Huawei HCIA Certification Training

HCIA-openGauss

Lab Guide

Issue: 1.0

Huawei Technologies Co., Ltd.

Trademarks and Permissions


and other Huawei trademarks are trademarks of Huawei Technologies Co., Ltd.

All other trademarks and trade names mentioned in this document are the property of their respective holders.

Notice

The purchased products, services, and features are stipulated by the commercial contract made between Huawei and the customer. All or partial products, services, and features described in this document may not be within the purchased scope or the usage scope. Unless otherwise specified in the contract, all statements, information, and recommendations in this document are provided "AS IS" without warranties, guarantees or representations of any kind, either express or implied.

The information in this document is subject to change without notice. Every effort has been made in the preparation of this document to ensure accuracy of the contents, but all statements, information, and recommendations in this document do not constitute a warranty of any kind, express or implied.

Huawei Technologies Co., Ltd.

Address	Huawei Industrial Base Bantian, Longgang Shenzhen 518129 People's Republic of China
Website:	http://e.huawei.com

Huawei Certification System

Huawei Certification, which adheres to the "platform + ecosystem" development strategy based on a new "Cloud-Pipe-Terminal" collaborative ICT architecture, is a complete certification system covering two categories: ICT infrastructure certification, and cloud service & platform certification.

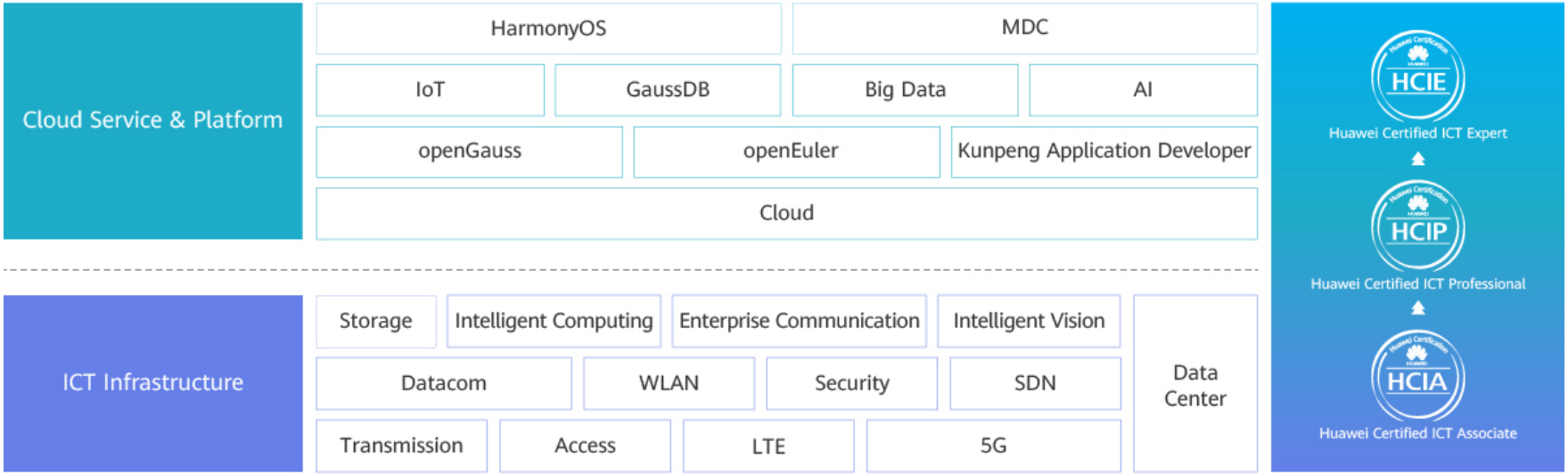
Huawei offers three levels of certification: Huawei Certified ICT Associate (HCIA), Huawei Certified ICT Professional (HCIP), and Huawei Certified ICT Expert (HCIE).

In keeping with the ICT convergence trend, Huawei Certification covers all ICT fields. Through its leading talent development system and certification standards, Huawei is committed to cultivating new ICT professionals in the digital era and building a healthy ICT talent ecosystem.

HCIA-openGauss certification is particular for openGauss engineers. It is intended to improve the skills of database development engineers and personnel dedicated to database development. The certification provides rich in-class experiments and industry cases to improve trainees' practical capabilities and promote the cultivation of database talent.

The Huawei certification system introduces the industry, fosters innovation, and imparts cutting-edge WLAN knowledge.

Huawei Certification



About This Document

Introduction

This document is designed for the HCIA-openGauss certification training. It is intended for trainees who are going to take the HCIA-openGauss exam or readers who want to understand the basic knowledge of openGauss and GaussDB(for openGauss) as well as classification and application scenarios of SQL syntax.

Description

This document consists of five parts, including openGauss installation and deployment, database and object management, SQL syntax in openGauss, GaussDB(for openGauss), and scenario-based comprehensive experiment.

- Experiment 1 is about openGauss environment setup and operations. It aims to help trainees understand how to deploy and connect to openGauss by purchasing Elastic Cloud Servers (ECSs) on HUAWEI CLOUD.
- Experiment 2 is about openGauss and object management. It aims to help trainees manage objects of openGauss by managing tablespaces, databases, and users in openGauss.
- Experiment 3 is about SQL syntax basics. It aims to help trainees master SQL syntax basics through data definition language (DDL) and data manipulation language (DML) operations.
- Experiment 4 is about GaussDB(for openGauss). It aims to describe how to add, delete, modify, and query data in the database by purchasing GaussDB(for openGauss) on HUAWEI CLOUD and connecting to the database by using Data Admin Service (DAS).
- Experiment 5 is a comprehensive experiment. It shows related operations performed on openGauss in the financial industry, including object management, connection management, user management, SQL statements, indexes, and views, with an aim to help trainees master openGauss through practices in real scenarios.

Background Knowledge Required

This course is for Huawei's basic certification. To better understand this course, familiarize yourself with the following:

- Computer basics, HUAWEI CLOUD console, and Linux basics.

Lab Environment

Networking Description

This lab environment is intended for database engineers who are preparing for the HCIA-openGauss exam. One GaussDB(for openGauss), one DAS, one elastic IP address (EIP), and one ECS are provided for each lab environment.

Devices

To meet the HCIA-openGauss lab requirements, you are advised to use the following configurations in each lab environment:

The mapping between device, model, and version is as follows.

Table 1-1 Mapping

Device	Model	Version
GaussDB	GaussDB(for openGauss)	Version 1.4
DAS	DAS	-
EIP	EIP	-
ECS	2 vCPUs | 4 GiB	-
openGauss	openGauss	2.0.0

1 Purchasing an ECS

1.1 Overview

1.1.1 About This Experiment

This experiment shows how to purchase an ECS on HUAWEI CLOUD, configure the ECS, connect to it, and perform operations on it.

