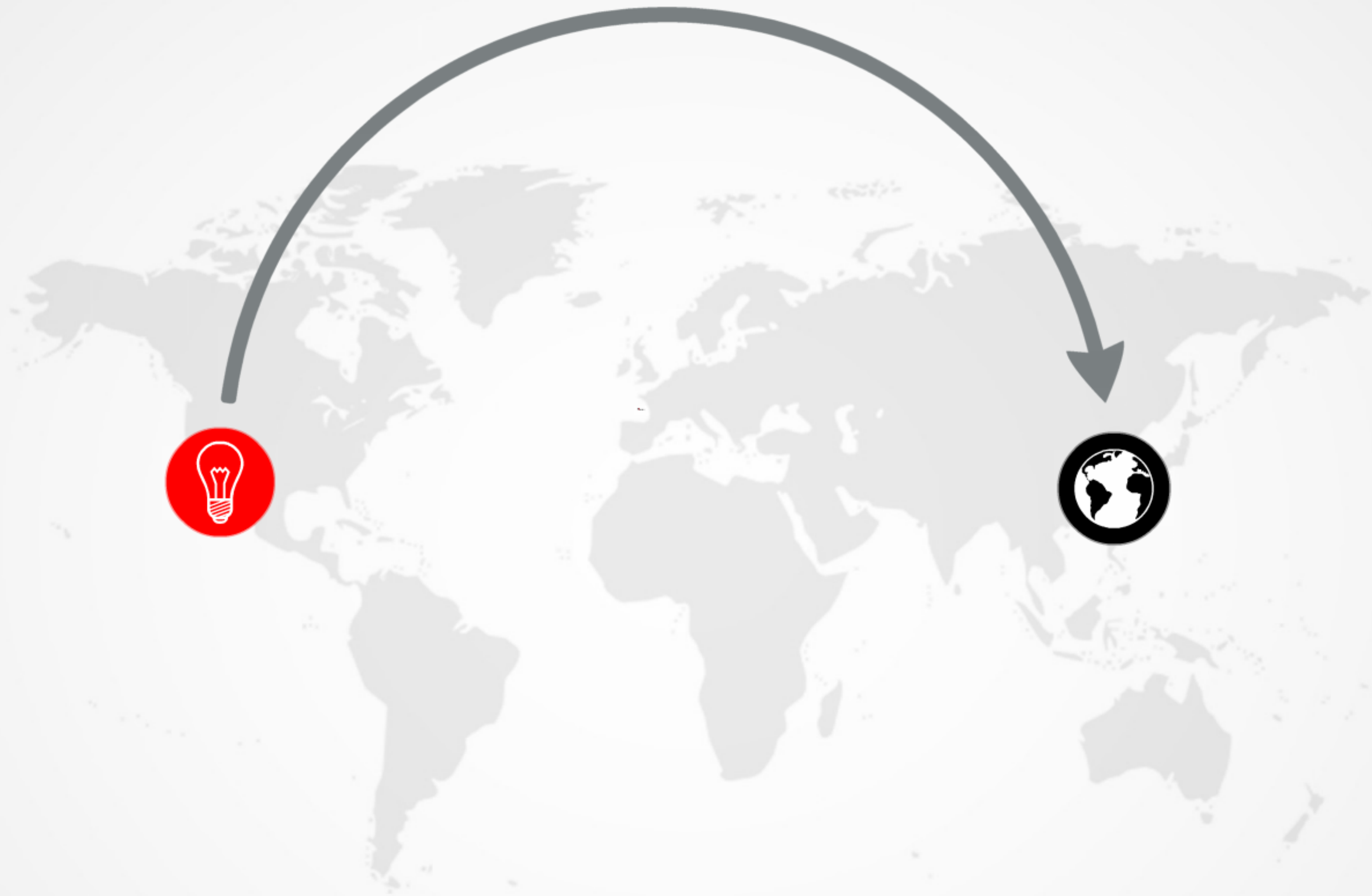


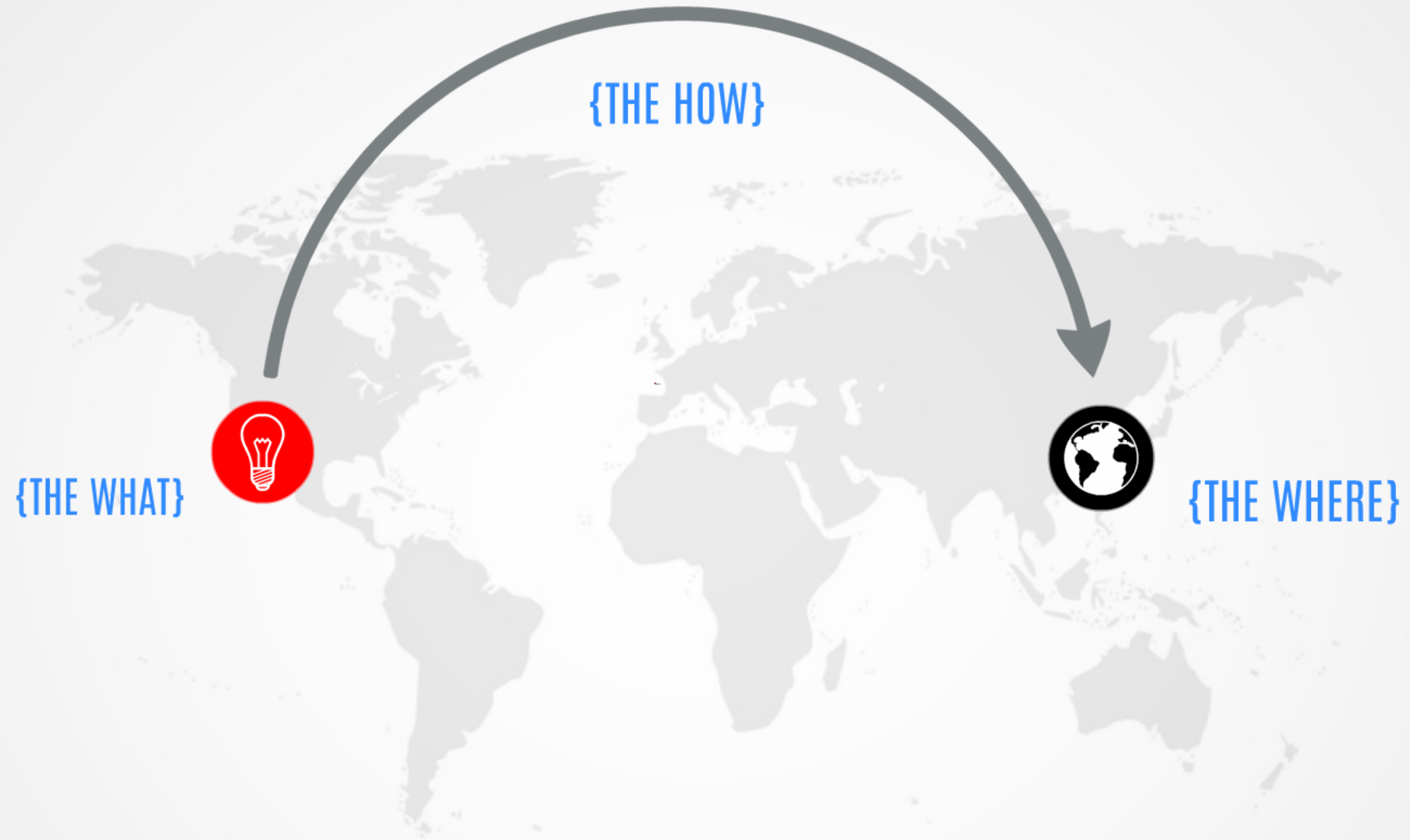


redhat®

// WHAT IS DEVOPS?







CODE

// WHY WE ARE HERE

{THE WHAT}





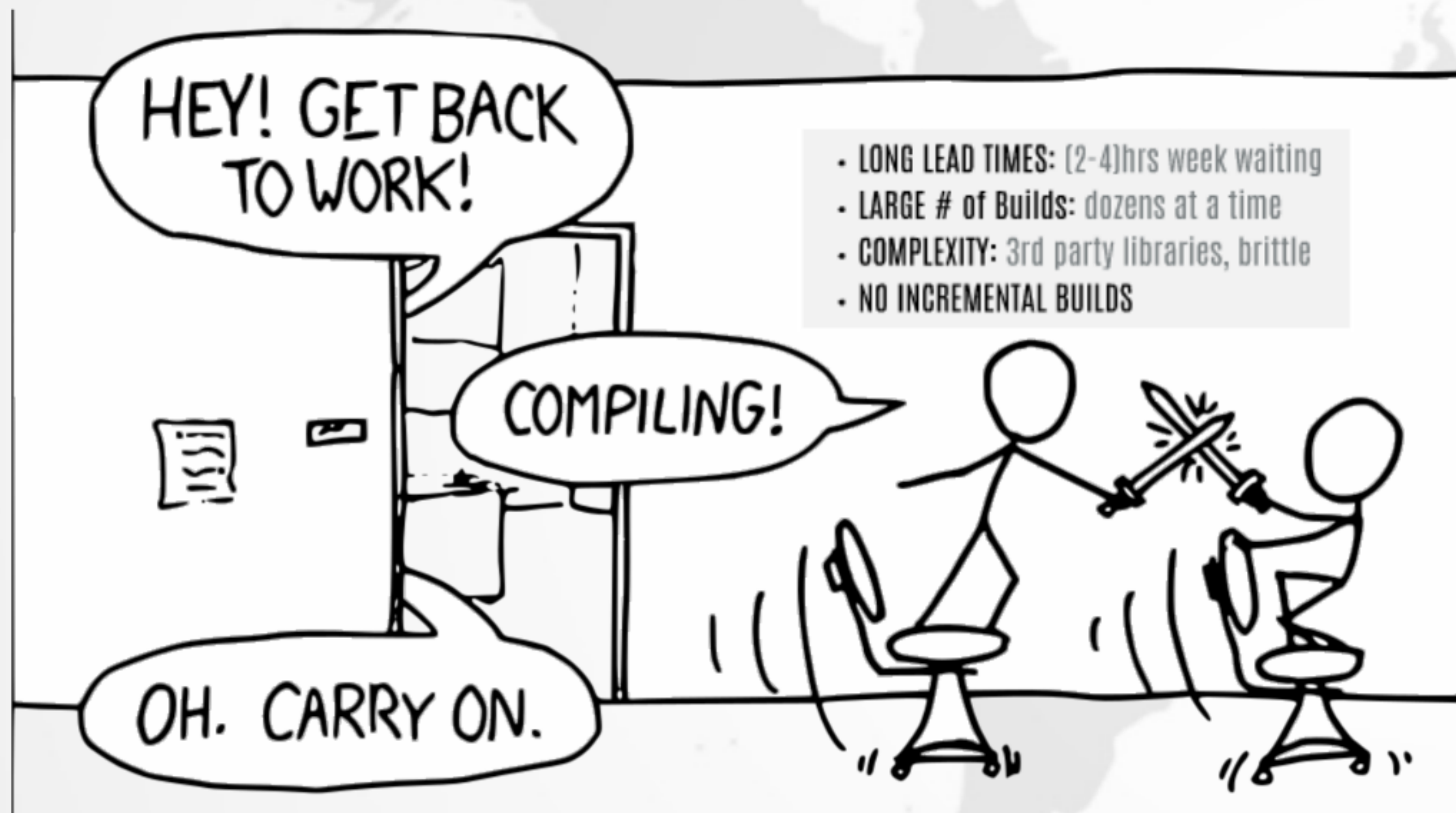
PRODUCTION

// WHERE MONEY IS MADE

{THE WHERE}

BUILDING

// MORE THAN JUST COMPILING



- **LONG LEAD TIMES:** (2-4)hrs week waiting
- **LARGE # of Builds:** dozens at a time
- **COMPLEXITY:** 3rd party libraries, brittle
- **NO INCREMENTAL BUILDS**



CONFIGURE

// SO MANY PIECES, SO LITTLE TIME

TO DISARM THE BOMB,
SIMPLY ENTER A VALID
tar COMMAND ON YOUR
FIRST TRY. NO GOOGLING.
YOU HAVE **TEN** SECONDS.

~# _



...ROB?

I'M SO SORRY.



STATE OF THE UNION

// 2017

- *~75% of systems are Virtual*
- *Typically use VM Templates*
- *Sysprep not a solved problem*
- *Same tools as 10 years ago*

DEPLOYING

// PUSH THOSE BITS OUT



PATCHING

// FUN FOR NO ONE

CASE STUDY *"Large Hospital"*

⚠️ URGENT: CRITICAL
UPDATE AVAILABLE!
(THIS UPDATE WILL REQUIRE
RESTARTING YOUR COMPUTER.)

REMINDE
ME LATER

CLICK



- ① 15 FULL-TIME EMPLOYEES
- ② 24x7 - 2 MONTHS / YEAR
- ③ OPERATING SYSTEMS ONLY

VERIFICATION

// WORKS GREAT UNTIL YOU TEST IT





EXISTING SYSTEMS

- USE E-MAIL TO COORDINATE
- SIGNIFICANT MANUAL EFFORT
- TRACKED W/ SPREADSHEETS

LEGACY COSTS

//ANALYTICS COMPANY
IN KANSAS CITY

1 0 0 0 x

- \$4,000 per VM = \$4,000,000 / YR
- 50% SUCCESS = 500 NEED REWORK
- 2 WEEKS WAIT = 38.4 YR OF WAIT

DEPLOYING

// PUSH THOSE BITS OUT



PATCHING

// FUN FOR NO ONE



CASE STUDY

"Large Hospital"

- 1 15 FULL-TIME EMPLOYEES
- 2 24x7 - 2 MONTHS / YEAR
- 3 OPERATING SYSTEMS ONLY

URGENT! CRITICAL UPDATE AVAILABLE!
(THIS UPDATE WILL REQUIRE RESTARTING YOUR COMPUTER.)



