



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

Introduction

Topics Covered:

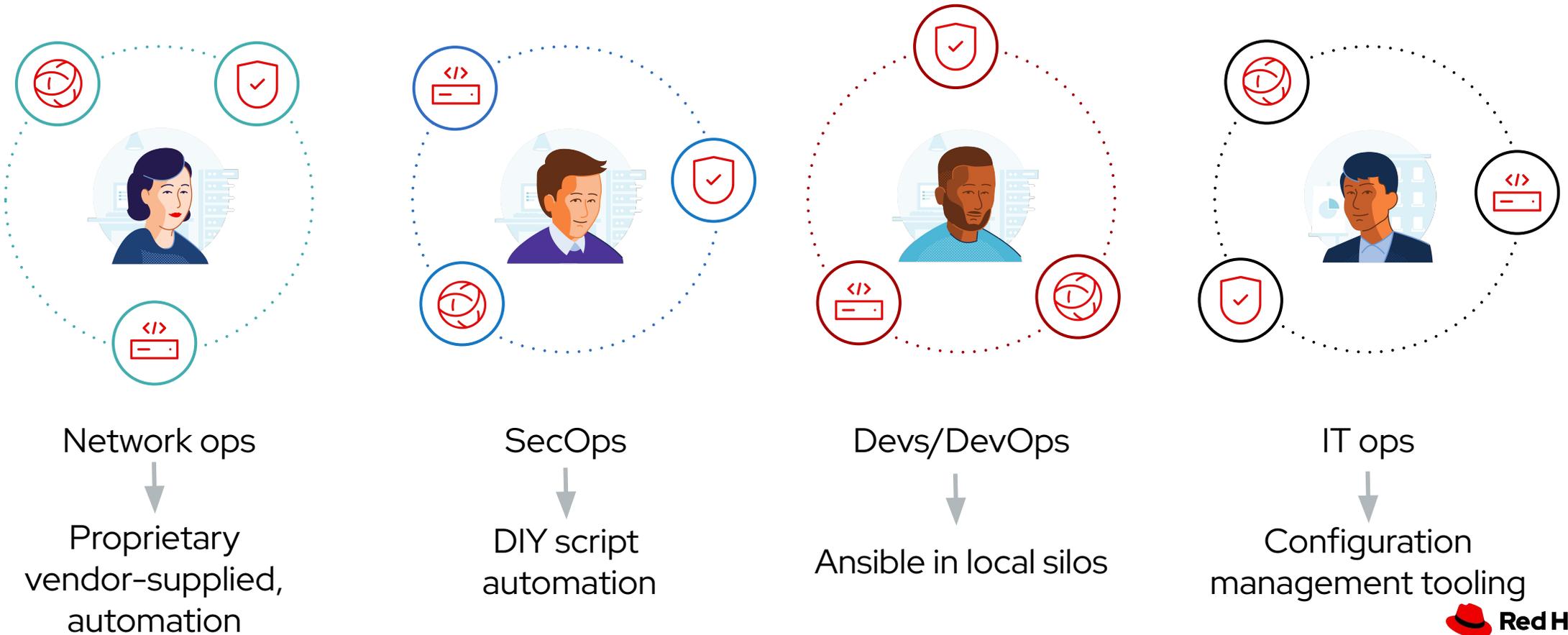
- Automation and Smart Management
 - Red Hat Ansible Automation Platform
 - Red Hat Satellite



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

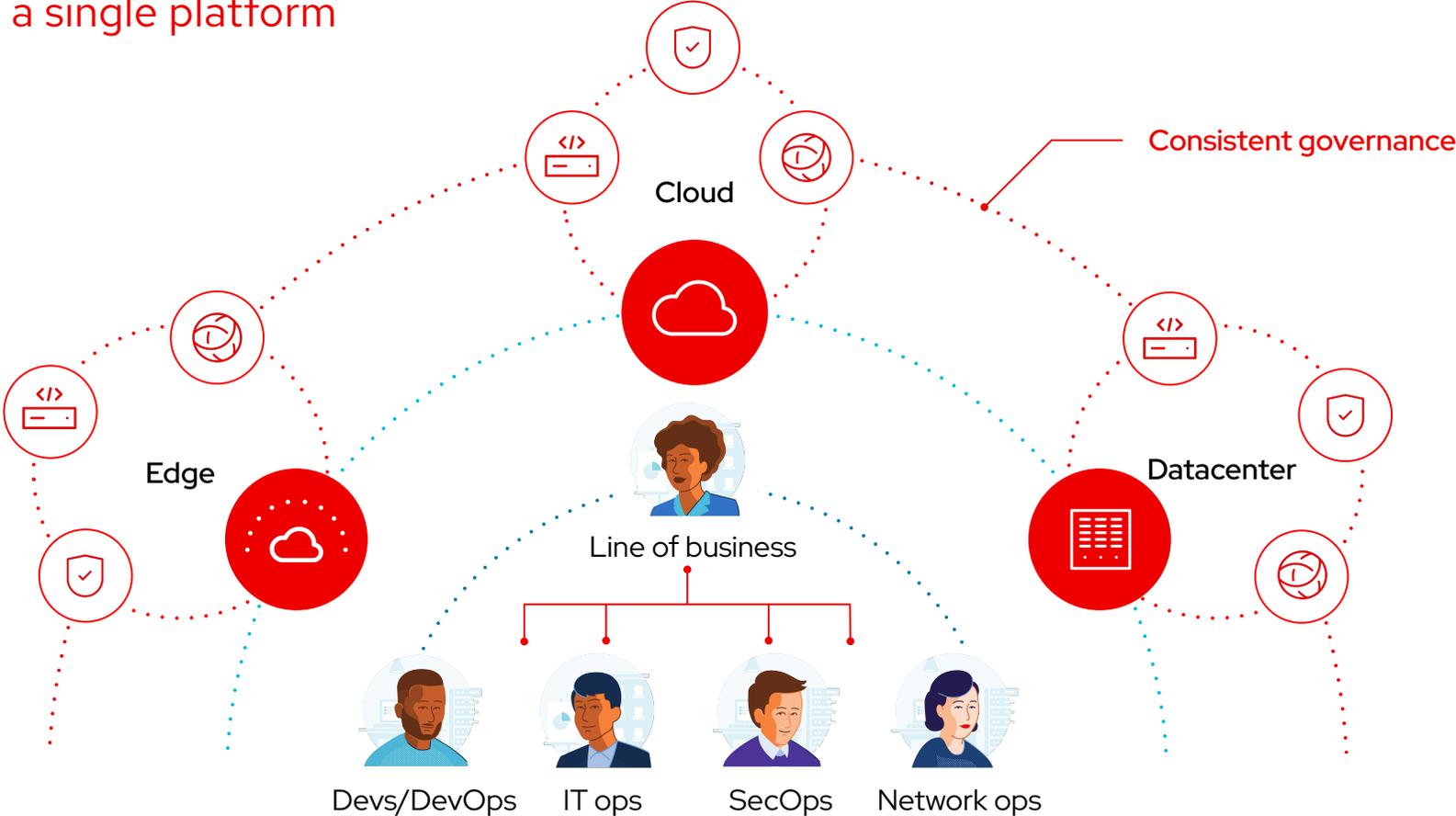
Many organizations share the same challenge

