

# AWS re:Invent

NOV. 28 – DEC. 2, 2022 | LAS VEGAS, NV

FSI307-R

# Advanced cross-Region disaster recovery patterns

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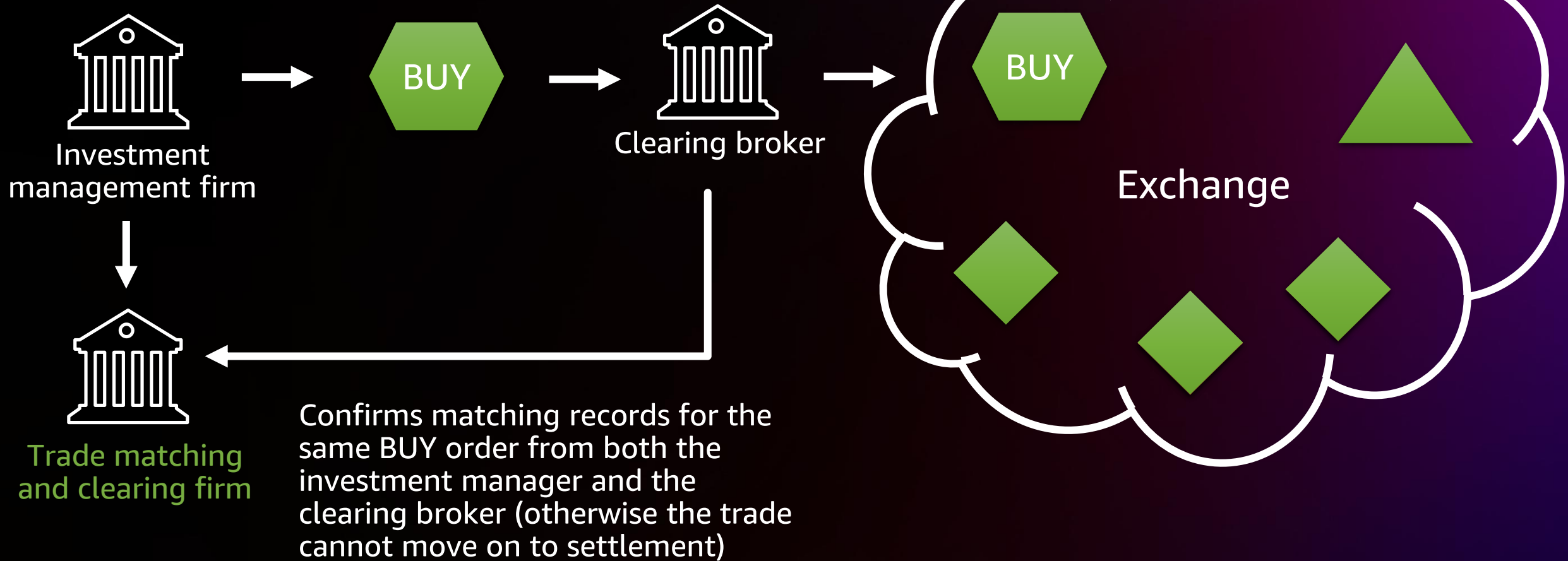
Bikash Behera