VERIFICATION

// WORKS GREAT UNTIL YOU TEST IT



PRODUCTION

// WHERE MONEY IS MADE



{THE WHERE}

{THE HOW}

CONFIGURE

// SO MANY PIECES, SO LITTLE TIME



BUILDING

// MORE THAN JUST COMPILING



CODE

// WHY WE ARE HERE



{THE WHAT}

75% IT SPENDING

RED HAT[®] SATELLITE

DEPLOYING

// PUSH THOSE BITS OUT

CONFIGURE

// SO MANY PIECES, SO LITTLE TIME

PATCHING

// FUN FOR NO ONE

CASE STUDY

"Large Hospital"

- 1 15 FULL-TIME EMPLOYEES
- 2 24x7 - 2 MONTHS / YEAR
- 3 OPERATING SYSTEMS ONLY

{THE HOW}



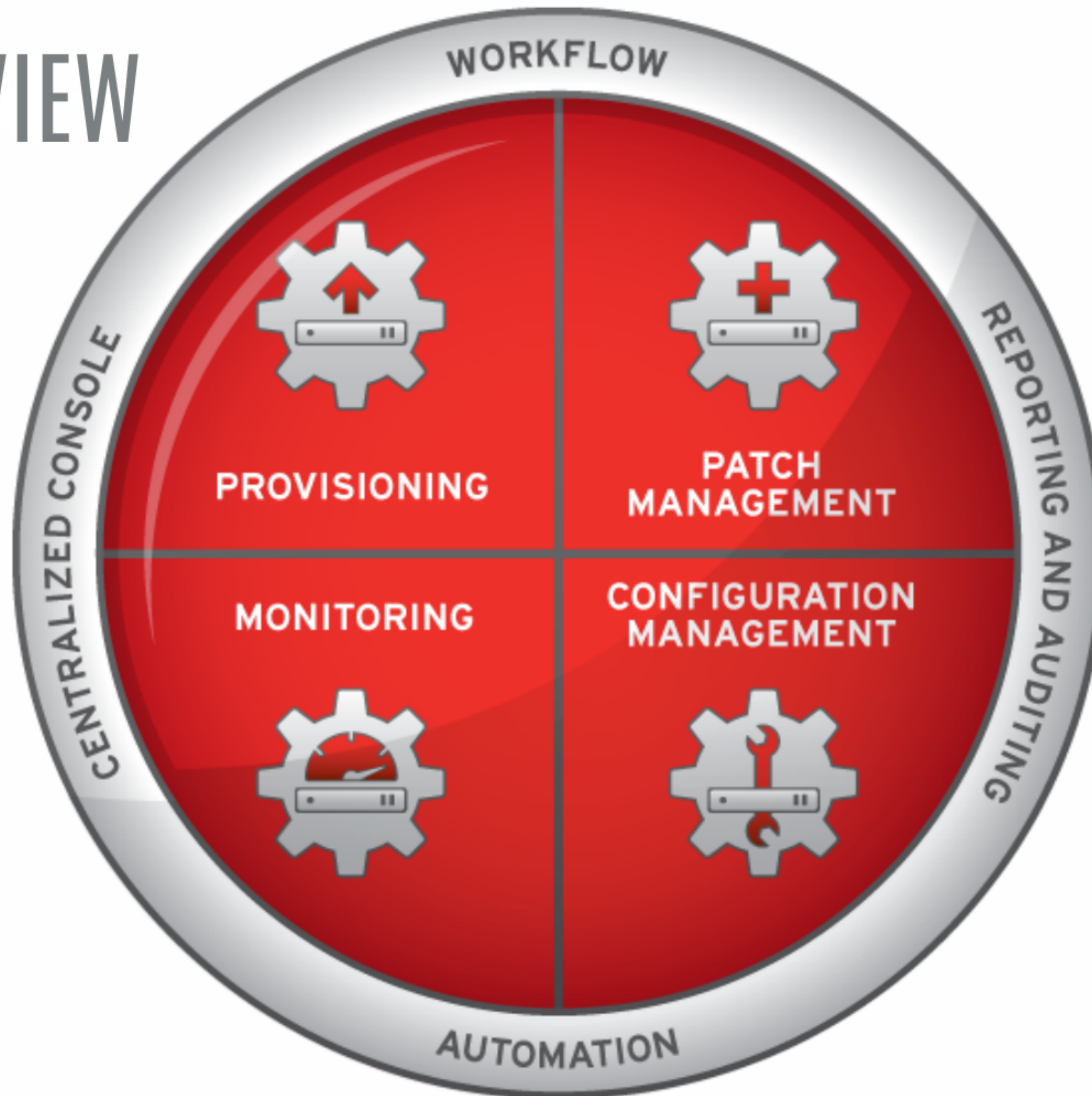
LDING

THAN JUST COMPILING

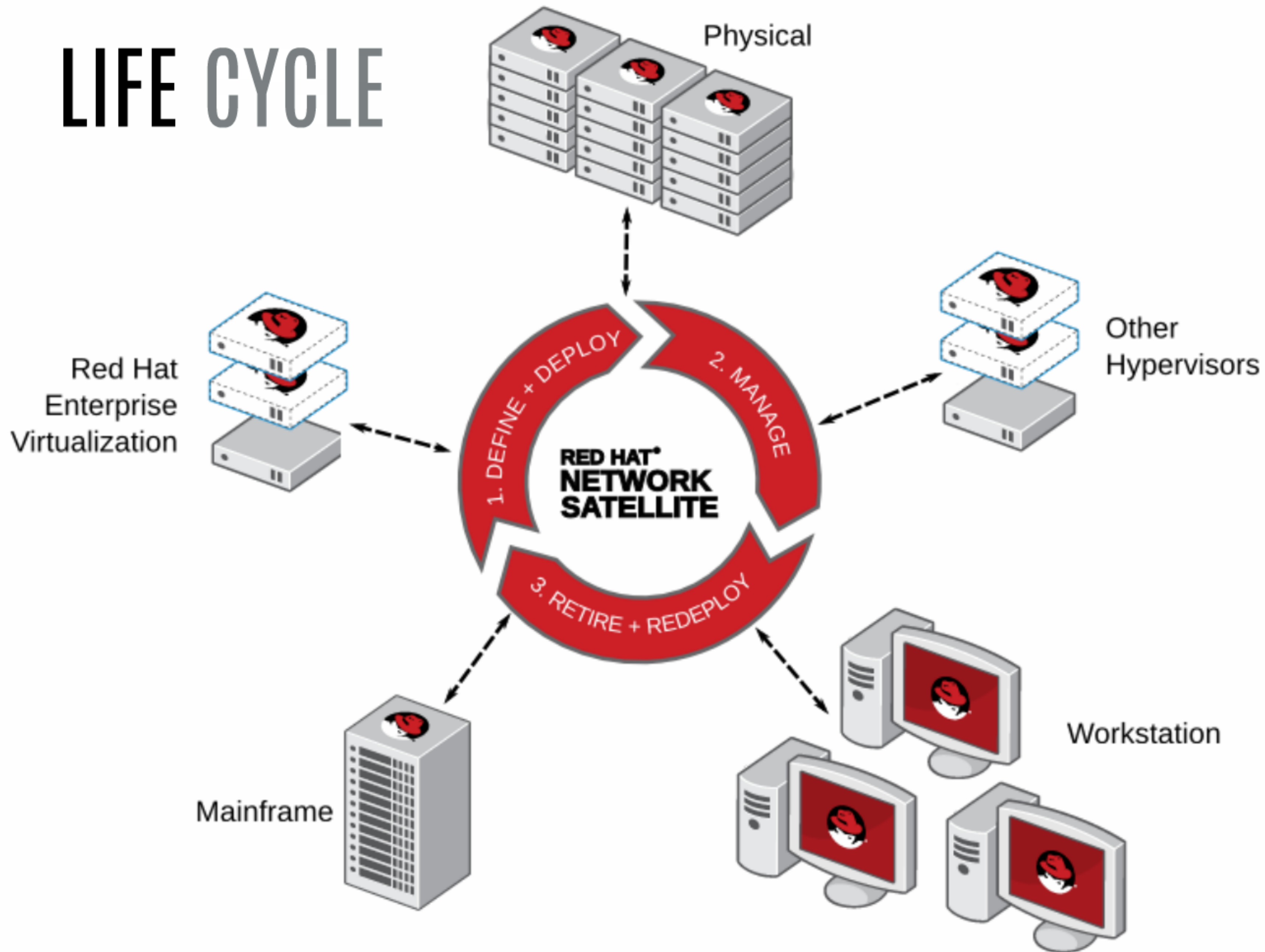
VERIFICATION

// WORKS GREAT UNTIL YOU TEST I

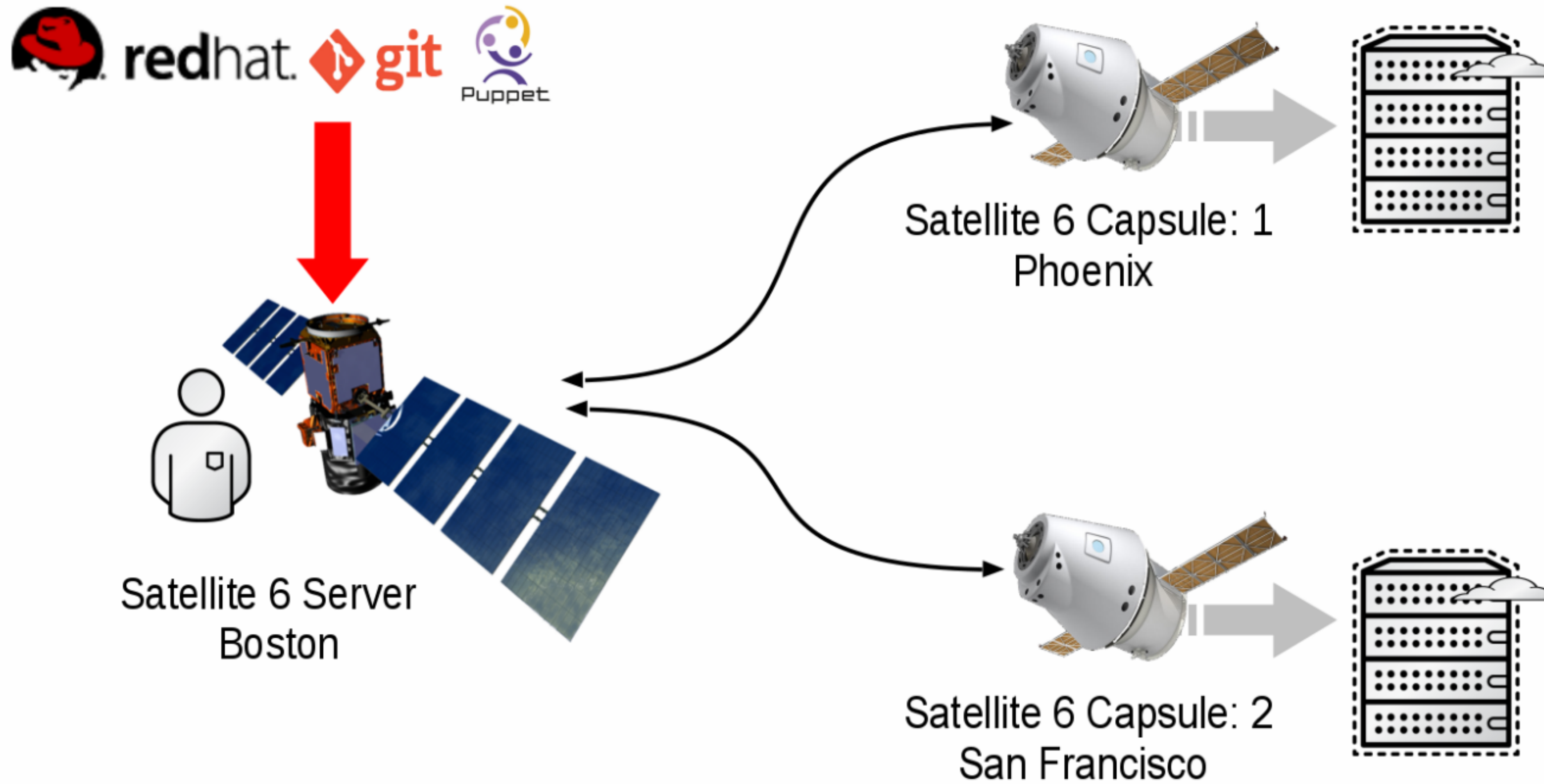
OVERVIEW



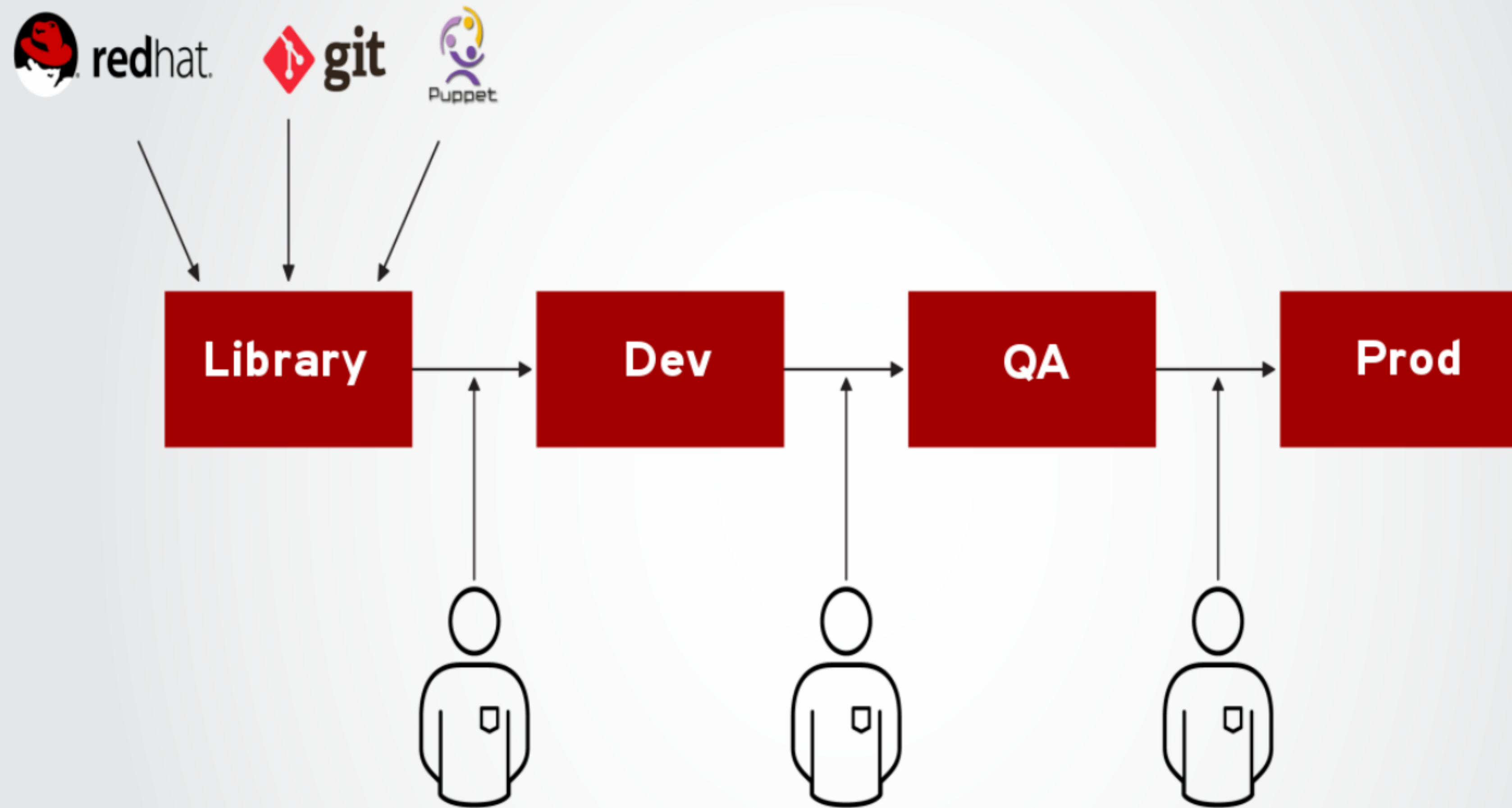
LIFE CYCLE



TOPOLOGY

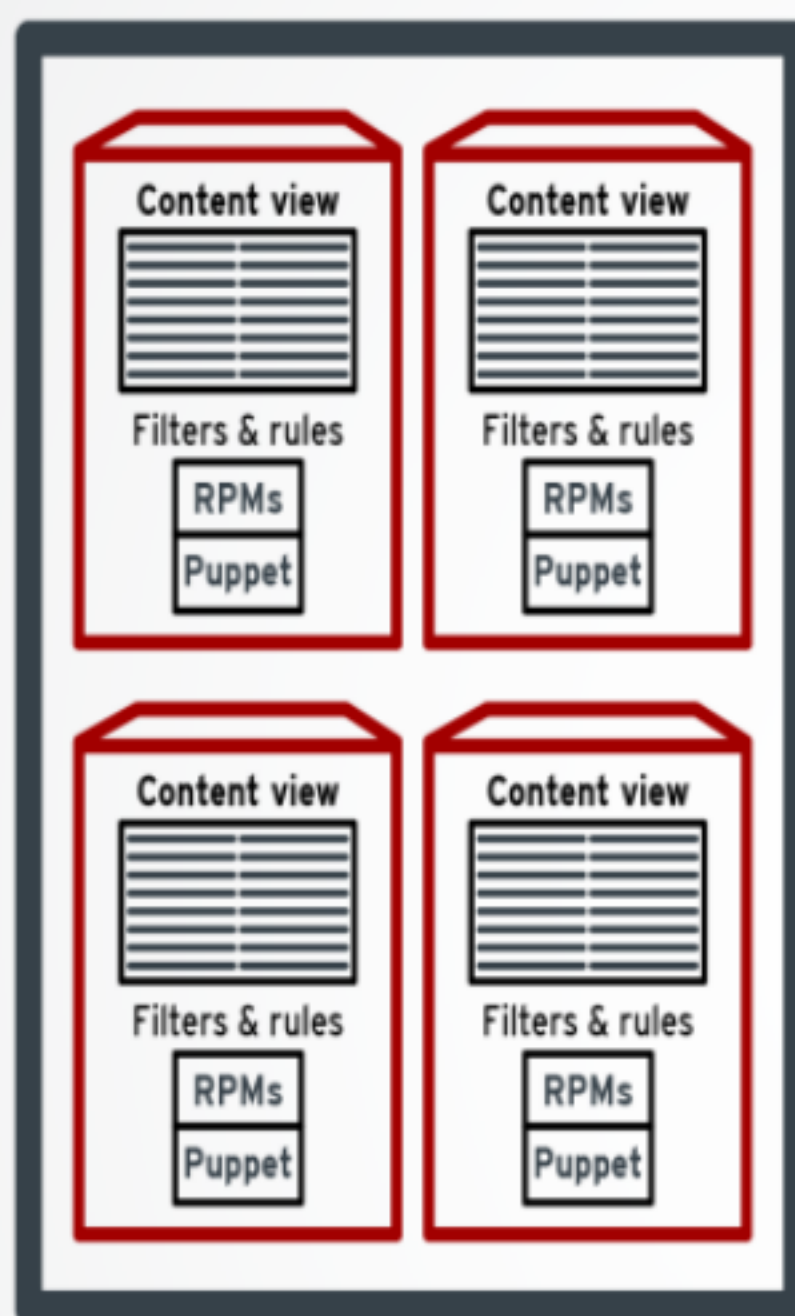


CONTENT PROMOTION



PROVISION FROM RECIPIES

How to build a system from start to finish



Content
OS & packages
Puppet modules



PARTITION TABLE

KICKSTART FILE

SUBNET/DOMAIN

ACTIVATION KEYS

PUPPET CLASSES

Host group

SUBSCRIPTION MANAGER

Default_Organization@Default_Location ▾

Monitor ▾

Content ▾

Hosts ▾

Configure ▾

Infrastructure ▾

Administer ▾

Your dashboard can be rearranged by clicking on a widget's title and dragging the widget to another position.

Content Host Subscription Status

Invalid Subscriptions	0
Insufficient Subscriptions	0
Current Subscriptions	11
Total Content Hosts	11



Current Subscription Totals

8 active subscriptions	0 subscriptions expiring in next 120 days	0 recently expired subscriptions
