

GitOps - 為你的 IaC 基礎架構即程式碼平台加上自動化引擎



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About Weithenn



- Microsoft MVP 2012 – 2021
- VMware vExpert 2012 – 2022
- Taiwan VMUG (VMware User Group) Leader
- 微軟 S2D 軟體定義儲存技術實戰...等 19 本著作
- 曾擔任 DevOpsDays Taipei 2021、Cloud & Edge Summit Taiwan 2021、Cloud Edge Summit Taiwan 2020、Global Azure 2020、StorTrends 2020 儲存趨勢論壇、VMware vForum Taiwan 2019.....等研討會講師。

All-Flash Virtualization for Global Manufacturing IT

With Micron memory and storage solutions, your IT infrastructure doesn't have to be.

Virtualization and HCI on All-Flash Platforms



12 manufacturing sites



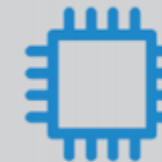
951 physical hosts



1893 processors



18,624 cores



275+ TB memory



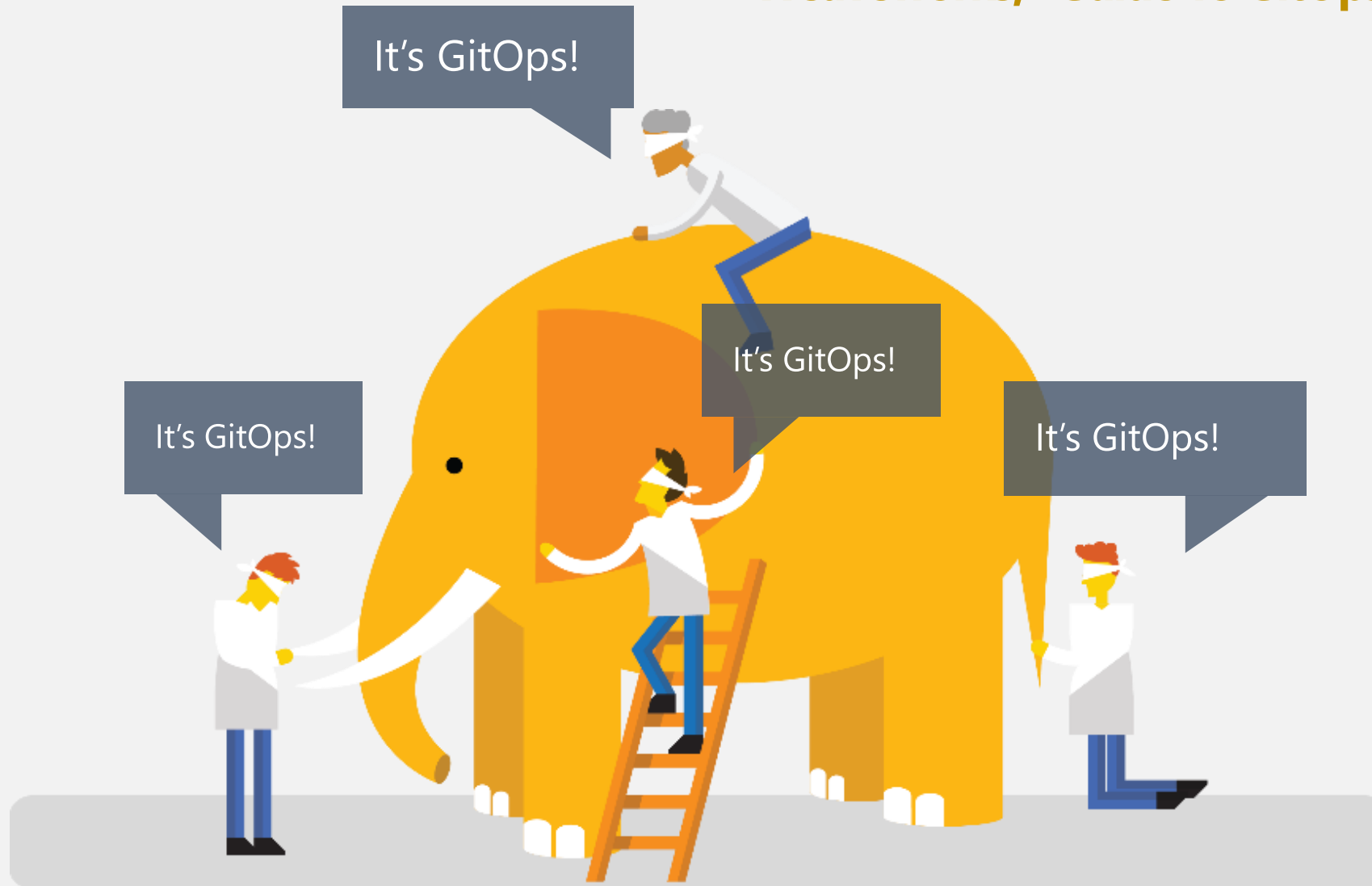
~18,500 machines

What is GitOps?



“**[GitOps]** works by using **Git** as a **single source of truth** for **declarative** infrastructure and applications.”

