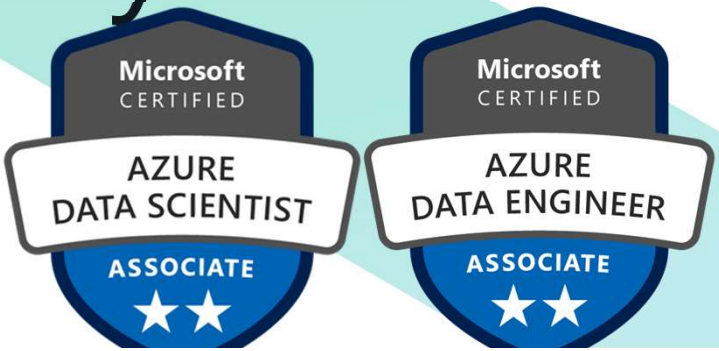
Oscar Zamora
@ZamoraO
linkedin.com/in/ozamora
ozamora.com

BI against Azure Synapse Analytics or Azure Analysis Services

Choosing the right architecture.

PASS SQLSATURDAY



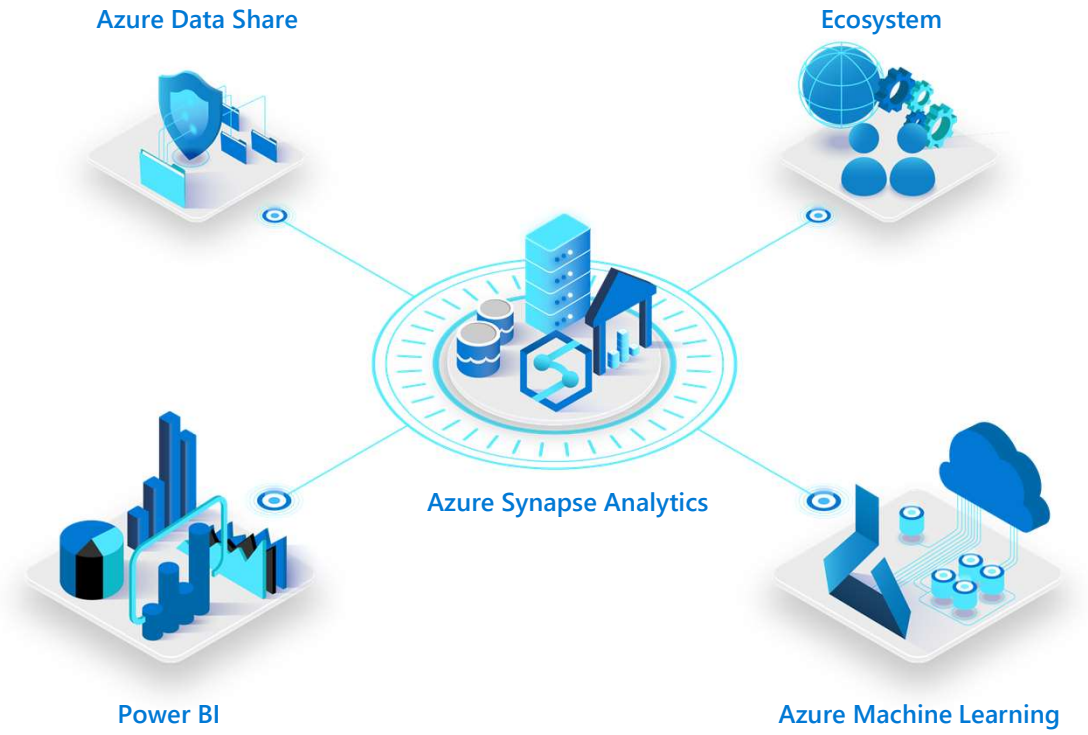
Agenda

Agenda

