
aws
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SDB001

How Koo used Amazon DynamoDB to connect millions of voices globally

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Agenda

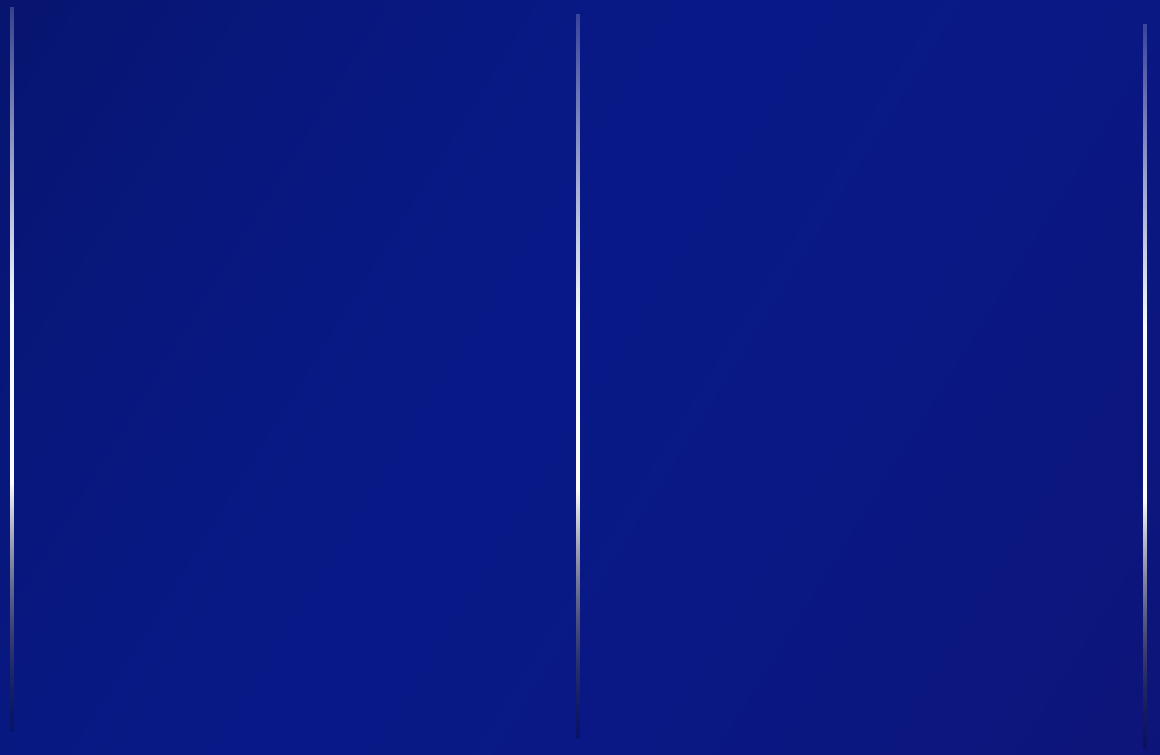
Amazon DynamoDB

- Application architecture evolution with NoSQL
- The key concepts

Koo’s Use Case

- The challenges
- Thinking NoSQL!
- Re:Invent using Amazon DynamoDB
- The benefits

Application architecture and patterns evolved

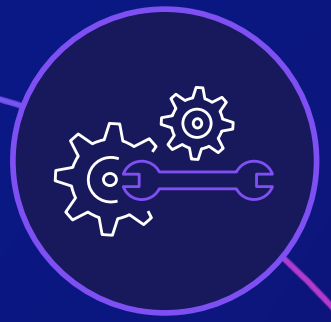


One size fits nothing at all

Developers want the right database to meet their application's unique requirements

Lack of scalability

Lack of developer flexibility



Performance issues

One-size-fits-all approach of using a relational database for everything is **no longer working**

Inability to integrate all data types

Built to support data-driven, highly scalable, distributed applications

Offered by the most scalable, trusted, and secure cloud provider

Designed to save time and costs, improve performance at scale, and innovate faster

AWS offers the **broadest and deepest portfolio** of purpose-built databases

Designed to meet the demands of modern globally distributed applications with microservices architectures

Built for every use case – relational, key-value, document, in-memory, wide-column, time-series, ledger, and graph

aws

What we learned from early builders

MICROSERVICES CHANGE HOW APPLICATIONS ARE BUILT IN THE CLOUD

E-commerce

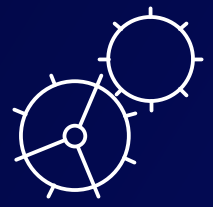
Media streaming

Social Media

Online gaming

Amazon DynamoDB

FAST AND FLEXIBLE NOSQL DATABASE AT ANY SCALE



Performance at scale

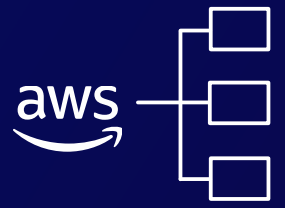
- Consistent, single-digit millisecond read and write performance
- Nearly unlimited throughput and storage

