MesosCon
EUROPE

mesos2iam

Zain Malik / Software Engineer / Schibsted Media Group

THE LINUX FOUNDATION

Schibsted Media Group

- 22 countries
- 38 products
- 1.2bn people
- 30m+ daily users

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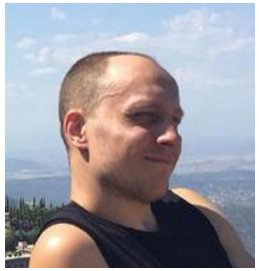
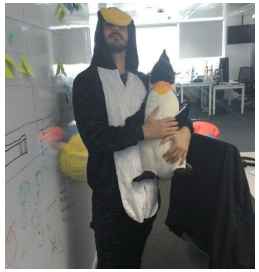
Team

Fabian Selles

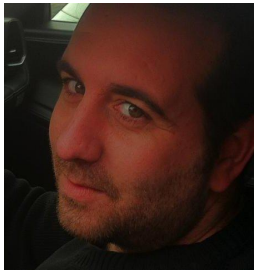


Ivan Ilves



Alan Bover

Sergi Mansilla



Jaime Jorge

Zain Malik

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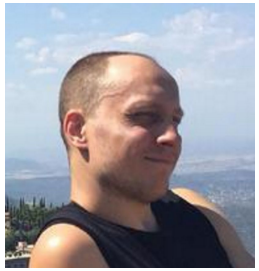

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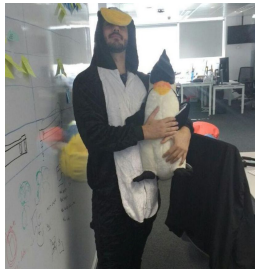

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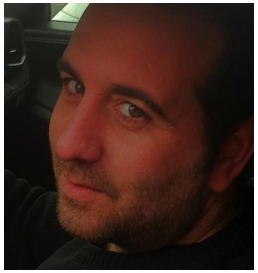

Jaime Jorge

Zain Malik

Contributor

Vicent Soria

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CRE (common runtime environments)

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CRE (common runtime environments)

>6K tasks

>15k jobs

>2k pods

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CRE (common runtime environments)

>6K tasks / day
>8GB / task
>1.4 cpu/task
~50 minutes

>15k jobs

>2k pods

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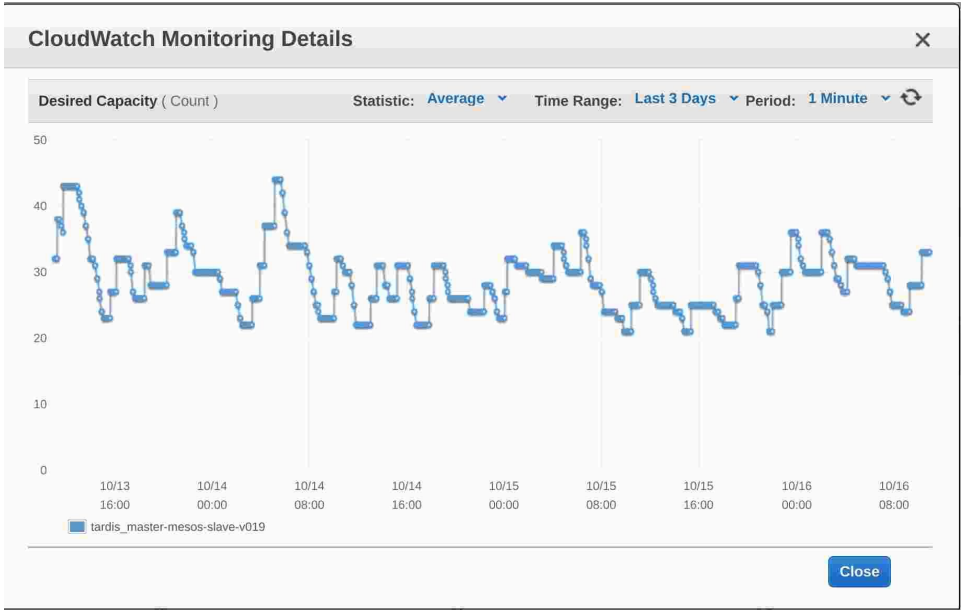

scaling down cluster with 0 failed task

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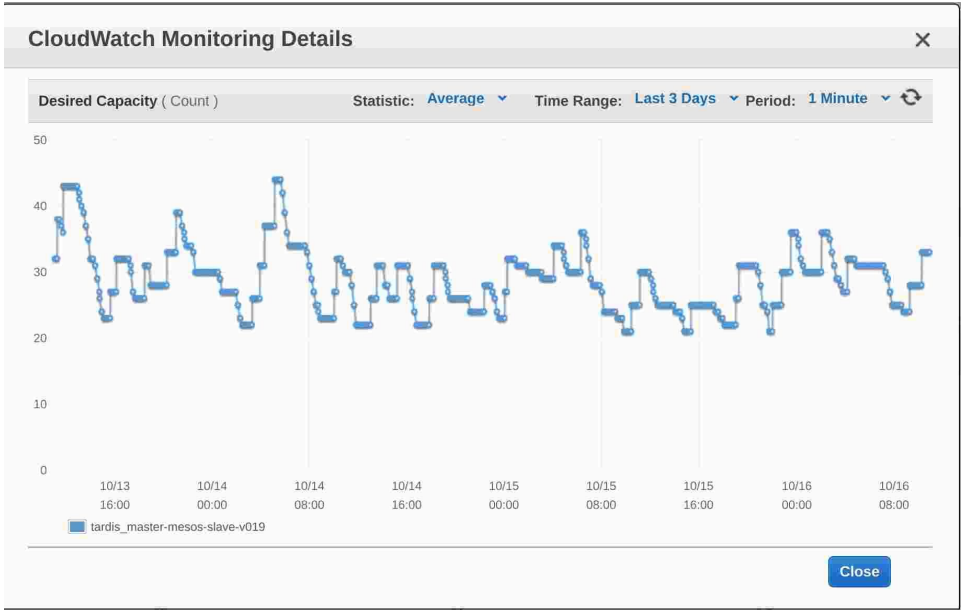

scaling down cluster with 0 failed task

The creepy guys who track down all frameworks we use and ask them to implement mesos maintenance primitives

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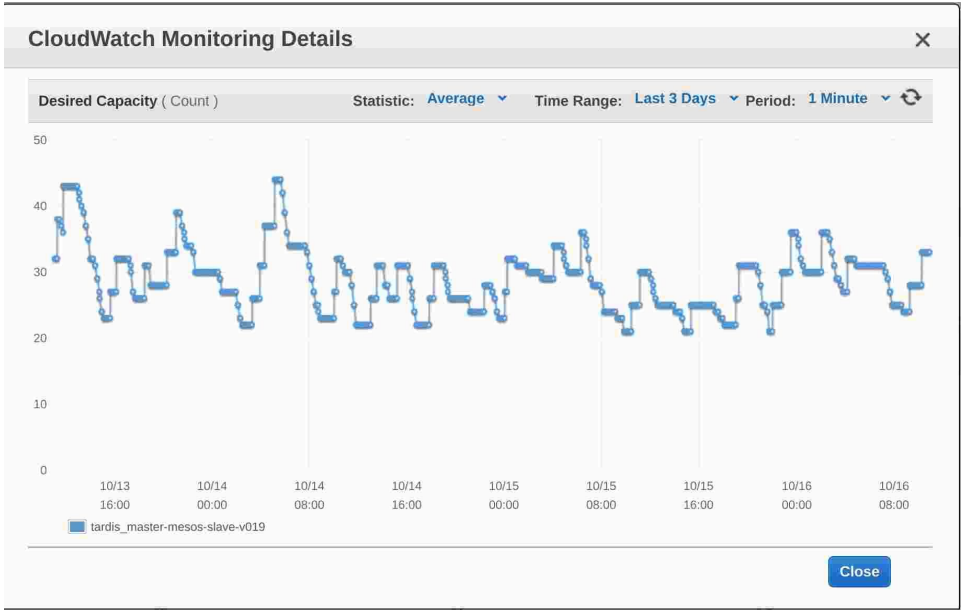

scaling down cluster with 0 failed task

The creepy guys who track down all frameworks we use and ask them to implement mesos maintenance primitives

