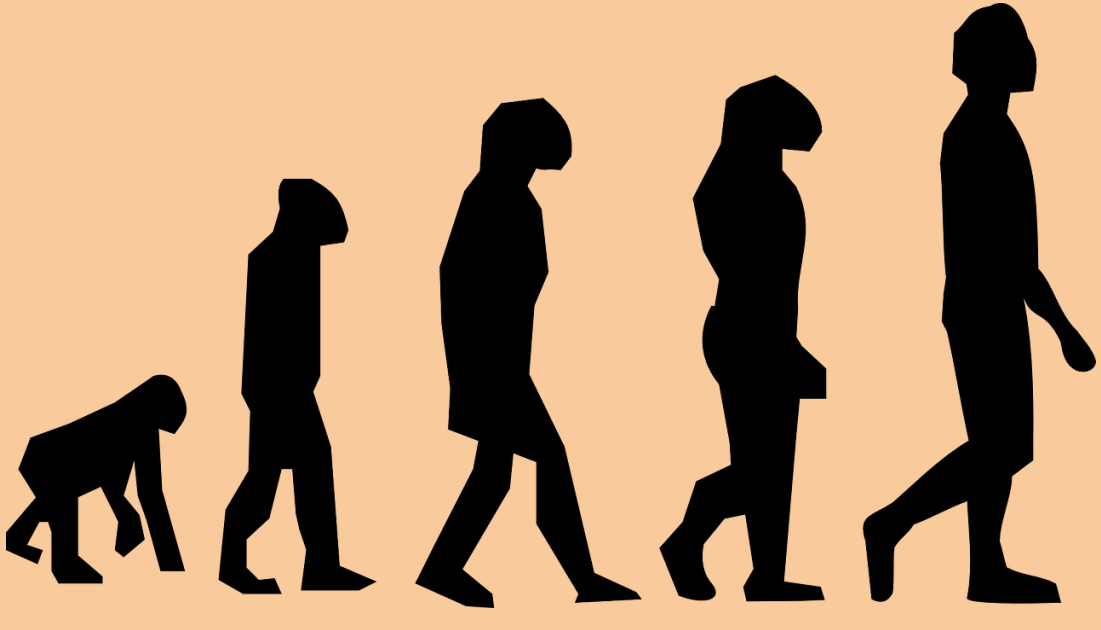
ANSIBLE

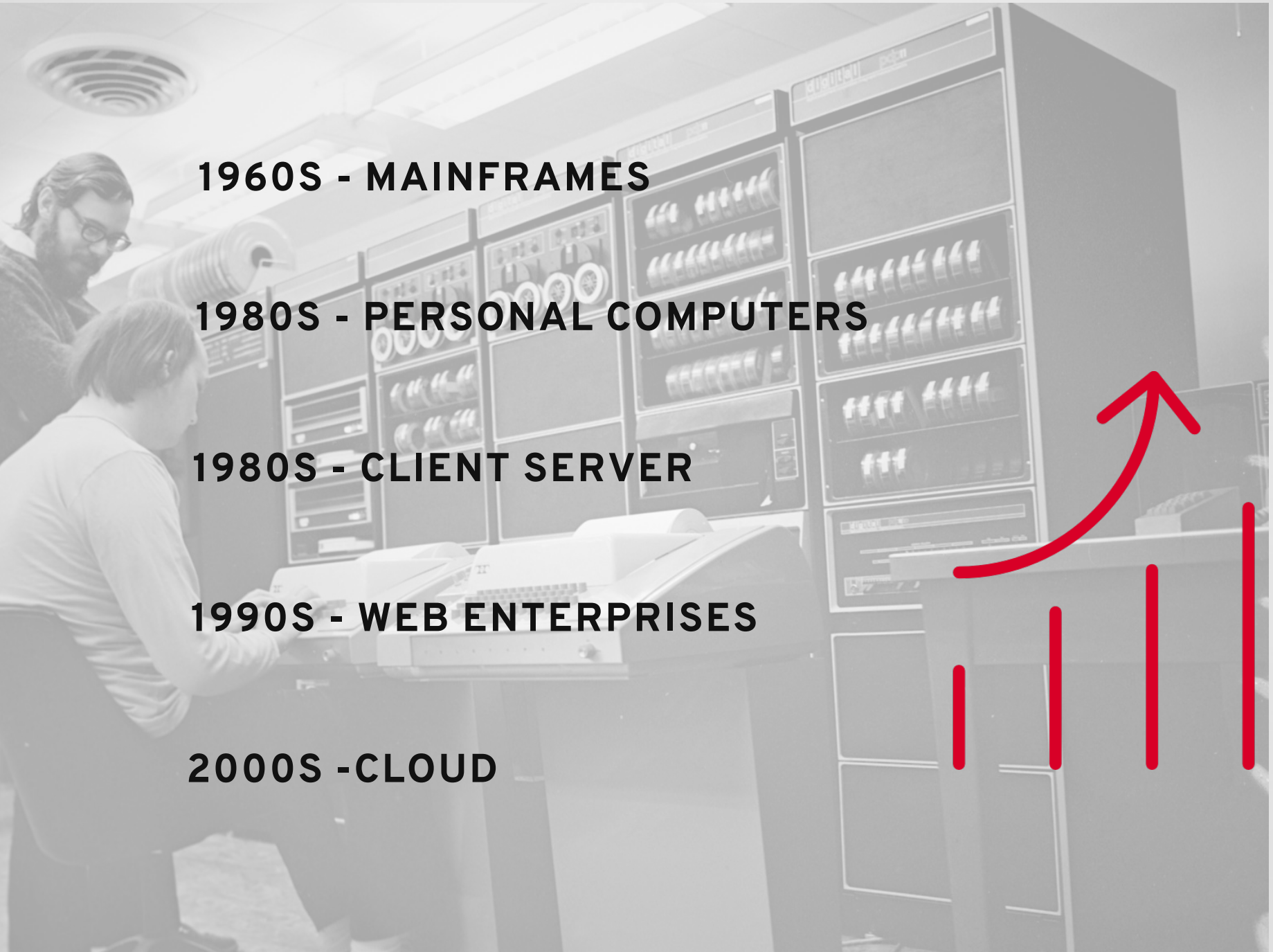
Introduction

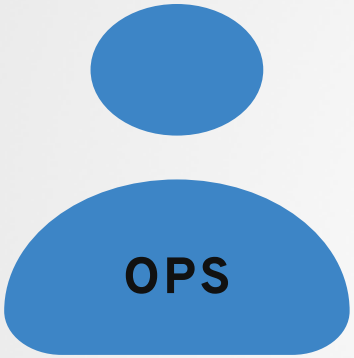
SCHOOL OF DEVOPS

WHY ANSIBLE ?

EVOLUTION

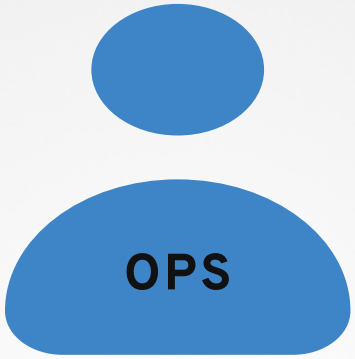



1960S - MAINFRAMES
1980S - PERSONAL COMPUTERS
1980S - CLIENT SERVER
1990S - WEB ENTERPRISES
2000S -CLOUD



- build or provision
- install and configure
- change management
- monitor

“ *keep the lights on .....*



Manual

Scripts

Automation Tools

REMOTE MANAGEMENT

- `func`
- pssh
- cluster-ssh
- parallel-ssh

CONFIGURATION MANAGEMENT

DEPLOYMENTS AND ORCHESTRATION

CAPISTRANO

FABRIC

PROVISIONING TOOLS

TERRAFORM

CLOUD FORMATION

HEAT

AD HOC SERVER MANAGEMENT

CONFIGURATION MANAGEMENT

DEPLOYMENT AND ORCHESTRATION

PROVISIONIONG

ANSIBLE

5 FEATURES

1. Simplicity
2. Batteries Included
3. Infrastructure as a Code
4. Code vs Data
5. Idempotence

SIMPLICITY

- SIMPLE TO LEARN
- SIMPLE TO SETUP

> *Simple Things should be simple, complex things should be possible*

- ALAN KAY

YAML

YET ANOTHER MARKUP LANGUAGE

```
---
- hosts: all
  remote_user: vagrant
  sudo: yes
  tasks:
  - name: create devops user
    user: >
     name=xyz
     uid=2001
     group=pqr
     password=er867!fe%rger93
```

