



# Automate Smart Management Workshop

Automate Smart Management for System Administrators and Operators





**Red Hat**  
Ansible Automation  
Platform



**Red Hat**  
Smart Management

# What you will learn

- ▶ Introduction to Automation with Satellite
- ▶ Workshop setup & walkthrough
- ▶ Compliance & Vulnerability Management
- ▶ Patch Management / OS
- ▶ CentOS to RHEL Conversion w/ App Stack



**Red Hat**

# Introduction

Topics Covered:

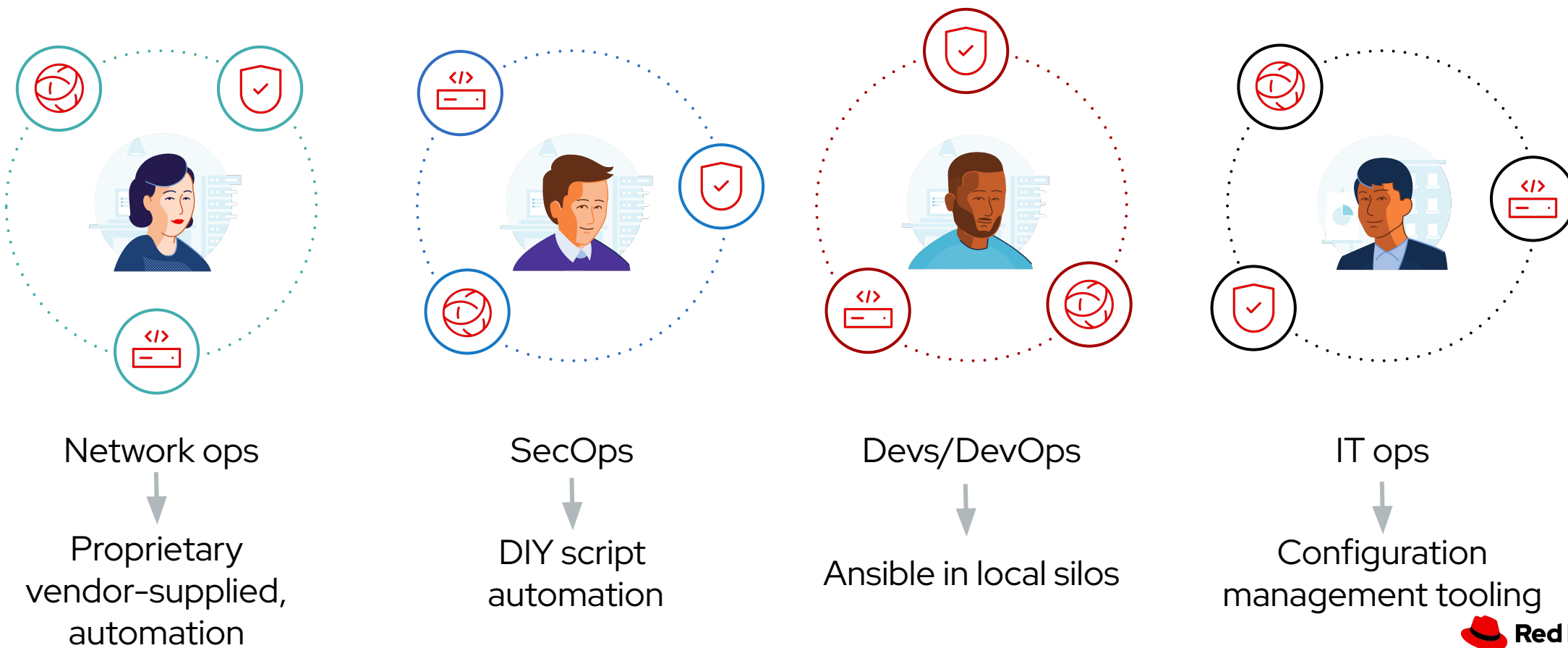
- Automation and Smart Management
  - Red Hat Ansible Automation Platform
  - Red Hat Satellite



Automation happens when  
one person meets a problem  
they never want to solve again

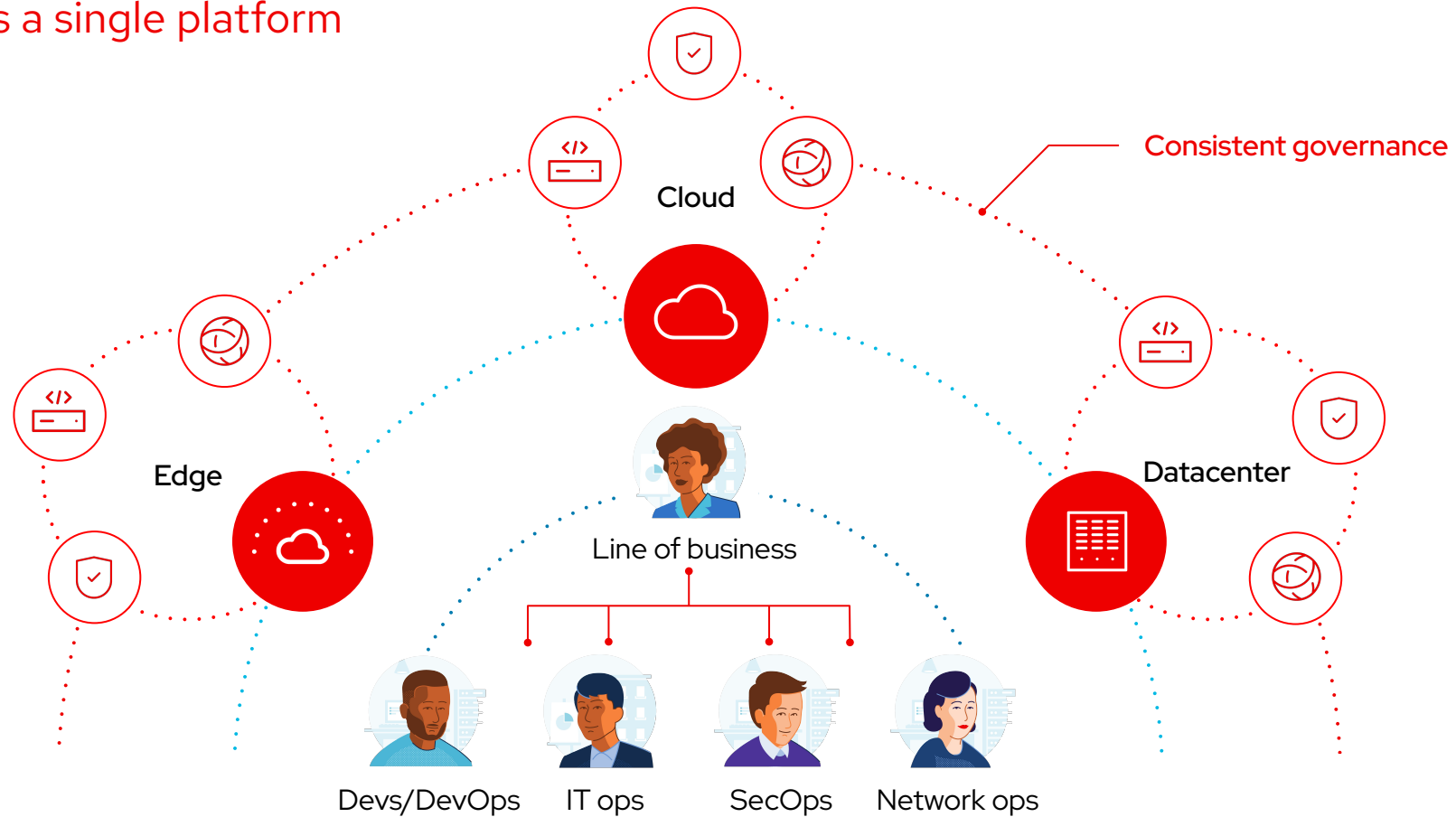
# Many organizations share the same challenge

Too many unintegrated, domain-specific tools



# Break down silos

Different teams a single platform



# Automate the deployment and management of automation

Your entire IT footprint

Do this...

