Button Push Deployments With Integrated Red Hat Open Management

The power of automation

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About US

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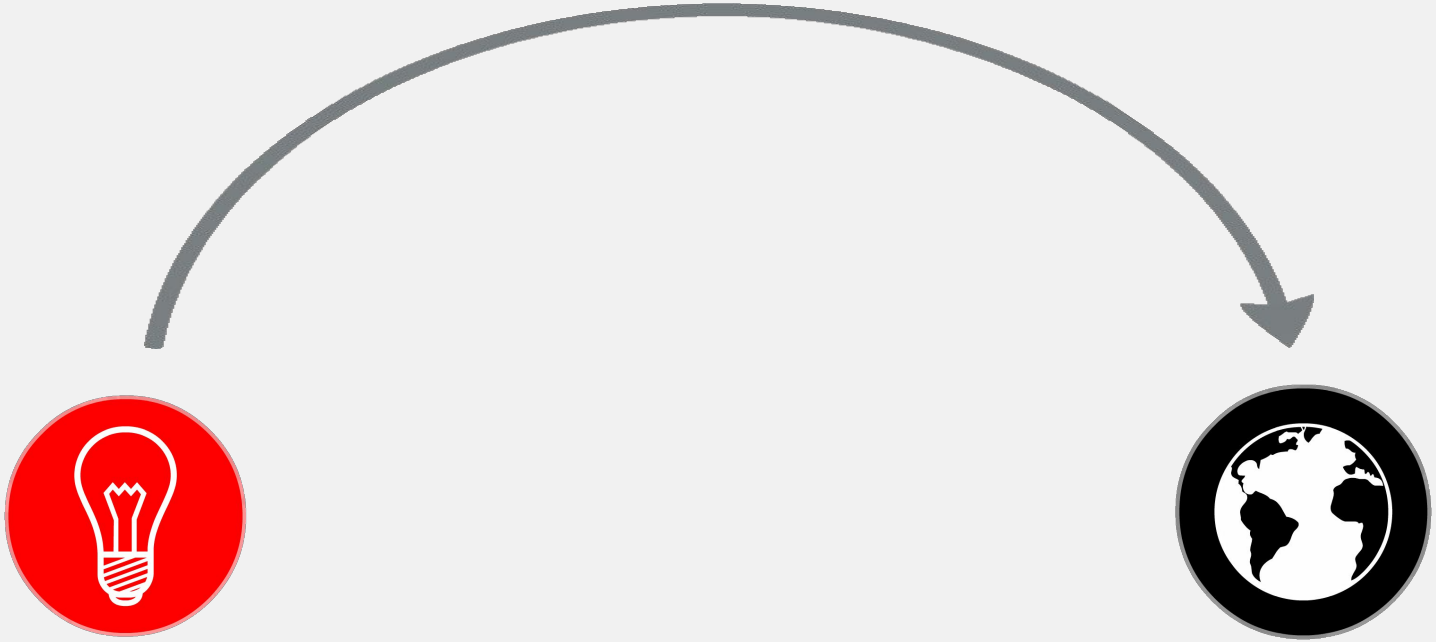
Intro

Ansible Tower, CloudForms, Insights, Satellite 6

- Why do we care?
- What problems are we solving?
- How do the Red Hat tools address this?
- What does it look like in action?



CODE

PROD

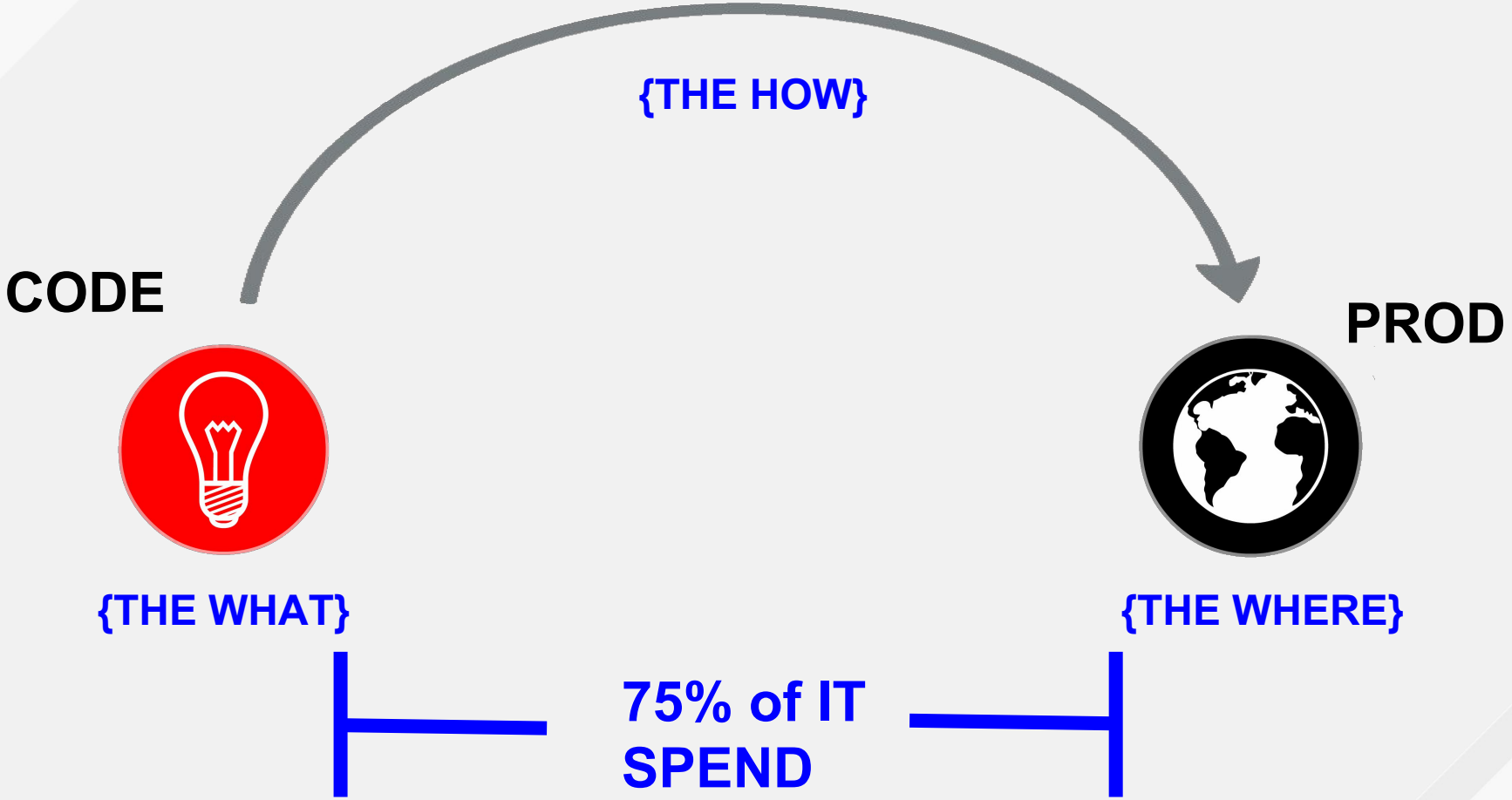
{THE HOW}

CODE

{THE WHAT}

PROD

{THE WHERE}



$ TRILLIONS PER YEAR

{THE HOW}

CODE

"The worst day in a company's life is the day they buy a large piece of software."

PROD

{THE WHAT}

{THE WHERE}

75% of IT SPEND

$ TRILLIONS PER YEAR

{THE HOW}

CODE

PROD

"The worst day in a company's life is the day they buy a large piece of software."

AUTOMATION IS THE HOW
WITHOUT THE OVERHEAD

{THE WHAT}

{THE WHERE}

75% of IT SPEND

$ TRILLIONS PER YEAR

One Button Push Away From Red Hat Management

Red Hat Management Automated

From start to finish in less than 3 hours with these ingredients

Satellite 6

CloudForms

Ansible Tower

Insights

Red Hat Management Automated

Prerequisites

- https://github.com/ldomb/rhsummit2017
- Minimum requirement ansible 2.2.1
- Ansible vault file with your passwords, private keys ...
- Ansible Tower License can be requested here:
  - https://www.ansible.com/license
- Satellite 6 Manifest
- An AWS account (AWS Cli)
- Private key for AWS instances
- CloudForms image in AWS (uploadcfme.yaml)

Red Hat Management Automated

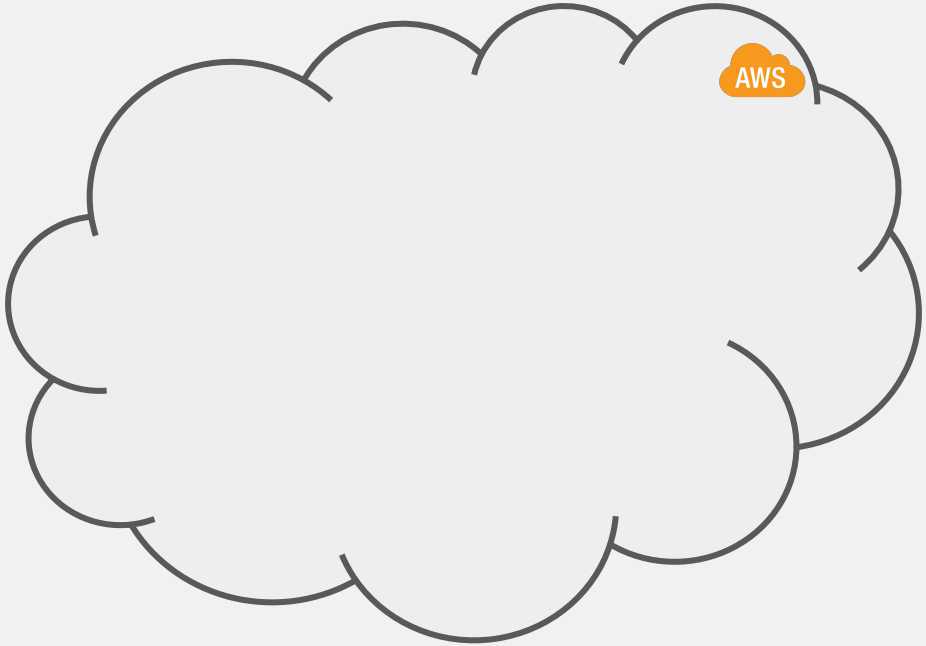
From start to finish in less than 3 hours with these ingredients

summit2017$ ansible-playbook buildrhmgmt.yaml --private-key=ldomb.pem --vault-password-file=../vaultpass -vv

RH-MANAGEMENT CORE

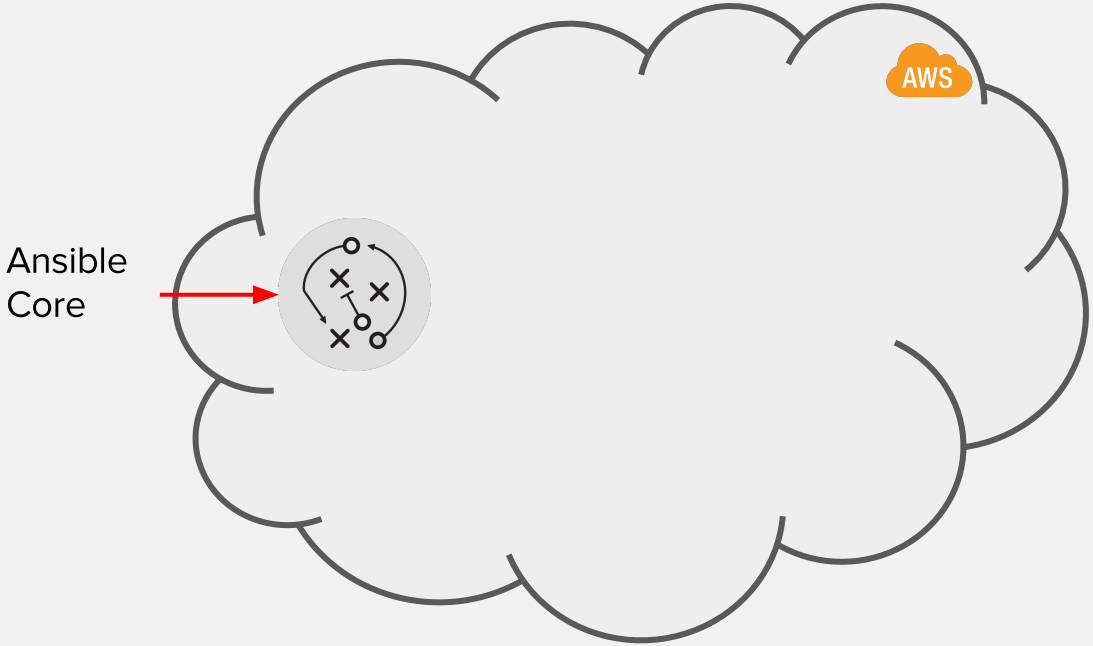
One click to rule them all - Foundation Installation Flow