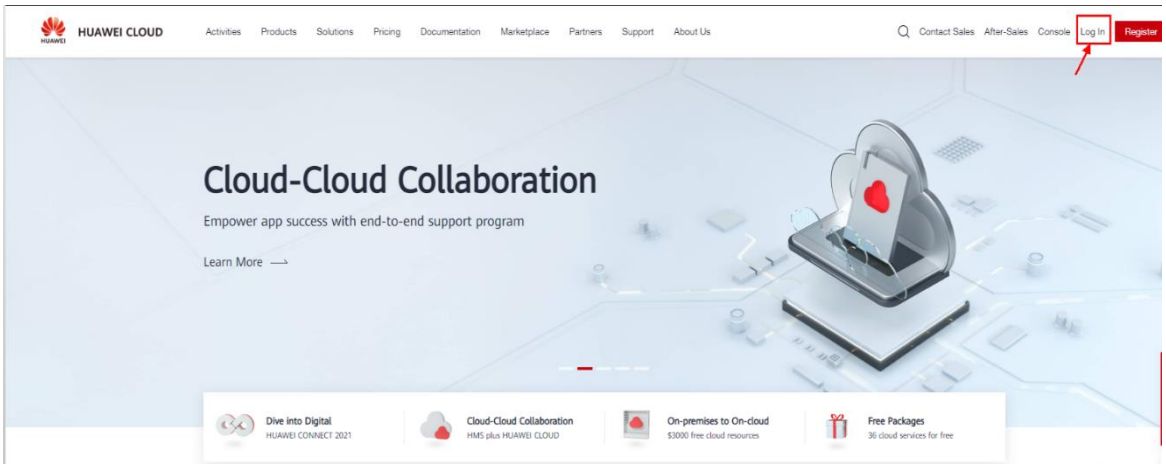
1.1.2 Objectives

- Master the process of purchasing an ECS.
- Learn how to connect to an ECS.

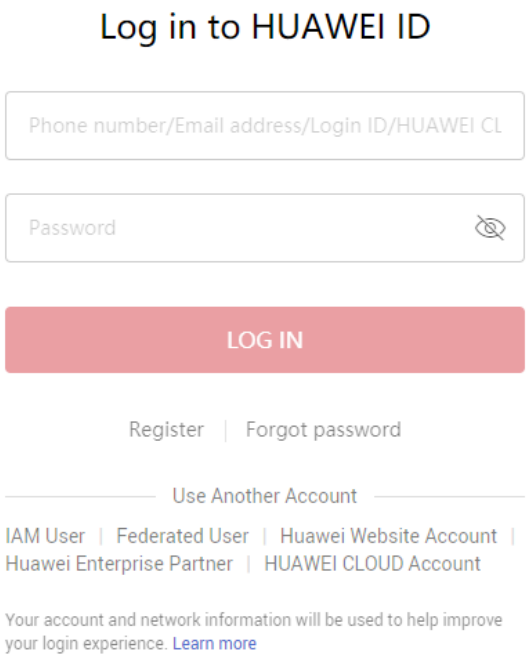
1.2 Purchasing an ECS (Arm-based openEuler)

1.2.1 Logging In to HUAWEI CLOUD

Step 1 Log in to the HUAWEI CLOUD official website at https://www.huaweicloud.com/, and click **Log In**.



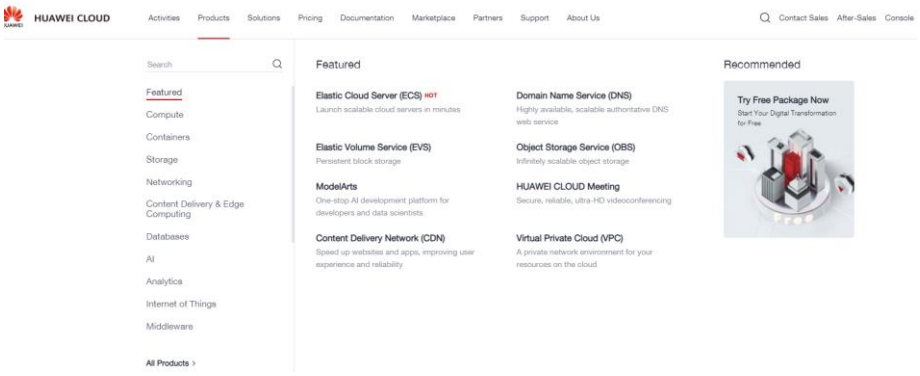
Step 2 Enter the account name and password, and click **LOG IN**.



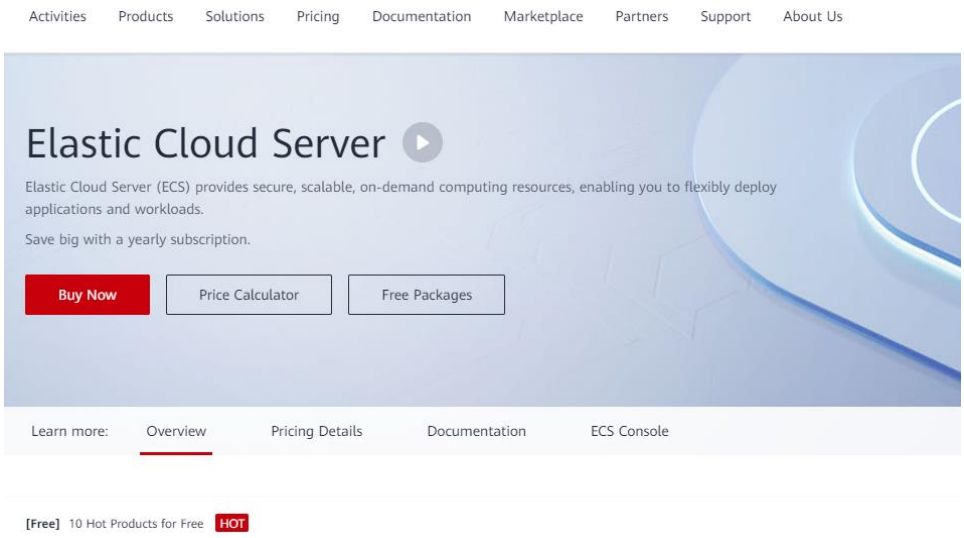
If you have not registered with HUAWEI CLOUD, click **Register** to register a HUAWEI CLOUD account first.

1.2.2 Purchasing an ECS

Step 1 On the HUAWEI CLOUD homepage (https://www.huaweicloud.com/), choose **Products** > **Featured** > **Elastic Cloud Server (ESC)**.



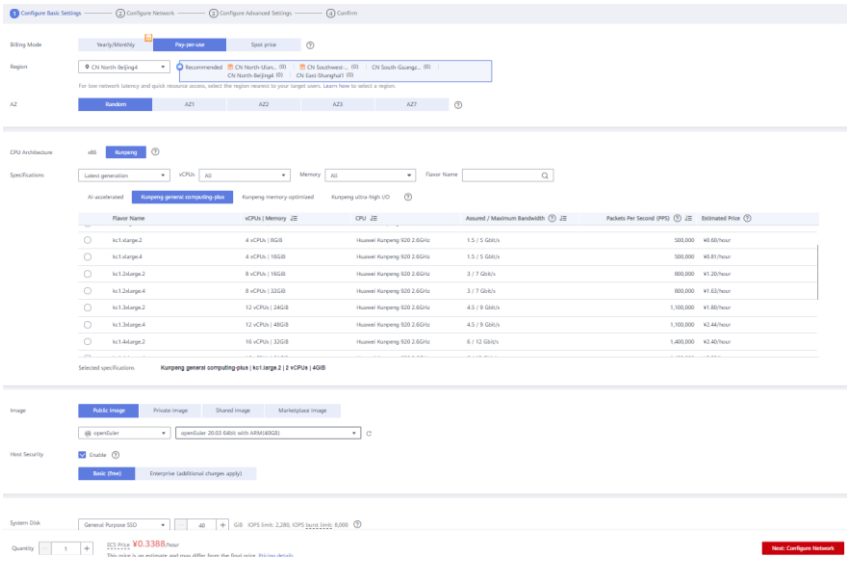
Step 2 Access the Elastic Cloud Server page.



Step 3 Configure the basic settings for your purchase.

