



链滴

# Elasticsearch6.0 集成测试 found jar hell i n test classpath

作者: [felayman](#)

原文链接: <https://ld246.com/article/1516360579872>

来源网站: [链滴](#)

许可协议: [署名-相同方式共享 4.0 国际 \(CC BY-SA 4.0\)](#)

前提是使用Idea进行单框架的集成,其他工具没有尝试过.

## 问题来源

在参考Elasticsearch官方单元测试集成方式的时候,在编写自己的单元测试的时候,出现了让人郁闷的常,这里我的单元测试是创建一个名称为"test-index"的索引,代码如下:

```
public class SampleTest extends ESIntegTestCase {

    @Test
    public void test() throws Exception {
        createIndex("test-index");
        assertTrue(indexExists("test-index"));
    }
}
```

运行单元测试,出现以下异常:

```
java.lang.RuntimeException: found jar hell in test classpath

    at org.elasticsearch.bootstrap.BootstrapForTesting.<clinit> (BootstrapForTesting.java:92)
    at org.elasticsearch.test.ESTestCase.<clinit> (ESTestCase.java:186)
    at java.lang.Class.forName0(Native Method)
    at java.lang.Class.forName(Class.java:348)
    at com.carrotsearch.randomizedtesting.RandomizedRunner$2.run(RandomizedRunner.java:
92)
Caused by: java.lang.IllegalStateException: jar hell!
duplicate jar[*****]
at org.elasticsearch.bootstrap.JarHell.parseClassPath(JarHell.java:142)
    at org.elasticsearch.bootstrap.JarHell.parseClassPath(JarHell.java:99)
    at org.elasticsearch.bootstrap.JarHell.checkJarHell(JarHell.java:90)
    at org.elasticsearch.bootstrap.BootstrapForTesting.<clinit> (BootstrapForTesting.java:90)
    ... 4 more
```

Test ignored.

Exception in thread "Thread-1" java.lang.NoClassDefFoundError: Could not initialize class org.elasticsearch.test.ESTestCase

```
    at java.lang.Thread.run(Thread.java:748)
    Suppressed: java.lang.IllegalStateException: No context information for thread: Thread[id=
3, name=Thread-1, state=RUNNABLE, group=TGRP-SampleTest]. Is this thread running under
a class com.carrotsearch.randomizedtesting.RandomizedRunner runner context? Add @RunW
th(class com.carrotsearch.randomizedtesting.RandomizedRunner.class) to your test class. Ma
e sure your code accesses random contexts within @BeforeClass and @AfterClass boundary (
or example, static test class initializers are not permitted to access random contexts).
    at com.carrotsearch.randomizedtesting.RandomizedContext.context(RandomizedContext
java:248)
    at com.carrotsearch.randomizedtesting.RandomizedContext.current(RandomizedContext.
ava:134)
    at com.carrotsearch.randomizedtesting.RandomizedRunner.augmentStackTrace(Random
zedRunner.java:1848)
    at com.carrotsearch.randomizedtesting.RunnerThreadGroup.uncaughtException(Runner
```

```
hreadGroup.java:20)
    at java.lang.Thread.dispatchUncaughtException(Thread.java:1959)
```

我们看下一共出现了哪些异常,见下面的 ##问题和解决方法##

## 问题和解决方法

### 问题1

- ERROR StatusLogger Log4j2 could not find a logging implementation. Please add log4j-cor to the classpath. Using SimpleLogger to log to the console...

解决方式:

在pom.xml文件添加log4j-core的依赖jar包,参考如下:

```
<dependency>
  <groupId>org.apache.logging.log4jgroupId>
  <artifactId>log4j-coreartifactId>
  <version>2.8.2version>
</dependency>
```

### 问题2

- found jar hell in test classpath

解决方式:

1. 在你的测试代码目录下创建一个包:org.elasticsearch.bootstrap
2. 在org.elasticsearch.bootstrap包下创建JarHell类,源码如下:

```
package org.elasticsearch.bootstrap;
import java.net.URL;

/**
 * @author lei.fang@shijue.me
 * @since . 2017-11-24
 */public class JarHell {
    private JarHell() {}
    public static void checkJarHell() throws Exception {}
    public static void checkJarHell(URL urls[]) throws Exception {}
    public static void checkVersionFormat(String targetVersion) {}
    public static void checkJavaVersion(String resource, String targetVersion) {}
    public static URL[] parseClassPath() {return new URL[]{};}
}
```

