Elastic Compute for Batch Platform

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Background

- Common use case of batch processing
  - Statement Generation, bank postings, risk evaluation, credit score calculation, inventory management, portfolio optimization, Data backup, Data crunching, Information extraction etc.
- JSR-352 : Batch Application for Java platform
- Logging, check pointing & parallelization
- Start, Stop , Restart, Kill
- Require huge dedicated backend infrastructure
- ROI

“Batch” As Is

- Infrastructure : Dedicated VMs, Under utilized Resources, Time to Production is more
- Operation : Dedicated ops to address production job failures
- Development : No Standard way to accomplish task

Where does “Batch Infra” stand?

PaaS

UC4

Control-M

QUARTZ

Commercial Solutions

Qubole

heroku

Iron.io

TIBCO™

Java Batch Application

Batch Infra

JSR 352

CHRONOS

docker

Spring Batch

spring

MESOS

Spark

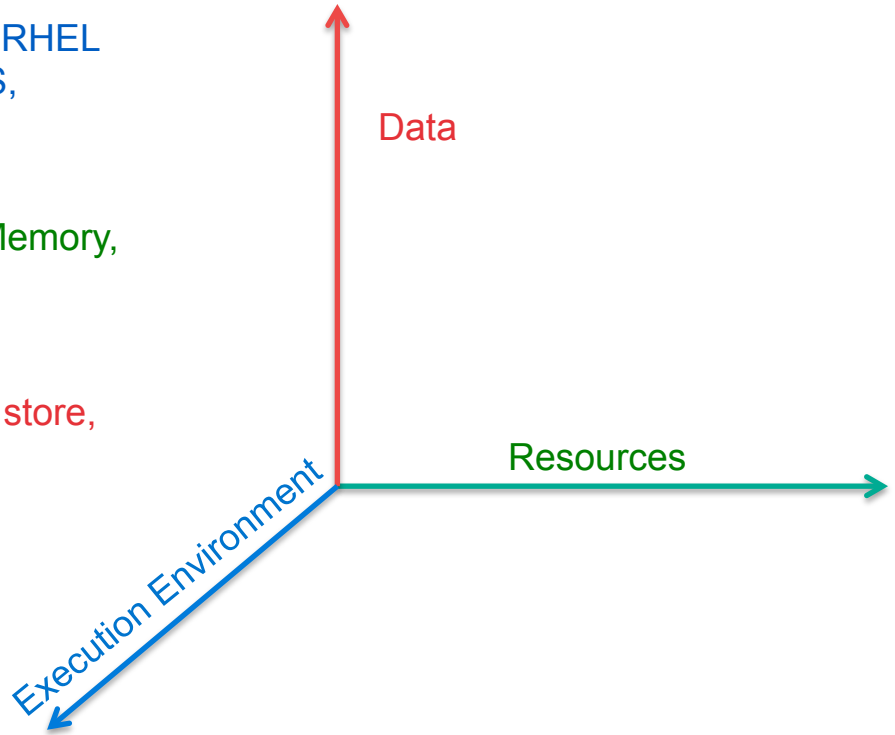
hadoop

Infra need for batch

Exec Environment : RHEL V?, Ubuntu, CentOS, Windows?

