

Don't talk to strangers

Test isolation with containers

Hristo Iliev

SAP

- NetWeaver Application Server Java
- SAP HANA Cloud Platform

Open Source

- Eclipse Virgo
- Cloud Foundry (Diego & Abacus)



Georgi Sabev

SAP

- SAP HANA Cloud Platform

Open Source

- Cloud Foundry (Diego & Abacus)



A close-up photograph of the side and rear of a silver car, possibly a hatchback, parked on a dark, rocky surface. In the background, a small white boat with a blue stripe is visible on the water under a cloudy sky.

Pictures

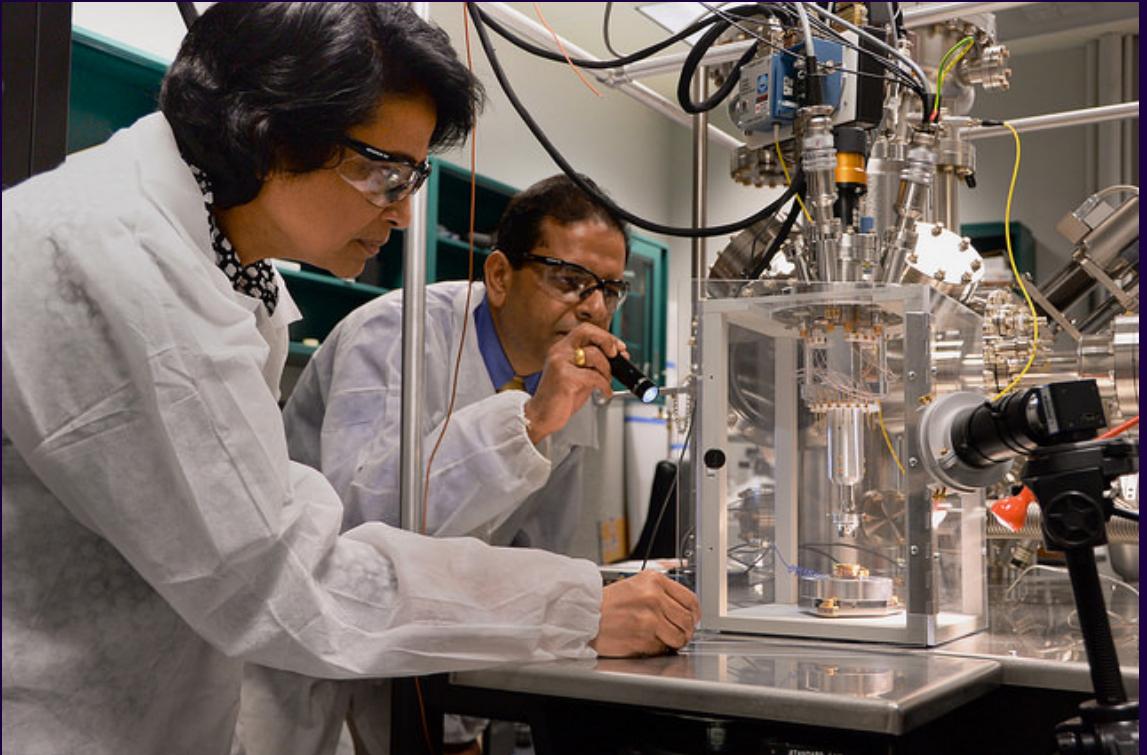
Creative Commons @ Flickr

Creating Working Software

Tests

Automation

Discipline





Problems

Test Pollution

Environment variables

Database records

Files

Programs / libraries



Resource contention

Processes compete for

- CPU
- Memory
- I/O



Multiple environments

OS

Mobile / Desktop

Cloud / Standalone

Databases

Versions



Test problems summary

Test pollution

Resource contention

