IBM MQ V9.1.4 with the fasp.io Gateway

Performance

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fasp.io Gateway with IBM MQ

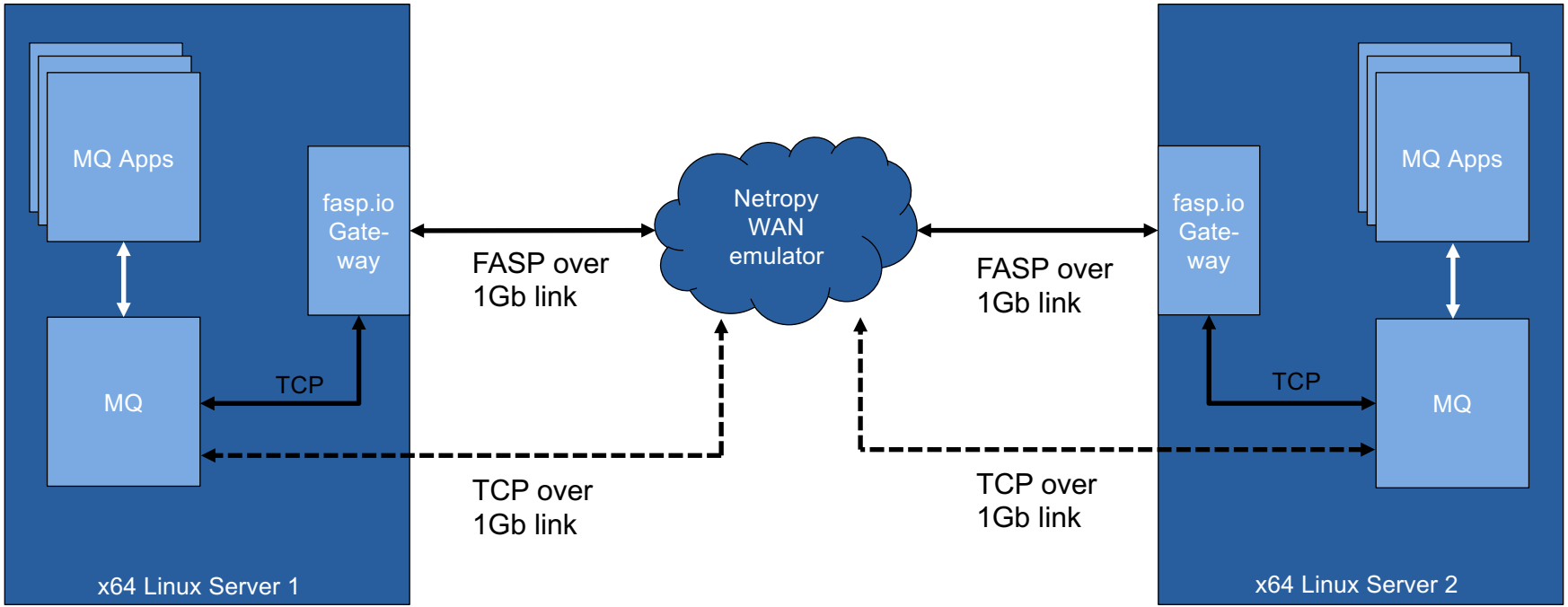
fasp.io Gateway is part of MQ V9.1.4 Advanced edition.

- Available as a download from passport advantage (part numbers: CJ6CBML, CC47WEN, CC47ZEN).
- Can dramatically improve throughput between queue managers, where links are across high latency and/or lossy networks (where traffic intended to be diverted through a single Gateway is <2Gb/s in total).
- Particularly suited to streaming workloads with larger messages.
- Distributed queueing considered in this presentation but other use cases can benefit (e.g. QREP).

Deployment Options

- Can be co-located on the same server as the queue manager or deployed on a separate host.
- Simply point the server channels at the pair of linked fasp.io Gateways instead of the remote queue manager listeners.
- No special setup or tuning of MQ is required.

Distributed Queueing Test Topology



fasp.io Gateway connected server channels ⟷ Direct connected server channels ⟷

Workloads

Two workloads tested

- Point-to-point (uni-directional) send/receive workload utilizing 10 pairs of server channels, with multiple applications (MQ-CPH).
- Requester/responder (bi-directional) workload utilizing 10 pairs of server channels, with multiple applications (MQ-CPH).

