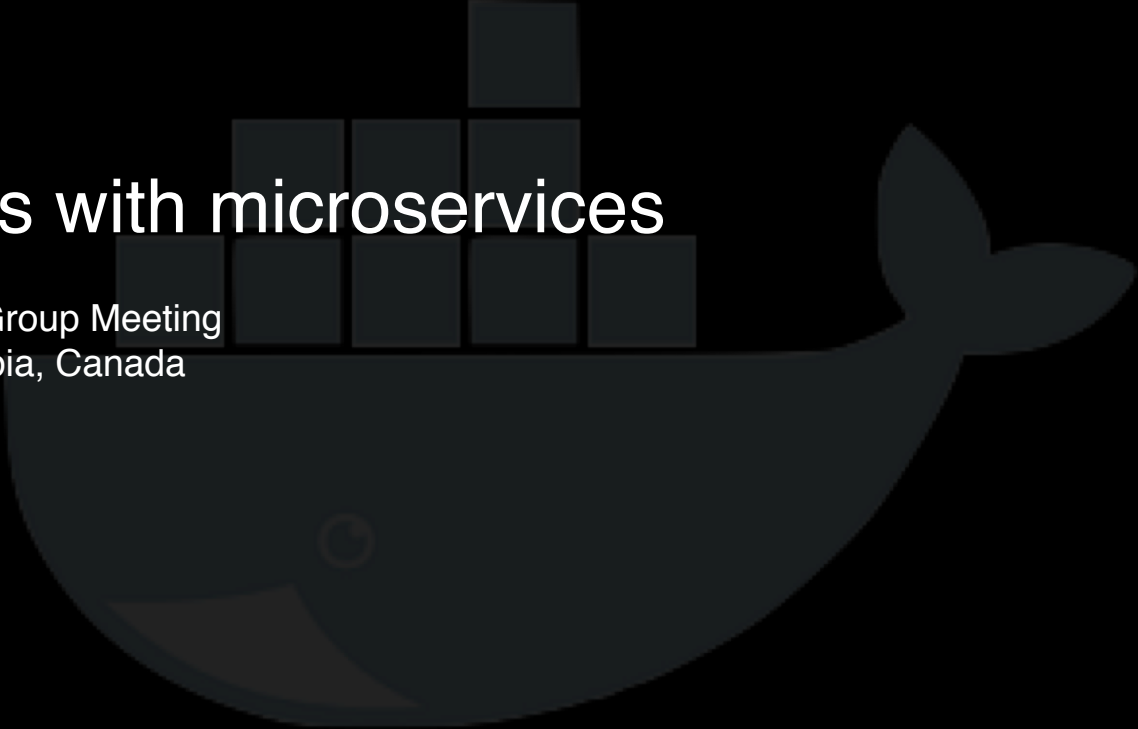


Experiments with microservices



2018 Antelope Users Group Meeting
Victoria, British Columbia, Canada

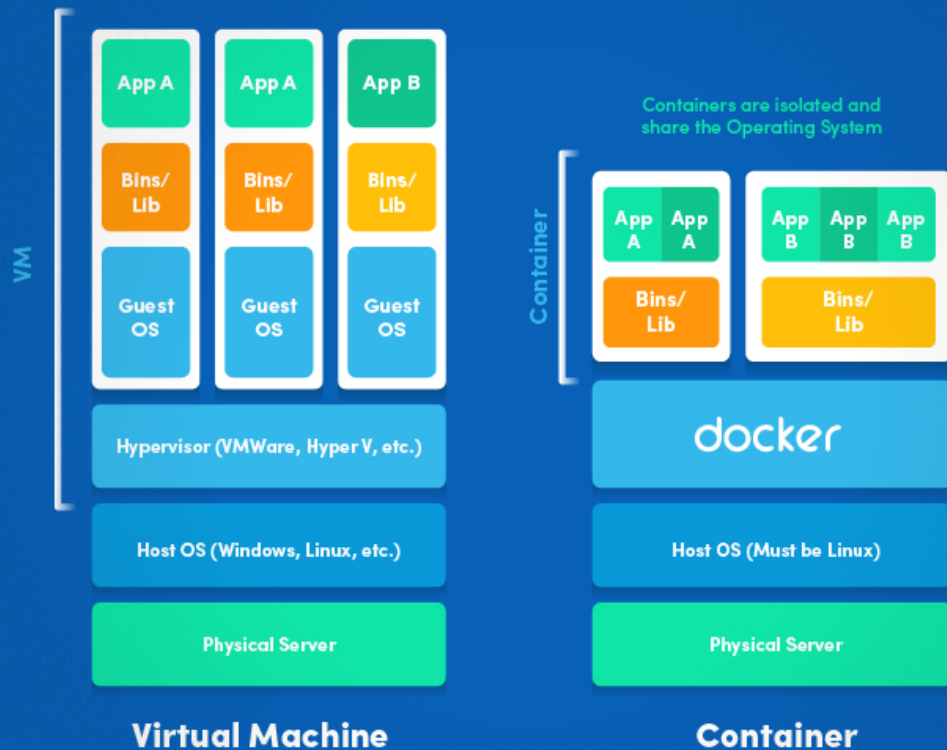
Juan Reyes
reyes@ucsd.edu

Tools

Docker is a computer program that performs operating-system-level virtualization, also known as "containerization".