CHR

eremetic

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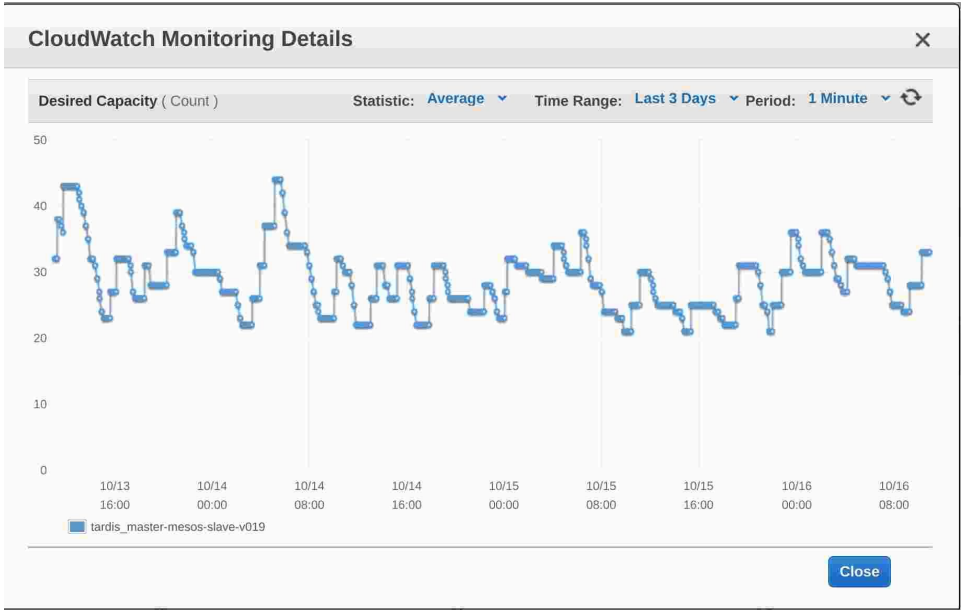

scaling down cluster with 0 failed task

The creepy guys who track down all frameworks we use and ask them to implement mesos maintenance primitives

fyi: deathnode → https://github.com/alanbover/deathnode

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mesos2**iam**

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IAM

- Stands for “Identity and Access Management”
- Takes care of Who(authentication) and How(authorization)

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IAM

- Action-level permissions
- Resource-level permissions
- Resource-based permissions
- Tag-based permissions
- Temporary security credentials
- Service-linked roles

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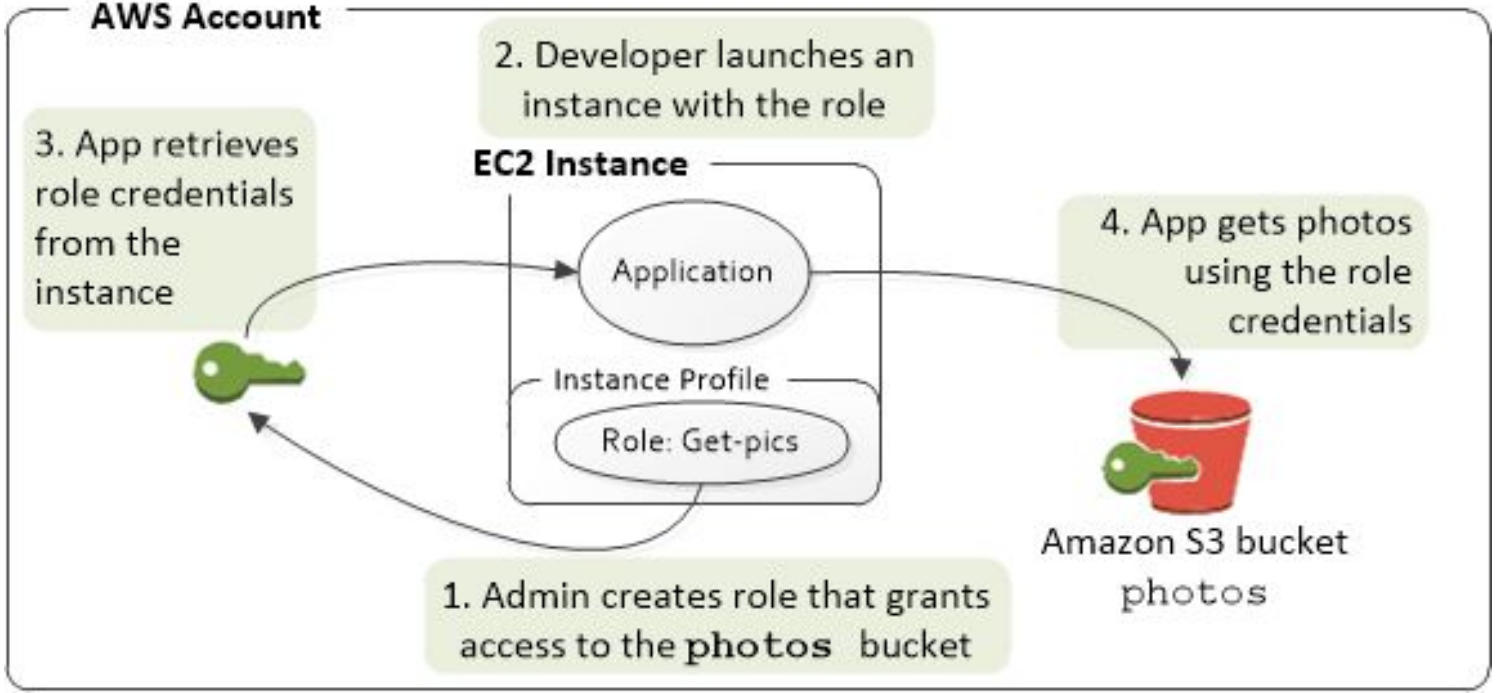
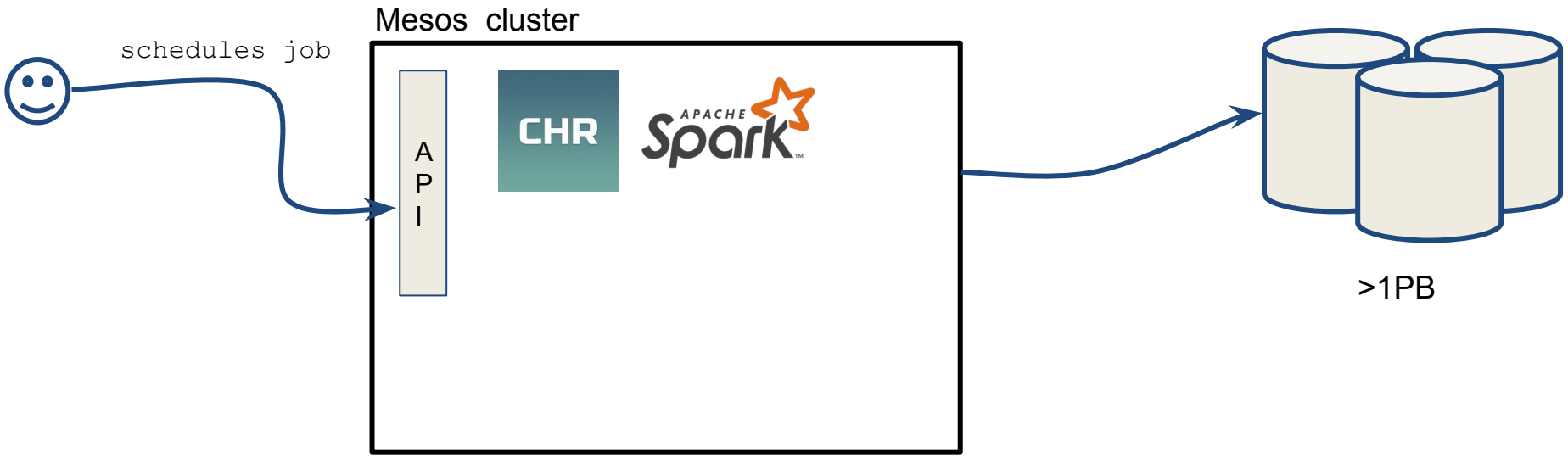
IAM with instances

