

CONTAINERIZATION IN EPAM CLOUD: DOCKER, DOCKER REGISTRY, AND KUBERNETES

A leading role in in the whole container lifecycle is given to the container orchestration: interactions between the orchestration tools and the applications that are running inside the respective containers, as well as maintenance of the containers' performance. Container orchestration tools support the stable container ecosystem where developers can quickly implement updates.

Within EPAM Cloud, you can set up the necessary containerization eco system, which would include Docker, Docker Registry, and Kubernetes. Below, you can find the step by step instruction on how to upload containers to the Docker Registry for further usage:

1. Activate the [Docker service and Docker Registry](#) in EPAM Cloud.
2. When the is activated for your project, go to the Docker swarm node:

```
root@ecs000f10571t1:/home/yaroslav_lymanskyi@epam.com# docker images
REPOSITORY                                TAG          IMAGE ID
stor01-by1.cloud.epam.com:5000/swarm      1.0.0       4a0d7b83266a

CREATED          VIRTUAL SIZE
2 years ago     15.6 MB
```

3. Run Docker container:

```
D:\Maestro\QA\maestro-cli\maestro-cli\bin>or2-docker-container -p demo -r epam-demo -a run -i000000000000 -cn testcl
response:

-----
host      | id          | name          |
-----
ec00000000 | b49000000000 | tender_dubinsky |
-----
```

4. You can check it on Docker swarm node:

```
root@ecs000f10571t1:/home/ user_user@epam.com# docker ps -a
CONTAINER ID        IMAGE                                     COMMAND                  CREATED
b49 0000000000      stor01-by1.cloud.epam.com:5000/swarm:1.0.0  "/swarm --help"        12 minutes ago
194 0000000000      stor01-by1.cloud.epam.com:5000/swarm:1.0.0  "/swarm manage --tlsv"  About an hour ago
d9a 0000000000      stor01-by1.cloud.epam.com:5000/swarm:1.0.0  "/swarm join --addr=e"  About an hour ago
a0 0000000000      stor01-by1.cloud.epam.com:5000/swarm:1.0.0  "/swarm create"        About an hour ago

-----
STATUS          PORTS          NAMES
Exited (0) 12 minutes ago          tender_dubinsky
Up About an hour          2375/tcp, 0.0.0.0:5001->2376/tcp  epc-swarm-manager-container
Up About an hour          2375/tcp          epc-docker-agent-node-container
Exited (0) About an hour ago          epc-swarm-cluster-container
```

5. Create a new image from an existing container:

```
D:\Maestro\QA\maestro-cli\maestro-cli\bin>or2di -p demo -r epam-demo
-cn testcl -a commit -c b49 00000000 -n test -t new
Response: Image created.
Response:

=====
id | name | tag |
-----
4d26d2d4d26d24d24d26d2d4d26d2d4d26d2d4d26d2d4d26d2d4d26d2d4d26d2d4d26d2d | test | new |
=====
```

6. Check the image created in 4 step:

```
root@ecs000f10571t1:/home/yaroslav_lymanskyi@epam.com# docker images -a
REPOSITORY TAG IMAGE ID CREATED VIRTUAL SIZE
test new 4d24d24d24d2 2 minutes ago 15.6 MB
ecs000f10572t1.epam.com:5000/test_repo 2.0 4d24d24d24d2 2 minutes ago 15.6 MB
stor01-by1.cloud.epam.com:5000/swarm 1.0.0 4a04a04a04a0 2 years ago 15.6 MB
<none> <none> 74b74b74b74b 2 years ago 15.6 MB
<none> <none> 7d27d277d7d2 2 years ago 15.6 MB
<none> <none> 5aeea5a5aeea 2 years ago 15.6 MB
<none> <none> f729f729f729 2 years ago 15.6 MB
<none> <none> 17e717e717e7 2 years ago 15.6 MB
<none> <none> 96b496b496b4 2 years ago 15.6 MB
<none> <none> 949194919491 2 years ago 15.33 MB
```

7. Push the new image to an existing Registry:

```
D:\Maestro\QA\maestro-cli\maestro-cli\bin>or2di -p epm-demo -r epam-demo
-a push -i 4d26d2d4d24d24d26d24d24d24d24d24d24d24d24d24d24d26d24d26d24d24d26d2
-t new -dr ecs0000000000 -R test_repo -cn testcl -nt 2.0
Response: Push image test_repo:new on docker registry ecs0000000000 submitted.
Find in "or2dri -a describe -dr ecs0000000000" when available.
Response: Push image test_repo:new on docker registry ecs0000000000 submitted.
Find in "or2dri -a describe -dr ecs0000000000" when available.
```

8. Check image on docker-registry:

```
D:\Maestro\QA\maestro-cli\maestro-cli\bin>or2dri -p epm-csup -r epam-openstack-10 -dr ecs0000000000
Response:

=====
host | id | namespace | repository | tag |
-----
ecs0000000000.epam.com | 4d26d2d4d24d24d26d24d24d24d24d24d24d24d24d24d24d26d24d26d24d24d26d2 | library | test_repo | 2.0 |
=====
```

After running these commands, you can integrate Kubernetes (activated [as a service](#), or setup manually) with the Docker Registry. Find more details [here](#).