

Previously we have seen how to deploy into ansible host using ci cd now we must create docker image using that war file

For that we need to install docker in ansible host machine.

Add ansadmin user into docker group so, user work and run docker command

```
[ansadmin@ansible-server ~]$  
[ansadmin@ansible-server ~]$ grep docker /etc/group  
[ansadmin@ansible-server ~]$  
[ansadmin@ansible-server ~]$ sudo yum install docker -y  
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd  
amzn2-core  
Resolving Dependencies  
--> Running transaction check  
--> Package docker.x86_64 0:20.10.25-1.amzn2.0.4 will be installed  
--> Processing Dependency: containerd >= 1.3.2 for package: docker-20.10.25-1.amzn2.0.4.x86_64  
--> Processing Dependency: libcgrouper >= 0.40.rc1-5.15 for package: docker-20.10.25-1.amzn2.0.4.x86_64  
--> Processing Dependency: runc >= 1.0.0 for package: docker-20.10.25-1.amzn2.0.4.x86_64  
--> Processing Dependency: pigz for package: docker-20.10.25-1.amzn2.0.4.x86_64  
--> Running transaction check  
--> Package containerd.x86_64 0:1.7.11-1.amzn2.0.1 will be installed  
--> Package libcgrouper.x86_64 0:0.41-21.amzn2 will be installed  
--> Package pigz.x86_64 0:2.3.4-1.amzn2.0.1 will be installed  
--> Package runc.x86_64 0:1.1.11-1.amzn2 will be installed  
Finished  
Installing collected packages: docker  
Successfully installed docker-20.10.25-1.amzn2.0.4
```

```
[ansadmin@ansible-server ~]$  
[ansadmin@ansible-server ~]$ grep docker /etc/group  
docker:x:992:  
[ansadmin@ansible-server ~]$  
[ansadmin@ansible-server ~]$ id ansadmin  
uid=1001(ansadmin) gid=1001(ansadmin) groups=1001(ansadmin)  
[ansadmin@ansible-server ~]$  
[ansadmin@ansible-server ~]$ usermod -aG docker ansadmin  
-bash: /usr/sbin/usermod: Permission denied  
[ansadmin@ansible-server ~]$ sudo usermod -aG docker ansadmin  
[ansadmin@ansible-server ~]$  
[ansadmin@ansible-server ~]$ id ansadmin  
uid=1001(ansadmin) gid=1001(ansadmin) groups=1001(ansadmin),992(docker)  
[ansadmin@ansible-server ~]$  
[ansadmin@ansible-server ~]$
```

```

[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$ sudo systemctl start docker
[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$ systemctl status docker
● docker.service - Docker Application Container Engine
   Loaded: loaded (/usr/lib/systemd/system/docker.service; disabled; vendor preset: disabled)
   Active: active (running) since Fri 2024-05-17 12:09:17 UTC; 11s ago
     Docs: https://docs.docker.com
   Process: 2078 ExecStartPre=/usr/libexec/docker/docker-setup-runtimes.sh (code=exited, status=0/SUCCESS)
   Process: 2077 ExecStartPre=/bin/mkdir -p /run/docker (code=exited, status=0/SUCCESS)
  Main PID: 2081 (dockerd)
    Tasks: 7
   Memory: 23.4M
   CGroup: /system.slice/docker.service
           └─2081 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock --default-ulimit nofile=32768:65536
[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$ vim Dockerfile
[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$ cat Dockerfile
FROM tomcat:latest
RUN cp -R /usr/local/tomcat/webapps.dist/* /usr/local/tomcat/webapps
COPY ./*.war /usr/local/tomcat/webapps

[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$ ls
Dockerfile  webapp.war
[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$

