

A nighttime photograph of a city skyline reflected in water. A large bridge with red suspension cables and lights is in the foreground, arching over the water. In the background, several skyscrapers are lit up, including a prominent one with a yellow top. The lights from the buildings and bridge are reflected in the calm water below.

Intro to Microservices



What is a Microservice?

30 seconds about me

- DigitalOcean.
- Thomson Reuters.
- Go Developer 5 years
- Spoken all over the world
- DevOps Startup
- Rode an elephant at my wedding



The background of the image is a close-up, macro shot of numerous water droplets of various sizes. The droplets are scattered across a dark, textured surface, likely glass or metal. The lighting is soft and diffused, creating a bokeh effect where the droplets in the foreground are sharp and detailed, while those in the background are blurred. The overall color palette is dark and moody, with shades of deep blue, purple, and black, accented by the bright, reflective highlights on the water droplets.

**Microservices are an
organizational scaling tool**

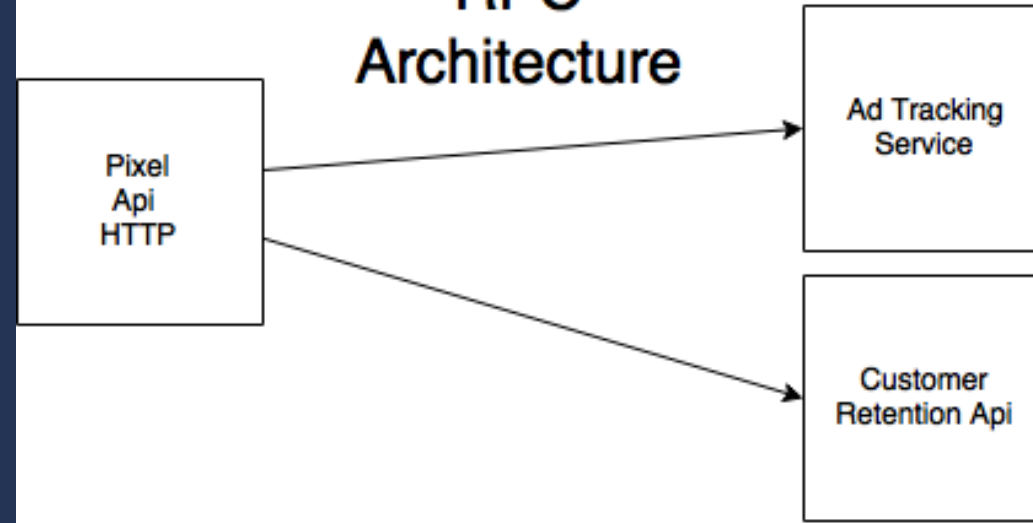
A photograph of a forest path covered in fallen autumn leaves. Two people are walking away from the camera on the path. The trees have dense foliage in shades of green, yellow, and brown. The overall lighting is soft and slightly dim, suggesting an overcast day or late afternoon. The text "Monoliths are great" is overlaid in a bold, yellow font in the center of the image.

