

1.

```
sd-0] [c.h.i.c.ClusterService]: [172.17.0.2]:5701 [dev] [5.2.2]
Members (size:2, ver:3) [
  Member [172.17.0.2]:5701 - 722b0917-2716-45bf-bf98-4224608eed97 this
  Member [172.17.0.3]:5701 - d374c32f-2152-4469-a5f1-aace38e79fc8
]
2023-03-18 13:09:19,318 [ INFO] [hz.sharp_goldwasser.IO.thread-in-1] [c.h.i.s.t.TcpSe
rverConnection]: [172.17.0.2]:5701 [dev] [5.2.2] Initialized new cluster connection
between /172.17.0.2:5701 and /172.17.0.4:49413
2023-03-18 13:09:24,392 [ INFO] [hz.sharp_goldwasser.priority-generic-operation.thre
ad-0] [c.h.i.c.ClusterService]: [172.17.0.2]:5701 [dev] [5.2.2]
Members (size:3, ver:3) [
  Member [172.17.0.2]:5701 - 722b0917-2716-45bf-bf98-4224608eed97 this
  Member [172.17.0.3]:5701 - d374c32f-2152-4469-a5f1-aace38e79fc8
  Member [172.17.0.4]:5701 - e719ff2e-e20e-47d5-a081-67d918769249
]
2023-03-18 13:09:19,323 [ INFO] [hz.eloquent_rubin.IO.thread-in-0] [c.h.i.s.t.TcpSe
rverConnection]: [172.17.0.4]:5701 [dev] [5.2.2] Initialized new cluster connection b
etween /172.17.0.4:49413 and /172.17.0.2:5701
2023-03-18 13:09:24,401 [ INFO] [hz.eloquent_rubin.IO.thread-in-1] [c.h.i.s.t.TcpSe
rverConnection]: [172.17.0.4]:5701 [dev] [5.2.2] Initialized new cluster connection b
etween /172.17.0.4:5701 and /172.17.0.3:58321
2023-03-18 13:09:24,416 [ INFO] [hz.eloquent_rubin.generic-operation.thread-0] [c.h.
i.c.ClusterService]: [172.17.0.4]:5701 [dev] [5.2.2]
Members (size:3, ver:3) [
  Member [172.17.0.2]:5701 - 722b0917-2716-45bf-bf98-4224608eed97
  Member [172.17.0.3]:5701 - d374c32f-2152-4469-a5f1-aace38e79fc8
  Member [172.17.0.4]:5701 - e719ff2e-e20e-47d5-a081-67d918769249 this
]
2023-03-18 13:09:24,442 [ INFO] [main] [c.h.j.i.JobCoordinationService]: [172.17.0.4
]:5701 [dev] [5.2.2] Jet started scanning for jobs
2023-03-18 13:09:24,452 [ INFO] [main] [c.h.c.LifecycleService]: [172.17.0.4]:5701 [
dev] [5.2.2] [172.17.0.4]:5701 is STARTED
Member [172.17.0.3]:5701 - d374c32f-2152-4469-a5f1-aace38e79fc8 this
]
2023-03-18 13:08:45,132 [ INFO] [main] [c.h.j.i.JobCoordinationService]: [172.17.0.
3]:5701 [dev] [5.2.2] Jet started scanning for jobs
2023-03-18 13:08:45,143 [ INFO] [main] [c.h.c.LifecycleService]: [172.17.0.3]:5701
[dev] [5.2.2] [172.17.0.3]:5701 is STARTED
2023-03-18 13:09:24,397 [ INFO] [hz.vigilant_rubin.priority-generic-operation.threa
d-0] [c.h.i.c.ClusterService]: [172.17.0.3]:5701 [dev] [5.2.2]
Members (size:3, ver:3) [
  Member [172.17.0.2]:5701 - 722b0917-2716-45bf-bf98-4224608eed97
  Member [172.17.0.3]:5701 - d374c32f-2152-4469-a5f1-aace38e79fc8 this
  Member [172.17.0.4]:5701 - e719ff2e-e20e-47d5-a081-67d918769249
]
2023-03-18 13:09:24,403 [ INFO] [hz.vigilant_rubin.IO.thread-in-1] [c.h.i.s.t.TcpSe
rverConnection]: [172.17.0.3]:5701 [dev] [5.2.2] Initialized new cluster connection
between /172.17.0.3:58321 and /172.17.0.4:5701
management-center)
2023-03-18 13:17:12,400 [ INFO] [main] [c.h.w.MCAApplication]: No active profile set
, falling back to 1 default profile: "default"
2023-03-18 13:17:16,022 [ INFO] [main] [c.h.w.c.SqlDbConfig]: Checking DB for requi
red migrations.
2023-03-18 13:17:17,842 [ INFO] [main] [c.h.w.c.SqlDbConfig]: Number of applied DB
migrations: 19.
2023-03-18 13:17:19,155 [ INFO] [main] [c.h.w.s.s.i.DisableLoginStrategy]: Login wi
ll be disabled for 5 seconds after 3 failed login attempts. For every 3 consecutive
failed login attempts, disable period will be multiplied by 10.
2023-03-18 13:17:22,757 [ INFO] [main] [c.h.w.MCAApplication]: Started MCAApplication
in 11.591 seconds (JVM running for 13.259)
2023-03-18 13:17:22,809 [ INFO] [AsyncExecutor-1] [c.h.w.MCAApplication]: Hazelcast
Management Center successfully started at http://localhost:8080
2023-03-18 13:17:22,832 [ INFO] [AsyncExecutor-2] [c.h.w.s.ClusterManager]: Connect
ing to 0 enabled cluster(s) on startup.
2023-03-18 13:17:22,847 [ INFO] [AsyncExecutor-1] [c.h.w.MCAApplication]: Hazelcast
Management Center 5.2.1 (20221201 - f06fa4a), Hazelcast client version: 5.2.1, embe
dded Jetty version: 9.4.49.v20220914
```

