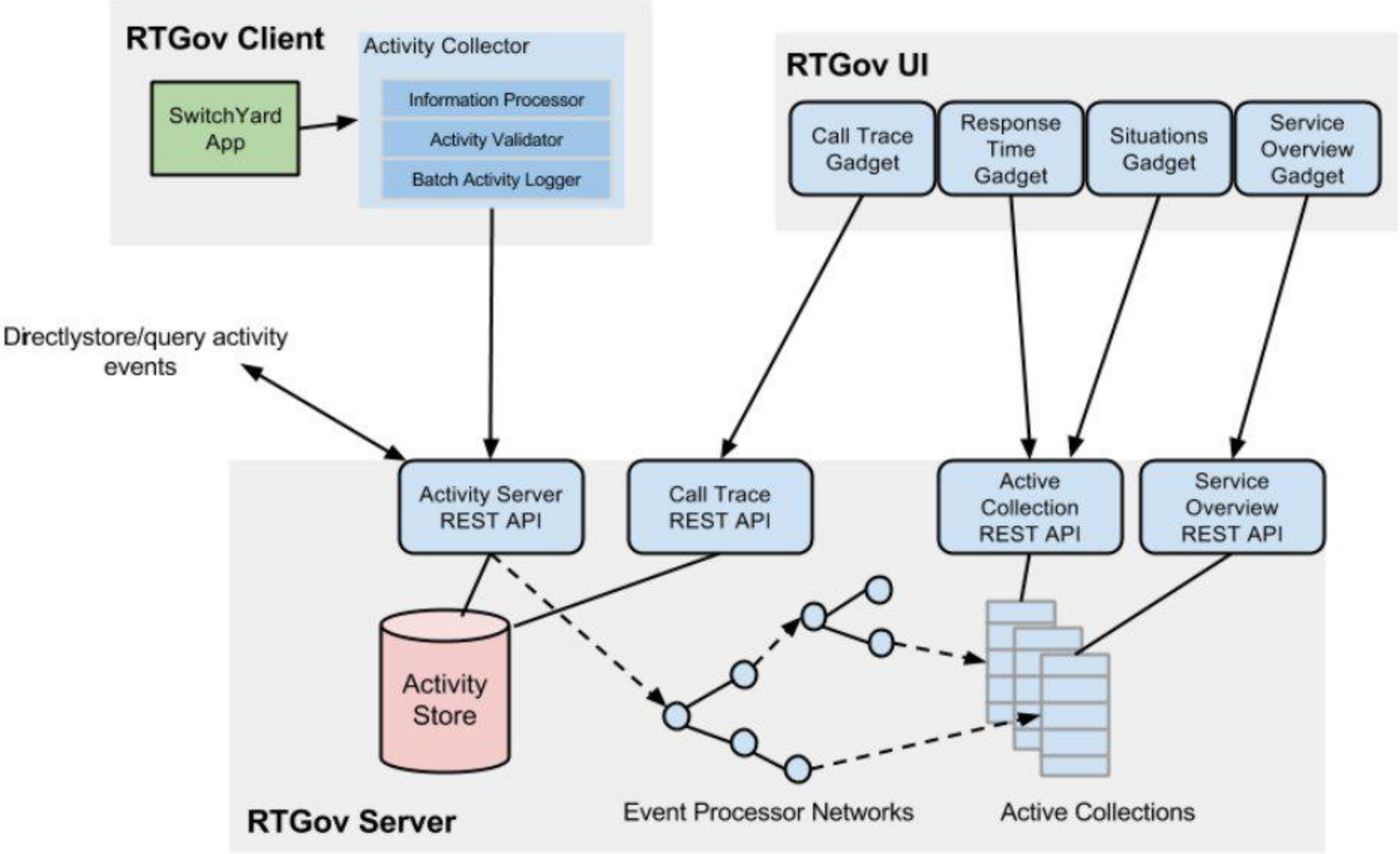
Lab 3

Run-Time Governance



FYI

- Activity Collector: Used to collect activity events.
- Activity Server and Store: Used for central activity event storage and querying.
- Event Processor Network: Used for generic event analysis to process the activity events.
- Active Collections: Used for active information management to post-process and cache information for end-user applications.

FYI

Note: The Policy Enforcement and Report Generation for the Home Loan application code is in process so we will review part of the code, concepts and Run Monitoring. The quickstart/overlord/rtgov quickstart with FSW walks through the Order Management Demo.

A deeper dive can be found in the RTGov section in *https://access.redhat.com/site/documentation/en-US/Red_Hat_JBoss_Fuse_Service_Works/6/pdf/Development_Guide_Volume_3_Governance/Red_Hat_JBoss_Fuse_Service_Works-6-Development_Guide_Volume_3_Governance-en-US.pdf*

Home Loan Interceptors:

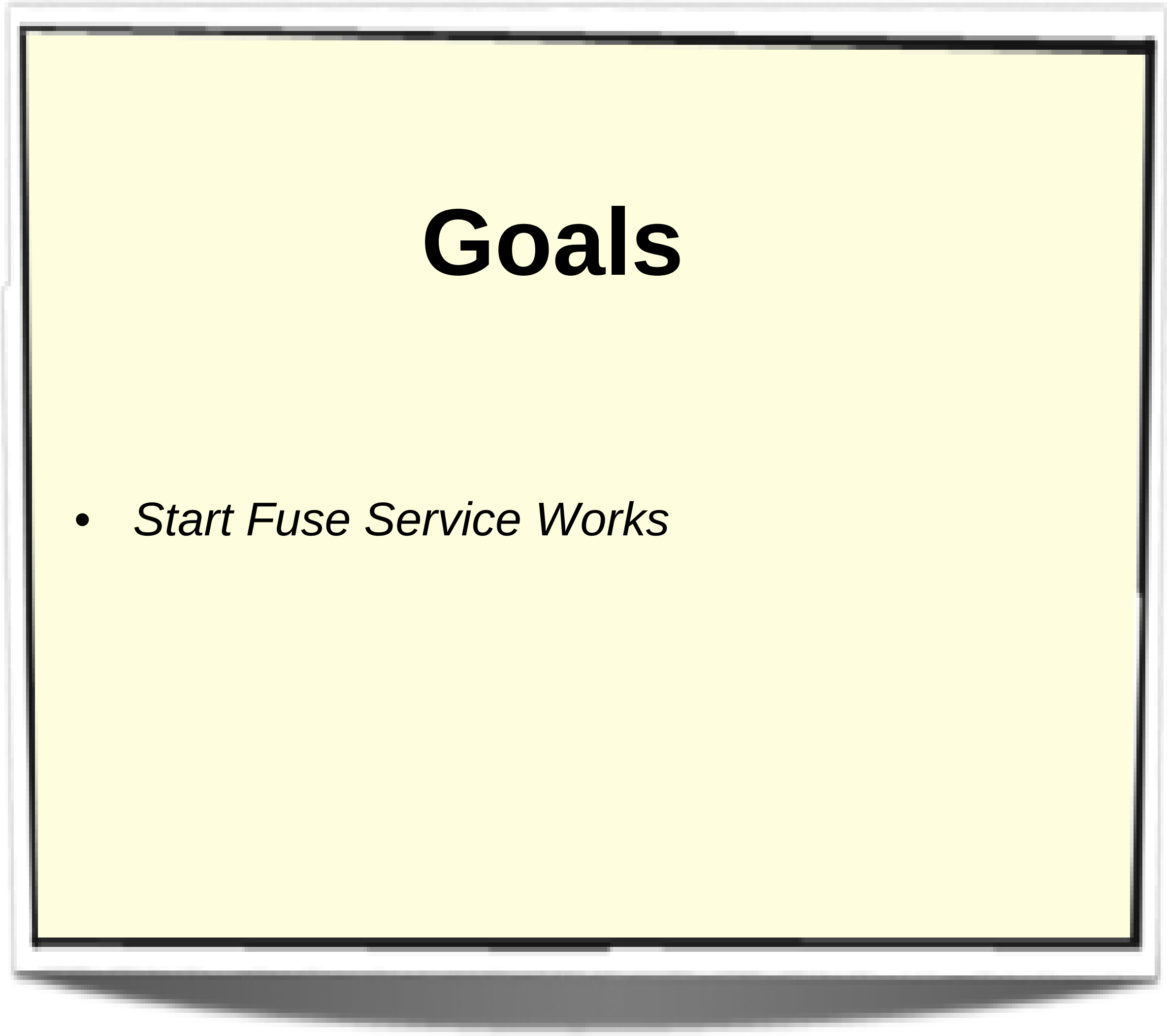
- Exchange Validator - This class is derived from an abstract base class that provides most of the required functionality for converting an Exchange message into an activity event.
- PolicyEnforcer – The policy enforcement is provided by a specific Switchyard Auditor implementation (PolicyEnforcer) that is included with the Home Loan application.

