



Home of Redis

April 24, 2017



- Introduction to Redis and Redis Labs
- Redis with MySQL
- Data Structures in Redis
- Benefits of Redis^e

Redis and Redis Labs



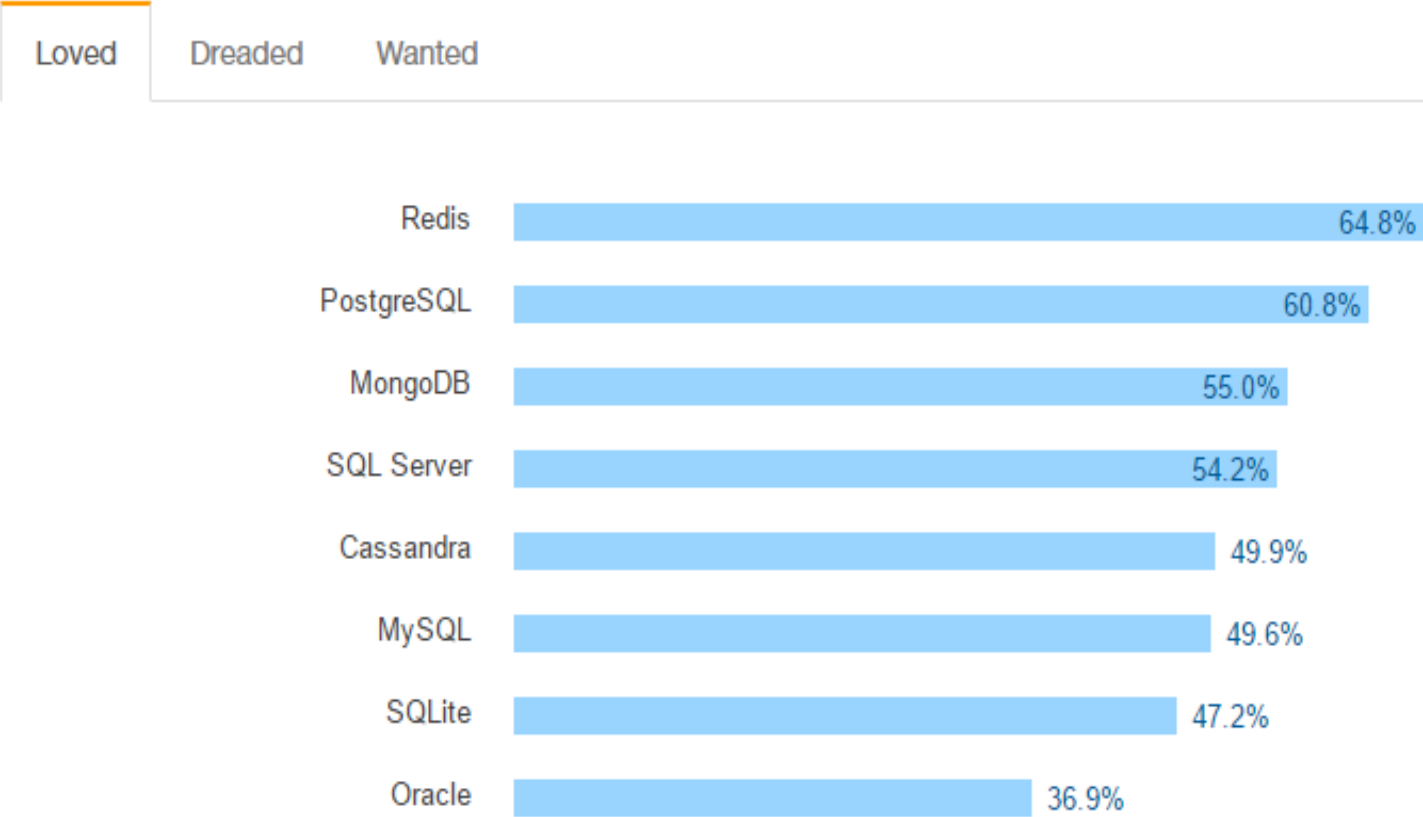
Open source. The leading **in-memory database platform**, supporting any high performance operational, analytics or hybrid use case.



The open source home and commercial provider of **Redis Enterprise (Redis[®])** technology, platform, products & services.

Redis Tops Database Popularity Rankings

Most Loved, Dreaded, and Wanted Databases



Stack Overflow Survey of 64,000 Developers:
“Redis is the MOST LOVED Database”