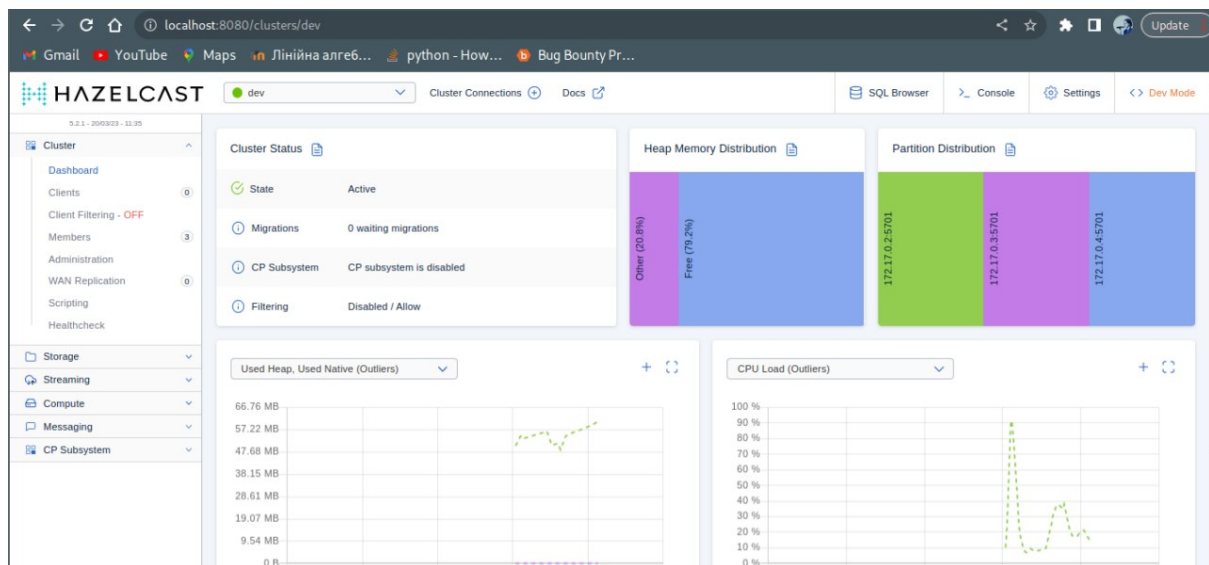
sudo docker run -p 5701:5701 hazelcast/hazelcast


sudo docker run -p 5702:5701 hazelcast/hazelcast


sudo docker run -p 5703:5701 hazelcast/hazelcast

bottom left window:

sudo docker run -p 8080:8080 hazelcast/management-center:latest



Maps 

Search 

Show System Maps ☐

Name ^	Entries ^	Entry Memory ^	Backup Memory ^	Events ^	Hits ^	Locks ^
lock-less-map	2907	352.02 kB	352.02 kB	0	0	0
optimistic-map	1000	121.09 kB	121.09 kB	0	9992	0
pessimistic-map	3000	363.28 kB	363.28 kB	0	0	0


1 - 3 of 3 Rows 10


2.

```
Num replaces in each thread = 1000
Num replaces in each thread = 1000
Num replaces in each thread = 1000
```

- скрін для оптимістичного локу - три потоки, в кожному по 1000 герпласе-ів, в сумі 3000 реплейсів і заповнена всіма потрібними значеннями мапа, як і для песимістичного локу - нічого не втрачається, потоки заповнюють мапу на 1000 елементів кожен і бачимо відповідно втрату для мапи без локів - менше елементів з 3000 які мали бути.

І такі самі результати будуть, якщо запустити не три ноди, а дві:




Maps 

Search 

Show System Maps ☐

Name ^	Entries ^	Entry Memory ^	Backup Memory ^	Events ^	Hits ^	Locks ^
lock-less-map	2412	292.08 kB	292.08 kB	0	0	0
optimistic-map	1000	121.09 kB	121.09 kB	0	9967	0
pessimistic-map	3000	363.28 kB	363.28 kB	0	0	0

1 - 3 of 3 Rows 10

Map Statistics (In-Memory Format: BINARY) RESET TIME 1 minute ago → now Default View   

Member ^	Entries ^	Gets ^	Puts ^	Removals ^	Sets ^	Entry Memory ^
172.17.0.2:5701	1499	0	1499	0	0	181.52 kB
172.17.0.3:5701	1501	0	1501	0	0	181.76 kB
TOTAL	3000	0	3000	0	0	363.28 kB

1 - 2 of 2 Rows 10

други скрін тут - розподіл елементів по двох нодах, де песимістичний лок

Окрема реалізація distributed map є в окремому аналогічному файлі і заповнює повністю мапу:

map_10	1000	123.92 kB	123.92 kB	0	0	0
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3. Для черги реалізація досить схожа як для мапи

```
Offering i = 0  
Taking i = 0  
Offering i = 1  
Taking i = 1  
Taking i = 2  
Offering i = 2  
Taking i = 3  
Offering i = 3  
Taking i = 4  
Offering i = 4  
Taking i = 5  
Offering i = 5  
Offering i = 6  
Taking i = 7  
Taking i = 6  
Offering i = 7  
Taking i = 8  
Offering i = 8  
Offering i = 9  
Taking i = 9  
Taking i = 9
```

не зависає і забирає і віддає всі елементи.

гітхаб:

https://github.com/ivddorrka/swa_ucl