GSE GUIDE SHARE EUROPE UK REGION

2023 Inperson Conference
Where Technology and Talent
Meet Tomorrow...

Modernize mainframes operations with Red Hat Ansible Automation

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Red Hat

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Session MF

GSE UK Conference 2023 Charities

- The GSE UK Region team hope that you find this presentation and others that follow useful and help to expand your knowledge of z Systems.
- Please consider showing your appreciation by kindly donating a small sum to our charities this year, Blood Bikes and LimbPower.

https://www.justgiving.com/crowdfunding/mark-wilson-343

TOC

- Why automation?
- Why Ansible?
- Ansible Automation Platform
- Event-Driven Ansible
- Ansible Lightspeed with IBM Watsonx Code Assistant
- Conclusions

About me

- Working in IT since 2004, mostly in consulting roles
- Ansible user since 2013
- Author of 5 books, 4 of which on Ansible
- EMEA Associate Principal Specialist Solution Architect
- RHCA V

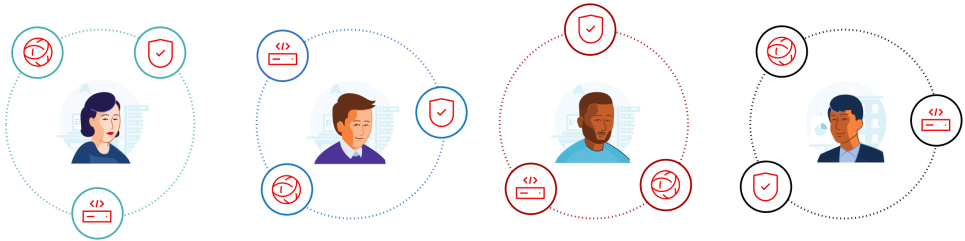
Why automation?


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

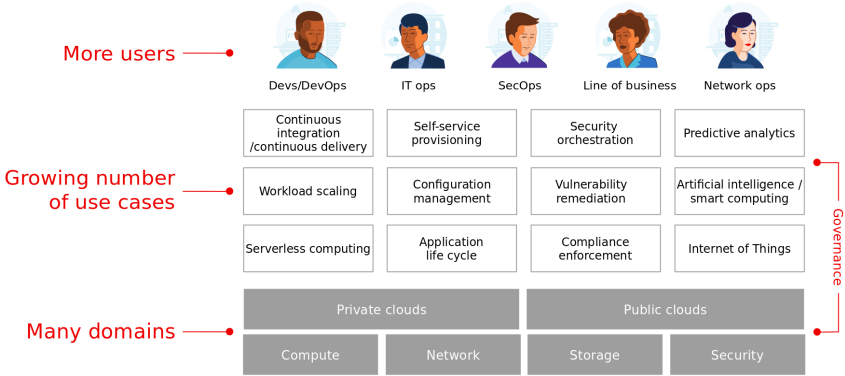
Too many unintegrated, domain-specific tools



Network ops SecOps Devs/DevOps IT ops

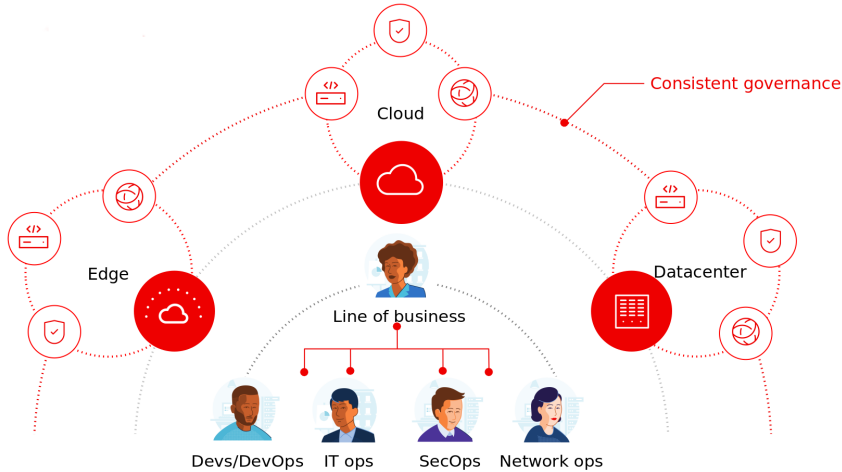
Many organizations have a problem

Too many unintegrated, domain-specific tools



Break down silos

Different teams a single platform



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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

Why 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, groups of Hosts, and variables
- **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

Galaxy NG

Collections

Collections

Namespaces

API token

Roles

Task Management

Documentation

Terms of Use

Thanks for trying out the new and improved Beta Galaxy, please share your feedback on github.com/ansible/galaxy_ng/discussions

Collections

Keywords | ibm_zos

Keywords ibm_zos ×

Clear all filters

1 - 17 of 17

ibm_zos_sysauto
Provided by ibm

The IBM Z System Automation collection includes roles and sa...

