

GaussDB

Getting Started

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1 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](#).

Procedure

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 Go to the [Buy DB Instance](#) page.

Step 2 On the **Buy DB Instance** page, click the **Custom Config** tab, select a billing mode, enter an instance name, and set basic instance parameters such as the edition type, DB engine version, DB instance type, and deployment model.

Figure 1-1 Basic Settings

The screenshot shows the 'Buy DB Instance' page with the 'Custom Config' tab selected. Under 'Basic Settings', the 'Billing Mode' is set to 'Pay-per-use'. The 'Region' is set to 'cn' and the 'Project' is set to ' '. A note states: '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 quick resource access, select the nearest region.'

Figure 1-2 Instance Configuration

Instance Configuration

DB Instance Name (?)

gauss-d0a7

Edition Type

Enterprise edition

Basic edition

DB Engine Version

V2.0-8.218

V2.0-8.210

V2.0-8.201

The current engine uses Huawei Cloud EulerOS by default. A DR relationship cannot be created between instances using this engine and those running EulerOS.

DB Instance Type

Distributed

Centralized

Deployment Model (?)

1 primary + 2 standby

Single

1 primary + 1 standby + 1 log

Replica Consistency Protocol (?)

Quorum

Paxos

AZ

az1

az2

az3

az4

Only one or three AZs can be selected.

Table 1-1 Parameters

Parameter	Example Value	Description
Billing Mode	Pay-per-use	GaussDB provides yearly/monthly billing and pay-per-use billing. ● 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. For distributed instances using the combined deployment model, yearly/monthly billing is only available to authorized users. To apply for the permissions needed, submit a service ticket. ● Pay-per-use: 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 Project	CN-Hong Kong	Region where the tenant is located. 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 Basic edition 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 Differences Between the Basic and Enterprise Editions of GaussDB Instances.
DB Engine Version	V2.0-8.218	GaussDB database version.

Parameter	Example Value	Description
DB Instance Type	Centralized	• Distributed: Distributed instances allow you to add nodes as needed to handle large volumes of concurrent requests. • Centralized: Centralized instances are good for small stable volumes of data, where data reliability and service availability are important.
Deployment Model	1 primary + 2 standby	• Distributed instances – Independent: Database components are deployed on different nodes. This model is good when high availability and stability are required and the instance scale is large. – Combined: Different database components are deployed on the same node. This model is only available for basic edition instances of V2.0-3.223 or later. Storage autoscaling is not supported by this model. • Centralized instances – HA (1 primary + 2 standby): 3-node deployment where there is one shard. The shard contains one primary DN and two standby DNs. – Single: single-node deployment where there is only one CMS component and one DN. This model is only available for instances of V2.0-2.2 or later. This single-node deployment cannot guarantee service availability (SLA) and is not suitable for production environments. It is only recommended for R&D and testing purposes. – 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 (also known as the log node). This model is only available for instances of V2.0-3.200 or later. This option is available only when Resource Type is set to Elastic Cloud Server (ECS).

Parameter	Example Value	Description
AZ	AZ1	An AZ is a physical region where resources have independent power supply and networks. AZs are physically isolated but interconnected through an internal network.

Step 3 Configure instance specifications.

Figure 1-3 Resource Configuration

Resource Configuration

Instance Specifications ⓘ

Dedicated(1:8)

Kunpeng dedicated(1:4)

Dedicated(1:4)

Dedicated(1:16)

vCPUs Memory	IPv6
☒ 4 vCPUs 16 GB	Supported
☐ 8 vCPUs 32 GB	Supported
☐ 16 vCPUs 64 GB	Supported
☐ 24 vCPUs 96 GB	Supported
☐ 32 vCPUs 128 GB	Supported
☐ 64 vCPUs 256 GB	Supported

DB Instance Specifications **Dedicated(1:4) | 4 vCPUs | 16 GB**

Storage Type ⓘ

Ultra-high I/O

Extreme SSD

Storage Space (GB) ⓘ

40

40 4800 9600 14320 24000

40 +

GaussDB provides free backup storage equal to the amount of your purchased storage space. After the free backup space is used up, charges are applied based on the [backup space pricing details](#).