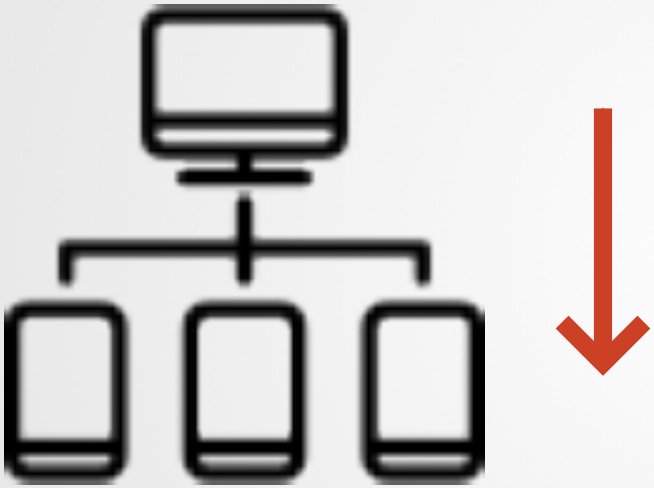
Human Readable | Machine Readable

Closer to natural language

Self Documented Code

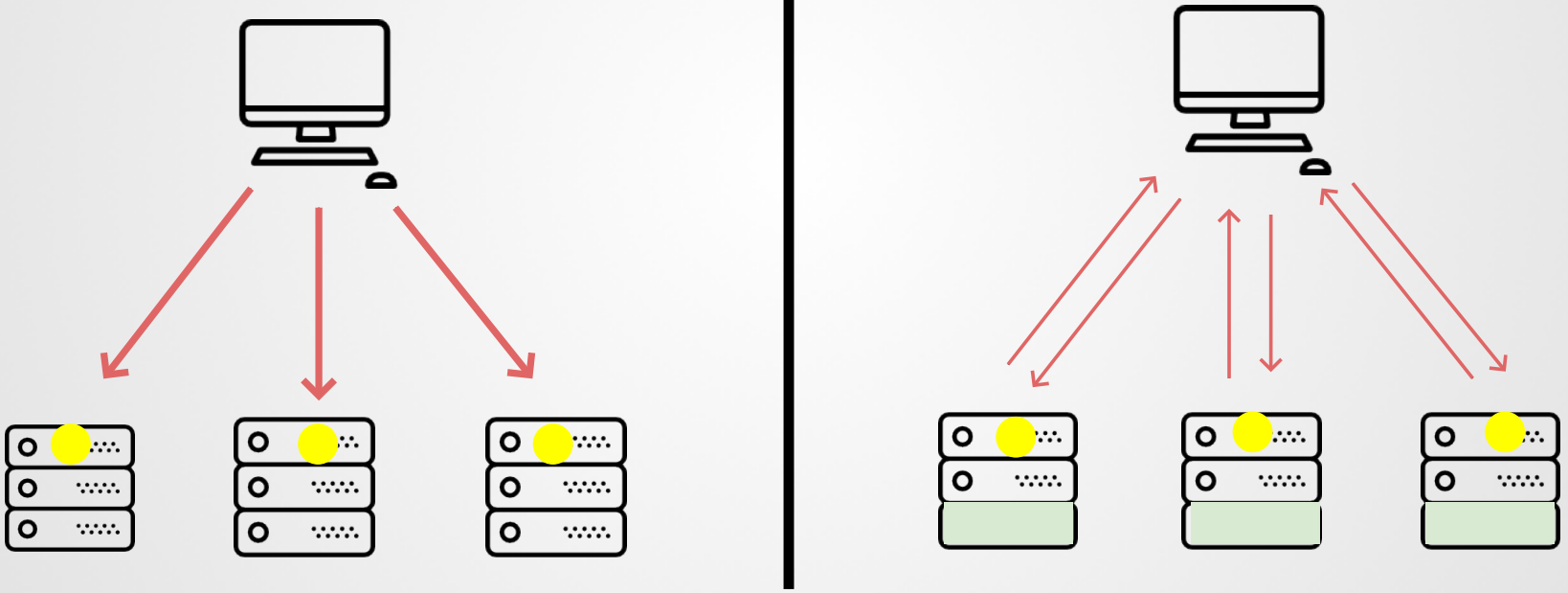
AGENT LESS

push model



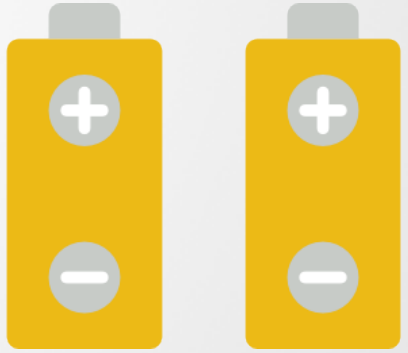
- Uses SSH / WinRM
- Simple to Setup
- Smaller Footprint
- Secure