Enterprise ready

- Data encryption at rest
- Global replication
- Up to 99.999% availability SLA

No servers to manage

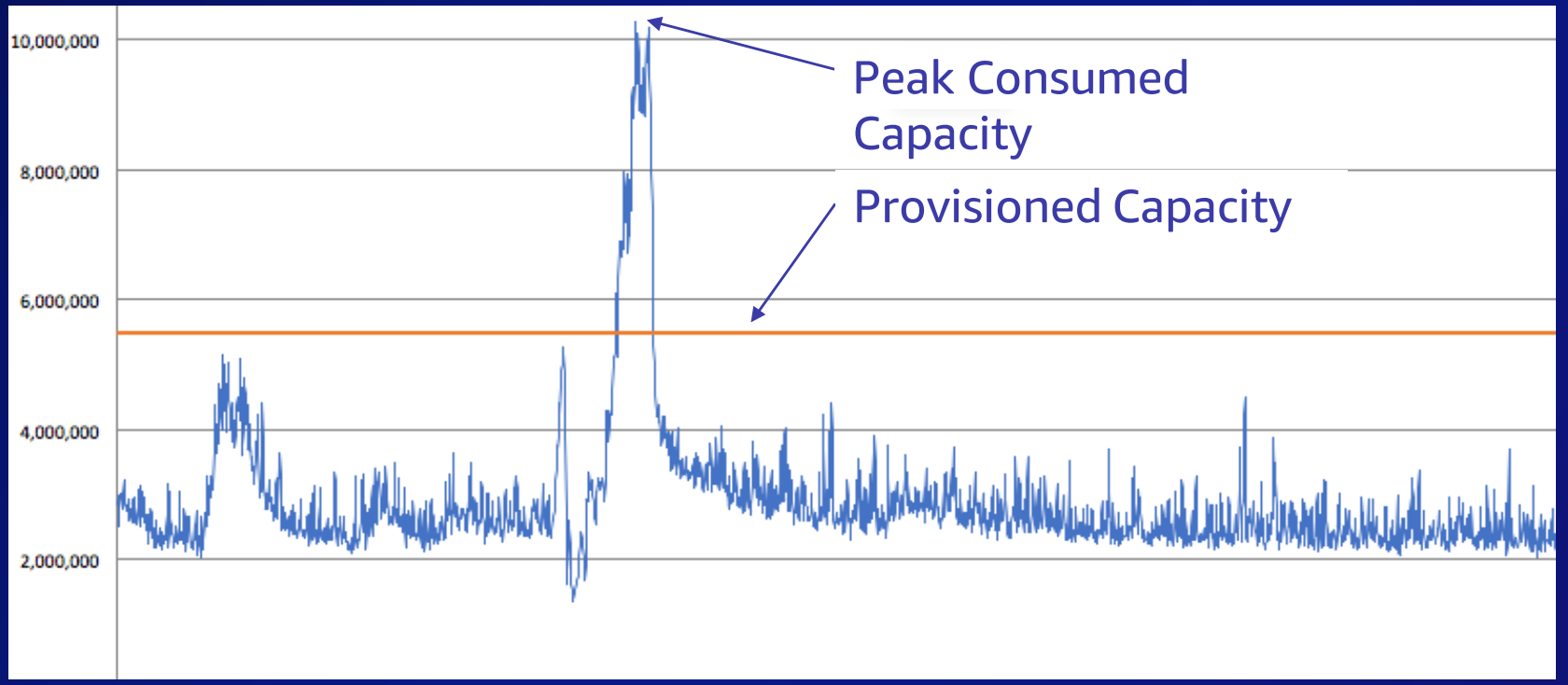
- Fully managed serverless database
- Massive scalability



Built-in integration with other AWS services

- Logging, monitoring, and analytics
- Applications that span multiple AWS services

Global-Scale Events: Elastic is the New Normal

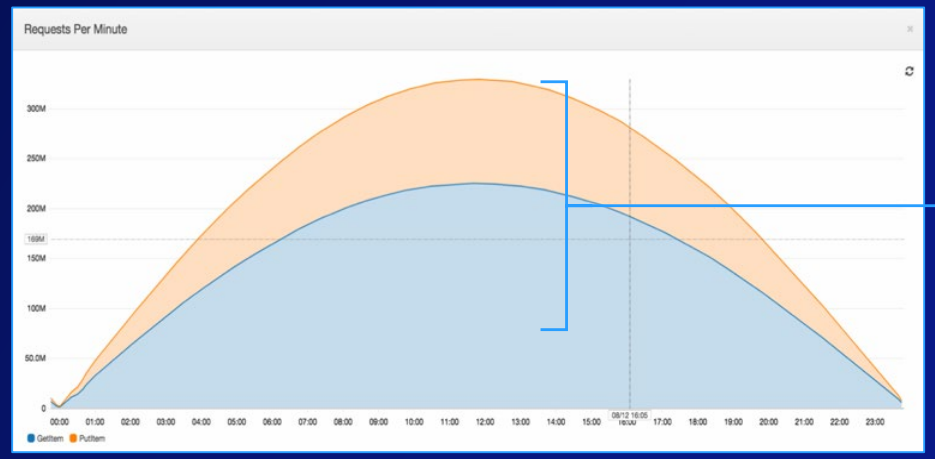


Performance at scale

- Millions of requests per second
- Trillions of items - Nearly unlimited throughput and storage
- Single-digit-millisecond read and write latencies

