10 THINGS TO CONSIDER WHEN SELECTING A KUBERNETES PLATFORM

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TODAY'S PRESENTERS

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WHAT WILL BE DISCUSSED TODAY?

FUNDAMENTAL CONCEPTS

DIY vs. COMMERCIAL DISTROS

CLOUD SPECIFIC vs CLOUD AGNOSTIC

THE DEVOPS PERSPECTIVE

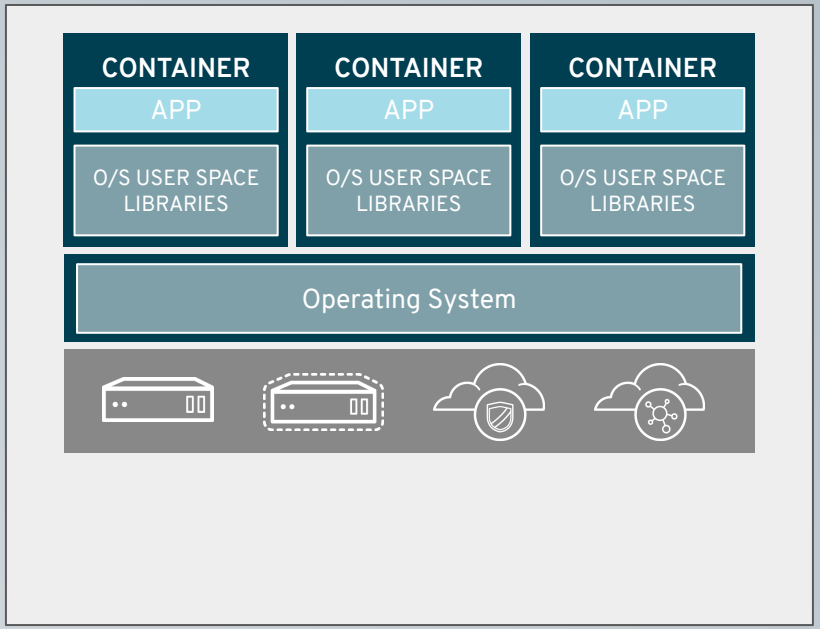
KUBERNETES PLATFORM EVOLUTION

FUNDAMENTAL CONCEPTS

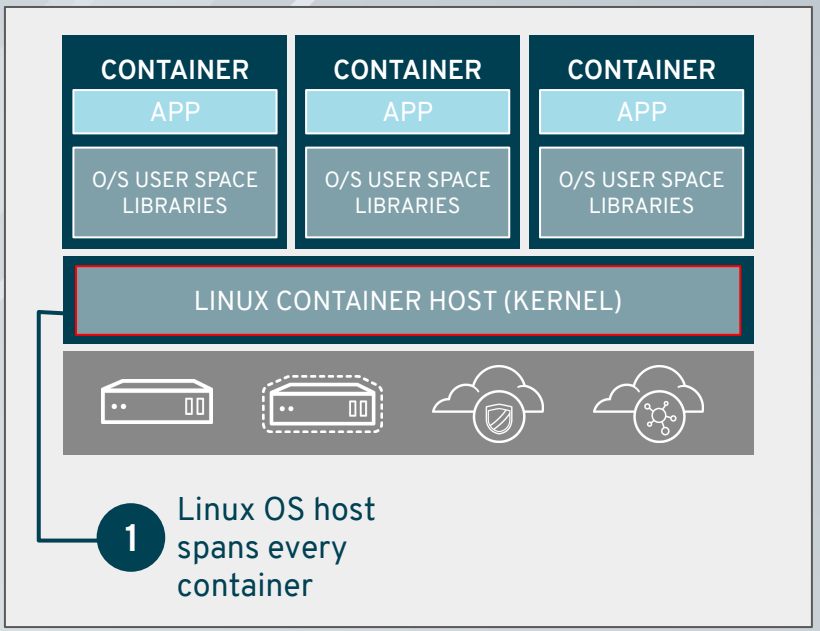
1

CONTAINERS ARE LINUX

THE LINUX OS MATTERS. CHOOSE WISELY.



