Containers as an enabler for Microservices

and what it means for our industry....

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redhat.

Agenda

Containers as an abstraction for microservices

What are Red Hat doing upstream

Why are people doing this and what am I seeing

Revolutions in IT

Speed & Capacity

Automation

Accessibility

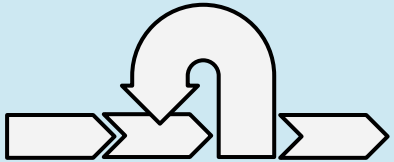
```
add esp,-$10
push ebx
mov eax,[$004093b0]
```

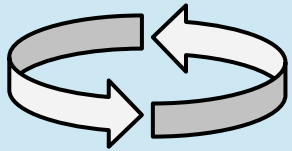
```
#include<stdio.h>
main()
{
   printf("Hello World");
}
```

```
public class Main {
    public static void main(String[] args) {
        System.out.println("Hello, World!");
    }
}
```

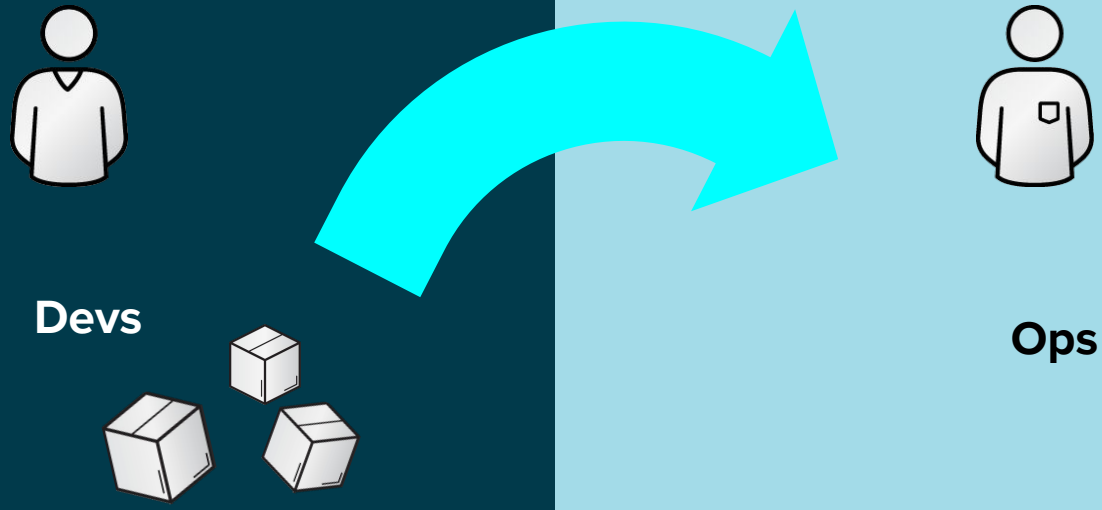
```
puts "Hello World"
```

Approach

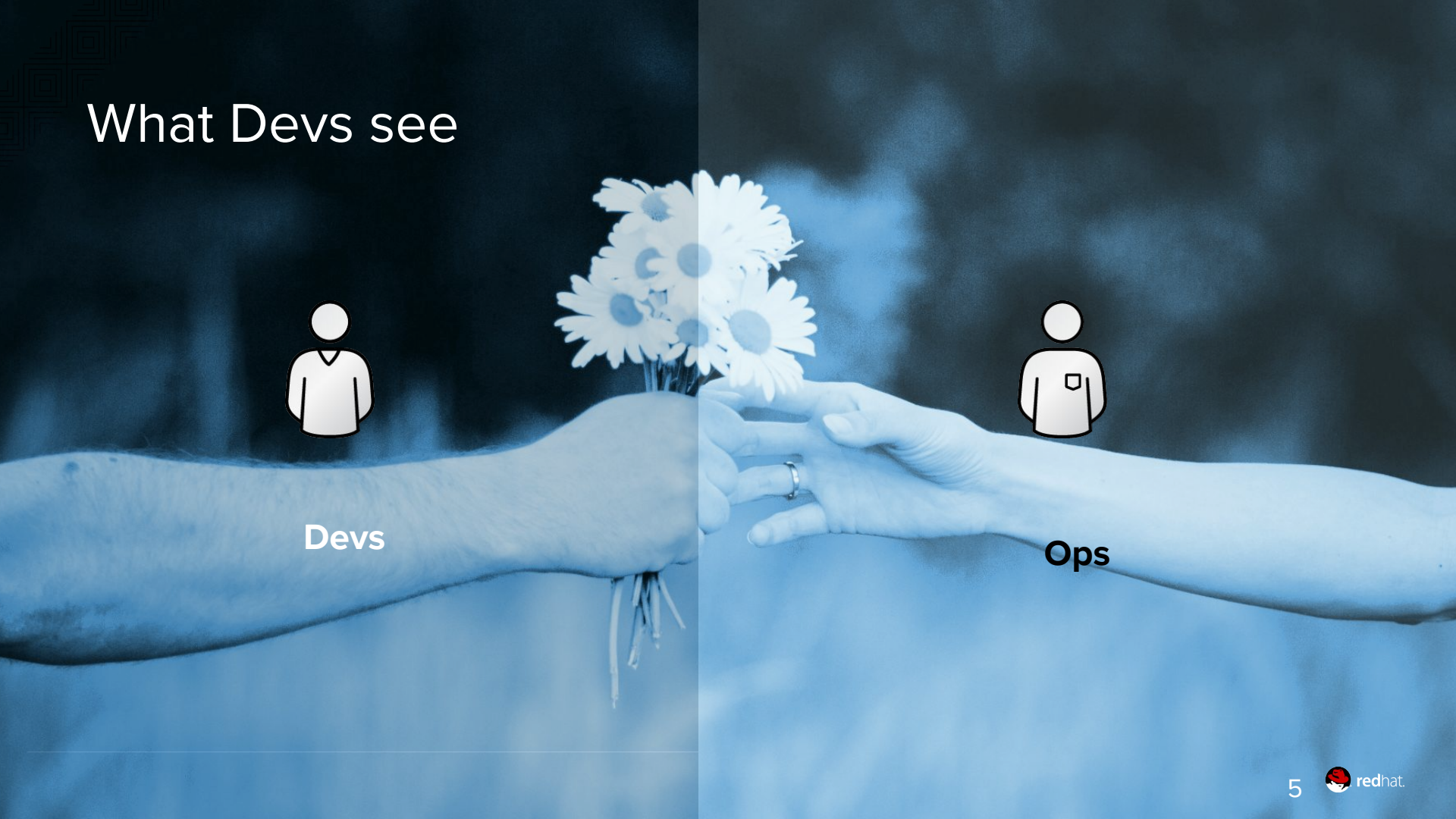




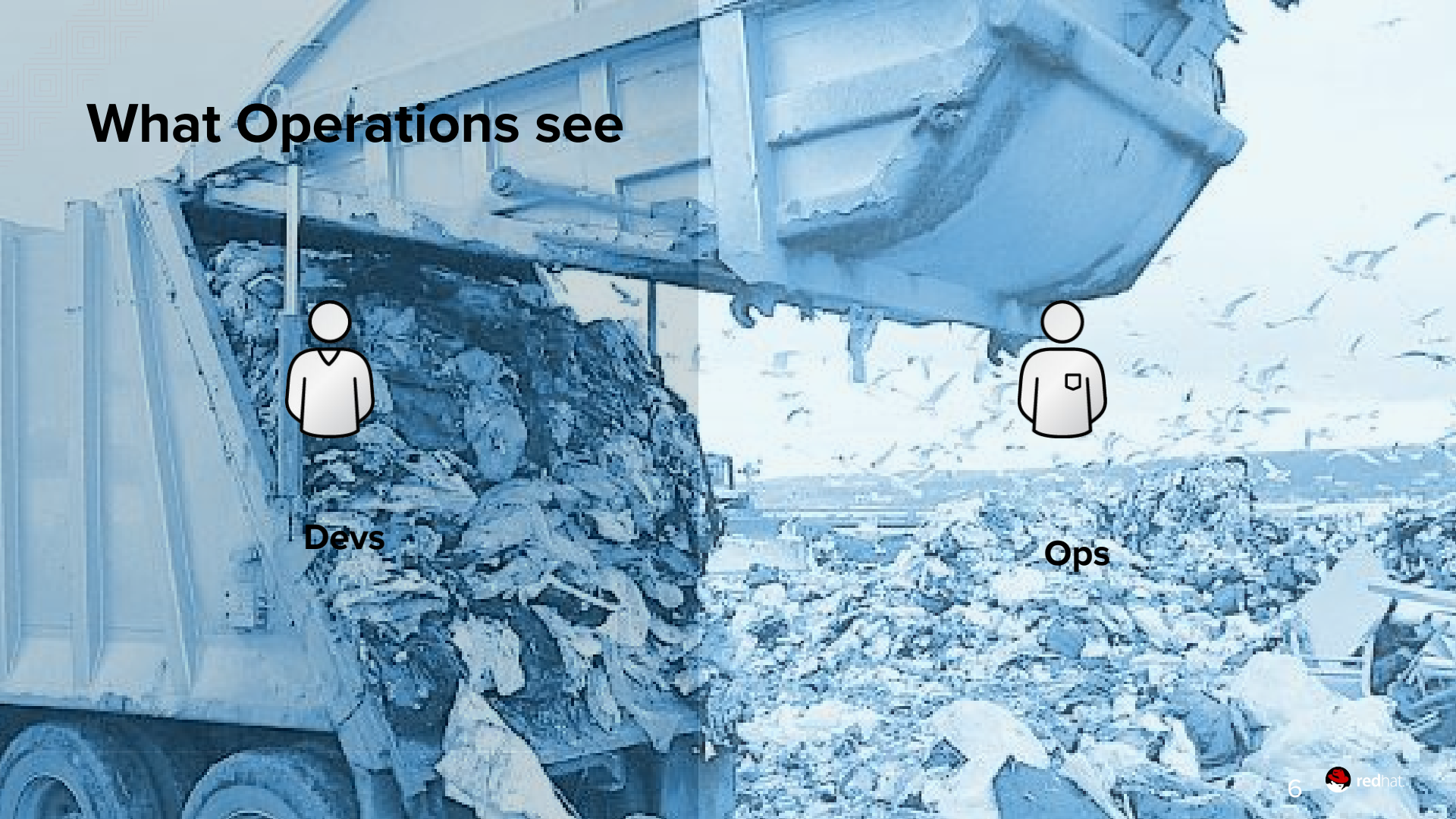
...but we still deliver apps the same way



