

How to use this deck

**Name:**

Lab Guide -

**Purpose:**

This deck is for teaching an Ansible Lab “Gitops with Event Driven Ansible” for Ansiblefest 2023

**Last updated:**

Sep 5th, 2023

**What this deck is for?**

Training, it goes hand-in-hand with self-paced exercises

**What is this deck is NOT for?**

Business level discussions

**Google Slides source link (Red Hat internal):**

https://docs.google.com/presentation/d/1wrJ9OOEvkais6wcyinMq42uvl_VJJQlzxHy8UgC220/edit?usp=sharing

**Owner:**

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Colin McNaughton



Event-Driven Ansible Technical Workshop

Ansible Self-Guided Labs



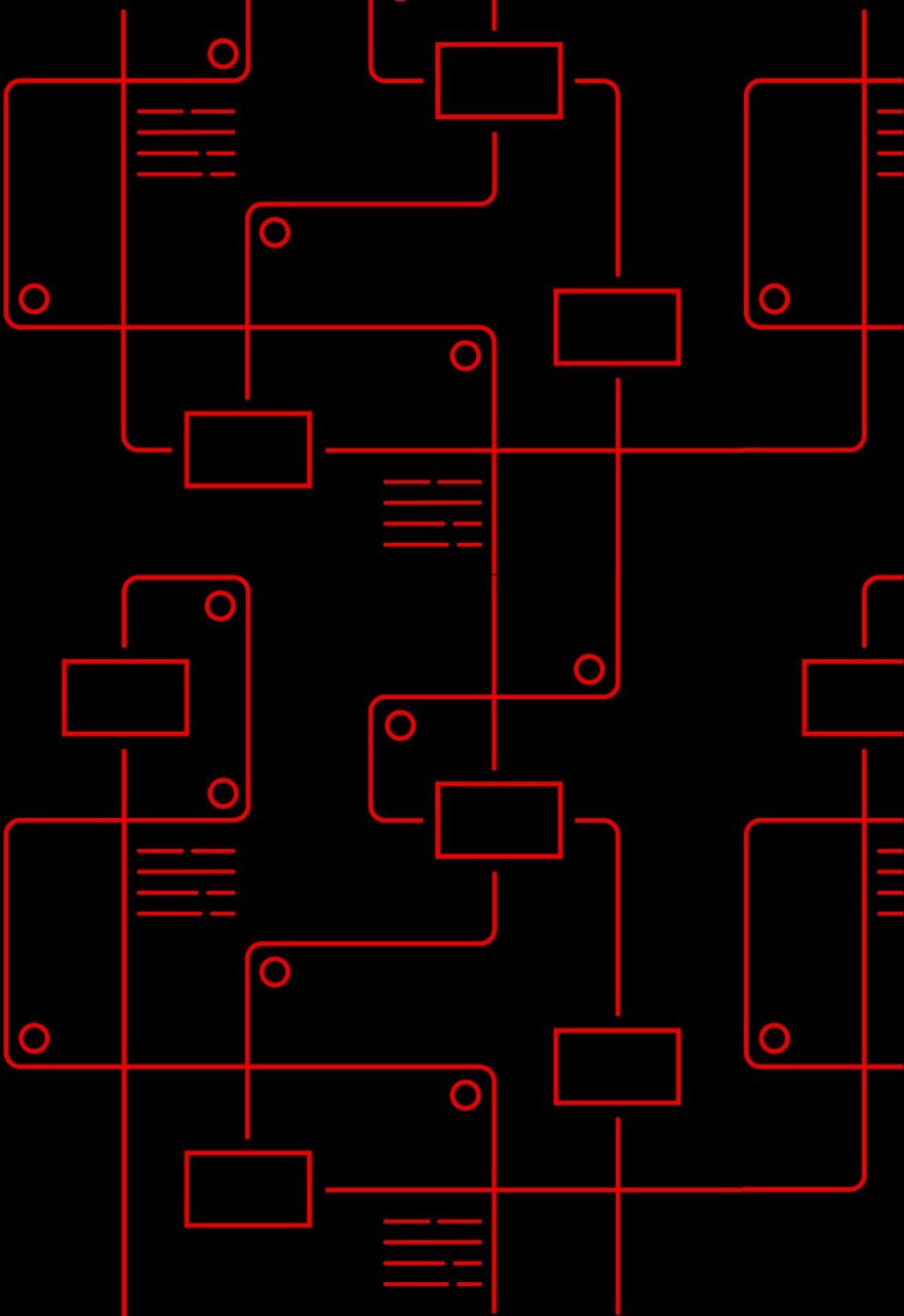
Event-Driven Ansible Technical Workshop

- 01 What is Event Driven Ansible?
- 02 How does it work?
- 03 Lab 1 - Getting Started with Event-Driven Ansible
- 04 Lab 2 - Getting Started with Event-Driven Ansible Controller
- 05 Next steps

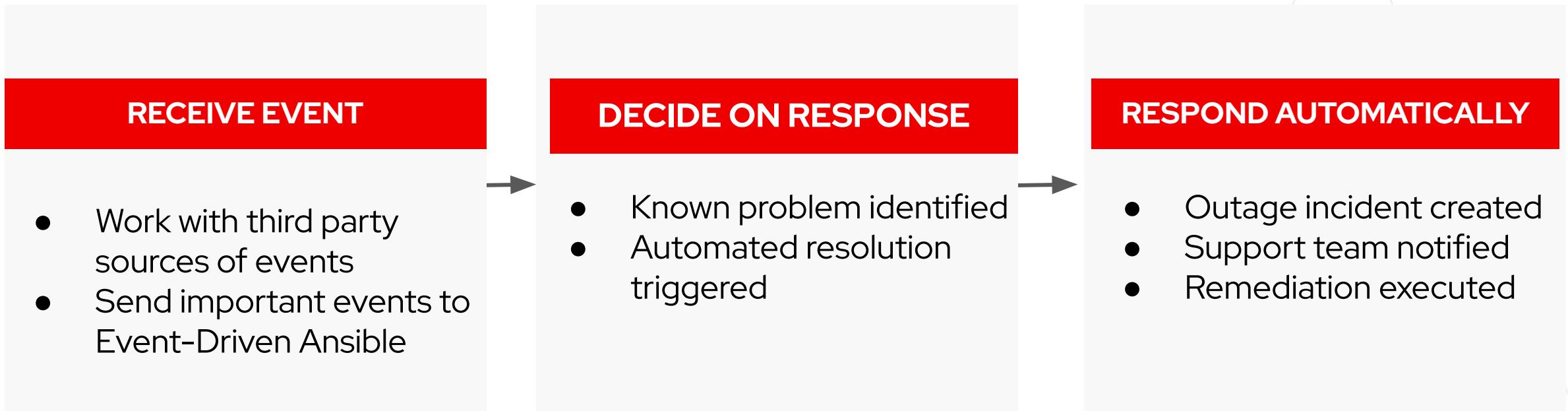


What is event-driven automation?

The ability to
connect intelligence, analytics and service requests
for an IT solution
to automated actions so that activities
can take place in a single motion.



A typical event-driven automation process

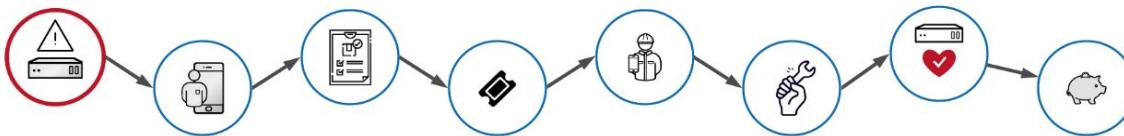


WORK ACROSS MULTI-VENDOR IT OPERATIONS

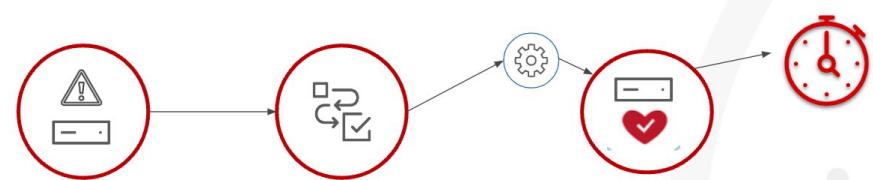
Work flexibly and well with multi-vendor monitoring and other solutions across the event driven architecture with appropriate approvals, controls and awareness

A brief history of IT Operations

The Old Way: Time, Toil and Churn



The new way: Event-Driven Automated Ops



Outage resolution:

Follow a people-intensive multi-step manual process including opening tickets and multiple handoffs.

Event-Driven outage resolution:

Receive event, matching to rule, respond and act automatically

Security risk resolution:

Monitor to identify risk, notify and open a ticket, manually apply a patch or manually initiate automation job.

Event-Driven security risk resolution:

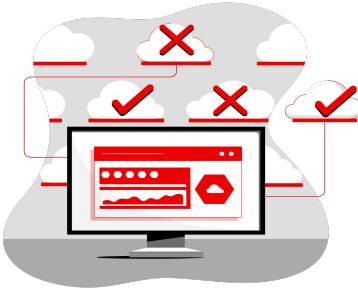
Receive risk event, match to rule, automatically apply patch to impacted inventory.

Suggested use cases for getting started



Service ticket enhancement

Automate fact gathering
Network administration
Edge device management



Remediation

Drift
Slow performance
Outages



User management

User authentication and access
Login issues
Group and role access

Event-Driven Ansible integrations and roadmap

CERTIFIED AND VALIDATED CONTENT

(Expected delivery Q2 and Q3 2023)

- Cisco NX-OS
- Cisco ThousandEyes
- CrowdStrike
- Cyberark
- Dynatrace*
- F5
- IBM Instana* and IBM Turbonomic*
- Palo Alto Networks
- Red Hat Insights
- Red Hat OpenShift
- ServiceNow
- Zabbix

*Collection includes both certified and validated content.