3. 添加VM options参数 -ea -Dtests.security.manager=false

这样就能自己编写单元测试来测试Elasticsearch和Lucene的相关功能,整个pom.xml如下

```
<dependencies>
  <dependency>
    <groupId>org.apache.lucene</groupId>
```

```

    <artifactId>lucene-test-framework</artifactId>
    <version>7.0.1</version>
    <scope>test</scope>
</dependency>
<dependency>
  <groupId>org.elasticsearch.test</groupId>
  <artifactId>framework</artifactId>
  <version>6.0.0</version>
  <scope>test</scope>
<dependency>
<dependency>
  <groupId>org.apache.logging.log4j</groupId>
  <artifactId>log4j-core</artifactId>
  <version>2.8.2</version>
</dependency>
<dependencies>

```

重新运行单元测试,测试结果如下:

```

[2017-11-23T21:57:29,271][INFO ][o.f.e.d.SampleTest      ] [test]: before test
[2017-11-23T21:57:29,273][INFO ][o.f.e.d.SampleTest      ] [SampleTest#test]: setting up test
[2017-11-23T21:57:29,286][INFO ][o.e.t.InternalTestCluster] Setup InternalTestCluster [SUITE-HILD_VM=[0]-CLUSTER_SEED=[9180804499904000471]-HASH=[13F343E443BAE]-cluster] with seed [7F68C50CF915F1D7] using [0] dedicated masters, [3] (data) nodes and [1] coord only nodes (min_master_nodes are [auto-managed])
[2017-11-23T21:57:29,580][INFO ][o.e.n.Node                ] [node_s0] initializing ...
[2017-11-23T21:57:29,635][INFO ][o.e.e.NodeEnvironment    ] [node_s0] using [1] data paths, mounts [[/ (/dev/disk1)]], net usable_space [129.5gb], net total_space [232.6gb], types [hfs]
[2017-11-23T21:57:29,635][INFO ][o.e.e.NodeEnvironment    ] [node_s0] heap size [3.5gb], compressed ordinary object pointers [true]
[2017-11-23T21:57:29,637][INFO ][o.e.n.Node                ] [node_s0] node name [node_s0], node ID [pCcOJN9vQjqSeC8bsMCyxA]
[2017-11-23T21:57:29,637][INFO ][o.e.n.Node                ] [node_s0] version[6.0.0], pid[44762], uid[8f0685b/2017-11-10T18:41:22.859Z], OS[Mac OS X/10.12.6/x86_64], JVM[Oracle Corporation/Java HotSpot(TM) 64-Bit Server VM/1.8.0_144/25.144-b01]
[2017-11-23T21:57:29,637][INFO ][o.e.n.Node                ] [node_s0] JVM arguments [-ea, -Dtest.security.manager=false, -Didea.test.cyclic.buffer.size=1048576, -javaagent:/Applications/IntelliJ IDEA.app/Contents/lib/idea_rt.jar=61668:/Applications/IntelliJ IDEA.app/Contents/bin, -Dfile.encoding=UTF-8]
[2017-11-23T21:57:29,642][INFO ][o.e.p.PluginsService     ] [node_s0] no modules loaded
[2017-11-23T21:57:29,643][INFO ][o.e.p.PluginsService     ] [node_s0] loaded plugin [org.elasticsearch.index.MockEngineFactoryPlugin]
[2017-11-23T21:57:29,643][INFO ][o.e.p.PluginsService     ] [node_s0] loaded plugin [org.elasticsearch.node.NodeMocksPlugin]
[2017-11-23T21:57:29,643][INFO ][o.e.p.PluginsService     ] [node_s0] loaded plugin [org.elasticsearch.search.search.MockSearchService$TestPlugin]
[2017-11-23T21:57:29,643][INFO ][o.e.p.PluginsService     ] [node_s0] loaded plugin [org.elasticsearch.test.ESIntegTestCase$TestSeedPlugin]
[2017-11-23T21:57:29,643][INFO ][o.e.p.PluginsService     ] [node_s0] loaded plugin [org.elasticsearch.test.discovery.TestZenDiscovery$TestPlugin]
[2017-11-23T21:57:29,644][INFO ][o.e.p.PluginsService     ] [node_s0] loaded plugin [org.elasticsearch.test.store.MockFSIndexStore$TestPlugin]
[2017-11-23T21:57:29,644][INFO ][o.e.p.PluginsService     ] [node_s0] loaded plugin [org.elasticsearch.test.store.MockFSIndexStore$TestPlugin]