Table 1-1 Basic ECS configurations

Item	Value
Billing Mode	**Pay-per-use** (Mandatory. Then, you need to configure the fee.)
Region	**CN North-Beijing4** (Recommended. openEuler public images may not be available if you select other regions.)
CPU Architecture	**Kunpeng**
Specifications	**2 vCPUs | 4 GB**
Image	**Public image** **openEuler** **openEuler 20.03 64bit with ARM(40 GB)**

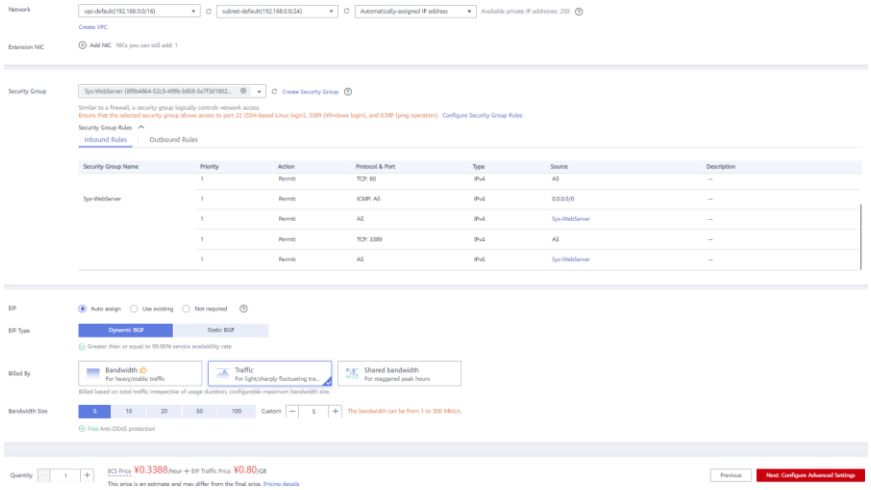


Retain the default settings for the other items and click **Next: Configure Network**.

Step 4 Configure the network for your purchase.

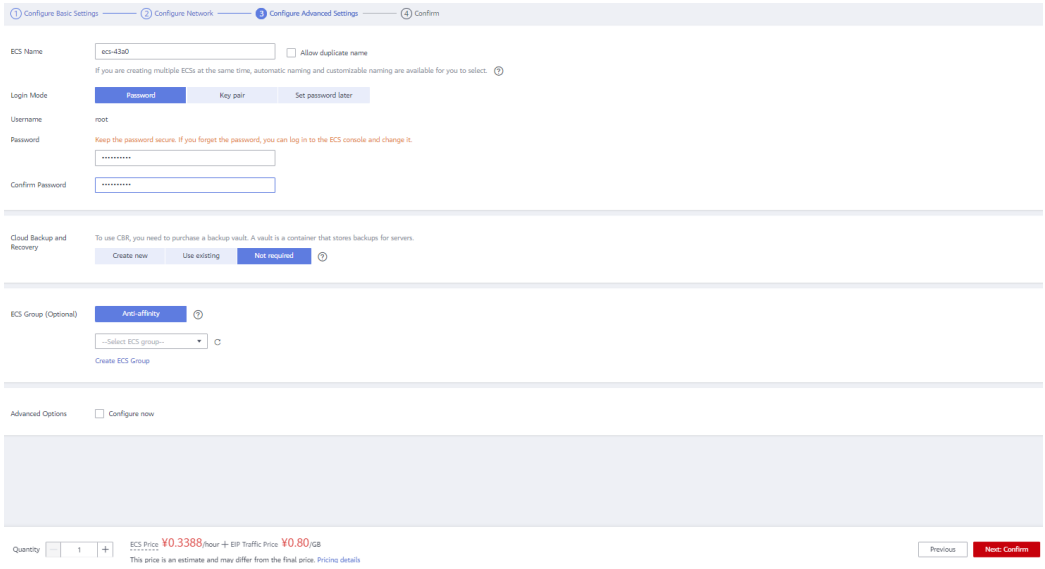
Table 1-2 ECS network configuration

Item	Value
Network	**vpc-default(192.168.0.0/16)** (existing default network)
EIP	**Auto assign**
Billed by	**Traffic**
Bandwidth Size	**5**



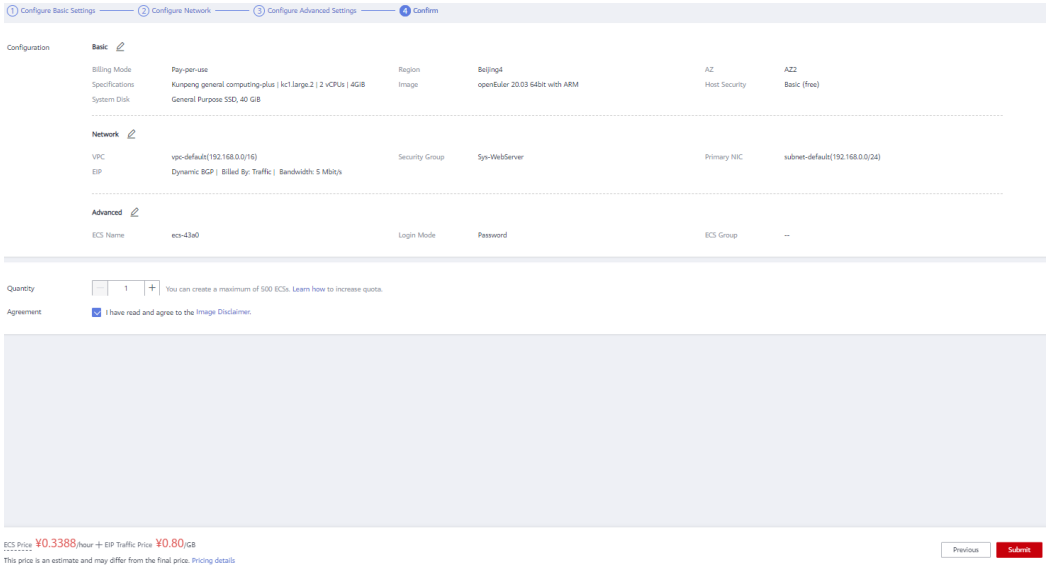
Retain the default settings for the other items and click **Next: Configure Advanced Settings**.

Step 5 Configure the advanced settings for your purchase.

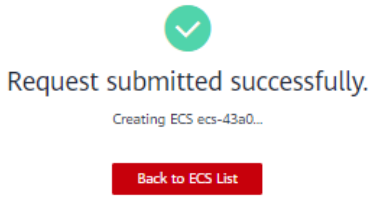


Note that **Username** is set to **root**, enter a custom password, and confirm the password. Retain the default settings for the other items, and click **Next: Confirm**.

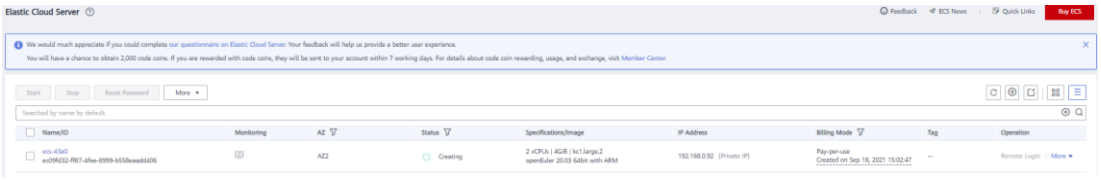
Step 6 Verify the configurations for your purchase.



Confirm the configurations, especially about the fee, select **I have read and agree to the Image Disclaimer**, and click **Submit**.