Resources : CPU, Memory, Network

Data: Hadoop, swift store, SQL, NoSQL

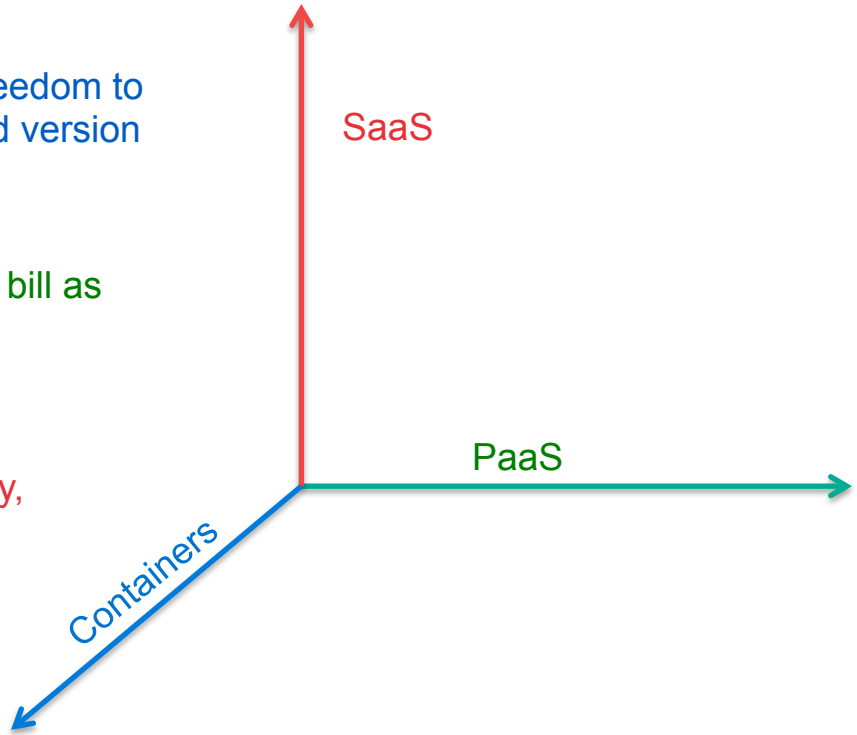


Infra need for batch

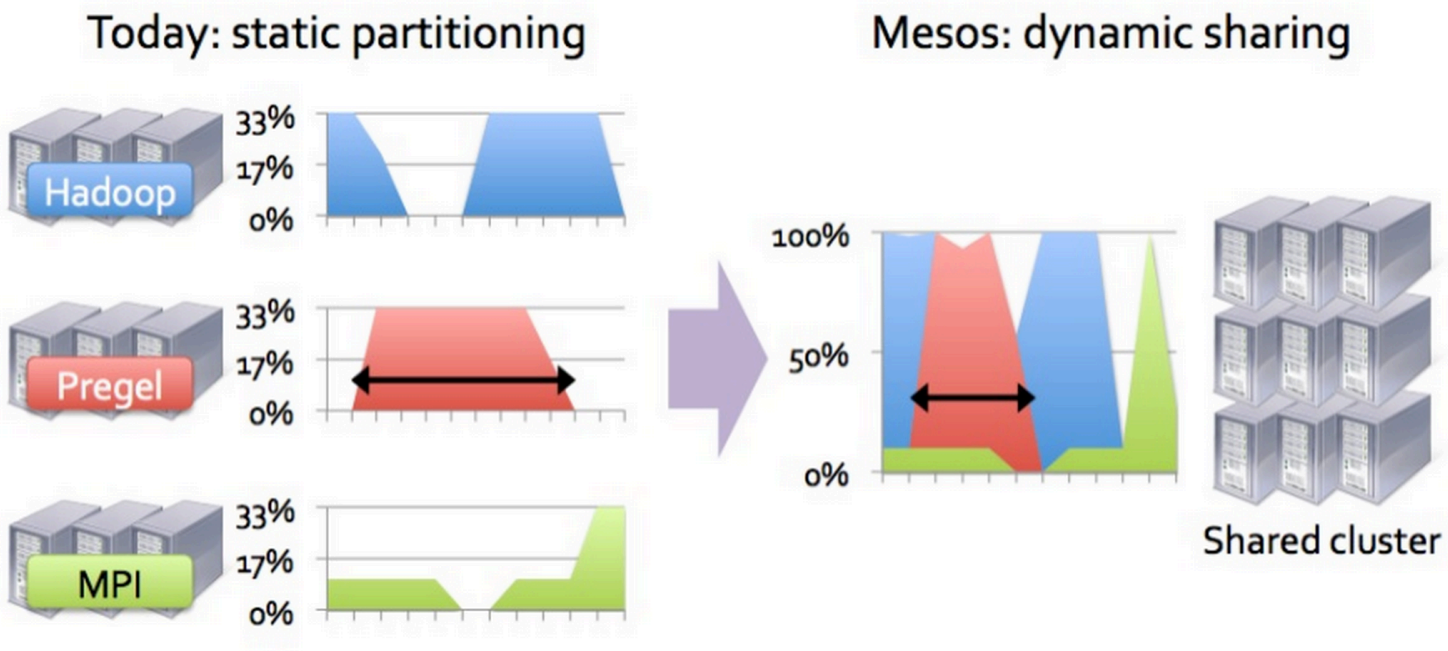
Exec Environment : freedom to use different flavor and version of container