What Devs see



What Operations see



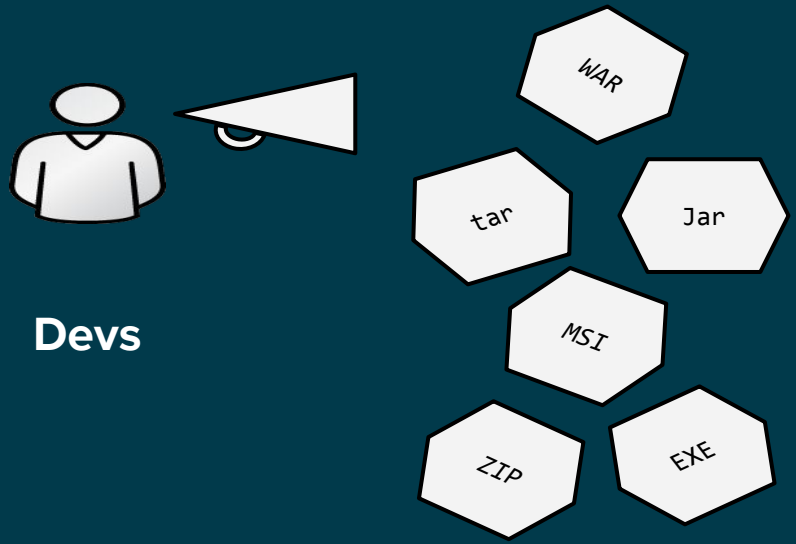
It is a tightly coupled, linear process

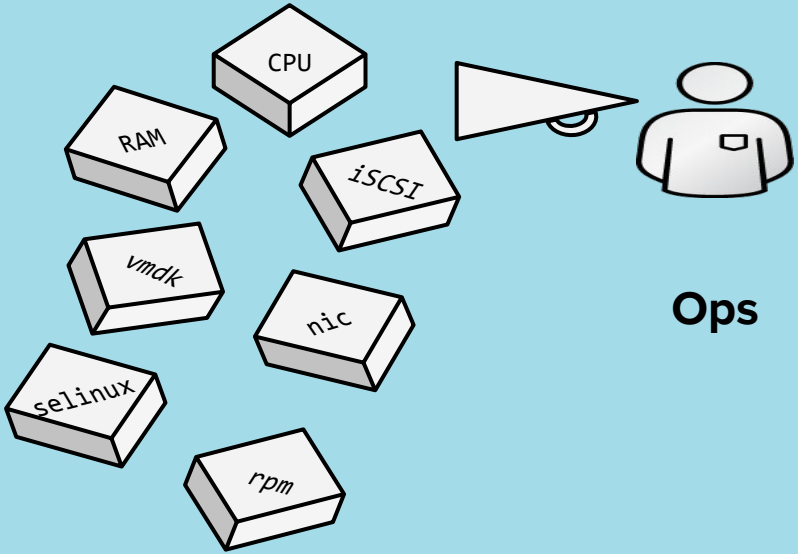
Devs and Ops are fundamentally different

