

GSE UK Conference 2022

Mainframes are MAD - Modern, Adaptable, Diverse

Modernize mainframes with Ansible and OpenShift

Fabio Alessandro Locati Red Hat

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GSE UK Conference 2022 Charitie

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Topics

- Automate the operations
- Modernize the workloads



About me

- Working in IT since 2004, mostly in consulting roles
- Ansible user since 2013
- OpenShift user since 2014
- Associate Principal Solution Architect EMEA for IBM
- RHCA II



Automate the operations





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





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 Playbook

```
___
- hosts: all
  become: True
  tasks:
    - name: Ensure httpd is installed
      yum:
        name: httpd
        state: latest
    - name: Ensure httpd is started
      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



Modernize the workloads







Hybrid and multicloud is the new normal

- 95% of enterprises will be using a mix of cloud models
- 31% of all compute capacity will be in a Private, on premises cloud in 2 years
- 60% of enterprises will utilize flexible conumption models by 2023

Sources: IDC Cloud Forecast, BCG, and McKinsey



Red Hat OpenShift - an abstraction platform





Containers will not displace the mainframe, they will enhance it

Why Red Hat OpenShift on the Mainframe

- Application Development Consistency
- Leverage industry knowledge and tools
- Workload portability



Why the Mainframe under Red Hat OpenShift

- Data gravity
- Low latency between LPARs
- Consolidation and TCO reduction
- Business Continuity
- Leverage Mainframe unique hardware capabilities



HA and DR in Red Hat OpenShift and Mainframe

- OpenShift only handles Pod failures not Node failures
- OpenShift needs a majority of etcd nodes running to maintain cluster stability. If a majority of etcd nodes go down the recovery might need to be done manually
- Software-defined persistent storage alone cannot achieve zero RTO and zero RPO that mission critical stateful workloads demand
- The Mainframe's HA capabilities can ensure that OpenShift nodes do not go down while providing near zero RTO ane zero RPO for stateful workloads when combined with external storage
- Does not need to be enabled for everything can be partially enabled for workloads that require it



IBM Crypto Express support for containers on Red Hat OpenShift

- Crypto Express performances
- Crypto Express 8S Quantum-safe Cryptography

The IBM CEX device plugin enables OpenShift containers to take advantage of crypto resources on IBM Crypto Express adapters.



Home > Software > Browse products > IBM CEX Device Plugin CM

Standalone image

IBM CEX Device Plugin CM

ibm/ibm-cex-device-plugin-cm

Architecture s390x - Tag V1.0.2 - Repository st

Repository structure: Single-stream



Red Hat OpenShift, much more than Kubernetes





Wrapping up

- It is key to focus on portable applications
- Containers can bring new tooling to Mainframe development
- The Mainframe is a great platform to run containerized workloads
- Red Hat OpenShift enables portable applications without giving up the specific platform optimizations





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🕴 This is the three digit number on the bottom of your delegate badge

2. Was the length of this presention correct?

🛉 1 to 4 = "Too Short" 5 = "OK" 6-9 = "Too Long"

1	2	3	4	5	6	7	8	9
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3. Did this presention meet your requirements?

* 1 to 4 = "No" 5 = "OK" 6-9 = "Yes"

4. Was the session content what you expected?

1 to 4 = "No" 5 = "OK" 6-9 = "Yes"

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