local clock offset: -8.914 ms

Remote clock offset: 5.442 ms

Run 1: Report of TaoVA-100x — Data Link



Run 2: Statistics of TaoVA-100x

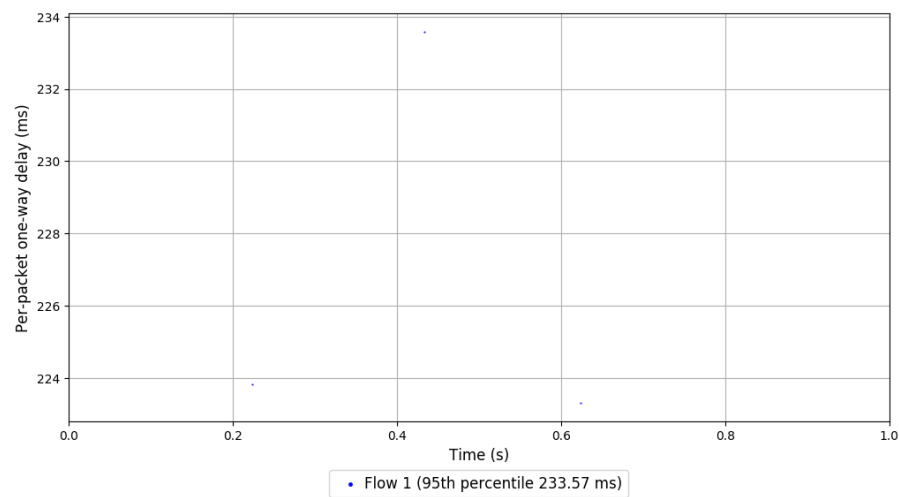
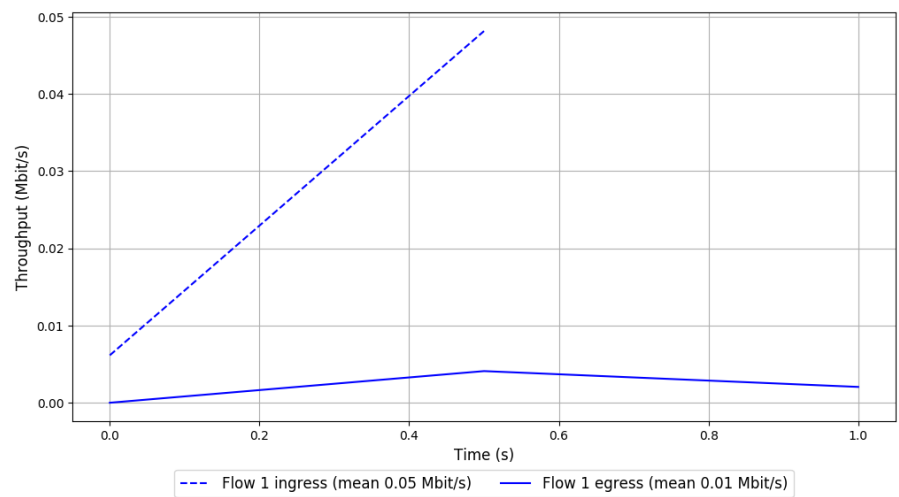
Start at: 2019-01-18 18:05:28

End at: 2019-01-18 18:05:58

Local clock offset: -7.871 ms

Remote clock offset: -0.7 ms

Run 2: Report of TaoVA-100x — Data Link



Run 3: Statistics of TaoVA-100x

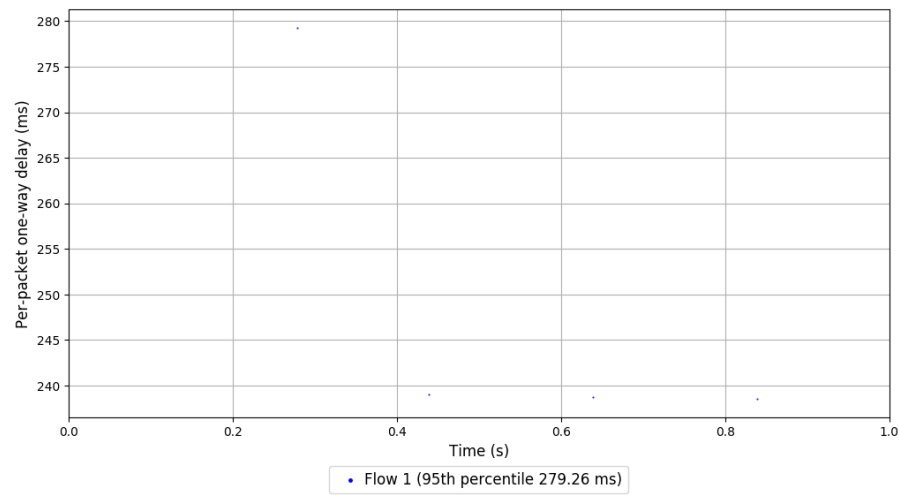
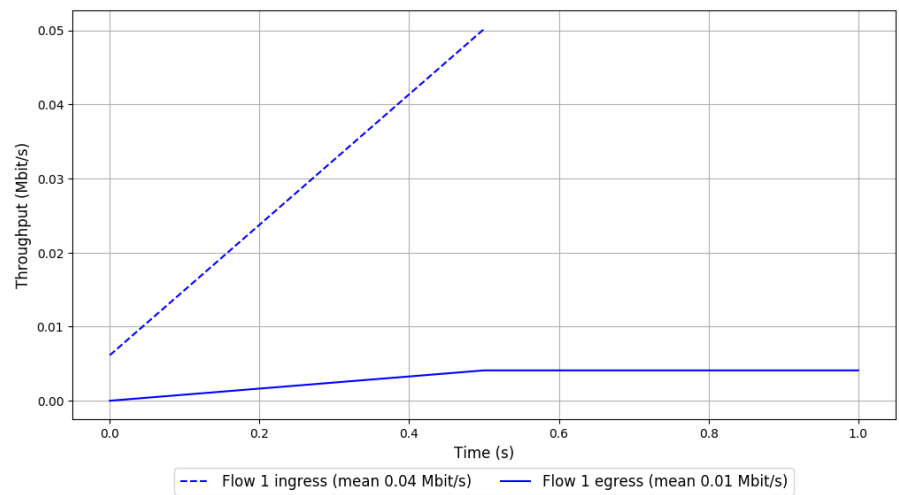
Start at: 2019-01-18 18:29:22