```

```

search.test.transport.MockTransportService$TestPlugin]
[2017-11-23T21:57:29,644][INFO ][o.e.p.PluginsService ] [node_s0] loaded plugin [org.elasti
search.transport.AssertingTransportInterceptor$TestPlugin]
[2017-11-23T21:57:29,644][INFO ][o.e.p.PluginsService ] [node_s0] loaded plugin [org.elasti
search.transport.MockTcpTransportPlugin]
[2017-11-23T21:57:30,919][INFO ][o.e.d.DiscoveryModule ] [node_s0] using discovery type [
est-zen]
[2017-11-23T21:57:31,463][INFO ][o.e.n.Node ] [node_s0] initialized
[2017-11-23T21:57:31,468][INFO ][o.e.n.Node ] [node_s1] initializing ...
[2017-11-23T21:57:31,473][INFO ][o.e.e.NodeEnvironment ] [node_s1] using [1] data paths,
mounts [[/ (/dev/disk1)], net usable_space [129.5gb], net total_space [232.6gb], types [hfs]
[2017-11-23T21:57:31,473][INFO ][o.e.e.NodeEnvironment ] [node_s1] heap size [3.5gb], co
pressed ordinary object pointers [true]
[2017-11-23T21:57:31,473][INFO ][o.e.n.Node ] [node_s1] node name [node_s1], node
ID [JD1UL8tJTZafqwmXjfM_Vw]
[2017-11-23T21:57:31,474][INFO ][o.e.n.Node ] [node_s1] version[6.0.0], pid[44762],
uid[8f0685b/2017-11-10T18:41:22.859Z], OS[Mac OS X/10.12.6/x86_64], JVM[Oracle Corporat
on/Java HotSpot(TM) 64-Bit Server VM/1.8.0_144/25.144-b01]
[2017-11-23T21:57:31,474][INFO ][o.e.n.Node ] [node_s1] JVM arguments [-ea, -Dtest
.security.manager=false, -Didea.test.cyclic.buffer.size=1048576, -javaagent:/Applications/Intell
J IDEA.app/Contents/lib/idea_rt.jar=61668:/Applications/IntelliJ IDEA.app/Contents/bin, -Dfile
encoding=UTF-8]
[2017-11-23T21:57:31,474][INFO ][o.e.p.PluginsService ] [node_s1] no modules loaded
[2017-11-23T21:57:31,474][INFO ][o.e.p.PluginsService ] [node_s1] loaded plugin [org.elasti
search.index.MockEngineFactoryPlugin]
[2017-11-23T21:57:31,474][INFO ][o.e.p.PluginsService ] [node_s1] loaded plugin [org.elasti
search.node.NodeMocksPlugin]
[2017-11-23T21:57:31,474][INFO ][o.e.p.PluginsService ] [node_s1] loaded plugin [org.elasti
search.search.MockSearchService$TestPlugin]
[2017-11-23T21:57:31,474][INFO ][o.e.p.PluginsService ] [node_s1] loaded plugin [org.elasti
search.test.ESIntegTestCase$TestSeedPlugin]
[2017-11-23T21:57:31,474][INFO ][o.e.p.PluginsService ] [node_s1] loaded plugin [org.elasti
search.test.discovery.TestZenDiscovery$TestPlugin]
[2017-11-23T21:57:31,475][INFO ][o.e.p.PluginsService ] [node_s1] loaded plugin [org.elasti
search.test.store.MockFSIndexStore$TestPlugin]
[2017-11-23T21:57:31,475][INFO ][o.e.p.PluginsService ] [node_s1] loaded plugin [org.elasti
search.test.transport.MockTransportService$TestPlugin]
[2017-11-23T21:57:31,475][INFO ][o.e.p.PluginsService ] [node_s1] loaded plugin [org.elasti
search.transport.AssertingTransportInterceptor$TestPlugin]
[2017-11-23T21:57:31,475][INFO ][o.e.p.PluginsService ] [node_s1] loaded plugin [org.elasti
search.transport.MockTcpTransportPlugin]
[2017-11-23T21:57:31,494][INFO ][o.e.d.DiscoveryModule ] [node_s1] using discovery type [
est-zen]
[2017-11-23T21:57:31,530][INFO ][o.e.n.Node ] [node_s1] initialized
[2017-11-23T21:57:31,534][INFO ][o.e.n.Node ] [node_s2] initializing ...
[2017-11-23T21:57:31,538][INFO ][o.e.e.NodeEnvironment ] [node_s2] using [1] data paths,
mounts [[/ (/dev/disk1)], net usable_space [129.5gb], net total_space [232.6gb], types [hfs]
[2017-11-23T21:57:31,538][INFO ][o.e.e.NodeEnvironment ] [node_s2] heap size [3.5gb], co
pressed ordinary object pointers [true]
[2017-11-23T21:57:31,539][INFO ][o.e.n.Node ] [node_s2] node name [node_s2], node
ID [9AtjFK_iSlmBX-GovTgMyQ]
[2017-11-23T21:57:31,539][INFO ][o.e.n.Node ] [node_s2] version[6.0.0], pid[44762],
uid[8f0685b/2017-11-10T18:41:22.859Z], OS[Mac OS X/10.12.6/x86_64], JVM[Oracle Corporat
on/Java HotSpot(TM) 64-Bit Server VM/1.8.0_144/25.144-b01]