Ansible
Core



RH-MANAGEMENT ANSIBLE TOWER

One click to rule them all - Foundation Installation Flow



RH-MANAGEMENT TOOLS

One click to rule them all - Foundation Installation Flow

```
TASK [manage-ec2-instances : add_host] ************************************
changed: [localhost] => (item={u'kernel': None, u'root_device_type': u'ebs', u'private_dns_name': u'ip-172-31-146-153.ec2.internal', u'public_ip':
 u'54.144.64.252', u'private_ip': u'172.31.146.153', u'id': u'i-0abbae05f7eb328d8', u'ebs_optimized': False, u'state': u'running', u'virtualizatio
n_type': u'hvm', u'root_device_name': u'/dev/sda1', u'ramdisk': None, u'block_device_mapping': {u'/dev/sda1': {u'status': u'attached', u'delete_on
_termination': True, u'volume_id': u'vol-0a8b0c5145e4626a0'}}, u'key_name': u'ldomb', u'image_id': u'ami-b63769a1', u'tenancy': u'default', u'grou
ps': {u'sg-5166b12e': u'rhmgmt'}, u'public_dns_name': u'ec2-54-144-64-252.compute-1.amazonaws.com', u'state_code': 16, u'tags': {u'Environment': u
'production', u'Type': u'towerrhsummit', u'Name': u'towerrhsummit'}, u'placement': u'us-east-1b', u'ami_launch_index': u'0', u'dns_name': u'ec2-54
-144-64-252.compute-1.amazonaws.com', u'region': u'us-east-1', u'launch_time': u'2017-04-28T15:43:22.000Z', u'instance_type': u'm3.large', u'archi
tecture': u'x86_64', u'hypervisor': u'xen'})

TASK [manage-ec2-instances : Wait for SSH banners] ****************************
ok: [localhost -> localhost] => (item={u'kernel': None, u'root_device_type': u'ebs', u'private_dns_name': u'ip-172-31-146-153.ec2.internal', u'pub
lic_ip': u'54.144.64.252', u'private_ip': u'172.31.146.153', u'id': u'i-0abbae05f7eb328d8', u'ebs_optimized': False, u'state': u'running', u'virtu
alization_type': u'hvm', u'root_device_name': u'/dev/sda1', u'ramdisk': None, u'block_device_mapping': {u'/dev/sda1': {u'status': u'attached', u'd
elete_on_termination': True, u'volume_id': u'vol-0a8b0c5145e4626a0'}}, u'key_name': u'ldomb', u'image_id': u'ami-b63769a1', u'tenancy': u'default'
, u'groups': {u'sg-5166b12e': u'rhmgmt'}, u'public_dns_name': u'ec2-54-144-64-252.compute-1.amazonaws.com', u'state_code': 16, u'tags': {u'Environ
ment': u'production', u'Type': u'towerrhsummit', u'Name': u'towerrhsummit'}, u'placement': u'us-east-1b', u'ami_launch_index': u'0', u'dns_name':
u'ec2-54-144-64-252.compute-1.amazonaws.com', u'region': u'us-east-1', u'launch_time': u'2017-04-28T15:43:22.000Z', u'instance_type': u'm3.large',
 u'architecture': u'x86_64', u'hypervisor': u'xen'})

PLAY [create tower] ***********************************************************

TASK [setup] ******************************************************************
ok: [54.144.64.252]

TASK [buildansibletower : get tar for ansibletower] ***************************
changed: [54.144.64.252]

TASK [buildansibletower : untar /tmp/ansible-tower-setup-bundle.tar.gz] ********
changed: [54.144.64.252]

TASK [buildansibletower : replace /tmp/ansible-tower-setup-bundle-3.1.2-1.el7/roles/nginx/tasks/tasks.yml] ***
changed: [54.144.64.252]

TASK [buildansibletower : add /etc/tower path to setting.py] ******************
changed: [54.144.64.252]

TASK [buildansibletower : copy inventory to setup folder] *********************
changed: [54.144.64.252]

TASK [buildansibletower : execute the tower installation] *********************
```

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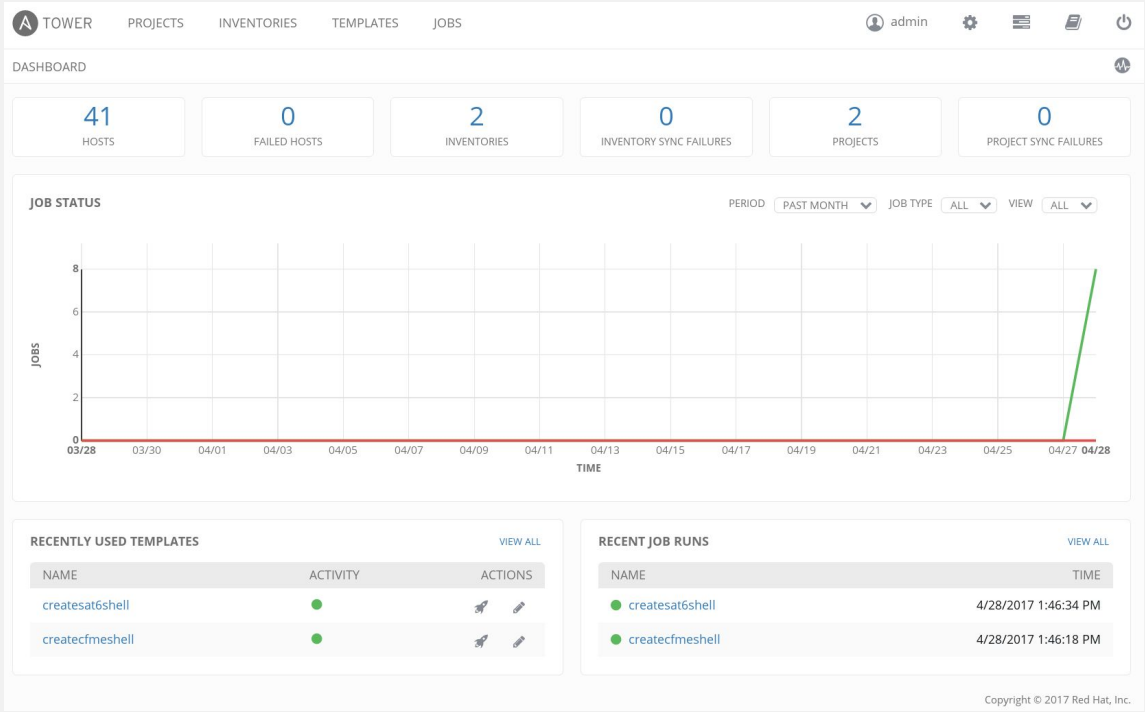
Building Ansible Tower - Gains



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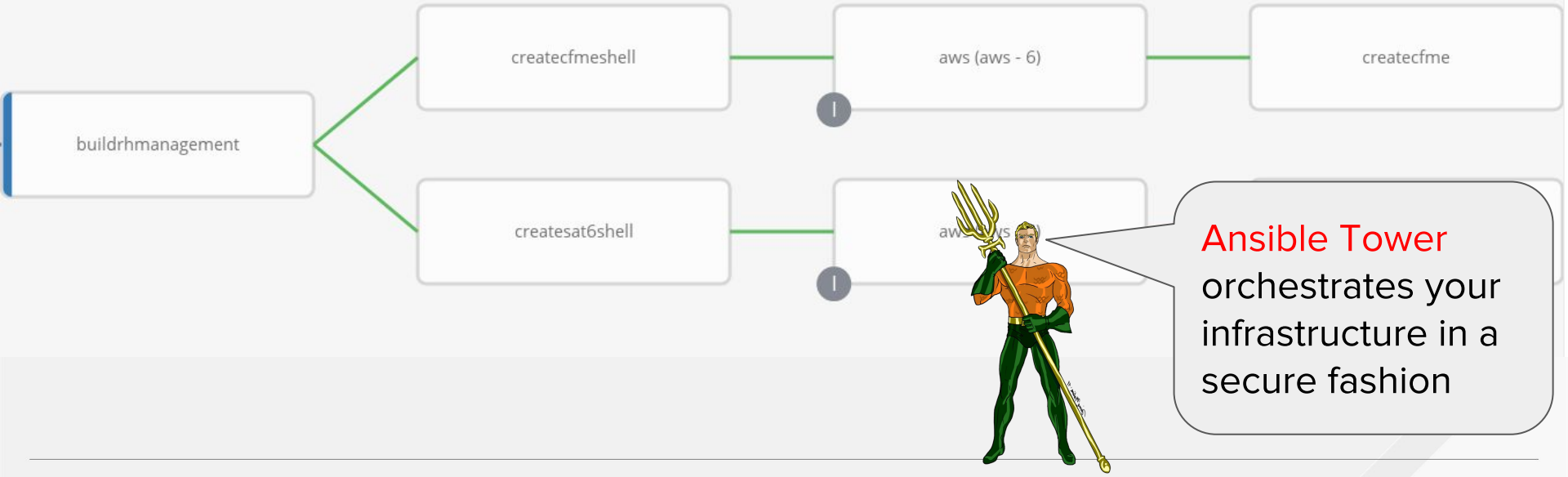
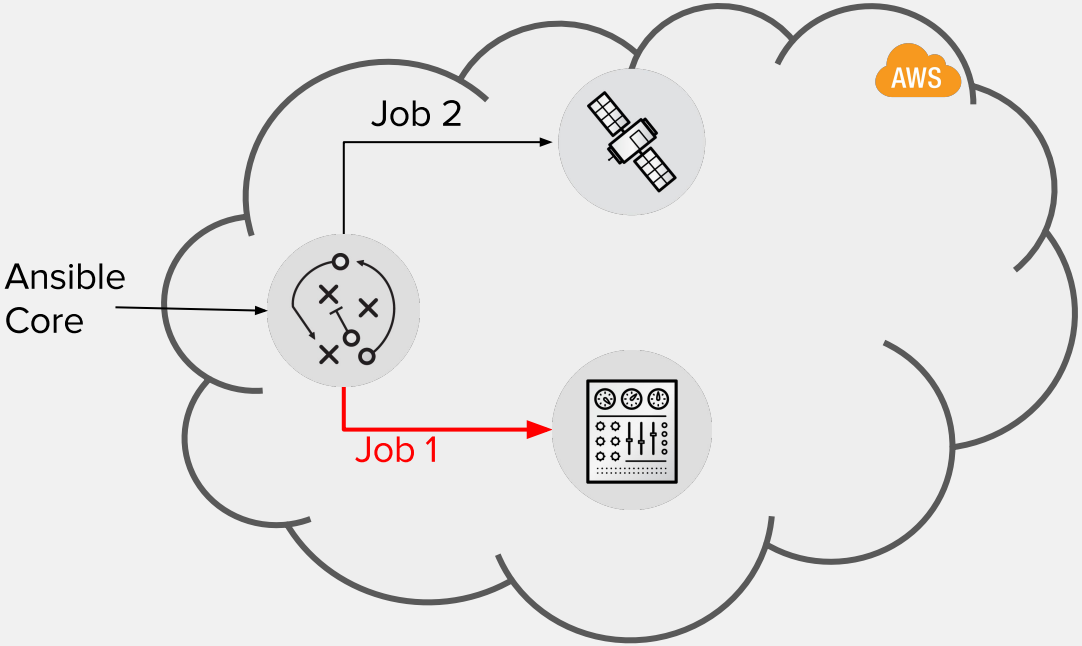
Building Ansible Tower - Gains - Workflow Editor



RH-MANAGEMENT SATELLITE 6 / CLOUDFORMS

One click to rule them all - Foundation Installation Flow



RH-MANAGEMENT TOOLS

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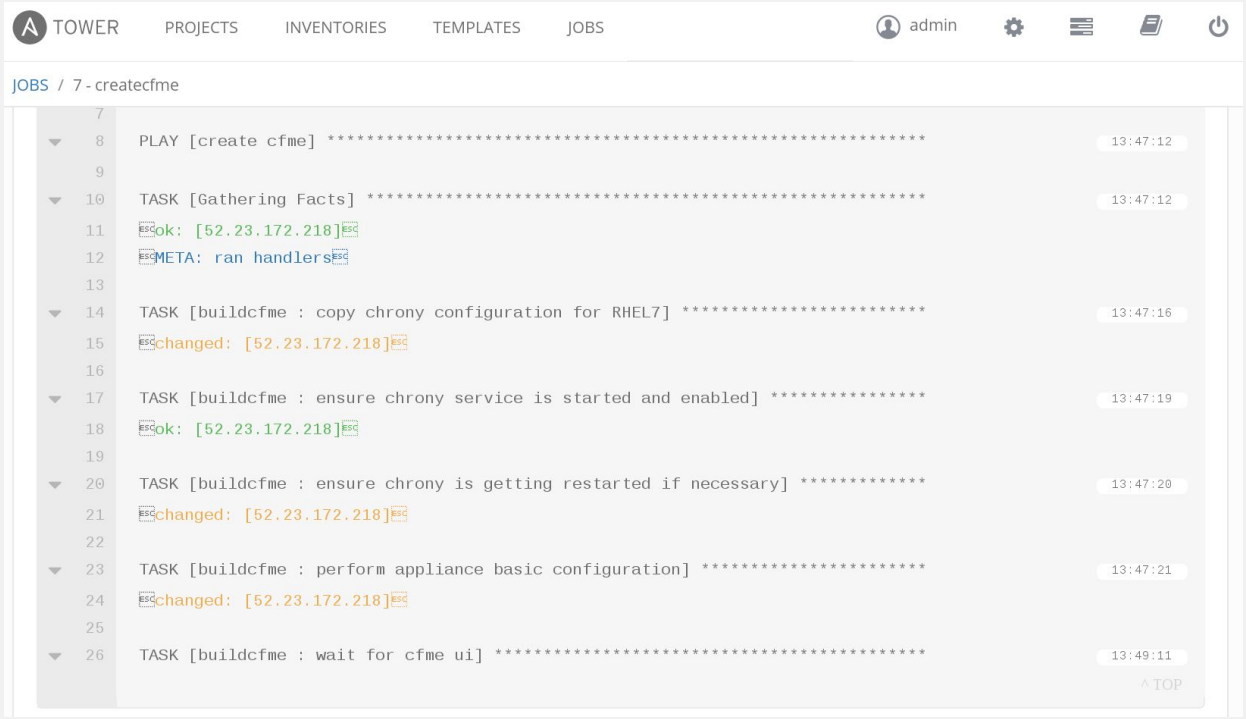