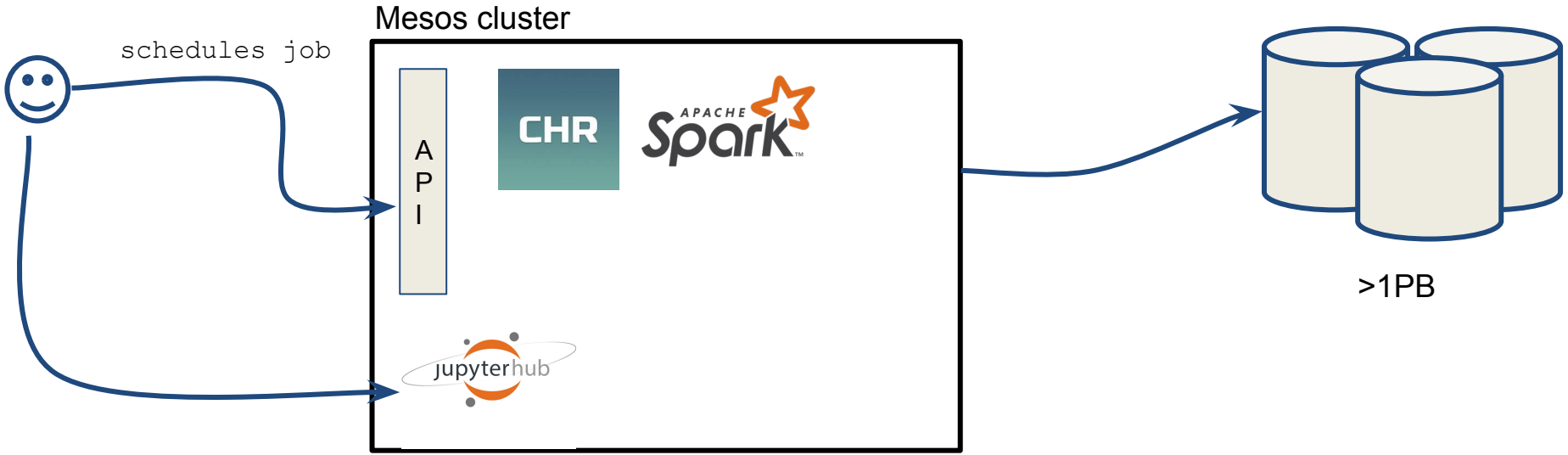


Our use case



>6k daily tasks

Our use case



>6k daily tasks

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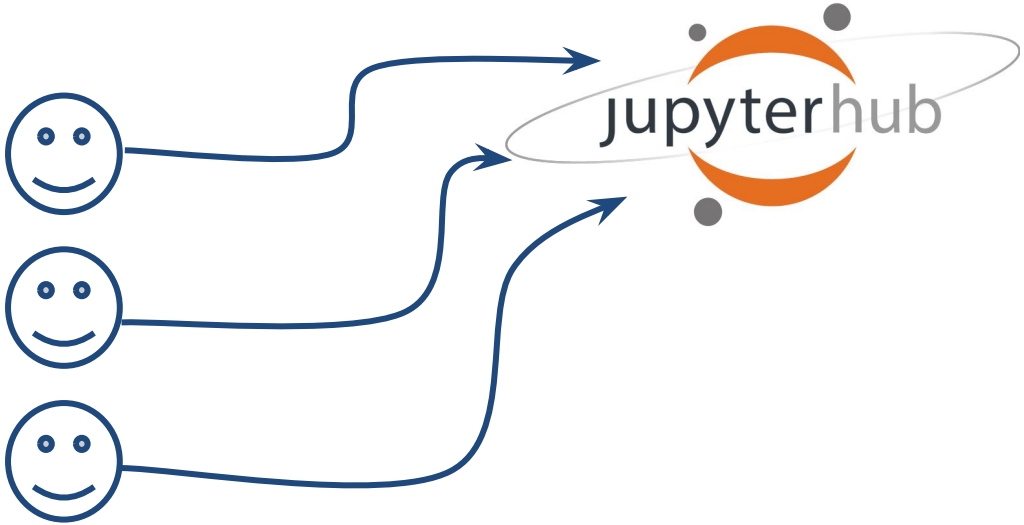
Our use case



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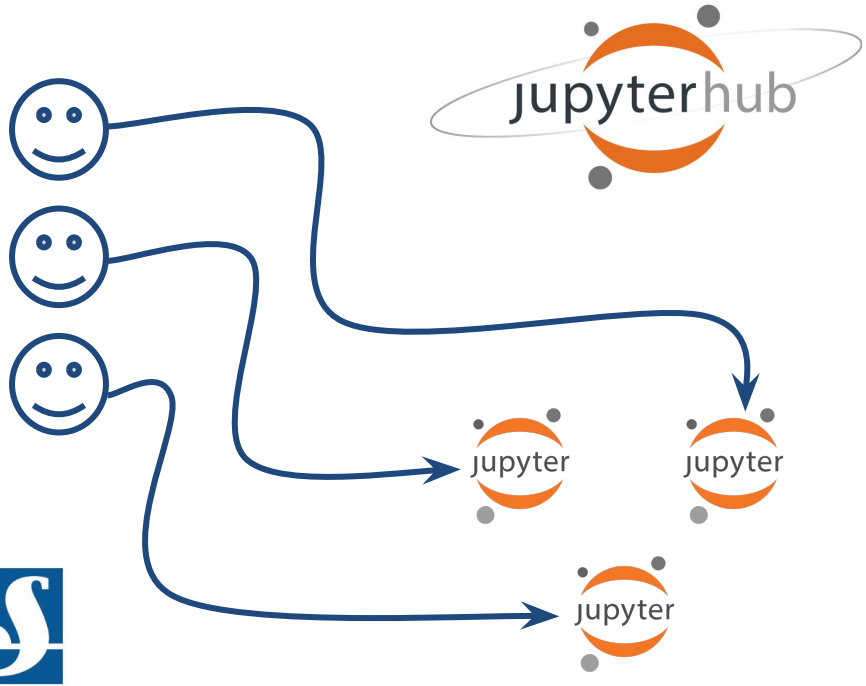
Our use case



