

<https://kubernetes.io/docs/tasks/job/fine-parallel-processing-work-queue/>

<https://kubernetes.io/zh/docs/tasks/job/fine-parallel-processing-work-queue/>

1.创建镜像

使用一个带有 redis 客户端的 python 工作程序从消息队列中读出消息，提供了一个简单的 Redis 工作队列客户端库

(1)在/Users/sunxi/Documents/书籍资料/分布式/转发_designing-distributed-systems/第十章/Hands On/one目录下创建 worker.py、rediswq.py、Dockerfile

```
MacBook-Pro-2:one sunxi$ pwd
/Users/sunxi/Documents/书籍资料/分布式/转发_designing-distributed-systems/第十章/Hands On/one
MacBook-Pro-2:one sunxi$ ls
Dockerfile      rediswq.py      worker.py
MacBook-Pro-2:one sunxi$
```

(2)创建worker镜像

MacBook-Pro-2:one sunxi\$ docker build -t job-wq-2 .

Sending build context to Docker daemon 9.728kB

Step 1/5 : FROM python

latest: Pulling from library/python

c5e155d5a1d1: Pull complete

221d80d00ae9: Pull complete

4250b3117dca: Pull complete

3b7ca19181b2: Pull complete

425d7b2a5bcc: Pull complete

dc3049ff3f44: Pull complete

472a6afc6332: Pull complete

5f79c90f8d7c: Pull complete

1051ee813012: Pull complete

Digest:

sha256:bc0a967762b9561b27230cf04cd927a9095febedf9c
7221f9482b3a2237f7ba9

Status: Downloaded newer image for python:latest

---> a4cc999cf2aa

Step 2/5 : RUN pip install redis

---> Running in 7133370876cb

Collecting redis

Downloading

<https://files.pythonhosted.org/packages/ac/a7/cff10cc5f1180834a3ed564d148fb4329c989cbb1f2e196fc9a10fa07072/redis-3.2.1-py2.py3-none-any.whl> (65kB)

Installing collected packages: redis

Successfully installed redis-3.2.1

Removing intermediate container 7133370876cb

---> 0be34846a89f

Step 3/5 : COPY ./worker.py /worker.py

---> 7b39976b67d6

Step 4/5 : COPY ./rediswq.py /rediswq.py

---> 059feb1dd573

Step 5/5 : CMD python worker.py

---> Running in f8cc0b146933

Removing intermediate container f8cc0b146933

---> f5a083fd4d90

Successfully built f5a083fd4d90

Successfully tagged job-wq-2:latest

MacBook-Pro-2:one sunxi\$ docker images

REPOSITORY	TAG	IMAGE ID	CREATED
SIZE			
job-wq-2	latest	f5a083fd4d90	9 seconds ago
934MB			
apachedoris/doris-dev	build-env	fd75ea7306bf	3 weeks ago
3.85GB			
python	latest	a4cc999cf2aa	4 weeks ago
929MB			
log-pilot	latest	04bcf5c494d3	2 months ago
119MB			
<none>	<none>	3349bfdb0c32	2 months ago
320MB			
redis	latest	a55fbf438dfd	2 months ago
95MB			
debian	latest	2d337f242f07	2 months ago
101MB			
alpine	3.6	43773d1dba76	3 months ago
4.03MB			
golang	1.9-alpine3.6	9769e351f631	11 months ago
269MB			
brendanburns/topz	db0fa58	97cf27a22fb5	2 years ago
6.19MB			

(3)推送镜像到Docker Hub

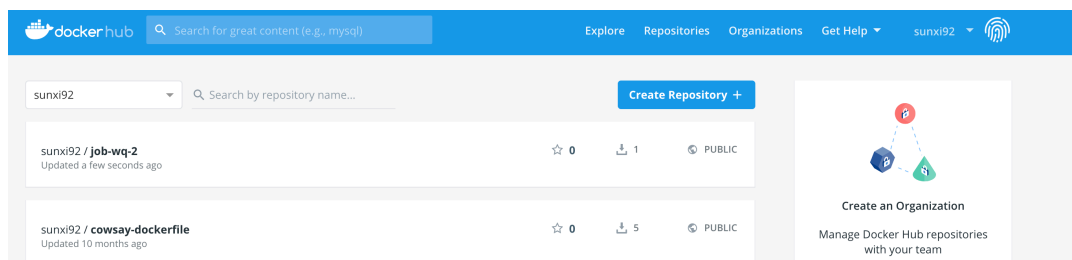
MacBook-Pro-2:one sunxi\$ docker tag job-wq-2 sunxi92/job-

