Deploying Wordpress Website with Mysql Database on Cloud Container Engine (CCE) Service

In this article, we will develop a Mysql database server and Wordpress website on Cloud Container Engine (CCE) service.

During the demo, some features such as high availability, advanced configurations and backup were ignored to keep costs low.

Please do not forget to delete the resources you created after the demo.

After delete process click on the 'My Resources' link below to check all the resources you use.

https://console-intl.huaweicloud.com/rms/

We will do this practice in 8 steps in total

1. Creating VPC for CCE cluster
2. Creating CCE Cluster
3. Creating CCE Cluster Node
4. Creating Mysql Server container (StatefulSet)
5. Uploading Wordpress docker image to SWR service
6. Creating Wordpress Website container (Deployment)
7. Configure Wordpress Website
8. Final: How to prepare homework proof

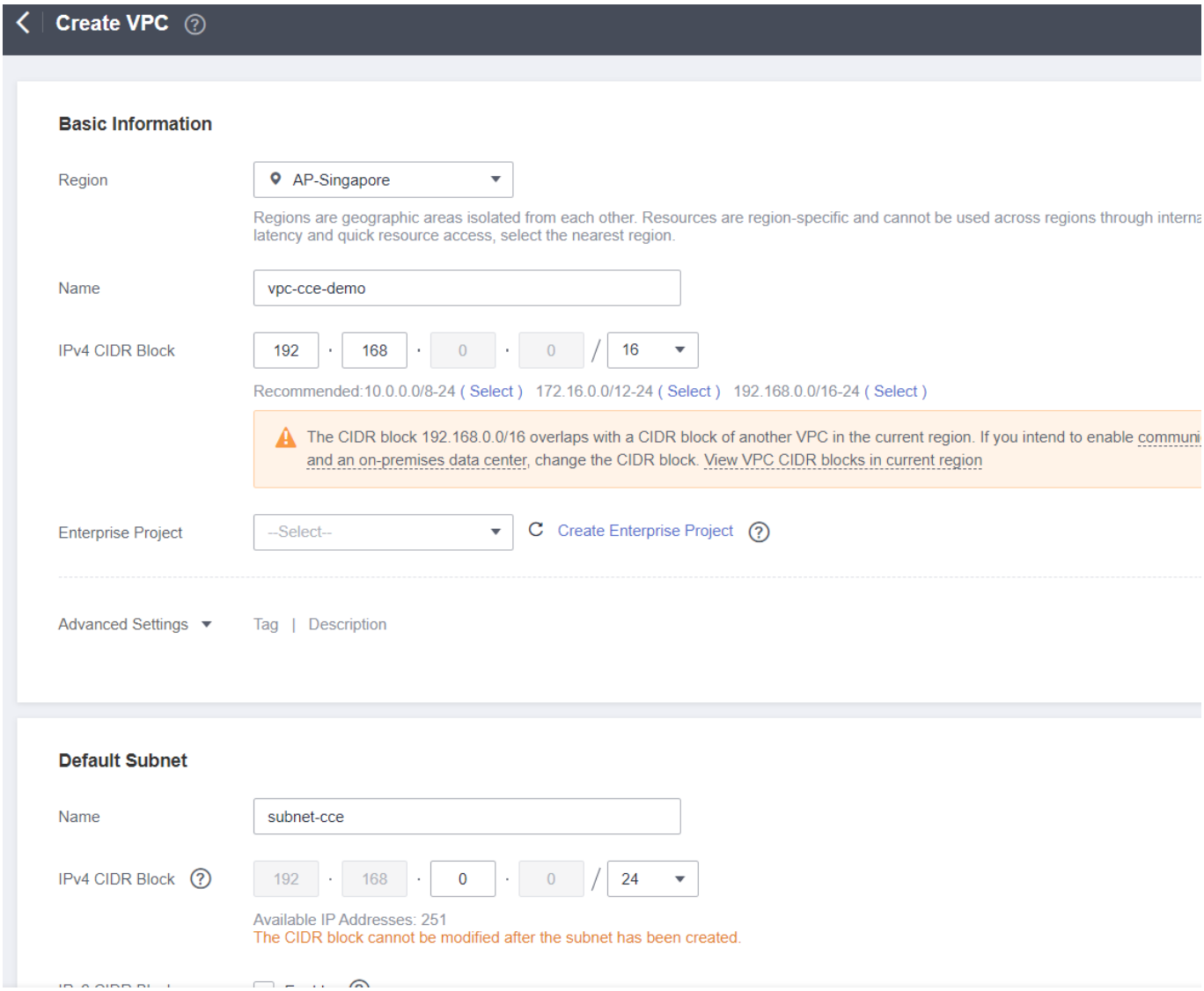
1. Creating VPC for CCE cluster

https://console-intl.huaweicloud.com/vpc/

In the Service List, choose Virtual Private Cloud.

Change the VPC name to vpc-cce and create one subnet subnet-cce. Retain the default settings for other parameters. Click Create Now.

```
Create VPC

Region:  AP-Singapore
Name: vpc-cce
IPv4 CIDR Block: 192.168.0.0 / 16


Default Subnet
Name: subnet-cce
IPv4 CIDR Block: 192.168.0.0 / 24
```

