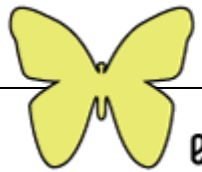
Developing Frameworks for Apache Mesos



elodina.net

Joe Stein

CEO of Elodina http://www.elodina.net/ a big data as a service platform built on top open source software. The Elodina platform enables customers to analyze data streams and programmatically react to the results in real-time. We solve today's data analytics needs by providing the tools and support necessary to utilize open source technologies.

As users, contributors and committers, Elodina also provides support for frameworks that run on Mesos including Apache Kafka, Exhibitor (Zookeeper), Apache Storm, Apache Cassandra and a whole lot more!

LinkedIn: http://linkedin.com/in/charmalloc
Twitter : @allthingshadoop

Overview

- What goes on Mesos?
- Framework = (Scheduler + Executor)
- What does it look like without a scheduler?
- We can do better using a scheduler!
- Schedulers working together.
- Framework API & Examples.

What goes on Mesos?


MESOS
ALL THE THINGS
memegenerator.net

Many, many things

kafka

STORM

Spark

Cassandra

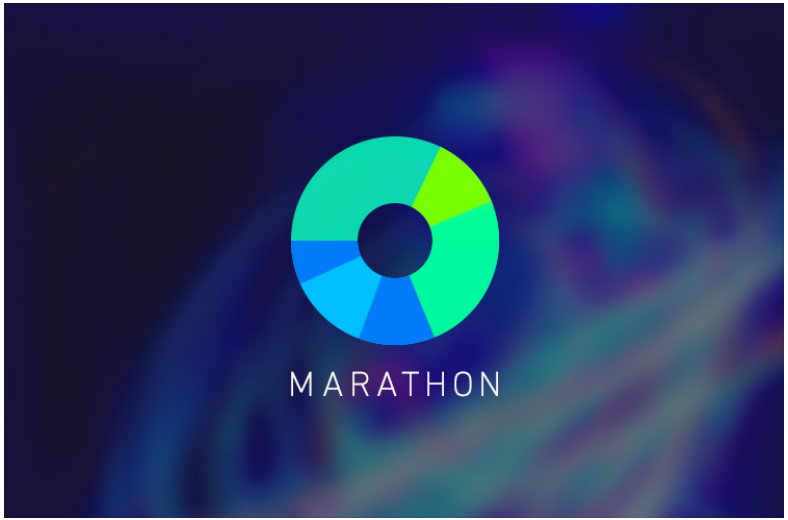
docker

memsql

MySQL

accumulo

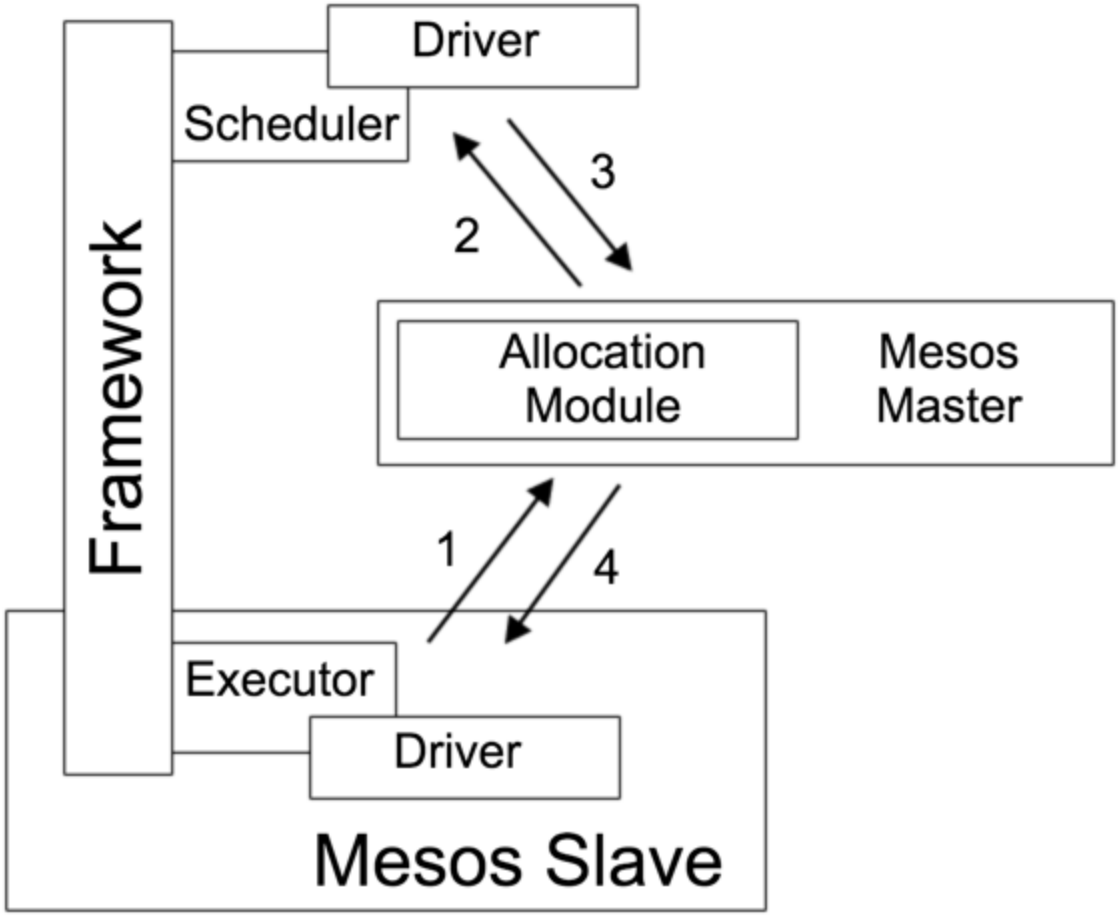
Anything can be run on Mesos with Marathon or Aurora