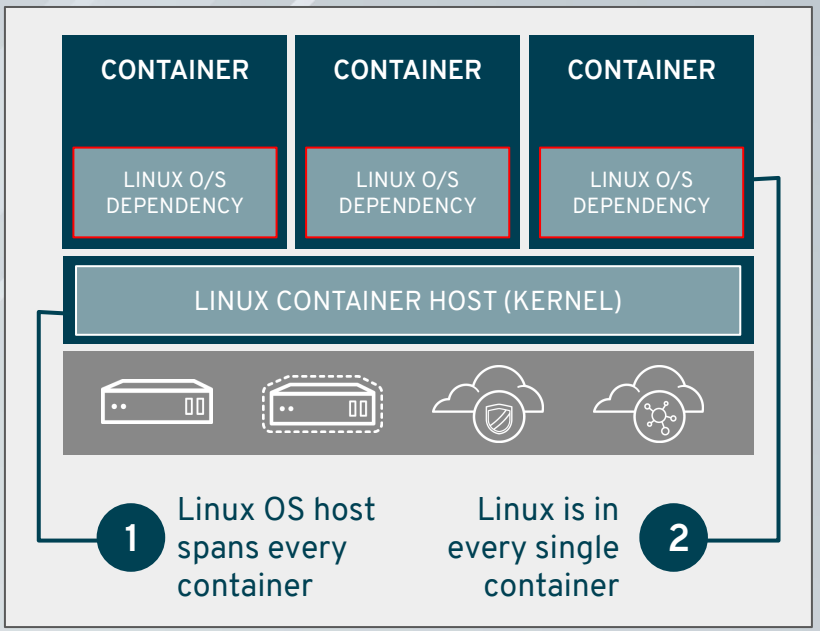
CONTAINERS START WITH LINUX



Linux is foundational to containers

- Containers run on a Linux Container Host OS

CONTAINERS START WITH LINUX

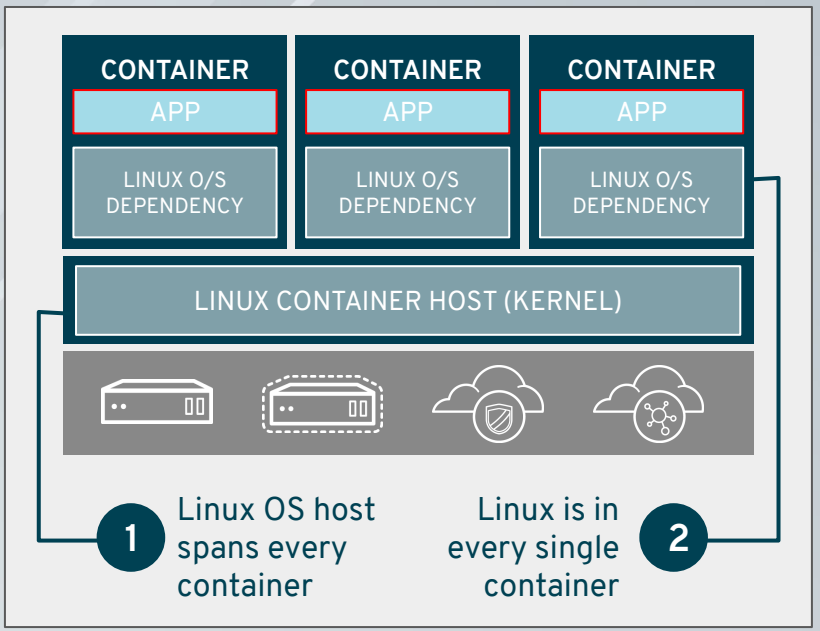


Containers depend on Linux features

- Linux (O/S User Space) is inside every container

Linux is foundational to containers

CONTAINERS START WITH LINUX



Apps in containers are running in Linux

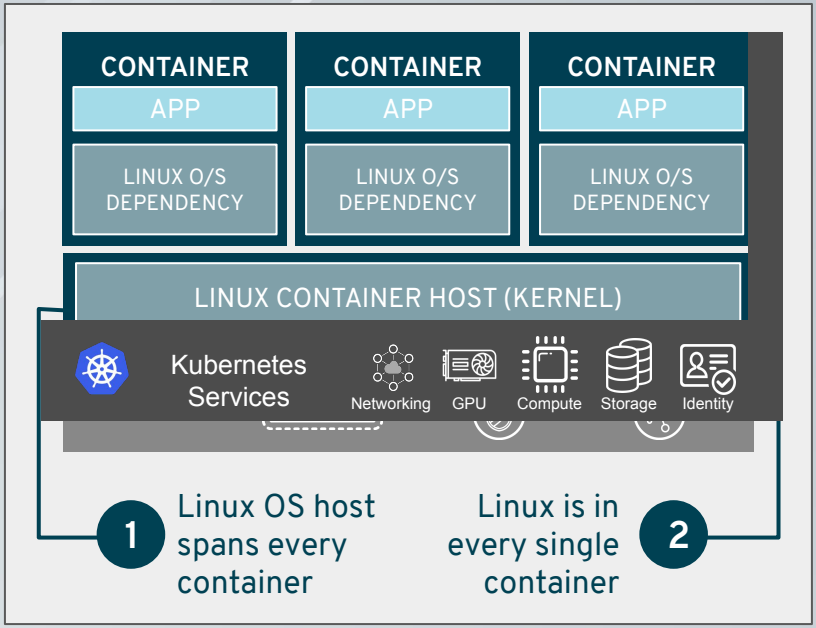
Containers depend on Linux features

Linux is foundational to containers

2

CONTAINERS ARE THE FOUNDATION OF KUBERNETES

CONTAINERS START WITH LINUX



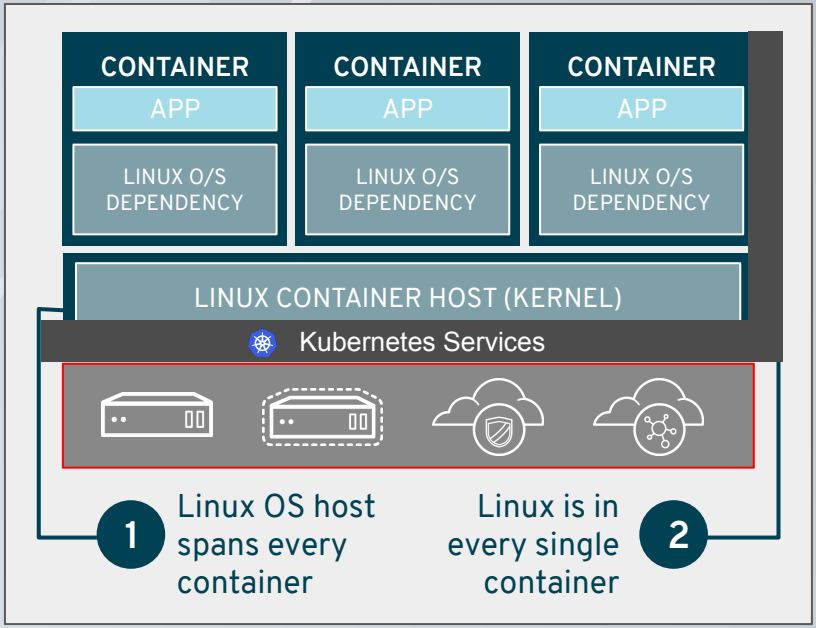
Apps in containers are running in Linux

Containers depend on Linux features

Linux is foundational to containers

Kubernetes uses Linux to manage resources

CONTAINERS START WITH LINUX



Apps in containers are running in Linux

Containers depend on Linux features

Linux is foundational to containers

Kubernetes uses Linux to manage resources

RHEL is the leading Linux for the enterprise

- Across all footprints from bare metal to cloud

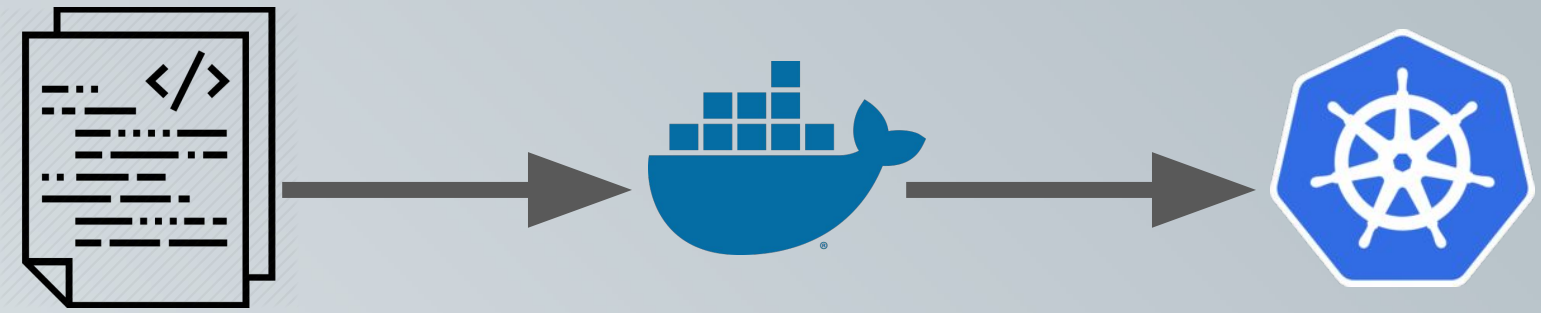
EXPERTISE IN LINUX IS EXPERTISE IN CONTAINERS

