
# Event-Driven Ansible

Smart IT delivered at the
speed of automation

#OpsAsCode

# 20%

## of IT processes will be

## “all automated”

## in one year

Source: The Impact of Event-Driven Automation on IT Operations, 451 Research, September, 2022.

Red Hat

# What is event-driven automation?

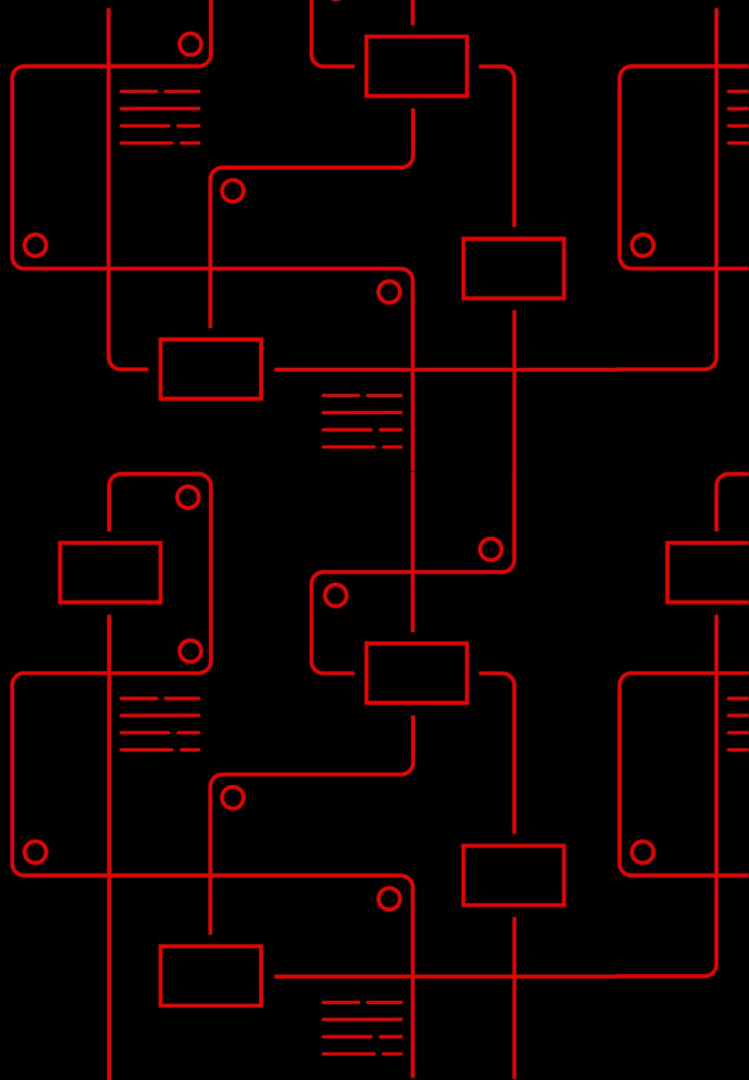
The ability to

connect intelligence, analytics and service requests

for  an IT solution

to automated actions so that activities

can take place in a single motion.



# Achieve goals and focus teams  with advanced automation techniques

### Speed

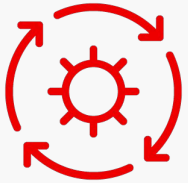
Reduce the number of manual steps, enable orchestration of multiple tools and accelerate cross-tool  interaction

**Become more agile**

### Consistency

Minimize risks with automated workflows, avoid human errors and use auditable and verifiable processes

**Ensure resilience**



### Innovation

Innovate to more advanced levels of automation and free productivity for innovation and higher level projects

**Transform IT**

# Advanced Automation

## Build on existing automation

### Tactical automation

- Remove the rote: automate low-value, high volume tasks
- Learn and assess benefits
- E.g., Security patching

### Process automation

- Unify siloed processes for faster innovation / resilience
- Automation-first culture
- E.g. automated DevOps

### Advanced automation

- Trusted data - AI/ML - action with event driven automation
- Edge use case management
- Validated operations (e.g enforced network environment)
- Hybrid cloud consistency

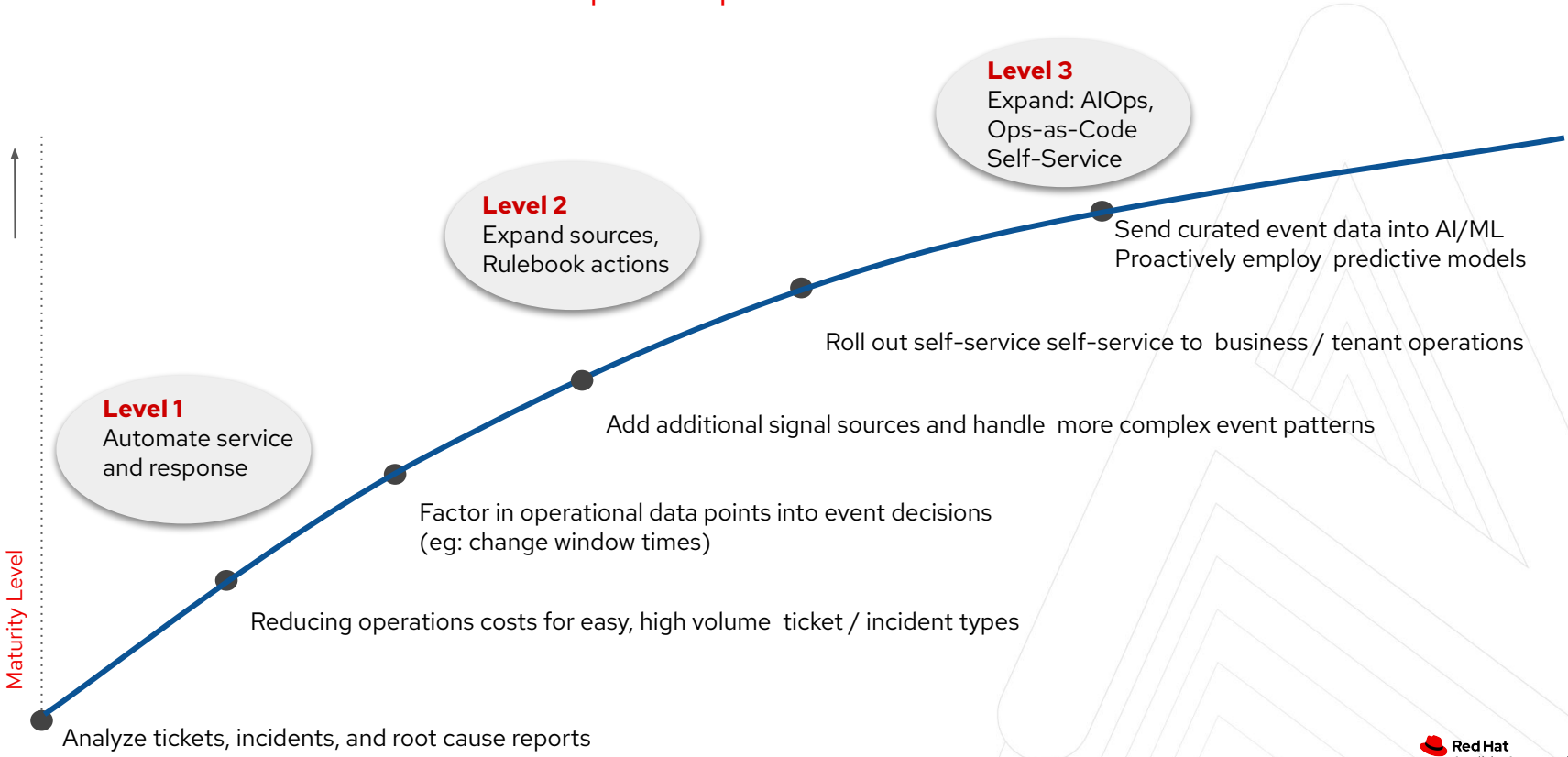
**Journey to hybrid cloud and modernization** → **Multi-cloud, Edge, Event-driven, AIOps**

