



Microsoft Data Platform Architecture

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Digital Specialist

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- Former Full-stack web developer
- Former Microsoft Learn Student Ambassador FY18-19
- Typescript / Javascript Lover ❤️
- Coffee Driven Development person



Jirachai Chansivanon (Job)
Associate Cloud Solution Architect
Microsoft Thailand

- Former Full-stack web developer
- Former Microsoft Learn Student Ambassador FY18-19
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Jirachai Chansivanon (Job)
Digital Specialist
Microsoft

Agenda

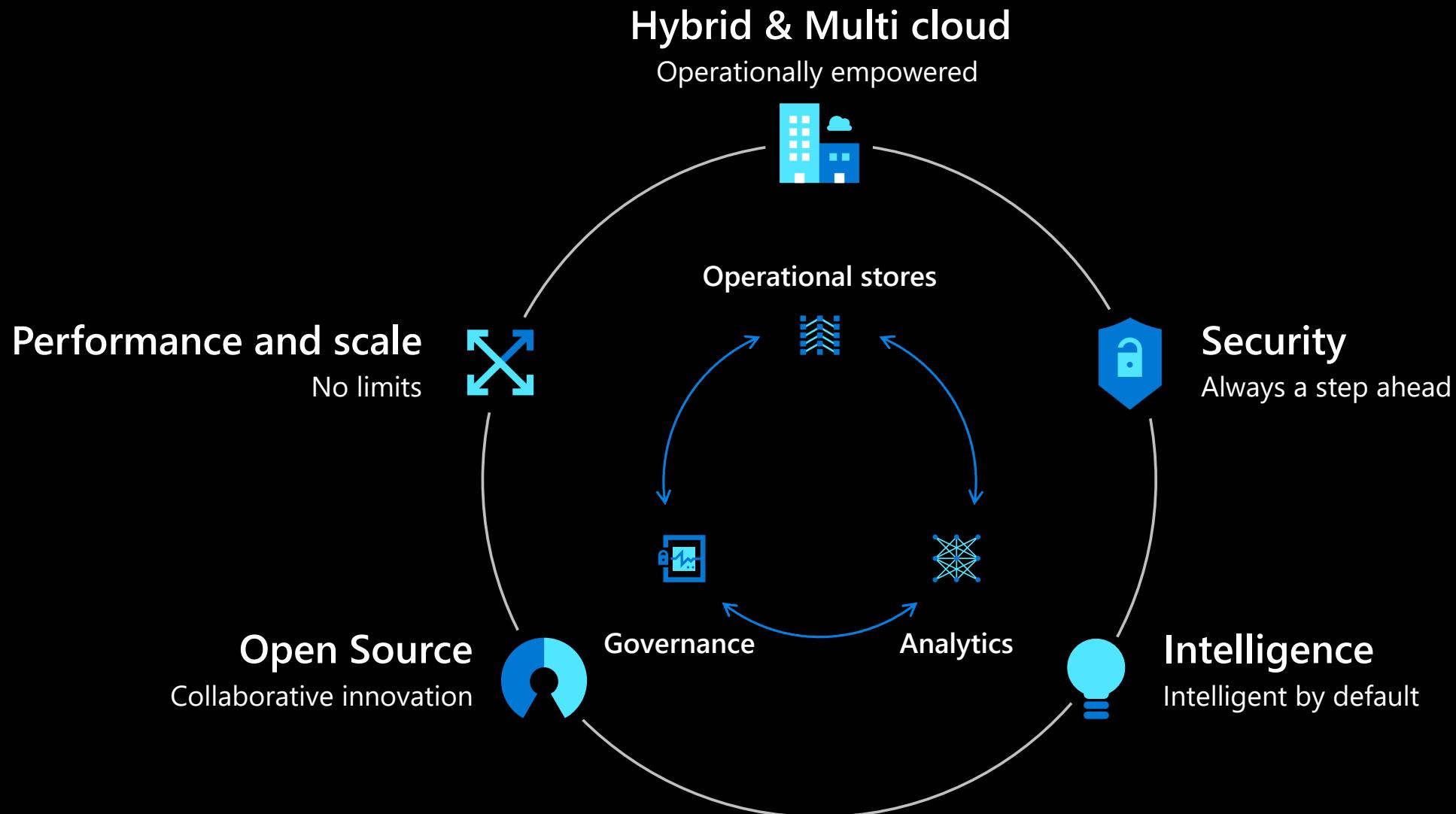
Overview
Azure Architecture Center
Governance
Sample Architectures
Real world architecture



