Docker Private registry

The Registry is a stateless, highly scalable server side application that stores and lets you distribute Docker images. The Registry is open-source, under the permissive Apache license.

USES

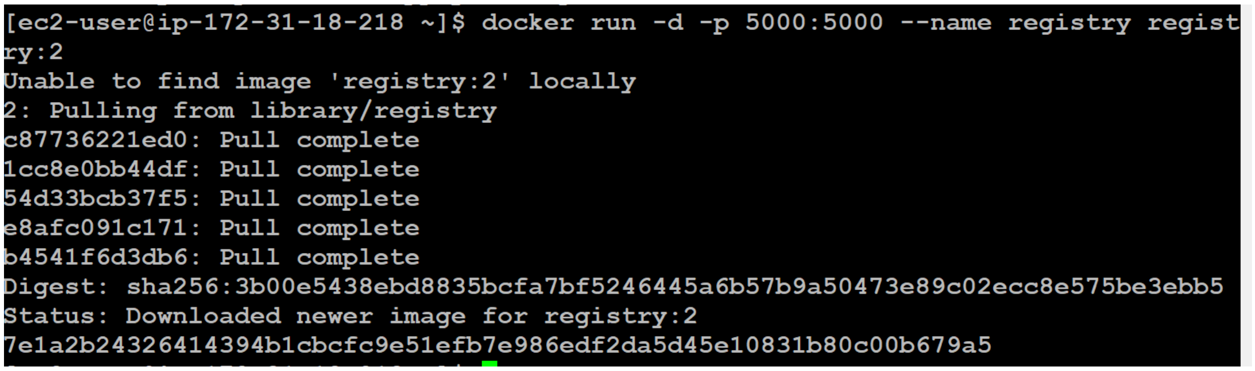
You should use the Registry if you want to:

1. tightly control where your images are being stored
2. fully own your images distribution pipeline
3. integrate image storage and distribution tightly into your in-house development workflow

Requirements

Start your registry here. **--restart=always** means (If you want to use the registry as part of your permanent infrastructure, you should set it to restart automatically when Docker restarts or if it exits)

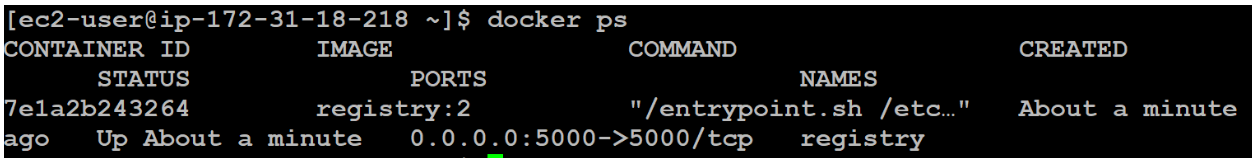
```
$ docker run -d -p 5000:5000 --restart=always --name registry registry:2
```



```
[ec2-user@ip-172-31-18-218 ~]$ docker run -d -p 5000:5000 --name registry regist
ry:2
Unable to find image 'registry:2' locally
2: Pulling from library/registry
c87736221ed0: Pull complete
1cc8e0bb44df: Pull complete
54d33bcb37f5: Pull complete
e8afc091c171: Pull complete
b4541f6d3db6: Pull complete
Digest: sha256:3b00e5438ebd8835bcfa7bf5246445a6b57b9a50473e89c02ecc8e575be3ebb5
Status: Downloaded newer image for registry:2
7e1a2b24326414394b1cbcfc9e51efb7e986edf2da5d45e10831b80c00b679a5
```

Check the registry container or not using below command.

$ docker ps



```
[ec2-user@ip-172-31-18-218 ~]$ docker ps
CONTAINER ID        IMAGE               COMMAND                  CREATED
      STATUS              PORTS                    NAMES
7e1a2b243264        registry:2          "/entrypoint.sh /etc…"   About a minute
ago      Up About a minute   0.0.0.0:5000->5000/tcp   registry
```

Pull (or build) some image from the hub

```
$ docker pull ubuntu
```

Tag the image so that it points to your registry

```
$ docker image tag ubuntu localhost:5000/my-ubuntu
```

push it your private registry

```
$ docker push localhost:5000/my-ubuntu
```

remove your local image and try to pull from local repository.

```
$ docker image remove ubuntu
$ docker image remove localhost:5000/my-ubuntu
```

```
$ docker pull localhost:5000/my-ubuntu
```

Now stop your registry and remove all data

```
$ docker container stop registry && docker container rm -v registry
```

Ref:

https://docs.docker.com/registry/deploying/

Customize the storage location

By default, your registry data is persisted as a docker volume on the host filesystem. If you want to store your registry contents at a specific location on your host filesystem, such as if you have an SSD or SAN mounted into a particular directory, you might decide to use a bind mount instead. A bind mount is more dependent on the filesystem layout of the Docker host, but more performant in many situations. The following example bind-mounts the host directory **/mnt/registry** into the registry container at **/var/lib/registry/.**

```
$ docker run -d \
  -p 5000:5000 \
  --restart=always \
  --name registry \
  -v /mnt/registry:/var/lib/registry \
  registry:2
```

get the list of images in my private registry.