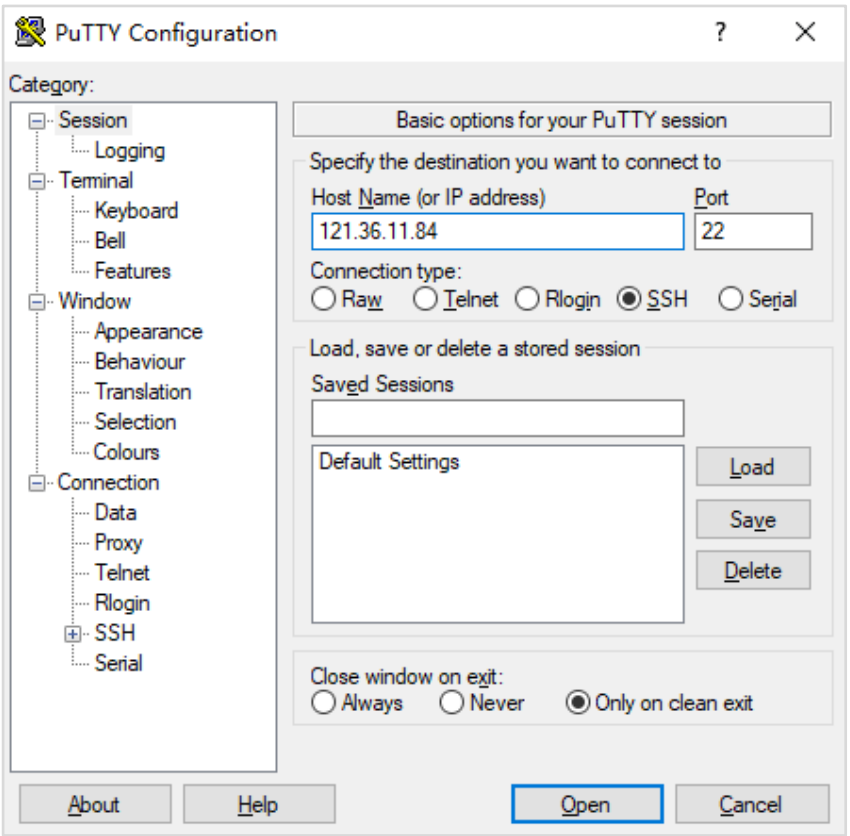
Viewing the ECS list



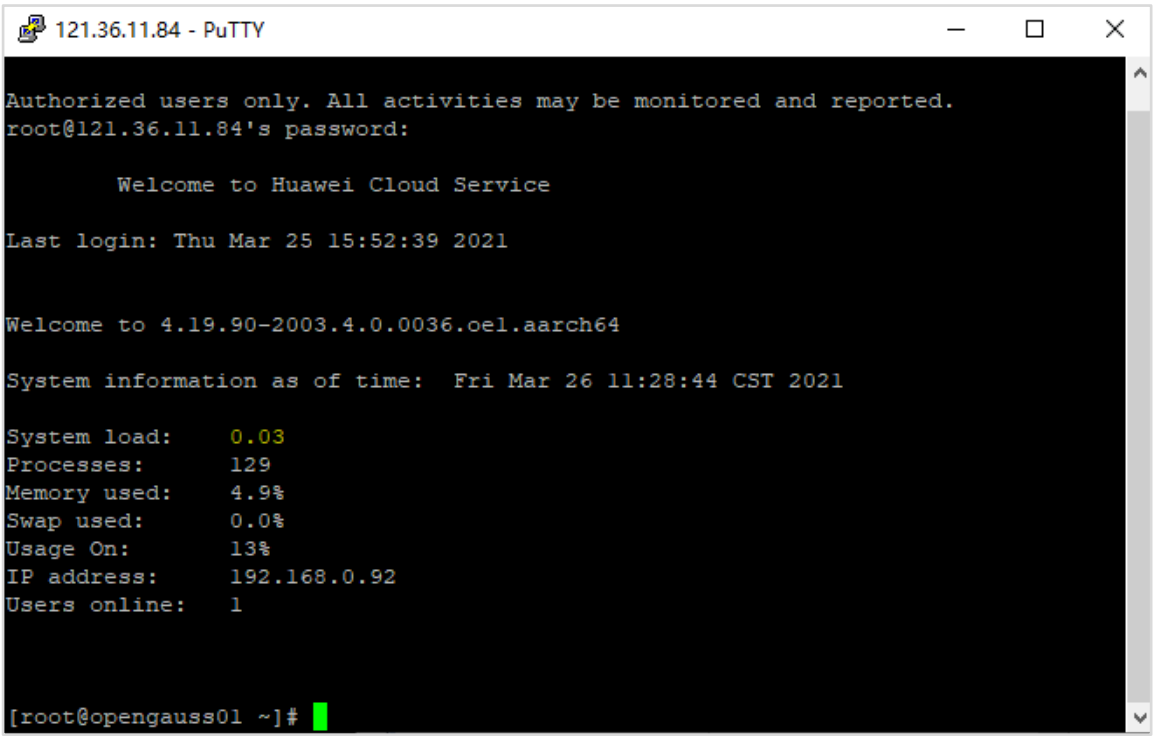
The preceding figure shows that the purchase is complete.

Note: In this experiment, the price of the Kunpeng server is the open beta price. For details, see pricing details on the HUAWEI CLOUD official website.

Step 7 Run PuTTY, enter the EIP, and click **Open**.



Step 8 Use the configured password to log in to the ECS as user **root**.


121.36.11.84 - PuTTY
Authorized users only. All activities may be monitored and reported.
root@121.36.11.84's password:
Welcome to Huawei Cloud Service
Last login: Thu Mar 25 15:52:39 2021
Welcome to 4.19.90-2003.4.0.0036.oel.aarch64
System information as of time: Fri Mar 26 11:28:44 CST 2021
System load: 0.03
Processes: 129
Memory used: 4.9%
Swap used: 0.0%
Usage On: 13%
IP address: 192.168.0.92
Users online: 1
[root@opengauss01 ~]#

2 GaussDB(for openGauss)

2.1 Overview

2.1.1 About This Experiment

This experiment describes how to purchase GaussDB(for openGauss) on HUAWEI CLOUD, configure it, and perform operations on it.

2.1.2 Objectives

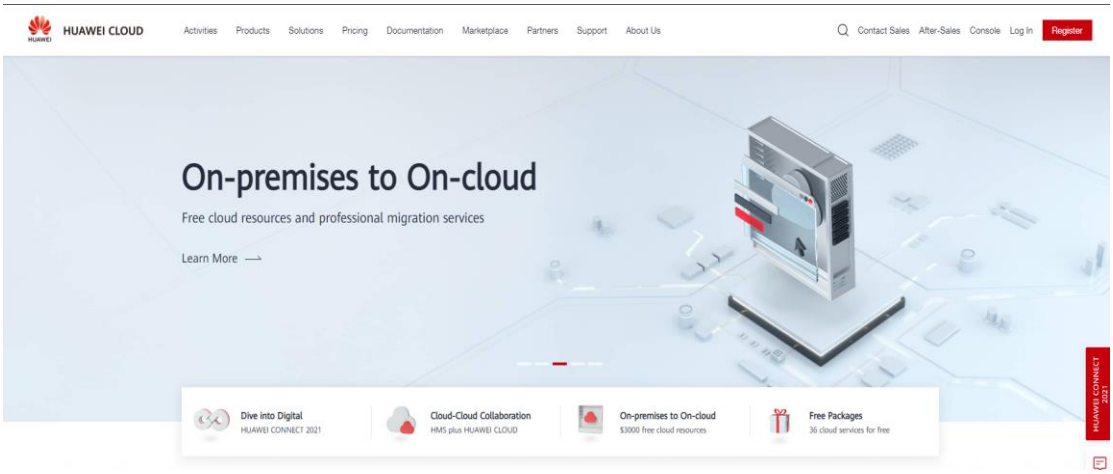
- Master the process of purchasing GaussDB(for openGauss).
- Master the usage of basic SQL statements in GaussDB(for openGauss).

