Basic Container
OpenShift Container Platform

LAB SHEET

Lab Note:

Server Information	
Hostname	**IP**
openshift.192.168.56.15.nip.io	192.168.56.15
appsname-projectname.192.168.56.15.nip.io	192.168.56.15
docker.192.168.56.15.nip.io	192.168.56.15
wordpress.192.168.56.15.nip.io	192.168.56.15

User Information	
User	**Password**
System: root	p@ssw0rd
Web Console: developer	p@ssw0rd
Web Console:	

1. Installation Lab (docker)

1. ทำการ login ไปที่เครื่อง server ด้วย user root โดยใช้ SSH Client หลังจาก เสร็จเรียบร้อย ให้ logout และ login ใหม่อีกครั้ง

```
$ ssh root@192.168.56.15
password: <enter root password>
Last login: Thu Aug 17 14:41:20 2017 from 192.168.56.1
[root@workshop ~]#
```

2. ตรวจสอบความถูกต้องในขั้นตอนการเพิ่ม repository

```
[root@workshop ~]# yum repolist
Loaded plugins: fastestmirror
Loading mirror speeds from cached hostfile
repo id                                  repo name                                  status
base/7/x86_64                            CentOS-7 - Base                            9,591
extras/7/x86_64                          CentOS-7 - Extras                            283
updates/7/x86_64                         CentOS-7 - Updates                         1,134
repolist: 11,008
```

3. ติดตั้ง docker และ/หรือ ติดตั้ง cockpit (GUI tools)

```
[root@workshop ~]# yum -y install docker
Loaded plugins: fastestmirror
base                                                                     | 3.6 kB  00:00:00
extras                                                                   | 3.4 kB  00:00:00
updates                                                                  | 3.4 kB  00:00:00
(1/2): extras/7/x86_64/primary_db                                        | 130 kB  00:00:00
(2/2): updates/7/x86_64/primary_db                                       | 3.6 MB  00:00:01
Loading mirror speeds from cached hostfile
Resolving Dependencies
--> Running transaction check
---> Package docker.x86_64 2:1.12.6-61.git85d7426.el7.centos will be installed
--> Processing Dependency: docker-common = 2:1.12.6-61.git85d7426.el7.centos for package:
2:docker-1.12.6-61.git85d7426.el7.centos.x86_64
--> Processing Dependency: docker-client = 2:1.12.6-61.git85d7426.el7.centos for package:
2:docker-1.12.6-61.git85d7426.el7.centos.x86_64
--> Processing Dependency: libsystemd.so.0(LIBSYSTEMD_209)(64bit) for package: 2:docker-
1.12.6-61.git85d7426.el7.centos.x86_64
--> Processing Dependency: libdevmapper.so.1.02(DM_1_02_97)(64bit) for package: 2:docker-
1.12.6-61.git85d7426.el7.centos.x86_64
--> Processing Dependency: libsystemd.so.0()(64bit) for package: 2:docker-1.12.6-
```

```
61.git85d7426.el7.centos.x86_64
.
.
.
truncated output

Installed:
  docker.x86_64 2:1.12.6-61.git85d7426.el7.centos

Dependency Installed:
  audit-libs-python.x86_64 0:2.7.6-3.el7
  checkpolicy.x86_64 0:2.5-4.el7
  container-selinux.noarch 2:2.28-1.git85ce147.el7
  container-storage-setup.noarch 0:0.7.0-1.git4ca59c5.el7
  docker-client.x86_64 2:1.12.6-61.git85d7426.el7.centos
  docker-common.x86_64 2:1.12.6-61.git85d7426.el7.centos
  libaio.x86_64 0:0.3.109-13.el7
  libcgroup.x86_64 0:0.41-13.el7
  libsemanage-python.x86_64 0:2.5-8.el7
  oci-register-machine.x86_64 1:0-3.13.gitcd1e331.el7
  oci-systemd-hook.x86_64 1:0.1.14-1.git1ba44c6.el7
  oci-umount.x86_64 2:2.0.0-1.git299e781.el7
  policycoreutils-python.x86_64 0:2.5-17.1.el7
  python-IPy.noarch 0:0.75-6.el7
  setools-libs.x86_64 0:3.3.8-1.1.el7
  skopeo-containers.x86_64 1:0.1.24-1.dev.git28d4e08.el7
  yajl.x86_64 0:2.0.4-4.el7

Complete!


[root@workshop ~]# yum -y install cockpit
Loaded plugins: fastestmirror
Loading mirror speeds from cached hostfile
Resolving Dependencies
--> Running transaction check
---> Package cockpit.x86_64 0:151-1.el7.centos will be installed
--> Processing Dependency: cockpit-ws = 151-1.el7.centos for package: cockpit-151-
1.el7.centos.x86_64
--> Processing Dependency: cockpit-system = 151-1.el7.centos for package: cockpit-151-
1.el7.centos.x86_64
--> Processing Dependency: cockpit-bridge = 151-1.el7.centos for package: cockpit-151-
1.el7.centos.x86_64
.
.
.
truncated output

Installed:
  cockpit.x86_64 0:151-1.el7.centos

Dependency Installed:
  cockpit-bridge.x86_64 0:151-1.el7.centos     cockpit-system.noarch 0:151-1.el7.centos
  cockpit-ws.x86_64 0:151-1.el7.centos         json-glib.x86_64 0:1.2.6-1.el7

Complete!
```

4. เปิดใช้งาน docker เป็นแบบ service และ enable docker ให้เป็นแบบ server เมื่อ start เครื่องขึ้นมาใหม่ และ ตรวจสอบความถูกต้องการติดตั้ง docker

```
[root@worksop ~]# systemctl start docker ;  systemctl enable docker

[root@worksop ~]# systemctl status docker

[root@worksop ~]# docker info
Containers: 0
 Running: 0
 Paused: 0
 Stopped: 0
Images: 0
Server Version: 1.12.6
Storage Driver: devicemapper
 Pool Name: docker-253:1-67620535-pool
 Pool Blocksize: 65.54 kB
 Base Device Size: 10.74 GB
 Backing Filesystem: xfs
 Data file: /dev/loop0
 Metadata file: /dev/loop1
 Data Space Used: 11.73 MB
 Data Space Total: 107.4 GB
 Data Space Available: 52.46 GB
 Metadata Space Used: 581.6 kB
 Metadata Space Total: 2.147 GB
 Metadata Space Available: 2.147 GB
 Thin Pool Minimum Free Space: 10.74 GB
 Udev Sync Supported: true
 Deferred Removal Enabled: true
 Deferred Deletion Enabled: true
 Deferred Deleted Device Count: 0


[root@worksop ~]# docker version
Client:
 Version:         1.12.6
 API version:     1.24
 Package version: docker-1.12.6-61.git85d7426.el7.centos.x86_64
 Go version:      go1.8.3
 Git commit:      85d7426/1.12.6
 Built:           Tue Oct 24 15:40:21 2017
 OS/Arch:         linux/amd64

Server:
 Version:         1.12.6
 API version:     1.24
 Package version: docker-1.12.6-61.git85d7426.el7.centos.x86_64
 Go version:      go1.8.3
 Git commit:      85d7426/1.12.6
 Built:           Tue Oct 24 15:40:21 2017
```

```
 OS/Arch:         linux/amd64
```

5. เปิดใช้งาน dockpit เป็นแบบ service และ enable cockpit ให้เป็นแบบ server เมื่อ start เครื่องขึ้นมาใหม่ และ ตรวจสอบความถูกต้องการติดตั้ง cockpit

```
[root@worksop ~]# systemctl start cockpit ;  systemctl enable cockpit

[root@worksop ~]# systemctl status cockpit

open browser to https://docker.192.168.56.15.nip.io:9090
login with root account and password
```

2. Docker basic command Lab

1. ทำการ login ไปที่เครื่อง docker.192.168.56.15.nip.io ด้วย user root โดยใช้ SSH Client หลังจาก เสร็จเรียบร้อย ให้ logout และ login ใหม่อีกครั้ง

```
$ ssh centos@docker.192.168.56.15.nip.io
centos@<docker.192.168.56.15.nip.io>'s password: <enter centos password>
Last login: Thu Aug 17 14:41:20 2017 from 172.20.10.9
[centos@workshop ~]$
```