Redis Tops Database Popularity Rankings



.....#1 database technology on AWS



.....#1 database used by Node.js developers



.....#1 database in Top Paying Technologies



.....#1 NoSQL among Top 10 Data Stores



.....#1 database on Docker



.....#1 NoSQL in User Satisfaction

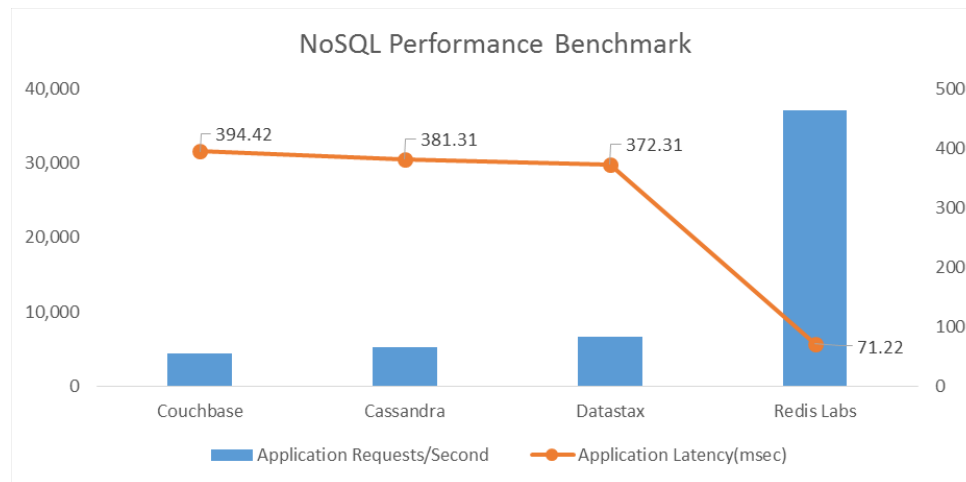


.....#1 in growth among top 3 NoSQL databases



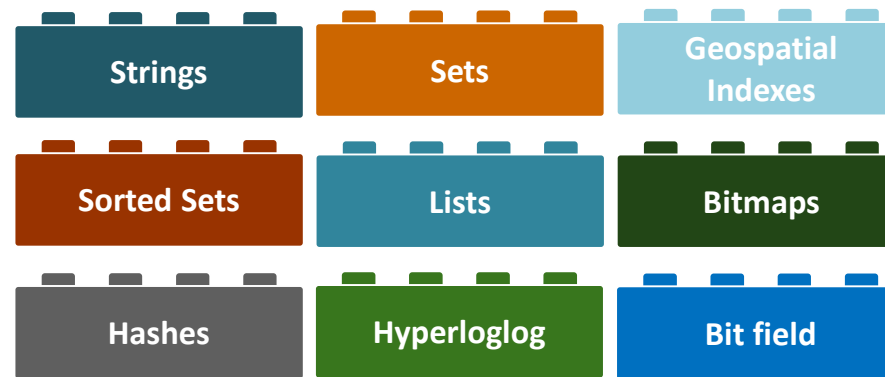
.....#1 database in skill demand

Redis Top Differentiators



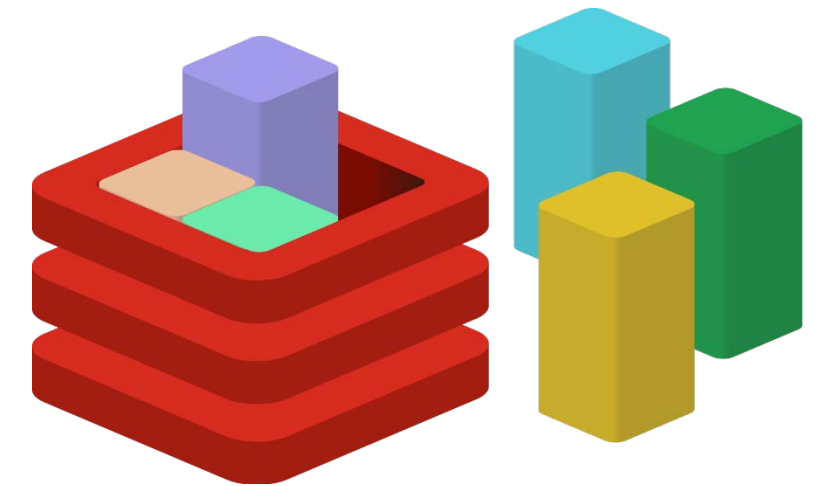
NoSQL Benchmark

Performance



Redis Data Structures

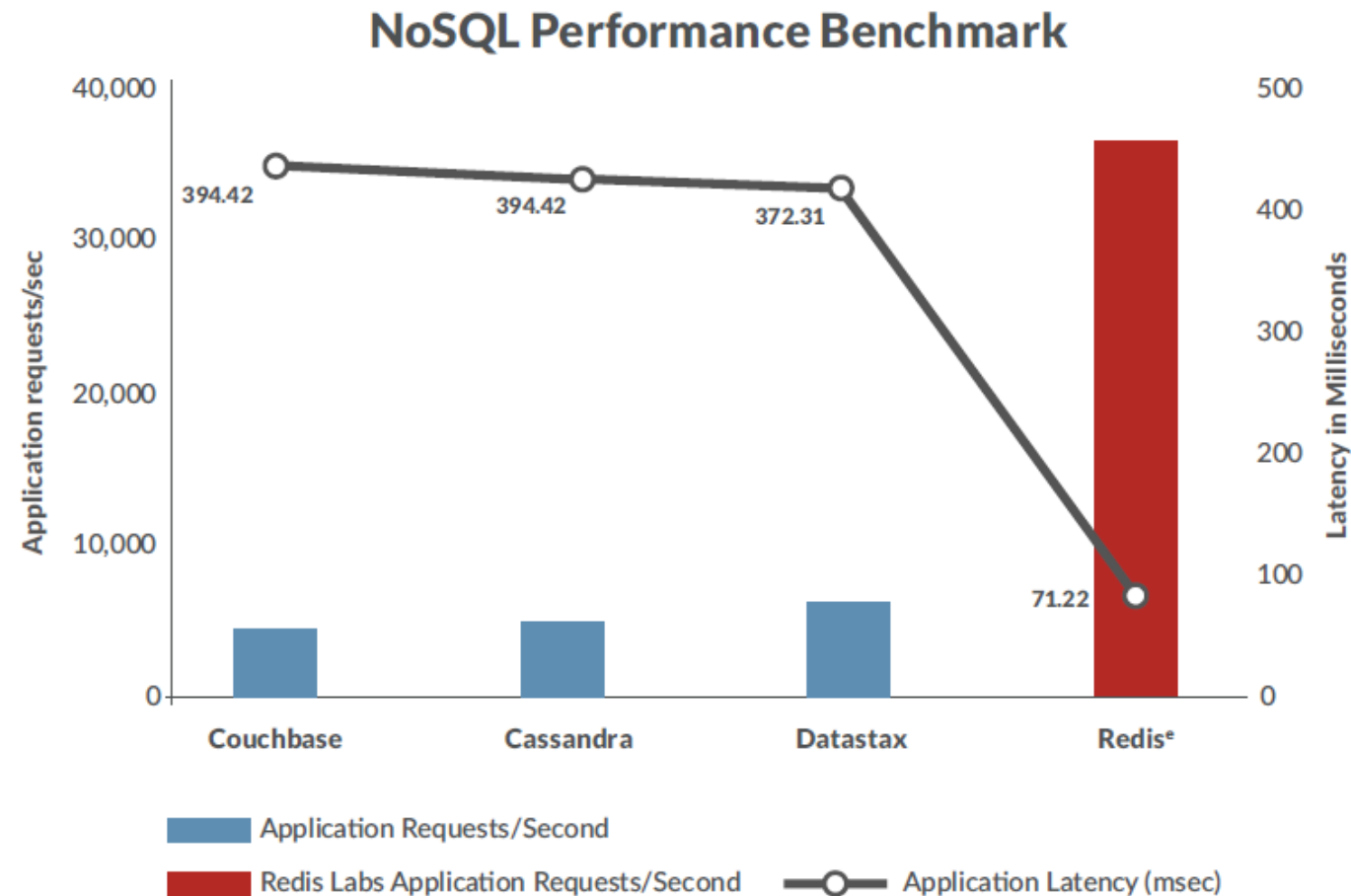
Simplicity



Redis Modules

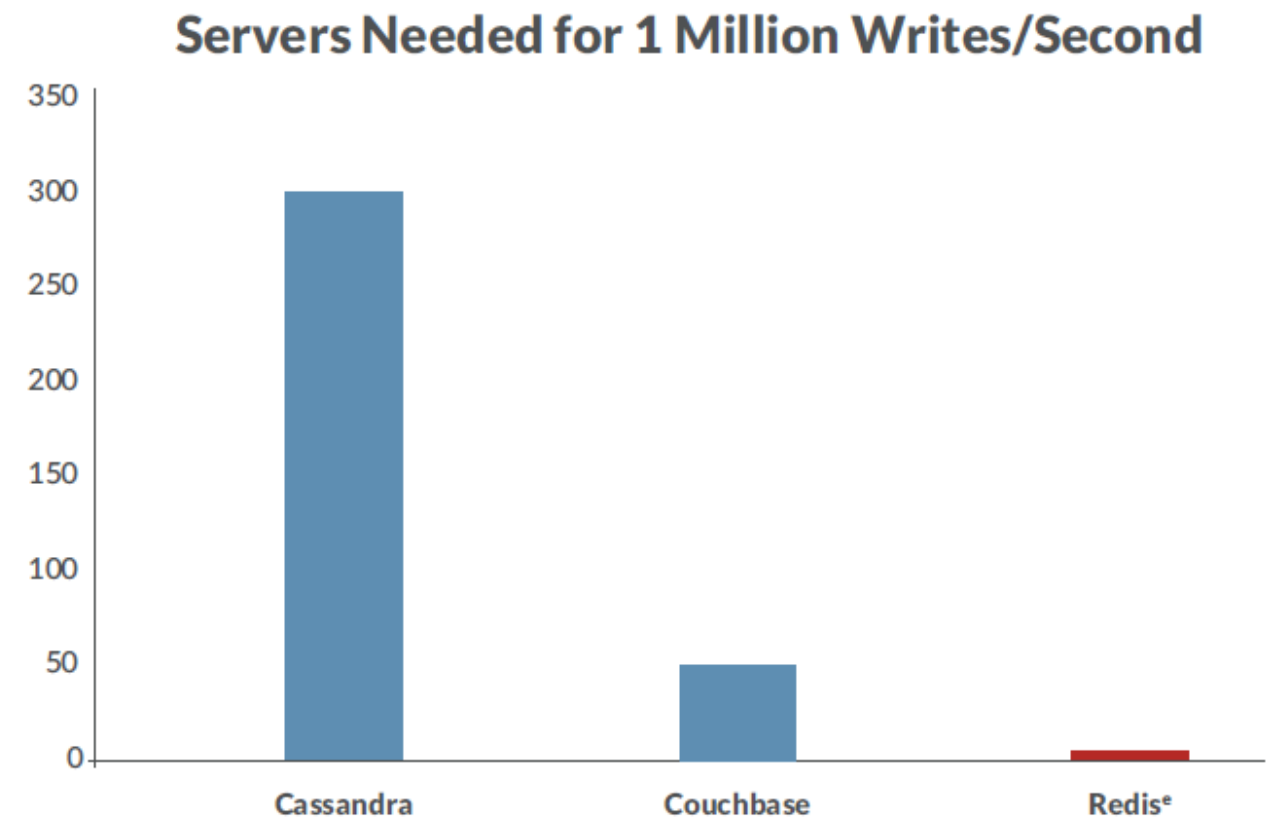
Extensibility

