### GaussDB

# **Getting Started**

 Issue
 01

 Date
 2025-06-19





#### Copyright © Huawei Cloud Computing Technologies Co., Ltd. 2025. All rights reserved.

No part of this document may be reproduced or transmitted in any form or by any means without prior written consent of Huawei Cloud Computing Technologies Co., Ltd.

#### **Trademarks and Permissions**

NUAWEI and other Huawei trademarks are the property 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 contract made between Huawei Cloud and the customer. All or part of the products, services and features described in this document may not be within the purchase 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 Cloud Computing Technologies Co., Ltd.

Address: Huawei Cloud Data Center Jiaoxinggong Road Qianzhong Avenue Gui'an New District Gui Zhou 550029 People's Republic of China

Website: https://www.huaweicloud.com/intl/en-us/

## **Contents**

1 Buying a GaussDB Instance and Connecting to It Through the DAS Console (Recommended)	1
2 Buying a GaussDB Instance and Connecting to It Using gsql	12
3 GaussDB Common Practices	24

# Buying a GaussDB Instance and Connecting to It Through the DAS Console (Recommended)

Data Admin Service (DAS) enables you to manage instances on a web-based console, simplifying database management and improving working efficiency. You can connect to and manage instances through DAS.

This section describes how to use DAS to connect to a GaussDB instance you have bought on the GaussDB management console. For more methods of connecting to an instance, see **GaussDB Instance Connection**.

#### **Operation Process**

Step	Description
Preparations	Sign up for a HUAWEI ID, enable Huawei Cloud services, make sure you have a valid payment method configured, create IAM users, and grant them specific GaussDB permissions.
Step 1: Buy an Instance	Configure basic information about a GaussDB instance and submit the purchase request.
Step 2: Log In to a GaussDB Instance Through DAS	Connect to the GaussDB instance using Data Admin Service (DAS).

#### Preparations

- 1. Sign up for a HUAWEI ID and enable Huawei Cloud services.
- 2. Before purchasing an instance, ensure that there is a valid payment method configured.
- 3. For fine-grained permissions management on Huawei Cloud resources, use Identity and Access Management (IAM) to create a user or user group and grant it specific operation permissions. For details, see **Creating a User and Granting Permissions**.

#### **Buying an Instance**

Step 1 Log in to the management console.

- **Step 2** Click <sup>(Q)</sup> in the upper left corner and select a region and project.
- **Step 3** Click  $\equiv$  in the upper left corner of the page and choose **Databases** > **GaussDB**.
- **Step 4** On the **Instances** page, click **Buy DB Instance**.
- Step 5 On the displayed page, set Billing Mode, enter DB Instance Name, select Edition Type, DB Engine Version, DB Instance Type, and Deployment Model, and complete other configurations.

#### Figure 1-1 Billing mode and basic information

Billing Mode	Yearly/Monthly Pay-per-use
Region	Regions are geographic areas isolated from each other. Resources are region-specific and cannot be used across regions through internal network connections. For low network latency and nuick resources velect the nearest region.
Project	
DB Instance Name	(X) (D)
Edition Type	Enterprise edition Basic edition
DB Engine Version	V2.0-8.103 V2.0-3.227
DB Instance Type	Distributed
Deployment Model	1 primary + 2 standby (3)
AZ	cn-north-4a     cn-north-4b     Cn-north-4c     AZ7       Only one or three AZs can be selected.     AZ7
Time Zone	(UTC+08:00) Beijing, Chongqing, Hong K_

Parameter	Example Value	Description		
Billing Mode Pay-per-use		GaussDB provides yearly/monthly billing and pay-per-use billing.		
		<ul> <li>Yearly/Monthly: You pay upfront for the amount of time you expect to use the DB instance for. You will need to make sure you have a top-up account with a sufficient balance or have a valid payment method configured first.</li> <li>For distributed instances using the combined deployment model, yearly/ monthly billing is only available to whitelisted users. To apply for the permissions needed, submit a service ticket.</li> </ul>		
		• <b>Pay-per-use</b> : You can start using the DB instance first and then pay as you go. Pricing is listed on a per-hour basis, but bills are calculated based on the actual usage duration.		
Region and		Region where the tenant is located.		
Project	CN-Hong Kong	Products in different regions cannot communicate with each other over a private network. After the instance is created, you cannot change its region.		
DB Instance Name	gauss-d0a7	The instance name is case-sensitive, must start with a letter, and can contain 4 to 64 characters. Only letters, digits, hyphens (-), and underscores (_) are allowed.		
Edition Type	Enterprise edition	GaussDB provides <b>Basic edition</b> and <b>Enterprise edition</b> .		
		The basic edition lacks certain advanced features that are available in the enterprise edition. The basic edition delivers the same level of performance as the enterprise edition at a more affordable price. This edition is ideal for users who prioritize cost and do not need advanced features.		
		For more details about the differences between the two editions, see <b>Differences Between the</b> <b>Basic and Enterprise Editions of GaussDB</b> <b>Instances</b> .		
DB Engine Version	V2.0-8.103	GaussDB database version.		

