



# Automation is for Humans

## Enterprise DevOps with Ansible

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Patrick Regan  
Sr. Solutions Architect

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# IT Value

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# Digital Transformation

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# Obstacles

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# Complexity Kills Productivity

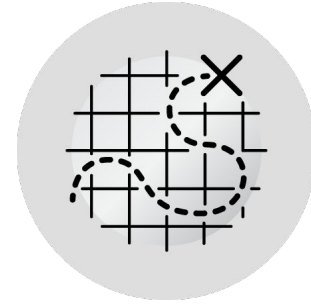
# Good IT Has



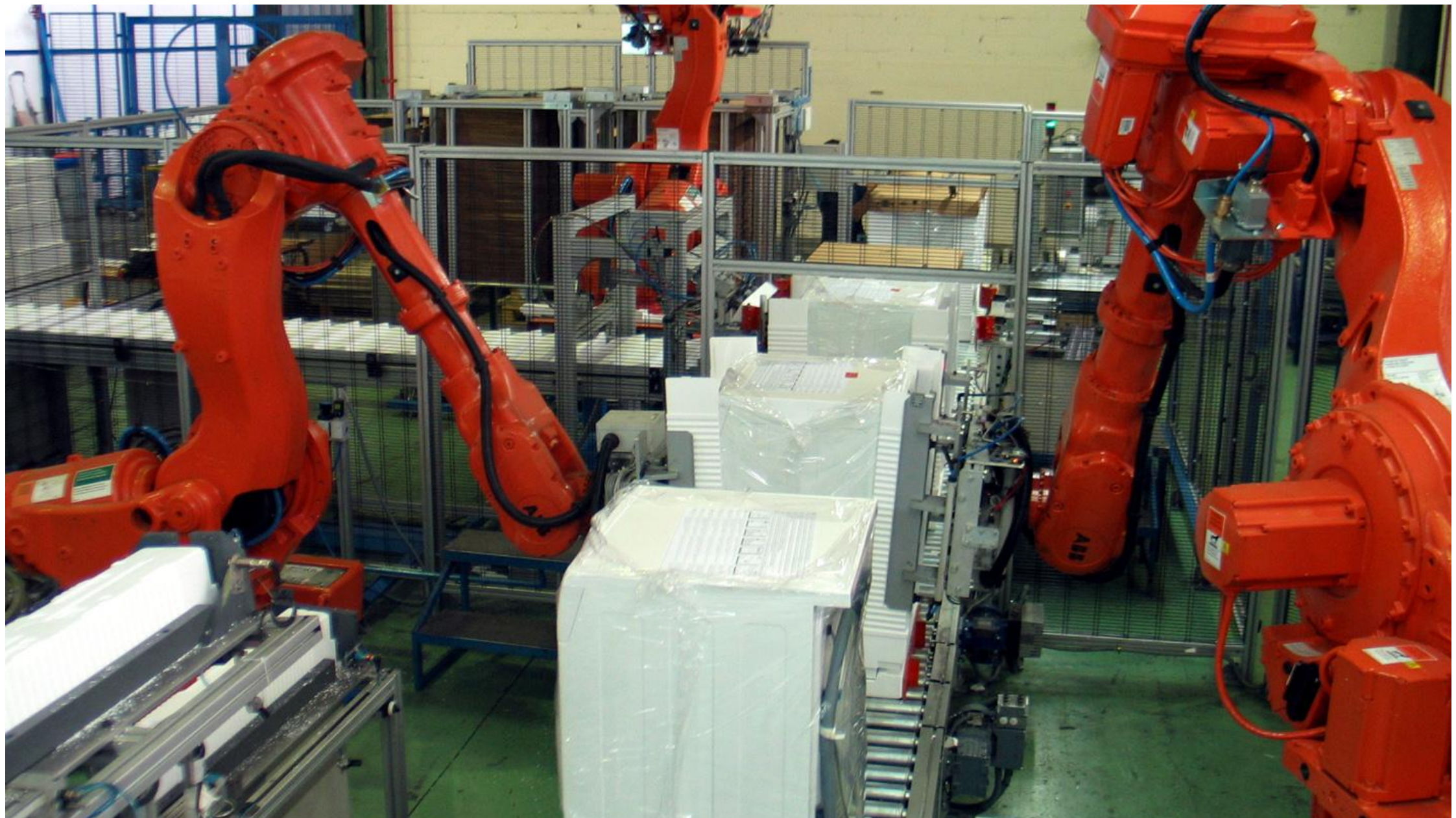
**Quality**



**Speed**



**Agility**



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# Consistency



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# Service

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# Speed

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# Human Elevation

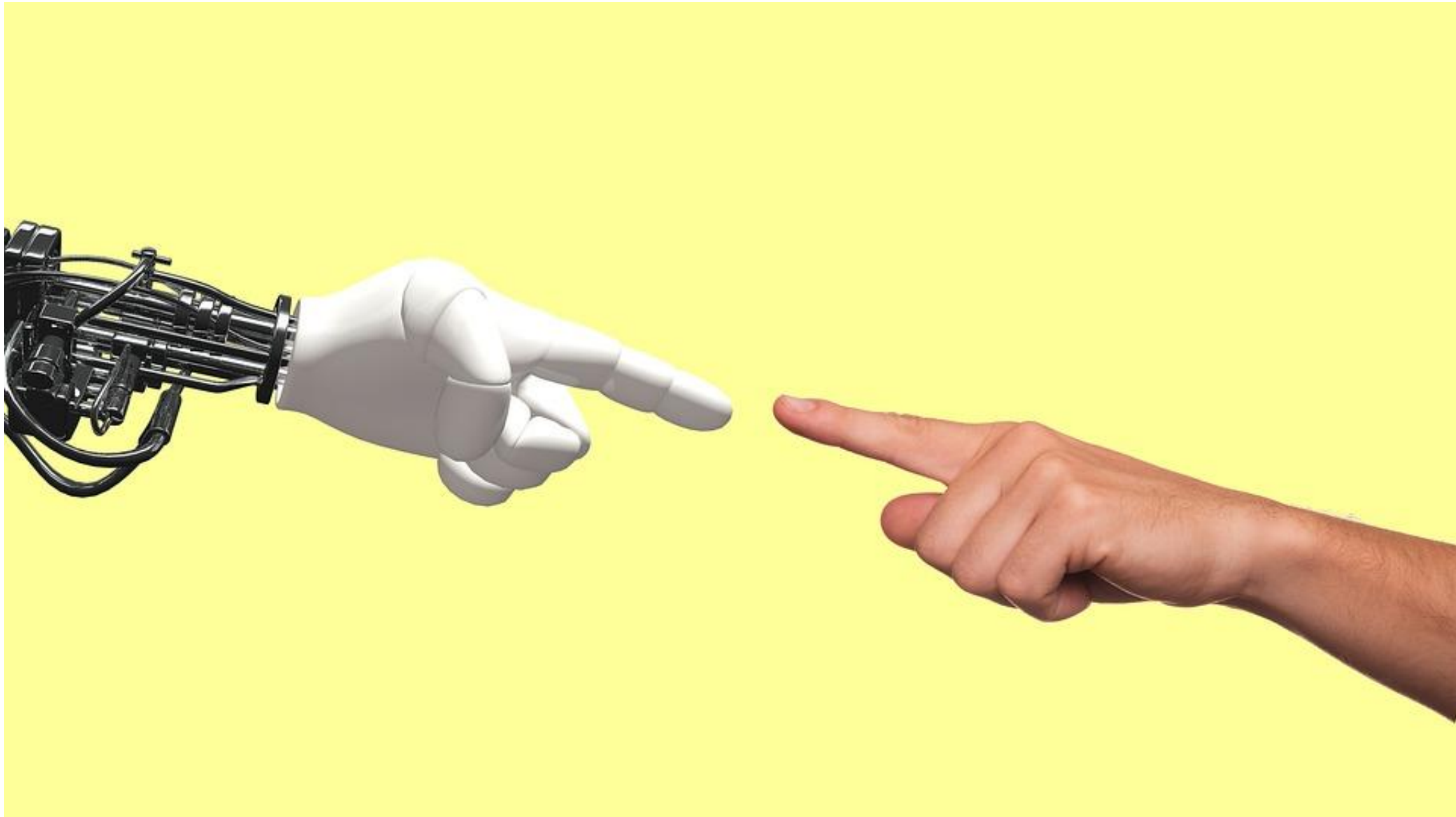
# Engineering with Empathy

Development



Operations

DevOps



# Perfect Automation

What do we want our automation to look and feel like?

