

The logo for Red Hat Summit, featuring the words "RED HAT" in a smaller font above "SUMMIT" in a larger, bold font, all contained within a white speech bubble shape.

RED HAT  
**SUMMIT**

# Automating, Securing, and Managing Cox Automotive's (AutoTrader) Big Data Infrastructure

with Ansible, Insights, and Satellite

Abdi Hersi, Senior Linux Engineer  
Cox Automotive  
Will Nix, Principal Technical Marketing Manager  
Red Hat

Summit 2017



# Abdi Hersi, Cox Automotive Big Data

Focused on IT infrastructure build and automation processes to deploy and manage Cox Auto's Big Data infrastructure using Red Hat Platforms

# Will Nix, Red Hat Management BU

Converged management solutions for Red Hat's strategic partners and customers.



# AGENDA

**RED HAT MANAGEMENT OVERVIEW**  
**WHY AUTOMATE?**  
**BEFORE & AFTER**  
**THE SOLUTION**  
**DISCUSSION / Q & A**

# MANAGEMENT OVERVIEW

# Management Portfolio

## ANSIBLE

by Red Hat®

AUTOMATE YOUR IT  
PROCESSES & DEPLOYMENTS

Simple & powerful language

No agents to install

Scale with **Ansible Tower**

## RED HAT® INSIGHTS

PREVENT CRITICAL ISSUES  
BEFORE THEY OCCUR

Continuous Insights

Verified Knowledge

Proactive Resolution

## RED HAT® SATELLITE

BUILD A TRUSTED & SECURE  
RED HAT ENVIRONMENT

Manage the Red Hat Lifecycle

Provision & Configure at Scale

Standardize Your Environment

## CLOUDFORMS

DELIVER SERVICES ACROSS  
YOUR HYBRID CLOUD

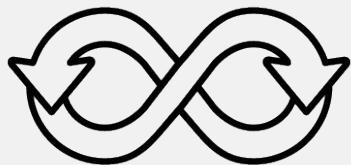
Hybrid Cloud Management

Self-Service Provisioning

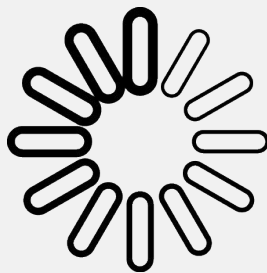
Policy-driven Compliance

# INNOVATION IN A COMPLEX WORLD

Under increasing pressure, businesses need to bring new ideas to market rapidly through:



DYNAMIC PLATFORM  
DEVELOPMENT



EFFICIENT  
DELIVERY



WELL TESTED  
CHANGES

# INNOVATION IN A COMPLEX WORLD

The required technology is becoming increasingly complex by nature demanding greater overhead to achieve:

✓ AVAILABILITY AND STABILITY

✓ OPTIMAL PERFORMANCE

✓ CONSISTENT SECURITY

Minimizing that overhead reduces cost and affords innovative focus.

# COMPLEXITY IS RISK

**80%**

Percent of commercial application outages caused by software failure and operational complexity

**Carnegie Mellon**

**\$336** k/hr

The median cost per hour of downtime for a production application for a large enterprise

**Gartner**

**\$15** m/yr

Mean annualized cost of cybercrime deference and remediation large US-based corporations