Lab Steps

- Step 0: Getting Started
- Step 1 : Configure RTGov
- Step 2 : Monitor a SLA
- Step 3 : Generate a SLA Report
- Step 4 : Review Synchronous Policy
- Step 5 : Review Asynchronous Policy

Step 0

Getting Started



Goals

- *Start Fuse Service Works*

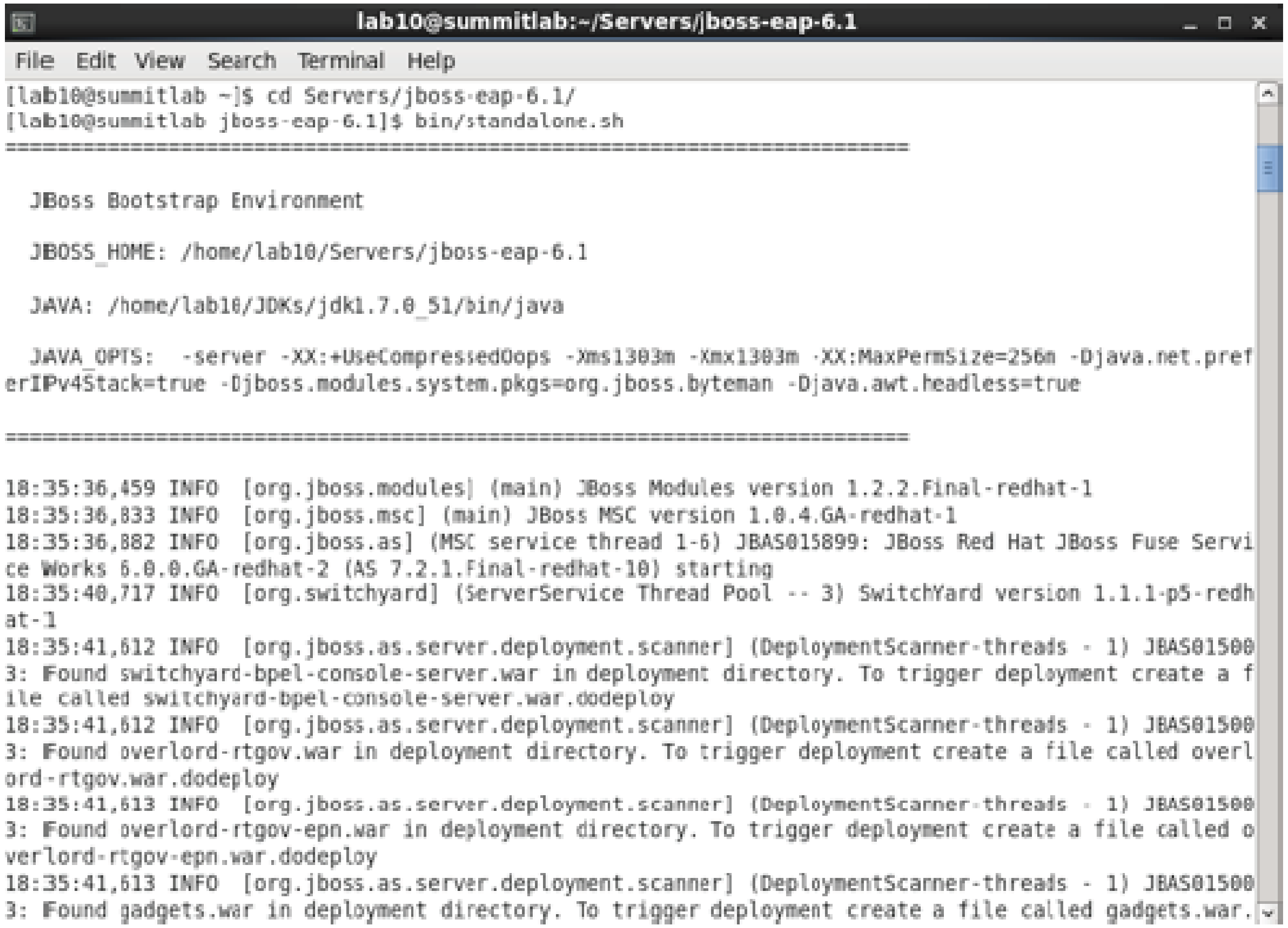
Getting Started

TODO

NOTE: Ignore this step if you already started the server.

1. Open a Terminal window
2. Navigate to the Server directory and start the server:

cd Servers/jboss-eap-6.1bin/standalone.sh


lab10@summitlab:~/Servers/jboss-eap-6.1
File Edit View Search Terminal Help

```
[lab10@summitlab ~]$ cd Servers/jboss-eap-6.1/
[lab10@summitlab jboss-eap-6.1]$ bin/standalone.sh
=========================================================================

  JBoss Bootstrap Environment

  JBOSS_HOME: /home/lab10/Servers/jboss-eap-6.1

  JAVA: /home/lab10/JDKs/jdk1.7.0_51/bin/java

  JAVA_OPTS:  -server -XX:+UseCompressedOops -Xms1303m -Xmx1303m -XX:MaxPermSize=256m -Djava.net.pref
erIPv4Stack=true -Djboss.modules.system.pkgs=org.jboss.byteman -Djava.awt.headless=true

=========================================================================

18:35:36,459 INFO  [org.jboss.modules] (main) JBoss Modules version 1.2.2.Final-redhat-1
18:35:36,833 INFO  [org.jboss.msc] (main) JBoss MSC version 1.0.4.GA-redhat-1
18:35:36,882 INFO  [org.jboss.as] (MSC service thread 1-6) JBAS015899: JBoss Red Hat JBoss Fuse Servi
ce Works 6.0.0.GA-redhat-2 (AS 7.2.1.Final-redhat-10) starting
18:35:40,717 INFO  [org.switchyard] (ServerService Thread Pool -- 3) SwitchYard version 1.1.1-p5-redh
at-1
18:35:41,612 INFO  [org.jboss.as.server.deployment.scanner] (DeploymentScanner-threads - 1) JBAS01500
3: Found switchyard-bpel-console-server.war in deployment directory. To trigger deployment create a f
ile called switchyard-bpel-console-server.war.dodeploy
18:35:41,612 INFO  [org.jboss.as.server.deployment.scanner] (DeploymentScanner-threads - 1) JBAS01500
3: Found overlord-rtgov.war in deployment directory. To trigger deployment create a file called overl
ord-rtgov.war.dodeploy
18:35:41,613 INFO  [org.jboss.as.server.deployment.scanner] (DeploymentScanner-threads - 1) JBAS01500
3: Found overlord-rtgov-epn.war in deployment directory. To trigger deployment create a file called o
verlord-rtgov-epn.war.dodeploy
18:35:41,613 INFO  [org.jboss.as.server.deployment.scanner] (DeploymentScanner-threads - 1) JBAS01500
3: Found gadgets.war in deployment directory. To trigger deployment create a file called gadgets.war.
```