```

```

[2017-11-23T21:57:31,539][INFO ][o.e.n.Node                ] [node_s2] JVM arguments [-ea, -Dtest
.security.manager=false, -Didea.test.cyclic.buffer.size=1048576, -javaagent:/Applications/IntelliJ IDEA.app/Contents/lib/idea_rt.jar=61668:/Applications/IntelliJ IDEA.app/Contents/bin, -Dfile
encoding=UTF-8]
[2017-11-23T21:57:31,540][INFO ][o.e.p.PluginsService     ] [node_s2] no modules loaded
[2017-11-23T21:57:31,540][INFO ][o.e.p.PluginsService     ] [node_s2] loaded plugin [org.elasti
search.index.MockEngineFactoryPlugin]
[2017-11-23T21:57:31,540][INFO ][o.e.p.PluginsService     ] [node_s2] loaded plugin [org.elasti
search.node.NodeMocksPlugin]
[2017-11-23T21:57:31,540][INFO ][o.e.p.PluginsService     ] [node_s2] loaded plugin [org.elasti
search.search.MockSearchService$TestPlugin]
[2017-11-23T21:57:31,540][INFO ][o.e.p.PluginsService     ] [node_s2] loaded plugin [org.elasti
search.test.ESIntegTestCase$TestSeedPlugin]
[2017-11-23T21:57:31,540][INFO ][o.e.p.PluginsService     ] [node_s2] loaded plugin [org.elasti
search.test.discovery.TestZenDiscovery$TestPlugin]
[2017-11-23T21:57:31,540][INFO ][o.e.p.PluginsService     ] [node_s2] loaded plugin [org.elasti
search.test.store.MockFSIndexStore$TestPlugin]
[2017-11-23T21:57:31,540][INFO ][o.e.p.PluginsService     ] [node_s2] loaded plugin [org.elasti
search.test.transport.MockTransportService$TestPlugin]
[2017-11-23T21:57:31,540][INFO ][o.e.p.PluginsService     ] [node_s2] loaded plugin [org.elasti
search.transport.AssertingTransportInterceptor$TestPlugin]
[2017-11-23T21:57:31,540][INFO ][o.e.p.PluginsService     ] [node_s2] loaded plugin [org.elasti
search.transport.MockTcpTransportPlugin]
[2017-11-23T21:57:31,556][INFO ][o.e.d.DiscoveryModule    ] [node_s2] using discovery type [
est-zen]
[2017-11-23T21:57:31,593][INFO ][o.e.n.Node                ] [node_s2] initialized
[2017-11-23T21:57:31,596][INFO ][o.e.n.Node                ] [node_sc3] initializing ...
[2017-11-23T21:57:31,600][INFO ][o.e.e.NodeEnvironment    ] [node_sc3] using [1] data paths,
mounts [[/ (/dev/disk1)], net usable_space [129.5gb], net total_space [232.6gb], types [hfs]
[2017-11-23T21:57:31,600][INFO ][o.e.e.NodeEnvironment    ] [node_sc3] heap size [3.5gb], c
ompressed ordinary object pointers [true]
[2017-11-23T21:57:31,601][INFO ][o.e.n.Node                ] [node_sc3] node name [node_sc3], n
ode ID [-N3NCafBR-O1JHNvit89rg]
[2017-11-23T21:57:31,601][INFO ][o.e.n.Node                ] [node_sc3] version[6.0.0], pid[44762],
build[8f0685b/2017-11-10T18:41:22.859Z], OS[Mac OS X/10.12.6/x86_64], JVM[Oracle Corpor
ation/Java HotSpot(TM) 64-Bit Server VM/1.8.0_144/25.144-b01]
[2017-11-23T21:57:31,601][INFO ][o.e.n.Node                ] [node_sc3] JVM arguments [-ea, -Dtes
t.security.manager=false, -Didea.test.cyclic.buffer.size=1048576, -javaagent:/Applicati
ons/IntelliJ IDEA.app/Contents/lib/idea_rt.jar=61668:/Applications/IntelliJ IDEA.app/Contents/bin, -Dfil
e.encoding=UTF-8]
[2017-11-23T21:57:31,602][INFO ][o.e.p.PluginsService     ] [node_sc3] no modules loaded
[2017-11-23T21:57:31,602][INFO ][o.e.p.PluginsService     ] [node_sc3] loaded plugin [org.elast
csearch.index.MockEngineFactoryPlugin]
[2017-11-23T21:57:31,602][INFO ][o.e.p.PluginsService     ] [node_sc3] loaded plugin [org.elast
csearch.node.NodeMocksPlugin]
[2017-11-23T21:57:31,602][INFO ][o.e.p.PluginsService     ] [node_sc3] loaded plugin [org.elast
csearch.search.MockSearchService$TestPlugin]
[2017-11-23T21:57:31,602][INFO ][o.e.p.PluginsService     ] [node_sc3] loaded plugin [org.elast
csearch.test.ESIntegTestCase$TestSeedPlugin]
[2017-11-23T21:57:31,602][INFO ][o.e.p.PluginsService     ] [node_sc3] loaded plugin [org.elast
csearch.test.discovery.TestZenDiscovery$TestPlugin]
[2017-11-23T21:57:31,602][INFO ][o.e.p.PluginsService     ] [node_sc3] loaded plugin [org.elast
csearch.test.store.MockFSIndexStore$TestPlugin]
[2017-11-23T21:57:31,603][INFO ][o.e.p.PluginsService     ] [node_sc3] loaded plugin [org.elast

