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Steps to configure private registry for Docke

② January 10, 2018

Posted by: Loges

Category: Blog, Cloud Computing

(https://www.assi configure-privatewindows-serve



Steps to configure private registry Docker Windows server 2016

In	n this blog	we will	show v	ou the St	ens to (Configure	private	registry	for	docker	Window	ıs server	201	6
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REQUIREMENTS

- Windows VM with docker service
- Linux VM (ubuntu or centos) with docker service

OVERVIEW

- Docker registry is a core open-source project and it's available for free in docker hub.
- Docker registry will be installed locally so it will be secure and really very fast.
- Currently, docker has not provided any registry container to run on windows platform.
- So we need to use the Linux environment to configure the private registry to store our windows container image

INSTALLING DOCKER ON WINDOWS

• We have already installed docker service on windows server 2016.

```
Administrator: Windows PowerShell
PS C:\> get-service docker
                              DisplayName
Status
         Name
                              docker
Running
         Docker
PS C:\> docker version
Client:
Version:
                17.06.2-ee-5
API version:
                1.30
Go version:
                go1.8.3
                508bb92
Git commit:
Built:
              Thu Nov 2 00
windows/amd64
                          2 00:51:36 2017
OS/Arch:
Server:
Version:
                17.06.2-ee-5
API version:
                1.30 (minimum version 1.24)
                go1.8.3
508bb92
Go version:
Git commit:
Built:
                Thu Nov 2 00:54:07 2017
OS/Arch:
                windows/amd64
Experimental: false
PS C:\> _
```

(https://www.assistanz.com/wp-

content/uploads/2018/01/image-153.png)

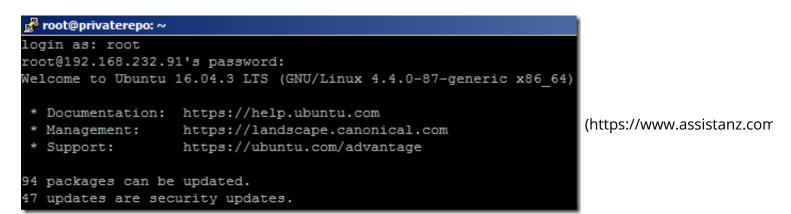
• Please check the URL to install the docker on windows 2016.

https://www.assistanz.com/installing-docker-in-windows-2016/ (https://www.assistanz.com/installing-windows-2016/)

PREPARING THE UBUNTU ENVIRONMENT

Note: We are using the ubuntu flavour OS for this demo

• Login into ubuntu vm through putty.



content/uploads/2018/01/image-154.png)

We have already enabled the root user to access the VM.

```
root@privaterepo:~# cat /etc/passwd root:x:0:0:root:/root:/bin/bash (https://www.assistanz.com/wp-content/uploads/2018/01/imag
```

• Open the **hostname** file to add a hostname for this VM.

```
root@privaterepo:~# vi /etc/hosts (https://www.assistanz.com/wp-content/uploads/2018/01/imag
```

• Add a hostname for this VM along with IP. Save the changes and close the file.

content/uploads/2018/01/image-157.png)