End at: 2019-01-18 18:29:52

Local clock offset: -7.342 ms

Remote clock offset: 6.863 ms

Run 3: Report of TaoVA-100x — Data Link



Run 1: Statistics of TCP Vegas

Start at: 2019-01-18 17:33:15

End at: 2019-01-18 17:33:45

Local clock offset: -8.636 ms

Remote clock offset: 0.469 ms

Below is generated by plot.py at 2019-01-18 18:43:07

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.48 Mbit/s

95th percentile per-packet one-way delay: 1076.038 ms

Loss rate: 1.00%

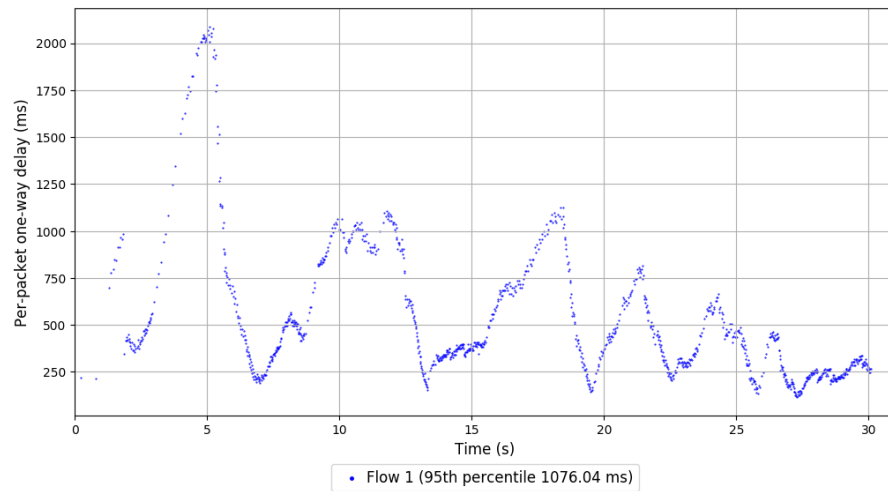
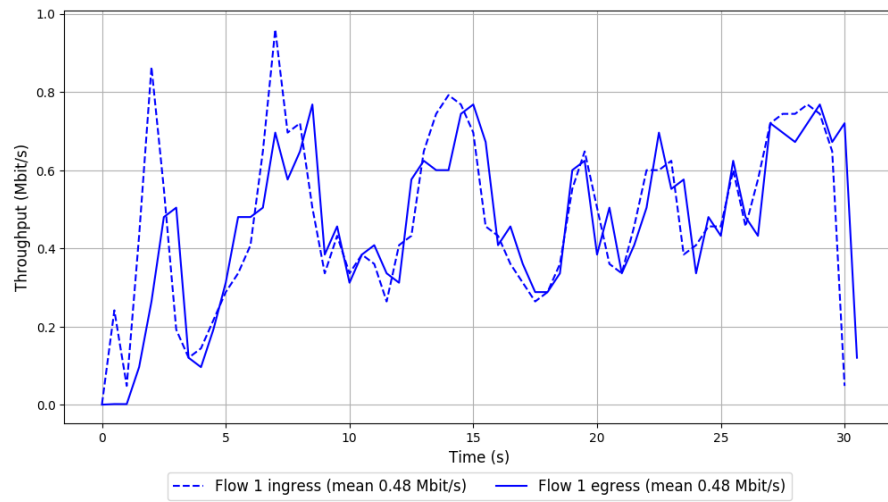
-- Flow 1:

Average throughput: 0.48 Mbit/s

95th percentile per-packet one-way delay: 1076.038 ms

Loss rate: 1.00%

Run 1: Report of TCP Vegas — Data Link



Run 2: Statistics of TCP Vegas

Start at: 2019-01-18 17:57:08

End at: 2019-01-18 17:57:38

Local clock offset: -7.948 ms

Remote clock offset: 0.467 ms

Below is generated by plot.py at 2019-01-18 18:43:07

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.28 Mbit/s

95th percentile per-packet one-way delay: 1095.102 ms

Loss rate: 0.98%

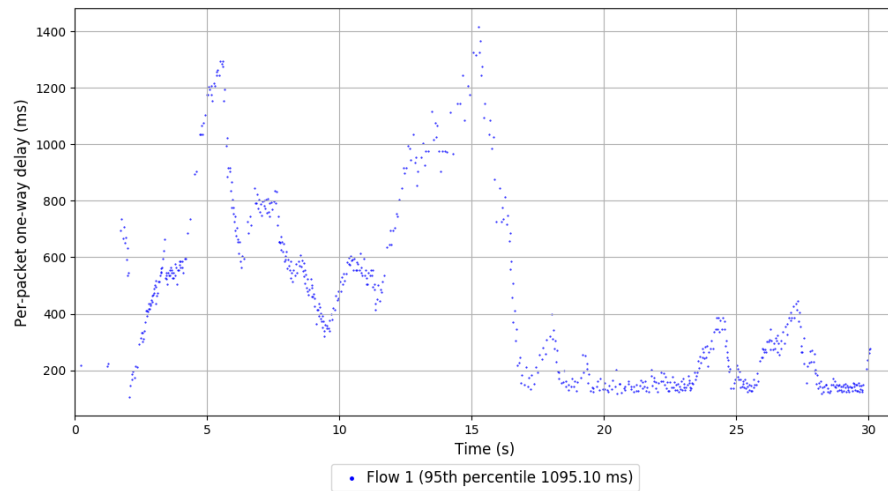
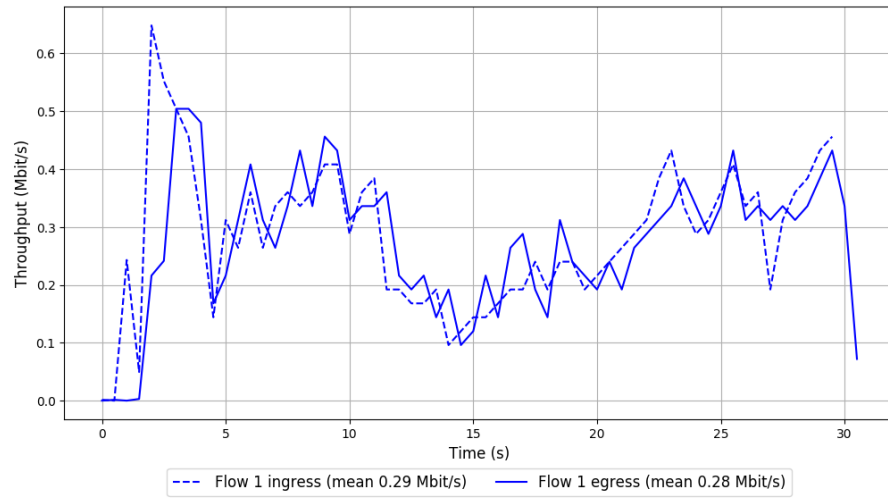
-- Flow 1:

Average throughput: 0.28 Mbit/s

95th percentile per-packet one-way delay: 1095.102 ms

Loss rate: 0.98%

Run 2: Report of TCP Vegas — Data Link

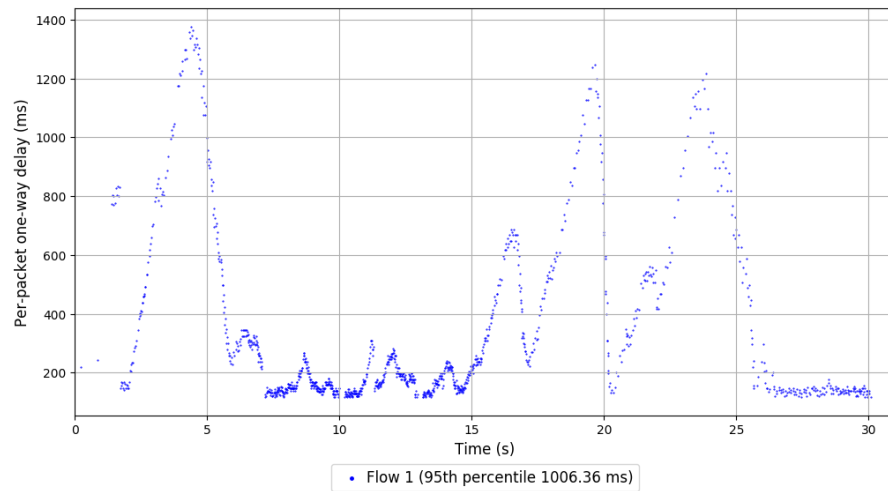
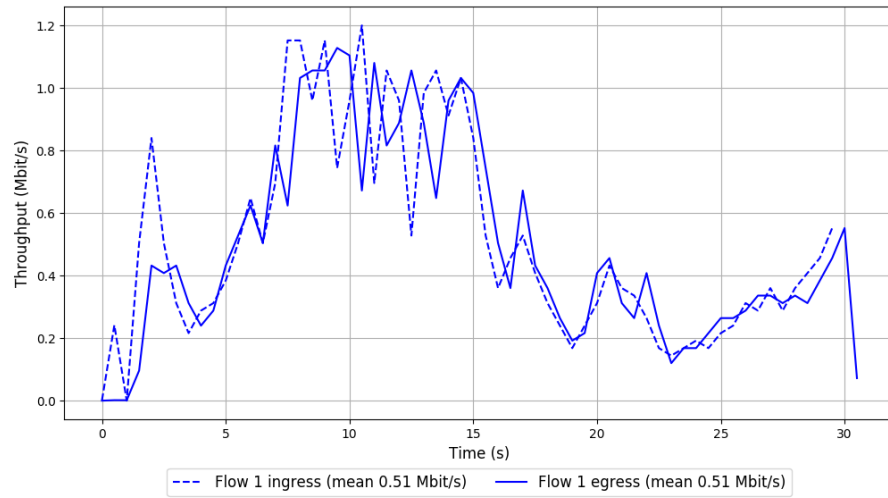


Run 3: Statistics of TCP Vegas

Start at: 2019-01-18 18:21:24
End at: 2019-01-18 18:21:54
Local clock offset: -7.384 ms
Remote clock offset: 4.16 ms

Below is generated by plot.py at 2019-01-18 18:43:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.51 Mbit/s
95th percentile per-packet one-way delay: 1006.364 ms
Loss rate: 0.16%
-- Flow 1:
Average throughput: 0.51 Mbit/s
95th percentile per-packet one-way delay: 1006.364 ms
Loss rate: 0.16%