- AWS SQS
- Azure Service Bus
- GCP Pub/Sub
- Kafka (AMQ Streams)
- Prometheus/Alertmanager
- Webhooks
- watchdog (file system watcher)
- url_check (url status check)
- range (event generation plugin)
- file (loading facts from yaml)

COMMUNITY CONTENT

- Arista

ROADMAP FOR INTEGRATIONS

- Additional ITSM solutions
- Additional observability / monitoring tools

[Blog: Event-Driven Ansible ecosystem partners](#)

(as of May, 2023)

Three key technical learning resources

The screenshot shows the Red Hat Event-Driven Ansible labs landing page. It features a large red 'A' logo on the right and a 'Red Hat' logo at the top left. A 'Powered by Instruct' badge is in the top right corner. The main heading is 'Event-Driven Ansible labs'. Below it, a subtext reads: 'Event-Driven Ansible is a new way to enhance and expand automation. It improves IT speed and agility, while enabling consistency and resilience by running automated actions in response to your events.' A section titled 'Available content (2)' lists two items: 'Get started with Event-Driven Ansible and Ansible rulebooks' and 'GitOps with Event-Driven Ansible'. Each item has a 'View details' button and a 'Start' button.

Interactive labs

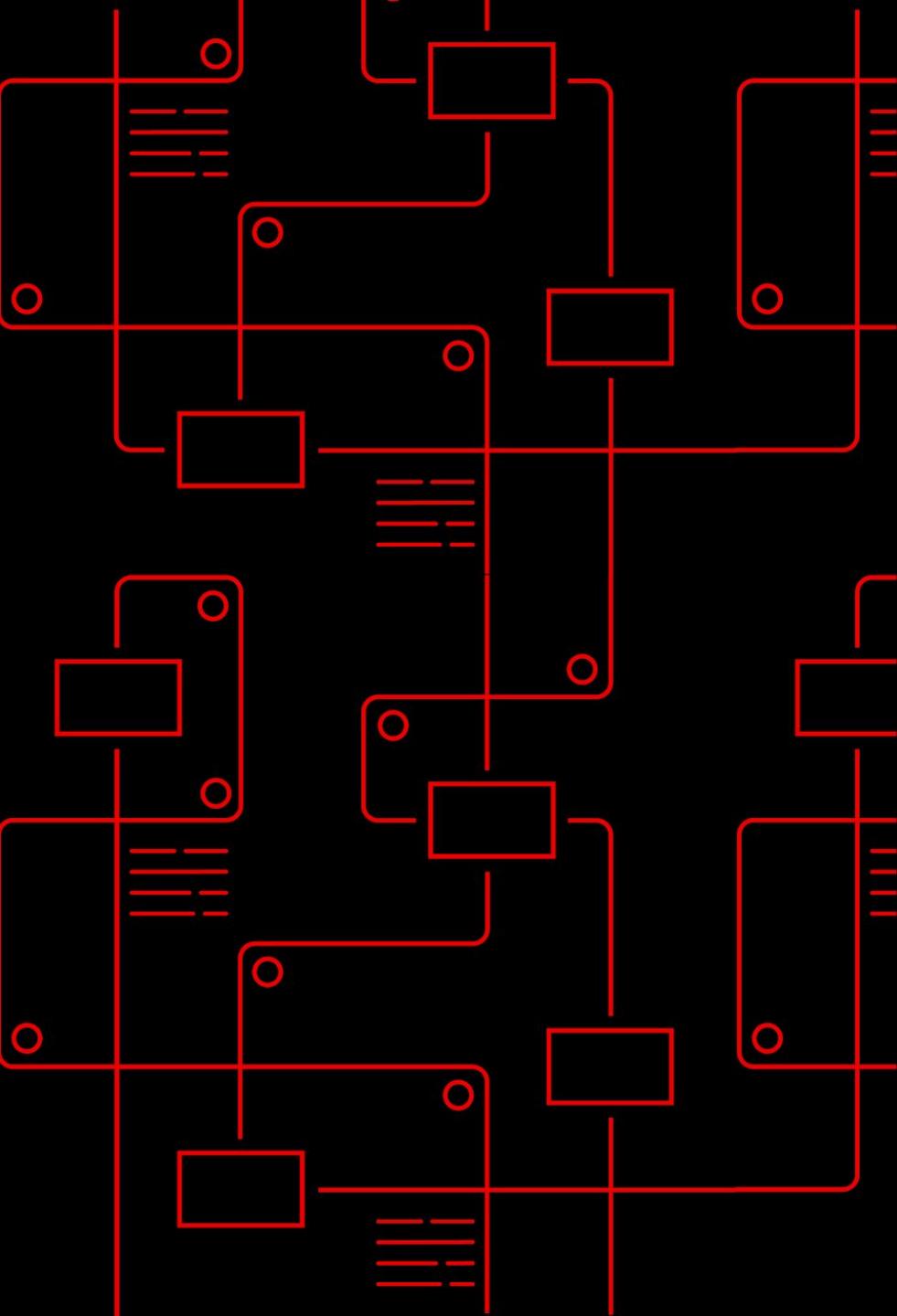
The screenshot shows a blog post titled 'Creating custom Event-Driven Ansible source plugins' by Colin McNaughton on February 7, 2023. The post is part of the 'Red Hat Ansible Automation Platform' series. The title is displayed prominently with a large red 'A' logo to its right. Below the title, the author's name and date are mentioned.

Technical blogs

The screenshot shows the 'Ansible Rulebook Documentation' page. The header includes the 'Ansible Rulebook Documentation' logo and a 'Welcome to Ansible Rulebook documentation' message. The left sidebar contains a navigation menu with links like 'CONTENTS', 'Introduction', 'Getting started', 'Installation', 'Development environment', etc. The main content area displays the 'Welcome to Ansible Rulebook documentation' page, which includes a 'Contents' section with a hierarchical list of topics such as 'Introduction', 'Getting started', 'Installation', and 'Development environment'.

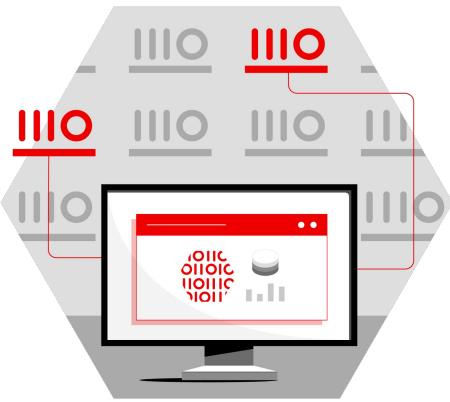
Rulebook docs

Ansible Rulebooks



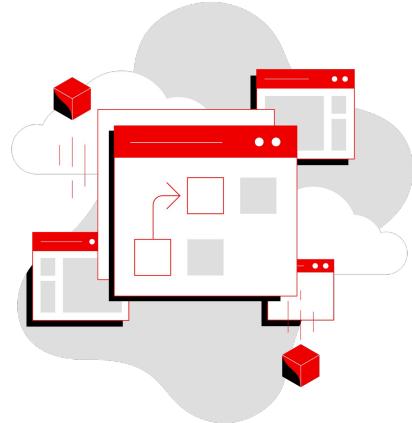
Key building blocks in Event-Driven Ansible

Simple, powerful, agentless



Sources

All the sources of event data you want to use



Rules

What you will create using Event-Driven Ansible®



Actions

When a condition or event is met, the Ansible Rulebook executes

Ansible Rulebooks contain the source of the event, as well as the instructions on what steps to perform when a certain condition is met—and it is all very flexible.

Ansible Rulebooks

Simple declarative decisions through rules

► Events are processed by a rules engine

- ▷ Rules trigger based on conditions and actions can be carried out by the rules engine
- ▷ Rules are organized into Ansible Rulebooks
- ▷ Ansible rules can apply to events occurring on specific hosts or groups

► Conditional management of actions to events

- ▷ Simple YAML structure for logical conditions
- ▷ Events can trigger different types of actions:
 - Run Ansible Playbooks
 - Run Modules
 - Post new events to the event handler

► YAML-like format familiarity

- ▷ Current Ansible users quickly learn and use Rulebook writing

```
- name: Automatic Remediation of a web server
  hosts: all
  sources:
    - name: listen for alerts
      ansible.eda.alertmanager:
        host: 0.0.0.0
        port: 8000
  rules:
    - name: restart web server
      condition: event.alert.labels.job == "fastapi" and
      event.alert.status == "firing"
      action:
        run_playbook:
          name: ansible.eda.start_app
```

