Relational Database Service

Getting Started

 Issue
 01

 Date
 2024-12-30





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Getting Started with RDS for MySQL

1.1 Buying a DB Instance and Connecting to It Using the mysql Client

After buying a DB instance, you can connect to it using a Linux ECS with the mysql client installed over a private network. This section describes how to access a DB instance from an ECS using the mysql client.

This section introduces how to connect to a DB instance with SSL disabled. To connect to a DB instance with SSL enabled, see Using MySQL CLI to Connect to an Instance Through a Private Network.

Operation Process

Process	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 RDS permissions.
Step 1: Buy an RDS for MySQL DB Instance	Select required basic settings and additional options and buy an RDS for MySQL DB instance.
Step 2: Buy an ECS	If you want to use the mysql client to connect to a DB instance, you need to prepare a server, install the mysql client on the server, and run the connection command. Purchase a Linux ECS that is in the same region and
	VPC as your DB instance. If you have purchased a Windows ECS, you can connect
	to the DB instance using MySQL-Front. For details, see Buying a DB Instance and Connecting to It Using MySQL-Front.

Process	Description
Step 3: Test Connectivity and Install the mysql Client	Test the network connectivity between the ECS and the floating IP address and port of the DB instance, and install the mysql client on the ECS.
Step 4: Connect to the DB Instance Using Commands (Non-SSL Connection)	Use a command-line interface (CLI) to connect to the DB instance using the floating IP address and port.

Preparations

- 1. Sign up for a HUAWEI ID and enable Huawei Cloud services.
- 2. Before purchasing DB instances, ensure that your account balance is sufficient. **Top up your account** if required.
- 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**.

Step 1: Buy an RDS for MySQL DB Instance

- 1. Go to the **Buy DB Instance** page.
- 2. On the **Quick Config** page, set basic parameters.

NOTE

Only mandatory parameters are provided on the **Quick Config** page. If the available parameters do not match your workloads, try **Custom Config**.

The following parameter settings are only for reference.

Figure 1-1 Basic Settings

sic Settings					
ng Mode 🧿					
Yearly/Monthly Pay	y-per-use				
ion ⊘					
CN-Hong Kong	~				
ions are geographic areas is	solated from each other. For low network la	itency and quick r	esource access, select the	nearest region.	
gine Options					
ance Presifications					
ance opecifications					
			•		
RDS for MySQL		F	▼ PostgreSQL		
RDS for MySQL For study and practice,	small websites or applications, and .	F	PostgreSQL	cation-based applications, comple	e
RDS for MySQL For study and practice, DB Engine Version	small websites or applications, and .	F 8.0 D	PostgreSQL For study and practice, lo B Engine Version	cation-based applications, comple	e 16
RDS for MySQL For study and practice, DB Engine Version DB Instance Type	small websites or applications, and . Primary/Standby	F 8.0 C	PostgreSQL For study and practice, lo B Engine Version B Instance Type	cation-based applications, comple Primary/Standby	e 16 ~
RDS for MySQL For study and practice, DB Engine Version DB Instance Type Instance Class	small websites or applications, and . Primary/Standby General-purpose 2U 4G	F 8.0 C ~ C	PostgreSQL for study and practice, ic DB Engine Version DB Instance Type	cation-based applications, comple Primary/Standby General-purpose 4U 8G	e 16 ~
RDS for MySQL For study and practice, DB Engine Version DB Instance Type Instance Class Storage	small websites or applications, and Primary/Standby General-purpose 2U 4G Cloud SSD 100GB	F 8.0 D Ir S	PostgreSQL for study and practice, lo B Engine Version B Instance Type Instance Class	cation-based applications, comple Primary/Standby General-purpose 4U 8G Cloud SSD 100GB	e 16 ~ ~
RDS for MySQL For study and practice, DB Engine Version DB Instance Type Instance Class Storage	small websites or applications, and . Primary/Standby General-purpose 2U 4G Cloud SSD 100GB	F 8.0 C V Ir V S	PostgreSQL For study and practice, lo DB Engine Version DB Instance Type Instance Class storage	cation-based applications, comple Primary/Standby General-purpose 4U 8G Cloud SSD 100GB	e 16 ~ ~
RDS for MySQL For study and practice, DB Engine Version DB Instance Type Instance Class Storage	small websites or applications, and Primary/Standby General-purpose 2U 4G Cloud SSD 100GB		PostgreSQL For study and practice, lo DB Engine Version DB Instance Type Instance Class storage	cation-based applications, comple Primary/Standby General-purpose 4U 8G Cloud SSD 100GB	e 16 ~ ~
RDS for MySQL For study and practice, DB Engine Version DB Instance Type Instance Class Storage	small websites or applications, and . Primary/Standby General-purpose 2U 4G Cloud SSD 100GB	F 8.0 C ~ C ~ Ir ~ S	PostgreSQL For study and practice, lo DB Engine Version DB Instance Type Instance Class Storage	cation-based applications, comple Primary/Standby General-purpose 4U 8G Cloud SSD 100GB	e 16 ~ ~

RDS provides 100 GB of free backup storage, the same size as your purchased storage space.

Parameter	Example Value	Description
Billing Mode	Pay-per-use	The billing mode of an instance.
		• Yearly/Monthly: A prepaid billing mode in which you pay for resources before using it. Bills are settled based on the subscription period. The longer the subscription, the bigger the discount. This mode is a good option for long-term, stable services.
		• Pay-per-use : A postpaid billing mode. You pay as you go and just pay for what you use. The DB instance usage is calculated by the second but billed every hour. This mode allows you to adjust resource usage easily. You neither need to prepare for resources in advance, nor end up with excessive or insufficient preset resources.
Region	CN-Hong Kong	The region where your resources are located. NOTE Products in different regions cannot communicate with each other through a private network. After a DB instance is created, the region cannot be changed. Therefore, exercise caution when selecting a region.
DB Engine Version	8.0	The database version.
DB Instance	Primary/	The architecture type of an instance.
Туре	Standby	Primary/Standby : An HA architecture. In a primary/standby pair, each instance has the same instance class. When a primary instance is being created, a standby instance is provisioned along with it to provide data redundancy. The standby instance is invisible to you after being created.
Instance Class	General- purpose 2U 4G	The vCPU and memory of an instance.
Storage	Cloud SSD	The storage space of an instance.
	100GB	It contains the system overhead required for inodes, reserved blocks, and database operation.

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 events are createdatakey and decrydatakey . Only the key owner can receive the events.

3. Complete advanced configurations.

Figure 1-2 Additional Options

✓ Additional Op	otions					
VPC: default_vpc	Subnet: default_subnet	IPv4 Address:	Database Port:	Security Group: default	Enterprise Project: default	Table Name: Case insensitive
Required Duratio	on and Quantity					
Quantity						
- 1 +						
You can create 50 m	ore instances (read replica	s included). Increas	e Quota			

Parameter	Example Value	Description
VPC	vpc-default	The virtual network in which your instance is located. A VPC can isolate networks for different workloads.
		If no VPC is available, click Create VPC .
		After a VPC is created, click \bigcirc . For details, see Creating a VPC and Subnet .
Subnet	subnet- default	A subnet provides dedicated network resources that are logically isolated from other networks for network security.
Security Group	default	It can enhance security by controlling access to RDS for MySQL from other services.
Enterprise Project	default	If your account has been associated with an enterprise project, select the target project from the Enterprise Project drop-down list.
		For more information about enterprise projects, see <i>Enterprise Management User Guide</i> .

Parameter	Example Value	Description
Table Name	Case insensitive	Whether table names are case sensitive. Restoration may fail if the case sensitivity settings of table names on the source and target instances are different.
		The case sensitivity of table names for created RDS for MySQL 8.0 instances cannot be changed.
Quantity	1	The number of instances to be created in a batch.

- 4. Click **Buy**.
- 5. Check the purchased DB instance.

Figure 1-3 Instance successfully purchased

Renew Unsubscribe Change to	Yearly/Monthly	More ~	Export									
○ DB Engine: MySQL × Add filter											× (e)	0
Name/ID 😔	Descr 🖯	DB In \varTheta	DB En \varTheta	Status 😔	Billin 🔶	Floati \ominus	Privat 🔶	Read/ \ominus	Enter \ominus	Creater	Operation	
rds-1096 36c2e55bccd149ecb19086030e6955bfin01	-	Primary/S 2 vCPUs	MySQL 8	O Available	Pay-per-use Created o	192	36c2		default	Sep 24	View Metrics $~\rm Log~In~More~\sim$	
Total Records: 1											10 ~	< 1 >

Step 2: Buy an ECS

- 1. Go to the Elastic Cloud Server console.
- 2. Check whether there is a Linux ECS.
 - If yes, go to 3.
 - If no, purchase an ECS and select Linux (for example, CentOS) as its OS.

To download the mysql client to the ECS, bind an EIP to the ECS. The ECS must be in the same region, VPC, and security group as the RDS for MySQL DB instance for mutual communications.

For details about how to purchase a Linux ECS, see **Purchasing a Custom ECS** in *Elastic Cloud Server User Guide*.

 If there is only a Windows ECS, you can use MySQL-Front to connect to the DB instance. For details, see Buying a DB Instance and Connecting to It Using MySQL-Front.

Figure 1-4 ECS

My ECSs: CN North-Beijing4 (1)												Q
Start Stop Re	estart	Reset Pass	word	are ~)	Export ~							
Q. Search or filter by name.												00
Name/ID 😔	Monit	Se	Status 😔	AZ 🖯	Specifications/Image ⊖	OS Type 😔	IP Address \ominus	Billing Mode \ominus	Enterprise Proj 😔	Tag ⊖	Operation	
ecs-4556 0a1004cd-3262-4750-8		٠	Running	AZ7	2 vCPUs 4 GiB c7.large.2 CentOS 8.2 64bit	Linux	192.168.0.111 (Pay-per-use Created on Sep 13,	default	**	Remote Login	More 🗸

3. Check whether the ECS and RDS for MySQL instance are in the same region and VPC.

Figure 1	-5 Overview			
< 🚫 rds-5c07	O Available			⊕ Log In @ Reset Password ۞ Reboot … Q
Overview				
Backups & Restorations	Instance Information			
Connectivity & Security	Davis Information			
Accounts	Basic Information			
Databases	DB Instance Name	DB Instance ID	Description	Maintenance Window
Logs	rds-5c07 & 🗆	64d754177e804874b16d860156a48cbbin01	- 22	02:00 - 06:00 (GMT+08:00) Configure (?)
SQL Audits	SSL	Administrator	Enterprise Project	Fallover Priority
Parameters	Disabled Enable Download	root Reset Password	default	Reliability Configure
Advanced O&M	AZ			
DBA Assistant V	cn-north-4a (Primary AZ), cn-north-4a (Standby AZ)			
Tags	Configurations			
Database Proxy	DB Engine Version	DB Instance Type	Instance Class	Storage
Memory Acceleration	MySQL 8.0.28 Upgrade Minor Version	Primary/Standby Switch	rds.mysql.n1.large.2.ha 2 vCPUs 4 GB (General- purpose) Configure	Cloud SSD 100 GB Scale Storage Space
	Replication Mode	Event Scheduler	Read/Write	
	Semi-synchronous Configure	Disabled Enable 🕥	Permissions Read/write Configure	
	Connectivity			
	Floating IP Address	Private Domain Name	VPC	Database Port
	192.168.0.137 🗇 Configure	64d754177e804874b16d950156a48cbbin01.internal.cn-Config north-4.mysql.rds.myhuaiweicloud.com	gur default_vpc 🕑	3306 Configure
	Subnet	Recommended Max.	Security Group	Read/Write Splitting
	default_subnet(192.168.0.0/24) 📑	Connections	1 security group Manage	Address
		4,000		- Apply
	Billing			
	Billing Mode	Created		
	Pay-per-use Configure	Sep 11, 2024 14:48:55 GMT+08:00		
			^ Hide	

- If they are not in the same region, purchase another ECS. The ECS and DB instance in different regions cannot communicate with each other. To reduce network latency, deploy your DB instance in the region nearest to your workloads.
- If the ECS and DB instance are in different VPCs, change the VPC of the ECS to that of the DB instance. For details, see **Changing a VPC**.

Step 3: Test Connectivity and Install the mysql Client

- 1. Log in to the ECS. For details, see **Login Using VNC** in the *Elastic Cloud Server User Guide*.
- 2. On the **Instances** page of the RDS console, click the DB instance name.
- 3. Choose **Connectivity & Security** from the navigation pane. In the **Connection Information** area, obtain the floating IP address and database port of the DB instance.

Figure 1-6 Connection information

< style="text-style-type: square; color: blue;">					
Overview					
Backups & Restorations	Connection Information				
Connectivity & Security	Floating IP Address	192.168.0.137 🗇 Change			
Accounts					
Databases	EIP	No EIP bound Bind			
Logs		_			
SQL Audits	Database Port	3306 Change			
Parameters					

4. On the ECS, check whether the floating IP address and database port of the DB instance can be connected.

telnet 192.168.6.144 3306

- If yes, network connectivity is normal.
- If no, check the security group rules.
 - Check the outbound rules of the ECS security group. By default, all outgoing network traffic is allowed.

If not all outgoing traffic is allowed, add an outbound rule for the floating IP address and port of the DB instance.

Figure 1-7 ECS security group

ecs-4556 ammany Disks Network Interfaces Security Groups	EIPs Monitoring 1	lags Cloud Back	up and Recovery	Host Security Load Balar	@ Fi	endback State Stop Rest	art Mon - Romon Login G
(192,188.0.111 (primary)							
Al (1) Crystes Charge Security Group	Security droup Rules Inbound Rules Outbound	Rules					
	Security Group Name	Priority	Action	Protocol & Port (1)	Type	Destination ()	Description
		100	Alov	AL	Pv4	AL	-
	oesat	100	Allow	м	IPv6	А	-

- If in the security group of the DB instance, there is no inbound rule allowing the access from the private IP address and port of the ECS, add an inbound rule for the private IP address and port of the ECS. For details, see Configuring a Security Group Rule.
- 5. Download the mysql client installation package for Linux to the ECS. The package **mysql-community-client-8.0.28-1.el6.x86_64.rpm** is used as an example.

wget https://dev.mysql.com/get/mysql-communityclient-8.0.28-1.el6.x86_64.rpm

NOTE

A mysql client running a version later than that of the DB instance is recommended.

6. Install the mysql client.

rpm -ivh --nodeps mysql-community-client-8.0.28-1.el6.x86_64.rpm

NOTE

• If any conflicts occur during the installation, add the **replacefiles** parameter to the command and install the client again.

rpm -ivh --replacefiles mysql-community-client-8.0.28-1.el6.x86_64.rpm

• If a message is displayed prompting you to install a dependent package during the installation, add the **nodeps** parameter to the command and install the client again.

rpm -ivh --nodeps mysql-community-client-8.0.28-1.el6.x86_64.rpm

Step 4: Connect to the DB Instance Using Commands (Non-SSL Connection)

1. Run the following command on the ECS to connect to the DB instance:

mysql -h <*host*> -P <*port*> -u <*userName*> -p Example:

mysql -h 192.168.6.144 -P 3306 -u root -p

Table 1-1	Parameter	description
-----------	-----------	-------------

	-
Parameter	Description
<host></host>	Floating IP address obtained in 3 .
<port></port>	Database port obtained in 3 . The default value is 3306.
<username></username>	Administrator account root .

2. Enter the password of the database account if the following information is displayed: Enter password:

Figure 1-8 Connection successful



FAQ

What Should I Do If I Can't Connect to My RDS DB Instance?

Follow-up Operations

After logging in to the DB instance, you can create or migrate databases.

- Creating a MySQL Database Using the Console
- Creating a MySQL Database Using an API
- Managing MySQL Databases Using DAS
- Migrating Data to RDS for MySQL

1.2 Buying a DB Instance and Connecting to It Using MySQL-Front

After buying a DB instance, you can connect to it using a Windows ECS with MySQL-Front installed over a private network.

MySQL-Front is a Windows front end for MySQL databases. It allows you to interact with MySQL databases through a GUI, including connecting to a database, running SQL commands, and managing tables and records.

Operation Process

Process	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 RDS permissions.
Step 1: Buy an RDS for MySQL DB Instance	Select required basic settings and additional options and buy an RDS for MySQL DB instance.
Step 2: Buy an ECS	If you want to use MySQL-Front to connect to a DB instance, you need to prepare a server, install MySQL-Front on the server, and log in to the instance.
	Purchase a Windows ECS that is in the same region and VPC as your DB instance.
	If you have purchased a Linux ECS, you can connect to the DB instance using the mysql client. For details, see Buying a DB Instance and Connecting to It Using the mysql Client .
Step 3: Test Connectivity and Install MySQL-Front	Test the network connectivity between the ECS and the floating IP address and port of the DB instance, and install MySQL-Front on the ECS.
Step 4: Connect to the DB Instance Using MySQL-Front	Use MySQL-Front to connect to the DB instance using the floating IP address and port.

Preparations

- 1. Sign up for a HUAWEI ID and enable Huawei Cloud services.
- 2. Before purchasing DB instances, ensure that your account balance is sufficient. **Top up your account** if required.
- 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**.

Step 1: Buy an RDS for MySQL DB Instance

- 1. Go to the **Buy DB Instance** page.
- 2. On the **Quick Config** page, set basic parameters.

NOTE

Only mandatory parameters are provided on the **Quick Config** page. If the available parameters do not match your workloads, try **Custom Config**.

The following parameter settings are only for reference.

