

Manage Power machines with Ansible

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TOC

Automation

Ansible

From a tool to a platform

Wrapping up

About me

- ▶ Working in IT since 2004, mostly in consulting roles
- ▶ Ansible user since 2013
- ▶ EMEA Associate Principal Specialist Solution Architect
- ▶ Red Hat Certified Architect (RHCA)

Automation



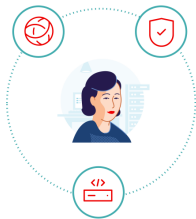
**Automation happens when one
person meets a problem they
never want to solve again**

Anyone can automate...
but an enterprise needs
to coordinate and scale

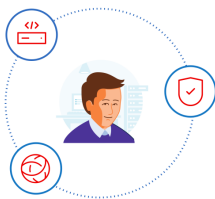


Many organizations share the same challenge

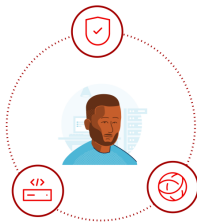
Too many unintegrated, domain-specific tools



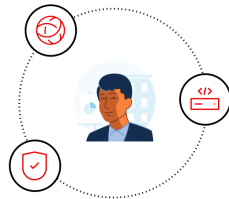
Network ops



SecOps



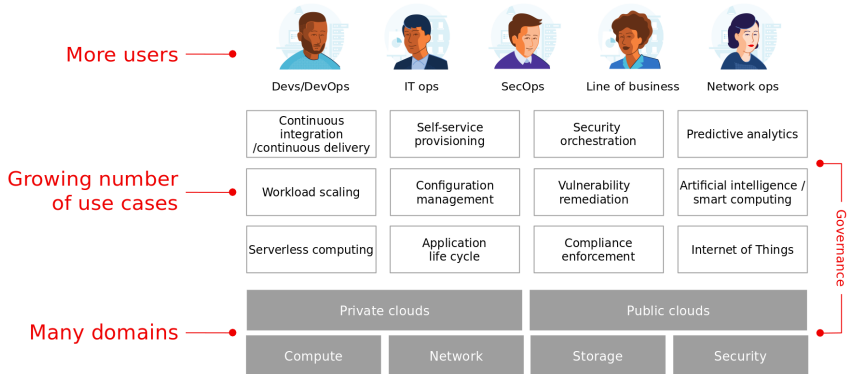
Devs/DevOps



IT ops

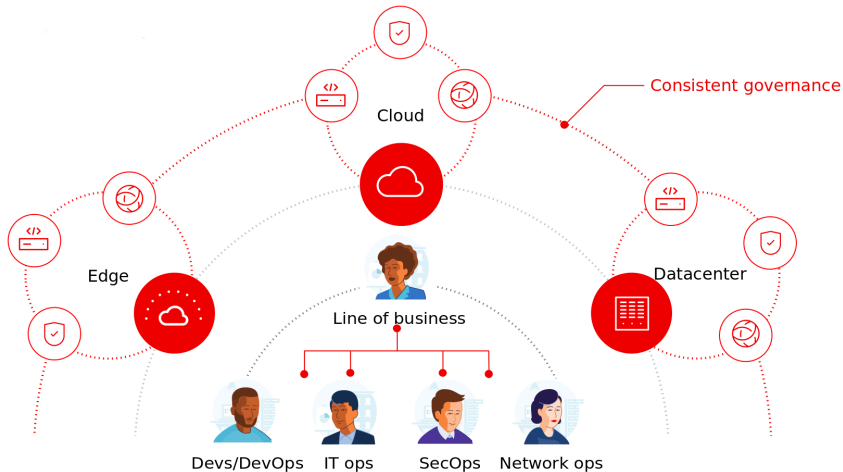
Many organizations have a problem

Too many unintegrated, domain-specific tools



Break down silos

Different teams a single platform



Idempotence

Definition

Idempotence is the property of certain operations in mathematics and computer science, that can be applied multiple times without changing the result beyond the initial application.