Multiple environments



Solutions

Traditional

- Dedicated hardware
- Virtual machines
- Cloud: AWS, Azure

New tools

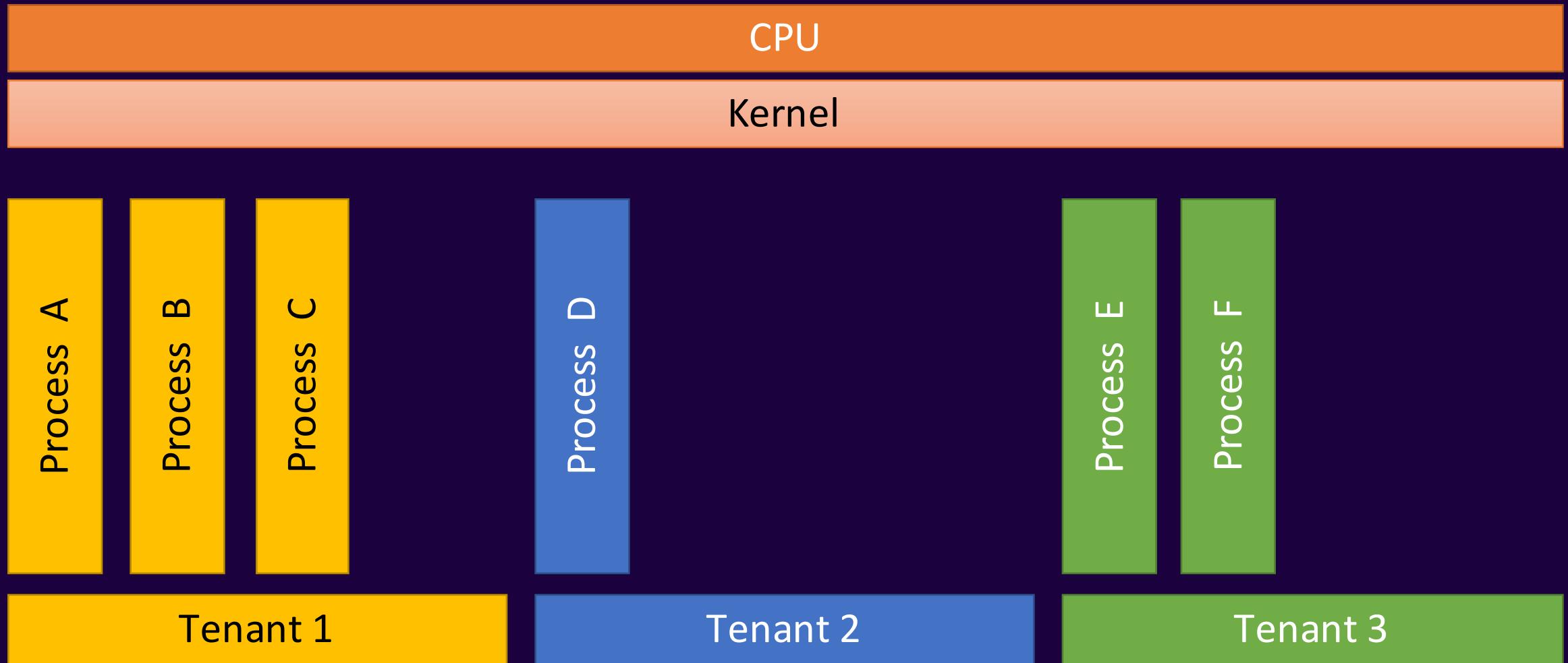




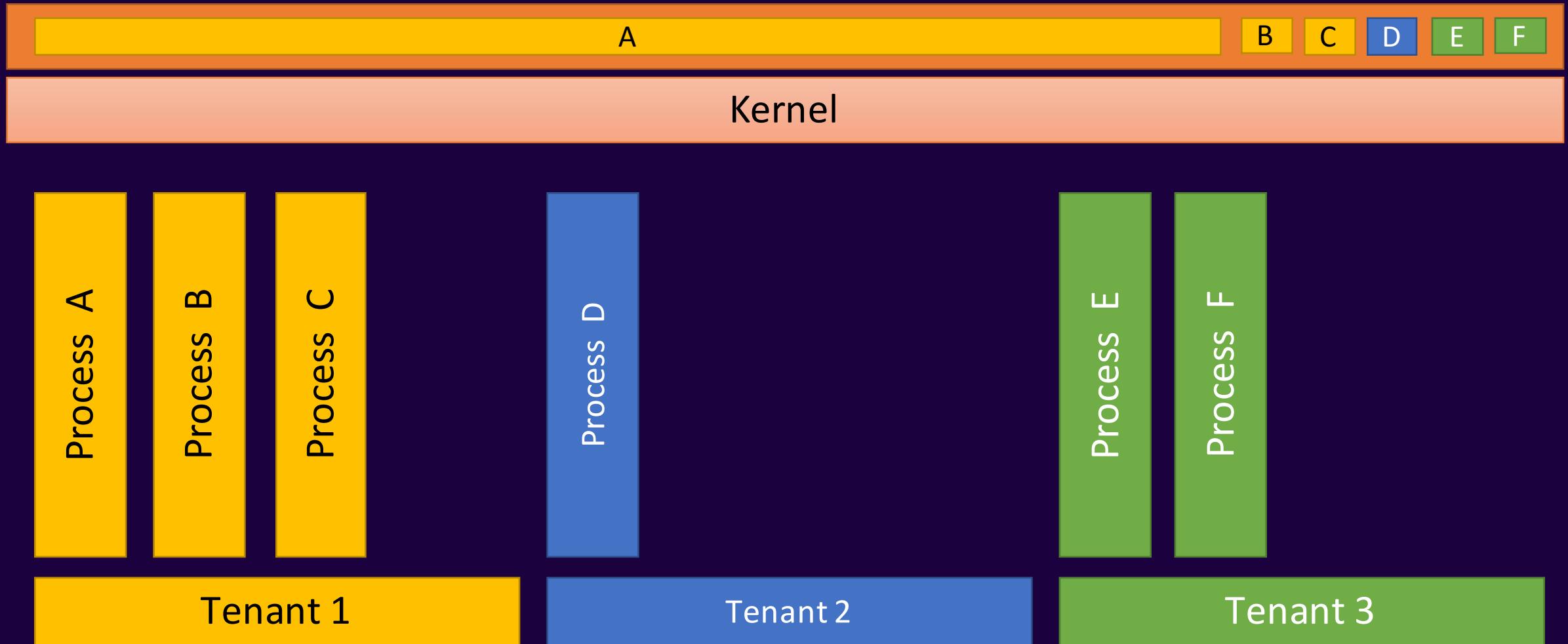
Containers

build, isolate, ship

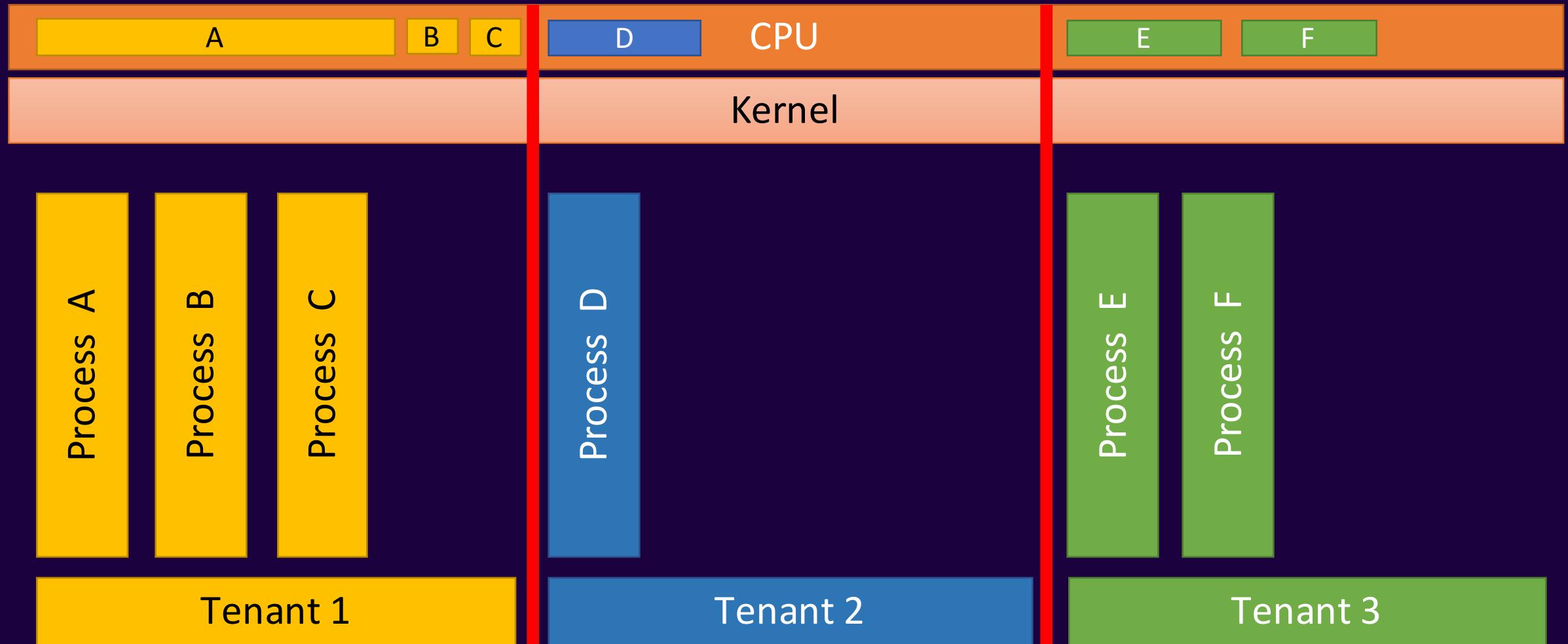
Container: Resource isolation



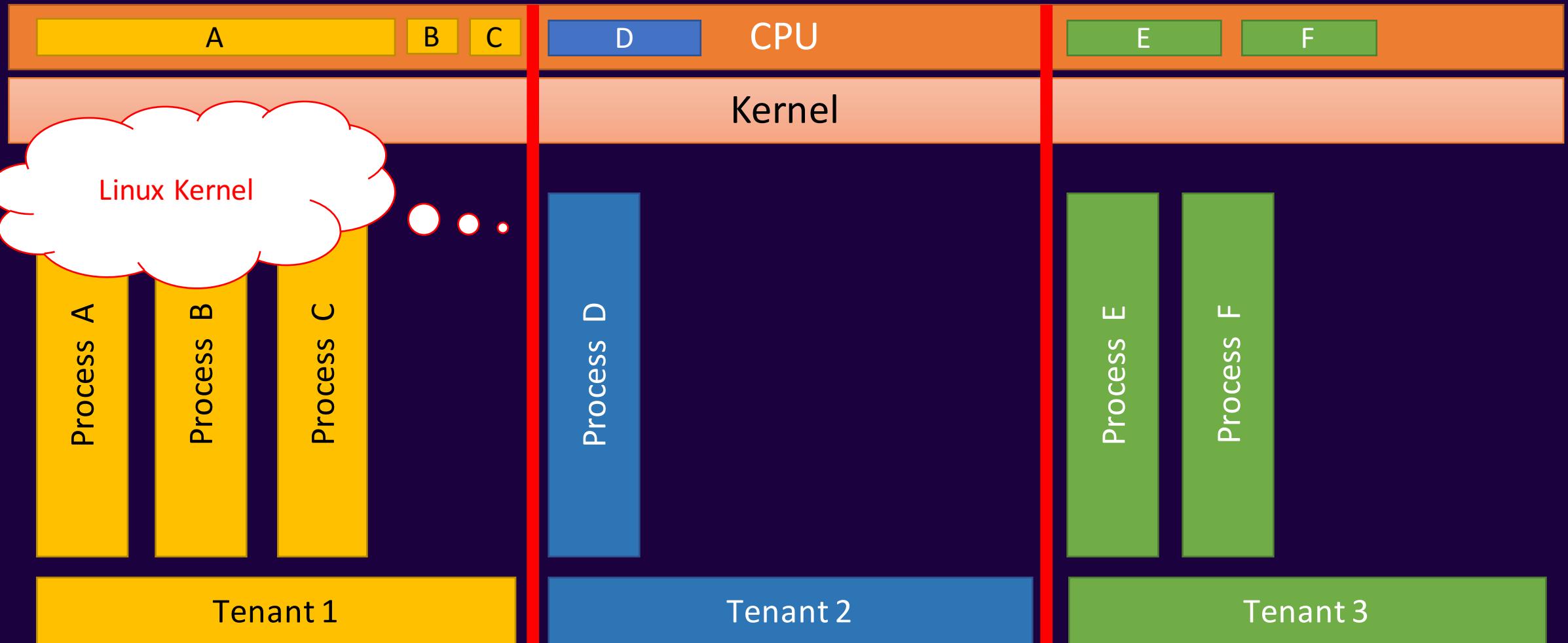
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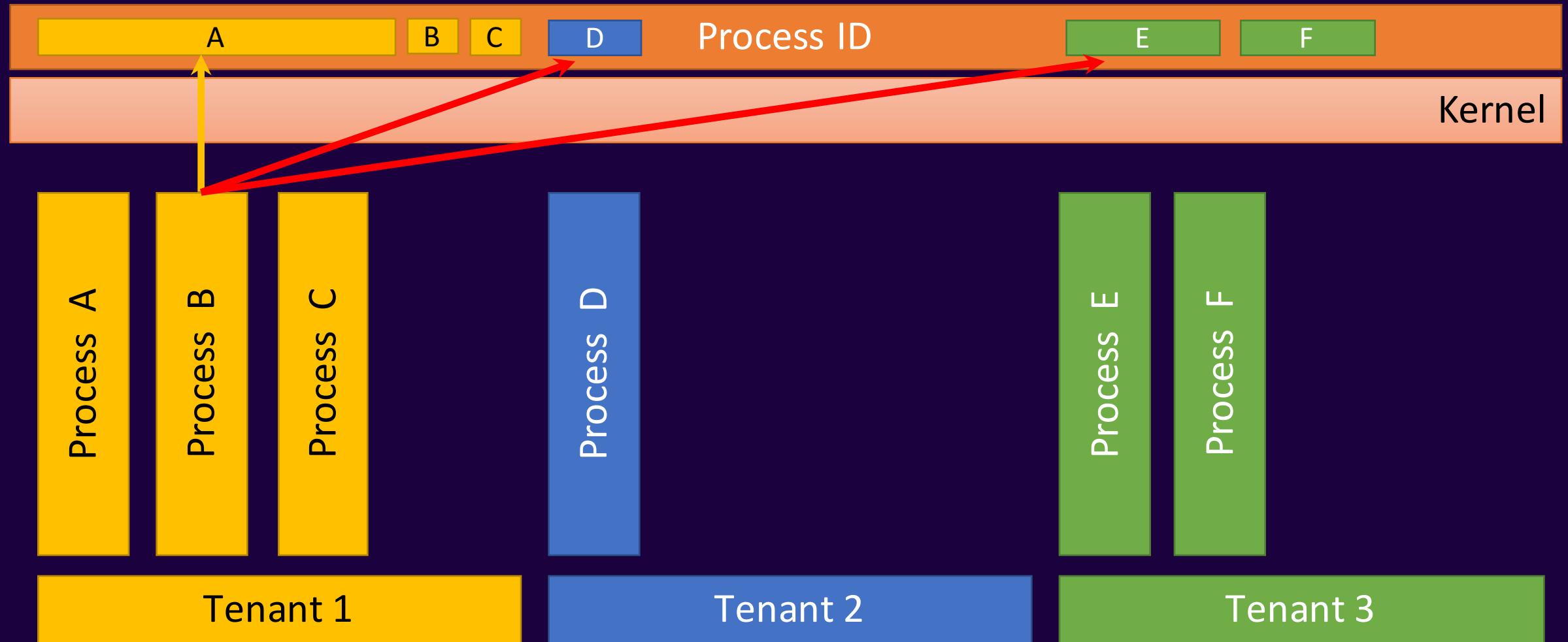
Container: Resource isolation



