

ANTONIS KALIPETIS - @AKALIPETIS / #HEAPCON19

**DO I REALLY NEED
CONTAINERS?**

ANTONIS KALIPETIS – @AKALIPETIS

- ▶ Docker Captain and early user
- ▶ Python lover and developer
- ▶ Senior Software Engineer at efood.gr / Delivery Hero
- ▶ Container training and consulting at SourceLair

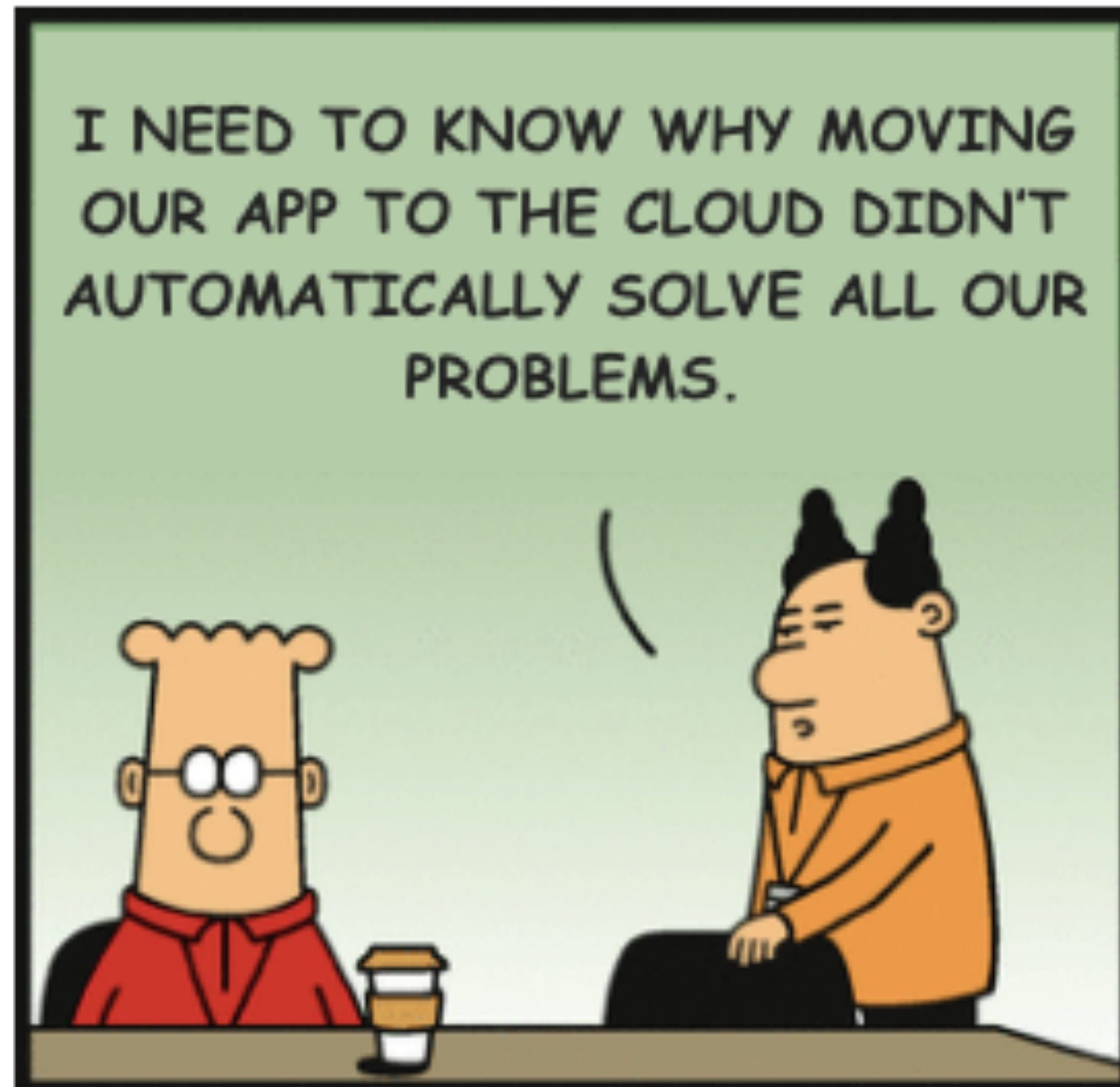
I love automating stuff and sharing knowledge around all things containers, DevOps and optimizing developer workflows.