Orchestrate

Manage configurations

Deploy applications

Provision / deprovision

Deliver continuously

Secure and comply

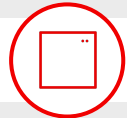
On these...



Firewalls



Load balancers



Applications



Containers



Virtualization platforms



Servers



Clouds



Storage



Network devices



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## THE FORRESTER WAVE™

### Infrastructure Automation Platforms

Q3 2020



## Red Hat named a Leader in The Forrester Wave™

### Infrastructure Automation Platforms, Q3 2020



Received highest possible score in the criteria of:

- Deployment functionality
  - Product Vision
  - Partner Ecosystem
  - Supporting products and services
  - Community support
  - Planned product enhancements
- "Ansible continues to grow quickly, particularly among enterprises that are automating networks. The solution excels at providing a variety of deployment options and acting as a service broker to a wide array of other automation tools."
  - "Red Hat's solution is a good fit for customers that want a holistic automation platform that integrates with a wide array of other vendors' infrastructure."

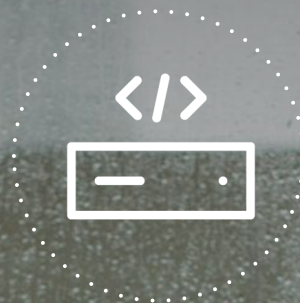
Source:

Gardner, Chris, Glenn O'Donnell, Robert Perdonii, and Diane Lynch. "[The Forrester Wave™: Infrastructure Automation Platforms, Q3 2020](#)." Forrester, 10 Aug. 2020.

DISCLAIMER: The Forrester Wave™ is copyrighted by Forrester Research, Inc. Forrester and Forrester Wave™ are trademarks of Forrester Research, Inc. The Forrester Wave™ is a graphical representation of Forrester's call on a market and is plotted using a detailed spreadsheet with exposed scores, weightings, and comments. Forrester does not endorse any vendor, product, or service depicted in the Forrester Wave™. Information is based on best available resources. Opinions reflect judgment at the time and are subject to change.

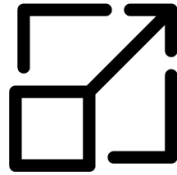






Manage. Secure. Operate.  
Smart!

# Gartner: Customers losing \$300,000 per hour on average due to IT downtime



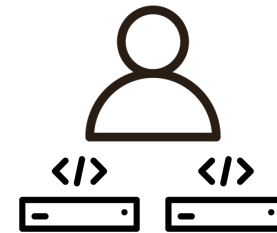
## Manage sprawl

More infrastructure and complexity than ever to manage



## Reducing risk

Lack of proactive assessment and management of known issues creates exposure



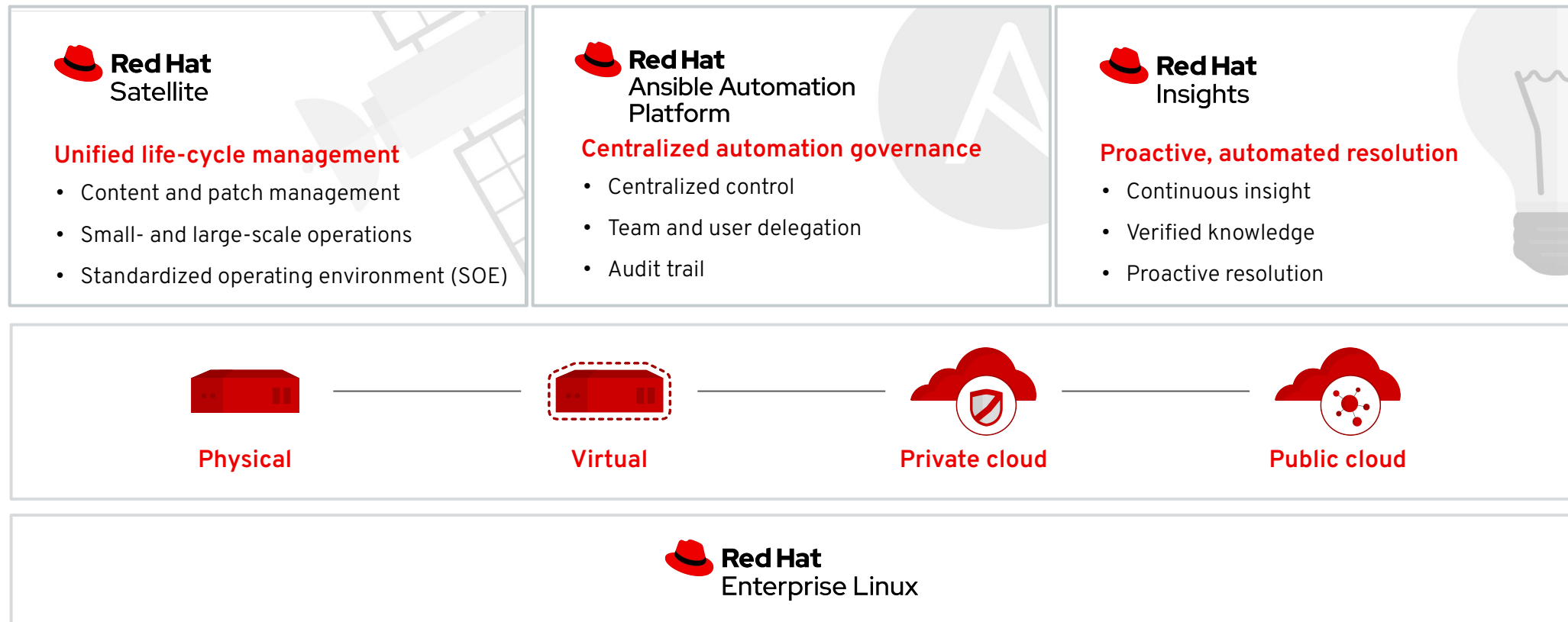
## Limited resourcing

Teams are stretched and lacking Linux skills being asked to do more with flat or decreasing budgets

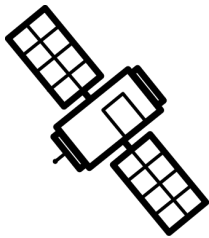
**Smart Management enables you to  
improve the reliability, availability,  
security and compliance of your RHEL  
systems, running on any platform, while  
reducing TCO and repetitive tasks**

# Red Hat Automation and Smart Management

Life-cycle Management, Automated Operations, and Predictive Analytics



# Working together to manage your Red Hat environment



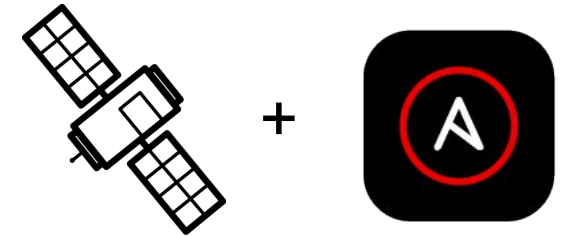
## Satellite can ....