```

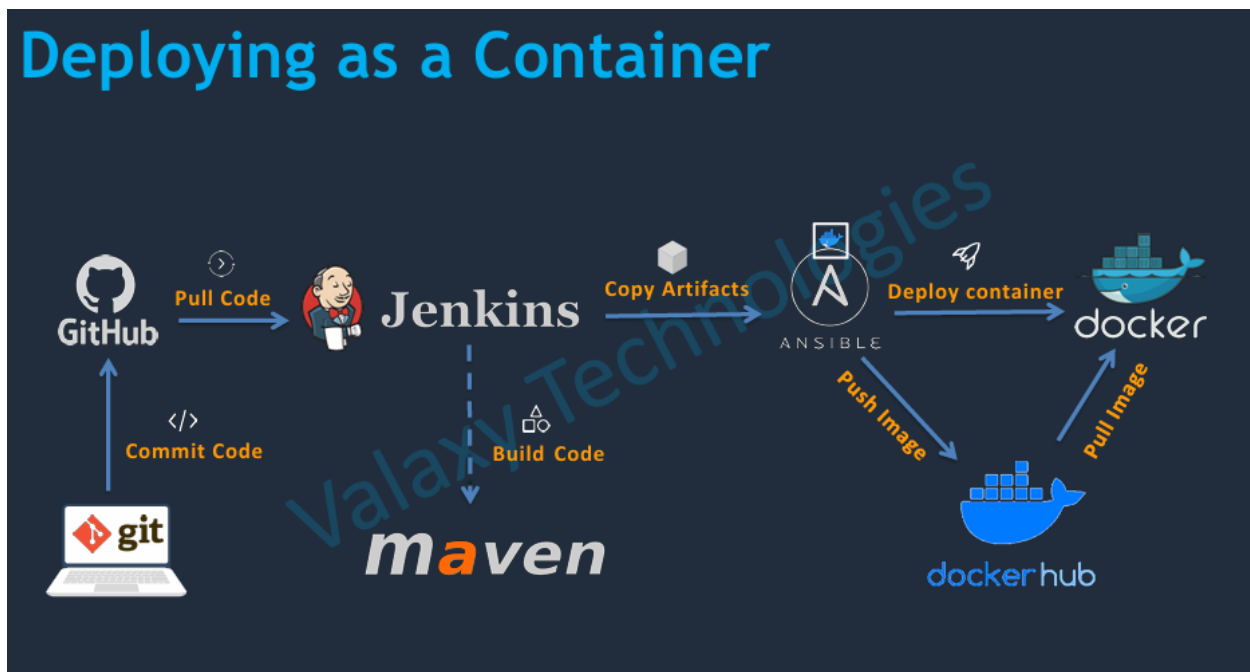
```

[ansadmin@ansible-server docker]$ ls
Dockerfile  webapp.war
[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$ docker build -t regapp:v1 .
Sending build context to Docker daemon 5.12kB
Step 1/3 : FROM tomcat:latest
latest: Pulling from library/tomcat
1a023cab5400: Pull complete
5e5d1bccc544: Pull complete
afd7ada947ce: Pull complete
478e5694bb3e: Pull complete
8fa38685928: Pull complete
20a33f56f976: Pull complete
09a19a84cf60: Pull complete
317da09bcc55: Pull complete
Digest: sha256:077388ab6bf11b4a9565877eb3a39a20c73ca70f21a42a9d82d2348ad3535e1b
Status: Downloaded newer image for tomcat:latest
--> 5a4ee0c8ccbe
Step 2/3 : RUN cp -R /usr/local/tomcat/webapps.dist/* /usr/local/tomcat/webapps
--> Running in 7e5e9d2d141e
Removing intermediate container 7e5e9d2d141e
--> fed7e2a65f2c
Step 3/3 : COPY ./*.war /usr/local/tomcat/webapps
--> 84c771844c28
Successfully built 84c771844c28
Successfully tagged regapp:v1
[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$ ll /var/run/docker.sock
-rw-rw---- 1 root docker 0 May 17 12:09 /var/run/docker.sock
[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$ sudo chmod 777 /var/run/docker.sock
[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$ ll /var/run/docker.sock
-rwxrwxrwx 1 root docker 0 May 17 12:09 /var/run/docker.sock
[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$ docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
regapp v1 84c771844c28 About a minute ago 460MB
tomcat latest 5a4ee0c8ccbe 3 days ago 455MB
[ansadmin@ansible-server docker]$

```

Create container for this image and check if it's working or not.

