Sangfor KubeManager

Application Deployment From Localhost

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About This Document

This document describes the application deployment guide in the KubeManager localhost.

Intended Audience

This document is intended for:

- Cloud Engineer
- Operations Manager

Note Icons

English Icon	Description
	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
	Indicates a hazardous situation, which if not avoided, could result in minor or moderate injury.
	Indicates a hazardous situation, which if not avoided, could result in settings failing to take effect, equipment damage, or data loss. NOTICE addresses practices not related to personal injury.
	Calls attention to important information, best practices, and tips. NOTE addresses information not related to personal injury or equipment damage.

Change Log

Date	Change Description
Oct. 27, 2021	This is the first release of this document.

Contents

1 Introduction

In this guide, we will deploy an online sock-shop service. Below is the basic overview for the deployment of an online sock shop.

Sock-Shop System Component

Front-end : User interface services
Order : Order services
Order-db : Mongo database for order
Payment : Payment services
User : User services
User-db : Mongo database for user
Catalogue : Product listing
Catalogue-db : MySQL database for product listing
Cart : Shopping cart services
Cart-bd : Mongo database for shopping cart
Shipping : shipping services

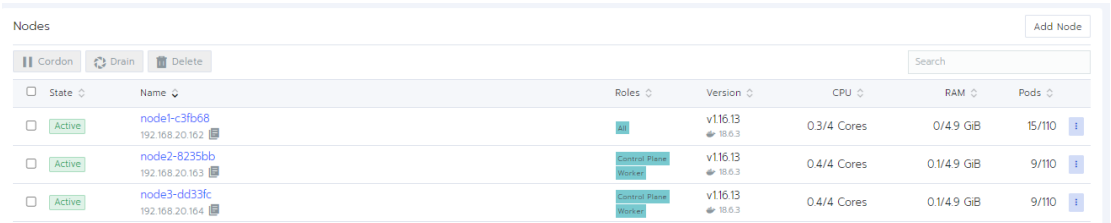
The demonstration will be using the following IP:

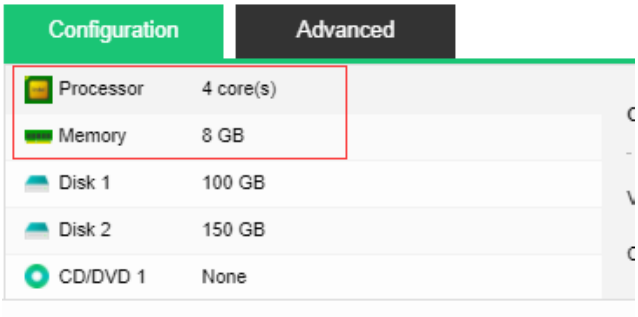
Kubemanager IP: 192.168.20.166

Harbor IP: 192.168.20.167

2 User Cluster Preparation

Use KubeManager to create a user cluster with at least one worker node more than 4 Cores 8G.





3 Images Preparation

1. SSH to Harbor or one of the worker node backend, upload the docker file (In this demonstration, the docker file name is **sock-shop-image.tar.gz**) to the host. Get the file from Sangfor TAC if needed.

