

Huawei Cloud Flexus RDS

Service Overview

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1 What Is FlexusRDS?

Huawei Cloud Flexus is a next-generation out-of-the-box cloud service family designed for small- and medium-sized enterprises (SMEs) and developers. Huawei Cloud Flexus RDS (FlexusRDS) is a product in the Huawei Cloud Flexus family.

Based on the open-source MySQL kernel, FlexusRDS is a lightweight relational database service developed for startups and individuals. It allows you to easily set up and manage DB instances and frees you to focus on your core business.

How to Use FlexusRDS

A web-based [management console](#) is provided for you to manage your FlexusRDS DB instances.

FlexusRDS supports MySQL 8.0 and 5.7. For details about how to buy a FlexusRDS DB instance, see [Buying and Connecting to a FlexusRDS Instance](#).

For more information, see the community documentation at <https://dev.mysql.com/doc/>.

Basic Concepts

- **DB Instance**
The smallest management unit of FlexusRDS is a DB instance. A DB instance is an isolated database environment on the cloud. You can create and manage FlexusRDS DB instances on the console.
- **DB Engine**
FlexusRDS supports the MySQL DB engine.
- **DB Instance Type**
FlexusRDS DB instances are classified into single instances and primary/standby instances.

Table 1-1 DB instance types

Type	Description	Notes
Single	Uses a single-node architecture. It is less expensive than a primary/standby DB pair.	If a fault occurs on a single-node instance, the instance cannot recover in a timely manner.
Primary/Standby	Uses an HA architecture. The primary and standby instances share the same IP address and can be deployed in different AZs.	<ul style="list-style-type: none"> When a primary instance is being created, a standby instance is provisioned synchronously to provide data redundancy. The standby instance is invisible to you after being created. If the primary instance fails, a failover occurs, during which database connection is interrupted. If there is a replication delay between the primary and standby instances, the failover takes an extended period of time. The client needs to be able to reconnect to the instance.

- Instance Class

You can choose one of several database plans based on the vCPUs, memory, storage, and DB instance type you require. The following database plans are available:

Table 1-2 Database plans

Instance Class	DB Instance Type
Standard 2U4G, 120 GB of storage	Single
Standard 2U8G, 240 GB of storage	Single
Standard 4U8G, 240 GB of storage	Single
High-availability 2U4G, 120 GB of storage	Primary/Standby
High-availability 2U8G, 240 GB of storage	Primary/Standby
High-availability 4U8G, 240 GB of storage	Primary/Standby

- Automated Backup

Automated backup is enabled by default when you create a FlexusRDS DB instance. The backup policy cannot be modified after instance creation.

- **Manual Backup**
Manual backups are user-initiated full backups of DB instances. You can download and delete manual backup as needed. Or if you want, you can keep the manual backups until you unsubscribe from your instance.

Differences Between FlexusRDS and RDS for MySQL

Table 1-3 Differences between FlexusRDS and RDS for MySQL

Item	FlexusRDS	RDS for MySQL
Instance class	Minimum: 2 vCPU and 4 GB of memory Maximum: 4 vCPU and 8 GB of memory	More high instance classes are supported. For details, see RDS for MySQL Instance Classes .
Scalability	<ul style="list-style-type: none"> • Read replicas are not supported. • The storage can autoscale up to 4 TB for an instance. 	<ul style="list-style-type: none"> • Up to five read replicas can be added for a DB instance. The time required for adding read replicas depends on the data volume. Adding read replicas require additional storage. • The storage can autoscale up to 4 TB for an instance.
Backup and restoration	<ul style="list-style-type: none"> • Data can be restored to a specific point in time using full backups and binlog playback. • Data can be restored to a new DB instance or the original DB instance. 	<ul style="list-style-type: none"> • Data can be restored to a specific point in time using full backups and binlog playback. • Data can be restored to a new DB instance, the original DB instance, or any existing DB instance other than the original one. • Database- and table-level recovery to any point in time is supported.
DB engine version	MySQL 5.7 and 8.0	MySQL 5.6, 5.7, and 8.0
Operation logs	Operation logs can be viewed on the FlexusRDS console.	Operation logs cannot be viewed on the RDS console. For details about task records, see Task Center .

Product Advantages

- **Quick Setup**
You can create a FlexusRDS DB instance anytime you want to on the console. You are advised to use Data Admin Service (DAS) to connect to your DB

instance. 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.

- **Solid Reliability**

FlexusRDS automatically backs up data every day and stores backups as packages in Object Storage Service (OBS). Automated backups are retained for seven days and can be used to restore data within that period. This can meet your requirements for data restoration in most cases.

