

Modernizing with Docker

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WILLIAM & MARY

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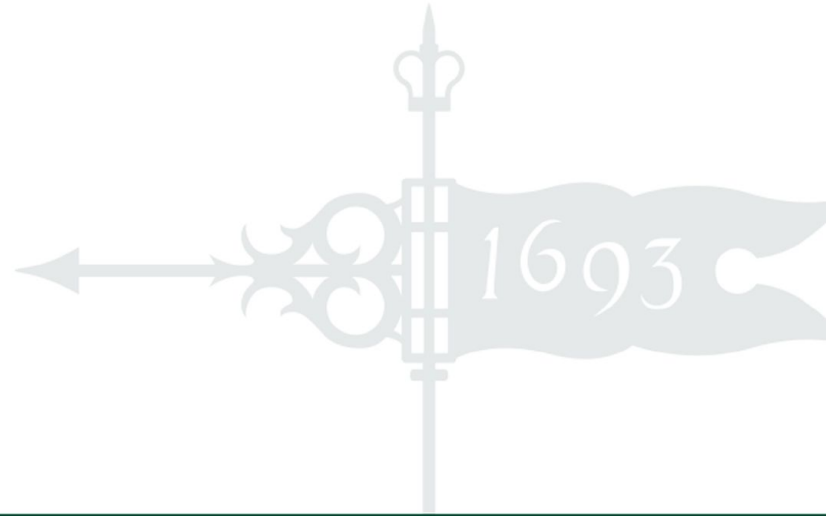
Agenda

- Modernize?
- Overview
- Best Practices
- Demo
- Challenges
- Next Steps

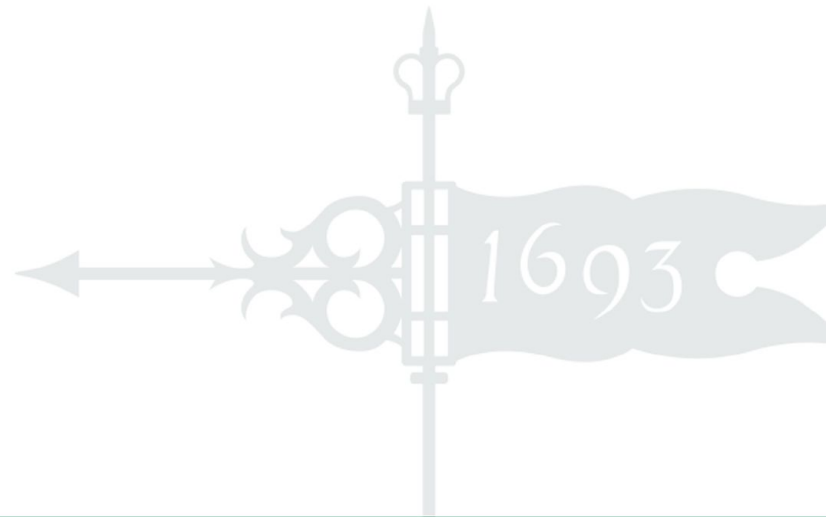


Modernization

Running apps not (intentionally) designed to run in containers, in containers.