Monoliths are great

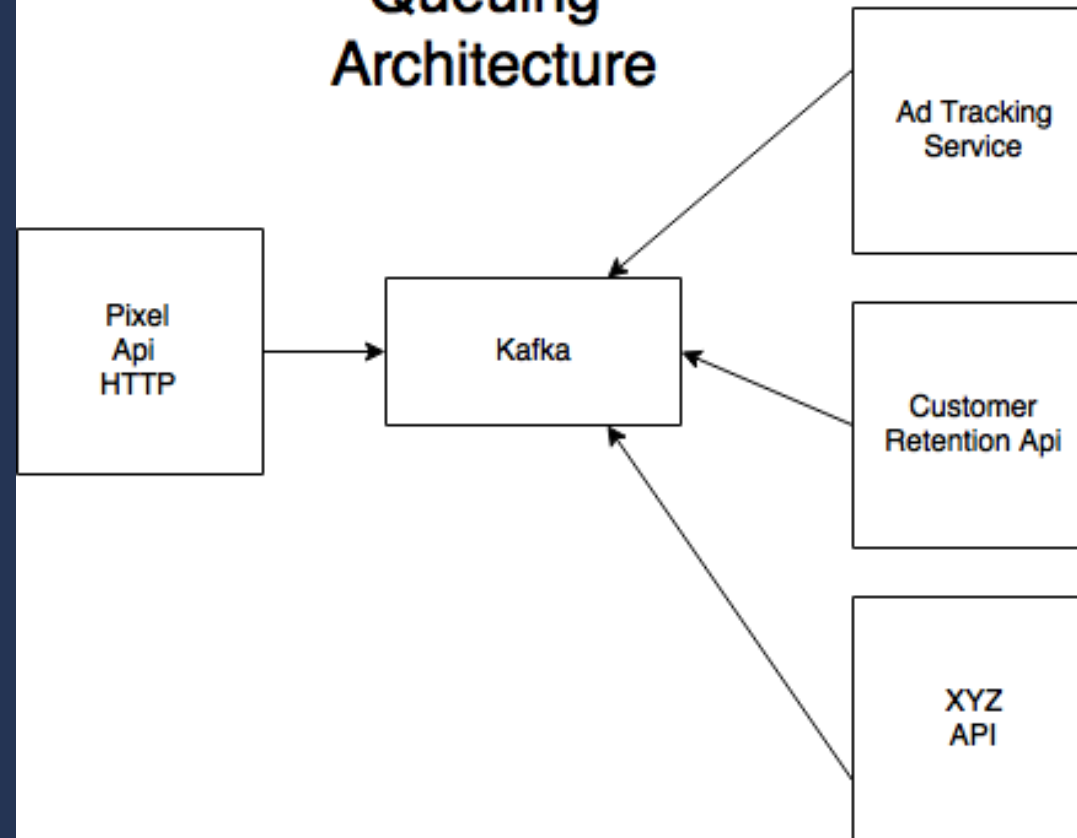
A photograph of a natural rock archway in a desert landscape. The arch is made of reddish-brown sandstone with visible horizontal layering. Through the arch, a clear blue sky and a rounded rock formation are visible. The text 'RPC Message Driven' is overlaid in the center in a bold, yellow font.

RPC Message Driven

RPC Architecture



Queuing Architecture



A wide-angle landscape photograph featuring a two-lane asphalt road that stretches from the bottom center towards the horizon. The road is flanked by green fields and some trees. In the background, a range of large, rugged mountains with significant snow cover dominates the scene under a heavy, overcast sky. The overall color palette is muted, with a blueish-grey tint.

G/RPC

Protobuf definition

```
package helloworld;

// The greeting service definition.
service Greeter {
    // Sends a greeting
    rpc SayHello (HelloRequest) returns (HelloReply) {}
}

// The request message containing the user's name.
message HelloRequest {
    string name = 1;
}

// The response message containing the greetings
message HelloReply {
    string message = 1;
}
```



Forget about config files

Environment variables

```
from envparse import env
```

```
env.read_envfile()
```

```
print('ACCESS =', env.str('AWS_ACCESS_KEY'))
```

```
print('SECRET =', env.str('AWS_SECRET_KEY'))
```

```
print('CONSULTING_LEVEL =', env.str('CONSULTING_LEVEL'))
```

```
print('OTHER =', env.str('OTHER', default='foo'))
```