Devs

Ops

Talking at cross purposes





The vision becomes compromised

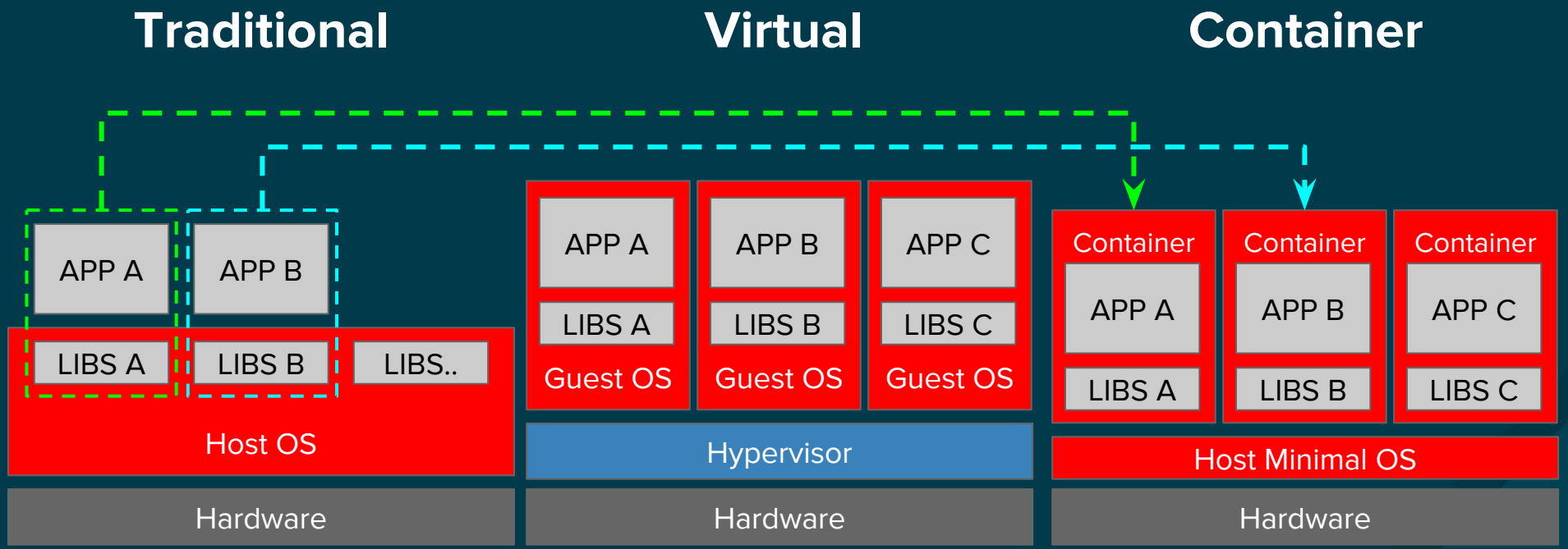
Enter: Containers

- **Container Runtime**
- **Container Packaging**

Container Runtime

selinux, cgroups, lxc, linux namespaces, runc, crio

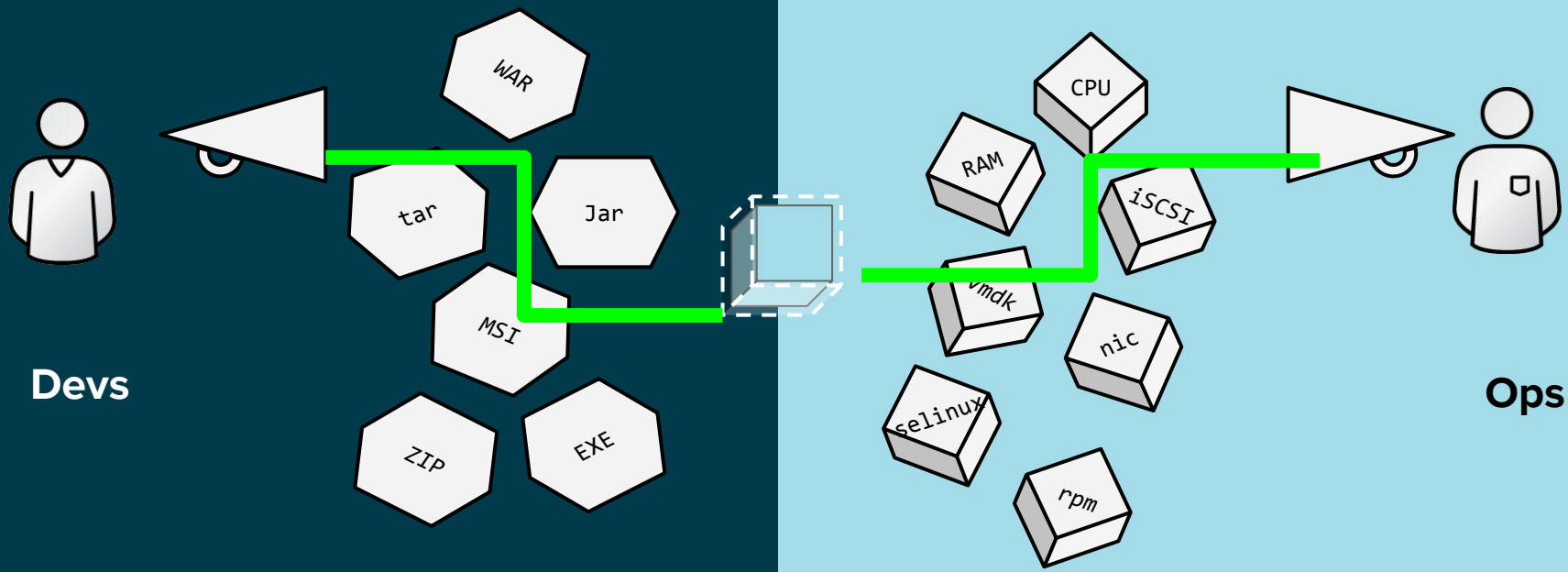
What are containers?