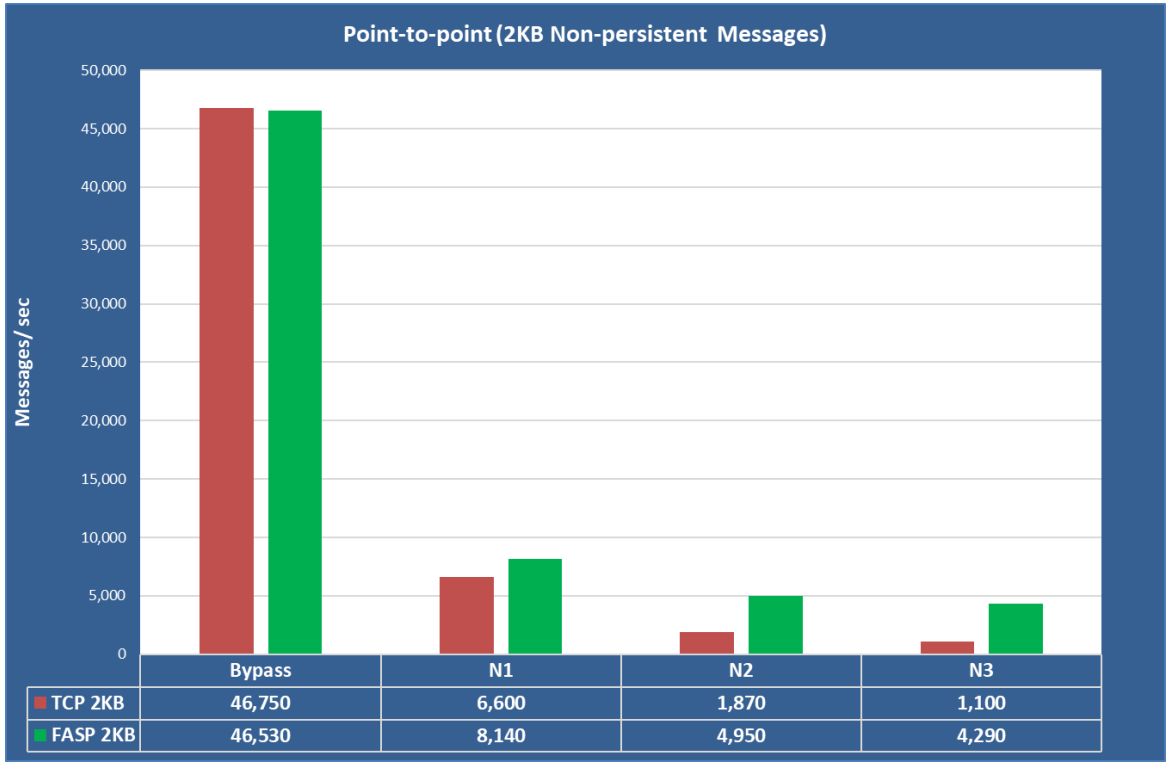
Workloads tested with different latencies and losses

- **N1:** 25ms network latency* (no packet loss)
- **N2:** 40ms network latency* (0.1% packet loss)
- **N3:** 50ms network latency* (0.5% packet loss)

