Alibaba Cloud ApsaraDB for Redis

Product Usage

Issue: 20190904

MORE THAN JUST CLOUD | Alibaba Cloud

Legal disclaimer

Alibaba Cloud reminds you to carefully read and fully understand the terms and conditions of this legal disclaimer before you read or use this document. If you have read or used this document, it shall be deemed as your total acceptance of this legal disclaimer.

1. **You shall download and obtain this document from the Alibaba Cloud website or other Alibaba Cloud-authorized channels, and use this document for your own legal business activities only. The content of this document is considered confidential information of Alibaba Cloud. You shall strictly abide by the confidentiality obligations. No part of this document shall be disclosed or provided to any third party for use without the prior written consent of Alibaba Cloud.**
2. **No part of this document shall be excerpted, translated, reproduced, transmitted, or disseminated by any organization, company, or individual in any form or by any means without the prior written consent of Alibaba Cloud.**
3. **The content of this document may be changed due to product version upgrades , adjustments, or other reasons. Alibaba Cloud reserves the right to modify the content of this document without notice and the updated versions of this document will be occasionally released through Alibaba Cloud-authorized channels. You shall pay attention to the version changes of this document as they occur and download and obtain the most up-to-date version of this document from Alibaba Cloud-authorized channels.**
4. **This document serves only as a reference guide for your use of Alibaba Cloud products and services. Alibaba Cloud provides the document in the context that Alibaba Cloud products and services are provided on an "as is", "with all faults " and "as available" basis. Alibaba Cloud makes every effort to provide relevant operational guidance based on existing technologies. However, Alibaba Cloud hereby makes a clear statement that it in no way guarantees the accuracy, integrity , applicability, and reliability of the content of this document, either explicitly or implicitly. Alibaba Cloud shall not bear any liability for any errors or financial losses incurred by any organizations, companies, or individuals arising from their download, use, or trust in this document. Alibaba Cloud shall not, under any circumstances, bear responsibility for any indirect, consequential, exemplary, incidental, special, or punitive damages, including lost profits arising from the use**

or trust in this document, even if Alibaba Cloud has been notified of the possibility of such a loss.

5. By law, all the content of the Alibaba Cloud website, including but not limited to works, products, images, archives, information, materials, website architecture, website graphic layout, and webpage design, are intellectual property of Alibaba Cloud and/or its affiliates. This intellectual property includes, but is not limited to, trademark rights, patent rights, copyrights, and trade secrets. No part of the Alibaba Cloud website, product programs, or content shall be used, modified, reproduced, publicly transmitted, changed, disseminated, distributed, or published without the prior written consent of Alibaba Cloud and/or its affiliates. The names owned by Alibaba Cloud shall not be used, published, or reproduced for marketing, advertising, promotion, or other purposes without the prior written consent of Alibaba Cloud. The names owned by Alibaba Cloud include, but are not limited to, "Alibaba Cloud", "Aliyun", "HiChina", and other brands of Alibaba Cloud and/or its affiliates, which appear separately or in combination, as well as the auxiliary signs and patterns of the preceding brands, or anything similar to the company names, trade names, trademarks, product or service names, domain names, patterns, logos, marks, signs, or special descriptions that third parties identify as Alibaba Cloud and/or its affiliates).
6. Please contact Alibaba Cloud directly if you discover any errors in this document.

Generic conventions

Table -1: Style conventions

Style	Description	Example
	This warning information indicates a situation that will cause major system changes, faults, physical injuries, and other adverse results.	 Danger: Resetting will result in the loss of user configuration data.
	This warning information indicates a situation that may cause major system changes, faults, physical injuries, and other adverse results.	 Warning: Restarting will cause business interruption. About 10 minutes are required to restore business.
	This indicates warning information, supplementary instructions, and other content that the user must understand.	 Notice: Take the necessary precautions to save exported data containing sensitive information.
	This indicates supplemental instructions, best practices, tips, and other content that is good to know for the user.	 Note: You can use Ctrl + A to select all files.
>	Multi-level menu cascade.	Settings > Network > Set network type
Bold	It is used for buttons, menus , page names, and other UI elements.	Click OK.
`Courier font`	It is used for commands.	Run the `cd / d C :/ windows` command to enter the Windows system folder.
Italics	It is used for parameters and variables.	`bae log list --instanceid` *Instance_ID*
[] or [a|b]	It indicates that it is a optional value, and only one item can be selected.	`ipconfig` *[-all|-t]*

Style	Description	Example
{} or {a|b}	It indicates that it is a required value, and only one item can be selected.	`swich {stand | slave}`

Contents

1 Product features

1.1 Does ApsaraDB for Redis support distributed cluster instances?

ApsaraDB for Redis supports distributed cluster instances. Cluster instances provide a larger storage capacity and higher processing performance.