Table 1-1 Parameters

Parameter	Example Value	Description
DB Instance Type	Centralized	• <b>Distributed</b> : You can add nodes for distributed instances as needed to handle large volumes of concurrent requests.
		<ul> <li>Centralized: Centralized instances are suitable for scenarios with small and stable volumes of data, where data reliability and service availability are extremely important.</li> <li>CAUTION Per-host licenses allow you to create only centralized instances</li> </ul>
Danlaymant	1 -	<ul> <li>Distributed</li> </ul>
Model	standby	Distributed
		<ul> <li>Independent: Database components are deployed on different nodes. This model is suitable for where high availability and stability are required and the instance scale is large.</li> </ul>
		<ul> <li>Combined: Different database components are deployed on the same node. This option is available only when Edition Type is Basic edition.</li> </ul>
		Centralized
		<ul> <li>HA (1 primary + 2 standby): 3-node deployment where there is a shard. The shard contains one primary DN and two standby DNs.</li> </ul>
		<ul> <li>Single: single-node deployment where there is only one CMS component and one DN. To create a single-replica instance, ensure that the instance version is V2.0-2.2 or later.</li> </ul>
		<ul> <li>1 primary + 1 standby + 1 log: 3-node deployment where there is one shard with three replicas. The shard contains one primary DN, one standby DN, and one log-dedicated DN. This model is available only for instances of version V2.0-3.200 or later.</li> </ul>
AZ	AZ1	An AZ is a physical region where resources have their own independent power supply and networks. AZs are physically isolated but interconnected through an internal network.

Parameter	Example Value	Description
Time Zone	(UTC+08:00) Beijing, Chongqing, Hong Kong, Urumqi	You need to select a time zone for your instance based on the region it is hosted in.

#### **Step 6** Configure instance specifications.

#### Figure 1-2 Specifications and storage

Instance Specifications	Dedicated(1:4)	0						
	Flavor Name							
	4 vCPUs   16 GB							
	DB Instance Specifications	Dedicated(1:4)   4 vCl	PUs   16 GB					
Storage Type	Ultra-high I/O	Learn more about stor	age types.					
Storage Space (GB)	40							
	0					- 40	+	0
	40	4	800	9560	14320	24000		
	GaussDB provides free back	up storage equal to the	amount of your purch	ased storage space. After	the free backup space is	used up, charges are app	plied based on t	the backup space pricing details.
	If too little storage is config	jured, when traffic volum	ne is high, the storage	can be used up quickly, a	ind the instance will chan	ige to read-only. Select ar	n amount of sto	prage based on how much traffic you expect there to be.
	If a small amount of storag	e is selected, ensure tha	t the checkpoint_segm	ents and wal_keep_segm	ents parameters meet th	e following requirements:	(checkpoint_se	$egments \times 2 + wal\_keep\_segments) \times 16 \ (MB) \leq Storage \ space \ (GB) \times datastorage\_threshold\_value\_check \times 0.5$
Disk Encryption	Disable	Enable	6 0					

#### Table 1-2 Parameters

Parameter	Example Value	Description
Instance Specifications	Dedicated(1:4), 4 vCPUs   16 GB	The vCPUs and memory of an instance.
Storage Type	Ultra-high I/O	The storage type determines the read/ write speed of an instance. The higher the maximum throughput is, the higher the instance read/write speed can be.
Storage Space	40 GB	The storage space contains the file system overhead required for inodes, reserved blocks, and database operations.
Disk Encryption	Disable	Enabling disk encryption improves data security, but slightly affects the read and write performance of the database.
		If a shared KMS key is used, the corresponding CTS event is <b>createGrant</b> . Only the key owner can receive this event.

**Step 7** Retain the default settings for the network information.

Figure	1-3	Network	configuration
--------	-----	---------	---------------

	Relationship among VPCs, subnets, security groups, and DB instances.			
VPC	default_vpc v	Q default_subnet	✓ Q ③	
	If you want to create a VPC, go to the VPC console.			
Security Group	default $\checkmark$	Q View Security Group 🗹 💿		
	In a security group, rules that authorize connections to DB instances apply to all DB instances associated with the security group.			
	Ensure that the TCP ports in the inbound rule of the s	lected security group contain 8000-8100, 20050,	5000-5001, 2379-2380, 6000, 6500.	
	Security Group Rules \vee Add Inbound Rule			
Database Port	Default port: 8000			
Single Floating IP Address				
	The single floating IP address policy is disabled by def	ult, but you can enable it if you want to create a	n instance with only one floating IP address.Instances with this policy enabled do not support IPv6.	

#### **Step 8** Configure the instance password and enterprise project.

#### Figure 1-4 Database configuration

Administrator	root
Administrator Password	Keep your password secure. The system cannot retrieve your password.
Confirm Password	
Parameter Template Enterprise Project	Default-Enterprise-Edition-GaussDB-8.10       View Parameter Template (2)         default       View Enterprise Projects (2) (3)
Tag	TMS's predefined tags are recommended for adding the same tag to different cloud resources. Create predefined tags 2 Q + Add Tag You can add 20 more tags.

Table 1-3 Parameters

Parameter	Example Value	Description
Administrator Password	-	Enter a strong password and periodically change it to improve security, preventing security risks such as brute force cracking.
Confirm Password	-	Enter the administrator password again.