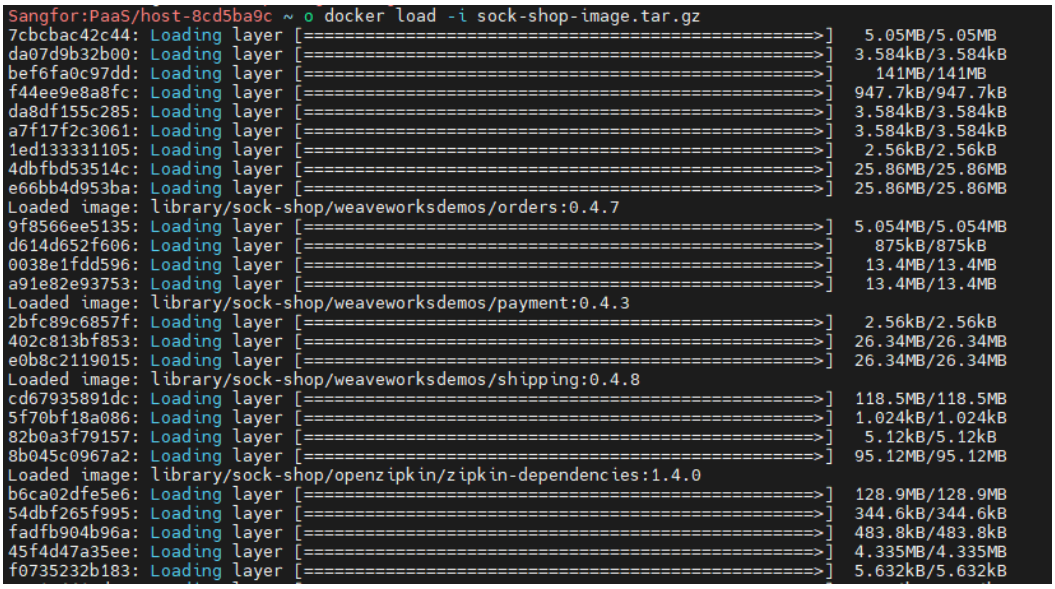
Credentials for SSH

Username: root

Password : Sangfor-paas.237

2. After this, extract the file using the **docker load** command (The extract process may take some time if it consists of many images).

   Command: docker load -i sock-shop-image.tar.gz



3. Check whether the images have loaded successfully. In this project, the docker file consists of 17 images.

Command:	
1.	docker images -a | grep sock
2.	docker images -a | grep sock | wc -l

```
Sangfor:PaaS/host-8cd5ba9c ~ o docker images -a | grep sock
library/sock-shop/mongo                                                         latest
 6d11486a97a7        15 months ago       388MB
library/sock-shop/openzipkin/zipkin                                             latest
 40f2f21f6707        16 months ago       158MB
library/sock-shop/redis                                                         alpine
 b546e82a6d0e        16 months ago       31.5MB
library/sock-shop/weaveworksdemos/user                                          0.4.7
 c276a3cc0418        3 years ago         35.7MB
library/sock-shop/weaveworksdemos/load-test                                     latest
 3ab3fd5cd04e        4 years ago         570MB
library/sock-shop/weaveworksdemos/catalogue                                     0.3.5
 0bd359b6d6e8        4 years ago         41.2MB
library/sock-shop/rabbitmq                                                      3.6.8
 8cdcbee37f62        4 years ago         179MB
library/sock-shop/weaveworksdemos/payment                                       0.4.3
 4f2c23055dcd        4 years ago         32.5MB
library/sock-shop/weaveworksdemos/front-end                                     0.3.12
 b54402ef78a5        4 years ago         120MB
library/sock-shop/weaveworksdemos/shipping                                      0.4.8
 4fc533e8180a        4 years ago         199MB
library/sock-shop/weaveworksdemos/carts                                         0.4.8
 c00473736118        4 years ago         198MB
library/sock-shop/weaveworksdemos/orders                                        0.4.7
 8275c5b9181b        4 years ago         198MB
library/sock-shop/weaveworksdemos/queue-master                                  0.3.1
 76f0de7a12ac        4 years ago         179MB
library/sock-shop/openzipkin/zipkin-dependencies                                1.4.0
 d34639ff6789        4 years ago         213MB
library/sock-shop/zipkin-mysql                                                  1.20.0
```

```
Sangfor:PaaS/host-8cd5ba9c ~ o docker images -a | grep sock | wc -l
17
```

4. Provide tagging to the image and save the output to b.sh (or another file name). After this, provide file permission to b.sh and run the script.

Command:	
1.	docker images -a | grep sock | awk '{print "docker tag "$1":"$2" HarborIP/"$1":"$2}' > b.sh
2.	chmod 777 b.sh
3.	./b.sh
4.	docker images -a | grep HarborIP/library/sock awk '{print $1":"$2}'

```
Sangfor:PaaS/host-8cd5ba9c ~ x docker images -a | grep sock | awk '{print "docker tag "$1":"$2" 192.168.20.167/"$1":"$2}' > b.sh
Sangfor:PaaS/host-8cd5ba9c ~ o chmod 777 b.sh
Sangfor:PaaS/host-8cd5ba9c ~ o ./b.sh
```

