1169 TECH

Apache Ignite 内存计算

2017.06.23

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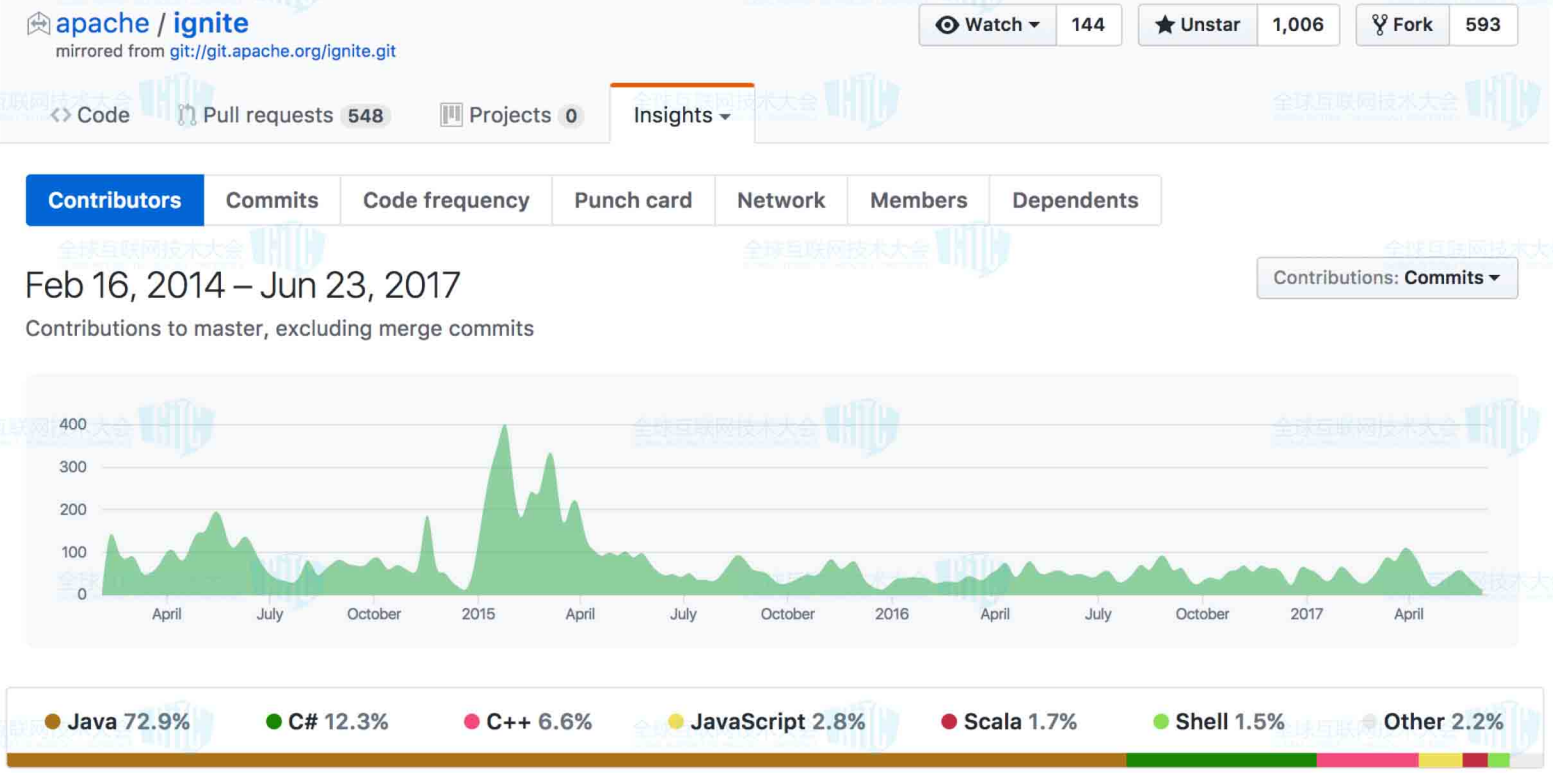
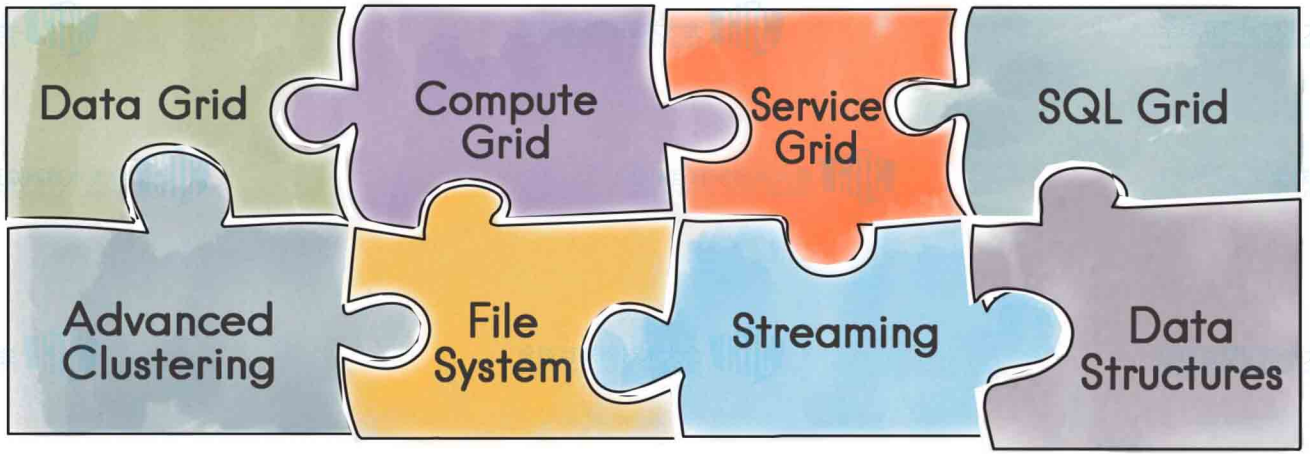
Agenda

