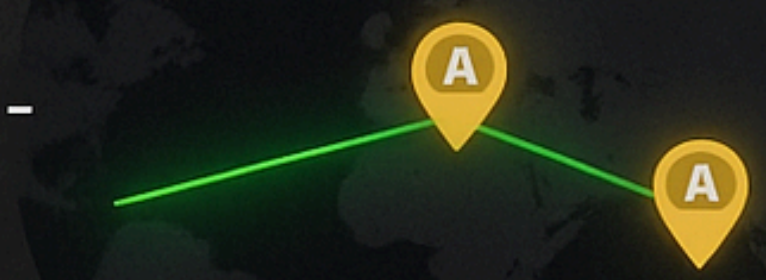
30 DAYS OF AZURE WELL ARCHITECTED FRAMEWORK

Day 1

Zero Downtime

Active-Active Multi-Region Setup

- Multiple regions run in parallel - each serves production traffic
- If one region fails, another seamlessly takes over
- Eliminates single-region dependency for continuous uptime



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Global Traffic Distribution

Azure Front Door / Traffic Manager route users by latency-or geography

In active-active, both regions share load continuously

Health probes keep users on the closest healthy region

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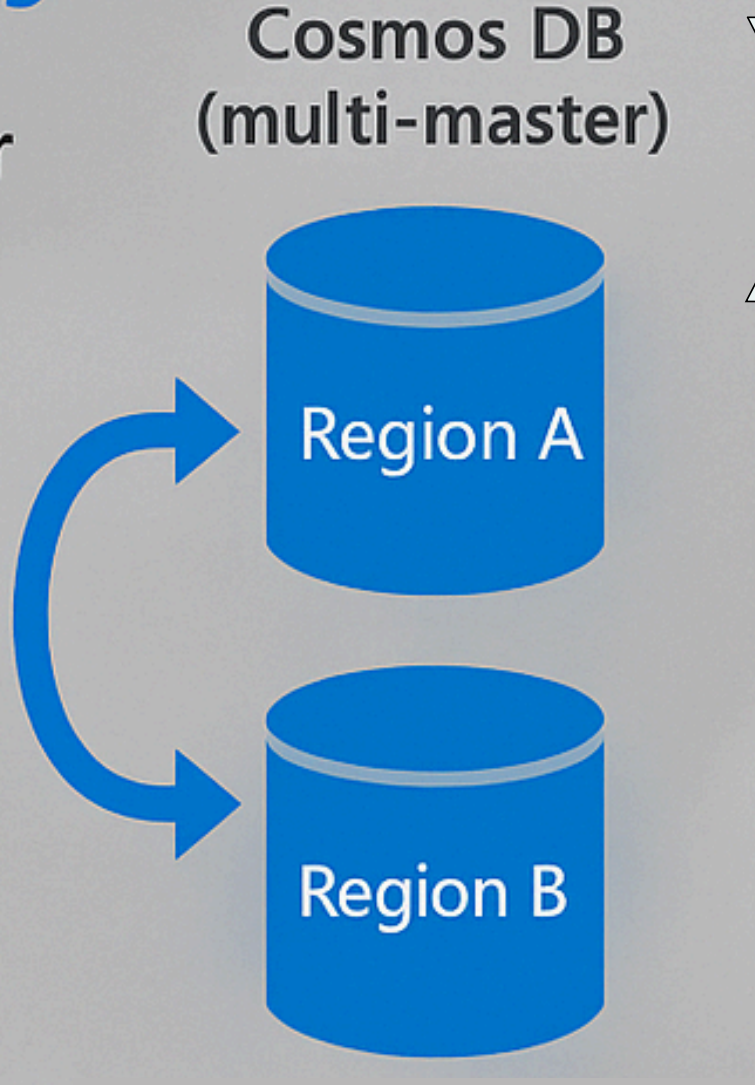
Data Replication & Consistency

- Cosmos DB: multi-master (multi-region writes) + conflict resolution
- Azure SQL: auto-failover groups; primary writes, readable replicas
- Choose consistency per need: strong vs eventual



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Resilience vs. Cost Trade-offs

- No single point of failure; regions can absorb
- Duplicated infra + data sync increase cost
- **2N** (each can handle 100%) = **maximum reliability**

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Design Best Practices

- Use Azure region pairs (e.g., East US ↔ West US)
- Synchronous for critical data; **async all else**
- Front Door/Traffic Manager health probes +/health endpoint
- Game days: test regional failover regularly