WHAT WE'RE GOING TO TALK ABOUT?

- ▶ Alternative deployment methods
- ▶ Containers, what do they bring into the game
- ▶ Obstacles introduced by containers
- ▶ Things where containers excel
- ▶ A little game

**A CONTAINER WALKS
INTO A BAR**

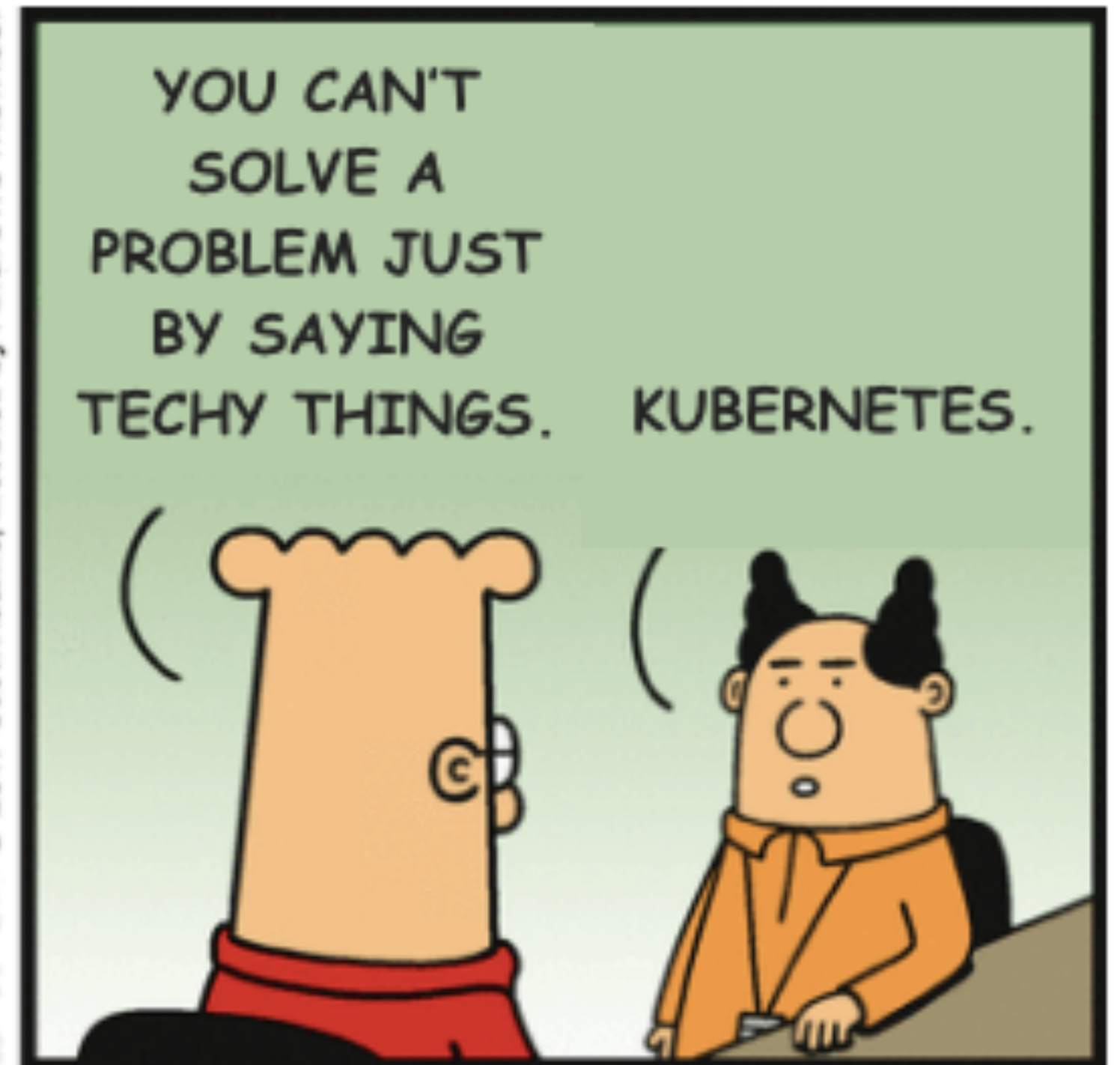
A REAL STORY NOW



Dilbert.com @ScottAdamsSays



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AVAILABLE DEPLOYMENT TARGETS

- ▶ Infrastructure level
 - ▶ Bare metal, Infrastructure as a Service
- ▶ Application level
 - ▶ Platforms as a Service, Serverless

INFRASTRUCTURE LEVEL

- ▶ Bare metal servers, ie Hetzner, Top Host, etc
 - ▶ Everything is done by a human
 - ▶ No virtualization involved
- ▶ Infrastructure as a Service, ie Google Cloud, AWS, Azure, Scaleway, etc
 - ▶ Infrastructure can be automated
 - ▶ Usually, there's virtualization involved