-- Weaveworks, “**Guide To GitOps**”

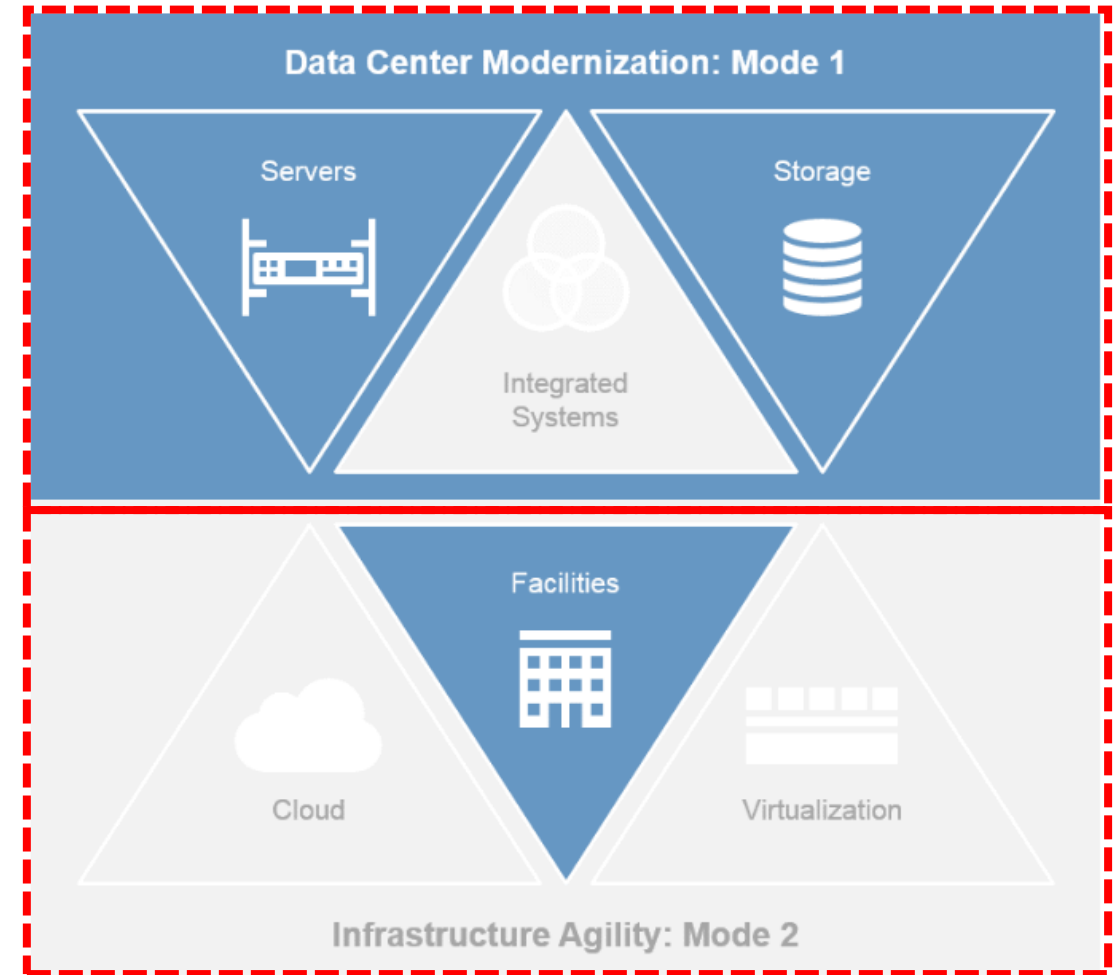


laC (Infrastructure as Code)



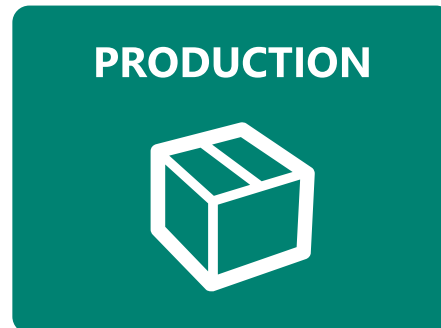
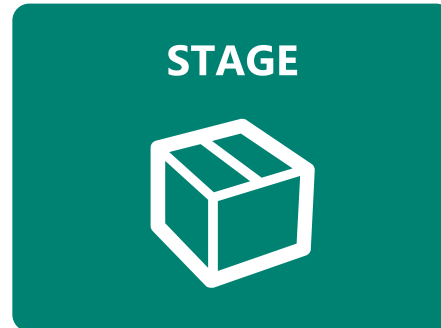
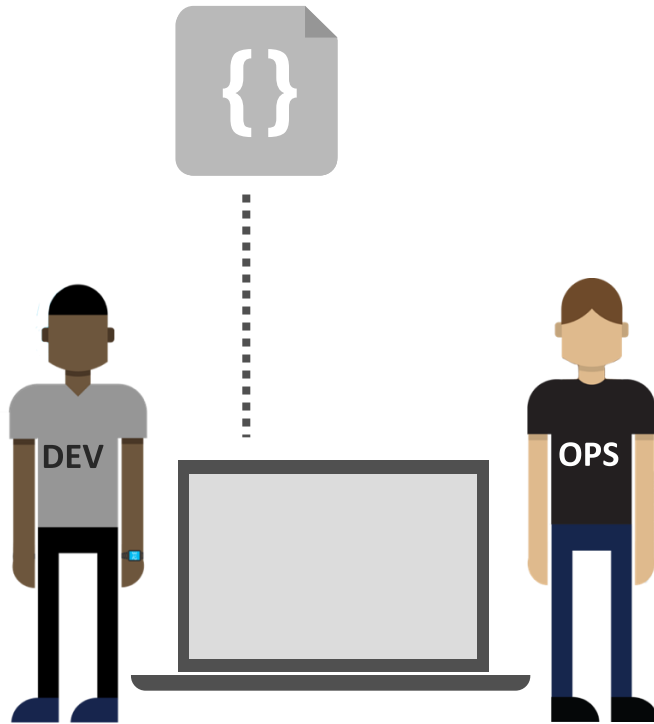
Bimodal IT – Mode 1 / Mode 2