Performance: the Most Powerful Database



Highest Throughput at Lowest Latency
in High Volume of Writes Scenario

Benchmarks performed by Avalon Consulting Group



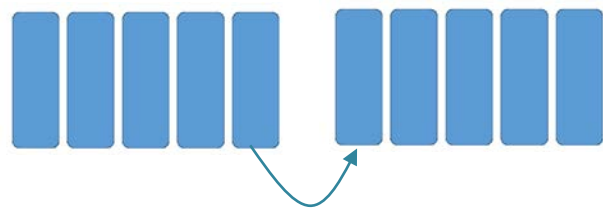
Lowest number of servers needed to
deliver 1 Million writes/second

Benchmarks published in the Google blog

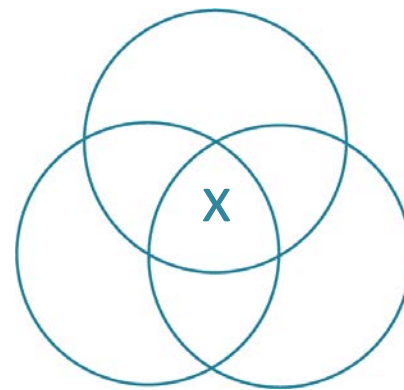
Simplicity: Data Structures - Redis' Building Blocks

- Data Structures like programmer's "Lego" blocks
- Simple commands for complex operations

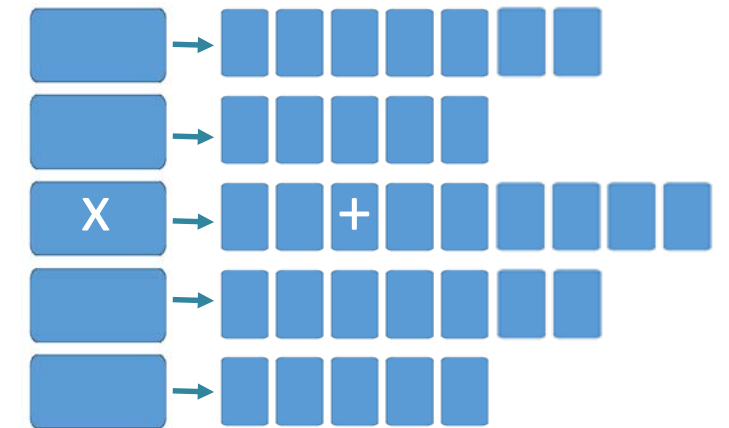
Examples:



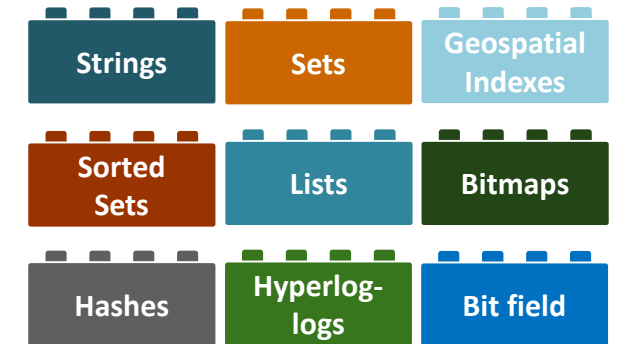
RPOPLPUSH



SINTER



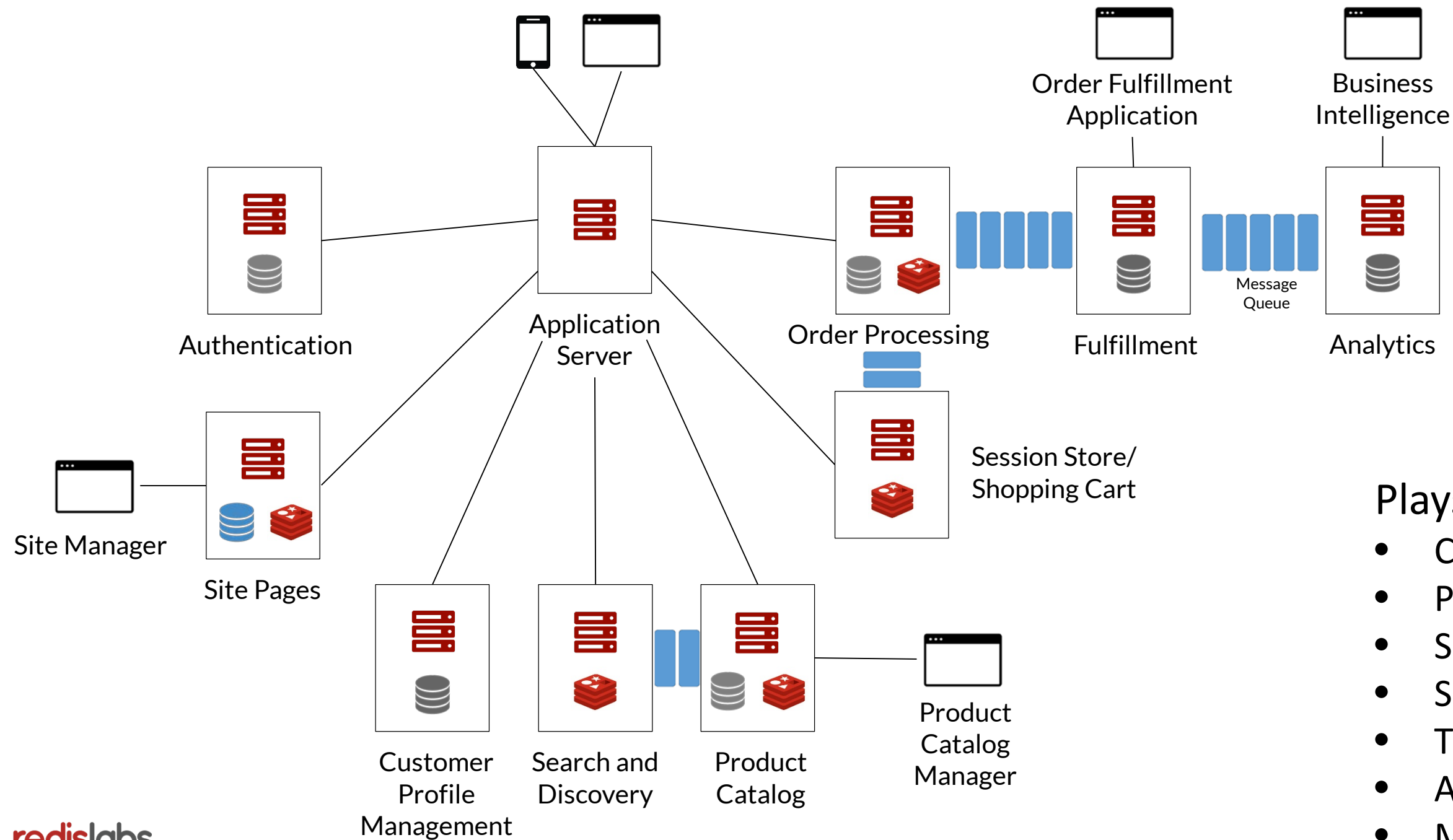
HINCRBY



While we say Redis is like Lego, some say it is like a.....