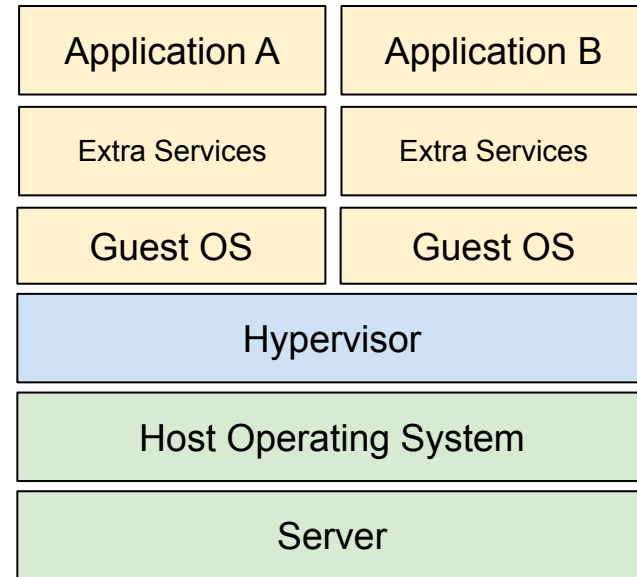
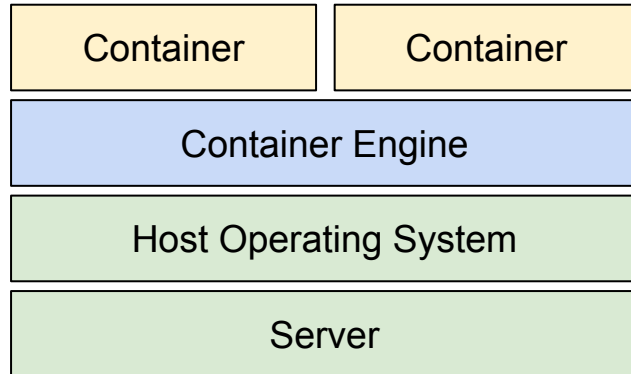


