

DevOps, Microservices and containers - from hype to reality with Red Hat OpenShift



Magnus Glantz
Solution Architect
Red Hat Denmark



@OpenShift



RHOpenShift

A photograph of a large stack of shipping containers in a port terminal. The containers are stacked high, filling the frame. They are primarily white and blue, with some green and grey ones interspersed. The perspective is from a low angle, looking up at the top of the stack. In the background, industrial structures like cranes and other shipping containers are visible under a clear sky.

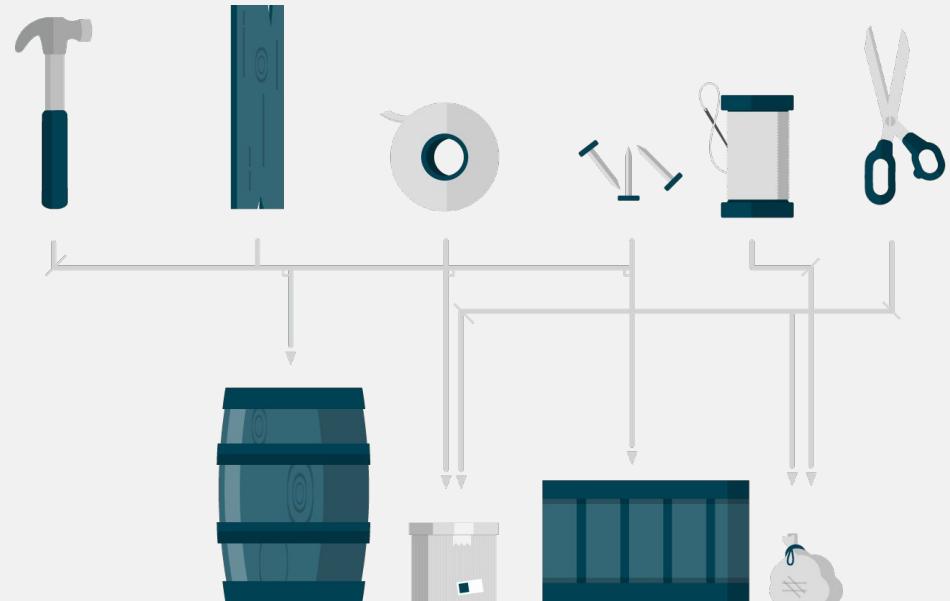
OpenShift



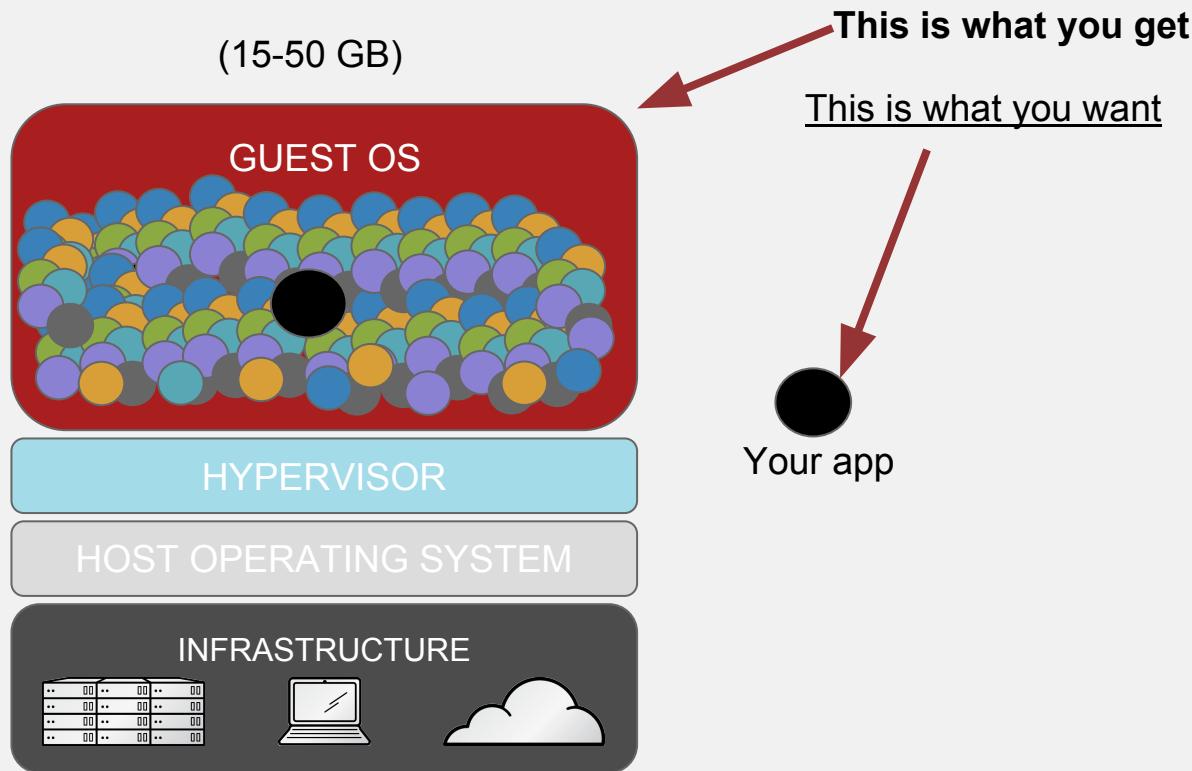
THE PROBLEM

Different applications delivered to IT:

- Have different requirements
- Use different languages, databases, and tools.

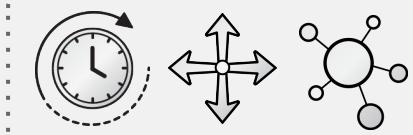


THE PROBLEM



THE PROBLEM

This is what they
want



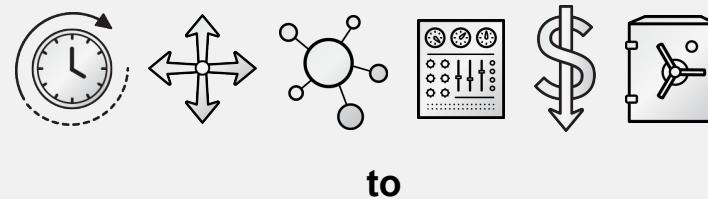
DEVELOPERS



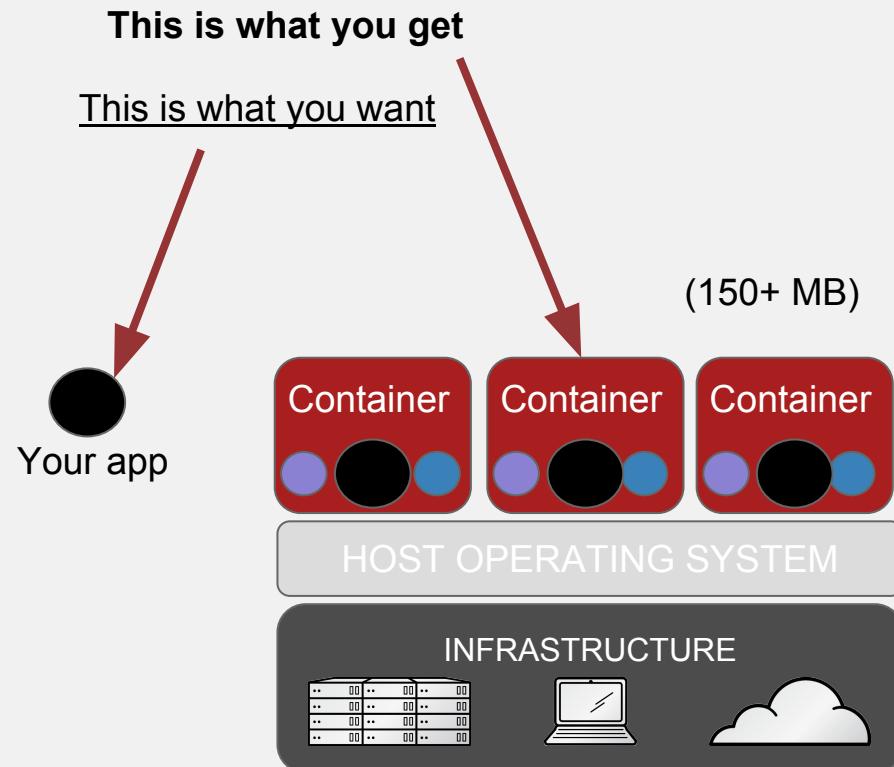
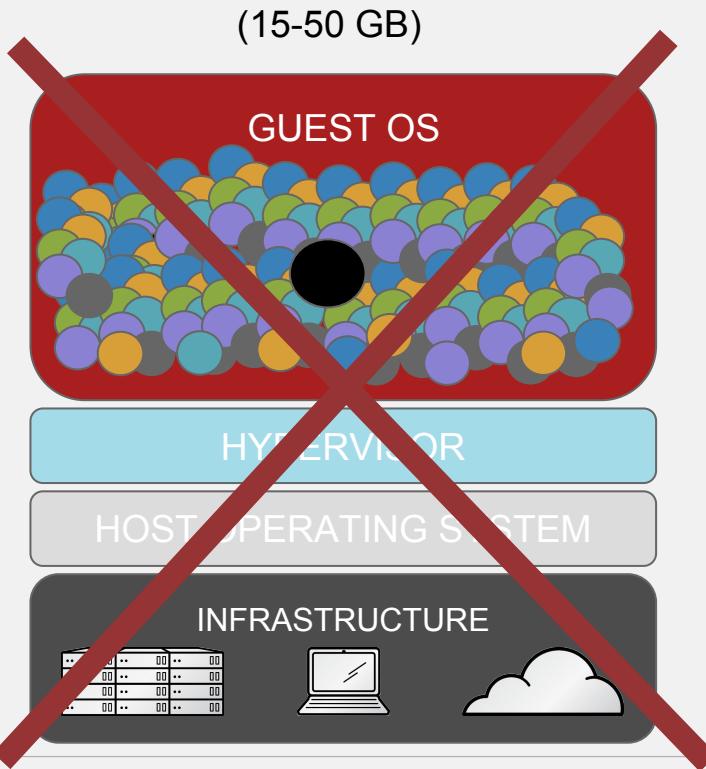
OPERATIONS