2.2 Purchasing a GaussDB(for openGauss) Instance

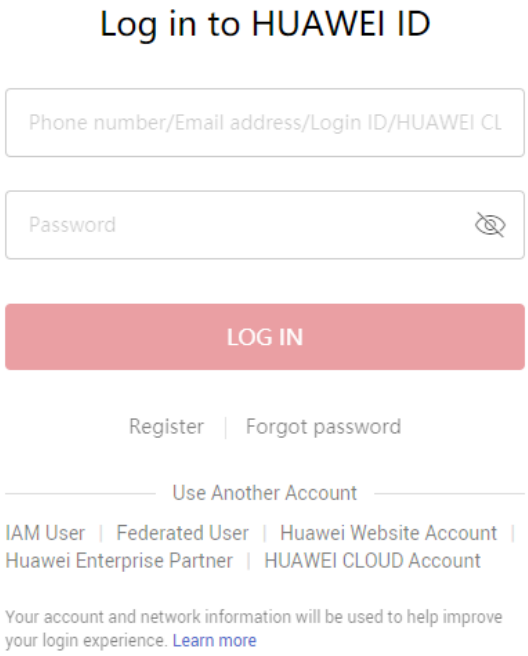
GaussDB(for openGauss) is an enterprise-level distributed relational database developed based on the openGauss ecosystem led by Huawei. It features Hybrid Transactional/Analytical Processing (HTAP) capabilities and supports intra-city deployment across AZs, scale-out of more than 1,000 nodes, and storage for petabytes of data to ensure zero data loss. It is highly available, reliable, secure, and scalable, and provides key capabilities including quick deployment, backup, restoration, monitoring, and alarm reporting for enterprises.

2.2.1 Logging In to the HUAWEI CLOUD Official Website

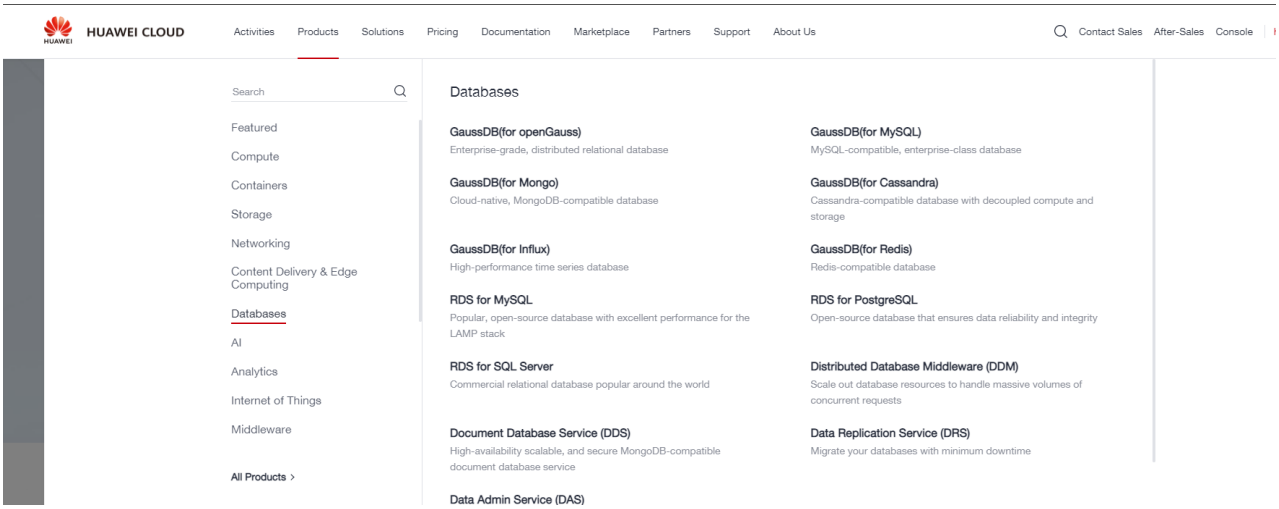
Step 1 Open the HUAWEI CLOUD official website at https://www.huaweicloud.com/intl/en-us/ and click **Log In** in the upper right corner of the page to access the HUAWEI CLOUD login page.



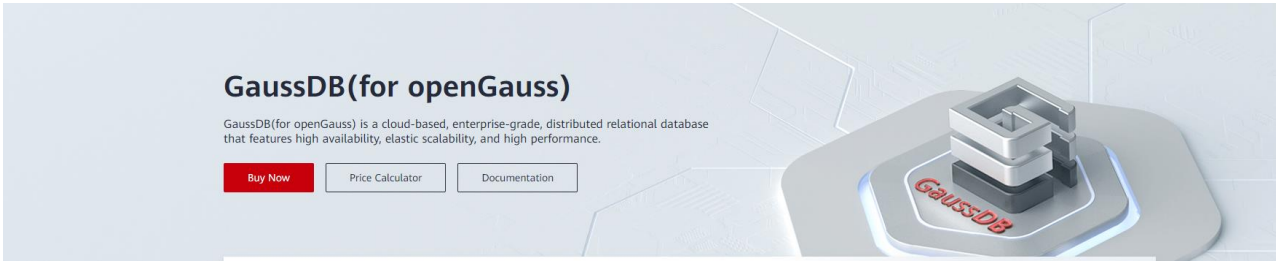
Step 2 Enter the username and password of the HUAWEI CLOUD account and click **LOG IN** to log in to the HUAWEI CLOUD official website.



Step 3 Choose **Products** > **Databases** > **GaussDB(for openGauss)**.