Redis^e - Swiss Army Knife of Microservices Architecture



Plays different roles

- Cache server
- Primary database
- Session store
- Search engine
- Time-series database
- Analytics database
- Message Broker

Popular Use Cases

REDIS LABS CUSTOMER RESEARCH

Redis Use Cases

What is your Redis use case?



Source: TechValidate survey of 169 users of Redis Labs



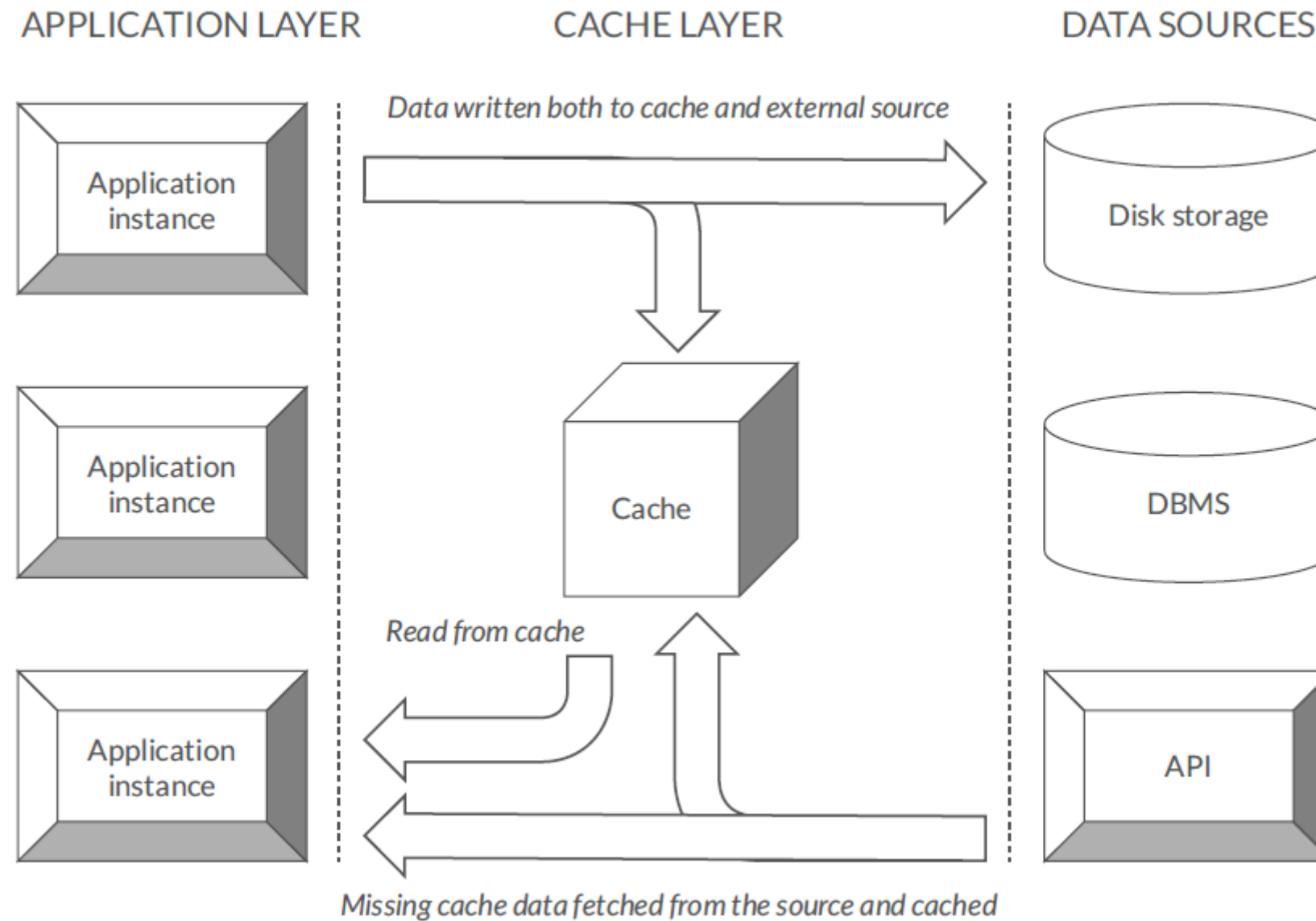
Published: Nov. 17, 2016 TVID: 34C-EC5-37E

redislabs



Redis^e with MySQL

Common Cache Use Case



A Simple Get/Set Program

```
import redis

r = redis.StrictRedis(\
    host='redis-10854.c11.us-east-1-2.ec2.cloud.redislabs.com ',\
    port=10854,\
    password='mypassword' )

r.set('key1', '123')
print(r.get('key1'))
```

A Simple Get/Set Program

```
import redis.clients.jedis.Jedis;

public class RedisTest
{
    public static void main(String[] args) throws Exception{
        private static final String URL =
            "redis-10854.c11.us-east-1-2.ec2.cloud.redislabs.com";
        private static final int PORT = 10854;
        private static final String PASSWORD = "mypassword";

        jedis = new Jedis(URL, PORT);
        jedis.auth(PASSWORD);

        jedis.set("key1", "123");
        System.out.println(jedis.get("key1"));
    }
}
```

Get creative with your keys

```
Select * from student_list  
Where course = "Redis" and location = "Santa Clara"
```

How would you cache the results?

```
SET "student_list:Redis:Santa Clara" [Results]
```


Get creative with your keys

The advantage of separating attributes

1. Get students enlisted to Redis course at all locations

```
KEYS "student_list:Redis:*"
```

```
MGET "student_list:Redis:Santa Clara" "student_list:Redis:New York"...
```

2. Get students enlisted to all the courses in Santa Clara

```
KEYS "student_list:*:Santa Clara"
```

```
MGET "student_list:Redis:Santa Clara" "student_list:MySQL:Santa Clara"...
```

Why Redis is the best Cache Server?



- In-memory store – fast access time
- Implemented in C, optimized for best performance
- Pipelining

Why Redis is the best Cache Server?

- Is binary safe
- Value can be as large as .5GB
- You can even have a JPEG as a key
- Operations are atomic



Why Redis is the best Cache Server?

Wide variety of eviction policies to suit your application needs

- noeviction
- allkeys-lru
- volatile-lru
- allkeys-random
- volatile-random
- volatile-ttl

A red stamp with the words "EVICTED NOTICE" in a bold, sans-serif font. The stamp is tilted at an angle, with "EVICTED" on the top line and "NOTICE" on the bottom line. The stamp has a distressed, ink-like texture.

Why Redis is the best Cache Server?