---------------------------	---	--

Latest Notifications

- Fri, 27 Feb 2015 21:34:44 +0000
incorrect locale format (RuntimeError) [More >>](#)
- Fri, 27 Feb 2015 21:34:41 +0000
incorrect locale format (RuntimeError) [More >>](#)
- Fri, 27 Feb 2015 21:34:30 +0000
incorrect locale format (RuntimeError) [More >>](#)



Content Views Overview

Wildman_demo_copy...	Promoted to Wildman_...	✓ Success Tue, 28 Apr 2015 22:13:59 +0000
Wildman_demo_rhel7...	Published new version	✓ Success Tue, 28 Apr 2015 17:45:37 +0000



Sync Overview

Red Hat Enterprise Linux	✓ Success	Thu, 07 May 2015 09:00:05 +0000
Puppet Forge	✓ Success	Thu, 30 Apr 2015 23:22:37 +0000



Host Collections

UPDATES	NAME	CONTENT HOSTS
	RHEL7-x86_64	5



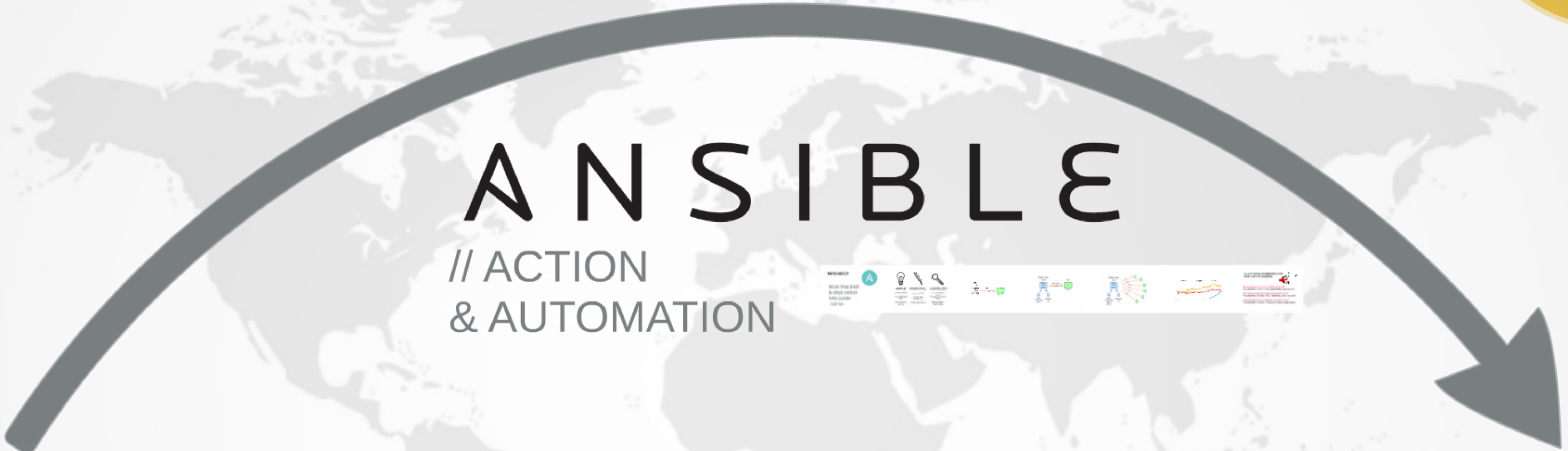
COMMAND LINE & FULL API

```
$hammer -u admin -p ***** product list --organization-id 'Red_Hat_SALAB' --enabled
```

PRODUCT ID	NAME	PROVIDER	ORGANIZATION
2	Red Hat Enterprise Linux Server	Red Hat	Red_Hat_SALAB
12	Red Hat Enterprise Linux Scalable File System for RHEL Server - Extended Upda...	Red Hat	Red_Hat_SALAB
15	Red Hat Software Collections Beta for RHEL Server	Red Hat	Red_Hat_SALAB
18	Red Hat Satellite 6 MDP	Red Hat	Red_Hat_SALAB
6	Red Hat Software Collections for RHEL Server	Red Hat	Red_Hat_SALAB
9	Red Hat Beta	Red Hat	Red_Hat_SALAB
10	Red Hat Enterprise Linux Server - Extended Update Support	Red Hat	Red_Hat_SALAB
1	Red Hat Satellite Tools 6 MDP	Red Hat	Red_Hat_SALAB
4	Red Hat Enterprise Linux 7 Public Beta	Red Hat	Red_Hat_SALAB



{THE HOW}



A N S I B L E

// ACTION
& AUTOMATION



WHAT IS ANSIBLE?



