Important Ansible Playbook Modules

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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)

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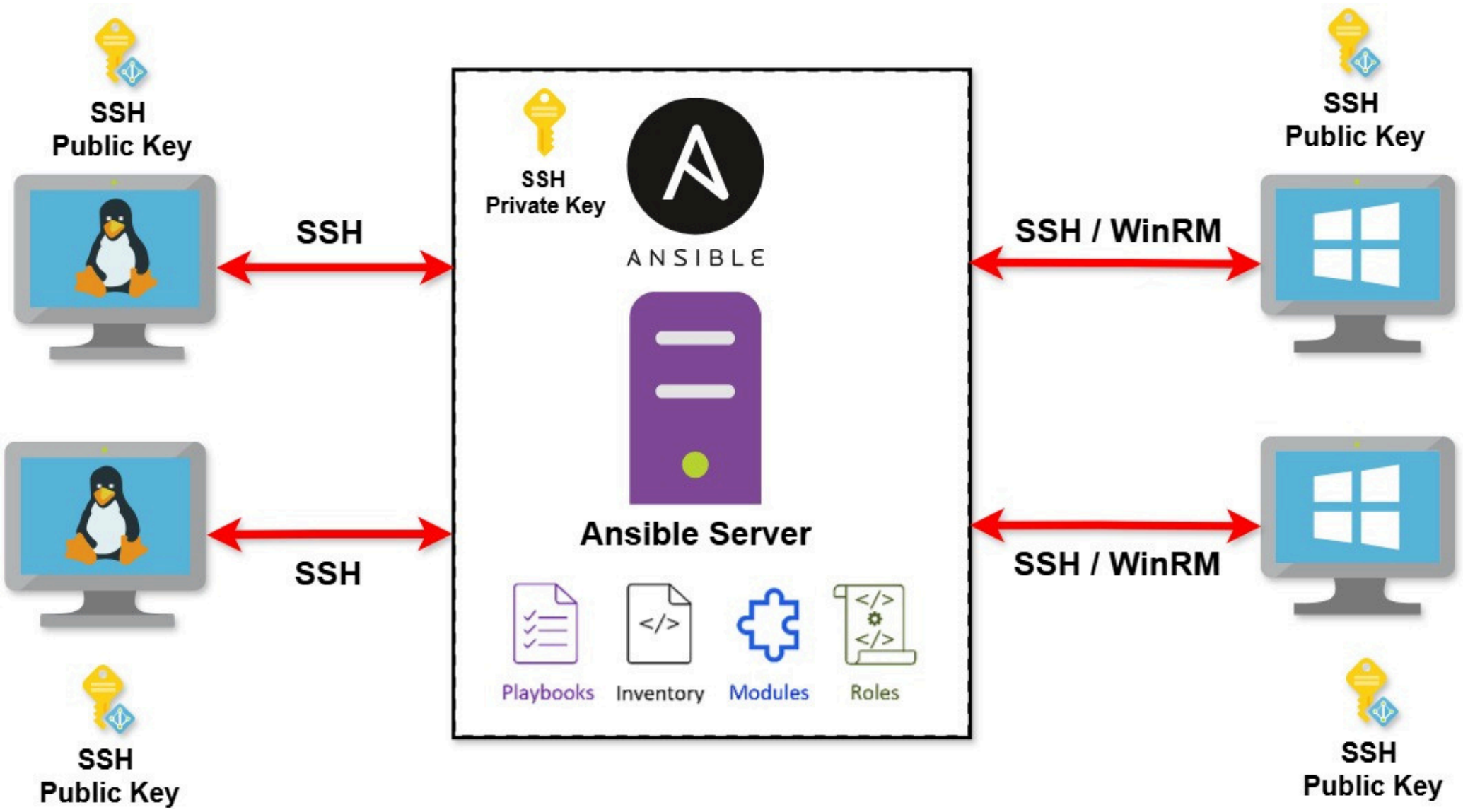
SSH keys can be used SSH private key on control node SSH public key on worker nodes



