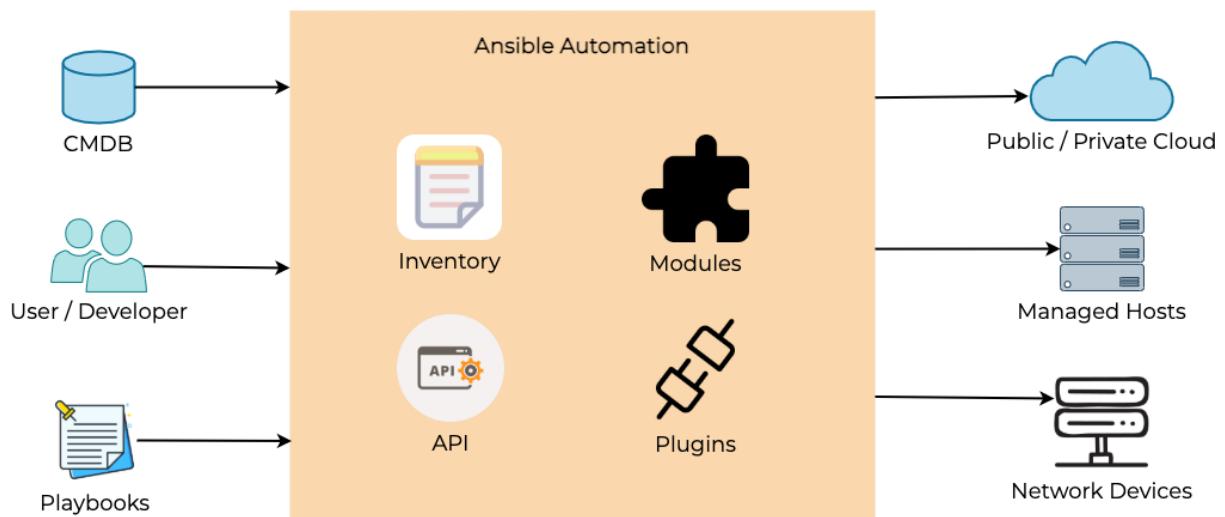
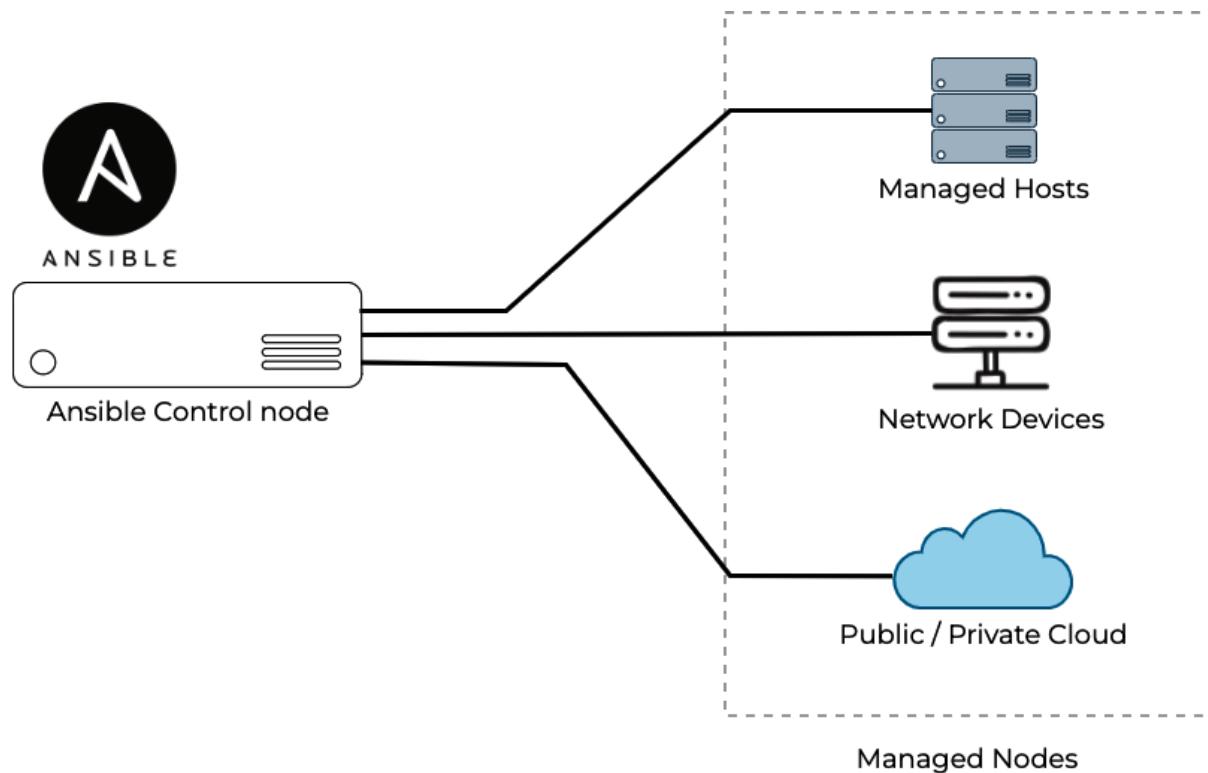


Chapter 1: Ansible Automation – Introduction



```

## Chapter-01/hosts
[nodes]
node1 ansible_host=192.168.56.25

[web]
node1 ansible_host=192.168.56.25
node2 ansible_host=192.168.56.24

[loadbalancer]
node3 ansible_host=192.168.56.45

[windows]
win2019 ansible_host=192.168.56.22

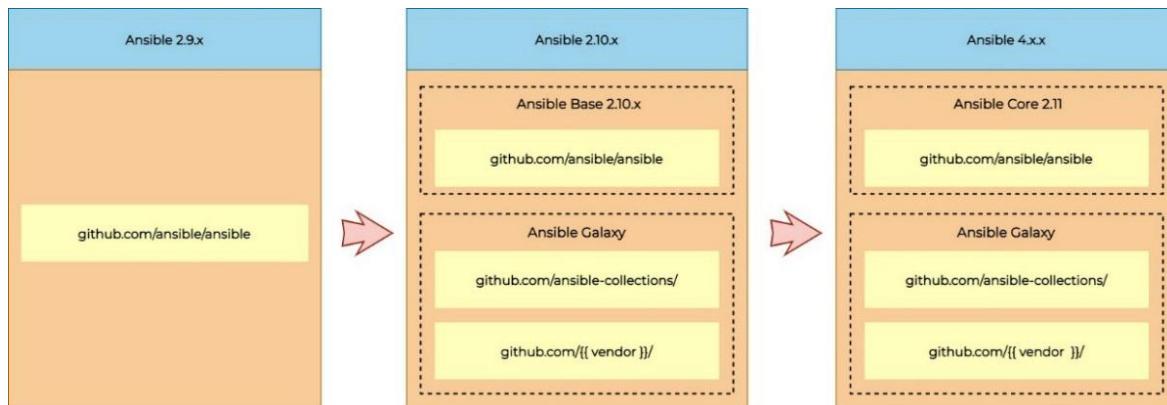
[nodes:vars]
ansible_ssh_private_key_file=/home/ansible/.ssh/id_rsa

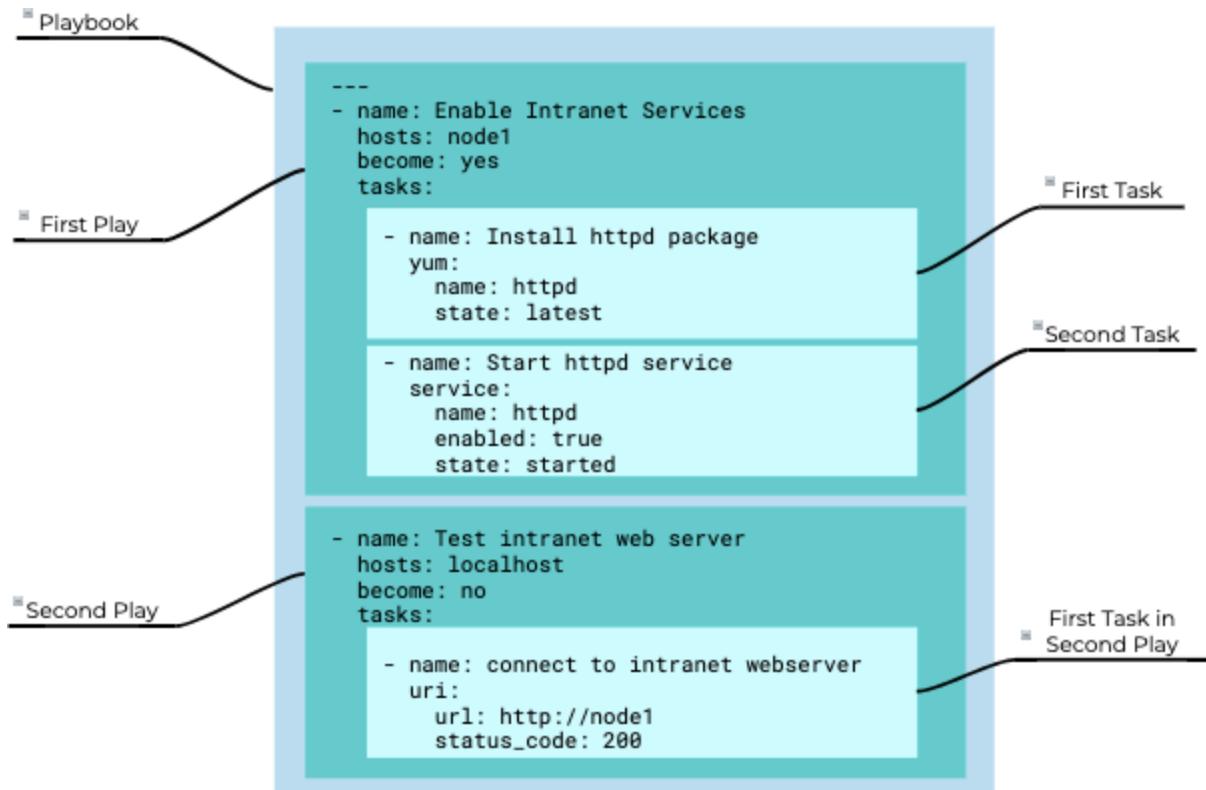
```

```

- name: Ping to managed node
  ping:
- name: Install httpd package
  yum:
    name: httpd
    state: latest

```





ansible@ansible ~]\$ sudo dnf list installed python3*

Updating Subscription Management repositories.

Installed Packages

python3-bind.noarch	32:9.11.26-3.el8	@rhel8-appstream-media
python3-chardet.noarch	3.0.4-7.el8	@anaconda
.	.	.
..<output omitted for brevity>..		
python36.x86_64	3.6.8-2.module+el8.1.0+3334+5cb623d7	@rhel8-appstream-media

Also verify the version of Python

[ansible@ansible ~]\$ python3 -V

Python 3.6.8

on RHEL/Fedora/CentOS systems

[ansible@ansible ~]\$ sudo dnf install ansible

For an Ubuntu system, you can use the apt command as follows:

\$ sudo apt install ansible

```
[ansible@ansible ~]$ ansible --version
ansible 2.9.27
config file = /etc/ansible/ansible.cfg
configured module search path = ['/home/ansible/.ansible/plugins/modules', '/usr/share/ansible/plugins/modules']
ansible python module location = /usr/lib/python3.6/site-packages/ansible
executable location = /usr/bin/ansible
python version = 3.6.8 (default, Mar 18 2021, 08:58:41) [GCC 8.4.1 20200928 (Red Hat 8.4.1-1)]
```

```
## download and install Python pip
$ curl https://bootstrap.pypa.io/get-pip.py -o get-pip.py
$ python get-pip.py --user

## If pip is already installed, then make sure it is upgraded to the latest supported version.
$ python -m pip install --upgrade pip

## Then, install Ansible using pip:
$ python -m pip install --user ansible
```

```
## Installing old ansible version (ansible + modules)
$ python -m pip install ansible==2.9.25 --user

## Installing Ansible package (ansible-core + Ansible collections)
$ python -m pip install ansible==4 --user

## Installing ansible-base (ansible-base only; you need to install required collections separately)
$ python -m pip install ansible-base==2.10.13 --user

## Installing ansible-core (ansible-core only; you need to install required collections separately)
$ python -m pip install ansible-core==2.11.4 --user
```

```
[ansible@ansible ~]$ ansible --version
[DEPRECATION WARNING]: Ansible will require Python 3.8 or newer on the controller starting with Ansible
2.12. Current version: 3.6.8 (default, Mar 18 2021, 08:58:41) [GCC 8.4.1 20200928 (Red Hat 8.4.1-1)]. This
feature will be removed from ansible-core in version 2.12. Deprecation warnings can be disabled by setting
deprecation_warnings=False in ansible.cfg.
ansible [core 2.11.6]
config file = None
configured module search path = ['/home/ansible/.ansible/plugins/modules', '/usr/share/ansible/plugins/modules']
ansible python module location = /home/ansible/.local/lib/python3.6/site-packages/ansible
ansible collection location = /home/ansible/.ansible/collections:/usr/share/ansible/collections
executable location = /home/ansible/.local/bin/ansible
python version = 3.6.8 (default, Mar 18 2021, 08:58:41) [GCC 8.4.1 20200928 (Red Hat 8.4.1-1)]
jinja version = 3.0.3
libyaml = True
```

● ○ ●

```
[ansible@ansible ~]$ mkdir ansible-demo
[ansible@ansible ~]$ cd ansible-demo/
[ansible@ansible ansible-demo]$ vim ansible.cfg
```

● ○ ●

```
[Defaults]
inventory = ./hosts
remote_user = devops
ask_pass = false
```

● ○ ●

```
ansible@ansible ansible-demo]$ ansible --version
ansible [core 2.11.6]
config file = /home/ansible/ansible-demo/ansible.cfg
.
..<output omitted for brevity>..
```

● ○ ●

```
[ansible@ansible ansible-demo]$ cat ansible.cfg
[Defaults]
inventory = ./hosts
remote_user = devops
ask_pass = false

[privilegeEscalation]
become = true
becomeMethod = sudo
becomeUser = root
becomeAskPass = true
```

● ○ ●

```
## switch to project directory
[ansible@ansible ~]$ cd ansible-demo/

## Open the file in text editor
[ansible@ansible ansible-demo]$ vim hosts
```

```
● ● ●  
[local]  
localhost  
  
[dev]  
192.168.100.4
```

```
● ● ●  
[ansible@ansible ansible-demo]$ cat hosts  
[local]  
localhost ansible_connection=local  
  
[dev]  
node01 ansible_host=192.168.100.4
```

```
● ● ●  
[ansible@ansible ansible-demo]$ ansible all --list-hosts  
hosts (2):  
localhost  
node01
```

```
● ● ●  
[ansible@ansible ansible-demo]$ cat myinventory  
[myself]  
localhost  
  
[intranetweb]  
servera.techbeatly.com  
serverb.techbeatly.com  
  
[database]  
db101.techbeatly.com  
  
[everyone:children]  
myself  
intranetweb  
database
```

```
● ● ●  
[ansible@ansible ansible-demo]$ ls -l  
total 12  
-rw-rw-r--. 1 ansible ansible 181 Nov 19 15:40 ansible.cfg  
-rw-rw-r--. 1 ansible ansible  90 Nov 19 15:33 hosts  
-rw-rw-r--. 1 ansible ansible 162 Nov 19 15:44 myinventory
```

```
● ● ●

[ansible@ansible ansible-demo]$ ansible all --list-hosts -i myinventory
hosts (4):
  localhost
  servera.techbeatly.com
  serverb.techbeatly.com
  db101.techbeatly.com
```

```
● ● ●

[ansible@ansible ansible-demo]$ ansible --help
.

.

-h, --help          show this help message and exit
-i INVENTORY, --inventory INVENTORY, --inventory-file INVENTORY
                  speciy inventory host path or comma separated host
                  list. --inventory-file is deprecated
-l SUBSET, --limit SUBSET
                  further imit selected hosts to an additional pattern
-m MODULE_NAME, --module-name MODULE_NAME
                  Name of the actionto execute (default=command)
-o, --one-line      condense output
-t TREE, --tree TREE log output to this directory
-v, --verbose       verbose mode (-vvv for more, -vvvv to enable
                  connection debugging)
.

...<output omitted for brevity>...
```

```
● ● ●

[ansible@ansible ansible-demo]$ ansible --list-hosts -i myinventory *techbeatly.com
hosts (3):
  servera.techbeatly.com
  serverb.techbeatly.com
  db101.techbeatly.com

## Print only db servers:
[ansible@ansible ansible-demo]$ ansible --list-hosts -i myinventory db*
hosts (1):
  Db101.techbeatly.com
```

```
● ● ●

## create a new user - devops
[root@node01 ~]# useradd devops

## set password for the new user
[root@node01 ~]# passwd devops
Changing password for user devops.
New password:
Retype new password:
passwd: all authentication tokens updated successfully.
```



```
[root@node01 ~]# echo "devops ALL=(ALL) NOPASSWD: ALL" > /etc/sudoers.d/devops
```



```
[ansible@ansible ansible-demo]$ ssh-keygen -t rsa -b 4096 -C "ansible@ansible.lab.local"
Generating public/private rsa key pair.
Enter file in which to save the key (/home/ansible/.ssh/id_rsa):
Created directory '/home/ansible/.ssh'.
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/ansible/.ssh/id_rsa.
Your public key has been saved in /home/ansible/.ssh/id_rsa.pub.
..<output omitted>..
+----[SHA256]----+
```



```
[ansible@ansible ansible-demo]$ ls -la ~/.ssh/
total 8
drwx----- 2 ansible ansible 38 Nov 19 16:14 .
drwx----- 7 ansible ansible 175 Nov 19 16:14 ..
-rw----- 1 ansible ansible 3389 Nov 19 16:14 id_rsa
-rw-r--r-- 1 ansible ansible 751 Nov 19 16:14 id_rsa.pub
```



```
[ansible@ansible ansible-demo]$ ssh-copy-id -i ~/.ssh/id_rsa devops@node01
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/ansible/.ssh/id_rsa.pub"
The authenticity of host 'node01 (192.168.100.4)' can't be established.
RSA key fingerprint is SHA256:UEQ72EtSvn+0/tuEDbeclQuhHNTtp/uPf+VVvKkuB6k.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already installed

/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompted now it is to install the new
keys
devops@node01's password:

Number of key(s) added: 1

Now try logging into the machine, with:  "ssh 'devops@node01'"
and check to make sure that only the key(s) you wanted were added.
```



```
[ansible@ansible ansible-demo]$ ssh devops@node01node-1
Last login: Fri Nov 19 16:23:25 2021
[devops@node01node-1 ~]$ 

## check sudo access
[devops@node01node-1 ~]$ sudo -i
[root@node01node-1 ~]# hostname
Node01Node-1.lab.local
```



```
[dev]
node01 ansible_host=192.168.100.4 ansible_ssh_private_key_file=/home/ansible/.ssh/id_rsa ansible_user=devops

## Or, you can configure the variable details
## separately in the inventory file:
[dev]
node01 ansible_host=192.168.100.4

[dev:vars]
ansible_ssh_private_key_file=/home/ansible/.ssh/id_rsa
ansible_user=devops
```



```
[ansible@ansible ansible-demo]$ ansible all -m ping
localhost | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/libexec/platform-python"
    },
    "changed": false,
    "ping": "pong"
}
node01 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/libexec/platform-python"
    },
    "changed": false,
    "ping": "pong"
}
```



```
[ansible@ansible ansible-demo]$ ansible all -m shell -a "whoami"
localhost | CHANGED | rc=0 >>
ansible
node01 | CHANGED | rc=0 >>
devops
```

```
[ansible@ansible ansible-demo]$ ansible all -m shell -a "hostname;uptime;date;cat /etc/*release| grep ^NAME;uname -a"
localhost | CHANGED | rc=0 >>
ansible
16:58:15 up 1:37, 1 user,  load average: 0.00, 0.00, 0.00
Fri Nov 19 16:58:15 UTC 2021
NAME="Red Hat Enterprise Linux"
Linux ansible 4.18.0-305.el8.x86_64 #1 SMP Thu Apr 29 08:54:30 EDT 2021 x86_64 x86_64 x86_64 GNU/Linux
node01 | CHANGED | rc=0 >>
node01.lab.local
16:58:15 up 1:43, 2 users,  load average: 0.24, 0.05, 0.02
Fri Nov 19 16:58:15 UTC 2021
NAME="Red Hat Enterprise Linux"
Linux node01.lab.local 4.18.0-305.el8.x86_64 #1 SMP Thu Apr 29 08:54:30 EDT 2021 x86_64 x86_64 x86_64 GNU/Linux
```

```
[ansible@ansible ansible-demo]$ ansible all -m setup -a "filter=ansible_distribution"
```

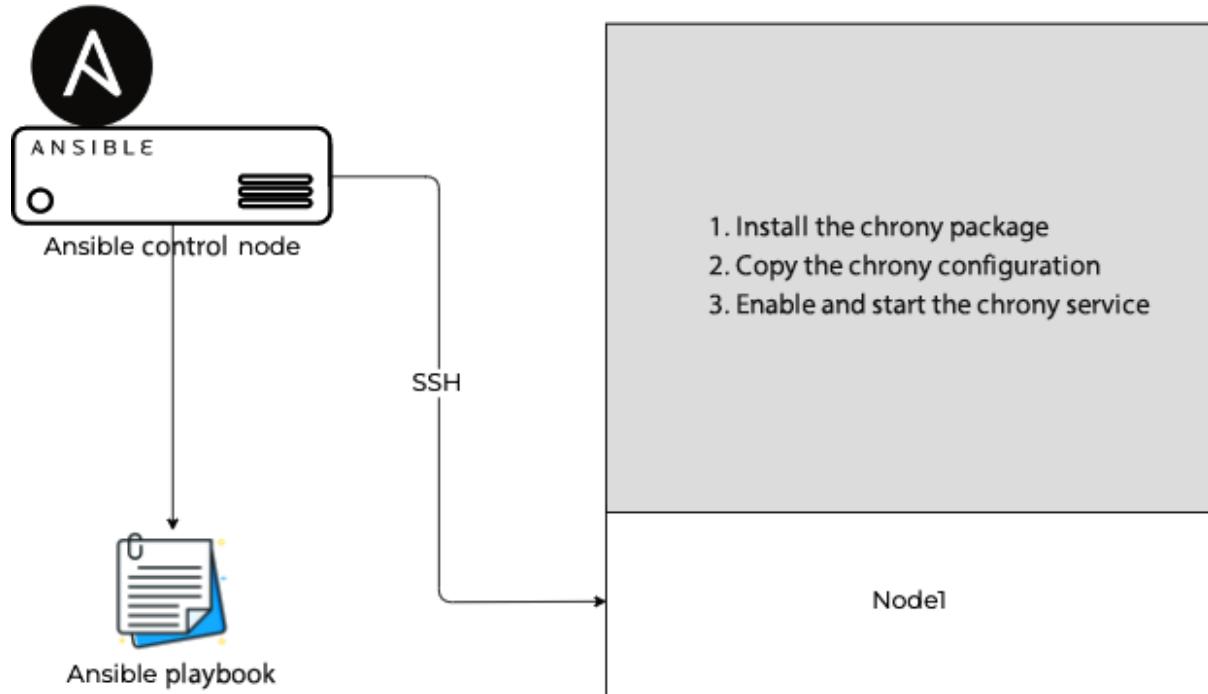
```
[ansible@ansible ansible-demo]$ ansible node01 -m dnf -a 'name=vim state=latest'
node01 | FAILED! => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/libexec/platform-python"
  },
  "changed": false,
  "msg": "This command has to be run under the root user.",
  "results": []
}
```

```
[ansible@ansible ansible-demo]$ ansible node01 -m dnf -a 'name=vim state=latest' -b
node01 | CHANGED => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/libexec/platform-python"
  },
  "changed": true,
  "msg": "",
  "rc": 0,
  "results": [
    "Installed: vim-common-2:8.0.1763-16.el8.x86_64",
    "Installed: vim-enhanced-2:8.0.1763-16.el8.x86_64",
    "Installed: gpm-libs-1.20.7-17.el8.x86_64"
  ]
}
```

```
## Chapter-01/site.yaml
---
- name: Install Vim Package
  hosts: node1
  become: true
  tasks:
    - name: Ensure vim package is installed
      ansible.builtin.dnf:
        name: vim
        state: latest
```

```
[ansible@ansible ansible-demo]$ ansible node01 -m dnf -a 'name=vim state=absent' -b
node01 | CHANGED => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/libexec/platform-python"
  },
  "changed": true,
  "msg": "",
  "rc": 0,
  "results": [
    "Removed: vim-enhanced-2:8.0.1763-16.el8.x86_64"
  ]
}
```

Chapter 2: Starting with Simple Automation



```
● ● ●  
[defaults]  
inventory = ./hosts  
remote_user = devops  
ask_pass = false  
  
deprecation_warnings = False  
[privilegeEscalation]  
become = false  
become_method = sudo  
become_user = root  
become_ask_pass = false
```

```
● ● ●  
. .  
[nodes]  
node1 ansible_host=192.168.56.25  
  
[nodes:vars]  
ansible_ssh_private_key_file=/home/ansible/.ssh/id_rsa  
ansible_user=devops
```



```
---  
- name: Install Chrony Package  
  hosts: node1  
  become: true  
  tasks:  
    - name: Ensure chrony package is installed  
      ansible.builtin.dnf:  
        name: chrony  
        state: latest
```



```
[ansible@ansible Chapter-02]$ ansible-playbook install-package.yaml  
  
PLAY [Install Chrony Package] *****  
  
TASK [Gathering Facts] *****  
ok: [node1]  
  
TASK [Ensure Chrony package is installed] *****  
changed: [node1]  
  
PLAY RECAP *****  
dev-rhel8-55node1 : ok=2    changed=1    unreachable=0    failed=0    skipped=0    rescued=0  
ignored=0
```



```
TASK [Ensure Chrony package is installed] *****  
changed: [node1]
```



```
[devops@node-1 ~]$ sudo yum list installed chrony  
Updating Subscription Management repositories.  
Installed Packages  
chrony.x86_64          4.1-1.el8          @rhel-8-for-x86_64-baseos-rpms
```



```
server 0.sg.pool.ntp.org  
server 1.sg.pool.ntp.org  
server 2.sg.pool.ntp.org  
server 3.sg.pool.ntp.org  
driftfile /var/lib/chrony/drift  
makestep 1.0 3  
rtcsync  
keyfile /etc/chrony.keys  
leapsectz right/UTC  
logdir /var/log/chrony
```

```
● ● ●

---  
# Chapter-02/install-package.yaml  
- name: Install Chrony Package  
  hosts: node1  
  become: true  
  tasks:  
    - name: Ensure chrony package is installed  
      ansible.builtin.dnf:  
        name: chrony  
        state: latest  
  
    - name: Copy chrony configuration to node  
      ansible.builtin.copy:  
        src: chrony.conf.sample  
        dest: /etc/chrony.conf  
        mode: 644  
        owner: root  
        group: root  
  
    - name: Enable and start chrony Service  
      ansible.builtin.systemd:  
        name: chronyd  
        state: started  
        enabled: yes  
        masked: no
```

```
● ● ●

[ansible@ansible Chapter-02]$ ansible-playbook install-package.yaml  
  
PLAY [Install Chrony Package] *****  
  
TASK [Gathering Facts] *****  
ok: [dev-rhel8-55]  
  
TASK [Ensure chrony package is installed] *****  
ok: [dev-rhel8-55]  
  
TASK [Copy chrony configuration to node] *****  
changed: [node1]  
  
TASK [Enable and start chrony Service] *****  
changed: [node1]  
  
PLAY RECAP *****  
node1 : ok=4    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

```
[devops@node-1 ~]$ cat /etc/chrony.conf
server 0.sg.pool.ntp.org
server 1.sg.pool.ntp.org
server 2.sg.pool.ntp.org
server 3.sg.pool.ntp.org
driftfile /var/lib/chrony/drift
makestep 1.0 3
rtcsync
keyfile /etc/chrony.keys
leapsectz right/UTC
logdir /var/log/chrony[devops@node-1 ~]$

[devops@node-1 ~]$ sudo systemctl status chronyd
● chronyd.service - NTP client/server
   Loaded: loaded (/usr/lib/systemd/system/chronyd.service; enabled; vendor preset: enable>
   Active: active (running) since Sun 2022-07-24 07:58:06 UTC; 1h 8min ago
     Docs: man:chronyd(8)
           man:chrony.conf(5)
...output omitted...
```

```
[ansible@ansible Chapter-02]$ ansible-doc -l
add_host                                Add a host ...
amazon.aws.aws_az_facts                  Gather info...
amazon.aws.aws_az_info                   Gather info...
amazon.aws.aws_caller_facts              Get informa...
amazon.aws.aws_caller_info                Get informa...
amazon.aws.aws_s3                        manage obje...
amazon.aws.cloudformation               Create or d...
amazon.aws.cloudformation_facts          Obtain info...
amazon.aws.cloudformation_info           Obtain info...
...output omitted...
```

```
[ansible@ansible Chapter-02]$ ansible-doc -s dnf
- name: Manages packages with the 'dnf' package manager
  dnf:
    allow_downgrade:      # Specify if the named package and version is allowed to downgrade
                          a maybe already installed higher
                          version of that package. Note
                          that setting allow_downgrade=True
                          can make this module behave in a
                          non-idempotent way. The task
                          could end up with a set of
                          packages that does not match the
...output omitted...
```

```

● ● ●

[ansible@ansible Chapter-02]$ ansible-doc dnf
> ANSIBLE.BUILTIN.DNF      (/home/ansible/.local/lib/python3.6/site-packages/ansible/modules/dnf.>

    Installs, upgrade, removes, and lists packages and groups with the
    `dnf` package manager.

OPTIONS (= is mandatory):

- allow_downgrade
    Specify if the named package and version is allowed to downgrade a
    maybe already installed higher version of that package. Note that
    setting allow_downgrade=True can make this module behave in a non-
    idempotent way. The task could end up with a set of packages that
    ...output omitted...
VERSION_ADDED_COLLECTION: ansible.builtin

EXAMPLES:

- name: Install the latest version of Apache
  dnf:
    name: httpd
    state: latest

- name: Install Apache >= 2.4
  dnf:
    name: httpd>=2.4
    state: present
...output omitted...

```

```

● ● ●

add_host                                         Add a host (a...
ansible.netcommon.cli_command                   Run a cli com...
ansible.netcommon.cli_config                    Push text bas...
ansible.netcommon.cli_parse                     Parse cli out...
ansible.netcommon.net_banner                   (deprecated, ...
ansible.netcommon.net_get                      Copy a file f...
ansible.netcommon.net_interface                (deprecated, ...
ansible.netcommon.net_l2_interface              (deprecated, ...
ansible.netcommon.net_l3_interface              (deprecated, ...
ansible.netcommon.net_linkagg                  (deprecated, ...
ansible.netcommon.net_lldp                     (deprecated, ...
ansible.netcommon.net_lldp_interface           (deprecated, ...
ansible.netcommon.net_logging                 Tests reachab...
ansible.netcommon.net_ping                     Copy a file f...
ansible.netcommon.net_put                      (deprecated, ...
ansible.netcommon.net_static_route             (deprecated, ...
ansible.netcommon.net_system                  (deprecated, ...
ansible.netcommon.net_user                    (deprecated, ...

/dnf

```

```
● ● ●

dnf
dpkg_selections
expect
f5networks.f5_modules.bigip_apm_acl
f5networks.f5_modules.bigip_apm_network_access
f5networks.f5_modules.bigip_apm_policy_fetch
f5networks.f5_modules.bigip_apm_policy_import
f5networks.f5_modules.bigip_asm_advanced_settings
f5networks.f5_modules.bigip_asm_dos_application
f5networks.f5_modules.bigip_asm_policy_fetch
f5networks.f5_modules.bigip_asm_policy_import
f5networks.f5_modules.bigip_asm_policy_manage
f5networks.f5_modules.bigip_asm_policy_server_technology
f5networks.f5_modules.bigip_asm_policy_signature_set
f5networks.f5_modules.bigip_cgnat_lsn_pool
f5networks.f5_modules.bigip_cli_alias
f5networks.f5_modules.bigip_cli_script
f5networks.f5_modules.bigip_command
/dnf

Manages pack...
Dpkg package ...
Executes a co...
Manage user-d...
Manage APM Ne...
Exports the A...
Manage BIG-IP...
Manage BIG-IP...
Manage applic...
Exports the A...
Manage BIG-IP...
Manage BIG-IP...
Manages Serve...
Manages Signa...
Manage CGNAT ...
Manage CLI al...
Manage CLI sc...
Run TMSH and ...
```

```
● ● ●

[ansible@ansible Chapter-02]$ ansible-doc -t become -l
ansible.netcommon.enable      Switch to elevated permissions on a network device
community.general.doas        Do As user
...output omitted...
runas                         Run As user
su                            Substitute User
sudo                          Substitute User DO
```

```
● ● ●

[ansible@ansible Chapter-02]$ ansible-doc -t connection -l
ansible.netcommon.httpapi     Use httpapi to run command on network appliances
ansible.netcommon.libssh       (Tech preview) Run tasks using libssh for ssh connection
...output omitted...
community.docker.docker       Run tasks in docker containers
community.docker.docker_api   Run tasks in docker containers
...output omitted...
community.kubernetes.kubectl Execute tasks in pods running on Kubernetes
community.libvirt.libvirt_lxc Run tasks in lxc containers via libvirt
community.libvirt.libvirt_qemu Run tasks on libvirt/qemu virtual machines
community.okd.oc               Execute tasks in pods running on OpenShift
community.vmware.vmware_tools Execute tasks inside a VM via VMWare Tools
containers.podman.buildah    Interact with an existing buildah container
containers.podman.podman     Interact with an existing podman container ...output omitted...
```

```

1 ---
2 - name: Install Chrony Package
3   hosts: node1
4   become: true
5   tasks:
6     - name: Ensure chrony package is installed
7       ansible.builtin.dnf:
8         name: chrony
9         state: latest
10
11    - name: Copy chrony configuration to node
12      ansible.builtin.copy:
13        src: chrony.conf.sample
14        dest: /etc/chrony.conf
15        mode: 644
16        owner: root
17        group: root
18
19    - name: Enable and start chrony Service
20      ansible.builtin.systemd:
21        name: chronyd
22        state: started
23        enabled: yes
:set nu

```

```

[ansible@ansible Chapter-02]$ cat ~/.vimrc
autocmd FileType yaml setlocal et ts=2 ai sw=2 nu sts=0
colorscheme desert

```

```

1 ---
2 - name: Install Chrony Package
3   hosts: dev-rhel8-55
4   become: true
5   tasks:
6     - name: Ensure chrony package is installed
7       ansible.builtin.dnf:
8         name: chrony
9         state: latest
10
11    - name: Copy chrony configuration to node
12      ansible.builtin.copy:
13        src: chrony.conf.sample
14        dest: /etc/chrony.conf
15        mode: 644
16        owner: root
17        group: root
18
19    - name: Enable and start chrony Service
20      ansible.builtin.systemd:
21        name: chronyd
22        state: started
23        enabled: yes
24        masked: no

```

```
[ansible@ansible Chapter-02]$ tree inventories/
inventories/
├── development
│   └── hosts
├── production
│   └── hosts
└── staging
    └── hosts

3 directories, 3 files
```

```
[ansible@ansible Chapter-02]$ ansible-doc -t connection -l |grep winrm
winrm
Run tasks over Microsoft's WinRM
```

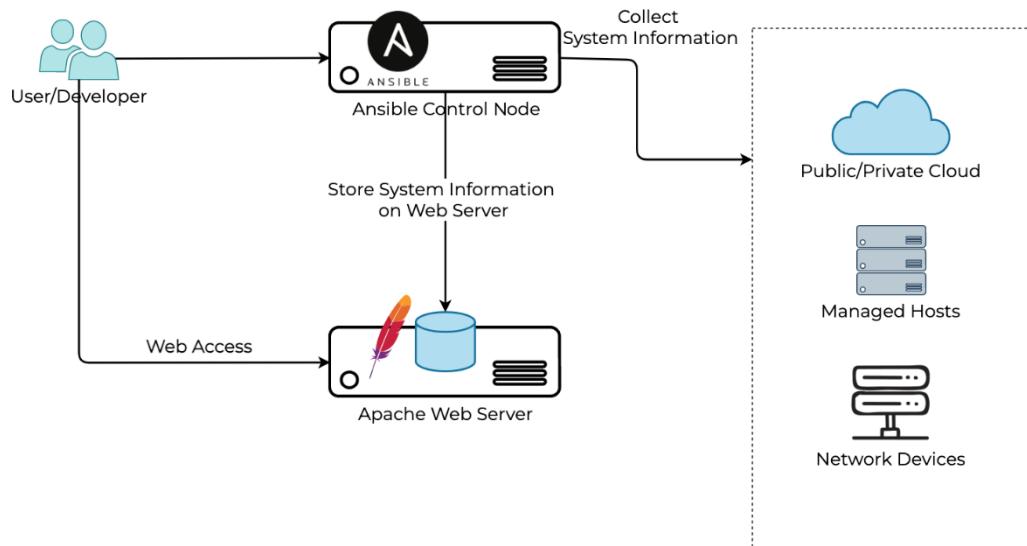
```
[ansible@ansible Chapter-02]$ cat inventories/production/hosts
[win2019]
prod-db-101 ansible_host=192.168.110.10

[win2019:vars]
ansible_connection=winrm
```

```
---
- name: Install Package
  hosts: win2019
  become: true
  connection: local
```

```
[ansible@ansible Chapter-02]$ ansible-playbook playbook.yml --connection=local
```

Chapter 3: Automating Your Daily Jobs



```
● ● ●
[ansible@ansible Chapter-02]$ ansible-playbook install-package.yaml
PLAY [Install Chrony Package] ****
TASK [Gathering Facts] ****
ok: [dev-rhel8-55]
...output omitted...
```

```
[ansible@ansible Chapter-03]$ tree ./
./
├── ansible.cfg
├── deploy-web.yml
├── hosts
├── node1-ansible-facts
└── README.md
├── roles
│   ├── deploy-web-server
│   │   ├── defaults
│   │   │   └── main.yml
│   │   ├── handlers
│   │   │   └── main.yml
│   │   ├── meta
│   │   │   └── main.yml
│   │   ├── README.md
│   │   ├── tasks
│   │   │   └── main.yml
│   │   ├── tests
│   │   │   └── inventory
│   │   └── vars
│   │       └── main.yml
│   └── security-baseline-rhel8
│       ├── defaults
│       │   └── main.yml
│       └── files
...<output omitted>...
```

```
● ● ●

Welcome to {{ ansible_facts.hostname }}
(IP Address: {{ ansible_facts.default_ipv4.address }})

Access is restricted; if you are not authorized to use it
please logout from this system

If you have any issues, please contact {{ system_admin_email }}.
Phone: {{ system_admin_phone | default('1800 1111 2222') }}

-----
This message is configured by Ansible
-----
```

```
● ● ●

tasks:
  - name: Deploy motd
    template:
      dest: /etc/motd
      src: motd.j2
```

```

● ● ●

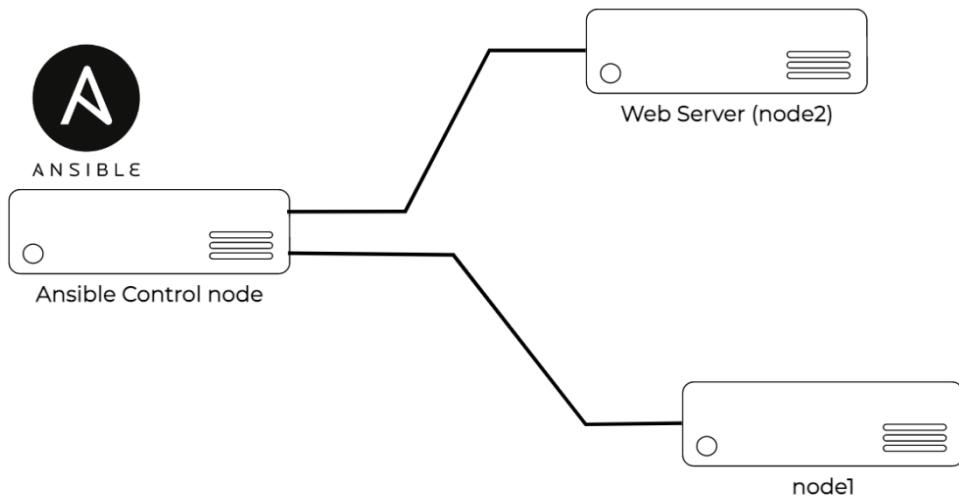
Welcome to node1
(IP Address: 10.1.10.25)

Access is restricted; if you are not authorized to use it
please logout from this system

If you have any issues, please contact sysops@lab.local.
Phone: 1800 1111 2222

-----
This message is configured by Ansible
-----

```



```

● ● ●

[defaults]
inventory = ./hosts
remote_user = devops
ask_pass = false

deprecation_warnings = False
[privilege_escalation]
become = false
become_method = sudo
become_user = root
become_ask_pass = false

```

```

● ● ●

[nodes]
node1 ansible_host=192.168.56.25

[web]
webserv1 ansible_host=192.168.56.24

[all:vars]
ansible_ssh_private_key_file=/home/ansible/.ssh/id_rsa

```

```
[ansible@ansible roles]$ ansible-galaxy role init deploy-web-server
- Role deploy-web-server was created successfully
```

```
[ansible@ansible roles]$ tree deploy-web-server/
deploy-web-server/
├── defaults
│   └── main.yml
├── handlers
│   └── main.yml
├── meta
│   └── main.yml
├── README.md
└── tasks
    └── main.yml
└── tests
    ├── inventory
    └── test.yml
└── vars
    └── main.yml

6 directories, 8 files
```

```
---  
# tasks file for deploy-web-server  
  
- name: Create directory  
  ansible.builtin.file:  
    state: directory  
    path: /var/www/html  
    mode: '0755'  
  
- name: Install httpd and firewalld  
  ansible.builtin.yum:  
    name:  
      - httpd  
      - firewalld  
    state: latest
```

```
---  
# tasks file for deploy-web-server  
.  
.br/>- name: Enable and Run Firewalld  
  ansible.builtin.service:  
    name: firewalld  
    enabled: true  
    state: started  
  
- name: Firewalld permit httpd service  
  ansible.posix.firewalld:  
    service: http  
    permanent: true  
    state: enabled  
    immediate: yes
```

```
---  
# tasks file for deploy-web-server  
  
- name: httpd enabled and running  
  ansible.builtin.service:  
    name: httpd  
    enabled: true  
    state: started
```

```
# Chapter-03/deploy-web.yml  
  
- name: Deploy Webserver using apache  
  hosts: web  
  become: true  
  tasks:  
    - name: Deploy Web service  
      include_role:  
        name: deploy-web-server
```

```
[ansible@ansible Chapter-03]$ ls -l  
total 16  
-rwxr--r--. 1 ansible ansible 209 Jan  8 14:16 ansible.cfg  
-rwxr--r--. 1 ansible ansible 158 Jan  9 09:41 deploy-web.yml  
-rwxr--r--. 1 ansible ansible 159 Jan  8 14:17 hosts  
-rwxr--r--. 1 ansible ansible 1249 Jan  8 13:45 README.md  
drwxrwxr-x. 3 ansible ansible 31 Jan  9 09:24 roles
```

```
[ansible@ansible Chapter-03]$ ansible-playbook deploy-web.yml  
  
PLAY [Deploy Webserver using apache] *****  
  
TASK [Gathering Facts] *****  
ok: [webserver1]  
  
TASK [Deploy Web service] *****  
  
TASK [deploy-web-server : Create directory] *****  
changed: [webserver1]  
  
TASK [deploy-web-server : Install httpd and firewalld] *****  
changed: [webserver1]  
  
TASK [deploy-web-server : Enable and Run Firewalld] *****  
changed: [webserver1]  
  
TASK [deploy-web-server : Firewalld permit httpd service] *****  
ok: [webserver1]  
  
TASK [deploy-web-server : httpd enabled and running] *****  
changed: [webserver1]  
  
PLAY RECAP *****  
webserver1 : ok=6    changed=4    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

```
[ansible@ansible Chapter-03]$ ansible-playbook deploy-web.yml

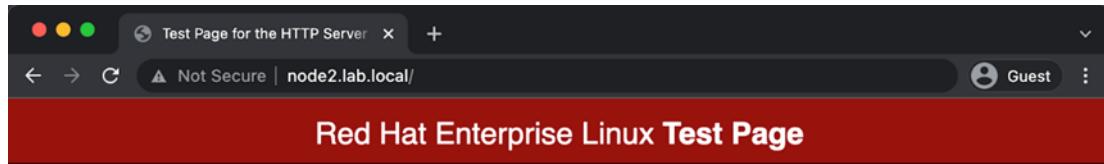
PLAY [Deploy Webserver using apache] ****
TASK [Gathering Facts] ****
ok: [webserver1]

...<output omitted>...

TASK [deploy-web-server : Firewalld permit httpd service] ****
ok: [webserver1]

TASK [deploy-web-server : httpd enabled and running] ****
ok: [webserver1]

PLAY RECAP ****
webserver1 : ok=6    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```



This page is used to test the proper operation of the HTTP server after it has been installed. If you can read this page, it means that the HTTP server installed at this site is working properly.

If you are a member of the general public:

The fact that you are seeing this page indicates that the website you just visited is either experiencing problems, or is undergoing routine maintenance.

If you would like to let the administrators of this website know that you've seen this page instead of the page you expected, you should send them e-mail. In general, mail sent to the name "webmaster" and directed to the website's domain should reach the appropriate person.

For example, if you experienced problems while visiting www.example.com, you should send e-mail to "webmaster@example.com".

For information on Red Hat Enterprise Linux, please visit the [Red Hat, Inc. website](#). The documentation for Red Hat Enterprise Linux is [available on the Red Hat, Inc. website](#).

If you are the website administrator:

You may now add content to the webroot directory. Note that until you do so, people visiting your website will see this page, and not your content.

For systems using the Apache HTTP Server: You may now add content to the directory `/var/www/html/`. Note that until you do so, people visiting your website will see this page, and not your content. To prevent this page from ever being used, follow the instructions in the file `/etc/httpd/conf.d/welcome.conf`.

For systems using NGINX: You should now put your content in a location of your choice and edit the `root` configuration directive in the `nginx` configuration file `/etc/nginx/nginx.conf`.


[Apache™](#) is a registered trademark of the Apache Software Foundation in the United States and/or other countries.
[NGINX™](#) is a registered trademark of F5 Networks, Inc.



```
[ansible@ansible Chapter-03]$ ansible node1 -m setup |less
node1 | SUCCESS => {
    "ansible_facts": {
        "ansible_all_ipv4_addresses": [
            "192.168.100.101",
            "192.168.56.25",
            "10.0.2.15"
        ],
        ...output omitted...
    },
    "ansible_date_time": {
        "date": "2022-01-10",
        "day": "10",
        ...output omitted...
    },
    "module_setup": true
},
"changed": false
}
```



```
[ansible@ansible Chapter-03]$ cd roles/
[ansible@ansible roles]$ ansible-galaxy role init system-report
- Role system-report was created successfully
```

```

● ● ●

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "https://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="https://www.w3.org/1999/xhtml">
<head>
<title>{{ ansible_hostname }} - System Information | Ansible Automation</title>

...<output omitted>...

<body style="margin:0px; padding:0px; width: 700px; text-align: center;" >
<table valign="top" width="100%" cellspacing="0" cellpadding="0" border="0" align="center">
<tbody><tr>
...<output omitted>...
<tr>
<td valign="top" align="center"><h2>System Information for {{ ansible_hostname }}</h2></td>
</tr>
<tr>
<td style="min-width:700px;background-color:#ffffff; text-align: center;" text-align="center">
<table valign="top" width="100%" cellspacing="0" cellpadding="0" border="1" align="center" >
<tr>
<td valign="top" align="left">System Name</td>
<td valign="top" align="left">{{ ansible_hostname }}</td>
</tr>
<tr>
<td valign="top" align="left">IP Address</td>
<td valign="top" align="left">{{ ansible_all_ipv4_addresses }}</td>
</tr>
...<output omitted>...

