**STAC-M3 Benchmarks**

**Record-Setting Performance**

*eXtremeDB® HPC*, the low latency database management system for capital markets.

In capital markets IT, the Securities Technology Analysis Center (STAC) plays the critical role of neutral third party, with audited benchmarks that enable apples-to-apples comparisons between solutions. McObject recently subjected its eXtremeDB Financial Edition database management system (DBMS) to multiple rounds of testing using the STAC-M3 Antuco 3TB benchmark and Kanaga 30+ TB suites, the gold standards for assessing tick data management performance.

**McObject/E8 STAC-M3: eXtremeDB 8.0 on E8-X24 NVMe (Intel Optane™) storage**

All the queries were programmed using Python and SQL, running on six Supermicro SYS-2028TP-HTTR (Intel® Xeon® E5-2600 processor) dual socket servers, connected to an E8 Storage E8-X24 high-performance shared NVMe (Intel Optane™) storage appliance.

The outstanding results include:

- Completed the entire 17 M3 tests in 18.4 seconds, compared to best previous of 48.1 seconds
- Faster mean response times than all previously published best results for 5 of the 17 operations
- More consistent response times (lower standard deviation) than all previous best results for 7 of the 17 operations
- 17.0x the performance of the previously published best result for the write benchmark (1T.WRITE.TIME) using a non-McObject database
- 9.1x the performance of the previously published best result for the NBBO benchmark (1T.NBBO.TIME) using a non-McObject database

**McObject/IBM STAC-M3 Kanaga: eXtremeDB 7.0 on POWER8**

McObject worked closely with IBM on three STAC-M3 implementations on POWER8 processor architecture, with the latest utilizing a 2-socket IBM Power System S824L server (12 cores per socket, 24 POWER8 cores total) running Redhat Linux, eXtremeDB version 7.0 and 57TB IBM FlashSystem 900.

Results included new speed and jitter records for all 21 of the benchmark queries that were more than:

- 21,139% and 19,875% faster than the best previously published result for the 10 thread Years 3 & 4 Market Snapshots, respectively (10T.YR3.MKTSNAP and 10T.YR4.MKTSNAP)
- 2,742% faster for the 10 thread Year 1 Market Snapshot (10T.YR1.MKTSNAP)
- 887% and 936% faster for the 100 thread Years 1 & 3 Volume Weighted Bid over 12 days, respectively (100T.YR1VWAB-12D-HO and 100T.YR3VWAB-12D-HO)
- More than 500% faster than the best previously recorded time to complete all 21 benchmark tests

**McObject/Lucera Financial Infrastructures: First Cloud-based STAC-M3 Antuco**

McObject partnered with Lucera Financial Infrastructures on a first-ever cloud-based STAC-M3 implementation. eXtremeDB 6.0, deployed across four SmartOS instances (64 cores) on the Intel-based Lucera Compute™ on-demand computing platform, beat records in 5 of the 17 benchmark tests. Compared to previous STAC-M3 benchmarks using a different DBMS, the McObject-Lucera pairing delivered performance that was more than:

- 250% faster than the best previously published result for the Multi-User Intervalized Statistics – 50 Threads benchmark (50T.STATS-UI)
- 150% faster for the Multi-User Intervalized Statistics – 100 Threads benchmark (100T.STATS- UI)
- 150% faster for the National Best Bid and Offer benchmark (1T.NBBO)