Simple things should
be simple and hard
things possible
- Alan Kay

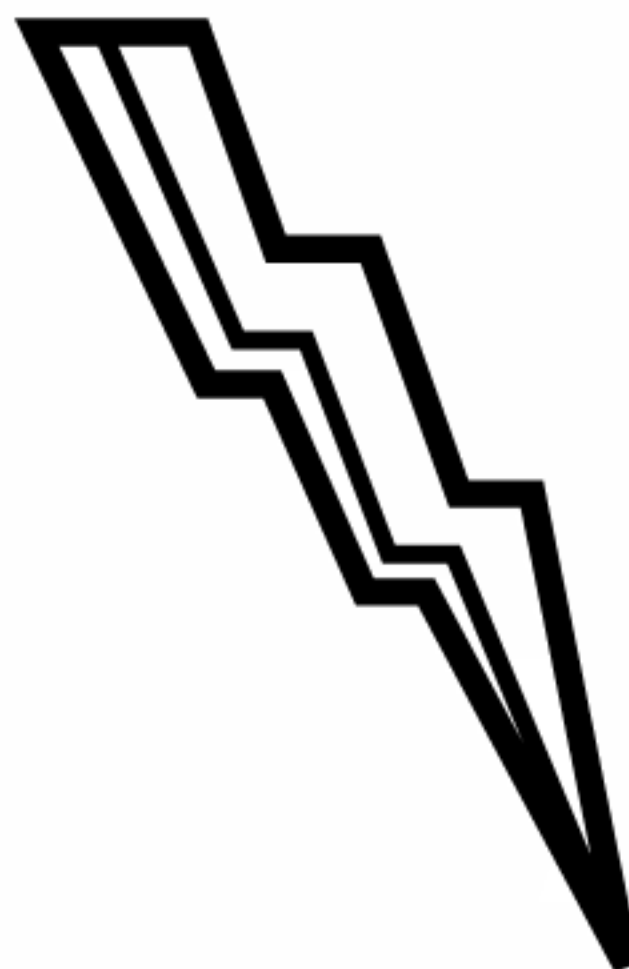


SIMPLE

Human readable

*No special coding
skills*

***Get productive
quickly***



POWERFULL

App deployment

*Configuration
management*

Orchestrate lifecycle



AGENTLESS

*Uses OpenSSH &
WinRM*

*No agents to exploit or
update*

***More efficient &
more secure***

Mgmt
Node



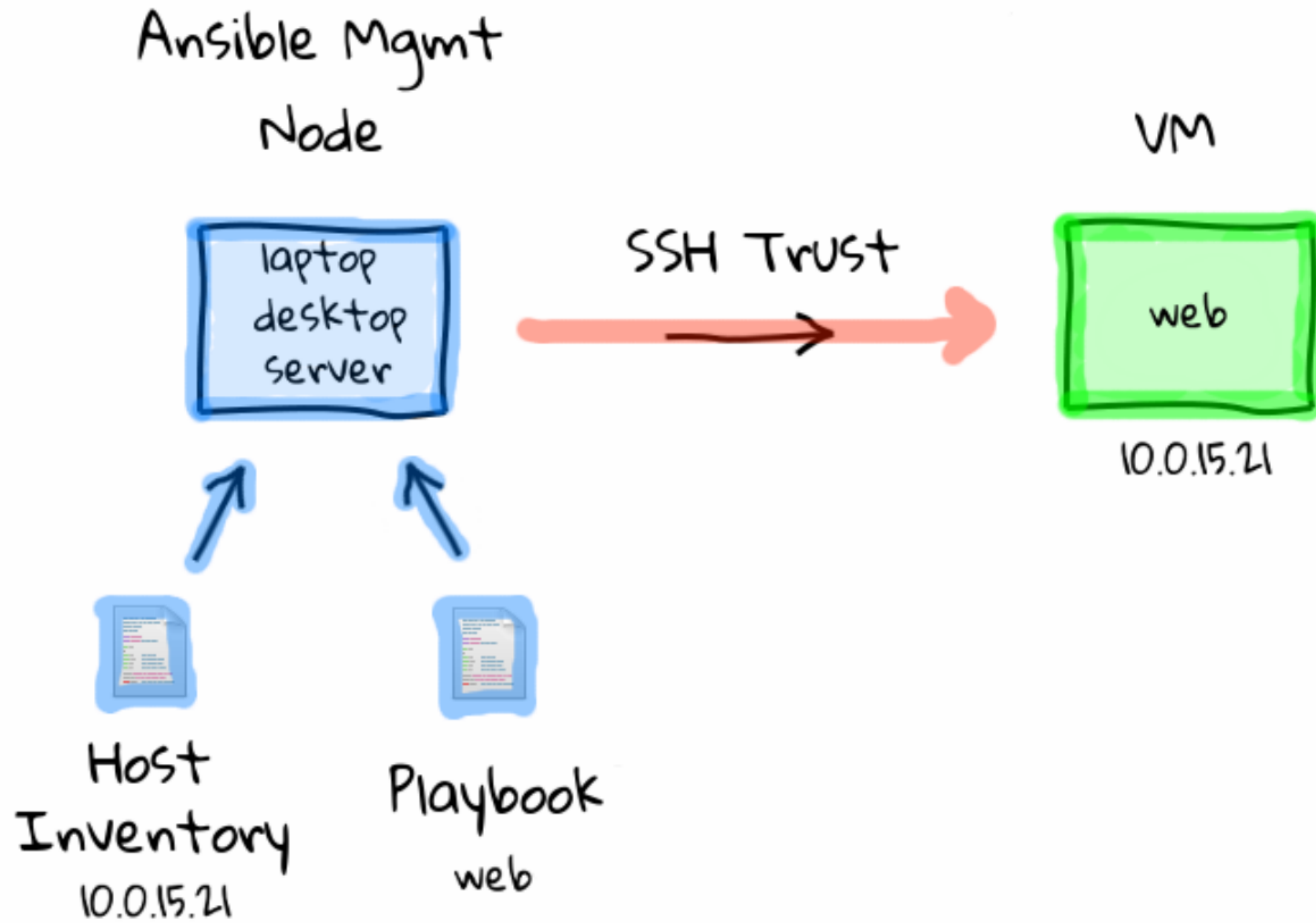
SSH

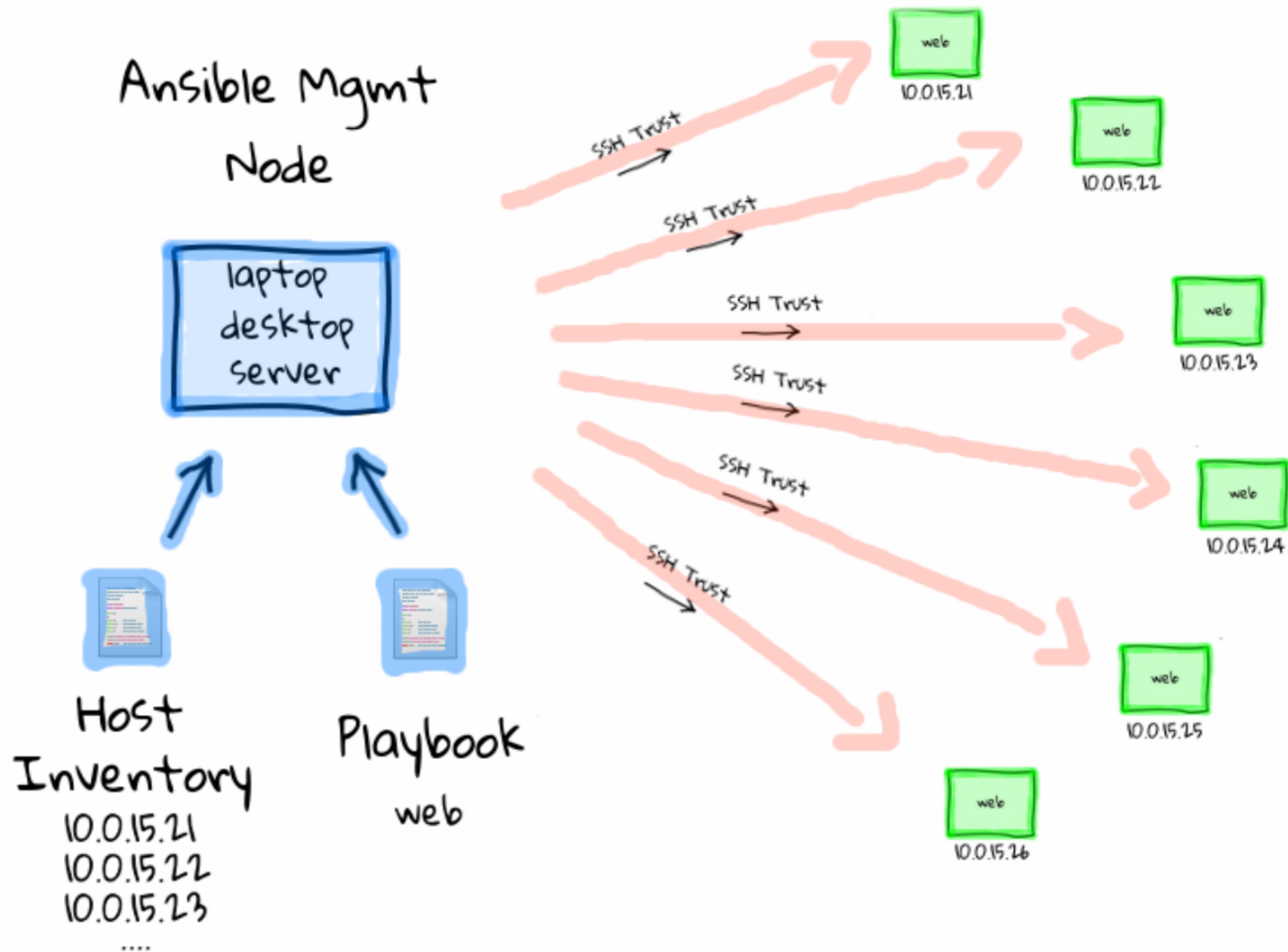


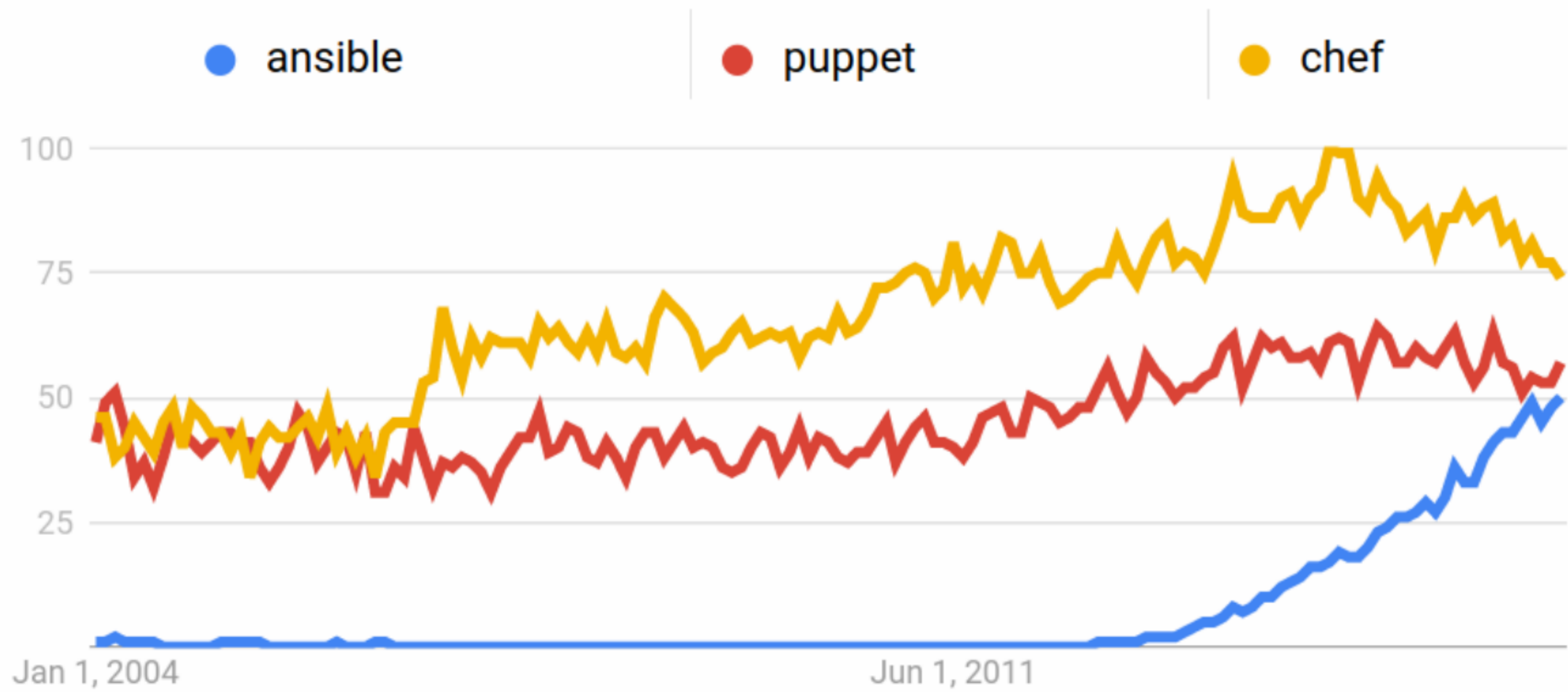
VM



10.0.15.21







SOLVE HARD PROBLEMS WITH ONE LINE OF ANSIBLE



Removing files from servers (Without rm -fR)