PUSH vs PULL



BATTERIES
INCLUDED

450+
MODULES



BATTERIES INCLUDED

SYSTEMS

NETWORK

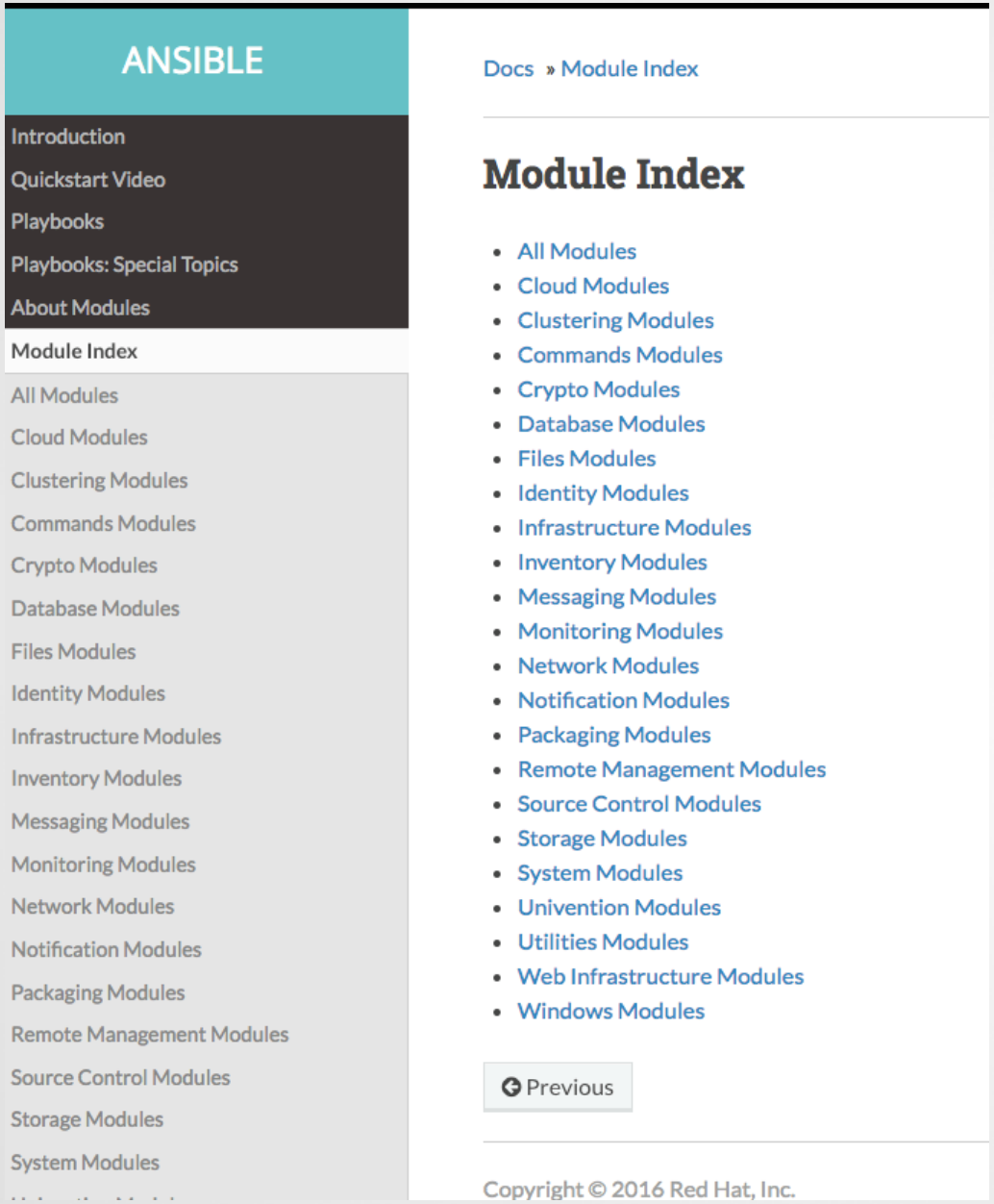
CLOUD

MONITORING TOOLS

SOURCE CONTROL

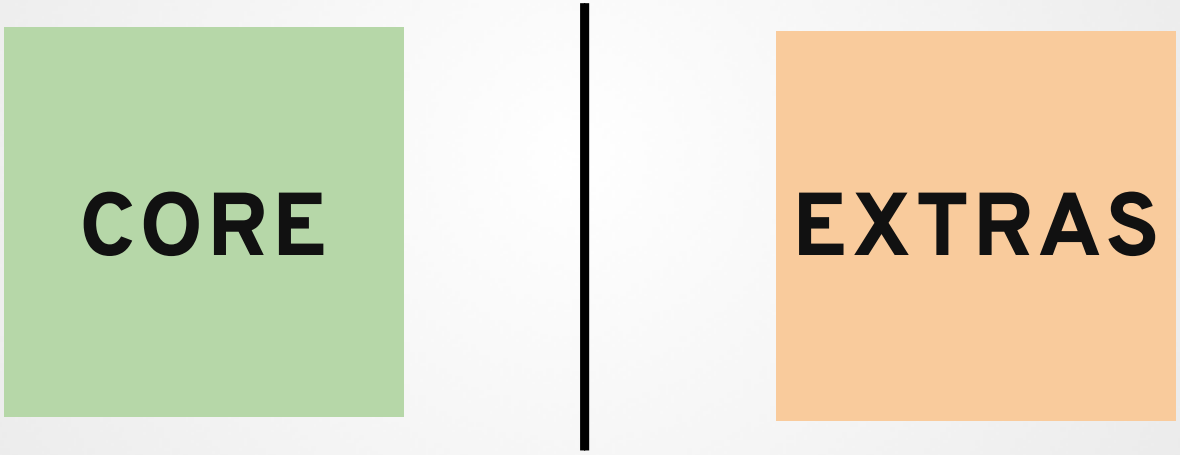
CONTAINERS

COLLABORATION TOOLS



23 CATAGORIES

MODULE TYPES



Infrastructure as a Code

```
---
- hosts: all
  remote_user: vagrant
  sudo: yes
  tasks:
  - name: create devops user with a
    user: >
     name=xyz
     uid=2001
     group=pqr
     password=er867!fe%rger93$#c
```