We can see **b.sh** was consists of the tagging of the image.

```
Sangfor:PaaS/host-8cd5ba9c ~ o cat b.sh
docker tag library/sock-shop/mongo:latest 192.168.20.167/library/sock-shop/mongo:latest
docker tag library/sock-shop/openzipkin/zipkin:latest 192.168.20.167/library/sock-shop/openzipkin/zipkin:latest
docker tag library/sock-shop/redis:alpine 192.168.20.167/library/sock-shop/redis:alpine
docker tag library/sock-shop/weaveworksdemos/user:0.4.7 192.168.20.167/library/sock-shop/weaveworksdemos/user:0.4.7
docker tag library/sock-shop/weaveworksdemos/load-test:latest 192.168.20.167/library/sock-shop/weaveworksdemos/load-test:latest
docker tag library/sock-shop/weaveworksdemos/catalogue:0.3.5 192.168.20.167/library/sock-shop/weaveworksdemos/catalogue:0.3.5
docker tag library/sock-shop/rabbitmq:3.6.8 192.168.20.167/library/sock-shop/rabbitmq:3.6.8
docker tag library/sock-shop/weaveworksdemos/payment:0.4.3 192.168.20.167/library/sock-shop/weaveworksdemos/payment:0.4.3
docker tag library/sock-shop/weaveworksdemos/front-end:0.3.12 192.168.20.167/library/sock-shop/weaveworksdemos/front-end:0.3.12
docker tag library/sock-shop/weaveworksdemos/shipping:0.4.8 192.168.20.167/library/sock-shop/weaveworksdemos/shipping:0.4.8
docker tag library/sock-shop/weaveworksdemos/carts:0.4.8 192.168.20.167/library/sock-shop/weaveworksdemos/carts:0.4.8
docker tag library/sock-shop/weaveworksdemos/orders:0.4.7 192.168.20.167/library/sock-shop/weaveworksdemos/orders:0.4.7
docker tag library/sock-shop/weaveworksdemos/queue-master:0.3.1 192.168.20.167/library/sock-shop/weaveworksdemos/queue-master:0.3.
docker tag library/sock-shop/openzipkin/zipkin-dependencies:1.4.0 192.168.20.167/library/sock-shop/openzipkin/zipkin-dependencies:
docker tag library/sock-shop/zipkin-mysql:1.20.0 192.168.20.167/library/sock-shop/zipkin-mysql:1.20.0
docker tag library/sock-shop/weaveworksdemos/catalogue-db:0.3.0 192.168.20.167/library/sock-shop/weaveworksdemos/catalogue-db:0.3.
docker tag library/sock-shop/weaveworksdemos/user-db:0.4.0 192.168.20.167/library/sock-shop/weaveworksdemos/user-db:0.4.0
```

As shown above, the images have been tagged.

```
Sangfor:PaaS/host-8cd5ba9c ~ x docker images -a | grep 192.168.20.167/library/sock | awk '{print $1":"$2}'
192.168.20.167/library/sock-shop/mongo:latest
192.168.20.167/library/sock-shop/openzipkin/zipkin:latest
192.168.20.167/library/sock-shop/redis:alpine
192.168.20.167/library/sock-shop/weaveworksdemos/user:0.4.7
192.168.20.167/library/sock-shop/weaveworksdemos/load-test:latest
192.168.20.167/library/sock-shop/weaveworksdemos/catalogue:0.3.5
192.168.20.167/library/sock-shop/rabbitmq:3.6.8
192.168.20.167/library/sock-shop/weaveworksdemos/payment:0.4.3
192.168.20.167/library/sock-shop/weaveworksdemos/front-end:0.3.12
192.168.20.167/library/sock-shop/weaveworksdemos/shipping:0.4.8
192.168.20.167/library/sock-shop/weaveworksdemos/carts:0.4.8
192.168.20.167/library/sock-shop/weaveworksdemos/orders:0.4.7
192.168.20.167/library/sock-shop/weaveworksdemos/queue-master:0.3.1
192.168.20.167/library/sock-shop/openzipkin/zipkin-dependencies:1.4.0
192.168.20.167/library/sock-shop/zipkin-mysql:1.20.0
192.168.20.167/library/sock-shop/weaveworksdemos/catalogue-db:0.3.0
192.168.20.167/library/sock-shop/weaveworksdemos/user-db:0.4.0
```

