



# INNOVATE2018

## ONLINE CONFERENCE



# **SAP on AWS: Big Businesses, Big Workloads, Big Data (Level 200)**

Santosh Choudhary, Senior Solution Architect  
Harpreet Singh, SAP Solution Architect

# Agenda

- SAP on AWS – Differentiators
- What is a Data Lake?
- Why Data Lake for SAP?
- Characteristics of a Data Lake
- Architecture – Customer Sentiment Analysis
- Demo – Customer Sentiment Analysis
- Summary

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# Why SAP on AWS is 'different'...



# Why SAP on AWS is 'different'...

*Speed*



# Why SAP on AWS is 'different'...

*Speed*



*I've been involved in several SAP implementations historically, they have all gone over budget and over schedule, and they're notorious for consuming a lot more energy than what you'd expect ... but this has gone well."*

Andrew Cole,  
Chief Executive



# Why SAP on AWS is 'different'...

*Speed*

*Agility*



# Why SAP on AWS is 'different'...

*Speed*

*Agility*



*"When started we thought the migration would be 7 months. Then we got into it and looked at a lot of automation and thought we could do this in 4 months. We actually did it in 3½ months."*

*Chris Wegmann,  
Managing Director*





# Why SAP on AWS is 'different'...



# Why SAP on AWS is 'different'...

*Speed*

*"We saw the high availability built in to AWS SAP S/4HANA deployments through the use of AWS regions and Availability Zones to prevent downtime. The security of the AWS Cloud gave us peace of mind."*

*Nilesh Patel  
Head of IT, Brigade Group*



*Security*

*Agility*



# Why SAP on AWS is 'different'...



# Why SAP on AWS is 'different'...

*Speed*

*Agility*



*"AWS infrastructure not only 'just works' it outperforms our hosted private cloud. Hosting costs to-date have been halved. Our ROI is less than 12 months, even accounting for one time migration costs and the SAP HANA license purchase."*

*Hanno Schupp,  
Head of Solution Center*



*Security*

*Flexibility*

# Amazon EC2 Instances – for SAP workloads



## General Purpose M4 and M5

Name	vCPU	Memory (GiB)	Network (Gbps)	Storage (Mbps)	SAPS
m5.24xlarge	96	384	25	10,000	135,230
m5.12xlarge	48	192	10	5,000	67,215
m5.4xlarge	16	64	High	2,120	22,538
m5.2xlarge	8	32	High	2,120	11,269
m5.xlarge	4	16	High	2,120	5,634
m5.large	2	8	High	2,120	2,817

## Compute Optimized C4 and C5

Name	vCPU	Memory (GiB)	Network (Gbps)	Storage (Mbps)	SAPS
c5.18xlarge	72	144	25	9,000	95,400
c5.9xlarge	36	72	10	4,500	47,700
c5.4xlarge	16	32	Up to 10	2,250	21,200
c5.2xlarge	8	16	Up to 10	2,250	10,600
c5.xlarge	4	8	Up to 10	2,250	5,300
c5.large	2	4	Up to 10	2,250	2,650

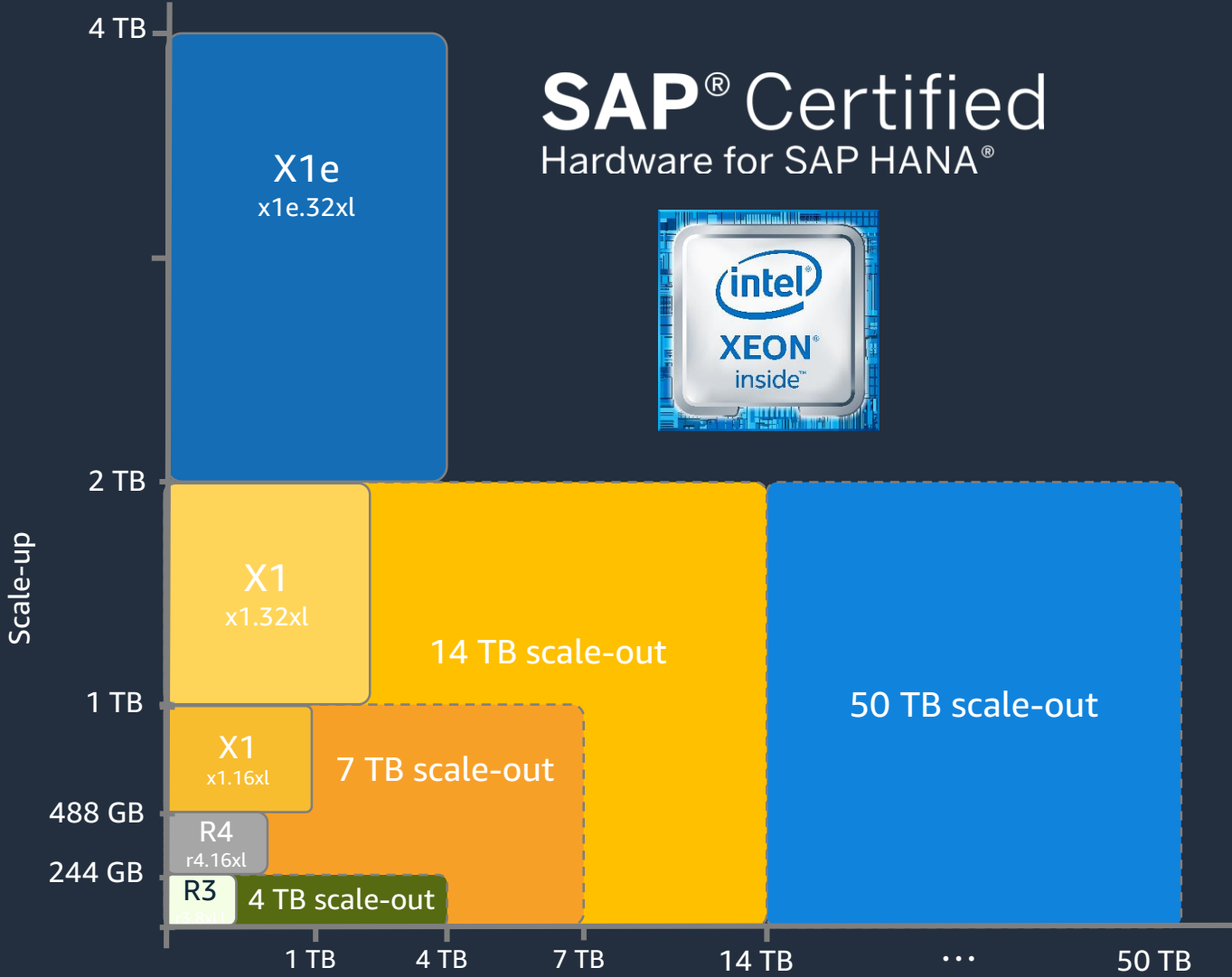
## Memory Optimized X1 & X1e

x1e.32xlarge	128	3,904	25	14,000	131,500
x1.32xlarge	128	1,952	25	14,000	131,500
x1e.16xlarge	64	1,952	10	7,000	32,875
x1.16xlarge	64	976	10	7,000	65,750
x1e.8xlarge	32	976	Up to 10	3,500	32,875
x1e.4xlarge	16	488	Up to 10	1,750	16,437
x1e.2xlarge	8	244	Up to 10	1,000	8,219
r4.8xlarge	32	244	10	7,000	38,200
r4.4xlarge	16	122	Up to 10	3,500	19,100
x1e.xlarge	4	122	Up to 10	500	4,109
r4.4xlarge	16	122	Up to 10	3,500	19,100
r4.2xlarge	8	61	Up to 10	1,750	9,550
r4.xlarge	4	30.5	Up to 10	875	4,775
r4.large	2	15	Up to 10	437	2,387