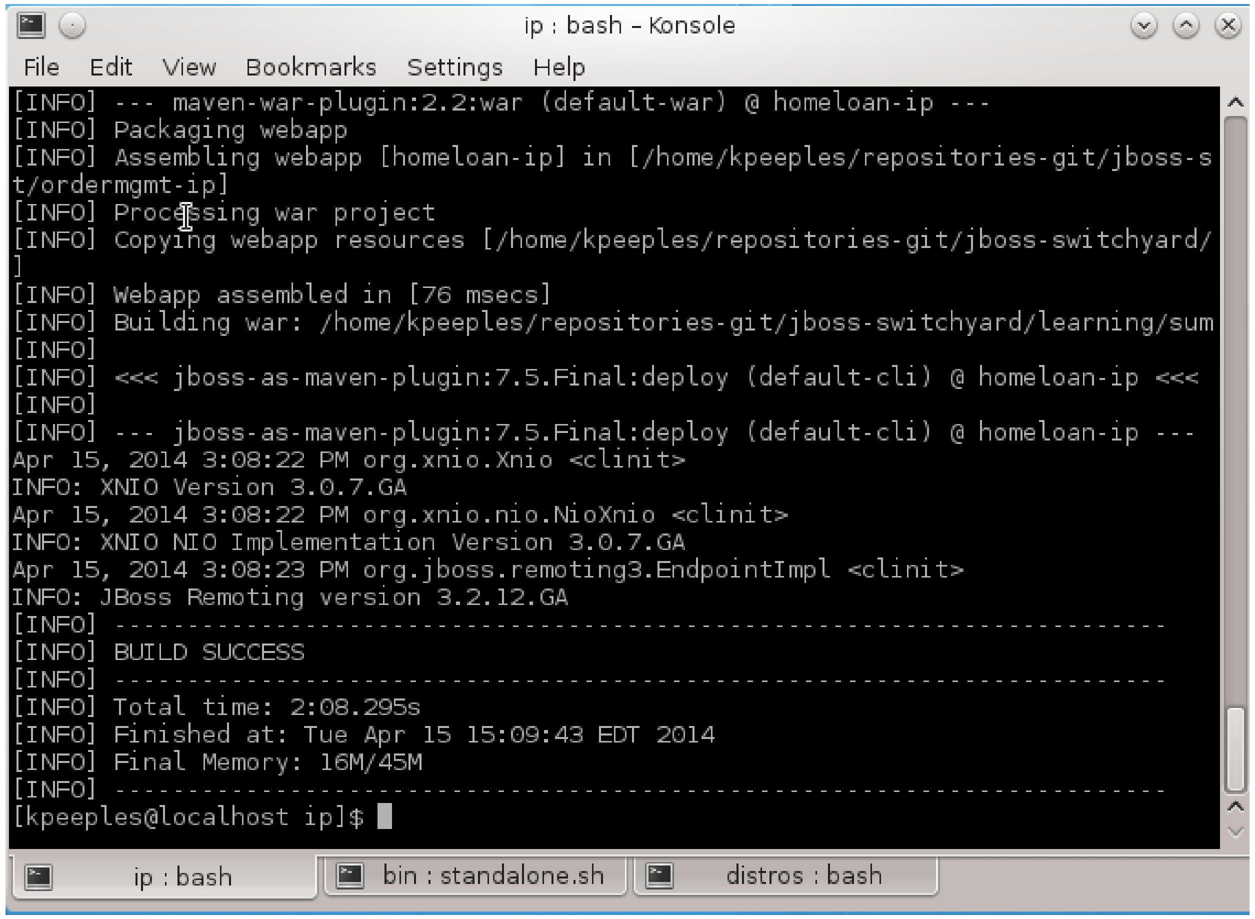
Getting Started

TODO

1. Open terminal
2. Change to lab3 folder
3. Change to the Information Processor folder
4. Run mvn jboss-as:deploy

FYI

For integrating an Activity Collector inside the execution environment, you can use Information processors to extract relevant context and property values from activity events.



```
[INFO] --- maven-war-plugin:2.2:war (default-war) @ homeloan-ip ---
[INFO] Packaging webapp
[INFO] Assembling webapp [homeloan-ip] in [/home/kpeeples/repositories-git/jboss-s
t/ordermgmt-ip]
[INFO] Processing war project
[INFO] Copying webapp resources [/home/kpeeples/repositories-git/jboss-switchyard/
]
[INFO] Webapp assembled in [76 msecs]
[INFO] Building war: /home/kpeeples/repositories-git/jboss-switchyard/learning/sum
[INFO]
[INFO] <<< jboss-as-maven-plugin:7.5.Final:deploy (default-cli) @ homeloan-ip <<<
[INFO]
[INFO] --- jboss-as-maven-plugin:7.5.Final:deploy (default-cli) @ homeloan-ip ---
Apr 15, 2014 3:08:22 PM org.xnio.Xnio <clinit>
INFO: XNIO Version 3.0.7.GA
Apr 15, 2014 3:08:22 PM org.xnio.nio.NioXnio <clinit>
INFO: XNIO NIO Implementation Version 3.0.7.GA
Apr 15, 2014 3:08:23 PM org.jboss.remoting3.EndpointImpl <clinit>
INFO: JBoss Remoting version 3.2.12.GA
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time: 2:08.295s
[INFO] Finished at: Tue Apr 15 15:09:43 EDT 2014
[INFO] Final Memory: 16M/45M
[INFO] ------------------------------------------------------------------------
[kpeeples@localhost ip]$
```

