



# Amazon ElastiCache

Real-time application performance  
while optimizing database costs

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# Time is Money

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

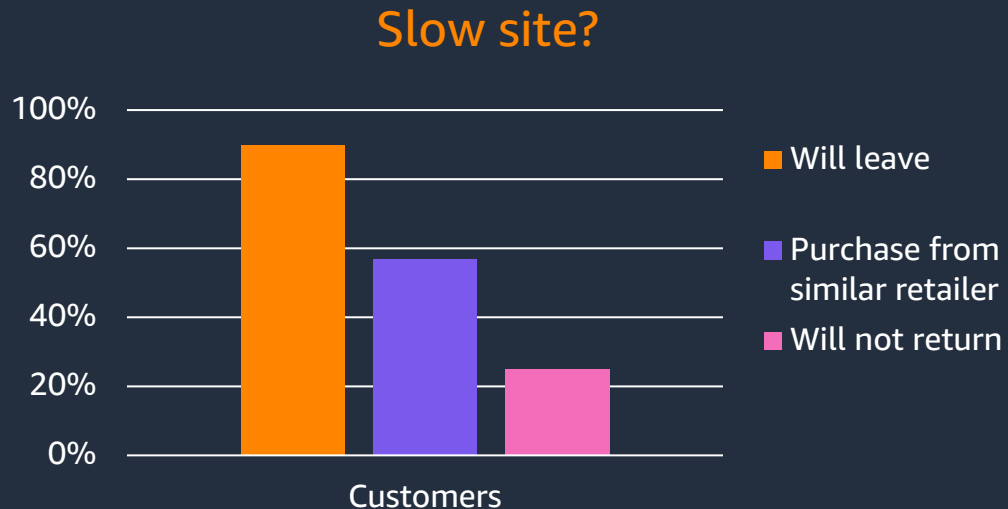
Operations are being improved through data analytics, IoT and AI/ML - *often in real-time.*



**Latency is not an option anymore:  
An unresponsive app causes financial lose because  
users move on or operations suffer.  
*Latency is the new outage.***

# Time is money

*“The No.1 reason people abandon a website after viewing just one page it’s slow to load.”<sup>1</sup>*



*“A two-second delay in web page load time increases bounce rate by 103 percent.” (Akami study)*

*“A brokerage firm lost \$20M in revenue when their electronic trading platform was 5 milliseconds behind the competition - **\$4M in revenue per millisecond**” (AWS case study)*

<sup>1</sup> Source: Why Slow Website Performance Hurts Retail Websites, 2022

# But real-time performance can be expensive



Relational databases were not designed for modern app needs.

Resulting in expense to increase performance or migrate apps to a new DB.

**Caching modernizes applications while reducing over costs.**

# Amazon ElastiCache

Real-time, cost-optimized performance for modern applications

## Performance & scalability



- Microsecond response time across hundreds of millions of operations per second
- Secure cross-region replication
- Auto-scale clusters horizontally

## High availability & enterprise security



- 99.99% availability SLA with Multi-AZ clusters
- Automatic failovers & recovery
- Encryption at rest/in transit
- HIPAA, PCI-DSS, and FedRAMP compliant, others

## Fully-managed, open-source compatible



- Redis and Memcached compatible with full access to Redis flexible data structures
- Efficiently scale in/out/up/down
- Automates time-consuming database management tasks like hardware provisioning, setup, patching, and backups.