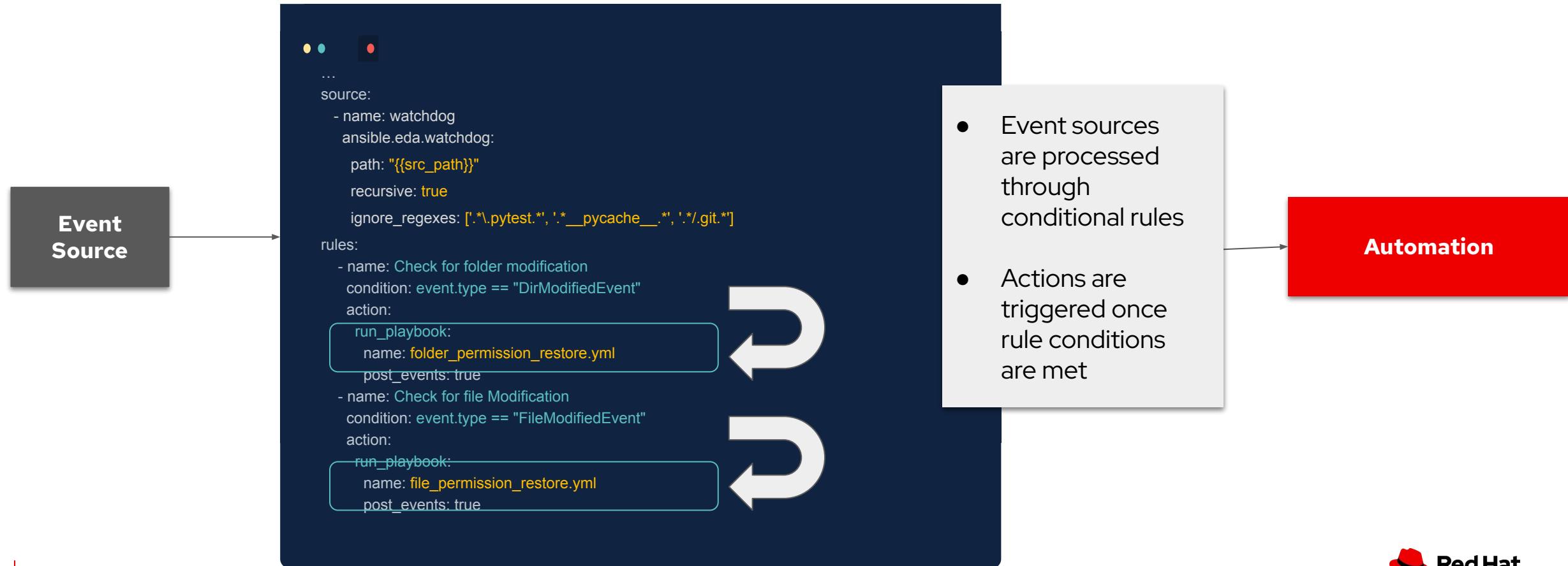
Anatomy of an Ansible Rulebook

Smart automation from conditional rules

Receive

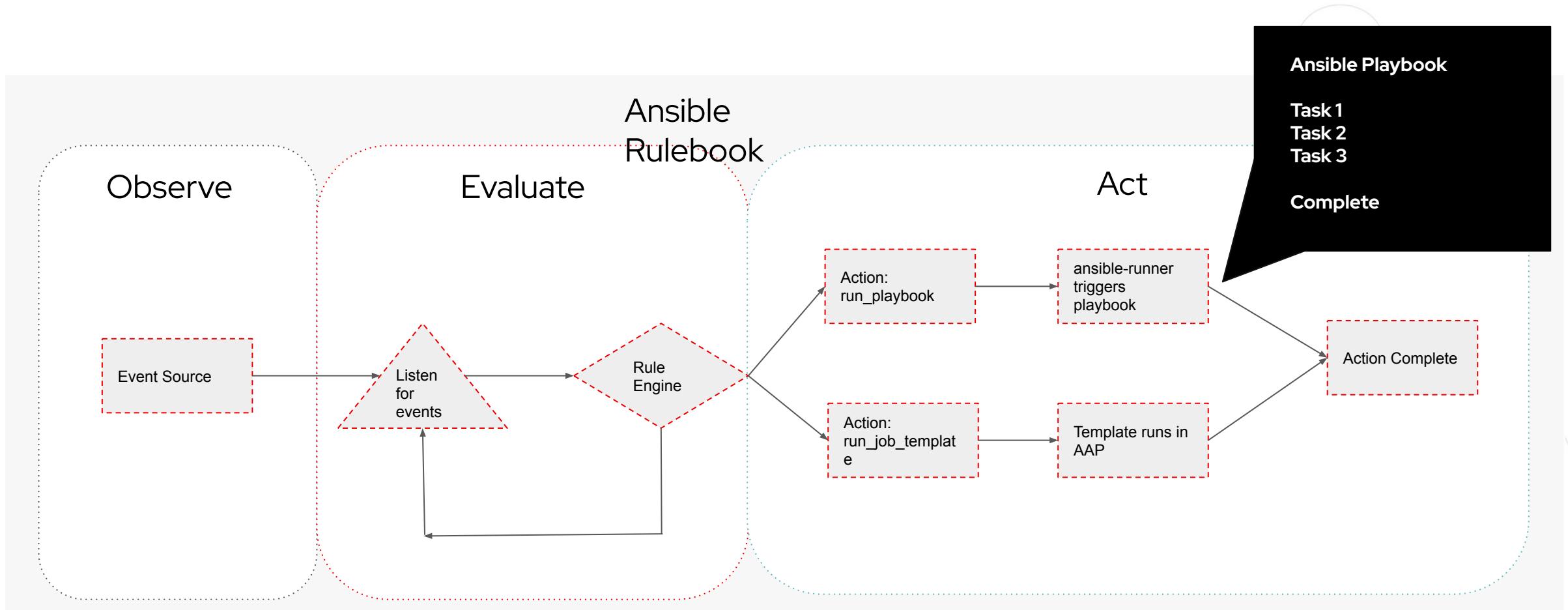
Decide

Respond



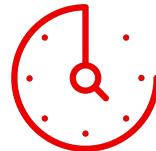
Event-Driven Ansible

Ansible Rulebooks can call playbooks to leverage and extend trusted playbooks

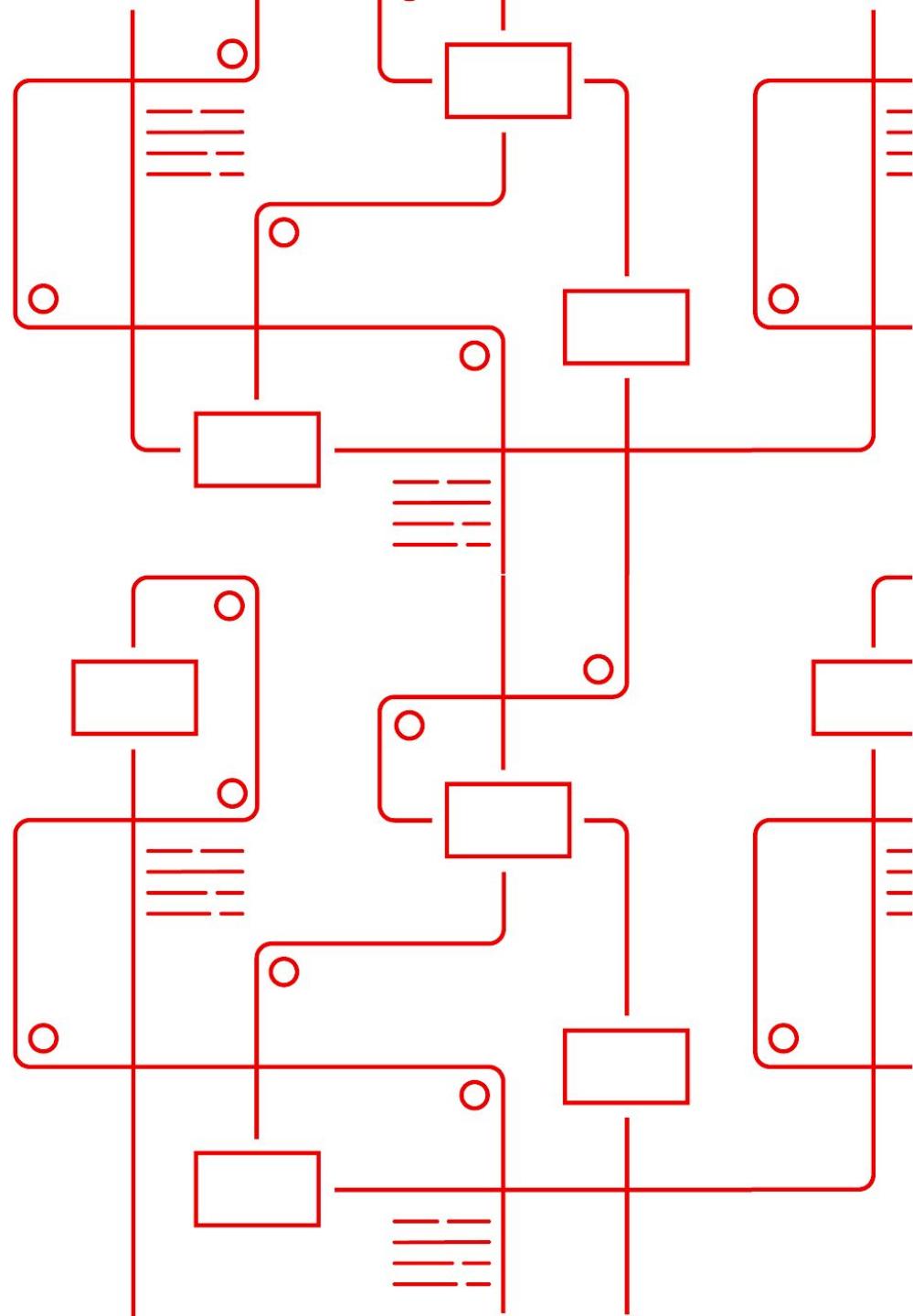


Lab Time

Lab 1 - Rulebooks: Getting started



25 Minutes (click to start)



Getting Started with EDA Controller

- Projects
- Decision Environments
- Rulebook Activation



EDA Controller

Event-Driven Ansible Management

The screenshot shows the Red Hat Ansible Automation Platform dashboard. The top navigation bar includes the Red Hat logo, the title "Ansible Automation Platform", and user account information. The left sidebar contains sections for "Dashboard", "Views" (with "Rule Audit" and "Rulebook Activations" dropdowns), "Resources" (with "Projects", "Credentials", and "Decision Environments" dropdowns), and "User Access" (with "Users" and "Roles" dropdowns). The main content area features a "Welcome to Ansible Automation Platform" message and a "Getting Started" section. It also displays two cards: "Projects" (which shows a large plus icon and the message "There are currently no projects") and "Decision Environments" (which lists "Default Decision Environment" with a modification date of "15/06/2023, 13:49:17").

▶ EDA Controller

- ▷ Manage EDA projects, Decision Environments and rulebook activation
- ▷ Audit running rulebooks
- ▷ View event history
- ▷ Securely connected to **Automation Controller** via **Token**

Getting Started

Event-Driven Ansible Management

Getting Started

Event-Driven Ansible is a highly scalable, flexible automation capability that works with event sources such as other software vendors' monitoring tools. In an automatic remediation use case, these vendor tools watch your IT solutions and identify "events," such as an outage.

To learn how to get started, view the documentation, [check out our instruct guides](#), or follow the steps below.



Project

Create a project.



Decision Environment

Create a decision environment.



Rulebook Activation

Create a rulebook activation.

