

**RED HAT**  
**SUMMIT**

**BOSTON, MA**  
**JUNE 23-26, 2015**

# Container Management : First Looks

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## ***Disclaimer***

This information is provided for discussion purposes only and is subject to change for any or no reason.



# Virtualization is Great

**BUT** with it came VM Sprawl

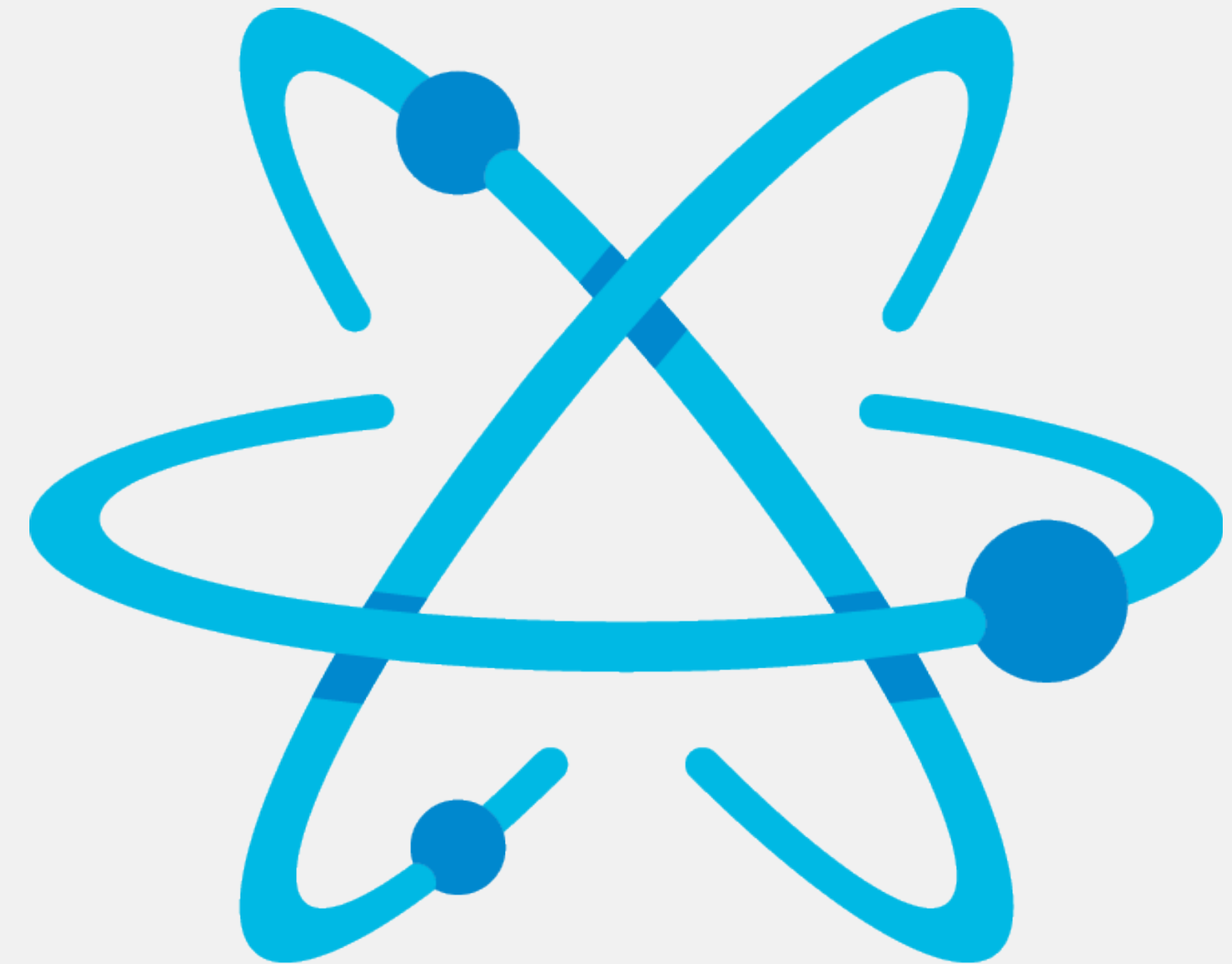
Containers are about micro-services...  
Expect 10X scale of VMs!

And... expect them to run in VMs  
(so we'll talk about managing through the layers)

# Elephant in the Room - How will we manage containers?

# What is Atomic?

- RHEL Atomic is a variation of Red Hat Enterprise Linux 7
- Components
  - systemd
  - Kubernetes
  - Docker
  - SELinux
- JEOS for Containers
- OSTree vs. Yum / RPM
- Everything is a Container



**RED HAT ATOMIC**

# Container Solutions

Solutions to Develop, Run, and Manage container-based applications

## RED HAT ATOMIC ENTERPRISE PLATFORM

Powered by Red Hat Enterprise Linux, an integrated infrastructure platform designed to run, orchestrate, and scale multi-container based applications and services



An integrated hybrid cloud application platform for application development and deployment that facilitates DevOps workflows and needs

## RED HAT® CLOUD SUITE for Applications

Solution providing both Infrastructure-as-a-Service (IaaS) for massive scalability and Platform-as-a-Service (PaaS) for faster application delivery, combined with a unified management framework that supports hybrid deployment models



# Compatibility Matrix

Audience	Capability	RH Atomic Enterprise Platform	OpenShift Enterprise by RH	RH Cloud Suite for Applications
Operations	Container optimized host	✓	✓	✓
	Orchestration	✓	✓	✓
	Large scale deployments	✓	✓	✓
	Certified ecosystem	✓	✓	✓
Developers	App lifecycle management		✓	✓
	Continuous integration		✓	✓
	Developer tooling		✓	✓
	Large scale deployments		✓	✓
Enterprise Architects	VMs + Containers			✓
	Unified Management			✓
	Hybrid Cloud			✓
	Full stack, fully integrated			✓

# Linux Containers - Concerns



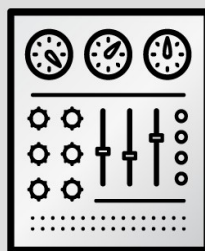
53% say security is their biggest concern about containers



43% say performance is their biggest concern about containers



41% say integration is their biggest concern about containers



**35% say management is their biggest concern about containers**



35% say certification is their biggest concern about containers

Base: 194 IT operations and development decision-makers at enterprises in APAC, EMEA, and North America Source:  
A commissioned study conducted by Forrester Consulting on behalf of Red Hat, January 2015