- Mode 1
 - Traditional Infrastructure
 - Reliability / Stability
 - Physical Server / Storage / Network
- Mode 2
 - Infrastructure Agility
 - Software Defined (SDC, SDS, SDN, SDDC)
 - VM / Container / Microservice
 - Agility / DevOps



SOURCE: GARTNER (JULY 2015)

IaC (Infrastructure as Code)



Habits

- Production first mindset
- Infrastructure as flexible resource

Value

- Optimized Resources
- Accelerate Delivery

Measure

- Deployment Rate
- MTTR (Mean Time to Repair)

DevOps Toolchain

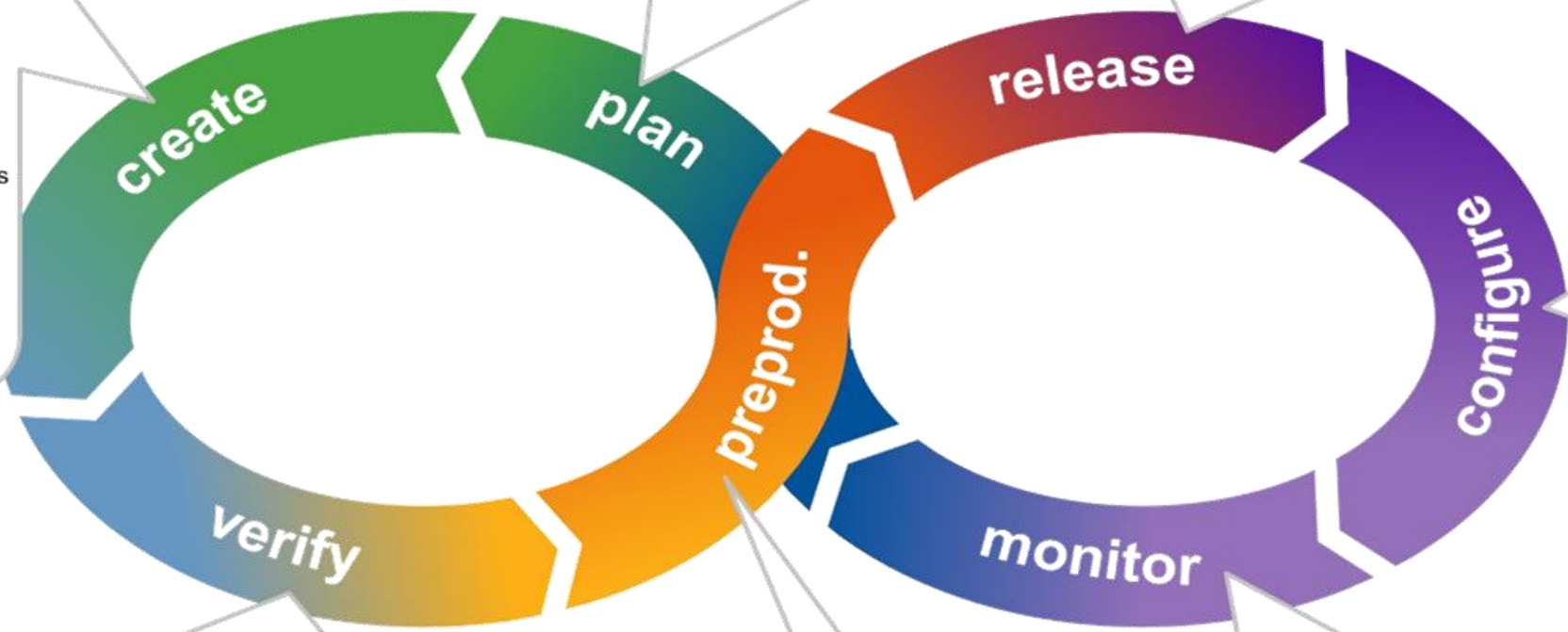
Example Vendors

- Code:**
 - Apple
 - Atlassian
 - Codenvy
 - GitHub
 - IBM
 - JetBrains
 - Microsoft
 - Parasoft
 - Perforce
 - Subversion
- Build:**
 - Atlassian
 - CircleCI
 - IBM
 - JetBrains
 - Jenkins
 - Microsoft
 - OpenMake Software
 - ThoughtWorks
 - Travis CI
- Configure:**
 - CFEngine
 - Chef
 - Puppet Labs
 - Red Hat (Ansible)
 - SaltStack

- Define:**
 - Axure
 - Blueprint
 - eDev
 - IBM
 - iRise
 - Jama
 - Micro Focus (Borland)
- Plan:**
 - AgileCraft
 - Atlassian
 - CA Technologies
 - CollabNet
 - Pivotal
 - Targetprocess
 - VersionOne