Solutions Architect  
AWS

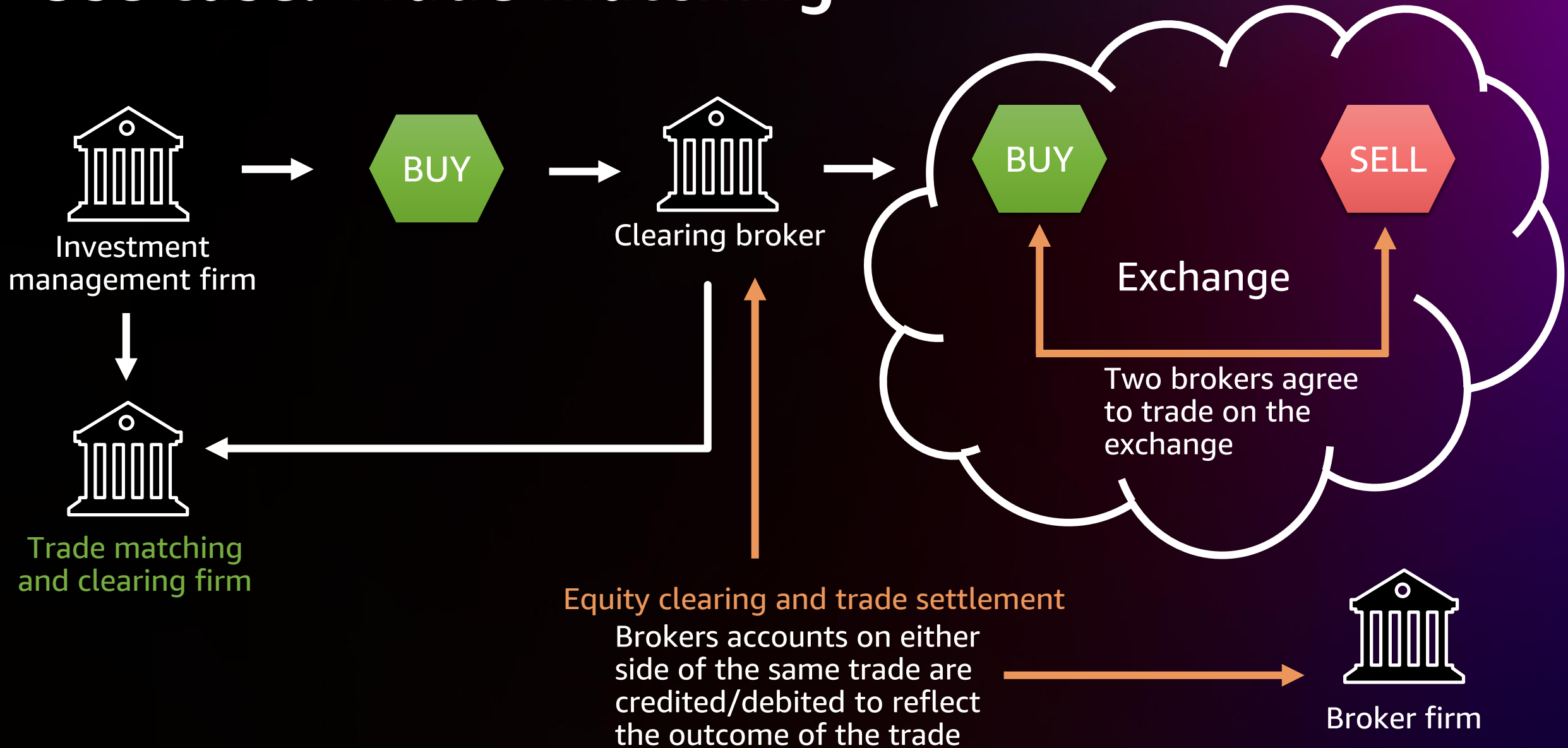


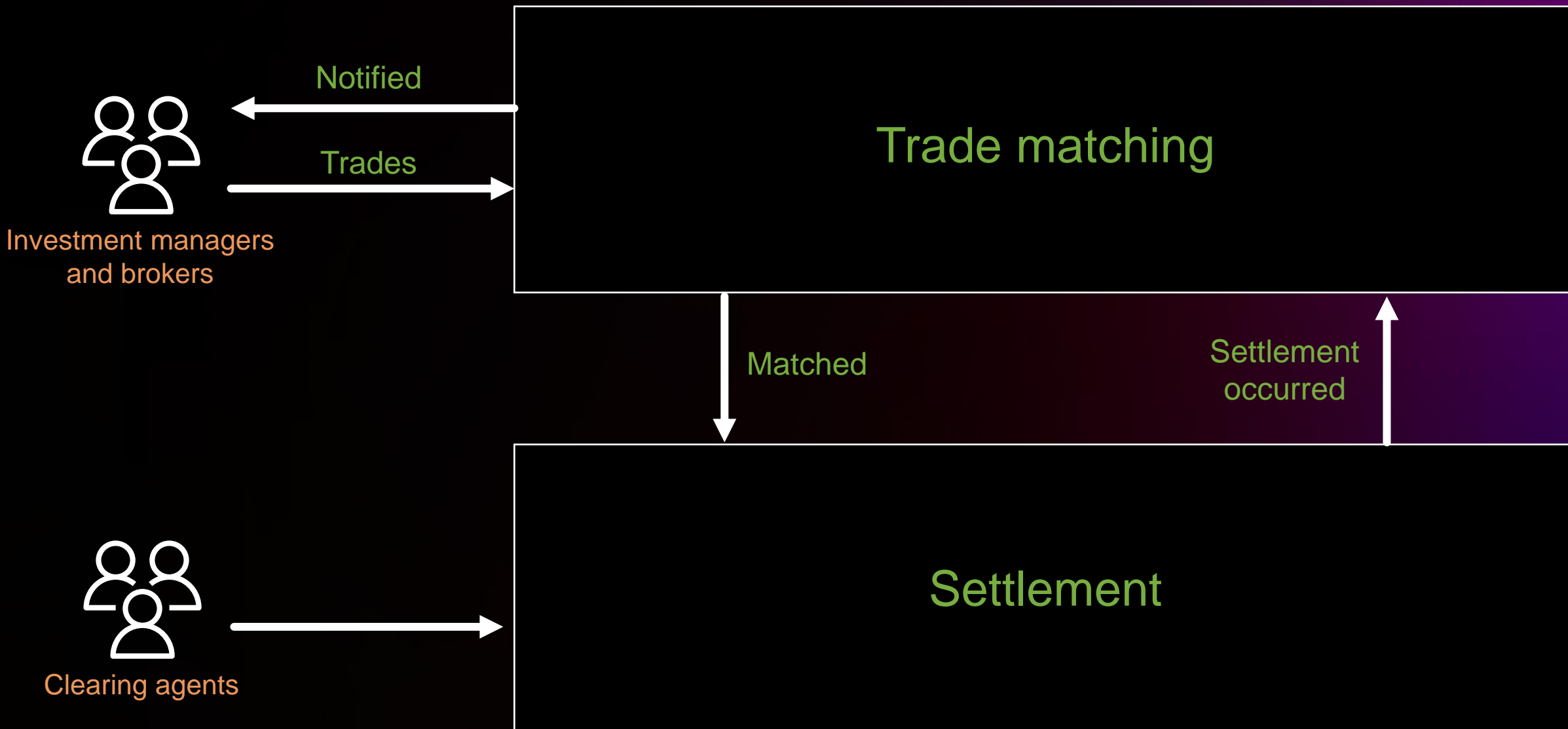
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# Use case: Trade matching

