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/1wrJ90OEvkais6wcyinMq42uv1_VJJQlzrxHy8UgC220/edit?usp=sharing

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Colin McNaughton

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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?

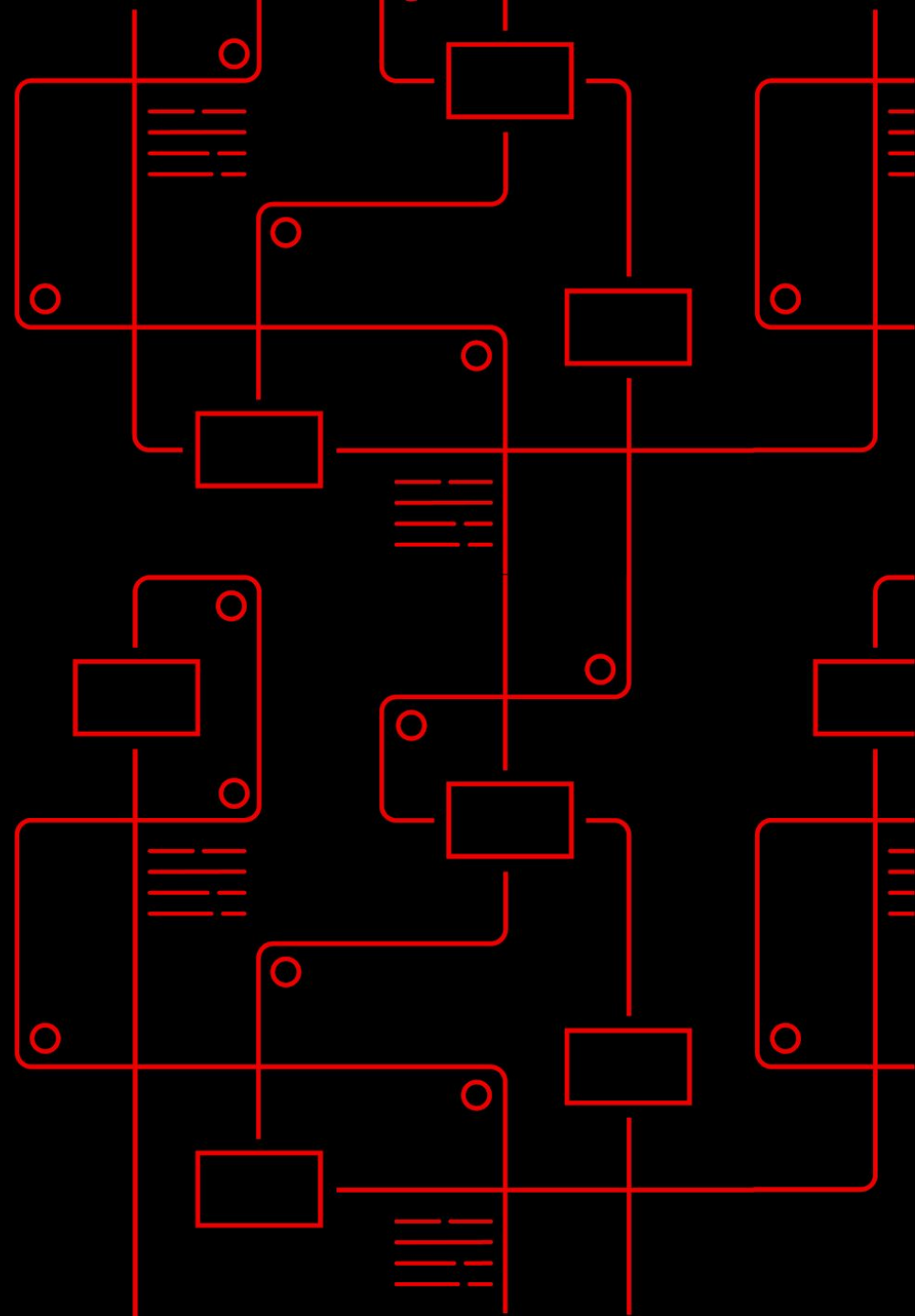
The ability to

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

RECEIVE EVENT

- Work with third party sources of events
- Send important events to Event-Driven Ansible

DECIDE ON RESPONSE

- Known problem identified
- Automated resolution triggered

RESPOND AUTOMATICALLY

- Outage incident created
- Support team notified
- Remediation executed

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

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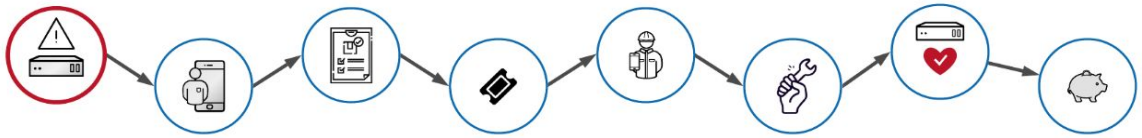
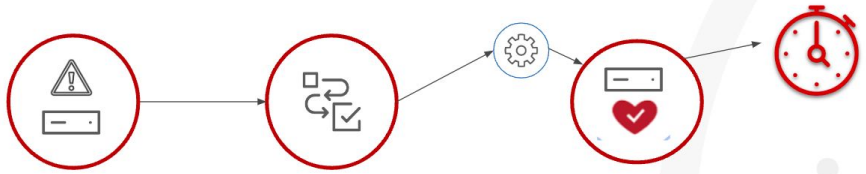
A brief history of IT Operations

The Old Way: Time, Toil and Churn



The new way: Event-Driven Automated Ops



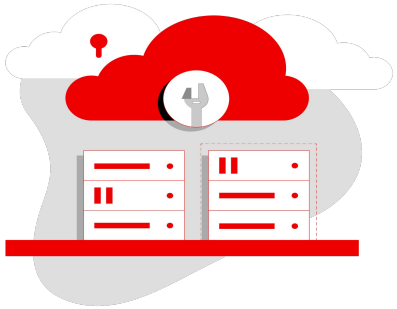
Outage resolution:
Follow a people-intensive multi-step manual process including opening tickets and multiple handoffs.

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

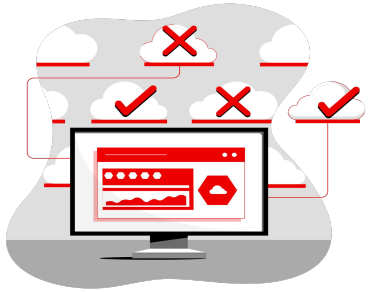


Service ticket enhancement

Automate fact gathering

Network administration

Edge device management

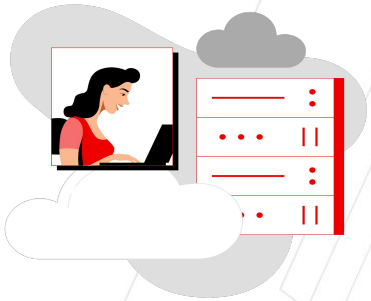


Remediation

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)

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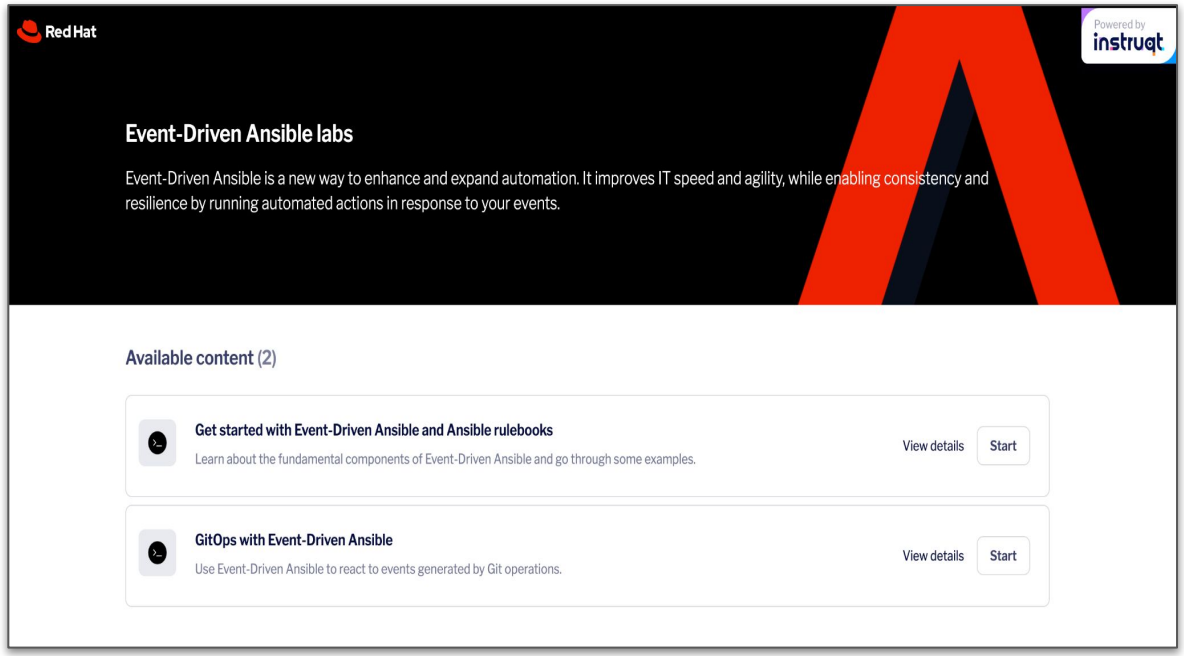
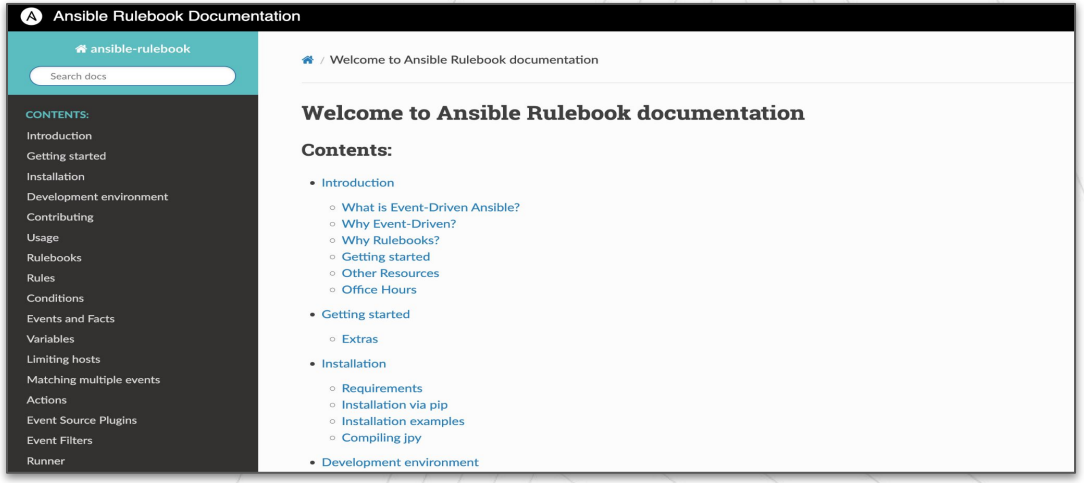
Three key technical learning resources