2. ใช้ docker basic command line

```
[centos@workshop ~]$ mkdir -p ~/docker/lab1
[centos@workshop ~]$ cd ~/docker/lab1
[centos@workshop lab1]$ docker search whalesay
```

```
[centos@workshop ~]$ docker search whalesay
INDEX       NAME                                      DESCRIPTION                                     STARS     OFFICIAL   AUTOMATED
docker.io   docker.io/docker/whalesay                 An image for use in the Docker demo tutorial    621
docker.io   docker.io/mendlik/docker-whalesay         Docker whalesay image from training materi...   6                    [OK]
docker.io   docker.io/caibar/whalesay                 Builds automatizados.                           1                    [OK]
docker.io   docker.io/milanfort/whalesay              Modified docker/whalesay image that output...   1
docker.io   docker.io/nikovirtala/whalesay            Tiny Go web service to print Moby Dock ASC...   1                    [OK]
docker.io   docker.io/ojenge/whalesay                 from docker/whalesay                            1
docker.io   docker.io/sabs1117/whalesay               Whalesay with fortune phrases.                  1
docker.io   docker.io/swinton/whalesay                whalesay, innit                                 1
docker.io   docker.io/asakilan/pg-whalesay            My whalesay                                     0
docker.io   docker.io/blaines/whalesay                                                               0
docker.io   docker.io/claytonrogers/docker-whalesay   Whalesay automated build                        0                    [OK]
docker.io   docker.io/dhalljohnston/whalesay          whalesay                                        0
docker.io   docker.io/firecyberice/whalesay           Docker **Cloud** automated build for **amd...   0
docker.io   docker.io/forsingh/whalesay               whalesay                                        0                    [OK]
docker.io   docker.io/jetolabs/whalesay               whalesay with fortune cookie messages           0
docker.io   docker.io/jracionero/docker-whalesay      My smarter docker whalesay                      0
docker.io   docker.io/ksvel/whalesay-demo            whalesay demo                                   0
docker.io   docker.io/laveshin/whalesay              whalesay image                                  0
docker.io   docker.io/liuzhishan/docker-whalesay     docker-whalesay                                 0
docker.io   docker.io/phyominhtun/whalesay           My whalesay image!                              0
docker.io   docker.io/puneethp/whalesay              Docker-Whalesay                                 0
docker.io   docker.io/saulgoodman/whalesay           whalesay image for docker training              0
docker.io   docker.io/tiagoferreira/whalesay         Whalesay image                                  0
docker.io   docker.io/whalebrew/whalesay                                                            0
docker.io   docker.io/xiyan130227/docker-whalesay    My smarter docker whalesay.                     0
[centos@workshop ~]$
```

```
[centos@workshop ~]$ docker pull docker/whalesay:latest
```

```
[centos@workshop lab1]$ docker pull docker/whalesay:latest
Trying to pull repository docker.io/docker/whalesay ...
latest: Pulling from docker.io/docker/whalesay

e190868d63f8: Downloading [==========>                                        ] 15.12 MB/65.77 MB
909cd34c6fd7: Download complete
0b9bfabab7c1: Download complete
a3ed95caeb02: Download complete
00bf65475aba: Downloading [>                                                  ] 377.8 kB/37.71 MB
c57b6bcc83e3: Waiting
8978f6879e2f: Waiting
8eed3712d2cf: Waiting
```

[centos@workshop ~]$ docker run -it docker/whalesay:latest cowsay “Hello KTB”

```
[centos@workshop ~]$ docker run -it docker/whalesay:latest cowsay “Hello KTB”
 _____________
< “Hello KTB” >
 -------------
    \
     \
      \
                    ##        .
              ## ## ##       ==
           ## ## ## ##      ===
       /""""""""""""""""___/ ===
  ~~~ {~~ ~~~~ ~~~ ~~~~ ~~ ~ /  ===- ~~~
       \______ o          __/
        \    \        __/
          \____\______/
[centos@workshop ~]$
```

[centos@workshop ~]$ docker run -it docker/whalesay:latest cowsay “Hello KTB-FAD”

```
[centos@workshop ~]$ docker run -it docker/whalesay:latest cowsay “Hello KTB-FAD”
 _________________
< “Hello KTB-FAD” >
 -----------------
    \
     \
      \
                    ##        .
              ## ## ##       ==
           ## ## ## ##      ===
       /""""""""""""""""___/ ===
  ~~~ {~~ ~~~~ ~~~ ~~~~ ~~ ~ /  ===- ~~~
       \______ o          __/
        \    \        __/
          \____\______/
[centos@workshop ~]$
```

[centos@workshop lab1]$ docker ps

```
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS              PORTS               NAMES
```

[centos@workshop lab1]$ docker ps -a

```
CONTAINER ID        IMAGE                   COMMAND                  CREATED             STATUS                      PORTS               NAMES
3d6668d67dc9        docker/whalesay:latest  "cowsay “Hello KTB-"     7 minutes ago       Exited (0) 7 minutes ago                        small_kare
018ddb1944f8        docker/whalesay:latest  "cowsay “Hello KTB\xe2"  10 minutes ago      Exited (0) 10 minutes ago                       sick_kare
```

[centos@workshop lab1]$ docker rm 018ddb1944f8 3d6668d67dc9

```
018ddb1944f8
3d6668d67dc9
```

[centos@workshop lab1]$ docker images

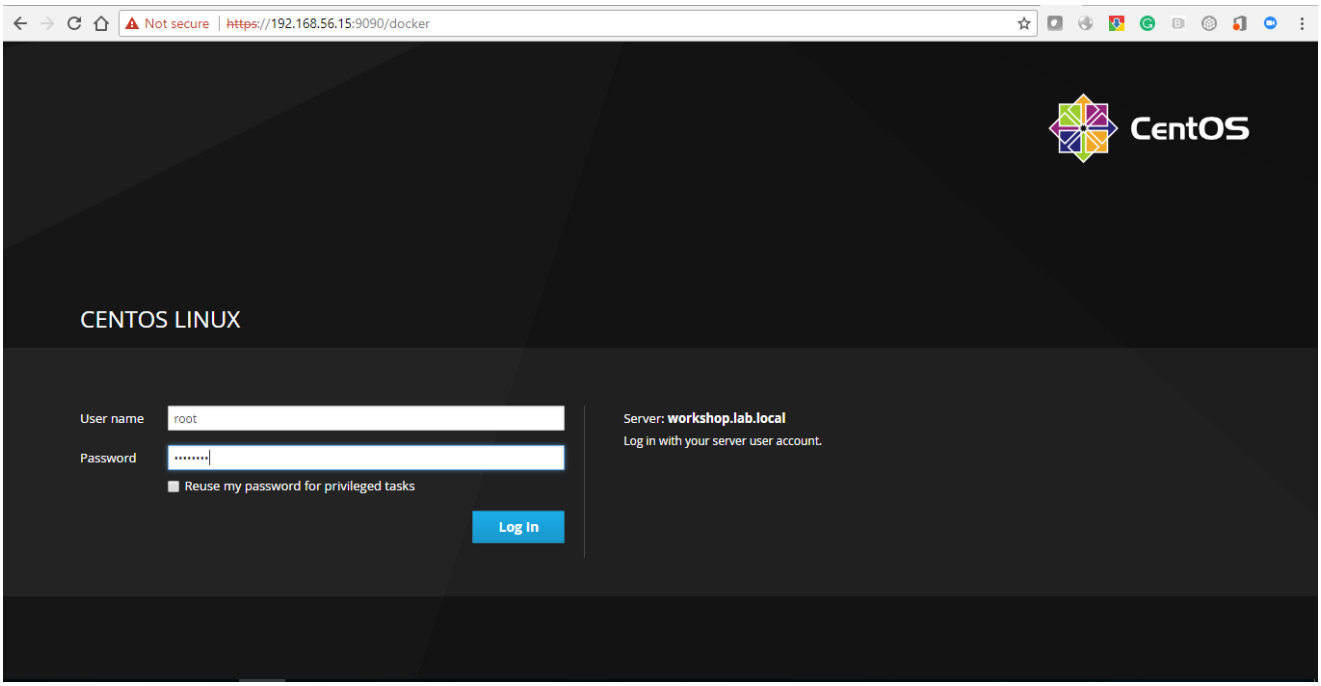
```
REPOSITORY                TAG                 IMAGE ID            CREATED             SIZE
docker.io/docker/whalesay   latest              6b362a9f73eb        2 years ago         247 MB
```