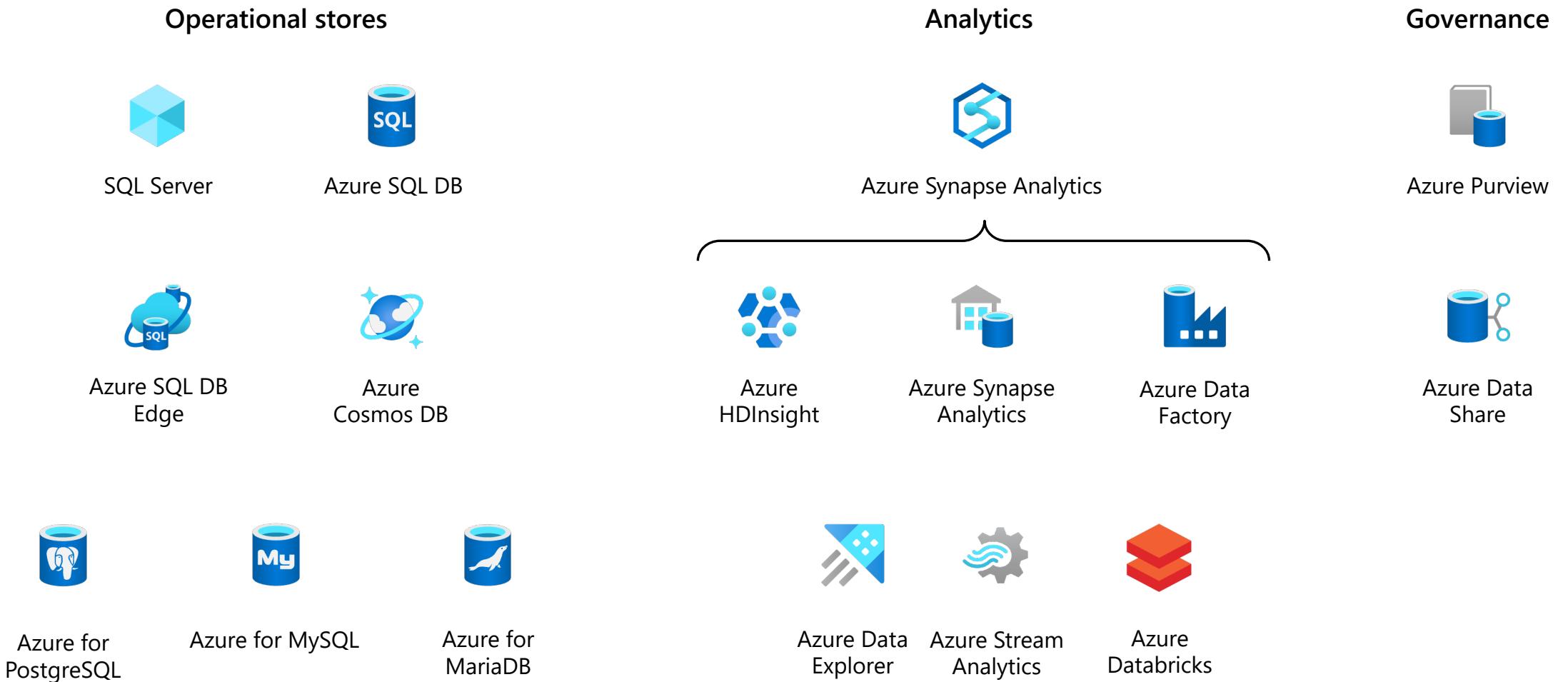
Overview



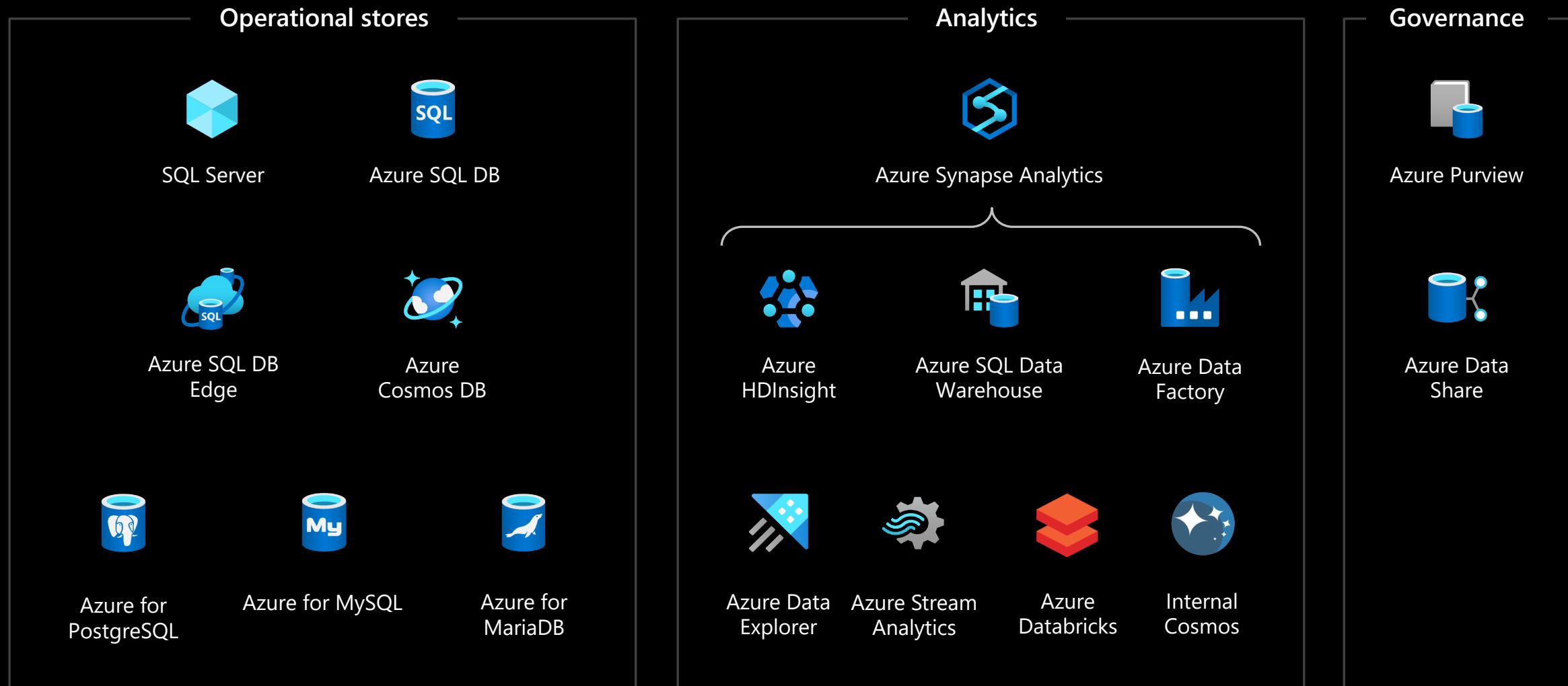
Azure Data Product Pillars



Azure Data & Analytics Products and Services

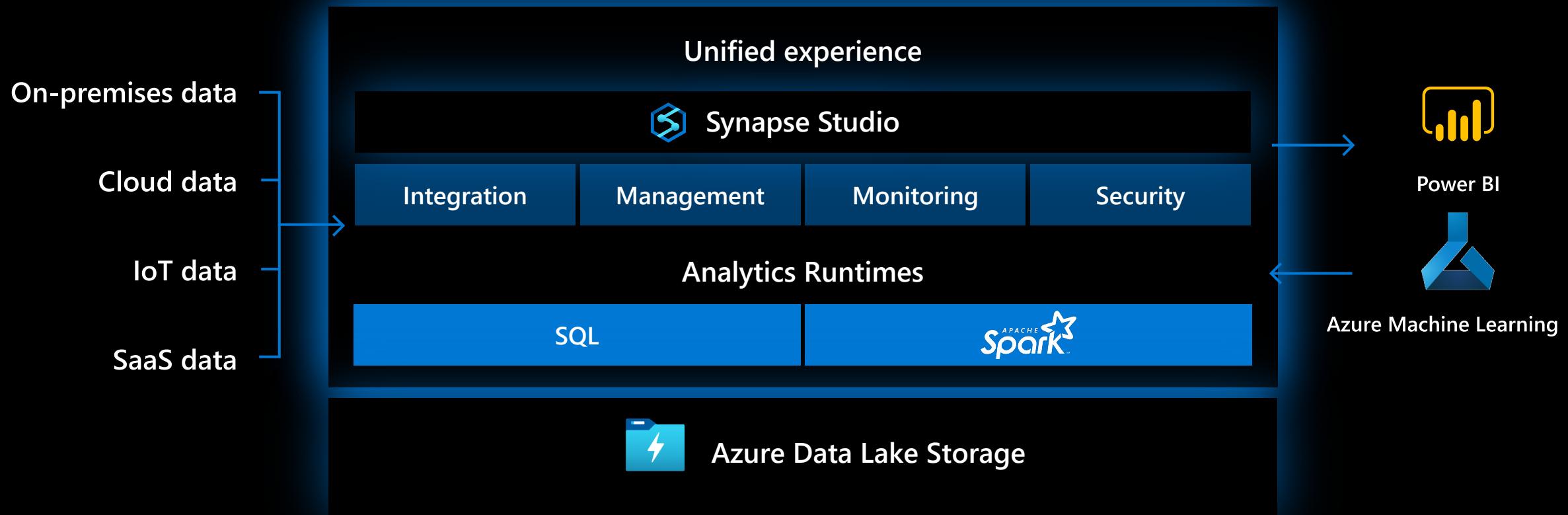


Azure Data Products and Services



Azure Synapse Analytics

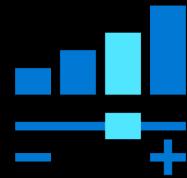
Limitless analytics service with unmatched time to insight



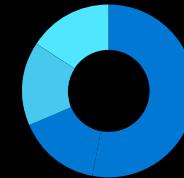
Azure Synapse Analytics

A single managed service for analytics over your lake, warehouse, or operational stores.