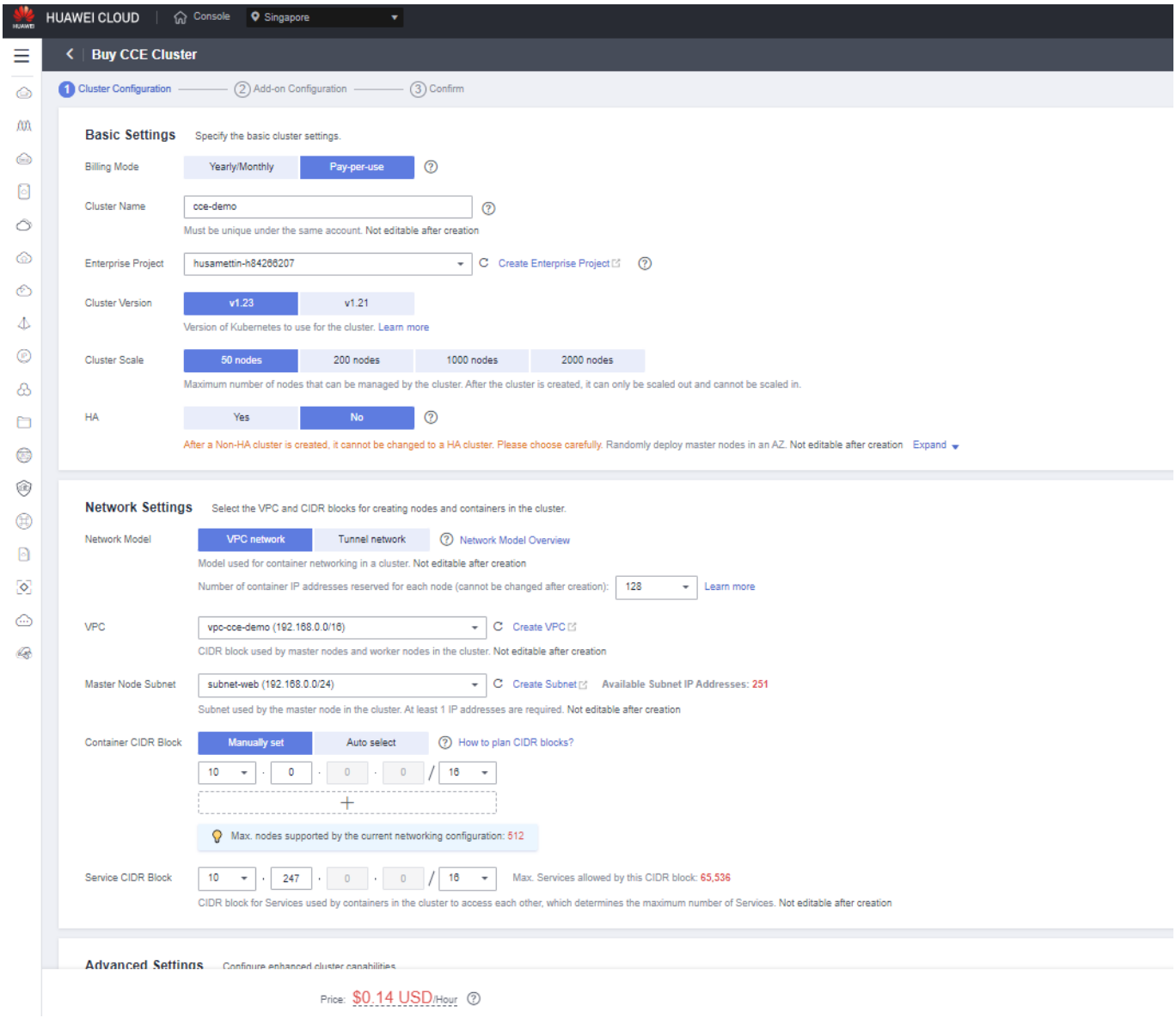


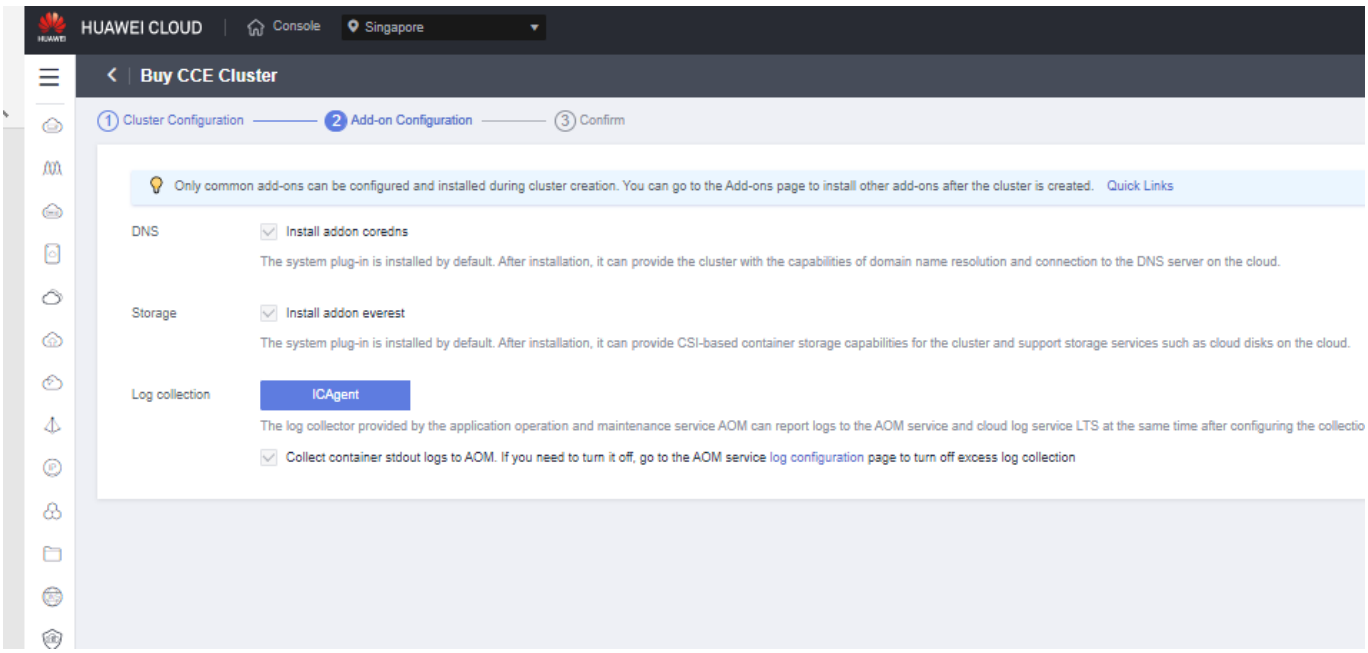
2. Creating CCE Cluster

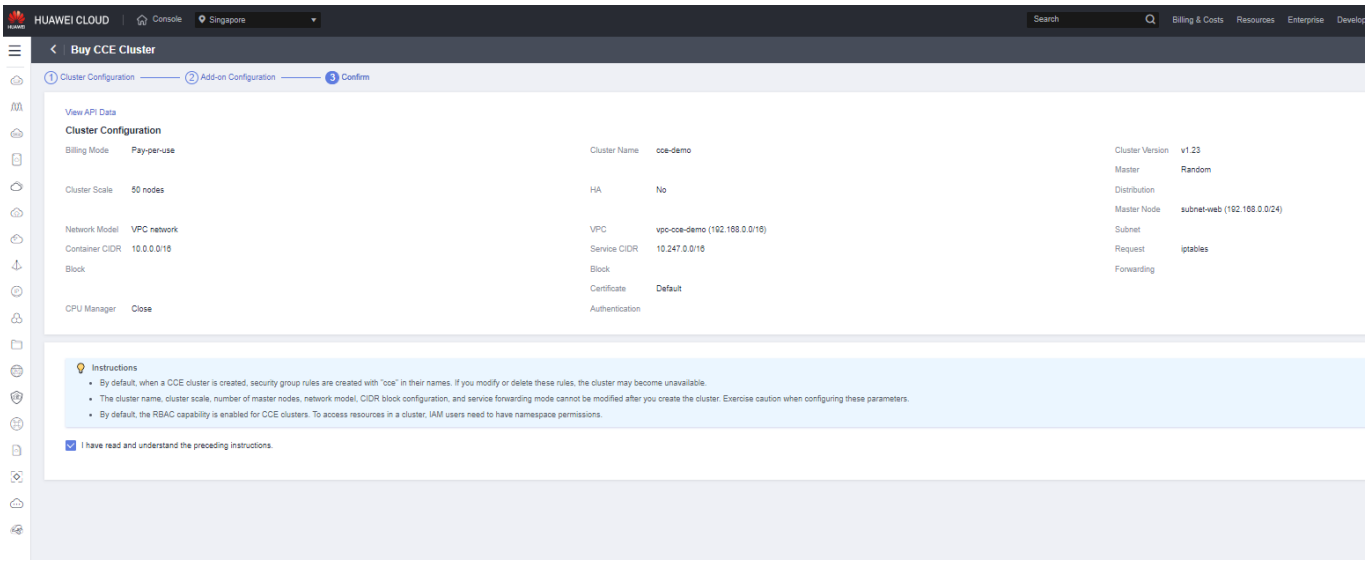
https://console-intl.huaweicloud.com/cce/

On the Buy CCE Cluster page, configure the cluster with the following parameters

```
Buy CCE Cluster

Cluster Name: cce-demo
Cluster Version: v1.23
Cluster Scale: 50 nodes
HA: No
Network Model: VPC network
VPC: vpc-cce
Master Node Subnet: subnet-cce
Container CIDR Block: Manually Set - 10.0.0.0 / 16
```


HUAWEI CLOUD
Console
Singapore
Buy CCE Cluster
1 Cluster Configuration
2 Add-on Configuration
3 Confirm
Basic Settings
Specify the basic cluster settings.
Billing Mode
Yearly/Monthly
Pay-per-use
Cluster Name
cce-demo
Must be unique under the same account. Not editable after creation
Enterprise Project
husamettin-h84266207
Create Enterprise Project
Cluster Version
v1.23
v1.21
Version of Kubernetes to use for the cluster. Learn more
Cluster Scale
50 nodes
200 nodes
1000 nodes
2000 nodes
Maximum number of nodes that can be managed by the cluster. After the cluster is created, it can only be scaled out and cannot be scaled in.
HA
Yes
No
After a Non-HA cluster is created, it cannot be changed to a HA cluster. Please choose carefully. Randomly deploy master nodes in an AZ. Not editable after creation
Expand
Network Settings
Select the VPC and CIDR blocks for creating nodes and containers in the cluster.
Network Model
VPC network
Tunnel network
Network Model Overview
Model used for container networking in a cluster. Not editable after creation
Number of container IP addresses reserved for each node (cannot be changed after creation):
128
Learn more
VPC
vpc-cce-demo (192.168.0.0/16)
Create VPC
CIDR block used by master nodes and worker nodes in the cluster. Not editable after creation
Master Node Subnet
subnet-web (192.168.0.0/24)
Create Subnet
Available Subnet IP Addresses: 251
Subnet used by the master node in the cluster. At least 1 IP addresses are required. Not editable after creation
Container CIDR Block
Manually set
Auto select
How to plan CIDR blocks?
10 . 0 . 0 . 0 / 16
Max. nodes supported by the current networking configuration: 512
Service CIDR Block
10 . 247 . 0 . 0 / 16
Max. Services allowed by this CIDR block: 65,536
CIDR block for Services used by containers in the cluster to access each other, which determines the maximum number of Services. Not editable after creation
Advanced Settings
Configure enhanced cluster capabilities
Price:
$0.14 USD/Hour

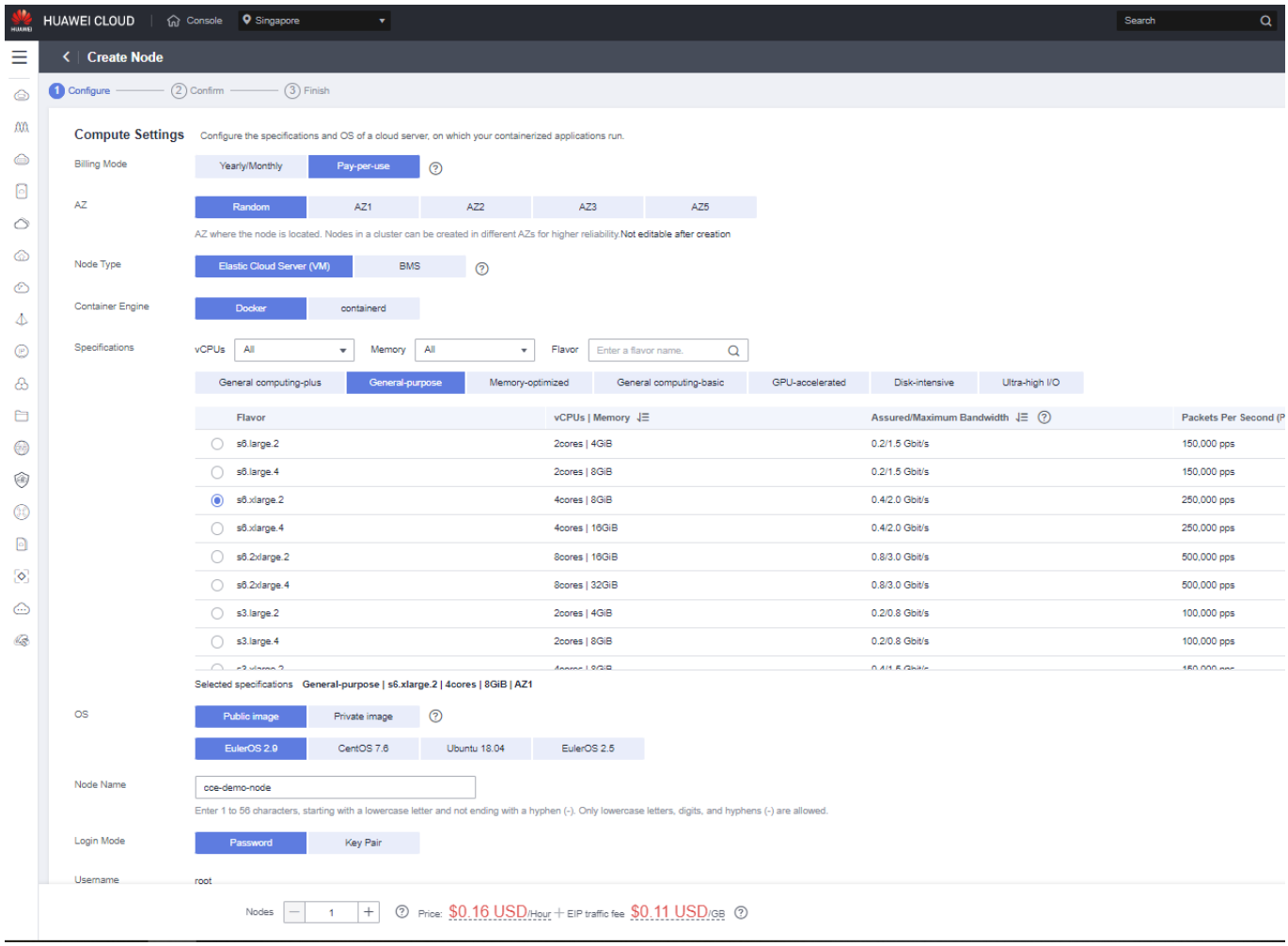

HUAWEI CLOUD
Console
Singapore
Buy CCE Cluster
1 Cluster Configuration
2 Add-on Configuration
3 Confirm
Only common add-ons can be configured and installed during cluster creation. You can go to the Add-ons page to install other add-ons after the cluster is created.
Quick Links
DNS
Install addon coredns
The system plug-in is installed by default. After installation, it can provide the cluster with the capabilities of domain name resolution and connection to the DNS server on the cloud.
Storage
Install addon everest
The system plug-in is installed by default. After installation, it can provide CSI-based container storage capabilities for the cluster and support storage services such as cloud disks on the cloud.
Log collection
ICAgent
The log collector provided by the application operation and maintenance service AOM can report logs to the AOM service and cloud log service LTS at the same time after configuring the collectio
Collect container stdout logs to AOM. If you need to turn it off, go to the AOM service log configuration page to turn off excess log collection