▶ Project

- ▷ Grab your Rulebooks and synchronize from source control

▶ Decision Environment

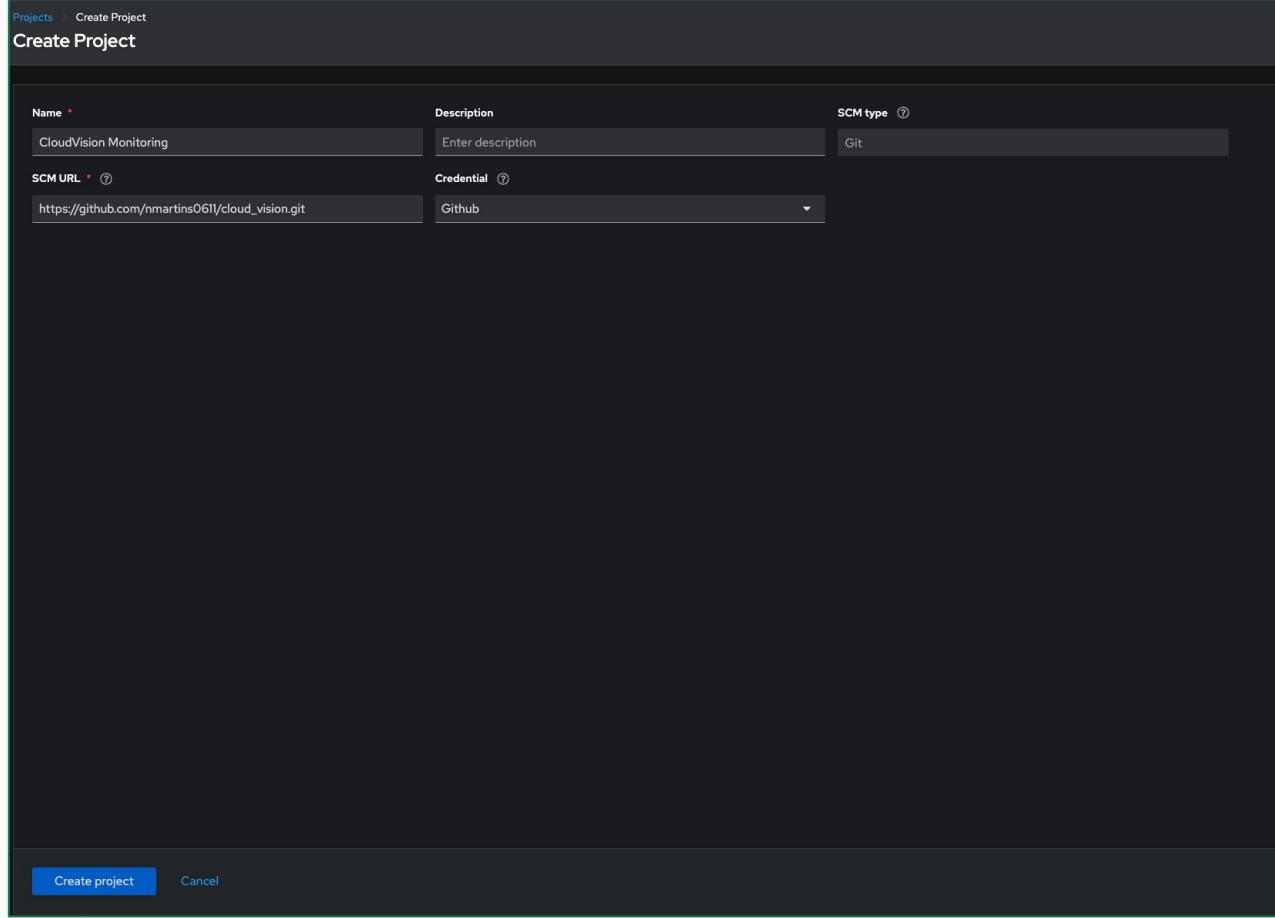
- ▷ Select the Container environment that contains ansible-rulebook and any additional Ansible content that is needed.

▶ Rulebook Activation

- ▷ Select your Ansible Rulebook form the project and configure how it runs.

Projects

Single source of truth for your Rulebooks



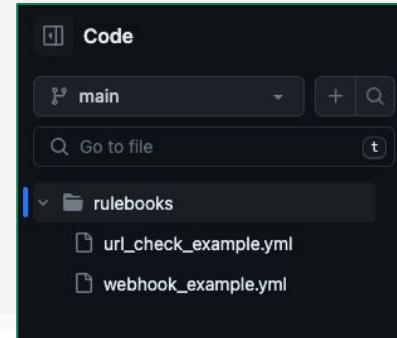
The screenshot shows a 'Create Project' form with the following fields:

- Name: CloudVision Monitoring
- Description: Enter description
- SCM type: Git
- SCM URL: https://github.com/nmartins0611/cloud_vision.git
- Credential: Github

At the bottom, there are 'Create project' and 'Cancel' buttons.

► Projects

- Similar to Automation controller, we create projects on EDA Controller and synchronize from a source of truth.
- Projects will contain all the resources you need such as Ansible Rulebooks.
- **Note:**
 - Rulebooks need to be kept in a rulebook subfolder in your project repository.



Decision Environments

Container based execution of Event-Driven Ansible

The screenshot shows two parts of a user interface for managing decision environments.

Create Decision Environment Form: This part is a modal window titled "Create Decision Environment". It contains fields for "Name" (with placeholder "Enter name"), "Description" (with placeholder "Enter description"), and "Image" (with placeholder "Enter image name"). Below these is a "Credential" dropdown menu with the option "Select credential".

Decision Environments List: This part is a main page titled "Decision Environments". It includes a search bar with filters for "Name" (set to "starts with") and a "Create decision environment" button. A table lists existing environments, showing one entry: "Default Decision Enviro..." which is a "Decision Environment" using the image "registry.redhat.io/ansible-automation-platform/decision-environment:latest".

▶ Decision Environments

- ▷ Provides an container environment similar to an Execution Environment.
- ▷ Contains ansible-rulebook to run rulebooks
- ▷ Contains any additional Ansible content needed

Configure Rulebook Activation

Event-Driven Ansible Management

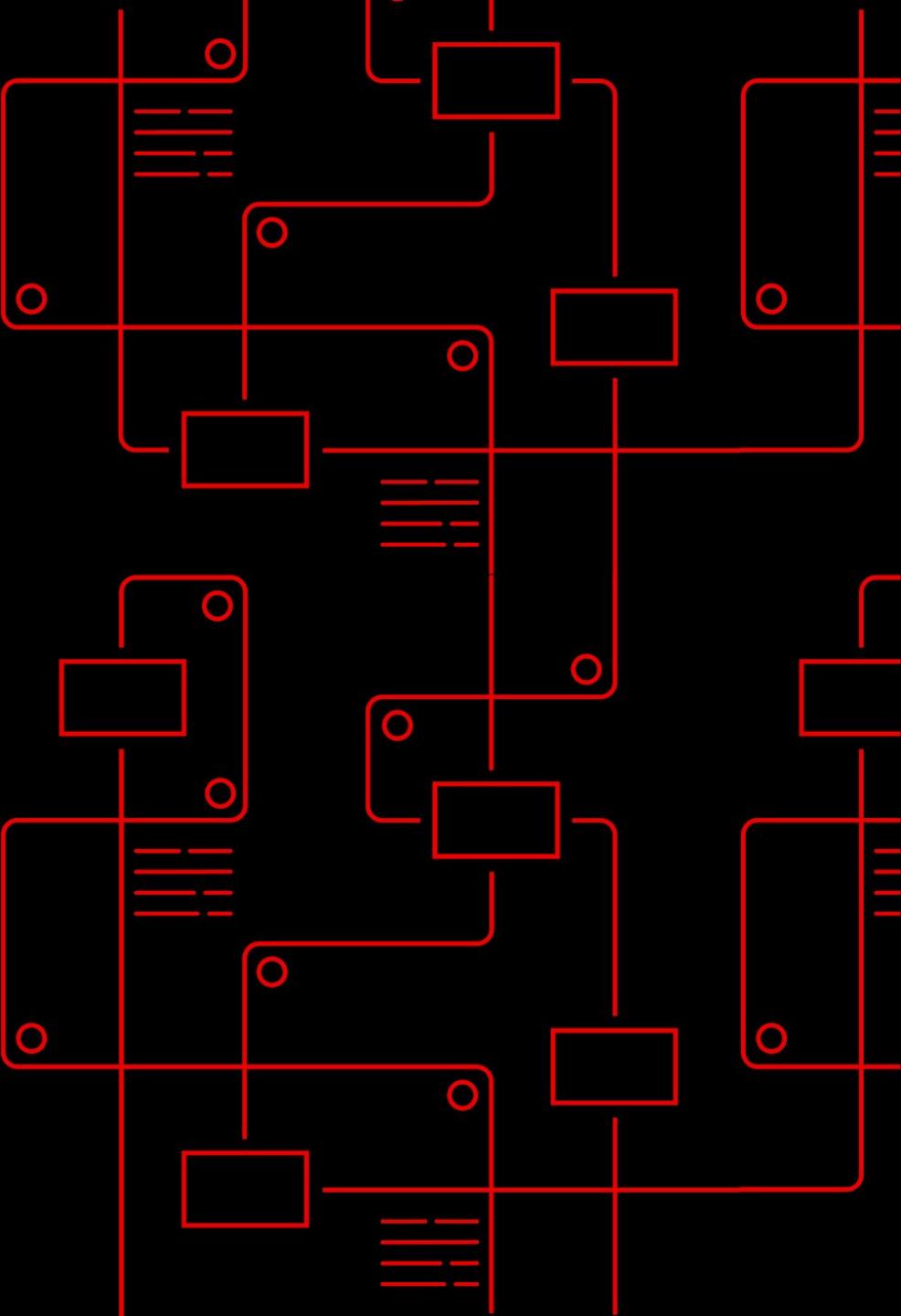
The screenshot shows the 'Create Rulebook Activation' interface. It includes fields for Name (URL_Check), Description (Enter description), Project (eda_samples), Rulebook (Select project rulebook), Decision environment (Default Decision Environment), Restart policy (Always), Variables (1), and Rulebook activation enabled? (Enabled). At the bottom are 'Create rulebook activation' and 'Cancel' buttons.