Figure 1-9 Basic Settings

sic Settings				
ng Mode 🗿				
Yearly/Monthly Pay	-per-use			
jion 🕐				
CN-Hong Kong	~			
ions are geographic areas is	olated from each other. For low network latenc	/ and quick resource access, select the	e nearest region.	
gine Options				
ance Specifications				
ance Specifications RDS for MySQL		PostgreSQL		
ance Specifications RDS for MySQL For study and practice, study and	small websites or applications, and	PostgreSQL For study and practice,	location-based applications, comple	<u></u>
RDS for MySQL For study and practice, s	small websites or applications, and 8.0	PostgreSQL For study and practice, DB Engine Version	location-based applications, comple	a 16
RDS for MySQL For study and practice, s DB Engine Version DB Instance Type	small websites or applications, and 8.0 Primary/Standby V	PostgreSQL For study and practice, DB Engine Version DB Instance Type	location-based applications, comple Primary/Standby	a 16 ❤
RDS for MySQL For study and practice, s DB Engine Version DB Instance Type Instance Class	small websites or applications, and 8.0 Primary/Standby v General-purpose 2U 4G v	PostgreSQL For study and practice, I DB Engine Version DB Instance Type Instance Class	location-based applications, comple Primary/Standby General-purpose 4U 8G	3 16 ~
RDS for MySQL For study and practice, s DB Engine Version DB Instance Type Instance Class Storage	small websites or applications, and 8.0 Primary/Standby ~ General-purpose 2U 4G ~ Cloud SSD 100GB ~	PostgreSQL For study and practice, I DB Engine Version DB Instance Type Instance Class Storage	location-based applications, comple Primary/Standby General-purpose 4U 8G Cloud SSD 100GB	2 16 ~ ~
RDS for MySQL For study and practice, s DB Engine Version DB Instance Type Instance Class Storage	small websites or applications, and 8.0 Primary/Standby ~ General-purpose 2U 4G ~ Cloud SSD 100GB ~	PostgreSQL For study and practice, DB Engine Version DB Instance Type Instance Class Storage	location-based applications, comple Primary/Standby General-purpose 4U 8G Cloud SSD 100GB	2 16 ~
Ance Specifications	small websites or applications, and 8.0 Primary/Standby ~ General-purpose 2U 4G ~ Cloud SSD 100GB ~	PostgreSQL For study and practice, DB Engine Version DB Instance Type Instance Class Storage	location-based applications, comple Primary/Standby General-purpose 4U 8G Cloud SSD 100GB	2 16 ~ ~

acrup Space

RDS provides 100 GB of free backup storage, the same size as your purchased storage space.

Parameter	Example Value	Description
Billing Mode	Pay-per-use	The billing mode of an instance.
		• Yearly/Monthly: A prepaid billing mode in which you pay for resources before using it. Bills are settled based on the subscription period. The longer the subscription, the bigger the discount. This mode is a good option for long-term, stable services.
		• Pay-per-use : A postpaid billing mode. You pay as you go and just pay for what you use. The DB instance usage is calculated by the second but billed every hour. This mode allows you to adjust resource usage easily. You neither need to prepare for resources in advance, nor end up with excessive or insufficient preset resources.
Region	CN-Hong Kong	The region where your resources are located. NOTE Products in different regions cannot communicate with each other through a private network. After a DB instance is created, the region cannot be changed. Therefore, exercise caution when selecting a region.
DB Engine Version	8.0	The database version.
DB Instance	Primary/	The architecture type of an instance.
Туре	Standby	Primary/Standby : An HA architecture. In a primary/standby pair, each instance has the same instance class. When a primary instance is being created, a standby instance is provisioned along with it to provide data redundancy. The standby instance is invisible to you after being created.
Instance Class	General- purpose 2U 4G	The vCPU and memory of an instance.
Storage	Cloud SSD	The storage space of an instance.
	100GB	It contains the system overhead required for inodes, reserved blocks, and database operation.

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 events are createdatakey and decrydatakey . Only the key owner can receive the events.

3. Complete advanced configurations.

Figure 1-10 Additional Options

✓ Additional Options						
VPC: default_vpc	Subnet: default_subnet	IPv4 Address:	Database Port:	Security Group: default	Enterprise Project: default	Table Name: Case insensitive
Required Duration	on and Quantity					
Quantity						
- 1 +						
You can create 50 more instances (read replicas included). Increase Quota						

Parameter	Example Value	Description
VPC	vpc-default	The virtual network in which your instance is located. A VPC can isolate networks for different workloads.
		If no VPC is available, click Create VPC .
		After a VPC is created, click \bigcirc . For details, see Creating a VPC and Subnet .
Subnet	subnet- default	A subnet provides dedicated network resources that are logically isolated from other networks for network security.
Security Group	default	It can enhance security by controlling access to RDS for MySQL from other services.
Enterprise Project	default	If your account has been associated with an enterprise project, select the target project from the Enterprise Project drop-down list.
		For more information about enterprise projects, see <i>Enterprise Management User Guide</i> .

Parameter	Example Value	Description
Table Name	Case insensitive	Whether table names are case sensitive. Restoration may fail if the case sensitivity settings of table names on the source and target instances are different.
		The case sensitivity of table names for created RDS for MySQL 8.0 instances cannot be changed.
Quantity	1	The number of instances to be created in a batch.

- 4. Click **Buy**.
- 5. Check the purchased DB instance.

Figure 1-11 Instance successfully purchased

Renew Unsubscribe Change to Y Q DB Engine: MySQL × Add filter	'early/Monthly	More ~	Export								× (8) (8) ×
Name/ID 😔	Descr 🖯	DB In 🔶	DB En \varTheta	Status 🖯	Billin \varTheta	Floati \varTheta	Privat	Read/ \ominus	Enter \varTheta	Creater	Operation
rds-f096 36c2e55bccd149ecbf9086030e6955bfin01	-	Primary/S 2 vCPUs	MySQL 8	O Available	Pay-per-use Created o	192	36c2		default	Sep 24	View Metrics Log In More 🗸
Total Records: 1											10 ~ (1 >

Step 2: Buy an ECS

- 1. Go to the Elastic Cloud Server console.
- 2. Check whether there is a Windows ECS.
 - If yes, go to 3.
 - If no, purchase an ECS and select Windows as its OS.

To download MySQL-Front to the ECS, bind an EIP to the ECS. The ECS must be in the same region, VPC, and security group as the RDS for MySQL DB instance for mutual communications.

For details about how to purchase a Windows ECS, see **Purchasing a Custom ECS** in *Elastic Cloud Server User Guide*.

 If there is only a Linux ECS, you can use the mysql client to connect to the DB instance. For details, see Buying a DB Instance and Connecting to It Using the mysql Client.

Figure 1-12 ECS

Start Stop Re	Start Step Restart Reset Plansword More V Export V											
 Search or filter by name. 												
□ Name/ID ⊖	Monit	Se	Status 🖯	AZ 🖯	Specifications/Image 🖯	OS Type	IP Address \ominus	Billing Mode 🖯	Enterprise Proj \varTheta	Tag ⊖	Operation	
ecs-79b3 61ca5e37-c519-4e5a-9		٥	Running	AZ7	2 vCPUs 4 GiB c7.large.2 KooGallery Windows Server	Windows	192.168.0.241 (Pay-per-use Created on Sep 13,	default	-	Remote Login	More 🗸

3. Check whether the ECS and RDS for MySQL instance are in the same region and VPC.

Figure 1	-13 Overview			
< 🔇 rds-5c07	O Available			⊕ Log In @ Reset Password ⑦ Reboot … ○
Overview				
Backups & Restorations	Instance Information			
Connectivity & Security				
Accounts	Basic Information			
Databases	DB Instance Name	DB Instance ID	Description	Maintenance Window
Logs	rds-5c07 🖉 🗆	64d754177e804874b16d860156a48cbbin01	- 12	02:00 - 06:00 (GMT+08:00) Configure (2)
SQL Audits	SSL	Administrator	Enterprise Project	Fallover Priority
Parameters	Disabled Enable Download	root Reset Password	default	Reliability Configure
Advanced O&M	AZ			
DBA Assistant 🗸	cn-north-4a (Primary AZ), cn-north-4a (Standby AZ)			
Tags	Configurations			
Database Proxy	DB Engine Version	DB Instance Type	Instance Class	Storage
Memory Acceleration	MySQL 8.0.28 Upgrade Minor Version	Primary/Standby Switch	rds.mysql.n1.large.2.ha 2 vCPUs 4 GB (General- purpose) Configure	Cloud SSD 100 GB Scale Storage Space
	Replication Mode	Event Scheduler	Read/Write	
	Semi-synchronous Configure	Disabled Enable (3)	Permissions Read/write Configure	
	Connectivity			
	Floating IP Address	Private Domain Name	VPC	Database Port
	192.168.0.137 🗇 Configure	64d754177e804874b16d860156a48cbbin01.internal.cn- Conti north-4.mysql.rds.myhuaweicloud.com □ ¹ e	gur default_vpc [2]	3305 Configure
	Subnet	Recommended Max.	Security Group	Read/Write Splitting
	default_subnet(192.168.0.0/24) 🕑	Connections	1 security group Manage	Address
		4,000		- Apply
	Billing			
	Billing Mode	Created		
	Pay-per-use Configure	Sep 11, 2024 14:48:55 GMT+08:00		
			∧ Hide	

- If they are not in the same region, purchase another ECS. The ECS and DB instance in different regions cannot communicate with each other. To reduce network latency, deploy your DB instance in the region nearest to your workloads.
- If the ECS and DB instance are in different VPCs, change the VPC of the ECS to that of the DB instance. For details, see **Changing a VPC**.

Step 3: Test Connectivity and Install MySQL-Front

- 1. Log in to the ECS. For details, see **Login Using VNC** in the *Elastic Cloud Server User Guide*.
- 2. On the **Instances** page of the RDS console, click the DB instance name.
- 3. Choose **Connectivity & Security** from the navigation pane. In the **Connection Information** area, obtain the floating IP address and database port of the DB instance.

Figure 1-14 Connection information

< style="text-style-type: square; color: blue;">rds-5c07 o Available					
Overview					
Backups & Restorations	Connection Information	I			
Connectivity & Security	Floating IP Address	192.168.0.137 D Change			
Accounts					
Databases	EIP	No EIP bound Bind			
Logs		_			
SQL Audits	Database Port	3306 Change			
Parameters					

4. Open the cmd window on the ECS and check whether the floating IP address and database port of the DB instance can be connected.

telnet 192.168.6.144 3306

- If yes, network connectivity is normal.
- If no, check the security group rules.
 - Check the outbound rules of the ECS security group. By default, all outgoing network traffic is allowed.

If not, add an outbound rule for the floating IP address and port of the DB instance.

Figure 1-15 ECS security group

C ecs-4556 Summary Disks Network Interfaces Security Groups	EIPs Monitoring	Tags Cloud Backup an	d Recovery Host Security	Coad Balancers	Freeback	top Restart More ~	Rometo Login 🛛 🔾
192.198.0.111 (primary)							
Al (1) Ceparios Change Security Group	Security Group Rules Inbound Rules Outbourd	Rules					
1 default Manage Rule	Security Group Name	Priority Ad	tion Protocol & Port	() Type	Destination (1)	Description	
	detait		av Al	IPv4	AL	-	
			av Al	PM	Al	-	

- If in the security group of the DB instance, there is no inbound rule allowing the access from the private IP address and port of the ECS, add an inbound rule for the private IP address and port of the ECS. For details, see Configuring a Security Group Rule.
- 5. Open a browser, and download and install the MySQL-Front tool on the ECS (version 5.4 is used as an example).

Step 4: Connect to the DB Instance Using MySQL-Front

- 1. Start MySQL-Front.
- 2. In the displayed dialog box, click **New**.

Figure 1-16 Connection management

퉪 Open Session	×
Sessions	
Name	Last Login
<u>N</u> ew	Remove Properties
	Open Cancel

3. Enter the information of the DB instance to be connected and click **Ok**.

📄 Add Account ж Description Name: Connection Host: 3306 🌲 Port: Connection Type: Built-in • Login Information User: root Password: Database: ... Ok Cancel Help

Figure 1-17 Adding an account

Table 1-2 Parameter description

Parameter	Description
Name	Name of the database connection task. If you do not specify this parameter, it will be the same as that configured for Host by default.
Host	Floating IP address obtained in 3 .
Port	Database port obtained in 3 . The default value is 3306.
User	Name of the user who will access the DB instance. The default user is root .
Password	Password of the account for accessing the DB instance.

4. In the displayed window, select the connection that you have created in **3** and click **Open**. If the connection information is correct, the DB instance will be connected.

Figure 1-18 Opening a session

8	Open Session	×
ſ	Sessions	
	Name	Last Login
	🥃 rds	???
	<u>N</u> ew	Remove Properties
		Open Cancel

FAQs

What Should I Do If I Can't Connect to My RDS DB Instance?

Follow-up Operations

After logging in to the DB instance, you can create or migrate your databases.

- Creating a Database Using the Console
- Creating a Database Using an API
- Managing Databases Using DAS
- Migrating Data to RDS for MySQL

1.3 Getting Started with RDS for MySQL Common Practices

After purchasing and connecting to a DB instance, you can view common practices to better use RDS for MySQL.

Practice		Description
Suggestions on using RDS for MySQL	Instance Usage Suggestions	This practice provides suggestions on using RDS for MySQL in terms of DB instances, database connection, reliability and availability, backup and restoration, SQL audit, routine O&M, and security.

Table 1-3 Common practices

Practice		Description		
	Database Usage Suggestions	This practice provides suggestions on database naming, database design, field design, index design, and SQL statement development.		
Website setup	Using RDS for MySQL to Set Up WordPress	This practice describes how to set up WordPress in a LAMP environment using Huawei Cloud Virtual Private Cloud (VPC), Elastic Cloud Server (ECS), and RDS for MySQL.		
	Using RDS for MySQL to Set Up Discuz!	This practice describes how to set up Discuz! in a LAMP environment using Huawei Cloud VPC, ECS, and RDS for MySQL.		
Data migration	Migrating Data to RDS for MySQL Using mysqldump	This practice describes how to use mysqldump to copy data from the source to an RDS for MySQL DB instance.		
	From RDS for MySQL to RDS for MySQL	This practice describes how to use Data Replication Service (DRS) to migrate table, database, or instance data of the source to an RDS for MySQL DB instance.		
	Migrating Data to RDS for MySQL Using the Export and Import Functions of DAS	This practice describes how to use Data Admin Service (DAS) to export data from the source and then import the data to an RDS for MySQL DB instance.		
	From RDS for MySQL to RDS for MySQL	This practice describes how to use DRS to synchronize data from the source to an RDS for MySQL DB instance.		
	 Configuring Remote Single-Active DR for an RDS for MySQL Instance Using DRS From RDS for MySQL to RDS for MySQL (Dual-Active DR) 	This practice describes how to use DRS to synchronize data from the source to a DR RDS for MySQL instance.		
	From DDM to RDS for MySQL	This practice describes how to use DRS to synchronize data from a DDM instance to an RDS for MySQL DB instance.		

Practice		Description
	From GaussDB Distributed to RDS for MySQL	This practice describes how to use DRS to synchronize data from a GaussDB distributed instance to an RDS for MySQL DB instance.
	From GaussDB Primary/ Standby to RDS for MySQL	This practice describes how to use DRS to synchronize data from a GaussDB primary/standby instance to an RDS for MySQL DB instance.
	From GaussDB(for MySQL) to RDS for MySQL	This practice describes how to use DRS to synchronize data from a GaussDB(for MySQL) DB instance to an RDS for MySQL DB instance.
	Migrating Data from Self-Managed MySQL Databases to RDS for MySQL	This practice describes how to use DRS to migrate data from a self- managed MySQL database to an RDS for MySQL DB instance.
	From Self-Managed MySQL to RDS for MySQL	This practice describes how to use DRS to synchronize data from a self- managed MySQL database to an RDS for MySQL DB instance.
	 From Self-Managed MySQL to RDS for MySQL (Single- Active DR) 	This practice describes how to use DRS to synchronize data from a self- managed MySQL database to a DR RDS for MySQL instance.
	 From Self-Managed MySQL to RDS for MySQL (Dual-Active DR) 	
	From Oracle to RDS for MySQL	This practice describes how to use DRS to synchronize data from a self- managed Oracle database to an RDS for MySQL DB instance.
	Migrating MySQL Databases from Other Clouds to RDS for MySQL	This practice describes how to use DRS to migrate MySQL databases from other clouds to RDS for MySQL.
	From MySQL on Other Clouds to RDS for MySQL	This practice describes how to use DRS to synchronize MySQL databases from other clouds to RDS for MySQL.

Practice		Description		
	 From MySQL on Other Clouds to RDS for MySQL (Single- Active DR) From MySQL on Other Clouds to RDS for MySQL (Dual- Active DR) 	This practice describes how to use DRS to synchronize MySQL databases from other clouds to DR RDS for MySQL instances.		
Data backup	Intra-region automated backup	This practice describes how RDS for MySQL automatically creates backups for a DB instance during a backup window and saves the backups based on the configured retention period.		
	Intra-region 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.		
	Cross-region automated backup	This practice describes how to store backups of a DB instance in another region for disaster recovery. If the DB instance fails, the backups in another region can be used to restore the data to a new DB instance.		
Data restoration	Restoring from Full Backups to RDS for MySQL Instances	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.		
	Restoring a DB Instance to a Point in Time	This practice describes how to use an automated backup to restore instance data to a specified point in time.		
	Restoring Databases or Tables to a Point in Time	This practice describes how to use an automated backup to restore databases or tables to a specified point in time.		

2 Getting Started with RDS for MariaDB

2.1 Step 1: Set Up for RDS

You can buy and connect to DB instances on the RDS console.

Registering a HUAWEI ID

If you already have a HUAWEI ID, skip this part. If you do not have a HUAWEI ID yet, perform the following steps to create one:

- Step 1 Open the Huawei Cloud website.
- Step 2 Click Register and complete the registration as instructed.

After the registration is successful, the system redirects you to your personal information page.

----End

Topping Up Your Account

- For details about RDS for MariaDB prices, see Price Calculator.
- Before purchasing an RDS for MariaDB instance, ensure that your account balance is sufficient. For details about how to top up an account, see Topping Up an Account.

Creating an IAM User and Granting Permissions

You can create an IAM user or user group on the Identity and Access Management (IAM) console and grant it specific operation permissions for fine-grained permissions management.

1. Create a user group and assign permissions to it.

Create a user group on the IAM console, and attach the **RDS ReadOnlyAccess** policy to the group.

D NOTE

To use some interconnected services, you also need to configure permissions of such services.

For example, to connect to your DB instance through the console, configure the **DAS FullAccess** permission of Data Admin Service (DAS) besides **RDS ReadOnlyAccess**.

2. Create an IAM user and add it to the user group.

Create a user on the IAM console and add the user to the group created in 1.

3. Log in and verify permissions.

Log in to the RDS console by using the created user, and verify that the user only has read permissions for RDS.

