From Scripts to Scale: Transforming Enterprise Automation with OPS/MVS and Ansible

Paul Buchanan, Principal Mainframe Systems Programmer
paul.buchanan@ensono.com

Jan Prihoda, Product Owner

jan.prihoda@broadcom.com

Cody Giardinello, Engineering Supervisor

cody.giardinello@broadcom.com

Ansible's Journey to z/OS

SHARE
EDUCATE • NETWORK • INFLUENCE

2012
- Founded by Michael DeHaan with origins in simplicity

2015
- **Red Hat acquired Ansible** accelerating enterprise adoption

2018
- **IBM acquired Red Hat** bringing Ansible into the IBM ecosystem

Today
- **Ansible extends to z/OS** through the IBM Z Ansible Core Collection

What is Ansible?

A Powerful Automation Engine

Simple & Human Readable

- Uses YAML playbooks—no complex scripts

Agentless

- No software to install on target systems—just SSH

Idempotent

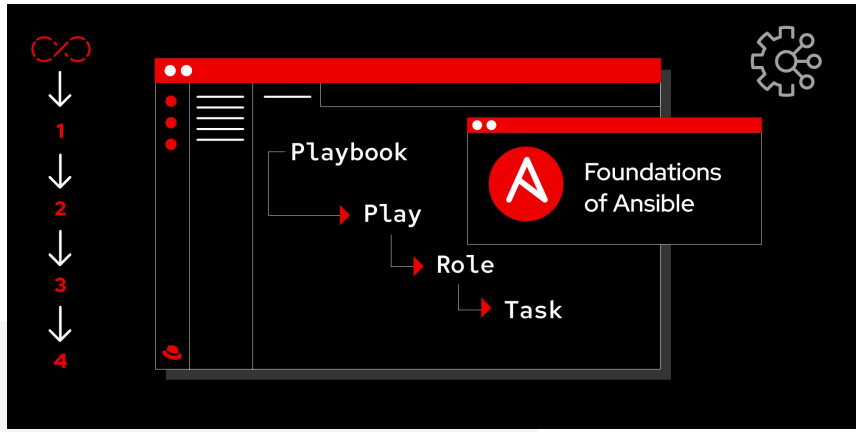
- Runs tasks only when needed, preventing unnecessary chan

Platform-agnostic

- Works across Linux, Windows, cloud, and z/OS

Extensible Ecosystem

- Supports plugins, modules, and integrations with tools



Using Ansible for Mainframe Tasks

A Simple, Structured Syntax

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// Query jobs beginning with 'JOB12'

zowe jobs ls jobs -o "*" -p "JOB12*"
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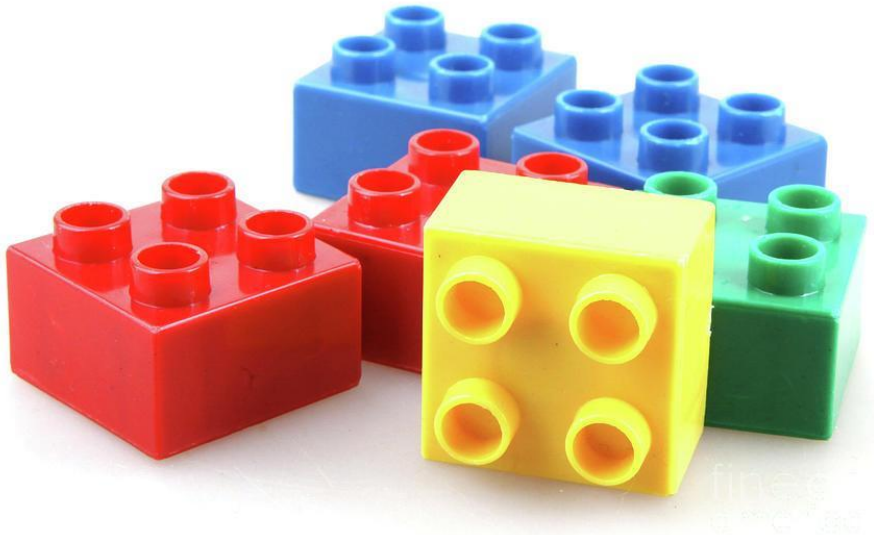
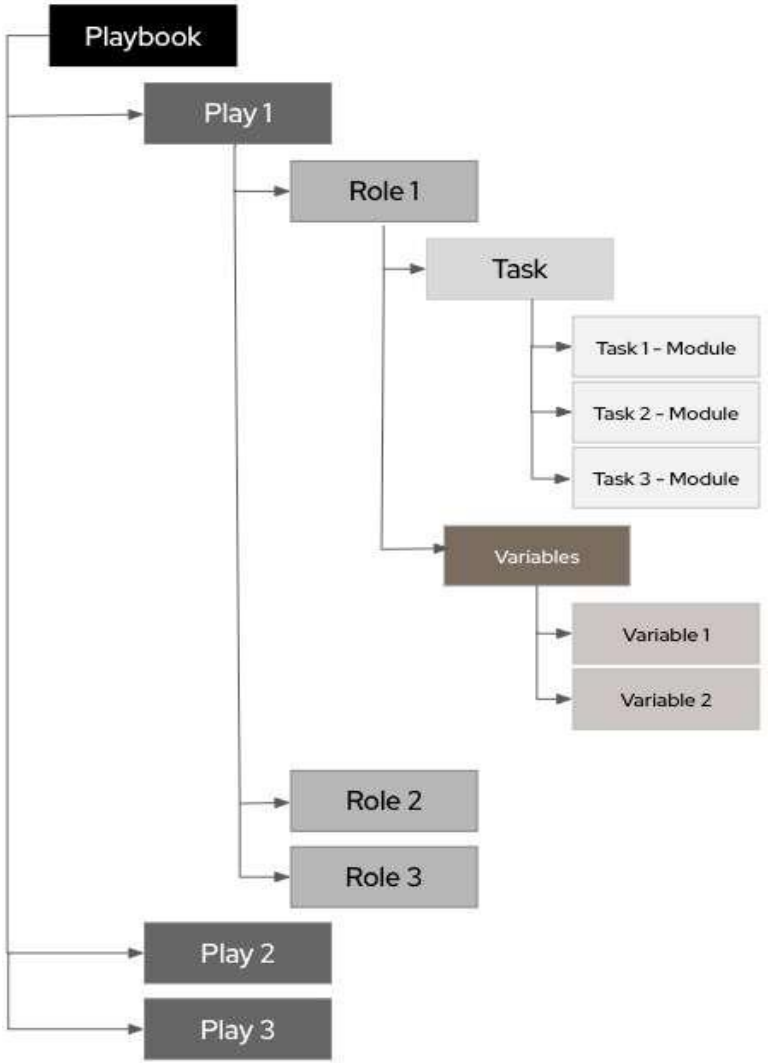
```


