Pantheon Report

Generated at 2018-03-05 22:27:58 (UTC).

Data path: AWS California 1 Ethernet (*local*) →Stanford ppp0 (*remote*).

Repeated the test of 17 congestion control schemes 3 times.

Each test lasted for 30 seconds running 3 flows with 10-second interval between two flows.

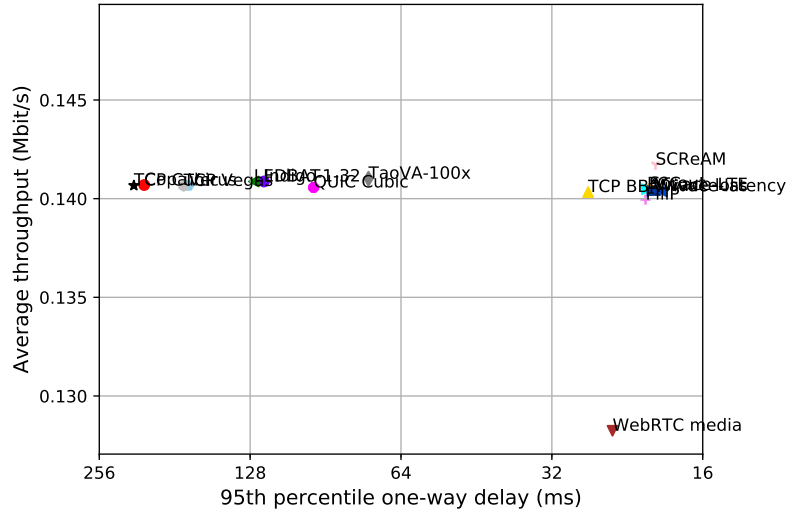Increased UDP receive buffer to 16 MB (default) and 32 MB (max).

Tested BBR with qdisc of Fair Queuing (`fq`), and other schemes with the default Linux qdisc (`pfifo_fast`).

NTP offsets were measured against `time.stanford.edu` and have been applied to correct the timestamps in logs.
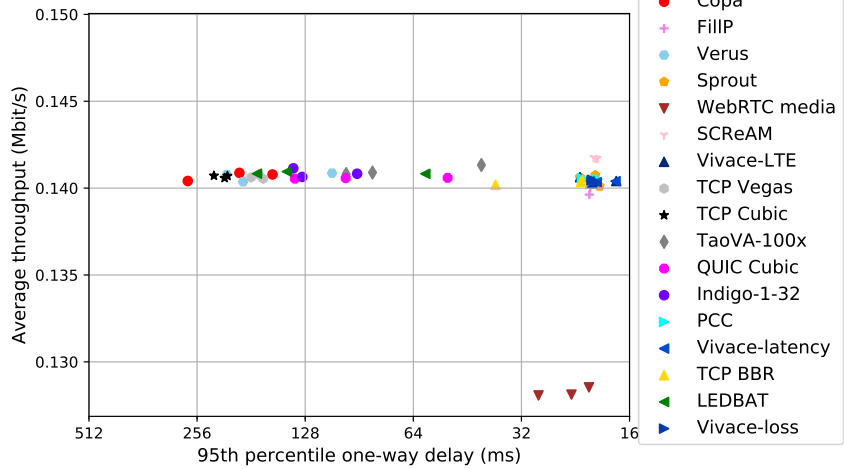
```
Git summary:
branch: master @ f12c42a2c63fdd9a862eefa0468859bf379b6623
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
 M datagrump/sender.cc
third_party/fillp @ 828bbf95fd4941149b5cec90f281d1c69ae1a5c6
third_party/genericCC @ 9249eea3238475c4d8cca1443d28df70bff6c4a2
third_party/indigo @ a9b2060d39e4da2e8987e893e3eca2a6c7cd0ab9
third_party/indigo-1-layer-128-unit @ 3ae9e4ef4230db7484501f82ce8b377695f2f66d
third_party/indigo-1-layer-32-unit @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/indigo-1-layer-32-unit-no-calib @ 1f3a7f75b41135ed5b540c0fd3505939528e2a5f
third_party/indigo-no-calib @ 7224f2202e8a044d8306fa0b983ad84360c53d89
third_party/koho_cc @ f0f2e693303aee82ea808e6928eac4f1083a6681
 M datagrump/sender.cc
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ fb1053193c2861da659ba9013db26744ccfcf993
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/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream @ c3370fd7bd17265a79aeb34e4016ad23f5965885
third_party/sourdough @ f1a14bffe749737437f61b1eaeeb30b267cde681
third_party/sprout @ 6f2efe6e088d91066a9f023df375eee2665089ce
 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 @ 7a4ba531e75b4a6f66f5c4580192120401784ce3
third_party/webrtc @ a488197ddd041ace68a42849b2540ad834825f42
```

test from AWS California 1 Ethernet to Stanford ppp0, 3 runs of 30s each per scheme
3 flows with 10s interval between flows (mean of all runs by scheme)

test from AWS California 1 Ethernet to Stanford ppp0, 3 runs of 30s each per scheme
3 flows with 10s interval between flows

scheme	# runs	mean avg tput (Mbit/s)			mean 95th-%ile delay (ms)			mean loss rate (%)		
		flow 1	flow 2	flow 3	flow 1	flow 2	flow 3	flow 1	flow 2	flow 3
TCP BBR	3	0.12	0.04	0.07	26.00	36.29	15.00	32.17	58.44	84.62
TCP Cubic	3	0.09	0.06	0.06	197.78	223.20	250.29	39.36	44.23	51.56
LEDBAT	3	0.10	0.04	0.06	61.17	139.11	193.24	38.07	52.23	52.43
PCC	3	0.09	0.05	0.05	21.99	18.97	17.59	96.40	99.18	99.64
QUIC Cubic	3	0.10	0.08	0.05	88.57	57.07	84.73	68.57	74.81	76.04
SCReAM	3	0.10	0.05	0.03	20.07	17.36	17.31	3.68	41.22	57.19
WebRTC media	3	0.11	0.01	0.01	23.99	29.63	33.56	64.66	76.71	74.89
Sprout	3	0.09	0.05	0.05	22.76	17.81	18.47	64.70	78.90	79.71
TaoVA-100x	3	0.08	0.08	0.04	71.25	64.51	78.48	94.31	95.07	97.09
TCP Vegas	3	0.10	0.05	0.04	134.22	210.02	140.33	36.78	46.75	58.19
Verus	3	0.09	0.08	0.03	145.21	161.36	138.69	74.10	73.19	65.16
Copa	3	0.09	0.06	0.05	202.51	121.71	249.77	64.12	78.69	77.80
FillP	3	0.09	0.05	0.05	22.51	18.47	17.64	99.11	99.57	99.77
Indigo-1-32	3	0.09	0.06	0.05	116.48	119.84	139.06	78.47	87.85	87.60
Vivace-latency	3	0.09	0.05	0.04	20.28	15.93	18.73	92.43	96.03	96.38
Vivace-loss	3	0.09	0.06	0.04	20.43	19.39	18.96	92.66	95.46	96.73
Vivace-LTE	3	0.09	0.05	0.05	20.45	19.77	18.62	92.52	95.93	96.26

```
Run 1: Statistics of TCP BBR

Start at: 2018-03-05 21:37:06
End at: 2018-03-05 21:37:36
Local clock offset: 1.158 ms
Remote clock offset: 0.723 ms


# Below is generated by plot.py at 2018-03-05 22:27:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 21.836 ms
Loss rate: 34.43%
-- Flow 1:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 21.494 ms
Loss rate: 23.44%
-- Flow 2:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 37.399 ms
Loss rate: 81.36%
-- Flow 3:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 12.754 ms
Loss rate: 88.29%
```
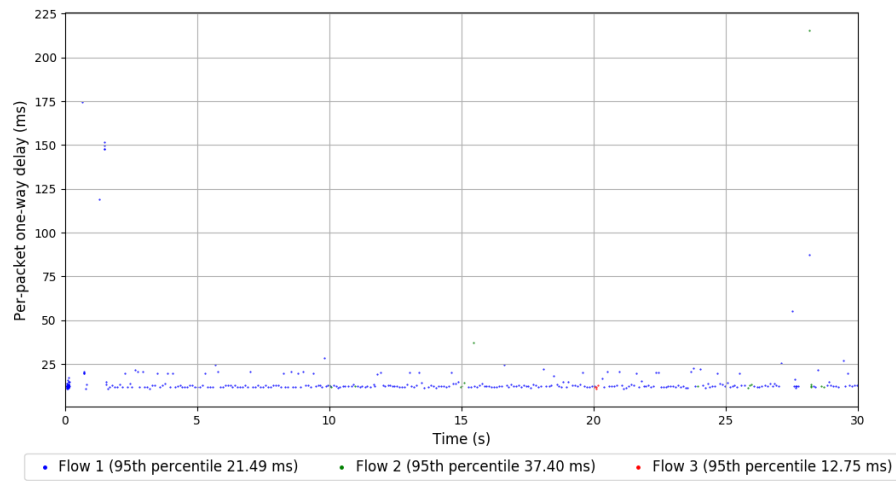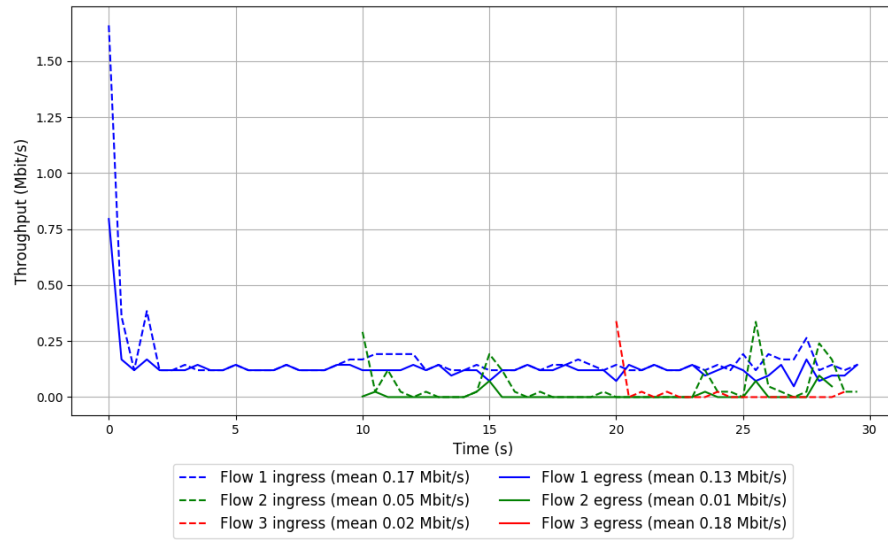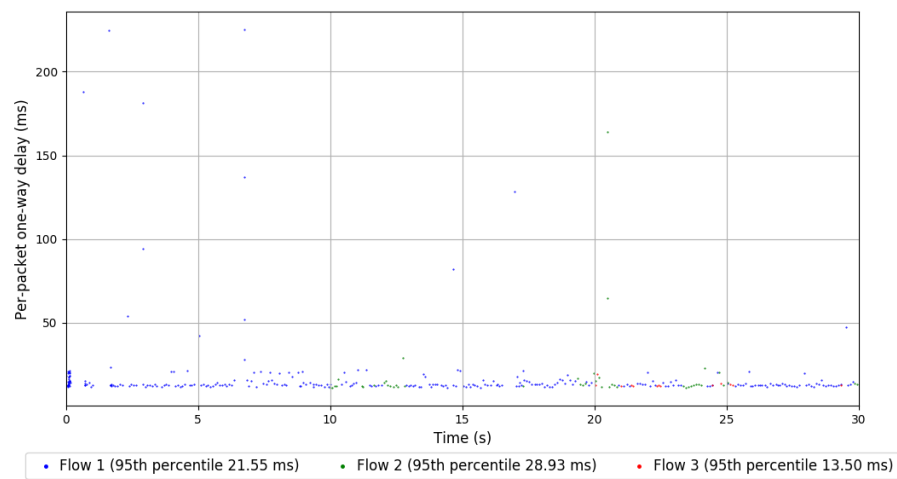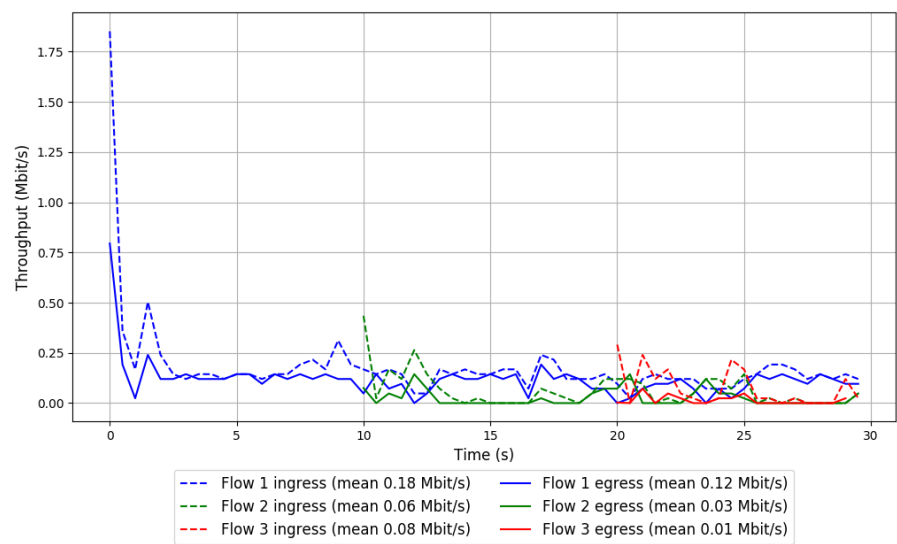
Run 1: Report of TCP BBR — Data Link

```
Run 2: Statistics of TCP BBR

Start at: 2018-03-05 22:00:46
End at: 2018-03-05 22:01:16
Local clock offset: 1.817 ms
Remote clock offset: 0.748 ms


# Below is generated by plot.py at 2018-03-05 22:27:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 21.646 ms
Loss rate: 43.61%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 21.548 ms
Loss rate: 34.73%
-- Flow 2:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 28.925 ms
Loss rate: 58.42%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 13.503 ms
Loss rate: 82.38%
```
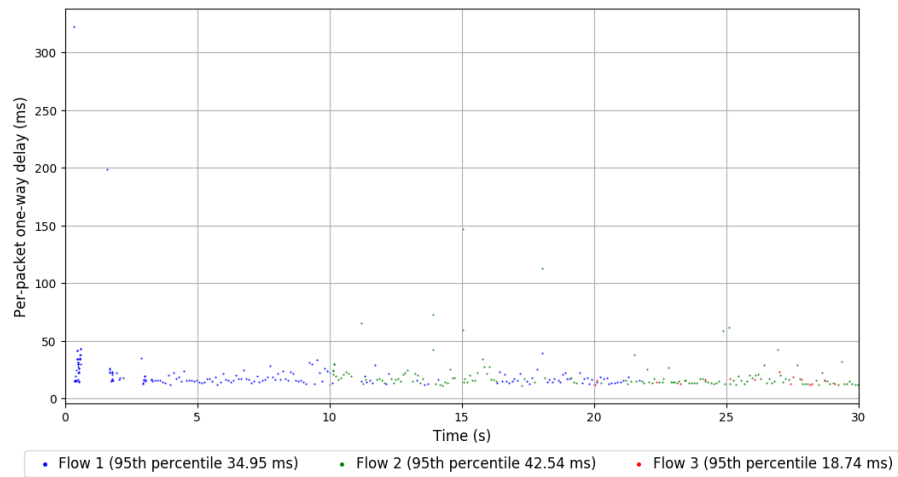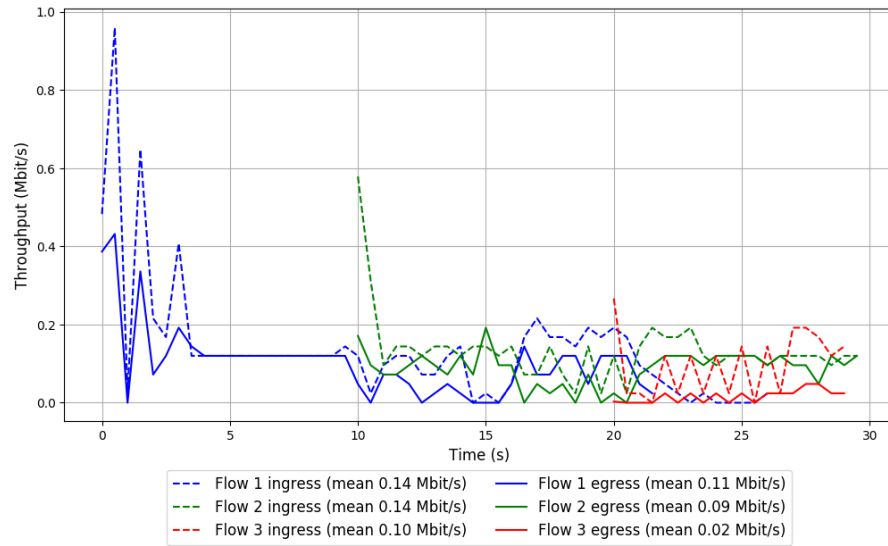
Run 2: Report of TCP BBR — Data Link

```
Run 3: Statistics of TCP BBR

Start at: 2018-03-05 22:24:28
End at: 2018-03-05 22:24:58
Local clock offset: 1.311 ms
Remote clock offset: 0.669 ms


# Below is generated by plot.py at 2018-03-05 22:27:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 37.783 ms
Loss rate: 43.07%
-- Flow 1:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 34.948 ms
Loss rate: 38.35%
-- Flow 2:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 42.543 ms
Loss rate: 35.54%
-- Flow 3:
Average throughput: 0.02 Mbit/s
95th percentile per-packet one-way delay: 18.739 ms
Loss rate: 83.20%
```
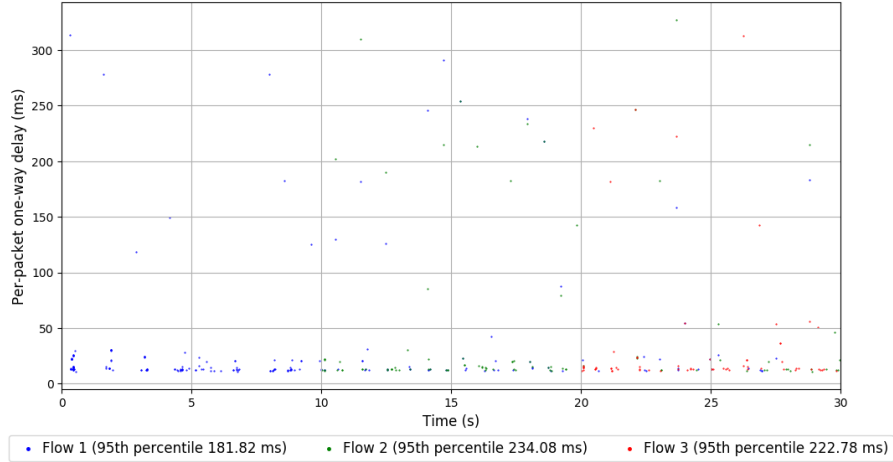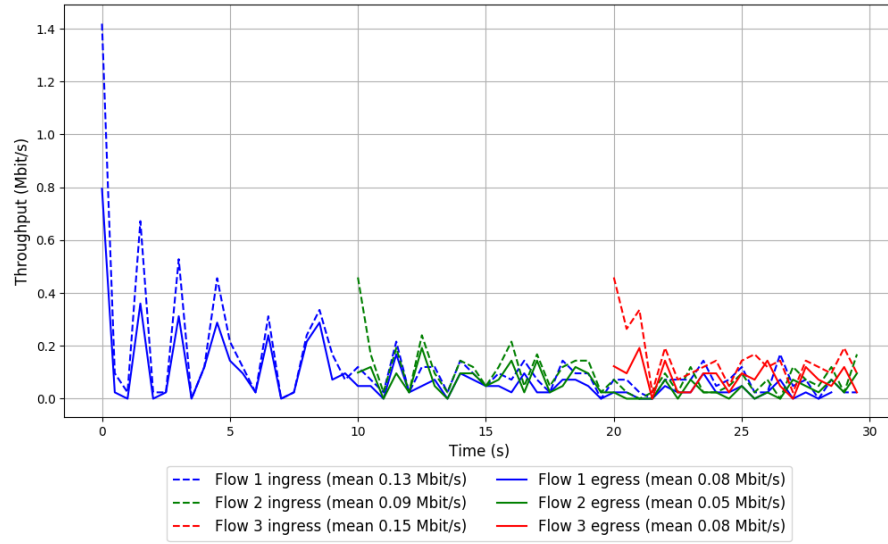
Run 3: Report of TCP BBR — Data Link

```
Run 1: Statistics of TCP Cubic

Start at: 2018-03-05 21:29:12
End at: 2018-03-05 21:29:42
Local clock offset: 1.077 ms
Remote clock offset: 0.764 ms


# Below is generated by plot.py at 2018-03-05 22:27:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 214.585 ms
Loss rate: 43.00%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 181.823 ms
Loss rate: 40.96%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 234.083 ms
Loss rate: 43.28%
-- Flow 3:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 222.776 ms
Loss rate: 47.95%
```
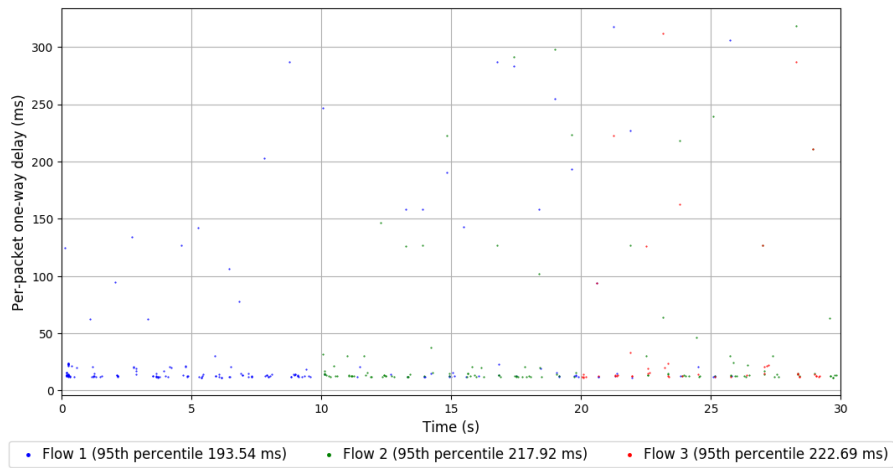
Run 1: Report of TCP Cubic — Data Link

```
Run 2: Statistics of TCP Cubic

Start at: 2018-03-05 21:52:53
End at: 2018-03-05 21:53:23
Local clock offset: 1.735 ms
Remote clock offset: 0.652 ms


# Below is generated by plot.py at 2018-03-05 22:27:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 210.774 ms
Loss rate: 41.49%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 193.538 ms
Loss rate: 38.85%
-- Flow 2:
Average throughput: 0.07 Mbit/s
95th percentile per-packet one-way delay: 217.918 ms
Loss rate: 42.28%
-- Flow 3:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 222.692 ms
Loss rate: 48.77%
```
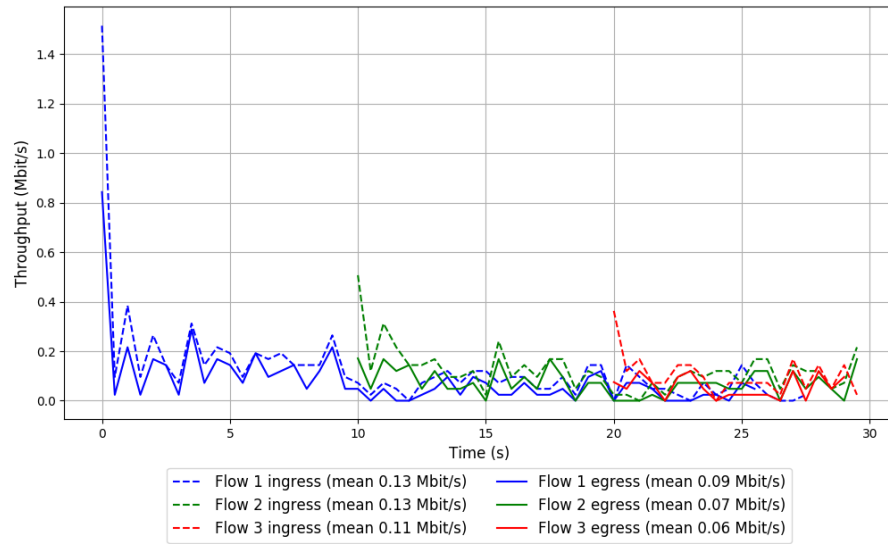
Run 2: Report of TCP Cubic — Data Link