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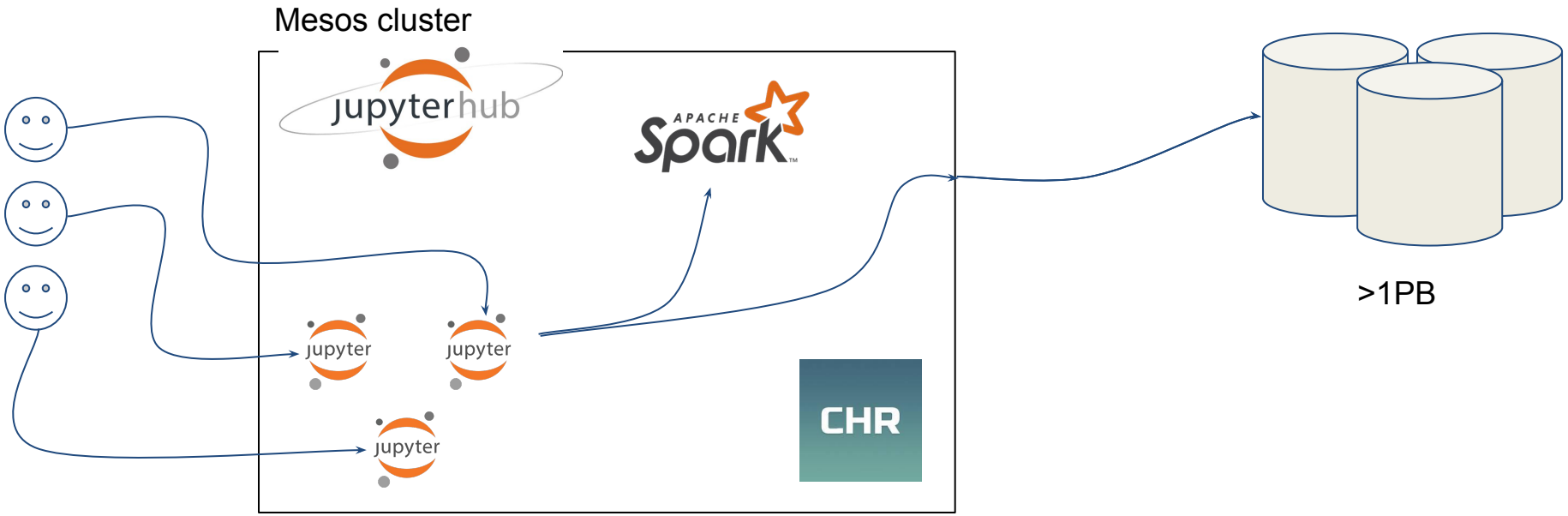
Our use case



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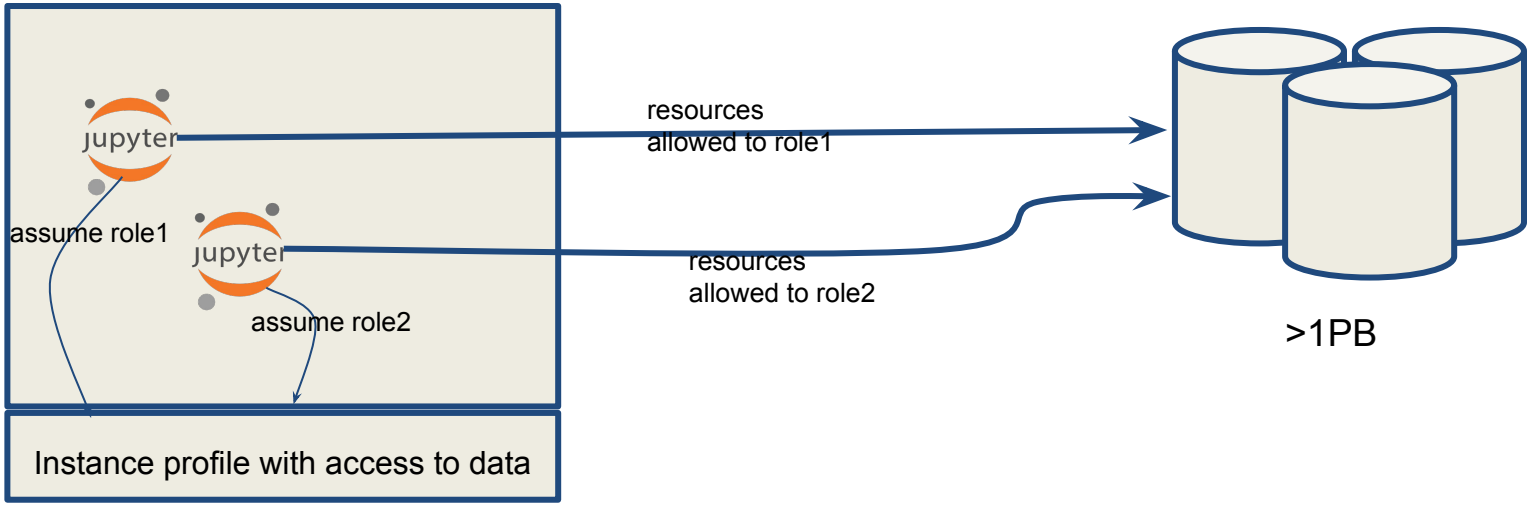
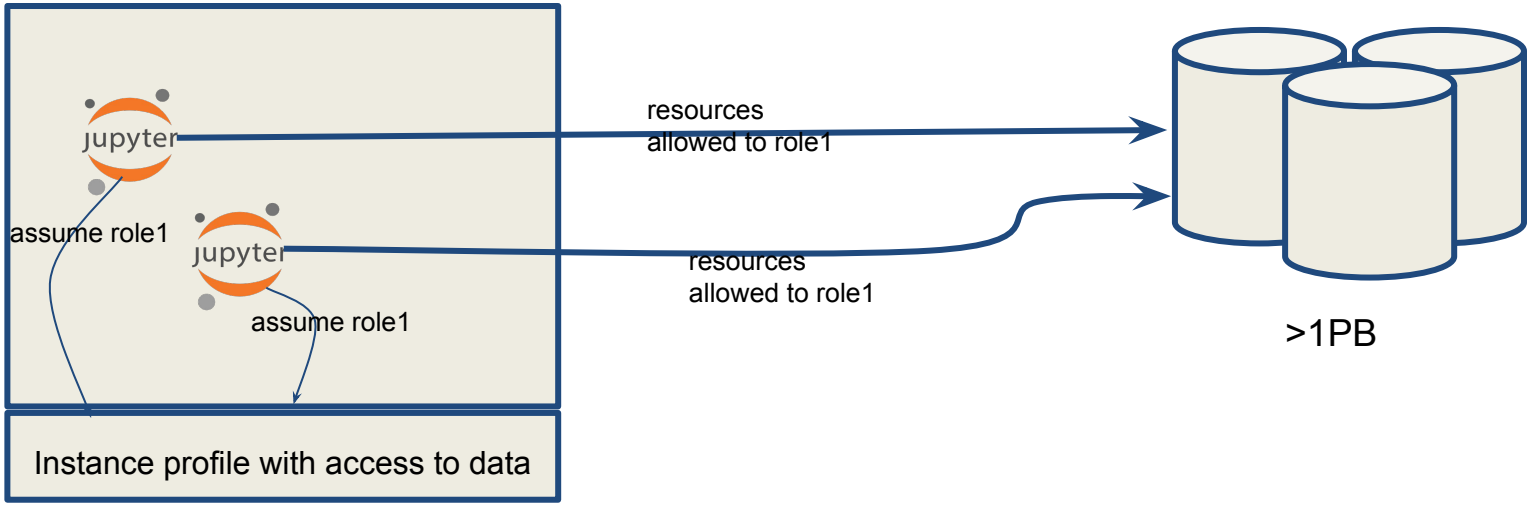
Our use case