APPLICATION LEVEL

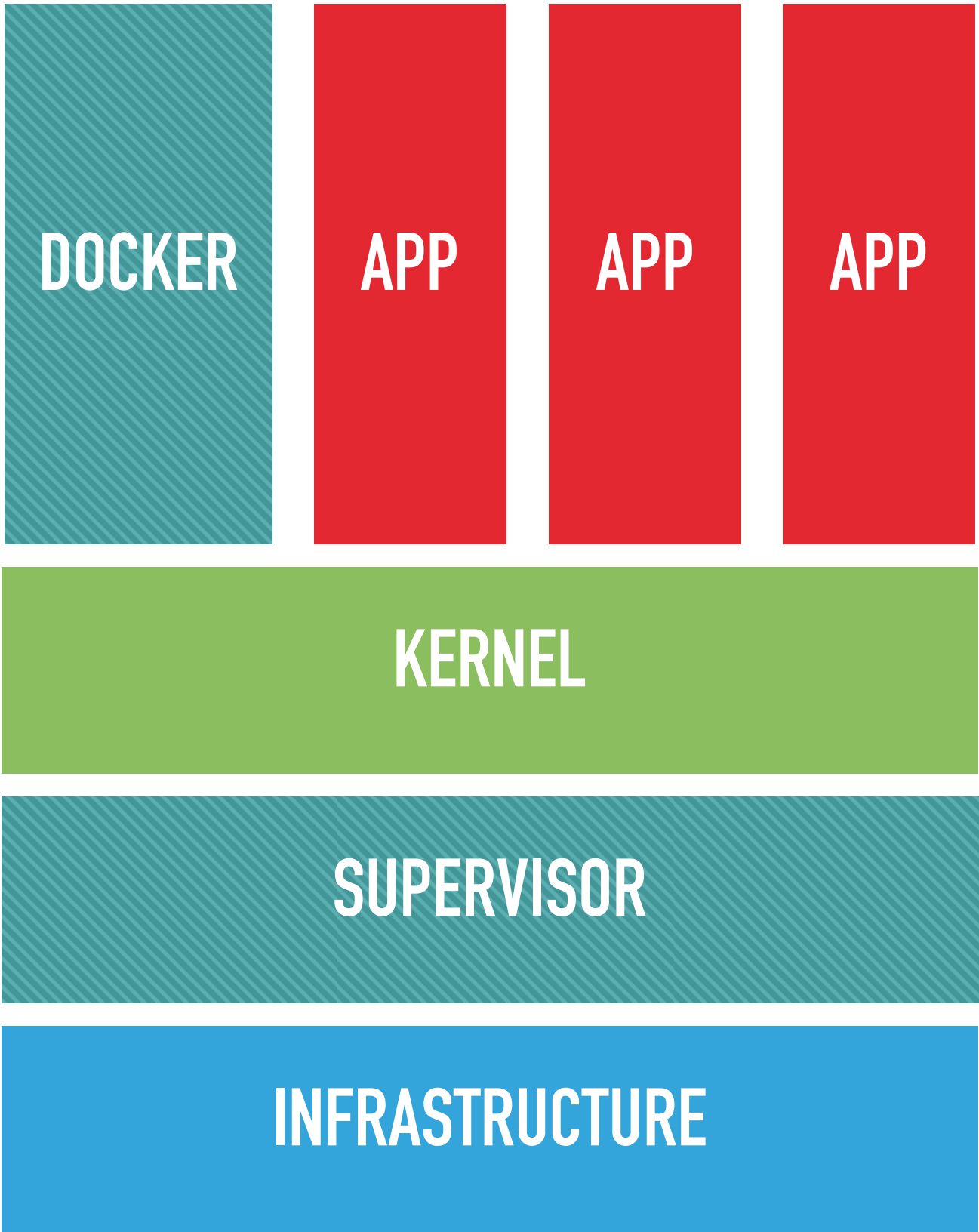
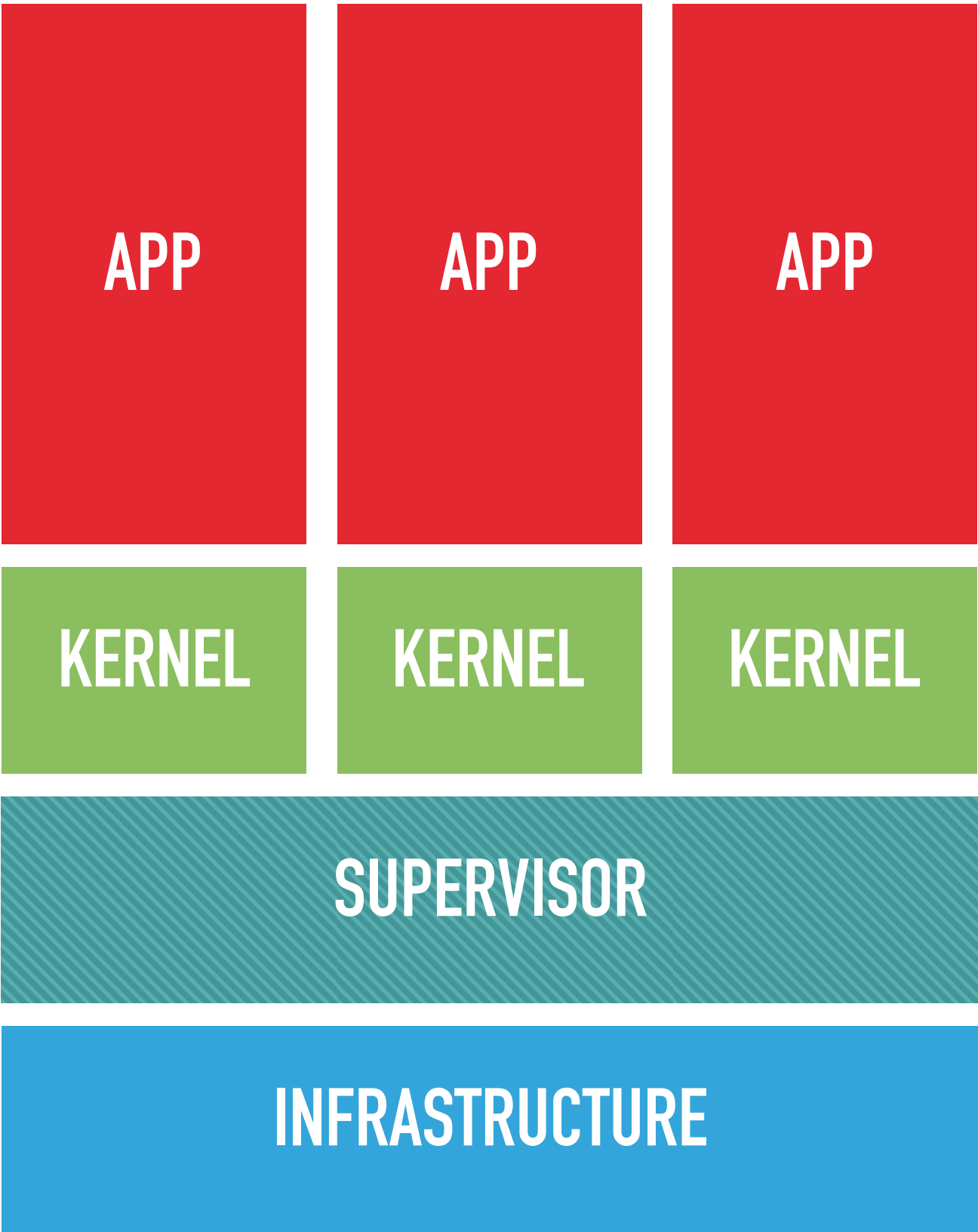
- ▶ **Platforms as a Service**, ie Heroku, Google App Engine, etc
 - ▶ Infrastructure is completely handled by the provider
 - ▶ They are pre-baked environments you can use to run your application
- ▶ **Serverless**, ie AWS Lambda, Azure Functions, Google Cloud Run, etc
 - ▶ There are servers involved! You just don't care about them
 - ▶ Your application is not running (and you don't pay for it) when not in use