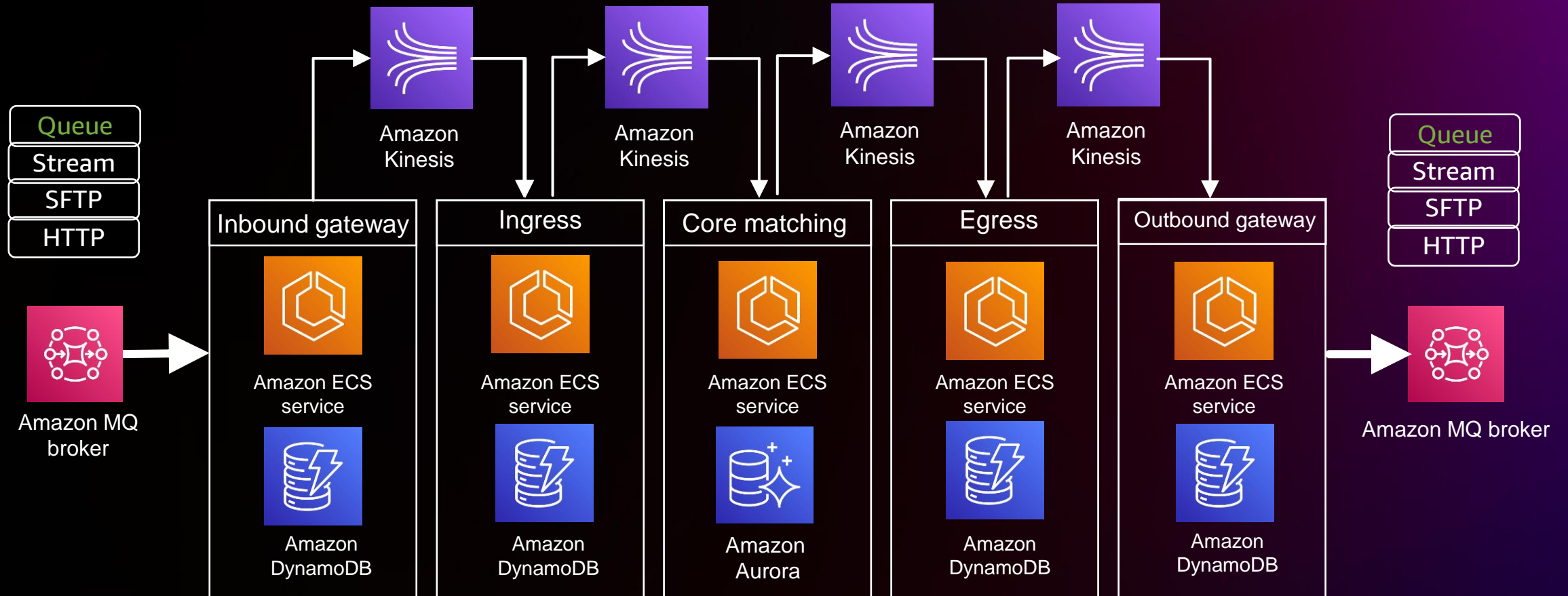


# Use case: Trade matching





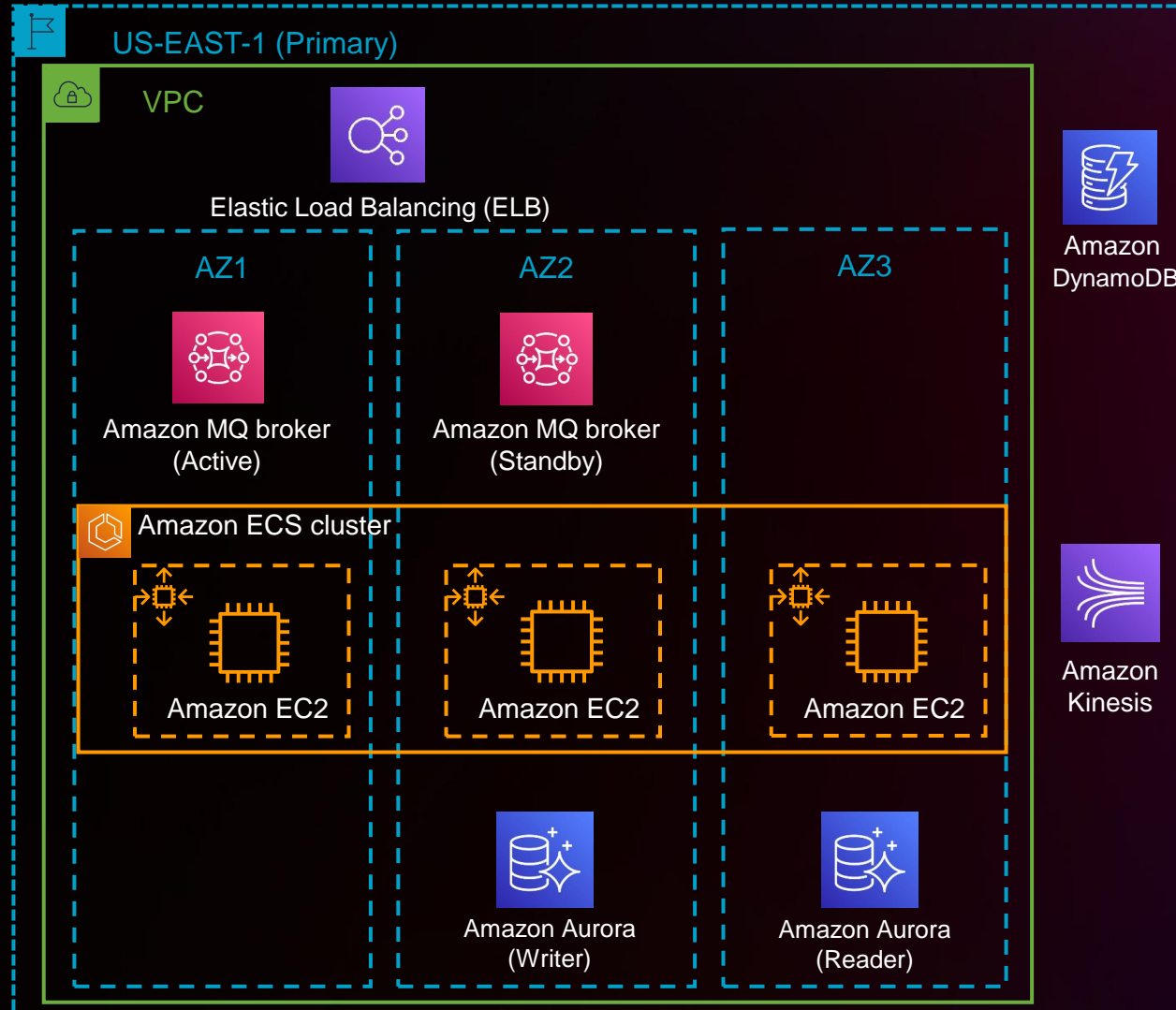
# Trade matching application overview



# Workshop architecture



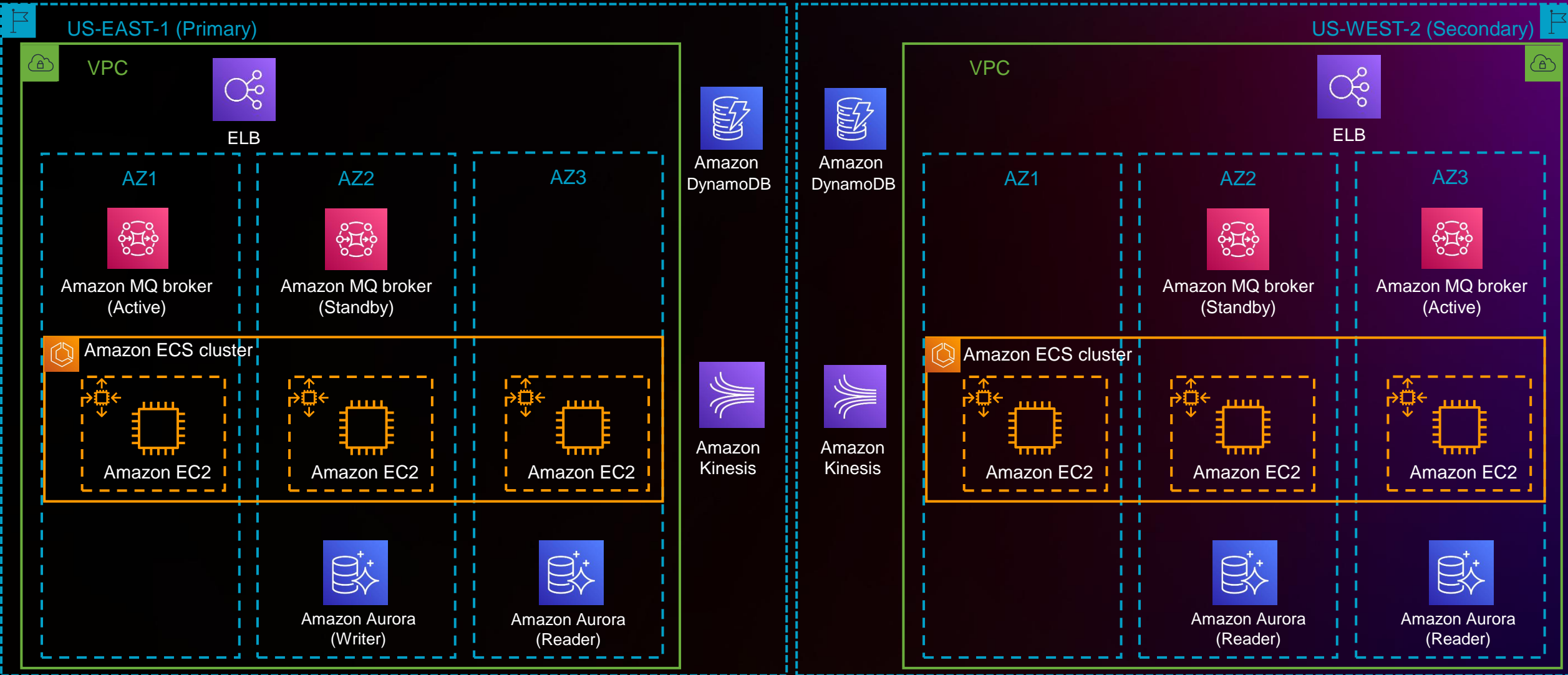
Amazon Route 53



# Multi-Region architecture



Amazon Route 53





# Module 1: Cross-Region replication

DynamoDB global table

Replication

Amazon  
DynamoDB

Amazon  
DynamoDB

Amazon  
Kinesis

Amazon  
Kinesis

Aurora global database

Replication

Amazon MQ message forwarding

Primary cluster

Secondary cluster

Primary cluster

Secondary cluster

Amazon Aurora  
(Writer)

