
AWS
re:Invent
NOV. 28 – DEC. 2, 2022 | LAS VEGAS, NV

PRT246

Building real-time applications to utilize AWS Graviton

Subbu Iyer

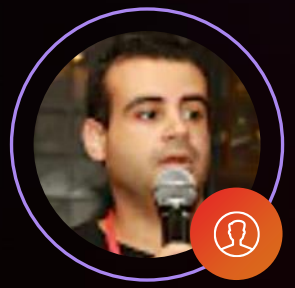
CEO
Aerospike

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Raj Pai

VP, Product Management – EC2
Amazon Web Services



Tal Gabay

Engineering Manager
Wix



Kyle Bush

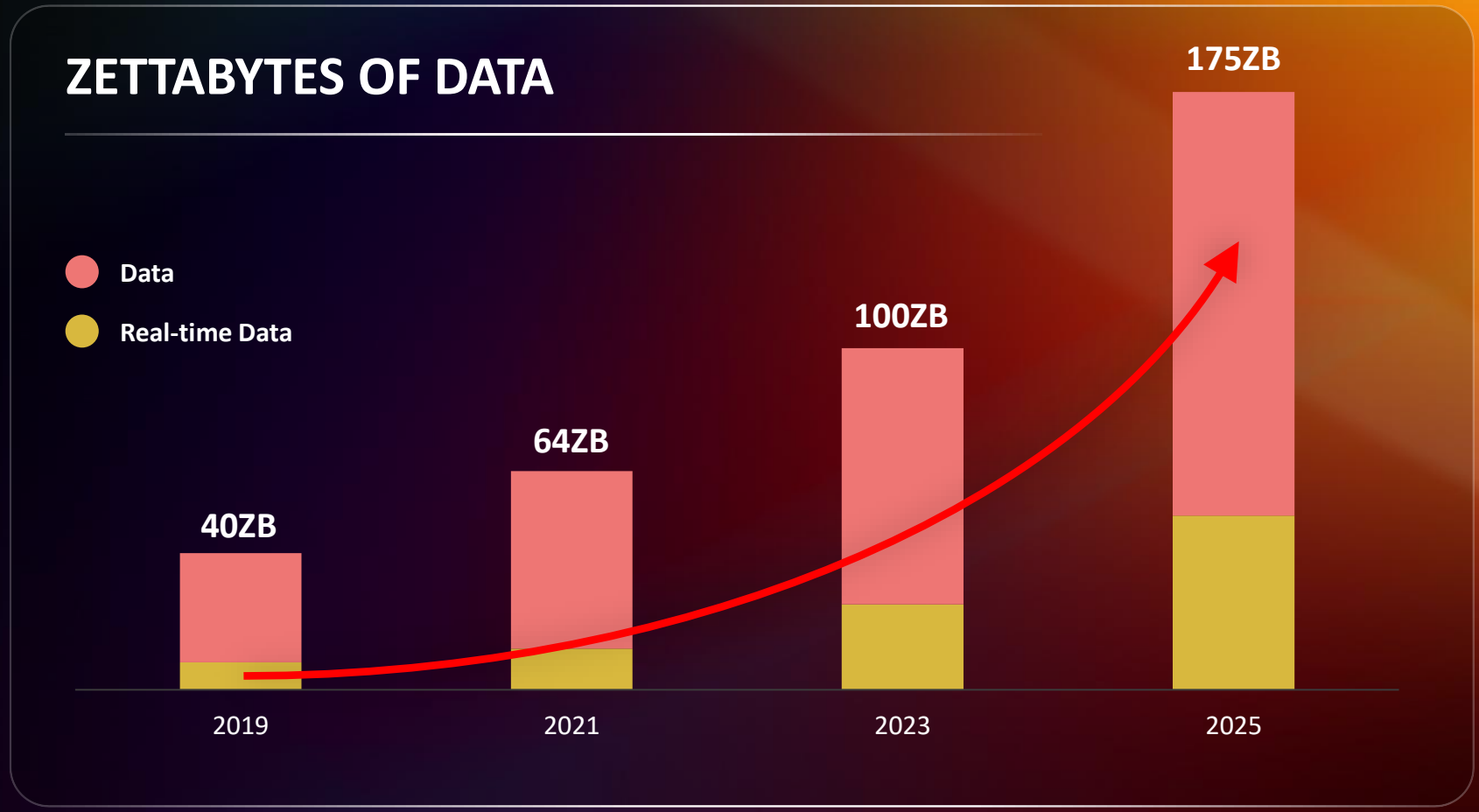
Vice President,
Data Analytics Architecture
Fidelity Investments

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AEROSPIKE

Real-time data is exploding

+35%

YOY Real-time Data Growth by 2025



Source: IDC

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Real-time data drives results

40%



Reduction in CapEx

40%



Improved time to market

35%



Increased customer acquisition

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Source: IDC: How Data Culture Fuels Business Value in Data-Driven Organizations