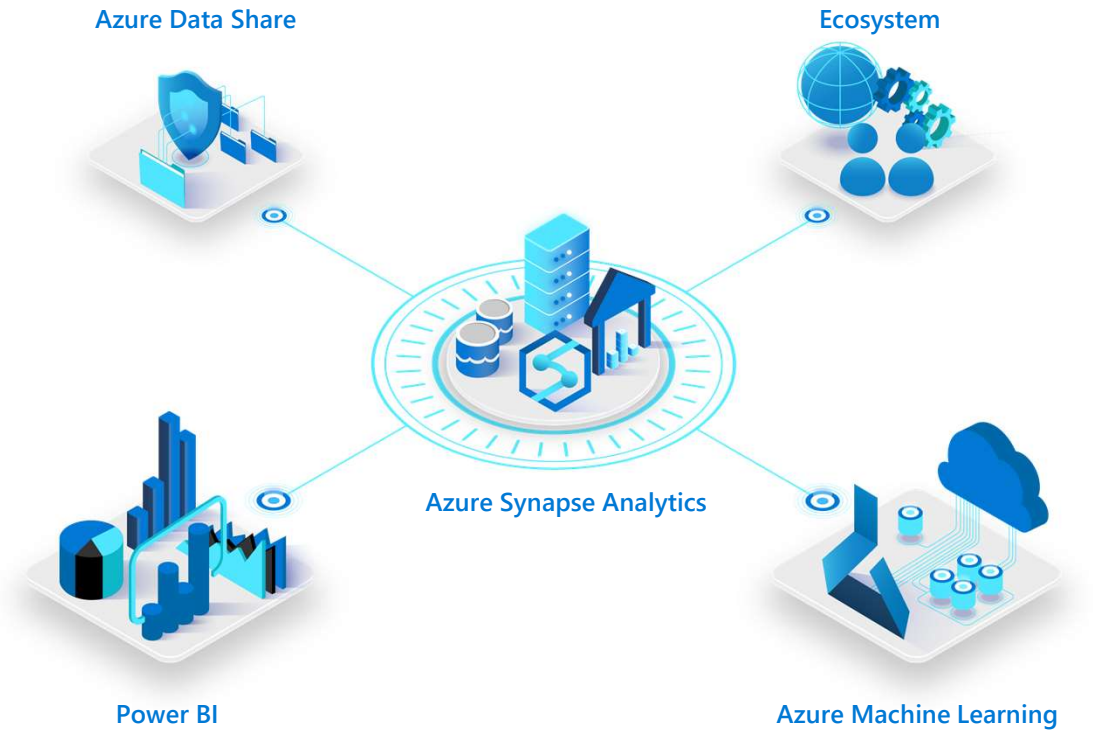
- Azure Synapse Analytics Fundamentals
- Azure Analysis Services Fundamentals
- Modern Data Warehouse Architecture
- When to choose Synapse Analytics
- When to choose Azure Analysis Services
- Let’s Speculate on the future
- Q & A Session