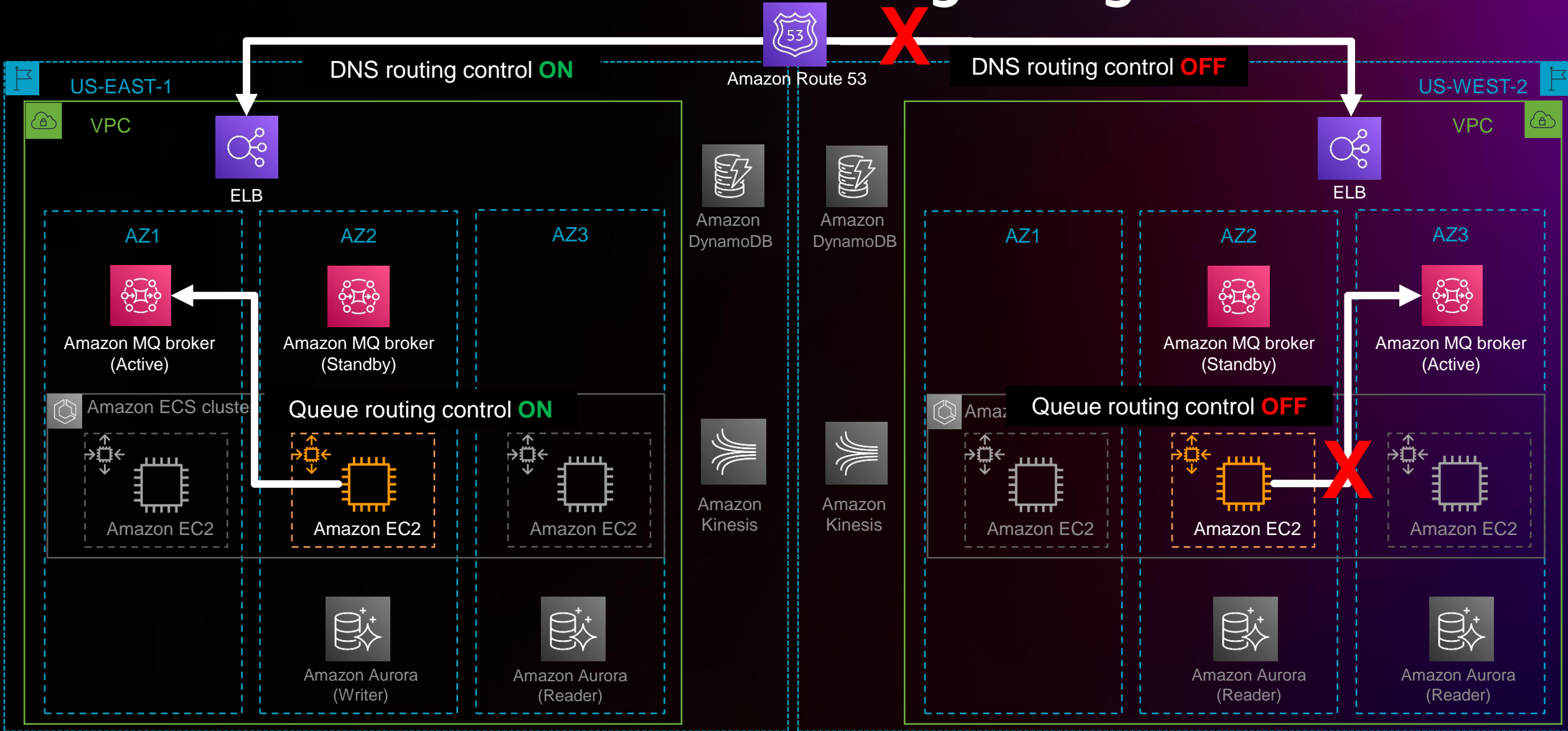
Amazon Aurora  
(Reader)

Amazon Aurora  
(Reader)

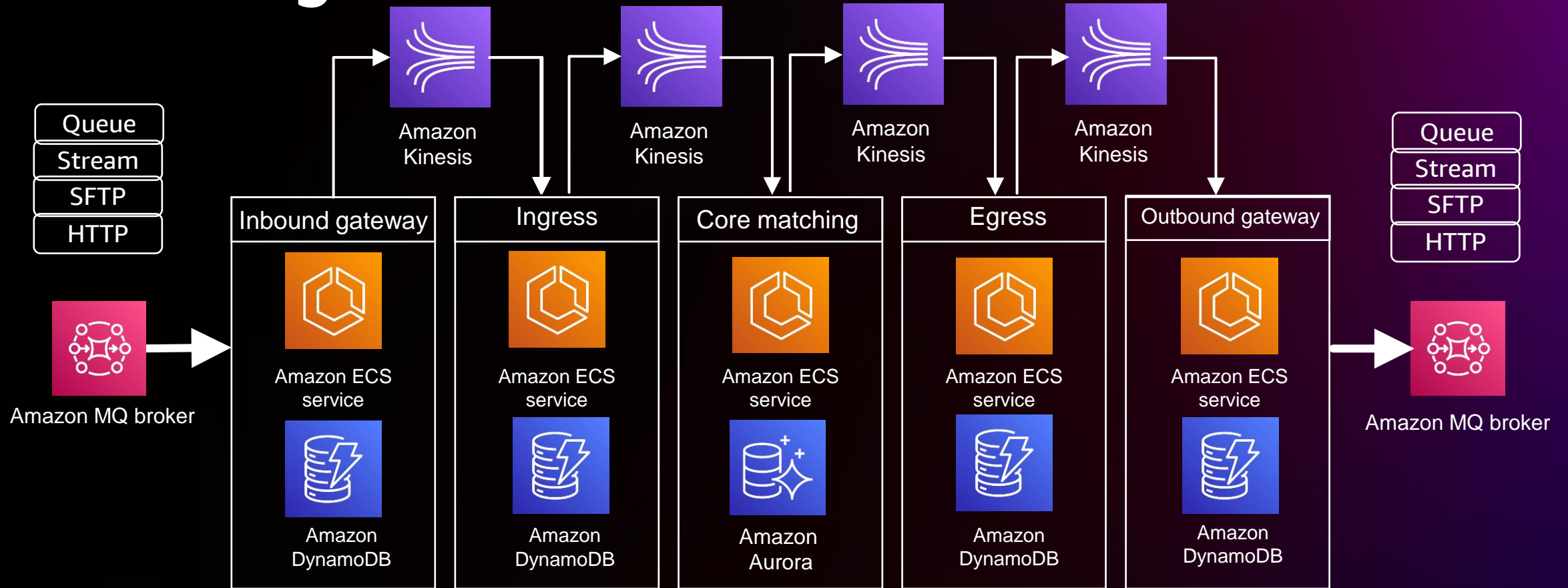
Amazon Aurora  
(Reader)



