



# DevNet Experts.

Topic- ANSIBLE



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# OVERVIEW

**What is Ansible?**

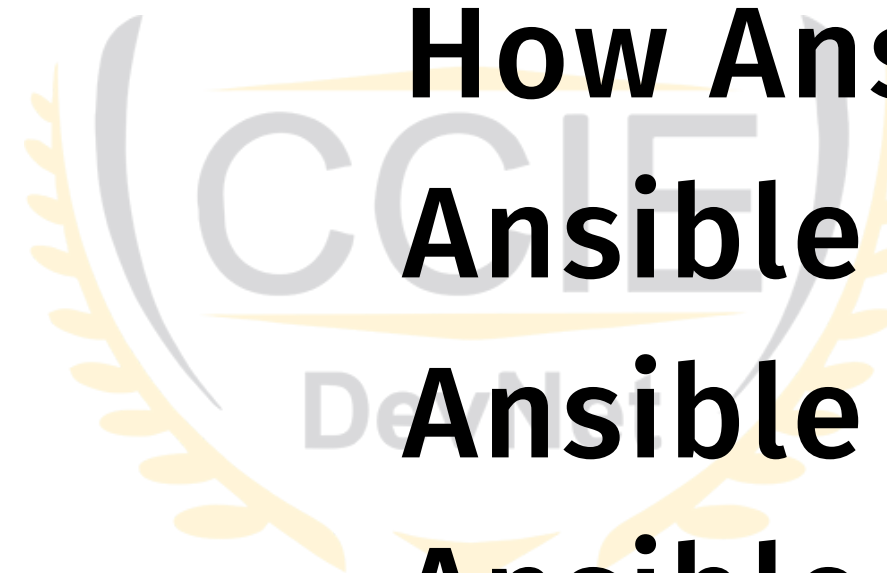
**How Ansible works?**

**Ansible Terminology**

**Ansible with Network Devices**

**Ansible Ad-hoc Commands**

**Ansible Playbook**



# What is Ansible?

- An open source IT automation tool.
- Can automate:-
  1. Provisioning.
  2. Configuration management.
  3. Application deployment.
  4. Orchestration.
  5. Other such manual IT processes.
- Based on Python.
- Can be extended by writing custom modules.



# How Ansible works?

- If target machine has Python installed, it pushes small programs called modules to execute the instructions written in YAML



- Connects to the remote systems (servers, network devices etc.) typically via SSH

- Written in Python and uses Python programs called Modules to carry out automation tasks

- If the target machine does not have python installed, it executes these modules remotely to carry out automation tasks

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# Ansible Terminology

- **Control Node-**

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The machine from which we run Ansible commands.

- **Managed Nodes-**

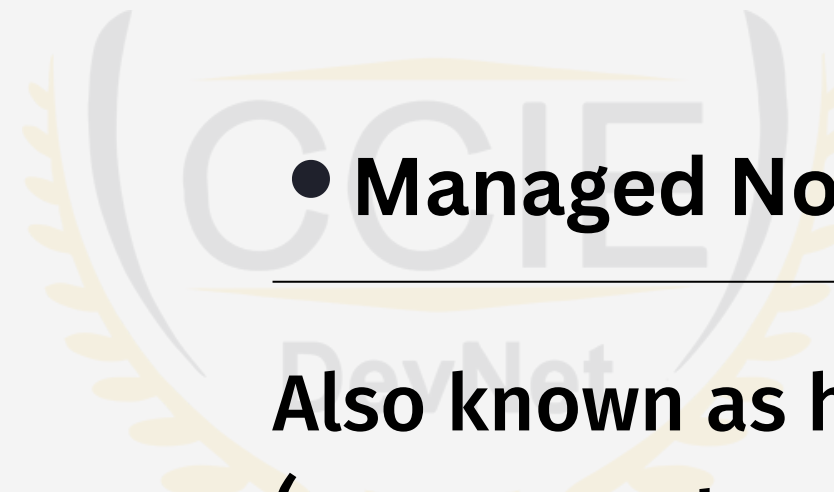
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Also known as hosts. These are the target devices (servers, network appliances or any other machines)

