





BIG DATA AT RAW HARDWARE SPEED?



Scylla: A new NoSQL Database

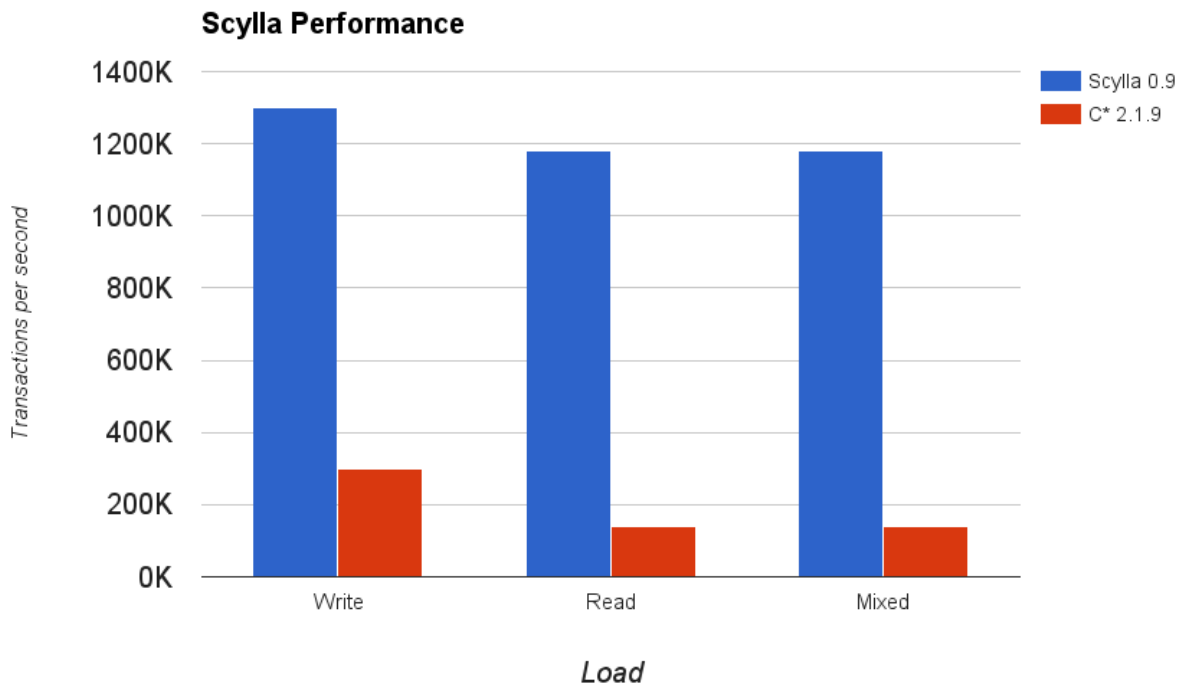
Capable of 1,000,000 operations per second
PER NODE