Metrics

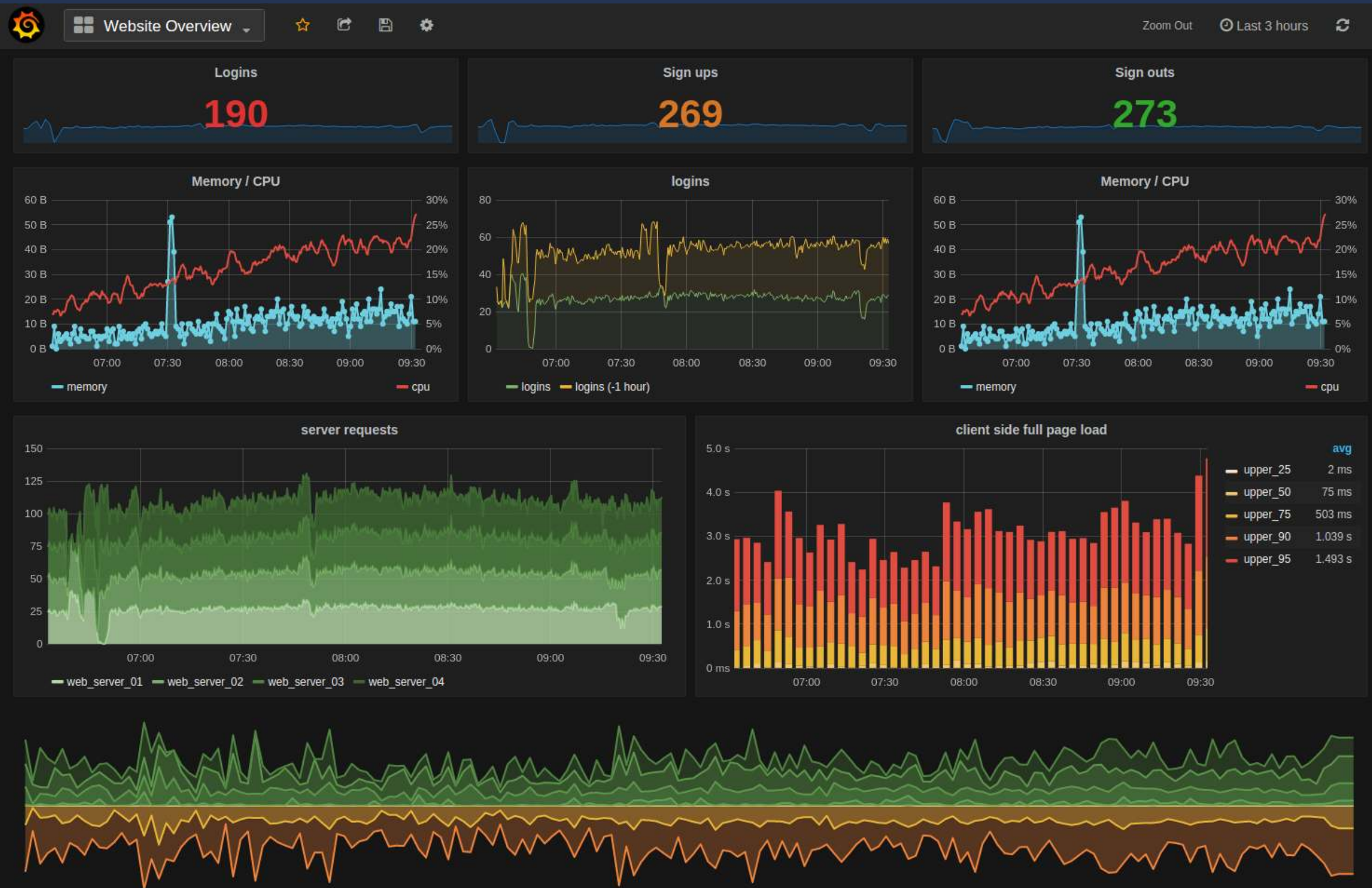


Metrics

```
from prometheus_client import Gauge
g = Gauge('my_inprogress_requests', 'Description of gauge')
g.inc()      # Increment by 1
g.dec(10)    # Decrement by given value
g.set(4.2)   # Set to a given value
```

```
from prometheus_client import Histogram
h = Histogram('request_latency_seconds', 'Description of histogram')
h.observe(4.7)    # Observe 4.7 (seconds in this case)
```

```
from prometheus_client import Counter
c = Counter('my_requests_total', 'HTTP Failures', ['method', 'endpoint'])
c.labels(method='get', endpoint='/').inc()
c.labels(method='post', endpoint='/submit').inc()
```





Logging to files is obsolete

REK Stack

- Rsyslog
- Elastic Search
- Kibana

Structured logging

```
{  
  "program": "microservice1", "host": "box01",  
  "log_level": "info", "msg": "Api Request recieved",  
  "user_id": "12345", "rpc_method": "post_add_tick"  
}
```

Logging

```
from structlog import get_logger
log = get_logger()
log.info("key_value_logging", out_of_the_box=True, effort=0)
```

```
log = log.bind(user="anonymous", some_key=23)
log = log.bind(user="hynek", another_key=42)
log.info("user.logged_in", happy=True)
```