# Cockpit

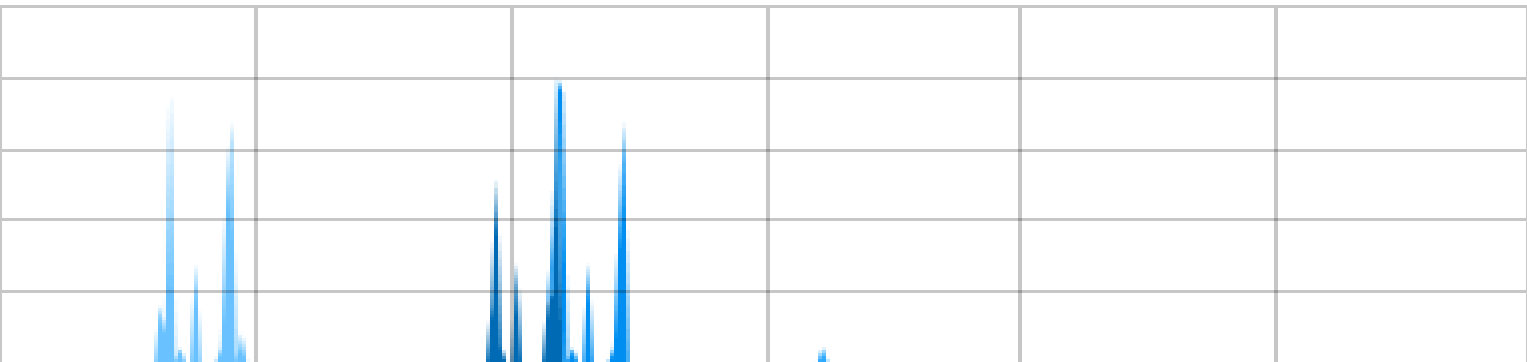


Cockpit is an **interactive remote RHEL**  
admin interface

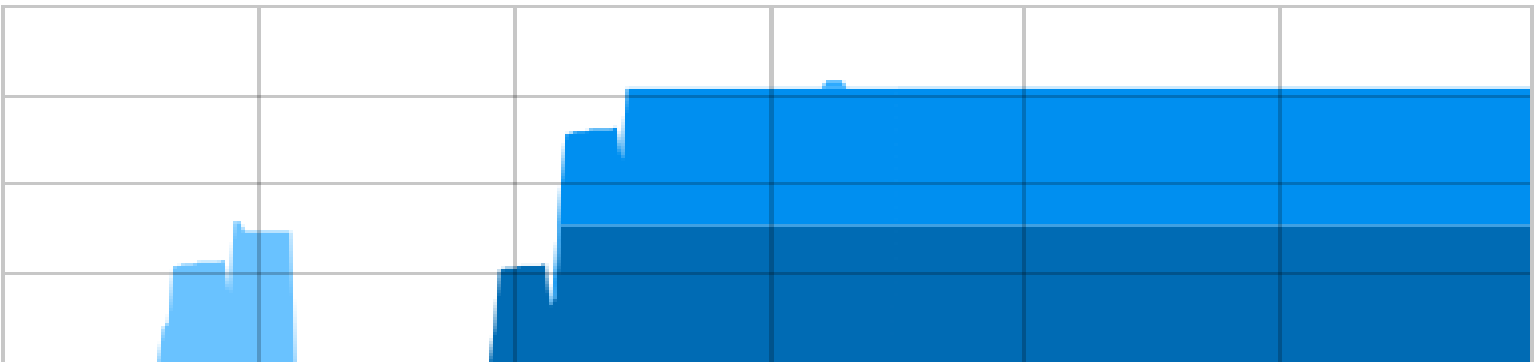
# GOALS

1. RHEL usable by non-expert admins
2. Complex RHEL features discoverable

Combined CPU usage 0%



Combined memory usage 295.6 MB



Containers						All ▾
Name	Image	Command	CPU	Memory		
prickly_newton	busybox:latest	/bin/sh	0%	<div></div>	956.0 KB	■
Wordpress1	tutum/wordpress:latest	/run.sh	0%	<div></div>	147.3 / 512.0 MB	■
Wordpress2	tutum/wordpress:latest	/run.sh	0%	<div></div>	147.3 / 232.4 MB	■

Images				Get new image
Tags	Created	Size		
busybox:latest	2014-10-01 22:46:08	2.3 MB		▶
odiobill/transmission:latest	2014-08-01 23:56:01	106.9 MB		▶
tutum/wordpress:latest	2014-11-20 11:54:05	477.7 MB		▶



# COCKPIT IS

# Zero footprint

# COCKPIT IS

# Works out of the box

# COCKPIT IS

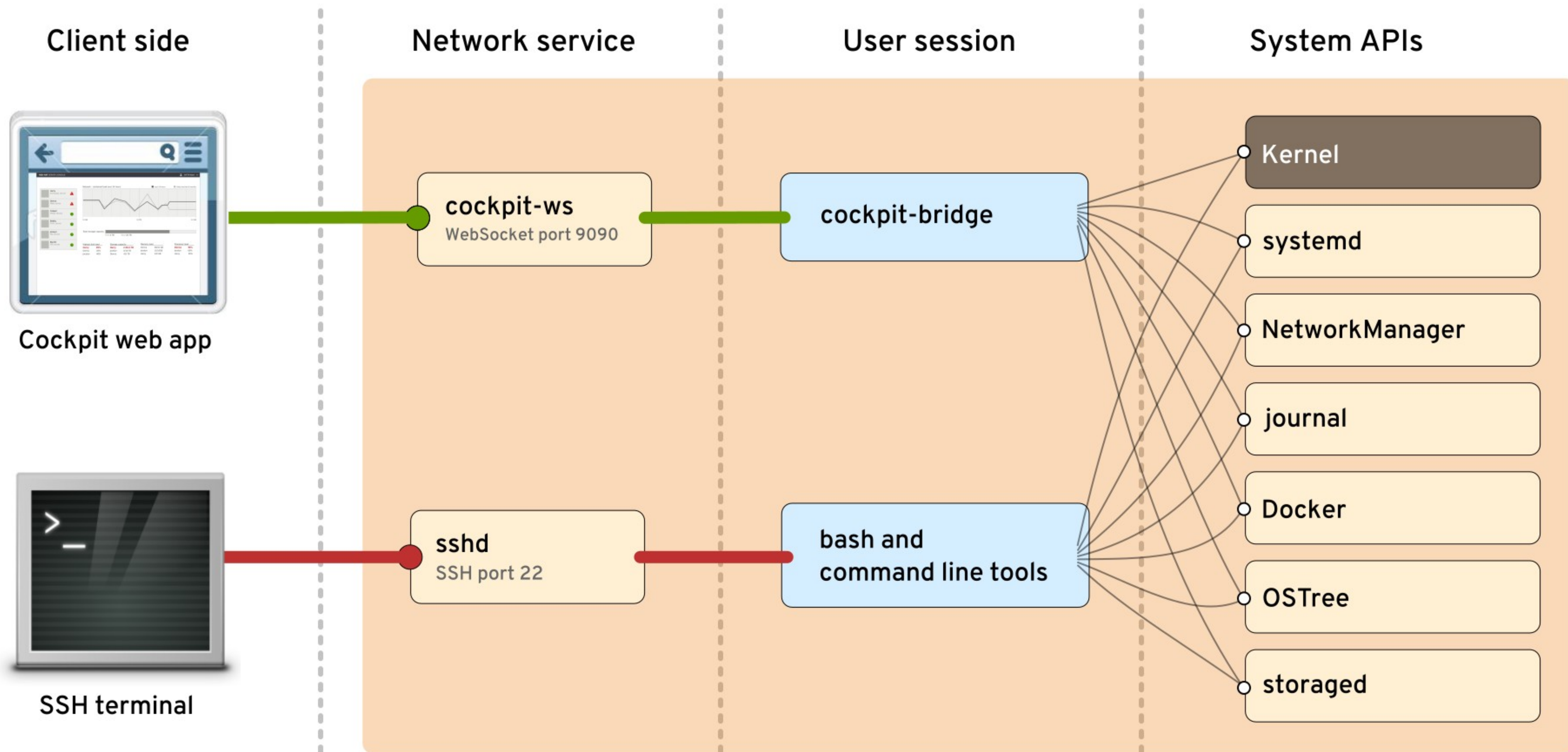
# Respects other configuration tools/systems



