STAC M3 Kanaga: Time Series Data Analytics Get Really Interesting at 31TB

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STAC M3 Winner 31TB Kanaga

IBM® Power® Systems™ S824 server and IBM FlashSystem™ 900 running McObject *eXtreme*DB Financial Edition 7.0

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, *eXtreme*DB Financial Edition version 7 and 57TB IBM FlashSystem 900.

New Records Set for All Tests

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

- ***212x the performance of the previously published best result for 10T.YR3-MKTSNAP***
- ***204x the performance of the previously published best result for 10T.YR4-MKTSNAP***
- ***36x the performance of the previously published best result for 10T.YR1-MKYSNAP***
- ***21x the performance of the previously published best result for 1T.OLDYRHIBID***
- ***10x the performance of the previously published best result for 100T.YR3VWAB-12D-HO***
- ***10x the performance of the previously published best result for 100T.YR1VWAB-12D-HO***

STAC M3 Kanaga & Antuco

McObject *eXtreme*DB Financial Edition and IBM Power8 824L
hold **all Kanaga records**, and **16 of 17 Antuco records** for a single, two-socket server

How did we do it?

***eXtreme*DB Financial Edition 7.0**

Best scaling DBMS for Big Data for trading and risk systems (Intel & POWER)
STAC-M3 test written in SQL and Python for easy development
High speed math functions and on-chip analytics (Pipelining)
ACID in-memory/Persistent low-latency database
SQL, C/C++/C#, Java, Python APIs for ease of programming

Extreme Power8 processor, cache and memory bandwidth on the 824L

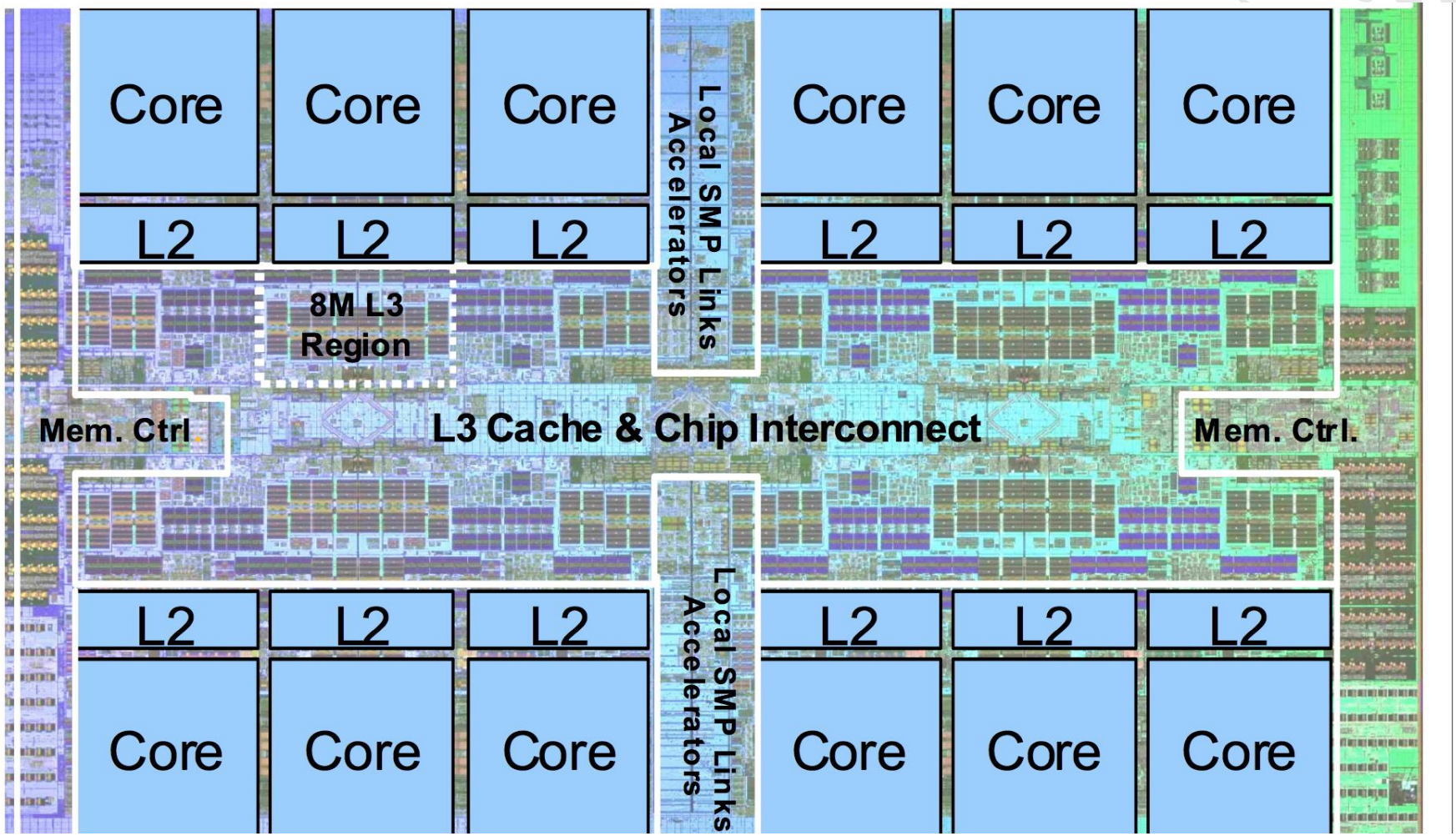
3.52GHz 12-core processors
8MB of L3 cache per core (96MB total/processor) w local extreme latency
384GB/s memory bandwidth through 256MB L4 cache to memory