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™

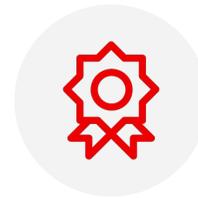
Infrastructure Automation Platforms

Q3 2020



Red Hat named a Leader in The Forrester Wave™

Infrastructure Automation Platforms, Q3 2020



Received highest possible score in the criteria of:

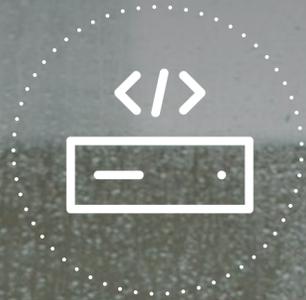
- Deployment functionality
 - Product Vision
 - Partner Ecosystem
 - Supporting products and services
 - Community support
 - Planned product enhancements
- "Ansible continues to grow quickly, particularly among enterprises that are automating networks. The solution excels at providing a variety of deployment 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.

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Manage. Secure. Operate.
Smart!

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



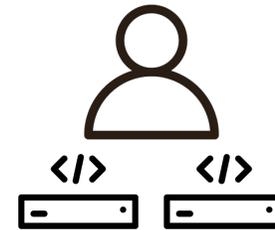
Manage sprawl

More infrastructure and complexity than ever to manage



Reducing risk

Lack of proactive assessment and management of known issues creates exposure



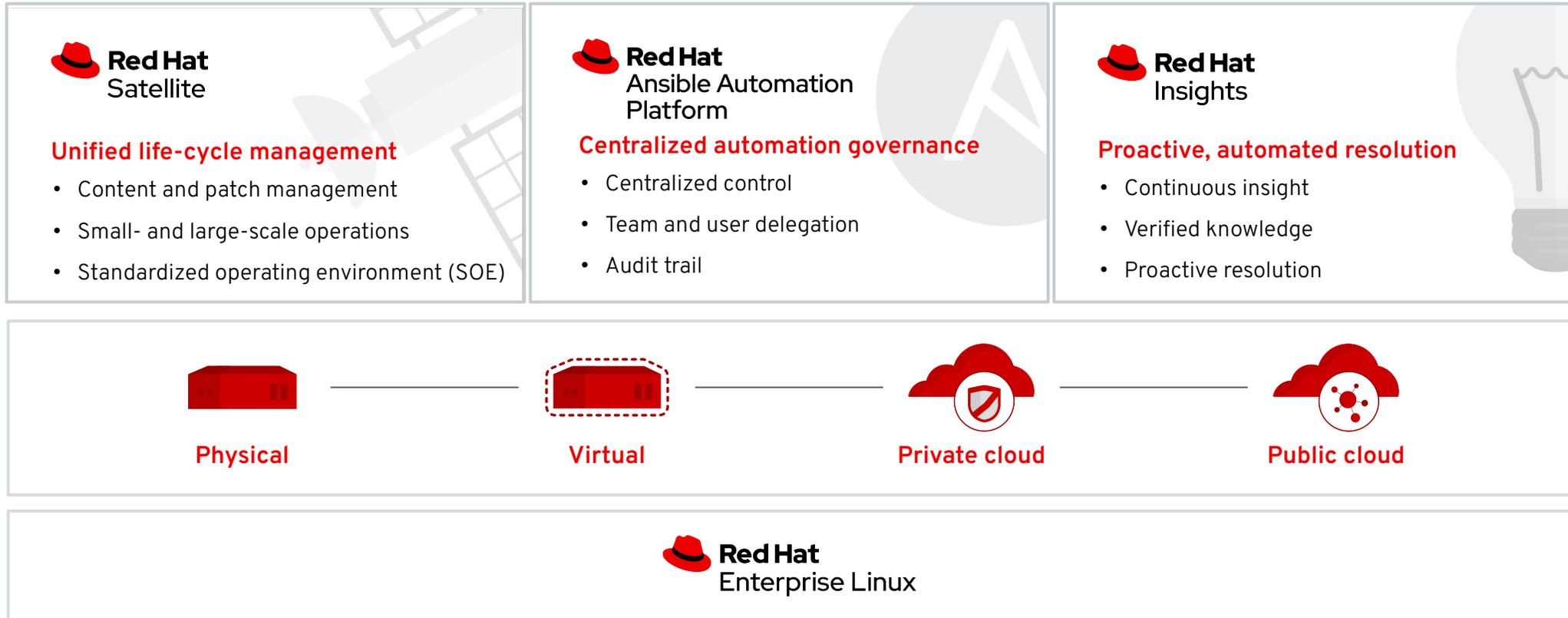
Limited resourcing

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

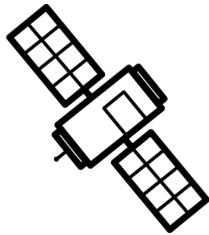
Smart Management enables you to improve the reliability, availability, security and compliance of your RHEL systems, running on any platform, while reducing TCO and repetitive tasks

Red Hat Automation and Smart Management

Life-cycle Management, Automated Operations, and Predictive Analytics



Working together to manage your Red Hat environment



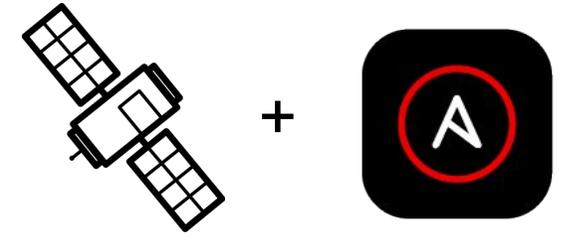
Satellite can

- ▶ 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 ...