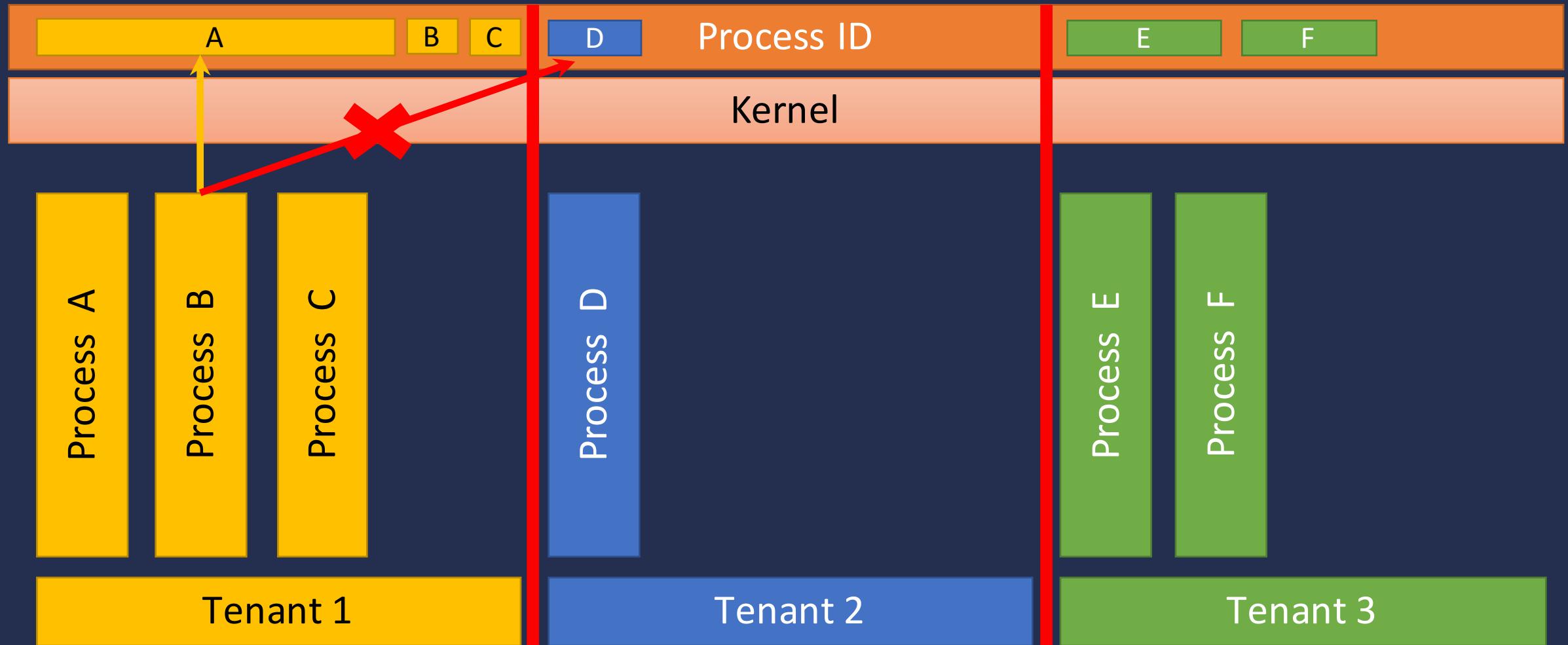
Container: Resource isolation



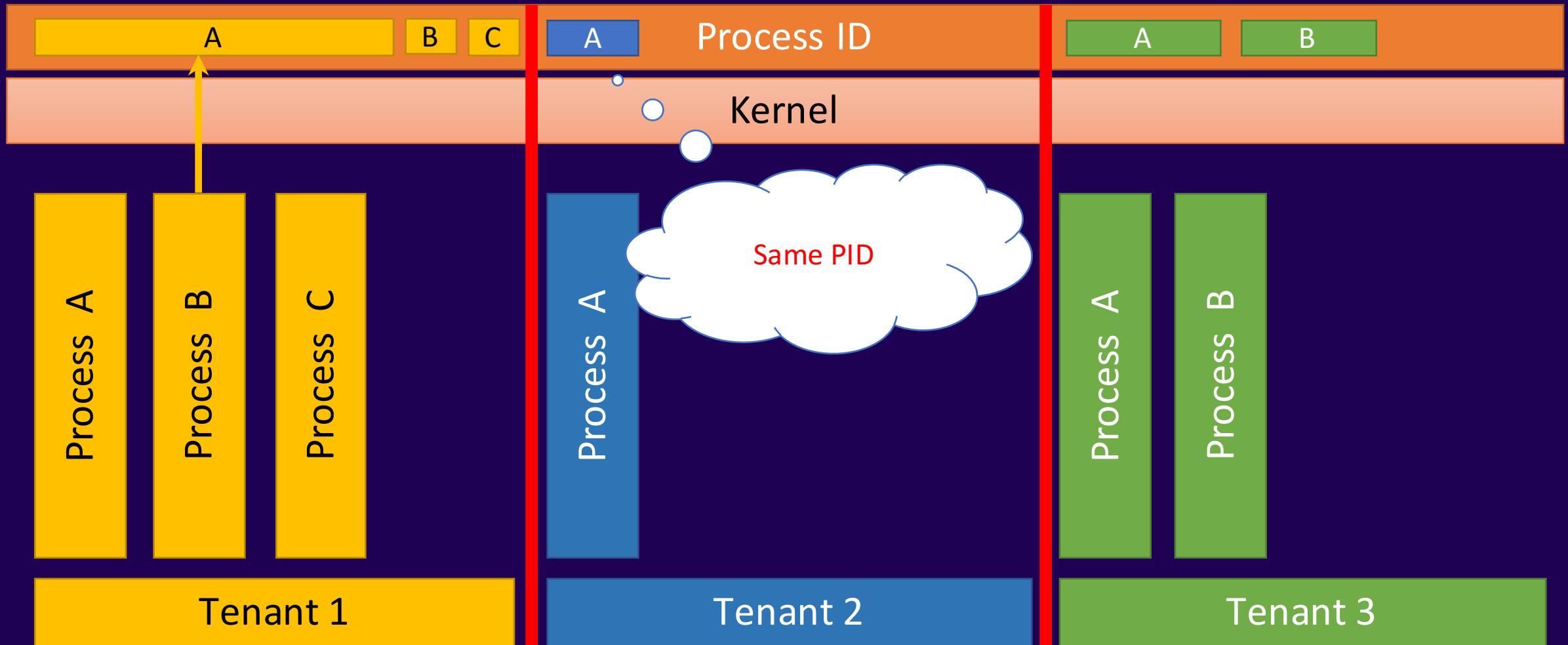
Container: Namespace isolation



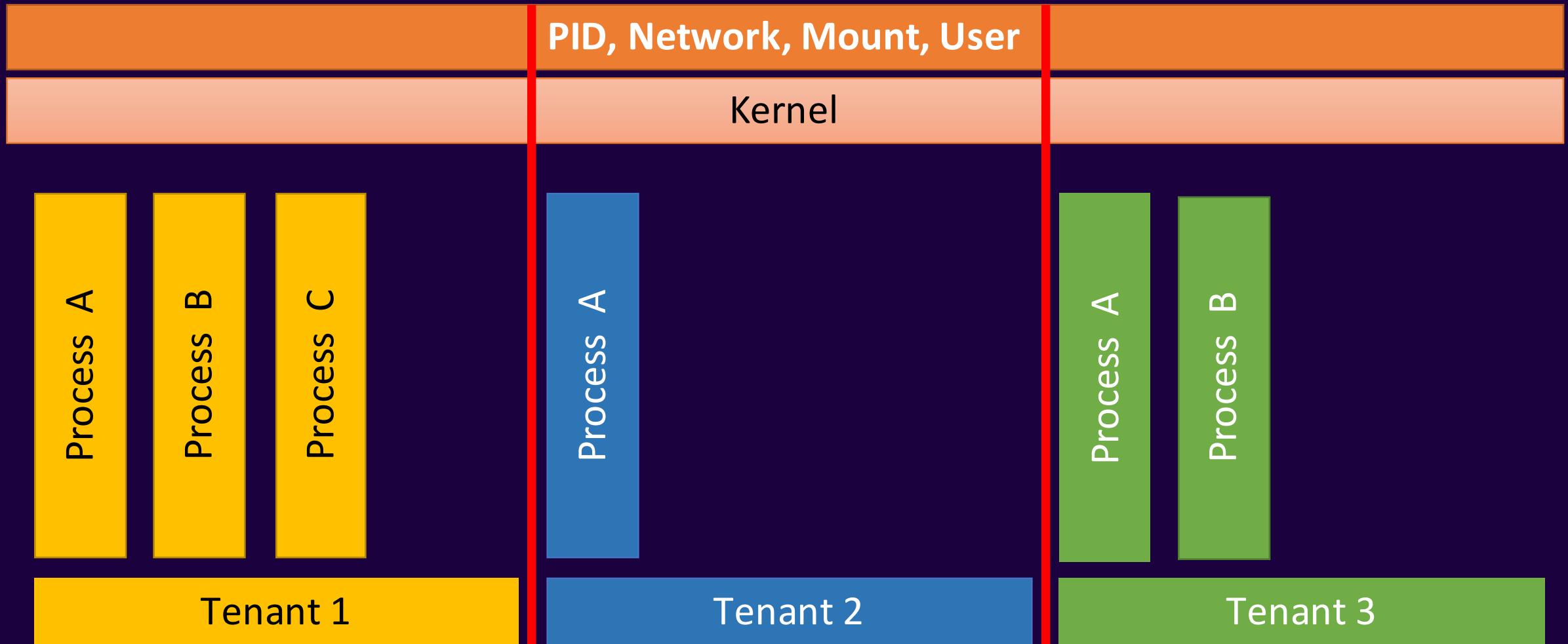
Container: Namespace isolation