Simple

Powerful

Universal

Speak a Common Language



**Red Hat**  
Ansible Automation  
Platform

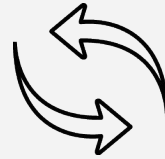
# Automation is for Humans

# Why Ansible?



## Simple

- Human readable automation
- No special coding skills needed
- Tasks executed in order
- Usable by every team
- Get productive quickly**



## Powerful

- App deployment
- Configuration management
- Workflow orchestration
- Network automation
- Orchestrate the app lifecycle**



## Agentless

- Agentless architecture
- Uses OpenSSH & WinRM
- No agents to exploit or update
- Get started immediately
- More efficient & more secure**

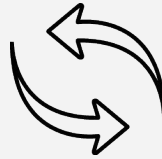


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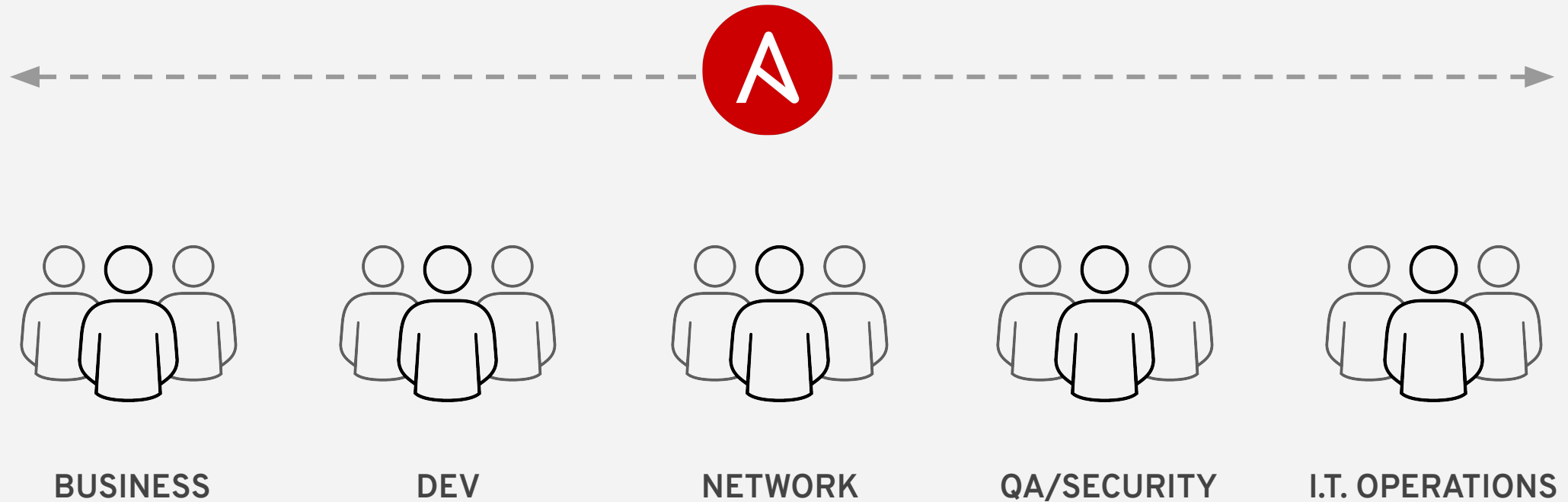
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# Ansible Automation works across teams



# Red Hat Ansible Engine

## Cross platform

Agentless support for all major OS variants, physical, virtual, cloud and network devices.

## Human readable

Perfectly describe and document every aspect of your application environment.

## Perfect description of application

Every change can be made by Playbooks, ensuring everyone is on the same page.

## Version controlled

Playbooks are plain-text. Treat them like code in your existing version control.

## Dynamic inventories

Capture all the servers 100% of the time, regardless of infrastructure, location, etc.

## Orchestration plays well with others

Orchestration plays well with others: ServiceNow, Infoblox, AWS, Terraform, Cisco ACI and more

```
---
- name: install and start apache
  hosts: web
  become: yes
  vars:
    http_port: 80

  tasks:
    - name: httpd package is present
      yum:
        name: httpd
        state: latest

    - name: latest index.html file is present
      copy:
        src: files/index.html
        dest: /var/www/html/

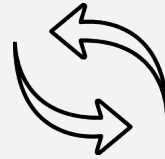
    - name: httpd is started
      service:
        name: httpd
        state: started
```

# Why Ansible?



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# What can I do using Ansible?

Automate the deployment and management of your entire IT footprint.

Do this...

Orchestration

Configuration  
Management

Application  
Deployment

Provisioning

Continuous  
Delivery

Security and  
Compliance

On these...

Firewalls

Load Balancers

Applications

Containers

Clouds

Servers

Infrastructure

Storage

Network Devices

And more...

# Ansible automates technologies you use

Time to automate is measured in minutes

## Cloud

AWS  
Azure  
Digital Ocean  
Google  
OpenStack  
Rackspace  
**+more**

## Operating Systems

RHEL  
Linux  
Windows  
**+more**

## Virt & Container

Docker  
VMware  
RHV  
OpenStack  
OpenShift  
**+more**

## Storage

Netapp  
Red Hat Storage  
Infinidat  
**+more**

## Windows

ACLs  
Files  
Packages  
IIS  
Regedits  
Shares  
Services  
Configs  
Users  
Domains  
**+more**

## Network

A10  
Arista  
Aruba  
Cumulus  
Bigswitch  
Cisco  
Dell  
Extreme  
F5  
Lenovo  
MikroTik  
Juniper  
OpenSwitch  
**+more**

## Security

Checkpoint  
Cisco  
CyberArk  
F5  
Fortinet  
Juniper  
IBM  
Palo Alto  
Snort  
**+more**

## Monitoring

Dynatrace  
Datadog  
LogicMonitor  
New Relic  
Sensu  
**+more**

## Devops

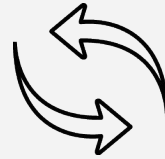
Jira  
GitHub  
Vagrant  
Jenkins  
Slack  
**+more**

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# LINUX AUTOMATION

**150+**  
Linux Modules

## **AUTOMATE EVERYTHING LINUX**

Red Hat Enterprise Linux, BSD,  
Debian, Ubuntu and many more!

ONLY REQUIREMENTS:  
Python 2 (2.6 or later)  
or Python 3 (3.5 or later)

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

# WINDOWS AUTOMATION

**90+**

Windows  
Modules

**1,300+**

Powershell DSC  
resources

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

# ANSIBLE NETWORK AUTOMATION

50

Network  
Platforms

700+

Network  
Modules

12\*

Galaxy  
Network Roles

[ansible.com/for/networks](https://ansible.com/for/networks)  
[galaxy.ansible.com/ansible-network](https://galaxy.ansible.com/ansible-network)

*\*Roles developed and maintained by Ansible Network Engineering*

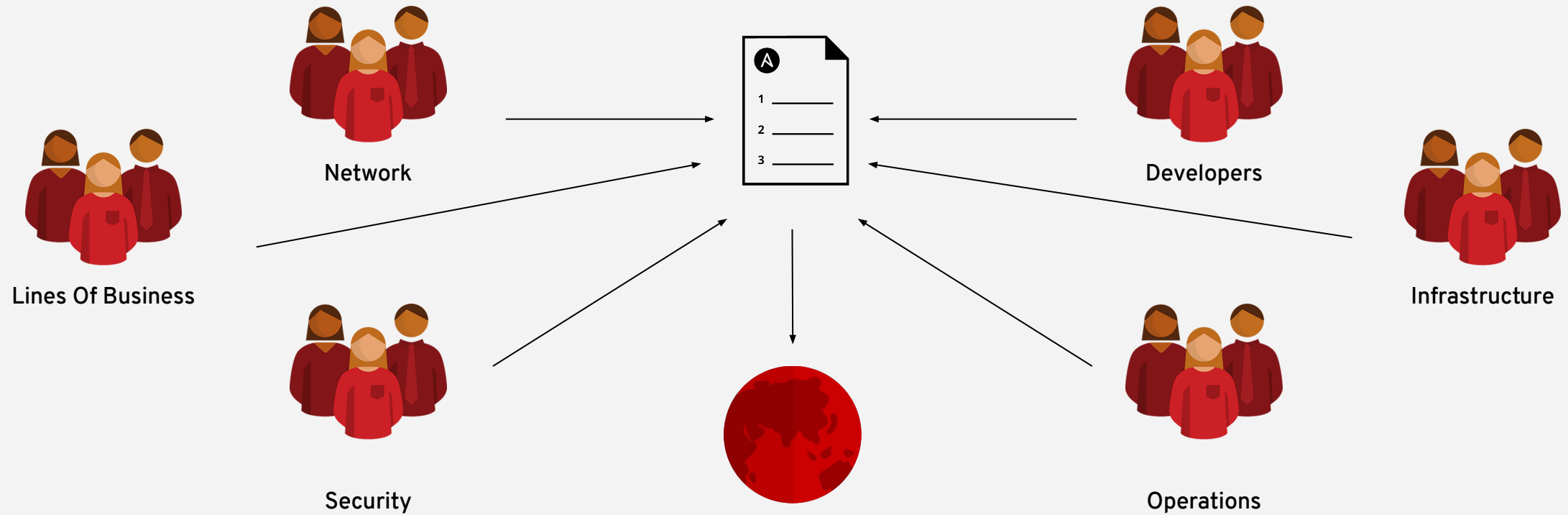


# Red Hat Ansible Automation Platform

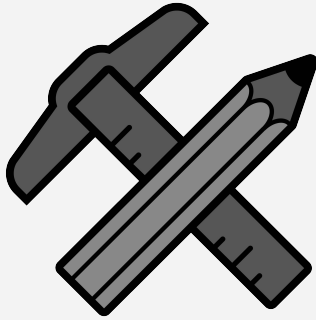
Red Hat Ansible Tower:  
Operate and  
control at scale



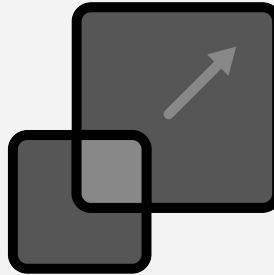
# When automation crosses teams, you need an automation platform



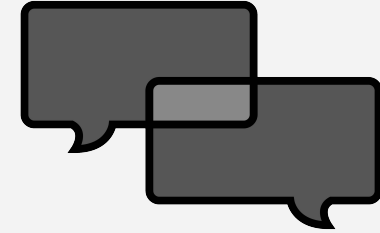
A platform can help you:



Create



Scale



Engage

# Red Hat Ansible Automation Platform



Network

Lines of  
business

Security

Operations

Infrastructure

Developers

Engage

**Ansible Hosted Services:** Engage users with an automation focused experience

Scale

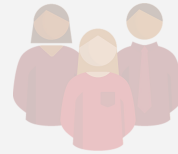
**Ansible Tower:** Operate & control at scale

Create

**Ansible Engine:** Universal language of automation

Fueled by an open source community

# Red Hat Ansible Automation Platform



Network

Lines of  
business

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Engage

**Ansible SaaS:** Engage users with an automation focused experience

Scale

**Control**

Web UI and API

**Delegation**

Role Based Access Controls

**Scale**

Scalable Execution Capacity

Create

**Ansible Engine:** Universal language of automation

Fueled by an open source community



# Red Hat Ansible Tower

## Push button

An intuitive user interface experience makes it easy for novice users to execute playbooks you allow them access to.

