Red Hat
Ansible Automation
Platform

Automation for all

Ansible Automation: Overview and Technical Introduction

Götz Rieger
Principal Solution Architect, Red Hat

Red Hat

THE WORLD IS AUTOMATING

Those who succeed in automation will win

40,000+
Stars on GitHub

3000+
Ansible modules

2,000,000+
Downloads a month

Red Hat

Microsoft
“Adopting Red Hat Ansible Automation has not only changed how our networks are managed, but also sparked a cultural transformation within our organization.”
Bart Dworak
Software Engineering Manager,
Infrastructure and Operations, Network
Red Hat

Red Hat Ansible Automation Platform

Network | Lines of business | Security

Operations | Infrastructure | Developers

Engage — **Ansible SaaS:** 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

Red Hat
Ansible Automation
Platform

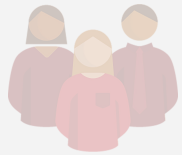
Red Hat Ansible Engine:

Universal language of automation

Red Hat

Red Hat Ansible Automation Platform

Network | Lines of business | Security | Operations | Infrastructure | Developers



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

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

Create

Simple	**Powerful**	**Agentless**
Human readable automation	Thousands of integrations	No agents to exploit or update

Fueled by an open source community

Red Hat

What is Ansible?

Ansible is a **simple automation language** that perfectly describes IT application environments in **Ansible Playbooks**. It's also an **application**, a **framework** and an **API**.

The **Ansible** and **AWX** projects are open source communities sponsored by Red Hat.

Ansible Engine and **Tower** are supported products built from the Ansible community projects.

Red Hat

Why Ansible?

Simple

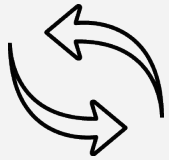
Human readable automation

No special coding skills needed

Tasks executed in order

Usable by every team

Get productive quickly



Powerful

Cross Platform

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

Red Hat

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...**

Red Hat

Ansible automates technologies you use

The Magic is in the Modules

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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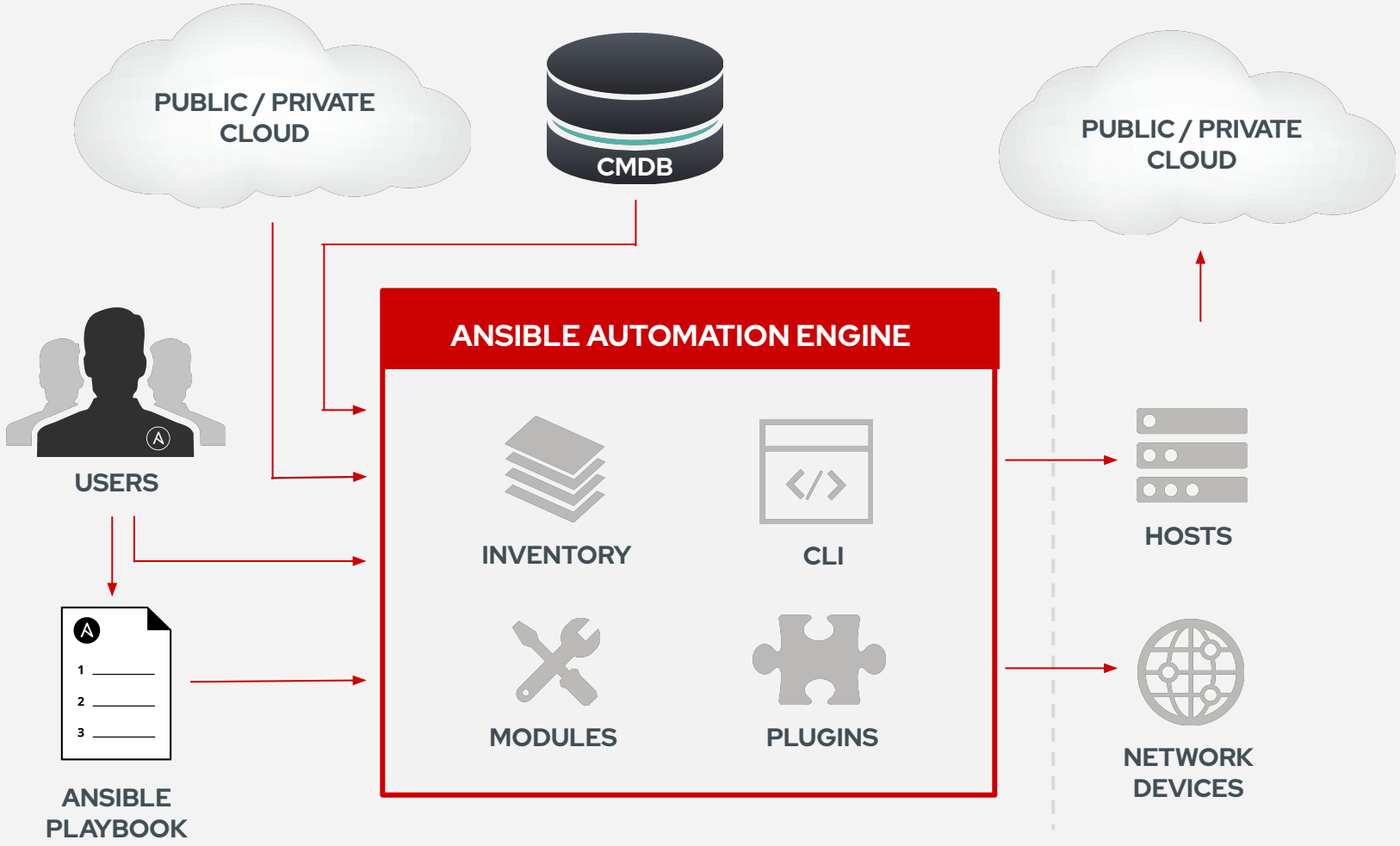
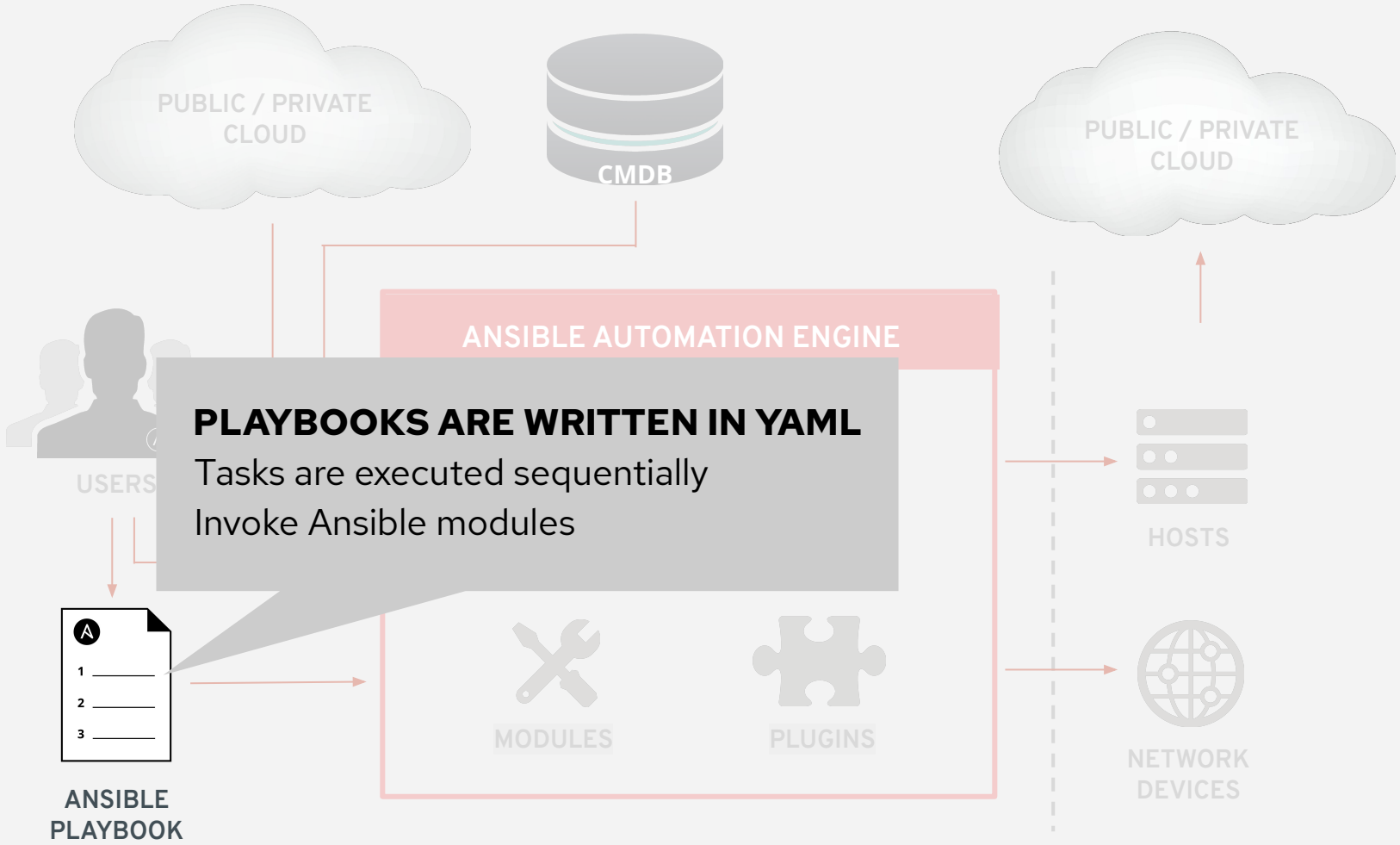

PUBLIC / PRIVATE CLOUD
CMDB
PUBLIC / PRIVATE CLOUD
ANSIBLE AUTOMATION ENGINE
USERS
INVENTORY
CLI
HOSTS
MODULES
PLUGINS
NETWORK DEVICES
1
2
3
ANSIBLE PLAYBOOK

Red Hat


PUBLIC / PRIVATE CLOUD
CMDB
PUBLIC / PRIVATE CLOUD
ANSIBLE AUTOMATION ENGINE
USERS
PLAYBOOKS ARE WRITTEN IN YAML
Tasks are executed sequentially
Invoke Ansible modules
HOSTS
1
2
3
MODULES
PLUGINS
NETWORK DEVICES
ANSIBLE PLAYBOOK