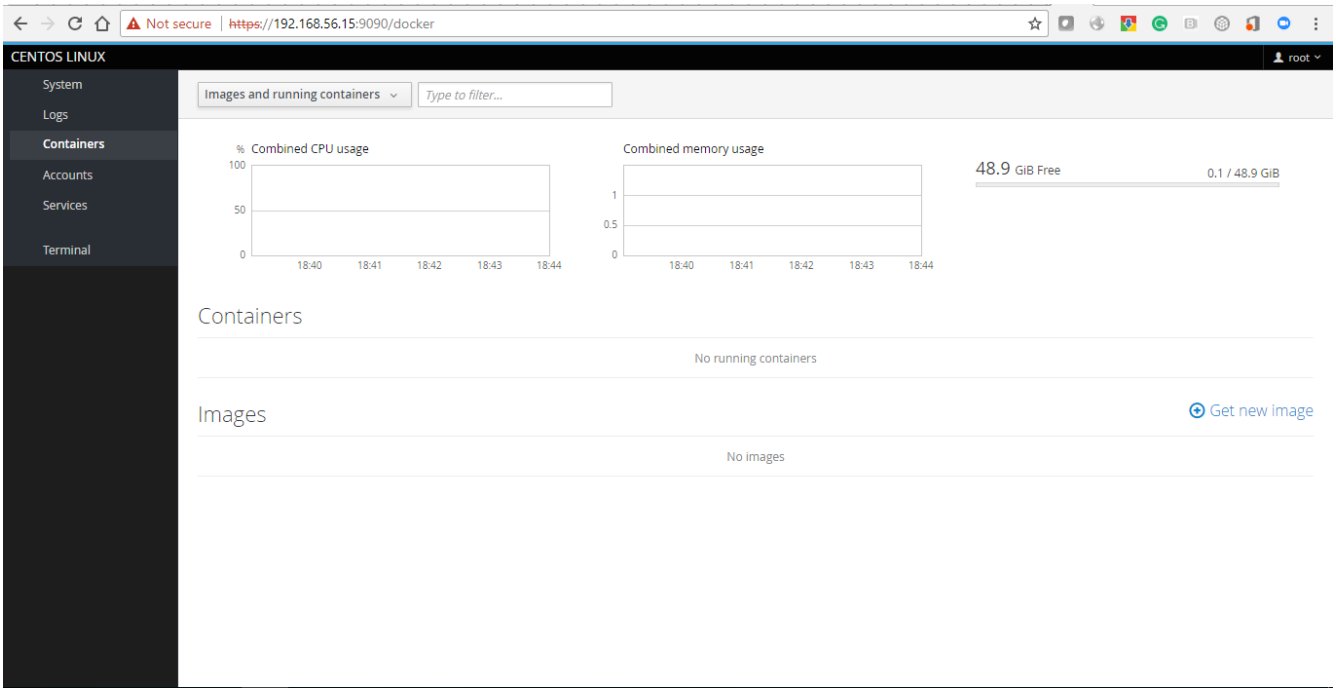
[centos@workshop lab1]$ docker rmi 6b362a9f73eb

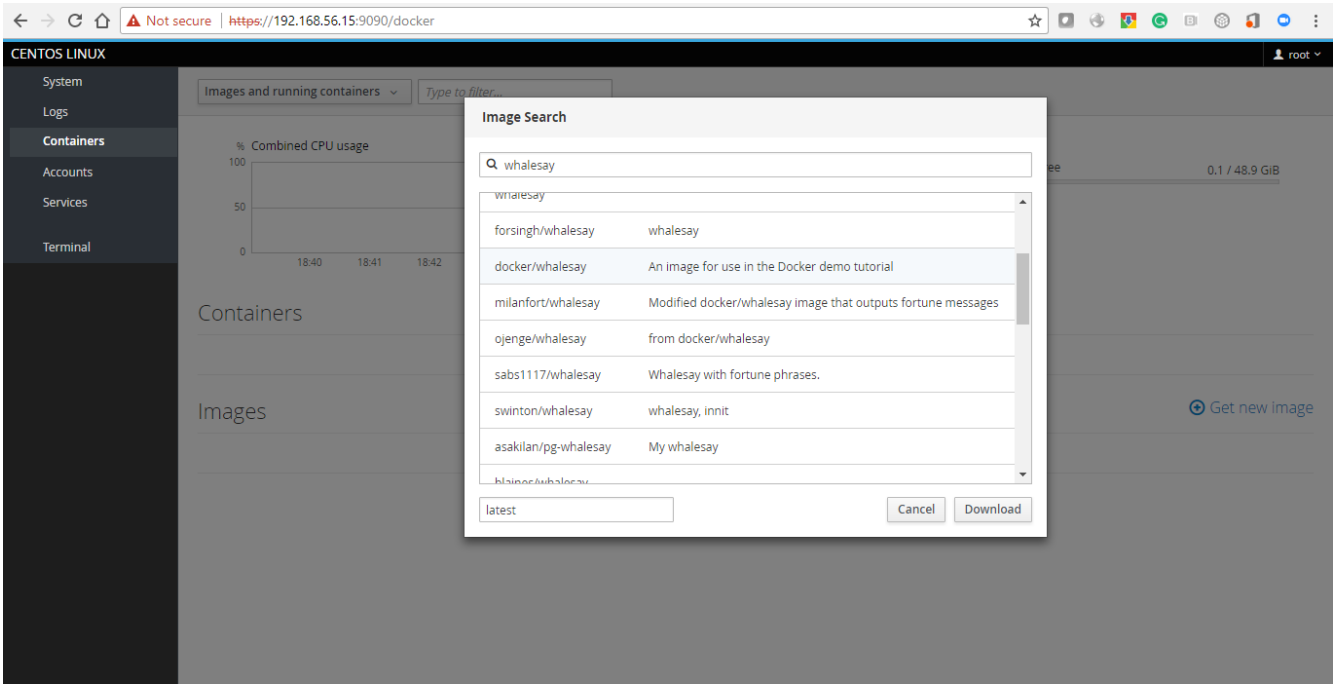
```
Untagged: docker.io/docker/whalesay:latest
Untagged: docker.io/docker/whalesay@sha256:178598e51a26abbc958b8a2e48825c90bc22e641de3d31e18aaf55f3258ba93b
```

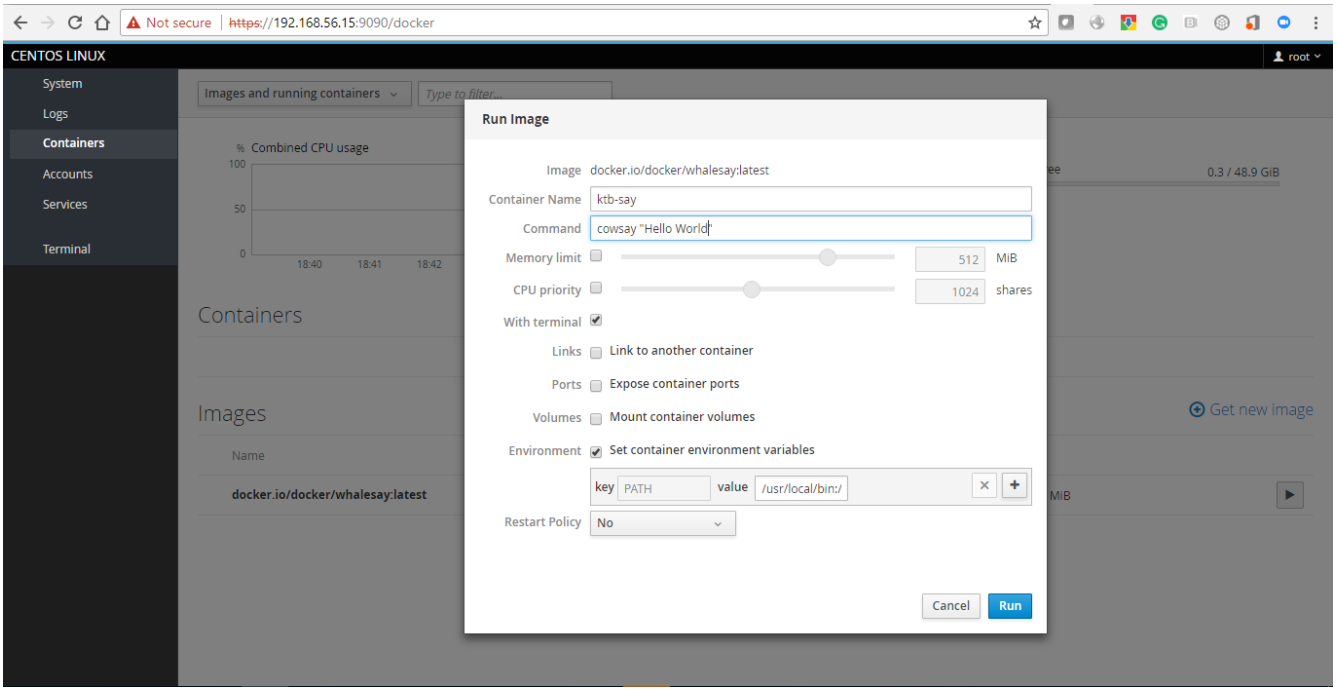
```
Deleted: sha256:6b362a9f73eb8c33b48c95f4fcce1b6637fc25646728cf7fb0679b2da273c3f4
Deleted: sha256:34dd66b3cb4467517d0c5c7dbe320b84539fbb58bc21702d2f749a5c932b3a38
Deleted: sha256:52f57e48814ed1bb08a651ef7f91f191db3680212a96b7f318bff0904fed2e65
Deleted: sha256:72915b616c0db6345e52a2c536de38e29208d945889eecef01d0fef0ed207ce8
Deleted: sha256:4ee0c1e90444c9b56880381aff6455f149c92c9a29c3774919632ded4f728d6b
Deleted: sha256:86ac1c0970bf5ea1bf482edb0ba83dbc88fefb1ac431d3020f134691d749d9a6
Deleted: sha256:5c4ac45a28f91f851b66af332a452cba25bd74a811f7e3884ed8723570ad6bc8
Deleted: sha256:088f9eb16f16713e449903f7edb4016084de8234d73a45b1882cf29b1f753a5a
Deleted: sha256:799115b9fdd1511e8af8a8a3c8b450d81aa842bbf3c9f88e9126d264b232c598
Deleted: sha256:3549adbf614379d5c33ef0c5c6486a0d3f577ba3341f573be91b4ba1d8c60ce4
Deleted: sha256:1154ba695078d29ea6c4e1adb55c463959cd77509adf09710e2315827d66271a
```