Point-in-time recovery (PITR) is supported. You can restore data to a new or original instance.

- **Storage Autoscaling**

Storage autoscaling is disabled by default. You can enable it after purchasing a DB instance. With storage autoscaling enabled, FlexusRDS automatically scales up the storage of your instance when the storage usage reaches your preset limit. You can configure the upper limit and increment for autoscaling to keep up with your workload growth at a low cost.

- **High Security**

FlexusRDS is protected by multiple layers of firewalls to defend against various malicious attacks, such as DDoS attacks and SQL injections.

- **Simplified O&M**

With a web-based console, you can reboot DB instances, reset passwords, modify parameters, view error logs and slow query logs, and restore data. Instance metrics like CPU usage, IOPS, connections, and storage usage are monitored in real time, and an alarm is reported once any of the metrics becomes abnormal. You can always keep aware of your instance health.

2 Permissions

If you need to assign different permissions to personnel in your enterprise to access your FlexusRDS resources, Identity and Access Management (IAM) is a good choice for fine-grained permissions management. IAM provides identity authentication, permissions management, and access control, helping you to securely access your Huawei Cloud resources.

With IAM, you can create IAM users and assign permissions to control their access to specific resources. For example, if you want some software developers in your enterprise to use FlexusRDS resources but do not want them to delete FlexusRDS instances or perform any other high-risk operations, you can create IAM users and grant permission to use FlexusRDS instances but not permission to delete them.

If your Huawei account does not require individual IAM users for permissions management, you can skip this section.

IAM is a free service. You only pay for the resources in your account. For more information about IAM, see [IAM Service Overview](#).

FlexusRDS Permissions

New IAM users do not have any permissions assigned by default. You need to first add them to one or more groups and attach policies or roles to these groups. The users then inherit permissions from the groups and can perform specified operations on cloud services based on the permissions they have been assigned.

FlexusRDS is a project-level service deployed in specific physical regions. When you set **Scope** to **Region-specific projects** and select the specified projects (for example, **cn-north-1**) in the specified regions (for example, **CN North-Beijing1**), the users only have permissions for FlexusRDS instances in the selected projects. If you set **Scope** to **All resources**, the users have permissions for FlexusRDS instances in all region-specific projects. When accessing FlexusRDS instances, the users need to switch to the authorized region.

You can grant permissions by using roles and policies.

- **Roles:** A coarse-grained authorization strategy provided by IAM to assign permissions based on users' job responsibilities. Only a limited number of service-level roles are available for authorization. Cloud services depend on each other. When you grant permissions using roles, you also need to attach

any existing role dependencies. Roles are not ideal for fine-grained authorization and least privilege access.

- **Policies:** A fine-grained authorization strategy that defines permissions required to perform operations on specific cloud resources under certain conditions. This type of authorization is more flexible and is ideal for least privilege access. For example, you can grant users only permissions to manage database resources of a certain type.

Table 2-1 lists all the system-defined permissions for FlexusRDS.

Table 2-1 System-defined permissions for FlexusRDS

Role/Policy Name	Description	Type	Dependencies
RDS FullAccess	Full permissions for FlexusRDS	System-defined policy	<p>To purchase a yearly/monthly DB instance, configure the following actions:</p> <p>bss:order:update bss:order:pay</p> <p>To use storage autoscaling, configure the following actions for IAM users:</p> <ul style="list-style-type: none"> • Creating a custom policy: <ul style="list-style-type: none"> - iam:agencies:listAgencies - iam:agencies:createAgency - iam:permissions:listRolesForAgencyOnProject - iam:permissions:grantRoleToGroupOnProject - iam:roles:listRoles - cors:productInstance:createDefault • Adding system role Security Administrator: Select a user group to which the user belongs. Click Authorize in the Operation column. Add the Security

Role/Policy Name	Description	Type	Dependencies
			Administrator role.
RDS ReadOnlyAccess	Read-only permissions for FlexusRDS resources	System-defined policy	N/A
RDS ManageAccess	Database administrator permissions for all operations except deleting FlexusRDS resources	System-defined policy	N/A
RDS Administrator	Administrator permissions for FlexusRDS	System-defined role	Tenant Guest and Server Administrator roles, which must be attached in the same project as the RDS Administrator role

Table 2-2 lists the common operations supported by system-defined permissions for FlexusRDS.