- Apache Ignite 项目简介
- Ignite场景和组件
- 为数据分析加速
- Q&A

Apache Ignite 项目



IMDF



高性能的分布式内存计算平台， 可以用于处理各种大规模数据集



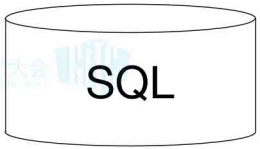
server server server server server server

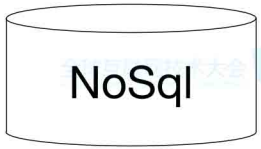
SQL NoSql Hadoop / BI

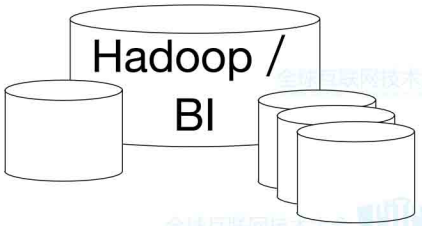



server server server server server server

caching? computing? searching? message?

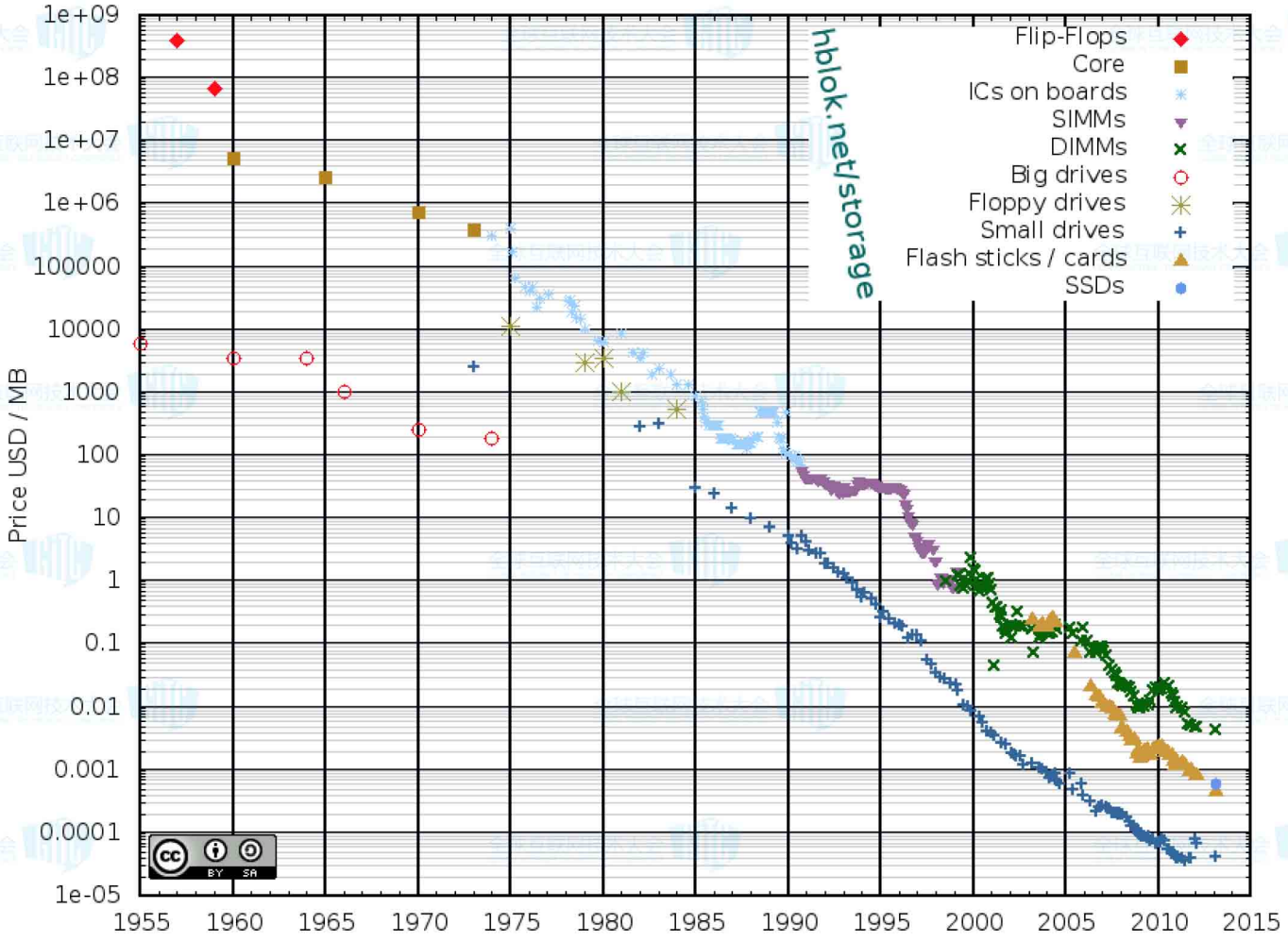







CUSTOMERS WHO BOUGHT THIS ITEM:
ALSO BOUGHT:

Historical Cost of Computer Memory and Storage



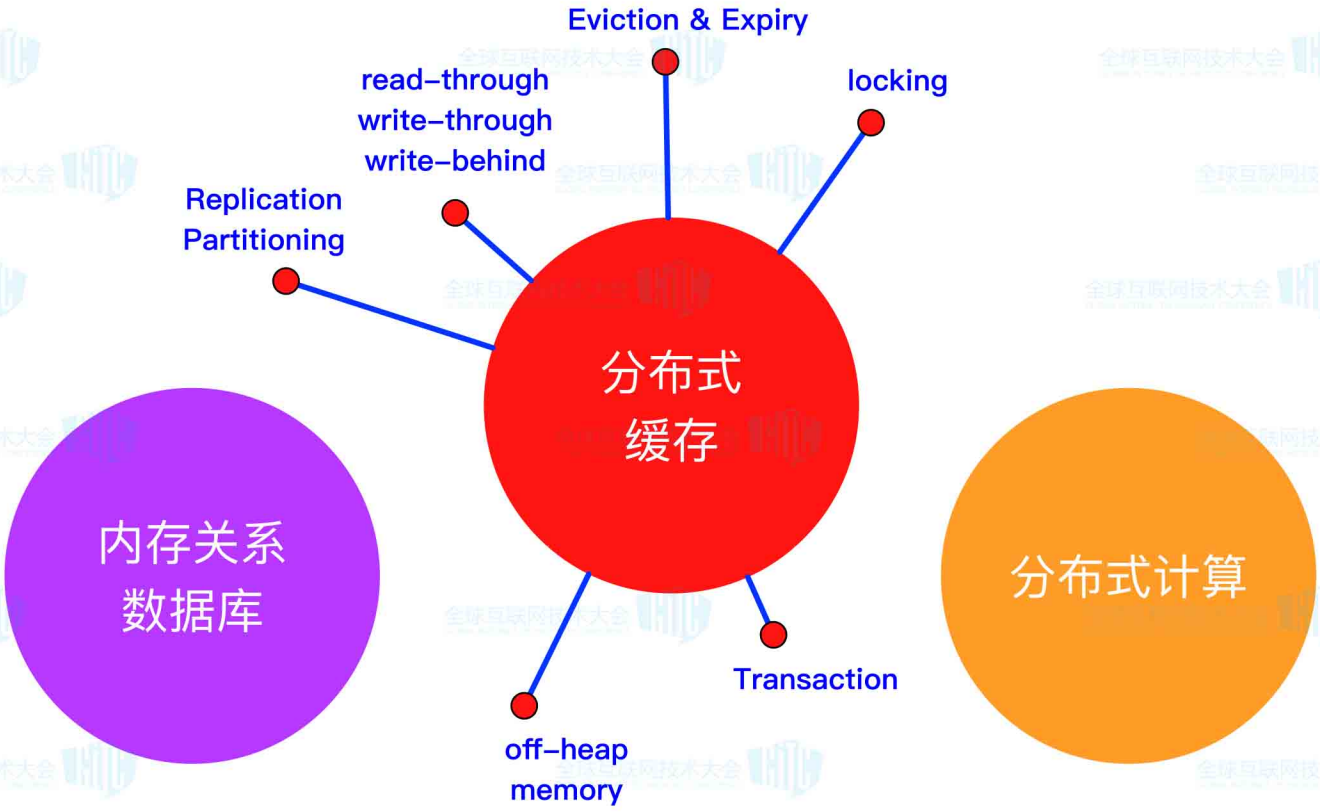
”Ram is the new disk, and disk is the new tape