Resources: Fail proof, bill as per usage

Data: Abstraction, consistency, availability, performance

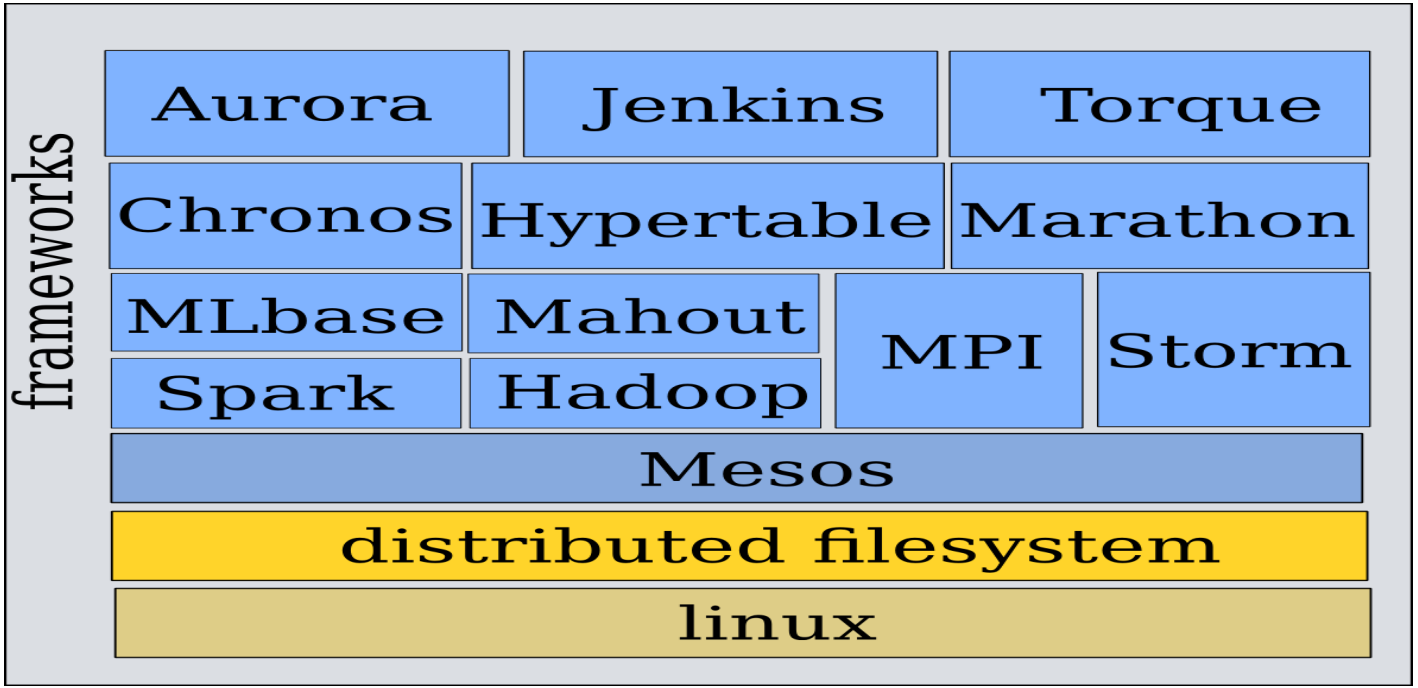


Static Partitioning & Resource Utilization

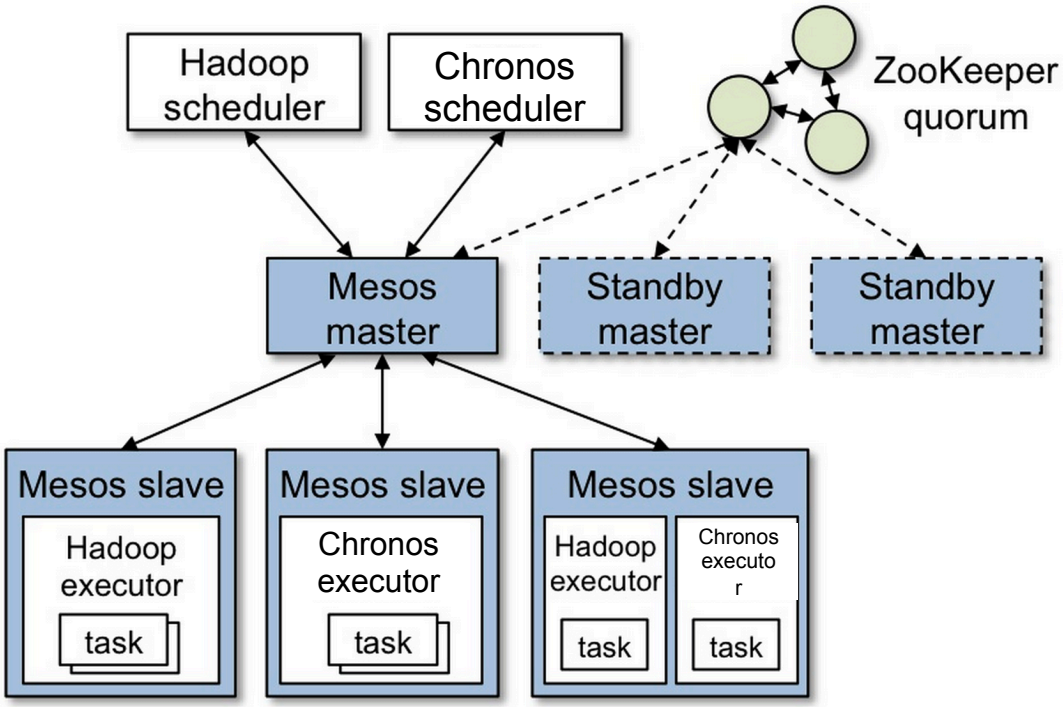


Mesos Eco System

Infra

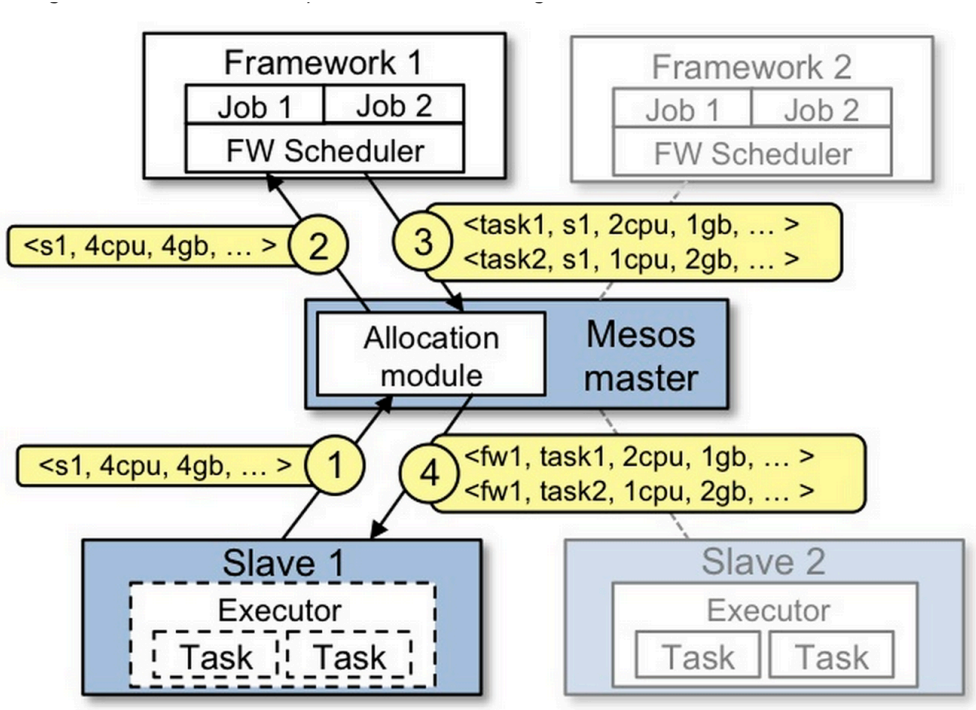


Apache Mesos Architecture



Resource Offer

Infra



Infra

What is BAAS?

1. Batch as a Hosted service
2. Self service
3. Fault tolerant
4. Better monitoring & notification
5. Better ways to interact with outside world (DBs, services, Hadoop, streams, messaging)
6. Flexibility in writing batch job.
7. Open source !!

