

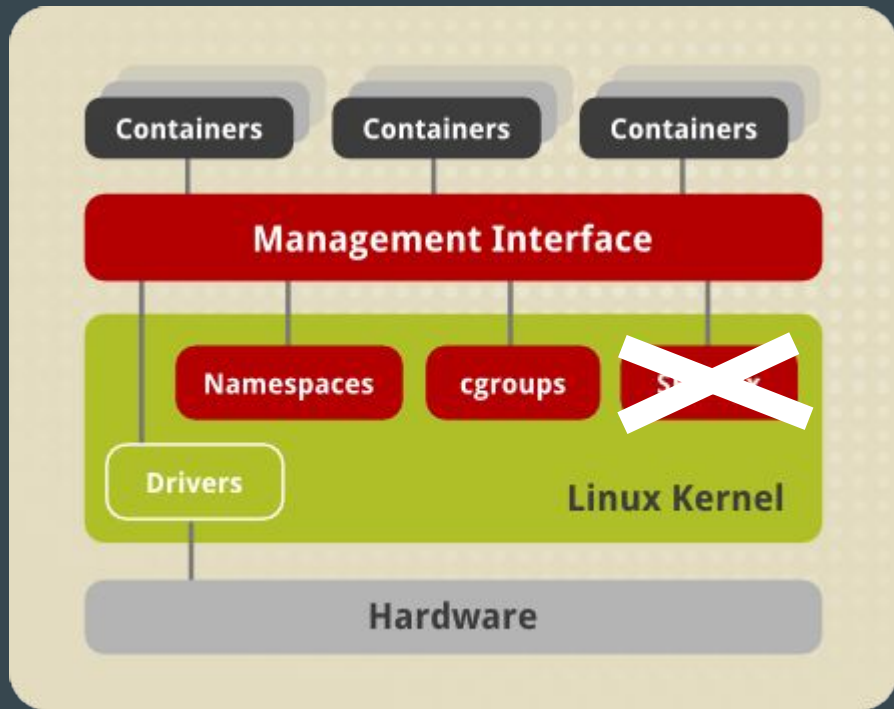
# docker

...

The Rise and Fall of the Container and the Spiders from Mars

# what's a container

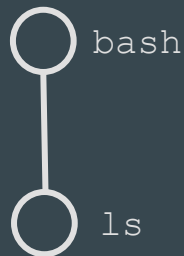
- [docker](#) is a Linux Container
- Linux is a kernel



[Red Hat docs](#)

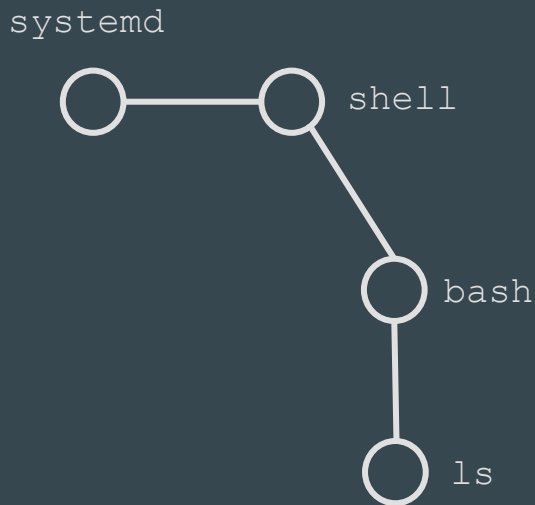
# what's a container

- docker is a Linux Container
- Linux is a kernel
- Namespaces



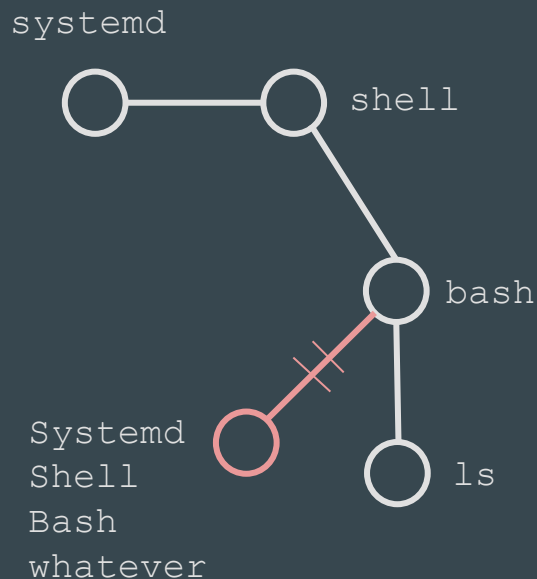
# what's a container

- docker is a Linux Container
- Linux is a kernel
- Namespaces



# what's a container

- docker is a Linux Container
- Linux is a kernel
- Namespaces



# what's a container

- [docker](#) is a Linux Container
- Linux is a kernel
- Namespaces
- Cgroups

# what's a container

- [docker](#) is a Linux Container
- Linux is a kernel
- Namespaces
- Cgroups: resource allocation



## why's a container

“Any organization that designs a system (defined broadly) will produce a design whose structure is a copy of the organization's communication structure.”