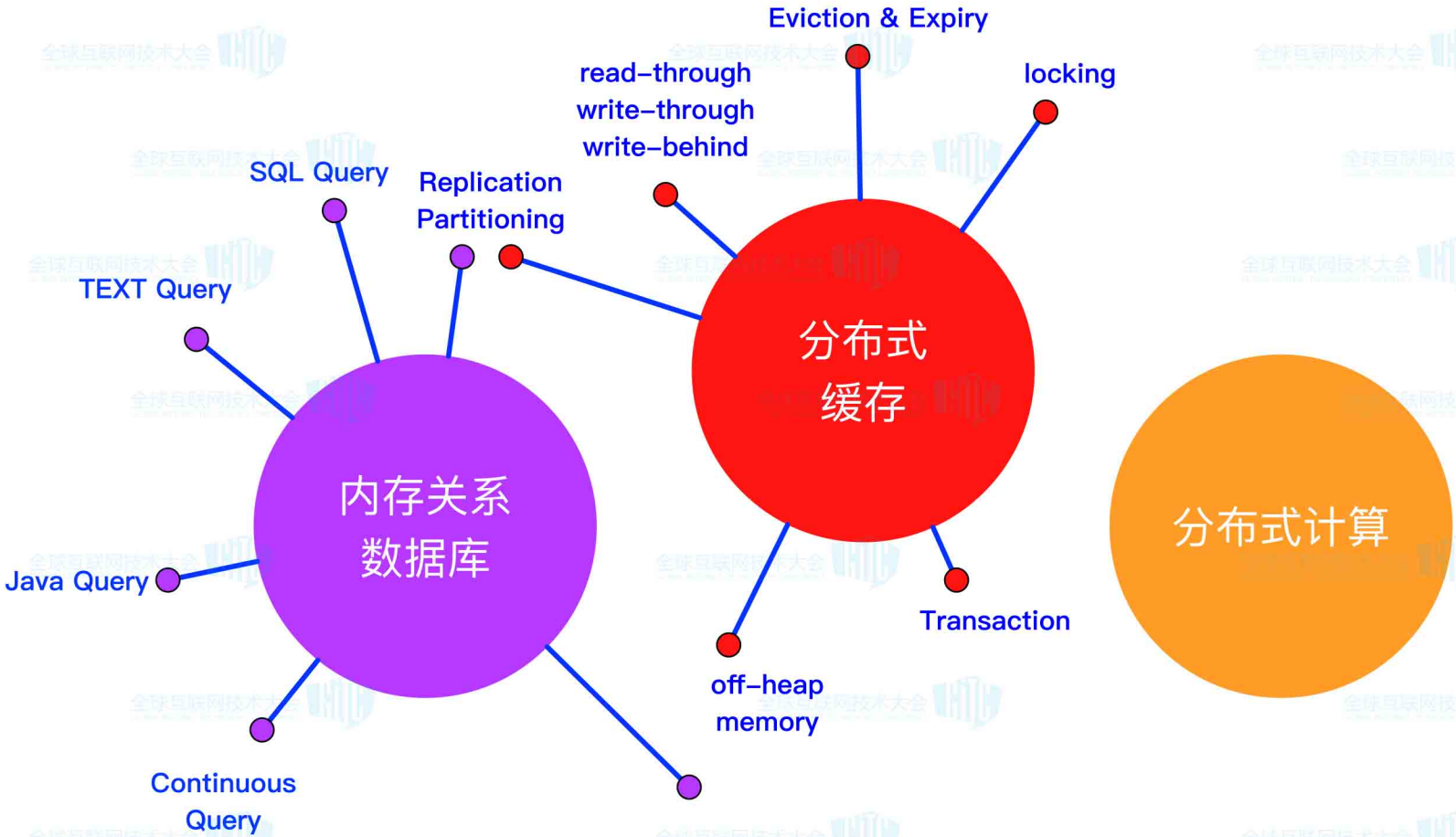
Gartner