Current architectures fail



INFRASTRUCTURE

Not architected for real-time



PROCESSING

Not able to process all data in real-time



COST

Not cost effective for scale and spikes

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What's required

HIGH-SPEED PROCESSING & INGEST

- Microseconds-to-milliseconds

HIGHLY AVAILABLE

- Five-nines uptime for years

STRONG CONSISTENCY

- Accurate data, always real-time speeds

DATA PIPELINE INTEGRATIONS

- Compatible with all data pipelines and event streams

MASSIVELY SCALABLE

- From gigabytes to petabytes

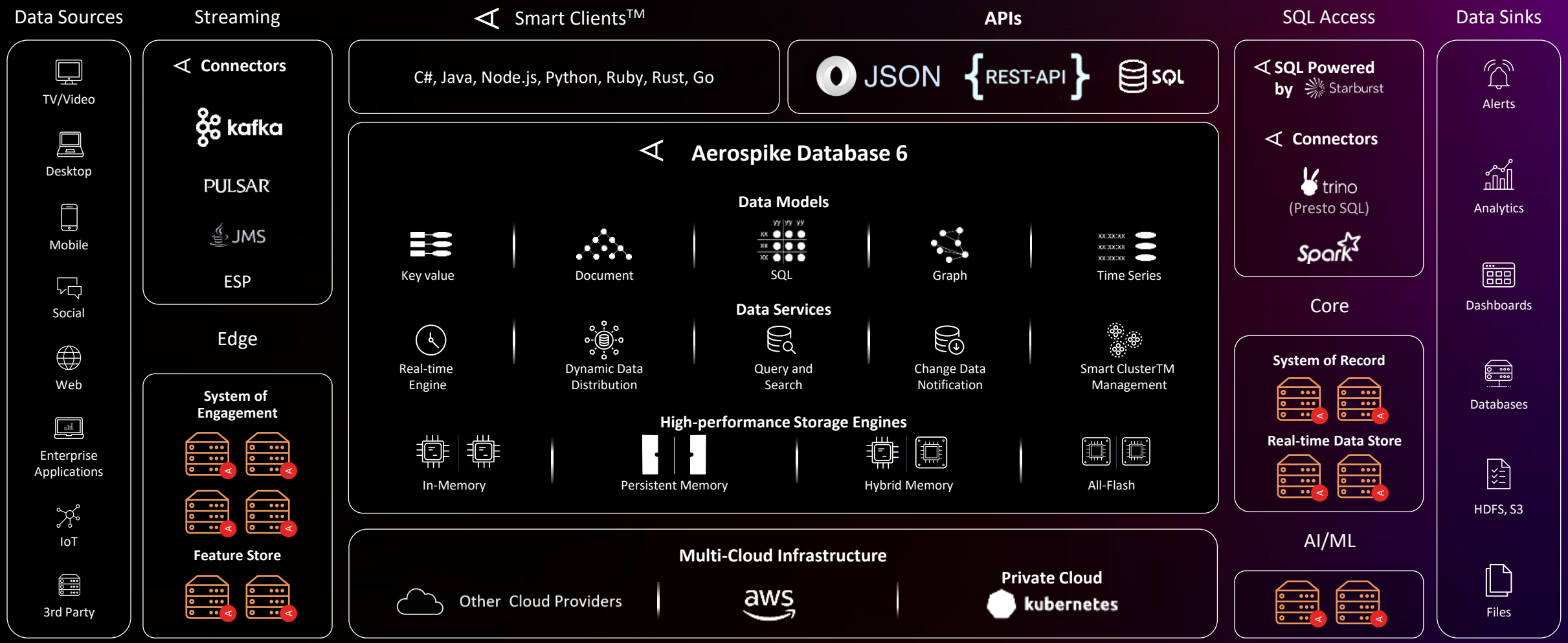
PREDICTABLE PERFORMANCE

- Linear, low variability, with low variance, even at massive scale

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The Aerospike Real-time Data Platform



Proven, patented* technology built from the ground up for real-time data needs

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* 14 Patents Approved

Aerospike Delivers



Low costs

Reduce server footprint by up to 80%



Unlimited scale

Predictable performance from GB to PB



Low latency

Sub-millisecond performance



Always On

Five-nines with globally distributed, strongly consistent data

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AEROSPIKE

Serving millions of concurrent users at scale on AWS



Scale

100M+ users

5.5M concurrent users

1M transactions per second

Latency

<15ms

Growth

30%

> *"Thanks to Aerospike's expertise and our data-driven team, Dream11 has become synonymous with sports fan engagement in India."*

Abhishek Ravi, Chief Information Officer, Dream11 and Dream Sports

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Lower cost + Higher performance

SIGNAL
A TransUnion® Company

	Other DB	Aerospike
Throughput	500k TPS	**8M TPS**
Latency	3,900 ms	**23 ms**
Servers	450	**60**



Saved **$6.9M**

Playtika

	Other DB	Aerospike
Throughput	200k TPS	**600k TPS**
Latency	> 1ms	**< 1ms**
Servers	200	**30**