If too little storage is configured, when traffic volume is high, the storage can be used up quickly, and the instance will change to read-only. Select an amount of storage based on how much traffic you expect there to be.

If a small amount of storage is selected, ensure that the checkpoint_segments and wal_keep_segments parameters meet the following requirements: (checkpoint_segments x 2 + wal_keep_segments) x 16 (MB) ≤ Storage space (GB) x datastorage_threshold_value_check x 0.5

Free Backup Space

ⓘ GaussDB provides 40 GB of free backup storage equal to the amount of your purchased storage space. After the free space is used up, you will be billed for the additional space on a Pay-per-use basis. After a DB instance is created, an automated backup will be created and remained for seven days by default. You can change its retention period.

Disk Encryption ⓘ

Disable

Enable ⓘ

Transparent Data Encryption ⓘ

Disable

Enable ⓘ

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.

Parameter	Example Value	Description
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 createGrant . Only the key owner can receive this event.
Transparent Data Encryption	Disable	• Disable: Encryption is disabled. • Enable: Encryption is enabled, which improves data security but affects system performance. If you select Enable, the Key Name parameter is displayed. You can select an existing key or create a new one as the tenant key.

Step 4 Retain the default settings for the network information.

Figure 1-4 Network Configuration

Network Configuration

Relationship among VPCs, subnets, security groups, and DB instances: ⓘ

VPC ⓘ

default_vpc ▼ ⓘ default_subnet(192.168.0.0/24) ▼ ⓘ

If you want to create a VPC, go to [the VPC console](#).

The subnet your DB instance will be deployed on cannot be changed later. Make sure it has enough private IP addresses available for future scale-ups. Available private IP addresses in the selected subnet: 0

Security Group ⓘ

default ▼ ⓘ [View Security Groups](#) ⓘ

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 rules of the selected security group contain 8000-8100, 20050, 5000-5001, 2379-2380, 6000, 6500.

Security Group Rules ▼ [Set Rule](#)

Database Port

8000

Single Private IP Address

☐

The single private IP address policy is disabled by default, but you can enable it if you want to create an instance with only one private IP address. Instances with this policy enabled do not support IPv6.

Step 5 Configure the instance password and enterprise project.

Figure 1-5 Instance Management

Instance Management

Administrator

root

Administrator Password

Keep your password secure. The system cannot retrieve your password.

Confirm Password

Figure 1-6 Additional Options

Additional Options

Parameter Template

Default-Enterprise-Edition-GaussDB-V2.0...

View Parameter Templates

Enterprise Project

default

View Enterprise Projects

Time Zone

(UTC+08:00) Beijing, Chongqing, Hong K...

Table Names in M-compatible Databases

Case-sensitive

Case-insensitive

This option cannot be changed later.

Tag

TMS's predefined tags are recommended for adding the same tag to different cloud resources.

Create predefined tags

+ Add

Tags you can still add: 20

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 Enterprise Project drop-down list. You can also go to the Enterprise Project Management console to create a project. For details, see Enterprise Management User Guide .
Time Zone	(UTC+08:00) Beijing, Chongqing, Hong Kong, Urumqi	Select a time zone according to the region hosting your DB instance when you buy the instance.
Table Names in M-compatible Databases	-	This parameter controls the case sensitivity of table names in an M-compatible database. The table names here also include table aliases and the names of user views, schemas (internal databases), as well as the names of columns related to these objects in the information_schema system view. NOTICE • The case sensitivity of M-compatible table names can only be configured during the creation of an instance and cannot be changed afterward. The default value is Case-sensitive. • To prevent operation failures, keep this setting consistent for both instances involved in the following operations: setting up a DR relationship, restoring data from a backup, importing and exporting data, and logical decoding. • This parameter is only available for centralized instances of version V2.0-8.203 or later.

Step 6 Click **Next**, confirm the instance information, and click **Submit**.