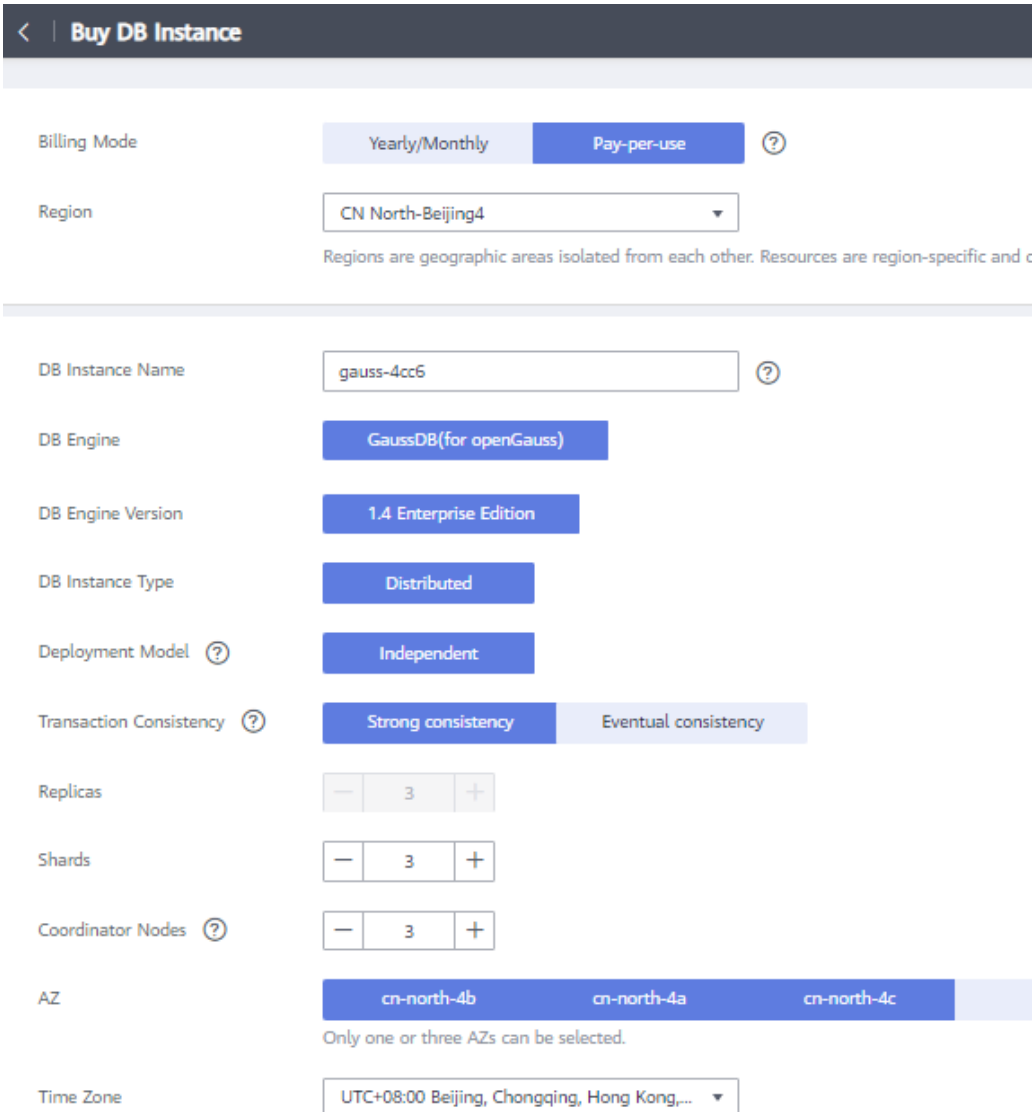


Step 4 Click **Buy Now**.

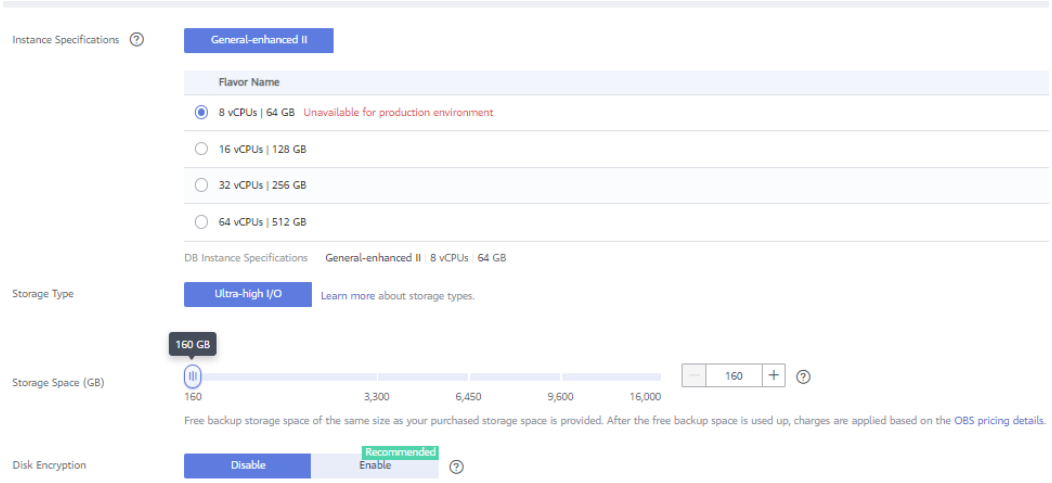


2.2.2 Purchasing a Database Instance

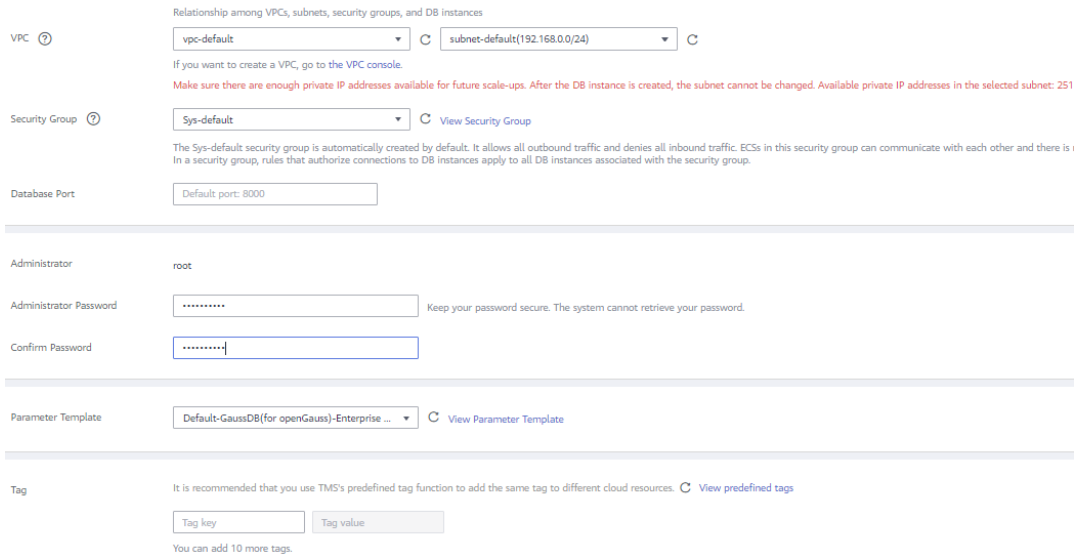
Step 1 Set **Billing Mode** to **Pay-per-use**, **DB Instance Name** to a custom name, and **Transaction Consistency** to **Strong consistency**. In this experiment, high availability is not considered to reduce the experiment cost. As such, set both **Shards** and **Coordinator Nodes** to **1**. For details, see the following figure.



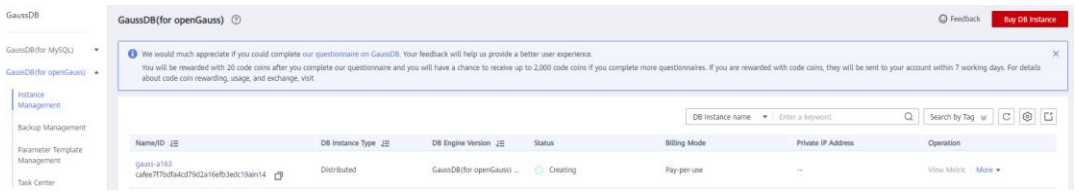
Step 2 Retain the default setting for **Instance Specifications**. For details, see the following figure.



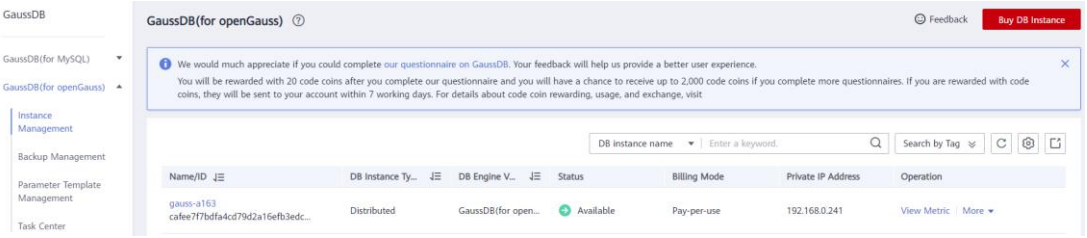
Step 3 Set **Administrator Password** and **Confirm Password**. Retain the default settings for the other items. Note that the configuration fee displayed in the lower left corner is about CNY84. For details, see the following figure.