- Release, Deploy & Coordination**
 - Atlassian
 - Automic
 - CA Technologies
 - Chef
 - Clarive
 - CollabNet
 - Electric Cloud
 - IBM
 - Inedo
 - Microsoft
 - MidVision
 - OpenMake Software
 - Orca
 - Octopus Deploy
 - Serena Software
 - VMware
 - XebiaLabs

- Continuous Configuration Automation**
 - CFEngine
 - Chef
 - Inedo
 - Puppet Labs
 - Red Hat (Ansible)
 - SaltStack



- Test Automation:**
 - IBM
 - Micro Focus
 - Microsoft
 - Sauce Labs
 - ThoughtWorks
 - Tricentis
- Static Analysis:**
 - Cast
 - Microsoft
 - Optimyth Software
 - Parasoft
 - Semmie
 - SonarSource
- Test Lab:**
 - Delphix
 - Microsoft
 - Perfecto
 - Quali
 - Qualsys
 - Skytap
 - SauceLabs
- Security:**
 - Micro Focus
 - Trend Micro
 - IBM
 - Trustwave
 - Veracode
 - Whitehat Security Inc.

- Artifactory**
- Atlassian**
- Bitbucket**
- Clarive**
- Electric Cloud**
- Inedo**
- Sonatype**

- Infrastructure, APM & Analytics and Log Mgmt.**
 - Datadog
 - Elastic
 - Ganglia
 - Nagios
 - Prometheus
 - Graphite
 - AppDynamics
 - BigPanda
 - Cacti
 - Dynatrace
 - Caliper
 - CA Technologies
 - New Relic
 - Splunk
 - SignalFX
 - Sumo Logic
 - Wireshark
 - Zabbix
 - Zenoss



CNCF – Cloud Native Landscape

Automation & Configuration

Provisioning



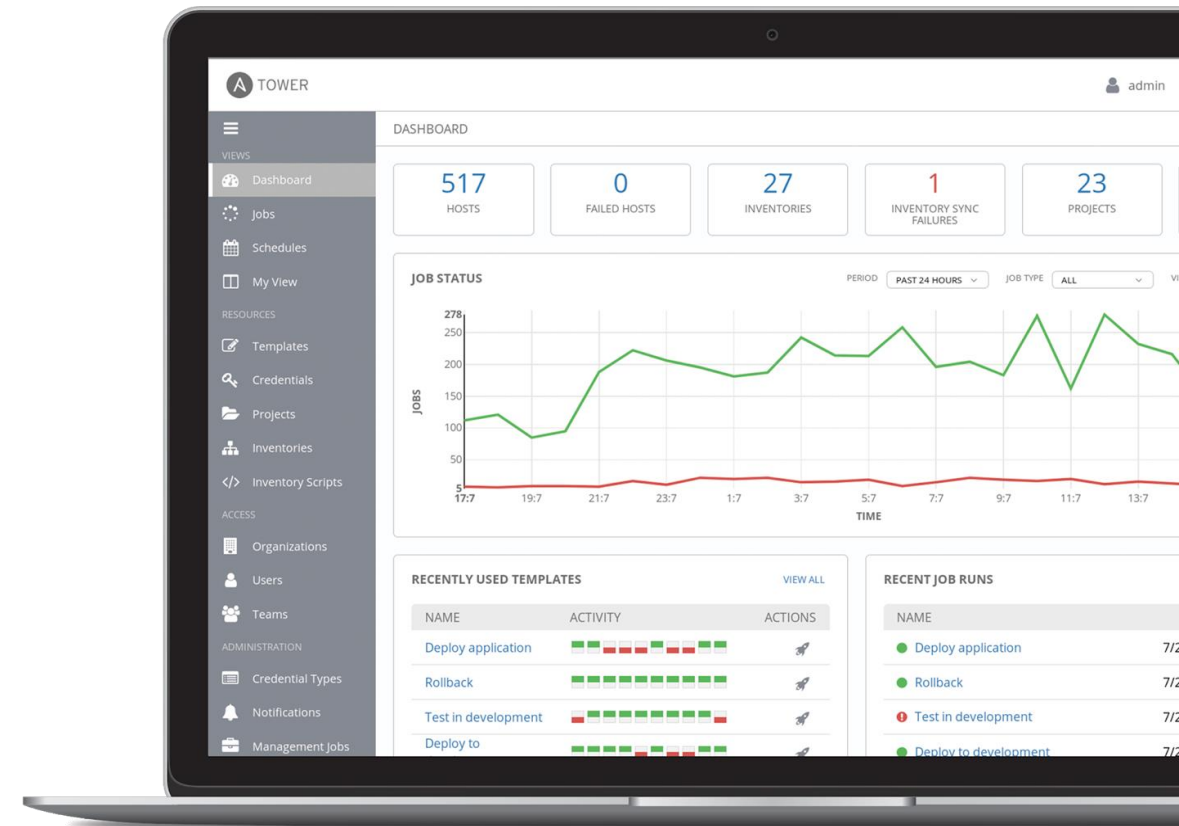
Why Ansible AWX



Why Ansible AWX

AWX provides a web-based user interface, REST API, and task engine built on top of Ansible. It is one of the upstream projects for **Red Hat Ansible Automation Platform**.

