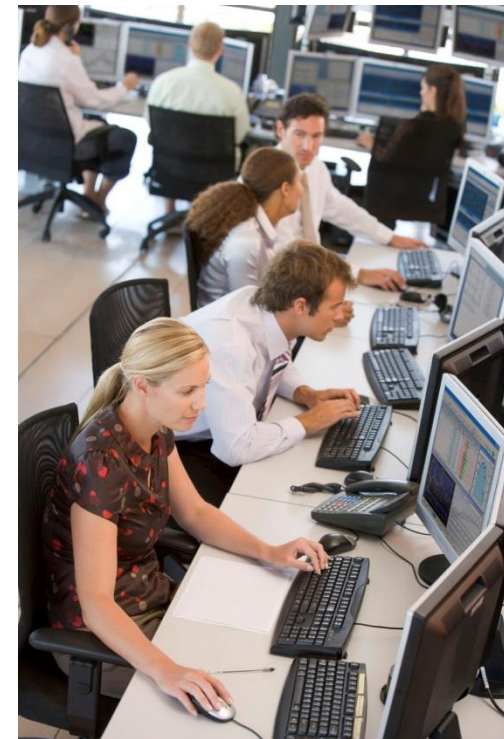


# Can SQL handle tick data with speed?



**Record breaking results on  
STAC-M3 with  
*eXtremeDB* Financial Edition**

**Nov 13, 2014**



# McObject

- **Specializing in High Performance DBMS**
  - 13 years in embedded systems
  - Netcom/Telecom, Military/Defense, Industrial Control
- **Embedded Systems**
  - Low power processors, limited memory
  - High volumes of data
  - Speed is critical
  - Corruption/failure is not an option
- **Proven technology**
  - Hundreds of customers, >30 million deployments
  - Financial and Capital Markets customers discovered us

# Some eXtremeDB Users



# Why care about another database?

*eXtremeDB* Set new records for the STAC-M3 benchmark

....and has been benchmarked by customers as the fastest

*eXtremeDB* uses standard languages and APIs (SQL)

....expensive developers with specialized knowledge isn't necessary

*eXtremeDB* doesn't fail or corrupt

....assures data for Order Books, Risk Management, etc...

*eXtremeDB* scales well for Big Data

*eXtremeDB* is affordable

# eXtremeDB Financial Edition

- **Proven exceptional speed**
  - In-memory and/or persistent storage
  - Small footprint = short code path
  - Advanced memory management techniques
  - Support for sharding databases and distributed queries
- **Transactional**
  - Support for ACID (Atomicity, Consistency, Isolation and Durability)
  - Never experienced a database corruption
- **Hybrid row/column storage**
  - Advantages of both based on the type of data
- **Vector-based statistical functions (~ 200)**
  - Pipelining keeps all interim data on CPU cache
  - Extended SQL API for highly productive coding
- **Bundled with all modules and APIs**
  - eXtremeDB Fusion, High Availability, Cluster, Transaction Logging, Data Relay, SQL
  - SQL, C/C++, Java, C#, ODBC, JDBC, and Python

# eXtremeDB Financial Edition Records

- New records set for lowest mean for **10** of the **17 tests**
- First **SQL** implementations of STAC-M3
- Database was distributed (64 or 72 shards).
  - Clients connected via TCP (local)
- Benchmarks with multithreads and/or indexing won by widest margins
- Set records using enterprise drives
  - (not specialized low latency drives)



IBM Power System S824



Lucera Compute Cloud



# STAC-M3 Results\*

## IBM Power System S824 IBM FlashSystem 840 Emulex 4-Port 8 Gb Fibre Channel Adapter

- First port of a low latency DBMS to **IBM POWER** platform
- One server with **512GB** and 2 CPUs x 12 cores = **24 cores**
- Storage had **24 LUNs** and **72 database shards**
- Set records using redundant enterprise drives (not specialized low latency drives)

### As compared to previous non-eXtremeDB STAC-M3 benchmarks

- New records set for **9** of the **17 tests**
- Completed the sum of mean STAC-M3 Benchmark times **1.6x faster** (66 sec vs 106 sec)
- Lowest standard deviation (lowest Jitter) ever tested in **9** of **17 tests**
- Over **4x** the performance of the previously published best result for **10T.VOLCURV**
- Over **4x** the performance of the previously published best result for **50T.STATS-UI**
- Over **4x** the performance of the previously published best result for **1T.NBBO**
- Over **2x** the performance of the previously published best result for **10T.MKTSNAP**

# STAC-M3 Results\*

## Lucera Compute Cloud Custom Scalable Informatics (SiCloud) SMART Optimus SSDs

- First port of a low latency DBMS to a **Cloud** platform
- 4 servers each with **64GB** memory and 16 cores = **64 cores**
- Storage had **12 SSDs** and **64 database shards**
- Set records using striped enterprise drives (not specialized low latency drives)
- New records set for **5** of the **17 tests**
- Compared to non-eXtremeDB results:
- Over **3X** the previously published best result for **50T.STATS-UI**
- Over **2X** the previously published best result for **100T.STATS-UI**
- Over **2X** the previously published best result for **1T.NBBO**

\* STAC Report forthcoming at [www.STACresearch.com/XTR141111](http://www.STACresearch.com/XTR141111)



# Next Steps

- ✓ Trials – we'll assist
- ✓ Hosting your POC on Lucera Compute
- ✓ Tick the box on response ticket for “McObject”
- ✓ Visit our table outside
- ✓ Visit our web site
- ✓ Call or email me:



Chris Mureen

425-888-8505 x211

<http://financial.mcobject.com>

[chris.mureen@mcobject.com](mailto:chris.mureen@mcobject.com)