Demo

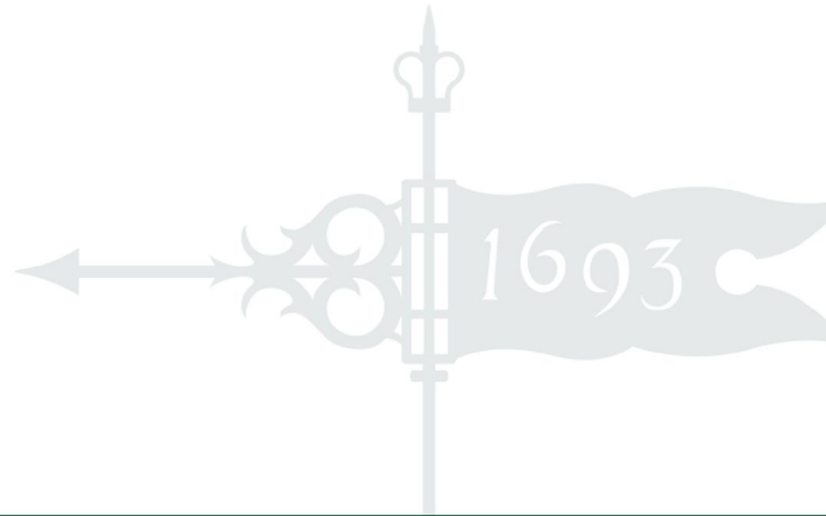


It's Not a VM

- Shared kernel
- Higher density

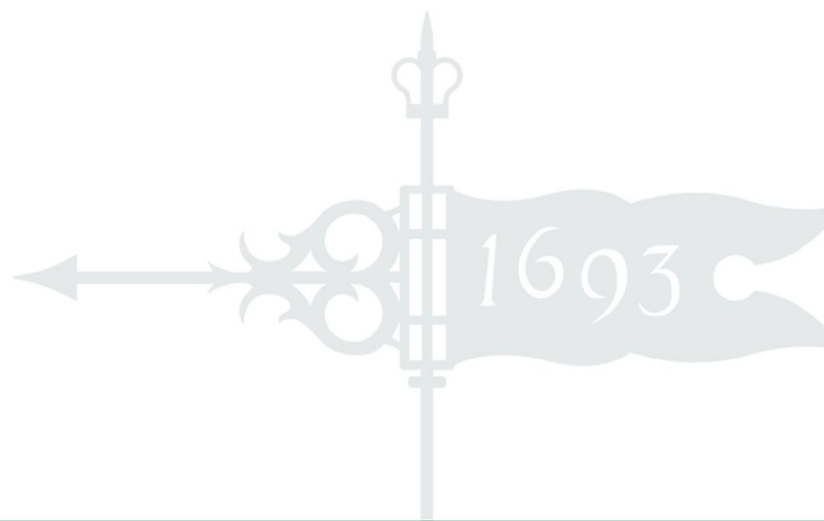


It's not lift and shift



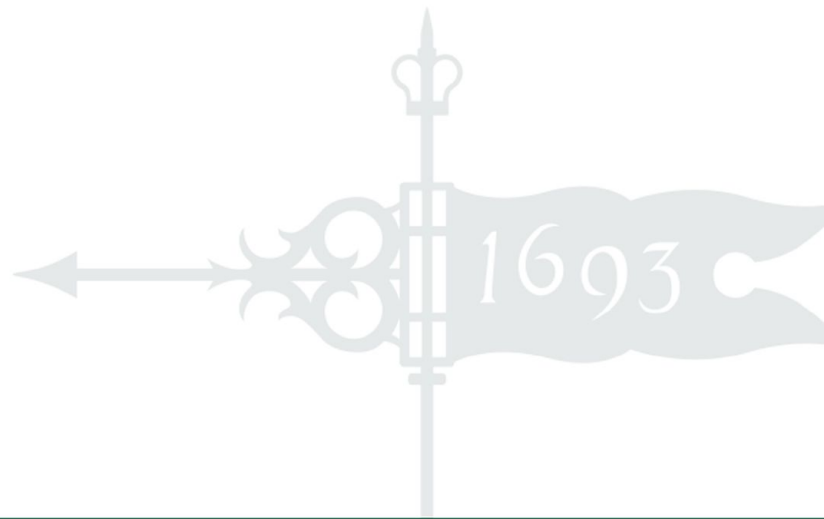
Best Practices

- Think about where you're headed
- Nothing environment specific
- No secrets
- Aim for one task per container
- Log to standard out/error



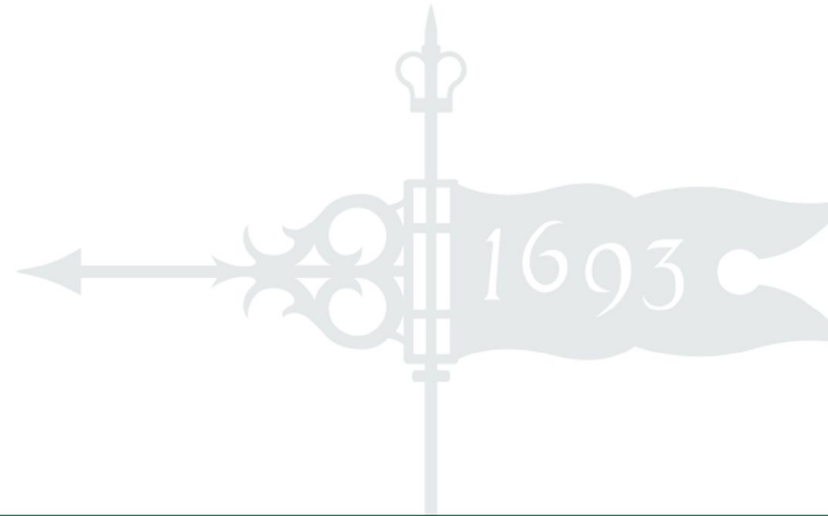
Where You're Headed

- Swarm, Kubernetes, both?
- Local development?
- Automated builds?
- Offload SSL?
- Plan to iterate



Nothing Environment Specific

- Create new instances quickly
- Promote the same image across instances
- Packaging applications, not (full) configuration



