ApsaraDB for Memcache

Product Introduction

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What is ApsaraDB for Memcache

ApsaraDB for Memcache is a memory-based cache service that supports high-speed access to large amounts of small data. ApsaraDB for Memcache can greatly cut down the backend storage load and speed up the response of websites and applications.

ApsaraDB for Memcache supports the key-value data structure and can communicate with clients that are compatible with the Memcached protocol.

ApsaraDB for Memcache supports out-of-the-box quick deployment and relieves the database load for dynamic web applications through the cache service, improving the overall response speed of the website.

Like the local self-built Memcached databases, ApsaraDB for Memcache is also compatible with the Memcached protocol and user environments, and can be used directly. The differences between them include: deployment of the complete infrastructure of hardware and data of ApsaraDB for Memcache in the cloud, with network security and system maintenance services.

System architecture

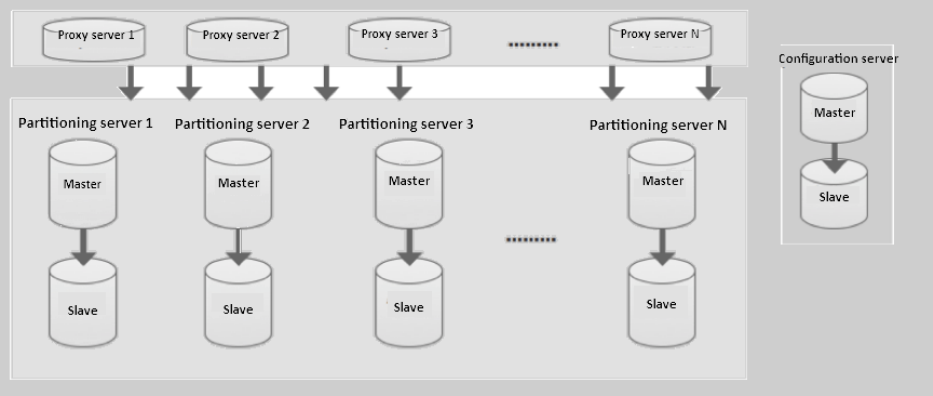
Introduction

ApsaraDB for Memcache uses a cluster-based architecture. It is embedded with data partitioning and reading algorithms. The whole process is transparent to the users and saves development and O&M hassles. Each partition node uses a master-slave architecture to guarantee high availability of services.

Architecture

ApsaraDB for Memcache is comprised of three components, namely, the proxy server (service proxy),

the partitioning server, and the configuration server.



Proxy server

Single-node. A cluster structure may contain multiple proxies and the system implements load balance and failover for the proxies.

Partitioning server

Each partitioning server is in a dual-copy highly available architecture. The system automatically implements the master-slave switchover in case of a fault in the master node to guarantee high availability of services.

Configuration server

The server is used to store cluster configuration information and partitioning policies. It currently adopts dual-copy architecture to guarantee high availability.

Notes

- The quantities of proxy servers, sharding servers, and configuration servers depend on the purchased specification. The following table lists the details.

Specification	Number of poxy servers	Number of sharding servers	Memory of a single sharding server
1 GB	1	1	1 GB
2 GB	1	1	2 GB
4 GB	1	1	4 GB
8 GB	1	1	8 GB
16 GB	2	2	8 GB
32 GB	4	4	8 GB

64 GB	8	8	8 GB
128 GB	16	16	8 GB
256 GB	16	16	16 GB
512 GB	32	32	16 GB

- A Memcache cluster exposes a uniform domain for access. You can visit this domain for normal access to and data operations on Memcache. The proxy server, the partitioning server and the configuration server do not provide domain access and cannot be directly accessed for operations.

Instance specifications

ApsaraDB for Memcache uses a cluster-based architecture and its types are defined as follows.

Specifications	CPU processing capacity	Number of nodes	Maximum number of connections	Maximum Intranet bandwidth (MByte)
1 GB	Single-core	1	10000	10
2 GB	Single-core	1	10000	16
4 GB	Single-core	1	10000	24
8 GB	Single-core	1	10000	24
16 GB	Dual-core	2	10000	96
32 GB	4-core	4	40000	192
64 GB	8-core	8	80000	384
128 GB	16-core	16	160000	768
256 GB	16-core	16	160000	768
512 GB	32-core	32	320000	1536

Note: Currently, 512 GB instance types are not directly available. You need to submit a Ticket to apply for activating a 512 GB instance.

Features

Distributed architecture, freeing businesses from the impact of single point of failure (SPOF)

ApsaraDB for Memcache uses a distributed cluster architecture. Each node is composed of two servers for hot backup and is capable of automatic disaster tolerance and failover.

Multiple types are available to cope with different business stresses with unlimited database performance expansion.

ApsaraDB for Memcache supports data persistence and backup recovery policies. It effectively secures data reliability and avoids the impact to the backend databases when the cache becomes invalid because of the physical node faults.