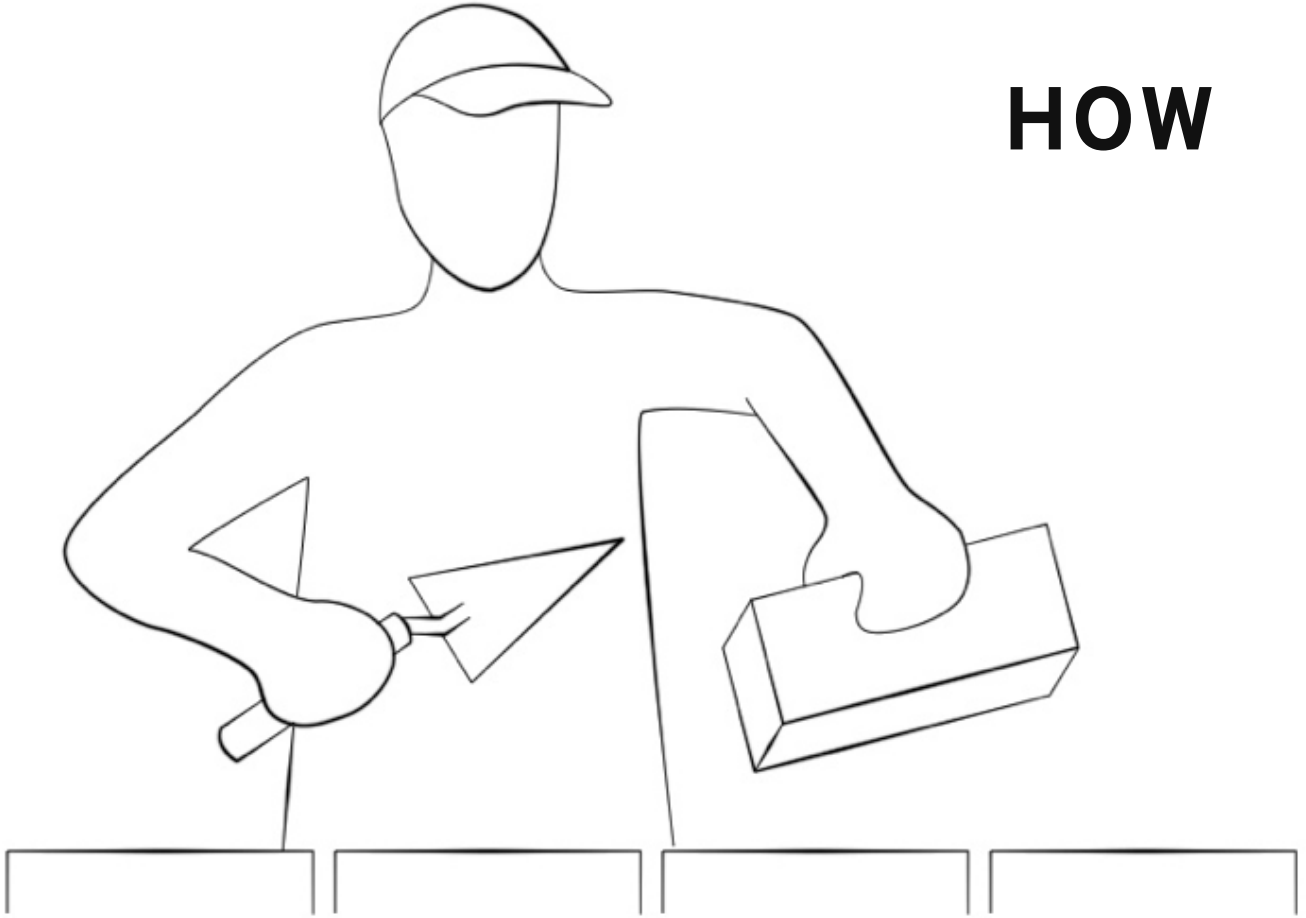
python

perl

SCRIPTS | **ANSIBLE**

shell

HOW

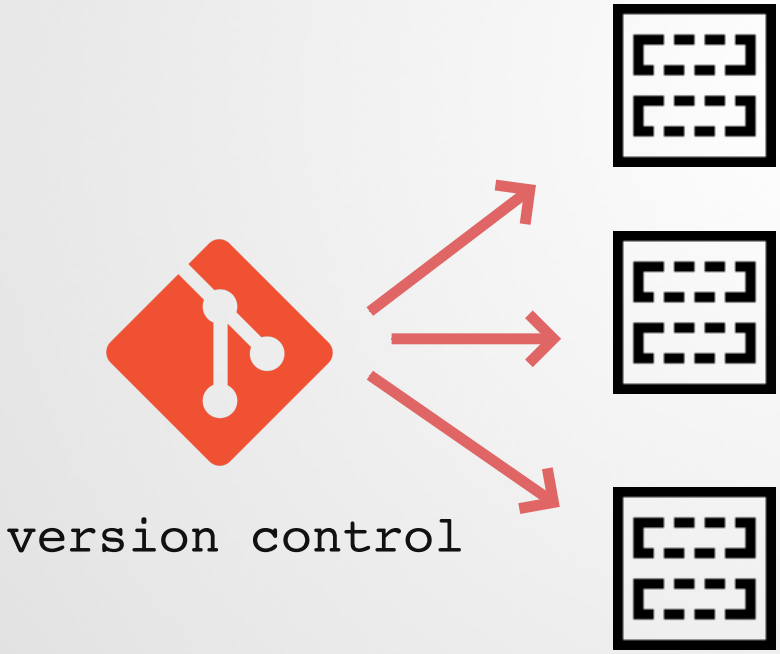


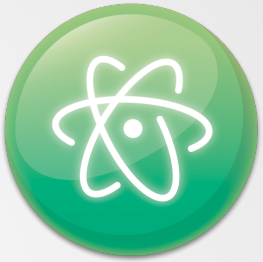
WHAT

```
user
  name        = xyz
  shell       = /bin/bash
  uid         = 5001
  group       = xyz
  password    = w&*Tnkj23sa
```

ADVANTAGES

TDD





