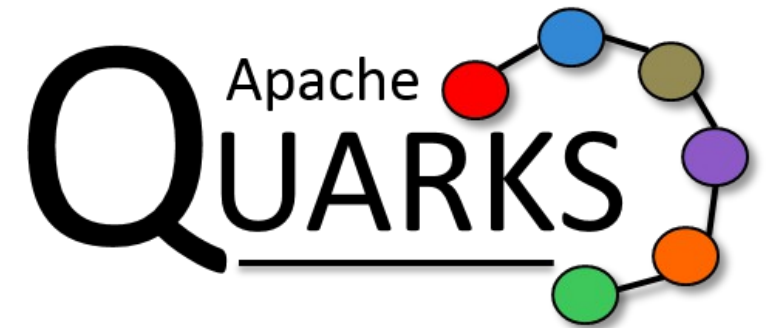


Apache Quarks for Developers

April 13, 2016



Apache Quarks is currently undergoing Incubation at the Apache Software Foundation.

Quarks Development Console - Topics



- Who am I?
 - ▣ Susan Cline, Quarks committer, IBM employee
- Why use the Quarks console?
- Adding the console to a Quarks application
- Views in the console
- Demo
- What's next?
- Questions / References

Why use the Quarks console?



-
- Used during development of a Quarks application
 - Shows these features of an application:
 - ▣ The topology
 - ▣ The kind of oplets (vertices)
 - ▣ The streams (edges)
 - ▣ Stream tags
 - Tuple counts
 - Metrics
 - ▣ If present, shows a counter and rate meter as a bar graph

Adding the console to a Quarks app



- Overview of a Quarks application:
 - ❏ A provider class is used to create a topology
 - ❏ A provider is used to submit the topology as a job
 - ❏ The class `DevelopmentProvider` extends `DirectProvider` and includes services:
 - Embed a Jetty web server in the same JVM as the running application
 - Starts the Jetty server
 - Configures a web application - 'the console'
 - Provides metric counters to enable measurement of tuple counts

Adding the console to a Quarkus app



Sample code from an example 'ConsoleWaterDetector' class:

```
public class ConsoleWaterDetector {
    public static void main(String[] args) throws Exception {
        DirectProvider dp = new DevelopmentProvider();
        System.out.println(dp.getServices().getService(HttpServer.class).getConsoleUrl());
        Topology wellTopology = dp.newTopology("ConsoleWaterDetector");
        ... add streams to the topology ...
        dp.submit(wellTopology);
    }
}
```

Views in the console



- Topology graph views
 - ❏ Static flow – shows the topology with no changes
 - ❏ Oplet kind – colors the graph by oplet kind
 - ❏ Tuple count – colors the oplets by tuple count
 - ❏ Stream tags – appears in all views if stream tags are added to the quarks app.
Colors the streams / edges
- Metrics:
 - ❏ Tuple counts – shown as a bar graph
 - ❏ Rate meters – shown as a bar graph
 - ❏ Single oplet counters – shown as a line graph

Demo



- Sample Quarks application, ConsoleWaterDetector
 - ❏ A county agency needs to monitor resident's wells for certain chemicals/pollutants
 - ❏ Each well has 4 sensor types: temp, ecoli, lead and acidity
 - ❏ Every second each well's sensor is read and union'ed into one stream
 - ❏ If any sensor's reading from the well is out of range the tuples are passed on
 - ❏ One of the wells NEVER has any bad readings
 - ❏ The wells sensor readings are then split again, so it's apparent which well the bad reading came from, and the sensor type of the bad reading.

Demo



- Quarks applications that embed the console require console.war to be built – the web app
 - ❏ To build console.war run 'ant' from the top level of the git repository
- To run the application 'ConsoleWaterDetector' from the command line:
 - ❏ `$java -cp target/java8/samples/lib/quarks.samples.console.jar quarks.samples.console.ConsoleWaterDetector`
- To run it from Eclipse, make sure console.war is built then right click: Run as Java Application
- Explanation of the application / instructions:
 - ❏ <http://quarks.incubator.apache.org/docs/console.html>

What's next for the console?



- Requesting feedback from users or potential users
 - ❏ What types of views would you like to see?
 - ❏ What kind of graph would you like to see?
 - ❏ What information do you need to help you understand a running application?
- Current thoughts on enhancements to the console:
 - ❏ Ability to zoom in on a portion of the graph
 - ❏ Ability to show actual tuple data flowing in a stream
 - ❏ Modify sizing of circles (vertices) representing oplets to be more consistent

Questions / Reference



- Quarks incubator project
 - 📦 <http://incubator.apache.org/projects/quarks.html>
- Quarks source:
 - 📦 ASF: <https://git-wip-us.apache.org/repos/asf?p=incubator-quarks.git>
 - 📦 Github mirror: <https://github.com/apache/incubator-quarks>
- Bug tracking (issues):
 - 📦 <https://issues.apache.org/jira/browse/QUARKS/>
- Quarks console – ConsoleWaterDetector Example
 - 📦 <http://quarks.incubator.apache.org/docs/console.html>
- Mailing list archive for dev:
 - 📦 http://mail-archives.apache.org/mod_mbox/incubator-quarks-dev/