**Ponemon**  
INSTITUTE



# Management Portfolio

**ANSIBLE**

by Red Hat®

**AUTOMATE YOUR IT  
PROCESSES & DEPLOYMENTS**

Simple & powerful language

No agents to install

Scale with



**ANSIBLE  
TOWER**  
by Red Hat®

**RED HAT®  
INSIGHTS**

**PREVENT CRITICAL ISSUES  
BEFORE THEY OCCUR**

Continuous Insights

Verified Knowledge

Proactive Resolution

**RED HAT®  
SATELLITE**

**BUILD A TRUSTED & SECURE  
RED HAT ENVIRONMENT**

Manage the Red Hat Lifecycle

Provision & Configure at Scale

Standardize Your Environment

**RED HAT®  
CLOUDFORMS**

**DELIVER SERVICES ACROSS  
YOUR HYBRID CLOUD**

Hybrid Cloud Management

Self-Service Provisioning

Policy-driven Compliance

# Management Portfolio

## ANSIBLE

by Red Hat®

AUTOMATE YOUR IT  
PROCESSES & DEPLOYMENTS

Simple & powerful language

No agents to install

Scale with **Ansible Tower**

## RED HAT® INSIGHTS

PREVENT CRITICAL ISSUES  
BEFORE THEY OCCUR

Continuous Insights

Verified Knowledge

Proactive Resolution

## RED HAT® SATELLITE

BUILD A TRUSTED & SECURE  
RED HAT ENVIRONMENT

Manage the Red Hat Lifecycle

Provision & Configure at Scale

