

()apache ignite-

Apache Ignite Ignite

- SOL Ignite

Ignite Ignite Apache



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Ignite jar() Ignite

Ignite ignite RAM

ignite



Apache Ignite:



- Server Map-Reduce
- Client / ()

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testCache

```
-
ClusterGroup clientGroup = ignite.cluster().forClients(); IgniteCompute clientCompute = ignite.
compute(clientGroup);
// Execute computation on the client nodes. clientCompute.broadcast() -> System.out.println("sum
```

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VM

- VM

Apache Ignite VM web java HelloIgnite



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VM

REST API Ignite

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Ignite

VM

(Docker OpenVZ) VM

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(compute)

Ignite::,



Ignite



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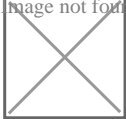


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web()

() :



Cache-aside

cache-aside

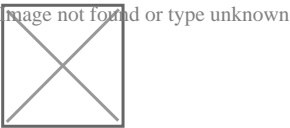


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cache-aside

Read-through and Write-through

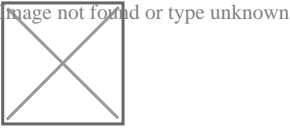


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Read-through and Write-through cache-aside

Write behind

write-behind Write-behind Write-behind

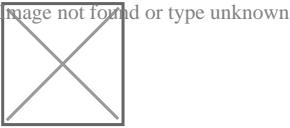


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Apache Ignite java JCache Ignite Ignite Cassandra Cassandra

Apache IgniteCache (JSR 107)CacheJavaCacheRDBMS

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javaAPI:CachingProviderCacheManag

- CachingProvidercachemanager
 - CacheManagerCacheManager
 - CacheManager
 - -
- :

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javaAPI:

- java.util.ConcurrentMap
 - API
 - ()
- CacheApache IgniteACIDSQLApache IgniteigniteCache

CAP

Apache IgniteigniteACIDigniteNoSQLACID

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:

- `igniteCache("myCache", IgniteCache.class);`
- `CA` `igniteCache("myCache", IgniteCache.class);`
- `CP` `igniteCache("myCache", IgniteCache.class);`
- `AP` `igniteCache("myCache", IgniteCache.class);`

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`igniteCache("myCache", IgniteCache.class);`

Clustering

Apache Ignite `igniteCache("myCache", IgniteCache.class);`

Cluster group

Ignite `ClusterGroup` `igniteCache("myCache", IgniteCache.class);`

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Ignite `igniteCache("myCache", IgniteCache.class);`

- Predefined cluster group(`igniteCache("myCache", IgniteCache.class);`)

-

```
IgniteCluster cluster = ignite.cluster();
// "myCache" cache
```

```
ClusterGroup dataGroup = cluster.forDataNodes("myCache");
```

- Cluster group with Node Attributes() worker()

```
IgniteConfiguration cfg = new IgniteConfiguration();
Map<String, String> attrs = Collections.singletonMap("ROLE", "master");
cfg.setUserAttributes(attrs);
Ignite ignite = Ignition.start(cfg);
```

```
( )master( ):
```

```
IgniteCluster cluster = ignite.cluster();ClusterGroup workerGroup = cluster.forAttribute("ROLE",
"master");
Collection<GridNode> workerNodes = workerGroup.nodes();
```

- Custom cluster group()CPU()

```
IgniteCluster cluster = ignite.cluster();
// ( )256MB
ClusterGroup readyNodes = cluster.forPredicate((node) -> node.metrics().getHeapMemoryUsed(\ ) <
256);
```

Data collocation

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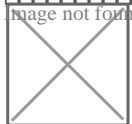


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ignite@AffinityKeyMappedkeyva

-

```
Object clientKey1 = new AffinityKey("Client1", "accId");
Object clientKey2 = new AffinityKey("Client2", "accId ");
Client c1 = new Client (clientKey1, ...);
Client c2 = new Client (clientKey2, ...);
cache.put("accId ", new Account("credit card"));
    cache.put(clientKey1, c1);
    cache.put(clientKey2, c2);
```

account ID client ID

Compute collocation with Data

Apache IgniteigniteCompute

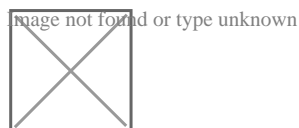
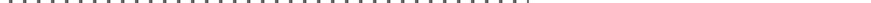
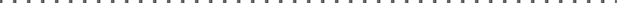


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```
String accId = "accountId";
ignite.compute().affinityRun("myCache", accId, () -> { Account account = cache.get(accId);
Client c1 = cache.get(clientKey1);
Client c2 = cache.get(clientKey2);
... });
```

Apache Ignite:

- RendezvousAffinityFunction-()
- FairAffinityFunction-

Zero SPOF

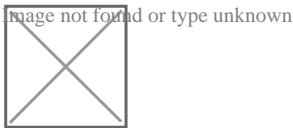


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Ignite

ignite SQL

igniteSQL

- In-memory Map-Reduce  SQL  Ignite  reduce  map 
- H2 SQL engine  SQL  Ignite  H2  SQL 

☐ RDBMS ☒ NoSQL

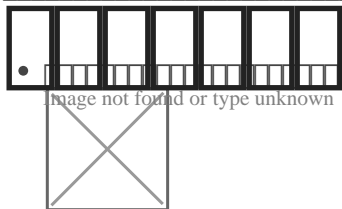


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- [] : []

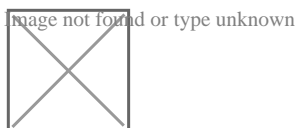


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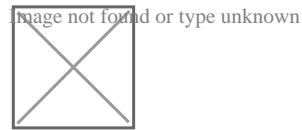


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- Latency

[illegible]

```
// 测试
IgniteCache<Integer, String> cache = ignite.getOrCreateCache("testCache");

// 测试异步
IgniteCache<Integer, String> asynCache = cache.withAsync();

// 测试并发
for(int i = 1; i <= 100; i++){
    cache.put(i, Integer.toString(i));
}

// 测试异步
asynCache.withAsync().get(1);

// 测试 future promise
IgniteFuture<String> igniteFuture = asynCache.future();

// java 8 lamda expression
igniteFuture.listen(f-> System.out.println("Cache Value:" + f.get()));
```

```

100ignite testCachefuturejava main()

```

- `Ignite[...]`
- `Ignite[...]`
- `[...]`
- `[...]`

Apache Ignite



Ignite Ignite

<https://www.jianshu.com/p/4f6d00548363>

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