With predictable, low latencies

Compatible with Apache Cassandra
drivers, integration, management tools



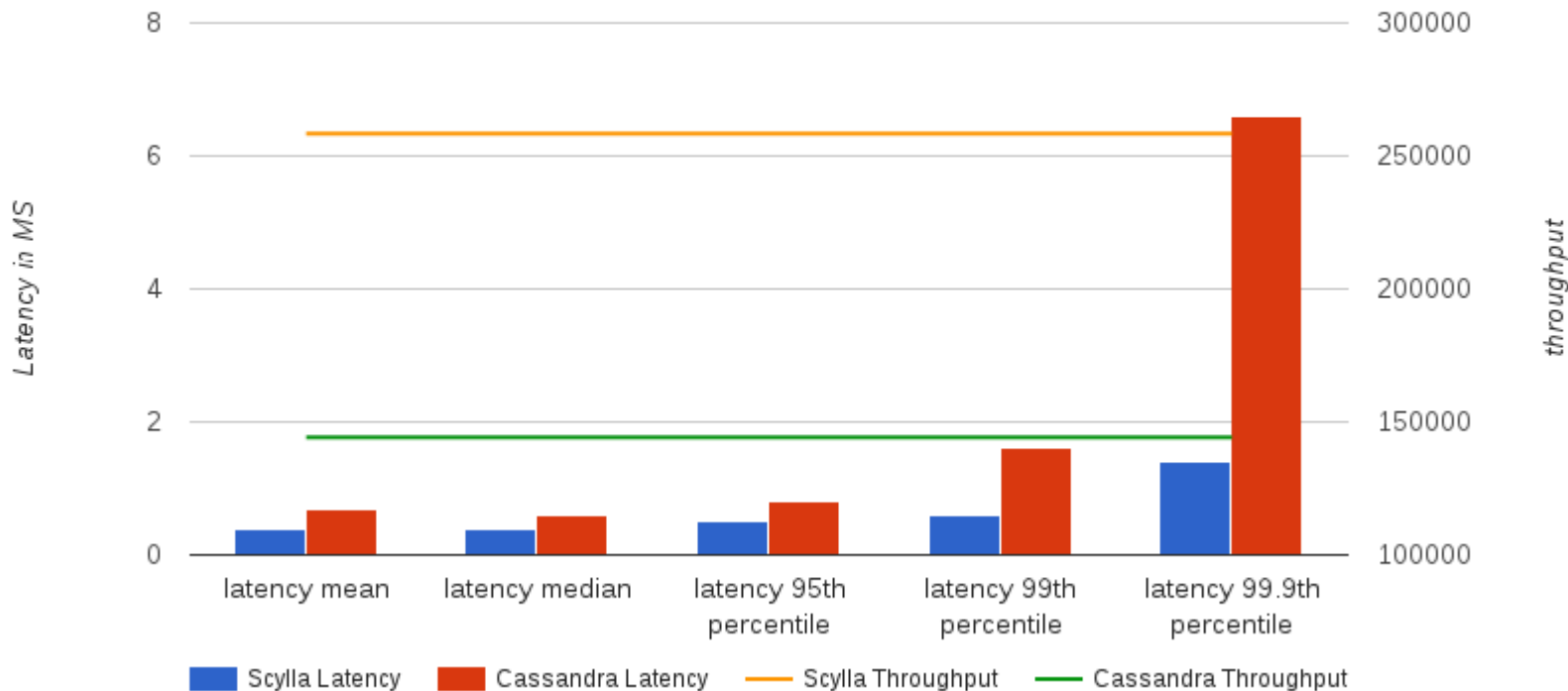
THROUGHPUT





LATENCY

Scylla and Cassandra Latency



[Learn more](#)



Average throughput. Results were rounded with accuracy of 10K.

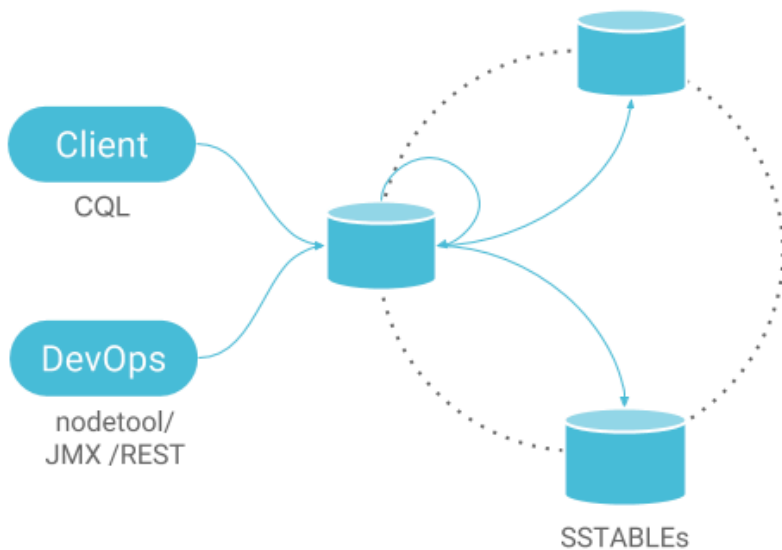
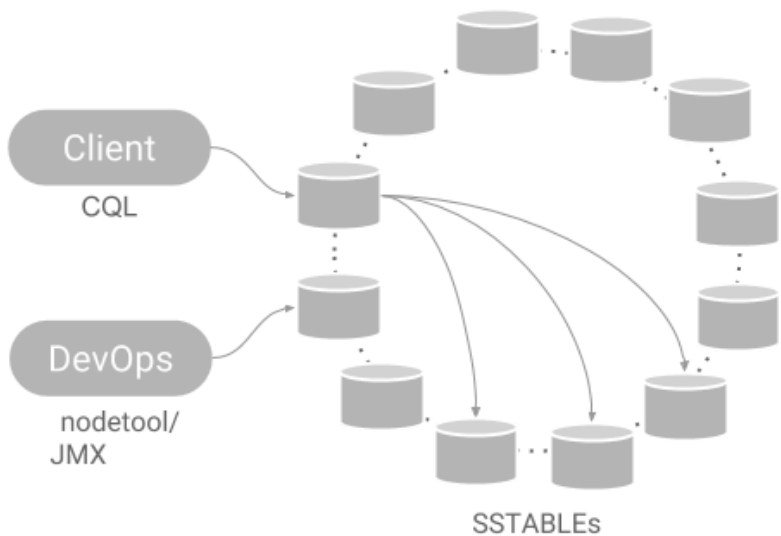