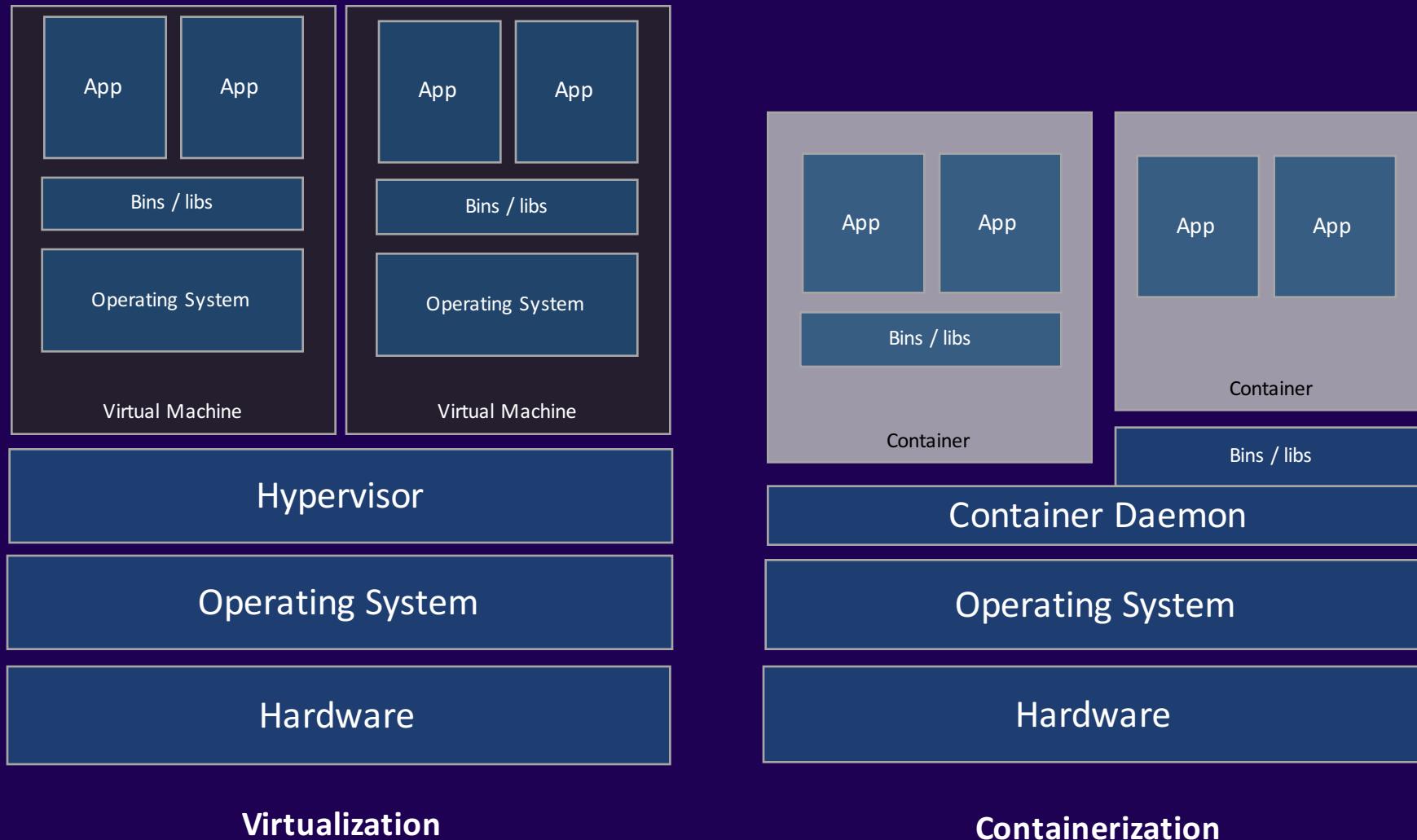
Container: Namespace isolation



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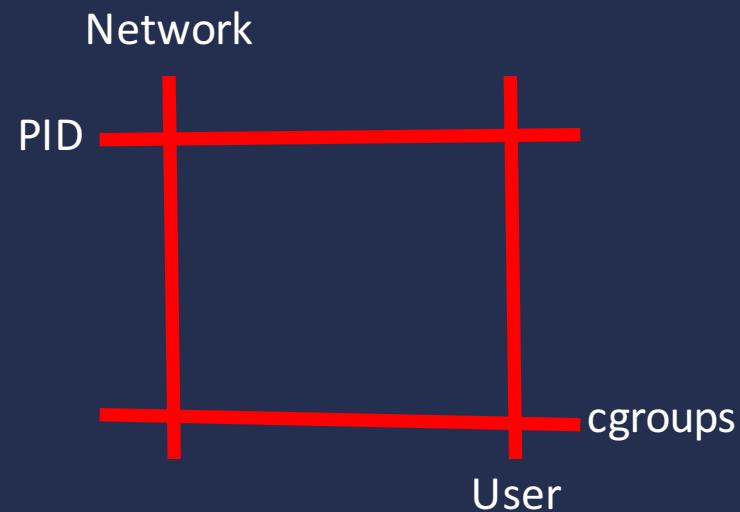
Containerization = Lightweight Virtualization



Container

?

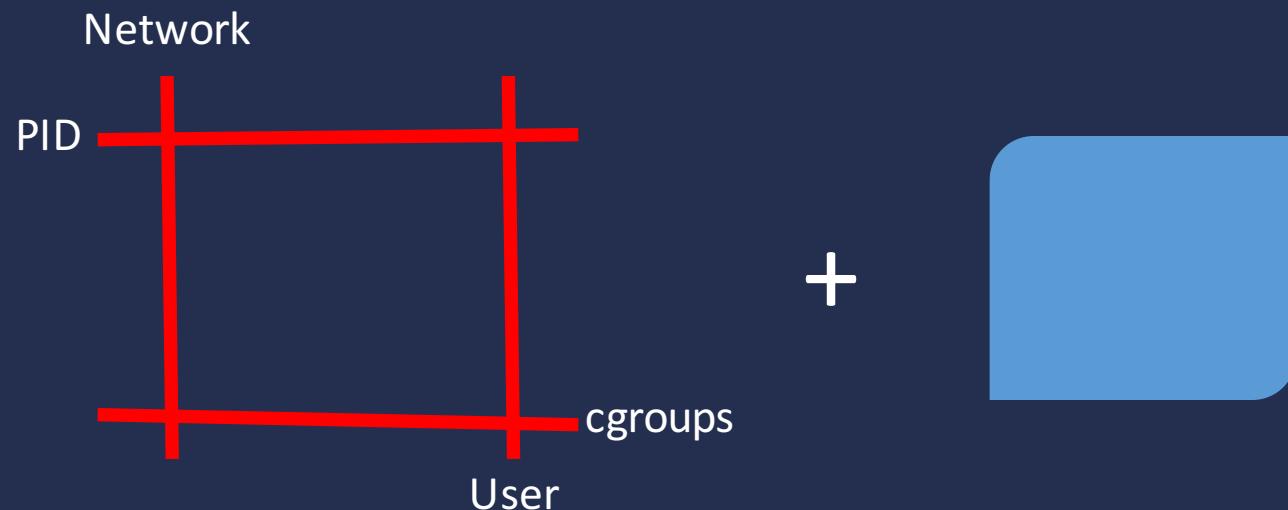
