



JUDCon

JBoss Users & Developers Conference

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Benchmarking Infinispan

Manik Surtani & Mircea Markus

twitter.com/maniksurtani

twitter.com/mirceamarkus



Who we are?

A pair of core Infinispan engineers.
Who are you?

Agenda

- Infinispan – 30,000 ft overview
- The need for benchmarking
- Challenges in benchmarking data grids
- The Cache Benchmark Framework
- Live demo!

What is Infinispan?

- Open source, in-memory data grid
- Written for the JVM
- Embedded (P2P) as well as client/server mode
- Client/server endpoints: Hot Rod, Memcached, REST
 - Consumable by non-JVM systems
- Successor to JBoss Cache
- See other talks during the week

Why benchmarking?

“Benchmarks are like assholes.
Everyone has one.” – Turk, Mladen

Why benchmarking?

- “Measure – don’t guess”
- Monitor performance
 - against JBoss Cache, and other competing products
 - between Infinispan releases
 - different configurations, access patterns
 - exceptional conditions
 - while scaling out
- Cornerstone for performance improvements

Challenges

- Multiple access patterns
- Web session replication
- Fronting a database
- Durable data store
- (your custom access pattern here)

Challenges

- Multiple cluster modes
 - Replicated
 - Distributed
 - Invalidated
- Network stacks
 - TCP
 - UDP
 - Both!

Challenges

- Multiple products / versions / configs
 - Infinispan
 - JBoss Cache
 - (your favourite data grid here)
- MxN problem
- If not comparative, what's the point?

Challenges

- Benchmarking scalability

```
do {  
    runBenchmark()  
    clusterSize ++  
} while (clusterSize < maxNodes)
```

- Measure throughput and TPS

Challenges

- Complex setup
 - coordinate between multiple distributed benchmark processes
- Result collation
 - centralised reporting
- Deal with anomalies and node failure
 - Including transient network hiccups

The tools we had

A faded, light blue illustration of a microscope and a computer monitor is visible in the background on the left side of the slide. The microscope is positioned vertically, and the monitor is positioned horizontally, partially overlapping the microscope.

Cache Benchmark Framework

- OSS, hosted on SourceForge
 - Inspect the code, no smoke and mirrors!
- Java-based
- Vendor-neutral. Contributors include:
 - Greg Luck/EHCache
 - Talip Ozturk/Hazelcast

Cache Benchmark Framework

- Currently used for benchmarking Infinispan
- Can run comparative benchmarks
 - Against different products
 - Against same product, for regressions
 - Against different configurations
- Ships with simple access patterns
- Benchmark for scalability

Cache Benchmark Framework

- Extensible
 - Add your own data grid products to test against
 - Add your own data access patterns
 - JUnit-like test cases
- Access patterns can be combined with products
 - No more M x N
- And tested as you scale out!

