

Experiment 12

Aim : To study software management tools using Ansible and create a case - study .

Theory :

Need of automation in software management -

Automation is essential to establishing reliable, consistent IT operations—with less downtime and improved return on investment. With automation, your team can deploy and decommission infrastructure components in just minutes (instead of hours or days), establish and maintain desired configuration states across multiple systems, and ensure compliance.

Ansible Automation Platform for simplicity and functionality

Ansible is a software tool that provides simple but powerful automation for cross-platform computer support. Red Hat® Ansible® Automation Platform is a robust platform that assumes the work of disparate solutions to help you establish a target baseline for systems, tackle system installations and updates, validate change requests, and more using easy-to-understand Ansible playbooks.

Features of Ansible Red Hat in Software Management :

- Establish and maintain desired baselines for systems to meet compliance
- Reduce drift, outages, and downtime by ensuring consistent system settings
- Lower risk of security breaches and other incidents through patch management
- Secure your automation through role-based access control and change request management
- Minimize human error by automating operational tasks
- Reduce skill requirements across multiple domains
- Eliminate siloed teams and processes by consolidating on a single, flexible platform
- Scale your automation anywhere—on premise, in the cloud, or at the network edge

Perks of using Ansible Tool :

1. Agentless and secure

Ansible Automation Platform is agentless—executing tasks and delivering all modules via Open Secure Shell Protocol (OpenSSH) to securely declare the desired configuration of your

systems. OpenSSH is recognized for its secure, lightweight performance (essential for edge devices) and support across cloud platforms including AWS, Google Cloud, and Microsoft Azure. By not requiring remote server agents, Ansible Automation Platform has a very low attack surface.

2. Declarative

Ansible Automation Platform uses a declarative model that lets you describe the "what" (desired state of your systems and services) versus the "how" (steps to achieve that desired state). This goal-centric approach makes it easier for your IT operations teams to quickly start automating and supports reliable, idempotent infrastructure configuration.

3. Feature-rich

Ansible Automation Platform includes access to over 125 certified content collections from more than 60 industry partners through the Red Hat [hybrid cloud console](#). Using pre-built playbooks and modules, Ansible Content Collections help you jump-start automation for configuration management around specific platforms and use cases and share content across teams for greater collaboration and efficiency.

With automation analytics and Red Hat Insights, you have full visibility into the performance of your automation. You can measure drift—comparing systems against each other or a baseline— and monitor and proactively resolve infrastructure issues, which minimizes compliance risks, threats, and potential downtime.

4. Considering a Red Hat subscription?

No matter where you are on your automation journey, Red Hat can help.

Ansible Automation Platform is a comprehensive, integrated solution that helps you automate for velocity, collaboration, and growth. It delivers open source innovation, hardened for your enterprise—so you can boost productivity and reduce time-to-completion for new projects.

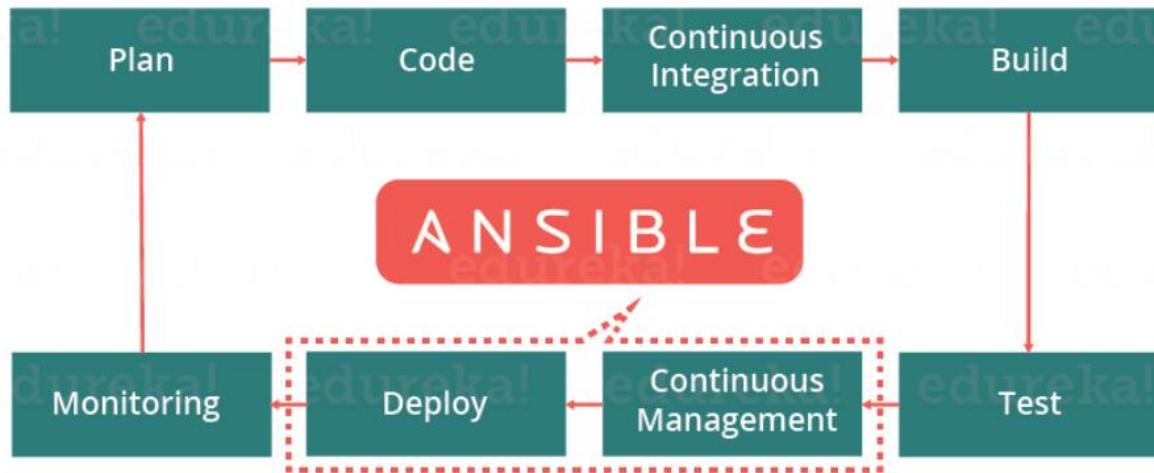
With a Red Hat subscription, you get certified content, a robust partner ecosystem, access to hosted management services, and life cycle technical support that allows your teams to create, manage, and scale automation across your organization. And you'll get expert knowledge gained from our success with thousands of customers.

One can use Ansible to automate three types of tasks:

- **Provisioning:** Set up the various servers you need in your infrastructure.
- [Configuration management:](#) Change the configuration of an application, OS, or device; start and stop services; install or update applications; implement a security policy; or perform a wide variety of other configuration tasks.
- **Application deployment:** Make [DevOps](#) easier by automating the deployment of internally developed applications to your production systems.

What is Ansible in DevOps?

In DevOps, as we know development and operations work is integrated. This integration is very important for modern test-driven application design. Hence, Ansible integrates this by providing a stable environment to both development and operations resulting in smooth orchestration. Refer to the image below to see how Ansible fits into DevOps:



Real – Time application (Microsoft)

Microsoft has set a goal of end-to-end digitization. This effort simplifies processes and experiences for end users across all of its infrastructure teams managing services and applications. As part of this shift, the company is focused on building a culture of success, supported by automation technology. Using Red Hat Ansible Automation Platform and working closely with Red Hat Consulting .



Hence Microsoft on successful utilization of Ansible tool in their software management managed to perform the following enhancements -

- Adopted centralized, phased automation to verify and reuse production code
- Established DevOps culture focused on learning new skills and collaborating across teams
- Saved thousands of work hours by mitigating network downtime and reducing production code defects

All this process and keeping pace with customer and partner expectations required addressing increased complexity across Microsoft's corporate network infrastructure — comprised of tens of thousands of endpoints, more than 400 engineers, and close to 150,000 total employees — that connects all of Microsoft's offices, sites, and retail locations worldwide.

In a nutshell ,

Microsoft's teams established three automation environments:

- Development, where code is developed and tested on a small scale
- User acceptance testing (UAT), where code is peer-reviewed and tested at scale
- Production Engineers now automate repeatable, day-to-day tasks by deploying Ansible Playbooks to the network through a centralized playbook version control system

It thus accommodated growth with new network approach and Microsoft Corporation develops, manufactures, and supports software, consumer electronics and computers, and related services.

Conclusion: Therefore we keenly studied software management process and the benefits of Ansible tool in efficient automation program of software management process as we discussed in our case study on its real-time utilization .