**Automation-first culture transformation**

**Simplicity and ROI**

# Suggested path to event-driven automation maturity

Simple to sophisticated use cases




Red Hat
Ansible Automation
Platform

# Typical event driven automation process

Red Hat Point of View

## OBSERVE

- Watch for conditions that matter to you
- Work with third party sources of events

## EVALUATE

- Known problem identified
- Automated resolution triggered

## ACT

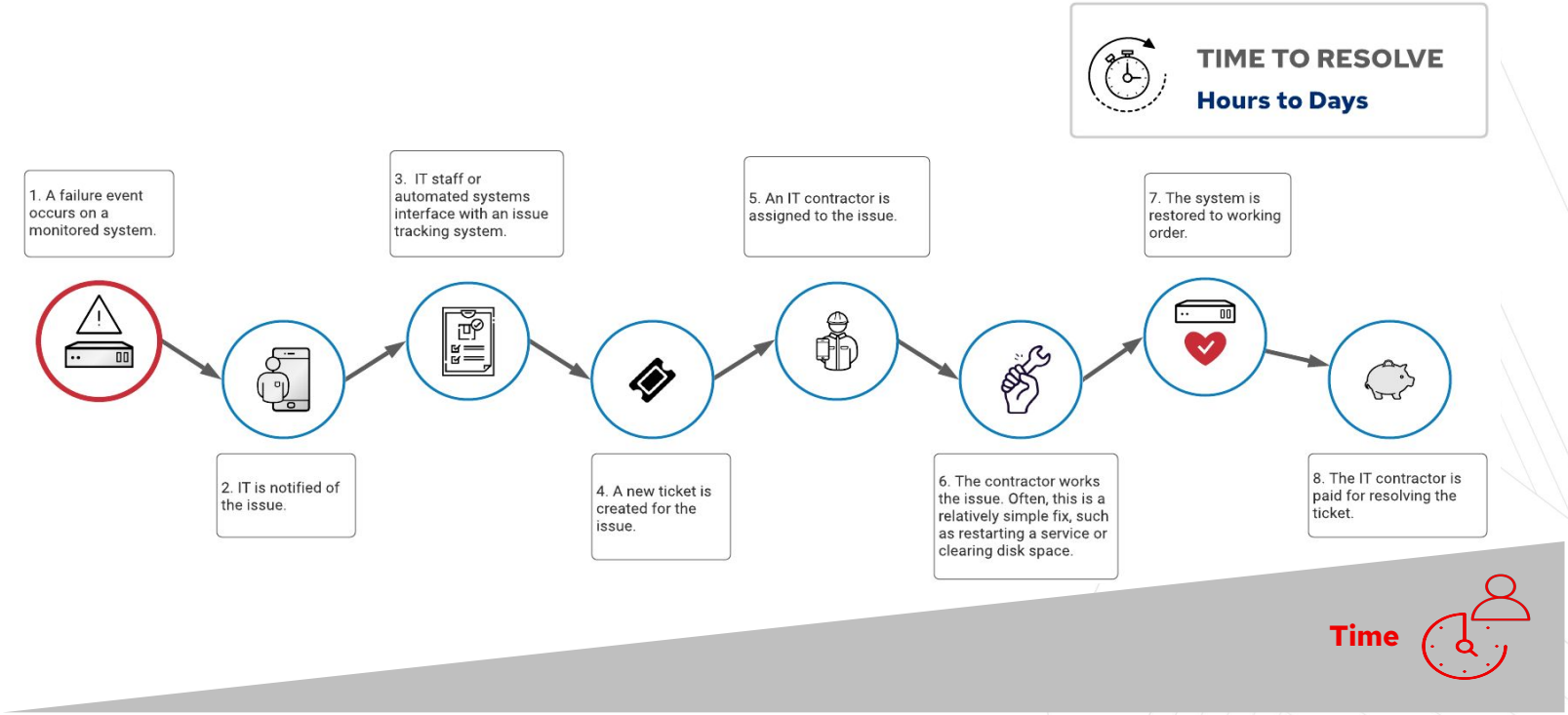
- Outage incident created
- Support team notified
- Remediation executed

## CO-OPERATE

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

# Example manual workflow: remediating issue on managed system

Time is spent on toil and churn



# Example event-driven workflow: Speed and shorter MTTR

## Event driven automated remediation: same issue, fully automated workflow

### OBSERVE

Third party tools:

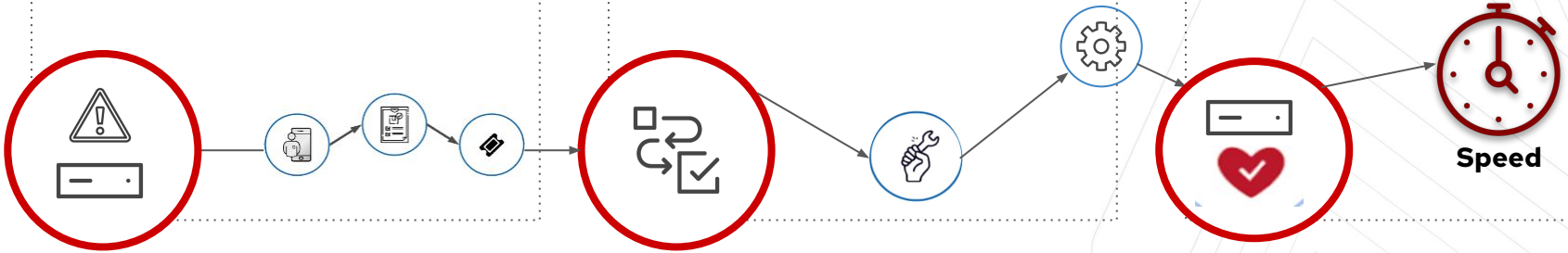
- Watch data / streaming data
- Identify event
- With or without notification and ticketing integration