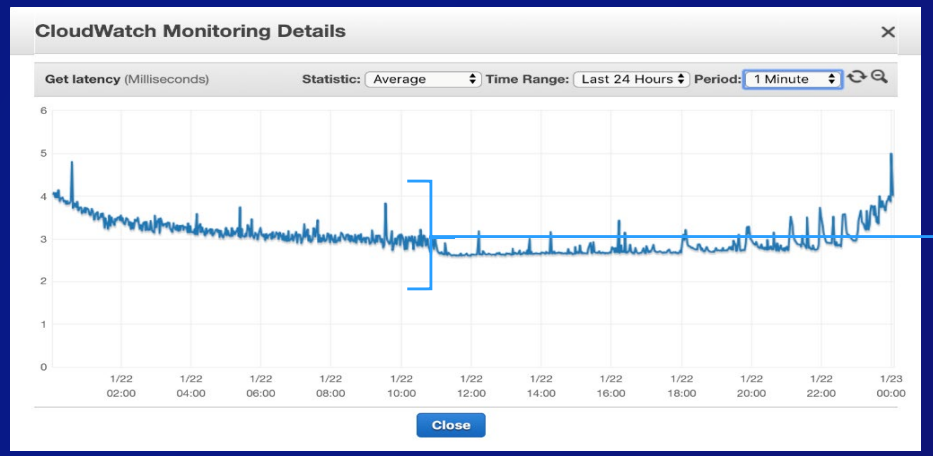
Consistent low latency even during spiky traffic

High request volume

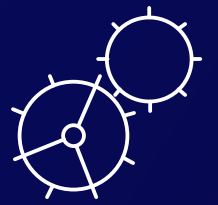


Many millions of requests per second

Consistently low latency



Only **1 millisecond** variance



Performance at scale

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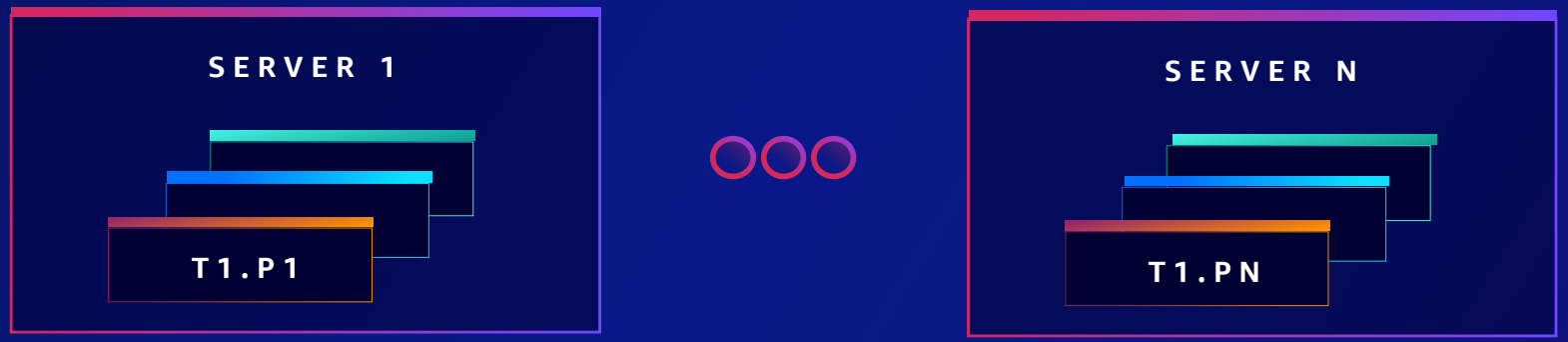
- Trillions of items - Nearly unlimited throughput and storage
- Single-digit-millisecond read and write latencies