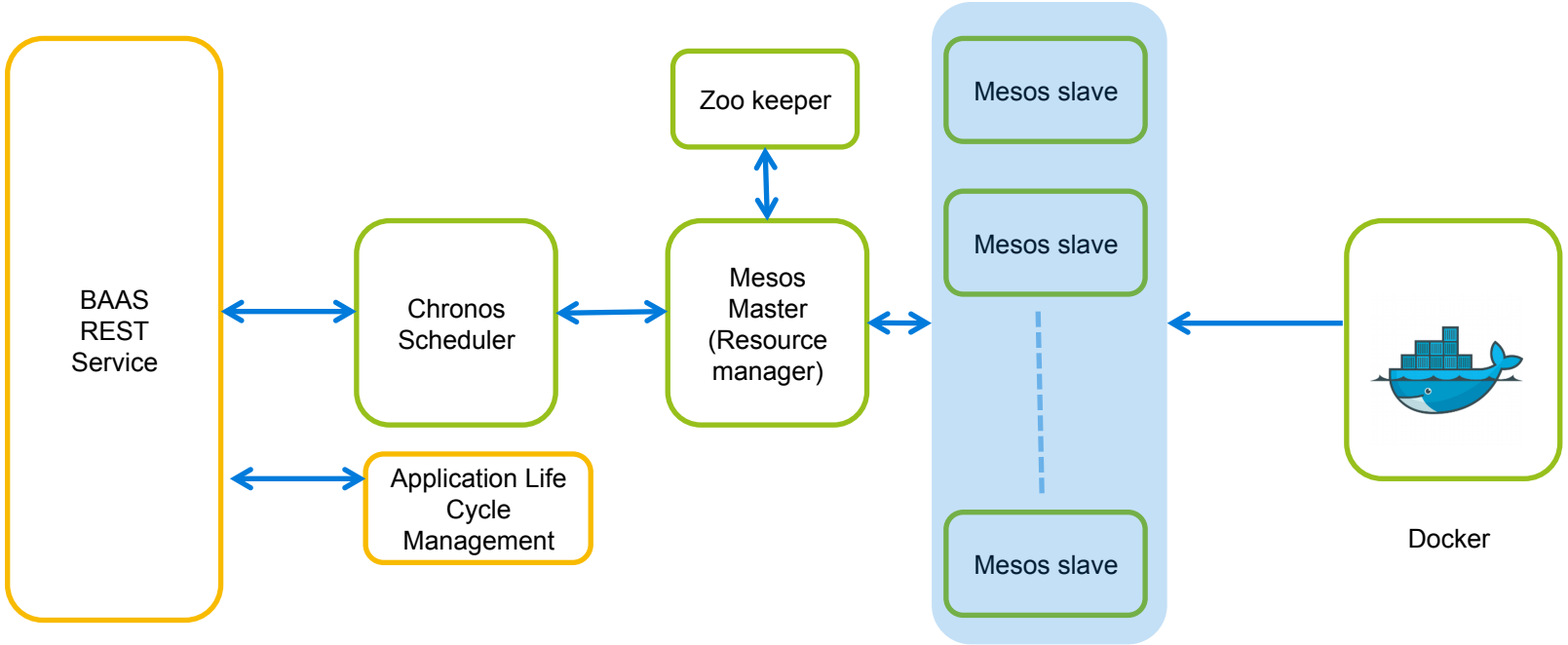
Infra

Our Approach

- Abstracting user experience from specifics of technology.
- Reduce opex and capex.
- Proactive monitoring and alerting
- Self service capability
- Fault tolerant.