Editing and Refactoring Tools

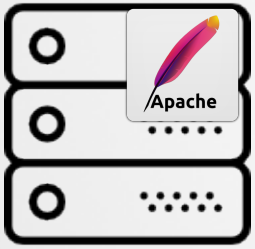
Peer Reviews

vs

CODE

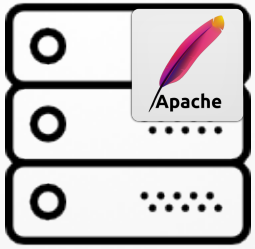
DATA

profile 1



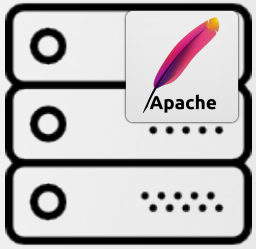

```
port = 80
user = apache
conn = 1024
```

profile 2

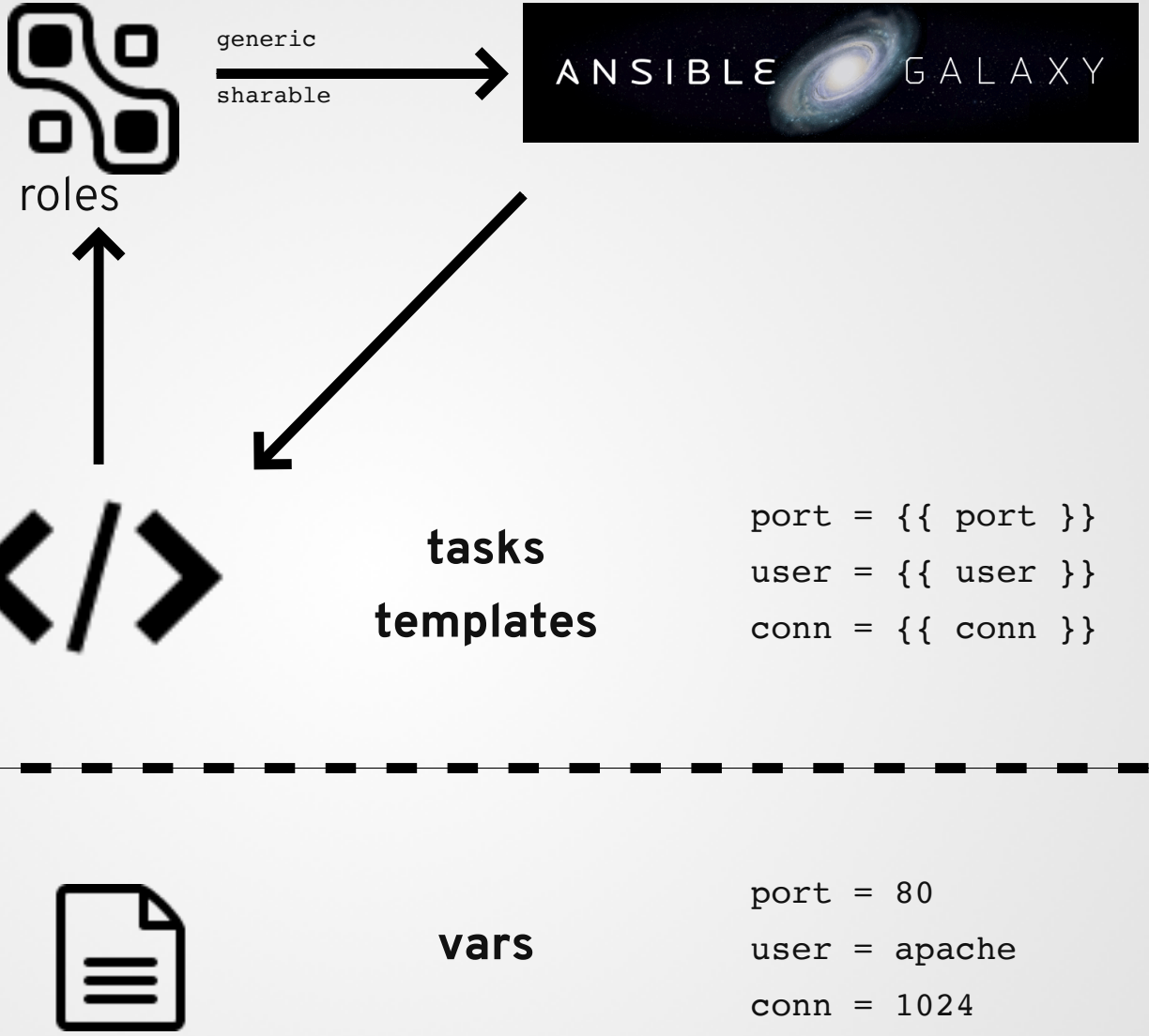



```
port = 8080
user = www-data
conn = 512
```

