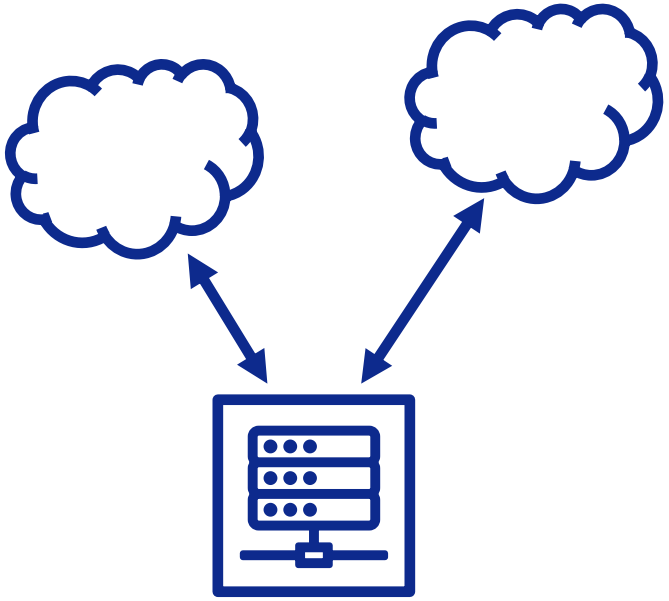
STAC Update: Fast Data

Peter Nabicht
President, STAC

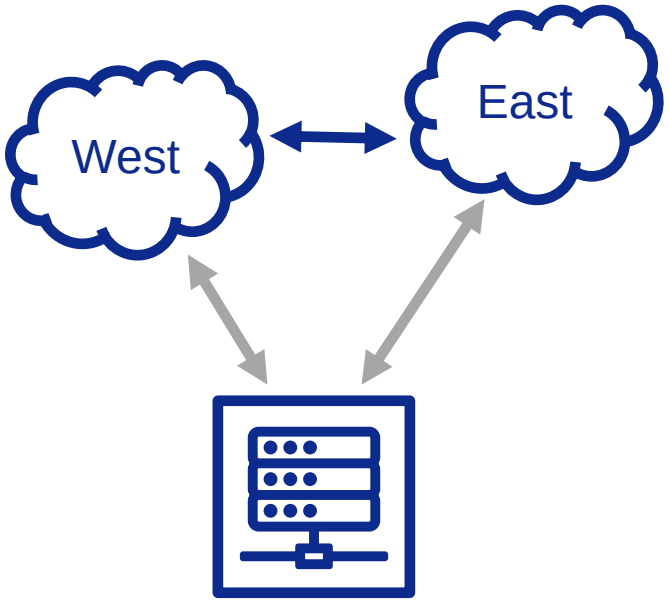
peter.nabicht@STACresearch.com

Cloud connectivity measurments

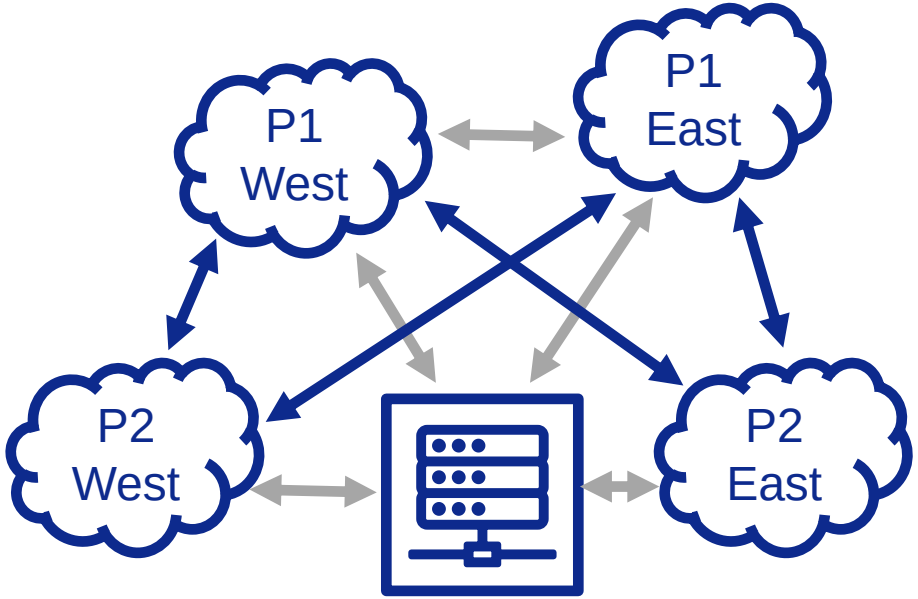
- Working through understanding latency and determinism of networks for