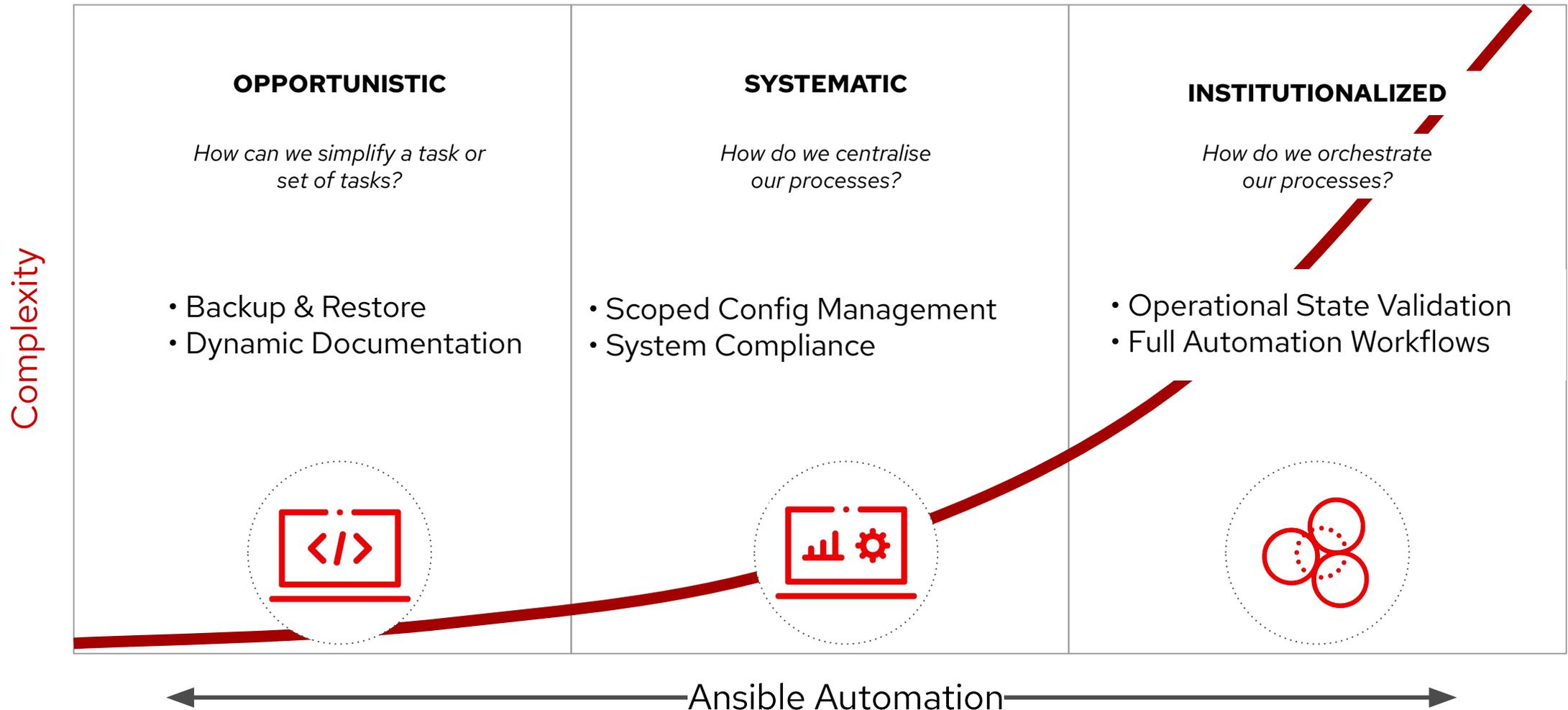
- ▶ Orchestrate provisioning
- ▶ Automate patching
- ▶ Full cross-platform management
 - continued next slide



Full Cross-Platform Management

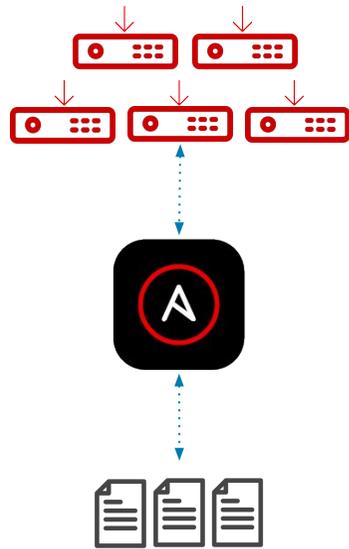
- Hybrid Cloud Dynamic Inventory
- Credential Management
- Orchestrated Workflows
- Lifecycle Patch Management
- Production Release Approvals
- Self Service Automation
- Role Based Access Control
- Red Hat Linux Automation
- Red Hat Satellite Automation
- Application startup/shutdown
- Network Services (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

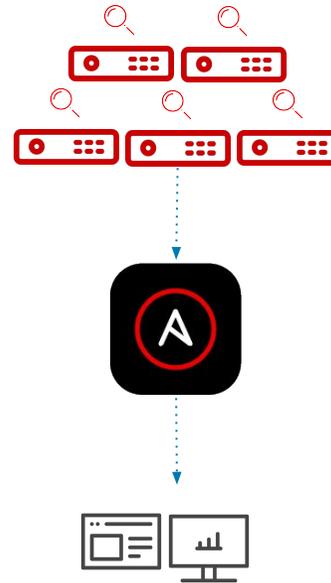
Quick automation victories for systems operators



Config Backup and Restore

Ubiquitous first touch use case

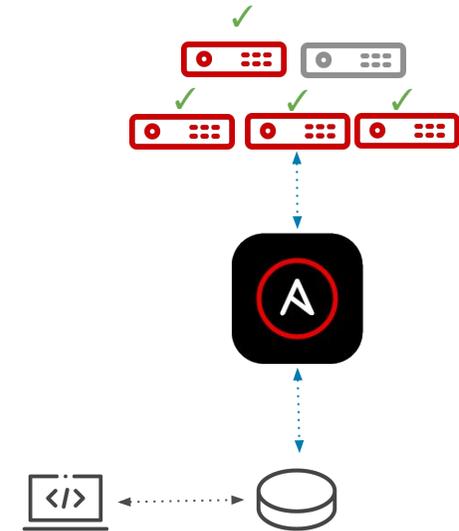
- Gain confidence in automation quickly
- First steps towards infra as code
- Quickly recover system state



Dynamic Documentation

Use Ansible facts to gain information

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



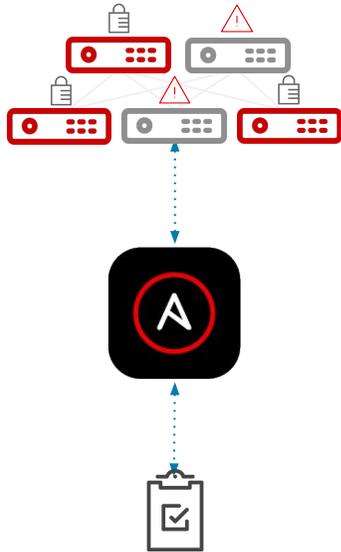
Scoped Config Management

Focus on high yield victories

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

Think Big

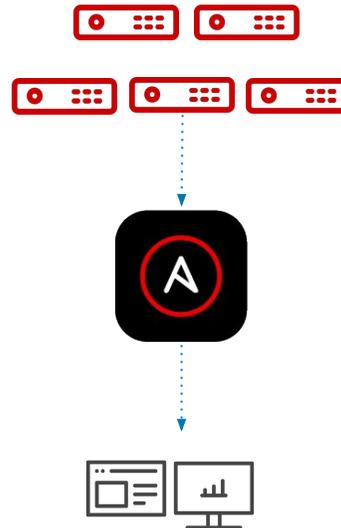
Institutionalizing automation into your organization



System Compliance

Respond quickly and consistently

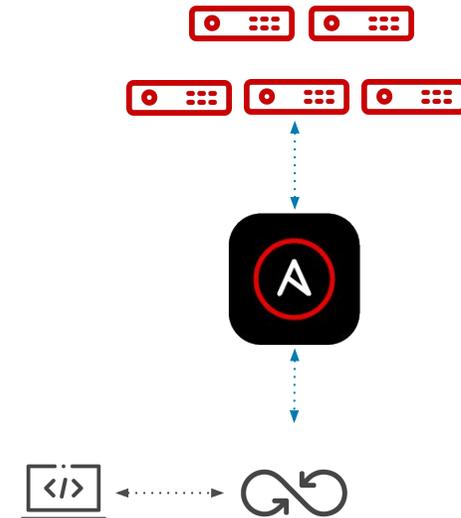
- Security and config compliance for systems
- Remove human error from security responses
- Enforce Configuration policies and hardening



