

## What is Ansible?

Ansible is an **open-source automation tool** used for:

- **Configuration management** (installing software, editing config files),
- **Application deployment,**
- **Server provisioning**, and
- **IT orchestration** (coordinating multiple systems).

It helps automate repetitive tasks across **many servers** using **simple YAML scripts** (called playbooks).

Ansible doesn't require installing agents on target systems—it uses **SSH** to communicate.

## Real-Time Example Use Case

### Example Scenario: Deploy Apache Web Server to Multiple Servers

Imagine you are a **DevOps Engineer** managing 100 Linux servers.  
You want to install and start the **Apache2 web server** on all of them.

Instead of connecting to each server manually and running:

```
sudo apt update  
sudo apt install apache2 -y  
sudo systemctl start apache2
```

You just write one **Ansible playbook**, and Ansible will run all commands automatically on all servers.

### Step 1: Update System Packages

```
sudo apt update
```

```
Hit:1 http://archive.ubuntu.com/ubuntu focal InRelease  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done
```

### Step 2: Install Software Properties Common

```
sudo apt install software-properties-common -y
```

### Step 3: Add Ansible PPA Repository

```
sudo add-apt-repository --yes --update ppa:ansible/ansible
```

## **Step 4:**

### **Install Ansible**

```
sudo apt install ansible -y
```

### **Verify Installation**

```
ansible --version
```

```
ansible [core 2.15.3]
python version = 3.10.12
jinja version = 3.1.2
```

## **Create a Playbook to Install Apache2**

### **Step 1: Create a folder for the project**

```
mkdir apache2
```

```
cd apache2
```

### **Step 2: Create a Playbook File**

```
nano apache2-install.yml
```

Then paste the content

```
---
```

```
- name: Install and Start Apache2 on Localhost
```

```
hosts: localhost
```

```
become: true
```

```
connection: local
```

```
tasks:
```

```
  - name: Update APT package index
```

```
    apt:
```

```
      update_cache: yes
```

```
  - name: Install Apache2 web server
```

```
    apt:
```

```
name: apache2
state: present

- name: Ensure Apache2 service is running and enabled
  service:
    name: apache2
    state: started
    enabled: yes
```

```
- name: Display Apache service status
  command: systemctl status apache2
  register: apache_status
  ignore_errors: yes
```

## Create Inventory File

nano hosts

### Add this line

```
[local]
localhost ansible_connection=local
```

### Verify inventory:

ansible all -i hosts -m ping

## Output

```
localhost | SUCCESS => {
  "changed": false,
  "ping": "pong"
}
```

## Run the Playbook

Check syntax before running:

```
ansible-playbook -i hosts apache2-install.yml --syntax-check
```

## Output

```
playbook: apache2-install.yml
```

## Run the playbook:

```
ansible-playbook -i hosts apache2-install.yml
```

## Expected Output

```
PLAY [Install and Start Apache2 on Localhost] *****  
  
TASK [Gathering Facts] *****  
ok: [localhost]  
  
TASK [Update APT package index] *****  
changed: [localhost]  
  
TASK [Install Apache2 web server] *****  
changed: [localhost]  
  
TASK [Ensure Apache2 service is running and enabled] *****  
ok: [localhost]  
  
TASK [Display Apache service status] *****  
ok: [localhost]  
  
PLAY RECAP *****  
localhost : ok=5    changed=2    unreachable=0    failed=0
```

## Verify Apache Installation

```
sudo systemctl status apache2
```

```
● apache2.service - The Apache HTTP Server  
   Loaded: loaded (/lib/systemd/system/apache2.service; enabled)  
   Active: active (running)  
     Main PID: 1576 (apache2)
```

Now go to browser

<http://localhost>

You'll see the **Apache2 Ubuntu Default Page** — proof that Ansible successfully installed and started it.