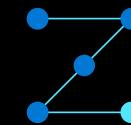
Limitless Scale



Powerful Insights



Unified Experience

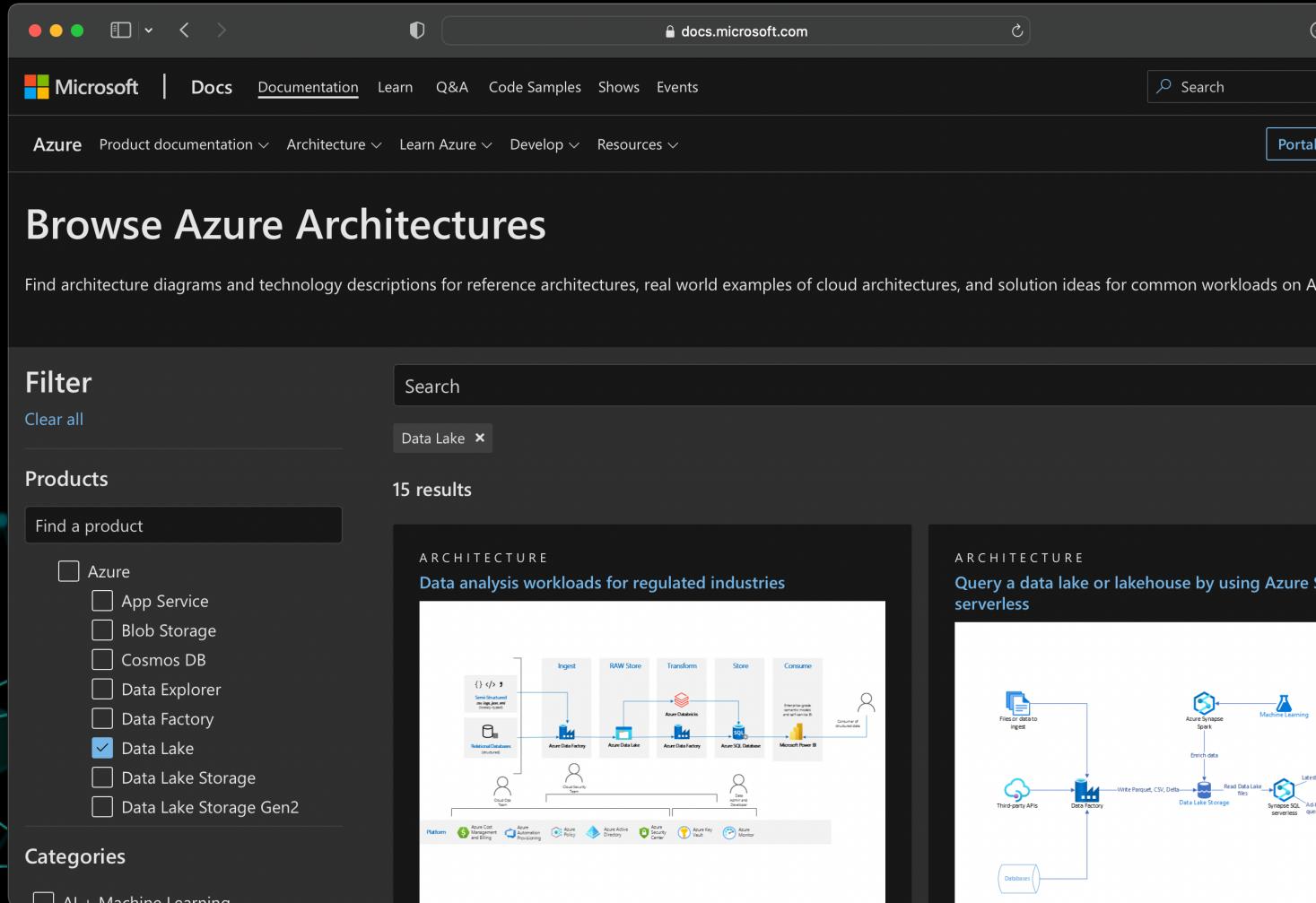


Unmatched Security



Azure Architecture Center

<https://docs.microsoft.com/en-us/azure/architecture/>
<https://aka.ms/azure-architecture-center>



The screenshot shows the Microsoft Docs website for the Azure Architecture Center. The URL is <https://docs.microsoft.com/en-us/azure/architecture/>. The page title is "Browse Azure Architectures". A search bar at the top right contains the text "Data Lake". Below the search bar, there is a "Filter" section with a "Products" dropdown containing options like App Service, Blob Storage, Cosmos DB, Data Explorer, Data Factory, Data Lake, Data Lake Storage, and Data Lake Storage Gen2. The "Data Lake" option is checked. There is also a "Categories" dropdown for "AI + Machine Learning". To the right of the filter, there is a "Search" input field and a "15 results" link. Two architecture diagrams are displayed: "Data analysis workloads for regulated industries" and "Query a data lake or lakehouse by using Azure serverless". Both diagrams show various Azure services connected in a workflow.

Microsoft | Docs Documentation Learn Q&A Code Samples Shows Events

Azure Product documentation ▾ Architecture ▾ Learn Azure ▾ Develop ▾ Resources ▾

Search

Filter

Clear all

Products

Find a product

Azure

App Service

Blob Storage

Cosmos DB

Data Explorer

Data Factory

Data Lake

Data Lake Storage

Data Lake Storage Gen2

Categories

AI + Machine Learning

Search

Data Lake

15 results

ARCHITECTURE

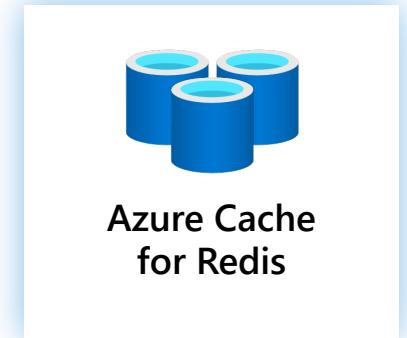
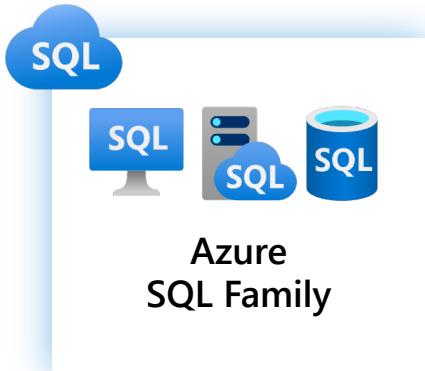
Data analysis workloads for regulated industries

ARCHITECTURE

Query a data lake or lakehouse by using Azure serverless

Azure database services offer the best of the cloud

Managed cloud databases



Fully managed 🔒

Focus on your applications, not your infrastructure with **fully managed and intelligent database services**

Limitless scale 📈

Build for future growth with **near-limitless, dynamic scaling** plus guaranteed high availability around the world.