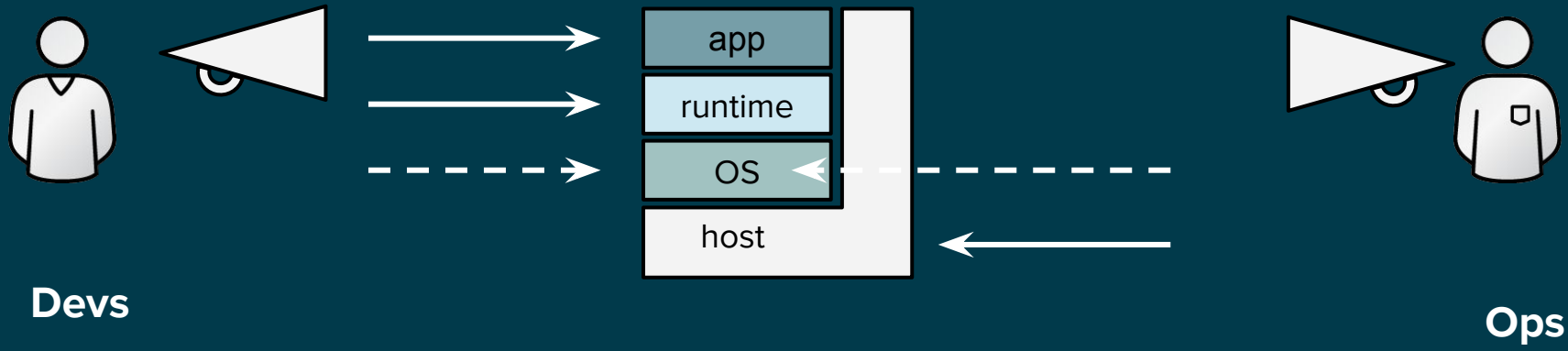
Container Packaging

Docker, rkt, appc, OCI-Image Specification

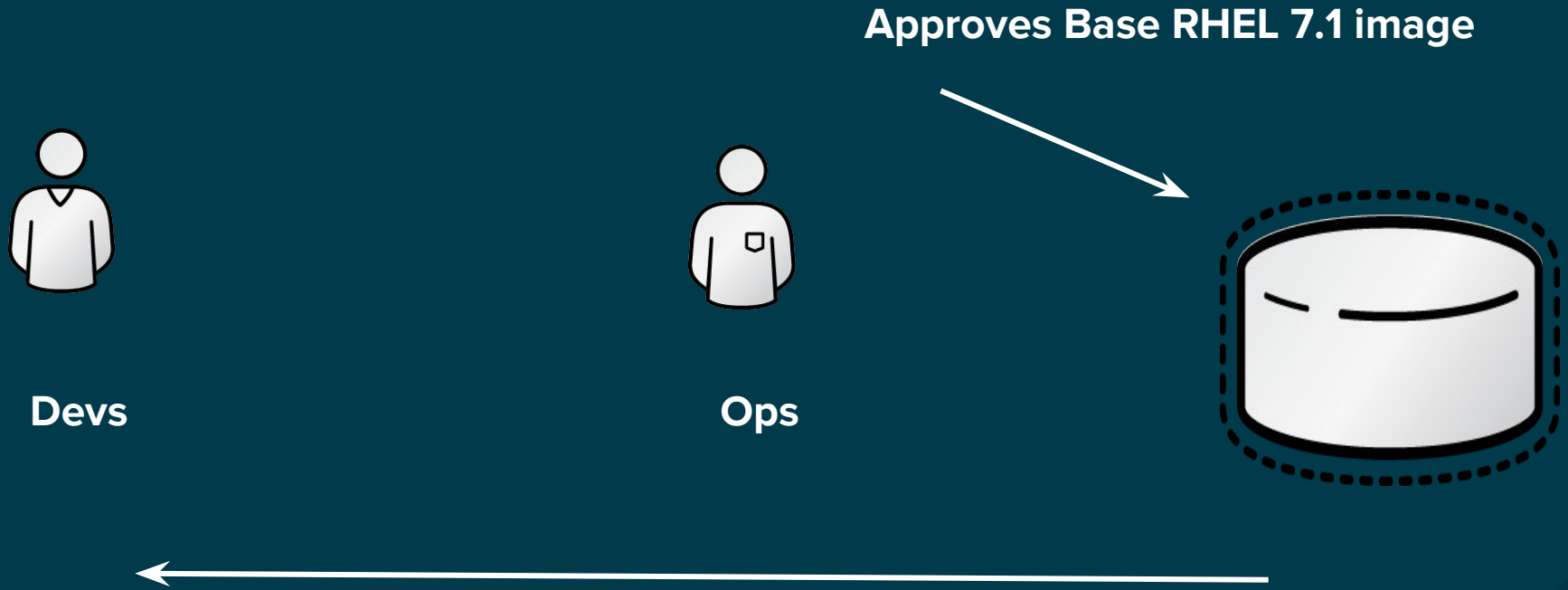
