Infinispan

Martin Genčúr

JBoss Quality Engineering, Red Hat

Agenda

- Configuring Infinispan
- Monitoring via JMX
- Example application
- Tasks

Configuring Infinispan

- CacheManager level
  - Configuration common to all caches under the same CacheManager
  - Defines communication inside the cluster
  - Allows for setup of executors for eviction, asynchronous communication
  - Fluent

Java API

GlobalConfigurationBuilder / GlobalConfiguration from package org.infinispan.configuration.global

Example

```
GlobalConfiguration glob = new GlobalConfigurationBuilder()
                           .transport()
                           .addProperty("configurationFile", "jgroups.xml")
                           .build();

//also .nonClusteredDefault(), .clusteredDefault()
```

CacheManager configuration – cont'd

XML

Tag <global>, subtags <transport>, <globalJmxStatistics>, <xxxExecutor>

Example

```xml
<global>
      <globalJmxStatistics enabled="true"
                            jmxDomain="org.infinispan"
                             cacheManagerName="SampleCacheManager"/>

      <transport clusterName="infinispan-cluster"
                  nodeName="Node-A">

          <properties>
              <property name="configurationFile" value="jgroups.xml"/>
          </properties>

      </transport>
</global>
```

https://github.com/infinispan/infinispan/blob/6.0.x/core/src/main/release/etc/config-samples/sample.xml
https://github.com/infinispan/infinispan/blob/6.0.x/core/src/main/resources/schema/infinispan-config-6.0.xsd

Configuring Infinispan

- Cache level
  - Might be different for each cache under the same CacheManager

Java API

ConfigurationBuilder/Configuration from package org.infinispan.configuration.cache

Example

```
Configuration loc = new ConfigurationBuilder()
                    //eviction(), expiration(), loaders(), locking(), ...
                    .clustering().cacheMode(CacheMode.LOCAL)
                    .expiration().lifespan(500).maxIdle(200).wakeUpInterval(10)
                    .build();

EmbeddedCacheManager manager = new DefaultCacheManager(glob, loc, true);

BasicCache<String, Object> myCache = manager.getCache(CACHE_NAME);
```

Cache configuration – cont'd

XML

Tags <default>, <namedCache>

Example

```
<namedCache name="distributedCache">
      <clustering mode="distribution">
         <sync/>
         <hash numOwners="3"
               rehashWait="120000"
                rehashRpcTimeout="600000"/>
         <l1 enabled="true"
              lifespan="600000"/>
      </clustering>
</namedCache>
```

JMX (Java Management Extensions)

- De facto standard for management and administration of Java applications
- Needs to be enabled in Infinispan on both cache manager level and cache level
- Various JMX GUI - JConsole, VisualVM

```
    JConsole: $JAVA_HOME/bin/jconsole
```