# Cockpit Demo Video

<https://www.youtube.com/watch?v=d70YKDUq77Y>

# Interactive System Configuration



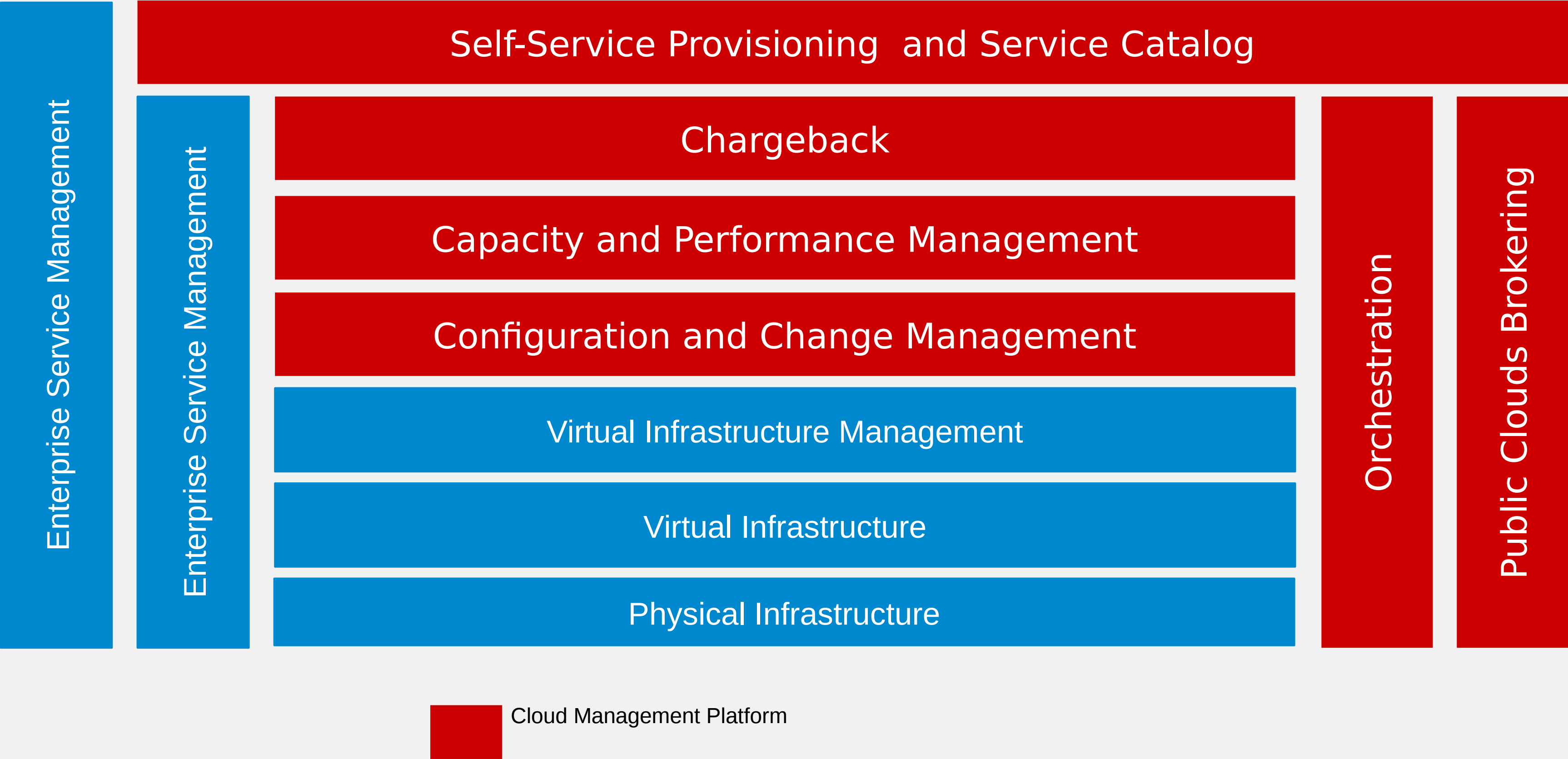