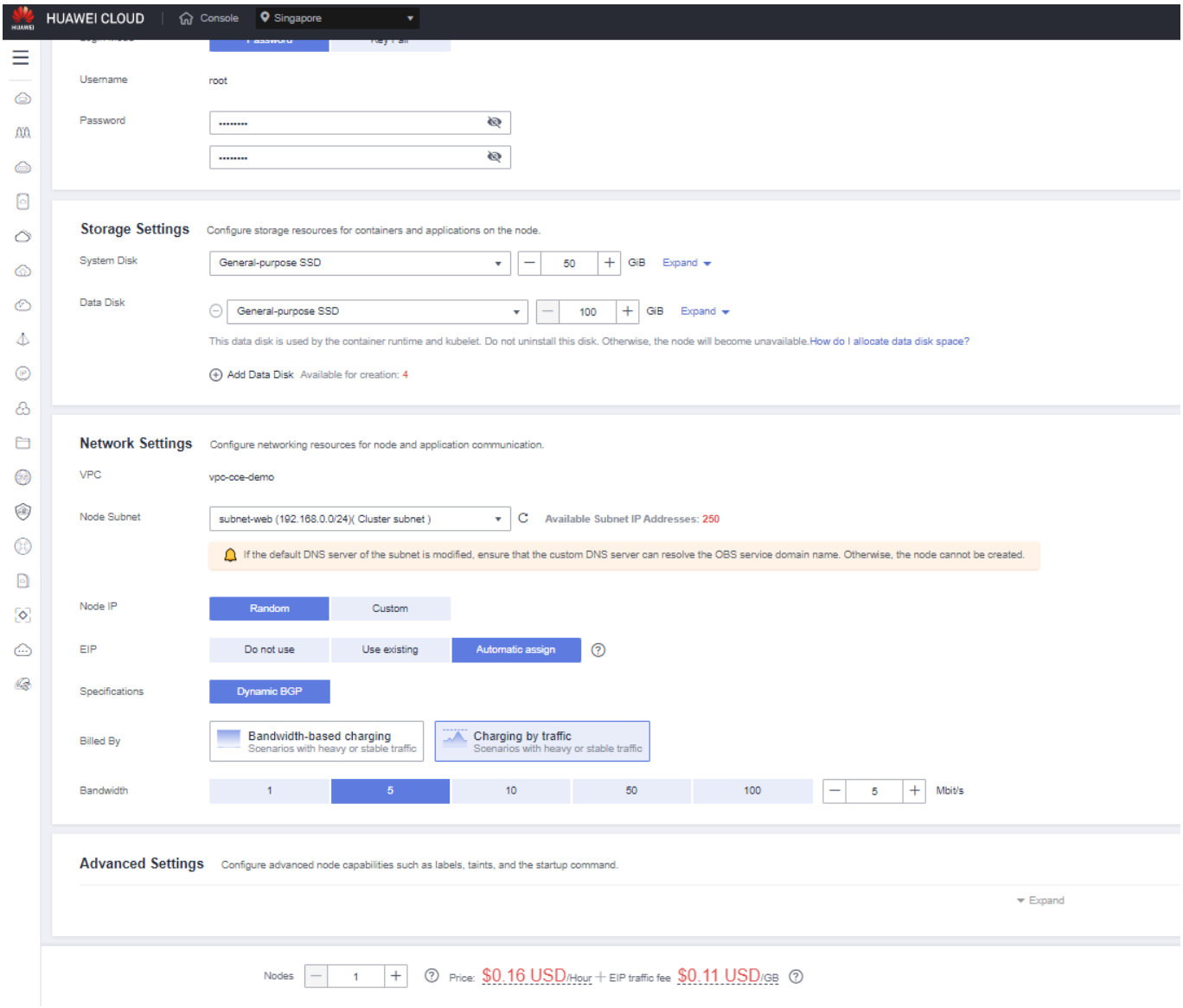


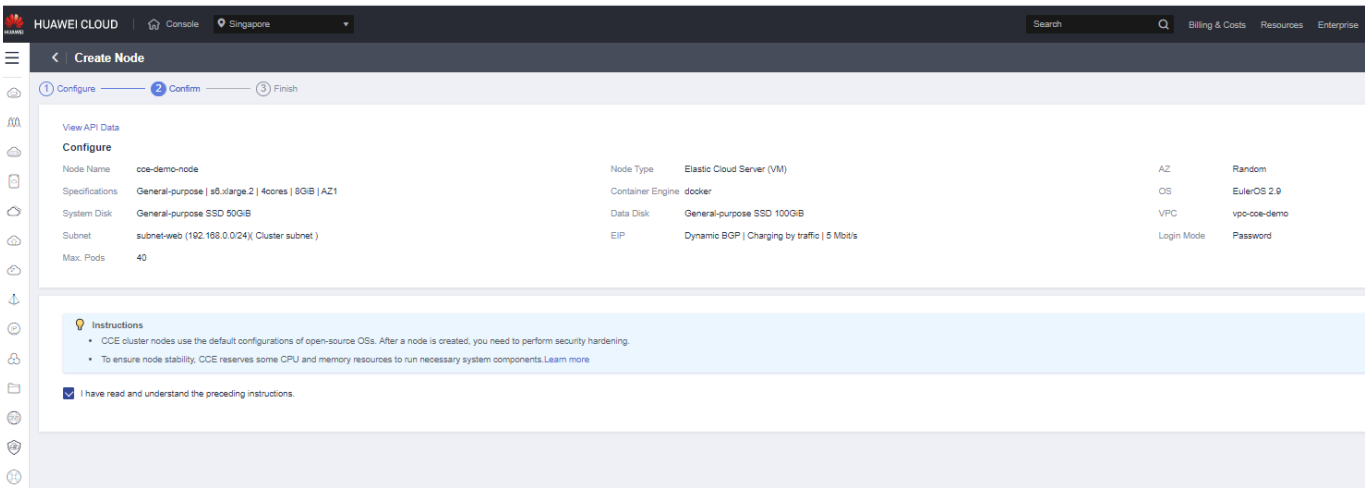
3. Creating CCE Cluster Node

On the CCE cluster detail screen, click the 'Create Node' link in the Nodes section

```
Billing Mode: Pay-per-use
AZ: Random
Node Type: Elastic Cloud Server (VM)
Container Engine: Docker
Specifications: s6.2xlarge.2    8cores | 16GiB (General Purpose)
OS: Public Image
Node Name: cce-demo-node
Login Mode: Password (the password can be customized)
EIP: Automatically assign
Billed By: Charging by traffic
Bandwidth: 5
```


HUAWEI CLOUD
Console
Singapore
Search
Create Node
1 Configure
2 Confirm
3 Finish
Compute Settings
Configure the specifications and OS of a cloud server, on which your containerized applications run.
Billing Mode
Yearly/Monthly
Pay-per-use
AZ
Random
AZ1
AZ2
AZ3
AZ5
AZ where the node is located. Nodes in a cluster can be created in different AZs for higher reliability.Not editable after creation
Node Type
Elastic Cloud Server (VM)
BMS
Container Engine
Docker
containerd
Specifications
vCPUs
All
Memory
All
Flavor
Enter a flavor name.
General computing-plus
General-purpose
Memory-optimized
General computing-basic
GPU-accelerated
Disk-intensive
Ultra-high I/O
Flavor
vCPUs | Memory
Assured/Maximum Bandwidth
Packets Per Second (P
s6.large.2
2cores | 4GiB
0.2/1.5 Gbit/s
150,000 pps
s6.large.4
2cores | 8GiB
0.2/1.5 Gbit/s
150,000 pps
s6.xlarge.2
4cores | 8GiB
0.4/2.0 Gbit/s
250,000 pps
s6.xlarge.4
4cores | 16GiB
0.4/2.0 Gbit/s
250,000 pps
s6.2xlarge.2
8cores | 16GiB
0.8/3.0 Gbit/s
500,000 pps
s6.2xlarge.4
8cores | 32GiB
0.8/3.0 Gbit/s
500,000 pps
s3.large.2
2cores | 4GiB
0.2/0.8 Gbit/s
100,000 pps
s3.large.4
2cores | 8GiB
0.2/0.8 Gbit/s
100,000 pps
Selected specifications General-purpose | s6.xlarge.2 | 4cores | 8GiB | AZ1
OS
Public image
Private image
EulerOS 2.9
CentOS 7.6
Ubuntu 18.04
EulerOS 2.5
Node Name
cce-demo-node
Enter 1 to 56 characters, starting with a lowercase letter and not ending with a hyphen (-). Only lowercase letters, digits, and hyphens (-) are allowed.
Login Mode
Password
Key Pair
Username
root
Nodes
1
Price:
$0.16 USD/Hour
EIP traffic fee
$0.11 USD/GB





4. Creating Mysql Server container (StatefulSet)

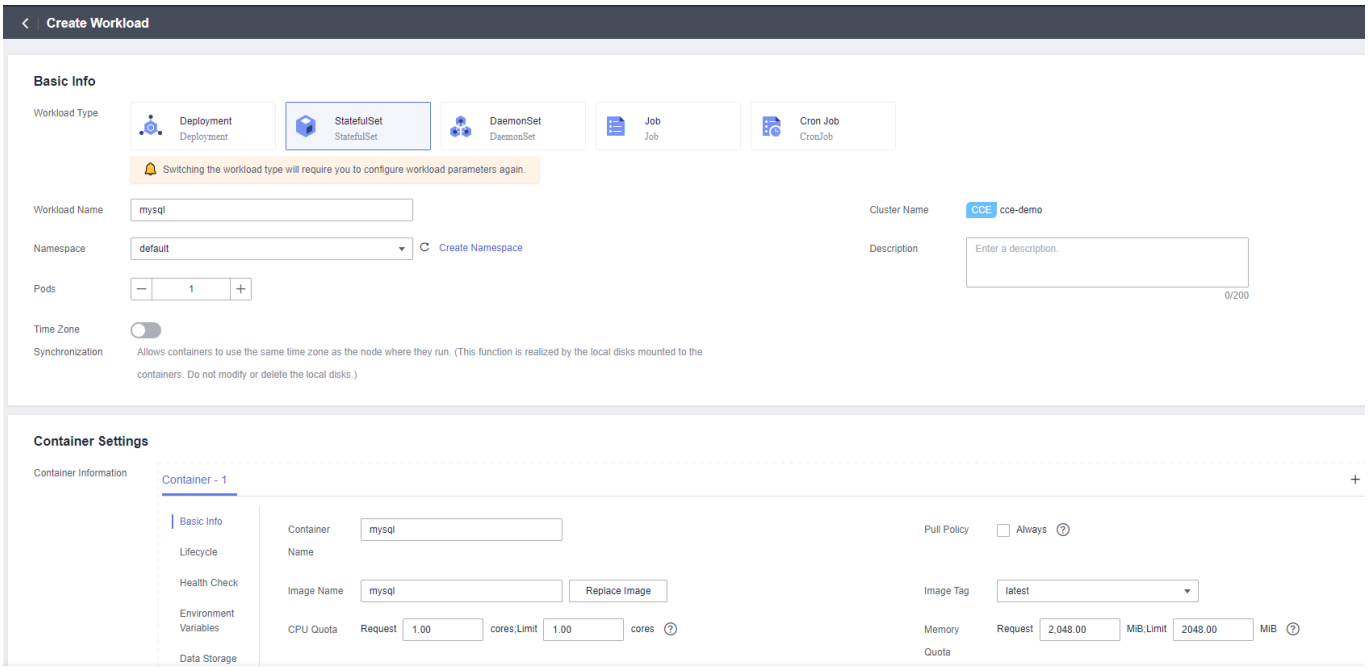
In the navigation pane on the left, choose Workloads > StatefulSets. On the page displayed, click 'Create Workload'.