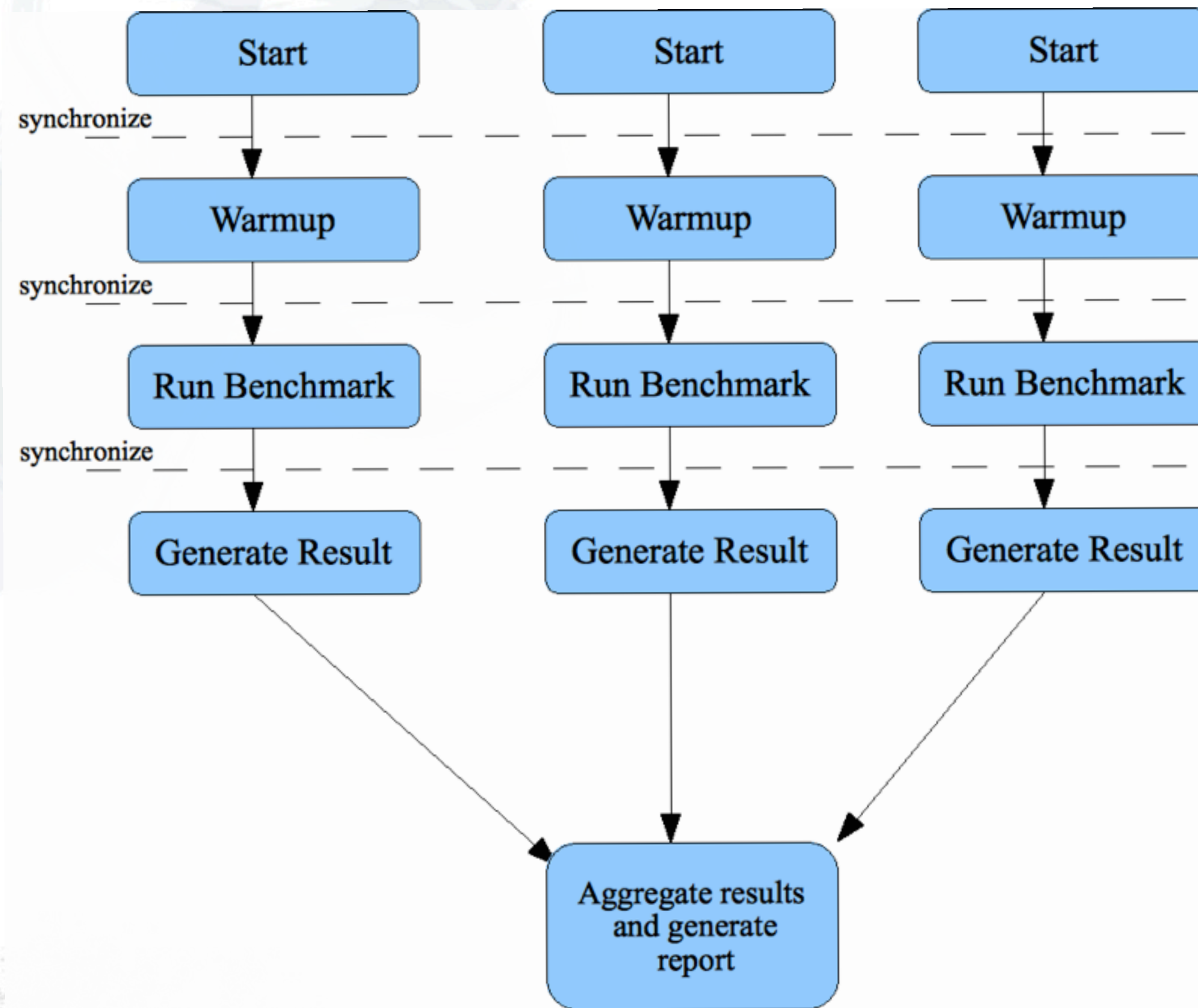
Cache Benchmark Framework

- Script-based
 - Currently only for POSIX
 - BASH scripts for launching remote processes
 - No Windows support yet
- Only for bootstrap

Cache Benchmark Framework

- Each process a finite state machine
- Master node to coordinate state change
 - And to collate results ...
 - ... and generate reports
 - Including graphical ones!

Basic idea



Status

- 1.0 GA released
- Web session replication access pattern
- Plugins for JBoss Cache, Infinispan, Coherence, EHCache
- Heavily used for tuning Infinispan's performance
- Currently used on a 128 node cluster

Road map

- Additional measurements
 - Memory & CPU overhead over time/
scale-out
- New data access patterns
- Control via JMX
- Standardise!
 - SPEC?

Want to see it?

- Web session replication
- Benchmark Infinispan vs. JBoss Cache
 - Replication for both
 - Distribution for Infinispan

Q&A

- <http://cachebenchfwk.sourceforge.net>
- <http://www.infinispan.org>
- <http://blog.infinispan.org>
- <http://twitter.com/infinispan>
- #infinispan

Learn more about Infinispan!

- *Storing Data on Cloud Infrastructure in a Scalable, Durable Manner - Wed 23rd*
- *Using Infinispan for High Availability, Load Balancing, & Extreme Performance - Thu, 24th*
- *How to Stop Worrying & Start Caching in Java - Thu 24th*
- *Why RESTful Design for Cloud is Best - Fri 25th*

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