# RED HAT® CLOUDFORMS



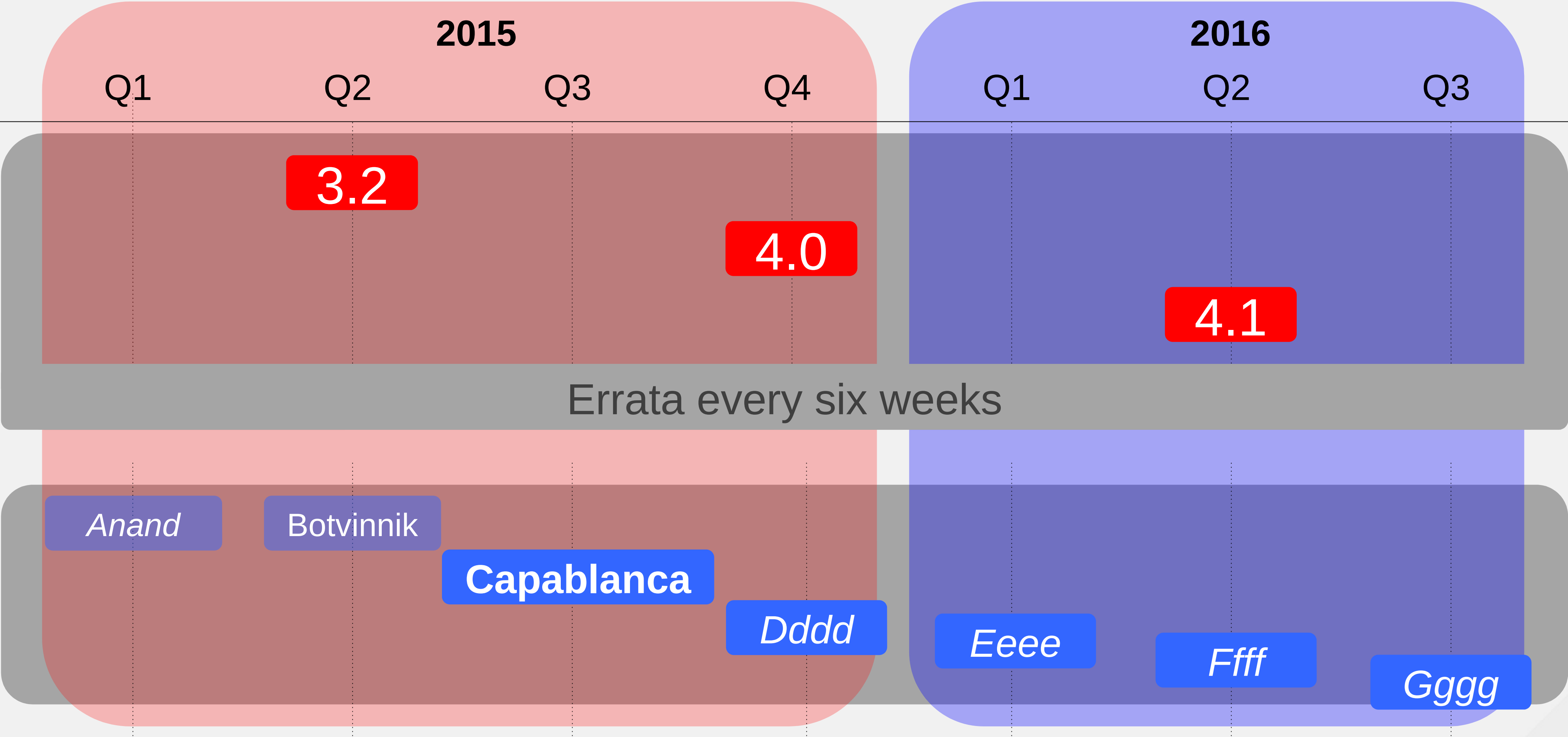
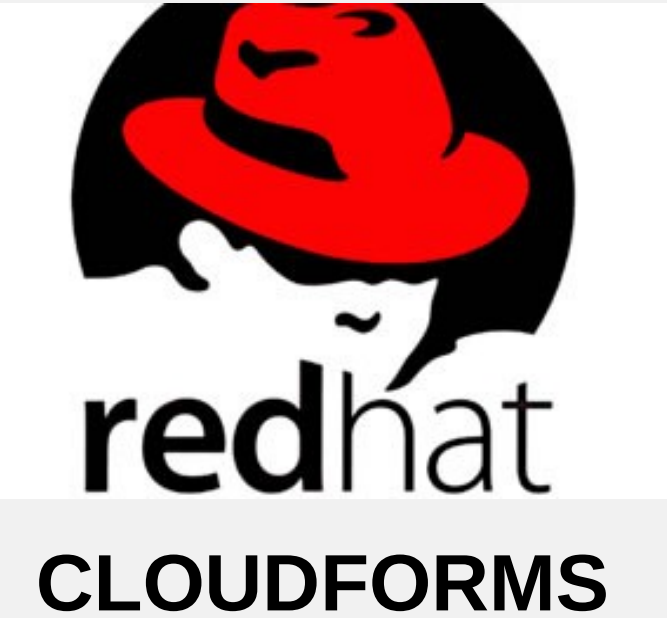


# GARTNER: IAAS REFERENCE ARCHITECTURE AND CMPS



Source: Gartner (July 2012)