5. Login to Harbor and prepare to push the images (Default Harbor login password is **Harbor12345**).

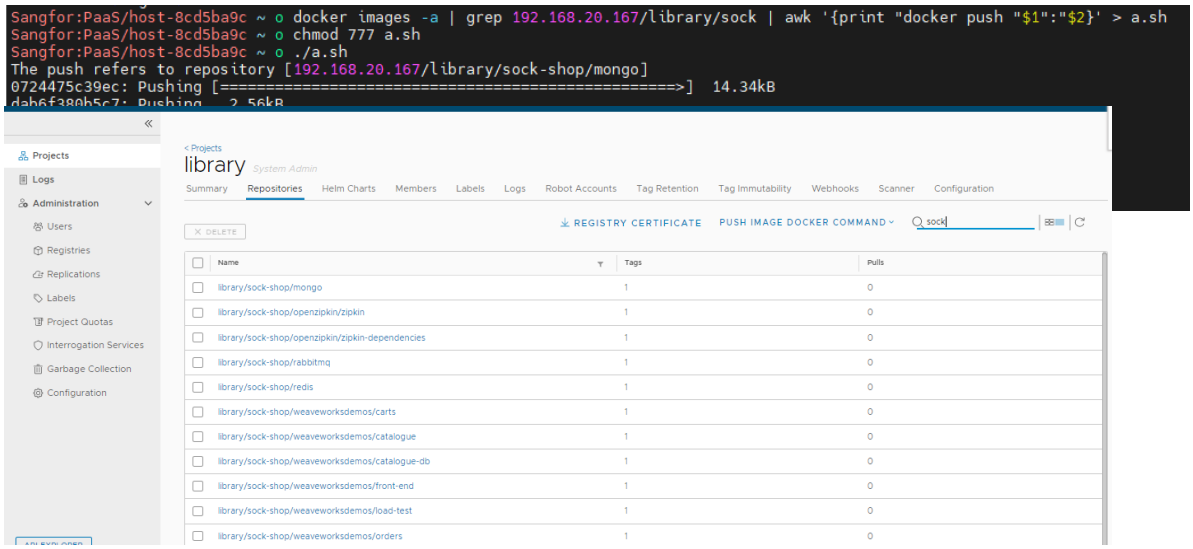
Command:	
1.	mkdir -p /etc/docker/certs.d/HarborIP
2.	curl -kL http://HarborIP/api/systeminfo/getcert -o /etc/docker/certs.d/HarborIP/ca.crt
3.	docker login -u admin -p Harbor12345 HarborIP

```
Sangfor:PaaS/host-8cd5ba9c ~ x mkdir -p /etc/docker/certs.d/192.168.20.167
Sangfor:PaaS/host-8cd5ba9c ~ o curl -kL http://192.168.20.167/api/systeminfo/getcert -o /etc/docker/certs.d/192.168.20.167/ca.crt
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100   169  100   169    0     0   122k      0 --:--:-- --:--:-- --:--:--  165k
100  1094  100  1094    0     0   1350      0 --:--:-- --:--:-- --:--:--     0
Sangfor:PaaS/host-8cd5ba9c ~ o docker login -u admin -p Harbor12345 192.168.20.167
WARNING! Using --password via the CLI is insecure. Use --password-stdin.
WARNING! Your password will be stored unencrypted in /root/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store

Login Succeeded
Sangfor:PaaS/host-8cd5ba9c ~ o
```

6. Push the images to Harbor. First, we will group all the **docker push** images commands and save the output to a.sh (or another file name). After this, grant file permission to a.sh and execute it.

Command:	
1.	docker images -a | grep HarborIP/library/sock | awk '{print "docker push "$1":"$2}' > a.sh
2.	chmod 777 a.sh
3.	./a.sh