- 42 instances certified across the R3, R4, M4, M5, C4, C5, X1 and X1e instance families
- Use in two-tier and three-tier configurations up to hundreds of thousands of SAPS
- *Check SAP Note 1656099 for more information*

# Amazon EC2 Instances – for SAP HANA

The Next Generation of HANA Infrastructure at Scale



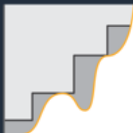
Engineered for SAP HANA



High  
Performance



Resilient



Flexible

Benefits:



Technical  
Excellence



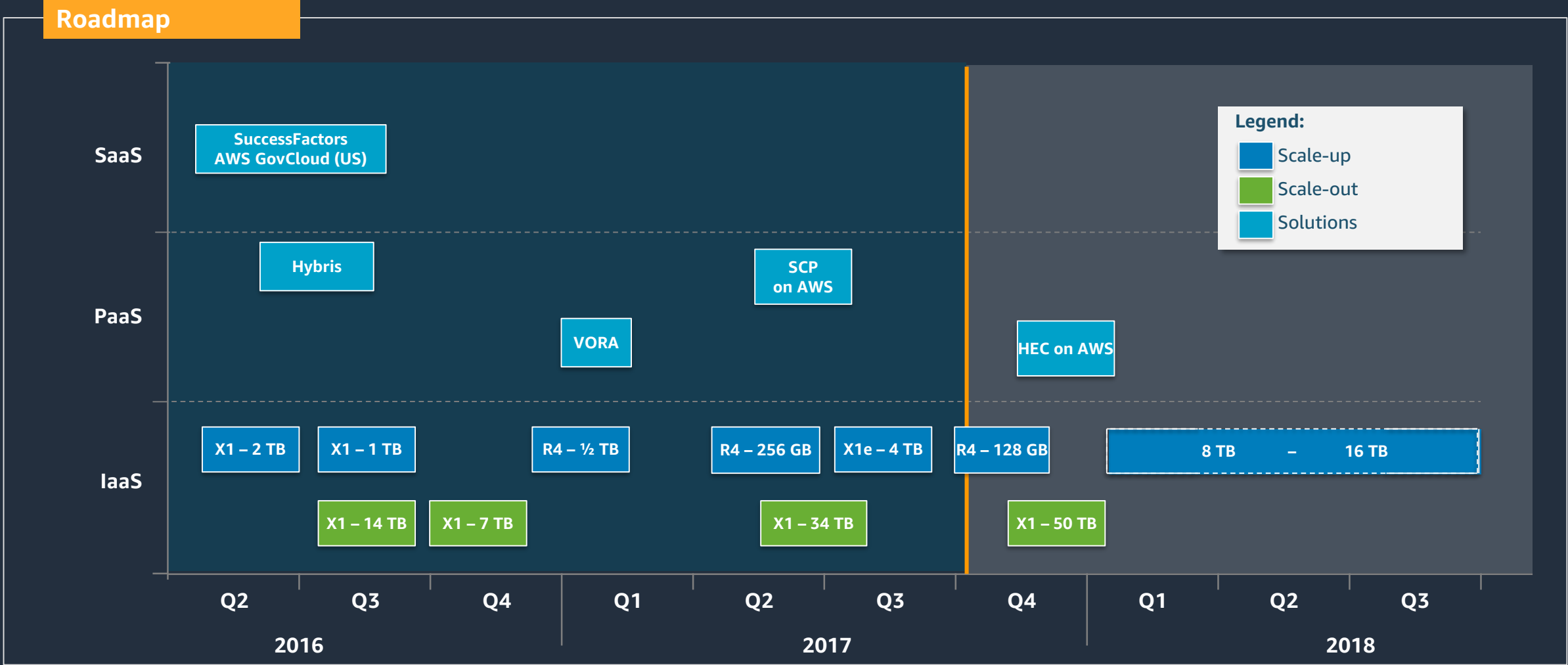
Infinite  
Global  
Scale



Lowest  
TCO



# SAP on AWS – A Long Term Commitment



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# For Data to Be a Differentiator, Customers Need to Be Able to...

## New types of analytics



Dashboards



Real-time



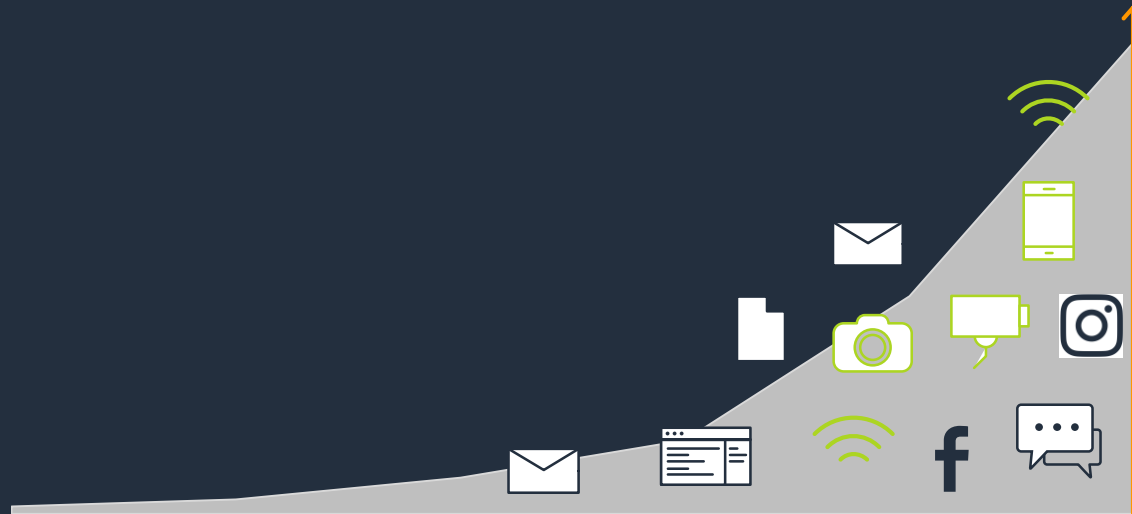
Predictive



Image  
Recognition



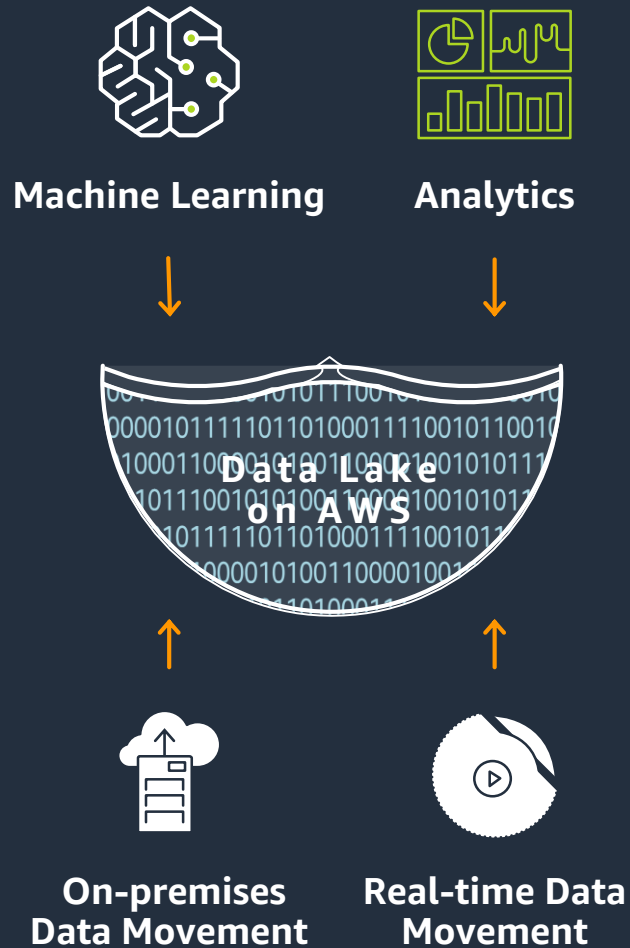
Voice



New types of data

- Capture and store new non-relational data at PB-EB scale in real time
- New type of analytics that go beyond batch reporting to incorporate real-time, predictive, voice, and image recognition
- Democratize access to data in a secure and governed way