## RESTful API

With an API first mentality every feature and function of Tower can be API driven. Allow seamless integration with other tools like ServiceNow and Infoblox.

## RBAC

Allow restricting playbook access to authorized users. One team can use playbooks in check mode (read-only) while others have full administrative abilities.

## Enterprise integrations

Integrate with enterprise authentication like TACACS+, RADIUS, Azure AD. Setup token authentication with OAuth 2. Setup notifications with PagerDuty, Slack and Twilio.

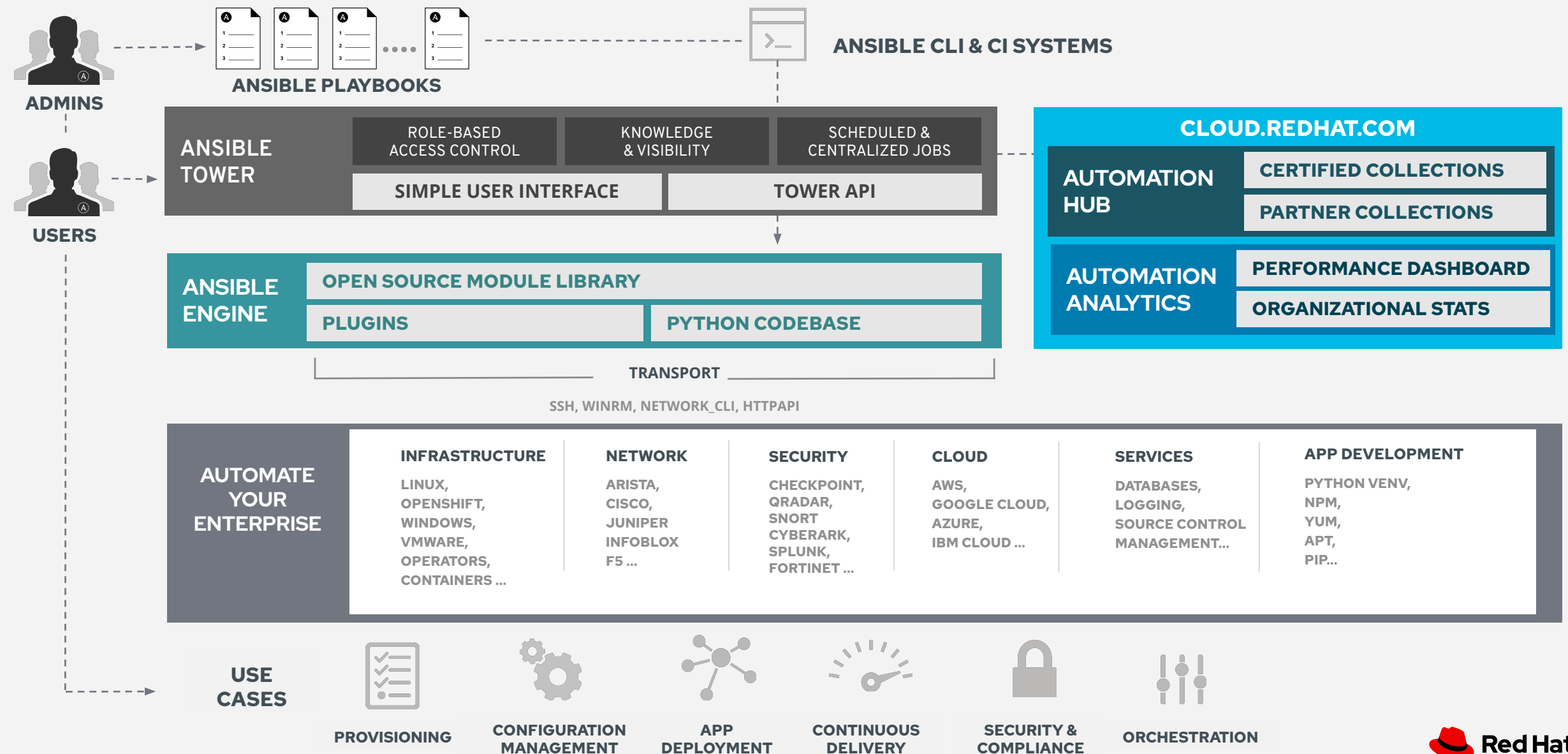
## Centralized logging

All automation activity is securely logged. Who ran it, how they customized it, what it did, where it happened - all securely stored and viewable later, or exported through Ansible Tower's API.

## Workflows

Ansible Tower's multi-playbook workflows chain any number of playbooks, regardless of whether they use different inventories, run as different users, run at once or utilize different credentials.

# Ansible Automation Platform



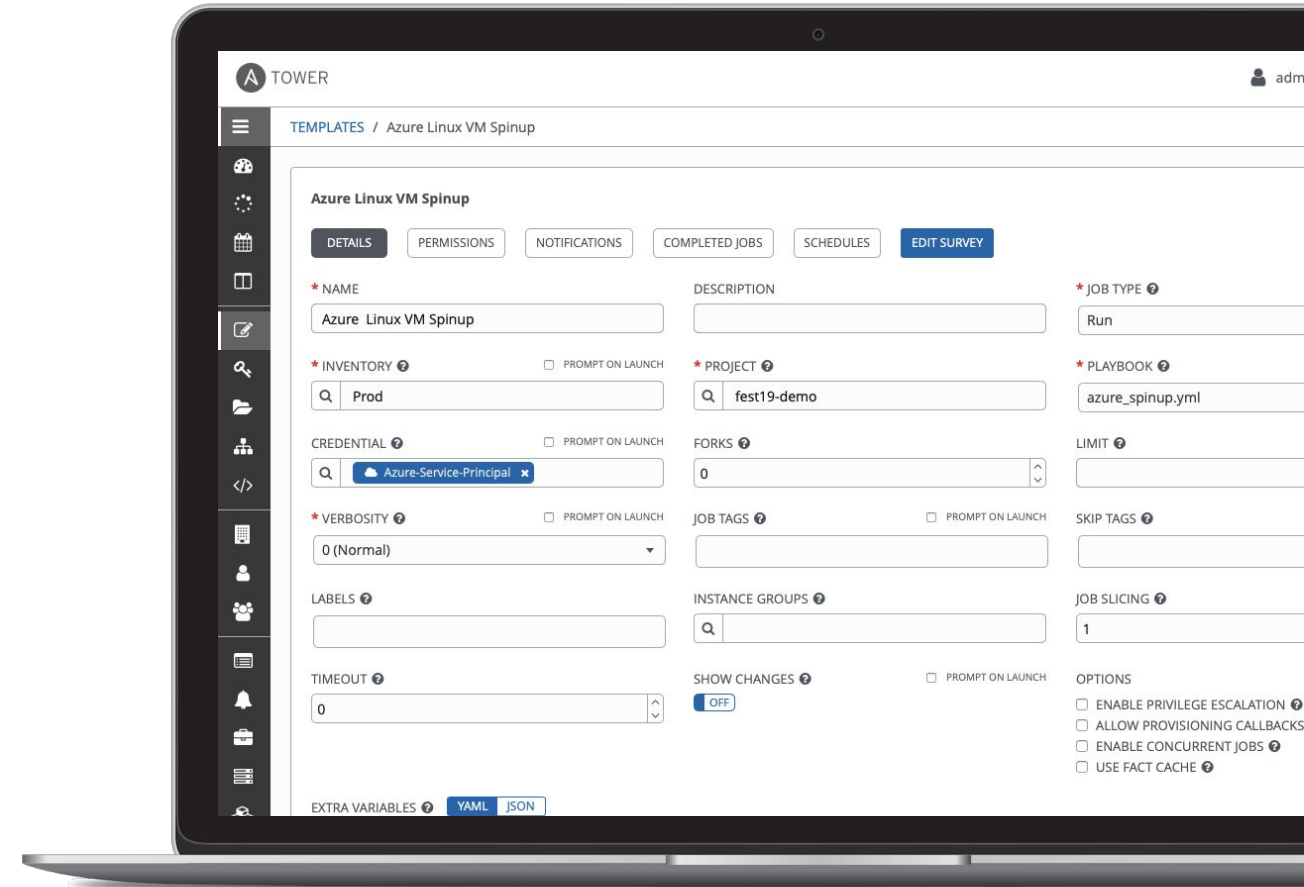
# Job Templates

Everything in Ansible Tower revolves around the concept of a **Job Template**. Job Templates allow Ansible Playbooks to be controlled, delegated and scaled for an organization.