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**

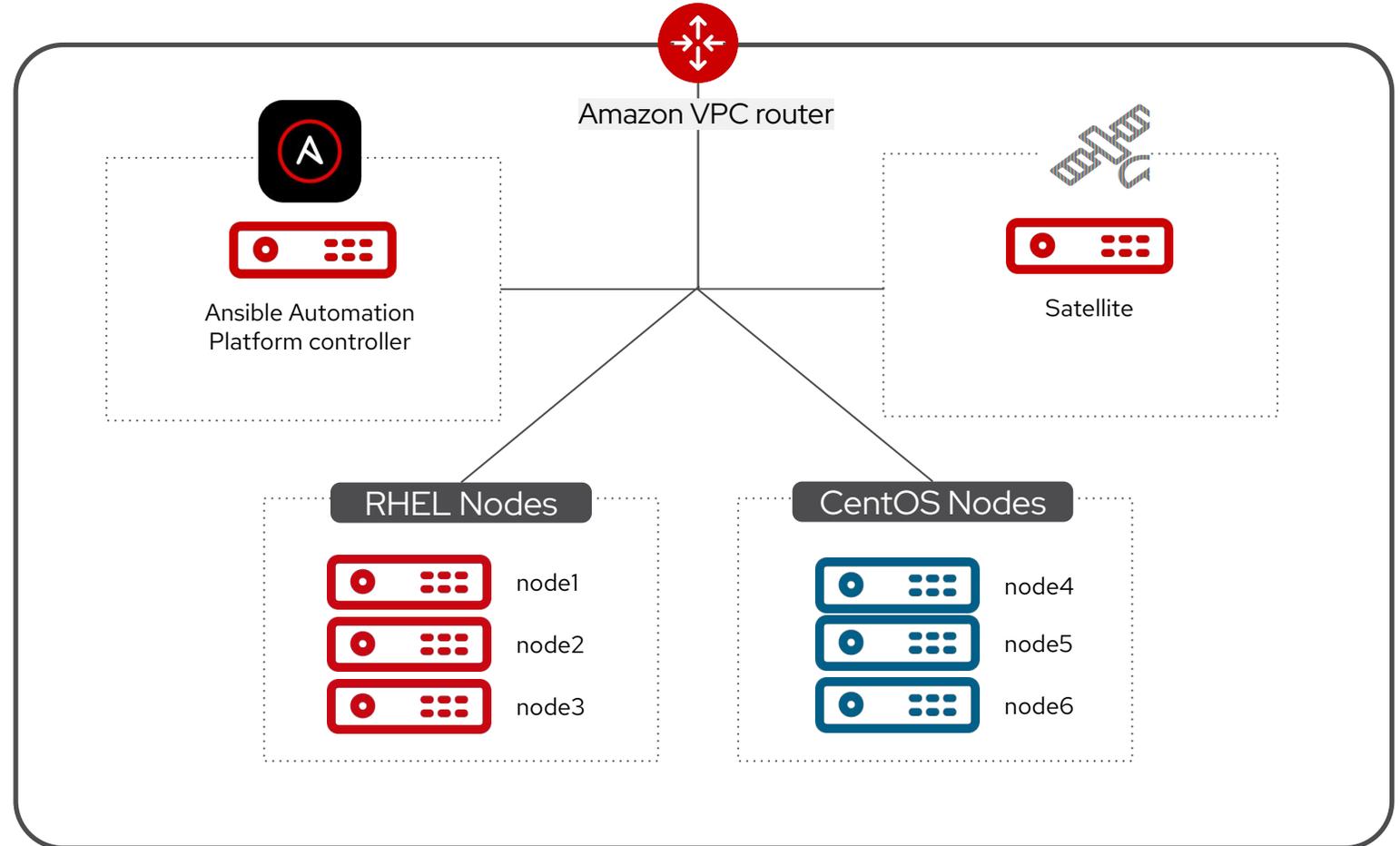
<https://github.com/ansible/workshops>

- **Learn with the real thing**

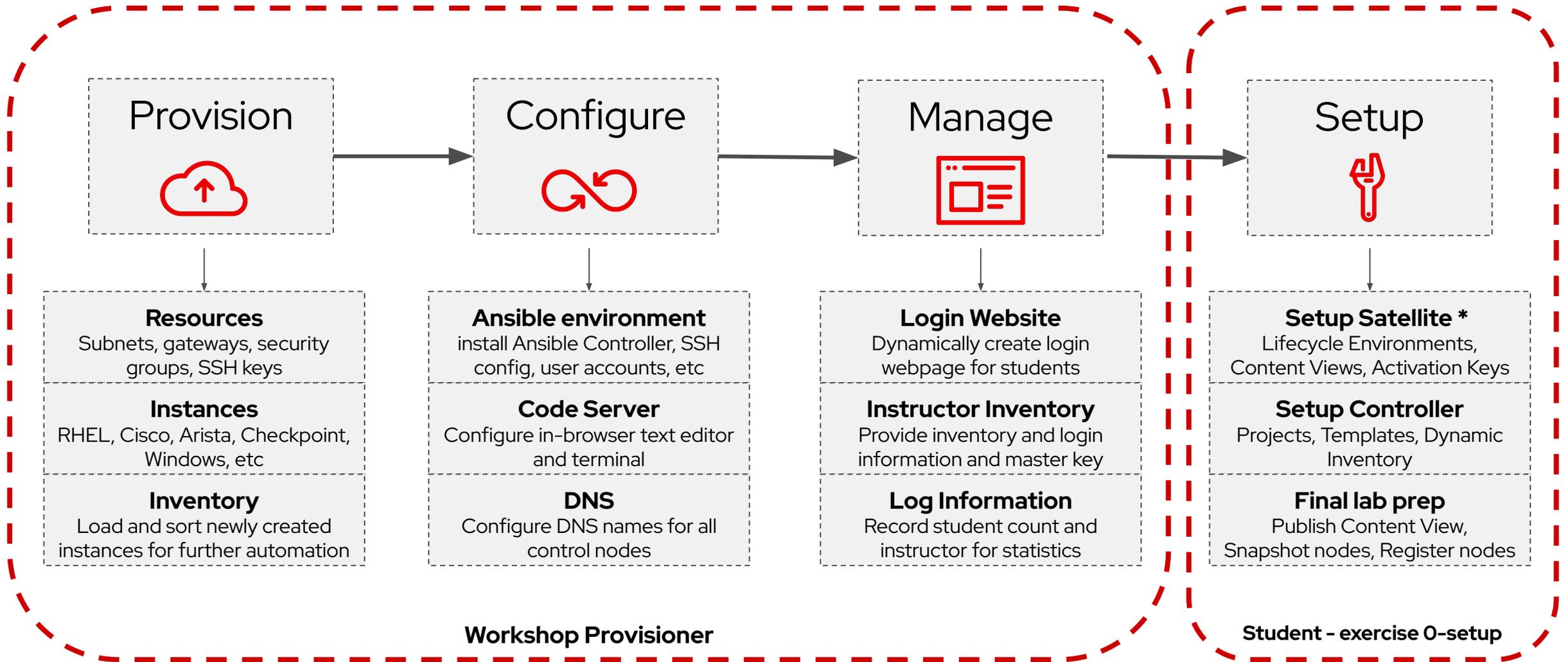
- **Red Hat Ansible Automation Platform**
- **Red Hat Satellite**