Containers connect dev to ops

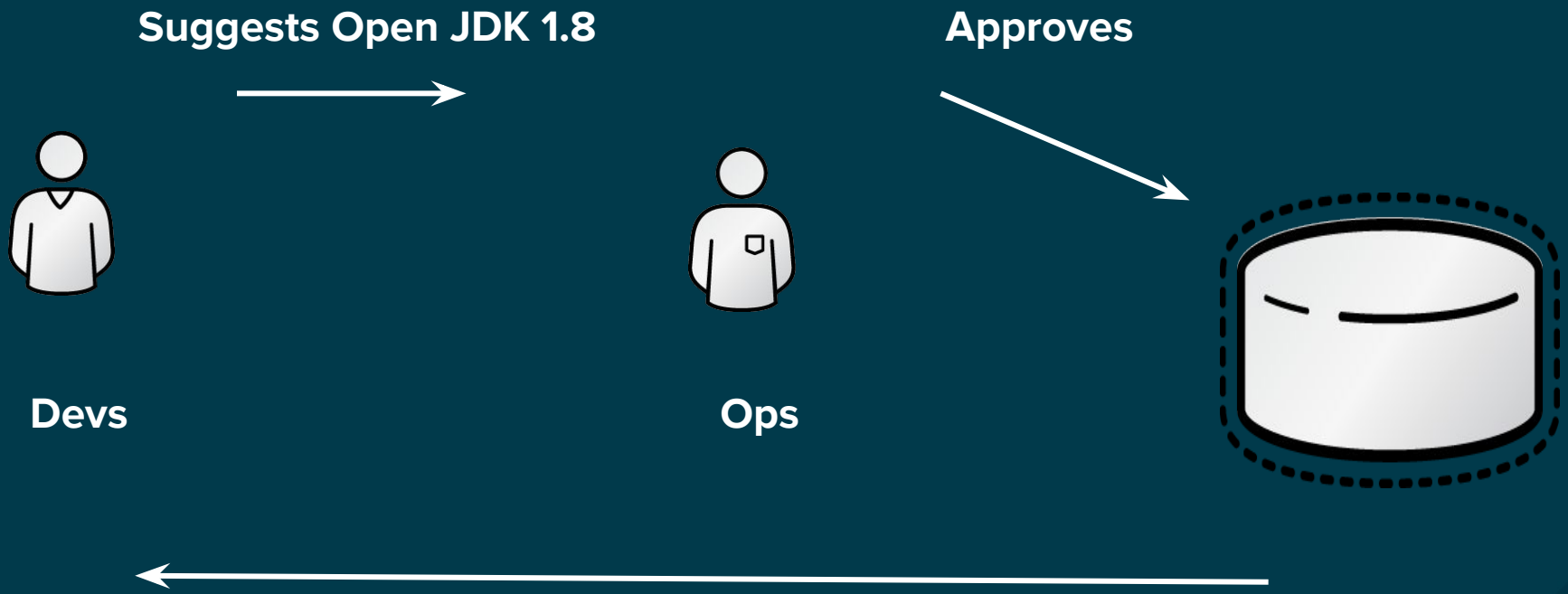


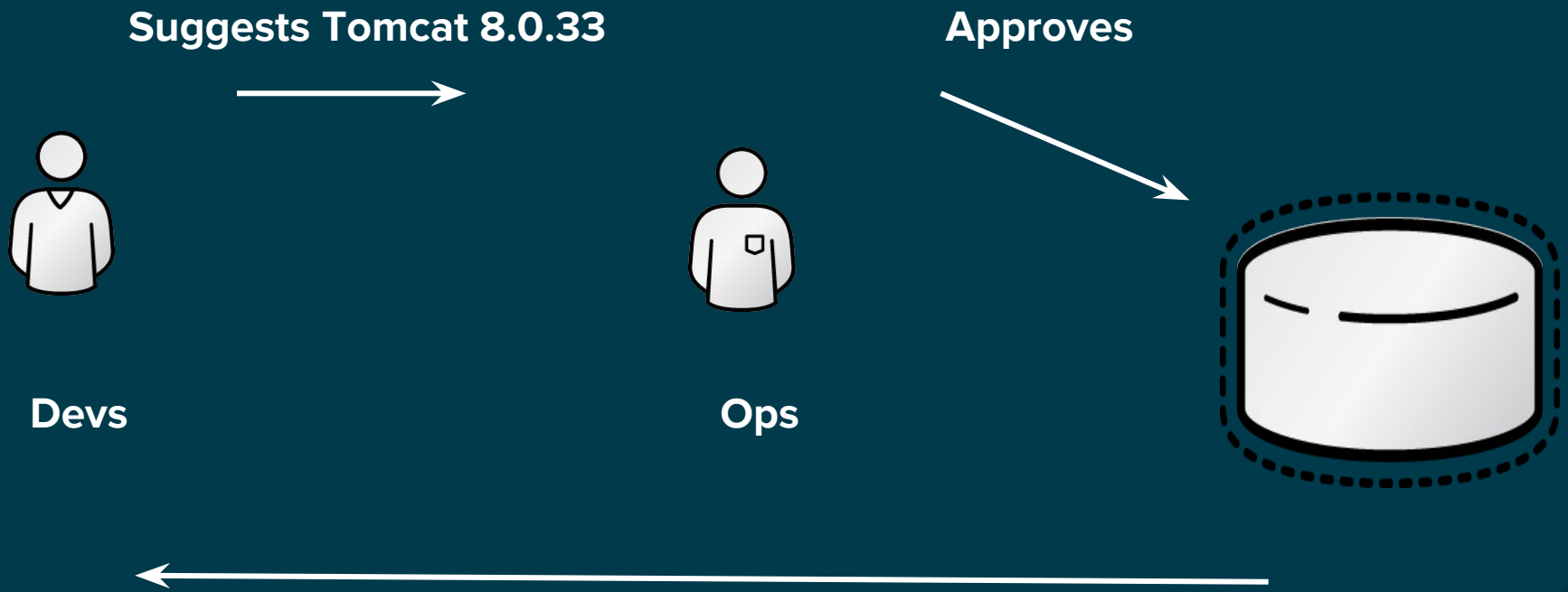
Devs and Ops start talking a common language