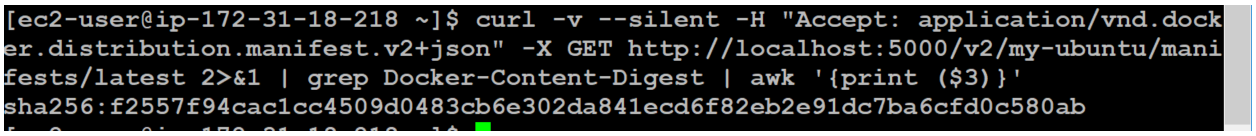
$ curl -X GET http://localhost:5000/v2/_catalog

If you want get the all tags form a particular image.

curl -X GET http://localhost:5000/v2/my-ubuntu/tags/list

if you want delete a tag first we need to get a catalog and tags and then use bellow command

curl -v --silent -H "Accept: application/vnd.docker.distribution.manifest.v2+json" -X GET http://localhost:5000/v2/my-ubuntu/manifests/latest 2>&1 | grep Docker-Content-Digest | awk '{print ($3)}'

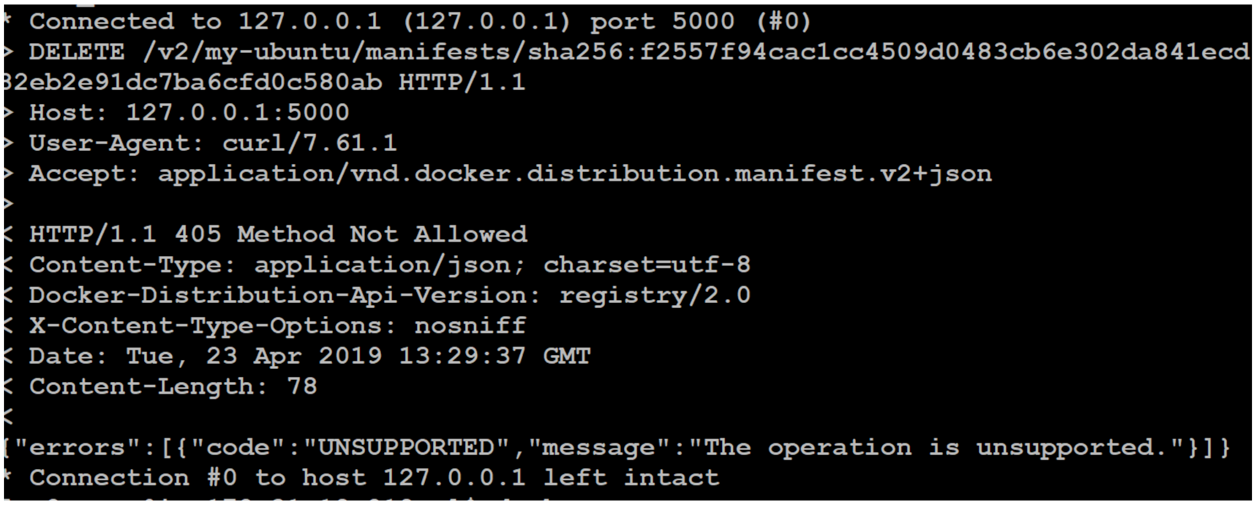


```
[ec2-user@ip-172-31-18-218 ~]$ curl -v --silent -H "Accept: application/vnd.dock
er.distribution.manifest.v2+json" -X GET http://localhost:5000/v2/my-ubuntu/mani
fests/latest 2>&1 | grep Docker-Content-Digest | awk '{print ($3)}'
sha256:f2557f94cac1cc4509d0483cb6e302da841ecd6f82eb2e91dc7ba6cfd0c580ab
```

Run the command given below with manifest value:

```
curl -v --silent -H "Accept: application/vnd.docker.distribution.manifest.v2+json" -X
DELETE http://127.0.0.1:5000/v2/my-ubuntu/manifests/
sha256:f2557f94cac1cc4509d0483cb6e302da841ecd6f82eb2e91dc7ba6cfd0c580ab
```