DIY
vs.
COMMERCIAL DISTRIBUTION

3

EVEN KUBERNETES GEEKS USE COMMERCIAL DISTRIBUTIONS

KUBERNETES THE APPLICATION



Q: WHAT IS KUBERNETES?

A: The Thing that Runs My Containers.
On Some Servers.
In the Cloud.

Right?

KUBERNETES: WHAT'S IN THE BOX

- APIserver
- Controller
- Scheduler
- Kubelet
- Kubectl

KUBERNETES: WHAT'S IN THE BOX

- APIserver
- *Default* Controller
- *Default* Scheduler
- Kubelet
- *Default* Client (Kubectl)

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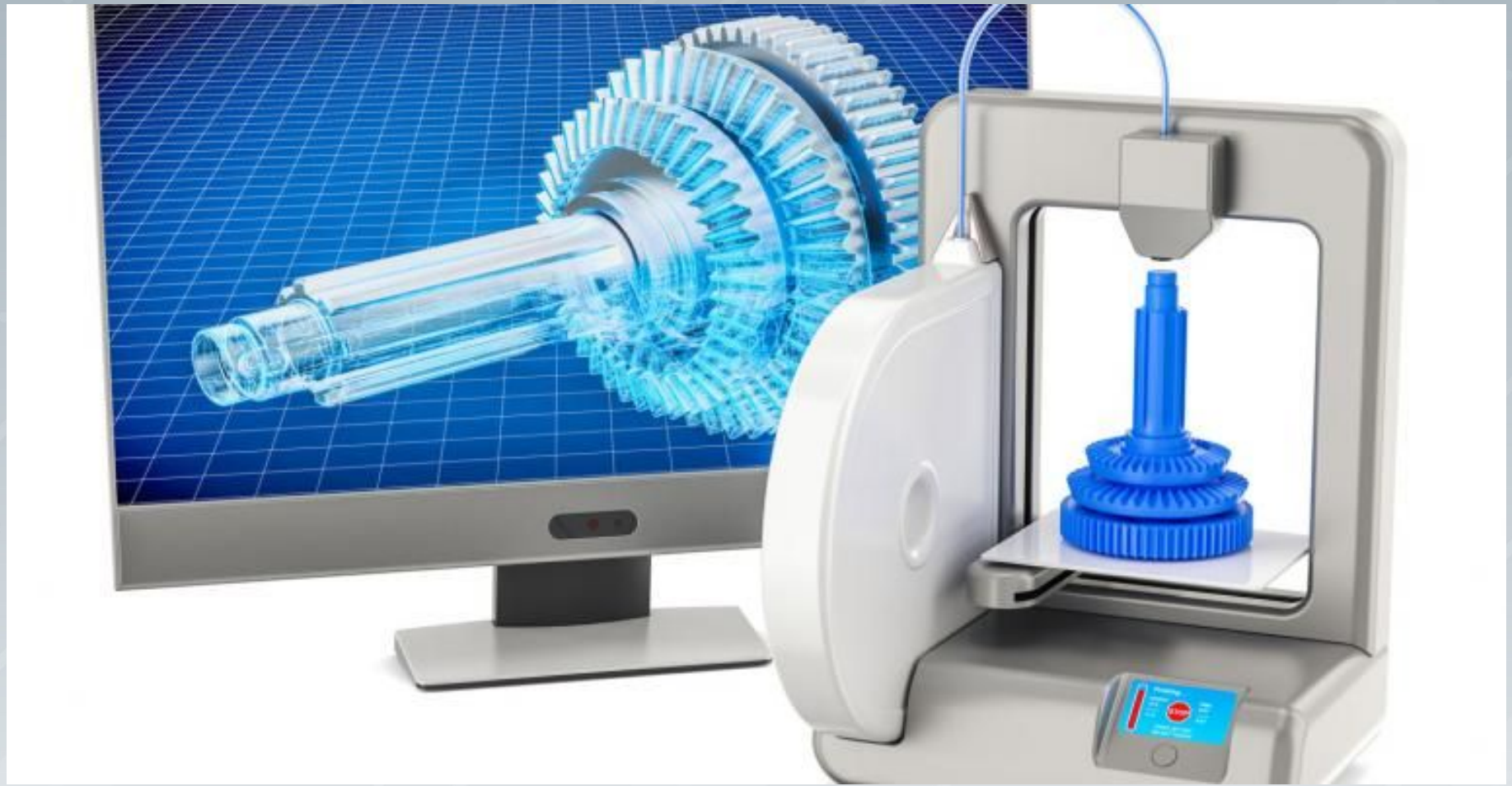
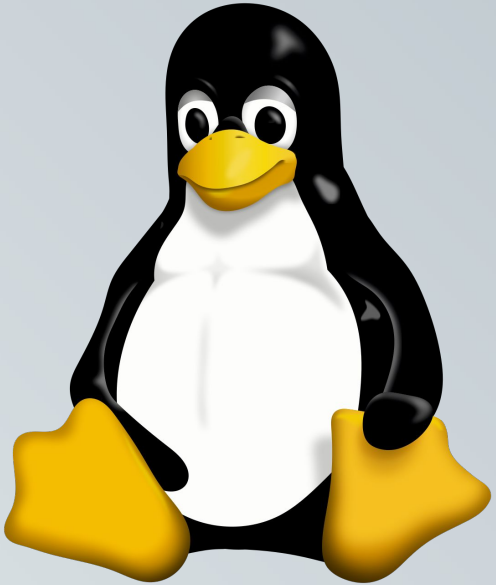
KUBERNETES: WHAT'S IN THE BOX

- APIserver
- Default Controller
- Default Scheduler
- Kubelet
- Default Client (Kubectl)