For more information about Redis commands that ApsaraDB for Redis cluster instances support, see Supported Redis commands.

1.2 Do a replica node and the corresponding master node receive data and perform updates simultaneously?

A master node automatically synchronizes updates to the corresponding replica node. However, the updates on the replica node may lag behind that on the master node due to Redis asynchronous replication. In this replication mechanism, the speed of I/O write operations on the master node may be higher than the speed of synchronization to the replica node. Also, network latency may exist between the master node and the replica node. Therefore, some data may be inconsistent between the master node and the replica node in a certain period.

If the issue persists, please submit a ticket.

1.3 How does ApsaraDB for Redis evict data by default?

By default, an ApsaraDB for Redis instance evicts data by using the volatile-lru policy. To modify the eviction policy, log on to the ApsaraDB for Redis console, click the target instance ID on the Instance List page to go to the Instance Information page, and click `System Parameters` in the left-side navigation pane.

- volatile-lru

  The system only evicts data that has Time To Live (TTL) configured according to the Least Recently Used (LRU) algorithm.

- volatile-ttl

  The system only evicts data that has TTL configured, and evicts the data in ascending order of TTL.
- allkeys-lru

  The system evicts data according to the LRU algorithm.
- volatile-random

  The system only randomly evicts data that has TTL configured.
- allkeys-random

  The system randomly evicts data.
- noeviction

  The system does not evict any data, but returns an error when you write new data to the system.
- volatile-lfu

  The system only evicts least frequently used keys that have TTL configured according to the Least Frequently Used (LFU) algorithm.
- allkeys-lfu

  The system evicts least frequently used keys according to the LFU algorithm.

1.4 Which version of Redis is compatible with ApsaraDB for Redis?

ApsaraDB for Redis is compatible with Redis version 3.2. ApsaraDB for Redis does not support a few commands in Redis version 3.2. For more information, see Supported Redis commands.

1.5 Does a master node of an ApsaraDB for Redis instance work with multiple replica nodes?

One master node of each ApsaraDB for Redis instance can work with only one replica node instead of multiple replica nodes.

1.6 Does ApsaraDB for Redis support data persistence?

An ApsaraDB for Redis instance stores data in memory and hard disks, and supports data persistence. You are insensitive to the operations and management of data persistence. You cannot manually specify the method and frequency of data persistence. Instead, ApsaraDB for Redis automatically manages this feature and performs related operations.

1.7 What is the relationship between ApsaraDB for Redis and Redis?

Alibaba Cloud ApsaraDB for Redis is a key-value cloud storage service that is compatible with Redis protocols. ApsaraDB for Redis supports most Redis commands . All clients compatible with Redis can connect to the ApsaraDB for Redis service to complete data storage and related operations.

1.8 Does ApsaraDB for Redis support master-replica replication?

Yes. ApsaraDB for Redis automatically manages the synchronization and failover operations between the master and replica nodes.

1.9 How does an ApsaraDB for Redis instance delete expired data?

An ApsaraDB for Redis instance deletes expired data in two ways:

- Automatic deletion: the system periodically detects and deletes expired keys in the background.
- Passive deletion: when you access a key that has been expired, the system deletes this key.

If the issue persists, submit a ticket to request technical support.

1.10 Does any ApsaraDB for Redis instance have a read-only replica node?

1.11 Does each ApsaraDB for Redis instance such as a cluster instance have one master node and one replica node running simultaneously?

All ApsaraDB for Redis instances including cluster instances have one master node and one replica node running at the backend. Each shard server in a cluster instance also has one master and one replica.

1.12 What is the size of each database on an ApsaraDB for Redis instance and how can I choose databases?

By default, each ApsaraDB for Redis instance has 256 databases named from DB 0 to DB 255.

The size of each database is not restricted. But the available database space is limited by the overall space of the ApsaraDB for Redis instance.

To switch between different databases, run the SELECT command.

For example, to select DB 1, run the `SELECT 1` command.

1.13 Description of redis-benchmark

Redis includes the redis-benchmark utility to test performance of the Redis service.