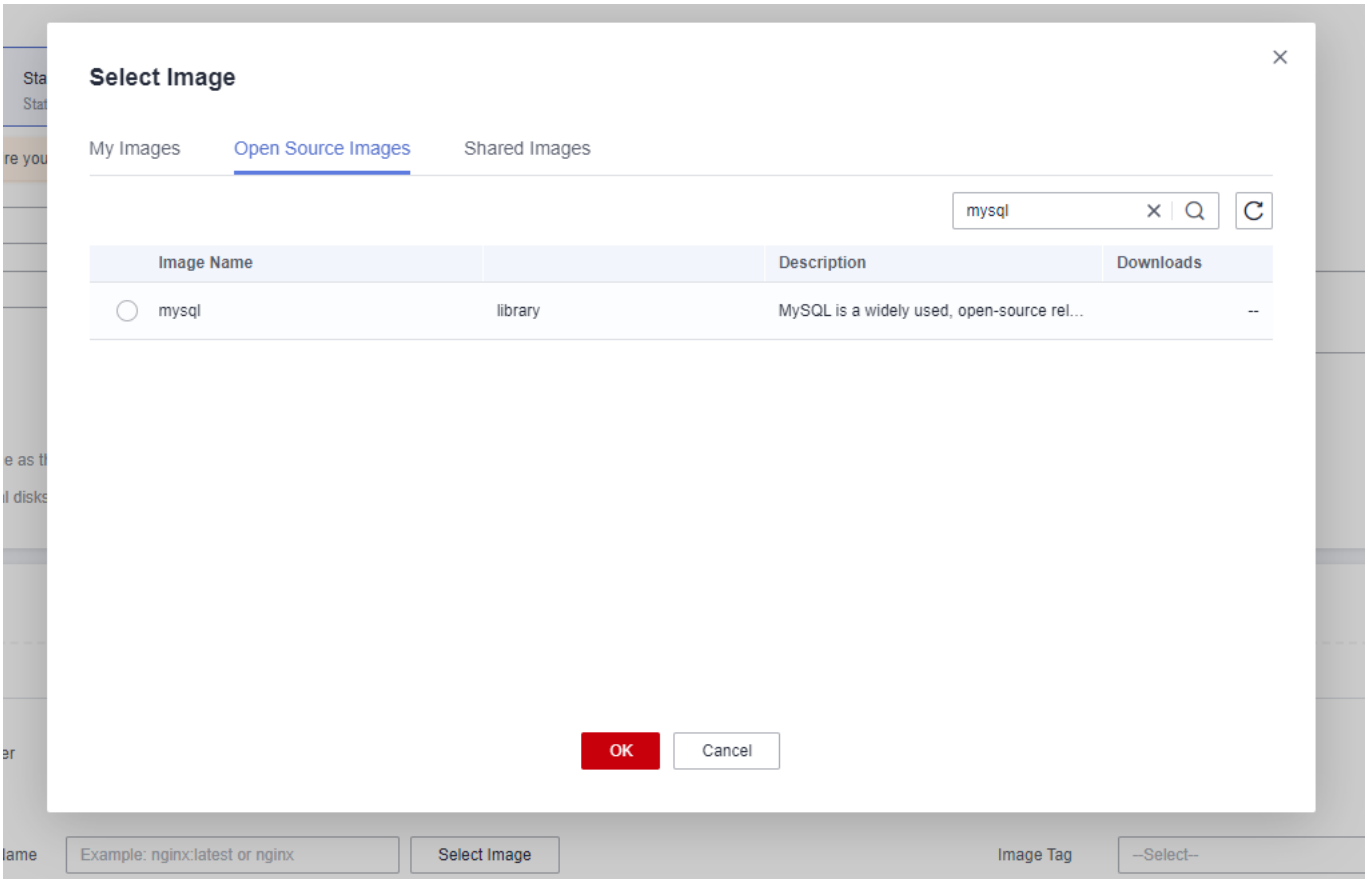
```
Basic Info
Workload Type: StatefulSet
```

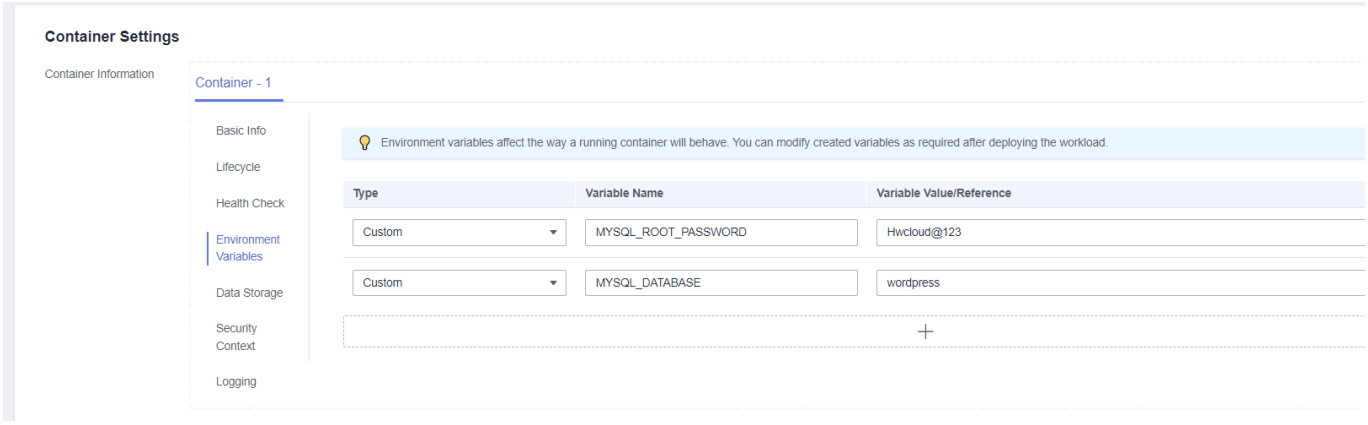
```
Workload Name:  mysql
Pods: 1

Container Settings -> Basic Info
Container Name: mysql
Image Name: Click 'Select Image' -> Click 'Open Source Images' -> Search
'mysql' and Select 'mysql'
Image Tag: latest
CPU Quota: Request: 1.00 Limit: 1.00
Memory Quota:  Request: 2048 Limit: 2048

Container Settings -> Environment Variables
configure the following environment variables
MYSQL_ROOT_PASSWORD: Hwcloud@123
MYSQL_DATABASE: wordpress

Container Settings -> Data Storage

Dynamic Volumes -> Create PVC
Storage Volume Claim Type: EVS
PVC Name: mysql-data
click 'Create'
Mount Path: /var/lib/mysql


Headless Service Parameters

Service Name : headless-mysql
Port Name: mysql
Service Port: 3306
Container Port: 3306

Service Settings
Click (+)
Create Service
Service Name: mysql
Service Type: Cluster IP
Service Port: 3306
Container Port: 3306
```

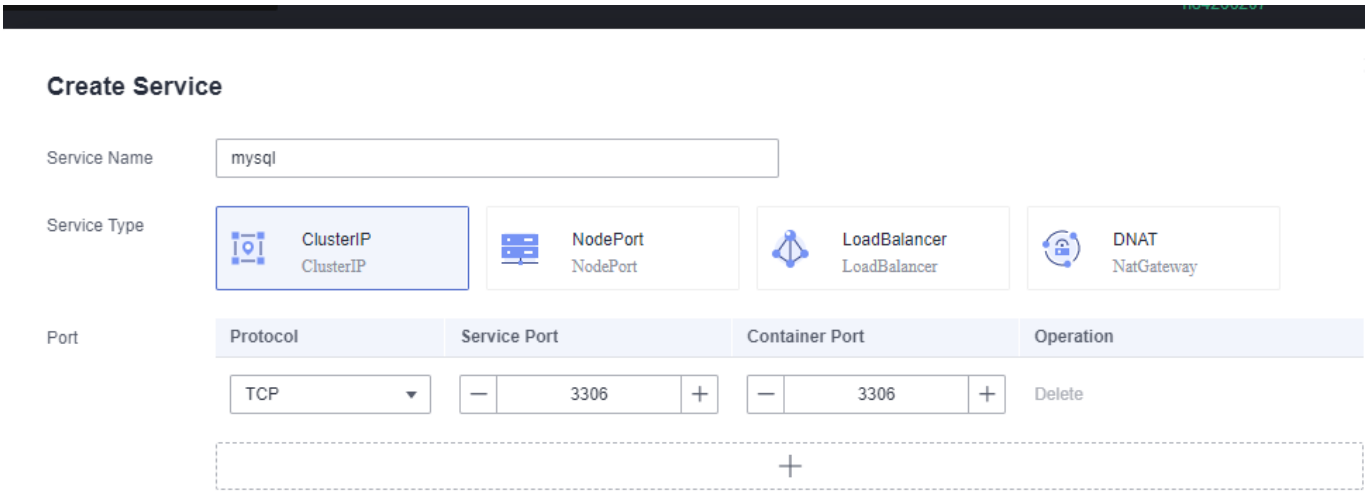
Click 'Create Workload'

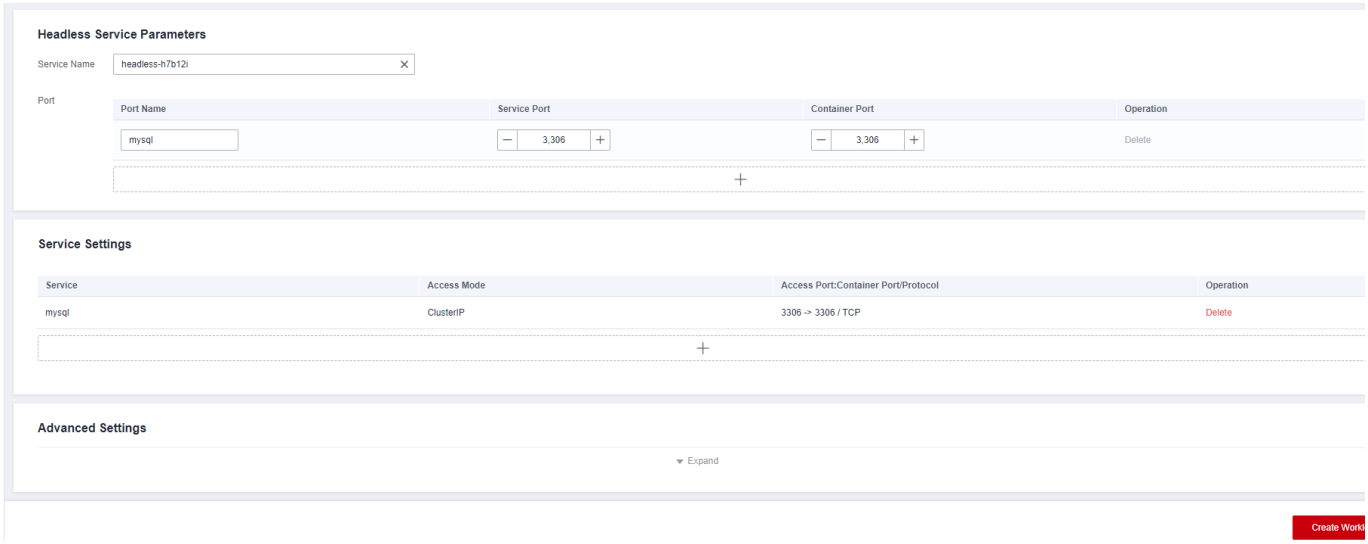
Obtain the internal domain name address for intra-cluster access: mysql.default.svc.cluster.local:3306, which will be used as the environment variable of the Wordpress container.