- CNI
- CSI
- Cloud Provider
- CRI
- Scheduler API
- Controller API
- Client API
- Workloads API
- etc



WE'VE SEEN THIS BEFORE



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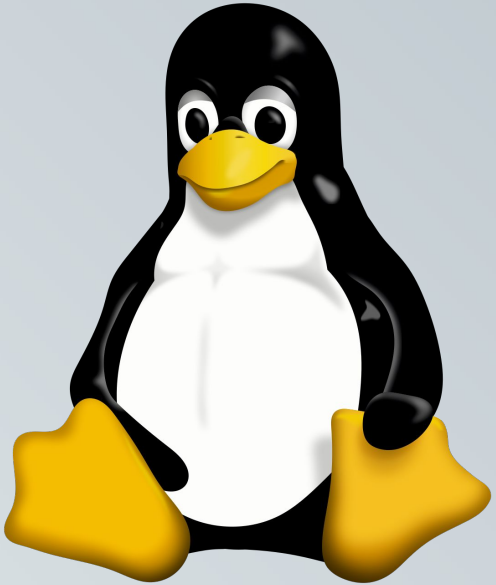
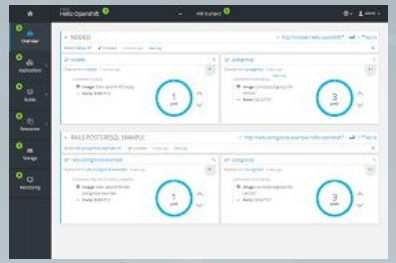


RED HAT®
ENTERPRISE
LINUX®



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KUBERNETES: A STACK DEFINITION, NOT AN APPLICATION

4

WHAT DIY USERS MUST OWN

INSTALLATION

Just use the official packages, right?

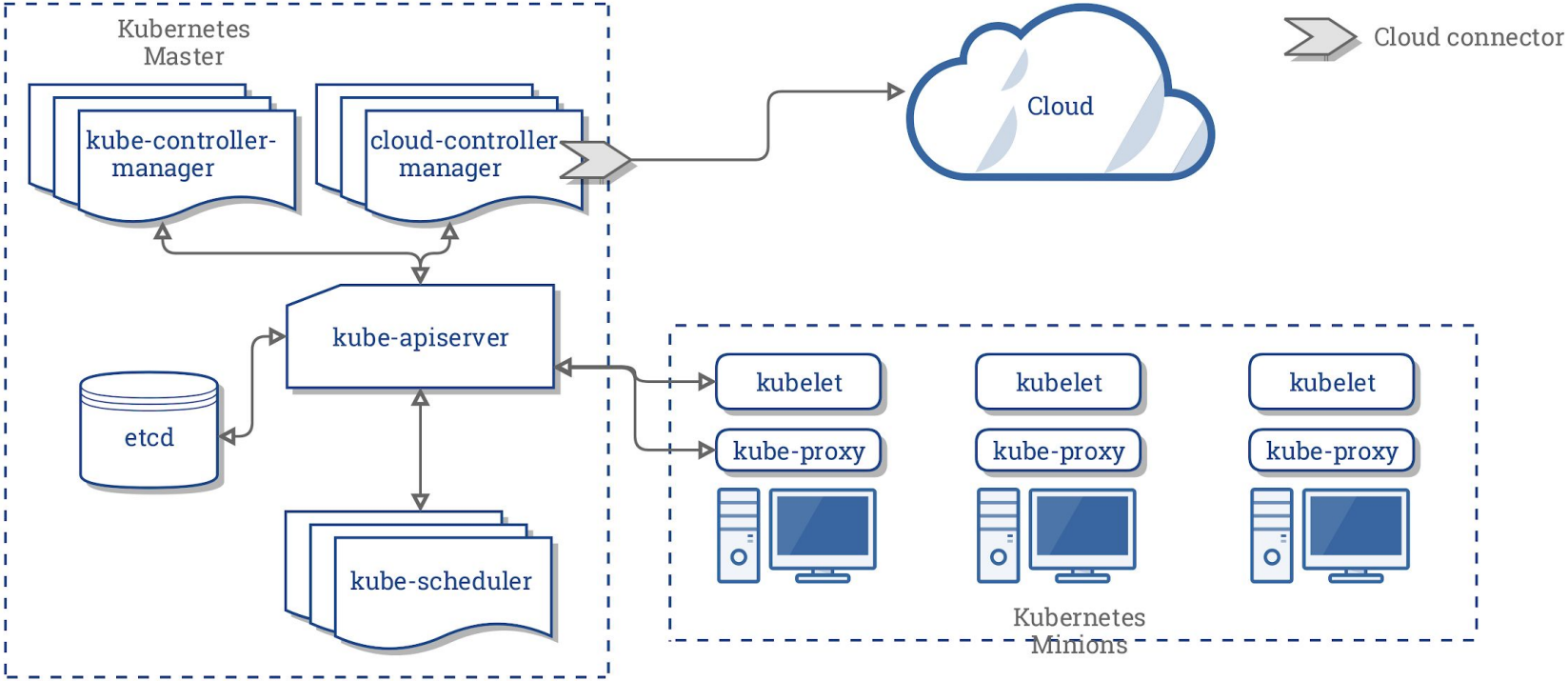


diagram from official Kubernetes documentation

INSTALLATION

- Kubeadm
  - Go, bare metal or bare vm
  - Also kubeadm-dind
  - Most "core"
- Kubespray
  - Ansible, all the clouds
- Kops
  - Go, AWS/GCE

Kubernetes The Hard Way

This tutorial walks you through setting up Kubernetes the hard way. This guide is not for people looking for a fully automated command to bring up a Kubernetes cluster. If that's you then check out Google Kubernetes Engine, or the Getting Started Guides.

Kubernetes The Hard Way is optimized for learning, which means taking the long route to ensure you understand each task required to bootstrap a Kubernetes cluster.

> The results of this tutorial should not be viewed as production ready, and may receive limited support from the community, but don't let that stop you from learning!

UPGRADING/MAINTENANCE

The Good Part:

You get all the new stuff, right away.

