

Sprawozdanie

Programowanie aplikacji w chmurze obliczeniowej

Laboratorium 6

WSTĘP DO TWORZENIA I KONFIGURACJI KLASTRÓW SWARM

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Grupa: 6.6

Index: 097690

Zadanie 7.1 Praca z usługami Docker Swarm

a) Inicjalizacja klastra, uruchomienie najnowszego obrazu nginx

```
student@vhost1:~$ docker swarm init
Error response from daemon: This node is already part of a swarm. Use "docker swarm leave" to leave this swarm and join another one.
student@vhost1:~$ docker swarm leave --force
Node left the swarm.
student@vhost1:~$ docker swarm init
Swarm initialized: current node (m3dkfhi3w9nzyfa5rog7wo58a) is now a manager.

To add a worker to this swarm, run the following command:

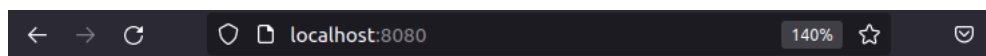
    docker swarm join --token SWMTKN-1-3t5cphmli6k73ms0w06sc7mbjfh14gc213bdpb38jg8cv73izb-b5614z0dybq0lre3imqmakhgn 10.0.10.4:2377

To add a manager to this swarm, run 'docker swarm join-token manager' and follow the instructions.

student@vhost1:~$ docker service create --name ngweb nginx
image nginx:latest could not be accessed on a registry to record
its digest. Each node will access nginx:latest independently,
possibly leading to different nodes running different
versions of the image.

ia571rdeny8cft3p0g2kmbwk
overall progress: 1 out of 1 tasks
1/1: running
verify: Service converged
student@vhost1:~$ docker service ls
ID NAME MODE REPLICAS IMAGE PORTS
ia571rdeny8c ngweb replicated 1/1 nginx:latest
student@vhost1:~$ docker service ps ngweb
ID NAME IMAGE NODE DESIRED STATE CURRENT STATE ERROR PORTS
10ozz759f4uq ngweb.1 nginx:latest vhost1 Running 14 seconds ago
student@vhost1:~$ docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
f5cd2d14284e nginx:latest "/docker-entrypoint..." 29 seconds ago Up 28 seconds 80/tcp ngweb.1.10ozz759f4uqx4la9scoku0of
0e7b5a160612 nginx:latest "/docker-entrypoint..." About a minute ago Up About a minute 80/tcp inspiring euclid
91cac6ea8881 nginx:latest "/docker-entrypoint..." 7 minutes ago Up 7 minutes 0.0.0.0:8080->80/tcp, :::8080->80/tcp vigilant engelbart
```

Potwierdzenie działania serwera



Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.

Thank you for using nginx.

b) Przeskalowanie usługi na 5 kontenerów

```
student@vhost1:~$ docker service scale ngweb=5
ngweb scaled to 5
overall progress: 5 out of 5 tasks
1/5: running
2/5: running
3/5: running
4/5: running
5/5: running
verify: Service converged
student@vhost1:~$ docker service ps ngweb
```

ID	NAME	IMAGE	NODE	DESIRED STATE	CURRENT STATE	ERROR	PORTS
10ozz759f4uq	ngweb.1	nginx:latest	vhost1	Running	Running 5 minutes ago		
t75yc3lecfc1	ngweb.2	nginx:latest	vhost1	Running	Running 7 seconds ago		
wwln80v6tnl9	ngweb.3	nginx:latest	vhost1	Running	Running 7 seconds ago		
jfrbgw36n9nt	ngweb.4	nginx:latest	vhost1	Running	Running 8 seconds ago		
3dc9ju7o8ifj	ngweb.5	nginx:latest	vhost1	Running	Running 7 seconds ago		

c) symulacja awarii na 1, 2 i 5 kontenerze

```
student@vhost1:~$ docker stop $(docker ps -q -f "name=ngweb.1") $(docker ps -q -f "name=ngweb.2") $(docker ps -q -f "name=ngweb.5")
f5cd2d14284e
3fcd47416cee
a00a2f0bbb2
student@vhost1:~$ docker service ps ngweb
```

