

# DynamoDB Streams

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# Overview



**Discuss DynamoDB streams**

**How to use DynamoDB streams**

**Streams use-cases**

**Process DynamoDB updates in real-time**

**Update CloudSearch in real-time**



# DynamoDB Streams Overview



What is DynamoDB stream

How it works

How we can use it



# Why do We Need Stream



**Many applications need real-time updates**

- Cross-region replication
- Real-time processing

**Can't use scans**

# Streams Features



Exactly-once, ordered stream of updates



Scales up with DynamoDB tables



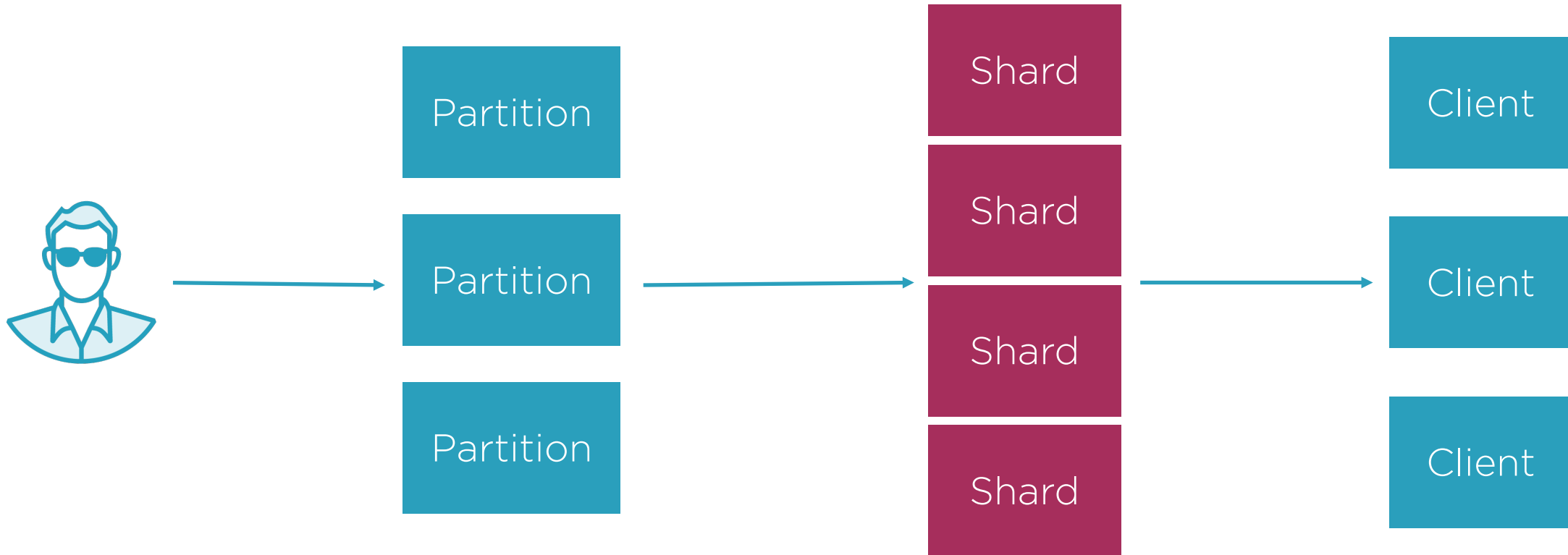
Sub-second latency



Keeps 24 hours of data



# How DynamoDB Streams Work



# Accessing Streams

## Low-level API

Low-level library and harder  
to use