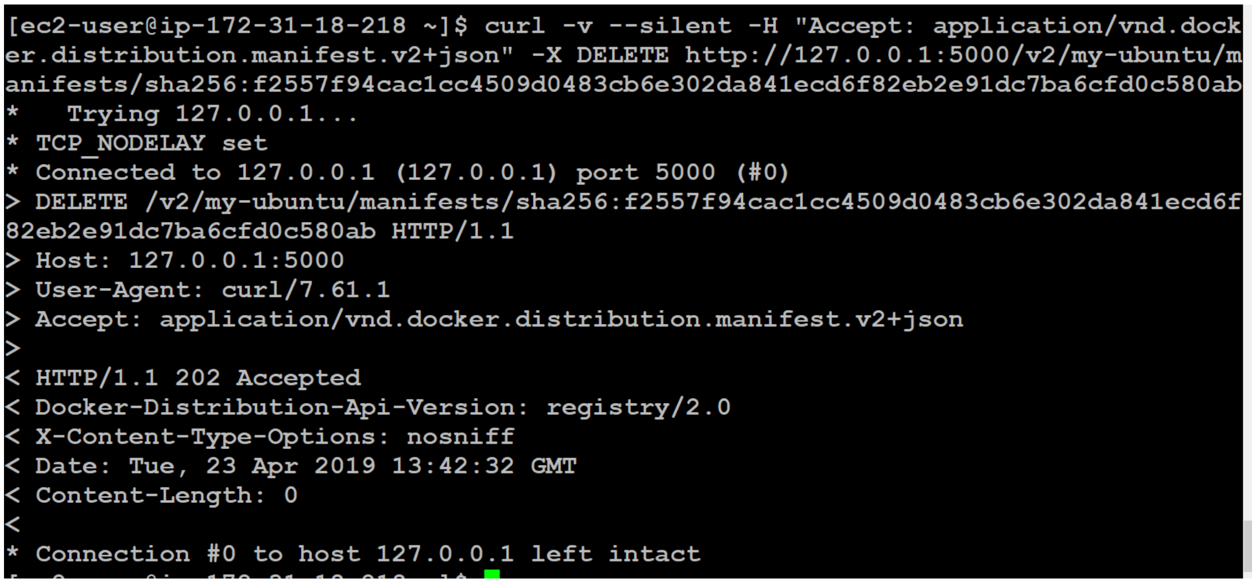
if you face below error



```
* Connected to 127.0.0.1 (127.0.0.1) port 5000 (#0)
> DELETE /v2/my-ubuntu/manifests/sha256:f2557f94cac1cc4509d0483cb6e302da841ecd
32eb2e91dc7ba6cfd0c580ab HTTP/1.1
> Host: 127.0.0.1:5000
> User-Agent: curl/7.61.1
> Accept: application/vnd.docker.distribution.manifest.v2+json
>
< HTTP/1.1 405 Method Not Allowed
< Content-Type: application/json; charset=utf-8
< Docker-Distribution-Api-Version: registry/2.0
< X-Content-Type-Options: nosniff
< Date: Tue, 23 Apr 2019 13:29:37 GMT
< Content-Length: 78
<
{"errors":[{"code":"UNSUPPORTED","message":"The operation is unsupported."}]}
* Connection #0 to host 127.0.0.1 left intact
```

if you want to delete the images we must set the environment variable called
REGISTRY_STORAGE_DELETE_ENABLED=true

```
docker run -d -p 5000:5000 -e REGISTRY_STORAGE_DELETE_ENABLED=true -v
/mnt/registry:/var/lib/registry --restart=always --name registry registry:2
```



```
[ec2-user@ip-172-31-18-218 ~]$ curl -v --silent -H "Accept: application/vnd.dock
er.distribution.manifest.v2+json" -X DELETE http://127.0.0.1:5000/v2/my-ubuntu/m
anifests/sha256:f2557f94cac1cc4509d0483cb6e302da841ecd6f82eb2e91dc7ba6cfd0c580ab
*   Trying 127.0.0.1...
* TCP_NODELAY set
* Connected to 127.0.0.1 (127.0.0.1) port 5000 (#0)
> DELETE /v2/my-ubuntu/manifests/sha256:f2557f94cac1cc4509d0483cb6e302da841ecd6f
82eb2e91dc7ba6cfd0c580ab HTTP/1.1
> Host: 127.0.0.1:5000
> User-Agent: curl/7.61.1
> Accept: application/vnd.docker.distribution.manifest.v2+json
>
< HTTP/1.1 202 Accepted
< Docker-Distribution-Api-Version: registry/2.0
< X-Content-Type-Options: nosniff
< Date: Tue, 23 Apr 2019 13:42:32 GMT
< Content-Length: 0
<
* Connection #0 to host 127.0.0.1 left intact
```

Install Jenkins using docker

```
$ docker run -p 8080:8080 -p 50000:50000 jenkins
```

This will store the workspace in /var/jenkins_home. All Jenkins data lives in there - including plugins and configuration. You will probably want to make that a persistent volume (recommended):

```
docker run -d -p 8080:8080 -p 50000:50000 -u root -v /Jenkins_home:/var/jenkins_home jenkins/jenkins:lts
```

```
docker run   --restart=always -d -p 8080:8080 -p 50000:50000 -u root -v /Jenkins_home:/var/jenkins_home -v /var/run/docker.sock:/var/run/docker.sock --name jenkins  jenkins/jenkins:lts
```