Container



Isolation



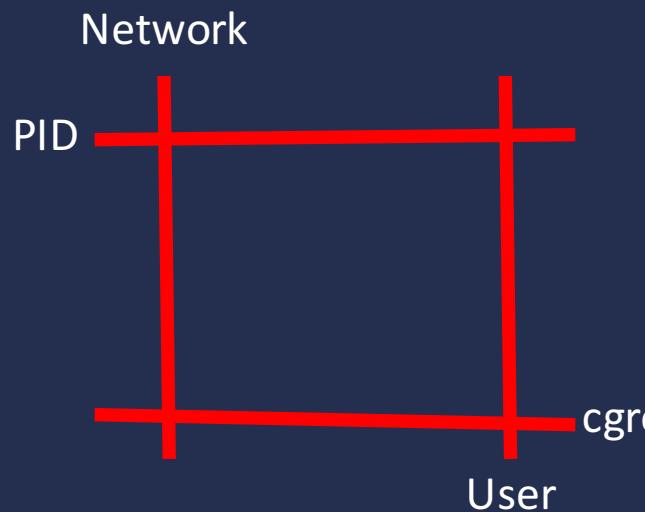
Container



Isolation



Container



+



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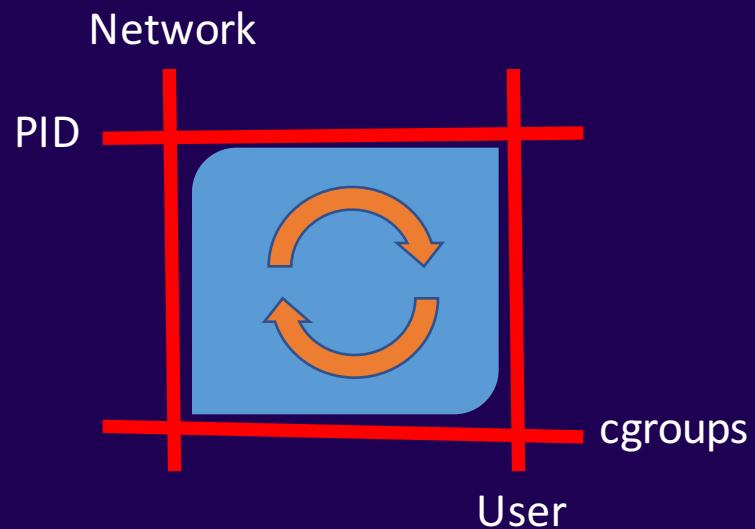
Isolation