▶ Rulebook Configuration

- ▷ Rulebooks from our Projects can be configured via Rulebook Activation. Restart Policies, Decision Environments, Variables and enablement are configured here.
- ▷ Additional Variables can be supplied to the rulebooks
- ▷ Restart Policy allows us to restart rulebooks if needed.
 - Always
 - Never
 - On Failure

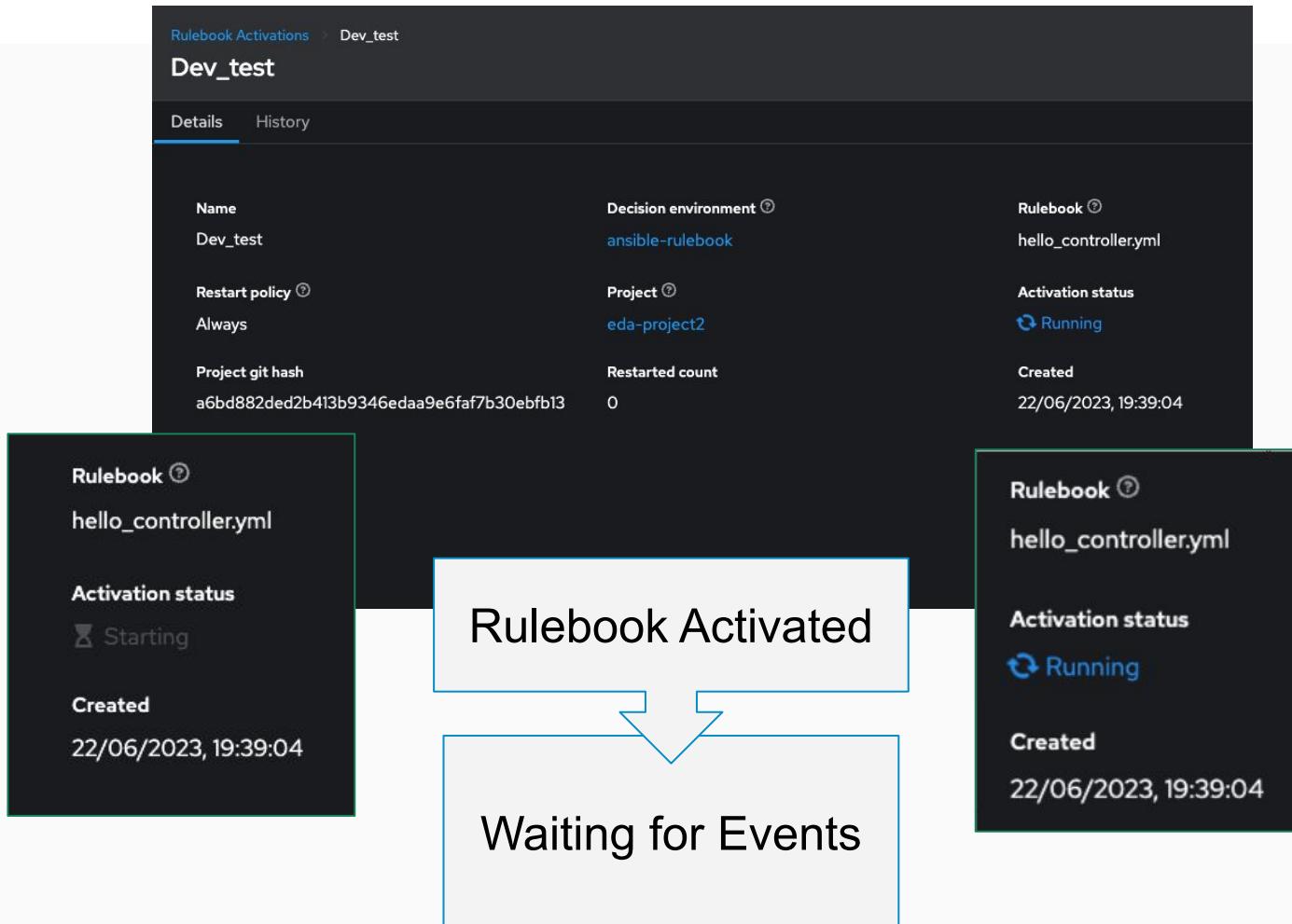
Rulebook and Event Auditing

- Gather information around Events and Actions
- Observe Rulebook activation
- View status of Event-Driven Ansible Rulebooks



Rulebook Activation

Activated Automation

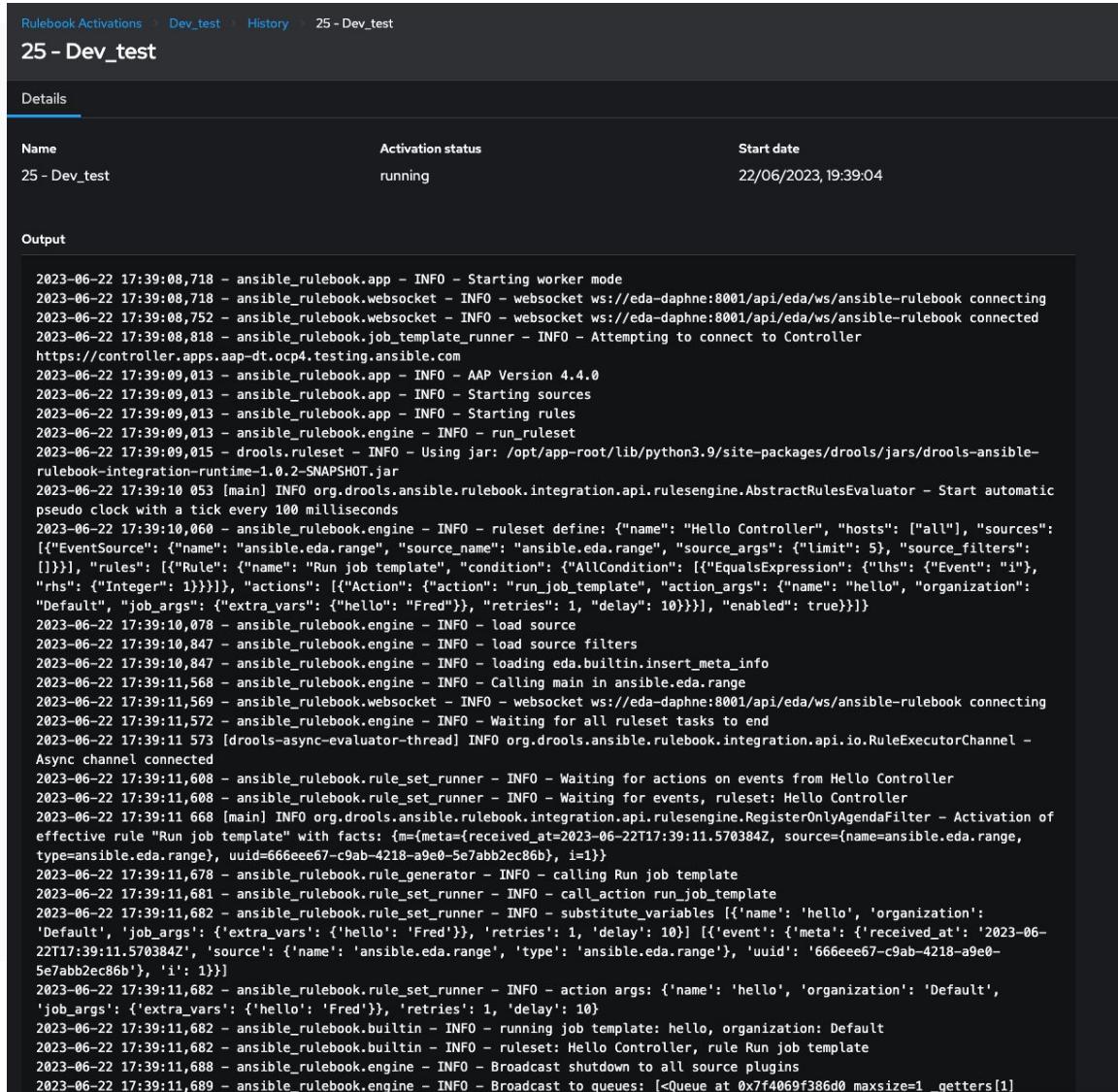


▶ Rulebook Activation

- Once Rulebooks are activated and running they are listening for events.
- Event data and Event History can be viewed from the Rulebook Activation window.
- Further inspection of the Rulebook events and actions can be done via **Rule Audit**

Rulebook Output

Viewing ansible-rulebook output and history



The screenshot shows a web-based interface for managing rulebook activations. The top navigation bar includes links for 'Rulebook Activations', 'Dev_test', 'History', and '25 - Dev_test'. The main title '25 - Dev_test' is displayed above a table. The table has three columns: 'Name' (25 - Dev_test), 'Activation status' (running), and 'Start date' (22/06/2023, 19:39:04). Below the table is a section titled 'Output' which contains a large block of log entries from the ansible_rulebook app. The log entries show the rulebook starting worker mode, connecting to a controller, defining a ruleset named 'Hello Controller', and executing a rule named 'Run job template'.

Name	Activation status	Start date
25 - Dev_test	running	22/06/2023, 19:39:04

Output

```
2023-06-22 17:39:08,718 - ansible_rulebook.app - INFO - Starting worker mode
2023-06-22 17:39:08,718 - ansible_rulebook.websocket - INFO - websocket ws://eda-daphne:8001/api/eda/ws/ansible-rulebook connecting
2023-06-22 17:39:08,752 - ansible_rulebook.websocket - INFO - websocket ws://eda-daphne:8001/api/eda/ws/ansible-rulebook connected
2023-06-22 17:39:08,818 - ansible_rulebook.job_template_runner - INFO - Attempting to connect to Controller https://controller.apps.aap-dt.ocp4.testing.ansible.com
2023-06-22 17:39:09,013 - ansible_rulebook.app - INFO - AAP Version 4.4.0
2023-06-22 17:39:09,013 - ansible_rulebook.app - INFO - Starting sources
2023-06-22 17:39:09,013 - ansible_rulebook.app - INFO - Starting rules
2023-06-22 17:39:09,013 - ansible_rulebook.engine - INFO - run_ruleset
2023-06-22 17:39:09,015 - drools.ruleset - INFO - Using jar: /opt/app-root/lib/python3.9/site-packages/drools/jars/drools-ansible-rulebook-integration-runtime-1.0.2-SNAPSHOT.jar
2023-06-22 17:39:10,053 [main] INFO org.drools.ansible.rulebook.integration.api.rulesengine.AbstractRulesEvaluator - Start automatic pseudo clock with a tick every 100 milliseconds
2023-06-22 17:39:10,060 - ansible_rulebook.engine - INFO - ruleset define: {"name": "Hello Controller", "hosts": ["all"], "sources": [{"EventSource": {"name": "ansible.eda.range", "source_name": "ansible.eda.range", "source_args": {"limit": 5}, "source_filters": []}}, {"rules": [{"name": "Run job template", "condition": {"AllCondition": [{"EqualExpression": {"lhs": {"Event": "i"}, "rhs": {"Integer": 1}}}], "actions": [{"Action": {"action": "run_job_template", "action_args": {"name": "hello", "organization": "Default", "job_args": {"extra_vars": {"hello": "Fred"}}, "retries": 1, "delay": 10}}, {"enabled": true}]}]}], "actions": []
2023-06-22 17:39:10,078 - ansible_rulebook.engine - INFO - load source
2023-06-22 17:39:10,847 - ansible_rulebook.engine - INFO - load source filters
2023-06-22 17:39:10,847 - ansible_rulebook.engine - INFO - loading eda.builtin.insert_meta_info
2023-06-22 17:39:11,568 - ansible_rulebook.engine - INFO - Calling main in ansible.eda.range
2023-06-22 17:39:11,569 - ansible_rulebook.websocket - INFO - websocket ws://eda-daphne:8001/api/eda/ws/ansible-rulebook connecting
2023-06-22 17:39:11,572 - ansible_rulebook.engine - INFO - Waiting for all ruleset tasks to end
2023-06-22 17:39:11,573 [drools-async-evaluator-thread] INFO org.drools.ansible.rulebook.integration.api.io.RuleExecutorChannel - Async channel connected
2023-06-22 17:39:11,608 - ansible_rulebook.rule_set_runner - INFO - Waiting for actions on events from Hello Controller
2023-06-22 17:39:11,608 - ansible_rulebook.rule_set_runner - INFO - Waiting for events, ruleset: Hello Controller
2023-06-22 17:39:11,668 [main] INFO org.drools.ansible.rulebook.integration.api.rulesengine.RegisterOnlyAgendaFilter - Activation of effective rule "Run job template" with facts: {meta={received_at='2023-06-22T17:39:11.570384Z', source={name=ansible.eda.range, type=ansible.eda.range}, uuid='666eee67-c9ab-4218-a9e0-5e7abb2ec86b'}, i=1}
2023-06-22 17:39:11,678 - ansible_rulebook.rule_generator - INFO - calling Run job template
2023-06-22 17:39:11,681 - ansible_rulebook.rule_set_runner - INFO - call_action run_job_template
2023-06-22 17:39:11,682 - ansible_rulebook.rule_set_runner - INFO - substitute_variables [{"name": "hello", "organization": "Default", "job_args": {"extra_vars": {"hello": "Fred"}}, "retries": 1, "delay": 10}] [{"event": {"meta": {"received_at": "2023-06-22T17:39:11.570384Z", "source": {"name": "ansible.eda.range", "type": "ansible.eda.range"}, "uuid": "666eee67-c9ab-4218-a9e0-5e7abb2ec86b"}, "i": 1}}]
2023-06-22 17:39:11,682 - ansible_rulebook.rule_set_runner - INFO - action args: {"name": "hello", "organization": "Default", "job_args": {"extra_vars": {"hello": "Fred"}}, "retries": 1, "delay": 10}
2023-06-22 17:39:11,682 - ansible_rulebook.builtin - INFO - running job template: hello, organization: Default
2023-06-22 17:39:11,682 - ansible_rulebook.builtin - INFO - ruleset: Hello Controller, rule Run job template
2023-06-22 17:39:11,688 - ansible_rulebook.engine - INFO - Broadcast shutdown to all source plugins
2023-06-22 17:39:11,689 - ansible_rulebook.engine - INFO - Broadcast to queues: [<Queue at 0x7f4069f386d0 maxsize=1 _getters[1]
```