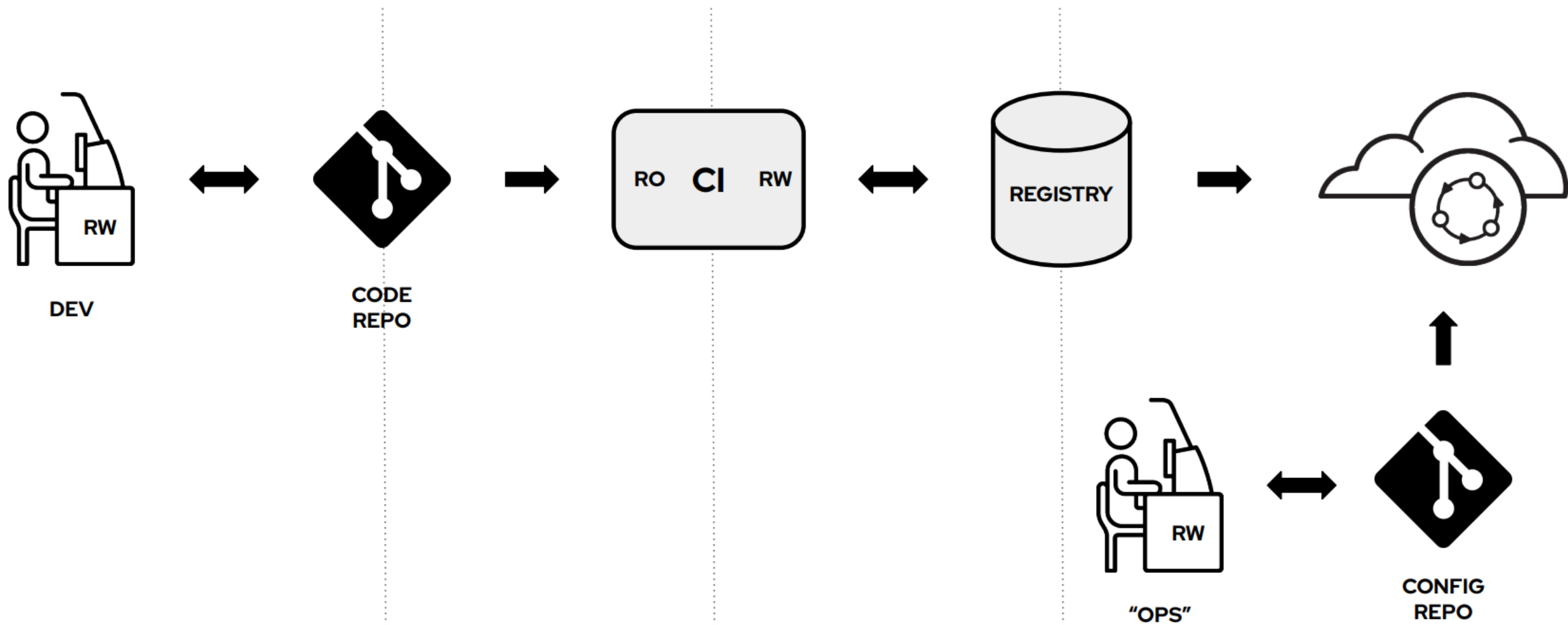
- ✓ RBAC (Role-Based Access Control)
- ✓ Push Button – Easy to execute playbook
- ✓ RESTful API
- ✓ Webhook
- ✓ Workflow
- ✓ Enterprise Integrations
- ✓ Centralized Logging
- ✓ Ansible AWX is **Open Source Community Project**