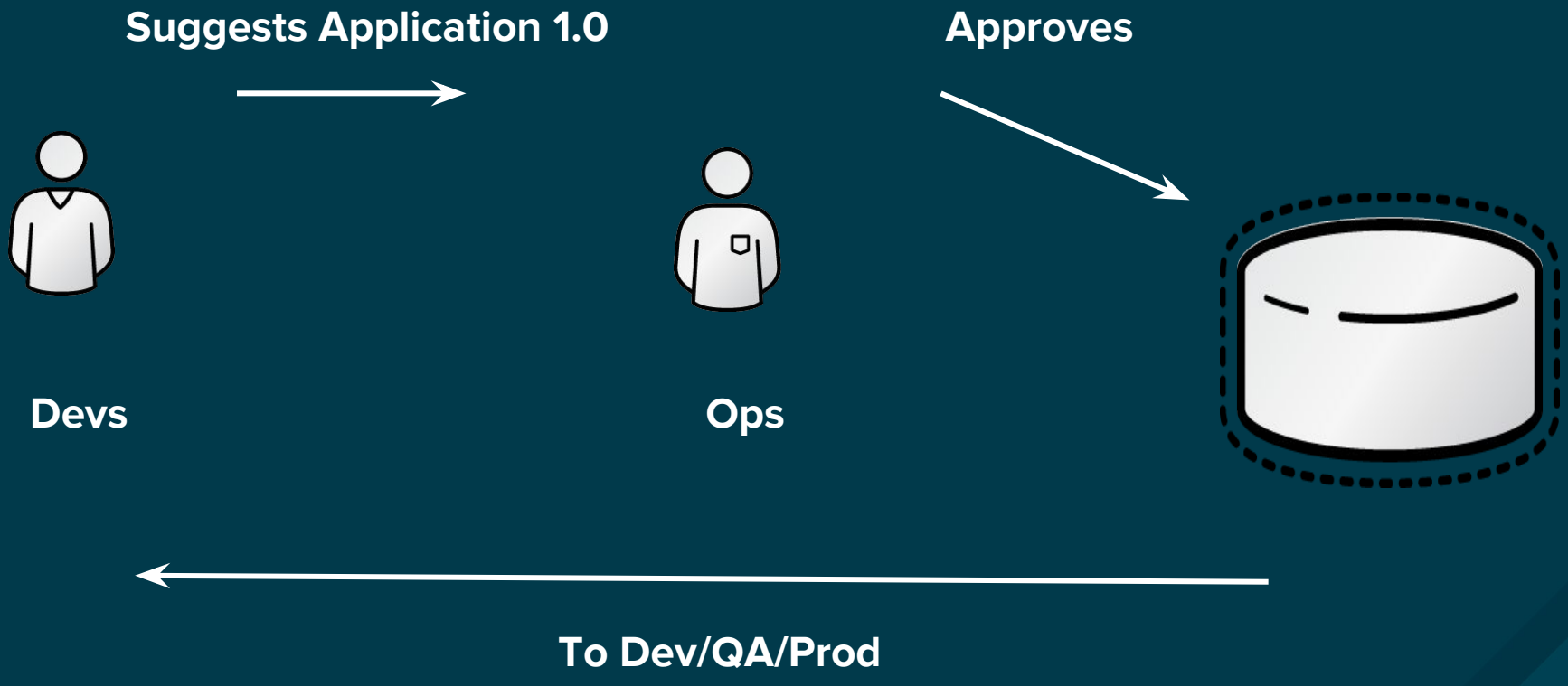


As a developer I want to build a java app on Tomcat 8.0.33

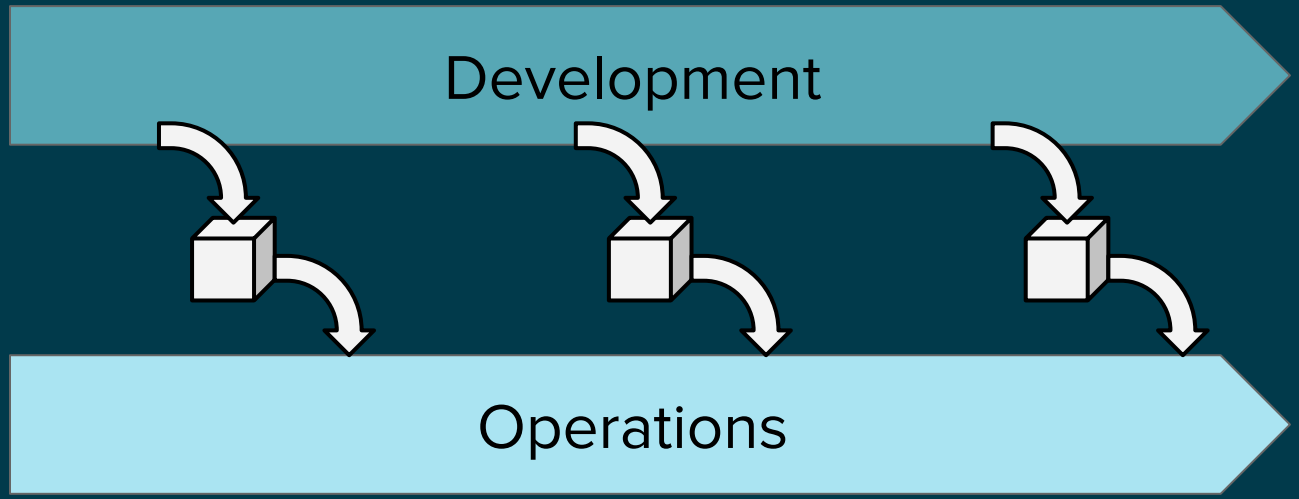

Approves Base RHEL 7.1 image
Devs
Ops
Uses RHEL 7.1 image to build Open JDK 1.8


Suggests Open JDK 1.8
Approves
Devs
Ops
Uses to build Tomcat 8.0.33 image


Suggests Tomcat 8.0.33
Approves
Devs
Ops
Uses Tomcat 8.0.33 image to build an application


Suggests Application 1.0
Approves
Devs
Ops
To Dev/QA/Prod

Enabling a loosely coupled delivery process



What does this have to do with Microservices?