```

```
csearch.test.transport.MockTransportService$TestPlugin]
[2017-11-23T21:57:31,603][INFO ][o.e.p.PluginsService ] [node_sc3] loaded plugin [org.elast
csearch.transport.AssertingTransportInterceptor$TestPlugin]
[2017-11-23T21:57:31,603][INFO ][o.e.p.PluginsService ] [node_sc3] loaded plugin [org.elast
csearch.transport.MockTcpTransportPlugin]
[2017-11-23T21:57:31,618][INFO ][o.e.d.DiscoveryModule ] [node_sc3] using discovery type
test-zen]
[2017-11-23T21:57:31,648][INFO ][o.e.n.Node ] [node_sc3] initialized
[2017-11-23T21:57:31,653][INFO ][o.e.n.Node ] [node_s0] starting ...
[2017-11-23T21:57:31,653][INFO ][o.e.n.Node ] [node_s2] starting ...
[2017-11-23T21:57:31,653][INFO ][o.e.n.Node ] [node_s1] starting ...
[2017-11-23T21:57:31,653][INFO ][o.e.n.Node ] [node_sc3] starting ...
[2017-11-23T21:57:31,672][INFO ][o.e.t.t.MockTransportService] [node_sc3] publish_address {
27.0.0.1:9400}, bound_addresses {[fe80::1]:9400}, {::1}:9400, {127.0.0.1:9400}
[2017-11-23T21:57:31,672][INFO ][o.e.t.t.MockTransportService] [node_s0] publish_address {1
7.0.0.1:9402}, bound_addresses {[fe80::1]:9402}, {::1}:9401, {127.0.0.1:9402}
[2017-11-23T21:57:31,672][INFO ][o.e.t.t.MockTransportService] [node_s2] publish_address {1
7.0.0.1:9403}, bound_addresses {[fe80::1]:9401}, {::1}:9403, {127.0.0.1:9403}
[2017-11-23T21:57:31,672][INFO ][o.e.t.t.MockTransportService] [node_s1] publish_address {1
7.0.0.1:9401}, bound_addresses {[fe80::1]:9403}, {::1}:9402, {127.0.0.1:9401}
[2017-11-23T21:57:31,703][INFO ][o.e.t.d.MockZenPing ] [node_s2] pinging using mock zen
ping
[2017-11-23T21:57:31,703][INFO ][o.e.t.d.MockZenPing ] [node_s1] pinging using mock zen
ping
[2017-11-23T21:57:31,703][INFO ][o.e.t.d.MockZenPing ] [node_s0] pinging using mock zen
ping
[2017-11-23T21:57:31,703][INFO ][o.e.t.d.MockZenPing ] [node_sc3] pinging using mock z
n ping
[2017-11-23T21:57:31,813][INFO ][o.e.c.s.MasterService ] [node_s2] zen-disco-elected-as-m
ster ([1] nodes joined){[node_s0]{pCcOJN9vQjqSeC8bsMCyxA}{F90SN69rSt2IL7hfG0vCw}{127
0.0.1}{127.0.0.1:9402}}, zen-disco-node-join{[node_s1]{JD1UL8tJTZafqwmXjfM_Vw}{uVdNVR8z
CigujYJf1nl-g}{127.0.0.1}{127.0.0.1:9401}}, reason: new master {node_s2}{9AtjFK_iSlmBX-GovT
MyQ}{h1KGFtA5T1itCPLVKvbWvA}{127.0.0.1}{127.0.0.1:9403}, added {[node_s1]{JD1UL8tJTZaf
wmXjfM_Vw}{uVdNVR8zSCigujYJf1nl-g}{127.0.0.1}{127.0.0.1:9401},{node_s0}{pCcOJN9vQjqSeC
bsMCyxA}{F90SN69rSt2IL7hfG0vCw}{127.0.0.1}{127.0.0.1:9402}},}
[2017-11-23T21:57:31,828][INFO ][o.e.c.s.ClusterApplierService] [node_s0] detected_master {n
de_s2}{9AtjFK_iSlmBX-GovTgMyQ}{h1KGFtA5T1itCPLVKvbWvA}{127.0.0.1}{127.0.0.1:9403}, ad
ed {[node_s1]{JD1UL8tJTZafqwmXjfM_Vw}{uVdNVR8zSCigujYJf1nl-g}{127.0.0.1}{127.0.0.1:9401}