THE PROBLEM

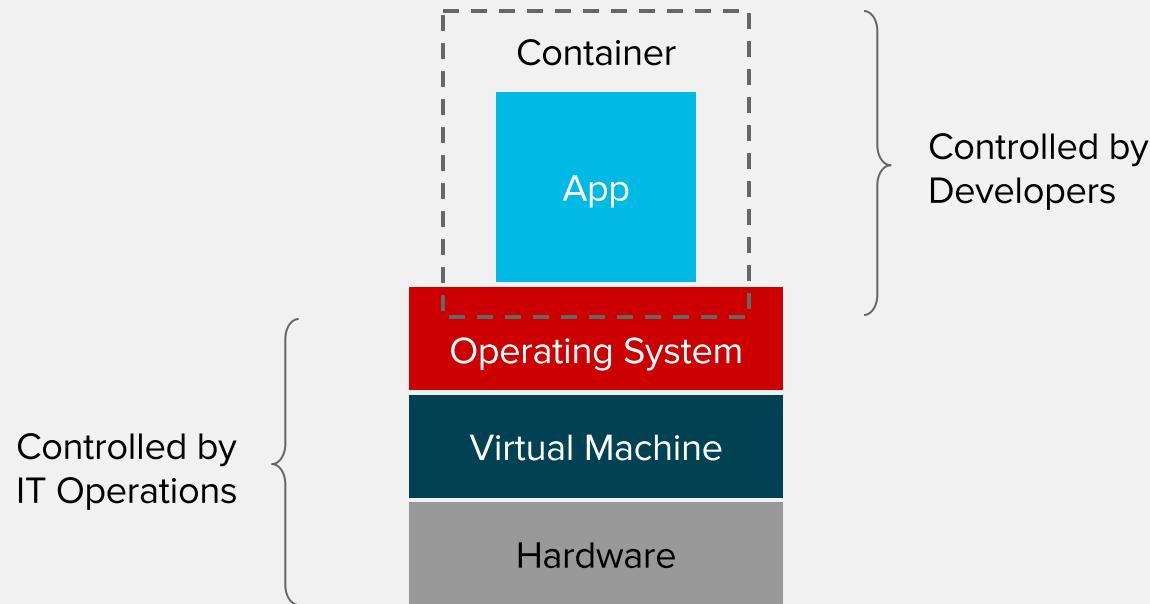
This is what you
need



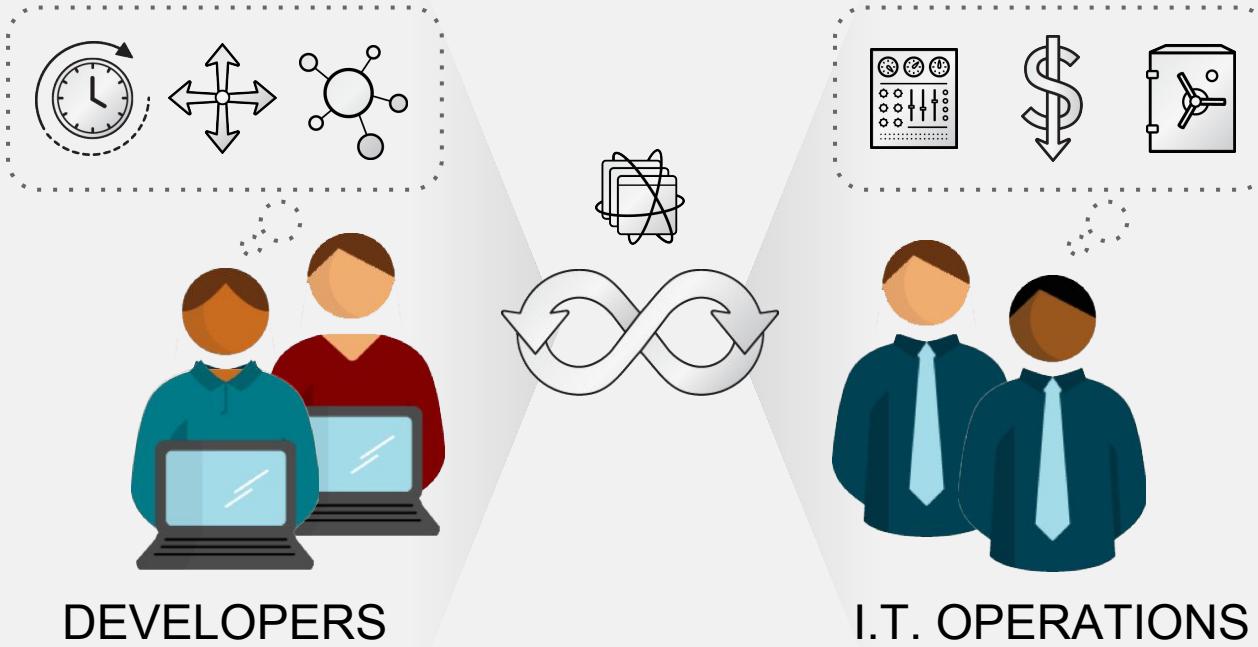
THE SOLUTION



CLEAR BOUNDARIES



COMMON LANGUAGE



WHAT ARE CONTAINERS?

It Depends Who You Ask

INFRASTRUCTURE

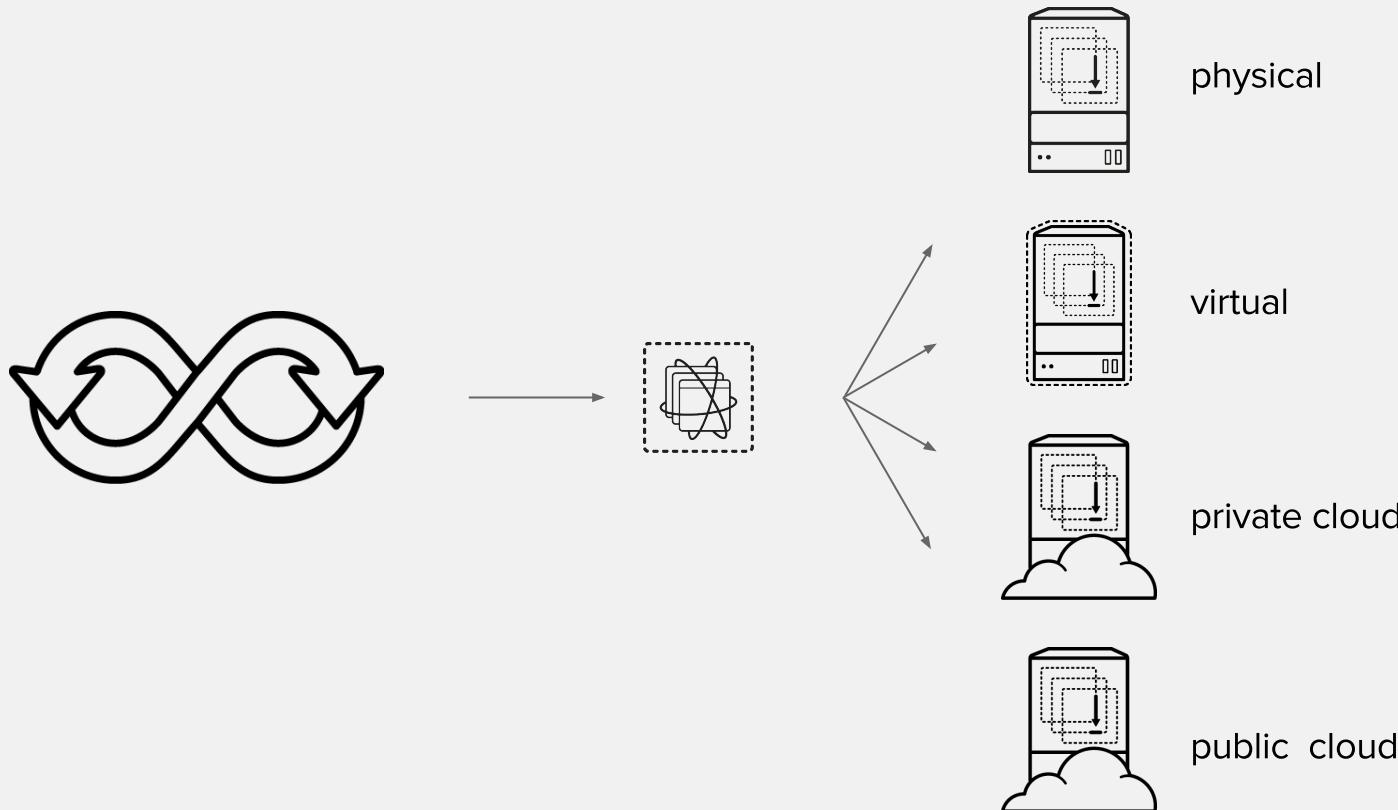
APPLICATIONS

- 
- Sandboxed application processes on a shared Linux OS kernel
 - Simpler, lighter, and denser than virtual machines
 - Portable across different environments
 - Package my application and all of its dependencies
 - Deploy to any environment in seconds and enable CI/CD
 - Easily access and share containerized components

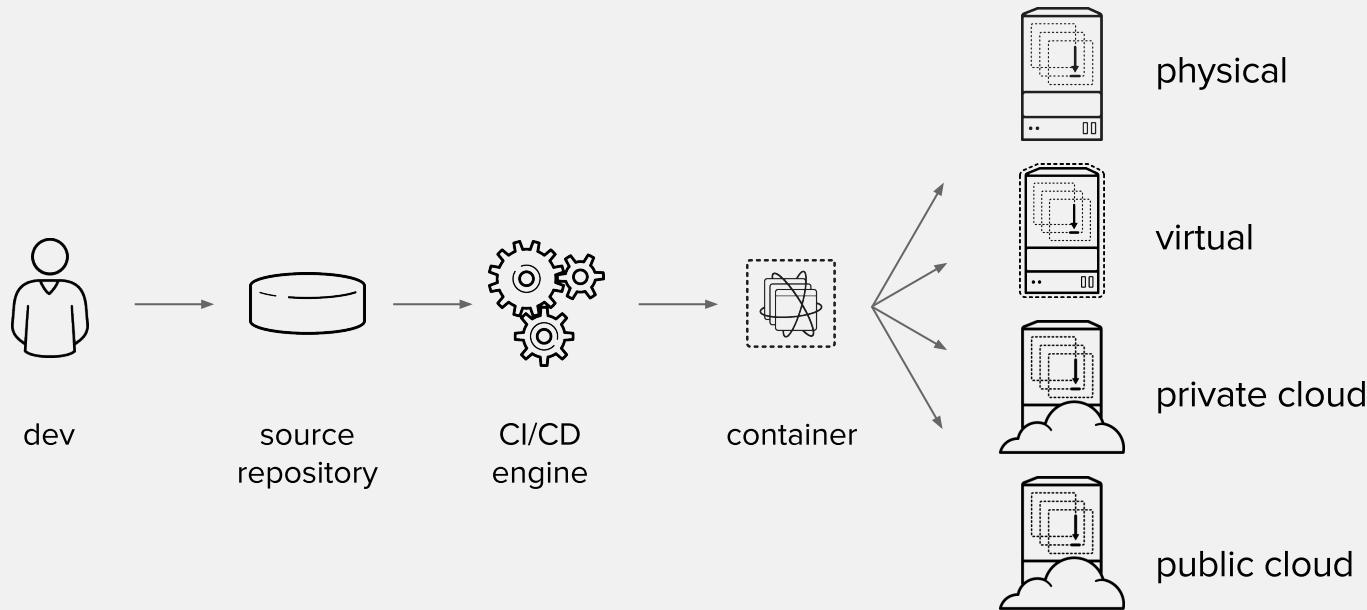
```
$ docker build -t app:v1 .
```

```
$ docker run app:v1
```