Interactive labs

Technical blogs



Rulebook docs

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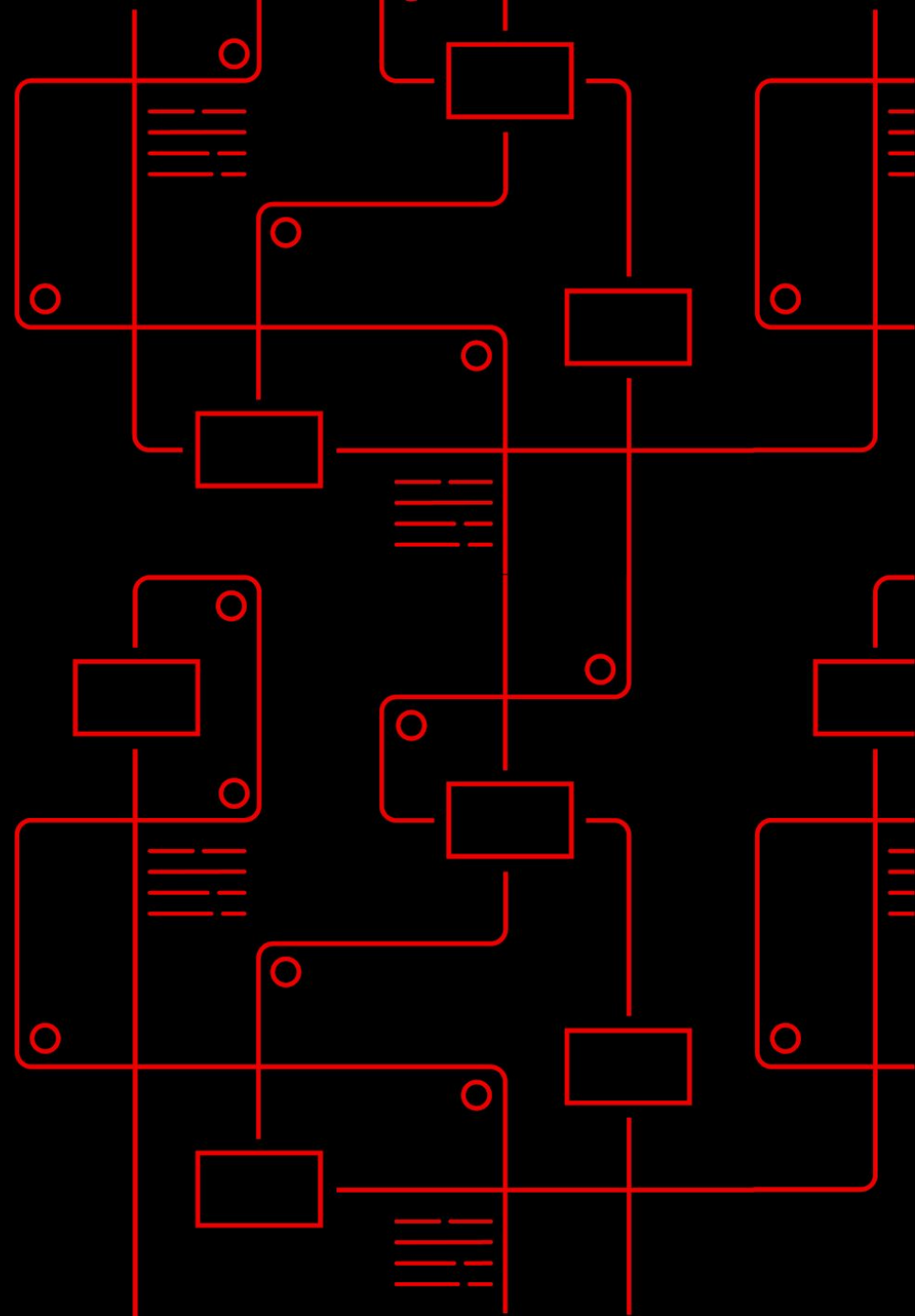
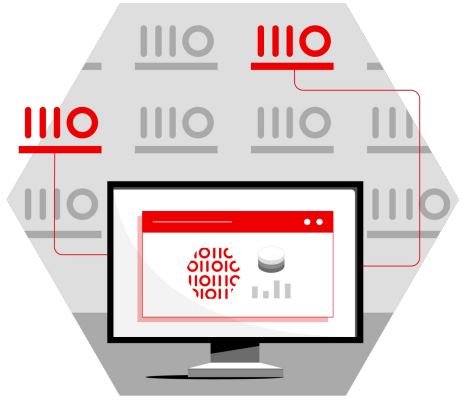
Ansible Rulebooks



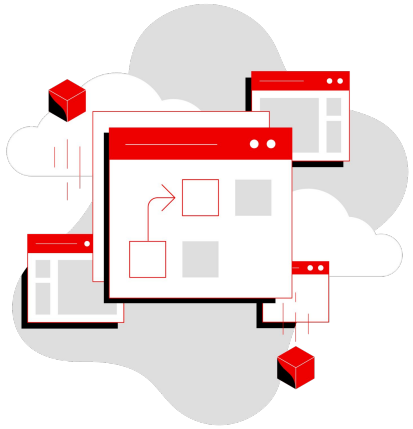
Key building blocks in Event-Driven Ansible

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

```yaml
- 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
```

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Anatomy of an Ansible Rulebook

Smart automation from conditional rules

Receive | **Decide** | **Respond**

Event Source

```
...
source:
  - name: watchdog
    ansible.eda.watchdog:
      path: "{{src_path}}"
      recursive: true
      ignore_regexes: ['.*\.pytest.*', '.*__pycache__.*', '.*/.git.*']
rules:
  - name: Check for folder modification
    condition: event.type == "DirModifiedEvent"
    action:
      run_playbook:
        name: folder_permission_restore.yml
        post_events: true
  - name: Check for file Modification
    condition: event.type == "FileModifiedEvent"
    action:
      run_playbook:
        name: file_permission_restore.yml
        post_events: true
```

- Event sources are processed through conditional rules
- Actions are triggered once rule conditions are met

Automation

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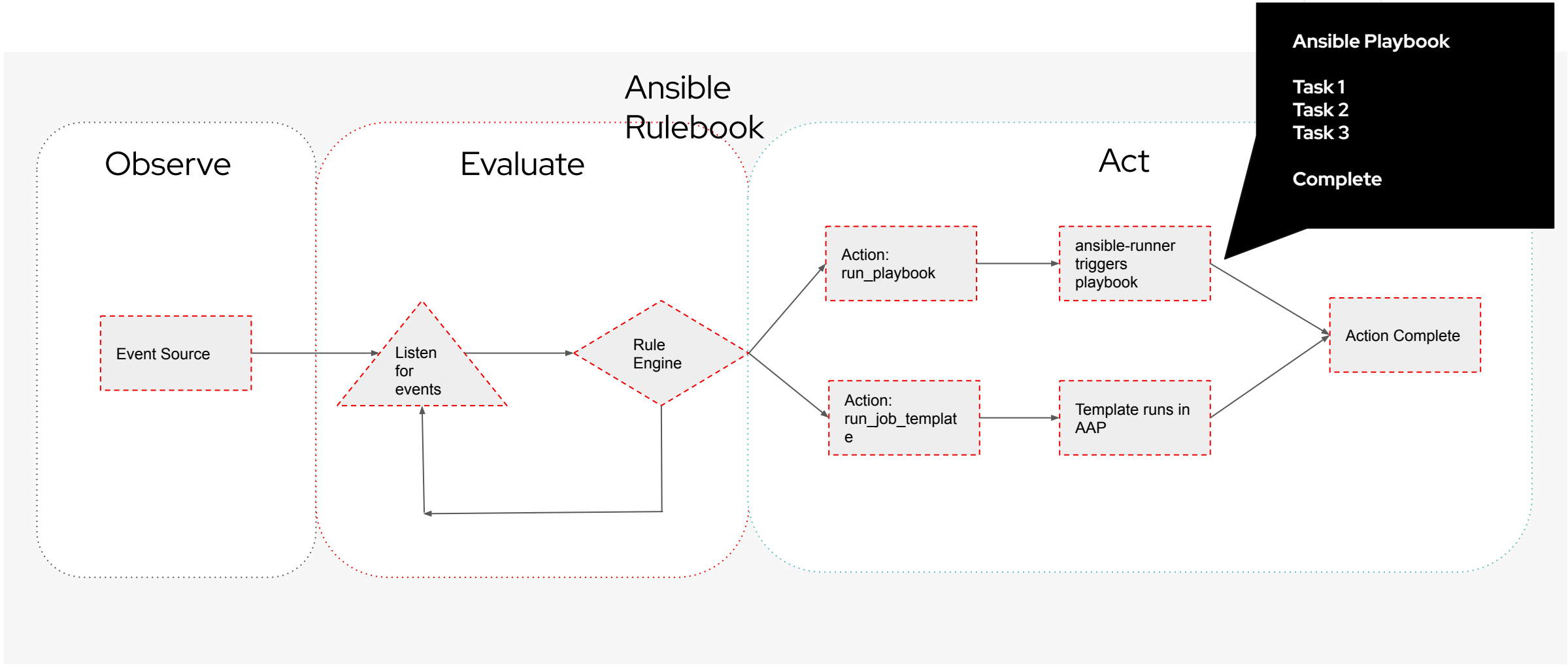
Event-Driven Ansible

