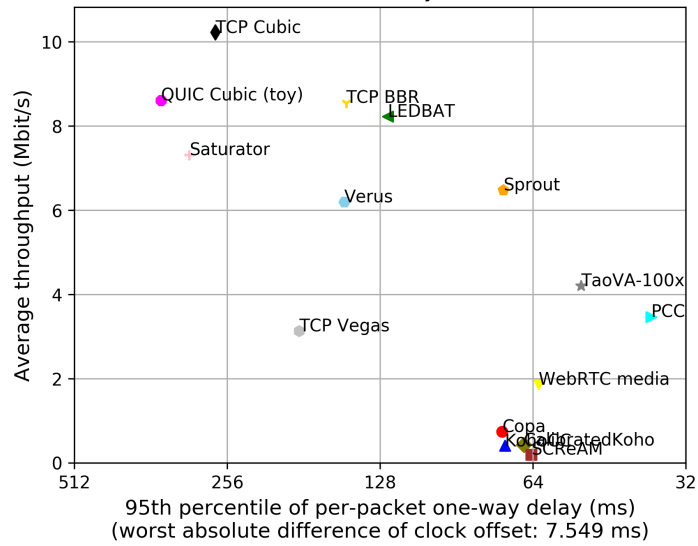


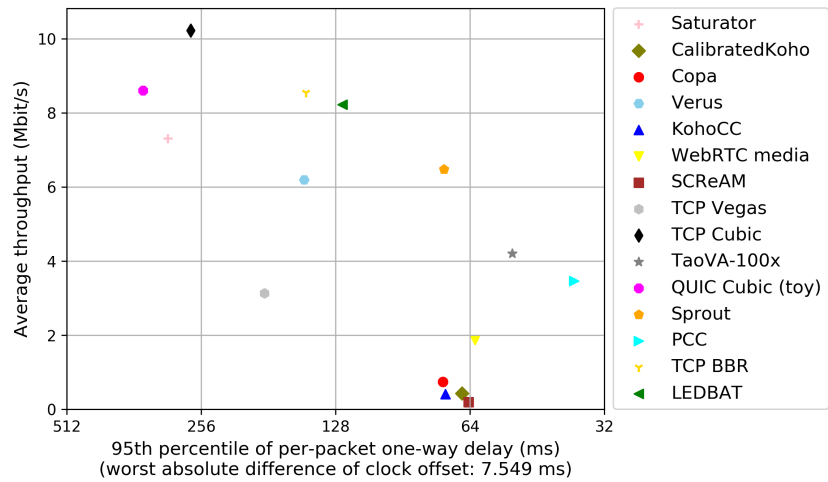
**Pantheon Summary** (Generated at Tue, 20 Jun 2017 07:19:52 +0000 with  
pantheon version f1f579919e2382b18c1fb18b676e821e7efc0b62)  
Repeated the test of 15 congestion control schemes once.  
Each test lasted for 30 seconds running 1 flow.  
Data path **from** Stanford ppp0 **to** AWS California 1 Ethernet.  
NTP offset measured against time.stanford.edu.

git branch: master @ f1f579919e2382b18c1fb18b676e821e7efc0b62  
third\_party/calibrated\_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50  
M datagrump/sender.cc  
third\_party/genericCC @ dae96123232f1bcb37725348fa2378691ce26725  
third\_party/koho\_cc @ f0f2e693303aee82ea808e6928eac4f1083a6681  
M datagrump/sender.cc  
third\_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf  
third\_party/pantheon-stimuli @ fc73a85ca16c34366d1888dc8a0d0d88d4ebf2a7  
third\_party/pantheon-tunnel @ 4893799ab83a43fa2d3236507d168f461e1243ed  
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 @ f1a14bffe749737437f61b1eaeab30b267cde681  
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/webrtc @ a488197ddd041ace68a42849b2540ad834825f42

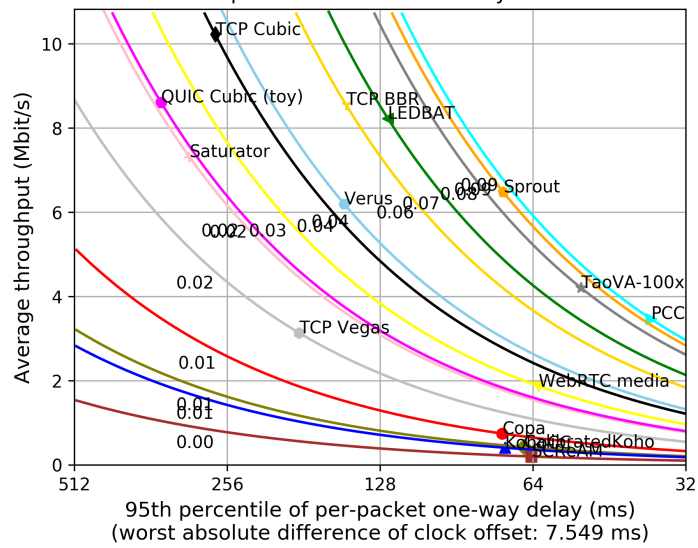
test from Stanford ppp0 to AWS California 1 Ethernet, 1 run of 30s each per scheme  
mean of all runs by scheme



test from Stanford ppp0 to AWS California 1 Ethernet, 1 run of 30s each per scheme



test from Stanford ppp0 to AWS California 1 Ethernet, 1 run of 30s each per scheme  
 mean power scores of all runs by scheme



Run 1: Statistics of TCP BBR

Start at: Tue, 20 Jun 2017 07:01:27 +0000

End at: Tue, 20 Jun 2017 07:01:57 +0000

Local clock offset: 4.666 ms

Remote clock offset: -2.675 ms

# Below is generated by plot.py at Tue, 20 Jun 2017 07:19:39 +0000

# Datalink statistics

-- Total of 1 flow:

Average throughput: 8.55 Mbit/s

95th percentile per-packet one-way delay: 149.319 ms

Loss rate: 0.29%

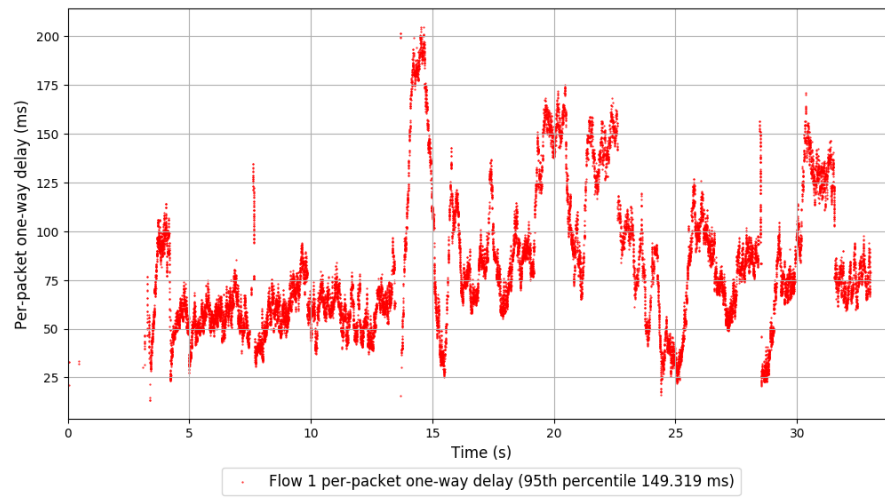
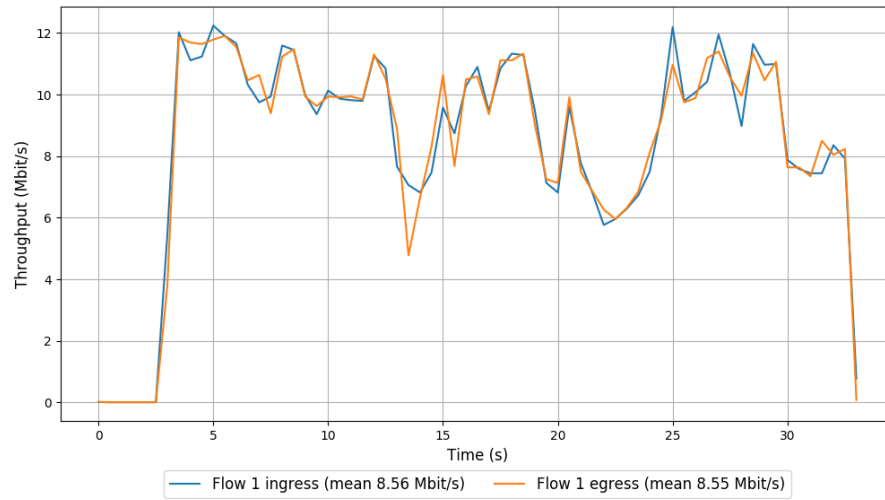
-- Flow 1:

Average throughput: 8.55 Mbit/s

95th percentile per-packet one-way delay: 149.319 ms

Loss rate: 0.29%

### Run 1: Report of TCP BBR — Data Link



Run 1: Statistics of CalibratedKoho

Start at: Tue, 20 Jun 2017 07:11:58 +0000

End at: Tue, 20 Jun 2017 07:12:28 +0000

Local clock offset: 4.808 ms

Remote clock offset: -2.64 ms

# Below is generated by plot.py at Tue, 20 Jun 2017 07:19:39 +0000

# Datalink statistics

-- Total of 1 flow:

Average throughput: 0.42 Mbit/s

95th percentile per-packet one-way delay: 66.755 ms

Loss rate: 0.52%

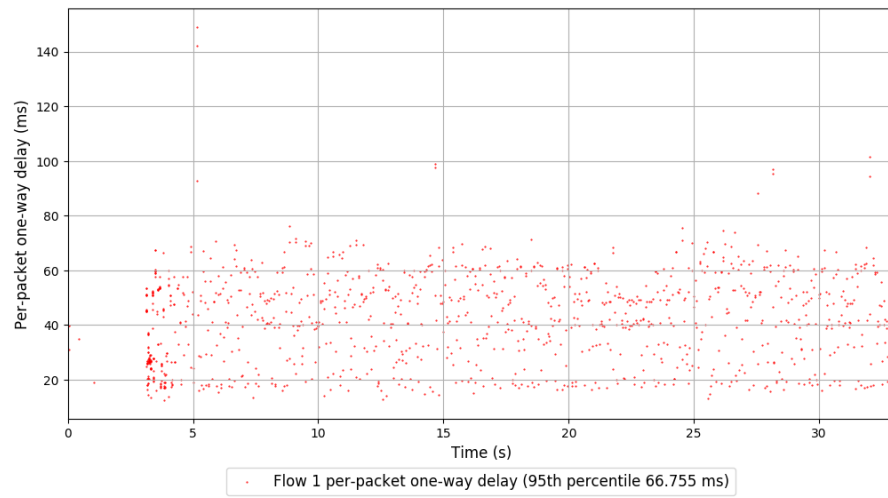
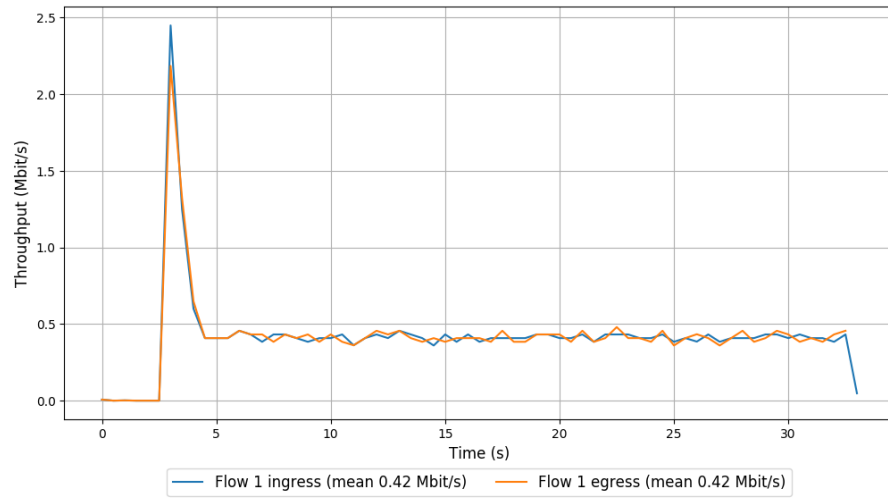
-- Flow 1:

Average throughput: 0.42 Mbit/s

95th percentile per-packet one-way delay: 66.755 ms

Loss rate: 0.52%

## Run 1: Report of CalibratedKoho — Data Link



Run 1: Statistics of Copa

Start at: Tue, 20 Jun 2017 07:13:08 +0000

End at: Tue, 20 Jun 2017 07:13:38 +0000

Local clock offset: 4.925 ms

Remote clock offset: -2.616 ms

# Below is generated by plot.py at Tue, 20 Jun 2017 07:19:39 +0000

# Datalink statistics

-- Total of 1 flow:

Average throughput: 0.74 Mbit/s

95th percentile per-packet one-way delay: 73.583 ms

Loss rate: 0.58%

-- Flow 1:

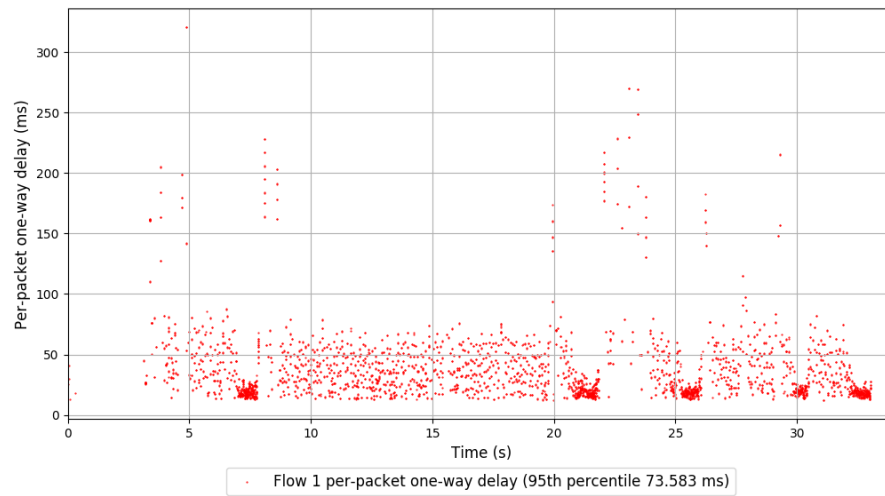
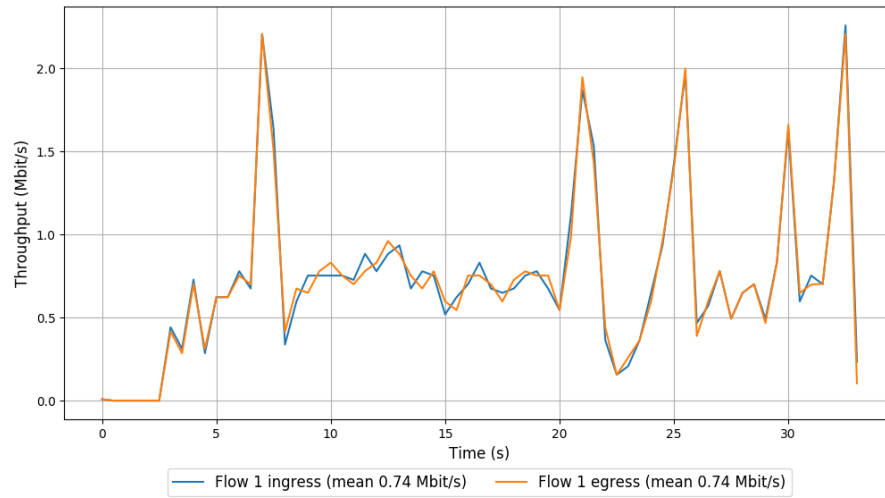
Average throughput: 0.74 Mbit/s

95th percentile per-packet one-way delay: 73.583 ms

Loss rate: 0.58%



## Run 1: Report of Copa — Data Link



Run 1: Statistics of TCP Cubic

Start at: Tue, 20 Jun 2017 07:09:38 +0000

End at: Tue, 20 Jun 2017 07:10:08 +0000

Local clock offset: 4.789 ms

Remote clock offset: -2.715 ms

# Below is generated by plot.py at Tue, 20 Jun 2017 07:19:40 +0000

# Datalink statistics

-- Total of 1 flow:

Average throughput: 10.22 Mbit/s

95th percentile per-packet one-way delay: 270.493 ms

Loss rate: 1.02%

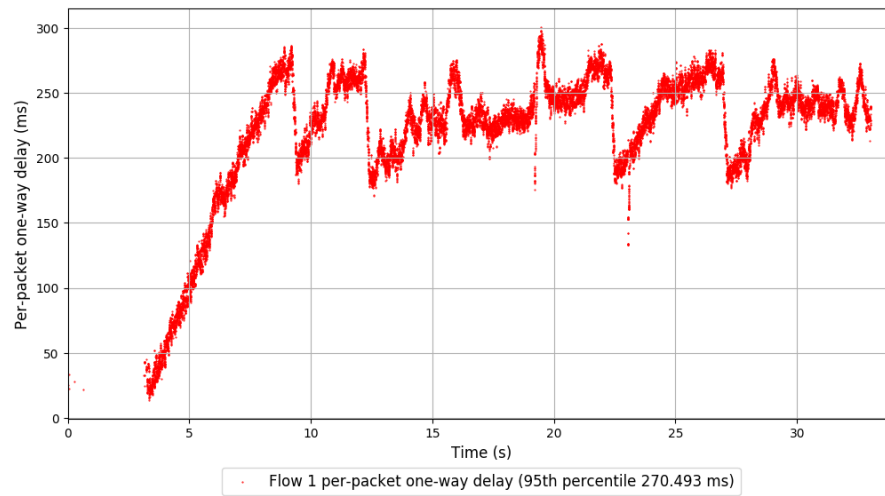
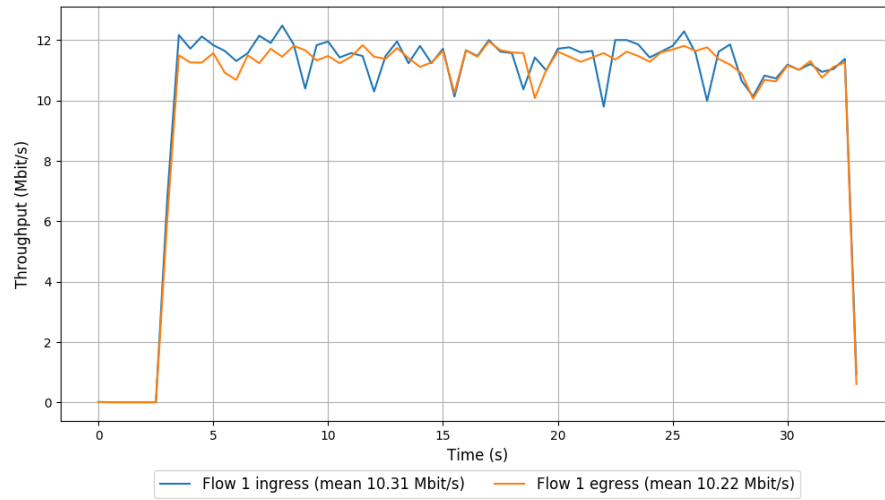
-- Flow 1:

Average throughput: 10.22 Mbit/s

95th percentile per-packet one-way delay: 270.493 ms

Loss rate: 1.02%

### Run 1: Report of TCP Cubic — Data Link



Run 1: Statistics of KohoCC

Start at: Tue, 20 Jun 2017 07:10:48 +0000

End at: Tue, 20 Jun 2017 07:11:18 +0000

Local clock offset: 4.864 ms

Remote clock offset: -2.616 ms

# Below is generated by plot.py at Tue, 20 Jun 2017 07:19:40 +0000

# Datalink statistics

-- Total of 1 flow:

Average throughput: 0.40 Mbit/s

95th percentile per-packet one-way delay: 72.637 ms

Loss rate: 0.54%

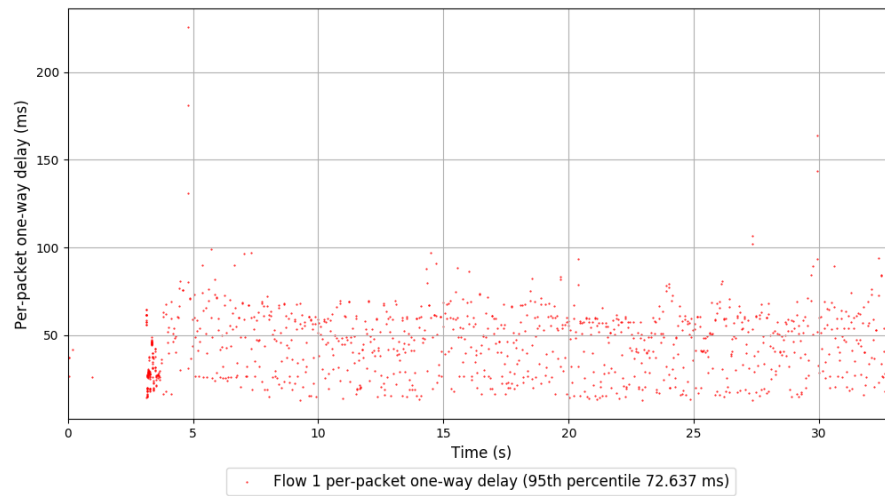
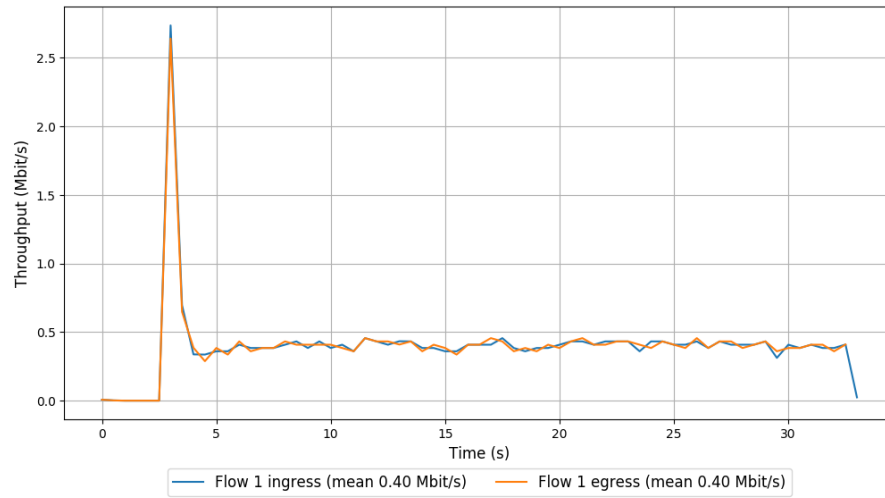
-- Flow 1:

Average throughput: 0.40 Mbit/s

95th percentile per-packet one-way delay: 72.637 ms

Loss rate: 0.54%

### Run 1: Report of KohoCC — Data Link



Run 1: Statistics of LEDBAT

Start at: Tue, 20 Jun 2017 07:14:18 +0000

End at: Tue, 20 Jun 2017 07:14:48 +0000

Local clock offset: 4.884 ms

Remote clock offset: -2.603 ms

# Below is generated by plot.py at Tue, 20 Jun 2017 07:19:42 +0000

# Datalink statistics

-- Total of 1 flow:

Average throughput: 8.22 Mbit/s

95th percentile per-packet one-way delay: 123.545 ms

Loss rate: 0.44%

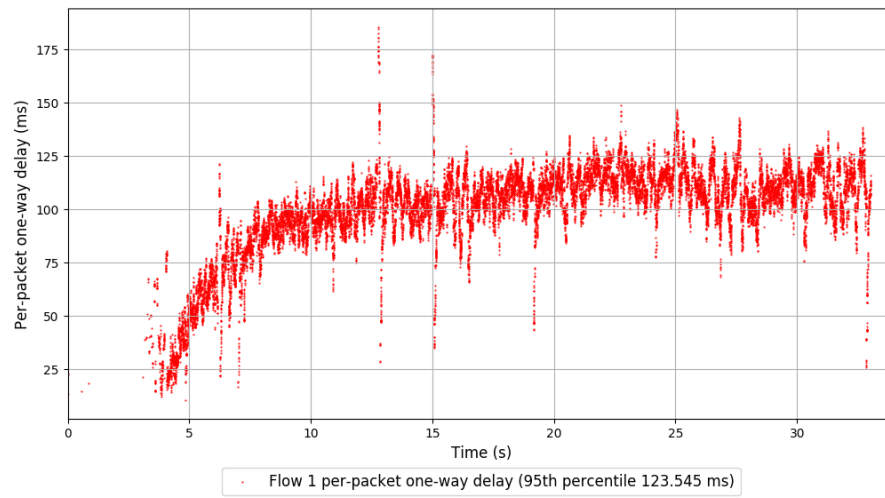
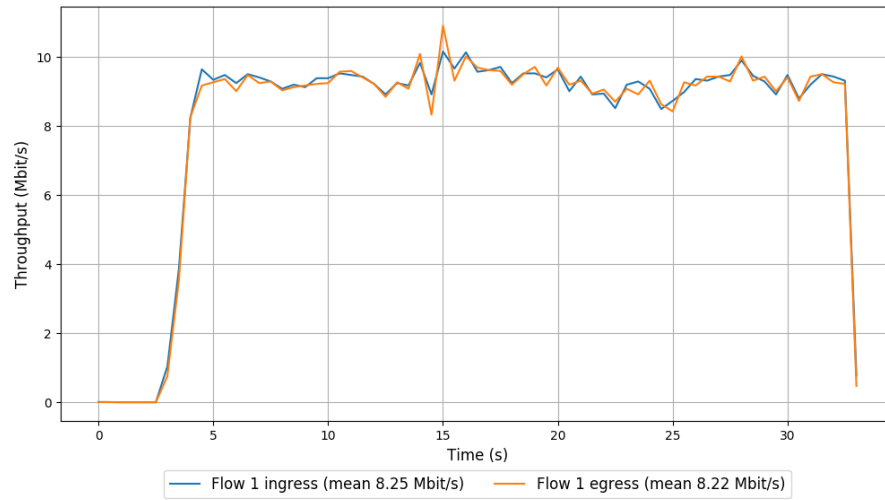
-- Flow 1:

Average throughput: 8.22 Mbit/s

95th percentile per-packet one-way delay: 123.545 ms

Loss rate: 0.44%

# Run 1: Report of LEDBAT — Data Link



Run 1: Statistics of PCC

Start at: Tue, 20 Jun 2017 07:07:18 +0000

End at: Tue, 20 Jun 2017 07:07:48 +0000

Local clock offset: 4.838 ms

Remote clock offset: -2.711 ms

# Below is generated by plot.py at Tue, 20 Jun 2017 07:19:42 +0000

# Datalink statistics

-- Total of 1 flow:

Average throughput: 3.46 Mbit/s

95th percentile per-packet one-way delay: 37.464 ms

Loss rate: 0.19%

-- Flow 1:

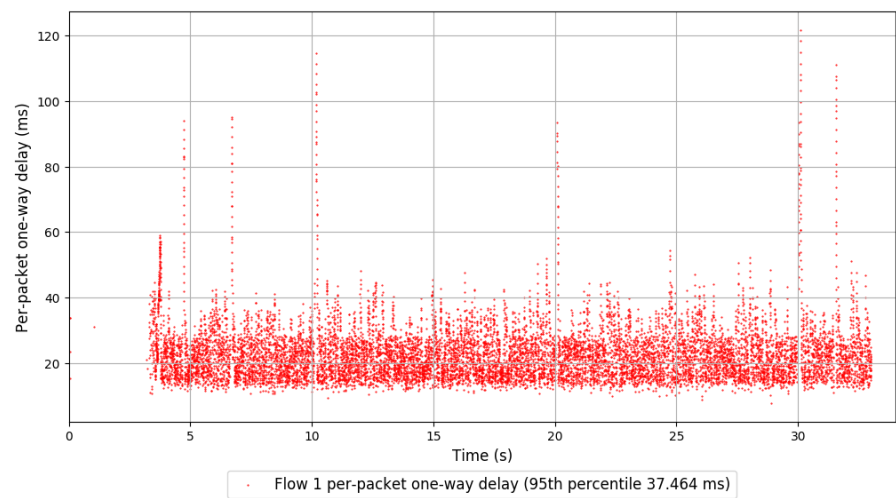
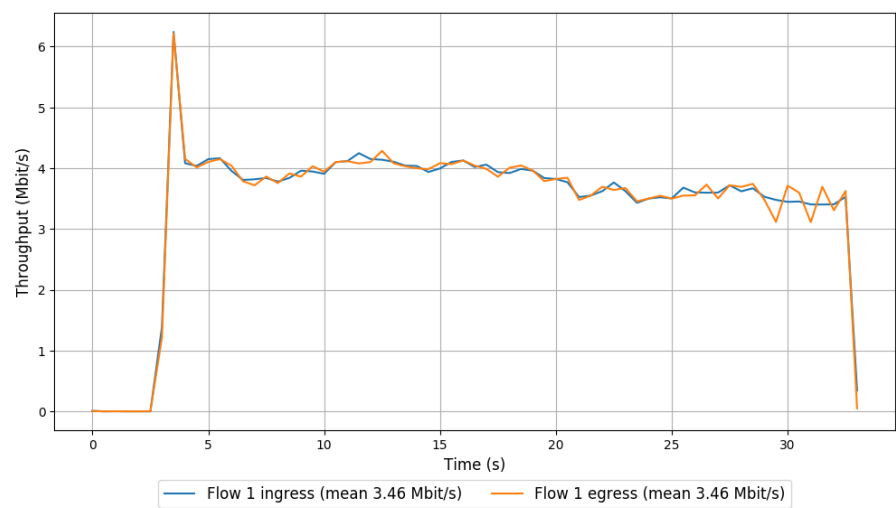
Average throughput: 3.46 Mbit/s

95th percentile per-packet one-way delay: 37.464 ms

Loss rate: 0.19%



Run 1: Report of PCC — Data Link



Run 1: Statistics of QUIC Cubic (toy)

Start at: Tue, 20 Jun 2017 07:17:49 +0000

End at: Tue, 20 Jun 2017 07:18:19 +0000

Local clock offset: 4.76 ms

Remote clock offset: -2.498 ms

# Below is generated by plot.py at Tue, 20 Jun 2017 07:19:43 +0000

# Datalink statistics

-- Total of 1 flow:

Average throughput: 8.61 Mbit/s

95th percentile per-packet one-way delay: 345.727 ms

Loss rate: 1.72%

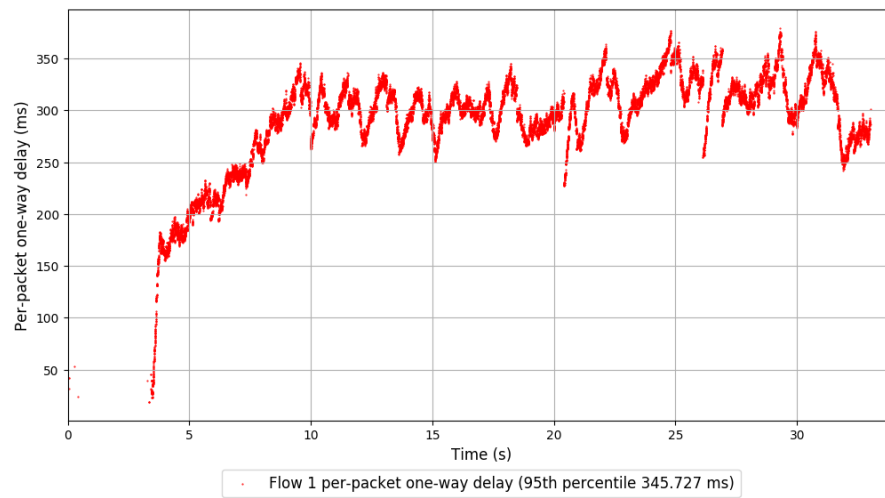
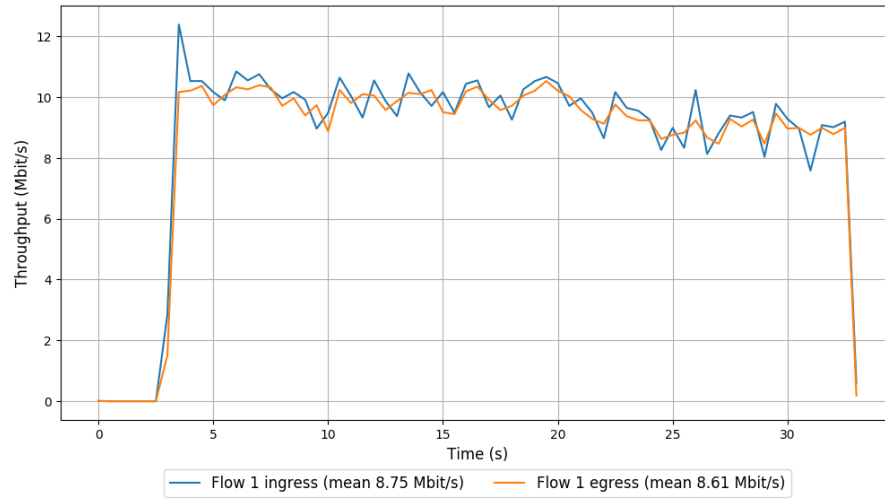
-- Flow 1:

Average throughput: 8.61 Mbit/s

95th percentile per-packet one-way delay: 345.727 ms

Loss rate: 1.72%

### Run 1: Report of QUIC Cubic (toy) — Data Link



Run 1: Statistics of Saturator

Start at: Tue, 20 Jun 2017 07:15:28 +0000

End at: Tue, 20 Jun 2017 07:15:58 +0000

Local clock offset: 4.73 ms

Remote clock offset: -2.497 ms

# Below is generated by plot.py at Tue, 20 Jun 2017 07:19:44 +0000

# Datalink statistics

-- Total of 1 flow:

Average throughput: 7.31 Mbit/s

95th percentile per-packet one-way delay: 303.848 ms

Loss rate: 2.60%

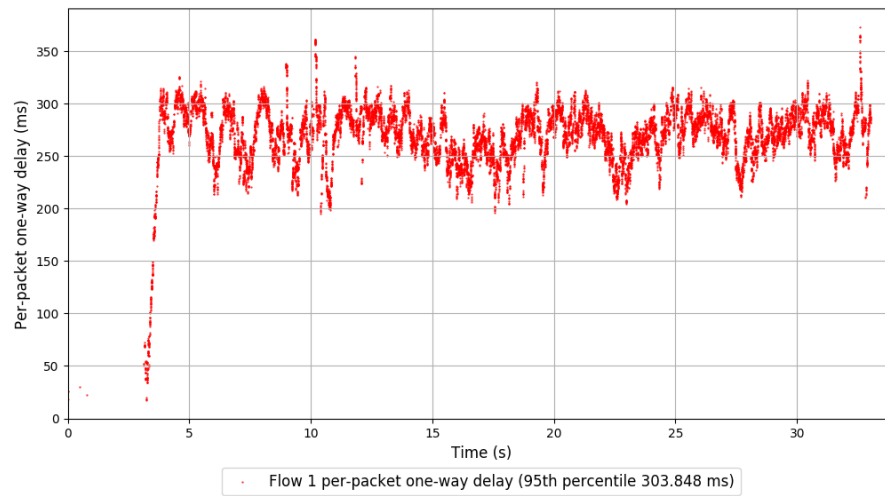
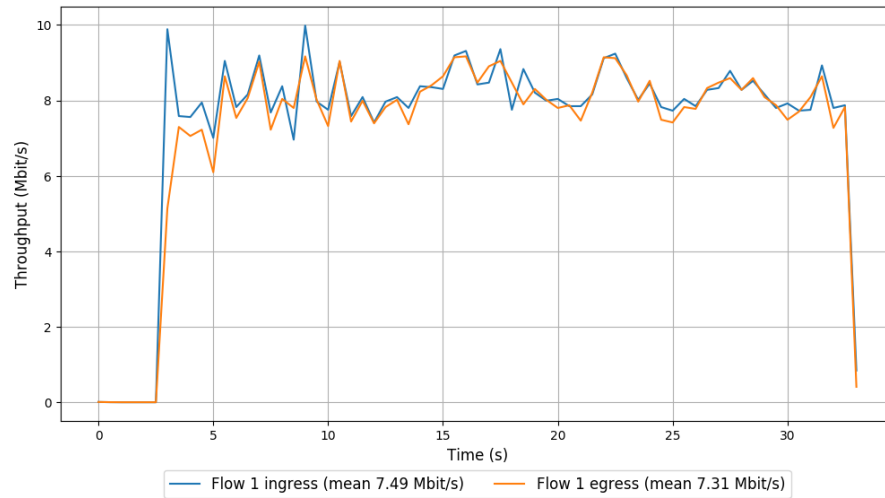
-- Flow 1:

Average throughput: 7.31 Mbit/s

95th percentile per-packet one-way delay: 303.848 ms

Loss rate: 2.60%

### Run 1: Report of Saturator — Data Link



Run 1: Statistics of SCReAM

Start at: Tue, 20 Jun 2017 07:16:39 +0000

End at: Tue, 20 Jun 2017 07:17:09 +0000

Local clock offset: 4.715 ms

Remote clock offset: -2.534 ms

# Below is generated by plot.py at Tue, 20 Jun 2017 07:19:45 +0000

# Datalink statistics

-- Total of 1 flow:

Average throughput: 0.19 Mbit/s

95th percentile per-packet one-way delay: 64.518 ms

Loss rate: 0.26%

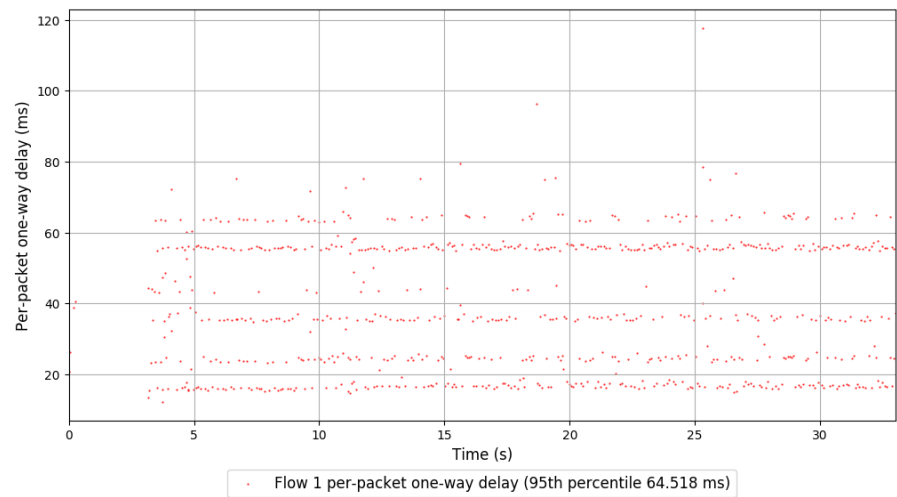
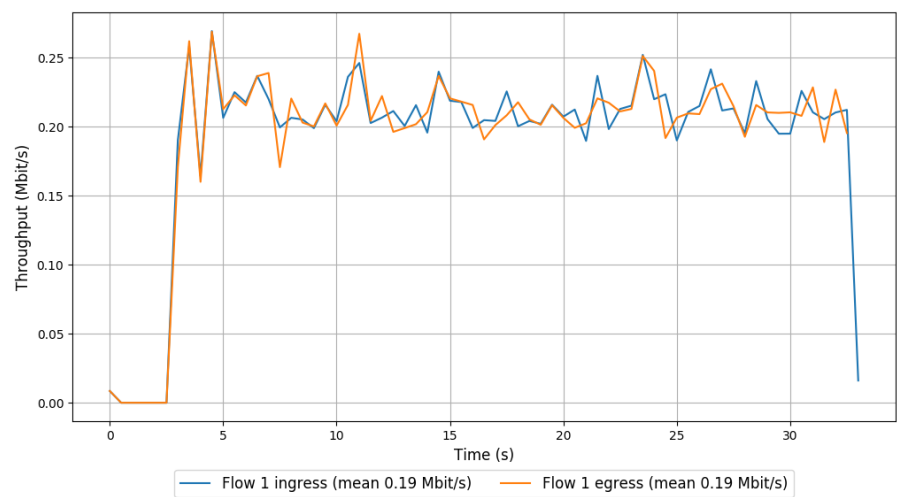
-- Flow 1:

Average throughput: 0.19 Mbit/s

95th percentile per-packet one-way delay: 64.518 ms

Loss rate: 0.26%

Run 1: Report of SReAM — Data Link



Run 1: Statistics of Sprout

Start at: Tue, 20 Jun 2017 07:02:37 +0000

End at: Tue, 20 Jun 2017 07:03:07 +0000

Local clock offset: 4.654 ms

Remote clock offset: -2.682 ms

# Below is generated by plot.py at Tue, 20 Jun 2017 07:19:46 +0000

# Datalink statistics

-- Total of 1 flow:

Average throughput: 6.48 Mbit/s

95th percentile per-packet one-way delay: 73.236 ms

Loss rate: 0.59%

-- Flow 1:

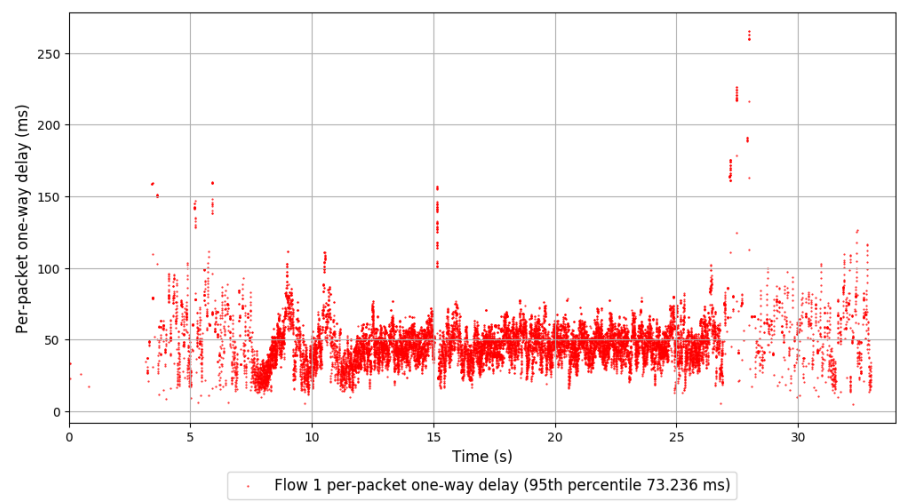
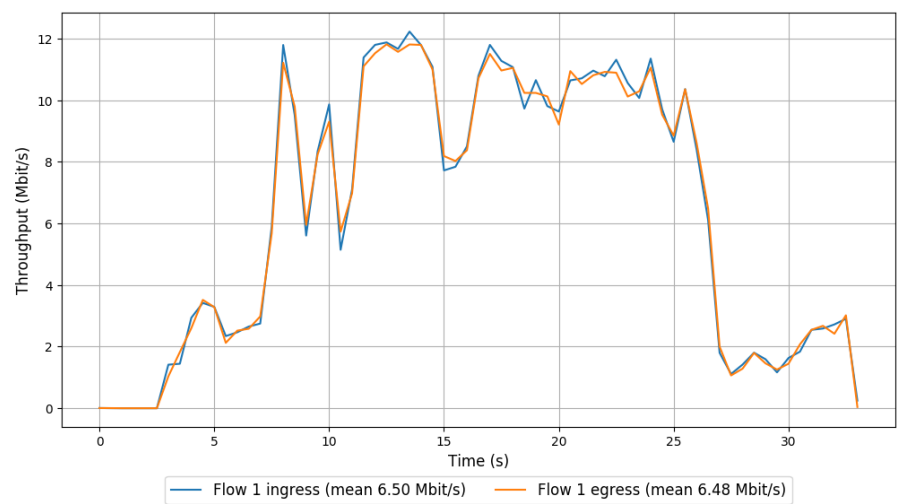
Average throughput: 6.48 Mbit/s

95th percentile per-packet one-way delay: 73.236 ms

Loss rate: 0.59%



Run 1: Report of Sprout — Data Link



Run 1: Statistics of TaoVA-100x

Start at: Tue, 20 Jun 2017 07:06:07 +0000

End at: Tue, 20 Jun 2017 07:06:37 +0000

Local clock offset: 4.704 ms

Remote clock offset: -2.722 ms

# Below is generated by plot.py at Tue, 20 Jun 2017 07:19:48 +0000

# Datalink statistics

-- Total of 1 flow:

Average throughput: 4.20 Mbit/s

95th percentile per-packet one-way delay: 51.439 ms

Loss rate: 1.03%

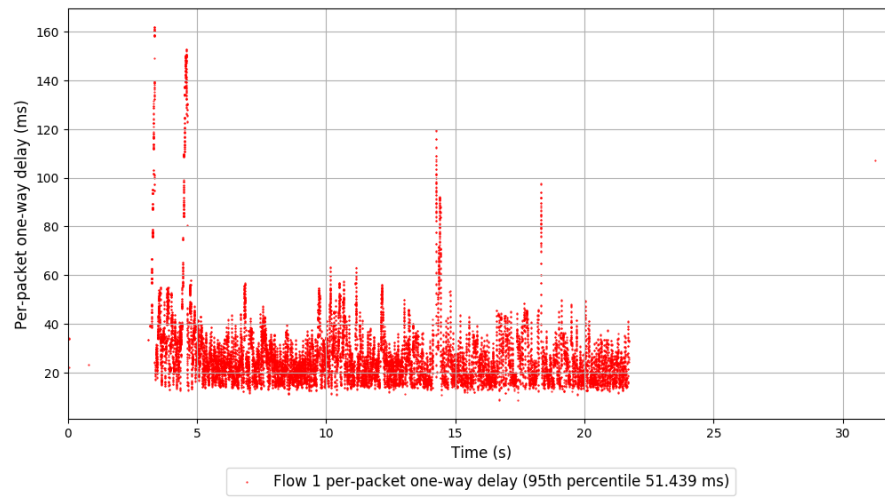
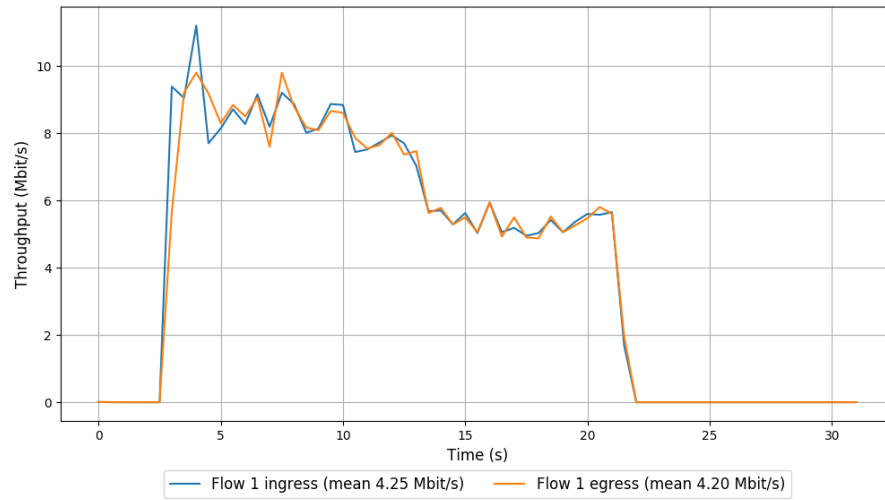
-- Flow 1:

Average throughput: 4.20 Mbit/s

95th percentile per-packet one-way delay: 51.439 ms

Loss rate: 1.03%

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



Run 1: Statistics of TCP Vegas

Start at: Tue, 20 Jun 2017 07:03:47 +0000

End at: Tue, 20 Jun 2017 07:04:17 +0000

Local clock offset: 4.695 ms

Remote clock offset: -2.683 ms

# Below is generated by plot.py at Tue, 20 Jun 2017 07:19:48 +0000

# Datalink statistics

-- Total of 1 flow:

Average throughput: 3.13 Mbit/s

95th percentile per-packet one-way delay: 184.839 ms

Loss rate: 0.44%

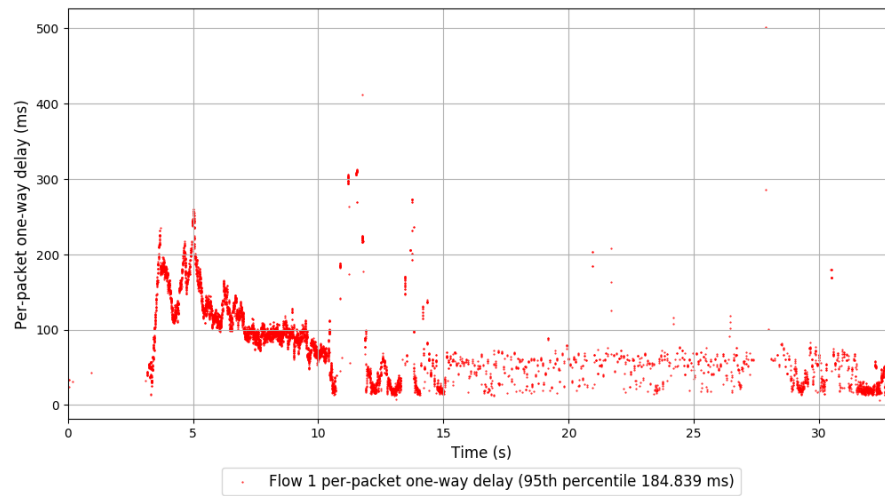
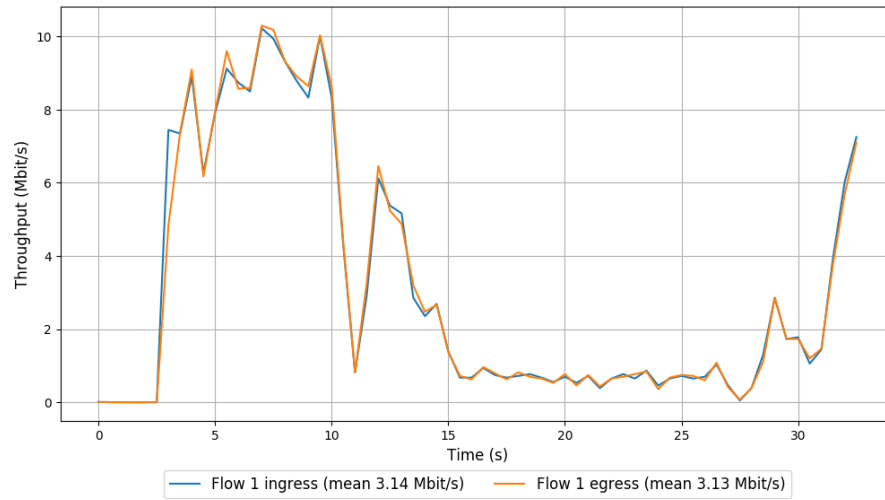
-- Flow 1:

Average throughput: 3.13 Mbit/s

95th percentile per-packet one-way delay: 184.839 ms

Loss rate: 0.44%

### Run 1: Report of TCP Vegas — Data Link



Run 1: Statistics of Verus

Start at: Tue, 20 Jun 2017 07:04:57 +0000

End at: Tue, 20 Jun 2017 07:05:27 +0000

Local clock offset: 4.69 ms

Remote clock offset: -2.711 ms

# Below is generated by plot.py at Tue, 20 Jun 2017 07:19:49 +0000

# Datalink statistics

-- Total of 1 flow:

Average throughput: 6.19 Mbit/s

95th percentile per-packet one-way delay: 150.629 ms

Loss rate: 26.52%

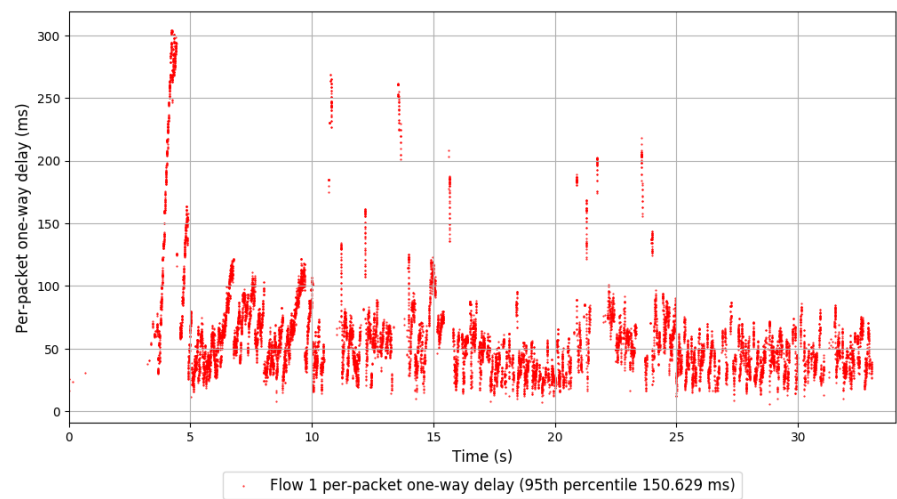
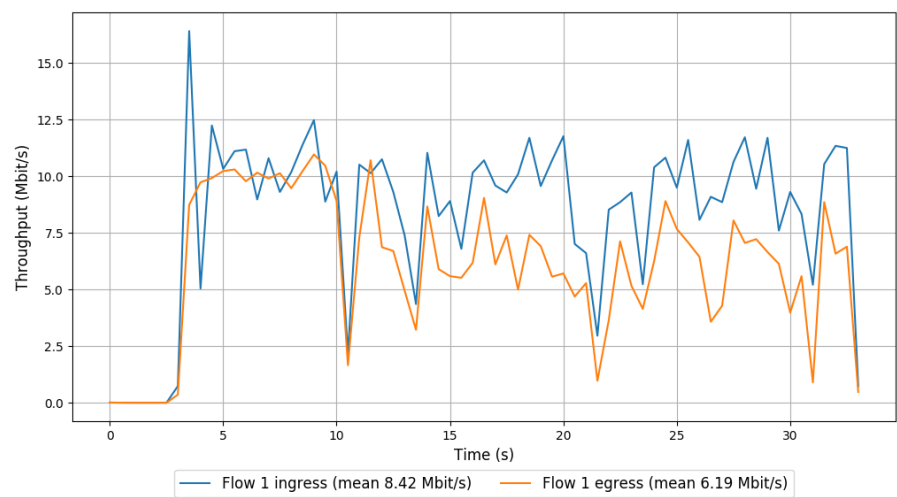
-- Flow 1:

Average throughput: 6.19 Mbit/s

95th percentile per-packet one-way delay: 150.629 ms

Loss rate: 26.52%

Run 1: Report of Verus — Data Link



Run 1: Statistics of WebRTC media

Start at: Tue, 20 Jun 2017 07:08:28 +0000

End at: Tue, 20 Jun 2017 07:08:58 +0000

Local clock offset: 4.782 ms

Remote clock offset: -2.704 ms

# Below is generated by plot.py at Tue, 20 Jun 2017 07:19:49 +0000

# Datalink statistics

-- Total of 1 flow:

Average throughput: 1.87 Mbit/s

95th percentile per-packet one-way delay: 62.376 ms

Loss rate: 0.38%

-- Flow 1:

Average throughput: 1.87 Mbit/s

95th percentile per-packet one-way delay: 62.376 ms

Loss rate: 0.38%



### Run 1: Report of WebRTC media — Data Link