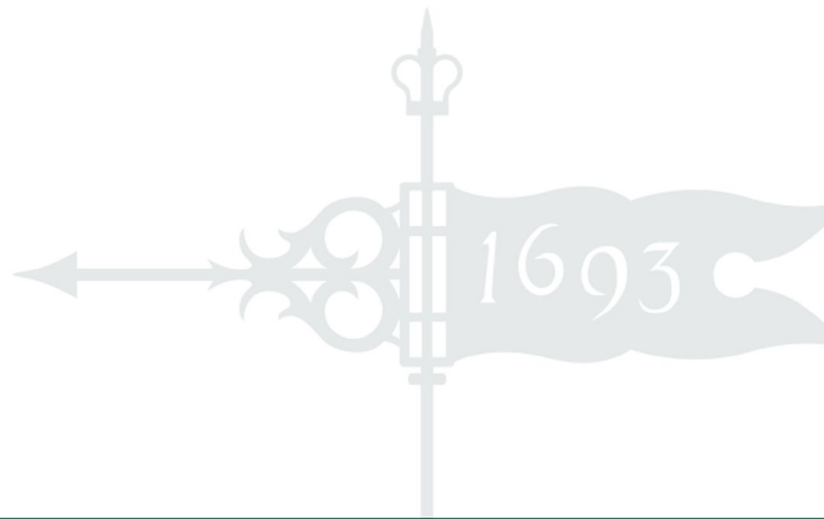
No Secrets

- Should be instance specific
- Special kind of configuration
- Keeps them from ending up where they shouldn't be
- Avoid secrets in environment variables*



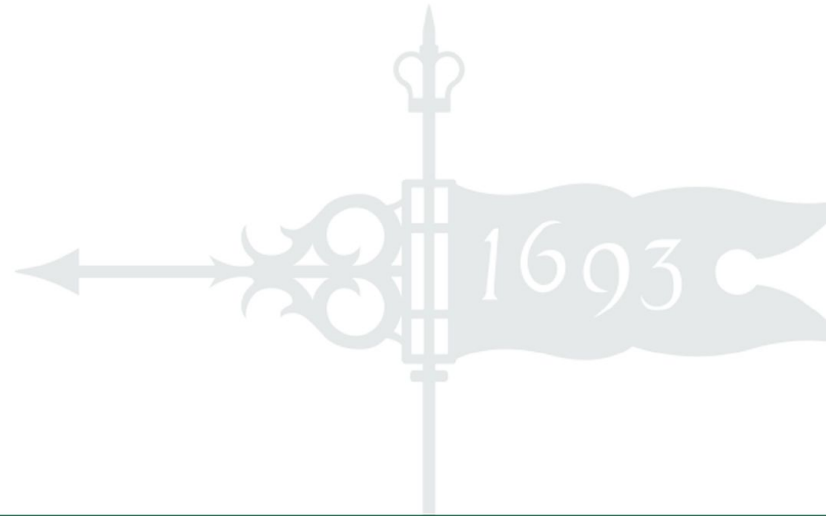
One Task Per Container*

- Less modular
- Requires systemd, upstart, init, etc.



Log Collection

- Log to stdout/stderr when possible



Making it Go

```
if [ -f "$DB_PASSWORD" ]; then
```

```
    val=$(cat "$DB_PASSWORD")
```

```
    sed -i "s/my_password/${val}/" "$SETTINGS_FILE"
```

```
else
```