Standardize Your Environment

## RED HAT® CLOUDFORMS

DELIVER SERVICES ACROSS  
YOUR HYBRID CLOUD

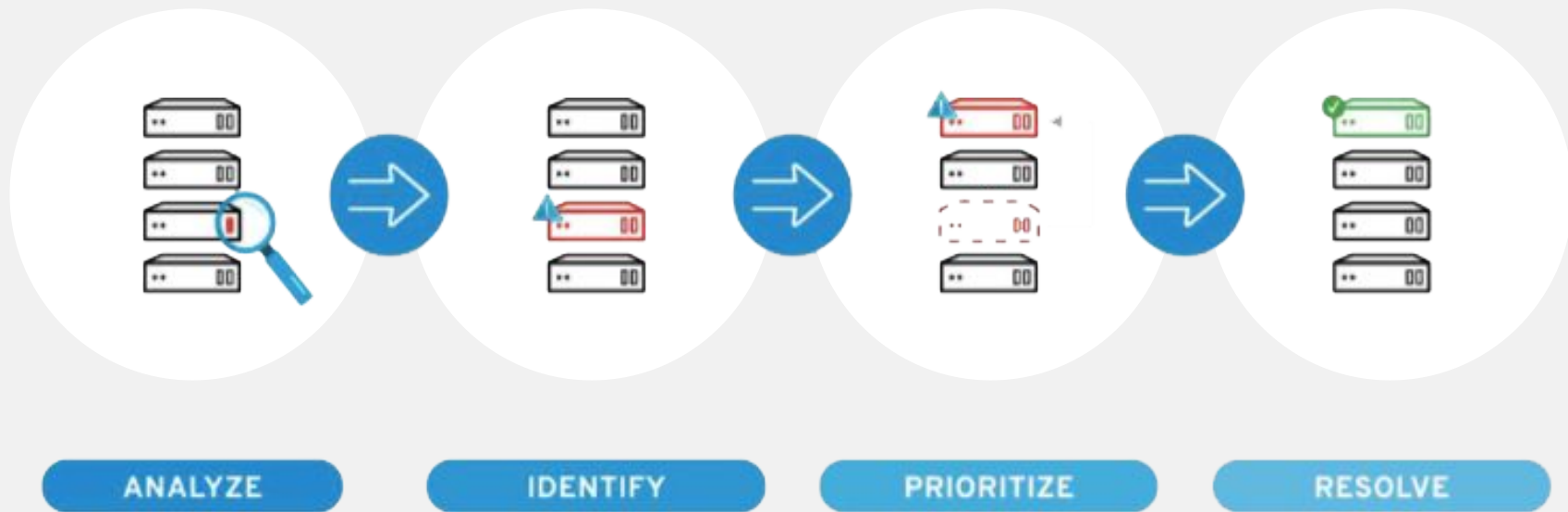
Hybrid Cloud Management

Self-Service Provisioning

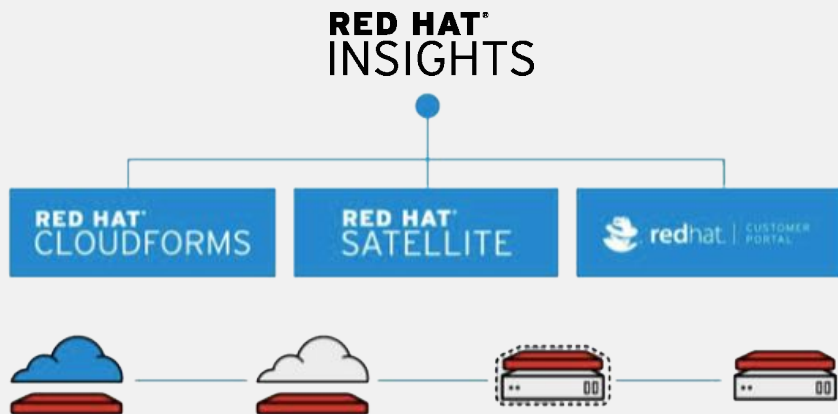
Policy-driven Compliance

# MANAGING INFRASTRUCTURE RISK

Automatic remediation



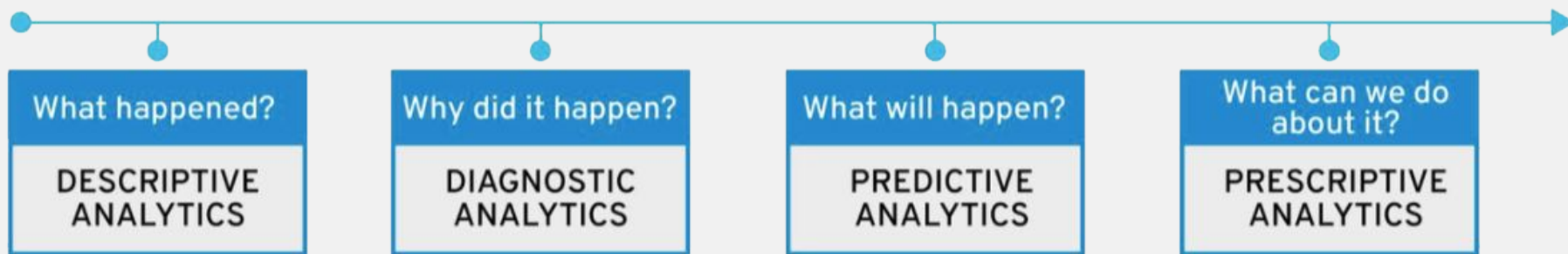
# INTEGRATED INTO THE TOOLS YOU USE



- Works on physical, cloud, and container-based workloads
- No new infrastructure to manage
- Integrated into Satellite 5.7, 6.1+ Cloudforms 4.0+, and the Red Hat Customer Portal
- API available for customer integration
- Insights + TAM drives deeper customer conversations and delivers regular assessments
- Insights + Satellite uses Insights to identify and prioritize risks and Satellite to patch so customers can fix things faster

# IT OPERATIONAL ANALYTICS: RED HAT INSIGHTS

## RED HAT<sup>®</sup> INSIGHTS

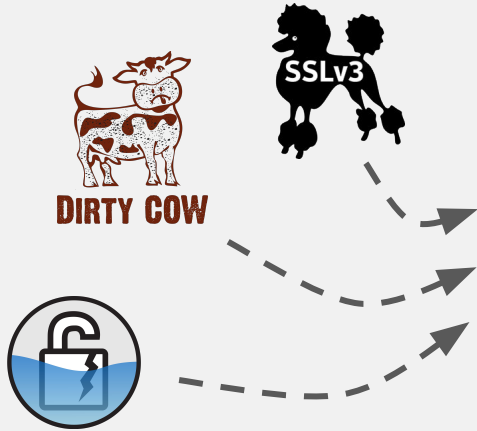


“ ”

*We have taken a position that, by 2018, 25 percent of the Global 2000 will have deployed an IT Operations Analytics platform (...) up from about 2 percent today.*