Create Workload
Basic Info
Workload Type
Deployment
Deployment
StatefulSet
StatefulSet
DaemonSet
DaemonSet
Job
Job
Cron Job
CronJob
Switching the workload type will require you to configure workload parameters again.
Workload Name
mysql
Cluster Name
CCE
cce-demo
Namespace
default
Create Namespace
Description
Enter a description.
0/200
Pods
1
Time Zone
Synchronization
Allows containers to use the same time zone as the node where they run. (This function is realized by the local disks mounted to the containers. Do not modify or delete the local disks.)
Container Settings
Container Information
Container - 1
Basic Info
Lifecycle
Health Check
Environment Variables
Data Storage
Container Name
mysql
Pull Policy
Always
Image Name
mysql
Replace Image
Image Tag
latest
CPU Quota
Request
1.00
cores;Limit
1.00
cores
Memory Quota
Request
2,048.00
MiB;Limit
2048.00
MiB


Select Image
My Images
Open Source Images
Shared Images
mysql
Image Name
Description
Downloads
mysql
library
MySQL is a widely used, open-source rel...
--
OK
Cancel
Example: nginx:latest or nginx
Select Image
Image Tag
--Select--


Container Settings
Container Information
Container - 1
Basic Info
Lifecycle
Health Check
Environment Variables
Data Storage
Security Context
Logging
Environment variables affect the way a running container will behave. You can modify created variables as required after deploying the workload.
Type
Variable Name
Variable Value/Reference
Custom
MYSQL_ROOT_PASSWORD
Hwcloud@123
Custom
MYSQL_DATABASE
wordpress


Create Service
Service Name
mysql
Service Type
ClusterIP
ClusterIP
NodePort
NodePort
LoadBalancer
LoadBalancer
DNAT
NatGateway
Port
Protocol
Service Port
Container Port
Operation
TCP
3306
3306
Delete


Headless Service Parameters
Service Name
headless-h7b12i
Port
Port Name
Service Port
Container Port
Operation
mysql
3,306
3,306
Delete
Service Settings
Service
Access Mode
Access Port:Container Port/Protocol
Operation
mysql
ClusterIP
3306 -> 3306 / TCP
Delete
Advanced Settings
Expand
Create Workl

Create PVC

Storage Volume Claim Type: EVS | Local PV

PVC Name: mysql-data

Creation Method: Dynamic creation

Creating the underlying storage incurs additional costs. Pricing Detail

Storage Classes: csi-disk

AZ: AZ1

Disk Type: General-purpose SSD | Ultra-high I/O | High I/O

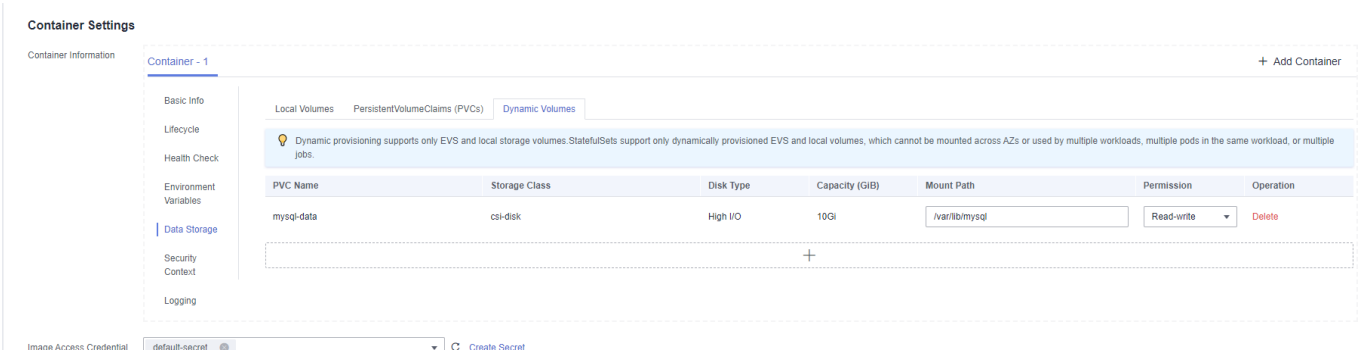
Access Mode: ReadWriteOnce

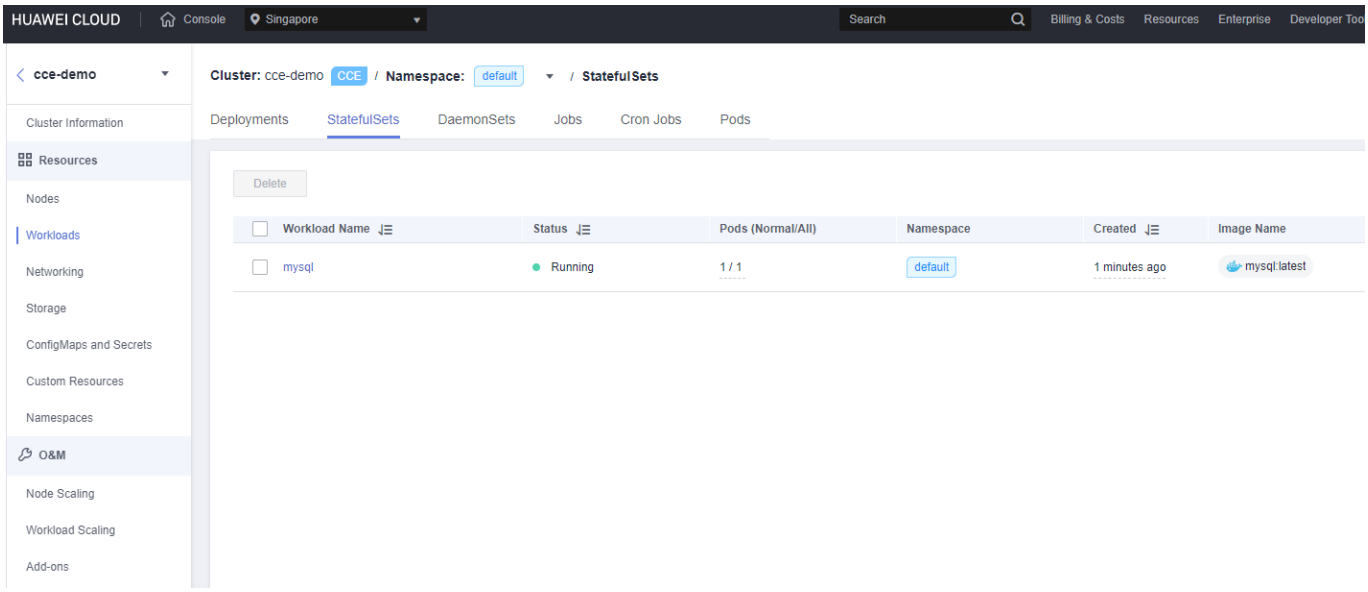
Capacity (GiB): 10

Encryption: Encryption

Enterprise Project: husamettin-h84266207

Create | Cancel





5. Uploading Wordpress docker image to SWR service

Step 1 Download the following image to the local PC

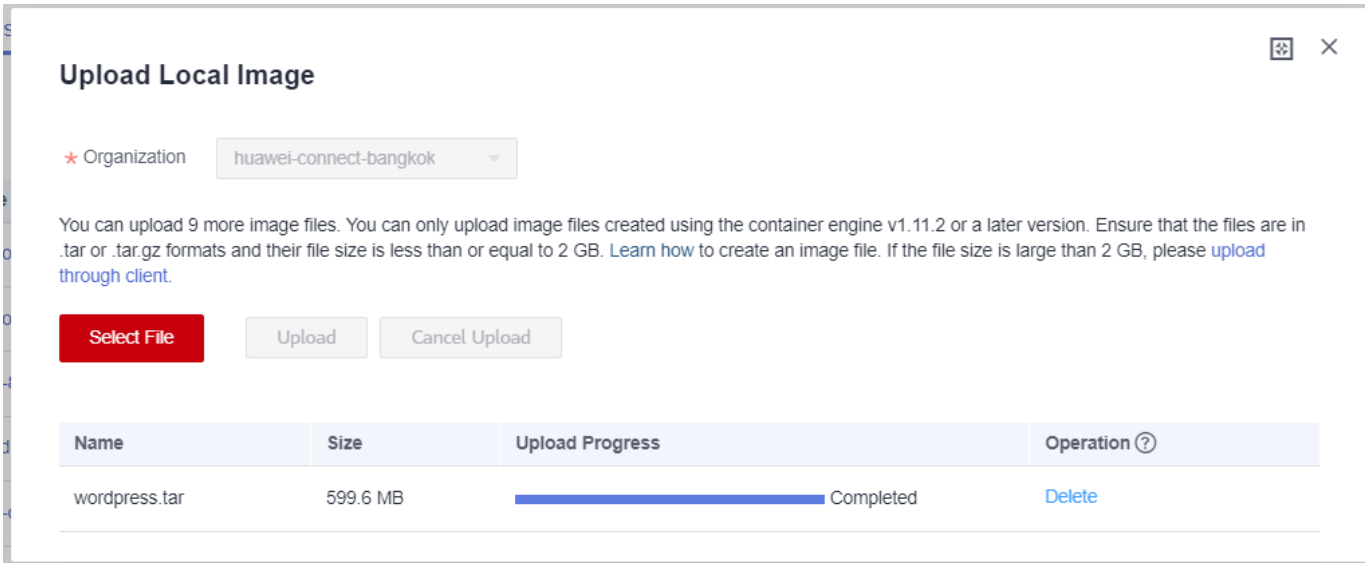
https://articleimages.obs.ap-southeast-3.myhuaweicloud.com:443/Articles/docker-images/wordpress.tar