- High Availability with instant, in-memory replication
- Persistence – snapshots, AOF (every second or every write)
- Scalable shared-nothing clustering

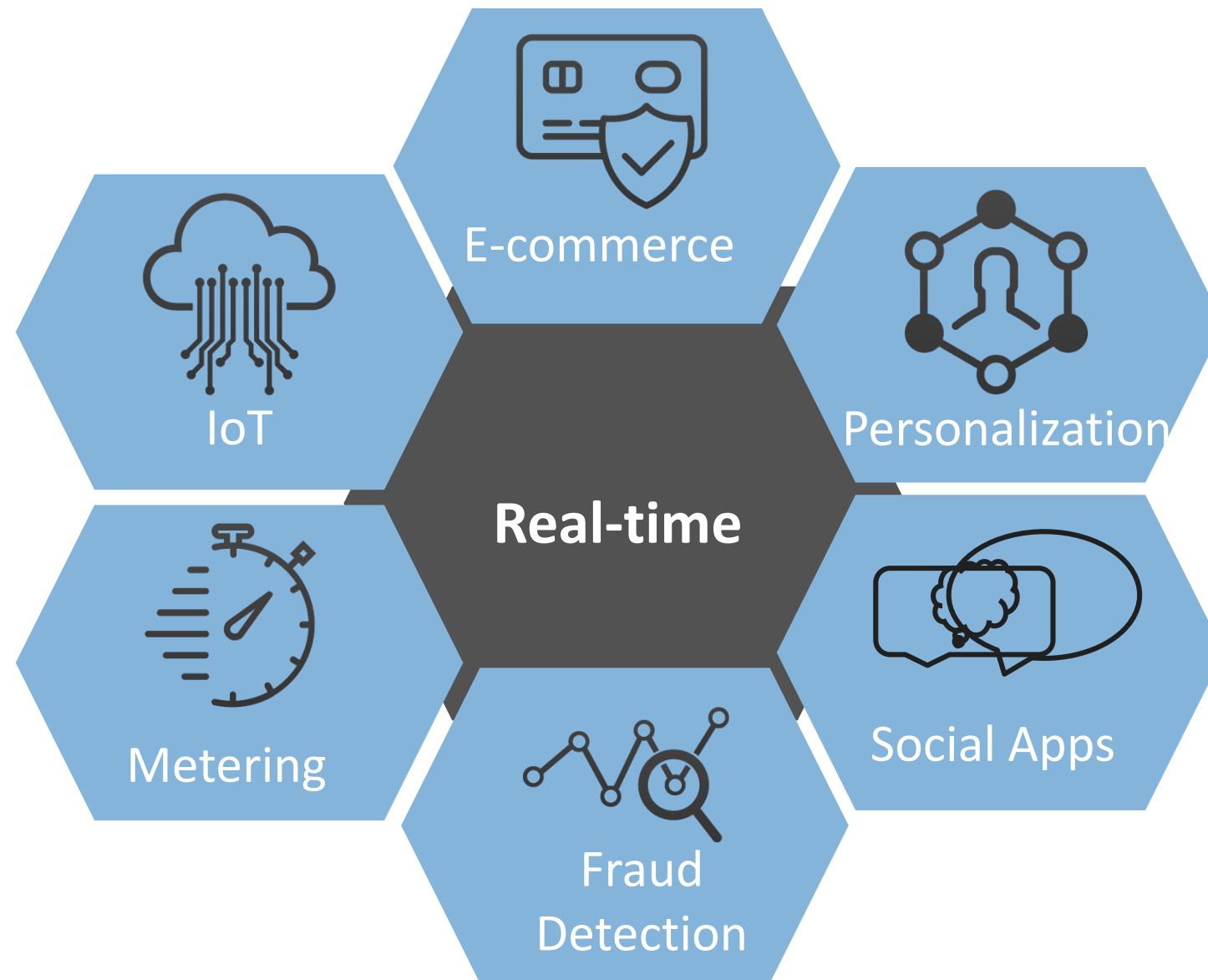


Redis is not just a caching layer

Redis offers a full range of capabilities that simplify and accelerate next generation applications



Redis Powers a Range of Solutions



...AND MANY MORE

Introduction to Data Structures in Redis

Redis Enterprise

Redis Labs Products



Redis^e Cloud

Fully managed Redis^e service on hosted servers within AWS, MS Azure, GCP, IBM Softlayer, Heroku, CF & OpenShift

