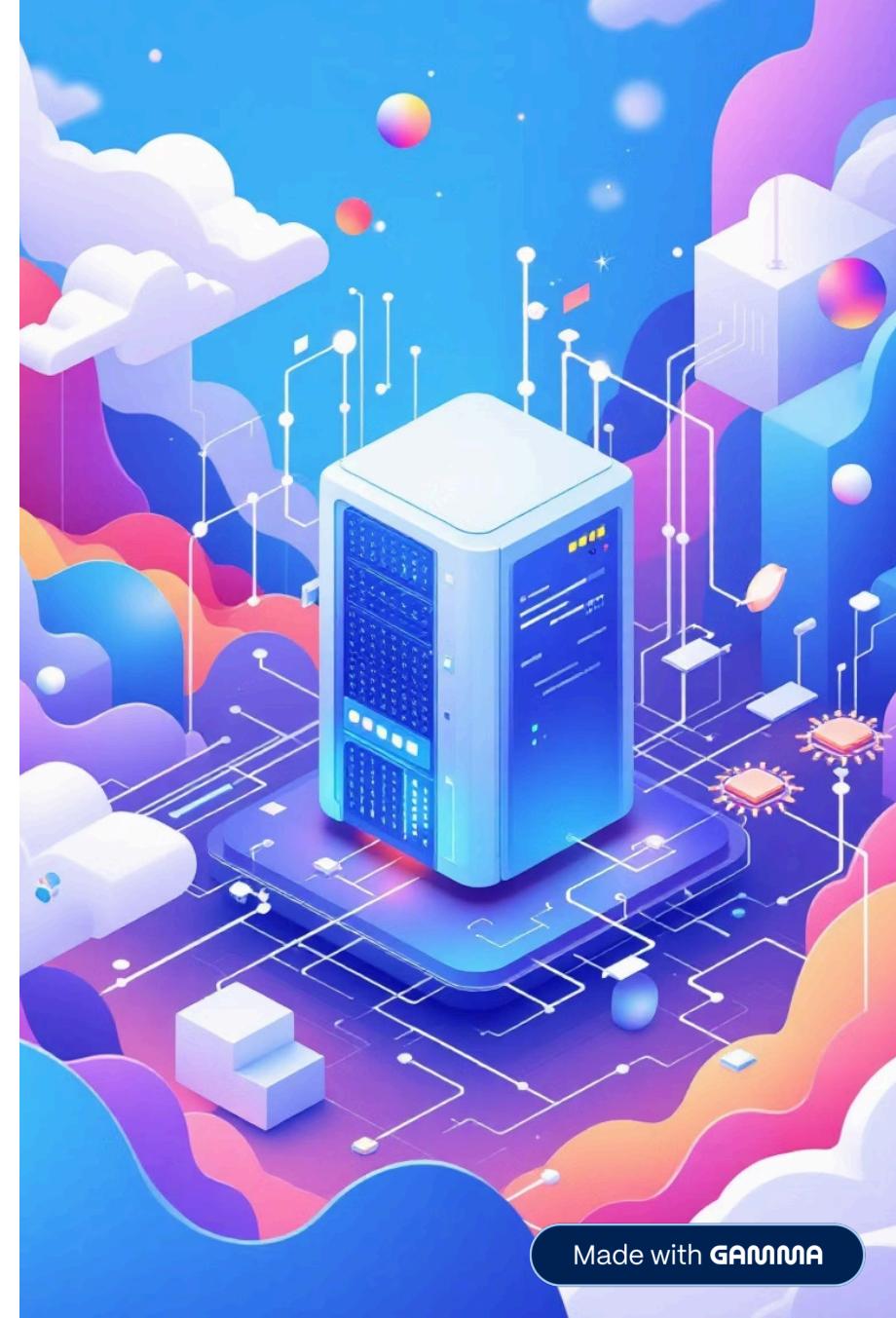


Ansible Playbooks - 1

A comprehensive guide for system administrators and DevOps engineers to understand, create, and optimize Ansible playbooks for infrastructure automation.



What Is an Ansible Playbook?

Definition

An Ansible Playbook is a list of tasks that are automatically executed for a specified set of nodes or hosts in your infrastructure.

Think of it as a blueprint that defines how your systems should be configured and maintained.



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Playbook Structure: Plays and Tasks

01

Task

A single action to be performed, like installing a package or starting a service.