LET'S GO A STEP BACK — WHAT IS A CONTAINER?

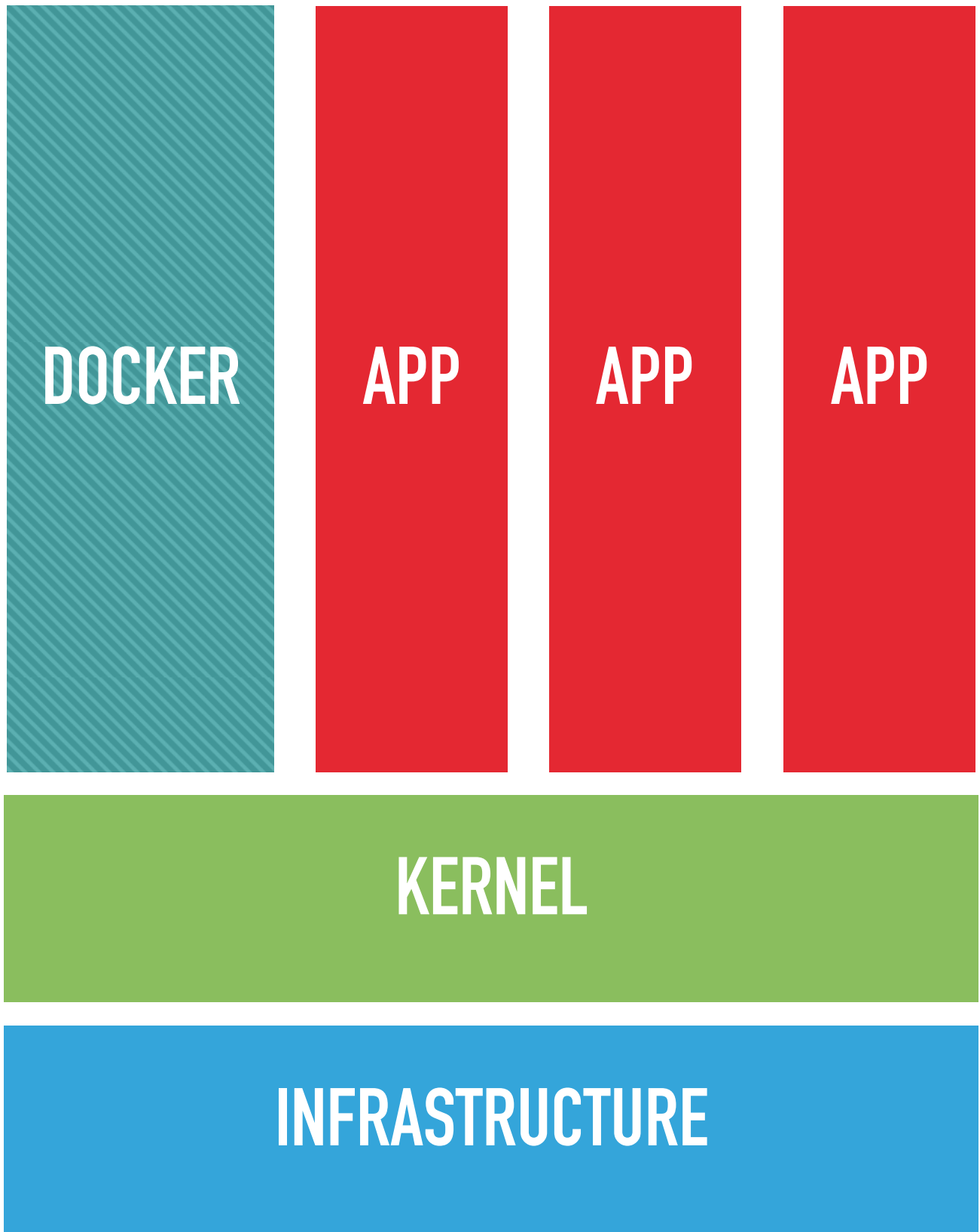