- **Red Hat Enterprise Linux**

- **CentOS Linux**



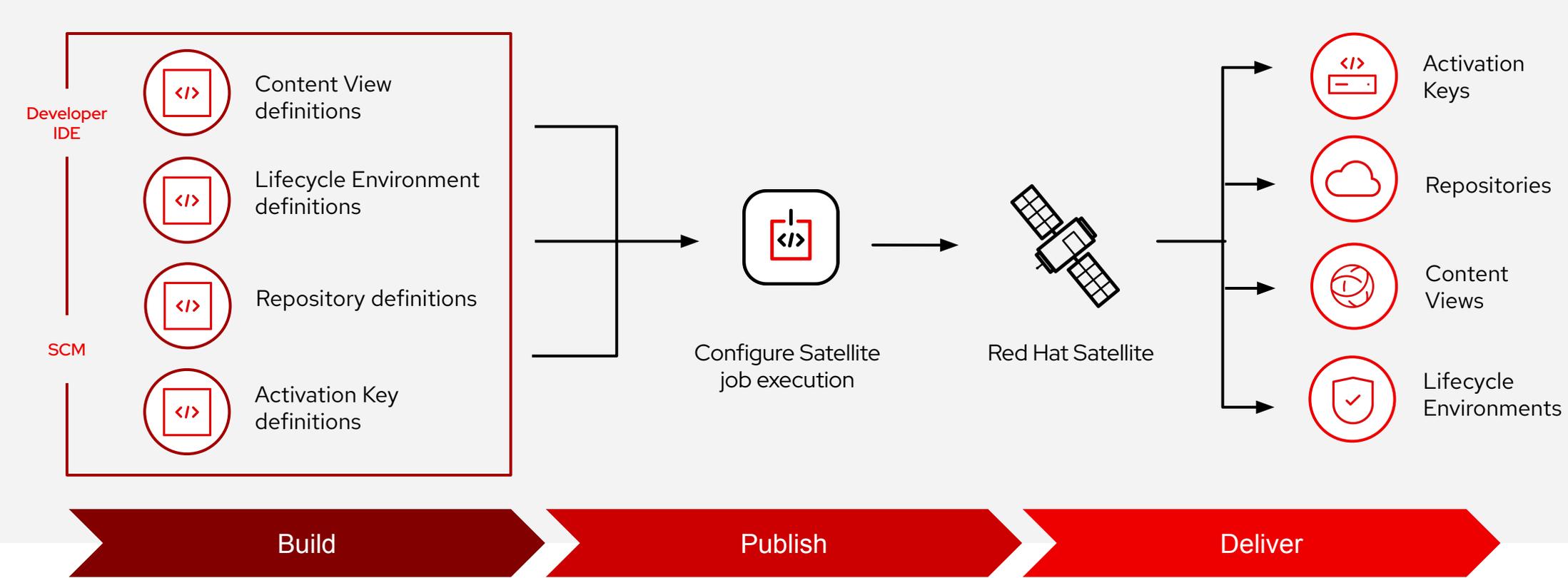
How does it work?