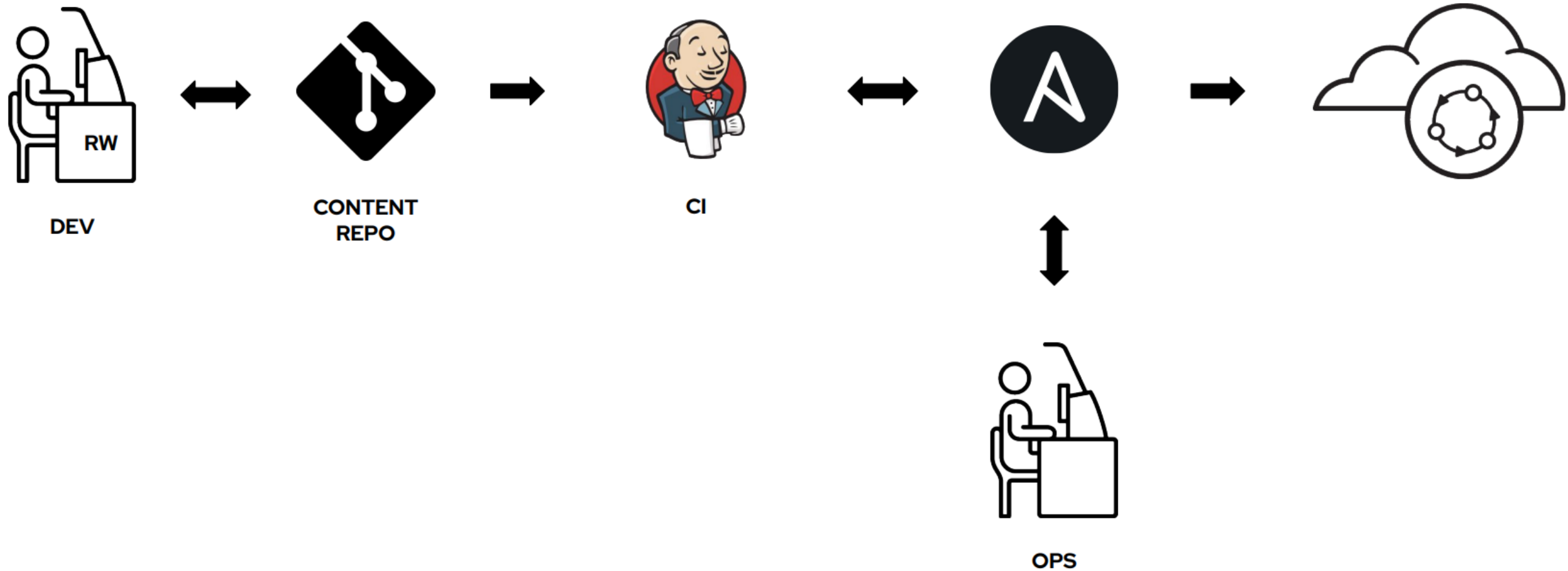
GitOps - Operations by Pull Request



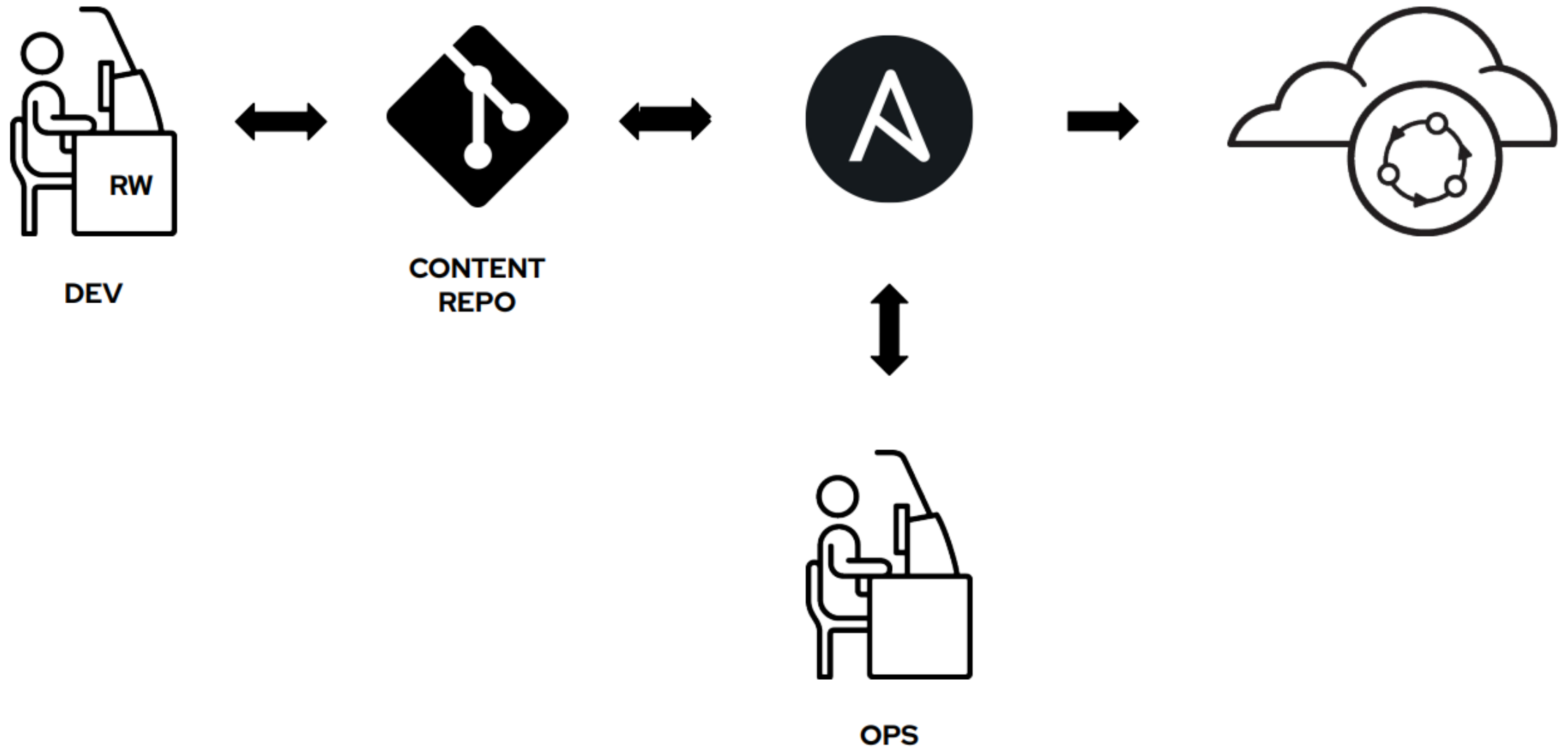
GitOps Workflow



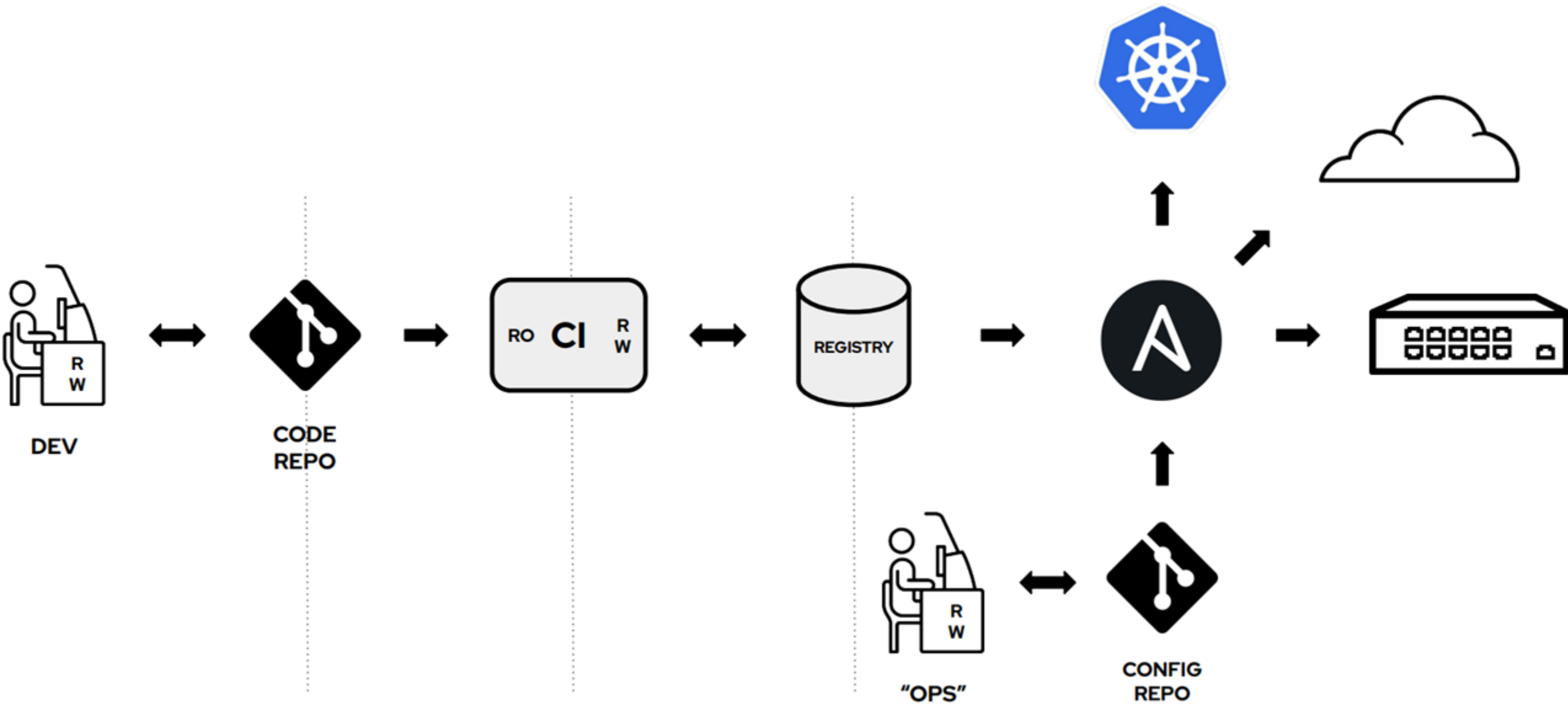
Git-Centric Ansible Deployments



Git-Centric Ansible Deployments Today



GitOps the Ansible Way



Demo

Using Ansible Automation Webhooks for GitOps



GitHub – Generate new PAT

PAT (Personal Access Token)

- ✓ GitHub
- ✓ GitLab

Scope fields

- ✓ repo:status
- ✓ repo_deployment
- ✓ public_repo

Edit personal access token

If you've lost or forgotten this token, you can regenerate it, but be aware that any scripts or applications using this token will need to be updated.

Note

GitOps lab for SRE Conference 2022

What's this token for?

Expiration

This token expires *on Thu, May 26 2022*. To set a new expiration date, you must [regenerate](#)

Select scopes

Scopes define the access for personal tokens. [Read more about OAuth scopes.](#)

<input type="checkbox"/>	repo	Full control of private repositories
<input checked="" type="checkbox"/>	repo:status	Access commit status
<input checked="" type="checkbox"/>	repo_deployment	Access deployment status
<input checked="" type="checkbox"/>	public_repo	Access public repositories
<input type="checkbox"/>	repo:invite	Access repository invitations
<input type="checkbox"/>	security_events	Read and write security events
<input type="checkbox"/>	workflow	Update GitHub Action workflows
<input type="checkbox"/>	write:packages	Upload packages to GitHub Package Registry
<input type="checkbox"/>	read:packages	Download packages from GitHub Package Registry



GitHub – Generate new PAT

Settings / Developer settings

GitHub Apps

OAuth Apps

Personal access tokens

Personal access tokens

Generate new token

Revoke all

Tokens you have generated that can be used to access the [GitHub API](#).

Make sure to copy your personal access token now. You won't be able to see it again!

✓ ghp_OU4HSoeEpKb



Delete

Personal access tokens function like ordinary OAuth access tokens. They can be used instead of a password for Git over HTTPS, or can be used to [authenticate to the API over Basic Authentication](#).