ID	NAME	IMAGE	NODE	DESIRED STATE	CURRENT STATE	ERROR	PORTS
qxooxe7rfous	ngweb.1	nginx:latest	vhost1	Ready	Ready 3 seconds ago		
10ozz759f4uq	\ ngweb.1	nginx:latest	vhost1	Shutdown	Complete 3 seconds ago		
xz3swgt13dpl	ngweb.2	nginx:latest	vhost1	Ready	Ready 3 seconds ago		
t75yc3lecfc1	\ ngweb.2	nginx:latest	vhost1	Shutdown	Complete 4 seconds ago		
wwln80v6tnl9	ngweb.3	nginx:latest	vhost1	Running	Running 9 minutes ago		
jfrbgw36n9nt	ngweb.4	nginx:latest	vhost1	Running	Running 9 minutes ago		
1107z842j2lw	ngweb.5	nginx:latest	vhost1	Ready	Ready 3 seconds ago		
3dc9ju7o8ifj	\ ngweb.5	nginx:latest	vhost1	Shutdown	Complete 3 seconds ago		

```
student@vhost1:~$ docker service ls
```

ID	NAME	MODE	REPLICAS	IMAGE	PORTS
ia571rdeny8c	ngweb	replicated	5/5	nginx:latest	

```
student@vhost1:~$ docker service ps ngweb
```

ID	NAME	IMAGE	NODE	DESIRED STATE	CURRENT STATE	ERROR	PORTS
qxooxe7rfous	ngweb.1	nginx:latest	vhost1	Running	Running 2 minutes ago		
10ozz759f4uq	\ ngweb.1	nginx:latest	vhost1	Shutdown	Complete 2 minutes ago		
xz3swgt13dpl	ngweb.2	nginx:latest	vhost1	Running	Running 2 minutes ago		
t75yc3lecfc1	\ ngweb.2	nginx:latest	vhost1	Shutdown	Complete 2 minutes ago		
wwln80v6tnl9	ngweb.3	nginx:latest	vhost1	Running	Running 12 minutes ago		
jfrbgw36n9nt	ngweb.4	nginx:latest	vhost1	Running	Running 12 minutes ago		
1107z842j2lw	ngweb.5	nginx:latest	vhost1	Running	Running 2 minutes ago		
3dc9ju7o8ifj	\ ngweb.5	nginx:latest	vhost1	Shutdown	Complete 2 minutes ago		

```
student@vhost1:~$ docker ps
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
25627c3e0076	nginx:latest	"/docker-entrypoint..."	2 minutes ago	Up 2 minutes	80/tcp	ngweb.5.1107z842j2lwef6nel1eeknjs
6cf915c43ec9	nginx:latest	"/docker-entrypoint..."	2 minutes ago	Up 2 minutes	80/tcp	ngweb.2.xz3swgt13dplw8he7wr08hpi
09142f36c6	nginx:latest	"/docker-entrypoint..."	2 minutes ago	Up 2 minutes	80/tcp	ngweb.1.qxooxe7rfous170cncvchlk2c
1ca455f64cfb	nginx:latest	"/docker-entrypoint..."	12 minutes ago	Up 12 minutes	80/tcp	ngweb.3.wwln80v6tnl9711615k43ck09
6799988c6eb1	nginx:latest	"/docker-entrypoint..."	12 minutes ago	Up 12 minutes	80/tcp	ngweb.4.jfrbgw36n9ntitwnqftunvjz7
0e7b5a160612	nginx:latest	"/docker-entrypoint..."	19 minutes ago	Up 19 minutes	80/tcp	inspiring euclid
31cac6ea8881	nginx:latest	"/docker-entrypoint..."	24 minutes ago	Up 24 minutes	0.0.0.0:8080->80/tcp, :::8080->80/tcp	vigilant engelbart

Wnioski:

Klasytry umożliwiają łatwą skalowalność systemu i lepsze zabezpieczenie przez awariami, w przypadku symulowanej awarii klaster utworzył automatycznie nowe kontenery które zastąpiły wyłączone kontenery 1,2 i 5, co umożliwiło nieprzerwaną pracę systemu. Klasytry przy odpowiedniej konfiguracji zapewniają rozłokowanie obciążenie obliczeniami przez co system jest w stanie być responsywny nawet przy dużej liczbie zapytań, (przy dużym obciążeniu można szybko utworzyć nowe kontenery które zapewnią wydajność, a po zmniejszeniu się ruchu można zmniejszyć wielkość systemu aby zoptymalizować koszty).