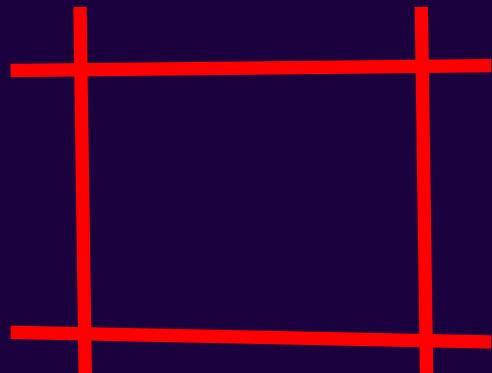
Content

Processes

Container

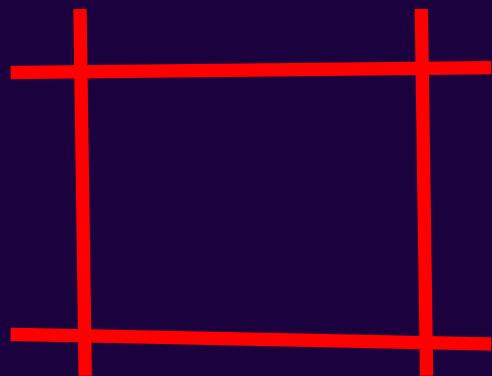


Container actions



Make me a container

Container actions

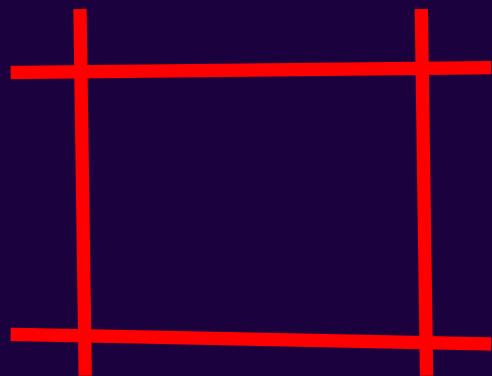


Make me a container



Put this in it

Container actions



Make me a container



Put this in it

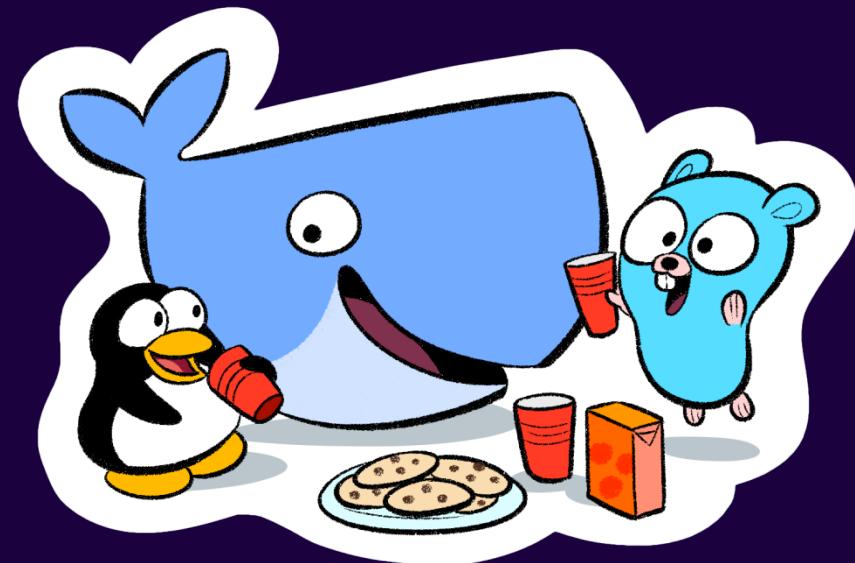


Run this for me

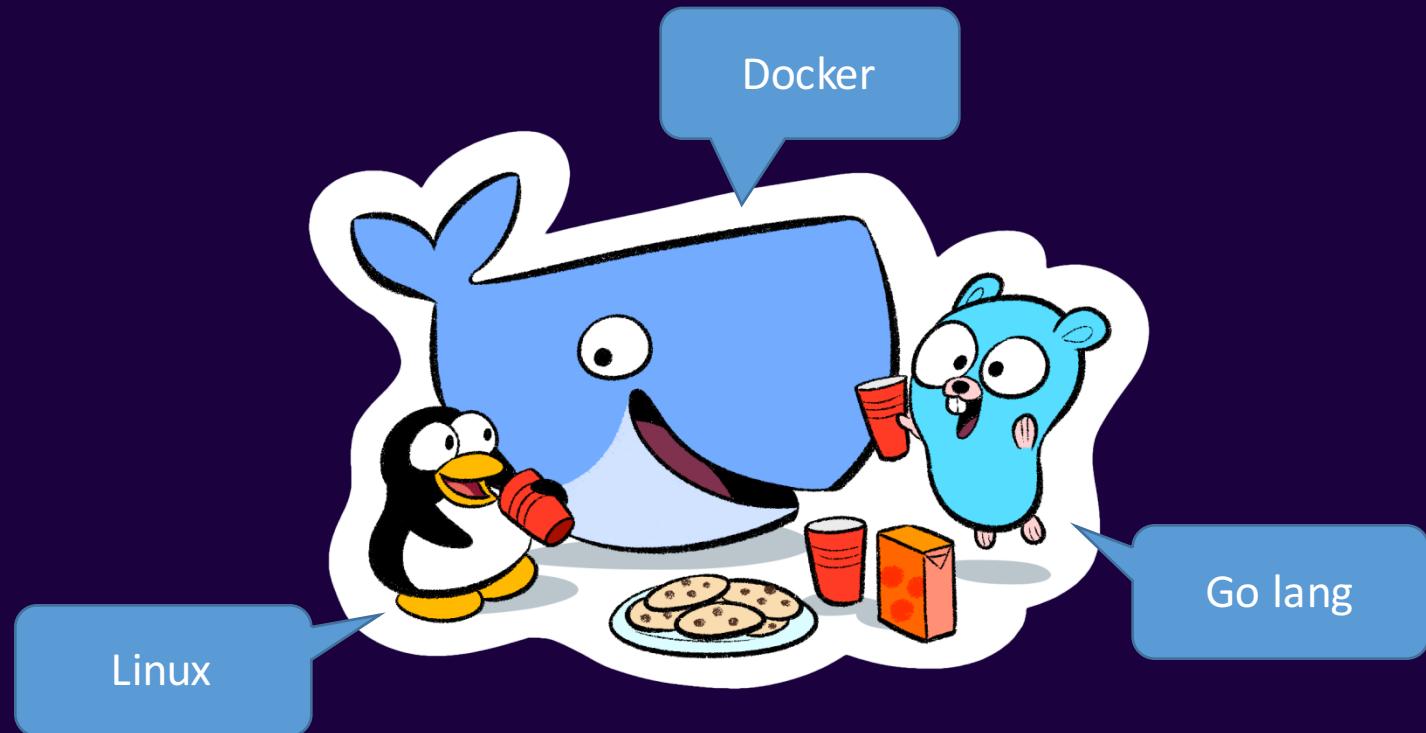
Docker

“Build, Ship, Run” Containers

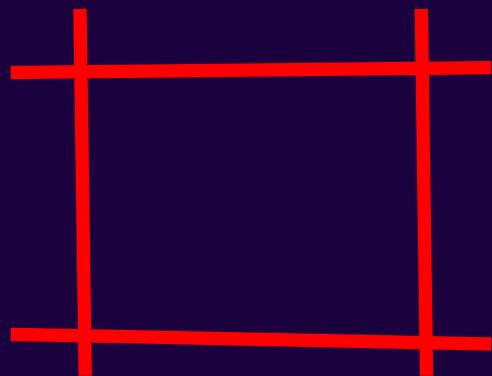
- Dockerfile
- Docker image
- Docker Hub



Logos



Dockerfile



Make me a container



Put this in it



Run this for me

Dockerfile

- Example:

```
FROM debian:stable
RUN apt-get update && apt-get install -y --force-yes apache2
EXPOSE 80 443
VOLUME [ "/var/www", "/var/log/apache2", "/etc/apache2" ]
ENTRYPOINT [ "/usr/sbin/apache2ctl", "-D", "FOREGROUND" ]
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Dockerfile

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Demo



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<https://github.com/hsiliev/strangers>

“

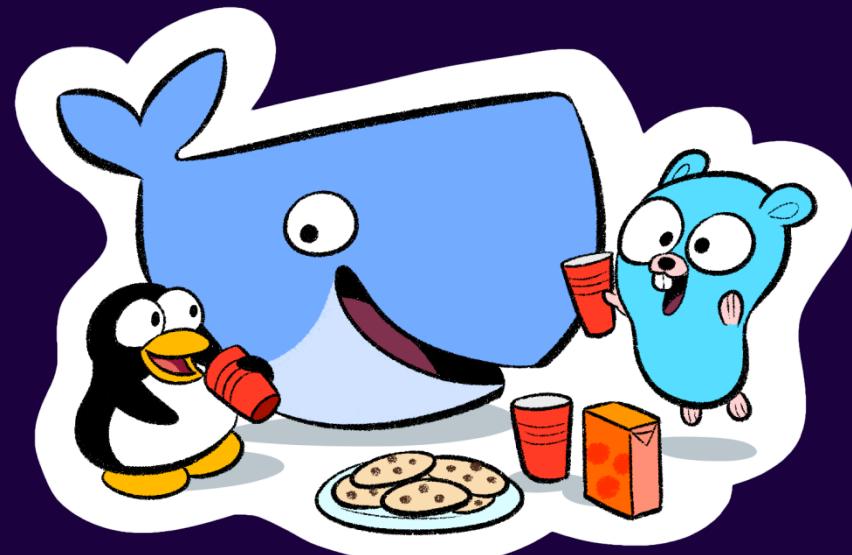