– **WILL CAPPELLI**, VP & Research Analyst, Gartner

# Identify issues with Red Hat Insights



Playbook

# ... and automate remediations



Add insights = tower video



# Management Portfolio

## ANSIBLE

by Red Hat®

AUTOMATE YOUR IT  
PROCESSES & DEPLOYMENTS

Simple & powerful language

No agents to install

Scale with **Ansible Tower**

## RED HAT® INSIGHTS

PREVENT CRITICAL ISSUES  
BEFORE THEY OCCUR

Continuous Insights

Verified Knowledge

Proactive Resolution

## RED HAT® SATELLITE

BUILD A TRUSTED & SECURE  
RED HAT ENVIRONMENT

Manage the Red Hat Lifecycle

Provision & Configure at Scale

Standardize Your Environment

## RED HAT® CLOUDFORMS

DELIVER SERVICES ACROSS  
YOUR HYBRID CLOUD

Hybrid Cloud Management

Self-Service Provisioning

Policy-driven Compliance

# Management Portfolio

## ANSIBLE

by Red Hat®

AUTOMATE YOUR IT  
PROCESSES & DEPLOYMENTS

Simple & powerful language

No agents to install

Scale with **Ansible Tower**

## RED HAT® INSIGHTS

PREVENT CRITICAL ISSUES  
BEFORE THEY OCCUR

Continuous Insights

Verified Knowledge

Proactive Resolution

## RED HAT® SATELLITE

BUILD A TRUSTED & SECURE  
RED HAT ENVIRONMENT

Manage the Red Hat Lifecycle

Provision & Configure at Scale

Standardize Your Environment

## RED HAT® CLOUDFORMS

DELIVER SERVICES ACROSS  
YOUR HYBRID CLOUD

Hybrid Cloud Management

Self-Service Provisioning

Policy-driven Compliance

# Infrastructure

## ANSIBLE

by Red Hat®

AUTOMATE YOUR IT  
PROCESSES & DEPLOYMENTS

Simple & powerful language

No agents to install

Scale with **Ansible Tower**

## RED HAT® INSIGHTS

PREVENT CRITICAL ISSUES  
BEFORE THEY OCCUR

Continuous Insights

Verified Knowledge

Proactive Resolution

## RED HAT® SATELLITE

BUILD A TRUSTED & SECURE  
RED HAT ENVIRONMENT

Manage the Red Hat Lifecycle

Provision & Configure at Scale

Standardize Your Environment

## RED HAT® CLOUDFORMS

DELIVER SERVICES ACROSS  
YOUR HYBRID CLOUD

Hybrid Cloud Management

Self-Service Provisioning

Policy-driven Compliance

RHEL

Gluster

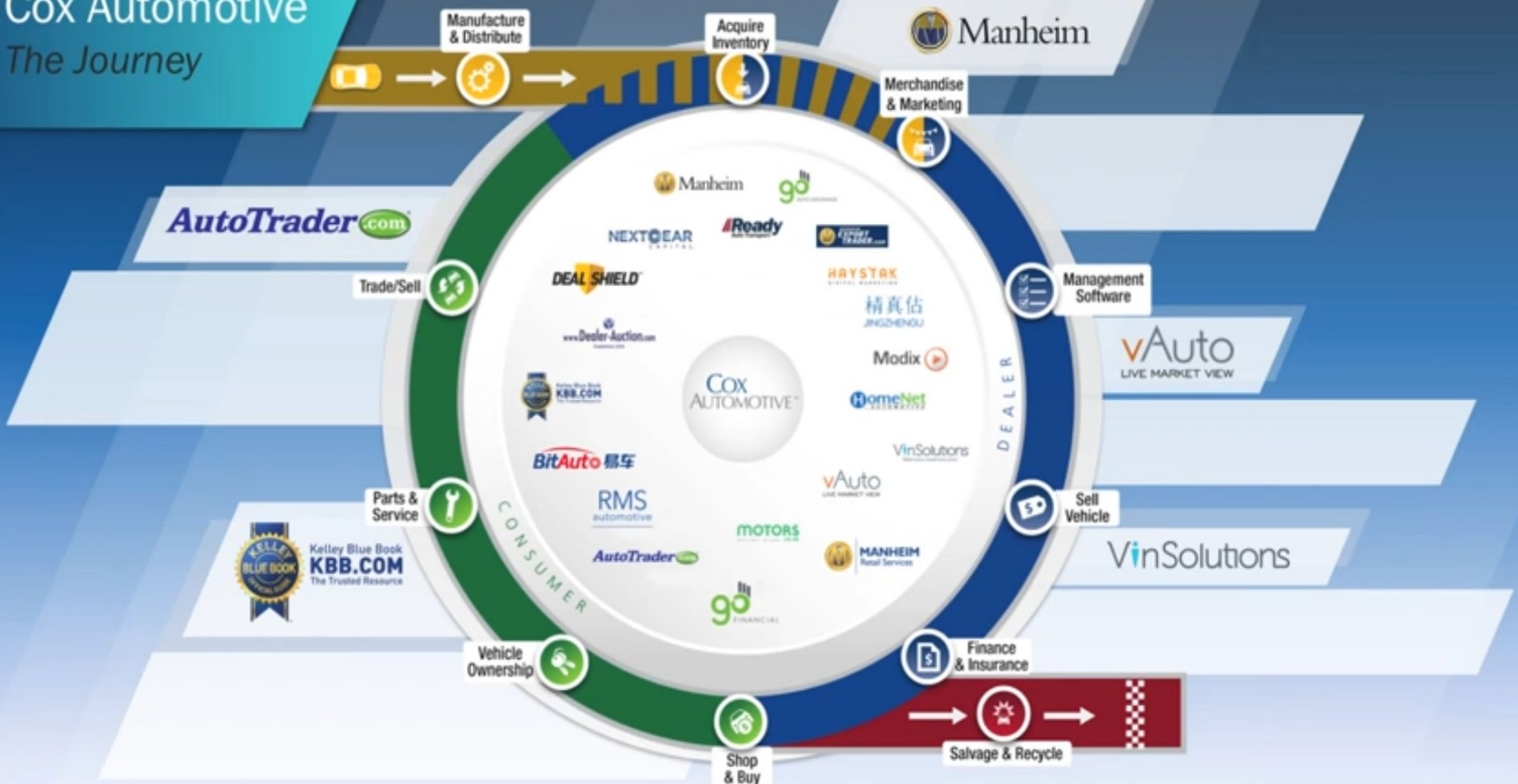
RHV

# WHY AUTOMATE

# Cox Automotive Network

# Cox Automotive

The Journey



Cox Automotive drives on-time delivery of IT resources



 **200+**

---

**LOCATIONS ACROSS THE GLOBE**

---

**WITH 30,000+ TEAM MEMBERS**

# WHY Build Hadoop Computing Cluster for Cox Automotive?



# WHY AUTOMATE?

# WHY CI/CD Pipeline?

# WHY AUTOMATE?

- Difficult to manage growing infrastructure
- No centralized User authentication
- System provisioning was time consuming
- Configuration management

# INFRASTRUCTURE SPRAWL

- Difficult to manage growing infrastructure
  - System provisioning was time consuming
- Many systems in different datacenters and the cloud and networks make difficult to manage



# NO CENTRALIZED USER AUTHENTICATION

- Difftakj avbi
  - problem
- User auth
  - Problem

# BEFORE AUTOMATION



## Challenges faced before integrating Cox-Auto Big Data with Ansible

- Significant time consumed during the Kickstart of a system.
- Manually configure (Storage, authentication, Kernel setting parameters, application setting in the conf file such as (ntp, sudoers, ulimit )
- Validate and test the system provision process such ( typos, configs, and etc..)