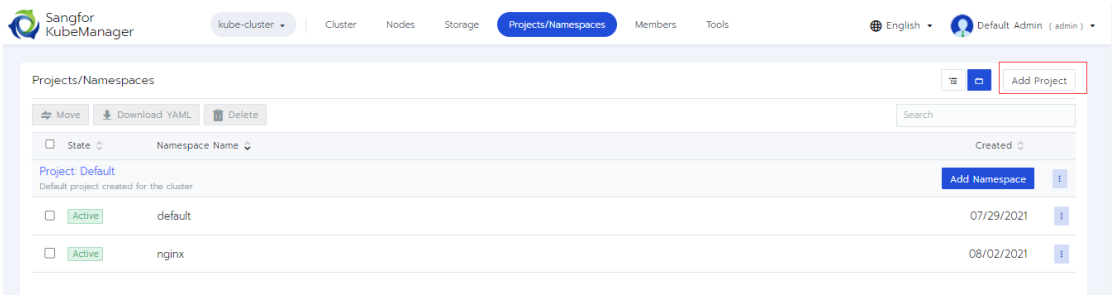


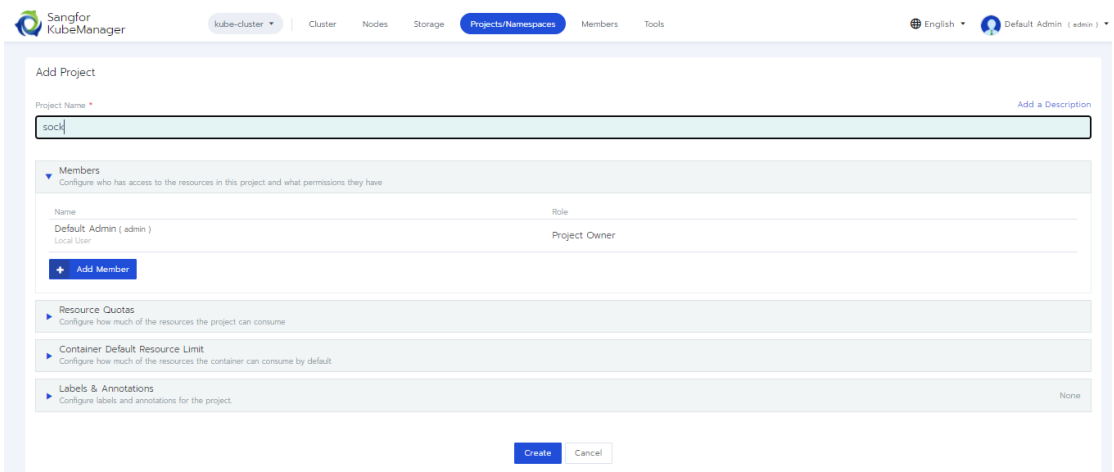
7. After this, the images should be able to push to Harbor successfully.

4 Services Deployment

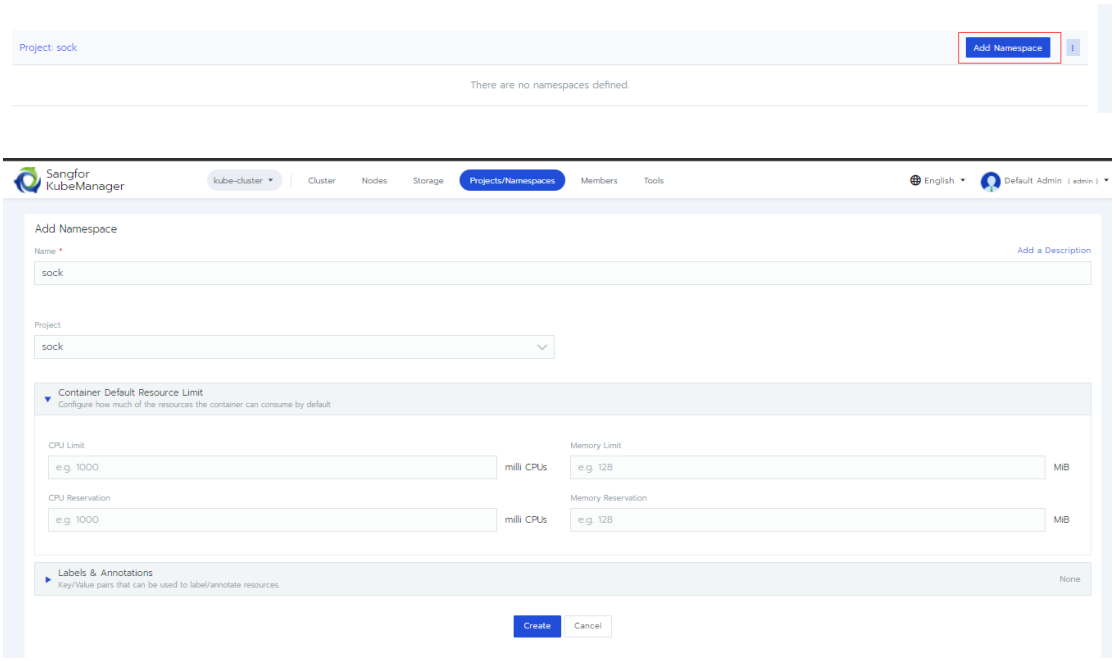
1. Login KubeManager, create a new Namespaces and project.