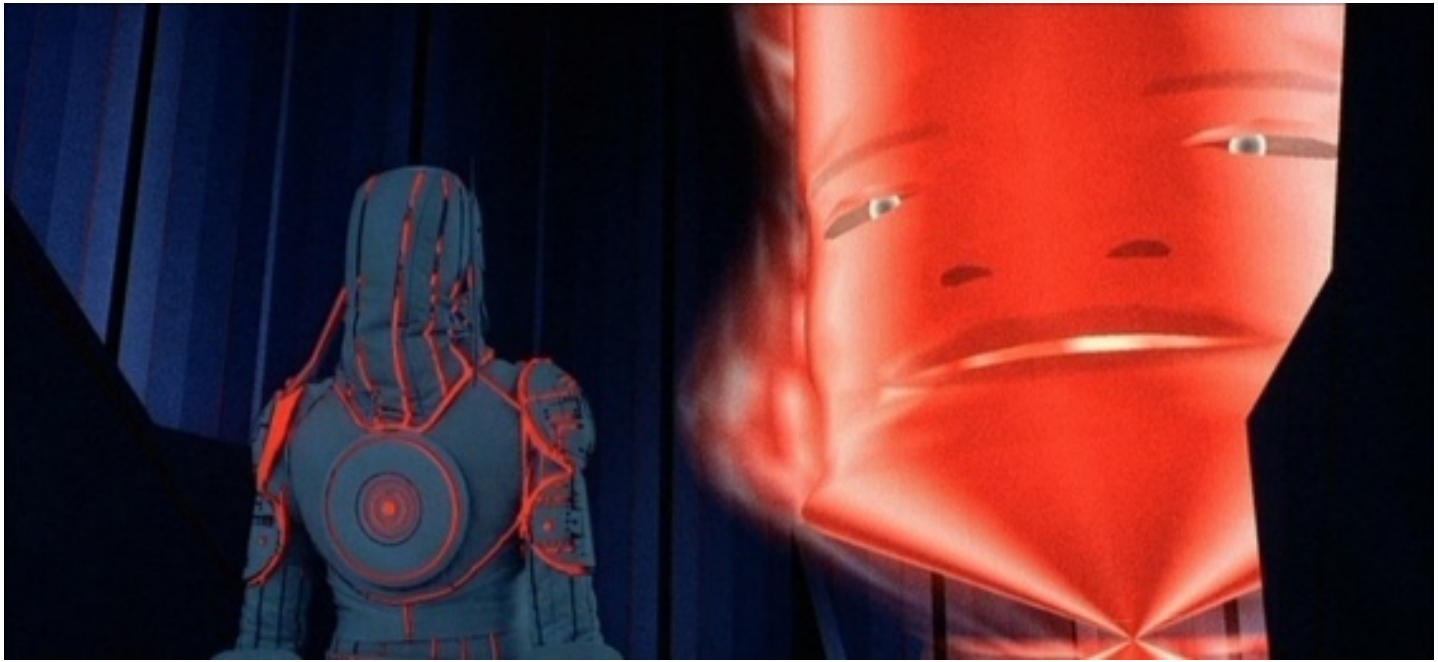
https://mesosphere.github.io/marathon/

http://aurora.apache.org/

Framework = (Scheduler + Executor)

