JBoss Cache

open source data grids

JBoss

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JBoss Cache

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Download demo application used during presentation here: http://sourceforge.net/project/showfiles.php?group_id=22866&package_id=102339&release_id=571969

JBoss WORLD

ORLANDO 2008

PRESENTED BY RED HAT

Who is this guy?
What’s he going to bore me with today?
What’s he going to bore me with today?

- Manik Surtani

  Project lead of JBoss Cache

- Agenda:

  Data grids and clustering Java, scaling load

  Brief overview on JBoss Cache, and how we achieve the above.

  - Live demo (hope this works)

  Ideas and strategies for making JBoss Cache provide fault tolerance and scalability, and removing bottlenecks

  Q & A

Why cache?

- Benefits:

  Removal of data retrieval or calculation bottlenecks

- Concerns/pitfalls:

  Cached data validity

  Cluster-wide coherence

  “Over-caching”

- Don’t cache unless you know you have a bottleneck

Why cluster?

- HA - Fault tolerance is critical

    24/7 world

    Global userbase

    SLAs

- Scaling horizontally

    Need to deal with predicted and unpredicted spikes

    Planned increase of capacity

- Coherence of state and performance of maintaining coherence - two opposing forces

Data grids and clustering

- Hardware is cheap.
  - Both CPUs and memory
- Grid computing is becoming easier to implement
  - Compute grid frameworks like GridGain
  - Work stealing patterns
- Data availability becomes important
  - Data retrieval bottleneck impact increases drastically with grid size
  - Cost of keeping caches coherent increases with cluster size
    - Not as much as data retrieval bottlenecks though

JBoss Cache - the answer!!

- Simple API for caching data

Either locally or cluster-wide

Support for eviction of unused elements

Cache loading/storing to disk to free up memory

Chaining caches, remote caches using TcpCacheLoader

Support for JTA transactions

Listeners and notifications

JMX manageability

Multiple locking schemes (optimistic, pessimistic, MVCC*)

JGroups as a network stack

Flavours

- Core cache

  for caching simple objects, primitives

- POJO cache

  Extension of core cache

  Optimised for caching large and complex objects with relationships

  - Object relationships maintained, even after replication or persistence

  Fine-grained replication

  Minimal API

Who uses JBoss Cache?

- JBoss Application Server - Clustering HTTP and EJB sessions, JPA entities
- Hibernate - entity caching
- SEAM - caching JSF generated content
- JBoss Portal
- Lucene/Hibernate Search - cluster-wide indexes
- GridGain - data grid component to complement compute grid
- Coming soon:

  Drools - clustering rules engines

  JBoss DNA - clustering metadata repositories
- Many other open source and commercial projects

Using JBoss Cache

- Licensing

  LGPL, truly open source, business-friendly
- 720K core jar
- 17MB ZIP download with documents, srcs, tests, optional extras
- No need for an App Server - just a JVM!
- API - Not going to waste your time with this. :-)

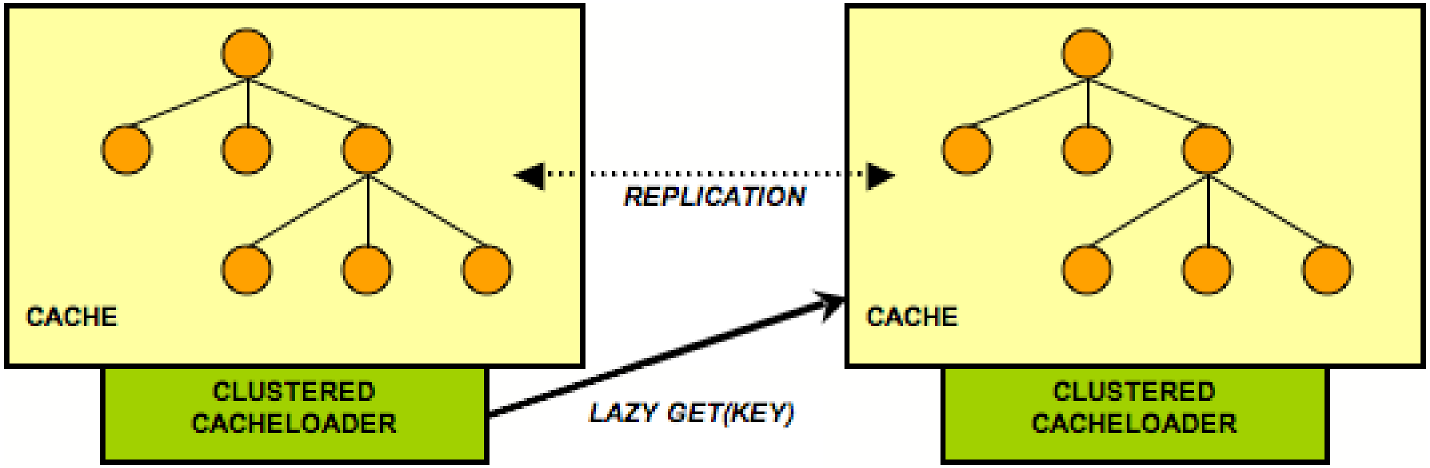
  Read Javadocs or the User Guide instead