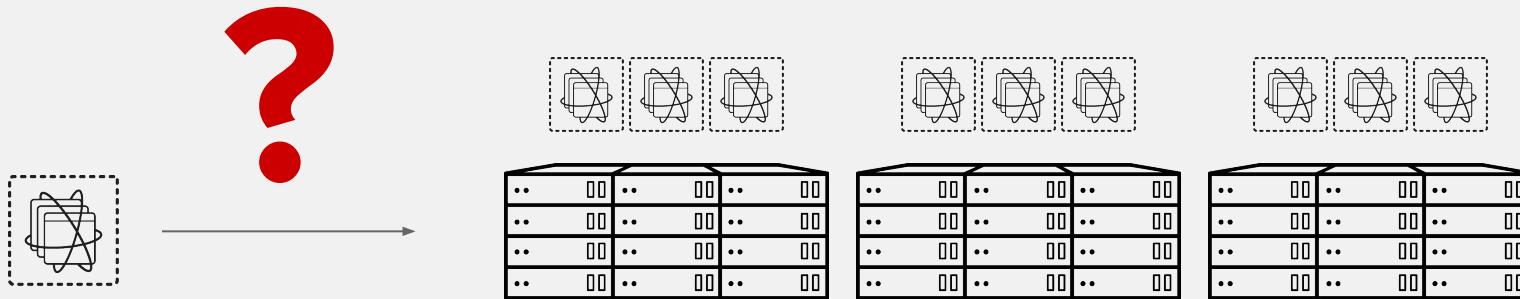
BUILD ONCE DEPLOY ANYWHERE



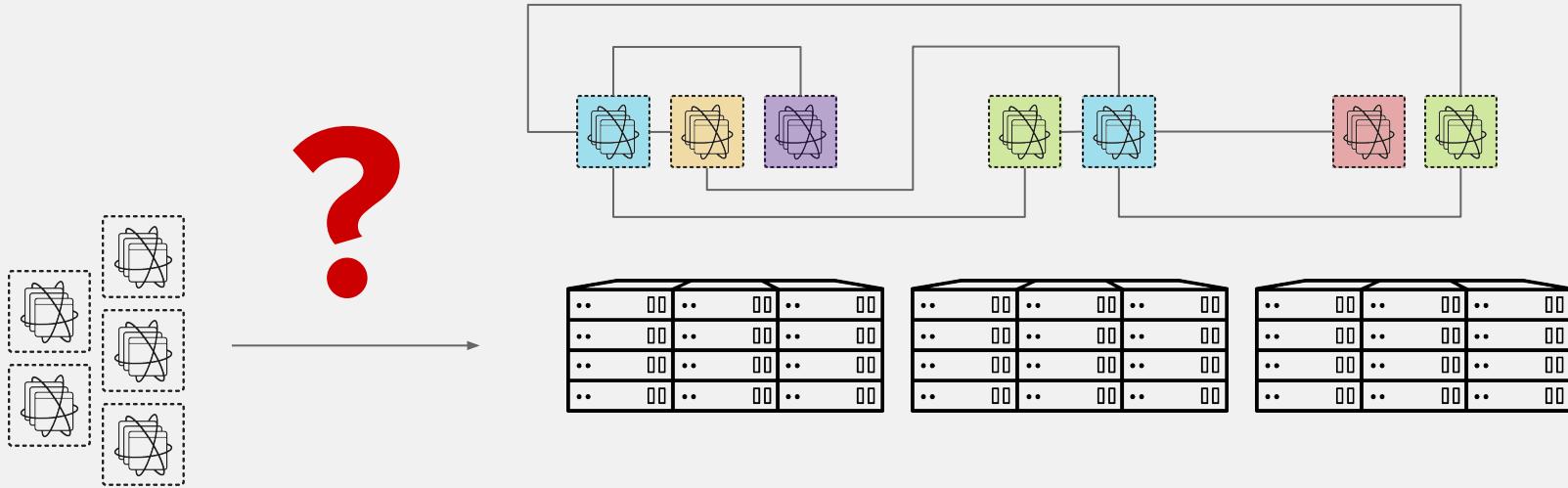
DEVOPS WITH CONTAINERS



DEVOPS WITH CONTAINERS AT SCALE: 1 APP = n Containers



DEVOPS WITH CONTAINERS AT SCALE: Where, what, how, who?



WE NEED MORE THAN JUST CONTAINERS

Scheduling

Decide where to deploy containers

Lifecycle and health

Keep containers running despite failures

Discovery

Find other containers on the network

Monitoring

Visibility into running containers

Security

Control who can do what

Scaling

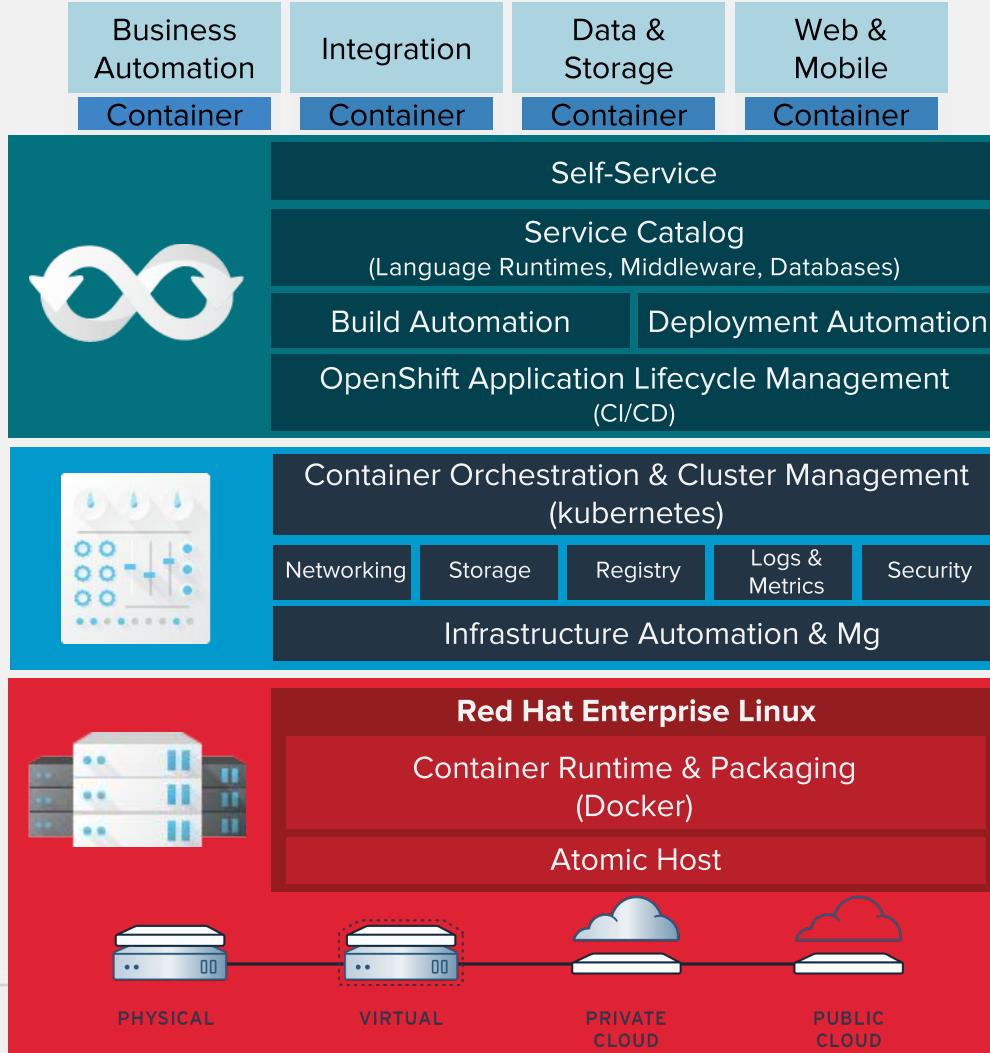
Scale containers up and down

Persistence

Survive data beyond container lifecycle

Aggregation

Compose apps from multiple containers





OPENSHIFT COMMONS

An interactive community for all OpenShift Users, Customers, Contributors, Partners, Service Providers and Developers to share ideas, code, best practices, and experiences.

More at <http://commons.openshift.org>



The background of the slide features a large, dense stack of shipping containers in a port terminal. The containers are stacked high, filling most of the frame. They are primarily white and blue, with some green ones visible on the right. The perspective is from a low angle, looking up at the top of the stack. In the foreground, there's a dark, horizontal band that serves as a title bar.