02

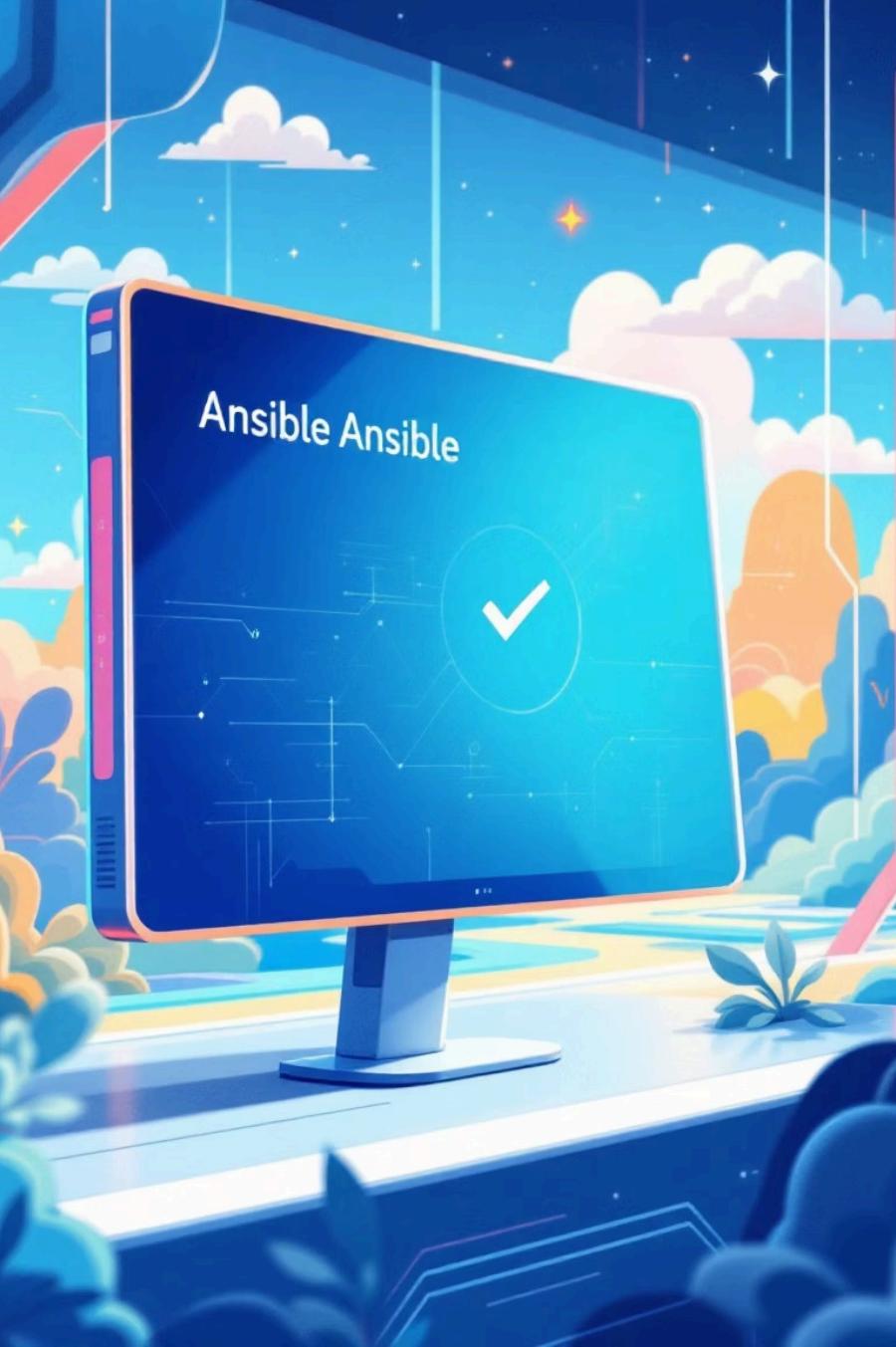
Play

One or more tasks combined together, targeting specific hosts from your inventory.

03

Playbook

A collection of plays that defines the complete automation workflow for your infrastructure.



The Power of Idempotency

Smart Execution

Playbooks check whether the desired final state has already been achieved before executing tasks.

No Redundant Work

If the system is already in the desired state, the task is skipped, preventing unnecessary repeated executions.

Example Playbook Structure

Here's a simple playbook named `playbook.yaml` containing two plays:

Play 1: Web Server Setup

Installs or updates to the latest Apache Server on designated web hosts.

Play 2: Database Setup

Installs or updates to the latest PostgreSQL server and ensures it's started using the system's init system (systemd, upstart, OpenRC).

Note: For Windows hosts, use the `ansible.windows.win_service` module instead.

Executing Your Playbook

Basic Execution

```
ansible-playbook -i inventory playbook.yaml
```

With Sudo Privileges

If you encounter a 'sudo missing' error, use the --ask-become-pass option:

```
ansible-playbook -i inventory playbook.yaml --ask-become-pass
```

Execution Strategies



Linear (Default)

Tasks are executed on all hosts in the batch before moving to the next task. Ensures synchronization.



Free

Tasks are executed as soon as a host is ready, allowing for maximum parallelization and efficiency.



Debug

Like linear strategy but controlled by an interactive debug session for troubleshooting.



Optimizing Performance: Forks and Batching

Forks Configuration

The number of parallel processes Ansible uses to execute tasks on multiple hosts simultaneously.

- Default: 5 hosts
- Recommended: 25 hosts
- Set in ansible.cfg or via --forks option

Batch Size Control

Determines how many hosts are processed in parallel during each batch of task execution.

```
- hosts: webservers  
serial: 10  
# or serial: 20%
```

Advanced Execution Control



Inventory Ordering

Control execution order:
inventory (default),
reverse_inventory, sorted,
reverse_sorted, or shuffled.



Run Once Tasks

Use `run_once: true` to execute a task only once, regardless of target host count.



Task Delegation

Use `delegate_to` to run specific tasks on designated hosts, even when targeting different hosts.

Key Takeaways



Playbooks are automation blueprints

They define tasks and plays that configure your infrastructure consistently and reliably.



Idempotency ensures safety

Run playbooks multiple times without fear of breaking existing configurations.



Performance tuning matters

Optimize with proper fork settings, batching strategies, and execution control for large-scale deployments.

Remember: With serial=5 and 10 hosts in inventory, you'll have 2 batches of execution.