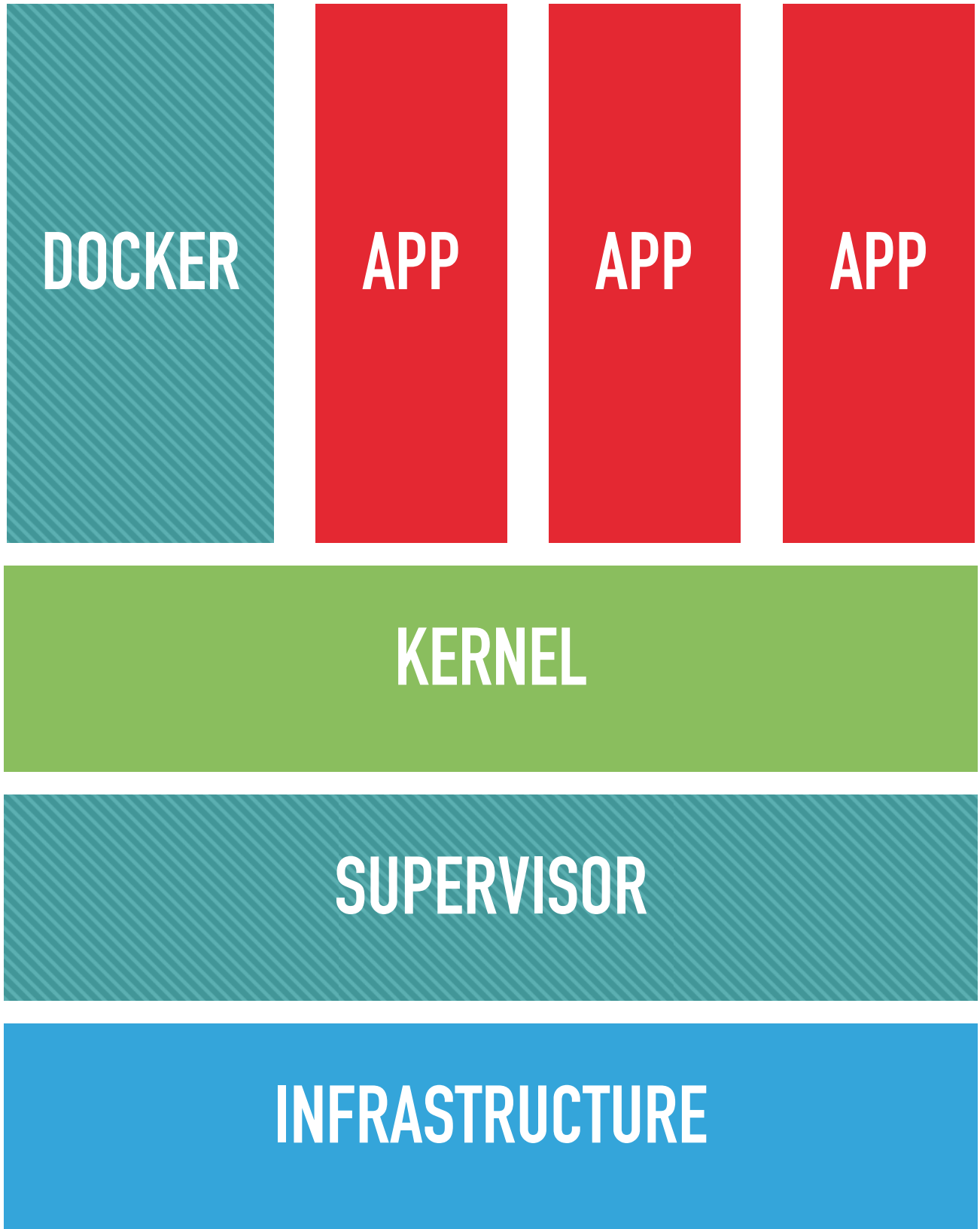
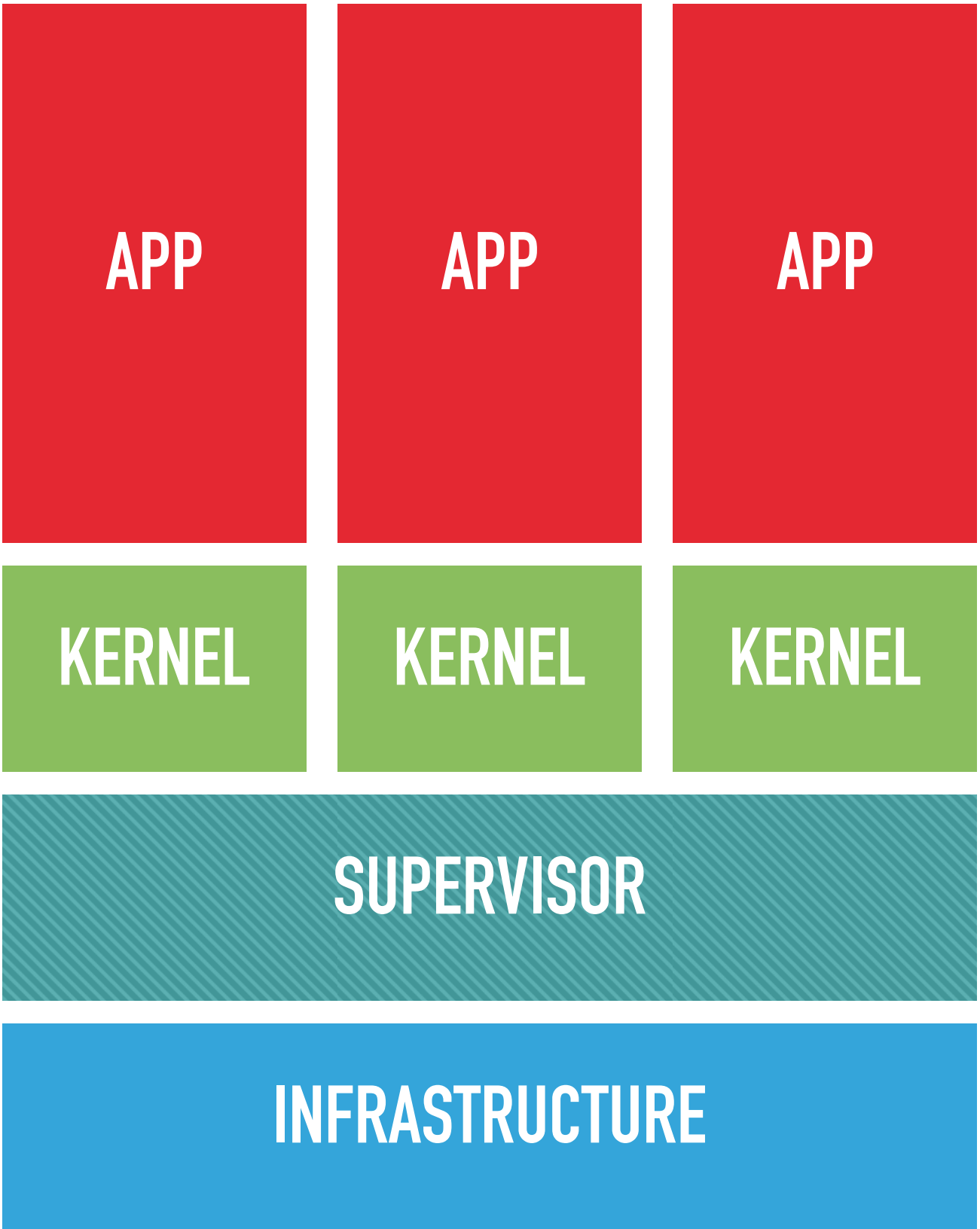
- ▶ It's a process
- ▶ Isolated in it's own world, using namespaces
- ▶ With limited resources, using cgroups