{node_s2}{9AtjFK_iSlmBX-GovTgMyQ}{h1KGFtA5T1itCPLVKvbWvA}{127.0.0.1}{127.0.0.1:9403}},,
reason: apply cluster state (from master [master {node_s2}{9AtjFK_iSlmBX-GovTgMyQ}{h1KGF
A5T1itCPLVKvbWvA}{127.0.0.1}{127.0.0.1:9403} committed version [1]])
[2017-11-23T21:57:31,828][INFO ][o.e.c.s.ClusterApplierService] [node_s1] detected_master {n
de_s2}{9AtjFK_iSlmBX-GovTgMyQ}{h1KGFtA5T1itCPLVKvbWvA}{127.0.0.1}{127.0.0.1:9403}, ad
ed {[node_s2}{9AtjFK_iSlmBX-GovTgMyQ}{h1KGFtA5T1itCPLVKvbWvA}{127.0.0.1}{127.0.0.1:94
3},{node_s0}{pCcOJN9vQjqSeC8bsMCyxA}{F90SN69rSt2IL7hfG0vCw}{127.0.0.1}{127.0.0.1:9402
},}, reason: apply cluster state (from master [master {node_s2}{9AtjFK_iSlmBX-GovTgMyQ}{h1K
FtA5T1itCPLVKvbWvA}{127.0.0.1}{127.0.0.1:9403} committed version [1]])
[2017-11-23T21:57:31,841][INFO ][o.e.n.Node ] [node_s0] started
[2017-11-23T21:57:31,841][INFO ][o.e.n.Node ] [node_s1] started
[2017-11-23T21:57:31,843][INFO ][o.e.c.s.ClusterApplierService] [node_s2] new_master {node_
2}{9AtjFK_iSlmBX-GovTgMyQ}{h1KGFtA5T1itCPLVKvbWvA}{127.0.0.1}{127.0.0.1:9403}, added {
node_s1}{JD1UL8tJTZafqwmXjfM_Vw}{uVdNVR8zSCigujYJf1nl-g}{127.0.0.1}{127.0.0.1:9401},{no
e_s0}{pCcOJN9vQjqSeC8bsMCyxA}{F90SN69rSt2IL7hfG0vCw}{127.0.0.1}{127.0.0.1:9402}}, rea
on: apply cluster state (from master [master {node_s2}{9AtjFK_iSlmBX-GovTgMyQ}{h1KGFtA5
```

```

1itCPLVKvbWvA}{127.0.0.1}{127.0.0.1:9403} committed version [1] source [zen-disco-elected-a
-master ([1] nodes joined){node_s0}{pCcOJN9vQjqSeC8bsMCyxA}{F90SN69rSt2IL7hfG0vCrw}
127.0.0.1}{127.0.0.1:9402}], zen-disco-node-join{node_s1}{JD1UL8tJTzafqwmXjfM_Vw}{uVdNV
8zSCigujYJf1nl-g}{127.0.0.1}{127.0.0.1:9401}})]
[2017-11-23T21:57:31,847][INFO ][o.e.n.Node                ] [node_s2] started
[2017-11-23T21:57:31,851][INFO ][o.e.c.s.MasterService    ] [node_s2] zen-disco-node-join{no
e_sc3}{-N3NCafBR-O1JHNvit89rg}{bhbfD7YCSsKUBAatch1B_qg}{127.0.0.1}{127.0.0.1:9400}], rea
son: added {{node_sc3}{-N3NCafBR-O1JHNvit89rg}{bhbfD7YCSsKUBAatch1B_qg}{127.0.0.1}{127
0.0.1:9400}},
[2017-11-23T21:57:31,874][INFO ][o.e.c.s.ClusterApplierService] [node_s1] added {{node_sc3}{
N3NCafBR-O1JHNvit89rg}{bhbfD7YCSsKUBAatch1B_qg}{127.0.0.1}{127.0.0.1:9400}},, reason: ap
ply cluster state (from master [master {node_s2}{9AtjFK_iSlmBX-GovTgMyQ}{h1KGFtA5T1itCPL
KvbWvA}{127.0.0.1}{127.0.0.1:9403} committed version [2]])
[2017-11-23T21:57:31,873][INFO ][o.e.c.s.ClusterApplierService] [node_sc3] detected_master {
ode_s2}{9AtjFK_iSlmBX-GovTgMyQ}{h1KGFtA5T1itCPLVKvbWvA}{127.0.0.1}{127.0.0.1:9403}, a
ded {{node_s1}{JD1UL8tJTzafqwmXjfM_Vw}{uVdNVr8zSCigujYJf1nl-g}{127.0.0.1}{127.0.0.1:940
},{node_s2}{9AtjFK_iSlmBX-GovTgMyQ}{h1KGFtA5T1itCPLVKvbWvA}{127.0.0.1}{127.0.0.1:9403},
node_s0}{pCcOJN9vQjqSeC8bsMCyxA}{F90SN69rSt2IL7hfG0vCrw}{127.0.0.1}{127.0.0.1:9402}},,