Red Hat

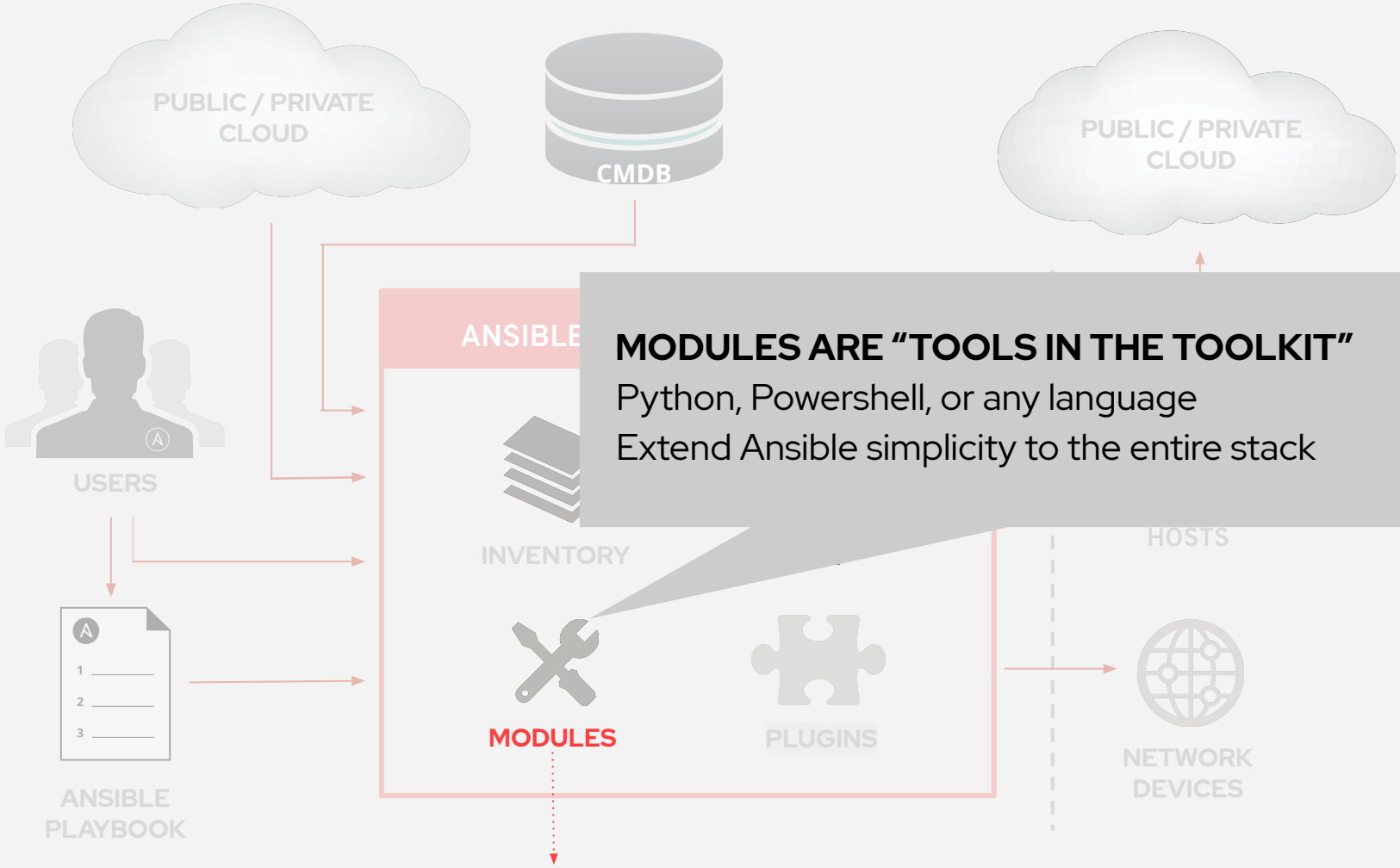
```
---
- name: install and start apache
  hosts: web
  become: yes

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

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

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

Red Hat



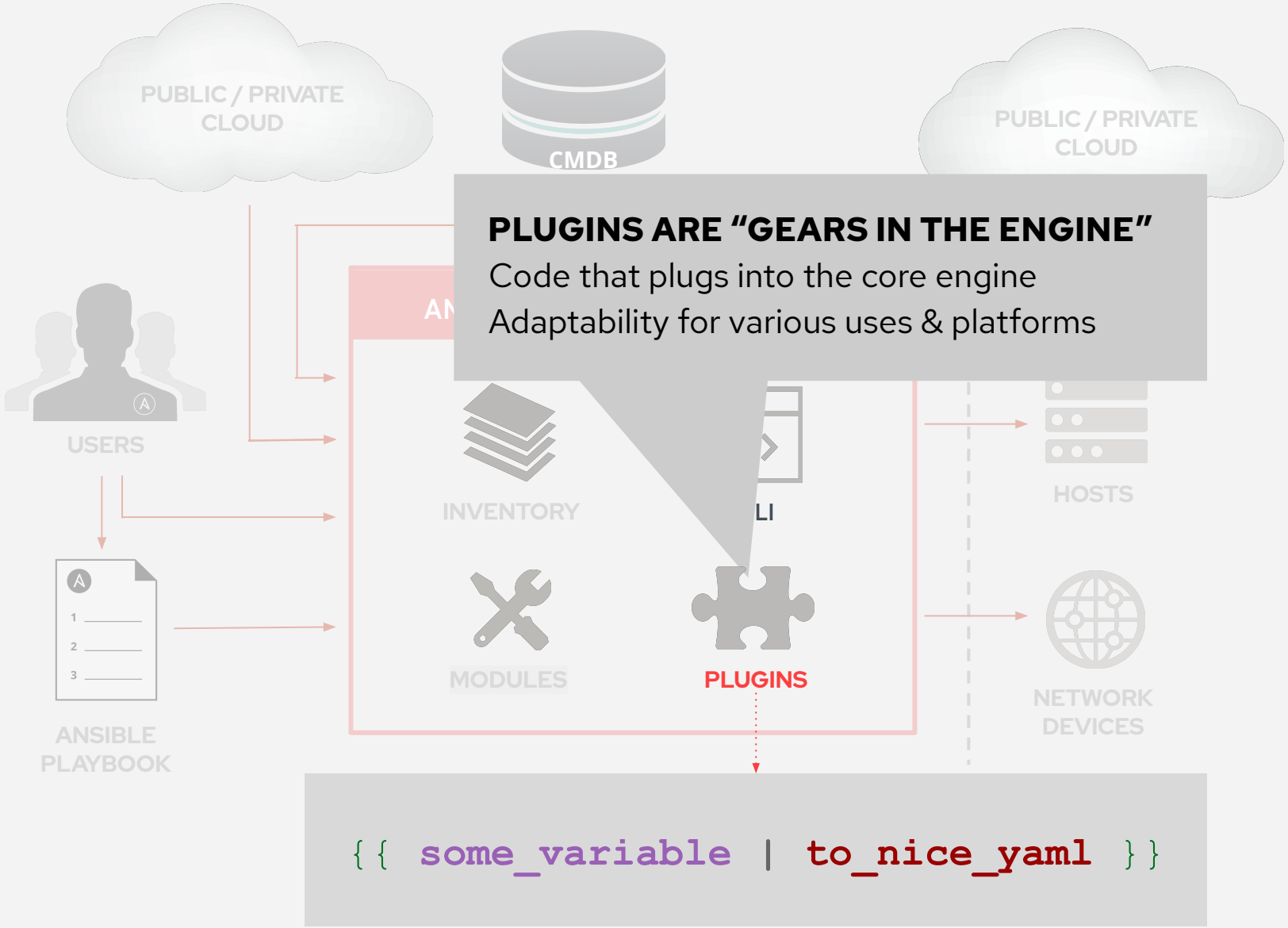
MODULES ARE "TOOLS IN THE TOOLKIT"

Python, Powershell, or any language

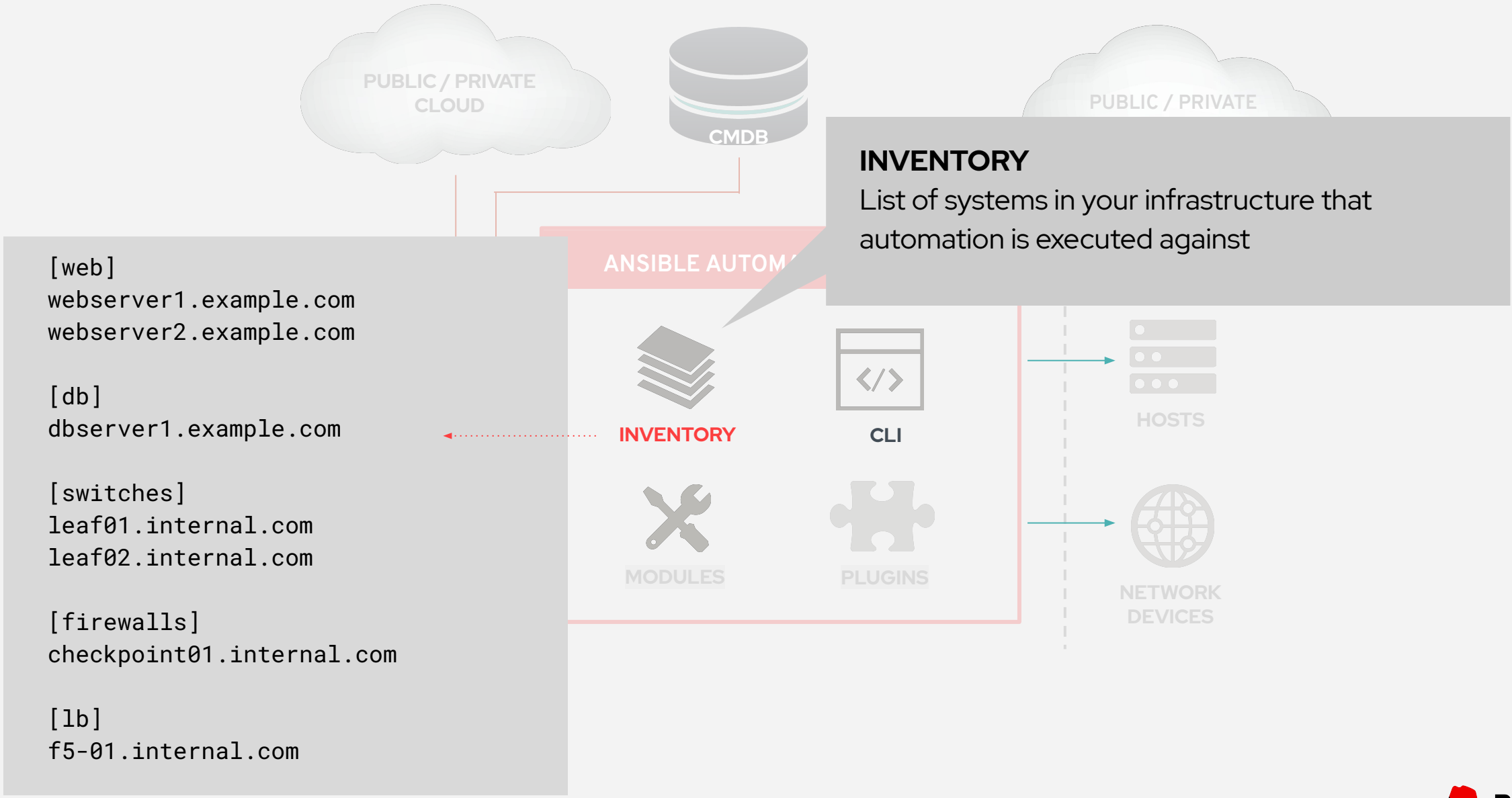
Extend Ansible simplicity to the entire stack

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

Red Hat


PUBLIC / PRIVATE CLOUD
CMDB
PUBLIC / PRIVATE CLOUD
PLUGINS ARE “GEARS IN THE ENGINE”
Code that plugs into the core engine
Adaptability for various uses & platforms
USERS
INVENTORY
HOSTS
MODULES
PLUGINS
NETWORK DEVICES
ANSIBLE PLAYBOOK
{{ some_variable | to_nice_yaml }}

Red Hat


PUBLIC / PRIVATE CLOUD
CMDB
PUBLIC / PRIVATE
INVENTORY
List of systems in your infrastructure that automation is executed against
[web]
webserver1.example.com
webserver2.example.com
[db]
dbserver1.example.com
[switches]
leaf01.internal.com
leaf02.internal.com
[firewalls]
checkpoint01.internal.com
[lb]
f5-01.internal.com
ANSIBLE AUTOM
INVENTORY
CLI
HOSTS
MODULES
PLUGINS
NETWORK DEVICES

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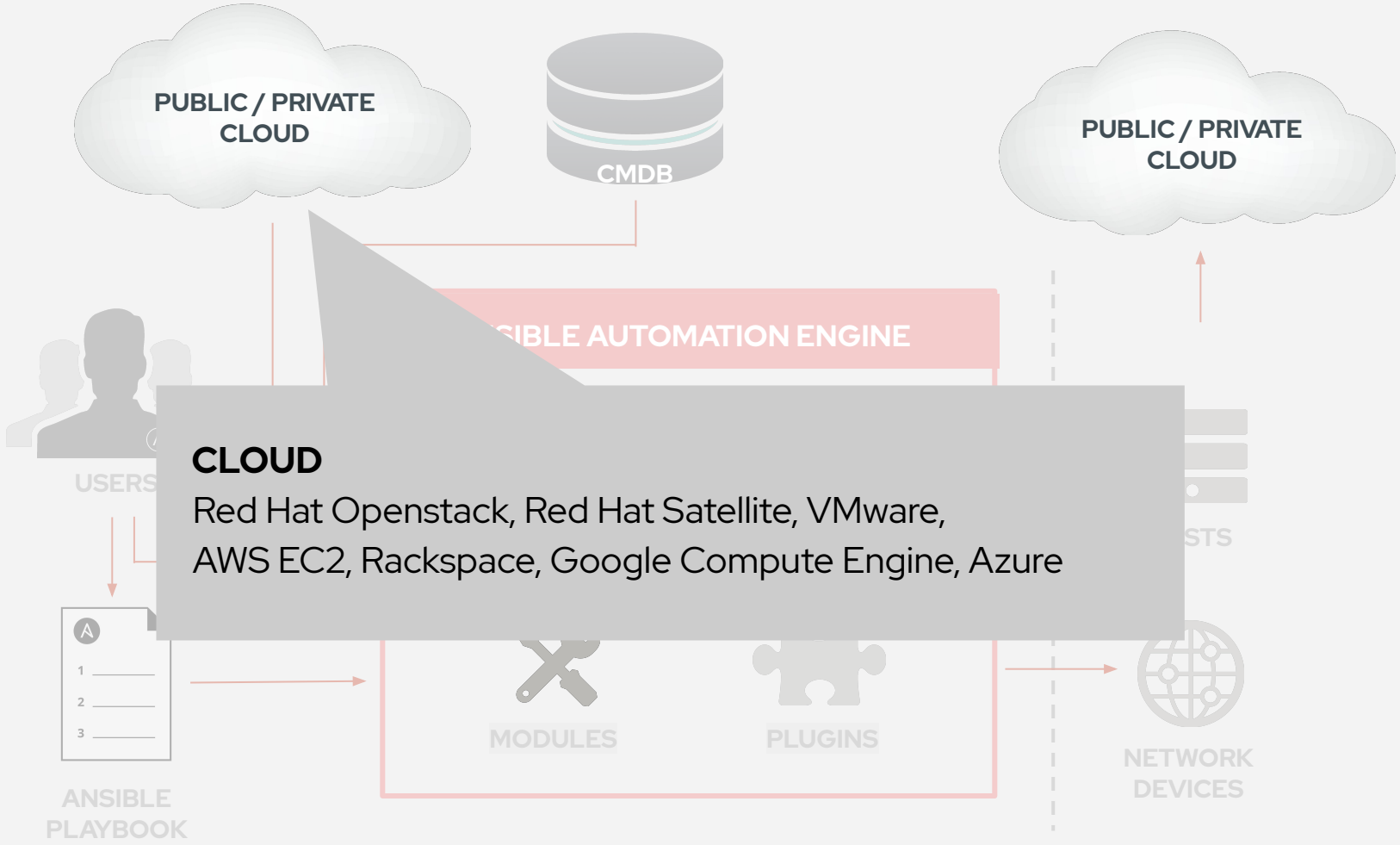