- Choose Service List > Relational Database Service and click Buy DB Instance. If a message appears indicating that you have insufficient permissions to perform the operation, the RDS ReadOnlyAccess policy has already been applied.
- Choose any other service in Service List. If a message appears indicating that you have insufficient permissions to access the service, the RDS ReadOnlyAccess policy has already taken effect.

2.2 Step 2: Buy a DB Instance

Scenarios

This section describes how to buy a DB instance on the RDS console.

RDS for MariaDB only supports the pay-per-use billing mode. RDS allows you to tailor your compute resources and storage space to your business needs.

Prerequisites

Your account balance is greater than or equal to \$0 USD.

Procedure

- Step 1 Go to the Buy DB Instance page.
- **Step 2** On that page, select a billing mode, configure information about your DB instance, and click **Next**.
 - Basic information

Billing Mode	Pay-per-use			
Region	• CN-Hong Kong	~	0	
	Regions are geographic are	eas isolated from each (other. For low network late	ency and quick resource access, select the nearest region.
Project	CN-Hong Kong	~]	
DB Instance Name	rds-78a5		0	
	If you buy multiple DB insta and so on.	nces at a time, they wil	, I be named with four digits	appended in the format "DB instance name-SN". For example,
DB Engine	MySQI	PostgreSQL	MariaDB	0
DD Engine	myour	Tongroouz	Manabb	0
DB Engine Version	10.5			
DB Instance Type	Primary/Standby	Single	0	
	Primary/standby HA archite	cture is suitable for pro	duction databases in large	e- and medium-sized enterprises, or for applications in Internet,
Storage Type	Cloud SSD	0		
Primary AZ	az2 az1	az3	az7 (?)	
-				
Standby AZ	az2 az1	az3	az7	
	Multi-AZ deployment provid	es disaster recovery ca	pabilities across AZs.	
Time Zone	(UTC+08:00) Beijing, Cho	ongqing, Hong 🗸		

Figure 2-1 Basic information

Table 2-1 Basic information

Parameter	Description
Billing Mode	Select Pay-per-use .
Region	Region where your resources are located. NOTE Products in different regions cannot communicate with each other through a private network. After a DB instance is created, the region cannot be changed. Therefore, exercise caution when selecting a region.
Project	The project corresponds to the region. Different regions correspond to different projects.
DB Instance Name	Must start with a letter and consist of 4 to 64 characters. Only letters (case-sensitive), digits, hyphens (-), and underscores (_) are allowed.
	 If you intend to buy multiple DB instances at a time, the allowed length for each instance name will change.
	 If you buy multiple DB instances at a time, they will be named <i>instance-0001</i>, <i>instance-0002</i>, and so on. (<i>instance</i> indicates the DB instance name you specify.)
DB Engine	MariaDB
DB Engine Version	For details, see DB Engines and Versions . The DB engine version differs in different regions.

Parameter	Description			
DB Instance Type	- Primary/Standby : uses an HA architecture with a primary DB instance and a synchronous standby DB instance. It is suitable for production databases of large- and medium-sized enterprises in Internet, Internet of Things (IoT), retail e-commerce sales, logistics, gaming, and other sectors. The standby DB instance improves instance reliability and is invisible to you after being created.			
	- Single : uses a single-node architecture, which is more cost- effective than primary/standby DB instances. It is only recommended for development and testing of microsites, and small and medium enterprises, or for learning about RDS.			
AZ	An AZ is a physical region where resources use independent power supply and networks. AZs are physically isolated but interconnected through an internal network. Some regions support both single-AZ and multi-AZ deployment and some only support single-AZ deployment. To achieve high reliability, RDS will automatically deploy your primary and standby instances in different physical servers even if you deploy them in the same AZ.			
	or across AZs to achieve failover and high availability.			
Storage Type	Determines the DB instance read/write speed. The higher the maximum throughput is, the higher the DB instance read/ write speed can be.			
	 Cloud SSD: cloud drives used to decouple storage from compute. The maximum throughput is 350 MB/s. 			
	 Extreme SSD: uses 25GE network and RDMA technologies to provide you with up to 1,000 MB/s throughput per disk and sub-millisecond latency. 			
Time Zone	You need to select a time zone for your instance based on the region hosting your instance. You can select a time zone during instance creation and change it later as needed.			

• Specifications and storage

Instance Class	Dedicated	General-purpose	② Learn more						
	vCPUs Memory								
	2 vCPUs 4 GB								^
	2 vCPUs 8 GB								
	2 vCPUs 16 GB								
	4 vCPUs 8 GB								
	4 vCPUs 16 GB								
	O 4 vCPUs 32 GB								-
	DB Instance Specifications	mariadb.x1.large.2.ha	2 vCPUs 4 GB (Dedica	ated)					
	40 GB								
Storage Space	40		830	1620	2410	4000	40 + 6	ir (i)	
	RDS provides free backup st	prage space of the same	size as your purchased	storage space. After t	he free backup space is use	d up, charges are appl	ied based on the OBS	S pricing details.	

Figure 2-2 Specifications and storage

Table 2-2 Specifications and storage

Parameter	Description
Instance Class	Refers to the vCPU and memory of a DB instance. Different instance classes support different numbers of database connections and maximum IOPS.
	After a DB instance is created, you can change its vCPU and memory. For details, see Changing a DB Instance Class .
Storage Space (GB)	Contains the system overhead required for inodes, reserved blocks, and database operation.
	Storage space can range in size from 40 GB to 4,000 GB and can be scaled up only by a multiple of 10 GB.
	After a DB instance is created, you can scale up its storage space. For details, see Scaling up Storage Space .

• Network and database configuration

VPC (?)	default_vpc ~	С	default_subnet(192.168.0.0/24) ~	С			View In-use IP Addresses (Addresses available: 242)
	The VPC an RDS instance is deployed in cannot be changed later. ECSs in different VPCs cannot communicate with each other by default. If you want to create a VPC, go to the VPC console.						
Security Group ⑦							
,	Ensure that port 3306 of the security group allow	is traffic 1	from your server IP address to the DB instance.				
	Security Group Rules 🔺 Add Inbound Rule						
Administrator	root						
Administrator Password		Keep your password secure. The system cannot retrieve your password.					
Confirm Password	a						
Parameter Template	Default-MariaDB-10.5	~	C View Parameter Template ③				
Table Name	Case sensitive Case insensitive		0				
Enterprise Project	-Select-	~	C View Project Management ③				
Tag 🕜	It is recommended that you use TMS's predefine	id tag fur	action to add the same tag to different cloud resource	es. C	View Predefined Tags		
	To add a tag, enter a tag key and a tag value below.						

Figure 2-3 Network and database configuration

Table 2-3 Network

Parameter	Description					
VPC	A virtual network in which your RDS DB instances are located. A VPC can isolate networks for different workloads. You can select an existing VPC or create a VPC. For details about how to create a VPC, see "Creating a VPC" in <i>Virtual Private Cloud User Guide</i> .					
	If no VPC is available, RDS allocates a VPC to you by default.					
	After a DB instance is created, the VPC cannot be changed.					
Subnet	Improves network security by providing dedicated network resources that are logically isolated from other networks. Subnets take effect only within an AZ. The Dynamic Host Configuration Protocol (DHCP) function is enabled by default for subnets in which you plan to create RDS DB instances and cannot be disabled.					
	A floating IP address is automatically assigned when you create a DB instance. You can also enter an unused IPv4 floating IP address in the subnet CIDR block.					
Security Group	Enhances security by controlling access to RDS from other services. A network access control list (ACL) can help control inbound and outbound traffic of subnets in your VPC. Ensure that the security group you select allows the client to access the DB instance.					
	If no security group is available or has been created, RDS allocates a security group to you by default.					

Table 2-4 Database	configuration
--------------------	---------------

Parameter	Description
Administrat or	The default login name for the database is root .
Administrat or Password	Must consist of 8 to 32 characters and contain the following character types: uppercase letters, lowercase letters, digits, and special characters (~!@#\$%^*=+?,()&). Enter a strong password and periodically change it for security reasons.
	If the password you provide is regarded as a weak password by the system, you will be prompted to enter a stronger password.
	Keep this password secure. The system cannot retrieve it.
	After a DB instance is created, you can reset this password. For details, see Resetting the Administrator Password .
Confirm Password	Must be the same as Administrator Password .
Parameter Template	Contains engine configuration values that can be applied to one or more DB instances. If you intend to create a primary/ standby DB pair, they use the same parameter template.
	You can modify the instance parameters as required after the DB instance is created. For details, see Modifying Parameters in a Parameter Template .
Table Name	Specifies whether table names are case sensitive. NOTE The case sensitivity of table names for created instances cannot be changed.
Enterprise Project	If your account has been associated with an enterprise project, select the target project from the Enterprise Project drop-down list.
	For more information about enterprise projects, see <i>Enterprise Management User Guide</i> .

• Tags

Table 2-5 Tags

Parameter	Description
Tag	Tags an RDS DB instance. This parameter is optional. Adding tags to RDS DB instances helps you better identify and manage the DB instances. A maximum of 20 tags can be added for each DB instance.
	If your organization has configured tag policies for RDS, add tags to DB instances based on the policies. If a tag does not comply with the policies, DB instance creation may fail. Contact your organization administrator to learn more about tag policies.
	After a DB instance is created, you can view its tag details on the Tags page. For details, see Managing Tags .

• Purchase period

Table 2-6 Purchase period

Parameter	Description
Quantity	RDS supports DB instance creation in batches. If you choose to create primary/standby DB instances and set Quantity to 1 , a primary DB instance and a standby DB instance will be created synchronously.

NOTE

- If you have any questions about the price, move the cursor to ⑦ in the **Price** area at the bottom of the page and click **Pricing details**.
- The performance of your DB instance depends on its configurations. Hardware configuration items include the instance specifications, storage type, and storage space.

Step 3 Confirm the specifications.

- If you do not need to modify your settings, click **Submit**.
- If you need to modify your settings, click **Previous**.
- **Step 4** To view and manage your DB instance, go to the **Instances** page.
 - When your DB instance is being created, the status is **Creating**. The status changes to **Available** after the instance is created. To view the detailed progress and result of the creation, go to the **Task Center** page.
 - The automated backup policy is enabled by default. You can change it after the DB instance is created. An automated full backup is immediately triggered once your DB instance is created.
 - After a DB instance is created, you can enter a description for it.
 - The default database port is **3306**. You can change it after a DB instance is created.

NOTE

You are advised to change the default database port in a timely manner. For details, see **Changing a Database Port**.

----End

2.3 Step 3: Connect to a DB Instance

2.3.1 Overview

An RDS DB instance can be connected through a private network, Data Admin Service (DAS), or a public network.

Conne ct Throu gh	IP Address	Scenarios	Description
DAS	No IP address required	DAS enables you to manage databases on a web-based console and provides you with database development, O&M, and intelligent diagnosis to make it easy to use and maintain your databases. The permissions required for connecting to DB instances through DAS are enabled by default.	 Easy to use, secure, advanced, and intelligent Recommended
Private netwo rk	Floating IP	RDS provides a floating IP address by default. If your applications are deployed on an ECS that is in the same region and VPC as your DB instance, you are advised to use a floating IP address to connect to the DB instance through the ECS.	 Secure and excellent performance Recommended

Table 2-7 RDS connection methods

Conne ct Throu gh	IP Address	Scenarios	Description
Public netwo rk	EIP	If you cannot access a DB instance through a floating IP address, bind an EIP to the DB instance and connect the DB instance through the EIP.	 A relatively lower level of security compared to other connection methods To achieve a higher transmission rate and security level, you are advised to migrate your applications to an ECS that is in the same VPC as your RDS DB instance and use a floating IP address to access the DB instance. You need to purchase an EIP. For details, see EIP billing details.

NOTE

- VPC: Virtual Private Cloud
- ECS: Elastic Cloud Server
- If the ECS is in the same VPC as your RDS DB instance, you do not need to apply for an EIP.

Figure 2-4 illustrates the connection over a private network or a public network.

Figure 2-4 DB instance connection



2.3.2 Connecting to a DB Instance Through a Private Network

2.3.2.1 Overview

Process

Figure 2-5 illustrates the process of connecting to an RDS for MariaDB instance through a private network.


Figure 2-5 Connecting to a DB instance through a private network

2.3.2.2 Configuring Security Group Rules

Before you can connect to your DB instance, you need to create security group rules to enable specific IP addresses and ports to access your RDS DB instance. This section describes how to configure an inbound rule for a DB instance.

Context

A security group is a collection of access control rules for ECSs and RDS DB instances that have the same security protection requirements and are mutually trusted in a VPC.

Scenarios

First check whether the ECS and RDS DB instance are in the same security group.

- If they are in the same security group, they can communicate with each other by default. No security group rule needs to be configured. Go to **Connecting** to a DB Instance Using a MariaDB Client.
- If they are in different security groups, configure security group rules for them, separately.
 - RDS DB instance: Configure an **inbound rule** for the security group with which the RDS DB instance is associated.
 - ECS: The default security group rule allows all outgoing data packets. In this case, you do not need to configure a security group rule for the ECS. If not all outbound traffic is allowed in the security group, you need to configure an **outbound rule** for the ECS.

For details about the requirements of security group rules, see Adding a Security Group Rule in *Virtual Private Cloud User Guide*.

Constraints

The default security group rule allows all outgoing data packets. ECSs and RDS DB instances can access each other if they are in the same security group. After a security group is created, you can configure security group rules to control access from and to the DB instances in the security group.

- By default, you can create a maximum of 100 security groups in your cloud account.
- By default, you can add up to 50 security group rules to a security group.
- One RDS instance can be associated only with one security group, but one security group can be associated with multiple RDS instances.
- Too many security group rules will increase the first packet latency. You are advised to create no more than 50 rules for a security group.
- To enable access to an RDS DB instance from resources outside the security group, you need to configure an **inbound rule** for the security group associated with the RDS DB instance.

D NOTE

To ensure the security of your data and DB instances, you are advised to use the principle of least privilege for database access. Change the database port (default value: **3306**), and set the IP address to the remote server's address or any IP address in the remote server's smallest subnet to control the access from the remote server.

The default value of **Source** is **0.0.0/0**, indicating that RDS DB instances in the security group can be accessed from any IP address.

Procedure

- Step 1 Log in to the management console.
- **Step 2** Click ^(Q) in the upper left corner and select a region and a project.
- Step 3 Click in the upper left corner of the page and choose Databases > Relational Database Service.
- **Step 4** On the **Instances** page, click the DB instance name.
- **Step 5** In the navigation pane on the left, choose **Connectivity & Security**. In the **Security Group Rules** area, view security group rules.
- **Step 6** Click **Add Inbound Rule** or **Allow All IP** to configure security group rules.

To add more inbound rules, click $^{\textcircled{\oplus}}$.

NOTE

Allow All IP allows all IP addresses to access RDS DB instances in the security group, which poses high security risks. Exercise caution when performing this operation.

Figure 2-6 Adding an inbound rule

Add Inbound Rule	D			×
() An inbound rule allows in	bound traffic to instances	in the security group.		
Security Group default				
Protocol & Port 💿	Туре	Source 💿	Description	Operation
Custom TCP V Example: 22 or 22-30	IPv4 V	IP Address V 0 . 0 . 0 / 0		Operation ~
	Add Rule You	I can create 4975 more security group ru	les. Increase quota	

ок	Cancel

Table	2-8	Inbound	rule	parameter	description
iable	~ ~	moouna	ruic	purumeter	acocription

Parameter	Description	Example Value
Protocol & Port	Protocol : network protocol. Available options: All ports , Custom TCP, Custom UDP , ICMP , or GRE .	Custom TCP
	Port : the port over which the traffic can reach your DB instance.	3306
	RDS for MariaDB instances can use database ports 1024 to 65535, excluding 12017 and 33071, which are reserved for RDS system use.	
Туре	Supported source IP address type. Its value can be: IPv4	IPv4
	● IPV6	

Parameter	Description	Example Value
Source	The source in an inbound rule is used to match the IP address or address range of an external request. The source can be:	0.0.0/0
	 Single IP address: 192.168.10.10/32 (IPv4 address) 	
	 IP address segment: 192.168.1.0/24 (IPv4 address segment) 	
	 All IP addresses: 0.0.0.0/0 (any IPv4 address) 	
	Security group: sg-abc	
	 IP address group: ipGroup- test 	
Description	Supplementary information about the security group rule. This parameter is optional.	N/A
	The description can contain a maximum of 255 characters and cannot contain angle brackets (<) or (>).	

Step 7 Click OK.

----End

2.3.2.3 Connecting to a DB Instance Using a MariaDB Client

You can connect to a DB instance through a Secure Sockets Layer (SSL) connection or a non-SSL connection. SSL encrypts connections to your DB instance, making in-transit data more secure.

Prerequisites

- 1. You have logged in to an ECS.
 - For details on how to create and log in to an ECS, see Purchasing an ECS and Logging In to an ECS.
 - To connect to a DB instance through an ECS, you must ensure that:
 - The ECS and DB instance are in the same VPC.
 - The ECS is allowed by the security group to access the DB instance.
 - If the security group associated with the DB instance is the default security group, you do not need to configure security group rules.
 - If the security group associated with the DB instance is not the default security group, check whether the security group rules

allow the ECS to connect to the DB instance. For details, see **Configuring Security Group Rules**.

If the rules allow the access from the ECS, you can connect to the DB instance through the ECS.

If the rules do not allow the access from the ECS, you need to add a security group rule allowing the ECS to access the DB instance.

2. You have installed a database client to connect to DB instances.

You can use a database client to connect to the target DB instance in Linux or Windows.

- In Linux, install a MariaDB client on a device that can access RDS. It is recommended that you download a MariaDB client running a version later than that of the DB instance.
- In Windows, you can use any common database client to connect to the target DB instance in a similar way.

Connecting to a DB Instance Using Commands (SSL Connection)

Step 1 Log in to the management console.