*Applied to both directions, so round trip case will be 2x latency

Results

2KB Non-persistent Point-to-point Workload



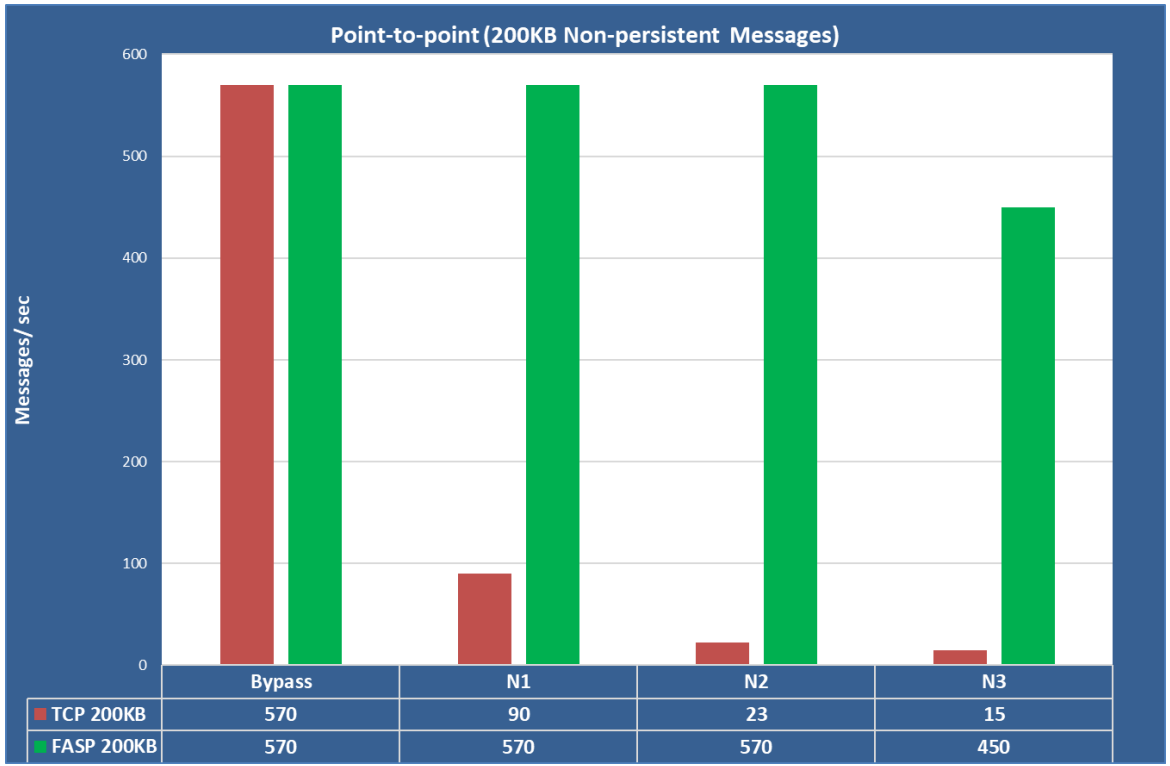
Summary

- For unconstrained network fasp.io Gateway showed near parity with TCP.
- As network constraints increased (N1 -> N3), the fasp.io Gateway showed increased benefit, reaching 3.9x TCP case for N3 network.

Reading The Graph

- Y-axis : Maximum messages/sec (before xmit queues start to back up).
- X-axis: Network constraint type (bypass = unconstrained).

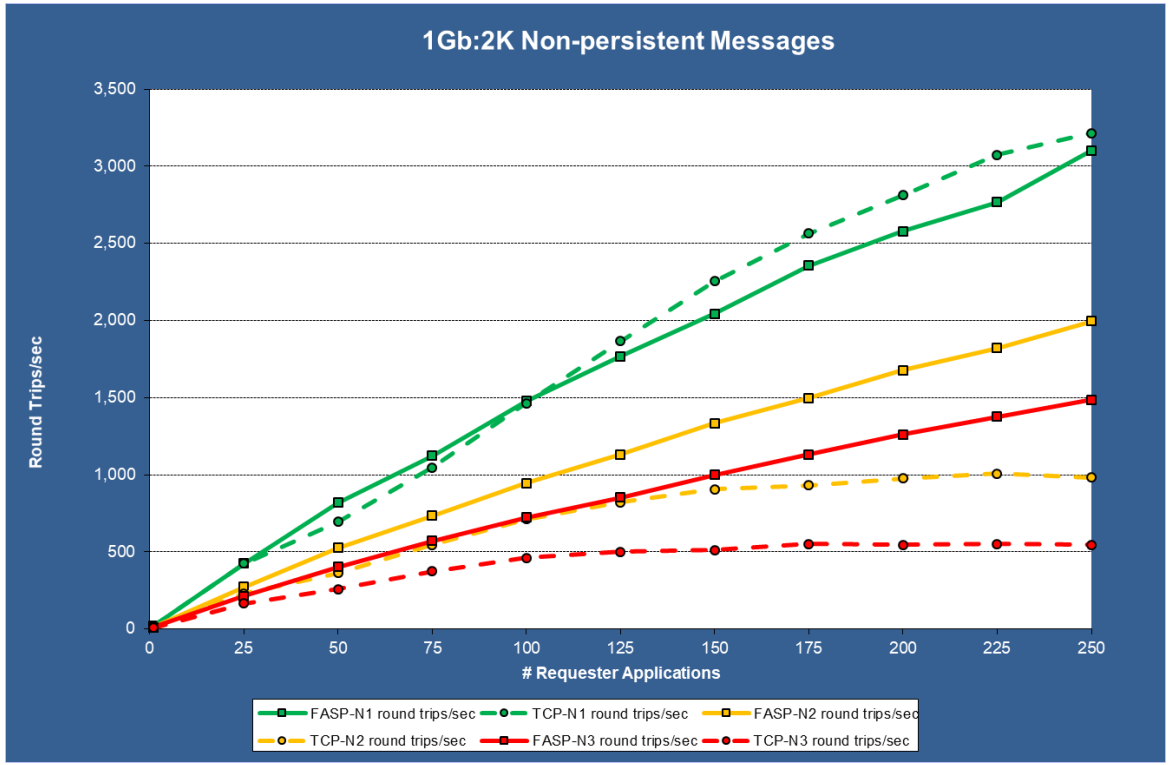
200KB Non-persistent Point-to-point Workload



Summary

- With larger message size, the fasp.io Gateway shows dramatic improvements over constrained TCP links.
- For unconstrained network the fasp.io Gateway showed near parity with TCP.
- As network constraints increased (N1 -> N3), the fasp.io Gateway showed increased benefit, reaching 30x TCP case for N3.