Job 1

RH-MANAGEMENT CLOUDFORMS

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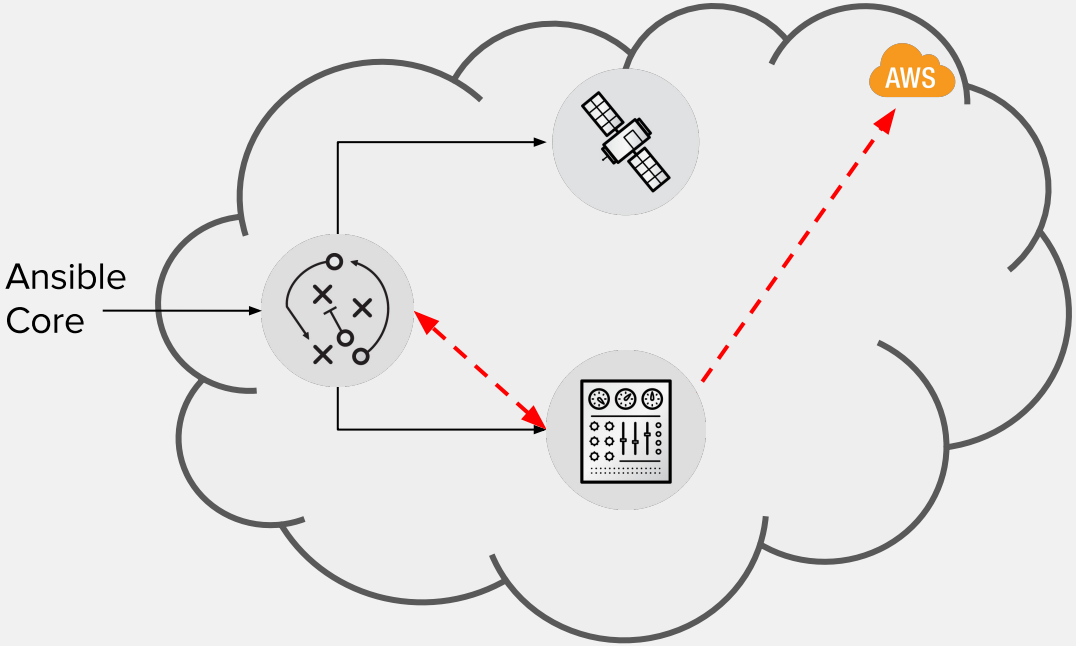
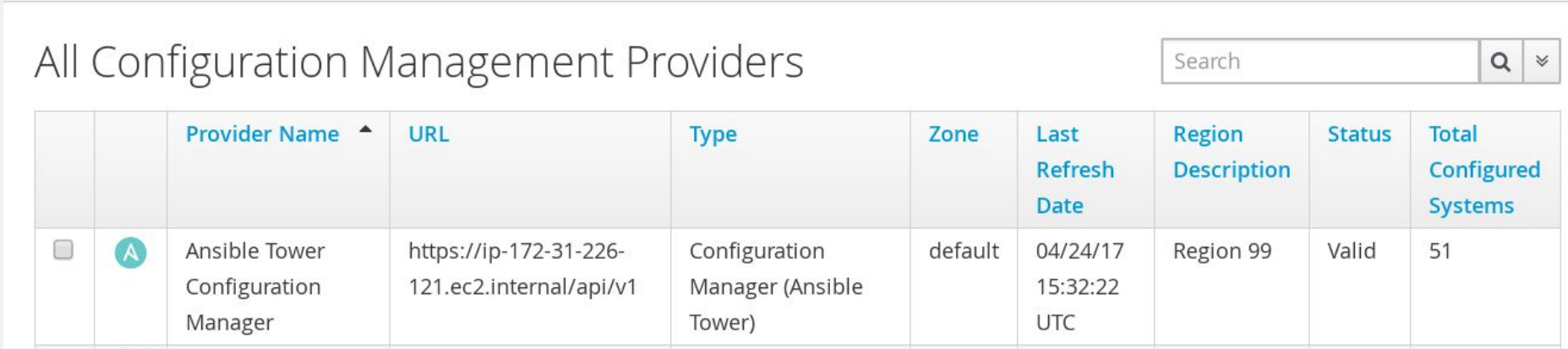


Red Hat Management Automated

CloudForms - Ansible Tower integration gains



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CloudForms - Ansible Tower integration gains

AWS01 (Summary)

Properties	
Region	US East (Northern Virginia)
Type	Amazon EC2
Management Engine GUID	a9ebf7b6-1ecd-11e7-83c8-12119dd96408
Region	us-east-1

Status	
Default Credentials	Valid
Last Refresh	Success - 17 Minutes Ago

Configuration	
Arbitration Profiles	0

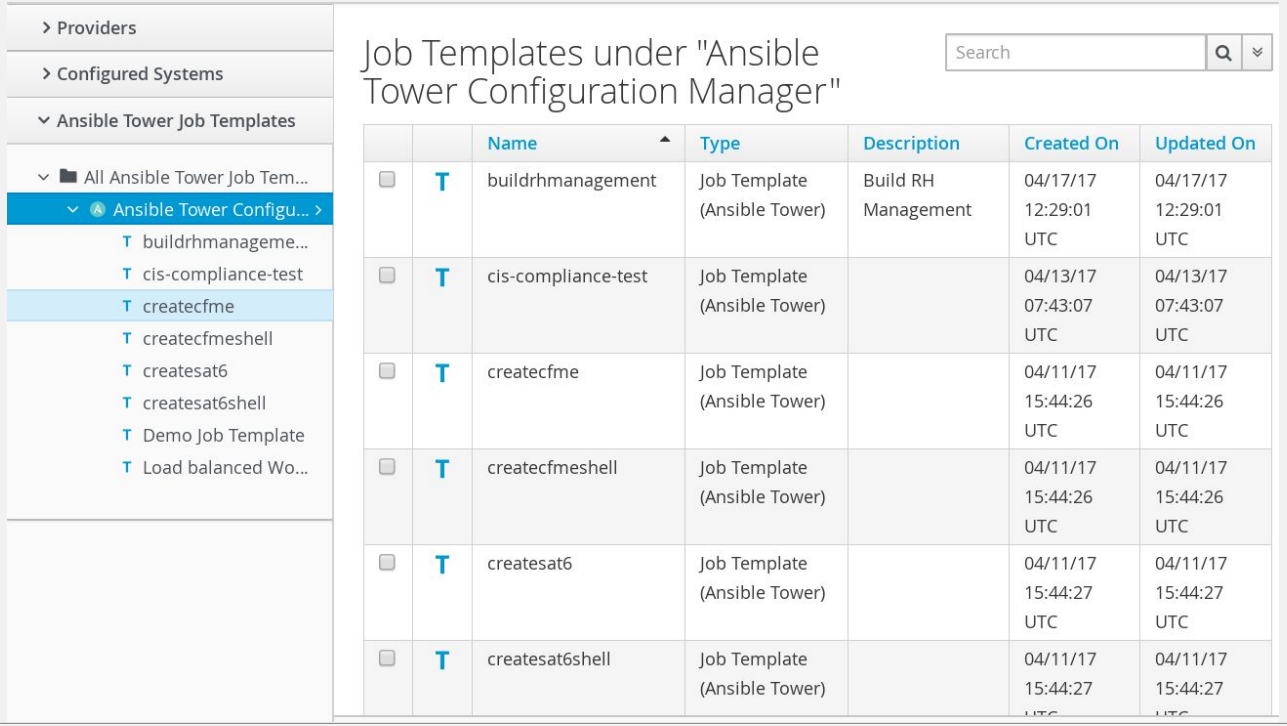
Relationships	
Network Manager	AWS01 Network Manager
Availability zones	5
Host aggregates	0
Cloud tenants	0
Flavors	76
Security Groups	25
Instances	12

Red Hat Management Automated

CloudForms - Ansible Tower integration gains

Red Hat Management Automated

CloudForms - Ansible Tower integration gains



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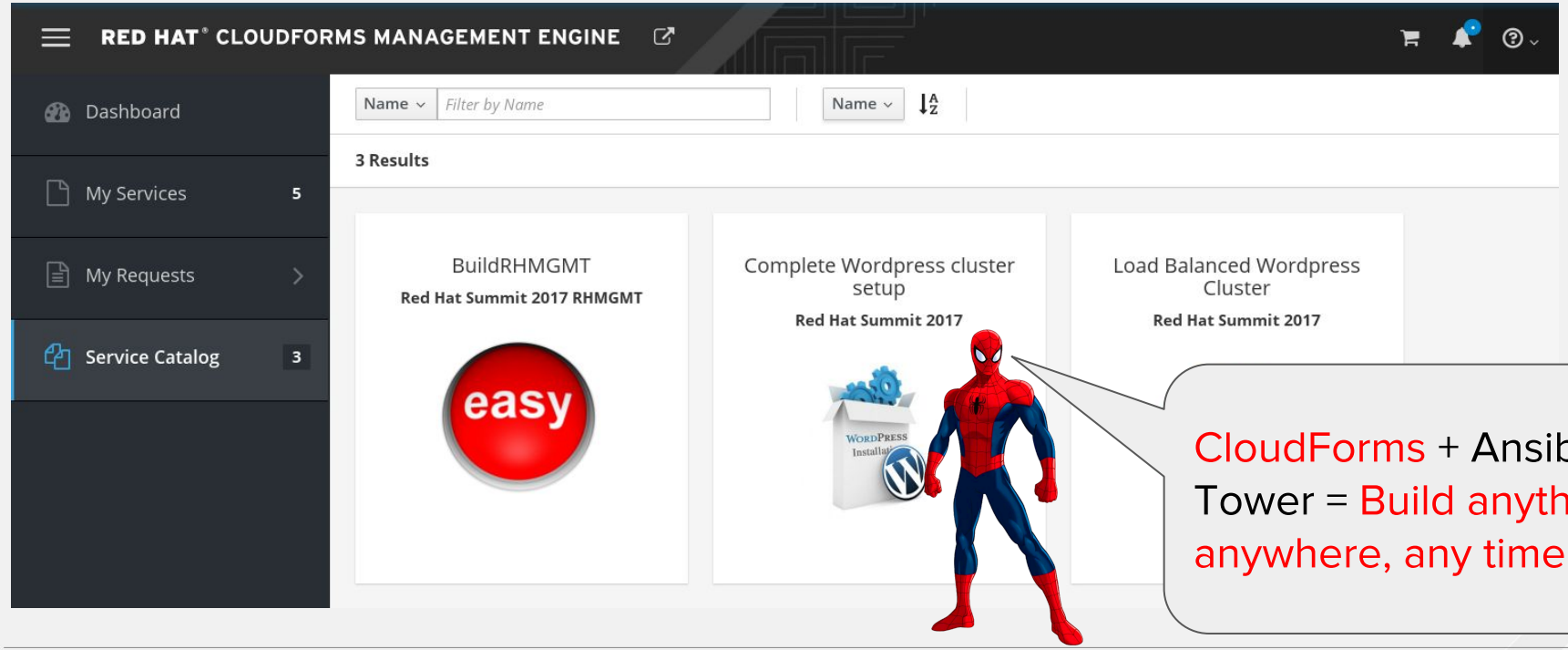
CloudForms - Ansible Tower integration gains



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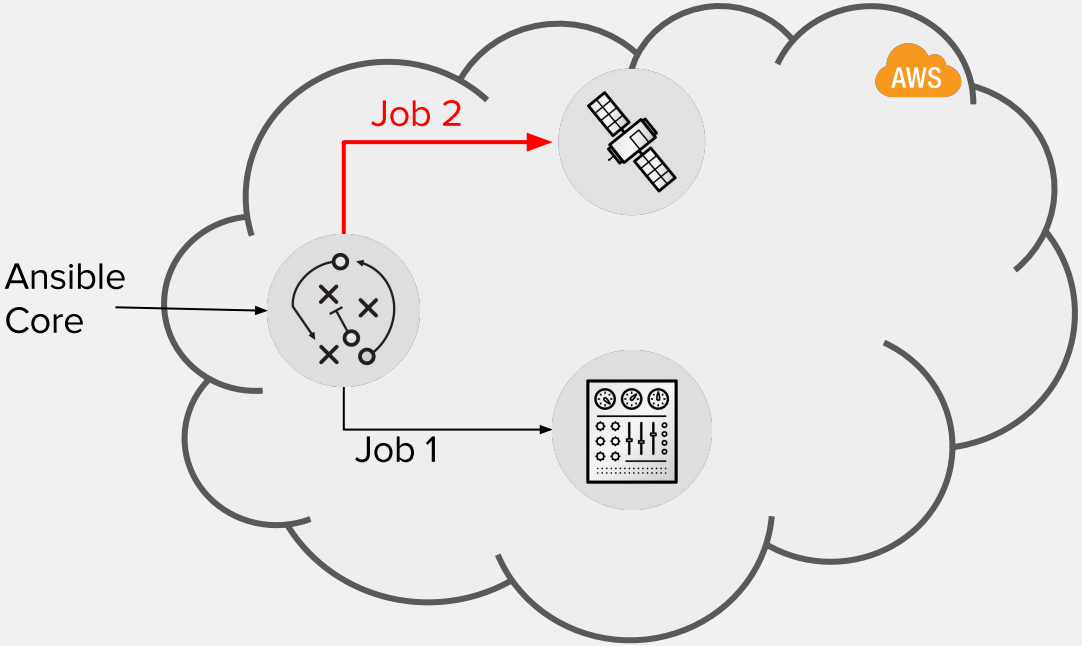

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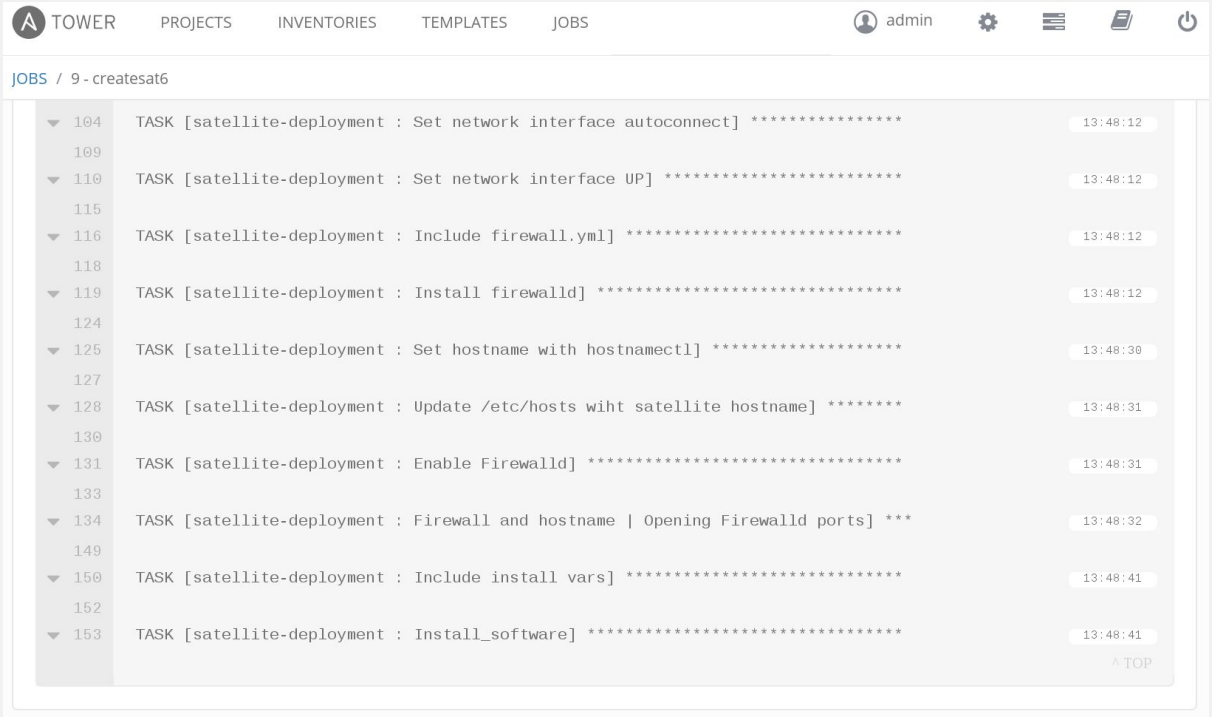