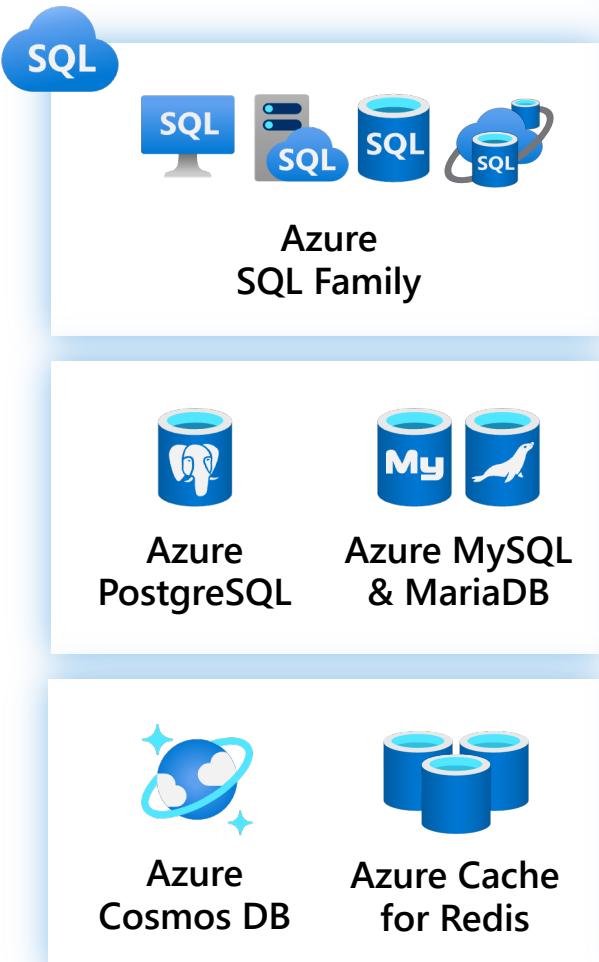
Open and flexible ✎

Choose the engine, deployment, resources languages and offers that fit your needs.

Intelligent security 🔒

Develop secure apps in the cloud with **policy-based security and compliance** from the world's most trusted cloud.

Choose the Azure database service right for any scenario



Migrate

Best **TCO and price for performance** while maximizing current licenses with Azure Hybrid Benefits

Achieve **scale and performance** for MySQL, PostgreSQL and Ocle with optimized TCO

Cloud scale and full database management to MongoDB, Cassandra, and Redis cache data

Modernize

Modernize .Net Applications with **fully managed SQL database** with includes serverless compute, AI-powered features

Highly available, secure, fully managed MySQL and PostgreSQL databases for enterprise-ready Java apps

Elasticity and agility to business-critical applications powered by non-relational data

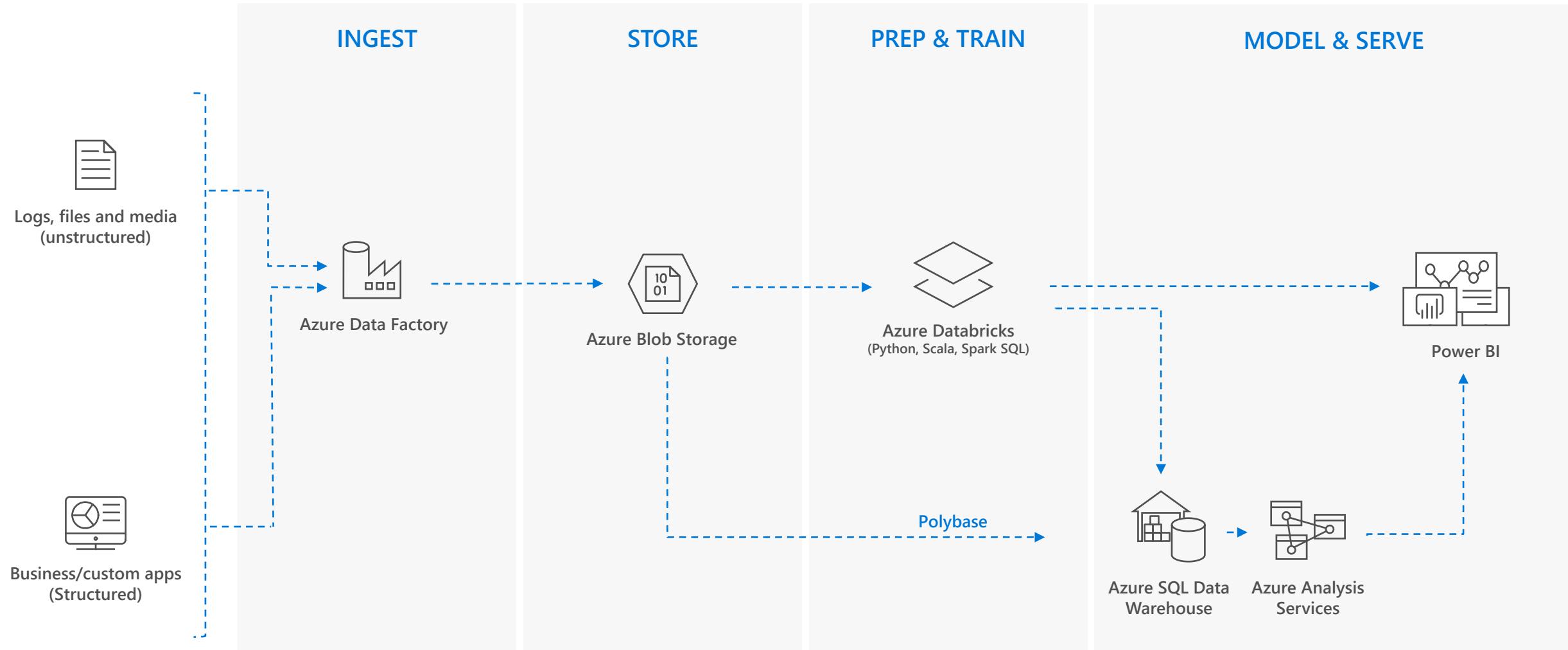
Build new

Bring **limitless scale and performance** to modern applications and support multi-tenant SaaS applications