```
- name: Query jobs beginning with 'JOB12'
  zos_job_query:
    job_id: "JOB12*"
```

Using Ansible for Mainframe Tasks

Robust, repeatable, and secure





Ansible at Ensono

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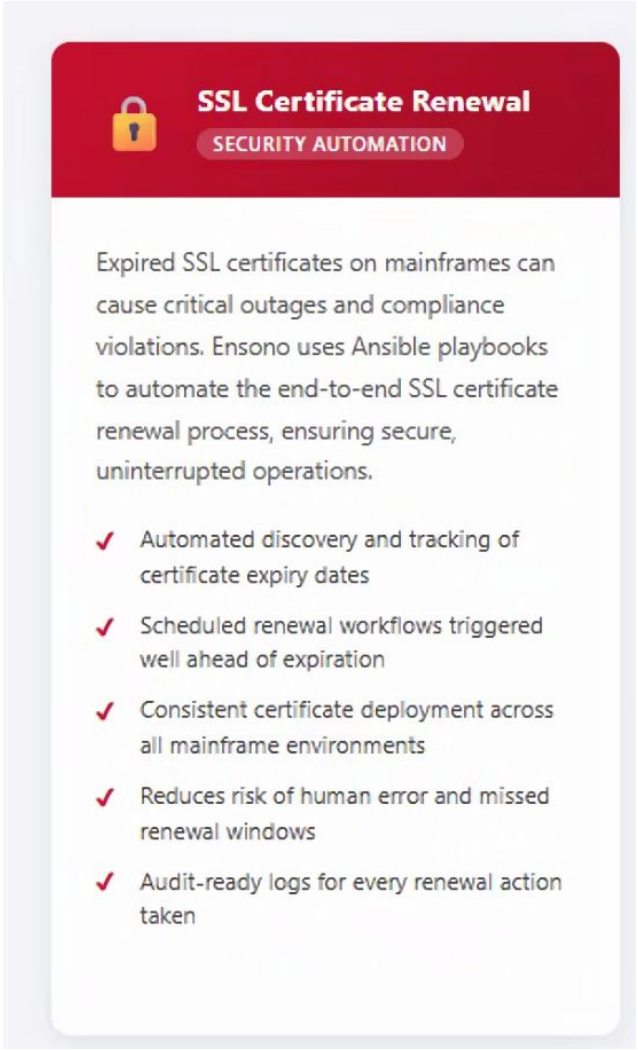
Ansible at Ensono

Ensono’s proven automation playbooks driving efficiency



Ansible at Ensono

Ensono’s proven automation playbooks driving efficiency

SSL Certificate Renewal

SECURITY AUTOMATION

Expired SSL certificates on mainframes can cause critical outages and compliance violations. Ensono uses Ansible playbooks to automate the end-to-end SSL certificate renewal process, ensuring secure, uninterrupted operations.

- ✓ Automated discovery and tracking of certificate expiry dates
- ✓ Scheduled renewal workflows triggered well ahead of expiration
- ✓ Consistent certificate deployment across all mainframe environments