Click the SWR service link

https://console-intl.huaweicloud.com/swr/

Click 'Upload Image' button on the top

After that select the downloaded wordpress.tar file and upload it

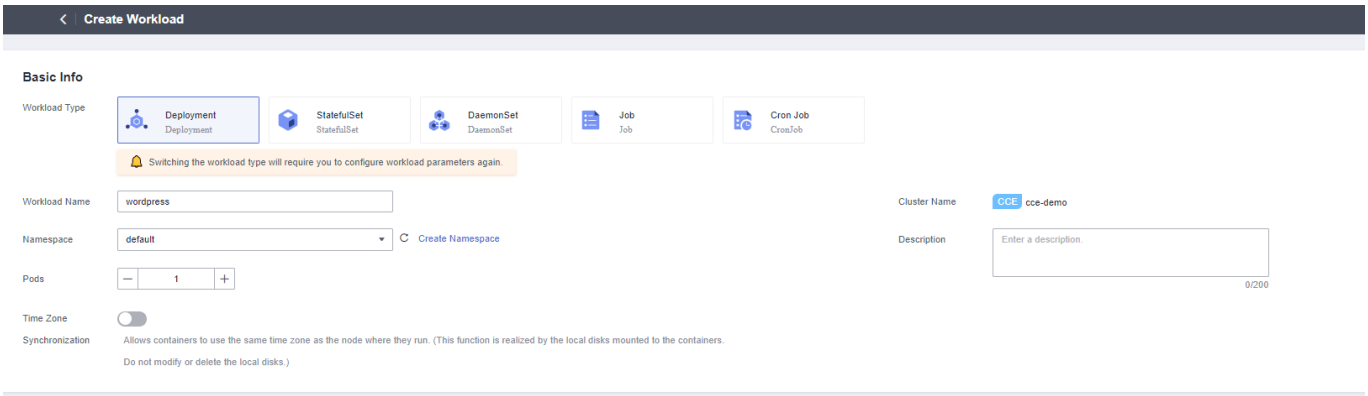


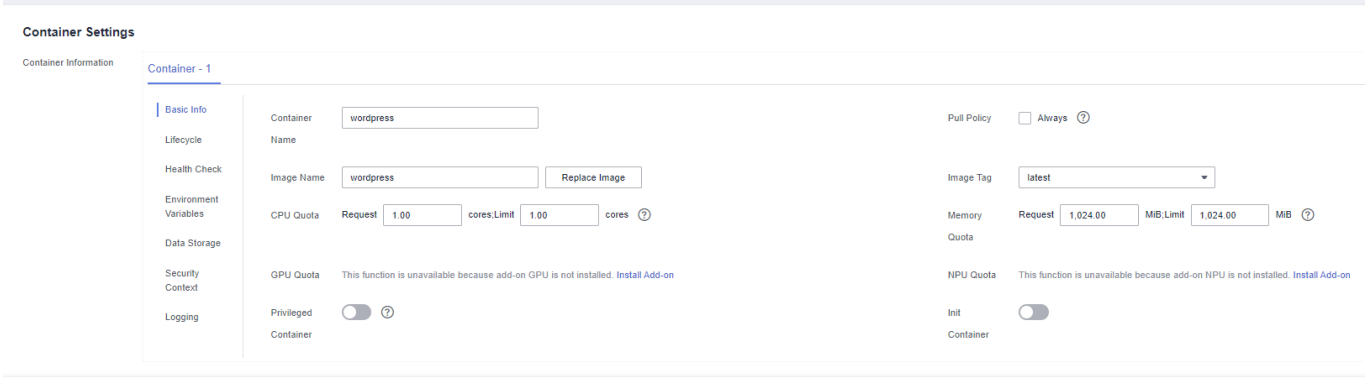
6. Creating Wordpress Website container (Deployment)

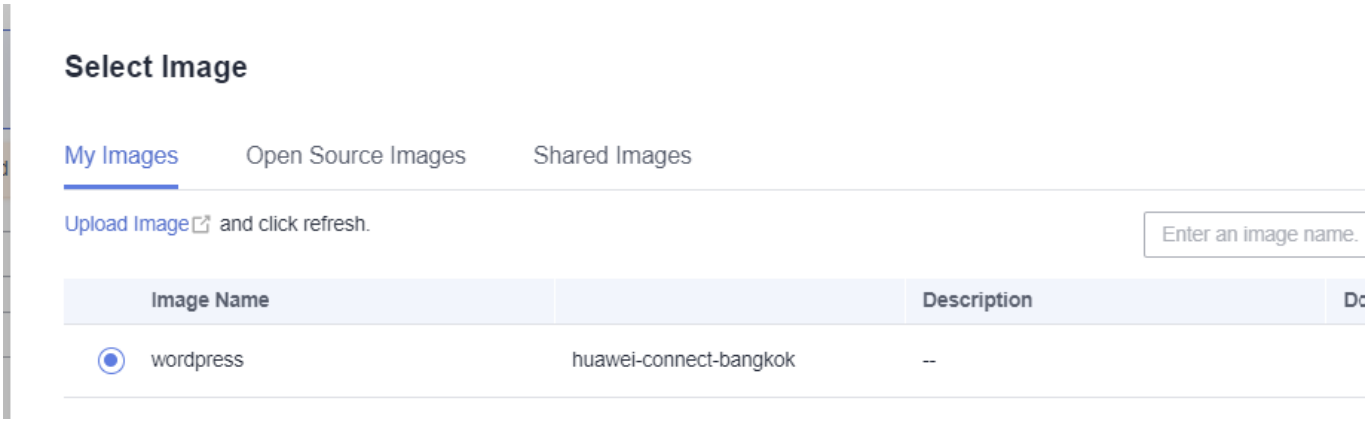
In the navigation pane on the left, choose Workloads > Deployments. On the page displayed, click 'Create Workload'.

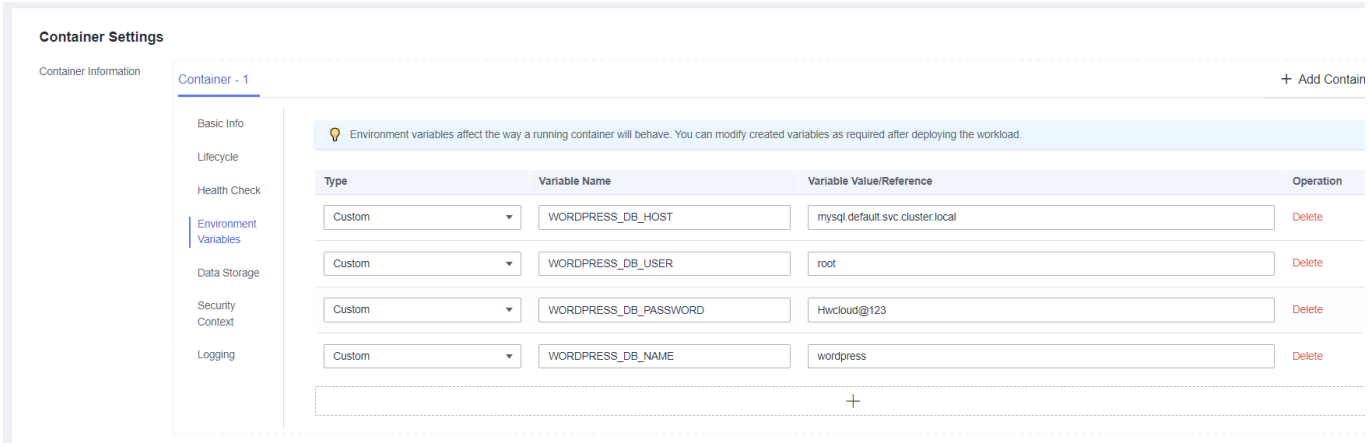
```
Basic Info
Workload Type: Deployment
Workload Name:  wordpress
Pods: 1

Container Settings -> Basic Info
Container Name: wordpress
Image Name: Click 'Select Image' -> Click 'My Images' ->  Select
'wordpress'
Image Tag: latest
CPU Quota: Request: 1.00 Limit: 1.00
Memory Quota:  Request: 1024 Limit: 1024

Container Settings -> Environment Variables
configure the following environment variables

WORDPRESS_DB_HOST: mysql.default.svc.cluster.local
WORDPRESS_DB_USER: root
WORDPRESS_DB_PASSWORD: Hwcloud@123
WORDPRESS_DB_NAME: wordpress


Service Settings
Click (+)
Create Service
Service Name: wordpress
Service Type: Load Balancer
Load Balancer: Auto Create
check the checkbox: I have read Notes on Using Load Balancers
Service Port: 80
Container Port: 80
```

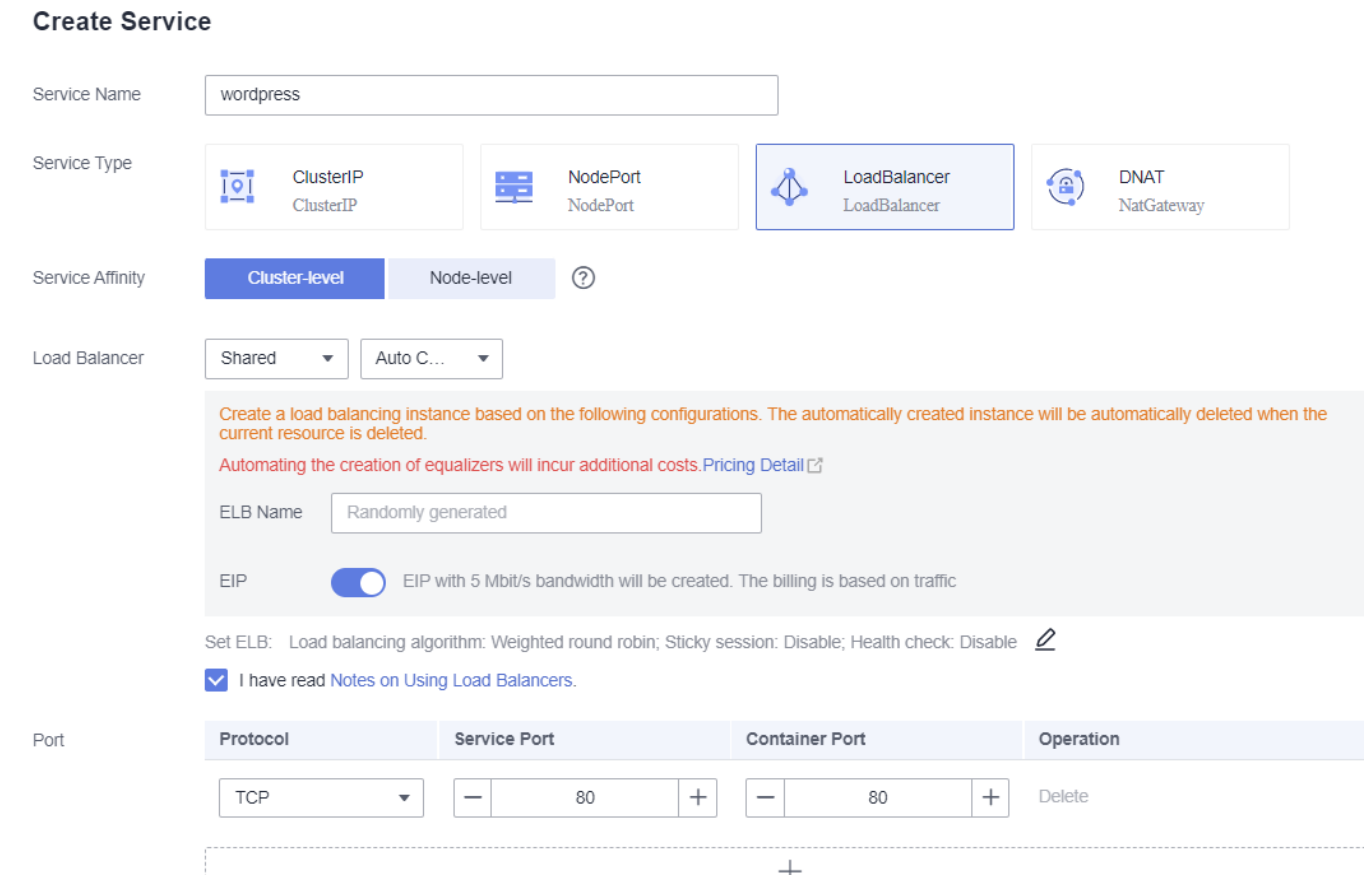
Click 'Create Workload'