# Real time performance and cost savings

# Modern applications demand performance

**$\mu$ s** is the new **ms**

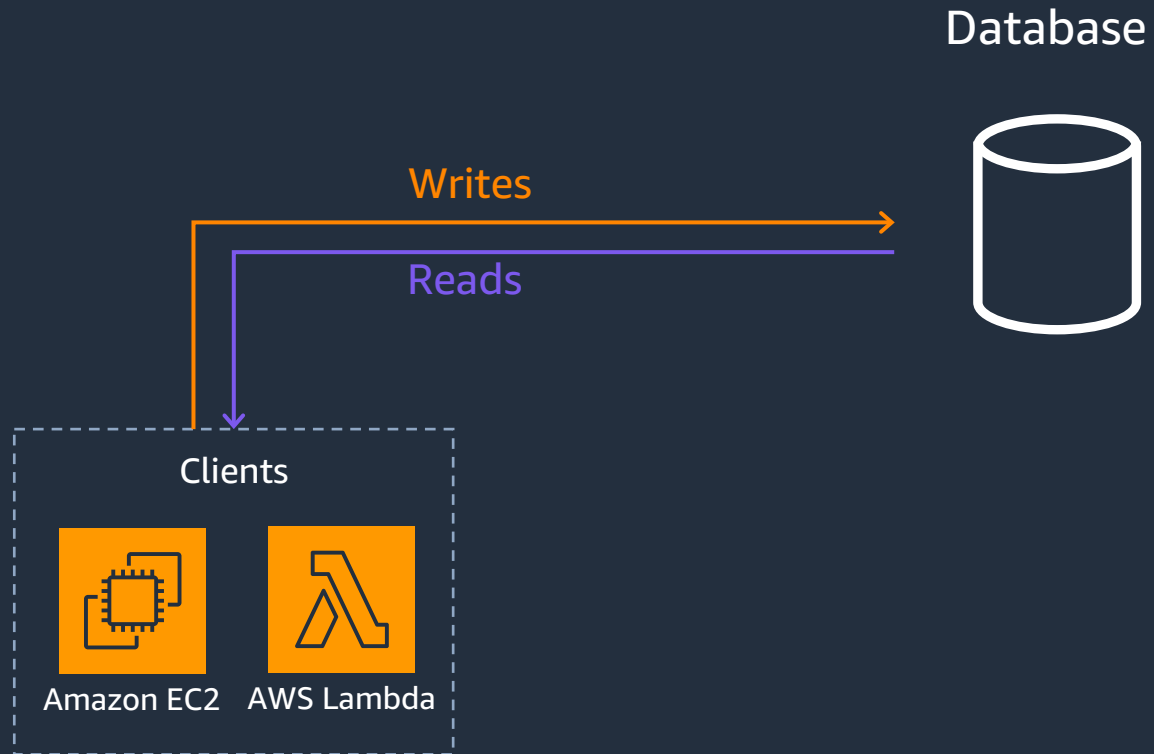
**Demand:** Speed, scale, and security

**Solution:** Scale the database

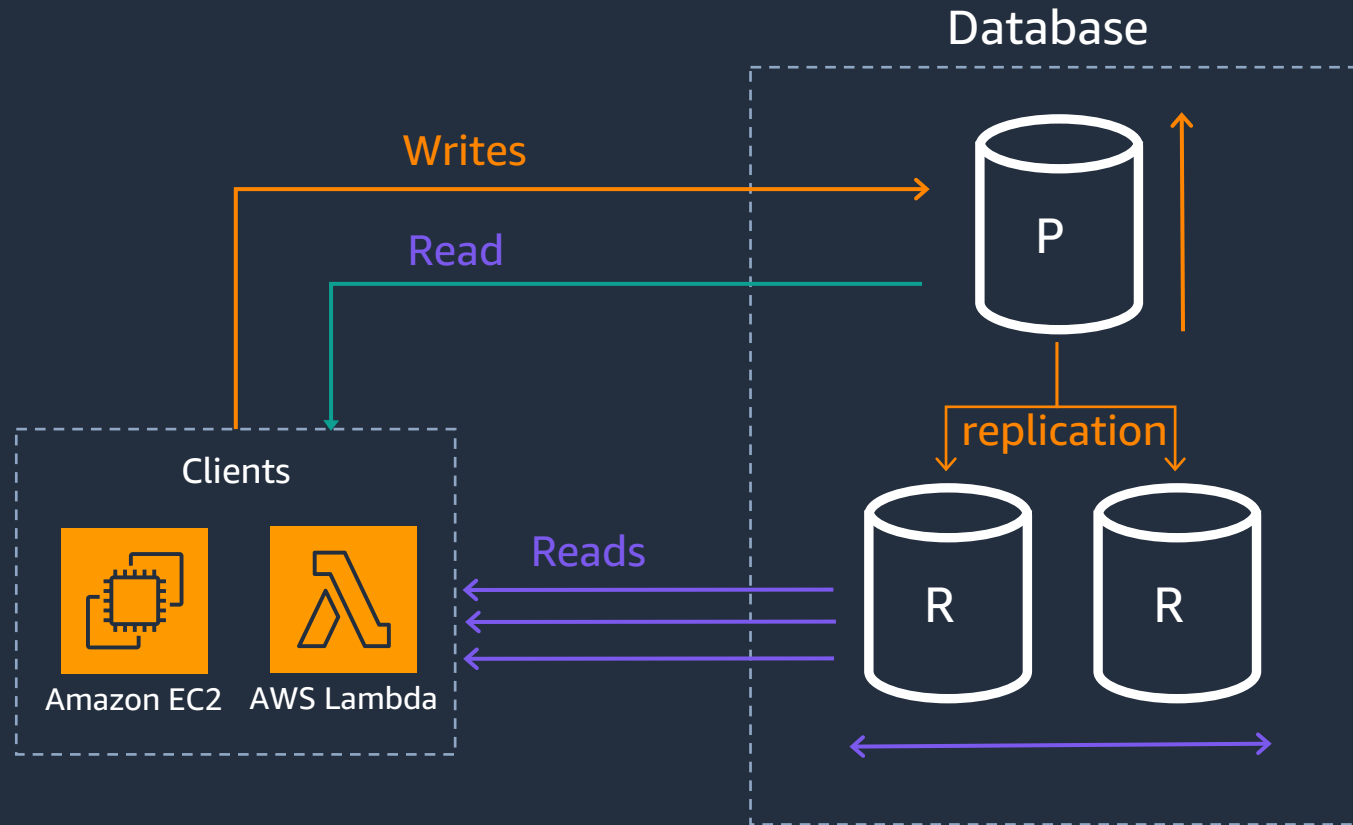
**Challenge:** Database now store more data, and are expensive to scale