- ✓ Reduces risk of human error and missed renewal windows
- ✓ Audit-ready logs for every renewal action taken

License Key Renewals

COMPLIANCE AUTOMATION

Managing software license keys across large mainframe estates is complex and error-prone. Ensono automates license key renewals with Ansible, keeping mainframe software compliant and fully operational without manual intervention.

- ✓ Centralized tracking of license expiration across all mainframe systems
- ✓ Automated key distribution and application via playbooks
- ✓ Proactive alerts before licenses lapse to avoid disruptions
- ✓ Eliminates emergency manual processes tied to last-minute renewals
- ✓ Supports compliance reporting and governance requirements

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Python & ZOAU Upgrades

CORE ANSIBLE DEPENDENCIES

Python and ZOAU (Z Open Automation Utilities) are foundational dependencies that power IBM's Ansible collections for Z. Keeping them current is critical. Ensono automates these upgrades to maintain a healthy, modern Ansible runtime on the mainframe.

- ✓ Automated detection of outdated Python and ZOAU versions
- ✓ Controlled upgrade playbooks with pre- and post-validation checks
- ✓ Minimizes downtime with staged rollout across environments
- ✓ Ensures compatibility with the latest IBM Z Ansible collections
- ✓ Reduces barrier for teams adopting Ansible on the mainframe

Basic Setup

Configure the Control Node

Install Prerequisites

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```
sudo apt install python3
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IBM ibm.ibm_zos_core

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ansible-galaxy collection install ibm.ibm_zos_core