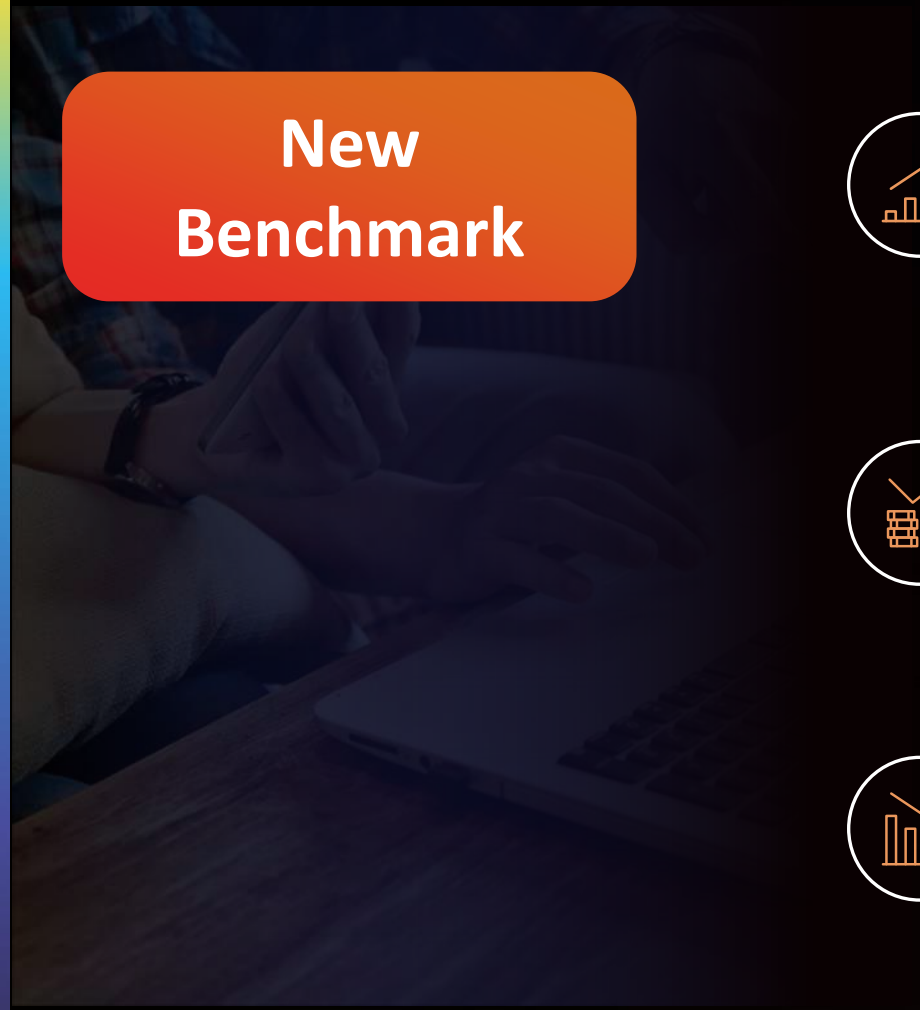
Saved **$4.2M**

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AEROSPIKE

Aerospike Database 6 on AWS Graviton delivers 1.6x improvement in price-performance



New Benchmark

63%
price-performance improvement

25,000,000 TPS
(99% < 1ms)

27%
reduced cost

18%
improved throughput

49%
carbon footprint reduction

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The Document Database for scale

JSON Support



Document API + JSONPath

- Uses JSON syntax
- Enables JSONPath queries
- Enables individual documents to be modified and queried

Millions of TPS



Batch + Streaming

- Batch operations for read, write, delete
- UDF support
- MessagePack
- Massively parallel Secondary Indexes

Languages and Frameworks



Options

- Spring Data
- C
- Java
- Go
- C#
- Python
- REST

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AEROSPIKE

Solving scale for documents

		Other DBs		EROSPIKE
zonetap	**IoT Geofencing for Real-time Construction Site Safety**	• Data ingest ceiling hit • Price became non-linear with data growth	→	• Scalability now + beyond • Sub-millisecond latency • High availability + uptime
Customer Intelligence Provider	**Ad Tech Targeting Platform and Ranking Engine**	• 1/5th the throughput • 2x the hardware	→	• 15x data growth scalability • Unified data platform
airtel	**Customer 360**	• Unable to make real-time inferences	→	• Integrate across data silos • High performance with low latency

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Companies winning with Aerospike

Global Digital Payments

airtel

Early Warning®

Recommendation Engine, Personalization

WiX

wayfair

Fraud Prevention

BARCLAYS

experian

Customer 360

Adobe

Fidelity INVESTMENTS

Real-time Operational Intelligence

Top 3 Global Brokerage Firm

NOKIA

Identity Management

neustar

LexisNexis® RISK SOLUTIONS

User Profile Store

Sony Interactive Entertainment

SnapChat

Global Data Distribution

Nielsen

yahoo!