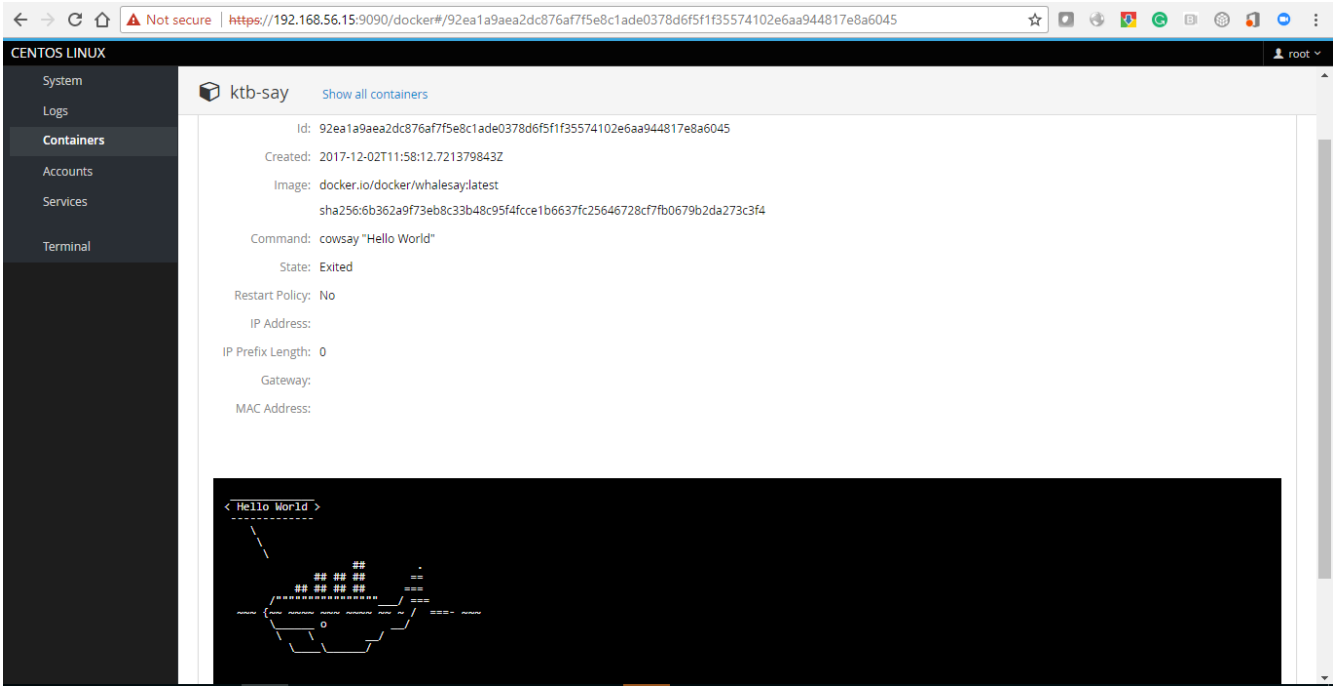
3. ทำซ้ำอีกครั้ง ด้วย Web Console GUI




Not secure | https://192.168.56.15:9090/docker
CENTOS LINUX
root
System
Logs
Containers
Accounts
Services
Terminal
Images and running containers
Type to filter...
% Combined CPU usage
100
50
0
18:40
18:41
18:42
18:43
18:44
Combined memory usage
1
0.5
0
48.9 GiB Free
0.1 / 48.9 GiB
Containers
No running containers
Images
Get new image
No images


Not secure | https://192.168.56.15:9090/docker
CENTOS LINUX
root
System
Logs
Containers
Accounts
Services
Terminal
Images and running containers
% Combined CPU usage
100
50
0
18:40
18:41
18:42
0.1 / 48.9 GiB
Containers
Images
Get new image
Image Search
whalesay
forsingh/whalesay whalesay
docker/whalesay An image for use in the Docker demo tutorial
milanfort/whalesay Modified docker/whalesay image that outputs fortune messages
ojenge/whalesay from docker/whalesay
sabs1117/whalesay Whalesay with fortune phrases.
swinton/whalesay whalesay, innit
asakilan/pg-whalesay My whalesay
latest
Cancel
Download


Not secure | https://192.168.56.15:9090/docker
CENTOS LINUX
root
System
Logs
Containers
Accounts
Services
Terminal
Images and running containers
Type to filter...
% Combined CPU usage
100
50
0
18:40
18:41
18:42
0.3 / 48.9 GiB
Containers
Images
Get new image
Name
docker.io/docker/whalesay:latest
Run Image
Image docker.io/docker/whalesay:latest
Container Name ktb-say
Command cowsay "Hello World"
Memory limit 512 MiB
CPU priority 1024 shares
With terminal
Links Link to another container
Ports Expose container ports
Volumes Mount container volumes
Environment Set container environment variables
key PATH value /usr/local/bin:/
Restart Policy No
Cancel
Run


Not secure | https://192.168.56.15:9090/docker#/92ea1a9aea2dc876af7f5e8c1ade0378d6f5f1f35574102e6aa944817e8a6045
CENTOS LINUX
root
System
Logs
Containers
Accounts
Services
Terminal
ktb-say
Show all containers
Id: 92ea1a9aea2dc876af7f5e8c1ade0378d6f5f1f35574102e6aa944817e8a6045
Created: 2017-12-02T11:58:12.721379843Z
Image: docker.io/docker/whalesay:latest
sha256:6b362a9f73eb8c33b48c95f4fcce1b6637fc25646728cf7fb0679b2da273c3f4
Command: cowsay "Hello World"
State: Exited
Restart Policy: No
IP Address:
IP Prefix Length: 0
Gateway:
MAC Address:
< Hello World >

\
\

4. การใช้ run docker ในแบบ daemon / terminal interactive / docker inspect / docker stop / docker start

```
Simple create and start container in terminal mode
[centos@workshop lab1]$ docker run -it --name php-demo-1 php:apache

Access to container with a shell inside container
[centos@workshop lab1]$ docker exec -it php-demo-1 /bin/bash

Get docker metadata and information
[centos@workshop lab1]$ docker inspect php-demo-1

Stop docker container
[centos@workshop lab1]$ docker stop php-demo-1

Start a stopped container
[centos@workshop lab1]$ docker start php-demo-1

Delete a stopped container
[centos@workshop lab1]$ docker rm php-demo-1


Start a container in demon mode
[centos@workshop lab1]$ docker run -d --name php-demo-2 php:apache

[centos@workshop lab1]$ docker inspect php-demo-2 | grep "IPAddress"

[centos@workshop lab1]$ curl http://$IP
```

Note.