## Kinesis Client Library

Recommended way to access  
streams



# Low-level API Methods

ListStreams

DescribeStream

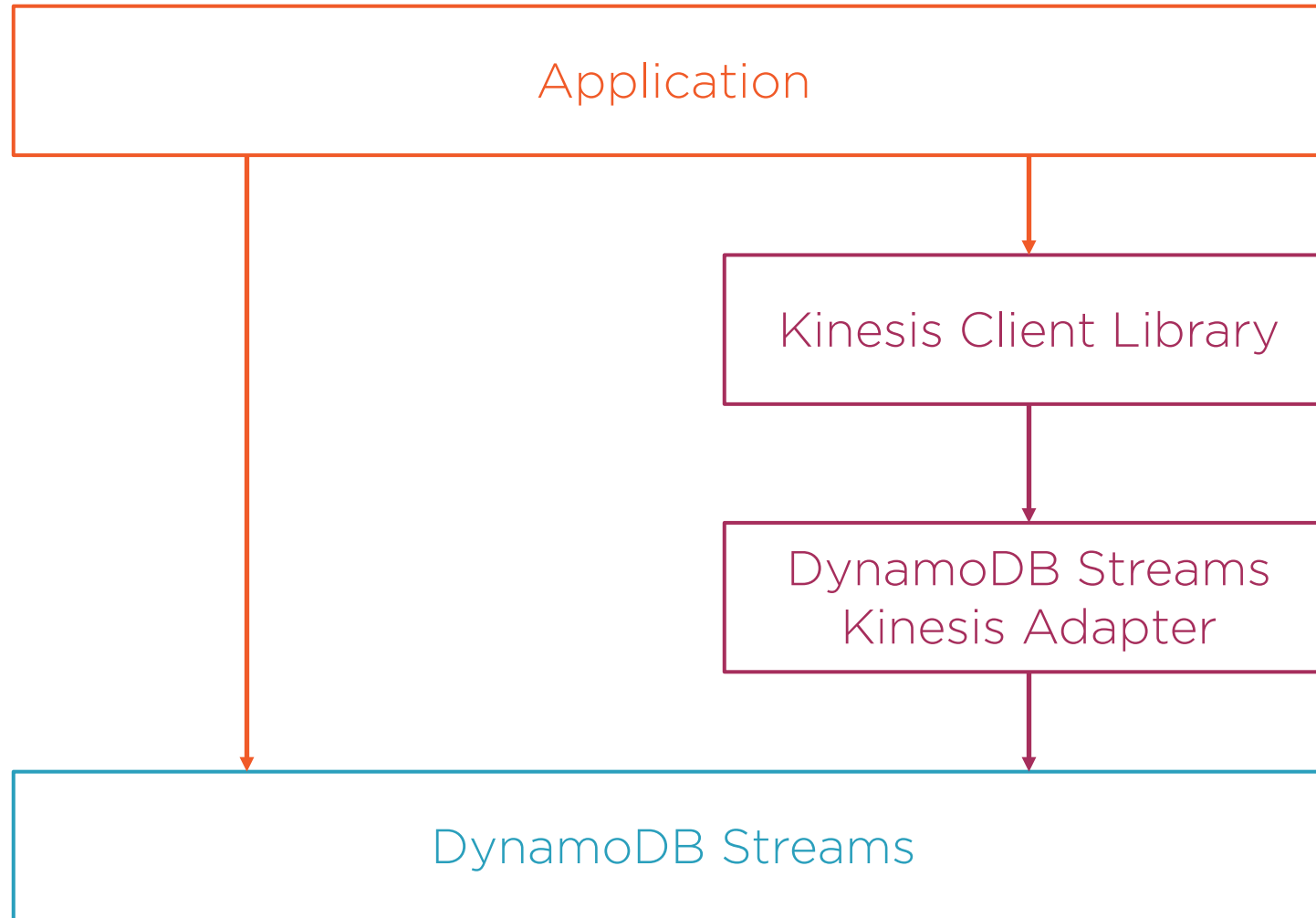
GetShardIterator

GetRecords





# Kinesis Client Library



# How to Start Using Streams



Enable streams on a table



Implement IRecordProcessor interface



Run streams processing application



# Kinesis Client Library Example

```
for (Record record : records) {  
    if (record instanceof RecordAdapter) {  
        com.amazonaws.services.dynamodbv2.model.Record streamRecord = ((RecordAdapter)  
record).getInternalObject();  
        switch (streamRecord.getEventName()) {  
            case "INSERT": ...  
            case "MODIFY": ...  
            case "REMOVE": ...  
        }  
    }  
    checkpointer.checkpoint();  
}
```