You work with tables, not servers

DynamoDB does the rest under the hood…



No servers to manage

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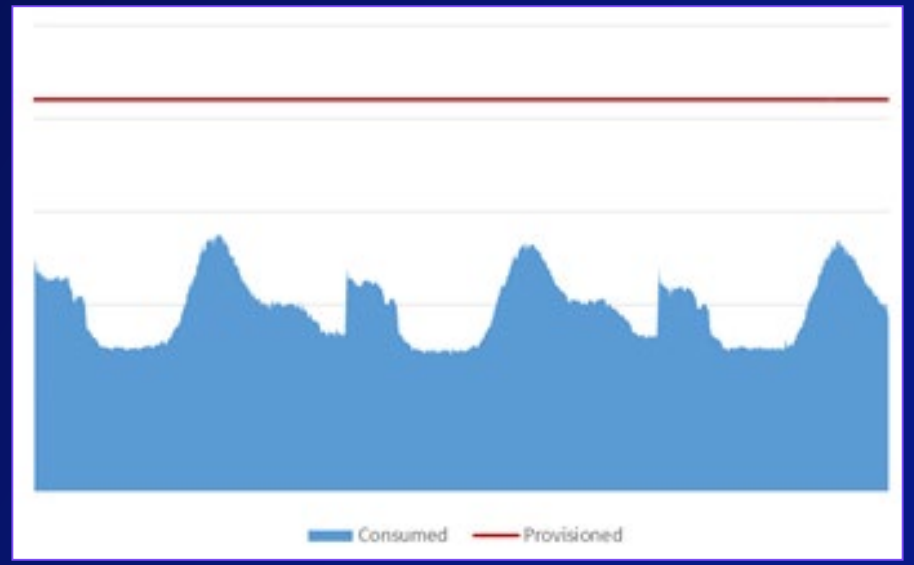
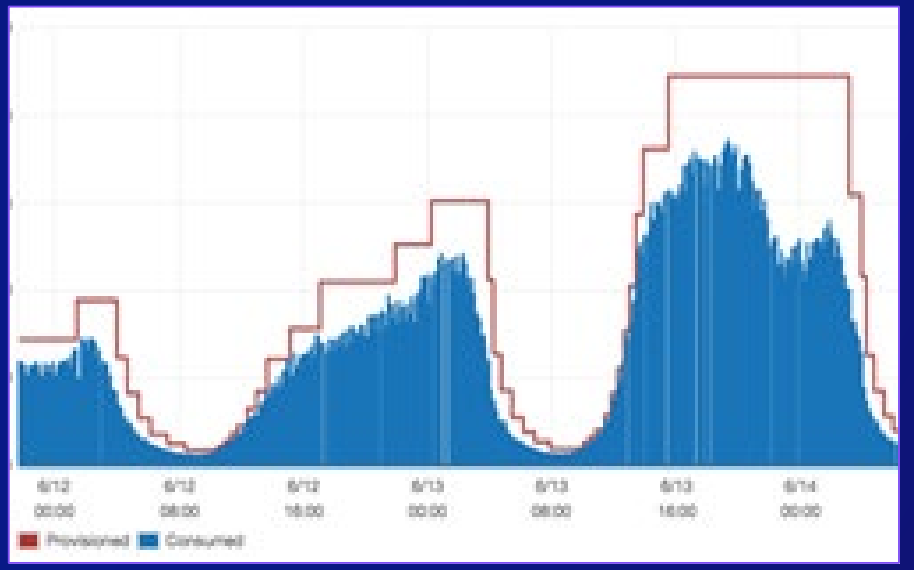
- Massive scalability

You work with tables, not servers

THROUGHPUT AUTOMATICALLY ADAPTS TO YOUR ACTUAL TRAFFIC



Without auto scaling



With auto scaling

No servers to manage

- Fully managed serverless database
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You work with tables, not servers

ON-DEMAND CAPACITY MODE

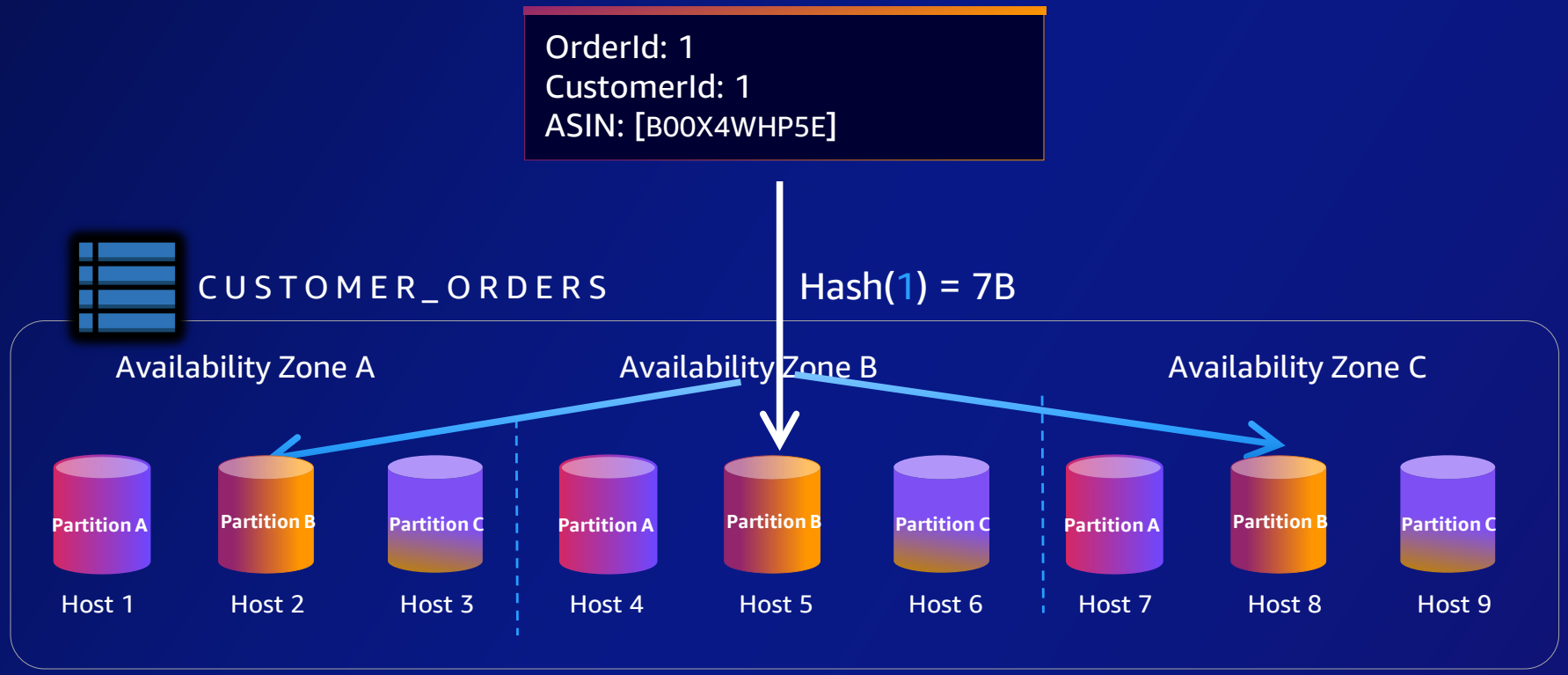
Features

- No capacity planning, provisioning, or reservations – simply make API calls
- Pay only for the reads and writes you perform