# MANUAL PROVISIONING



- Location (DataCenter)
  - Identify where the system will live in
- OS Version
  - Identify which Linux OS version will be used (RHEL5.x, RHEL6.x, or RHEL7.x)
- Network and DNS
  - Add the appropriate Networking and create a DNS record for the system
- Start the Kickstart Process
  - Add system to the DHCP config and create MAC address filename and Symbolic link to the OS images ( RHEL5.x, RHEL6.x, or RHEL7.x )

# MORE manual provisioning

How we used to do it



# CONFIGURATION MANAGEMENT

Configuration management:

Maintaining consistency, how hard it was to manage everything without a management suite and automation.

**THATS A LOT OF MANUAL WORK**

# WHY AUTOMATE?



- ~~Difficult to manage growing infrastructure~~
- Easier to manage infrastructure growth
- ~~No centralized User authentication~~
- Centralized access control
- ~~System provisioning was time consuming~~
- Fast deployments
- ~~Configuration management~~
- Eliminate config drift

# Deployed Infrastructure

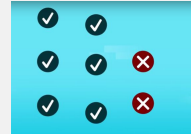
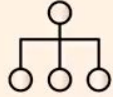
Provisioning Cox Auto Big Data Infrastructure using  
Red Hat Satellite 6 - [Demo](#)

# OUR SOLUTION

# Satellite at Autotrader

What Does Satellite do for Cox-Auto Big Data Infrastructure?

- Centralized location for provision BigData instance(s)
  - Automate Provisioning using PXE, Images & Containers
- Our dynamic source of Inventory for the Ansible Tower
- Integrated with Red Hat Insights
  - We can predict and prevent issue before they occur in our Big Data infrastructure and affects our business--And, tells us how to take correct of action



## SATELLITE

BUILD A TRUSTED & SECURE  
RED HAT ENVIRONMENT

Manage the Red Hat Lifecycle  
Provision & Configure at Scale  
Standardize Your Environment



# Deployed Infrastructure (Host Group Profile)

Host | Puppet Classes | Interfaces | Operating System | Virtual Machine | Parameters | Additional Information

Name \*  This value is used also as the host's primary interface name.

Organization \*

Location \*

Host Group  ✕ ▲

Deploy on

Compute profile

Lifecycle Environment

Content View

Puppet Environment  ✕ ▲

Content Source  ✕ ▼ Use this as a source for installing Puppet modules.

Puppet CA  ▼ Use this puppet server as a CA server.

Puppet Master  ▼ Use this puppet server as an initial Puppet Server or to execute puppet runs.

OpenStack Console

host group definition by:  
key: "{{[appname]}}\_{{[approle]}}\_{{[sd1c]}}"



# Deployed Infrastructure (RHEL OS Images)

coxauto\_bigdata ▾ Monitor ▾ Content ▾ Containers ▾ Hosts ▾ Configure ▾ Infrastructure ▾ Red Hat Insights ▾ Administer ▾

Host Puppet Classes Interfaces **Operating System** Virtual Machine Parameters Additional Information

Architecture \* x86\_64 ✕ ▾

Operating system \* RedHat 6.6 ✕ ▾

Provisioning Method \*

Build mode RedHat 5.11

Media Selection RedHat 5.8  
RedHat 5.9  
RedHat 6.3  
RedHat 6.4  
RedHat 6.5  
**RedHat 6.6**