Deploying as a Container



So, Ansible server there is docker file and war file .

Help of playbook we have to build docker image and push that image to dockerhub and

One docker host multiple docker docker can able to pull that image and run that container first of we create playbook for docker file build play book and then after push into docker hub

So we have to run ansible playbook on ansible server for that we need to add ansible server IP into hosts file and create playbook.

Now we need to add ansible server IP into vim /etc/ansible/hosts file

```
[ansadmin@ansible-server docker]$  
[ansadmin@ansible-server docker]$ sudo vim /etc/an  
anacrontab ansible/  
[ansadmin@ansible-server docker]$ sudo vim /etc/ansible/hosts  
[ansadmin@ansible-server docker]$  
[ansadmin@ansible-server docker]$  
[ansadmin@ansible-server docker]$ cat /etc/ansible/hosts  
[docker]  
172.31.36.247  
  
[ansible]  
172.31.8.110
```

Run the ansible all -a uptime

```
[ansadmin@ansible-server docker]$ ansible all -a uptime
The authenticity of host '172.31.8.110 (172.31.8.110)' can't be established.
ECDSA key fingerprint is SHA256:3P7VlKU5+wTnFXMD3Ysyot6wTOVVUndY3hAKR+0s/Qc.
ECDSA key fingerprint is MD5:a4:86:f4:ac:c2:ae:fb:f2:1f:cf:b5:3b:e3:b2:e1:ee.
Are you sure you want to continue connecting (yes/no)? [WARNING]: Platform linux on host 172.31.36.247 is using the discovered Python interpreter
nterpreter could change this. See
https://docs.ansible.com/ansible/2.9/reference_appendices/interpreter_discovery.html for more information.
172.31.36.247 | CHANGED | rc=0 >>
13:03:14 up 1 day, 5:39, 3 users, load average: 0.00, 0.00, 0.00
yes
172.31.8.110 | UNREACHABLE! => {
  "changed": false,
  "msg": "Failed to connect to the host via ssh: Warning: Permanently added '172.31.8.110' (ECDSA) to the list of known hosts.\r\nPermission
  "unreachable": true
}
[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$
```

You can see that ansible server ansadmin user can't identify ansible becoz we don't added ansadmin user .ssh file into in root user that's why ansible not recognize.

```
[ansadmin@ansible-server docker]$ ip a s
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 9001 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 0a:89:16:c1:86:eb brd ff:ff:ff:ff:ff:ff
    inet 172.31.8.110/20 brd 172.31.15.255 scope global dynamic eth0
        valid_lft 2012sec preferred_lft 2012sec
    inet6 fe80::889:16ff:fe1:86eb/64 scope link
        valid_lft forever preferred_lft forever
3: docker0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue state DOWN group default
    link/ether 02:42:54:6b:79:f7 brd ff:ff:ff:ff:ff:ff
    inet 172.17.0.1/16 brd 172.17.255.255 scope global docker0
        valid_lft forever preferred_lft forever
    inet6 fe80::42:54ff:fe6b:79f7/64 scope link
        valid_lft forever preferred_lft forever
[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$ ssh-copy-id 172.31.8.110
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/ansadmin/.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
ansadmin@172.31.8.110's password:

Number of key(s) added: 1

Now try logging into the machine, with:  "ssh '172.31.8.110'"
and check to make sure that only the key(s) you wanted were added.

[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$ ansible all -a uptime
[WARNING]: Platform linux on host 172.31.36.247 is using the discovered Python interpreter at /usr/bin/python, but future installation of another Python interpreter could change t
https://docs.ansible.com/ansible/2.9/reference_appendices/interpreter_discovery.html for more information.
172.31.36.247 | CHANGED | rc=0 >>
13:08:10 up 1 day, 5:44, 3 users, load average: 0.00, 0.00, 0.00
[WARNING]: Platform linux on host 172.31.8.110 is using the discovered Python interpreter at /usr/bin/python, but future installation of another Python interpreter could change th
https://docs.ansible.com/ansible/2.9/reference_appendices/interpreter_discovery.html for more information.
172.31.8.110 | CHANGED | rc=0 >>
13:08:10 up 8:56, 4 users, load average: 0.08, 0.02, 0.01
[ansadmin@ansible-server docker]$
```