profile 3




```
port = 9000
user = httpd
conn = 4096
```


generic
sharable
ANSIBLE GALAXY
roles
code
tasks
templates
port = {{ port }}
user = {{ user }}
conn = {{ conn }}
data
vars
port = 80
user = apache
conn = 1024

IDEMPOTENCE

$$F(F(X)) = F(X)$$

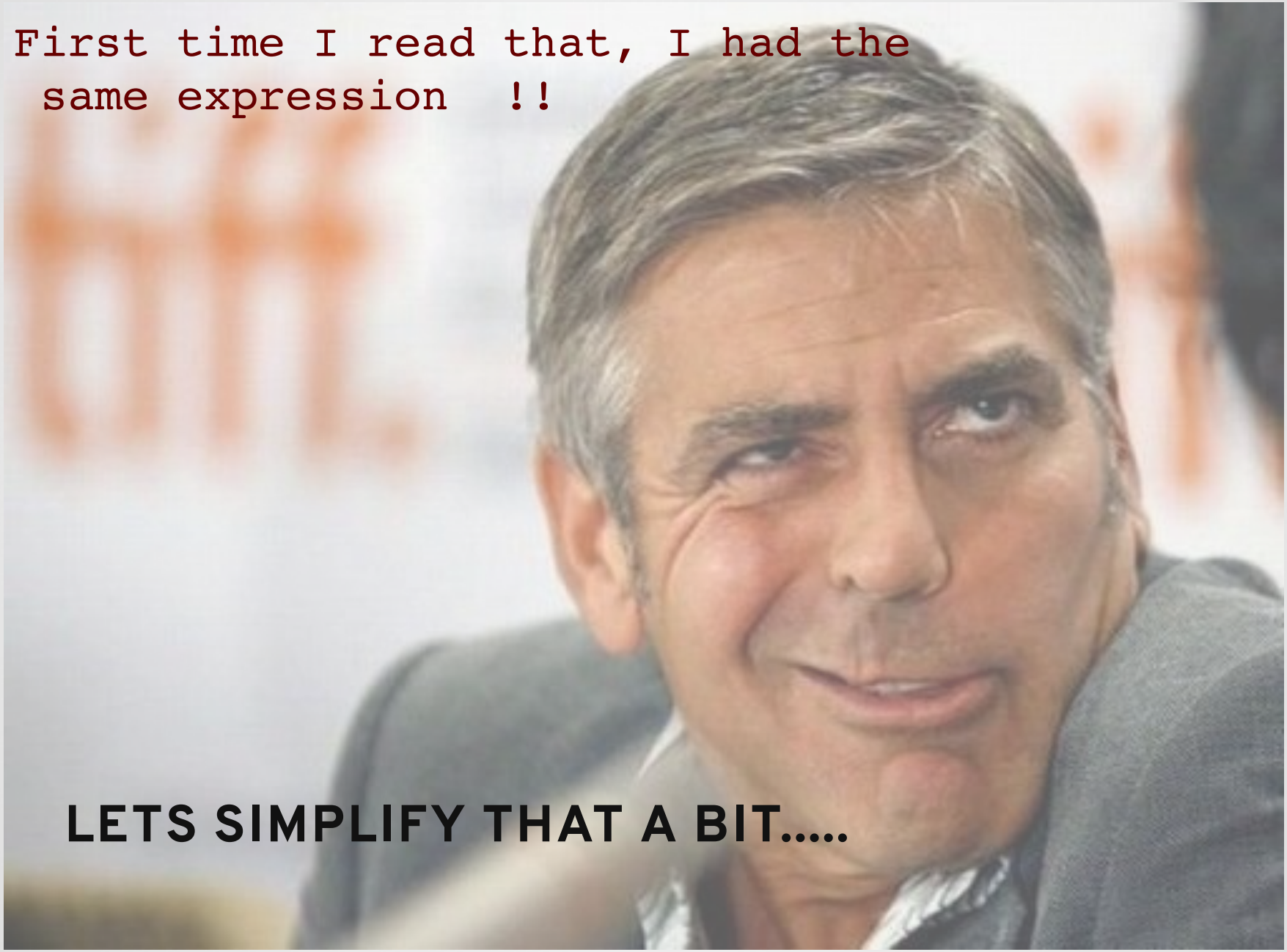
DEFINITION

IDEMPOTENCE

“ Idempotence is the property of certain operations in mathematics and computer science, that can be applied multiple times without changing the result beyond the initial application.