Update the available packages in the Ubuntu VM using apt-get update command.

```
root@privaterepo:~# apt-get update
Get:1 http://security.ubuntu.com/ubuntu xenial-security InRelease [102 kB]
Get:2 http://security.ubuntu.com/ubuntu xenial-security/main amd64 Packages [415 kB]
Get:3 http://security.ubuntu.com/ubuntu xenial-security/main i386 Packages [377 kB]
Get:4 http://security.ubuntu.com/ubuntu xenial-security/main Translation-en [182 kB]
Get:5 http://security.ubuntu.com/ubuntu xenial-security/restricted amd64 Packages [7,224
Get:6 http://security.ubuntu.com/ubuntu xenial-security/restricted i386 Packages [7,224
Get:7 http://security.ubuntu.com/ubuntu xenial-security/restricted Translation-en [2,152
Get:8 http://security.ubuntu.com/ubuntu xenial-security/universe amd64 Packages [194 kB]
Hit:9 http://in.archive.ubuntu.com/ubuntu xenial InRelease
Get:10 http://in.archive.ubuntu.com/ubuntu xenial-updates InRelease [102 kB]
Get:11 http://security.ubuntu.com/ubuntu xenial-security/universe i386 Packages [159 kB]
Get:12 http://in.archive.ubuntu.com/ubuntu xenial-backports InRelease [102 kB]
Get:13 http://security.ubuntu.com/ubuntu xenial-security/universe Translation-en [100 kB
Get:14 http://in.archive.ubuntu.com/ubuntu xenial-updates/main amd64 Packages [695 kB]
Get:15 http://security.ubuntu.com/ubuntu xenial-security/multiverse amd64 Packages [3,20
Get:16 http://security.ubuntu.com/ubuntu xenial-security/multiverse i386 Packages [3,376
Get:17 http://in.archive.ubuntu.com/ubuntu xenial-updates/main i386 Packages [650 kB]
Get:18 http://in.archive.ubuntu.com/ubuntu xenial-updates/main Translation-en [290 kB]
Get:19 http://in.archive.ubuntu.com/ubuntu xenial-updates/restricted amd64 Packages [7,5
Get:20 http://in.archive.ubuntu.com/ubuntu xenial-updates/restricted i386 Packages [7,60
Get:21 http://in.archive.ubuntu.com/ubuntu xenial-updates/restricted Translation-en [2,2
Get:22 http://in.archive.ubuntu.com/ubuntu xenial-updates/universe amd64 Packages [571 k
Get:23 http://in.archive.ubuntu.com/ubuntu xenial-updates/universe i386 Packages [533 kB
Get:24 http://in.archive.ubuntu.com/ubuntu xenial-updates/universe Translation-en [230 k
Get:25 http://in.archive.ubuntu.com/ubuntu xenial-updates/multiverse amd64 Packages [16.
Get:26 http://in.archive.ubuntu.com/ubuntu xenial-updates/multiverse i386 Packages [15.3
Get:27 http://in.archive.ubuntu.com/ubuntu xenial-backports/main amd64 Packages [4,840 B
Get:28 http://in.archive.ubuntu.com/ubuntu xenial-backports/main i386 Packages [4,832 B]
Get:29 http://in.archive.ubuntu.com/ubuntu xenial-backports/universe amd64 Packages [6,6
Get:30 http://in.archive.ubuntu.com/ubuntu xenial-backports/universe i386 Packages [6,60
Fetched 3,697 kB in 15s (241 kB/s)
Reading package lists... Done
root@nrivatereno:~#
```

INSTALLING THE DOCKER ON UBUNTU

• Use the below command to install the docker on ubuntu

apt-get install -y docker.io

```
root@privaterepo:~# apt-get install -y docker.io
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
bridge-utils cgroupfs-mount containerd runc ubuntu-fan
Suggested packages:
mountall aufs-tools debootstrap docker-doc rinse zfs-fuse | zfsutils
The following NEW packages will be installed:
bridge-utils cgroupfs-mount containerd docker.io runc ubuntu-fan
upgraded, 6 newly installed, 0 to remove and 97 not upgraded.
Need to get 17.5 MB of archives.
After this operation, 90.5 MB of additional disk space will be used.
Get:1 http://in.archive.ubuntu.com/ubuntu xenial/main amd64 bridge-utils amd64 1.5-9ubuntu1 [28.6 kB]
Get:2 http://in.archive.ubuntu.com/ubuntu xenial/universe amd64 cgroupfs-mount all 1.2 [4,970 B]
Get:3 http://in.archive.ubuntu.com/ubuntu xenial-updates/universe amd64 runc amd64 1.0.0~rc2+docker1.13.1-0ubuntu1
```

(https://www.assistanz.com/wp-content/uploads/2018/01/image-159.png)