### EVALUATE

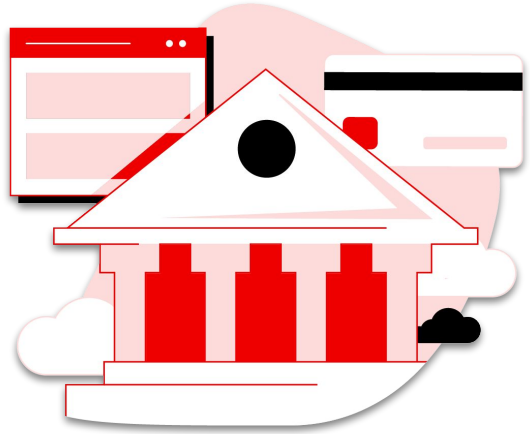
- Routed for remediation
- Known problem identified
- Required action identified

### ACT

- Automated resolution triggered
- Remediation action completed
- Shorter MMTR



# Event Driven Automation in Financial Services



"We've seen other banks use Ansible to automate tasks like patching or VM provisioning and greatly reduce the amount of time and human effort required.

Not only have other banks stimulated innovation, they've done it **while saving hundreds of millions of dollars**."

- **90% of systems patched without human intervention, reducing risk of human error**
- Individuals went from managing 100's of servers to 1000's each
- Better infrastructure stability due to cross functional team collaboration
- Expected savings hundreds of millions due to less time and effort
- Shared syntax, collaboration, inspiration = transformed culture

# Event-Driven Ansible developer preview

# Event-Driven Ansible

**Automate** decision making

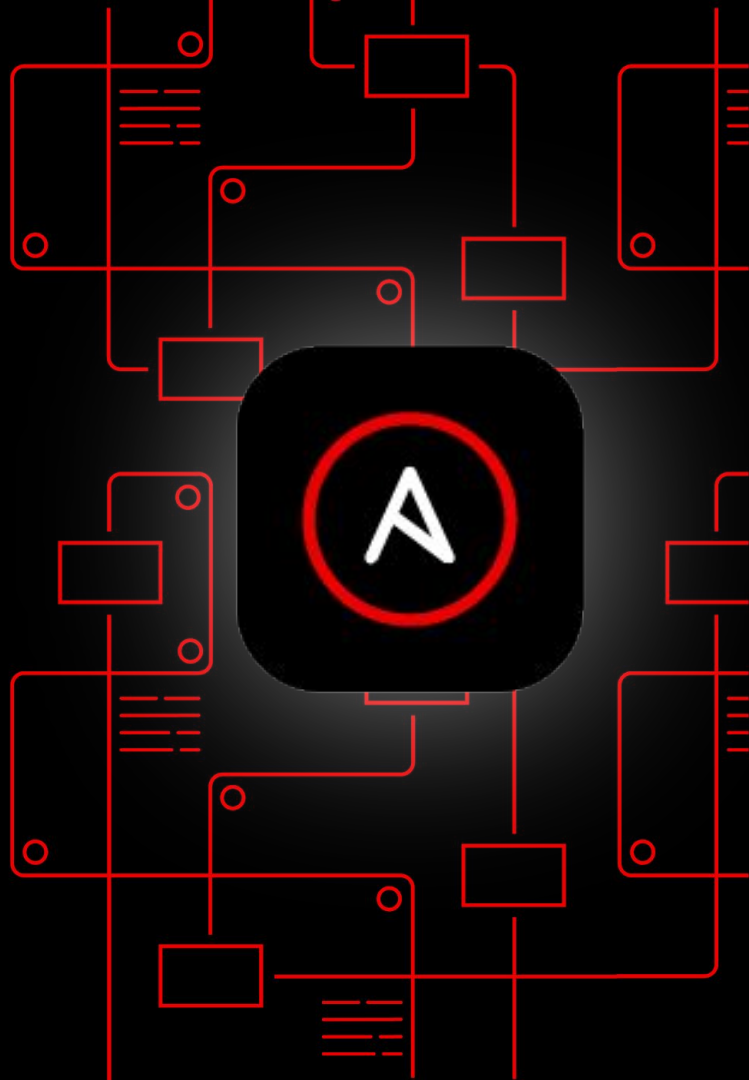
**Leverage** numerous sources of events

**Implement** event-driven automation within and across multiple IT use cases

**Achieve** new milestones in efficiency, service delivery excellence and cost savings

# Event-Driven Ansible developer preview

**Highly scalable, flexible** Event Driven Automation built within your existing platform to deliver automation that can process events for **discrete, actionable intelligence**, **execute automated actions** to respond to events and provide **observation and auditability** across your automation landscape.



# Key building blocks in Event Driven Ansible

## Flexible and interoperable from source to rule to action to automate IT

**Certified Sources**

- Define where events come from, consume events and pass to the rules engine.
- Source support includes Prometheus, Sensu, Red Hat, as well as webhooks and Kafka.
- “Custom source” plugin support.

**Rules**

- Conditional structure for describing when actions should occur, based on information matching source file data.
- Ansible Rulebooks

**Actions**

- Familiar Ansible actions such as playbooks, and “ad-hoc” tasks
- “Create Event” function allows system to still act on data not contained in a source file
- Automate any IT use case

# Why Event-Driven Ansible?

## Flexibility and Extensibility

### Flexible from source to rule to action

- Real-time, multiple sources to feed actions
- Flexible integrations: event buses, webhooks or vendor-specific
- “Bring your own source” plugin creation

### Robust automation handler

- Critical solution for acting on events, with decisioning
- Flexible ways to take action: Ansible Playbooks or direct modules
- Simple to complex rules development

### IT environment-friendly

- Automate any IT use case quickly and simply
- Partner Content Collections model by Red Hat and partners

### Single automation platform for all IT needs

AT GA

- Choice of automation modes, manual or event-driven
- Familiar to existing Ansible users, with YAML-like Ansible Rulebook creation