Options of redis-benchmark are described as follows:

```
Usage :  redis - benchmark  [- h ] [- p ] [- c ] [- n [- k ]
- h       Server   hostname  ( default   127 . 0 . 0 . 1 )
- p       Server   port  ( default   6379 )
- s       Server   socket  ( overrides   host   and   port )
- c       Number   of   parallel   connection  s  ( default   50 )
- n       Total   number   of   requests  ( default   10000 )
- d        Data   size   of   SET / GET   value   in   bytes  (
default   2 )
- k        1 = keep   alive   0 = reconnect  ( default   1 )
- r        Use   random   keys   for   SET / GET / INCR ,  random
values   for   SADD
  Using   this   option   the   benchmark   will   get / set   keys
  in   the   form   mykey_rand : 0000000124  56   instead   of
constant
  keys ,  the   argument   determines   the   max
  number   of   values   for   the   random   number .  For
instance
```

```
  if  set  to  10  only  rand : 0000000000  00  -  rand :
0000000000  09
  range  will  be  allowed .
- P        Pipelinere  quests .  Default  1  ( no  pipeline ).
- q        Quiet .  Just  show  query / sec  values
— csv      Output  in  CSV  format
- l        Loop .  Run  the  tests  forever
- t        Only  run  the  comma - separated  list  of  tests
.  The  test
  names  are  the  same  as  the  ones  produced  as  output
.
- I        Idle  mode .  Just  open  N  idle  connection  s
and  wait .
```

Some testing commands are listed as follows:

1. ```
   redis - benchmark  - h  192 . 168 . 1 . 201  - p  6379  - c  100
    - n  100000
   ```

   This command is used to test the performance of a Redis server. The Redis server runs on a local host and -h specifies the IP address of the host. This server provides the service port 6379. In this testing, the Redis server processes 100 concurrent connections and 100,000 requests.

2. ```
   redis - benchmark  - h  192 . 168 . 1 . 201  - p  6379  - q  - d
     100
   ```

   This command is used to test the performance of accessing 100-byte packets.

3. ```
   redis - benchmark  - t  set , lpush  - n  100000  - q
   ```

   This command is only used to test the performance of specified operations.

4. ```
   redis - benchmark  - n  100000  - q  script  load  " redis .
   call (‘ set ’,’ foo ’,’ bar ’)"
   ```

   This command is only used to test the performance of accessing some values.

In the actual testing, the system returns the following error: `writing to socket : connection timed out` .

```
[root@ ~]# redis-benchmark -h  -p 18000 -c 5000 -n 100000 -q
PING_INLINE: 66622.25 requests per second
PING_BULK: 50709.94 requests per second
SET: 52910.05 requests per second
GET: 58823.53 requests per second
INCR: 35161.74 requests per second
LPUSH: 60024.01 requests per second
LPOP: 54024.85 requests per second
SADD: 57240.98 requests per second
SPOP: 62305.30 requests per second
LPUSH (needed to benchmark LRANGE): 30854.68 requests per second
LRANGE_100 (first 100 elements): 52356.02 requests per second
LRANGE_300 (first 300 elements): 32905.56 requests per second
Writing to socket: Connection timed out63
Writing to socket: Connection timed out
Writing to socket: Connection timed out
Writing to socket: Connection timed out
Writing to socket: Connection timed out
Writing to socket: Connection timed out
Writing to socket: Connection timed out
Writing to socket: Connection timed out
Writing to socket: Connection timed out
Writing to socket: Connection timed out
Writing to socket: Connection timed out
Writing to socket: Connection timed out
Writing to socket: Connection timed out
```

Run the `netstat -an` command to check whether the ApsaraDB for Redis instance has used too many ports. If so, restart the instance to release the connections, and perform the testing again.

```
root@iZ # redis-benchmark -h  -p 18000 -c 5000 -n 100000 -q
PING_INLINE: 38314.18 requests per second
PING_BULK: 37693.18 requests per second
SET: 37341.30 requests per second
GET: 37271.71 requests per second
INCR: 37439.16 requests per second
LPUSH: 36832.41 requests per second
LPOP: 37678.97 requests per second
SADD: 36284.47 requests per second
SPOP: 34293.55 requests per second
LPUSH (needed to benchmark LRANGE): 37622.27 requests per second
LRANGE_100 (first 100 elements): 33772.38 requests per second
LRANGE_300 (first 300 elements): 27397.26 requests per second
LRANGE_500 (first 450 elements): 23293.73 requests per second
LRANGE_600 (first 600 elements): 20391.52 requests per second
MSET (10 keys): 37565.74 requests per second
```

You can submit a ticket to request technical support.

1.14 How many databases does each ApsaraDB for Redis instance support?

Each instance supports 256 databases.

2 Developing and testing

2.1 How can I use the redis-cli tool to connect to ApsaraDB for Redis?

To connect to an ApsaraDB for Redis instance with redis-cli, see #unique_21.

2.2 Where can I download ApsaraDB for Redis clients?

Clients compatible with Redis protocols can connect to Alibaba Cloud ApsaraDB for Redis. You can choose any Redis client based on the features of your application.

For more information about Redis clients, see Clients.

If the issue persists, submit a ticket to request technical support.