Run 3: Report of TCP Vegas — Data Link

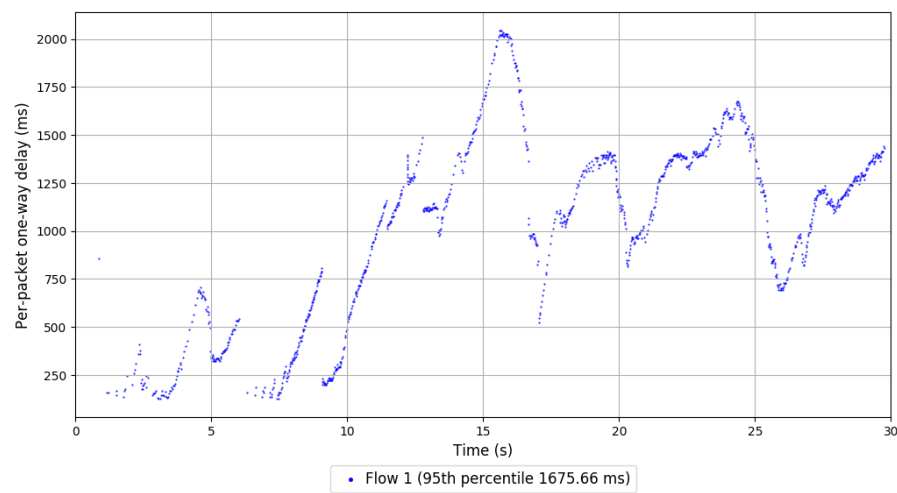
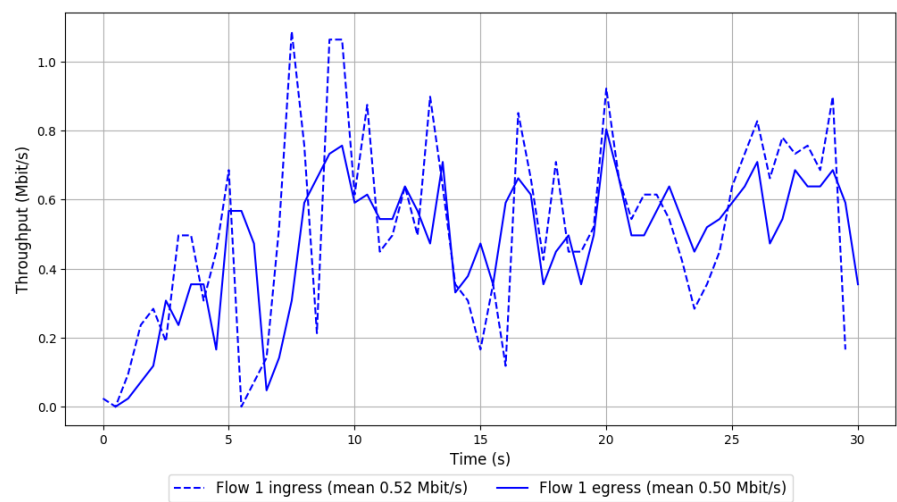


Run 1: Statistics of Verus

Start at: 2019-01-18 17:43:31
End at: 2019-01-18 17:44:01
Local clock offset: -8.993 ms
Remote clock offset: -0.645 ms

Below is generated by plot.py at 2019-01-18 18:43:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.50 Mbit/s
95th percentile per-packet one-way delay: 1675.659 ms
Loss rate: 6.34%
-- Flow 1:
Average throughput: 0.50 Mbit/s
95th percentile per-packet one-way delay: 1675.659 ms
Loss rate: 6.34%

Run 1: Report of Verus — Data Link

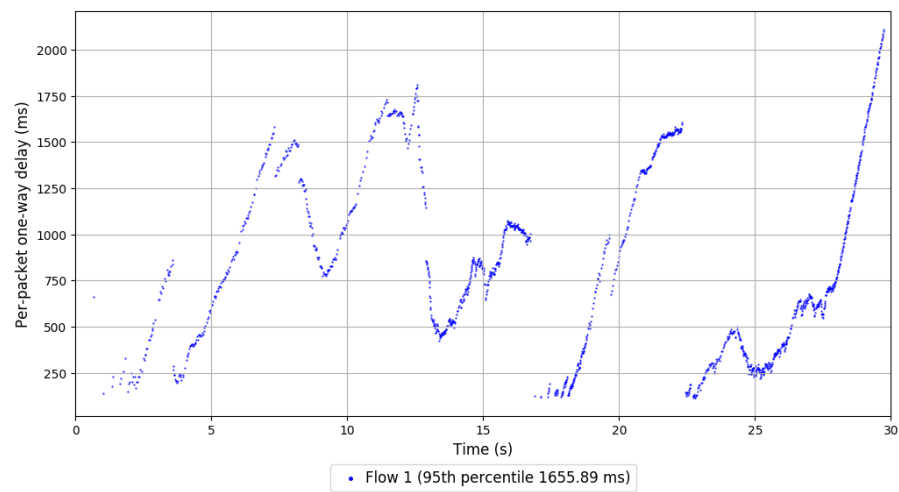
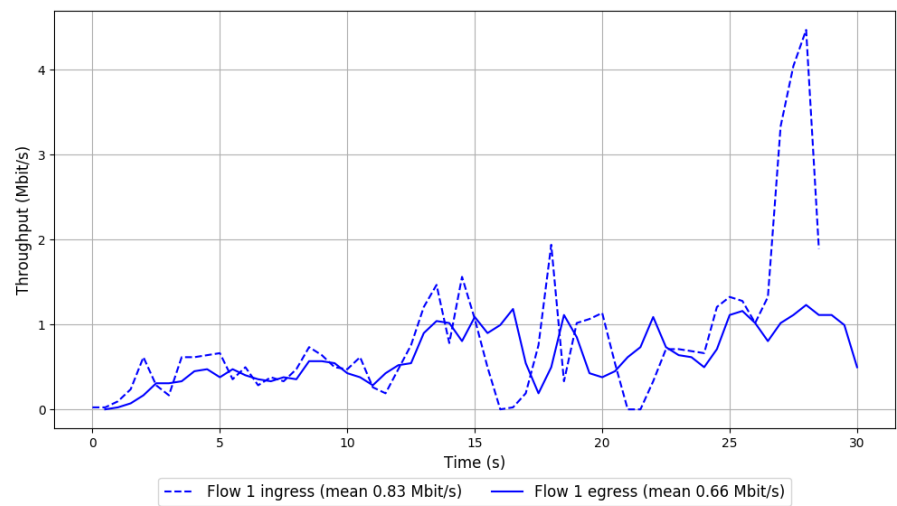