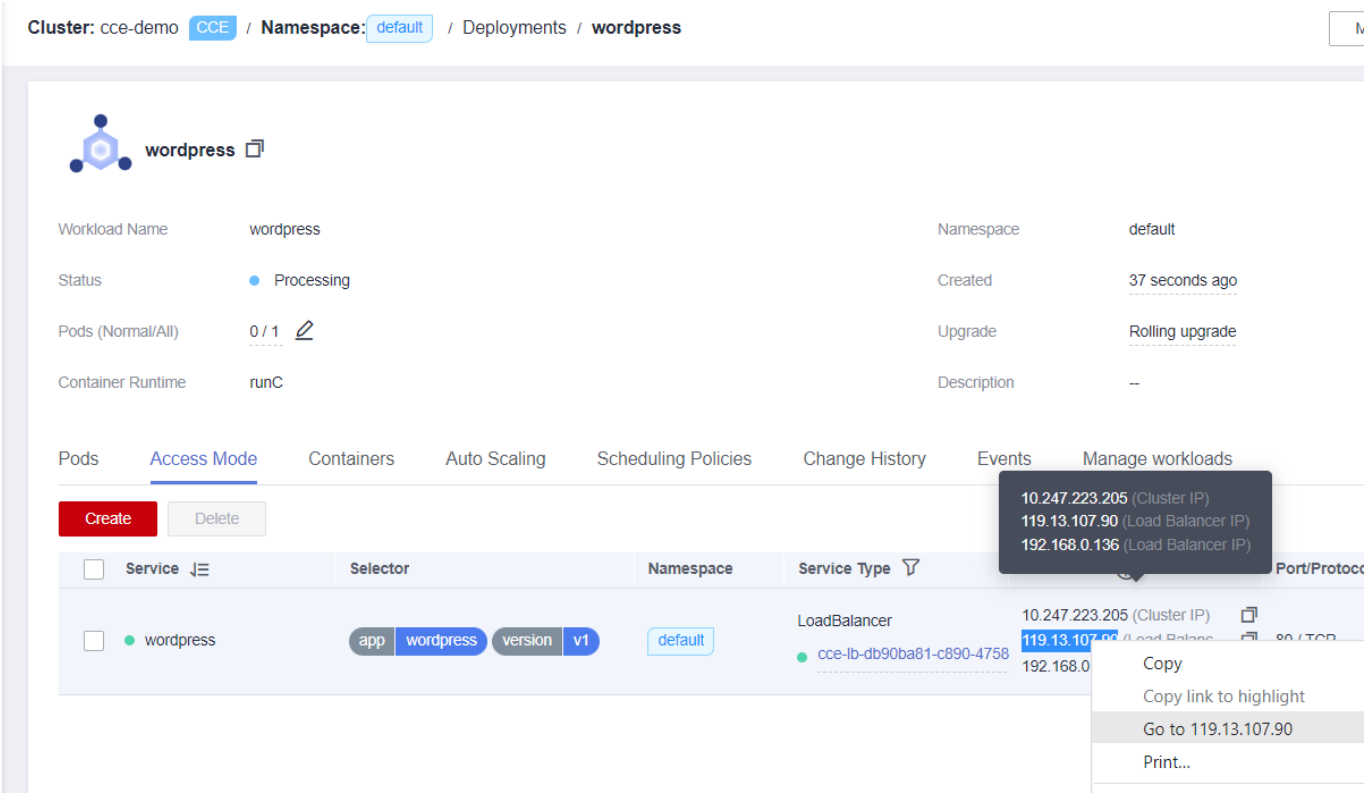

Create Workload
Basic Info
Workload Type
Deployment
Deployment
StatefulSet
StatefulSet
DaemonSet
DaemonSet
Job
Job
Cron Job
CronJob
Switching the workload type will require you to configure workload parameters again.
Workload Name
wordpress
Cluster Name
CCE
cce-demo
Namespace
default
Create Namespace
Description
Enter a description.
0/200
Pods
1
Time Zone
Synchronization
Allows containers to use the same time zone as the node where they run. (This function is realized by the local disks mounted to the containers.
Do not modify or delete the local disks.)


Container Settings
Container Information
Container - 1
Basic Info
Lifecycle
Health Check
Environment Variables
Data Storage
Security Context
Logging
Container Name
wordpress
Pull Policy
Always
Image Name
wordpress
Replace Image
Image Tag
latest
CPU Quota
Request
1.00
cores;Limit
1.00
cores
Memory Quota
Request
1,024.00
MiB;Limit
1,024.00
MiB
GPU Quota
This function is unavailable because add-on GPU is not installed. Install Add-on
NPU Quota
This function is unavailable because add-on NPU is not installed. Install Add-on
Privileged Container
Init Container


Select Image
My Images
Open Source Images
Shared Images
Upload Image and click refresh.
Enter an image name.
Image Name
Description
wordpress
huawei-connect-bangkok
--


Container Settings
Container Information
Container - 1
Add Contain
Basic Info
Lifecycle
Health Check
Environment Variables
Data Storage
Security Context
Logging
Environment variables affect the way a running container will behave. You can modify created variables as required after deploying the workload.
Type
Variable Name
Variable Value/Reference
Operation
Custom
WORDPRESS_DB_HOST
mysql.default.svc.cluster.local
Delete
Custom
WORDPRESS_DB_USER
root
Delete
Custom
WORDPRESS_DB_PASSWORD
Hwcloud@123
Delete
Custom
WORDPRESS_DB_NAME
wordpress
Delete





7. Configure Wordpress Website

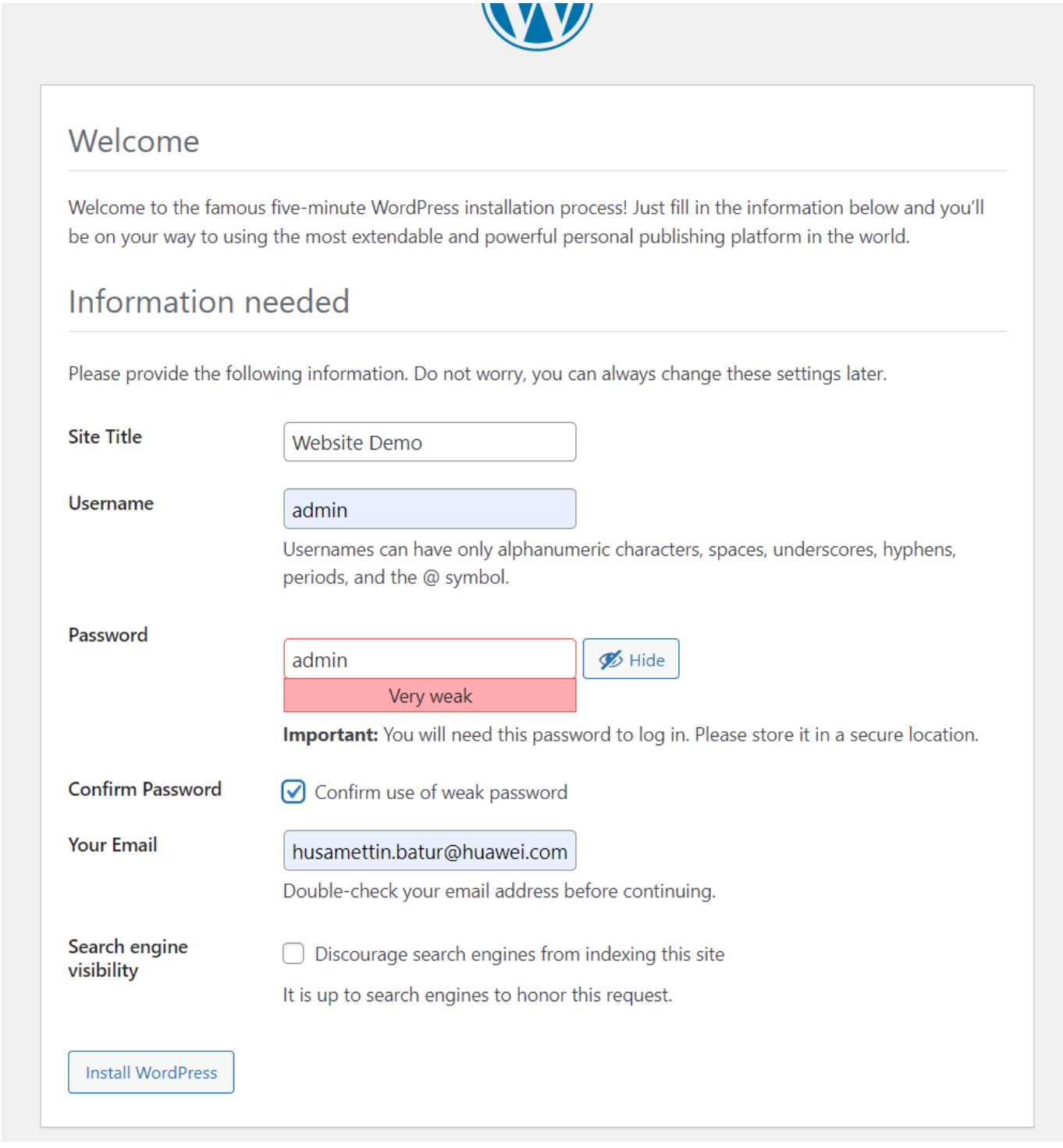
Cluster: cce-demoCCE/Namespace:default/Deployments/wordpress