▶ Rulebook Activation

- Once Rulebooks are activated It is possible to view the history output of that rulebook.
- This provides you with the ability to view the verbose output of ansible-rulebook for your specific rulebook.

Rule Audit

An Overview of events and actions

The screenshot shows two main sections of a web-based Rule Audit application.

Top Section: A table titled "Rule Audit" showing a single row of data for a rule named "Run job template".

Name	Status	Rulebook activation	Last fired date
Run job template	✓ Successful		22/06/2023, 19:39:11

Bottom Section: A detailed view for the "Run job template" rule. The title is "Run job template". Below it is a navigation bar with tabs: "Details" (which is active), "Events", and "Actions".

Rule name	Status	Rulebook activation ⓘ
Run job template	✓ Successful	Dev_test

Below the table, there are two rows of information:

Created	Fired date
22/06/2023, 19:39:32	22/06/2023, 19:39:11

Audit Rulebook Activation

- ▷ Rule Audit allows you to view data around the events and actions that have taken place.
- ▷ Events will list the events that have matched within the rulebook.
- ▷ Actions provide a list of actions which have taken place

Event Audit

Event information and auditing

The screenshot shows the 'Run job template' section of the Rule Audit interface. At the top, there are tabs for 'Details', 'Events' (which is selected), and 'Actions'. Below the tabs is a search bar with the placeholder 'Name starts with' and a button with a right-pointing arrow. The main area displays a table with three columns: 'Name', 'Source type', and 'Timestamp'. A single row is visible, showing 'ansible.eda.range' as the name, 'ansible.eda.range' as the source type, and '22/06/2023, 19:39:11' as the timestamp. A large blue arrow points from the 'Events' tab down to a modal window titled 'Event details'. This modal contains the same information as the table: 'Name: ansible.eda.range', 'Source type: ansible.eda.range', and 'Timestamp: 22/06/2023, 19:39:11'. Below this, there is a section titled 'Event log' which contains the JSON object '{ "i": 1 }'. At the bottom of the modal is a blue 'Close' button.

Name	Source type	Timestamp
ansible.eda.range	ansible.eda.range	22/06/2023, 19:39:11

Event details

Name	Source type	Timestamp
ansible.eda.range	ansible.eda.range	22/06/2023, 19:39:11

Event log

```
{"i":1}
```

Close

▶ Event list

- ▶ The Event list in Rule Audit provides a list of events that have been matched with your Rulebook conditions.
- ▶ The events are listed and provide the event source type where they were observed.
- ▶ These events can be selected to get the event information.

Action Audit

Action information and data

Rule Audit > Run job template

Run job template

Details Events Actions

Name starts with →

Name	Status	Last fired date
run_job_template		

Jobs > 188 - hello

Details

Back to Jobs Details Output

Job ID	188	Status	Successful	Started	22/06/2023, 19:39:12
Finished	22/06/2023, 19:39:23	Job Template	hello	Job Type	Playbook Run
Launched By	admin	Inventory	managed nodes	Project	Demo Project
Revision	347e44fea036c94d5f60e544de006453ee5c71 ad	Playbook	hello_world.yml	Verbosity	0 (Normal)
Execution Environment	Default execution environment	Controller Node	controller-task-5c89b6bd-7fdfb	Container Group	default
Job Slice	0/1	Forks	0	Timeout	No timeout specified
Credentials	SSH: managed nodes				
Created	22/06/2023, 19:39:12 by admin	Last Modified	22/06/2023, 19:39:12		
Variables	YAML JSON				
1 {}					
Artifacts	YAML JSON				
1 {}					
<button>Relaunch</button> <button>Delete</button>					

Actions

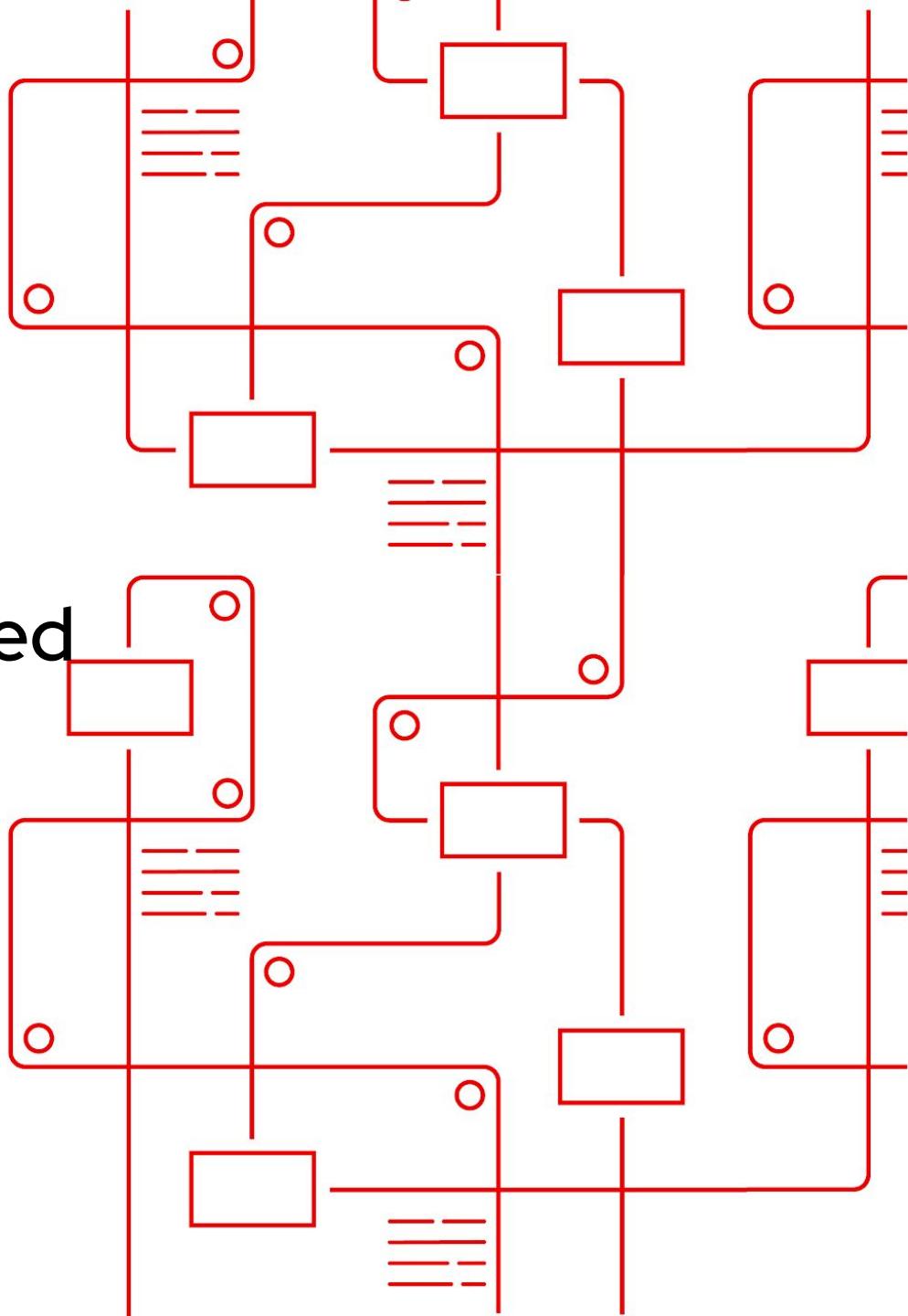
- Rule Audit provides the ability to access the Action history.
- If the action is to run_job_template in Automation Controller, the action will link back to the Job Status on Automation Controller.