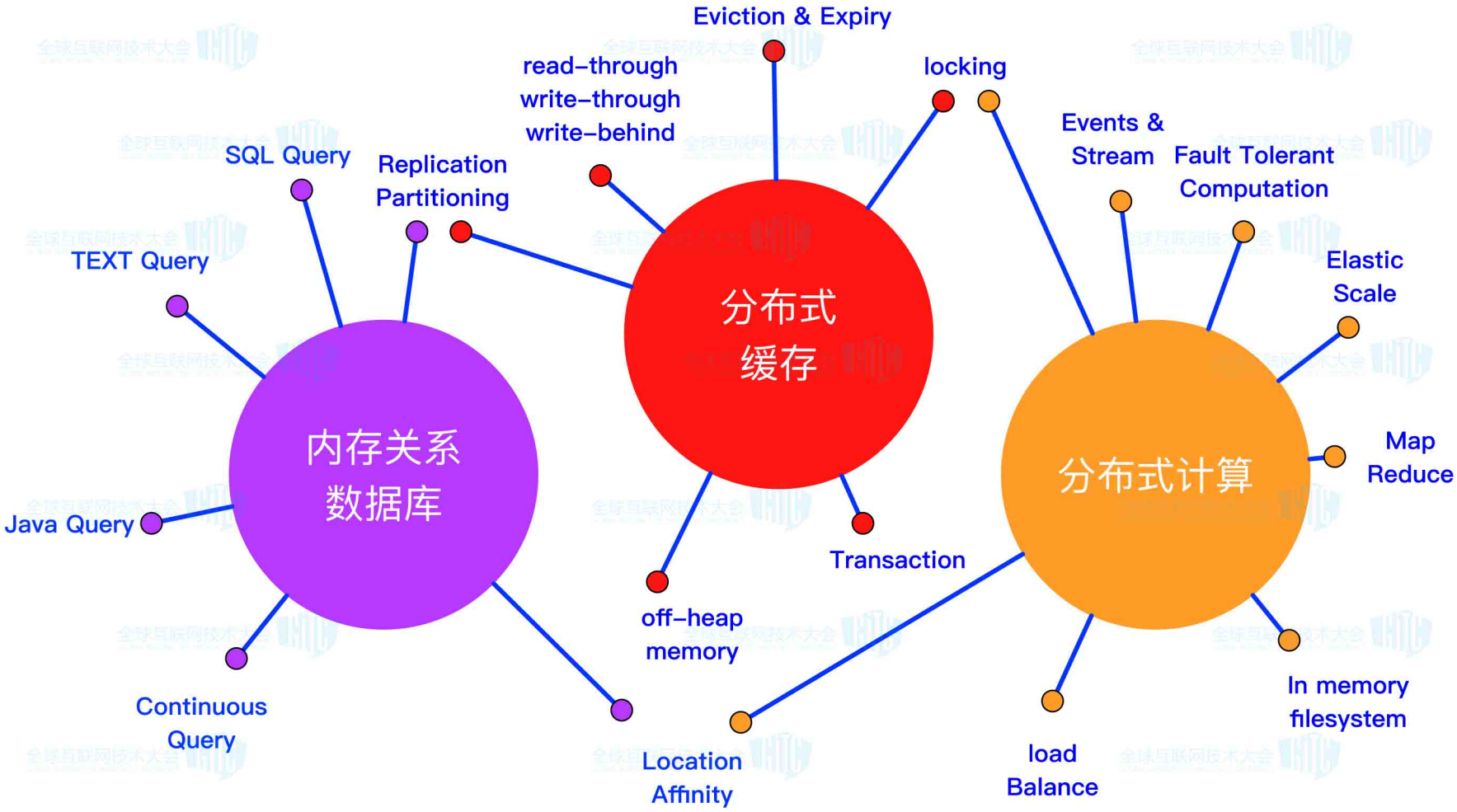
- API call <> OS IO<> 控制器 <> 硬盘
- 延时：毫秒级（10e-3)