Step 7 Go to the instance list.

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

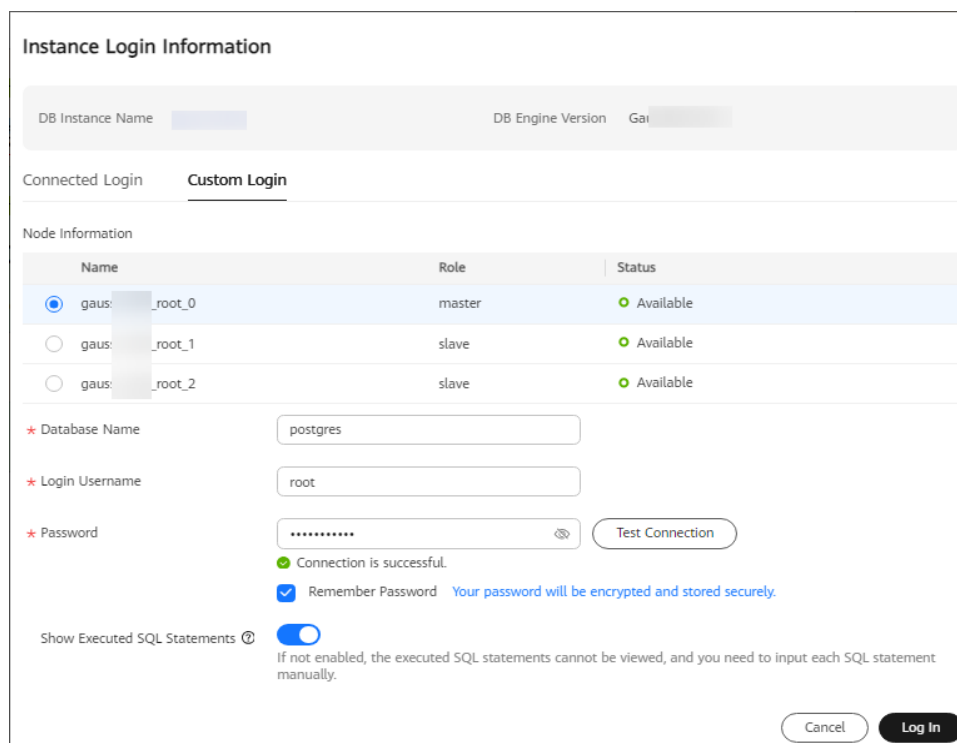
----End

Logging In to a GaussDB Instance Through DAS

Step 1 [Log in to the management console](#).

Step 2 Click  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 1-7 Login page**Table 1-4** Parameters

Parameter	Example Value	Description
Login Username	root	Username of the GaussDB database account. The default administrator is root .
Database Name	postgres	Name of the database to be connected. The default management database is postgres .
Password	-	Password of the database user.

Parameter	Example Value	Description
Show Executed SQL Statements	Enabled	You are advised to enable Show Executed SQL Statements . With it enabled, you can view the executed SQL statements under SQL Operations > SQL History 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.