Now it's working

Now create ansible-playbook for create docker image

```
[ansadmin@ansible-server docker]$ vim regapp.yaml
[ansadmin@ansible-server docker]$ cat regapp.yaml
---
- name: This playbook for create docker image
  hosts: ansible
  tasks:
    - name: create docker image
      command: docker build -t regapp:v1 .
      chdir: /opt/docker
[ansadmin@ansible-server docker]$ ansible-playbook regapp.yaml --check
ERROR! conflicting action statements: chdir, command

The error appears to be in '/opt/docker/regapp.yaml': line 5, column 5, but may
be elsewhere in the file depending on the exact syntax problem.

The offending line appears to be:

    tasks:
    - name: create docker image
      ^ here
[ansadmin@ansible-server docker]$ cat regapp.yaml
---
- name: This playbook for create docker image
  hosts: ansible
  tasks:
    - name: create docker image
      command: docker build -t regapp:v1 .
      chdir: /opt/docker
[ansadmin@ansible-server docker]$ vim regapp.yaml
[ansadmin@ansible-server docker]$ ansible-playbook regapp.yaml --check

PLAY [This playbook for create docker image] *****

TASK [Gathering Facts] *****
[WARNING]: Platform linux on host 172.31.8.110 is using the discovered Python interpreter at /usr/bin/python, but future installation of another Python interpreter could change this. See
https://docs.ansible.com/ansible/2.9/reference\_appendices/interpreter\_discovery.html for more information.
ok: [172.31.8.110]

TASK [create docker image] *****
skipping: [172.31.8.110]

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

[ansadmin@ansible-server docker]$
```

Now, run docker images command and see the images

After that run the playbook

```
regapp      v1      84c771844c28   About an hour ago   460MB
tomcat      latest  5a4ee0c8ccbe   3 days ago         455MB
[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$ ansible-playbook regapp.yaml

PLAY [This playbook for create docker image] *****

TASK [Gathering Facts] *****
[WARNING]: Platform linux on host 172.31.8.110 is using the discovered Python interpreter at /usr/bin/python, but future installation of another Python interpreter could chan
https://docs.ansible.com/ansible/2.9/reference\_appendices/interpreter\_discovery.html for more information.
ok: [172.31.8.110]

TASK [create docker image] *****
changed: [172.31.8.110]

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

[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$ docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
regapp v1 84c771844c28 About an hour ago 460MB
tomcat latest 5a4ee0c8ccbe 3 days ago 455MB
[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$ vim regapp.yaml
[ansadmin@ansible-server docker]$ cat regapp.yaml
---
- name: This playbook for create docker image
  hosts: ansible
  tasks:
    - name: create docker image
      command: docker build -t regapp:latest .
      args:
        chdir: /opt/docker
[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$ ansible-playbook regapp.yaml

PLAY [This playbook for create docker image] *****

TASK [Gathering Facts] *****
[WARNING]: Platform linux on host 172.31.8.110 is using the discovered Python interpreter at /usr/bin/python, but future installation of another Python interpreter could chan
https://docs.ansible.com/ansible/2.9/reference\_appendices/interpreter\_discovery.html for more information.
ok: [172.31.8.110]

TASK [create docker image] *****
changed: [172.31.8.110]

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

[ansadmin@ansible-server docker]$ docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
regapp latest 84c771844c28 About an hour ago 460MB
regapp v1 84c771844c28 About an hour ago 460MB
tomcat latest 5a4ee0c8ccbe 3 days ago 455MB
[ansadmin@ansible-server docker]$
```