Parameter	Example Value	Description
Enterprise Project	default	If the instance has been associated with an enterprise project, select the target project from the <b>Enterprise Project</b> drop-down list.
		You can also go to the Enterprise Project Management console to create a project. For details, see <i>Enterprise</i> <i>Management User Guide</i> .

- **Step 9** Click **Next**, confirm the instance information, and click **Submit**.
- **Step 10** Go to the instance list.

If status of the instance becomes **Available**, the instance has been created.

----End

#### Logging In to a GaussDB Instance Through DAS

- Step 1 Log in to the management console.
- **Step 2** Click <sup>(Q)</sup> in the upper left corner and select a region and project.
- **Step 3** Click = in the upper left corner of the page and choose **Databases** > **GaussDB**.
- **Step 4** On the **Instances** page, locate the DB instance you want to log in to and click **Log In** in the **Operation** column.

Alternatively, click the DB instance name on the **Instances** page. On the displayed **Basic Information** page, click **Log In** in the upper right corner of the page.

**Step 5** On the **Custom Login** page, select the node to be logged in to. Enter the correct database username and password, and click **Test Connection**. After the connection test is successful, click **Log In**.

#### Figure 1-5 Login page

Instance Login Information			>
DB Instance Name		DB Engine Versio	n Gai
Connected Login Custom Log	in		
Node Information			
Name		Role	Status
gaus: _root_0		master	• Available
gaus: _root_1		slave	• Available
gaus: _root_2		slave	• Available
* Database Name	postgres		
★ Login Username	root		
* Password	••••••	۵) (	Test Connection
Show Executed SQL Statements ${f O}$	<ul> <li>Connection is success</li> <li>Remember Passwor</li> <li>If not enabled, the execumanually.</li> </ul>	ful. d Your password will be e ted SQL statements cannot	ncrypted and stored securely. be viewed, and you need to input each SQL statement

#### Table 1-4 Parameters

Parameter	Example Value	Description
Login Username	root	Username of the GaussDB database account. The default administrator is <b>root</b> .
Database Name	postgres	Name of the database to be connected. The default management database is <b>postgres</b> .
Password	-	Password of the database user.
Show Executed SQL Statements	Enabled	You are advised to enable <b>Show Executed SQL</b> <b>Statements</b> . With it enabled, you can view the executed SQL statements under <b>SQL Operations</b> > <b>SQL History</b> and execute them again without entering the SQL statements.

#### ----End

#### **Getting Started with SQL**

After logging in to an instance, you can create database users, databases, and tables through DAS.

**Step 1** Create a database user.

Only administrators that are created during the instance installation can access the initial database by default. You can also create other database users.

#### CREATE USER joe WITH PASSWORD "XXXXXXXXX";

If information similar to the following is displayed, the creation is successful.

Database:	postgres	$\vee$	Execute SQL (F8)     Execute SQL (F8)     SQL Favorites v
Schema:	public	$\vee$	1 CREATE USER joe WITH PASSWORD ' ";
Tables	Views		
Please sea	rch by k   C	X C	
	No data.		
			Executed SQL Statements Messages
			Execute
			[Split SQL] Number of SQL(s) to be executed: 1
			[Executed SQL: (1)] CREATE USER ine WITH PASSWORD
			executed successfully. Time required: [52ms.]

Figure 1-6 Creating a database user

In this case, you have created a user named **joe**, and the user password is **xxxxxxx**.

For more information about database users, see Users and Permissions.

Step 2 Create a database.

#### **CREATE DATABASE** *db\_tpcds*;

If information similar to the following is displayed, the creation is successful.

#### Figure 1-7 Creating a database

Database:	postgres	v (	Execute SQL (F8) Execute SQL (F9) SQL Favorites V	
Schema:	public	$\vee$	1 CREATE DATABASE db_tpcds;	
Tables	Views			
Please sea	rch by k   Q	С		
	No data.	E	xecuted SQL Statements Messages	
		-	Execute	
		[	Split SQL] Number of SQL(s) to be executed: 1	
		[ c	Executed SQL: (1)] REATE DATABASE db_tpcds; executed successfully. Time required: [516ms.]	

Switch to the newly created database in the upper left corner.

#### **Figure 1-8** Switching to the new database

Database:	postgres	~		
Schema:	db_tpcds			
Tables	postgres			
Please search by k   Q				

Step 3 Create a table.

- Run the following command to create a schema: **CREATE SCHEMA** *myschema*;
- Create a table named mytable that has only one column. The column name is firstcol and the column type is integer.
   CREATE TABLE myschema.mytable (firstcol int);
- Insert data to the table.
   INSERT INTO myschema.mytable values (100);
- View data in the table.
   SELECT \* FROM myschema.mytable;

#### Note:

- By default, new database objects, such as the **mytable** table, are created in the *\$user* schema. For more information about schemas, see **Creating and Managing Schemas**.
- For details about how to create a table, see Creating and Managing Tables.
- In addition to the created tables, a database contains many system catalogs. These system catalogs contain information about instance installation as well as the queries and processes running in GaussDB. You can collect information about the database by querying the system catalogs. For details about querying system catalogs, see Querying a System Catalog.
- **Step 4** In the **db\_tpcds** database, run the following statement as user **root** to grant all permissions of the **db\_tpcds** database to user **joe**:

GRANT ALL ON DATABASE db\_tpcds TO joe;

GRANT USAGE ON schema myschema TO joe;

#### GRANT ALL ON TABLE myschema.mytable TO joe;

- **Step 5** Log in to the **db\_tpcds** database as user **joe**.
- **Step 6** After login, insert data into the table and verify the data.