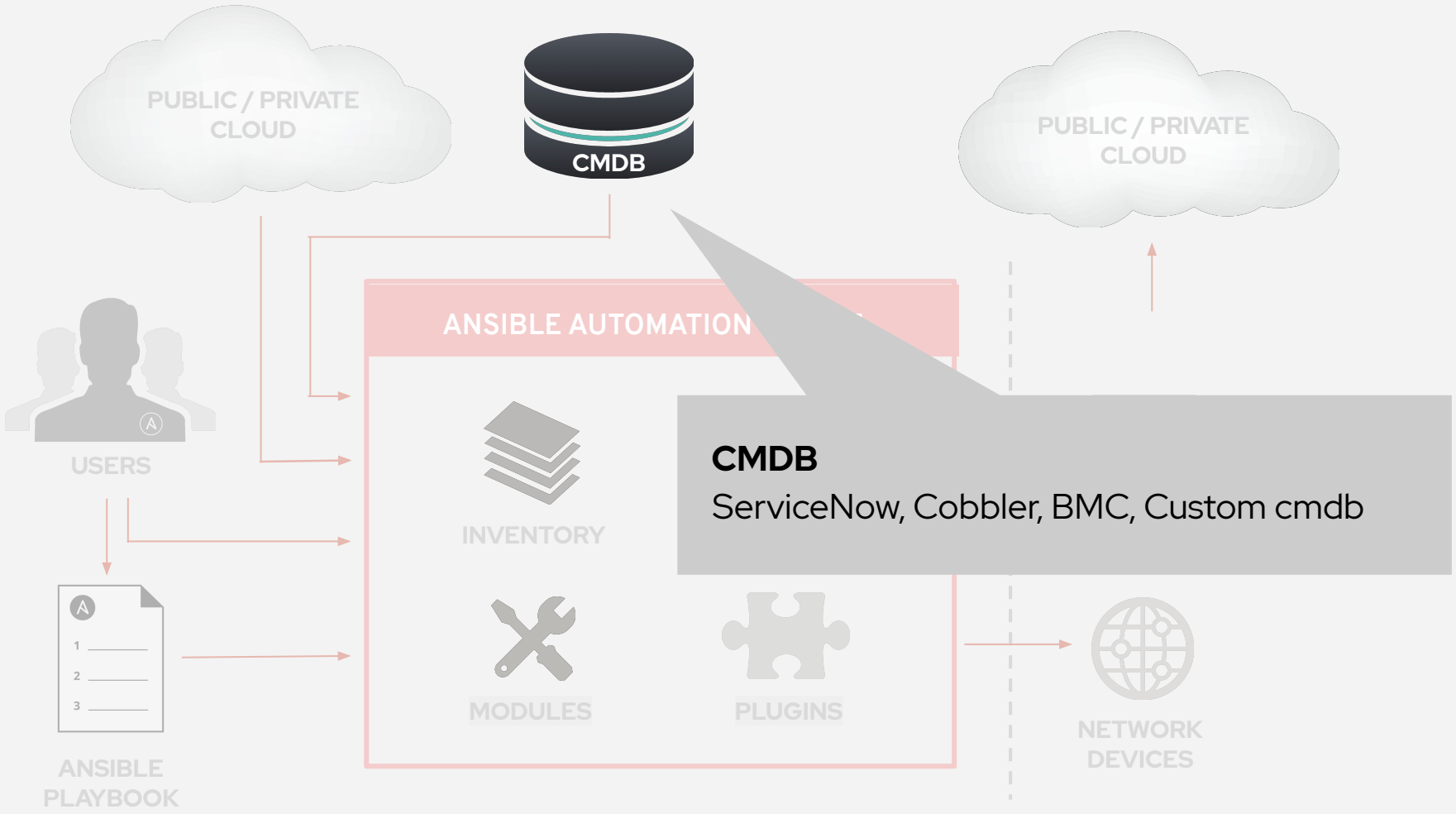


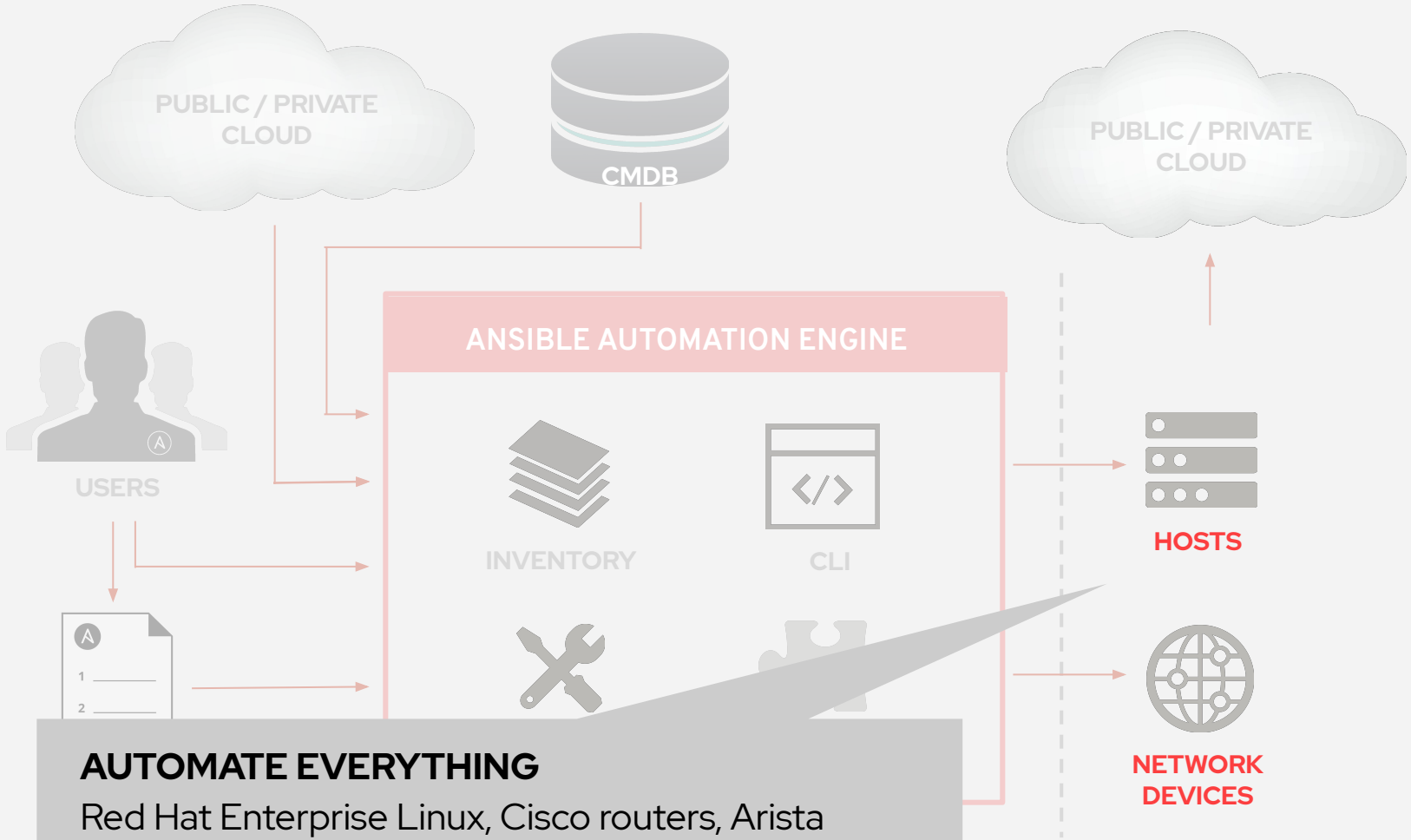
CLOUD

Red Hat Openstack, Red Hat Satellite, VMware,
AWS EC2, Rackspace, Google Compute Engine, Azure

Red Hat


PUBLIC / PRIVATE CLOUD
CMDB
PUBLIC / PRIVATE CLOUD
ANSIBLE AUTOMATION
USERS
INVENTORY
CMDB
ServiceNow, Cobbler, BMC, Custom cmdb
MODULES
PLUGINS
NETWORK DEVICES
ANSIBLE PLAYBOOK

Red Hat


PUBLIC / PRIVATE CLOUD
CMDB
PUBLIC / PRIVATE CLOUD
ANSIBLE AUTOMATION ENGINE
USERS
INVENTORY
CLI
HOSTS
NETWORK DEVICES
AUTOMATE EVERYTHING
Red Hat Enterprise Linux, Cisco routers, Arista switches, Juniper routers, Windows hosts, Check Point firewalls, NetApp storage, F5 load balancers and more

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Ansible Automation
Platform

Red Hat Ansible Tower:

Operate and control at scale

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Red Hat Ansible Automation Platform

Network | Lines of business | Security | Operations | Infrastructure | Developers

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

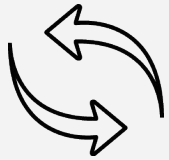
Ansible Engine: Universal language of automation

Fueled by an open source community

Red Hat

Why Ansible?

Simple



Powerful

Agentless

What is Missing?

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Ansible Tower

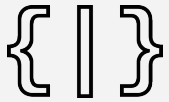