It will take few minutes to complete the operation.

```
Preparing to unpack .../runc 1.0.0~rc2+docker1.13.1-0ubuntu1~16.04.1 amd64.deb ..
Unpacking runc (1.0.0~rc2+docker1.13.1-0ubuntu1~16.04.1) ...
Selecting previously unselected package containerd.
Preparing to unpack .../containerd 0.2.5-Oubuntu1~16.04.1 amd64.deb ...
Unpacking containerd (0.2.5-Oubuntu1~16.04.1) ...
Selecting previously unselected package docker.io.
Preparing to unpack .../docker.io 1.13.1-Oubuntu1~16.04.2 amd64.deb ...
Unpacking docker.io (1.13.1-Oubuntu1~16.04.2) ...
Selecting previously unselected package ubuntu-fan.
Preparing to unpack .../ubuntu-fan 0.12.8~16.04.2 all.deb ...
Unpacking ubuntu-fan (0.12.8~16.04.2) ...
Processing triggers for man-db (2.7.5-1) ...
Processing triggers for ureadahead (0.100.0-19) ...
Processing triggers for systemd (229-4ubuntu19) ...
Setting up bridge-utils (1.5-9ubuntu1) ...
Setting up cgroupfs-mount (1.2) ...
Setting up runc (1.0.0~rc2+docker1.13.1-0ubuntu1~16.04.1) ...
Setting up containerd (0.2.5-Oubuntu1~16.04.1) ...
Setting up docker.io (1.13.1-0ubuntu1~16.04.2) ...
Adding group `docker' (GID 117) ...
Done.
Setting up ubuntu-fan (0.12.8~16.04.2) ...
Processing triggers for systemd (229-4ubuntu19) ...
Processing triggers for ureadahead (0.100.0-19) ...
root@privaterepo:~#
```

(https://www.assistanz.com/wp-content/uploads/2018/01/image-160.png)

• Check the docker service status using the below command.

service docker status

(https://www.assistanz.com/wp-content/uploads/2018/01/image-161.png)

• To verify the docker version, type **docker version** command.



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(HTTPS://WWW.ASSISTANZ.COM/)

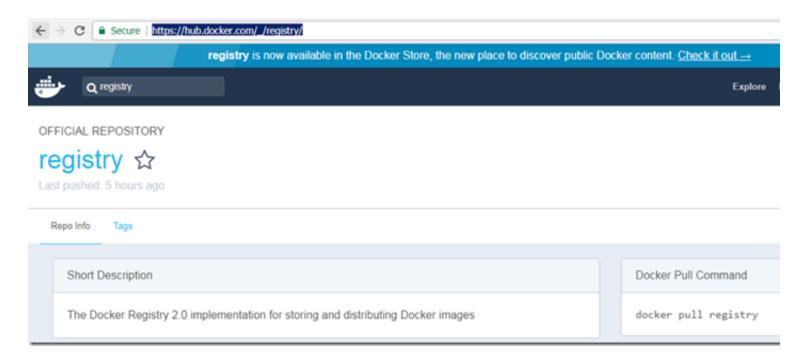
API version: 1.26 (minimum version 1.12)
Go version: go1.6.2
Git commit: 092cba3
Built: Thu Nov 2 20:40:23 2017
OS/Arch: linux/amd64
Experimental: false
root@privaterepo:~#

162.png)

CREATING DOCKER REGISTRY

• You can find the docker official registry from the below URL.

https://hub.docker.com/_/registry/ (https://hub.docker.com/_/registry/)



(https://www.assistanz.com/wp-content/uploads/2018/01/image-163.png)

• Use the **docker pull** command to pull the registry image from the docker hub.

docker pull registry

```
root@privaterepo:~

root@privaterepo:~# docker pull registry

Using default tag: latest

latest: Pulling from library/registry

81033e7c1d6a: Pull complete

b235084c2315: Pull complete

c692f3a6894b: Pull complete

ba2177f3a70e: Pull complete

a8d793620947: Pull complete

Digest: sha256:672d519d7fd7bbc7a448d17956ebeefe225d5eb27509d8dc5ce67ecb4a0bce54

Status: Downloaded newer image for registry:latest

root@privaterepo:~#
```

(https://www.assistanz.com/wp-content/uploads/2018/01/image-164.png)

• You can verify the list of docker images using the below command.

docker images

root@privaterepo:~#	docker images			
REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
registry	latest	d1fd7d86a825	5 hours ago	33.3 MB

(https://www.assistanz.com/wp-content/uploads/2018/01/image-165.png)

• By default, docker registry will listen in port **5000**. Launch the registry container using the docker run in detach n port 5000 mapping.

docker run –name regdock -p 5000:5000 -d registry

```
root@privaterepo:~# docker run --name regdock -p 5000:5000 -d registry
005d523ce240f27b0f6daf862e433241c95b50445e81b43d83478fb3a5567852
```

(https://www.assista

content/uploads/2018/01/image-166.png)