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Ansible Collections

Open Source and Supported

ANSIBLE

IBM ibm.ibm_zos_core

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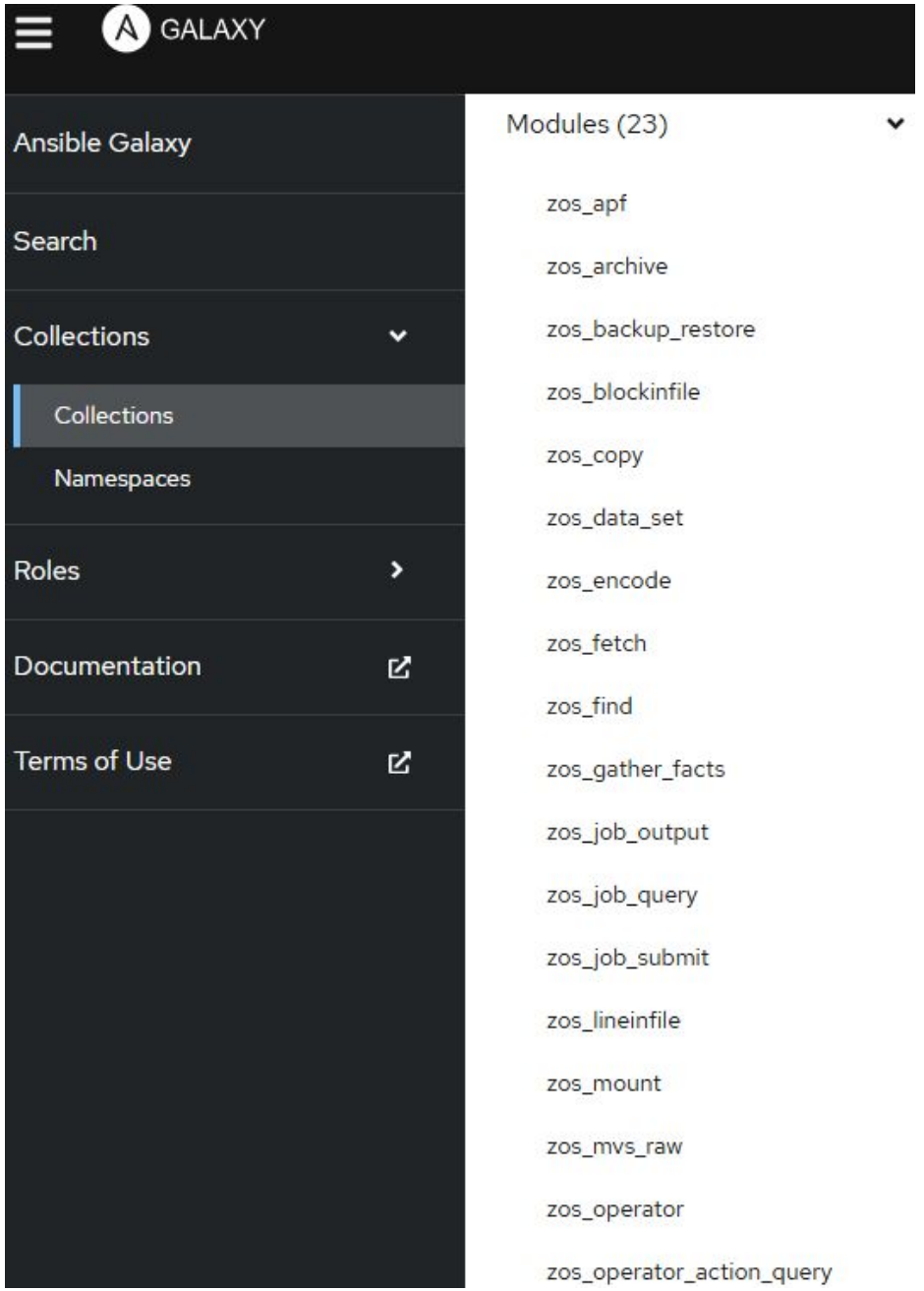

Ansible Collections

Open Source and Supported

ANSIBLE

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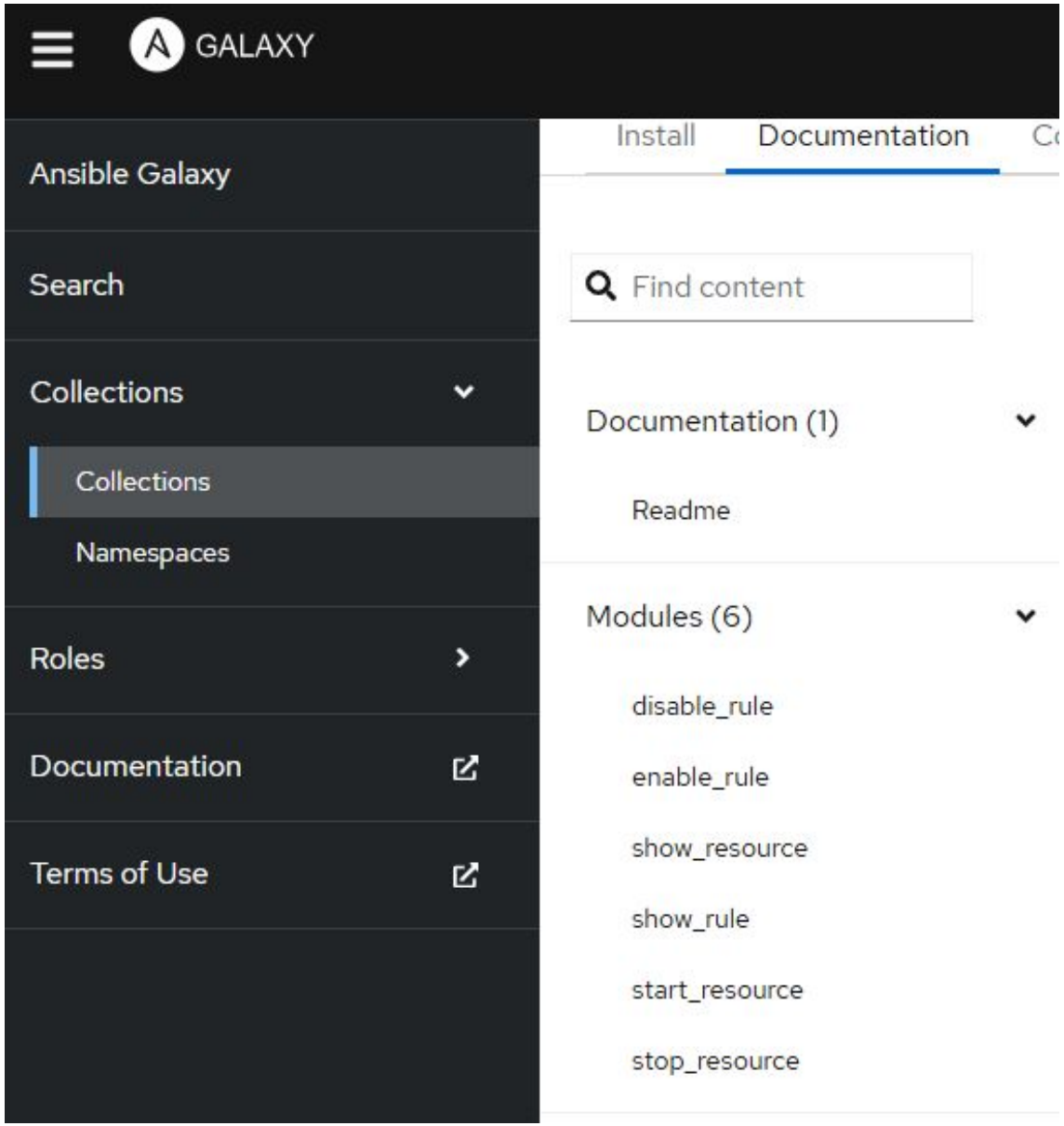

Our First Playbook

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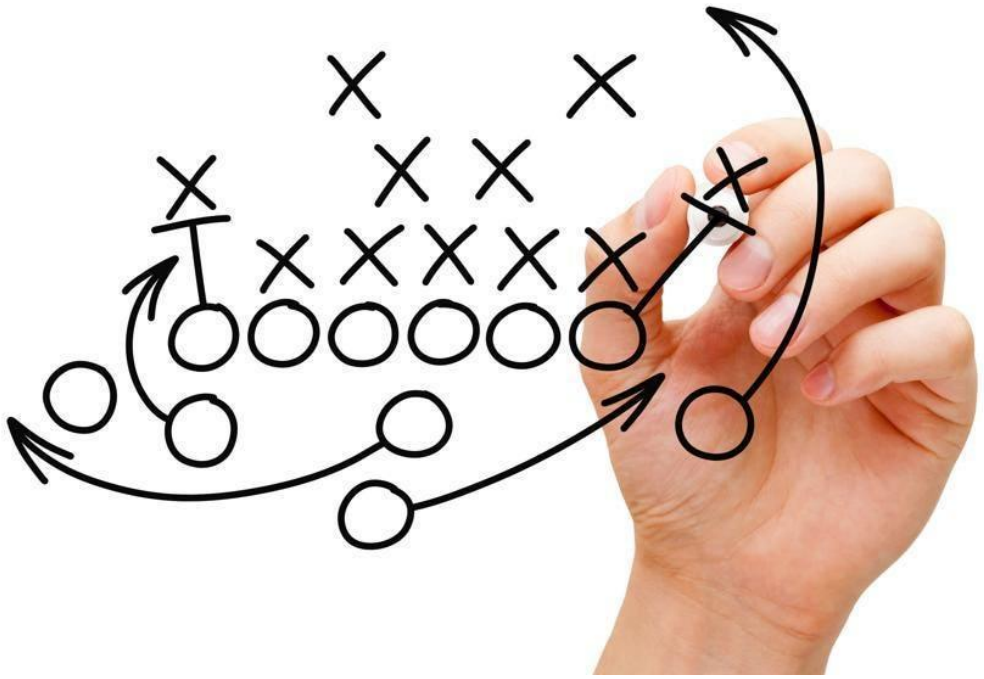
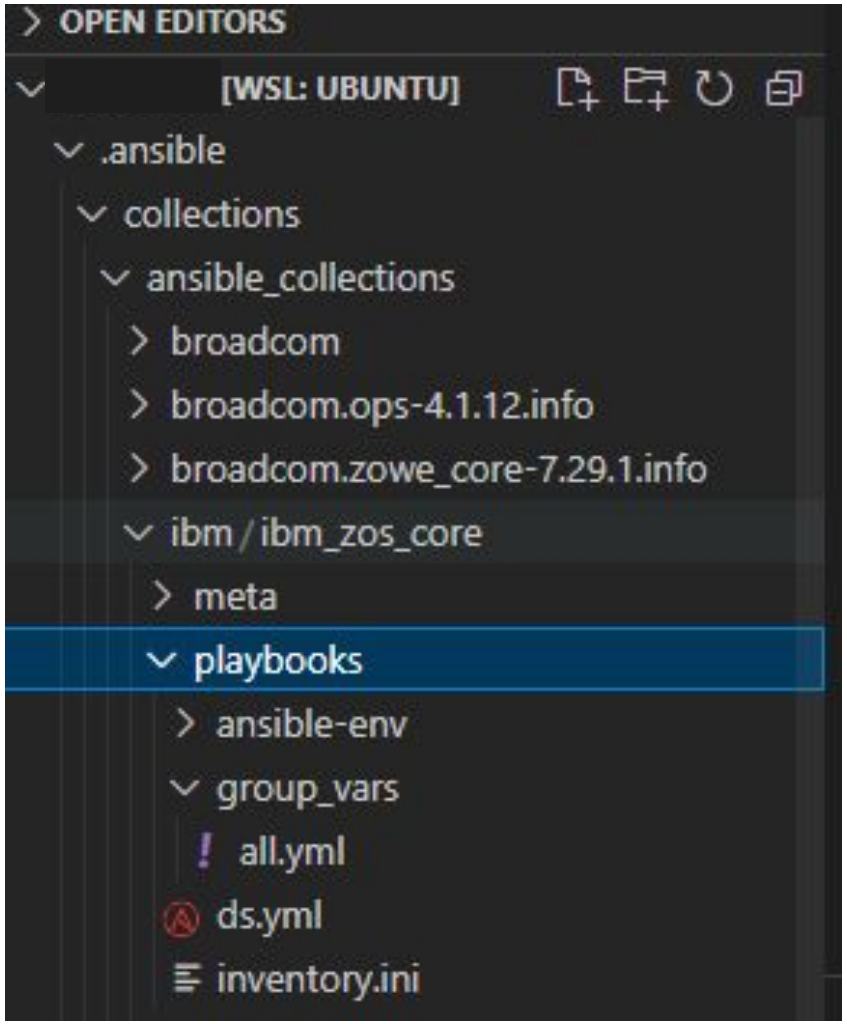
A Three Pronged Approach





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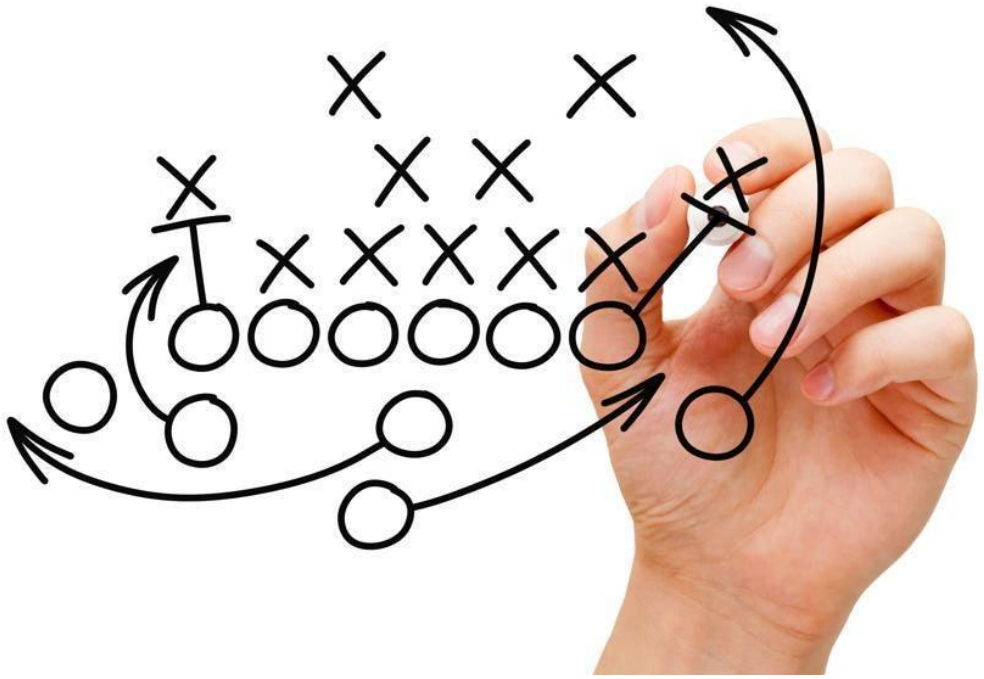
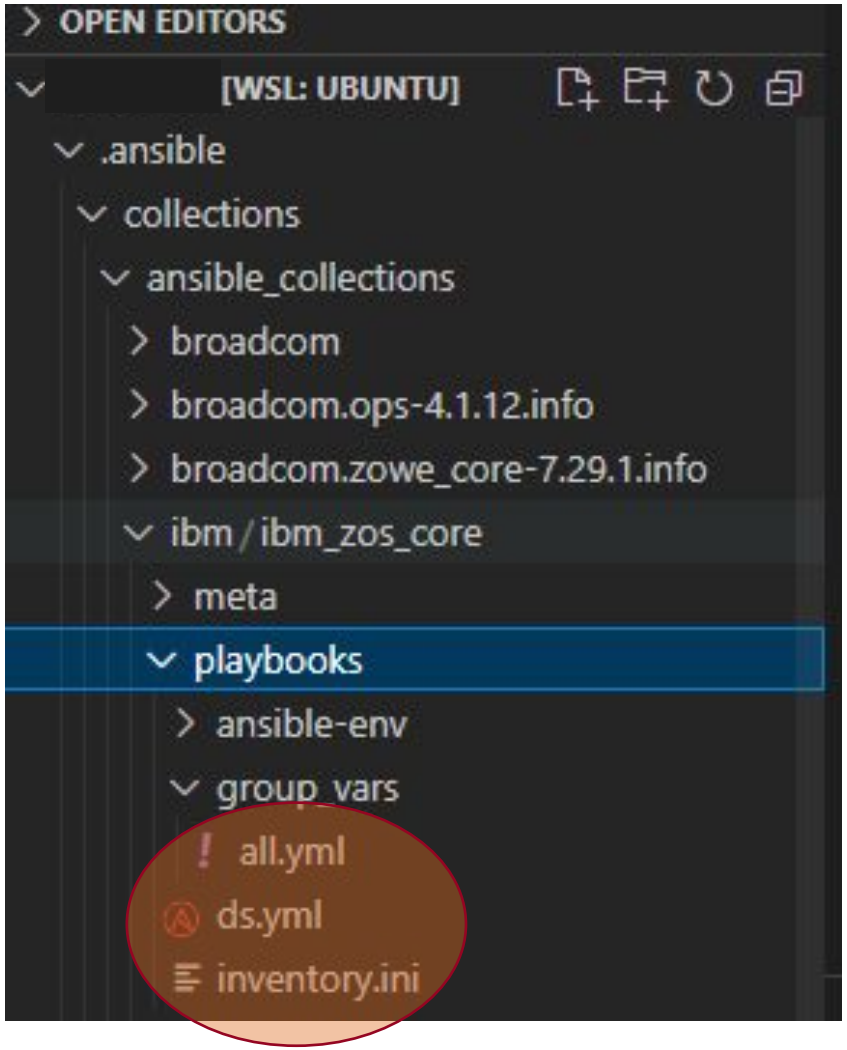
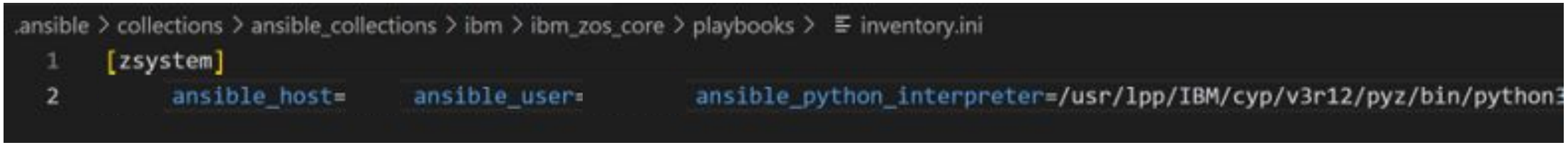




Inventory File

Connecting to z/OS Managed Nodes

inventory.ini



Environment Variable File

Shared Among Playbooks

Ansible Vars File - Ansible variables File (vars.json)