Detail of Dockerfile how docker image build from https://hub.docker.com/_/php/

---

5. การใช้ docker run รู้จักการใช้งาน ENV

```
[centos@workshop lab1]$ docker run -it --name mariadb-inst1 mariadb:latest

Unable to find image 'mariadb:latest' locally
```

```
Trying to pull repository docker.io/library/mariadb ...
latest: Pulling from docker.io/library/mariadb
85b1f47fba49: Pull complete
5671503d4f93: Pull complete
62466fedcc9d: Pull complete
b4ef8399f3aa: Pull complete
e34b2cf62e1d: Pull complete
7291500bf826: Pull complete
a77c97e1ff71: Pull complete
abe17ed7eabe: Pull complete
a5488a3ed5dd: Pull complete
6263a21bc821: Pull complete
bb5bd77424aa: Pull complete
Digest: sha256:d840bd45e8b1da7e4a77c0610a0f9a5b1f15d960268cf089f89539c658e15cb6
error: database is uninitialized and password option is not specified
  You need to specify one of MYSQL_ROOT_PASSWORD, MYSQL_ALLOW_EMPTY_PASSWORD and
MYSQL_RANDOM_ROOT_PASSWORD


[centos@workshop lab1]$ docker run -it --name mariadb-inst1 -e
MYSQL_ROOT_PASSWORD=rootSecret -e MYSQL_PASSWORD=DBSecret -e MYSQL_USER=DBuser -e
MYSQL_DATABASE=DB  mariadb:latest

/usr/bin/docker-current: Error response from daemon: Conflict. The name "/mariadb-
inst1" is already in use by container
5bb5d5d2d9fcd318569b24cfe0e2fc594976ee38e3a70755245378dbde596620. You have to
remove (or rename) that container to be able to reuse that name..

[centos@workshop lab1]$ docker rm mariadb-inst1
mariadb-inst1

[centos@workshop lab1]$ docker inspect mariadb-inst1 | grep "IPAddress"
                    "IPAddress": "172.17.0.2",


[centos@workshop lab1]$ mysql -h172.17.0.2 -uroot -prootSecret
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 8
Server version: 10.2.11-MariaDB-10.2.11+maria~jessie mariadb.org binary
distribution

Copyright (c) 2000, 2017, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> shutdown;
Query OK, 0 rows affected (0.00 sec)

[centos@workshop lab1]$ mysql -h172.17.0.2 -uDBuser -pDBSecret DB
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 8
Server version: 10.2.11-MariaDB-10.2.11+maria~jessie mariadb.org binary
```

```
distribution

Copyright (c) 2000, 2017, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [DB]>
```

6. การใช้งาน expose port

```
[centos@workshop lab1]$ docker run -d --name mariadb-inst2 -e
MYSQL_ROOT_PASSWORD=rootSecret -e MYSQL_PASSWORD=DBSecret -e MYSQL_USER=DBuser -e
MYSQL_DATABASE=DB -p 13306:3306  mariadb:latest

[centos@workshop lab1]$ mysql -h127.0.0.1 -P13306 -uDBuser -pDBSecret DB
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 8
Server version: 10.2.11-MariaDB-10.2.11+maria~jessie mariadb.org binary distribution

Copyright (c) 2000, 2017, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [DB]>
```

7. การใช้ volume mapping ในการทำ persistent storage

```
[centos@workshop lab1]$ docker stop mariadb-inst2 ; docker rm mariadb-inst2

[centos@workshop lab1]$ docker run -d --name mariadb-inst3 -e
MYSQL_ROOT_PASSWORD=rootSecret -e MYSQL_PASSWORD=DBSecret -e MYSQL_USER=DBuser -e
MYSQL_DATABASE=DB -v $PWD:/var/lib/mysql -p 13306:3306  mariadb:latest

[centos@workshop lab1]$ mysql -h127.0.0.1 -P13306 -uDBuser -pDBSecret DB
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 8
Server version: 10.2.11-MariaDB-10.2.11+maria~jessie mariadb.org binary
distribution

Copyright (c) 2000, 2017, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.
MariaDB [DB]>
MariaDB [DB]> create table table1 (id int auto_increment primary key, detail
varchar(50));
Query OK, 0 rows affected (0.04 sec)

MariaDB [DB]> insert into table1 values ('1','this is a detail1');
```

```
Query OK, 1 row affected (0.01 sec)

MariaDB [DB]> insert into table1 (detail) values ('this is a detail2');
Query OK, 1 row affected (0.08 sec)

MariaDB [DB]> select * from table1;
+----+-------------------+
| id | detail            |
+----+-------------------+
|  1 | this is a detail1 |
|  2 | this is a detail2 |
+----+-------------------+
2 rows in set (0.00 sec)

MariaDB [DB]>

[centos@workshop lab1]$ docker stop mariadb-inst3
mariadb-inst3

[centos@workshop lab1]$ docker rm mariadb-inst3
mariadb-inst3

[centos@workshop lab1]$ docker run -d --name mariadb-inst4 -e
MYSQL_ROOT_PASSWORD=rootSecret -e MYSQL_PASSWORD=DBSecret -e MYSQL_USER=DBuser -e
MYSQL_DATABASE=DB -v $PWD:/var/lib/mysql -p 13306:3306  mariadb:latest

a5a88094929ab93fe42ddc3b3f2c104d5e2c73fe2f6e91413bd6cd258b13390c

[centos@workshop lab1]$ mysql -h127.0.0.1 -P13306 -uDBuser -pDBSecret DB
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 9
Server version: 10.2.11-MariaDB-10.2.11+maria~jessie mariadb.org binary
distribution

Copyright (c) 2000, 2017, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [DB]> select * from table1;
+----+-------------------+
| id | detail            |
+----+-------------------+
|  1 | this is a detail1 |
|  2 | this is a detail2 |
+----+-------------------+
2 rows in set (0.00 sec)

MariaDB [DB]>
```

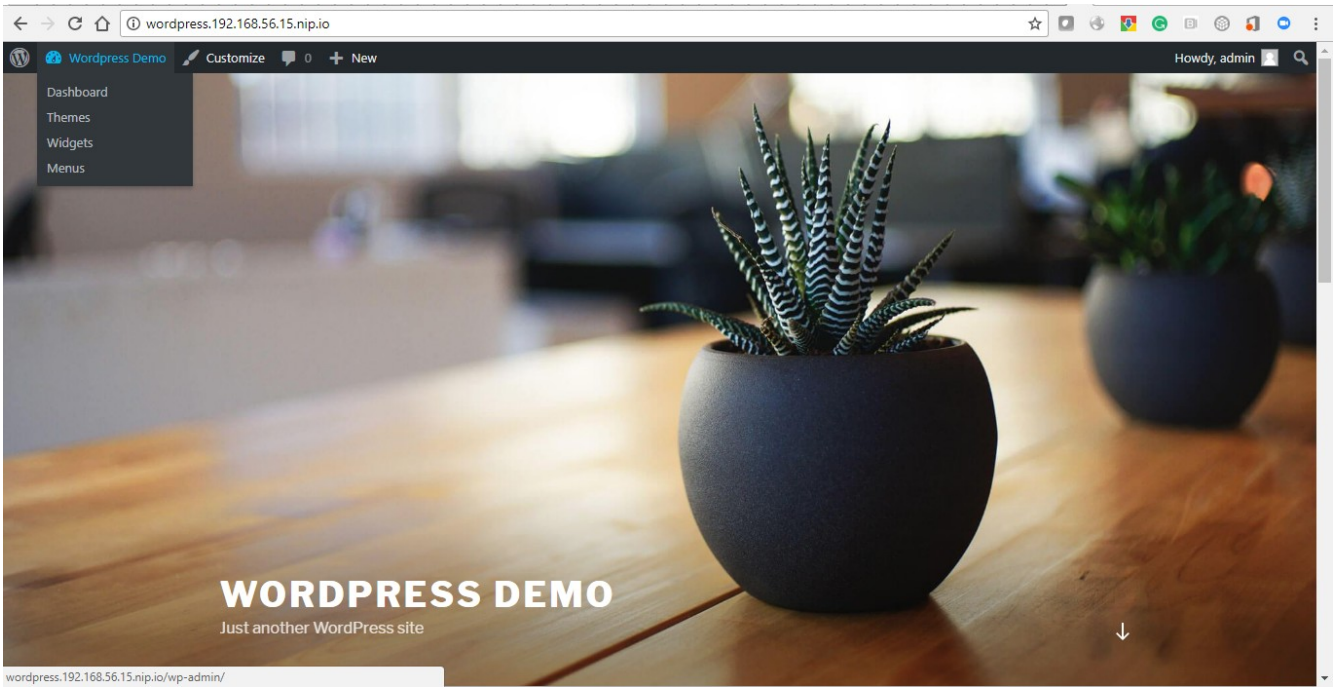
```
[centos@workshop lab1]$ docker create --name mariadb-data -v $PWD:/var/lib/mysql
mariadb:latest

463347304e1dec7d375e246ecd2423418dd7dc77253fa72662322ccd0a26ab46

[centos@workshop lab1]$ docker run -d --name mariadb-inst5 -e
MYSQL_ROOT_PASSWORD=rootSecret -e MYSQL_PASSWORD=Secret -e MYSQL_USER=user -e
MYSQL_DATABASE=DB --volumes-from mariadb-data -p 13306:3306  mariadb:latest

5a32506b4d213c7d119510b23edabb56fc085e1f989f595a9af0ed7a9f83be12
```

Note.