+article



+article

700,316 hits

Selected Fields

_source

Fields

Popular fields

agent

bytes

geo.city

geo.coordinates

geo.country_code

@timestamp

_id

_index

_type

creation_time

destination

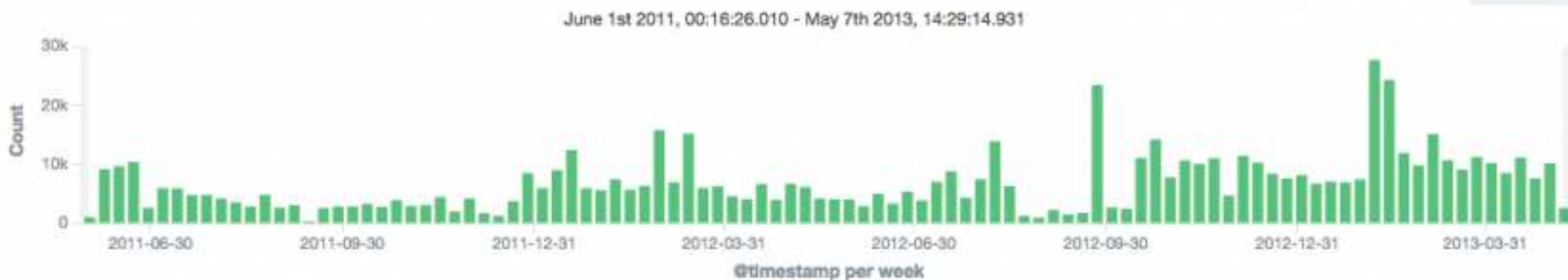
geo.region

referrer

request

timezone

user



Time	_source
May 7th 2013, 14:29:02.000	referrer: http://www.spk.usace.army.mil/Media/NewsReleases/tabid/1034/ Article /13480/corps-releases-inspection-rating-sacramento-river-west-bank-levees.aspx @timestamp: May 7th 2013, 14:29:02.000 creation_time: May 7th 2012, 14:15:25.000 agent: Mozilla/5.0 (Windows NT 6.1; WOW64; rv:20.0) Gecko/20100101 Firefox/20.0 bytes: 379990 geo.country_code: US geo.city: Fort Huachuca geo.region: AZ geo.coordinates: {"lat":31.5273,"lon":-110.360703} timezone: America/Phoenix request: http://bit.ly/JMGCUW destination: http://www.spk.usace.army.mil/M
May 7th 2013, 14:28:50.000	destination: http://www.spk.usace.army.mil/Media/NewsReleases/tabid/1034/ Article /13480/corps-releases-inspection-rating-sacramento-river-west-bank-levees.aspx @timestamp: May 7th 2013, 14:28:50.000 creation_time: May 3rd 2013, 12:01:44.000 agent: Mozilla/5.0 (Windows NT 6.1; WOW64; rv:20.0) Gecko/20100101 Firefox/20.0 bytes: geo.country_code: US geo.city: Fort Huachuca geo.region: AZ geo.coordinates: {"lat":31.5273,"lon":-110.360703} timezone: America/Phoenix request: http://1.usa.gov/18ikFnb user: usacesacramento referrer: direct

Table

JSON

[Link to /usagov/log/AUuEF4d3npiyxElindkv](#)

@timestamp

May 7th 2013, 14:28:50.000

Container based deploys



Docker file example

```
COPY requirements.txt ./
```

```
RUN pip install --no-cache-dir -r requirements.txt
```

```
COPY . .
```

```
CMD [ "python", "./your-daemon-or-script.py" ]
```