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```
Run 3: Statistics of TCP Cubic

Start at: 2018-03-05 22:16:34
End at: 2018-03-05 22:17:04
Local clock offset: 1.759 ms
Remote clock offset: 0.727 ms


# Below is generated by plot.py at 2018-03-05 22:27:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 229.777 ms
Loss rate: 42.83%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 217.990 ms
Loss rate: 38.26%
-- Flow 2:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 217.591 ms
Loss rate: 47.13%
-- Flow 3:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 305.408 ms
Loss rate: 57.95%
```
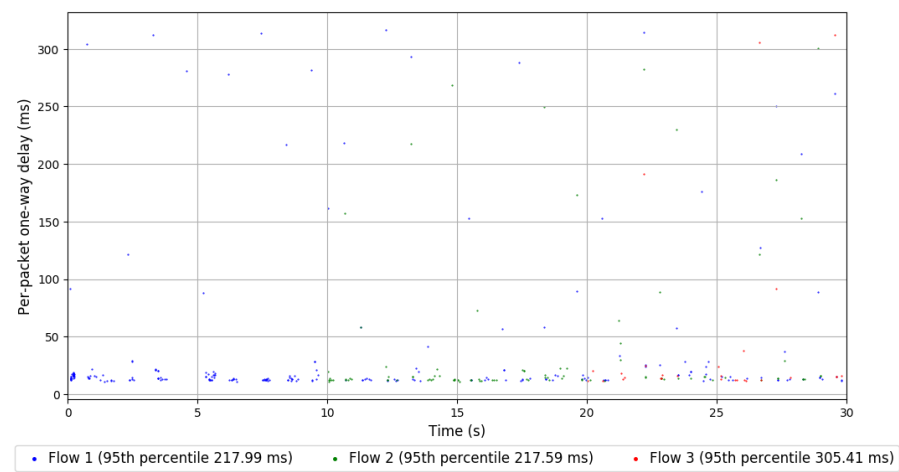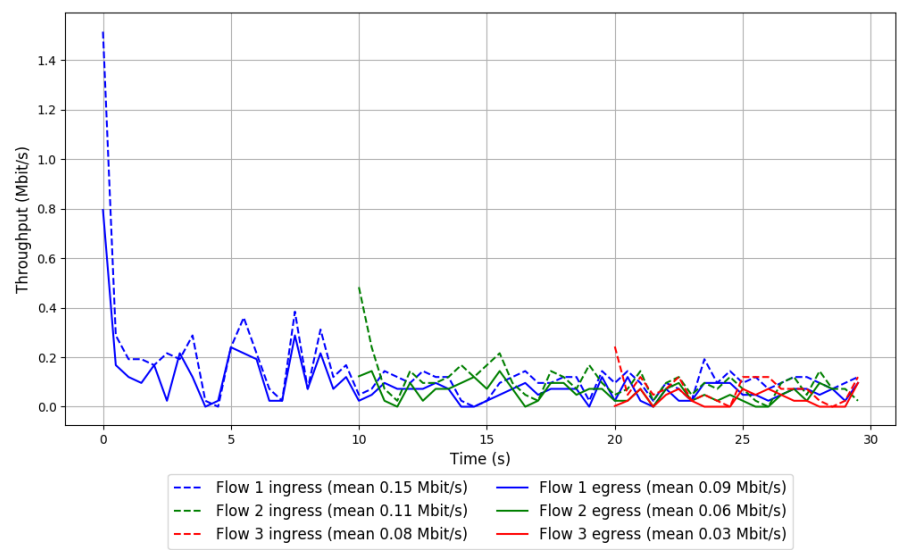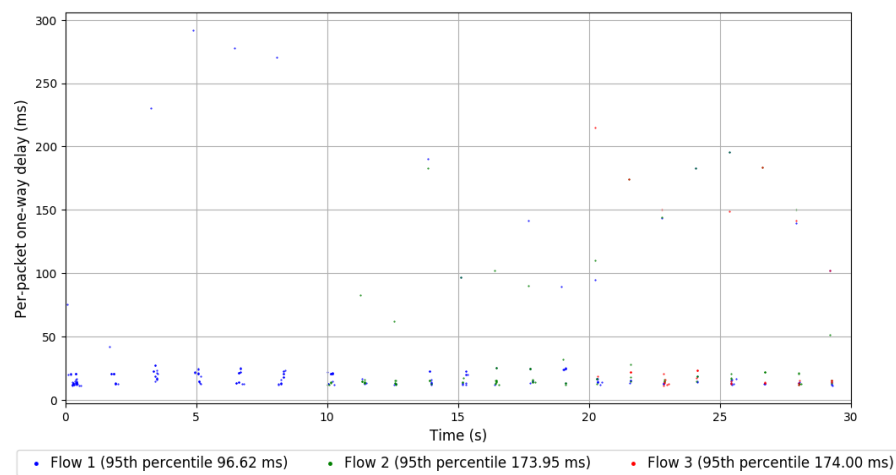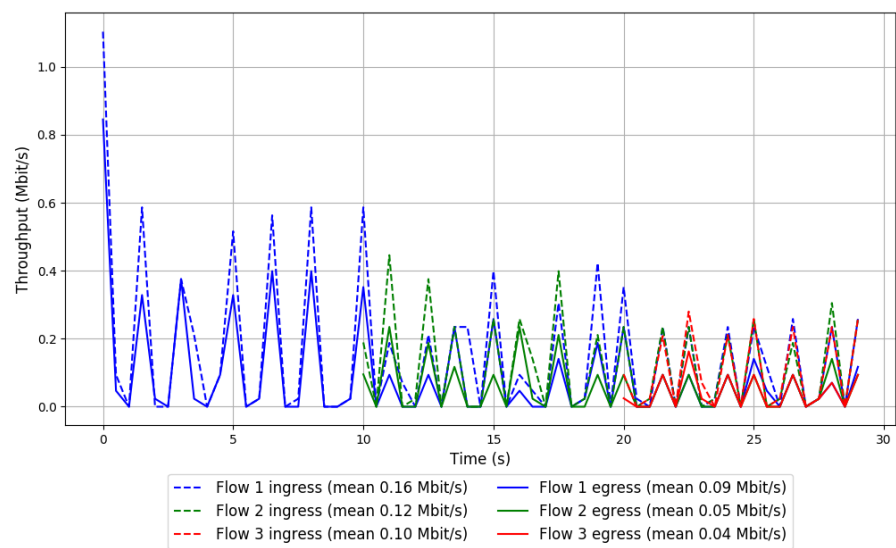
Run 3: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 0.15 Mbit/s)   Flow 1 egress (mean 0.09 Mbit/s)
Flow 2 ingress (mean 0.11 Mbit/s)   Flow 2 egress (mean 0.06 Mbit/s)
Flow 3 ingress (mean 0.08 Mbit/s)   Flow 3 egress (mean 0.03 Mbit/s)

Flow 1 (95th percentile 217.99 ms)   Flow 2 (95th percentile 217.59 ms)   Flow 3 (95th percentile 305.41 ms)

```
Run 1: Statistics of LEDBAT

Start at: 2018-03-05 21:35:47
End at: 2018-03-05 21:36:17
Local clock offset: 1.155 ms
Remote clock offset: 0.8 ms

# Below is generated by plot.py at 2018-03-05 22:27:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 143.953 ms
Loss rate: 47.67%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 96.622 ms
Loss rate: 42.13%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 173.953 ms
Loss rate: 53.83%
-- Flow 3:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 173.996 ms
Loss rate: 59.70%
```
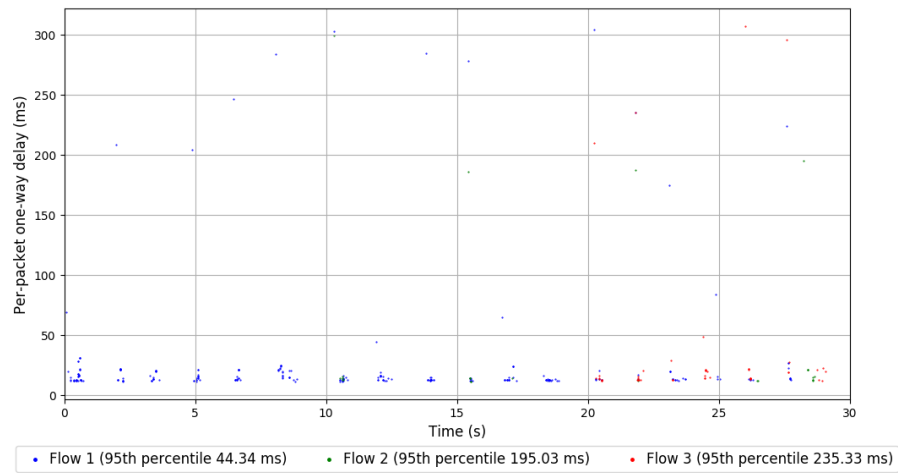
Run 1: Report of LEDBAT — Data Link

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```
Run 2: Statistics of LEDBAT

Start at: 2018-03-05 21:59:28
End at: 2018-03-05 21:59:58
Local clock offset: 1.904 ms
Remote clock offset: 0.678 ms

# Below is generated by plot.py at 2018-03-05 22:27:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 174.386 ms
Loss rate: 40.80%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 44.340 ms
Loss rate: 35.84%
-- Flow 2:
Average throughput: 0.02 Mbit/s
95th percentile per-packet one-way delay: 195.035 ms
Loss rate: 56.40%
-- Flow 3:
Average throughput: 0.07 Mbit/s
95th percentile per-packet one-way delay: 235.326 ms
Loss rate: 51.93%
```
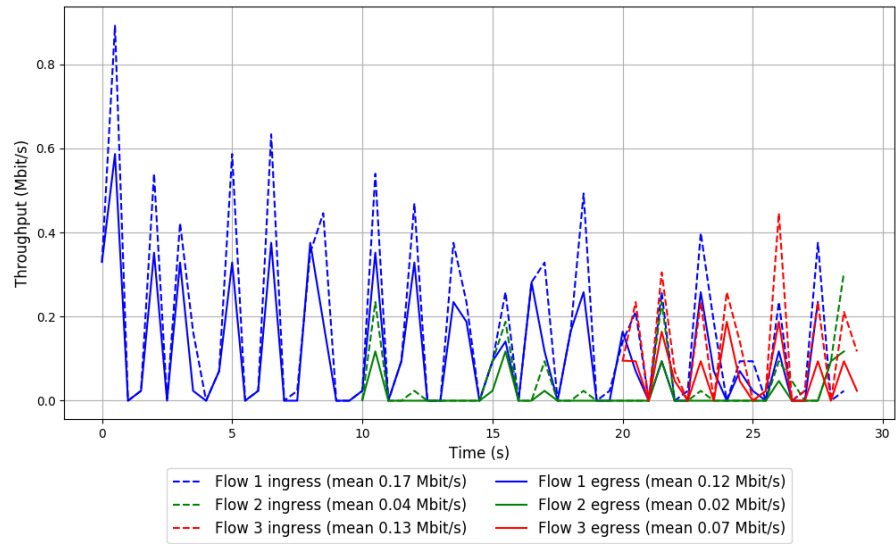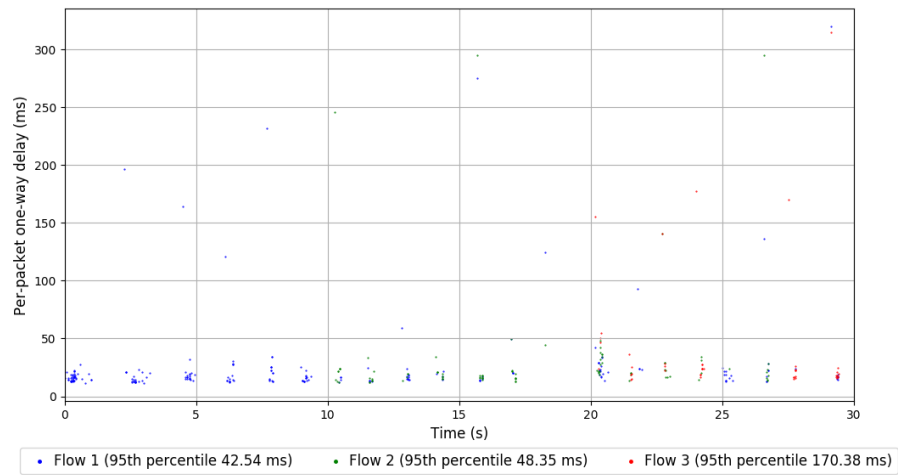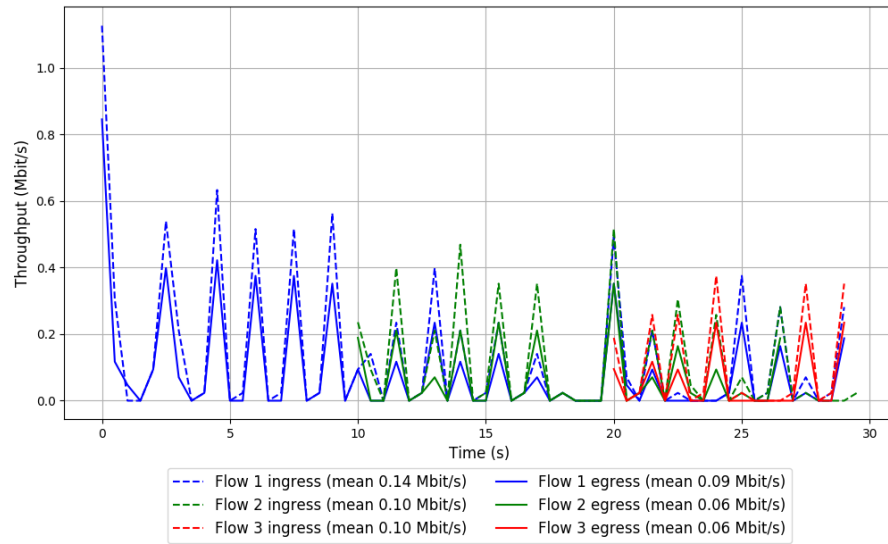
Run 2: Report of LEDBAT — Data Link

Flow 1 ingress (mean 0.17 Mbit/s) --- Flow 1 egress (mean 0.12 Mbit/s) ---
Flow 2 ingress (mean 0.04 Mbit/s) --- Flow 2 egress (mean 0.02 Mbit/s) ---
Flow 3 ingress (mean 0.13 Mbit/s) --- Flow 3 egress (mean 0.07 Mbit/s) ---

• Flow 1 (95th percentile 44.34 ms)   • Flow 2 (95th percentile 195.03 ms)   • Flow 3 (95th percentile 235.33 ms)

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```
Run 3: Statistics of LEDBAT

Start at: 2018-03-05 22:23:09
End at: 2018-03-05 22:23:39
Local clock offset: 1.436 ms
Remote clock offset: 0.711 ms


# Below is generated by plot.py at 2018-03-05 22:27:23
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 59.256 ms
Loss rate: 40.46%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 42.542 ms
Loss rate: 36.25%
-- Flow 2:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 48.346 ms
Loss rate: 46.45%
-- Flow 3:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 170.385 ms
Loss rate: 45.65%
```
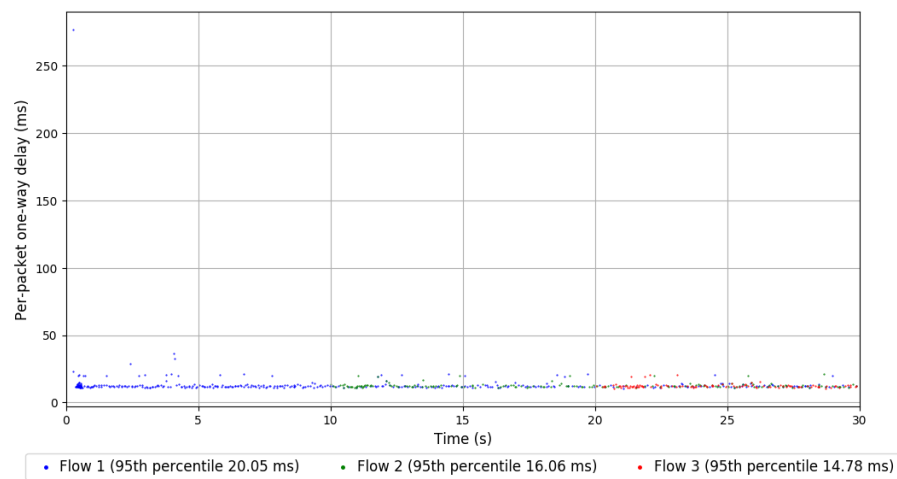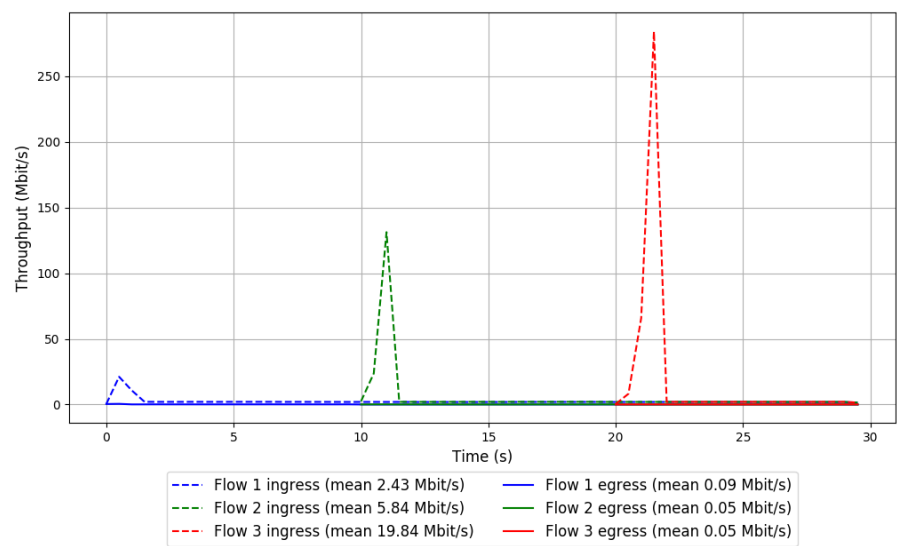
Run 3: Report of LEDBAT — Data Link

```
Run 1: Statistics of PCC

Start at: 2018-03-05 21:19:59
End at: 2018-03-05 21:20:29
Local clock offset: 1.255 ms
Remote clock offset: 0.842 ms


# Below is generated by plot.py at 2018-03-05 22:27:33
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 19.640 ms
Loss rate: 98.92%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 20.047 ms
Loss rate: 96.35%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 16.059 ms
Loss rate: 99.12%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 14.784 ms
Loss rate: 99.75%
```
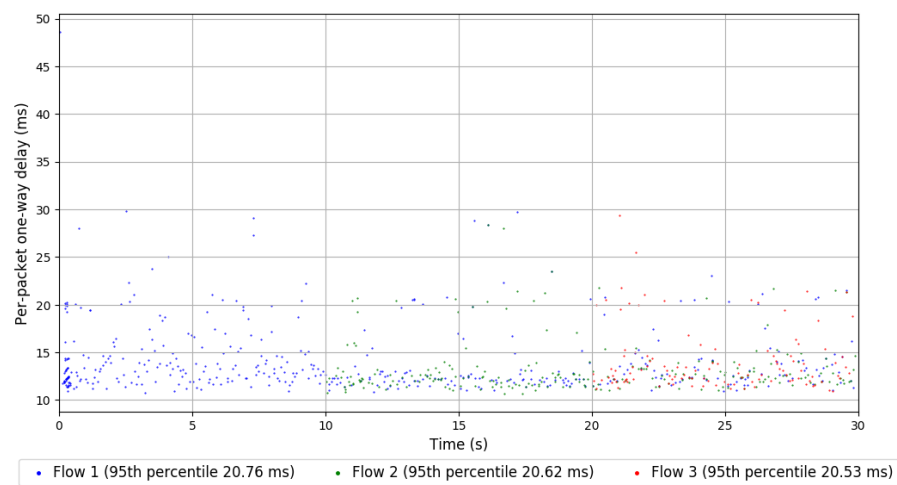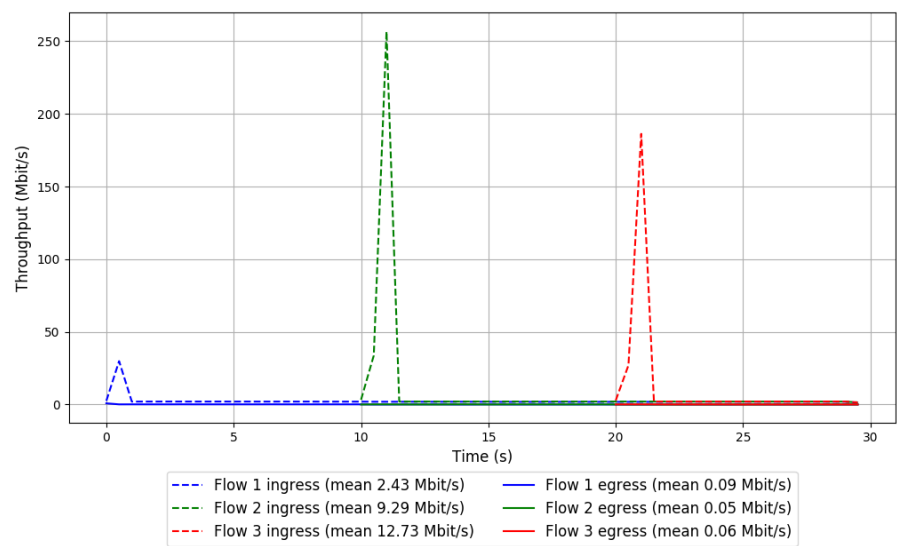
Run 1: Report of PCC — Data Link

- Flow 1 ingress (mean 2.43 Mbit/s)
- Flow 2 ingress (mean 5.84 Mbit/s)
- Flow 3 ingress (mean 19.84 Mbit/s)
- Flow 1 egress (mean 0.09 Mbit/s)
- Flow 2 egress (mean 0.05 Mbit/s)
- Flow 3 egress (mean 0.05 Mbit/s)

- Flow 1 (95th percentile 20.05 ms)
- Flow 2 (95th percentile 16.06 ms)
- Flow 3 (95th percentile 14.78 ms)

```
Run 2: Statistics of PCC

Start at: 2018-03-05 21:43:41
End at: 2018-03-05 21:44:11
Local clock offset: 1.296 ms
Remote clock offset: 0.686 ms