---

8. การ link between container

```
[centos@workshop lab1]$ docker run --name wordpress-server --link mariadb-
inst5:mysql -d -e WORDPRESS_DB_NAME=DB -e WORDPRESS_DB_USER=DBUser -e
WORDPRESS_DB_PASSWORD=DBSecret -p 80:80 -p 443:443 wordpress

Unable to find image 'wordpress:latest' locally
Trying to pull repository docker.io/library/wordpress ...
latest: Pulling from docker.io/library/wordpress
85b1f47fba49: Already exists
.
.
.
b6b18f55e533: Pull complete
49c5f1d693cd: Pull complete
Digest: sha256:8fd3cad0d1a9291db828ea74a7aee4cc01ff94b5ee17df493279e4d673cab56f
193e4837e0f67c78bfc89451bb120a069e0ff32fd2465a684322b12e1036cd71
```


wordpress.192.168.56.15.nip.io
Wordpress Demo
Customize
0
New
Howdy, admin
Dashboard
Themes
Widgets
Menus
WORDPRESS DEMO
Just another WordPress site
wordpress.192.168.56.15.nip.io/wp-admin/

3. Docker building own application container Lab

1. ใช้ dockerbuild command line / Dockerfile

```
[centos@workshop ~]$ mkdir -p ~/docker/lab2
[centos@workshop ~]$ cd ~/docker/lab2
[centos@workshop lab2]$ vim Dockerfile
----
FROM jboss/wildfly:latest

MAINTAINER Jaruwat Boonmee <j.boonmee@outlook.com>

USER root

RUN yum -y install maven && yum clean all

----

docker build --rm -t jboss/wildfly-maven ~/lab2/jboss-wildfly-maven

----

FROM jboss/wildfly-maven:latest

MAINTAINER Jaruwat Boonmee <j.boonmee@outlook.com>

COPY node-info /usr/src/node-info

RUN mvn -f /usr/src/node-info/pom.xml clean package

RUN cp /usr/src/node-info/target/node-info.war
/opt/jboss/wildfly/standalone/deployments/node-info.war

EXPOSE 8080

CMD ["/opt/jboss/wildfly/bin/standalone.sh", "-b", "0.0.0.0", "-bmanagement",
"0.0.0.0"]

----

docker build --rm -t jboss/wildfly-maven ~/lab2/add-nodeinfo
docker run -it -p 8080:8080 --name node-info node-info

----
```

https://hub.docker.com/r/jboss/wildfly/~/dockerfile/

(original from jboss/base-jdk:8)

4. OpenShift Lab

1. ทำการ login ไปที่เครื่อง openshift.192.168.56.15.nip.io ด้วย user root โดยใช้ SSH Client หลังจาก เสร็จเรียบร้อย ให้ logout และ login ใหม่อีกครั้ง

```
$ ssh  root@openshift.192.168.56.15.nip.io
root@<openshift.192.168.56.15.nip.io>'s password: <enter root password>
Last login: Thu Aug 17 14:41:20 2017 from 172.20.10.9
[root@workshop ~]#
```

2. สร้าง directory สำหรับ lab1 ของ openshift

```
[centos@workshop ~]$ mkdir -p ~/openshift/lab1
[centos@workshop ~]$ cd ~/openshift/lab1
```

3. ติดตั้ง openshift utils และ repositories

```
[root@workshop ~]# yum -y install centos-release-openshift-origin.noarch
Loaded plugins: fastestmirror
Loading mirror speeds from cached hostfile
Resolving Dependencies
--> Running transaction check
---> Package centos-release-openshift-origin.noarch 0:1-1.el7.centos will be installed
--> Processing Dependency: centos-release-paas-common for package: centos-release-openshift-origin-1-
1.el7.centos.noarch
--> Running transaction check
---> Package centos-release-paas-common.noarch 0:1-1.el7.centos will be installed
--> Finished Dependency Resolution

Dependencies Resolved

================================================================================================
 Package                                Arch         Version              Repository    Size
================================================================================================
Installing:
 centos-release-openshift-origin        noarch       1-1.el7.centos       extras        11 k
Installing for dependencies:
 centos-release-paas-common             noarch       1-1.el7.centos       extras        11 k

Transaction Summary
================================================================================================
Install  1 Package (+1 Dependent package)

Total download size: 22 k
Installed size: 37 k
Is this ok [y/d/N]: y
Downloading packages:
```

```
(1/2): centos-release-openshift-origin-1-1.el7.centos.noarch.rpm     |  11 kB  00:00:00
(2/2): centos-release-paas-common-1-1.el7.centos.noarch.rpm          |  11 kB  00:00:00
--------------------------------------------------------------------------------
Total                                                 58 kB/s |  22 kB  00:00:00
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
  Installing : centos-release-paas-common-1-1.el7.centos.noarch                  1/2
  Installing : centos-release-openshift-origin-1-1.el7.centos.noarch             2/2
  Verifying  : centos-release-paas-common-1-1.el7.centos.noarch                  1/2
  Verifying  : centos-release-openshift-origin-1-1.el7.centos.noarch             2/2

Installed:
  centos-release-openshift-origin.noarch 0:1-1.el7.centos

Dependency Installed:
  centos-release-paas-common.noarch 0:1-1.el7.centos

Complete!

[root@workshop ~]# yum -y install atomic-openshift-utils origin-clients atomic-
registries
Loaded plugins: fastestmirror
Loading mirror speeds from cached hostfile
Resolving Dependencies

Installed:
  atomic-openshift-utils.noarch 0:3.6.173.0.60-1.el7
  origin-clients.x86_64 0:3.6.1-1.0.008f2d5
  atomic-registries.x86_64 1:1.19.1-5.git48c224b.el7.centos

Dependency Updated:
  chkconfig.x86_64 0:1.7.4-1.el7                 nspr.x86_64 0:4.13.1-1.0.el7_3
  nss.x86_64 0:3.28.4-15.el7_4                   nss-softokn.x86_64 0:3.28.3-8.el7_4
  nss-softokn-freebl.x86_64 0:3.28.3-8.el7_4     nss-sysinit.x86_64 0:3.28.4-15.el7_4
  nss-tools.x86_64 0:3.28.4-15.el7_4             nss-util.x86_64 0:3.28.4-3.el7

Complete!
```

3. สร้าง openshift origin all-in-one cluster

```
[root@workshop ~]# mkdir /opt/oc-config
[root@workshop ~]# mkdir /opt/oc-data
[root@workshop ~]# [root@workshop ~]# oc cluster up --metrics --version=v3.6.0
--public-hostname='openshift.192.168.56.15.nip.io' --server='192.168.56.15'
--routing-suffix='192.168.56.15.nip.io' --host-data-dir=/opt/oc-data/ --host-
config-dir=/opt/oc-config/ --use-existing-config

Starting OpenShift using openshift/origin:v3.6.0 ...
Pulling image openshift/origin:v3.6.0
Pulled 1/4 layers, 26% complete
Pulled 1/4 layers, 61% complete
Pulled 2/4 layers, 69% complete
Pulled 3/4 layers, 90% complete
Pulled 4/4 layers, 100% complete
Extracting
Image pull complete
-- Checking OpenShift client ... OK
```

```
-- Checking Docker client ... OK
-- Checking Docker version ... OK
-- Checking for existing OpenShift container ... OK
-- Checking for openshift/origin:v3.6.0 image ...
   Pulling image openshift/origin:v3.6.0
   Pulled 1/4 layers, 26% complete
   Pulled 1/4 layers, 61% complete
   Pulled 2/4 layers, 69% complete
   Pulled 3/4 layers, 90% complete
   Pulled 4/4 layers, 100% complete
   Extracting
   Image pull complete
-- Checking Docker daemon configuration ... FAIL
   Error: did not detect an --insecure-registry argument on the Docker daemon
   Solution:

     Ensure that the Docker daemon is running with the following argument:
        --insecure-registry 172.30.0.0/16

[root@workshop ~]# echo “INSECURE_REGISTRY='--insecure-registry 172.30.0.0/16'” >>
/etc/sysconfig/docker

[root@workshop ~]# systemctl restart docker

[root@workshop ~]# oc cluster up --version=v3.6.0 --public-hostname='openshift.192.168.56.15.nip.io'
--server='192.168.56.15' --routing-suffix='192.168.56.15.nip.io' --host-data-dir=/opt/oc-data/ --host-
config-dir=/opt/oc-config/ --use-existing-config
Starting OpenShift using openshift/origin:v3.6.0 ...
OpenShift server started.

The server is accessible via web console at:
    https://openshift.192.168.56.15.nip.io:8443

The metrics service is available at:
    https://hawkular-metrics-openshift-infra.192.168.56.15.nip.io/hawkular/metrics

You are logged in as:
    User:     developer
    Password: <any value>

To login as administrator:
    oc login -u system:admin
```