Docker build

```
docker build -t myapp:version .
```

Docker Run

```
docker run -V /dev/log:/dev/log -E=addr=:8080 myapp:version
```

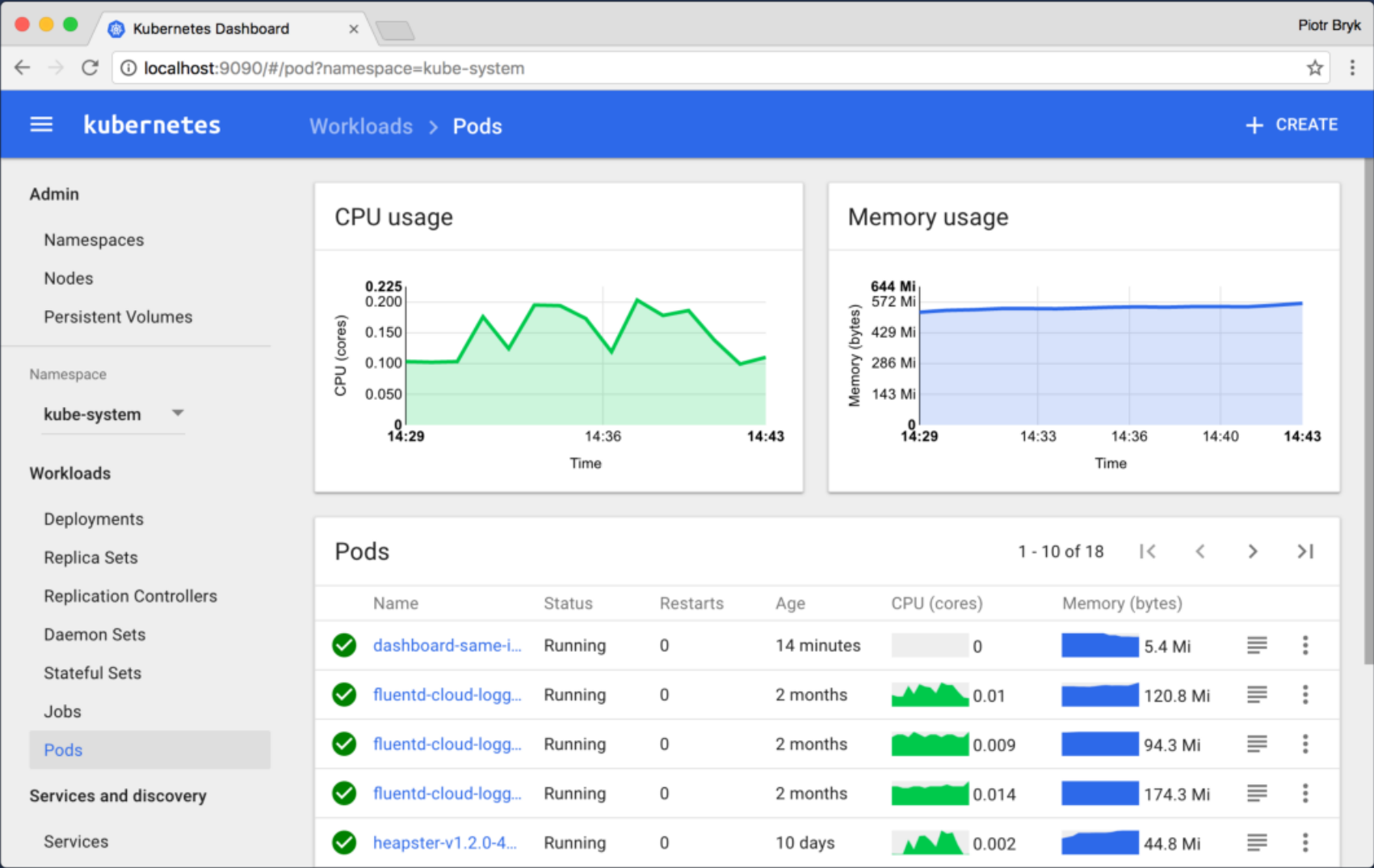
Breakdown

- Syslog -> -V /dev/log:/devlog
- ENV Vars -> -E addr=:8080
- Application container -> myapp:version

A wide-angle photograph of the Golden Gate Bridge at night. The bridge's iconic orange-red towers and suspension cables are illuminated, with warm yellow lights along the bridge deck. The bridge spans a body of water, and its lights are reflected on the calm surface. In the background, the city lights of San Francisco and the dark silhouettes of hills are visible under a deep blue twilight sky.

Ansible + Docker

Kubernetes



Cloud

- Aws Container engine
- Google Container Engine (GKE)
- Private install of Kubernetes





Why containers are the future



Questions?