INSERT INTO myschema.mytable values (200);

**SELECT \* FROM** myschema.mytable;

#### Figure 1-9 Inserting and verifying data

• Execute SQL (F8) E Format SQL (F9)	Execute SQL Plan (F6)	SQL Favorites V
1 INSERT INTO myschema.mytable values 2 SELECT * FROM myschema.mytable;	(200);	
Executed SQL Statements Messages Res	ult Set1 ×	
The following is the execution result set of SELE	CT * FROM myschema.mytable;.	① The table below canno
	firstco	I Contraction of the second
1	100	
2	200	

#### ----End

#### Follow-up Operations

After logging in to the instance, you can create alarm rules, set automated backup policies, create databases, and migrate data. For details, see:

- Creating an Alarm Rule
- Setting an Automated Backup Policy
- Creating a Database Using SQL
- Creating a Database Through an API
- Managing GaussDB Databases Through DAS
- Migrating Data to GaussDB

#### FAQ

Question: What can I do if the DAS console is not displayed after I click **Log In** in the **Operation** column of an instance on the **Instances** page?

Solution: Set your browser to allow pop-ups and try again.

# **2** Buying a GaussDB Instance and Connecting to It Using gsql

This section describes how to use the gsql client to connect to a GaussDB instance you have bought on the GaussDB management console. For more methods of connecting to an instance, see **GaussDB Instance Connection**.

#### **Operation Process**

Step	Description
Preparations	Sign up for a HUAWEI ID, enable Huawei Cloud services, make sure you have a valid payment method configured, create IAM users, and grant them specific GaussDB permissions.
Step 1: Buy an Instance	Configure basic information about a GaussDB instance and submit the purchase request.
Step 2: Buy an ECS	Buy an ECS that is in the same region and VPC as your GaussDB instance.
Step 3: Obtain the Driver Package	Download the driver package that matches the version of your instance.
Step 4: Connect to the Database	Use gsql to connect to GaussDB.

#### Preparations

- 1. Sign up for a HUAWEI ID and enable Huawei Cloud services.
- 2. Before purchasing an instance, ensure that there is a valid payment method configured.
- 3. For fine-grained permissions management on Huawei Cloud resources, use Identity and Access Management (IAM) to create a user or user group and grant it specific operation permissions. For details, see **Creating a User and Granting Permissions**.

#### **Buying an Instance**

Step 1 Log in to the management console.

- **Step 2** Click <sup>(Q)</sup> in the upper left corner and select a region and project.
- **Step 3** Click  $\equiv$  in the upper left corner of the page and choose **Databases** > **GaussDB**.
- **Step 4** On the **Instances** page, click **Buy DB Instance**.
- Step 5 On the displayed page, set Billing Mode, enter DB Instance Name, select Edition Type, DB Engine Version, DB Instance Type, and Deployment Model, and complete other configurations.

#### Figure 2-1 Billing mode and basic information

Billing Mode	Yearly/Monthly Pay-per-use
Region	Regions are geographic areas isolated from each other. Resources are region-specific and cannot be used across regions through internal network connections. For low network latency and nuick resources velect the nearest region.
Project	
DB Instance Name	(X) (D)
Edition Type	Enterprise edition Basic edition
DB Engine Version	V2.0-8.103 V2.0-3.227
DB Instance Type	Distributed
Deployment Model	1 primary + 2 standby (3)
AZ	cn-north-4a     cn-north-4b     Cn-north-4c     AZ7       Only one or three AZs can be selected.     AZ7
Time Zone	(UTC+08:00) Beijing, Chongqing, Hong K_

Parameter	Example Value	Description	
Billing Mode	Pay-per-use	GaussDB provides yearly/monthly billing and pay-per-use billing.	
		<ul> <li>Yearly/Monthly: You pay upfront for the amount of time you expect to use the DB instance for. You will need to make sure you have a top-up account with a sufficient balance or have a valid payment method configured first.</li> <li>For distributed instances using the combined deployment model, yearly/ monthly billing is only available to whitelisted users. To apply for the permissions needed, submit a service ticket.</li> </ul>	
		• <b>Pay-per-use</b> : You can start using the DB instance first and then pay as you go. Pricing is listed on a per-hour basis, but bills are calculated based on the actual usage duration.	
Region and		Region where the tenant is located.	
Project	CN-Hong Kong	Products in different regions cannot communicate with each other over a private network. After the instance is created, you cannot change its region.	
DB Instance Name	gauss-d0a7	The instance name is case-sensitive, must start with a letter, and can contain 4 to 64 characters. Only letters, digits, hyphens (-), and underscores (_) are allowed.	
Edition Type	Enterprise edition	GaussDB provides <b>Basic edition</b> and Enterprise edition.	
		The basic edition lacks certain advanced features that are available in the enterprise edition. The basic edition delivers the same level of performance as the enterprise edition at a more affordable price. This edition is ideal for users who prioritize cost and do not need advanced features.	
		For more details about the differences between the two editions, see <b>Differences Between the</b> <b>Basic and Enterprise Editions of GaussDB</b> <b>Instances</b> .	
DB Engine Version	V2.0-8.103	GaussDB database version.	