# Below is generated by plot.py at 2018-03-05 22:27:33
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 20.644 ms
Loss rate: 98.90%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 20.758 ms
Loss rate: 96.47%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 20.624 ms
Loss rate: 99.43%
-- Flow 3:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 20.526 ms
Loss rate: 99.54%
```
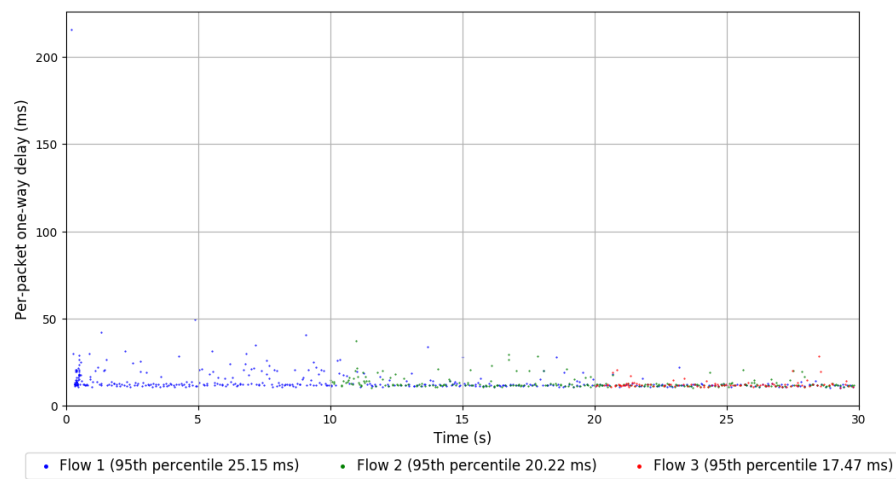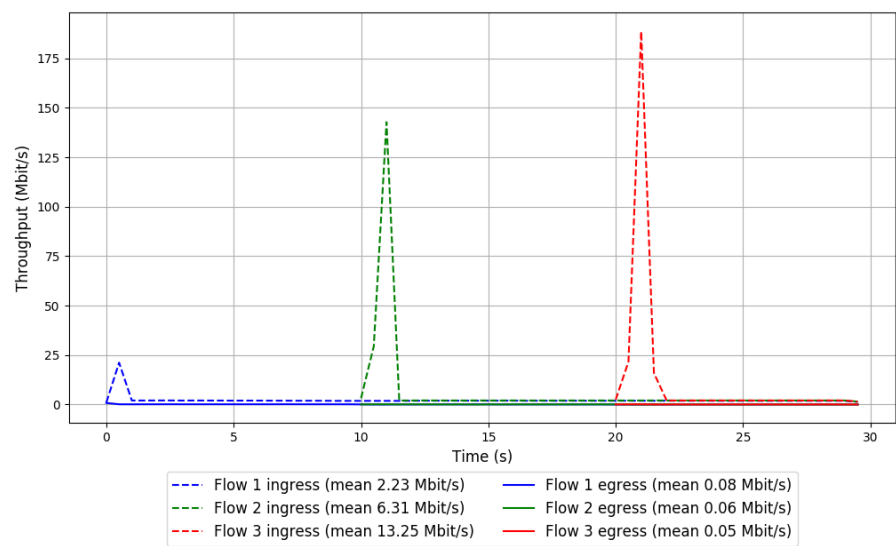
Run 2: Report of PCC — Data Link

- Flow 1 ingress (mean 2.43 Mbit/s)
- Flow 2 ingress (mean 9.29 Mbit/s)
- Flow 3 ingress (mean 12.73 Mbit/s)
- Flow 1 egress (mean 0.09 Mbit/s)
- Flow 2 egress (mean 0.05 Mbit/s)
- Flow 3 egress (mean 0.06 Mbit/s)

- Flow 1 (95th percentile 20.76 ms)
- Flow 2 (95th percentile 20.62 ms)
- Flow 3 (95th percentile 20.53 ms)

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```
Run 3: Statistics of PCC

Start at: 2018-03-05 22:07:21
End at: 2018-03-05 22:07:51
Local clock offset: 2.015 ms
Remote clock offset: 0.657 ms


# Below is generated by plot.py at 2018-03-05 22:27:33
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 21.718 ms
Loss rate: 98.71%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 25.153 ms
Loss rate: 96.38%
-- Flow 2:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 20.219 ms
Loss rate: 98.98%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 17.466 ms
Loss rate: 99.64%
```
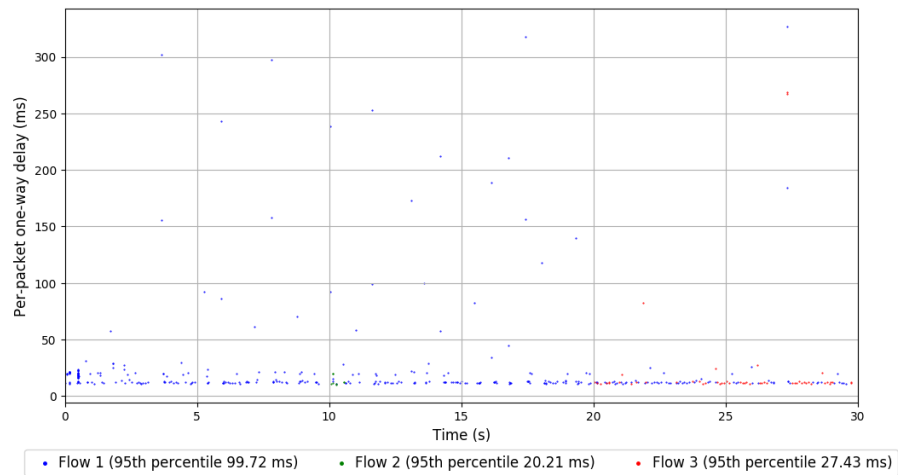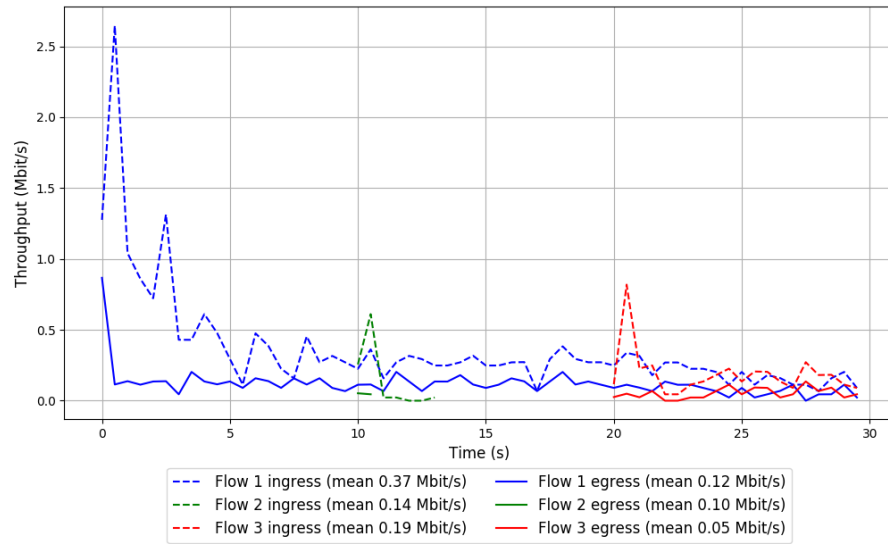
Run 3: Report of PCC — Data Link

Flow 1 ingress (mean 2.23 Mbit/s)   Flow 1 egress (mean 0.08 Mbit/s)
Flow 2 ingress (mean 6.31 Mbit/s)   Flow 2 egress (mean 0.06 Mbit/s)
Flow 3 ingress (mean 13.25 Mbit/s)   Flow 3 egress (mean 0.05 Mbit/s)

Flow 1 (95th percentile 25.15 ms)   Flow 2 (95th percentile 20.22 ms)   Flow 3 (95th percentile 17.47 ms)

```
Run 1: Statistics of QUIC Cubic

Start at: 2018-03-05 21:33:09
End at: 2018-03-05 21:33:39
Local clock offset: 1.097 ms
Remote clock offset: 0.742 ms


# Below is generated by plot.py at 2018-03-05 22:27:33
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 98.732 ms
Loss rate: 68.57%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 99.716 ms
Loss rate: 67.08%
-- Flow 2:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 20.209 ms
Loss rate: 89.55%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 27.427 ms
Loss rate: 72.04%
```
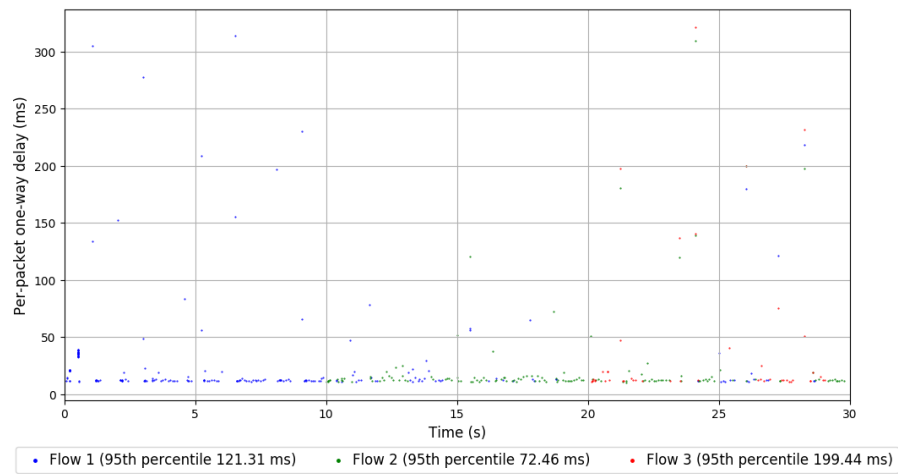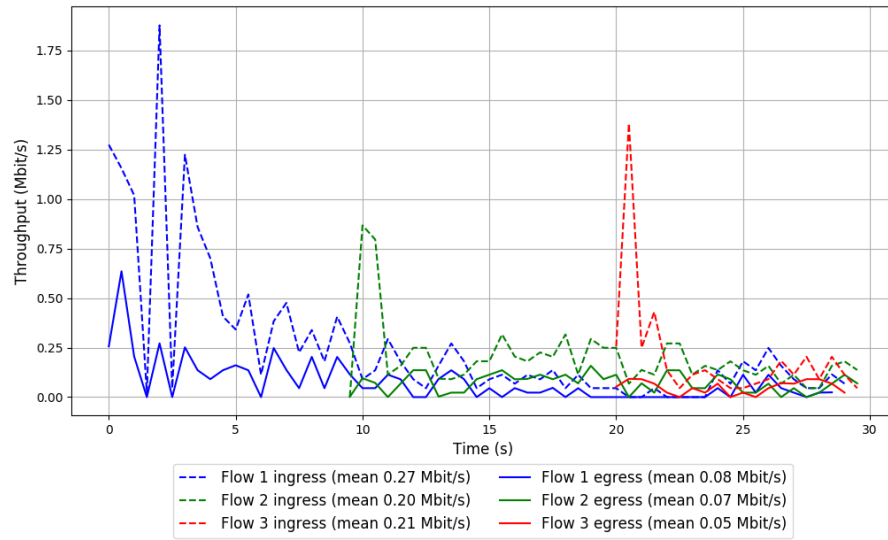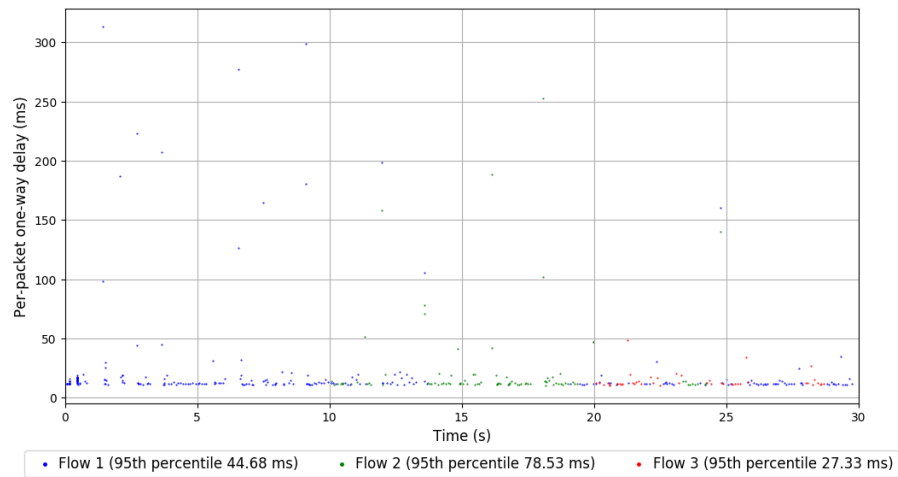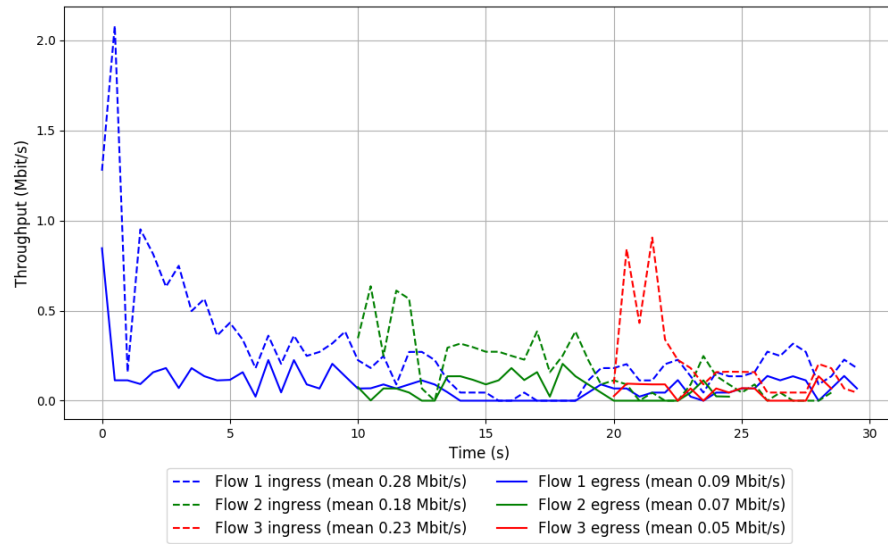
Run 1: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 0.37 Mbit/s) — Flow 1 egress (mean 0.12 Mbit/s)
Flow 2 ingress (mean 0.14 Mbit/s) — Flow 2 egress (mean 0.10 Mbit/s)
Flow 3 ingress (mean 0.19 Mbit/s) — Flow 3 egress (mean 0.05 Mbit/s)

Flow 1 (95th percentile 99.72 ms) • Flow 2 (95th percentile 20.21 ms) • Flow 3 (95th percentile 27.43 ms)

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```
Run 2: Statistics of QUIC Cubic

Start at: 2018-03-05 21:56:50
End at: 2018-03-05 21:57:20
Local clock offset: 1.766 ms
Remote clock offset: 0.652 ms


# Below is generated by plot.py at 2018-03-05 22:27:33
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 136.765 ms
Loss rate: 69.73%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 121.312 ms
Loss rate: 70.98%
-- Flow 2:
Average throughput: 0.07 Mbit/s
95th percentile per-packet one-way delay: 72.457 ms
Loss rate: 63.80%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 199.438 ms
Loss rate: 76.75%
```
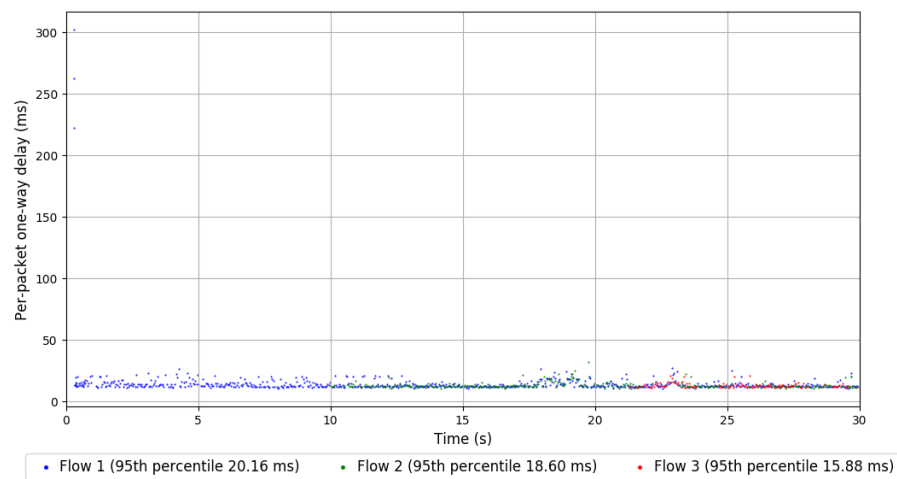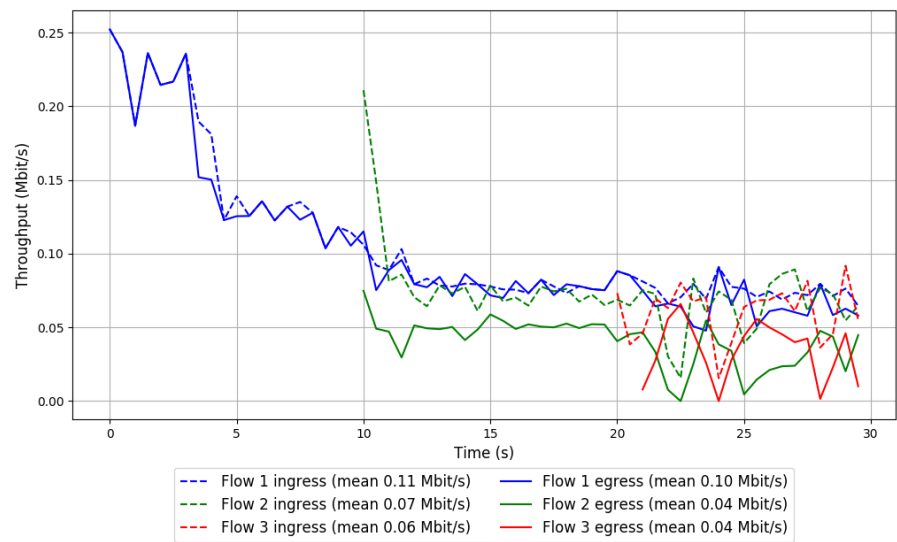
Run 2: Report of QUIC Cubic — Data Link

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-03-05 22:20:31
End at: 2018-03-05 22:21:01
Local clock offset: 1.562 ms
Remote clock offset: 0.61 ms


# Below is generated by plot.py at 2018-03-05 22:27:33
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 51.363 ms
Loss rate: 70.32%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 44.679 ms
Loss rate: 67.64%
-- Flow 2:
Average throughput: 0.07 Mbit/s
95th percentile per-packet one-way delay: 78.535 ms
Loss rate: 71.08%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 27.332 ms
Loss rate: 79.32%
```

Run 3: Report of QUIC Cubic — Data Link

```
Run 1: Statistics of SCReAM

Start at: 2018-03-05 21:23:57
End at: 2018-03-05 21:24:27
Local clock offset: 1.211 ms
Remote clock offset: 0.774 ms

# Below is generated by plot.py at 2018-03-05 22:27:33
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 19.847 ms
Loss rate: 21.05%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 20.160 ms
Loss rate: 4.73%
-- Flow 2:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 18.603 ms
Loss rate: 45.31%
-- Flow 3:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 15.884 ms
Loss rate: 49.11%
```
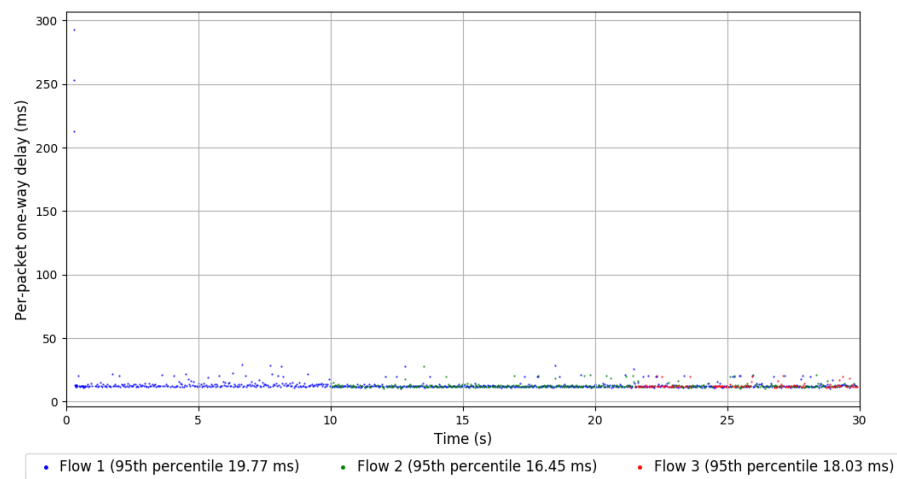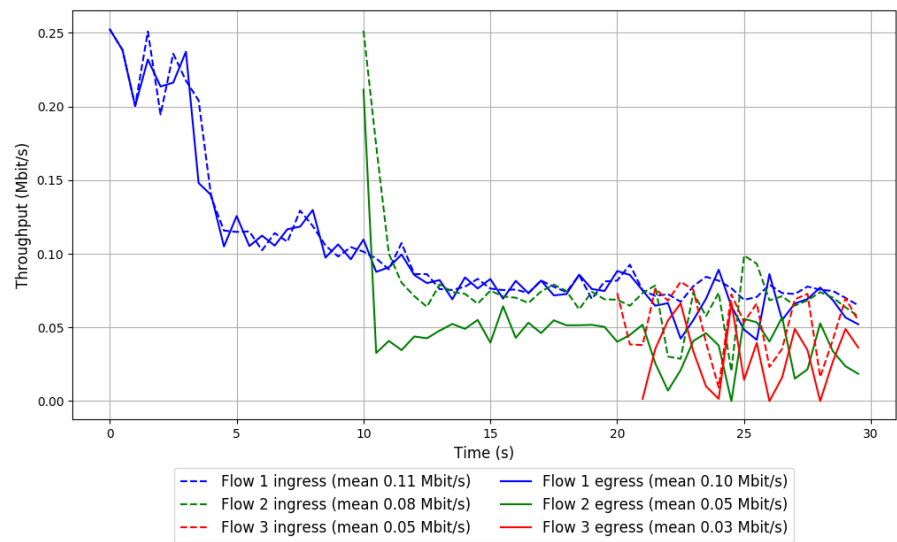
Run 1: Report of SCReAM — Data Link

```
Run 2: Statistics of SCReAM

Start at: 2018-03-05 21:47:37
End at: 2018-03-05 21:48:07
Local clock offset: 1.597 ms
Remote clock offset: 0.639 ms


# Below is generated by plot.py at 2018-03-05 22:27:33
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 19.639 ms
Loss rate: 19.62%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 19.772 ms
Loss rate: 4.18%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 16.453 ms
Loss rate: 40.82%
-- Flow 3:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 18.026 ms
Loss rate: 50.17%
```
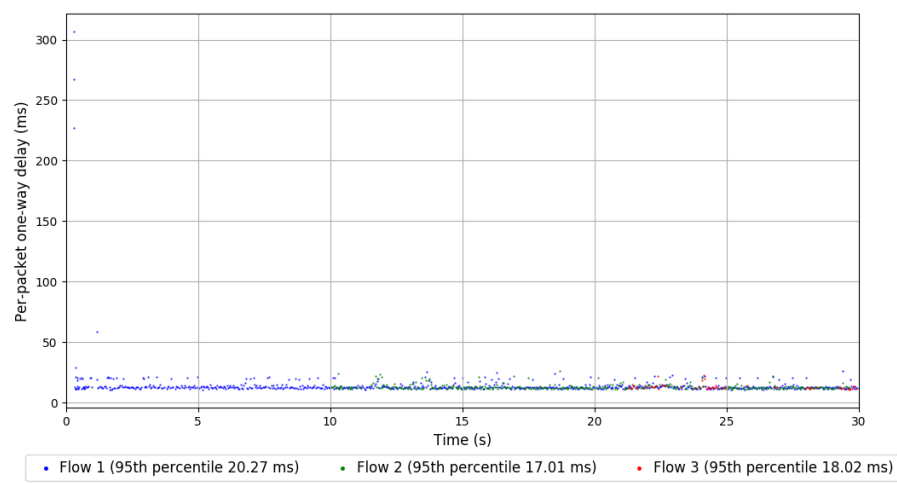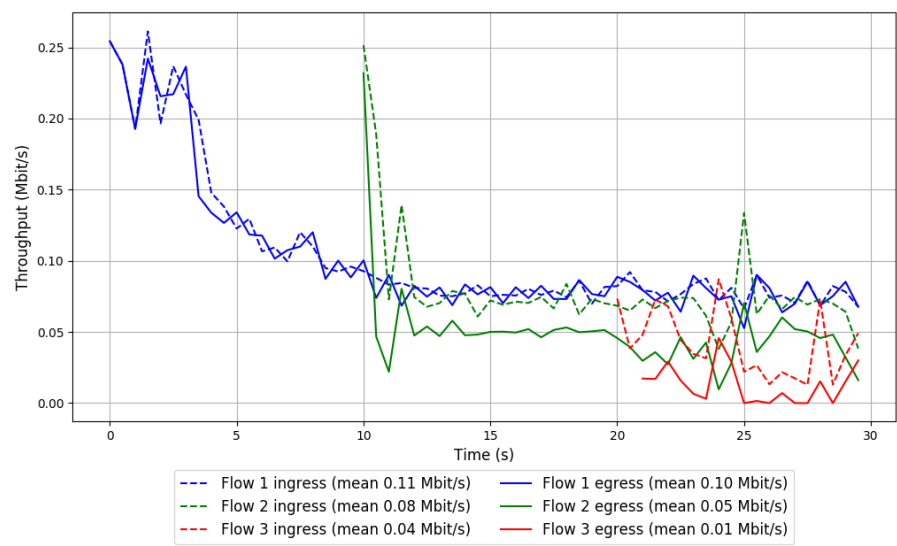
Run 2: Report of SCReAM — Data Link

```
Run 3: Statistics of SCReAM

Start at: 2018-03-05 22:11:18
End at: 2018-03-05 22:11:48
Local clock offset: 2.097 ms
Remote clock offset: 0.753 ms


# Below is generated by plot.py at 2018-03-05 22:27:33
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 20.143 ms
Loss rate: 18.70%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 20.274 ms
Loss rate: 2.13%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 17.009 ms
Loss rate: 37.54%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 18.022 ms
Loss rate: 72.29%
```
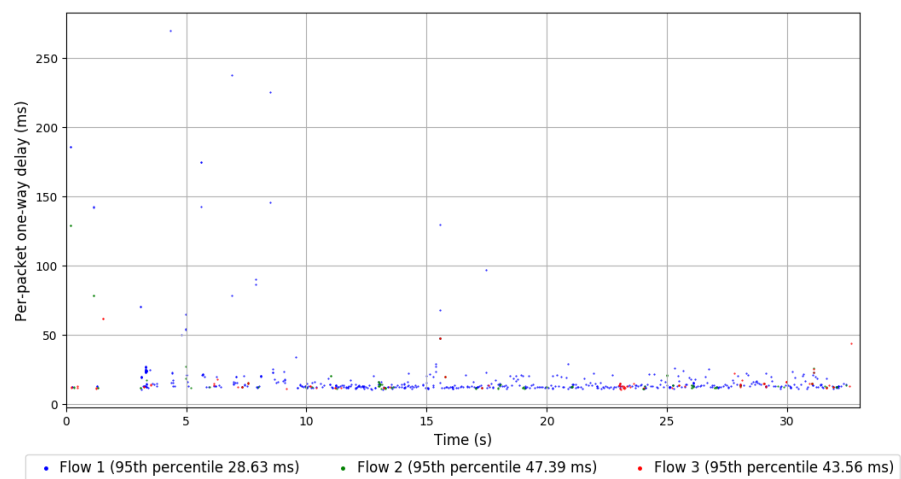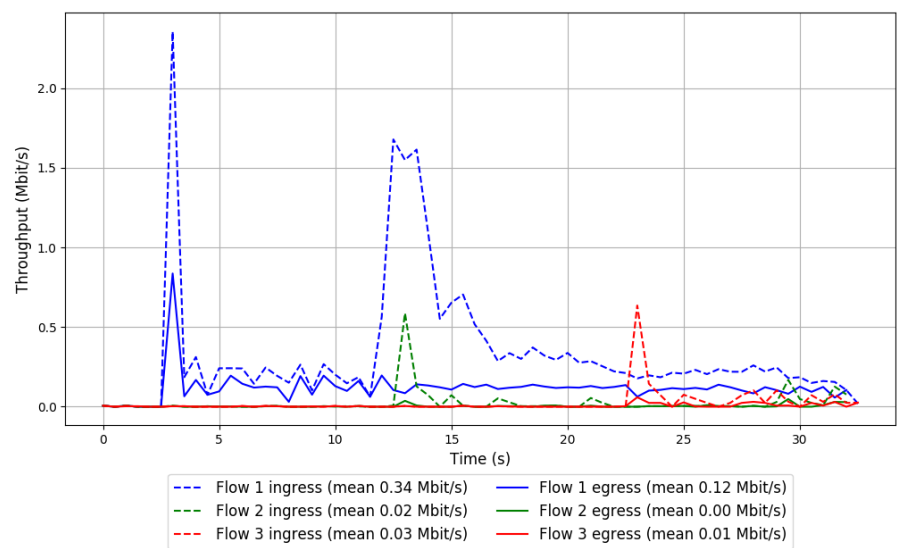
Run 3: Report of SCReAM — Data Link