OpenShift

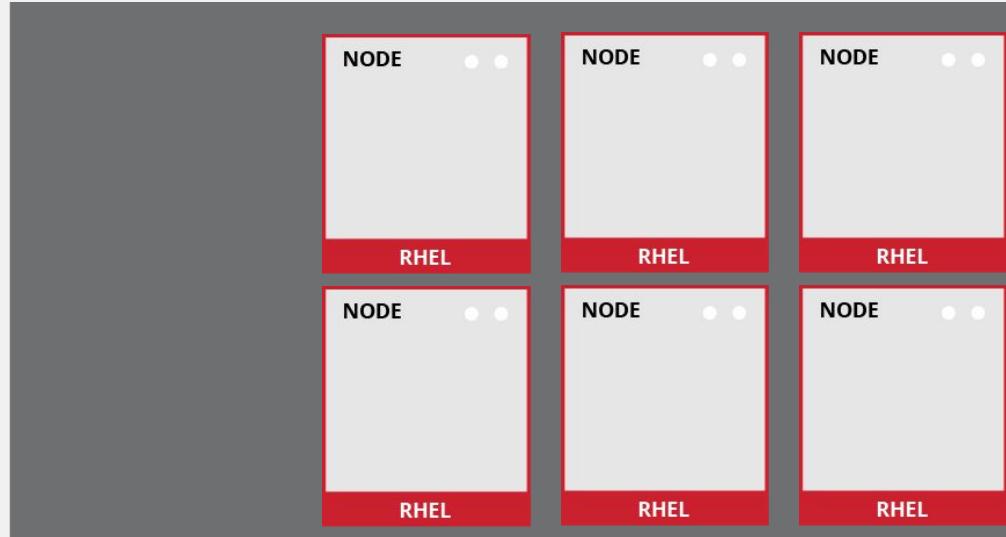
Architecture Overview



OpenShift runs on your choice of infrastructure



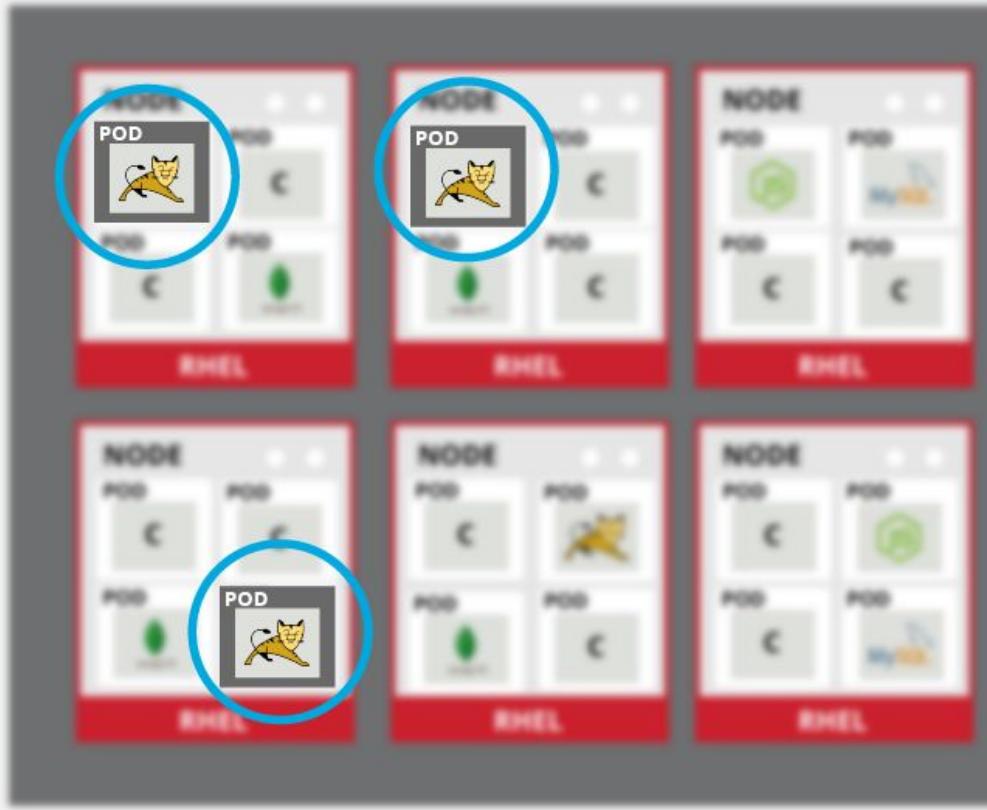
Nodes are instances of RHEL where apps will run



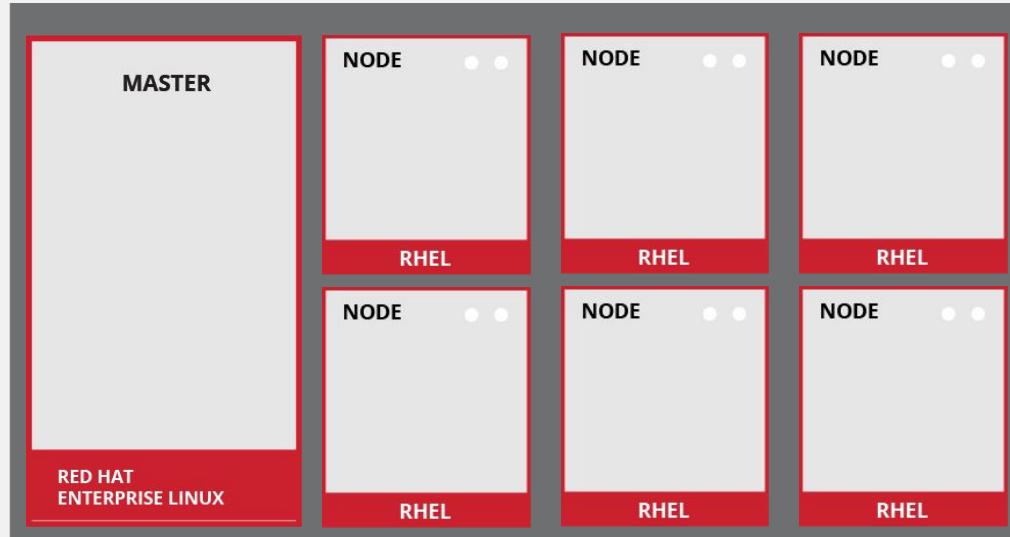
Apps and components run in containers



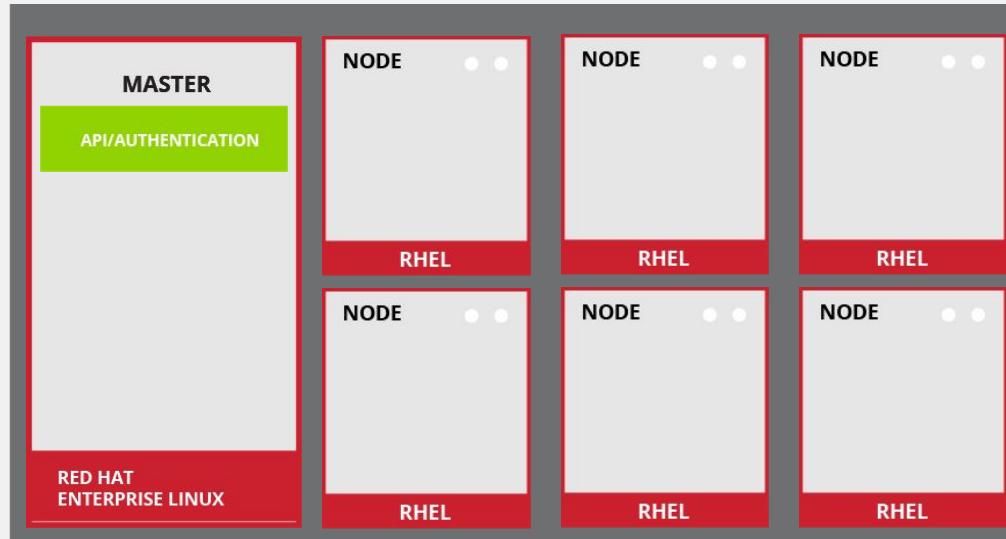
Pods are the orchestrated unit in OpenShift