Job 2

RH-MANAGEMENT SATELLITE 6

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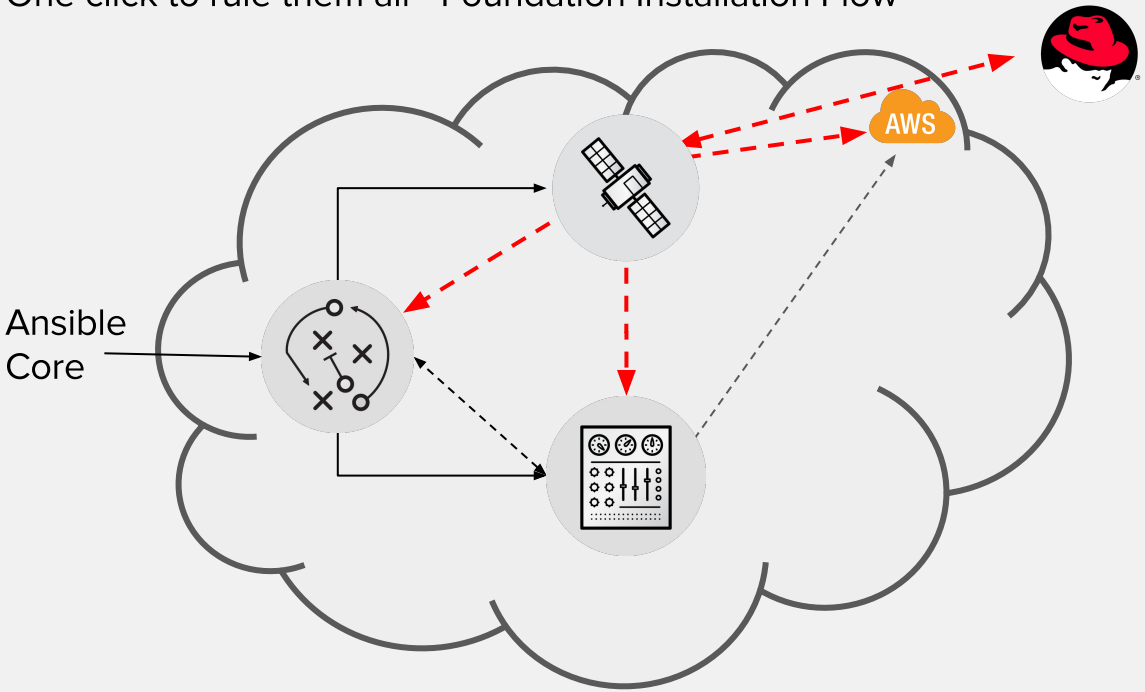

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Satellite 6 - CloudForms - Ansible Tower - Integration Gains

All Configuration Management Providers

Search

		Provider Name	URL	Type	Zone	Last Refresh Date	Region Description	Status	Total Configured Systems
☐		Ansible Tower Configuration Manager	https://ip-172-31-226-121.ec2.internal/api/v1	Configuration Manager (Ansible Tower)	default	04/24/17 15:32:22 UTC	Region 99	Valid	51
☐		Satellite 6 Configuration Manager	https://ip-172-31-57-253.ec2.internal	Configuration Manager (Red Hat Satellite)	default	04/24/17 15:32:21 UTC	Region 99	Valid	9

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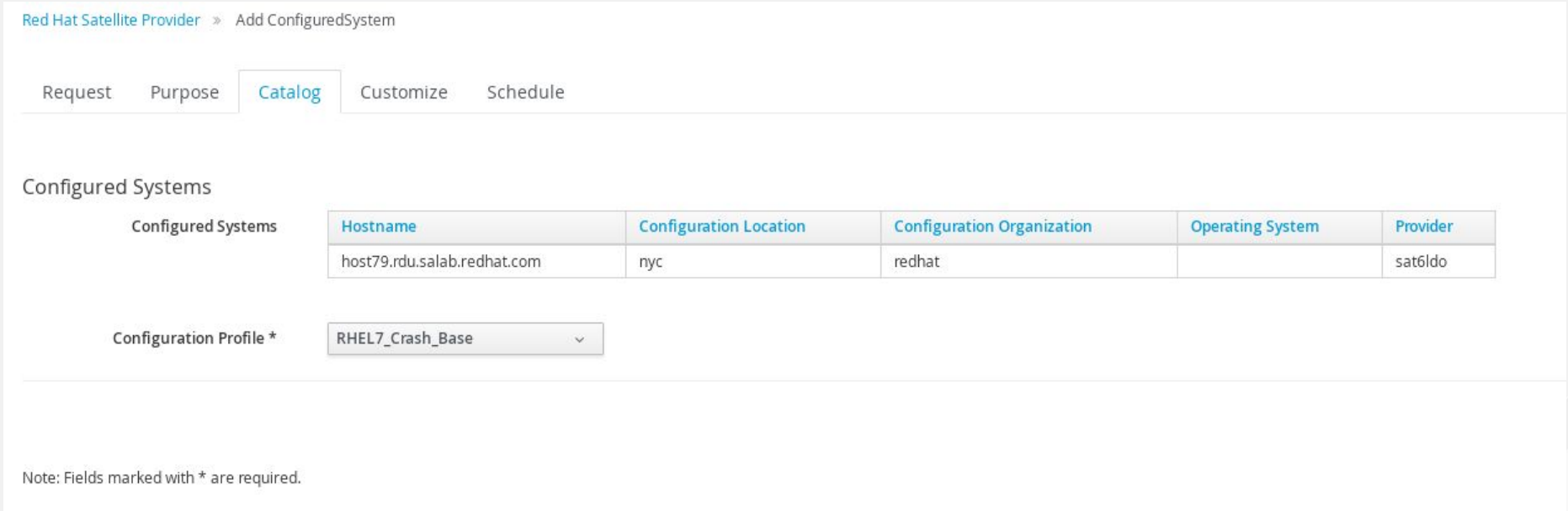
Satellite 6 - CloudForms - Ansible Tower - Integration Gains



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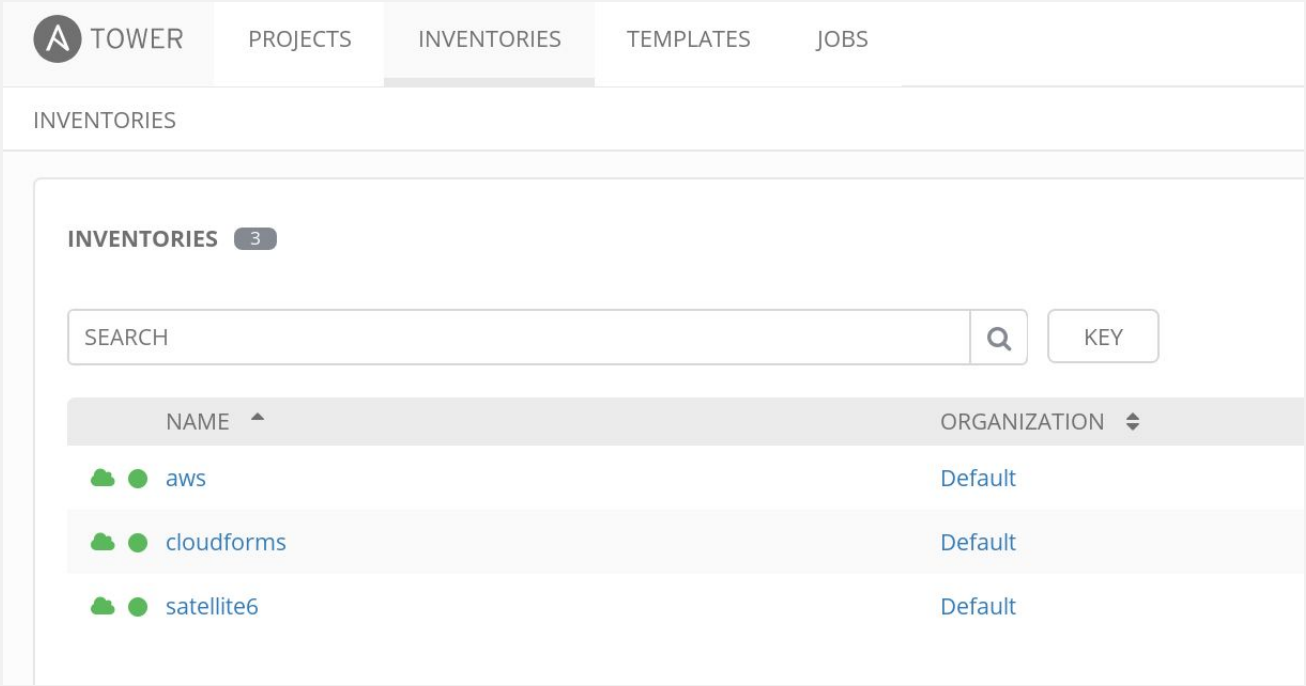

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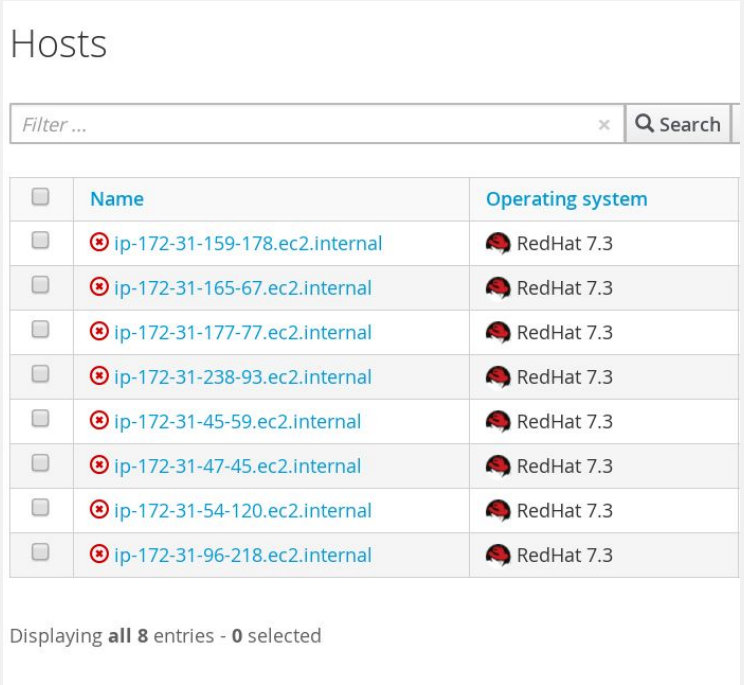
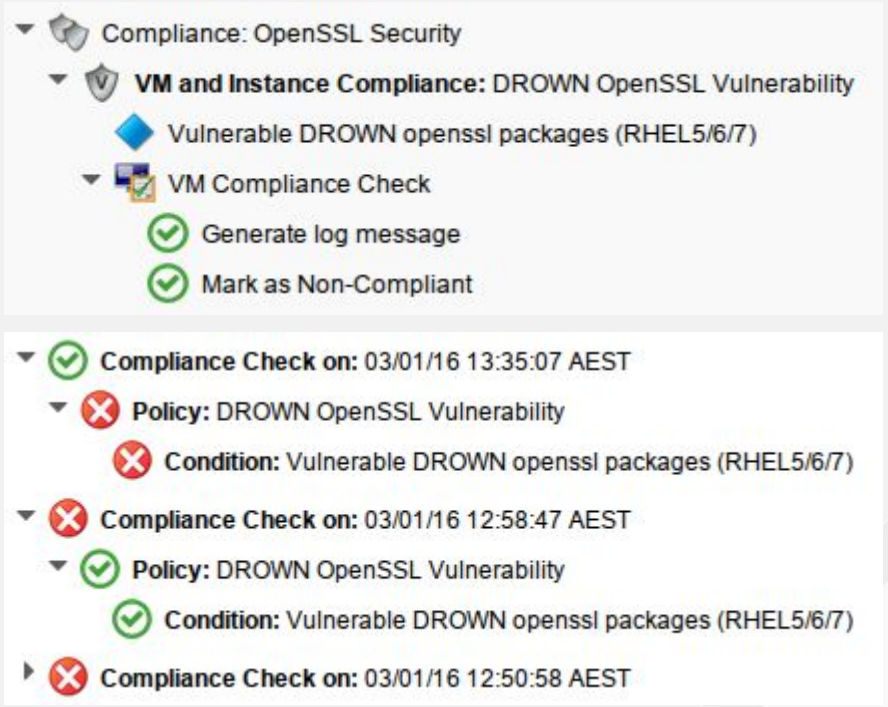


CloudForms



Red Hat Management Automated

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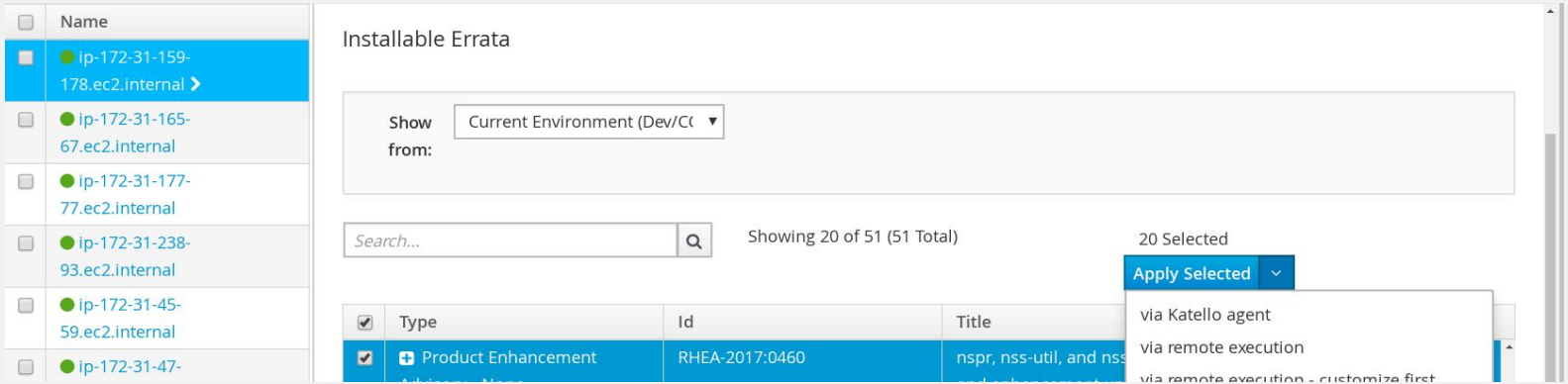
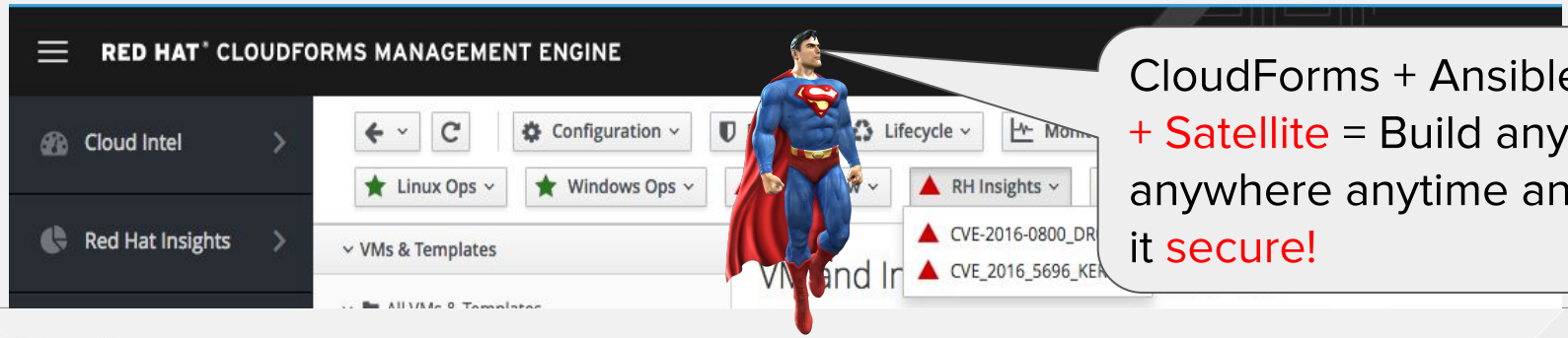