Extreme storage

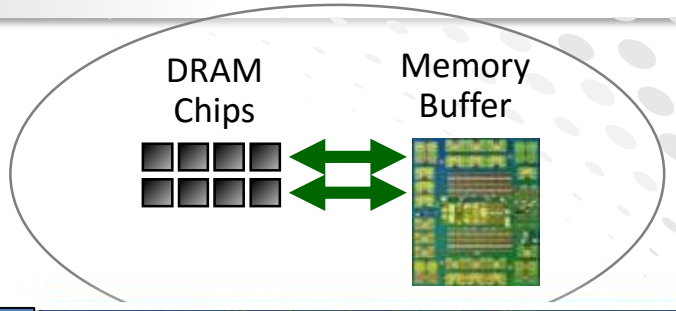
IBM FlashSystem 900 with 57TB solid state memory array
Enterprise class, RAID protected, redundant, fiber channel connected storage

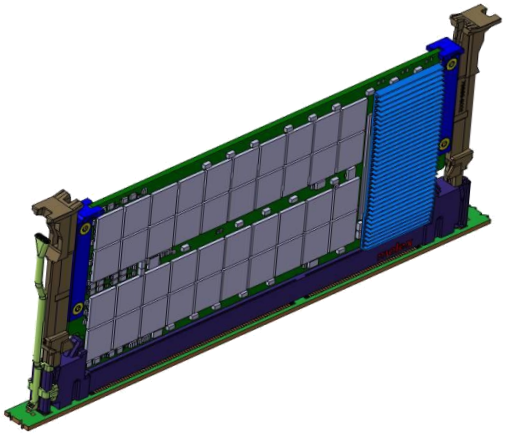
Extreme speed, flexibility, throughput, latency and jitter – what more do you need?