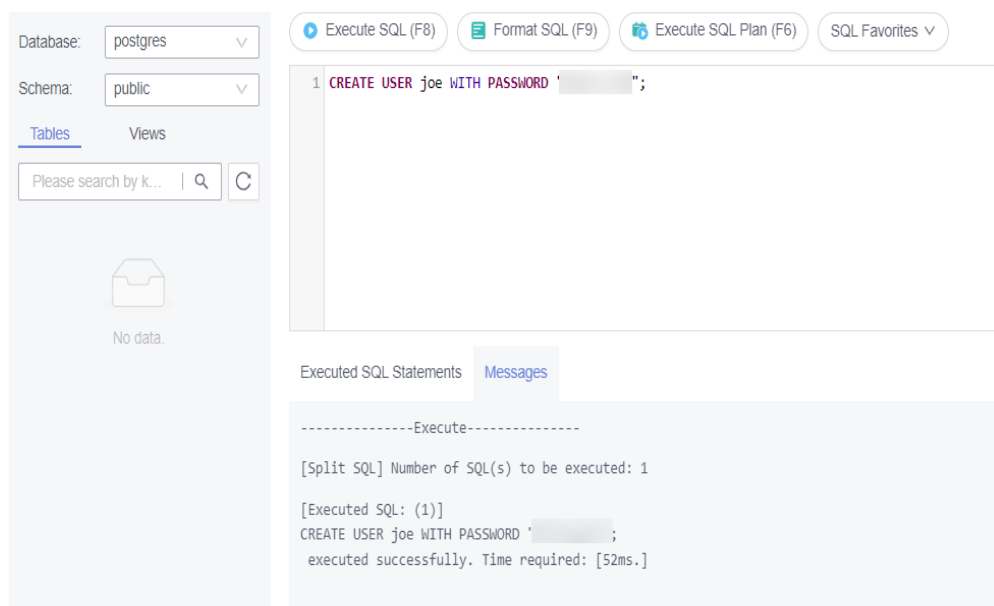
Step 1 Create a database user.

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 "xxxxxxx";
```

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

Figure 1-8 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](#).

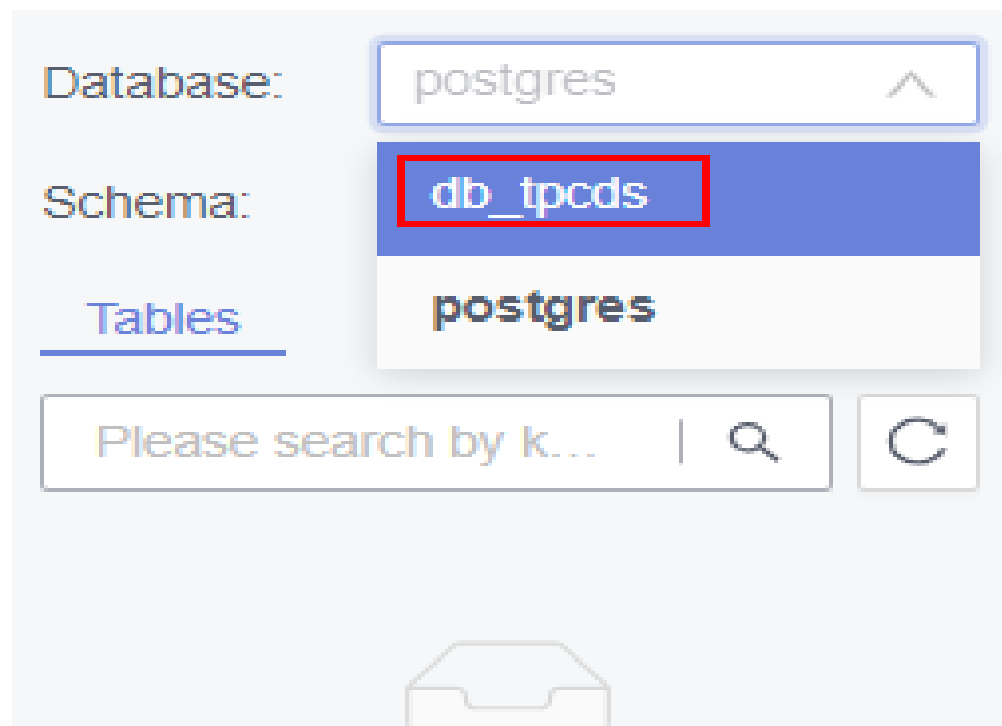
Step 2 Create a database.