jupyter
assume role1
jupyter
assume role2
Instance profile with access to data
resources
allowed to role1
resources
allowed to role2
>1PB

Our use case


jupyter
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Instance profile with access to data
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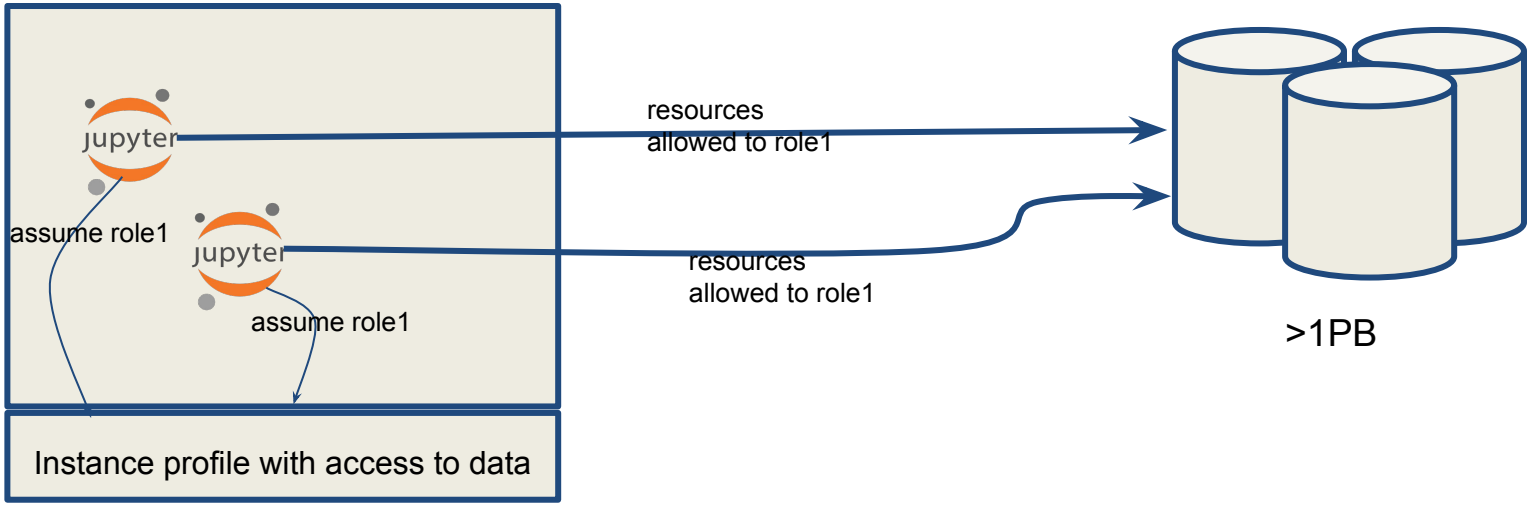
Our use case



Problem? Each user just need to know the other users iam role, create a job with other role and access those resources

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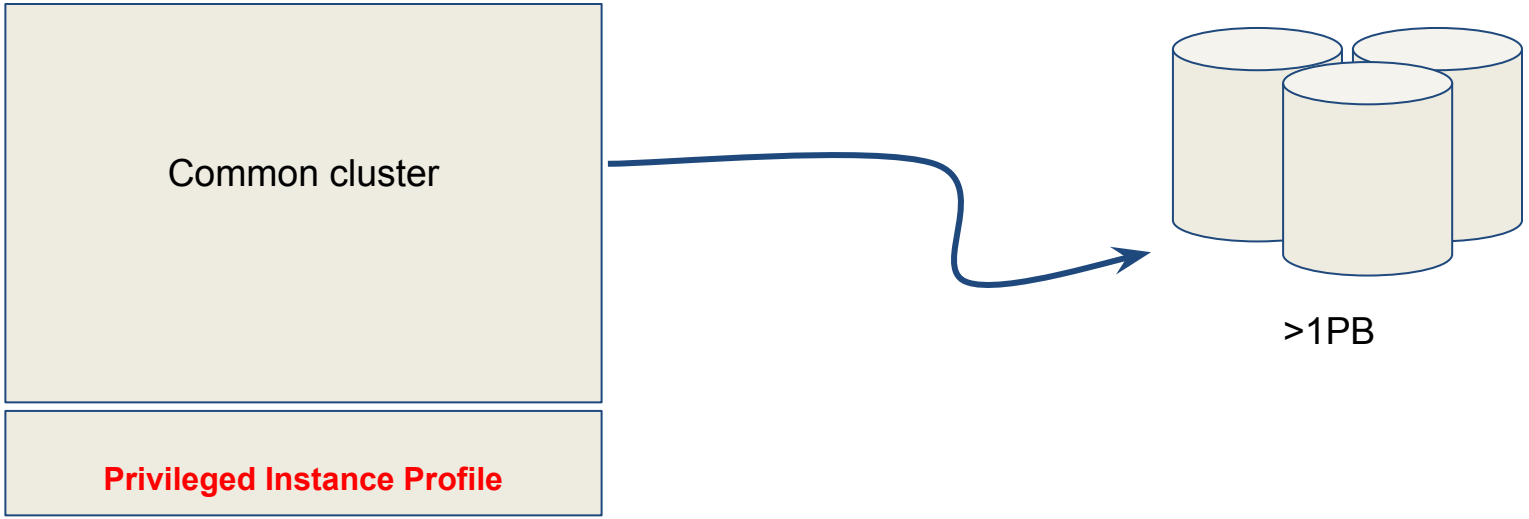
The problem



iam

let’s dig deep

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IAM

How do EC2 instances retrieve their credentials?