 Table 2-1 Parameters

Parameter	Example Value	Description
DB Instance Type	Centralized	• <b>Distributed</b> : You can add nodes for distributed instances as needed to handle large volumes of concurrent requests.
		<ul> <li>Centralized: Centralized instances are suitable for scenarios with small and stable volumes of data, where data reliability and service availability are extremely important.</li> <li>CAUTION Per-host licenses allow you to create only centralized instances.</li> </ul>
Deployment	1 primary + 2	Distributed
Model	standby	<ul> <li>Independent: Database components are deployed on different nodes. This model is suitable for where high availability and stability are required and the instance scale is large.</li> </ul>
		<ul> <li>Combined: Different database components are deployed on the same node. This option is available only when Edition Type is Basic edition.</li> </ul>
		Centralized
		<ul> <li>HA (1 primary + 2 standby): 3-node deployment where there is a shard. The shard contains one primary DN and two standby DNs.</li> </ul>
		<ul> <li>Single: single-node deployment where there is only one CMS component and one DN. To create a single-replica instance, ensure that the instance version is V2.0-2.2 or later.</li> </ul>
		<ul> <li>1 primary + 1 standby + 1 log: 3-node deployment where there is one shard with three replicas. The shard contains one primary DN, one standby DN, and one log-dedicated DN. This model is available only for instances of version V2.0-3.200 or later.</li> </ul>
AZ	AZ1	An AZ is a physical region where resources have their own independent power supply and networks. AZs are physically isolated but interconnected through an internal network.

Parameter	Example Value	Description
Time Zone	(UTC+08:00) Beijing, Chongqing, Hong Kong, Urumqi	You need to select a time zone for your instance based on the region it is hosted in.

#### **Step 6** Configure instance specifications.

#### Figure 2-2 Specifications and storage

Instance Specifications	Dedicated(1:4)	٥							
	Flavor Name								
	4 vCPUs   16 GB								
	DB Instance Specifications	Dedicated(1:4)   4 vCPUs	16 GB						
Storage Type	Ultra-high I/O	Learn more about storage t	types.						
Storage Space (GB)	40								
	0						40	+ (	Ð
	40	4800	9	1560	14320	24000			
	GaussDB provides free back	cup storage equal to the amo	unt of your purchase	ed storage space. After	the free backup space is	used up, charges a	re applied bas	sed on ti	te backup space pricing details.
	If too little storage is config	gured, when traffic volume is	high, the storage can	n be used up quickly, ar	nd the instance will chan	ge to read-only. Se	lect an amour	nt of sto	rage based on how much traffic you expect there to be.
	If a small amount of storag	e is selected, ensure that the	checkpoint_segment	s and wal_keep_segme	ents parameters meet the	e following requirer	ments: (check	point_se	gments x 2 + wal_keep_segments) x 16 (MB) $\leq$ Storage space (GB) x datastorage_threshold_value_check x 0.5
Disk Encryption	Disable	Enable 🏠	0						

#### Table 2-2 Parameters

Parameter	Example Value	Description				
InstanceDedicated (1:4), 4SpecificationsvCPUs   16 GB		The vCPUs and memory of an instance.				
Storage Type	Ultra-high I/O	The storage type determines the read/ write speed of an instance. The higher the maximum throughput is, the higher the instance read/write speed can be.				
Storage Space	40 GB	The storage space contains the file system overhead required for inodes, reserved blocks, and database operations.				
Disk Encryption	Disable	Enabling disk encryption improves data security, but slightly affects the read and write performance of the database.				
		If a shared KMS key is used, the corresponding CTS event is <b>createGrant</b> . Only the key owner can receive this event.				

**Step 7** Retain the default settings for the network information.

Figure	2-3	Network	configuration
			<u> </u>

	Relationship among VPCs, subnets, security groups, a	nd DB instances.					
VPC	default_vpc v	Q default, subnet v Q ()					
	If you want to create a VPC, go to the VPC console.						
Security Group	default 🗸	Q View Security Group C ③					
	In a security group, rules that authorize connections to DB instances apply to all DB instances associated with the security group.						
	Ensure that the TCP ports in the inbound rule of the	selected security group contain 8000-8100, 20050, 5000-5001, 2379-2380, 6000, 6500.					
	Security Group Rules \vee Add Inbound Rule						
Database Port	Default port: 8000						
Single Floating IP Address							
	The single floating IP address policy is disabled by d	efault, but you can enable it if you want to create an instance with only one floating IP address.Instances with this policy enabled do not support IPv6.					

**Step 8** Configure the instance password and enterprise project.

#### Figure 2-4 Database configuration

Administrator	root
Administrator Password	Keep your password secure. The system cannot retrieve your password.
Confirm Password	
Parameter Template Enterprise Project	Default-Enterprise-Edition-GaussDB-8.10       View Parameter Template C         default       View Enterprise Projects C       Image: Compare the project C
Tag	TMS's predefined tags are recommended for adding the same tag to different cloud resources. Create predefined tags [2] Q + Add Tag You can add 20 more tags.