Ansible Rulebooks can call playbooks to leverage and extend trusted playbooks



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Lab Time

Lab 1 - Rulebooks: Getting started

25 Minutes (click to start)

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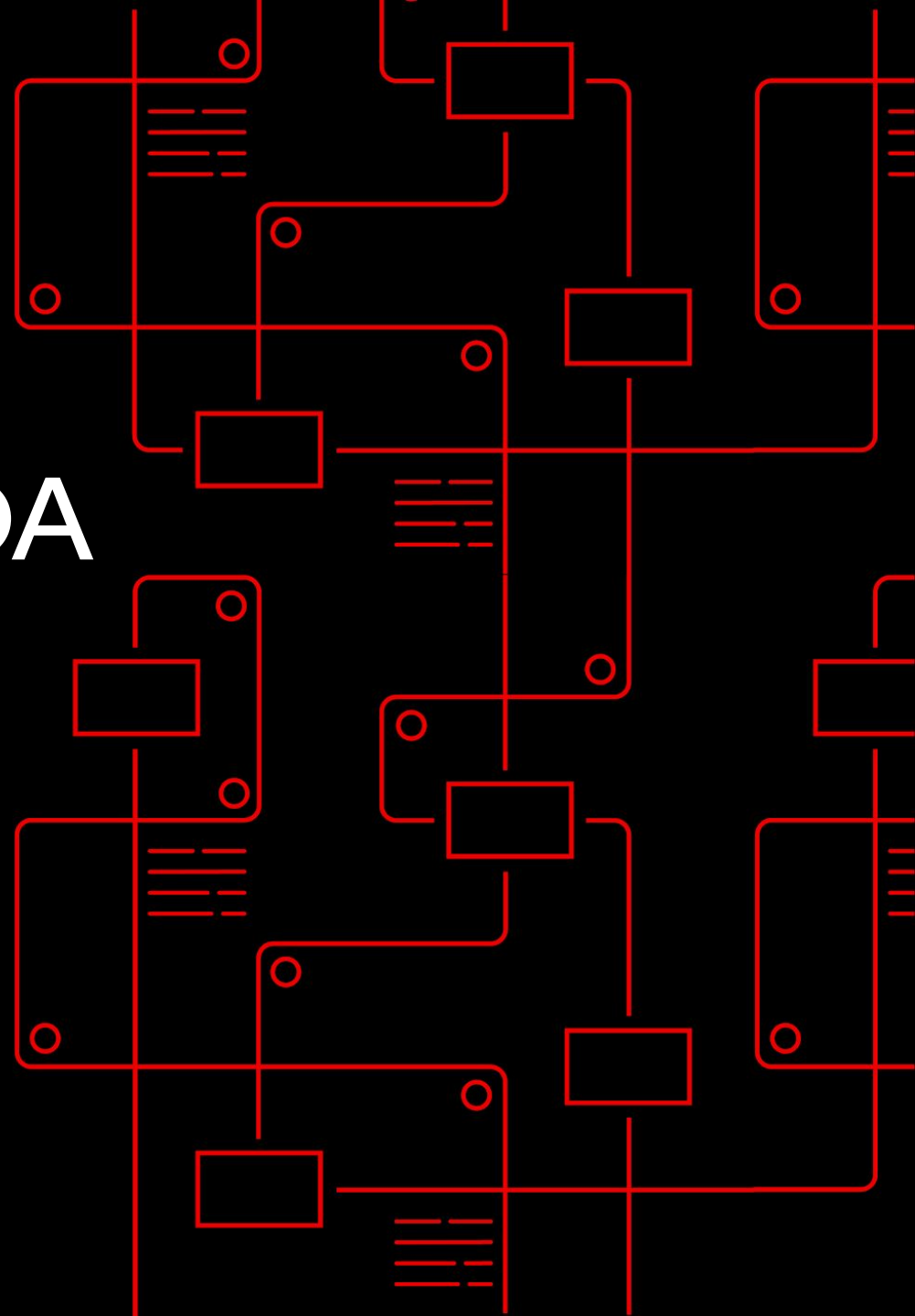
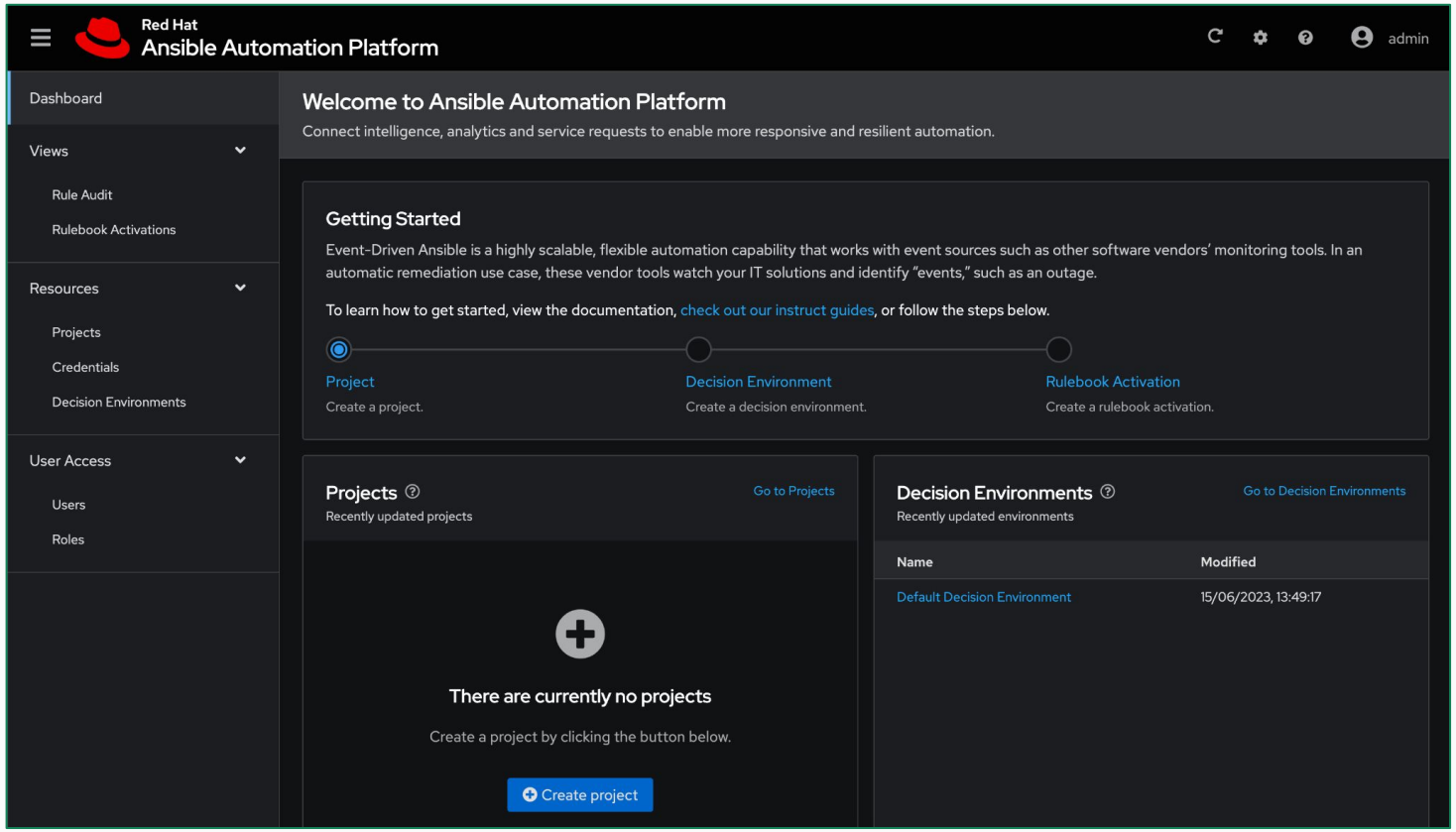
Getting Started with EDA Controller