You can run builds on the master (out of the box) but if you want to attach build slave servers: make sure you map the port: -p 50000:50000 - which will be used when you connect a slave agent.

```
docker run -d --restart=always -u root -p 8080:8080 -p 50000:50000 -v /Jenkins_home:/var/jenkins_home -v $(which docker):/usr/bin/docker -v /var/run/docker.sock:/var/run/docker.sock --name jenkins  jenkins/jenkins:lts
```

```
docker run -d --restart=always -u root -p 8080:8080 -p 50000:50000 -v /Jenkins_home:/var/jenkins_home -v $(which docker):/usr/bin/docker -v /var/run/docker.sock:/var/run/docker.sock -v /home/ec2-user/.docker/config.json:/root/.docker/config.json --name jenkins  jenkins/jenkins:lts
```

Docker Private Repository as remote system

1. Install docker and run registry container in new machine.

2. go to docker host machine where we are building images and create a daemon.josn file.

/etc/docker/daemon.json

```
{
  "insecure-registries" : ["publicip:5000"]
}
```

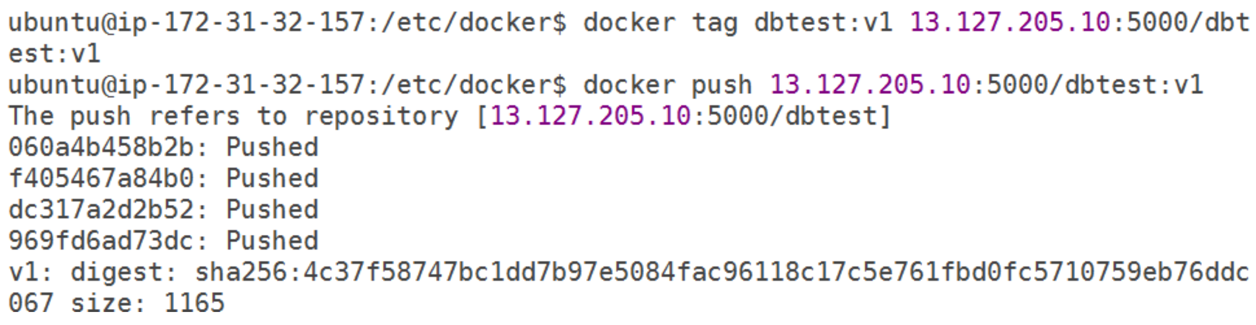
After adding json file must be restart docker service.

$ sudo service docker restart

Add the 5000 port in security group in registry server.

$ docker tag dbtest:v1 13.127.205.10:5000/dbtest:v1

$ docker push 13.127.205.10:5000/dbtest:v1



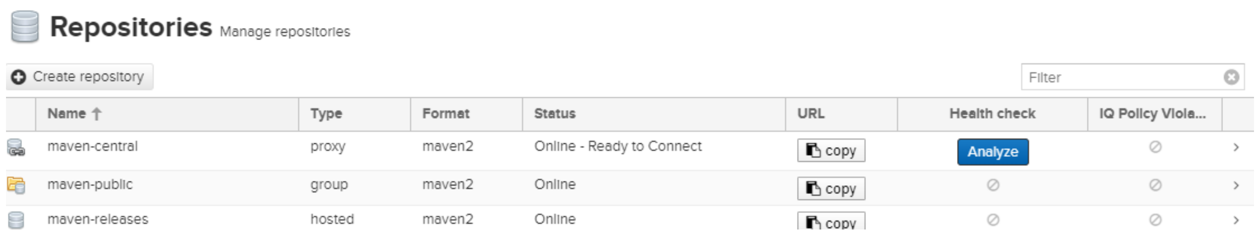
```
ubuntu@ip-172-31-32-157:/etc/docker$ docker tag dbtest:v1 13.127.205.10:5000/dbt
est:v1
ubuntu@ip-172-31-32-157:/etc/docker$ docker push 13.127.205.10:5000/dbtest:v1
The push refers to repository [13.127.205.10:5000/dbtest]
060a4b458b2b: Pushed
f405467a84b0: Pushed
dc317a2d2b52: Pushed
969fd6ad73dc: Pushed
v1: digest: sha256:4c37f58747bc1dd7b97e5084fac96118c17c5e761fbd0fc5710759eb76ddc
067 size: 1165
```

No we are able to push the images successfully.