Flow 1 ingress (mean 0.11 Mbit/s) Flow 1 egress (mean 0.10 Mbit/s)
Flow 2 ingress (mean 0.08 Mbit/s) Flow 2 egress (mean 0.05 Mbit/s)
Flow 3 ingress (mean 0.04 Mbit/s) Flow 3 egress (mean 0.01 Mbit/s)

Flow 1 (95th percentile 20.27 ms)   Flow 2 (95th percentile 17.01 ms)   Flow 3 (95th percentile 18.02 ms)

```
Run 1: Statistics of WebRTC media

Start at: 2018-03-05 21:26:34
End at: 2018-03-05 21:27:04
Local clock offset: 1.198 ms
Remote clock offset: 0.844 ms


# Below is generated by plot.py at 2018-03-05 22:27:33
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 28.683 ms
Loss rate: 67.36%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 28.630 ms
Loss rate: 65.52%
-- Flow 2:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 47.390 ms
Loss rate: 82.64%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 43.564 ms
Loss rate: 77.24%
```
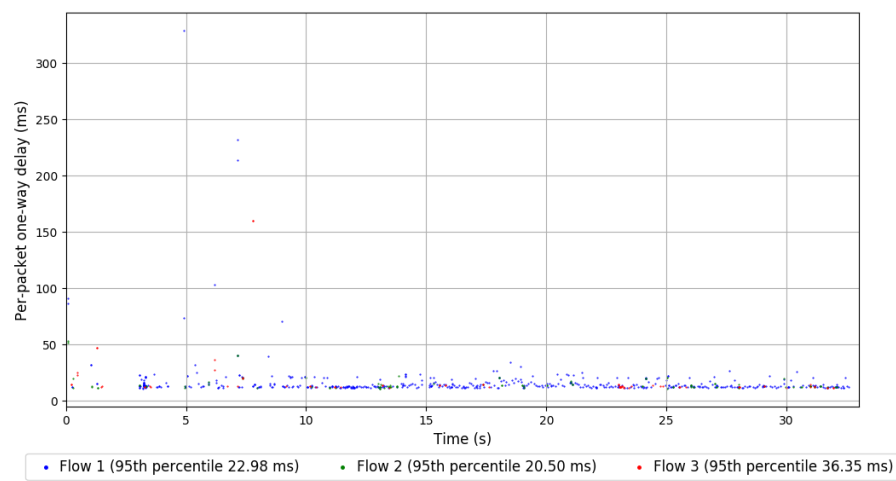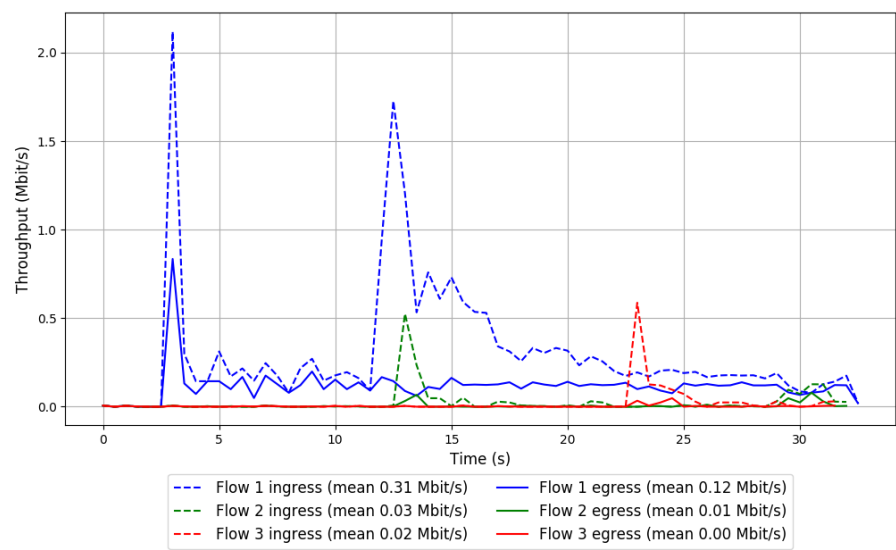
Run 1: Report of WebRTC media — Data Link

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```
Run 2: Statistics of WebRTC media

Start at: 2018-03-05 21:50:15
End at: 2018-03-05 21:50:45
Local clock offset: 1.589 ms
Remote clock offset: 0.702 ms


# Below is generated by plot.py at 2018-03-05 22:27:33
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 23.220 ms
Loss rate: 63.58%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 22.980 ms
Loss rate: 61.28%
-- Flow 2:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 20.496 ms
Loss rate: 75.66%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 36.353 ms
Loss rate: 84.33%
```
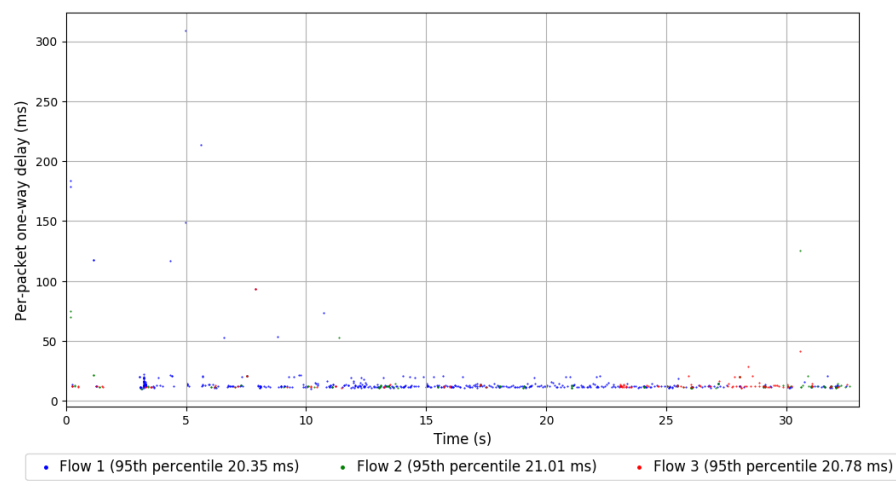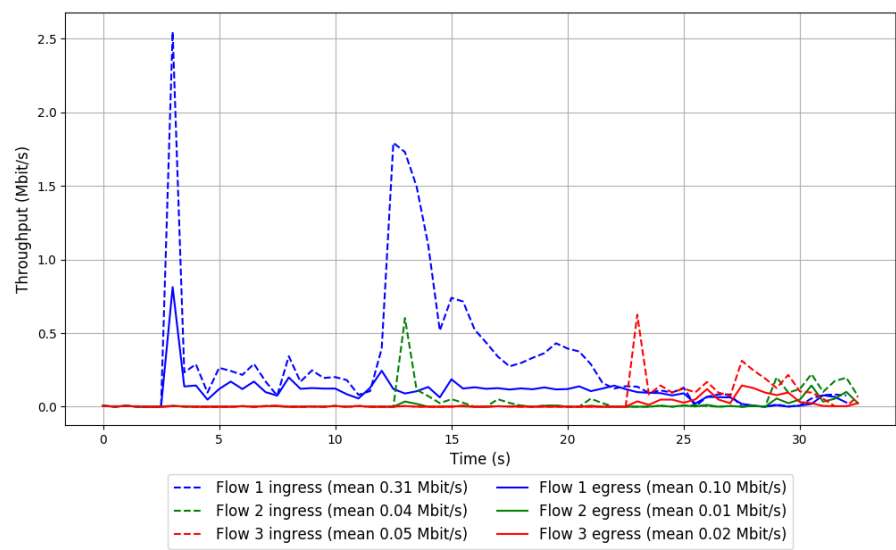
Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2018-03-05 22:13:56
End at: 2018-03-05 22:14:26
Local clock offset: 2.008 ms
Remote clock offset: 0.682 ms


# Below is generated by plot.py at 2018-03-05 22:27:33
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 20.756 ms
Loss rate: 67.12%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 20.351 ms
Loss rate: 67.17%
-- Flow 2:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 21.007 ms
Loss rate: 71.83%
-- Flow 3:
Average throughput: 0.02 Mbit/s
95th percentile per-packet one-way delay: 20.777 ms
Loss rate: 63.10%
```
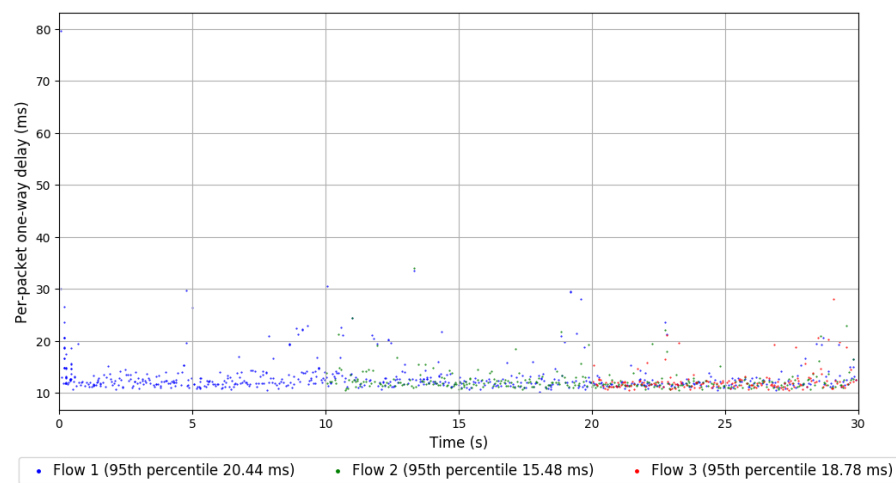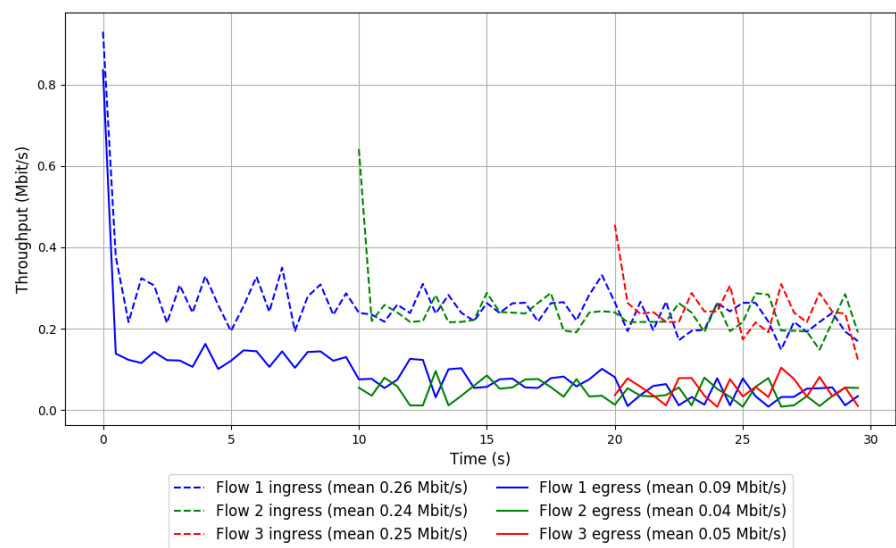
Run 3: Report of WebRTC media — Data Link

Flow 1 ingress (mean 0.31 Mbit/s)   Flow 1 egress (mean 0.10 Mbit/s)
Flow 2 ingress (mean 0.04 Mbit/s)   Flow 2 egress (mean 0.01 Mbit/s)
Flow 3 ingress (mean 0.05 Mbit/s)   Flow 3 egress (mean 0.02 Mbit/s)

Flow 1 (95th percentile 20.35 ms)   Flow 2 (95th percentile 21.01 ms)   Flow 3 (95th percentile 20.78 ms)

```
Run 1: Statistics of Sprout

Start at: 2018-03-05 21:18:40
End at: 2018-03-05 21:19:10
Local clock offset: 1.293 ms
Remote clock offset: 0.754 ms


# Below is generated by plot.py at 2018-03-05 22:27:33
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 19.389 ms
Loss rate: 72.31%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 20.443 ms
Loss rate: 64.30%
-- Flow 2:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 15.484 ms
Loss rate: 81.57%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 18.776 ms
Loss rate: 79.64%
```
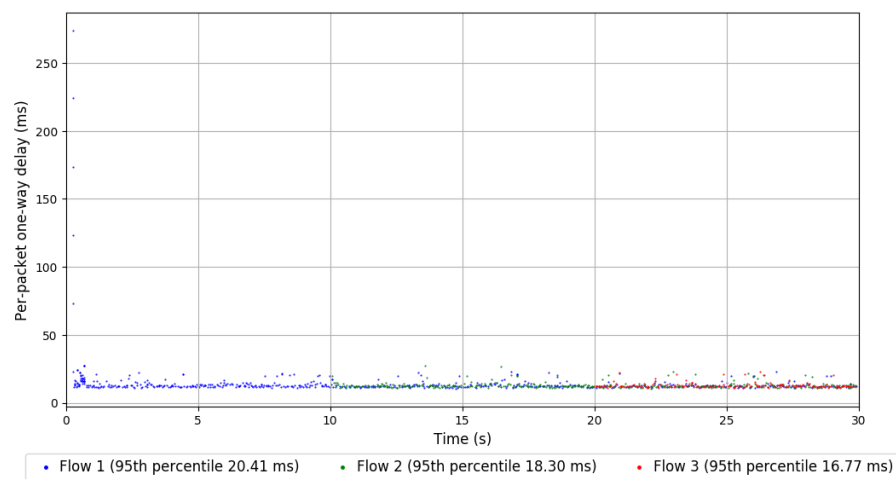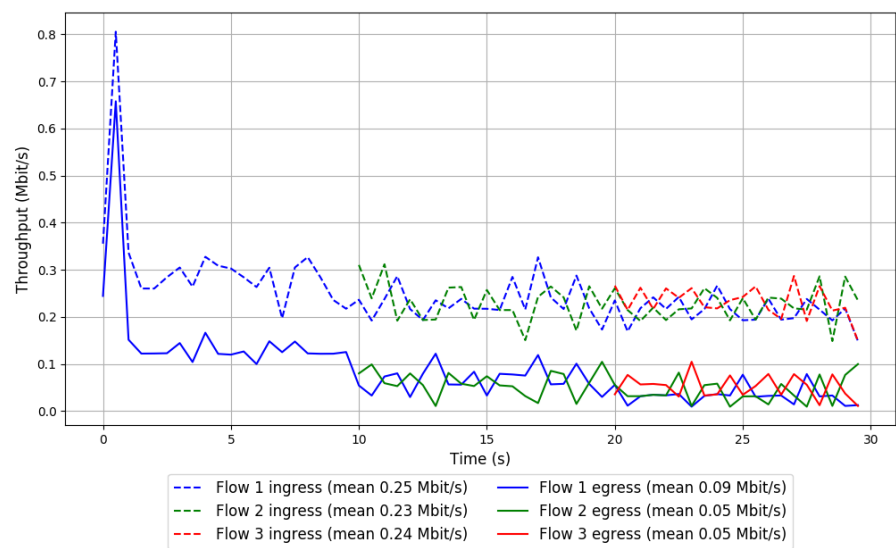
Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2018-03-05 21:42:22
End at: 2018-03-05 21:42:52
Local clock offset: 1.241 ms
Remote clock offset: 0.783 ms