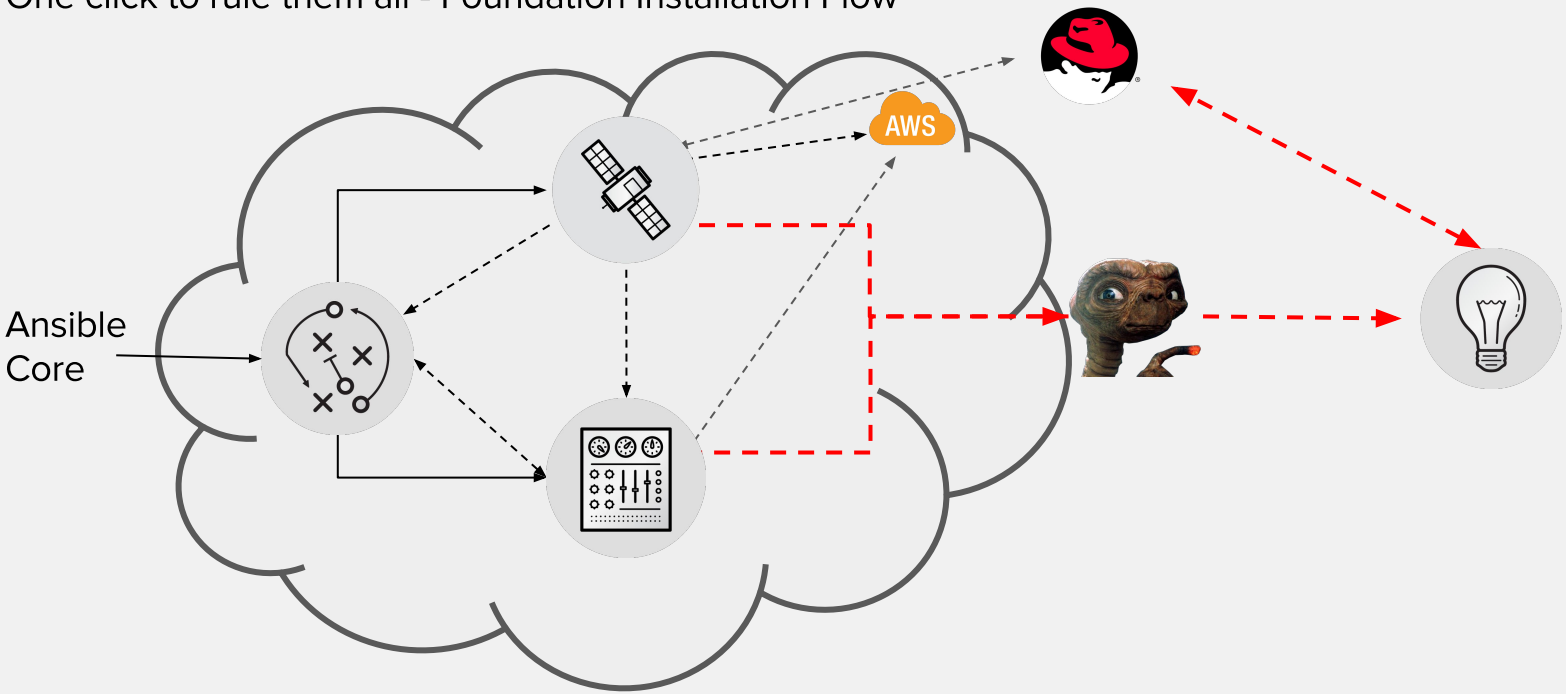
CloudForms



CloudForms + Ansible Tower + Satellite = Build anything anywhere anytime and make it secure!

RH-MANAGEMENT INSIGHTS

One click to rule them all - Foundation Installation Flow



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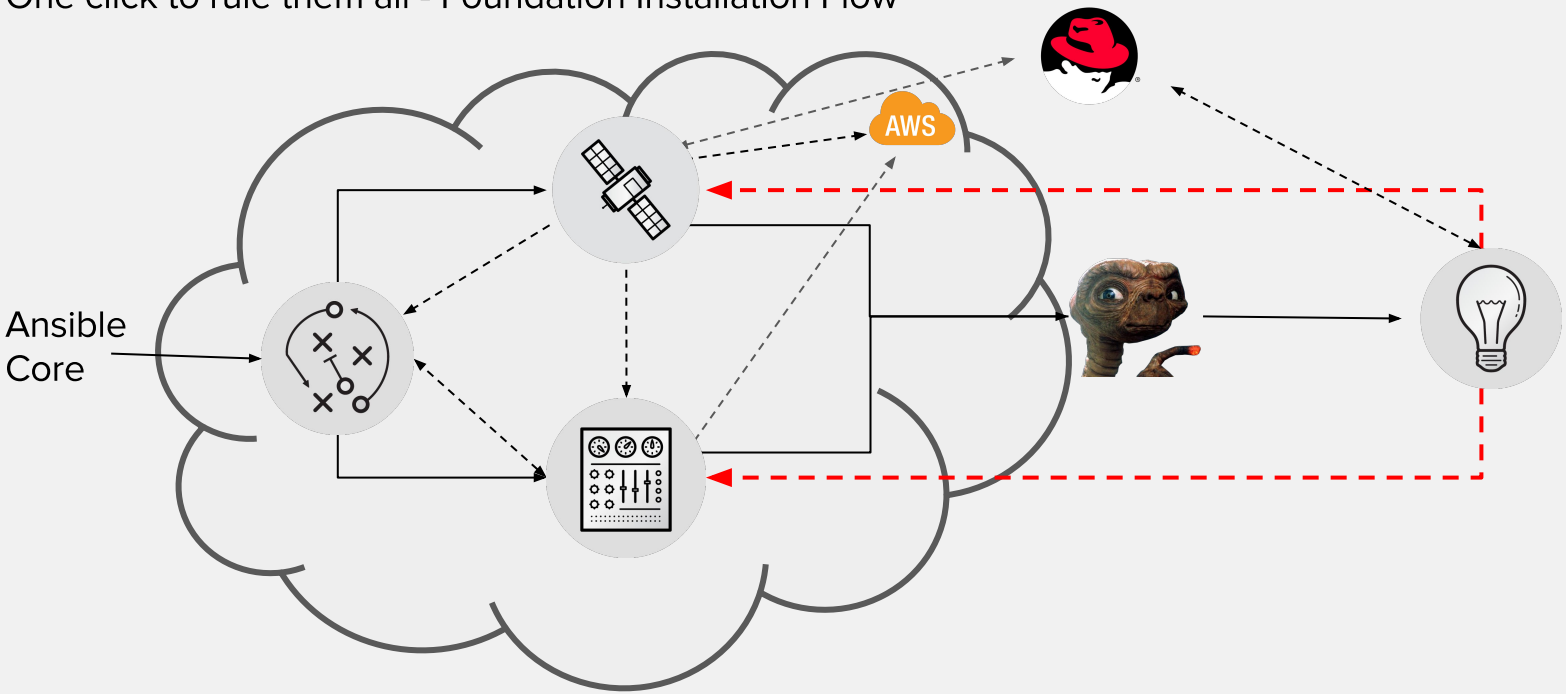

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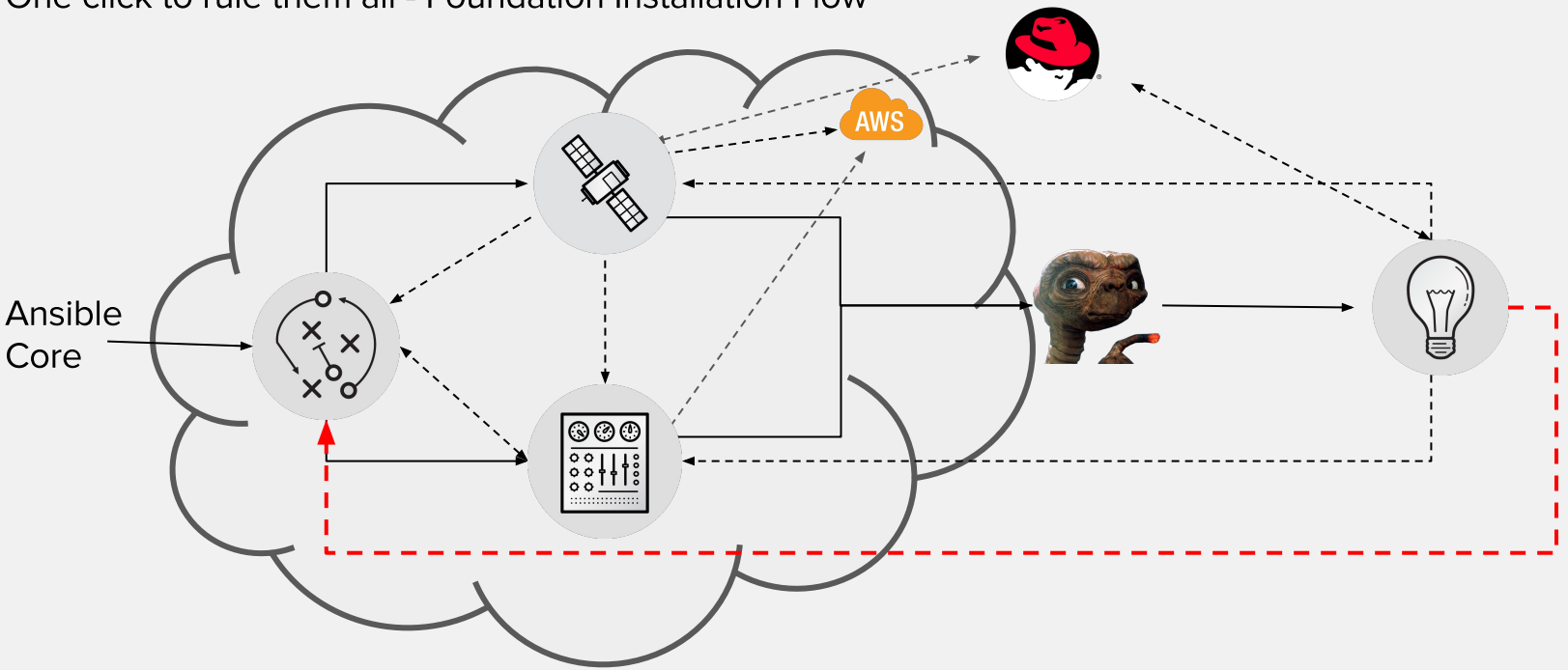

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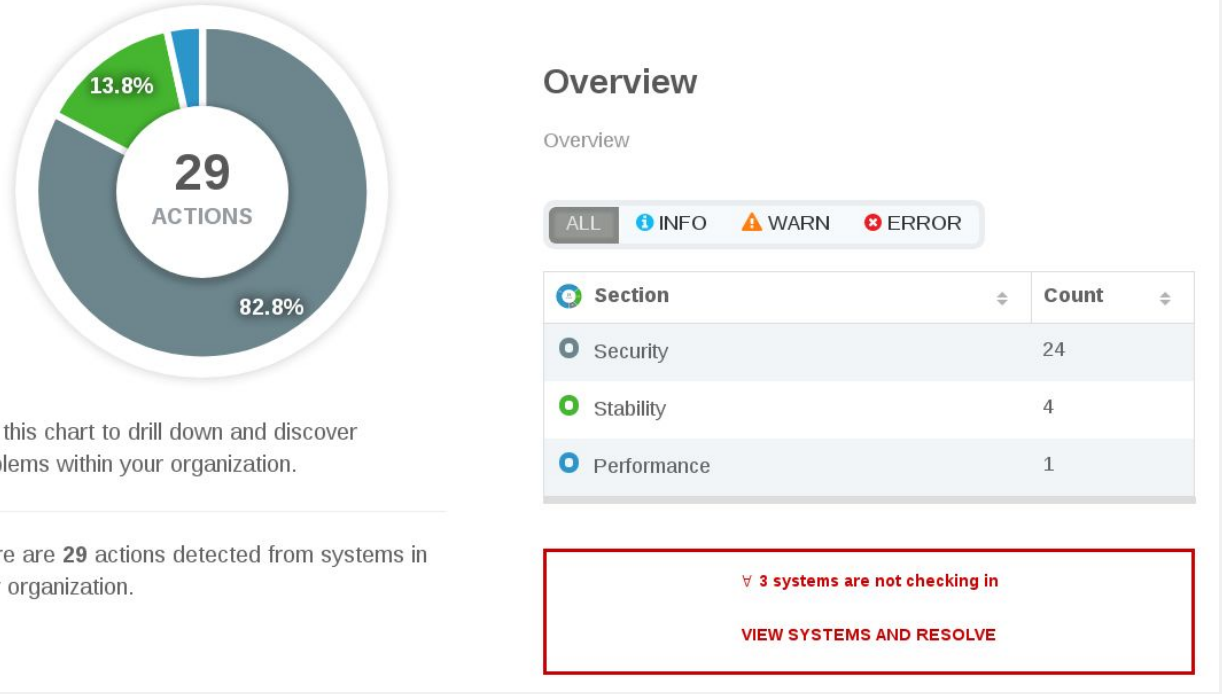
Insights - CloudForms - Ansible Tower - Satellite 6 - integration gains



Red Hat Management Automated

Insights - CloudForms - Ansible Tower - Satellite 6 - integration gains

⚠ Kdump crashkernel reservation failed due to improper configuration of crashkernel parameter

Kdump is unable to reserve memory for the kdump kernel. The kdump service has not started and a vmcore will not be captured if the host crashes, which will make it difficult for our support technicians to determine why the machine crashed.