1. 169.254.170.2$AWS_CONTAINER_CREDENTIALS_RELATIVE_URI
2. 169.254.169.254/latest/meta-data/iam/security-credentials/$ROLE

From version 1.11.0 in all AWS sdk clients it goes through the 1st option*

*If it's set AWS_CONTAINER_CREDENTIALS_RELATIVE_URI, the client send the request to http://169.254.170.2${AWS_CONTAINER_CREDENTIALS_RELATIVE_URI} instead of the usual /latest/meta-data/iam/security-credentials

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Actually that's how IAM roles for ECS tasks are working

```
the ECS Agent populates the
AWS_CONTAINER_CREDENTIALS_RELATIVE_URI variable
With /credential_provider_version/credentials?id=task_UUID
```

in other words
169.254.170.2$AWS_CONTAINER_CREDENTIALS_RELATIVE_URI
is
169.254.170.2/*credential_provider_version*/credentials?id=*task_UUID*

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IAM in Action

```
$> curl 169.254.170.2$AWS_CONTAINER_CREDENTIALS_RELATIVE_URI
$> {
   "AccessKeyId": "ACCESS_KEY_ID",
   "Expiration": "EXPIRATION_DATE",
   "RoleArn": "TASK_ROLE_ARN",
   "SecretAccessKey": "SECRET_ACCESS_KEY",
   "Token": "SECURITY_TOKEN_STRING"
}
```

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mesos2iam

mesos2iam is a daemon that runs inside Mesos agents

To give us back the control of IAM policies on tasks level

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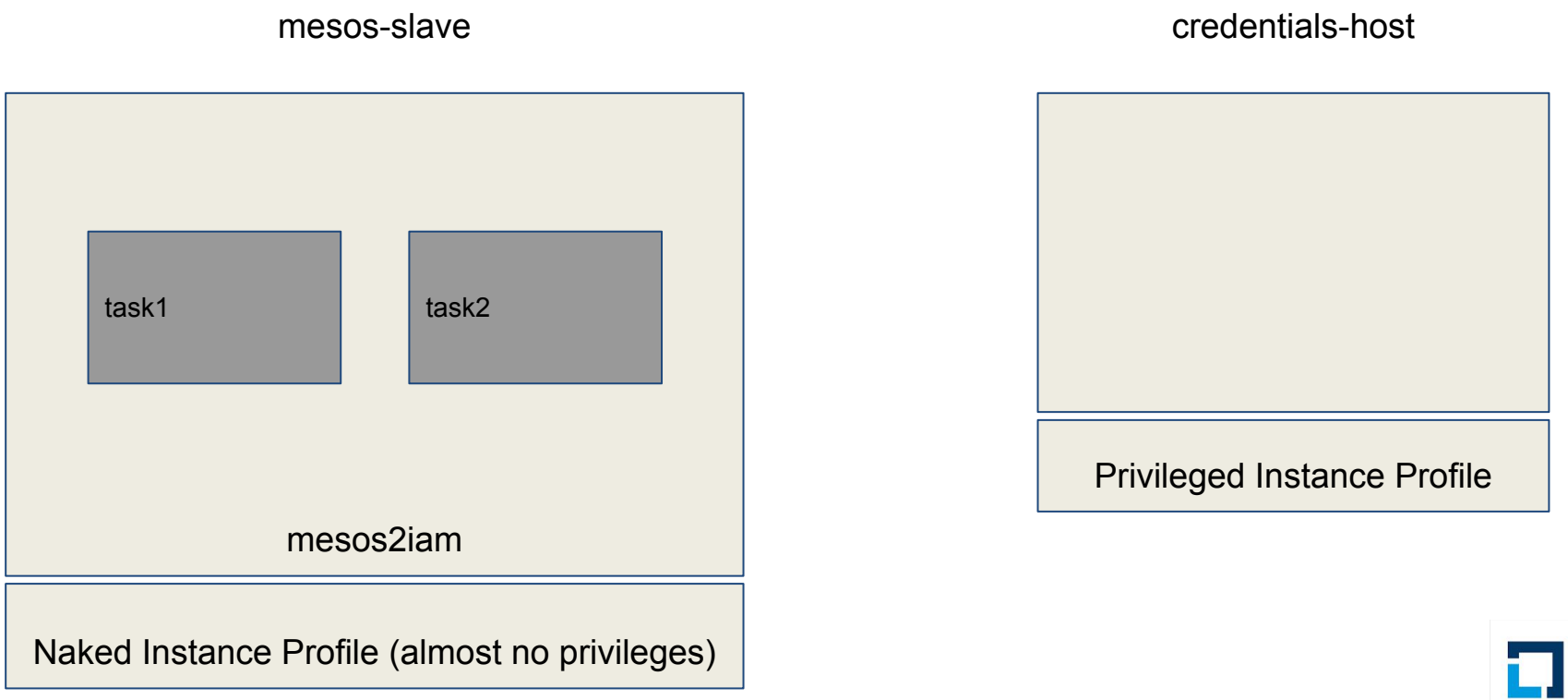
mesos2iam

- manage iptables rules
- retrieve a *TASK ID* from container
- fetch credentials for the task

mesos2iam



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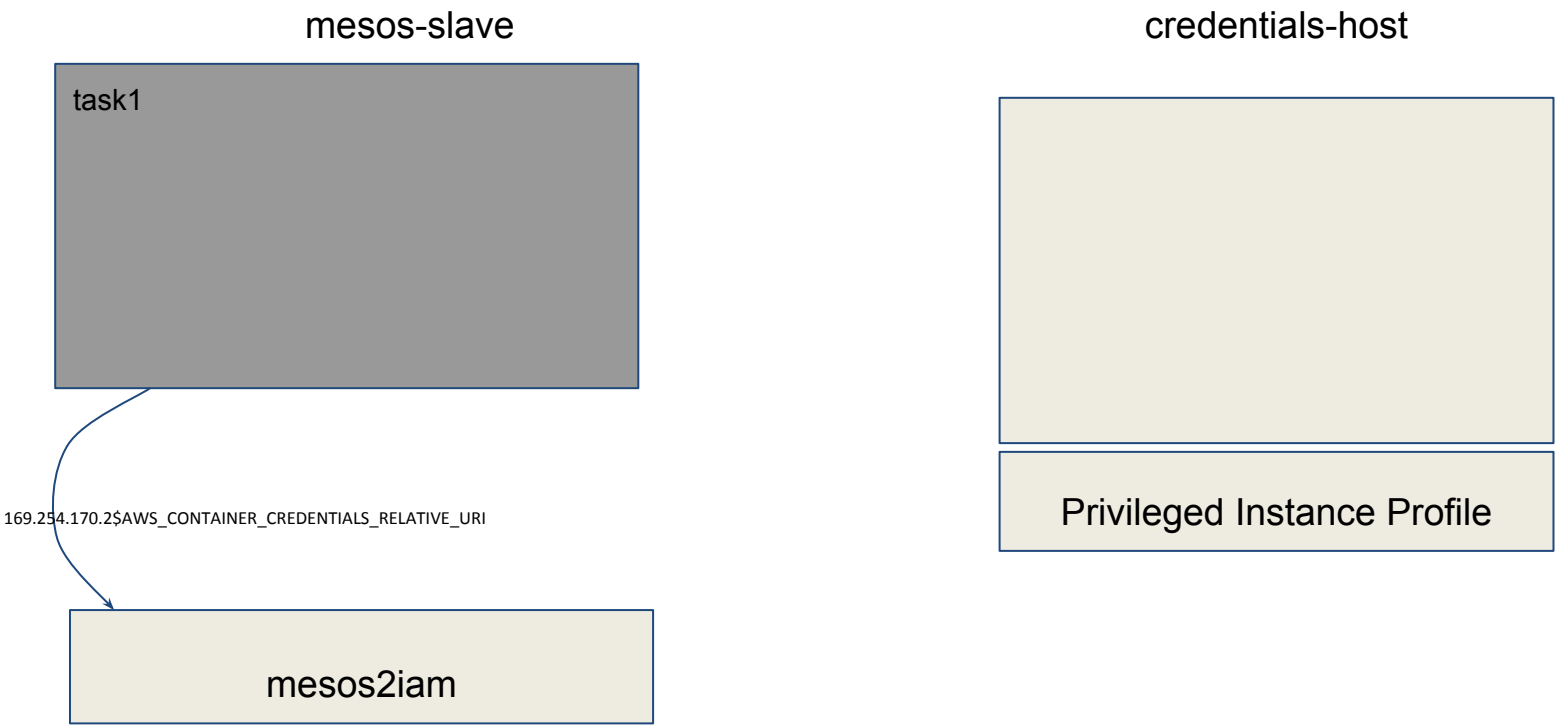