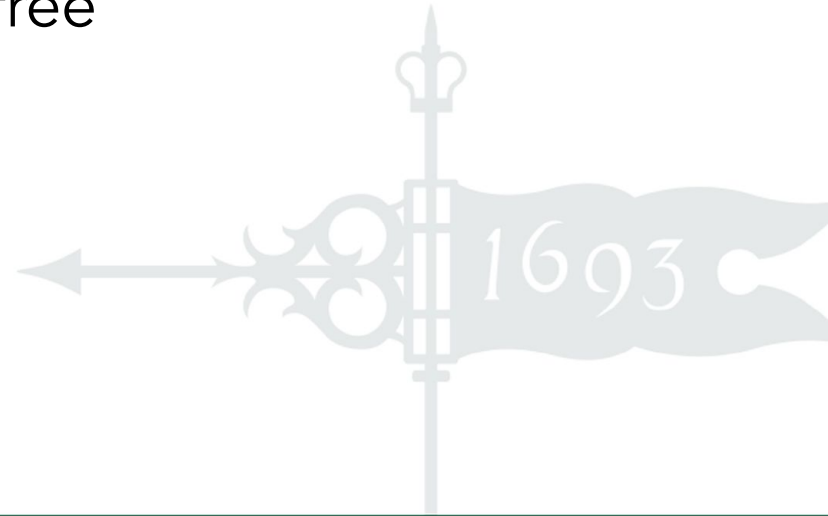
```
    sed -i "s/my_password/${DB_PASSWORD}/" "$SETTINGS_FILE"
```

```
fi
```



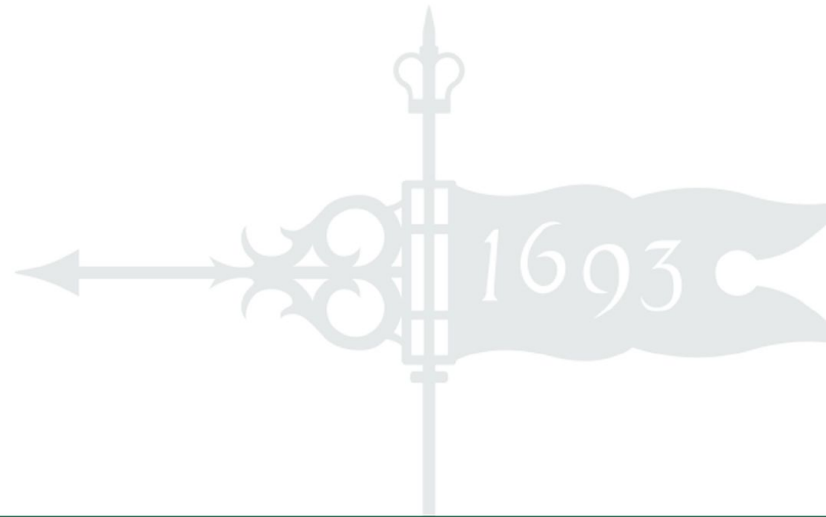
Demo

- W&M CMS is a commercial Java/Tomcat app
- Vendor provides (and only supports) their own Tomcat
- Target swarm and local development
 - Should get Kubernetes for free



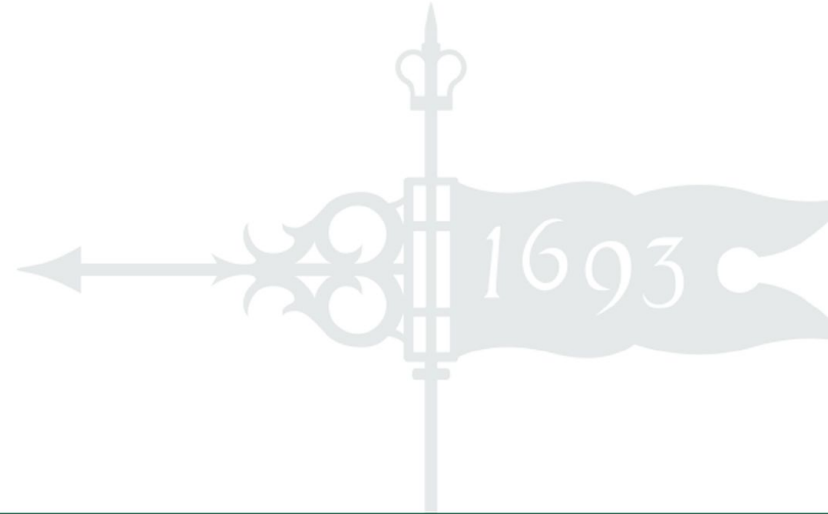
Build

- Uses vendor supplied packages
- Require ourselves to set instance specific stuff
 - We could have set defaults, but didn't have a lot
- Limited stuff to patch
- Tested on our local machine



