Ranking Redis
on the High Performance Database Scorecard

Redis Labs is the open source home and commercial provider of Redis. Redis started in 2009 as a caching layer replacing an older caching system by the name of memcached. From the beginning, Redis was engineered for performance. Redis can support any data type or data structure in-memory, and all its commands are optimized for performance.

Over time, Redis expanded its coverage to address virtually any use case in any industry. With support for a wide range of data structures and algorithms that serve as effective building blocks (for example, Lists, Sets, Sorted Sets, Hashes, Geospatial indices, HyperLogLog, and Bitmaps), developers can implement numerous features at a fraction of the development complexity.

Redis Modules enable developers to create new functionality on top of Redis without changing the core. Redis Modules become, in a sense, custom database functionality that can be used by microservices or applications to do advanced work while also simplifying development and reducing the number of specialty databases that need to be deployed, which simplifies the environment and greatly reduces TCO.

Redis uses its Modules to enrich the platform's capability. Through Redis Modules, Redis has added a variety of capabilities, including secondary index, JSON, search and machine learning. Modules share the platform's scalability, high availability, in-memory speed, and distribution over multiple geographic locations. Redis' search engine significantly outperforms other standard search engines on the market, with throughput of up to 5X that of Elasticsearch and Solr and latency that is 4-8X better.

Deployment options

Organizations have a variety of options when it comes to procuring and deploying Redis. The open source version is available for free download and is supported by the open source community.

Redis Labs offers commercial enterprise Redis both as-a-service and as downloadable software. Redis Cloud is on a public cloud in a shared environment. Redis Labs rents thousands of cloud servers in multiple public clouds, such as Amazon Web Services, Google Cloud, IBM SoftLayer and Microsoft Azure. Redis Labs puts its technology on its cloud-based servers and customers create databases on those servers in a zero-touch manner. Redis Labs manages scaling and high availability of the databases, with no operational effort required from the customer. Redis Cloud plans include a free tier as well as monthly, annual, pay-as-you-go, reserved or dedicated options, based on the size of the databases in gigabytes.

Alternatively, Redis Labs offers a managed private cloud option. Redis Cloud Private (RCP) is intended for organizations that want a fully managed service within their virtual private cloud (VPC). Redis Labs deploys and runs Redis as a service on those servers. In this case, the customer pays the cloud provider that's hosting its VPC and Redis separately. Redis charges for its services based on two parameters: the size of the database and the maximum throughput in operations per second. These parameters are measured every hour on the hour and a monthly fee is calculated.

Redis also offers downloadable enterprise software. The same technology that powers Redis as a service options also power Redis' enterprise software. Redis Labs Enterprise Cluster (RLEC) is available to download from the Redis website and deploy anywhere, including in a public cloud or a private data center. The customer is responsible for the installation and ongoing operation of the software.

RLEC can be downloaded free of charge for proof of concept projects. When the customer is ready to use it for production, the organization purchases an activation key through the Redis Labs sales organization, and the customer is charged based on the number of database shards.

The final option for deploying Redis is called Managed RLEC. In this scenario, RLEC is deployed on-premises, in the customer's private data center, but the database software is remotely managed by Redis Labs. The IT organization gives Redis Labs access to their private environment, and the Redis Labs DevOps center manages the database remotely, thereby relieving the customer's staff of this responsibility. The customer pays a certain premium on the price per-shard for the software.

Both Redis Cloud VPC and RLEC include the ability to use flash memory or SSDs as an extension of RAM. This enables customers to store very large datasets at a substantially lower cost by using a combination of flash and RAM. When such a combination is used, Redis Labs' technology ensures the characteristic sub-millisecond latencies of Redis and high throughput by storing keys and hot values in RAM and cold values in flash, effectively tiering the data while retaining high performance.

CRITERIA	PRIORITY FOR YOUR DEPLOYMENT	REDIS
Support for multiple deployment models, including on-premises, public cloud, private cloud, and remotely managed		Redis Cloud, Redis Cloud Private (RCP), Redis Labs Enterprise Cluster (RLEC), Managed RLEC
Ability to run on a single server, on a cluster, on multiple clusters, or geographically distributed clusters		Yes
Ops per second/Acceptable latency per operation/hardware needed to get to required performance characteristics		A single instance can easily support 100,000 ops per second at sub-millisecond latency on standard instances on AWS, and a few million operations per second in a standard cluster
Option to outsource database management		Yes
Support for multiple data structures/engines		Yes
Enables microservices to create hundreds of databases to meet demand		Yes
Support for in-memory, with choice to balance RAM with cheaper options like SSD to achieve the right performance mix		Yes
Tiered service for hot, warm, and cold data		Yes
Support for in-database analytics		Yes
Add-ons to support particular functions, and ability to code add-ons in languages like C, Python or Go		Redis Modules Can program modules in C, Python, or Go
Available as open source		Yes (without support)
Proof of concept for commercial version		Yes