  www.jbosscache.org
- Demo instead!

High availability strategies

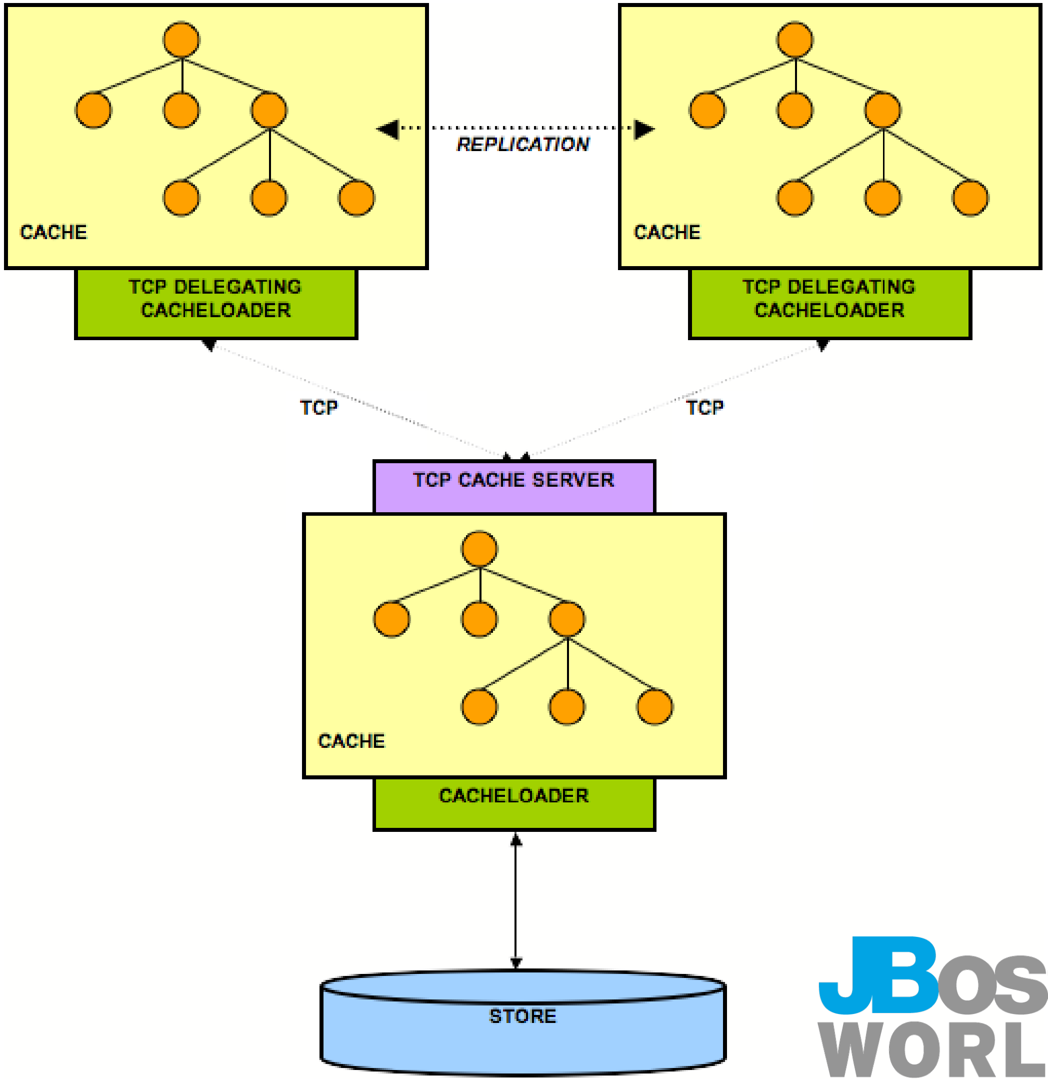
- Lazy state transfer

  Involves the use of the ClusteredCacheLoader



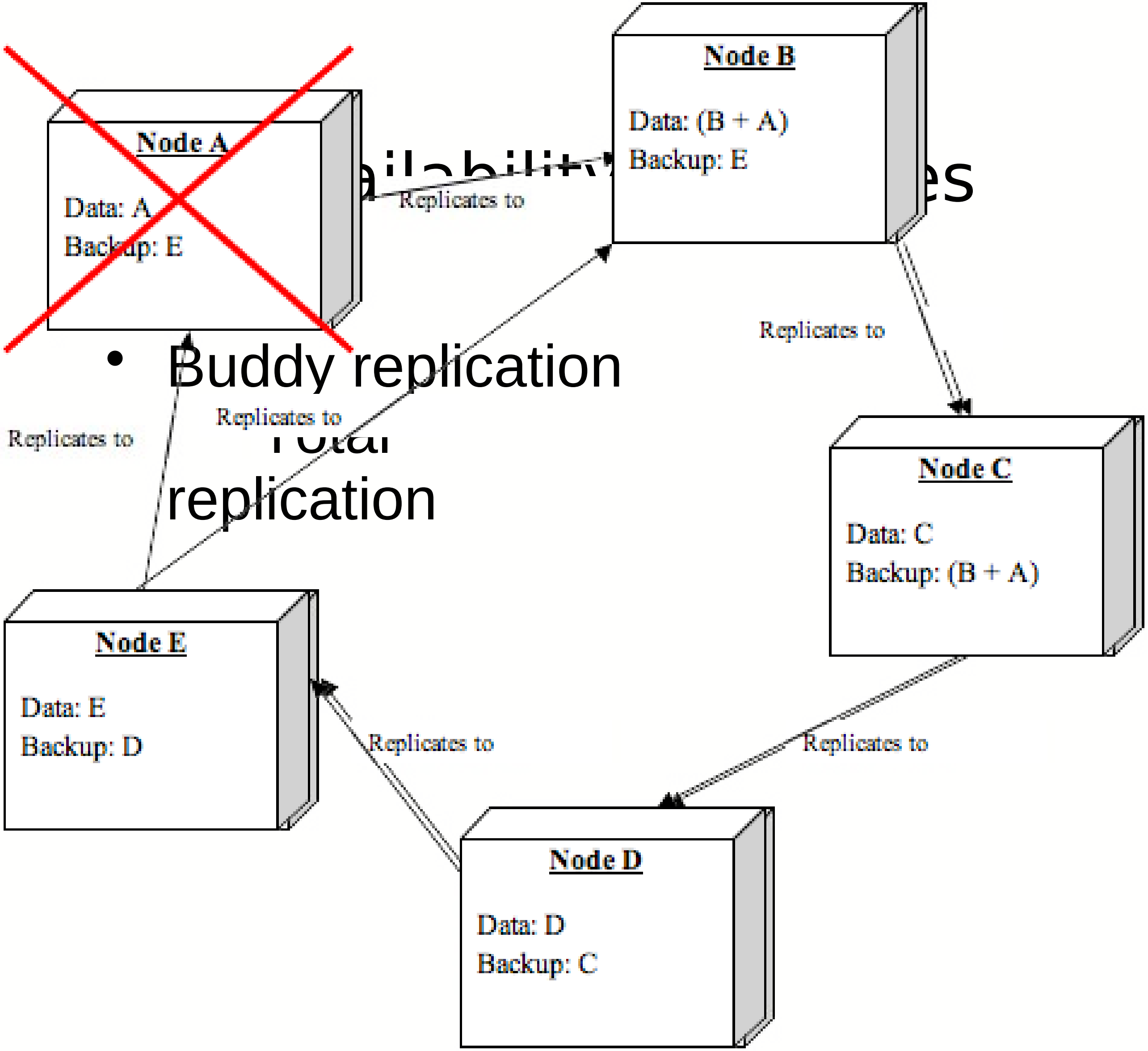
High availability strategies

- Tiered caches
- Involves the use of TCP delegating cache loader and TCP cache server components



ailability ... es

- Buddy replication
  - Total replication



Q & A

Download, Use, Contribute, Participate!

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