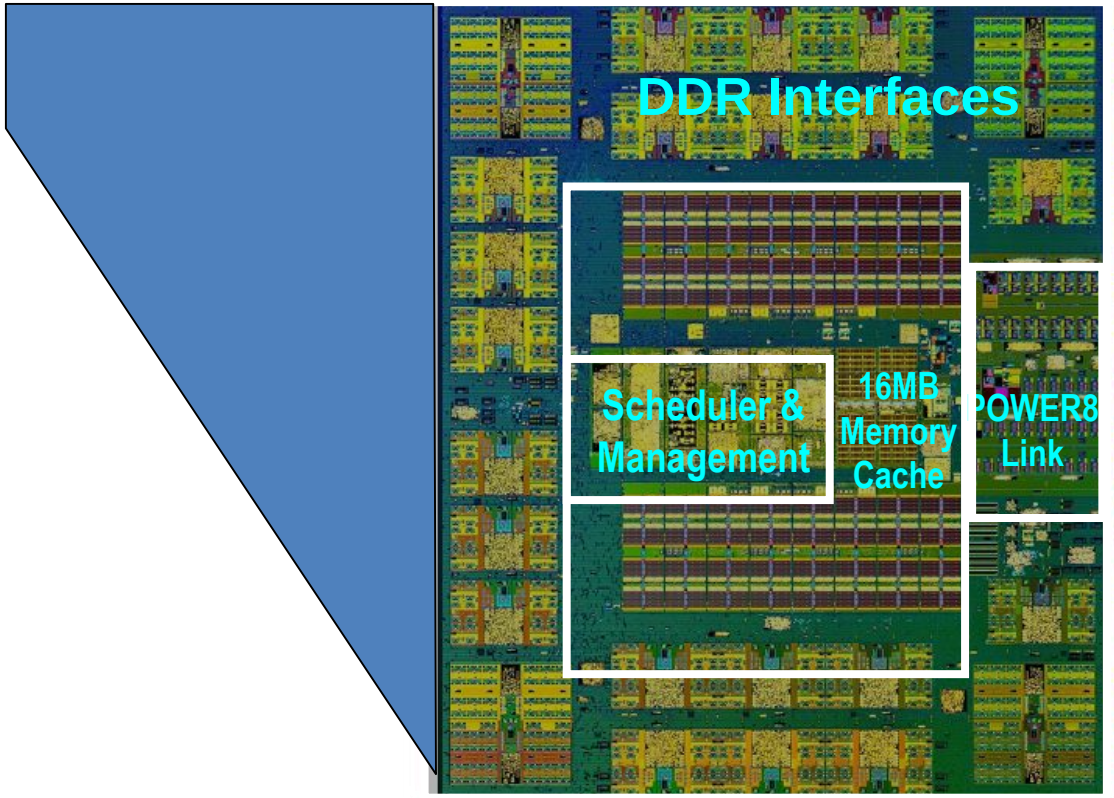
OpenPOWER 8 Processor Chip



POWER8 Memory Buffer Chip







Intelligence Moved into Memory

- Scheduling logic, caching structures
- Energy Mgmt, RAS decision point
  - Formerly on Processor
  - Moved to Memory Buffer