Project Deployment:

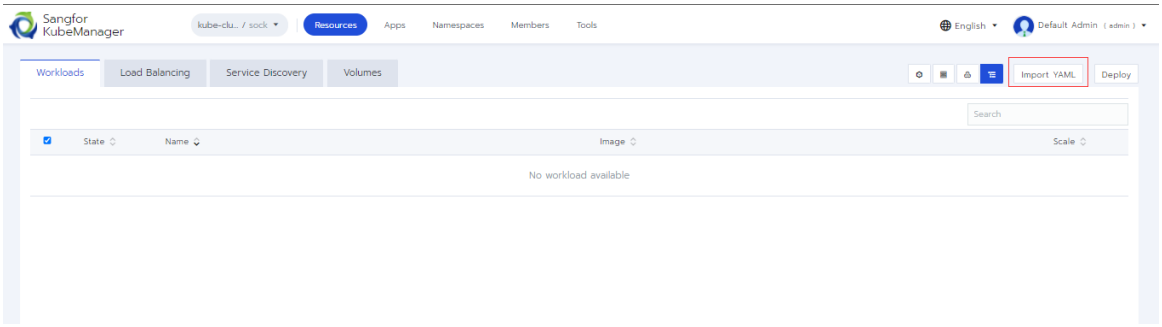




Namespace Deployment:



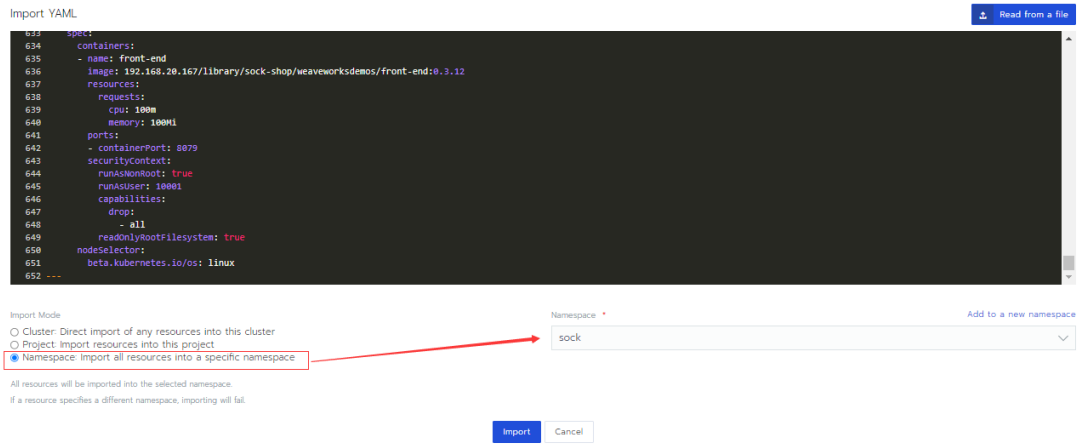
2. Browse to the project page, import the image by importing **YAML files**.