Identity Graph at Scale

Playtika

PayPal

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AEROSPIKE

Aerospike + AWS: Working backward from the customer

Raj Pai

VP – Product Management, EC2
AWS

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Aerospike on AWS is a natural fit

High performance

Need for high throughput and extreme low latency

Cost effective

Great value for both their customers & their business

Globally available, secure, and reliable

Go global in minutes

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Broadest and deepest platform choice

CATEGORIES

General purpose + burstable

Compute-optimized

Memory-optimized

Storage-optimized

Accelerated computing

CAPABILITIES

Choice of processor
(AWS, Intel, AMD)

Fast processors
(up to 4.5 GHz)

High memory footprint
(up to 24 TiB)

Instance storage
(HDD and NVMe)

Accelerated computing
(GPU, FPGA, ASIC)

Networking
(up to 800 Gbps)

Bare Metal

Size
(<1 vCPU to 448 vCPU)

OPTIONS

Amazon EBS

Windows, Linux,
UNIX, macOS

MORE THAN

575

INSTANCE TYPES

for virtually every
workload and
business need

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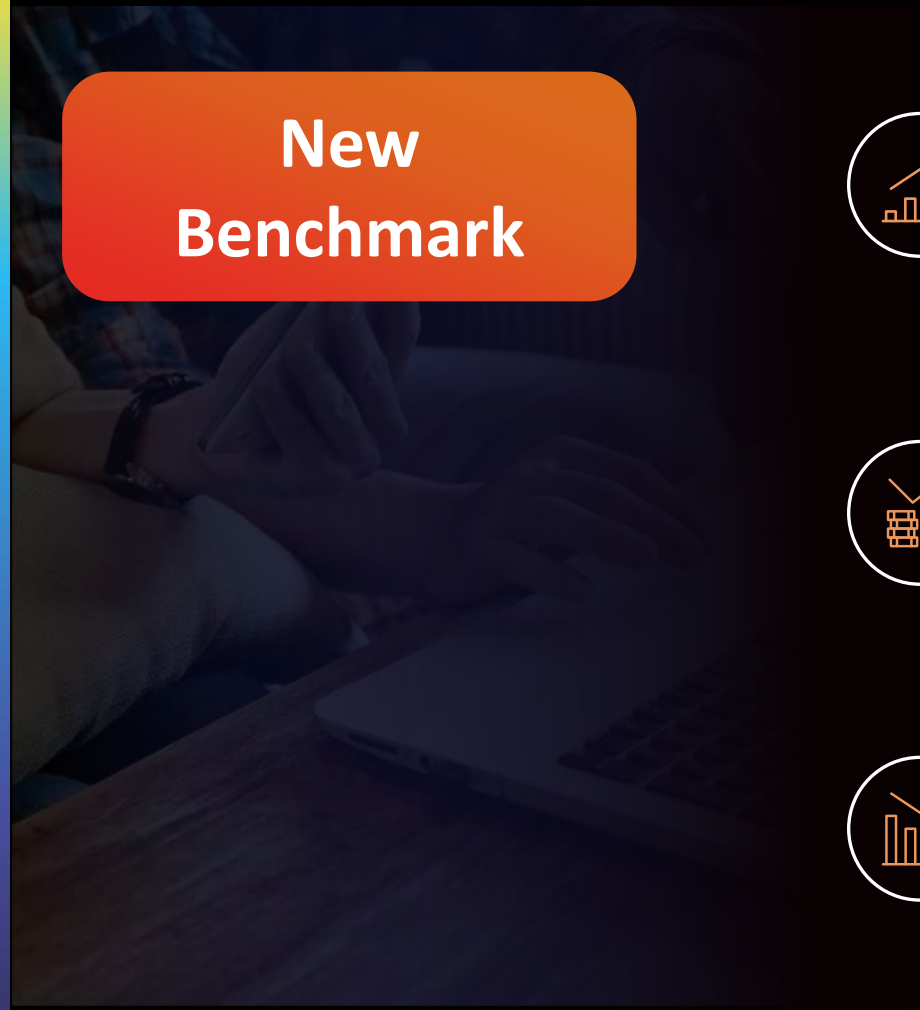
Aerospike journey on AWS

I3 / I3en instances (SSD)	I4i instances (Nitro SSD)	Im4gen / Is4gn instances (Graviton + Nitro SSD)
1st / 2nd gen Intel Xeon Scalable CPU	3rd gen Intel Xeon Scalable CPU	AWS Graviton CPU
Commercial SSDs	AWS Nitro SSD	AWS Nitro SSD
Million of transactions per second	70% performance increase for Read/Write alone	40% better compute price performance
Millisecond Read/Write latency		Up to 60% less energy for the same performance

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49%
carbon footprint reduction

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Aerospike @ Wix:
Real-time user personalization

