

```

control how and which user you become as on target hosts

--become-method BECOME_METHOD
    privilege escalation method to use (default=sudo), use `ansible-doc -t become -l` to list valid choices.
--become-user BECOME_USER
    run operations as this user (default=root)
-K, --ask-become-pass
    ask for privilege escalation password
-b, --become
    run operations with become (does not imply password prompting)

Connection Options:
control as whom and how to connect to hosts

--private-key PRIVATE_KEY_FILE, --key-file PRIVATE_KEY_FILE
    use this file to authenticate the connection
--scp-extra-args SCP_EXTRA_ARGS
    specify extra arguments to pass to scp only (e.g. -l)
--sftp-extra-args SFTP_EXTRA_ARGS
    specify extra arguments to pass to sftp only (e.g. -f, -l)
--ssh-common-args SSH_COMMON_ARGS
    specify common arguments to pass to sftp/scp/ssh (e.g. ProxyCommand)
--ssh-extra-args SSH_EXTRA_ARGS
    specify extra arguments to pass to ssh only (e.g. -R)
-T TIMEOUT, --timeout TIMEOUT
    override the connection timeout in seconds (default=10)
-c CONNECTION, --connection CONNECTION
    connection type to use (default=smart)
-k, --ask-pass
    ask for connection password
-u REMOTE_USER, --user REMOTE_USER
    connect as this user (default=None)

Some modules do not make sense in Ad-Hoc (include, meta, etc)
[ root@e1aa69b2f0c9: # ansible --version
ansible 2.10.8
  config file = None
  configured module search path = ['/root/.ansible/plugins/modules', '/usr/share/ansible/plugins/modules']
  ansible python module location = /usr/lib/python3/dist-packages/ansible
  executable location = /usr/bin/ansible
  python version = 3.10.12 (main, Nov 20 2023, 15:14:05) [GCC 11.4.0]
[root@e1aa69b2f0c9: # ssh root@node1
The authenticity of host 'node1 (172.19.0.4)' can't be established.
ED25519 key fingerprint is SHA256:Dy81ECKlS4B4Z/UE01wrer6Icj1VRaq3a6pToo+g3E.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'node1' (ED25519) to the list of known hosts.
root@node1's password:
Welcome to Ubuntu 16.04.7 LTS (GNU/Linux 6.5.11-linuxkit aarch64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

[root@c37a97125076: ~]# exit
logout
Connection to node1 closed.
root@e1aa69b2f0c9: #

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[Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'node2' (ED25519) to the list of known hosts.
|root@node2's password:
Welcome to Ubuntu 16.04.7 LTS (GNU/Linux 6.5.11-linuxkit aarch64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

|root@fb8c26cb5a5df:~# exit
|logout
|Connection to node2 closed.
|root@e1aa69b2f0c9:/# ssh-keygen -t rsa -b 2048
|Generating public/private rsa key pair.
|Enter file in which to save the key (/root/.ssh/id_rsa):
|Enter passphrase (empty for no passphrase):
|Enter same passphrase again:
|Your identification has been saved in /root/.ssh/id_rsa
|Your public key has been saved in /root/.ssh/id_rsa.pub
|The key fingerprint is:
|SHA256:egfSTw-BwokF9RyQW4Snqj212rgTX4zu0sEe+8zPmeQ root@e1aa69b2f0c9
|The key's randomart image is:
+---[RSA 2048]---+
|   +***+
|   oo=oo .
|   ..** .
|   . o= .
|   .++ S o
|   =++ + o
|   oo++ . +
|   .o++ = o
|   ...+.E
+---[SHA256]---+
|root@e1aa69b2f0c9:/# ssh-copy-id root@node1
|/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/root/.ssh/id_rsa.pub"
|/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
|root@node1's password:

Number of key(s) added: 1

Now try logging into the machine, with:  "ssh 'root@node1'"
and check to make sure that only the key(s) you wanted were added.

|root@e1aa69b2f0c9:/# ssh-copy-id root@node2
|/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/root/.ssh/id_rsa.pub"
|/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
|root@node2's password:

Number of key(s) added: 1

Now try logging into the machine, with:  "ssh 'root@node2'"
and check to make sure that only the key(s) you wanted were added.