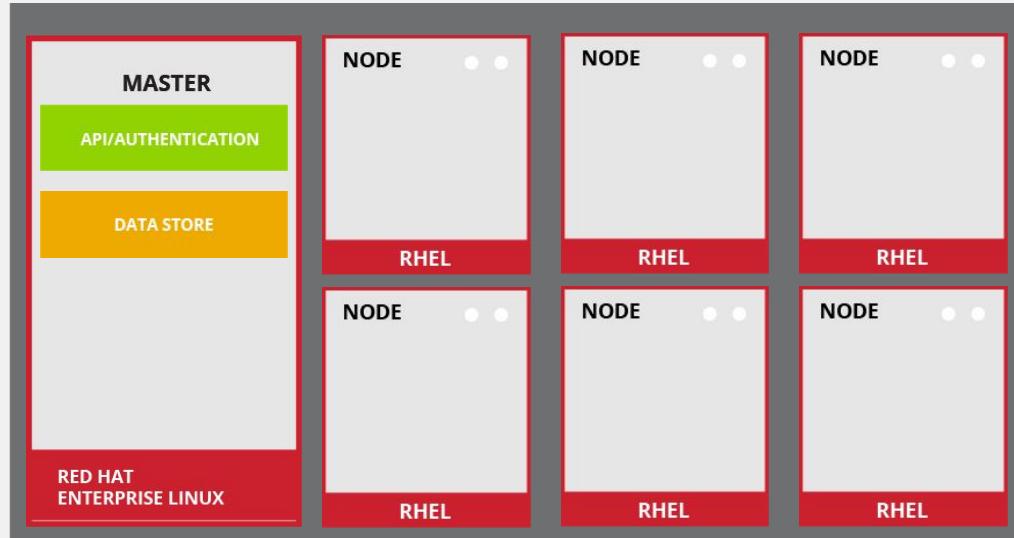
Masters are the Control Plane



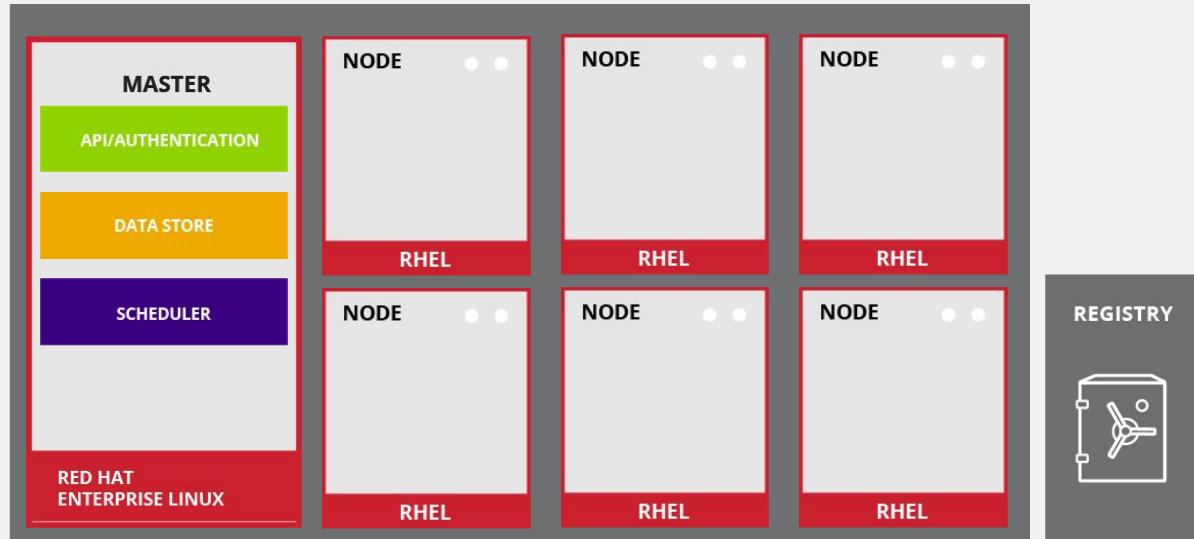
API and Authentication



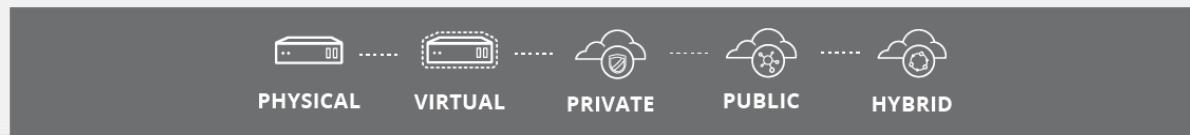
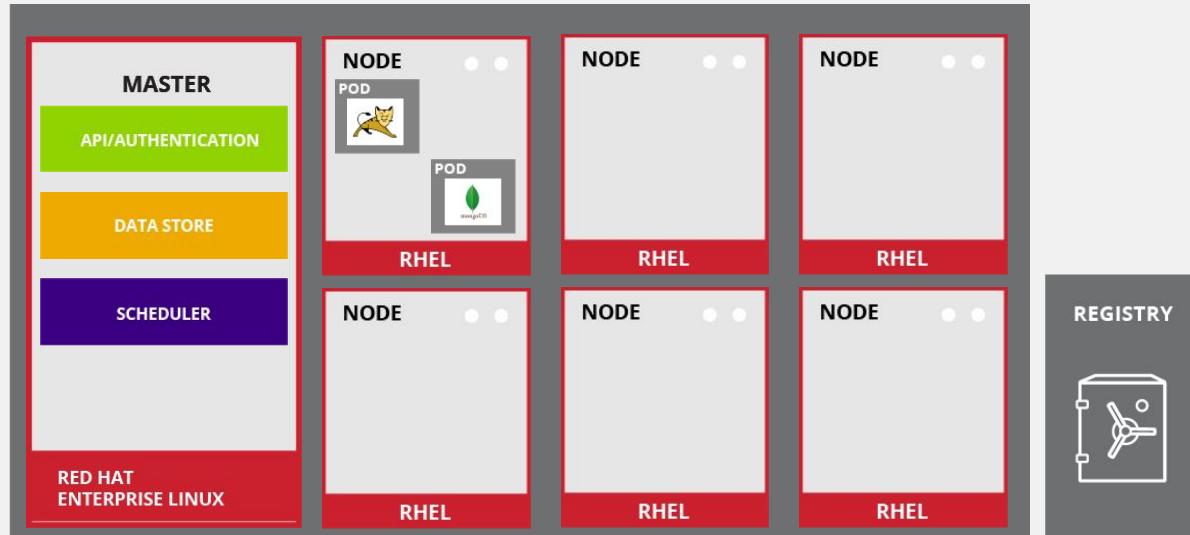
Desired and Current State