```
environment_vars:
  _BPXK_AUTOCVT: ON
  ZOAU_ROOT: '/usr/lpp/IBM/zoau/v1r3'
  PYTHONPATH: '/usr/lpp/IBM/zoau/v1r3/lib/3.12'
  LIBPATH: '/usr/lpp/IBM/zoau/v1r3/lib:/usr/lpp/IBM/cyp/v3r12/pyz/lib:/lib:/usr/lib:/usr/lpp/Printsrv/lib'
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```

Playbook

.ansible > collections > ansible_collections > ibm > ibm_zos_core > playbooks > ds.yml

```yaml
---
- hosts: zsystem
  collections:
    - ibm.ibm_zos_core
  gather_facts: no
  vars:
  environment: "{{ environment_vars }}"
  tasks:
    - name: Ping host - {{ ansible_host }}
      ping:
      register: result
    - name: Response
```

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:~/.ansible/collections/ansible_collections/ibm/ibm_zos_core/playbooks$ ansible-playbook -i inventory.ini ds.yml

PLAY [zsystem] ***********************************************************************************************************************************

TASK [Ping host -       ***********************************************************************************************************************
ok: [zsystem]

TASK [Response] **********************************************************************************************************************************
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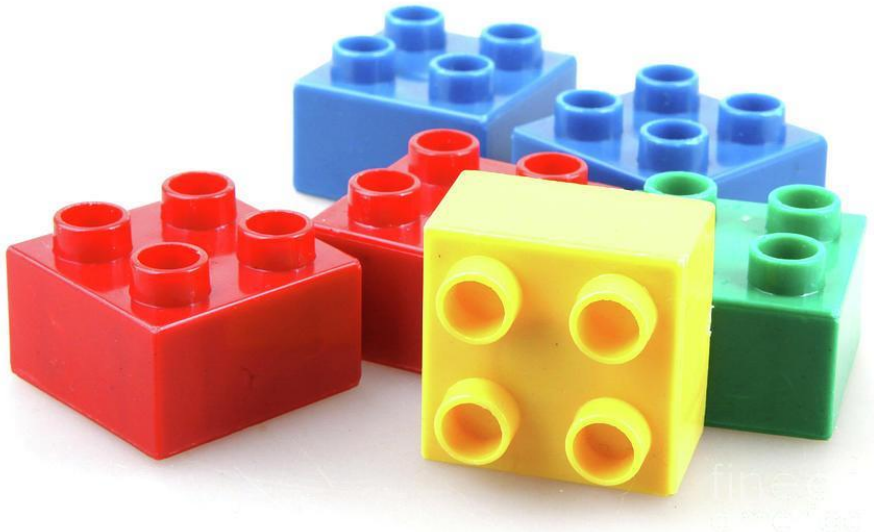
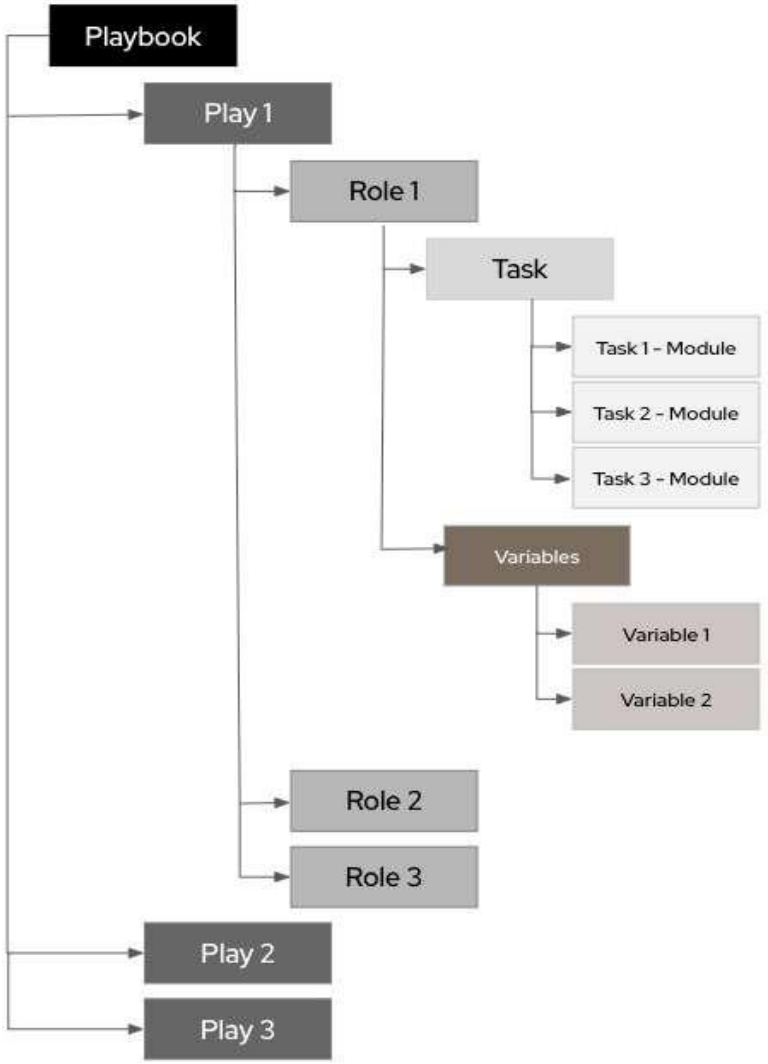
Automation Building Blocks

Robust, repeatable, and secure





OPS/MVS Modules

Open Source Extensions

Modules (6)

- disable_rule
- enable_rule
- show_resource
- show_rule
- start_resource
- stop_resource

Examples

```
- name: Enable MYRULE on ruleset OPSRULES on subsystem OPSS.
  broadcom.ops.enable_rule:
    ruleset: OPSRULES
    rule: MYRULE
    subsystem: OPSS
```

Scripts to Scale

Operator vs Ansible — Workflow Comparison

Reacting to a ticket manually at the console vs Ansible seeing the ticket and orchestrating the action

OPERATOR CHALLENGES

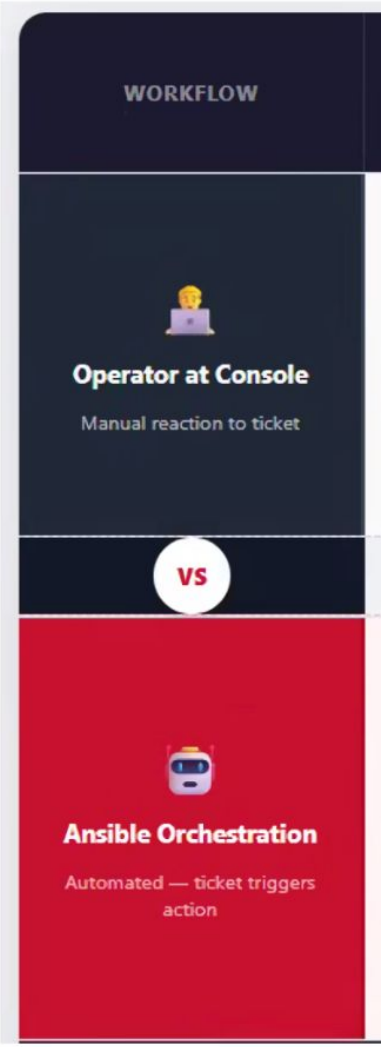
- Delays tied to operator availability and shift schedules
- Inconsistent outcomes based on individual skill and experience
- Tribal knowledge disappears when experienced staff leave
- Repetitive manual tasks consume valuable operator time
- Documentation is incomplete and varies person to person

ANSIBLE ADVANTAGES

- Responds to tickets instantly — 24 / 7 with no human intervention
- Same playbook runs the same way every time — zero drift
- Knowledge lives in the playbook — not in someone's head
- Frees operators to focus on higher-value, complex work
- Automatic logging delivers complete, consistent audit trails