• To verify the running container, execute the **docker ps** command.

```
root@privaterepo:~# docker ps

CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS

005d523ce240 registry "/entrypoint.sh /e..." About a minute ago Up About a minute 0.0.0.0:5000-
root@privaterepo:~#
```

(https://www.assistanz.com/wp-content/uploads/2018/01/image-167.png)

• Now the container is listening in the port **5000**. We can use the system name or IP to access this container from

VERIFY THE DOCKER REGISTRY CONTAINER

To get into the registry container, run the below command.

docker exec - it regdock sh

```
oot@privaterepo:~# docker ps
ONTAINER ID
                   IMAGE
                                        COMMAND
                                                                  CREATED
                                                                                      STATUS
                                                                                                           PORTS
05d523ce240
                                        "/entrypoint.sh /e..."
                                                                                      Up About an hour
                                                                                                           0.0.0.0:5000-
                   registry
                                                                  About an hour ago
:cot@privaterepo:~#
:cot@privaterepo:~#
root@privaterepo:~# docker exec -it regdock sh
```

(https://www.assistanz.com/wp-content/uploads/2018/01/image-168.png)

• The default location of registry config file inside the container is /etc/docker/registry/config.yml

```
/etc/docker/registry # ls
config.yml
/etc/docker/registry # (http
```

(https://www.assistanz.com/wp-content/uploads/2018/01/image-169.png)

• Open the config.yml file in VI editor. By default, it listens to port 5000 and our private images will be stored unde directory.

```
ersion: 0.1
log:
 fields:
   service: registry
storage:
 cache:
   blobdescriptor: inmemory
 filesystem:
   rootdirectory: /var/lib/registry
http:
 addr: :5000
 headers:
   X-Content-Type-Options: [nosniff]
health:
 storagedriver:
   enabled: true
   interval: 10s
   threshold: 3
```

(https://www.assistanz.com/wp-content/uploads/2018

170.png)

• By default, registry container listens through https. To disable the HTTPS, Go-to /etc/docker/ directory on your

```
root@privaterepo:/etc/docker# 11

total 12

drwxr-xr-x 2 root root 4096 Jan 10 11:31 ./

drwxr-xr-x 92 root root 4096 Jan 10 11:30 ../

-rw----- 1 root root 244 Jan 10 11:31 key.json

root@privaterepo:/etc/docker#
```

content/uploads/2018/01/image-171.png)

• Create a new file name named daemon.json file and add the below entry.

{"insecure-registries":["privaterepo:5000"]}

```
root@privaterepo:/etc/docker# vi daemon.json (https://www.assistanz.com/wp-content/uploads/20
```

172.png)

```
root@privaterepo: /etc/docker

"insecure-registries": ["privaterepo: 5000"]

(https://www.assistanz.com/wp-content/uploads/20
```

173.png)

Note: Here privaterepo is the machine host name. Modify it based on your machine

Save and close the file.

```
root@privaterepo:/etc/docker# 11

total 16

drwxr-xr-x 2 root root 4096 Jan 10 14:11 ./

drwxr-xr-x 92 root root 4096 Jan 10 11:30 ../

-rw-r--r- 1 root root 45 Jan 10 14:11 daemon.json

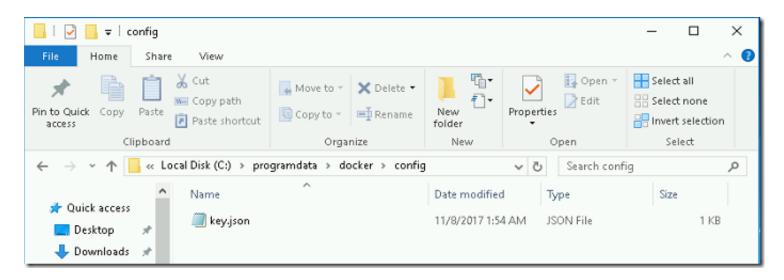
-rw----- 1 root root 244 Jan 10 11:31 key.json

root@privaterepo:/etc/docker#
```

content/uploads/2018/01/image-174.png)

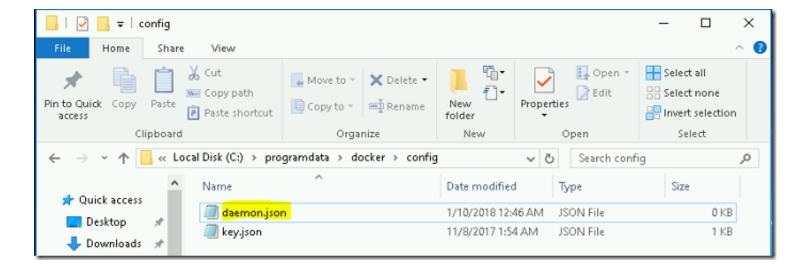
PREPARE THE WINDOWS DOCKER MACHINE

Login into windows VM and Go-to C:\programdata\docker\config folder.