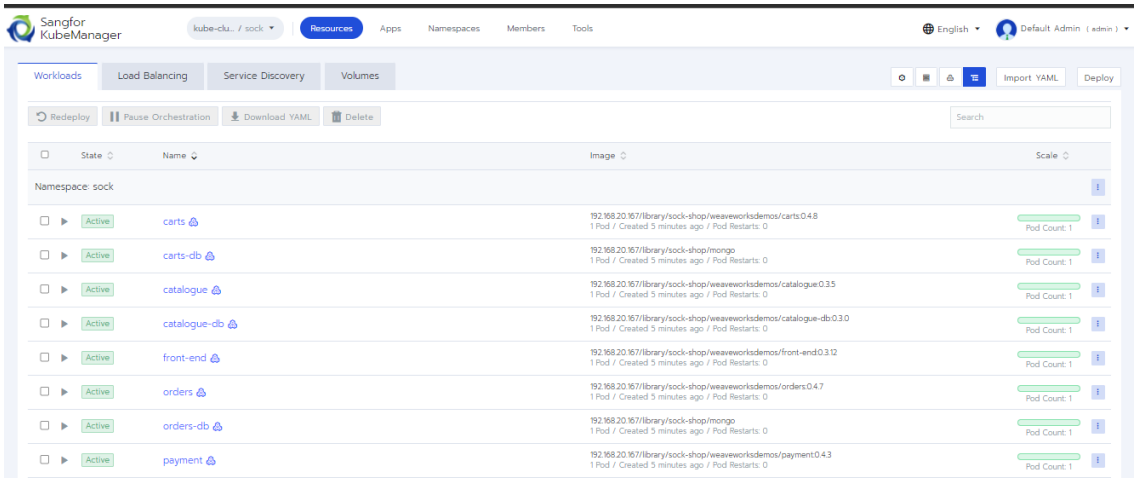
NOTE

If the docker project consists of more than one workload, it's suggested to have a YAML file to define the relationship between workloads and how they should be deployed.

Copy and paste the YAML file content. Remember to replace all the Harbor Ip according to the environment.