Idempotent examples:

- ▶ $X = 100$ (always 100)
- ▶ $X = X^0$ (always 1)
- ▶ `echo "TEST" > /root/example`

Non-idempotent examples:

- ▶ $X = X * 2$
- ▶ `echo "TEST" » /root/example`

Idempotence – tricky/edge cases

- ▶ `yum update`
- ▶ `yum install ...`
- ▶ `wget ...`
- ▶ `echo "$x" > /root/test`

Ansible

Ansible

- ▶ Open Source
- ▶ Mainly push mode (agent-less)
- ▶ Infrastructure as Data (in YAML format)
- ▶ Very gentle learning curve
- ▶ Very readable code
- ▶ Collections to support code-reusability
- ▶ Ecosystem

Ansible key concepts

- ▶ **Host:** target of the execution
- ▶ **Group:** group of hosts
- ▶ **Inventory:** collection of Hosts and groups of Hosts
- ▶ **Module:** code to control system resources, like services, packages, or files (anything really), or handle executing system commands
- ▶ **Task:** instance of a Module
- ▶ **Role:** way to abstract a collection of tasks that has a specific role and is idempotent
- ▶ **Playbook:** multiple Tasks and Roles that could be idempotent (or not) in a single file
- ▶ **Collection:** multiple Modules and Roles distributed as a single bundle
- ▶ **Execution Environment:** a container containing the ansible executable, the collections, and needed libraries

Inventories

- ▶ **static:** human compiled (and maintained) lists
- ▶ **dynamic:** populated at runtime by a script
 - ▶ Amazon web Services
 - ▶ Azure
 - ▶ Digital Ocean
 - ▶ Google Cloud Engine
 - ▶ OpenStack
 - ▶ Many more
 - ▶ **Bring your own!**

Ansible Playbook

```
---
```

```
- hosts: all
  become: True
  tasks:
    - name: Ensure httpd is installed
      ansible.builtin.package:
        name: httpd
        state: latest
    - name: Ensure httpd is started
      ansible.builtin.service:
        name: httpd
        state: started
```


Collections

Collections are a data structure containing automation content:

- ▶ Modules
- ▶ Playbooks
- ▶ Roles
- ▶ Plugins
- ▶ Documentation
- ▶ Tests

Search

power_



Filters

(171 results)

Collections 37



ibm

power_aix

Ansible Content for IBM Power Systems - AIX provides a collection of content used to manage and deploy Power Systems AIX.

0 Modules 2 Roles 0 Plugins
power_aix_bootst
power_aix_vioshc



infrastructure ibm power aix

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Current Version: 1.6.1 uploaded 2 months ago



ibm

power_hmc

Ansible Content for IBM Power HMCs - to manage configurations of Power HMC and Power systems managed by the HMC.

1 Modules 0 Roles 0 Plugins
power_system



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ibm

power_vios

Ansible Content for IBM Power Systems - VIOS provides a collection of content used to manage and deploy Power Systems VIOS.

0 Modules 1 Roles 0 Plugins
power_vios_boots



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ibm

power_aix_oracle

Ansible content for installing Oracle Database 19c on IBM Power Systems running with AIX Operating system



infrastructure ibm power aix oracle

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power_linux_sap

RHEL/SLES ansible automation to prepare LPARs for installing SAP on Power Systems.

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web	2,980
monitoring	1,786
networking	1,414
database	1,320
docker	1,308
cloud	1,197
ubuntu	1,080
security	1,051

Popular Platforms

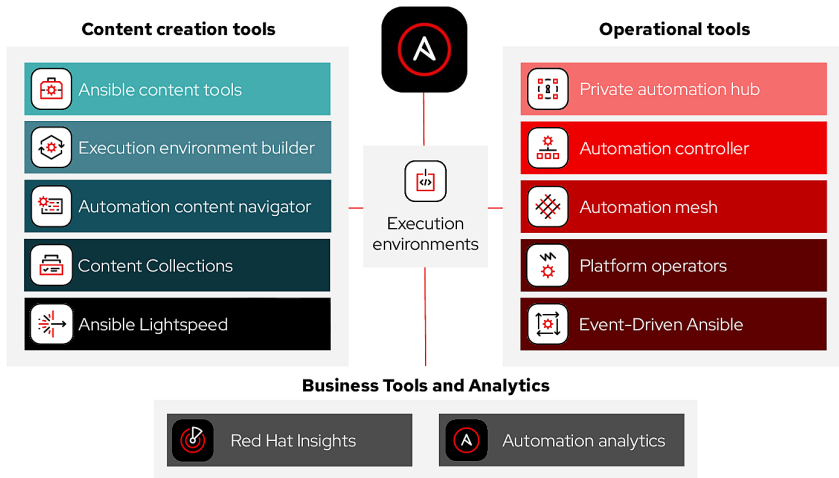
Ubuntu	143,306
EL	27,197
Debian	58,343
Fedora	52,708
ArchLinux	1,169
opensuse	9,628
GenericLinux	1,027
Alpine	866