Pandas (Python Data Analysis Library) takes data (like a CSV or TSV file, or a SQL database) and creates a Python object with rows and columns called ***data frame*** that looks very similar to table in a statistical software.

Containers vs. VMs



Dockerfile

```
FROM ubuntu:latest

RUN apt-get update \
    && apt-get install -y build-essential bash vim curl git wget \
    python3 python3-pip python3-dev \
    && apt-get -y autoremove \
    && apt-get -y clean \
    && apt-get autoclean \
    && rm -rf /var/lib/apt/lists/*

# No need for Python 2
RUN rm -f /usr/bin/python && ln -s /usr/bin/python3 /usr/bin/python

RUN pip3 install --upgrade pip
RUN pip3 install numpy scipy pandas matplotlib pymongo
```


Dockerfile

```
ENV HOME /home
RUN mkdir -p /home/notebooks

COPY db2mongo.py /home/
COPY dblogger.py /home/
COPY dbevents.py /home/
COPY dbscope.py /home/

RUN mkdir -p /home/notebooks/db
ADD demo/ /home/notebooks/db/
```

Dockerfile

```
RUN mkdir -p /home/notebooks/antelope/data/schemas  
ADD schemas /home/notebooks/antelope/data/schemas/  
  
WORKDIR /home/  
CMD ["python", "db2mongo.py", "/home/notebooks/db/demo"]
```

The screenshot shows the Docker Hub interface for user **jreyes1108**. The page title is "Repositories". A search bar is present with the placeholder text "Type to filter repositories by name". Below the search bar, there is a table listing the user's repositories. The table has four columns: repository name, visibility, stars, pulls, and a details link. Three repositories are listed, all with 0 stars and 0 pulls.

Repository	Visibility	Stars	Pulls	Details
jreyes1108/antelopeevents_web	public	0	0	DETAILS
jreyes1108/antelopeevents_db	public	0	0	DETAILS
jreyes1108/antelopeevents_worker	public	0	0	DETAILS

services:

mongodb:

image: jreyes1108/antelopeevents_db

environment:

- ADMIN_USER=admin
- ADMIN_PASS=adminpass
- USER=user
- PASS=userpass
- DB=dev

ports:

- 27017:27017

web:

image: jreyes1108/antelopeevents_web

ports:

- 80:80

depends_on:

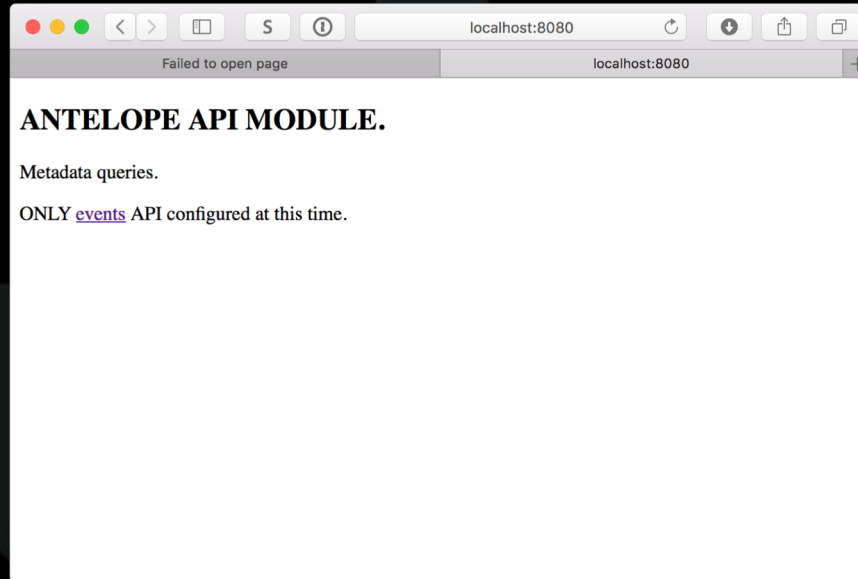
- mongodb

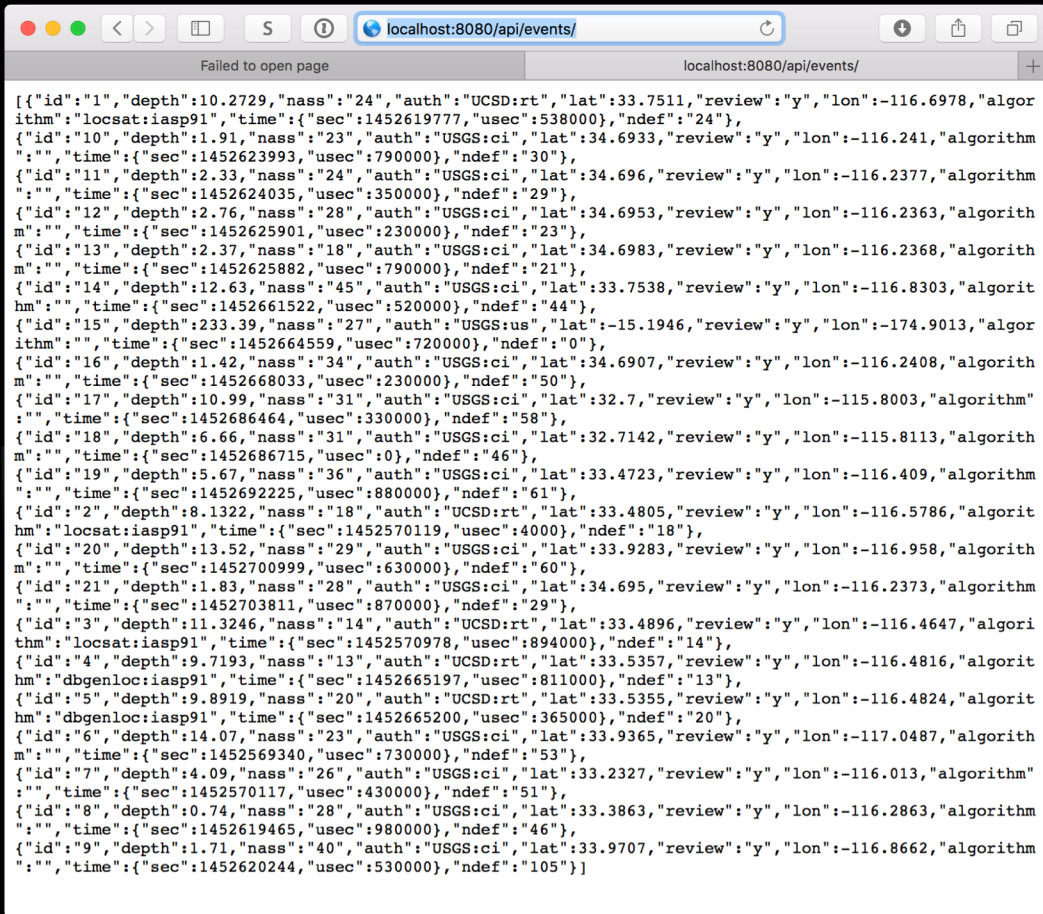
worker:

image: jreyes1108/antelopeevents_worker

depends_on:

- web
- Mongodb





```
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}
```

docker

containers



swarm



compose



The screenshot displays the AWS Management Console interface. On the left, the navigation menu shows various AWS services, with 'EC2 Dashboard' and 'Instances' highlighted. The main content area shows a table of EC2 instances. The first instance, named 'antelope', is in a 'running' state. To the right of the table, the details for the selected instance are shown. The 'Description' tab is active, providing a comprehensive overview of the instance's configuration, including its ID, state, type, availability zone, security groups, and various identifiers like AMI ID, VPC ID, and Subnet ID. The 'Launch time' is also displayed as 'May 8, 2018 at 9:29:58 AM UTC+2 (less than one hour ago)'.

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS (IPv4)	IPv4 Public IP
antelope	i-0b45247c1e2cc4095	t2.micro	us-east-2a	running	Initializing	None	ec2-13-59-176-106.us-east-2.compute.amazonaws.com	13.59.176.106

Instance: i-0b45247c1e2cc4095 (antelope) **Public DNS:** ec2-13-59-176-106.us-east-2.compute.amazonaws.com

Description		Status Checks	Monitoring	Tags
Instance ID	i-0b45247c1e2cc4095			
Instance state	running			
Instance type	t2.micro			
Elastic IPs				
Availability zone	us-east-2a			
Security groups	docker-machine, view inbound rules			
Scheduled events	No scheduled events			
AMI ID	ubuntu/images/hvm-ssd/ubuntu-xenial-16.04-amd64-server-20170619.1 (ami-8b92b4ee)			
Platform	-			
IAM role	-			
Key pair name	antelope			
EBS-optimized	False			
Public DNS (IPv4)	ec2-13-59-176-106.us-east-2.compute.amazonaws.com			
IPv4 Public IP	13.59.176.106			
IPv6 IPs	-			
Private DNS	ip-172-31-7-91.us-east-2.compute.internal			
Private IPs	172.31.7.91			
Secondary private IPs				
VPC ID	vpc-10394b78			
Subnet ID	subnet-4eb2dc26			
Network interfaces	eth0			
Source/dest. check	True			
T2 Unlimited	-			
Owner	826239847368			
Launch time	May 8, 2018 at 9:29:58 AM UTC+2 (less than one hour ago)			


```
ec2-18-188-3-206.us-east-2.compute.amazonaws.com/api/€
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