(https://www.assistanz.com/wp-content/uploads/2018/01/image-175.png)

Create a new filename daemon.json in that folder.



(https://www.assistanz.com/wp-content/uploads/2018/01/image-176.png)

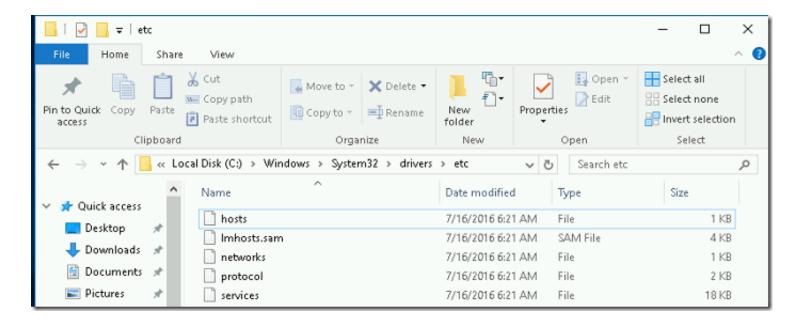
• Open the daemon.json file and add the below entry.

{"insecure-registries":["privaterepo:5000"]}



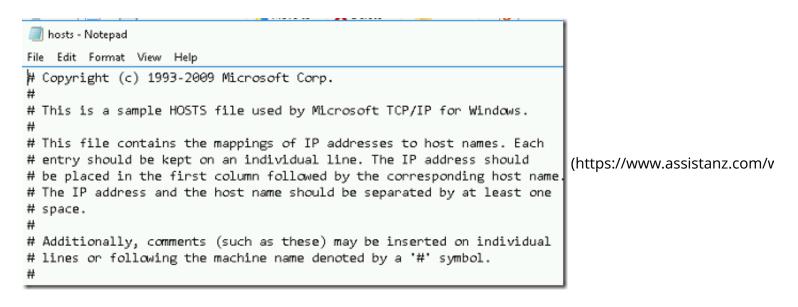
177.png)

- Save and close the file.
- Go-to C:\Windows\System32\drivers\etc folder.



(https://www.assistanz.com/wp-content/uploads/2018/01/image-178.png)

• Open the **hosts** file in the notepad.



content/uploads/2018/01/image-179.png)

Add your ubuntu machine name and its IP address.

```
🧐 hosts - Notepad
File Edit Format View Help
# Copyright (c) 1993-2009 Microsoft Corp.
# This is a sample HOSTS file used by Microsoft TCP/IP for Windows.
# This file contains the mappings of IP addresses to host names. Each
# entry should be kept on an individual line. The IP address should
# be placed in the first column followed by the corresponding host name.
# The IP address and the host name should be separated by at least one
# space.
# Additionally, comments (such as these) may be inserted on individual
# lines or following the machine name denoted by a '#' symbol.
                                                                           (https://www.assistanz.com
# For example:
#
#
       102.54.94.97
                                                # source server
                        rhino.acme.com
        38.25.63.10
#
                        x.acme.com
                                                # x client host
# localhost name resolution is handled within DNS itself.
                      localhost
        127.0.0.1
#
        ::1
                        localhost
192.168.232.91 privaterepo
```

content/uploads/2018/01/image-180.png)

• Save and close the hosts file. Verify the hostname through **PING** command.

```
PS C:\> ping privaterepo

Pinging privaterepo [192.168.232.91] with 32 bytes of data:
Reply from 192.168.232.91: bytes=32 time<1ms TTL=64

Ping statistics for 192.168.232.91:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = Oms, Maximum = Oms, Average = Oms
PS C:\>
```

content/uploads/2018/01/image-181.png)