Job templates also encourage the reuse of Ansible Playbook content and collaboration between teams.

A **Job Template** requires:

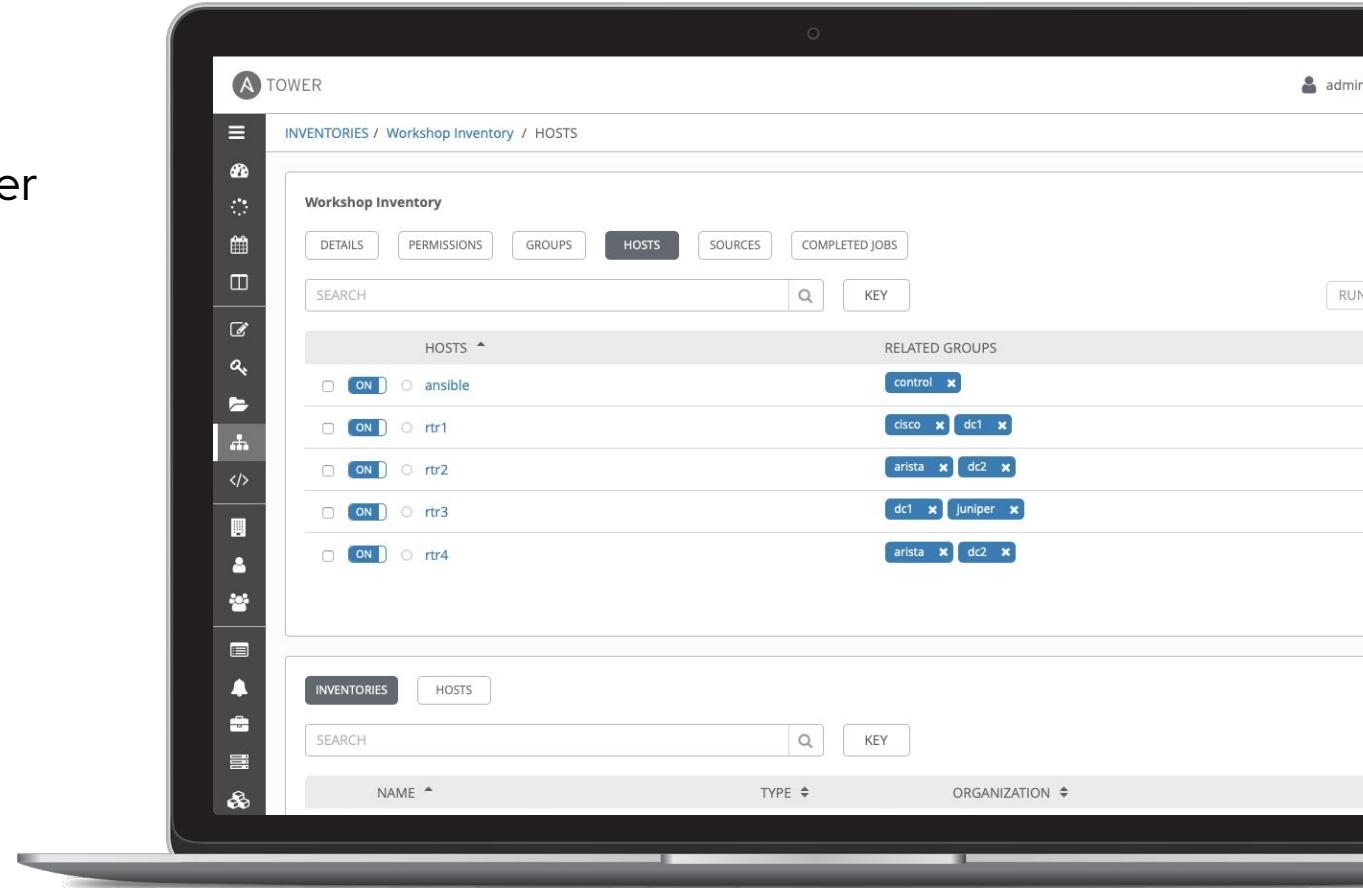
- An **Inventory** to run the job against
- A **Credential** to login to devices.
- A **Project** which contains Ansible Playbooks



# Inventory

Inventory is a collection of hosts (nodes) with associated data and groupings that Ansible Tower can connect to and manage.

- Hosts (nodes)
- Groups
- Inventory-specific data (variables)
- Static or dynamic sources

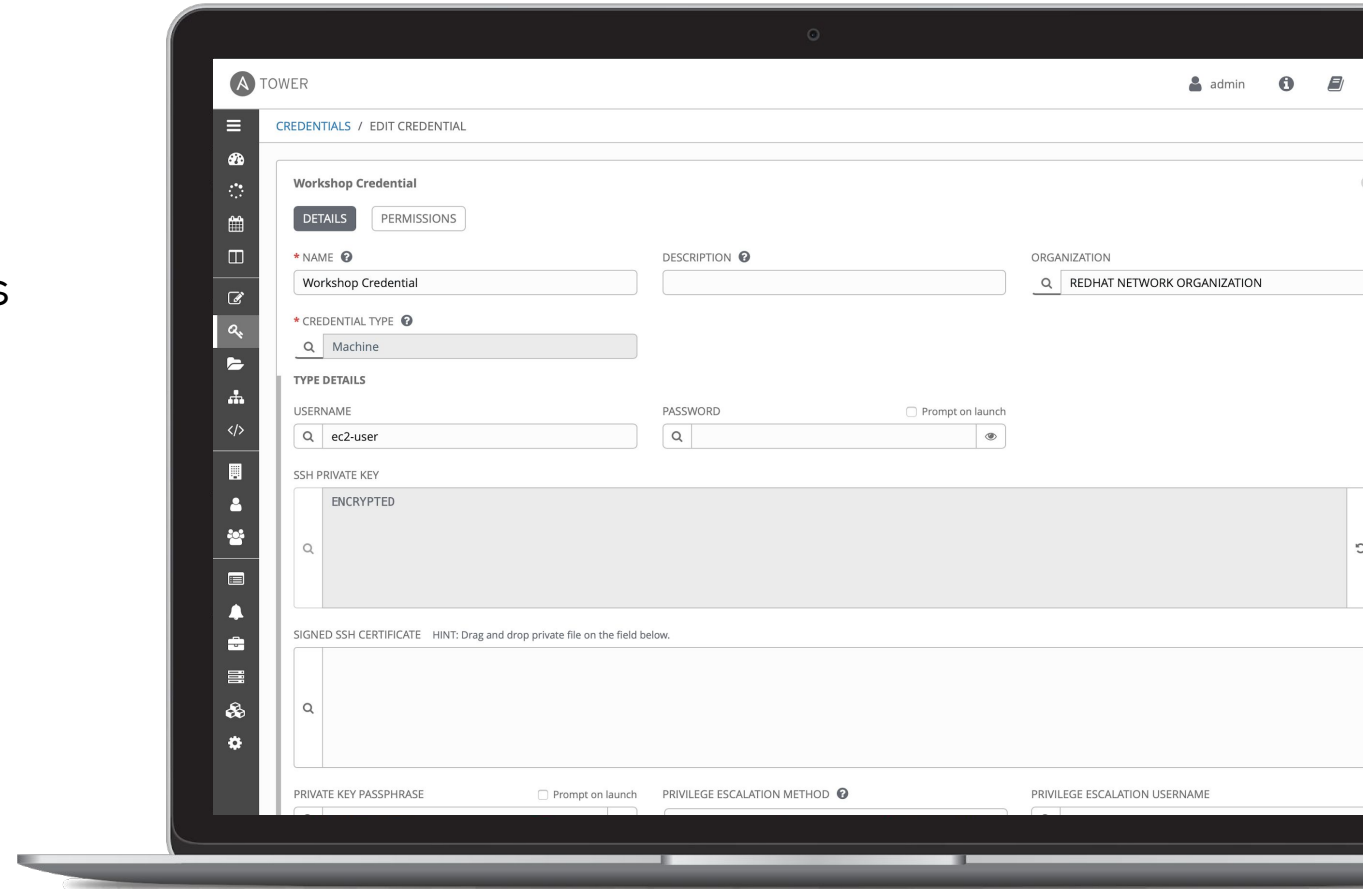


# Credentials

Credentials are utilized by Ansible Tower for authentication with various external resources:

- Connecting to remote machines to run jobs
- Syncing with inventory sources
- Importing project content from version control systems
- Connecting to and managing network devices