- **Step 2** Click ^(Q) in the upper left corner and select a region and a project.
- Step 3 Click in the upper left corner of the page and choose Databases > Relational Database Service.
- **Step 4** On the **Instances** page, click the instance name to go to the **Basic Information** page.
- **Step 5** In the **DB Information** area, check whether SSL is enabled.
 - If yes, go to **Step 6**.
 - If no, click . In the displayed dialog box, click **OK**. Then, go to **6**.
- **Step 6** Click \checkmark next to the **SSL** field to download **Certificate Download.zip**, and extract the root certificate **ca.pem** and bundle **ca-bundle.pem** from the package.
- Step 7 Import the root certificate ca.pem to the Linux or Windows. For details, see How Can I Import the Root Certificate to a Windows or Linux OS?
- **Step 8** Connect to the RDS for MariaDB instance. In Linux, for example, run the following command:

mysql -h <host> -P <port> -u <userName> -p --ssl-ca=<caName>

Example:

mysql -h 172.16.0.31 -P 3306-u root -p --ssl-ca=ca.pem

Parameter	Description
<host></host>	Floating IP address. To obtain this parameter value, go to the Basic Information page of the DB instance. You can find the floating IP address in the Connection Information area.
<port></port>	Database port. By default, the value is 3306 . To obtain this parameter value, go to the Basic Information page of the DB instance. You can find the database port in the Connection Information area.
<username></username>	Database account used for logging in to the DB instance. The default value is root .
<caname></caname>	Name of the CA certificate. The certificate should be stored in the directory where the command is executed.

Table 2-9 Para	meter description
----------------	-------------------

Step 9 Enter the password of the database account if the following information is displayed:

Enter password:

Figure 2-7 Connection example



----End

2.3.3 Connecting to a DB Instance Through a Public Network

2.3.3.1 Overview

Process

Figure 2-8 illustrates the process of connecting to an RDS for MariaDB instance through a public network.



Figure 2-8 Connecting to a DB instance through a public network

2.3.3.2 Binding an EIP

Scenarios

You can bind an EIP to a DB instance for public accessibility and can unbind the EIP from the DB instance as required.

Precautions

- To enable this function, contact customer service.
- You need to configure security groups and enable specific IP addresses and ports to access the target DB instance. Before accessing the DB instance, add an individual IP address or an IP address range that will access the DB instance to the inbound rule. For details, see **Configuring Security Group Rules**.
- Traffic generated by the public network is charged. You can unbind the EIP from the DB instance when the EIP is no longer used.

Binding an EIP

Step 1 Log in to the management console.

- **Step 2** Click ¹ in the upper left corner and select a region and a project.
- Step 3 Click in the upper left corner of the page and choose Databases > Relational Database Service.
- **Step 4** On the **Instances** page, click the target DB instance.
- **Step 5** In the navigation pane on the left, choose **Connectivity & Security**. In the **Connection Information** area, click **Bind** next to the **EIP** field.
- **Step 6** In the displayed dialog box, select an EIP and click **Yes**.

Figure 2-9 Selecting an EIP

Bind EIP			
For security purposes, af outbound rules in the se	ter the EIP is bound, use SSL to connect curity group.	t to the database and add inboun	nd and
Select EIP Only EIPs that have r	not been bound to any cloud resource a	ire displayed.	C
EIP	Status	Bandwidth	
۲	Our Description of the second seco	5 Mbit/s	
View EIP			
	Yes No		

Step 7 On the **Connectivity & Security** page, view the EIP that has been bound to the DB instance.

You can also view the progress and result of binding an EIP to a DB instance on the **Task Center** page.

----End

2.3.3.3 Configuring Security Group Rules

For security, you need to create security group rules to allow specific IP addresses and ports to access your RDS DB instance. When you attempt to connect to an RDS DB instance through an EIP, configure an **inbound rule** for the security group associated with the DB instance.

Context

A security group is a collection of access control rules for ECSs and RDS DB instances that have the same security protection requirements and are mutually trusted within a VPC.

Constraints

The default security group rule allows all outgoing data packets. ECSs and RDS DB instances can access each other if they are in the same security group. After a security group is created, you can configure security group rules to control access from and to the DB instances in the security group.

- By default, you can create a maximum of 100 security groups in your cloud account.
- By default, you can add up to 50 security group rules to a security group.
- One RDS instance can be associated only with one security group, but one security group can be associated with multiple RDS instances.
- Too many security group rules will increase the first packet latency. You are advised to create no more than 50 rules for a security group.
- To enable access to an RDS DB instance from resources outside the security group, you need to configure an **inbound rule** for the security group associated with the RDS DB instance.

NOTE

To ensure the security of your data and DB instances, you are advised to use the principle of least privilege for database access. Change the database port (default value: **3306**), and set the IP address to the remote server's address or any IP address in the remote server's smallest subnet to control the access from the remote server.

The default value of **Source** is **0.0.0/0**, indicating that RDS DB instances in the security group can be accessed from any IP address.

Procedure

Step 1 Log in to the management console.

- **Step 2** Click ¹ in the upper left corner and select a region and a project.
- Step 3 Click in the upper left corner of the page and choose Databases > Relational Database Service.
- **Step 4** On the **Instances** page, click the DB instance name.
- **Step 5** In the navigation pane on the left, choose **Connectivity & Security**. In the **Security Group Rules** area, view security group rules.
- Step 6 Click Add Inbound Rule or Allow All IP to configure security group rules.

To add more inbound rules, click $\textcircled{\oplus}$.

NOTE

Allow All IP allows all IP addresses to access RDS DB instances in the security group, which poses high security risks. Exercise caution when performing this operation.

Figure 2-10 Adding an inbound rule

Add Inbound Rule	0			×
i An inbound rule allows ir	nbound traffic to instances	in the security group.		
Security Group default				
Protocol & Port ③	Туре	Source 💿	Description	Operation
Custom TCP V Example: 22 or 22-30	IPv4 V	IP Address V 0 . 0 . 0		Operation ~
	Add Rule You	u can create 4975 more security group ru	les. Increase quota	

OK Cancel

Table 2-10 Inbound rule	parameter description	ſ
-------------------------	-----------------------	---

Parameter	Description	Example Value
Protocol & Port	Protocol: network protocol. Available options: All ports, Custom TCP, Custom UDP, ICMP, or GRE.	Custom TCP
	Port : the port over which the traffic can reach your DB instance.	3306
	RDS for MariaDB instances can use database ports 1024 to 65535, excluding 12017 and 33071, which are reserved for RDS system use.	
Туре	Supported source IP address type. Its value can be: • IPv4 • IPv6	IPv4

Parameter	Description	Example Value
Source	The source in an inbound rule is used to match the IP address or address range of an external request. The source can be:	0.0.0/0
	• Single IP address: 192.168.10.10/32 (IPv4 address)	
	 IP address segment: 192.168.1.0/24 (IPv4 address segment) 	
	 All IP addresses: 0.0.0.0/0 (any IPv4 address) 	
	Security group: sg-abc	
	 IP address group: ipGroup- test 	
Description	Supplementary information about the security group rule. This parameter is optional.	N/A
	The description can contain a maximum of 255 characters and cannot contain angle brackets (<) or (>).	

Step 7 Click OK.

----End

2.3.3.4 Connecting to a DB Instance Using a MariaDB Client

You can connect to an instance through a non-SSL connection or an SSL connection using a MariaDB client. SSL encrypts connections to your DB instance and is more secure.

Prerequisites

- 1. An EIP has been bound to the target DB instance and security group rules have been configured. The operations are as follows:
 - a. Bind an EIP to your DB instance.

For details about how to bind an EIP, see **Binding an EIP**.

- b. Obtain the IP address of the ECS you use to connect to the DB instance.
- c. Configure security group rules.

Add the IP address obtained in **1.b** and the DB instance port to the inbound rule of the security group.

For details about how to configure a security group rule, see **Configuring Security Group Rules**.

- d. Run the **ping** command to check the connectivity between the ECS and the EIP that has been bound to the DB instance in **1.a**.
- 2. You have installed a database client to connect to DB instances.

You can use a database client to connect to the target DB instance in Linux or Windows.

- In Linux, you need to install a MariaDB client on your device. It is recommended that you download a MariaDB client running a version later than that of the DB instance.
- In Windows, you can use any common database client to connect to the target DB instance in a similar way.

Connecting to a DB Instance Using Commands (SSL Connection)

Step 1 Log in to the management console.

- **Step 2** Click ^Q in the upper left corner and select a region and a project.
- Step 3 Click in the upper left corner of the page and choose Databases > Relational Database Service.
- **Step 4** On the **Instances** page, click the instance name to go to the **Basic Information** page.
- **Step 5** In the **DB Information** area, check whether SSL is enabled.
 - If yes, go to 6.
 - If no, click OM. In the displayed dialog box, click OK. Then, go to 6.
- **Step 6** Click \checkmark next to the **SSL** field to download **Certificate Download.zip**, and extract the root certificate **ca.pem** and bundle **ca-bundle.pem** from the package.
- Step 7 Import the root certificate ca.pem to the Linux or Windows. For details, see How Can I Import the Root Certificate to a Windows or Linux OS?
- **Step 8** Connect to the RDS for MariaDB instance. In Linux, for example, run the following command:

mysql -h <host> -P <port> -u <userName> -p --ssl-ca=<caName>

Example:

mysql -h 172.16.0.31 -P 3306-u root -p --ssl-ca=ca.pem

 Table 2-11
 Parameter description

Parameter	Description
<host></host>	EIP of the DB instance to be connected.
<port></port>	Port of the DB instance to be connected.
<username></username>	Database account used for logging in to the DB instance. The default value is root .

Parameter	Description
< <i>caName</i> >	Name of the CA certificate. The certificate should be stored in the directory where the command is executed.

Step 9 Enter the password of the database account if the following information is displayed:

Enter password:

Figure 2-11 Connection example

NOTE

If the connection fails, ensure that preparations have been correctly made in **Prerequisites** and try again.

----End

2.3.4 Connecting to a DB Instance Through DAS

Scenarios

Data Admin Service (DAS) enables you to connect to and manage DB instances with ease on a web-based console. The permission required for connecting to DB instances through DAS has been enabled for you by default. Using DAS to connect to your DB instance is recommended, which is more secure and convenient.

Procedure

Step 1 Log in to the management console.

- **Step 2** Click ¹ in the upper left corner and select a region and a project.
- **Step 3** Click in the upper left corner of the page and choose **Databases** > **Relational Database Service**.
- **Step 4** On the **Instances** page, locate the DB instance and click **Log In** in the **Operation** column.

Figure 2-12 Login page

Instance	Login	Information
----------	-------	-------------

DB Instance Name	rds-\ DB Engine Version MariaDB 10.5
* Login Username	root
* Password	Test Connection
	Remember Password Your password will be encrypted and stored securely.
Description	created by sync rds instance
Collect Metadata Periodically ⑦	If not enabled, DAS can query the real-time structure information only from databases, which may affect the real-time performance of databases.
Show Executed SQL Statements ⑦	If not enabled, the executed SQL statements cannot be viewed, and you need to input each SQL statement manually.
	Log In Cancel

- **Step 5** Enter the database username and password and click **Test Connection**.
- Step 6 After the connection test is successful, click Log In.

For details about how to manage databases using DAS, see **RDS for MariaDB Database Management** in the *Data Admin Service User Guide*.

----End

2.4 Example: Buy and Connect to an RDS for MariaDB Instance

This example illustrates how to purchase an RDS for MariaDB instance and connect to it from a Linux ECS over a private network.

- Step 1: Buy an RDS for MariaDB Instance
- Step 2: Buy an ECS
- Step 3: Connect to the RDS for MariaDB Instance

Figure 2-13 Example diagram



Step 1: Buy an RDS for MariaDB Instance

- 1. Go to the **Buy DB Instance** page.
- 2. Configure the instance information and click **Next**. Keep the region, AZ, VPC, and security group of the DB instance the same as those of the ECS.

Billing Mode	Yearly/Monthly	Pay-per-use	0	
Region	AP-Bangkok	٣		
	Regions are geographic a	reas isolated from each of	ther. Resources are region-	specific and cannot be used acress regions through internal network connections. For law network latency and quick resource access, select the nearest region.
DB Instance Name	rds-a8b5	(0	
	If you buy multiple DB in:	stances at a time, they will	be named with four digits	appended in the format "DB instance name-SN". For example, if the DB instance name is instance, the first instance will be named as instance-0001, the second as instance-0002, and so on.
DB Engine	MySQL	PostgreSQL	Microsoft SQL Server	MariaDB Learn more about DB engines and versions.
DB Engine Version	10.5			
DB Instance Type 🕥	Primary/Standby	Single		
	Primary/standby HA arch	itecture is suitable for pro	duction databases in large	+ and medium-sized enterprises, or for applications in Internet, IoT, retail e-commerce, logistics, and gaming industries.
Storage Type	Cloud SSD	Learn more about storag	ge types.	
Primary AZ	az2	az1	az3	
Standby AZ 🕥	az2	az1	azð	
	Multi-AZ deployment pro	vides disaster recovery cap	pabilities across AZs.	
Time Zone	(UTC+08:00) Beijing, C	hongqing, Hong 🔻		

Figure 2-14 Selecting an engine version

Instance Class	General-purpose Dedi	cated				
	vCPU Memory	IPv6				
	● 2 vCPUs 4 GB	Not support	ed			
	O 2 vCPUs 8 GB	Not support	ed			
	○ 4 vCPUs 8 GB	Not support	ed			
	O 4 vCPUs 16 GB	Not support	ed			
	0 8 vCPUs 16 GB	Not support	ed			
	0 8 vCPUs 32 GB	Not support	ed			
	DB Instance Specifications Genera	l-purpose 2 vCPUs 4 GB				
	40 GB					
Storage Space (GB)				40 +	0	
	40	830 1,620	2,410 4,000			
	RDS provides free backup storage s	pace of the same size as your purchas	sed storage space. After the	free backup space is us	ed up, charges are applied b	ased on the OBS pricing details

Figure 2-15 Selecting an instance class

Figure 2-16 Configuring network information

	⑦ Relationship among VPCs,	s, security groups, and DB instances	
VPC 🕜	default_vpc	 C default_subnet(192.168.0.0/24) C 	
	After the RDS instance is create An EIP is required if you want t	/PC cannot be changed. ECSs in different VPCs cannot communicate with each other by default. If you want to s DB instances through a public network. View EIP	create a VPC, go to the VPC console.
Security Group 🏾 🕜	default	C View Security Group	
	Security Group Rules 🗸 🗸		

Figure 2-17 Setting a password

Administrator	root	
Administrator Password		& Keep your password secure. The system cannot retrieve your password
Confirm Password		0
Parameter Template	Default-MariaDB-10.5	✓ C View Parameter Template ⑦
Table Name	Case sensitive Case insensitive	0
Enterprise Project	-Select	✓ C View Project Management ③

3. View the purchased RDS instance.

Figure 2-18 Instance successfully purchased

Renew	Unsubscribe Change to Yearly/Mon	thly More	*								C	č
Select one	e or more filters from the pop-up lists. If you enter a k	eyword without a fil	er applied, the system w	vill search for all instance name	es matching this ke	word.					C	2
	Name/ID J≣	Description	DB Instance T ↓Ξ	DB Engine Version J⊟	Status ↓⊟	Billing Mode	Floating IP A	Enterprise P	Database Po	Storage Type	Operation	
			Primary/Standby 2 vCPUs 4 GB	MariaDB 10.5.16	Available	Pay-per-Use Created on F	192.168	default	3306	Cloud SSD	View Metric More 💌	

Step 2: Buy an ECS

- 1. Go to the **Buy ECS** page.
- 2. Configure basic settings and click **Next: Configure Network**. Keep the region and AZ of the ECS the same as those of the RDS for MariaDB instance to be connected.

Figure 2-19 Basic configurations

ng Mode	Yearly/Monthly Pay-per-use	Spot price (?)				
ion	CN-Hong Kong					
	For low network latency and quick resource access, select	t the region nearest to your target users	. Learn how to select a region.			
	Random AZ1	AZ2 (?)				
Architecture	x86 Kunpeng 🕐					
0		Manage				
incations	Latest generation • VCPOS	• Menaj	✓ AII ▼ Fill	Q		
	General computing-plus General computing	Memory-optimized High-per	formance computing Ultra-high I/O	GPU-accelerated ⑦		
	Flavor Name	vCPUs Memory(GiB) ↓Ξ	Cb∩ 1≣	Assured / Maximum Bandwidth ⑦ ↓Ξ	Packets Per Second (PPS) ⑦ ↓Ξ	IPv6
	o c6.large.2	2 vCPUs 4 GiB	Intel Cascade Lake 3.0GHz	1.2 / 4 Gbit/s	400,000	Yes
	O cő.large.4	2 vCPUs 8 GIB	Intel Cascade Lake 3.0GHz	1.2 / 4 Gbit/s	400,000	Yes
	C c6xlarge.2	4 vCPUs 8 GIB	Intel Cascade Lake 3.0GHz	2.4 / 8 Gbit/s	800,000	Yes
	C c6.xlarge.4	4 vCPUs 16 GIB	Intel Cascade Lake 3.0GHz	2.4 / 8 Gbit/s	800,000	Yes
			Intel Consula Laba 2.0011a	4.5 / 15 Gbit/s	1,500,000	Yes
	C c6.2xlarge.2	8 vCPUs 16 GIB	Intel cascade cake 5.0GHz			
	 c6:2xlarge.2 c5:2xlarge.4 	8 vCPUs 16 GIB 8 vCPUs 32 GIB	Intel Cascade Lake 3.0GHz	4.5 / 15 Gbit/s	1,500,000	Yes
	c6.2xlarge.2 c6.2xlarge.4 c6.3xlarge.4	8 vCPUs 16 GIB 8 vCPUs 32 GIB	Intel Cascade Lake 3.0GHz	4.5 / 15 Gbit/s	1,500,000	Yes

Quantity 1 + ELSPICE mount This price is an estimate and may differ from the final price. Pricing details

Figure 2-20 Selecting an image

image	Public image	Private image	Shared image	Marketplace image	
	CentOS	CentOS 8	2 64bit(40GB)		
Host Security	Enable (?)				
System Disk	High I/O	• - 40	+ GIB IOPS	limit: 2,120, IOPS <u>burst limit</u> : 5,	000
	-				
	Add Data Disk You can	attach 23 more disks.			
	Data disks added to a Linux	ECS can be initialized u	using a wizard script.		
Quantity — 1	+ ECS Price	0			

3. Configure the ECS network information and click **Next: Configure Advanced Settings**. Keep the VPC and security group of the ECS the same as those of the RDS for MariaDB instance to be connected.