- ▶ Manage content repositories
- ▶ Manage content lifecycles
- ▶ Patch RHEL servers
- ▶ Provision RHEL servers  
physical, virtual or cloud



## AAP can ....

- ▶ Orchestration across platforms
- ▶ Automate all the things
- ▶ Integrate multiple tools and workflows



## Together Satellite and AAP can ...

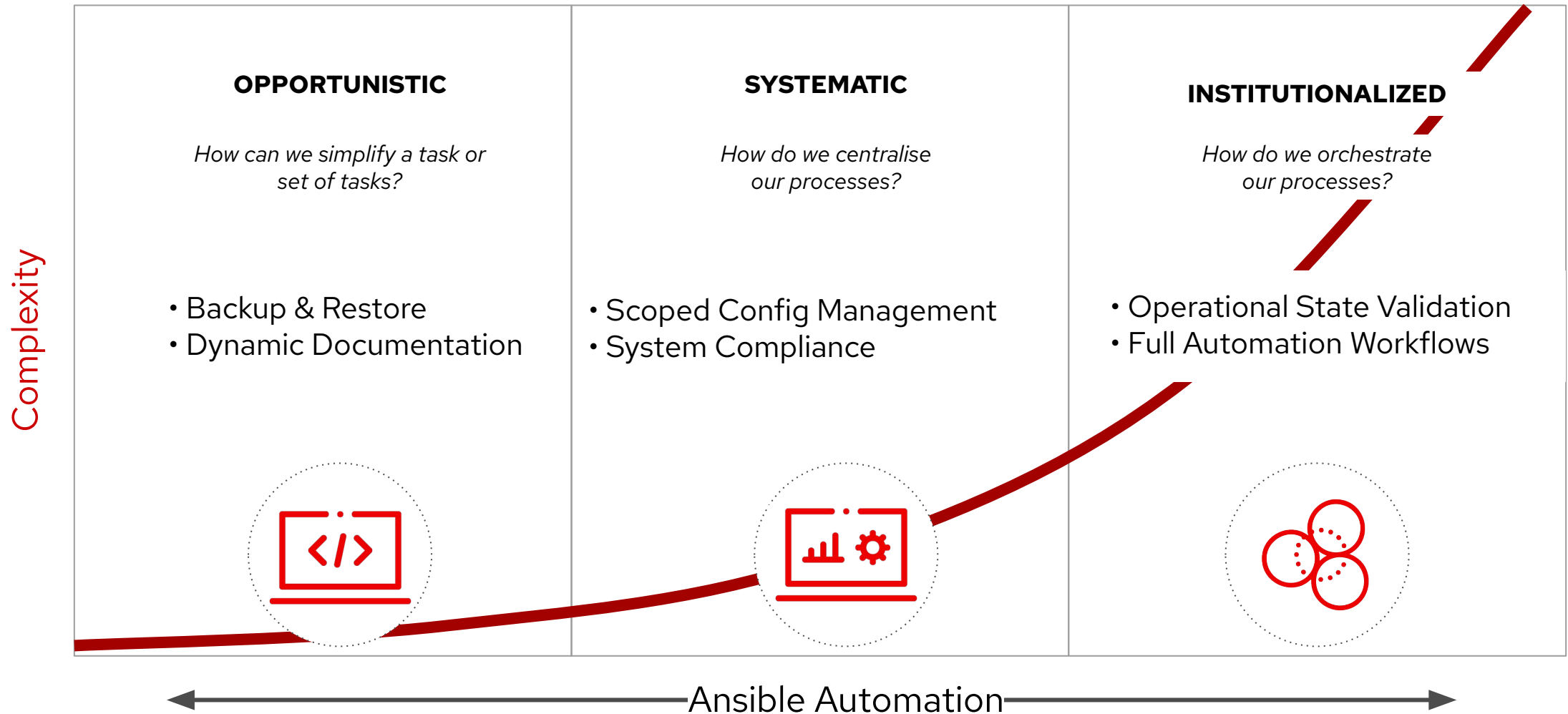
- ▶ Orchestrate provisioning
- ▶ Automate patching
- ▶ Full cross-platform management
  - continued next slide



## Full Cross-Platform Management

- Hybrid Cloud Dynamic Inventory
- Credential Management
- Orchestrated Workflows
- Lifecycle Patch Management
- Production Release Approvals
- Self Service Automation
- Role Based Access Control
- Red Hat Linux Automation
- Red Hat Satellite Automation
- Application startup/shutdown
- Network Services (FW/LB/DNS)
- ITSM Change Management
- Server Reboots
- Kernel Upgrades
- Service Catalog Integration
- HA/Cluster Patching
- Backups/Snapshots
- Multi-OS Patching (Linux\Unix\Windows)

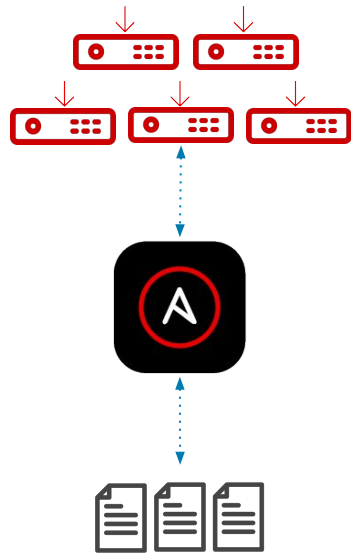
# Automation Journey





# Start Small

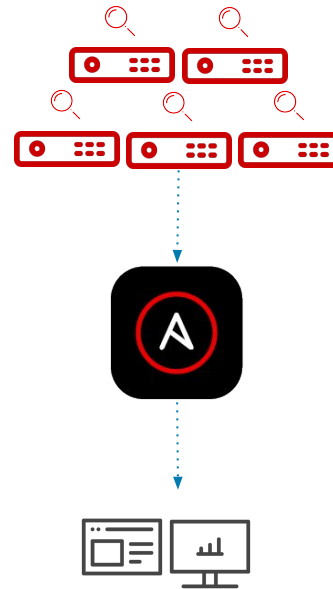
Quick automation victories for systems operators



## Config Backup and Restore

### Ubiquitous first touch use case

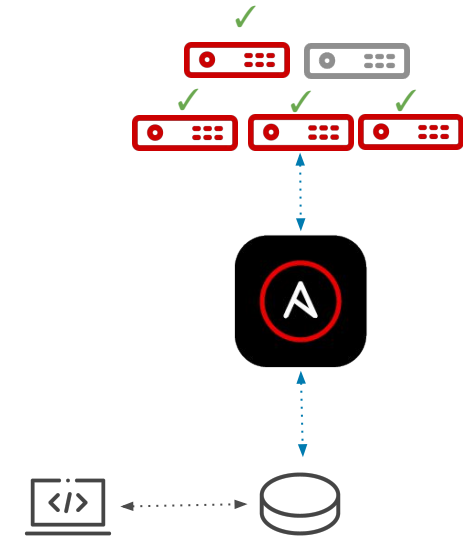
- Gain confidence in automation quickly
- First steps towards infra as code
- Quickly recover system state



## Dynamic Documentation

### Use Ansible facts to gain information

- Read-only, no production config change
- Dynamic Documentation and reporting
- Understand state of systems



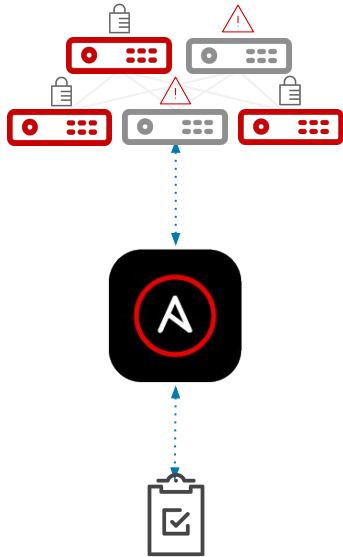
## Scoped Config Management

### Focus on high yield victories

- Automate package management and config
- Introduce source of truth concepts
- Enforce Configuration policy

# Think Big

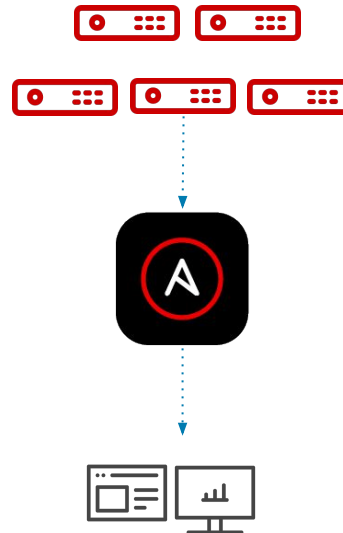
## Institutionalizing automation into your organization



### System Compliance

#### Respond quickly and consistently

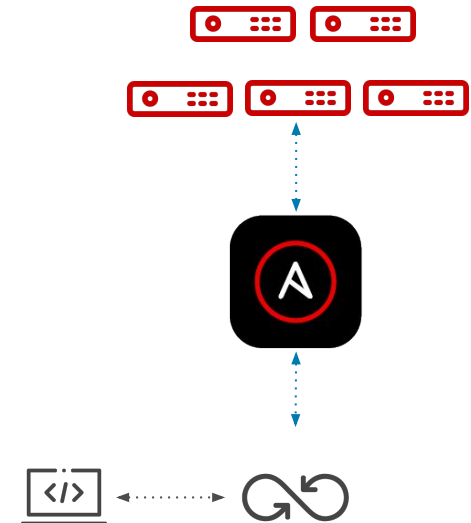
- Security and config compliance for systems
- Remove human error from security responses
- Enforce Configuration policies and hardening