A multi-level security defense system to resist more than 90% of network attacks for you

DDoS defense: Real-time monitoring of network access is enabled. The source IP address gets cleaned in the event of high-traffic attacks. If the cleaning turns out ineffective, the traffic gets redirected to a black hole.

IP address whitelist configuration: A maximum of 100 server IP addresses can be configured in the whitelist for accessing an instance, directly putting risks under control from the source.

VPC virtual network: ApsaraDB for Memcache is fully connected to VPC and you can build an isolated network environment based on Alibaba Cloud.

SASL(Simple Authentication and Security Layer) authentication: SASL-enabled user identify authentication to safeguard data access security.

Improved tools to share your O&M workload for cache and databases

Monitoring and warning: Real-time monitoring and warning on instance information such as CPU utilization, IOPS, connections, and disk space is provided to view the status of the instance as needed.

Data management: Visualized data management tools are available for you to easily handle data operations.

Source code and distributed maintenance: Professional database kernel experts offer maintenance services to save your effort on maintaining Memcache source code and distributed algorithms.

Benefits

Ease of use

Out-of-the-box service: Out-of-the-box use is immediately available after purchase. It facilitates fast business deployment.

Compatible with open-source Memcache: Compatible with Memcached Binary Protocol. All clients complying with the protocol (binary SASL) can connect to ApsaraDB for Memcache.

Visualized management and monitoring panel: The console provides multiple monitoring metrics for your convenience to manage Memcache instances.

Cluster features

Larger capacity and higher performance. The default cluster output utilizes super large cluster instances to cater the large capacity and high performance demands.

Elastic resizing

One-click resizing of storage capacity: You can adjust the storage capacity of an instance in the console based on business requirements.

Uninterrupted services during online expansion: Instance storage capacity can be adjusted online without the need to stop services, with no impact to your own business.

Resource isolation

Instance-level resource isolation to secure stability of a single user service in a better way.

Security and reliability

Password authentication is supported to guarantee safe and reliable access.

Persistent data storage: Memory + hard disk storage meets data persistence demands and provides high-speed data reading/writing..

Minute-level monitoring

ApsaraDB for Memcache provides minute-level monitoring of historical data at the engine and resource levels.

ApsaraDB for Memcache provides monitoring information on various data structures and interfaces to display access information clearly, so that you can fully understand the situation and use ApsaraDB for Memcache effectively.

High availability

Each instance has a master node and a slave node to avoid service interruptions because of single point of failure (SPOF).

Automatic detection and recovery of hardware faults: ApsaraDB for Memcache enables automatic detection of hardware faults and switchover within seconds to recover services.

Scenarios

Frequently-accessed businesses

Such as social networks, e-businesses, games, and advertisements. Frequently-accessed data can be stored in ApsaraDB for Memcache and the underlying data in RDS.

Large promotion businesses

Large promotion or flash sales systems are usually under high access pressure. The average database usually cannot undertake such read/write stress. In such cases, ApsaraDB for Memcache can turn out to be a viable option.

Inventory systems with counters

Alibaba Cloud ApsaraDB for RDS and ApsaraDB for Memcache can be used in combination. RDS stores the specific data information, while the database fields store the specific statistics. Alibaba Cloud ApsaraDB for Memcache reads the statistics, while RDS stores the statistics.

Data analysis businesses

ApsaraDB for Memcache can be used in combination with the big data computing service MaxCompute to implement distributed analysis and processing of big data. It is suitable for the big data processing scenarios such as data mining and business analysis. The Data Integration service can also synchronize the data between ApsaraDB for Memcache and MaxCompute by itself thus, simplifying the data operations.

Glossary

Term	Description
Memcached	Memcached is a high-performance distributed caching system for memory objects. For the official introduction of Memcached, see here. Alibaba Cloud ApsaraDB for Memcache is compatible with the Memcached binary protocol and text protocol.

Instance ID	An instance corresponds to a user space. It is the basic unit for using ApsaraDB for Memcache. ApsaraDB for Memcache imposes different QPS and traffic limits on single instances of different capacity specifications. You can view the instance ID list on the console.
Connection address	The host address used to connect to ApsaraDB for Memcache is displayed in the form of domain names. You can query the host address in **Instance Information**>**Basic Information**>**Instance Details**>**Intranet Address**.
Connection password	The password used to connect to ApsaraDB for Memcache. You can set the password during the purchase, or reset the password after the purchase.
Hit rate	The successful reads by the user/the reads by the user.
Password-free access	It specifies whether or not you can access the corresponding ApsaraDB for Memcache instance on an authorized ECS without a password. For more information, see Password-free Access.
SASL	Simple Authentication and Security Layer (SASL) is a mechanism that expands the verification capability of the client/server (C/S) mode. Memcached starts to support SASL authentication from version 1.4.3. Alibaba Cloud ApsaraDB for Memcache also uses SASL as the authentication mechanism because ApsaraDB for Memcache is shared by multiple tenants. Essentially, SASL uses passwords to guarantee security of the cached data. We recommend use a strong password and change the password periodically. ApsaraDB for Memcache performs an authentication once every 60 seconds automatically.