Central

Central place for everyone

Overview of present and past

Schedule jobs

Have one common view



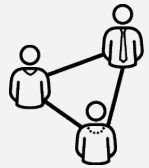
Integration

Simple, powerful API

Uses REST for quick adoption

No special agents or lib needed

Integrate with everything



Access

Teams and users enable RBAC

Deposit credentials securely

Assign access to unprivileged

Separate access and execution

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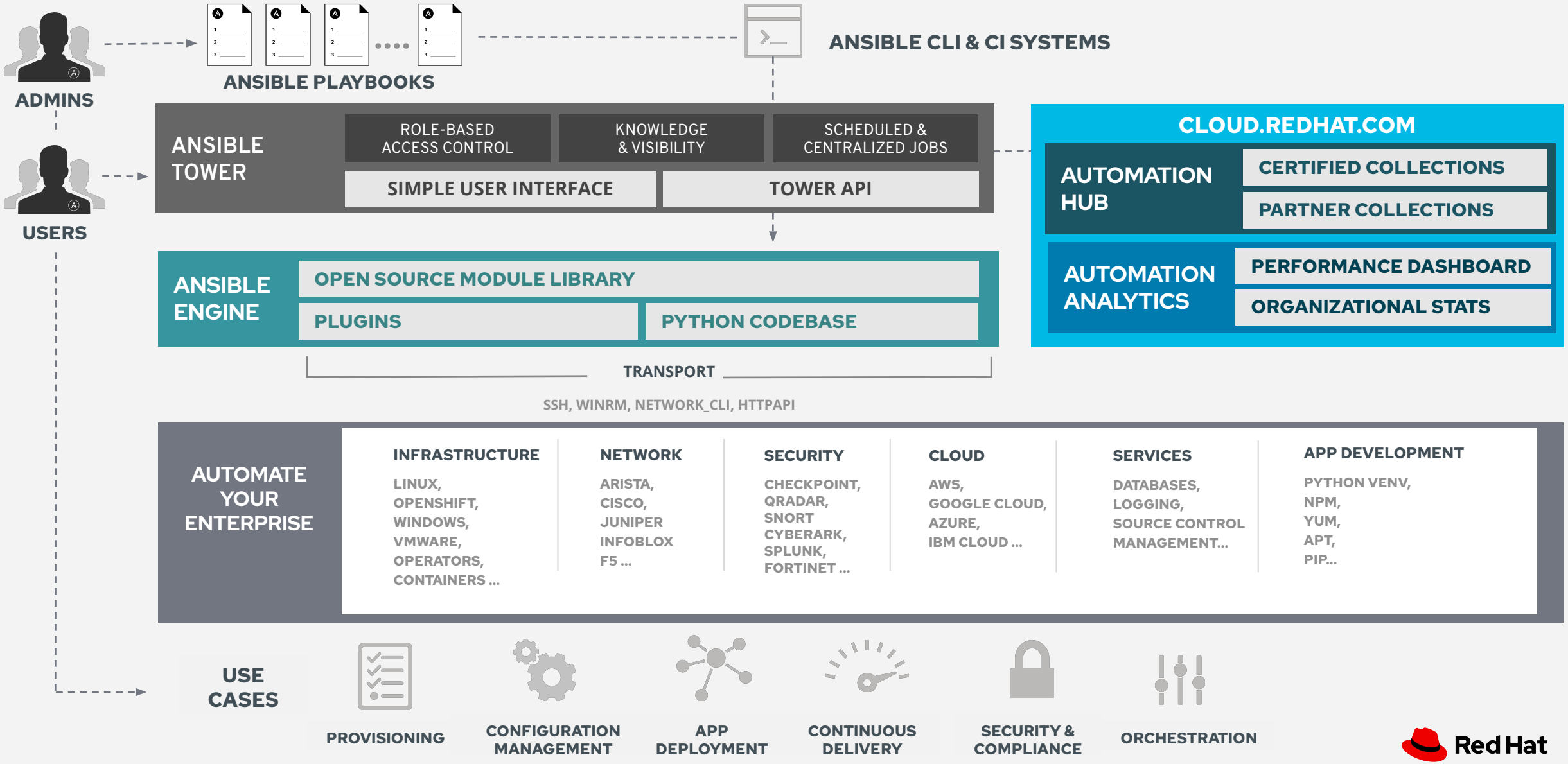
Ansible Automation Platform



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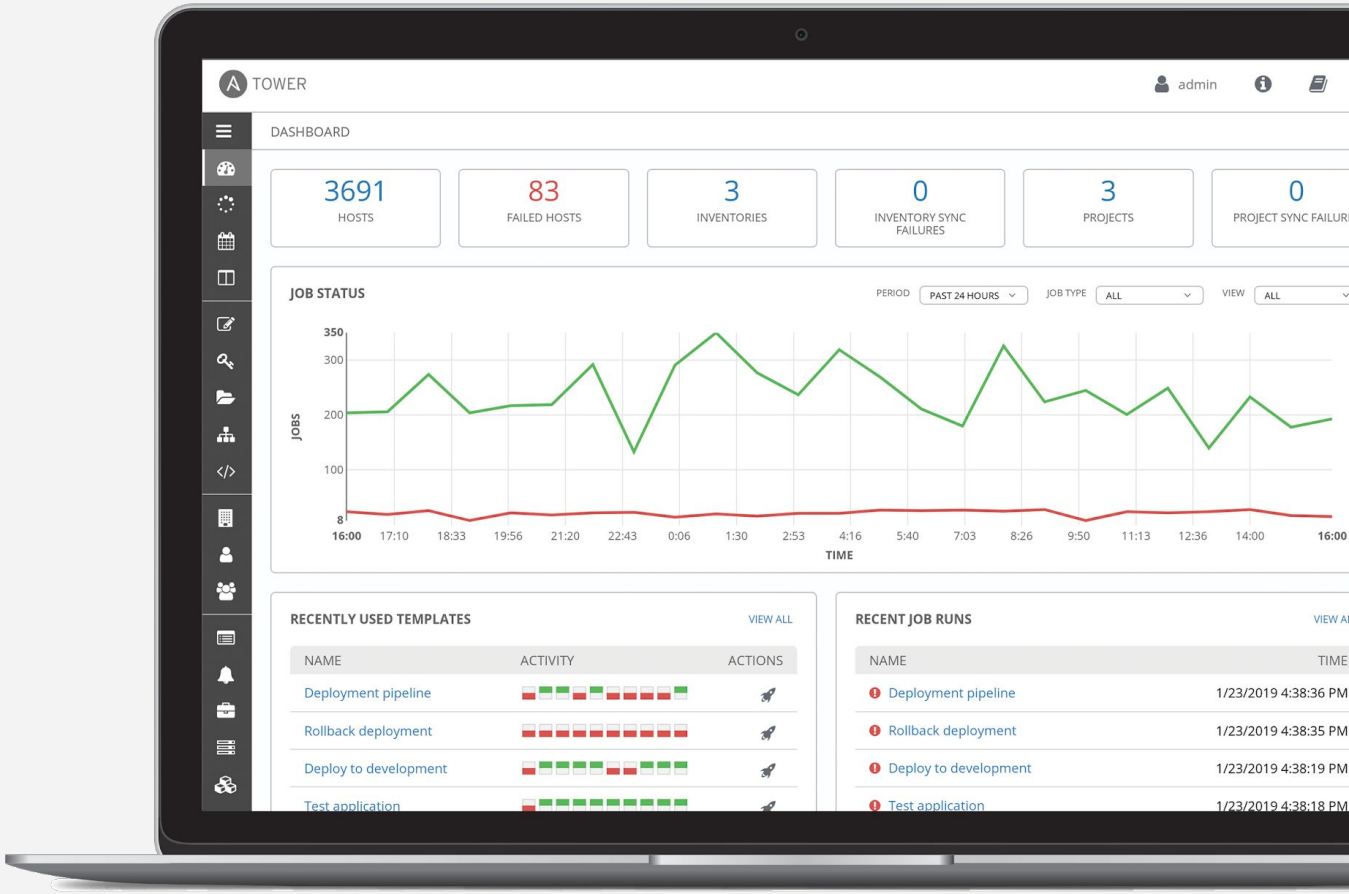
What is Ansible Tower?

Ansible Tower is a UI and RESTful API allowing you to scale IT automation, manage complex deployments and speed productivity.

- ➔ Role-based access control
- ➔ Deploy entire applications with push-button deployment access
- ➔ All automations are centrally logged
- ➔ Powerful workflows match your IT processes



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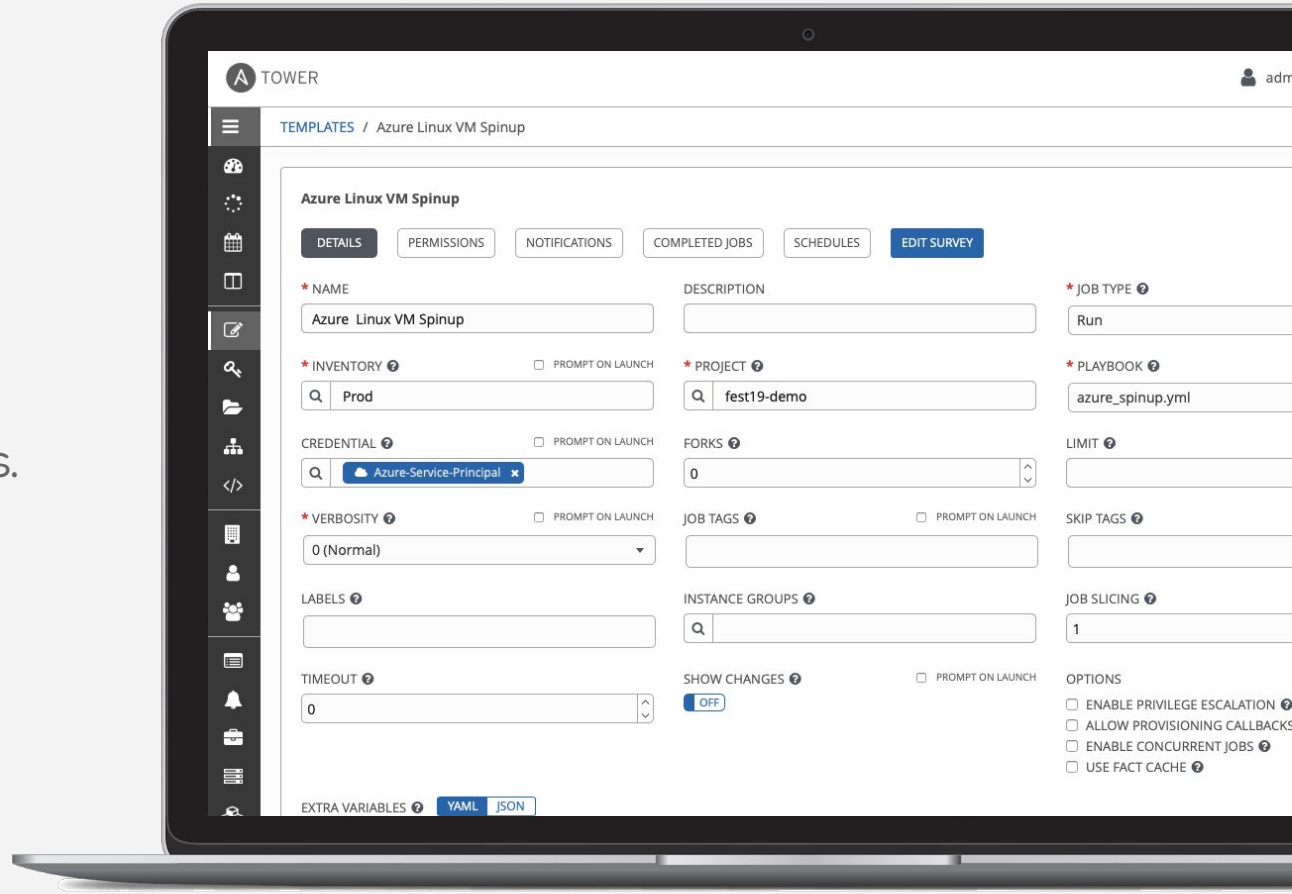
Job Templates

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**



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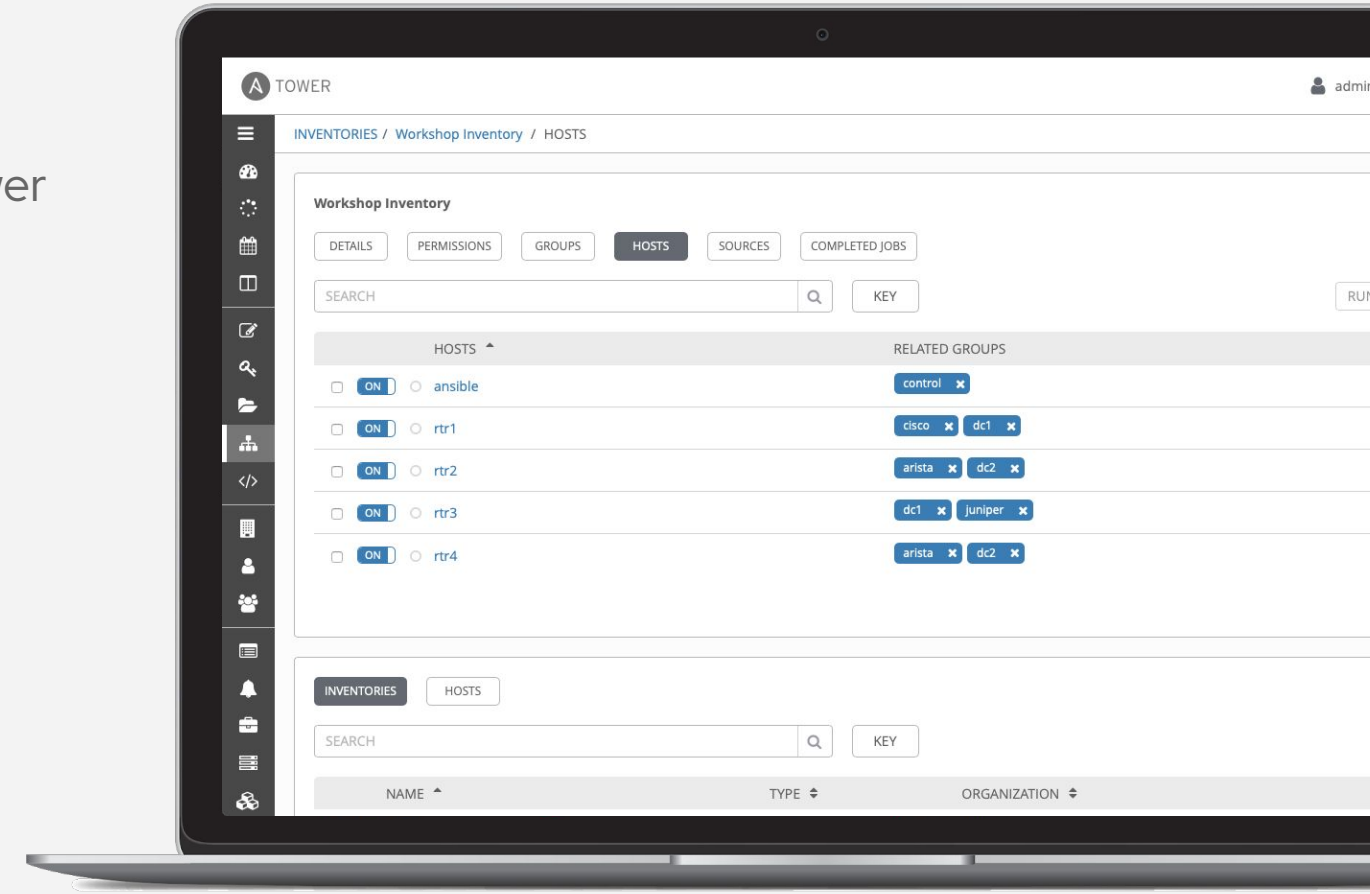
Inventory

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