- API call <> 指针运算（内存访问）
- 延时：纳秒级或者微秒级 (10e-6, 10e-9)


分布式
缓存
内存关系
数据库
分布式计算

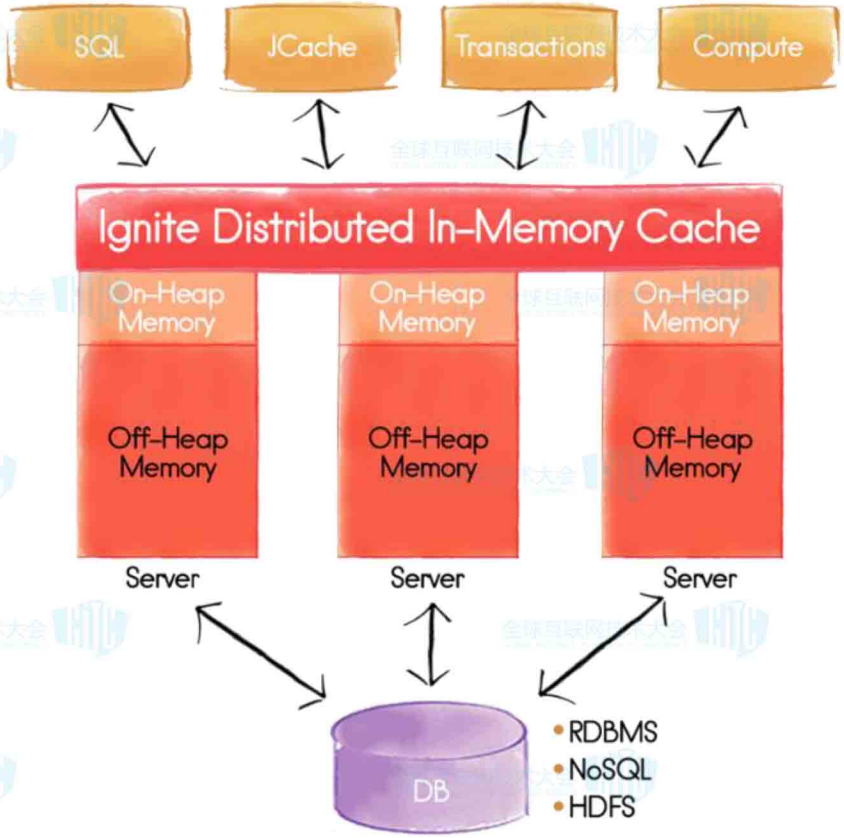

Eviction & Expiry
read-through
write-through
write-behind
locking
Replication
Partitioning
分布式
缓存
内存关系
数据库
分布式计算
Transaction
off-heap
memory


Eviction & Expiry
read-through
write-through
write-behind
locking
SQL Query
Replication
Partitioning
TEXT Query
分布式
缓存
内存关系
数据库
分布式计算
Java Query
Transaction
off-heap
memory
Continuous
Query