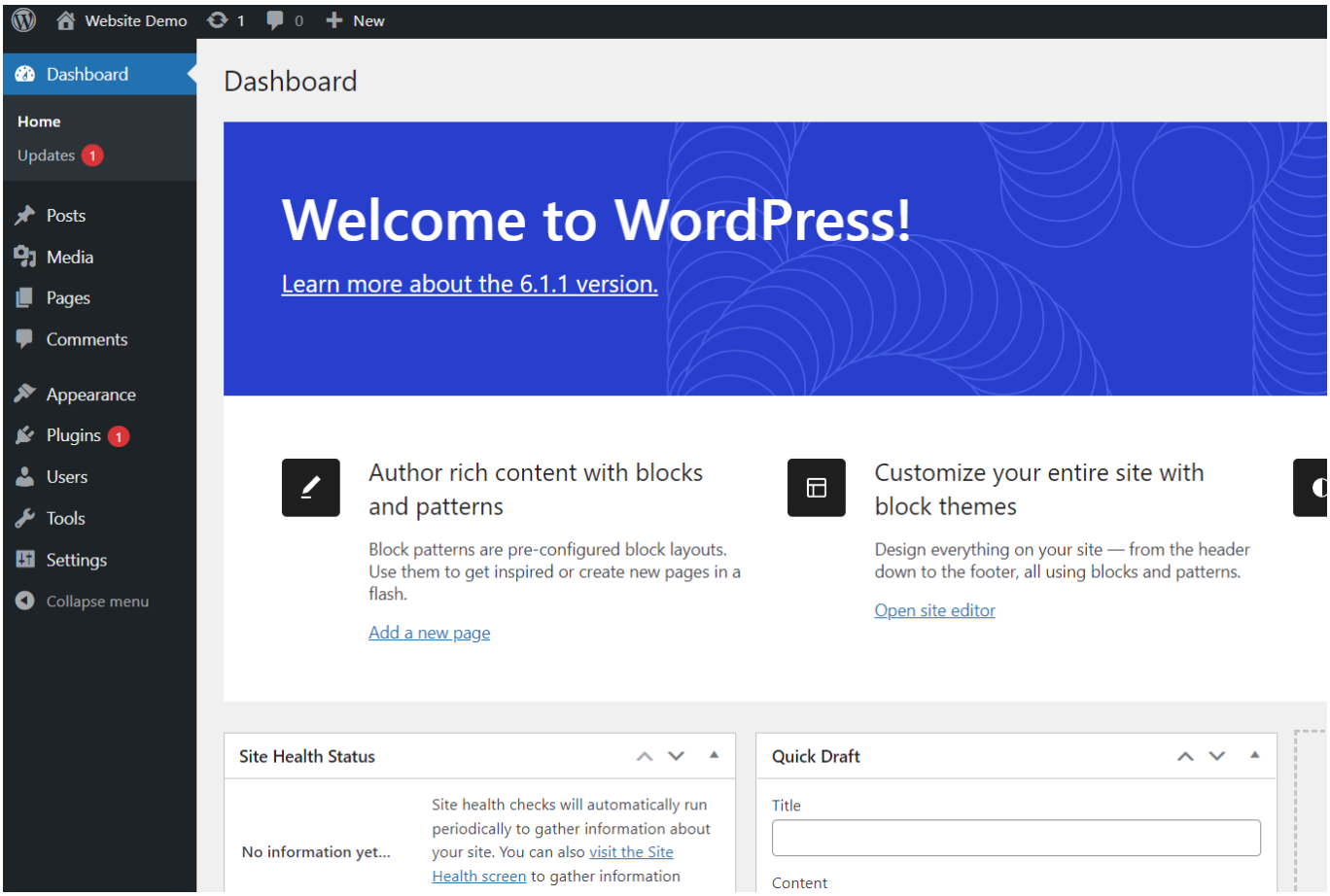
In the 'wordpress' deployment detail page, click 'Access Mode' tab.

Click Load Balancers public IP address (EIP) and open it with browser

```
Site Title: Website demo
Username: admin
Password: admin
Confirm Password: check
Your Email : your-email
```

Click Install Wordpress





8. Final: How to prepare homework proof

We need to take 3 screenshots for homework submission.

1. Mysql statefulset detail page / access mode screenshot

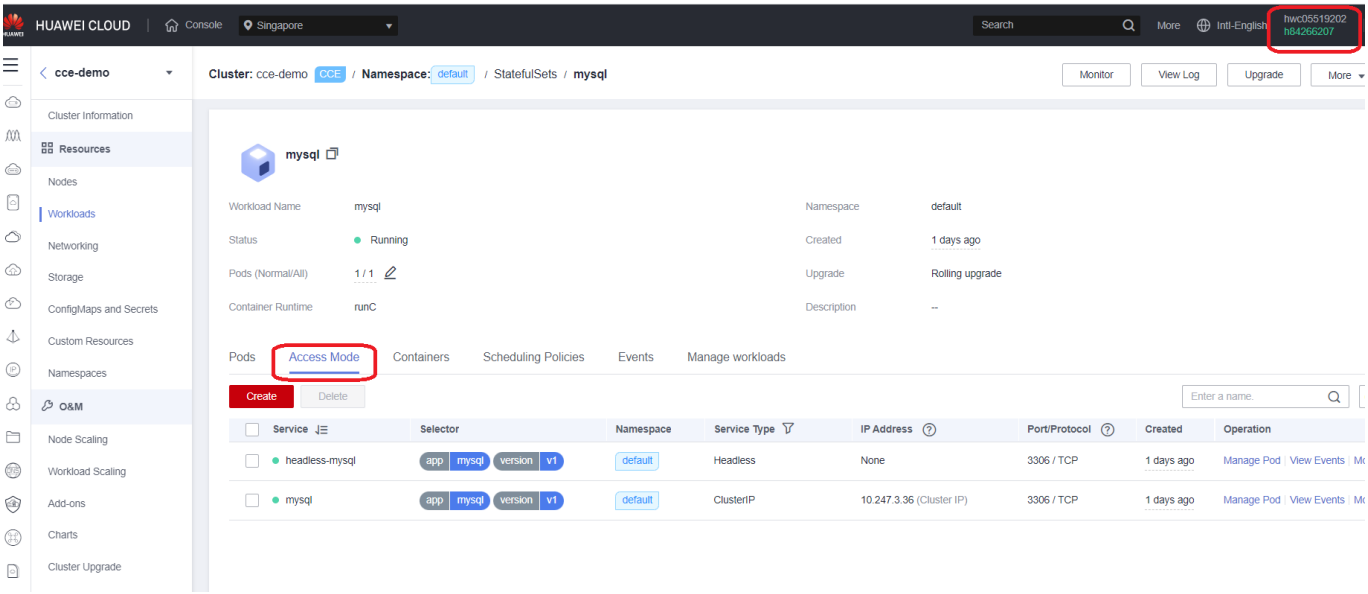
Cluster: cce-demoCCE/Namespace:default/StatefulSets/mysql

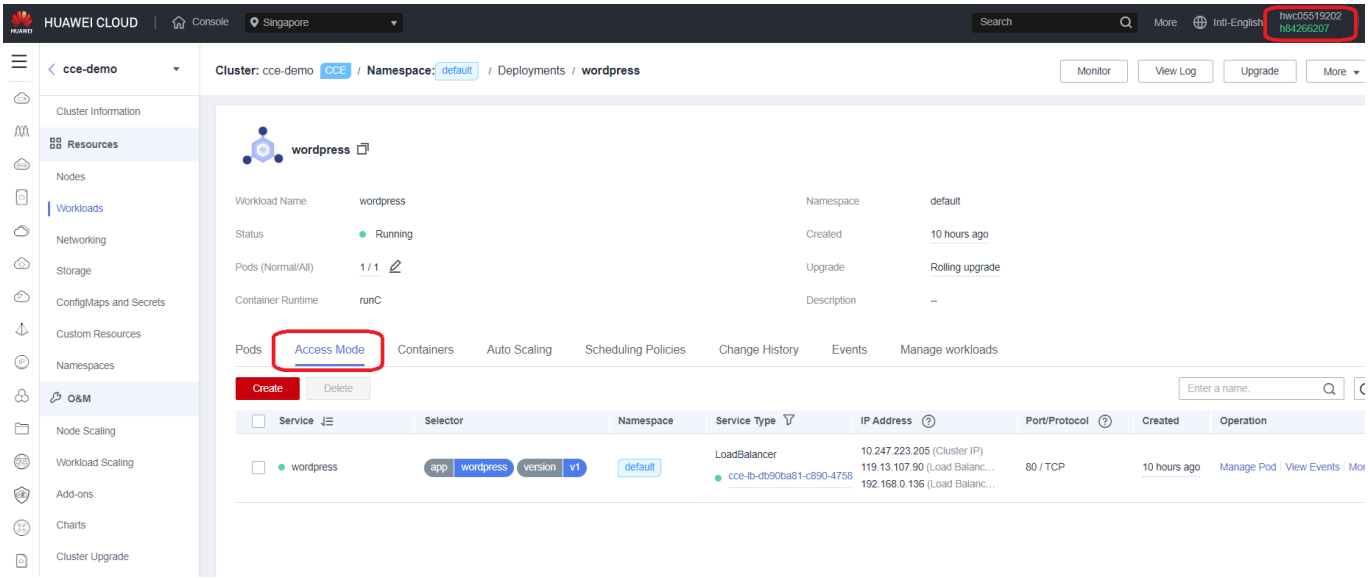
2. Wordpress deployment detail page / access mode screenshot

Cluster: cce-demoCCE/Namespace:default/Deployments/wordpress

3. Screenshot of working wordpress website

Note: Make sure that your Huawei Cloud username is also shown in the screenshots (1,2)


HUAWEI CLOUD
Console
Singapore
Search
More
Intl-English
hwc05519202
hl84266207
cce-demo
Cluster: cce-demo CCE / Namespace: default / StatefulSets / mysql
Monitor
View Log
Upgrade
More
Cluster Information
Resources
Nodes
Workloads
Networking
Storage
ConfigMaps and Secrets
Custom Resources
Namespaces
O&M
Node Scaling
Workload Scaling
Add-ons
Charts
Cluster Upgrade
mysql
Workload Name mysql
Namespace default
Status Running
Created 1 days ago
Pods (Normal/All) 1 / 1
Upgrade Rolling upgrade
Container Runtime runC
Description --
Pods
Access Mode
Containers
Scheduling Policies
Events
Manage workloads
Create
Delete
Enter a name.
Service
Selector
Namespace
Service Type
IP Address
Port/Protocol
Created
Operation
headless-mysql
app mysql version v1
default
Headless
None
3306 / TCP
1 days ago
Manage Pod | View Events | Mo
mysql
app mysql version v1
default
ClusterIP
10.247.3.36 (Cluster IP)
3306 / TCP
1 days ago
Manage Pod | View Events | Mo


HUAWEI CLOUD
Console
Singapore
Search
More
Intl-English
hwc05519202
hl84266207
cce-demo
Cluster: cce-demo CCE / Namespace: default / Deployments / wordpress
Monitor
View Log
Upgrade
More
Cluster Information
Resources
Nodes
Workloads
Networking
Storage
ConfigMaps and Secrets
Custom Resources
Namespaces
O&M
Node Scaling
Workload Scaling
Add-ons
Charts
Cluster Upgrade
wordpress
Workload Name wordpress
Namespace default
Status Running
Created 10 hours ago
Pods (Normal/All) 1 / 1
Upgrade Rolling upgrade
Container Runtime runC
Description --
Pods
Access Mode
Containers
Auto Scaling
Scheduling Policies
Change History
Events
Manage workloads
Create
Delete
Enter a name.
Service
Selector
Namespace
Service Type
IP Address
Port/Protocol
Created
Operation
wordpress
app wordpress version v1
default
LoadBalancer
cce-lb-db90ba81-c890-4758
10.247.223.205 (Cluster IP)
119.13.107.90 (Load Balanc...
192.168.0.136 (Load Balanc...
80 / TCP
10 hours ago
Manage Pod | View Events | Mo

Mindblown: a blog about philosophy.

Hello world!

Welcome to WordPress. This is your first post.
Edit or delete it, then start writing!

December 6, 2022