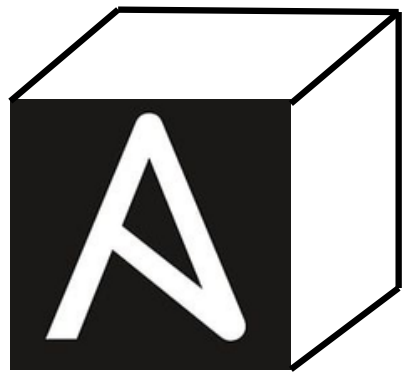

Important Ansible Playbook Modules

Ömer Berat Sezer

PhD | Software Engineer | DevOps | Solution Architect

linkedin.com/in/omerberatsezer/

github.com/omerbsezer

Ansible is an open-source automation tool

Ansible automates tasks and commands to manage multiple nodes (servers, PCs)

commands, tasks, codes turn into the **infrastructure as code (IaC)**

savable, versionable, repeatable and testable codes with IaC

agentless: on the worker node, any agent app is not required to run

documentation: https://docs.ansible.com

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two types of nodes (servers)
1. control node (master)
2. worker nodes

control node communicates
with remote nodes
via SSH (for Linux and Windows)
or WinRM (for Windows)

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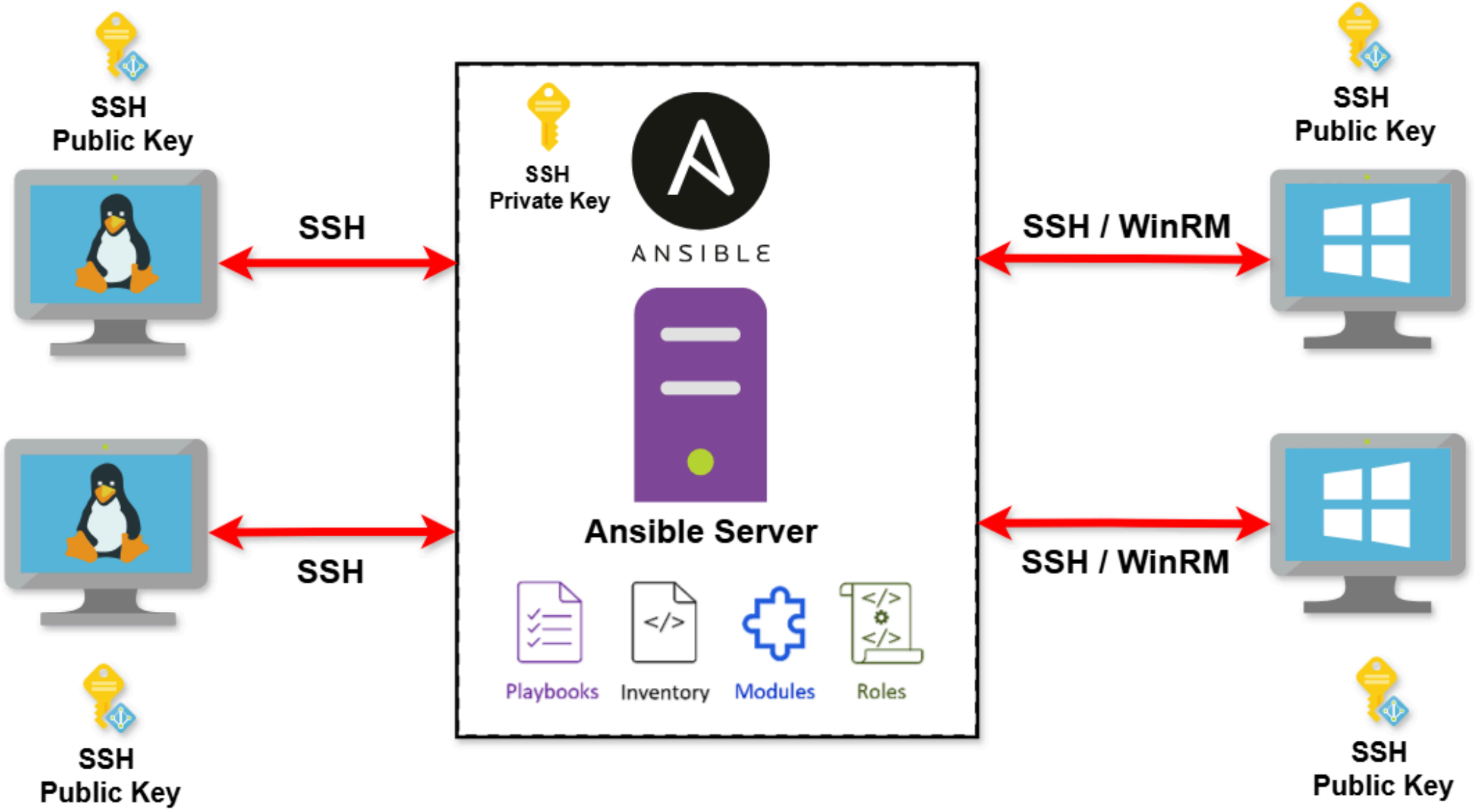
SSH keys can be used
SSH private key on control node
SSH public key on worker nodes



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install Ansible

Ansible installed on a control node

the control node manages target machines via SSH
without requiring any agents
on the worker nodes

```
user@ansible:$  sudo apt update && sudo apt install ansible -y
# On Debian/Ubuntu
[user@ansible ~]:# sudo yum install ansible -y
# On CentOS/RHEL
```