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A microservice is packaged as a container

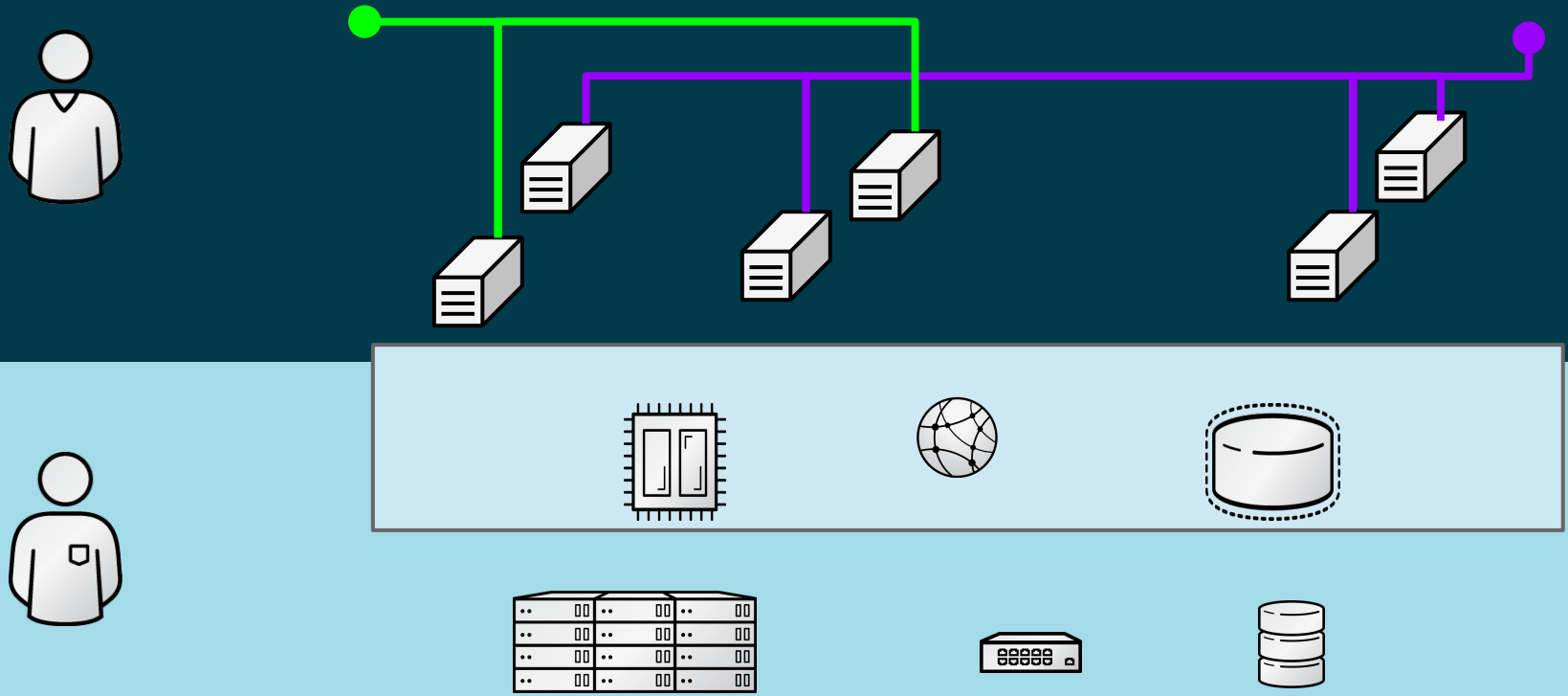
A git repo -> image -> a microservice

Image Layers (and images) become contracts between dev + ops (goodbye runbook)

DevOps (Build Once, Rollback/Forward, Canary/BlueGreen)

Automated testing/patching

Container orchestration



Where are RHT Investing

OCI (container formats & runtime)

OS (selinux, runc, cgroups, linux namespaces, ostree)

Kubernetes

Making RHEL free for Dev Use (CDK - developer.redhat.com)

.Net Core

Software Collections (Node, MongoDB, php, python, c++, gcc, gdb,)

Industry Trends

Why are people doing this and what am I seeing

Why

Move to cloud

Why

Move to cloud

Move away from centralised IT and an acceptance of empowering LoB and partners to deliver solutions that can be delivered in days and weeks as opposed to months and years

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Enable Microservices, acceptance that SOA is dead

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Infrastructure Efficiency

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Agility

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Infrastructure Efficiency

Operational Efficiency


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