# Relational database access pattern



# Relational database scaling



## DB Scale Vertically

- Increased memory
- Increased CPU count
- Increased network capacity

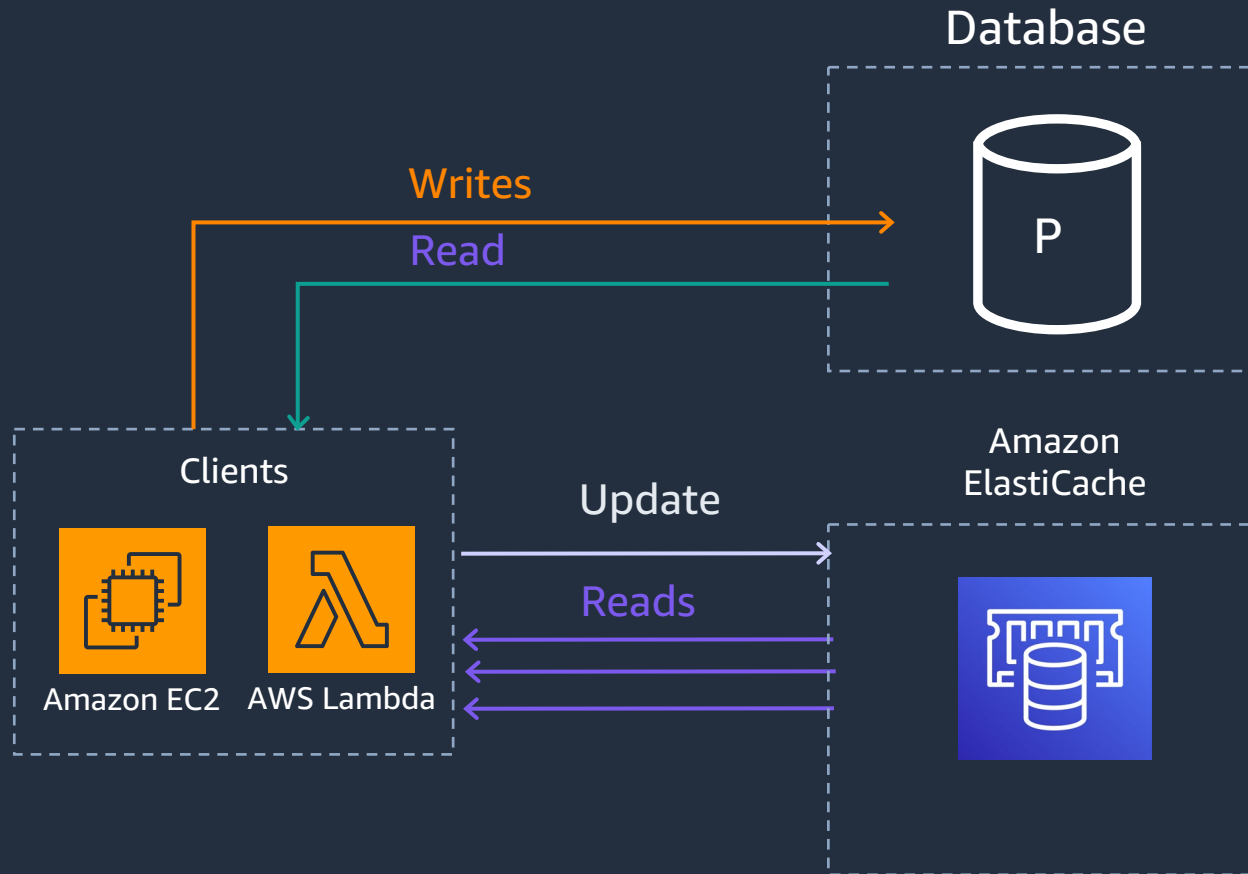
## DB Scale Horizontally

- Increased read capacity

## Drawbacks

- Vertical scaling is limited
- Unnecessary data on replicas
- Impacted by disk-based latency
- Costly & limited in scope