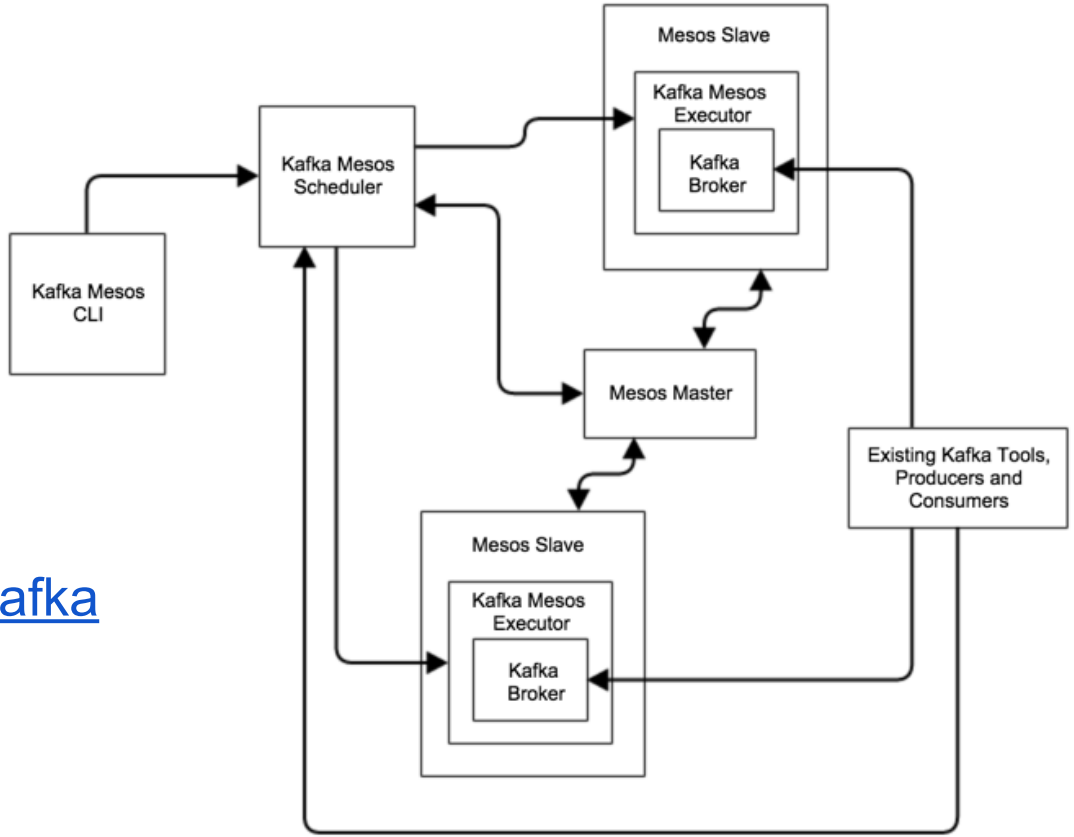

Framework
Driver
Scheduler
3
2
Allocation Module
Mesos Master
1
4
Executor
Driver
Mesos Slave

Scheduler



Executors

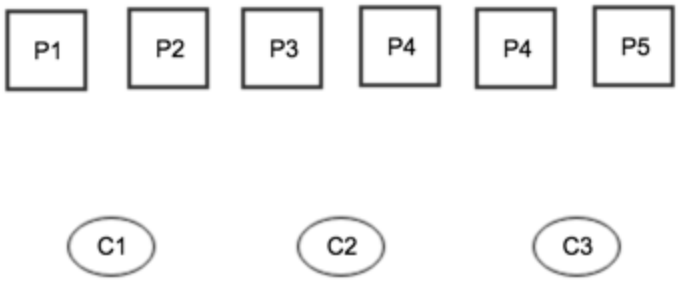
mesos/kafka



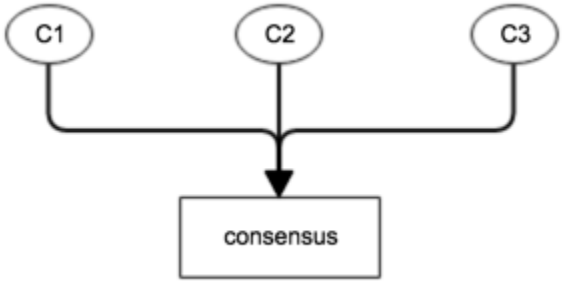
https://github.com/mesos/kafka

What does it look like without a scheduler?