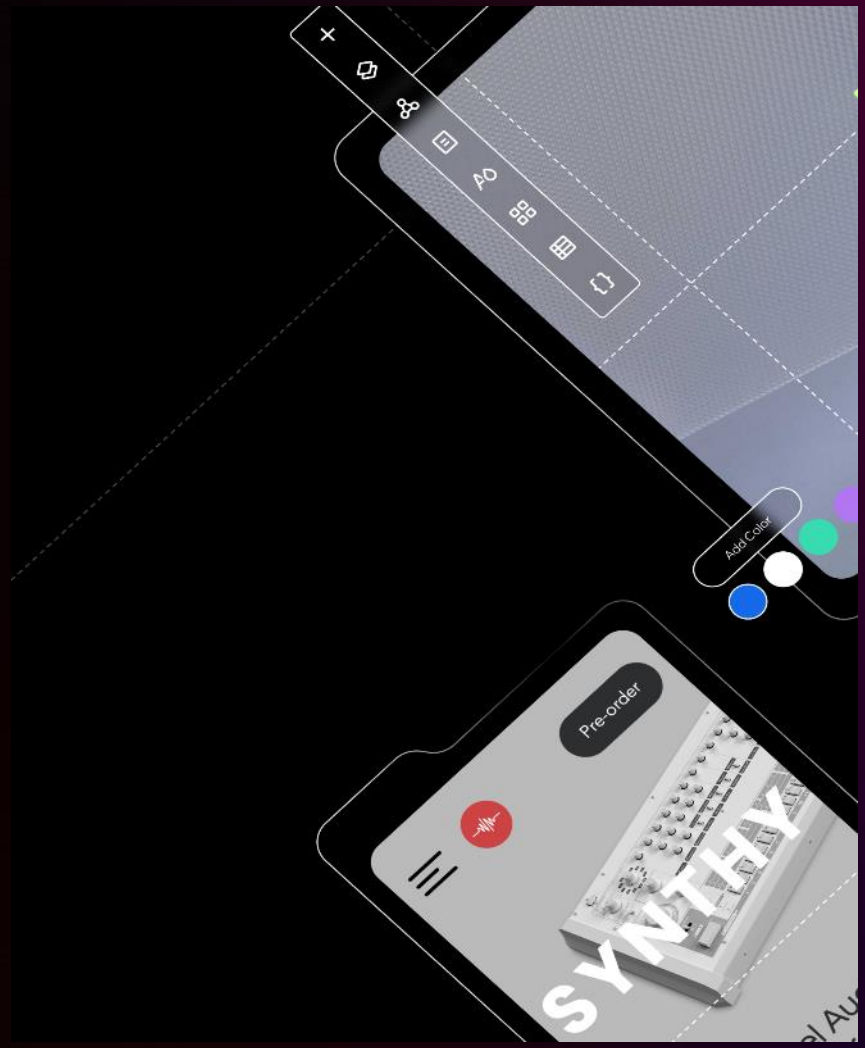
Tal Gabay

Engineering Manager
Wix.com

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Our north star goal

Becoming the best web creation platform for any type of user and any type of business, anywhere in the world.



**Our belief is that in next 7 years 50% of anything new on the web will be built on Wix*

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Wix in numbers

Total registered users 234M	Subscriptions 6M+	New users per month 2M+	Countries with Wix users 190
Supported languages 22	Wix Locations 30	Employees 5,800	R&D 1,600