Azure Synapse Analytics Fundamentals

Azure Synapse Analytics Fundamentals



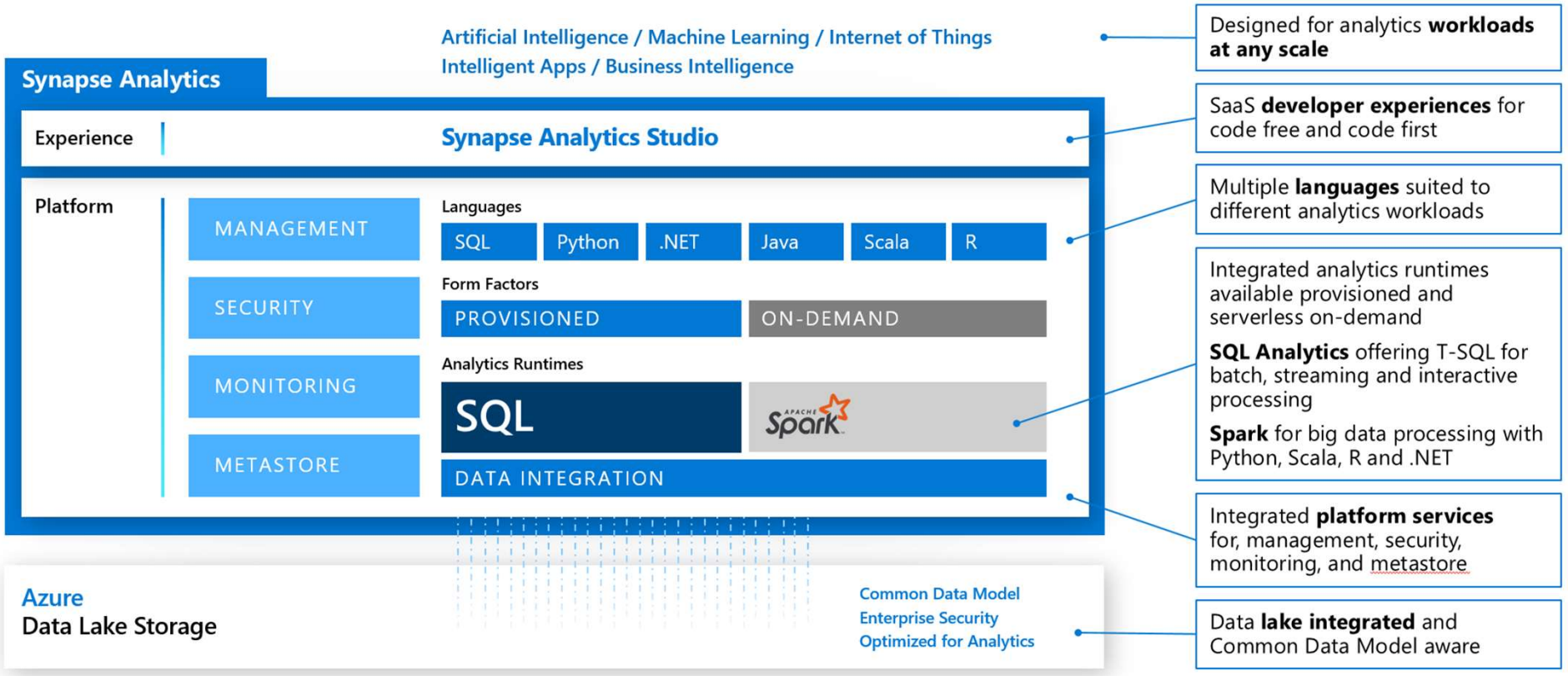
Azure Synapse Analytics Fundamentals



- SQL pool (pay per DWU provisioned) – (GA)
- SQL on-demand (pay per TB processed) – (Preview)
- Spark: Deeply integrated Apache Spark (Preview)
- Data Integration: Hybrid data integration (Preview)
- Studio: unified user experience. (Preview)