# Release Schedule

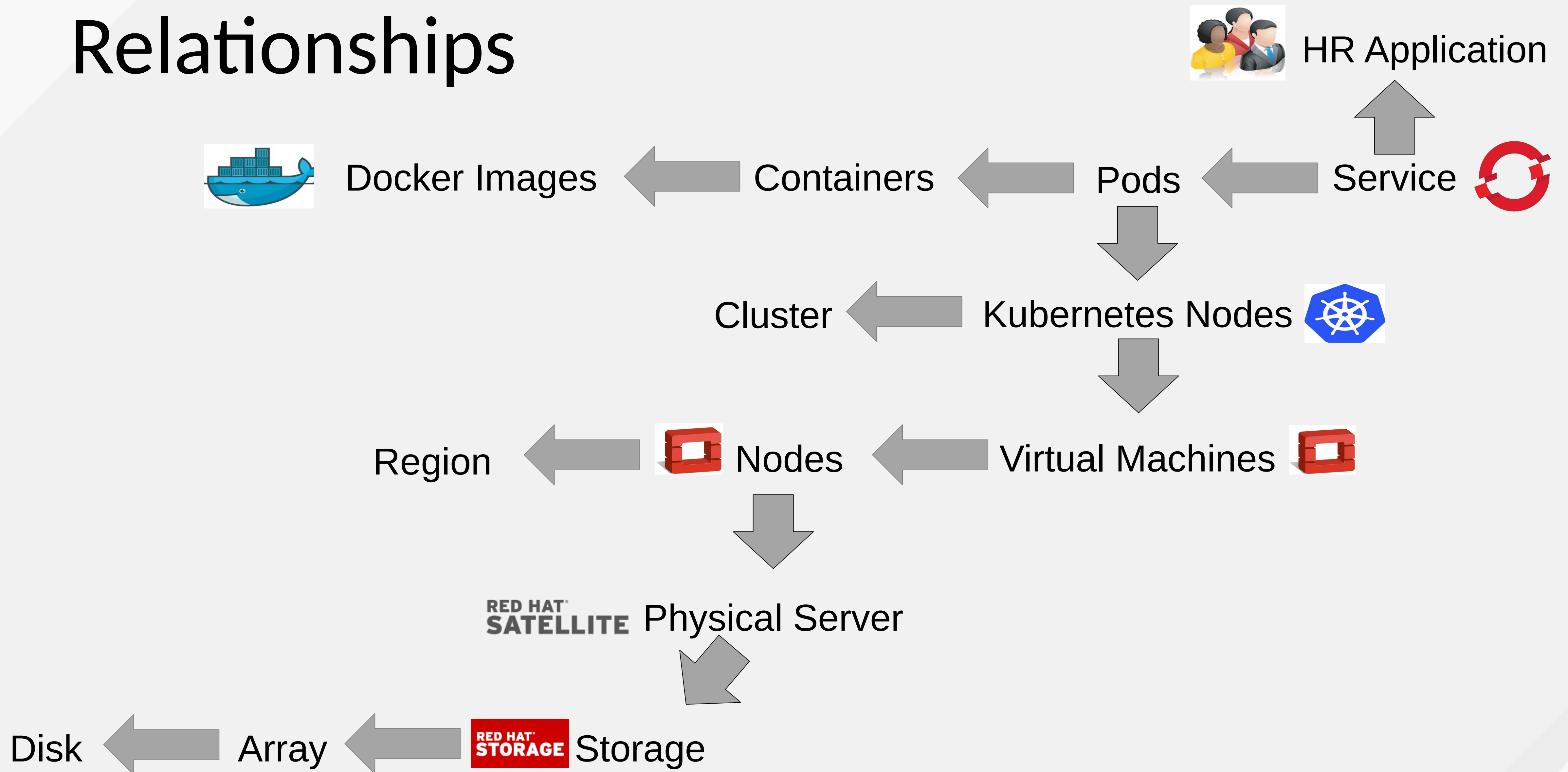


**Note :** Red Hat CloudForms may NOT align directly to a ManageIQ release of the same month/quarter.  
**Note :** Red Hat CloudForms version numbering is guidance only.