PREPARING THE IMAGES

From the windows machine, type docker images to list the available images in the windows docker.

```
PS C:\> docker images
REPOSITORY TAG IMAGE ID CREATED
microsoft/windowsservercore latest ce27208ad678 3 months ago
microsoft/nanoserver latest 302c09e12784 3 months ago
PS C:\> _
```

(https://www.assistanz.com/wp-content/uploads/2018/01/image-182.png)

The image name should be in the below format

private repo namespace:<portnumber>/imagename

Example: privaterepo:5000/mynanoserver

• Rename the image name as shown as above. We are using nanoserver for this demo.

docker tag microsoft/nanoserver privaterepo:5000/mynanoserver

```
C:\> docker images
REPOSITORY
                                  TAG
                                                         IMAGE ID
                                                                                 CREATED
                                                         ce27208ad678
microsoft/windowsservercore
                                                                                 3 months ago
                                  latest
microsoft/nanoserver
                                  latest
                                                          302c09e12784
                                                                                 3 months ago
PS C:\>
PS C:\>
PS C:\>
PS C:\>
        docker tag microsoft/nanoserver privaterepo:5000/mynanoserver
   C:\>
```

(https://www.assistanz.com/wp-content/uploads/2018/01/image-183.png)

Untag the old image name using the below command.

docker rmi microsoft/nanoserver:latest

```
PS C:\> docker images
REPOSITORY
                                                            IMAGE ID
                                                                                   CREATED
                                     TAG
microsoft/windowsservercore
                                                            ce27208ad678
                                     latest
                                                                                    3 months ago
                                                                                   3 months ago
microsoft/nanoserver
                                     latest
                                                            302c09e12784
privaterepo:5000/mynanoserver
                                                                                   3 months ago
                                     latest
                                                            302c09e12784
PS C:\>
PS C:\>
PS C:\> <mark>docker</mark> rmi microsoft/nanoserver:latest
Untagged: microsoft/nanoserver:latest
Untagged: microsoft/nanoserver@sha256:bea766f955b4e7e0c5d41654454629b81ef20d57df51709d61
PS C:\>
PS C:\>
PS C:\>
PS C:\> docker images
REPOSITORY
                                     TAG
                                                            IMAGE ID
                                                                                   CREATED
                                                            ce27208ad678
microsoft/windowsservercore
                                     latest
                                                                                    3 months ago
privaterepo:5000/mynanoserver
                                                            302c09e12784
                                                                                   3 months ago
                                     latest
PS C:\> _
```

(https://www.assistanz.com/wp-content/uploads/2018/01/image-184.png)

VERIFICATION

• Use the below command to push docker images to docker registry.

docker push privaterepo:5000/mynanoserver

```
PS C:\> docker push privaterepo:5000/mynanoserver
The push refers to a repository [privaterepo:5000/mynanoserver]
58c642e95314: Skipped foreign layer
6c357baed9f5: Skipped foreign layer
latest: digest: sha256:bea766f955b4e7e0c5d41654454629b81ef20d57df51709d61531d51d1cac
PS C:\> _
```

(https://www.assistanz.com/wp-content/uploads/2018/01/image-185.png)

• We can use the below URL to view the list of images available in the private registry through a web browser.

http://privaterepo:5000/v2/_catalog (http://privaterepo:5000/v2/_catalog)



content/uploads/2018/01/image-186.png)