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What we're trying to solve

WiX Engineering

User / Site Real-time Data



Profile Service

Personalized Product Experience

Personalized Customer Care

Conversion and Upsell

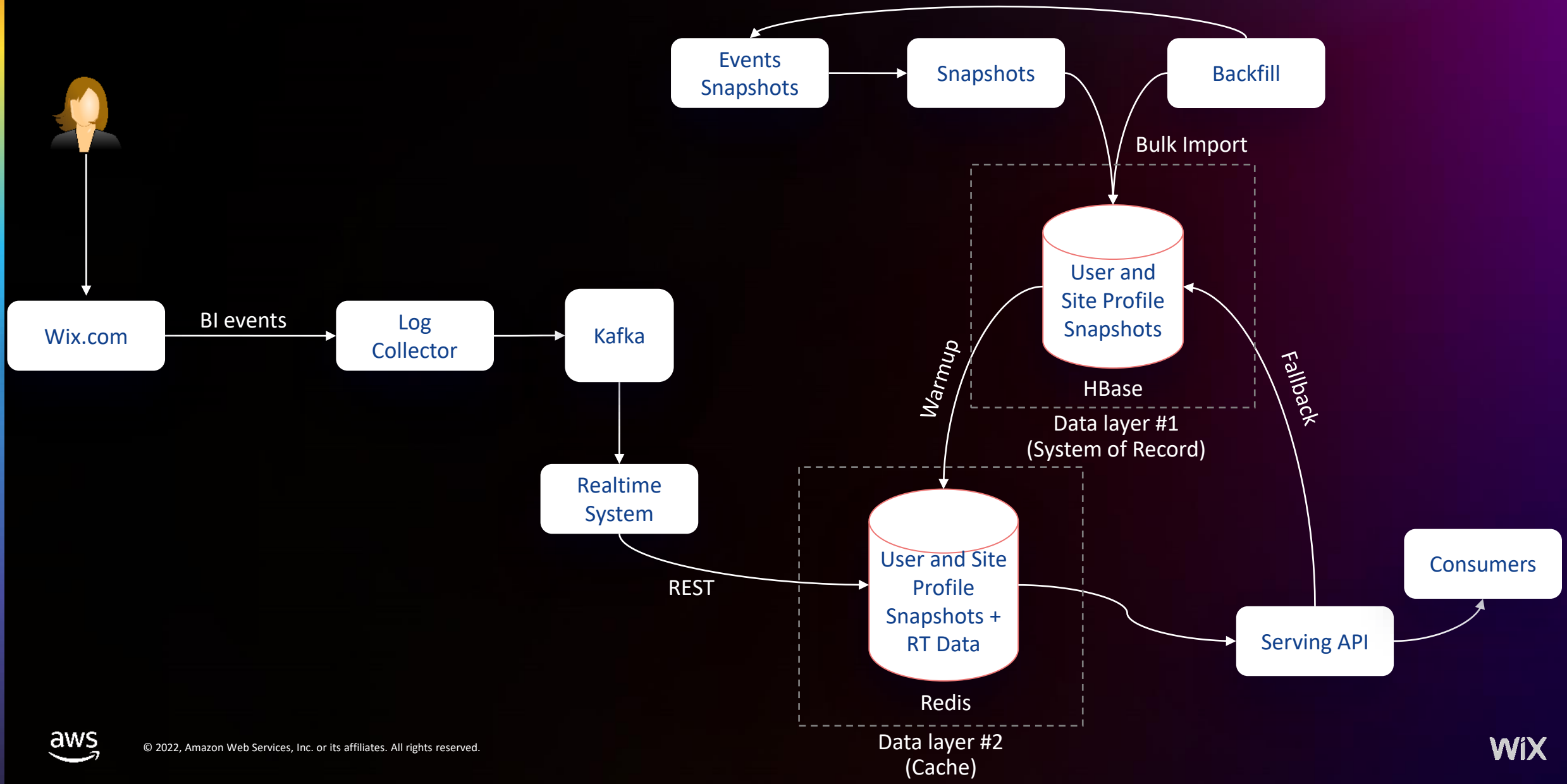
Channels & Partners Product Customization

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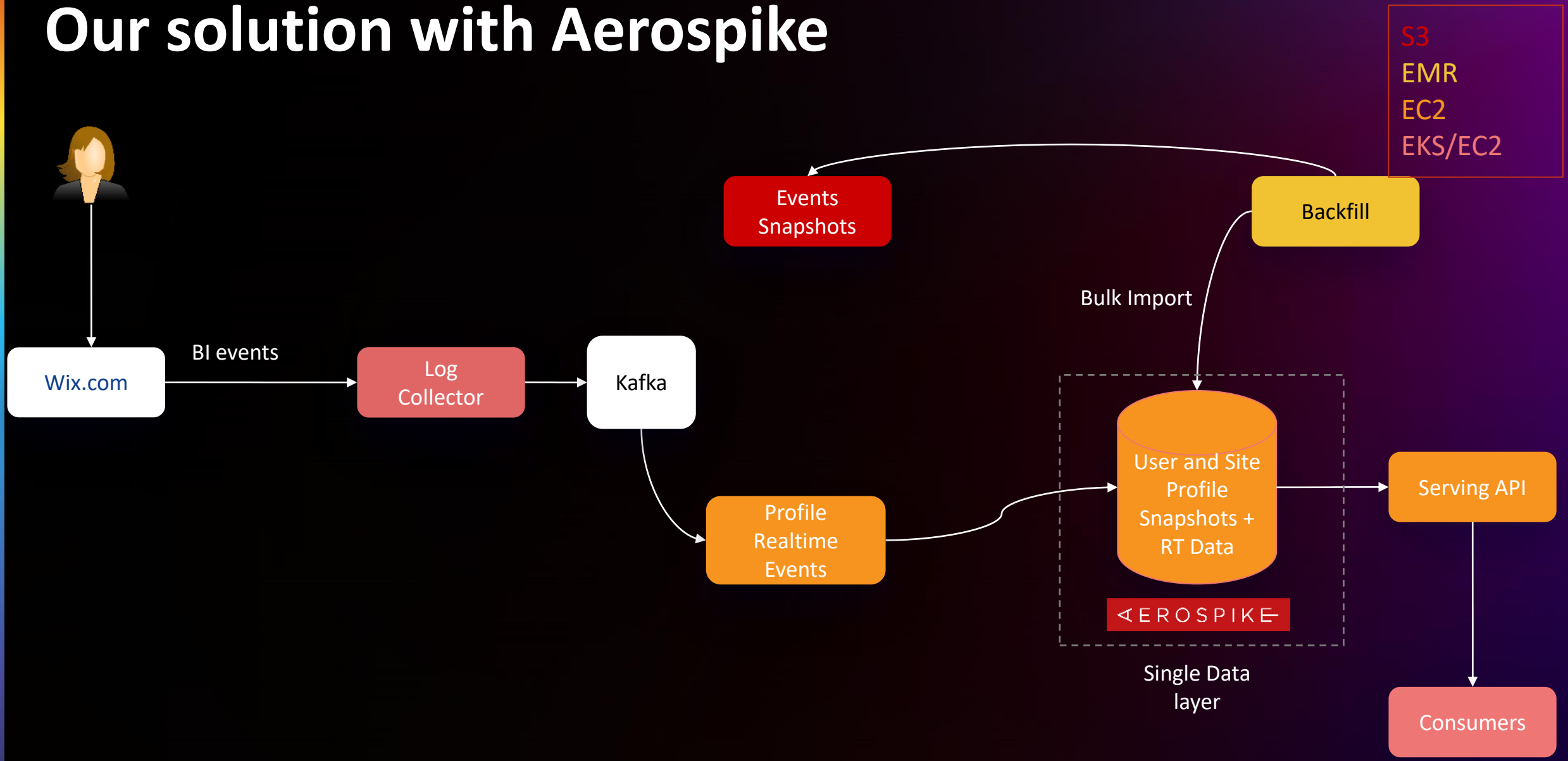
WiX