Figure 2-21 Network settings

< Elastic Cloud Ser	ver						Assured Purchase 🕞 Fixed Purchase			
(1) Configure Basic Settings -	Configure Network	— (3) Configure Advanced	Settings — ④ Co	tfm						
Network	vpc-last01(192.168.0.0/16) Create VPC	C subnet-lest01(15	12.168.0.0/24) ·	C Automatically assign IP address	 Available private II 	P addresses: 250 🔞				
Extension NIC	O Add NC NCS you can still add: 1									
Security Group	Skouh Grup									
	Security Group Name	Priority	Action	Protocol & Port (2)	Туре	Source ③	Description			
		1	Permit	TCP: 8000	IPv4	0.0.0.0/0	-			
		1	Permit	TCP: 8635	IPv4	0.0.0.0/0	-			
		1	Permit	TCP: 8080	IPv4	0.0.0.0/0	-			
		1	Permit	UDP: 111	IPv4	0.0.0.00	Create by sfs turbo			
		1	Permit	TCP: 111	IPv4	0.0.0.0	Create by sts turbo			

Figure 2-22 Selecting an EIP

EID Tuno		unamic PCP		Ct-	atic PGP					
ar type	Greater t	nan or equal t	o 99 95% sen	vice availabilit	v rate					
Billed By	Bai	ndwidth 🍁 heavy/stable	traffic		Traffic	t/sharply fluc	tuating t	raffic		Shared bandwidth For staggered peak hours
	Billed based	on total traffic	irrespective of	of usage durat	ion; configural	ole maximum	bandwi	dth size.		
Bandwidth Size	5	10	20	50	100	Custom	-	1	+	The bandwidth can be from 1 to 300 Mbit/s.
	S Free Anti-	DDoS protec	ion							
Release Option	Release	with ECS	D							

4. Configure the ECS password and click **Next: Confirm**.

Figure 2-23 Advanced settings

1 Configure Basic Settings -	(2) Configure Network (3) Configure Advanced Settings (4) Confirm
ECS Name	ecs-ska9 Allow duplicate name If you are creating multiple ECBs at the same time, automatic naming and outomitable naming are available for you to select.
Login Mode	Password Key pair Set password later
Username	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 vault. A vault is a container that stores backups for servers. Create new Use existing Not required. To
Cloud Eye	Enable Detailed Monitoring Frees ① Cnable 1-minute fined-grained monitoring of ECS metrics, such as CPU, memory, network, disk, and process.
ECS Group (Optional)	Anti-affinity -Stelet ECS group- C C C C C C C C C C C C C C C C C C

5. Confirm the configurations and click **Submit**.

Figure 2-24 Confirming the configurations

Configuration	Basic 🖉						
	Billing Mode	Pay-per-use	Region	Hong Kong	AZ	AZ2	
	Specifications System Disk	General computing-plus c6.large.2 2 vCPUs 4 GiB High I/O, 40 GiB	Image	CentOS 7.6 64bit	Host Security	Disabled	
	Network 🖉						
	VPC	default_vpc (192.168.0.0/16)	Security Group	default	Primary NIC	default_subnet (192.168.0.0/24)	
	EIP	Dynamic BGP Billed By: Traffic Bandwidth: 1 Mbit/s					
	Advanced 🖉						
	ECS Name	ecs-e5d6-test	Login Mode	Password	ECS Group		
aunch Template	Save as Launch	Template					
Enterprise Project	default	C Create Enterprise Proje	ct 🕐				
Quantity	- 1 4	You can create a maximum of 20 ECSs. Learn how to increase q	uota.				
Agreement	I have read and	d agree to the Service Level Agreement and image Disclaimer.					

This price is an estimate and may differ from the final price. Pricing details

6. View the purchased ECS.

Step 3: Connect to the RDS for MariaDB Instance

1. Use a Linux remote connection tool (for example, MobaXterm) to log in to the ECS. Enter the EIP bound to the ECS for **Remote host**.

Figure 2-25 Creating a session

Session se	ttings														\times
SSH	Telnet	<mark>⊮</mark> Rsh	Xdmcp	U RDP	VNC	FTP	SFTP	💉 Serial	9 File	≥ Shell	(3) Browser	📡 Mosh	🚏 Aws S3	E WSL	
N B	asic SSH s Remote hos	ettings st *			⊠ Spe	cify user	name ro	ot	2	Po	ort 22				
	▲ Advanced SSH settings Image: Terminal settings ★ Bookmark settings ★ Bookmark settings Secure Shell (SSH) session														
						🕑 ОК]	80	Cancel						

2. Enter the password of the ECS.

Figure 2-26 Entering the password

		(roc	ot)							
Terr	minal	Sessions	View	X server	Tools	Games	Settings	Macros	Help	
Q	uick d	connect				1 2.	· ((root)	×	4
//	🔝 Us	er sessions		r	oot@		's	passwor	d:	
//	9		(root)							
ions										
Sess										
*										
s										
Ê										
48.										
cros										
Ma										
1										

Figure 2-27 Successful login



3. Install a **MariaDB client** by following the instructions provided in the official documentation.

In CentOS, for example, run the following statement: yum install MariaDB-client

Figure 2-28 Installing a client

ependencies Resolved								
Package	Arch	Version	Reposit					
Installing: mariadb-server	x86 64	1:5.5.68-1.el7	base					

4. Connect to the RDS for MariaDB instance. mysql -h *ip* -P 3306 -u root -p

Figure 2-29 Connection succeeded

5. Create a database, for example, **mydb**. create database mydb;

Figure 2-30 Creating a database

MariaDB [(none)]> show databases;					
++ Database					
++ information_schema mysql performance_schema ++ 3 rows in set (0.00 sec)					
MariaDB [(none)]> create database mydb; Query OK, 1 row affected (0.01 sec)					
MariaDB [(none)]> show databases;					
Database					
information_schema mydb mysql performance_schema					
++ 4 rows in set (0.00 sec)					

6. Create a table, for example, **my_table**. create table my_table(id int);

Figure 2-31 Creating a table

MariaDB [mydb]> show tables; Empty set (0.00 sec)	
MariaDB [mydb]> create table my_table(id int); Query OK, 0 rows affected (0.01 sec)	
MariaDB [mydb]> show tables;	
Tables_in_mydb	
imy_table i	
1 row in set (0.00 sec)	
MariaDB [mydb]>	

3 Getting Started with RDS for PostgreSQL

3.1 Buying a DB Instance and Connecting to It Using the PostgreSQL Client

You can connect to your DB instance using a Linux ECS installed with the PostgreSQL client over a private network.

You can use the PostgreSQL client to connect to your DB instance over a Secure Sockets Layer (SSL) connection. SSL encrypts connections to your DB instance, making in-transit data more secure.

SSL is enabled by default when you create an RDS for PostgreSQL DB instance and cannot be disabled after the instance is created.

Enabling SSL reduces the read-only and read/write performance of your instance by about 20%.

Operation Process

Process	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 RDS permissions.
Step 1: Buy an RDS for PostgreSQL DB Instance	Select required basic settings and additional options and buy an RDS for PostgreSQL DB instance.

Process	Description
Step 2: Buy an ECS	If you want to use the PostgreSQL client to connect to a DB instance, you need to prepare a server, install the PostgreSQL client on the server, and run the connection command.
	Purchase a Linux ECS that is in the same region and VPC as your DB instance.
Step 2: Test Connectivity and Install the PostgreSQL Client	Test the network connectivity between the ECS and the floating IP address and port of the DB instance, and install the PostgreSQL client on the ECS.
Step 4: Connect to the DB Instance Using Commands (SSL Connection)	Use a command-line interface (CLI) to connect to the DB instance using the floating IP address and port.

Preparations

- 1. Sign up for a HUAWEI ID and enable Huawei Cloud services.
- 2. Before purchasing DB instances, ensure that your account balance is sufficient. **Top up your account** if required.
- 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**.

Step 1: Buy an RDS for PostgreSQL DB Instance

- 1. Go to the **Buy DB Instance** page.
- 2. On the **Quick Config** page, set basic parameters.

NOTE

The following parameter settings are only for reference.

Parameter	Example Value	Description
Billing Mode	Pay-per-use	The billing mode of an instance.
		• Yearly/Monthly: A prepaid billing mode in which you pay for resources before using it. Bills are settled based on the subscription period. The longer the subscription, the bigger the discount. This mode is a good option for long-term, stable services.
		• Pay-per-use : A postpaid billing mode. You pay as you go and just pay for what you use. The DB instance usage is calculated by the second but billed every hour. This mode allows you to adjust resource usage easily. You neither need to prepare for resources in advance, nor end up with excessive or insufficient preset resources.
Region	CN-Hong Kong	The region where your resources are located. NOTE Products in different regions cannot communicate with each other through a private network. After a DB instance is created, the region cannot be changed. Therefore, exercise caution when selecting a region.
DB Engine Version	16	The database version.
DB Instance Type	Primary/ Standby	The architecture type of an instance. Primary/Standby : An HA architecture. In a primary/standby pair, each instance has the same instance class. When a primary instance is being created, a standby instance is provisioned along with it to provide data redundancy. The standby instance is invisible to you after being created.
Instance Class	General- purpose 4U 8G	The vCPU and memory of an instance.
Storage	Cloud SSD 100GB	The storage space of an instance. It contains the system overhead required for inodes, reserved blocks, and database operation.

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 events are createdatakey and decrydatakey . Only the key owner can receive the events.

3. Complete advanced configurations.

Figure 3-1 Additional Options

	ptions						
VPC: default_vpc	Subnet: default_subnet	IPv4 Address:	Database Port:	Security Group: default	Enterprise Project: default		
Required Duration and Quantity							
Quantity							
_ 1 +							
You can create 49 m	ore instances (read replica	s included). Increas	e Quota				

Parameter	Example Value	Description
VPC	default_vpc	The virtual network in which your instance is located. A VPC can isolate networks for different workloads.
		If no VPC is available, click Create VPC .
		After a VPC is created, click \bigcirc . For details, see Creating a VPC and Subnet .
Subnet	default_subn et	A subnet provides dedicated network resources that are logically isolated from other networks for network security.
Security Group	default	It can enhance security by controlling access to RDS for PostgreSQL from other services.
Enterprise Project	default	If your account has been associated with an enterprise project, select the target project from the Enterprise Project drop-down list.
		For more information about enterprise projects, see <i>Enterprise Management User Guide</i> .

Parameter	Example Value	Description
Quantity	1	The number of instances to be created in a batch.

- 4. Click **Buy**.
- 5. Check the purchased DB instance.

Figure 3-2 Instance successfully purchased

Renew Unsubscribe Change to T	/early/Monthly	More ~	Export						
Q Select a property or enter a keyword.									© 0 ©
□ Name/ID 🖨	Descr 🔤	DB In 🔤	DB Engl 🔤	Status 🕀	Billin 🔤	Floati 🔤	Read/.	Operation	
rds-7394 8b265c3227b74c76b85468e00a253161in03	-	Primary/S 4 vCPUs	PostgreSQL	O Available	Pay-per-use Created o	192.1	-	Log In View Metrics More	~

Step 2: Buy an ECS

- 1. Go to the Elastic Cloud Server console.
- 2. Check whether there is a Linux ECS that meets the requirements.

NOTICE

RDS for PostgreSQL supports the following client installation methods:

- Download the PostgreSQL client installation package. This method is recommended for PostgreSQL 15 and earlier versions. It has requirements on ECS images. For details, see the **official PostgreSQL documentation**.
- Download the source code. This method has no requirements on PostgreSQL versions and ECS images.
- If yes, go to **3**.
- If no, purchase an ECS and select Linux (for example, CentOS 7) as its OS.
 To download the PostgreSQL client to the ECS, bind an EIP to the ECS.
 The ECS must be in the same region, VPC, and security group as the RDS for PostgreSQL DB instance for mutual communications.

For details about how to purchase a Linux ECS, see **Purchasing a Custom ECS** in *Elastic Cloud Server User Guide*.

3. Check whether the ECS and RDS for PostgreSQL instance are in the same region and VPC.

Figure 3-3 ECS information

ECS Information	
ID	bd7eb5f3-145f-489b-98f4-87c9d894625e
Name	ecs-e4d1 🖉
Description	2
Region	
AZ	AZ7
Specifications	General computing-plus 2 vCPUs 4 GiB c7.large.2
Image	CentOS 7.9 64bit Public image
VPC	default_vpc

Figure 3-4 Overview

< rds-ccc3 o Available		
Basic Information	DB Information	
Backups & Restorations	DB Instance Name	rds-ccc3 🖉 🗇
Connectivity & Security	Description	2
Accounts	Description	- 2
Databases	Maintenance Window (?)	02:00 - 06:00 (GMT+08:00) Change
Logs	Instance Class	rds pg v1 large 2 ha L2 vCPUs L4 GR (Dedicated) Change
SQL Audits	Instance Class	rus.pg.X1.iarge.2.iia 2 vor 05 4 GB (Deutcateu) Change
Parameters	SSL	International 🕹
Plugins	Enterprise Project	default
Tags		
	AZ	cn-north-4a (Primary AZ), AZ7 (Standby AZ)
	Connection Information	
	Floating IP Address	192.168.0.161 🗇 Change
	VPC	default_vpc
	Subnet	default_subnet(192.168.0.0/24)
	Security Group	1security group Manage

- If they are not in the same region, purchase another ECS. The ECS and DB instance in different regions cannot communicate with each other. To reduce network latency, deploy your DB instance in the region nearest to your workloads.
- If the ECS and DB instance are in different VPCs, change the VPC of the ECS to that of the DB instance. For details, see **Changing a VPC**.

Step 2: Test Connectivity and Install the PostgreSQL Client

Installing the PostgreSQL Client (PostgreSQL 15 and Earlier Versions)

- 1. Log in to the ECS. For details, see **Login Using VNC** in the *Elastic Cloud Server User Guide*.
- 2. On the Instances page of the RDS console, click the DB instance name.
- 3. Choose **Connectivity & Security** from the navigation pane. In the **Connection Information** area, obtain the floating IP address and database port of the DB instance.

Figure 3-5 Connection information

< 🔿 rds-7394	• Available		Ə Log In 준 View Metrics 또 Instance Topology ···· 이 오
Overview			
Backups & Restorations	Connection Inform	mation	
Connectivity & Security	Floating IP Address	192.168.0.146 Change	Private Domain Name 8b265c3227b74c76b85468e00a253161in03.internal.cn-nor
Accounts			Change
Databases	EIP	No EIP bound Bind	Database Port 5432 Change
Logs			
SQL Audits	88L	International 📥	
Parameters			

- 4. On the ECS, check whether the floating IP address and database port of the DB instance can be connected. curl -kv 192.168.0.7:5432
 - If yes, network connectivity is normal.
 - If no, check the security group rules.
 - If in the security group of the ECS, there is no outbound rule with Destination set to 0.0.0.0/0 and Protocol & Port set to All, add an outbound rule for the floating IP address and port of the DB instance.

Figure 3-6 ECS security group

< default	inter Outbourge	Bulan Access	ated bestensor . Tax			@ Feedback	Import Rule	xport Rule
annuny modula i	Combourd		and mananous may					
 Gome security group 	oup rules will not take eff	ect for ECSs with certs	in specifications. Learn more 🕑					×
Add Rule	Past-Add Rule	Defete Allow	Common Ports Outbound P	ules: 2 View Security Group Co	mfguration Examples 🕑			
C. Select a property of	or enter a keyword.							00
Priority	Action	Туре	Protocol & Port	Destination	Description	Last Modified	Operation	
100	Allow	IPv6	All	010		Mar 02, 2022 1	Modify Replicate De	Nete
100	Allow	IPv4	AI	0.0.0.00		Mar 02, 2022 1	Modify Replicate De	Hete
Total Records: 2							10 🗸	

- If in the security group of the DB instance, there is no inbound rule allowing the access from the private IP address and port of the ECS, add an inbound rule for the private IP address and port of the ECS. For details, see Configuring Security Group Rules.
- 5. Install the PostgreSQL client.

The PostgreSQL community provides **client installation methods** for different OSs. You can download and install the client using the installation

tool of the OS. This installation method is simple but has requirements on the ECS OS. It is only available to the OSs supported by the PostgreSQL community.

In this example, CentOS 7 is used. Use the default installation tool of the OS to install the client (PostgreSQL 15 or earlier).

Figure 3-7 Obtaining the installation tool

PostgreSQL Yum Repository	
The PostgreSQL Yum Repository will integrate with your normal systems and patch management, and provide automatic updates for all su PostgreSQL.	pported versions of PostgreSQL throughout the support lifetime of
The PostgreSQL Yum Repository currently supports:	
Red Hat Enterprise Linux Rocky Linux AlmaLinux AlmaLinux CentOS (7 and 6 only) Oracle Linux Fedora*	
*Note: due to the shorter support cycle on Fedora, all supported versions of PostgreSQL are not available on this platform. We do not reco	nmend using Fedora for server deployments.
To use the PostgreSQL Yum Repository, follow these steps:	
1. Select version:	
15	\$
2. Select platform:	
Red Hat Enterprise, CentOS, Scientific or Oracle version 7	÷
3. Select architecture:	
x86_64	\$
4. Copy, paste and run the relevant parts of the setup script:	
<pre># Install the repository RSM: rudo ym install -y bitps://download.portgresql.org/pub/repos/yms/reporpas/NL-7-x80_04/pgdg-redMat-repo-latest.noarch.rpn # Install PostgreSQL: sudo ym install -y postgresql5-server</pre>	Copy Script
# Optionally initialize the database and enable automatic start: sudo /urs/sgcal=75/hin/postgreeqal=75-entp initdb sudo systexctl enable postgreeqal=15 sudo systexctl start postgreeqal=15	_

Run the following commands:

sudo yum install -y https://download.postgresql.org/pub/repos/yum/reporpms/EL-7-x86_64/pgdgredhat-repo-latest.noarch.rpm sudo yum install -y postgresgl15-server

Check whether the installation is successful.

psql -V

Figure 3-8 Successful installation

Running transaction	
Installing : postgresql15-libs-15.8-196D6.rhel7.x86_64	
Installing : libzstd-1.5.5-1.el7.x86_64	
Installing : libicu-50.2-4.el7_7.x86_64	
Installing : postgresql15-15.8-1PGDG.rhel7.x86_64	
Installing : postgresql15-server-15.8-1PGDG.rhel7.x86_64	5/5
Verifying : libicu-50.2-4.e17_7.x86_64	
Verifying : postgresql15-server-15.8-1PGDG.rhel7.x86_64	2/5
Verifying : libzstd-1.5.5-1.el7.x86_64	3/5
Verifying : postgresql15-libs-15.8-1PGDG.rhel7.x86_64	
Verifying : postgresql15-15.8-1PGDG.rhel7.x86_64	
Installed:	
postgresql15-server.x86_64 0:15.8-1PGDG.rhel7	
Dependency Installed:	
libicu.x86_64 0:50.2-4.el7_7 libzstd.x86_64 0:15.5-1.el7 postgresql15.x86_64 0:15.8-1PGDG.rhel7 postgresql15-libs.x86_64 0:15.8-1PGDG.rhel7	
Complete!	
[rootgecs-4dc2 ~]# psq1 -V	
psql (PostgreSQL) 15.8	
[root@ecs-4dc2 ~]#	

Installing the PostgreSQL Client (No Restrictions on the Version)

- 1. Log in to the ECS. For details, see **Login Using VNC** in the *Elastic Cloud Server User Guide*.
- 2. On the Instances page of the RDS console, click the DB instance name.
- 3. Choose **Connectivity & Security** from the navigation pane. In the **Connection Information** area, obtain the floating IP address and database port of the DB instance.