Run 2: Statistics of Verus

Start at: 2019-01-18 18:07:45
End at: 2019-01-18 18:08:15
Local clock offset: -8.646 ms
Remote clock offset: 0.349 ms

Below is generated by plot.py at 2019-01-18 18:43:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.66 Mbit/s
95th percentile per-packet one-way delay: 1655.891 ms
Loss rate: 19.52%
-- Flow 1:
Average throughput: 0.66 Mbit/s
95th percentile per-packet one-way delay: 1655.891 ms
Loss rate: 19.52%

Run 2: Report of Verus — Data Link



Run 3: Statistics of Verus

Start at: 2019-01-18 18:31:38

End at: 2019-01-18 18:32:08

Local clock offset: -7.275 ms

Remote clock offset: 7.343 ms

Below is generated by plot.py at 2019-01-18 18:43:07

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.93 Mbit/s

95th percentile per-packet one-way delay: 1870.986 ms

Loss rate: 3.66%

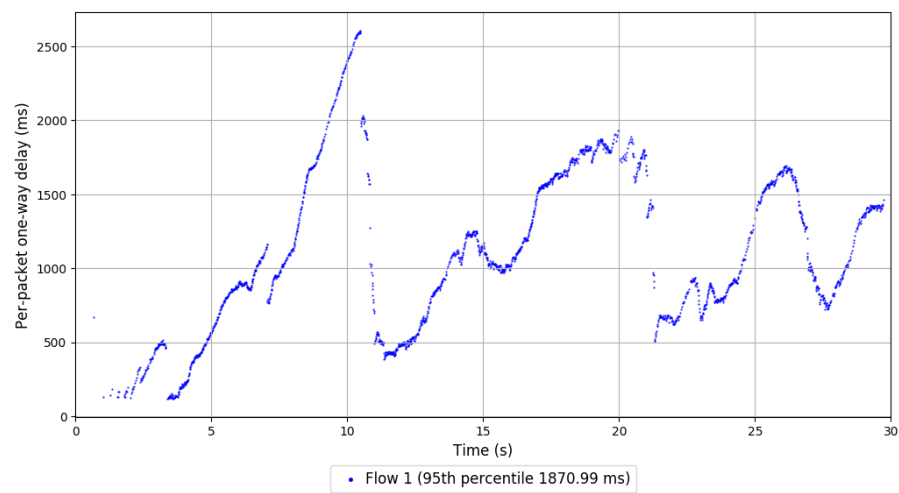
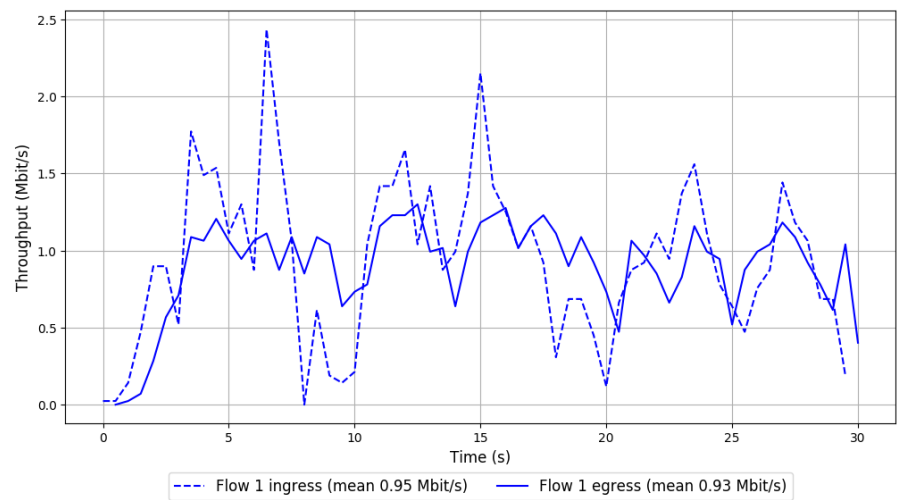
-- Flow 1:

Average throughput: 0.93 Mbit/s

95th percentile per-packet one-way delay: 1870.986 ms

Loss rate: 3.66%

Run 3: Report of Verus — Data Link

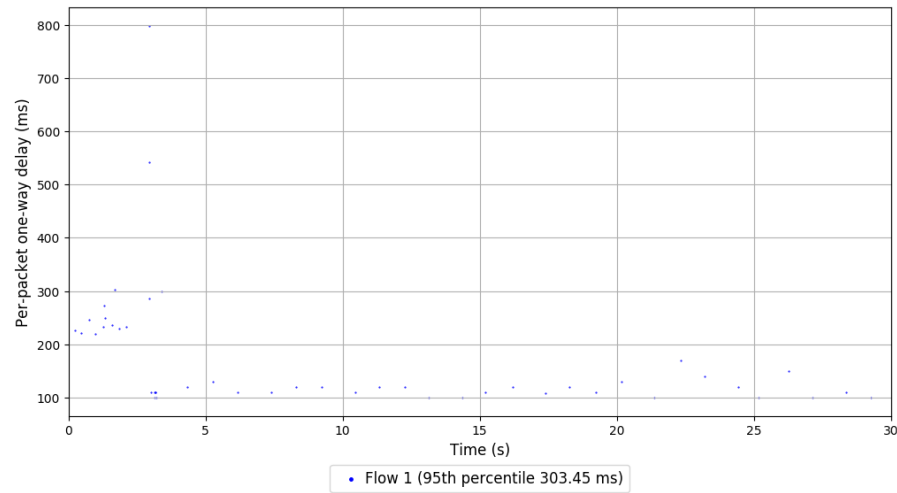
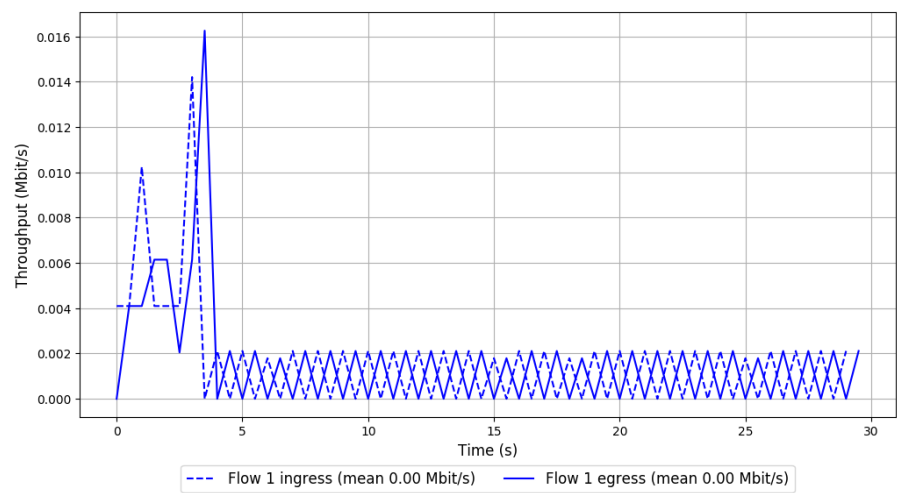


Run 1: Statistics of PCC-Vivace

Start at: 2019-01-18 17:44:40
End at: 2019-01-18 17:45:10
Local clock offset: -9.042 ms
Remote clock offset: -0.926 ms

Below is generated by plot.py at 2019-01-18 18:43:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 303.447 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 303.447 ms
Loss rate: 0.00%

Run 1: Report of PCC-Vivace — Data Link



Run 2: Statistics of PCC-Vivace

Start at: 2019-01-18 18:08:53

End at: 2019-01-18 18:09:23

Local clock offset: -8.681 ms

Remote clock offset: 0.314 ms

Below is generated by plot.py at 2019-01-18 18:43:07

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.54 Mbit/s

95th percentile per-packet one-way delay: 15020.453 ms

Loss rate: 57.03%

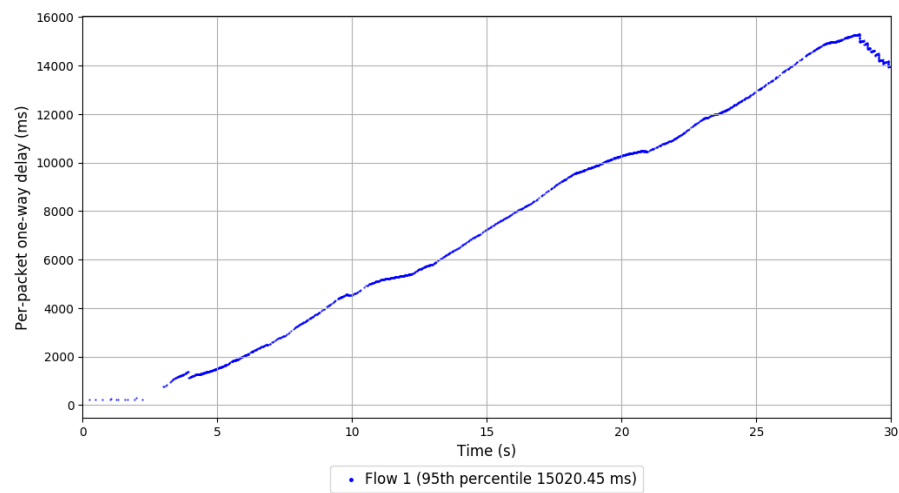
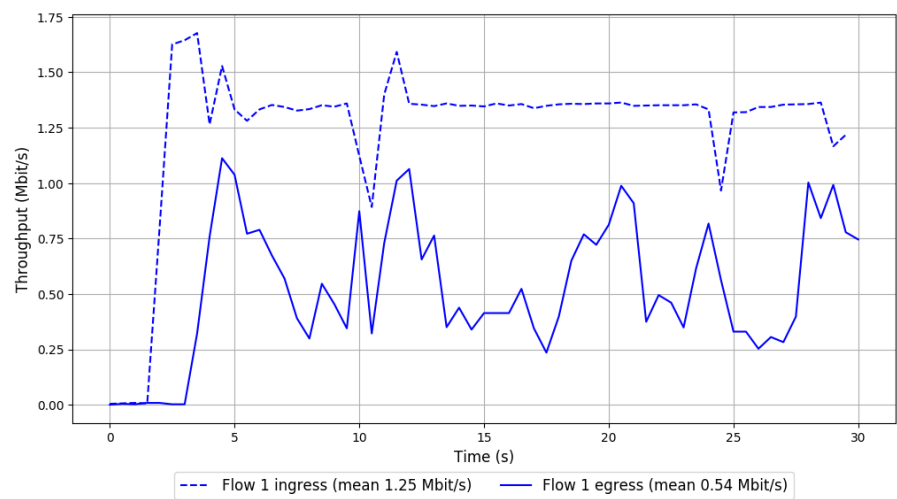
-- Flow 1:

Average throughput: 0.54 Mbit/s

95th percentile per-packet one-way delay: 15020.453 ms

Loss rate: 57.03%

Run 2: Report of PCC-Vivace — Data Link



Run 3: Statistics of PCC-Vivace

Start at: 2019-01-18 18:32:46

End at: 2019-01-18 18:33:16

Local clock offset: -6.422 ms

Remote clock offset: 6.085 ms

Below is generated by plot.py at 2019-01-18 18:43:07

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.46 Mbit/s

95th percentile per-packet one-way delay: 17293.837 ms

Loss rate: 67.16%

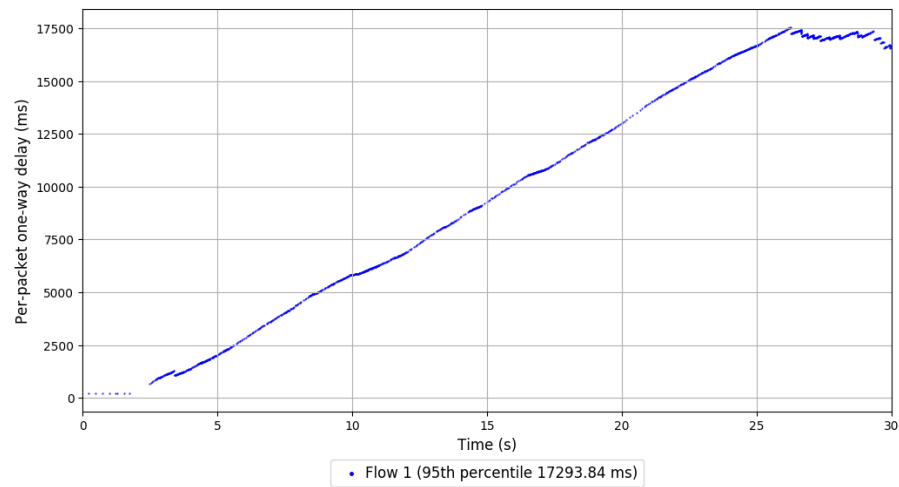
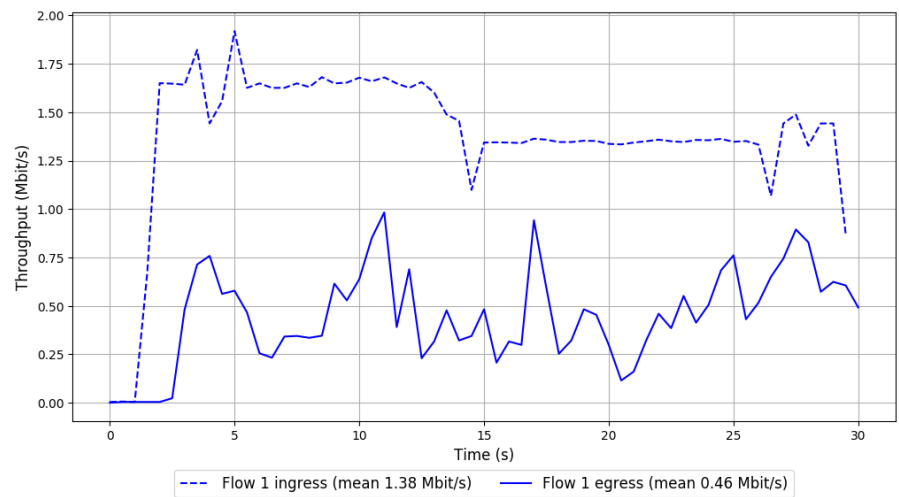
-- Flow 1:

Average throughput: 0.46 Mbit/s

95th percentile per-packet one-way delay: 17293.837 ms

Loss rate: 67.16%

Run 3: Report of PCC-Vivace — Data Link



Run 1: Statistics of WebRTC media

Start at: 2019-01-18 17:45:48

End at: 2019-01-18 17:46:18

Local clock offset: -9.166 ms

Remote clock offset: 0.284 ms

Below is generated by plot.py at 2019-01-18 18:43:07

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.05 Mbit/s

95th percentile per-packet one-way delay: 1365.819 ms

Loss rate: 0.00%

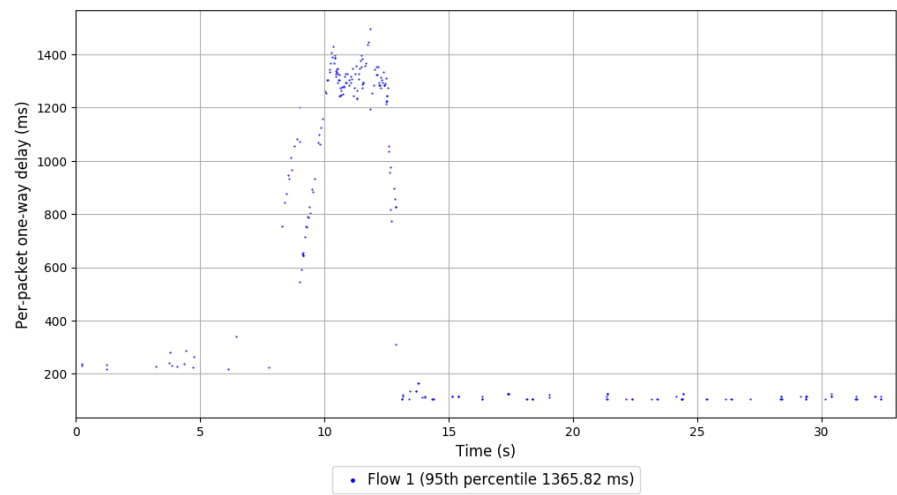
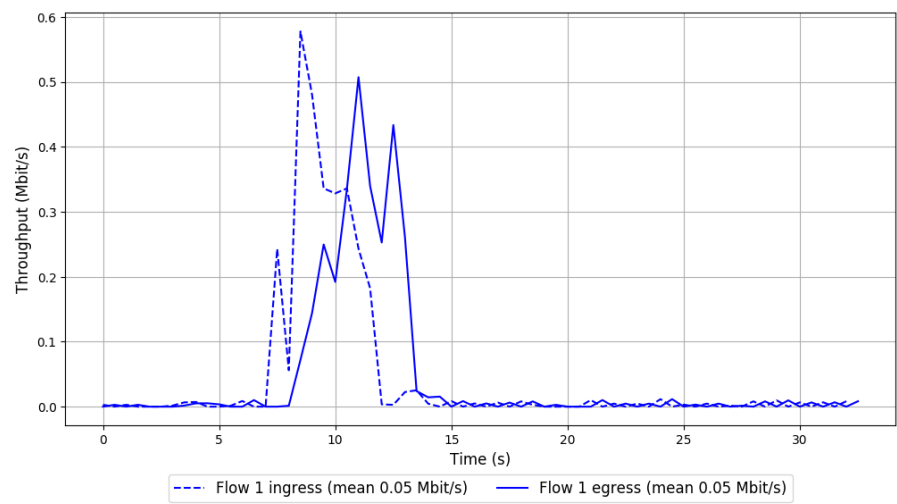
-- Flow 1:

Average throughput: 0.05 Mbit/s

95th percentile per-packet one-way delay: 1365.819 ms

Loss rate: 0.00%

Run 1: Report of WebRTC media — Data Link



Run 2: Statistics of WebRTC media

Start at: 2019-01-18 18:10:02

End at: 2019-01-18 18:10:32

Local clock offset: -8.689 ms

Remote clock offset: 3.253 ms

Below is generated by plot.py at 2019-01-18 18:43:07

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.05 Mbit/s

95th percentile per-packet one-way delay: 370.820 ms

Loss rate: 0.00%

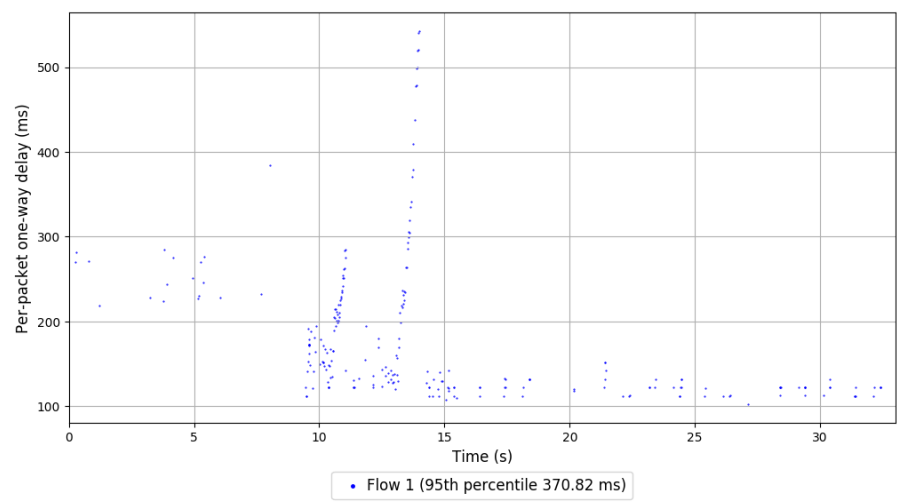
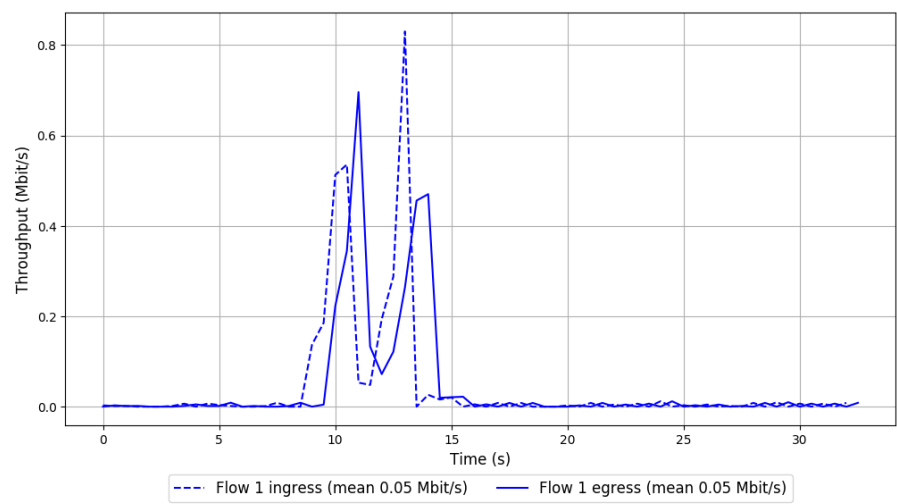
-- Flow 1:

Average throughput: 0.05 Mbit/s

95th percentile per-packet one-way delay: 370.820 ms

Loss rate: 0.00%

Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

Start at: 2019-01-18 18:33:54

End at: 2019-01-18 18:34:24

Local clock offset: -6.443 ms

Remote clock offset: 7.589 ms

Below is generated by plot.py at 2019-01-18 18:43:07

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.05 Mbit/s

95th percentile per-packet one-way delay: 807.769 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 0.05 Mbit/s

95th percentile per-packet one-way delay: 807.769 ms

Loss rate: 0.00%

Run 3: Report of WebRTC media — Data Link