0 Modules | 2 Roles | 0 Plugins | 0 Dependencies

ibm_zos_core
Provided by ibm

The IBM z/OS core collection includes connection plugins, ac...

20 Modules | 0 Roles | 21 Plugins | 0 Dependencies

ibm_zos_ims
Provided by ibm

The IBM z/OS IMS collection includes modules and sample

7 Modules | 0 Roles | 8 Plugins | 1 Dependency

ibm_zos_cics
Provided by ibm

The Red Hat Ansible Certified Content for IBM Z CICS collect...

5 Modules | 0 Roles | 2 Plugins | 0 Dependencies

zos_python_operator
Provided by ibm

IBM Z and Cloud Modernization Stack Operator for IBM Open

0 Modules | 0 Roles | 0 Plugins | 0 Dependencies

zos_opencpp_operator
Provided by ibm

IBM Z and Cloud Modernization Stack Operator for IBM C/C++

0 Modules | 0 Roles | 0 Plugins | 0 Dependencies

zos_go_operator
Provided by ibm

IBM Z and Cloud Modernization Stack Operator for IBM Open

0 Modules | 0 Roles | 0 Plugins | 0 Dependencies

zos_zoau_operator
Provided by ibm

IBM Z and Cloud Modernization Stack Operator for IBM Z Open

0 Modules | 0 Roles | 0 Plugins | 0 Dependencies

zos_java_operator
Provided by ibm

IBM Z and Cloud Modernization Stack Operator for IBM Java