UPGRADING/MAINTENANCE

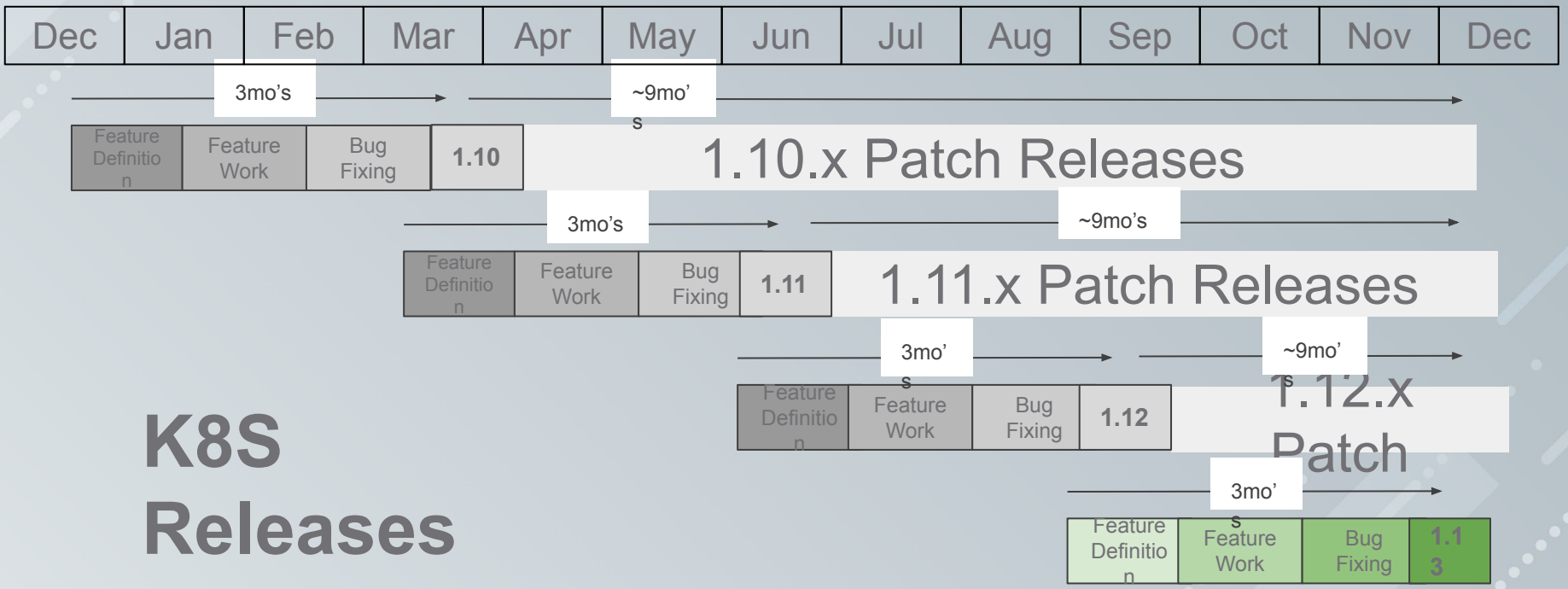
The Good Part:

You get all the new stuff, right away.

The Bad Part:

You get all the new stuff, right away.

HIGH VELOCITY DEVELOPMENT



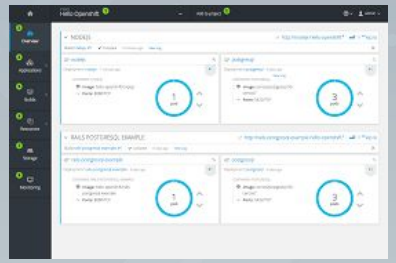
K8S Releases

EFFECT ON OPS

New releases every 3 months
+ Patch support only for 9 months
+ No LTS releases, yet

= Get ready to upgrade twice a year

Also: Alpha/Beta features can break compatibility



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DO YOU WANT TO BUILD A CLOUD, OR DO YOU JUST WANT TO RUN ONE?

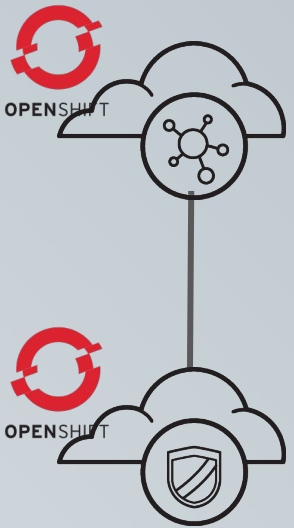
CLOUD SPECIFIC vs. CLOUD AGNOSTIC

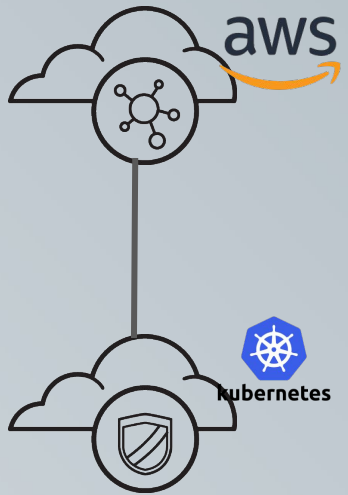
5

ARE ALL CLOUDS THE SAME?

PLATFORM CONSISTENCY?

- SAME DEV EXPERIENCE
- SAME OPS EXPERIENCE
- INSTALL BUILT-IN
- TRUSTED RHEL OS
- REGISTRY BUILT-IN
- LOGGING BUILT-IN
- MONITORING BUILT-IN
- UPGRADES BUILT-IN
- CONSISTENT SUPPORT





- DIY DEV EXPERIENCE
- DIFFERENT OPS MODELS
- DIFFERENT INSTALLS
- UNTRUSTED LINUX OS
- DIY ADD-ON SERVICES
- WHO SUPPORTS IT?