# Relationships





# Red Hat CloudForms Demos



RED HAT® CLOUDFORMS MANAGEMENT ENGINE

Brian Johnson

Cloud Intelligence

Services

Clouds

Infrastructure

Containers

Control

Automate

Optimize

Configure

Dashboard

Container Providers

Projects

Nodes

Container Groups

Routes

Replicators

Images

Image Registries

Services

Containers

Topology

2

Providers

1

1

52

Nodes

3

1200

Container Groups

35

300

Containers

2500

Services

4

Registries

2500

Images

510

Projects

300

Routes

Utilization

CPU

50 Available of 1000 MHz

950 MHz Used

Last 30 Days

Memory

256 Available of 432 GB

176 GB Used

Last 30 Days

Storage

0.5 Available of 1.6 TB

1.1 TB Used

Last 30 Days

Network

200 Available of 1300 Gbps

1100 Gbps Used

Last 30 Days

Container Group Trends

Last 30 Days

Created

Deleted

Image Creation Trends

Last 30 Days

Images

Total Size

Utilization By Nodes

CPU

> 90%

80-90%

70-80%

< 70%

Memory

Very Low

Low

High

Very High

Storage

Very Low

Low

High

Very High

Network

Very Low


Low


High


Very High


localhost:4200/#








27  
Nodes


2


120  
Containers


2  
Registries


210  
Projects

500  
Container Groups

35

1500  
Services

1250  
Images

175  
Routes

Utilization

CPU

50 Available of 1000 MHz

950 MHz Used

Last 30 Days

Memory

256 Available of 432 GB

176 GB Used

Last 30 Days

Storage

0.5 Available of 1.6 TB

1.1 TB Used

Last 30 Days

Network

200 Available of 1300 Gbps

1100 Gbps Used

Last 30 Days

Container Group Trends

Last 30 Days

Created Deleted

Image Creation Trends

Last 30 Days

Images Total Size

Utilization By Nodes

CPU

Memory

Storage

Network

> 90%

80-90%

70-80%

< 70%


Very Low


Low


High


Very High








25  
Nodes


180  
Containers


2  
Registries

310  