AWX – Create New Credential for GitHub PAT

Credentials > GitHub PAT

Edit Details

Name *	Description	Organization
<input type="text" value="GitHub PAT"/>	<input type="text"/>	<input type="text" value="SRE-Conference-2022"/>

Credential Type *

Type Details

Token * ?



AWX – Playbook / Workflow enable Webhooks


Options


Enable Webhook  Enable Concurrent Jobs 

1


Webhook details

Webhook Service 

GitHub 


Webhook URL 

http://awx.southeastasia.cloudapp.azure.com/api...


Webhook Key 

SFi0JKWfiQC9yTX...



Webhook Credential 



GitHub PAT 

3

Save

Cancel

GitHub – Add webhook for you Repo

Payload URL

- ✓ Copy the contents of **Webhook URL**

Content type

- ✓ Set to **application/json**

Secret

- ✓ Copy the contents of **Webhook Key**

Webhooks / Manage webhook

Settings

Recent Deliveries

We'll send a POST request to the URL below with details of any subscribed events. You can also specify which data format you'd like to receive (JSON, x-www-form-urlencoded, etc). More information can be found in [our developer documentation](#).

Payload URL *

`http://awx.southeastasia.cloudapp.azure.com/api/v2/workflow_job_`

Content type

application/json

Secret

If you've lost or forgotten this secret, you can change it, but be aware that any integrations using this secret will need to be updated. — [Change Secret](#)

Which events would you like to trigger this webhook?

- Just the push event.
- Send me everything.
- Let me select individual events.

Active


We will deliver event details when this hook is triggered.

Update webhook

Delete webhook



Payload output – AWX / GitHub

Status	 Successful	Started	2022/4/28 下午8:36:09
Finished	2022/4/28 下午8:36:35	Workflow Job Template	GitOps Demo - Workflow
Job Type	Workflow Job	Launched By	weithenn
Inventory	SRE Demo Inventory	Created	2022/4/28 下午8:36:06 by weithenn
Last Modified	2022/4/28 下午8:36:09		

Variables YAML JSON

```
1 {
2   "tower_webhook_event_type": "push",
3   "tower_webhook_event_guid": "eea1225c-c542-11ec-8d76-8665d3a96a29",
4   "tower_webhook_event_ref": "707c3d4f2fe4fcf5f95b1e9876c2d8a6e07a07",






```

Relaunch Delete

Webhooks / Manage webhook

Settings

Recent Deliveries

✓	 eea1225c-c542-11ec-8d76-8665d3a96a29	2022-04-26 20:36:04	...
✓	 32ad4f86-c541-11ec-960b-8e52ba4d811b	2022-04-26 17:13:56	...
✓	 fad94d26-c540-11ec-8690-9f9d082318c3	2022-04-26 17:12:22	...
✓	 f24a924a-c53c-11ec-9bec-b2d7f4c7b7f7	2022-04-26 16:43:30	...
✓	 aed798b0-c53b-11ec-993f-0637c65755cc	2022-04-26 16:34:28	...



Resources & More

Ansible Free Online Course



Ansible Basics: Automation Technical Overview

[Overview](#)[Outline](#)[Outcomes](#)

Outline for this course

Course overview: What you can expect to learn in this Technical Overview

Ansible introduction: The benefits of the Ansible Automation Platform

Creating automation: Understanding how Ansible works

Ansible basics: Using Ansible inventories, main Ansible config file, and modules

Playbook basics: Using Ansible plays, tasks and modules, and playbook runs

Ansible variables: Understanding variables, debug module, Ansible facts

Ansible constructs: Using conditionals, handlers, loops

Templating: Building templates, template module, Jinja2

Roles: Understanding what roles are and what they look like, and using Galaxy and Automation Hub

Introduction to automation controller: Operationalizing your automation

Building an automation job: Understanding inventories, credentials, syncing a project, and building a job template


Self-Service IT: Using surveys and building a job template

Role-based access control: Setting access controls for organizations and teams


Workflows: Using workflow visualizer and understanding convergence and divergence

Next steps: Where to learn more about Ansible

Location

Taiwan 

Format

[What's this?](#)Video classroom **Duration** 30 days**Cost** 0 USD[Get started](#)[Find a learning facility near you](#)Already purchased this offering? [Log in](#)

See what other students are saying in the
[Red Hat Learning Community](#)



Resources & More

- ▶ [GitOps - Operations by Pull Request](https://www.weave.works/blog/gitops-operations-by-pull-request)
 - <https://www.weave.works/blog/gitops-operations-by-pull-request>
- ▶ [Guide to GitOps](https://www.weave.works/technologies/gitops/)
 - <https://www.weave.works/technologies/gitops/>
- ▶ [Using Ansible Automation Webhooks for GitOps](https://www.redhat.com/sysadmin/ansible-webhooks-gitops)
 - <https://www.redhat.com/sysadmin/ansible-webhooks-gitops>

- ▶ [Ansible K8s Modules](https://docs.ansible.com/ansible/latest/modules/list_of_clustering_modules.html#k8s)
 - https://docs.ansible.com/ansible/latest/modules/list_of_clustering_modules.html#k8s
- ▶ [How Useful Is Ansible In A Cloud-Native Kubernetes Environment?](https://www.ansible.com/blog/how-useful-is-ansible-in-a-cloud-native-kubernetes-environment)
 - <https://www.ansible.com/blog/how-useful-is-ansible-in-a-cloud-native-kubernetes-environment>



Thank you!