### Operational State Validation

#### Going beyond config management

- Parsing operational state to structured values
- Schema validation and verification
- Enhance operational workflows



### Automated SysOps

#### Infrastructure as code

- Data centric automation
- Deploy configuration pipelines
- GitOps for Systems Automation

# About Your Lab

Topics Covered:

- Understanding the workshop Infrastructure
- Exercise 0 - Infrastructure as Code

# The lab environment today

## Workbench Topology

- **Practice what we preach**

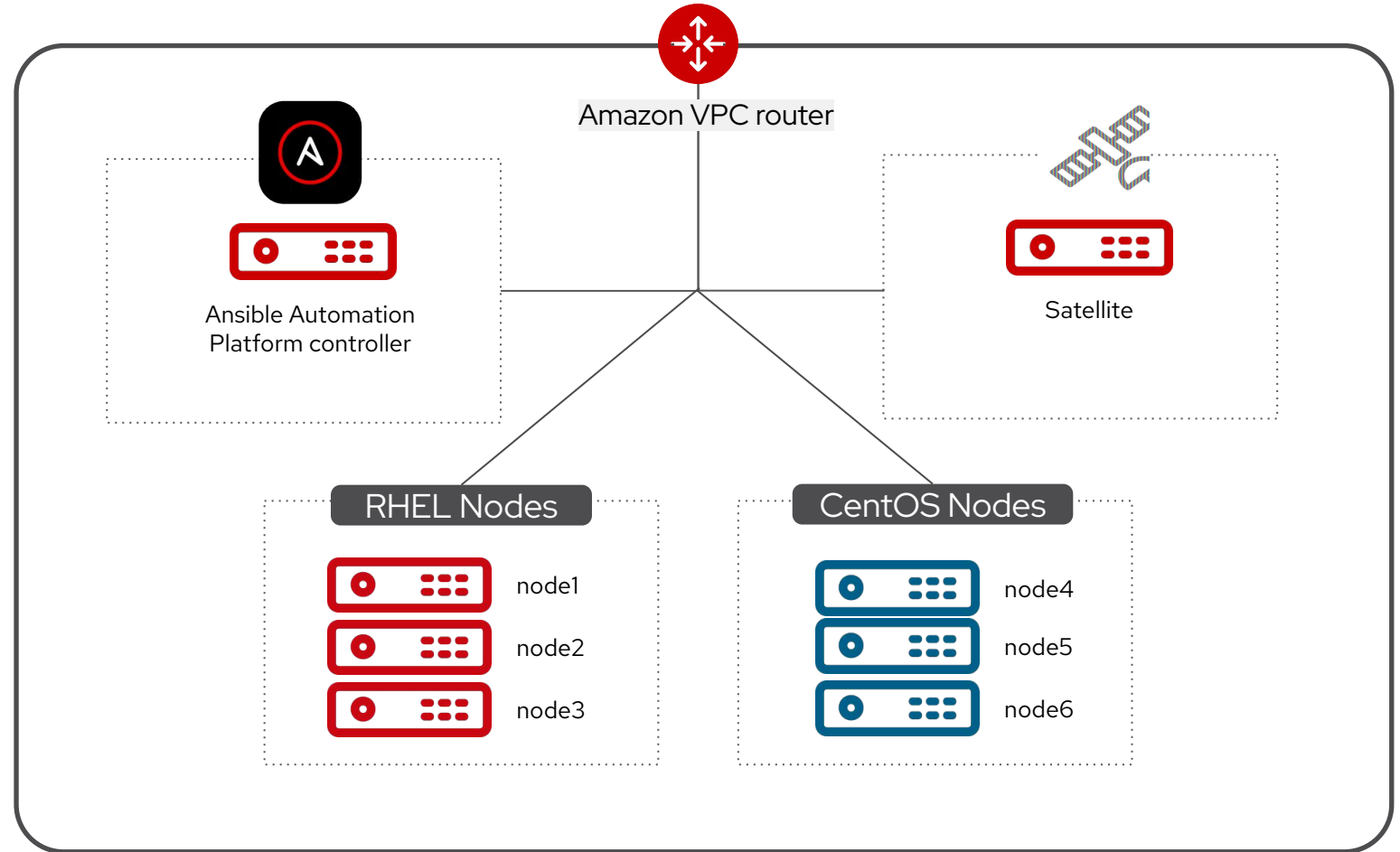
<https://github.com/ansible/workshops>

- **Learn with the real thing**

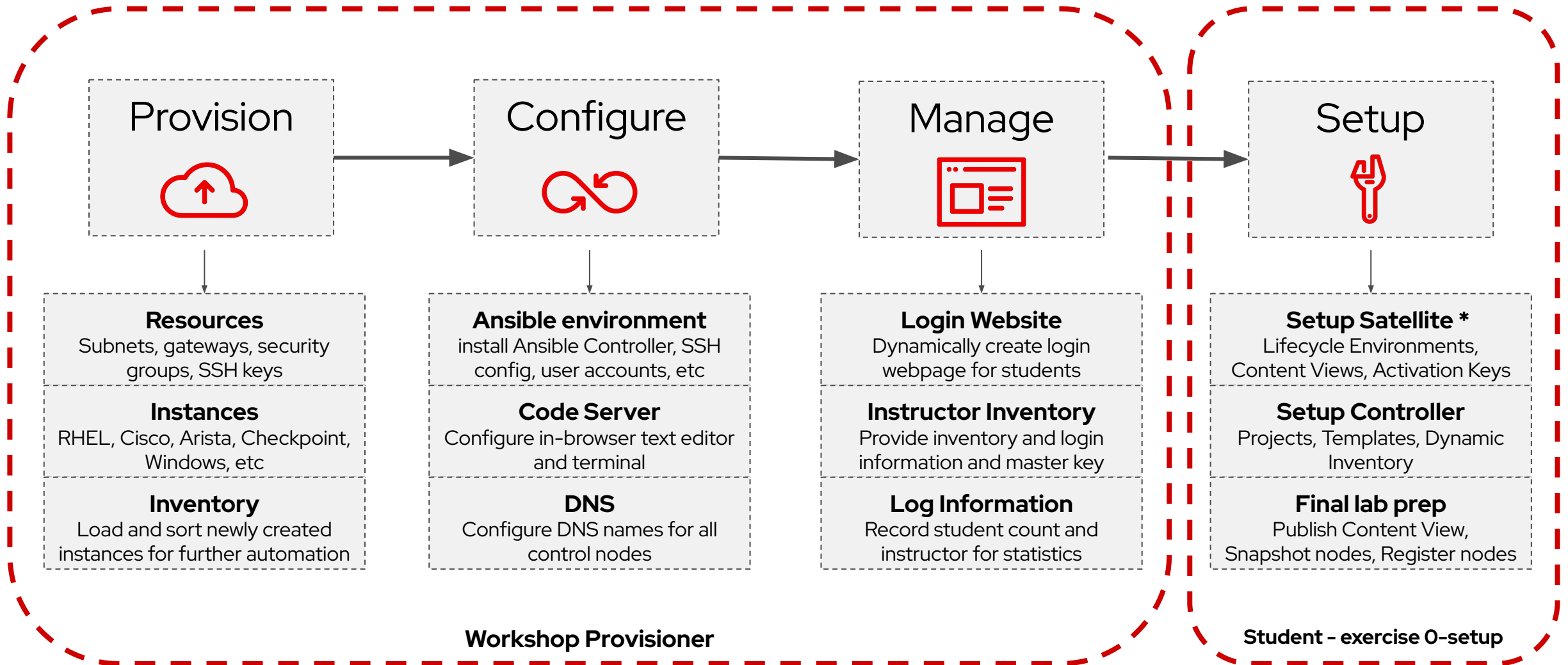
- **Red Hat Ansible Automation Platform**
- **Red Hat Satellite**