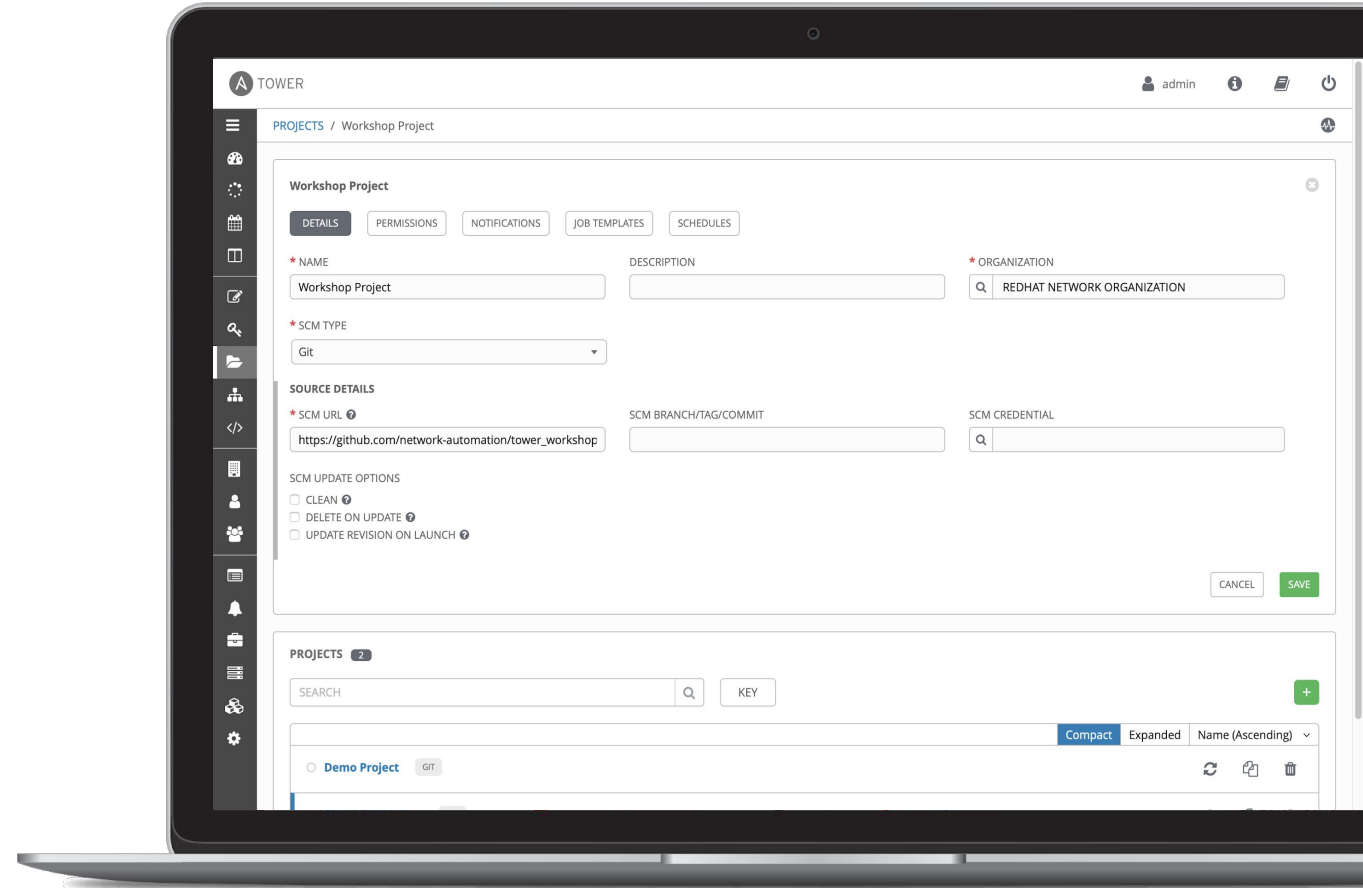
Centralized management of various credentials allows end users to leverage a secret without ever exposing that secret to them.



# Project

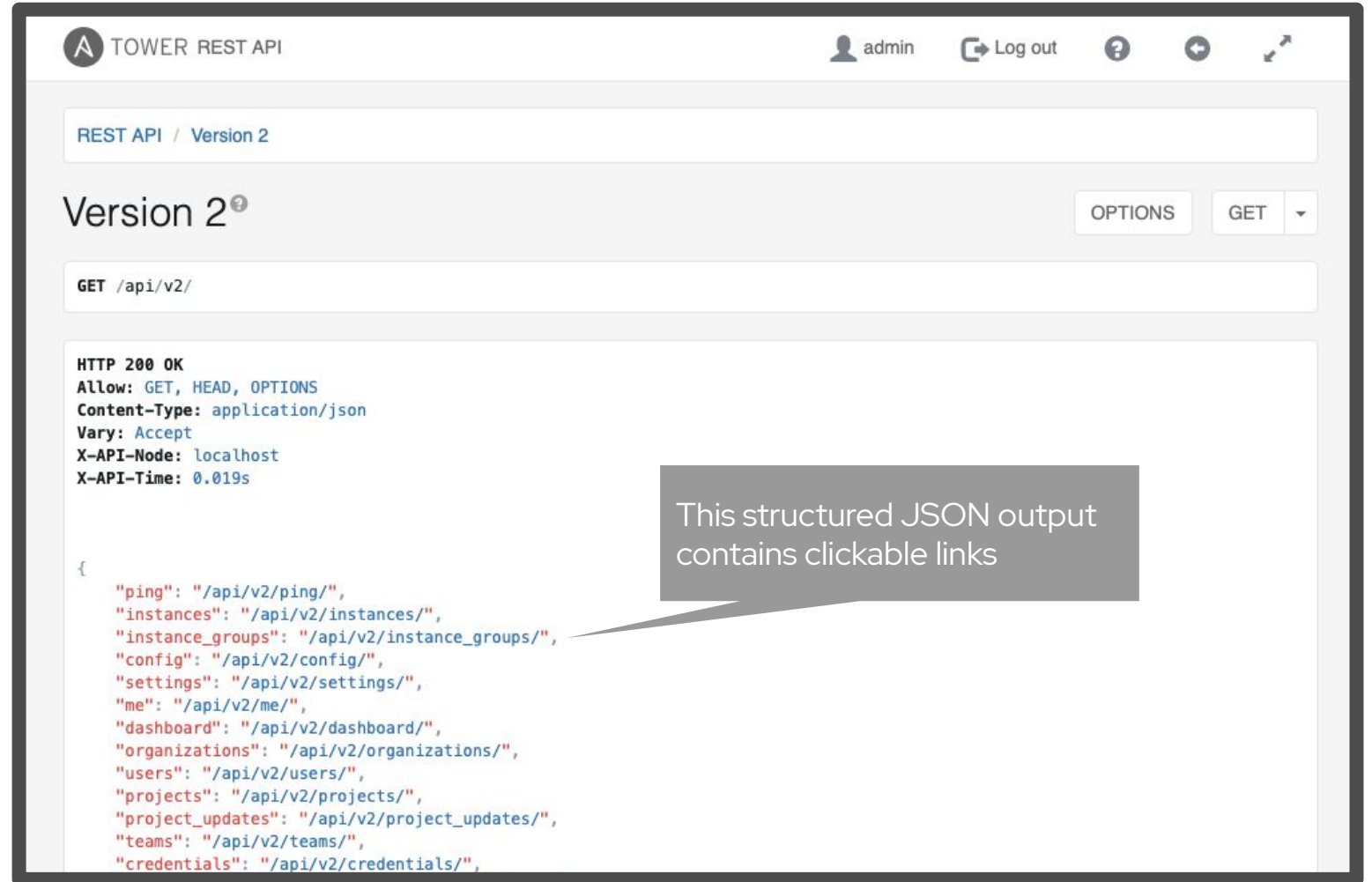
A project is a logical collection of Ansible Playbooks, represented in Ansible Tower.

You can manage Ansible Playbooks and playbook directories by placing them in a source code management system supported by Ansible Tower, including Git, Subversion, and Mercurial.



# RESTful API

Fully browsable API,  
everything within the Web UI  
can be accessed via the API  
for programmatic access



# Role Based Access Control (RBAC)

Job Templates, Inventory, Credentials and Projects can be assigned to specific Users and Teams.

Clicking the USERS or TEAMS buttons shows available options

The screenshot shows the Tower web interface with a modal dialog titled 'CONFIGURE RED HAT ENTERPRISE LINUX WEB SERVERS | ADD USERS / TEAMS'. The dialog has a step indicator '1 Please select Users / Teams from the lists below.' and two buttons: 'USERS' (highlighted with a red box) and 'TEAMS'. Below the buttons is a search bar labeled 'SEARCH' with a magnifying glass icon and a 'KEY' button. A table lists available users with columns for USERNAME, FIRST NAME, and LAST NAME. The table contains two rows: one for 'ewiggin' (Ender Wiggin) and one for 'mrackham' (Mazer Rackham). At the bottom right of the dialog are 'CANCEL' and 'SAVE' buttons. The background shows the Tower sidebar with 'TEMPLATES' selected and the breadcrumb 'TEMPLATES / Configure Red Hat Enterprise Linux web servers / PERMISSIONS'.

USERNAME	FIRST NAME	LAST NAME
<input type="checkbox"/> ewiggin	Ender	Wiggin
<input type="checkbox"/> mrackham	Mazer	Rackham

ITEMS 1 - 2



# Enterprise Authentication

Use your existing enterprise authentication including:

- Azure AD
- Github
- Google OAuth2
- LDAP
- Radius
- SAML
- TACACS+

Multiple supported enterprise authentication methods are easily integrated with Ansible Tower

SETTINGS / AUTHENTICATION

**AUTHENTICATION**

AZURE AD GITHUB GOOGLE OAUTH2 LDAP RADIUS SAML **TACACS+**

TACACS+ SERVER ? REVERT eros.commandschool.rhdemo.i

TACACS+ PORT ? REVERT 49

TACACS+ SECRET ? REVERT SHOW .....