Key benefits

- Eliminates trade-offs of overprovisioning or underprovisioning
- Instantly accommodates your workload as traffic ramps up or down

99.99% availability within an AWS Region



Enterprise ready

THREE-WAY REPLICATION

- Data is always replicated to three Availability Zones
- 99.99% availability SLA for each AWS region

Amazon DynamoDB global tables

Build high-performance, globally distributed applications

Low-latency reads and writes to locally available tables

Multi-Region redundancy and resiliency and 99.999% availability

Multi-active writes from any Region

Easy to set up and no application rewrites required

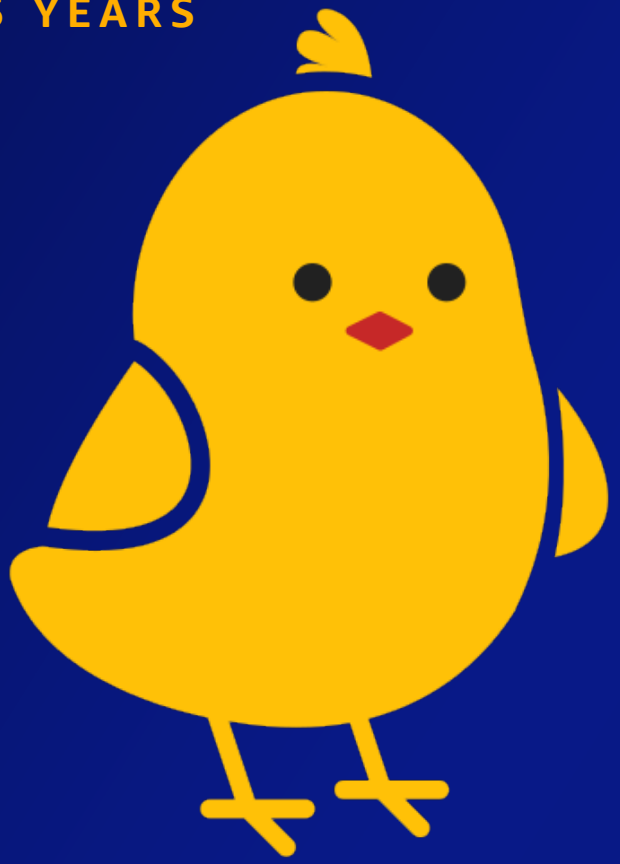
Amazon DynamoDB key features and capabilities

- 99.999% SLA
- DynamoDB Accelerator (DAX)
- Global tables
- Encryption at rest
- Auto scaling
- Adaptive capacity
- Time To Live (TTL)
- NoSQL Workbench
- Transactions
- Export to Amazon S3
- Point-in-time recovery (PITR)
- On-demand backup and restore
- Amazon DynamoDB Streams and Kinesis Data Streams support
- Amazon CloudWatch Contributor Insights for DynamoDB
- AWS CloudTrail logging of DynamoDB data-plane operations