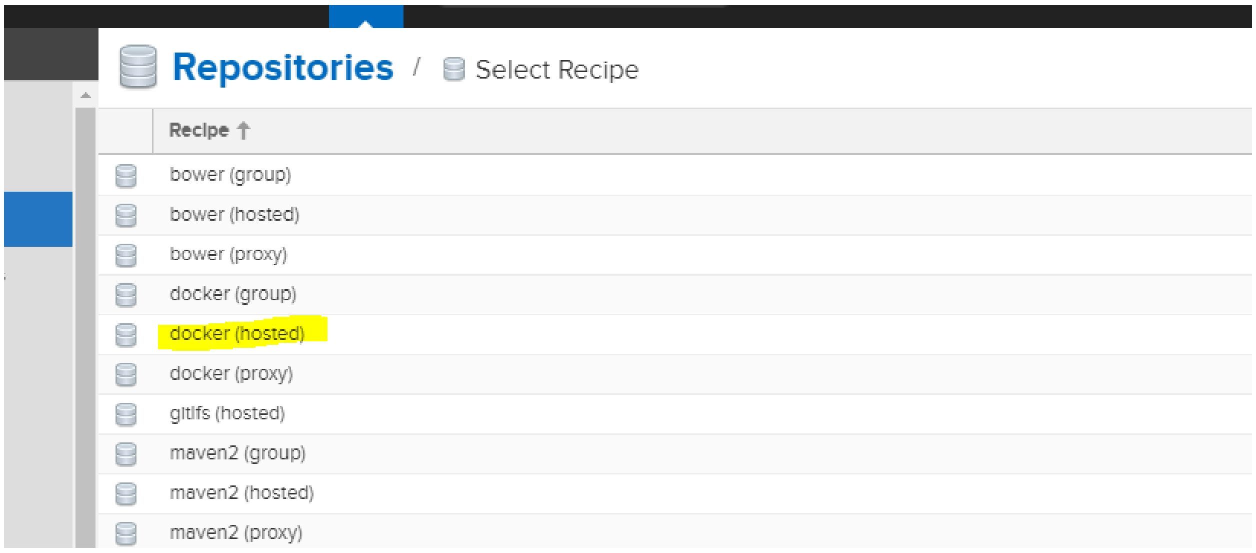
CREATE NEXUS DOCKER PRIVATE REGISTRY

1. Install the nexus in your machine as per our nexus documentation.

2. create docker repo server administration and configuration → Repositories → new Repository → select docker hosted



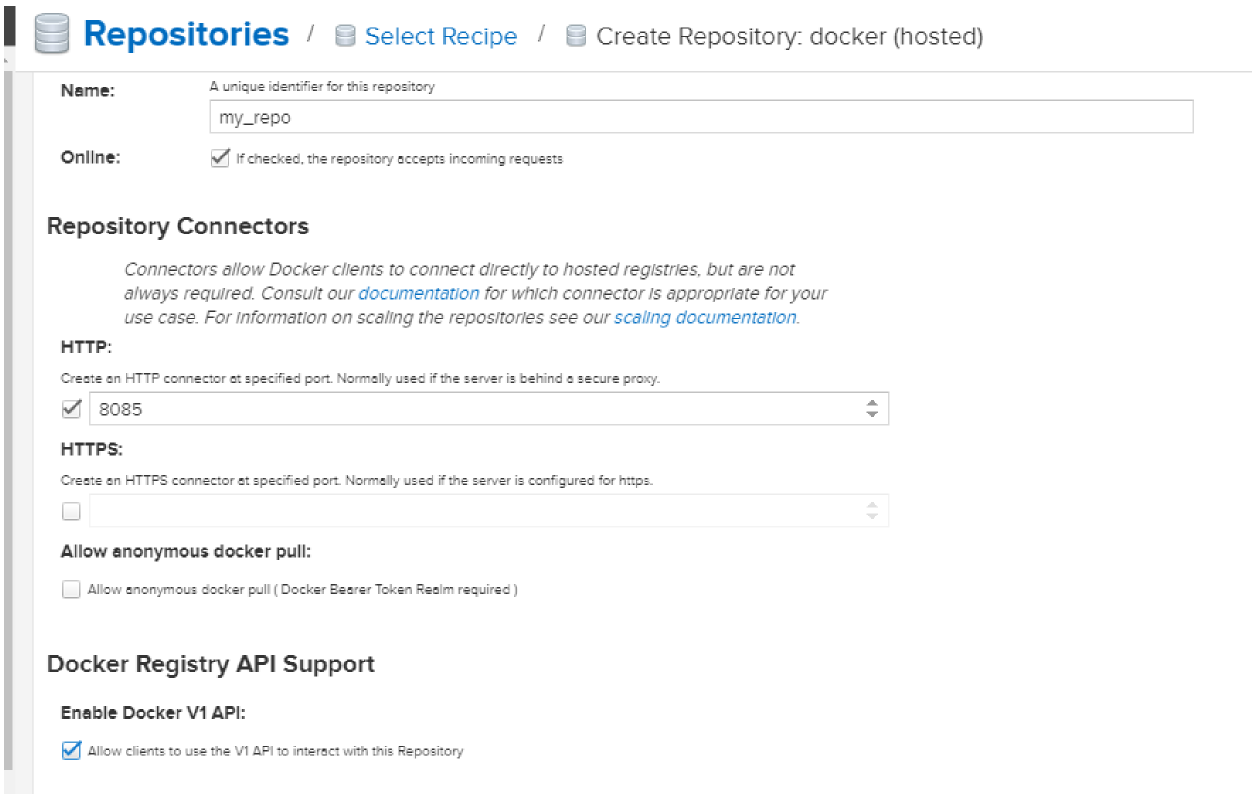
Name ↑	Type	Format	Status	URL	Health check	IQ Policy Viola...
maven-central	proxy	maven2	Online - Ready to Connect	copy	Analyze	⊘
maven-public	group	maven2	Online	copy	⊘	⊘
maven-releases	hosted	maven2	Online	copy	⊘	⊘