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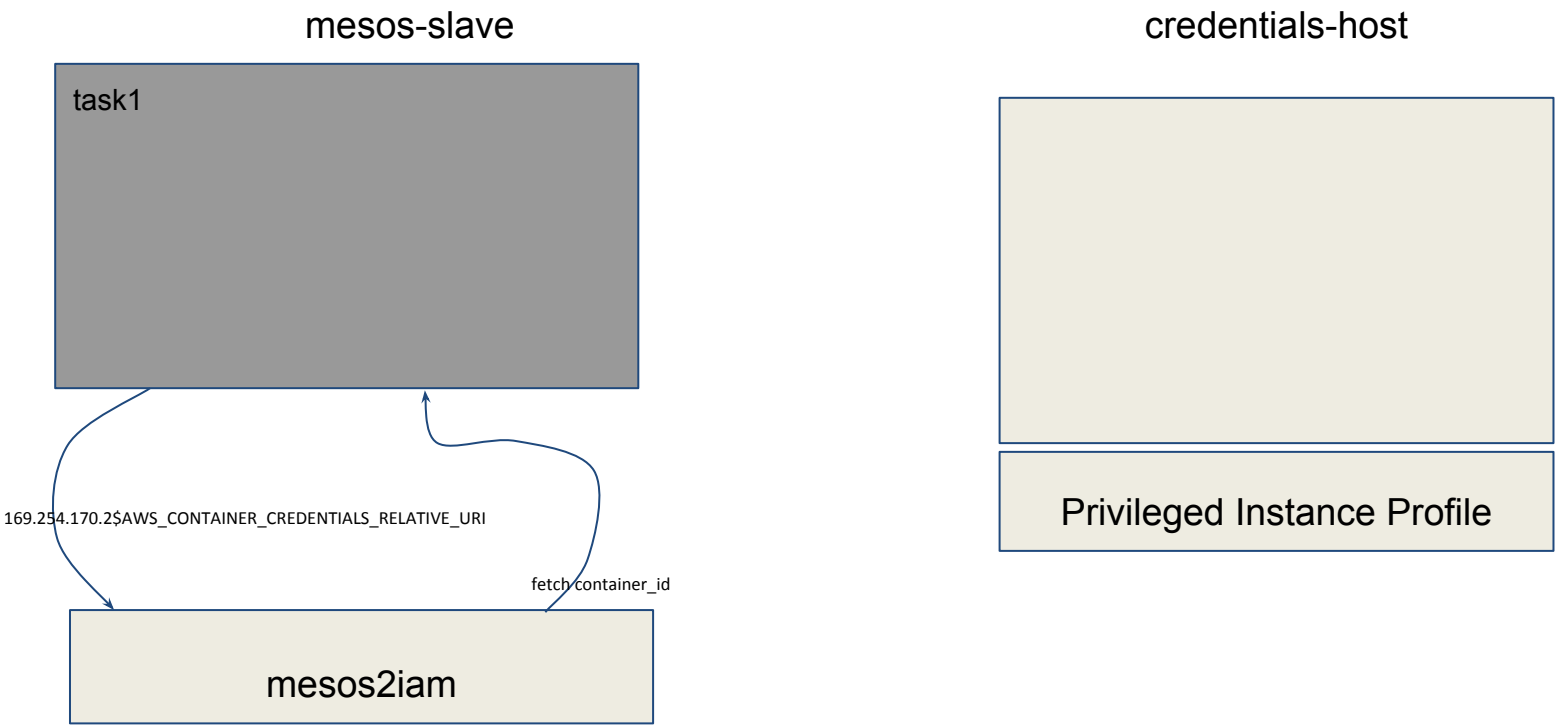

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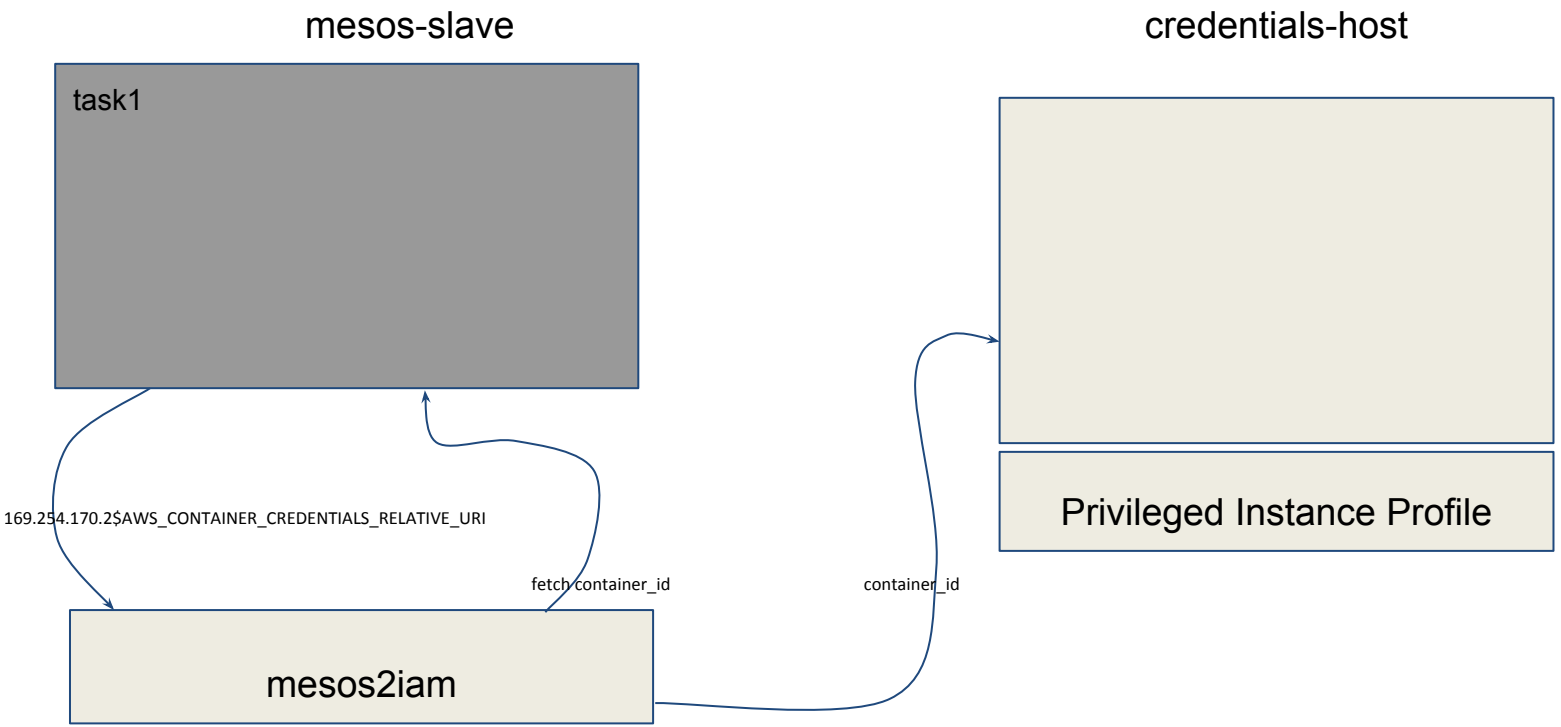