CONSISTENT PLATFORM

INCONSISTENT PLATFORM

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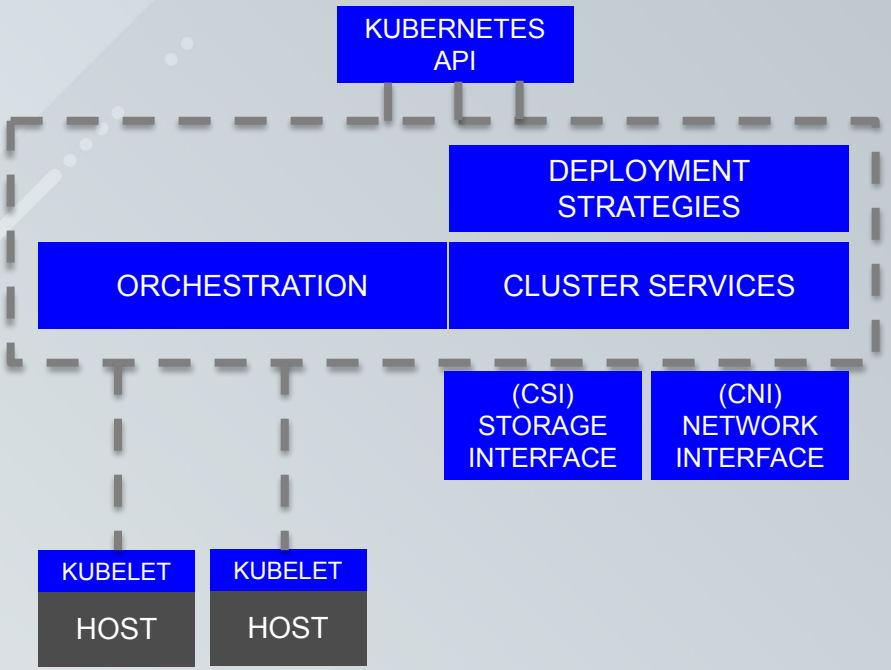
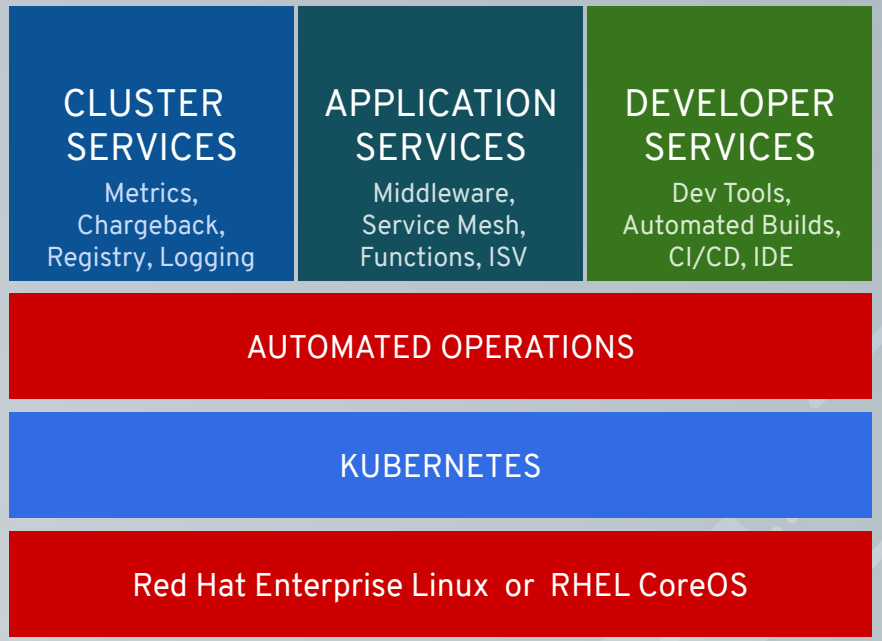
PLATFORMS ARE MORE THAN KUBERNETES

KUBERNETES vs. KUBERNETES PLATFORMS





THE DEVOPS PERSPECTIVE

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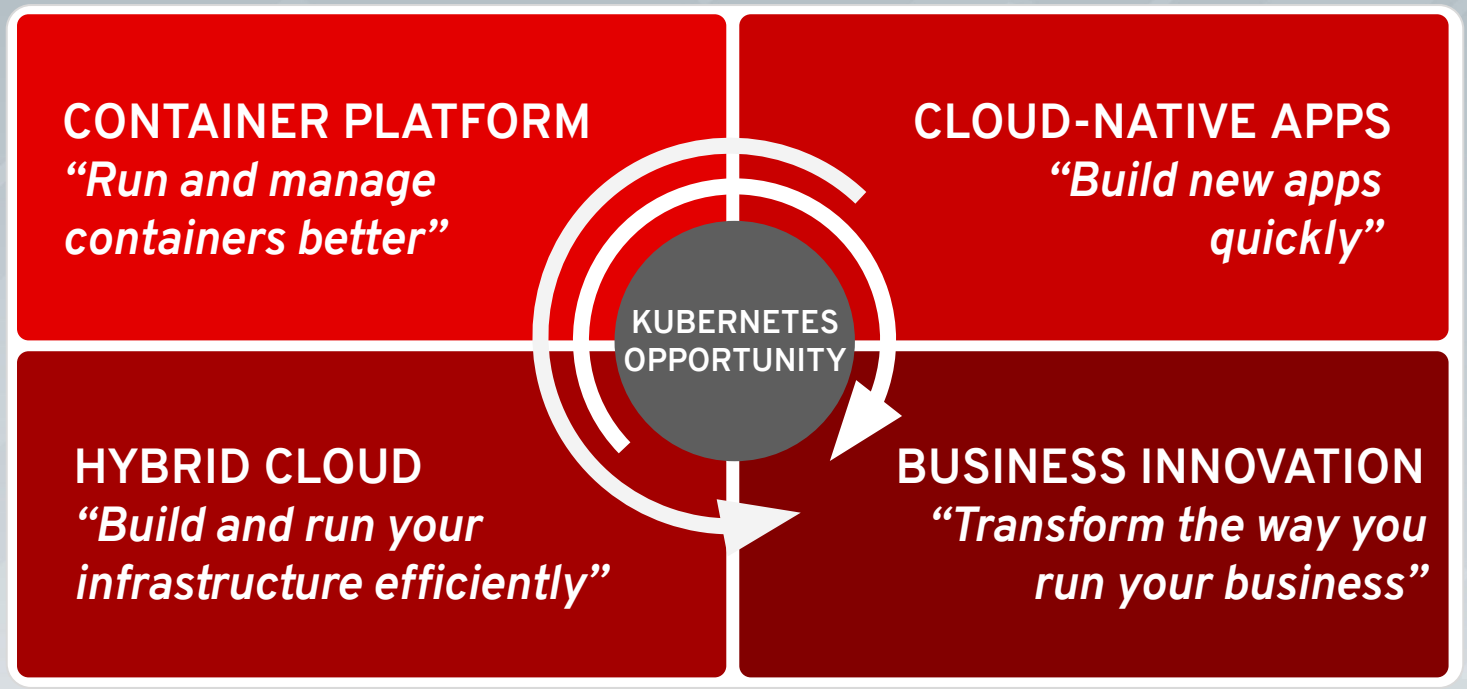
WHO HAS A KUBERNETES PROBLEM?

