
AWS
re:Invent
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Deploy AWS global databases for a global user base

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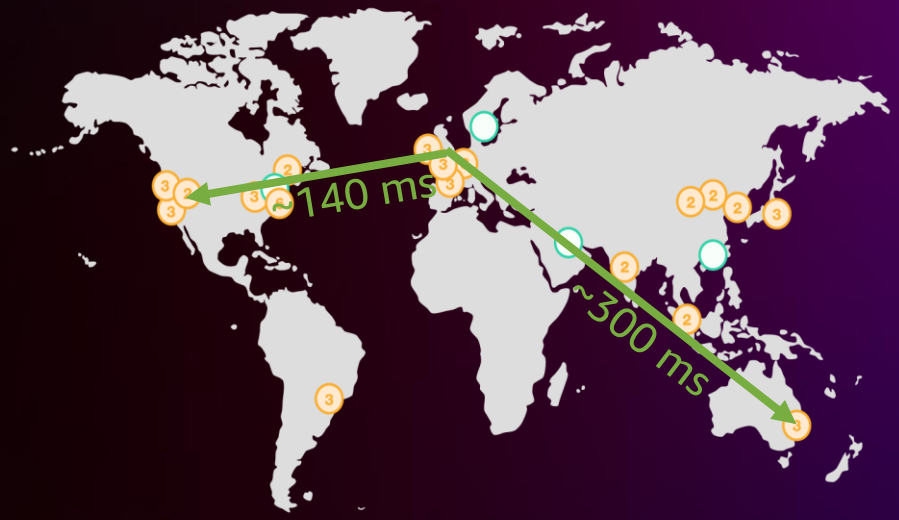
Agenda

- What’s so special about globally distributed solutions?
- Traps and tensions
- AWS global databases
- Let’s help solve your problems

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How the laws of physics affect your solutions

CAP theorem



PACELC theorem

In the event of network **P**artitions . . . choose between **A**vailability and **C**onsistency . . . **E**lse . . . choose between **L**atency and **C**onsistency

More details: https://en.wikipedia.org/wiki/PACELC_theorem

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Top traps and tensions

A

One size fits all

Approaching the workload as a monolith, one solution for everything

B

Can’t afford any data loss

Strong global consistency has a cost. Instead, think “reconstructible.”

C

Simplified developer experience

Abstract away latency, consistency, serializability complexities

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Use AWS global databases

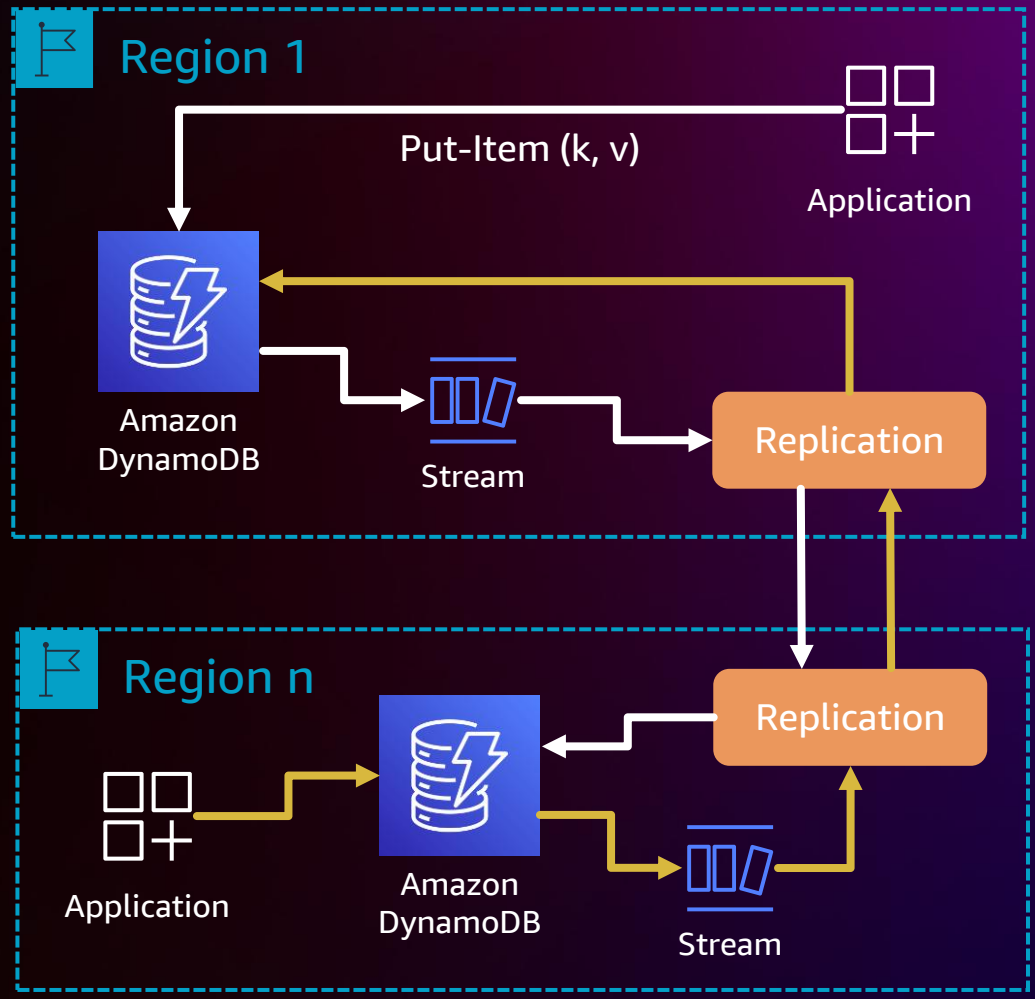
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Multi-Region, multi-active capabilities

