Automatizzare l'IT con Ansible

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TOC

About me

- Working in IT since 2004, mostly in consulting roles
- Ansible user since 2013
- Author of 5 books, 4 of which on Ansible:
    - Learning Ansible
    - Practical Ansible
    - Learning Ansible 2.7
    - Practical Ansible - Second Edition
- EMEA Associate Principal Specialist Solution Architect @ Red Hat
- RHCA V

Why Automation?

The problem

- The complexity was increasing constantly
- A couple of operations people left
- Issues started to become obvious

Project Diamond

- Reduce complexity
- Make every process explicit
- Avoid dependence of a process to certain people

- Complexity increased
- Every process was kind of explicit
- Avoided dependence of a process to certain people
- Changing a process depended on certain people

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

Why Ansible?

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

- 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

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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

```yaml
---
- 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

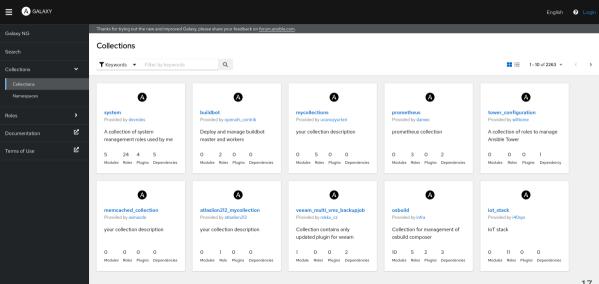Collections are a data structure containing automation content:

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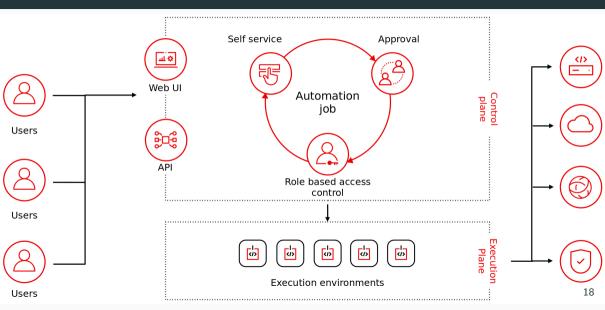- Tests

The Ansible Ecosystem

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 Galaxy

English · Login

Thanks for trying out the new and improved Galaxy, please share your feedback on forum.ansible.com.

Galaxy NG

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Roles ›

Documentation

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Collections

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system
Provided by devroles

A collection of system management roles used by me

5	24	4	5
Modules	Roles	Plugins	Dependencies

buildbot
Provided by openafs_contrib

Deploy and manage buildbot master and workers

0	2	0	0
Modules	Roles	Plugins	Dependencies

mycollections
Provided by ucanozyurteri

your collection description

0	5	0	0
Modules	Roles	Plugins	Dependencies

prometheus
Provided by damex

prometheus collection

0	3	0	2
Modules	Roles	Plugins	Dependencies

tower_configuration
Provided by willtome

A collection of roles to manage Ansible Tower

0	0	0	1
Modules	Roles	Plugins	Dependency

memcached_collection
Provided by asmacdo

your collection description

0	0	0	0
Modules	Roles	Plugins	Dependencies

atlaslion212_mycollection
Provided by atlaslion212

your collection description

0	1	0	0
Modules	Role	Plugins	Dependencies

veeam_multi_vms_backupjob
Provided by rokku_cz

Collection contains only updated plugin for veeam

1	0	0	2
Module	Roles	Plugins	Dependencies

osbuild
Provided by infra

Collection for management of osbuild composer

10	5	2	3
Modules	Roles	Plugins	Dependencies

iot_stack
Provided by i40sys

IoT stack

0	11	0	0
Modules	Roles	Plugins	Dependencies

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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

Questions?

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