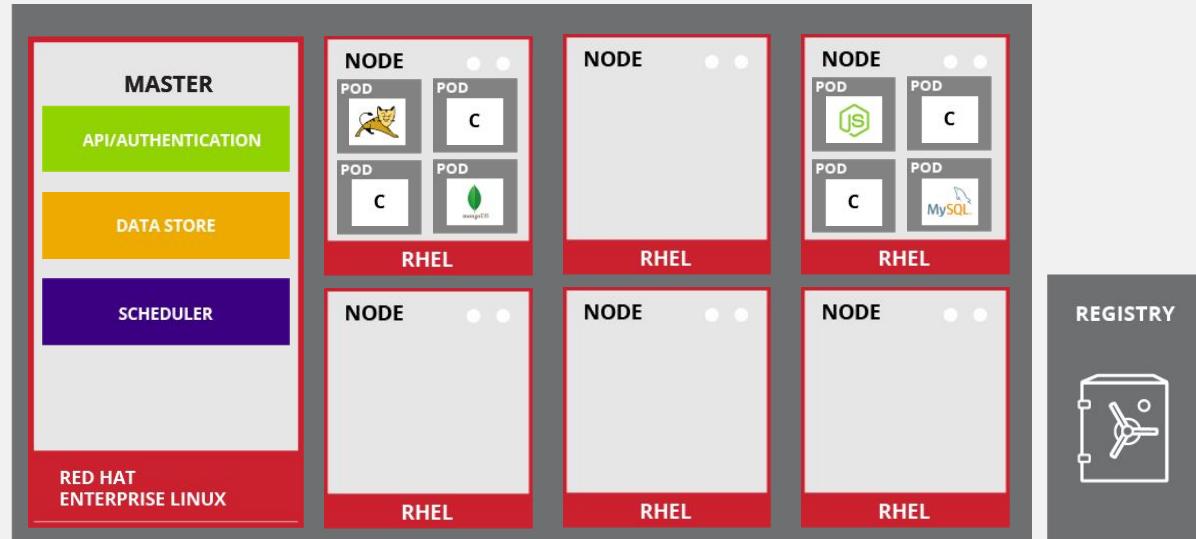
Scheduler Pulls From The Registry



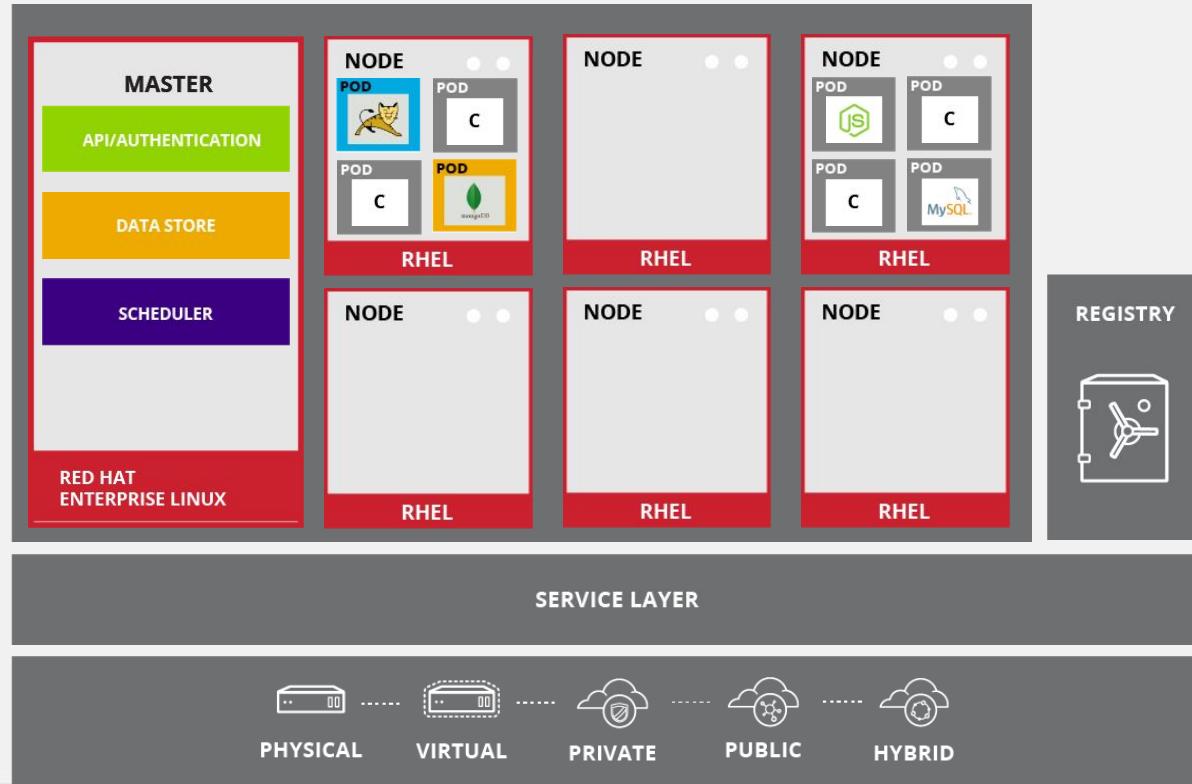
Orchestration and Scheduling



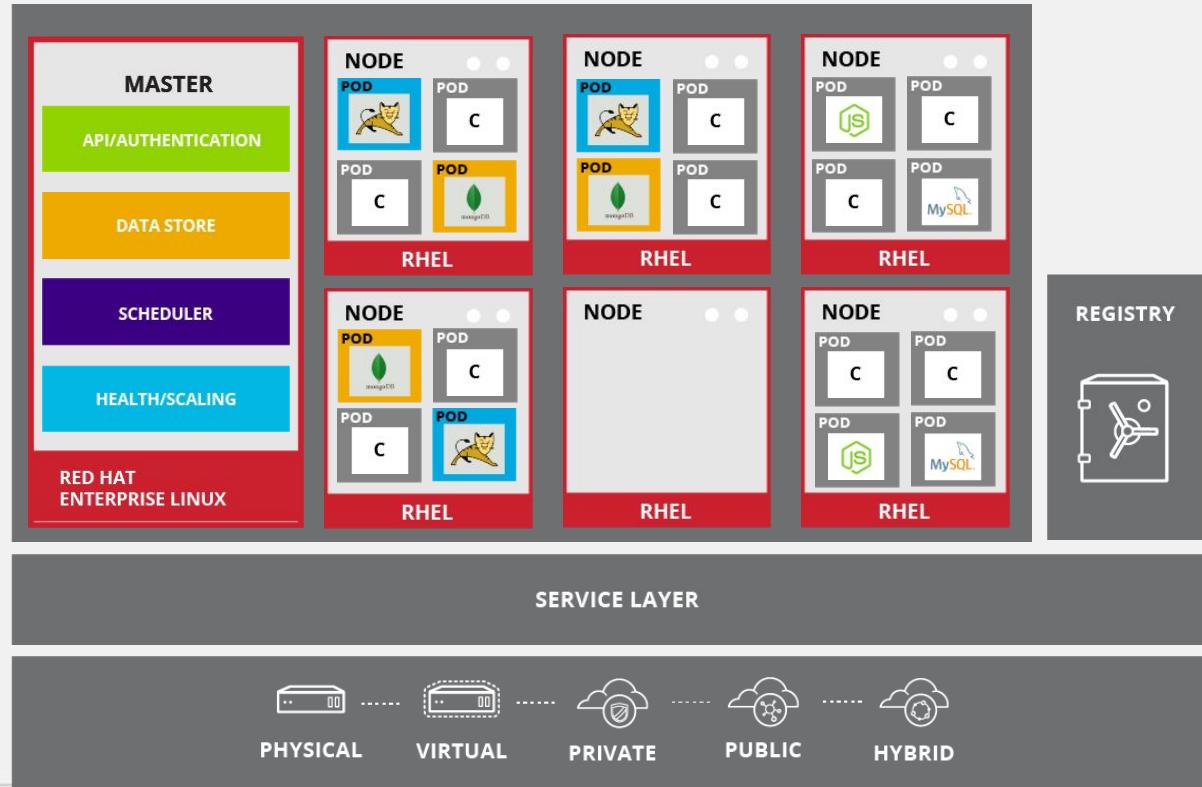
Placement by Policy



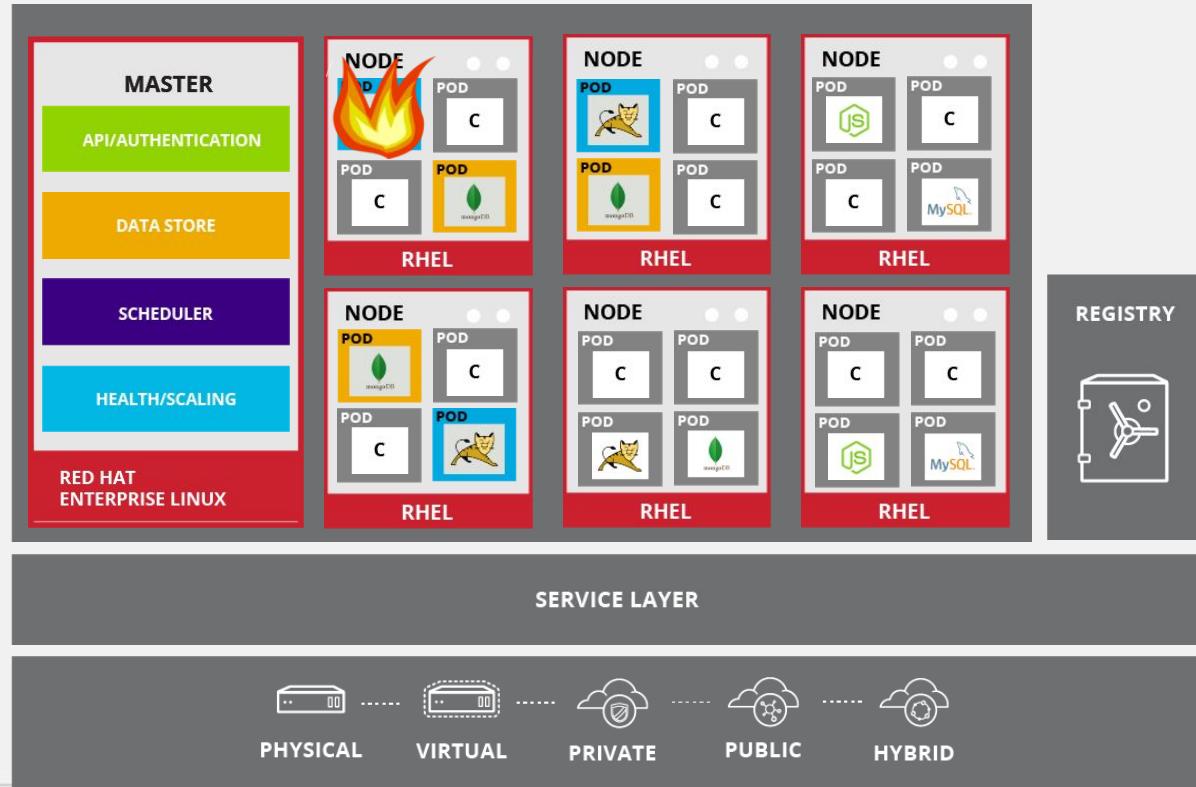
Services connect application components



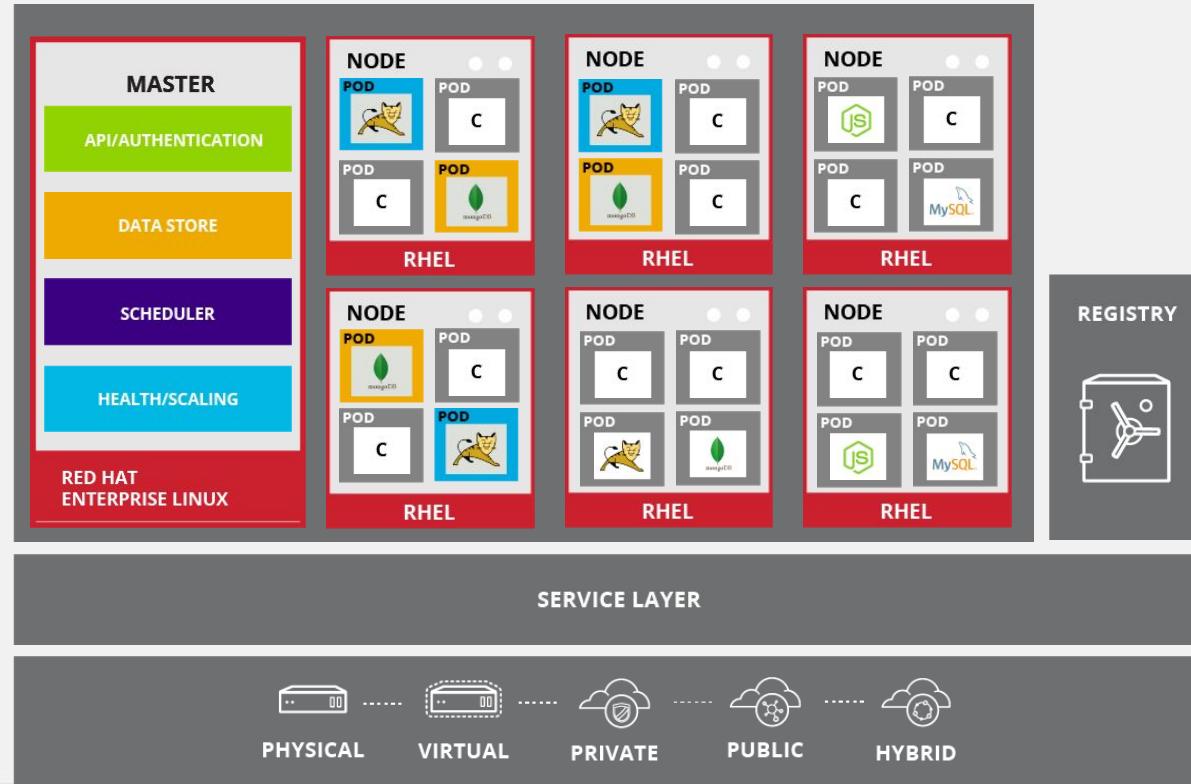
Health and Scaling



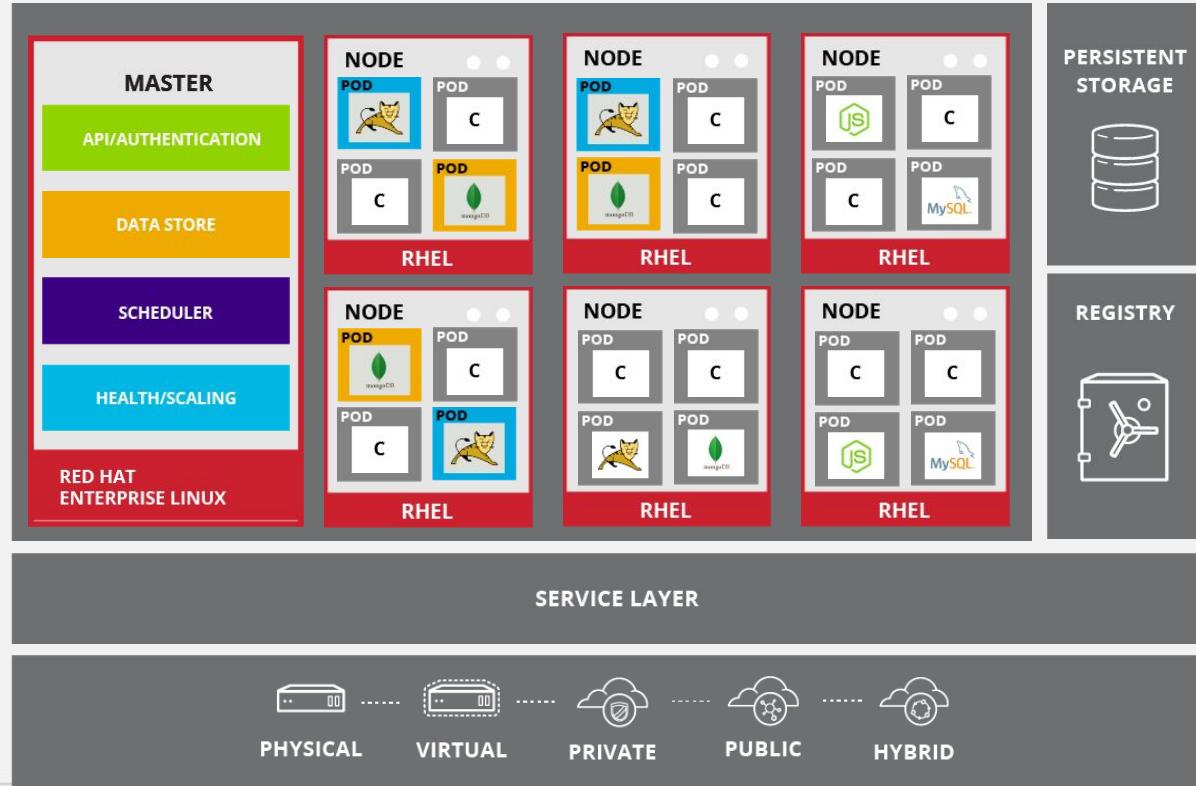
What about unhealthy Pods?