# Below is generated by plot.py at 2018-03-05 22:27:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 19.937 ms
Loss rate: 71.17%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 20.413 ms
Loss rate: 65.35%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 18.305 ms
Loss rate: 77.54%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 16.771 ms
Loss rate: 77.60%
```
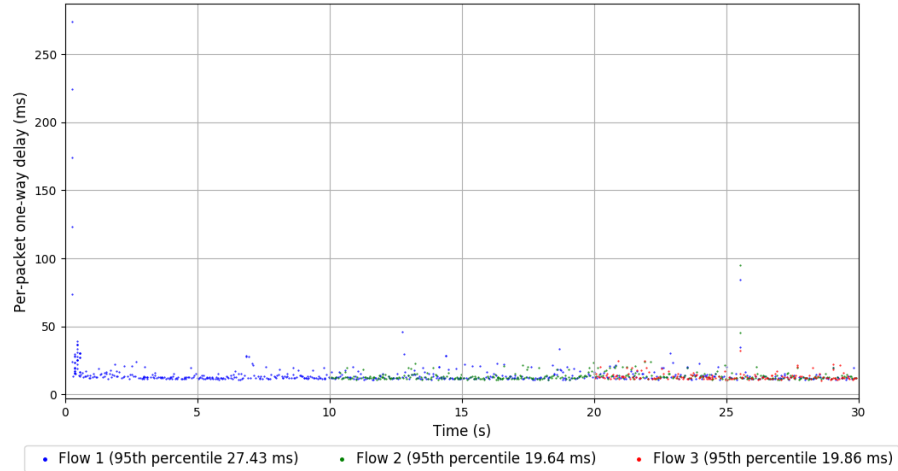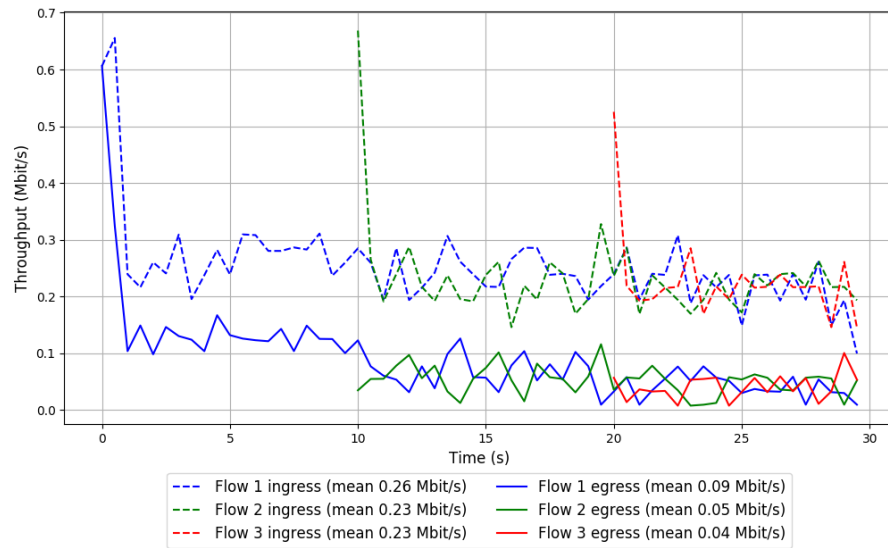
Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2018-03-05 22:06:02
End at: 2018-03-05 22:06:32
Local clock offset: 1.994 ms
Remote clock offset: 0.68 ms


# Below is generated by plot.py at 2018-03-05 22:27:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 21.994 ms
Loss rate: 71.37%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 27.434 ms
Loss rate: 64.45%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 19.643 ms
Loss rate: 77.58%
-- Flow 3:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 19.855 ms
Loss rate: 81.89%
```
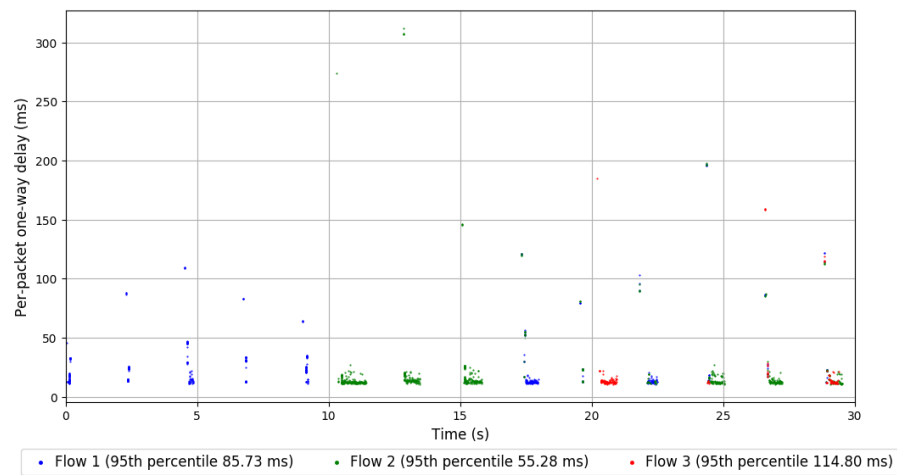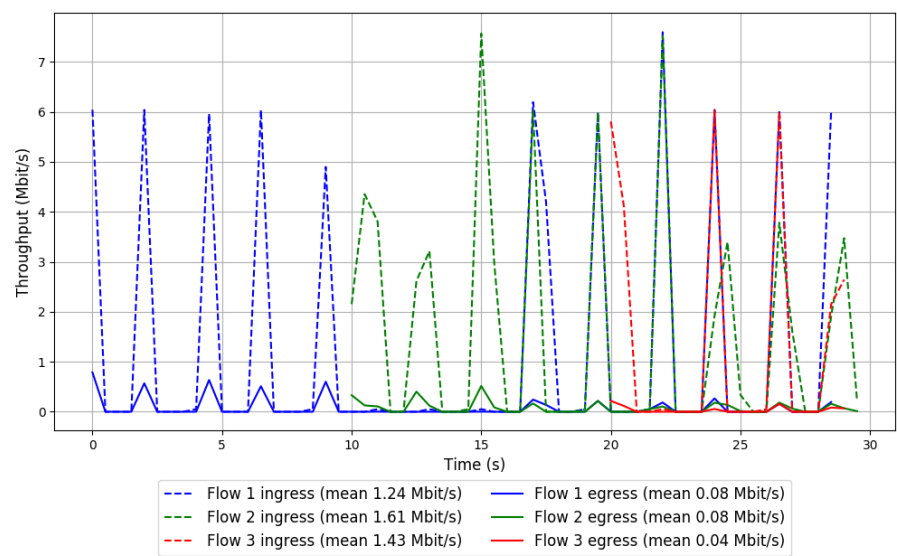
Run 3: Report of Sprout — Data Link

```
Run 1: Statistics of TaoVA-100x

Start at: 2018-03-05 21:30:31
End at: 2018-03-05 21:31:01
Local clock offset: 1.098 ms
Remote clock offset: 0.782 ms


# Below is generated by plot.py at 2018-03-05 22:27:38
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 83.144 ms
Loss rate: 94.85%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 85.734 ms
Loss rate: 93.61%
-- Flow 2:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 55.282 ms
Loss rate: 95.16%
-- Flow 3:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 114.802 ms
Loss rate: 97.40%
```
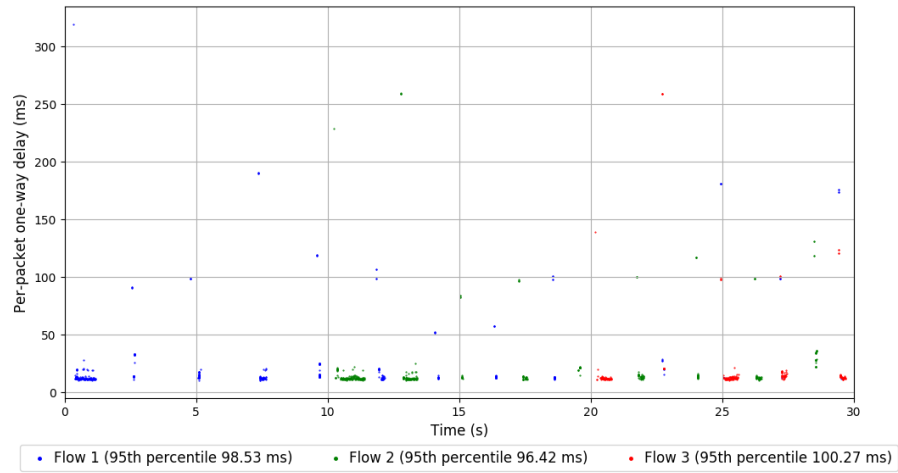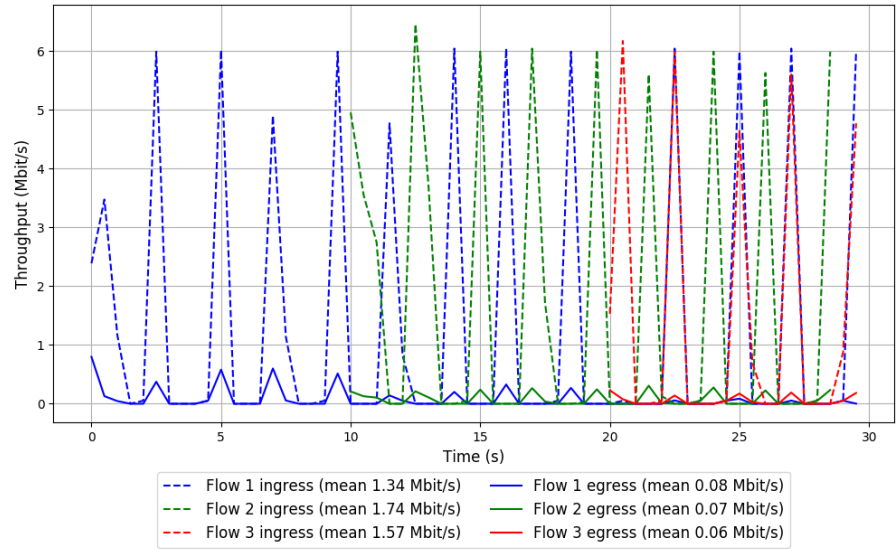
Run 1: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 1.24 Mbit/s)   Flow 1 egress (mean 0.08 Mbit/s)
Flow 2 ingress (mean 1.61 Mbit/s)   Flow 2 egress (mean 0.08 Mbit/s)
Flow 3 ingress (mean 1.43 Mbit/s)   Flow 3 egress (mean 0.04 Mbit/s)

Flow 1 (95th percentile 85.73 ms)   Flow 2 (95th percentile 55.28 ms)   Flow 3 (95th percentile 114.80 ms)

```
Run 2: Statistics of TaoVA-100x

Start at: 2018-03-05 21:54:12
End at: 2018-03-05 21:54:42
Local clock offset: 1.779 ms
Remote clock offset: 0.657 ms


# Below is generated by plot.py at 2018-03-05 22:27:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 98.435 ms
Loss rate: 95.25%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 98.534 ms
Loss rate: 94.39%
-- Flow 2:
Average throughput: 0.07 Mbit/s
95th percentile per-packet one-way delay: 96.421 ms
Loss rate: 95.82%
-- Flow 3:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 100.272 ms
Loss rate: 96.30%
```
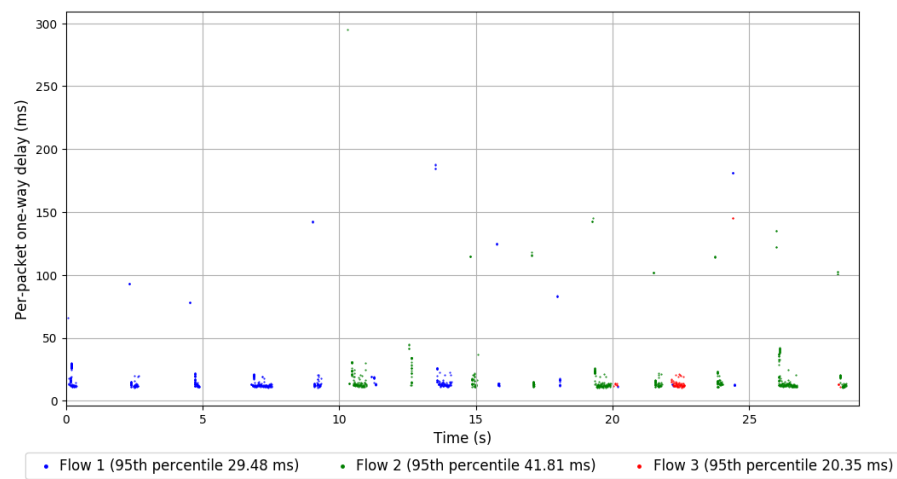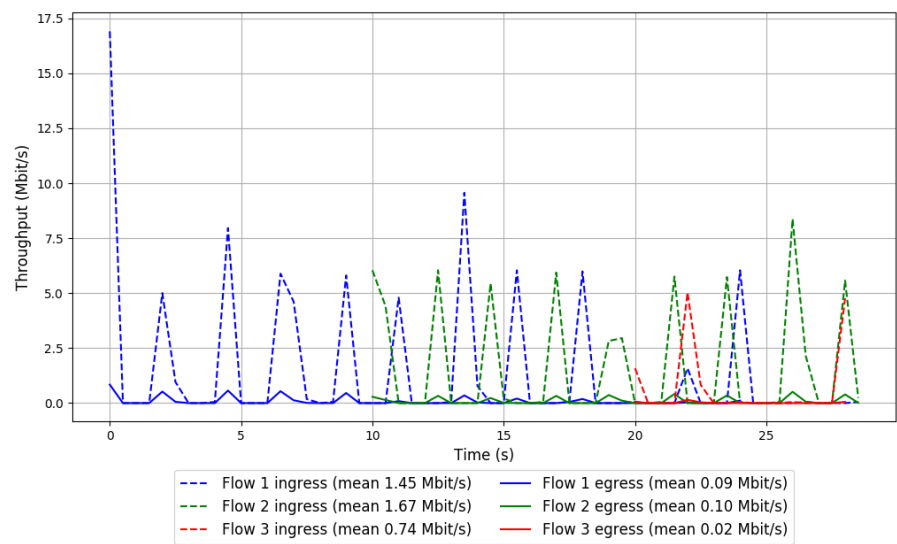
Run 2: Report of TaoVA-100x — Data Link

```
Run 3: Statistics of TaoVA-100x

Start at: 2018-03-05 22:17:53
End at: 2018-03-05 22:18:23
Local clock offset: 1.762 ms
Remote clock offset: 0.646 ms


# Below is generated by plot.py at 2018-03-05 22:27:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 41.361 ms
Loss rate: 94.86%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 29.476 ms
Loss rate: 94.92%
-- Flow 2:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 41.813 ms
Loss rate: 94.24%
-- Flow 3:
Average throughput: 0.02 Mbit/s
95th percentile per-packet one-way delay: 20.352 ms
Loss rate: 97.56%
```
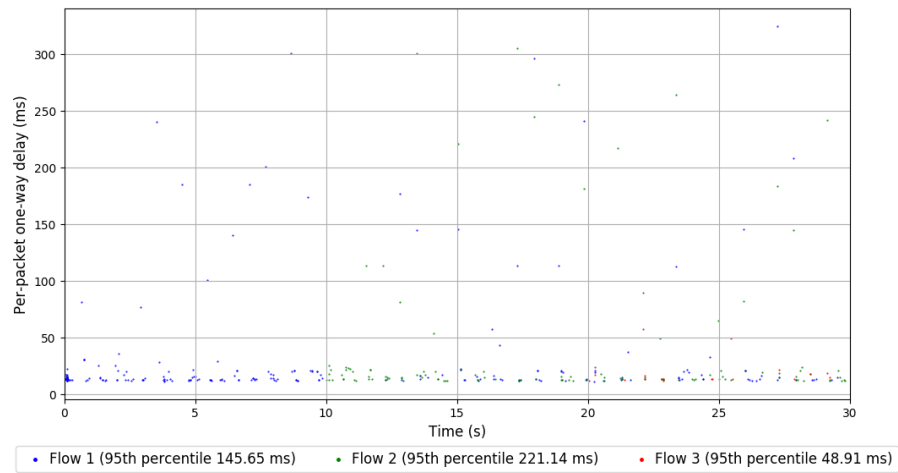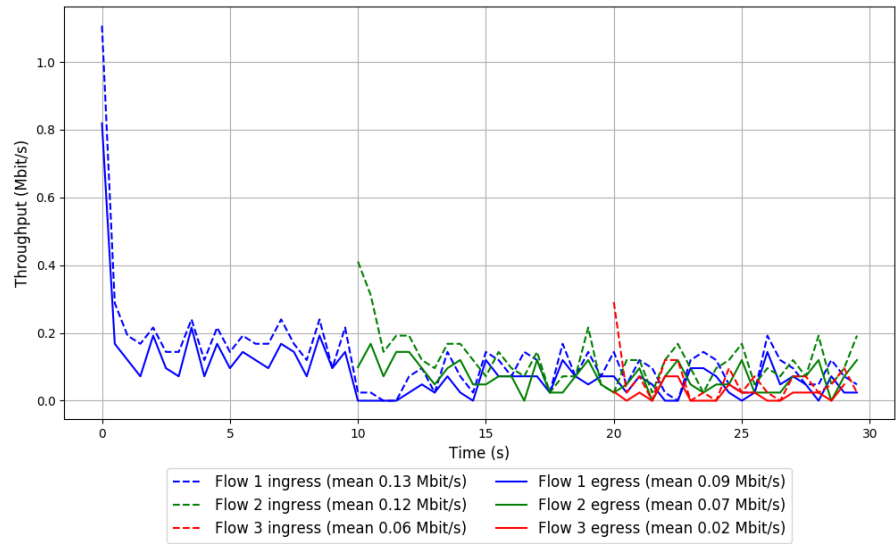
Run 3: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 1.45 Mbit/s)   Flow 1 egress (mean 0.09 Mbit/s)
Flow 2 ingress (mean 1.67 Mbit/s)   Flow 2 egress (mean 0.10 Mbit/s)
Flow 3 ingress (mean 0.74 Mbit/s)   Flow 3 egress (mean 0.02 Mbit/s)

Flow 1 (95th percentile 29.48 ms)   Flow 2 (95th percentile 41.81 ms)   Flow 3 (95th percentile 20.35 ms)

```
Run 1: Statistics of TCP Vegas

Start at: 2018-03-05 21:31:50
End at: 2018-03-05 21:32:20
Local clock offset: 1.092 ms
Remote clock offset: 0.798 ms


# Below is generated by plot.py at 2018-03-05 22:27:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 181.176 ms
Loss rate: 39.70%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 145.651 ms
Loss rate: 33.83%
-- Flow 2:
Average throughput: 0.07 Mbit/s
95th percentile per-packet one-way delay: 221.141 ms
Loss rate: 42.62%
-- Flow 3:
Average throughput: 0.02 Mbit/s
95th percentile per-packet one-way delay: 48.914 ms
Loss rate: 65.84%
```
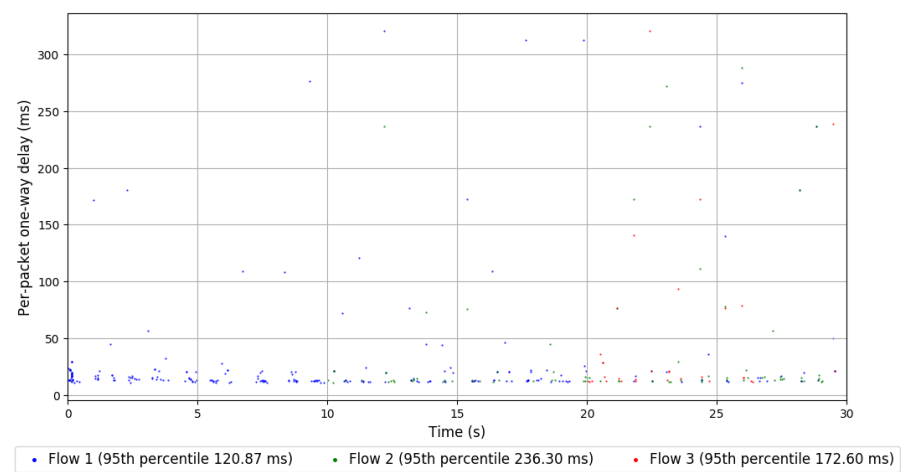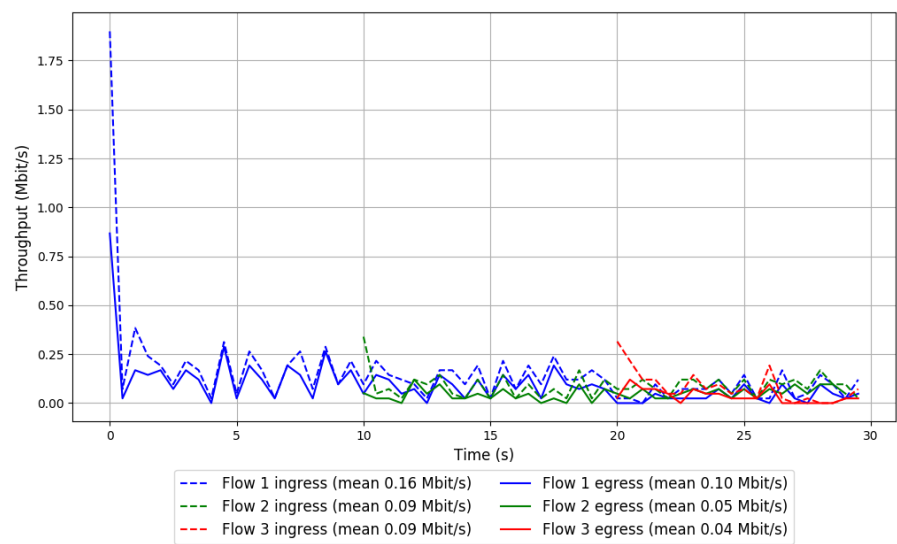
Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2018-03-05 21:55:31
End at: 2018-03-05 21:56:01
Local clock offset: 1.727 ms
Remote clock offset: 0.638 ms


# Below is generated by plot.py at 2018-03-05 22:27:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 172.604 ms
Loss rate: 42.59%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 120.869 ms
Loss rate: 38.49%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 236.296 ms
Loss rate: 46.90%
-- Flow 3:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 172.604 ms
Loss rate: 56.42%
```
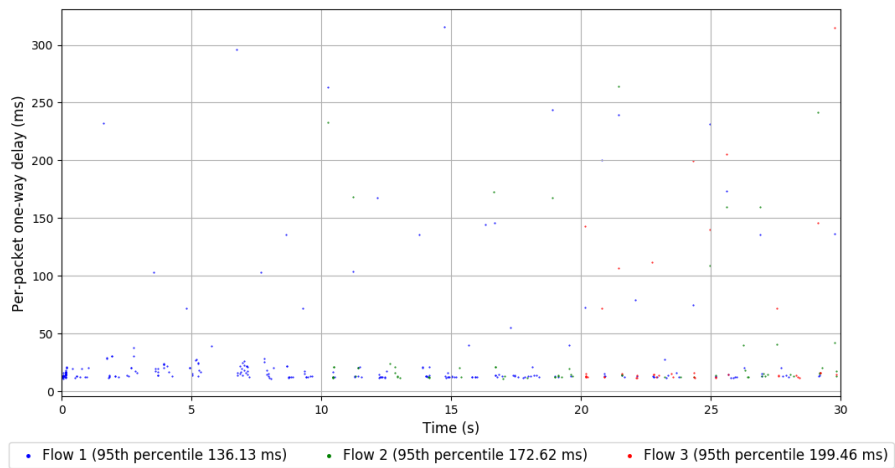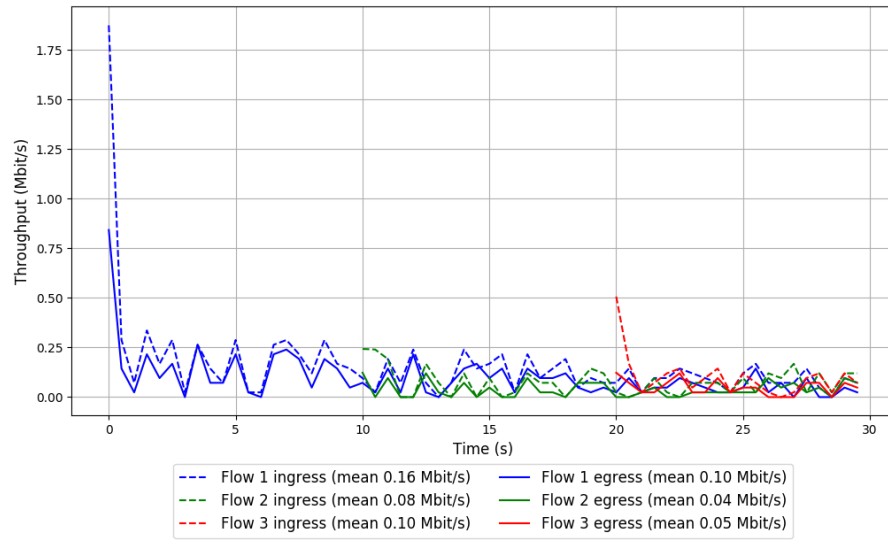
Run 2: Report of TCP Vegas — Data Link

```
Run 3: Statistics of TCP Vegas

Start at: 2018-03-05 22:19:12
End at: 2018-03-05 22:19:42
Local clock offset: 1.571 ms
Remote clock offset: 0.706 ms


# Below is generated by plot.py at 2018-03-05 22:27:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 167.560 ms
Loss rate: 42.67%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 136.133 ms
Loss rate: 38.02%
-- Flow 2:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 172.615 ms
Loss rate: 50.73%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 199.462 ms
Loss rate: 52.30%
```
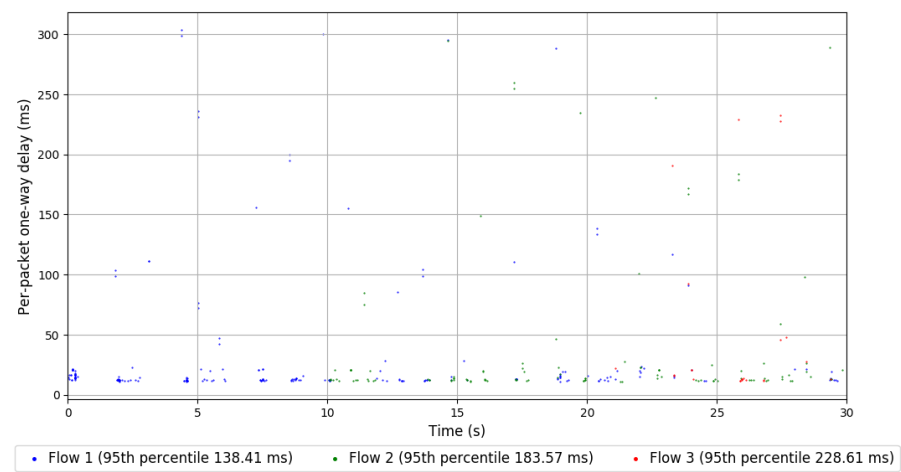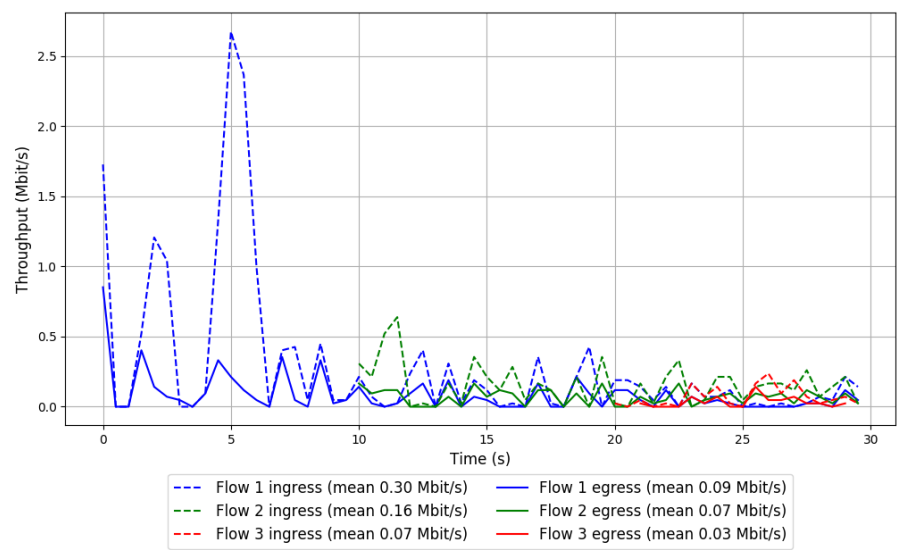
Run 3: Report of TCP Vegas — Data Link