2KB Non-persistent Requester-responder Workload



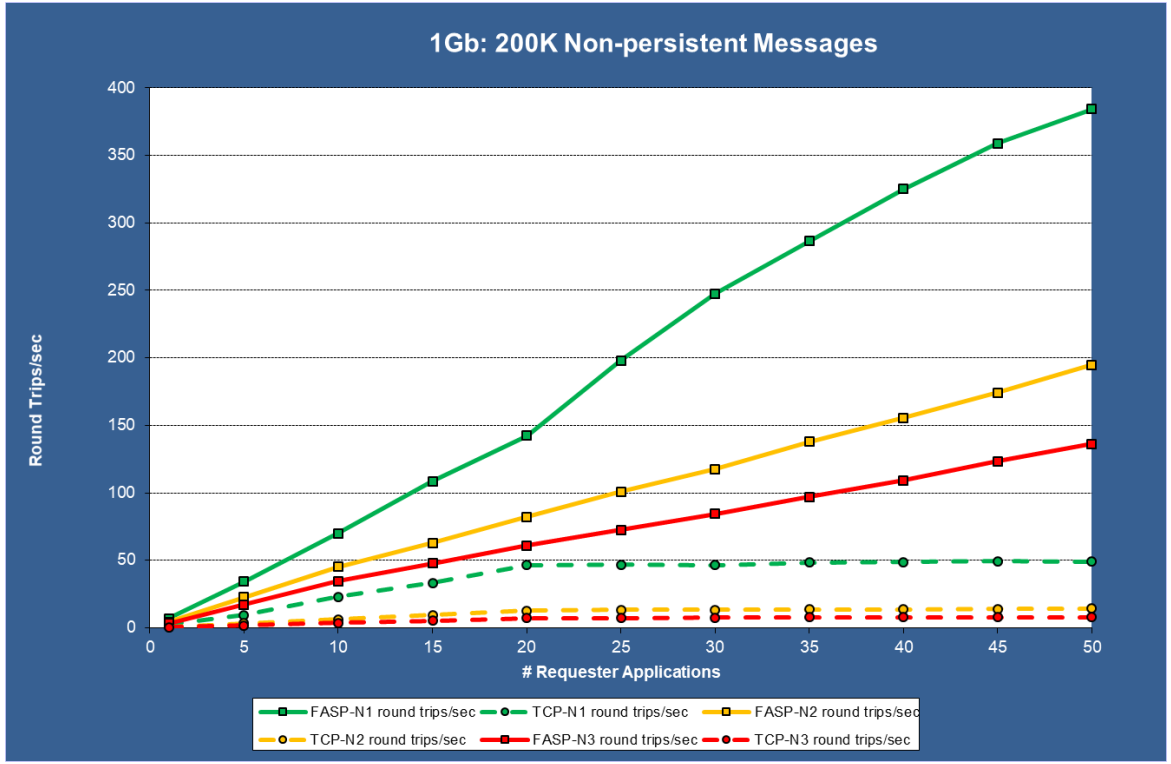
Summary

- For requester/responder workload (not optimal for fasp.io Gateway), higher latency networks (N2 & N3) showed benefits from using the fasp.io Gateway.
- N1 link (50ms round-trip delay) does not benefit.
- Not recommended for fast, unrestricted network.

Reading The Graph

- X-axis : Increasing numbers of requester applications
- Y-Axis Round trips/sec
- Solid lines are tests via fasp.io Gateway, dashed lines of same colour are direct TCP links for same test.

200KB Non-persistent Requester-Responder Workload



Summary

- Larger message size showed good benefits of using the fasp.io Gateway for all three restricted network cases.
- Not recommended for fast, unrestricted network with this type of workload, where fasp.io Gateway was typically slower (not shown here).

Resources

- MQ knowledge centre page
  https://www.ibm.com/support/knowledgecenter/SSFKSJ_9.1.0/com.ibm.mq.con.doc/aspera_def_unixlinux.htm

- Aspera fasp.io Gateway user guide:
  https://download.asperasoft.com/download/docs/fasp.io/1.0.0/admin/webhelp/index.html

- MQ-CPH Workload:
  https://github.com/ibm-messaging/mq-cph

Questions?