TACACS+ AUTH SESSION TIMEOUT ? REVERT 5

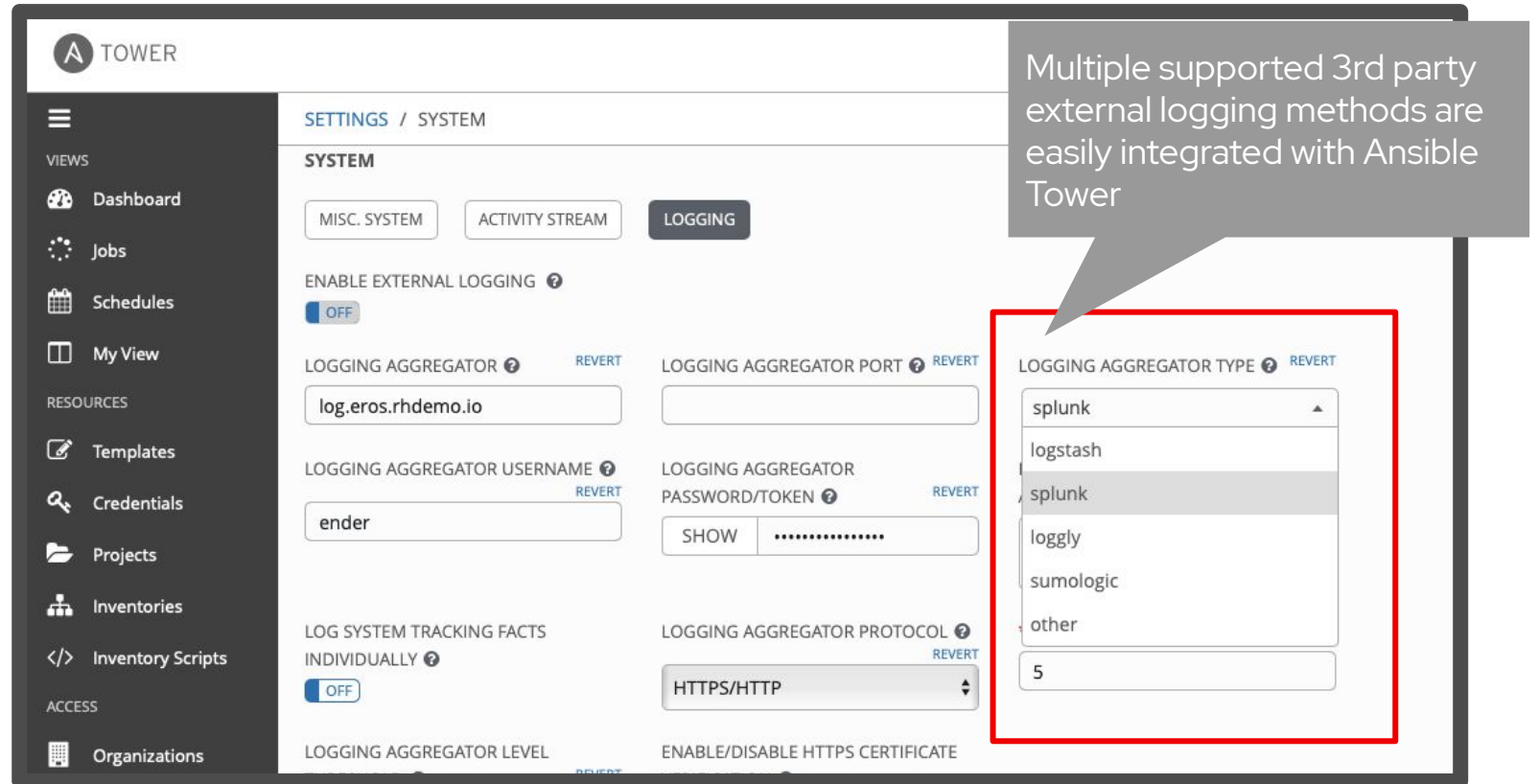
TACACS+ AUTHENTICATION PROTOCOL ? REVERT ascii

REVERT ALL TO DEFAULT

CANCEL SAVE

# Centralized Logging

Ansible Tower creates a centralized control point for Ansible Automation. If desired Ansible Tower can be integrated with existing log aggregation services.



The screenshot displays the Ansible Tower web interface, specifically the 'SETTINGS / SYSTEM' page. The 'LOGGING' tab is selected under the 'SYSTEM' section. The 'ENABLE EXTERNAL LOGGING' toggle is currently 'OFF'. The 'LOGGING AGGREGATOR' field contains 'log.eros.rhdemo.io'. The 'LOGGING AGGREGATOR USERNAME' field contains 'ender'. The 'LOGGING AGGREGATOR PASSWORD/TOKEN' field is masked with dots. The 'LOGGING AGGREGATOR TYPE' dropdown menu is open, showing a list of supported external logging methods: 'splunk', 'logstash', 'splunk', 'loggly', 'sumologic', and 'other'. The 'LOGGING AGGREGATOR PORT' field is empty. The 'LOGGING AGGREGATOR PROTOCOL' dropdown is set to 'HTTPS/HTTP'. The 'LOG SYSTEM TRACKING FACTS INDIVIDUALLY' toggle is 'OFF'. The 'LOGGING AGGREGATOR LEVEL' field is empty. The 'ENABLE/DISABLE HTTPS CERTIFICATE' toggle is 'OFF'. A red box highlights the 'LOGGING AGGREGATOR TYPE' dropdown menu, and a speech bubble points to it with the text: 'Multiple supported 3rd party external logging methods are easily integrated with Ansible Tower'.

Multiple supported 3rd party external logging methods are easily integrated with Ansible Tower

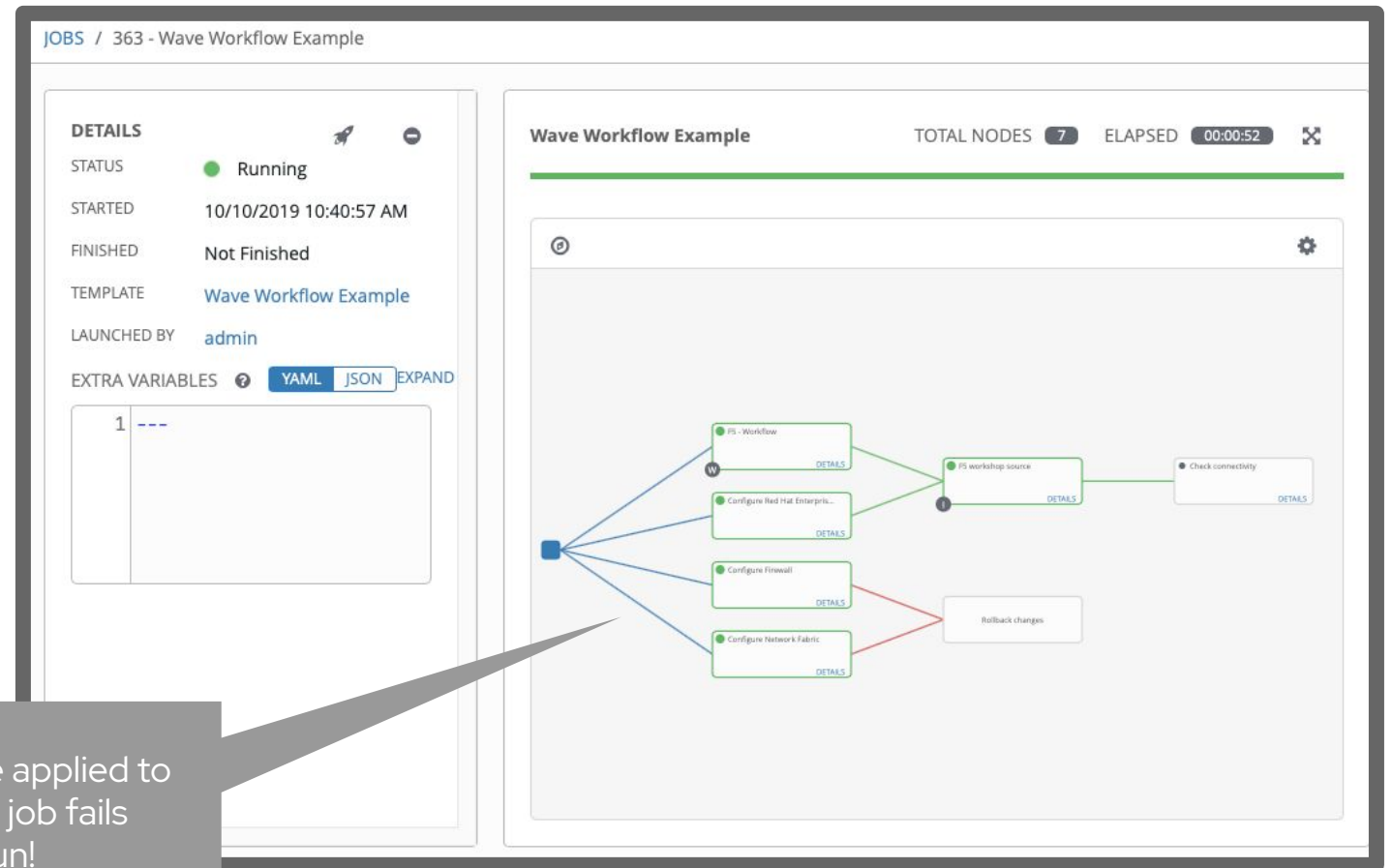
# Workflows

Create powerful holistic automation using Ansible Workflows.

Orchestration can easily be configured by linking Job Templates.