RAM



Redis^e Cloud Private

Fully managed Redis^e service in VPCs within AWS, MS Azure, GCP & IBM Softlayer

RAM

or

Flash



Redis^e Pack

Downloadable Redis^e software for any enterprise datacenter or cloud environment

RAM

or

Flash



Redis^e Pack Managed

Fully managed Redis^e Pack in private data centers

RAM

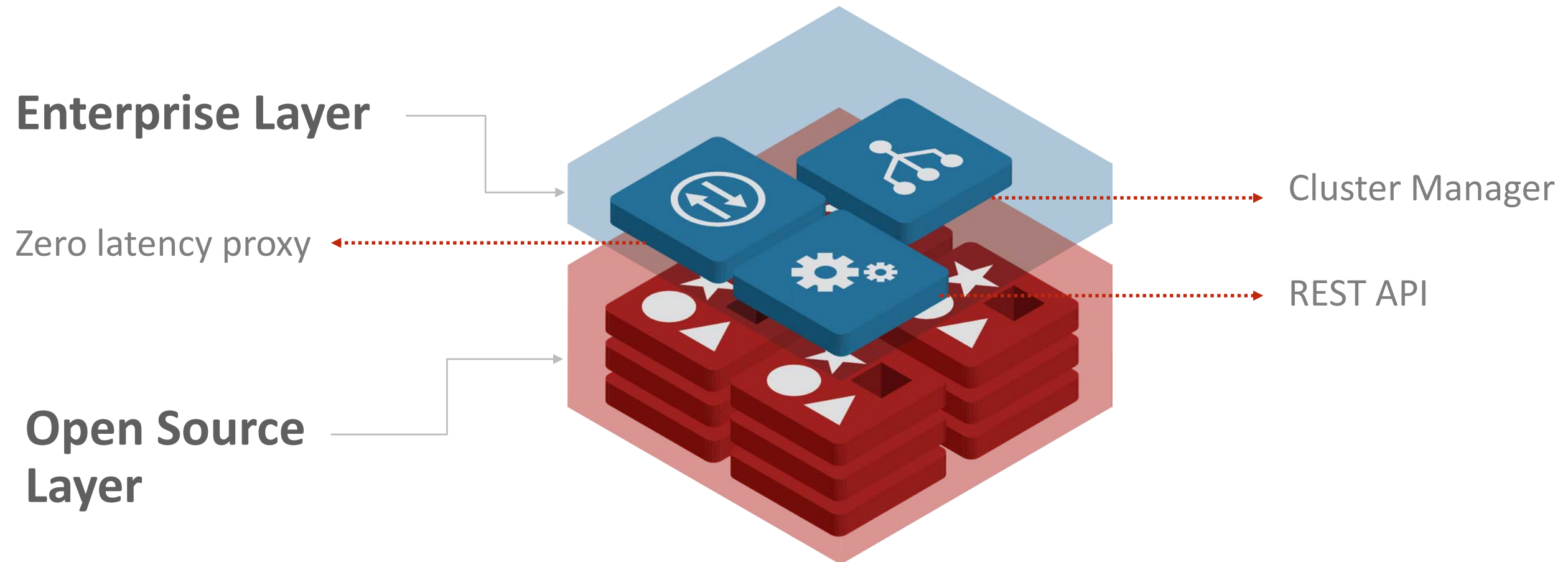
or

Flash

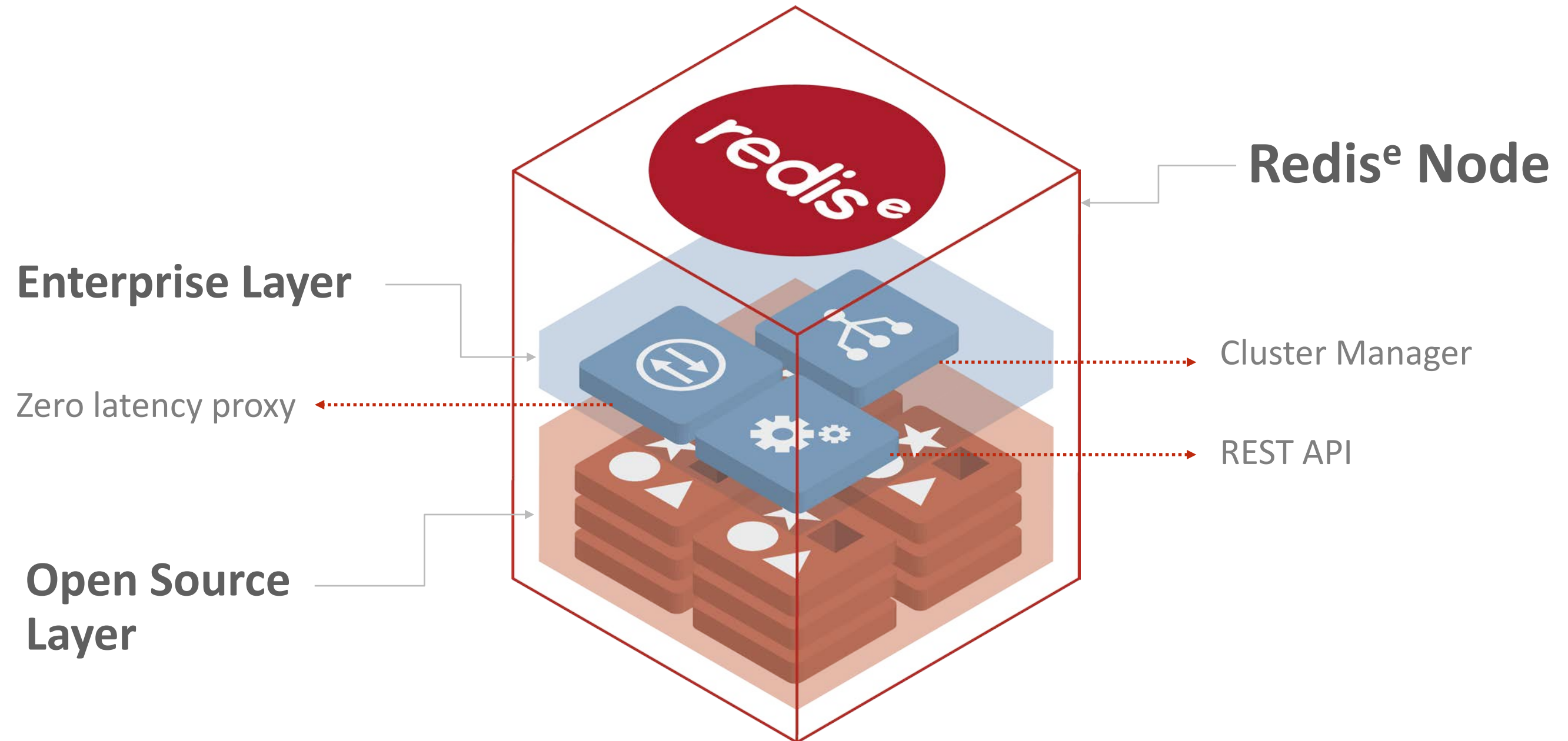
Redis Database Instances



Redis^e Technology



Redis^e Technology



Redis^e Technology

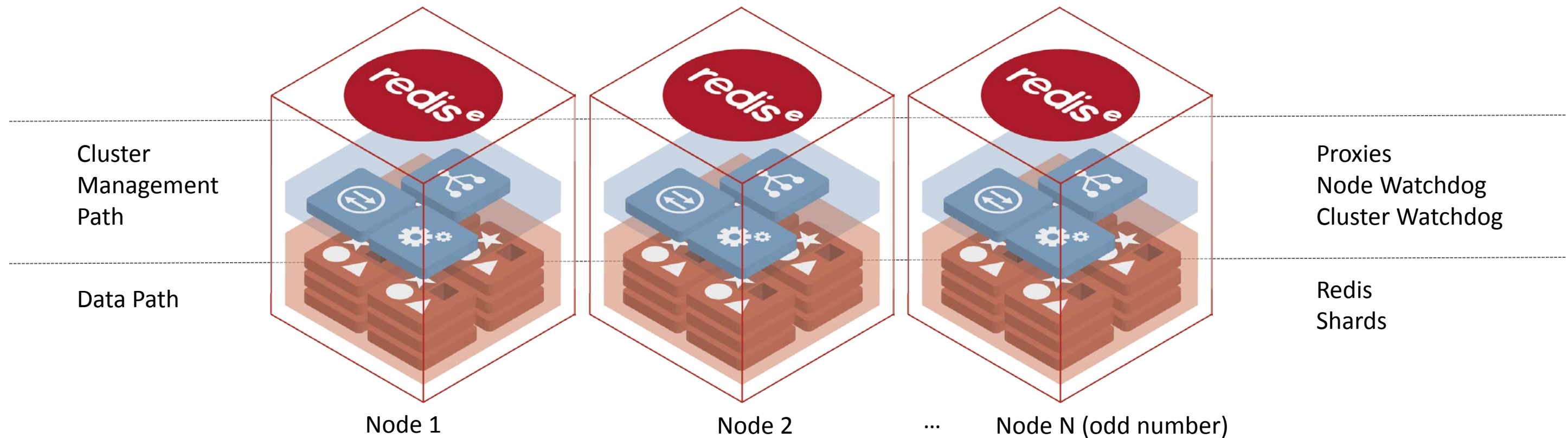
Redis^e Cluster

- Shared nothing cluster architecture
- Fully compatible with open source commands & data structures