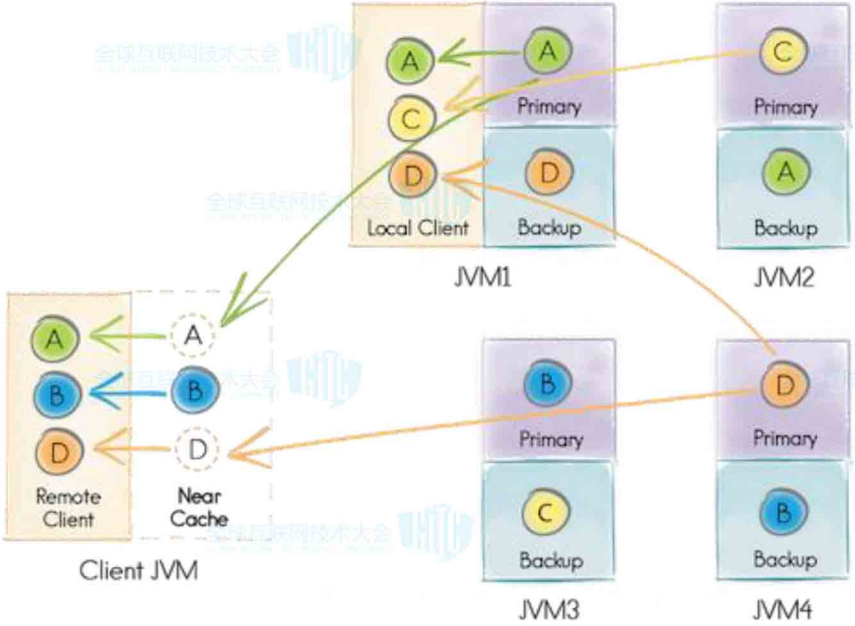

Eviction & Expiry
read-through
write-through
write-behind
locking
SQL Query
Replication
Partitioning
Events &
Stream
Fault Tolerant
Computation
TEXT Query
分布式
缓存
Elastic
Scale
内存关系
数据库
分布式计算
Map
Reduce
Java Query
Transaction
off-heap
memory
Continuous
Query
In memory
filesystem
Location
Affinity
load
Balance

数据节点

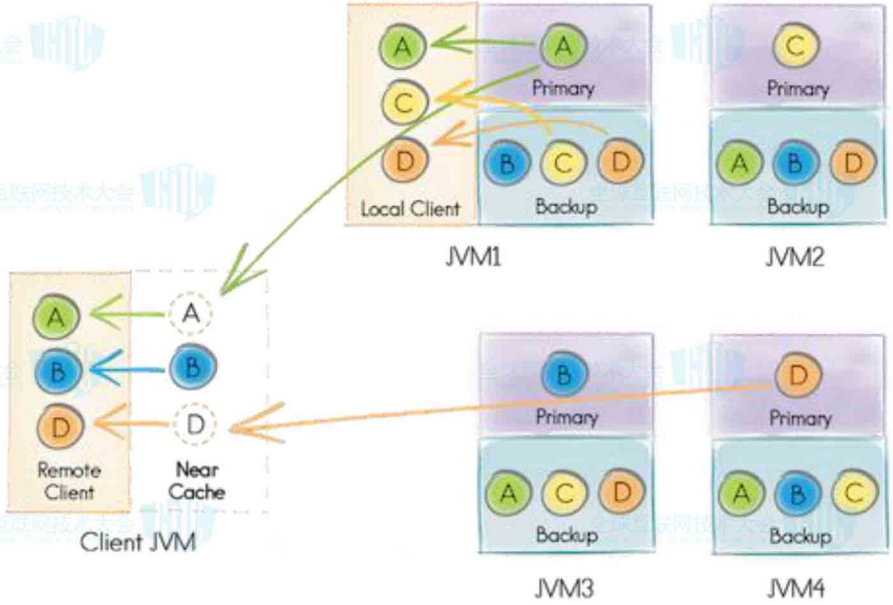
- 分布式k-v存储
- In-memory index
- On-heap/off-heap
- Tb级的任意格式的数据
- 自动 Failover
- 分布式ACID事务
- ASI99 sql query
- JDBC Driver
- 可选的持久化存储