Table 2-3 Parameters

Parameter	Example Value	Description
Administrator Password	-	Enter a strong password and periodically change it to improve security, preventing security risks such as brute force cracking.
Confirm Password	-	Enter the administrator password again.

Parameter	Example Value	Description
Enterprise Project	default	If the instance has been associated with an enterprise project, select the target project from the <b>Enterprise Project</b> drop-down list.
		You can also go to the Enterprise Project Management console to create a project. For details, see <i>Enterprise</i> <i>Management User Guide</i> .

**Step 9** Click **Next**, confirm the instance information, and click **Submit**.

**Step 10** Go to the instance list.

If status of the instance becomes **Available**, the instance has been created.

----End

#### **Buying an ECS**

GaussDB provides the gsql tool to help you connect to a database using the command-line interface (CLI). Before the connection, you need to create an ECS for installing the gsql tool.

- 1. Log in to the management console.
- 2. Click = in the upper left corner of the page and choose **Computing** > **Elastic Cloud Server** to go to the Elastic Cloud Server console.
- 3. On the page that is displayed, click **Buy ECS**.
- 4. Configure basic settings and click **Next: Configure Network**.
  - **Region**: Select the region of the GaussDB instance to be connected.
  - Billing Mode: Pay-per-use
  - **AZ**: Select the AZ of the GaussDB instance to be connected.
  - Image: EulerOS and EulerOS 2.5 64bit(40 GiB)
  - Retain the default values for other parameters.

#### Figure 2-5 Basic settings

Configure Basic Settings	(2) Configure Network (3) Configure Advanced Settings (4) Confirm	
Region	O Recommended CN Hoth-Seign4 CN South-Gaug_ CN Exet-Shangha1 II CN Southwest-G_     CN Hoth-Jangka1     CN Hoth-Jangka1	
	For low network latency and quick resource access, select the region nearest to your target users. Learn how to select a region. 🕐	
Billing Mode	VearlyMonthly 🖾 Pay-pars.ass. Spot price.	
	Pay per-use ECS6 do not support ICP ting.	
AZ	Random A24 A25 A21 ()	
Instance Selection	By Type By Scenario C? Help Me Choose	1
CPU Architecture	sti Kunpeng O	
	FiexanX launch: Fiexible compute with 6: the performance and a superliable experience, subliable for general workloads in tech, retail, finance, and gaming industries. Buy FiexanX instance	
Specifications	KPR5 -Select KPUs- V Menory -Select Menory- V Paror Name Enter a layout. Q CH64 self-out specifications	
	Onternal computing-plas General computing Memory-optimized Large-memory Diski-intensive GPU-accelerated General computing-basic ()	
	Several Jul C7 cds dd c3	
	Collapse Help ^	
	General computing plus ECSs use dedicated vCPUs and next-generation network acceleration engines to provide powerful compute and network performance.	
	ECS Type Plavor Name VCPUa 0 Memory 0 CPU 0 Anterest Maximum Bandwidth 0 Packets Per Second 0 0 IPv6 Estimated Price 0 0	
	General computing plus c7 c7 large 2 2 vCPUs 4 GB Intel loc Lake Max 4 Golds 400,000 PPS Yes -	

#### Figure 2-6 Selecting an image

Image	Public image P	rivate image	Shared image	Marketplace image	0	
	S EulerOS	V EulerOS 2.5	64bit(40 GiB)		~	Q
Protection	Basic edition (one-month free     Advanced HSS edition (pair     None	ee trial) Free trial for d) ⑦	one month (?)			
System Disk	General Purpose SSD	✓ − 40	+ GiB IOPS limit:	2,280, IOPS <u>burst limit</u> : 8,000	0	Show Y Enabled SCSI
	Add Data Disk You can atta	ach 23 more disks.				
	- Data diaka added to a Linux EC	C one he initialized w	ing a wizard equipt			
	Data disks added to a Linux EC.	S can be minalized us	ang a wizaru script.			

- 5. Configure the ECS network and click **Next: Configure Advanced Settings**.
  - **Network**: Select the VPC of the GaussDB instance to be connected.
  - Security Group: Select the security group of the GaussDB instance to be connected.
  - EIP: Not required

#### Figure 2-7 Network configuration

Configure Basic Settings		Configure Network	<ul> <li>3 Configure Advanced Sett</li> </ul>	ings (4) Confirm						
Network	defaul	L'vpo(1	~ Q default_subre	) v a	Automatically assign	n IP address	V Available private IP addre	18868: 250 🕑		
	Create \	Create VPC								
Extension NIC	⊕ Add	NIC NICs you can still add: 1	l i i i i i i i i i i i i i i i i i i i							
Source/Destination Check		0								
Security Group	default		× ~ ) (	Create Security Group ③						
	Similar is a home at security prove played southing heatment access. Events that the velocities from a prove played access to post 22 (555)-based Linux hope), 3088 (Mindows Rope), and KLMF ging operation; Configure Security Group Rules Security Group Rules ^									
	Selec	ted security groups(1)		Security Group Rules						
		Security Group Name	Organize	Inbound Rules Out	bound Rules					
	1	default	Down Up	Security Group Name	Priority	Action	Protocol & Port (3)	Туре	Source ③	Description
					1	Permit	TCP: 3389	IPv4	0.0.0.0/0	Permit default Windows remote des
				datud	1	Permit	TCP: 22	IPv4	0.0.0.0/0	Permit default Linux SSH port.
				union.	100	Permit	Al	IPv6	default	-
					100	Permit	Al	IPv4	default	-
EID.		areign	Not required							
L.	U 400	usage 🕓 use existing	- monoqueros (i)							