# Data Lakes and Analytics from AWS



Open and comprehensive



Secure



Scalable and durable



Cost-effective

# Exponential Growth of Business Data

Transactions



ERP



Web logs /  
cookies



Connected  
devices



Social media



- Data must be captured from diverse sources at speed and scale
- Data needs to be pulled together, breaking down traditional silos
- Benefits need to far outweigh the costs of collection and analysis

# Expanding Access Requirements

## Data Scientists



## Data Analysts



## Business Users



## Engagement Platforms



## Automation / Events

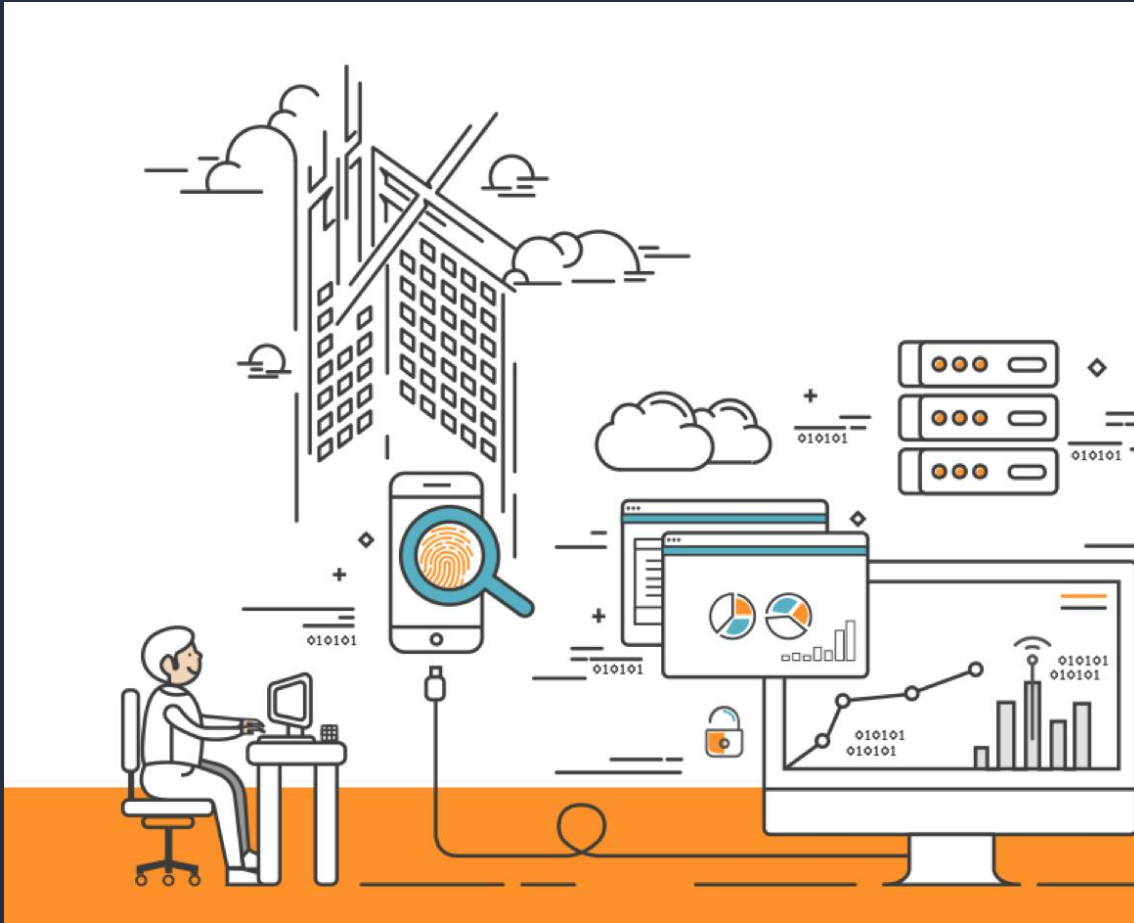


- More personas need access to data, through appropriate tools
- More systems need to link to data for decision and process automation
- Users need to be able to find information, and access it securely

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# Why data lake using SAP data is critical?

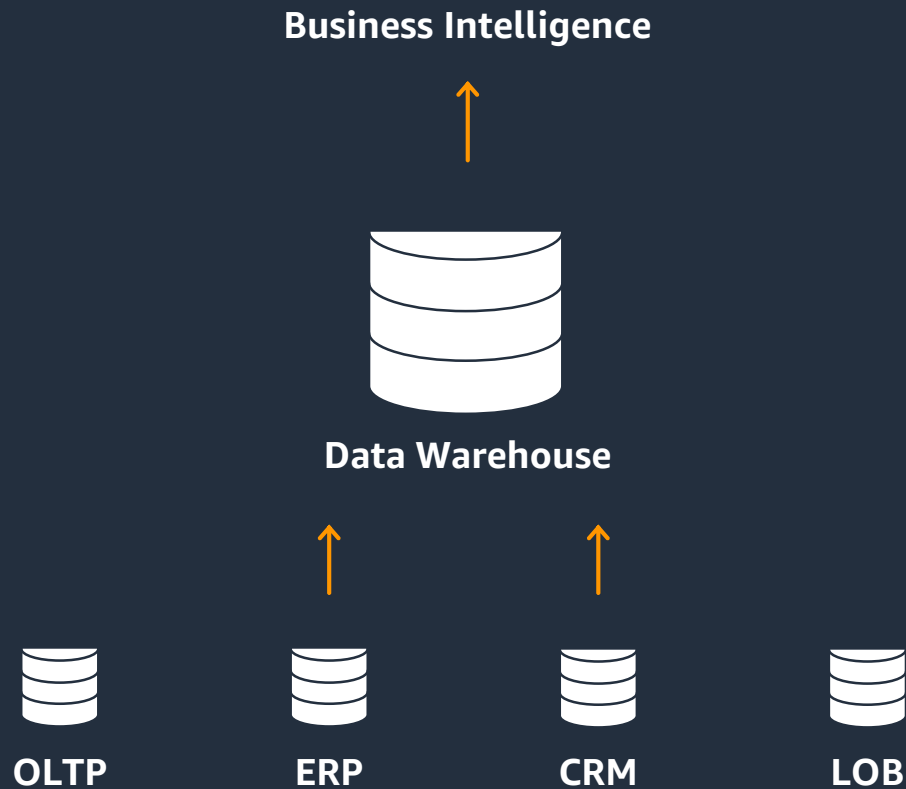


- Stores Enterprise data from all business functions.
- 360 degree visibility into business process
- Brings a new dimension of the feedback in the system
- Allows flexibility and necessary agility into the decision making process
- Allows organization to see end to end picture from marketing to sales and ultimately delivery and consumption of products and services