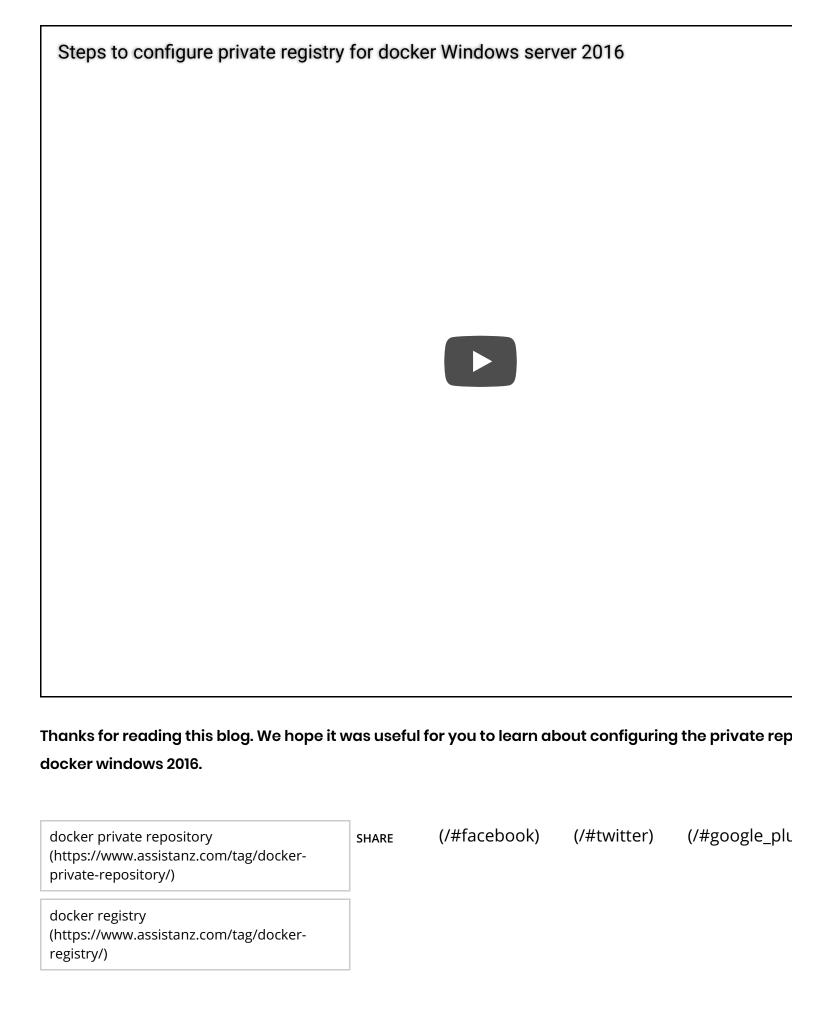
Note: Privaterepo is the ubuntu machine name.

• Login into registry container and go-to /var/lib/registry/docker/registry/v2/repositories directory and you will pushed images.

```
CONTAINER ID
                                        COMMAND
                                                                 CREATED
                                                                                                          PORTS
                   IMAGE
                                                                                     STATUS
005d523ce240
                                        "/entrypoint.sh /e..."
                                                                 2 hours ago
                                                                                     Up 2 hours
                                                                                                          0.0.0.0:5000-
                   registry
root@privaterepo:~#
root@privaterepo:~#
root@privaterepo:~# docker exec -it regdock sh
 # cd /var/lib/registry/docker/registry/v2/repositories
var/lib/registry/docker/registry/v2/repositories #
var/lib/registry/docker/registry/v2/repositories #
var/lib/registry/docker/registry/v2/repositories # ls
var/lib/registry/docker/registry/v2/repositories #
```

(https://www.assistanz.com/wp-content/uploads/2018/01/image-187.png)

VIDEO



docker repository (https://www.assistanz.com/tag/docker-repository/)

docker ubuntu (https://www.assistanz.com/tag/docker-ubuntu/)

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nanoserver (https://www.assistanz.com/tag/nanoserver/)

windows docker (https://www.assistanz.com/tag/windows-docker/)



AUTHOR: **LOGES**

Logeswaran holds Microsoft certified engineer & solution architect certifications with over 11+2 experience in the fields of hosting technologies and IMS/Cloud consulting. At AssistanZ, Logesw

spearheads the strategic planning and execution of the company's Microsoft based core technologies to Enterpris

2 comments



Sreejith

APRIL 15, 2018 AT 9:48 PM (HTTPS://WWW.ASSISTANZ.COM/STEPS-TO-CONFIGURE-PRIVATE-REGISTRY-FOR-DOCI SERVER-2016/#COMMENT-3053)

Hi Loges,

Quite informative with the screen shots. I actually reached your website while troubleshoo this.

Well, I think we have an issue here with the setup. If you actually check the contents of you you will soon realize that the size is too small. As its mentioning skipping foreign layers, its storing the nano server layer there....!

Please have a look at this.

Thanks & regards, Sreejith



Loges (http://www.assistanz.com)

APRIL 20, 2018 AT 1:40 PM (HTTPS://WWW.ASSISTANZ.COM/STEPS-TO-CONFIGURE-PRIVATE-REGISTRY-FOR-DOCI SERVER-2016/#COMMENT-3225)

Hi Sreejith,

Thanks for the comment. We will check and update it.

Regards,

Loges

leave a reply

Name E-mail Website

Message *

> post a comment

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