Step 1

Configure RTGov

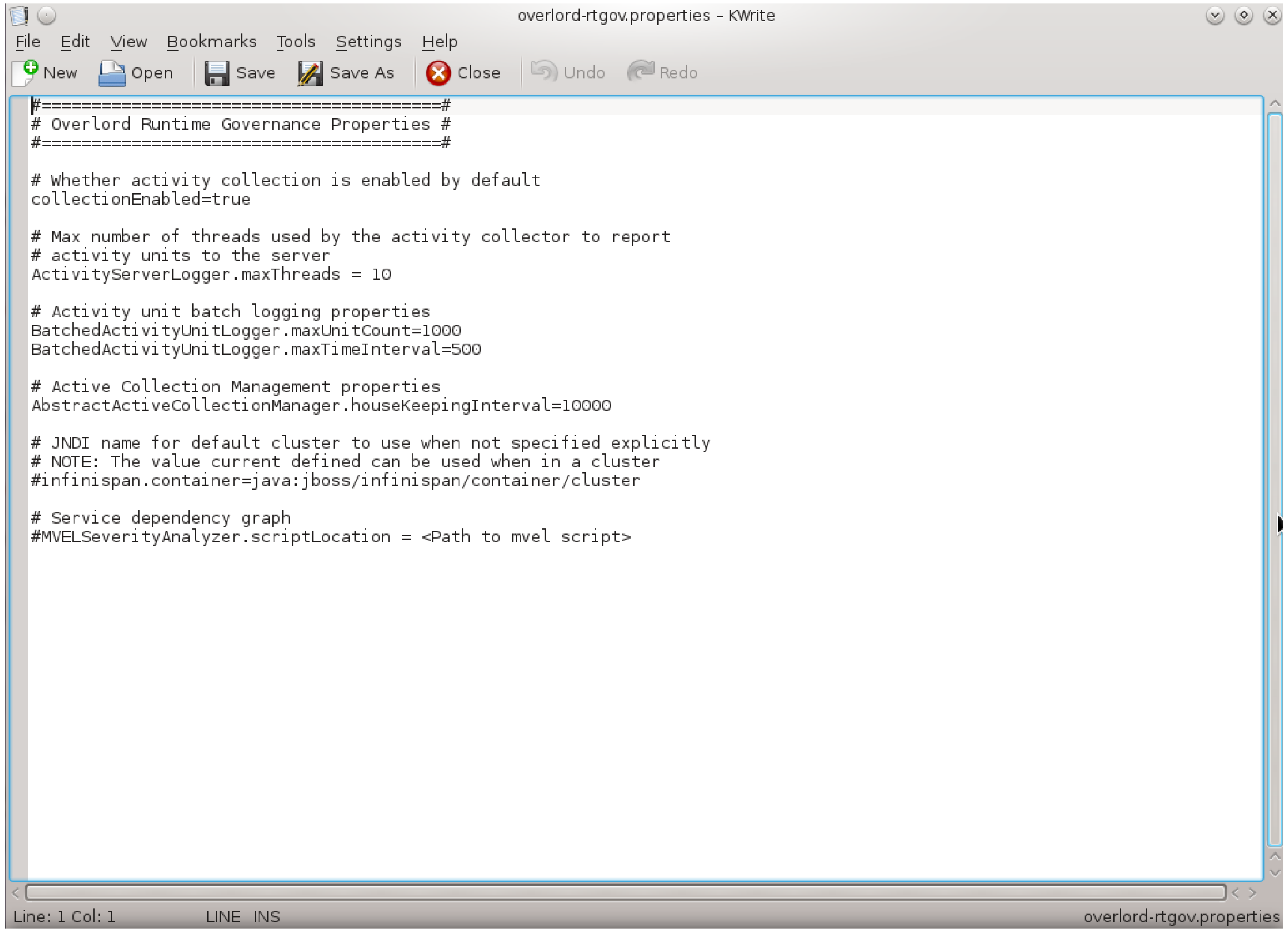
Goals

- *Enable Activity Collection*

Configure RTGov

TODO

1. Open your preferred text editor, ie Write or Kwrite
2. Browse to /home/lab10/Servers/jboss-eap-6.1/standalone/configuration and open overlord-rtgov.properties
3. Change the collectionEnabled property to true
4. Save your changes



```
#========================================#
# Overlord Runtime Governance Properties #
#========================================#

# Whether activity collection is enabled by default
collectionEnabled=true

# Max number of threads used by the activity collector to report
# activity units to the server
ActivityServerLogger.maxThreads = 10

# Activity unit batch logging properties
BatchedActivityUnitLogger.maxUnitCount=1000
BatchedActivityUnitLogger.maxTimeInterval=500

# Active Collection Management properties
AbstractActiveCollectionManager.houseKeepingInterval=10000

# JNDI name for default cluster to use when not specified explicitly
# NOTE: The value current defined can be used when in a cluster
#infinispan.container=java:jboss/infinispan/container/cluster

# Service dependency graph
#MVELSeverityAnalyzer.scriptLocation = <Path to mvel script>
```

Step 2

Monitor a SLA

Goals

- *Configure JBDS to deploy workflow*
- *Sign onto S-RAMP*
- *Check for deployment of workflow*

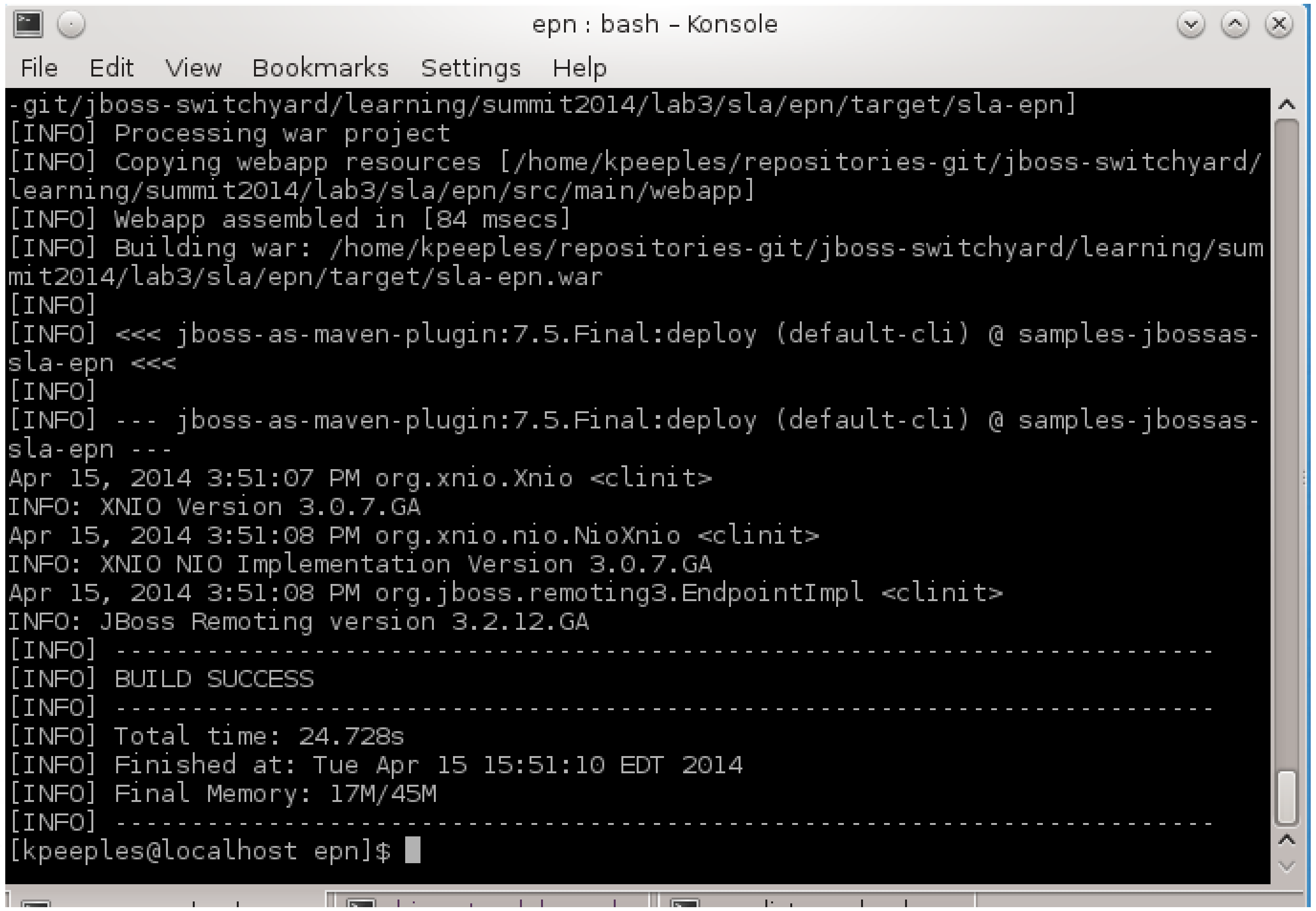
Monitor a SLA

FYI

An EPN (Event Processor Network) processes a stream of events through a network of linked nodes established to perform specific filtering, transformation or analysis tasks. You can define this network as an object model or specify it as a JSON representation for packaging in a suitable form, and subsequently de-serialized when deployed to the Run-Time Governance server.