**IT ALL COMES DOWN TO
MANAGING CPU/RAM**

MANAGING CPU/RAM



MANAGING CPU/RAM



BUT MOST IMPORTANTLY...

**IT'S AN
APPLICATION PACKAGING FORMAT**

WHERE DO CONTAINERS COME INTO PLAY?

- ▶ Infrastructure level
 - ▶ Deploy to containers, using a container orchestrator (like Swarm or Kubernetes)
 - ▶ Provide a Containers as a Service offering for your developers
- ▶ Application level
 - ▶ Your application (quite possibly) run in containers
 - ▶ You can use Docker images as a deployment unit

**CONTAINERS DO NOT
SOLVE YOUR PROBLEMS**



Kelsey Hightower  @kelseyhightower · Mar 24, 2019



I'm always going to recommend people exercise extreme caution when running stateful workloads on Kubernetes. Most people who are asking "can I run stateful workloads on Kubernetes" don't have much experience with Kubernetes and often times the workload they are asking about.



Kelsey Hightower 
@kelseyhightower

Some people believe that rubbing Kubernetes on a stateful workload turns it into a fully managed database offering rivaling RDS. This is false. Maybe with enough effort, and additional components, and an SRE team, you can build RDS on top of Kubernetes.

♡ 494 9:15 AM - Mar 24, 2019



💬 168 people are talking about this



CONTAINERS
TRANSFORM YOUR PROBLEMS

MOVING TO CONTAINERS INTRODUCES NEW PROBLEMS

- ▶ You can no longer be aware of what's running where
- ▶ Connectivity is an issue, as you need an overlay network to communicate between containers
- ▶ Stateful applications is a whole different beast
- ▶ You have to rethink your monitoring solutions
- ▶ Container isolation is not as good as VM isolation

WHY SHOULD I EVEN CARE ABOUT CONTAINERS THEN?

- ▶ Your current problems, might be harder to solve than those introduced by containers
- ▶ Your architecture has changed so much, that your current solution cannot fit your needs
- ▶ Your current pipeline is not fast enough and cannot be improved, due to architectural issues
- ▶ You really want to surf the hype wave 🏄

WHERE DO CONTAINERS EXCEL

- ▶ Easily and quickly deploy new applications
- ▶ High level architecture as code
- ▶ More power (and responsibility) to the developers
- ▶ Easier to replicate environment between development, testing, staging and production

THINGS TO CONSIDER WHEN CHOOSING YOUR INFRASTRUCTURE TYPE

- ▶ Cost of people to support the infrastructure VS cost of managed services
- ▶ Infrastructure needs variance
 - ▶ morning VS night or Summer VS Christmas
- ▶ Product stage and planning
 - ▶ build an MVP as soon as yesterday VS plan for the next 3-5 years

**CHOOSE THE INFRASTRUCTURE
THAT'S BEST FOR YOUR PEOPLE
AND BUSINESS NEEDS**

[KAHOOT.IT](https://kahoot.it)

LET'S PLAY A GAME

THANKS!

ANTONIS KALIPETIS

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