0 Modules | 0 Roles | 0 Plugins | 0 Dependencies

zos_nodejs_operator
Provided by ibm

IBM Z and Cloud Modernization Stack Operator for IBM Open

0 Modules | 0 Roles | 0 Plugins | 0 Dependencies

zos_ims_operator
Provided by ibm

zos_package_manager
Provided by ibm

ibm_zos_core_ftp
Provided by daiki_shimizu

zos_cics_operator
Provided by ibm

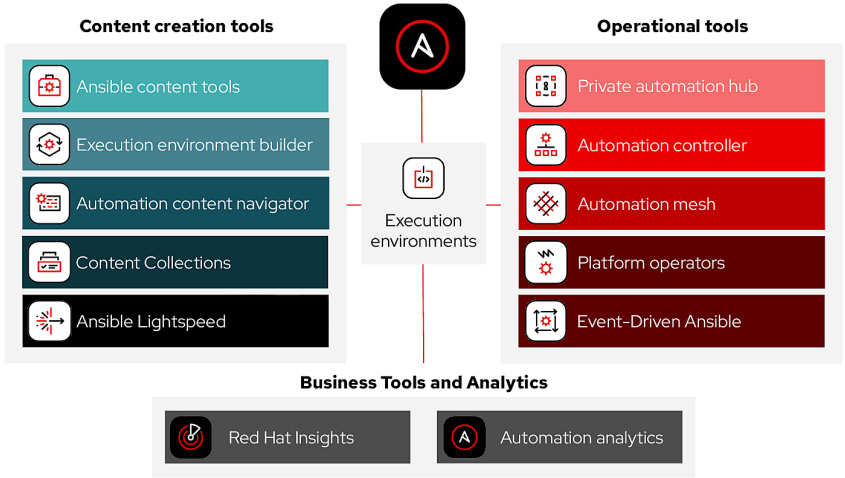
ibm_zosmf
Provided by ibm

Ansible in numbers

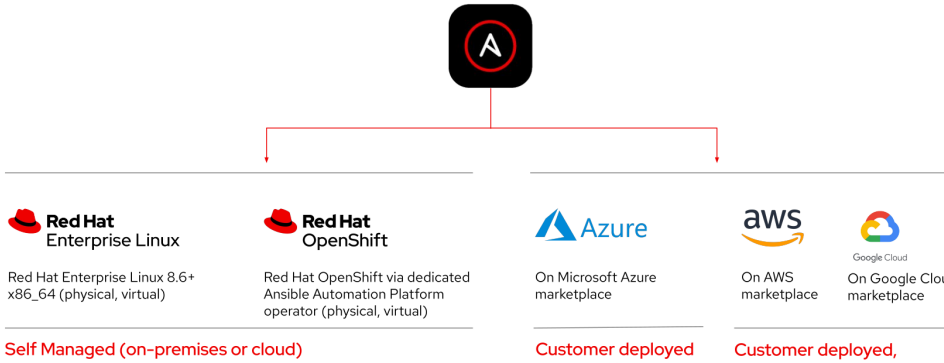
- **2M downloads** per month (Red Hat versions only)
- **2K customers** (Red Hat versions only)
- **4M+ systems** managed (Red Hat versions only)
- **4K modules**
- **140+ certified collections**
- **3550+ contributors**
- **55K+ GitHub stars**

Ansible Automation Platform

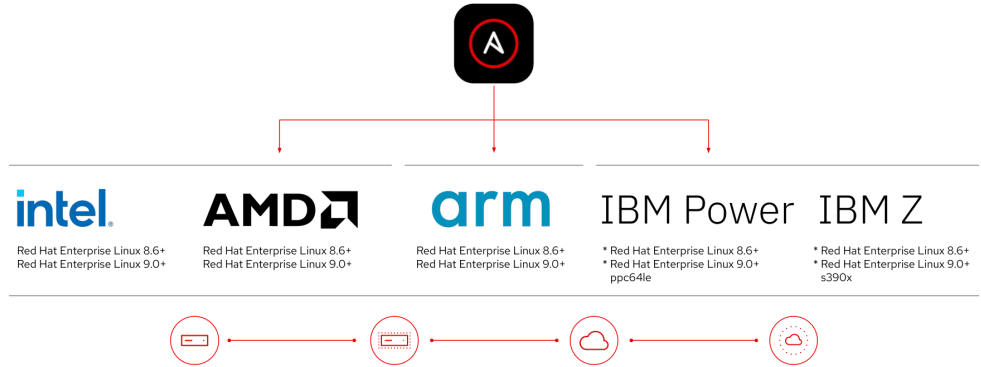
The Ansible Automation Platform



Ansible Automation deployment options



Ansible Automation Platform architectures options



Holistic automation for your enterprise

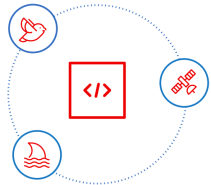
- Create
- Operate
- Consume

Create

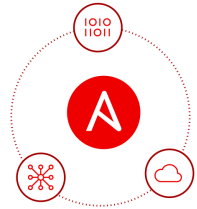
Many technologies, different life cycles