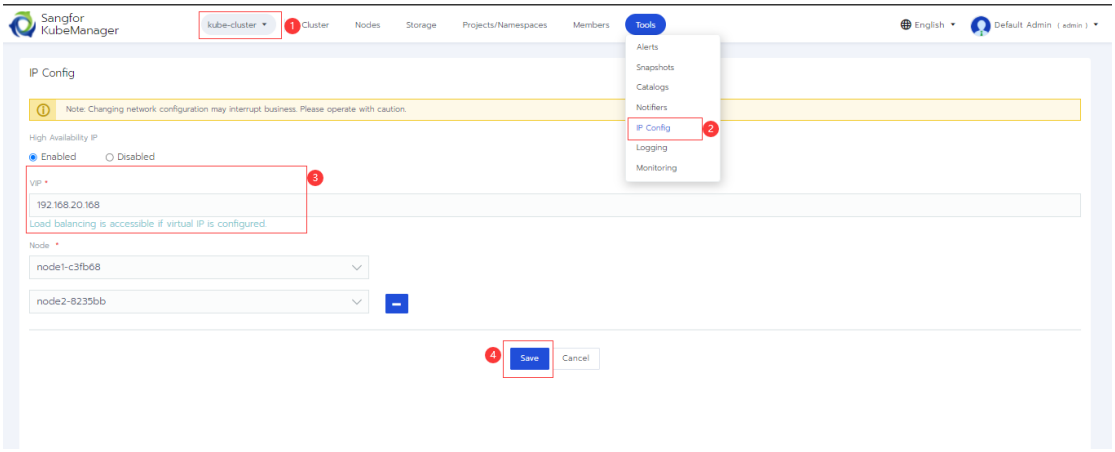


3. After the workload is created, it will need to wait for some time until all the workload turns to active status.

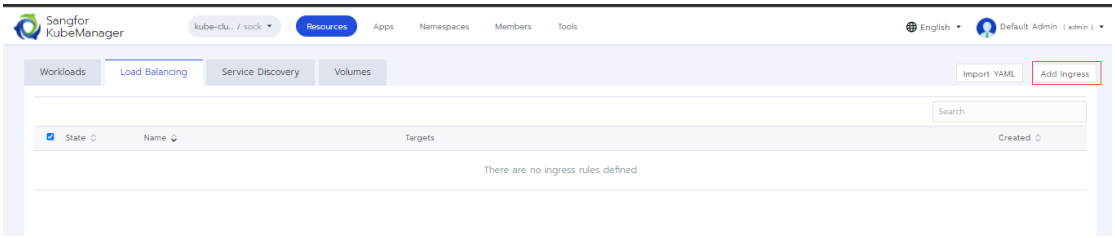


5 Publish Services

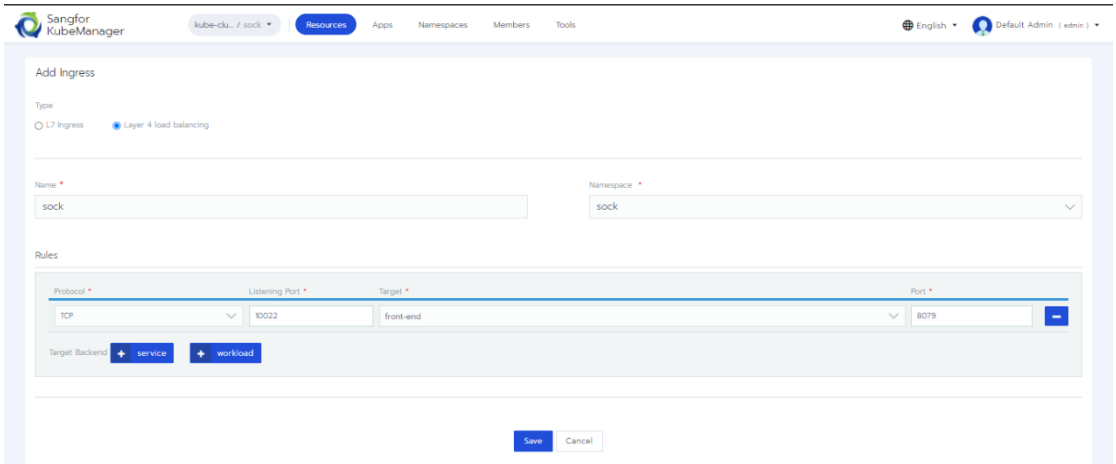
1. Access cluster mode, proceed to **Tools > IP config**, set a virtual IP for the cluster, and click **Save** once it is completed.



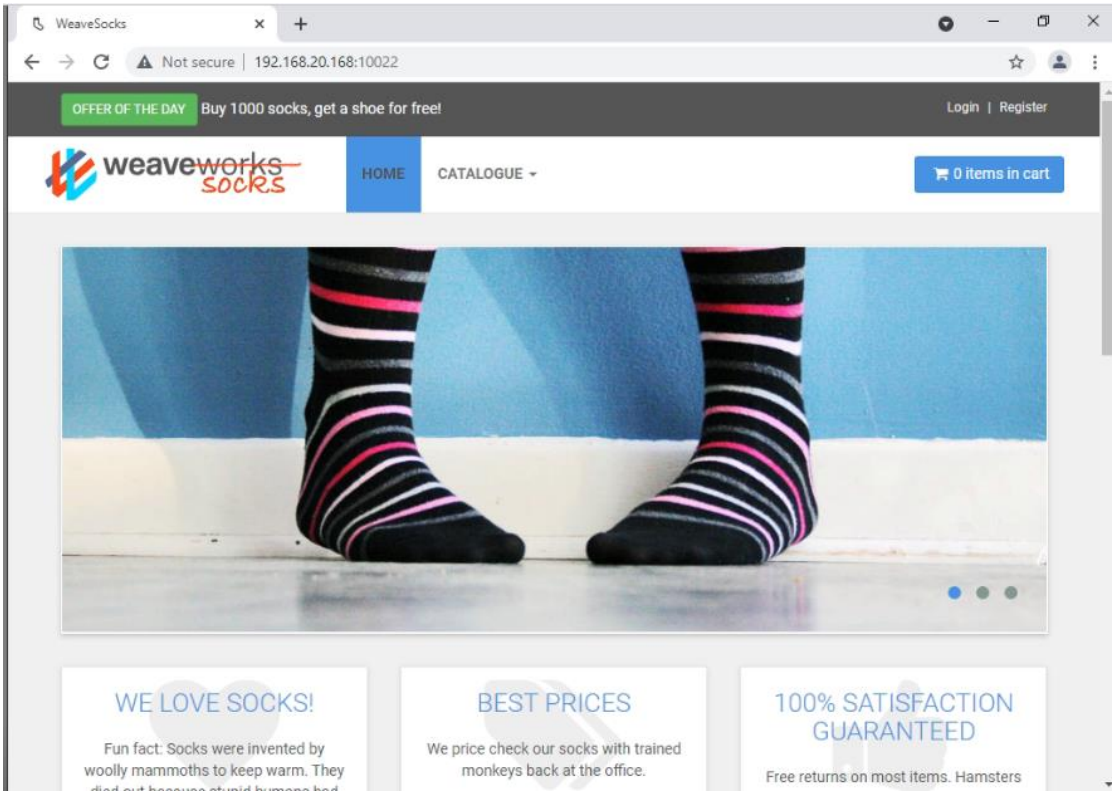
2. Access the project and click **Add Ingress** to configure for Load Balancing.



Provide a name for the project. After this, configure the load balancing policy. In this project, the **front-end** workload interacts with the user. Therefore it will be the target for load balancing. The port used for the workload is 8079, while the listening port for localhost can be **any value**.



3. Access the web service through the VIP with the listening port. If the project is deployed successfully, the web services should be accessible by the browser.



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