reason: apply cluster state (from master [master {node_s2}{9AtjFK_iSlmBX-GovTgMyQ}{h1KGFt
5T1itCPLVKvbWvA}{127.0.0.1}{127.0.0.1:9403} committed version [2]])
[2017-11-23T21:57:31,874][INFO ][o.e.c.s.ClusterApplierService] [node_s0] added {{node_sc3}{
N3NCafBR-O1JHNvit89rg}{bhbfD7YCSsKUBAatch1B_qg}{127.0.0.1}{127.0.0.1:9400}},, reason: ap
ply cluster state (from master [master {node_s2}{9AtjFK_iSlmBX-GovTgMyQ}{h1KGFtA5T1itCPL
KvbWvA}{127.0.0.1}{127.0.0.1:9403} committed version [2]])
[2017-11-23T21:57:31,883][INFO ][o.e.n.Node                ] [node_sc3] started
[2017-11-23T21:57:31,884][INFO ][o.e.c.s.ClusterApplierService] [node_s2] added {{node_sc3}{
N3NCafBR-O1JHNvit89rg}{bhbfD7YCSsKUBAatch1B_qg}{127.0.0.1}{127.0.0.1:9400}},, reason: ap
ply cluster state (from master [master {node_s2}{9AtjFK_iSlmBX-GovTgMyQ}{h1KGFtA5T1itCPL
KvbWvA}{127.0.0.1}{127.0.0.1:9403} committed version [2] source [zen-disco-node-join{node
sc3}{-N3NCafBR-O1JHNvit89rg}{bhbfD7YCSsKUBAatch1B_qg}{127.0.0.1}{127.0.0.1:9400}})]
[2017-11-23T21:57:31,886][INFO ][o.e.p.PluginsService      ] [transport_client_node_sc3] no mo
dules loaded
[2017-11-23T21:57:31,886][INFO ][o.e.p.PluginsService      ] [transport_client_node_sc3] loaded
plugin [org.elasticsearch.transport.MockTcpTransportPlugin]
[2017-11-23T21:57:31,895][INFO ][o.e.g.GatewayService      ] [node_s2] recovered [0] indices in
o cluster state
[2017-11-23T21:57:31,952][INFO ][o.e.p.PluginsService      ] [transport_client_node_s2] no mod
ules loaded
[2017-11-23T21:57:31,953][INFO ][o.e.p.PluginsService      ] [transport_client_node_s2] loaded p
ugin [org.elasticsearch.transport.MockTcpTransportPlugin]
[2017-11-23T21:57:32,123][INFO ][o.f.e.d.SampleTest        ] [SampleTest#test]: all set up test
[2017-11-23T21:57:32,124][INFO ][o.e.p.PluginsService      ] [transport_client_node_s1] no mod
ules loaded
[2017-11-23T21:57:32,125][INFO ][o.e.p.PluginsService      ] [transport_client_node_s1] loaded p
ugin [org.elasticsearch.transport.MockTcpTransportPlugin]
[2017-11-23T21:57:32,228][INFO ][o.e.c.m.MetaDataCreateIndexService] [node_s2] [test-index]
creating index, cause [api], templates [random_index_template], shards [4]/[0], mappings []
[2017-11-23T21:57:32,531][INFO ][o.e.c.r.a.AllocationService] [node_s2] Cluster health status c
hanged from [YELLOW] to [GREEN] (reason: [shards started [[test-index][1], [test-index][3]] ...]).
[2017-11-23T21:57:32,551][INFO ][o.f.e.d.SampleTest        ] [SampleTest#test]: cleaning up afte
r test
[2017-11-23T21:57:32,566][INFO ][o.e.p.PluginsService      ] [transport_client_node_s0] no mod
ules loaded
[2017-11-23T21:57:32,566][INFO ][o.e.p.PluginsService      ] [transport_client_node_s0] loaded p