Lab Time

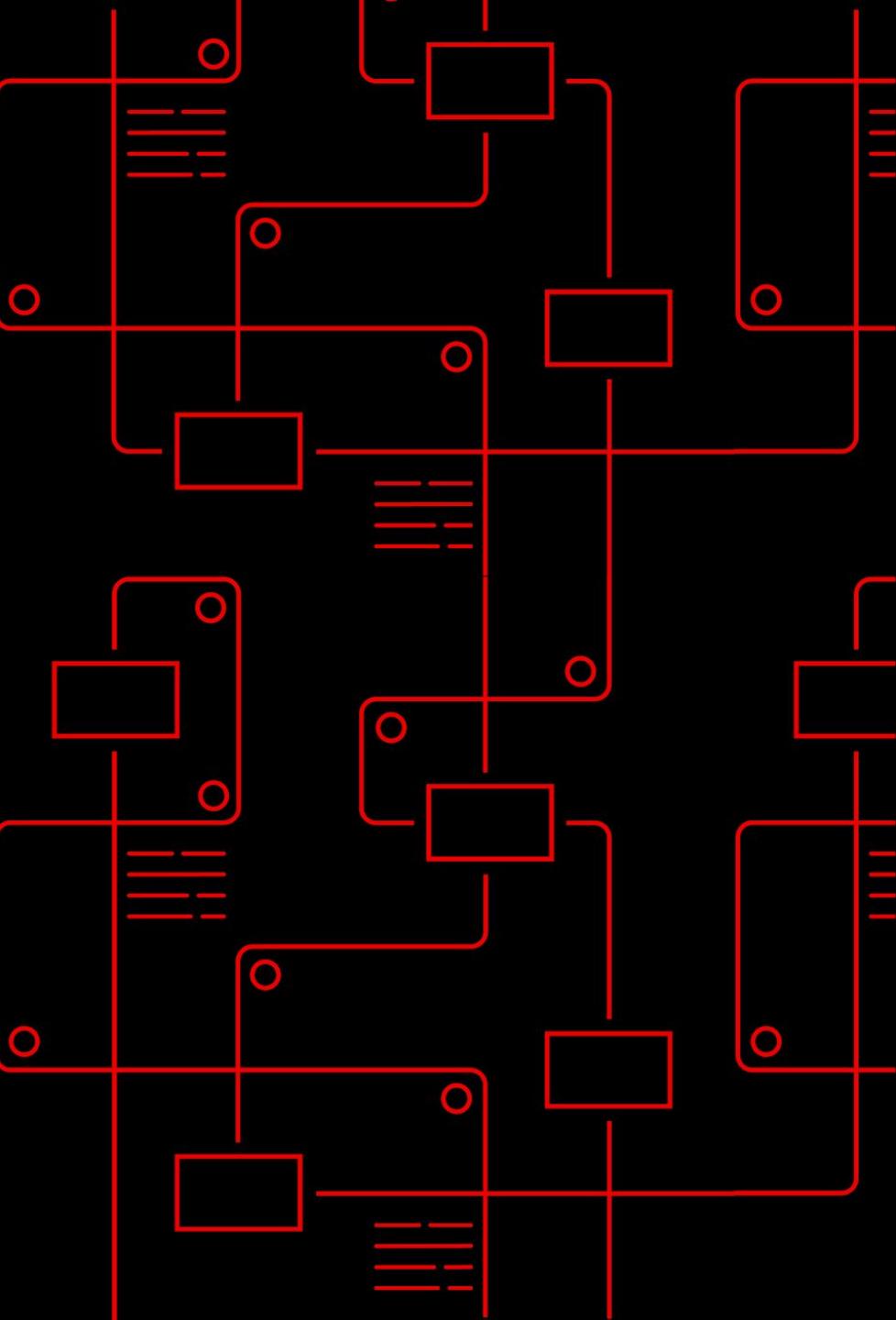
Lab 2 - EDA Controller: Getting started



40 Minutes (click to start)



Next steps



Learning resources

Continue your automation journey with Red Hat Ansible for public cloud automation



Ansible Automation Labs

red.ht/ansible_labs

E-book:

An IT executive's guide to automation

red.ht/automate_guide

Ansible Basics:

Automation Technical Overview

red.ht/automation_basics

Thank you

Red Hat is the world's leading provider of enterprise open source software solutions. Award-winning support, training, and consulting services make Red Hat a trusted adviser to the Fortune 500.