</table>
</td>
</tr>
<tr>
<td style="font-size:12px; line-height:18px; color:#999999; padding: 20px;">
    If you find any mismatch in report, please report to <a href="mailto:{{ report_admin_email }}" target="_blank" style="text-decoration:none; color:#999999;">{{ report_admin_email }}</a>
</td>
</tr>
</tbody>
</table>
</body></html>

```

```

● ● ●

---  

# tasks file for system-report  

- name: Generate and save system report in html format  

  template:  

  dest: /var/www/html/{{ inventory_hostname }}.html  

  src: system-information.html.j2  

  delegate_to: node2

```

```

● ● ●

# Chapter-03/system-info.yml

- name: Collect System Information
  hosts: nodes
  become: true
  vars:
    report_admin_email: admin@lab.local
  tasks:
    - name: Generate System Report
      include_role:
        name: system-report

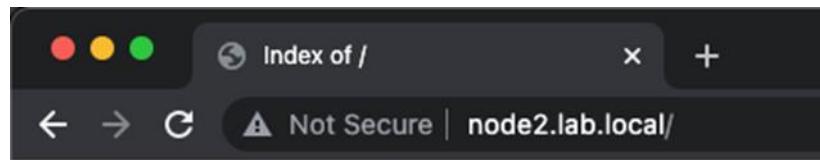
```

```
[ansible@ansible Chapter-03]$ ansible-playbook system-info.yml

PLAY [Collect System Information] ****
TASK [Gathering Facts] ****
ok: [node1]

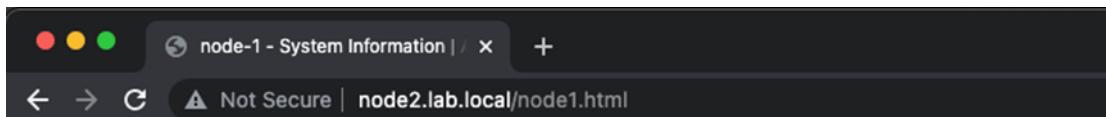
TASK [Generate System Report] ****
TASK [system-report : Generate and save system report in html format] ****
changed: [node1 -> node2]

PLAY RECAP ****
node1 : ok=2    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```



Index of /

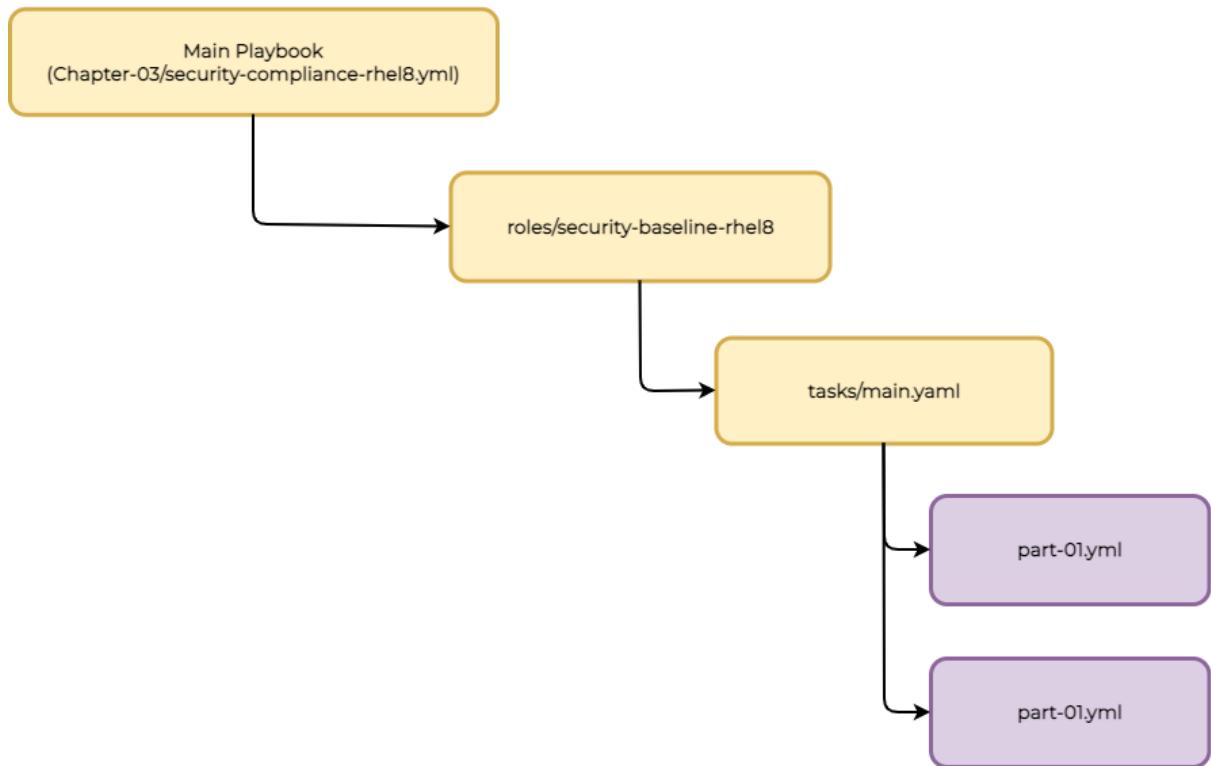
<u>Name</u>	<u>Last modified</u>	<u>Size</u>	<u>Description</u>
node1.html	2022-01-09 13:53	2.5K	



System Information for node-1

System Name	node-1
IP Address	['192.168.100.101', '192.168.56.25', '10.0.2.15']
Network Interfaces	['eth0', 'eth2', 'eth1', 'lo']
Architecture	x86_64
Operating System	RedHat 8.4

If you find any mismatch in report, please report to admin@lab.local



● ● ●

```
[ansible@ansible Chapter-03]$ cd roles/
[ansible@ansible roles]$ ansible-galaxy role init security-baseline-rhel8
- Role security-baseline-rhel8 was created successfully
```

● ● ●

```
---
# tasks file for security-baseline-rhel8

- name: "Running Part 01 checks"
  include_tasks: "part-01.yml"
  when: "'01.01' not in baseline_exclusions"

- name: "Running Part 02 checks"
  include_tasks: "part-02.yml"
  when: "'02.01' not in baseline_exclusions"
```

```
● ● ●

# part-01.yml

- name: "Ensure sudo is installed"
  dnf:
    name: sudo
    state: present

- name: "Ensure sudo log file exists"
  lineinfile:
    path: /etc/sudoers
    regexp: '^Defaults\s*logfile="{{ sudo_log }}"'
    line: 'Defaults logfile="{{ sudo_log }}"
insertafter: "# Defaults specification"
validate: /usr/sbin/visudo -cf %s
```

```
● ● ●

# part-02.yml

- name: "Ensure message of the day is configured properly"
  copy:
    src: "{{ motd_file }}"
    dest: /etc/motd
    owner: root
    group: root
    mode: 0644

- name: "Ensure local login warning banner is configured properly"
  copy:
    src: "{{ issue_file }}"
    dest: /etc/issue
    owner: root
    group: root
    mode: 0644
```

```
● ● ●

[ansible@ansible Chapter-03]$ cat roles/security-baseline-rhel8/files/banner
Authorized uses only. All activities will be monitored and reported.

[ansible@ansible Chapter-03]$ cat roles/security-baseline-rhel8/files/issue
Authorized uses only. All activities will be monitored and reported.
```

```
[ansible@ansible Chapter-03]$ tree roles/security-baseline-rhel8/
roles/security-baseline-rhel8/
├── defaults
│   └── main.yml
├── files
│   ├── banner
│   └── issue
├── handlers
│   └── main.yml
├── meta
│   └── main.yml
├── README.md
└── tasks
    ├── main.yml
    ├── part-01.yml
    └── part-02.yml
└── tests
    ├── inventory
    └── test.yml
└── vars
    └── main.yml

7 directories, 12 files
```

```
[ansible@ansible Chapter-03]$ cat vars/common.yml
sudo_log: "/var/log/sudoers"
motd_file: "banner"
issue_file: "issue"
```

```
# vars/baseline_exclusions.yml

baseline_exclusions:
  #- '01.01'
  # Ensure sudo is installed
  #- '01.02'
  # Ensure sudo log file exists
  #- 02.01
  # Ensure message of the day is configured properly
  #- 02.02
  # Ensure local login warning banner is configured properly
  - '100.100'
```

```
---
# defaults file for security-baseline-rhel8
sudo_log: "/var/log/sudoers"
motd_file: "banner"
issue_file: "issue"
```

```

● ● ●

---  

# Chapter-03/security-compliance-rhel8.yml  
  

- name: Performing Security Scanning and Configuration - RHEL8  

  hosts: "{{ NODES }}"                      # give NODES during playbook.  

         # eg: -e "NODES=webservers"  

  become: true  

  vars_files:  

    - vars/common.yml                      # common variables  

    - vars/baseline_exclusions.yml        # exclusion list  
  

  tasks:  

    - name: 'Starting Scanning'  

      include_role:  

        name: security-baseline-rhel8

```

```

● ● ●

[ansible@ansible Chapter-03]$ ansible-playbook security-compliance-rhel8.yml -e "NODES=nodes"  
  

PLAY [Performing Security Scanning and Configuration - RHEL8] *****  
  

...<output omitted>...  
  

TASK [security-baseline-rhel8 : Running Part 01 checks] *****  

included: /home/ansible/ansible-book-packt/Chapter-03/roles/security-baseline-rhel8/tasks/part-01.yml for node1  
  

TASK [security-baseline-rhel8 : Ensure sudo is installed] *****  

ok: [node1]  
  

TASK [security-baseline-rhel8 : Ensure sudo log file exists] *****  
  

...<output omitted>...  
  

PLAY RECAP *****  

node1 : ok=6    changed=2    unreachable=0    failed=0    skipped=1    rescued=0    ignored=0

```

```

● ● ●

[ansible@ansible Chapter-03]$ ssh devops@node1
Authorized uses only. All activities will be monitored and reported.
Last login: Mon Jan 10 08:09:50 2022 from 192.168.56.23
[devops@node-1 ~]$

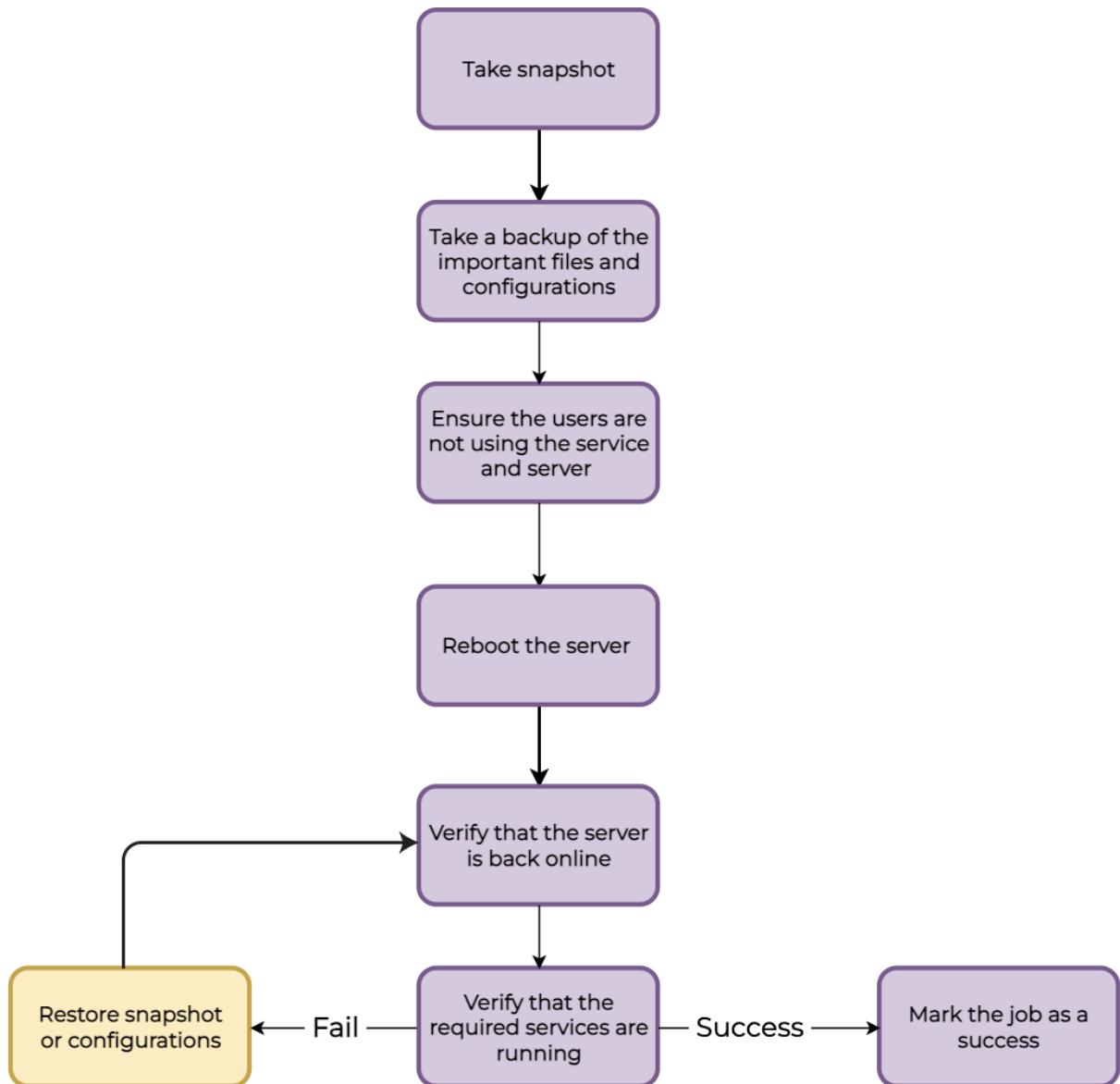
```

```

● ● ●

$ ansible-playbook site.yml --extra-vars "version=1.23.45 other_variable=foo"
$ ansible-playbook site.yml --extra-vars '{"version":"1.23.45","other_variable":"foo"}'
$ ansible-playbook site.yml --extra-vars "@vars_file.json"

```



● ● ●

```

# Chapter-03/system-reboot.yml

- name: System Reboot Linux
  hosts: "{{ NODES }}"
  gather_facts: no
  become: true
  tasks:
    - name: Running Pre-reboot tasks
      debug:
        msg: "Taking backup and snapshot"
        # you can include your backup and other jobs here.

    - name: Reboot node and wait for 5 min
      reboot:
        reboot_timeout: 300

    - name: Running Post-reboot tasks
      debug:
        msg: "Verifying services and filesystem"
        # you can include your verification tasks here.
  
```

```
[devops@node-1 ~]$ uptime  
09:03:22 up 0 min, 1 user, load average: 0.76, 0.24, 0.08
```

```
[ansible@ansible Chapter-03]$ ansible-vault create vars/secrets  
New Vault password:  
Confirm New Vault password:
```

```
[ansible@ansible Chapter-03]$ cat vars/secrets  
$ANSIBLE_VAULT;1.1;AES256  
38393063373031356638353866353937306462663565366266323166363130356435326564343735  
3061663831326237356430353361646235396661663538310a373337376339383561353762356265  
3936383031646534616630366637306435306134356361373434333653630656533393739643238  
3136306130633761610a6461383261303334353738363038323433353737303535353665616430  
32323537303765356366383930623631666561393661626535663135316362326134623066623234  
31373138616137346132626230626464343034306637316636633539663530303338396163666131  
383237626162626334376133663039366331
```

```
[ansible@ansible Chapter-03]$ ansible-vault view vars/secrets  
Vault password:  
mysecretusername: username  
mysecretpassword: password
```

```
[ansible@ansible Chapter-03]$ cd roles/  
[ansible@ansible roles]$ ansible-galaxy role init send-email  
- Role send-email was created successfully
```

```

---  

# roles/send-email/tasks/main.yml  
  

- name: Sending notification email  

  mail:  

    host: "{{ email_smtp_server }}"  

    port: "{{ email_smtp_server_port }}"  

    secure: try  

    from: "{{ email_smtp_from_address }}"  

    to: "{{ email_smtp_to_address }}"  

    #cc: "{{ email_smtp_cc_address }}"  

    subject: "{{ email_smtp_subject }}"  

    body: "{{ email_report_body }}"  

    #attach:  

    #  - "{{ report_file_name }}"  

    headers:  

      - Reply-To="{{ email_smtp_replyto_address }}"  

    username: "{{ email_smtp_username }}"  

    password: "{{ email_smtp_password }}"  

  delegate_to: localhost

```

```

[ansible@ansible Chapter-03]$ ansible-vault create vars/smtp_secrets.yml  

New Vault password:  

Confirm New Vault password:

```

```

email_smtp_username: 'ansible-automation@lab.local'  

email_smtp_password: 'secretpassword'  

~  

~  

~  

~  

~  

~  

~  

:wq

```

```

---  

# Chapter-03/system-reboot-with-email.yml  
  

- name: System Reboot - Linux with email notification  

  hosts: "{{ NODES }}"  

  gather_facts: no  

  become: true  

  vars_files:  

    vars/smtp_secrets.yml  

  vars:  

    email_smtp_server: 'smtp.mail.com'  

    email_smtp_server_port: '587'  

    email_smtp_from_address: 'ansible@lab.local (Ansible Automation)'  

    email_smtp_to_address:  

      #- 'John Doe <john@lab.local>'  

      #- 'Linda <linda@lab.local>'  

    #email_smtp_cc_address:  

    #  - 'John Doe <john@gmail.com>'  

    email_smtp_replyto_address: 'no-reply@lab.local'

```

```

● ● ●

---  

# Chapter-03/system-reboot-with-email.yml  

#...<playbook continues>...
tasks:  

  - name: Email notification before reboot
    include_role:
      name: send-email
    vars:
      email_report_body: "Alert: {{ inventory_hostname }} is rebooting as per schedule. Please do not use the server. Notification will be sent after the reboot activity is completed."
      email_smtp_subject: "Weekly System Reboot - {{ inventory_hostname }} - Initiated"  

  - name: Running Pre-reboot tasks
    debug:
      msg: "Taking backup and snapshot"      # include your backup and other jobs here.  

  - name: Reboot node and wait for 5 min
    reboot:
      reboot_timeout: 300  

  - name: Running Post-reboot tasks
    debug:
      msg: "Verifying services and filesystem" # include your verification tasks here.  

  - name: Email notification after reboot
    include_role:
      name: send-email
    vars:
      email_report_body: "Alert: {{ inventory_hostname }} reboot activity has been completed."
      email_smtp_subject: "Weekly System Reboot - {{ inventory_hostname }} - completed"

```

```

● ● ●

[ansible@ansible Chapter-03]$ ansible-playbook system-reboot-with-email.yml -e "NODES=nodes"
ERROR! Attempting to decrypt but no vault secrets found

```

```

● ● ●

[ansible@ansible Chapter-03]$ ansible-playbook system-reboot-with-email.yml -e "NODES=nodes" --ask-vault-password
Vault password:  

*****  

PLAY [System Reboot - Linux with email notification]
*****
TASK [Email notification before reboot]
*****
TASK [send-email : Sending notification email]
*****
*
```

...<output omitted>...

Mail

Primary

Social

Promotions

Inbox

5

- Starred
- Snoozed
- Important
- Sent

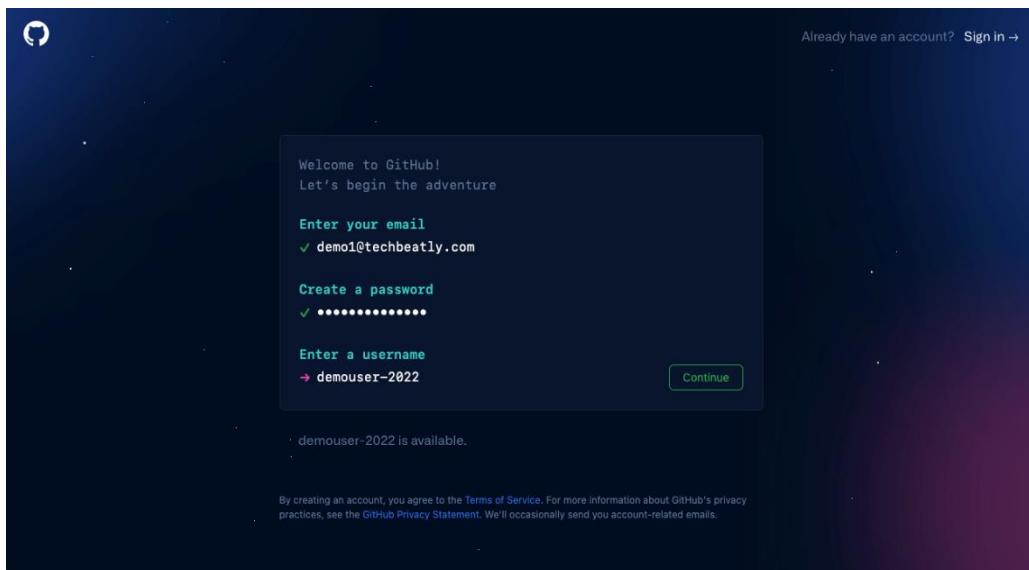
- | | | |
|-------------------------------------------------------------------|---------------------------|-------|
| <input type="checkbox"/> | Ansible Automation | 09:48 |
| Weekly System Reboot - node1 - completed | | |
| Alert: node1 reboot activity has been completed. | | |
| <input type="checkbox"/> | Ansible Automation | 09:48 |
| Weekly System Reboot - node1 - Initiated | | |
| Alert: node1 is rebooting as per schedule. Please do not use t... | | |

Chapter 4: Exploring Collaboration in Automation Development

```
● ● ●  
$ ls -l  
total 0  
drwxr-xr-x 14 gini staff 448 21 Jan 12:46 ansible-role-pgsql-replication  
drwxr-xr-x 12 gini staff 384 21 Jan 12:45 ansible-role-repo-epel  
drwxr-xr-x 11 gini staff 352 21 Jan 12:42 ansible-role-setup-user  
drwxr-xr-x 14 gini staff 448 21 Jan 12:45 ansible-role-system-facts-report  
drwxr-xr-x 15 gini staff 480 21 Jan 12:41 ansible-role-tower-setup
```

```
● ● ●  
[ansible@ansible ansible-collections]$ ls -l  
total 0  
drwxr-xr-x 14 gini staff 448 21 Jan 13:22 ansible-collection-custom-modules  
drwxr-xr-x  5 gini staff 160 21 Jan 13:21 ansible-collection-kubernetes_home_lab
```

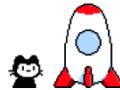
```
● ● ●  
|   ├── ansible-inventory-development  
|   |   ├── group_vars  
|   |   |   └── mysqlservers  
|   |   ├── host_vars  
|   |   └── inventory  
|   ├── ansible-inventory-production  
|   |   ├── group_vars  
|   |   |   ├── mysqlservers  
|   |   |   └── webservers  
|   |   ├── host_vars  
|   |   └── inventory  
|   └── ansible-inventory-staging  
|       ├── group_vars  
|       |   ├── mysqlservers  
|       |   └── webservers  
|       ├── host_vars  
|       └── inventory
```



Your GitHub launch code ➔ Inbox x Print Compose

 GitHub <noreply@github.com> 19:47 (1 minute ago) star undo more
to demouser-2022 ▾

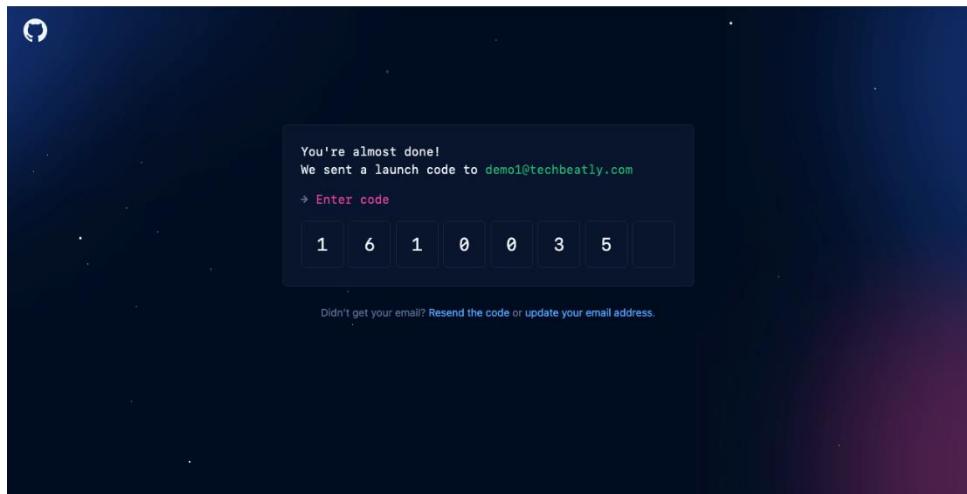

Here's your GitHub launch code, @demouser-2022!



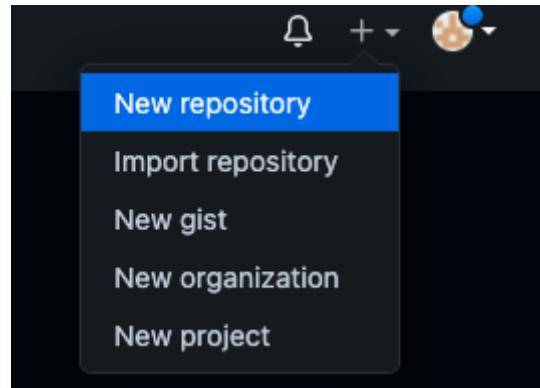
Continue signing up for GitHub by entering the code below:

16100350

Open GitHub



A screenshot of the GitHub dashboard. On the left, there's a sidebar with "Create your first project" and "Recent activity". The main area features a central banner with the text "The home for all developers — including you." and a brief introduction. Below the banner are sections for "Start a new repository", "Create your profile README", "Contribute to an existing repository", "Create a README", "Write code in your web browser", "Install a powerful code editor", and "Set up your local dev environment". To the right, there's a "Latest changes" feed with items like "Easily discover and navigate to multiple licenses in repositories" and "Secret scanning alert events now in the audit log". A notification bar at the top right says "Our response to the war in Ukraine".



 Search or jump to... Pull requests Issues Marketplace Explore + 

Create a new repository

A repository contains all project files, including the revision history. Already have a project repository elsewhere? [Import a repository](#).

Owner • **Repository name** •

 **demouser-2022** / **ansible-package-installation** 

Great repository names are short and memorable. Need inspiration? How about [legendary-adventure](#)?

Description (optional)

Ansible playbooks for package installaton

 **Public**
Anyone on the internet can see this repository. You choose who can commit.

 **Private**
You choose who can see and commit to this repository.

Initialize this repository with:
Skip this step if you're importing an existing repository.

Add a README file
This is where you can write a long description for your project. [Learn more](#).

Add .gitignore
Choose which files not to track from a list of templates. [Learn more](#).

.gitignore template: **None**

Choose a license
A license tells others what they can and can't do with your code. [Learn more](#).

License: **None**

This will set  **main** as the default branch. Change the default name in your [settings](#).

ⓘ You are creating a public repository in your personal account.

Create repository

 Search or jump to... Pull requests Issues Marketplace Explore + 

[demouser-2022 / ansible-package-installation](#) Public

 **Code**  **Issues**  **Pull requests**  **Actions**  **Projects**  **Wiki**  **Security**  **Insights**  **Settings**

 **main**  **1 branch**  **0 tags**

[Go to file](#) [Add file](#) [Code](#) [About](#)

 **demouser-2022 Initial commit**  **e02e43b now**  **1 commit**

 **README.md** **Initial commit** 

README.md

ansible-package-installation

Ansible playbooks to install packages

About

Ansible playbooks to install packages

 [Readme](#)

 **0 stars**

 **1 watching**

 **0 forks**

Releases

No releases published

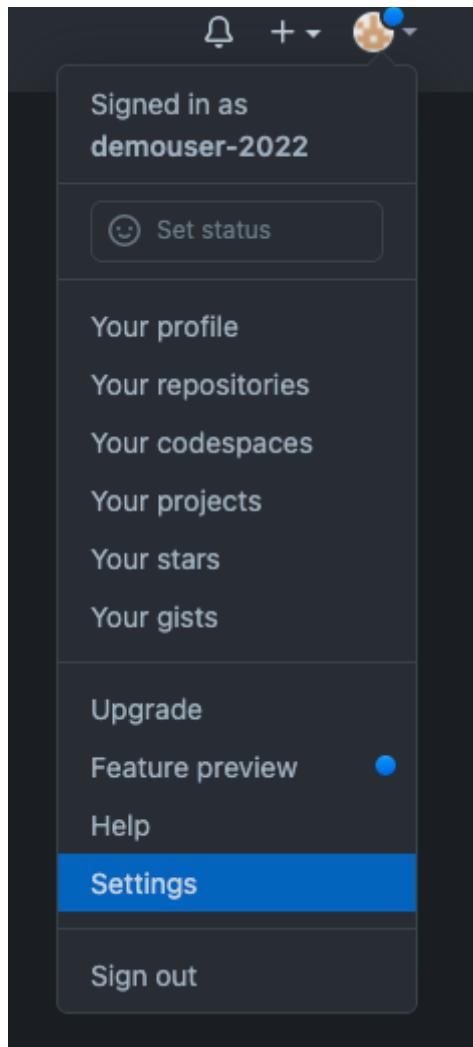
[Create a new release](#)

Packages

No packages published

[Publish your first package](#)

```
[ansible@ansible ~]$ cat ~/.ssh/id_rsa.pub
ssh-rsa
AAAAAB3NzaC1yc2EAAAQABAAQDgzbPJQ4Vp6FG04XVGUpQNzpT0y01+pS/9whfBqjvY800gfJM2eg/rpcubMsMAamCPzeFmy0RKXIhxAno55nm9
VcENfobknHb4IQmRq@AT0iG1niyWDJB9fUIm/3Y0Pt+ZxPiiua/iQvc8B4FqLGvBGSWB9GZE40PPFk+sfCrmDrlI+2kgBeRJ3xKqMxoj70aReHDd0/jVN
9VcUiHQ+WrtqBSHyH0bb1SCxWFScj7VKR2BnayyKrS1ED0luPKLwfcEM5scms6tL8cwnyCvko4W2afIQqSbEdh0esoGh/fQl4c7ycFnkIxainReEEDEX
nBso9Nd3PCTojT86RyqDUgpazjMsZkmL52YPcq2aX6RGOrE8ewIEATHNNM4nH5tTMf/35j3+3WXA/9NSdsvikGet5FKL21tIy2qo5hKHgMnL9Dipdoa
i3cnLCD/t4A/Z0bNsAMWDgzSPsmVjdDCBealRJYiLJjm8sTjleruah5DLZqfZoTymuMloInxsM= ansible@ansible-controlnode
```



The screenshot shows the GitHub account settings for a user named "demouser-2022". The left sidebar contains a navigation menu with various options like Account settings, Profile, Account, Appearance, Accessibility, Account security, Billing & plans, Security log, Security & analysis, Sponsorship log, Emails, Notifications, Scheduled reminders, and several others. The "SSH and GPG keys" option is currently selected and highlighted in blue. The main content area is titled "SSH keys" and displays a message stating "There are no SSH keys associated with your account." It includes a link to "generating SSH keys" and "common SSH problems". A green "New SSH key" button is located in the top right corner. Below this, another section titled "GPG keys" shows a similar message with a "New GPG key" button.

The screenshot shows the "SSH keys / Add new" page for the same user. The left sidebar has the "SSH and GPG keys" option selected again. The main form has a "Title" field containing "ansible@ansible-controlnode" and a "Key" field containing a long string of text starting with "ssh-rsa AAAAB3NzaC1yc2EAAAQABAAQ...". At the bottom of the form is a green "Add SSH key" button.

This screenshot shows the GitHub account settings page for a user named "demouser-2022". The left sidebar contains links for Account settings, Profile, Account, Appearance, Accessibility, Account security, Billing & plans, Security log, Security & analysis, Sponsorship log, and Emails. The main content area is titled "SSH keys" and displays a single key entry:

	ansible@ansible-controlnode
SSH	SHA256:VDCDMnYf/1Lp6jAQrgm1DsZQ2ygyQlqs16VQf8V/M
Added on 21 Jan 2022	
Never used — Read/write	

A "Delete" button is located to the right of the key entry. Below the key list, there is a link to "generating SSH keys" and a troubleshooting section for common SSH problems.

This screenshot shows the GitHub repository page for "demouser-2022 / ansible-package-installation". The repository is public and has 1 branch and 0 tags. The main content area shows a commit history:

	demouser-2022 Initial commit	e02e43b 1 hour ago	1 commit
	README.md	Initial commit	1 hour ago

The README.md file content is displayed below:

ansible-package-installation

Ansible playbooks to install packages

The right sidebar contains sections for "About", "Releases", and "Packages".

This screenshot shows the GitHub repository page for "demouser-2022 / ansible-package-installation". The repository has 1 branch and 0 tags. The main content area shows the README.md file content:

ansible-package-installation

Ansible playbooks to install packages

The right sidebar shows cloning options:

- Clone (HTTPS, SSH, GitHub CLI)
- git@github.com:demouser-2022/ansible-
- Use a password-protected SSH key.
- Open with GitHub Desktop
- Download ZIP



```
[ansible@ansible ~]$ git clone git@github.com:demouser-2022/ansible-package-installation.git
Cloning into 'ansible-package-installation'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Receiving objects: 100% (3/3), done.
```



```
[ansible@ansible ~]$ cd ansible-package-installation/
[ansible@ansible ansible-package-installation]$ ls -la
total 4
drwxrwxr-x. 3 ansible ansible 35 Jan 21 14:25 .
drwxrwxrwt. 9 root      root   208 Jan 21 14:25 ..
drwxrwxr-x. 8 ansible ansible 163 Jan 21 14:25 .git
-rw-r--r--. 1 ansible ansible 69 Jan 21 14:25 README.md
```



```
[ansible@ansible ansible-package-installation]$ ls -la
total 24
drwxrwxr-x. 3 ansible ansible 121 Jan 21 14:24 .
drwx----- 13 ansible ansible 4096 May 28 03:26 ..
-rw-r--r--. 1 ansible ansible 209 Jan 21 14:24 ansible.cfg
-rw-r--r--. 1 ansible ansible 222 Jan 21 14:24 chrony.conf.sample
drwxrwxr-x. 8 ansible ansible 185 Jan 21 14:32 .git
-rw-r--r--. 1 ansible ansible 135 Jan 21 14:24 hosts
-rw-r--r--. 1 ansible ansible 558 Jan 21 14:24 install-package.yaml
-rw-r--r--. 1 ansible ansible 69 Jan 21 14:21 README.md
```



```
[ansible@ansible ansible-package-installation]$ git status
On branch main
Your branch is up to date with 'origin/main'.

Untracked files:
  (use "git add <file>..." to include in what will be committed)
    ansible.cfg
    chrony.conf.sample
    hosts
    install-package.yaml

nothing added to commit but untracked files present (use "git add" to track)
```



```
[ansible@ansible ansible-package-installation]$ git status
On branch main
Your branch is up to date with 'origin/main'.

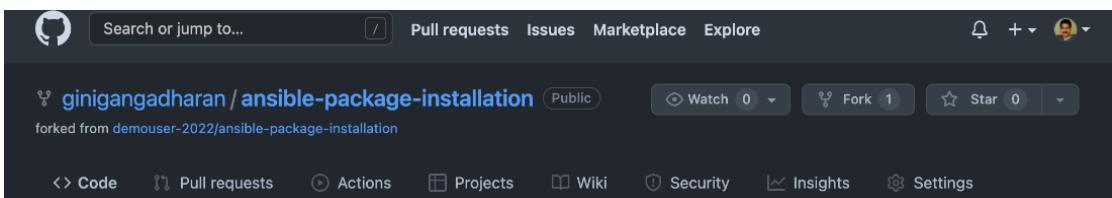
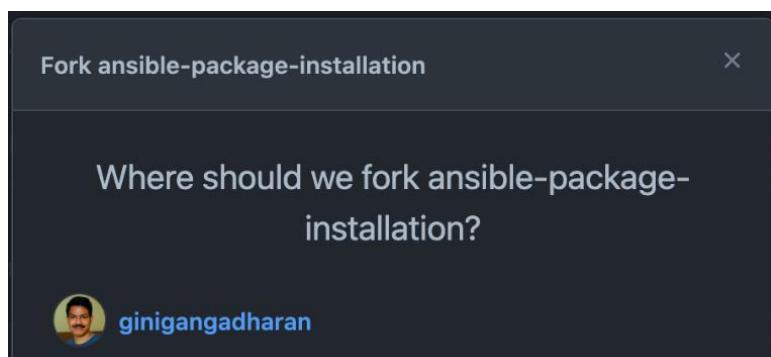
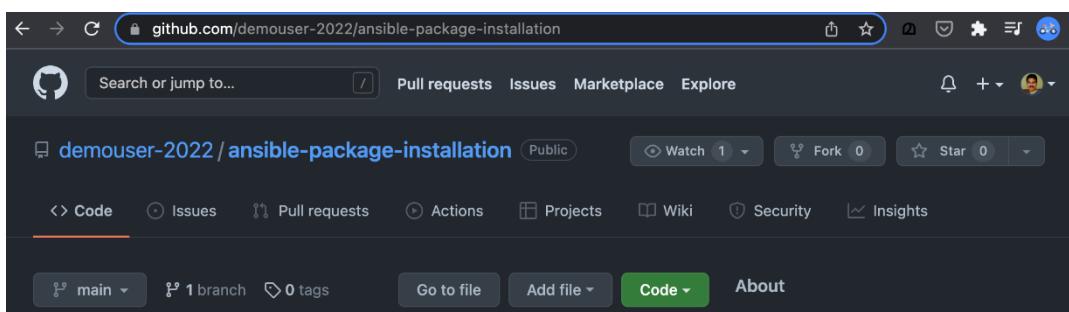
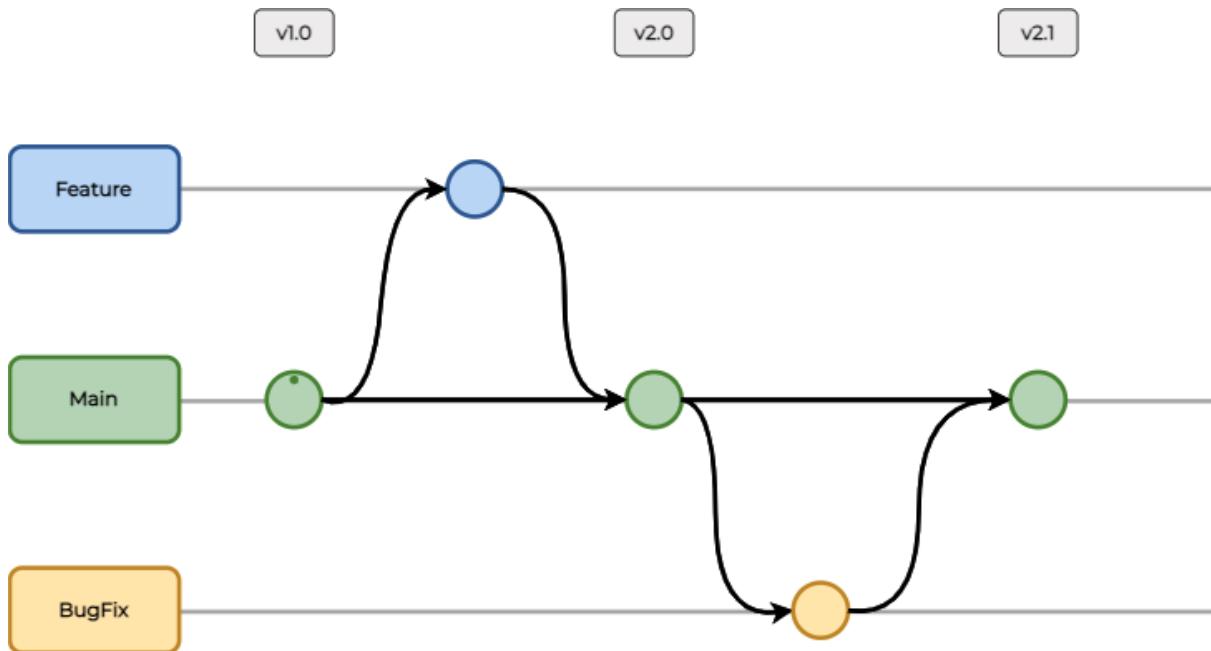
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    new file:   ansible.cfg
    new file:   chrony.conf.sample
    new file:   hosts
    new file:   install-package.yaml
```

```
[ansible@ansible ansible-package-installation]$ git commit -m "First commit with Ansible files"
[main 302dfcc] First commit with Ansible files
 4 files changed, 51 insertions(+)
 create mode 100644 ansible.cfg
 create mode 100644 chrony.conf.sample
 create mode 100644 hosts
 create mode 100644 install-package.yaml
```

```
[ansible@ansible ansible-package-installation]$ git push
Enumerating objects: 7, done.
Counting objects: 100% (7/7), done.
Compressing objects: 100% (6/6), done.
Writing objects: 100% (6/6), 1.04 KiB | 1.04 MiB/s, done.
Total 6 (delta 0), reused 0 (delta 0), pack-reused 0
To github.com:demouser-2022/ansible-package-installation.git
 e02e43b..302dfcc main -> main
```

The screenshot shows a GitHub repository page for 'demouser-2022 / ansible-package-installation'. The repository is public and has 1 branch and 0 tags. The 'Code' tab is selected. A commit titled 'demouser-2022 and demouser-2022 First commit with Ansible files' is highlighted with a blue border. This commit was authored by 'demouser-2022' and committed 6 minutes ago. It contains 2 commits. The commit details show five files: README.md, ansible.cfg, chrony.conf.sample, hosts, and install-package.yaml, all of which were created during this initial commit. The README.md file contains the text 'ansible-package-installation' and 'Ansible playbooks to install packages'. The repository statistics on the right indicate 0 stars, 1 watching, and 0 forks.

This screenshot shows the same GitHub repository page after a refresh or update. The commit history now lists two entries under 'Commits on Jan 21, 2022'. The first entry is the 'Initial commit' from the previous screenshot. The second entry is a 'Verified' commit titled 'First commit with Ansible files' made by 'demouser-2022' 9 minutes ago. The commit details for this second commit are identical to the first, showing the creation of the same five files. The repository statistics remain the same: 0 stars, 1 watching, and 0 forks.



```
● ● ●

$ git clone git@github.com:ginigangadharan/ansible-package-installation.git
Cloning into 'ansible-package-installation'...
remote: Enumerating objects: 9, done.
remote: Counting objects: 100% (9/9), done.
remote: Compressing objects: 100% (8/8), done.
Receiving objects: 100% (9/9), done.
remote: Total 9 (delta 0), reused 6 (delta 0), pack-reused 0

$ cd ansible-package-installation
$ ls -l
total 40
-rw-r--r-- 1 gini staff 69 22 Jan 12:33 README.md
-rw-r--r-- 1 gini staff 209 22 Jan 12:33 ansible.cfg
-rw-r--r-- 1 gini staff 222 22 Jan 12:33 chrony.conf.sample
-rw-r--r-- 1 gini staff 135 22 Jan 12:33 hosts
-rw-r--r-- 1 gini staff 558 22 Jan 12:33 install-package.yaml
```

```
● ● ●

$ git status
On branch feature-1
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
    modified:   install-package.yaml

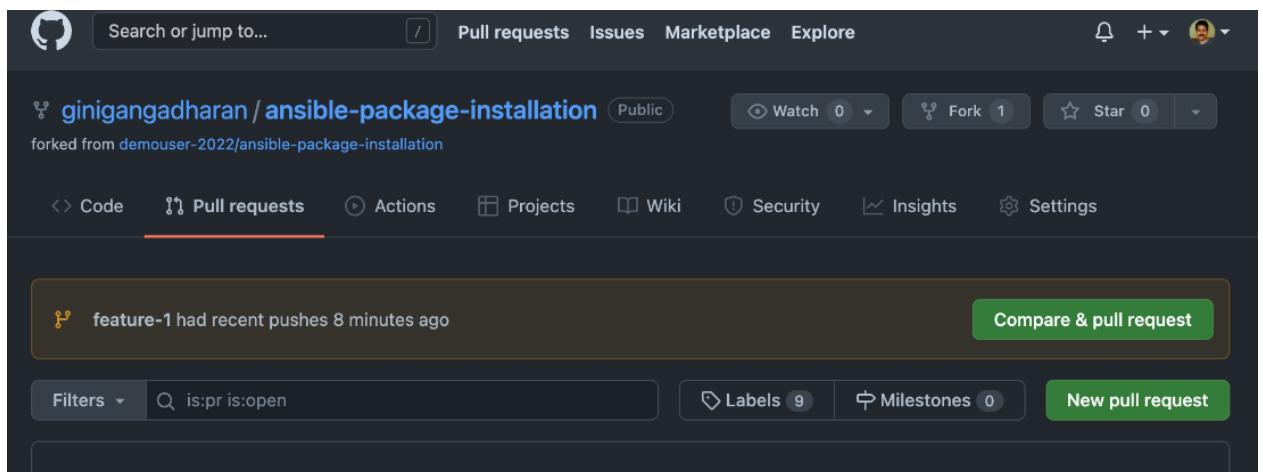
no changes added to commit (use "git add" and/or "git commit -a")
```

```
● ● ●

$ git add *
$ git commit -m "updated install-package.yaml"
[feature-1 6e7004b] updated install-package.yaml
1 file changed, 2 insertions(+), 2 deletions(-)
```

```
$ git log  
commit 898e5dfde4d90805feb579d245efdce5a18738c7 (HEAD -> feature-1)  
Author: ginigangadharan <net.gini@gmail.com>  
Date:   Sat Jan 22 13:04:26 2022 +0800  
  
    updated install-package.yaml  
  
commit 302dfcccd4cc5b018e17619d8fb1a107b9f230350 (origin/main, origin/HEAD, main)  
Author: demouser-2022 <M demol@techbeatly.com>  
Date:   Fri Jan 21 14:32:14 2022 +0000  
  
    First commit with Ansible files  
  
commit e02e43be5e66504e6c129443b38c228245a6444a  
Author: demouser-2022 <98160880+demouser-2022@users.noreply.github.com>  
Date:   Fri Jan 21 21:23:13 2022 +0800  
  
Initial commit
```

```
$ git push -u origin feature-1  
Enumerating objects: 5, done.  
Counting objects: 100% (5/5), done.  
...<output omitted>...  
* [new branch]      feature-1 -> feature-1  
Branch 'feature-1' set up to track remote branch 'feature-1' from 'origin'.
```



Comparing changes

Choose two branches to see what's changed or to start a new pull request. If you need to, you can also [compare across forks](#).

base repository: demouser-2022/ansible-pac... ▾ base: main ▾ ←

head repository: ginigangadharan/ansible-pac... ▾ compare: feature-1 ▾

✓ Able to merge. These branches can be automatically merged.

Discuss and review the changes in this comparison with others. [Learn about pull requests](#)

[Create pull request](#)

Search or jump to...

Pulls Issues Marketplace Explore

demouser-2022/ansible-package-installation (Public)

Pin Unwatch 1 Fork 0 Star 0

Code Issues Pull requests 1 Actions Projects Wiki Security Insights ...

updated install-package.yaml #1

Open ginigangadharan wants to merge 1 commit into demouser-2022:main from ginigangadharan:feature-1

Conversation 0 Commits 1 Checks 0 Files changed 1 +2 -1

ginigangadharan commented 2 minutes ago First-time contributor ...

No description provided.

updated install-package.yaml 898e5df

Add more commits by pushing to the feature-1 branch on ginigangadharan/ansible-package-installation.

Continuous integration has not been set up GitHub Actions and several other apps can be used to automatically catch bugs and enforce style.

This branch has no conflicts with the base branch Merging can be performed automatically.

Merge pull request

You can also [open this in GitHub Desktop](#) or view [command line instructions](#).

Reviewers No reviews Still in progress? Convert to draft

Assignees No one—assign yourself

Labels None yet

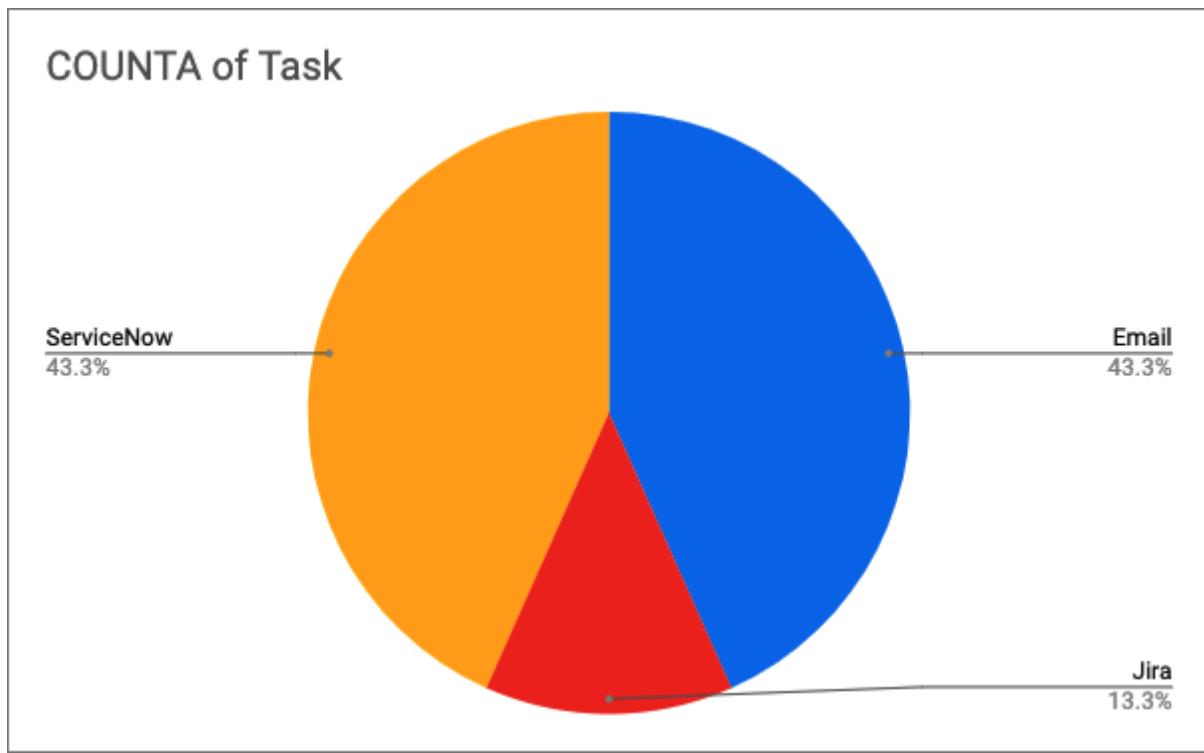
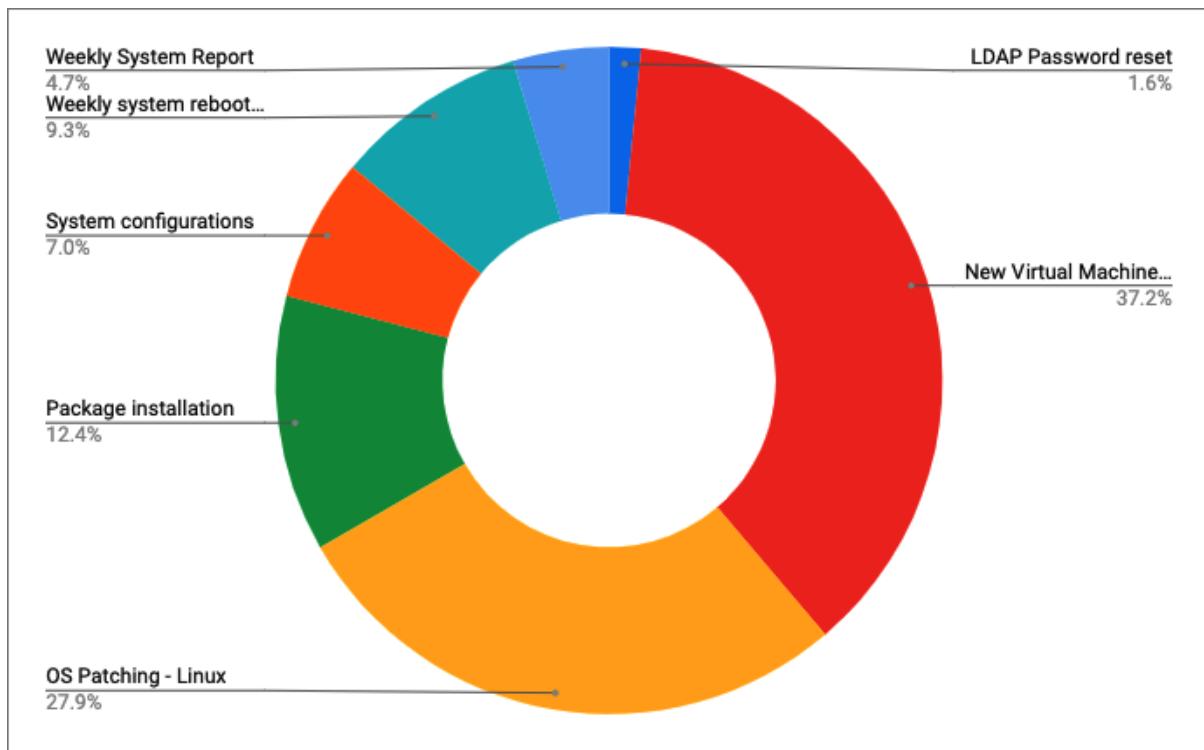
Projects None yet

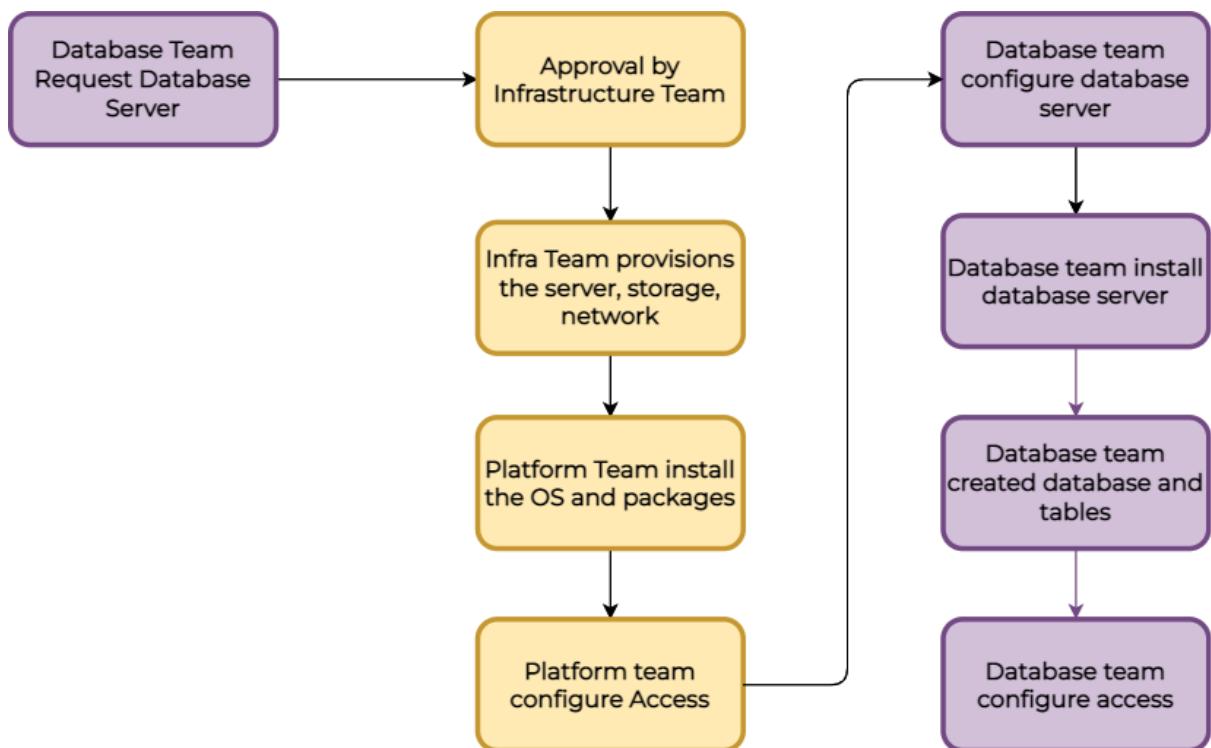
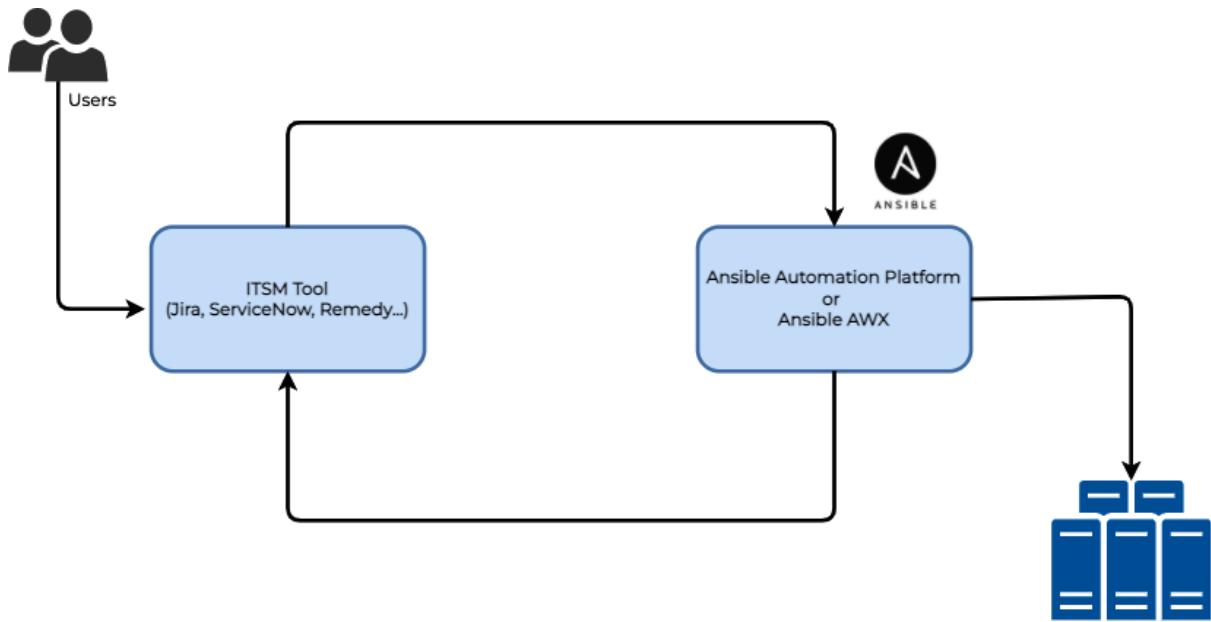
Milestone No milestone

