Simplify Microservices Architectures with Amazon MemoryDB for Redis

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Time is money

Most businesses operate online and mobile - *screens are becoming the face of the brand.*

Data analytics and AI/ML are improving internal operations *- but need real-time data access.*

Latency is not an option anymore.
Unresponsive apps lead to substantial financial loss.
Users move on or operations suffer.

Latency is the new outage

Modern apps are complex and performance thirsty

Massive scale

- Millions of users or devices/sensors.
- Concurrent, spikey application access (millions RPS)
- Large data volumes / high throughput (GB/sec)

Changing development environments

- Microservice architectures
- Data model and data type agility
- Mission critical

Real-time processing

- Personalization, recommendations, transactions
- Fraud detection, actionable analytics

Modern apps need modern database foundations

MemoryDB has ultra-fast in-memory performance.

Built on open source Redis loved by developers.

Relational databases were not optimized for modern application needs.

Customers are spending too much - leading to database sprawl.

When performance matters most

MemoryDB

- **Latency sensitive workloads:** extremely low response time needs
- **High request rate:** up to 100s of millions of requests per second
- **Hot data:** need frequent, fast access for business critical apps
- **High data throughput:** GB per second read data access
- **No Data Loss:** source of truth, persistent, recoverable

Use Cases

Broad MemoryDB use cases

Web and mobile

User content data stores

Session management

Geospatial indexing

Retail

Customer profiles and accounts

Inventory tracking and fulfillment

Personalized recommendations

Gaming

Player profiles & history

Real-time data processing

Leaderboards

Banking and finance

Payment processing

Fraud detection

High volume exchanges

Media and entertainment

User data stores and profiles

Real-time streaming / AdTech

Catalog management

IoT

Streaming device data

Operational insights

Real-time analytics

Amazon MemoryDB for Redis

Amazon MemoryDB for Redis

Redis-compatible, in-memory database with Multi-AZ durability

Ultra-fast performance

Microsecond reads and single-digit millisecond writes

Redis compatibility

Flexible and friendly Redis APIs and data structures

Durability and high availability

Multi-AZ transactional log for durability and replicas for high availability

Fully managed

AWS-managed hardware and software setup, configuration, monitoring, and snapshots