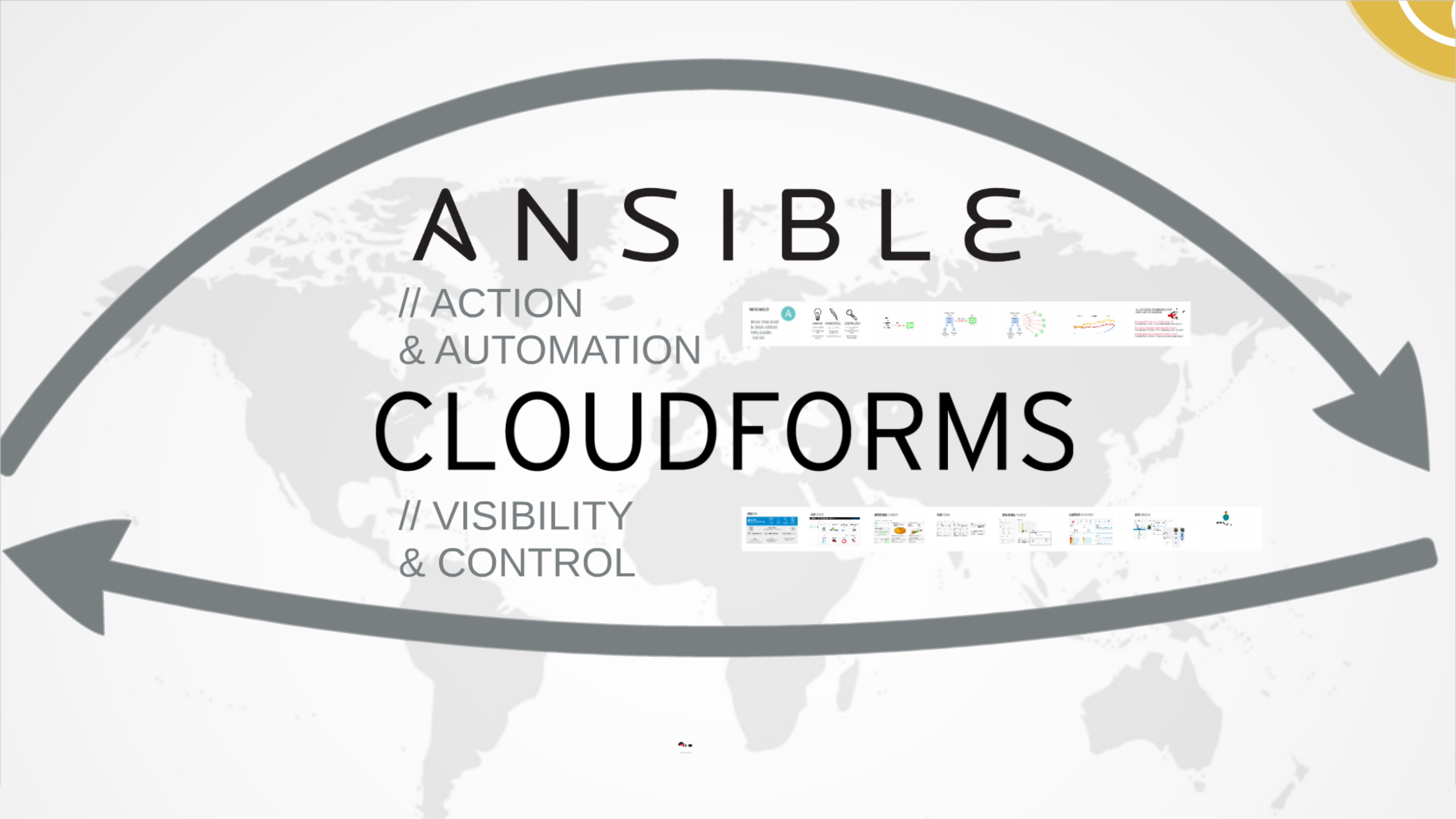
```
$ ansible web -m file -a "dest=/path/to/file state=absent"
```

Run backup script in background (20 Hr timeout)

```
$ ansible web -B 72000 -P 0 -a "/bin/bkup_cmd --do-stuff"
```

Show Requests/sec and Bytes/sec of web servers

```
$ ansible web -m shell -a "apachectl status | grep Status"
```

ANSIBLE

// ACTION
& AUTOMATION

CLOUDFORMS

// VISIBILITY
& CONTROL



OVERVIEW

RED HAT® CLOUDFORMS



Unified
management



Complete
self-service



Operational
visibility

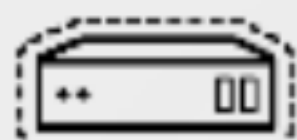


Compliance
and governance



CONTAINERS

OpenShift by Red Hat | Kubernetes



VIRTUALIZATION

VMware

Microsoft Hyper-V

Red Hat Enterprise Virtualization



PRIVATE CLOUD

OpenStack

Red Hat Enterprise Linux
OpenStack Platform



PUBLIC CLOUD

Amazon Web Services

Windows Azure

SELF SERVICE

☰

RED HAT® CLOUDFORMS MANAGEMENT ENGINE

🔗

Dashboard

My Services1

My Requests1

Service Catalog8

Service NameFilter by Name

8 Results

Generic Linux Distro

Infrastructure as a Service



Hadoop Cluster

Big Data



Microsoft Azure Windows 2012 VM

Cloud



Mirantis OpenStack Instance

Cloud



Red Hat Atomic Platform

Red Hat Software



Red Hat Enterprise Linux

Red Hat Software



Red Hat OpenShift Enterprise

Red Hat Software



Red Hat OpenStack Instance

Cloud



OPERATIONAL VISIBILITY

Operations Summary

Health / Compliance

Public Cloud

Quick Links

[Order Service](#)

[My Services](#)

[My Workloads](#)

CloudForms Server Status

Hostname	CPU %	Memory %	Status
Cloudforms32-localhost	0.0%	3.1%	not responding
localhost	0.2%	6.3%	started

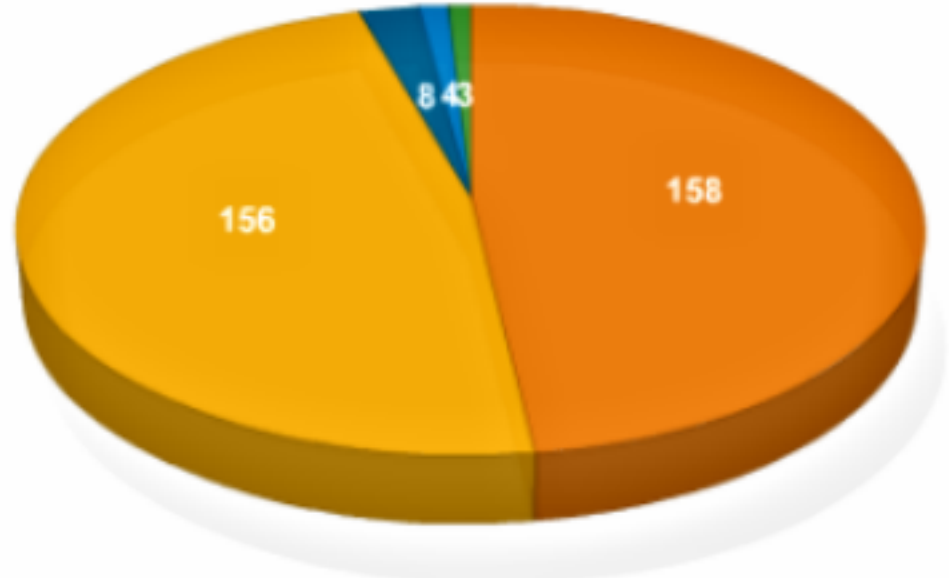
Updated 03/15/16 23:15 | Next 03/16/16 02:00

Group CPU Quota Usage

Group	Quota Max CPUs	Allocated vCPUs (Total)
db_team	20	10
web_team	10	4
EvmGroup-super admin		1

Workload by Provider

- VMware vCenter
- Red Hat Enterprise Virtualization Manager
- Microsoft System Center VMM
- OpenStack
- Amazon EC2



Updated 09/14/15 14:12 | Next 03/16/16 02:00

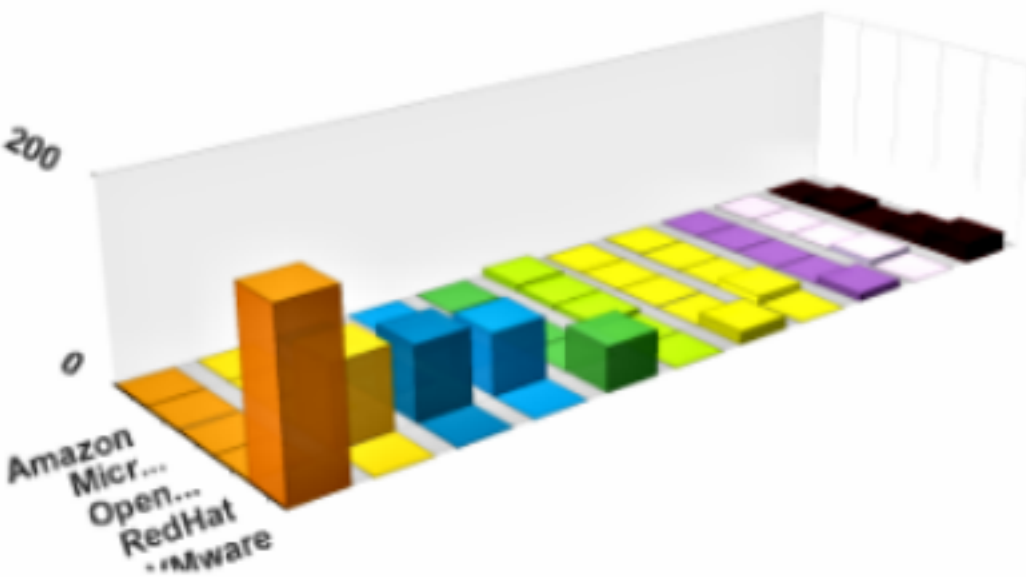
Top CPU Consumers (weekly)

Asset Name	Cluster Name	CPU - Usage Rate (%) (Avg)
No records found		

Updated 03/15/16 03:44 | Next 03/17/16 00:00

Vendor and Guest OS Chart

- Red Hat Enterprise Linux 6 (x86_64)
- rhel_6x64
- Other Linux (64-bit)
- Microsoft Windows Server 2008 R2
- Debian GNU/Linux 4.0
- Other
- rhel_7x64
- other
- Unknown
- rhel_6
- windows_7



Updated 03/15/16 03:44 | Next 03/17/16 00:00

EVM: Recently Discovered VMs

Red Hat CloudForms 4.0 on Host cloud07-acc.gps.hst.ams2.re
dhat.com
Date : 2015-12-15 17:38:37 UTC
cjung-test1 at iscsi-cloud14
Date : 2015-12-15 17:38:38 UTC

RIGHT SIZING

Operations Summary

Health / Compliance

Public Cloud

Right Sizing - CPU			
Name	Number of CPUs	CPU - Sizing	CPU - Savings
amaya-rhel7	2	1	1
CFME CloudClone	4	1	3
CFME-5.3-88_ncatling	4	5	-1
CFME-5.4-43_ncatling	4	5	-1
cfme001	1	2	-1
Updated 09/14/15 14:22 Next 06/22/16 07:00			

Right Sizing - Memory			
Name	Memory	Memory - Sizing	Memory - Savings
amaya-rhel7	2 GB	104 MB	1.9 GB
CFME CloudClone	6 GB	308 MB	5.7 GB
CFME-5.3-88_ncatling	6 GB	4.5 GB	1.5 GB
CFME-5.4-43_ncatling	6 GB	5.8 GB	184 MB
cfme001	2 GB	32 MB	2 GB
Updated 09/14/15 14:22 Next 06/22/16 07:00			

VM Compliance		
Name	Detail Condition Desc	Last Compliance History Activity Sample - Timestamp (Day/Time)
Cloud Forms 3.1.3	Vulnerable bash Package (ShellShock)	09/14/15 09:15:10 UTC
Cloud Forms 3.1.3	Vulnerable Open SSL Package (Heartbleed)	09/14/15 09:15:10 UTC
Updated 09/14/15 14:27 Next 06/22/16 06:15		