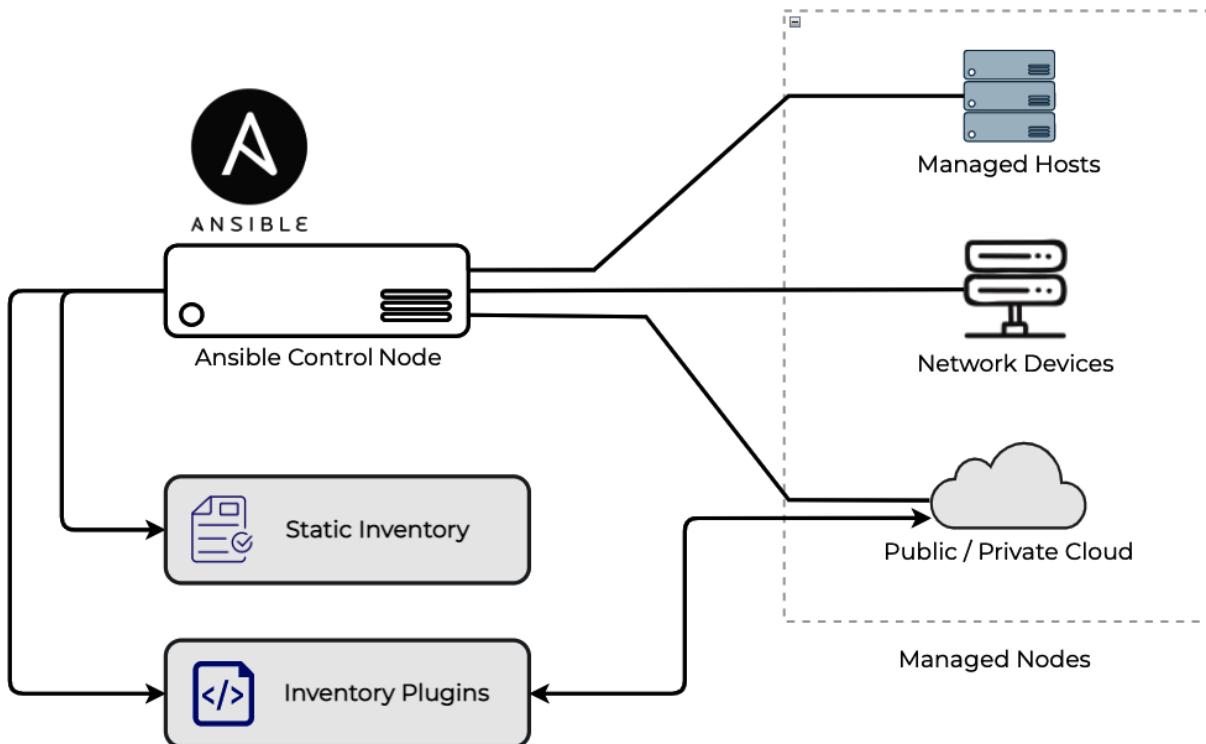
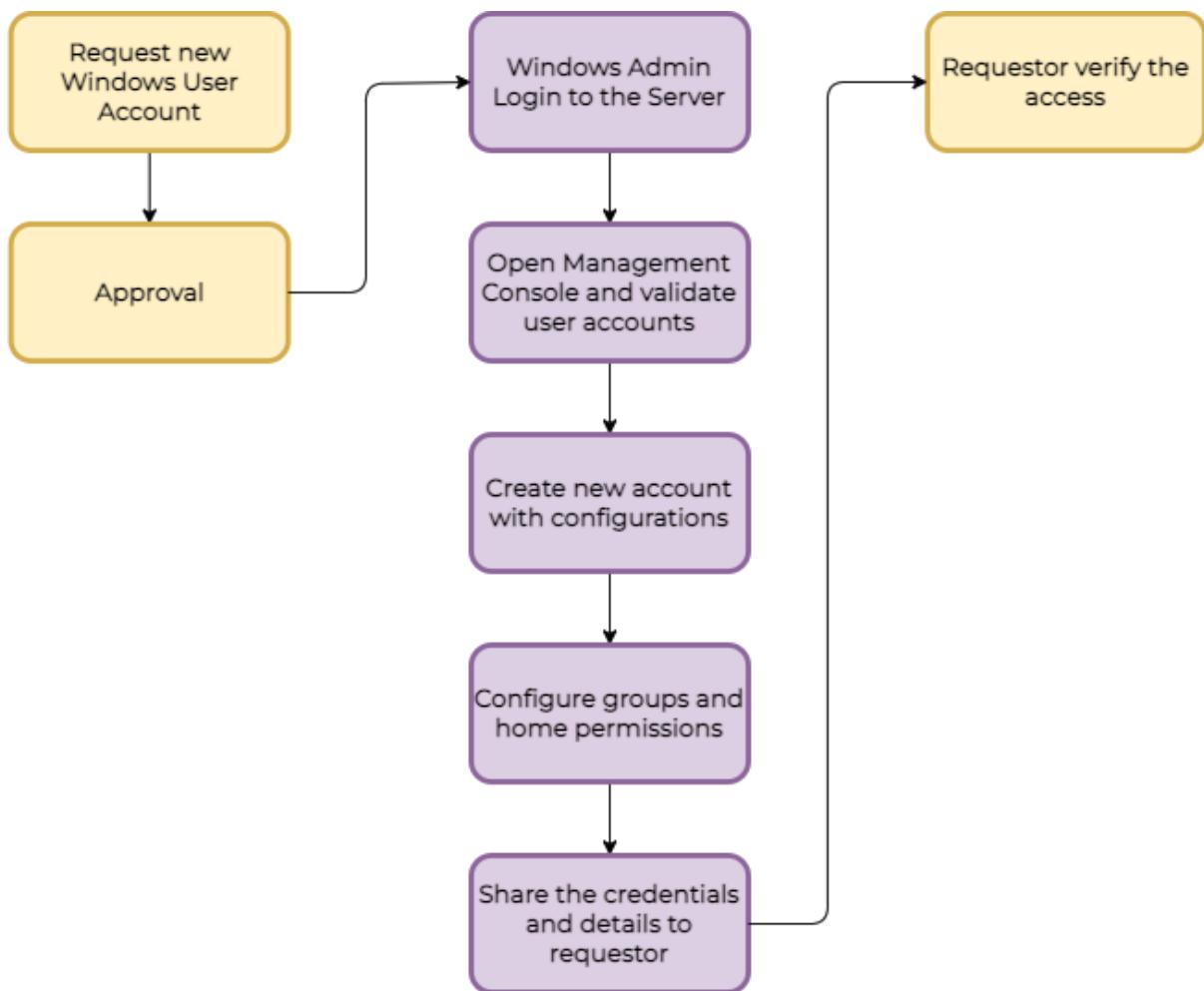
Linked issues Successfully merging this pull request may close these issues.

Chapter 5: Expanding Your Automation Landscape

Date	Task	Minutes	Source
01-01-2021	LDAP Password reset	10	Jira
01-01-2021	Package installation	120	ServiceNow
01-01-2021	Package installation	100	ServiceNow
01-01-2021	Package installation	100	ServiceNow
02-01-2021	OS Patching - Linux	120	ServiceNow
02-01-2021	OS Patching - Linux	120	ServiceNow
02-01-2021	Weekly system reboot - Linux	60	Email
02-01-2021	Weekly system reboot - Linux	60	Email
02-01-2021	Weekly system reboot - Linux	60	Email
02-01-2021	Weekly system reboot - Linux	60	Email
03-01-2021	OS Patching - Linux	120	ServiceNow
03-01-2021	OS Patching - Linux	120	ServiceNow
03-01-2021	OS Patching - Linux	120	ServiceNow
03-01-2021	OS Patching - Linux	120	ServiceNow
04-01-2021	New Virtual Machine Configuration	240	ServiceNow
04-01-2021	New Virtual Machine Configuration	240	ServiceNow
04-01-2021	New Virtual Machine Configuration	240	ServiceNow
04-01-2021	New Virtual Machine Configuration	240	ServiceNow
04-01-2021	Additional disk configuration	120	Email
04-01-2021	Additional disk configuration	120	Email
04-01-2021	Additional disk configuration	120	Email
04-01-2021	Additional disk configuration	120	Email
06-01-2021	LDAP Password reset	10	Jira
06-01-2021	System configurations	60	Email
06-01-2021	System configurations	60	Email
06-01-2021	System configurations	60	Email
07-01-2021	LDAP Password reset	10	Jira
07-01-2021	LDAP Password reset	10	Jira
07-01-2021	Weekly System Report	60	Email
07-01-2021	Weekly System Report	60	Email









```
[ansible@ansible Chapter-05]$ ansible-galaxy collection list amazon.aws

# /home/ansible/ansible-book-packet/Chapter-05/collections/ansible_collections
Collection Version
-----
amazon.aws 3.0.0
```



```
[ansible@ansible Chapter-05]$ ansible-doc -t inventory -l |grep aws
amazon.aws.aws_ec2                           EC2 inventory sourc...
amazon.aws.aws_rds                           rds instance source
```



Add user

1 2 3 4 5

Set user details

You can add multiple users at once with the same access type and permissions. [Learn more](#)

User name*

ansible-demo

[+ Add another user](#)

Select AWS access type

Select how these users will access AWS. Access keys and autogenerated passwords are provided in the last step. [Learn more](#)

Access type*

Programmatic access

Enables an **access key ID** and **secret access key** for the AWS API, CLI, SDK, and other development tools.

AWS Management Console access

Enables a **password** that allows users to sign-in to the AWS Management Console.

The screenshot shows the AWS Management Console top navigation bar. It includes the AWS logo, a "Services" dropdown, a search bar with placeholder text "Search for services, features, marketplace products, and docs [Alt+S]", and links for "devops", "Global", and "Support".

Add user

1 2 3

Set permissions



Add user to group



Copy permissions from existing user



Attach existing policies directly

Create policy

Filter policies ▾

Search

Showin

	Policy name ▾	Type	Used as
<input checked="" type="checkbox"/>	AdministratorAccess	Job function	Permissions policy (1)
<input type="checkbox"/>	AdministratorAccess-Amplify	AWS managed	None
<input type="checkbox"/>	AdministratorAccess-AWSElasticBeanstalk	AWS managed	None
<input type="checkbox"/>	AlexaForBusinessDeviceSetup	AWS managed	None
<input type="checkbox"/>	AlexaForBusinessFullAccess	AWS managed	None
<input type="checkbox"/>	AlexaForBusinessGatewayExecution	AWS managed	None
<input type="checkbox"/>	AlexaForBusinessLifesizeDelegatedAccessPolicy	AWS managed	None
<input type="checkbox"/>	AlexaForBusinessPolyDelegatedAccessPolicy	AWS managed	None

The screenshot shows the AWS Management Console top navigation bar, identical to the first one.

Add user

1 2 3 4 5

Success

You successfully created the users shown below. You can view and download user security credentials. You can also email users instructions for signing in to the AWS Management Console. This is the last time these credentials will be available to download. However, you can create new credentials at any time.

Users with AWS Management Console access can sign-in at: <https://941008431329.signin.aws.amazon.com/console>

Download .csv

	User	Access key ID	Secret access key
<input checked="" type="checkbox"/>	ansible-demo	[REDACTED]	***** Show



```
[ansible@ansible Chapter-05]$ cat ~/.aws/credentials
[default]
aws_access_key_id=EXAMPLEKEY
aws_secret_access_key=EXAMPLEACCESSKEY
[ansible]
aws_access_key_id=EXAMPLEKEY
aws_secret_access_key=EXAMPLEACCESSKEY
```

```
[ansible@ansible Chapter-05]$ cat ~/.aws/config
[default]
region=ap-southeast-1 output=json
```

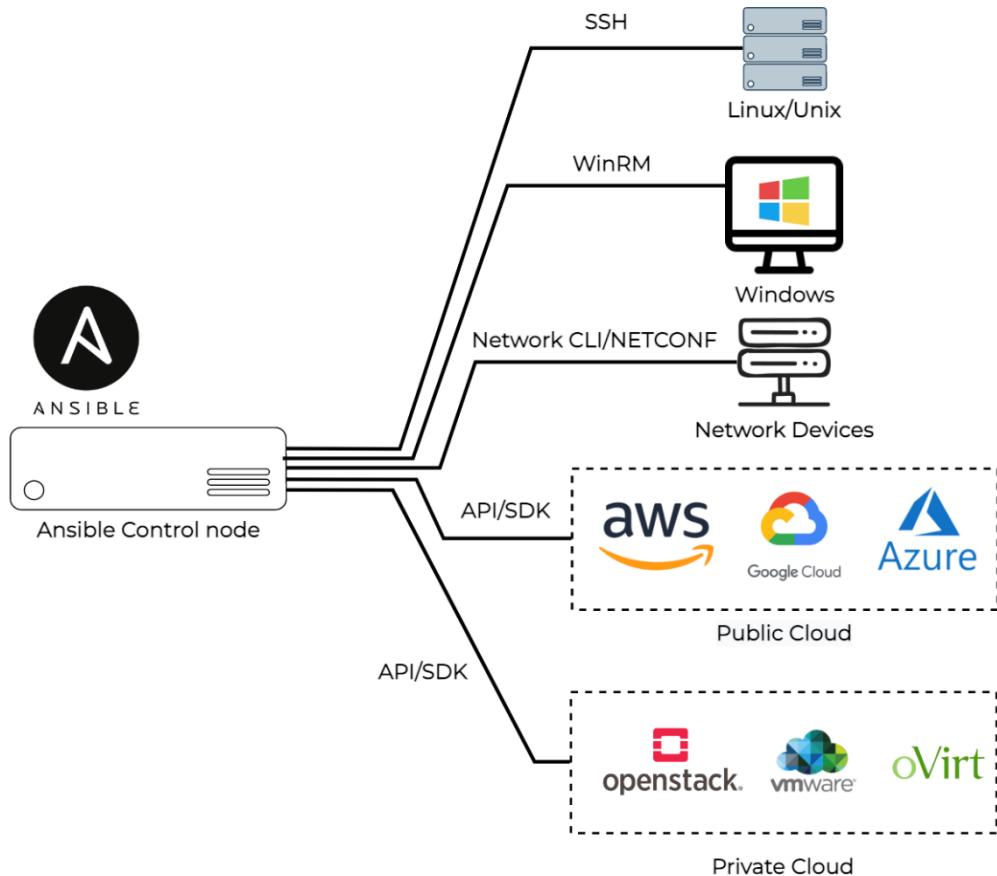
```
[ansible@ansible Chapter-05]$ mkdir inventories/aws
[ansible@ansible Chapter-05]$ cd inventories/aws/
[ansible@ansible aws]$ cat lab.aws_ec2.yml
# lab.aws_ec2.yml
plugin: amazon.aws.aws_ec2
boto_profile: ansible
regions:
- ap-southeast-1
```

```
[ansible@ansible Chapter-05]$ ansible-inventory -i inventories/aws/ --graph
@all:
|--@aws_ec2:
| |--ec2-13-250-108-199.ap-southeast-1.compute.amazonaws.com
| |--ec2-13-250-48-91.ap-southeast-1.compute.amazonaws.com
| |--ec2-54-179-175-153.ap-southeast-1.compute.amazonaws.com
|--@ungrouped:
```

```
[ansible@ansible Chapter-05]$ ansible-inventory -i inventories/aws/ --graph
@all:
|--@aws_ec2:
| |--ec2-54-179-175-153.ap-southeast-1.compute.amazonaws.com
|--@ungrouped:
```

```
[ansible@ansible Chapter-05]$ ansible all -m ping -i inventories/aws/
ec2-13-250-108-199.ap-southeast-1.compute.amazonaws.com | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python"
    },
    "changed": false,
    "ping": "pong"
}
```

Chapter 6: Automating Microsoft Windows and Network Devices



```
● ● ●

[ansible@ansible Chapter-06]$ ansible-doc -s -t connection community.docker.docker
> COMMUNITY.DOCKER.DOCKER      (/home/ansible/ansible-book-packet/Chapter-06/collections/ansible_collectio>

    Run commands or put/fetch files to an existing docker container. Uses the
    Docker CLI to execute commands in the container. If you prefer to directly
    connect to the Docker daemon, use the community.docker.docker_api
    connection plugin.

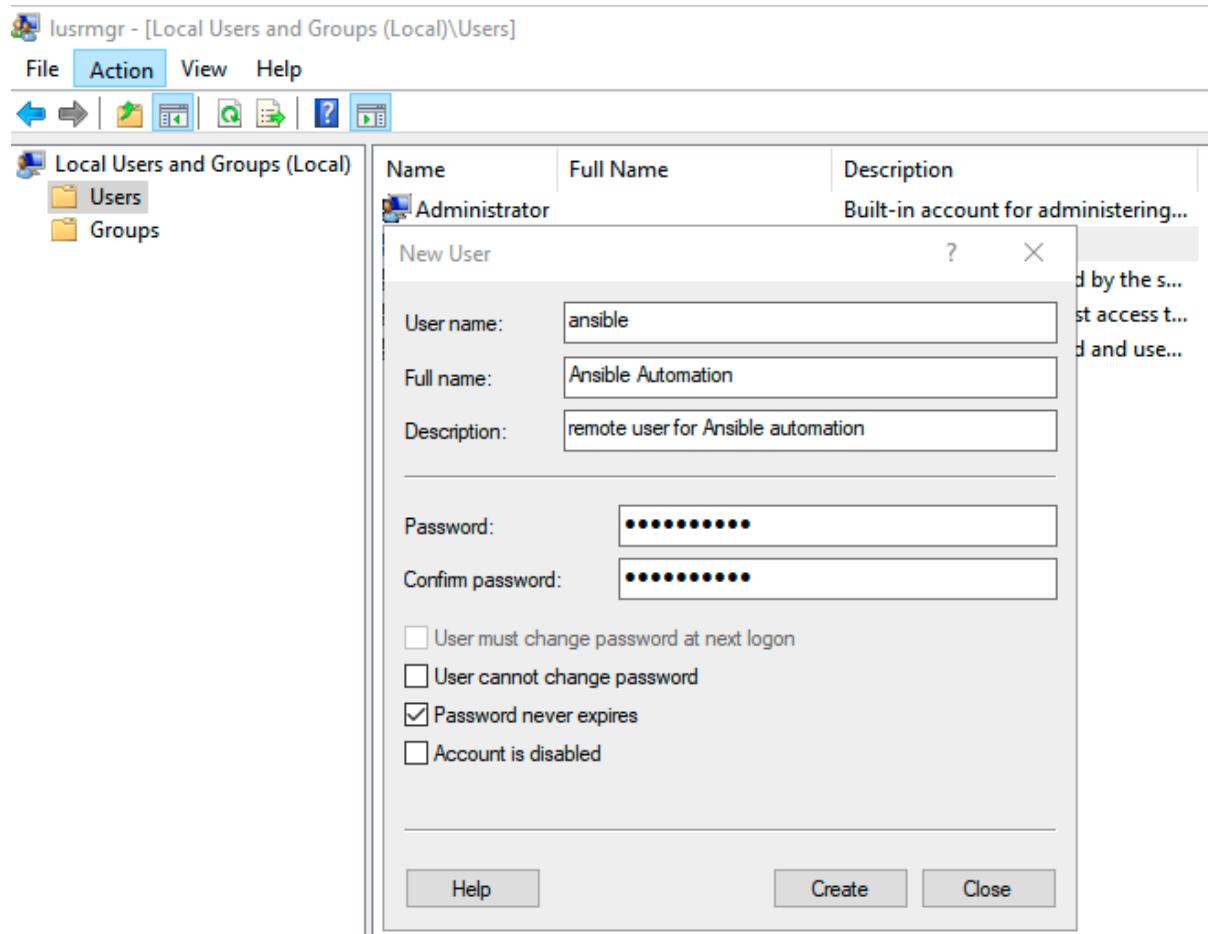
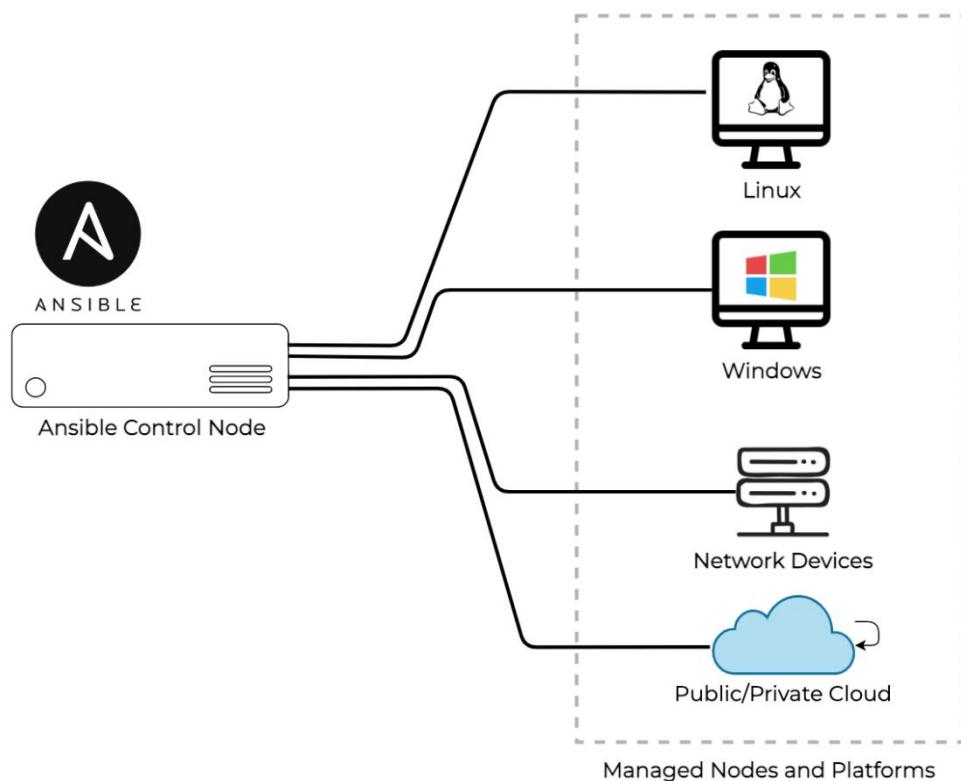
OPTIONS (= is mandatory):

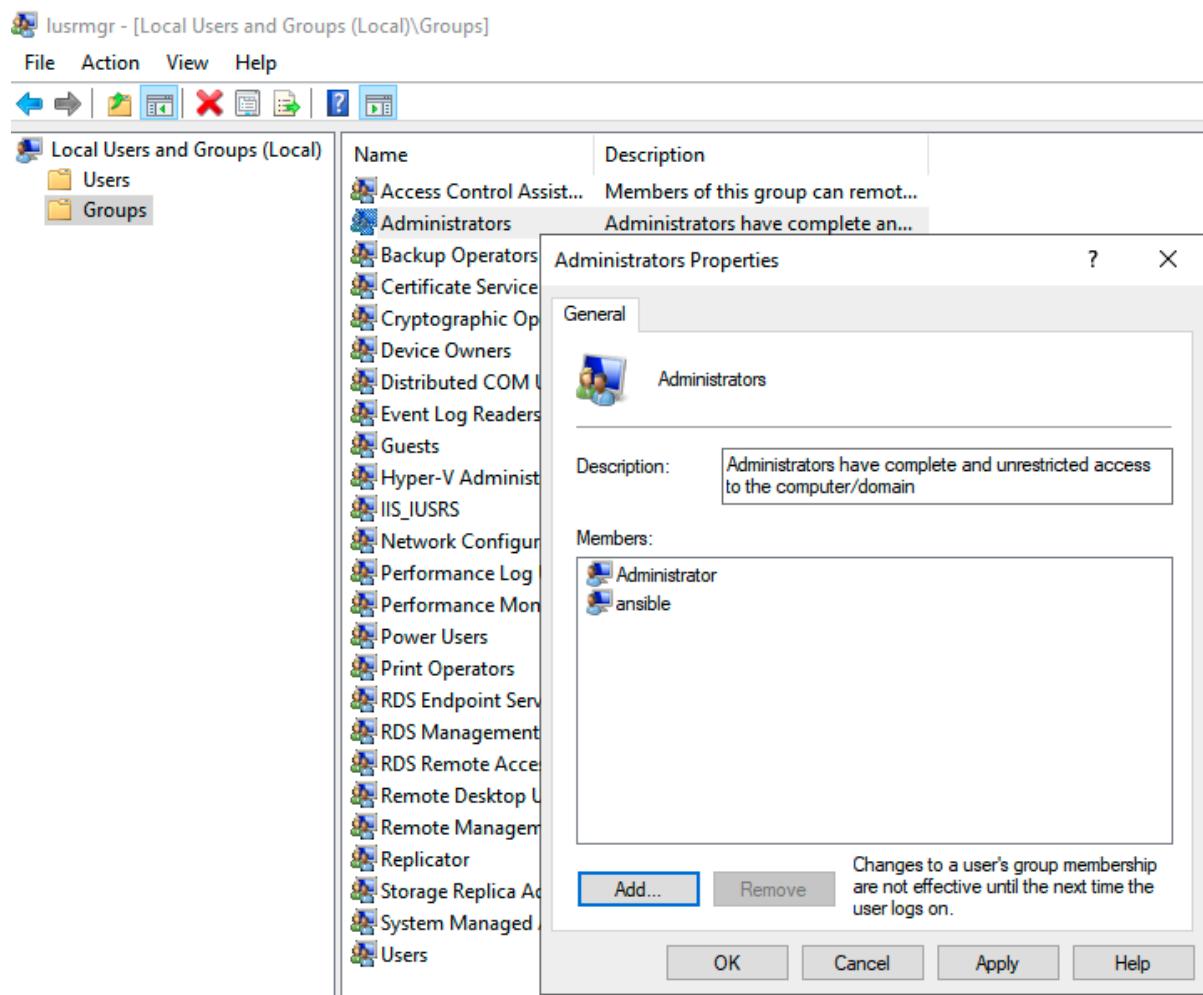
- container_timeout
    Controls how long we can wait to access reading output from the container
    once execution started.
    [Default: 10]
    set_via:
        env:
            - name: ANSIBLE_TIMEOUT
            - name: ANSIBLE_DOCKER_TIMEOUT
                version_added_collection: community.docker
        ini:
            - key: timeout
                section: defaults
            - key: timeout
    :
```

```
---  
# inventory variables  
ansible_connection: "winrm"  
ansible_user: "ansible"  
ansible_password: "MySecretWindowsPassword"  
ansible_port: "5985"  
ansible_winrm_transport: "basic"  
ansible_winrm_server_cert_validation: ignore
```

```
● ● ●

ansible_ssh_private_key_file=/home/ansible/.ssh/id_rsa
ansible_ssh_common_args='-o StrictHostKeyChecking=no'
```





```
PS C:\Users\Administrator> (Get-Host).Version
```

Major	Minor	Build	Revision
5	1	14393	693

```

PS C:\Users\Administrator> $url =
"https://raw.githubusercontent.com/ansible/ansible/devel/examples/scripts/ConfigureRemotingForAnsible.ps1"
PS C:\Users\Administrator> $file = "$env:temp\ConfigureRemotingForAnsible.ps1"
PS C:\Users\Administrator> (New-Object -TypeName System.Net.WebClient).DownloadFile($url, $file)
PS C:\Users\Administrator> powershell.exe -ExecutionPolicy ByPass -File $file
Self-signed SSL certificate generated; thumbprint: DD2BFC45E7503BC9C05BA9174326B593614C733

wxr          : http://schemas.xmlsoap.org/ws/2004/09/transfer
a           : http://schemas.xmlsoap.org/ws/2004/08/addressing
w           : http://schemas.dmtf.org/wbem/wsman/1/wsman.xsd
lang        : en-US
Address     : http://schemas.xmlsoap.org/ws/2004/08/addressing/role/anonymous
ReferenceParameters : ReferenceParameters

Ok.

```

```

C:\Users\Administrator>winrm e winrm/config/listener
Listener
    Address = *
    Transport = HTTP
    Port = 5985
    Hostname
    Enabled = true
    URLPrefix = wsman
    CertificateThumbprint
    ListeningOn = 10.0.2.15, 127.0.0.1, 192.168.99.103, ::1, fe80::5efe:10.0.2.15%3, fe80::5efe:192.168.99.103%13,
    fe80::785d:9659:c4d4:9b0f%16

Listener
    Address = *
    Transport = HTTPS
    Port = 5986
    Hostname = WIN-CCUQI8Q4RMH
    Enabled = true
    URLPrefix = wsman
    CertificateThumbprint = 64E69568BD75F3068BDCBF7ED819E4EA9ED1FDA3
    ListeningOn = 10.0.2.15, 127.0.0.1, 192.168.99.103, ::1, fe80::5efe:10.0.2.15%3, fe80::5efe:192.168.99.103%13,
    fe80::785d:9659:c4d4:9b0f%16

```

```

[ansible@ansible Chapter-06]$ nc -vz 192.168.56.22 5985
Connection to 192.168.56.22 5985 port [tcp/wsman] succeeded!

[ansible@ansible Chapter-06]$ nc -vz 192.168.56.22 5986
Connection to 192.168.56.22 5986 port [tcp/wsmans] succeeded!

```

```

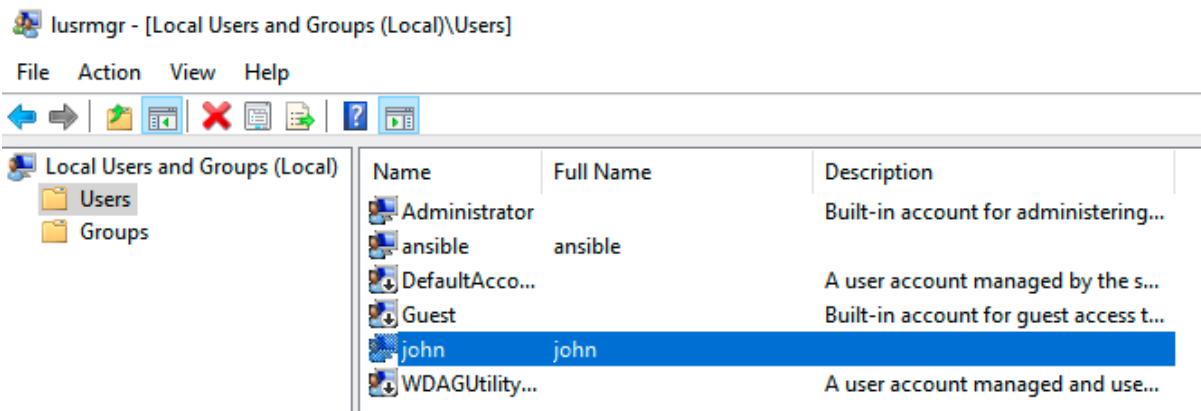
[ansible@ansible Chapter-06]$ cat group_vars/windows
---
ansible_user: "ansible"
ansible_password: "MySecretWindowsPassword"
ansible_port: "5985"
ansible_connection: "winrm"
ansible_winrm_transport: "basic"
ansible_winrm_server_cert_validation: ignore

```

```
[ansible@ansible Chapter-06]$ ansible windows -m win_ping  
win2019 | SUCCESS => {  
    "changed": false,  
    "ping": "pong"  
}
```

```
---  
- name: "Create New user on Windows Machine"  
hosts: "{{ NODES }}"  
vars:  
  windows_username: "john"  
  windows_password: "MyP4ssw0rd"  
tasks:  
  - name: Create a new User  
    win_user:  
      name: "{{ windows_username }}"  
      password: "{{ windows_password }}"  
      state: present  
      groups:  
        - Users  
    when: ansible_os_family == 'Windows'
```

```
[ansible@ansible Chapter-06]$ ansible-playbook windows-create-user.yaml -e "NODES=windows"
```



Local Users and Groups (Local)\Users				
File Action View Help				
Local Users and Groups (Local)		Name	Full Name	Description
	Users		Administrator	Built-in account for administering...
	Groups		ansible	ansible
			DefaultAcco...	A user account managed by the s...
			Guest	Built-in account for guest access t...
			john	john
			WDAGUtility...	A user account managed and use...

Value of ansible_connection	Protocol	Requires	Persistent?
ansible.netcommon.network_cli	CLI over SSH	network_os setting	yes
ansible.netcommon.netconf	XML over SSH	network_os setting	yes
ansible.netcommon.httpapi	API over HTTP/HTTPS	network_os setting	yes
local	depends on provider	provider setting	no



```
[coreswtiches]
c7000-sw01 ansible_host=192.168.0.242

[coreswtiches:vars]
ansible_connection=ansible.netcommon.network_cli
ansible_network_os=cisco.ios.ios
ansible_password='Cisco@123'
ansible_user=admin
ansible_become_method=enable
ansible_become_password='Cisco@123'

[distributionswtiches]
hp5130ds01 ansible_host=192.168.0.253

[distributionswtiches:vars]
ansible_password=hpassadmin
ansible_user=hppassword
```



```
[ansible@ansible inventories]$ cat network
...output omitted...

[vyos]
vyos-01 ansible_host=192.168.56.201

[vyos:vars]
ansible_connection=ansible.netcommon.network_cli
ansible_user=vyosuser
ansible_password=vyispASSWORD
ansible_network_os=vyos.vyos.vyos
```

```
## Chapter-06/vyos-facts.yaml

- name: Collecting VyOS facts
  connection: ansible.netcommon.network_cli
  gather_facts: false
  hosts: vyos
  tasks:
    - name: Fetching VyOS details
      vyos.vyos.vyos_facts:
        gather_subset: all

    - name: Display fact output
      debug:
        msg: "VyOS version: {{ ansible_net_version }}"
```

```
[ansible@ansible Chapter-06]$ ansible-playbook -i inventories/ vyos-facts.yaml

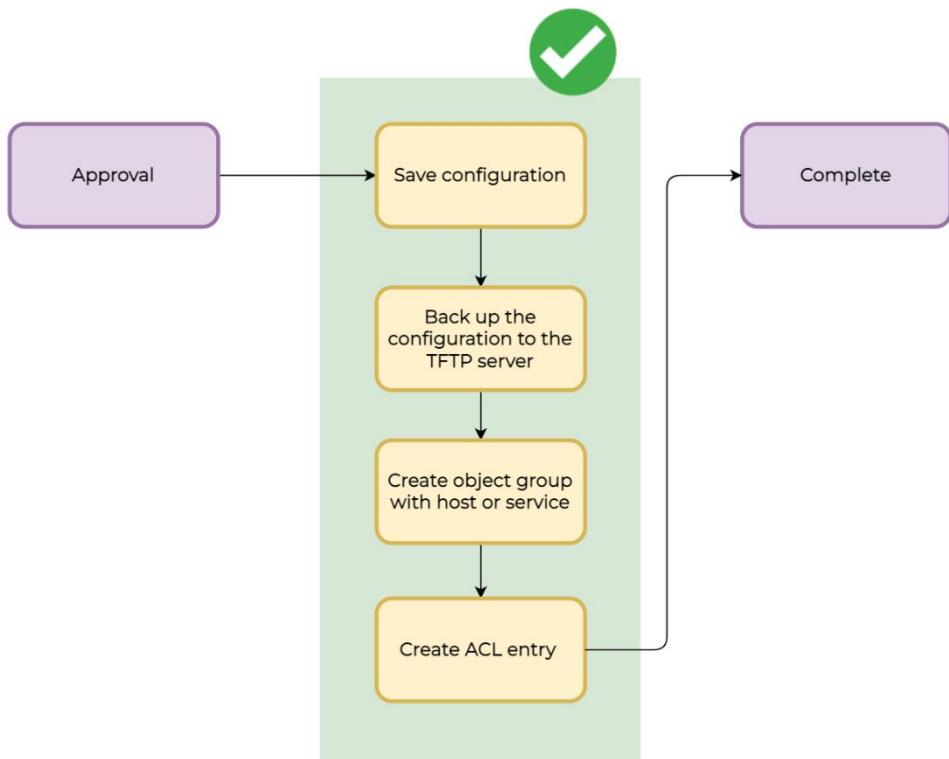
PLAY [Collecting VyOS facts] ****
TASK [Fetching VyOS details] ****
ok: [vyos-01]

TASK [Display fact output] ****
ok: [vyos-01] => {
    "msg": "VyOS version: VyOS 1.4-rolling-202202130317"
}

PLAY RECAP ****
vyos-01 : ok=2    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

```
[asa]
ciscoasa ansible_host=192.168.57.121

[asa:vars]
ansible_user=adminasa
ansible_ssh_pass=password
ansible_become=true
ansible_become_method=ansible.netcommon.enable
ansible_become_pass=password
ansible_connection=ansible.netcommon.network_cli
ansible_network_os=cisco.asa.asa
```



```

● ● ●

---
- name: Cisco ASA Create ACL Entry
  hosts: "{{ nw_devices }}"
  gather_facts: no

  vars:
    take_backup: "Yes"
    tftp_server: 192.168.57.106
    tftp_server_port: 69

    acl_identifier: Demo-ACL
    acl_type: extended
    acl_action: permit #or deny
    acl_entry_source_ip: 10.1.20.11
    acl_entry_source_mask: 255.255.255.255

    asa_object_group_name: DEMO-NETWORK-TEAM-NEW
    asa_object_group_type: network # service, security etc.
    asa_object_group_host: 192.0.50.4
  
```

```

● ● ●

tasks:
  - name: Set backup filename
    ansible.builtin.set_fact:
      backup_filename: "{{ inventory_hostname }}_{{ lookup('pipe', 'date +%Y%m%d-%H%M%S') }}_backup.cfg"

  - name: Save configuration and take device Backup to tftp
    cisco.asa.asa_command:
      commands:
        - write memory
        - copy /noconfirm running-config tftp://{{ tftp_server }}/{{ backup_filename }}
    when: take_backup == "Yes"
  
```

```
● ● ●
- name: Merge module attributes of given object-group
cisco.asa.asa_ogs:
  config:
    - object_type: network
      object_groups:
        - name: "{{ asa_object_group_name }}"
          network_object:
            host:
              - "{{ asa_object_group_host }}"
state: merged
```

```
● ● ●
- name: Add new ACL Entry and Merge configuration with device configuration
cisco.asa.asa_acls:
  config:
    acls:
      - name: "{{ acl_identifier }}"
        acl_type: "{{ acl_type }}"
        aces:
          - grant: "{{ acl_action }}"
            protocol_options:
              tcp: true
            source:
              address: "{{ acl_entry_source_ip }}"
              netmask: "{{ acl_entry_source_mask }}"
            destination:
              object_group: "{{ asa_object_group_name }}"
state: merged
```

```
[ansible@ansible Chapter-06]$ ansible-playbook cisco-asa-acl-create.yaml -e "nw_devices=asa"
PLAY [Cisco ASA Create ACL Entry] ****
TASK [Set backup filename] ****
ok: [ciscoasa]
TASK [Save configuration and take device Backup to tftp] ****
ok: [ciscoasa]
TASK [Merge module attributes of given object-group] ****
changed: [ciscoasa]
TASK [Add new ACL Entry and Merge configuration with device configuration] ****
changed: [ciscoasa]
PLAY RECAP ****
ciscoasa : ok=4    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

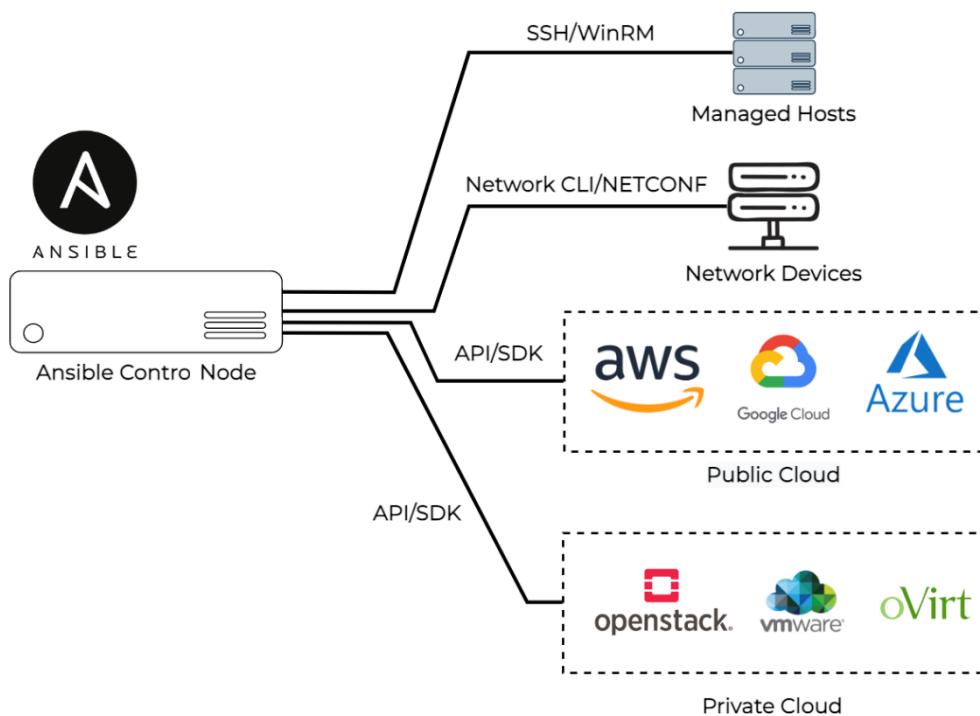
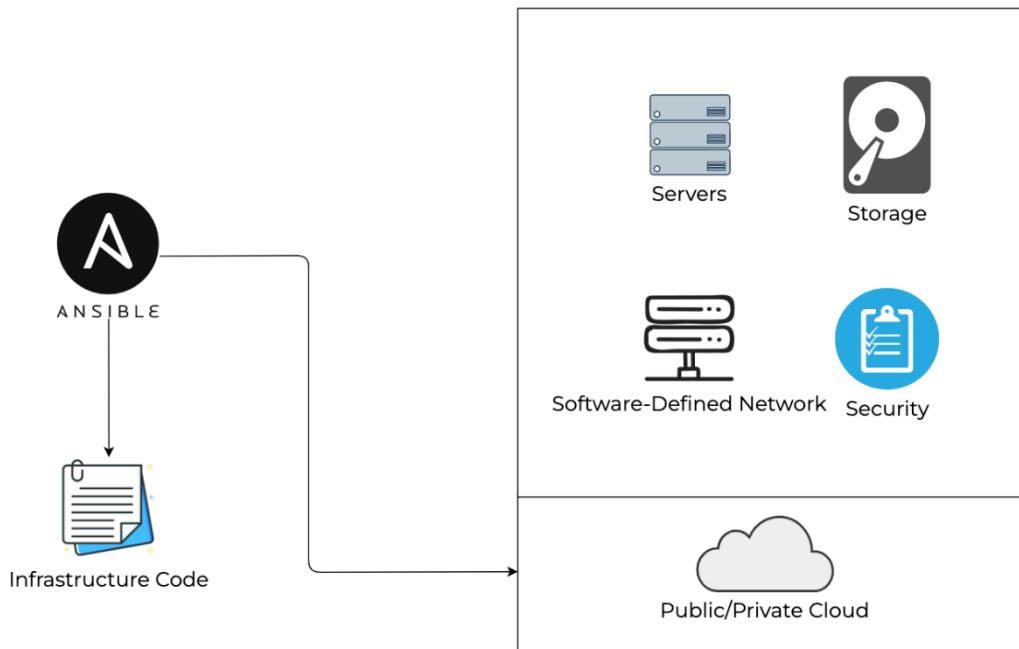


```
$ ssh adminasa@192.168.57.121
adminasa@192.168.57.121's password:
User adminasa logged in to ciscoasa
Logins over the last 1 days: 2. Last login: 03:49:07 UTC May 29 2022 from 192.168.57.1
Failed logins since the last login: 0.
Type help or '?' for a list of available commands.
ciscoasa> en
Password: *****
ciscoasa#
ciscoasa#
ciscoasa# show running-config object-group | include DEMO-NETWORK-TEAM-NEW
object-group network DEMO-NETWORK-TEAM-NEW
ciscoasa#
ciscoasa# show running-config access-list | include Demo-ACL
access-list Demo-ACL extended permit tcp host 10.1.20.11 object-group DEMO-NETWORK-TEAM-NEW
```



```
[operator@tftp-prod tftpboot]$ ls -lrt
total 48
-rw-r--r--. 1 nobody nobody 8368 May 29 03:54 ciscoasa_20220529-115451_backup.cfg
-rw-r--r--. 1 nobody nobody 8368 May 29 03:55 ciscoasa_20220529-115531_backup.cfg
-rw-r--r--. 1 nobody nobody 8400 May 29 03:55 ciscoasa_20220529-115553_backup.cfg
-rw-r--r--. 1 nobody nobody 8432 May 29 03:56 ciscoasa_20220529-115610_backup.cfg
```

Chapter 7: Managing Your Virtualization and Cloud Platforms



A Documentation

All modules

- Cloud modules
 - Alicloud
 - Amazon
 - Atomic
 - Azure
 - Centurylink
 - Cloudscale
 - Cloudstack
 - Digital_Ocean
 - Dimensiondata
 - Docker
 - Google
 - Hcloud
 - Heroku
 - Huawei
 - Kubevirt
 - Linode
 - Lxc
 - Lxd
 - Memset
 - Misc
 - Oneandone
 - Online
 - Opennebula
 - Openstack
 - Oracle
 - Ovh
 - Ovirt
 - Packet

Docs » User Guide » Working With Modules » Module Index » Cloud modules

You are reading the latest Red Hat released version of the Ansible documentation. Community users can use this, or select any version in version selection to the left, including **latest** for the most recent community version.

Cloud modules

Alicloud

- ali_instance – Create, Start, Stop, Restart or Terminate an Instance in ECS. Add or Remove Instance to/from a Security Group
- ali_instance_info – Gather information on instances of Alibaba Cloud ECS

Amazon

- aws_acm_info – Retrieve certificate information from AWS Certificate Manager service
- aws_api_gateway – Manage AWS API Gateway APIs
- aws_application_scaling_policy – Manage Application Auto Scaling Scaling Policies
- aws_az_info – Gather information about availability zones in AWS
- aws_batch_compute_environment – Manage AWS Batch Compute Environments
- aws_batch_job_definition – Manage AWS Batch Job Definitions
- aws_batch_job_queue – Manage AWS Batch Job Queues
- aws_caller_info – Get information about the user and account being used to make AWS calls
- aws_codebuild – Create or delete an AWS CodeBuild project
- aws_codecommit – Manage repositories in AWS CodeCommit
- aws_codepipeline – Create or delete AWS CodePipelines
- aws_config_aggregation_authorization – Manage cross-account AWS Config authorizations
- aws_config_aggregator – Manage AWS Config aggregations across multiple accounts
- aws_config_delivery_channel – Manage AWS Config delivery channels
- aws_config_recorder – Manage AWS Config Recorders
- aws_config_rule – Manage AWS Config resources
- aws_direct_connect_connection – Creates, deletes, modifies a DirectConnect connection
- aws_direct_connect_gateway – Manage AWS Direct Connect Gateway
- aws_direct_connect_link_aggregation_group – Manage Direct Connect LAG bundles

GALAXY

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vmware

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Details	Read Me	Content	
vca_fw Module add/remove firewall rules in a gateway in a vca	vca_nat Module add/remove nat rules in a gateway in a vca	vca_vapp Module Manages vCloud Air vApps instances.	vcenter_domain_user_group_info Module Gather user or group information of a domain.
vcenter_extension Module Register/deregister vCenter Extensions	vcenter_extension_info Module Gather info vCenter extensions	vcenter_folder Module Manage folders on given datacenter	vcenter_license Module Manage VMware vCenter license keys
vcenter_standard_key_provider Module Add, reconfigure or remove Standard Key Provider on vCenter server	vmware_about_info Module Provides information about VMware server to which user is connecting to	vmware_category Module Manage VMware categories	vmware_category_info Module Gather info about VMware tag categories
vmware_cfg_backup Module Backup / Restore / Reset ESXi host configuration	vmware_cluster Module Manage VMware vSphere clusters	vmware_cluster_drs Module Manage Distributed Resource Scheduler (DRS) on VMware vSphere clusters	vmware_cluster_ha Module Manage High Availability (HA) on VMware vSphere clusters

GALAXY

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Info

Installation

```
$ ansible-galaxy collection install
$ vmware.vmware_rest
```

NOTE: Installing collections with ansible-galaxy is only supported in ansible 2.9+

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2.1.4 released a month ago (latest)

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Quality of docs?

- ⚡ ⚡ ⚡ +

Ease of use?

- ⚡ ⚡ ⚡ +

Does what it promises? Y N

Y N

Works without

Y N



```
[ansible@ansible Chapter-07]$ cat ansible.cfg
[defaults]
inventory = ./hosts
remote_user = devops
ask_pass = false
```

```
COLLECTIONS_PATHS = ./collections
```

● ● ●

```
[ansible@ansible Chapter-07]$ ansible-galaxy collection install community.vmware
Starting galaxy collection install process
Process install dependency map
Starting collection install process
Downloading https://galaxy.ansible.com/download/community-vmware-2.1.0.tar.gz to
/home/ansible/.ansible/tmp/ansible-local-2922ya8yiroz/tmpgwmpkp4a/community-vmware-2.1.0-hk7iqmqh
Installing 'community.vmware:2.1.0' to '/home/ansible/ansible-book-pact/Chapter-
07/collections/ansible_collections/community/vmware'
community.vmware:2.1.0 was installed successfully
```

● ● ●

```
[ansible@ansible Chapter-07]$ ansible-galaxy collection list community.vmware
# /home/ansible/ansible-book-pact/Chapter-07/collections/ansible_collections
Collection      Version
-----
community.vmware 2.1.0

# /usr/local/lib/python3.6/site-packages/ansible_collections
Collection      Version
-----
community.vmware 1.17.0
```

● ● ●

```
[ansible@ansible Chapter-07]$ cat collections/ansible_collections/community/vmware/requirements.txt
pyVmomi>=6.7
git+https://github.com/vmware/vsphere-automation-sdk-python.git ; python_version >= '2.7'  # Python 2.6 is not
supported
```

● ● ●

```
[ansible@ansible Chapter-07]$ pip install -r collections/ansible_collections/community/vmware/requirements.txt
```

● ● ●

```
[ansible@ansible Chapter-07]$ mkdir vars
[ansible@ansible Chapter-07]$ cd vars/
[ansible@ansible vars]$ ansible-vault create vmware-credential.yaml
New Vault password:
Confirm New Vault password:
```

```

# details about the cluster
vcenter_hostname: vcenter.lab.local
vmware_datacenter: DC1
vmware_cluster_name: 'AZ1'
vmware_datastore: 'datastore1'
vm_folder: "/"

# details for the new VM
vm_name: 'DC1AZ1POC101'
vm_template_name: 'RHEL7-New'
# disk details
vm_disk_size_gb: '40'
vm_disk_type: 'thin'
vm_disk_datastore_name: 'datastore1'
# capacity and hardware
vm_memory_size_mb: '8192'

...<output omitted for brevity>...