```
CREATE DATABASE db_tpcds;
```

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

Figure 1-9 Creating a database

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

Figure 1-10 Switching to the new database**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 1-11 Inserting and verifying data



----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 Go to the [Buy DB Instance](#) page.

Step 2 On the **Buy DB Instance** page, click the **Custom Config** tab, select a billing mode, enter an instance name, and set basic instance parameters such as the edition type, DB engine version, DB instance type, and deployment model.

Figure 2-1 Basic Settings

The screenshot shows the 'Buy DB Instance' page with the 'Custom Config' tab selected. Under 'Basic Settings', the 'Billing Mode' is set to 'Pay-per-use'. The 'Region' is set to 'cn' and the 'Project' is set to ' '. A note states: '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 quick resource access, select the nearest region.'

Figure 2-2 Instance Configuration

Instance Configuration

DB Instance Name (?)

gauss-d0a7

Edition Type

Enterprise edition

Basic edition

DB Engine Version

V2.0-8.218

V2.0-8.210

V2.0-8.201

The current engine uses Huawei Cloud EulerOS by default. A DR relationship cannot be created between instances using this engine and those running EulerOS.

DB Instance Type

Distributed

Centralized

Deployment Model (?)

1 primary + 2 standby

Single

1 primary + 1 standby + 1 log

Replica Consistency Protocol (?)

Quorum

Paxos

AZ

az1

az2

az3

az4

Only one or three AZs can be selected.

Table 2-1 Parameters

Parameter	Example Value	Description
Billing Mode	Pay-per-use	GaussDB provides yearly/monthly billing and pay-per-use billing. • 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. For distributed instances using the combined deployment model, yearly/monthly billing is only available to authorized users. To apply for the permissions needed, submit a service ticket. • Pay-per-use: 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 Project	CN-Hong Kong	Region where the tenant is located. 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 Basic edition 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 Differences Between the Basic and Enterprise Editions of GaussDB Instances.
DB Engine Version	V2.0-8.218	GaussDB database version.

Parameter	Example Value	Description
DB Instance Type	Centralized	• Distributed: Distributed instances allow you to add nodes as needed to handle large volumes of concurrent requests. • Centralized: Centralized instances are good for small stable volumes of data, where data reliability and service availability are important.
Deployment Model	1 primary + 2 standby	• Distributed instances – Independent: Database components are deployed on different nodes. This model is good when high availability and stability are required and the instance scale is large. – Combined: Different database components are deployed on the same node. This model is only available for basic edition instances of V2.0-3.223 or later. Storage autoscaling is not supported by this model. • Centralized instances – HA (1 primary + 2 standby): 3-node deployment where there is one shard. The shard contains one primary DN and two standby DNs. – Single: single-node deployment where there is only one CMS component and one DN. This model is only available for instances of V2.0-2.2 or later. This single-node deployment cannot guarantee service availability (SLA) and is not suitable for production environments. It is only recommended for R&D and testing purposes. – 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 (also known as the log node). This model is only available for instances of V2.0-3.200 or later. This option is available only when Resource Type is set to Elastic Cloud Server (ECS).

Parameter	Example Value	Description