# DynamoDB Streams Pricing



**First 2,500,000 read requests free**  
**\$0.02 per 100,000 per read requests**



# Overview

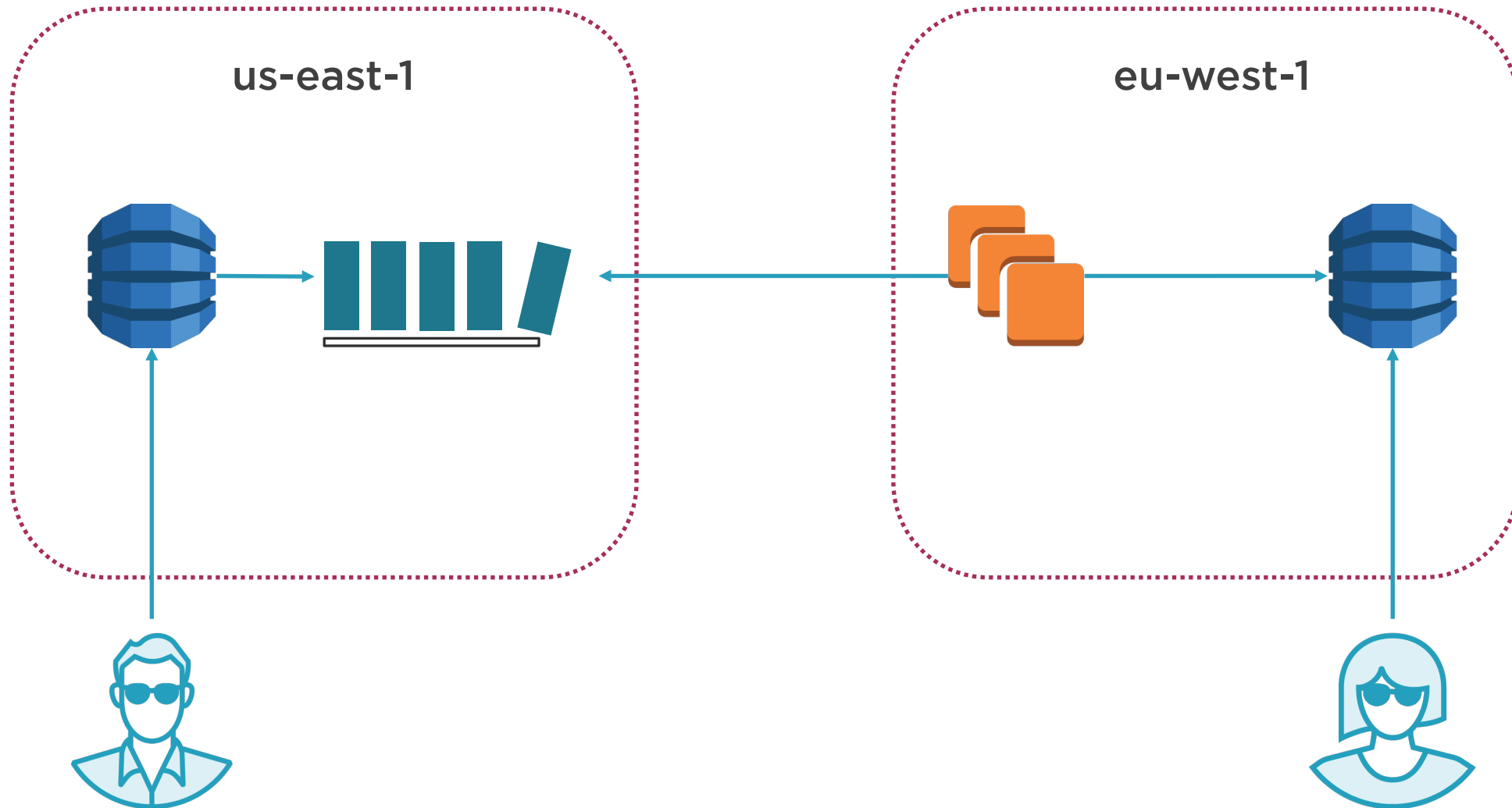


**Describe some of the streams use-cases**

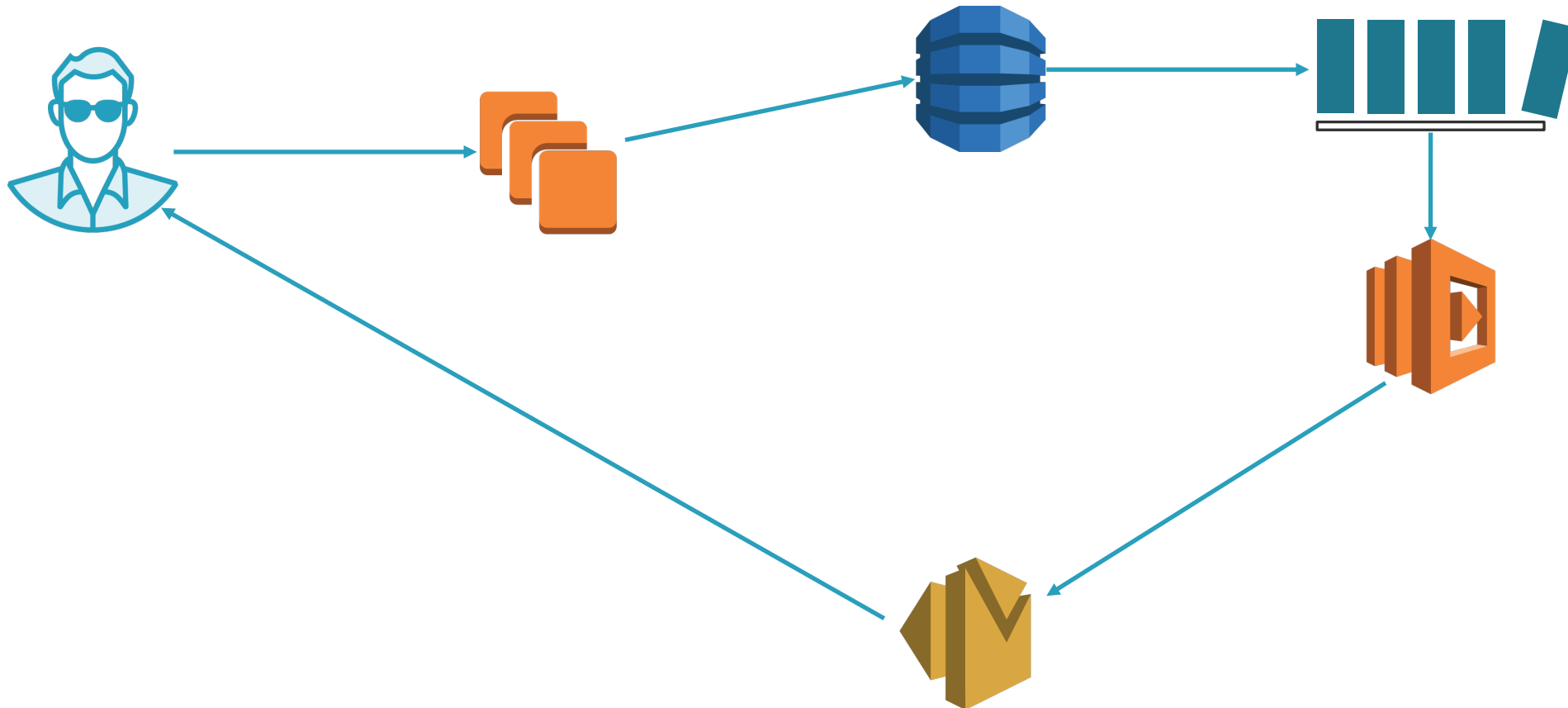
**Give an idea of how to use them**



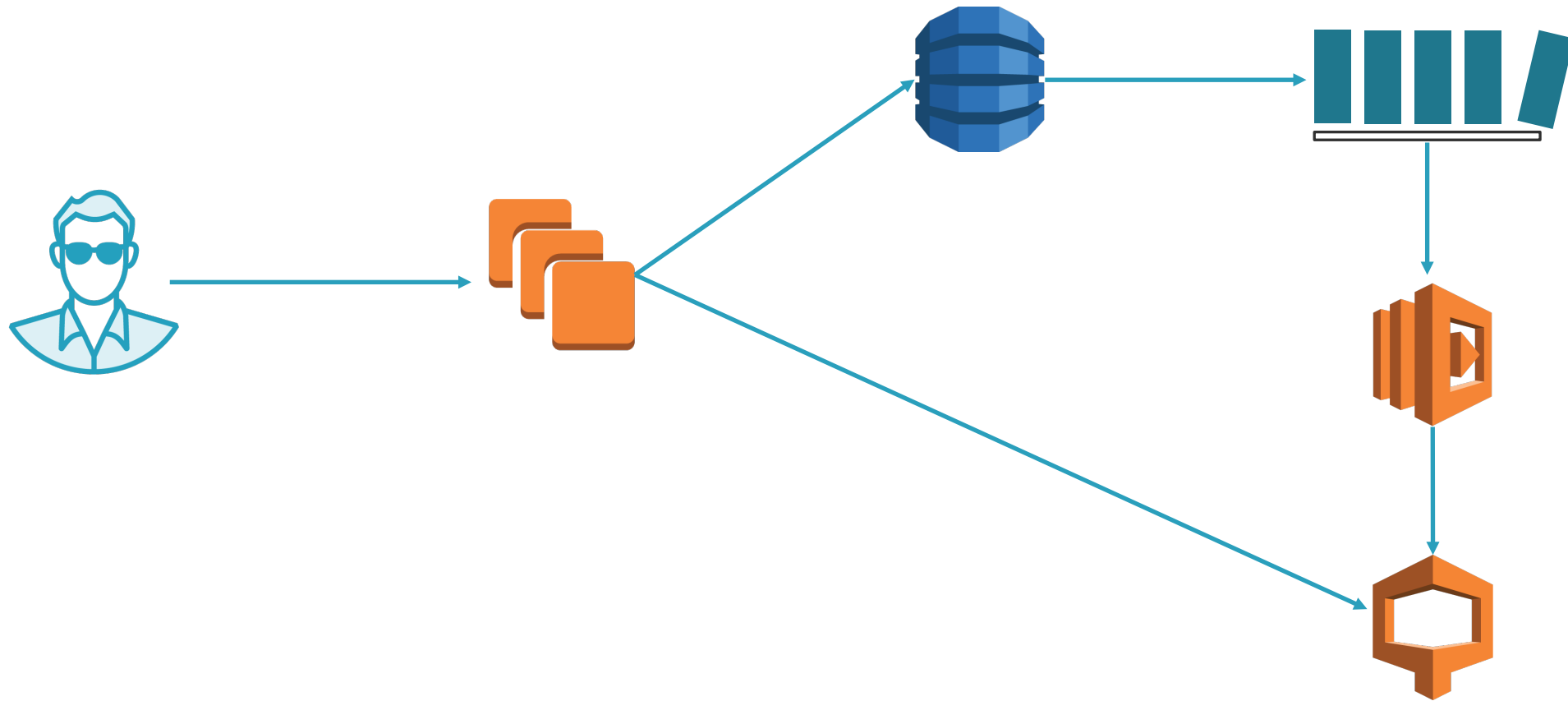
# Cross-region Replication



# Send Email Notification

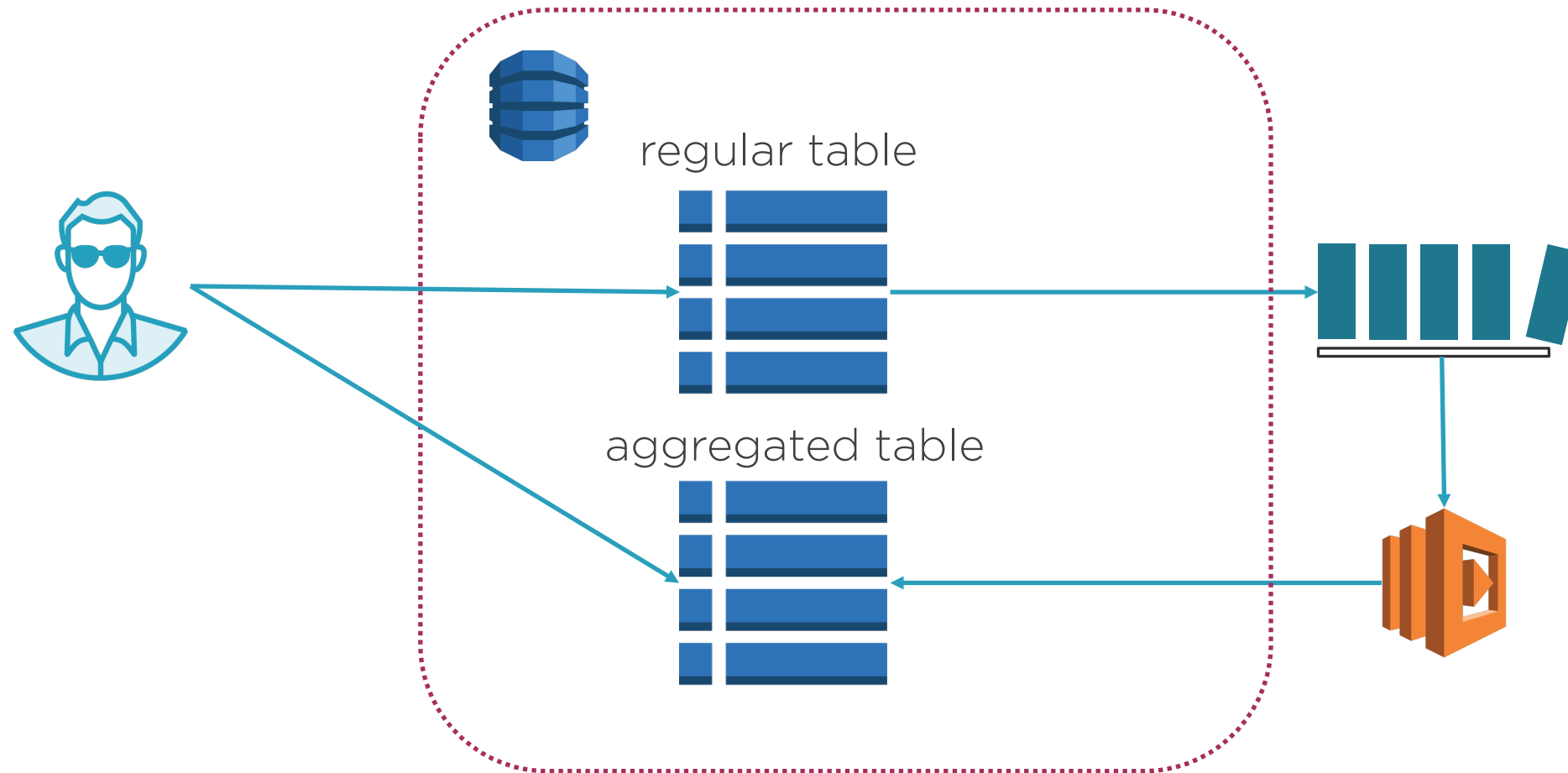