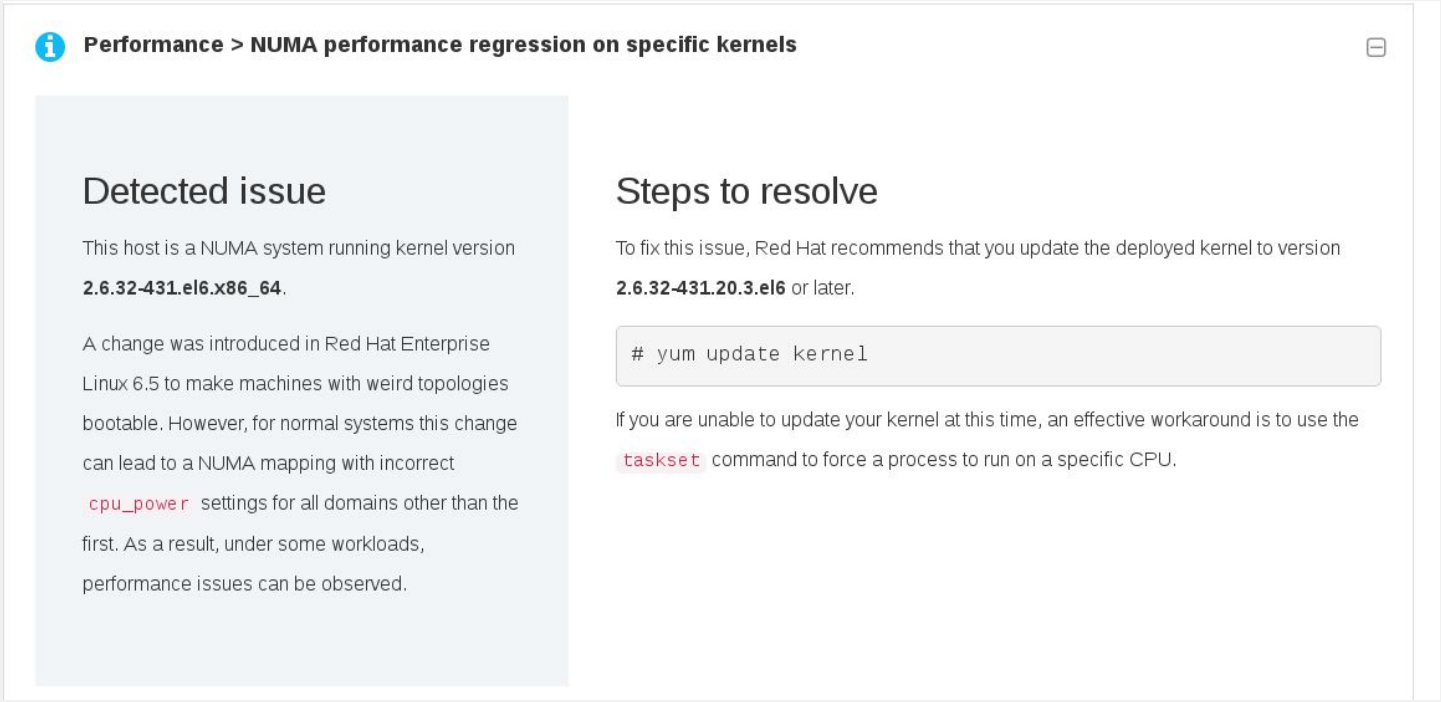
Impacted Systems

Overview / Stability / Kdump crashkernel reservation failed due to improper configuration of crashkernel parameter

Hostname	Reported	
Filter		
demo-insights-rhel65	about 9 hours ago	View
demo-insights-rhel70.demo.mbu.redhat.com	about a month ago	View
localhost.localdomain.localdomain	2 months ago	View

Red Hat Management Automated

Insights - CloudForms - Ansible Tower - Satellite 6 - integration gains



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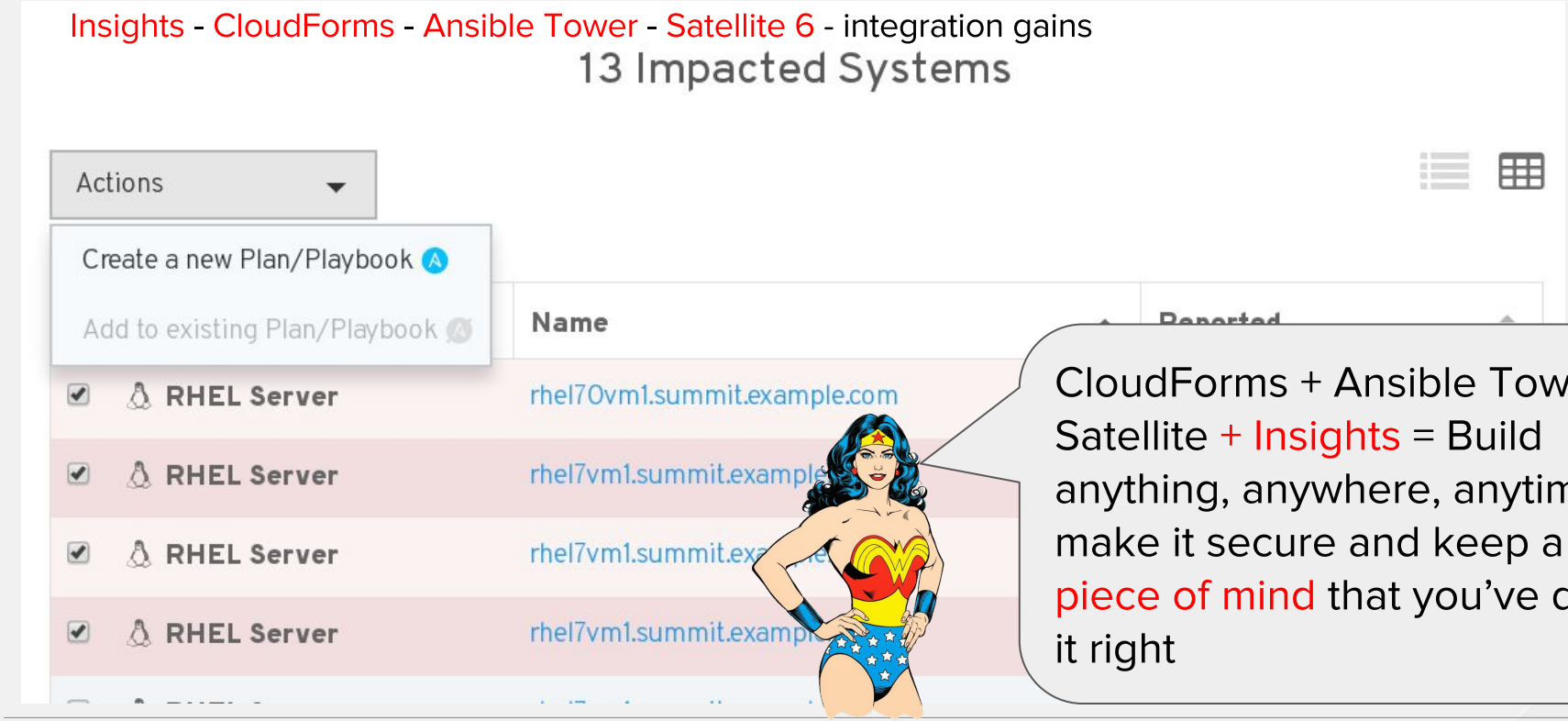


CloudForms + Ansible Tower + Satellite + Insights = Build anything, anywhere, anytime, make it secure and keep a piece of mind that you've done it right

RH-MANAGEMENT SUPERPOWERS TEAM

SATELLITE 6

INSIGHTS

ANSIBLE TOWER

CLOUDFORMS

Provision and manage servers and networking anywhere, anytime and be sure it's secure and compliant. Keep in mind we are watching you!

One Button Push To RH Management Suite

http://bit.ly/2oQwxxF

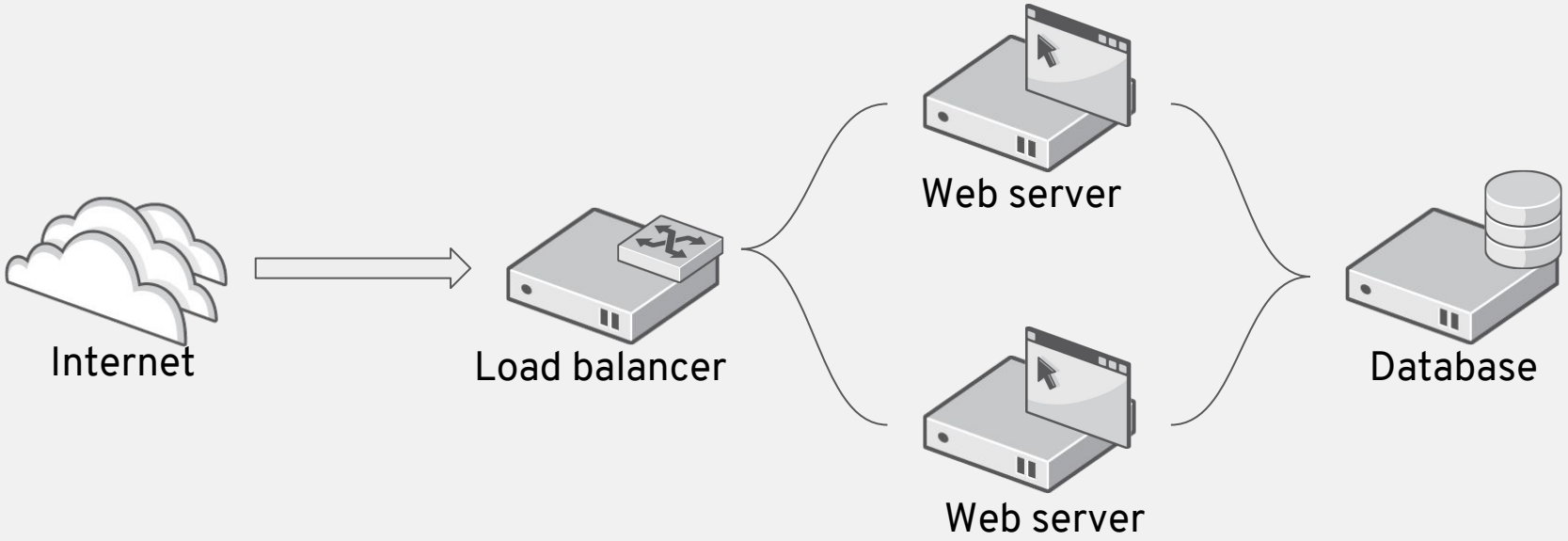
Here’s a practical example, kids!

APPLICATION ANATOMY

Or: whose critical application only runs on a single server?

- A lot of applications out there follow the n-tier paradigm
  - This means applications functions are split out into multiple servers
- Traditionally, deploying applications like this has involved a lot of scripting
- Enter the combination of CloudForms, Satellite 6 and Ansible

AN N-TIER APPLICATION



HOW DOES THAT WORK?

- Automating the deploying an n-tier application requires
  - Something to create the initial systems
  - Something to configure the initial systems
  - Something to get the software from
  - Something to tie things together
  - Someplace my end users can go to, to press a button labeled ‘gimme’

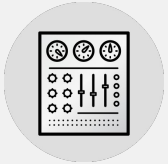
HOW DOES THAT WORK?

- Automating the deploying an n-tier application requires
  - Something to create the initial systems ➢ CloudForms
  - Something to configure the initial systems ➢ Satellite 6
  - Something to get the software from ➢ Satellite 6
  - Something to tie things together ➢ Ansible Tower by Red Hat
  - Someplace my end users can go to, to press a button labeled ‘gimme’ ➢ CloudForms

CLOUDFORMS SELF-SERVICE

How CloudForms ties self-service, system deployment and configuration together

Order a service in the CloudForms self-service portal



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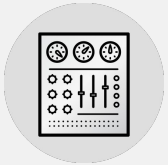

Deploy four instances in OpenStack

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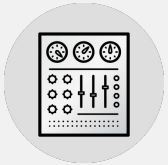

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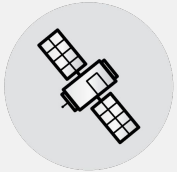