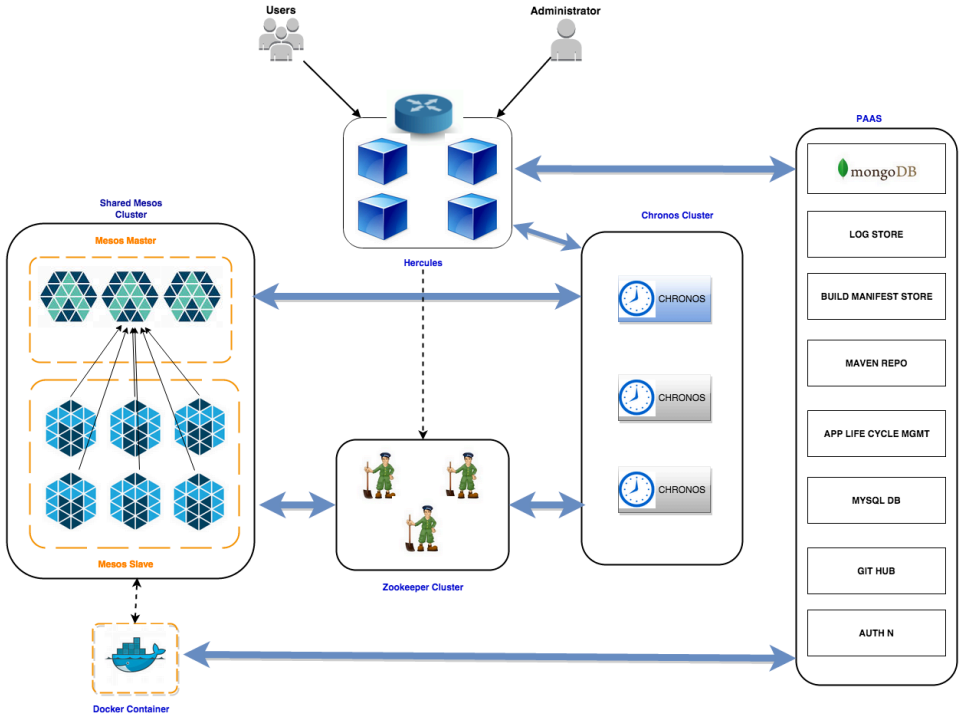
BAAS Detailed View

Infra



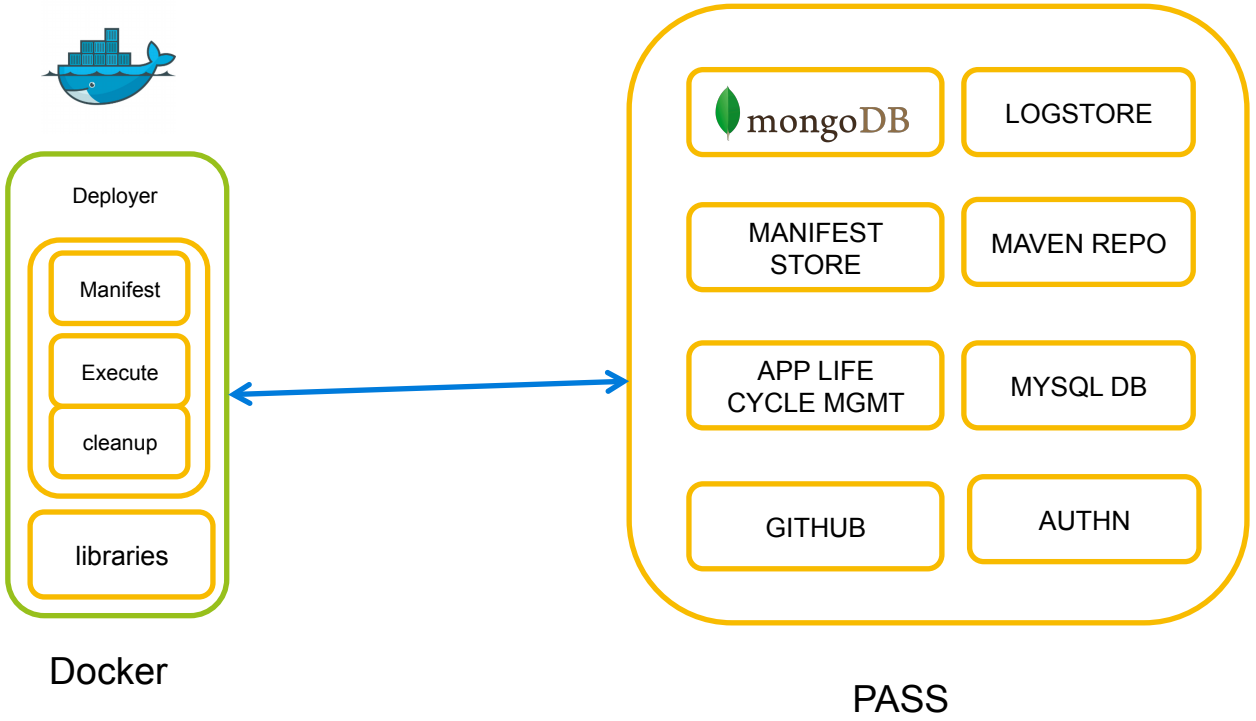
BAAS Deployment View

Infra



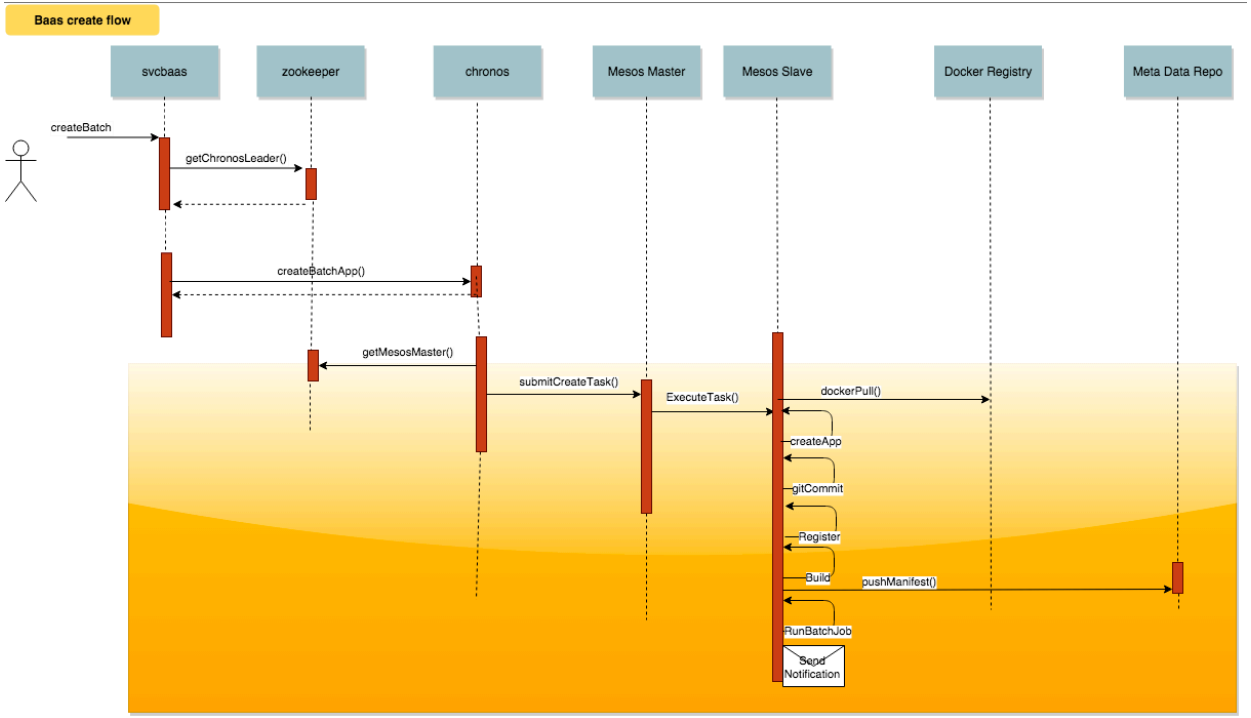
Interacting modules in Docker

Infra



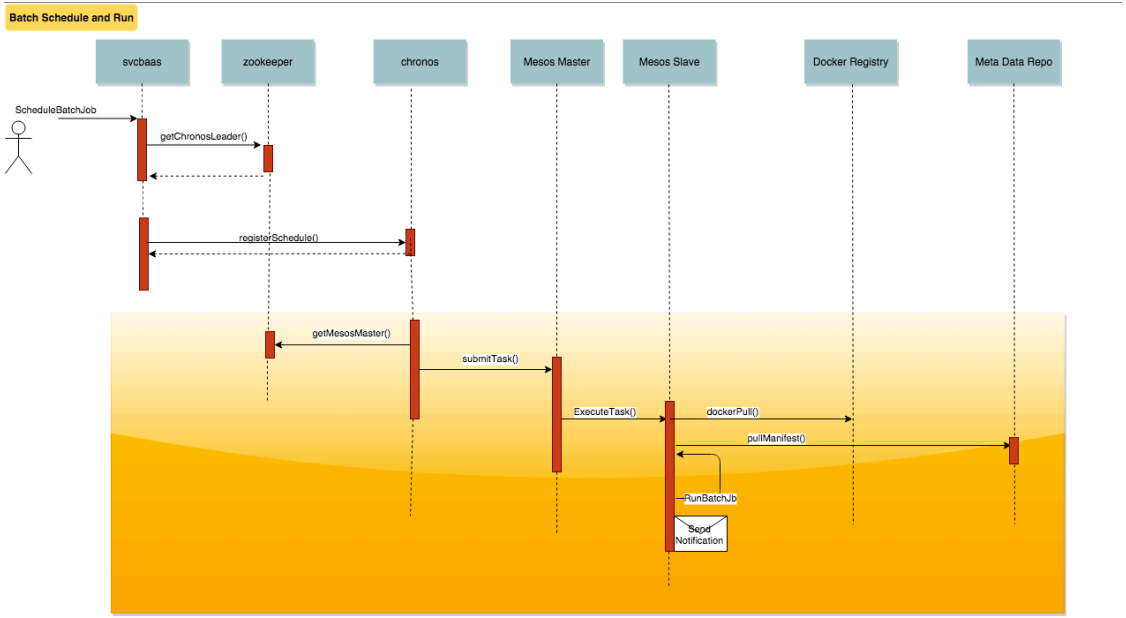
Create Batch Flow

Infra



Schedule and Run Batch Job

Infra



Self Service

Operation

- Creating & Registering Batch App.
- Provisioning
- Build & Deployment
- Scheduling
- Monitoring batch jobs during execution
- Email alert for failure, long running jobs.
- Killing a running batch job.
- Restarting a failed job.