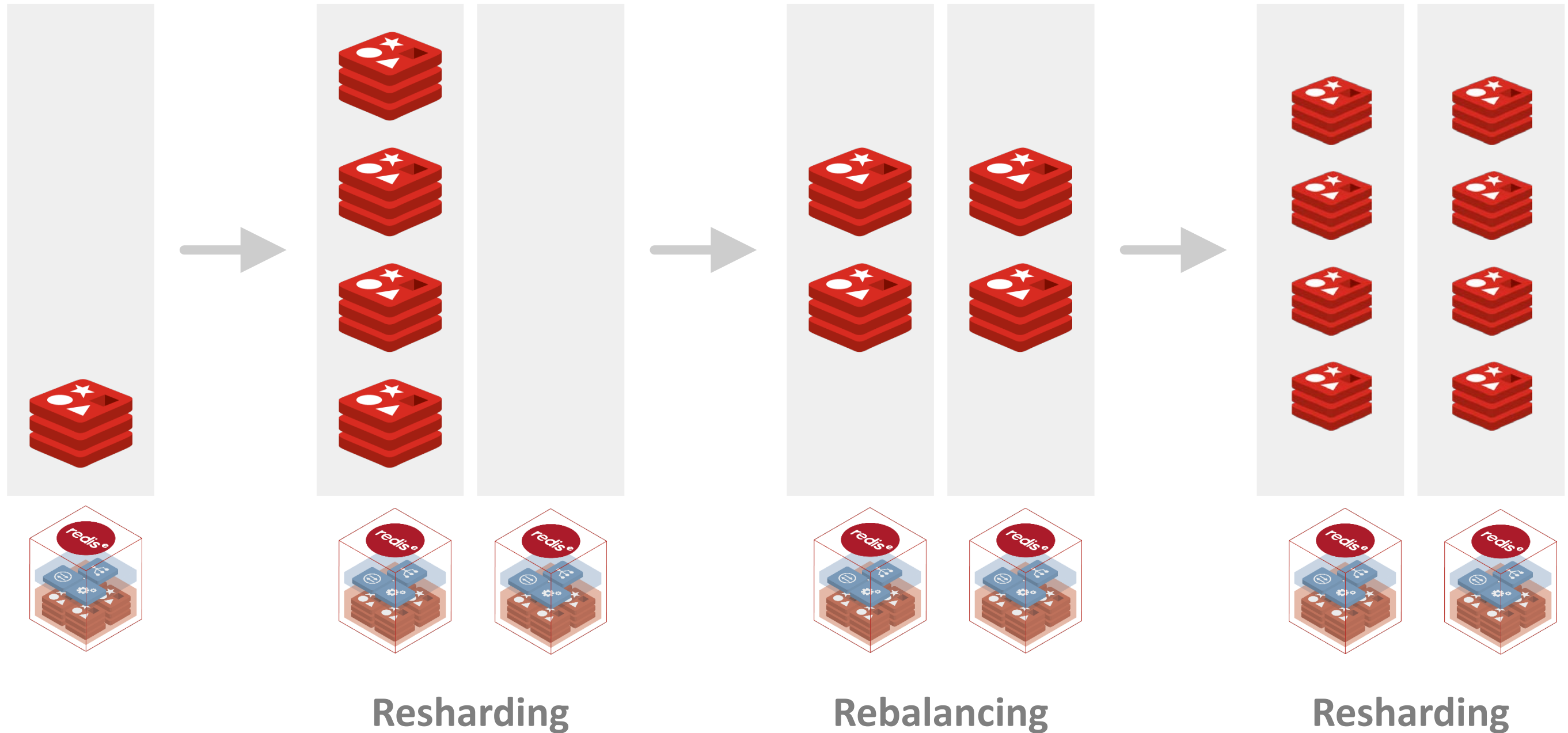
Redis^e - Shared Nothing Symmetric Architecture

Distributed Proxies
Single or Multiple Endpoints



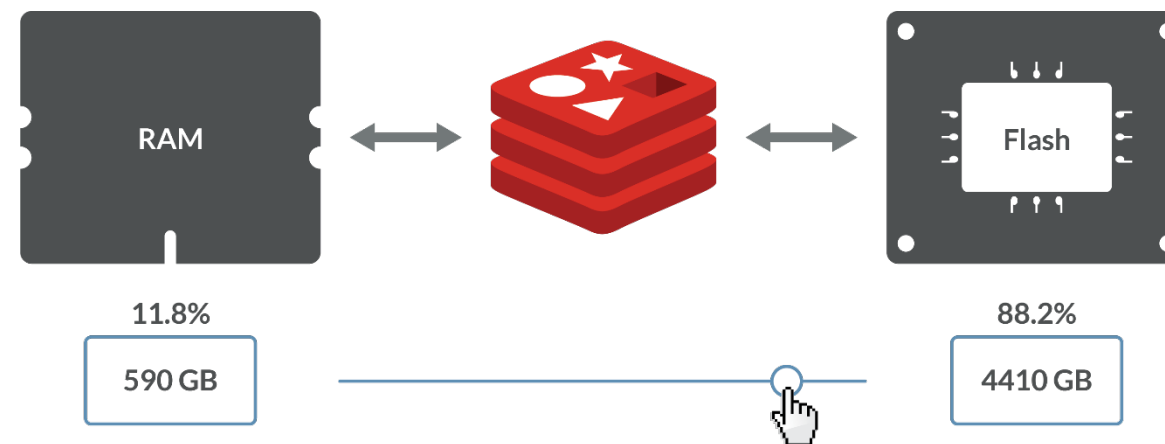
Unique multi-tenant “Docker” like architecture enables running hundreds of databases over a single, average cloud instance without performance degradation and with maximum security provisions

Scale Out with Rebalancing & Resharding



Redis^e Flash

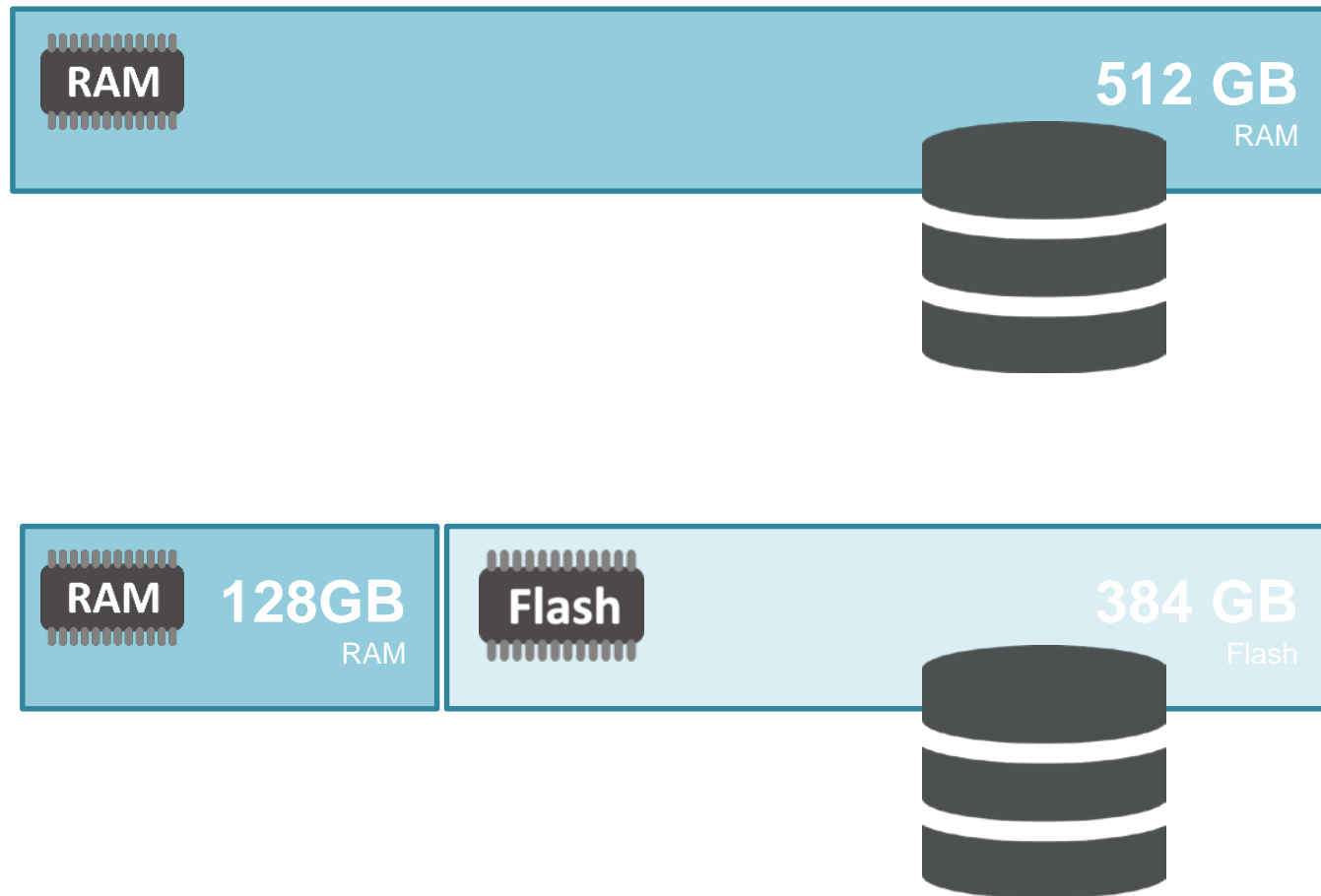
Large Datasets with Near RAM Latency at a Lower Cost



- Optimize read/writes with RAM-Extension
- Gain speed with smart caching between RAM and Flash
- Available on Redis^e Pack and Redis^e Cloud Private

Why Redis^e Flash?