Koo

THE 2ND LARGEST MICRO-BLOGGING PLATFORM

IN JUST 2.5 YEARS



Koo’s business vision

Userbase expansion

20M to 60M by 2023
and further more

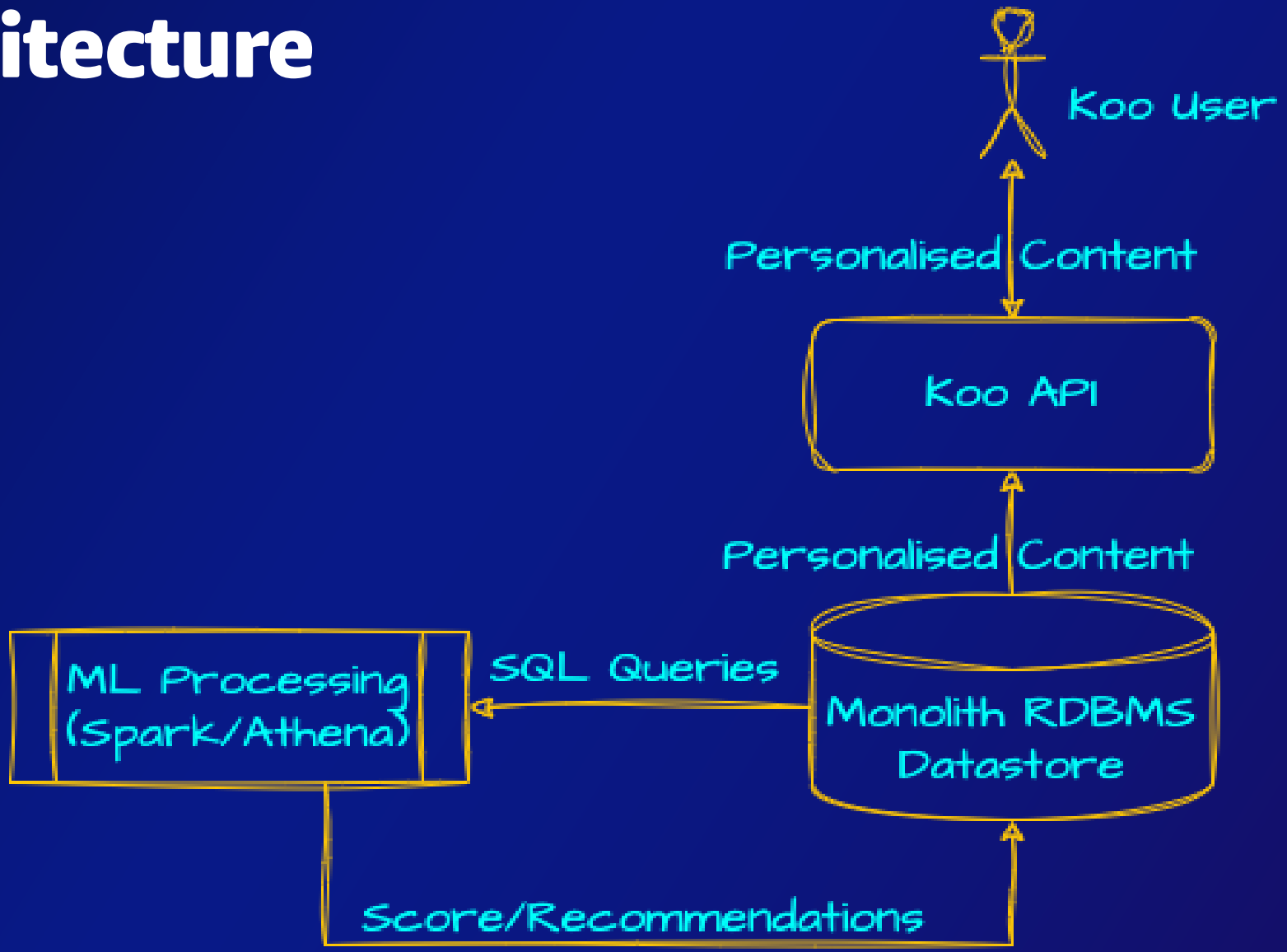
Global Expansion

- US
- Brazil
- Nigeria
- …

Monetization

> “ Be ready for 20X Scale

Initial architecture



The challenges with RDBMS database

Scalability

Performance

Operational Issues

Koo' app requirements

Users	Millions
Data volume	TBs
Locality	Global
Performance	Microsecond latency
Request rate	Millions per second
Access	Mobile & web
Scale	15x-20x Traffic Spikes

Re:Think Koo's data persistence

Think NoSQL!!

- Identify critical paths in user journey
- Datasets: Different performance, scaling needs

Benchmark for extreme scale

Focus on operational ease

> “ No silver bullet

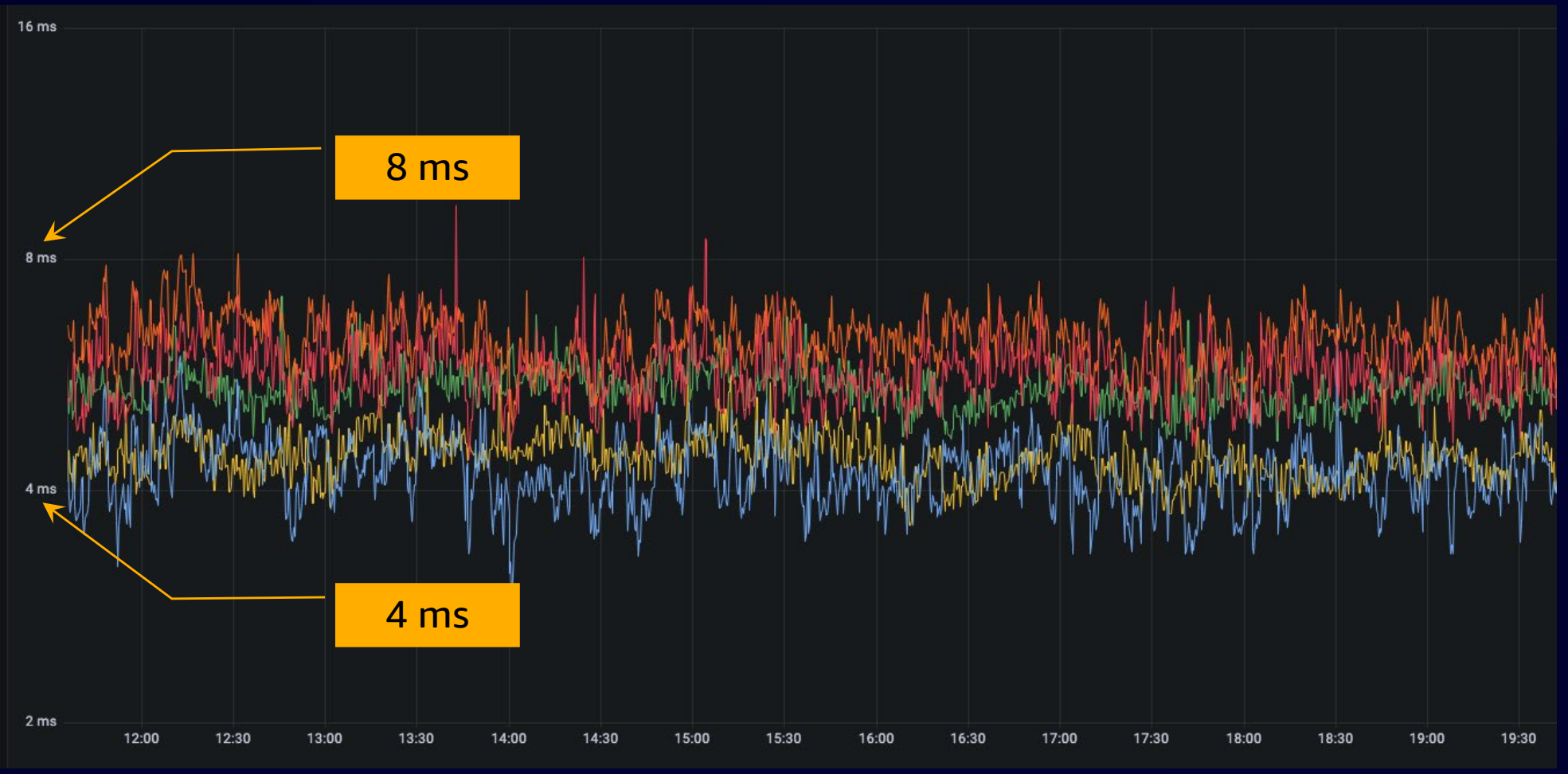
Thinking NoSQL!