So, far we have created ansible-playbook which can create a docker image but our purpose is we would like to commit this docker image onto docker hub

```
[ansadmin@ansible-server docker]$ docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
regapp        latest    84c771844c28   About an hour ago   460MB
regapp        v1        84c771844c28   About an hour ago   460MB
tomcat        latest    5a4ee0c8ccbe   3 days ago        455MB
[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$ docker login
Login with your Docker ID to push and pull images from Docker Hub. If you don't have a Docker ID, head over to https://hub.docker.com to create one.
Username: bunty4200
Password:
Error response from daemon: Get "https://registry-1.docker.io/v2/": unauthorized: incorrect username or password
[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$ docker login
Login with your Docker ID to push and pull images from Docker Hub. If you don't have a Docker ID, head over to https://hub.docker.com to create one.
Username: bunty4200
Password:
WARNING! Your password will be stored unencrypted in /home/ansadmin/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store

Login Succeeded
[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$
```

```
[ansadmin@ansible-server docker]$ docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
regapp        latest    84c771844c28   About an hour ago   460MB
regapp        v1        84c771844c28   About an hour ago   460MB
tomcat        latest    5a4ee0c8ccbe   3 days ago        455MB
[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$ docker push regapp:latest
The push refers to repository [docker.io/library/regapp]
dc794ff60b8a: Preparing
18e20891e197: Preparing
4e95d942713d: Preparing
05e06c5519d2: Preparing
268477cde69a: Preparing
53ebc4e827bc: Waiting
c380a1355aca: Waiting
41db8fe8bac3: Waiting
2db7720a8970: Waiting
629ca62fb7c7: Waiting
denied: requested access to the resource is denied
[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$
```

Docker push command don't identify docker hub account for that we need to tag our image with docker hub account username

For that tagging the image using `docker tag imageID bunty4200/regapp`

```

[ansadmin@ansible-server docker]$ docker build -t regapp:latest .
Sending build context to Docker daemon 6.144kB
Step 1/3 : FROM tomcat:latest
--> 5a4ee0c8ccbe
Step 2/3 : RUN cp -R /usr/local/tomcat/webapps.dist/* /usr/local/tomcat/webapps
--> Running in d1b878b17ba5
Removing intermediate container d1b878b17ba5
--> 9995af49b91e
Step 3/3 : COPY ./*.war /usr/local/tomcat/webapps
--> 248e006f64bf
Successfully built 248e006f64bf
Successfully tagged regapp:latest
[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$ docker images
REPOSITORY      TAG          IMAGE ID      CREATED        SIZE
regapp           latest       248e006f64bf  3 seconds ago  460MB
tomcat           latest       5a4ee0c8ccbe  3 days ago    455MB
[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$ docker tag 248e006f64bf bunty4200/regapp:latest
[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$ docker images
REPOSITORY      TAG          IMAGE ID      CREATED        SIZE
regapp           latest       248e006f64bf  35 seconds ago  460MB
bunty4200/regapp latest       248e006f64bf  35 seconds ago  460MB
tomcat           latest       5a4ee0c8ccbe  3 days ago    455MB
[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$ docker push bunty4200/regapp:latest
The push refers to repository [docker.io/bunty4200/regapp]
bc7dc5a975a4: Pushed
ec94abb2a022: Pushed
4e95d942713d: Pushed
05e06c5519d2: Pushed
268477cde69a: Pushed
53ebc4e827bc: Pushed
c380a1355aca: Pushed
41db8fe8bac3: Pushed
2db7720a8970: Pushed
629ca62fb7c7: Pushed
latest: digest: sha256:9a45b9070cc7019177ce49938a0022dc69580b6f84f1eb7e4d89db2b8b6e7fa3 size: 2414
[ansadmin@ansible-server docker]$

```

We are doing manual step to tag the image and push image.

So want to achive this automation for that we have to update playbook

```
[ansadmin@ansible-server docker]$ ls
Dockerfile  regapp.yaml  webapp.war
[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$ vim regapp.yaml
[ansadmin@ansible-server docker]$
[ansadmin@ansible-server docker]$ cat regapp.yaml
---
- name: This playbook for create docker image
  hosts: ansible
  tasks:
    - name: create docker image
      command: docker build -t regapp:latest .
      args:
        chdir: /opt/docker

    - name: create tag to push image onto dockerhub
      command: docker tag regapp:latest bunty4200/regapp:latest

    - name: push docker image
      command: docker push bunty4200/regapp:latest
[ansadmin@ansible-server docker]$
```