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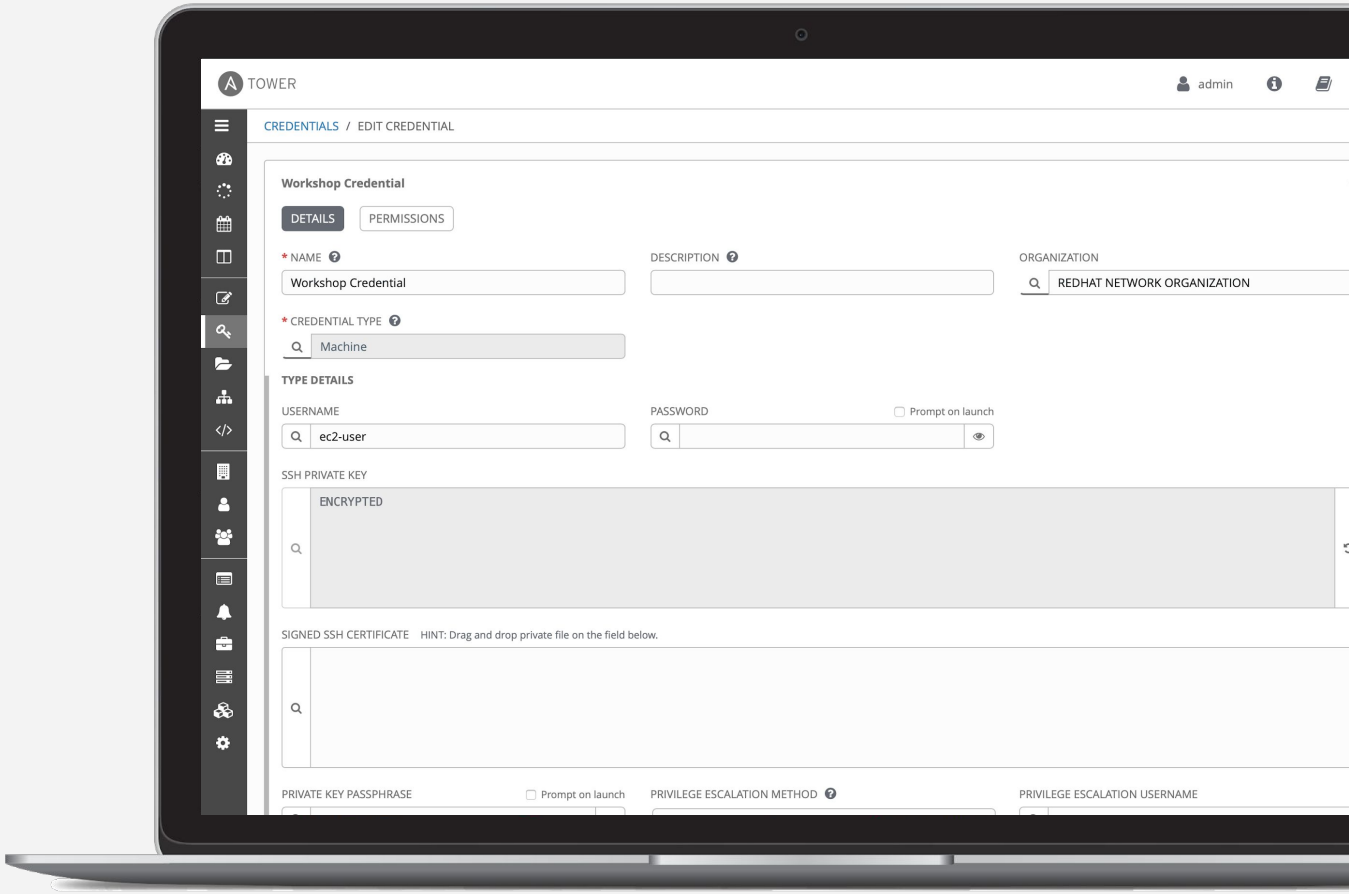
Credentials

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.



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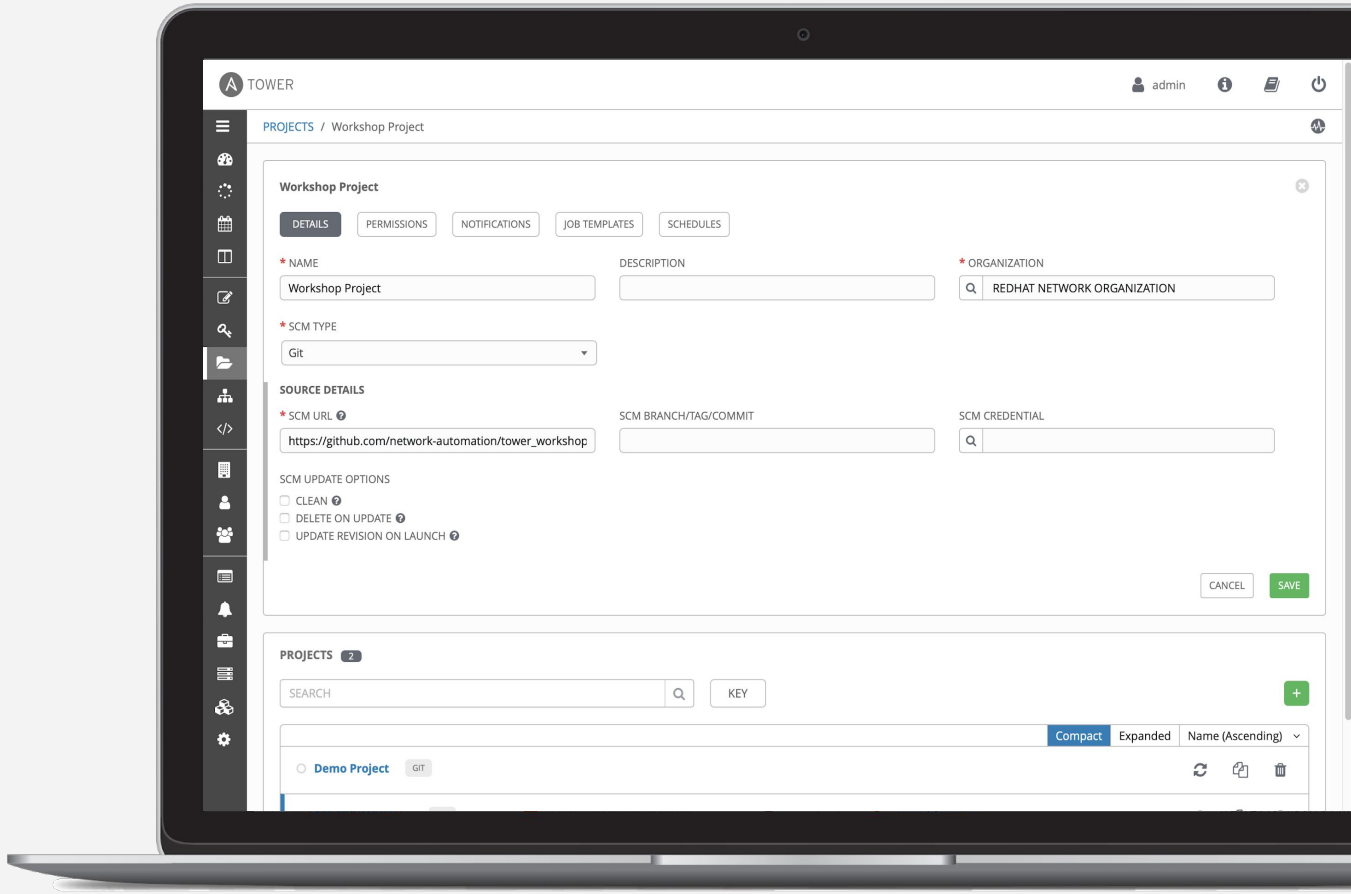
Project

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.



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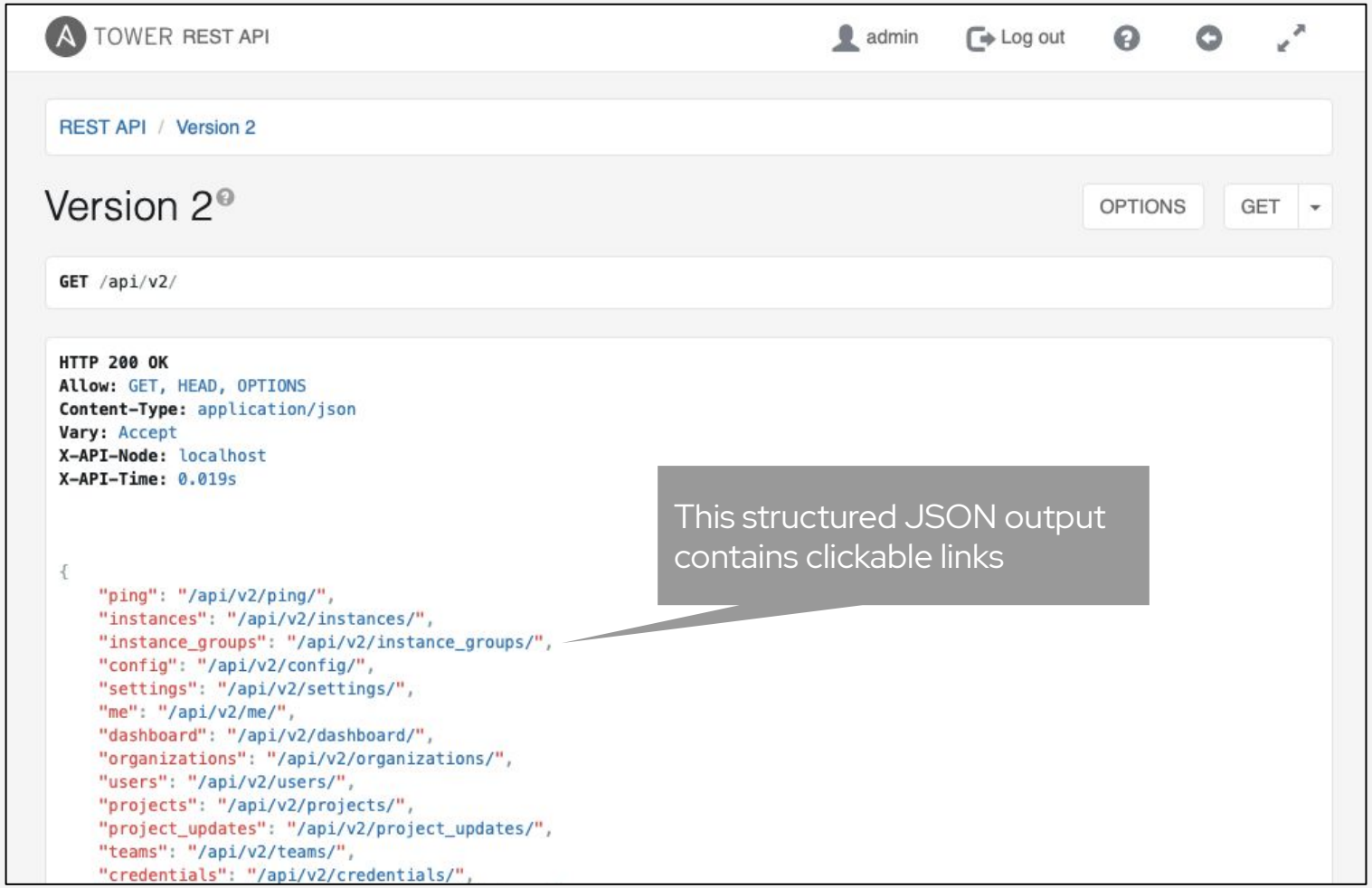
RESTful API

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



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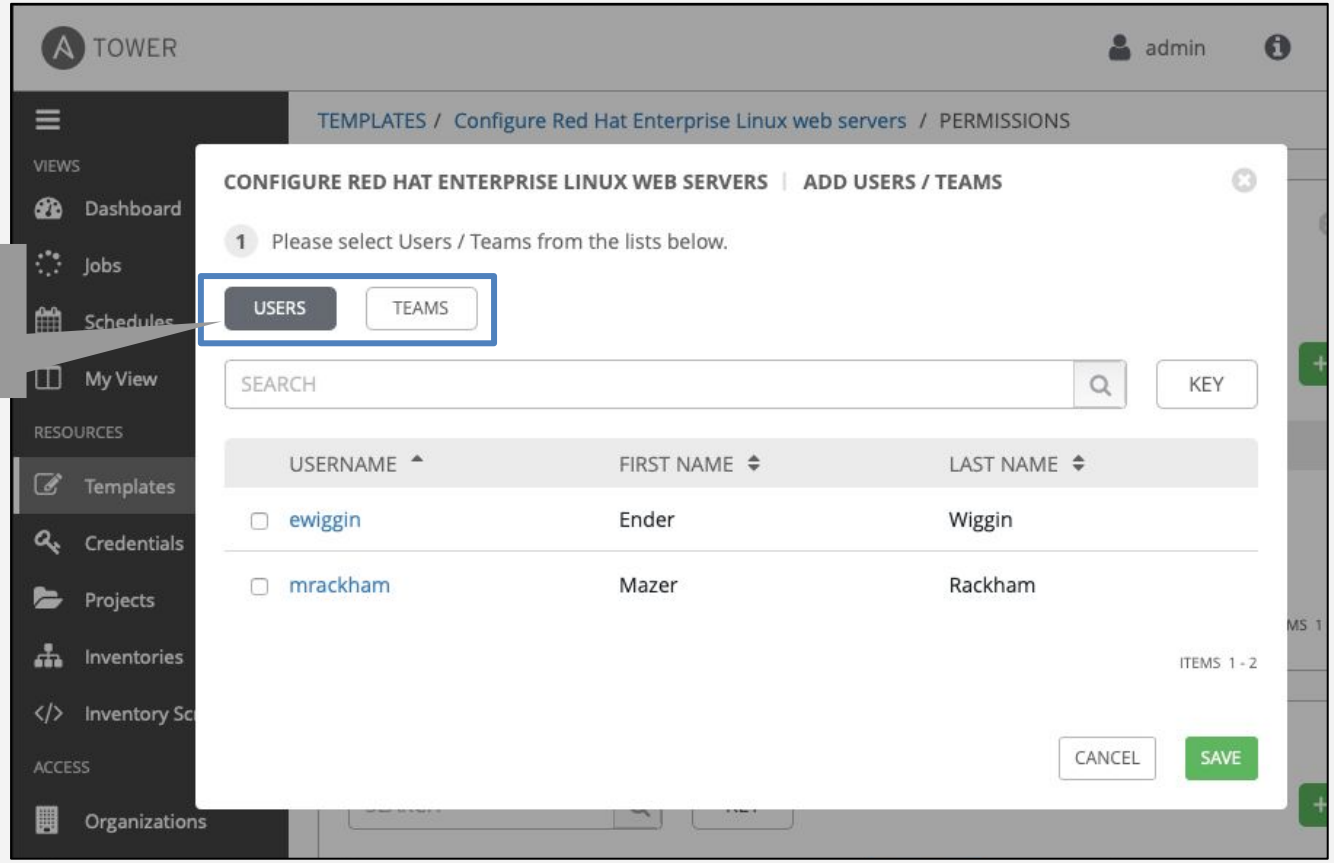
Role Based Access Control (RBAC)

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

Clicking the USERS or TEAMS buttons shows available options



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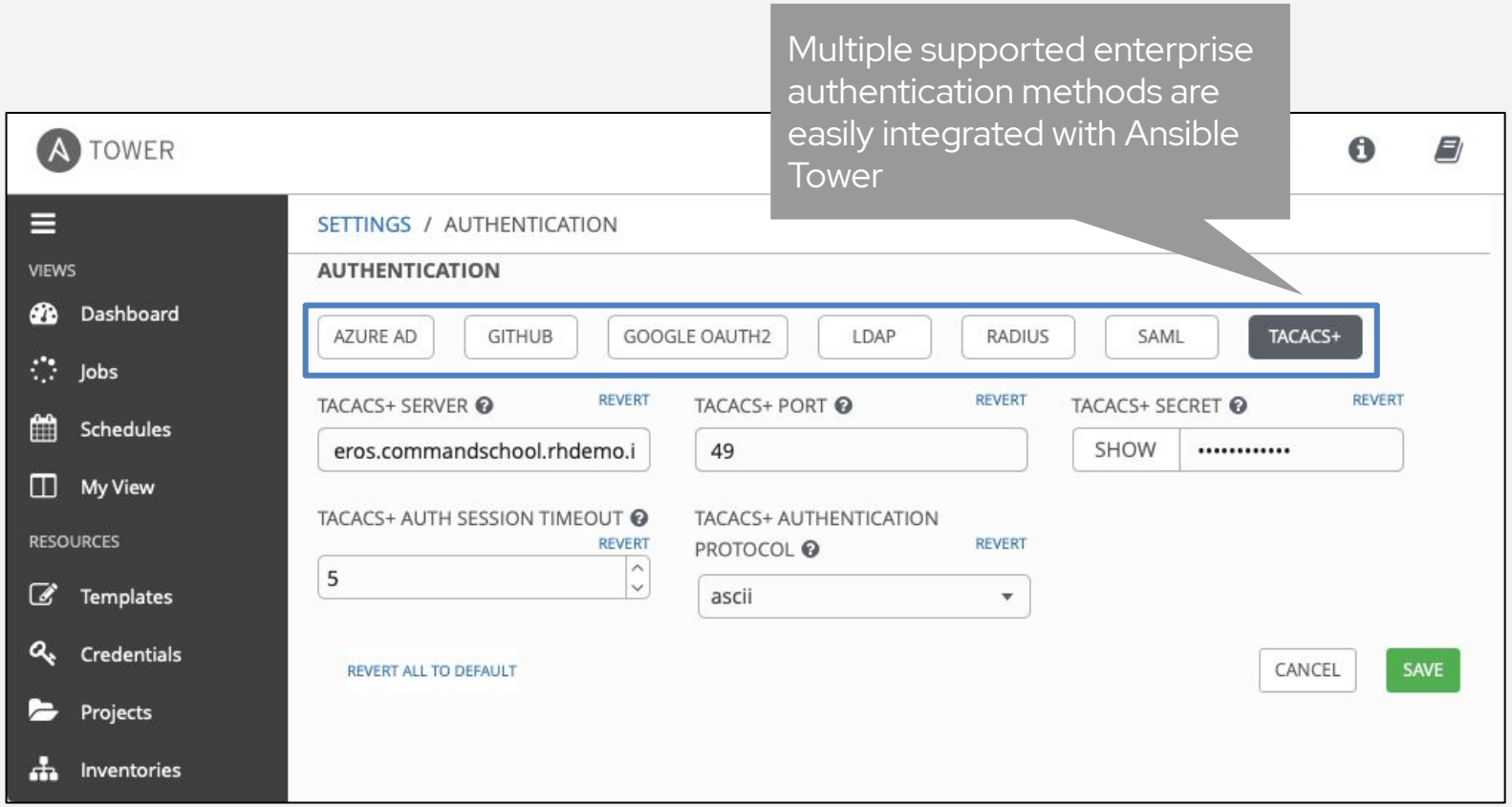
Enterprise Authentication

Use your existing enterprise authentication including:

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



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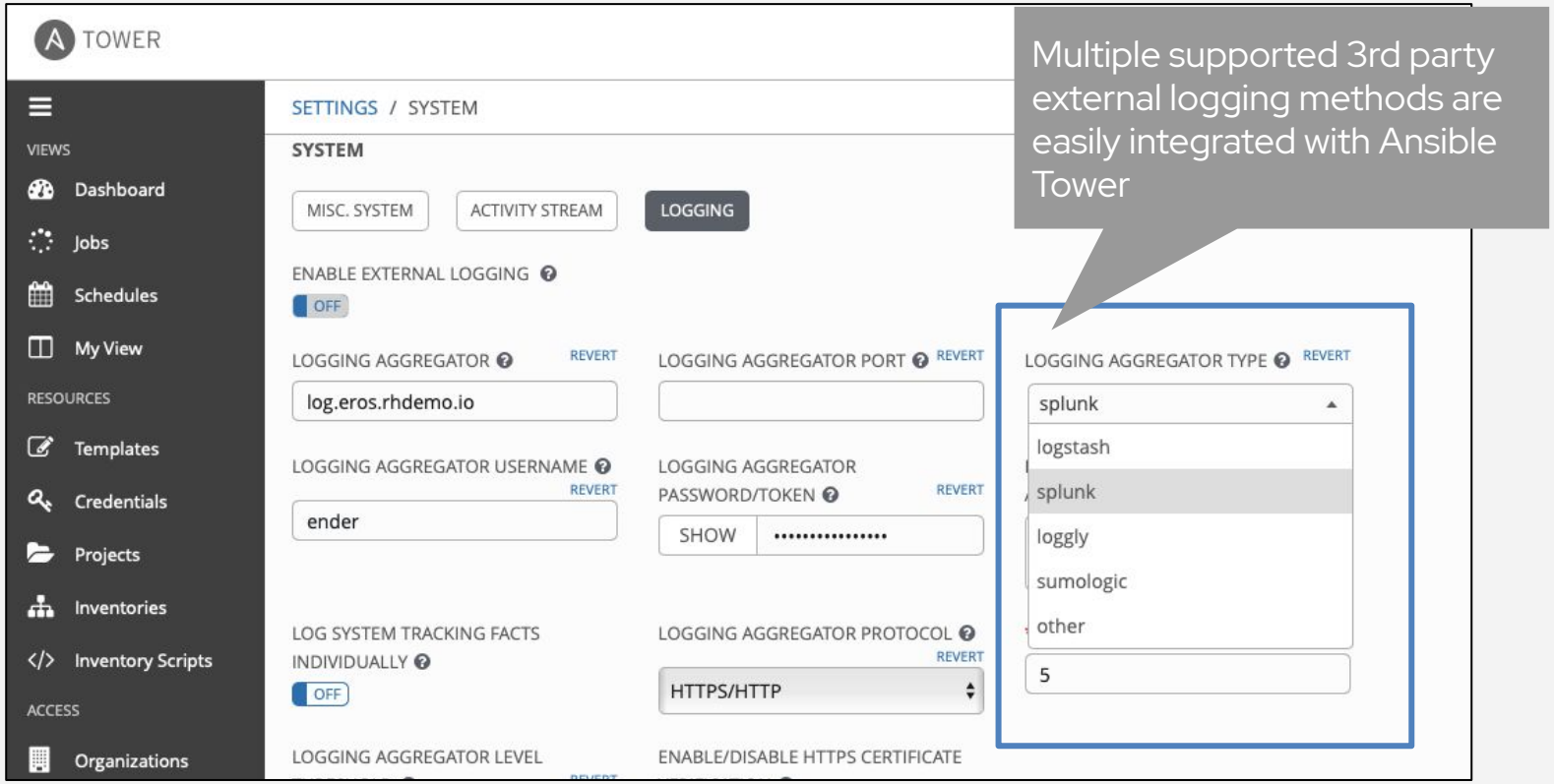
Centralized Logging

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



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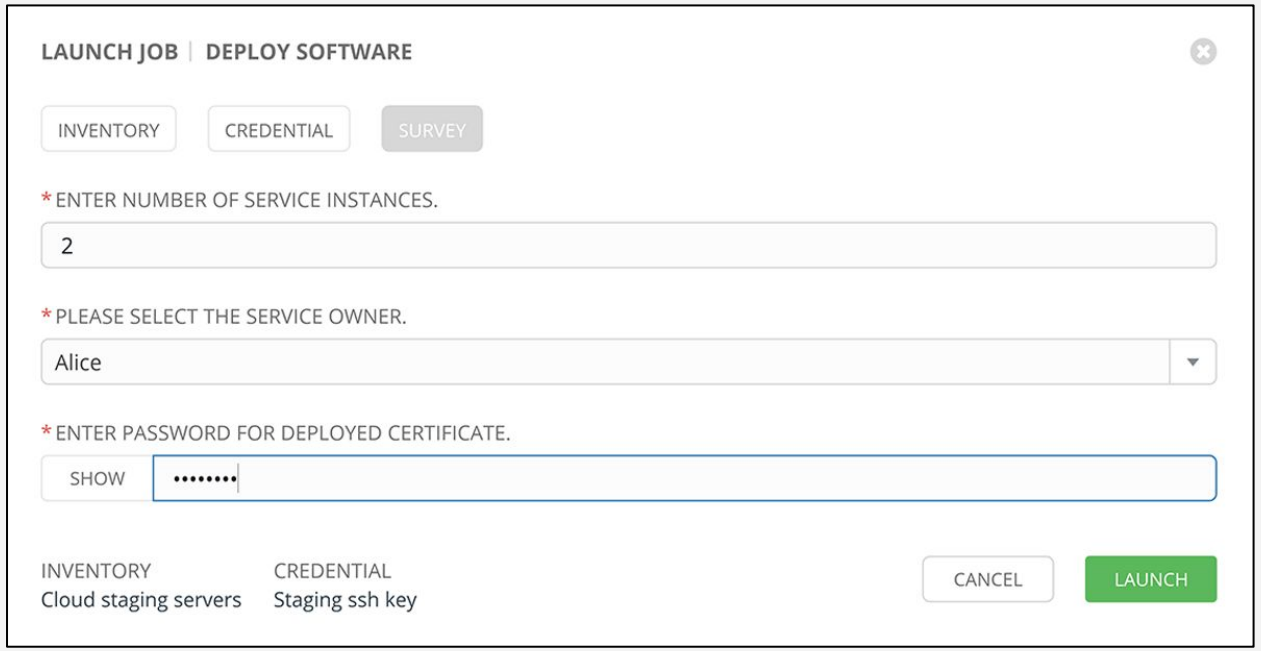
Self-Service IT

Tower lets you launch Playbooks with just a single click. It can prompt you for variables, let you choose from available secure credentials and monitor the resulting deployments.