AZ	AZ1	An AZ is a physical region where resources have independent power supply and networks. AZs are physically isolated but interconnected through an internal network.

Step 3 Configure instance specifications.

Figure 2-3 Resource Configuration

Resource Configuration

Instance Specifications ⓘ

Dedicated(1:8) Kumpeng dedicated(1:4) **Dedicated(1:4)** Dedicated(1:16)

vCPUs Memory	IPv6
☒ 4 vCPUs 16 GB	Supported
☐ 8 vCPUs 32 GB	Supported
☐ 16 vCPUs 64 GB	Supported
☐ 24 vCPUs 96 GB	Supported
☐ 32 vCPUs 128 GB	Supported
☐ 64 vCPUs 256 GB	Supported

DB Instance Specifications Dedicated(1:4) | 4 vCPUs | 16 GB

Storage Type ⓘ

Ultra-high I/O Extreme SSD

Storage Space (GB) ⓘ

40

40 4800 9600 14320 24000 - 40 +

GaussDB provides free backup storage equal to the amount of your purchased storage space. After the free backup space is used up, charges are applied based on the [backup space pricing details](#).

If too little storage is configured, when traffic volume is high, the storage can be used up quickly, and the instance will change to read-only. Select an amount of storage based on how much traffic you expect there to be.

If a small amount of storage is selected, ensure that the `checkpoint_segments` and `wal_keep_segments` parameters meet the following requirements: $(\text{checkpoint_segments} \times 2 + \text{wal_keep_segments}) \times 16 \text{ (MB)} \leq \text{Storage space (GB)} \times \text{datastorage_threshold_value_check} \times 0.5$

Free Backup Space

ⓘ GaussDB provides 40 GB of free backup storage equal to the amount of your purchased storage space. After the free space is used up, you will be billed for the additional space on a Pay-per-use basis. After a DB instance is created, an automated backup will be created and remained for seven days by default. You can change its retention period.

Disk Encryption ⓘ

Disable Enable ⓘ

Transparent Data Encryption ⓘ

Disable Enable ⓘ

Table 2-2 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.

Parameter	Example Value	Description
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 createGrant . Only the key owner can receive this event.
Transparent Data Encryption	Disable	• Disable: Encryption is disabled. • Enable: Encryption is enabled, which improves data security but affects system performance. If you select Enable, the Key Name parameter is displayed. You can select an existing key or create a new one as the tenant key.

Step 4 Retain the default settings for the network information.

Figure 2-4 Network Configuration

Network Configuration

Relationship among VPCs, subnets, security groups, and DB instances: ⓘ

VPC ⓘ

ⓘ

If you want to create a VPC, go to [the VPC console](#).

The subnet your DB instance will be deployed on cannot be changed later. Make sure it has enough private IP addresses available for future scale-ups. Available private IP addresses in the selected subnet: 0

Security Group ⓘ

ⓘ [View Security Groups](#)

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 rules of the selected security group contain 8000-8100, 20050, 5000-5001, 2379-2380, 6000, 6500.

Security Group Rules

Database Port

Single Private IP Address

☐

The single private IP address policy is disabled by default, but you can enable it if you want to create an instance with only one private IP address. Instances with this policy enabled do not support IPv6.

Step 5 Configure the instance password and enterprise project.

Figure 2-5 Instance Management

Instance Management

Administrator

root

Administrator Password

Keep your password secure. The system cannot retrieve your password.

Confirm Password

Figure 2-6 Additional Options

Additional Options

Parameter Template

Default-Enterprise-Edition-GaussDB-V2.0...

View Parameter Templates

Enterprise Project

default

View Enterprise Projects

Time Zone

(UTC+08:00) Beijing, Chongqing, Hong K...

Table Names in M-compatible Databases

Case-sensitive

Case-insensitive

This option cannot be changed later.

Tag