Starting point



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Our solution with Aerospike



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Key differences

	HBase + Redis	AEROSPIKE
Data availability in real-time	Partial %	100%
Response times	13ms + 5ms (respectively)	2-3ms
Architectural complexity	2 data layers	1 data layer
Cost, annual	-	45% less

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WIX

PRT246

Caching Snowflake Data with Aerospike for Advanced Analytics

Kyle Bush

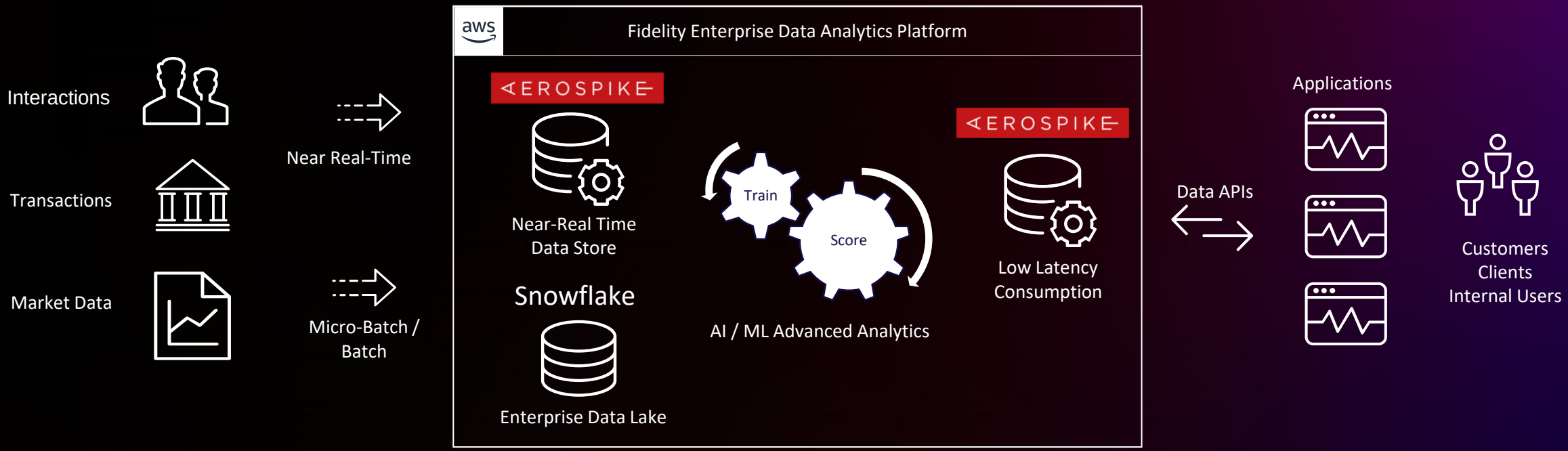
VP, Analytics Data Architecture
Fidelity Investments

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Fidelity Use Cases

Advanced Analytics & Insights

- Leverage advanced analytics for personalization, market risk analysis and other advanced analytics at scale
- Provide more accurate, near-real time decision support with realistic analytics
- Enable digital capabilities through highly scalable APIs that can integrated with any Fidelity business