Workflow approvals allow Workflows to pause and wait for human interaction

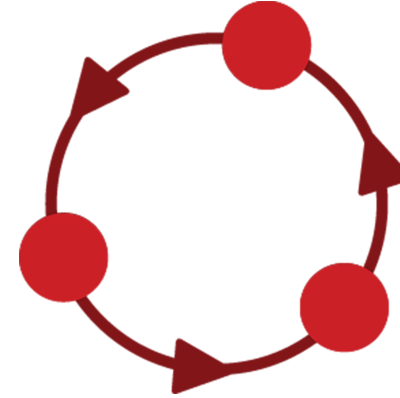
Flow logic can be applied to workflows. If this job fails this next Job is run!



# Webhooks – Enabling GitOps

Trigger Job Templates or Workflows straight via configurable webhooks

Automatically provision, update, configure, and apply based on pushes to your source control.



# Scale

Ansible Tower clusters add redundancy and capacity, allowing you to scale Ansible automation across your enterprise.

- Unifying task execution across execution nodes
- Leverage Kubernetes and OpenShift to spin up execution capacity at runtime
- Expand execution to be able to pull jobs from a central Ansible Tower infrastructure

## Ansible Tower





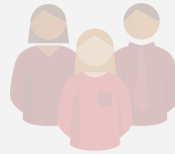
# **Red Hat** Ansible Automation Platform

**CLOUD.REDHAT.COM**

Engage users with  
an automation  
focused experience



# Red Hat Ansible Automation Platform



Network

Lines of  
business

Security

Operations

Infrastructure

Developers

**Engage**

**Knowledge**

Automation Analytics

**Collaborate**

Automation Hub

**Trusted**

Certified content

**Accelerate**

Collections

**Scale**

**Ansible Tower:** Operate & control at scale

**Create**

**Ansible Engine:** Universal language of automation

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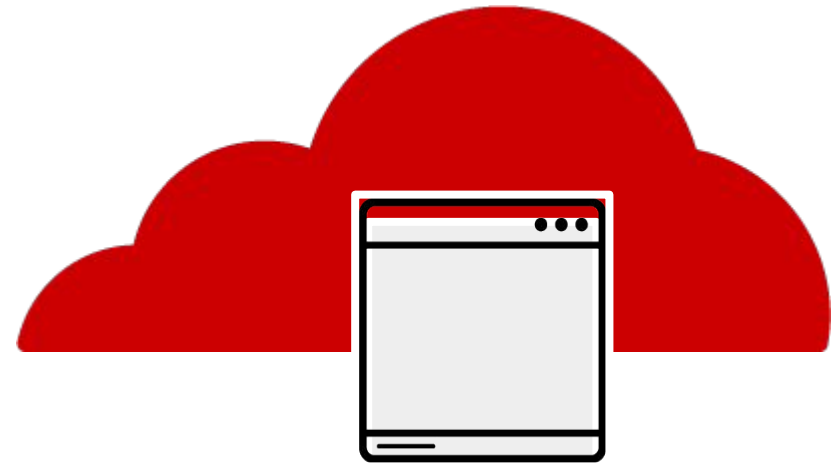
# Automation Analytics: What is it?

SaaS (Software as a Service) on [cloud.redhat.com](https://cloud.redhat.com)

Analytics for all Ansible Tower clusters for an organization

Includes:

- visual dashboard
- health notifications
- organization statistics

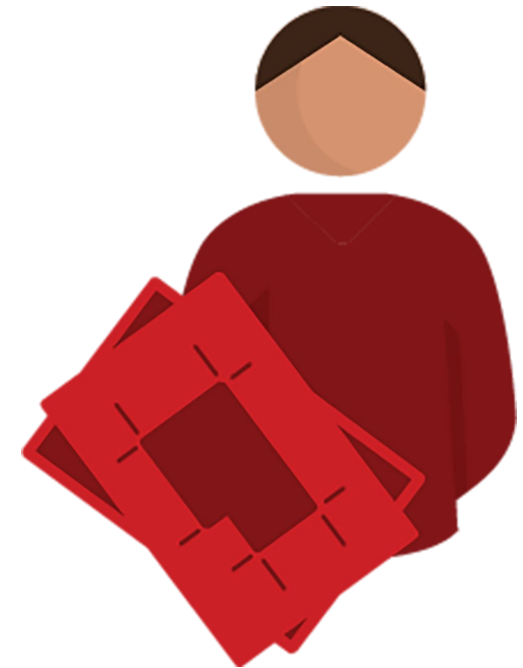




# Automation Analytics: What does it provide?

Enables an Automation Center of Excellence

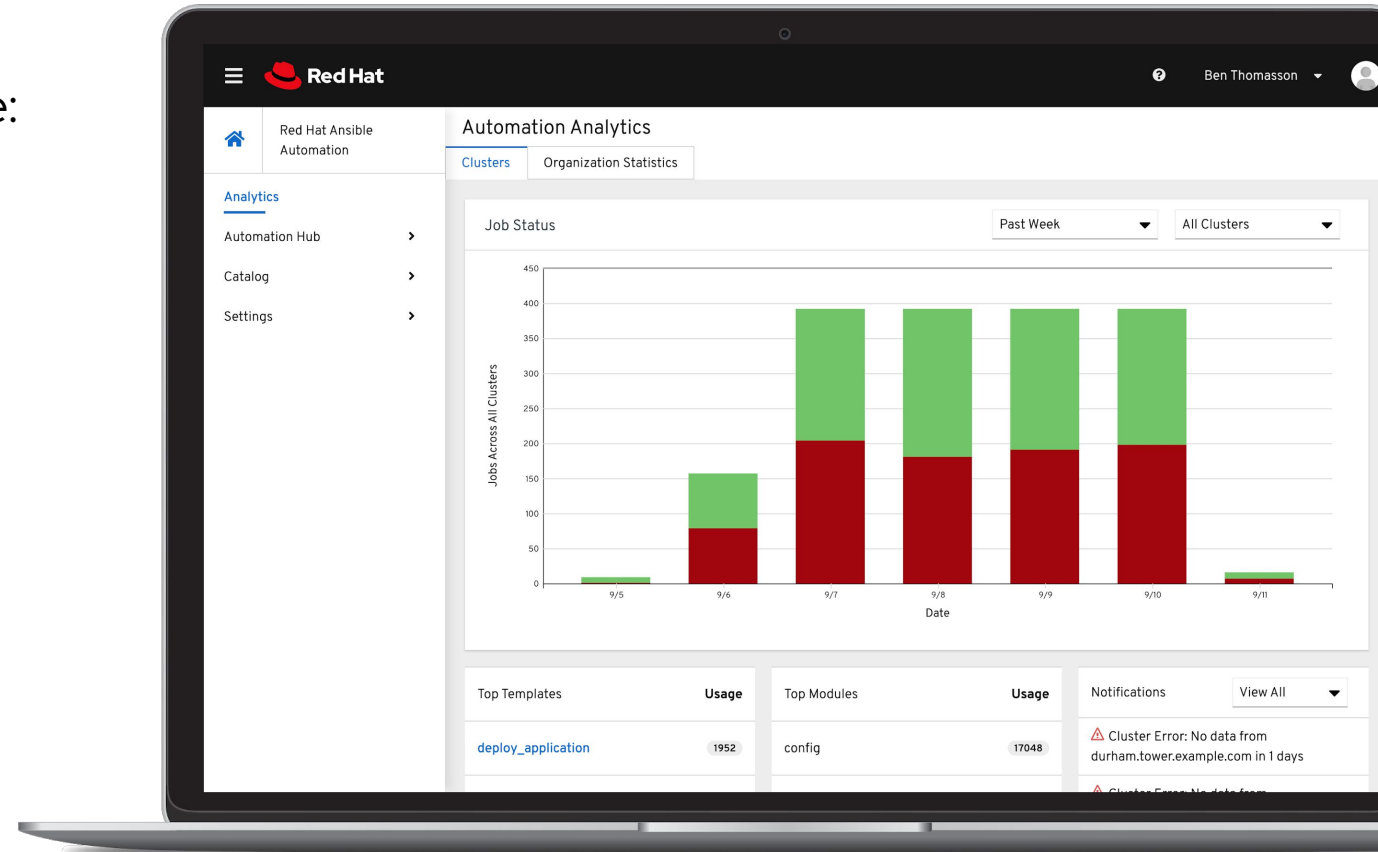
- View information about automation health, usage and performance across your enterprise.
- Gain information about automation in your enterprise:
  - Which organizations are using the most automation?
  - Utilization rates
  - Enterprise-wide success and failure rates for automation



# Analytics dashboard

Information across all clusters for an enterprise:

- Job Status graph
- Top Job Templates
- Top Modules



# Health notifications

- Ansible Tower Cluster is down
- Node (within a cluster) is down
- Last time data was updated
- Near license count