- Projects
- Decision Environments
- Rulebook Activation



EDA Controller

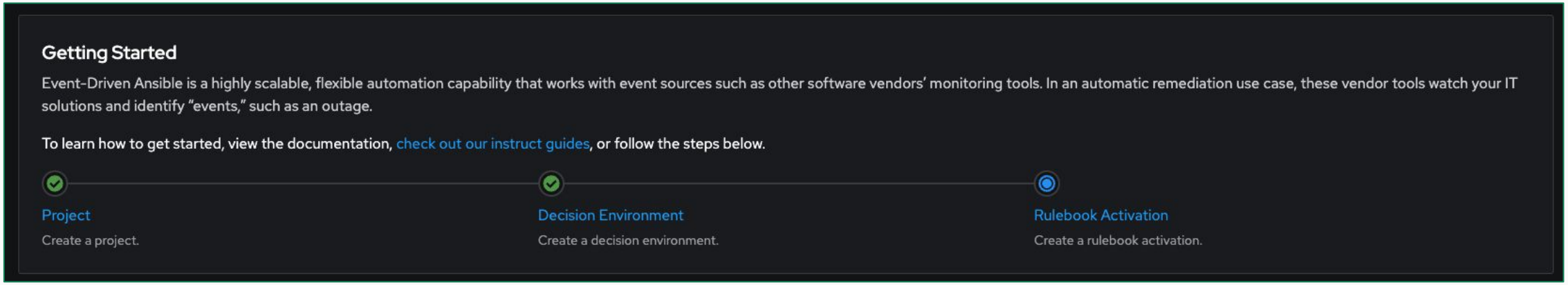
Event-Driven Ansible Management



- **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

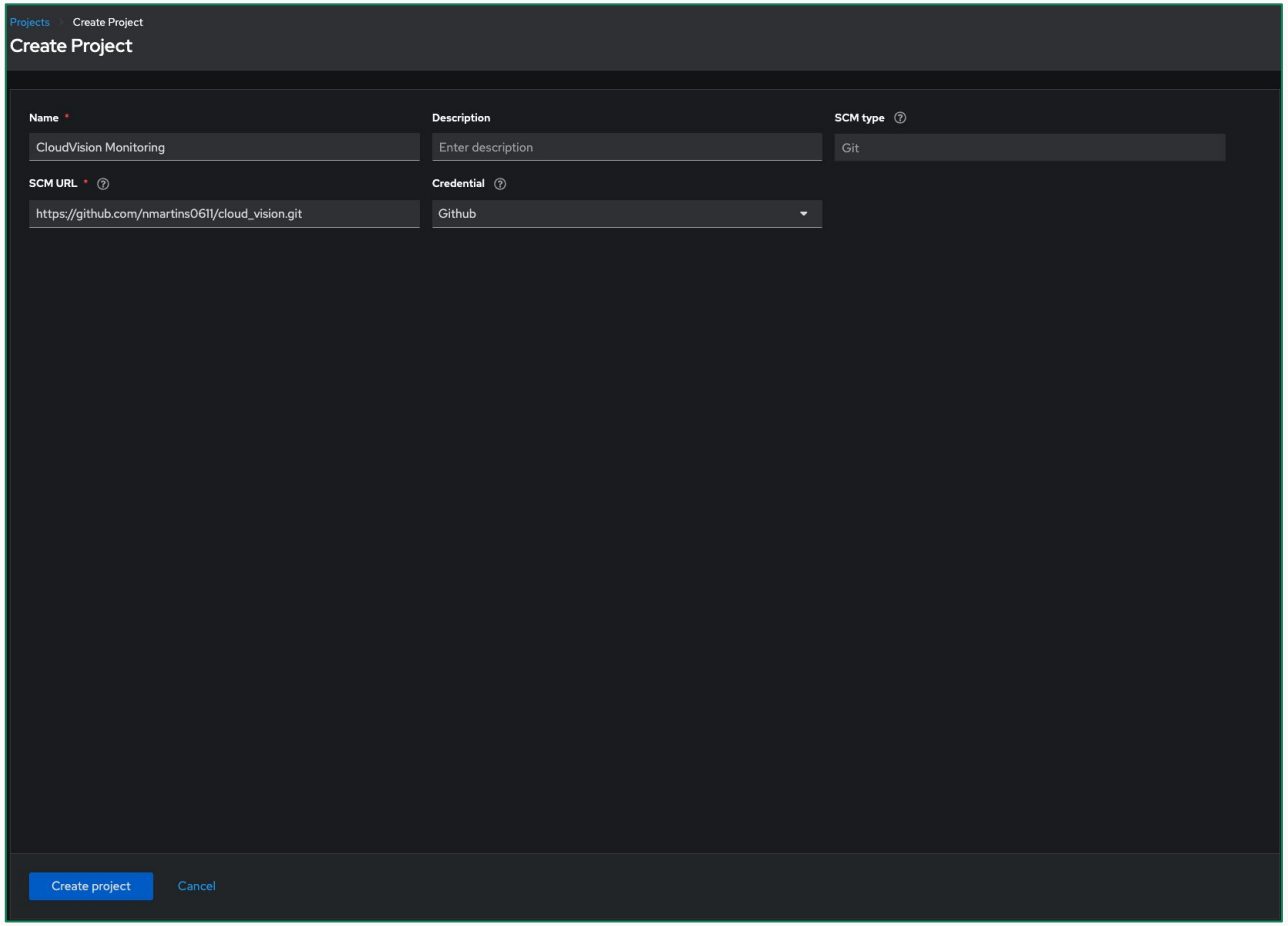
Event-Driven Ansible Management



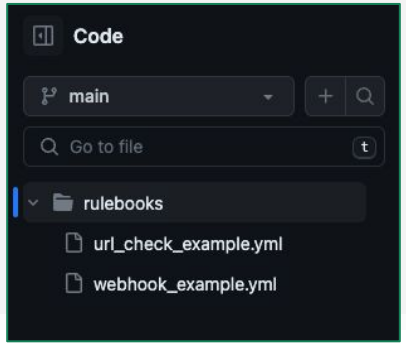
- **Project**
  - Grab your Rulebooks and synchronize from source control
- **Decision Environment**
  - Select the Container environment that contains ansible-rulebook and any additional Ansible content that is needed.
- **Rulebook Activation**
  - Select your Ansible Rulebook form the project and configure how it runs.

Projects

Single source of truth for your Rulebooks

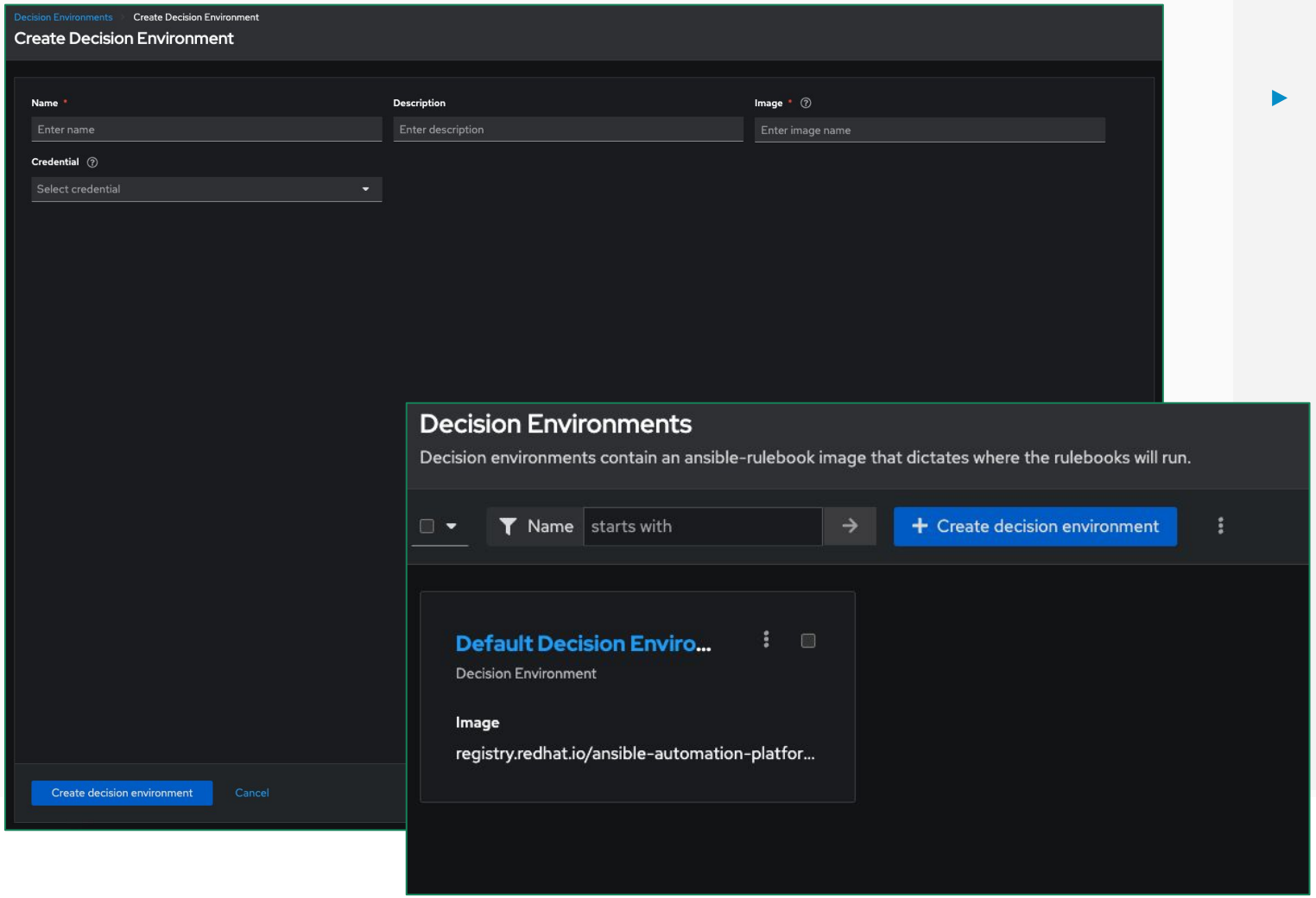


- **Projects**
  - Similar to Automation controller, we create projects on EDA Controller and synchronize from a source of truth.
  - Projects will contain all the resources you need such as Ansible Rulebooks.
  - **Note:**
    - Rulebooks need to be kept in a rulebook subfolder in your project repository.



Decision Environments

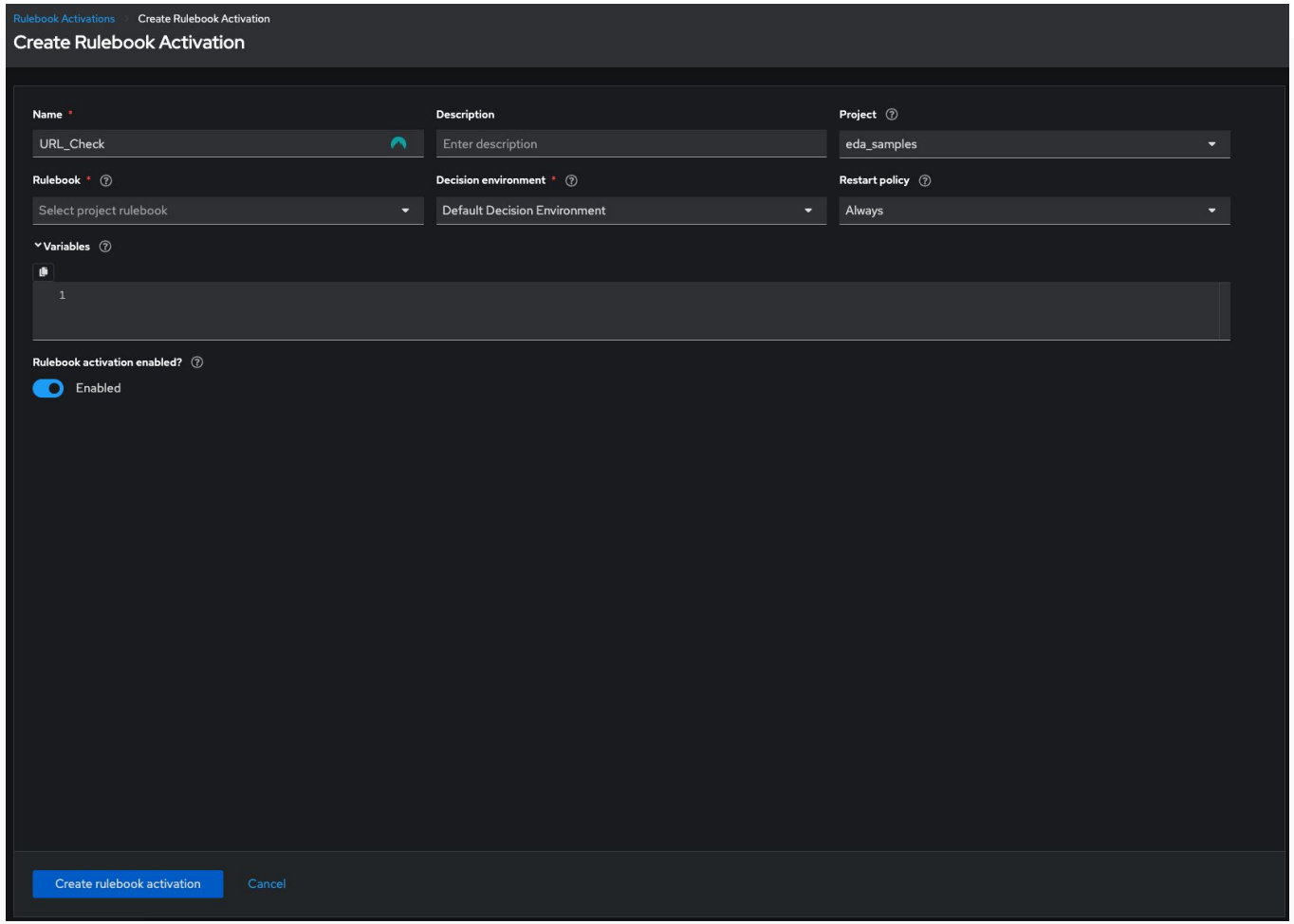
Container based execution of Event-Driven Ansible