Projects

700  
Container Groups

1000  
Services

1250  
Images

125  
Routes

Utilization

CPU

50 Available of 1000 MHz

950 MHz Used

Last 30 Days

Memory

256 Available of 432 GB

176 GB Used

Last 30 Days

Storage

0.5 Available of 1.6 TB

1.1 TB Used

Last 30 Days

Network

200 Available of 1300 Gbps

1100 Gbps Used

Last 30 Days

Container Group Trends

Last 30 Days

Created Deleted

Image Creation Trends

Last 30 Days

Images Total Size

Utilization By Nodes

CPU


Memory

Storage


Network


> 90%80-90%70-80%< 70%


Very LowLowHighVery High

27  
Nodes

120  
Containers

175  
Routes

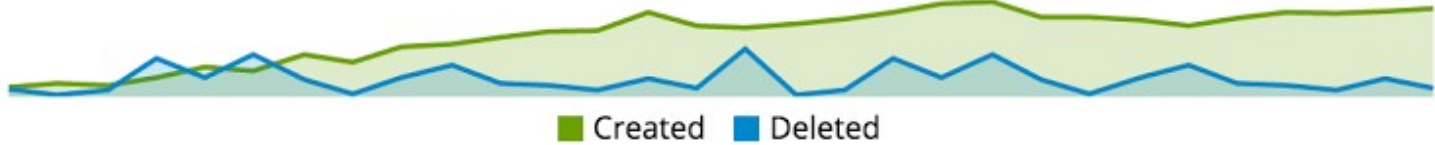
500  
Container Groups

1500  
Services

1250  
Images

### Container Group Trends

Last 30 Days



Created Deleted

### Utilization

#### CPU

50 Available of 1000 MHz

950 MHz Used

Last 30 Days

#### Memory

256 Available of 432 GB

176 GB Used

Last 30 Days

#### Storage

0.5 Available of 1.6 TB

1.1 TB Used

Last 30 Days

#### Network

200 Available of 1300 Gbps

1100 Gbps Used

Last 30 Days

### Quotas

CPU

26 of 45

Memory

8 of 16

Container Groups


500 of 632

Services

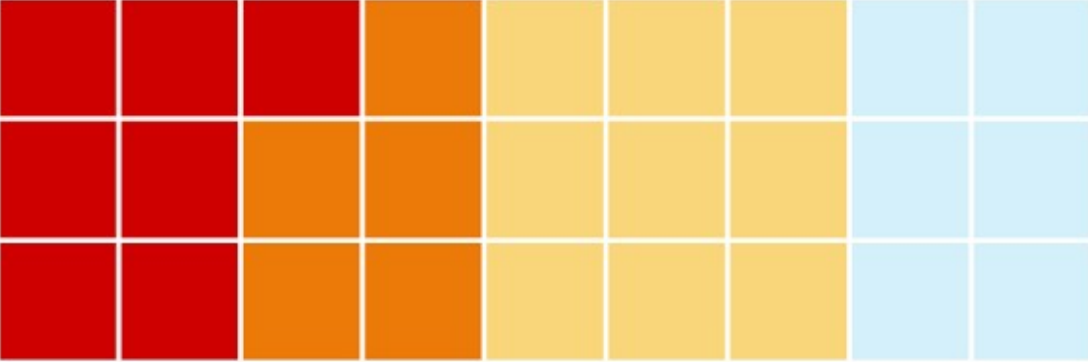
1500 of 2500

### Utilization By Nodes

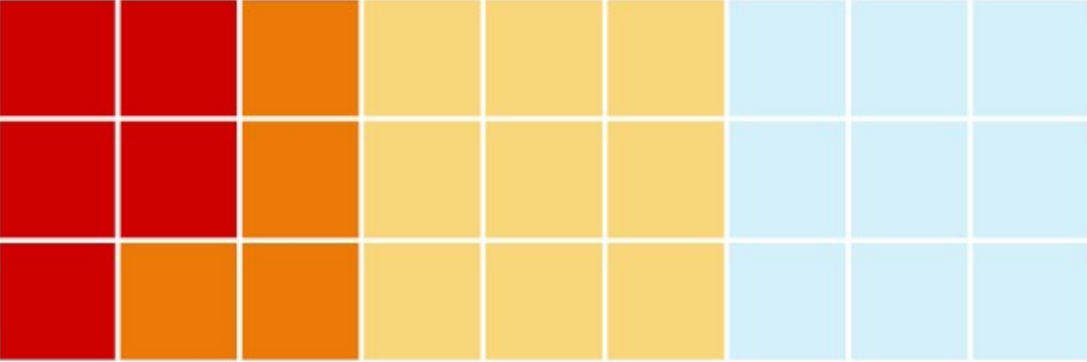
#### CPU




#### Memory



#### Storage



#### Network



> 90%

80-90%

70-80%

< 70%

Very Low

Low

High

Very High

localhost:4200/#



# Dashboard Demo Video

<https://www.youtube.com/watch?v=Ko4hqe6HrQ0>



 Container Groups

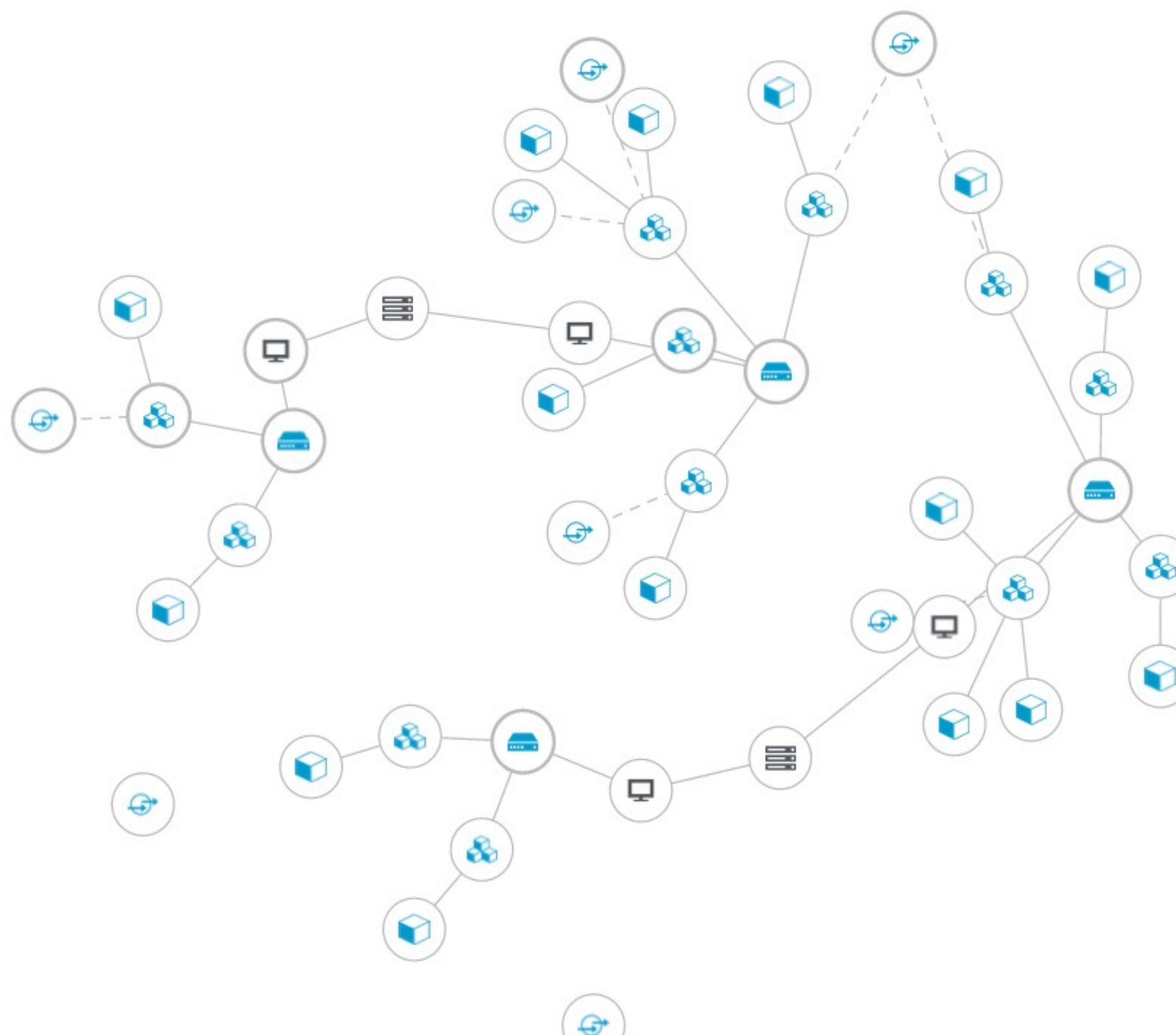
 Services

 Nodes

 Containers

 Hosts

 VMs



# Topology Demo Video

<https://www.youtube.com/watch?v=N51b-TB3Zqw>



# Project, Replicator, SmartState Demo Video

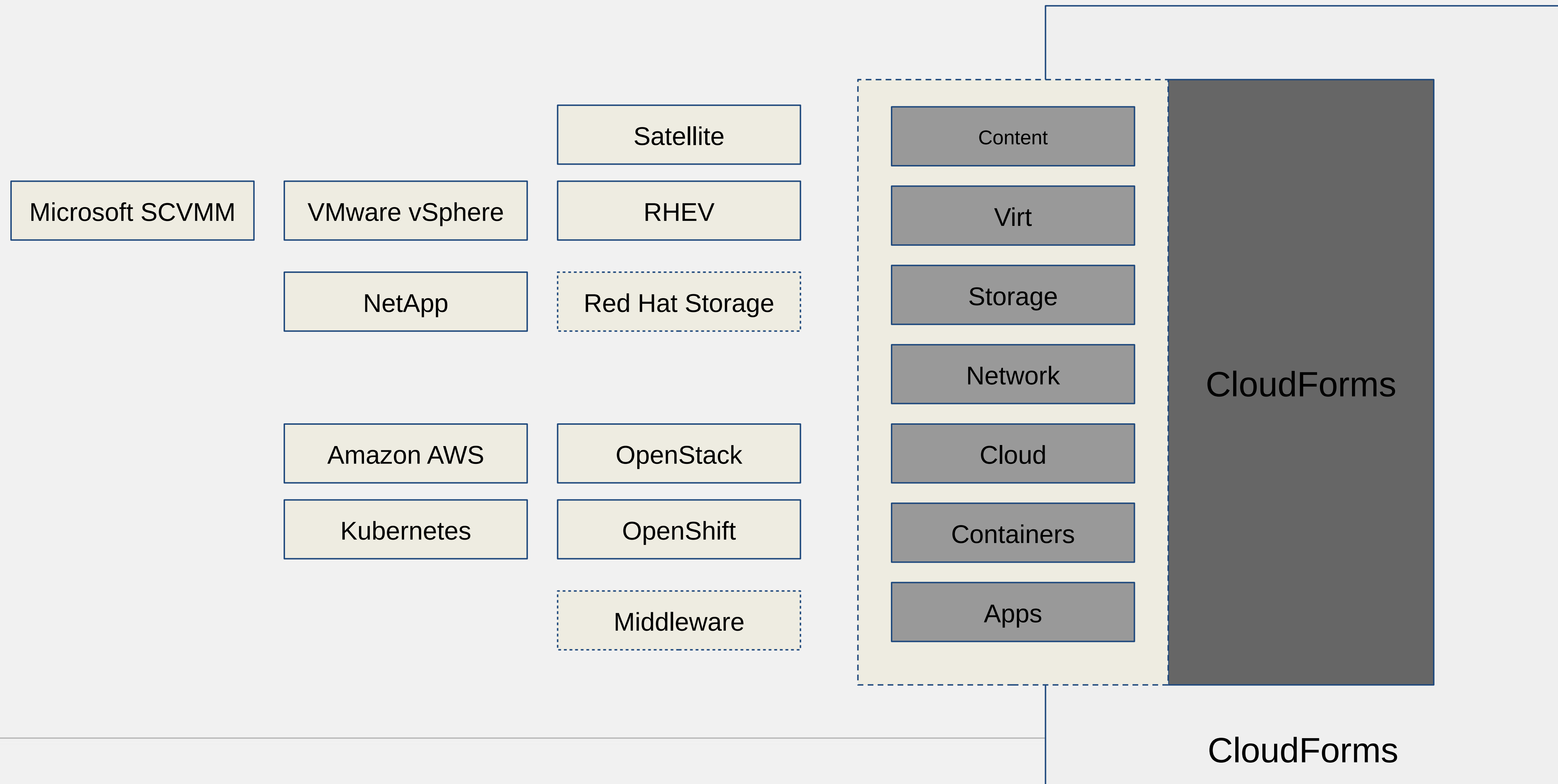
<https://www.youtube.com/watch?v=Oc7DCabuT4k>

