Dispatch Router Performance Testing

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Latency and throughput testing for Dispatch Router code version 1.15.0 with Proton 0.33.0.

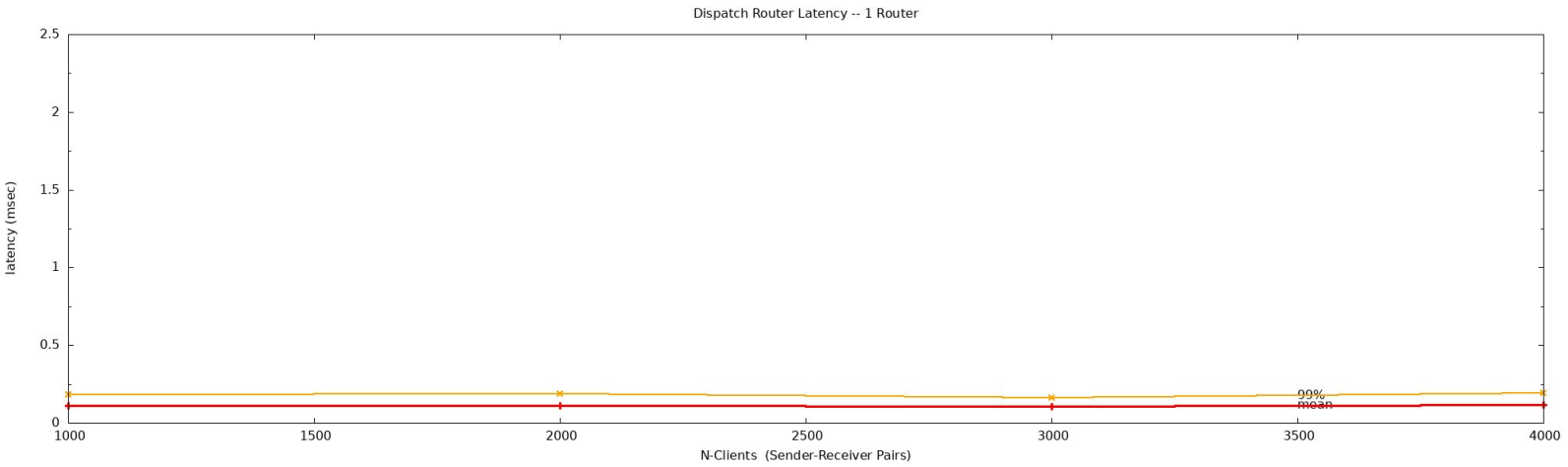
How the Latency Tests Work

Single router with sender-receiver pairs attached. So the test labeled '2000' actually has 4000 clients attached: 2000 senders and 2000 receivers. Each sender-receiver pair shares a unique address.

- Senders and receivers come in pairs: each sender sends to one receiver using a unique address.
- Each sender is throttled to 10 messages per second.
- Each message has 100 byte payload.
- No sender begins sending until all clients have finished starting up and attaching to their routers.
- Senders insert a timestamp into message just before sending. Receiver extracts timestamp upon reception and calculates flight time (latency).

- No client does I/O or memory allocation during messaging time.
- Receivers save flight time information in an array and do not write it out until all receivers have finished receiving expected number of messages.
- All routers and clients are colocated on one machine.
- Machine is 32-core AMD 3970X 3.7 GHz 256 MB.
- Cores are locked at 3.7 GHz
- Dispatch Router code version: 1.15.0-SNAPSHOT
- Proton code version: 0.33.0-SNAPSHOT
- First second and last second of data are trimmed off before analyzing and graphing data, because they contain test-generated effects.
- All messages are sent non-presettled. This means that the receiver sends acknowledgments back through the router to the sender.

Latency Results



The red line shows the mean latency for all messages. The gold line is at the level such that 99% of all messages are at or below that latency.

How the Throughput Tests Work

In throughput tests a much smaller number of sender-receiver pairs is used and the senders are allowed to run unthrottled. sending messages as fast as they can. Each sender sends 1 million messages.

As with latency tests, messages are sent non-presettled.

All receiver results are collected as in latency tests, but only to measure the time between the first and last reception. Divide total messages by seconds to get overall messages per second.

Throughput Results

Throughput reaches a peak of 400,000 messages per second and degrades only slightly as client pairs increase from 5 to 100.

Please note that 400,000 messages per second equals 800,000 transfers per second by the router.