Serve large datasets at a much lower cost



>70%

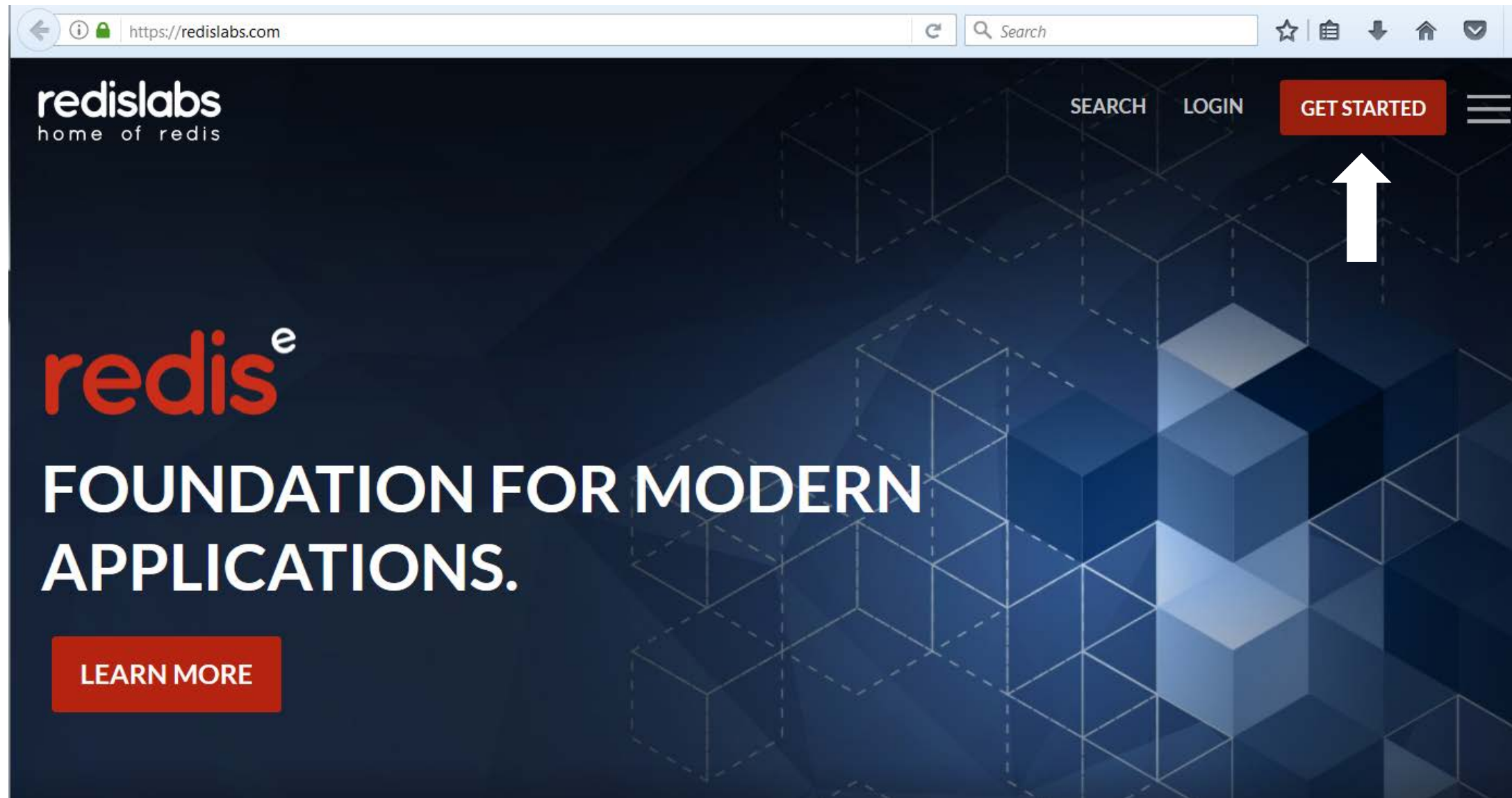
Lower Cost with RAM+Flash
Compared to all-in-RAM

Cost Comparison of RAM vs Flash on AWS

	Redis on RAM	Redis ^e Flash
Dataset size	10 TB	10 TB
Database size with replication	30 TB	20 TB*
AWS instance type	x1.32xlarge	i3.16xlarge
Actual instance size (RAM, and RAM+Flash)	1.46 TB	3.66 TB
# of instances needed	21	6+1
Persistent Storage (EBS)	154 TB	110 TB
1 year cost (reserved instances)	\$1,595,643	\$298,896
Savings	-	81.27%

* Redis^e handles quorum issues at the node level and needs only two copies of data for high availability

How?



<http://redislabs.com>

How?



The image shows a screenshot of the Redis Labs website's sign-up page. At the top, there's a dark red header with the 'redislabs' logo and the tagline 'home of redis'. Below this, four circular icons represent different Redis services: Redis Cloud, Redis Cloud Private, Redis Pack, and Redis Pack Managed. The main heading reads 'The fastest way to deploy a Redis database' followed by 'Fully managed hosted Redis^e service on major public clouds'. The sign-up form is titled 'Sign Up Free' and includes a link for existing users to 'Login'. The form fields are: 'FIRST NAME', 'LAST NAME', 'EMAIL', 'COMPANY', 'COUNTRY' (a dropdown menu with 'Select...' as the placeholder), and 'PASSWORD (6-20 CHARACTERS)'. At the bottom of the form, there's a checkbox area with the text 'By creating your account, you agree to our Terms of Use' and a prominent red 'GET STARTED' button.

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home of redis

redis^e Redis^e Cloud
redis^e Redis^e Cloud Private
redis^e Redis^e Pack
redis^e Redis^e Pack Managed

The fastest way to deploy a Redis database
Fully managed hosted Redis^e service on major public clouds

Sign Up Free [Have an account? Login](#)

FIRST NAME

LAST NAME

EMAIL

COMPANY

COUNTRY

PASSWORD (6-20 CHARACTERS)

☐ By creating your account, you agree to our [Terms of Use](#)

GET STARTED

<http://redislabs.com>

Register Today!



redisconf17

May 30–June 1, 2017

Marriott Marquis, San Francisco

EXPLORE
ENDLESS
POSSIBILITIES



Join us for the largest gathering of Redis users and experts. Explore Redis capabilities in a range of use cases including machine learning, IoT, analytics, personalization, streaming, metering, artificial intelligence and many more.

<http://redisconf.com>

Code: RedisHero2017