- 6. Configure a password for the ECS, set other parameters as required, and click **Next: Confirm**.
  - ECS Name: Enter a name that is easy to identify.
  - **Password**: Set a strong password to improve security.
  - **Confirm Password**: Enter the password again.
  - Retain the default values for other parameters.

) Configure Basic Settings	Configure Network	Configure Advanced Settings      (4) Confirm
ECS Name	ecs-7ed6 If you are creating multiple ECSs at the sam	Allow duplicate name e time, automatic naming and customizable naming are available for you to select. ③
Description		
		0/85 %
Login Mode	Password Ke	y pair Set password later (?)
Usemame	root	
Password	Keep the password secure. If you forget the	password, you can log in to the ECS console and change it.
Confirm Password		
Cloud Backup and Recovery	To use CBR, you need to purchase a backup Create new Use existing CBR backups can help you restore data in c	> vault. A vault is a container that stores backups for servers.         Not required       ⑦         ase anything happens to your ECS. To ensure data security, you are advised to use CBR.
ECS Group (Optional)	Anti-affinity Failur Select ECS group Create ECS Group	e domain        ⑦       ·       Q
Advanced Options	Configure now	

#### Figure 2-8 Advanced settings

- 7. Confirm the configuration and click **Submit**.
- 8. View the purchased ECS.

#### **Obtaining the Driver Package**

Download particular packages listed in **Table 2-4** based on the version of your instance.

Version	Download Address
V2.0-8.x	Driver package Verification package for the driver package
V2.0-3.x	Driver package Verification package for the driver package
V2.0-2.x	Driver package Verification package for the driver package

Table 2-4 Driver package download lis	t
---------------------------------------	---

To prevent a software package from being tampered with during transmission or storage, download the corresponding verification package and perform the following steps to verify the software package:

- 1. Upload the software package and verification package to the same directory on a Linux VM.
- 2. Run the following command to verify the integrity of the software package: **cat** *GaussDB\_driver.zip.sha256* | **sha256sum --check**

If **OK** is displayed in the command output, the verification is successful. GaussDB\_driver.zip: OK

#### **Connecting to a Database**

GaussDB lets you select either SSL or non-SSL connections as required.

#### Non-SSL Connection

- 1. Log in as the **root** user to the ECS you have created.
- 2. Upload the client tool package and configure gsql environment variables.
  - a. Run the following command to create the **/tmp/tools** directory for storing the client tool package: mkdir /tmp/tools
  - b. Download the GaussDB\_driver.zip driver package of the required version by referring to Obtaining the Driver Package, and upload it to the /tmp/tools directory of the created ECS.
  - c. Run the following commands to decompress the GaussDB\_driver.zip driver package:
     cd /tmp/tools
     unzip GaussDB\_driver.zip
  - Run the following commands to copy the decompressed GaussDB-Kernel\_\*\*\*\_EULER\_64bit-Gsql.tar.gz client tool package to the /tmp/ tools directory:

#### **NOTE**

This section uses the gsql tool package suitable for the centralized instances running on Euler2.5\_x86\_64 as an example. The relative path of the tool package varies depending on where you decompressed it.

cd /tmp/tools/GaussDB\_driver/Centralized/Euler2.5\_X86\_64/ cp GaussDB-Kernel\_\*\*\*\_EULER\_64bit-Gsql.tar.gz /tmp/tools

- Run the following commands to decompress the package: cd /tmp/tools
   tar -zxvf GaussDB-Kernel\_\*\*\*\_EULER\_64bit-Gsql.tar.gz
- f. Configure environment variables.

Run the following command to open the ~/.bashrc file:

vim ~/.bashrc

Press **G** to move the cursor to the last line, press **i** to enter Insert mode, and type the following information. Then, press **Esc** to exit Insert mode, and run **:wq** to save the settings and exit.

export PATH=/*tmp/tools*/bin:\$PATH export LD\_LIBRARY\_PATH=/*tmp/tools/*lib:\$LD\_LIBRARY\_PATH Run the following command to make the environment variables take effect permanently: source ~/.bashrc

3. Enter the password when prompted to connect to the database.

After an instance is created, a **postgres** database is generated by default. Database **postgres** is used as an example.

gsql -d *postgres* -h *10.0.0.0* -U *root* -p *8000* Password for user root:

- *postgres* indicates the name of the database to be connected.
- *10.0.0.0* indicates the IP address of the instance. On the **Basic Information** page of the instance to be connected, obtain the private IP address in the **Node List** area.
- *root* indicates the username used to log in to the database.
- *8000* indicates the port number of the database. On the **Basic Information** page of the instance to be connected, obtain the database port in the **Network Information** area.