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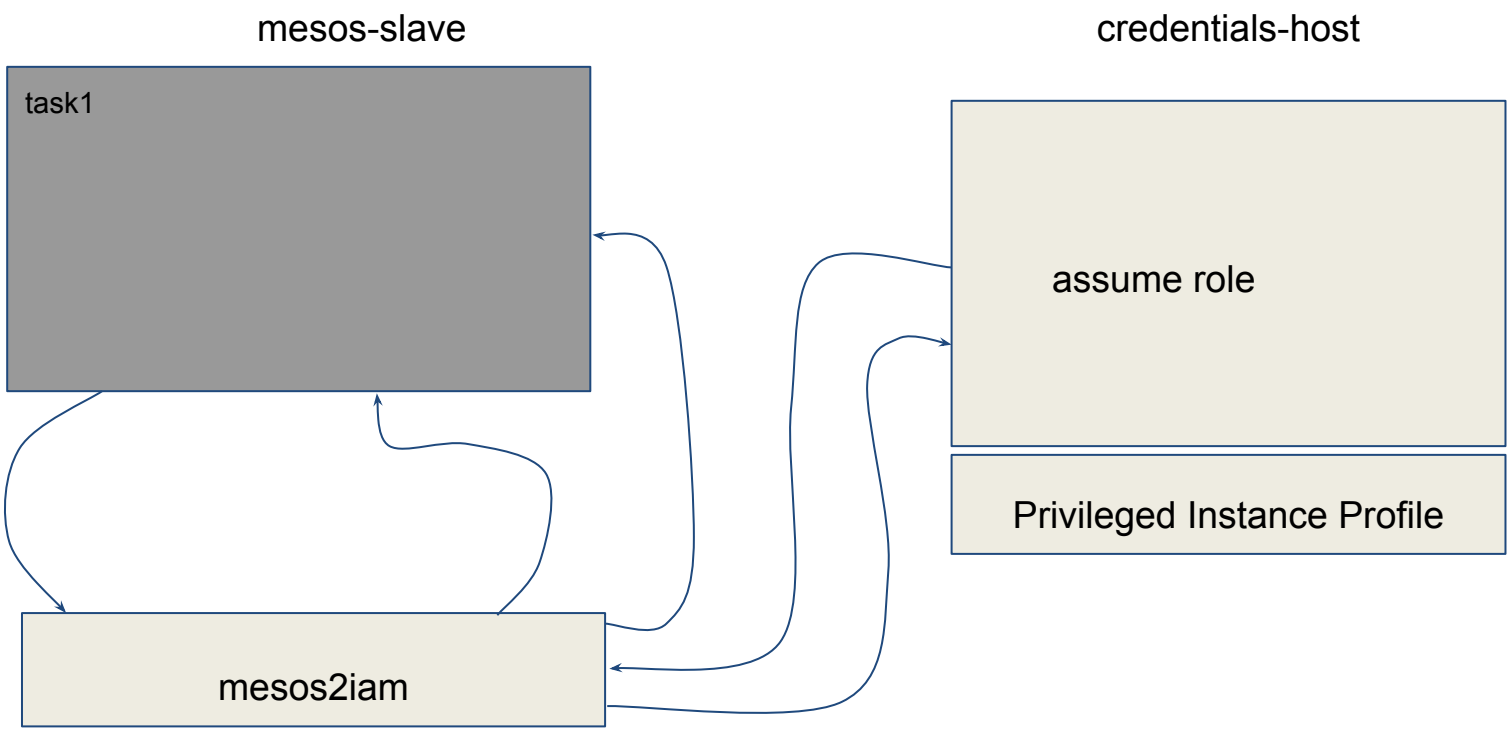
mesos2iam



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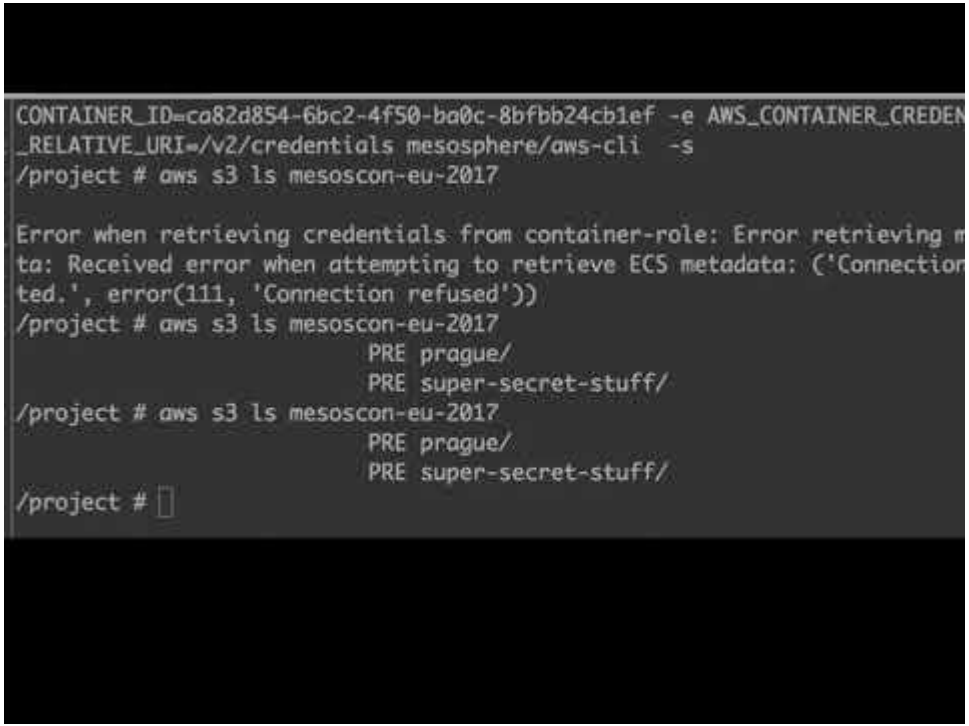
demo time



https://www.youtube.com/watch?v=ra3SOeO_yp0

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Opensource

CONTRIBUTIONS WELCOME

mesos2iam:https://github.com/schibsted/mesos2iam
smaug(naive credentials api):https://github.com/schibsted/smaug
deathnode: https://github.com/alanbover/deathnode

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QUESTIONS?

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