TODO

1. Open a terminal
2. browse to lab3/sla/epn
3. deploy epn with mvn jboss-as:deploy



```
-git/jboss-switchyard/learning/summit2014/lab3/sla/epn/target/sla-epn]
[INFO] Processing war project
[INFO] Copying webapp resources [/home/kpeeples/repositories-git/jboss-switchyard/
learning/summit2014/lab3/sla/epn/src/main/webapp]
[INFO] Webapp assembled in [84 msecs]
[INFO] Building war: /home/kpeeples/repositories-git/jboss-switchyard/learning/sum
mit2014/lab3/sla/epn/target/sla-epn.war
[INFO]
[INFO] <<< jboss-as-maven-plugin:7.5.Final:deploy (default-cli) @ samples-jbossas-
sla-epn <<<
[INFO]
[INFO] --- jboss-as-maven-plugin:7.5.Final:deploy (default-cli) @ samples-jbossas-
sla-epn ---
Apr 15, 2014 3:51:07 PM org.xnio.Xnio <clinit>
INFO: XNIO Version 3.0.7.GA
Apr 15, 2014 3:51:08 PM org.xnio.nio.NioXnio <clinit>
INFO: XNIO NIO Implementation Version 3.0.7.GA
Apr 15, 2014 3:51:08 PM org.jboss.remoting3.EndpointImpl <clinit>
INFO: JBoss Remoting version 3.2.12.GA
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time: 24.728s
[INFO] Finished at: Tue Apr 15 15:51:10 EDT 2014
[INFO] Final Memory: 17M/45M
[INFO] ------------------------------------------------------------------------
[kpeeples@localhost epn]$
```

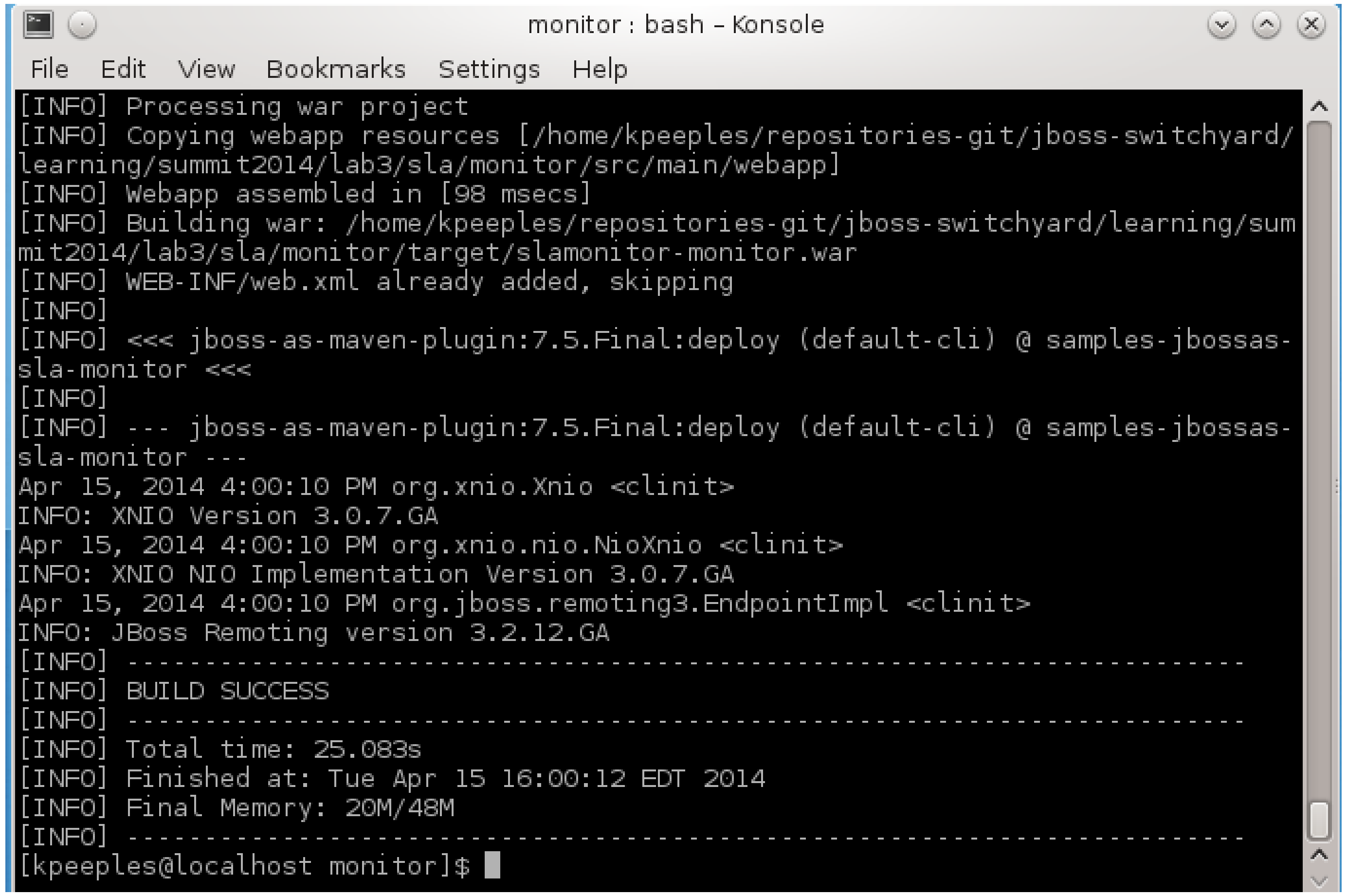
Monitor a SLA

FYI

Service Level Agreements can be policed using rules defined in an Event Processor Network, and reporting to end users using the pre-configured "Situations" active collection. T he rule used in this example is detecting whether the response time associated with an operation on a service exceeds a particular level. However more complex temporal rules could be defined to identify the latency between any two points in a business transaction flow.