For more information about gsql commands, see **Tool Reference**.

#### **SSL** Connection

- 1. Log in to the management console.
- 2. Click 🔍 in the upper left corner and select a region and project.
- 3. Click in the upper left corner of the page and choose **Databases** > **GaussDB**.
- 4. On the **Instances** page, click the name of the target instance. In the **Configuration** area on the **Basic Information** page, click in the **SSL** field to download the root certificate or certificate bundle.
- 5. Upload the root certificate to the ECS or save it to the device to be connected to the GaussDB instance.

Import the root certificate to the Linux ECS. For details, see **How Can I** Import the Root Certificate to a Windows or Linux OS?

6. Connect to a GaussDB instance.

A Linux ECS is used in this example. Run the following command to set environment variables on the ECS: export PGSSLMODE=*sslmode>* export PGSSLROOTCERT=*ca-file-directory>* 

gsql -h <host> -p <port> -d <database> -U <user>

Example:

export PGSSLMODE="verify-ca" export PGSSLROOTCERT="/home/Ruby/ca.pem"

#### gsql -h 10.0.0.0 -p 8000 -d postgres -U root

Password for user root:

Parameter	Description
<host></host>	IP address of the DB instance. To obtain the IP address, click the instance name on the <b>Instances</b> page to go to the <b>Basic Information</b> page of the instance. The IP address can be found in the <b>Private IP Address</b> column of the <b>Node List</b> area.
<port></port>	Database port number. The default value is <b>8000</b> . To obtain the database port, click the instance name on the <b>Instances</b> page to go to the <b>Basic Information</b> page of the instance. The database port can be founded in the <b>Database Port</b> field of the <b>Network</b> <b>Information</b> area.
<database></database>	Name of the database to connect to. The default database is <b>postgres</b> .
<user></user>	Username of the GaussDB database account. The default administrator is <b>root</b> .
<i><ca-file- directory&gt;</ca-file- </i>	Directory of the CA certificate for SSL connection.
<sslmode></sslmode>	SSL connection mode. Set it to <b>verify-ca</b> to verify that the server is trustworthy by checking the certificate chain.

For more information about gsql commands, see **Tool Reference**.

7. Check the command output after you log in to the database. If information similar to the following is displayed, the SSL connection has been established. SSL connection (cipher: DHE-RSA-AES256-GCM-SHA384, bits: 256)

#### Follow-up Operations

After logging in to the instance, you can create alarm rules, set automated backup policies, create databases, and migrate data. For details, see:

- Creating an Alarm Rule
- Setting an Automated Backup Policy
- Creating a Database Using SQL
- Creating a Database Through an API
- Managing GaussDB Databases Through DAS
- Migrating Data to GaussDB

# **3** GaussDB Common Practices

After buying and connecting to a GaussDB instance, you can use GaussDB as required by referring to the common practices provided in this section.

Practice		Description
Developmen t and design proposal	Database Object Naming Conventions	This practice describes the restrictions on naming database objects.
	Database Object Design	This practice describes the principles for designing databases, schemas, tables, fields, constraints, views, and joined tables.
	Tool Interconnection	This practice describes notes about configuring tools.
	SQL Compilation	This practice describes the principles for performing DDL operations, loading and unloading data, converting types, and performing queries.
Database usage	Creating a Database Account	This practice describes how to use CREATE USER and ALTER USER to create and manage database users, respectively. Data is not shared between users.
	Creating and Managing Databases	This practice describes how to use CREATE DATABASE and ALTER DATABASE to create and manage database users, respectively.

Table 3-1 Common best practices of GaussDB

Practice		Description
	Creating and Managing Tablespaces	The administrator can use tablespaces to control the layout of disks where a database is installed. This practice describes how to use SQL syntax to create and manage tablespaces.
	Creating and Managing Tables	A table is created in a database and can be stored in different databases. Tables under different schemas in a database can have the same name. This practice describes how to use SQL syntax to create tables.
	Querying System Catalogs	In addition to the created tables, GaussDB contains many system catalogs. These system catalogs contain information about instance installation as well as the queries and processes running in GaussDB. This practice describes how to collect information about the databases by querying system catalogs.
Data migration	Using DRS to Migrate Data from Oracle Database to GaussDB	This practice describes how to use DRS to migrate data from Oracle databases to GaussDB.
Data backup	Configuring an Automated Backup Policy	This practice describes how to enable the system to automatically create backups for a DB instance during a backup window and save the backups based on the configured retention period.
	Creating a Manual Backup	This practice describes how to create manual backups for a DB instance. These backups can be used to restore data for improved reliability.
	Deleting a Manual Backup	You can delete manual backups for instances and tables to release storage space. This practice describes how to delete manual backups of an instance.
Data restoration	Restoring a Backup File to a GaussDB Instance	This practice describes how to use an automated or manual backup to restore a DB instance to how it was when the backup was created. The restoration is at the instance level.

Practice		Description
	Restoring a GaussDB Instance to a Specific Point in Time	This practice describes how to use an automated backup to restore instance data to a specified point in time.