Pass control to Satellite for OS configuration, errata

CLOUDFORMS SELF-SERVICE

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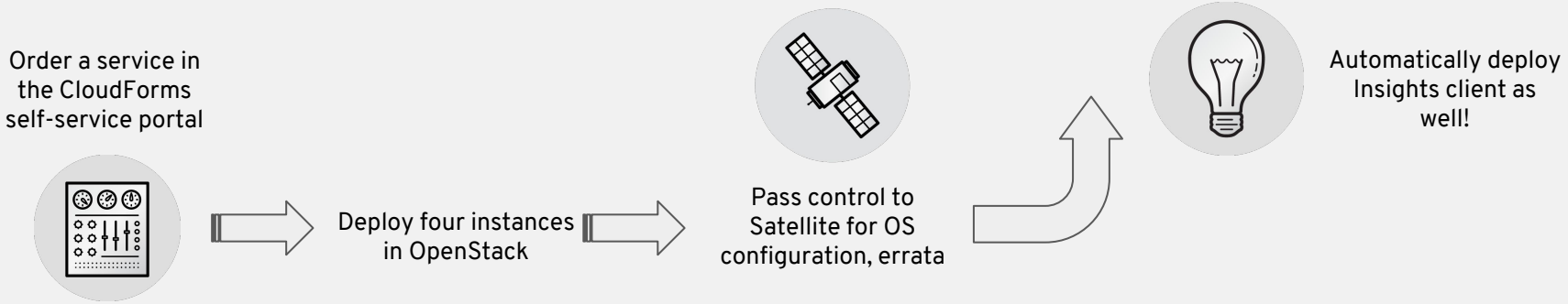
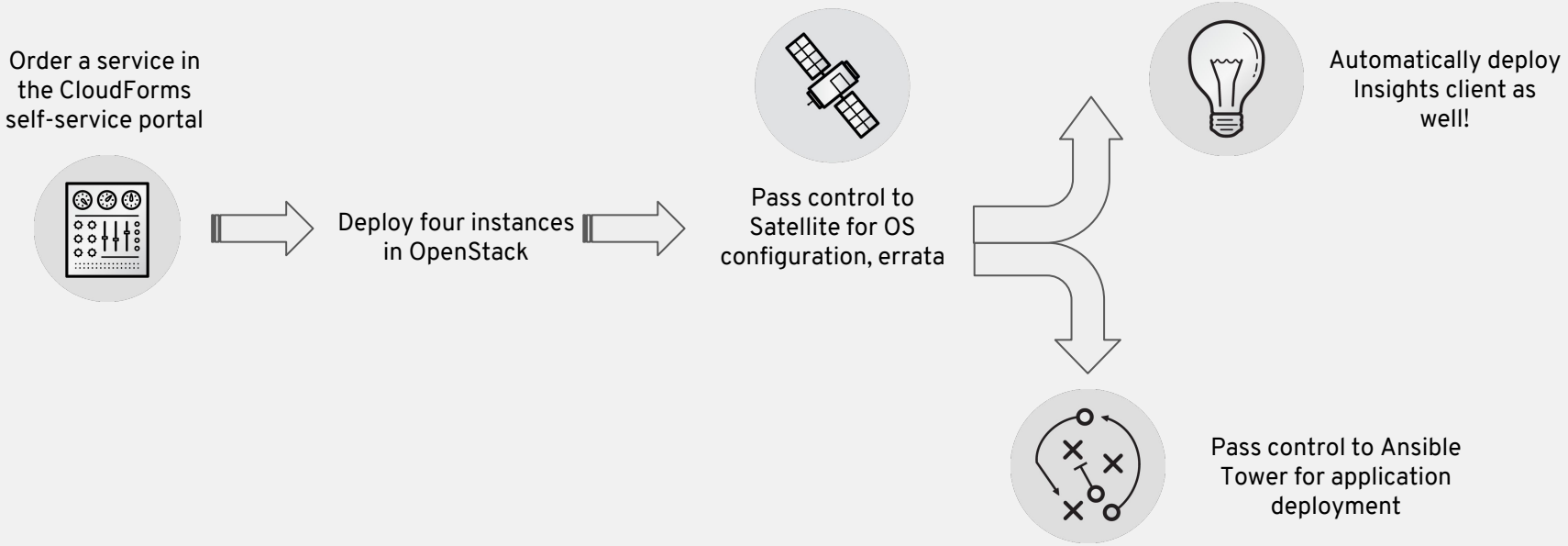


CLOUDFORMS SELF-SERVICE

How CloudForms ties self-service, system deployment and configuration together



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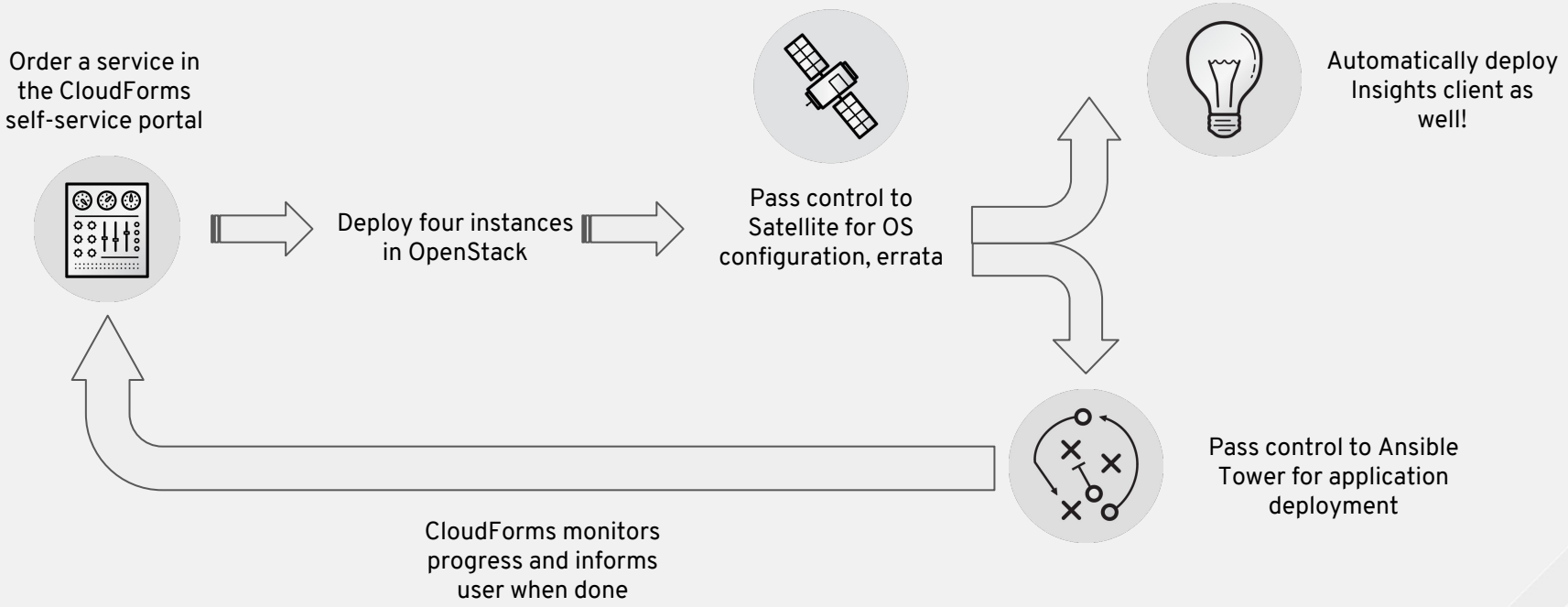

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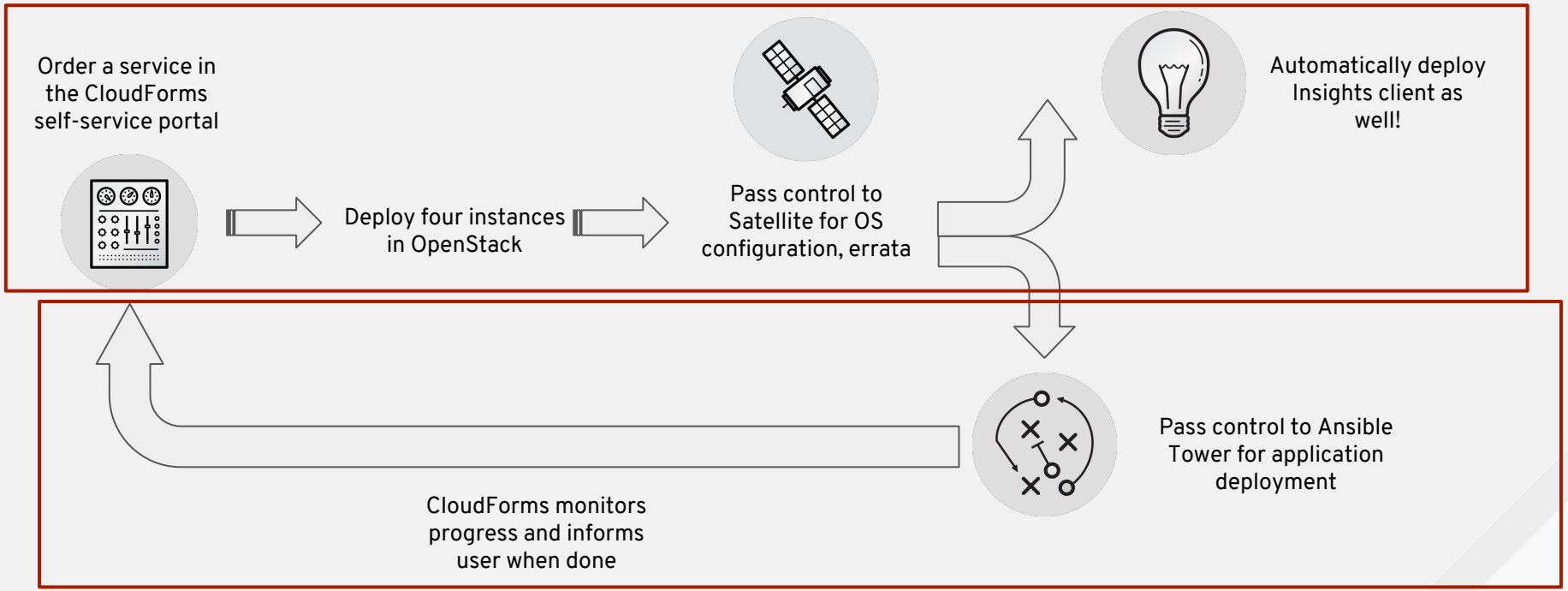
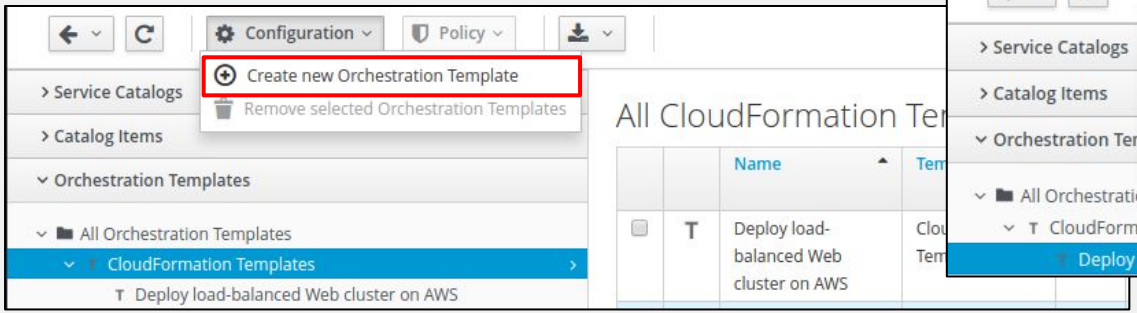


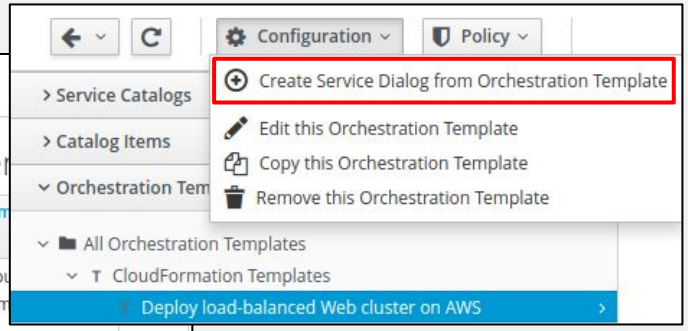
How hard is that?

For VMs or groups of VMs, setting up self-service in CloudForms is actually fairly straightforward.

- CloudForms can consume and store:
  - Heat templates
  - CloudFormation templates
  - Azure templates



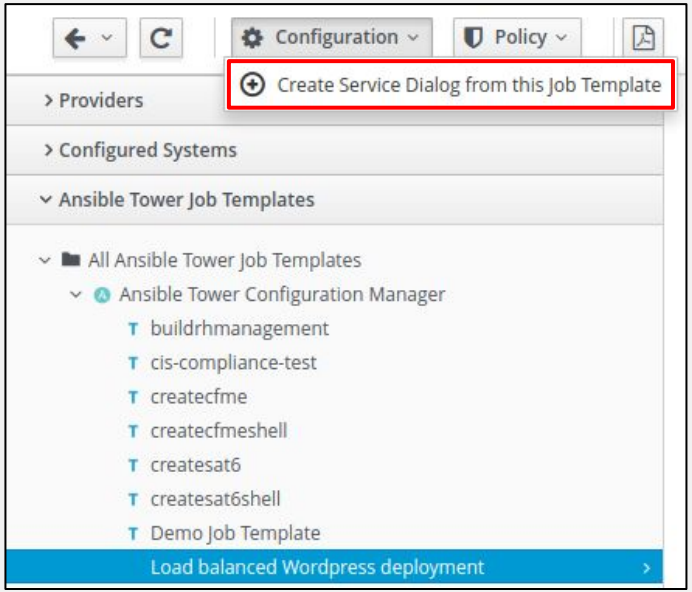
- CloudForms can automatically create dialogs from the parameters in those templates



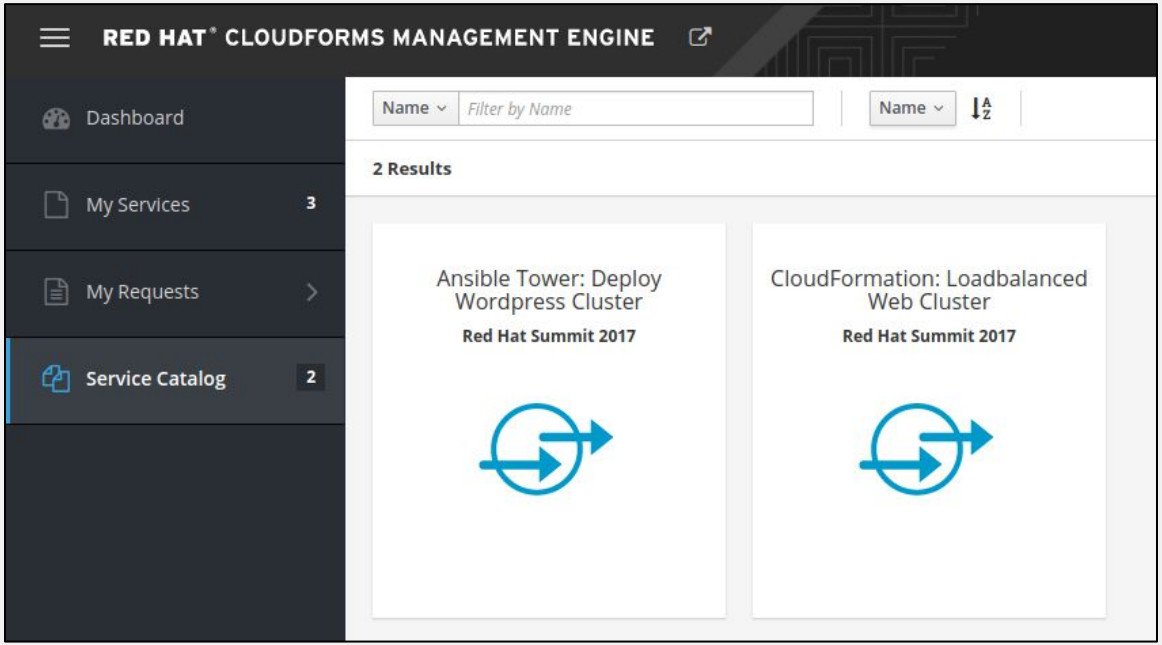
How hard is that?