# Get started with Event-Driven Ansible

Quick wins: solve these use cases fast, simply and cost-effectively

## SERVICE TICKET AUGMENTATION

- Automate fact gathering
- Network administration, e.g. Update infrastructure awareness on network events
- Edge device management, e.g. Compliance & drift are managed post event

## REMEDIATION

- Address drift issues
- Slow performance issues, e.g. Automate common port troubleshooting and shut/no shut the port
- Outage issue

## USER MANAGEMENT

- User authentication + access, e.g., providing and troubleshooting access
- Login issues, e.g., reset password
- Group/role access, e.g., configuring access to network resources

# Event-Driven Ansible is Use Case-Friendly

## Apply to any of your IT domains for full automation of key tasks

### Networking

- Basic network troubleshooting tasks
- Remediate configuration issues based on port events
- Infrastructure awareness based on routing events

### Edge

- Remediate application deployment issues
- Trigger edge app redeployments
- Automate application scaling

### Cloud

- Trigger cloud estate check from instance creation events
- Automate remediation tasks from service bus events

### Infrastructure

- Escalate Infrastructure issues for improved observability
- Ensure compliance post change events

### Security

- Automate log enrichment from a security event.
- Automate security responses from incidents.
- Escalate events for human intervention

### Applications

- Allow applications to trigger remediation of issues from patterns
- Enrich healing capabilities of applications and their dependencies.

# Event-Driven Ansible technical overview

# Ansible Rulebooks

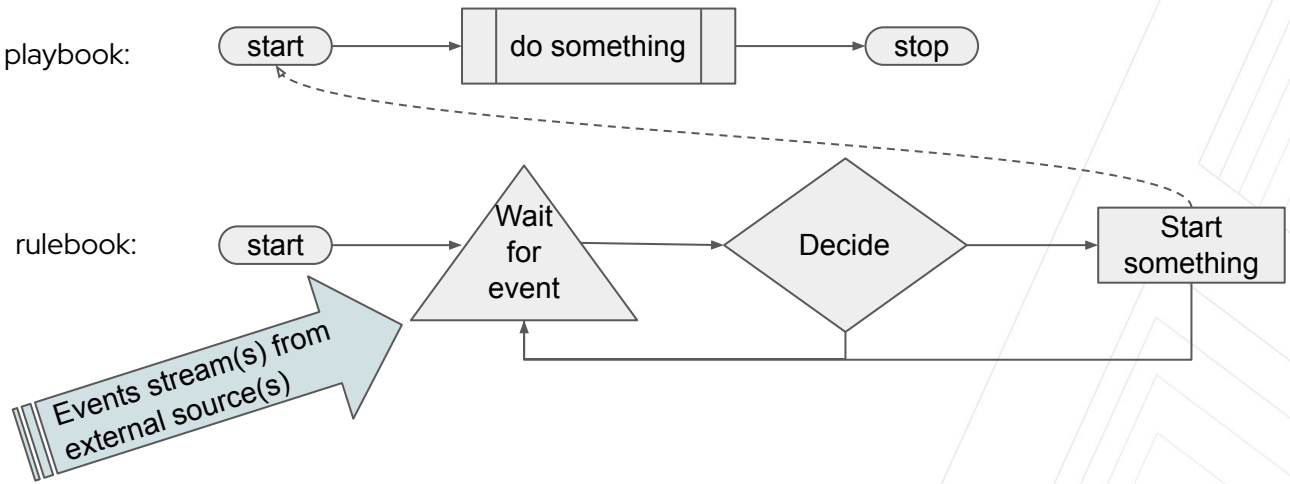
## Simple declarative decisions through rules