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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@ans ble:$ sudo apt update && sudo apt  nstall ans ble -y
# On Deb an/Ubuntu
[user@ans ble ~]:# sudo yum  nstall ans ble -y
# On CentOS/RHEL
```

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configuration (ansible.cfg)

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

ans ble.cfg

```
[defaults]
 nventory = ./ nventory                 #  nventory f le path
pr vate_key_f le = ~/.ssh/ d_rsa        # pr vate SSH key path
remote_user = ubuntu                    # def nes the default SSH user
host_key_check ng = False               # SSH host key ver f cat on requ red?
retry_f les_enabled = False             # retry f les are d sabled
log_path = /var/log/ans ble.log         # to save logs of Ans ble runs
```

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inventory

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

nventor es/ nventory

```
[webservers]
web1 ans ble_ssh_host=192.168.1.10 ans ble_user=ubuntu
web2 ans ble_ssh_host=192.168.1.11 ans ble_user=ubuntu
[databases]
db1 ans ble_ssh_host=192.168.1.20 ans ble_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 wh ch group of servers to run ( nventory)
  become: yes           # run tasks w th elevated pr v leges (sudo)
  tasks:
- name: Install Apache
    apt:                # apt module
      name: apache2
      state: present    # apt module parameter (to  nstall)
  - name: Ensure Apache  s runn ng
    serv ce:
      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

apt (debian-based)

installing a package, apt

! modules.yml

```
- name:  nstall Apache
 apt:
      name: apache2
      state: present
 become: yes
```

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yum (redhat-based)

installing a package, apt

! modules.yml

```yaml
- name:  nstall ng nx
  yum:
      name: ng nx
      state: present
  become: yes
```

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file
(directory)

create a directory

! modules.yml

```yaml
- name: create a d rectory
  f le:
    path: /tmp/example_d r
    state: d rectory
    mode: '0755'
    owner: root
    group: root
```

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file

create a file

! modules.yml

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

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lineinfile

modify a configuration file, add 1 line

! modules.yml

```
- name: ensure a l ne ex sts  n a conf g f le
  l ne nf le:
      path: /etc/sysctl.conf
      l ne: "net. pv4. p_forward = 1"
```

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copy

copy file to remote

! modules.yml

```yaml
- name: copy conf gurat on f le
  copy:
      src: /path/to/source.conf
      dest: /etc/app/conf g.conf
      mode: '0644'
```

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service

start and enable a service

! modules.yml

```
- name: ensure Apache  s runn ng and enabled
 serv ce:
     name: apache2
     state: started
     enabled: true
```

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shell

run a shell command

! modules.yml

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

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user

create a new user

! modules.yml

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

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cron

add a cron job

! modules.yml

```
- name: add a cron job
 cron:
     name: "backup database"
     m nute: "0"
     hour: "2"
     job: "/usr/local/b n/backup.sh"
```

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fetch

retrieve a log file

! modules.yml

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

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git

git clone

! modules.yml

```
- name: clone G t repos tory
  g t:
      repo: https://g thub.com/example/repo.g t
      dest: /opt/repo
      vers on: master
```

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ping

test connection, ping

! modules.yml

```
- name: p ng the target node
  p ng:
```

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unarchive

extract a tarball, unarchive

! modules.yml

```yaml
- name: extract tarball
 unarch ve:
     src: /tmp/f le.tar.gz
     dest: /opt/app
     remote_src: yes
```

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reboot

reboot the system

! modules.yml

```
- name: reboot the server
  reboot:
      reboot_t meout: 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

```
- name: open port 80
 f rewalld:
      port: 80/tcp
      permanent: true
      state: enabled
      become: true
```

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package

generic module to manage packages

! modules.yml

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

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group

manage groups

! modules.yml

```
- name: create a group
  group:
      name: ans ble_group
      state: present
```

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command

run a command on the remote host

! modules.yml

```
- name: l st d rectory contents
  command: ls -l /tmp
```

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stat, debug

get file or directory properties
and get output to debug

! modules.yml

```
- name: check  f a f le ex sts
 stat:
     path: /etc/myapp/conf g.conf
     reg ster: f le_ nfo
- name: pr nt the ent re reg stered var able
     debug:
     var: f le_ nfo
```

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