Offering Ansible Job Templates to your users isn't much different. (As already mentioned.)

- CloudForms connects to Ansible Tower
- Create service dialogs based on the surveys in Ansible Job Templates
- You can customize these after creating them

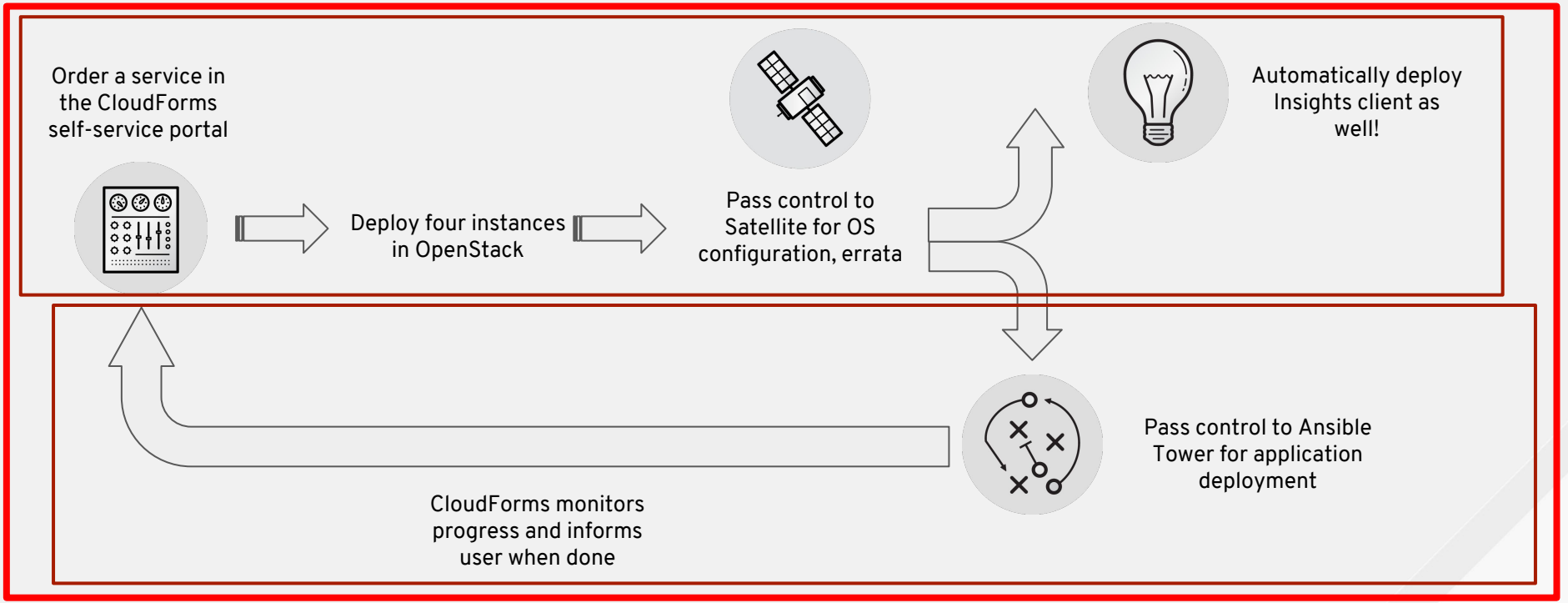


So now we have two self service items



This calls for a bundle!

BUNDLING CATALOG ITEMS



A Catalog Bundle!

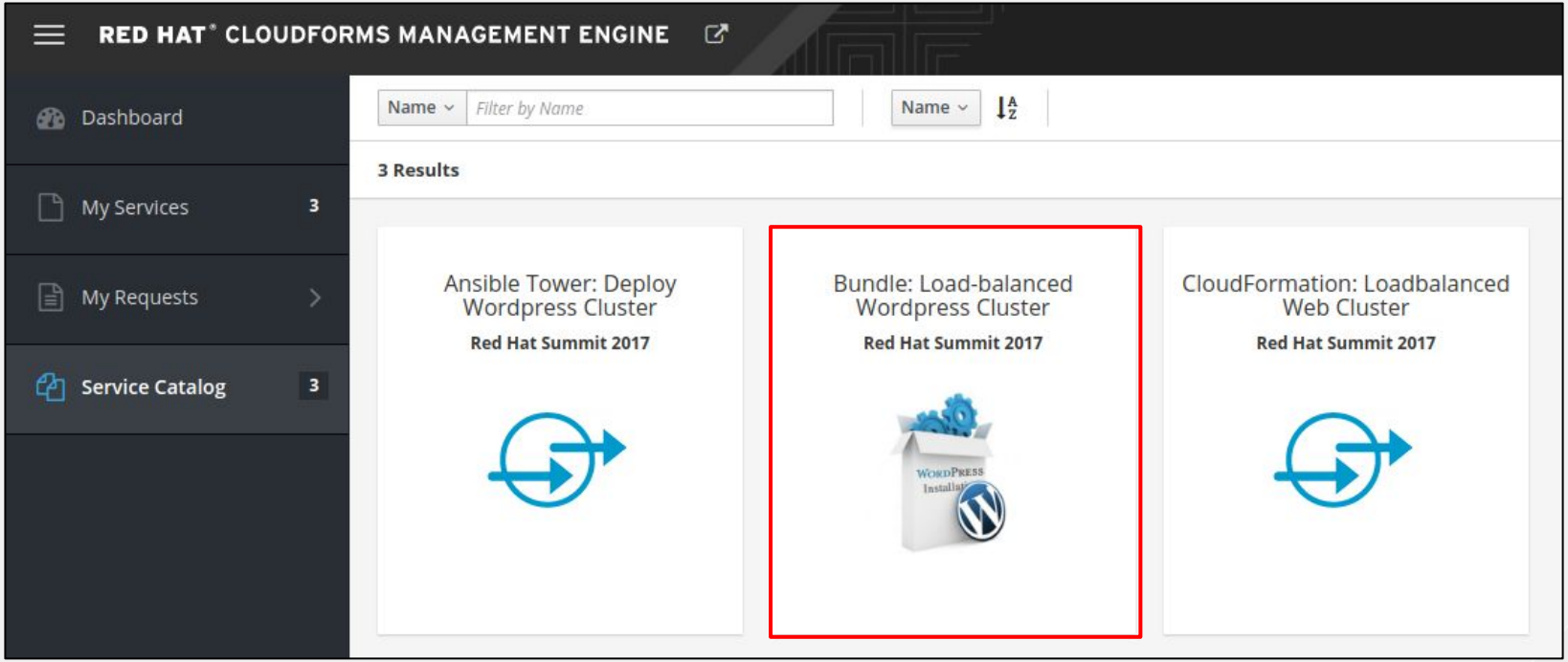
Service Catalog Item "Bundle: Load-balanced Wordpress Cluster"

Basic Info | Selected Resources

Resources

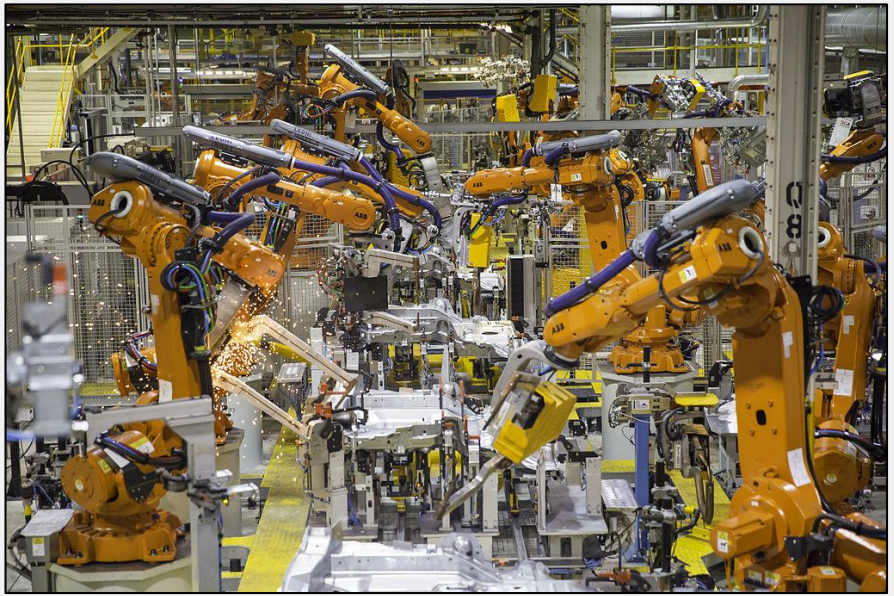
	Name	Description	Action Order	Provision Order	Action		Delay (mins)	
					Start	Stop	Start	Stop
	CloudFormation: Loadbalanced Web Cluster	Four node, load-balanced Web Apache / MariaDB Cluster	1	1	Power On	Shutdown	0	0
	Ansible Tower: Deploy Wordpress Cluster	Deploy Wordpress Cluster based on Satellite 6 hostgroups	2	2	Do Nothing	Do Nothing	5	0

A CatalogBundle!



How does this work? With a state machine!

- A state machine is like a production line, with robots at stations along the line to perform actions
- Each of my catalog items has a state machine that defines the steps to deliver the item
  - a set of predefined steps
  - a set of empty placeholders
- Use the placeholders to execute additional, custom steps for deployment



Customizing state machines: example 1

- For the example, we customized the state machine for CloudFormation deployments
- Deployment should only then be finished when the Satellite part is done
- **Solution**: use one of the placeholders to query Satellite API for existence and configuration status of the new machines
- I've put this script up as a Gist on Github, so you can copy and improve upon it

https://gist.github.com/wzzrd/7cc7bab19b049eb4aa8842d2bf77026e

Customizing state machines: example 2

- We needed to pass the VMs created during the first catalog item (CloudFormation) to the Ansible Tower Job Template

- **Solution**: store the names of the newly created VMs in a variable, read the variable during the initialization of the Ansible Job catalog item

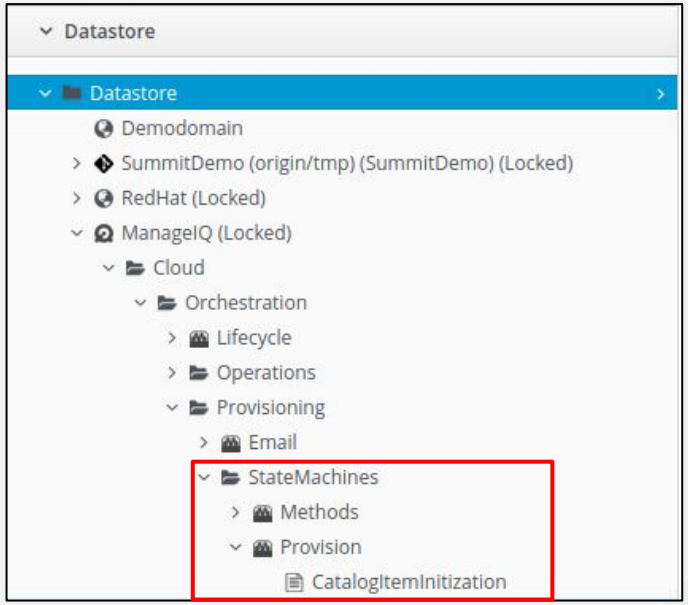
- Saving of the hostnames Happens in same script as previous customization example
- Customized method to start the Ansible Tower Job Template:

  https://gist.github.com/wzzrd/8a0c9e38f91668589049e32d20943eb0

How hard is customizing state machines?

- A state machine is stored in a CloudForms Automation domain
- A table with rows for each “robot” along the assembly line
- Stored in Git as YAML

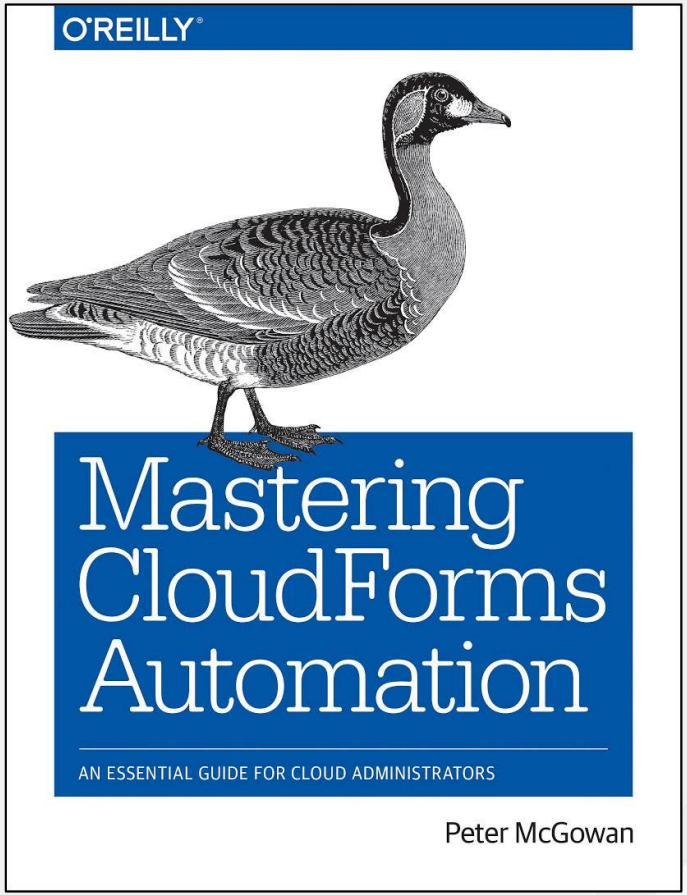
- Copy the ones that ship with CFME to your own domain, edit as required
- Each “robot” is a Ruby method, and we ship many examples :)



Want to learn more?

- There is an excellent book on CloudForms automation
- It's freely available on our website

- http://red.ht/2oYQttJ



DEMO

- I have a demo video, but it didn't fit this presentation :(
- Good news is, it's up on YouTube as of RIGHT NOW!

- YouTube: http://bit.ly/2qqkc0f

- Let use know what you think!
- Our email addresses are on the intro slide, ask us any question by mail, or drop by the CloudForms booth: we'll all be manning it this week!

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Resources

Links to resources used in this presentation

Resources used for this presentation

- https://access.redhat.com/articles/2258471 (hammer cheat sheet)
- https://github.com/rhtconsulting/cfme-rhconsulting-scripts
- https://galaxy.ansible.com/juliovp01/satellite6-install/ (original playbook for sat6)