```
Run 1: Statistics of Verus

Start at: 2018-03-05 21:34:28
End at: 2018-03-05 21:34:58
Local clock offset: 1.079 ms
Remote clock offset: 0.72 ms


# Below is generated by plot.py at 2018-03-05 22:27:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 190.610 ms
Loss rate: 67.07%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 138.406 ms
Loss rate: 70.95%
-- Flow 2:
Average throughput: 0.07 Mbit/s
95th percentile per-packet one-way delay: 183.573 ms
Loss rate: 57.84%
-- Flow 3:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 228.614 ms
Loss rate: 60.00%
```
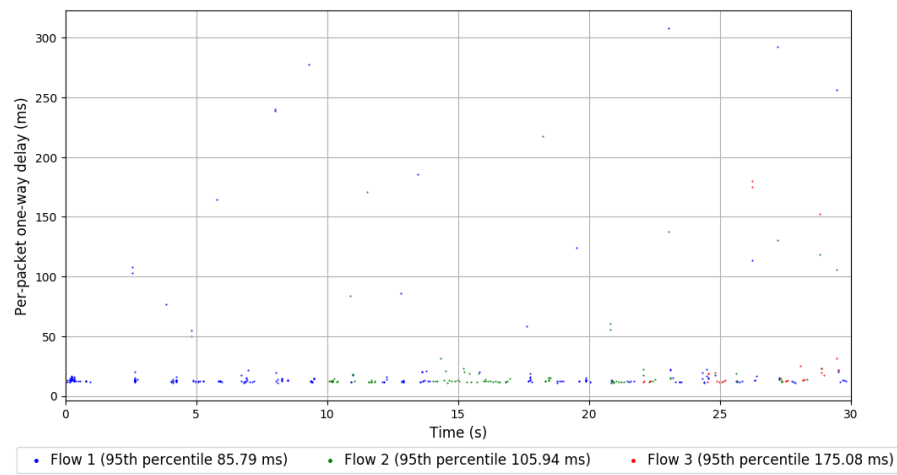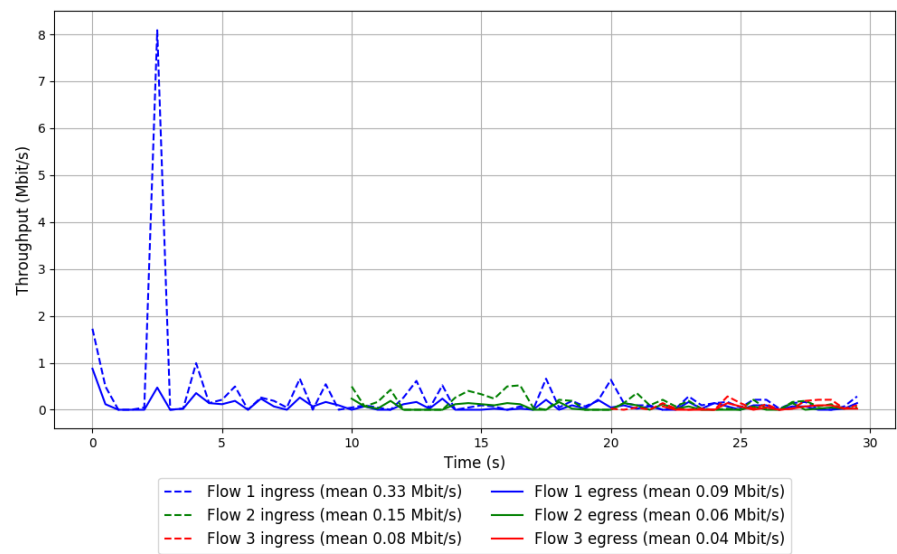
Run 1: Report of Verus — Data Link

```
Run 2: Statistics of Verus

Start at: 2018-03-05 21:58:09
End at: 2018-03-05 21:58:39
Local clock offset: 1.863 ms
Remote clock offset: 0.763 ms


# Below is generated by plot.py at 2018-03-05 22:27:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 107.744 ms
Loss rate: 69.18%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 85.789 ms
Loss rate: 72.11%
-- Flow 2:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 105.936 ms
Loss rate: 62.20%
-- Flow 3:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 175.084 ms
Loss rate: 58.21%
```
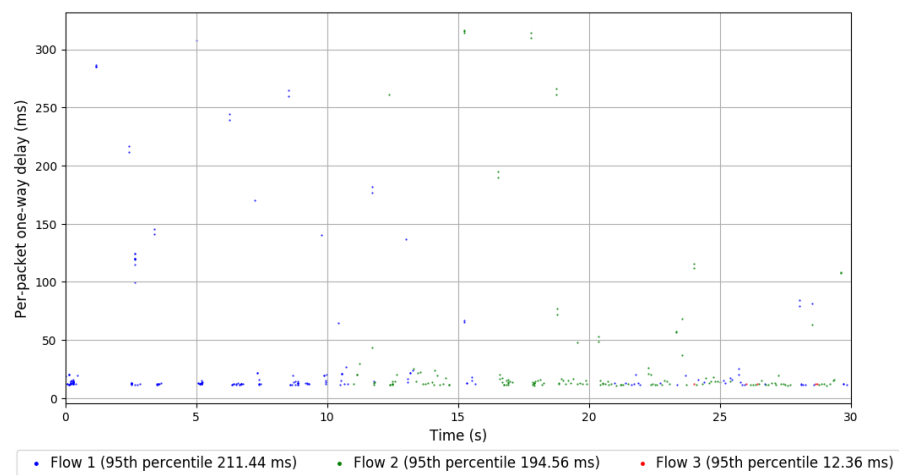
Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2018-03-05 22:21:50
End at: 2018-03-05 22:22:20
Local clock offset: 1.493 ms
Remote clock offset: 0.686 ms


# Below is generated by plot.py at 2018-03-05 22:27:48
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 211.436 ms
Loss rate: 98.93%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 211.436 ms
Loss rate: 79.25%
-- Flow 2:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 194.563 ms
Loss rate: 99.53%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 12.359 ms
Loss rate: 77.27%
```
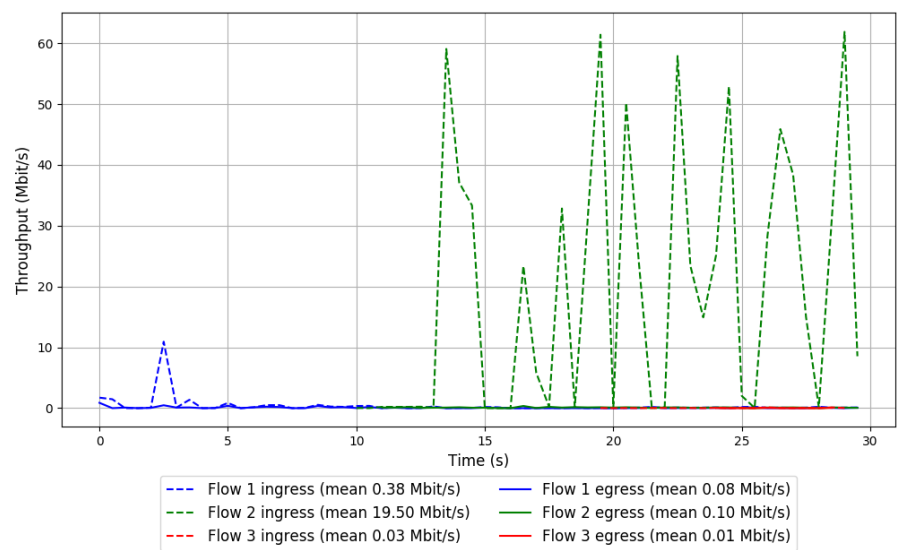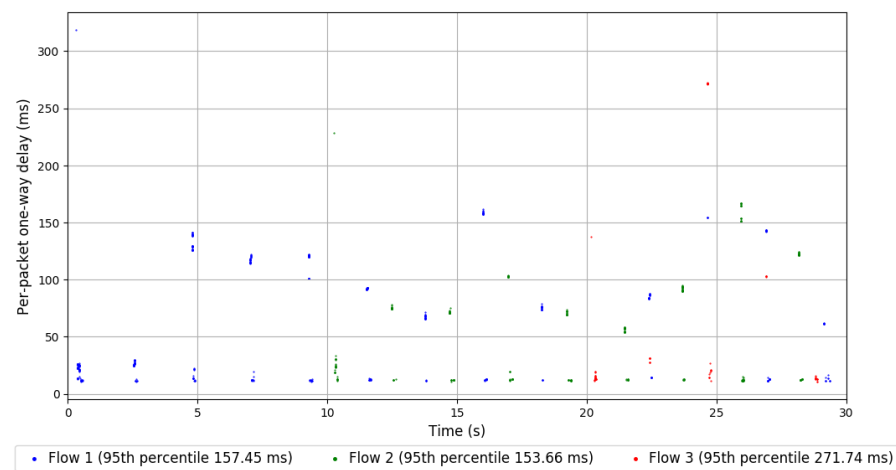
Run 3: Report of Verus — Data Link

69

```
Run 1: Statistics of Copa

Start at: 2018-03-05 21:17:21
End at: 2018-03-05 21:17:51
Local clock offset: 1.325 ms
Remote clock offset: 0.783 ms


# Below is generated by plot.py at 2018-03-05 22:27:48
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 157.836 ms
Loss rate: 69.90%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 157.449 ms
Loss rate: 64.78%
-- Flow 2:
Average throughput: 0.07 Mbit/s
95th percentile per-packet one-way delay: 153.661 ms
Loss rate: 72.88%
-- Flow 3:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 271.736 ms
Loss rate: 82.14%
```
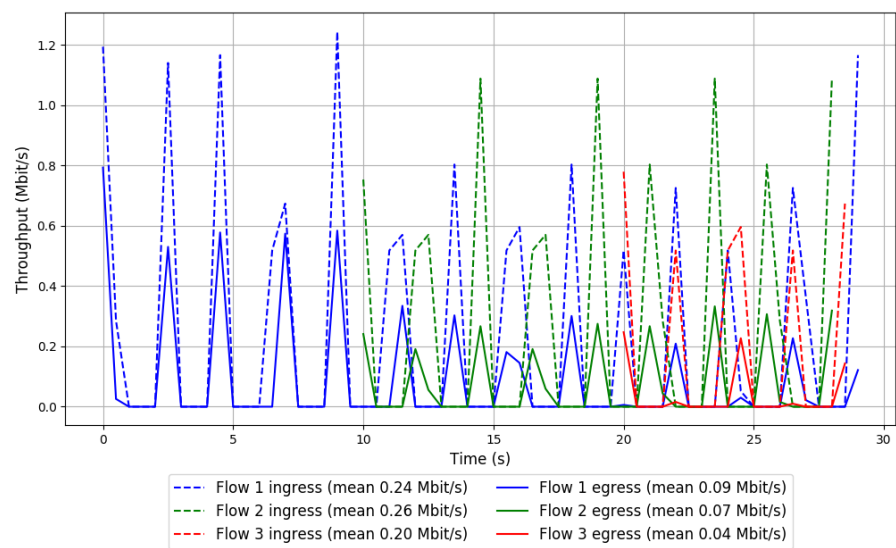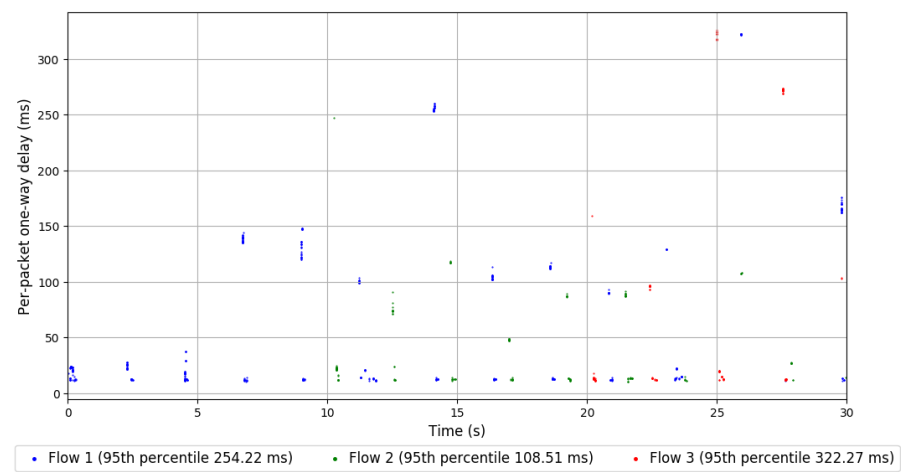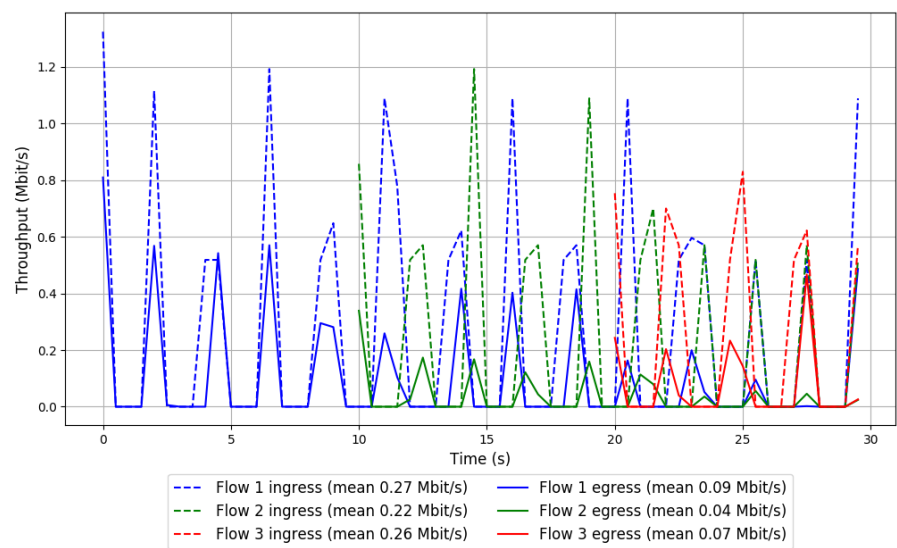
Run 1: Report of Copa — Data Link

- - - Flow 1 ingress (mean 0.24 Mbit/s)   —— Flow 1 egress (mean 0.09 Mbit/s)
- - - Flow 2 ingress (mean 0.26 Mbit/s)   —— Flow 2 egress (mean 0.07 Mbit/s)
- - - Flow 3 ingress (mean 0.20 Mbit/s)   —— Flow 3 egress (mean 0.04 Mbit/s)

- Flow 1 (95th percentile 157.45 ms)   • Flow 2 (95th percentile 153.66 ms)   • Flow 3 (95th percentile 271.74 ms)

```
Run 2: Statistics of Copa

Start at: 2018-03-05 21:41:03
End at: 2018-03-05 21:41:33
Local clock offset: 1.268 ms
Remote clock offset: 0.687 ms


# Below is generated by plot.py at 2018-03-05 22:27:48
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 271.792 ms
Loss rate: 71.71%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 254.219 ms
Loss rate: 64.40%
-- Flow 2:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 108.510 ms
Loss rate: 84.10%
-- Flow 3:
Average throughput: 0.07 Mbit/s
95th percentile per-packet one-way delay: 322.271 ms
Loss rate: 73.34%
```
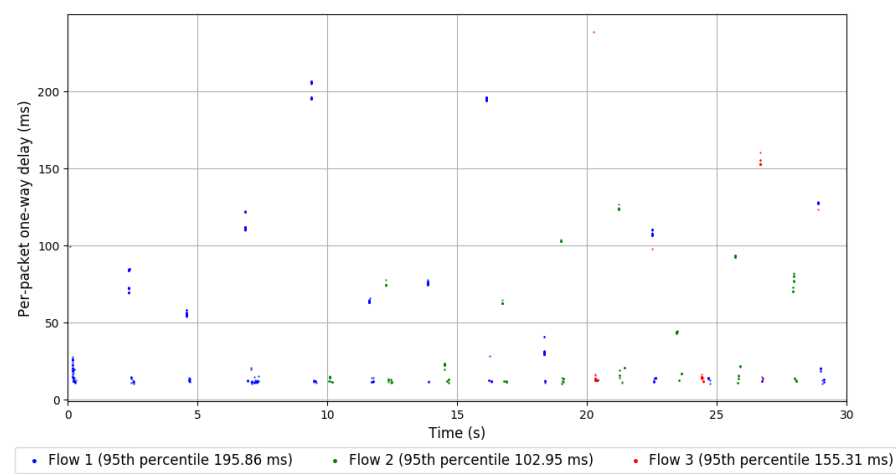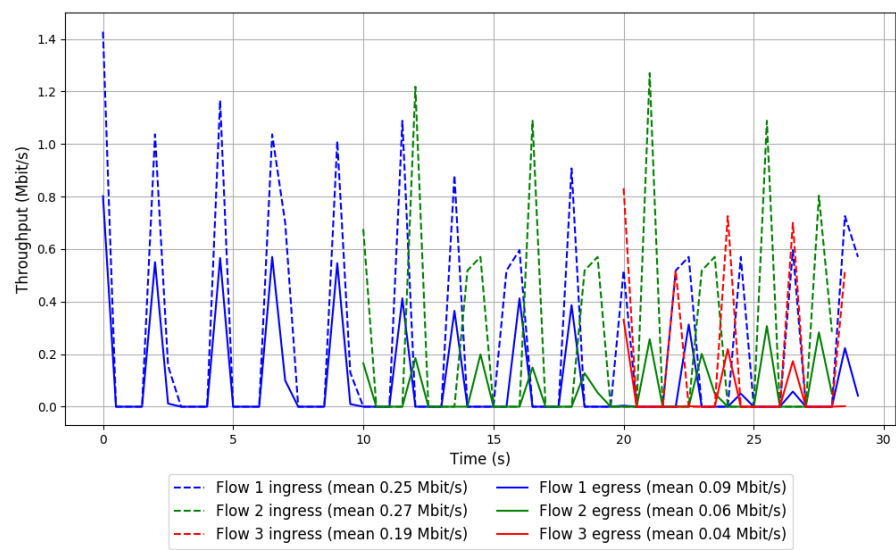
Run 2: Report of Copa — Data Link

```
Run 3: Statistics of Copa

Start at: 2018-03-05 22:04:43
End at: 2018-03-05 22:05:13
Local clock offset: 1.956 ms
Remote clock offset: 0.665 ms


# Below is generated by plot.py at 2018-03-05 22:27:48
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 195.147 ms
Loss rate: 70.49%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 195.858 ms
Loss rate: 63.18%
-- Flow 2:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 102.950 ms
Loss rate: 79.08%
-- Flow 3:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 155.305 ms
Loss rate: 77.92%
```
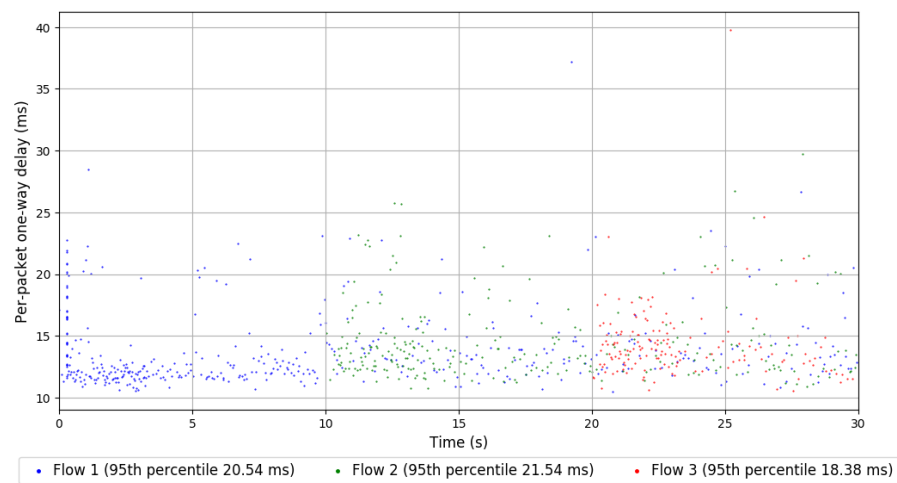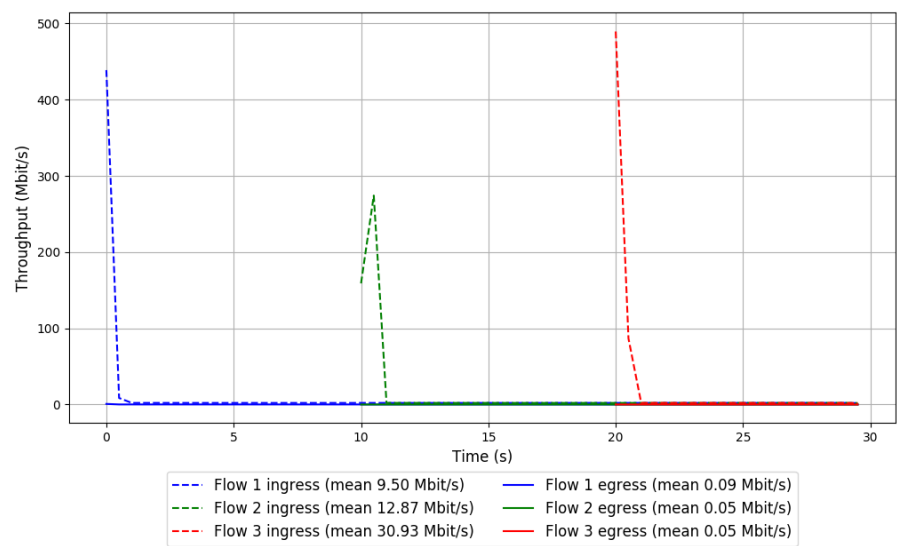
Run 3: Report of Copa — Data Link

```
Run 1: Statistics of FillP

Start at: 2018-03-05 21:22:37
End at: 2018-03-05 21:23:07
Local clock offset: 1.232 ms
Remote clock offset: 0.759 ms


# Below is generated by plot.py at 2018-03-05 22:27:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 20.710 ms
Loss rate: 99.51%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 20.539 ms
Loss rate: 99.07%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 21.538 ms
Loss rate: 99.58%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 18.383 ms
Loss rate: 99.85%
```