Amazon DynamoDB global tables

- NoSQL database engine
- 99.999% availability
- Fully managed, asynchronous replication (eventually consistent)
- Application writes are local to the Region and strongly consistent
- Last writer wins same-item conflict resolution
- Converges to identical consistent state

PACELC

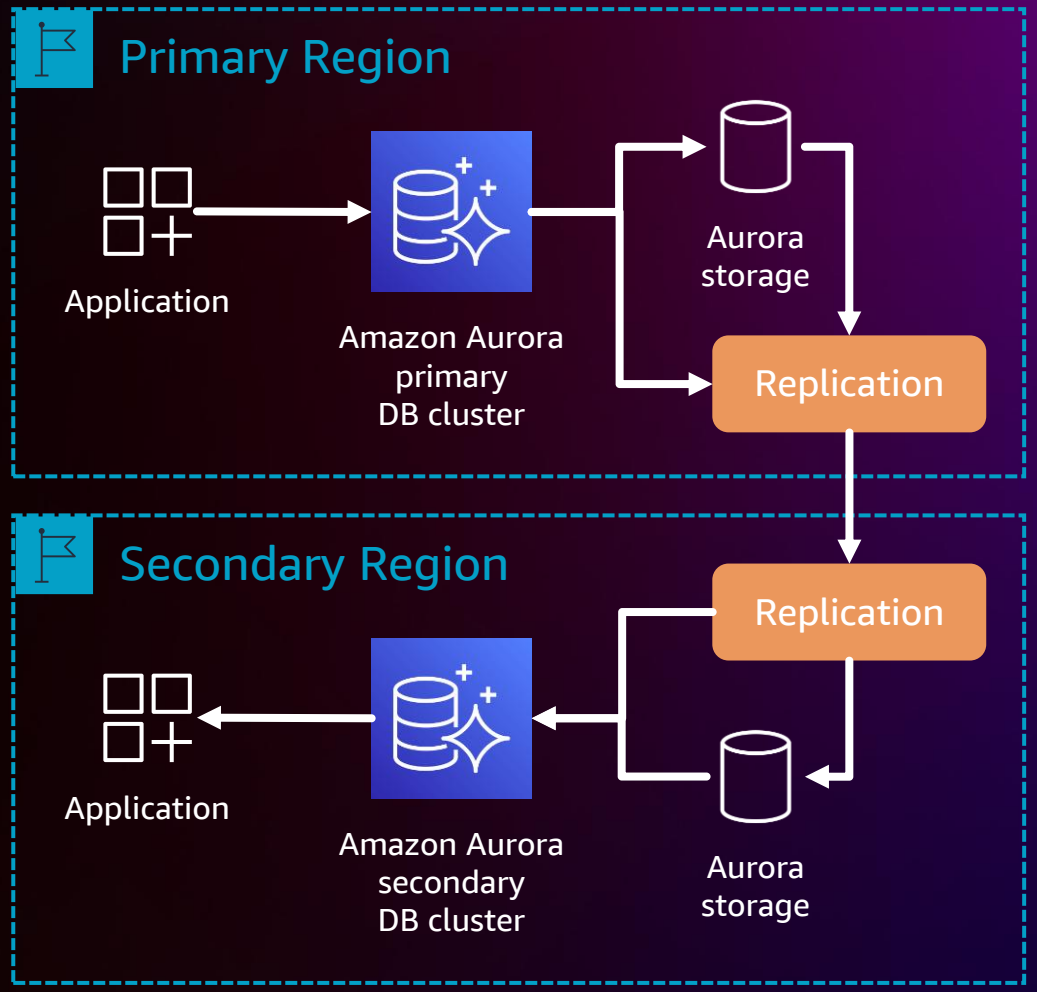


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Single-Region writer, global read capabilities

Amazon Aurora global database*
Amazon DocumentDB global cluster
Amazon Neptune global database
Amazon ElastiCache for Redis global datastore**

- 99.99% availability
- Fully managed, asynchronous replication (eventually consistent)
- Writes only in primary Region
- Log-based storage-level replication
- Strong consistency on primary Region writer only



*Aurora MySQL-compatible also supports write forwarding with tunable consistency
**Uses different replication technology

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Let’s get started . . .

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Summary

Multi-Region, multi-active

- Amazon DynamoDB global tables

Single-Region writes, global reads

- Amazon Aurora global database
- Amazon DocumentDB global clusters
- Amazon Neptune global database
- Amazon ElastiCache for Redis global datastore
- Amazon RDS cross-Region read replicas

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