```

```

[ansible@ansible Chapter-07]$ mkdir roles

[ansible@ansible Chapter-07]$ cd roles
[ansible@ansible roles]$ ansible-galaxy role init vmware-provision-vm-from-template
- Role vmware-provision-vm-from-template was created successfully

```

```

---  

# tasks file for vmware-provision-vm-from-template  

- name: Check VM exist or not  

  include_tasks: vmware-provisioning-pre-check.yaml  

- name: Provision VM  

  include_tasks: vmware-provisioning-task.yaml  

  when: vm_check.failed

```

```

---  

# vmware-provisioning-pre-check.yaml  

- name: Check if VM exist with same name  

  no_log: true  

  community.vmware.vmware_guest_find:  

    hostname: "{{ vcenter_hostname }}"  

    username: "{{ vcenter_username }}"  

    password: "{{ vcenter_password }}"  

    validate_certs: no  

    name: "{{ vm_name }}"  

  delegate_to: localhost  

  register: vm_check  

  ignore_errors: yes  

- name: If VM with same name already exist  

  debug:  

    msg: "The virtual machine {{ vm_name }} already exist. Skipping tasks..."  

  when: not vm_check.failed

```

```

---  

# vmware-provisioning-task.yaml  

- name: "Provisioning New VM using template {{ vm_template_name }}"  

  vmware_guest:  

    hostname: "{{ vcenter_hostname }}"  

    username: "{{ vcenter_username }}"  

    password: "{{ vcenter_password }}"  

    validate_certs: no  

    datacenter: "{{ vmware_datacenter }}"  

    cluster: "{{ vmware_cluster_name }}"  

    folder: "{{ vm_folder }}"  

    #guest_id: "{{ vm_guest_id }}"  

    name: "{{ vm_name }}"  

    template: "{{ vm_template_name }}"  

    state: poweredon  

    wait_for_ip_address: "{{ vm_wait_for_ip_connection }}"  

    wait_for_customization: "{{ vm_wait_for_customization }}"  

    #customization_spec: "{{ vm_base_profile }}"  

    datastore: "{{ vmware_datastore }}"  

...<removed code for brevity>...

```

```

---  

# defaults file for vmware-provision-vm-from-template  

vcenter_hostname: vcenter.lab.local  

vmware_datacenter: DC1  

vmware_cluster_name: AZ1

```

```

## vmware-provision-vm-from-template.yml  

---  

- name: "Provision VM from Template"  

  hosts: localhost  

  gather_facts: no  

  become: no  

  connection: local  

  vars_files:  

    - vars/common-vars.yml      # other common variables  

    - vars/vmware-credential.yml # vcenter credential  

  tasks:  

    - name: Deploy new VM in vCenter  

      ansible.builtin.include_role:  

        name: vmware-provision-vm-from-template  

      tags: provisionvmfromtemplate  

    - name: Waits for SSH (VM UP and Running)  

      ansible.builtin.wait_for:  

        host: "{{ vm_net1_ip_address }}"  

        port: 22  

        delay: "{{ vm_wait_for_ssh_time }}"  

        timeout: 300  

        state: started  

      when: vm_wait_for_ip_connection == "yes"

```

```

## vmware-provision-vm-from-template.yml

.

- name: Add newly created VMs to a host group
  no_log: true
  ansible.builtin.add_host:
    name: "{{ vm_net1_ip_address }}"
    groups: "vmwarenewvms"
    ansible_ssh_extra_args: ' -o StrictHostKeyChecking=no '
    ansible_user: "{{ vm_ansible_user_name }}"
    ansible_password: "{{ vm ansible_user_password }}"
    var_vm_os_family: "{{ vm_os_family }}"
    var_vm_user_name_list: "{{ vm_user_name_list }}"
    var_vm_user_password: "{{ vm_user_password }}"
  when: vm_os_family == "RHEL"

```

```

## vmware-provision-vm-from-template.yml

.

## 2nd play for post-configurations
- name: RHEL VM Post-Provisioning Configurations
  hosts: vmwarenewvms
  gather_facts: no
  become: yes
  tasks:
    - name: Waiting for SSH
      wait_for:
        host: "{{ inventory_hostname }}"
        port: 22
        delay: 1
        timeout: 300
        state: started
      when: var_vm_os_family is defined
      become: no
      vars:
        ansible_connection: local

    - name: New VM post-provisioning configurations
      debug:
        msg: "You can include additional tasks to execute inside the new VM as post provisioning configurations"
      when: var_vm_os_family is defined

```



```
[ansible@ansible Chapter-07]$ ansible-playbook vmware-provision-vm-from-template.yml --ask-vault-password  
Vault password:
```

The screenshot shows the AWS Free Tier landing page. At the top, there's a navigation bar with links for Contact Us, Support, English, My Account, Sign In to the Console, Products, Solutions, Pricing, Documentation, Learn, Partner Network, AWS Marketplace, Customer Enablement, Events, Explore More, and a search icon. Below the navigation is a secondary navigation bar with links for AWS Free Tier, Overview, FAQs, and Terms and Conditions. The main content area features a large heading "AWS Free Tier" and a sub-headline "Gain free, hands-on experience with the AWS platform, products, and services". A call-to-action button "Create a Free Account" is visible. To the right, there's a "FEATURED" section titled "Startups may be eligible for AWS credits" with a sub-description about AWS Activate. Below this is a link "Sign up for Activate Today ». The bottom section is titled "Types Of Offers" and lists three categories: "Free trials" (represented by a stopwatch icon), "12 months free" (represented by a calendar icon), and "Always free" (represented by a circular infinity symbol icon). Each category has a brief description and a link to learn more.

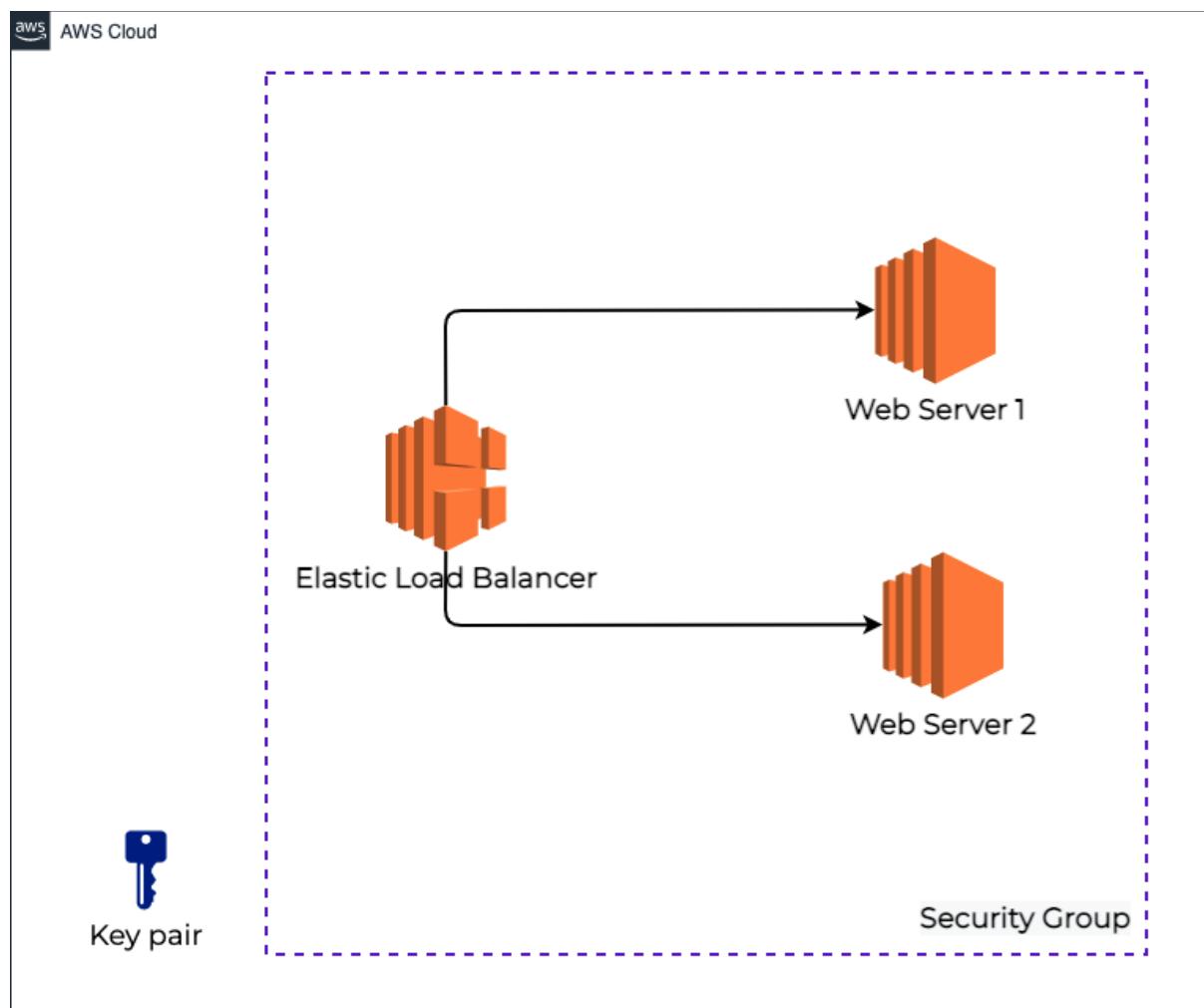
```
[ansible@ansible Chapter-07]$ cat requirements.yaml
```

```
---
```

```
collections:
  # Install a collection from Ansible Galaxy.
  - name: amazon.aws
    version: 3.0.0
    source: https://galaxy.ansible.com
  - name: community.vmware
    version: 2.1.0
    source: https://galaxy.ansible.com
  - name: google.cloud
    version: 1.0.2
    source: https://galaxy.ansible.com
  - name: community.general
    version: 4.0.1
    source: https://galaxy.ansible.com
  - name: ansible.posix
    version: 1.3.0
    source: https://galaxy.ansible.com
```

```
[ansible@ansible Chapter-07]$ [ansible@ansible Chapter-07]$ ansible-galaxy install -r requirements.yaml
```

```
[ansible@ansible Chapter-07]$ ansible-galaxy collection list  
.  
# /home/ansible/ansible-book-packt/Chapter-07/collections/ansible_collections  
Collection          Version  
-----  
amazon.aws          3.0.0  
ansible.posix        1.3.0  
community.aws       3.1.0  
community.general   4.0.1  
community.vmware    2.1.0  
google.cloud         1.0.2
```



```
[ansible@ansible Chapter-07]$ ls -l roles/
total 0
drwxrwxr-x. 4 ansible ansible 35 Jul 30 08:00 aws-create-ec2
drwxrwxr-x. 5 ansible ansible 61 Jul 30 08:00 aws-create-elb
drwxrwxr-x. 3 ansible ansible 19 Jul 30 08:00 aws-create-keypair
drwxrwxr-x. 3 ansible ansible 19 Jul 30 08:00 aws-create-sg
drwxrwxr-x. 3 ansible ansible 19 Jul 30 08:00 aws-create-targetgrp
drwxrwxr-x. 3 ansible ansible 19 Jul 30 08:00 aws-delete-ec2
drwxrwxr-x. 3 ansible ansible 19 Jul 30 08:00 aws-delete-elb
drwxrwxr-x. 3 ansible ansible 19 Jul 30 08:00 aws-delete-keypair
drwxrwxr-x. 3 ansible ansible 19 Jul 30 08:00 aws-delete-sg
drwxrwxr-x. 3 ansible ansible 19 Jul 30 08:00 aws-delete-targetgrp
drwxrwxr-x. 3 ansible ansible 19 Jul 30 08:00 aws-get-vpc-details
drwxrwxr-x. 3 ansible ansible 19 Jul 30 08:00 aws-remove-web
drwxrwxr-x. 3 ansible ansible 19 Jul 30 08:00 deploy-web-server
drwxrwxr-x. 8 ansible ansible 124 Jul 30 08:00 vmware-provision-vm-from-template
```

```
## aws-common-vars.yml
---
# variables aws environment
vpc_id: ""
vpc_subnet_list: []

region: ap-southeast-1
aws_region: ap-southeast-1
elbgroupname: webtarget

inventory_webgroup: ec2webservers
existing_ec2_list: []
new_ec2_list: []
existing_ec2_public_ips: []
...<removed for brevity>...
```

```
## vars/aws-ec2-new.yml
---
# list of ec2 instances
ec2_new_list:
  aws_web_101:
    name: AWS_WEB_101
    key_name: "{{ aws_demo_key }}"
    group: SG-Ansible-Demo
    instance_type: t2.micro
  aws_web_102:
    name: AWS_WEB_102
    key_name: "{{ aws_demo_key }}"
    group: SG-Ansible-Demo
    instance_type: t2.micro
```

● ● ●

```
---  
# tasks file for aws-create-sg  
- name: Create Security group  
  amazon.aws.ec2_group:  
    profile: "{{ aws_boto_profile }}"  
    name: "{{ aws_security_group }}"  
    description: 'Security Group with SSH and HTTP rules'  
    vpc_id: "{{ aws_vpc_id }}"  
    region: "{{ aws_region }}"  
    rules:  
      - proto: tcp  
        ports:  
          - 80  
        cidr_ip: 0.0.0.0/0  
        rule_desc: allow all on port 80  
      - proto: tcp  
        ports:  
          - 22  
        cidr_ip: 0.0.0.0/0  
        rule_desc: allow all on port 22
```

● ● ●

```
---  
# tasks file for aws-create-keypair  
- name: Create key pair  
  amazon.aws.ec2_key:  
    name: "{{ aws_demo_key }}"  
    key_material: "{{ lookup('file', '~/.ssh/id_rsa.pub') }}"  
    profile: "{{ aws_boto_profile }}"  
    region: "{{ aws_region }}"
```

● ● ●

```
---  
# tasks file for aws-create-elb  
- name: Create Amazon ELB  
  amazon.aws.ec2_elb_lb:  
    profile: "{{ aws_boto_profile }}"  
    name: "{{ aws_elb_app_lb }}"  
    region: "{{ aws_region }}"  
    zones:  
      - "{{ ap_zone1 }}"  
      - "{{ ap_zone2 }}"  
    listeners:  
      - protocol: http  
        load_balancer_port: 80  
        instance_port: 80  
        proxy_protocol: True  
    state: present  
  register: elbcreated  
  
- name: Collect ELB Public DNS  
  ansible.builtin.set_fact:  
    elb_public_dns: "{{ elbcreated.elb.dns_name }}"
```



```
---  
# tasks file for aws-create-vm  
  
- name: Fetch Instances by tag, subnet and type  
  amazon.aws.ec2_instance_info:  
    profile: "{{ aws_boto_profile }}"  
    region: "{{ aws_region }}"  
    filters:  
      "tag:Name": "{{ item.value.name }}"  
      #network-interface.subnet-id: "{{ item.value.vpc_subnet_id }}"  
      instance-type: "{{ item.value.instance_type }}"  
      instance-state-name: ["running", "stopped", "stopping", "starting", "pending"]  
    loop: "{{ lookup('dict', ec2_new_list, wantlist=True) }}"  
    register: ec2_collected  
  
- name: Collect ec2 in a list  
  set_fact:  
    existing_ec2_list: "{{ existing_ec2_list }} + {{ item }}"  
  loop: "{{ ec2_collected | json_query('results[*].instances[*].tags.Name') }}"  
  #loop: "{{ ec2_collected | json_query('results[*].invocation.module_args.instance_ids') }}"
```



```
---  
# tasks file for aws-create-vm  
.  
. - name: Launching EC2 instances  
  amazon.aws.ec2_instance:  
    profile: "{{ aws_boto_profile }}"  
    key_name: "{{ aws_demo_key }}"  
    security_group: "{{ aws_security_group }}"  
    instance_type: "{{ item.value.instance_type }}"  
    image_id: "{{ aws_ami_id }}"  
    state: running  
    wait: true  
    #wait_timeout: 300  
    #count: 1  
    region: "{{ aws_region }}"  
    tags:  
      Name: "{{ item.value.name }}"  
      detailed_monitoring: no  
    vpc_subnet_id: "{{ vpc_subnet_list | random }}"  
    network:  
      assign_public_ip: yes  
  loop: "{{ lookup('dict', ec2_new_list, wantlist=True) }}"  
  when: "not item.value.name in existing_ec2_list"  
  register: created_ec2
```

```
---  
# tasks file for aws-create-vm  
  
- name: Collect newly created ec2 in a list  
  ansible.builtin.set_fact:  
    new_ec2_list: "{{ new_ec2_list }} + [ '{{ item.instances[0].public_ip }}' ]"  
  when: item.instances[0].public_ip is defined  
  loop: "{{ created_ec2.results }}"  
  
- name: Status  
  ansible.builtin.debug:  
    msg: "{{ item }} : Waiting for instances online..."  
  with_items: "{{ new_ec2_list }}"  
  
- name: Wait for SSH  
  ansible.builtin.wait_for:  
    host: "{{ item }}"  
    port: 22  
    delay: 3  
    connect_timeout: 180  
    sleep: 5  
    state: started  
  with_items: "{{ new_ec2_list }}"
```

```
---  
# tasks file for aws-create-vm  
  
- name: Fetch Instances by tag, subnet and type  
  amazon.aws.ec2_instance_info:  
    profile: "{{ aws_boto_profile }}"  
    region: "{{ aws_region }}"  
    filters:  
      "tag:Name": "{{ item.value.name }}"  
      #network-interface.subnet-id: "{{ item.value.vpc_subnet_id }}"  
      instance-type: "{{ item.value.instance_type }}"  
      instance-state-name: ["running", "stopped", "stopping", "starting", "pending"]  
    loop: "{{ lookup('dict', ec2_new_list, wantlist=True) }}"  
    register: ec2_existing_collected
```

```
-->
# tasks file for aws-create-vm

-
- name: Update Amazon ELB and add instance ids
  amazon.aws.ec2_elb_lb:
    profile: "{{ aws_boto_profile }}"
    name: "{{ aws_elb_app_lb }}"
    region: "{{ aws_region }}"
    zones:
      - "{{ ap_zone1 }}"
      - "{{ ap_zone2 }}"
    listeners:
      - protocol: http
        load_balancer_port: 80
        instance_port: 80
        proxy_protocol: True
    instance_ids:
      - "{{ item.instances[0].instance_id }}"
    state: present
  register: elbcreated
  loop: "{{ ec2_existing_collected.results }}"
```

```
-->
# tasks file for aws-create-vm

-
- name: Collect ec2 Public IP in a list
  ansible.builtin.set_fact:
    existing_ec2_public_ips: "{{ existing_ec2_public_ips }} + [ '{{ item.instances[0].public_ip_address }}' ] "
  loop: "{{ ec2_existing_collected.results }}"

-
- name: Add ec2 instances to a host group
  ansible.builtin.add_host:
    name: "{{ item }}"
    groups: "{{ inventory_webgroup }}"
    ansible_ssh_extra_args: '-o StrictHostKeyChecking=no '
  loop: "{{ existing_ec2_public_ips }}"
```

```

## Chapter-07/aws-infra-provisioning.yaml
---

- name: Provision AWS Infrastructure
  hosts: localhost
  gather_facts: no
  connection: local
  vars_files:
    - vars/aws-ec2-new.yml
    - vars/aws-common-vars.yml
  vars:
    aws_boto_profile: ansible
  tasks:
    - name: Fetch VPC ID
      include_role:
        name: aws-get-vpc-details

    - name: Create Security Group
      include_role:
        name: aws-create-sg
      tags: sgcreate

    - name: Create Keypair
      include_role:
        name: aws-create-keypair
      tags: keycreate

    - name: Create ELB
      include_role:
        name: aws-create-elb
      tags: elbcreate

    - name: Create ec2 instances
      include_role:
        name: aws-create-ec2
      tags: ec2create

```

```

## Chapter-07/aws-infra-provisioning.yaml
.

## 2nd play to deploy webserver on new ec2 instance
- name: Deploy Webserver to EC2 instances
  hosts: ec2webservers
  remote_user: ec2-user
  become: true
  tasks:
    - name: Deploy Web service
      include_role:
        name: deploy-web-server

## 3rd play to display ELB details
- name: IaC Summary
  hosts: localhost
  tasks:
    - debug:
        msg: "Website is accessible on Application ELB: {{ elb_public_dns }} (It may take some time to get the backend instance to come InService)"

```

```
● ● ●

[ansible@ansible Chapter-07]$ ansible-playbook aws-infra-provisioning.yaml
...<output omitted for brevity>...

TASK [debug] ****
ok: [localhost] => {
    "msg": "Website is accessible on Application ELB: ansible-iac-demo-elb-app-lb-893112002.ap-southeast-1.elb.amazonaws.com (It may take some time to get the backend instance to come InService)"
}


```

```
● ● ●

## Chapter-07/aws-infra-destroy.yaml
---
- name: Destroy AWS Infrastructure
  hosts: localhost
  gather_facts: no
  connection: local
  vars_files:
    - vars/aws-ec2-new.yml
    - vars/aws-common-vars.yml
  vars:
    aws_boto_profile: ansible
  tasks:
    - name: Fetch VPC ID
      include_role:
        name: aws-get-vpc-details

    - name: Delete ec2 instances
      include_role:
        name: aws-delete-ec2
      tags: ec2delete

    - name: Delete App ELB
      include_role:
        name: aws-delete-elb
      tags: elbdelete

...<omitted for brevity>...
```

```
● ● ●

[ansible@ansible Chapter-07]$ cat vars/gcp-details.yaml
gcp_auth_kind: serviceaccount
gcp_service_account_email: ansible-demo@ansible-automation-demo.iam.gserviceaccount.com
gcp_service_account_file: ~/.config/ansible-automation-demo-bce5e5cf69d0.json
gcp_project: ansible-automation-demo
gcp_scopes:
  - https://www.googleapis.com/auth/compute
```

```
## Chapter-07/gcp-create-instance.yml
---
- name: "Provision new GCP instance"
  hosts: localhost
  gather_facts: no
  become: no
  connection: local
  vars_files:
    - vars/gcp-details.yaml      # GCP credentials and details
  tasks:
    - name: Get info about default VPC network
      gcp_compute_network_info:
        project: "{{ gcp_project }}"
        auth_kind: "{{ gcp_auth_kind }}"
        service_account_file: "{{ gcp_service_account_file }}"
        filters:
          - name = default
      register: default_network_details
```

```
## Chapter-07/gcp-create-instance.yml

-
- name: Create a disk with OS
  google.cloud.gcp_compute_disk:
    project: "{{ gcp_project }}"
    auth_kind: "{{ gcp_auth_kind }}"
    service_account_file: "{{ gcp_service_account_file }}"
    name: demo-disk
    size_gb: 10
    source_image: projects/debian-cloud/global/images/family/debian-9
    zone: us-central1-a
    state: present
  register: instance_source_disk
```

```
## Chapter-07/gcp-create-instance.yml

-
- name: Create GCP instance
  google.cloud.gcp_compute_instance:
    project: "{{ gcp_project }}"
    auth_kind: "{{ gcp_auth_kind }}"
    service_account_file: "{{ gcp_service_account_file }}"
    zone: us-central1-a
    state: present
    name: demo-instance
    machine_type: n1-standard-1
    disks:
      - auto_delete: 'true'
        boot: 'true'
        source: "{{ instance_source_disk }}"
    labels:
      environment: production
    network_interfaces:
      - network: "{{ default_network_details.resources[0] }}"
```

INSTANCES INSTANCE SCHEDULE

VM instances are highly configurable virtual machines for running workloads on Google infrastructure. [Learn more](#)

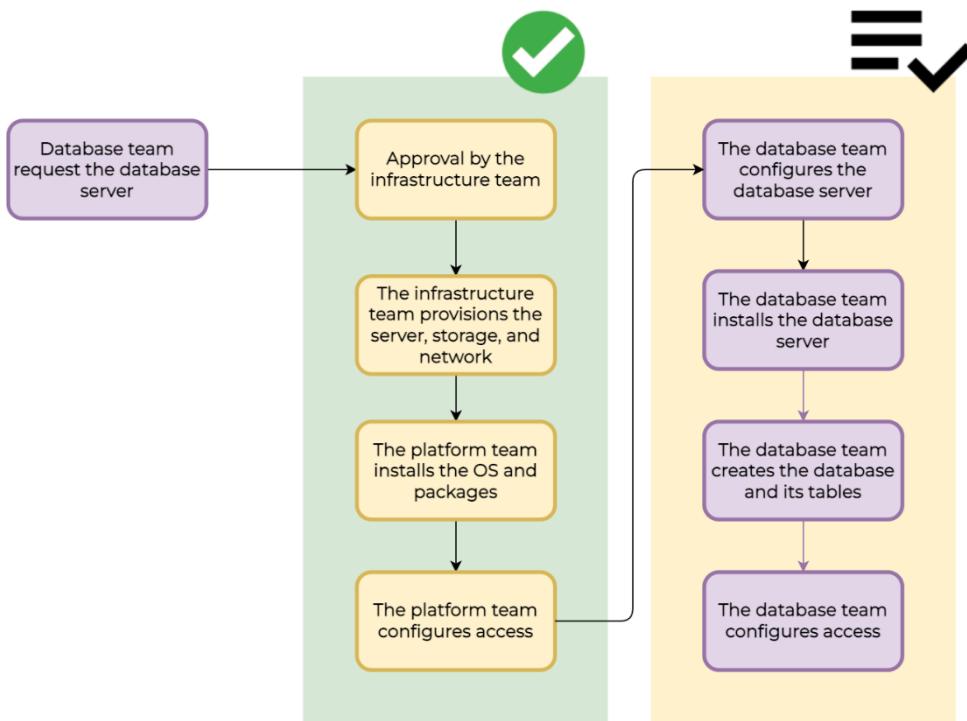
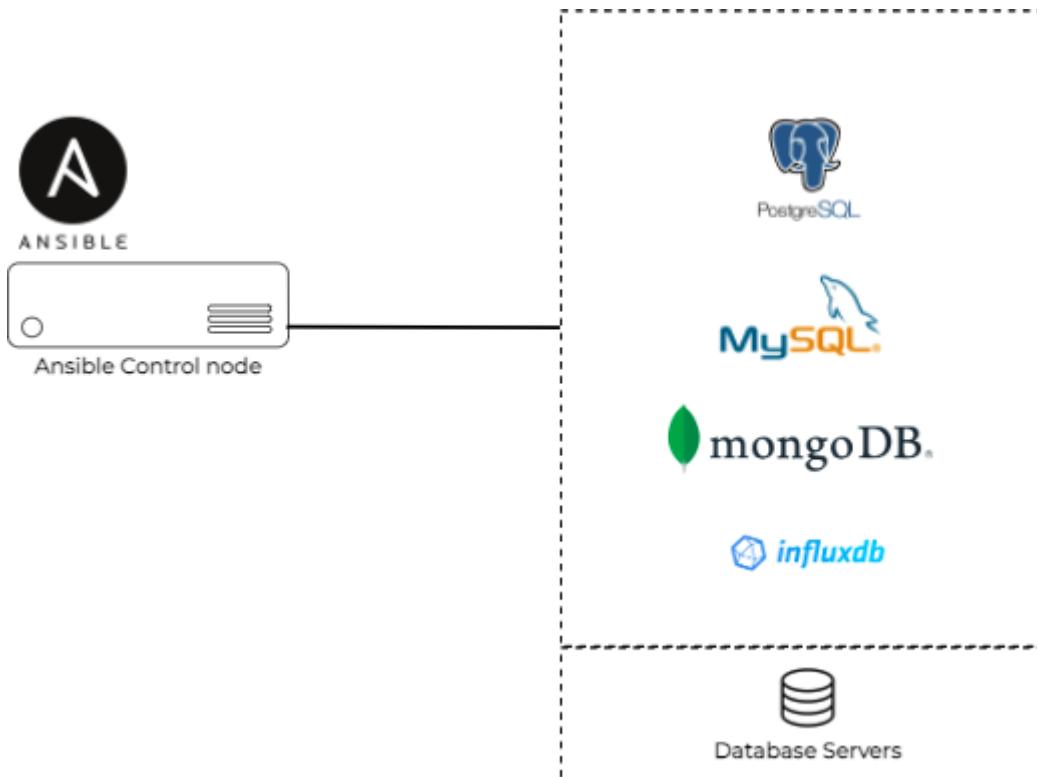
Filter Enter property name or value

<input type="checkbox"/>	Status	Name ↑	Zone	Machine type	Recommendations	In use by	Internal IP	External IP	Connect
<input checked="" type="checkbox"/>	Green	demo-instance	us-central1-a	n1-standard-1			10.128.0.4 (nic0)	None	SSH ⋮

Filter Enter property name or value

<input type="checkbox"/>	Status	Name ↑	Type	Size	Zone(s)	In use by	Snapshot schedule	Actions
<input checked="" type="checkbox"/>	Green	demo-disk	Standard persistent disk	10 GB	us-central1-a	demo-instance	None	⋮

Chapter 8: Helping the Database Team with Automation



GALAXY

Home Search

Search: postgresql

722 Results Active filters: Deprecated: False X Type: Role X Clear All Filters

Roles 722

postgresql
PostgreSQL server for Linux.
geerlingguy 4.4 / 5 Score 1490795 Downloads Last Imported: 4 months ago

postgresql
Install and manage a PostgreSQL (http://www.postgresql.org/) server.
galaxyproject 5 / 5 Score 36283 Downloads Last Imported: 4 months ago

postgresql_client
PostgreSQL client for Debian and Ubuntu.
AlphaNodes 5 / 5 Score 74754 Downloads Last Imported: 17 days ago



```
[defaults]
.
.
COLLECTIONS_PATHS = ./collections
roles_path = roles
```



```
[ansible@ansible Chapter-08]$ ansible-galaxy install geerlingguy.postgresql -p roles/
Starting galaxy role install process
- downloading role 'postgresql', owned by geerlingguy
- downloading role from https://github.com/geerlingguy/ansible-role-postgresql/archive/3.4.0.tar.gz
- extracting geerlingguy.postgresql to /home/ansible/ansible-book-packt/Chapter-08/roles/geerlingguy.postgresql
- geerlingguy.postgresql (3.4.0) was installed successfully
```



```
# vars/postgres.yaml
postgresql_databases:
  - name: database_demo
postgresql_users:
  - name: demouser
    password: password
postgresql_hba_entries:
  - { type: local, database: all, user: all, auth_method: peer }
  - { type: host, database: all, user: all, address: '0.0.0.0/0', auth_method: md5 }
```



```
---  
## Chapter-08/postgres-deploy.yaml  
- name: Deploying PostgreSQL Database Server  
  hosts: "{{ NODES }}"  
  become: true  
  vars_files:  
    - vars/postgres.yaml  
  tasks:  
    - name: Install and configure PostgreSQL  
      include_role:  
        name: gearlingguy.postgresql  
    .  
    .
```



```
---  
## Chapter-08/postgres-deploy.yaml  
. . .  
- name: Allow remote connection for PostgreSQL  
  ansible.builtin.lineinfile:  
    path: /var/lib/pgsql/data/postgresql.conf  
    regexp: '^listen_addresses'  
    line: "listen_addresses = '*'"  
    insertbefore: '^#port = 5432'  
  
- name: restart postgresql  
  service:  
    name: postgresql.service  
    state: restarted  
    sleep: 5  
  
- name: Allow 5432 port for PostgreSQL on firewall  
  ansible.posix.firewalld:  
    port: 5432/tcp  
    zone: public  
    permanent: yes  
    state: enabled  
    immediate: yes
```



```
[ansible@ansible Chapter-08]$ ansible-playbook postgres-deploy.yaml -e "NODES=node1"
```



```
[devops@node-1 ~]$ sudo su - postgres  
Last login: Tue Mar 15 09:59:35 UTC 2022 on pts/1  
  
[postgres@node-1 ~]$ postgres -V  
postgres (PostgreSQL) 10.17
```



```
[postgres@node-1 ~]$ psql
psql (10.17)
Type "help" for help.

postgres=#
```



```
postgres=# \l
              List of databases
   Name    | Owner | Encoding | Collate | Ctype | Access privileges
---+-----+-----+-----+-----+-----+
database_demo | postgres | UTF8 | en_US.UTF-8 | en_US.UTF-8 |
postgres     | postgres | UTF8 | en_US.UTF-8 | en_US.UTF-8 |
template0    | postgres | UTF8 | en_US.UTF-8 | en_US.UTF-8 | =c/postgres      +
          |        |       |           |       | postgres=CTc/postgres
template1    | postgres | UTF8 | en_US.UTF-8 | en_US.UTF-8 | =c/postgres      +
          |        |       |           |       | postgres=CTc/postgres
(4 rows)
```



```
postgres=# \du
              List of roles
Role name | Attributes | Member of
-----+-----+-----+
demouser  |             | {}
postgres  | Superuser, Create role, Create DB, Replication, Bypass RLS | {}
```



```
postgres=# \q
[postgres@node-1 ~]$
```



```
[postgres@node-1 ~]$ cat /var/lib/pgsql/data/pg_hba.conf
#
# Ansible managed
#
# PostgreSQL Client Authentication Configuration File
# =====
#
# See: https://www.postgresql.org/docs/current/static/auth-pg-hba-conf.html

local all all    peer
host all all 0.0.0.0/0    md5
```

```
● ● ●

[devops@node-1 ~]$ sudo su - postgres
Last login: Tue Mar 15 08:59:39 UTC 2022 on pts/1
[postgres@node-1 ~]$

# Open psql command line
[postgres@node-1 ~]$ psql
psql (10.17)
Type "help" for help.
```

```
● ● ●

postgres=# ALTER USER postgres WITH ENCRYPTED PASSWORD 'PassWord';
ALTER ROLE

## exit psql cli
postgres=# \q

## exit postgres user
[postgres@node-1 ~]$ exit
logout
[devops@node-1 ~]$
```

```
[ansible@ansible Chapter-08]$ ansible-galaxy collection install microsoft.sql
```

```
● ● ●

- name: Create a new database
  community.general.mssql_db:
    name: sales_db
    state: present
```

```
● ● ●

# Chapter-08/postgres-manage-database.yaml
---
- name: Deploying PostgreSQL Database Server
  hosts: "{{ NODES }}"
  vars:
    ansible_become_user: postgres
    postgres_user: postgres
    postgres_password: 'PassWord'
    postgres_host: localhost
    postgres_database: db_sales
    postgres_table: demo_table
    postgres_new_user_name: devteam
    postgres_new_user_password: 'DevPassword'
```

```
# Chapter-08/postgres-manage-database.yaml

tasks:
  - name: Create a new database
    community.postgresql.postgresql_db:
      login_user: "{{ postgres_user }}"
      login_password: "{{ postgres_password | default('') }}"
      login_host: "{{ postgres_host | default('localhost') }}"
      name: "{{ postgres_database }}"
```

```
# Chapter-08/postgres-manage-database.yaml

  - name: Create table with few columns
    community.postgresql.postgresql_table:
      login_user: "{{ postgres_user }}"
      login_password: "{{ postgres_password }}"
      login_host: "{{ postgres_host }}"
      db: "{{ postgres_database }}"
      name: "{{ postgres_table }}"
      columns:
        - id bigserial primary key
        - num bigint
        - stories text
      ssl_mode: disable
```

```
# Chapter-08/postgres-manage-database.yaml

  - name: Create user and grant access to database
    community.postgresql.postgresql_user:
      login_user: "{{ postgres_user }}"
      login_password: "{{ postgres_password }}"
      login_host: "{{ postgres_host }}"
      db: "{{ postgres_database }}"
      name: "{{ postgres_new_user_name }}"
      password: "{{ postgres_new_user_password }}"
      encrypted: yes
      priv: "CONNECT/{{ postgres_table }}:ALL"
      expires: "Dec 31 2022"
      comment: "Developer user access"
      state: present
```

```
[ansible@ansible Chapter-08]$ ansible-playbook postgres-manage-database.yaml -e "NODES=node1"
```

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```
[devops@node-1 ~]$ sudo su - postgres
Last login: Sat Aug 20 13:59:54 UTC 2022 on pts/0
[postgres@node-1 ~]$

[postgres@node-1 ~]$ psql
psql (10.17)
Type "help" for help.

postgres=# \l
          List of databases
   Name   |  Owner   | Encoding | Collate | Ctype | Access privileges
---+---+---+---+---+---+
database_demo | postgres | UTF8 | en_US.UTF-8 | en_US.UTF-8 |
db_sales | postgres | UTF8 | en_US.UTF-8 | en_US.UTF-8 | =Tc/postgres      +
           |          |       |          |          | postgres=CTc/postgres+
           |          |       |          |          | devteam=c/postgres
postgres | postgres | UTF8 | en_US.UTF-8 | en_US.UTF-8 |
template0 | postgres | UTF8 | en_US.UTF-8 | en_US.UTF-8 | =c/postgres      +
           |          |       |          |          | postgres=CTc/postgres
template1 | postgres | UTF8 | en_US.UTF-8 | en_US.UTF-8 | =c/postgres      +
           |          |       |          |          | postgres=CTc/postgres
(5 rows)
```

● ● ●

```
postgres=# \du
          List of roles
Role name | Attributes | Member of
---+---+---+
demouser |           | {}
devteam | Password valid until 2022-12-31 00:00:00+00 | {}
postgres | Superuser, Create role, Create DB, Replication, Bypass RLS | {}
```

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```
postgres=# \c db_sales
You are now connected to database "db_sales" as user "postgres".
db_sales=# \dt
          List of relations
 Schema |    Name    | Type  | Owner
---+---+---+---+
public | demo_table | table | postgres
(1 row)
```



```
db_sales=# \d+ demo_table
                                         Table "public.demo_table"
 Column | Type | Collation | Nullable | Default | Storage | Stat
 s target | Description
-----+-----+-----+-----+-----+-----+-----+
 id    | bigint |          | not null | nextval('demo_table_id_seq')::regclass | plain   |
      |
 num   | bigint |          |          |          | plain   |
      |
 stories | text |          |          |          | extended |
      |
Indexes:
 "demo_table_pkey" PRIMARY KEY, btree (id)
```



```
[postgres@node-1 ~]$ psql -U devteam -h localhost -d db_sales
Password for user devteam:
psql (10.17)
Type "help" for help.

db_sales=> \dt
      List of relations
 Schema |     Name      | Type | Owner
-----+-----+-----+-----+
 public | demo_table | table | postgres
(1 row)
```



```
- name: Grant users access to databases
  community.postgresql.postgresql_pg_hba:
    dest: /var/lib/postgres/data/pg_hba.conf
    contype: host
    users: johnt
    source: 192.168.0.100/24
    databases: db_sales
    method: peer
    create: true
```



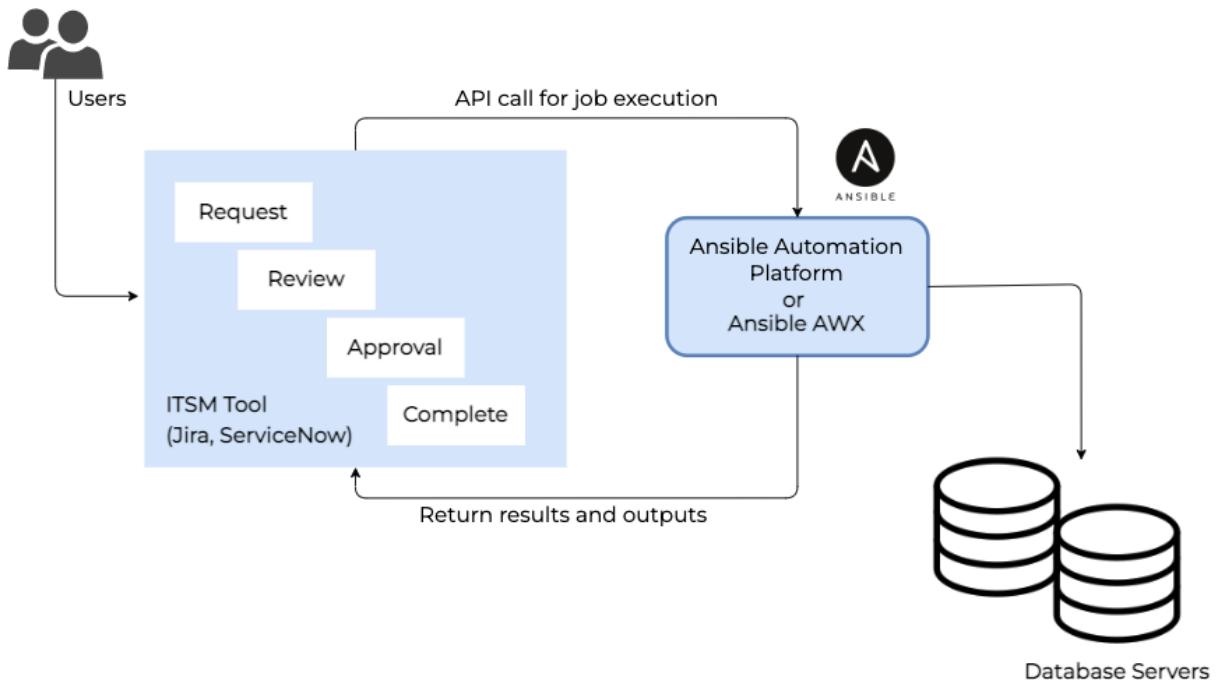
```
- name: Dump existing database to a file
  community.postgresql.postgresql_db:
    login_user: "{{ postgres_user }}"
    login_password: "{{ postgres_password }}"
    login_host: "{{ postgres_host }}"
    name: "{{ postgres_database }}"
    state: dump
    target: /data/db.dumps/daily_prod_db_sales.sql
```

```
● ● ●
- name: Restore backup from file to database
  community.postgresql.postgresql_db:
    login_user: "{{ postgres_user }}"
    login_password: "{{ postgres_password }}"
    login_host: "{{ postgres_host }}"
    name: "{{ postgres_database }}"
    state: restore
    target: /tmp/test.sql
```

```
# Chapter-08/postgres-backup-restore.yaml
---
- name: Deploying PostgreSQL Database Server
  hosts: "{{ NODES }}"
  vars:
    ansible_become_user: postgres
    postgres_user: postgres
    postgres_password: 'PassWord'
    postgres_host: localhost
    postgres_database: db_sales

    db_action: 'restore' #'backup'
  tasks:
    - name: Dump existing database to a file
      community.postgresql.postgresql_db:
        login_user: "{{ postgres_user }}"
        login_password: "{{ postgres_password }}"
        login_host: "{{ postgres_host }}"
        name: "{{ postgres_database }}"
        state: dump
        target: /tmp/test.sql
      when: db_action == 'backup'

    - name: Restore backup from file to database
      community.postgresql.postgresql_db:
        login_user: "{{ postgres_user }}"
        login_password: "{{ postgres_password }}"
        login_host: "{{ postgres_host }}"
        name: "{{ postgres_database }}"
        state: restore
        target: /tmp/test.sql
      when: db_action == 'restore'
```



Create another issue

[Cancel](#) [Create](#)

Database Name

db_sales

Database Server

node1.lab.local

Database Username

johnt

Please enter the database username for which the password to be reset

Create another issue

Cancel

Create



```
# Chapter-08/postgres-password-reset.yaml
---
- name: Deploying PostgreSQL Database Server
  ## collect the database server name from Jira
  hosts: "{{ DATABASE_NODE }}"
  vars:
    ansible_become_user: postgres
    postgres_user: postgres
    postgres_password: 'PassWord'
    postgres_host: localhost

  ## collect the database name from Jira
  postgres_database: "{{ DATABASE_NAME }}"
  ## collect the database user name from Jira
  db_user_name: "{{ DATABASE_USER_NAME }}"
  ## Generate random password
  db_user_password: "{{ lookup('password', '/dev/null chars=ascii_lowercase,digits length=8') }}"
```



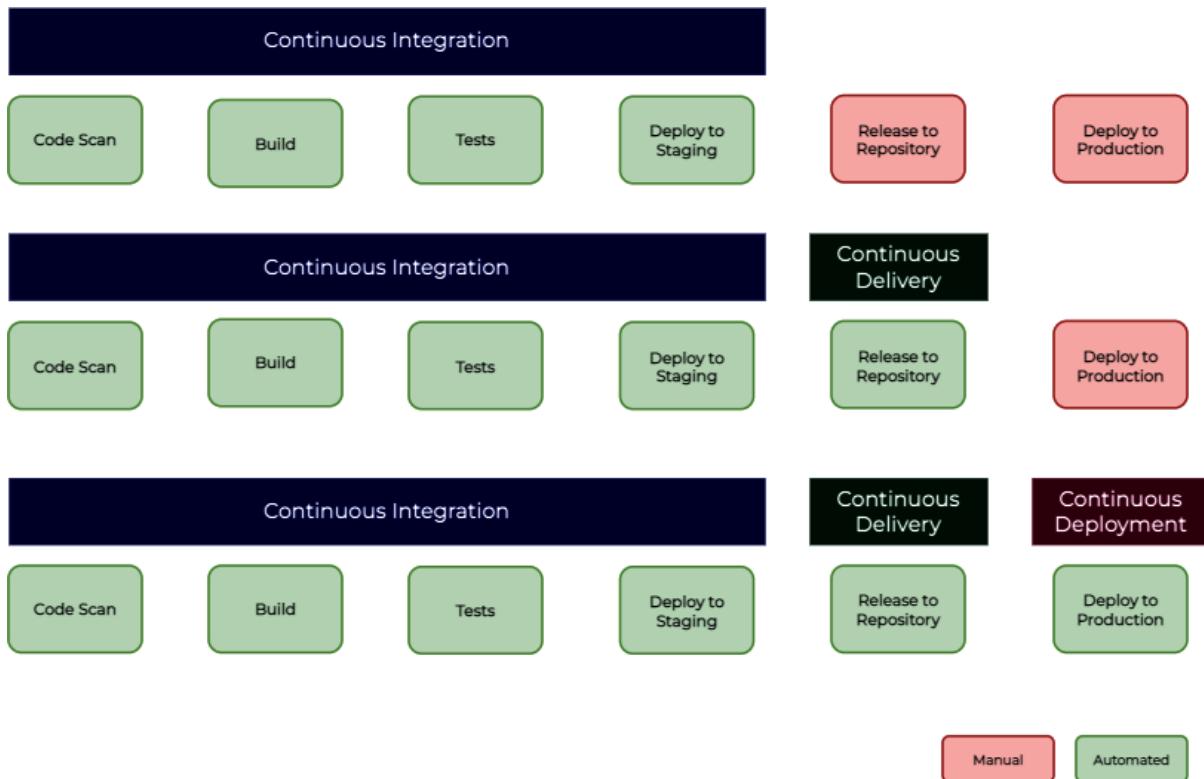
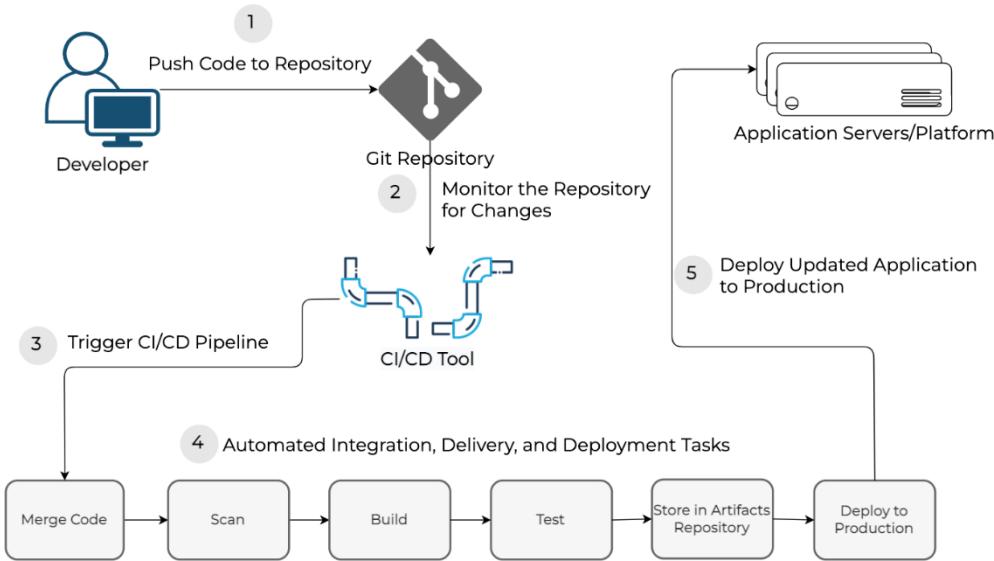
```
# Chapter-08/postgres-password-reset.yaml
.
.
.
- name: Set user's password with no expire date
  community.postgresql.postgresql_user:
    login_user: "{{ postgres_user }}"
    login_password: "{{ postgres_password | default(omit) }}"
    login_host: "{{ postgres_host | default('localhost') }}"
    db: "{{ postgres_database }}"
    name: "{{ db_user_name }}"
    password: "{{ db_user_password }}"
    priv: "CONNECT/products:ALL"
    expires: infinity
```

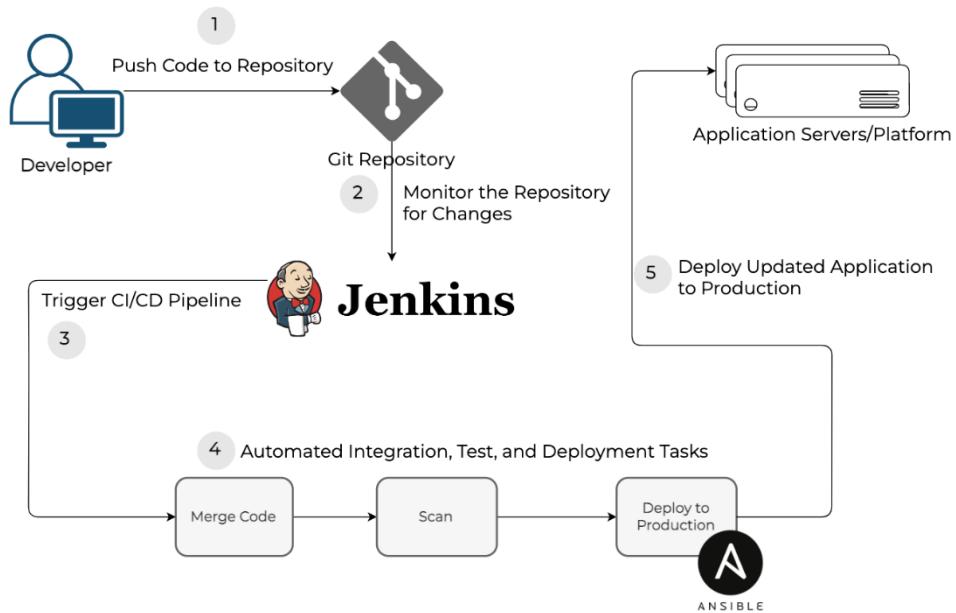


```
# Chapter-08/postgres-password-reset.yaml
.

.
.
- name: Comment on Jira issue
  community.general.jira:
    uri: '{{ jira_server }}'
    username: '{{ jira_user }}'
    password: '{{ jira_pass }}'
    issue: '{{ issue.meta.key }}'
    operation: comment
    comment: 'Password has been reset for the user {{ db_user_name }}, for the database {{ postgres_database }}'
```

Chapter 9: Implementing Automation in a DevOps Workflow





General Source Code Management **Build Triggers** Build Environment Build Post-build Actions

Trigger builds remotely (e.g., from scripts) ?

Authentication Token

SECRETTOKEN

Use the following URL to trigger build remotely: `JENKINS_URL/job/ansible-demo/build?token=TOKEN_NAME` or `/buildWithParameters?token=TOKEN_NAME`

Optionaly append `&cause=Cause+Text` to provide text that will be included in the recorded build cause.

Build after other projects are built ?

Build periodically ?

GitHub Branches

GitHub Pull Requests ?

GitHub hook trigger for GITScm polling ?

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Webhooks / Add webhook

We'll send a POST request to the URL below with details of any subscribed events. You can also specify which data format you'd like to receive (JSON, x-www-form-urlencoded, etc). More information can be found in our developer documentation.