Repositories / Select Recipe

	Recipe ↑
	bower (group)
	bower (hosted)
	bower (proxy)
	docker (group)
	docker (hosted)
	docker (proxy)
	gitlfs (hosted)
	maven2 (group)
	maven2 (hosted)
	maven2 (proxy)

Enter the repo name http port which used to push images and select and enable docker v1 api and then create repository.



Repositories / Select Recipe / Create Repository: docker (hosted)

Name: A unique identifier for this repository
my_repo

Online: ✓ If checked, the repository accepts incoming requests

Repository Connectors

Connectors allow Docker clients to connect directly to hosted registries, but are not always required. Consult our documentation for which connector is appropriate for your use case. For information on scaling the repositories see our scaling documentation.

HTTP:

Create an HTTP connector at specified port. Normally used if the server is behind a secure proxy.
✓ 8085

HTTPS:

Create an HTTPS connector at specified port. Normally used if the server is configured for https.
☐

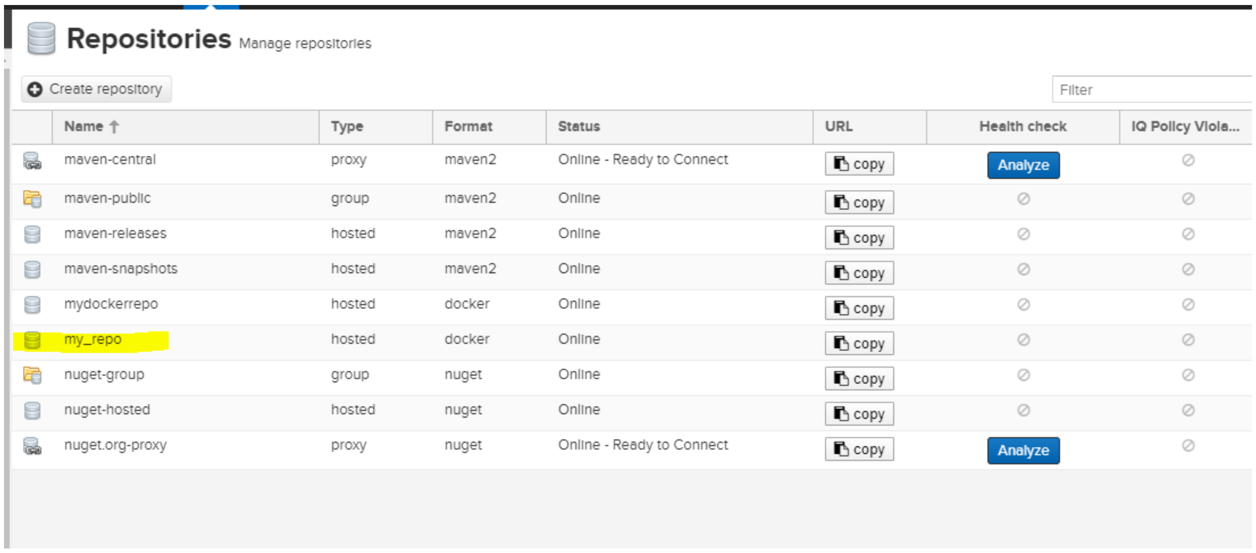
Allow anonymous docker pull:

☐ Allow anonymous docker pull (Docker Bearer Token Realm required)