Which can be simply represented by,

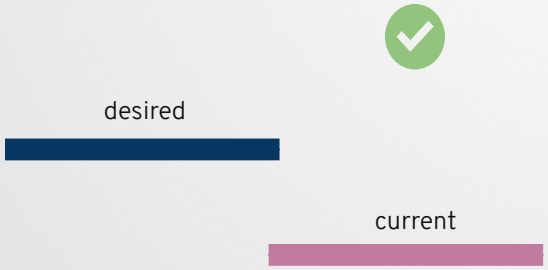
$$F(F(X)) = F(X)$$


First time I read that, I had the same expression !!
LETS SIMPLIFY THAT A BIT.....

MUMBAI
3
GOA
1
BANGALORE
2
CHENNAI

HOW IS IT RELEVANT TO ANSIBLE ?

- Ansible runs are invoked multiple times
- Every time, it compares the desired state vs current



1ST RUN	2ND RUN	3RD RUN
task 1	task 1	task 1
task 2	task 2	task 2
task 3	**task 3**	task 3
task 4	task 4	task 4
task 5	**task 5**	task 5
task 6	task 6	task 6
task 7	task 7	task 7
task 8	**task 8**	task 8

“ THE STORY

2012

MICHAEL DEHAAN

2006 - Emerging Technologies Group, RedHat

Cobbler | Func

Product Manager, Puppet Labs

Ansible

Src: https://www.ansible.com/blog/2013/12/08/the-origins-of-ansible

2013

ANSIBLE INC

ANSIBLE WORKS => ANSIBLE INC

- Said Ziouani
- Michael DeHaan
- Tim Gerla

ANSIBLE ?

```
Ansible(noun):  a fictional machine
 capable of communicating faster th
an the speed of light.
```

Coined by Ursula K. Le Guin in her 1966 novel
Rocannon's World

REDHAT

2015

Red Hat to Acquire IT Automation and DevOps Leader Ansible

Red Hat advances frictionless IT with simplified management for hybrid clouds, OpenStack environments and container-based services

October 16, 2015 06:58 AM Eastern Daylight Time

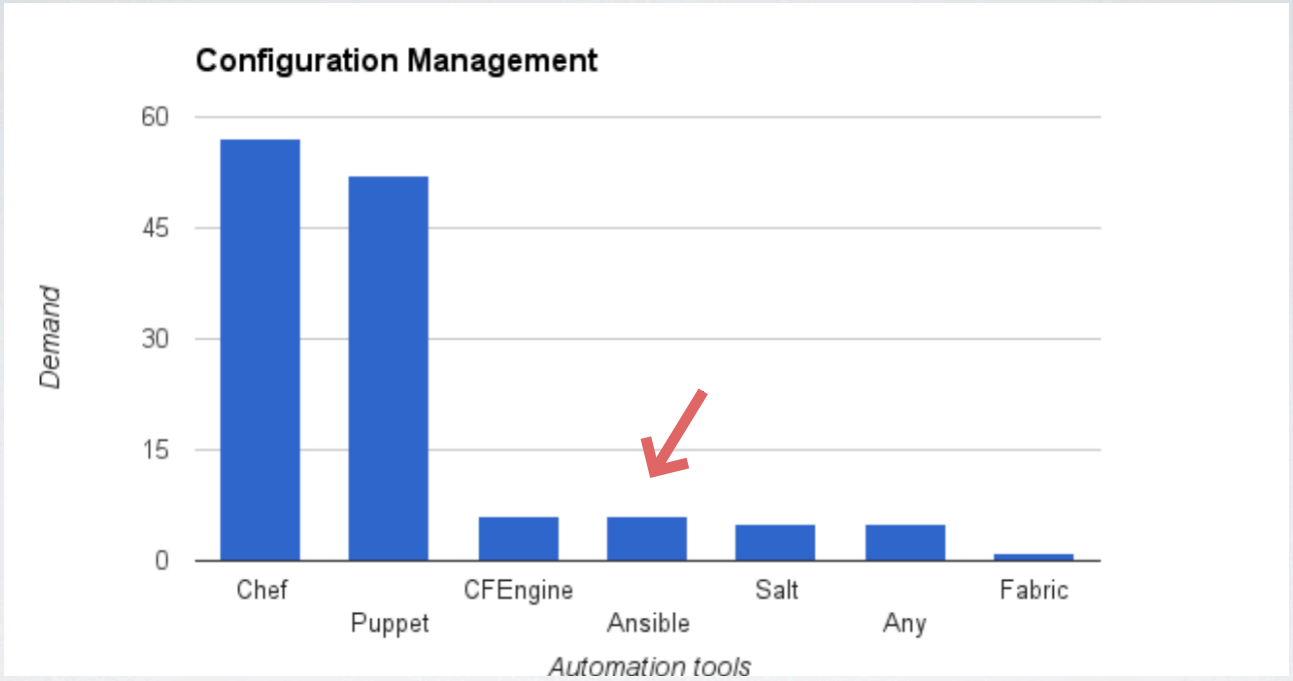
RALEIGH, N.C.--(BUSINESS WIRE)--Red Hat, Inc. (NYSE: RHT), the world's leading provider of open source solutions, today announced that it has signed a definitive agreement to acquire Ansible, Inc., a provider of powerful IT automation solutions designed to help enterprises move toward frictionless IT. Ansible's automation capabilities, together with Red Hat's existing management portfolio, will help users drive down the cost and complexity of deploying and managing both cloud-native and traditional applications across hybrid cloud environments. With today's announcement, Red Hat expands its leadership in hybrid cloud management, OpenStack and containers.