Ansible in numbers

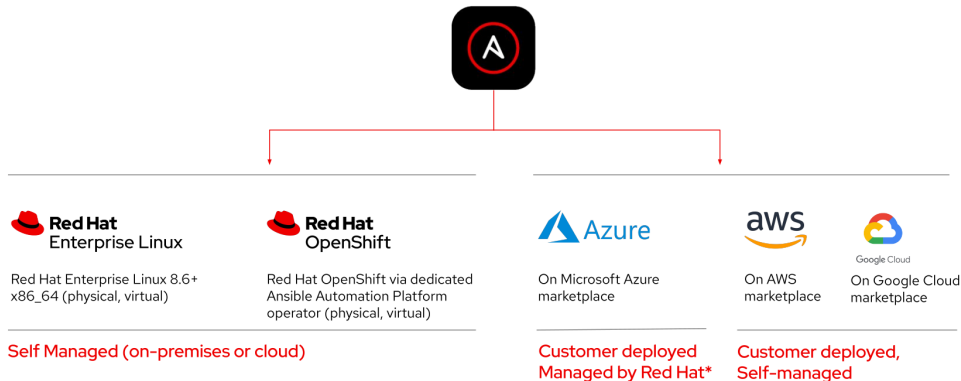
- ▶ **55k+ commits** to the Ansible project
- ▶ **5k+ contributors** to the Ansible project
- ▶ **31k+ repositories** on GitHub depend on ansible/ansible
- ▶ **19th on the list** of key software engineer skills in 2023¹
- ▶ **3k+ customers** (Red Hat versions only)

From a tool to a platform

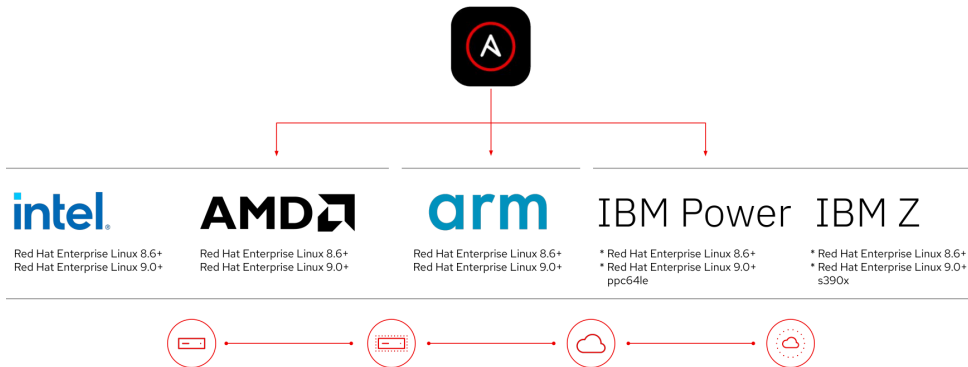
The Ansible Automation Platform



Ansible Automation deployment options



Ansible Automation Platform architectures options



Holistic automation for your enterprise

- ▶ Create
- ▶ Operate
- ▶ Consume

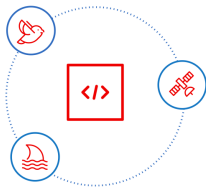
Create

Many technologies, different life cycles

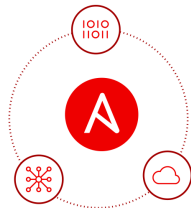
How to keep runtime environment, collections, and dependencies aligned?