Run 1: Report of FillP — Data Link

```
Run 2: Statistics of FillP

Start at: 2018-03-05 21:46:18
End at: 2018-03-05 21:46:48
Local clock offset: 1.533 ms
Remote clock offset: 0.755 ms

# Below is generated by plot.py at 2018-03-05 22:27:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 21.127 ms
Loss rate: 99.41%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 23.347 ms
Loss rate: 99.13%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 14.456 ms
Loss rate: 99.54%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 15.444 ms
Loss rate: 99.74%
```
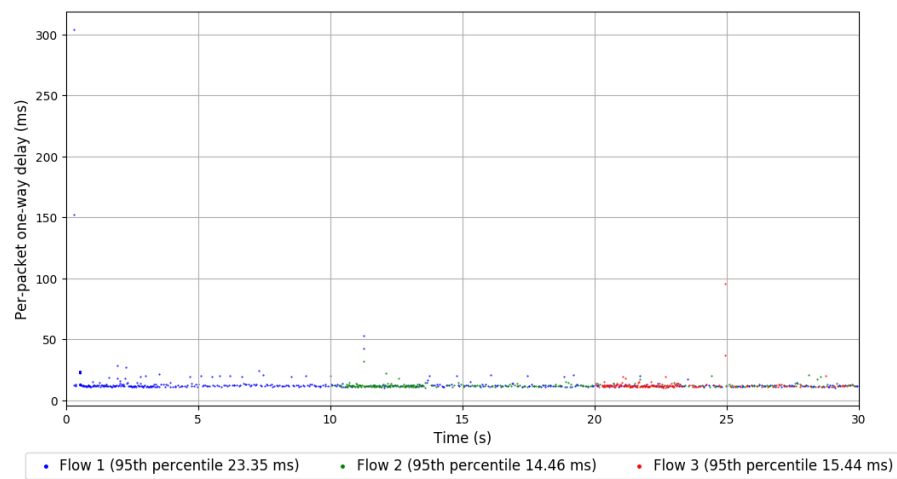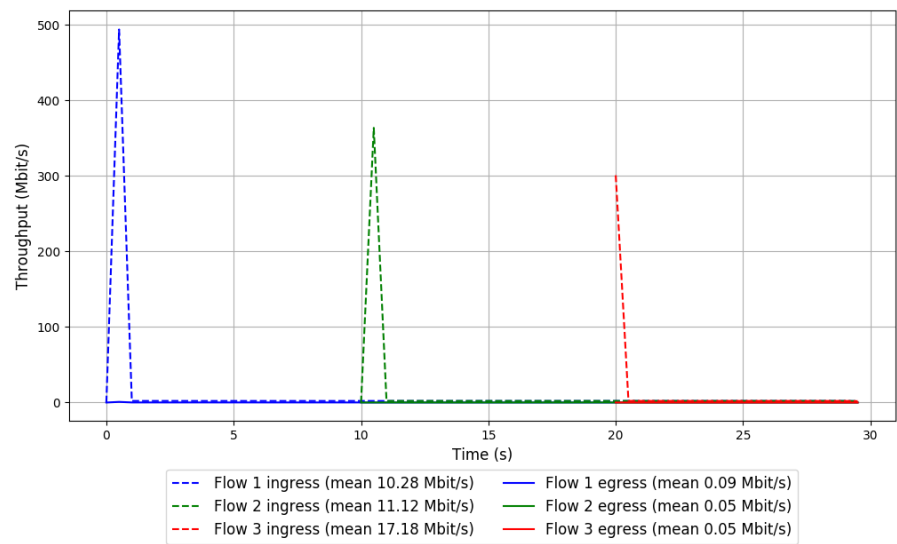
Run 2: Report of FillP — Data Link

```
Run 3: Statistics of FillP

Start at: 2018-03-05 22:09:59
End at: 2018-03-05 22:10:29
Local clock offset: 2.053 ms
Remote clock offset: 0.721 ms

# Below is generated by plot.py at 2018-03-05 22:27:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 20.593 ms
Loss rate: 99.42%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 23.656 ms
Loss rate: 99.13%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 19.431 ms
Loss rate: 99.59%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 19.096 ms
Loss rate: 99.72%
```
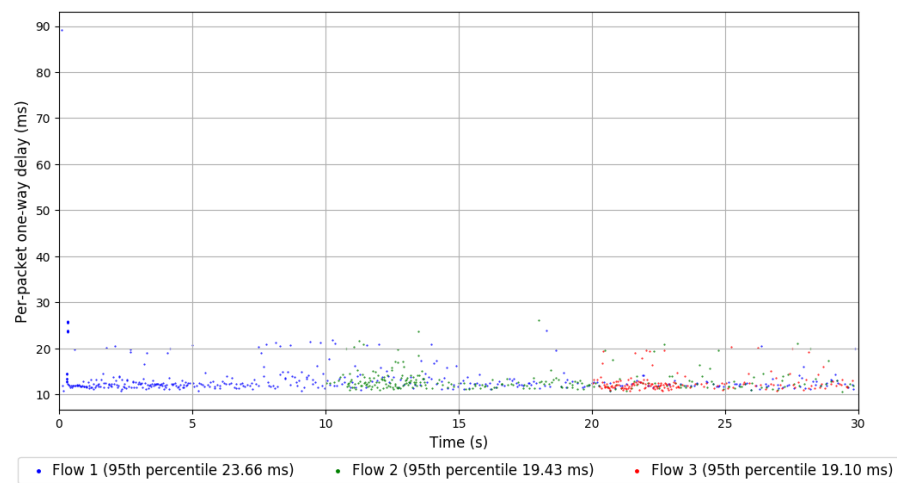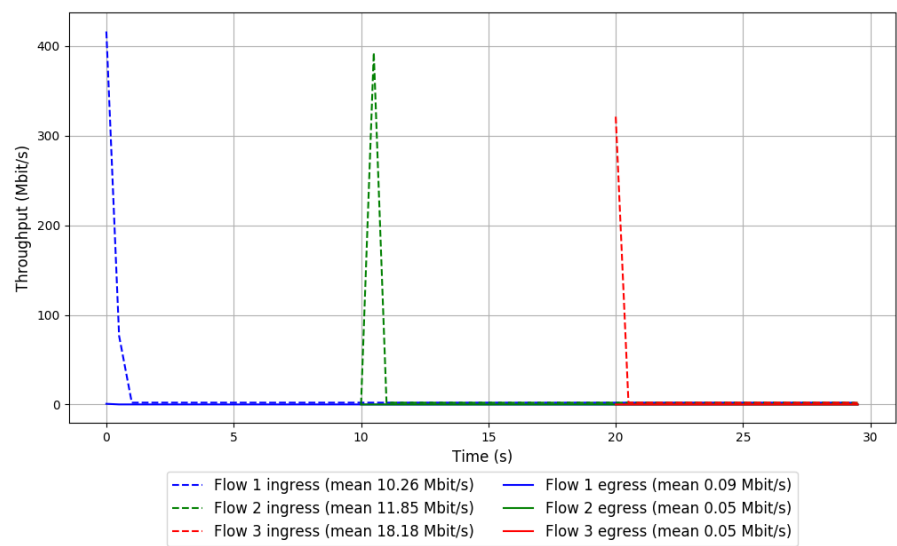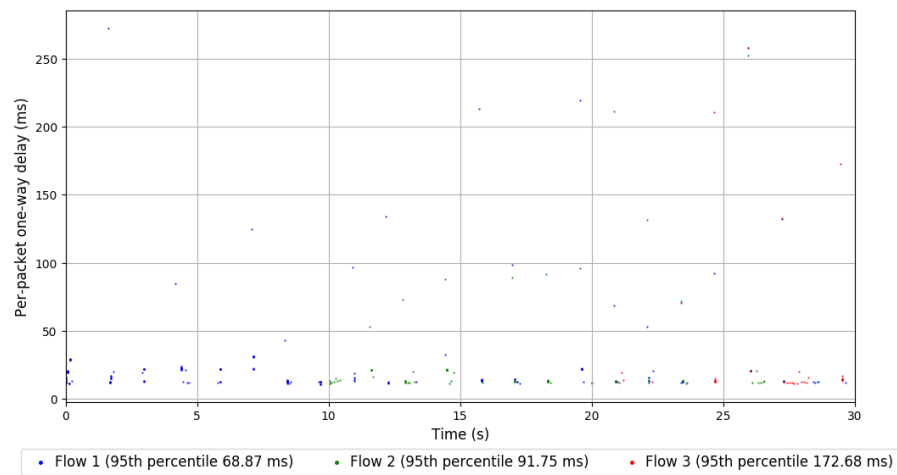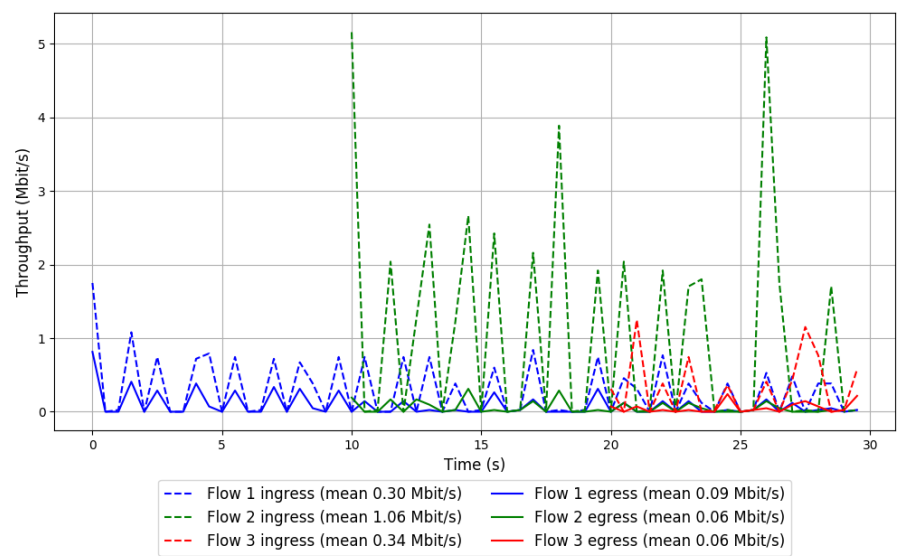
Run 3: Report of FillP — Data Link

```
Run 1: Statistics of Indigo-1-32

Start at: 2018-03-05 21:38:25
End at: 2018-03-05 21:38:55
Local clock offset: 1.18 ms
Remote clock offset: 0.739 ms


# Below is generated by plot.py at 2018-03-05 22:27:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 91.753 ms
Loss rate: 87.25%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 68.870 ms
Loss rate: 70.46%
-- Flow 2:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 91.753 ms
Loss rate: 94.91%
-- Flow 3:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 172.675 ms
Loss rate: 83.64%
```

Run 1: Report of Indigo-1-32 — Data Link

```
Run 2: Statistics of Indigo-1-32

Start at: 2018-03-05 22:02:05
End at: 2018-03-05 22:02:35
Local clock offset: 1.939 ms
Remote clock offset: 0.677 ms


# Below is generated by plot.py at 2018-03-05 22:27:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 138.145 ms
Loss rate: 89.35%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 130.059 ms
Loss rate: 85.42%
-- Flow 2:
Average throughput: 0.07 Mbit/s
95th percentile per-packet one-way delay: 138.145 ms
Loss rate: 93.45%
-- Flow 3:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 139.570 ms
Loss rate: 81.33%
```
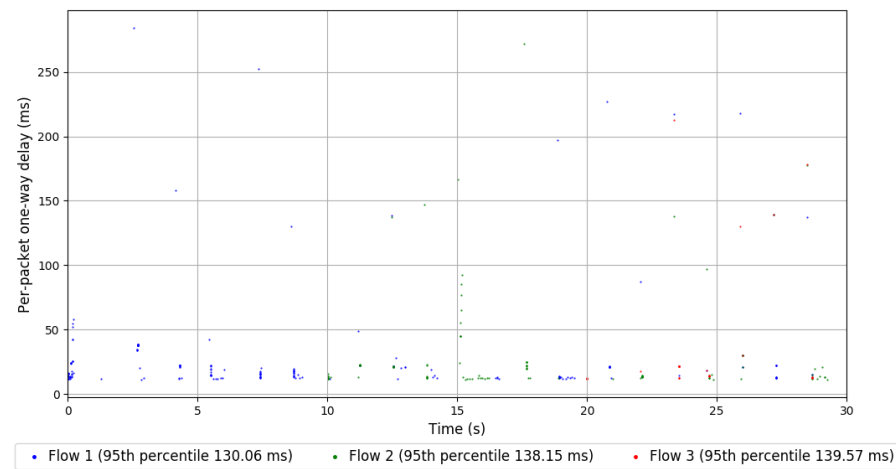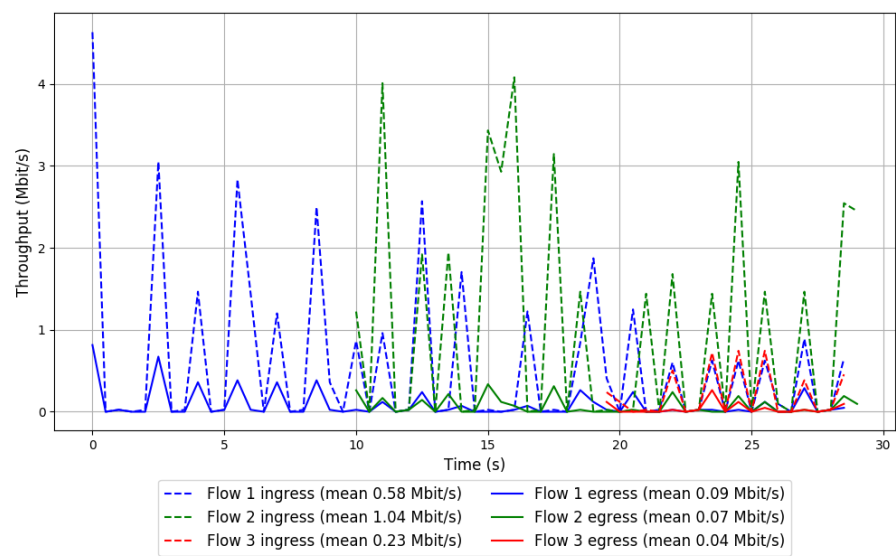
Run 2: Report of Indigo-1-32 — Data Link

```
Run 3: Statistics of Indigo-1-32

Start at: 2018-03-05 22:25:47
End at: 2018-03-05 22:26:17
Local clock offset: 1.27 ms
Remote clock offset: 0.726 ms

# Below is generated by plot.py at 2018-03-05 22:27:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 130.452 ms
Loss rate: 88.78%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 150.523 ms
Loss rate: 79.53%
-- Flow 2:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 129.629 ms
Loss rate: 75.19%
-- Flow 3:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 104.925 ms
Loss rate: 97.84%
```
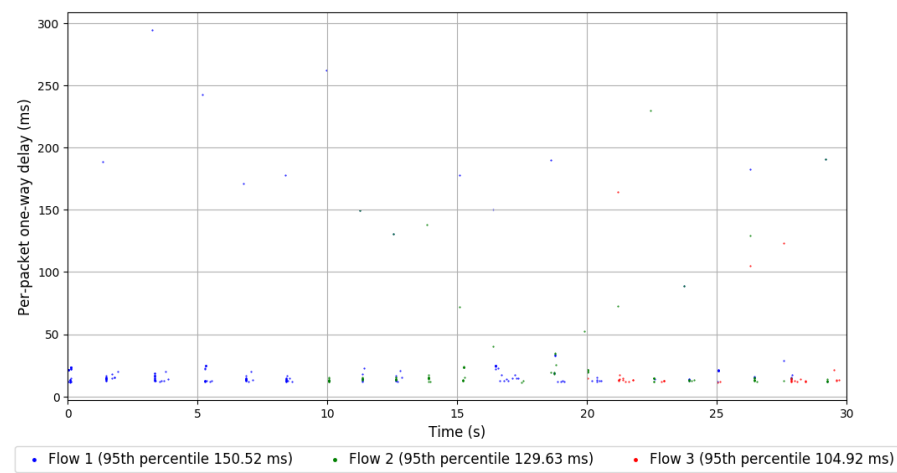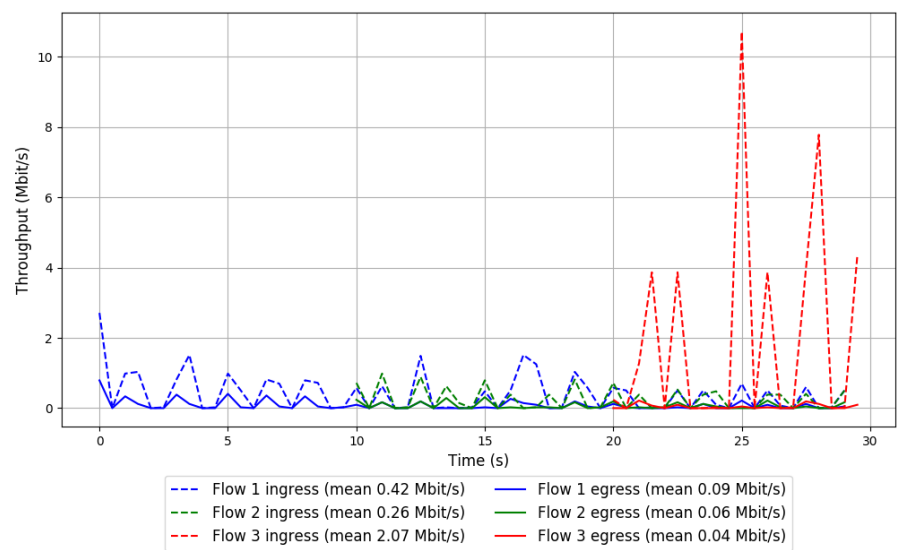
Run 3: Report of Indigo-1-32 — Data Link

```
Run 1: Statistics of Vivace-latency

Start at: 2018-03-05 21:21:18
End at: 2018-03-05 21:21:48
Local clock offset: 1.135 ms
Remote clock offset: 0.84 ms


# Below is generated by plot.py at 2018-03-05 22:27:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 20.684 ms
Loss rate: 94.33%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 20.957 ms
Loss rate: 92.62%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 19.574 ms
Loss rate: 96.21%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 21.233 ms
Loss rate: 95.65%
```
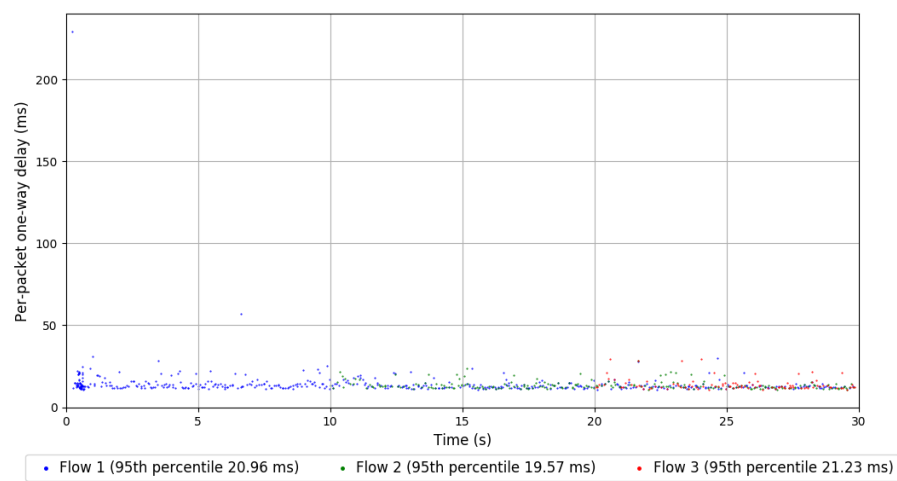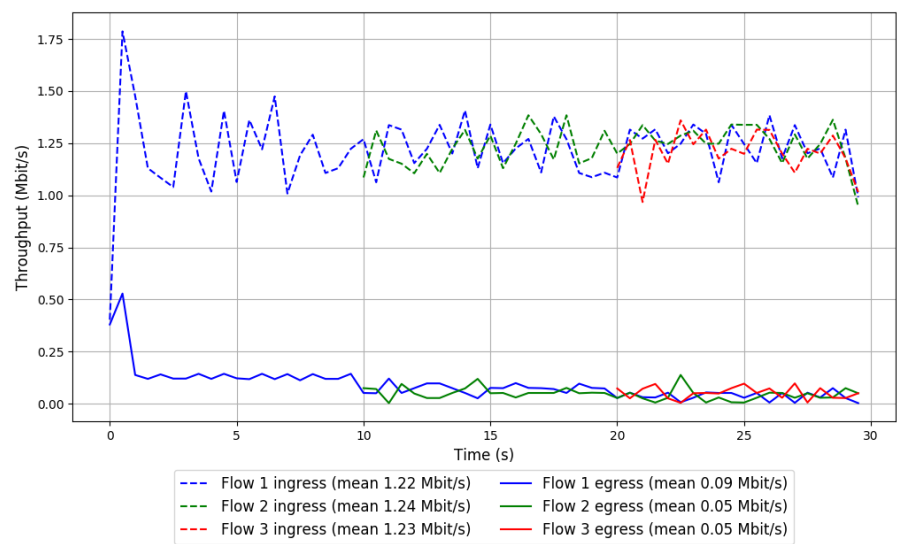
Run 1: Report of Vivace-latency — Data Link

```
Run 2: Statistics of Vivace-latency

Start at: 2018-03-05 21:45:00
End at: 2018-03-05 21:45:30
Local clock offset: 1.474 ms
Remote clock offset: 0.722 ms


# Below is generated by plot.py at 2018-03-05 22:27:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 19.756 ms
Loss rate: 94.28%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 20.073 ms
Loss rate: 92.44%
-- Flow 2:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 14.162 ms
Loss rate: 95.47%
-- Flow 3:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 19.564 ms
Loss rate: 97.28%
```
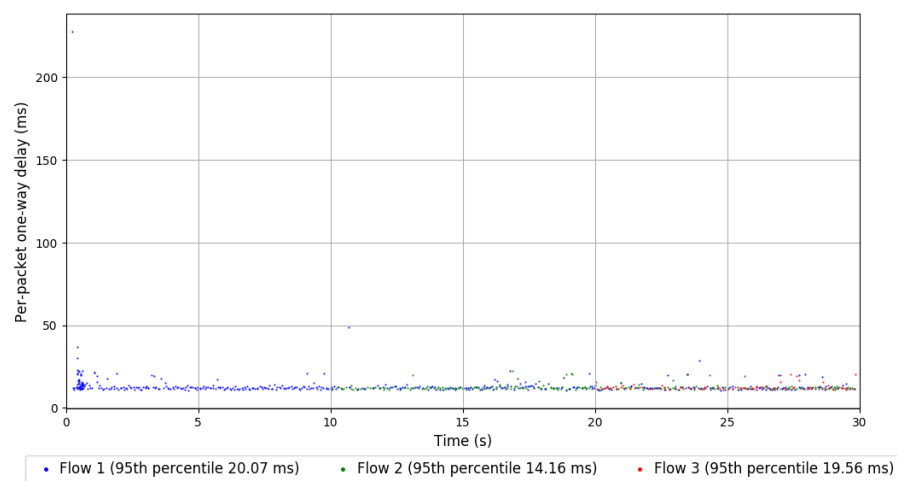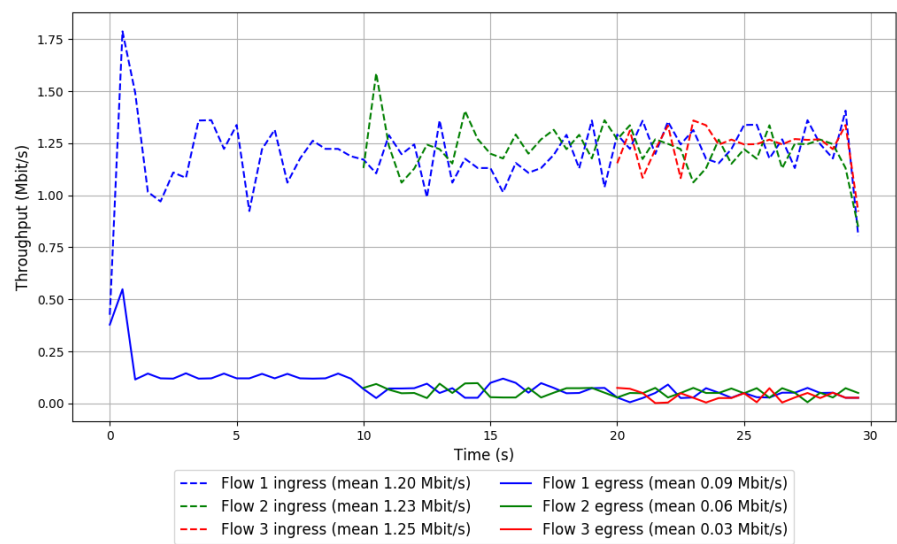
Run 2: Report of Vivace-latency — Data Link

```
Run 3: Statistics of Vivace-latency

Start at: 2018-03-05 22:08:40
End at: 2018-03-05 22:09:10
Local clock offset: 2.014 ms
Remote clock offset: 0.652 ms


# Below is generated by plot.py at 2018-03-05 22:27:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 17.511 ms
Loss rate: 94.28%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 19.800 ms
Loss rate: 92.24%
-- Flow 2:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 14.050 ms
Loss rate: 96.40%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 15.399 ms
Loss rate: 96.21%
```
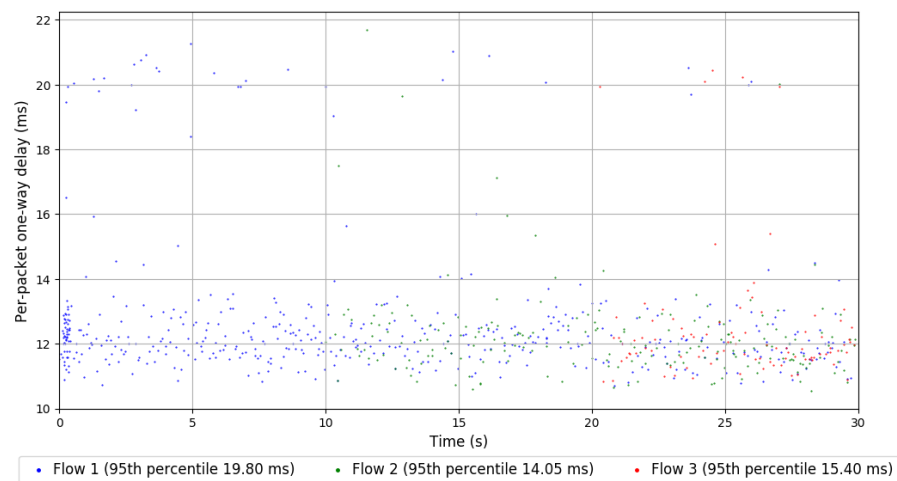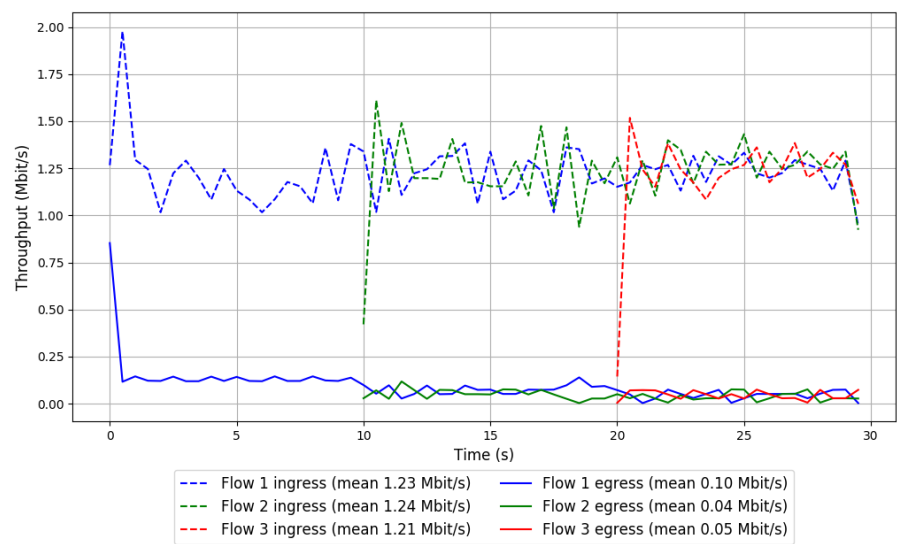
Run 3: Report of Vivace-latency — Data Link

```
Run 1: Statistics of Vivace-loss

Start at: 2018-03-05 21:27:53
End at: 2018-03-05 21:28:23
Local clock offset: 1.095 ms
Remote clock offset: 0.747 ms


# Below is generated by plot.py at 2018-03-05 22:27:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 20.413 ms
Loss rate: 94.22%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 21.048 ms
Loss rate: 92.50%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 19.213 ms
Loss rate: 95.75%
-- Flow 3:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 18.193 ms
Loss rate: 96.32%
```
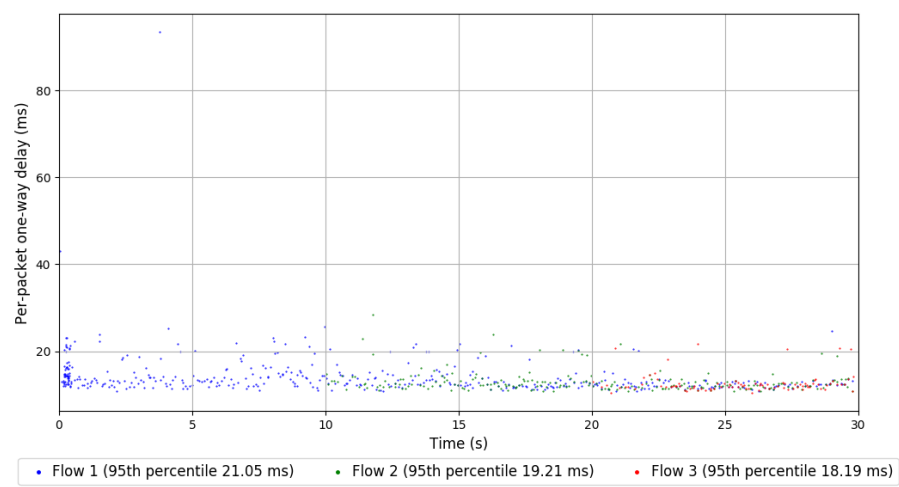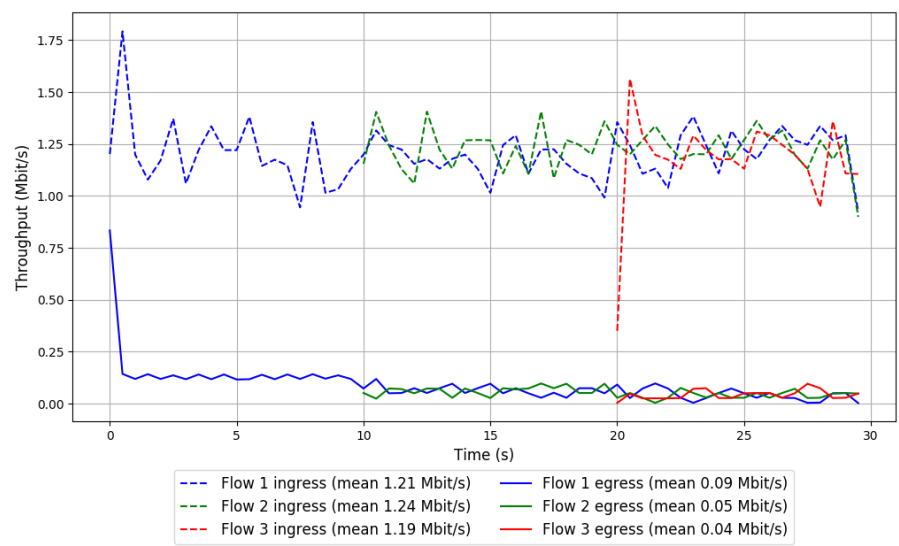
Run 1: Report of Vivace-loss — Data Link

```
Run 2: Statistics of Vivace-loss

Start at: 2018-03-05 21:51:34
End at: 2018-03-05 21:52:04
Local clock offset: 1.709 ms
Remote clock offset: 0.745 ms


# Below is generated by plot.py at 2018-03-05 22:27:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 20.306 ms
Loss rate: 94.33%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 20.262 ms
Loss rate: 92.82%
-- Flow 2:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 19.923 ms
Loss rate: 95.41%
-- Flow 3:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 24.521 ms
Loss rate: 96.66%
```