Docker Registry API Support

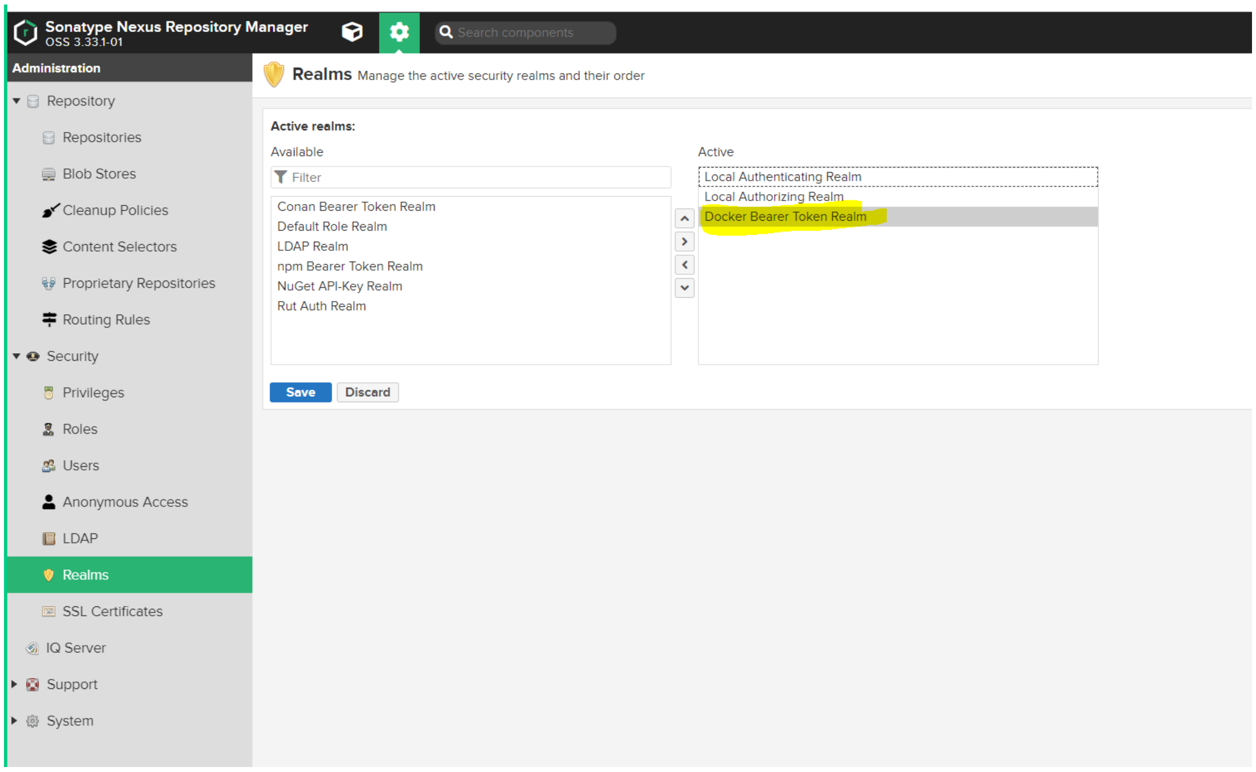
Enable Docker V1 API:

✓ Allow clients to use the V1 API to interact with this Repository



Repositories Manage repositories

Name	Type	Format	Status	URL	Health check	IQ Policy Viola...
maven-central	proxy	maven2	Online - Ready to Connect	copy	Analyze	⊘
maven-public	group	maven2	Online	copy	⊘	⊘
maven-releases	hosted	maven2	Online	copy	⊘	⊘
maven-snapshots	hosted	maven2	Online	copy	⊘	⊘
mydockerrepo	hosted	docker	Online	copy	⊘	⊘
my_repo	hosted	docker	Online	copy	⊘	⊘
nuget-group	group	nuget	Online	copy	⊘	⊘
nuget-hosted	hosted	nuget	Online	copy	⊘	⊘
nuget.org-proxy	proxy	nuget	Online - Ready to Connect	copy	Analyze	⊘



Sonatype Nexus Repository Manager OSS 3.33.1-01

Realms Manage the active security realms and their order

Active realms:

Available	Active
Conan Bearer Token Realm	Local Authenticating Realm
Default Role Realm	Local Authorizing Realm
LDAP Realm	Docker Bearer Token Realm
npm Bearer Token Realm	
NuGet API-Key Realm	
Rut Auth Realm	

add the 8085 ports in to security group of nexus server.

3. create a image with <serverpublicip>:port

```
docker tag myapp <publicip>:8085/myapp
```

4. should login with nexus credentials

```
    docker login -u admin -p admin123 <publicip>:8085
```

Before pushing and login you must add the repo url in daemon.json file and then restart your docker deamon.

```
$ sudo service docker restart
```

/etc/docker/daemon.json

```
{
  "insecure-registries" : ["publicip:8085"]
}
```

5. push the image

```
Docker push <publicip>:8085/myapp
```

Push docker images to ECR repo

First need needs to setup aws cli

Create aws iam user→ add administration policy→ download AWS Access Key ID and AWS Secret Access Key.