Containers: Pros & Cons

Pros

- Isolation
- Reproducible environment
- Easy to maintain

Cons

- Multi-platform
- Discipline



Software Production

Complexity

Tests

Automation





Pipelines

Multiple-builds

Popular solutions

Build servers

Jenkins

Travis

...

Homegrown





Concourse

CI, Pipelines, Delivery

Concourse

Reproducible builds

Simple building blocks

Docker containers



Concourse: Concepts

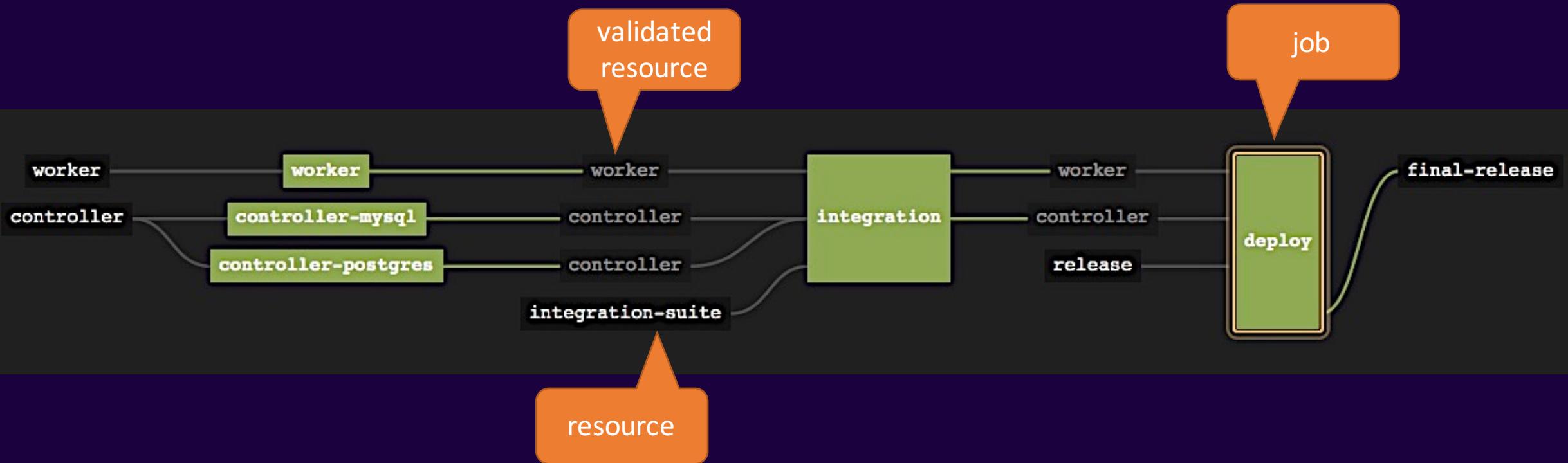
Resources

Tasks

Jobs



Concourse: Pipeline



Concourse: Pipeline YML

resources:

- name: source

type: git

source:

uri: source.git

branch: master

jobs:

- name: build

plan:

- get: source

- task: build

file: build.yml

Demo



“



<https://github.com/hsiliev/strangers>

“

Concourse: Pros & Cons

Pros

- Reproducible environment
- Native pipeline support
- Release process modeling

Cons

- Maturity
- Scripting



A close-up photograph of a wooden pencil writing the letters "Q&A" in cursive on a sheet of white paper with blue horizontal ruling lines. The pencil tip is dark and slightly worn.

Q&A

Thank you!



hristo.iliev@sap.com



georgi.sabev@sap.com