- **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
      benthomasson.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: benthomasson.eda.start_app
```

# EDA - Playbook vs. Rulebook

## Event Driven Ansible






Red Hat
Ansible Automation Platform

# Event-Driven Ansible Integration Technologies

## Event source plugins

### PARTNER SOURCE PLUGINS

- Prometheus/Alertmanager
- AppDynamics
- Sensu
- Dynatrace

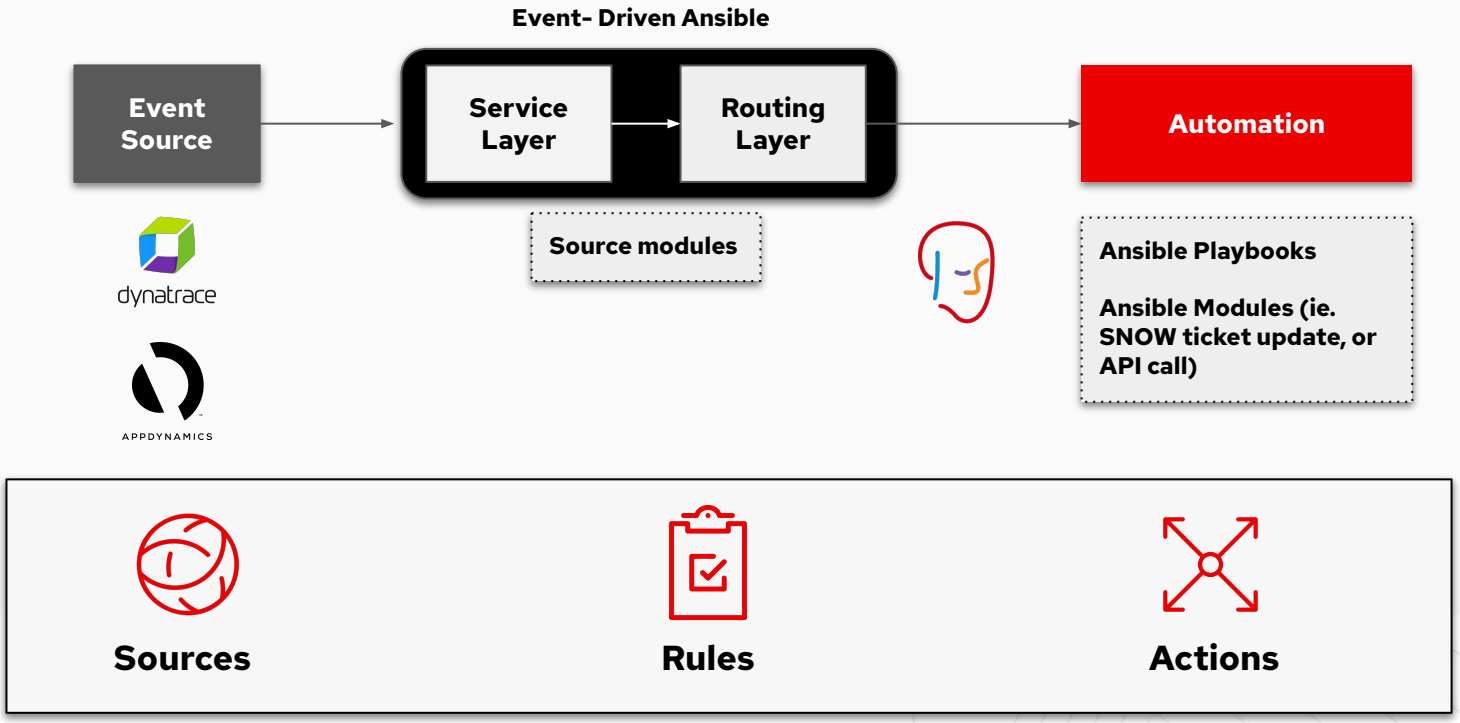
### OPEN SOURCE PLUGINS

- Kafka (event streams)
- webhooks
- watchdog (file system watcher)
- url_check (url status check)
- range (event generation plugin_
- file (loading facts from yaml)

### ROADMAP FOR INTEGRATIONS

- Azure Service Bus
- AWS EventBridge

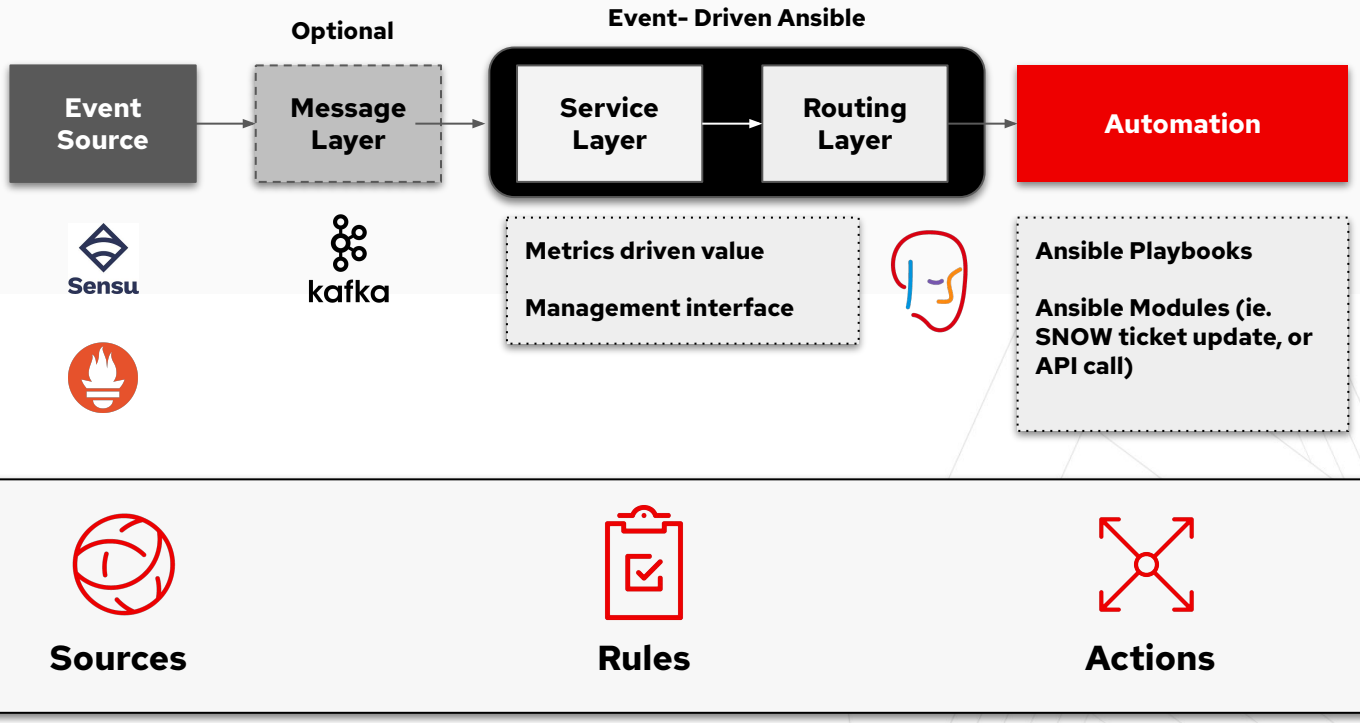
# Execution layers of Event Driven Automation without messaging layer






Red Hat
Ansible Automation
Platform

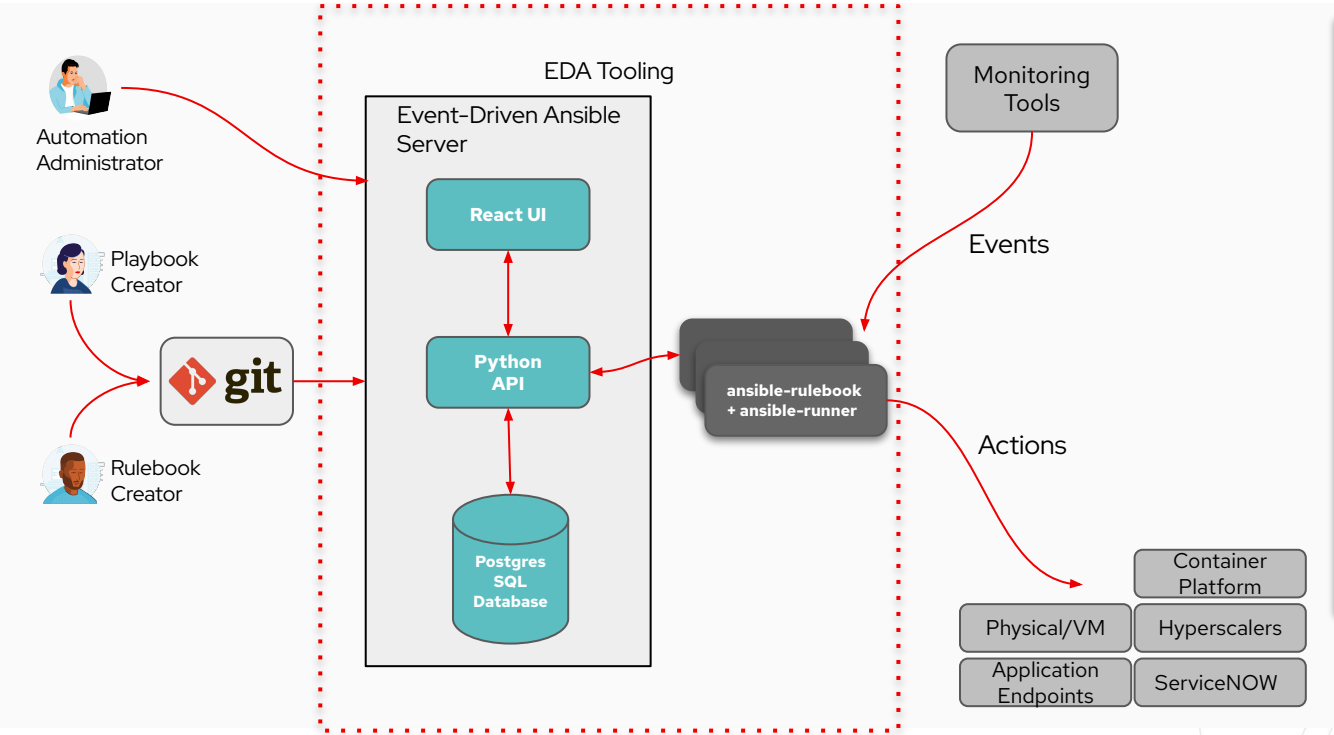
# Execution layers of Event Driven Automation






Red Hat

# Event-Driven Ansible Components




## EDA Server

- Activation manager/scheduler
- API Rulebook management
- API project management
- Database
- Ansible Runner