- **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

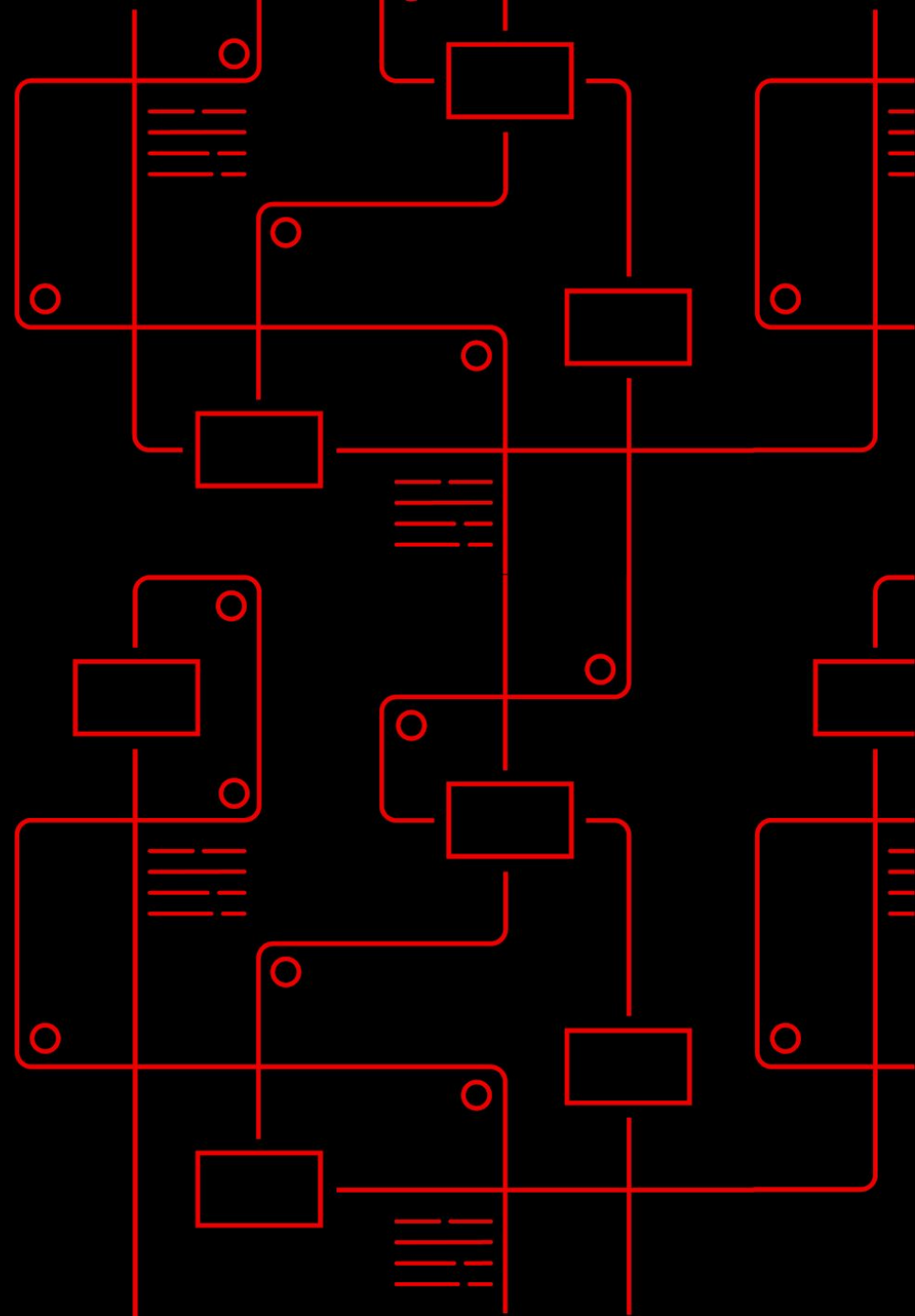
Event-Driven Ansible Management



- **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

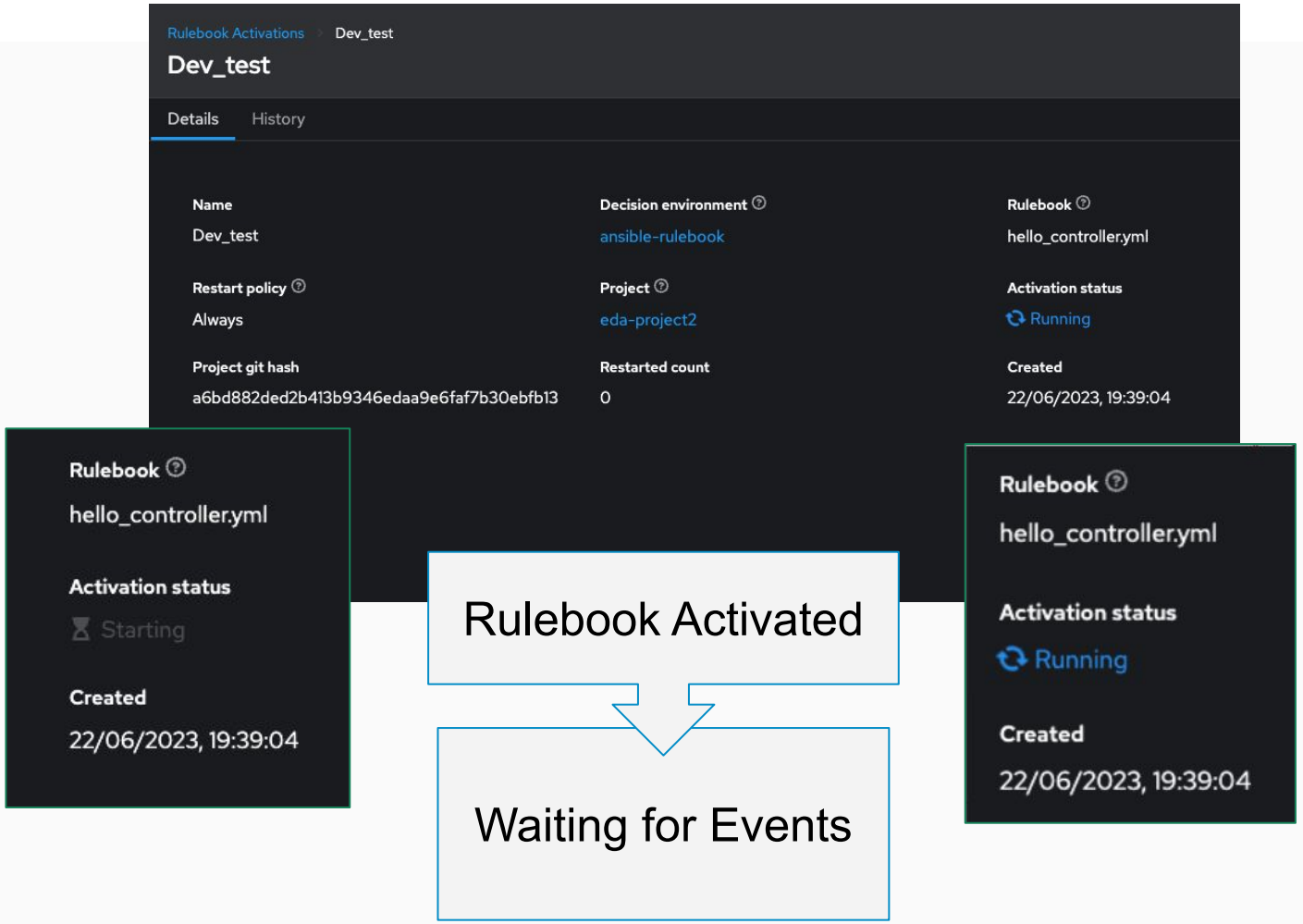
Rulebook and Event Auditing