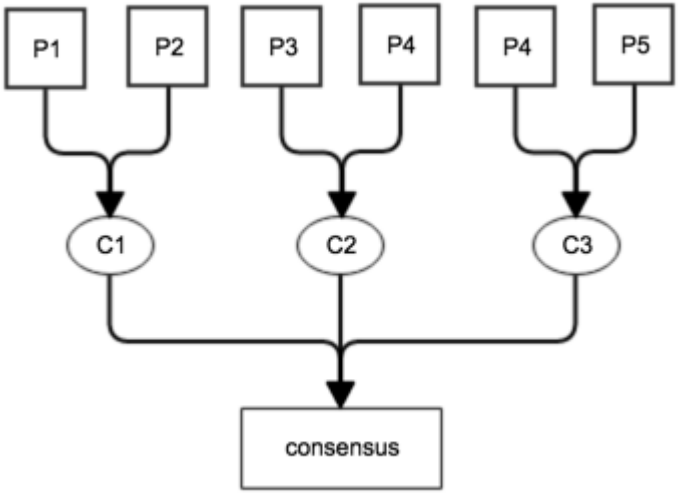
without a scheduler



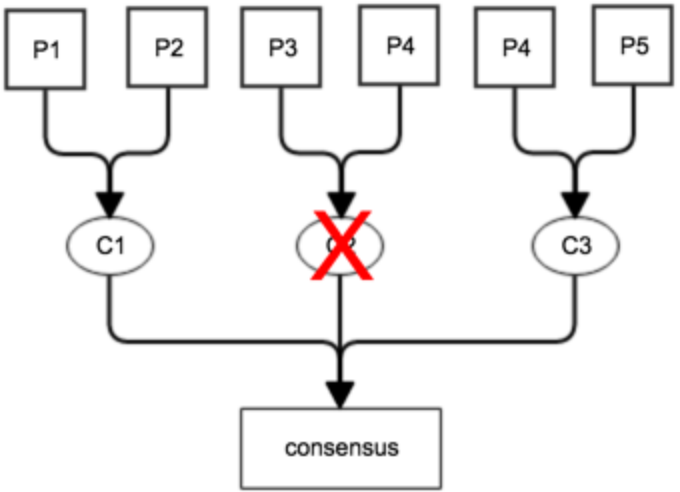
without a scheduler



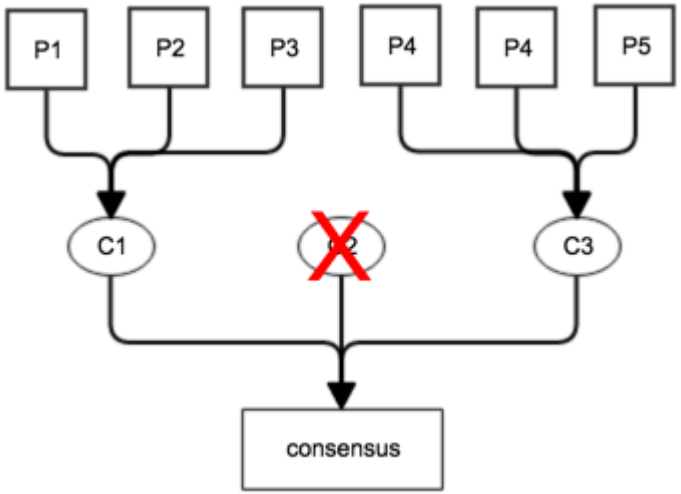
without a scheduler



without a scheduler

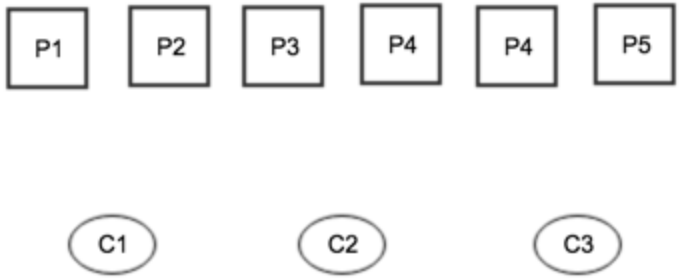


without a scheduler

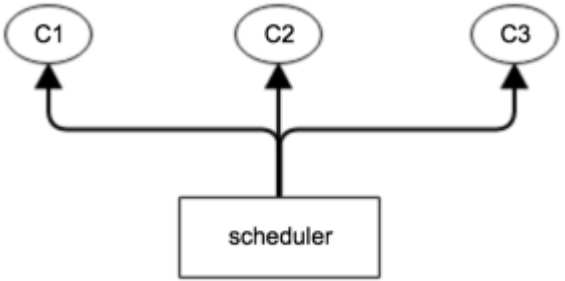


We can do better using a scheduler

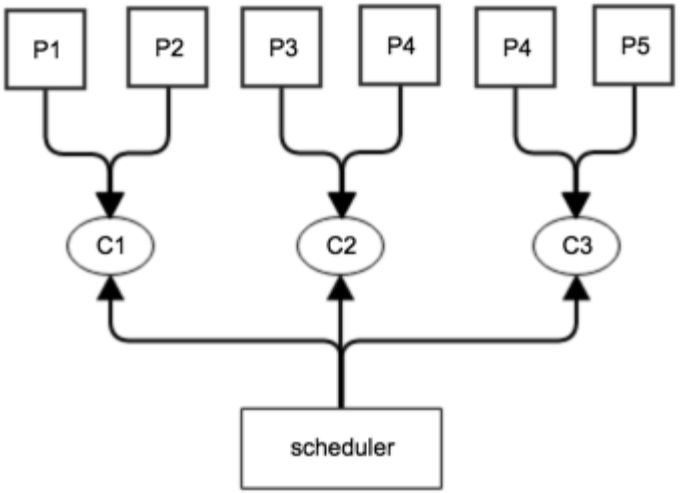
with a scheduler



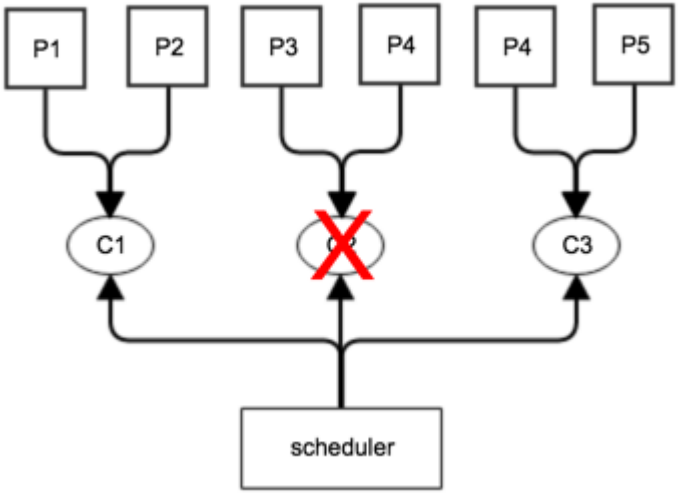
with a scheduler



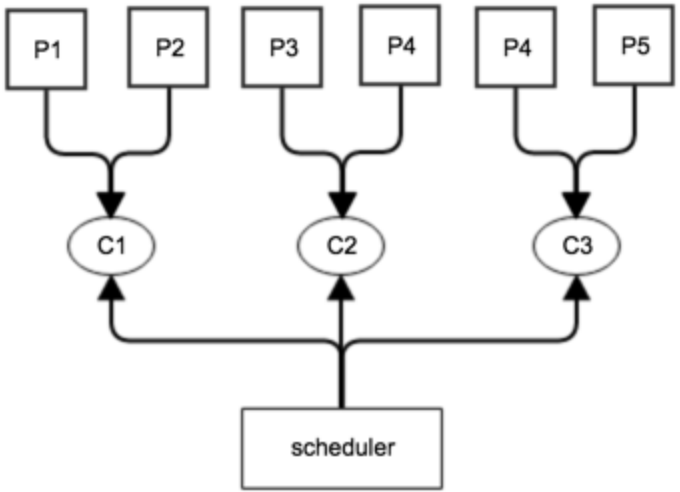
with a scheduler



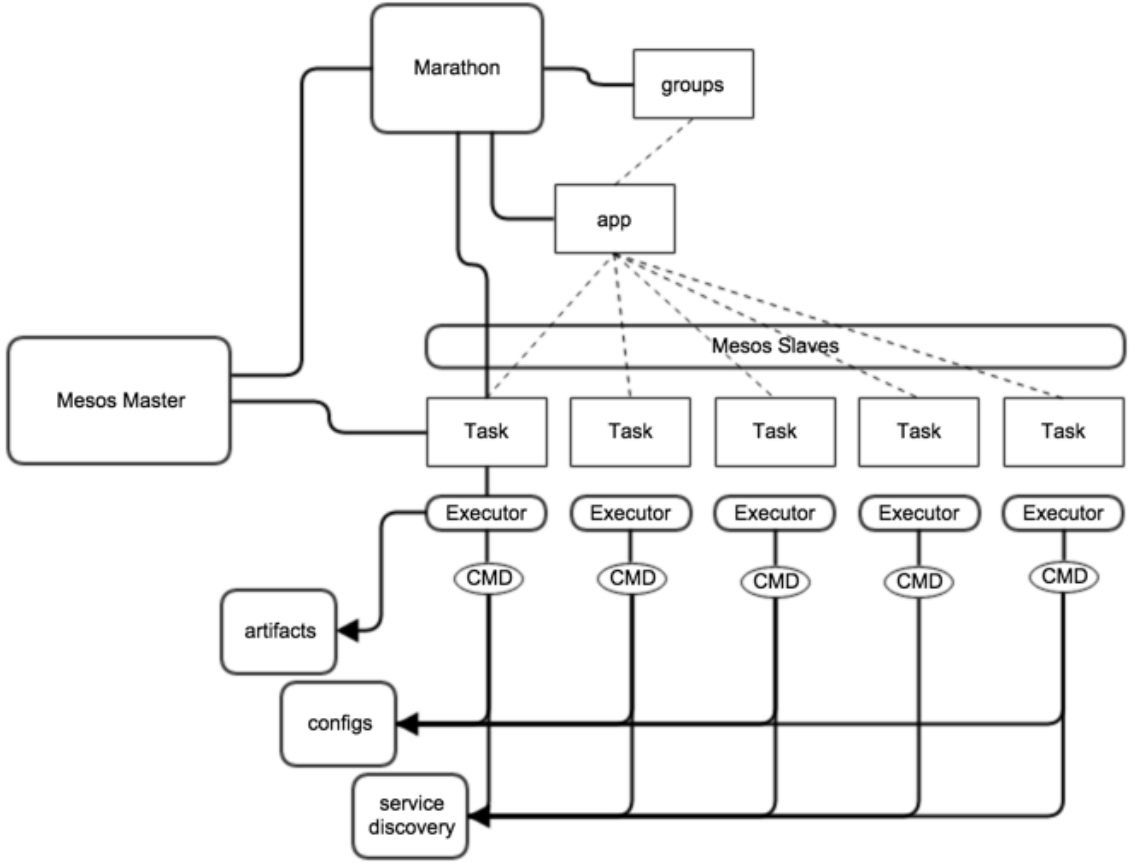
with a scheduler