TODO

1. Open a terminal
2. browse to lab3/sla/monitor
3. deploy monitor with mvn jboss-as:deploy



```
[INFO] Processing war project
[INFO] Copying webapp resources [/home/kpeeples/repositories-git/jboss-switchyard/
learning/summit2014/lab3/sla/monitor/src/main/webapp]
[INFO] Webapp assembled in [98 msecs]
[INFO] Building war: /home/kpeeples/repositories-git/jboss-switchyard/learning/sum
mit2014/lab3/sla/monitor/target/slamonitor-monitor.war
[INFO] WEB-INF/web.xml already added, skipping
[INFO]
[INFO] <<< jboss-as-maven-plugin:7.5.Final:deploy (default-cli) @ samples-jbossas-
sla-monitor <<<
[INFO]
[INFO] --- jboss-as-maven-plugin:7.5.Final:deploy (default-cli) @ samples-jbossas-
sla-monitor ---
Apr 15, 2014 4:00:10 PM org.xnio.Xnio <clinit>
INFO: XNIO Version 3.0.7.GA
Apr 15, 2014 4:00:10 PM org.xnio.nio.NioXnio <clinit>
INFO: XNIO NIO Implementation Version 3.0.7.GA
Apr 15, 2014 4:00:10 PM org.jboss.remoting3.EndpointImpl <clinit>
INFO: JBoss Remoting version 3.2.12.GA
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time: 25.083s
[INFO] Finished at: Tue Apr 15 16:00:12 EDT 2014
[INFO] Final Memory: 20M/48M
[INFO] ------------------------------------------------------------------------
[kpeeples@localhost monitor]$ 
```

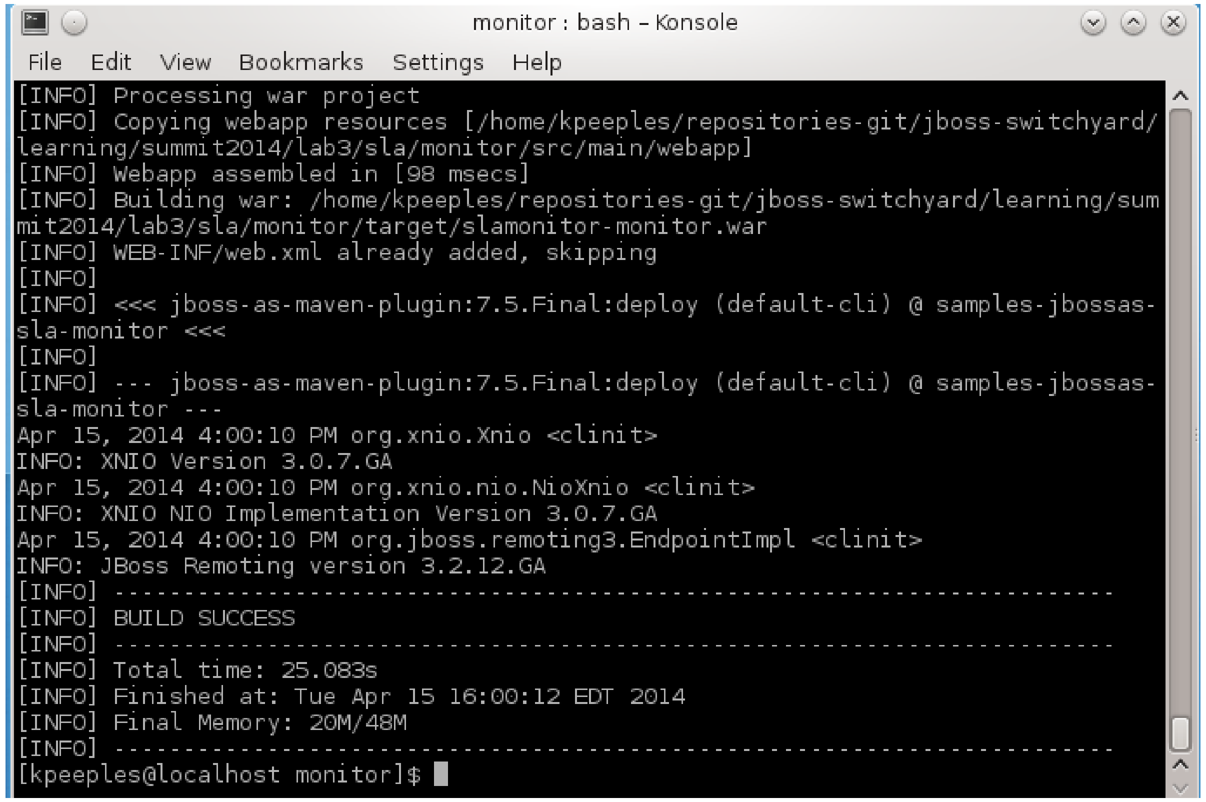
Monitor a SLA

FYI

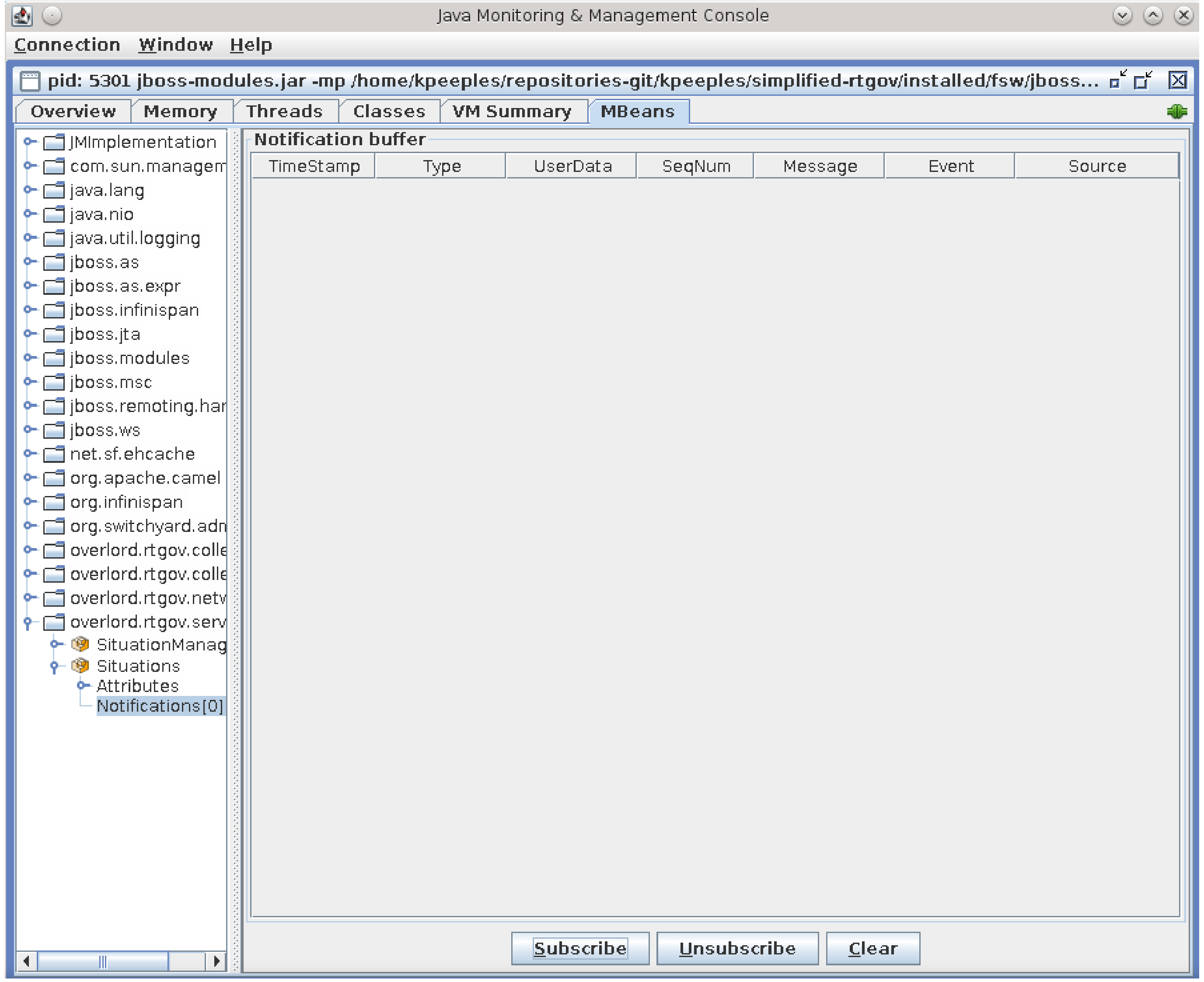
The "out of the box" active collection configuration is pre-initialized with a collection for the **org.overlord.rtgov.analytics.situation.Situation** objects, subscribing to the "Situations“ subject from the Event Processor Network. Therefore any detected SLA violations will automatically be stored in this collection (accessible via a REST ful service), and reported to the associated JMX notifier.