Media \* coxauto\_bigdata/Library/Red\_Hat\_Server/Red\_Hat\_En... ✕ ▾

Partition table \* bigdata default partitions ✕ ▾

Custom partition table

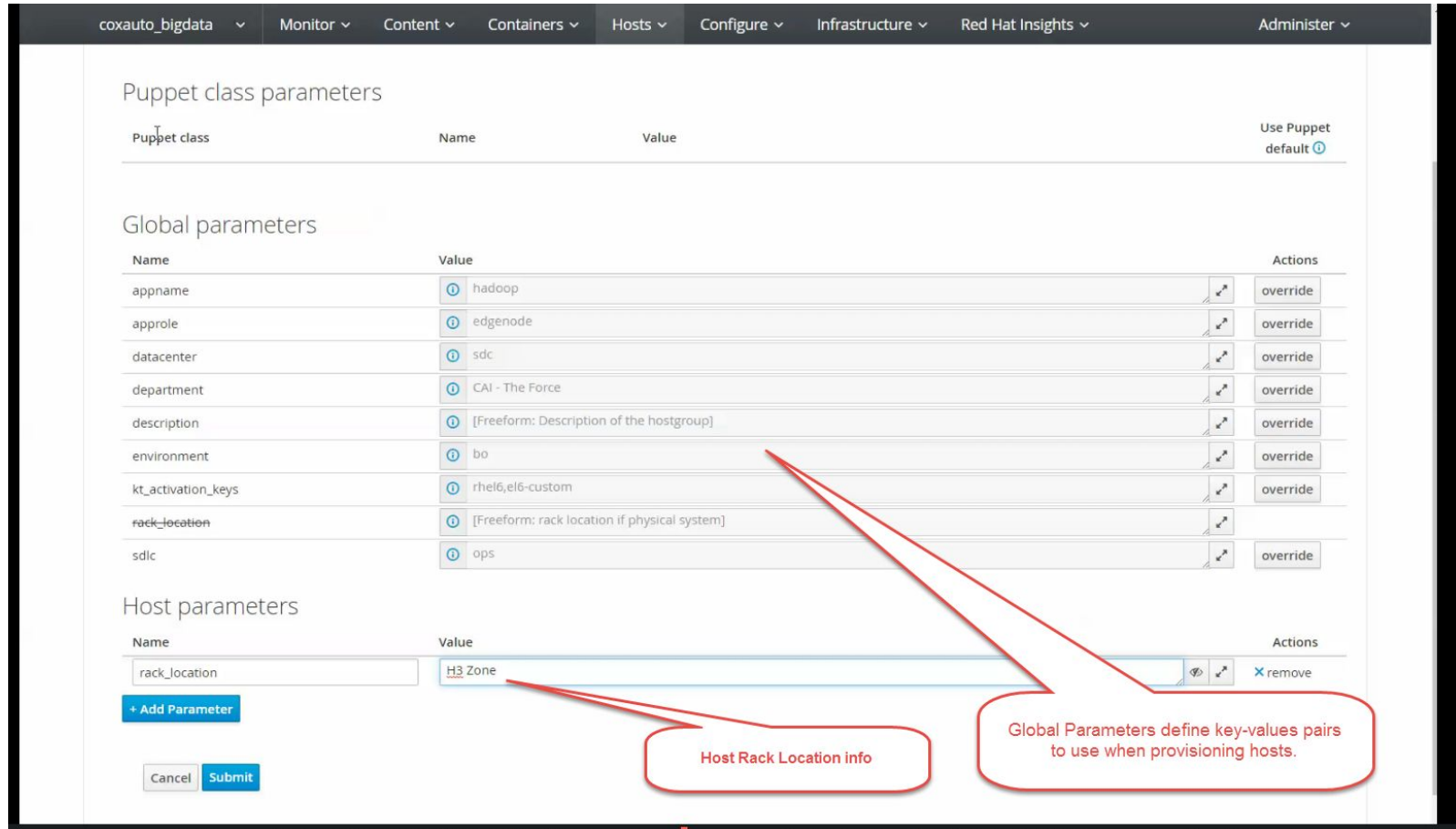
What ever text(or ERB template) you use in here, would be used as your OS disk layout options if you want to use the partition table option, delete all of the text from this field

Root password \*  Password must be 8 characters or more



RHEL Operating Systems images

# Deployed Infrastructure (Global Parameters)



The screenshot displays a web interface for managing infrastructure parameters. The top navigation bar includes menus for 'coxauto\_bigdata', 'Monitor', 'Content', 'Containers', 'Hosts', 'Configure', 'Infrastructure', 'Red Hat Insights', and 'Administer'.

**Puppet class parameters**

Puppet class	Name	Value	Use Puppet default
--------------	------	-------	--------------------

**Global parameters**

Name	Value	Actions
appname	hadoop	override
approle	edgenode	override
datacenter	sdic	override
department	CAI - The Force	override
description	[Freeform: Description of the hostgroup]	override
environment	bo	override
kt_activation_keys	rhel6,el6-custom	override
rack_location	[Freeform: rack location if physical system]	override
sdic	ops	override

**Host parameters**

Name	Value	Actions
rack_location	H3 Zone	remove

**Host Rack Location info**

**Global Parameters define key-values pairs to use when provisioning hosts.**



# Insights at Autotrader

What does Insights do for us?

Deploys automatically on provisioning

Monitors for infrastructure performance and problems

Ensures big data systems meet security and stability standards

Provides zero-day alerts for emerging risks

Ability to automate remediation through Ansible

**RED HAT<sup>®</sup>**  
**INSIGHTS**



PREVENT CRITICAL ISSUES  
BEFORE THEY OCCUR

Continuous Insights

Verified Knowledge

Proactive Resolution

# Ansible Tower at Autotrader

What does Insights do for us?

Deploys automatically on provisioning

Monitors for infrastructure performance and problems

Ensures big data systems meet security and stability standards

Provides zero-day alerts for emerging risks

Ability to automate remediation through Ansible



AUTOMATE YOUR IT  
PROCESSES & DEPLOYMENTS

Simple & powerful language

No agents to install

Scale with **Ansible Tower**

# Deployed Infrastructure (Callback Feature)

JOB TEMPLATES / USG-BIGDATA-OS-NONPR...

\*INVENTORY ?

bigdata-inventory

Prompt on launch

\*MACHINE CREDENTIAL ?

ansprov

Prompt on launch

FORKS ?

30

JOB TAGS ?

Prompt on launch

PROVISIONING CALLBACK URL ?

https://:443/api/v1/job\_templates/456/

LABELS ?