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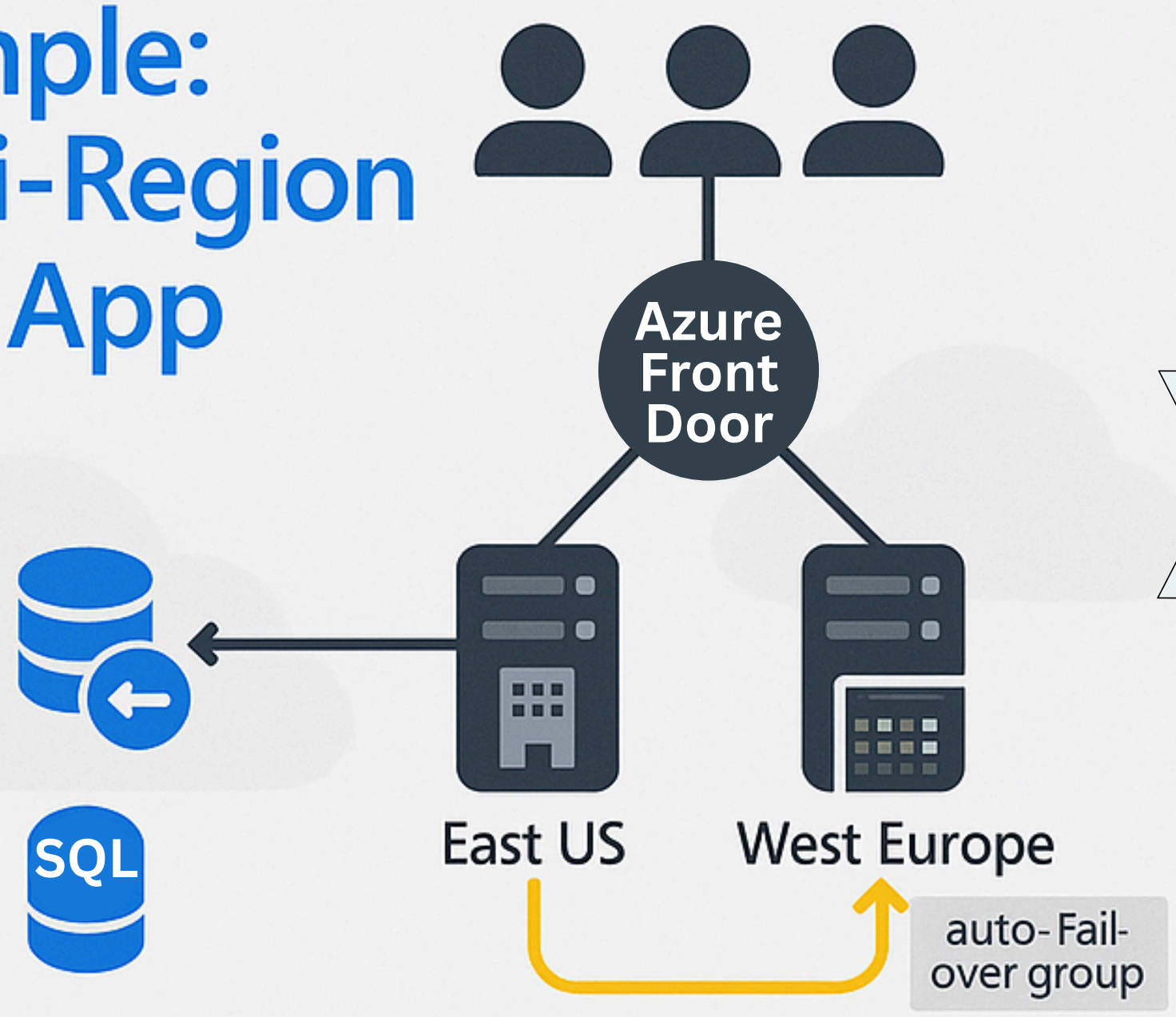
Example: Multi-Region Web App



- Front Door distributes users to nearest region
- Cosmos DB multi-region writes for catalog
- Azure SQL failover for transactions
- If West Europe fails → all traffic to East US **(minimal impact)**

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Key Takeaway

Active-active can achieve 99.99%+ availability by eliminating single-region risk.

It’s more complex and costly, but essential for mission-critical systems.

Leverage Azure’s global network to deliver a truly resilient service

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