Payload URL *

`https://jenkins.myorganization.com/job/ansible-demo/build?token=SECRETTOKEN`

Content type

`application/x-www-form-urlencoded`

Secret

```
pipeline {
    agent any
    stages {
        stage ("Fetch Ansible content") {
            steps {
                git "https://github.com/ginigangadharan/website-demo-one-page.git"
            }
        }
        stage("Deploy application using Ansible") {
            steps {
                ansiblePlaybook credentialsId: 'private-key', disableHostKeyChecking: true, installation: 'Ansible',
inventory: 'produ.inventory', playbook: 'deploy-web.yaml'
            }
        }
    }
}
```

```
[web]
node1 ansible_host=192.168.56.25
node2 ansible_host=192.168.56.24
```

```
# ---  
# Chapter-09/deploy-web.yaml  
- name: Deploying Application  
  hosts: "{{ NODES }}"  
  become: yes  
  vars:  
    application_repo: 'https://github.com/ginigangadharan/website-demo-one-page'  
    application_branch: production  
    application_path: /var/www/html  
  
  tasks:
```

```
# Chapter-09/deploy-web.yaml...
.
.
.
- name: Delete content & directory if exists
  ansible.builtin.file:
    state: absent
    path: "{{ application_path }}"

- name: Create application directory
  ansible.builtin.file:
    state: directory
    path: "{{ application_path }}"
    mode: '0755'
```



```
# Chapter-09/deploy-web.yaml...

.
.
.
- name: Install httpd, firewalld and Git packages
  ansible.builtin.dnf:
    name:
      - httpd >= 2.4
      - firewalld
      - git
    state: latest

- name: Enable and Run firewalld service
  ansible.builtin.service:
    name: firewalld
    enabled: true
    state: started

- name: Permit httpd service in firewall
  ansible.posix.firewalld:
    service: http
    permanent: true
    state: enabled
    immediate: yes

- name: Enable and start httpd service
  ansible.builtin.service:
    name: httpd
    enabled: true
    state: started
```



```
# Chapter-09/deploy-web.yaml...

.
.
.
- name: Git checkout the application or website
  ansible.builtin.git:
    repo: "{{ application_repo }}"
    dest: "{{ application_path }}"
    version: "{{ application_branch }}"

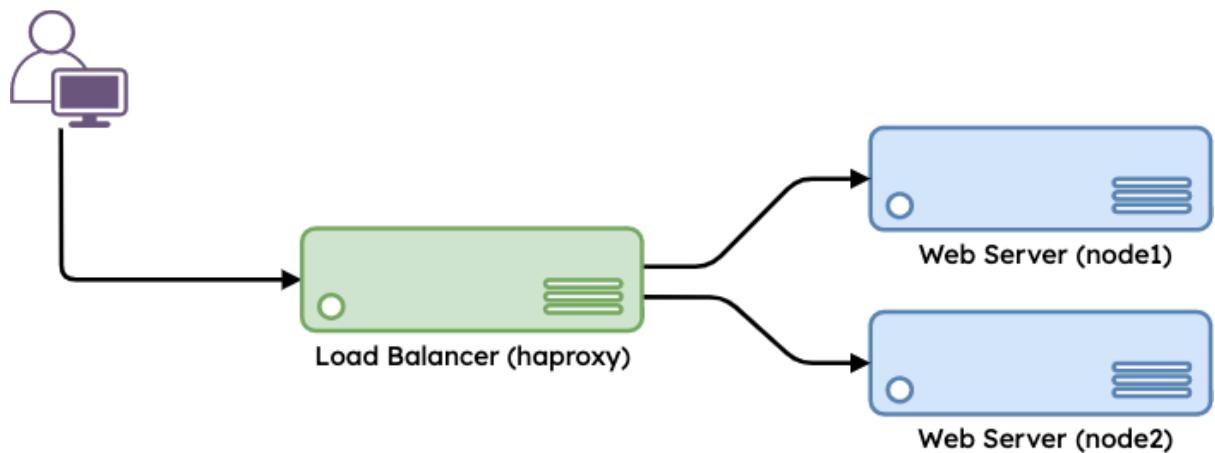
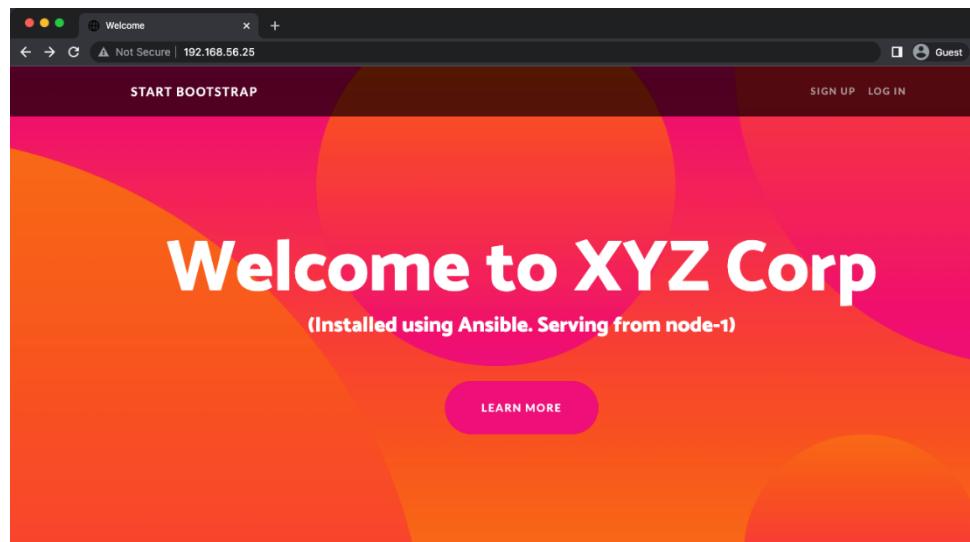
- name: Update index.html with server details
  ansible.builtin.lineinfile:
    path: "{{ application_path }}/index.html"
    regexp: 'SERVER_DETAILS'
    line: "<h3>(Installed using Ansible. Serving from {{ ansible_hostname }})</h3>"
```

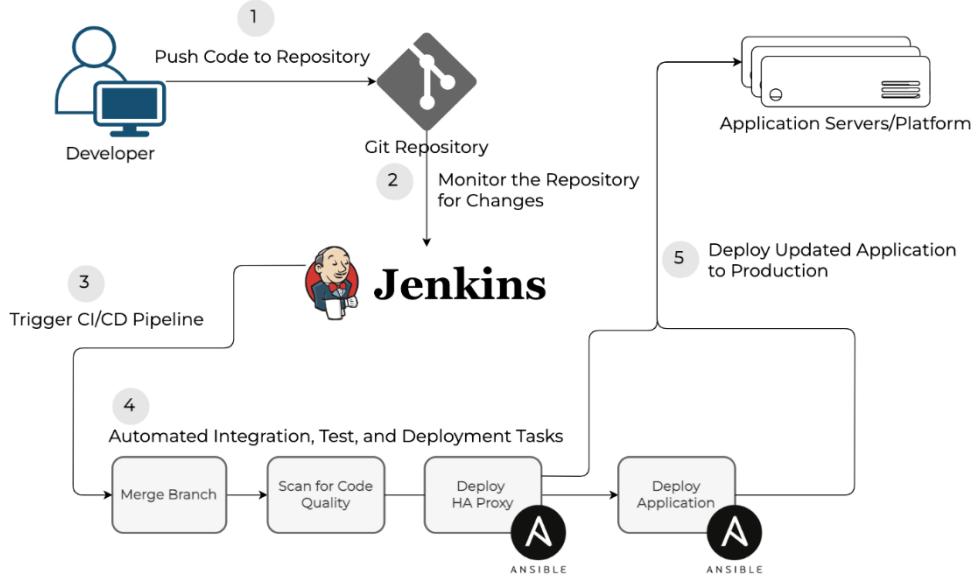


```
# Chapter-09/deploy-web.yaml...

.
.
.
- name: Verify deployment
  hosts: "{{ NODES }}"
  become: no
  tasks:
    - name: Verify application health
      ansible.builtin.uri:
        url: http://{{ inventory_hostname }}.lab.local
        status_code: 200
      delegate_to: localhost
```

```
[ansible@ansible Chapter-09]$ ansible-playbook deploy-web.yaml -e "NODES=web"
<output omitted>
.
.
TASK [Verify application health] ****
ok: [localhost]
.
```





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```
[loadbalancer]
node3 ansible_host=192.168.56.45
```

● ● ●

```
[ansible@ansible Chapter-09]$ cd roles
[ansible@ansible roles]$ ansible-galaxy role install gearlingguy.haproxy
```

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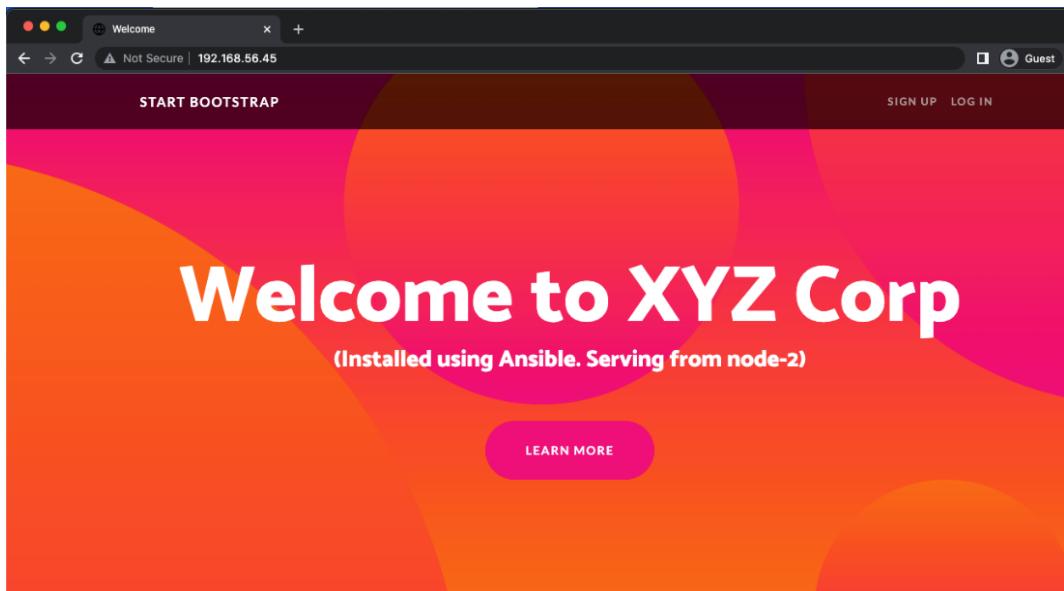
```
--- # Chapter-09/deploy-haproxy.yaml
- name: Deploy Load Balancer using HAProxy
  hosts: loadbalancer
  become: yes
  vars:
    haproxy_frontend_name: 'hafrontend'
    haproxy_backend_name: 'habackend'
    haproxy_backend_servers:
      - name: node1
        address: 192.168.56.25:80
      - name: node2
        address: 192.168.56.24:80
  tasks:
    - name: Install haproxy
      include_role:
        name: gearlingguy.haproxy

    - name: Permit port 80 in firewall
      ansible.posix.firewalld:
        port: 80/tcp
        permanent: true
        state: enabled
        immediate: yes
```

```
# Chapter-09/deploy-haproxy.yaml

.
.
.
- name: Verify load balancer deployment
  hosts: loadbalancer
  become: no
  tasks:
    - name: Verify load balancer health
      ansible.builtin.uri:
        url: http://{{ inventory_hostname }}.lab.local
        status_code: 200
      delegate_to: localhost
```

```
[ansible@ansible Chapter-09]$ ansible-playbook deploy-haproxy.yaml
.
.
.
TASK [Verify load balancer health]*****
ok: [node3 => localhost]
.
```



1. Stop application monitoring services (to avoid any unwanted alerts)

2. Remove (disable) the web server from the load balancer backend

3. Stop the web service

4. Deploy a new version of the application or files

5. Start the web service

6. Add the web server back to the load balancer backend

7. Start application monitoring



```
hosts: web
become: yes
serial: 25%
tasks:
```

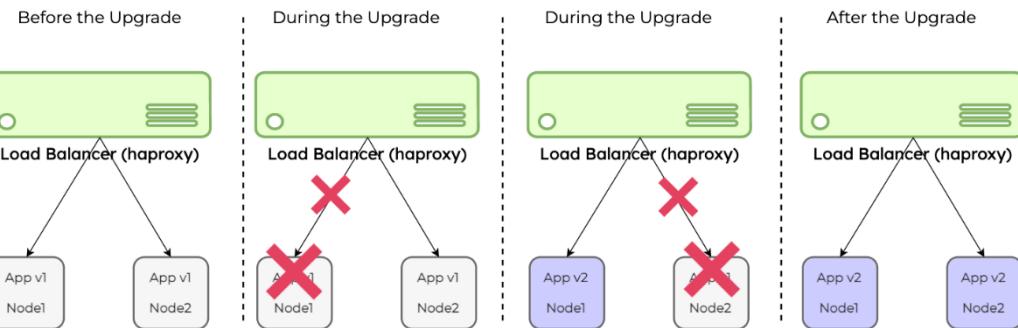


1

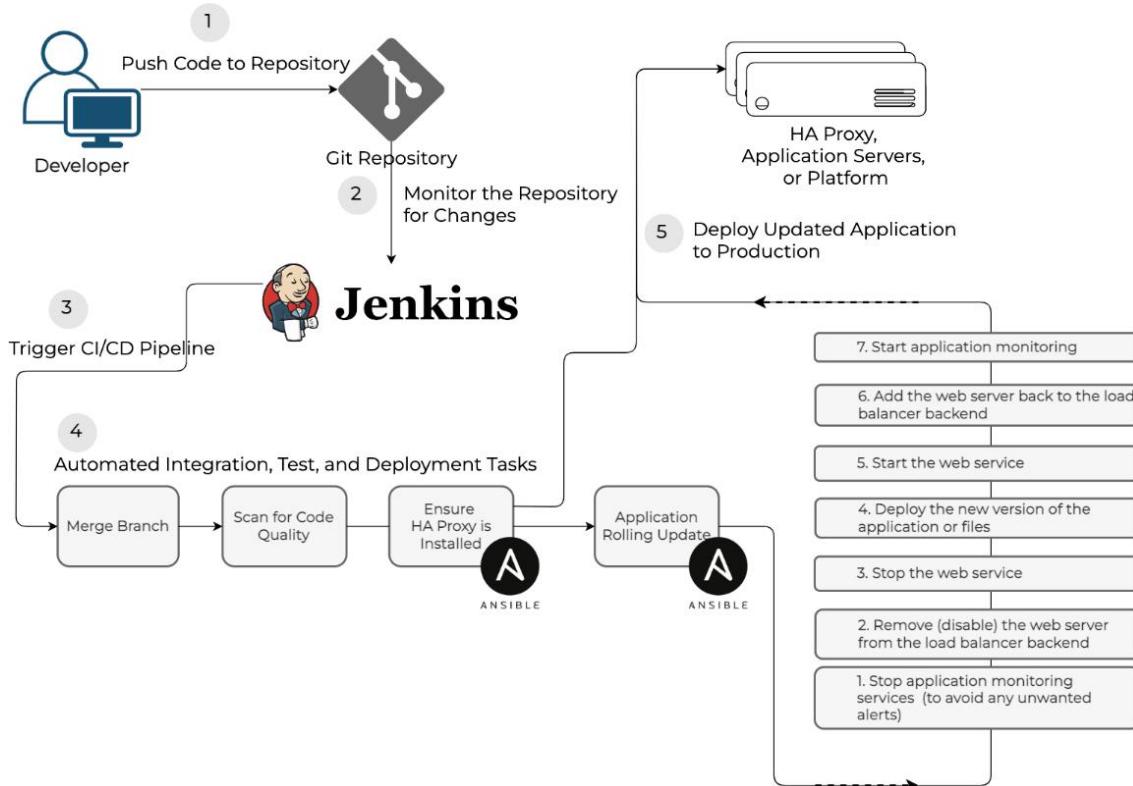
2

3

4



```
serial:
  - 1
  - 20%
  - 100%
```



```
## Clone the repository to your local machine:  
[ansible@ansible ~]$ git clone git@github.com:ginigangadharan/website-demo-one-page  
  
## Switch to the repository's directory:  
[ansible@ansible ~]$ cd website-demo-one-page  
  
## Switch to the production branch:  
[ansible@ansible website-demo-one-page]$ git checkout production  
Switched to branch 'production'  
Your branch is up to date with 'origin/production'.  
  
## Checkout new branch called v2  
[ansible@ansible website-demo-one-page]$ git checkout -b v2  
Switched to a new branch 'v2'
```

```
<h1 class="masthead-heading mb-0">Welcome to XYZ Corp</h1>  
<h4>(v2)</h4>  
SERVER_DETAILS
```

```
[ansible@ansible website-demo-one-page]$ git add .;git commit -m "v2"  
[ansible@ansible website-demo-one-page]$ git push -u origin v2
```

```
---  
# Chapter-09/rolling-update.yaml  
- name: Rolling Update  
  hosts: "{{ NODES }}"  
  become: yes  
  serial: 1  
  vars:  
    haproxy_backend_name: 'habackend'  
    application_repo: 'https://github.com:ginigangadharan/website-demo-one-page'  
    application_branch: production  
    application_path: /var/www/html  
  
  tasks:
```



```
---  
# Chapter-09/rolling-update.yaml  
  
- name: Disable server in haproxy backend  
  community.general.haproxy:  
    state: disabled  
    host: '{{ inventory_hostname }}'  
    wait: yes  
    socket: "/var/lib/haproxy/stats"  
    backend: "{{ haproxy_backend_name }}"  
    fail_on_not_found: yes  
  delegate_to: '{{ item }}'  
  with_items: '{{ groups.loadbalancer }}'  
  
- name: Stop httpd service  
  ansible.builtin.service:  
    name: httpd  
    state: stopped
```



```
---  
# Chapter-09/rolling-update.yaml  
  
- name: Delete content & directory if exists  
  ansible.builtin.file:  
    state: absent  
    path: "{{ application_path }}"  
  
- name: Create application directory  
  ansible.builtin.file:  
    state: directory  
    path: "{{ application_path }}"  
    mode: '0755'  
  
- name: Git checkout - latest application content  
  ansible.builtin.git:  
    repo: "{{ application_repo }}"  
    dest: "{{ application_path }}"  
    version: "{{ application_branch }}"  
  
- name: Update index.html with server details  
  ansible.builtin.lineinfile:  
    path: "{{ application_path }}/index.html"  
    regexp: 'SERVER_DETAILS'  
    line: "<h3>(Installed using Ansible. Serving from {{ ansible_hostname }})</h3>"
```



```
---  
# Chapter-09/rolling-update.yaml  
. . .  
- name: Start httpd service  
  ansible.builtin.service:  
    name: httpd  
    state: started  
  
- name: Enable server in haproxy backend  
  community.general.haproxy:  
    state: enabled  
    host: '{{ inventory_hostname }}'  
    wait: yes  
    socket: "/var/lib/haproxy/stats"  
    backend: "{{ haproxy_backend_name }}"  
    fail_on_not_found: yes  
  delegate_to: '{{ item }}'  
  with_items: '{{ groups.loadbalancer }}'
```



```
---  
# Chapter-09/rolling-update.yaml  
. . .  
- name: Verify load balancer traffic  
  hosts: loadbalancer  
  become: no  
  tasks:  
    - name: Verify load balancer traffic  
      ansible.builtin.uri:  
        url: http://{{ inventory_hostname }}.lab.local  
        status_code: 200  
      delegate_to: localhost
```



```
[ansible@ansible Chapter-09]$ ansible-playbook rolling-update.yaml -e "NODES=web application_branch=v2"
```

```
. . .  
PLAY [Rolling Update] *****  
TASK [Gathering Facts] *****  
ok: [node1]  
  
TASK [Disable server in haproxy backend] *****  
changed: [node1 -> node3] => (item=node3)  
. . .
```

```

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.

.

PLAY [Rolling Update] ****
TASK [Gathering Facts] ****
ok: [node2]

TASK [Disable server in haproxy backend] ****
changed: [node2 -> node3] => (item=node3)
.

.

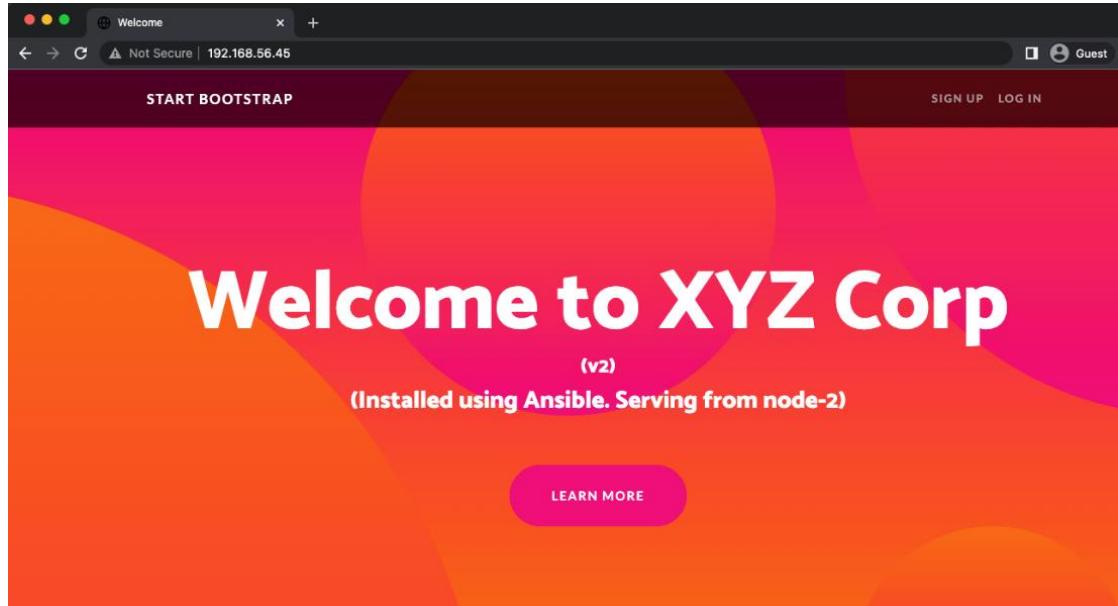
Finally, the Verify load balancer traffic task is successful as follows.
PLAY [Verify load balancer traffic] ****

TASK [Gathering Facts] ****
ok: [node3]

TASK [Verify load balancer traffic] ****
ok: [node3 -> localhost]
.

.

```

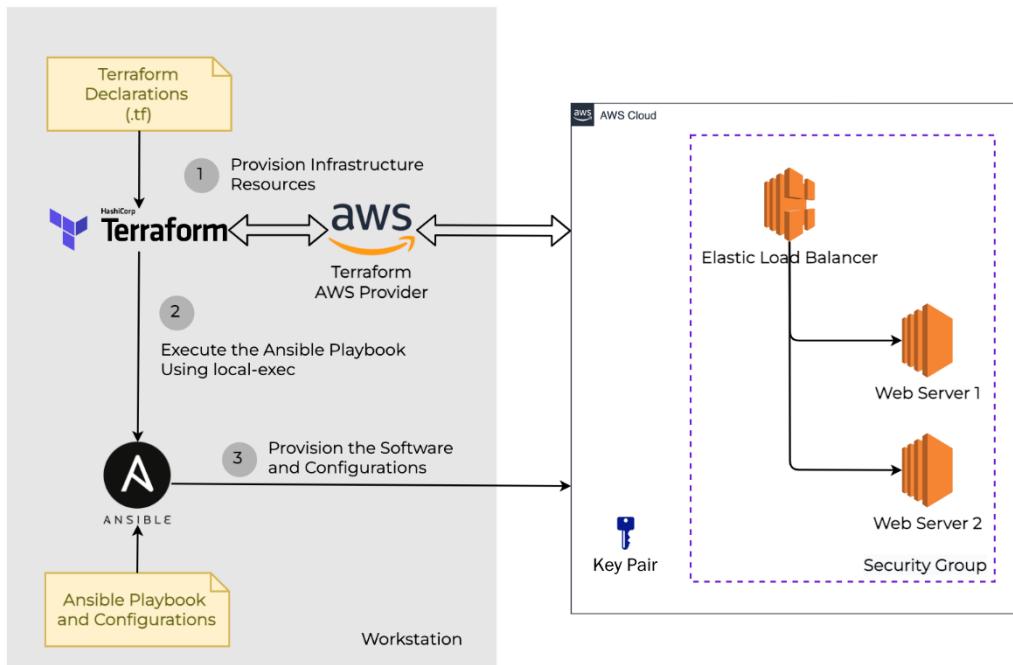


```

● ● ●

resource "aws_instance" "dbnodes" {
  ami           = var.aws_ami_id
  instance_type = "t2.large"
  key_name      = aws_key_pair.ec2loginkey.key_name
  count         = var.dbnodes_count
  security_groups = ["dbnodes-sg"]
  user_data     = file("user-data-dbnodes.sh")
  tags = {
    Name = "dbnode-${count.index + 1}"
  }
}

```

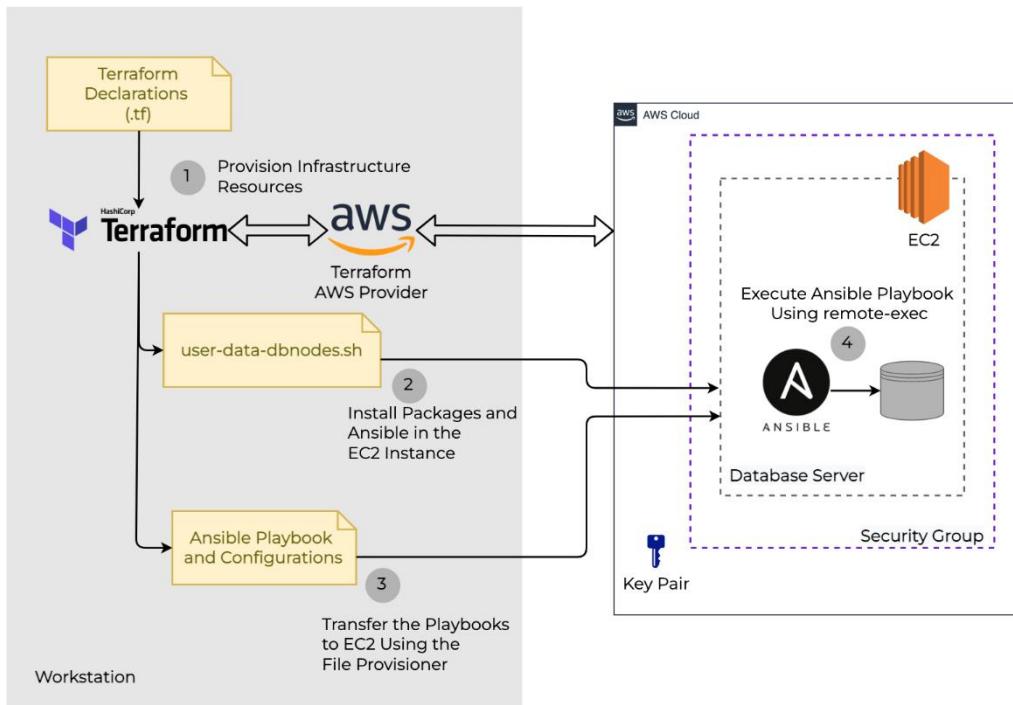


```

resource "aws_instance" "dbnodes" {
  ami           = var.aws_ami_id
  instance_type = "t2.large"
  key_name      = aws_key_pair.ec2loginkey.key_name
  count         = var.dbnodes_count
  security_groups = ["dbnodes-sg"]
  user_data     = file("user-data-dbnodes.sh")
  tags = {
    Name = "dbnode-${count.index + 1}"
  }

  provisioner "local-exec" {
    command = "ANSIBLE_HOST_KEY_CHECKING=False ansible-playbook -u ec2-user -i '${self.public_ip}', --private-key ${var.ssh_key_pair} post-configuration.yaml"
  }
}

```



```
#!/bin/bash
sudo amazon-linux-extras install -y epel
sudo useradd devops
echo -e 'devops\ndevops' | sudo passwd devops
echo 'devops ALL=(ALL) NOPASSWD: ALL' | sudo tee /etc/sudoers.d/devops
sudo sed -i "s/PasswordAuthentication no/PasswordAuthentication yes/g" /etc/ssh/sshd_config
sudo systemctl restart sshd.service
sudo yum install -y python3
sudo yum install -y vim
sudo yum install -y ansible
sudo yum install -y git
```



```
resource "aws_instance" "dbnodes" {
  ami           = var.aws_ami_id #"ami-0cd31be676780afa7"
  instance_type = "t2.large"
  key_name      = aws_key_pair.ec2loginkey.key_name
  count         = var.dbnodes_count
  security_groups = ["dbnodes-sg"]
  user_data     = file("user-data-dbnodes.sh")
  tags = {
    Name = "dbnode-${count.index + 1}"
  }
}
```



```
# copy dbnode-config.yaml
provisioner "file" {
  source      = "dbnode-config.yaml"
  destination = "/home/ec2-user/dbnode-config.yaml"
  connection {
    type      = "ssh"
    user      = "ec2-user"
    private_key = file(pathexpand(var.ssh_key_pair))
    host      = self.public_ip
  }
}

# Execute Ansible Playbook
provisioner "remote-exec" {
  inline = [
    "sleep 120; ansible-playbook dbnode-config.yaml"
  ]
  connection {
    type      = "ssh"
    user      = "ec2-user"
    private_key = file(pathexpand(var.ssh_key_pair))
    host      = self.public_ip
  }
}
```

Chapter 10: Managing Containers Using Ansible



```
[dockerhost]
node1 ansible_host=192.168.56.25
```



```
[ansible@ansible Chapter-10]$ ansible-galaxy install gearlingguy.docker -p roles/
[ansible@ansible Chapter-10]$ ansible-galaxy install gearlingguy.pip -p roles/
You can verify the roles installation as follows.
[ansible@ansible Chapter-10]$ ansible-galaxy role list
# /home/ansible/ansible-book-packet/Chapter-10/roles
- gearlingguy.docker, 4.1.3
- gearlingguy.pip, 2.1.0
```

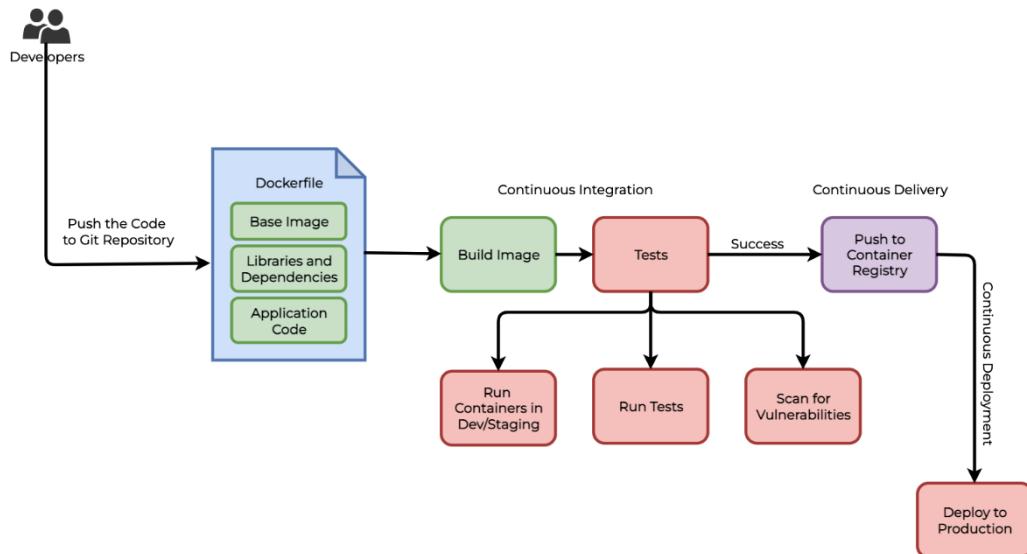


```
---
# Chapter-10/deploy-docker.yaml
- name: Deploy Docker to Host
hosts: "{{ NODES }}"
become: yes
vars:
  pip_install_packages:
    - name: docker
tasks:
  - name: Install docker
    include_role:
      name: gearlingguy.docker
  - name: Install Packges
    include_role:
      name: gearlingguy.pip
```



```
[ansible@ansible Chapter-10]$ ansible-playbook deploy-docker.yaml -e "NODES=dockerhost"
```

```
[root@node-1 ~]# docker version
Client: Docker Engine - Community
Version:           20.10.14
API version:      1.41
Go version:       go1.16.15
..<output omitted>..
Server: Docker Engine - Community
Engine:
  Version:          20.10.14
  API version:     1.41 (minimum version 1.12)
  Go version:      go1.16.15
..<output omitted>..
containerd:
  Version:          1.5.11
  GitCommit:        3df54a852345ae127d1fa3092b95168e4a88e2f8
..<output omitted>..
```



```
[defaults]
inventory = ./hosts
remote_user = devops
ask_pass = false

COLLECTIONS_PATHS = ./collections
roles_path = roles
```

```
[ansible@ansible Chapter-10]$ ansible-galaxy collection install community.docker
```

```
[ansible@ansible Chapter-10]$ ansible-galaxy collection list
...
<output omitted>
# /home/ansible/ansible-book-packt/Chapter-10/collections/ansible_collections
Collection      Version
-----
community.docker 2.3.0
```

```
./collections).
[ansible@ansible Chapter-10]$ ansible-galaxy collection list |grep -i docker
community.docker          1.10.2
community.docker 2.3.0
```

```
---+
# Chapter-10/container-manage.yaml
- name: Manage Docker containers
hosts: "{{ NODES }}"
become: yes
vars:
  container_image: nginx
  container_name: web
  container_port: 80
  container_expose_port: 8080
  container_action: 'run'
```

```
tasks:
- name: Create and Start a Docker container
  community.docker.docker_container:
    name: "{{ container_name }}"
    image: "{{ container_image }}"
    state: started
    ports: "{{ container_expose_port }}:{{ container_port }}"
  when: container_action == 'run'
```

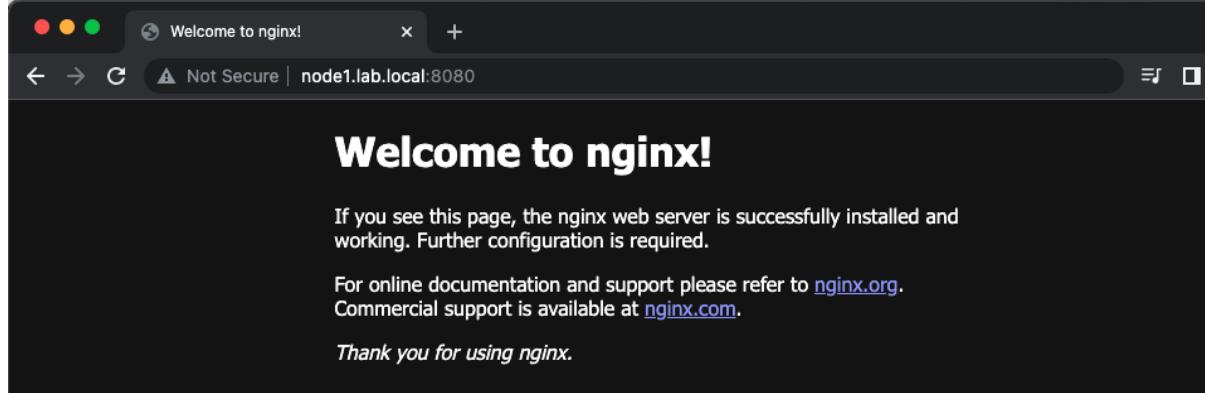
```
- name: Verify web site running inside container
hosts: "{{ NODES }}"
become: no
vars:
  container_expose_port: 8080
  container_action: 'run'
tasks:
- name: Verify application health
  ansible.builtin.uri:
    url: http://{{ inventory_hostname }}.lab.local:{{ container_expose_port }}
    status_code: 200
  delegate_to: localhost
  when: container_action == 'run'
```

```
[ansible@ansible Chapter-10]$ ansible-playbook container-manage.yaml -e "NODES=dockerhost"
```

```
[root@node-1 ~]# docker ps
CONTAINER ID   IMAGE      COMMAND                  CREATED     STATUS      PORTS     NAMES
e36fb7419165   nginx      "/docker-entrypoint..."  10 minutes ago   Up 10 minutes   0.0.0.0:8080->80/tcp   web
```

```
[ansible@ansible Chapter-10]$ curl http://node1:8080
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
..<output omitted>..
<a href="http://nginx.com/">nginx.com</a>.</p>

<p><em>Thank you for using nginx.</em></p>
</body>
</html>
```



● ● ●

```
- name: Stop Docker container
  community.docker.docker_container:
    name: "{{ container_name }}"
    state: stopped
  when: container_action == 'stop'

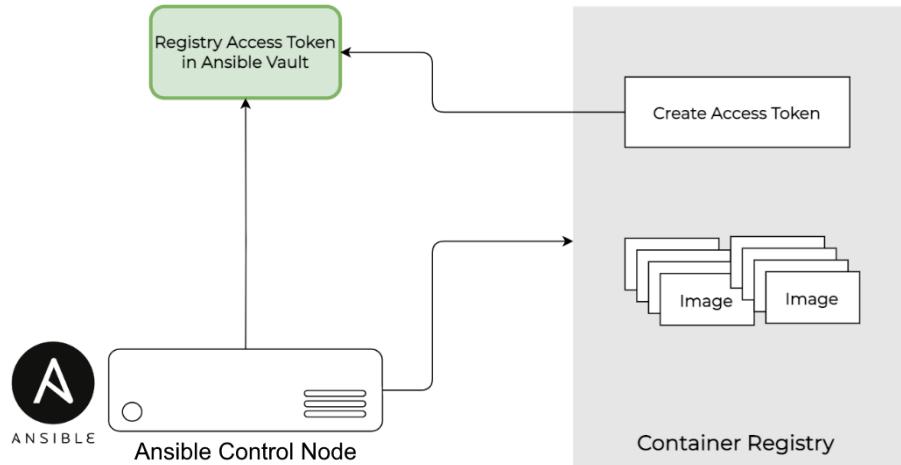
- name: Remove Docker container
  community.docker.docker_container:
    name: "{{ container_name }}"
    state: absent
  when: container_action == 'stop'
```

● ● ●

```
[ansible@ansible Chapter-10]$ ansible-playbook container-manage.yaml -e "NODES=dockerhost container_action=stop"
```

● ● ●

```
[root@node-1 ~]# docker ps -a
CONTAINER ID   IMAGE      COMMAND   CREATED     STATUS      PORTS     NAMES
[root@node-1 ~]#
```



New Access Token

A personal access token is similar to a password except you can have many tokens and revoke access to each one at any time. [Learn more](#)

Access Token Description *

ansible-book-demo

Access permissions

Read, Write, Delete

Read, Write, Delete tokens allow you to manage your repositories.

[Cancel](#)

[Generate](#)



```
[ansible@ansible Chapter-10]$ mkdir vars  
[ansible@ansible Chapter-10]$ ansible-vault create vars/docker-credential.yaml  
New Vault password:  
Confirm New Vault password:
```



```
# vars/docker-credential.yaml  
docker_username: yourdockerusername  
docker_password: yourdockeraccesstoken
```

Create Temp Directory

Git Checkout Application Repo

Delete Existing Image

Build Image

Dockerfile

Base Image

Libraries and Dependencies

Application Code

Test Image

Log into Docker Hub

Tag and Push Image to Docker Registry

Log Out of Docker Hub



```
# syntax=docker/dockerfile:1  
FROM node:12-alpine  
RUN apk add --no-cache python2 g++ make  
WORKDIR /app  
COPY . .  
RUN yarn install --production  
CMD ["node", "src/index.js"]  
EXPOSE 3000
```

```
$ ls -l
total 344
-rw-r-xr-x 1 gini staff 182 3 Apr 15:33 Dockerfile
-rw-r--r-- 1 gini staff 204 3 Apr 14:07 README.md
-rw-rw-r--@ 1 gini staff 646 10 Feb 16:59 package.json
drwxrwxr-x@ 5 gini staff 160 3 Apr 14:06 spec
drwxrwxr-x@ 7 gini staff 224 3 Apr 14:06 src
-rw-rw-r--@ 1 gini staff 162208 10 Feb 16:59 yarn.lock
```

```
---  
# Chapter-10/container-build.yaml  
- name: Building Container Images  
  hosts: "{{ NODES }}"  
  become: yes  
  vars:  
    application_repo: https://github.com/ginigangadharan/nodejs-todo-demo-app  
    application_branch: main  
    application_name: todo-app  
    application_version: v1  
    container_image_repository: ginigangadharan  
    container_registry_url: https://index.docker.io/v1/  
  
  vars_files:  
    - vars/docker-credential.yaml  
.  
.
```

```
---  
# Chapter-10/container-build.yaml  
..  
tasks:  
  - name: Create temporary location  
    ansible.builtin.tempfile:  
      state: directory  
      prefix: "container_build_"  
      register: temp_location  
  
  - debug:  
    msg: "{{ temp_location.path }}"  
  
  - name: Git checkout the application  
    ansible.builtin.git:  
      repo: "{{ application_repo }}"  
      dest: "{{ temp_location.path }}"  
      version: "{{ application_branch }}"  
.  
.
```

```
---  
# Chapter-10/container-build.yaml  
.  
- name: Delete existing container image with same name and tag  
  community.docker.docker_image:  
    name: "{{ application_name }}"  
    tag: "{{ application_version }}"  
    state: absent  
  
- name: Build container image  
  community.docker.docker_image:  
    name: "{{ application_name }}"  
    tag: "{{ application_version }}"  
    build:  
      path: "{{ temp_location.path }}"  
    source: build  
    state: present  
..
```

```
---  
# Chapter-10/container-build.yaml  
.  
- name: Integration and other tests  
  debug:  
    msg: "Your tests can be included here..."  
..
```

```
---  
# Chapter-10/container-build.yaml  
.  
- name: Log into DockerHub  
  community.docker.docker_login:  
    registry_url: "{{ container_registry_url }}"  
    username: "{{ docker_username }}"  
    password: "{{ docker_password }}"  
  
- name: Push container image to registry  
  community.docker.docker_image:  
    name: "{{ application_name }}"  
    tag: "{{ application_version }}"  
    repository: "{{ container_image_repository }}/{{ application_name }}:{{ application_version }}"  
    source: local  
    push: yes  
..
```

```
---  
# Chapter-10/container-build.yaml  
..  
- name: Add tag latest to image  
  community.docker.docker_image:  
    name: "{{ application_name }}:{{ application_version }}"  
    repository: "{{ container_image_repository }}/{{ application_name }}:latest"  
    force_tag: yes  
    push: yes  
    source: local  
  
- name: Log out of DockerHub  
  community.docker.docker_login:  
    registry_url: "{{ container_registry_url }}"  
    state: absent
```

```
● ● ●

---  
# Chapter-10/container-build.yaml  
..  
- name: Delete temporary location  
  ansible.builtin.file:  
    path: "{{ temp_location.path }}"  
    state: absent
```

```
[ansible@ansible Chapter-10]$ ansible-playbook container-build.yaml -e "NODES=dockerhost" --ask-vault-password
```

```
[root@node-1 ~]# docker images |grep todo
todo-app          v1      8408ad9523d3  2 minutes ago  407MB
sinigancadharan/todo-app  v1      83c58c775765  26 hours ago  407MB
```



 **ginigangadharan / todo-app**

This repository does not have a description [Edit](#)

⌚ Last pushed: 5 minutes ago

Docker commands

To push a new tag to this repository,

```
docker push ginigangadharan/todo-app:tagname
```

Tags and Scans

This repository contains 1 tag(s).

TAG	OS	PULLED	PUSHED
v1		---	5 minutes ago

[See all](#)

VULNERABILITY SCANNING - DISABLED

[Enable](#)

Automated Builds

Manually pushing images to Hub? Connect your account to GitHub or Bitbucket to automatically build and tag new images whenever your code is updated, so you can focus your time on creating.

Available with Pro, Team and Business subscriptions.

[Upgrade to Pro](#) [Learn more](#)

Readme 

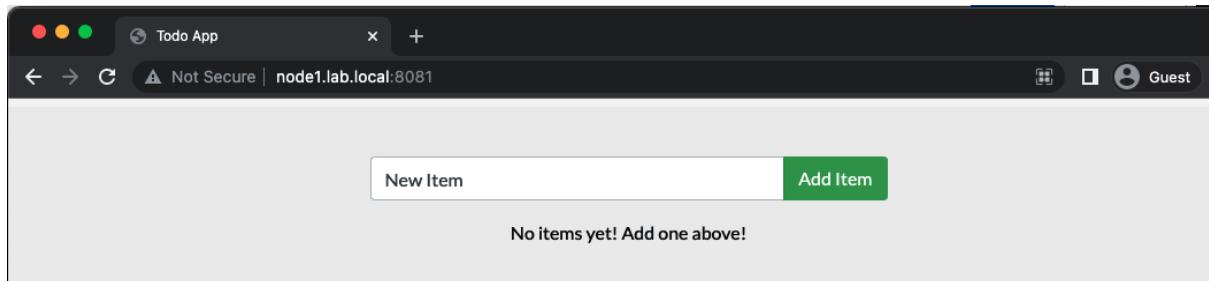
Repository description is empty. Click [here](#) to edit.

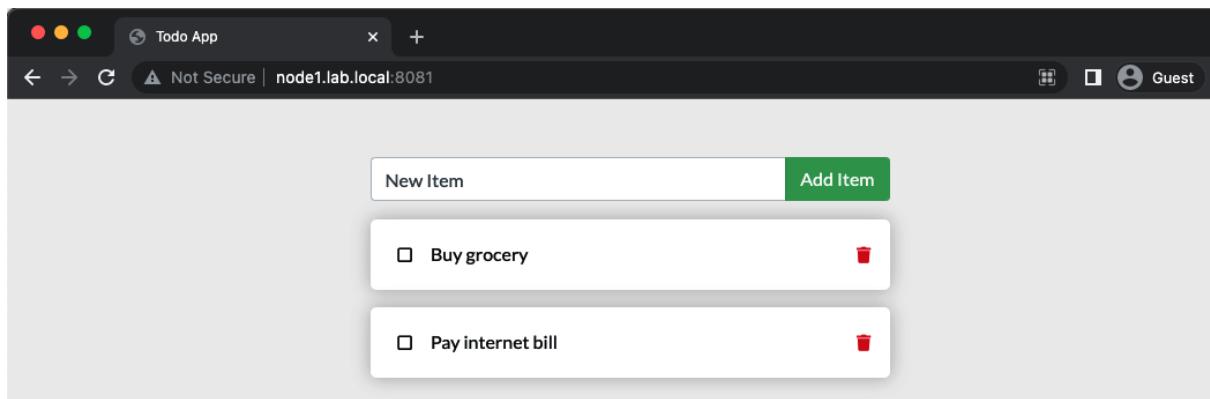
● ● ●

```
[ansible@ansible Chapter-10]$ ansible-playbook container-manage.yaml -e "NODES=dockerhost
container_image=ginigangadharan/todo-app container_name=todo-app container_port=3000 container_expose_port=8081"
```

● ● ●

```
[root@node-1 ~]# docker ps |grep todo
0e158f5710bf    ginigangadharan/todo-app    "docker-entrypoint.s..."   3 minutes ago   Up 3 minutes   0.0.0.0:8081->3000/tcp    todo-app
```





```
[ansible@ansible Chapter-10]$ ansible-playbook container-manage.yaml -e "NODES=dockerhost
container_image=ginigangadharan/todo-app container_name=todo-app container_port=3000 container_expose_port=8081
container_action=stop"
```

```
---
- name: Deploy wordpress stack on Docker
  hosts: "{{ NODES }}"
  become: yes
  vars:
    db_volume: 'mariadb'
    wordpress: 'wordpress'
    mysql_root_password: 'secretrootpassword'
    mysql_username: 'wordpressuser'
    mysql_password: 'secretpassword'
    mysql_database: 'wordpressdb'
    container_port: 8082
  tasks:
```

```

● ● ●

- name: Deploy MariaDB server for Database
  community.docker.docker_container:
    state: started
    image: mariadb
    name: mariadb
    volumes:
      - "{{db_volume}}:/var/lib/mysql"
    env:
      MYSQL_ROOT_PASSWORD: "{{ mysql_root_password }}"
      MYSQL_PASSWORD: "{{ mysql_password }}"
      MYSQL_DATABASE: "{{ mysql_database }}"
      MYSQL_USER: "{{ mysql_username }}"

- name: Deploy WordPress
  community.docker.docker_container:
    state: started
    image: wordpress
    name: wordpress
    restart_policy: always
    ports:
      - "{{ container_port }}:80"
    links:
      - "{{ db_volume }}:/var/lib/mysql"
    volumes:
      - "{{ wordpress }}:/var/www/html"
    env:
      MYSQL_PASSWORD: "{{ mysql_password }}"
      MYSQL_DATABASE: "{{ mysql_database }}"
      MYSQL_USER: "{{ mysql_username }}"
      MYSQL_HOST: mariadb

```

```

● ● ●

[ansible@ansible Chapter-10]$ ansible-playbook deploy-wordpress-on-docker.yaml -e "NODES=dockerhost"

```

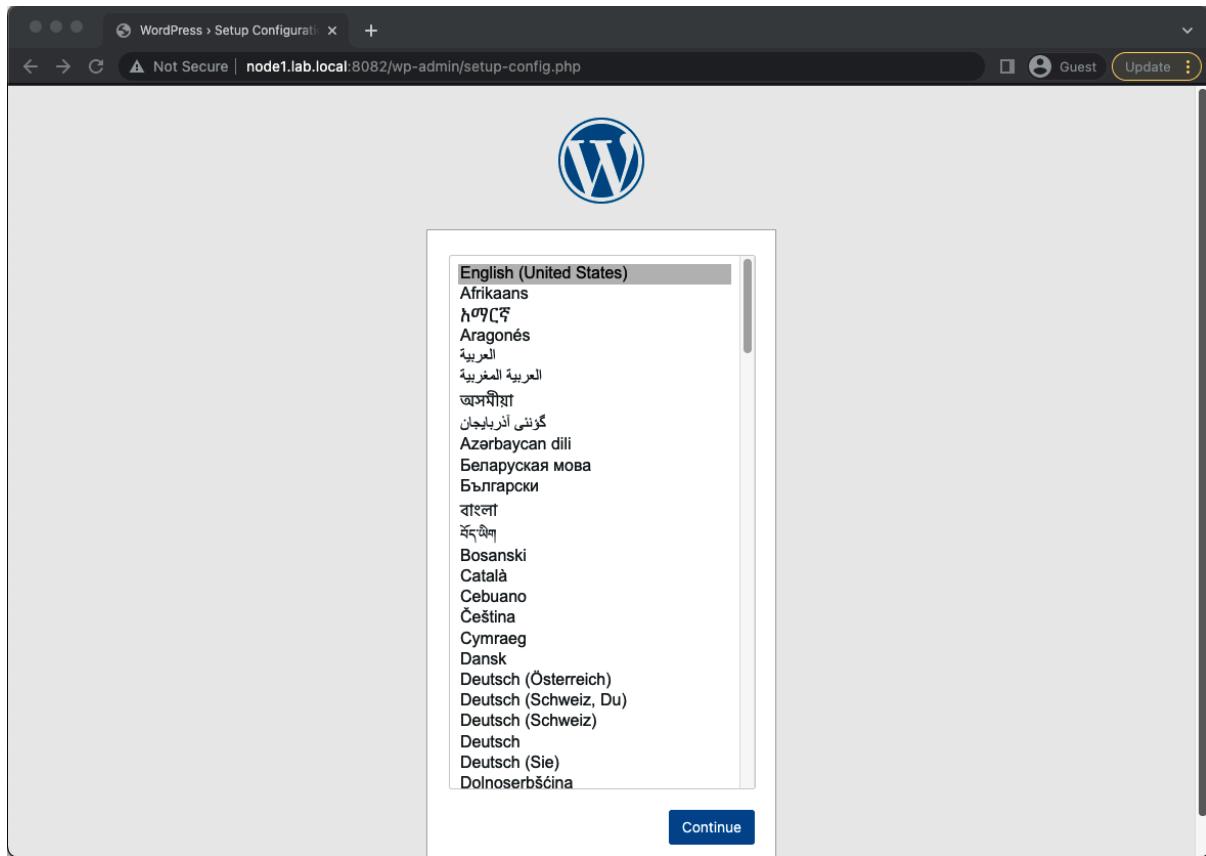
```