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

Collections



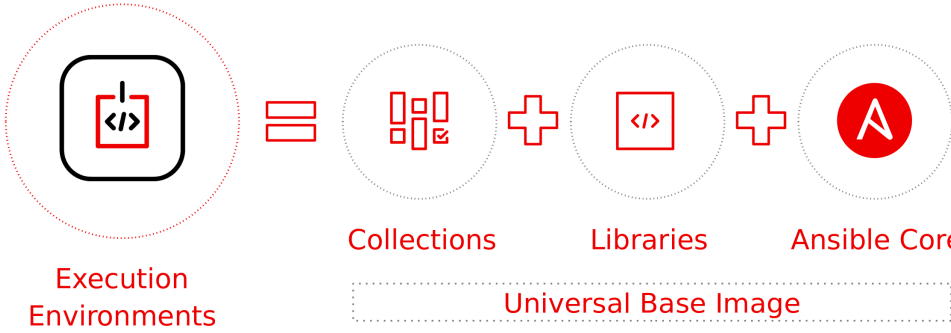
Dependencies



Runtime

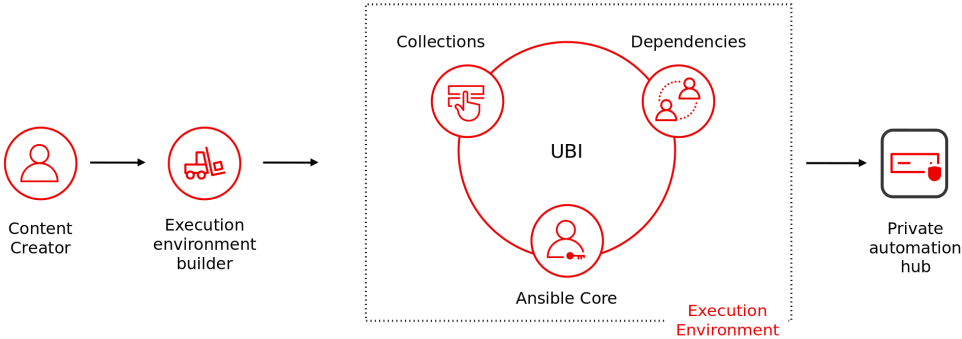
Automation Execution Environments

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



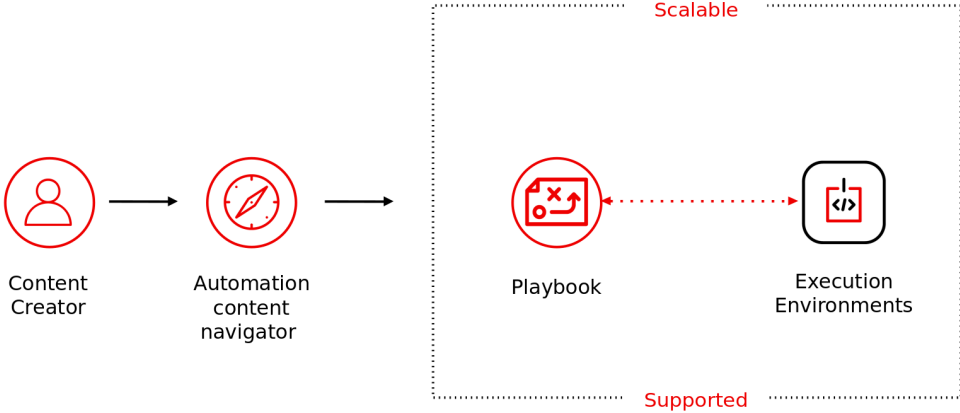
Build, create, publish

Development cycle of an automation execution environment



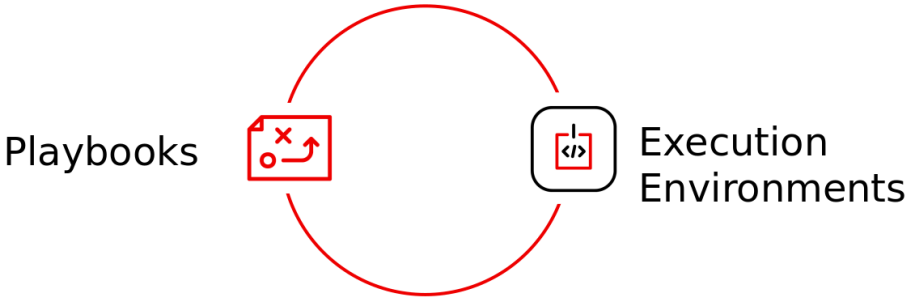
Develop, test, run

How to develop, test and run containerized Ansible content

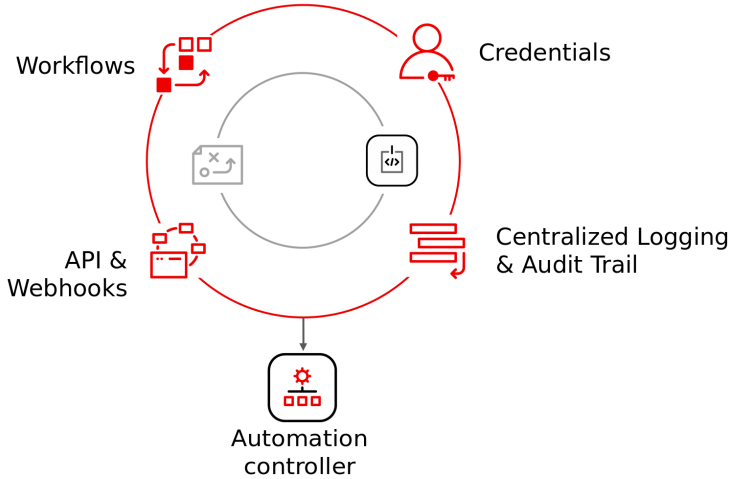


Operate

Components of Automation

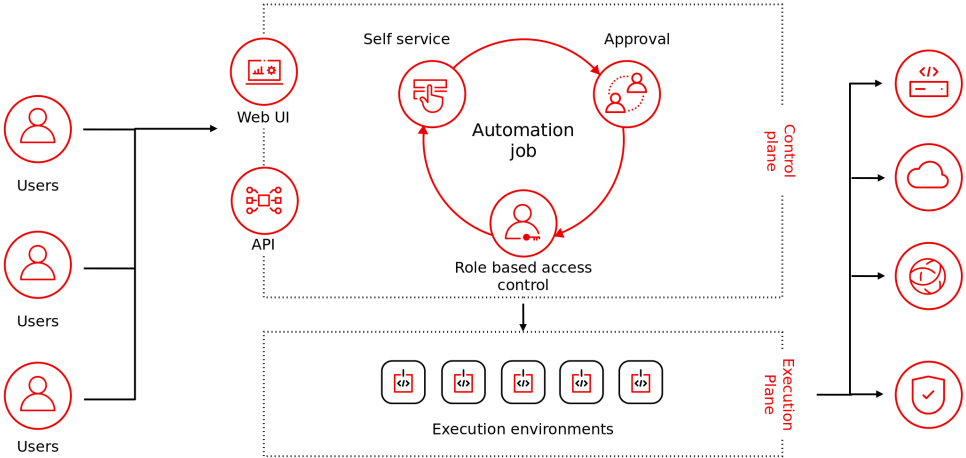


Anatomy of Automation Operation



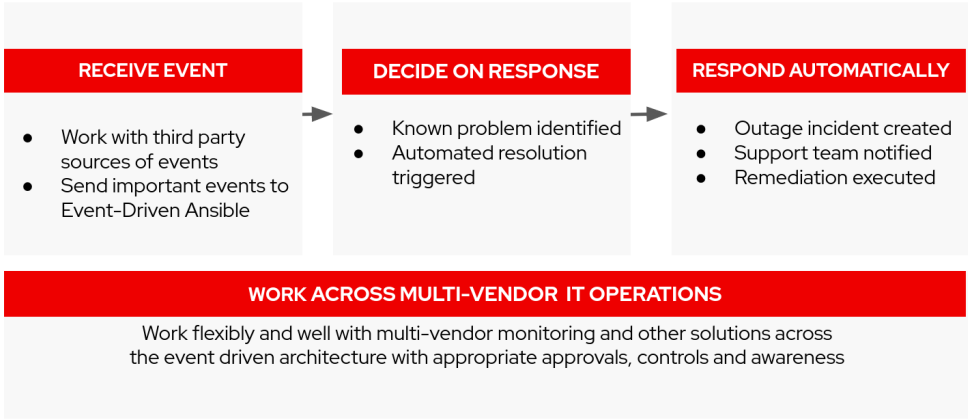
Consume

Full architecture



Event-Driven Ansible

Event-Driven Ansible



Ansible Lightspeed with IBM Watsonx Code Assistant

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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.

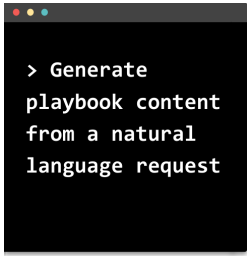
Generative AI raises a number of questions

- **Where** is generated code coming from?
- Can companies trust that their **private data** is protected?
- What exactly are data **models being trained on** - and by whom?

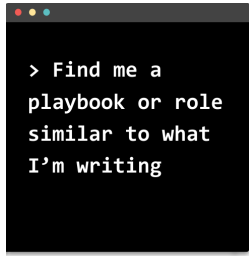
Ansible Lightspeed with IBM Watsonx Code Assistant

- Generative AI solution
- Engineered to help individuals, teams, and organizations automate faster
- Integrating developer tooling
- Access to Ansible-focused foundation models
- Red Hat + IBM automation expertise
- Ansible Lightspeed streamlines and enhances the Ansible content creation experience

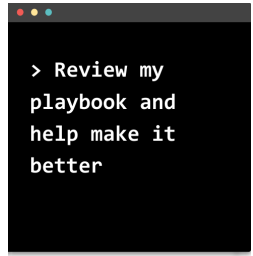
Red Hat Ansible Lightspeed capabilities



Content Generation



Content Discovery



Content Optimization

Content Explanation

Features on roadmap for 2024

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Conclusions

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

Please submit your session feedback!

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- This session is MF

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