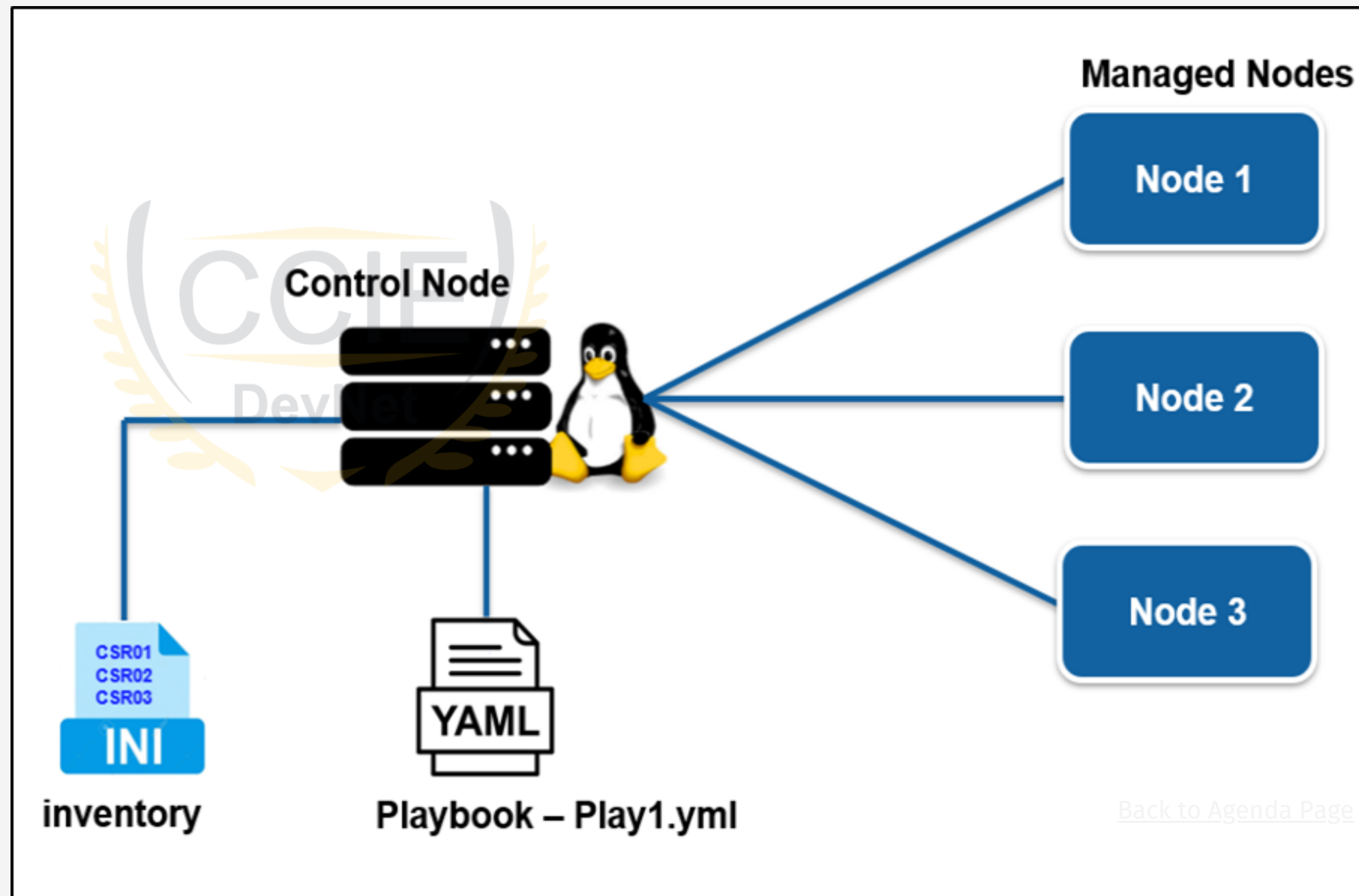
- **Inventory-**

---

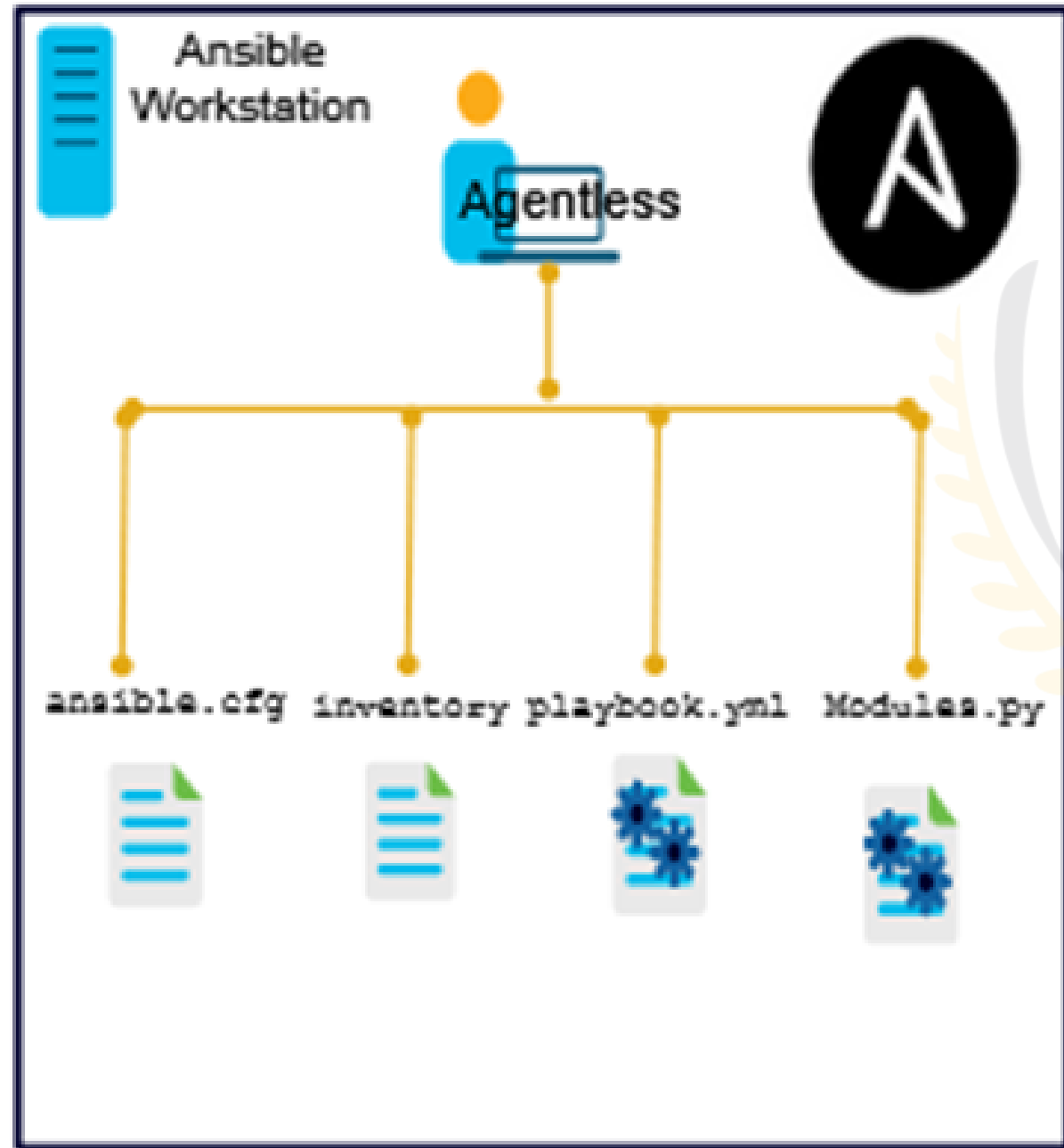
List of managed nodes provided by some inventory source or a flat file known as host file