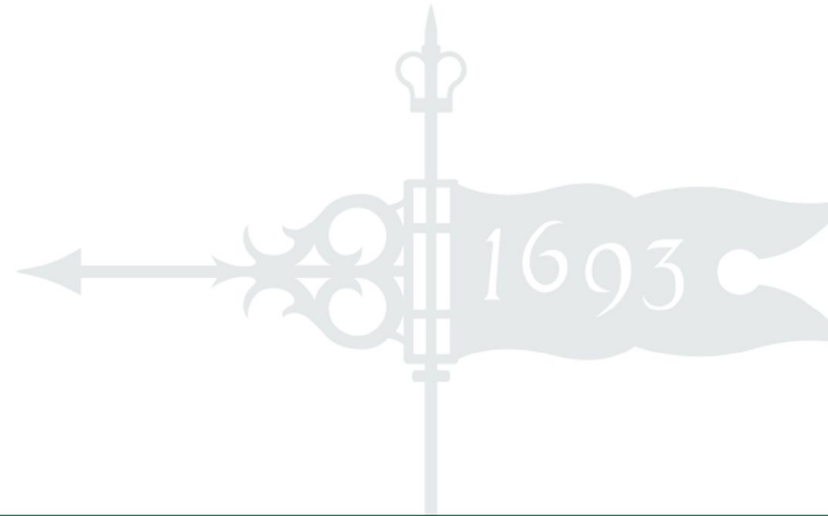
Run

- Runs on Swarm and Kubernetes
- Scales up and down easily
- Developers and Operations become soft dependencies on each other



Our Challenges

- Session persistence
- Log captures
- Scheduled service restarts



Ecosystem

Traefik (traefik.io)

```
traefik.backend.loadbalancer.stickiness: "true"
```

Filebeat (elastic.co)

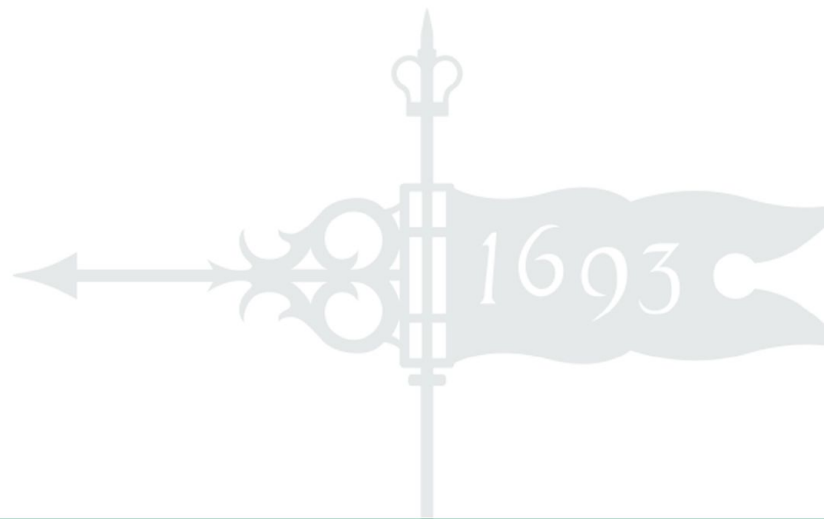
```
filebeat.enable: "true"
```

Custom Tools (github.com/pcfens/swarm-service-restart)

```
edu.wm.restartService.schedule: "0 4 * * 3"
```

What Next?

- Monitor your Environment
 - We use Prometheus with cadvisor
- Might need a L7 load balancer
 - Traefik, nginx, Docker EE
- Containerize more apps
- Share





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INFORMATION TECHNOLOGY

github.com/pcfens/docker-summit

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