● ● ●

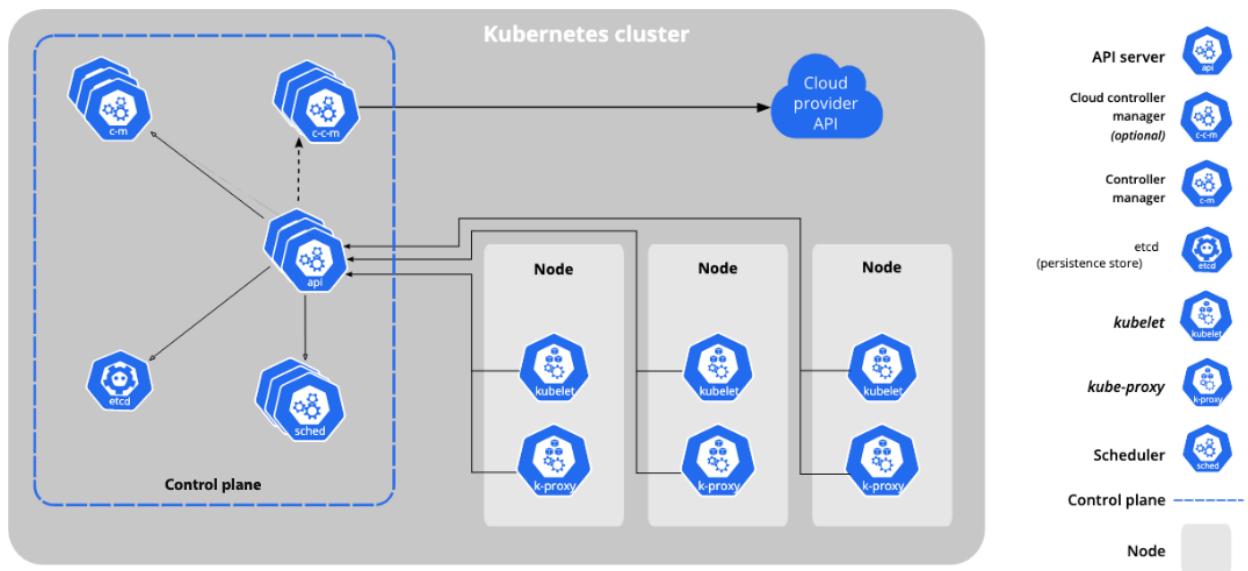
[devops@node-1 ~]$ sudo docker ps
CONTAINER ID   IMAGE       COMMAND                  CREATED        STATUS        PORTS          NAMES
d5253f49d1c9   wordpress   "docker-entrypoint.s..."  15 minutes ago  Up 15 minutes  0.0.0.0:8082->80/tcp
wordpress
74eb2db91a52   mariadb    "docker-entrypoint.s..."  15 minutes ago  Up 15 minutes  3306/tcp
mariadb

[devops@node-1 ~]$ sudo docker volume ls
DRIVER     VOLUME NAME
local      mariadb
local      wordpress

```



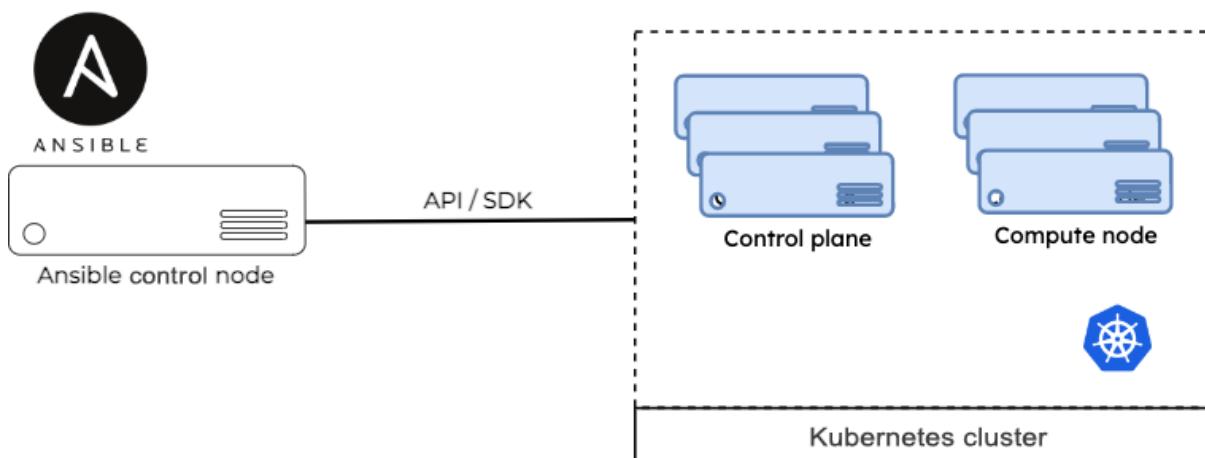
Chapter 11: Managing Kubernetes Using Ansible



```
$ minikube version
minikube version: v1.25.1
commit: 3e64b11ed75e56e4898ea85f96b2e4af0301f43d

$ minikube status
minikube
type: Control Plane
host: Running
kubelet: Running
apiserver: Running
kubeconfig: Configured

$ minikube node list
minikube      192.168.64.10
```



```
[defaults]
.
.
COLLECTIONS_PATHS = ./collections
```

```
[ansible@ansible Chapter-11]$ ansible-galaxy collection install kubernetes.core
```

```
[ansible@ansible Chapter-11]$ ls -l ~/.kube/
total 16
-rw-r--r--. 1 ansible ansible 1111 Apr 25 14:03 ca.crt
-rw-r--r--. 1 ansible ansible 1147 Apr 25 14:03 client.crt
-rw-----. 1 ansible ansible 1675 Apr 25 14:03 client.key
-rw-rw-r--. 1 ansible ansible 824 Apr 25 13:58 minikube-config
```

```
[ansible@ansible Chapter-11]$ cat <<EOF | sudo tee /etc/yum.repos.d/kubernetes.repo
[kubernetes]
name=Kubernetes
baseurl=https://packages.cloud.google.com/yum/repos/kubernetes-el7-x86_64
enabled=1
gpgcheck=1
repo_gpgcheck=1
gpgkey=https://packages.cloud.google.com/yum/doc/yum-key.gpg https://packages.cloud.google.com/yum/doc/rpm-package-key.gpg
EOF
```

```
[ansible@ansible Chapter-11]$ sudo yum install -y kubectl
```

```
[ansible@ansible Chapter-11]$ export KUBECONFIG=$KUBECONFIG:/home/ansible/.kube/minikube-config
```



```
[ansible@ansible Chapter-11]$ kubectl version
Client Version: version.Info{Major:"1", Minor:"23", GitVersion:"v1.23.6",
GitCommit:"ad3338546da947756e8a88aa6822e9c11e7eac22", GitTreeState:"clean", BuildDate:"2022-04-14T08:49:13Z",
GoVersion:"go1.17.9", Compiler:"gc", Platform:"linux/amd64"}
Server Version: version.Info{Major:"1", Minor:"23", GitVersion:"v1.23.1",
GitCommit:"86ec240af8cbd1b60bcc4c03c20da9b98005b92e", GitTreeState:"clean", BuildDate:"2021-12-16T11:34:54Z",
GoVersion:"go1.17.5", Compiler:"gc", Platform:"linux/amd64"}
```



```
[ansible@ansible Chapter-11]$ kubectl get po -n kube-system
NAME             READY   STATUS    RESTARTS   AGE
coredns-64897985d-msdjk   1/1     Running   18          164d
etcd-minikube      1/1     Running   21          164d
kube-apiserver-minikube  1/1     Running   22          164d
kube-controller-manager-minikube  1/1     Running   21          164d
kube-proxy-bh9wj     1/1     Running   19          164d
kube-scheduler-minikube  1/1     Running   21          164d
metrics-server-6b76bd68b6-4lcww  1/1     Running   69          164d
storage-provisioner   1/1     Running   80          164d
```



```
# Chapter-11/k8s-details.yaml
---
- name: Ansible Kubernetes Info
  hosts: localhost
  tasks:
    - name: Get a list of all pods from any namespace
      kubernetes.core.k8s_info:
        kubeconfig: /home/ansible/.kube/minikube-config
        kind: Pod
        namespace: kube-system
      register: pod_list

    - name: Display Pod Details
      debug:
        msg: "{{ pod_list }}"
```

```

[ansible@ansible Chapter-11]$ ansible-playbook k8s-details.yaml |more
...<output omitted for brevity>...

TASK [Display Pod Details] ****
ok: [localhost] => {
    "msg": {
        "api_found": true,
        "changed": false,
        "failed": false,
        "resources": [
            {
                "apiVersion": "v1",
                "kind": "Pod",
                "metadata": {
                    "creationTimestamp": "2022-02-01T06:57:46Z",
                    "generateName": "coredns-64897985d-",
                    "labels": {
                        "k8s-app": "kube-dns",
                        "pod-template-hash": "64897985d"
                    },
                    "managedFields": [
                        {
                            "apiVersion": "v1",
                            "fieldsType": "FieldsV1",
...
<output omitted for brevity>...

```

```

- name: Get a list of Nodes
  kubernetes.core.k8s_info:
    kubeconfig: /home/ansible/.kube/minikube-config
    kind: Node
  register: node_list

- name: Display Pod Details
  debug:
    msg: "{{ item.metadata.labels['kubernetes.io/hostname'] }}"
  loop: "{{ node_list.resources }}"

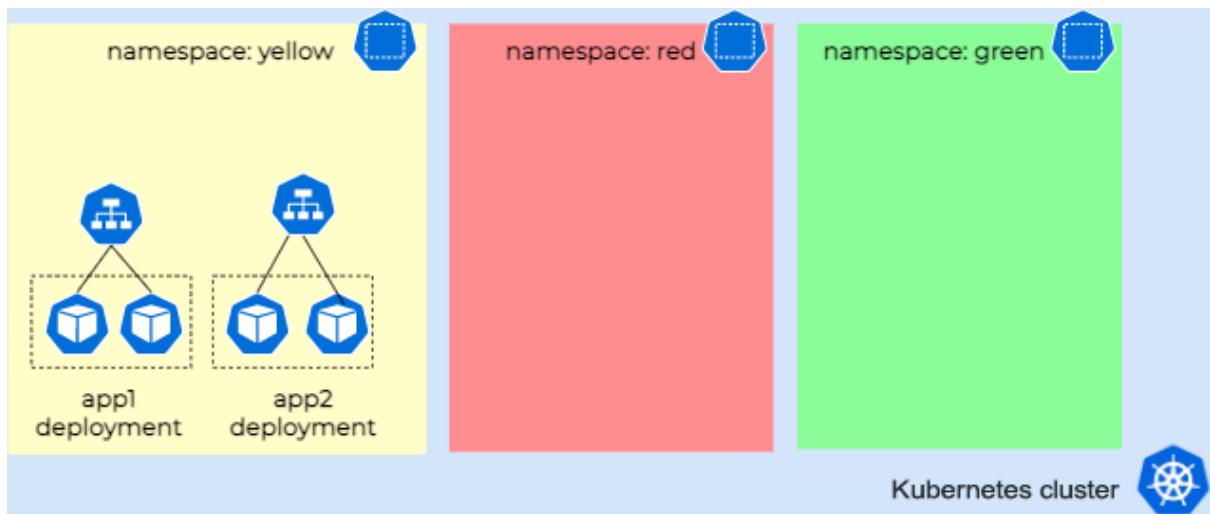
```

```

[ansible@ansible Chapter-11]$ ansible-playbook k8s-details.yaml
...<output omitted>..
ames': ['k8s.gcr.io/kube-scheduler@sha256:8be4eb1593cf9ff2d91b44596633b7815a3753696031a1eb4273d1b39427fa8c',
'k8s.gcr.io/kube-scheduler:v1.23.1'], 'sizeBytes': 53488305}, {'names': ['k8s.gcr.io/ingress-nginx/kube-webhook-
certgen@sha256:64d8c73dca984af206adf9d6d7e46aa550362b1d7a01f3a0a91b20cc67868660'], 'sizeBytes': 47736388}, {'names':
['k8s.gcr.io/coredns/coredns@sha256:5b6ec0d6de9baaf3e92d0f66cd96a25b9edbce8716f5f15dcda616b3abd590e'],
'k8s.gcr.io/coredns/coredns:v1.8.6'], 'sizeBytes': 46829283}, {'names': ['kubernetesui/metrics-
scraper@sha256:36d5b3f60e1a14cc5ada820910535074bdf5cf73fb70d1ff1681537eef4e172', 'kubernetesui/metrics-
scraper:v1.0.7'], 'sizeBytes': 34446077}, {'names': ['gcr.io/k8s-minikube/storage-
provisioner@sha256:18eb69d1418e854ad5a19e399310e52808a8321e4c441c1dddad8977a0d7a944', 'gcr.io/k8s-minikube/storage-
provisioner:v5'], 'sizeBytes': 31465472}], 'apiVersion': 'v1', 'kind': 'Node'}) => {
    "msg": "minikube"
}

PLAY RECAP ****
localhost          : ok=5      changed=0      unreachable=0      failed=0      skipped=0      rescued=0      ignored=0

```



```
---
apiVersion: apps/v1
kind: Deployment
metadata:
  name: todo-app
  labels:
    app: todo
spec:
  replicas: 1
  selector:
    matchLabels:
      app: todo
  template:
    metadata:
      labels:
        app: todo
    spec:
      containers:
        - name: todoapp
          image: ginigangadharan/todo-app:latest
          ports:
            - containerPort: 3000
```



```
---
apiVersion: v1
kind: Service
metadata:
  name: todoapp-svc
spec:
  type: NodePort
  ports:
    - targetPort: 3000
      port: 3000
      nodePort: 30080
  selector:
    app: todo
```

```
---  
# Chapter-11/k8s-app-deploy.yaml  
- name: Deploying Application to Kubernetes  
  hosts: localhost  
  gather_facts: false  
  vars:  
    kubeconfig_file: /home/ansible/.kube/minikube-config  
    namespace_name: todoapp-ns  
  tasks:  
    - name: Create a k8s namespace  
      kubernetes.core.k8s:  
        kubeconfig: "{{ kubeconfig_file }}"  
        name: "{{ namespace_name }}"  
        api_version: v1  
        kind: Namespace  
        state: present
```

```
[ansible@ansible Chapter-11]$ ansible-playbook k8s-app-deploy.yaml
```

```
[ansible@ansible Chapter-11]$ kubectl get namespace todoapp-ns  
NAME      STATUS   AGE  
todoapp-ns  Active   6s
```

```
# Chapter-11/k8s-app-deploy.yaml – tasks for deployment and service  
  
- name: Create Deployment  
  kubernetes.core.k8s:  
    kubeconfig: "{{ kubeconfig_file }}"  
    state: present  
    src: todo-app-deploy.yaml  
    namespace: "{{ namespace_name }}"  
  
- name: Expose application on NodePort  
  kubernetes.core.k8s:  
    kubeconfig: "{{ kubeconfig_file }}"  
    state: present  
    src: todo-app-service.yaml  
    namespace: "{{ namespace_name }}"
```

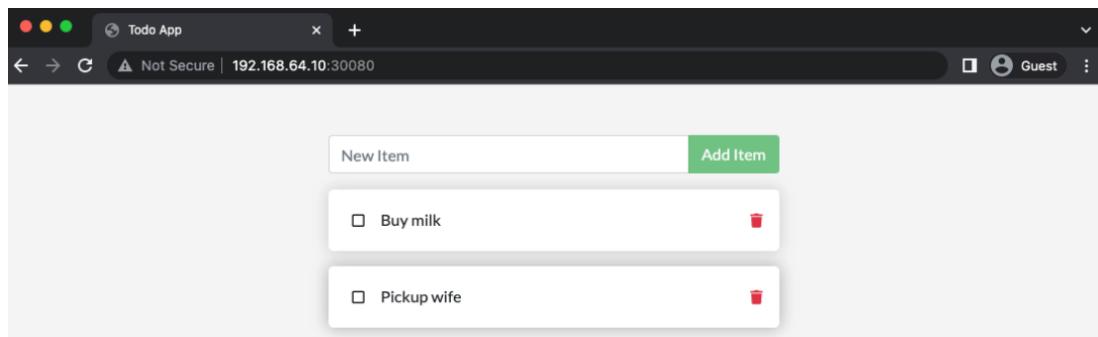
```
[ansible@ansible Chapter-11]$ kubectl -n todoapp-ns get all
NAME                      READY   STATUS    RESTARTS   AGE
pod/todo-app-546b5b58d-bhhnz   1/1     Running   0          5m36s

NAME            TYPE      CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE
service/todoapp-svc  NodePort  10.98.213.33  <none>           3000:30080/TCP  5m35s

NAME            READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/todo-app  1/1       1           1          5m36s

NAME            DESIRED  CURRENT  READY   AGE
replicaset.apps/todo-app-546b5b58d  1         1         1        5m36s
```

```
$ minikube service list
|-----|-----|-----|-----|
|  NAMESPACE  |          NAME          | TARGET PORT |          URL          |
|-----|-----|-----|-----|
| default     | kubernetes           | No node port |               |
| ingress-nginx | ingress-nginx-controller | http/80      | http://192.168.64.10:31729 |
|             |                         | https/443    | http://192.168.64.10:30711 |
| ingress-nginx | ingress-nginx-controller-admission | No node port |               |
| kube-system  | kube-dns              | No node port |               |
| kube-system  | metrics-server         | No node port |               |
| todoapp-ns   | todoapp-svc            | 3000          | http://192.168.64.10:30080 |
|-----|-----|-----|-----|
```



```
● ● ●

apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
  name: todoapp-ingress
  annotations:
    nginx.ingress.kubernetes.io/rewrite-target: /$1
spec:
  rules:
    - host: todoapp.local
      http:
        paths:
          - path: /
            pathType: Prefix
            backend:
              service:
                name: todoapp-svc
                port:
                  number: 3000
```

```
- name: Create ingress resource
kubernetes.core.k8s:
  kubeconfig: "{{ kubeconfig_file }}"
  state: present
  src: todo-app-ingress.yaml
  namespace: "{{ namespace_name }}"
```

```
[ansible@ansible Chapter-11]$ kubectl -n todoapp-ns get all
NAME                           READY   STATUS    RESTARTS   AGE
pod/todo-app-546b5b58d-bhhnz   1/1     Running   0          5m36s

NAME                    TYPE        CLUSTER-IP   EXTERNAL-IP   PORT(S)        AGE
service/todoapp-svc   NodePort   10.98.213.33 <none>        3000:30080/TCP   5m35s

NAME                     READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/todo-app 1/1     1           1           5m36s

NAME                     DESIRED   CURRENT   READY   AGE
replicaset.apps/todo-app 1         1         1       5m36s
```

```
$ kubectl -n todoapp-ns scale deployment/todo-app --replicas=3
deployment.apps/todo-app scaled
```

```
[ansible@ansible Chapter-11]$ kubectl -n todoapp-ns get all
NAME                      READY   STATUS    RESTARTS   AGE
pod/todo-app-546b5b58d-bhhnz 1/1     Running   0          16m
pod/todo-app-546b5b58d-hk6zz 1/1     Running   0          21s
pod/todo-app-546b5b58d-lkm1t  1/1     Running   0          21s

NAME            TYPE        CLUSTER-IP      EXTERNAL-IP      PORT(S)        AGE
service/todoapp-svc  NodePort    10.98.213.33  <none>           3000:30080/TCP  16m

NAME                  READY   UP-TO-DATE  AVAILABLE   AGE
deployment.apps/todo-app  3/3      3           3           16m

NAME                DESIRED  CURRENT  READY   AGE
replicaset.apps/todo-app-546b5b58d  3       3         3       16m
```

```
[ansible@ansible Chapter-11]$ kubectl -n todoapp-ns describe service/todoapp-svc
Name:                     todoapp-svc
Namespace:                 todoapp-ns
Labels:                   <none>
Annotations:              <none>
Selector:                 app=todo
Type:                     NodePort
IP Family Policy:         SingleStack
IP Families:              IPv4
IP:                       10.98.213.33
IPs:                      10.98.213.33
Port:                     <unset>  3000/TCP
TargetPort:               3000/TCP
NodePort:                 <unset>  30080/TCP
Endpoints:                172.17.0.10:3000,172.17.0.11:3000,172.17.0.9:3000
Session Affinity:          None
External Traffic Policy:  Cluster
Events:                  <none>
```

```
$ kubectl -n todoapp-ns scale deployment/todo-app --replicas=1
deployment.apps/todo-app scaled
```

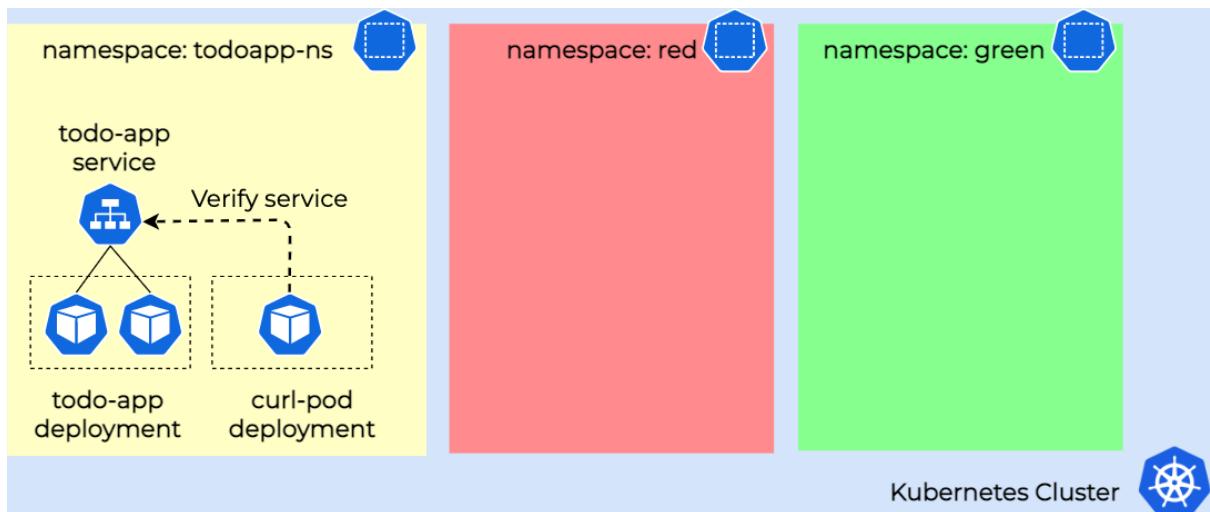
```
● ● ●

---  
# Chapter-11/k8s-app-scale.yaml  
- name: Scaling Applications in Kubernetes  
  hosts: localhost  
  gather_facts: false  
  vars:  
    kubeconfig_file: /home/ansible/.kube/minikube-config  
    namespace_name: todoapp-ns  
  tasks:  
    - name: Scale deployment  
      kubernetes.core.k8s_scale:  
        kubeconfig: "{{ kubeconfig_file }}"  
        api_version: v1  
        kind: Deployment  
        name: todo-app  
        namespace: "{{ namespace_name }}"  
        replicas: 4  
        wait_timeout: 30
```

```
● ● ●  
[ansible@ansible Chapter-11]$ ansible-playbook k8s-app-scale.yaml
```

```
● ● ●  
[ansible@ansible Chapter-11]$ kubectl -n todoapp-ns get pods  
NAME           READY   STATUS    RESTARTS   AGE  
todo-app-546b5b58d-5j8nj  1/1     Running   0          28s  
todo-app-546b5b58d-7sr8j  1/1     Running   0          28s  
todo-app-546b5b58d-bhhnz  1/1     Running   0          24m  
todo-app-546b5b58d-r9nmz  1/1     Running   0          28s
```

```
● ● ●  
$ kubectl exec --stdin --tty POD_NAME -- /bin/bash
```



```
---
apiVersion: v1
kind: Pod
metadata:
  name: curl-pod
  namespace: todoapp-ns
  labels:
    app: curl-pod
spec:
  containers:
    - name: curl
      image: radial/busyboxplus:curl
      command:
        - "sleep"
        - "50000"
```

```
---
# Chapter-11/curl-app-deploy.yaml
- name: Deploying curl Pod
  hosts: localhost
  gather_facts: false
  vars:
    kubeconfig_file: /home/ansible/.kube/minikube-config
    namespace_name: todoapp-ns
  tasks:
    - name: Create a Pod with curl image
      kubernetes.core.k8s:
        kubeconfig: "{{ kubeconfig_file }}"
        state: present
        src: curl-app-pod.yaml
        namespace: "{{ namespace_name }}"
```

```
# Chapter-11/curl-app-deploy.yaml - tasks for curl command and status

- name: Verify todo-app service
  ignore_errors: yes
  kubernetes.core.k8s_exec:
    kubeconfig: "{{ kubeconfig_file }}"
    namespace: "{{ namespace_name }}"
    pod: curl-pod
    command: curl todoapp-svc:3000
    register: curl_output

- name: Display service check output
  debug:
    msg: "{{ curl_output.stdout_lines }}"
  when: curl_output.failed == false

- name: Display service check output
  debug:
    msg: "Service (todoapp-svc) is not reachable !"
  when: curl_output.failed == true
```

```
# Chapter-11/curl-app-deploy.yaml - tasks to delete the curl pod after validation

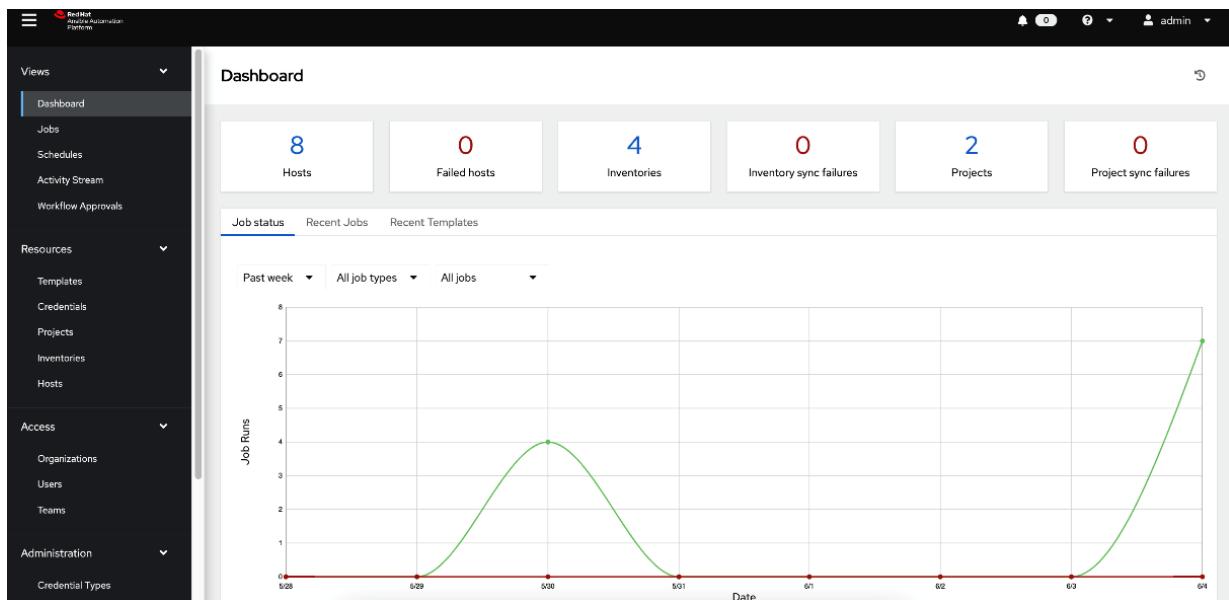
- name: Delete curl pod
  kubernetes.core.k8s:
    kubeconfig: "{{ kubeconfig_file }}"
    state: absent
    src: curl-app-pod.yaml
    namespace: "{{ namespace_name }}"
```

```
[ansible@ansible Chapter-11]$ ansible-playbook curl-app-deploy.yaml
...<output omitted>...

TASK [Display service check output] ****
ok: [localhost] => {
    "msg": [
        "",
        "<!DOCTYPE html>",
        "<html>",
        "<head>",
        "  <meta charset=\"utf-8\" />",
        "  <meta name=\"viewport\" content=\"width=device-width, initial-scale=1, shrink-to-fit=no, maximum-scale=1.0, user-scalable=0\" />",
        "  <link rel=\"stylesheet\" href=\"css/bootstrap.min.css\" crossorigin=\"anonymous\" />",
        "  <link rel=\"stylesheet\" href=\"css/font-awesome/all.min.css\" crossorigin=\"anonymous\" />",
        "  <link href=\"https://fonts.googleapis.com/css?family=Lato&display=swap\" rel=\"stylesheet\" />",
        "  <link rel=\"stylesheet\" href=\"css/styles.css\" />",
        "  <title>Todo App</title>",
        "</head>",
        "<body>",
        "  <div id=\"root\"></div>",
        "  <script src=\"js/react.production.min.js\"></script>",
        "  <script src=\"js/react-dom.production.min.js\"></script>",
        "  <script src=\"js/react-bootstrap.js\"></script>",
        "  <script src=\"js/babel.min.js\"></script>",
        "  <script type=\"text/babel\" src=\"js/app.js\"></script>",
        "</body>",
        "</html>"
    ]
}

...<output omitted>...
```

Chapter 12: Integrating Ansible with Your Tools

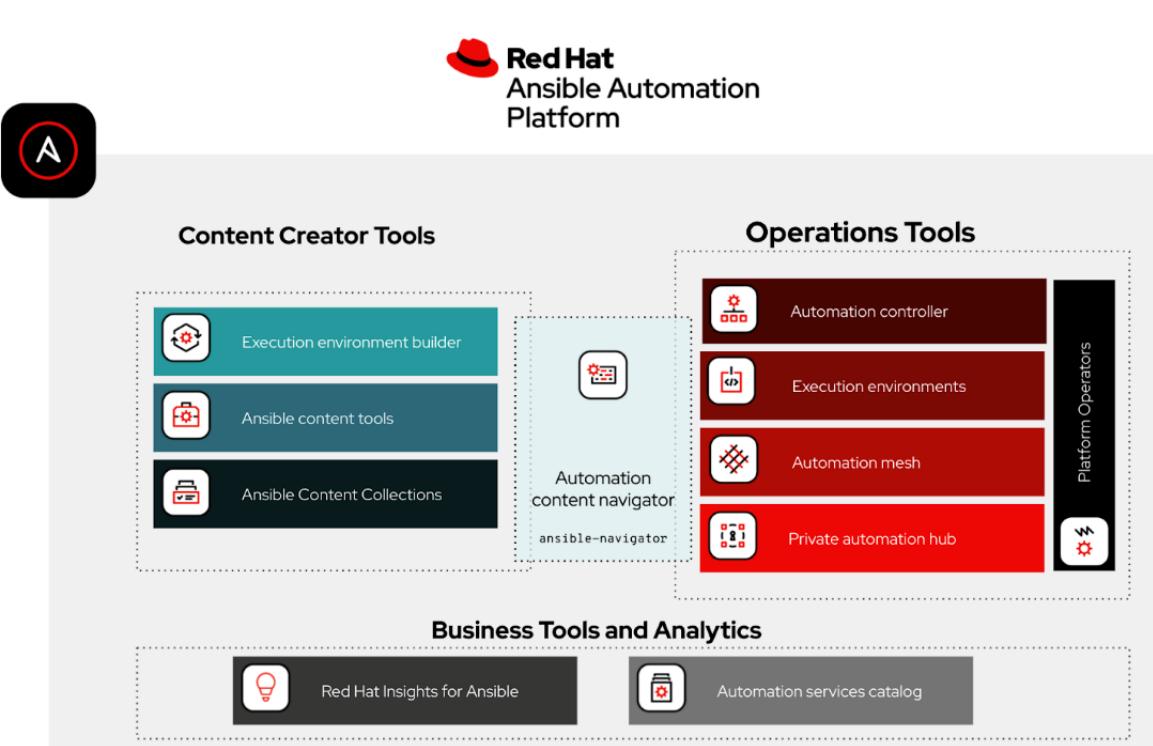


The screenshot shows the 'Create New Credential' form. It includes fields for 'Name' (aws-credential), 'Description' (AWS secret and access), 'Organization' (Security Ops), and a dropdown for 'Credential Type' which is currently empty. A dropdown menu lists several credential types: Amazon Web Services, Ansible Galaxy/Automation Hub API Token, Centrify Vault Credential Provider Lookup, Container Registry, CyberArk AIM Central Credential Provider Lookup, CyberArk Conjur Secret Lookup, and GitHub Personal Access Token.



Create New Schedule

Name *	Description	Start date/time *						
Weekly	Job to run every Sunday midnight	2022-06-04 12:00 AM						
Local time zone *	Run frequency *							
Asia/Singapore	Week							
Frequency Details <table border="1"> <tr> <td>Run every *</td> <td>On days *</td> <td>End *</td> </tr> <tr> <td>1 week</td> <td><input checked="" type="checkbox"/> Sun <input type="checkbox"/> Mon <input type="checkbox"/> Tue <input type="checkbox"/> Wed <input type="checkbox"/> Thu <input type="checkbox"/> Fri <input type="checkbox"/> Sat</td> <td><input checked="" type="radio"/> Never <input type="radio"/> After number of occurrences <input type="radio"/> On date</td> </tr> </table>			Run every *	On days *	End *	1 week	<input checked="" type="checkbox"/> Sun <input type="checkbox"/> Mon <input type="checkbox"/> Tue <input type="checkbox"/> Wed <input type="checkbox"/> Thu <input type="checkbox"/> Fri <input type="checkbox"/> Sat	<input checked="" type="radio"/> Never <input type="radio"/> After number of occurrences <input type="radio"/> On date
Run every *	On days *	End *						
1 week	<input checked="" type="checkbox"/> Sun <input type="checkbox"/> Mon <input type="checkbox"/> Tue <input type="checkbox"/> Wed <input type="checkbox"/> Thu <input type="checkbox"/> Fri <input type="checkbox"/> Sat	<input checked="" type="radio"/> Never <input type="radio"/> After number of occurrences <input type="radio"/> On date						
<input type="button" value="Save"/> <input type="button" value="Cancel"/>								



```
0 ## Welcome
1
2
3 Some things you can try from here:
4 - `:collections` Explore available collections
5 - `:config` Explore the current ansible configuration
6 - `:doc <plugin>` Review documentation for a module or plugin
7 - `:help` Show the main help page
8 - `:images` Explore execution environment images
9 - `:inventory -i <inventory>` Explore an inventory
10 - `:log` Review the application log
11 - `:open` Open current page in the editor
12 - `:replay` Explore a previous run using a playbook artifact
13 - `:run <playbook> -i <inventory>` Run a playbook in interactive mode
14 - `:quit` Quit the application
15
16 happy automating,
17
18 -winston
```

^f/PgUp page up **^b/PgDn** page down **↑↓** scroll **esc** back **:help** help

Automation execution environments

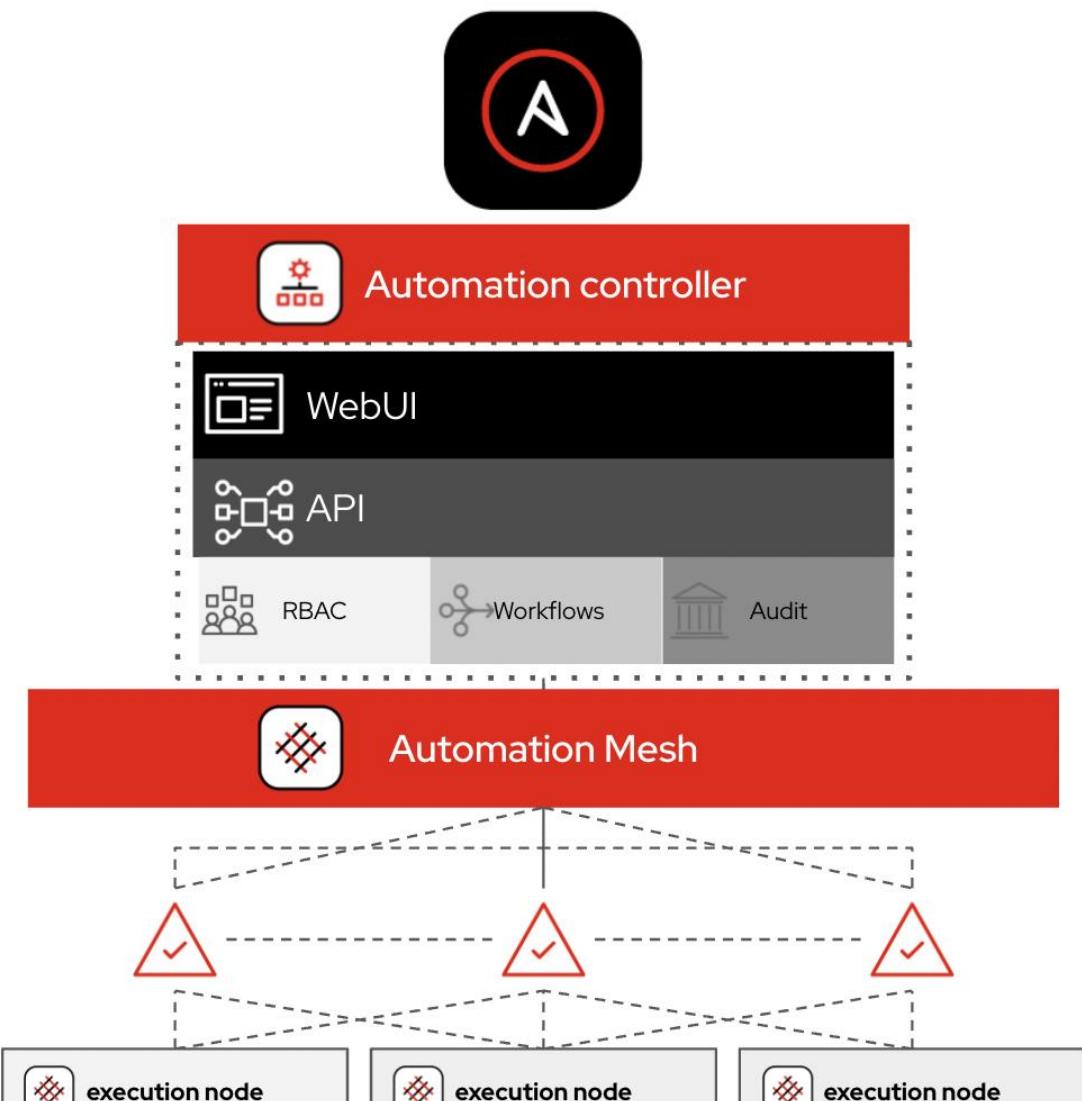
Libraries and Dependencies

Python 3.8

Supported Ansible Collections

Ansible Core

Universal Base Image (UBI)

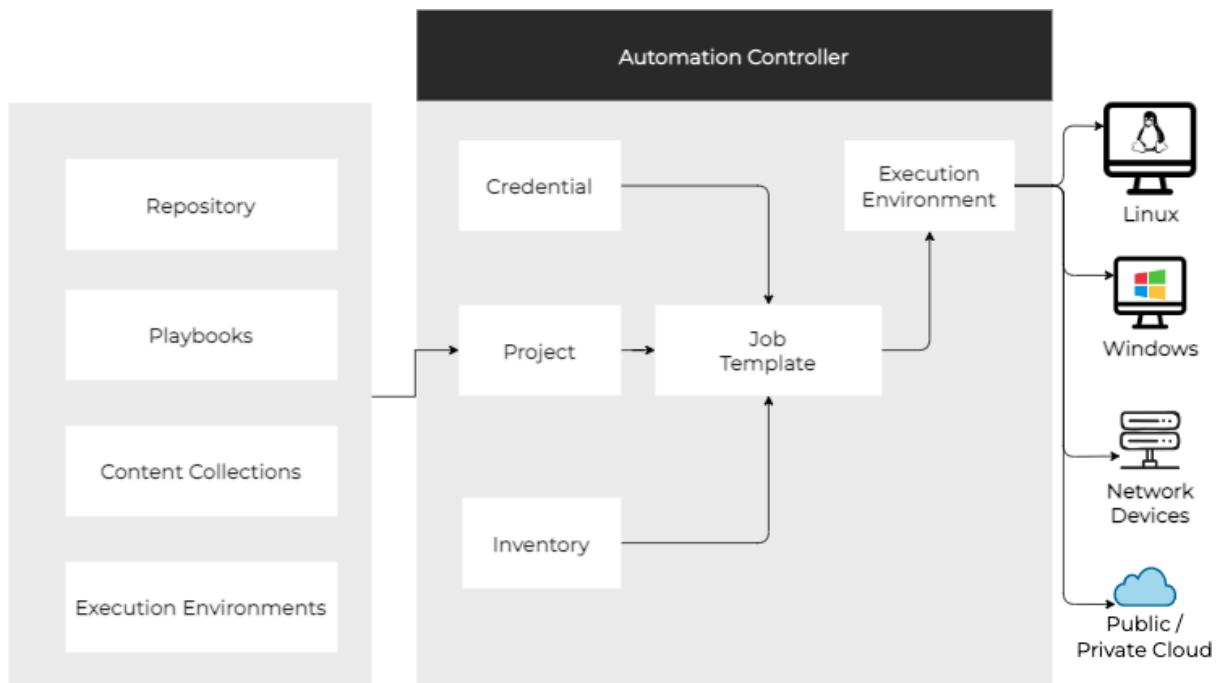
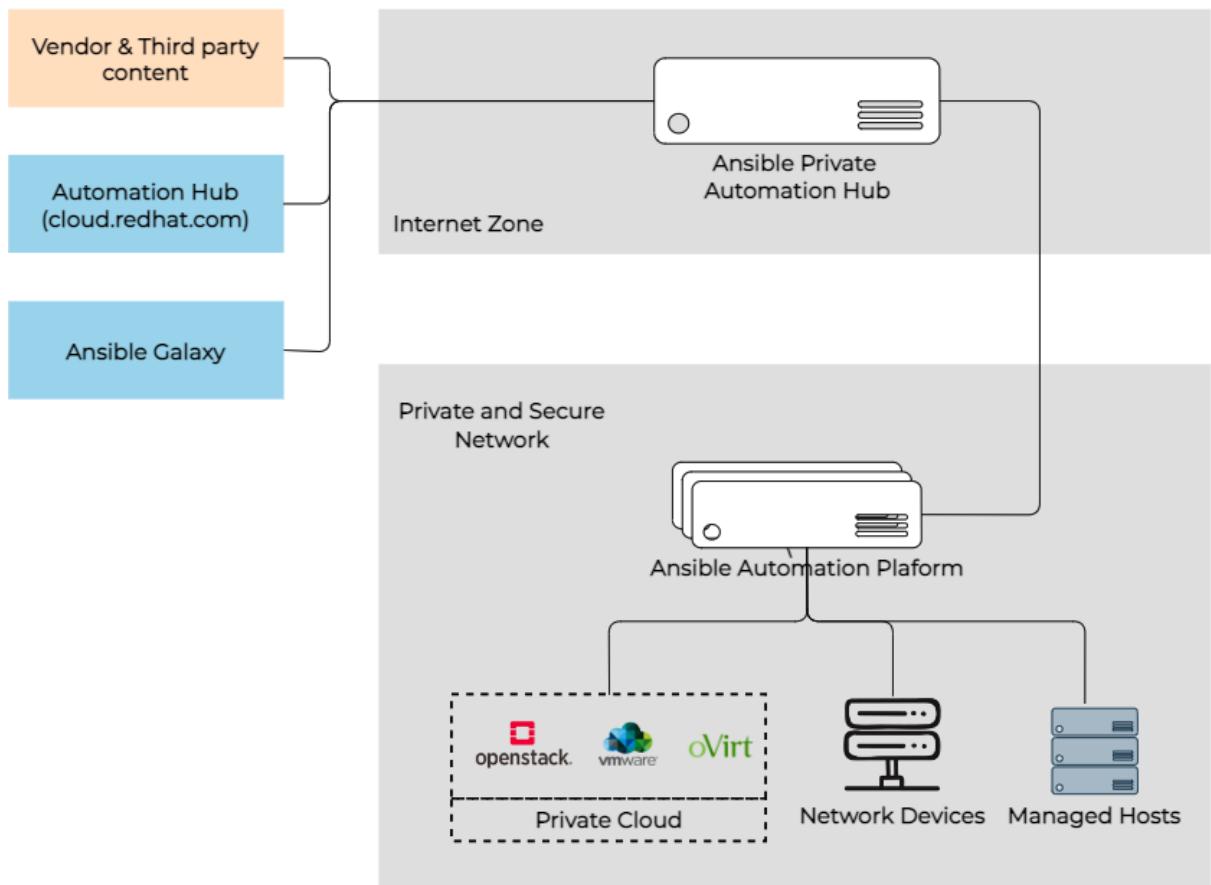


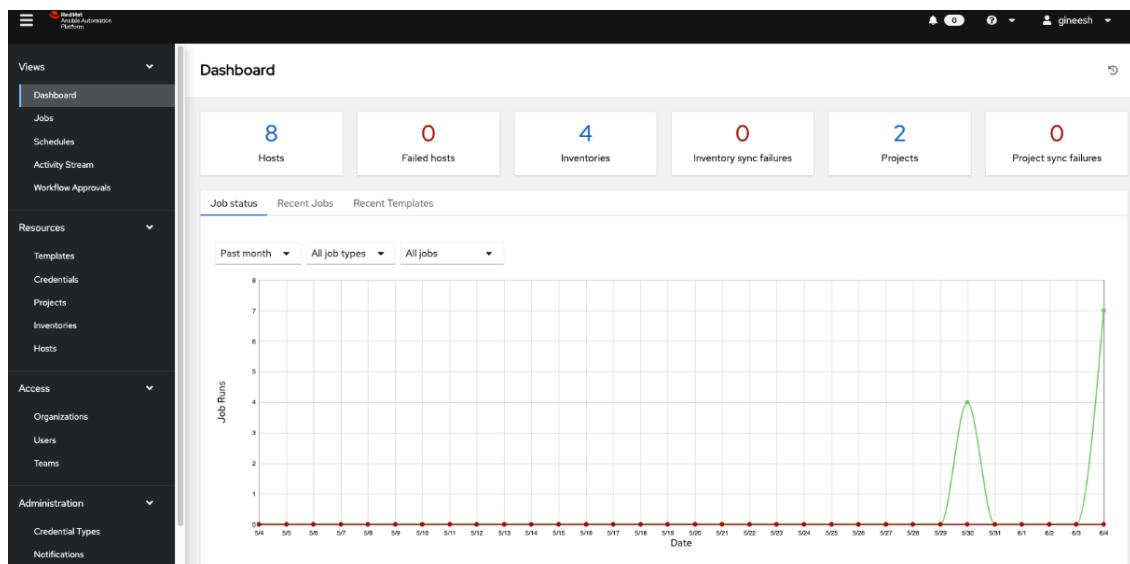
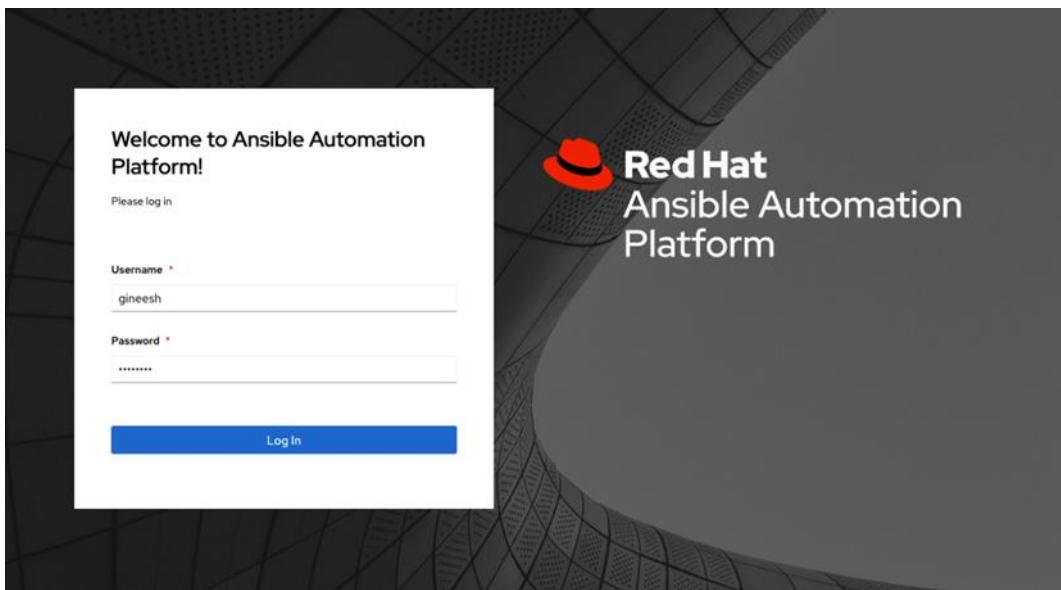
Screenshot of the Red Hat Hybrid Cloud Console interface, specifically the "Collections" page under the "Ansible Automation Platform" section.

Collections

Collection	Provider	Description	Modules	Roles	Plugins	Dependencies
cloud	Provided by Google Cloud	The Google Cloud Platform collection.	170	5	2	0
flashblade	Provided by Pure Storage	Collection of modules to manage Pure Storage	44	0	0	0
flasharray	Provided by Pure Storage	Collection of modules to manage all Pure Storage	53	0	0	0
f5_modules	Provided by F5 Networks	F5 Imperative Collection for Ansible	178	0	8	1
ibm	Provided by IBM	Ansible Security Collection for IBM QRadar SIEM	14	0	1	1
dynatrace_collection	Provided by Dynatrace	Collection comprising capabilities to send comments	2	2	0	0
mgmt	Provided by Check Point	Check Point collection for the Management Server	136	0	2	0
aws	Provided by NetApp	Cloud Volumes Service (CVS) for AWS	4	0	0	0
aruba	Provided by Aruba	aruba	20	0	4	1
elements	Provided by NetApp	Netapp ElementSW (Solidfire) Collection	24	0	0	0

Feedback



A modal dialog titled "Create New Organization" is shown. It has fields for "Name" (Security Ops), "Description" (Security Team), and "Max Hosts" (0). Under "Instance Groups", there is a search bar. Under "Execution Environment", another search bar shows "Ansible Galaxy". At the bottom are "Save" and "Cancel" buttons.

Create New Project

Name *	Description	Organization *
Database Management	DB Administration jobs	Security Ops
Execution Environment	Source Control Credential Type *	
Default execution environment	Git	
Type Details		
Source Control URL *	Source Control Branch/Tag/Commit	Source Control Refspec
https://github.com/ginigangadharan/ansible-database-demo		
Source Control Credential		
<input type="text"/>		
Options		
<input type="checkbox"/> Clean <input type="checkbox"/> Delete <input type="checkbox"/> Track submodules <input type="checkbox"/> Update Revision on Launch <input type="checkbox"/> Allow Branch Override		
Save		Cancel

Details

Back to Projects		Details	Access	Notifications	Job Templates	Schedules
Last Job Status	Successful	Name	Database Management	Description	DB Administration jobs	
Organization	Operations	Source Control Type	Git	Source Control Revision	ace7398	
Source Control URL	https://github.com/ginigangadharan/ansible-database-demo	Cache Timeout	0 Seconds	Default Execution Environment	Default execution environment	
Project Base Path	/var/lib/awx/projects	Playbook Directory	_15_database_management	Created	6/5/2022, 10:38:54 AM by gineesh	
Last Modified	6/5/2022, 10:38:54 AM by gineesh					
Edit	Sync	Delete				

```
[ansible@ansible Chapter-12]$ cat hosts
[database]
node2 ansible_host=192.168.1.122
```

Inventories

Create new inventory

Name *	Description	Organization *
Ansible Dev Lab		Security Ops
Instance Groups		
<input type="text"/>		
Variables		
<input type="radio"/> YAML <input type="radio"/> JSON <pre>1 ---</pre>		
Save		Cancel

Details

Ansible Dev Lab		Type	Inventory	Organization	Security Ops
Name	Ansible Dev Lab				
Variables	YAML JSON	<pre>1 ---</pre>			
Created	6/4/2022, 5:50:48 PM by gineesh	Last Modified	6/4/2022, 5:50:48 PM by gineesh	Edit	Delete

Create new group

Name *	Description
dbnodes	Database Server Host group
Variables	YAML JSON
<pre>1 ---</pre>	
Save	Cancel



dbnodes		Description	Hosts
Name	dbnodes	Database Server Host group	
Variables	YAML JSON	<pre>1 ---</pre>	
Created	6/4/2022, 6:01:41 PM by gineesh	Last Modified	6/4/2022, 6:01:41 PM by gineesh
Edit	Delete		



Back to Groups Details Related Groups Hosts

Name Q Add ▾ Run Command Disassociate

Add existing host
Add new host

No Hosts Found

Please add Hosts to populate this list



Name * dbnode1 Description

Variables YAML JSON

