Automation for all

Ansible technical introduction and overview
Automation happens when one person meets a problem they never want to solve again
Teams are automating...

- Lines Of Business
- Network
- Security
- Operations
- Developers
- Infrastructure
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
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...
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
Ansible automates technologies you use

Time to automate is measured in minutes, 50+ certified platforms

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Red Hat Ansible Tower
by the numbers:

94%
Reduction in recovery time following a security incident

84%
Savings by deploying workloads to generic systems appliances using Ansible Tower

67%
Reduction in man hours required for customer deliveries

Financial summary:

146%
ROI on Ansible Tower

<3 MONTHS
Payback on Ansible Tower

SOURCE: “The Total Economic Impact™ Of Red Hat Ansible Tower, a June 2018 commissioned study conducted by Forrester Consulting on behalf of Red Hat.”
Red Hat Ansible Engine:
Universal language of automation
### Red Hat Ansible Automation Platform

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<td>Create</td>
<td>Simple</td>
<td>Powerful</td>
<td>Agentless</td>
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<td></td>
<td>Human readable automation</td>
<td>Thousands of integrations</td>
<td>No agents to exploit or update</td>
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Fueled by an open source community
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

Red Hat Ansible Engine
PLAYBOOKS ARE WRITTEN IN YAML
Tasks are executed sequentially
Invoke Ansible modules
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
ANSSIBLE AUTOMATION ENGINE
CMDB
USERS
INVENTORY
HOSTS
NETWORK
DEVICES
PLUGINS
CLI
ANSSIBLE
PLAYBOOK
PUBLIC / PRIVATE CLOUD

PUBLIC / PRIVATE CLOUD

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/
PLUGINS ARE “GEARS IN THE ENGINE”
Code that plugs into the core engine
Adaptability for various uses & platforms

{{ some_variable | to_nice_yaml }}
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
CLOUD
Red Hat Openstack, Red Hat Satellite, VMware, AWS EC2, Rackspace, Google Compute Engine, Azure
ANSIBLE AUTOMATION ENGINE

HOSTS

NETWORK DEVICES

CLI

ANSIBLE PLAYBOOK

MODULES

PLUGINS

INVENTORY

CMDB

ServiceNow, Cobbler, BMC, Custom cmdb

PUBLIC / PRIVATE CLOUD

PUBLIC / PRIVATE CLOUD

CMDB

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
Red Hat Ansible Tower: Operate and control at scale
Red Hat Ansible Automation Platform

Engage Ansible SaaS: Engage users with an automation focused experience

Create Ansible Engine: Universal language of automation

Scale
- Control: Web UI and API
- Delegation: Role Based Access Controls
- Scale: Scalable Execution Capacity

Fueled by an open source community
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
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**

**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.
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.
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.

This structured JSON output contains clickable links.
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.
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.
Centralized Logging

Ansible Tower creates a centralized control point for Ansible Automation. If desired, Ansible Tower can be integrated with existing log aggregation services.
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
Engage users with an automation focused experience
Red Hat Ansible Automation Platform

Fueled by an open source community

Ansible Engine: Universal language of automation
Ansible Tower: Operate & control at scale

Engage
- Knowledge
  - Automation Analytics
- Collaborate
  - Automation Hub
- Governance
  - Automation Services Catalog
- Trusted
  - Certified content
- Accelerate
  - Collections

Scale

Create

Network
Lines of business
Security
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Automation Analytics: What is it?

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
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 last updated 2019-09-11 07:42:12 UTC
Organizational statistics

- **Filter by Organization**
- **Job Status by Organization**
- **Job Runs 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

```yaml
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:
```
Discover, publish, and manage Collections

Quickly discover available Red Hat and certified content through Collections.

Manage your organization’s view of available content.

Publish your locally available automation via on-premise.
Automation Services Catalog

Manage, provision, and retire automation resources

Deliver customers’ pre built automation to the developer and the business user.

Deliver governance of automation services for the enterprise user.

Supply the necessary controls required by the business to track how this automation is being used.
Interaction with the services catalog

Platforms
Ansible Tower is a Platform to the Catalog, it presents Job Templates and Workflows and executes them as jobs. Business governance can be applied to Platforms.

Products
Users order Products are high level abstractions of the service offerings. An Administrator can override the detail of a Product as well as govern the individual product with Business Logic.

Portfolios
Allows for an Administrator to group service offerings as products into logical collections. Portfolios can be shared to groups of users as well as support Business Governance.

Organizations
An Organization is a collection of Platforms, Portfolios, Products, Users, Groups and Approval policies. An entire organization can be governed for Business Logic.
Next steps:

**Get started**
- ansible.com/get-started
- ansible.com/tower-trial

**Workshops, training & services**
- ansible.com/workshops
- Red Hat Training
- Red Hat Services: Automation Adoption Journey

**Join the community**
- ansible.com/community

**Share your story**
- Follow us @Ansible
- Friend us on Facebook
Thank you