- Report generation for batch job executions.
- Chain the execution of batch Jobs

Development

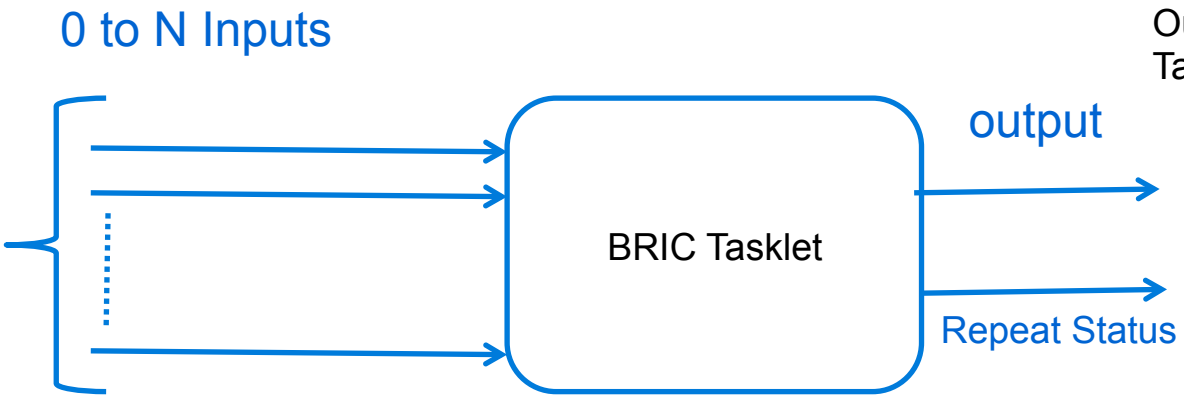
- Do I need to code all steps in batch ?
- Is there a standard way of writing a step / task ?
- How can I pass parameters from one step to another ?
- Why should every one implement same task in different way?
- Where can I contribute a well defined task / step to be used in batch job ?

Storage

- Is there a abstraction for batch storage needs ?
- Is it possible to isolate storage and choice of storage from code?
- Should I write a separate batch app for taking backup?