# Ansible Terminology (cont.)



# Ansible with Network Devices.



**Control Node**

SSH, NETCONF, REST, SNMP, API



**Managed Nodes**



# Ansible Ad-hoc Commands.

```
[ansible@controller ~]$ ansible all -m shell -a "free -m"
```

```
server2 | CHANGED | rc=0 >>
```

	total	used	free	shared	buff/cache	available
Mem:	815	176	248	12	391	497
Swap:	0	0	0			

```
server1 | CHANGED | rc=0 >>
```

	total	used	free	shared	buff/cache	available
Mem:	815	181	243	12	391	492
Swap:	0	0	0			

- Ansible ad hoc command to check free memory (free -m) using the shell module on all the servers in the inventory



# Ansible Playbook.

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```
---
- name: Update web servers
  hosts: webservers
  remote_user: root

  tasks:
  - name: Ensure apache is at the latest version
    ansible.builtin.yum:
      name: httpd
      state: latest
  - name: Write the apache config file
    ansible.builtin.template:
      src: /srv/httpd.j2
      dest: /etc/httpd.conf
```

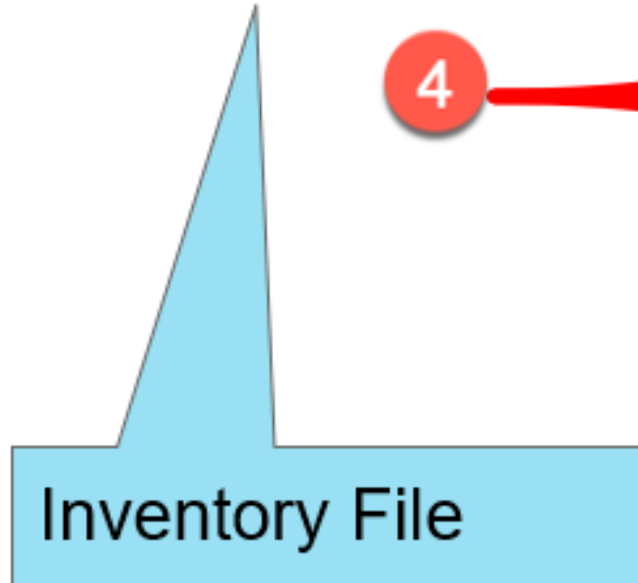
Sample playbook showing one play with two tasks.

- Playbooks - Similar to a program or a script containing set of instructions in the form of plays and tasks written in easy to understand YAML.
- Plays - Small units of executables containing variables, tasks and roles that can be repeatedly executed

# Ansible Playbook. (cont.)

1

```
[iosxe]
csr1kv-1
csr1kv-2
```



4

2

3

```
---
- name: PLAY 1 - View and Deploy SNMP
  hosts: iosxe
  connection: network_cli
  gather_facts: no

  tasks:
    - name: TASK 1 - SHOW SNMP COMMUNITY
      ios_command:
        commands: show snmp community

    - name: TASK 2 - MANAGE SNMP
      ios_config:
        commands:
          - snmp-server community public RO
          - snmp-server community private RW
```

# Ansible Playbook (cont.)

1. Inventory file showing the list of hosts
2. Header section showing:
  - Name of the play
  - Nodes it wants to connect
  - Connection mode to be used. Default is ssh, in this case it is using `network_cli` to talk to network devices.
3. List of tasks showing the module to be used
  - `ios_command` - Module to send command line commands to Cisco IOS Devices
  - `ios_config` - Module to send config commands to Cisco IOS Devices
4. One play in the playbook





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DEMO.