- **Red Hat Enterprise Linux**

- **CentOS Linux**



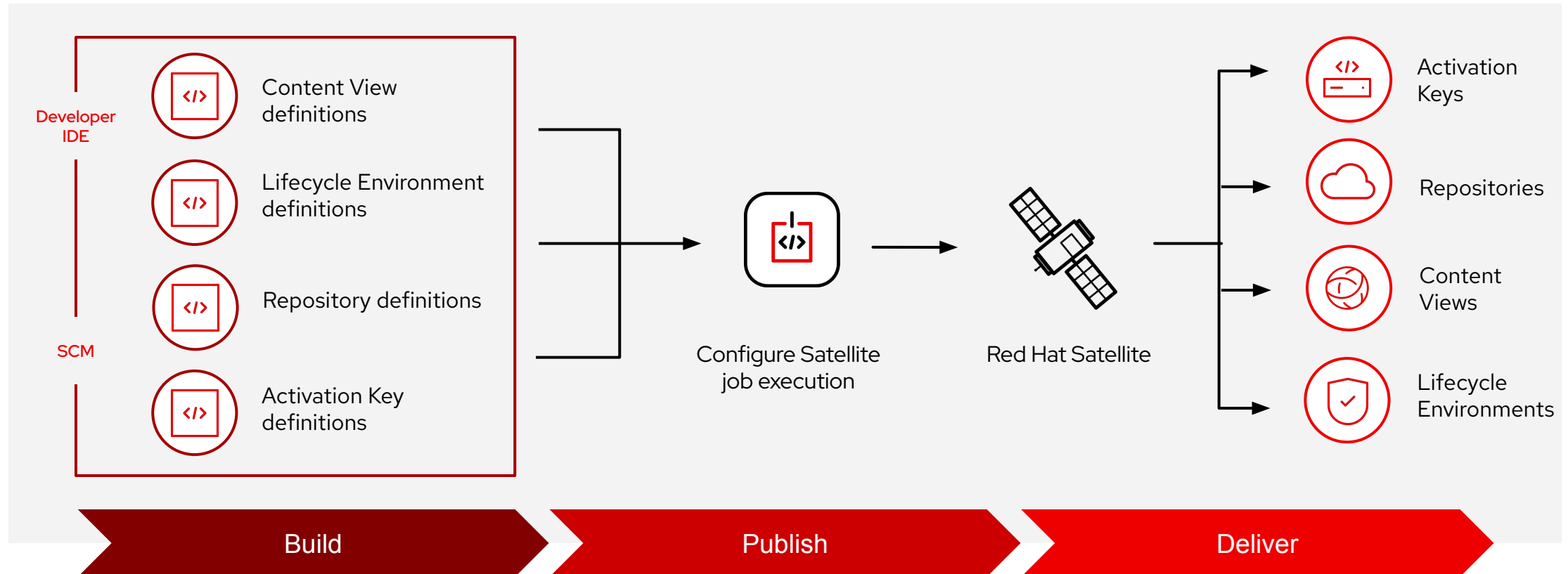
# How does it work?



\* Completed during workshop deployment

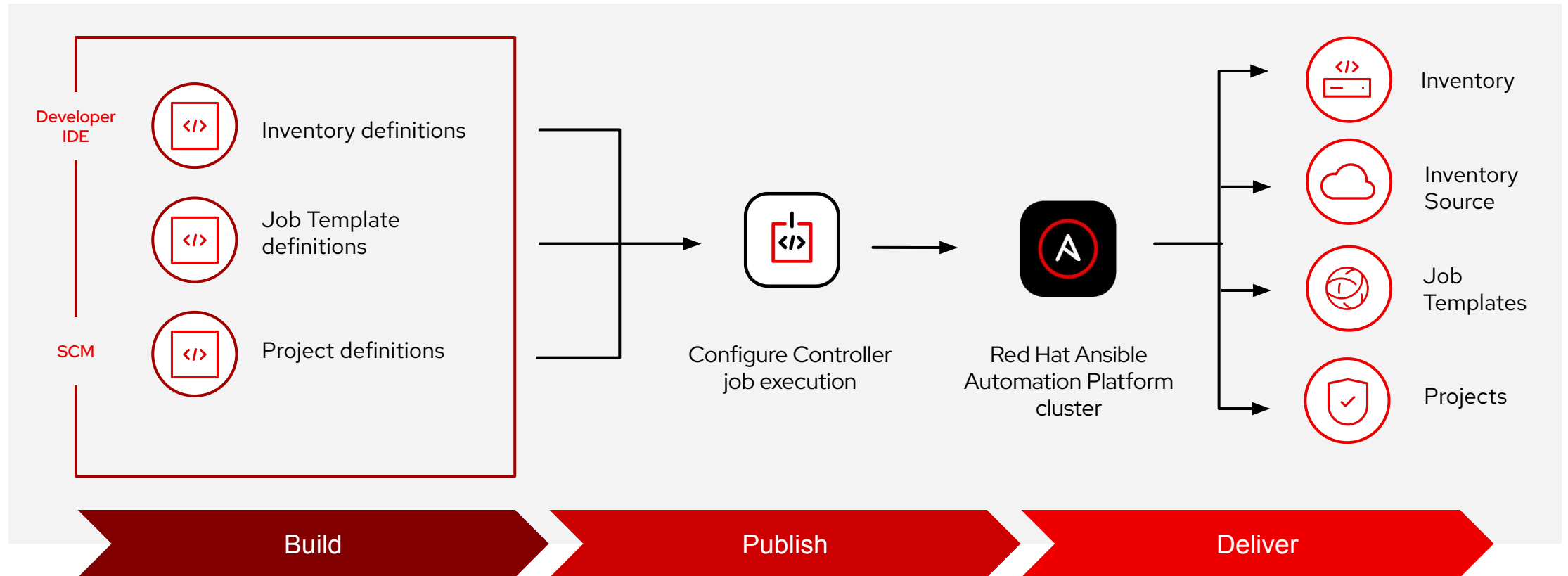
# Infrastructure as Code Architecture

## Day 1 configuration of Satellite



# Infrastructure as Code architecture

## Day 1 configuration of Automation controller







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## Lab Time

Begin exercise **0-intro** now in your lab environment  
~35 minutes



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# Exercise 1

## Compliance / Vulnerability Management

- Create an OpenSCAP compliance policy
- Create an Ansible template and automate an OpenSCAP scan
- Review ARF reporting in Satellite

**75%**

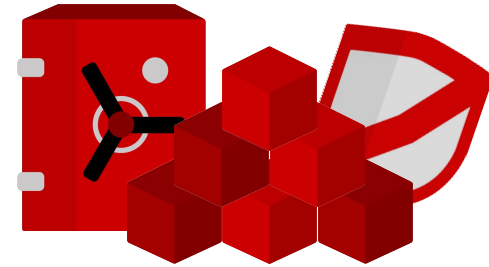
**of CIOs are investing to improve  
cyber-risk mitigation**

# Compliance management adds complexity



## Regulatory and industry standards

- National Institute of Standards and Technology (NIST)
- National Cybersecurity Agency of France (ANSSI)
- Health Insurance Portability and Accountability Act (HIPAA)
- Federal Risk and Authorization Management Program (FedRAMP) and more



## Compliance and security artifacts creation

- System security plans
- Security compliance audit documentation
- Gap analysis reports
- Audit and remediation baselines

# Security automation with OpenSCAP

Red Hat's security scanner is included with Red Hat Enterprise Linux and Red Hat Satellite



## **Validated and certified tool**

National Institute of Standards and Technology (NIST) certified Security Content Automation Protocol (SCAP) scanner with National Checklist content