Batch Reusable Infra component

Development



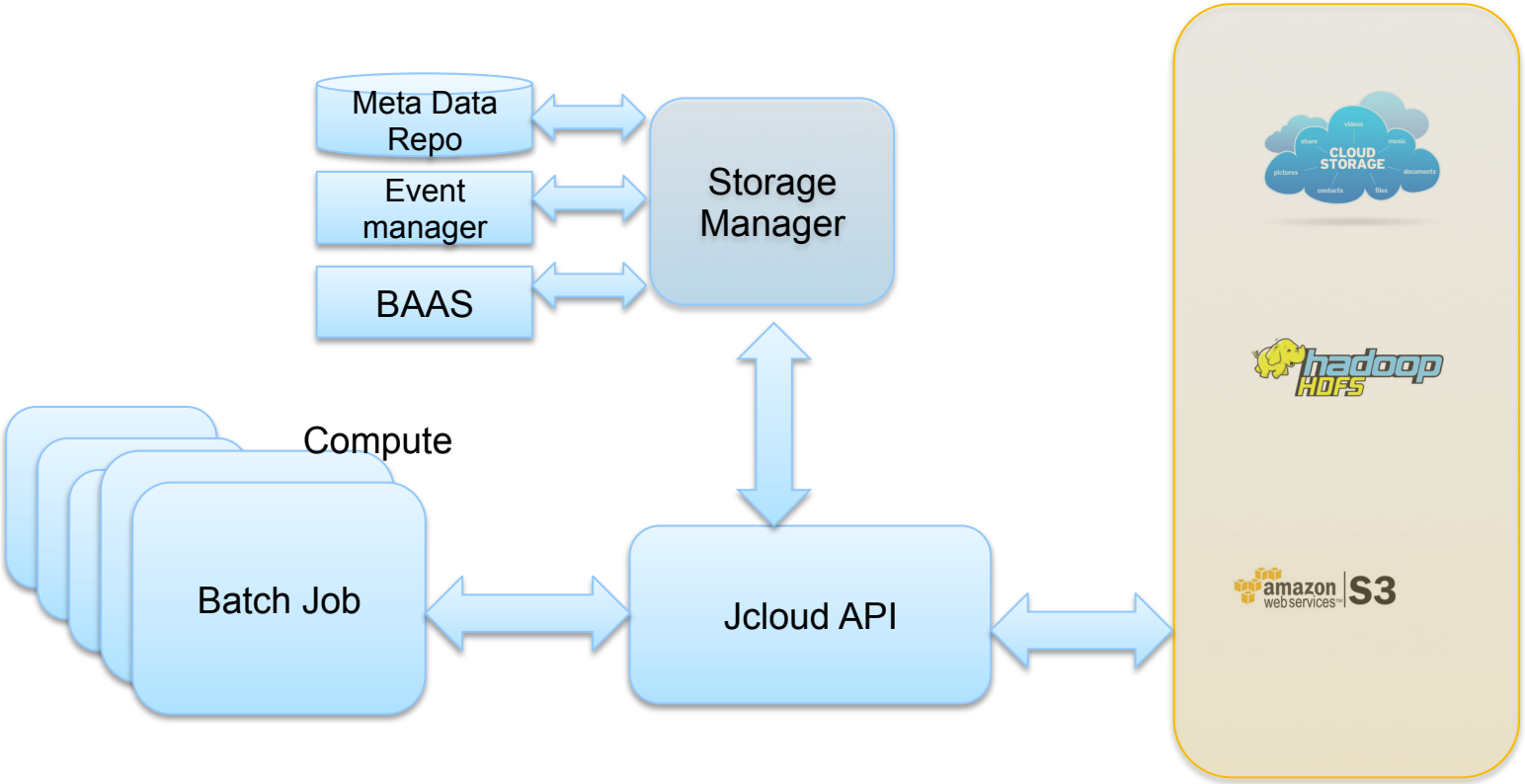
Output can be passed to other Tasklet

Inputs can be

1. hardcoded parameters
2. Previous Tasklet
3. Command line parameters

Storage as a Service

Development



“Batch” with this

- Infrastructure : NO Dedicated VMs, improved Resource utilization, Time to Production in less than a day
- Operation : Complete self service, Developer is responsible to take action if failure
- Development : Standard way to accomplish task

what
who
which
where
why
how
when

Resources

- http://stackoverflow.com/questions/18285212/how-to-scale-docker-containers-in-production
- http://eurosys2013.tudos.org/wp-content/uploads/2013/paper/Schwarzkopf.pdf
- http://www.wired.com/wiredenterprise/2013/03/google-borg-twitter-mesos/
- http://www.slideshare.net/tomasbart/introduction-to-apache-mesos
- http://www.slideshare.net/pacoid/strata-sc-2014-apache-mesos-as-an-sdk-for-building-distributed-frameworks
- https://www.docker.com/tryit/