wq-2

MacBook-Pro-2:one sunxi\$ docker images

REPOSITORY	TAG	IMAGE ID	CREATED
job-wq-2	latest	f5a083fd4d90	6 minutes ago
			934MB
sunxi92/job-wq-2	latest	f5a083fd4d90	6 minutes ago
			934MB
apachedoris/doris-dev	build-env	fd75ea7306bf	3 weeks ago
			3.85GB
python	latest	a4cc999cf2aa	4 weeks ago
			929MB
log-pilot	latest	04bcf5c494d3	2 months ago
			119MB
<none>	<none>	3349bfdb0c32	2 months ago
			320MB
redis	latest	a55fbf438dfd	2 months ago
			95MB
debian	latest	2d337f242f07	2 months ago
			101MB
alpine	3.6	43773d1dba76	3 months ago
			4.03MB
golang	1.9-alpine3.6	9769e351f631	11 months ago
			269MB
brendanburns/topz	db0fa58	97cf27a22fb5	2 years ago
			6.19MB

MacBook-Pro-2:one sunxi\$ docker push sunxi92/job-wq-2
The push refers to repository [docker.io/sunxi92/job-wq-2]
bf929d564b52: Layer already exists
ac5442bf71ab: Layer already exists
5c7870caac34: Pushed
2633623f6cf4: Pushed
5194c23c2bc2: Pushed
69bbfe9f27d4: Pushed
2492a3be066b: Pushed
910d7fd9e23e: Layer already exists
4230ff7f2288: Pushed
2c719774c1e1: Pushed
ec62f19bb3aa: Pushed
f94641f1fe1f: Pushed
latest: digest:
sha256:bb2a5677279a55361a5404b947ebfac4cebaedc3e
8f335f413a6ec8fe8526b size: 2844
https://hub.docker.com/?utm_source=docker4mac_18.06.0-ce-mac70



2.启动Redis

启动一个临时的 Pod 用于运行 Redis 和 一个临时的 service 以便我们能够找到这个 Pod

```
root@k8s-master:~/sunxi/redis# kubectl create -f redis-  
pod.yaml
```

```
pod/redis-master created
```

```
root@k8s-master:~/sunxi/redis# kubectl create -f redis-  
service.yaml
```

```
service/redis created
```

```
root@k8s-master:~/sunxi/redis# kubectl get pods
```

NAME	READY	STATUS	RESTARTS	AGE
redis-master	1/1	Running	0	41s

```
root@k8s-master:~/sunxi/redis# kubectl get svc
```

NAME	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)	AGE
kubernetes	ClusterIP	10.96.0.1	<none>	443/TCP	25d
redis	ClusterIP	10.106.137.126	<none>	6379/TCP	34s

3.创建工作队列，并在队列中填满任务(任务只是一些将被打印出来的字符串)

启动一个临时的可交互的 pod 用于运行 Redis 命令行界面

```
root@k8s-master:~/sunxi/redis# kubectl run -i --tty temp --  
image redis --command "/bin/sh"
```

```
kubectl run --generator=deployment/apps.v1 is DEPRECATED  
and will be removed in a future version. Use kubectl run --  
generator=run-pod/v1 or kubectl create instead.
```

If you don't see a command prompt, try pressing enter.

```
# redis-cli -h redis
redis:6379> rpush job2 "apple"
(integer) 1
redis:6379> rpush job2 "banana"
(integer) 2
redis:6379> rpush job2 "cherry"
(integer) 3
redis:6379> rpush job2 "date"
(integer) 4
redis:6379> rpush job2 "fig"
(integer) 5
redis:6379> rpush job2 "grape"
(integer) 6
redis:6379> rpush job2 "lemon"
(integer) 7
redis:6379> rpush job2 "melon"
(integer) 8
redis:6379> rpush job2 "orange"
(integer) 9
redis:6379> lrange job2 0 -1
1) "apple"
2) "banana"
3) "cherry"
4) "date"
5) "fig"
6) "grape"
```

7) "lemon"

8) "melon"

9) "orange"

redis:6379>

知识补充:

Redis Rpush 命令用于将一个或多个值插入到列表的尾部(最右边)。

如果列表不存在，一个空列表会被创建并执行 RPUSH 操作。

当列表存在但不是列表类型时，返回一个错误。

Redis Lrange 返回列表中指定区间内的元素，区间以偏移量 START 和 END 指定。其中 0 表示列表的第一个元素，1 表示列表的第二个元素，以此类推。你也可以使用负数下标，以 -1 表示列表的最后一个元素，-2 表示列表的倒数第二个元素，以此类推。

4.定义一个Job

apiVersion: batch/v1

kind: Job

metadata:

name: job-wq-2

spec:

parallelism: 2

template:

metadata:

name: job-wq-2

spec:

containers:

- name: c

image: sunxi92/job-wq-2

restartPolicy: OnFailure

```
root@k8s-master:~/sunxi/redis# kubectl apply -f job.yaml
```

```
job.batch/job-wq-2 created
```

```
root@k8s-master:~/sunxi/redis# kubectl get pods
```

NAME	READY	STATUS	RESTARTS	AGE
job-wq-2-mr92r	0/1	Completed	0	13s
job-wq-2-ll4t6	0/1	Completed	0	13s
redis-master	1/1	Running	0	4h46m
temp-6c96bb599-qs6w7	1/1	Running	0	4h44m

```
root@k8s-master:~/sunxi/redis#
```

```
root@k8s-master:~/sunxi/redis# kubectl describe jobs/job-wq-2
```

Name: job-wq-2

Namespace: default

Selector: controller-uid=9b8250d6-8bef-11e9-ace1-025444015d80

Labels: controller-uid=9b8250d6-8bef-11e9-ace1-025444015d80

job-name=job-wq-2

Annotations: kubectl.kubernetes.io/last-applied-configuration:

```
{"apiVersion":"batch/v1","kind":"Job","metadata":
{"annotations":{},"name":"job-wq-
2","namespace":"default"},"spec":{"parallelism":2,"templ...
```

Parallelism: 2

Completions: <unset>

Start Time: Tue, 11 Jun 2019 02:21:23 +0000

Pods Statuses: 2 Running / 0 Succeeded / 0 Failed

Pod Template:

Labels: controller-uid=9b8250d6-8bef-11e9-ace1-025444015d80

job-name=job-wq-2

Containers:

c:

Image: sunxi92/job-wq-2

Port: <none>

Host Port: <none>

Environment: <none>

Mounts: <none>

Volumes: <none>

Events:

Type	Reason	Age	From	Message
Normal	SuccessfulCreate	46s	job-controller	Created pod: job-wq-2-mr92r

Normal	SuccessfulCreate	46s	job-controller	Created pod: job-wq-2-ll4t6
--------	------------------	-----	----------------	-----------------------------

root@k8s-master:~/sunxi/redis# kubectl logs pods/job-wq-2-mr92r

Worker with sessionID: 209b0d9d-1bd5-4cee-8ba4-

7d77bc2a69fc

Initial queue state: empty=False

Working on orange

Working on lemon

Working on fig

Working on cherry

Working on apple

Queue empty, exiting

root@k8s-master:~/sunxi/redis# kubectl logs pods/job-wq-2-
ll4t6

Worker with sessionID: e740ea7f-8115-4cef-8ca2-
53eeca20dd84

Initial queue state: empty=False

Working on melon

Working on grape

Working on date

Working on banana

Waiting for work

Queue empty, exiting

知识补充：

[https://kubernetes.io/docs/reference/generated/kubernetes-
api/v1.14/#job-v1-batch](https://kubernetes.io/docs/reference/generated/kubernetes-api/v1.14/#job-v1-batch)

parallelism
integer

Specifies the maximum desired number of pods the job should run at any given time. The actual number of pods running in steady state will be less than this number when $(\text{.spec.completions} - \text{.status.successful}) < \text{.spec.parallelism}$, i.e. when the work left to do is less than max parallelism. More info: <https://kubernetes.io/docs/concepts/workloads/controllers/jobs-run-to-completion/>

restartPolicy
string

Restart policy for all containers within the pod. One of Always, OnFailure, Never. Default to Always. More info: <https://kubernetes.io/docs/concepts/workloads/pods/pod-lifecycle/#restart-policy>

<https://www.cnblogs.com/CloudMan6/p/8454758.html>

问题：

单独kubectl run --command启动Redis容器，server并没有启动

单独创建Redis pod，server会自动启动

```
root@k8s-master:~/sunxi/redis# kubectl run -i --tty temp --image redis --command "/bin/sh"
kubectl run --generator=deployment/apps.v1 is DEPRECATED and will be removed in a future version. Use kubectl run --generator=run-pod/v1 or kubectl create instead.

If you don't see a command prompt, try pressing enter.

# redis-cli -h redis
Could not connect to Redis at redis:6379: Name or service not known
not connected> |
```

原因：kubectl run 的--command参数会覆盖Redis镜像中Dockerfile的入口命令

<https://github.com/docker-library/redis/blob/master/5.0/Dockerfile>

```
--command=false: If true and extra arguments are present, use them as the 'command' field in the container, rather than the 'args' field which is the default.
```

<https://blog.csdn.net/hxpjava1/article/details/80750626>