Table 2-2 Common operations supported by system-defined permissions

Operation	RDS FullAccess	RDS ReadOnlyAccess	RDS ManageAccess	RDS Administrator
Creating a FlexusRDS instance	√	x	√	√
Deleting a FlexusRDS instance	√	x	x	√
Querying FlexusRDS instances	√	√	√	√

Table 2-3 Common operations and supported actions

Operation	Actions	Remarks
Creating a DB instance	rds:instance:create rds:param:list	To select a VPC, subnet, and security group, configure the following actions: vpc:vpcs:list vpc:vpcs:get vpc:subnets:get vpc:securityGroups:get To purchase a yearly/monthly DB instance, configure the following actions: bss:order:update bss:order:pay cors:productInstance:createDefault
Rebooting a DB instance	rds:instance:restart	N/A
Querying a DB instance list	rds:instance:list	N/A
Querying DB instance details	rds:instance:list	If the VPC, subnet, and security group are displayed in the DB instance list, you need to configure vpc*:get and vpc*:list.
Changing a DB instance password	rds:password:update	N/A
Changing a DB instance name	rds:instance:modify	N/A
Binding or unbinding an EIP	rds:instance:modifyPublicAccess	To query public IP addresses, configure the following actions: vpc:publicIps:get vpc:publicIps:list
Modifying parameters in a parameter template	rds:param:modify	N/A
Creating a manual backup	rds:backup:create	N/A

Operation	Actions	Remarks
Obtaining the link for downloading a backup file	rds:backup:download	N/A
Deleting a manual backup	rds:backup:delete	N/A
Querying the restoration time range	rds:instance:list	N/A
Restoring data to a new DB instance	rds:instance:create	To select a VPC, subnet, and security group, configure the following actions: vpc:vpcs:list vpc:vpcs:get vpc:subnets:get vpc:securityGroups:get cors:productInstance:createDefault
Restoring data to the original DB instance	rds:instance:restoreInPlace	N/A
Obtaining a database backup file list	rds:backup:list	N/A
Querying a database error log	rds:log:list	N/A
Querying a database slow log	rds:log:list	N/A
Submitting an order for a yearly/monthly DB instance	bss:order:update	To purchase a yearly/monthly DB instance, configure the following actions: bss:order:pay
Managing a tag	rds:instance:modify	Tag-related operations depend on the tms:resourceTags:* permission.

Operation	Actions	Remarks
Configuring autoscaling	rds:instance:extendSpace	<p>To enable autoscaling, configure the following actions for the IAM users instead of your Huawei account:</p> <ul style="list-style-type: none"> • Creating a custom policy <ul style="list-style-type: none"> - iam:agencies:list Agencies - iam:agencies:createAgency - iam:permissions:listRolesForAgencyOnProject - iam:permissions:grantRoleToGroupOnProject - iam:roles:listRoles • Adding system role Security Administrator: Select a user group to which the user belongs. Click Authorize in the Operation column. Add the Security Administrator role.

3 Billing

FlexusRDS supports only yearly/monthly billing.

Billing Items

You will be billed for your instance class, backup storage (optional), and public network traffic (optional).

Table 3-1 Billing items

Billing Item	Description
Instance class	Yearly/Monthly billing is used. The actual prices are displayed on the console.
(Optional) Backup storage	FlexusRDS provides free backup storage of the same size as your purchased database storage. If the backup storage usage exceeds your purchased database storage, the billing starts.
(Optional) Public network traffic	FlexusRDS instances are accessible from public networks. Traffic from public networks is billed.

Specification Changes

Autoscaling up storage space: You can enable storage autoscaling as required. You will be billed for new storage space.

Renewal

An upfront payment is required when you purchase yearly/monthly instances. No additional fees are incurred as you use the instances.

To renew a subscription, see [Renewing DB Instances](#).

Expiration

When a yearly/monthly instance expires, no operations can be performed on the console. The monitoring, alarm reporting, and other O&M operations will also be unavailable. If your account is not topped up or the resource package is not renewed before the retention period expires, the DB instance will become unavailable and data stored in the DB instance will be deleted and cannot be recovered.

4 Constraints

The following tables list the constraints designed to ensure the stability and security of FlexusRDS instances.

Specifications

Table 4-1 Specifications

Item	Constraints	Description
Storage space	The purchased storage space depends on the selected instance class.	You can enable storage autoscaling for your instance after the instance is created. Storage can autoscale to no more than 4 TB.

Quotas

Table 4-2 Quotas

Item	Constraints	Description
Tags	A maximum of 20 tags can be added for a DB instance.	For more information, see Managing Tags .
Free backup space	FlexusRDS provides free backup space of the same size as your purchased storage space.	After you pay for the storage space of your instance, you will get a backup space of the same size for free. For more information, see How Is FlexusRDS Backup Data Billed?

