Manage Power machines with Ansible

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About me

- Working in IT since 2004, mostly in consulting roles
- Ansible user since 2013
- EMEA Associate Principal Specialist Solution Architect
- RHCA IV





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



Project Diamond Coal



- 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

Many organizations share the same challenge

Too many unintegrated, domain-specific tools





Many organizations have a problem

Too many unintegrated, domain-specific tools



Break down silos

Different teams a single platform





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.



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



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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
- 7th of 96M proects on GitHub by contributors



What makes it a platform?



Holistic automation for your enterprise

- Create
- Operate
- Consume







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







How to develop, test and run containerized Ansible content









Components of Automation





Anatomy of Automation Operation









Full architecture



📥 Red Hat

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



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