OPERATIONAL PLANNING

Reference VM Selection

All VMs

CFME-5.3-88_ncatling

VM Options

Source Allocation

vCPU Count ☒ 4

Memory Size ☒ 6144 MB

Disk Space ☒ 60 GB

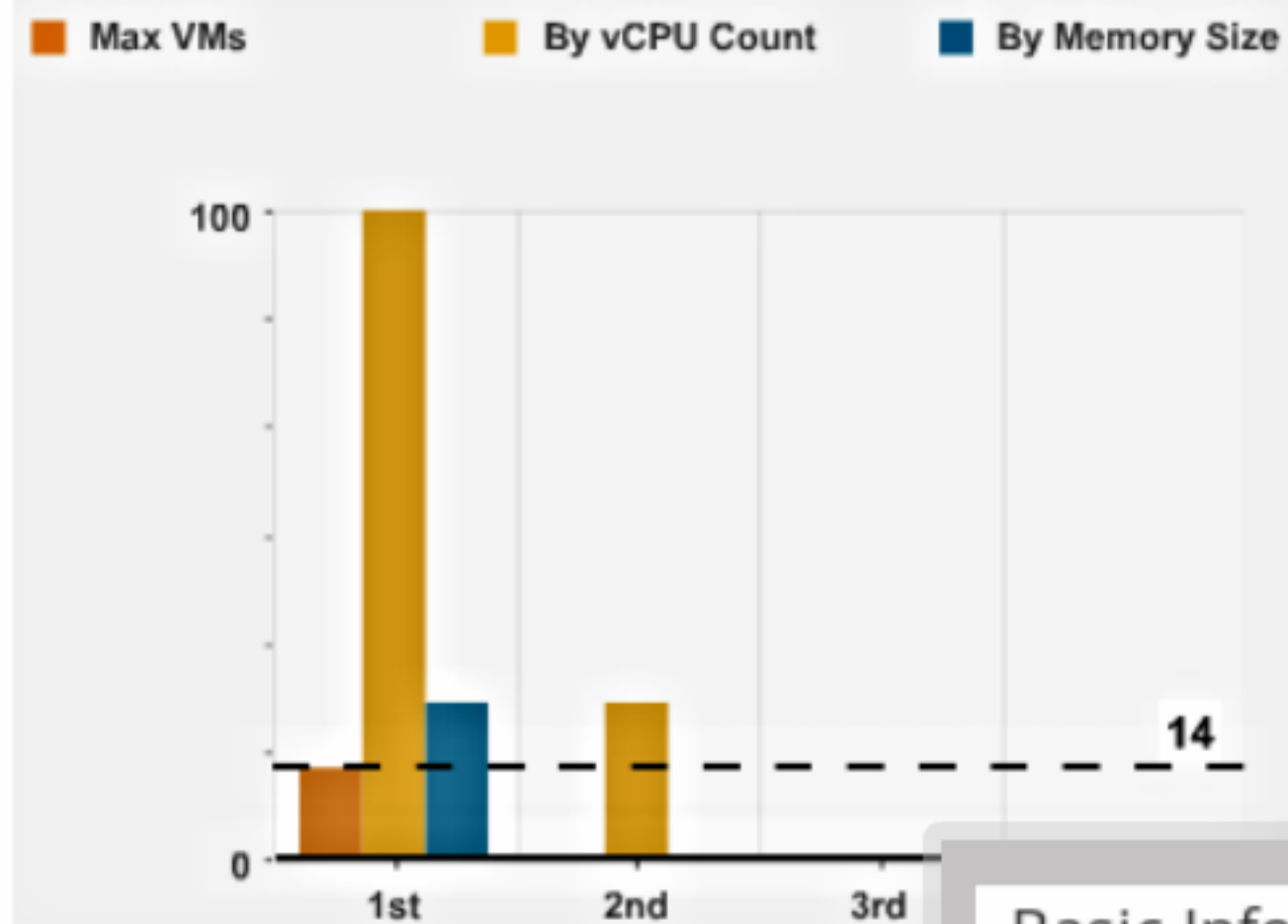
Target Options / Limits

Show Clusters

vCPUs per Core 10

Memory Size 90%

VM Planning



Eligible Cluster / Deployment Role

Rank	Name	Max V
1st	Demonstrations	14
2nd	Infrastructure	0

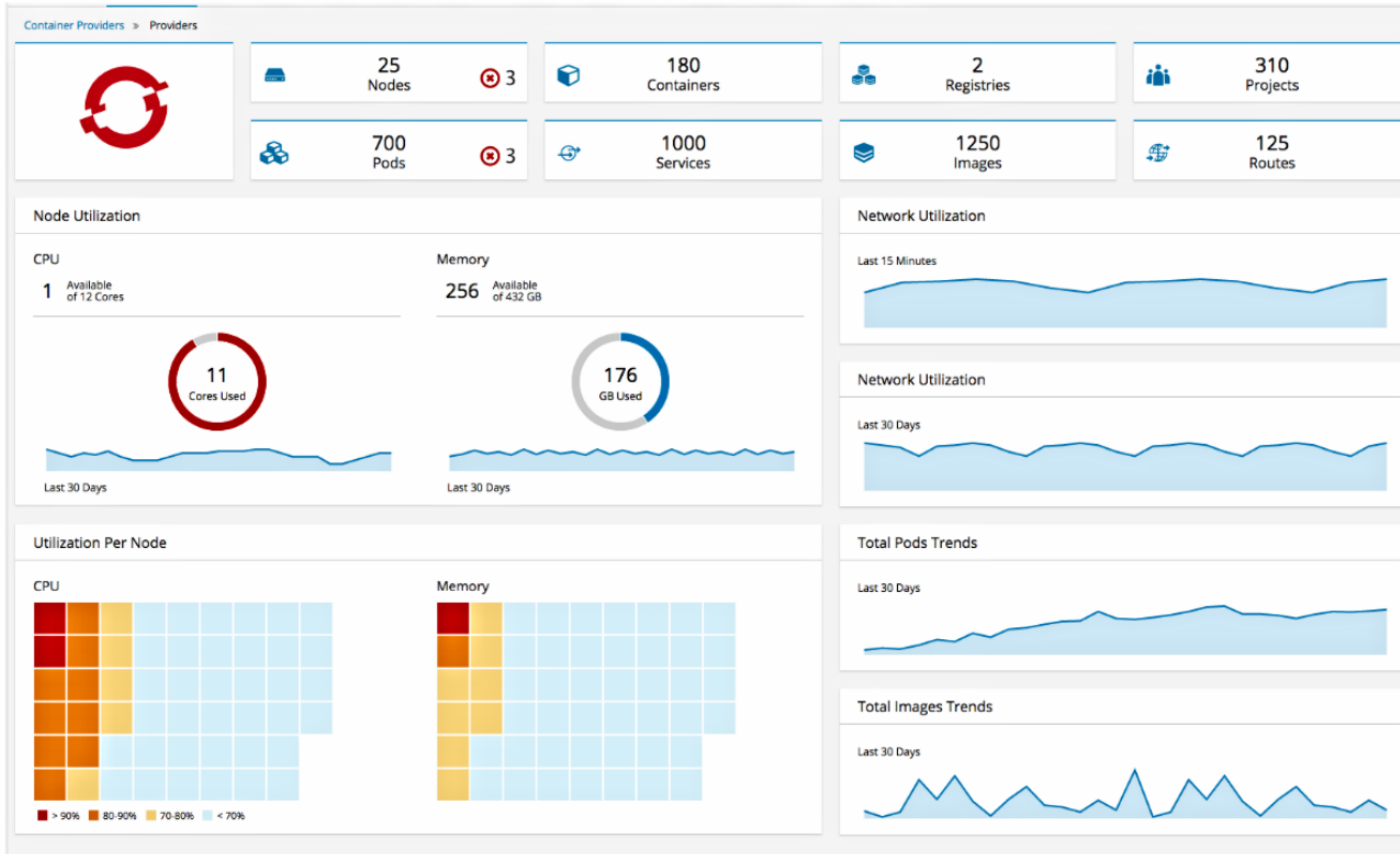
Basic Information

Utilization Trend Summa... Datastore

Selected Day 12/07/15

Disk	
Total	4 TB (100%)
Max Used	3.9 TB (96%)
Avg Used	3.9 TB (96%)
Disk Space Max Trend: Projected to hit Total	02/17/2016
Disk Space Average Trend: Projected to hit Total	01/10/2016

CONATINER MANAGEMENT



DRIFT ANALYSIS

Providers

Clusters

Hosts

Virtual Machines

Resource Pools

Datastores

Repositories

PXE

Requests

VMs & Templates

All VMs & Templates

AMS vCenter

EMEA CloudLab

DemoCentral

Discovered virtual machin

Individuals

amaya

amaya-el7bis

amaya-rhel7

amaya-rhs1

cjung

dmesser

lavenel

ncatling

←

↺

Configuration

Policy

Lifecycle

Power

Refresh Relationships and Power States

Perform SmartState Analysis

Extract Running Processes

Compare Selected items

Edit Selected item

Set Ownership

Remove selected items from t

Right-Size Recommendations

Reconfigure Selected items

VM or Tem

amaya-el7bis

ar

Total Matches	% Matched:	
+ Workload (26)	% Matched:	
+ Hardware (7)	% Matched:	
- Network Adapters (1)	% Matched:	
- #0	% Matched:	
Location	(empty)	(empty)
Present	false	true
Start Connected	true	true
Address	00:50:56:b0:dd:25	00:50:56:b0:d7:86

SELF SERVICE

CloudForms
CloudForms SSP
Ticketing Systems
Web Services
REST API



REQUIREMENTS

RBAC Rules?

Quota enforcement?
(Size, storage, or cost)

Approval Required?
(If over a certain size?)

Workload placement
(Cost, Capacity, etc.)