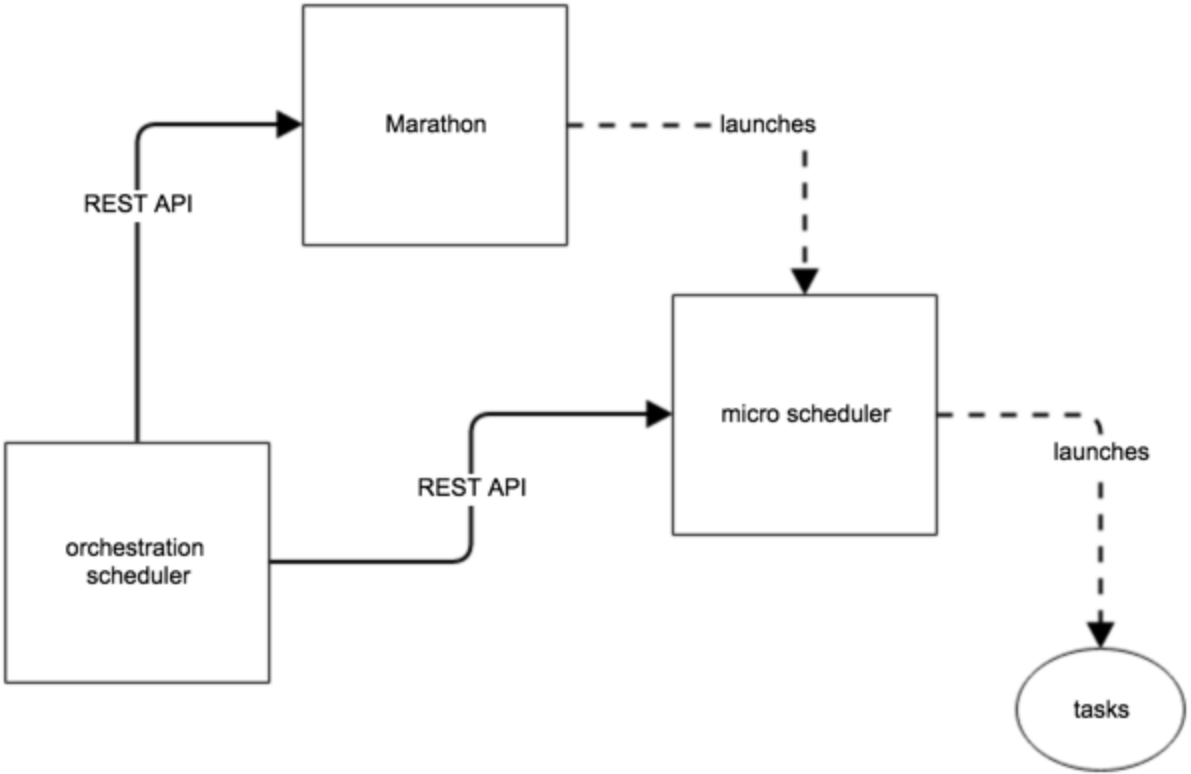


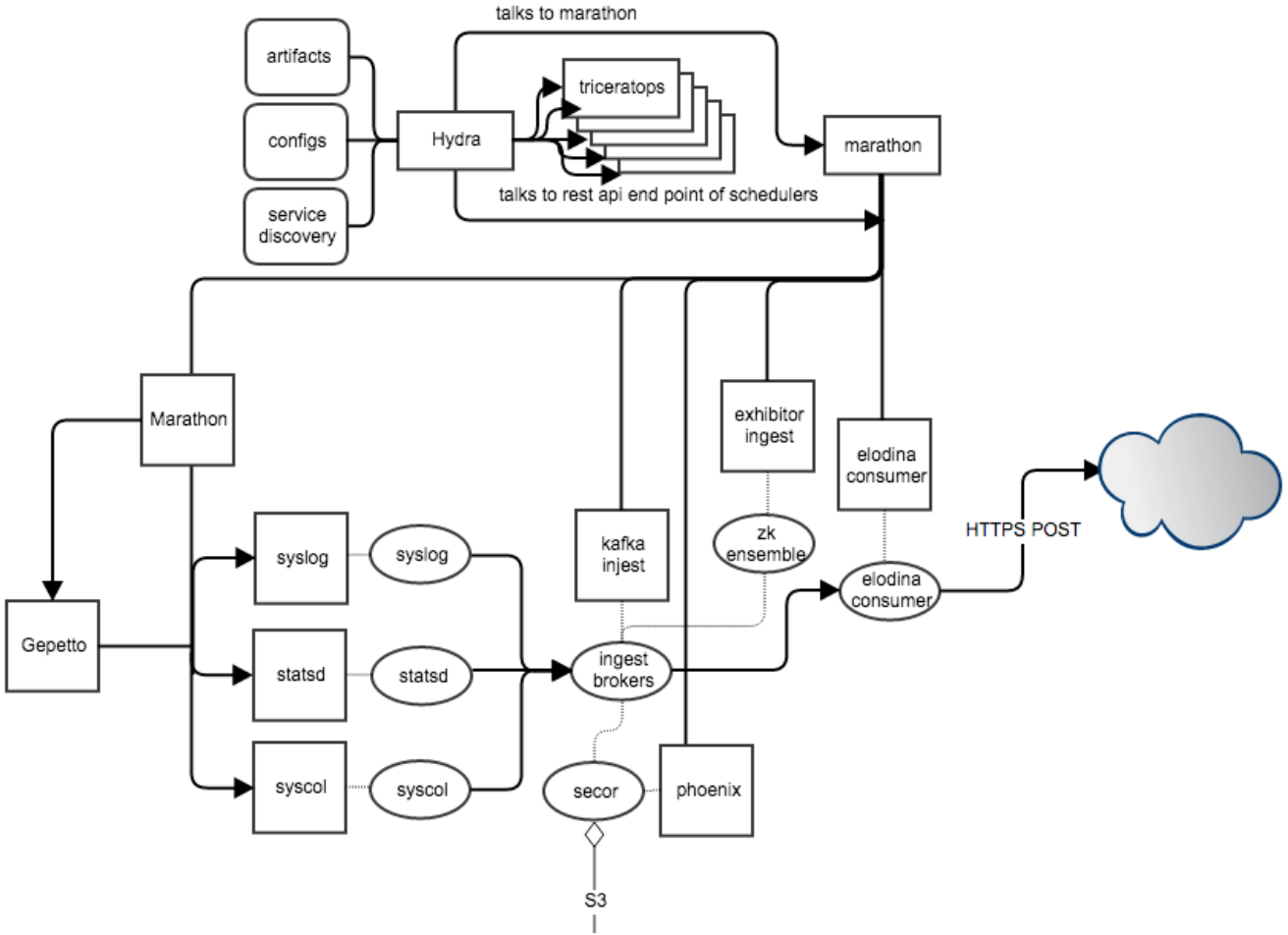
with a scheduler



Schedulers working together


Marathon
groups
app
Mesos Slaves
Mesos Master
Task
Task
Task
Task
Task
Executor
Executor
Executor
Executor
Executor
CMD
CMD
CMD
CMD
CMD
artifacts
configs
service discovery


Marathon
launches
REST API
micro scheduler
launches
REST API
orchestration
scheduler
tasks


talks to marathon
artifacts
configs
service discovery
Hydra
triceratops
marathon
talks to rest api end point of schedulers
Marathon
exhibitor ingest
elodina consumer
HTTPS POST
syslog
syslog
kafka injest
zk ensemble