Notifications

View All ▼

⚠ Cluster Error: No data from durham.tower.example.com in 1 days

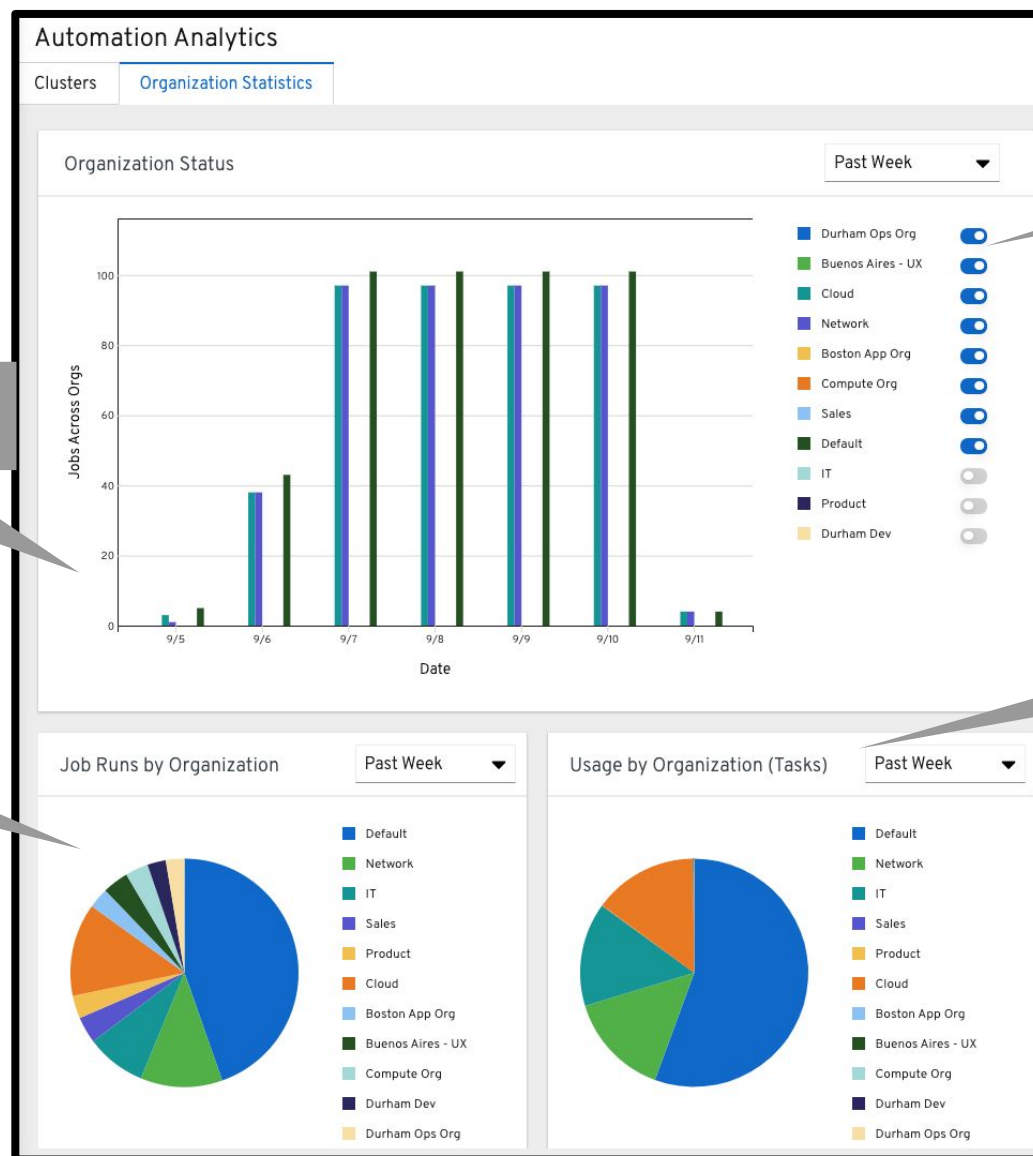
⚠ Cluster Error: No data from madrid.tower.example.com in 1 days

Notifications last updated 2019-09-11 07:42:12 UTC

# Organizational statistics

Job Status by Organization

Job Runs by Organization



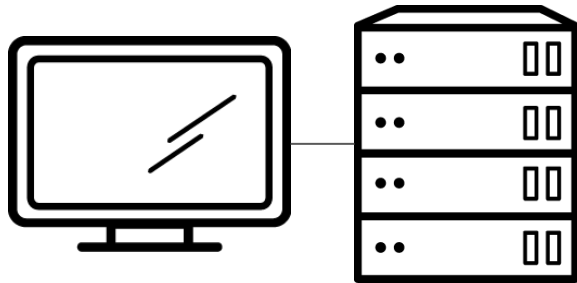
Filter by Organization

Usage by Organization

# Dashboard comparison

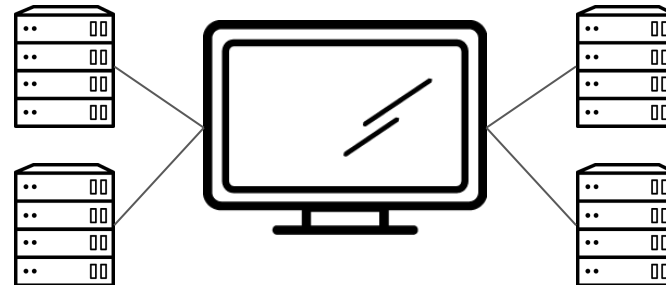
## Ansible Tower

- Recent job templates
- No module data
- One cluster



## Automation Analytics

- Top job templates
- Top modules
- All clusters
- Filter by cluster



# Ansible Content Collections

## Simplified and consistent content delivery

Provides quick benefit by lowering barriers to automation

Streamlines tech partners providing direct-to-user automation

Simplifies internal collaboration, distribution, versioning

Ability to distribute, share and consume content at your own pace



# Ansible Content Collection example

## Directory Layout

```
.
├── galaxy.yml
├── plugins
│   ├── action
│   │   └── ping.py
│   ├── module_utils
│   │   └── pingutils.py
│   └── modules
│       └── ping.py
└── roles
    ├── ping_bootstrap
    │   ├── defaults
    │   ├── filters
    │   ├── meta
    │   ├── tasks
    │   └── vars
    └── ping_deploy
        ├── defaults
        ├── meta
        └── tasks
```

## In a playbook

```
hosts: somehosts
collections:
  - custom.pinger
  - redhat.open_ping

tasks:
  - custom.pinger.ping:

  - ansible.builtin.ping: # use only the ping packaged in core

  - ansible.legacy.ping: # use core or library(etc)/ping.py
    when: thing | custom.pinger.filter == 42

  - ping: # searches collections "path" otherwise...
    # still works, == ansible.legacy.ping:
```

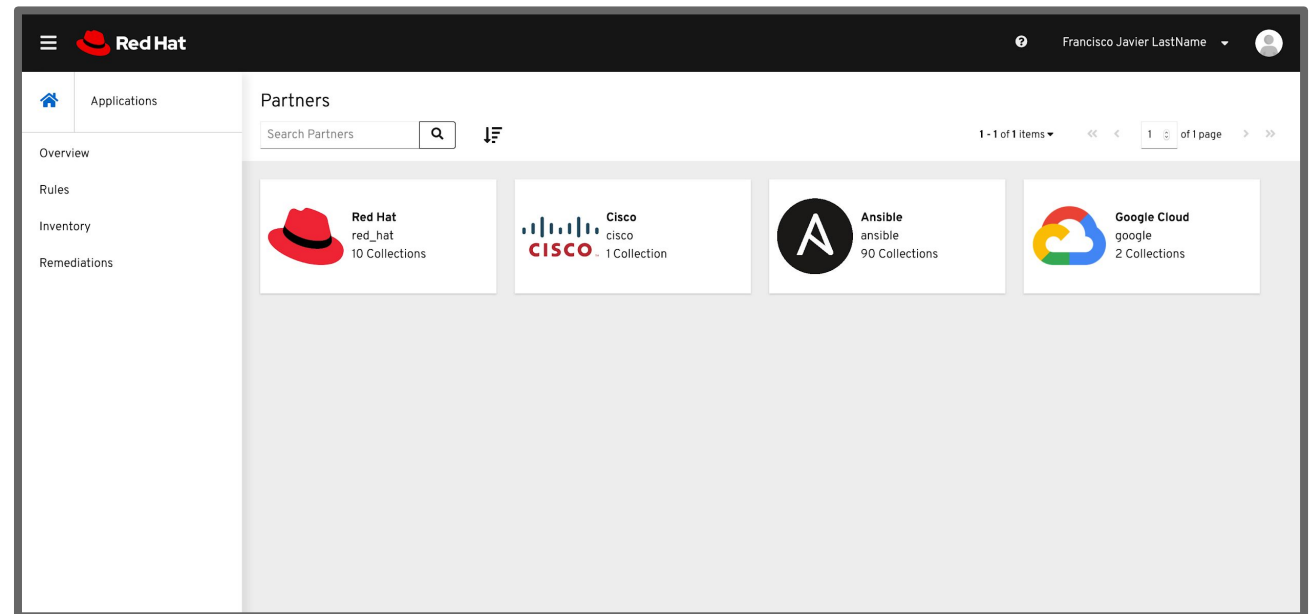
# Automation Hub

## Discover, publish, and manage Collections

Quickly discover available Red Hat and certified content through Collections.

Manage and test your organization's view of available content.\*

Publish your locally available automation via on-premise.\*





# Next steps:

## Get started

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

[ansible.com/tower-trial](https://ansible.com/tower-trial)

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## Workshops, training & services

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

[Red Hat Training](#)

[Red Hat Services: Automation Adoption Journey](#)

## Join the community

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

---

## Share your story

[Follow us @Ansible](#)

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# Automation is for Humans

# Thank you

Red Hat is the world's leading provider of enterprise open source software solutions. Award-winning support, training, and consulting services make Red Hat a trusted adviser to the Fortune 500.



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