# SmartState and Genealogy Demo Video

<https://www.youtube.com/watch?v=Y56m6fnaBRg>

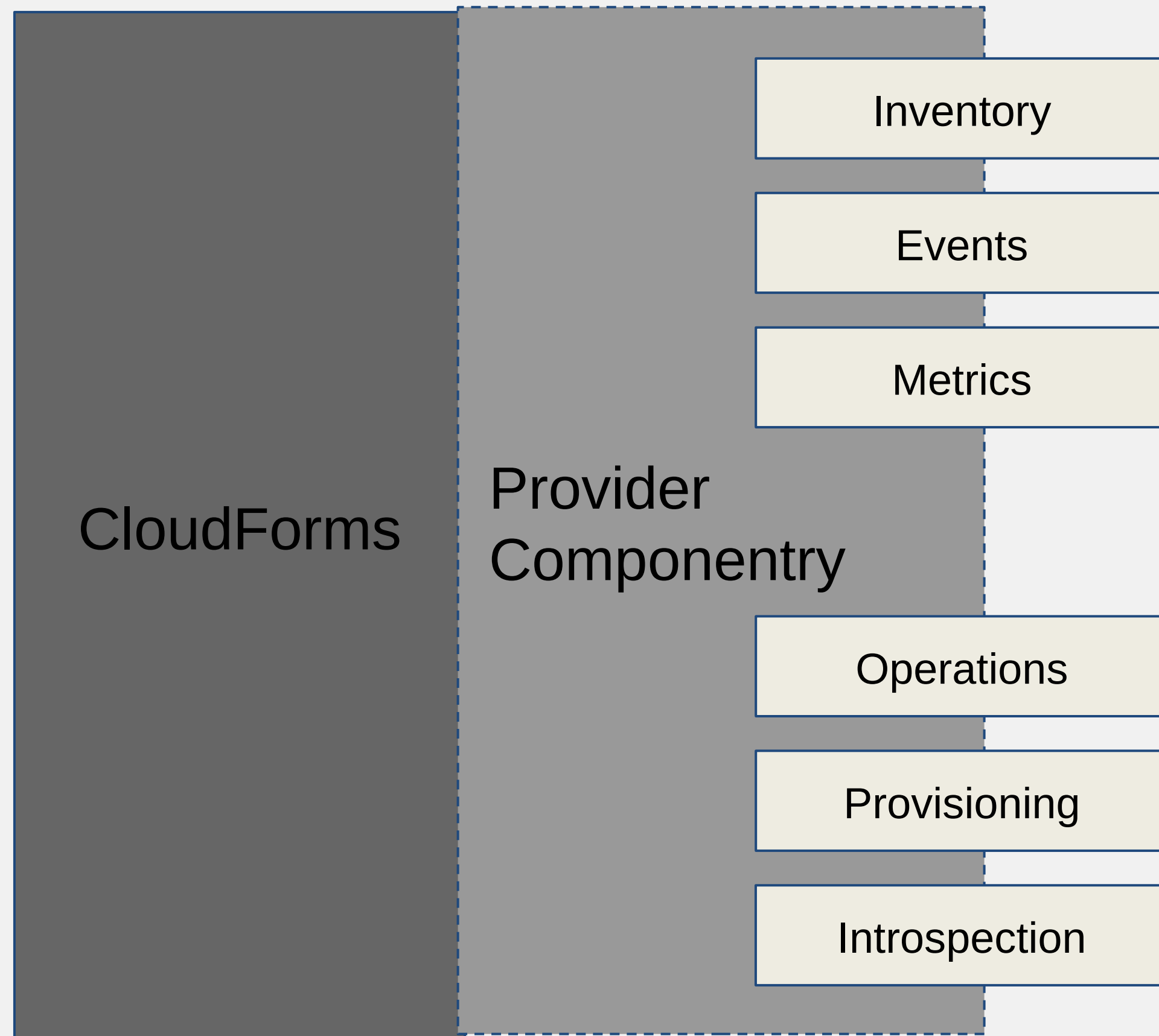
# Architecture

# Pluggable Provider Architecture

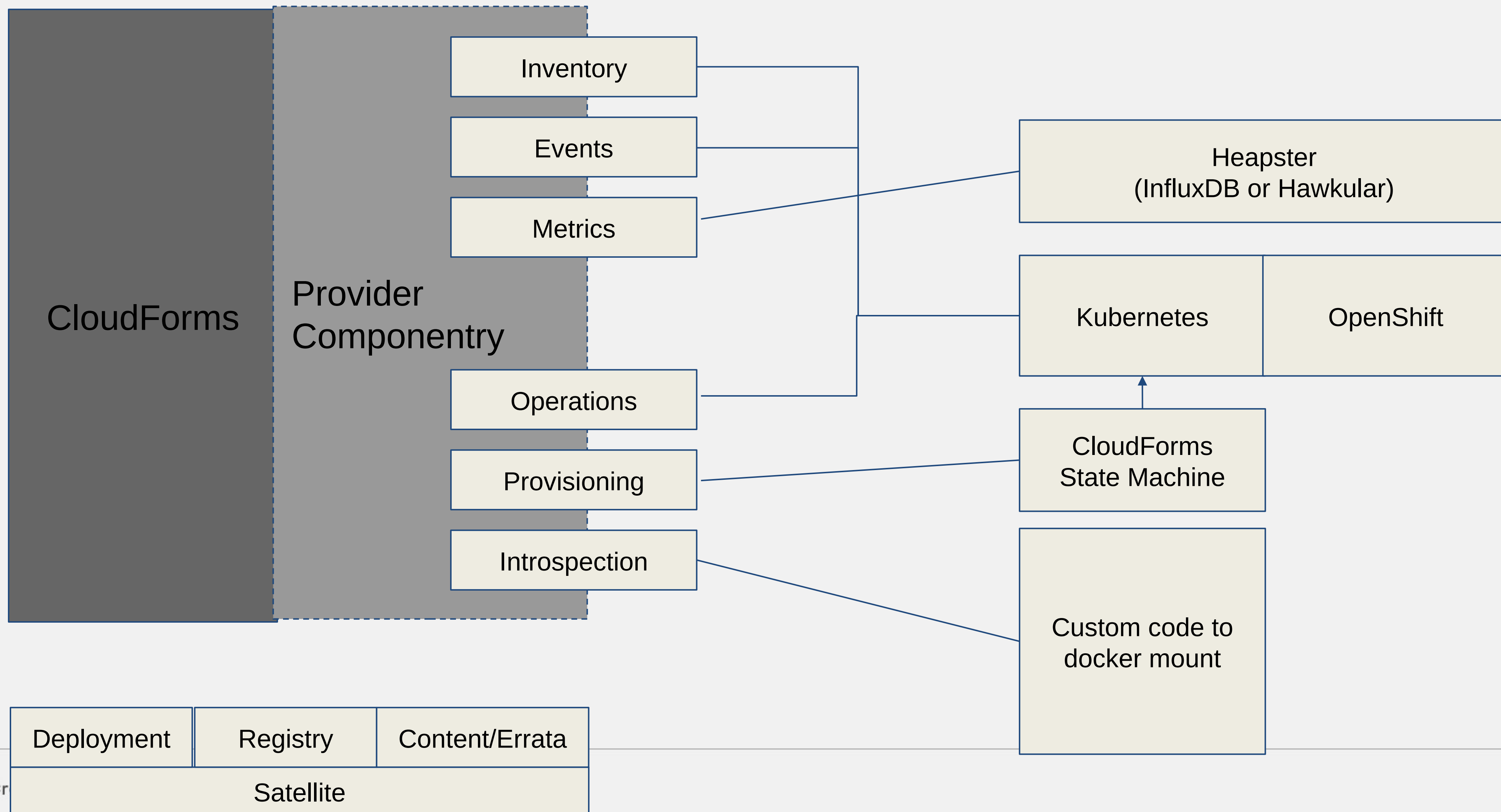




# Provider Components



# Provider Components for Kubernetes/OpenShift



**Thursday, June 25 1:20 pm - 2:20 pm**

**Amadeus uses next-generation containerized application platform with OpenShift (Room 206)**

**Red Hat Enterprise Linux 7 Atomic Host special interest group panel (Room 306)**

**Atomic architectures & containerized, application-centric IT (Room 302)**

**Immutable infrastructure, containers, & the future of microservices (Room 310)**

**Thursday, June 25 2:30 pm - 3:30 pm**

**Red Hat CloudForms roadmap (Room 206)**

**Continuous integration & continuous delivery via containers (Room 313)**

**Operating and managing an Atomic container-based infrastructure (Room 302)**



**Thursday, June 25 3:40 pm - 4:40 pm**

**Container security: Do containers actually contain?  
Should you care? (Room 304)**

**Enterprise containers 101 (Room 200)**

**Thursday, June 25 4:50 pm - 5:50 pm**

**Red Hat's container roadmap**

**room 312 Thursday, June 25 4:50 pm - 5:50 pm**

**Friday**

**Containers versus virtualization**

**Room 302 - 9:45 am - 10:45 am**

**Containerizing applications, existing and new**

**Ballroom B-2 - 9:00 am - 11:00 am**

**Containers & config management (Docker & Puppet)**

**Room 206 - 11:00 am - 12:00 pm**



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# Questions ?

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