Build **cloud native transactional apps** with AKS and PostgreSQL and enable massive scale with Hyperscale (Citus)

Enable **real-time personalization and streaming telemetry** at scale with cloud-native applications

Modern Data Warehouse

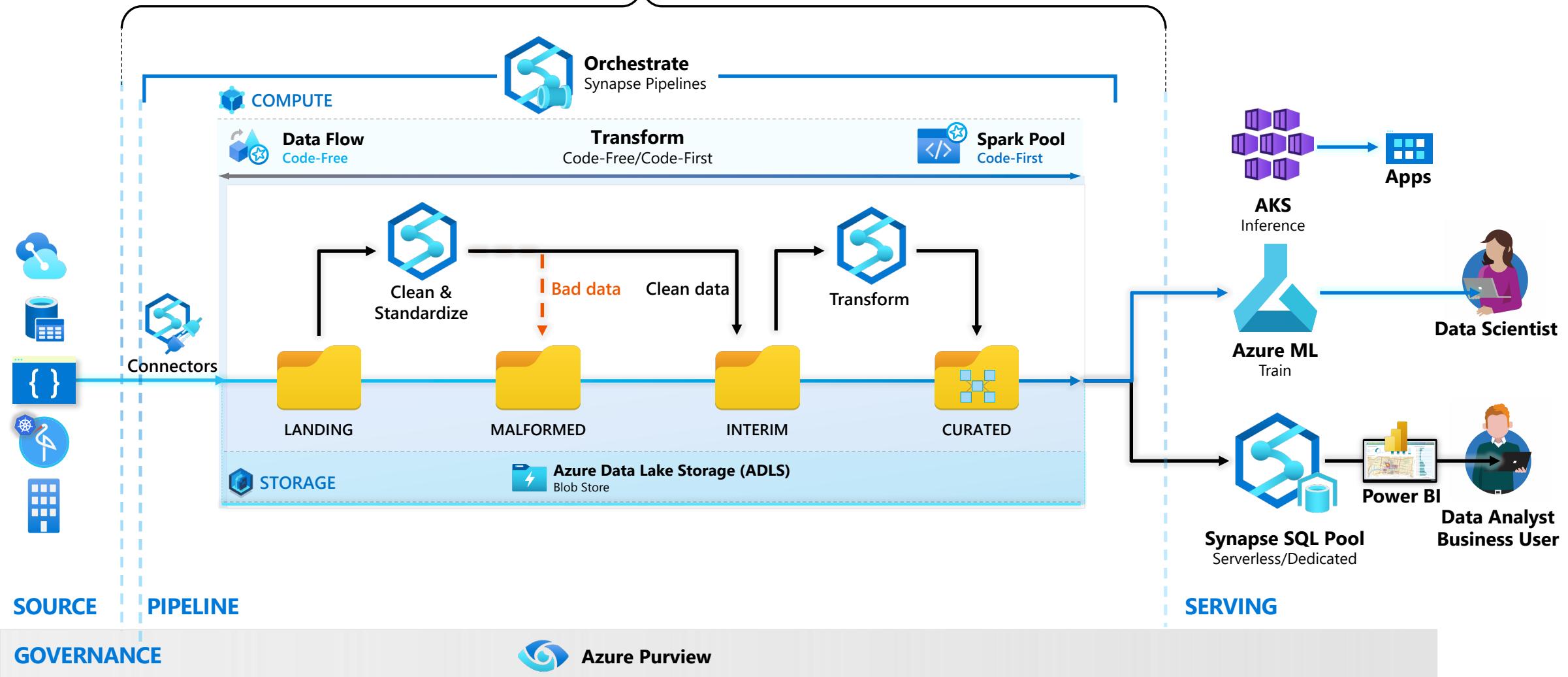


Azure also supports other Big Data services like Azure HDInsight and Azure Data Lake to allow customers to tailor the above architecture to meet their unique needs.

Synapse Reference Architecture



Data Engineer / BI Developer / Analyst



Governance



Data governance is interdisciplinary

Data Management
Data Engineering
Data Stewardship

Chief Data Officer

Data Discovery

What data do I have?
Where did the data originate?
Can I trust it?

Data Governance

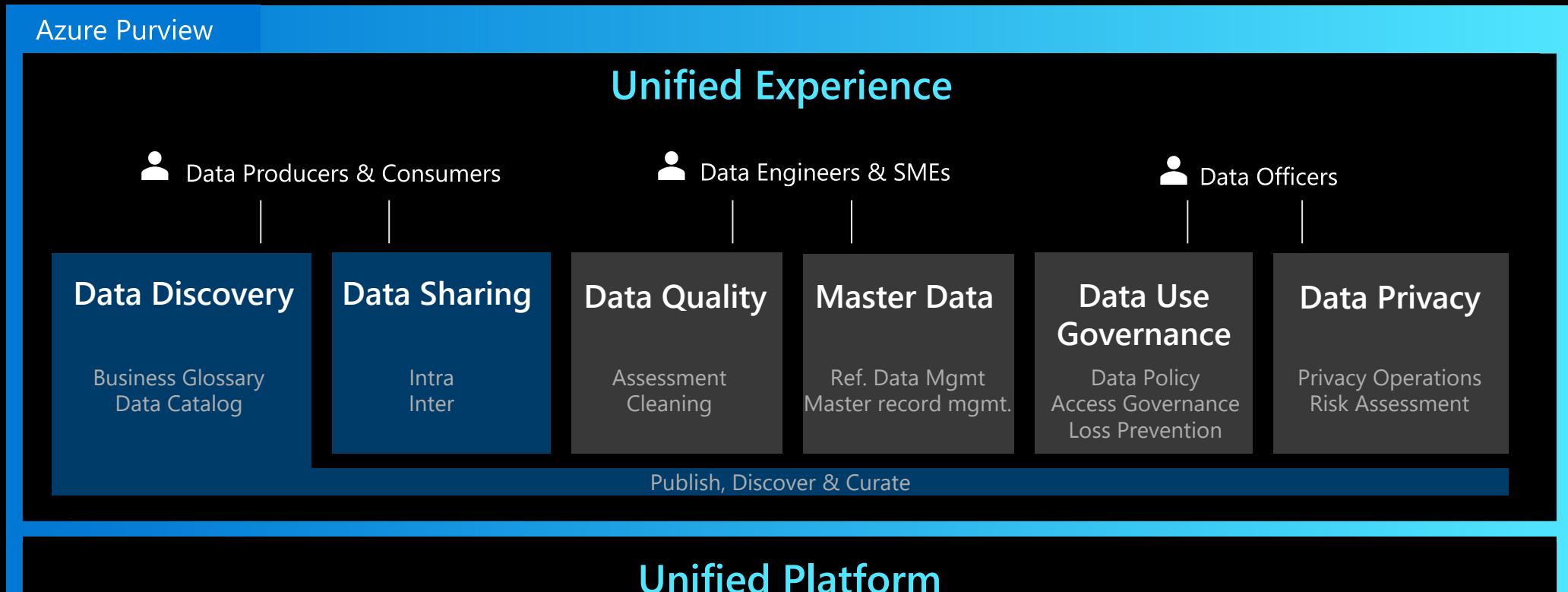
What's my exposure to risk?
Is my usage compliant?
How do I control access to my data?