Step 4 Click **Submit**. The configuration confirmation page is displayed. After confirmation, the GaussDB(for openGauss) instance is purchased. The console is displayed, where you can see that the database is being created.



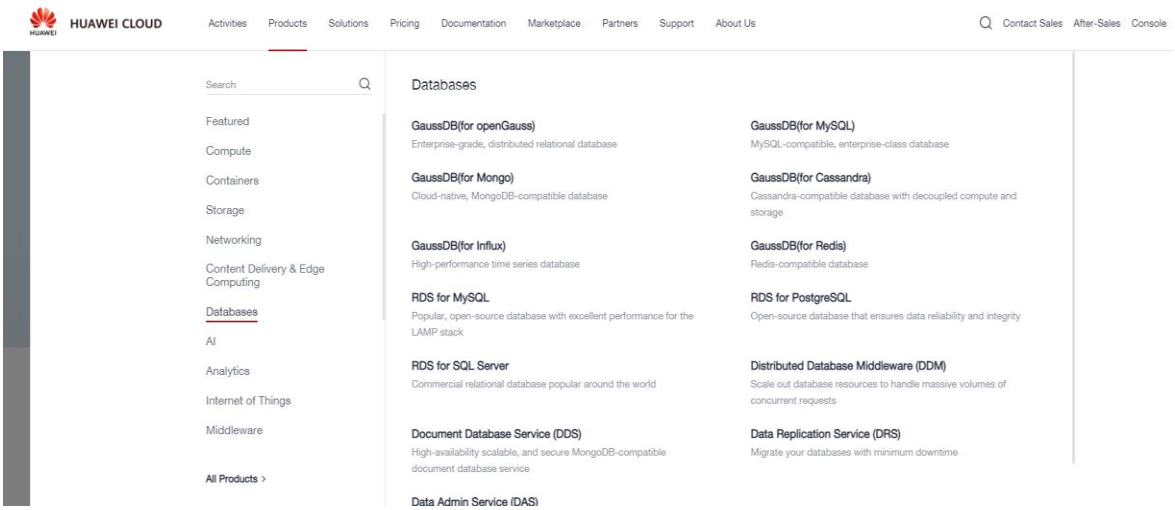
Step 5 Verify that the instance is successfully created and the instance state is **Available**, as shown in the following figure.



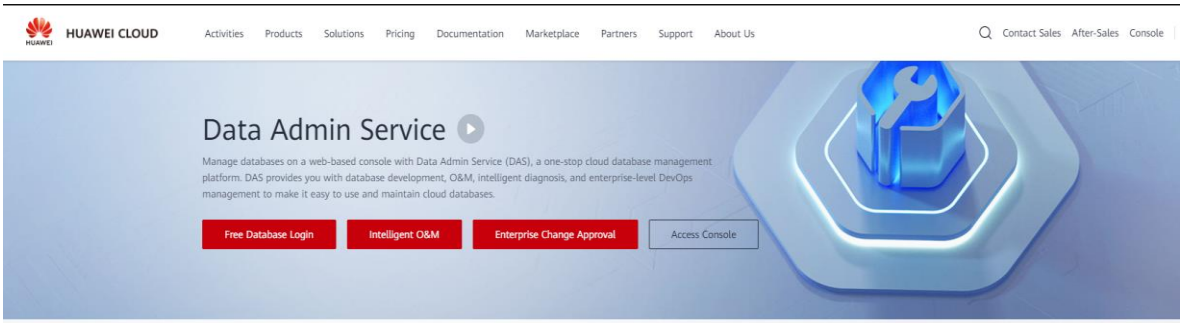
2.3 Using DAS

2.3.1 Connecting to the Database by Using DAS

Step 1 Log in to the HUAWEI CLOUD official website at https://www.huaweicloud.com/, and choose **Products** > **Databases** > **Data Admin Service (DAS)**.

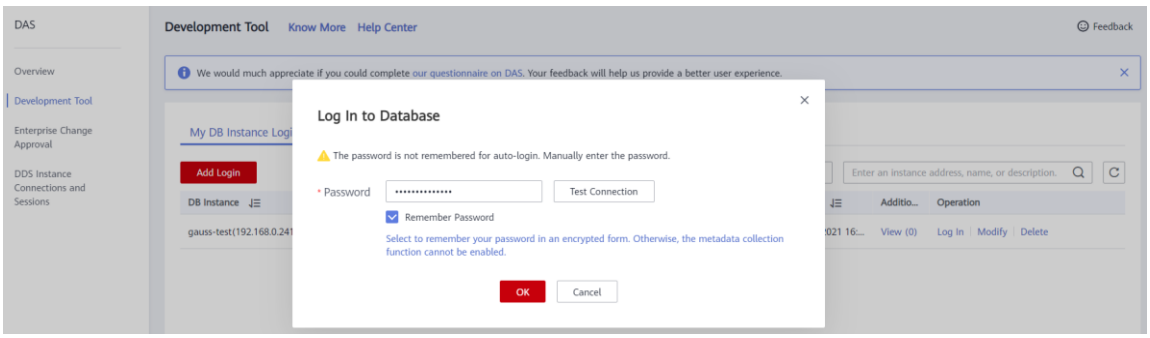


Step 2 Click **Free Database Login**.



Step 3 Click **Development Tool**, locate GaussDB(for openGauss), and click **Log In**.

Enter the password set during database instance creation, select **Remember Password**, and click **Test Connection**. After the connection test is successful, click **OK**.



3 Resource Release Experiment

3.1 Overview

3.1.1 About This Experiment

This experiment shows how to delete an ECS instance and GaussDB(for openGauss) on HUAWEI CLOUD, aiming to help trainees understand how to clear ECS and GaussDB(for openGauss) resources on HUAWEI CLOUD.

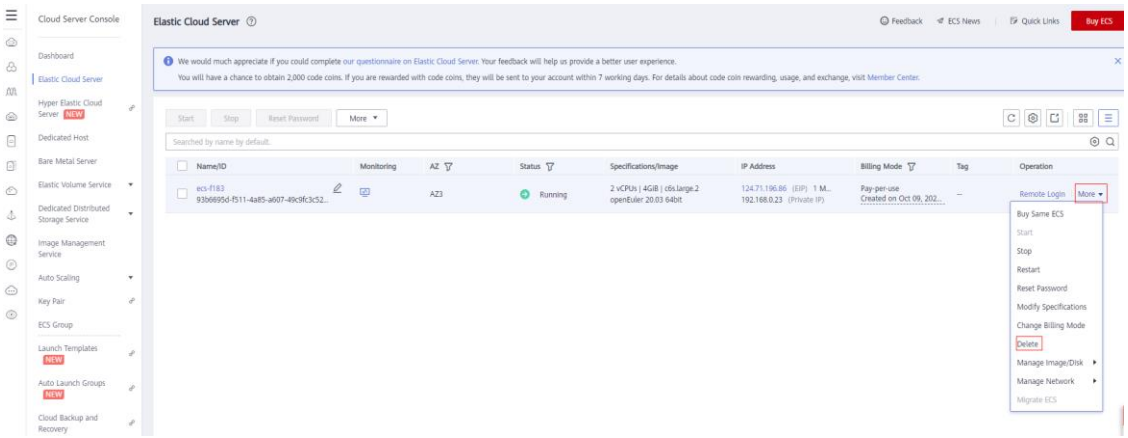
3.1.2 Objectives

- Know how to release ECS resources.
- Know how to release GaussDB(for openGauss) resources.
- Get familiar with operations on HUAWEI CLOUD.