## **System and container scanning**

Known vulnerability and security policy compliance scanning

## **Automation support**

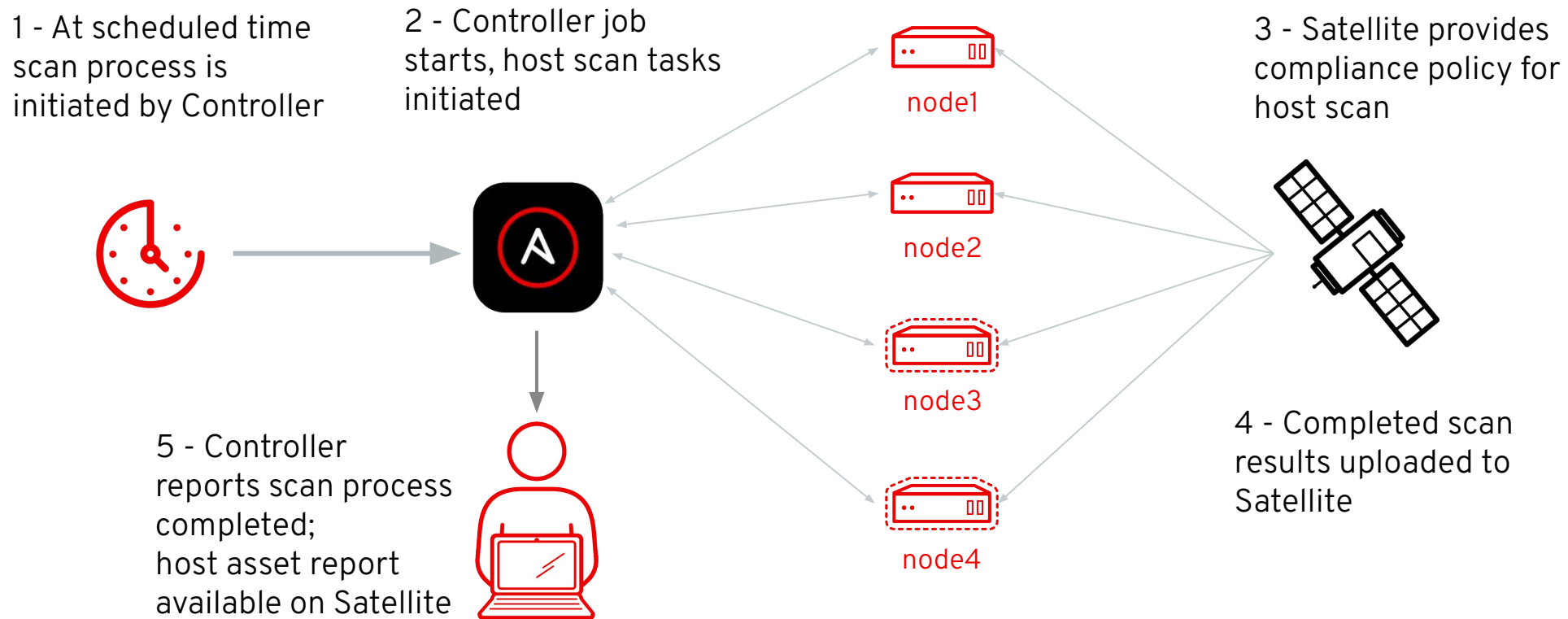
Red Hat® Ansible® Automation remediation Playbooks provided and supported by Red Hat

## **Customizable content**

Content customization through SCAP Workbench graphical interface

# OpenSCAP Workflow

Using Ansible Automation Platform to automate OpenSCAP in your environment





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## Lab Time

Complete exercise **1-openscap** now in your lab environment  
~35 minutes



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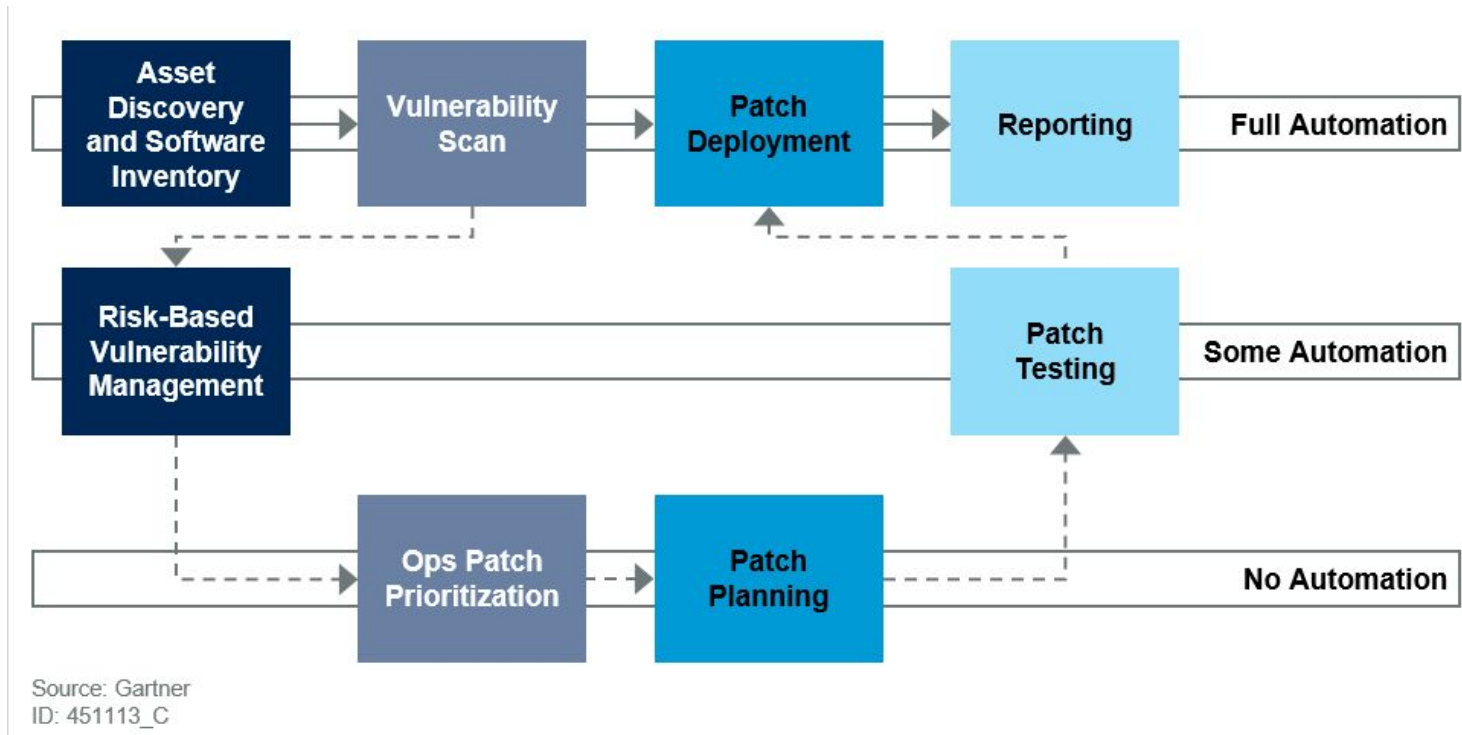


# Exercise 2

## Patch Management

- Automate Patching Prerequisites
- Automate Patch Deployment

# Automate Where Possible



*“Using multiple tools for patch automation is unavoidable and will improve both execution efficiency and patching success.”*

-Gartner

# Satellite and Ansible Controller Integration

Documented best practices to help optimize use of both products



## Dynamic Inventory

Allows Ansible Controller to use Satellite as a dynamic inventory and source of current systems state