MANY GROUPS INVOLVED IN THE APPLICATION PLATFORM



DEVELOPER TOOLING IS CRITICAL TO THE PLATFORM

GETTING YOUR DEVELOPERS ONTO KUBERNETES

THE PLAN

1. Install Kubernetes
2. Containerize Apps
3. ?????
4. PROFIT!!!

MOTIVATING DEVELOPERS

1. Developers care about *their* time
2. Deploying to Kubernetes needs to be faster/easier
    a. Or at least time neutral
3. Developer tool integration is critical to your success

YOU NEED TO MAKE IT EASIER TO DEPLOY TO KUBERNETES THAN TO DEPLOY ANYWHERE ELSE

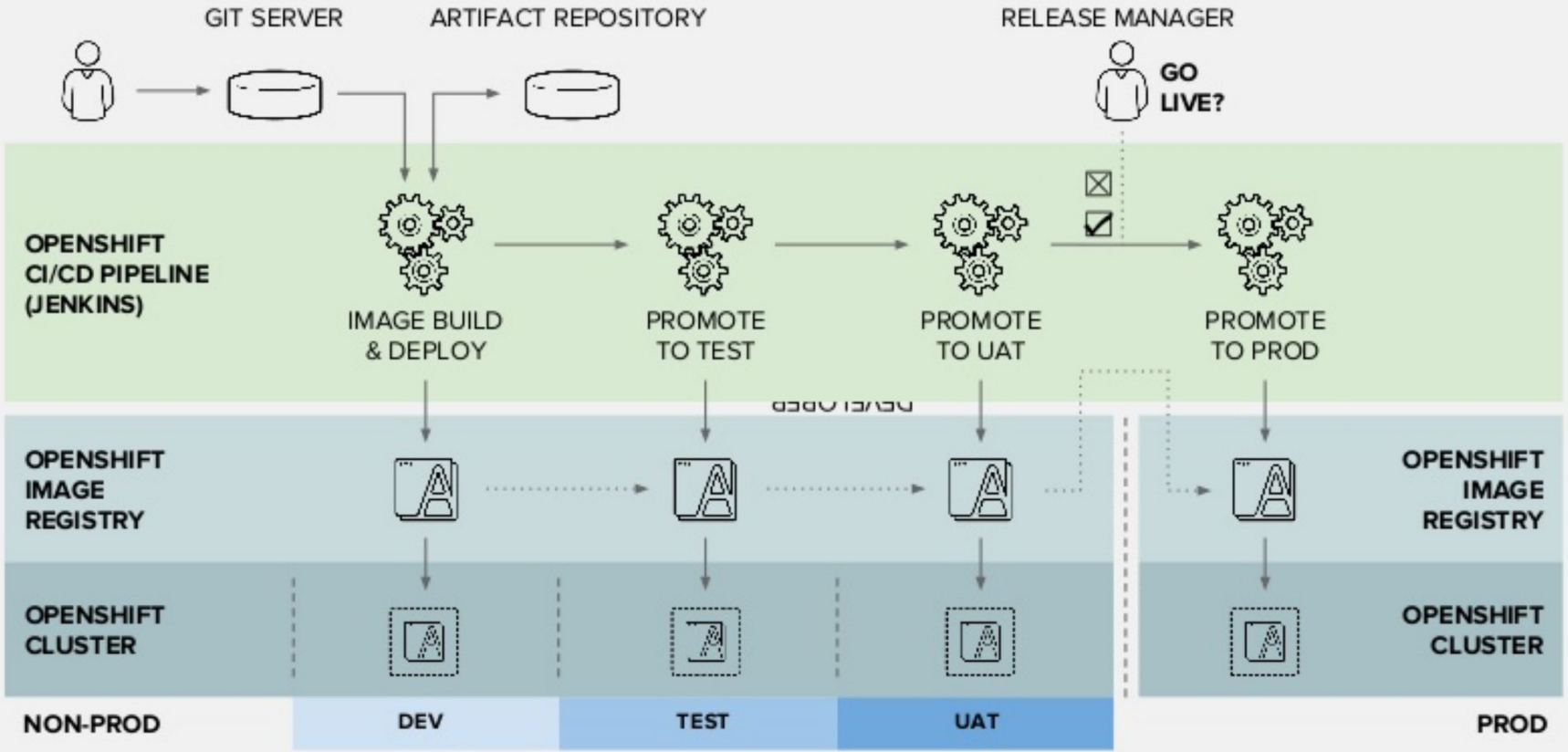
Don't ask your developers to do packaging.