TODO

1. Open a terminal
2. Open jconsole
3. Choose jboss-modules process
4. Choose insecure
5. Click mbeans tab
6. Browse to the notifications in overlord.rtgov.services in Situations
7. Click subscribe
8. Send a home loan soap message with mvn –Psoap from lab2
9. Notice the server console
10. Notice the Violation in the JConsole



```
[INFO] Processing war project
[INFO] Copying webapp resources [/home/kpeeples/repositories-git/jboss-switchyard/
learning/summit2014/lab3/sla/monitor/src/main/webapp]
[INFO] Webapp assembled in [98 msecs]
[INFO] Building war: /home/kpeeples/repositories-git/jboss-switchyard/learning/sum
mit2014/lab3/sla/monitor/target/slamonitor-monitor.war
[INFO] WEB-INF/web.xml already added, skipping
[INFO]
[INFO] <<< jboss-as-maven-plugin:7.5.Final:deploy (default-cli) @ samples-jbossas-
sla-monitor <<<
[INFO]
[INFO] --- jboss-as-maven-plugin:7.5.Final:deploy (default-cli) @ samples-jbossas-
sla-monitor ---
Apr 15, 2014 4:00:10 PM org.xnio.Xnio <clinit>
INFO: XNIO Version 3.0.7.GA
Apr 15, 2014 4:00:10 PM org.xnio.nio.NioXnio <clinit>
INFO: XNIO NIO Implementation Version 3.0.7.GA
Apr 15, 2014 4:00:10 PM org.jboss.remoting3.EndpointImpl <clinit>
INFO: JBoss Remoting version 3.2.12.GA
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time: 25.083s
[INFO] Finished at: Tue Apr 15 16:00:12 EDT 2014
[INFO] Final Memory: 20M/48M
[INFO] ------------------------------------------------------------------------
[kpeeples@localhost monitor]$ 
```



Monitor a SLA

FYI

You can also request the list of response time information from the same custom service, using the URL http://localhost:8080/slamonitor-monitor/monitor/responseTimes?operation=intake

TODO

1. Open a browser
2. Browse to response time for operations
3. *http://localhost:8080/slamonitor-monitor/monitor/responseTimes?operation=intake*