|root@e1aa69b2f0c9:/# ]
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/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
[root@node1's password:
Number of key(s) added: 1

Now try logging into the machine, with: "ssh 'root@node1'"
and check to make sure that only the key(s) you wanted were added.

[root@e1aa69b2f0c9:/# ssh-copy-id root@node2
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/root/.ssh/id_rsa.pub"
/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
[root@node2's password:
Number of key(s) added: 1

Now try logging into the machine, with: "ssh 'root@node2'"
and check to make sure that only the key(s) you wanted were added.

[root@e1aa69b2f0c9:/# vi inventory.txt
[root@e1aa69b2f0c9:/# ansible-inventory -i inventory.txt --list
{
    "_meta": {
        "hostvars": {
            "host1": {
                "ansible_host": "node1",
                "ansible_user": "root"
            },
            "host2": {
                "ansible_host": "node2",
                "ansible_user": "root"
            }
        }
    },
    "all": {
        "children": [
            "group1",
            "ungrouped"
        ]
    },
    "group1": {
        "hosts": [
            "host1",
            "host2"
        ]
    }
}
[root@e1aa69b2f0c9:/# ansible all -i inventory.txt -m ping
host1 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
    },
    "changed": false,
    "ping": "pong"
}
host2 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
    },
    "changed": false,
    "ping": "pong"
}
root@e1aa69b2f0c9:/# ]
```



```
node2
[root@e1aa69b2f0c9:/etc/ansible# ansible all -m ping
node2 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
    },
    "changed": false,
    "ping": "pong"
}
node1 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
    },
    "changed": false,
    "ping": "pong"
}
root@e1aa69b2f0c9:/etc/ansible# ansible all -m setup
node1 | SUCCESS => {
    "ansible_facts": {
        "ansible_apparmor": {
            "status": "disabled"
        },
        "ansible_architecture": "aarch64",
        "ansible_bios_date": "NA",
        "ansible_bios_vendor": "NA",
        "ansible_bios_version": "NA",
        "ansible_board_asset_tag": "NA",
        "ansible_board_name": "NA",
        "ansible_board_serial": "NA",
        "ansible_board_vendor": "NA",
        "ansible_board_version": "NA",
        "ansible_chassis_asset_tag": "NA",
        "ansible_chassis_serial": "NA",
        "ansible_chassis_vendor": "NA",
        "ansible_chassis_version": "NA",
        "ansible_cmdline": {
            "com.docker.VMID": "0195974b-9217-444d-9e5a-d251fb79224c",
            "console": "nvnc",
            "eth0.IPNNet": "192.168.65.3/24",
            "eth0.mtu": "65535",
            "eth0.router": "192.168.65.1",
            "eth1.dhcp": true,
            "init": "/init",
            "irqaffinity": "0",
            "linuxkit.unified_cgroup_hierarchy": "1",
            "loglevel": "1",
            "mitigations": "off",
            "no_stf_barrier": true,
            "noibpb": true,
            "noibrs": true,
            "nospec_store_bypass_disable": true,
            "panic": "0"
        },
        "root": "/dev/vdb",
        "virtio_net.disable_csum": "1",
        "vpnkit.connect": "connect://2/1999",
        "vpnkit.disable": "osxfs-data",
        "vsyscall": "emulate"
    },
    "ansible_date_time": {
        "date": "2024-03-10",
        "day": "10",
        "epoch": "1710037399",
        "hour": "02",
        "iso8601": "2024-03-10T02:00:00+00:00"
    }
}
```

```
"cap_setpcap",
"cap_net_bind_service",
"cap_net_raw",
"cap_sys_chroot",
"cap_mknod",
"cap_audit_write",
"cap_setfcap+P"
],
"ansible_system_capabilities_enforced": "True",
"ansible_system_vendor": "NA",
"ansible_uptime_seconds": 2999,