## Satellite Content Collection

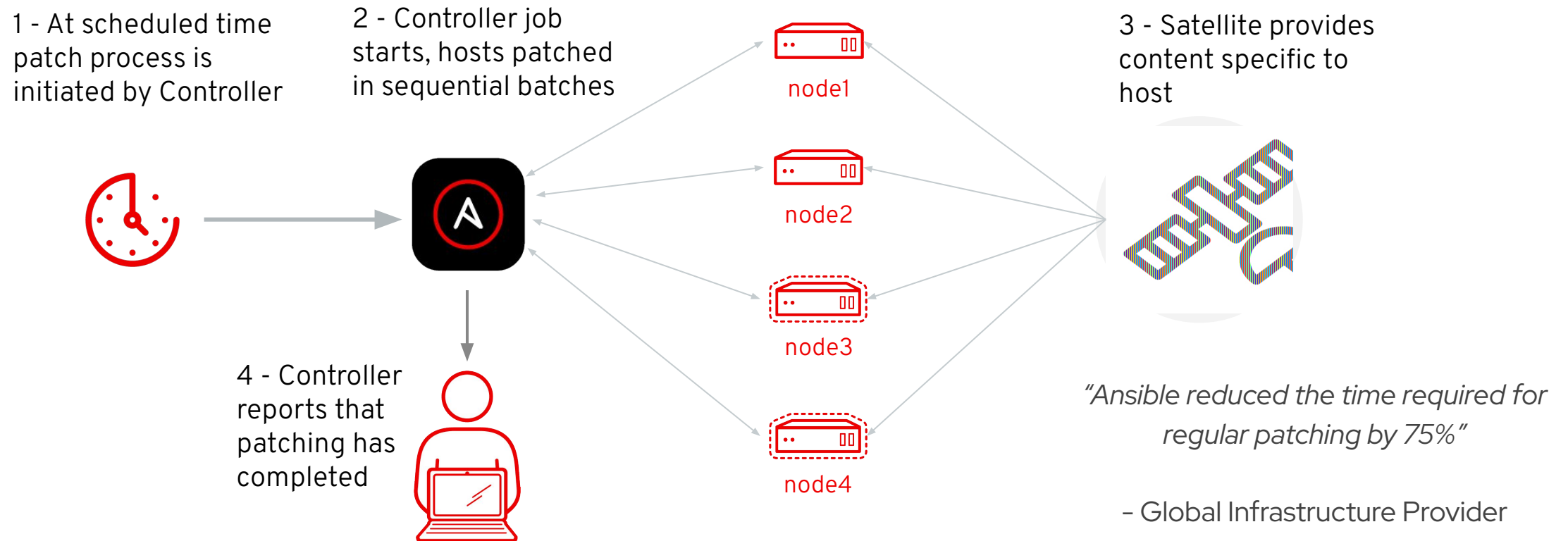
Ansible modules and roles for automating administrative tasks in Red Hat Satellite

## Post-Provision

Provides systems provisioned via Satellite a means to “callback” to Ansible Controller for post-provisioning playbook runs

# Automated Patching Solution

Using Ansible Automation Platform to automate patches through your environment





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## Lab Time

Complete exercise **2-patching** now in your lab environment  
~35 minutes



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# Exercise 3

CentOS to RHEL conversion

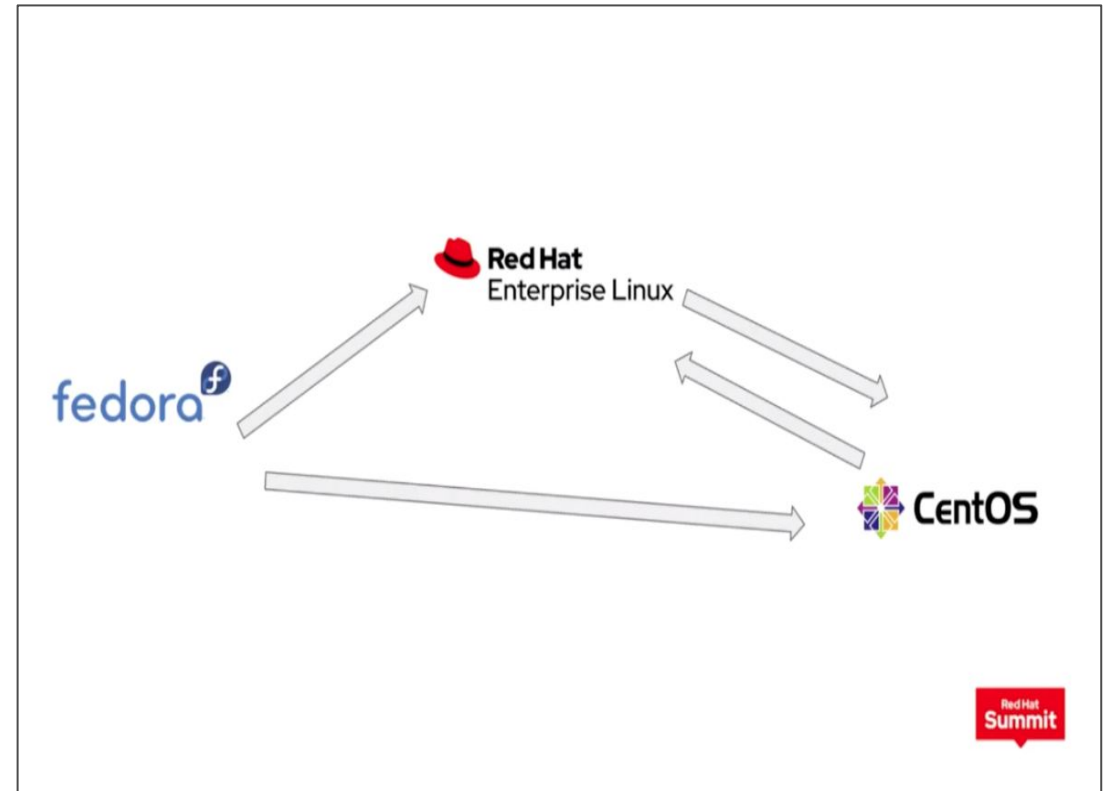
- CentOS - current/future state
- Using Satellite + Ansible Automation

Platform w/ existing CentOS

- RHEL Conversion Process

# CentOS - Previous State

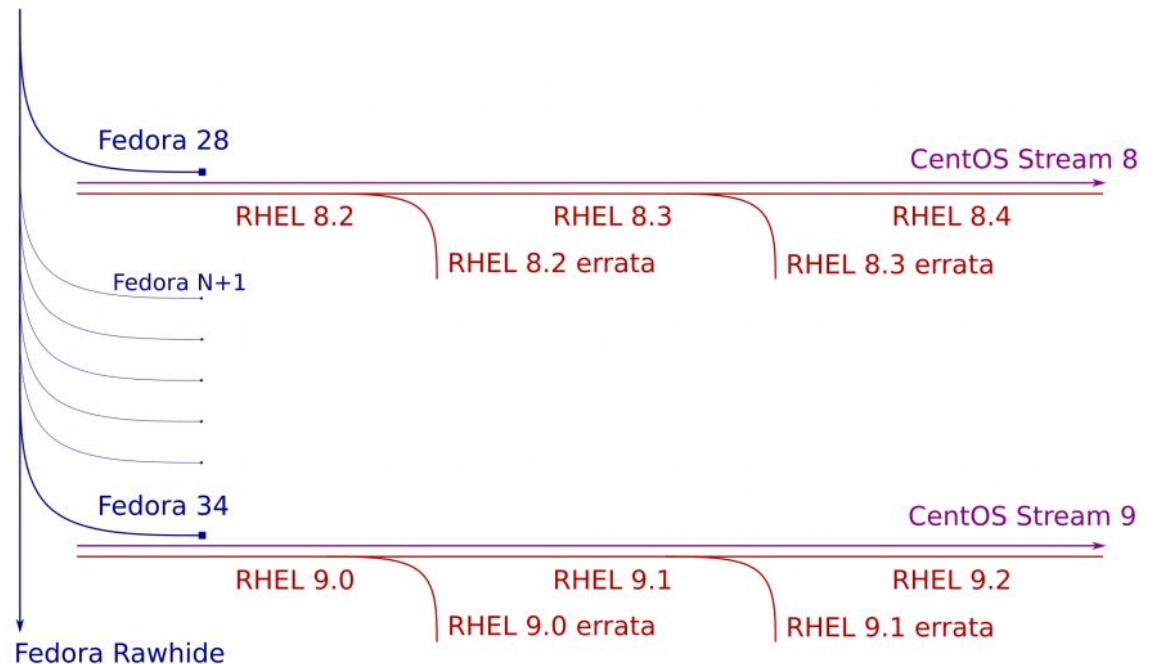
- CentOS Linux 8 retired on December 31, 2021
- CentOS Linux 7 will continue to receive updates until June 30, 2024
- Customers running CentOS Linux 7/8 will need to migrate to an alternative OS.