Processor Interface

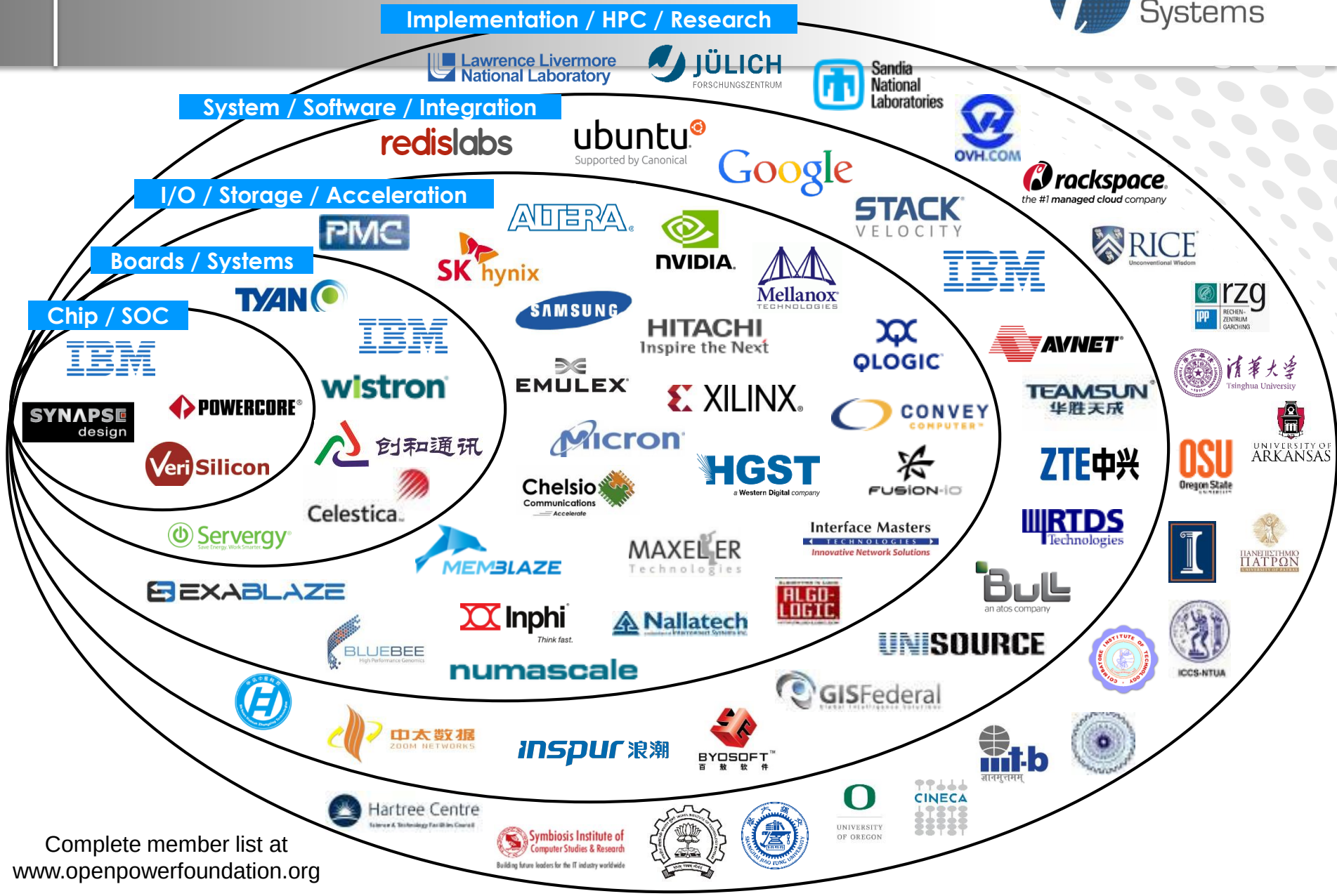
- 9.6 GB/s high speed interface
- More robust RAS
- " On-the-fly" lane isolation/repair

Performance Value

- End-to-end fastpath and data retry (latency)
- Cache → latency/bandwidth, partial updates
- Cache → write scheduling, prefetch, energy

Fueling an Open Development Community

Integration Systems



Complete member list at
www.openpowerfoundation.org

Join us!

"The level of support behind the OpenPOWER Foundation leads me to believe **that IBM has a real chance at ending Intel's server chip monopoly**." [*IBM is the real threat to Intel's server dominance*, Motley Fool]

"Up to **100x** the power of a classic x86 setup

OVH.COM

http://labs.runabove.com/power8/

"… doubling the performance of its already powerful predecessor, Power7+. **The POWER8 specs are mind boggling.** [Microprocessor report]

Data-centric supercomputers based on POWER for Department of Energy, Oak Ridge National Labs & Lawrence Livermore to advance innovation and discovery in science, engineering and national defense in ***$325M deal***

"Both the current results and future potential are so promising that we are preparing to build an OpenPOWER-based, Open Compute platform. And it will run OpenStack services.

rackspace

http://www.rackspace.com/blog/openpower-opening-the-stack-all-the-way-down/

"The new systems incorporate technologies from IBM and other providers that are part of OpenPOWER…which allow you to achieve **unprecedented computing performance**. [Cloud Times]

"IBM's **huge advantages in multithreading and memory bandwidth** favor POWER8 when running larger test suites that more closely reflect real-world enterprise applications.

The Linley Group

http://www.linleygroup.com/newsletters/newsletter_detail.php?num=5275