RED HAT®
CLOUDFORMS

BUILD

Register IPAM / DNS

Create VM

Add networking /
Storage

Add to Domain / LDAP

Register system



ANSIBLE

CONFIGURE

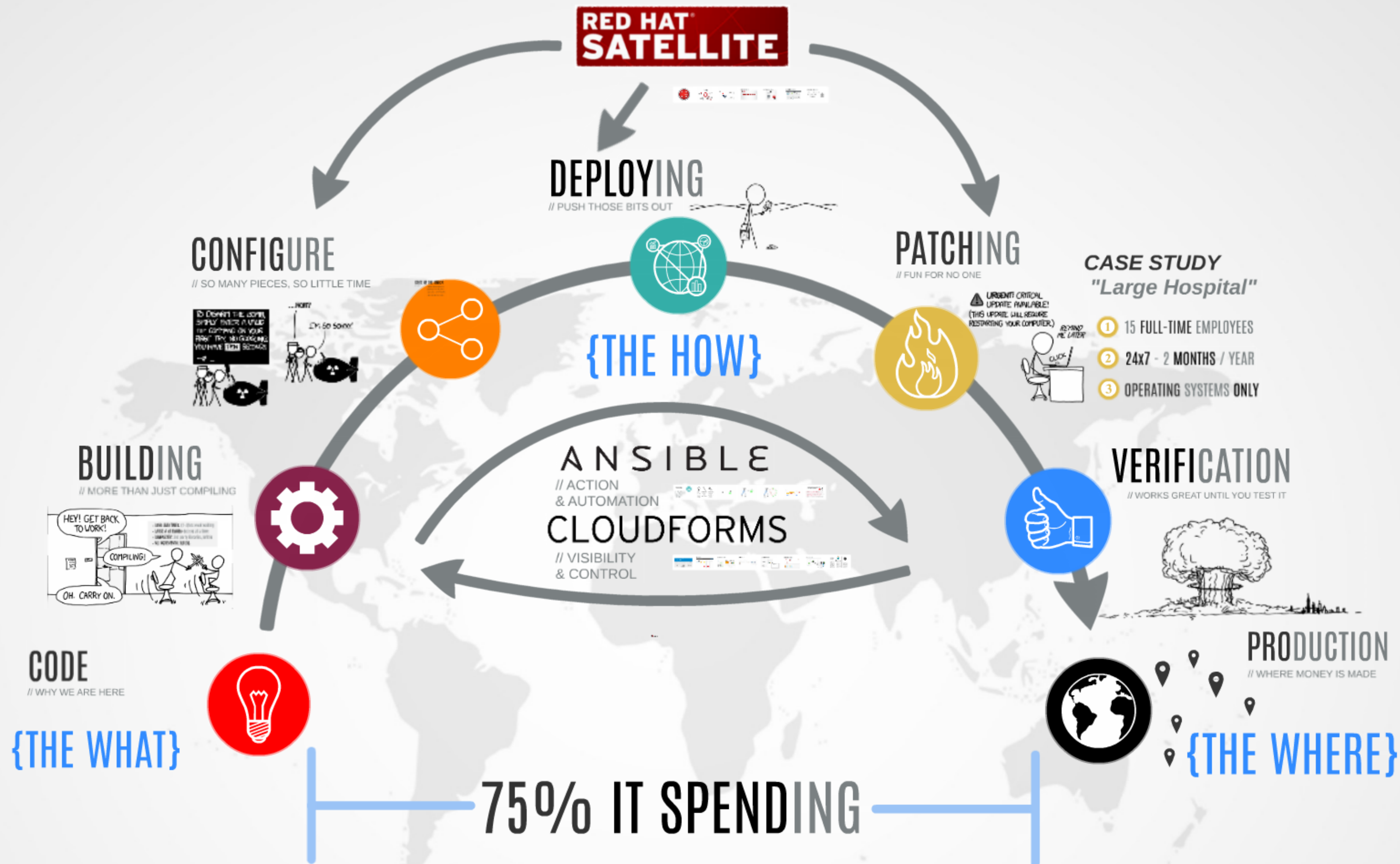
Update NTP/DNS

Perform OS Updates

Create user accounts

Install backup agents

Configure apps and
check policies



ILING

Ona's

VE
// W



ANSIBLE
// ACTION
& AUTOMATION
CLOUDFORMS
// VISIBILITY
& CONTROL



Jenkins

// OR OPENSIFT S2I

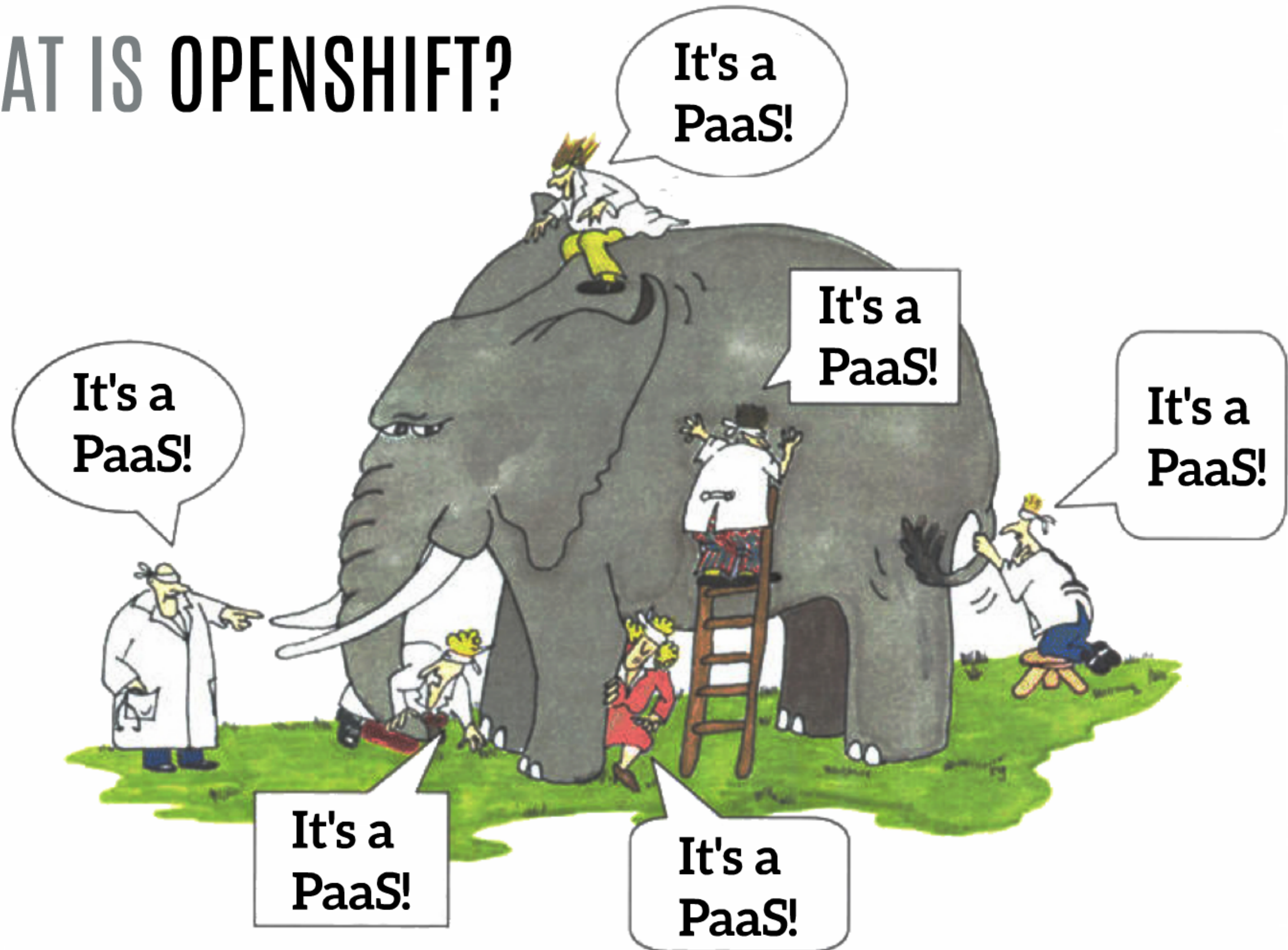


OPENSIFT
ENTERPRISE
by Red Hat®



75% IT SPENDING

WHAT IS OPENSIFT?



WHAT IS A CONTAINER?

Run Time (R/W)