- Ansible Rulebook CLI
- Ansible Core
- RHEL 8 UBI
- Python

## Ansible Content Collections

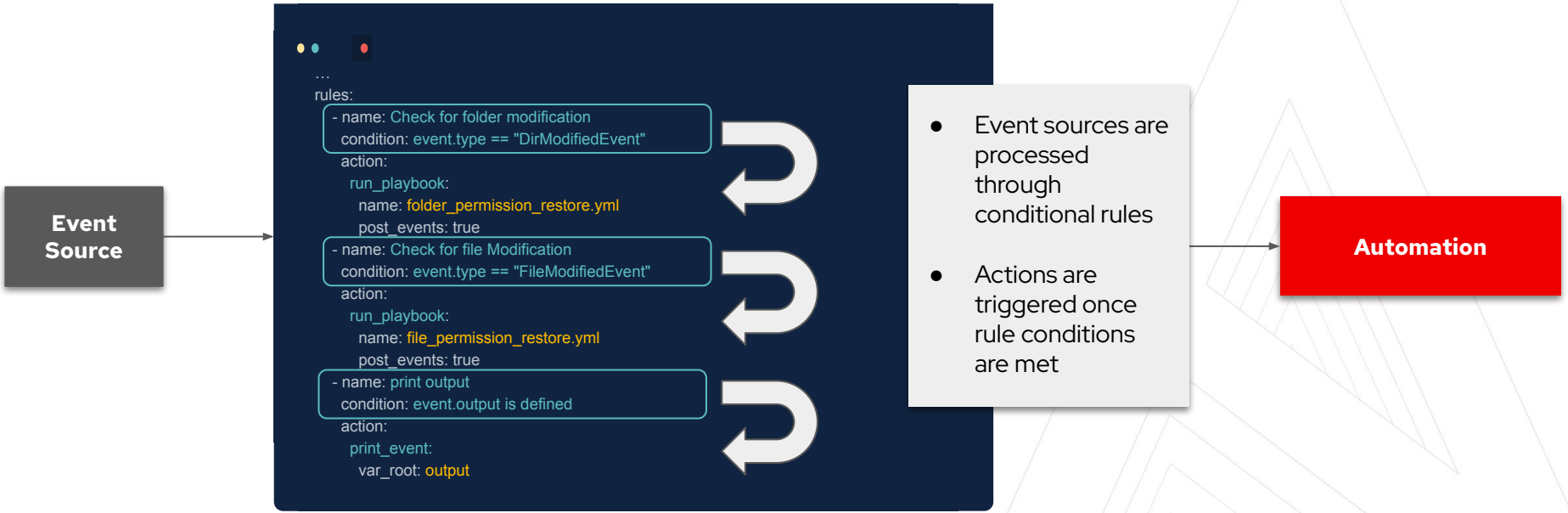
Ansible Rulebook Source Plugins:

- Kafka
- Prometheus / Alertmanager
- Sensu
- Dynatrace
- Appdynamics

Extensible Ansible Rulebook Examples

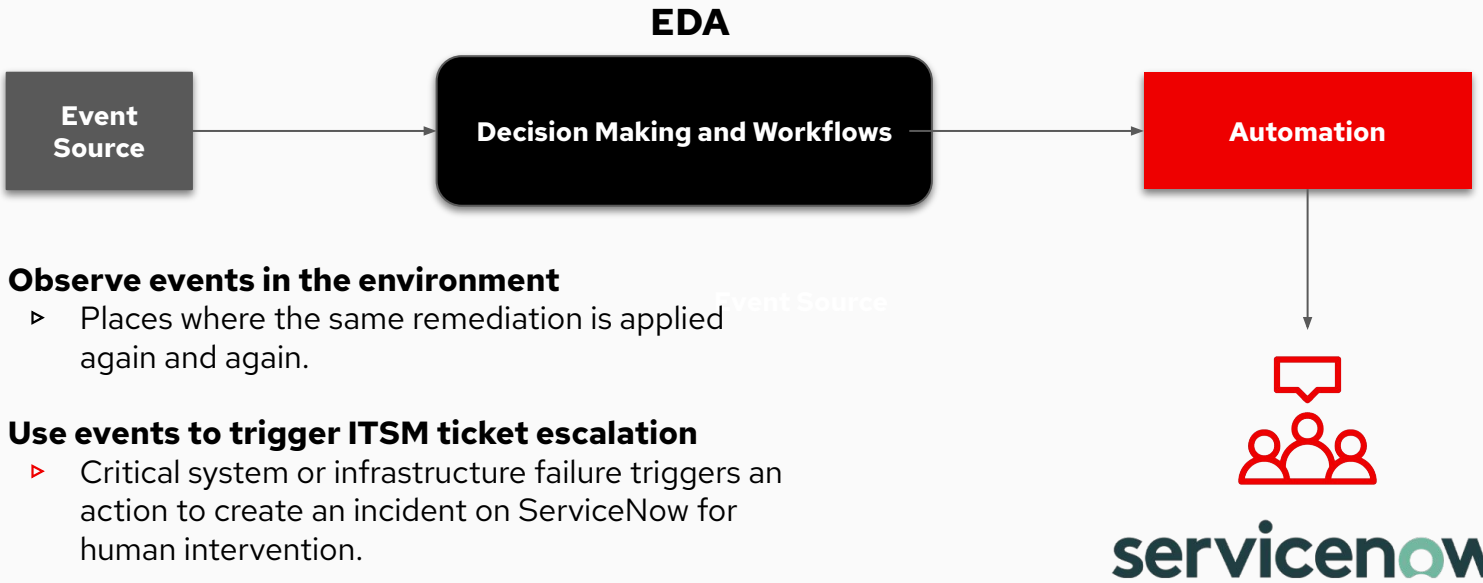
# How does Ansible handle rules processing?

## Smart automation from conditional rules



# Event-Driven Ansible - ServiceNow ITSM integration

Events to human observation




- **Observe events in the environment**
  - Places where the same remediation is applied again and again.
- **Use events to trigger ITSM ticket escalation**
  - Critical system or infrastructure failure triggers an action to create an incident on ServiceNow for human intervention.
- **Update ServiceNOW CMDB**
  - Infrastructure changes can be observed and used to trigger ServiceNow to update its inventory

# Getting started, resources & roadmap

# Steps for getting started

**Install via pip:**

**STEP 1:** Install Java 11+ and set JAVA_HOME

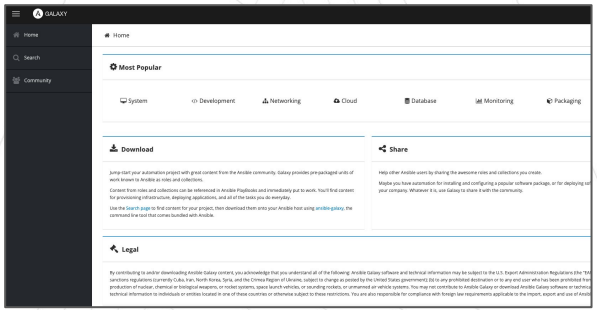
**STEP 2:** Install Ansible-Rulebook with pip:

```
pip install ansible-rulebook
```

**STEP 3**: Install the galaxy collection for EDA:

```
ansible-galaxy collection install ansible.eda
```

**Install from Galaxy Collection**
(Fedora and MacOS):




**STEP 1:** Install the galaxy collection for EDA:

```
ansible-galaxy collection install ansible.eda
```

**STEP 2:** Install via playbook:

```
ansible-playbook install-rulebook-cli.yml
```

Try it out! Getting Started Lab:
https://www.ansible.com/products/ansible-community-training



Red Hat
Ansible Automation
Platform

# Getting started

## Hands on Event-Driven Ansible developer preview

**STEP 1:** Go to the Ansible-Events repository
github.com/ansible/event-driven-ansible

**STEP 2**: Install ansible-rulebook
pip install ansible-rulebook OR
docker build -t ansible-events

**STEP 3**: Configure monitoring sources

**STEP 4**: Build your rulebook

**STEP 5**: Start listening to events!
ansible-rulebook –rulebook MyRulebook.yml

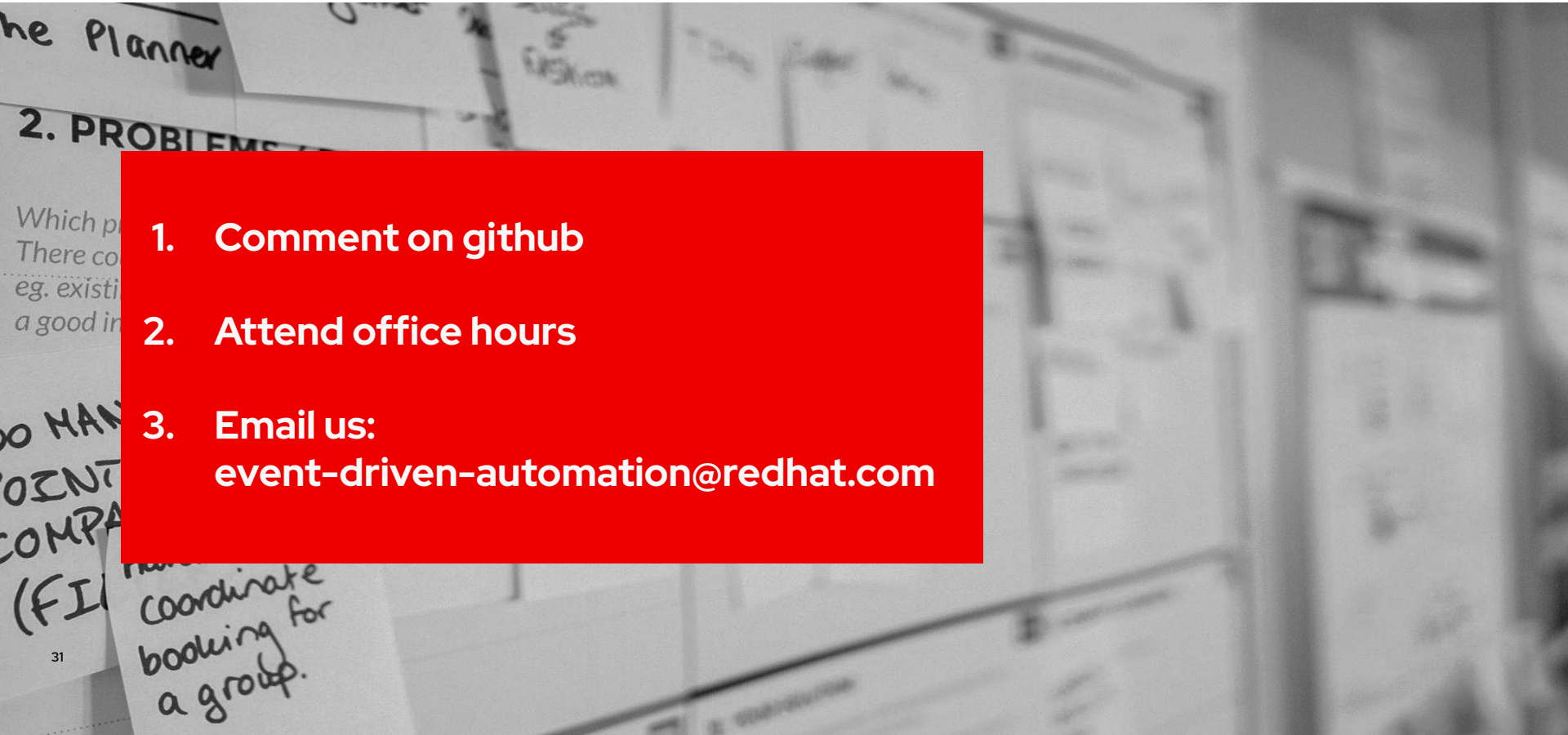
**STEP 6**: Use the resources to support your learning.

# Ansible community is key


**Ansible Users**
**Try it and share feedback**
**event-driven-automation@redhat.com**

**Technology Partners**
**Create content collections and integrations**
**ansible-partners@redhat.com**

# Three ways to share feedback




1. Comment on github
2. Attend office hours
3. Email us: event-driven-automation@redhat.com

# Resources

Get started on your event driven automation journey

## MANAGERS

Event-Driven Ansible web page

451 Research: The Impact of Event-Driven Automation on IT Operations

Blog: Speed and accuracy through event-driven automation

Blog: Introducing Event-Driven Ansible

## TECHNICAL ROLES

Github repository

Event-Driven Ansible web page

Free Self-paced lab

Attend Office Hours November or December

Blog: Getting started with Event-Driven Ansible

Blog: Introducing Event-Driven Ansible

## PARTNERS

Github repository

Event-Driven Ansible web page

Free Self-paced lab

Attend Office Hours November or December

Contact the partner team:
ansible-partners@redhat.com

# Roadmap

**AnsibleFest 2022**
October 18 + 19

**2023**
AAP 2.4 + AAP 2.5

## Event Driven Ansible developer preview

- A rules language and file structure for defining relationship between events and actions
- A community driven CLI to run the rules files (rulebooks) and server to manage the execution
- Observability into execution that results from events
- Engage community & ISVs: try, feedback and integrate

## Integrate Event Driven Ansible into Red Hat Ansible Automation Platform

- Functionality available in automation controller
- Use Ansible features (RBAC etc.) with Event-Driven Ansible
- One platform with choice of automation modes

# Smart IT delivered at the speed of automation

## Event-Driven Ansible

| | |
|---|---|
| **Open** | Try it, download from github |
| **Flexible** | From source to rule to action, across your ecosystem |
| **Fast** | Close issues and tickets, proactively address problems, eliminate rote tasks |
| **Use Case Friendly** | Completely automate IT actions as needed |
| **Familiar** | YAML-like Ansible Rulebook constructs |
| **Simple** | Choice of automatically- or manually-initiated actions (at GA) |

# Event-Driven Ansible for partners



Partner

# Why work with Event-Driven Ansible?

## ISVs

Create Content Collections so customers gain value from joint solution.  Include source plugins and extensible Ansible Rulebooks.