* Completed during workshop deployment

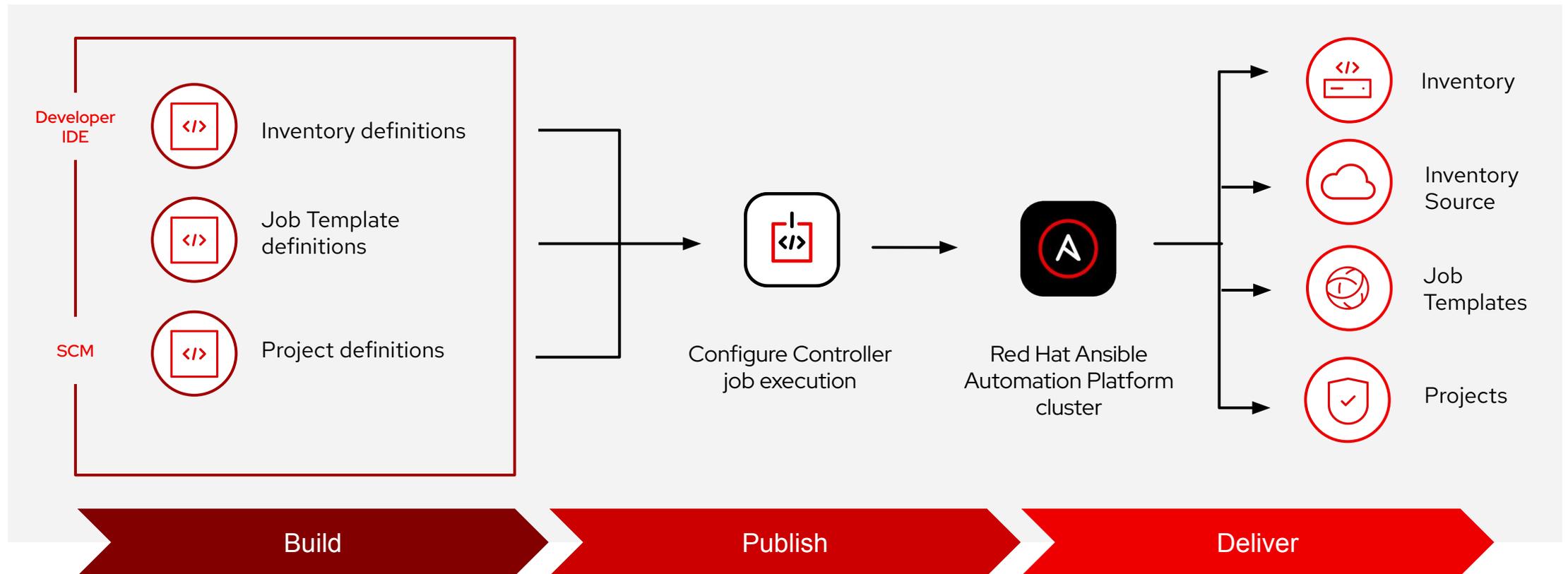
Infrastructure as Code Architecture

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

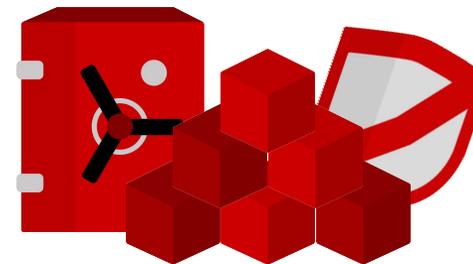
Compliance / Vulnerability Management

- 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

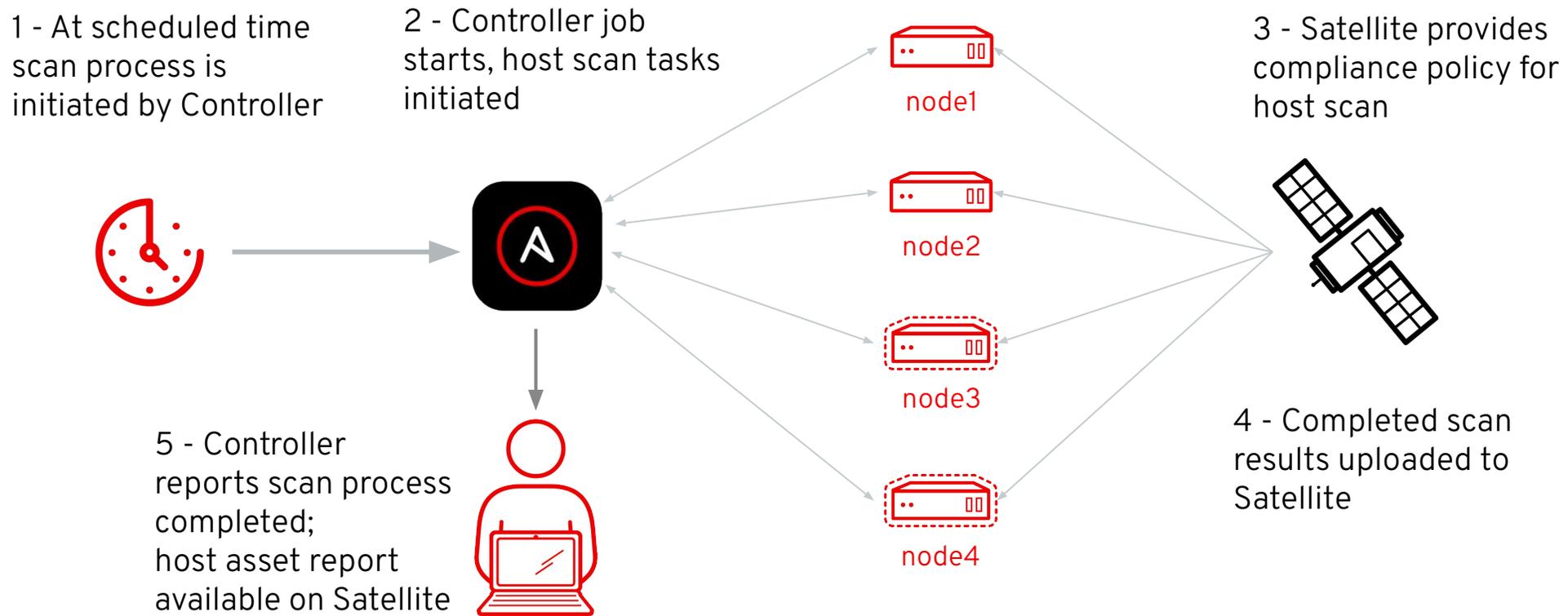
Red Hat® Ansible® Automation remediation Playbooks provided and supported by Red Hat

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



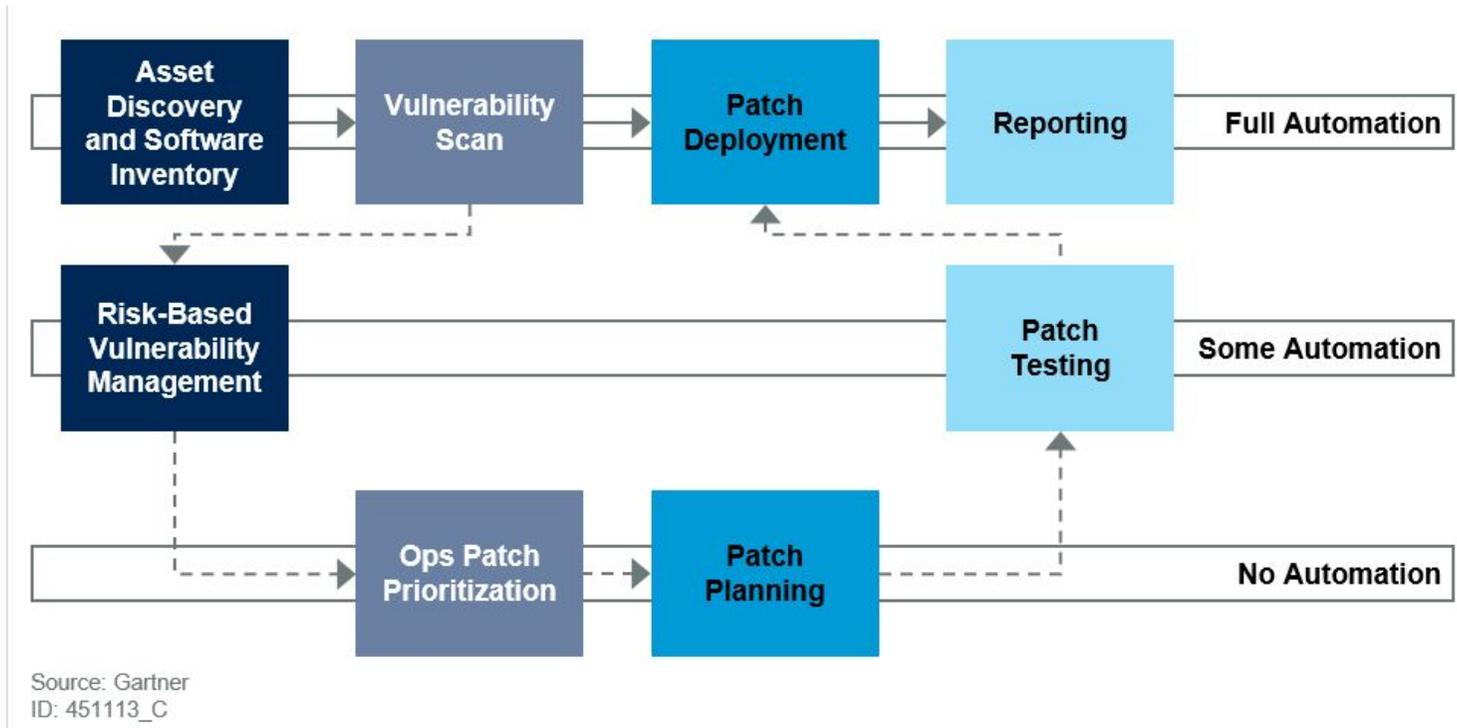
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Exercise 2