```



```
ugin [org.elasticsearch.transport.MockTcpTransportPlugin]
[2017-11-23T21:57:32,664][INFO ][o.e.c.m.MetadataDeleteIndexService] [node_s2] [test-index
PQ0jLcgnQ-yyV9-d4-MQLw] deleting index
[2017-11-23T21:57:32,674][INFO ][o.e.t.s.MockFSIndexStore$Listener] [node_s0] [test-index][1]
start check index
[2017-11-23T21:57:32,675][INFO ][o.e.t.s.MockFSIndexStore$Listener] [node_s1] [test-index][0]
start check index
[2017-11-23T21:57:32,687][INFO ][o.e.t.s.MockFSIndexStore$Listener] [node_s0] [test-index][1]
end check index
[2017-11-23T21:57:32,687][INFO ][o.e.t.s.MockFSIndexStore$Listener] [node_s1] [test-index][0]
end check index
[2017-11-23T21:57:32,694][INFO ][o.e.t.s.MockFSIndexStore$Listener] [node_s1] [test-index][3]
start check index
[2017-11-23T21:57:32,695][INFO ][o.e.t.s.MockFSIndexStore$Listener] [node_s1] [test-index][3]
end check index
[2017-11-23T21:57:32,703][INFO ][o.e.t.s.MockFSIndexStore$Listener] [node_s2] [test-index][2]
start check index
[2017-11-23T21:57:32,708][INFO ][o.e.t.s.MockFSIndexStore$Listener] [node_s2] [test-index][2]
end check index
[2017-11-23T21:57:32,732][INFO ][o.f.e.d.SampleTest      ] [SampleTest#test]: cleaned up after
test
[2017-11-23T21:57:32,733][INFO ][o.f.e.d.SampleTest      ] [test]: after test
```

其中输出日志有有一句:

```
[2017-11-23T21:57:32,228][INFO ][o.e.c.m.MetadataCreateIndexService] [node_s2] [test-index]
creating index, cause [api], templates [random_index_template], shards [4]/[0], mappings []
```

表示测试成功,终于可以开心的去用Elasticsearch官方提供的单元测试框架来测试Elasticsearch强大的功能和原理.

## 参考

- [found jar hell in test classpath](#)
- [java jar hell runtime exception](#)
- [Java Testing Framework](#)