Gepetto
statsd
statsd
ingest brokers
elodina consumer
syscol
syscol
secor
phoenix
S3

Framework API & Examples

Mesos Protos

https://github.com/apache/mesos/blob/master/include/mesos/mesos.proto

Everything is good to understand but here is a good place to start

- FrameworkInfo
- TaskInfo
- TaskState
- MasterInfo
- SlaveInfo

Mesos Framework Development Guide

http://mesos.apache.org/documentation/latest/app-framework-development-guide/

- Scheduler API
  - registered, reregistered, disconnected
  - resourceOffers, offerRescinded, statusUpdate, frameworkMessage
  - slaveLost, executorLost, error
- Executor API
  - registered, reregistered, disconnected
  - launchTask, killTask, frameworkMessage

Task Reconciliation

http://mesos.apache.org/documentation/latest/reconciliation/

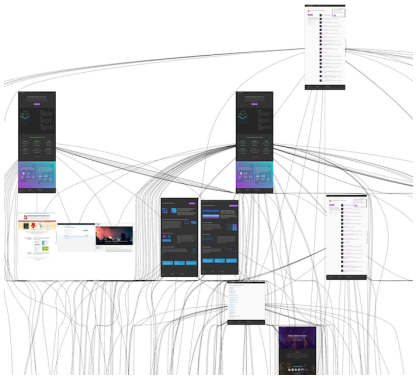
It is the responsibility of Mesos (scheduler driver / Master) to ensure that the framework is notified when a disconnection, and subsequent (re-)registration occurs. At this point, the scheduler should perform task state reconciliation.

Language Bindings

- c++ →
  - https://github.com/apache/mesos/tree/master/src/examples
- python →
  - https://github.com/apache/mesos/tree/master/src/examples/python
  - https://github.com/wickman/pesos
- java →
  - https://github.com/apache/mesos/tree/master/src/examples/java
  - http://mesos.apache.org/api/latest/java/
  - https://github.com/groupon/jesos
- go →
  - https://github.com/mesos/mesos-go
- clojure →
  - https://github.com/dgrnbrg/clj-mesos
  - https://github.com/pyr/mesomatic
- scala →
  - https://github.com/mesosphere/scala-sbt-mesos-framework.g8

Rendler

- cpp
- go
- haskell
- java
- python
- scala



A rendering web crawler for Apache Mesos.

https://github.com/mesosphere/RENDLER

Questions?

Joe Stein

http://www.elodina.net