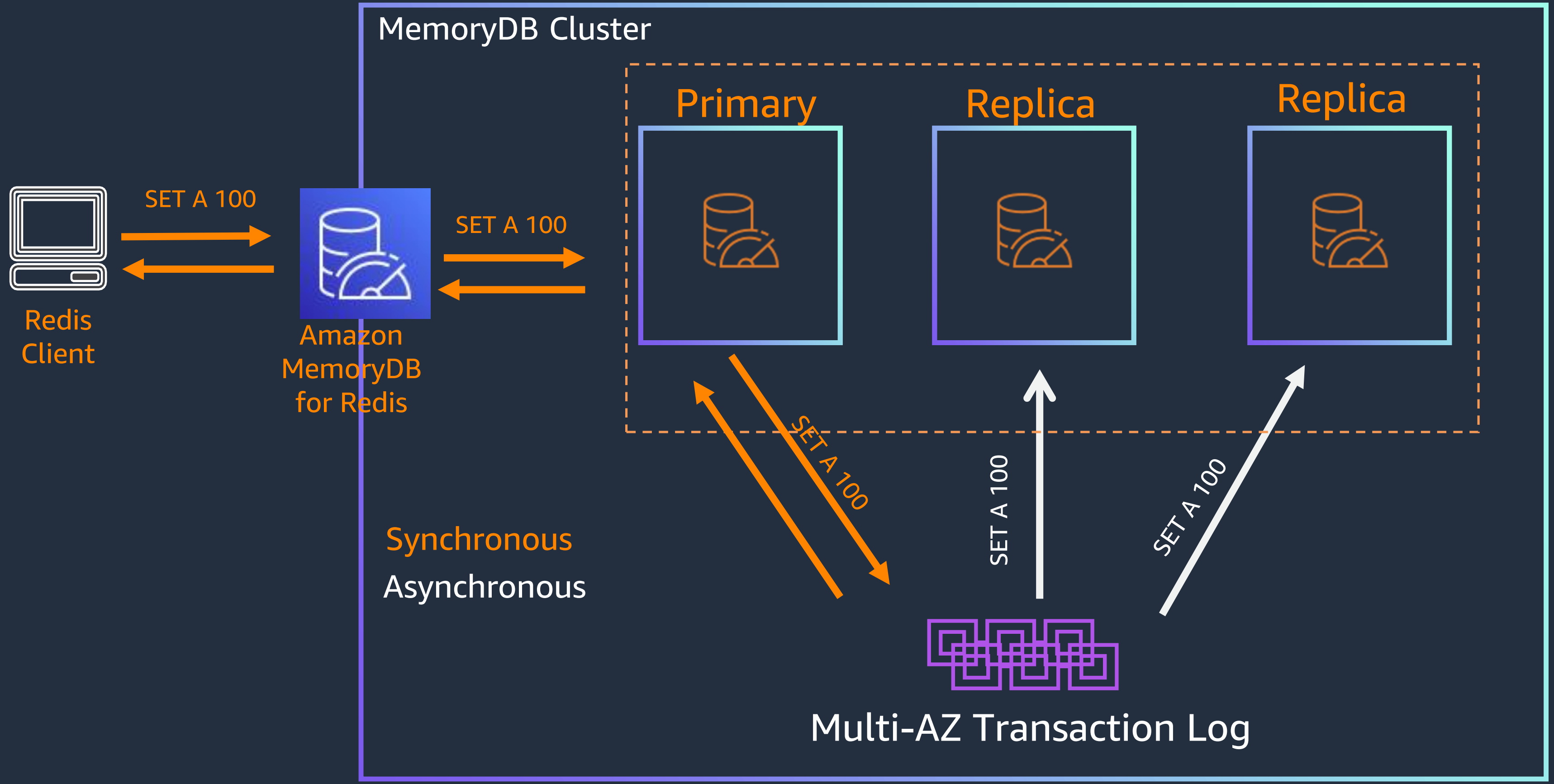
High scalability

Up to 500 nodes and 128 TB of in-memory storage per cluster (with 1 replica per shard)

Security

Amazon VPC, encryption at-rest and in-transit, Access Control Lists (ACLs)

Amazon MemoryDB: Durable Multi-AZ Transaction log



- All writes committed to Multi-AZ transactional log
- Only after the write is fully committed in the durable transaction log, an ack is sent back to the client
- Guaranteed delivery of writes to replicas