DEVELOPER TOOL REQUIREMENTS

- Familiar
- Easy to Use
- Integrates into Workflows
- Supports Teamwork

USE FAMILIAR TOOLS

CONTINUOUS DELIVERY PIPELINE



MAKE DEVELOPER BUY-IN A KEY PART OF YOUR KUBERNETES DEPLOYMENT PLAN

THE KUBERNETES PLATFORM EVOLUTION

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KUBERNETES HAS EVOLVED QUITE A BIT IN 5 YEARS

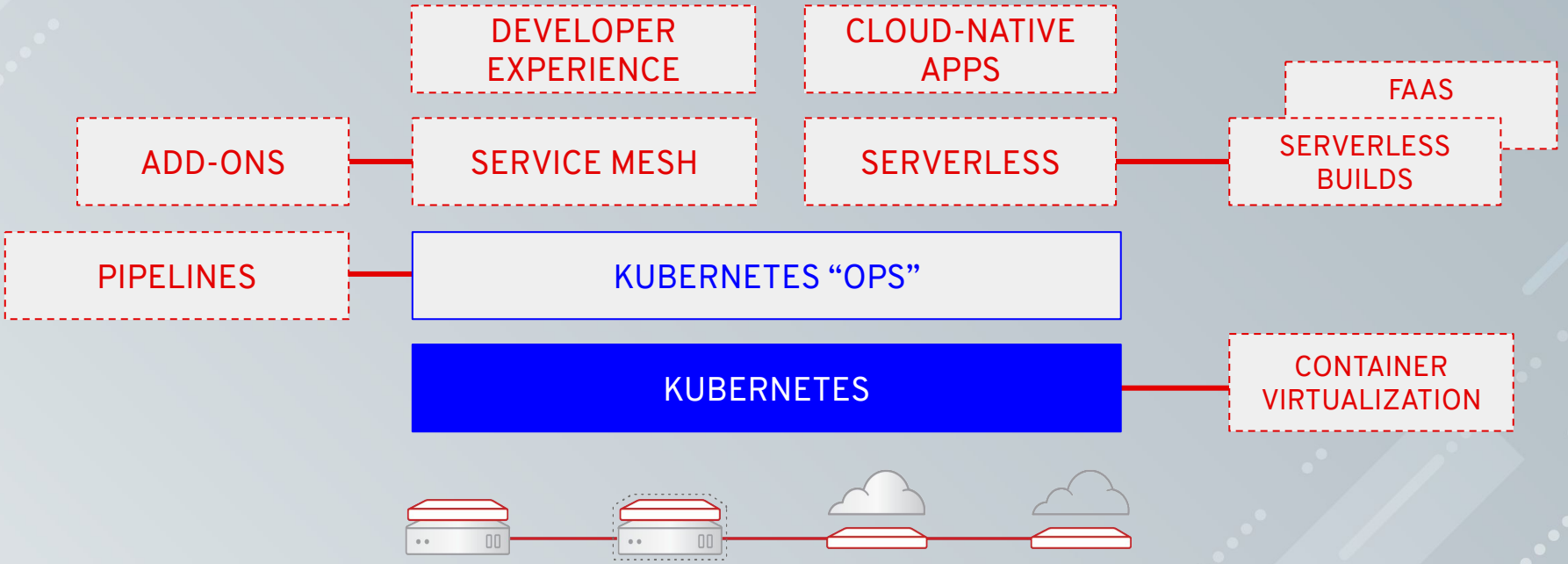
MOVING INTO THE THIRD ERA OF KUBERNETES

1st generation
2015-2016

2nd generation
2016-2017

3rd generation
2018-2020

KUBERNETES IS A JUST A PIECE OF THE "PLATFORM"



OPERATORS - SIMPLIFY COMPLEXITY

docker + PostgreSQL

- Containerized

AWS RDS

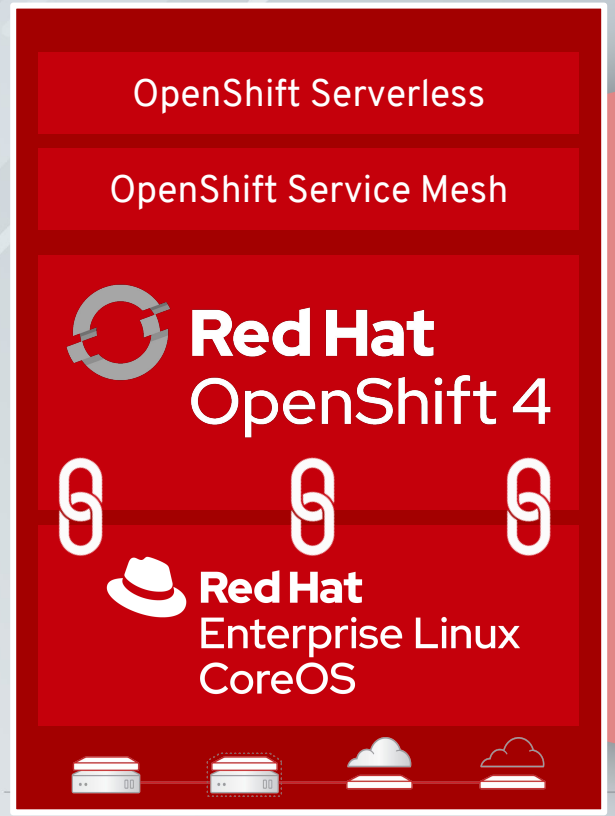
- Containerized
- Cloud storage ready
- Replicated
- Backup
- Automated updates

crunchy data + OPERATOR FRAMEWORK

- Containerized
- Container storage ready
- Replicated
- Backup
- Automated updates
- Enhanced observability
- Customization
- Local development
- Fully Open Source
- Any Kubernetes
- Certified on OpenShift

OPERATOR FRAMEWORK

A MODERN KUBERNETES PLATFORM



- INTEGRATED MARKETPLACES
- MODERN DEVELOPMENT PATTERNS - INTEGRATED
- SELF-SERVICE APPLICATIONS, APPLICATIONS-AS-A-SERVICE
- AUTOMATED OPERATIONS AND UPDATES
- SECURE BY DEFAULT
- IMMUTABLE INFRASTRUCTURE and LINUX OS
- CONSISTENT, AUTOMATED DEPLOYMENT TO ANY CLOUD

WRAP UP

10

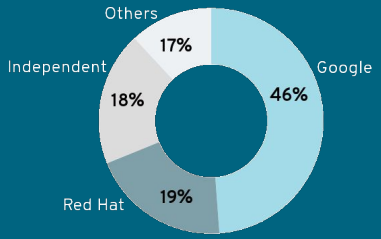
THE 4 C's OF KUBERNETES PLATFORMS

WHY IS RED HAT THE BEST CHOICE?

THE FOUR Cs

CODE

Kubernetes commits



Red Hat are the leading Enterprise, Multi-Cloud Kubernetes developers.

We make container development easy, reliable, & more secure.

CUSTOMERS

Pioneer, easyJet, FICO, inmarsat, BMW, LogistiCare, Deutsche Bank, sky, AIX Capital, lenovo, T-Systems, Schiphol, Volvo, UnitedHealth Group, The University of North Carolina at Chapel Hill, British Columbia, Disney, BARCLAYS, GOVTECH, Massachusetts General Hospital, MACQUARIE BANK, AMADEUS, KeyBank, SBB CFF FFS, Lufthansa, La Poste, CISCO, ATPCO, Point72 Asset Management

Over 1000 Kubernetes customers. Most reference customers running in production.

We have years of experience running OpenShift Online & OpenShift Dedicated services.

CLOUD

amazon web services™

Azure

Google Cloud Platform

Strong partnerships with cloud providers, ISVs, CCSPs.

Extensive container catalog and OperatorHub of certified partner images and operators.

COMPREHENSIVE

INTEGRATED
SCALING
MONITORING
LOGGING
METERING
CHARGEBACK

AS-A-SERVICE APPLICATIONS
LIFECYCLE MANAGEMENT
BROADEST APPLICATION SUPPORT

FLEXIBLE DEVELOPER PRODUCTIVITY
SERVERLESS

AUTOMATED OPERATIONS AND UPDATES

INDUSTRY STANDARD ENTERPRISE KUBERNETES

SECURE HYBRID CLOUD

Our comprehensive portfolio of container products and services includes developer tools, security, application services, storage, & management.

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