New version Memcache

Background

ApsaraDB for Memcache (original version) uses distributed cache architecture. It guarantees service

reliability but does not guarantee data reliability. When a service node fails you must push the Memcache system in the event of data loss. Because, Memcache does not provide a data persistence policy, which can cause major problems.

To serve our customers better, the Alibaba Cloud ApsaraDB team upgraded ApsaraDB for Memcache (on May 10, 2017) with advanced features including dual-node hot standby, data persistence, and backup recovery. The new Memcache offers you with complete database solutions covering disaster tolerance, recovery, monitoring, migration, and so on, without affecting service reliability.

Product forms comparison

Module	New Version Memcache	Earlier Version Memcache
Distributed architecture	Supported	Supported
Data persistence guarantee	Supported	Not supported
Dual-node hot standby architecture	Supported	Not supported
Memcache protocol compatibility	Fully compatible	Fully compatible

Sales model comparison

The new version has more flexible sales models, and supports both Subscription and Pay-As-You-Go.

Module	Later Version Memcache	Earlier Version Memcache
Subscription new purchase	Supported	Not supported
Subscription upgrade	Supported	Not supported
Subscription renewal	Supported	Not supported
Subscription renewal and configuration change	Supported	Not supported
Subscription automatic renewal	Supported	Not supported
Pay-As-You-Go new purchase	Supported	Supported
Pay-As-You-Go configuration change	Supported	Supported
Release of Pay-As-You-Go instances	Supported	Supported
Changing Pay-As-You-Go to Subscription	Supported	Not supported

Supported regions

New Memcache supports a wider range of regions, including major international regions and all regions in China.

International regions list

Region	Zone	New Version Memcache	Old Version Memcache
Asia Pacific (Singapore)	Asia Pacific 1 Zone A	Supported	Not supported
Japan	Japan Zone A	Supported	Not supported
Germany (Frankfurt)	Germany Zone A	Supported	Not supported
Southeast Asia Pacific 2 (Sydney)	Australia Zone A	Supported	Not supported
Hong Kong	Hong Kong Zone C	Supported	Not supported
US East	US East 1 Zone A	Supported	Not supported
US (Silicon Valley)	US West 1 Zone B	Supported	Supported

Regions in China

Region	Zone	New Version Memcache	Old Version Memcache
East China 1	East China 1 Zone B	Supported	Supported
	East China 1 Zone D	Supported	Supported
	East China 1 Zone E	Supported	Supported
East China 2	East China 2 Zone A	Supported	Supported
	East China 2 Zone B	Supported	Supported
South China 1	South China 1 Zone A	Supported	Supported
	South China 1 Zone B	Supported	Supported
North China 1	North China 1 Zone B	Supported	Supported
North China 2	North China 2 Zone A	Supported	Supported
	North China 2 Zone B	Supported	Supported
	North China 2 Zone C	Supported	Supported

Functional modules comparison

New Memcache supports more functions, most of which are advanced database functions.

Categories	Functions	New Version Memcache	Old Version Memcache
Backup recovery	Full backup	Supported	Not supported
	Backup recovery	Supported	Not supported
	Clone instance	Supported	Not supported
	Data flow operation	Supported	Simple command lines
Monitoring alarms	Resource monitoring	Supported	Supported
	Resource alarms	Supported	Supported
Data security	Whitelist	Supported	Not supported
	VPC	Supported	Supported
	Whitelist password-free access	Supported	Supported
	Password-free for multiple Memcache instances	Supported	Not supported

Related FAQs

How can I manage and change the configuration of the earlier version ApsaraDB for Memcache?

A: You can continue managing earlier version ApsaraDB for Memcache instances in Alibaba Cloud console. Activated earlier version instances can be managed, changed in configuration, and released normally.

How can I purchase another earlier version ApsaraDB for Memcache instance?

A: The earlier version ApsaraDB for Memcache no longer supports purchasing new instances. You may only purchase a later version ApsaraDB for Memcache product.

Alibaba Cloud launched single-node ApsaraDB for Memcache in August 2017. The single-node product has the same price as the earlier version ApsaraDB for Memcache does. You can flexibly choose single-node or dual-node product formats to meet diverse business needs.

How can I upgrade an earlier version ApsaraDB for Memcache instance to the new version?

A: Currently ApsaraDB for Memcache does not support one-click upgrade from the earlier version to the new version.

To upgrade Memcache to the new version, you must purchase a new version instance, push data manually, direct your apps to the domain name of the new instance, and then release the earlier version instance.