FULLY COMPATIBLE

- ❑ Uses Cassandra SSTables
- ❑ Use your existing drivers
- ❑ Use your existing CQL queries
- ❑ Use your existing `cassandra.yaml`
- ❑ Manage with `nodetool` or other JMX console
- ❑ Use your existing code with no change
- ❑ Copy over a complete Cassandra database
- ❑ Works with the Cassandra ecosystem (Spark etc.)



FULLY COMPATIBLE





SCYLLA IS QUITE DIFFERENT

Shard-per-core, no locks, no threads, zero-copy

Based on the Seastar C++ application framework

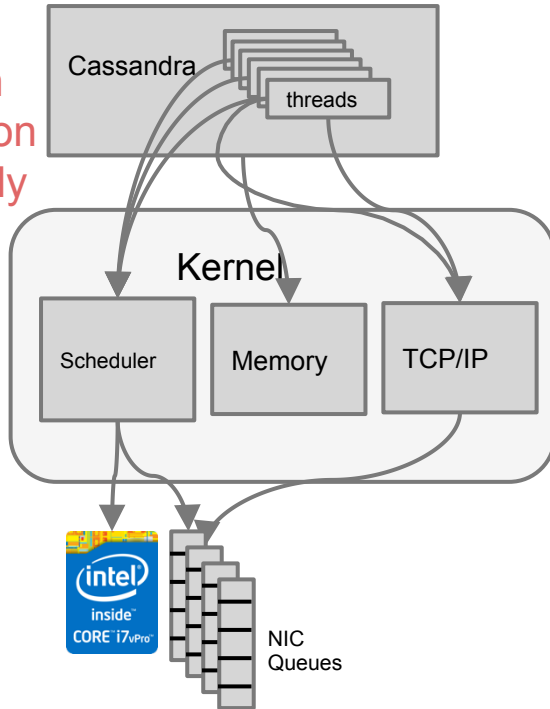
Efficient, unified DB cache (vs. Linux page cache)