## SIs / Resellers

Develop services offerings that include Event-Driven Ansible. Talk to customers who benefit from automating rote tasks, especially those fixing the same issue repeatedly or those very high volumes of the same task.

## Consultants

Contribute to the community via content collections. Develop integrations with new sources or create Ansible Rulebooks,. Share feedback and knowledge across the community to increase your visibility.



Partner

# Key solution areas

## Monitoring tools

- Develop a source plug-in for your monitoring tool
- Your monitoring and analysis “event” sent to Event-Driven Ansible for decisioning and action

## Custom event sources

- Build extensible plug-ins and modules for the customer’s own environment data and/or analytics
- Connectivity to a data or event resources such as an event bus

## Another idea?

- Let’s chat. Event driven automation is new
- Event-driven takes an ecosystem and we are open to ideas, including in the area of event analytics

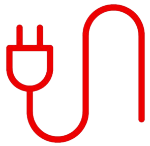


Partner

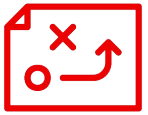
# What is content?

All together, delivered as content collections

MODULES



PLUGINS



PLAYBOOKS & RULEBOOKS

TESTS

DOCUMENTATION

CONTENT COLLECTIONS



Red Hat

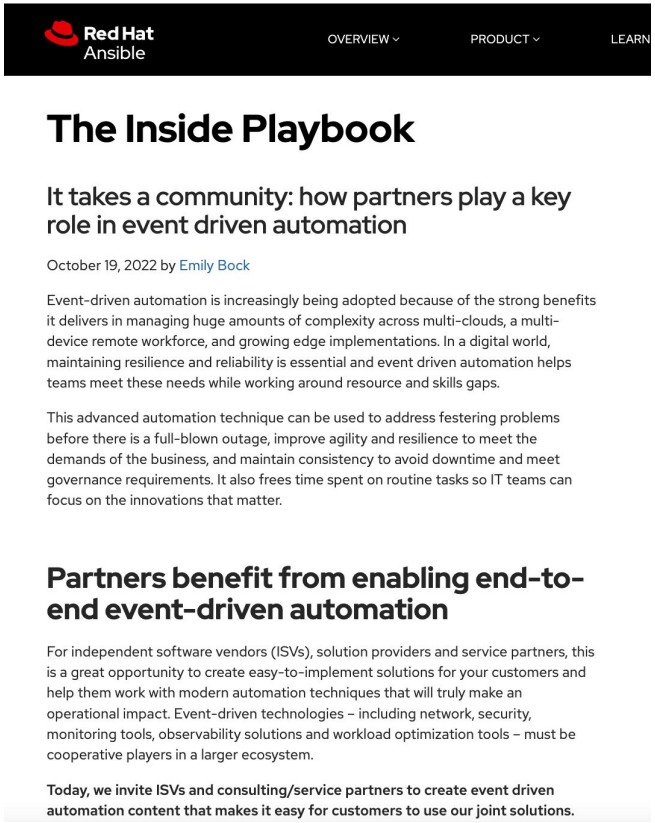
# Content Collection Organization for Event-Driven Ansible

Content coming soon.



Partner

# Getting started



Red Hat Ansible OVERVIEW PRODUCT LEARN

## The Inside Playbook

### It takes a community: how partners play a key role in event driven automation

October 19, 2022 by Emily Bock

Event-driven automation is increasingly being adopted because of the strong benefits it delivers in managing huge amounts of complexity across multi-clouds, a multi-device remote workforce, and growing edge implementations. In a digital world, maintaining resilience and reliability is essential and event driven automation helps teams meet these needs while working around resource and skills gaps.

This advanced automation technique can be used to address festering problems before there is a full-blown outage, improve agility and resilience to meet the demands of the business, and maintain consistency to avoid downtime and meet governance requirements. It also frees time spent on routine tasks so IT teams can focus on the innovations that matter.

### Partners benefit from enabling end-to-end event-driven automation

For independent software vendors (ISVs), solution providers and service partners, this is a great opportunity to create easy-to-implement solutions for your customers and help them work with modern automation techniques that will truly make an operational impact. Event-driven technologies – including network, security, monitoring tools, observability solutions and workload optimization tools – must be cooperative players in a larger ecosystem.

**Today, we invite ISVs and consulting/service partners to create event driven automation content that makes it easy for customers to use our joint solutions.**

[It takes a community blog]

[ansible-partners@redhat.com]

[Office hours Nov 16, 2022]

[Office hours Dec 14, 2022]



Partner

# 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/user/RedHatVideos


facebook.com/redhatinc


twitter.com/RedHat