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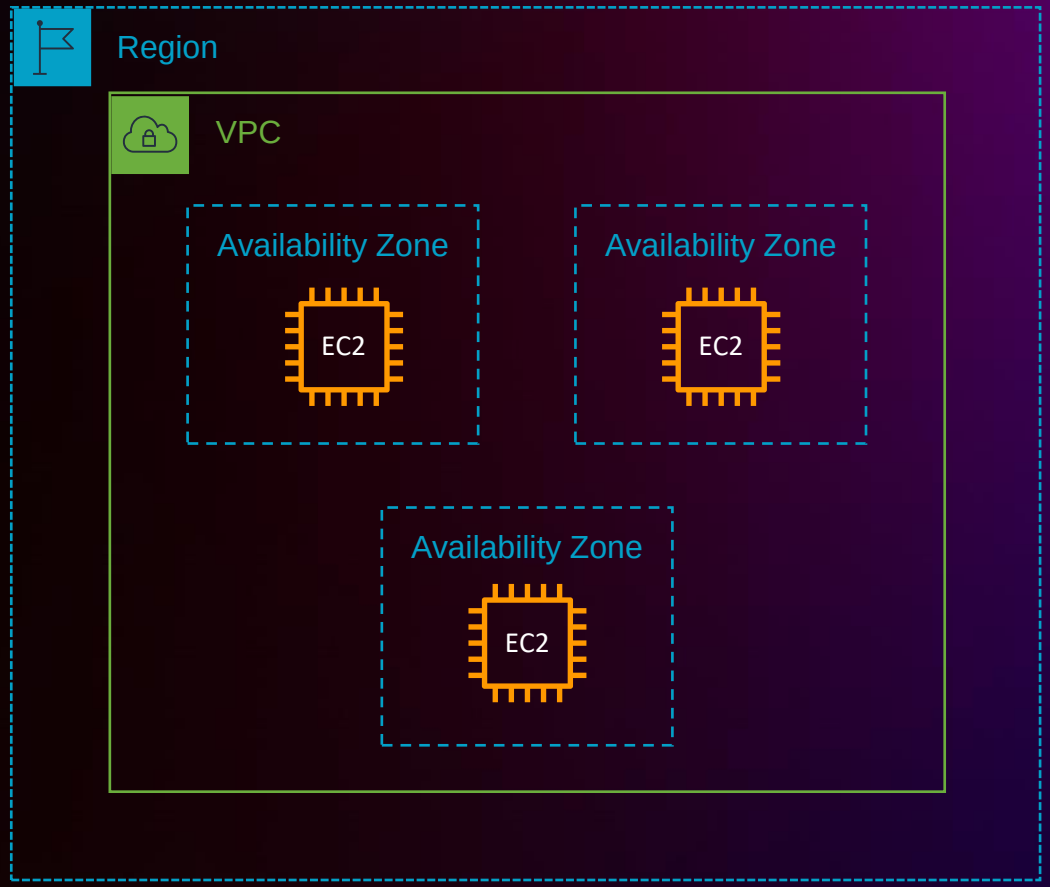
Infrastructure & Topology

Aerospike Clusters

- 3 Nodes – 1 per Availability Zone
- Multi-Region – Active/Active with Replication via XDR
- VPC Peering to Consumer VPCs

Aerospike Nodes

- I3en Instance (I4i, Graviton)
- 2x Replication Factor
- SSD Device Storage Engine

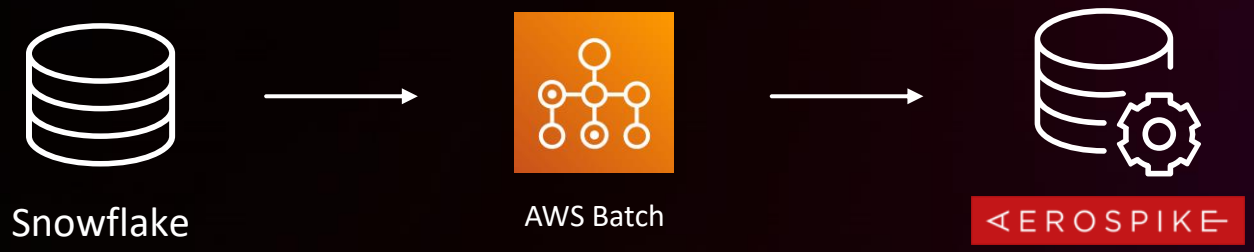


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Data Ingestion

Aerospike Data Loader

- Custom utility written in Java 11 with Aerospike Java Client Library
- Configuration-driven design to accept any Snowflake SQL statement
- Automatically maps Snowflake datatypes to appropriate Aerospike datatypes
- Multi-threaded design for high throughput data ingestion



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Aerospike Benefits



Modernization of cloud technology stack on AWS



Integration with Enterprise Data Analytics platform on Snowflake/AWS



Enhanced performance for mixed workloads of reads and writes



Several storage options, multi-model & cluster configuration based on use cases



Easy to setup, manage, and comply with cloud & security requirements

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...in Summary

Booth #3835



High performance at scale + global high availability + strong consistency



Low TCO



AWS Graviton drives price-performance + carbon footprint reduction



Document database @ scale is winning



Proven global customers

aws

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AEROSPIKE

Aerospike Cloud



Announced November 2nd

Aerospike Database as a Service
on AWS

Sign up for our early access program:
aerospike.com/cloud-early-access

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Questions?

Booth #3835

Graviton
Benchmark white paper
aerospike.com/graviton

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Document Database
Learn more
aerospike.com/document-db

Developer Hub
Sandbox, Code snippets
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Thank you!



Please complete the session survey in the **mobile app**

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