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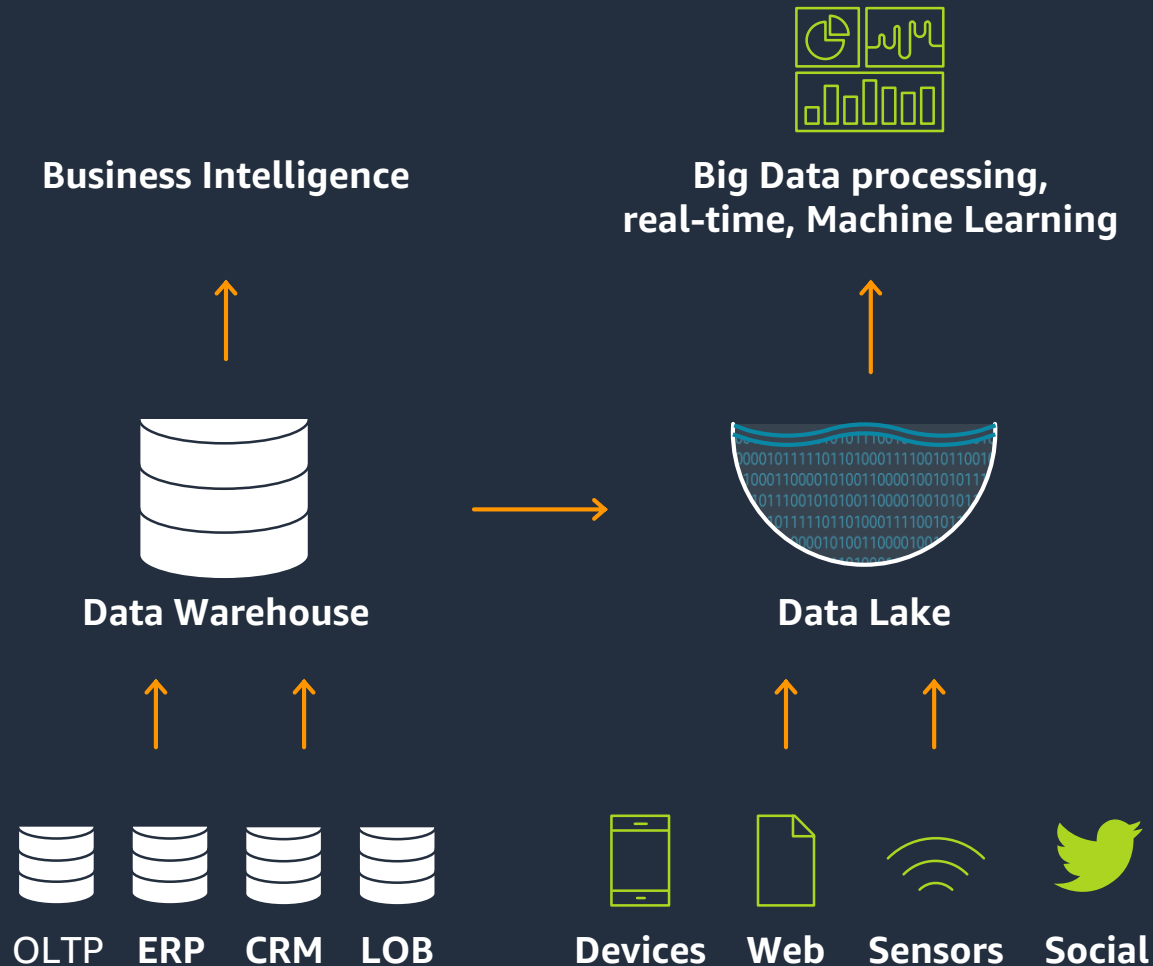
# Traditionally, Analytics Used to Look Like This



- Relational data
- TBs–PBs scale
- Schema defined prior to data load
- Operational reporting and ad hoc
- Large initial CAPEX + \$10K–\$50K/TB/Year



# Data Lakes Extend the Traditional Approach



- Relational and non-relational data
- TBs–EBs scale
- Diverse analytical engines
- Low-cost storage & analytics

# Comparison of a Data Lake to an Enterprise Data Warehouse



Enterprise DW

Complementary to EDW (not replacement)

Data lake can be source for EDW

Schema on read (no predefined schemas)

Schema on write (predefined schemas)

Structured/semi-structured/Unstructured data

Structured data only

Fast ingestion of new data/content

Time consuming to introduce new content

Data Science + Prediction/Advanced Analytics + BI use cases

BI use cases only (no prediction/advanced analytics)

Data at low level of detail/granularity

Data at summary/aggregated level of detail

Loosely defined SLAs

Tight SLAs (production schedules)

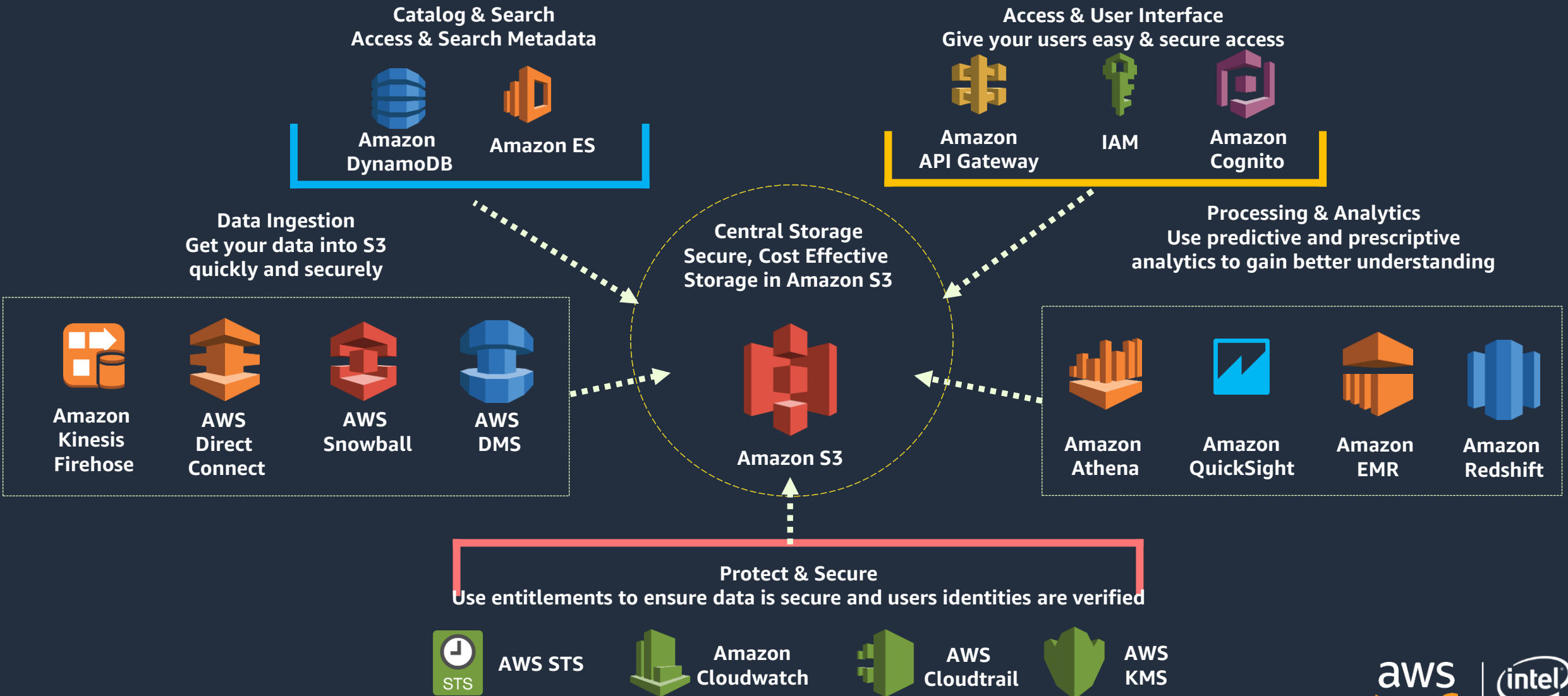
Flexibility in tools (open source/tools for advanced analytics)