"Management's Discussion and Analysis of Financial Condition and Results of Operations."

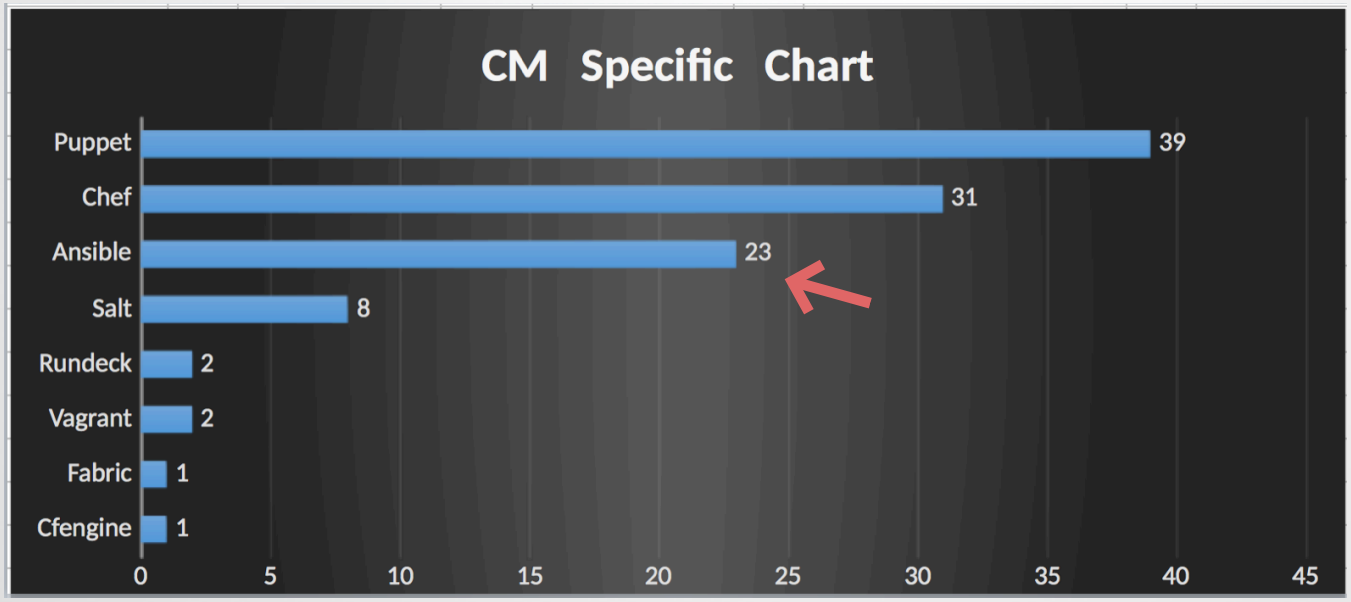
Tweet this

Ansible's simple and agentless approach, unlike competing solutions, does not require any special coding skills, removing some of the most significant barriers to automation across IT. From deployment and configuration to rolling upgrades, by adding Ansible to its hybrid management portfolio, Red Hat will help customers to:

src: http://www.businesswire.com/news/home/20151016005177/en


Configuration Management
60
45
30
15
0
Demand
Chef
Puppet
CFEngine
Ansible
Salt
Any
Fabric
Automation tools

2014


CM Specific Chart
Puppet
Chef
Ansible
Salt
Rundeck
Vagrant
Fabric
Cfengine
39
31
23
8
2
2
1
1
0
5
10
15
20
25
30
35
40
45

2016

```
Ansible Releases at a Glance
============================

Active Development
++++++++++++++++++

2.2    TBD - in progress

Released
++++++++

2.1.0  "The Song Remains the Same" in progress
2.0.2  "Over the Hills and Far Away" 04-19-2016
2.0.1  "Over the Hills and Far Away" 02-24-2016
2.0.0  "Over the Hills and Far Away" 01-12-2016
1.9.6  "Dancing In the Streets" 04-15-2016
1.9.5  "Dancing In the Streets" 03-21-2016
1.9.4  "Dancing In the Streets" 10-09-2015
1.9.3  "Dancing In the Streets" 09-03-2015
1.9.2  "Dancing In the Streets" 06-24-2015
1.9.1  "Dancing In the Streets" 04-27-2015
1.9.0  "Dancing In the Streets" 03-25-2015
1.8.4  "You Really Got Me" ---- 02-19-2015
1.8.3  "You Really Got Me" ---- 02-17-2015
1.8.2  "You Really Got Me" ---- 12-04-2014
1.8.1  "You Really Got Me" ---- 11-26-2014
1.7.2  "Summer Nights" -------- 09-24-2014
1.7.1  "Summer Nights" -------- 08-14-2014
1.7    "Summer Nights" -------- 08-06-2014
```

RELEASES

Led Zeppelin songs

Van Halen songs

CUSTOMER STORIES

WHO IS USING IT ?

SPLUNK

RUNNABLE

FATMAP

REFERENCES

- Timeline: https://www.crunchbase.com/organization/ansible/timeline#/timeline/indexBullet Two
- The Origins of Ansible by Michael DeHaan https://www.ansible.com/blog/2013/12/08/the-origins-of-ansible
- BusinessWire Article on RedHat's acquisition of Ansible http://www.businesswire.com/news/home/20151016005177/en