```
1 ----  
2 ansible_host: 192.168.1.122
```

Save Cancel

Credentials

Create New Credential



Name * Ansible User SSH Credential Description SSH Key based access Organization Security Ops

Credential Type * Machine

Type Details

Username devops Password Prompt on launch

SSH Private Key

Drag a file here or browse to upload

```
-----BEGIN OPENSSH PRIVATE KEY-----  
b3BlnNzaClrZXktdjEAAAABG5vbmcUAAAAEb9uZQAAAAAAAAABAABlwAAAAdzc2gtcn  
NhAAAAAwEAAQAAAYEA4M6zyUOFaehRjuFIRIKUDc6UzsJfqUv/cIXwao72PDjoHyTNnoP  
66XLmzLDAgpgj83hZstESlyB4sQJ6OUp5vVXBDX6GSJx2+CEJkatAEzohtZ4slgyQfxKICJ  
v92Dj7fmcT4olGv4kL3PAeBaixrwRklgfRmRODjzxZPrHwq5g65SPtpIAxkSd8SqjMaI+9
```

Private Key Passphrase	<input type="checkbox"/> Prompt on launch	Privilege Escalation Method 	Privilege Escalation Username
<input type="text"/>		<input type="text"/>	
Privilege Escalation Password	<input type="checkbox"/> Prompt on launch		
<input type="text"/>			

Credentials > Ansible User SSH Credential
Edit Details

Name *	Description	Organization
<input type="text"/> Ansible User SSH Credential	<input type="text"/> SSH Key based access	<input type="text"/> Security Ops
Credential Type *		
<input type="text"/> Machine		
Type Details		
Username	Password	<input type="checkbox"/> Prompt on launch
<input type="text"/> ansible	<input type="text"/>	
SSH Private Key		
<input type="text"/> Drag a file here or browse to upload \$Encrypted\$ 		Browse... Clear

Blueprint Ansible Automation Platform

gineesh

Views		Templates		
Dashboard		Add job template		
Jobs		Delete		
Schedules				
Activity Stream				
Workflow Approvals				
Resources				
Templates				
Credentials				
Projects				
Inventories				
Hosts				
Access				
		<input type="text"/> Name  Add 		
		<input type="text"/> Name  Add 		
		<input type="text"/> Name  Add 		
		<input type="text"/> Name  Add 		
		<input type="text"/> Name  Add 		
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		<input type="text"/> Name Add		
		<input type="text"/> Name Add		

Templates

Create New Job Template

Name * PostgreSQL - Create Database and User Access

Description

Job Type * Run

Inventory * Ansible Dev Lab

Project * Database Management

Execution Environment * Default execution environment

Playbook * postgres-manage-database.yaml

Credentials * SSH:Ansible User SS...

Labels

Variables YAML JSON

```
1 ---  
2
```



```
# postgres-manage-database.yaml  
---  
- name: Managing PostgreSQL Database Server  
  hosts: "{{ NODES }}"  
  vars:  
    ansible_become_user: postgres  
    postgres_user: postgres  
    postgres_password: 'PassWord'  
    postgres_host: localhost  
    postgres_database: db_sales  
    postgres_table: demo_table  
    postgres_new_user_name: devteam  
    postgres_new_user_password: 'DevPassword'  
  tasks:  
    -
```

Templates > PostgreSQL - Create Database and User Access
Survey

< Back to Templates Details Access Notifications Schedules Jobs Survey

Add



No survey questions found.

Please add survey questions.



Add Question

Question *

Description

Answer variable name *

Answer type * Required

Multiple Choice Options *

dbnode1	<input checked="" type="checkbox"/>
dbnode2	<input checked="" type="checkbox"/>
dbnode3	<input checked="" type="checkbox"/>
dbnodes	<input checked="" type="checkbox"/>

Type answer then click checkbox on right to select answer as default.
Press 'Enter' to add more answer choices. One answer choice per line.

Save **Cancel**



Add **Edit Order** **Delete** **Survey Enabled**

Name	Type	Default	Actions
<input type="checkbox"/> Database Node(s) *	multiselect		
<input type="checkbox"/> PostgreSQL Admin User *	text		
<input type="checkbox"/> PostgreSQL Admin Password *	password	ENCRYPTED	
<input type="checkbox"/> Database Name *	text		
<input type="checkbox"/> Table Name to Create *	text		
<input type="checkbox"/> New Database Username to Create *	text		
<input type="checkbox"/> Password for New Database User *	password	ENCRYPTED	

PostgreSQL - Create Database and User Access

Description

Job Type * Run

Inventory * Ansible Dev Lab

Project * Database Management

Execution Environment * Default execution environment

Playbook * postgres-manage-database.yaml

Credentials * SSH: Ansible User SS...

Labels

Variables

YAML JSON

```
1 ---  
2 ansible_become_user: postgres  
3 postgres_host: localhost
```

Templates

Name	Type	Last Ran	Actions
PostgreSQL - Create Database and User Access	Job Template	6/5/2022, 11:40:38 AM	Launch Template Edit Delete

Launch | PostgreSQL - Create Database and User Access

1 Survey

2 Preview

Database Node(s) *
dbnode1

PostgreSQL Admin User *
postgres

PostgreSQL Admin Password *

Database Name *
hr_db

Table Name to Create *
employees

New Database Username to Create *
devteam

Password for New Database User *

Next **Back** **Cancel**

Launch | PostgreSQL - Create Database and User Access

1 Survey

2 Preview

Playbook	postgres-manage-database.yaml	Forks	0	Verbosity	0 (Normal)
Show Changes	Off	Job Slicing	1		
Credentials	SSH: Ansible User SSH ls				
Created	6/5/2022, 11:02:44 AM by gineesh	Last Modified	6/5/2022, 11:36:35 AM by gineesh		

Prompted Values

Variables **YAML** **JSON**

```

1 -> NODES:
2   - dbnode1
3 postgres_user: postgres
4 postgres_password: *****
5 postgres_database: hr_db

```

Launch **Back** **Cancel**

Output

Back to Jobs Details Output

PostgreSQL - Create Database and User Access

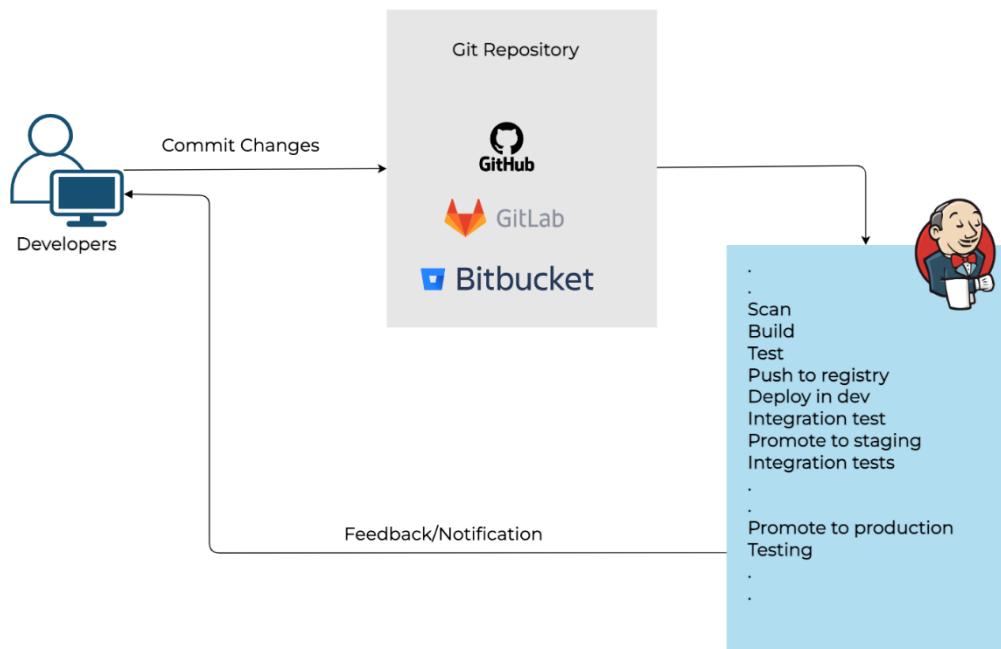
Plays 1 Tasks 4 Hosts 1 Elapsed 00:00:09

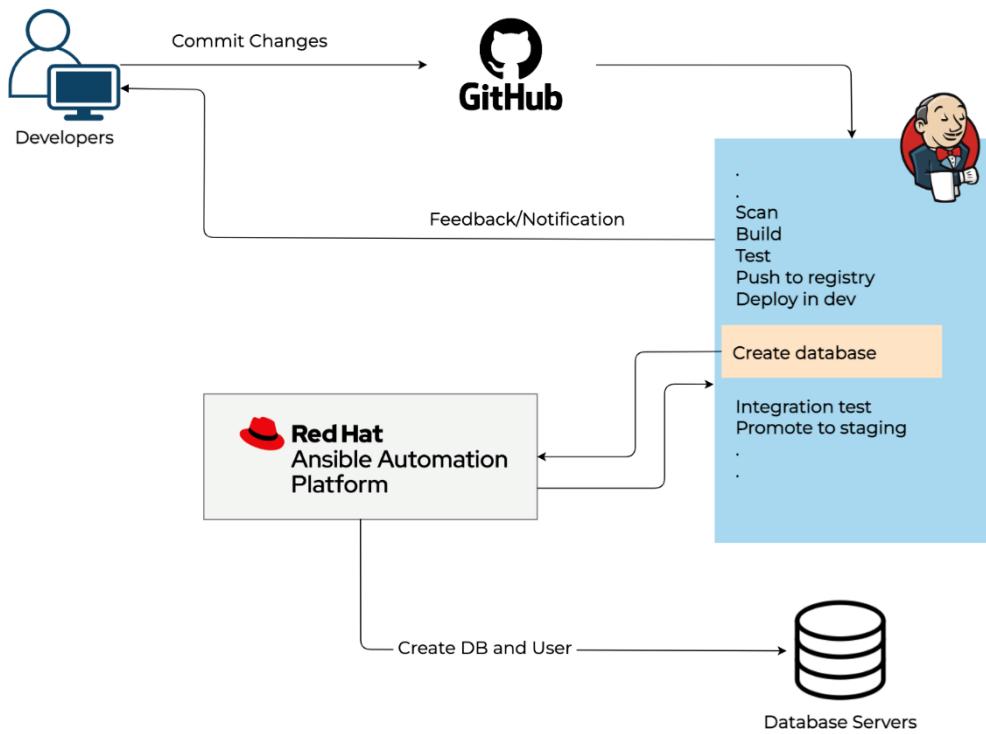
Stdout ▾ Q

```

0 Identity added: /runner/artifacts/57/ssh_key_data (ansible@ansible-controlnode)
1
2 PLAY [Deploying PostgreSQL Database Server] *****
3
4 TASK [Gathering Facts] *****
5 ok: [dbnode1]
6
7 TASK [Create a new database] *****
8 changed: [dbnode1]
9
10 TASK [Create table with few columns] *****
11 changed: [dbnode1]
12
13 TASK [Create user and grant access to database] *****
14 changed: [dbnode1]
15
16 PLAY RECAP *****
17 dbnode1 : ok=4    changed=3   unreachable=0   failed=0    skipped=0   rescued=0   ignored=0
18

```





Jenkins Plugin Manager interface showing the Ansible Tower plugin installed:

- Dashboard > Plugin Manager
- Plugin Manager search bar: Ansible Tower
- Installed tab selected.
- Ansible Tower Plugin 0.16.0 listed as Enabled.

Ansible Tower configuration for Tower Installation:

- Name: AAP-Demo
- URL: https://192.168.1.103/
- Credentials: admin/*********
- Force Trust Cert:
- Enable Debugging:
- Test Connection button
- Save and Apply buttons

Branch Sources

Git X

Project Repository ?

`https://github.com/ginigangadharan/nodejs-todo-demo-app`

Credentials ?

- none -  Add ▾

Behaviours

Scan Multibranch Pipeline Triggers

Periodically if not otherwise run ?

Interval ?

1 minute

```
● ● ●

pipeline {
    agent any

    environment {
        // Git Repo
        GIT_URL = "https://github.com/ginigangadharan/nodejs-todo-demo-app"
        // Database variables
        DATABASE_SERVER = "dbnode1"
        POSTGRES_USER = "postgres"
        POSTGRES_PASSWORD = "PassWord"
        POSTGRES_DATABASE = "app2_db"
        POSTGRES_TABLE = "data_table"
        POSTGRES_NEW_USER_NAME = "devteam"
        POSTGRES_NEW_USER_PASSWORD = "DevPassword"
    }
    .
    .
}
```

```
● ● ●

stage("Creating Database") {
    steps {
        echo "Create database and user access using Ansible Automation Controller"
        script {
            // Trigger Ansible controller job
            ansible_controller_job();
        }
    }
}
```

```

def ansible_controller_job(){
    ansibleTower(
        towerServer: 'AAP-Demo',
        templateType: 'job',
        jobTemplate: 'PostgreSQL - Create Database and User Access',
        importTowerLogs: true,
        inventory: 'Ansible Dev Lab',
        jobTags: '',
        skipJobTags: '',
        limit: '',
        removeColor: false,
        verbose: true,
        credential: '',

        extraVars: '''--nodes $DATABASE_SERVER
                    --postgres-user $POSTGRES_USER
                    --postgres-password $POSTGRES_PASSWORD
                    --postgres-database $POSTGRES_DATABASE
                    --postgres-table $POSTGRES_TABLE
                    --postgres-new-user-name $POSTGRES_NEW_USER_NAME
                    --postgres-new-user-password $POSTGRES_NEW_USER_PASSWORD
                    ...
                ''')
}

```

Jenkins

Dashboard > To-Do App Deployment > main >

Status

Up

Changes

Build Now

View Configuration

Full Stage View

Pipeline Syntax

Build History trend ▾

Filter builds...

#27 Jun 05 1 1428 commit

#26 Jun 05 No Changes 1422

#25 Jun 05 1 1338 commit

#24 Jun 2022, 06:28

#26 Jun 2022, 06:22

#25 Jun 2022, 05:38

#24 Jun 2022, 05:37

#23 Jun 2022, 05:36

#22 Jun 2022, 05:35

Pipeline main

Full project name: To-Do App Deployment/main

Recent Changes

Stage View

Average stage times: (Average full run time: ~19s)	Declarative: Checkout SCM	Git Checkout	Build	Unit Test	Integration Test	Creating Database	Deploy
#27 Jun 05 1 1428 commit	892ms	808ms	93ms	145ms	132ms	14s	77ms
#26 Jun 05 No Changes 1422	831ms	860ms	115ms	173ms	155ms	14s	77ms
#25 Jun 05 1 1338 commit	772ms	792ms	51ms	114ms	99ms	15s	90ms

Dashboard > To-Do App Deployment > main > #27

```

Create database and user access using Ansible Automation Controller
[Pipeline] script
[Pipeline] {
[Pipeline] ansibleTower
Beginning Ansible Tower Run on AAP-Demo
Expanded extra vars to ---
    NODES: ["dbnode1"]
    postgres_user: "postgres"
    postgres_password: "PassWord"
    postgres_database: "app2_db"
    postgres_table: "data_table"
    postgres_new_user_name: "devteam"
    postgres_new_user_password: "DevPassword"

[WARNING]: Job type defined but prompt for job type on launch is not set in tower job
[WARNING]: Extra variables defined but prompt for variables on launch is not set in tower job
[WARNING]: Inventory defined but prompt for inventory on launch is not set in tower job
Requesting tower to run job template PostgreSQL - Create Database and User Access
Template Job URL: https://192.168.1.103/#/jobs/66
Identity added: /runner/artifacts/66/.ssh/key_data (ansible@ansible-controlnode)

PLAY [Deploying PostgreSQL Database Server] *****

TASK [Gathering Facts] *****
{0;32mok: [dbnode1] {0m

TASK [Create a new database] *****
{0;32mok: [dbnode1] {0m

TASK [Create table with few columns] *****
{0;32mok: [dbnode1] {0m

TASK [Create user and grant access to database] *****
{0;32mok: [dbnode1] {0m

PLAY RECAP *****
{0;32mok: [dbnode1] {0m
Tower completed the requested job

```

Notification Templates

Create New Notification Template

Name *	Description	Organization *
DB Notification Email		Security Ops
Type *		
E-mail		
Type Details		
Username	Password	Host *
ansible-automation@example.com	*****	smtp.example.com
Recipient list * ⓘ	Sender e-mail *	Port *
dba@example.com	ansible-automation@example.com	587
Timeout * ⓘ	E-mail options	
60	<input type="checkbox"/> Use SSL	<input type="checkbox"/> Use TLS
<input checked="" type="checkbox"/> Customize messages...		
<input type="button" value="Save"/> <input type="button" value="Cancel"/>		

Templates > PostgreSQL - Create Database and User Access

Notifications

Back to Templates Details Access Notifications Schedules Jobs Survey					
Name	Q	1-1 of 1			
Name ↑	Type ⓘ	Options			
DB Notification Email	Email	<input type="checkbox"/> Start	<input checked="" type="checkbox"/> Success	<input type="checkbox"/> Failure	
1-1 of 1 items ▾ << < 1 of 1 page > >>					

Job #67 'PostgreSQL - Create Database and User Access' successful: <https://towerhost/#/jobs/playbook/67> 

 [Inbox](#) 

ansible-automation@example.com
to me 

15:52 (3 minutes ago)   

Job #67 had status successful, view details at <https://towerhost/#/jobs/playbook/67>

```
{  
    "id": 67,  
    "name": "PostgreSQL - Create Database and User Access",  
    "url": "https://towerhost/#/jobs/playbook/67",  
    "created_by": "admin",  
    "started": "2022-06-05T07:52:00.534533+00:00",  
    "finished": "2022-06-05T07:52:09.030926+00:00",  
    "status": "successful",  
    "traceback": "",  
    "inventory": "Ansible Dev Lab",  
    "project": "Database Management",  
    "playbook": "postgres-manage-database.yaml",  
    "credential": "Ansible User SSH Credential",  
    "limit": "",  
    "extra_vars": {"\"ansible_become_user\": \"postgres\", \"postgres_host\": \"localhost\", \"postgres_user\": \"postgres\", \"postgres_password\": \"$encrypted$\", \"postgres_database\": \"app2_db\", \"postgres_table\": \"data_table\", \"postgres_new_user_name\": \"devteam\", \"postgres_new_user_password\": \"$encrypted$\", \"NODES\": [\"dbnode1\"]}",  
    "hosts": {  
        "dbnode1": {  
            "failed": false,  
            "changed": 0,  
            "dark": 0,  
            "failures": 0,  
            "ok": 4,  
            "processed": 1,  
            "skipped": 0,  
            "rescued": 0,  
            "ignored": 0  
        }  
    }  
}
```

 Reply  Forward

 Customize messages...

Use custom messages to change the content of notifications sent when a job starts, succeeds, or fails. Use curly braces to access information about the job: {{ job_friendly_name }}, {{ url }}, {{ job.status }}. You may apply a number of possible variables in the message. For more information, refer to the [Ansible Tower Documentation](#).

Start message

```
1 {{ job_friendly_name }} #{{ job.id }} '{{ job.name }}' {{ job.status }}: {{ url }}
```

Start message body

```
1 {{ job_friendly_name }} #{{ job.id }} had status {{ job.status }}, view details at {{ url }}  
2  
3 {{ job_metadata }}
```

Success message

```
1 {{ job_friendly_name }} #{{ job.id }} '{{ job.name }}' {{ job.status }}: {{ url }}
```

Success message body

```
1 {{ job_friendly_name }} #{{ job.id }} had status {{ job.status }}, view details at {{ url }}  
2  
3 {{ job_metadata }}
```



Tutorials

- Publish interactive notifications**
- Post messages on a schedule**
- Collecting product feedback**
- Responding to app mentions**
- Hello World Slack app using Bolt**
- How to quickly get and use a Slack API token**

OAuth & Permissions

Settings

- Basic Information
- Collaborators**
- Socket Mode
- Install App
- Manage Distribution

Features

- App Home
- Org Level Apps
- Incoming Webhooks
- Interactivity & Shortcuts
- Slash Commands
- Workflow Steps
- OAuth & Permissions**
- Event Subscriptions
- User ID Translation
- App Manifest NEW
- Beta Features

Advanced token security via token rotation

Recommended for developers building on or for security-minded organizations – opting into token rotation allows app tokens to automatically expire after they're issued within your app code. [View documentation.](#)

Opt In

OAuth Tokens for Your Workspace

These tokens were automatically generated when you installed the app to your team. You can use these to authenticate your app. [Learn more.](#)

Bot User OAuth Token

vWL

Access Level: Workspace

Reinstall to Workspace

Copy

Notification Templates

Create New Notification Template

Name *: DB Notifications to Slack

Description: Database Operations

Organization *: Security Ops

Type *: Slack

Type Details

Destination channels *: #database-operations

Token *:

Notification color:

Customize messages...

Save **Cancel**

Templates > PostgreSQL - Create Database and User Access

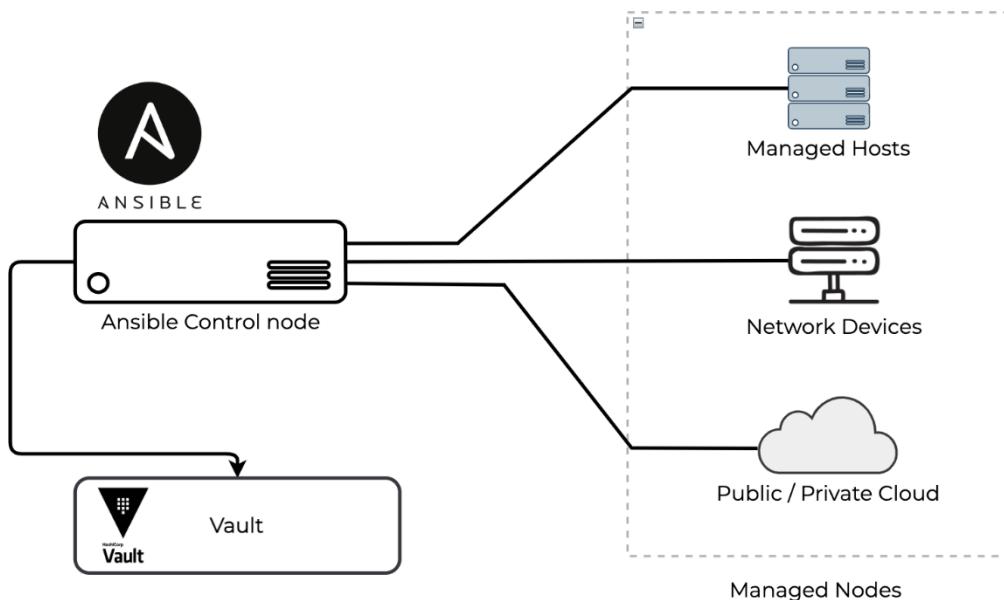
Notifications

Notifications		
Name	Type	Options
DB Notification Email	Email	<input type="checkbox"/> Start <input checked="" type="checkbox"/> Success <input type="checkbox"/> Failure
DB Notifications to Slack	Slack	<input checked="" type="checkbox"/> Start <input checked="" type="checkbox"/> Success <input checked="" type="checkbox"/> Failure

database-operations

- + Add a bookmark
 - Job #73 'List to String' successful: <https://aap.example.com/#/jobs/playbook/73> Today
 - Job #74 'List to String' running: <https://aap.example.com/#/jobs/playbook/74>
 - Job #74 'List to String' successful: <https://aap.example.com/#/jobs/playbook/74>
 - Job #75 'PostgreSQL - Create Database and User Access' running: <https://aap.example.com/#/jobs/playbook/75>
 - Job #75 'PostgreSQL - Create Database and User Access' successful: <https://aap.example.com/#/jobs/playbook/75>
 - Job #76 'PostgreSQL - Create Database and User Access' running: <https://aap.example.com/#/jobs/playbook/76>
 - Job #76 'PostgreSQL - Create Database and User Access' successful: <https://aap.example.com/#/jobs/playbook/76>
- ansible-automation APP 6:12 PM
 - Job #77 'PostgreSQL - Create Database and User Access' running: <https://aap.example.com/#/jobs/playbook/77>
 - Job #77 'PostgreSQL - Create Database and User Access' successful: <https://aap.example.com/#/jobs/playbook/77>

Chapter 13: Using Ansible for Secret Management



```
# Fetching database password from Hashicorp vault using hashi_vault lookup
- ansible.builtin.debug:
  msg: "{{ lookup('community.hashi_vault.hashi_vault', 'secret=dbpass:value token=c975b780-d1be-8016-866b-01d0f9b688a5 url=http://myvault:8200') }}"

# Fetching secret from AWS Secret manager using aws_secret lookup
- name: lookup secretsmanager secret in the current region
  debug: msg="{{ lookup('amazon.aws.aws_secret', '/path/to/secrets', bypass=true) }}"
```

```
---
- name: Accepting sensitive data using prompts
  hosts: node1
  gather_facts: no

  vars_prompt:
    - name: database_username
      prompt: Enter your username
      private: no

    - name: database_password
      prompt: Enter your password

  tasks:
    - name: Print a message
      ansible.builtin.debug:
        msg: 'Login to database as {{ database_username }}'
```

```

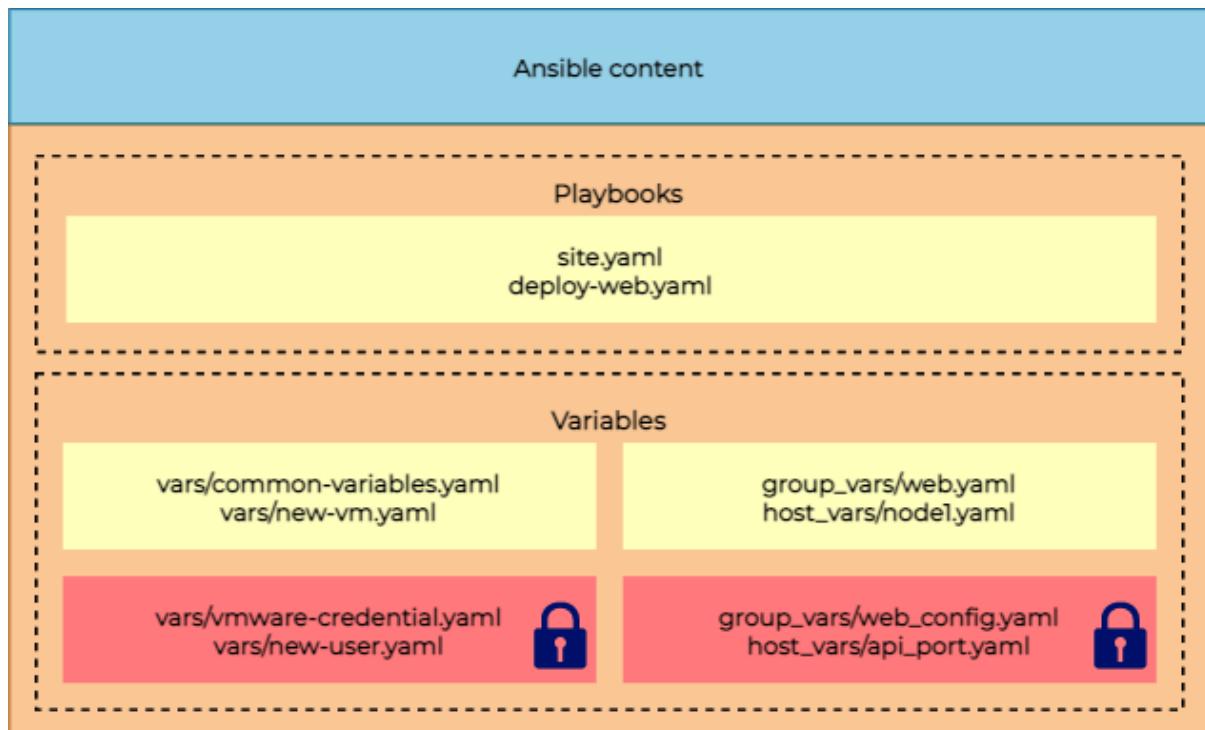
● ● ●

[ansible@ansible Chapter-13]$ ansible-playbook prompt.yaml
Enter your username: dbadmin
Enter your password:

PLAY [Accepting sensitive data using prompts] ****
TASK [Print a message] ****
ok: [node1] => {
    "msg": "Login to database as dbadmin"
}

PLAY RECAP ****
node1 : ok=1    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0

```



```

● ● ●

[ansible@ansible Chapter-13]$ ansible-vault create vars/cloud-credential.yaml
New Vault password:
Confirm New Vault password:

```

```
● ● ●
cloud_username: myusername
cloud_password: mysecretpassword
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
:
:wq
```

```
[ansible@ansible Chapter-13]$ cat vars/cloud-credential.yaml
$ANSIBLE_VAULT;1.1;AES256
6633663735323933738323435656233623865363461343234623339646535626537623762633132
3833366432313965336566663864356662393030643238320a306630373264663164346235643137
61303830353863363034623638383235376465346133383635653433666461666131393736316437
6265646630653437300a30653364333313735626534396437363337636537343936666263353530
363663626263373066613464386336316234623966383966623730363037613763333438366463
66356313035333163323938333635323533036326326530363332356235373936376462326365
643266663335343966616431613633373838
```

```
[ansible@ansible Chapter-13]$ cat vars/dbdetails.yaml
database_username: dbadmin
database_password: dbPassword
database_port: 5432
```

```
[ansible@ansible Chapter-13]$ ansible-vault encrypt vars/dbdetails.yaml
New Vault password:
Confirm New Vault password:
Encryption successful
```

```
[ansible@ansible Chapter-13]$ cat vars/dbdetails.yaml
$ANSIBLE_VAULT;1.1;AES256
39623133643337646637373132653835303939333737653361623132326336643237633466356665
363164626435336337336562643238366306637636362300a613035646533333631643835613463
653336437363764326130313638333663265383539383636656339356366613334373931366431
6266366132336561640a656330376461323831363533363237356335663239373733313133316563
33613536646363633861336232663964653035376635666461353363343936633566613862316462
643431353035613736646330623086235656566634303734623735623161626236393338373434
6463666661383037626666336438636435663339633930343353164336238663666346162343261
32633832323273633373636613331613261313462653673430326333238343366303538626362
3330
```

```
[ansible@ansible Chapter-13]$ ansible-vault create --vault-id mysecret@prompt vars/secret-with-id.yaml  
New vault password (mysecret):  
Confirm new vault password (mysecret):
```

```
[ansible@ansible Chapter-13]$ cat vars/secret-with-id.yaml
$ANSIBLE_VAULT;1.2;AES256;mysecret
3433623062663934623464393135643332323761326163623953432339303135633239323133
33356463613134564536256166656262323765373461380a3264316463188333663323383366
316533303165383936646330313664636613239642653030363565439393633330366263663933
6163626332653366340a65663430616162303535353966666533365366132666135386330343939
31623130326463366333346332363031366237376163613534386237363737366431
```

```
# ansible.cfg
[defaults]
.
.
.
vault_identity_list = inline@~/ansible/.vault_pass , files@~/ansible/.secret_pass
```

```
[ansible@ansible Chapter-13]$ ansible-vault view vars/dbdetails.yaml
Vault password:
database_username: dbadmin
database_password: dbPassWord
database_port: 5432
```

```
[ansible@ansible Chapter-13]$ ansible-vault edit vars/dbdetails.yaml  
Vault password:
```

```
database_username: dbadmin
database_password: dbPassWord
database_port: 5432
database_ha: true

~  
~  
~  
~  
~  
~  
~  
~  
~  
~
```

```
[ansible@ansible Chapter-13]$ ansible-vault decrypt vars/dbdetails.yaml
Vault password:
Decryption successful
```

```
[ansible@ansible Chapter-13]$ cat vars/dbdetails.yaml
database_username: dbadmin
database_password: dbPassword
database_port: 5432
database_ha: true
```

```
[ansible@ansible Chapter-13]$ ansible-vault rekey vars/cloud-credential.yaml
Vault password:
New Vault password:
Confirm New Vault password:
Rekey successful
```

```
[ansible@ansible Chapter-13]$ ansible-vault encrypt_string mysecretpassword --name password
New Vault password:
Confirm New Vault password:
password: !vault |
$ANSIBLE_VAULT;1.1;AES256
66656431373962663439343661653962633563336663396166393765376239653539386364643037
39633438613838316231323432626364633636363136610a393361303835316636393139666637
393166623438336233323537386161623036353335630663466623466356333765616365396431
3734646465376232630a39323130393562333731383364653939387396265363032613063636535
6435363035336637323935383430333326466613334336262323261363832396636
Encryption successful
```

```
[ansible@ansible Chapter-13]$ ansible-vault encrypt_string --name password
New Vault password:
Confirm New Vault password:
Reading plaintext input from stdin. (ctrl-d to end input, twice if your content does not already have a newline)
this is a secret strng typed frm input.
!vault |
$ANSIBLE_VAULT;1.1;AES256
36646133396137623861373033633330313734666433663636373066306566303334366531303238
3064363362633663373633343437653864343932646264610a333136336461386635363965376164
3362653938366237643439376364636363383133613439376664633663633431393261643236
393436624376466640a62636133356232353831663833663563353963633731343030762383035
66623038663364636664363637326437613961656361646334373238626366376662393039636366
386564643963616335653830323203739366133386434653138
Encryption successful
```

```

● ● ●

---  

## Chapter-13/encrypted-string-playbook.yaml  

- name: Using encrypted variables  

  hosts: node1  

  vars:  

    password: !vault |  

      $ANSIBLE_VAULT;1.1;AES256  

      623863616565326432623363633630326266373866313461343938398326335336237303463  

      613832303837366564316430353134331366232663666350a643362323264373532393036323361  

      31393332613566303064343631363035323531653034363236356432373863353266623535930  

      3466663030386634300a633334386439656530663431343237626534623137326465363665643034  

      64663932363236363939373561643739663339373139356539373032643565326233  

  tasks:  

- name: Print a message  

  ansible.builtin.debug:  

  msg: 'Password is: {{ password }}'

```

```

● ● ●

userlist:  

john:  

  username: john  

  password: StrongPassword  

leena:  

  username: leena  

  password: AnotherPassWord

```

```

[ansible@ansible Chapter-13]$ cat vars/users.yaml  

$ANSIBLE_VAULT;1.1;AES256  

3366613236376430346139306362320653162613936373061663432643535636435383766383561  

342353431663666323438383731396636623036373233300a35373434313733366666133373632  

32373865336266616235376461643130626234313731376234343032353334373839333934363263  

3639663461663764310a646362313031313633653166333361633636613166343939353933643938  

3443237335306466636356436353363139363732396162303063306365313462313034366230  

37313438393861616333633264633063636231343136373863333373461316532356566316131  

3235396364303303266353662366133303432393563323139633033333332303134626163366364  

646164323232396139343937316530636433326361376531356136653635633263363230303330  

3534373538653866637306662323039333838656232333635343637326134663430626232653731  

64343837643433623234633738356636316439633932346133376531333938393865343364303434  

393163396339616363666134353864636635

```

```

● ● ●

# Chapter-13/manage-user.yaml  

- name: Creating Linux Users  

  hosts: node1  

  become: true  

  gather_facts: false  

  vars:  

    new_group: admins  

  vars_files:  

    - vars/users.yaml  

  tasks:

```

```
# Chapter-13/manage-user.yaml

- name: Create new group
  ansible.builtin.group:
    name: "{{ new_group }}"
    state: present
- name: Add the user
  ansible.builtin.user:
    name: "{{ item.value.username }}"
    password: "{{ item.value.password | password_hash('sha256') }}"
    shell: /bin/bash
    groups: admins
    append: yes
  loop: "{{ lookup('dict', userlist, wantlist=True) }}"
```

```
[ansible@ansible Chapter-13]$ ansible-playbook manage-user.yaml
ERROR! Attempting to decrypt but no vault secrets found
```

```
[ansible@ansible Chapter-13]$ ansible-playbook manage-user.yaml --ask-vault-password
Vault password:

PLAY [Creating Linux Users] ****

TASK [Create new group] ****
ok: [node1]

TASK [Add the user] ****
changed: [node1] => (item={'key': 'john', 'value': {'username': 'john', 'password': 'StrongPassword'}})
changed: [node1] => (item={'key': 'leena', 'value': {'username': 'leena', 'password': 'AnotherPassWord'}})

PLAY RECAP ****
node1 : ok=2    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

```
[ansible@ansible Chapter-13]$ ansible node1 -m shell -a "cat /etc/passwd |tail -2"
node1 | CHANGED | rc=0 >>
john:x:1003:1004::/home/john:/bin/bash
leena:x:1004:1005::/home/leena:/bin/bash
```

```
[ansible@ansible Chapter-13]$ echo "MyVaultSecret" > ~/.vault-secret
[ansible@ansible Chapter-13]$ cat ~/.vault-secret
MyVaultSecret
```

```
[ansible@ansible Chapter-13]$ ansible-playbook manage-user.yaml --vault-password-file ~/.vault-secret
PLAY [Creating Linux Users] *****

TASK [Create new group] *****
ok: [node1]

TASK [Add the user] *****
changed: [node1] => (item={'key': 'john', 'value': {'username': 'john', 'password': 'StrongPassword'}})
changed: [node1] => (item={'key': 'leena', 'value': {'username': 'leena', 'password': 'AnotherPassWord'}})

PLAY RECAP *****
node1 : ok=2    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

```
[ansible@ansible Chapter-13]$ ansible-playbook manage-user.yaml --ask-vault-password
Vault password:

PLAY [Creating Linux Users] *****

TASK [Create new group] *****
ok: [node1]

TASK [Add the user] *****
changed: [node1] => (item={'key': 'john', 'value': {'username': 'john', 'password': 'StrongPassword'}})
changed: [node1] => (item={'key': 'leena', 'value': {'username': 'leena', 'password': 'AnotherPassWord'}})

PLAY RECAP *****
node1 : ok=2    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

```
# Chapter-13/manage-user.yaml...
- name: Add the user
  ansible.builtin.user:
    name: "{{ item.value.username }}"
    password: "{{ item.value.password | password_hash('sha256') }}"
    shell: /bin/bash
    groups: admins
    append: yes
  loop: "{{ lookup('dict', userlist, wantlist=True) }}"
  no_log: True
```

```
[ansible@ansible Chapter-13]$ ansible-playbook manage-user.yaml --vault-password-file ~/.vault-secret
PLAY [Creating Linux Users] *****

TASK [Create new group] *****
ok: [node1]

TASK [Add the user] *****
changed: [node1] => (item=None)
changed: [node1] => (item=None)
changed: [node1]

PLAY RECAP *****
node1 : ok=2    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

```

ased,publickey -o PasswordAuthentication=no -o 'User="devops"' -o ConnectTimeout=10 -o
ControlPath=/home/ansible/.ansible/cp/0726bd8bd1 192.168.56.25 '/bin/sh -c '""'rm -f -r
/home/devops/.ansible/tmp/ansible-tmp-1658050078.9681451-9038-50587566300946/ > /dev/null 2>&1 && sleep 0'"""
<192.168.56.25> rc=0, stdout and stderr censored due to no log
changed: [node1] => (item=None) => {
    "censored": "the output has been hidden due to the fact that 'no_log: true' was specified for this result",
    "changed": true
}
changed: [node1] => {
    "censored": "the output has been hidden due to the fact that 'no_log: true' was specified for this result",
    "changed": true
}
}
Read vars_file 'vars/users.yaml'
META: ran handlers
Read vars_file 'vars/users.yaml'
META: ran handlers

PLAY RECAP ****
node1 : ok=2    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0

```

```

[ansible@ansible Chapter-13]$ mkdir -p group_vars/postgres/vault

[ansible@ansible Chapter-13]$ ansible-vault create group_vars/postgres/vault/dbuser.yaml
New Vault password:
Confirm New Vault password:

```

```

[ansible@ansible Chapter-13]$ cat group_vars/postgres/vault/dbuser.yaml
$ANSIBLE_VAULT;1.1;AES256
39393133613930333734653061653237326639306664323631623431663265316162636331396461
3334383863303133306536323266396439393365313164610a333030333661316230643862313237
33623262316432633366323430653639666262656630326338633731353231643961336236373136
6163306561646362360a653230333266393266653836343962383135633631646535613862306334
6565363131636666134373432306531393566383364643634373931373636383438383837373139
323836332316436383466313334666393139656464393861363735656263616238386431306436
65663735323435336335383932623437643437643232663030386634363738313832353537303562
3565666334643661303

```

```

# Chapter-13/postgres-create-dbuser.yaml
---
- name: Add new PostgreSQL Database user
  hosts: "{{ NODES }}"
  vars:
    ansible_become_user: postgres
    postgres_user: postgres
    #postgres_password: moved to Vault file
    postgres_host: localhost
    postgres_database: db_sales
    postgres_table: demo_table
  tasks:

```

```
# Chapter-13/postgres-create-dbuser.yaml...

- name: Create user and grant access to database
  community.postgresql.postgresql_user:
    login_user: "{{ postgres_user }}"
    login_password: "{{ postgres_password }}"
    login_host: "{{ postgres_host }}"
    db: "{{ postgres_database }}"
    name: "{{ postgres_app_user_name }}"
    password: "{{ postgres_app_user_password }}"
    encrypted: yes
    priv: "CONNECT/{{ postgres_table }}:ALL"
    expires: "Dec 31 2022"
    comment: "Application user access"
    state: present
```

```
[ansible@ansible Chapter-13]$ ansible-playbook postgres-create-dbuser.yaml --vault-password-file ~/.vault-secret -e "NODES=postgres"

PLAY [Add new PostgreSQL Database user] ****
TASK [Gathering Facts] ****
ok: [node2]

TASK [Create user and grant access to database] ****
ok: [node2]

PLAY RECAP ****
node2 : ok=2    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

Credentials

Create New Credential



Name *	Description	Organization						
app-backend-vault	Vault password for backend app	<input type="button" value="Search"/> Security Ops						
Credential Type *	<input type="button" value="Vault"/>							
Type Details <table border="1"> <tr> <td>Vault Password *</td> <td><input type="checkbox"/> Prompt on launch</td> <td>Vault Identifier </td> </tr> <tr> <td></td> <td></td> <td> backend</td> </tr> </table>			Vault Password *	<input type="checkbox"/> Prompt on launch	Vault Identifier		backend
Vault Password *	<input type="checkbox"/> Prompt on launch	Vault Identifier						
.....		backend						
<input type="button" value="Save"/> <input type="button" value="Cancel"/>								

Select Credentials

You cannot select multiple vault credentials with the same vault ID. Doing so will automatically deselect the other with the same vault ID.

Selected Category: Vault

Selected: SSH: Demo Credential, Vault: app-backend-v...

Name	
app-backend-vault backend	<input checked="" type="checkbox"/>

1 of 1 page

Select Cancel

Templates > Deploy Backend App

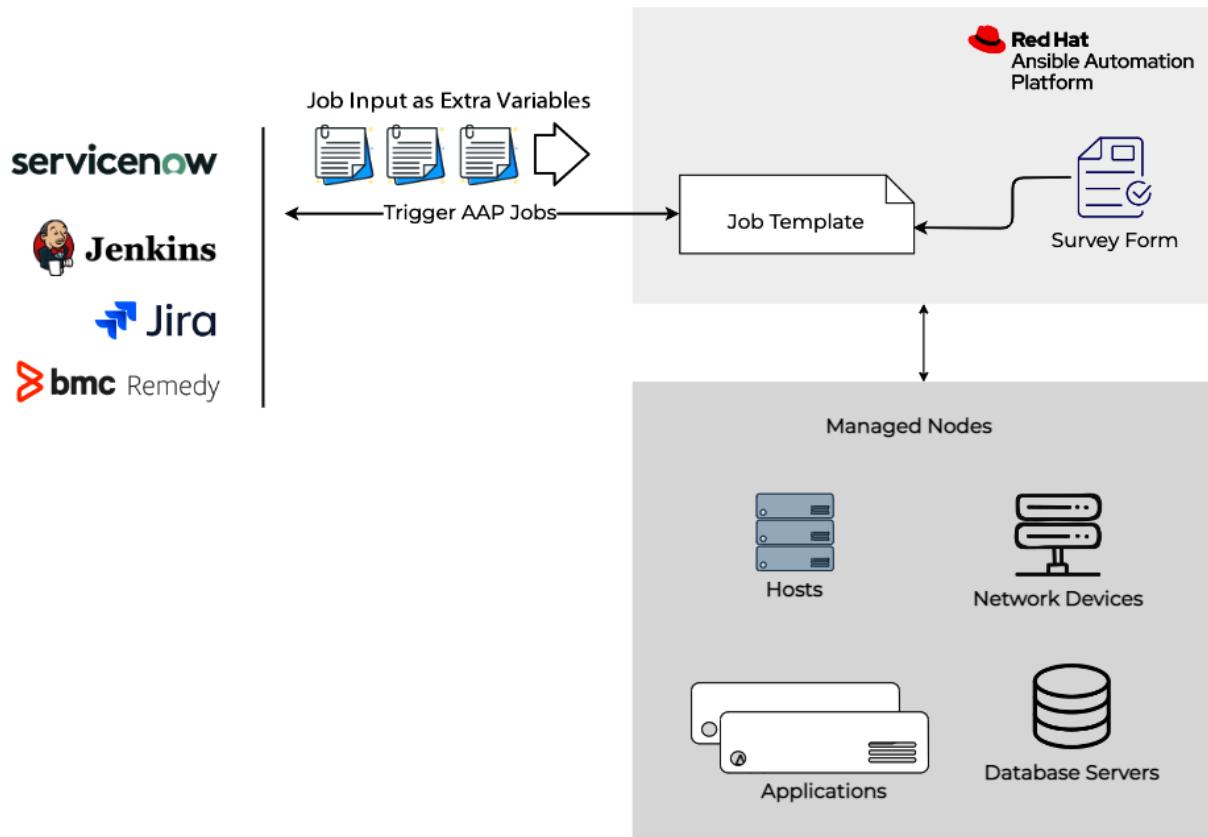
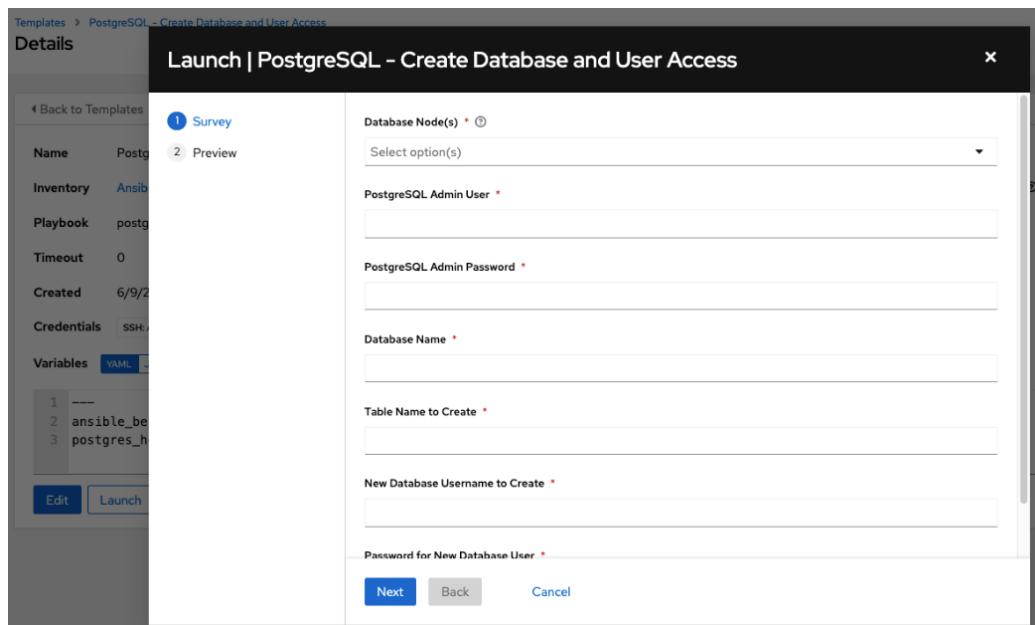
Edit Details

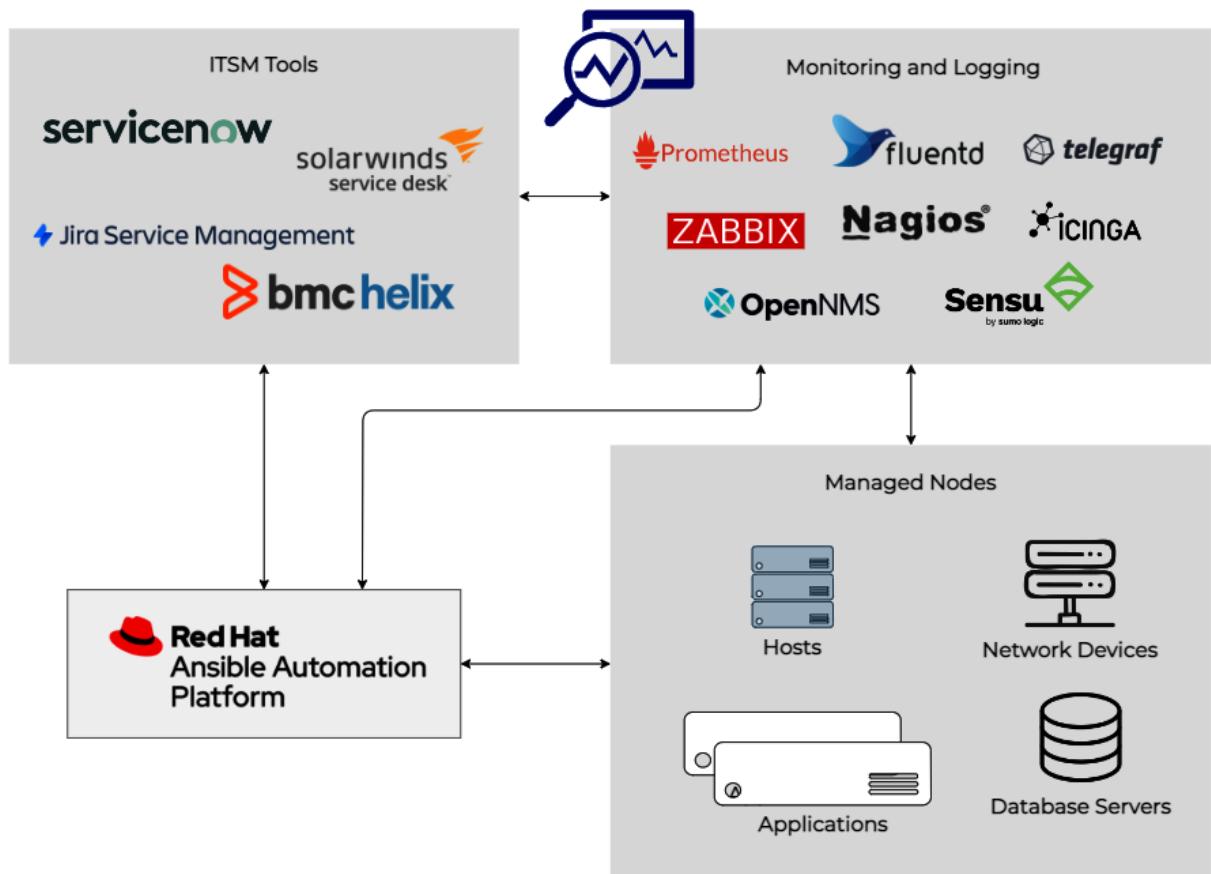
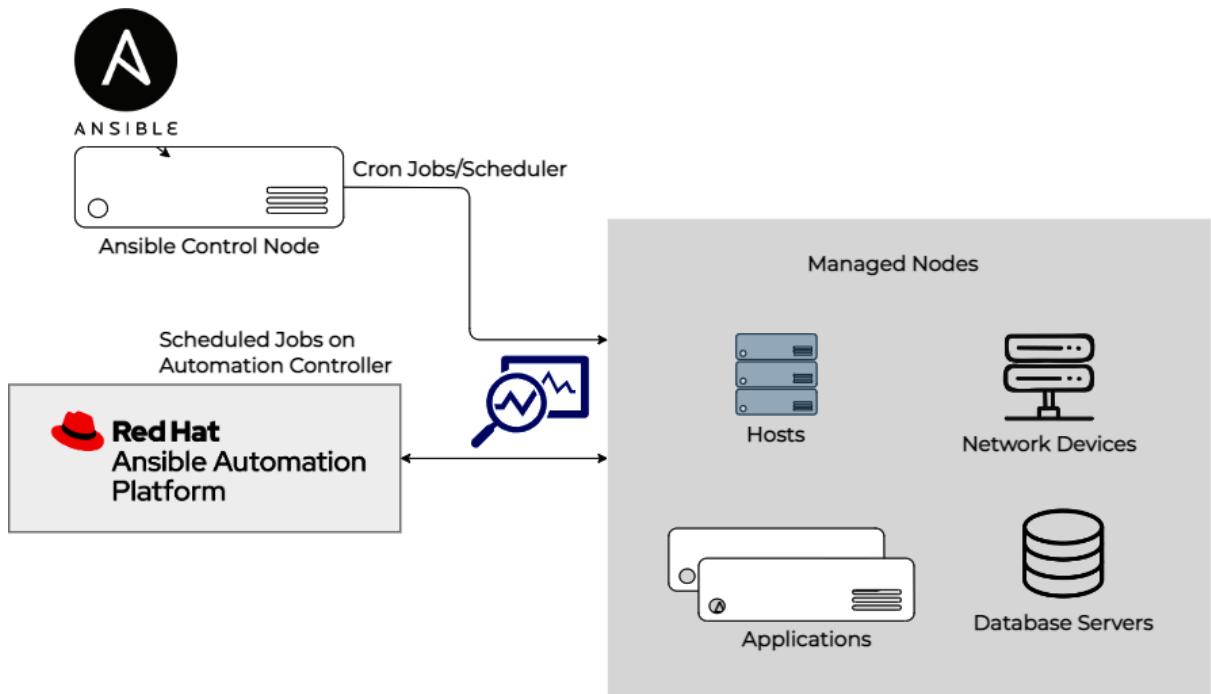
Name *	Description	Job Type * <input checked="" type="checkbox"/> Prompt on launch
Deploy Backend App	Backend App Deployment	Run
Inventory * <input checked="" type="checkbox"/> Prompt on launch	Project * <input checked="" type="checkbox"/> Execution Environment	
Demo Inventory	Security Automation	
Playbook * <input checked="" type="checkbox"/>	Ansible-AWS-Provisioning/aws-infr... <input checked="" type="checkbox"/> Prompt on launch	
Credentials <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Vault: app-backend-v... <input checked="" type="checkbox"/> SSH: Demo Credential	
Labels <input checked="" type="checkbox"/>		