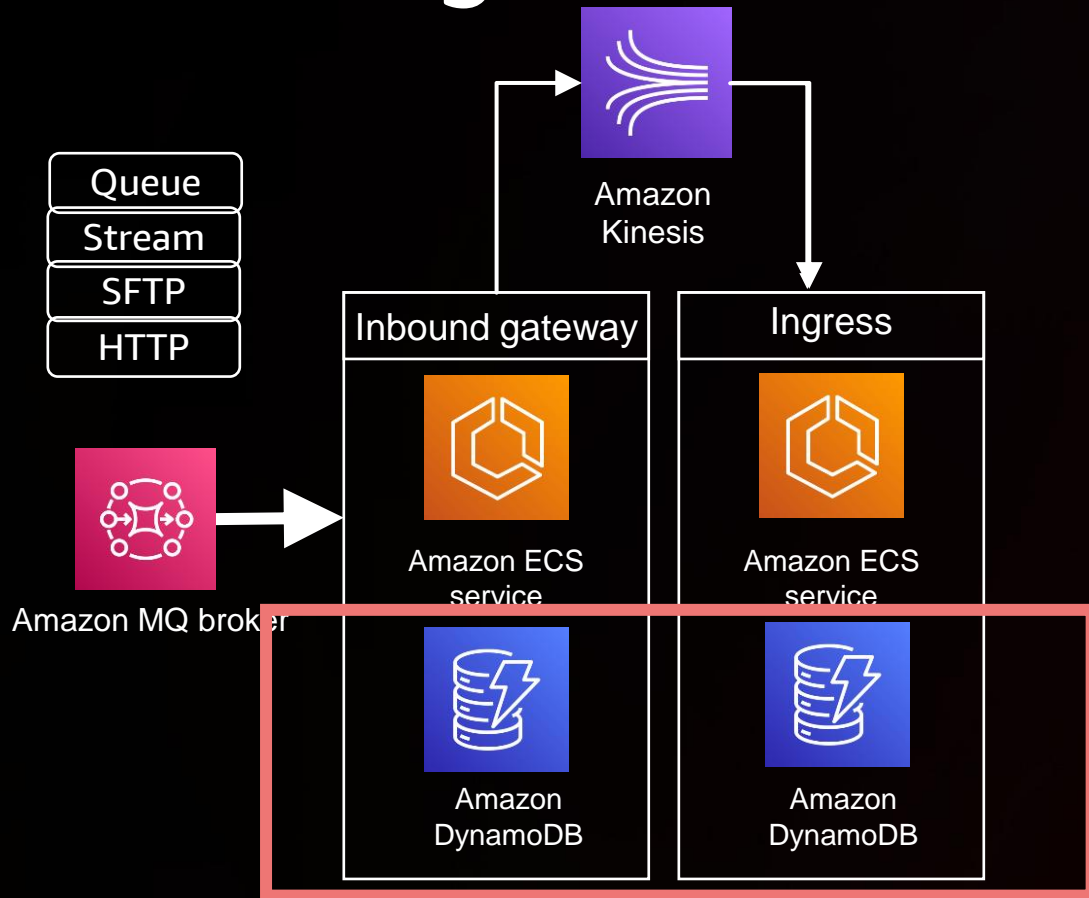
# Module 2: Global traffic shifting using Route 53 ARC