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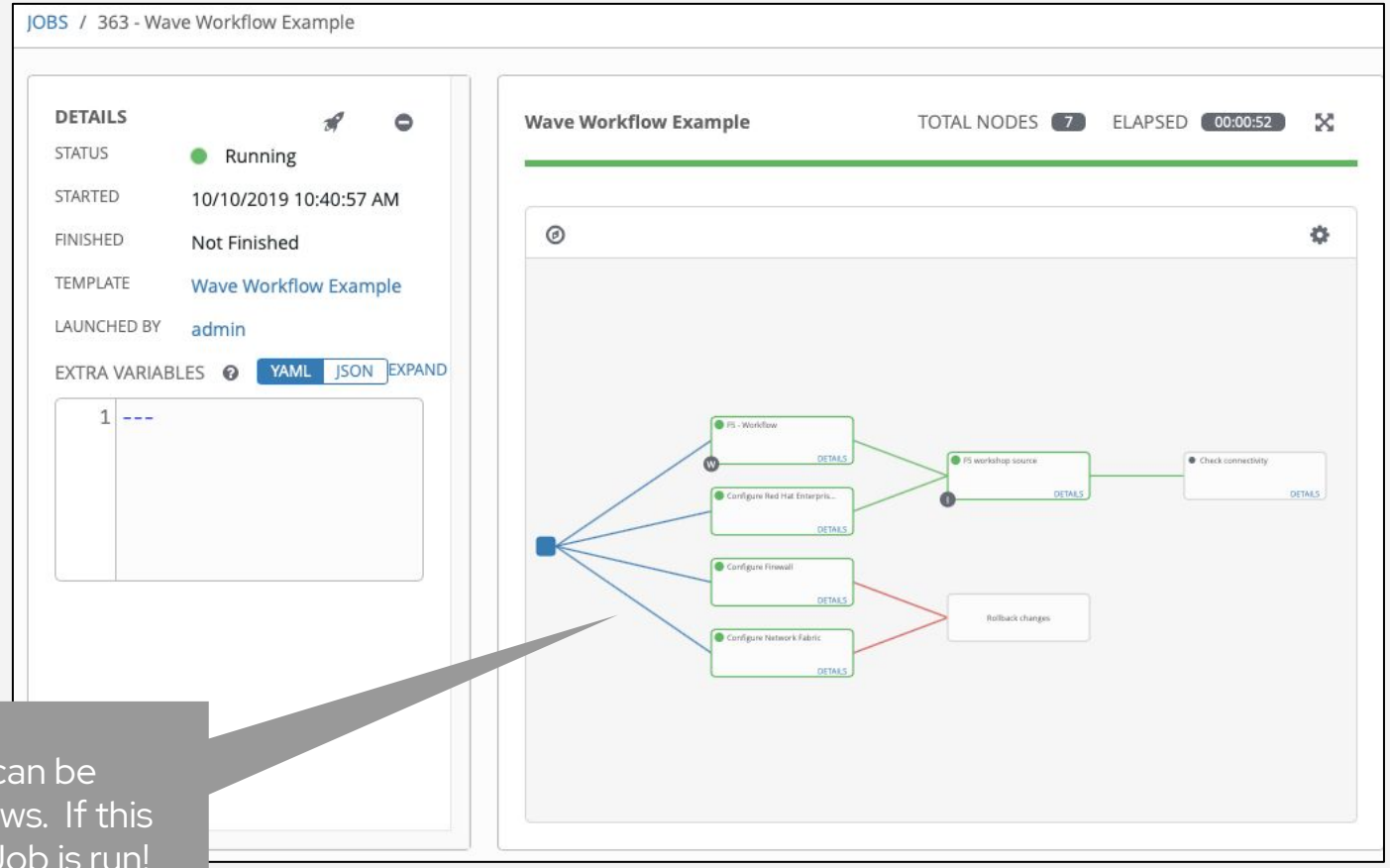
Workflows

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



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

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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.

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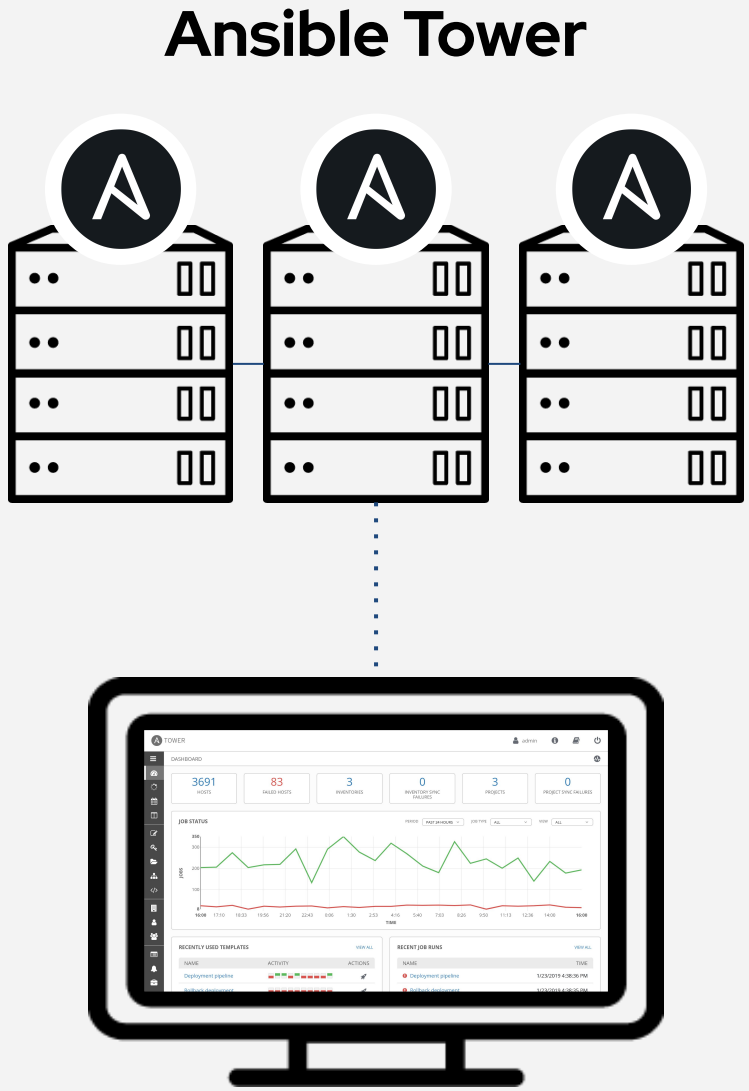
Scale

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



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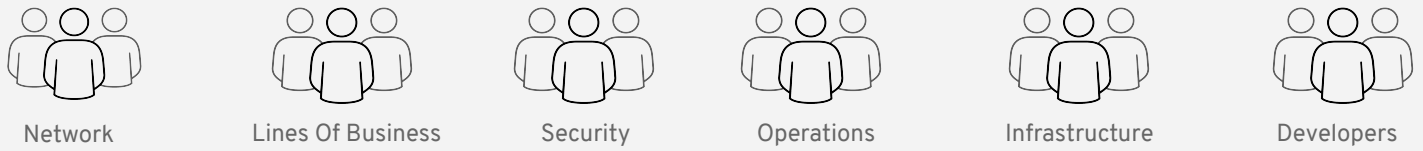
Ansible Automation Platform



Red Hat Ansible Automation Platform

Accelerate Content Collections	**Collaborate** Automation Hub	**Trust** Certified Content	**Inform** Automation Analytics

Ansible Tower: Operate & control at scale

Ansible Engine: Universal language of automation

Fueled by an open source community

Red Hat

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Ansible Automation Platform

CLOUD.REDHAT.COM

Engage users with an automation focused experience

Red Hat

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

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Ansible Tower: Operate & control at scale