\*PROJECT ?

usg-bigdata-os-NONPROD

CLOUD CREDENTIAL ?

LIMIT ?

Prompt on launch

SKIP TAGS ?

Prompt on launch

HOST CONFIG KEY ?

Prompt on launch

\*PLAYBOOK ?

site.yml

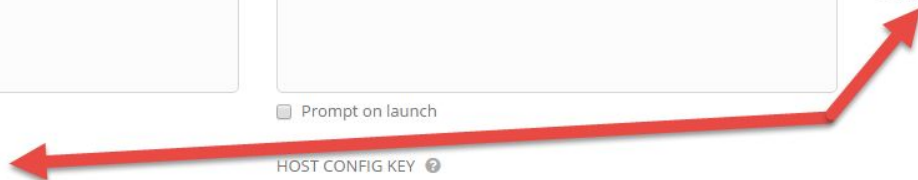
NETWORK CREDENTIAL ?

\*VERBOSITY ?

0 (Normal)

OPTIONS

- Enable Privilege Escalation ?
- Allow Provisioning Callbacks ?



# Ansible Tower at Autotrader

What does Insights do for us?

Deploys automatically on provisioning

Monitors for infrastructure performance and problems

Ensures big data systems meet security and stability standards

Provides zero-day alerts for emerging risks

Ability to automate remediation through Ansible



AUTOMATE YOUR IT  
PROCESSES & DEPLOYMENTS

Simple & powerful language

No agents to install

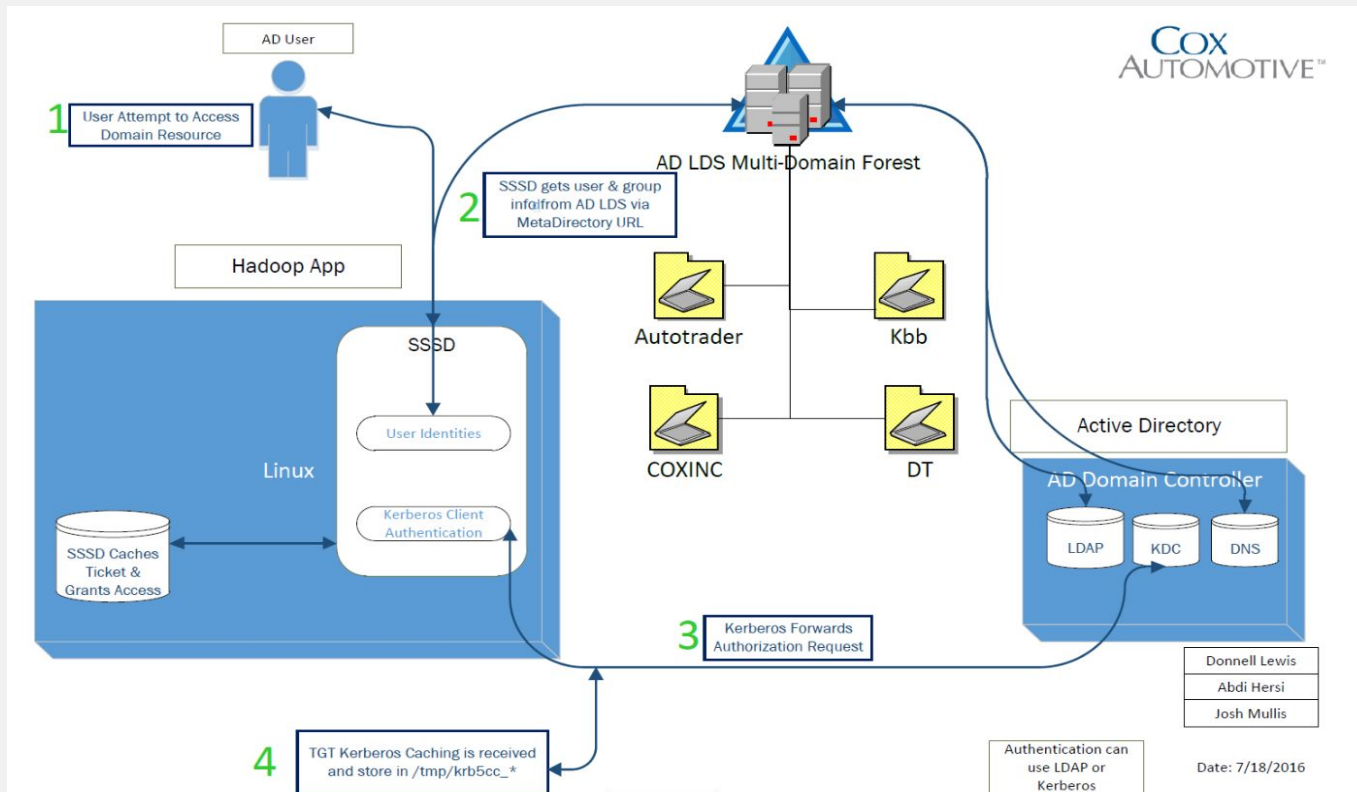
Scale with **Ansible Tower**

- No centralized User authentication
  - OneLogin Solution for Cox Auto Hadoop Computing Cluster