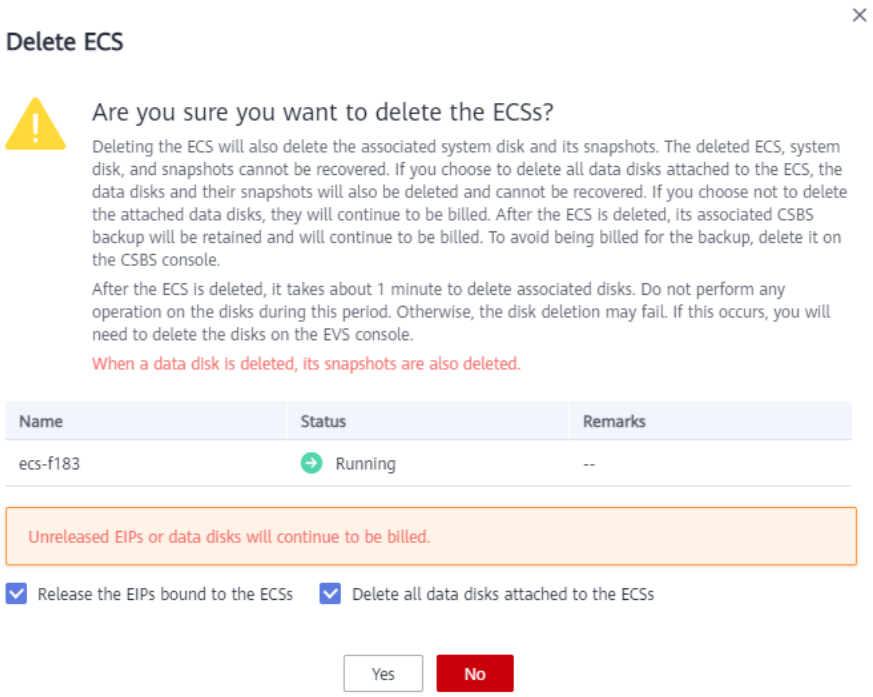
3.2 Deleting an ECS and Related Resources

After the experiment is complete, delete the charged resources on HUAWEI CLOUD to avoid unnecessary charging. Locate the created ECS and perform the following steps to delete it.

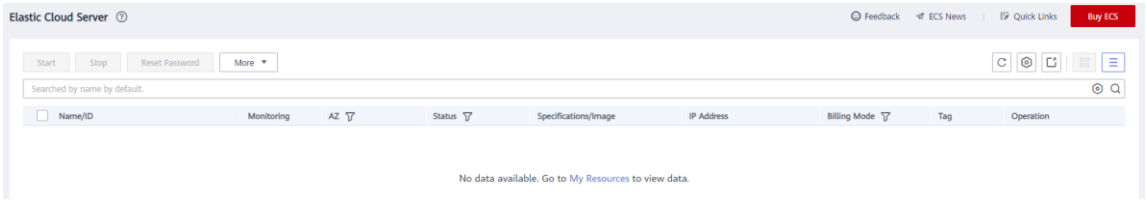
Step 1 Access the ECS console, locate the row that contains the ECS to be deleted, and choose **More** > **Delete**.



Step 2 In the dialog box that is displayed, select Release the EIPs bound to the ECSs and Delete all data disks attached to the ECSs, and click **Yes**.



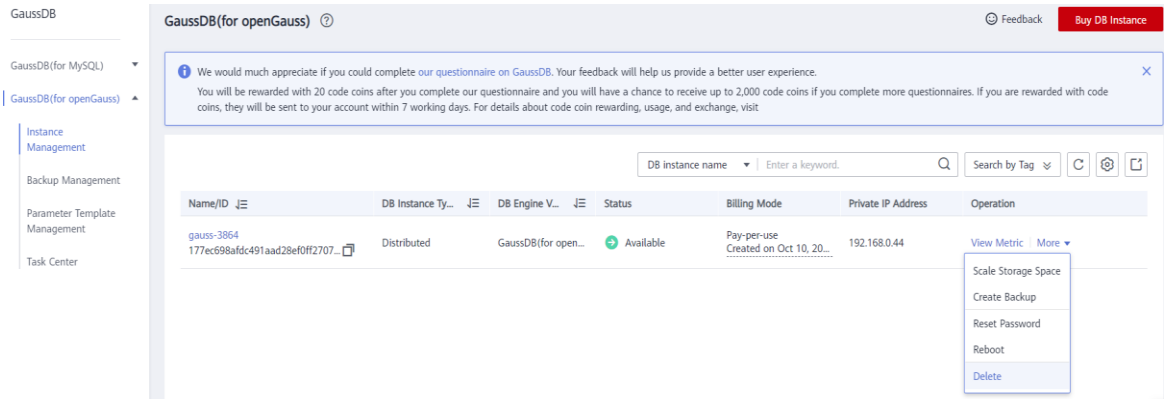
Step 3 If no resource is displayed in the list, the ECS has been deleted.



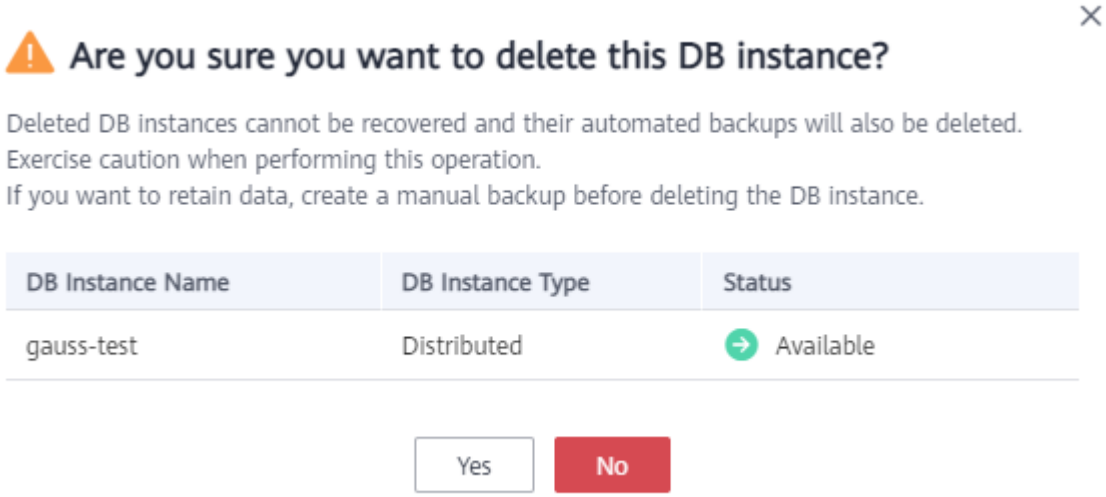
3.3 Deleting GaussDB(for openGauss) Resources

After the experiment is complete, delete the charged resources on HUAWEI CLOUD to avoid unnecessary charging. Locate the created GaussDB(for openGauss) and perform the following steps to delete it.

Step 1 Access the GaussDB console, locate the row that contains the GaussDB(for openGauss) instance to be deleted, and choose **More** > **Delete**.



Step 2 In the dialog box that is displayed, confirm the information and click **Yes**.



Step 3 If no resource is displayed in the list, the GaussDB(for openGauss) instance has been deleted.