MemoryDB for Redis support for Redis 7

Redis Functions

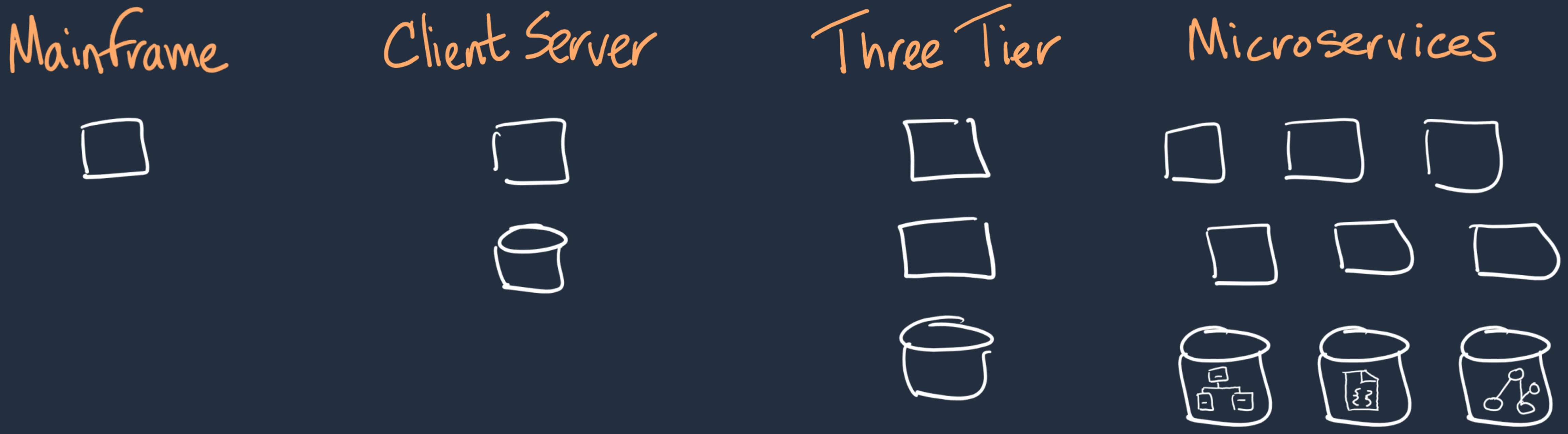
ACL v2

Sharded Pub/Sub

Enhanced I/O Multiplexing

Microservices

Application architecture, patterns have evolved



Microservices change how applications are built in the cloud

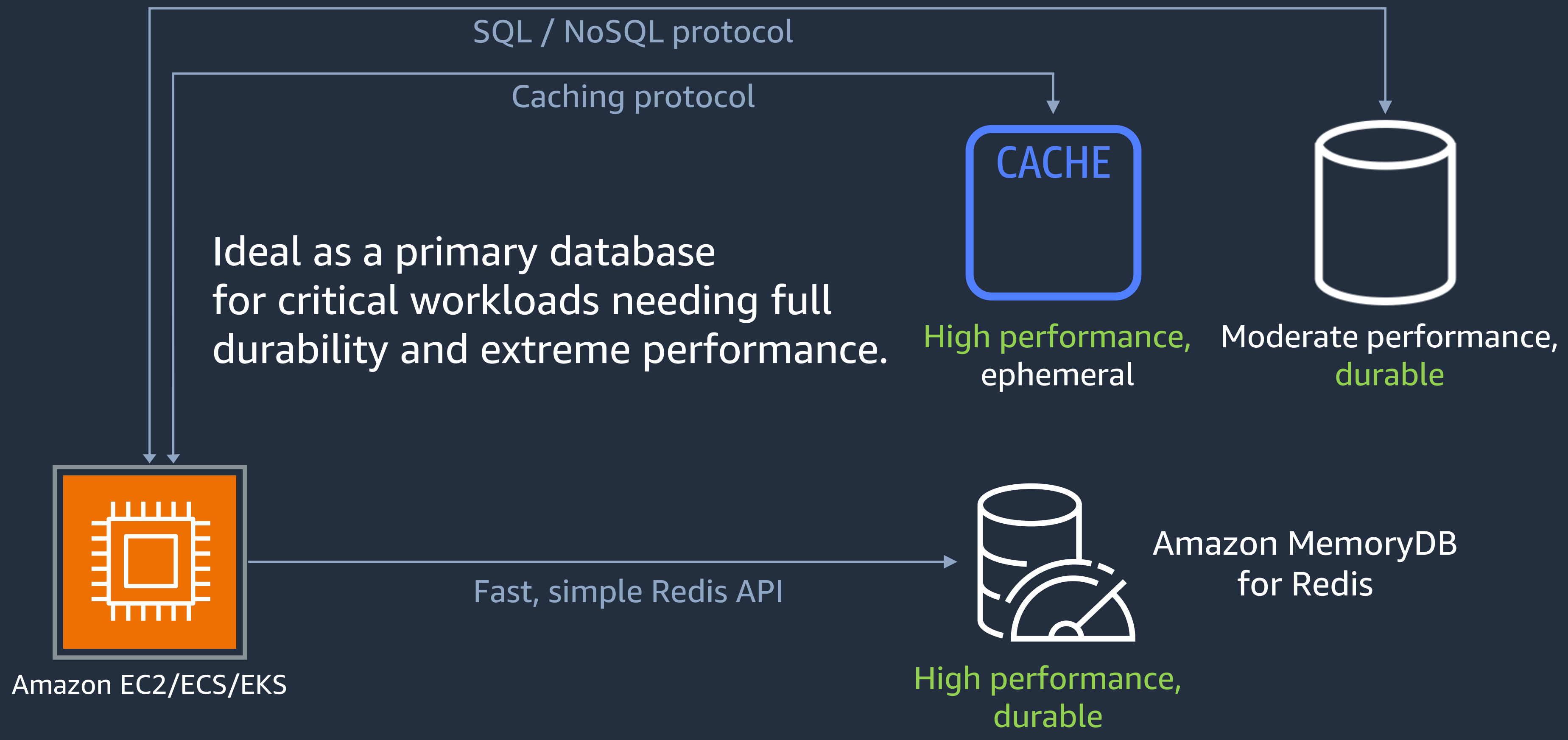
Flexible Redis data structures and API

Strings	Serialized strings, counters, bitmaps
Lists	Linked lists, Sequences, news feeds
Sorted sets	Gaming leaderboards, scores
Streams	IoT, Message queues

….and more like Hash, Sets, Bitmaps, Geospatial, HyperLogLogs and JSON

Simpliying Architectures

Simplified architecture and access



Ideal as a primary database for critical workloads needing full durability and extreme performance.

Cache Invalidation

“There are only two hard things in Computer Science: cache invalidation and naming things.”
-- Phil Karlton

With MemoryDB for Redis there is no need for cache invalidation

Demo

Getting Started with MemoryDB for Redis

Amazon MemoryDB for Redis

Getting Started with Amazon MemoryDB for Redis

Build with Amazon MemoryDB for Redis

Thank you!