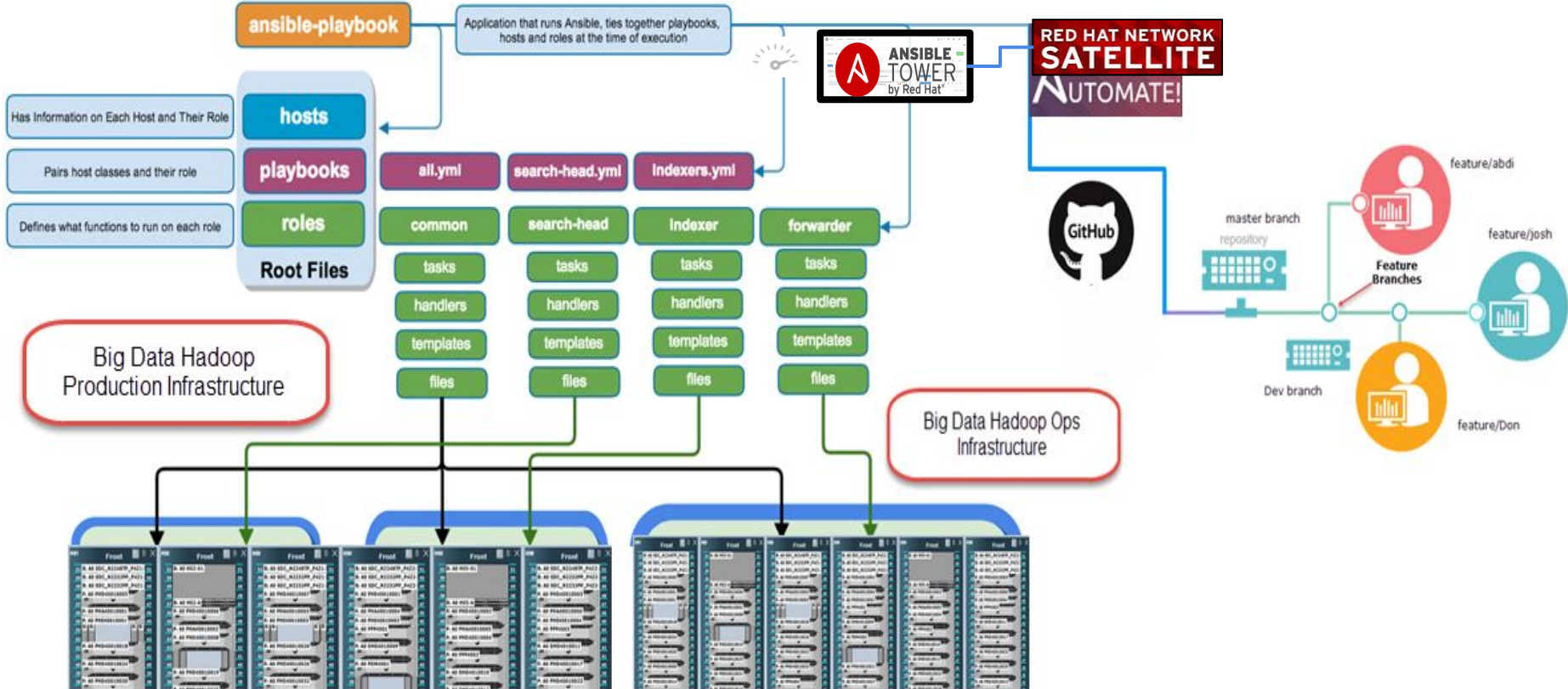




# OneLogin: CENTRALIZED AUTHENTICATION



# Continuous Delivery (CI/CD Pipeline)



# AUTOMATION HAS HELPED US

Increase Productivity

Manage Infrastructure growth

Significant time-savings

Maintain consistency



# QUESTIONS



# THANK YOU



[plus.google.com/+RedHat](https://plus.google.com/+RedHat)



[facebook.com/redhatinc](https://facebook.com/redhatinc)



[linkedin.com/company/red-hat](https://linkedin.com/company/red-hat)



[twitter.com/RedHatNews](https://twitter.com/RedHatNews)



[youtube.com/user/RedHatVideos](https://youtube.com/user/RedHatVideos)

The logo for Red Hat Summit, featuring the words "RED HAT" in a smaller font above "SUMMIT" in a larger, bold font, all contained within a white speech bubble shape.

**RED HAT  
SUMMIT**

**LEARN. NETWORK.  
EXPERIENCE  
OPEN SOURCE.**

# Deployed Infrastructure



**ANSIBLE**  
AUTOMATE YOUR IT  
PROCESSES & DEPLOYMENTS

Simple & powerful language  
No agents to install  
Scale with **Ansible Tower**