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configuration (ansible.cfg)

defining global settings
like inventory location,
SSH connection details,
and plugin paths

ansible.cfg

```
[defaults]
inventory = ./inventory                 # inventory file path
private_key_file = ~/.ssh/id_rsa        # private SSH key path
remote_user = ubuntu                    # defines the default SSH user
host_key_checking = False               # SSH host key verification required?
retry_files_enabled = False             # retry files are disabled
log_path = /var/log/ansible.log         # to save logs of Ansible runs
```

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inventory

an inventory file lists target
hosts with IP or DNS name
and their grouping for Ansible operations

inventories/inventory

```
[webservers]
web1 ansible_ssh_host=192.168.1.10 ansible_user=ubuntu
web2 ansible_ssh_host=192.168.1.11 ansible_user=ubuntu
[databases]
db1 ansible_ssh_host=192.168.1.20 ansible_user=root
```

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playbook

a YAML file defining tasks, roles, or workflows for managing hosts

playbooks are declarative and describe the desired state of systems

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playbook
(yaml file)

deploy.yml

```yaml
- name: Install and start Apache
  hosts: webservers   # select on which group of servers to run (inventory)
  become: yes         #  run tasks with elevated privileges (sudo)
  tasks:
    - name: Install Apache
      apt:                    # apt module
        name: apache2
        state: present     # apt module parameter (to install)
  - name: Ensure Apache is running
    service:
      name: apache2
      state: started
```

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playbook modules

many playbook listed in Ansible documents

all modules:

https://docs.ansible.com/ansible/2.8/modules/modules_by_category.html

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apt
(debian-based)

installing a package, apt

! modules.yml

```yaml
- name: install Apache
  apt:
    name: apache2
    state: present
  become: yes
```

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yum
(redhat-based)

installing a package, apt

! modules.yml

```yaml
- name: install nginx
  yum:
    name: nginx
    state: present
  become: yes
```

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file
(directory)

create a directory

! modules.yml

```yaml
- name: create a directory
  file:
    path: /tmp/example_dir
    state: directory
    mode: '0755'
    owner: root
    group: root
```

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file

create a file

! modules.yml

```yaml
- name: create an empty file
  file:
    path: /tmp/example_file.txt
    state: file
    mode: '0644'
    owner: root
    group: root
```

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lineinfile

modify a configuration file, add 1 line

! modules.yml

```yaml
- name: ensure a line exists in a config file
  lineinfile:
      path: /etc/sysctl.conf
      line: "net.ipv4.ip_forward = 1"
```

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copy

copy file to remote

! modules.yml

```yaml
- name: copy configuration file
  copy:
    src: /path/to/source.conf
    dest: /etc/app/config.conf
    mode: '0644'
```

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service

start and enable a service

! modules.yml

```yaml
- name: ensure Apache is running and enabled
  service:
    name: apache2
    state: started
    enabled: true
```

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shell

run a shell command

! modules.yml

```yaml
- name: run a shell command
  shell: "echo 'Hello World' > /tmp/hello.txt"
```

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user

create a new user

! modules.yml

```yaml
- name: create a user
  user:
    name: john
    state: present
    groups: sudo
```

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cron

add a cron job

! modules.yml

```yaml
- name: add a cron job
  cron:
    name: "backup database"
    minute: "0"
    hour: "2"
    job: "/usr/local/bin/backup.sh"
```

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fetch

retrieve a log file

! modules.yml

```yaml
- name: fetch log file from remote server
  fetch:
      src: /var/log/app.log
      dest: /local/logs/
      flat: yes
```

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git

git clone

! modules.yml

```yaml
- name: clone Git repository
  git:
      repo: https://github.com/example/repo.git
      dest: /opt/repo
      version: master
```

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ping

test connection, ping

! modules.yml

```yaml
- name: ping the target node
  ping:
```

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unarchive

extract a tarball, unarchive

! modules.yml

```yaml
- name: extract tarball
  unarchive:
    src: /tmp/file.tar.gz
    dest: /opt/app
    remote_src: yes
```

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reboot

reboot the system

! modules.yml

```yaml
- name: reboot the server
  reboot:
    reboot_timeout: 300
```

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mount

mount a disk

! modules.yml

```yaml
- name: mount /dev/sdb1 to /mnt
  mount:
    path: /mnt
    src: /dev/sdb1
    fstype: ext4
    state: mounted
```

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firewalld

open a port

! modules.yml

```yaml
- name: open port 80
  firewalld:
      port: 80/tcp
      permanent: true
      state: enabled
      become: true
```

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package

generic module to manage packages

! modules.yml

```yaml
- name: install curl
  package:
    name: curl
    state: present
```

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group

manage groups

! modules.yml

```yaml
- name: create a group
  group:
    name: ansible_group
    state: present
```

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command

run a command on the remote host

! modules.yml

```yaml
- name: list directory contents
  command: ls -l /tmp
```

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stat, debug

get file or directory properties
and get output to debug

! modules.yml

```yaml
- name: check if a file exists
  stat:
    path: /etc/myapp/config.conf
    register: file_info
- name: print the entire registered variable
    debug:
    var: file_info
```

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user@ansible:$ ##

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Linux, Terraform, DevOps
Why? Cause; More will unfold over time

||
V

https://linkedin.com/in/omerberatsezer

https://github.com/omerbsezer

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to help more people see it

user@ansible:$ ##

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