Azure Synapse Analytics Fundamentals

Limitless analytics service with unmatched time to insight



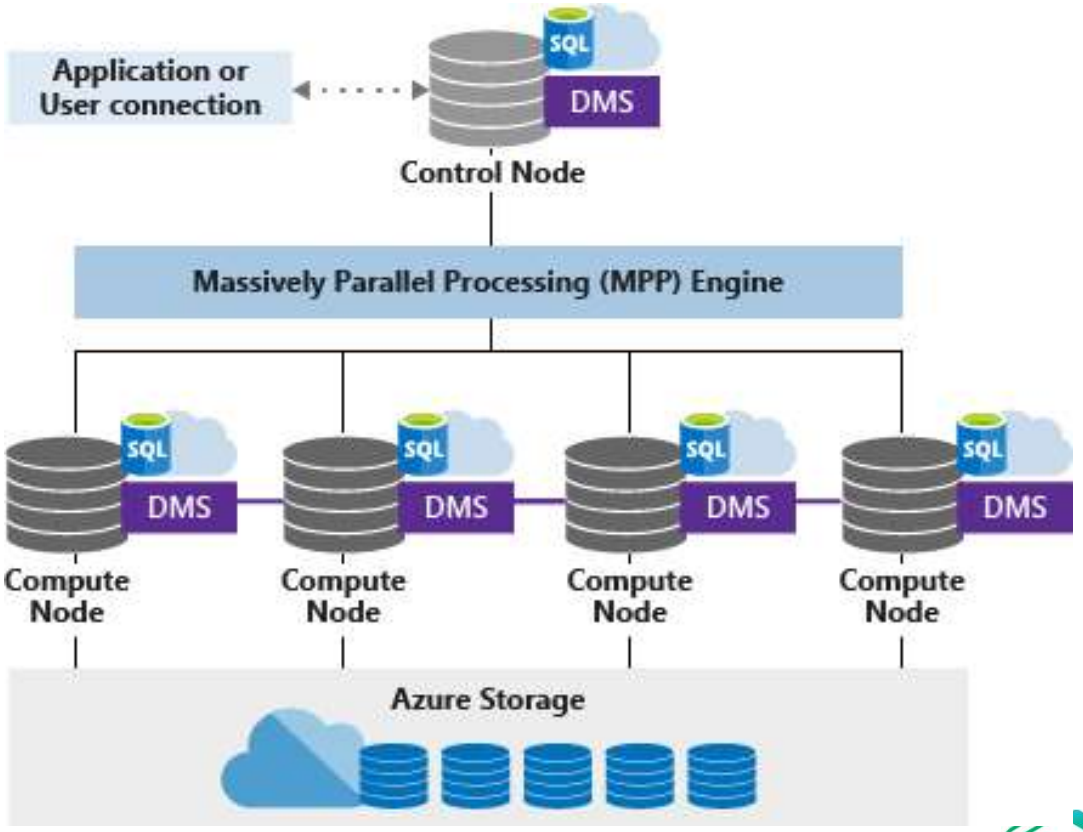
Azure Synapse SQL Pool

Azure Synapse SQL Pool

- A cloud iteration of APS (formerly PDW)
- A cloud-based Enterprise Data Warehouse (EDW) that uses Massively Parallel Processing (MPP)
- Allows running complex SQL across terabytes of data leveraging multiple nodes
- Accepts fast ingestion of data using Polybase
- With scalable compute and limitless storage

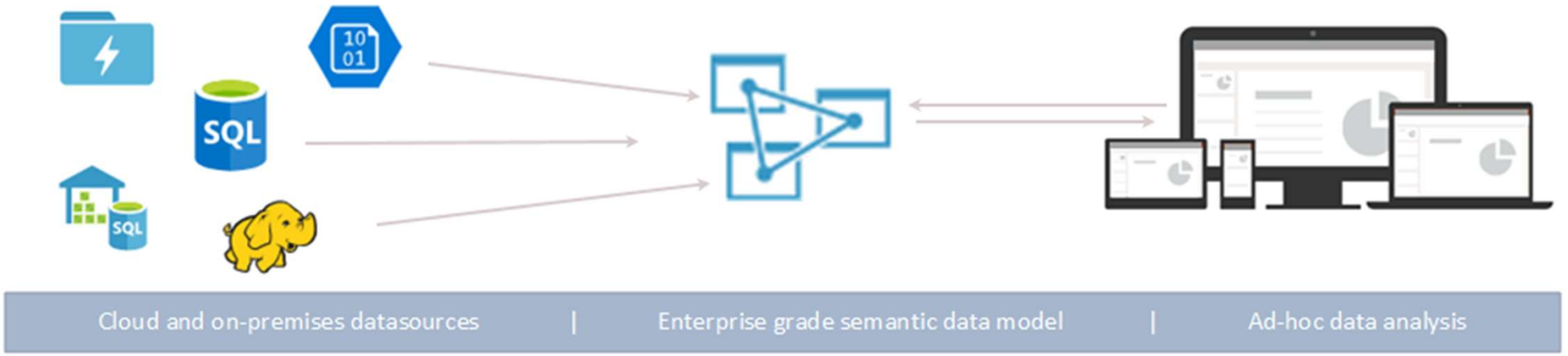
Azure Synapse SQL Pool

- Node based
  - Control Node
  - Compute Nodes
- Decoupled Storage
  - Distributed Datafiles
  - Blob Storage
  - Local NVMe caching

