Modernizing with Docker

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Agenda

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

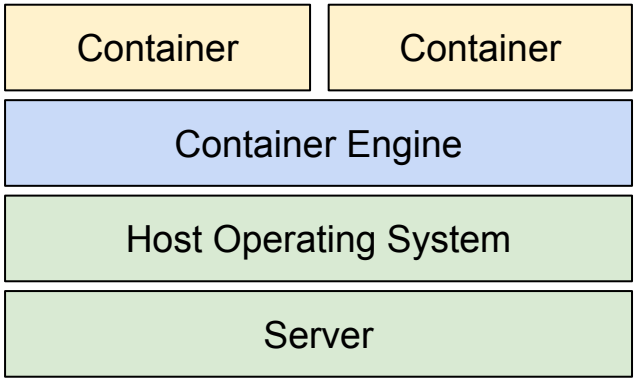
Modernization

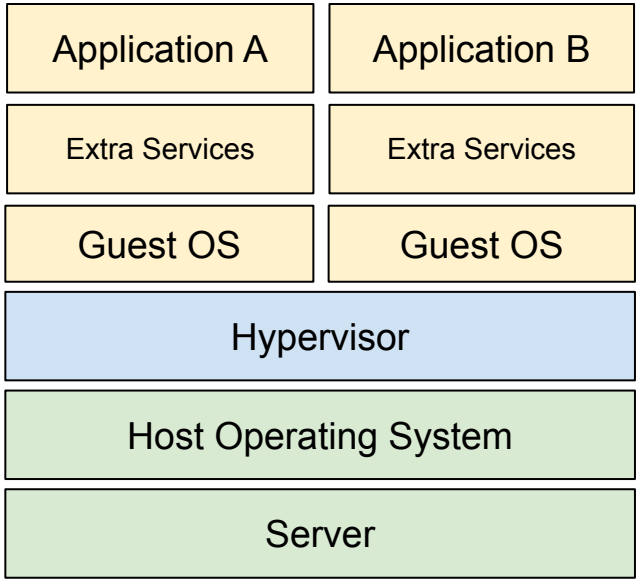
Running apps not (intentionally) designed to run in containers, in containers.

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

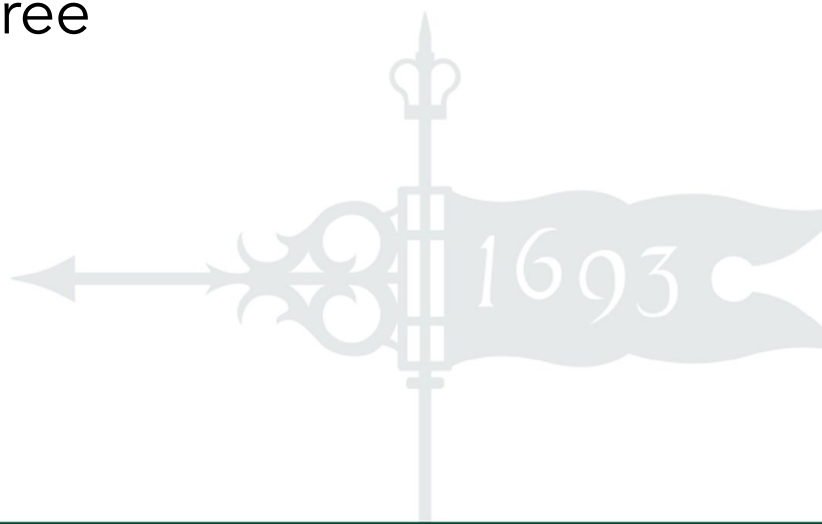
- Log to stdout/stderr when possible

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
  - Orchestrators are important, but are easy to change early on
- Scales up and down easily
- Developers and Operations become soft dependencies on each other

Our Challenges

- Session persistence
- Log captures
- Scheduled service restarts

Labels!

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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