"ansible_user_dir": "/root",
"ansible_user_gecos": "root",
"ansible_user_gid": 0,
"ansible_user_id": "root",
"ansible_user_shell": "/bin/bash",
"ansible_user_uid": 0,
"ansible_userspace_bits": "64",
"ansible_virtualization_role": "guest",
"ansible_virtualization_type": "docker",
"discovered_interpreter_python": "/usr/bin/python3",
"gather_subset": [
    "all"
],
"module_setup": true
},
"changed": false
}
[root@e1aa69b2f0c9:/etc/ansible# ansible all -a uptime
node1 | CHANGED | rc=0 >
02:23:46 up 50 min, 1 user, load average: 0.09, 0.03, 0.01
node2 | CHANGED | rc=0 >
02:23:46 up 50 min, 1 user, load average: 0.09, 0.03, 0.01
[root@e1aa69b2f0c9:/etc/ansible# ansible all -m file -a "path=~/.tmp-file state=touch"
node2 | CHANGED => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
    },
    "changed": true,
    "dest": "/root/.tmp-file",
    "gid": 0,
    "group": "root",
    "mode": "0644",
    "owner": "root",
    "size": 0,
    "state": "file",
    "uid": 0
}
node1 | CHANGED => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
    },
    "changed": true,
    "dest": "/root/.tmp-file",
    "gid": 0,
    "group": "root",
    "mode": "0644",
    "owner": "root",
    "size": 0,
    "state": "file",
    "uid": 0
}
}
root@e1aa69b2f0c9:/etc/ansible#
```

```
[root@e1aa69b2f0c9:/# vi file1.yaml
[root@e1aa69b2f0c9:/# ansible-playbook -i inventory.txt file1.yaml
PLAY [all] ****
TASK [Gathering Facts] ****
ok: [host2]
ok: [host1]

TASK [create a file] ****
changed: [host1]
changed: [host2]

PLAY RECAP ****
host1 : ok=2    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
host2 : ok=2    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
root@e1aa69b2f0c9:/#
```

```
[root@e1aa69b2f0c9:/# vi file2.yaml
[root@e1aa69b2f0c9:/# ansible-playbook -i inventory.txt file2.yaml
PLAY [all] ****
TASK [Gathering Facts] ****
ok: [host2]
ok: [host1]

TASK [create a file] ****
changed: [host1]
changed: [host2]

PLAY RECAP ****
host1 : ok=2    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
host2 : ok=2    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
root@e1aa69b2f0c9:/#
```

```
root@e1aa69b2f0c9:/# vi inventory.txt
root@e1aa69b2f0c9:/# vi file3.yaml
root@e1aa69b2f0c9:/# ansible-playbook -i inventory.txt file3.yaml

PLAY [task] ****
TASK [Gathering Facts] ****
ok: [node1]

TASK [update task] ****
ok: [node1] => {
    "msg": "test node"
}

PLAY RECAP ****
node1 : ok=2    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
root@e1aa69b2f0c9:/# 

root@e1aa69b2f0c9:/# ansible-playbook -i inventory.txt file4.yaml

PLAY [all] ****
TASK [Gathering Facts] ****
ok: [host1]
ok: [host2]

TASK [Update apt cache] ****
changed: [host1]
changed: [host2]

TASK [Install Node.js dependencies] ****
ok: [host1] => (item(curl))
ok: [host2] => (item(curl))
ok: [host1] => (item=software-properties-common)
ok: [host2] => (item=software-properties-common)

TASK [Add NodeSource repository] ****
ok: [host1]
ok: [host2]

TASK [Install Node.js] ****
ok: [host2]
ok: [host1]

TASK [Install build-essential] ****
changed: [host1]
changed: [host2]

PLAY RECAP ****
host1 : ok=6    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
host2 : ok=6    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
root@e1aa69b2f0c9:/#
```

```

~/Desktop/lab3udevops - root@e1aa69b2f0c9: / = com.docker.cli > docker exec -it e1aa69b2f0c9 bash
Preparing to unpack .../apt-transport-https_1.2.35_arm64.deb ...
Unpacking apt-transport-https (1.2.35) ...
Setting up apt-transport-https (1.2.35) ...
root@c37a97125076:/# exit
simarchawla@Simars-Air ~ % docker exec -it f8c26cb5a5df bash
root@f8c26cb5a5df:/# apt-get install apt-transport-https
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  apt-transport-https
0 upgraded, 0 newly installed, 0 to remove and 2 not upgraded.