On-prem to Cloud



Cloud Region to Cloud Region



Cloud Provider to Cloud Provider

STAC®
SECURITIES TECHNOLOGY ANALYSIS CENTER

Cloud connectivity latencies

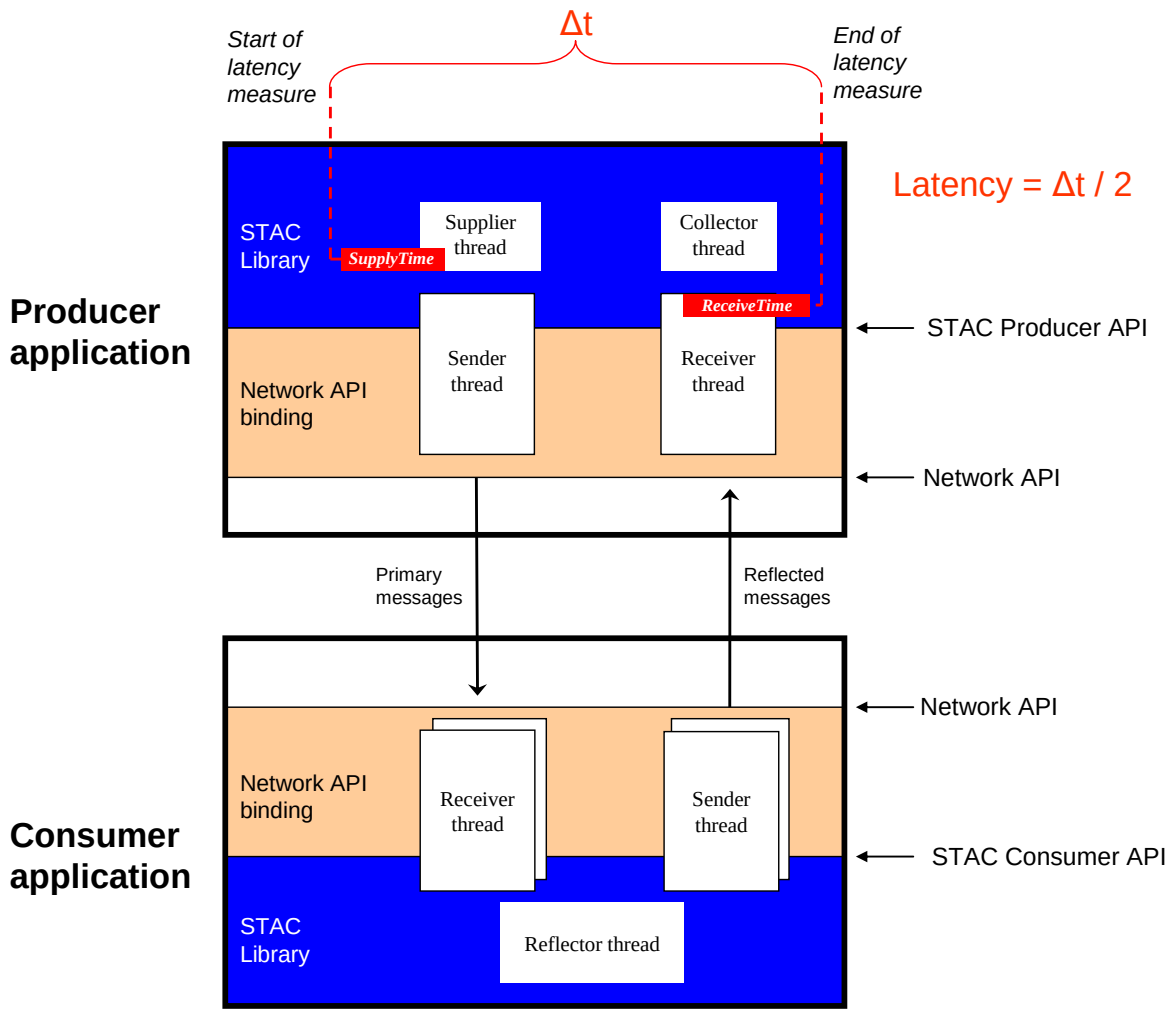
- Recently held first meeting
  - 5 financial firms plus cloud, network, and service providers
- Many challenges under discussion, including
  - Time sync, accurate time stamps, and where in the path to time stamp
  - Hypervisor vs containers vs bare metal
  - Taking measurements over time and over multiple cloud instances
- Next step is defining a base-case, common scenario to use as a strawman for answering the open issues
- If you are interested in helping define specifications…

council@STACresearch.com

STAC®
SECURITIES TECHNOLOGY ANALYSIS CENTER

STAC-N1

- Measures the performance of a host network stack (server, OS, drivers, host adapter)
- Round-trip software timestamping
- Market data style workload
- Network API to network API
  - No middleware, feed handlers, etc.



STAC®
SECURITIES TECHNOLOGY ANALYSIS CENTER

STAC-N1 / UDP / AMD / HPE / XtremeScale / OpenOnload

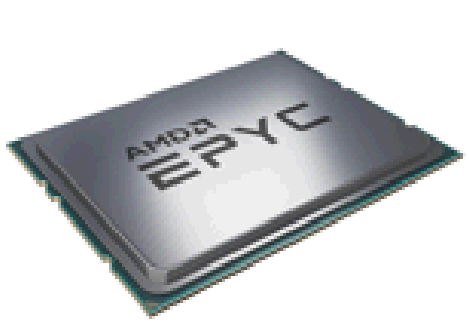
- First STAC software latency benchmarks with AMD EPYC
- Stack
  - STAC-N1 UDP-TCP binding
  - 2 x HPE ProLiant DL345 Gen10 Plus Servers
    - 1 x 32-core AMD EPYC™ 75F3 @ 2.95Ghz (4 GHz Boost)
    - AMD Xilinx XtremeScale™ X2522-25G-PLUS Adapter
    - Red Hat Enterprise Linux 8.4
  - 25Gb (via cross-over cable, FEC off)

www.STACresearch.com/AMD221001

STAC®
SECURITIES TECHNOLOGY ANALYSIS CENTER

Vs. all public results for UDP on non-overclocked servers

- The lowest maximum latency for the base rate of 100k messages per second
  - STAC.N1.β1.PINGPONG.LAT1
- The highest maximum throughput tested of 1.2 million messages per second
  - STAC.N1.β1.PINGPONG.TPUT1
- The lowest 99p and max latency at the highest rate tested. Both:
  - STAC.N1.β1.PINGPONG.LAT2
  - STAC.N1.β1.PINGPONG.LAT3



www.STACresearch.com/AMD221001

STAC®
SECURITIES TECHNOLOGY ANALYSIS CENTER