Patch Management

- Automate Patching Prerequisites
- Automate Patch Deployment

Automate Where Possible

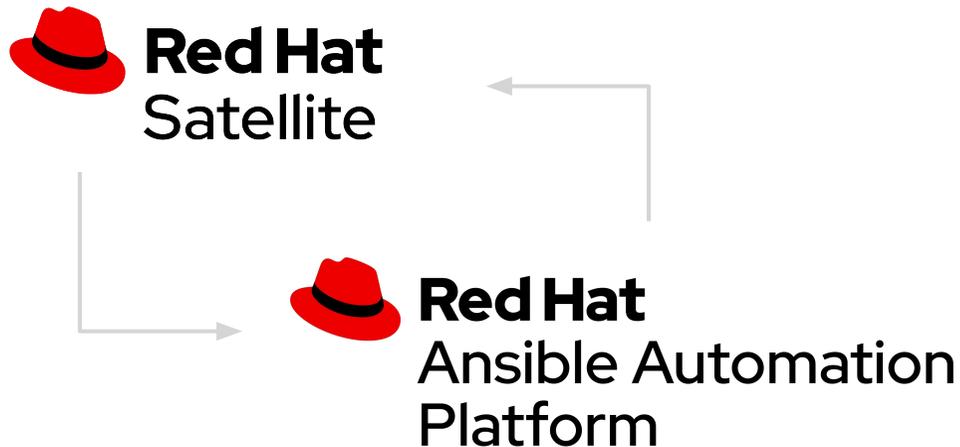


“Using multiple tools for patch automation is unavoidable and will improve both execution efficiency and patching success.”

-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

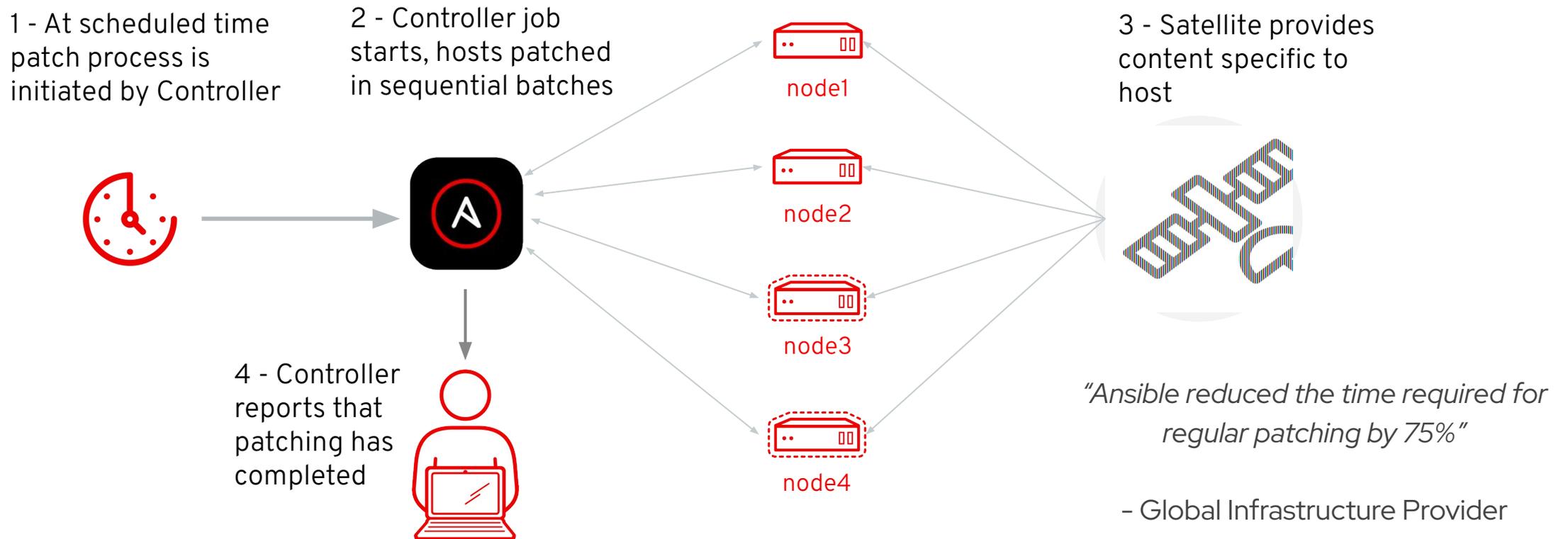
Ansible modules and roles for automating administrative tasks in Red Hat Satellite

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

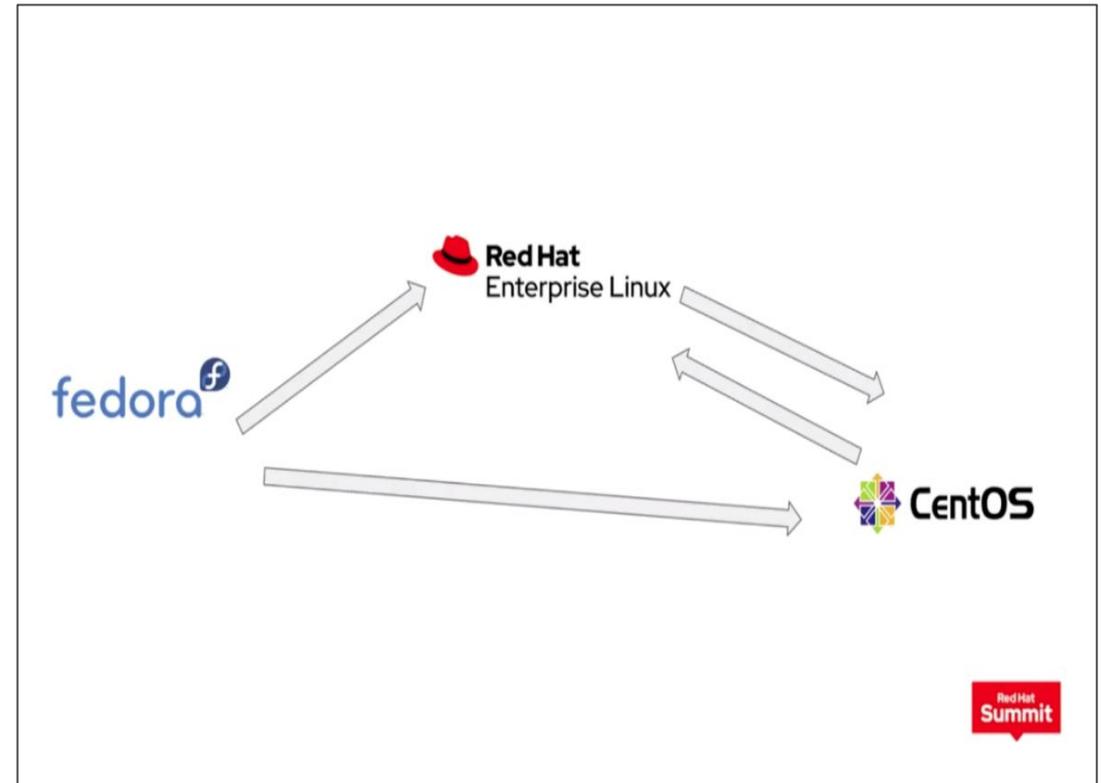
- CentOS - current/future state
- Using Satellite + Ansible Automation