Data Compliance
Data Security
Data Policy

Data Governance

A unified approach to data governance

Roadmap



On Prem & Multi-Cloud

Operational, Analytical, SaaS

Synapse
Power BI
AML
Sentinel
M365
and more ...

Enterprise-grade security



Synapse: Complete data protection

Best-in-class Security

Customer & System Managed Keys

All data encrypted by default

Up to 3x levels of data encryption at rest

Democratize data at scale with fine-grained ACL

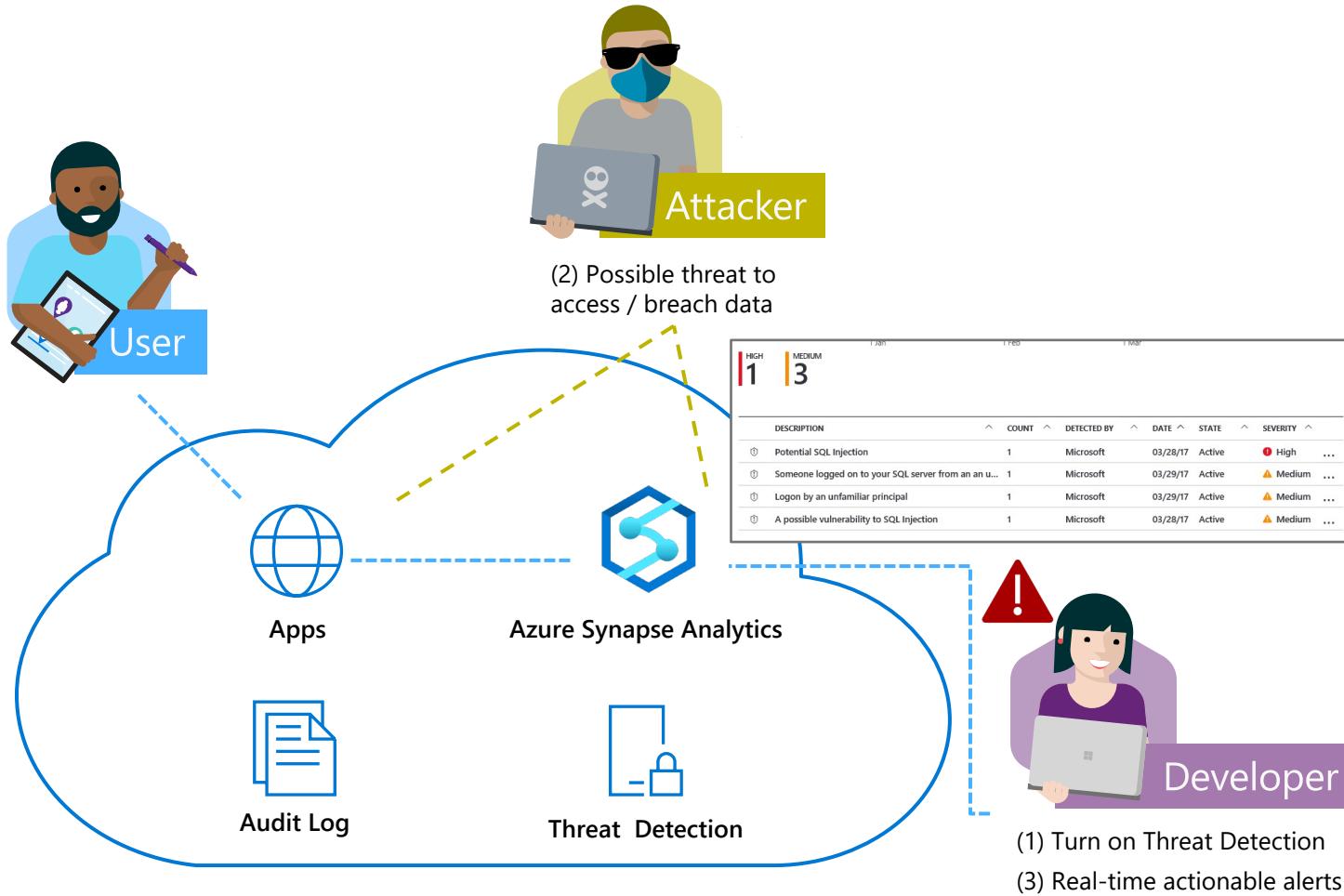
Proactive protection

Comprehensive Compliance

Category	Feature	
Data Protection	Data in transit	✓
	Data encryption at rest	✓
	Data discovery and classification	✓
Access Control	Object level security (tables/views)	✓
	Row level security	✓
	Column level security	✓
Authentication	Dynamic data masking	✓
	Column level encryption	✓
	SQL login	✓
Network Security	Azure active directory	✓
	Multi-factor authentication	✓
	Managed virtual network	✓
Threat protection	Custom virtual network	✓
	Firewall	✓
	Azure ExpressRoute	✓
Isolation	Azure Private Link	✓
	Threat detection	✓
	Auditing	✓
Isolation	Vulnerability assessment	✓
	Dedicated metadata store	✓
	Hosted in customer tenant	✓

SQL threat detection

Detect and investigate anomalous database activity



- ✓ Detects potential SQL injection attacks
- ✓ Detects unusual access & data exfiltration activities
- ✓ Actionable alerts to investigate & remediate
- ✓ View alerts for your entire Azure tenant using Azure Security Center

SQL Data Discovery & Classification

Discover, classify, protect and track access to sensitive data

The screenshot displays two windows from the Azure portal:

- Top Window (Overview):** Shows key metrics: Classified columns (10 / 109), Tables containing sensitive data (4 / 12), Unique information types (4). It includes donut charts for Label distribution (10 columns) and Information type distribution (CONTACT INFO: NAME, CREDENTIALS, FINANCIAL).
- Bottom Window (Settings - Information protection):** Shows a list of sensitivity labels with their descriptions. Labels include Public, General, Confidential, Confidential - GDPR, Highly confidential, and Highly confidential - GDPR.

- ✓ Automatic **discovery** of columns with sensitive data
- ✓ Add **persistent sensitive data labels**
- ✓ Audit and detect access to the sensitive data
- ✓ Manage labels for your entire Azure tenant using Azure Security Center

SQL Data Discovery & Classification - setup

Step 1: Enable Advanced Data Security on the logical SQL Server

ayotestdw (ayotestserver/ayotestdw) - Advanced Data Security

Search (Ctrl+F)

Settings Feedback

Turn on Advanced Data Security for all databases on this server, at the cost of 15 USD/server/month. This includes Threat Protection for the server. We invite you to a trial period for the first 30 days, without charge.