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



Rulebook Activation

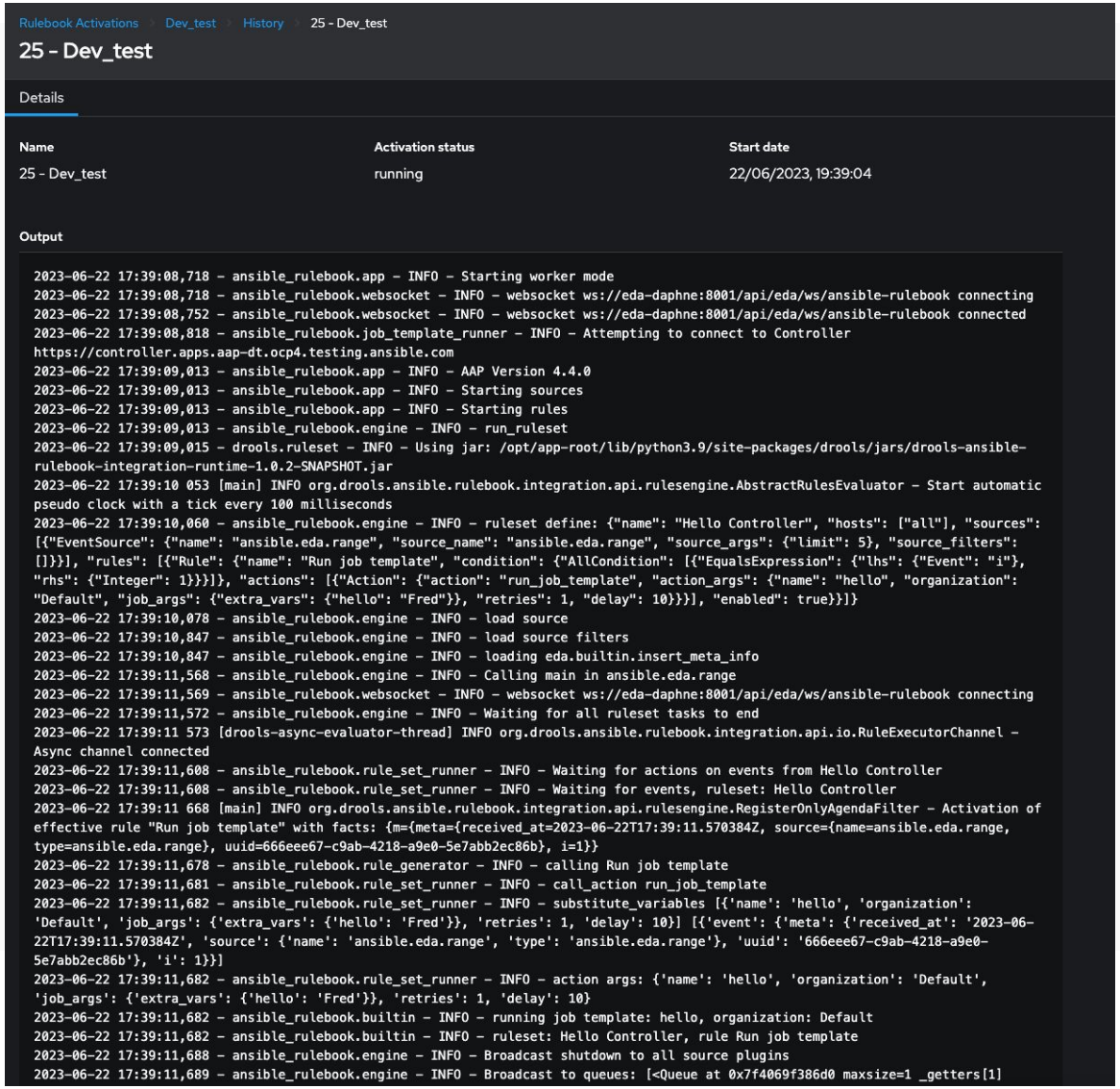
Activated Automation



- **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

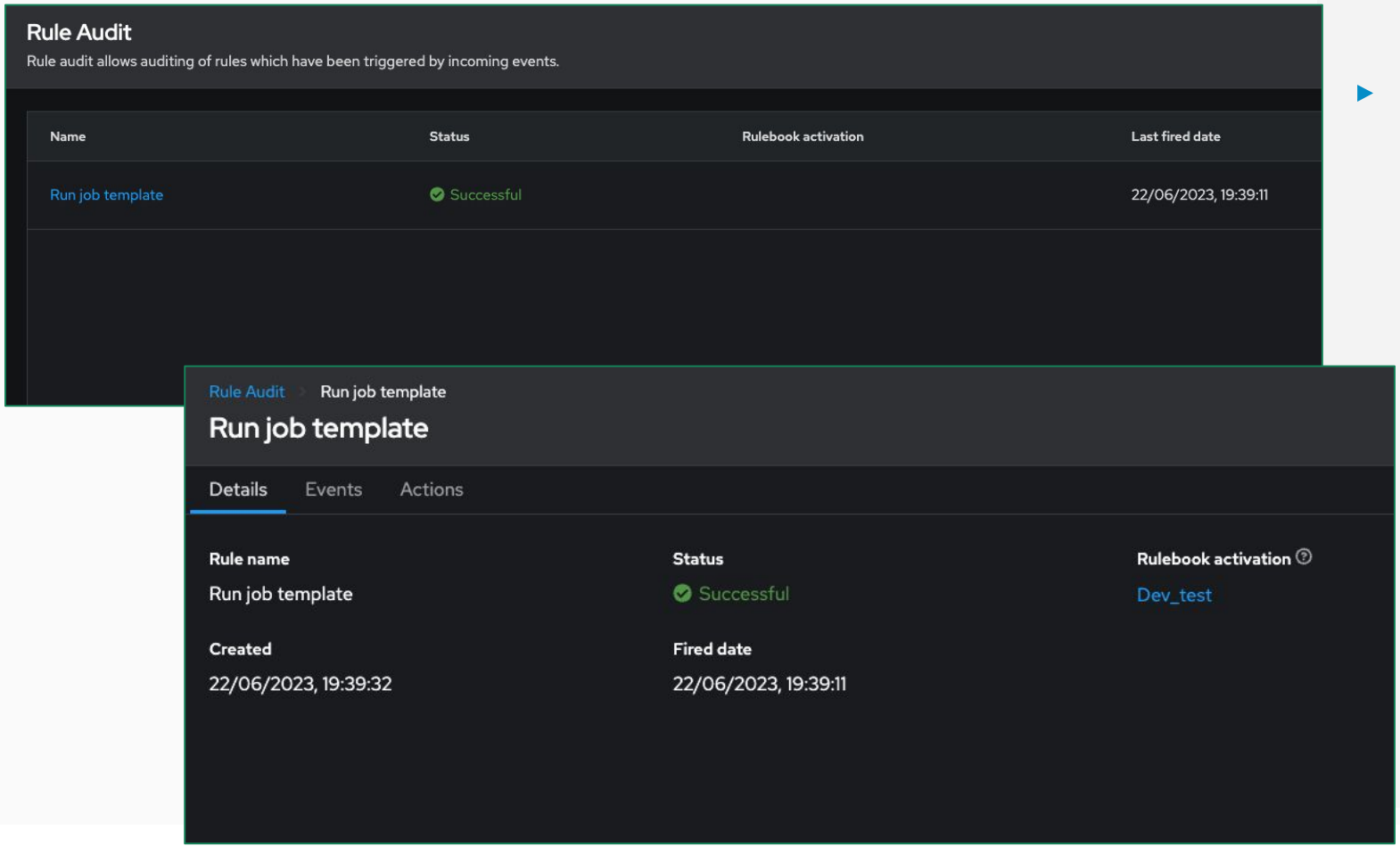
Viewing ansible-rulebook output and history