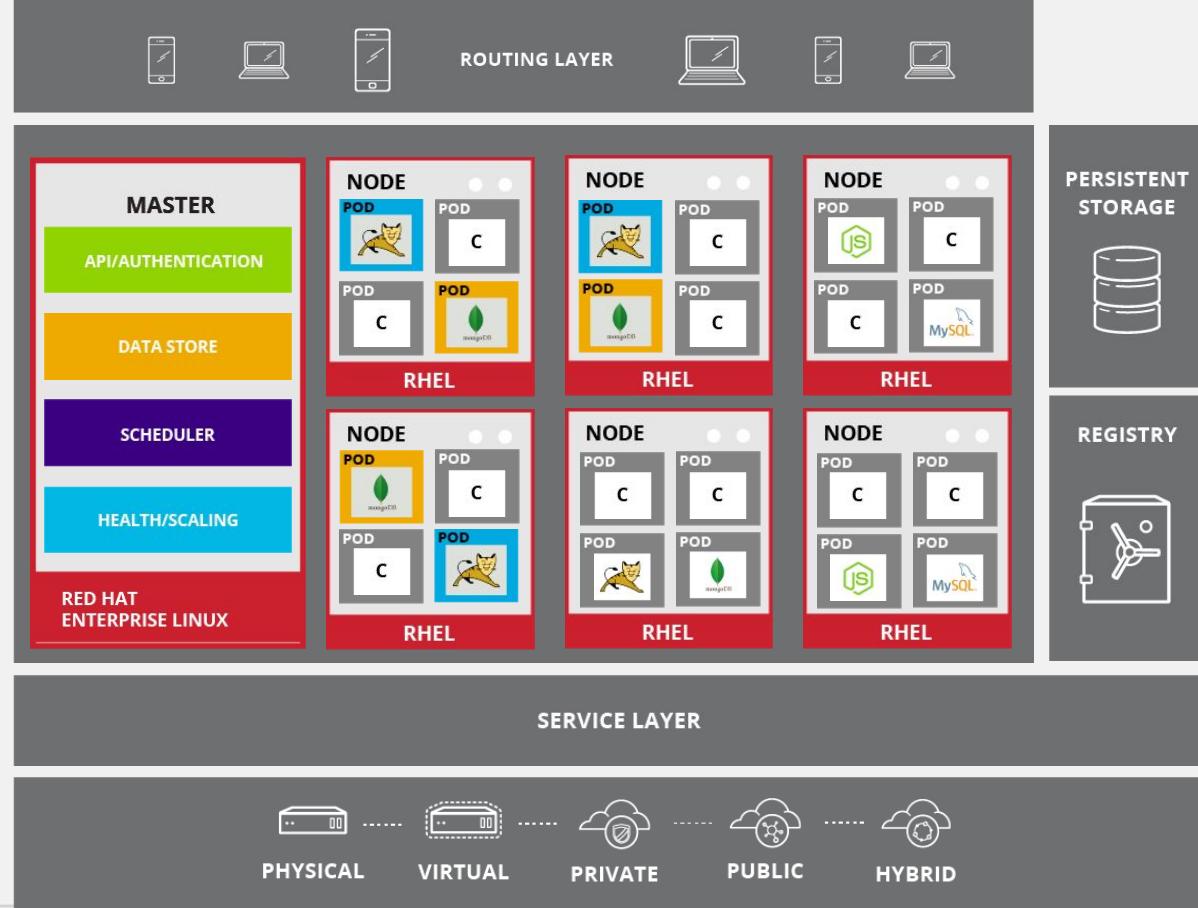
The Master remediates Pod failures



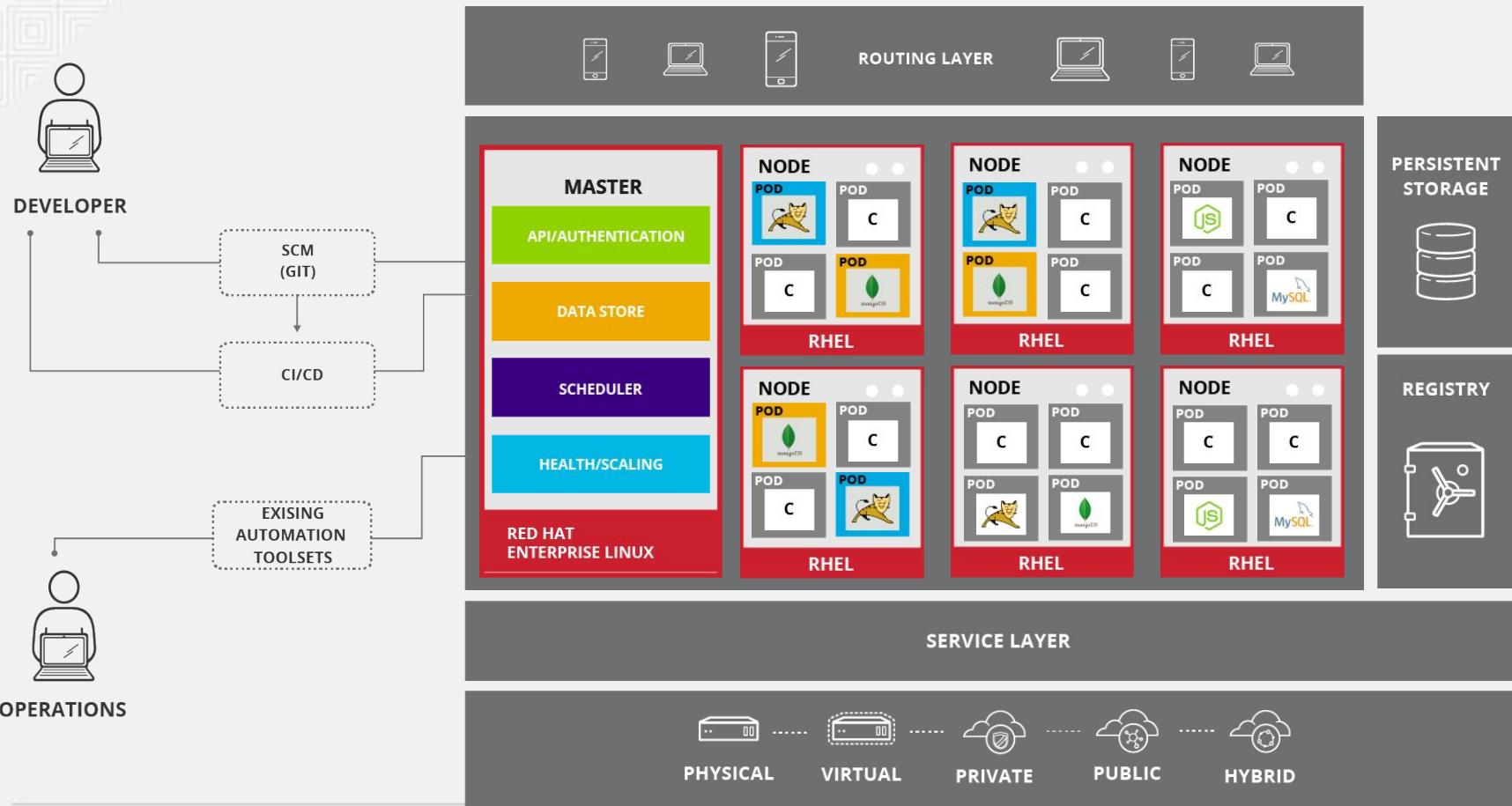
What about app data?



Routing layer for external accessibility



Access via Web UI, CLI, IDE, API





On Public Cloud

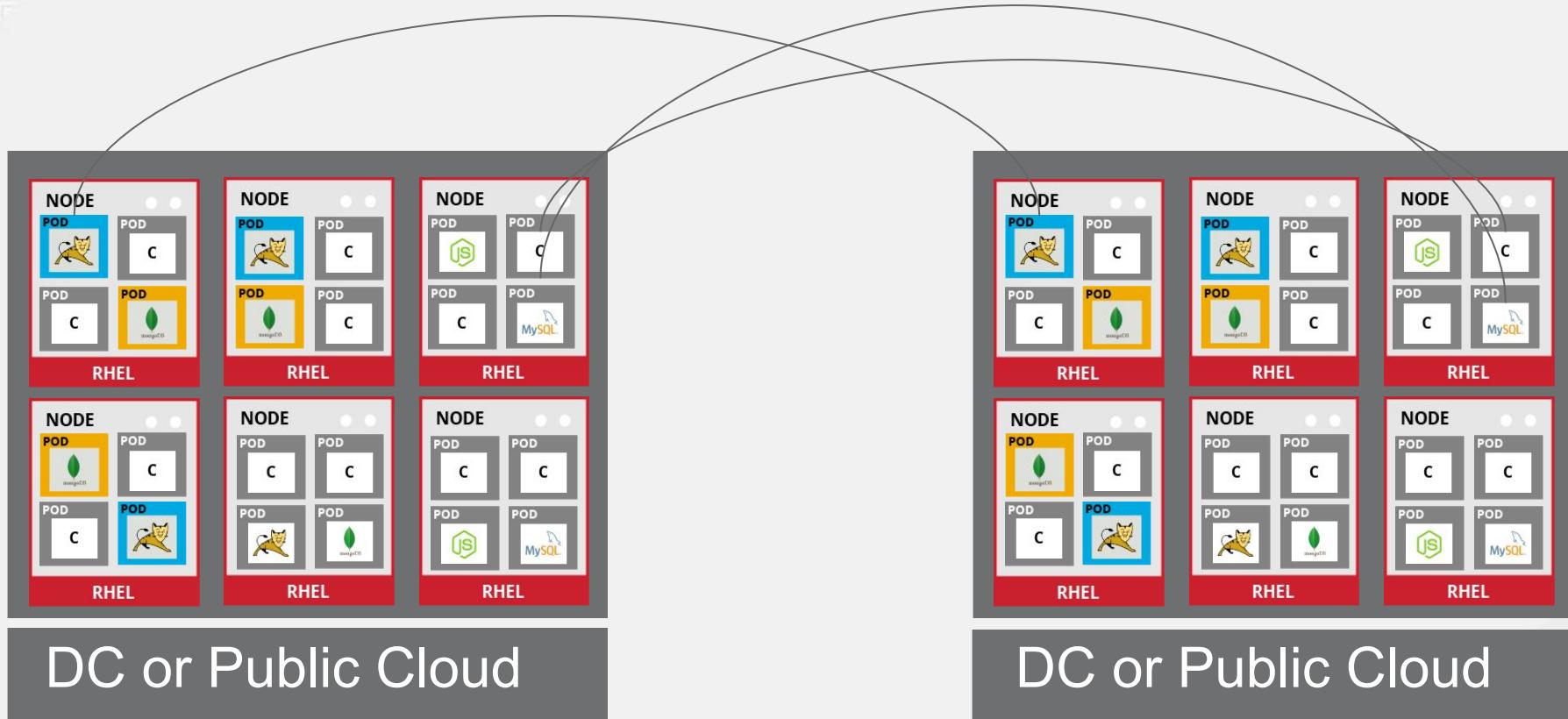


Deploying OpenShift on Public Cloud

Where you can deploy Red Hat Enterprise Linux
...you can deploy OpenShift Container Platform



Benefits of OpenShift: Moving workloads



DC or Public Cloud

DC or Public Cloud

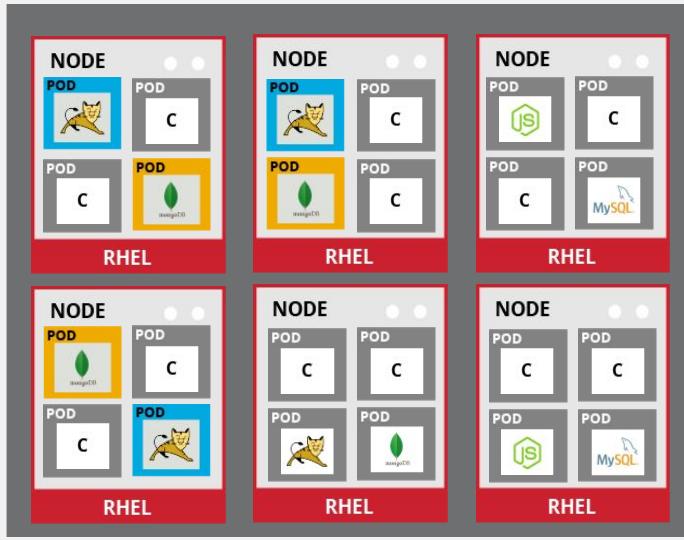
Benefits of OpenShift: Abstraction



dev

Process

container



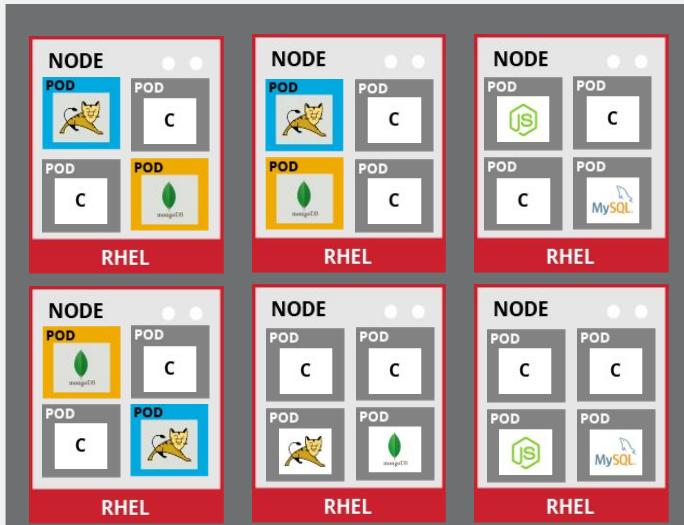
DC or Public Cloud



dev

Process

container



DC or Public Cloud

LIVE DEMO/WORKSHOP

A photograph showing a massive stack of shipping containers at a port. The containers are stacked high, filling the frame. In the center, a large white cargo ship is being loaded or unloaded by several industrial cranes. The sky is overcast and grey.

