Diagnose issues using VisualVM && || Java Mission Control

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Dev FullStack

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1 What's the point?

Find a solution for

- Programming issue
  - Deadlock
  - Memory leaks
- Non Programming issue
  - Bad environment or JVM settings
    - Memory settings,
    - Encoding,
    - Wrong GC Usage,
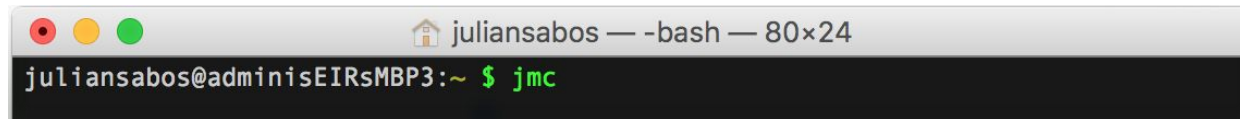   - …

2 How does it works?

Mac

- Visual VM

- Java Mission Control

Windows

- Visual VM
    - Goto the bin folder of your JDK
    - Double click on *jvisualvm.exe*

- Java Mission Control
    - Goto the bin folder of your JDK
    - Double click on *jmc.exe*

Java Mission Control

DEMO

Visual VM

DEMO

Important features

- Get the general settings of your running java application,
- Visualize the memory usage,
- Visualize internal threads running,
- Create thread dumps,
- Get notifications on certain condition and...

Less important features

- … send an email,
- Remote call the GC,
- Customize the memory of your process on the fly,
- Add customized gauges and pretend you ride a Ferrari.

Concret use cases 1

- Client *ESB*
  - Issue Integration tests are taking too much time
    - Before: 3h
    - After: 45 min
    - Issue:
      - Usage of a non appropriate GC
      - Memory not customized

Concret use cases 2

- Client *ESB*
  - Some behaviors stop, we have to restart the ESB every week
    - Before: Stops every week / days for no reason
    - After: Still running after (can't stop Usain)
    - Issue:
      - Thread Deadlock
      - Ftp Socket not closed

What is the cost?

- Overhead usually below 1% (commercial says)
  - Low footprint on the java process by design,
  - Build into the runtime.
- Need some configuration for remote analysis
  - Specify the remote port and some other things :

```
-Dcom.sun.management.jmxremote.port=9999 \
-Dcom.sun.management.jmxremote.authenticate=false \
-Dcom.sun.management.jmxremote.ssl=false
```

$ Cheap $

Warning

Commercial features on **Java Mission Control** & **Flight Control**

- https://www.theregister.co.uk/2016/12/16/oracle_targets_java_users_non_compliance/

/!\ Do not use the commercial features /!

Other tools

- YourKit
  - https://www.yourkit.com/java/profiler/features/
- JProfile
  - https://www.ej-technologies.com/products/jprofiler/overview.html
- ...

Kisses

I love you mom & dad.

Resources

- Java Mission Control
  - Oracle documentation : [click](#)
  - Short Youtube video by James Weaver : [click](#)
- Visual VM
  - Visual VM documentation : [click](#)
- Remote configuration configuration
  - Oracle documentation : [click](#)
  - Stack Overflow quick config : [click](#)
- Code : LoadAndDeadlock
- For more, Google It