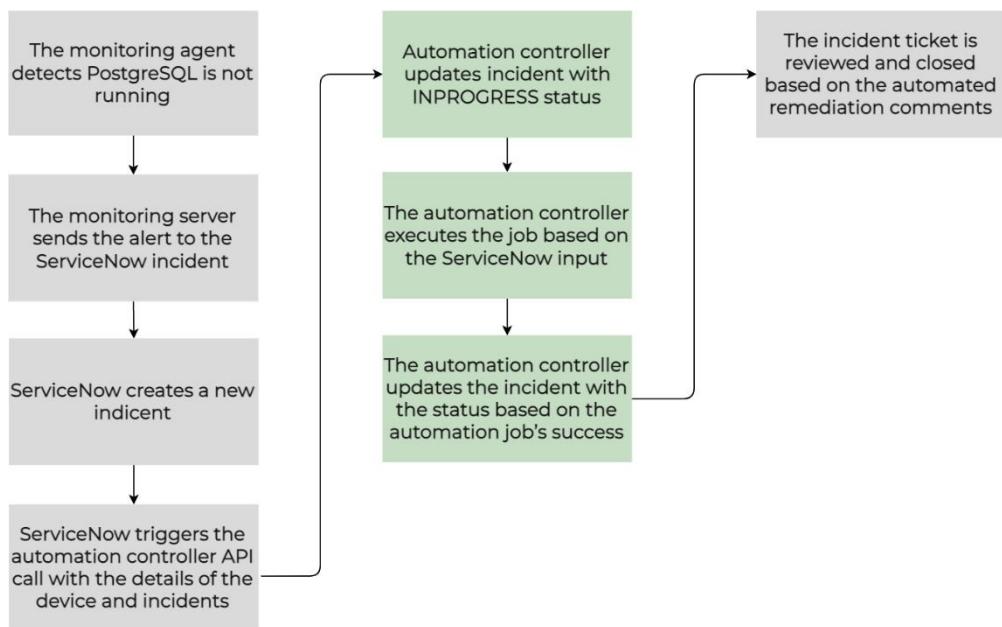
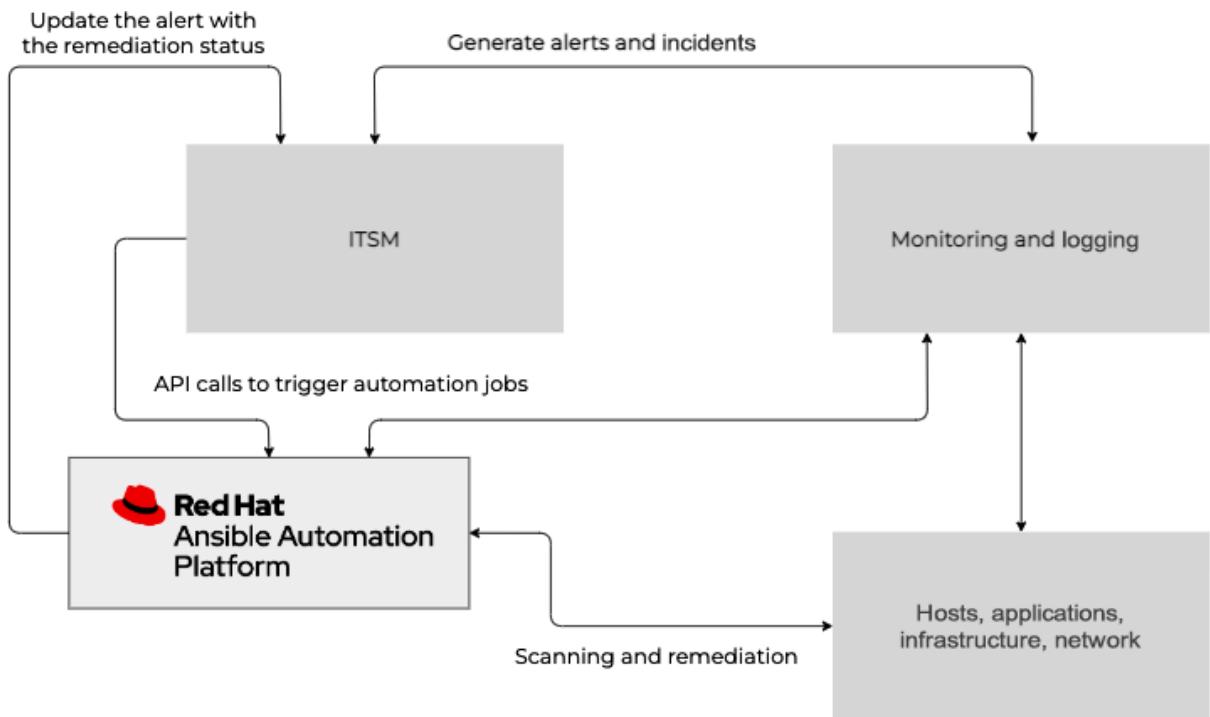


```
[ansible@ansible Chapter-13]$ ansible-vault view vars/dbdetails.yaml
Vault password:
database_username: dbadmin
database_password: dbPassword
database_port: 5432
```

Chapter 14: Keeping Automation Simple and Efficient







Templates

Name	Type	Last Ran	Actions
PostgreSQL - Service Start	Job Template	6/5/2022, 6:12:58 PM	



```
# postgresql-service-start.yaml
---
- name: Restarting PostgreSQL Database service
  hosts: "{{ NODES }}"
  vars:
    tasks:
      - name: Update ServiceNow incident as In progress
        servicenow.servicenow.snow_record:
          username: "{{ snow_username }}"
          password: "{{ snow_password }}"
          instance: "{{ snow_instance_name }}"
          state: present
          number: "{{ snow_incident_number }}"
          data:
            work_notes : "Updating PostgreSQL service"
            state: -3
```



```
- name: Start service postgresql, if not started
  ansible.builtin.service:
    name: postgresql
    state: started
    register: psql_service_status
```



```
- name: Update ServiceNOW incident
  servicenow.servicenow.snow_record:
    username: "{{ snow_username }}"
    password: "{{ snow_password }}"
    instance: "{{ snow_instance_name }}"
    state: present
    number: "{{ snow_incident_number }}"
    data:
      work_notes : "PostgreSQL Service has been started"
      state: 0
  when:
    - psql_service_status.state == 'started'
```

CIS WorkBench

Communities Benchmarks Tickets Downloads Support Center

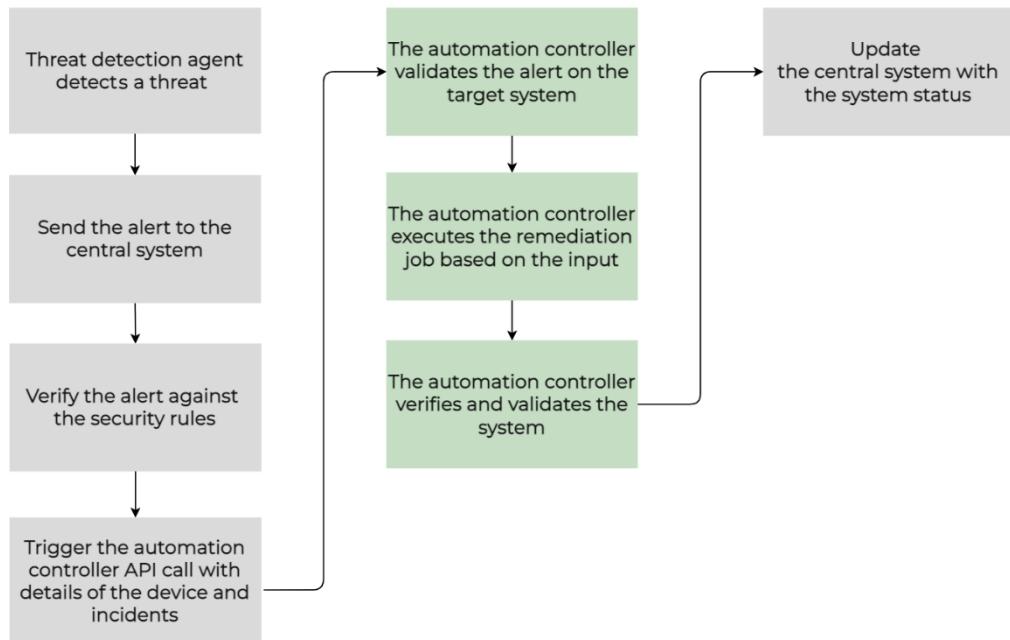
ginigangadharan

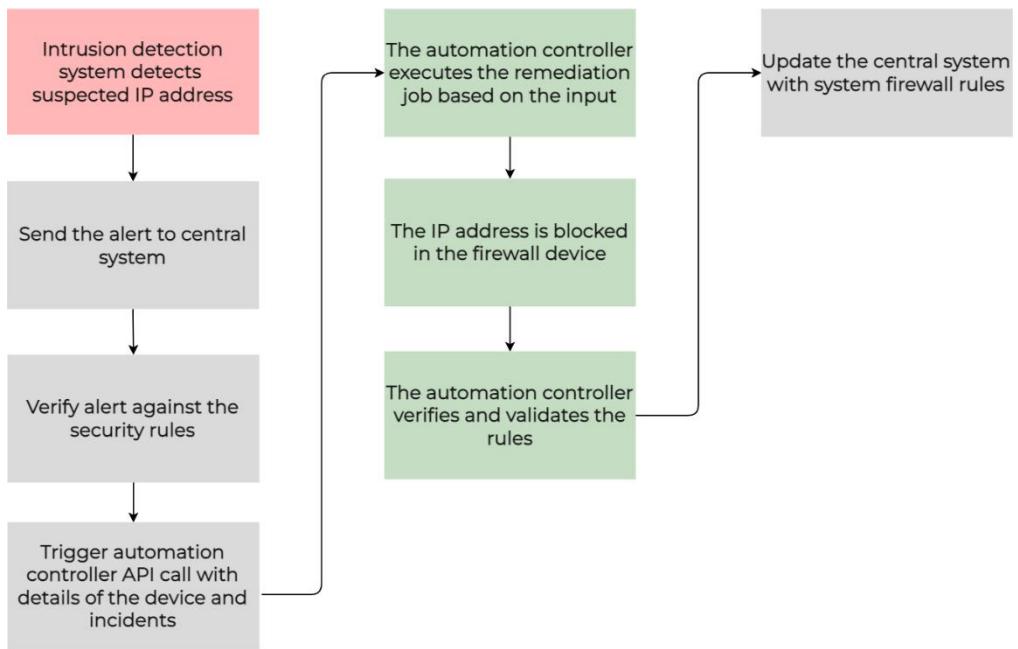
Gineesh Madapparambath
ginigangadharan

- Dashboard
- Communities
- Benchmarks
- Tickets
- Proposed Changes
- Downloads

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Title	Linked To	Size	Created	Updated
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CIS Azure Kubernetes Service (AKS) Benchmark V1.0.0 - PDF Benchmark Cloud Platform Docker (CIS_Azure_Kubernetes_Service_(AKS)_Benchmark_V1.0.0_PDF.pdf)	CIS Azure Kubernetes Service (AKS) Benchmark	1.30MB	4 months ago	4 months ago





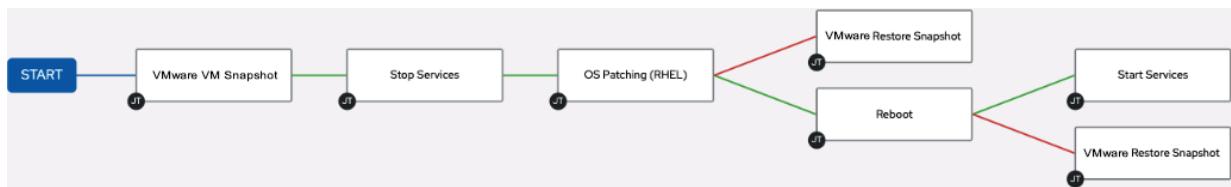
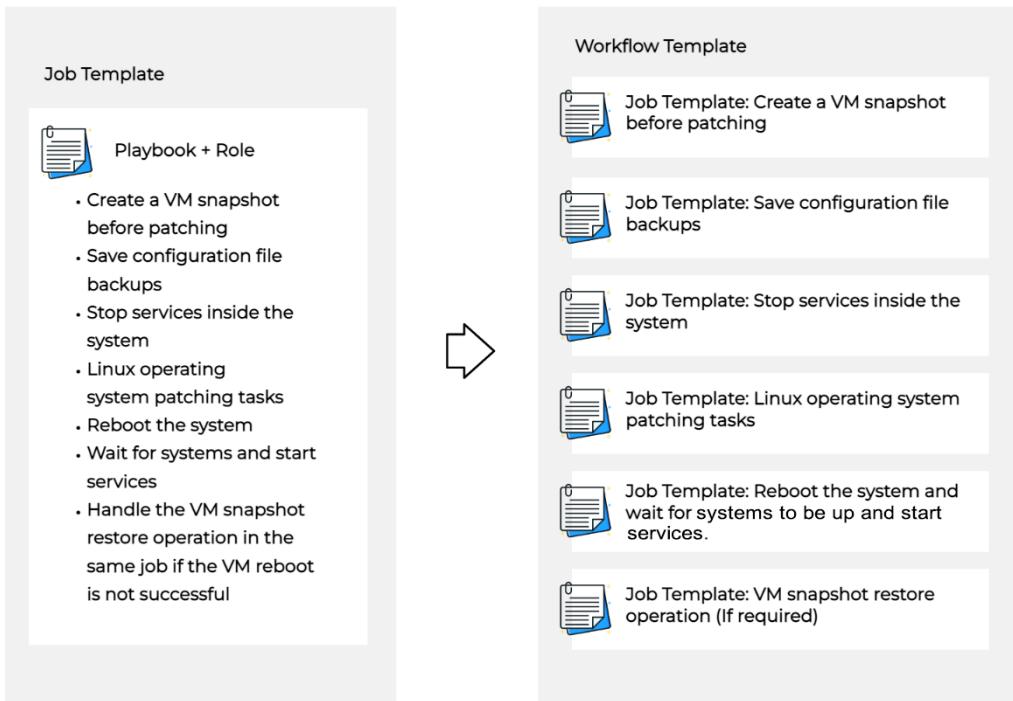
```

- name: Add new ACL Entry and Merge configuration with device configuration
cisco.asa.asa_acls:
  config:
    acls:
      - name: "{{ acl_identifier }}"
        acl_type: "{{ acl_type }}"
        aces:
          - grant: "{{ acl_action }}"
            #line: 1
            protocol_options:
              tcp: true
            source:
              address: "{{ acl_entry_source_ip }}"
              netmask: "{{ acl_entry_source_mask }}"
            destination:
              object_group: "{{ asa_object_group_name }}"
            #log: default
        state: merged
  register: acl_status

```

```
● ● ●
- name: Create {{ firewall_policy_address_entry_to_add }} Entry
  delegate_to: localhost
  fortinet.fortios.fortios_firewall_address:
    host: "{{ fortigate_host_ip }}"
    username: "{{ fortigate_username }}"
    password: "{{ fortigate_password }}"
    vdom: "{{ fortigate_vdom }}"
    https: "{{ fortigate_ssl_use }}"
    ssl_verify: "{{ fortigate_ssl_verify }}"
    state: "present"
    firewall_address:
      allow_routing: "disable"
      #color: "6"
      comment: "{{ firewall_policy_address_comment }}"
      name: "{{ firewall_policy_address_name }}"
      policy_group: "{{ firewall_policy_address_group }}"
      subnet: "{{ firewall_policy_address_entry_to_add }}/32"
      type: "ipmask"
      visibility: "enable"
```

```
● ● ●
- name: Create Security Rule
  paloaltonetworks.panos.panos_security_rule:
    provider: "{{ panos_provider }}"
    rule_name: "{{ panos_rule_name }}"
    source_ip: "{{ panos_source_ip_address.splitlines() | default('any') }}"
    source_user: "{{ panos_source_user.splitlines() | default('any') }}"
    destination_ip: "{{ panos_destination_ip_address.splitlines() }}"
    category: "{{ panos_url_category.splitlines() | default('any') }}"
    application: "{{ panos_application_category.splitlines() | default('any') }}"
    service: "{{ panos_service.splitlines() }}"
    group_profile: "{{ panos_group_profile | default('None') }}"
    action: "{{ panos_rule_action }}"
    rule_type: "{{ panos_rule_type }}"
    log_start: "{{ panos_log_start | bool }}"
    log_end: "{{ panos_log_end | bool }}"
```



Chapter 15: Automating Non-Standard Platforms and Operations

```
● ● ●

# install-python.yaml
---
- name: Installing Python on target machine
  hosts: "{{ NODES }}"
  gather_facts: false
  tasks:
    - name: Install Latest Python package
      ansible.builtin.raw: sudo yum -y install python36

    - name: Verify Python version
      ansible.builtin.raw: python3 -V
      register: python_version

    - name: Display installed Python version.
      ansible.builtin.debug:
        msg: "Installed Python version: {{ python_version.stdout_lines }}"
```

```
● ● ●

[ansible@ansible Chapter-15]$ ansible-playbook install-python.yaml -e "NODES=node1"

PLAY [Installing Python on target machine] ****
TASK [Install Latest Python package] ****
changed: [node1]

TASK [Verify Python version] ****
changed: [node1]

TASK [Display installed Python version.] ****
ok: [node1] => {
    "msg": "Installed Python version: ['Python 3.6.8']"
}

PLAY RECAP ****
node1 : ok=3    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```



● ● ●

```
[fortios]
fg01 ansible_host=192.168.57.125

[fortios:vars]
ansible_user=admin
ansible_ssh_pass='Admin#123'
ansible_host_key_checking=false
ansible_network_os=fortinet.fortios.fortios
ansible_connection=ansible.netcommon.httpapi
ansible_httpapi_use_ssl=True
ansible_httpapi_validate_certs=False
```

● ● ●

```
- name: Backup global settings on FortiOS device
fortinet.fortios.fortios_monitor_fact:
  selector: 'system_config_backup'
  vdom: 'root'
  params:
    scope: 'global'
```

● ● ●

```
- name: FortiGate Configuration Backup
raw: |
  execute cfg save
  execute backup config tftp {{ backup_filename }} {{ tftp_server }}
register: tftp_copy_status
```

```
● ● ●

[fortios]
fg01 ansible_host=192.168.57.125

[fortios:vars]
ansible_user=admin
ansible_ssh_pass='Admin#123'
ansible_host_key_checking=false
#ansible_network_os=fortinet.fortios.fortios
#ansible_connection=ansible.netcommon.httpapi
#ansible_httpapi_use_ssl=True
#ansible_httpapi_validate_certs=False
```

```
● ● ●

- name: FortiGate Update Software
  raw: |
    execute restore image tftp {{ fortios_image_filename }} {{ tftp_server }}
    Y
  register: image_update_status
```

```
● ● ●

- name: Take Cisco ASA Backup
  cisco.asa.asa_command:
    commands:
      - write memory
      - copy /noconfirm running-config tftp://{{ tftp_server }}/{{ backup_filename }}
```

```
● ● ●

- name: Gather EC2 instance details
  amazon.aws.ec2_instance_info:

- name: Gather information about instances in Singapore
  amazon.aws.ec2_instance_info:
    filters:
      availability-zone: ap-southeast-1
```

```
● ● ●

$ curl http://todo-app.example.com:8081/api/todos
[{"id":1,"title":"Send weekly report to team","description":"Weekly health check report","completed":false},
 {"id":2,"title":"Arrange team dinner","description":"Check for places","completed":false}, {"id":3,"title":"Schedule meeting with John for security audit","description":"Pending long time","completed":false}]
```

```
# todo-app.yaml
---
- name: Managing todo application using API
  hosts: localhost
  gather_facts: false
  become: false
  vars:
    todo_app_ur: 'http://todo-app.example.com:8081'
    todo_app_healthcheck: 'health'
```

```
tasks:
- name: Check that you can connect (GET) to a page and it returns a status 200
  uri:
    url: "{{ todo_app_ur }}/{{ health_check }}"
    return_content: yes
    status_code: 200
  register: health_status

- name: Display health check status
  debug:
    msg: "{{ health_status.content }}"
```

```
...<omitted>...
TASK [Display health check status]
*****
ok: [localhost] => {
  "msg": {
    "changed": false,
    "connection": "close",
    "content": "{\"uptime\":2438.676111528,\"message\":\"OK\",\"timestamp\":1655004678873}",
    "content_length": "66",
    "cookies": {},
    "cookies_string": "",
    "date": "Sun, 12 Jun 2022 03:31:18 GMT",
    "elapsed": 0,
    "failed": false,
    "msg": "OK (66 bytes)",
    "redirected": false,
    "status": 200,
    "url": "http://todo-app.example.com:8081/health"
  }
}
...<omitted>...
```

```
TASK [Display health check status]
*****
ok: [localhost] => {
  "msg": {
    "message": "OK",
    "timestamp": 1655004693105,
    "uptime": 2452.908586769
  }
}
```

```
- name: Get ToDo Items
  uri:
    url: "{{ todo_app_ur }}/api/todos"
    return_content: yes
    status_code: 200
  register: todo_items

- name: Display items
  debug:
    msg: "{{ todo_items.content }}"
```

```
<omitted>...
TASK [Display items]
*****
ok: [localhost] => {
    "msg": [
        {
            "completed": false,
            "description": "Weekly health check report",
            "id": 1,
            "title": "Send weekly report to team"
        },
        {
            "completed": false,
            "description": "Check for places",
            "id": 2,
            "title": "Arrange team dinner"
        },
        {
            "completed": false,
            "description": "Pending long time",
            "id": 3,
            "title": "Schedule meeting with John for security audit"
        }
    ]
}
<omitted>...
```

```
vars:
  todo_app_ur: 'http://todo-app.example.com:8081'
  health_check: 'health'

new_item:
  title: Learn API call using Ansible
  description: A new task added by Ansible
  completed: false
```

```
● ● ●

- name: Add a new item in ToDo list
  url:
    url: "{{ todo_app_ur }}/api/todos"
    method: POST
    return_content: yes
    status_code: 201
    body_format: json
    body: "{{ new_item }}"
  register: item_add_status

- name: Display items
  debug:
    msg: "{{ item_add_status }}"
```

```
● ● ●

<omitted>...
TASK [Add a new item in ToDo list]
*****
ok: [localhost]

TASK [Display items]
*****
ok: [localhost] => {
  "msg": {
    "changed": false,
    "connection": "close",
    "content": "{\"id\":12,\"title\":\"Learn API call using Ansible\",\"description\":\"A new task added by Ansible\",\"completed\":false}",
    "content_type": "application/json",
    "cookies": {},
    "cookies_string": "",
    "date": "Sun, 12 Jun 2022 04:21:50 GMT",
    "elapsed": 0,
    "failed": false,
    "json": {
      "completed": false,
      "description": "A new task added by Ansible",
      "id": 12,
      "title": "Learn API call using Ansible"
    },
    "msg": "OK (unknown bytes)",
    "redirected": false,
    "status": 201,
    "transfer_encoding": "chunked",
    "url": "http://todo-app.example.com:8081/api/todos"
  }
}
<omitted>...
```

```
● ● ●

{"add": [
  {% for dns in dns_list %}
  {"name": "{{ dns }}"},
  {% endfor %}
]}
```

```
# akamai-dns-block.yaml
---
- name: Block DNS in Akamai Device
  hosts: localhost
  gather_facts: false
  become: false
  vars:
    akamai_api_endpoint: 'http://10.1.10.100:8080'
    akamai_list_path: '/list/blacklist/nodes'
    akamai_api_username: 'admin'
    akamai_api_password: 'secretpassword'

  dns_list:
    - blockthisurl.com
    - anotherwebsite.com
    - notagoodwebsite.com
```

```
tasks:
  - name: Template the DNS List to block
    ansible.builtin.set_fact:
      dns_list_templated: "{{ lookup('template', 'akamai-url-block-format.j2') }}"

  - name: "{{ akamai_list_name }} - Create substitute records Akamai"
    uri:
      url: "{{ akamai_api_endpoint }}{{ akamai_list_path }}"
      method: POST
      return_content: yes
      user: "{{ akamai_api_username }}"
      password: "{{ akamai_api_password }}"
      status_code:
        - 201
        - 200
    headers:
      Accept: application/json
      Content-Type: application/json
    body_format: json
    body: "{{ dns_list_templated }}"
    register: akamai_add_out
```

```
[ansible@ansible Chapter-15]$ ansible-config dump |grep DEFAULT_MODULE_PATH
DEFAULT_MODULE_PATH(default) = ['/home/ansible/.ansible/plugins/modules', '/usr/share/ansible/plugins/modules']
```

```
[defaults]

library = ./library
```

```

● ● ●

[ansible@ansible Chapter-15]$ cat library/customhello.sh
#!/bin/bash
#
# This script accepts two inputs
# 1. application_name
# 2. application_version

changed="false"
display="This is a simple bash module"
OS="$(uname)"
HOSTNAME="$(uname -n)"

source $1
display="Application Name: $application_name (version: $application_version)"
if [ "$application_name" == "bash" ]; then
    changed="true"
    display="$display - This is a bash App"
fi

printf '{"changed": %s, "msg": "%s", "operating_system": "%s", "hostname": "%s"}' "$changed" "$display" "$OS"
"$HOSTNAME"
exit 0

```

```

● ● ●

---
- name: Testing Custom Module
  hosts: node1
  gather_facts: false
  vars:
    app_name: "bash"
    app_version: "1.0"
  tasks:
    - name: Application Name and Version
      customhello:
        application_name: "{{ app_name }}"
        application_version: "{{ app_version }}"
      register: custom_value

    - debug:
        msg: "{{ custom_value }}"

```

```

● ● ●

<omitted>...
TASK [debug]
*****
ok: [node1] => {
    "msg": {
        "changed": true,
        "failed": false,
        "hostname": "node-1",
        "msg": "Application Name: bash (version: 1.0) - This is a bash App",
        "operating_system": "Linux"
    }
}
<omitted>...

```

```
● ● ●

DOCUMENTATION = """
---
module: hello_message
short_description: A Hello Message Module
version_added: "2.10"
description:
    - "A Hello Message Module"
options:
    message:
        description:
            - The message to be printed.
        required: true
        type: string
...<omitted>...

author:
    - Gineesh Madapparambath (@ginigangadharan)
..."""



```

```
● ● ●

EXAMPLES = """
# Simple Custom Hello App
- name: Calling hello_message module
  hello_message:
    message: "Hello"
    name: "John"
...
"""



```

```
● ● ●

RETURN = """
greeting:
    description: Hello Response
    returned: success
    type: str
    sample: Hello World
os_version:
    description: Operating System Information
    returned: success
    type: str
    sample: Linux 4.18.0-305.el8.x86_64 #1 SMP Thu Apr 29 08:54:30 EDT 2021
...
"""



```

```
● ● ●

.
.

from ansible.module_utils.basic import AnsibleModule, platform

def main():
    module_args = dict(
        message=dict(type='str', required=True),
        name=dict(type='str', required=False),
    )
    result = dict(
        changed=False,
        greeting='Sample Message',
        os_version=''
    )
.
.
```

```
[ansible@ansible Chapter-15]$ ansible-doc hello_message
> HELLO_MESSAGE      (/home/ansible/ansible-book-packt/Chapter-15/library/hello_message.py)
```

```
A Hello Message Module
```

```
OPTIONS (= is mandatory):
```

```
= message
    The message to be printed.

    type: string

- name
    The name of the person.
    [Default: (null)]
    type: string
```

```
AUTHOR: Gineesh Madapparambath (@ginigangadharan)
```

```
<omitted>...
```

```
EXAMPLES:
```

```
# Simple Custom Hello App
- name: Calling hello_message module
  hello_message:
    message: "Hello"
    name: "John"
```

```
RETURN VALUES:
```

```
- greeting
    Hello Response

    returned: success
    sample: Hello World
    type: str

- os_version
    Operating System Information
<omitted>...
```

```
---
- name: Testing Custom Module
  hosts: localhost
  gather_facts: false
  vars:
    custom_message: "Hello"
    custome_name: "John"
  tasks:
    - name: Calling custom module
      hello_message:
        message: "{{ custom_message }}"
        name: "{{ custome_name }}"
      register: custom_value

    - debug:
        msg: "{{ custom_value }}"
```

```
● ● ●

<omitted>...
TASK [debug]
*****
ok: [localhost] => {
    "msg": {
        "changed": false,
        "failed": false,
        "greeting": "Hello John",
        "os_version": "Linux 4.18.0-305.el8.x86_64 #1 SMP Thu Apr 29 08:54:30 EDT 2021"
    }
}
<omitted>...
```

```
● ● ●

collection/
├── docs/
├── galaxy.yml
├── meta/
│   └── runtime.yml
└── plugins/
    ├── modules/
    │   └── module1.py
    ├── inventory/
    └── ...
 README.md
roles/
├── role1/
├── role2/
└── ...
playbooks/
├── files/
├── vars/
└── templates/
└── tasks/
tests/
...<omitted>...
```

```
---  
namespace: ginigangadharan  
name: custom_modules_demo  
version: 1.0.4  
readme: README.md  
authors:  
  - Gineesh Madapparambath <gini@iamgini.com>  
description: Ansible Custom Module Demo for Ansible Book  
license:  
  - GPL-2.0-or-later  
license_file: ''  
tags:  
  - demos  
  - ansible  
  - devops  
dependencies: {}  
repository: https://github.com/PacktPublishing/Ansible-for-Real-life-Automation/  
documentation: https://github.com/PacktPublishing/Ansible-for-Real-life-Automation/tree/main/Chapter-15/collection  
homepage: https://github.com/PacktPublishing/Ansible-for-Real-life-Automation/tree/main/Chapter-15/collection  
issues: https://github.com/PacktPublishing/Ansible-for-Real-life-Automation/issues
```

```
[ansible@ansible Chapter-15]$ cd collection
[ansible@ansible collection]$ ansible-galaxy collection build
Created collection for ginigangadharan.custom_modules_demo at /home/ansible/ansible-book-packt/Chapter-15/collection/ginigangadharan-custom_modules_demo-1.0.0.tar.gz
[ansible@ansible Chapter-15]$
```

```
[ansible@ansible collection]$ ansible-galaxy collection publish \
> --token $ANSIBLE_GALaxy_TOKEN \
> ./ginigangadharan-custom_modules_demo-1.0.0.tar.gz
Publishing collection artifact '/home/ansible/ansible-book-packt/Chapter-15/collection/ginigangadharan-
custom_modules_demo-1.0.0.tar.gz' to default https://galaxy.ansible.com/api/
Collection has been published to the Galaxy server default https://galaxy.ansible.com/api/
Waiting until Galaxy import task https://galaxy.ansible.com/api/v2/collection-imports/20104/ has completed
Collection has been successfully published and imported to the Galaxy server default https://galaxy.ansible.com/api/
```

The screenshot shows the Ansible Galaxy web interface. The top navigation bar includes links for About, Help, Documentation, and user authentication (net.gini). The left sidebar features links for Home, Search, Community, My Content (which is selected), and My Imports. The main content area is titled "My Content" and displays a collection named "ginigangadharan". This collection is owned by "Gini" and has one provider. A blue button labeled "+ Add Content" is visible. Below this, a search bar and filter options are shown. The results section indicates "1 Results" for the filter "Name: demo". A single item, "custom_modules_demo", is listed as an "Ansible Custom Module Demo". It includes a "See Imports" link and a "Upload New Version" button. At the bottom, pagination controls show "10 per page" and "1 of 1".

GALAXY

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Community Authors > ginigangadharan > custom_modules_demo

 custom_modules_demo
Ansible Custom Module Demo
ginigangadharan

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Filter content... Show: Roles Modules Playbooks Plugins

hello_message
A Hello Message Module

Chapter 16: Ansible Automation Best Practices for Production

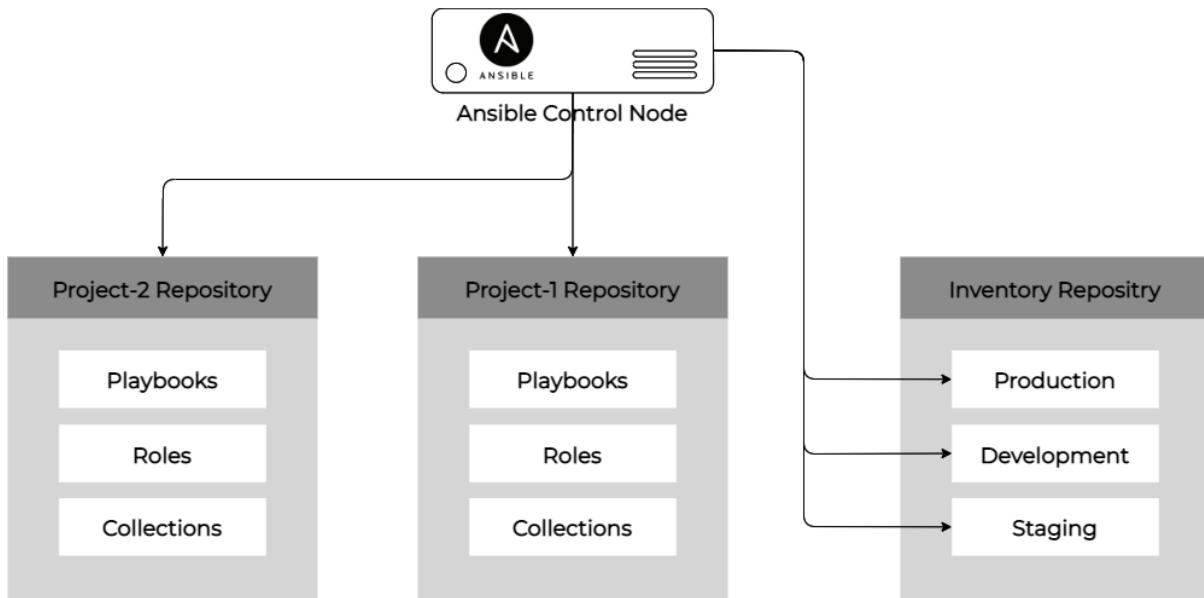
```
● ● ●  
[ansible@ansible Chapter-16]$ tree ./  
./  
├── ansible.cfg          # ansible configuration  
├── deploy-web.yml       # a playbook  
├── group_vars           # directory for group level variables  
│   ├── dbnodes.yaml      # variables for inventory group dbnodes  
│   └── web.yaml          # variables for inventory group web  
├── hosts                # another inventory file  
├── host_vars             # directory for host level variables  
│   ├── node1.yaml         # variables for node1  
│   └── node2.yaml         # variables for node2  
├── nodes_development     # inventory for development nodes  
├── nodes_production      # inventory for production nodes  
├── nodes_staging          # inventory for staging nodes  
└── README.md
```

```
● ● ●  
├── roles                 # roles directory  
│   ├── deploy-web-server  # web deployment role  
│   │   ├── defaults        # defaults file  
│   │   └── main.yml        # main configuration file  
│   │   ├── tasks            # tasks directory  
│   │   └── main.yml        # main tasks file  
│   │   ├── templates        # templates directory  
│   │   └── tests             # tests directory  
│   │       ├── inventory    # inventory directory  
│   │       └── test.yml      # test configuration file  
│   │   └── vars              # vars directory  
│   └── security-baseline-rhel8 # security hardening role  
... output omitted...  
├── site.yml  
├── system-info.yml  
└── system-reboot.yml
```

38 directories, 56 files

```
● ● ●  
10.1.10.100  
192.168.1.25  
10.1.10.25  
10.2.100.40  
dbserver-101.example.com  
prod-app-101.example.com
```

```
● ● ●  
web01 ansible_host=10.1.10.100  
app02 ansible_host=192.168.1.25  
lb101 ansible_host=10.1.10.25  
db201 ansible_host=10.2.100.40  
web102 ansible_host=sglxwp-101.example.com  
app301 ansible_host=slixmkp-app-101.example.com
```



```
● ● ●  
[ansible@ansible inventories]$ tree ./  
./  
├── dev  
│   ├── group_vars  
│   │   ├── dbnodes.yaml  
│   │   └── web.yaml  
│   └── hosts  
├── prod  
│   ├── group_vars  
│   │   ├── dbnodes.yaml  
│   │   └── web.yaml  
│   └── hosts  
│       └── host_vars  
│           ├── node1.yaml  
│           └── node2.yaml  
└── stg  
    └── hosts
```

```

● ● ●

# file: dev/hosts
# singapore web servers
# group variables in dev/group_vars/web.yaml
[web]
web101.example.com
web102.example.com
web103.example.com

# singapore db servers
# group variable in dev/group_vars/dbnodes.yaml
[dbnodes]
db201.example.com
db202.example.com
db203.example.com

# backup nodes in Malaysia
[backupnodes]
bkp101.example.com
bkp102.example.com

# Singapore servers in a parent group
[sgnodes:children]
web
dbnodes

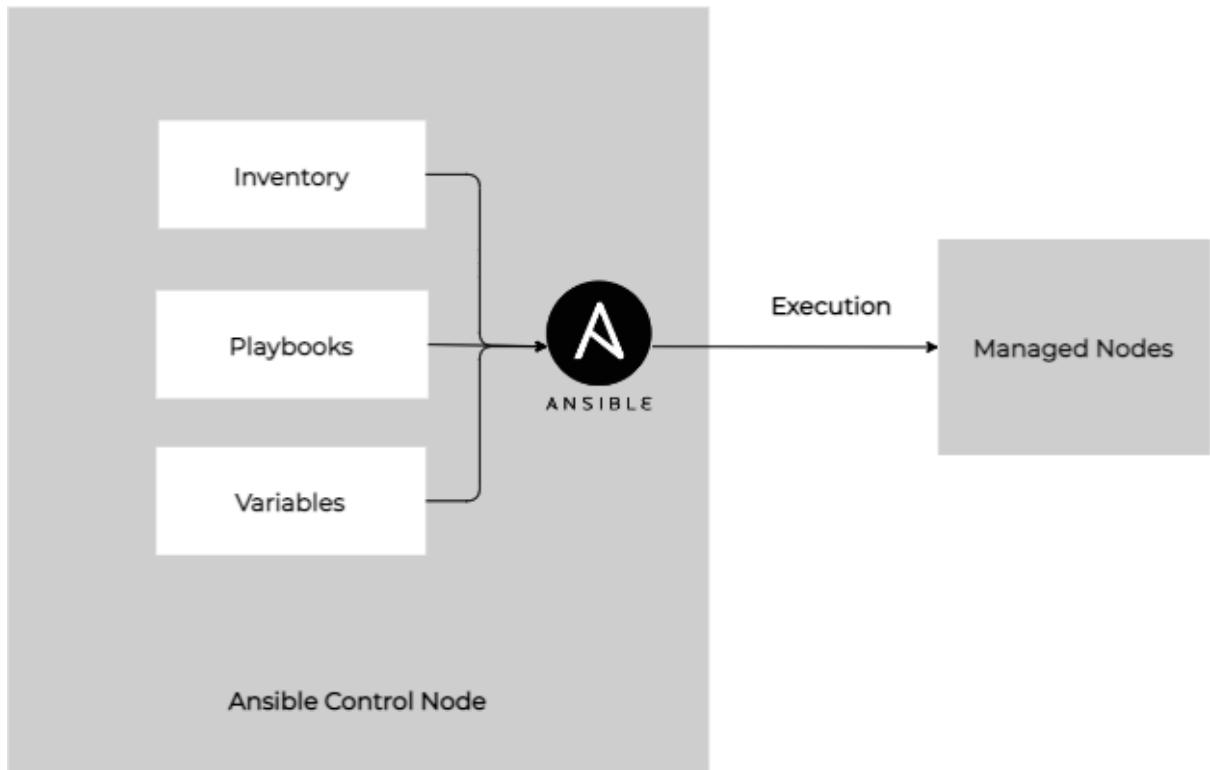
```

```

● ● ●

[ansible@ansible inventories]$ ansible-inventory -i dev/hosts --list
{
    "_meta": {
        "hostvars": {}
    },
    "all": {
        "children": [
            "backupnodes",
            "sgnodes",
            "ungrouped"
        ]
    },
    ... output omitted...
    "sgnodes": {
        "children": [
            "dbnodes",
            "web"
        ]
    },
    "web": {
        "hosts": [
            "web101.example.com",
            "web102.example.com",
            "web103.example.com"
        ]
    }
}

```



● ● ●

```
[ansible@ansible Chapter-16]$ tree inventories/stg/
inventories/stg/
├── group_vars
│   ├── dbnodes.yaml
│   └── web.yaml
└── hosts
    └── host_vars
        ├── node1.yaml
        └── node2.yaml

2 directories, 5 files
```

● ● ●

```
[ansible@ansible Chapter-16]$ tree inventories/stg/
inventories/stg/
├── group_vars
│   ├── dbnodes.yaml
│   └── web.yaml
└── hosts
    └── host_vars
        ├── node1.yaml
        └── node2.yaml

2 directories, 5 files
```

```
# file: stg/hosts
[web]
node1 ansible_host=192.168.56.25
node2 ansible_host=192.168.56.24
node3 ansible_host=192.168.56.60

[all:vars]
ansible_ssh_private_key_file=/home/ansible/.ssh/id_rsa
```

```
[ansible@ansible Chapter-16]$ mkdir inventories/stg/group_vars  
[ansible@ansible Chapter-16]$ mkdir inventories/stg/host_vars
```

```
# file: stg/group_vars/web.yaml  
web server port: 80
```

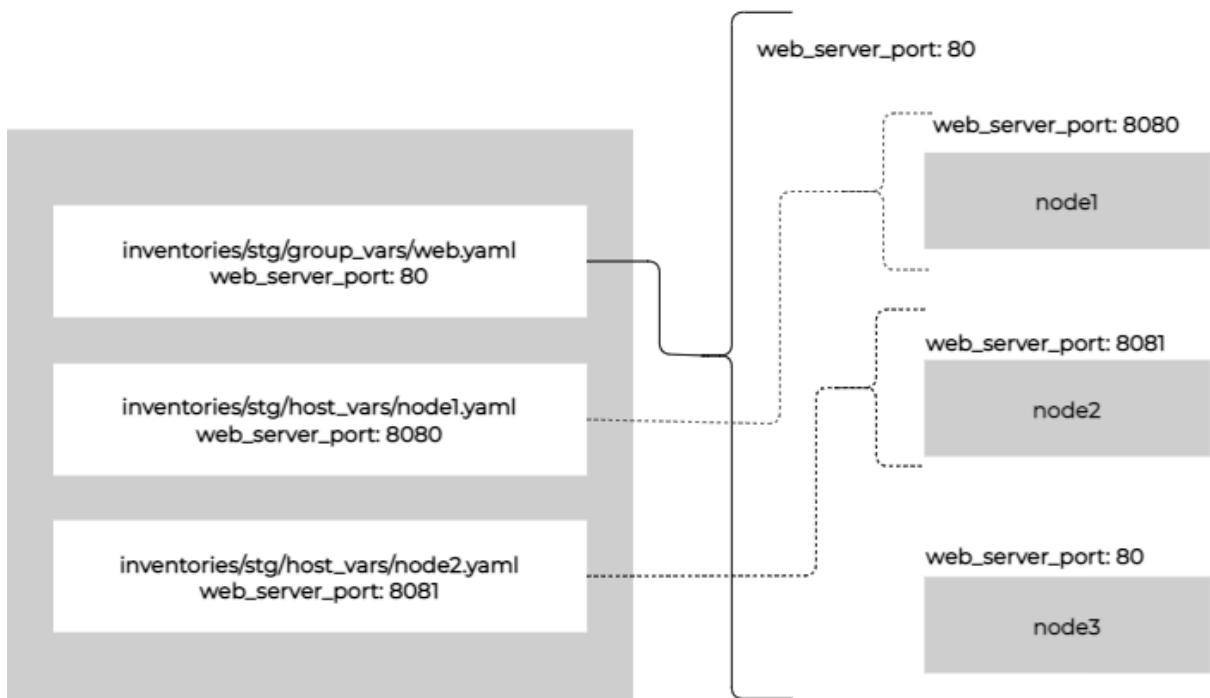
```
# file: stg/host_vars/node1.yaml  
web_server_port: 8080
```

```
# file: stg/host_vars/node2.yaml
web_server_port: 8081
default_web_page_content: "Welcome to node2"
```

```
[ansible@ansible Chapter-16]$ tree inventories/stg/
inventories/stg/
├── group_vars
│   ├── dbnodes.yaml
│   └── web.yaml
└── hosts
└── host_vars
    ├── node1.yaml
    └── node2.yaml

2 directories, 5 files
```

```
[ansible@ansible Chapter-16]$ ansible-inventory --list -i inventories/stg/
{
    "_meta": {
        "hostvars": {
            "node1": {
                "ansible_host": "192.168.56.25",
                "ansible_ssh_private_key_file": "/home/ansible/.ssh/id_rsa",
                "web_server_port": 8080
            },
            "node2": {
                "ansible_host": "192.168.56.24",
                "ansible_ssh_private_key_file": "/home/ansible/.ssh/id_rsa",
                "default_web_page_content": "Welcome to node2",
                "web_server_port": 8081
            },
            "node3": {
                "ansible_host": "192.168.56.60",
                "ansible_ssh_private_key_file": "/home/ansible/.ssh/id_rsa",
                "web_server_port": 80
            }
        }
    },
    ...output omitted...
}
```



```
● ● ●

[ansible@ansible Chapter-06]$ ansible-inventory web --list
{
    "_meta": {
        "hostvars": {
            "node1": {
                "ansible_host": "192.168.56.25",
                "ansible_ssh_private_key_file": "/home/ansible/.ssh/id_rsa",
                "ansible_user": "ansibleadmin"
            },
            "node2": {
                "ansible_host": "192.168.56.24",
                "ansible_user": "user1"
            },
            "node3": {
                "ansible_host": "192.168.56.60",
                "ansible_user": "devops"
            },
            "win2019": {
                "ansible_user": "ansible",
                "ansible_winrm_server_cert_validation": "ignore",
                "ansible_winrm_transport": "basic"
            }
        }
    },
    ...output omitted...
}
```

```
● ● ●

[ansible@ansible Chapter-03]$ ansible-vault create vars/secrets
New Vault password:
Confirm New Vault password:
[ansible@ansible Chapter-03]$ cat vars/secrets
$ANSIBLE_VAULT;1.1;AES256
389306373031356638353866353937306462663565366266323166363130356435326564343735
3061663831326237356430353361646235396661663538310a373337376339383561353762356265
39363830316465346166303666373064353061343563613734343336653630656533393739643238
3136306130633761610a6461383261303343537383630383234333573737303535353665616430
32323537303765356366383930623631666561393661626535663135316362326134623066623234
313731386161373461326262306264643403430663731663663353966353030338396163666131
383237626162626334376133663039366331
```

```
● ● ●

[ansible@ansible Chapter-06]$ ansible-playbook password-promt.yaml --ask-pass
SSH password:
```

```

● ● ●

# Task to send a notification email before the reboot operation.
- name: Email notification before reboot
  include_role:
    name: send-email
  vars:
    email_report_body: "Alert: {{ inventory_hostname }} is rebooting as per schedule. Please do not use the server. Notification will be sent after the reboot activity is completed."
    email_smtp_subject: "Weekly System Reboot - {{ inventory_hostname }} - Initiated"
  tags:
    - email
    - notification

# You may add your pre-reboot tasks here
# such as taking backups, configure maintainance mode,
# disable monitoring and so on.
- name: Running Pre-reboot tasks
  debug:
    msg: "Taking backup and snapshot"
  tags:
    - pretasks
    - backup

```

immediate <small>boolean</small>	<p>Should this configuration be applied immediately, if set as permanent.</p> <p>Choices:</p> <ul style="list-style-type: none"> • no ← (default) • yes
--------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

```

● ● ●

- name: Enable and Run Firewalld
  ansible.builtin.service:
    name: firewalld
    enabled: true
    state: started

- name: Firewalld permit httpd service
  ansible.posix.firewalld:
    service: http
    permanent: true
    state: enabled
    immediate: yes

```

```

● ● ●

tasks:
  - name: Copy a file to managed hosts
    copy: name=demo.txt dest=/tmp/demo.txt owner=ansible group=ansible
  - name: Create a new directory if it does not exist
    file: path=/home/ansible/new-dir state=directory mode='0755'

```

```
tasks:
  - name: Copy a file to managed hosts
    copy:
      src: files/demo-text-file.txt
      dest: /home/ansible/demo-text-file.txt
      owner: ansible
      group: ansible

  - name: Create a new directory if it does not exist
    file:
      path: /home/ansible/new-dir
      state: directory
      mode: '0755'
```

```
- name: Installing Web Packages
  hosts: webservers
  tasks:
    - name: Installing Web
      yum:
        name: httpd
        state: present
```

```
- name: Installing Web Packages
  hosts: "{{ nodes }}"
  tasks:
    - name: Installing Web
      yum:
        name: "{{ web_package }}"
        state: present
```

```
tasks:
  - block:
    - name: Show Message
      debug:
        msg: "Trying httpd"
    - name: Install Package
      yum:
        name: httpd-wrong
        state: present

rescue:
  - name: Show error
    debug:
      msg: "Unknown Package"
  - name: Install nginx
    yum:
      name: nginx
      state: latest

always:
  - name: Message
    debug:
      msg: "Playbook Done"
```

```
● ● ●

- name: "Patching Pre-tasks"
  include_role:
    name: linux-patching
    tasks_from: linux-patching-pre-tasks.yaml

- name: "Patching Tasks"
  include_role:
    name: linux-patching

- name: "Patching Post-tasks"
  include_role:
    name: linux-patching
    tasks_from: linux-patching-post-tasks.yaml
```

```
● ● ●

# variable names with shortnames
myvar: something
webport: 8080
dbpath: /opt/mysql
fwpackage: firewalld
fg_api: 10.1.10.10

# variables with meaningful names
user_location: /home/devops/
httpd_web_port: 8080
mysql_database_home: /opt/mysql
firewall_package: firewalld
fortigate_api_ip: 10.1.10.10
```