Partitioned Cache

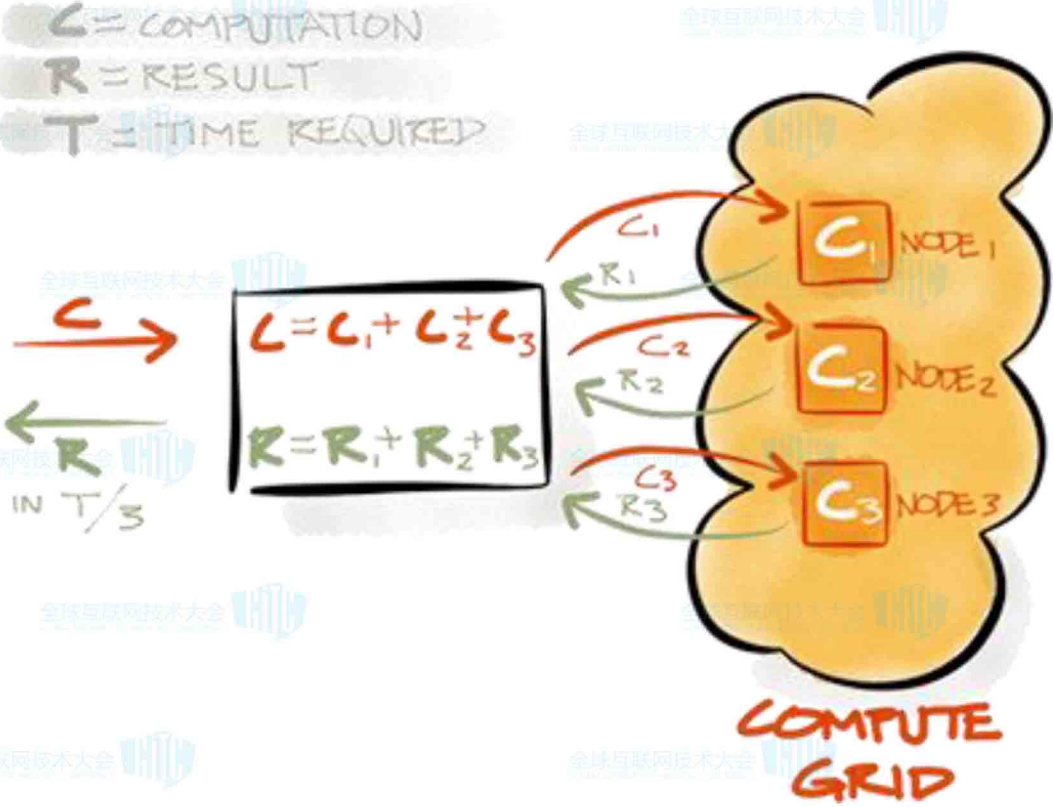


Replicated Cache



计算节点

- MapReduce
- 零部署
- 类似cron的定时任务
- State-checkpoint
- 负载均衡
- 自动Failover

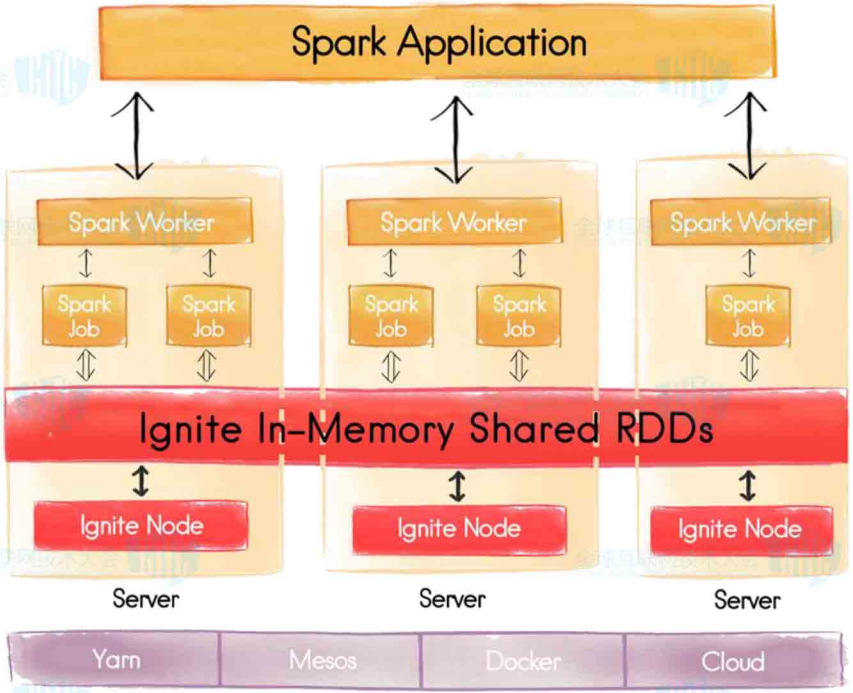


Ignite & SQL

- ANSI-99 SQL
- H2 引擎
- 内存索引(in/off memory)
- 分布式的集合函数、分组、排序
- 跨node的Join & Union
- 基于JVM的函数扩展(Java, Clojrue,Scala)

为spark 提速

- Sharded in memory RDD



https://github.com/apacheignite/zeppelin-demo

apache ignite

APACHE Spark™

```
%ignite.ignitesql
SELECT o.name as Organization, avg(p.salary) as Salary
FROM Person p, "Organizations".Organization o
WHERE p.orgId = o.id
AND o.id IN (12553, 444134, 5173)
GROUP BY o.name
ORDER BY Salary ASC
```

organization
Organization444144
Organization5673
Organization12653

Took 0 sec. Last updated by anonymous at June 21 2017, 3:21:48 PM.

```
%sql
SELECT o.name as organization, avg(p.salary) as salary
FROM Person p, Organization o
WHERE p.orgId = o.id
AND o.id IN (12653, 444144, 5673)
GROUP BY o.name
ORDER BY salary DESC
```

organization
Organization444144
Organization5673
Organization12653

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Q&A

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谢谢观赏