What to learn more?



<http://openshift.katacoda.com>



SIGN UP TO OPENSHIFT ONLINE FOR FREE



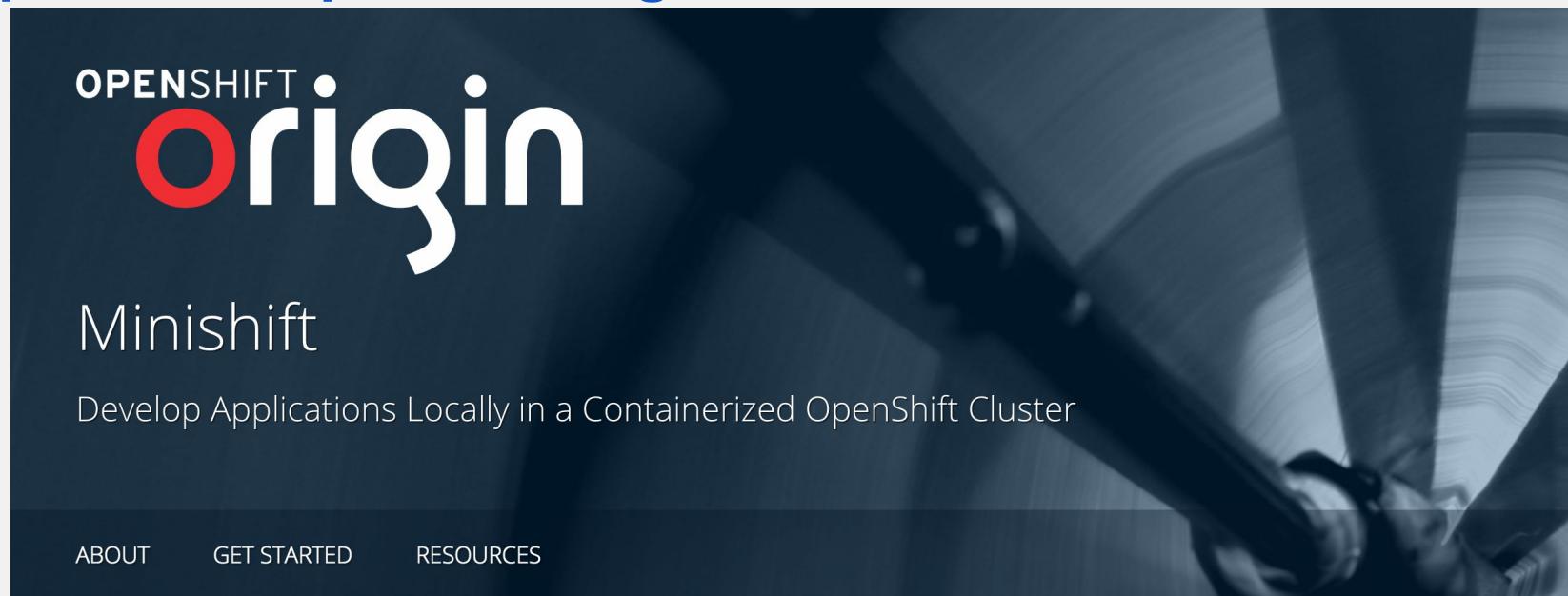
Interactive Learning Portal

Our Interactive Learning Scenarios provide you with a pre-configured OpenShift instance, accessible from your browser without any downloads or configuration. Use it to experiment, learn OpenShift and see how we can help solve real-world problems.

Getting Started with
OpenShift for
Developers

START SCENARIO

<https://www.openshift.org/minishift/>



The background of the page features a dark, moody photograph of a person sitting at a desk, viewed from behind. They are looking at a computer screen, with multiple monitors visible in the background. The lighting is dramatic, with strong highlights and shadows.

OPENSIFT
origin

Minishift

Develop Applications Locally in a Containerized OpenShift Cluster

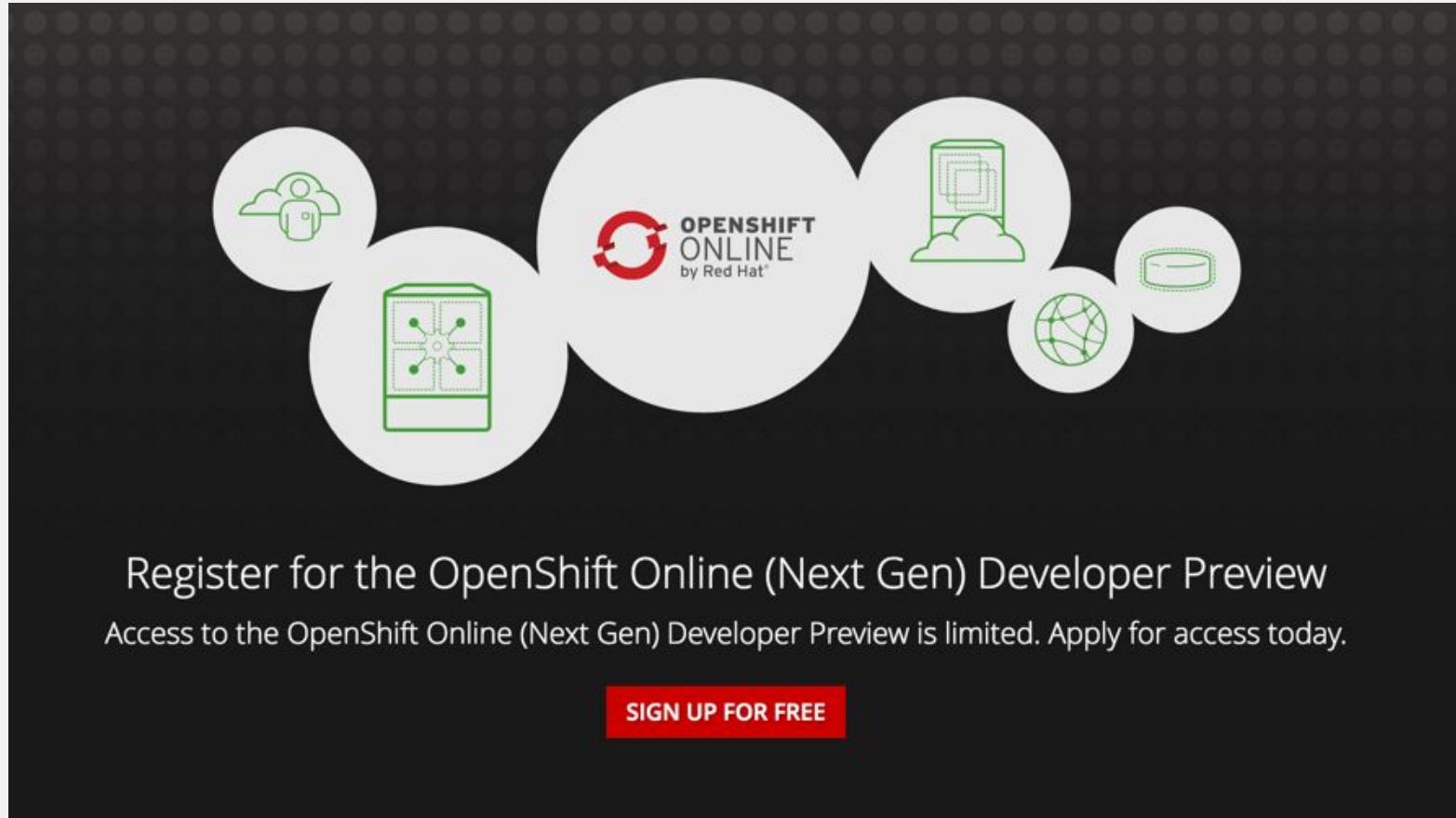
ABOUT GET STARTED RESOURCES

Minishift is a tool that helps you run OpenShift locally by launching a single-node OpenShift cluster inside a virtual machine. With Minishift you can try out OpenShift or develop with it, day-to-day, on your local machine.

You can run Minishift on Windows, Mac OS, and GNU/Linux operating systems. Minishift uses [libmachine](#) for provisioning virtual machines, and [OpenShift Origin](#) for running the cluster.



<https://www.openshift.com/devpreview/>



The image shows the landing page for the OpenShift Online (Next Gen) Developer Preview. At the top center is the OpenShift Online logo, which includes a red circular icon with a white gear-like symbol and the text "OPENSHIFT ONLINE by Red Hat". Surrounding the logo are five white circles containing green icons: a person in a cloud, a server rack, a monitor displaying code, a globe, and a database cylinder. Below these elements is a large, dark grey rectangular area containing promotional text and a call-to-action button.

Register for the OpenShift Online (Next Gen) Developer Preview

Access to the OpenShift Online (Next Gen) Developer Preview is limited. Apply for access today.

[SIGN UP FOR FREE](#)

Red Hat Open Innovation Labs

MODERNIZE TRADITIONAL APPS

- Extend applications
- Optimize applications
- Scale applications
- Expose to orchestration

INNOVATION ACCELERATED

DEVELOP CONTEMPORARY APPS

- Develop on PaaS environment
- Transform how you design and develop apps
- Adopt lean and agile principles
- Master DevOps practices



COLLABORATION

Space to work,
innovate, and discuss



RESIDENCY

An eight-week accelerated
teaming engagement



COMMUNITY INCUBATION

Communities
supporting innovation

<https://install.openshift.com/>



OPENSIFT

Get ready to rock with OpenShift.

Origin / latest / Enterprise / 3.x

Pick the installation that's right for you.

Latest development release
`oc cluster up`

- Cross platform; Runs anywhere you can run Docker

Container Development Kit
`vagrant up (On Mac/Linux)`

(Run the [devsuite installer](#) exe on Windows)

- Most full featured all-in-one host environment
- Cross platform; Runs in a virtual machine
- Ideal for all levels of container experience

OpenShift Container Platform
`atomic-openshift-installer install`

- Enterprise grade, fully supported for production workloads in your datacenter or the cloud
- Highly configurable

Don't have access? Start a [free trial](#) today!

Need more help? We're here for you.

- The [OpenShift Enterprise Installation and Configuration Guide](#) is available at the [OpenShift Enterprise documentation site](#).
- Customers can open [support cases](#) as well as browse a wealth of subscribers only [solutions](#), [articles](#) and much more.
- Familiar with IRC? OpenShift superstars can be found on the [#openshift](#) and [#openshift-dev](#) channels on [FreeNode](#).
- You can also join the [Users](#) or [Developers](#) mailing list.

THANK YOU



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