# Update CloudSearch





# Create Aggregation Table



# Overview



**Fix CloudSearch setup**

**Update CloudSearch with every update**

**Will use AWS Lambda to do this**



# What Problem are We Solving



**CloudSearch keeps its own data**

**If not updated won't find new records**

**Can use DynamoDB streams**

# What is AWS Lambda



**Serverless compute solution from AWS**

**Just need to upload code**

**Automatically scalable**

**Cost efficient**

**Integrates with DynamoDB**



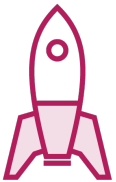
# How to Implement Lambda Function



Submit Lambda code



Assign a role



Add DynamoDB trigger



# Lambda Code Example (JavaScript)

```
var AWS = require("aws-sdk");
exports.handler = (event, context, callback) => {
  event.Records.forEach((record) => {
    if (record.eventName == 'UPDATE') {
      ...
    }
  })
}
```



# Update Documents from Lambda

```
documents = [{  
    type: 'add',  
    id : '123',  
    fields: {  
        description: 'New description'  
    }  
}]  
  
var request = {  
    contentType: 'application/json',  
    documents : JSON.stringify(documents)};  
cloudSearchClient.uploadDocuments(request, function(err, data) {  
    ...  
});
```



# Summary



What is DynamoDB streams

DynamoDB streams use-cases

How to use DynamoDB streams

Implemented examples

DynamoDB triggers