Limited flexibility in tools (SQL only)

# Functional Architecture of Data Lake on S3



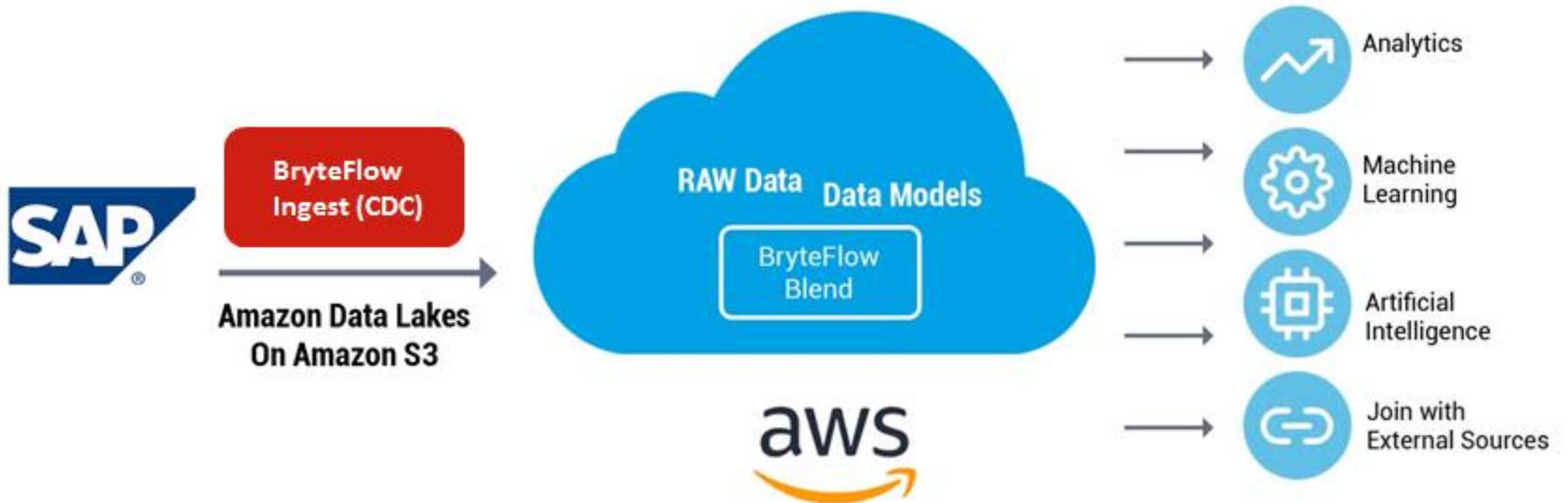
# Functional Architecture of Data Lake on S3



# Demo – Part 1

Leveraging the enterprise data from SAP to get clear picture of Marketing, Sales and ultimately Billing and Delivery of the Dummy Product

# Architecture of Structured Data extraction



# SAP Tables Used for the Demo

Tables Used – VBAP, VBAK, LIPS, VBRK, VBRP

VBAK : SAP Sales Document Header

VBAP : SAP Sales Document Item Data Table

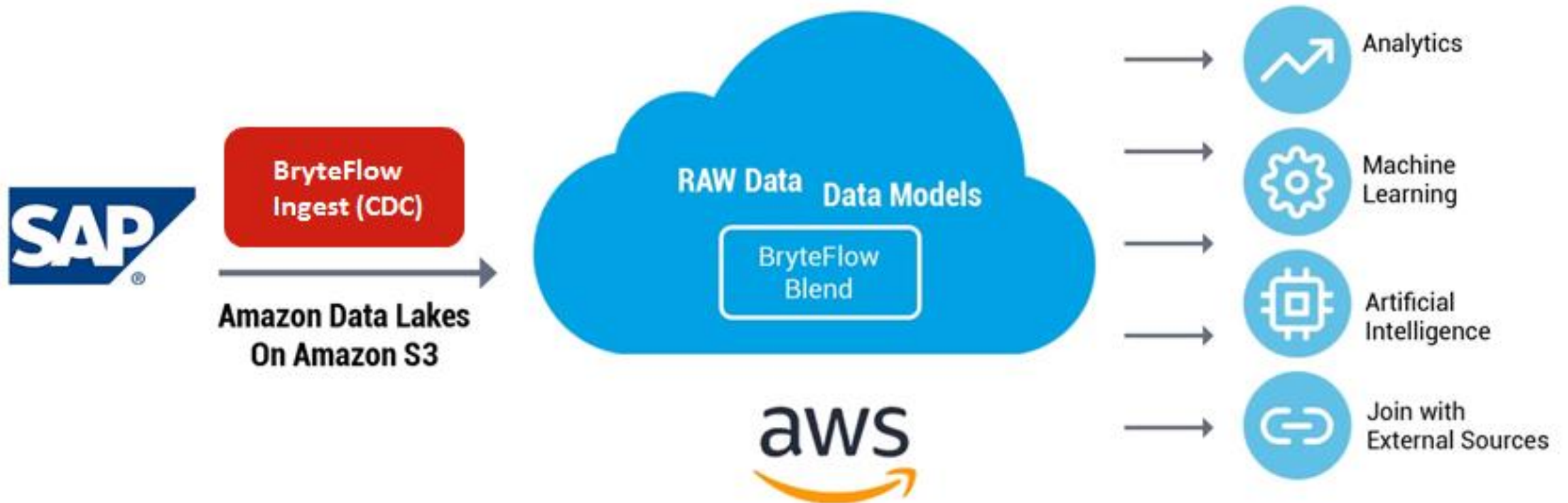
VBRK : SAP Billing Document Header

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LIPS : SAP Sales Delivery Item data

Custom View on VBAK, VBAP, VBRK, VBRP and LIPS

# Architecture of Structured Data extraction





# Demo Customer Sentiment Analysis

Using Live Tweeter feeds to do Customer Sentiment Analysis  
related to the dummy product