Operator vs. Ansible - Workflow Comparison

Reacting to a ticket manually vs. Orchestrating through OPS/MVS



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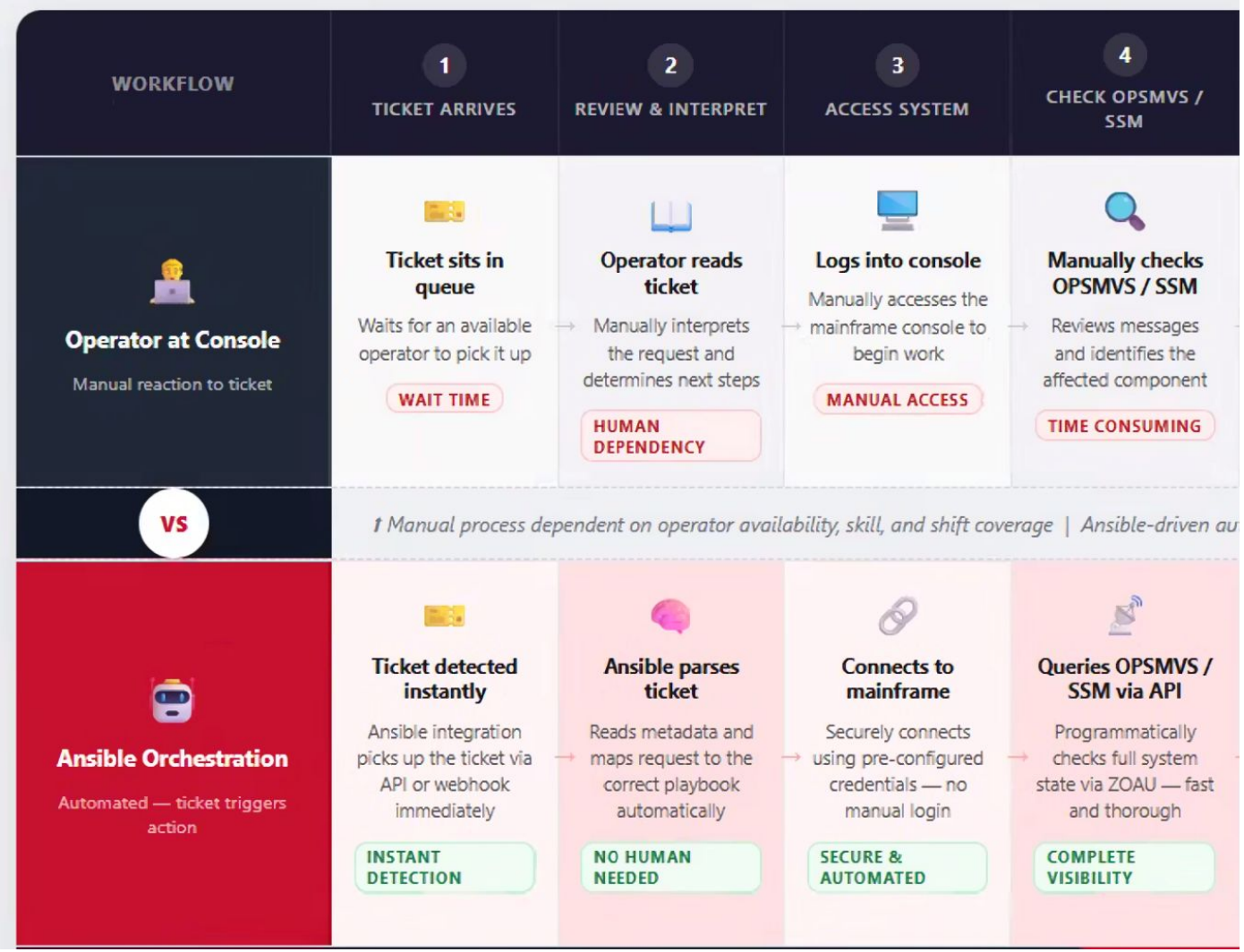

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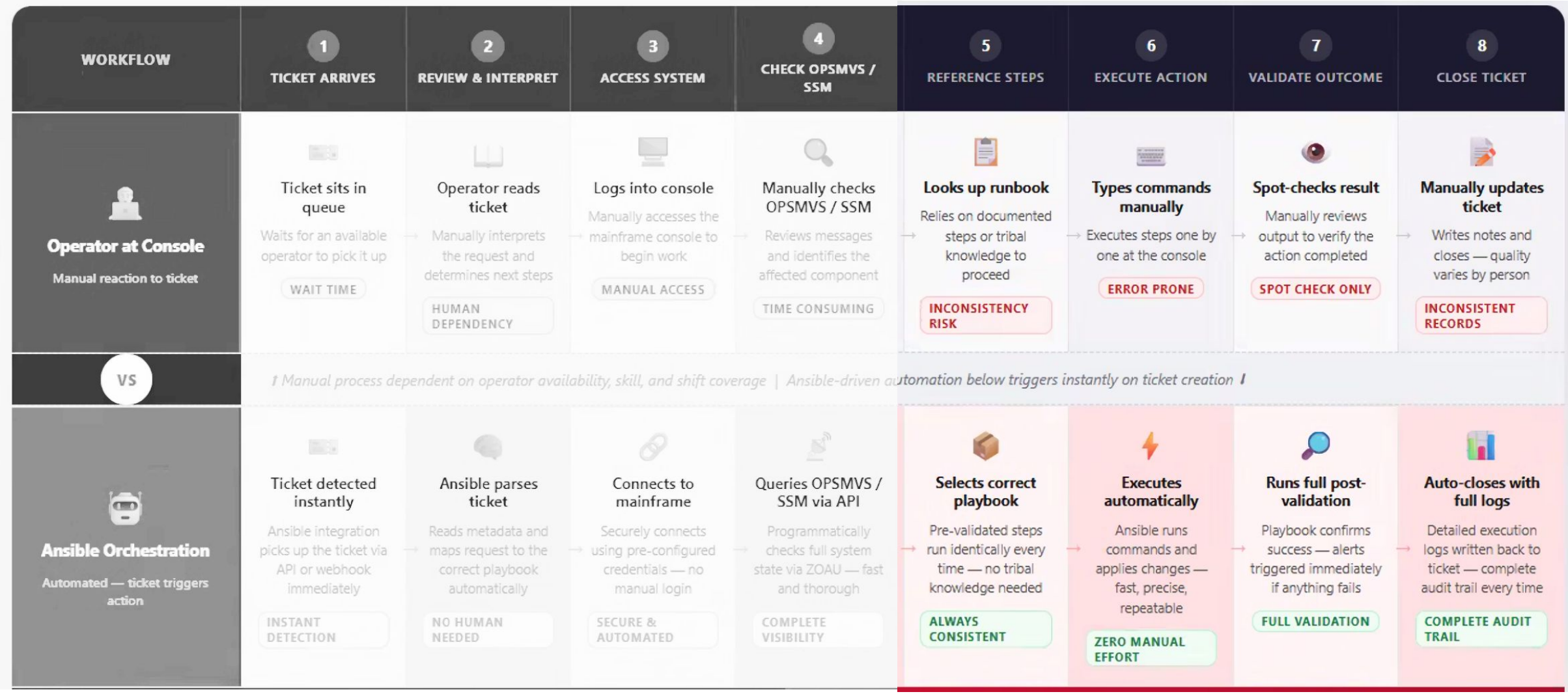
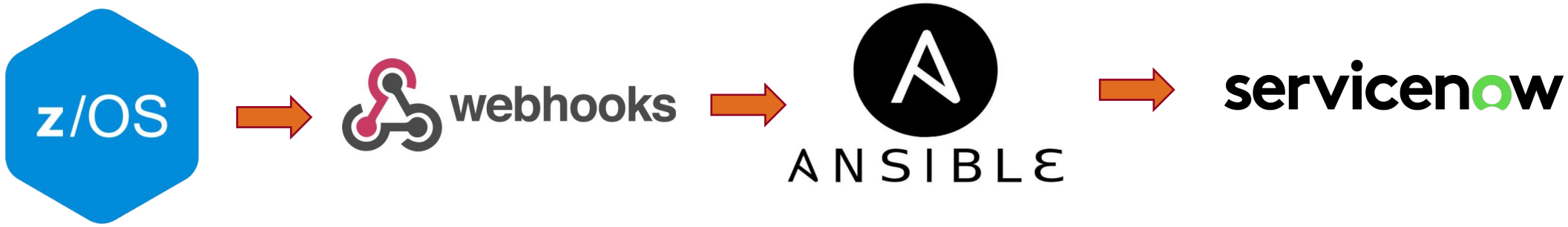