CRITICAL PATHS IN USER JOURNEY VS NEEDS

	Partition Based Lookups	Sorting	High Reads	High Writes	Secondary Index
Koos	✓	✓	✓	✓	✓
Reactions	✓	✓	✓	✓	✓
Signups	✓	✓	✓	✓	✓
Feed	✓	X	✓	X	X
Social Graph	✓	X	✓	X	✓
Recommendations	✓	✓	✓	X	X

Benchmarking with DynamoDB

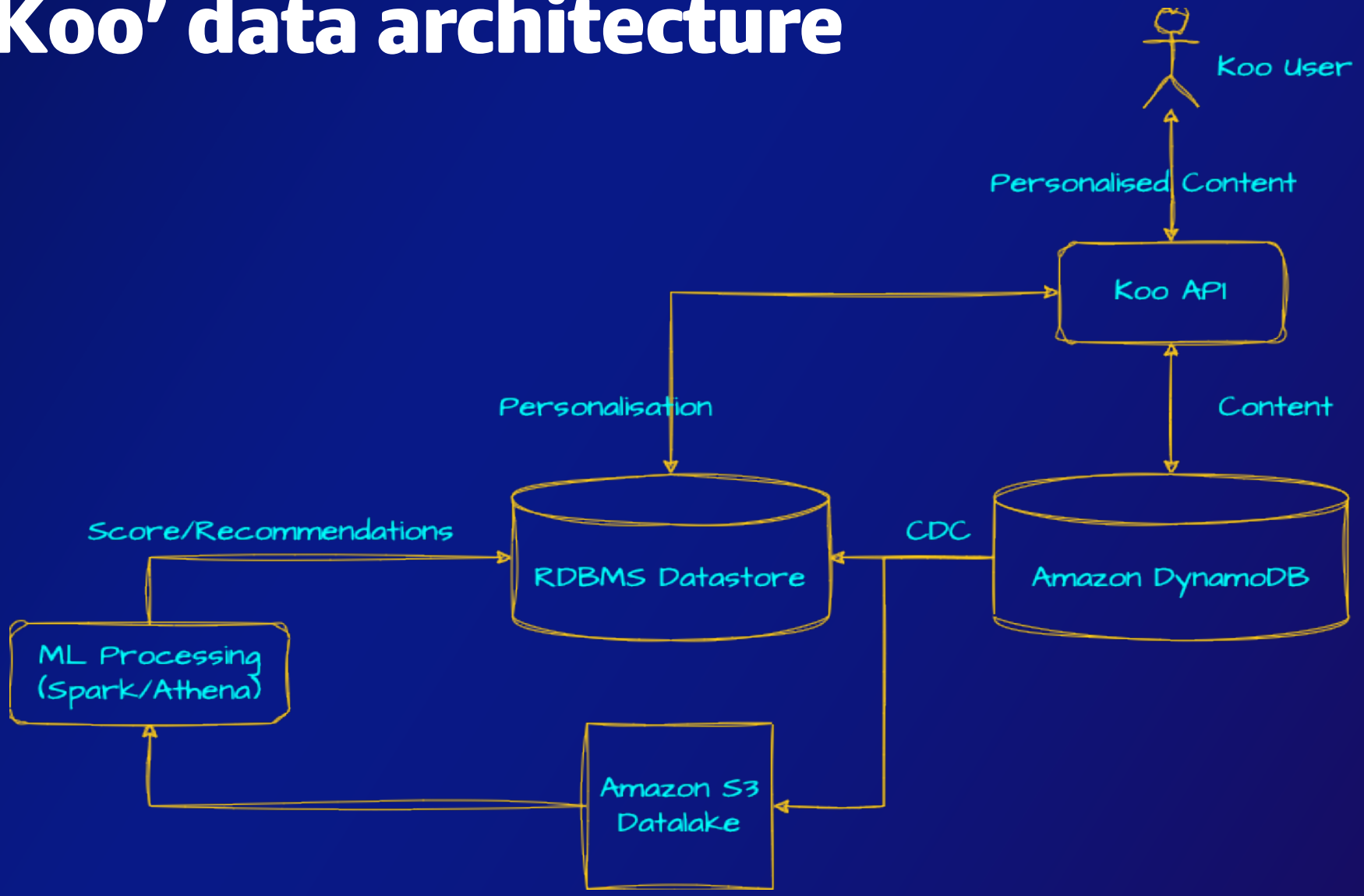
CONSISTENTLY LOW LATENCY AT SCALE



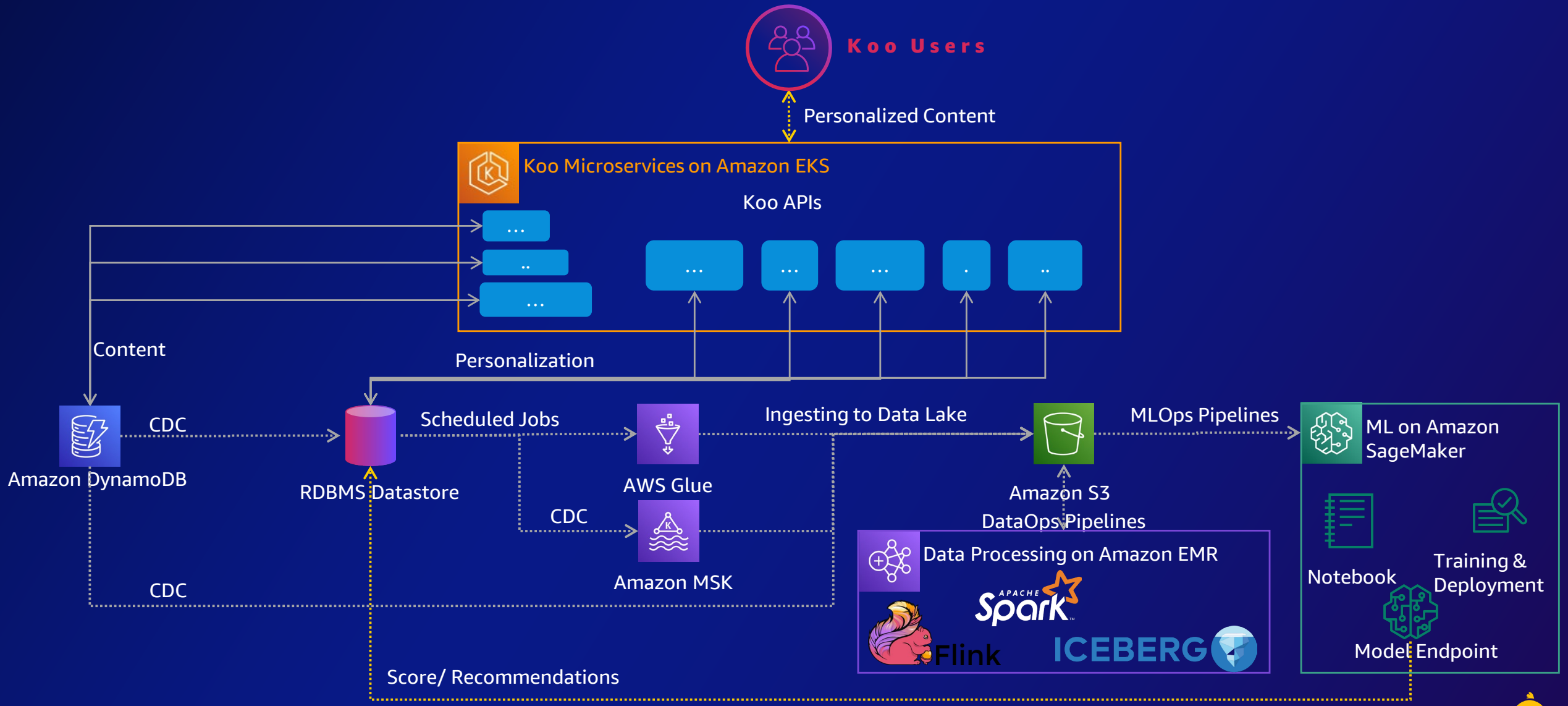
Concurrency	10X
Latency	< 10 ms

Operation	Latency
Reaction Get	4.42 ms
Reaction Write	5.42 ms
Content Get	4.26 ms
Content Creator Get	6.24 ms
Content Write	5.71 ms

Re:Invent Koo' data architecture



Re:Invent Koo's data architecture



The benefits of new architecture

USING AMAZON DYNAMODB

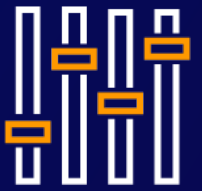
Battle tested @ Brazil Launch

Low Latency even for peak traffic

- Registrations surged to 20X
- Feeds surged to 8X

Global Expansion and Data Privacy

User Profiles are stored in respective regions to comply with data privacy and local laws



Operational Ease

- No servers to manage
- Devops culture, frequent releases & faster innovation

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Your time is now

Build in-demand cloud skills your way

Thank you!

Please complete the session survey

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