# Adding Amazon ElastiCache



## Adding a caching service

Improves latency

Increased read capacity

Scales vertically and horizontally

Scales to multiple regions

Fraction of DB replication cost

Reduces database sprawling

# SQL Server Cost saving scenario

My Estimate

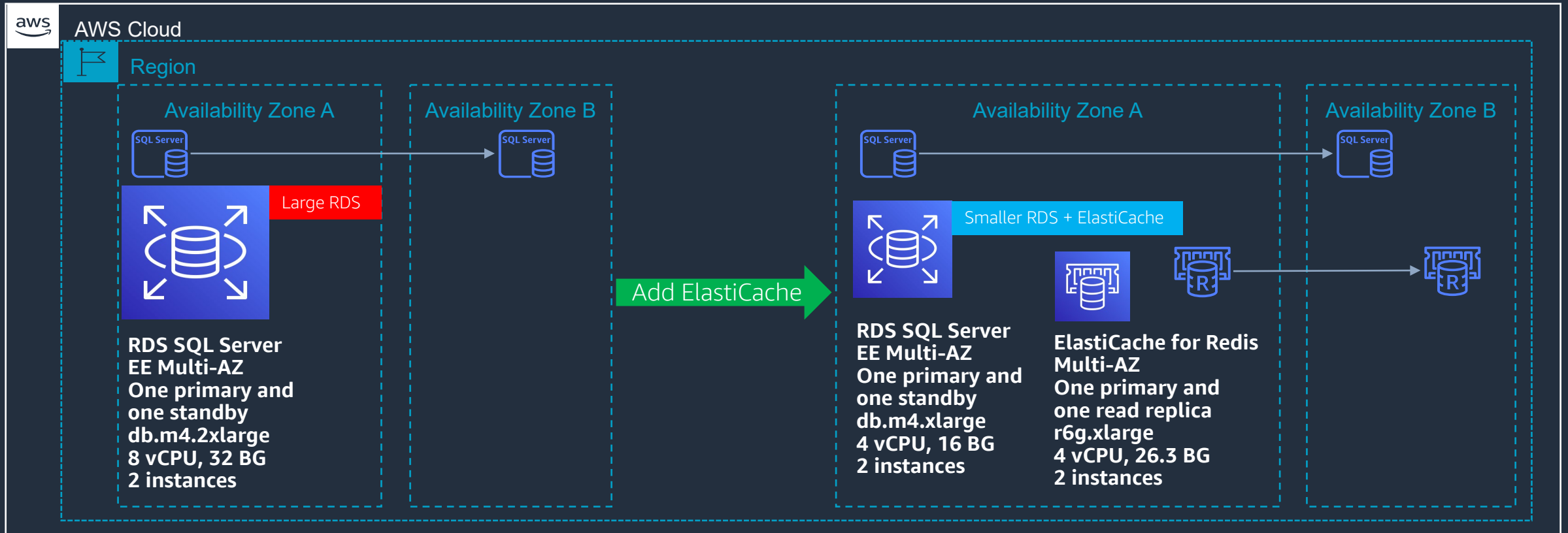
Duplicate Delete Move to Create group Add support Add service

Find resources

<input type="checkbox"/>	Service Name		Upfront cost	Monthly cost	Description	Region	Config Summary
<input type="checkbox"/>	Amazon ElastiCache		0.00 USD	300.03 USD	ElastiCache 4vCPU 26.3 GiB	US East (N. Virginia)	Nodes (1), Insta...
<input type="checkbox"/>	Amazon RDS for SQL server		0.00 USD	1,810.04 USD	RDS SQL server 4vCPU 16GiB	US East (N. Virginia)	Storage for each...
<input type="checkbox"/>	Amazon RDS for SQL server		0.00 USD	3,742.35 USD	RDS SQL server 8vCPU 32GiB	US East (N. Virginia)	Storage for each...

- With ElastiCache: Scale up read throughput 2x for only ~\$300 per month.
- Without ElastiCache: SQL Server instance only upgrade cost 6x ~\$1800.

# Production RDS SQL Server Multi-AZ for HA



Original Configuration	vCores	RAM	Annual Cost
RDS SQL Server (m4.2xlarge) x2 MAZ	16	64	\$89,816
<b>Total</b>	<b>16</b>	<b>64</b>	<b>\$89,816</b>

New Configuration	vCores	RAM	Annual Cost
RDS SQL Server (m4.xlarge) x2 MAZ	8	32	\$43,440
ElastiCache (r6g.xlarge) x2 MAZ	8	52	\$7,200
<b>Total</b>	<b>16</b>	<b>84</b>	<b>\$49,640</b>
<b>Savings</b>			<b>~45%</b>

# Demo



**Thank you!**