4. building 1st java application with S2I (Source to Image)

```
[centos@workshop ~]$ oc new-app --image-stream="openshift/wildfly:latest"
https://github.com/goldmann/node-info.git

--> Found image fad1e05 (2 weeks old) in image stream "openshift/wildfly" under tag "latest" for
"openshift/wildfly:latest"

    WildFly 10.1.0.Final
    --------------------
    Platform for building and running JEE applications on WildFly 10.1.0.Final

    Tags: builder, wildfly, wildfly10

    * The source repository appears to match: jee
    * A source build using source code from https://github.com/goldmann/node-info.git will be created
```

```
      * The resulting image will be pushed to image stream "node-info:latest"
      * Use 'start-build' to trigger a new build
    * This image will be deployed in deployment config "node-info"
    * Port 8080/tcp will be load balanced by service "node-info"
      * Other containers can access this service through the hostname "node-info"

--> Creating resources ...
    imagestream "node-info" created
    buildconfig "node-info" created
    deploymentconfig "node-info" created
    service "node-info" created
--> Success
    Build scheduled, use 'oc logs -f bc/node-info' to track its progress.
    Run 'oc status' to view your app.

---

[centos@workshop ~]$ oc get all
NAME           TYPE      FROM      LATEST
bc/node-info   Source    Git       1

NAME                 TYPE      FROM          STATUS     STARTED         DURATION
builds/node-info-1   Source    Git@fd9ceed   Complete   6 minutes ago   6m45s

NAME           DOCKER REPO                            TAGS      UPDATED
is/node-info   172.30.1.1:5000/myproject/node-info   latest    14 seconds ago

NAME           REVISION   DESIRED   CURRENT   TRIGGERED BY
dc/node-info   1          1         1         config,image(node-info:latest)

NAME             DESIRED   CURRENT   READY     AGE
rc/node-info-1   1         1         1         14s

NAME            CLUSTER-IP      EXTERNAL-IP   PORT(S)    AGE
svc/node-info   172.30.94.253   <none>        8080/TCP   6m

NAME                   READY     STATUS      RESTARTS   AGE
po/node-info-1-b2kjj   1/1       Running     0          9s
po/node-info-1-build   0/1       Completed   0          6m

---

[centos@workshop ~]$ oc expose service node-info --hostname=node-info.192.168.56.15.nip.io
route "node-info" exposed

---

[centos@workshop ~]$ oc get route

---

[centos@workshop ~]$ oc get builds

---

[centos@workshop ~]$ oc logs -f builds/[BUILD_NAME]  eg. node-info
```

5. การดูข้อมูลของ Application และการดูรายละเอียดของการทำงานและปัญหา

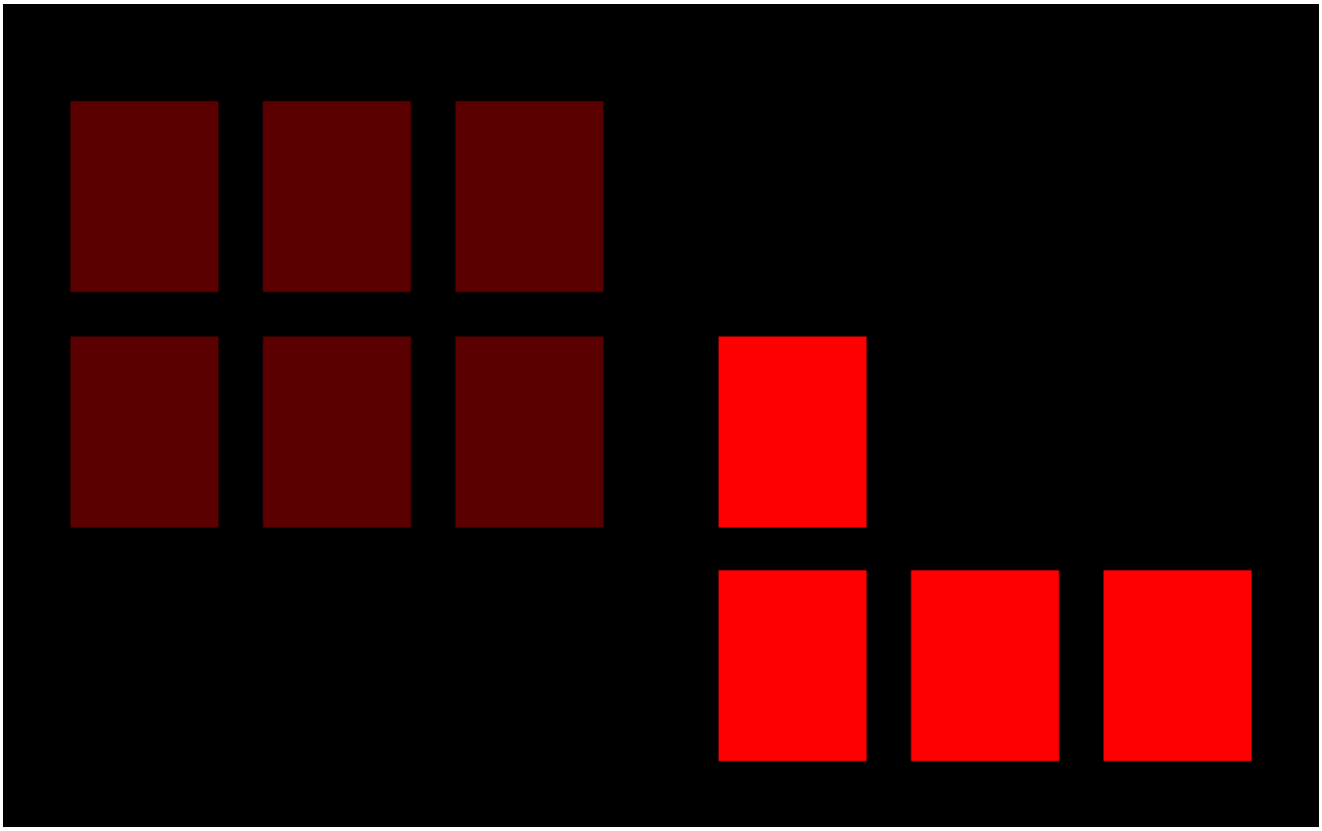
```
[centos@workshop bin]$ oc get pod
NAME                READY     STATUS      RESTARTS   AGE
node-info-1-b2kjj   1/1       Running     0          4h
node-info-1-build   0/1       Completed   0          4h

[centos@workshop bin]$ oc get dc
NAME        REVISION   DESIRED   CURRENT   TRIGGERED BY
node-info   1          1         1         config,image(node-info:latest)

[centos@workshop bin]$ oc get route
NAME        HOST/PORT                         PATH      SERVICES    PORT       TERMINATION   WILDCARD
node-info   node-info.192.168.56.15.nip.io              node-info   8080-tcp                 None

[centos@workshop bin]$ oc describe dc/node-info

[centos@workshop bin]$ oc describe pod node-info

[centos@workshop bin]$ oc logs -f node-info
```