Enable Advanced Data Security on the server

Overview

Activity log

Tags

Diagnose and solve problems

Maintenance schedule

Quick start

Geo-backup policy

Connection strings

Properties

Locks

Export template

Advanced Data Security

Auditing

Firewalls and virtual networks

Transparent data encryption

Common Tasks

Load Data

Query editor (preview)

Build dashboards + reports

Model and cache data

Step 2: Use recommendations and/or manual classification to classify all the sensitive columns in your tables

Data Discovery & Classification (preview)

Save Discard **+ Add classification** Feedback

Overview Classification

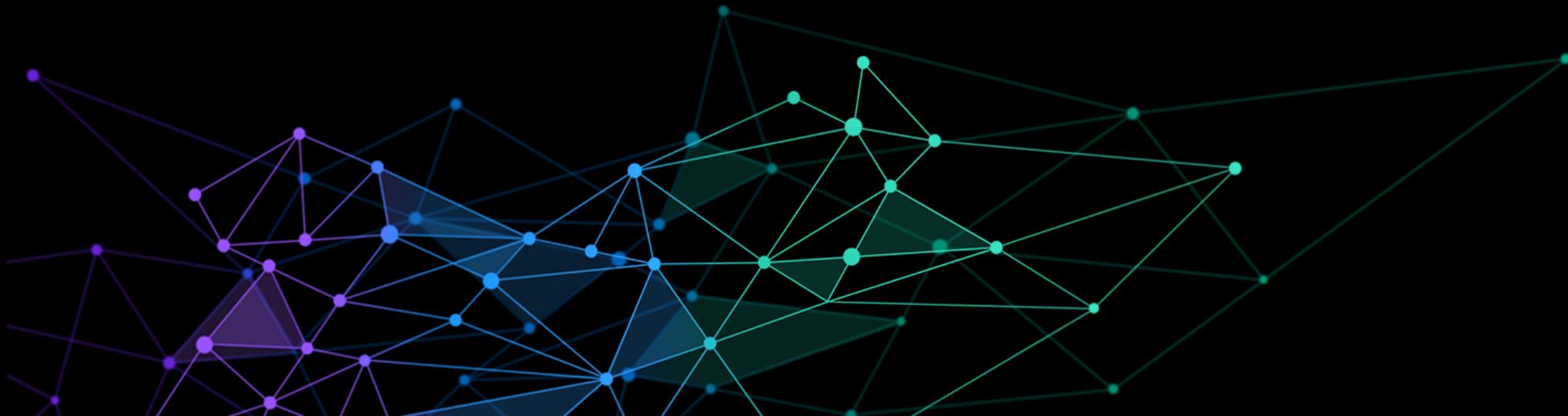
4 columns with classification recommendations (Click to minimize)

Accept selected recommendations

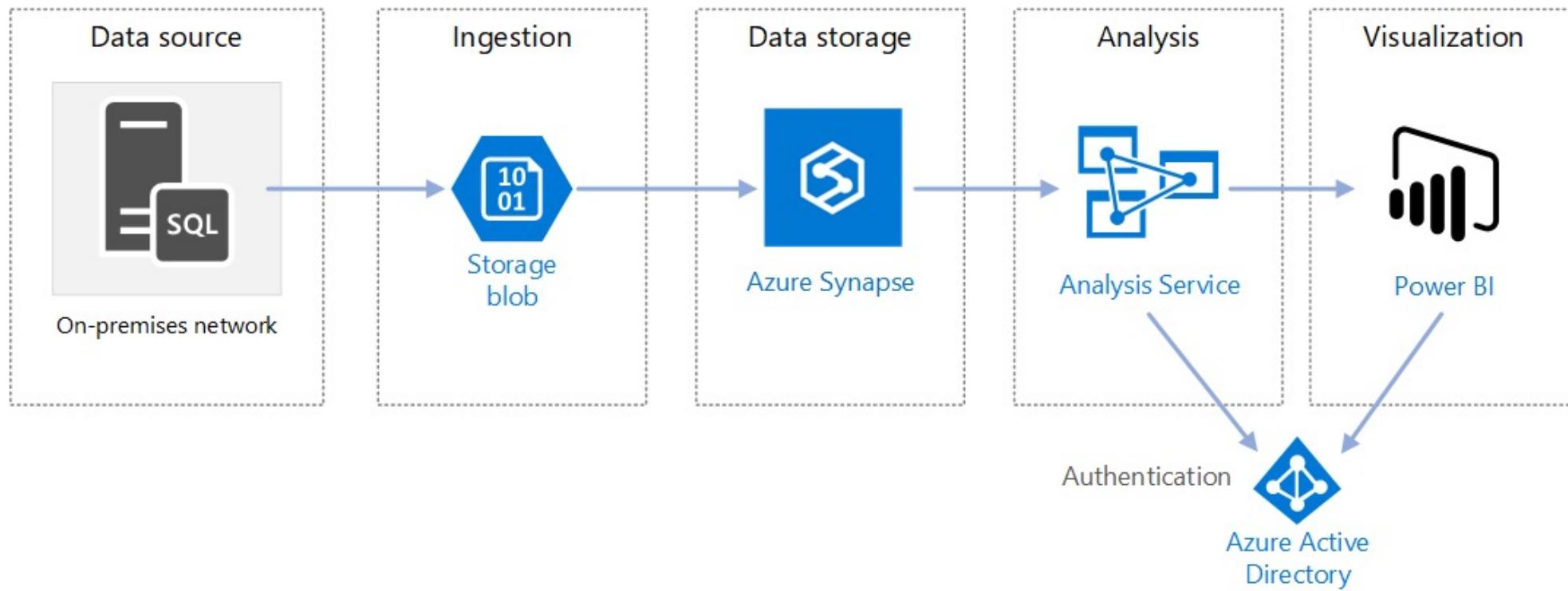
Select all Schema: 1 selected Table: 4 selected Filter by column

SCHEMA	TABLE	COLUMN	INFORMATION TYPE	SENSITIVITY LABEL
externalstaging	dimUSFIPSCodes	StatePostalCode	Contact Info	Confidential
externalstaging	dimWeatherObservationSites	StatePostalCode	Contact Info	Confidential
externalstaging	factDroughtMeasurements	StatePostalCode	Contact Info	Confidential
externalstaging	factWaterUsageMeasurements	StatePostalCode	Contact Info	Confidential