CQL-oriented storage engine

Exploit all hardware resources - NUMA, multiqueue NICs,
etc

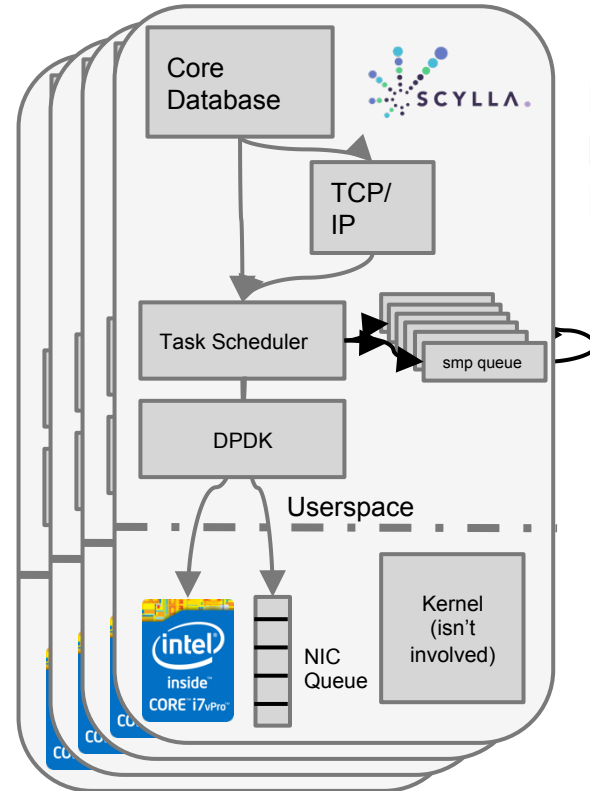
SCYLLA DB: ARCHITECTURE COMPARISON

Traditional stack



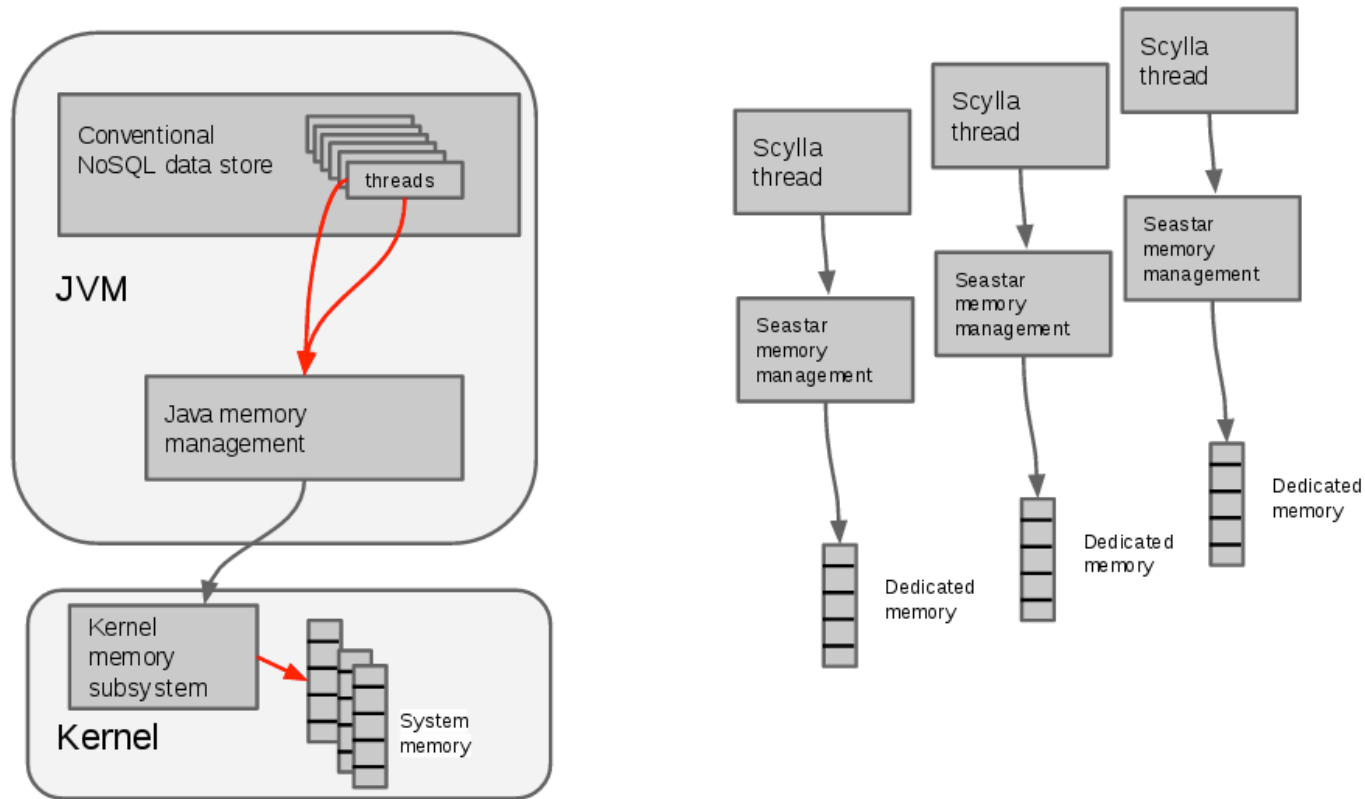
Lock contention
Cache contention
NUMA unfriendly