Run 2: Report of Vivace-loss — Data Link

- Flow 1 ingress (mean 1.23 Mbit/s)
- Flow 2 ingress (mean 1.22 Mbit/s)
- Flow 3 ingress (mean 1.27 Mbit/s)
- Flow 1 egress (mean 0.09 Mbit/s)
- Flow 2 egress (mean 0.06 Mbit/s)
- Flow 3 egress (mean 0.04 Mbit/s)

- Flow 1 (95th percentile 20.26 ms)
- Flow 2 (95th percentile 19.92 ms)
- Flow 3 (95th percentile 24.52 ms)

```
Run 3: Statistics of Vivace-loss

Start at: 2018-03-05 22:15:15
End at: 2018-03-05 22:15:45
Local clock offset: 1.937 ms
Remote clock offset: 0.666 ms


# Below is generated by plot.py at 2018-03-05 22:27:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 19.762 ms
Loss rate: 94.29%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 19.985 ms
Loss rate: 92.65%
-- Flow 2:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 19.031 ms
Loss rate: 95.22%
-- Flow 3:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 14.156 ms
Loss rate: 97.22%
```
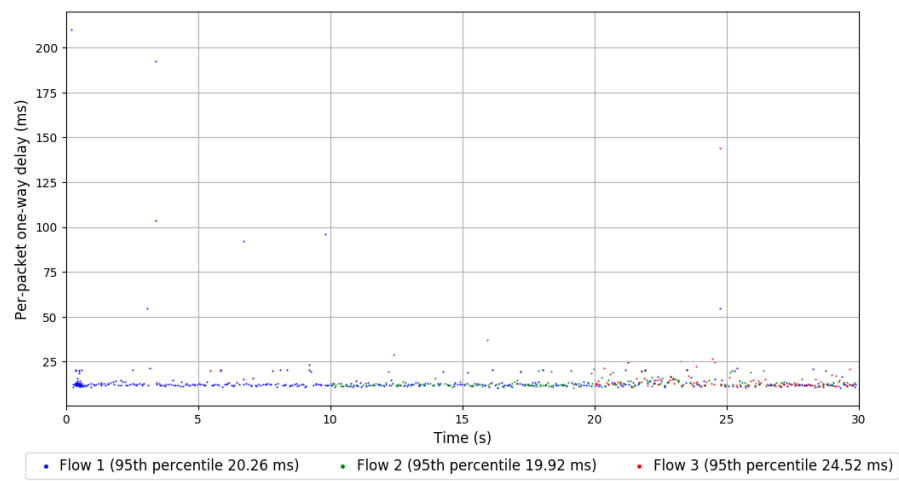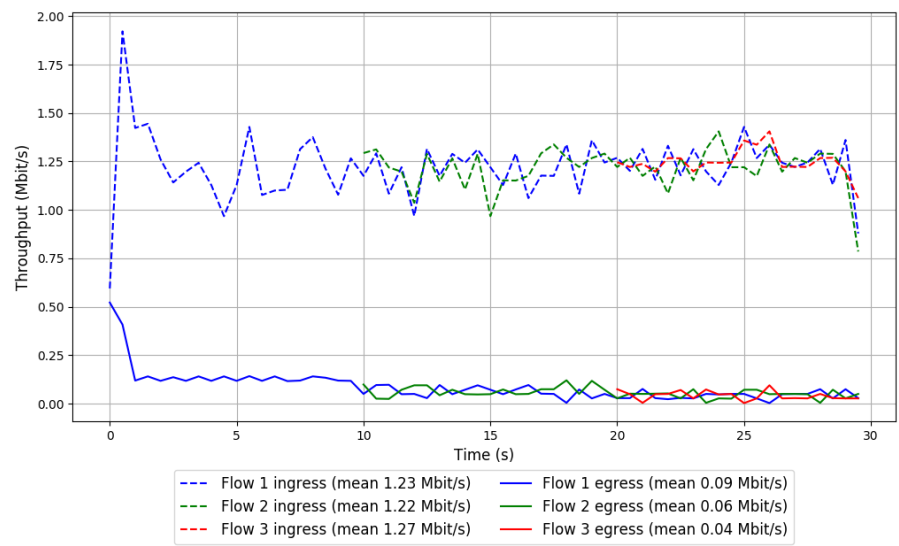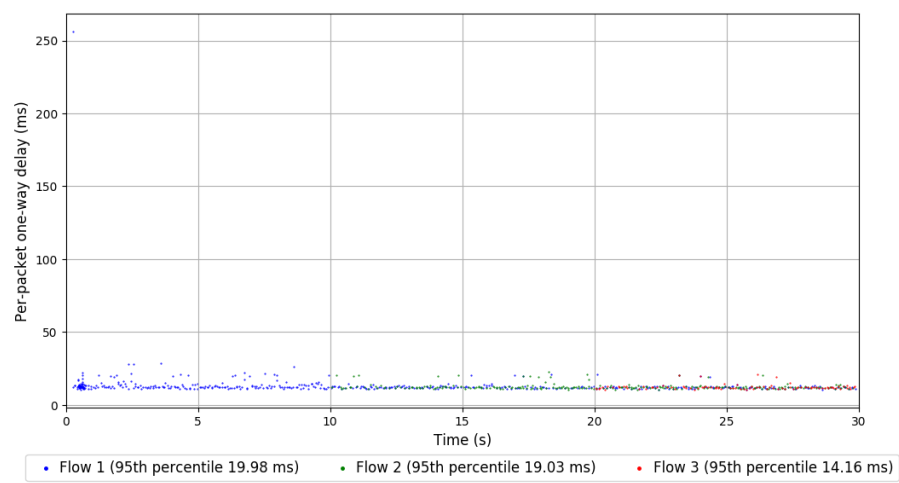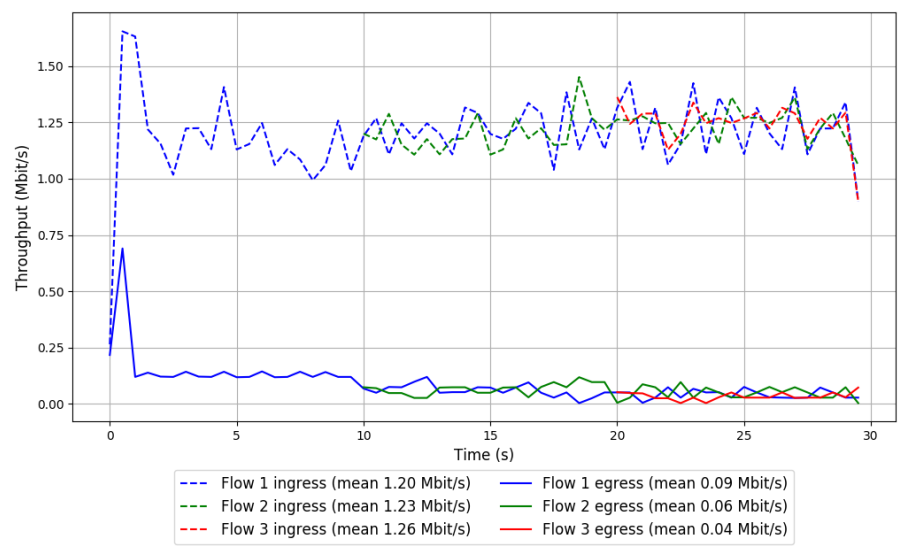
Run 3: Report of Vivace-loss — Data Link

```
Run 1: Statistics of Vivace-LTE

Start at: 2018-03-05 21:16:03
End at: 2018-03-05 21:16:33
Local clock offset: 1.36 ms
Remote clock offset: 0.734 ms


# Below is generated by plot.py at 2018-03-05 22:27:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 20.327 ms
Loss rate: 94.31%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 20.603 ms
Loss rate: 92.19%
-- Flow 2:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 20.052 ms
Loss rate: 96.40%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 20.181 ms
Loss rate: 96.31%
```
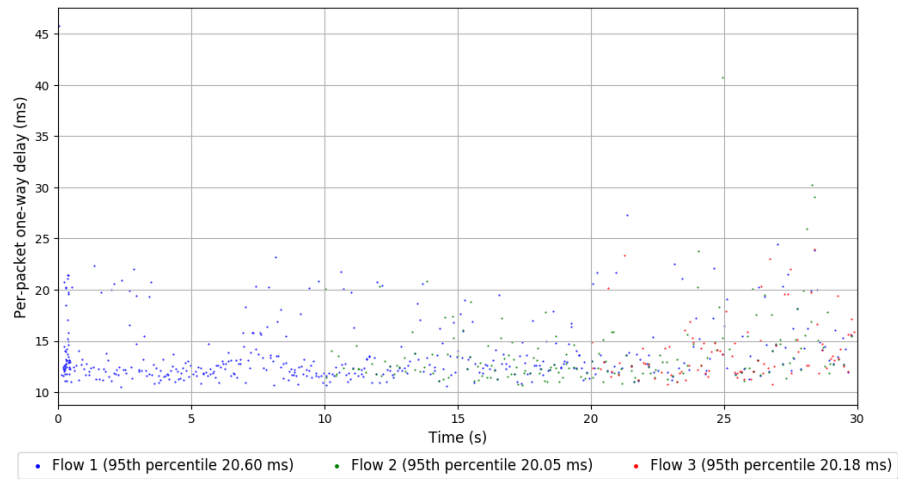
Run 1: Report of Vivace-LTE — Data Link

Flow 1 ingress (mean 1.21 Mbit/s)   Flow 1 egress (mean 0.10 Mbit/s)
Flow 2 ingress (mean 1.24 Mbit/s)   Flow 2 egress (mean 0.04 Mbit/s)
Flow 3 ingress (mean 1.28 Mbit/s)   Flow 3 egress (mean 0.05 Mbit/s)

Flow 1 (95th percentile 20.60 ms)   Flow 2 (95th percentile 20.05 ms)   Flow 3 (95th percentile 20.18 ms)

```
Run 2: Statistics of Vivace-LTE

Start at: 2018-03-05 21:39:44
End at: 2018-03-05 21:40:14
Local clock offset: 1.081 ms
Remote clock offset: 0.702 ms


# Below is generated by plot.py at 2018-03-05 22:27:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 17.422 ms
Loss rate: 94.27%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 16.988 ms
Loss rate: 92.63%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 18.131 ms
Loss rate: 95.67%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 17.422 ms
Loss rate: 96.29%
```
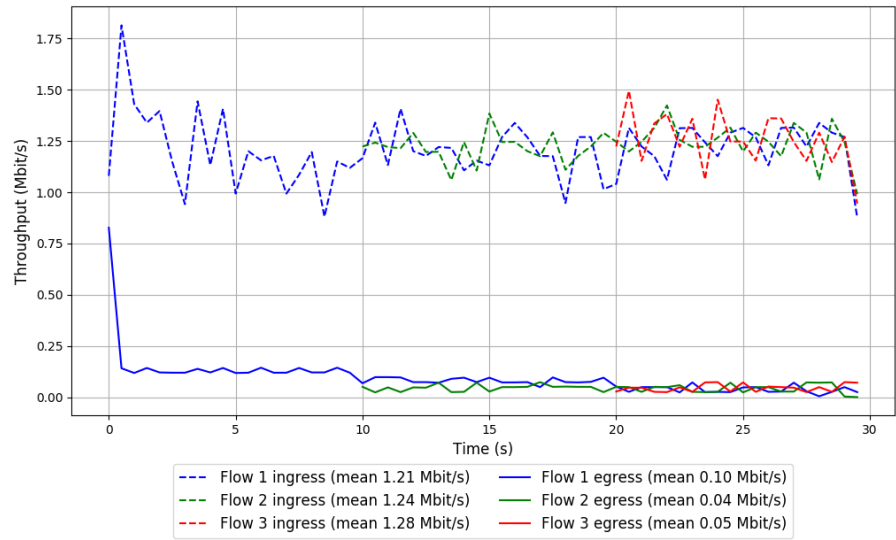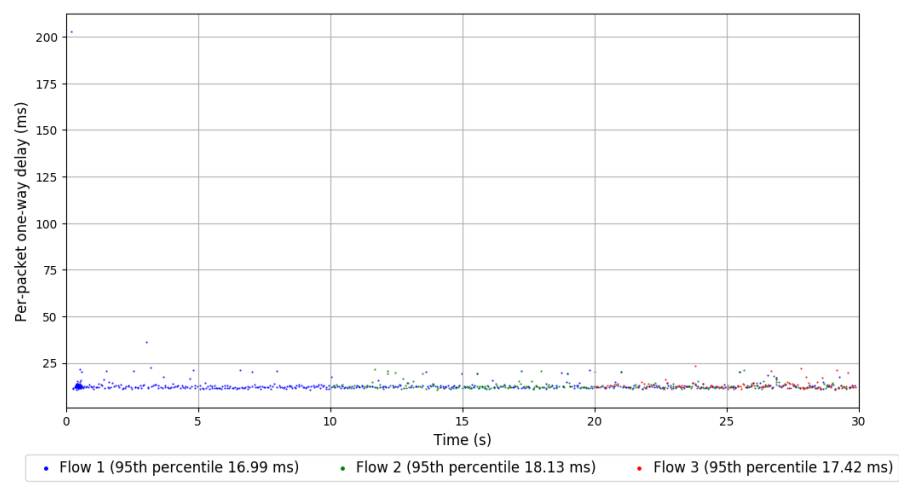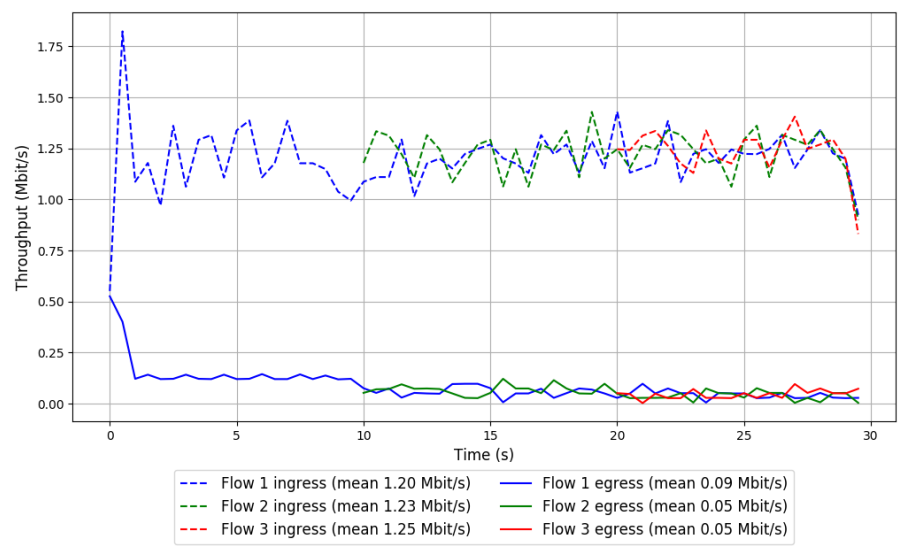
Run 2: Report of Vivace-LTE — Data Link

Flow 1 ingress (mean 1.20 Mbit/s)   Flow 1 egress (mean 0.09 Mbit/s)
Flow 2 ingress (mean 1.23 Mbit/s)   Flow 2 egress (mean 0.05 Mbit/s)
Flow 3 ingress (mean 1.25 Mbit/s)   Flow 3 egress (mean 0.05 Mbit/s)

Flow 1 (95th percentile 16.99 ms)   Flow 2 (95th percentile 18.13 ms)   Flow 3 (95th percentile 17.42 ms)

```
Run 3: Statistics of Vivace-LTE

Start at: 2018-03-05 22:03:24
End at: 2018-03-05 22:03:54
Local clock offset: 1.945 ms
Remote clock offset: 0.791 ms


# Below is generated by plot.py at 2018-03-05 22:27:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 21.987 ms
Loss rate: 94.31%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 23.748 ms
Loss rate: 92.74%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 21.117 ms
Loss rate: 95.71%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 18.248 ms
Loss rate: 96.18%
```

Run 3: Report of Vivace-LTE — Data Link