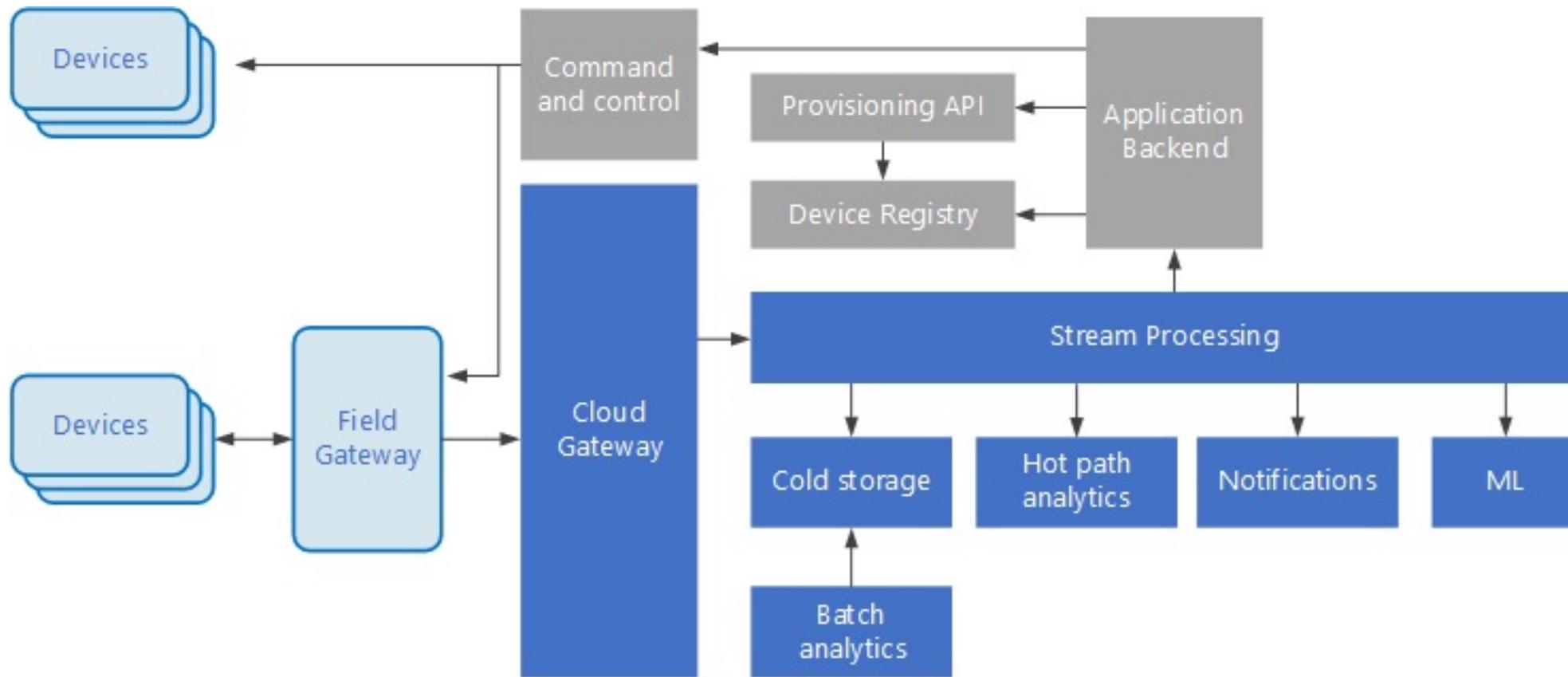
Sample Architectures



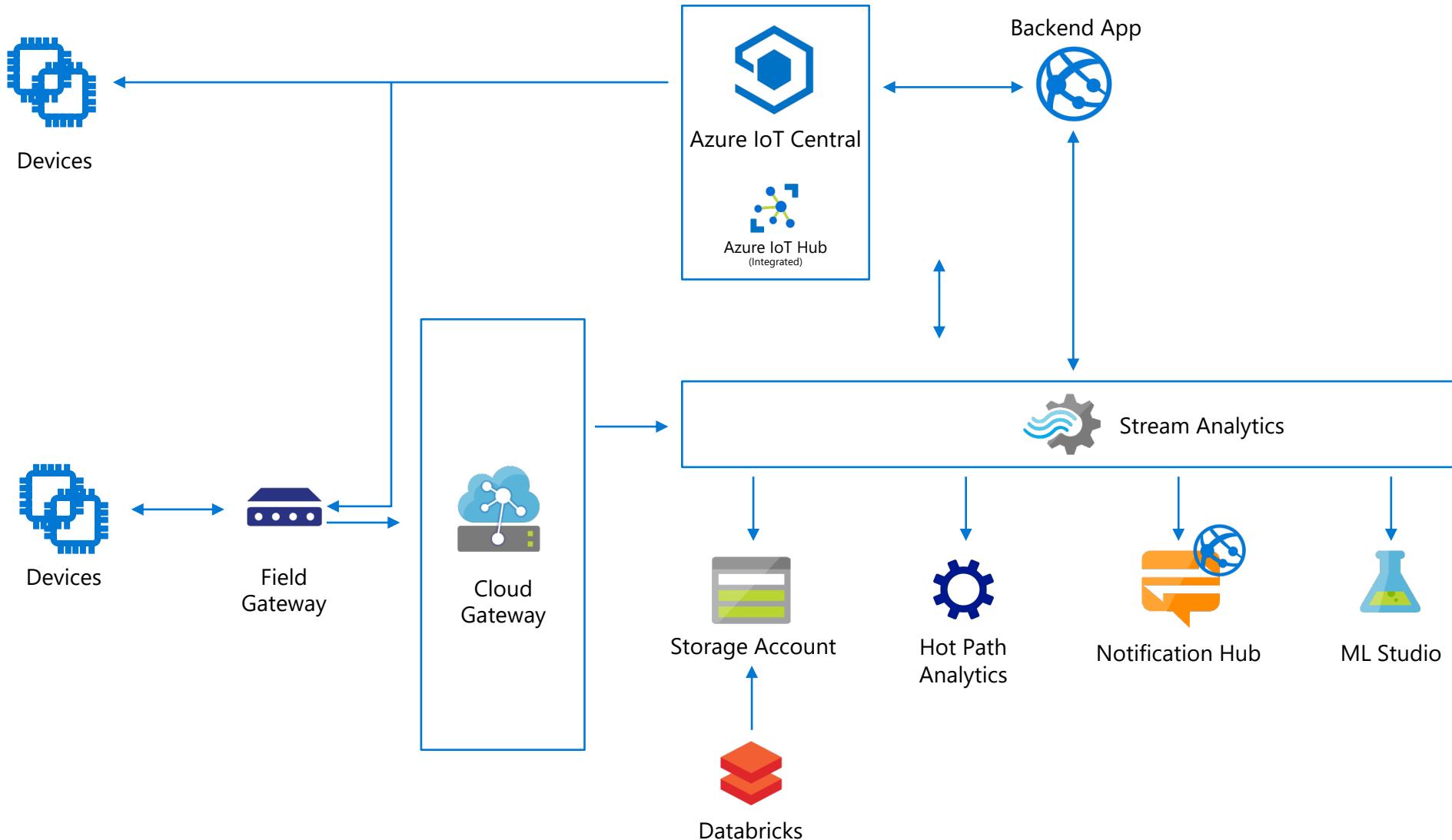
Enterprise BI



Big Data platform (IoT)



Big Data platform (IoT)



Real world Architecture