Forward Looking

Integrations & Forward Looking

Event Driven Automation



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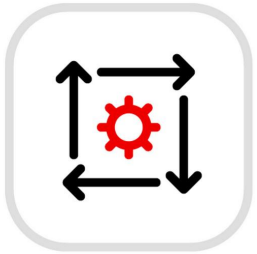
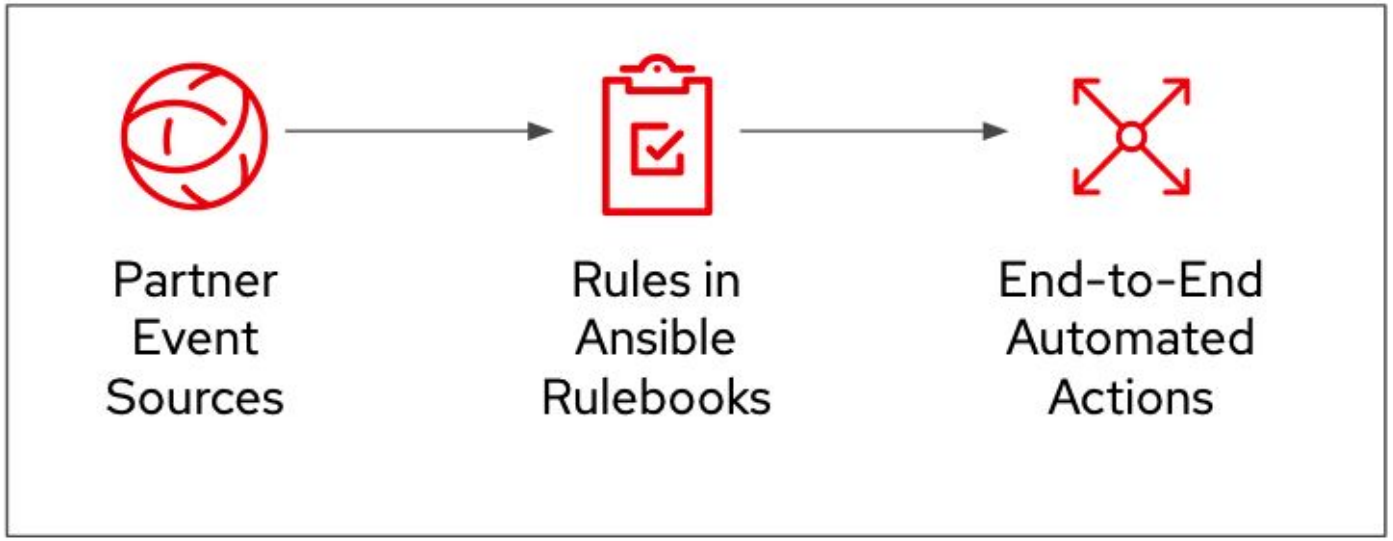


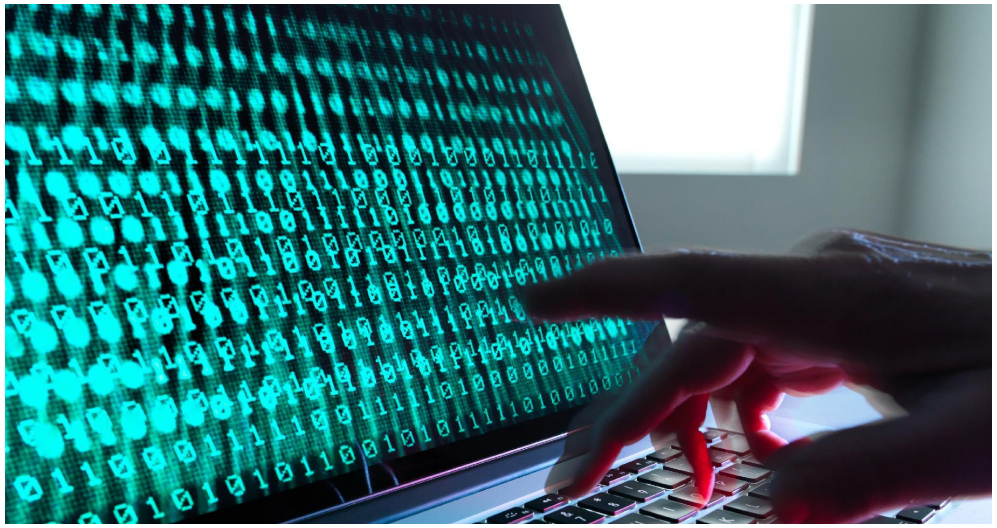
Event Driven Ansible



Hands-On Workshop: Ethical Mainframe Hacking (BYOD)

Join us for a **hands-on** opportunity to learn about ethical hacking and z/OS!

- Explore a vulnerable web application with a database backend,
- Learn the process of identification, fuzzing, iterating potential exploits
- Ultimately hacking into the mainframe's database



Location: **Room 409**

- Monday Aug 17 2:30-3:30pm
- Wednesday Aug 19 9:15-10:15am

Limited space — come early!

Your feedback is important!

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www.share.org/evaluation