– Melvin E. Conway



# why's a container (in science)

TECHNOLOGY FEATURE | 24 August 2020

## Challenge to scientists: does your ten-year-old code still run?

**Missing documentation and obsolete environments force participants in the Ten Years Reproducibility Challenge to get creative.**

[Jeffrey M. Perkel](#)



<https://www.nature.com/articles/d41586-020-02462-7>

# why's a container (in science)

- reproducibility as *idempotence*
- dependency hell
- abandoned software



# what's docker

- Docker is a image-based linux container solution.
- Images and containers.
- Volumes.



docker

# necessary nvim setup

- `which node || sudo apt install nodejs npm`
- `npm install -g dockerfile-language-server-nodejs`
- It's fine if that does not work, treesitter will be enough.
- Relevant commit:

[https://github.com/biosustain/lost\\_semester/commit/ce8a04ccbfccac7aaad41b6556b08ae180deb5b31](https://github.com/biosustain/lost_semester/commit/ce8a04ccbfccac7aaad41b6556b08ae180deb5b31)

# Let's build a Docker Image

...

Result commit:

[https://github.com/biosustain/lost\\_semester/commit/5170143f1687d7d9fc4cc6c85d16bf5d17e1e540](https://github.com/biosustain/lost_semester/commit/5170143f1687d7d9fc4cc6c85d16bf5d17e1e540)

# docker-compose

...

The Rise and Fall of the Microservice and the Spiders from Mars

# what's a microservice

- Opposite of Monolith.

Frontend of webpage

Database

Backend HTTPS server

Mail server

Internet Explorer

A weird-looking llama

# what's a microservice

- Opposite of Monolith.

Frontend of webpage

Database

Backend HTTPS server

Mail server



# what's a microservice

- Opposite of Monolith.
- Loosely-coupled mini application.

(own deps)

Backed HTTPS server

# what's a microservice

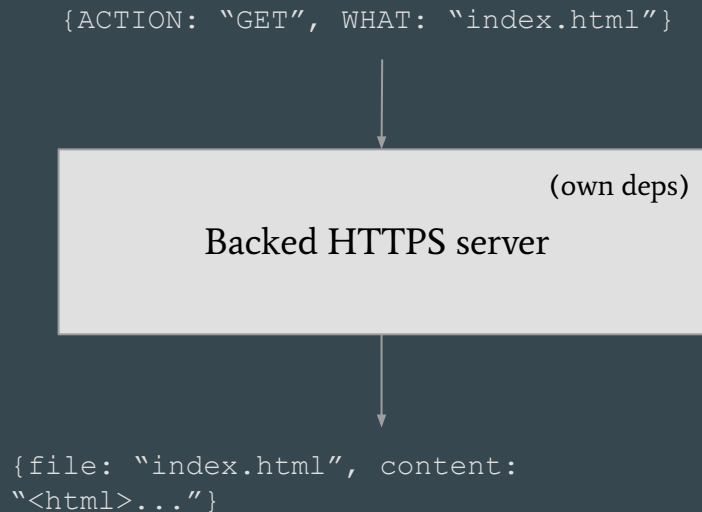
- Opposite of Monolith.
- Loosely-coupled mini application.
- Usually does only one thing.

(own deps)

Backed HTTPS server

# what's a microservice

- Opposite of Monolith.
- Loosely-coupled mini application.
- Usually does only one thing.
- Presents an API to the world\*.



# why's a microservice

- Same as why's a container.

# what's docker-compose

- It is a microservice orchestrator with docker containers as microservices.

# let's orchestrate



Sender commit:

[https://github.com/biosustain/lost\\_semester/commit/8722802627f63f2004559610bdfe1c2b9537982f](https://github.com/biosustain/lost_semester/commit/8722802627f63f2004559610bdfe1c2b9537982f)

Final commit:

[https://github.com/biosustain/lost\\_semester/commit/ac33df8ce94dbafd44aff0de8ca228cf6bf4998b](https://github.com/biosustain/lost_semester/commit/ac33df8ce94dbafd44aff0de8ca228cf6bf4998b)