Need to get 24.8 kB of archives.
After this operation, 217 kB of additional disk space will be used.
Get: 1 http://ports.ubuntu.com/ubuntu-ports xenial-updates/main arm64 apt-transport-https arm64 1.2.35 [24.8 kB]
Fetched 24.8 kB in 0s (87.6 kB/s)
debconf: delaying package configuration, since apt-utils is not installed
Selecting previously unselected package apt-transport-https.
(Reading database ... 10888 files and directories currently installed.)
Preparing to unpack .../apt-transport-https_1.2.35_arm64.deb ...
Unpacking apt-transport-https (1.2.35) ...
Setting up apt-transport-https (1.2.35) ...
root@f8c26cb5a5df:/# sudo apt-get update
bash: sudo: command not found
root@f8c26cb5a5df:/#
root@f8c26cb5a5df:/# apt-get update
Get:1 https://deb.nodesource.com/node_14.x xenial InRelease [4584 B]
Hit:2 http://ports.ubuntu.com/ubuntu-ports xenial InRelease
Ign:3 https://deb.nodesource.com/node_14.x xenial InRelease
Hit:4 http://ports.ubuntu.com/ubuntu-ports xenial-updates InRelease
Hit:5 http://ports.ubuntu.com/ubuntu-ports xenial-backports InRelease
Fetched 4584 B in 0s (9998 B/s)
Reading package lists... Done
W: GPG error: https://deb.nodesource.com/node_14.x xenial InRelease: The following signatures couldn't be verified because the public key is not available: NO_PUBKEY 1655A0AB68576200
W: GPG error: https://deb.nodesource.com/node_14.x xenial InRelease: https://deb.nodesource.com/node_14.x xenial InRelease is not signed.
N: Data from such a repository can't be authenticated and is therefore potentially dangerous to use.
N: See apt-secure(8) manpage for repository creation and user configuration details.
root@f8c26cb5a5df:/# docker exec -it c37a97125076 bash
bash: docker: command not found
root@f8c26cb5a5df:/# cd
root@f8c26cb5a5df:/# exit
exit
simarchawla@Simars-Air ~ % docker exec -it c37a97125076 bash
root@c37a97125076:/# apt-get install apt-transport-https
Reading package lists... Done
Building dependency tree
Reading state information... Done
apt-transport-https is already the newest version (1.2.35).
0 upgraded, 0 newly installed, 0 to remove and 2 not upgraded.
root@c37a97125076:/# exit
exit
simarchawla@Simars-Air ~ % docker exec -it f8c26cb5a5df bash
root@f8c26cb5a5df:/# apt-get install apt-transport-https
Reading package lists... Done
Building dependency tree
Reading state information... Done
apt-transport-https is already the newest version (1.2.35).
0 upgraded, 0 newly installed, 0 to remove and 2 not upgraded.
root@f8c26cb5a5df:/#
root@e1aa69b2f0c9: / = com.docker.cli > ansible-playbook -i inventory.txt file5.yaml
PLAY [all] ****
TASK [Update package manager cache] ****
changed: [host1]
changed: [host2]

TASK [Install required packages] ****
ok: [host1] => {item=git}
ok: [host2] => {item=git}
ok: [host1] => {item=curl}
ok: [host2] => {item=curl}
ok: [host1] => {item=wget}
ok: [host2] => {item=wget}
ok: [host1] => {item=nginx}
ok: [host2] => {item=nginx}
ok: [host1] => {item=nodejs}
ok: [host2] => {item=nodejs}

TASK [Clone the repository] ****
changed: [host1]
changed: [host2]

TASK [Install Node.js dependencies] ****
changed: [host2]
changed: [host1]

TASK [Build app] ****
changed: [host2]
changed: [host1]

PLAY RECAP ****
host1 : ok=5    changed=4    unreachable=0    failed=0     skipped=0    rescued=0   ignored=0
host2 : ok=5    changed=4    unreachable=0    failed=0     skipped=0    rescued=0   ignored=0
root@e1aa69b2f0c9: /#

```