# Module 3: Reconciliation and exactly-once processing



# Module 3: Reconciliation and exactly-once processing



- The applications are designed for idempotency, and each incoming message is assigned a globally unique UUID
- Each step of the process is stored externally and replicated so we can query adjacent data stores to reconcile missing messages

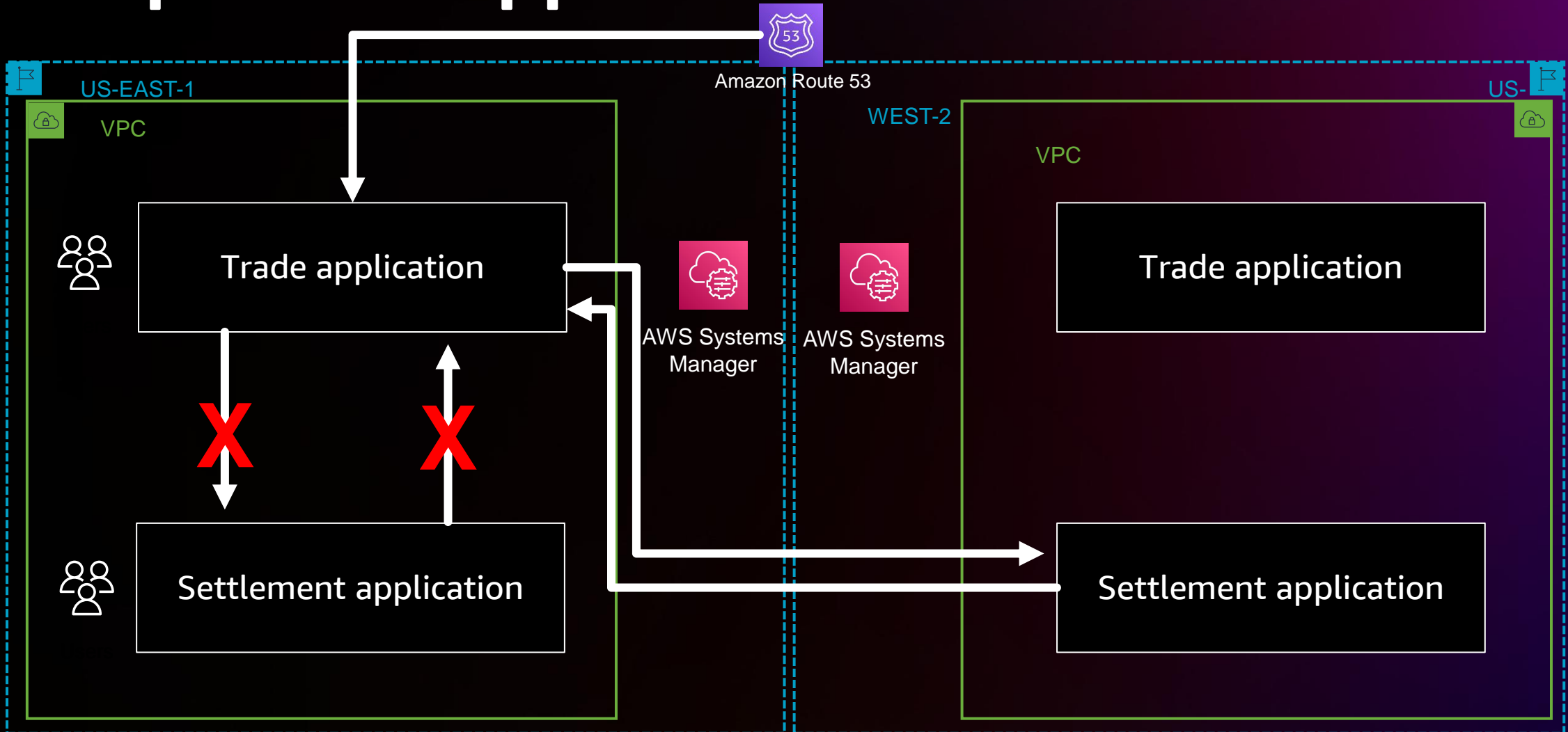
# Module 4: Big red button for failover

1. Close the flow of messages in the primary Region
2. Rotate the application from the primary to the secondary Region
3. Reconcile and replay any lost messages between any application components
4. Open the flow of messages in the secondary Region

AWS Systems  
Manager



# Module 5: Disaster recovery orchestration for co-dependent applications



# Starting the workshop

Workshop URL: <https://tinyurl.com/fsi307>

Workshop Hash: 9e7d-09f42e-fa

# Thank you!

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