Item	Constraints	Description
Retention period of automated backups	The default value is seven days and cannot be changed.	7-day retention can meet your requirements in most cases. If you want to retain backups for more than seven days, create manual backups.
Log retention period	<ul style="list-style-type: none"> Error log details: 30 days Slow query log details: 7 days 	For more information, see Logs .

Naming

Table 4-3 Naming

Item	Constraints
Instance name	<ul style="list-style-type: none"> 4 to 64 characters long Must start with a letter. Only letters (case sensitive), digits, hyphens (-), underscores (_), and periods (.) are allowed.
Backup name	<ul style="list-style-type: none"> Must be 4 to 64 characters long. Must start with a letter. Only letters (case sensitive), digits, hyphens (-), and underscores (_) are allowed.

Security

Table 4-4 Security

Item	Constraints
root permissions	<p>Only the administrator account root is provided on the instance creation page. For details about the supported permissions, see root Permissions.</p> <p>NOTE Running revoke, drop user, or rename user on root may cause service interruption. Exercise caution when running any of these statements.</p>

Item	Constraints
root password	<ul style="list-style-type: none"> • 8 to 32 characters long • Must contain at least three types of the following characters: uppercase letters, lowercase letters, digits, and special characters (~ ! @ # \$ % ^ * - _ = + ? , () & .). <p>For more information, see Resetting the Administrator Password.</p>
Database port	3306
System account	<p>To provide O&M services, the system automatically creates system accounts when you create FlexusRDS instances. These system accounts are unavailable to you.</p> <ul style="list-style-type: none"> • rdsAdmin: a management account with the highest permission. It is used to query and modify instance information, rectify faults, migrate data, and restore data. • rdsRepl: a replication account, used to synchronize data from the primary instance to the standby instance. • rdsBackup: a backup account, used for backend backup. • rdsMetric: a metric monitoring account used by watchdog to collect database status data.

Instance Operations

Table 4-5 Instance operations

Item	Description
Storage engine	Only the InnoDB storage engine is supported.
Instance deployment	Cloud servers where DB instances are deployed are not directly visible to you. You can only access the DB instances through IP addresses and database ports.
Data migration	Data Replication Service (DRS) can be used to migrate data. It is easy to use and can complete a migration task in minutes. DRS facilitates data transfer between databases, helping you reduce DBA labor costs and hardware costs.
Primary/Standby replication	FlexusRDS uses a primary/standby dual-node replication cluster. You do not need to set up replication additionally. The standby instance is not visible to you and therefore you cannot access it directly.

Item	Description
Rebooting a DB instance	FlexusRDS instances cannot be rebooted through commands. They must be rebooted on the management console.
Viewing backups	You can download automated and manual backups for local storage. To download a backup, you can use OBS Browser+, the current browser, or the download URL. For more information, see Downloading a Full Backup .
Log management	<ul style="list-style-type: none"> Logging is enabled by default and cannot be disabled. Binary logging is enabled by default.

root Permissions

Table 4-6 root permissions

Permission	Level	Description	Supported
Select	Table	Query permissions	Yes
Insert	Table	Insert permissions	
Update	Table	Update permissions	
Delete	Table	Delete permissions	
Create	Database, table, or index	Permissions of creating databases, tables, or indexes	
Drop	Database or table	Permissions of deleting databases or tables	
Reload	Server management	Permissions of running the following commands: flush-hosts, flush-logs, flush-privileges, flush-status, flush-tables, flush-threads, refresh, and reload	
Process	Server management	Permissions of viewing processes	
Grant	Database, table, or stored program	Permissions of granting access control	

Permission	Level	Description	Supported
References	Database or table	Foreign key operation permissions	
Index	Table	Index permissions	
Alter	Table	Permissions of altering tables, such as adding fields or indexes	
Show_db	Server management	Permissions of viewing database connections	
Create_tmp_table	Server management	Permissions of creating temporary tables	
Lock_tables	Server management	Permissions of locking tables	
Execute	Stored procedure	Permissions of executing storage procedures	
Repl_slave	Server management	Replication permissions	
Repl_client	Server management	Replication permissions	
Create_view	View	Permissions of creating views	
Show_view	View	Permissions of viewing views	
Create_routine	Stored procedure	Permissions of creating storage procedures	
Alter_routine	Stored procedure	Permissions of altering storage procedures	
Create_user	Server management	Permissions of creating users	
Event	Database	Event triggers	
Trigger	Database	Triggers	

Permission	Level	Description	Supported
Super	Server management	Permissions of killing threads	No NOTE For more information, see Why Does the Root User Not Have the Super Permission?
File	File on the server	Permissions of accessing files on database server nodes	No
Shutdown	Server management	Permissions of shutting down databases	
Create_tablespace	Server management	Permissions of creating tablespaces	