Scylla sharded stack



No contention
Linear scaling
NUMA friendly

Scylla Memory Management

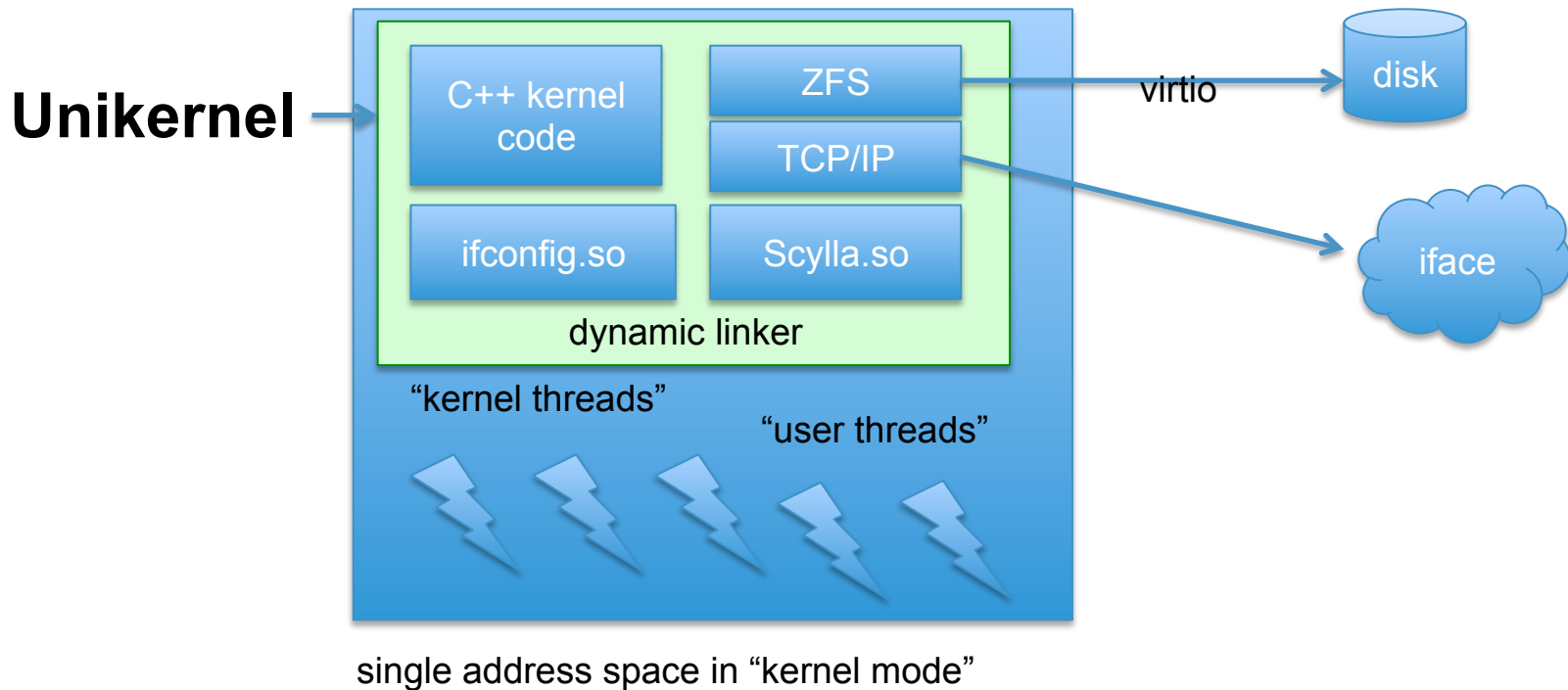


Seastar framework



- Each engine is executed by each core
- Shared-nothing per-core design
- No threads, no context switch and no locks
 - instead: asynchronous lambda invocation
- Programming model
 - Futures
 - Promises
 - Continuations
- Full kernel bypass, supports zero-copy

OSv: a library operating system





Open source

☐ URLs to remember:

- <http://www.scylladb.com/>
- <http://seastar-project.com>
- <http://osv.io/>