Platform w/ existing CentOS

- RHEL Conversion Process

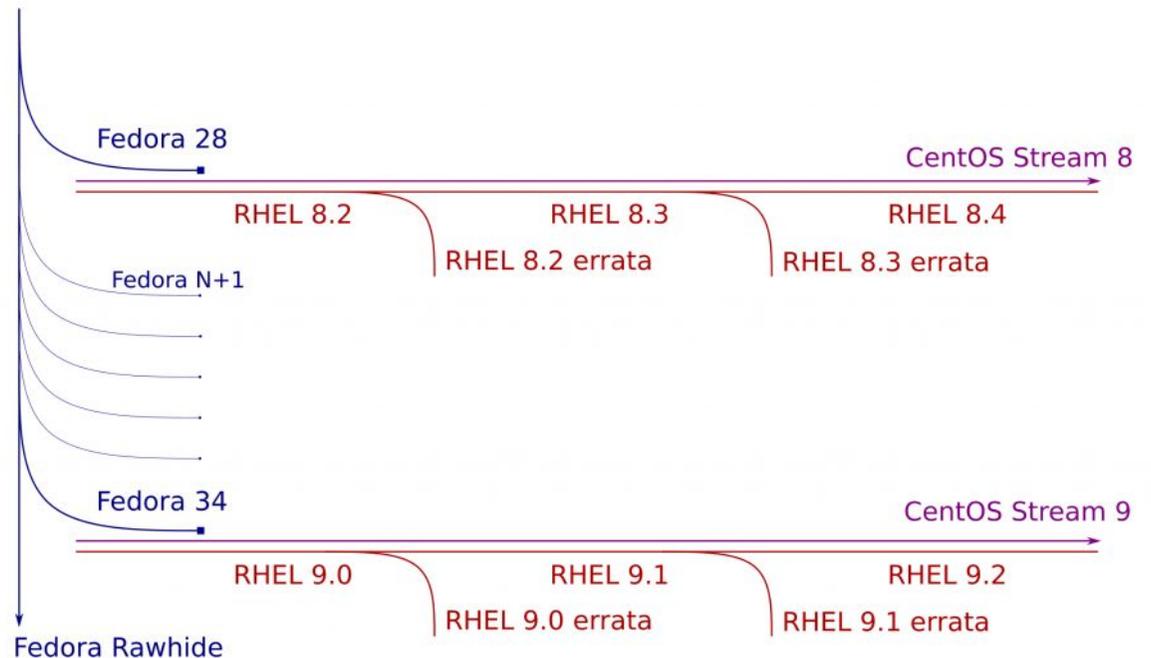
CentOS - Previous State

- 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

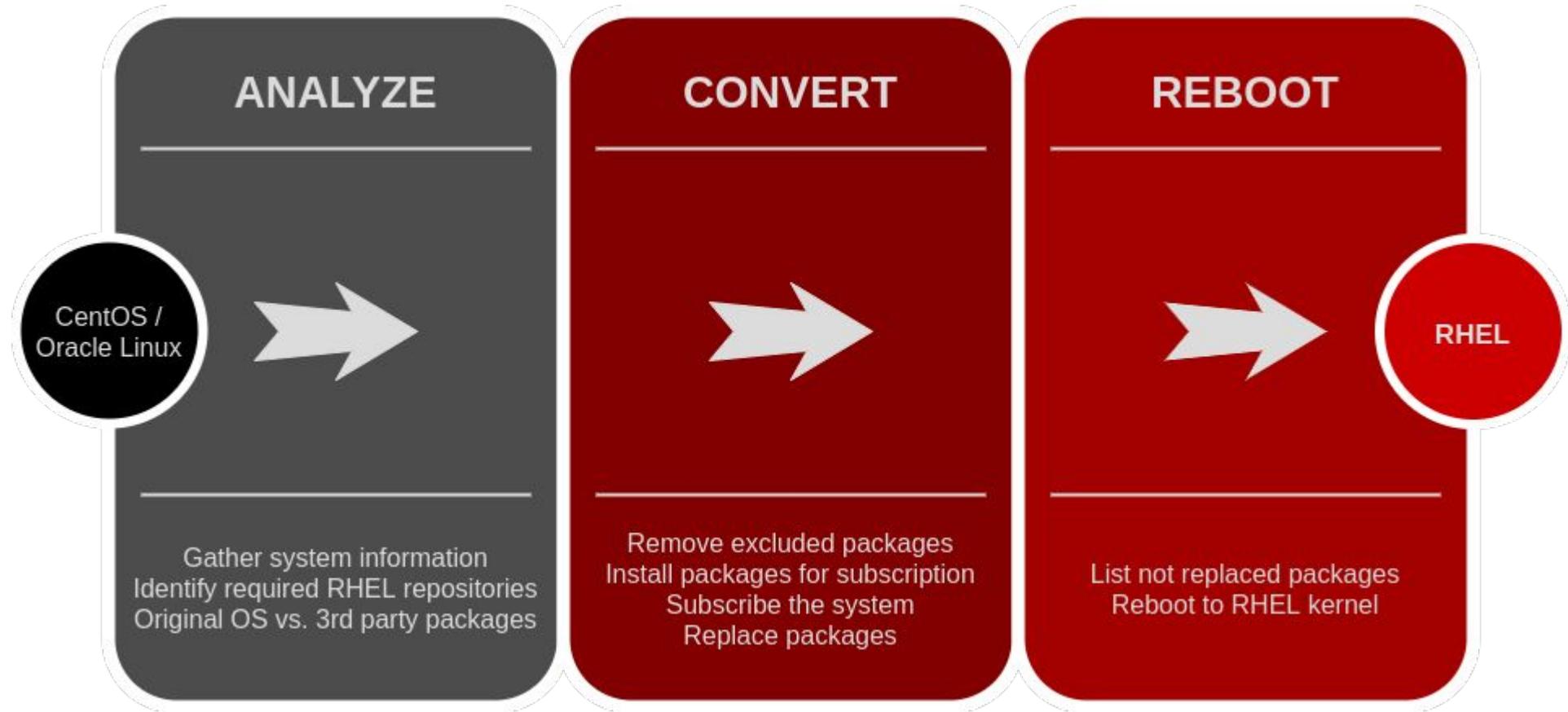


- ▶ We believe CentOS Stream represents the best way to further drive Linux innovation by giving customers and the broader ecosystem a closer connection to the development of Red Hat Enterprise Linux
- ▶ Positive interest in CentOS Stream since its introduction in 2019, including public statements from 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)
- Dev & CI/CD to ensure RHEL compatibility: **Red Hat Developer program** (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)

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

[AAP-trial](#)

WORKSHOPS & TRAINING

aap2.demoredhat.com/

Red Hat Training

JOIN THE COMMUNITY

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

SHARE YOUR STORY

Follow us @Ansible

Friend us on Facebook

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://www.linkedin.com/company/red-hat)

 [youtube.com/AnsibleAutomation](https://www.youtube.com/AnsibleAutomation)
[youtube.com/RedHat](https://www.youtube.com/RedHat)

 [facebook.com/ansibleautomation](https://www.facebook.com/ansibleautomation)

 twitter.com/ansible
twitter.com/RedHatSatellite

 github.com/ansible
github.com/RedHatSatellite