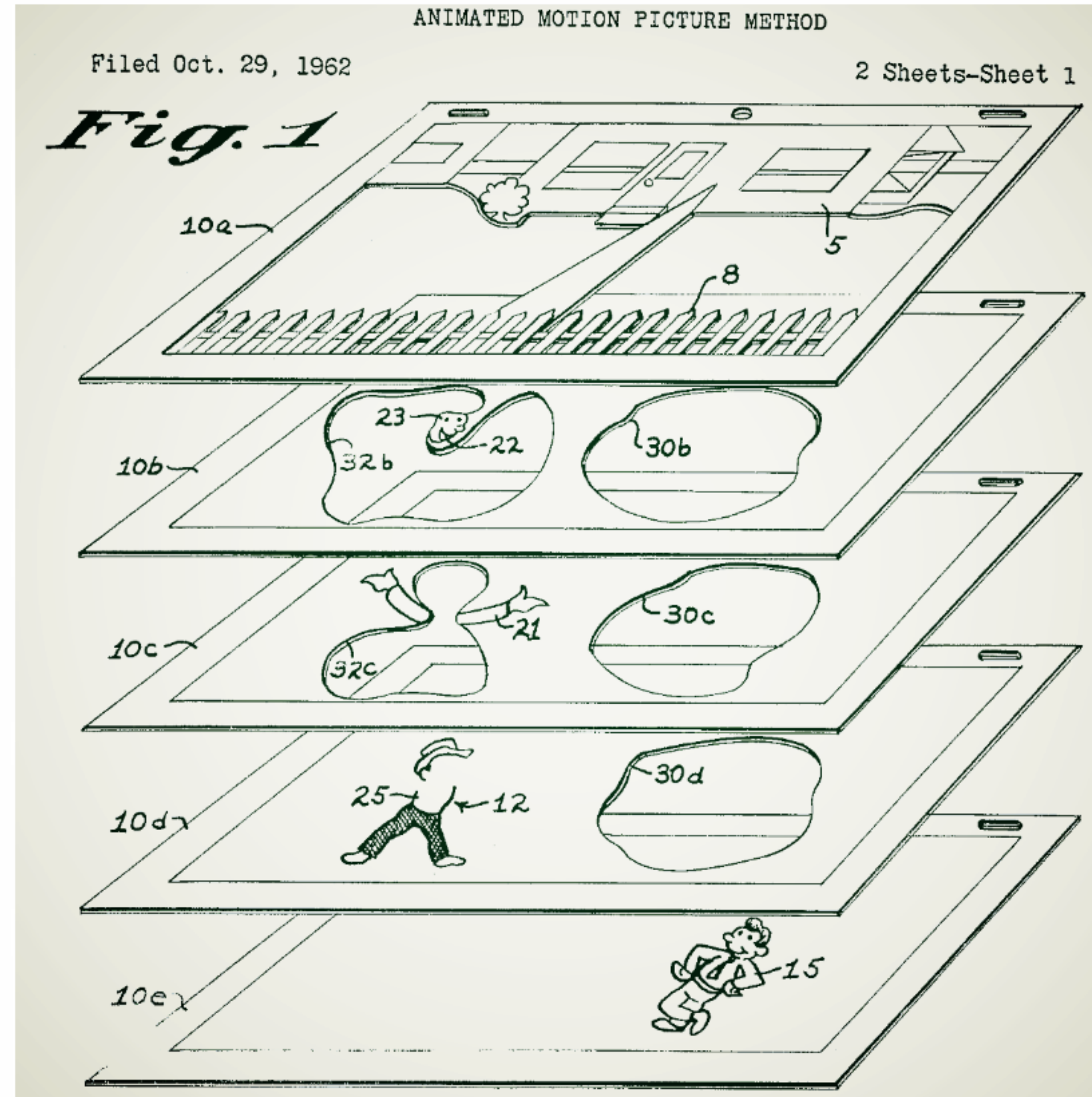
Add App Code

Add Java

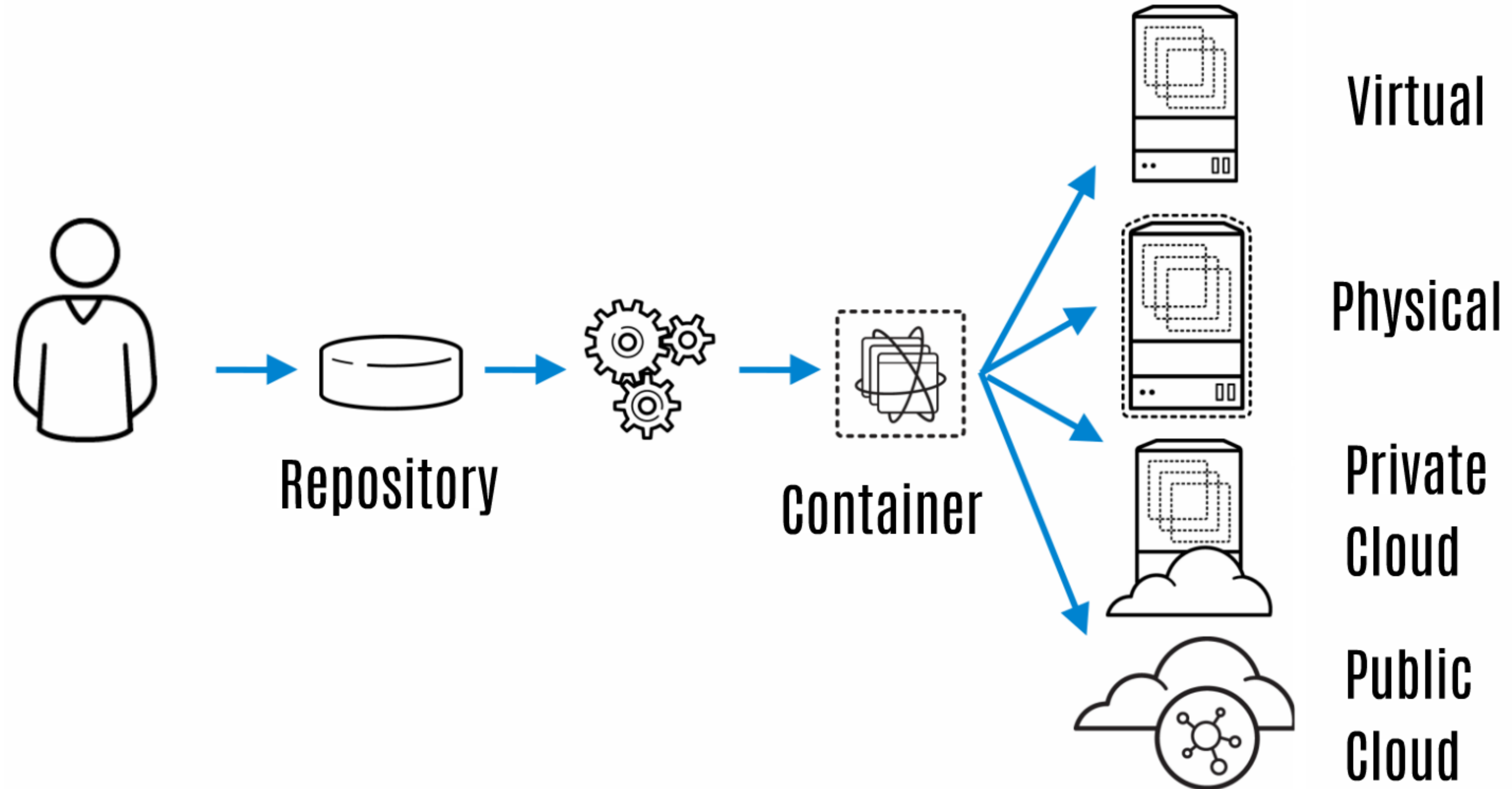
Add Apache

Add OS Layer

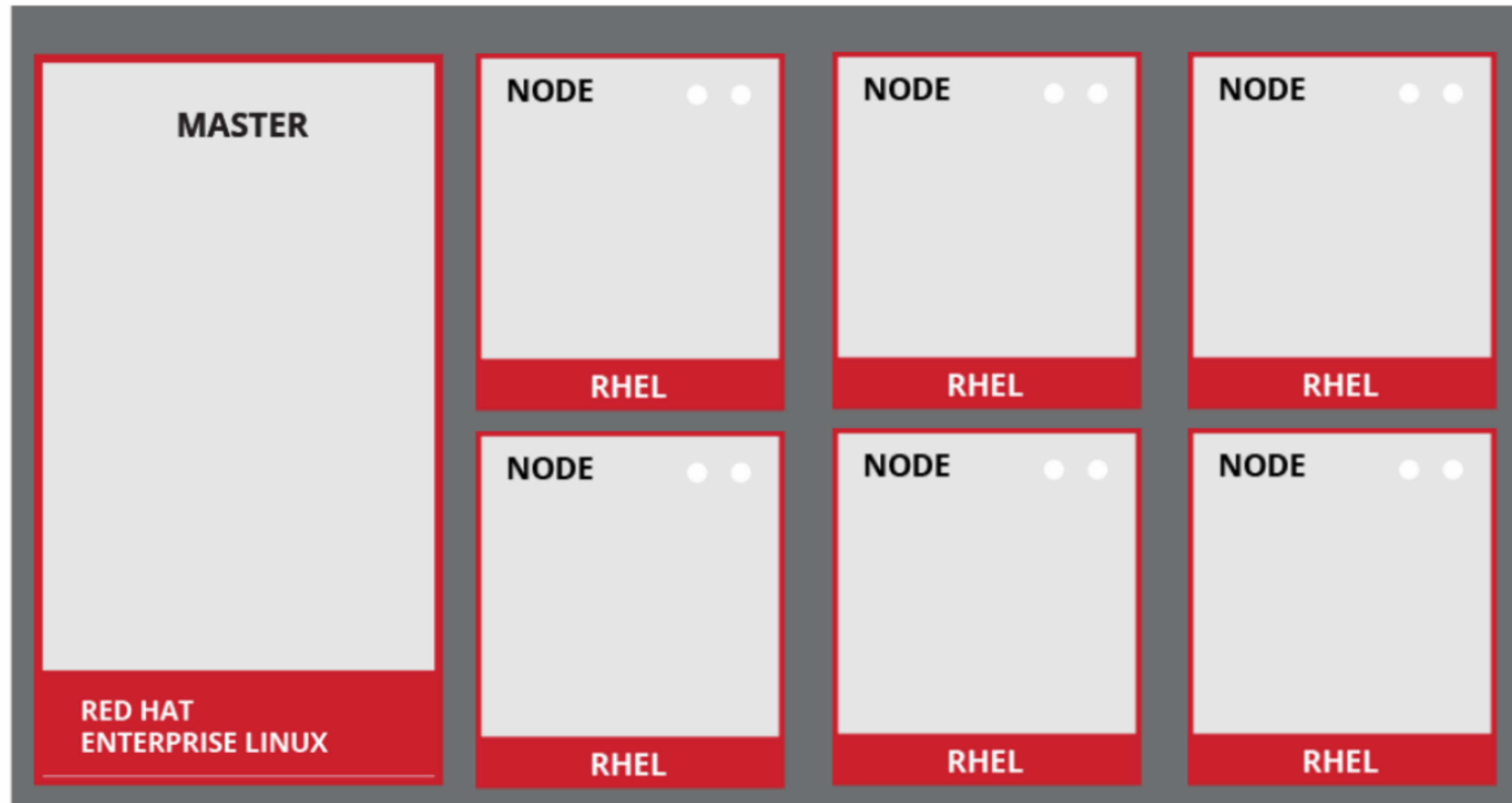
Base Image



THE CI/CD PROCESS

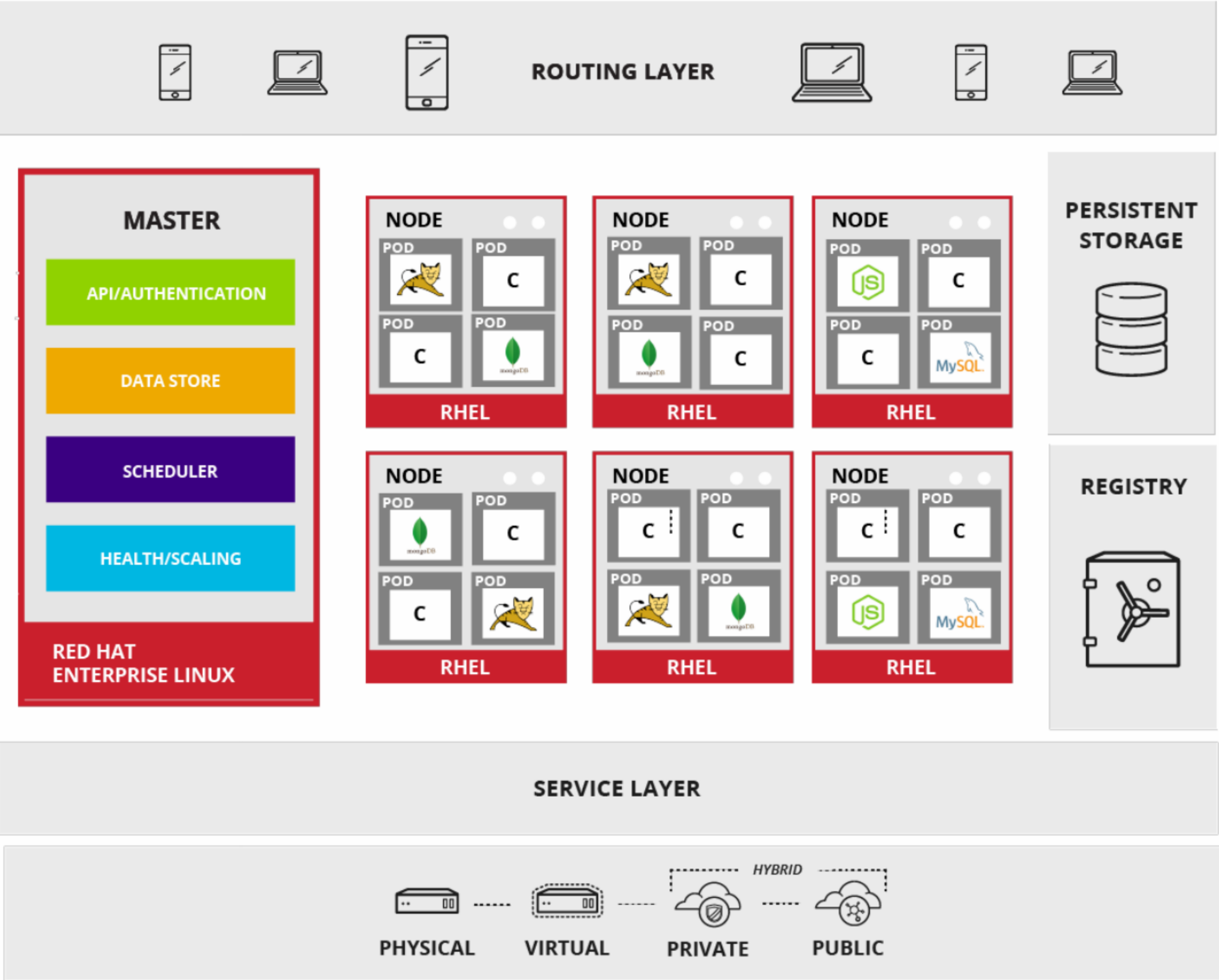


STANDARDIZED INFRASTRUCTURE



PODS > CONTAINERS





 Overview

Overview

Filter by label

Add



SERVICE : FRONTEND

5432/TCP → 8080

www.example.com

DEPLOYMENT: FRONTEND, #1

2 hours ago from image change



CONTAINER: RUBY-HELLOWORLD

Image: [rubyapp/origin-ruby-sample](#) (925dbca)

Build: [ruby-sample-build](#), #1

</> Source: Merge pull request #52 from bpares/stdout (bd94cbb)

Ports: 8080/TCP

SERVICE

5434/TCP → 3306

database

[Create Route](#)

DEPLOYMENT: DATABASE, #1

2 hours ago from config change



CONTAINER: RUBY-HELLOWORLD-DATABASE

Image: openshift/mysql-55-centos7:latest

Ports: 3306/TCP

Details

ReplicationController

Name	database-1
------	------------

Namespace rubyapp

Created Feb 18, 2016 9:59:54 AM

Replicas 1

Selector

deployment	database-1
------------	------------

```
deploymentconfig      database
```

name	database
------	----------

Pod Template

Restart policy	Always
----------------	--------

DNS policy	ClusterFirst
------------	--------------

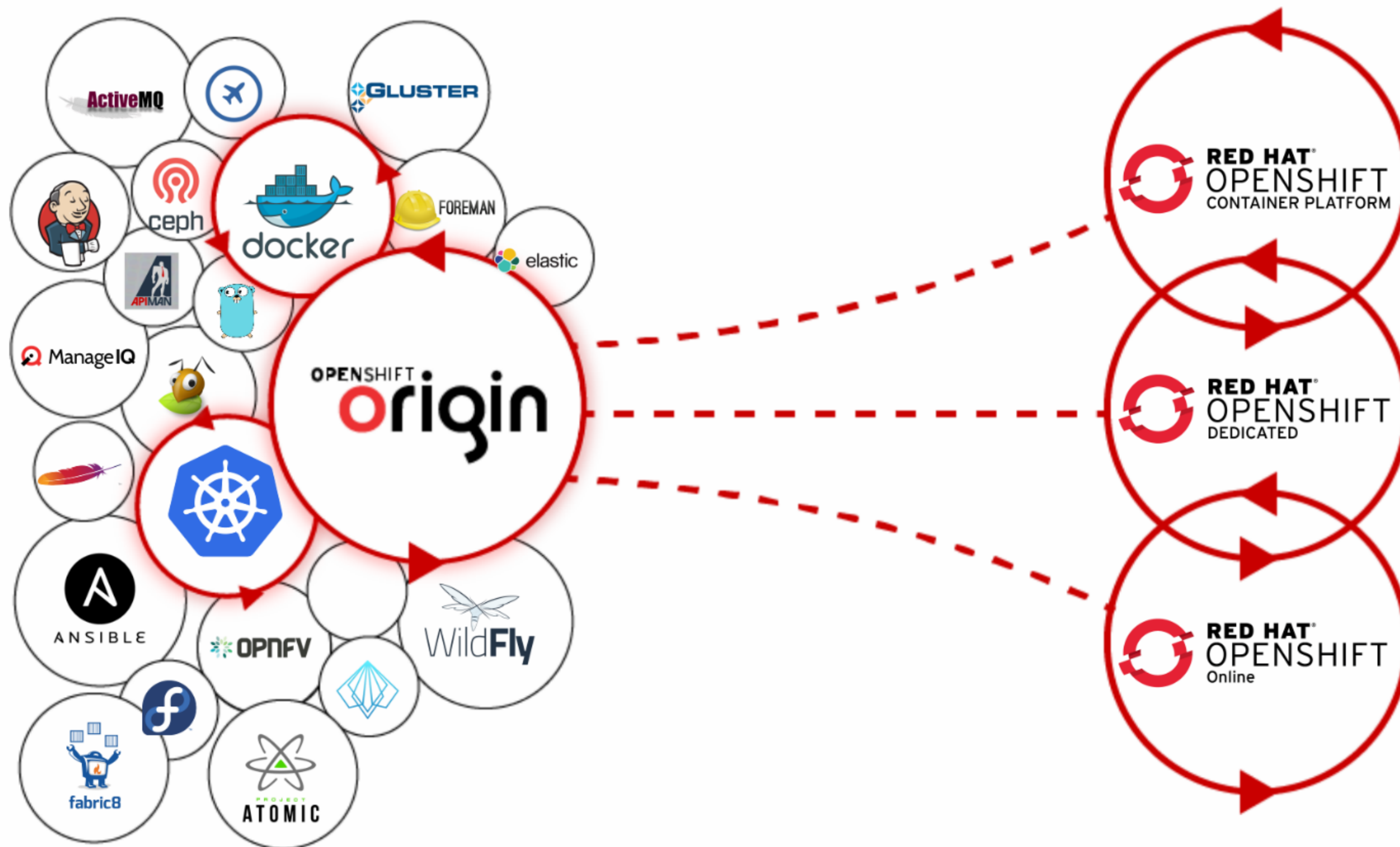
Containers

Name	ruby-helloworld-database
------	--------------------------

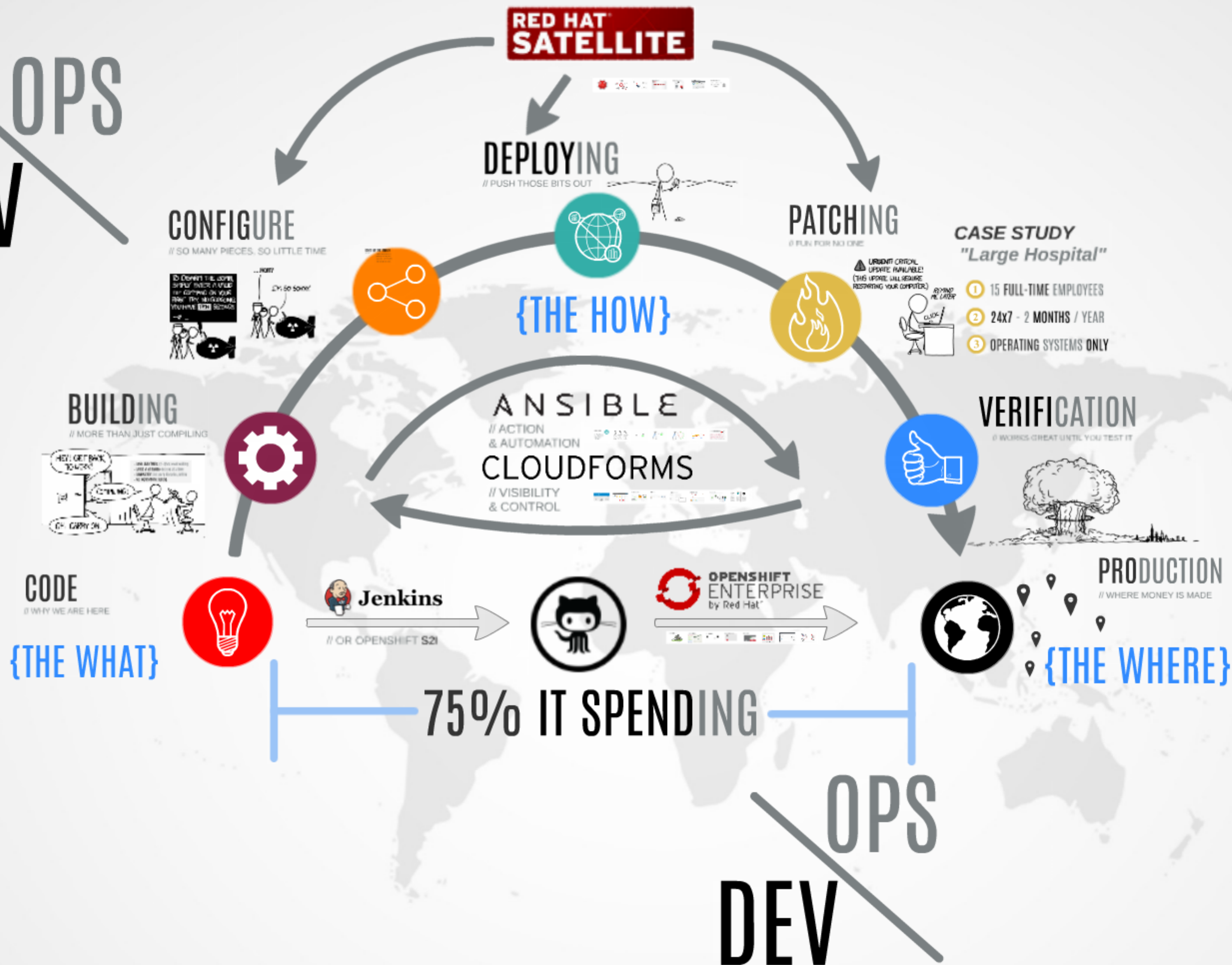
Image	openshift/mysql-55-centos7:latest
-------	-----------------------------------

Ports	3306/TCP
-------	----------

```
Env vars      MYSQL_DATABASE=longdat
              abasenamegoeshere
              MYSQL_USER=userEFG
```

~~OPS~~
DEV



MODE 1
MODE 2

// THIS IS DEVOPS



Questions?

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