TMS's predefined tags are recommended for adding the same tag to different cloud resources.

Create predefined tags

+ Add

Tags you can still add: 20

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 Enterprise Project drop-down list. You can also go to the Enterprise Project Management console to create a project. For details, see Enterprise Management User Guide .
Time Zone	(UTC+08:00) Beijing, Chongqing, Hong Kong, Urumqi	Select a time zone according to the region hosting your DB instance when you buy the instance.
Table Names in M-compatible Databases	-	This parameter controls the case sensitivity of table names in an M-compatible database. The table names here also include table aliases and the names of user views, schemas (internal databases), as well as the names of columns related to these objects in the information_schema system view. NOTICE - The case sensitivity of M-compatible table names can only be configured during the creation of an instance and cannot be changed afterward. The default value is Case-sensitive. - To prevent operation failures, keep this setting consistent for both instances involved in the following operations: setting up a DR relationship, restoring data from a backup, importing and exporting data, and logical decoding. - This parameter is only available for centralized instances of version V2.0-8.203 or later.

Step 6 Click **Next**, confirm the instance information, and click **Submit**.

Step 7 Go to the instance list.

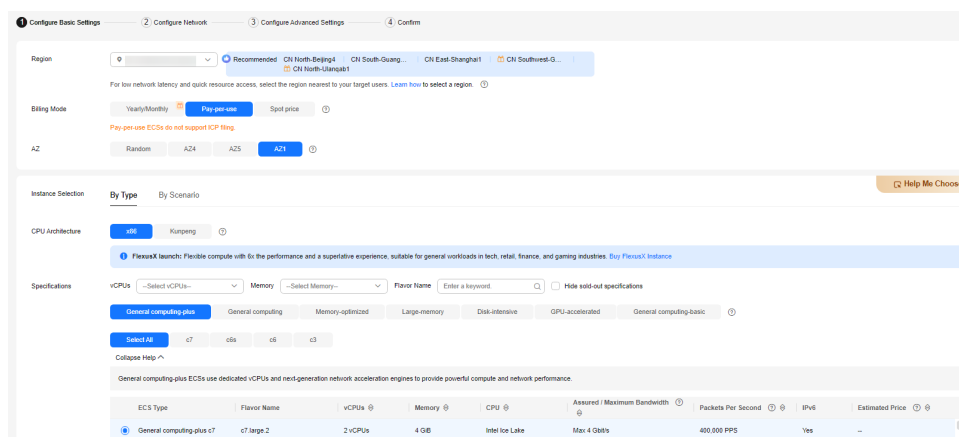
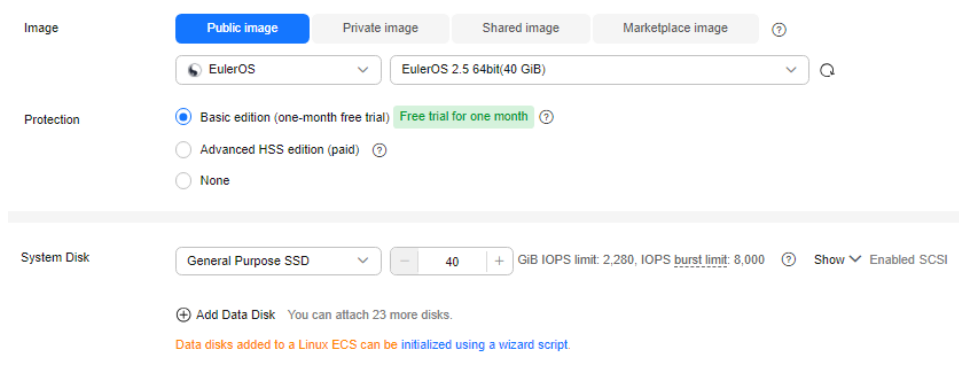
If status of the instance becomes **Available**, the instance has been created.

----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 2-7 Basic settings**Figure 2-8 Selecting an image**

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 2-9 Network configuration

The screenshot shows the 'Configure Network' step in the ECS console. The 'Network' section is set to 'default_vpc' and 'default_subnet'. The 'Extension NIC' section has 'Add NIC' set to '1'. The 'Source/Destination Check' is enabled. The 'Security Group' section is set to 'default'. Below this, there is a table of 'Security Group Rules'.

Security Group Name	Priority	Action	Protocol & Port	Type	Source	Description
default	1	Permit	TCP: 3389	IPv4	0.0.0.0	Permit default Windows remote des...
default	1	Permit	TCP: 22	IPv4	0.0.0.0	Permit default Linux SSH port.
default	100	Permit	All	IPv6	default	-
default	100	Permit	All	IPv4	default	-

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.

Figure 2-10 Advanced settings

The screenshot shows the 'Configure Advanced Settings' step in the ECS console. The 'ECS Name' is 'ecs-7ed6'. The 'Description' is empty. The 'Login Mode' is 'Password'. The 'Username' is 'root'. The 'Password' and 'Confirm Password' fields are masked. The 'Cloud Backup and Recovery' section has 'Not required' selected. The 'ECS Group' section has 'Anti-affinity' selected. The 'Advanced Options' section has 'Configure now' selected.

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.

Table 2-4 Driver package download list

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

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
```

- d. 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
```

- e. 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**.

- On the **Instances** page, click the name of the target instance. In the **Configuration** area on the **Basic Information** page, click  next to the **SSL** field to download the root certificate or certificate bundle.
- 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?](#)

- 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:

Table 2-5 Parameter description

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

Table 3-1 Common best practices of GaussDB

Practice		Description
Development 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.

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.