Figure 3-9 Connection information

< rds-ccc3 o Available				Log In View Metrics Reboot Migrate Database C
Basic Information				
Backups & Restorations	Connection Information			
Connectivity & Security	Floating IP Address	192.168.0.161 🗗 Change	Private Domain Name	e0563b10cfd845c4a3a566400d008b8in03.internal.cn-north-4.postgresql.rds.myhuaweicioud.com
Accounts	EIP	No EIP bound Bind	Database Port	5432 🖉 🕜
Databases	SSL	International 🛓		
Logs				

- On the ECS, check whether the floating IP address and database port of the DB instance can be connected. curl -kv 192.168.0.7:5432
 - If yes, network connectivity is normal.
 - If no, check the security group rules.
 - If in the security group of the ECS, there is no outbound rule with Destination set to 0.0.0/0 and Protocol & Port set to All, add an outbound rule for the floating IP address and port of the DB instance.

Figure 3-10 ECS security group

default						C Feedback	CI Import Hule Li Expo
ry Inbound Ru	les Outbound Rule	s Associated Instances					
Some security group	orules will not take effect for	ECSs with certain specifications. Learn more					
Vdd Rule Fast-	Add Rule Delete	Allow Common Parts Outbound Rule	is: 2 Learn more about s	ecurity group configuration.			
recity filter criteria.							
Priority 🕥	Action ③	Protocol & Port (2)	Type	Destination (?)	Description	Last Modified	Operation
100	Allaw	AI	IPv6	::0	-	Apr 13, 2022 18:49:17 GMT+08:00	Modify Replicate Delete
100	Allow	AL	IPv4	0.0.00 3		Apr 13, 2022 18:49:17 GMT+08:00	Modify Replicate Delete

- If in the security group of the DB instance, there is no inbound rule allowing the access from the private IP address and port of the ECS, add an inbound rule for the private IP address and port of the ECS. For details, see Configuring Security Group Rules.
- 5. Install the PostgreSQL client.

Installation from source code: This installation method has no restrictions on the RDS PostgreSQL instance version and ECS OS.

The following uses an ECS using the Huawei Cloud EulerOS 2.0 image as an example to describe how to install a PostgreSQL 16.4 client.

Figure 3-11 Checking the ECS image

ECS Information	
ID	d52c8027-ee75-4ced-95d6-6f91a281822d
Name	ecs-e4d7 🖉
Description	2
Region	
AZ	AZ7
Specifications	General computing-plus 2 vCPUs 4 GiB c7.large.2
Image	Huawei Cloud EulerOS 2.0 Standard 64 bit Public image
VPC	default_vpc

a. To use SSL connection, download OpenSSL on the ECS in advance. sudo yum install -y openssl-devel

- b. Obtain the code download link, run wget to download the installation package to the ECS, or download the installation package to the local PC and upload it to the ECS. wget https://ftp.postgresql.org/pub/source/v16.4/postgresql-16.4.tar.gz
- c. Decompress the installation package. tar xf postgresql-16.4.tar.gz
- d. Compile and install the client. cd postgresql-16.4 ./configure --without-icu --without-readline --without-zlib --with-openssl make -j 8 && make install

NOTE

If **--prefix** is not specified, the default path is **/usr/local/pgsql**. The client can be installed in the simplest way.

Figure 3-12 Compilation and installation

make[4]. Ecaving directory //oot/postercsdr 10.4/Stc/port
make -C//.src/common all
<pre>make[4]: Entering directory '/root/postgresql-16.4/src/common'</pre>
make[4]: Nothing to be done for 'all'.
<pre>make[4]: Leaving directory '/root/postgresql-16.4/src/common'</pre>
<pre>make[3]: Leaving directory '/root/postgresql-16.4/src/interfaces/libpq'</pre>
make -C//src/port all
make[3]: Entering directory '/root/postgresql-16.4/src/port'
make[3]: Nothing to be done for 'all'.
make[3]: Leaving directory '/root/postgresql-16.4/src/port'
make -C//.src/common all
make[3]: Entering directory '/root/postgresql-16.4/src/common'
make[3]: Nothing to be done for 'all'.
make[3]: Leaving directory '/root/postgresql-16.4/src/common'
/usr/bin/mkdir -p '/usr/local/pgsql/lib/pgxs/src/test/isolation'
/usr/bin/install -c pg_isolation_regress '/usr/local/pgsql/lib/pgxs/src/test/isolation/pg_isolation_regress'
/usr/bin/install -c isolationtester '/usr/local/pgsql/lib/pgxs/src/test/isolation/isolationtester'
make[2]: Leaving directory '/root/postgresql-16.4/src/test/isolation'
make -C test/perl install
<pre>make[2]: Entering directory '/root/postgresql-16.4/src/test/perl'</pre>
make[2]: Nothing to be done for 'install'.
make[2]: Leaving directory '/root/postgresql-16.4/src/test/perl'
/usr/bin/mkdir -p '/usr/local/pgsql/lib/pgxs/src'
/usr/bin/install -c -m 644 Makefile.global '/usr/local/pgsql/lib/pgxs/src/Makefile.global'
/usr/bin/install -c -m 644 Makefile.port '/usr/local/pgsql/lib/pgxs/src/Makefile.port'
/usr/bin/install -c -m 644 ./Makefile.shlib '/usr/local/pgsql/lib/pgxs/src/Makefile.shlib'
/usr/bin/install -c -m 644 ./nls-global.mk '/usr/local/pgsql/lib/pgxs/src/nls-global.mk'
make[1]: Leaving directory '/root/postgresql-16.4/src'
make -C config install
make[1]: Entering directory '/root/postgresql-16.4/config'
/usr/bin/mkdir -p '/usr/local/pgsql/lib/pgxs/config'
/usr/bin/install -c -m 755 ./install-sh '/usr/local/pgsql/lib/pgxs/config/install-sh'
/usr/bin/install -c -m 755 ./missing '/usr/local/pgsql/lib/pgxs/config/missing'
make[1]: Leaving directory '/root/postgresql-16.4/config'

e. Add the following code to the **/etc/profile** file to configure environment variables:

export PATH=/usr/local/pgsql/bin:\$PATH export LD_LIBRARY_PATH=/usr/local/pgsql/lib:\$LD_LIBRARY_PATH source /etc/profile

f. Test whether the psql is available. psql -V

Figure 3-13 Testing psql



Step 4: Connect to the DB Instance Using Commands (SSL Connection)

- 1. On the **Instances** page of the RDS console, click the DB instance name.
- 2. In the navigation pane, choose **Connectivity & Security**.
- 3. In the **Connection Information** area, click \checkmark next to the **SSL** field to download **Certificate Download.zip**, and extract the root certificate **ca.pem** and bundle **ca-bundle.pem** from the package.

Figure 3-14 Downloading a certificate

< rds-ccc3 o Available									
Basic Information									
Backups & Restorations	Connection Information								
Connectivity & Security	Floating IP Address	192.168.0.161 🗇 Change							
Accounts	EIP	No EIP bound Bind							
Databases	SSL	International 👱							
Logs									

4. Upload **ca.pem** to the ECS.

NOTE

- TLS v1.2 or later is recommended. Versions earlier than TLS v1.2 have security risks.
- The recommended protocol algorithm is EECDH+ECDSA+AESGCM:EECDH+aRSA +AESGCM:EDH+aRSA+AESGCM:EDH+aDSS+AESGCM:!aNULL:!eNULL:!LOW:!3DES:! MD5:!EXP:!SRP:!RC4. Using other options have security risks.
- **ca-bundle.pem** contains both the new certificate provided as of April 2017 and the old certificate.
- Both **ca.pem** and **ca-bundle.pem** can be used for SSL connections because **ca-bundle.pem** contains **ca.pem**.
- 5. Run the following command on the ECS to connect to the DB instance: psql --no-readline -h <host> -p <port> "dbname=<database> user=<user> sslmode=verify-ca sslrootcert=<ca-file-directory>"

Example:

psql --no-readline -h 192.168.0.7 -p 5432 "dbname=postgres user=root sslmode=verify-ca sslrootcert=/root/ca.pem"

Parameter	Description
<host></host>	Floating IP address obtained in 3 .
<port></port>	Database port obtained in 3 . The default value is 5432 .
<database></database>	Name of the database to be connected. The default database name is postgres .
<user></user>	Administrator account root .
<ca-file- directory></ca-file- 	Directory of the CA certificate used for the SSL connection. This certificate should be stored in the directory where the command is executed.
sslmode	SSL connection mode. Set it to verify-ca to use a CA to check whether the service is trusted.

 Table 3-1
 Parameter description

6. Enter the password of the database account as prompted. Password:

If the following information is displayed, the connection is successful. SSL connection (protocol: TLSv1.2, cipher: ECDHE-RSA-AES256-GCM-SHA384, bits: 256, compression: off)

Follow-up Operations

After logging in to the DB instance, you can create or migrate databases.

- Creating a PostgreSQL Database Using an API
- Managing PostgreSQL Databases Using DAS
- Migration Solution Overview

3.2 Buying an RDS for PostgreSQL Instance and Connecting to It Through DAS

This section describes how to purchase an RDS for PostgreSQL instance and how to connect to it using DAS.

- Step 1: Buy an RDS for PostgreSQL DB Instance
- Step 2: Connect to the RDS for PostgreSQL Instance

Step 1: Buy an RDS for PostgreSQL DB Instance

- 1. Go to the **Buy DB Instance** page.
- 2. On the **Quick Config** page, set basic parameters.

NOTE

The following parameter settings are only for reference.

Parameter	Example Value	Description
Billing Mode	Pay-per-use	The billing mode of an instance.
		• Yearly/Monthly: A prepaid billing mode in which you pay for resources before using it. Bills are settled based on the subscription period. The longer the subscription, the bigger the discount. This mode is a good option for long-term, stable services.
		• Pay-per-use : A postpaid billing mode. You pay as you go and just pay for what you use. The DB instance usage is calculated by the second but billed every hour. This mode allows you to adjust resource usage easily. You neither need to prepare for resources in advance, nor end up with excessive or insufficient preset resources.
Region	CN-Hong Kong	The region where your resources are located. NOTE Products in different regions cannot communicate with each other through a private network. After a DB instance is created, the region cannot be changed. Therefore, exercise caution when selecting a region.
DB Engine Version	16	The database version.
DB Instance	Primary/	The architecture type of an instance.
Туре	Standby	Primary/Standby : An HA architecture. In a primary/standby pair, each instance has the same instance class. When a primary instance is being created, a standby instance is provisioned along with it to provide data redundancy. The standby instance is invisible to you after being created.
Instance Class	General- purpose 4U 8G	The vCPU and memory of an instance.
Storage	Cloud SSD	The storage space of an instance.
	TUUGB	It contains the system overhead required for inodes, reserved blocks, and database operation.

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 events are createdatakey and decrydatakey . Only the key owner can receive the events.

3. Complete advanced configurations.

Figure 3-15 Additional Options

	ptions					
VPC: default_vpc	Subnet: default_subnet	IPv4 Address:	Database Port:	Security Group: default	Enterprise Project: default	
Required Duratic	on and Quantity					
Quantity						
I +						
You can create 49 m	ore instances (read replica	s included). Increas	e Quota			

Parameter	Example Value	Description
VPC	default_vpc	The virtual network in which your instance is located. A VPC can isolate networks for different workloads.
		If no VPC is available, click Create VPC.
		After a VPC is created, click \bigcirc . For details, see Creating a VPC and Subnet .
Subnet	default_subn et	A subnet provides dedicated network resources that are logically isolated from other networks for network security.
Security Group	default	It can enhance security by controlling access to RDS for PostgreSQL from other services.
Enterprise Project	default	If your account has been associated with an enterprise project, select the target project from the Enterprise Project drop-down list.
		For more information about enterprise projects, see <i>Enterprise Management User Guide</i> .

Parameter	Example Value	Description
Quantity	1	The number of instances to be created in a batch.

- 4. Click **Buy**.
- 5. Check the purchased DB instance.

Figure 3-16 Instance successfully purchased

Renew Unsubscribe Change to	o Yearly/Monthly	More v	Export						
Q Select a property or enter a keyword.									Q
□ Name/ID 🖨	Descr 🖨	DB In 🔤	DB Engl 🔶	Status 🔤	Billin 🔤	Floati 🔤	Read/.	Operation	
rds-7394 8b265c3227b74c76b85468e00a253161in03	-	Primary/S 4 vCPUs	PostgreSQL	O Available	Pay-per-use Created o	192.1	-	Log In View Metrics More 🗸	

Step 2: Connect to the RDS for PostgreSQL Instance

 Since no password is configured in Step 1: Buy an RDS for PostgreSQL DB Instance, you need to reset the password before you can connect to the instance. In the instance list, choose More > Reset Password.

Figure 3-17 Instance list

O DB Engine: PostgreSQL × Add filter	× (1) (1)	0
✓ Name/ID 🔶	Descr \Leftrightarrow DB In \Leftrightarrow DB En \Leftrightarrow Status \Leftrightarrow Billin \notin Operation	
V rds-7394 9684a97bc91e45c4b026eb46025a0beein03	- Single PostgreS O Available Pay-per-us Log In View Metrics More A	
	Change Storage Space	
Total Records: 1	Change Instance Class < 1	>
	Change Type to Primary/Standby	
	Create Backup	
	View DR Details	
	Modify Parameters	
	Reset Password	
	Reboot	
	Stop	
	Delete	

2. Enter a new password, confirm the password, and click **OK**.
Figure 3-18 Resetting a password

Reset Password		×
DB instance ID	9684a97bc91e45c4b026eb46025a0beein03	
DB Instance Name	rds-7394	
New Password	•••••	Ø
Confirm Password	•••••	Ì
	Cancel	ок

3. Click Log In in the Operation column.

Figure 3-19 Instance list

Renew Unsubscribe Change to	Yearly/Monthly	More ~	Export			
O DB Engine: PostgreSQL × Add filter						× (a) (a)
✓ Name/ID ⇔	Descr 🖯	DB In 😔 🛛	DB En 😔	Status 😔	Billin Operation	
rds-7394 9684a97bc91e45c4b026eb46025a0beein03		Single 2 vCPUs	PostgreSQ	 Available 	Pay-per-u: Created o	More 🗸

- 4. Enter the required information and click **Log In**.
 - Login Username: Enter root.
 - Database Name: Enter postgres.
 - **Password**: Enter the password you specified in **2**.

Figure 3-20 Logging in to an instance

Instance Login Informatio	n	>
DB Instance Name rds-7394	DB Engine Version PostgreSQL 15	
★ Login Username	root	
* Database Name	postgres	
★ Password	Image: Second	
Description		
Show Executed SQL Statements ⑦	If not enabled, the executed SQL statements cannot be viewed, and you need to input each SQL statement manually.	
	Cancel Log In	

5. Choose **SQL Operations** > **SQL Query**.

Figure 3-21 SQL Query

Data Admins	Service PostgreSQL	SQL Operations	Database
Home	SQL Query ×	SQL Query	
Current	Database: postgres ()	SQL History	2.16
Database:	postgres V	Execute SQL (F	8) 🔁 F
Schema:	public 🗸	The code editor	r provides the
Tables	Views	1 551567 * 500	
Please se	earch by key Q	I SELECT * FROM	*1

Create a database named test1.
 CREATE DATABASE test1;

Current Database: postgres 🕕	Antice Solution Solut
	Execute SQL (F8) Execute SQL (F9) SQL Favorites v
Schema: public V	1 CREATE DATABASE test1;
Tables Views	
Please search by k Q	
No data	
No data.	Executed SQL Statements Messages
	Execute [Split SQL] Number of SQL(s) to be executed: 1 [Executed SQL: (1)] CREATE DATABASE test1; executed successfully. Time required: [99ms.]

Figure 3-22 Creating a database

7. Switch to **test1** and create a schema named **schema1** in the database.

Figure 3-23 Switching to the database

Current D	atabase:postgres 🕕	Master Switch SQL
Database:	postgres ^	Execute SQL (F8)
Schema:	postgres	1 CREATE DATABASE
Tables	test1	
Please sea	rch by k 오 C	

CREATE SCHEMA schema1;

Figure 3-24 Creating a schema

Database:	test1	\vee	● Execute SQL (F8) SQL (F9) (Execute SQL Plan (F6) SQL Favorites ∨
Schema:	public	\sim	1 CREATE SCHEMA schemal;
Tables	Views		
Please sea	rch by k Q	С	
	No data.		Executed SQL Statements Messages
			Execute
			[Split SQL] Number of SQL(s) to be executed: 1
			[Executed SQL: (1)]
			executed successfully. Time required: [15ms.]

 Switch to schema1 and create a table named mytable with only one column. Specify the column name as firstcol and the column type as integer.
 CREATE TABLE schema1.mytable (firstcol int);

Figure 3-25 Creating a table

Database:	test1	\sim	Execute SQL (F8) Execute SQL (F9) SQL Favorites
Schema:	schema1	\sim	<pre>1 CREATE TABLE schemal.mytable (firstcol int);</pre>
Tables	Views		
Please sea	arch by k O	C	
	No data.		
			Executed SQL Statements Messages
			Execute
			[Split SQL] Number of SQL(s) to be executed: 1
			[Executed SQL: (1)]
			executed successfully. Time required: [5ms.]