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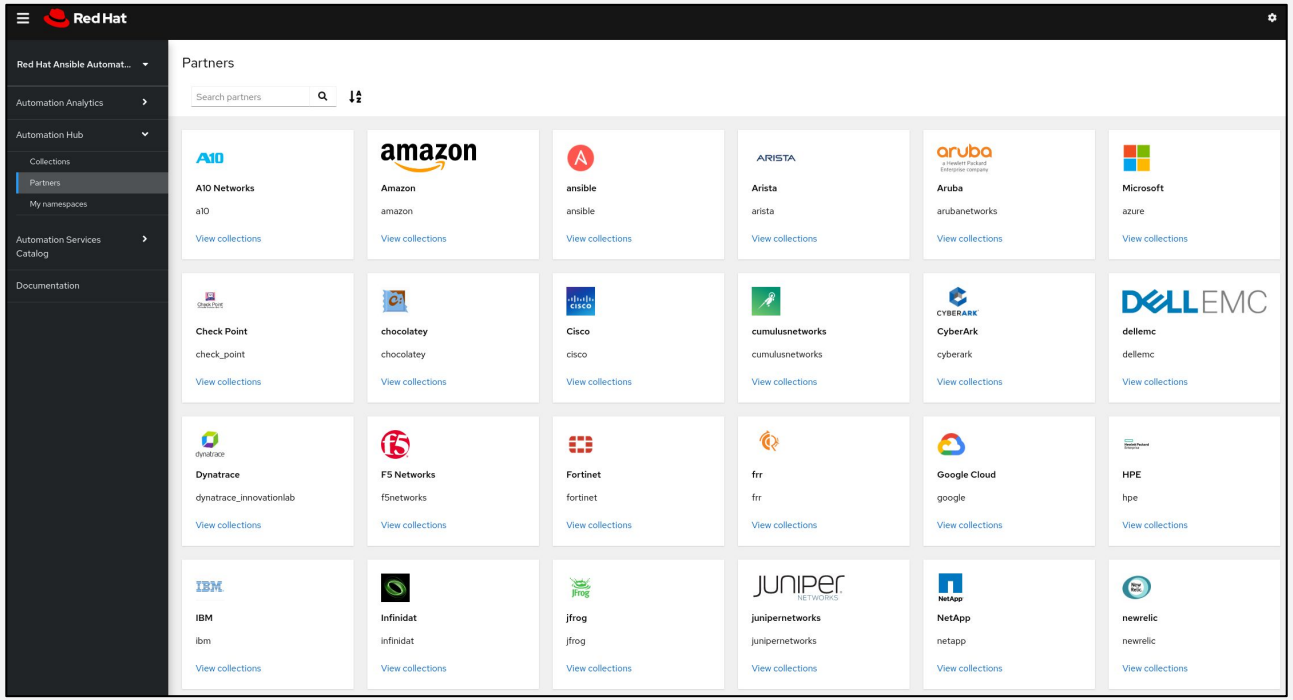
Automation Hub

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.*

Manage your locally available automation via on-premise.*



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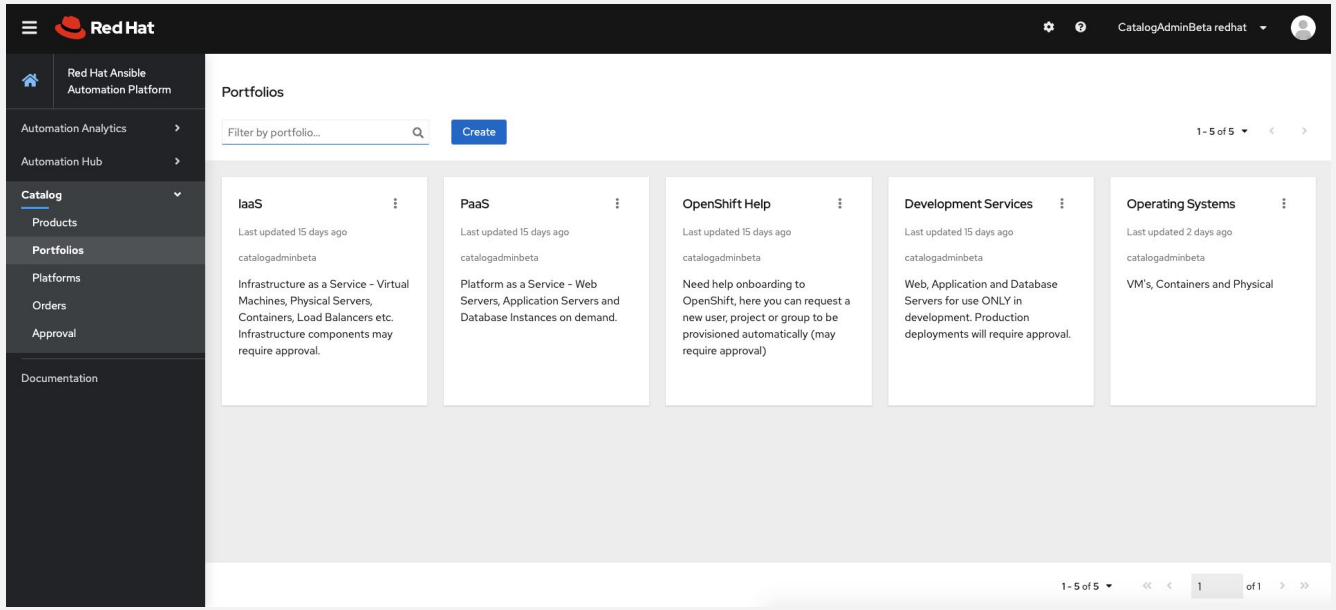
Automation Services Catalog

The Services Catalog delivers customers' pre built automation to the developer and the business user

It also delivers governance of automation services for the enterprise user

And supplies the necessary controls required by the business to track how this automation is being used



Red Hat

Automation Analytics

SaaS (Software as a Service) on cloud.redhat.com

Analytics for **all Ansible Tower** clusters for an organization

Includes:

- ➔ visual dashboard
- ➔ health notifications
- ➔ organization statistics

Gain information about automation in your enterprise:

- ➔ Which organizations are using the most automation?
- ➔ Utilization rates
- ➔ Enterprise-wide success and failure rates
- ➔ for automation

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Organizational statistics

Filter by Organization

Job Status by Organization

Usage by Organization

Job Runs by Organization

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Red Hat
Ansible Automation
Platform

Customers

Red Hat