- **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

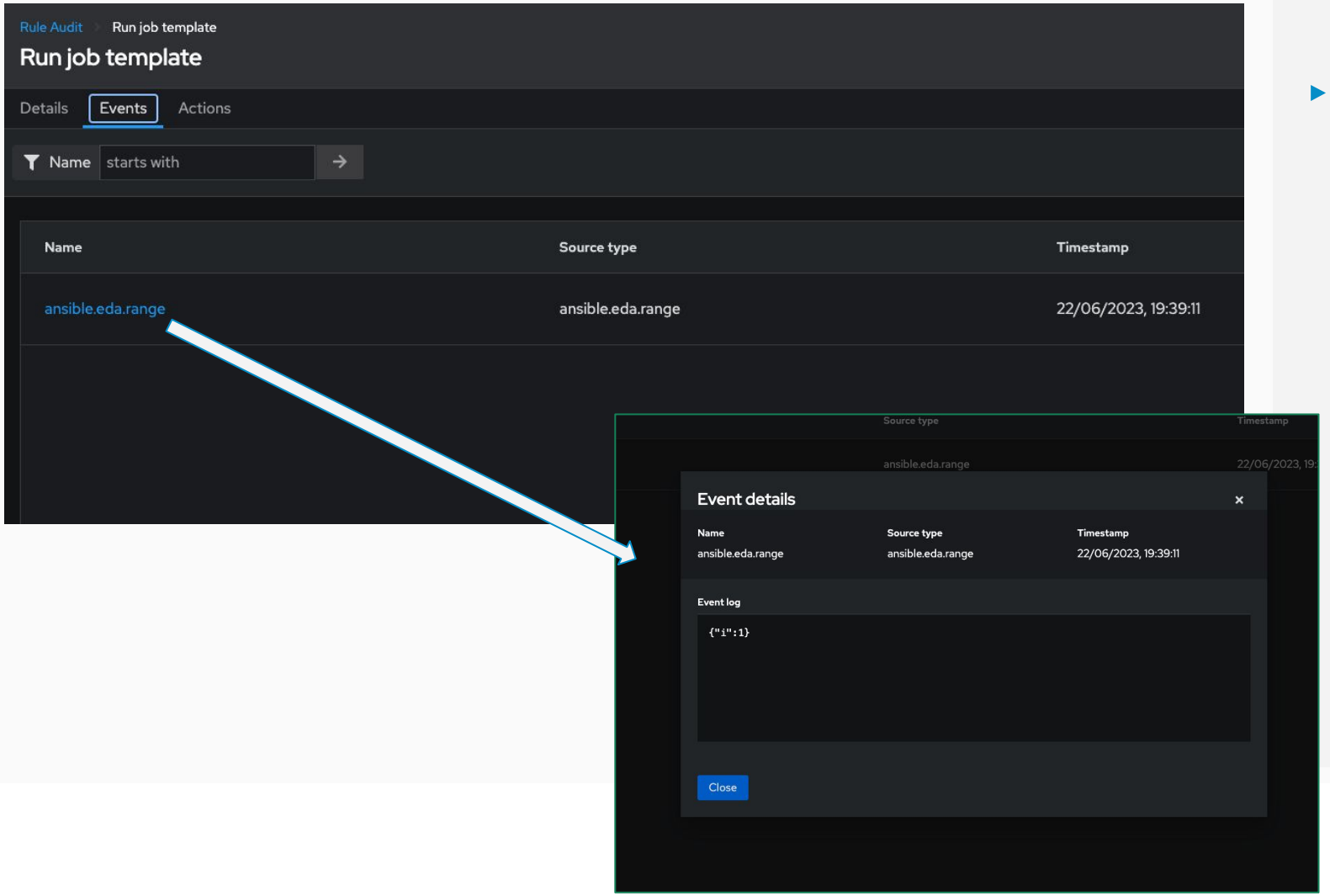
An Overview of events and actions



- **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

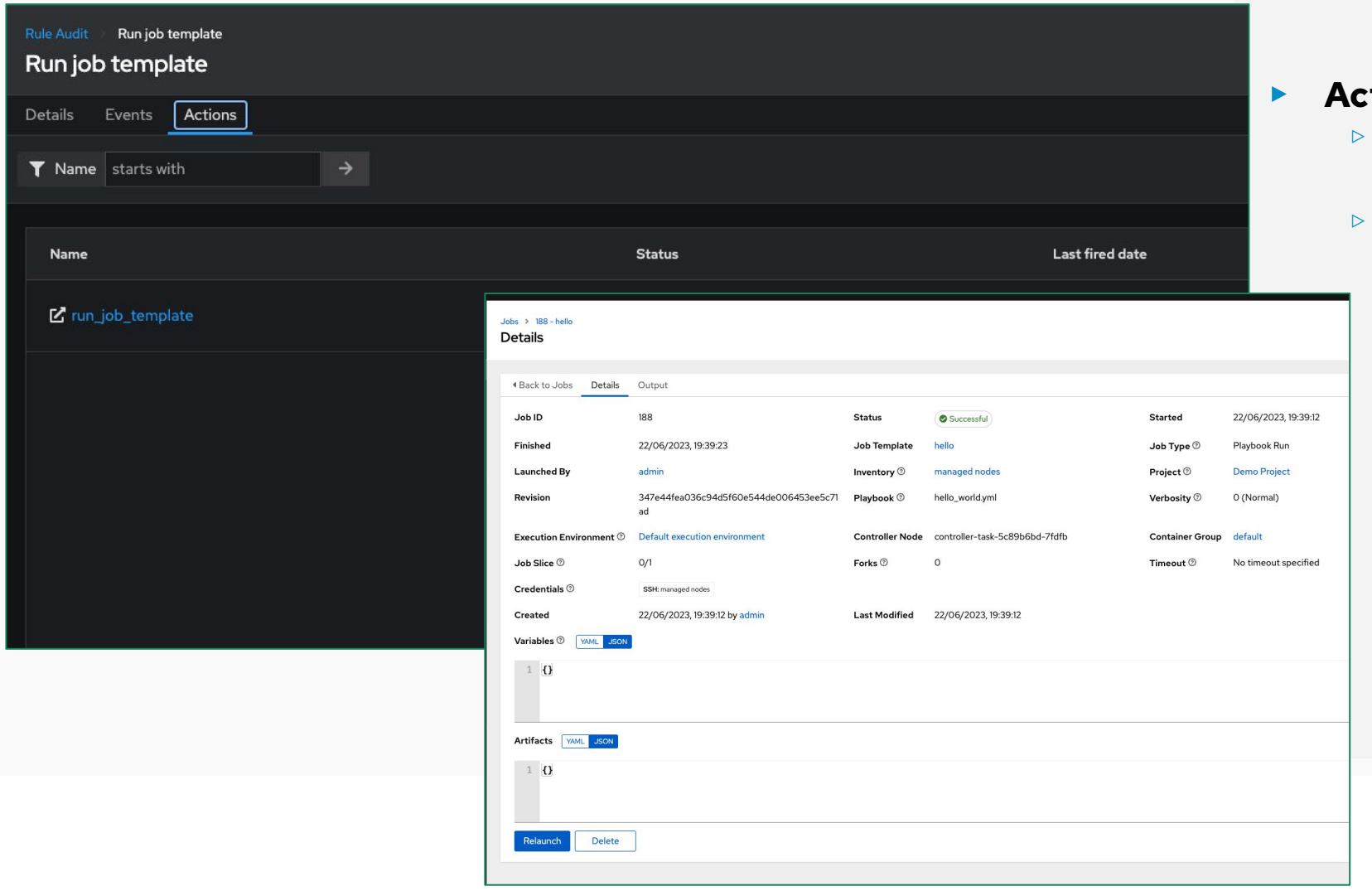
Event information and auditing



- **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



- **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)

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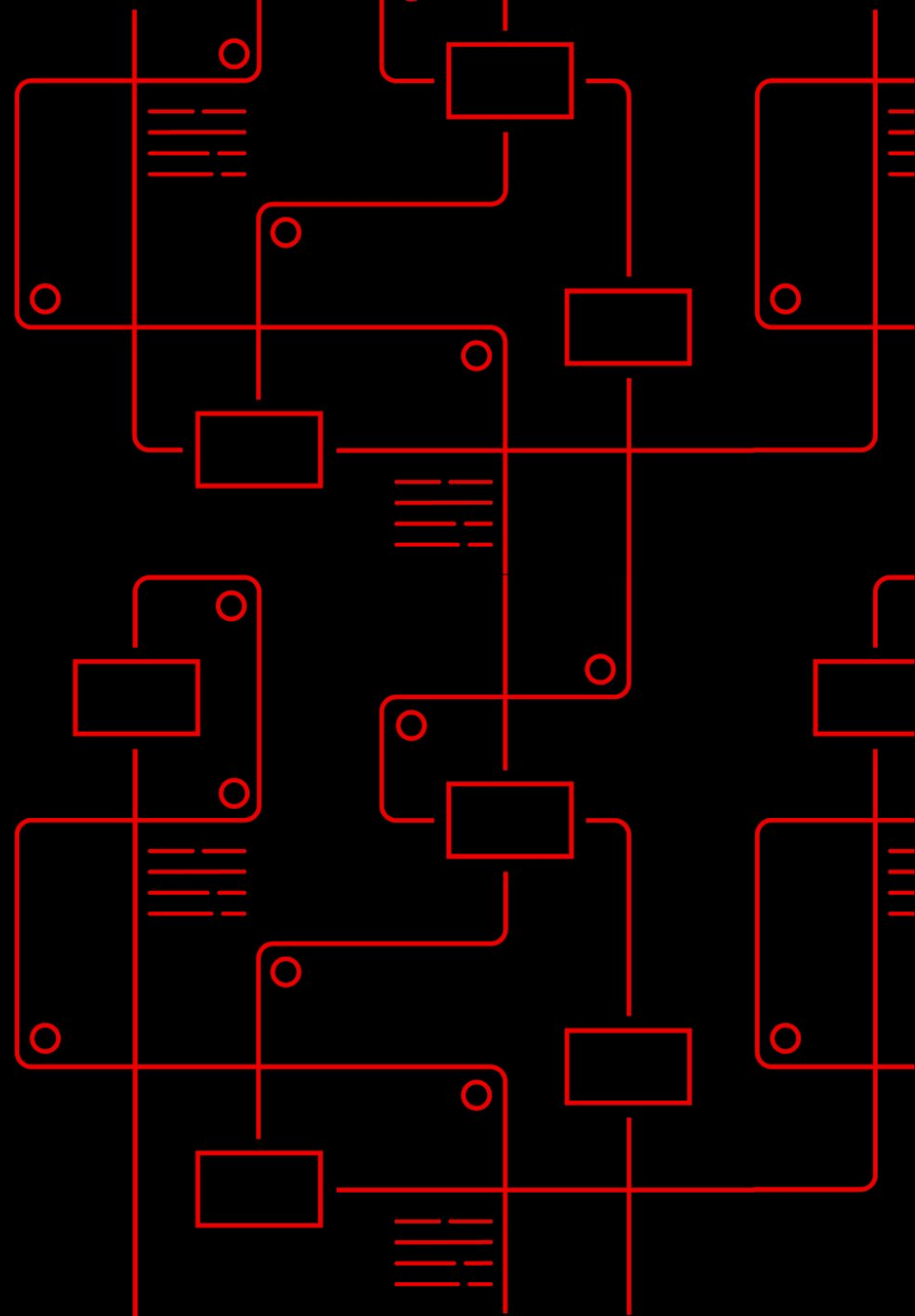
Next steps