Insert data to the table.
 INSERT INTO schema1.mytable values (100);

Figure 3-26 Inserting data

Database:	test1	\sim	● Execute SQL (F8) ■ Format SQL (F9) (
Schema:	schema1	\vee	1 INSERT INTO schemal.mytable values (100);
Tables	Views		
Please sea	arch by k Q	С	
	No data.		Executed SQL Statements Messages
			Execute
			[Split SQL] Number of SQL(s) to be executed: 1
			[Executed SQL: (1)]
			<pre>INSERT INTO schemal.mytable values (100);</pre>
			executed successfully. Time required: [45ms.]

Query data in the table. SELECT * FROM "schema1"."mytable"

Figure 3-27 Querying data

Database: test1 V	Execute SQL (F8) Format SQL (F9) SQL Favorites	
Schema: schema1 v	1 SELECT * FROM "schemal"."mytable"	
Tables Views		
Please search by k Q		
NO data.	Executed SQL Statements Messages Result Set1 ×	
	The following is the execution result set of SELECT * FROM "schema1"."mytable".	① This object has no primary
	firstcol	
	1 100	

10. In the upper part of the page, choose **Account Management** > **Role Management**.

Figure 3-28 Role management

Data Datin Service PostgreSQL	SQL Operations	Database Management	Import and Export	Account Management
Home Role Management ×				
+Create Role Batch Delete				
Role Name			Role ID	
pg_database_owner			6171	
pg_read_all_data			6181	
pg_write_all_data			6182	
root			16384	

11. Click **Create Role** and complete basic settings. **user1** is used as an example.

Figure 3-29 Creating a role

Home Role Management ×							
Back to Role Management I	3ack to Role Management List / Create Role						
Basic Settings Rol	e Groups Permissions						
* Role Name	user1						
Login							
* Password		ø					
* Confirm Password		ø					
Connection Limit	-1						
Expires	Select a date.						
Create Database							
Create Role							
Inherit Permission ⑦							
		Save					

12. Click the **Permissions** tab and grant **user1** the permissions to perform operations on databases, schemas, and tables.

Figure 3-30 Granting permissions

Database teot1 teot1 teot1		schema1 v schema1 v	Object mytable V	Column	Permissions DELETEJNSERT,REFERENCES,SELECT,TRIGGER,TRUNCATE,UP
test1 test1 test1	× 1	schema1 v schema1 v	mytable V		DELETE, INSERT, REFERENCES, SELECT, TRIGGER, TRUNCATE, UP
test1 test1	~ 1	schema1 V			
test1					CREATE,USAGEEdt
					CONNECT, CREATE, TEMPORARYEdit

13. On the **Development Tool** page, click **Add Login** and log in to the database as **user1**.

Figure 3-31 Adding login

DB Engine	PostgreSQL 🔻			
Source Database	RDS	ECS		
			Enter a DB instance name.	Q
	DB Instance Name	DB Engine Version	DB Instance Type	Status
	rds-eff5	PostgreSQL 13	Primary/Standby	Available
Login Username Password	user1 Connection is successful. Remember Password Your Dassword	Test Conne	ction	
Description				
Show Executed SQL				

14. Create **schema2** in **test1** to verify that **user1** has the **CREATE** permission. **CREATE SCHEMA schema2**;

×

Figure 3-32 Verifying permissions

Database:	test1	V (Execute SQL (F8) Format SQL (F9) Execute SQL Plan (F6) SQL Favorites
Schema:	public	$\overline{}$	1 CREATE SCHEMA schema2;
Tables	Views		
Please sea	arch by k Q	С	
	No data.		Executed SQL Statements Messages
			Execute
			[Split SQL] Number of SQL(s) to be executed: 1
			[Executed SQL: (1)] CREATE SCHEMA schema2; executed successfully. Time required: [45ms.]

3.3 Getting Started with RDS for PostgreSQL Common Practices

After purchasing and connecting to a DB instance, you can view common practices to better use RDS for PostgreSQL.

Practice		Description		
Suggestions on using RDS for PostgreSQL	Instance Usage Suggestions	This practice provides suggestions on using RDS for PostgreSQL in terms of database connection, read replicas, reliability and availability, logical replication, database age, stability, routine O&M, and security.		
	Database Usage Suggestions	This practice provides suggestions on database naming, table design, index design, SQL design, and security.		
Data migration	Migrating Data to RDS for PostgreSQL Using psql	This practice describes how to use pg_dump to copy data from the source to an RDS for PostgreSQL DB instance.		
	Migrating Data to RDS for PostgreSQL Using the Export and Import Functions of DAS	This practice describes how to use Data Admin Service (DAS) to export data from the source and then import the data to an RDS for PostgreSQL DB instance.		

 Table 3-2
 Common practices

Practice		Description			
	From RDS for PostgreSQL to RDS for PostgreSQL	This practice describes how to use DRS to synchronize data from the source to an RDS for PostgreSQL DB instance.			
	From Self-Managed PostgreSQL to RDS for PostgreSQL	This practice describes how to use DRS to synchronize data from a self- managed PostgreSQL database to an RDS for PostgreSQL DB instance.			
	From PostgreSQL on Other Clouds to RDS for PostgreSQL	This practice describes how to use DRS to synchronize data from PostgreSQL databases on other clouds to RDS for PostgreSQL.			
	From Oracle to RDS for PostgreSQL	This practice describes how to use DRS to synchronize data from a self- managed Oracle database to an RDS for PostgreSQL DB instance.			
	From RDS for MySQL to RDS for PostgreSQL	This practice describes how to use DRS to synchronize data from an RDS for MySQL DB instance to an RDS for PostgreSQL DB instance.			
	From Self-Managed MySQL to RDS for PostgreSQL	This practice describes how to use DRS to synchronize data from a self- managed MySQL database to an RDS for PostgreSQL DB instance.			
	From MySQL on Other Clouds to RDS for PostgreSQL	This practice describes how to use DRS to synchronize data from MySQL databases on other clouds to RDS for PostgreSQL.			
Data backup	Intra-region automated backup	This practice describes how RDS for PostgreSQL automatically creates backups for a DB instance during a backup window and saves the backups based on the configured retention period.			
	Intra-region 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.			
Data restoration	Restoring from Full Backups to RDS for PostgreSQL Instances	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 DB Instance to a Point in Time	This practice describes how to use an automated backup to restore instance data to a specified point in time.		

4 Getting Started with RDS for SQL Server

4.1 Overview

An RDS DB instance can be connected through a private network, Data Admin Service (DAS), or a public network.

Conne ct Throu gh	IP Address	Scenarios	Description
DAS	No IP address is required. You can log in to the DAS console and use RDS directly.	DAS enables you to manage databases on a web-based console and provides you with database development, O&M, and intelligent diagnosis to make it easy to use and maintain your databases. The permissions required for connecting to DB instances through DAS are enabled by default.	 Easy to use, secure, advanced, and intelligent Recommended
Private netwo rk	Floating IP RDS provides a floating IP address by default. When your applications are deployed on an ECS that is in the same region and VPC as RDS, you are advised to use a floating IP address to connect to the RDS DB instance through the ECS.		 Secure and excellent performance Recommended

Table 4-1	RDS	connection	methods
	1105	connection	meenous

Conne ct Throu gh	IP Address	Scenarios	Description
Public netwo rk	EIP	If you cannot access an RDS DB instance through a floating IP address, bind an EIP to the DB instance and connect the DB instance to the ECS through the EIP.	 A relatively lower level of security compared to other connection methods To achieve a higher transmission rate and security level, you are advised to migrate your applications to an ECS that is in the same VPC as your RDS DB instance and use a floating IP address to access the DB instance. You need to purchase an EIP. For details, see EIP billing details.

NOTE

- VPC: indicates the Virtual Private Cloud.
- ECS: indicates the Elastic Cloud Server.
- You can log in to DB instances using the Data Admin Service (DAS) service or other database clients.
- If the ECS is in the same VPC as the RDS DB instance, you do not need to apply for an EIP.

Figure 4-1 illustrates the connection over a private network or a public network.

Figure 4-1 DB instance connection



4.2 Connecting to a DB Instance Through DAS (Recommended)

Scenarios

Data Admin Service (DAS) enables you to connect to and manage databases with ease on a web-based console. The permissions required for connecting to DB instances through DAS are enabled by default. You are advised to use this connection method.

Procedure

- Step 1 Log in to the management console.
- **Step 2** Click ¹ in the upper left corner and select a region.
- Step 3 Click in the upper left corner of the page and choose Databases > Relational Database Service.
- **Step 4** On the **Instances** page, locate the DB instance and click **Log In** in the **Operation** column.

Figure 4-2 Logging in to an instance



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

Figure 4-3 Logging in to an instance

< rds-5a68 o Availabl			e Feedback Log In View Metrics Reboot Migrate Database C
Basic Information			
Backups & Restorations	DB Instance Topology		
Connectivity & Security			
Accounts		DB instance	
Databases		Careful (Switch Primer)	
Distributed Transactions		rds-5a68 rds-5a68	
Logs			
Parameters			

Step 5 On the displayed login page, enter the correct username and password and click **Log In**.

----End

FAQ

- What Should I Do If I Can't Connect to My DB Instance Due to Insufficient Permissions?
- What Should I Do If I Can't Connect to My RDS for SQL Server Instance?

Follow-up Operations

After logging in to the DB instance, you can create or migrate databases.

- Managing RDS for SQL Server Databases Using DAS
- Migration Solution Overview

4.3 Connecting to a DB Instance Through a Private Network

4.3.1 Connecting to a DB Instance Through a Private Network

Process

Figure 4-4 illustrates the process of connecting to an RDS for SQL Server DB instance through a private network.



Figure 4-4 Connecting to a DB instance through a private network

4.3.2 Connecting to a DB Instance from a Windows ECS

You can connect to your DB instance using a Windows ECS installed with SQL Server Management Studio over a private network.

This section describes how to connect to a DB instance with SSL disabled. To connect to a DB instance with SSL enabled, see **Connecting to an Instance Through a Private Network**.

Step 1: Buy an ECS

- 1. Log in to the management console and check whether there is an ECS available.
 - If there is a Windows ECS, go to 3.
 - If no Windows ECS is available, go to 2.

Figure 4-5 ECS

Name/ID	Monitori	Security	AZ 🏹	Status 🏹	Specifications/Image	IP Address	Billing Mode 🍞	Enterprise	Tag	Operation
ecs-e021	國	٥		Running	2 vCPUs 16 GiB m2.large.8 Marketplace Windows Server 2	(EIP) 1 Mbit/s 192.168.6.115 (Private IP)	Pay-per-use	default	-	Remote Login More 👻

2. Buy an ECS and select Windows as its OS.

To download SQL Server Management Studio to the ECS, bind an EIP to the ECS. The ECS must be in the same region, VPC, and security group as the RDS for SQL Server DB instance for mutual communications.

For details about how to purchase a Windows ECS, see **Purchasing a Custom ECS** in *Elastic Cloud Server User Guide*.

3. On the ECS Information page, view the region and VPC of the ECS.

ecs-e	02f					
ummary	Disks	Network Interfaces	Security Groups	EIPs	Monitoring	Tags
ECS Info	ormation					
ID						
Name		ecs-e02f 🖉				
Region						
AZ		AZ1				
Specificati	ons	General computing 2 v	CPUs 16 GiB m2.large.8	•		
Image		Marketplace Windows	s Server	40	GB Marketplace in	lage
		Version: Windows Serve	er 2019 Standard 64bit			
VPC		default_vpc				
Billing Mod	de	Pay-per-use				
Obtained		Jun 08, 2023 10:39:12 (GMT+08:00			
Launched		Jun 08, 2023 10:39:23 0	GMT+08:00			
Deletion Ti	ime	Modify				

Figure 4-6 ECS information

4. On the **Overview** page of the RDS for SQL Server instance, view the region and VPC of the DB instance.

Figure 4-7 Overview

< 🔇 rds-20b2 o	Available		
Overview			
Backups & Restorations	Instance Information		
Connectivity & Security	Danie Information		
Accounts	Basic mormation		
Databases	DB Instance Name	DB Instance ID	Description
Distributed Transactions	rds-20b2 🖉 🗇	90be5b25b4154607b2aa3af4efc813d9in04 🗍	- 2
Lons	Time Zone	SSL	Administrator
Paramatore	China Standard Time	Download	rdsuser Reset Password
Parameters	Failover Priority	Character Set	AZ
DBA Assistant V	Reliability Configure	Chinese_PRC_90_CI_AI Configure	cn-north-4a (Primary AZ), cn-north-4a (Standby AZ)
Publications & Subscriptions	Configurations		
Tags	DB Engine Version	DB Instance Type	Instance Class
	Microsoft SQL Server 2022 Standard Edition	Primary/Standby Switch	rds.mssql.spec.n1.se.xlarge.2.ha 4 vCPUs 8 GB (General-purpose)
	Connectivity		
	Floating IP Address	EIP	VPC
	192.168.0.190 D Configure	- Bind	default_vpc 🖾
	Subnet	Security Group	
	default_subnet(192.168.0.0/24)	default Configure	

- 5. Check whether the ECS and RDS for SQL Server instance are in the same region and VPC.
 - If yes, go to Step 2: Test Connectivity and Install SQL Server Management Studio.
 - If they are not in the same region, purchase another ECS or DB instance. The ECS and DB instance in different regions cannot communicate with

each other. To reduce network latency, deploy your DB instance in the region nearest to your workloads.

- If the ECS and DB instance are in different VPCs, change the VPC of the ECS to that of the DB instance. For details, see **Changing a VPC**.

Step 2: Test Connectivity and Install SQL Server Management Studio

- 1. Log in to the ECS. For details, see **Login Using VNC** in the *Elastic Cloud Server User Guide*.
- 2. On the **Instances** page of the RDS console, click the DB instance name to go to the **Overview** page.
- 3. Obtain the floating IP address and database port of the DB instance.

Figure 4-8 Connection information

< 🔇 rds-20b2	O Available				⊕ Log in @ Reset Password ⑦ Reboot
Overview					
Backups & Restorations	Instance Information				
Connectivity & Security					
Accounts	Basic Information				
Databases	DB Instance Name	DB Instance ID	Description		Maintenance Window
Distributed Transactions	rds-20b2 🖉 🗇	90be5b25b4154607b2aa3af4etc813d9in04	- 2		02:00 - 05:00 (GMT+08:00) Configure (?)
Logs	Time Zone	SSL	Administrator		Enterprise Project
Parameters	China Standard Time	Download	rdsuser Reset Password		default
DBA Assistant V	Failover Priority	Character Set	AZ		Service Provider
Publications &	Reliability Configure	Chinese_PRC_90_CI_AI Configure	cn-north-4a (Primary AZ), cn-north-4a (Standby AZ)		EDENSOFT INTERNATIONAL LIMITED
Subscriptions	Configurations				
Tags	DB Engine Version	DB Instance Type	Instance Class		Storage
	Microsoft SQL Server 2022 Standard Edition	Primary/Standby Switch	rds.mssql.spec.n1.se.xlarge.2.ha 4 vCPUs 8 GB (General-purpose)	Configure	Cloud SSD 100 GB Scale Storage Space
	Connectivity				
	Floating IP Address	EIP	VPC		Database Port
	192.168.0.190 Configure	Bind	default_vpc 🕑		1433 Configure
	Subnet	Security Group			
	default_subnet(192.168.0.0/24)	default Configure			

4. Open the cmd window on the ECS and check whether the floating IP address and database port of the DB instance can be connected.

telnet 192.168.2.182 1433

- If yes, network connectivity is normal.
- If no, check the security group rules.
 - If in the security group of the ECS, there is no outbound rule with Destination set to 0.0.0/0 and Protocol & Port set to All, add an outbound rule for the floating IP address and port of the DB instance.

Figure 4-9 ECS security group

default						Freedback	월 Import Rule 🏾 🖸 E	oport Rule
mary Inbound R	ules Outbound Ru	es Associated Instances						
G Some security group	ip rules will not take effect to	r ECSs with certain specifications. Learn more						×
Add Rule Fas	LAdd Rule Delete	Allow Common Parts Outbound Rules	2 Learn more about s	security group configuration.				C
Specify filter criteria.								Q
Priority ③	Action ③	Protocol & Port (?)	Type	Destination (?)	Description	Last Modified	Operation	
100	Alaw	Al	IPv6	::0	-	Apr 13, 2022 18:49:17 GMT+08:00	Modify Replicate Delete	
100	Alow	AL	IPv4	00.000 3	-	Apr 13, 2022 18:49:17 GMT+08:00	Modity Replicate Delete	

- If in the security group of the DB instance, there is no inbound rule allowing the access from the private IP address and port of the ECS, add an inbound rule for the private IP address and port of the ECS. For details, see Configuring Security Group Rules.
- 5. Open a browser on the ECS, visit the **Microsoft website**, and download the installation package, for example, SQL Server Management Studio 18.0.

6. Double-click the installation package and complete the installation as instructed.

Step 3: Connect to the DB Instance Using SQL Server Management Studio

- 1. Start SQL Server Management Studio.
- 2. Choose **Connect** > **Database Engine**. In the displayed dialog box, enter login information.

Figure 4-10 Connecting to the server

	SQL Server
Server <u>t</u> ype:	Database Engine 👻
<u>S</u> erver name:	, 1433 👻
<u>A</u> uthentication:	SQL Server Authentication 👻
Login:	rdsuser 🗸
<u>P</u> assword:	****
	Remember password

 Table 4-2 Parameter description

Parameter	Description
Server name	Floating IP address and database port obtained in 3 .
Authenticat ion	Authentication mode. Select SQL Server Authentication.
Login	Name of the account used to access the DB instance. The default value is rdsuser .
Password	Password of the account.

3. Click **Connect** to connect to the DB instance.

Follow-up Operations

After logging in to the DB instance, you can create or migrate databases.

- Managing RDS for SQL Server Databases Using DAS
- Migration Solution Overview

4.3.3 Configuring Security Group Rules

Scenarios

A security group is a collection of access control rules for ECSs and RDS DB instances that have the same security protection requirements and are mutually trusted within a VPC.

This section describes how to create a security group to enable specific IP addresses and ports to access RDS.

First check whether the ECS and RDS DB instance are in the same security group.