# CentOS - “Stream”ing now

- Provides a **Continuous Delivery model**, for the development of RHEL
- A rolling preview of the next minor release of RHEL
- **Faster feedback/features in RHEL** – the upstream **community** can merge/pull request against CentOS Stream, tracks closer to RHEL



# CentOS Stream: Moving Upstream

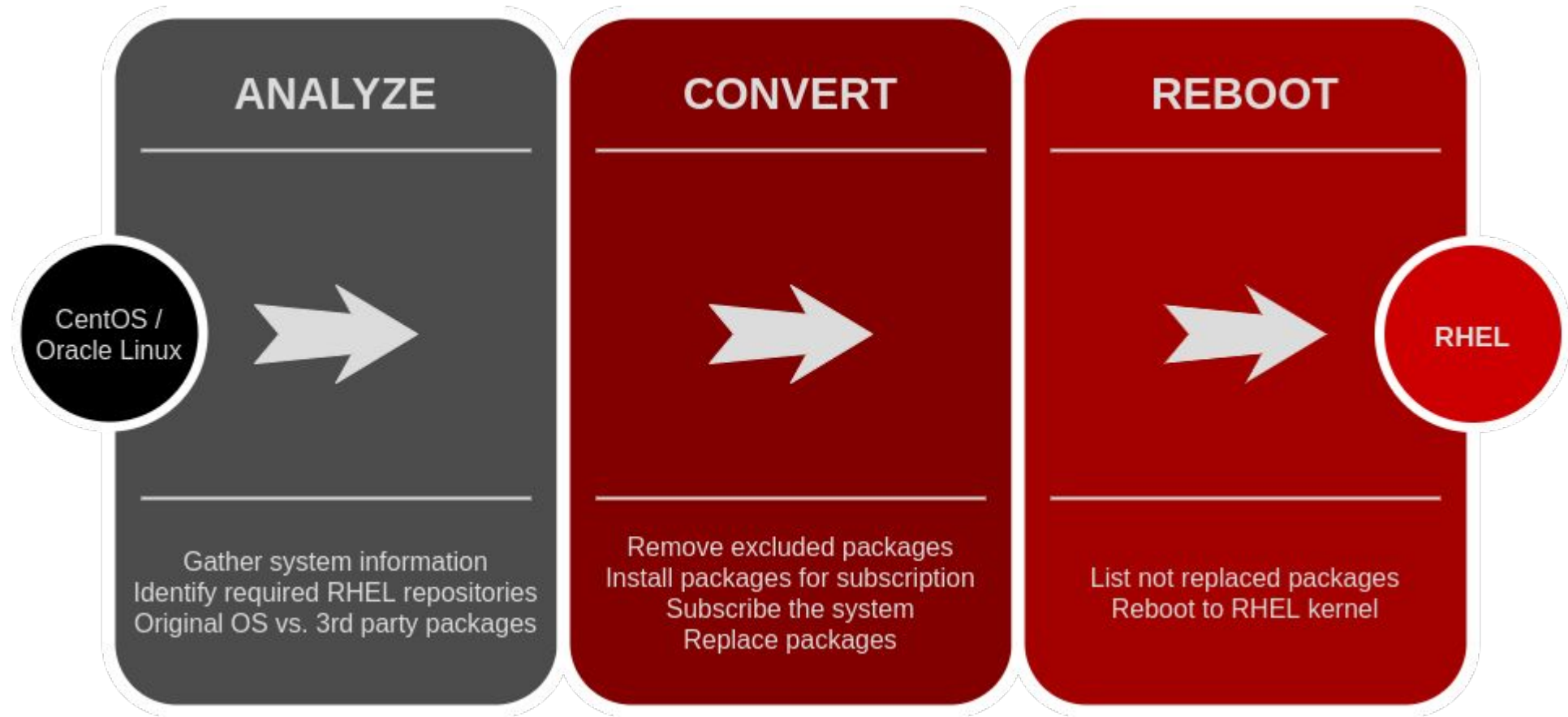


- ▶ We believe CentOS Stream represents the best way to further drive Linux innovation by giving customers and the broader ecosystem a closer connection to the development of Red Hat Enterprise Linux
- ▶ Positive interest in CentOS Stream since its introduction in 2019, including public statements from Facebook and Intel
- ▶ As an open source platform for development, CentOS Stream will become an innovation hub for Red Hat Enterprise Linux
- ▶ Red Hat is offering low- and no-cost options to ease the transition from CentOS Linux

## Which Platform is Right for You?

- Operating System development and desktop use cases: **Fedora**
- Hassle-free and secure OS for your home lab: **Red Hat Developer program** ([developers.redhat.com](https://developers.redhat.com))
- Dev & CI/CD to ensure RHEL compatibility: **Red Hat Developer program** ([developers.redhat.com](https://developers.redhat.com))
- Dev & CI/CD to ensure RHEL+1 compatibility: **CentOS Stream**
- Developing containerized applications: **RHEL Universal Base Image (UBI)**
- Participate in RHEL development: **CentOS Stream**
- Running mission critical workloads: **RHEL**
- Developing software for resale or hardware: **Red Hat Partner Connect Program** ([connect.redhat.com](https://connect.redhat.com))

# Steps of the migration



# Exercise Details

- ▶ Our CentOS 7 nodes are registered to the Satellite system via a complete CV/LE/Activation Key arrangement where we are mirroring what a traditional RHEL7\_Dev, RHEL7\_QA, RHEL7\_Prod env looks like and doing the same, only backed by custom CentOS repositories underpinning everything. We use subscription-manager on the CentOS nodes to register the nodes with the Satellite
- ▶ Utilize the [Convert2RHEL](#) tool (*Disclaimer: backup, test. backup, test. backup, test...*)
- ▶ Conversion source of RHEL packages:
  - Custom repositories (FTP, mounted ISO, etc.)
  - Red Hat Subscription Manager (CDN or Satellite) -- Satellite utilized for this exercise
- ▶ Roll back is possible up to the point-of-no-return, but users are advised to perform a complete system backup prior running the utility (remember the disclaimer?).
- ▶ All actions accomplished via Ansible roles, providing a greater understanding and following of migration process, permitting easier customization/specialization for individual conversion/migration requirements via Ansible Controller workflows on a case-by-case basis.

# Exercise Resources

- ▶ Knowledge base articles + videos
  - KB Article: [How to convert from CentOS or Oracle Linux to RHEL](#) (Jan 2021)
  - Blog: [Converting from CentOS to RHEL with Convert2RHEL and Satellite](#) (March 2020)
  - Blog: [Convert2RHEL: How to update RHEL-like systems in place to subscribe to RHEL](#) (Jan 2020)
  - YouTube: [Converting from CentOS Linux 8 to CentOS Stream](#) (Jan 2021)



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## Lab Time

Complete exercise **3-convert2rhel** now in your lab environment  
~45 minutes



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# Next Steps

## GET STARTED

[ansible.com/resources/get-started](https://ansible.com/resources/get-started)

[AAP-trial](#)

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## WORKSHOPS & TRAINING

[aap2.demoredhat.com/](https://aap2.demoredhat.com/)

**Red Hat Training**

## JOIN THE COMMUNITY

[ansible.com/community](https://ansible.com/community)

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## SHARE YOUR STORY

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# Next Steps

## SATELLITE RESOURCES

[Red Hat Satellite Blog - https://satelliteblog.redhat.com/](https://satelliteblog.redhat.com/)

[Red Hat Satellite Product page](#)

[Red Hat Satellite Customer Portal](#)

[Red Hat Satellite Documentation](#)

[Red Hat Consulting offering: Transition to Red Hat Satellite 6](#)

## SATELLITE TRAINING AND VIDEOS

**NEW COURSE** - [RH053: Satellite Technical Overview](#) also available on [Udemy](#)

[RH403: Red Hat Satellite 6 Administration](#)

Satellite 6.5 Reporting Engine Video: <https://www.youtube.com/watch?v=sBciejh1G80>

# Thank you



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



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