Step 3

Generate a Report

Goals

Generate A Report

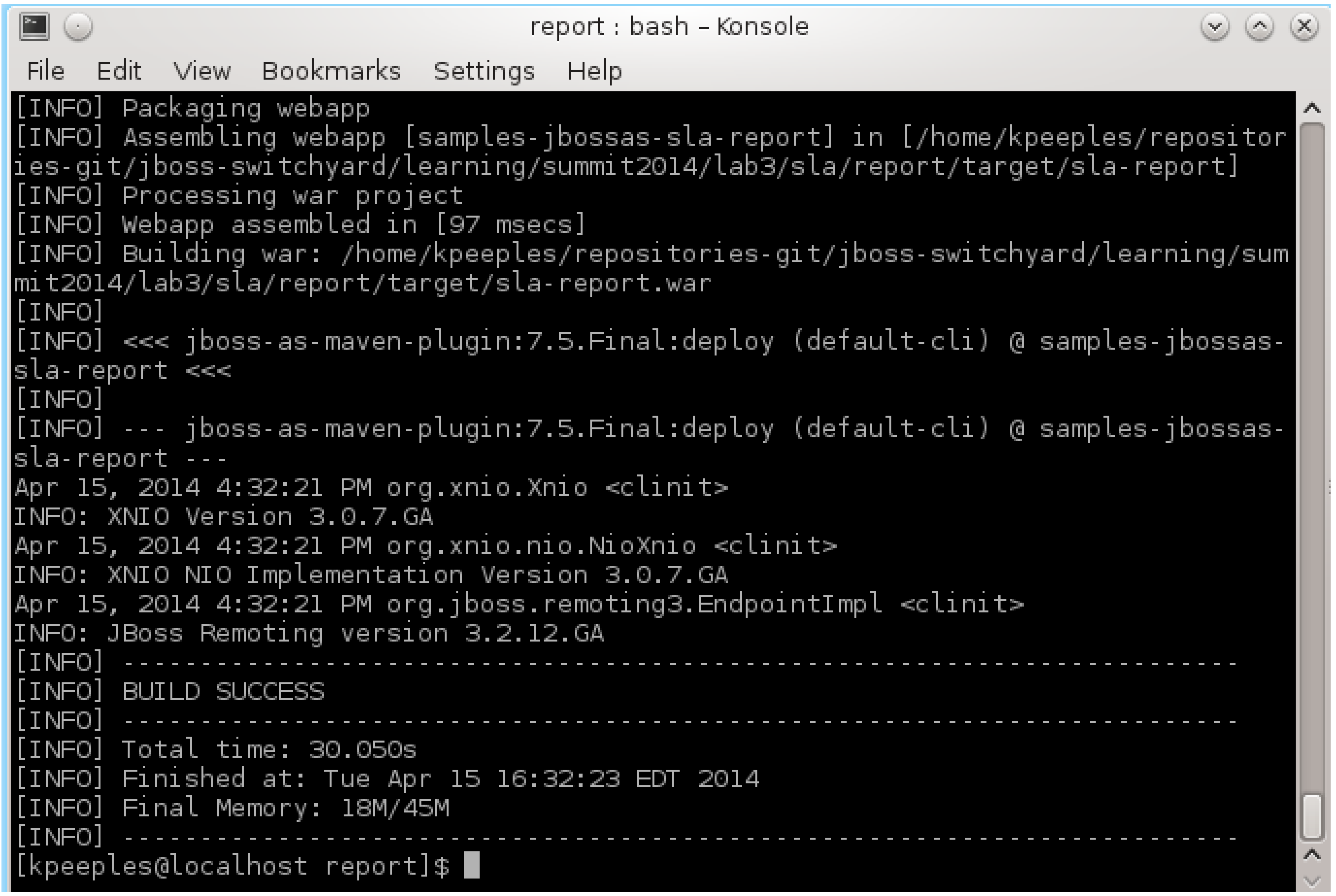
Generate a Report

FYI

The report can be accessed via the REST interface

TODO

1. *Open a terminal*
2. *Change to lab3/sla/report*
3. *Deploy to jboss with mvn jboss-as:deploy*



```
[INFO] Packaging webapp
[INFO] Assembling webapp [samples-jbossas-sla-report] in [/home/kpeeples/repositor
ies-git/jboss-switchyard/learning/summit2014/lab3/sla/report/target/sla-report]
[INFO] Processing war project
[INFO] Webapp assembled in [97 msecs]
[INFO] Building war: /home/kpeeples/repositories-git/jboss-switchyard/learning/sum
mit2014/lab3/sla/report/target/sla-report.war
[INFO]
[INFO] <<< jboss-as-maven-plugin:7.5.Final:deploy (default-cli) @ samples-jbossas-
sla-report <<<
[INFO]
[INFO] --- jboss-as-maven-plugin:7.5.Final:deploy (default-cli) @ samples-jbossas-
sla-report ---
Apr 15, 2014 4:32:21 PM org.xnio.Xnio <clinit>
INFO: XNIO Version 3.0.7.GA
Apr 15, 2014 4:32:21 PM org.xnio.nio.NioXnio <clinit>
INFO: XNIO NIO Implementation Version 3.0.7.GA
Apr 15, 2014 4:32:21 PM org.jboss.remoting3.EndpointImpl <clinit>
INFO: JBoss Remoting version 3.2.12.GA
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time: 30.050s
[INFO] Finished at: Tue Apr 15 16:32:23 EDT 2014
[INFO] Final Memory: 18M/45M
[INFO] ------------------------------------------------------------------------
[kpeeples@localhost report]$
```

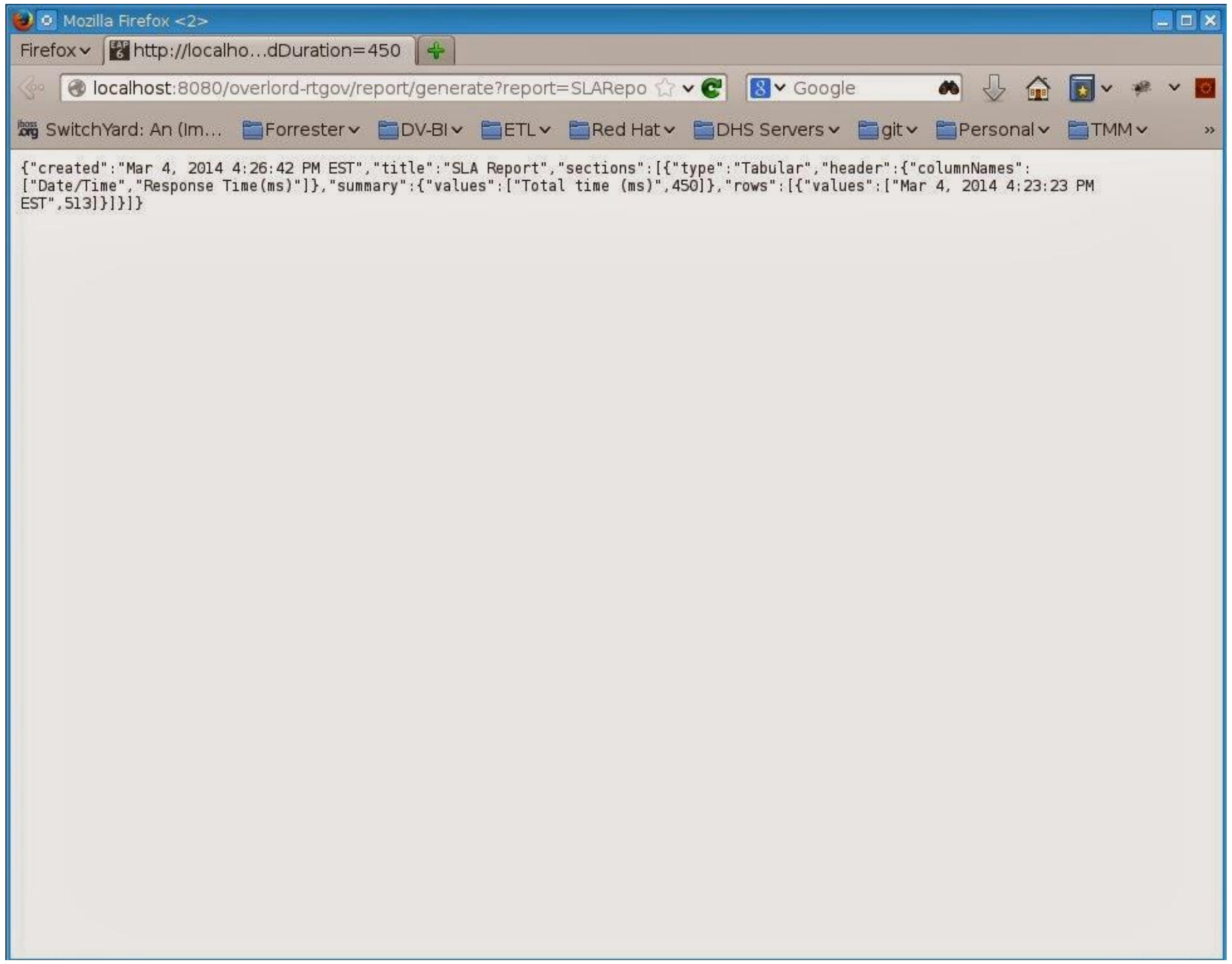
Generate a Report

FYI

This is the example from the Orders Demo. The Home Loan generate will show empty at the moment.

TODO

1. *Open a terminal and change to lab3//homeloan*
2. *Send multiple soap messages with mvn –Psoap from lab2*
3. *Open a browser*
4. *Browse to http://localhost:8080overlordrtgovreportgenerateeport=SLAReport&startDay=1&startMonth=1&startYear=2013&endDay=31&endMonth=12&endYear=2013&maxResponseTime=400&averagedDuration=450*



localhost:8080/overlord-rtgov/report/generate?report=SLARepo

```
{"created":"Mar 4, 2014 4:26:42 PM EST","title":"SLA Report","sections":[{"type":"Tabular","header":{"columnNames":
["Date/Time","Response Time(ms)"]},"summary":{"values":["Total time (ms)",450]},"rows":[{"values":["Mar 4, 2014 4:23:23 PM
EST",513]}]}]}
```

Step 4

Review Synchronous Policy

Goals

- *Review the concept of Synchronous Policy*

Review a Synchronous Policy

FYI

The Synchronous Enforcement approach shows how a business policy can be implemented in a synchronous (or inline) manner, where the decision is taken immediate, and can therefore be used to influence the current business transaction. A policy enforcement mechanism can be used with the Activity Validator mechanism, to immediately evaluate the business policy and (if appropriate) block the business transaction.

For Example, if two requests are received within two seconds of each other then the ones after the first are blocked.

Step 5

Review Asynchronous Policy

Goals

- *Review the concept of Asynchronous Policy*

Review a Asynchronous Policy

FYI

The Asynchronous Enforcement approach shows how a business policy can be implemented in an asynchronous (or out-of-band) manner, where the decision is taken after the fact, and can therefore only be used to influence future business transactions.

For Example, A customer has a debt threshold of 150. If requests have totaled more than the threshold any subsequent request we will receive a SOAP fault from the server. T his is due to the fact that the PolicyEnforcer auditor has intercepted the request, and detected that the customer is now suspended.

Lab 3 Complete!