Collections



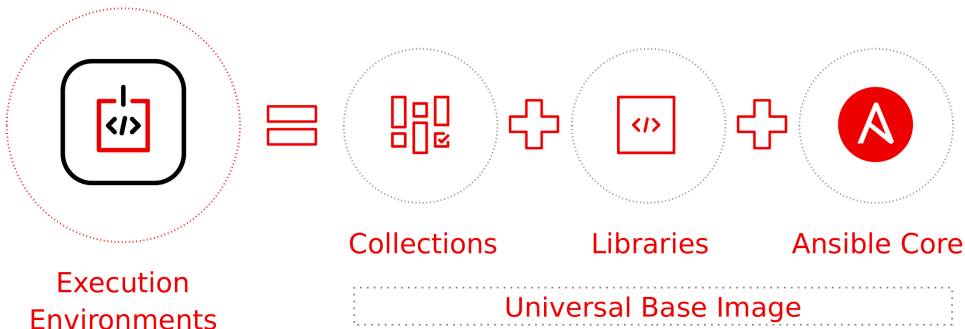
Dependencies



Runtime

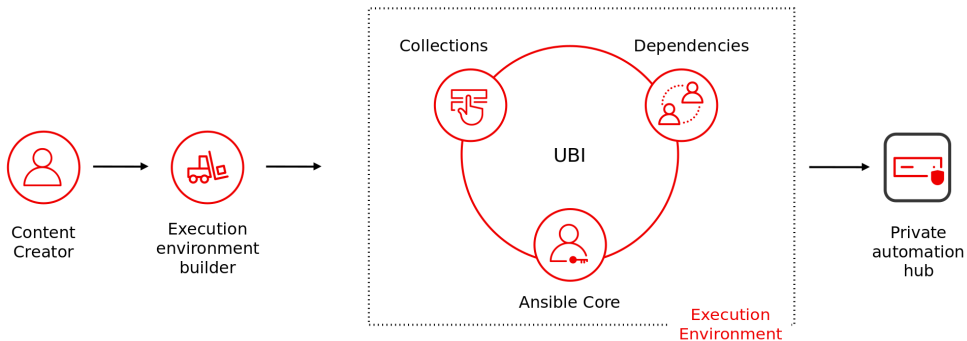
Automation Execution Environments

Components needed for automation, packaged in a cloud-native way



Build, create, publish

Development cycle of an automation execution environment



Develop, test, run

How to develop, test and run containerized Ansible content

Scalable



Content
Creator



Automation
content
navigator



Playbook



Execution
Environments

Supported

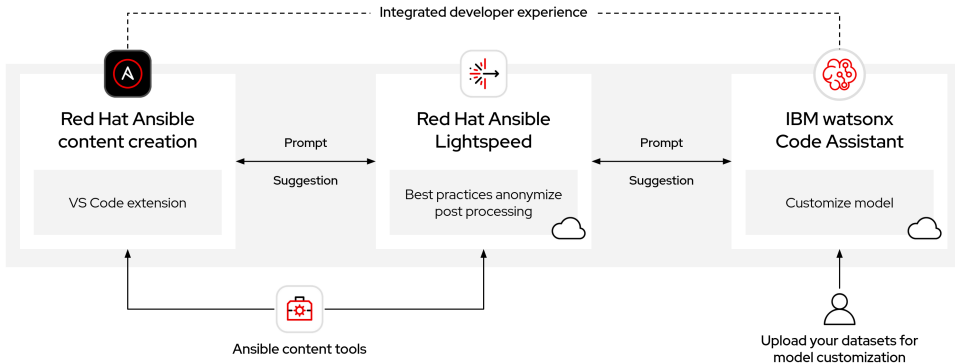
Why is not everything automated?

- ▶ Too much time required to automate processes
- ▶ Not enough people are able to create automation
- ▶ Difficult to find and reuse code

Generative AI has the potential to transform enterprise automation

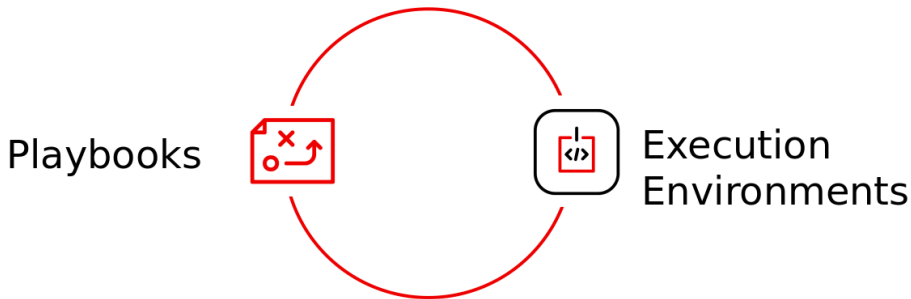
- ▶ **Enhance productivity:** With AI-generated code recommendations that are more accurate, more reliable, and integrated into your automation developers' existing Ansible workflows.
- ▶ **Expand who can create:** By reducing barriers to entry for automation code creation, and empowering automation SMEs with basic coding knowledge to translate their expertise into clean, compliant YAML code for Ansible Playbooks.
- ▶ **Extend trust and compliance:** With an automation code base that adheres to accepted Ansible best practices, options to customize data models, and significant data safeguards in place.