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

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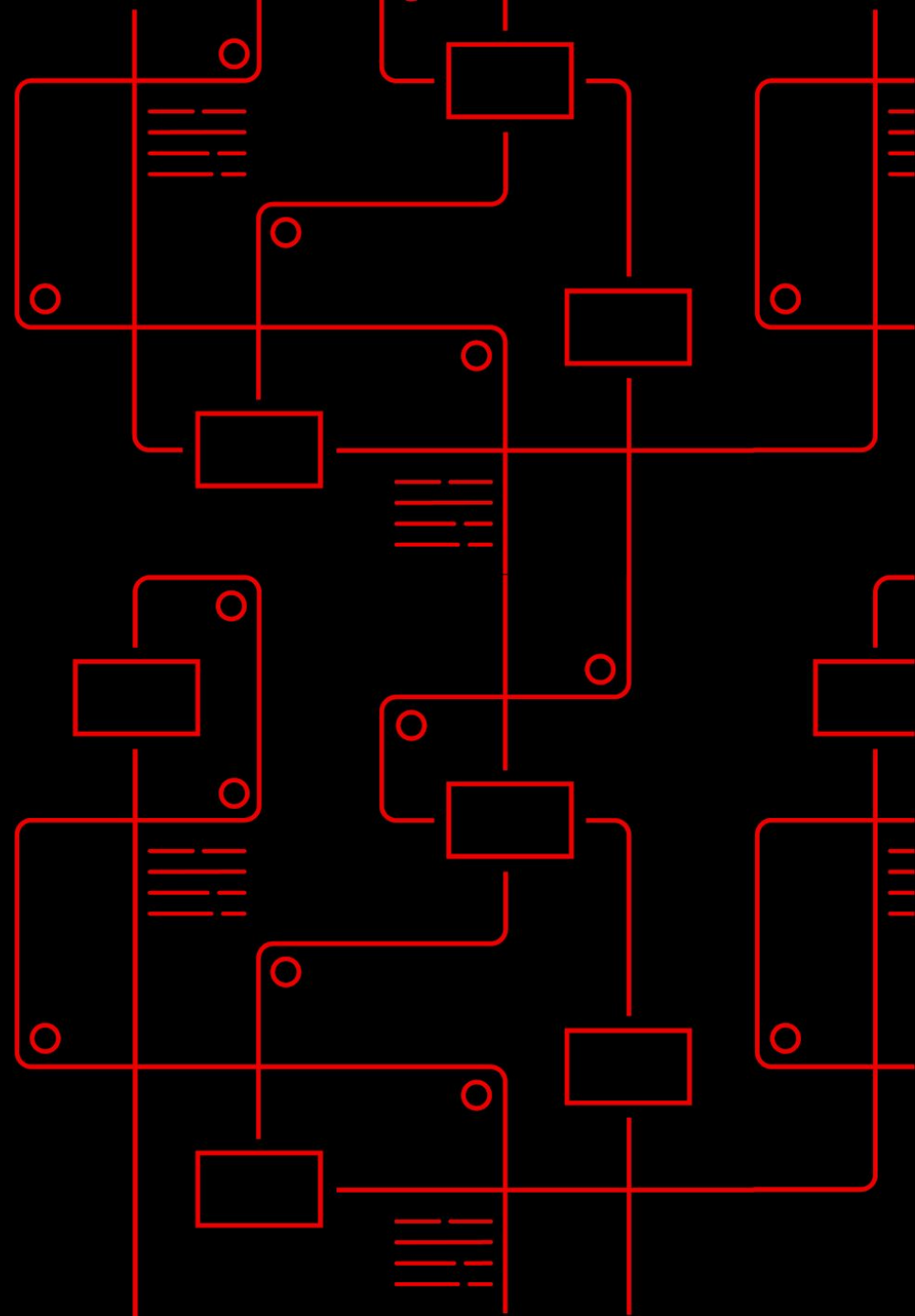
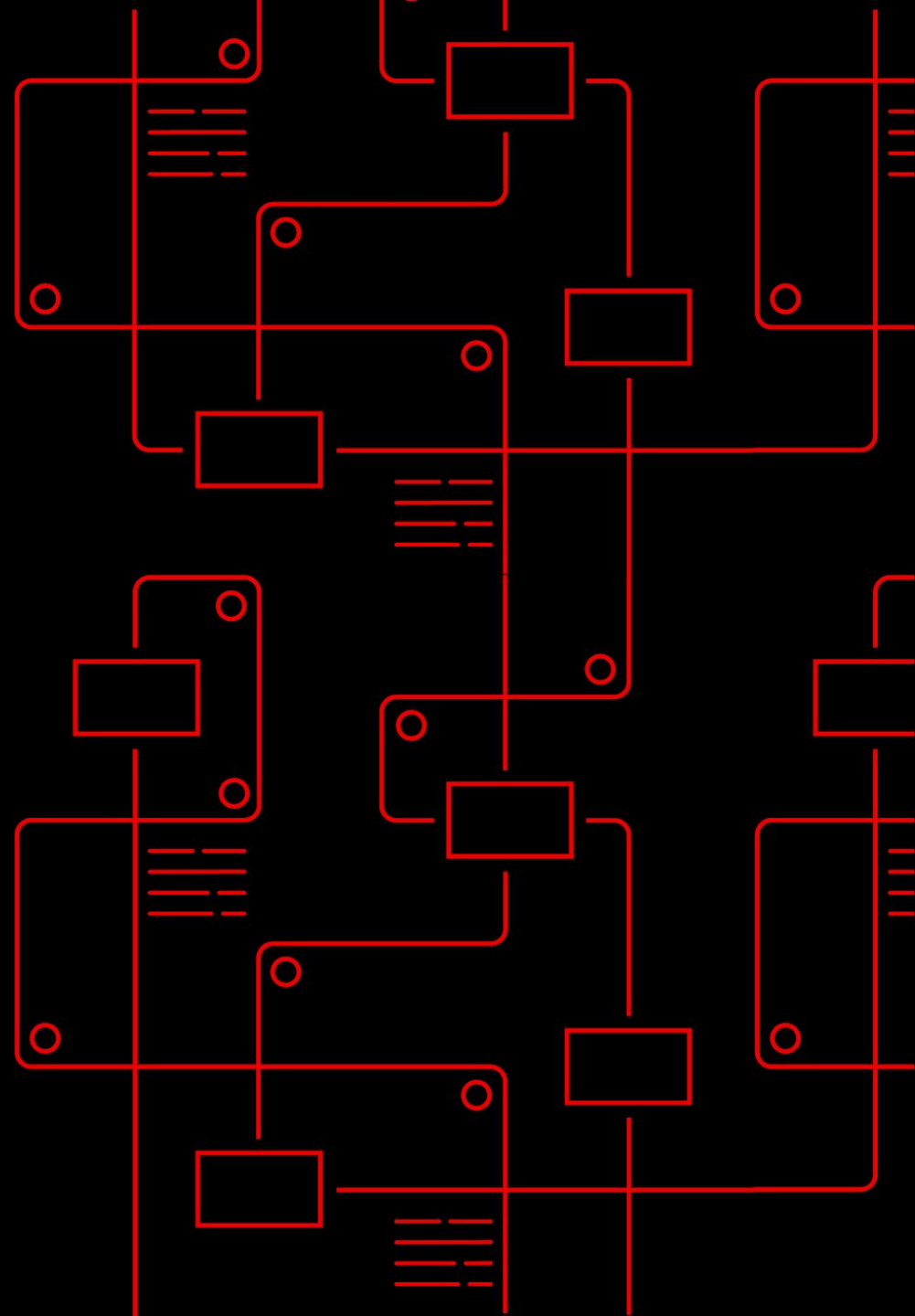
Supplemental lab: Event-Driven Ansible and gitops



Event driven gitops



So what is **GitOps?**

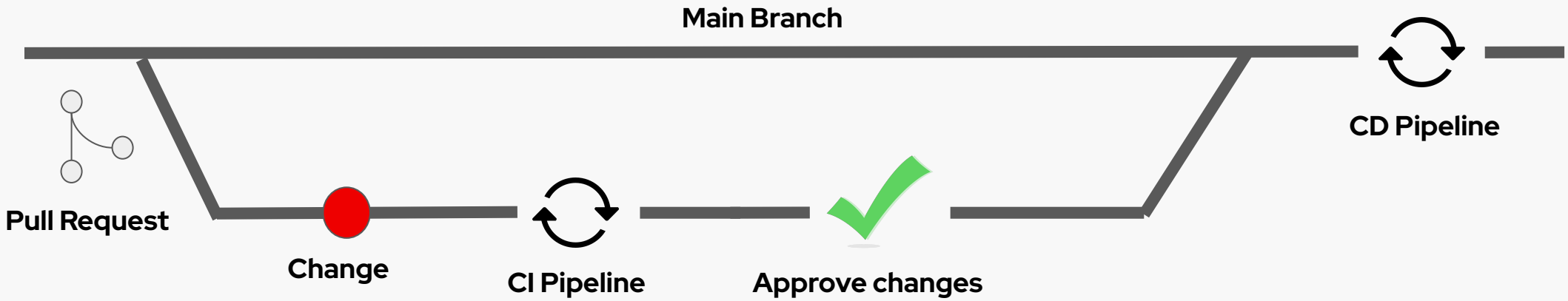
GitOps it is an operational framework that takes DevOps best practices for application development and applies them to infrastructure automation.

In other words?

Treat infrastructure as code as you would application code.

GitOps **workflow**

1. Create Pull Request
2. Run CI Pipeline
3. Approve changes
4. Run CD Pipeline



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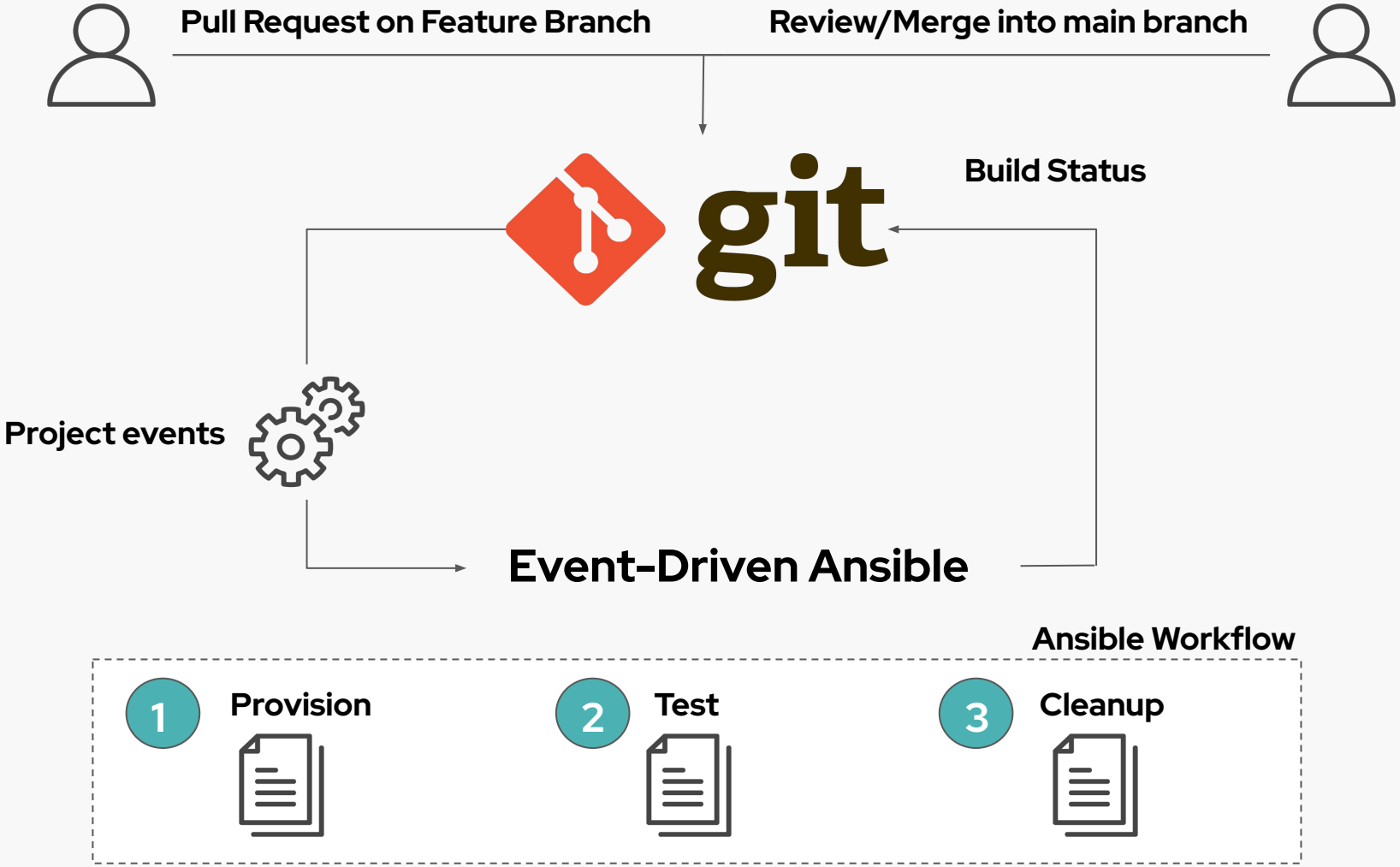
The benefits of **GitOps**

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