# Architecture – Customer Sentiment Analysis

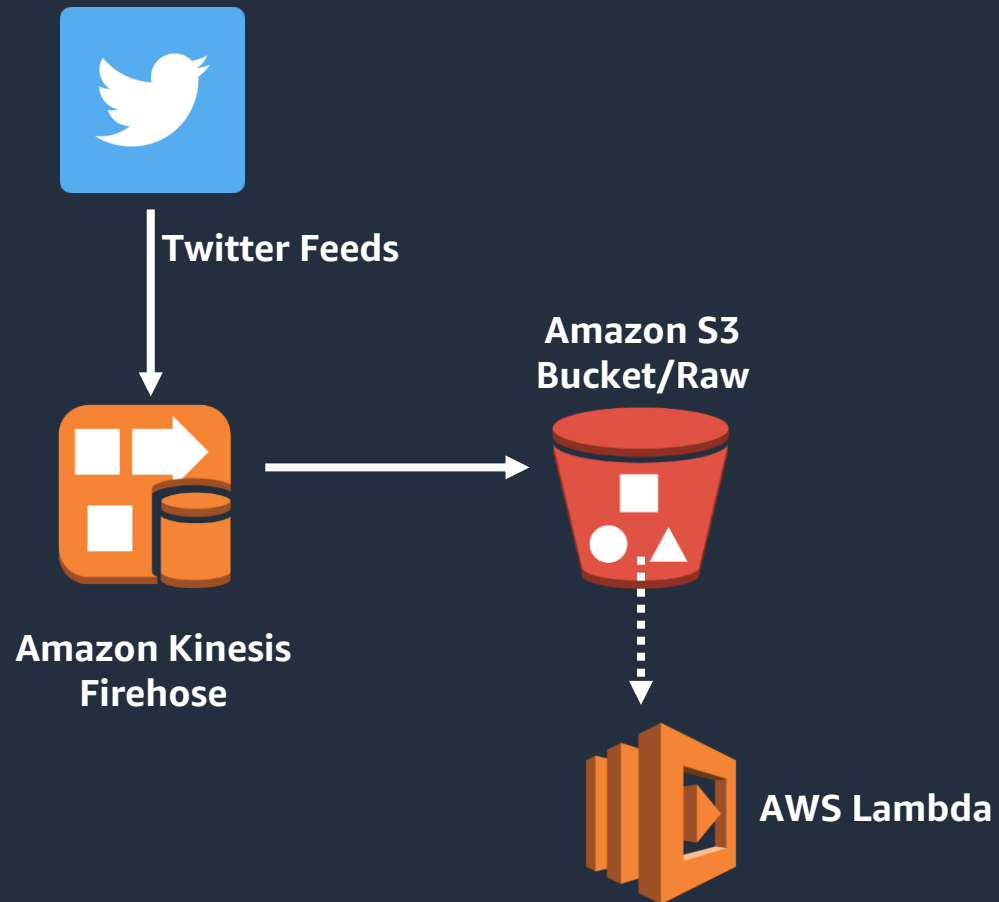


**Twitter Feeds**

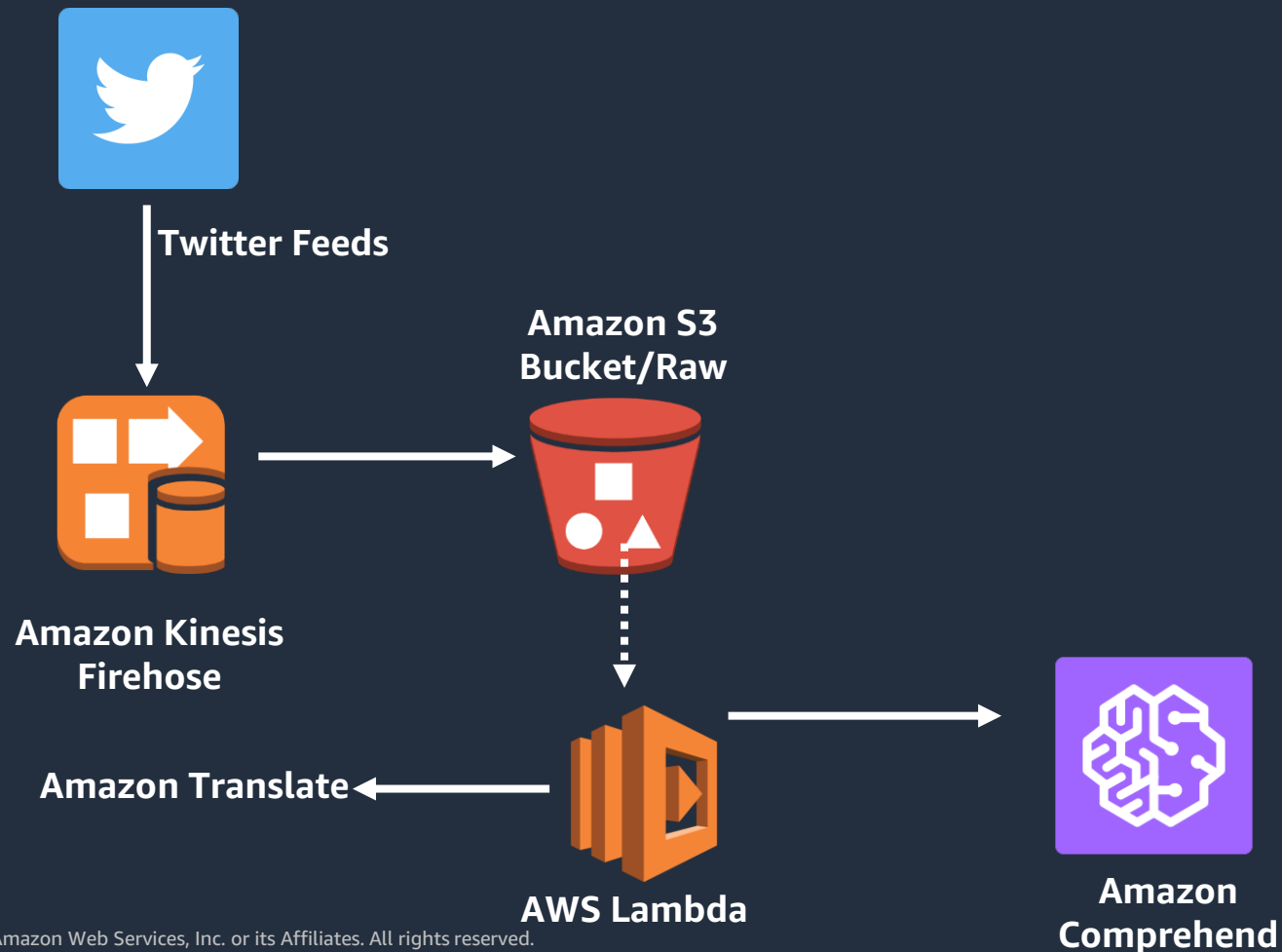
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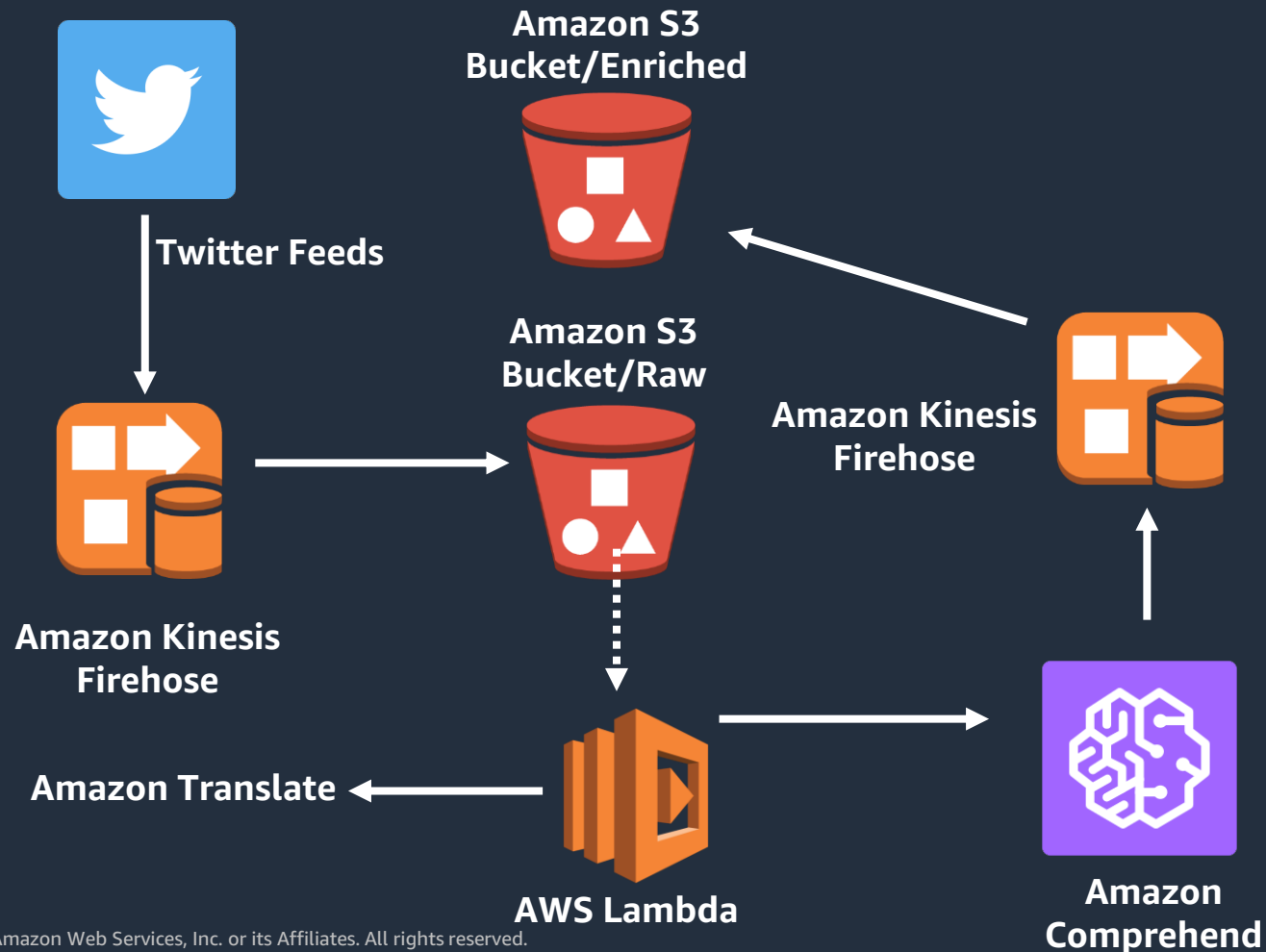
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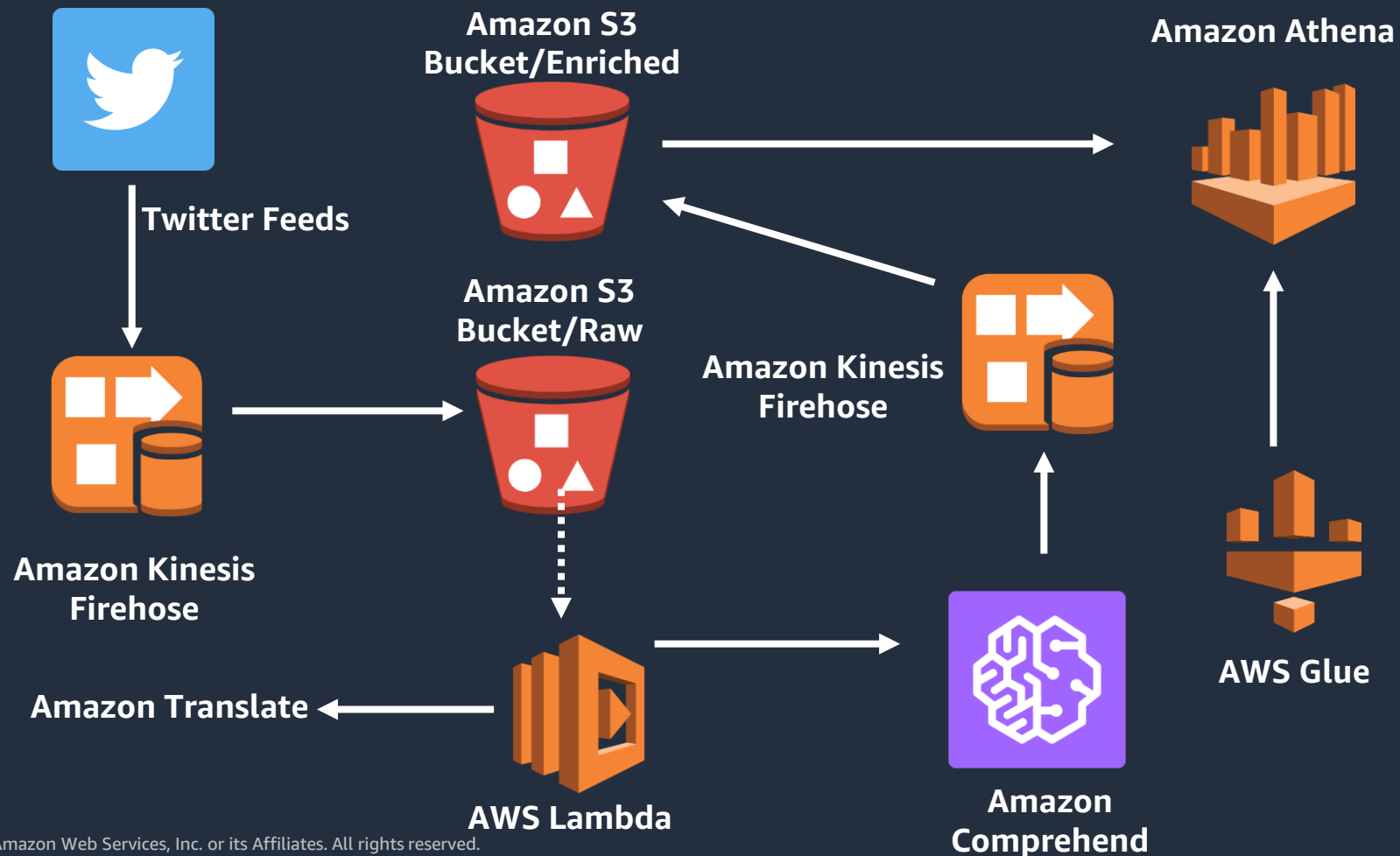
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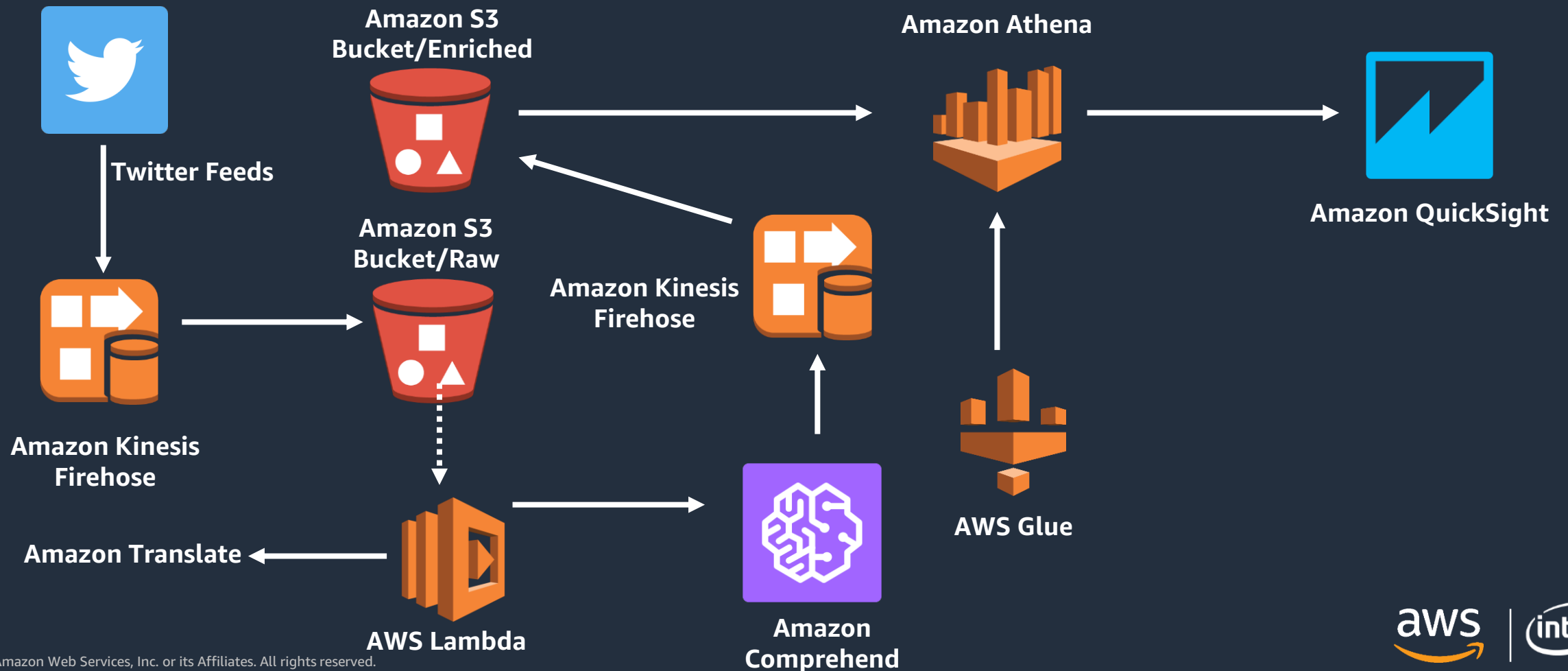
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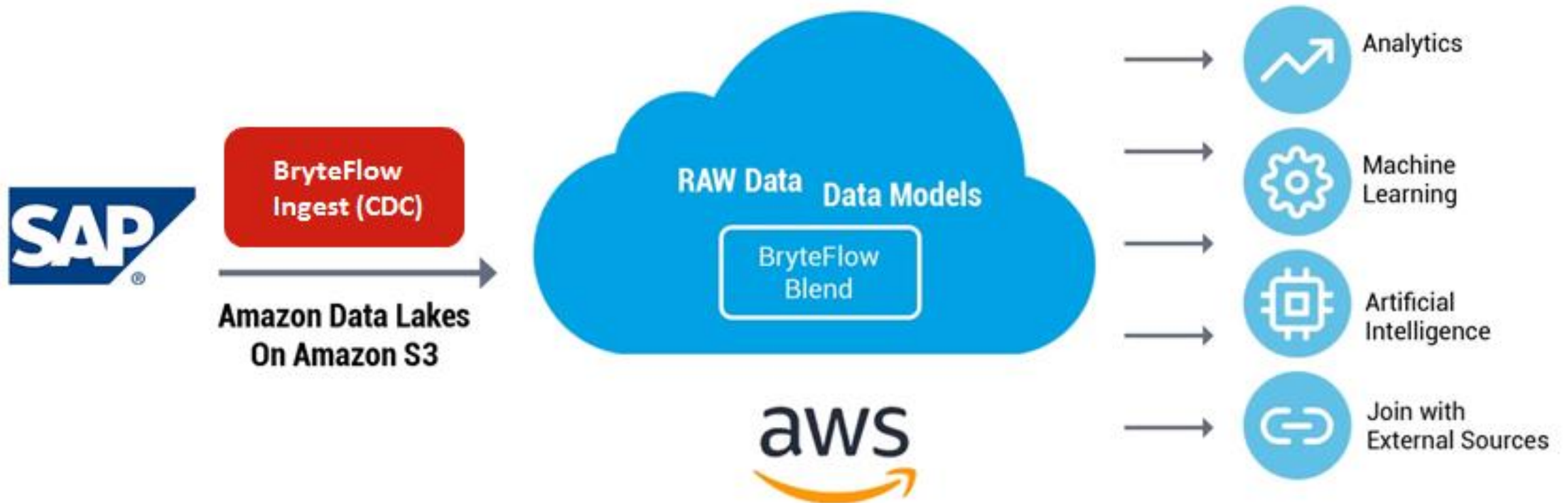