Red Hat Ansible Automation Platform Customers

Red Hat

Ebook: The Automated Enterprise

THE AUTOMATED ENTERPRISE

Transform your business with an automation platform that unifies your people and processes

Get the e-book

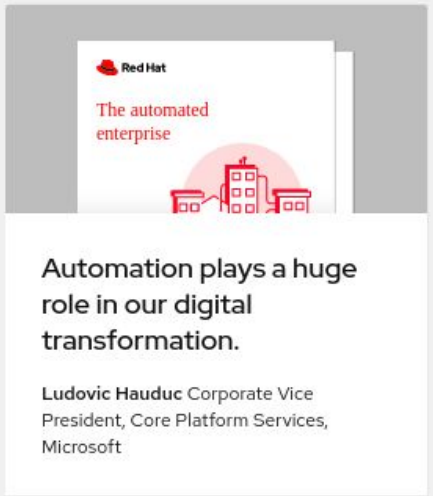
Change is upon us. Automation can help.

No matter the complexity of your environment or where you are on your IT modernization journey, an IT operations automation strategy can help you improve existing processes. With automation, you can save time, increase quality, improve employee satisfaction, and reduce costs throughout your organization.

Inside the book

"The Automated Enterprise" shows the important role IT automation plays in business today.

- **The basics of automation**
  What can you automate? How can automation help?
- **How to develop an enterprise-wide automation strategy**
  Assessment, planning, adaptation
- **How to implement your automation strategy**
  Start small, show value, expand conservatively
- **5 common automation use cases**
  Infrastructure, Network, Security, DevOps, Hybrid and Multicloud
- **Red Hat® Ansible Automation customer success stories**
  Including Microsoft, Siemens, British Army
- **And more!**



https://www.redhat.com/en/resources/automated-enterprise-e-book

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