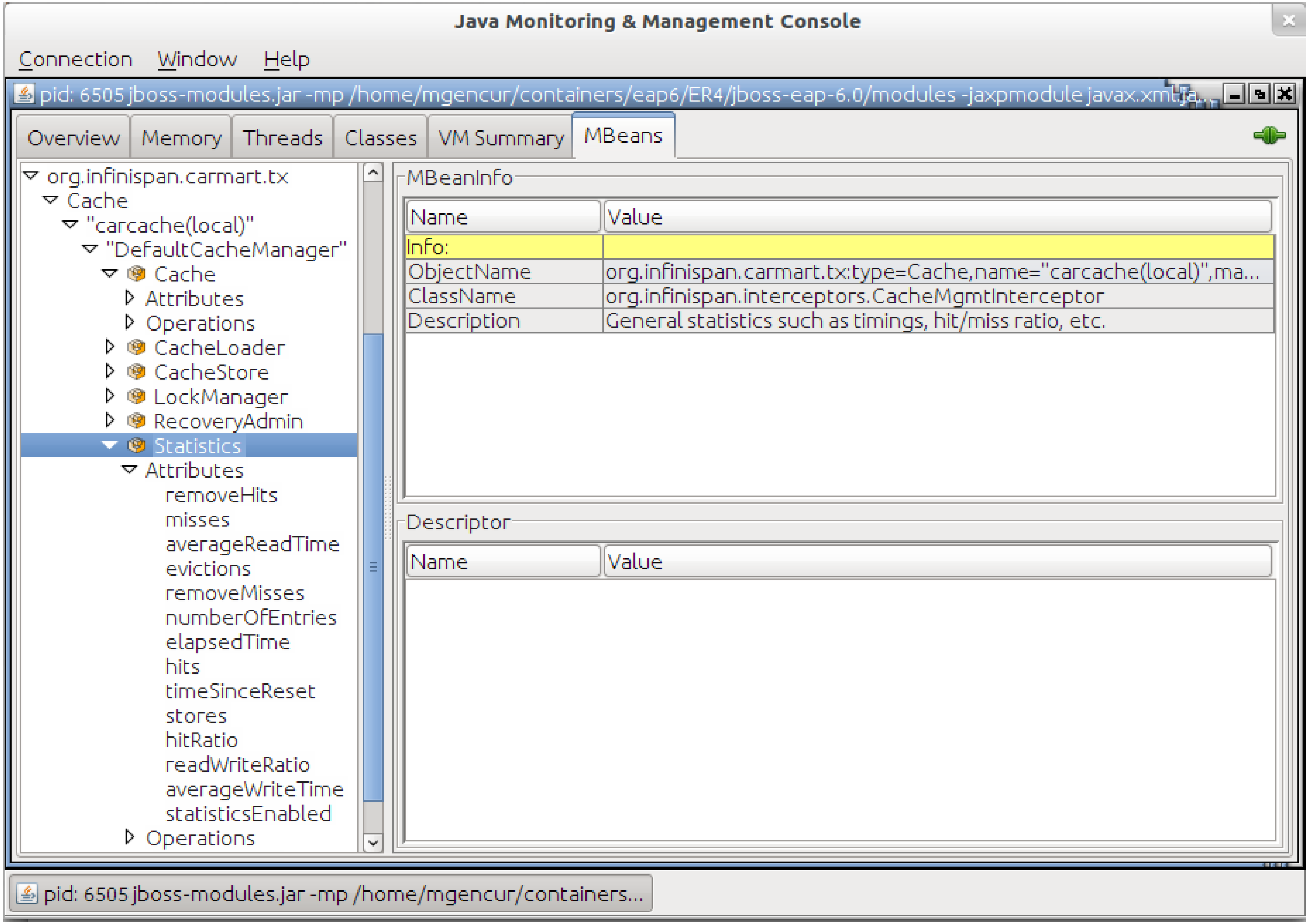
- MBeans

```
jboss.infinispan:type=Cache,name="___defaultcache(local)",manager="default",component=Cache"
```

- MBeans available locally/remotely

```
service:jmx:rmi:///jndi/rmi://hostname:1090/jmxrmi
```

JConsole



MBeanInfo

Name	Value
Info:	
ObjectName	org.infinispan.carmart.tx:type=Cache,name="carcache(local)",ma...
ClassName	org.infinispan.interceptors.CacheMgmtInterceptor
Description	General statistics such as timings, hit/miss ratio, etc.

Descriptor

Name	Value

Demo

- https://github.com/qa/a4m36jee-2014
- Branches infinispan-00 – infinispan-04-complete-querying
  - Branch infinispan-03-prepare-querying is a starting point for Task 3
- Infinispan repository

  https://github.com/infinispan/infinispan/tree/6.0.x

Task 0

- **Get familiar with the web app**
  - After deploy the app is available at localhost:8080/infinispan-seminar
- How to make the cache accessible from the application?
- How to store a list of cars so that we can list them on a web page (safely)?
- How to get statistics like a number of entries in the cache?

Task 1 - Configuration

- Configure the cache according to the following requirements:
  - Configuration located in CacheContainerProvider
  - Cache parameters available via JMX (need to activate them)
  - One-node cluster (local mode)
  - Max. 4 entries in the cache
  - When more than 4 entries stored in the cache, the entry which was not used for longest time will be removed from the cache and stored in a local file system
- Verify via JMX that the cache contains max. 4 entries at any moment (JConsole)
- Hints
  - eviction, passivation
  - http://docs.jboss.org/infinispan/6.0/configdocs/infinispan-config-6.0.html
  - http://infinispan.org/docs/6.0.x/user_guide/user_guide.html

Task 2 – Asynchronous events

- Modify LocalStatisticsProvider so that
  - events about newly created, modified and removed entries are collected **synchronously**
  - the overall number of events is displayed on the initial screen of the application

- Hints
  - Listeners, AtomicInteger
  - http://docs.jboss.org/infinispan/6.0/configdocs/infinispan-config-6.0.html
  - http://infinispan.org/docs/6.0.x/user_guide/user_guide.html

Task 3 - Querying

- Switch to tag infinispan-03-prepare-querying
- Add search logic to CarManager
  - Create a query using QueryBuilder, which will search for all cars matching one of these parameters: color, brand or country (might match just one of those parameters)
  - *Advanced: Create a query using Apache Lucene's BooleanQuery, which will return only cars matching all of the parameters (color, brand and country), ignoring fields that were left empty*

- Hints
  - QueryBuilder, keyword
  - http://infinispan.org/docs/6.0.x/user_guide/user_guide.html#_querying_infinispan
  - http://docs.jboss.org/hibernate/stable/search/reference/en-US/html_single