If you are using ami linux2 we no need to install aws cli. If you are Ubuntu or some other os need to install aws cli refer below link or refer aws cli installation document.

https://docs.aws.amazon.com/cli/latest/userguide/install-cliv2-linux.html#cliv2-linux-install

you need to create repository **my-alpine** in aws ecr

```
$ aws ecr create-repository \
    --repository-name my-alpine \
    --image-scanning-configuration scanOnPush=true \
    --region ap-south-1
```

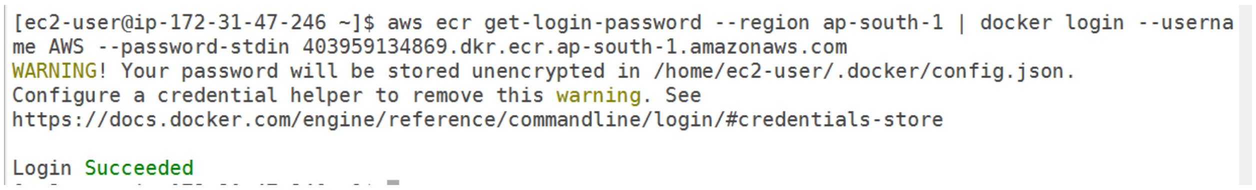
create tag using below command

```
$ docker tag alpine 403959134869.dkr.ecr.ap-south-1.amazonaws.com/my-alpine
```

After you have installed and configured the AWS CLI, authenticate the Docker CLI to your default registry. That way, the **docker** command can push and pull images with Amazon ECR. The AWS CLI provides a **get-login** command to simplify the authentication process.

```
$ aws ecr get-login-password --region ap-south-1 | docker login --username AWS --password-stdin 403959134869.dkr.ecr.ap-south-1.amazonaws.com
```

You can see output like below

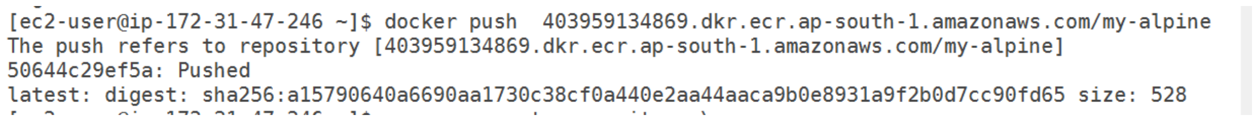


```
[ec2-user@ip-172-31-47-246 ~]$ aws ecr get-login-password --region ap-south-1 | docker login --userna
me AWS --password-stdin 403959134869.dkr.ecr.ap-south-1.amazonaws.com
WARNING! Your password will be stored unencrypted in /home/ec2-user/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store

Login Succeeded
```

Then try to push docker image

```
$  docker push  403959134869.dkr.ecr.ap-south-1.amazonaws.com/my-alpine
```



```
[ec2-user@ip-172-31-47-246 ~]$ docker push  403959134869.dkr.ecr.ap-south-1.amazonaws.com/my-alpine
The push refers to repository [403959134869.dkr.ecr.ap-south-1.amazonaws.com/my-alpine]
50644c29ef5a: Pushed
latest: digest: sha256:a15790640a6690aa1730c38cf0a440e2aa44aaca9b0e8931a9f2b0d7cc90fd65 size: 528
```

Docker private repo ui third party lib

https://hub.docker.com/r/joxit/docker-registry-ui

https://opensourcelibs.com/lib/joxit-docker-registry-ui

https://github.com/Joxit/docker-registry-ui/issues/25

```
docker run -d -p 5000:5000 -e REGISTRY_STORAGE_DELETE_ENABLED=true  -v
`pwd`/config.yml:/etc/docker/registry/config.yml -v /mnt/registry:/var/lib/registry  --
restart=always --name registry registry:2.7.1
```

```
docker run -d -p 80:80 -e URL=http://127.0.0.1:5000 -e DELETE_IMAGES=true joxit/docker-registry-ui:1.5-static
```

config.yml

```
version: 0.1
log:
  fields:
    service: registry
storage:
  delete:
    enabled: true
  cache:
    blobdescriptor: inmemory
  filesystem:
    rootdirectory: /var/lib/registry
http:
  addr: :5000
  headers:
    X-Content-Type-Options: [nosniff]
    Access-Control-Allow-Origin: ['http://3.109.122.249']
    Access-Control-Allow-Methods: ['HEAD', 'GET', 'OPTIONS', 'DELETE']
    Access-Control-Allow-Headers: ['Authorization', 'Accept']
    Access-Control-Max-Age: [1728000]

    Access-Control-Allow-Credentials: [true]

    Access-Control-Expose-Headers: ['Docker-Content-Digest']
```

```
docker run -d -p 5000:5000 -e REGISTRY_STORAGE_DELETE_ENABLED=true  -v
`pwd`/config.yml:/etc/docker/registry/config.yml -v /mnt/registry:/var/lib/registry  --
restart=always --name registry registry:2.7.1
```

```
docker run -d -p 80:80 -e URL=http://65.1.94.194:5000 -e DELETE_IMAGES=true --
name=registry_ui  joxit/docker-registry-ui:1.5-static
```