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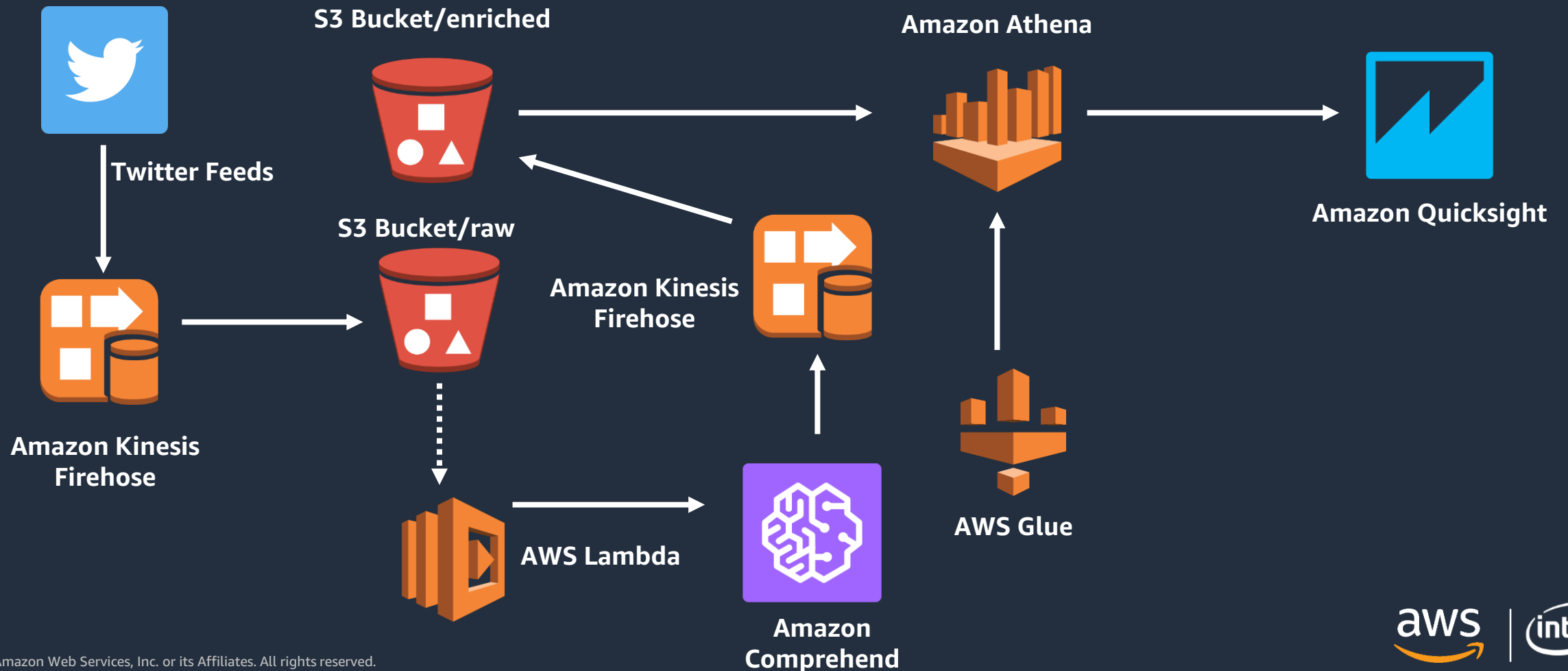
# Architecture of Structured Data extraction



# Demo Part - 2

Using Live Tweeter feeds to do Customer Sentiment Analysis  
related to the dummy product

# Architecture – Customer Sentiment Analysis



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# Demo – Customer Sentiment Analysis



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# Amazon S3 for the Data Lake



## Durable

Designed for 11 9s of durability



## Available

Designed for 99.99% availability



## High performance

- Multiple upload
- Range GET



## Easy to use

- Simple REST API
- AWS SDKs
- Read-after-create consistency
- Event notification
- Lifecycle policies



## Scalable

- Store as much as you need
- Scale storage and compute independently
- No minimum usage commitments



## Integrated

- Amazon Redshift / Spectrum
- Amazon EMR
- Amazon Athena
- Amazon DynamoDB

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