linkedin.com/company/red-hat



youtube.com/c/AnsibleAutomation

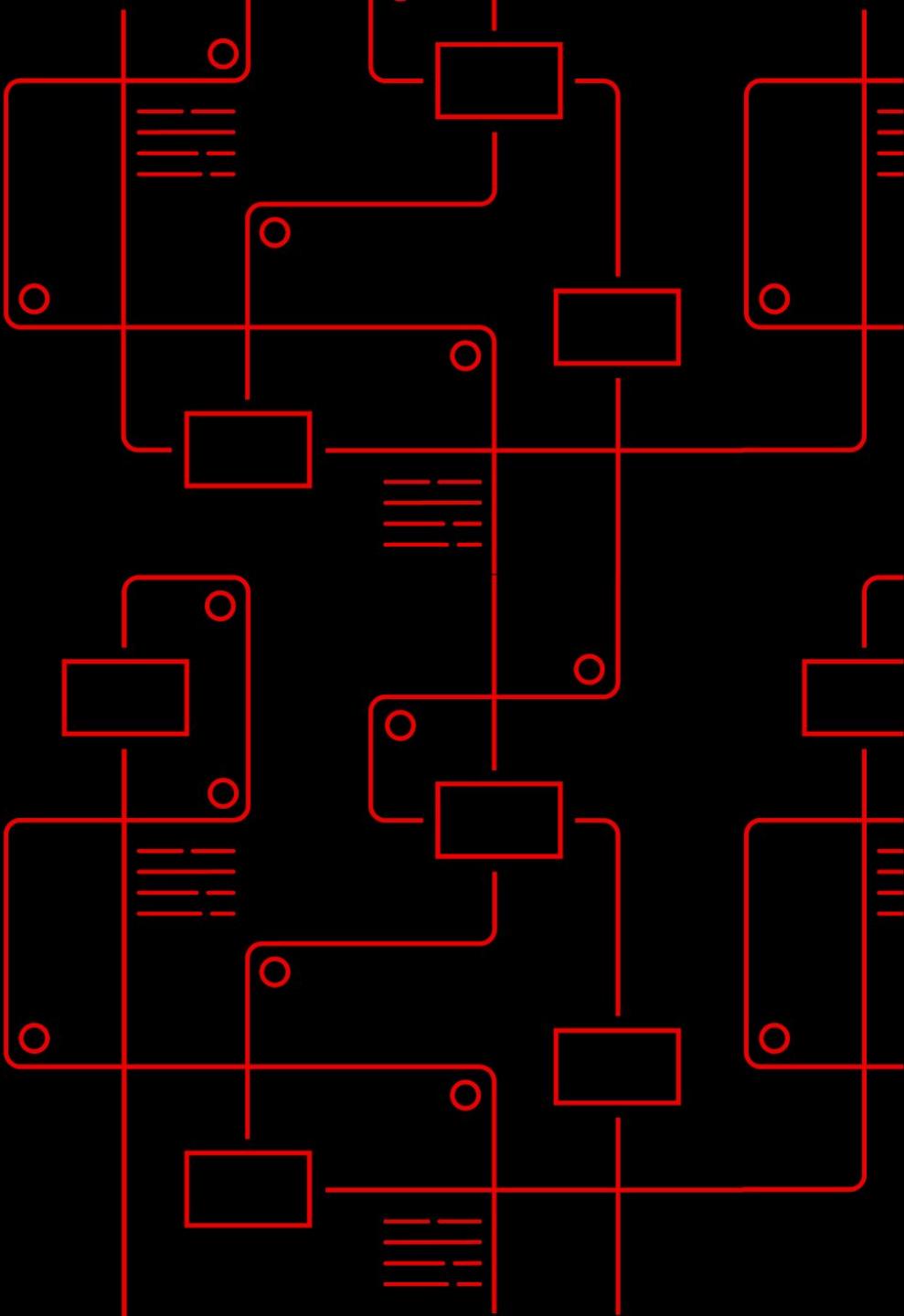


facebook.com/redhatinc

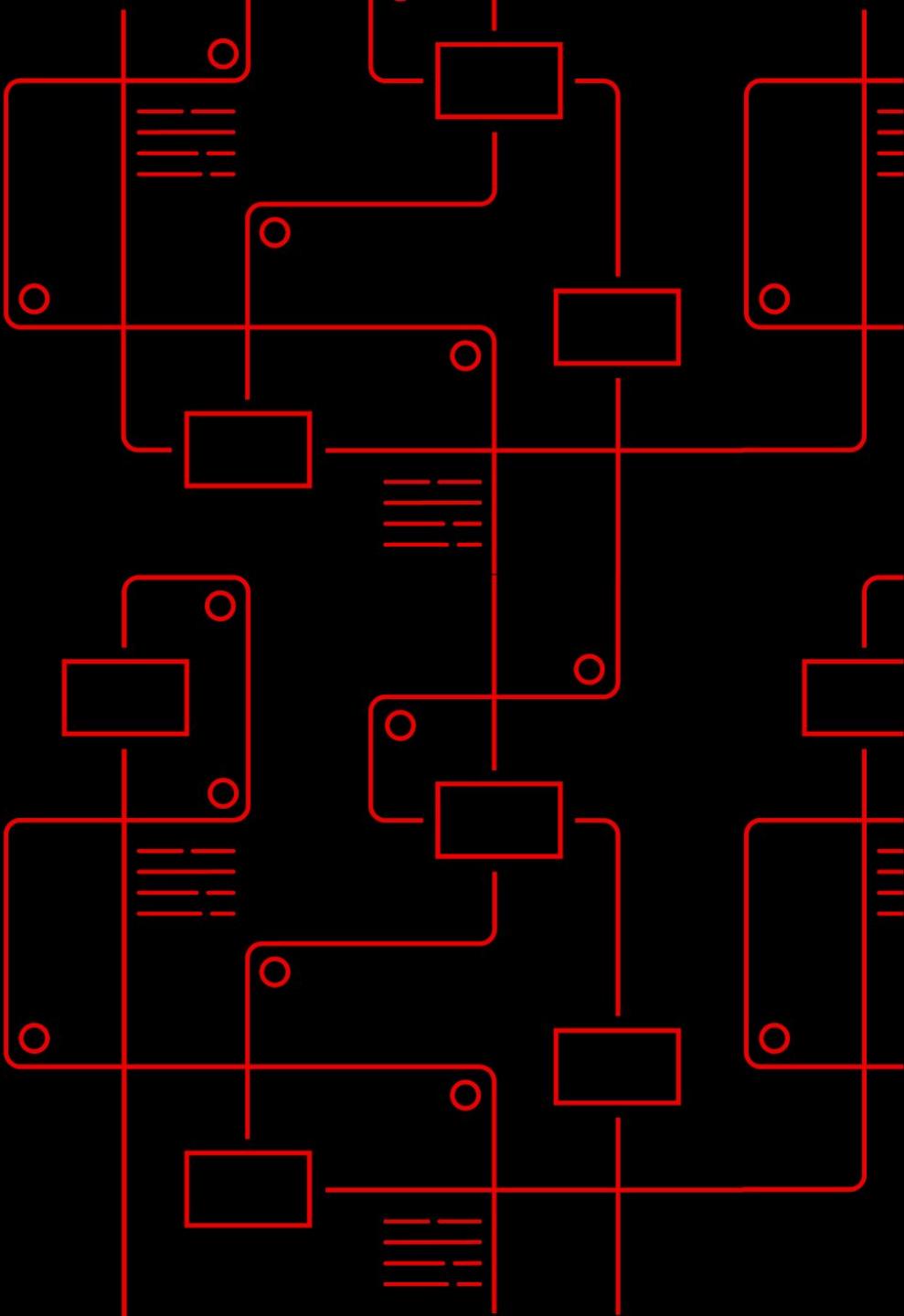


twitter.com/ansible

Supplemental lab: Event-Driven Ansible and gitops



Event driven gitops



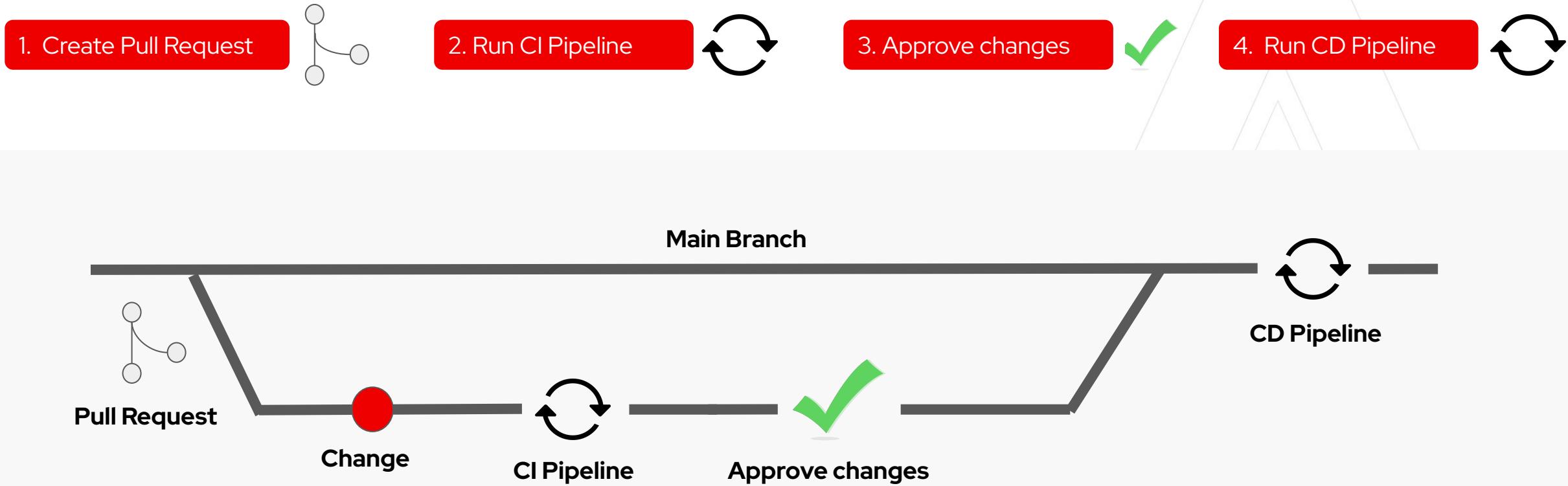
So what is **GitOps**?

GitOps it is an operational framework that takes DevOps best practices for application development and applies them to infrastructure automation.

In other words?

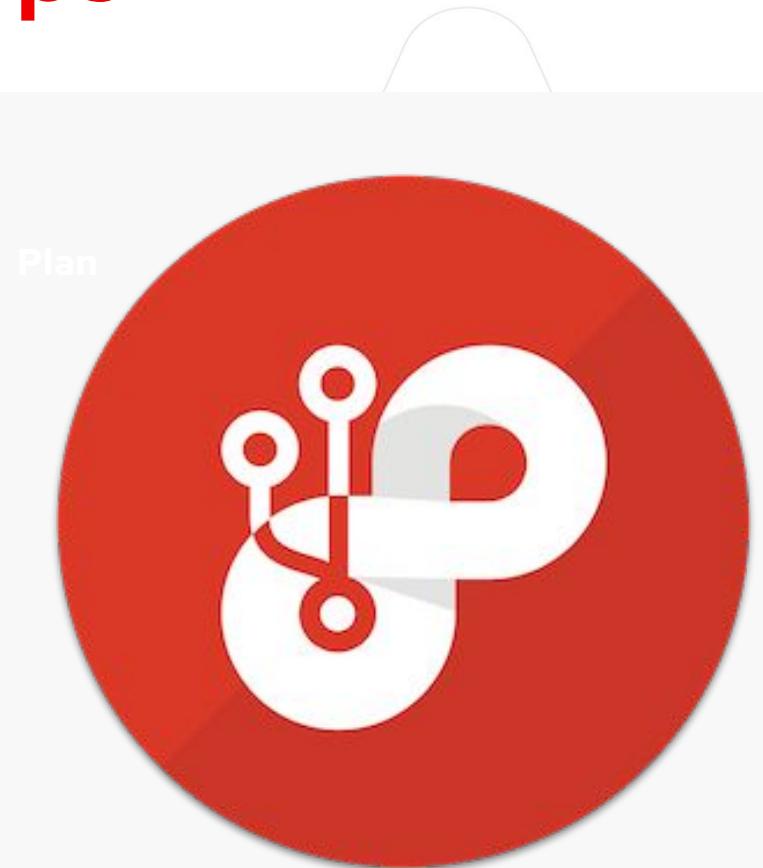
Treat infrastructure as code as you would application code.

GitOps **workflow**

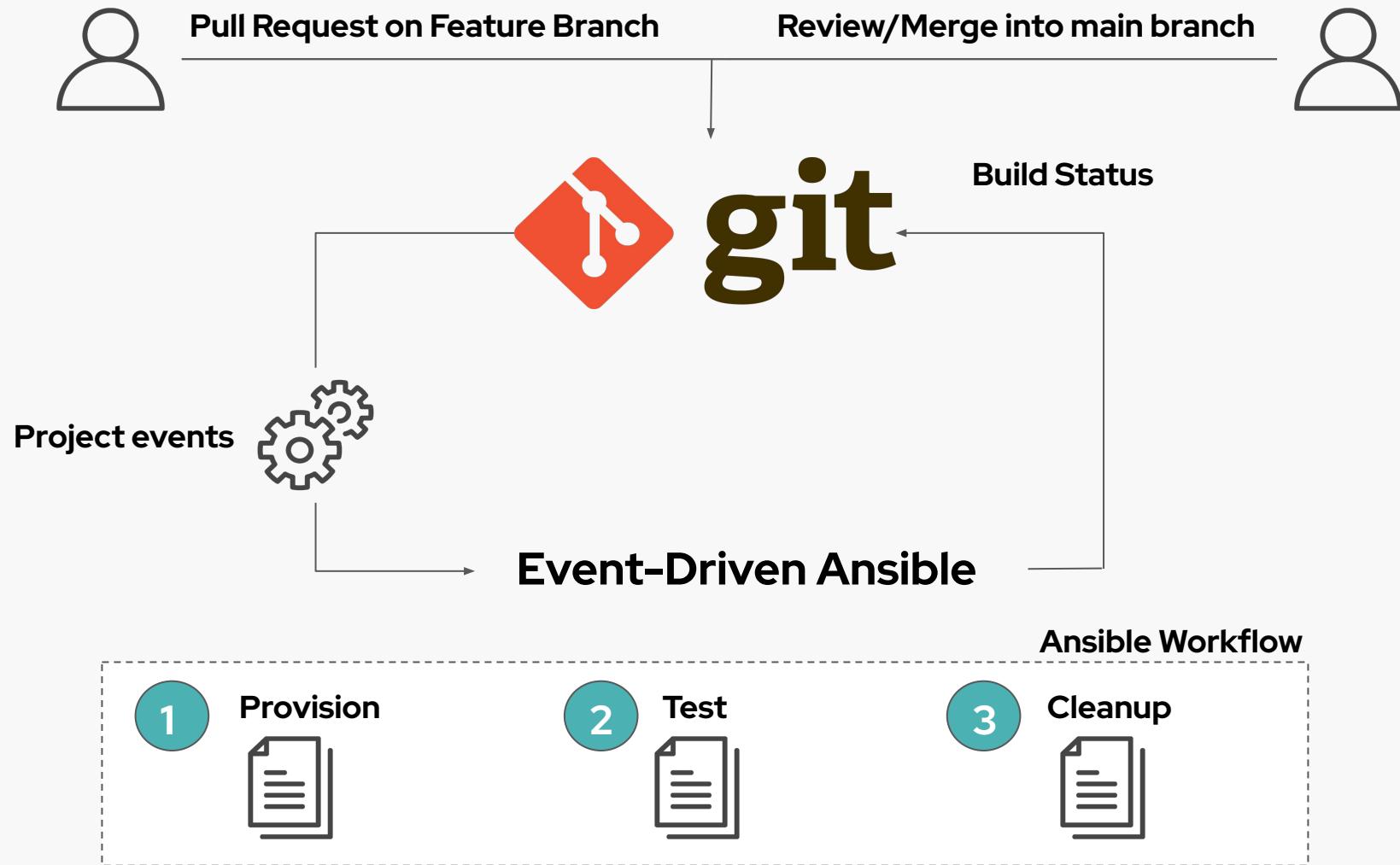


The benefits of **GitOps**

1. Increased productivity
2. Enhanced developer experience
3. Improved stability
4. Higher reliability
5. Consistency and standardization



Event Driven Ansible GitOps workflow



Lab Time

Lab 2 - Gitops with Event Driven Ansible



30 Minutes