Ansible Lightspeed with IBM Watsonx Code Assistant

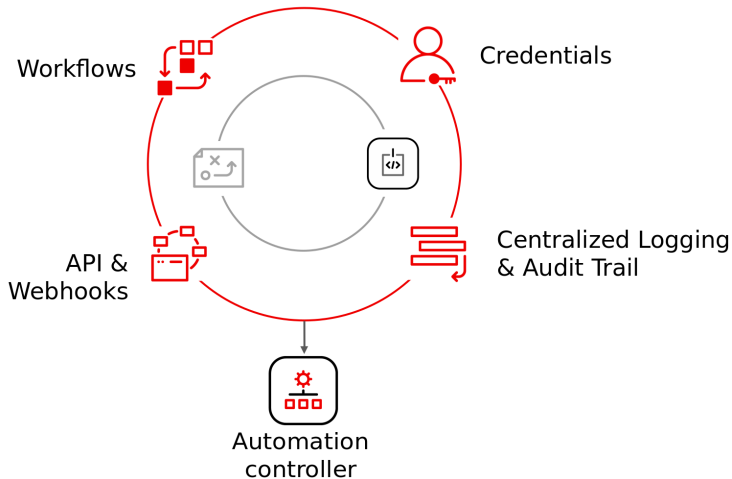


Operate

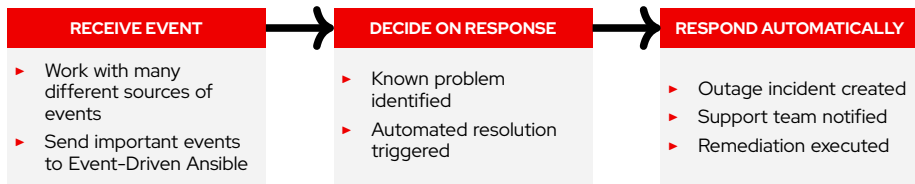
Components of Automation



Anatomy of Automation Operation



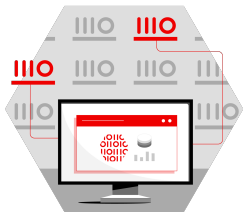
Automate event workflow



WORK ACROSS MULTI-DOMAIN AND MULTI-VENDOR IT OPERATIONS

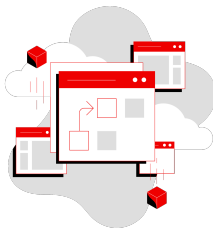
Work flexibly and well with multi-domain and multi-vendor monitoring and other solutions across the event driven architecture with appropriate approvals, controls and awareness

Key building blocks in EDA



Sources

All the sources of event data you want to use



Rules

What you will create using Event-Driven Ansible

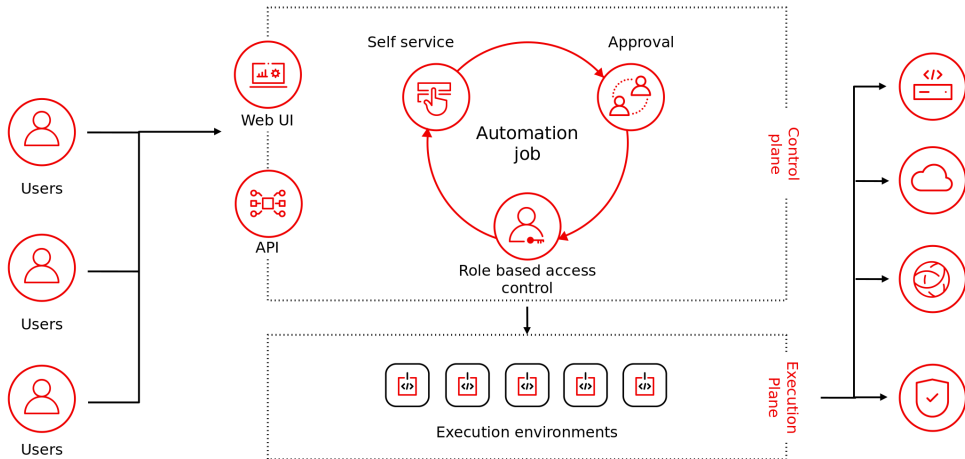


Actions

When a condition or event is met, the Ansible Rulebook executes

Consume

Full architecture



Wrapping up

Wrapping up

- ▶ Automation is key to simplify and optimize IT operations
- ▶ A single automation platform will provide more value, by being shared
- ▶ An automation platform requires way more than just an automation tool
- ▶ Ansible has a full ecosystem that allows it to be a full automation platform

Thank you

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