- If the ECS and RDS DB instance are in the same security group, they can communicate with each other by default. No security group rule needs to be configured. Go to **Connecting to a DB Instance from a Windows ECS**.
- If the ECS and RDS DB instance are in different security groups, you need to configure security group rules for them, separately.
 - RDS DB instance: Configure an **inbound rule** for the security group with which the RDS DB instance is associated.
 - ECS: The default security group rule allows all outgoing data packets. In this case, you do not need to configure a security group rule for the ECS. If not all outbound traffic is allowed in the security group, you need to configure an **outbound rule** for the ECS.

This section describes how to configure an inbound rule for an RDS DB instance.

For details about the requirements of security group rules, see the Adding a Security Group Rule section in the *Virtual Private Cloud User Guide*.

Precautions

The default security group rule allows all outgoing data packets. ECSs and RDS DB instances can access each other if they are deployed in the same security group. After a security group is created, you can configure security group rules to control access from and to the DB instances in the security group.

- By default, you can create a maximum of 100 security groups in your cloud account.
- By default, you can add up to 50 security group rules to a security group.
- One RDS DB instance can be associated with multiple security groups, and one security group can be associated with multiple RDS DB instances.
- Too many security group rules will increase the first packet latency. You are advised to create no more than 50 rules for each security group.
- To enable access to an RDS DB instance from resources outside the security group, you need to configure an **inbound rule** for the security group associated with the RDS DB instance.

D NOTE

To ensure the security of your data and DB instances, you are advised to use the principle of least privilege for database access. Change the default database port **1433**, and set the IP address to the remote server's address or the remote server's smallest subnet address to control the access from the remote server.

The default value of **Source** is **0.0.0/0**, indicating that RDS DB instances in the security group can be accessed from any IP address.

For details about the requirements of security group rules, see the **Adding a Security Group Rule** section in the *Virtual Private Cloud User Guide*.

Procedure

- Step 1 Log in to the management console.
- **Step 2** Click ¹ in the upper left corner and select a region and a project.
- Step 3 Click in the upper left corner of the page and choose Databases > Relational Database Service.
- **Step 4** On the **Instances** page, click the DB instance name to go to the **Overview** page.
- **Step 5** Configure security group rules.

Under Security Group, click the security group name.

Figure 4-11 Connection information

Connection Information		Connectivity & S	Security 🖸 Connect to RDS Handle Connection Failure	
Floating IP Address	192.168.0.119 🗗 Change	EIP	Bind	
VPC	default_vpc	Database Port	1433 Change	
Subnet	default_subnet(192.168.0.0/24)	Security Group	default 🖉	
Microsoft SQL Server Management Studio Connection (Private) 192.168.0.119,1433 Note: Use a comma (,) to separate the IP address and database port.				

Step 6 On the **Inbound Rules** tab, click **Add Rule**. In the displayed dialog box, set required parameters to add an inbound rule.

You can click + to add more inbound rules.

Figure 4-12 Adding an inbound rule

Add Inbo	und Rule	e Lea	arn more about security group	configuration.			×
i Inboun Some s	d rules allow i security group	incoming rules wil	traffic to instances associated with the I not take effect for ECSs with certain s	security group. pecifications. Learn	more		
Security Group You can import	default_s	securityg s in a bat	roup ch.				
Priority (?	Action	?	Protocol & Port (?)	Туре	Source ⑦	Description	Operation
1-100	Allov	/ •	Protocols/TCP (Custo Example: 22 or 22-30	IPv4 -	IP address •		Replicate Del
				Add Rule			

OK Cancel

Table 4-3 Inbound rule	parameter description
------------------------	-----------------------

Parameter	Description	Example Value
Priority	Security group rule priority. Value range: 1 to 100. The default priority is 1 and has the highest priority. The security group rule with a smaller value has a higher priority.	1
Action	Security group rule actions. A rule with a deny action overrides another with an allow action if the two rules have the same priority.	Allow
Protocol & Port	Protocol : network protocol. Available options: All ports , Custom TCP , Custom UDP , ICMP , and GRE .	ТСР

Parameter	Description	Example Value
	Port : the port over which the traffic can reach your DB instance. An RDS for SQL Server instance can use the default database port 1433 or any port from the range 2100-9500 (excluding 5355 and 5985). If your instance uses 2019 Enterprise Edition, 2019 Standard Edition, 2019 Web Edition, 2017 Enterprise Edition, 2017 Standard Edition, or 2017 Web Edition, ports 5050, 5353, and 5986 cannot be specified for it.	1433
Туре	IP address type.	IPv4
Source	 Source address. It can be a single IP address, an IP address group, or a security group to allow access from them to your DB instance. Examples: Single IP address: 192.168.10.10/32 (IPv4 address) IP address segment: 192.168.1.0/24 (IPv4 address segment) All IP addresses: 0.0.0.0/0 (any IPv4 address) Security group: sg-abc IP address group: ipGrouptest 	0.0.0/0
Description	Supplementary information about the security group rule. This parameter is optional. The description can contain a maximum of 255 characters and cannot contain angle brackets (<) or (>).	-

----End

4.4 Connecting to a DB Instance Through a Public Network

4.4.1 Connecting to a DB Instance Through a Public Network

Process

Figure 4-13 illustrates the process of connecting to an RDS for SQL Server DB instance through a public network.





4.4.2 Binding an EIP

Scenarios

You can bind an EIP to a DB instance for public accessibility and can unbind the EIP from the DB instance as required.

Precautions

• You need to configure security groups and enable specific IP addresses and ports to access the target DB instance. Before accessing the DB instance, you need to add an individual IP address or an IP address range that will access

the DB instance to the inbound rule. For details, see section **Configuring Security Group Rules**.

• Traffic generated by the public network is charged. You can unbind the EIP from your DB instance when the EIP is no longer used.

Binding an EIP

- Step 1 Log in to the management console.
- **Step 2** Click \bigcirc in the upper left corner and select a region and a project.
- **Step 3** Click in the upper left corner of the page and choose **Databases** > **Relational Database Service**.
- **Step 4** On the **Instances** page, click the DB instance name.
- **Step 5** In the navigation pane on the left, choose **Connectivity & Security**. In the **Connection Information** area, click **Bind** next to the **EIP** field.

Figure 4-14 Binding an EIP

< rds-6331-0001 o A	vailable	
Basic Information		
Backups & Restorations	Connection Information	
Connectivity &	Floating IP Address	192.168.61.224 🗇 Change
Security		
Accounts	EIP	No EIP bound Bind

Step 6 In the displayed dialog box, select an EIP and click **OK**.

If no available EIPs are displayed, click View EIP and obtain an EIP.

Figure 4-15 Selecting an EIP

Bind EIP			×
For security purposes, after the EIP is outbound rules in the security group.(required to establish the SSL connect	bound, use <mark>SSL</mark> to connect to the da After you bind an EIP to an RDS for s ion.)	atabase and add inbound and SQL Server instance, a reboot is	
Select EIP Only EIPs that have not been bo	und to any cloud resource are display	ved.	2
EIP	Status	Bandwidth	
	No data available.		
View EIP			
	Yes No		

Step 7 On the **Connectivity & Security** page, view the EIP that has been bound to the DB instance.

You can also view the progress and result of binding an EIP to a DB instance on the **Task Center** page.

----End

4.4.3 Connecting to a DB Instance from a Windows Server

You can connect to your DB instance from a local Windows server installed with SQL Server Management Studio over a public network.

This section describes how to connect to a DB instance with SSL disabled. To connect to a DB instance with SSL enabled, see **Connecting to an Instance Through a Public Network**.

Step 1: Test Connectivity and Install SQL Server Management Studio

- 1. On the **Instances** page of the RDS console, click the DB instance name to go to the **Overview** page.
- 2. Obtain the EIP and database port of the DB instance.

Figure 4-16 Connection information

< 🔇 rds-f418 o A	waiiable				🕀 Log In 🔞 Reset Password 🔅 Reboot …
Overview					
Backups & Restorations	Instance Information				
Connectivity & Security	Basic Information				
Accounts					
Databases	DB Instance Name	DB Instance ID	Description	Mai	stenance Window
Distributed Transactions	rds-1418 Z 🗇	b830e06051ea4457b878a38e9110ad98in04 🗇	- a	02:0	0 - 06:00 (GMT+08:00) Configure 3
8818	Time Zone	SSL	Administrator	Fail	over Priority
Logs	UTC+08.00	Download	rdsuser Reset Password	Reli	ability Configure
Parameters	Character Set	AZ	Windows License		
DBA Assistant 🗸	Chinese_PRC_CI_AI Configure	az3 (Primary AZ), az3 (Standby AZ)	Primary instance Unactivated Standby instance Unacti	vated Activate	
Publications & Subscriptions	Configurations				
Taas	DB Engine Version	DB Instance Type	Instance Class	Stor	age
Tayo	Microsoft SQL Server 2017 Standard Edition	Primary/Standby Switch	rds.mssql.spec.x1.se.large.8.ha 2 vCPUs 16 GB (Dedicated)	Configure	d SSD 40 GB Scale Storage Space
	Connectivity				
	Floating IP Address	EIP	VPC	Data	abase Port
	172.16.0.89 🖨 Configure	🗇 Set Security Group Rule 🖄 💿	vpc-6db8 🕑	143	3 Configure
	Subnet	Security Group			
	· · · · · · · · · · · · · · · · · · ·				

If no EIP has been bound to the DB instance, see **Binding an EIP**.

3. Open the cmd window on your local server and check whether the EIP and database port of the DB instance can be connected.

telnet EIP 1433

- If yes, network connectivity is normal.
- If no, check the security group rules.
 - Check inbound rules in the security group of the DB instance. Add an inbound rule for the EIP and port of the DB instance. For details, see **Configuring Security Group Rules**.
- 4. Open a browser on the local server, visit the **Microsoft website**, and download the installation package, for example, SQL Server Management Studio 18.0.
- 5. Double-click the installation package and complete the installation as instructed.

Step 2: Connect to the DB Instance Using SQL Server Management Studio

- 1. Start SQL Server Management Studio.
- Choose Connect > Database Engine. In the displayed dialog box, enter login information.

Figure 4-17 Connecting to the server

	SQL Server		
Server <u>t</u> ype:	Database Engine 💌		
<u>S</u> erver name:	, 1433 🗸		
Authentication:	SQL Server Authentication 🗸		
Login:	rdsuser 🗸		
<u>P</u> assword:	*****		
	Remember password		

Table 4-4 Parameter description

Parameter	Description	
Server name	EIP and database port obtained in 2.	
Authenticat ion	Authentication mode. Select SQL Server Authentication .	
Login	Name of the account used to access the DB instance. The default value is rdsuser .	
Password	Password of the account.	

3. Click **Connect** to connect to the DB instance.

Follow-up Operations

After logging in to the DB instance, you can create or migrate databases.

- Managing RDS for SQL Server Databases Using DAS
- Migration Solution Overview

4.4.4 Configuring Security Group Rules

Scenarios

A security group is a collection of access control rules for ECSs and RDS DB instances that have the same security protection requirements and are mutually trusted within a VPC.

This section describes how to create a security group to enable specific IP addresses and ports to access RDS.

When you attempt to connect to an RDS DB instance through an EIP, you need to configure an **inbound rule** for the security group associated with the DB instance.

Precautions

The default security group rule allows all outgoing data packets. ECSs and RDS DB instances can access each other if they are deployed in the same security group. After a security group is created, you can configure security group rules to control access from and to the DB instances in the security group.

- By default, you can create a maximum of 100 security groups in your cloud account.
- By default, you can add up to 50 security group rules to a security group.
- One RDS DB instance can be associated with multiple security groups, and one security group can be associated with multiple RDS DB instances.
- Too many security group rules will increase the first packet latency. You are advised to create no more than 50 rules for a security group.
- To enable access to an RDS DB instance from resources outside the security group, you need to configure an **inbound rule** for the security group associated with the RDS DB instance.

NOTE

To ensure the security of your data and DB instances, you are advised to use the principle of least privilege for database access. Change the default database port **1433**, and set the IP address to the remote server's address or the remote server's smallest subnet address to control the access from the remote server.

The default value of **Source** is **0.0.0.0/0**, indicating that RDS DB instances in the security group can be accessed from any IP address.

For details about the requirements of security group rules, see the Adding a **Security Group Rule** section in the *Virtual Private Cloud User Guide*.

Procedure

- Step 1 Log in to the management console.
- **Step 2** Click ^(Q) in the upper left corner and select a region and a project.
- Step 3 Click in the upper left corner of the page and choose Databases > Relational Database Service.
- **Step 4** On the **Instances** page, click the DB instance name to go to the **Overview** page.
- **Step 5** Configure security group rules.

Under Security Group, click the security group name.

Figure 4-18 Connection information

Connection Information		Connectivity & S	ecurity 🖸 Connect to RDS Handle Connection Failure	
Floating IP Address	192.168.0.119 🗇 Change	EIP	Bind	
VPC	default_vpc	Database Port	1433 Change	
Subnet	default_subnet(192.168.0.0/24)	Security Group	default 🖉	
Microsoft SQL Server Management Studio Connection (Private) 192.168.0.119,1433 Note: Use a comma (.) to separate the IP address and database port.				

Step 6 On the **Inbound Rules** tab, click **Add Rule**. In the displayed dialog box, set required parameters to add an inbound rule.

You can click + to add more inbound rules.

Figure 4-19 Adding an inbound rule

dd Inboun	d Rule Lea	arn more about security group	configuration.			
inbound rul Some secu	les allow incoming rity group rules wil	traffic to instances associated with the I not take effect for ECSs with certain s	security group. specifications. Learr	1 more		
curity Group	default_securityg Itiple rules in a bate	roup ch.				
Priority 🕐	Action ⑦	Protocol & Port (?)	Туре	Source (?)	Description	Operation
1-100	Allow v	Protocols/TCP (Custo •	IPv4 ·	IP address		Replicate Del
		LAmple. 22 of 22-30		0.0.0.0/0		
			Add Rule			

OK Cancel

Table 4-5 Inbound rule parameter description

Parameter	Description	Example Value
Priority	Security group rule priority. Value range: 1 to 100. The default priority is 1 and has the highest priority. The security group rule with a smaller value has a higher priority.	1
Action	Security group rule actions. A rule with a deny action overrides another with an allow action if the two rules have the same priority.	Allow
Protocol & Port	Protocol: network protocol. Available options: All ports, Custom TCP, Custom UDP, ICMP, and GRE.	ТСР

Parameter	Description	Example Value
	Port : the port over which the traffic can reach your DB instance. An RDS for SQL Server instance can use the default database port 1433 or any port from the range 2100-9500 (excluding 5355 and 5985). If your instance uses 2019 Enterprise Edition, 2019 Standard Edition, 2019 Web Edition, 2017 Enterprise Edition, 2017 Standard Edition, or 2017 Web Edition, ports 5050, 5353, and 5986 cannot be specified for it.	1433
Туре	IP address type.	IPv4
Source	 Source address. It can be a single IP address, an IP address group, or a security group to allow access from them to your DB instance. Examples: Single IP address: 192.168.10.10/32 (IPv4 address) IP address segment: 192.168.1.0/24 (IPv4 address segment) All IP addresses: 0.0.0.0/0 (any IPv4 address) Security group: sg-abc IP address group: ipGrouptest 	0.0.0/0
Description	Supplementary information about the security group rule. This parameter is optional. The description can contain a maximum of 255 characters and cannot contain angle brackets (<) or (>).	-

----End

4.5 Getting Started with RDS for SQL Server Common Practices

After purchasing and connecting to a DB instance, you can view common practices to better use RDS for SQL Server.

Practice		Description	
Suggestions on using RDS for SQL Server	Instance Usage Suggestions	This practice provides suggestions on DB instance class, database connection, database migration, and instance usage.	
SSRS deployment	Deploying SQL Server Reporting Services (SSRS) on RDS for SQL Server	This practice describes how to deploy SSRS on RDS for SQL Server.	
Data migration	Migrating Data to RDS for SQL Server Using the Export and Import Functions of DAS	This practice describes how to use Data Admin Service (DAS) to export data from the source and then import the data to an RDS for SQL Server DB instance.	
	Migrating Data from an ECS-Hosted SQL Server Database to RDS for SQL Server Using the Export and Import Functions of SSMS	This practice describes how to use SQL Server Management Studio (SSMS) to migrate data from an ECS-hosted SQL Server database to an RDS for SQL Server DB instance.	
	Migrating Data from an On-Premises SQL Server Database to RDS for SQL Server Using the Export and Import Functions of SSMS	This practice describes how to use SSMS to migrate data from an on- premises SQL Server database to an RDS for SQL Server DB instance.	
	Deploying SQL Server Reporting Services (SSRS) on RDS for SQL Server	This practice describes how to deploy SSRS on RDS for SQL Server.	
	Migrating Backup Data of an RDS for SQL Server DB Instance to Another RDS for SQL Server DB Instance	This practice describes how to use DRS to migrate backup data from the source to an RDS for SQL Server DB instance.	

Table 4-	6 Common	practices
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Practice		Description	
	From RDS for SQL Server to RDS for SQL Server	This practice describes how to use DRS to synchronize data from an RDS for SQL Server DB instance to another RDS for SQL Server DB instance.	
	Migrating Backup Data of an On-Premises SQL Server Database to an RDS for SQL Server DB Instance	This practice describes how to use DRS to migrate backup data of an on-premises SQL Server database to an RDS for SQL Server DB instance.	
	From On-Premises SQL Server to RDS for SQL Server	This practice describes how to use DRS to synchronize data from an on- premises SQL Server database to an RDS for SQL Server DB instance.	
	Migrating Backup Data of SQL Server Databases on Other Clouds to RDS for SQL Server	This practice describes how to use DRS to migrate backup data of SQL Server databases on other clouds to RDS for SQL Server.	
	From SQL Server on Other Clouds to RDS for SQL Server	This practice describes how to use DRS to synchronize data from SQL Server databases on other clouds to RDS for SQL Server.	
Data backup	Intra-region automated backup	This practice describes how RDS for SQL Server automatically creates backups for a DB instance during a backup window and saves the backups based on the configured retention period.	
	Intra-region 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.	
Data restoration	Restoring from Full Backups to RDS for SQL Server Instances	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.	
	Restoring a DB Instance to a Point in Time	This practice describes how to use an automated backup to restore instance data to a specified point in time.	