6. การกำหนด scale out and recovery application

```
[centos@workshop lab1]$ oc login -u developer

[centos@workshop lab1]$ oc whoami
developer

[centos@workshop bin]$ oc project myproject
Now using project "myproject" on server "https://openshift.192.168.56.15.nip.io:8443".


[centos@workshop bin]$ oc get pod
NAME                READY     STATUS      RESTARTS   AGE
node-info-1-b2kjj   1/1       Running     0          4h
node-info-1-build   0/1       Completed   0          4h

[centos@workshop bin]$ oc get dc
NAME        REVISION   DESIRED   CURRENT   TRIGGERED BY
node-info   1          1         1         config,image(node-info:latest)

[centos@workshop bin]$ oc get route
NAME        HOST/PORT                         PATH      SERVICES    PORT       TERMINATION   WILDCARD
node-info   node-info.192.168.56.15.nip.io              node-info   8080-tcp                 None

[centos@workshop bin]$
for i in $(seq 1 5);
do curl http://node-info.192.168.56.15.nip.io/node-info/ ;
done
```

```
[centos@workshop bin]$ oc scale dc node-info --replicas=3

[centos@workshop bin]$ oc get pod
NAME                READY     STATUS              RESTARTS   AGE
node-info-1-b2kjj   1/1       Running             0          4h
node-info-1-build   0/1       Completed           0          4h
node-info-1-dv2ml   0/1       ContainerCreating   0          7s
node-info-1-f4s6q   0/1       ContainerCreating   0          7s

[centos@workshop bin]$
for i in $(seq 1 5);
do curl http://node-info.192.168.56.15.nip.io/node-info/ ;
done

[centos@workshop bin]$ oc delete pod/PODNAME eg. node-info-1-b2kjj

[centos@workshop bin]$ oc get pod
```

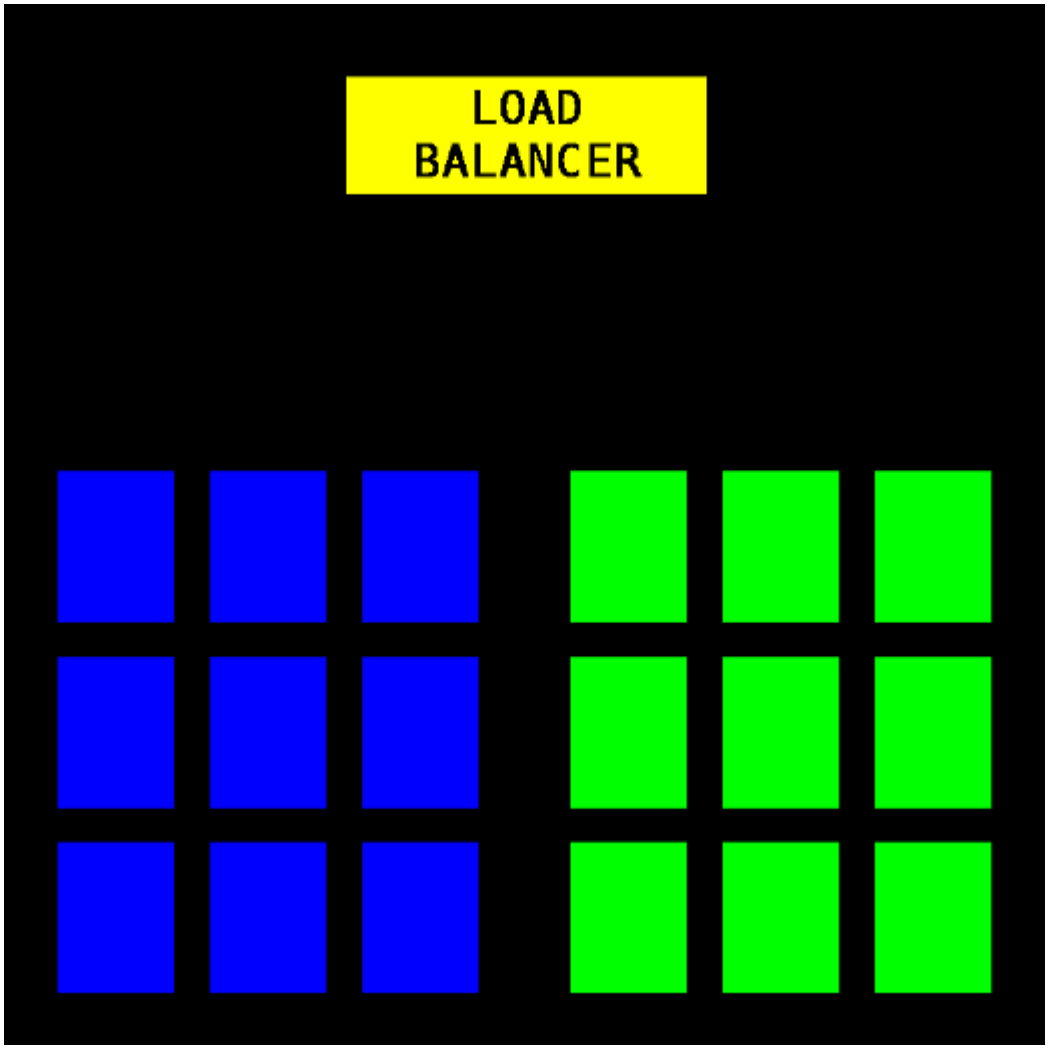
7. การทำ rolling update / roll-out and roll-back



```
[centos@workshop lab1]$ oc login -u developer
```

```
[centos@workshop lab1]$ oc whoami
developer

[centos@workshop bin]$ oc new-project rolling
Now using project "rolling" on server "https://openshift.192.168.56.15.nip.io:8443".

[centos@workshop bin]$ oc new-app https://github.com/doesntexist/rolling.git

[centos@workshop bin]$ oc logs -f bc/rolling
Cloning "https://github.com/doesntexist/rolling.git" ...
        Commit: c114a5cf9140481feaf1c0466f67f4fa8714cabe (Create index.php)
        Author: doesntexist <32286853+doesntexist@users.noreply.github.com>
        Date:   Sun Dec 3 22:42:55 2017 +0700
---> Installing application source...
Pushing image 172.30.1.1:5000/rolling/rolling:latest ...
Pushed 0/10 layers, 1% complete
Pushed 1/10 layers, 30% complete
Pushed 2/10 layers, 21% complete
Pushed 3/10 layers, 31% complete
Pushed 4/10 layers, 41% complete
Pushed 5/10 layers, 56% complete
Pushed 6/10 layers, 64% complete
Pushed 7/10 layers, 74% complete


[centos@workshop bin]$ oc get svc
NAME      CLUSTER-IP      EXTERNAL-IP   PORT(S)    AGE
rolling   172.30.247.40   <none>        8080/TCP   2m

[centos@workshop bin]$ oc expose svc rolling
--hostname=rolling.192.168.56.15.nip.io
route "rolling" exposed

[centos@workshop bin]$ oc scale dc rolling --replicas=3

[centos@workshop bin]$ curl http://rolling.192.168.56.15.nip.io
 I am VERSION ONE <br><br>My Pod IP is : 172.17.0.7 <br><br> My URL is: rolling.192.168.56.15.nip.io

## CHANGE CODE TO VERSION TWO

[centos@workshop bin]$ oc start-build bc/rolling

[centos@workshop bin]$ oc get pod
NAME              READY     STATUS              RESTARTS   AGE
rolling-1-8g3j5   0/1       Terminating         0          6m
rolling-1-build   0/1       Completed           0          23m
rolling-1-bzwhn   0/1       Terminating         0          6m
rolling-1-ssrt7   1/1       Running             0          21m
rolling-2-11wlw   1/1       Running             0          19s
rolling-2-build   0/1       Completed           0          5m
rolling-2-deploy  1/1       Running             0          26s
rolling-2-q0gwc   1/1       Running             0          9s
rolling-2-t3pl1   0/1       ContainerCreating   0          2s


[centos@workshop bin]$ oc rollback bc/rolling

[centos@workshop bin]$ oc get pod -w
```

8. การทำ blue-green deployment




```
[centos@workshop bin]$
oc new-app https://github.com/doesntexist/bluegreen.git --name=blue

[centos@workshop bin]$
oc expose svc blue --name=bluegreen --hostname=bluegreen.192.168.56.15.nip.io
route "bluegreen" exposed

[centos@workshop bin]$
oc new-app https://github.com/doesntexist/bluegreen.git --name=green

[centos@workshop bin]$ oc get svc
NAME      CLUSTER-IP       EXTERNAL-IP   PORT(S)    AGE
blue      172.30.138.216   <none>        8080/TCP   16m
```

```
green     172.30.35.186    <none>        8080/TCP   1m
[centos@workshop bin]$ oc get pod
NAME            READY     STATUS      RESTARTS   AGE
blue-1-build    0/1       Completed   0          18m
blue-1-qk3f0    1/1       Running     0          15m
green-1-build   0/1       Completed   0          3m
green-1-jqrjx   1/1       Running     0          2m

[centos@workshop bin]$
oc get route/bluegreen -o yaml | sed -e 's/name: blue$/name: green/' | oc replace
-f -
route "bluegreen" replaced
```