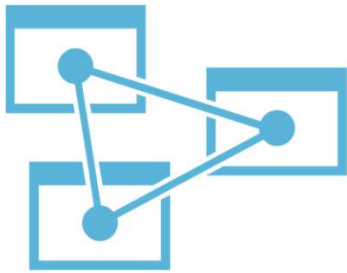


Azure Analysis Services Fundamentals

Azure Analysis Services Fundamentals

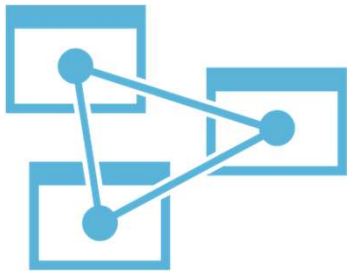


Azure Analysis Services Fundamentals



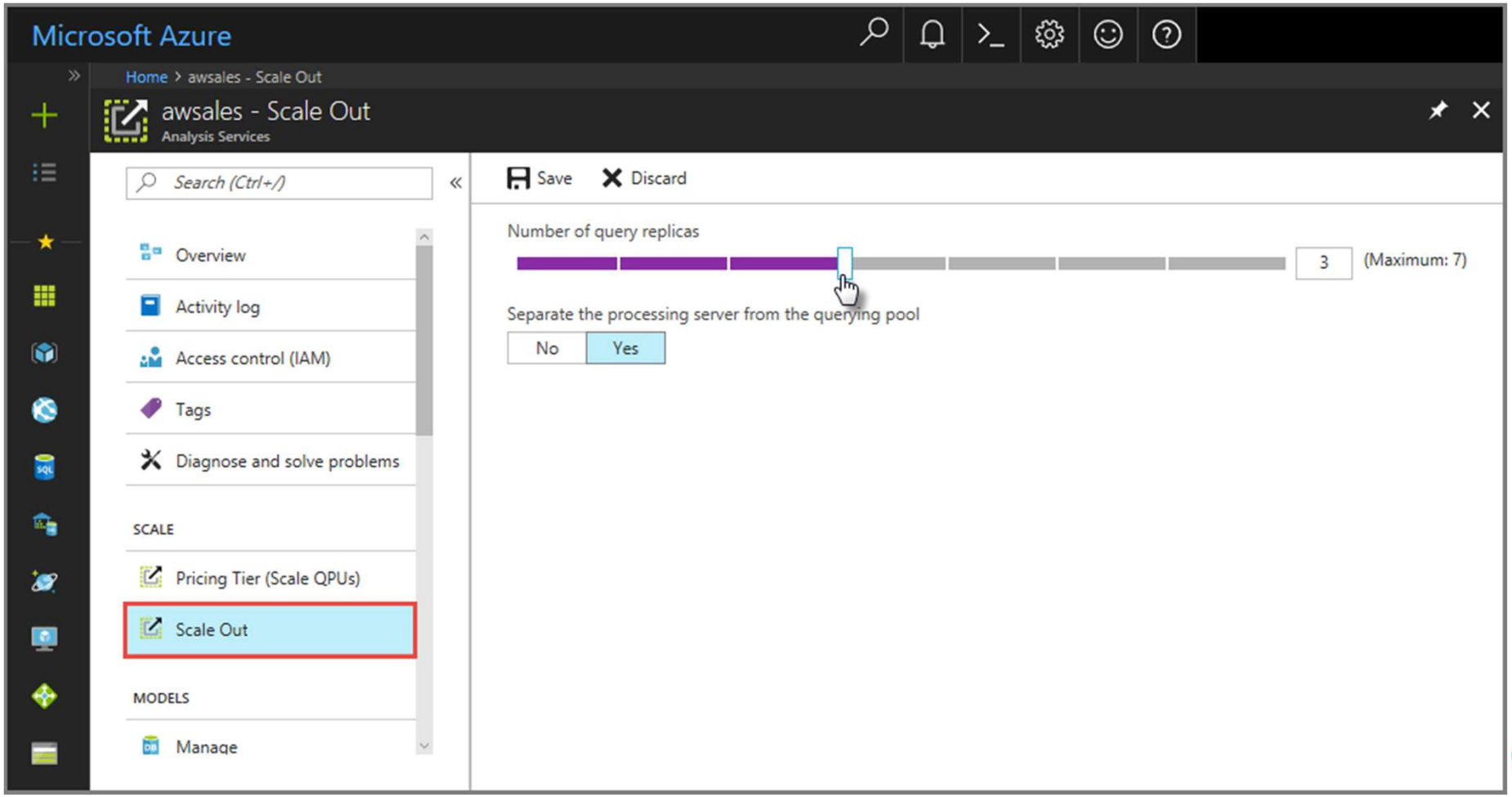
- Fully managed platform (PaaS)
- Provides enterprise-grade data models in the cloud
- Allows to combine data from multiple data sources
- Able to define metrics ana aggregations
- Secure your data in a single, trusted tabular semantic data model
- Easier and faster way to browse massive amounts of data for ad-hoc data analysis

Azure Analysis Services Fundamentals

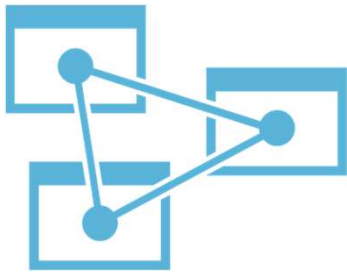


- Tiers
  - Developer (D1): 20 QPUs, 3 GBs, No Scale Out.
  - Basic (B1, B2): 40~80 QPUs, 10-16 GBs
    - Limited Concurrency, No Scale Out, For Smaller Tabular models
  - Standard Tier (S0~S9, S8v2*, S9v2*)
    - 40 ~ 1280 QPUs, 10 ~ 400 GBs
    - For mission-critical production applications
    - Elastic Concurrency
    - Advanced data refresh for near real-time data model updates
    - Supports all tabular modeling features

Azure Analysis Services Fundamentals



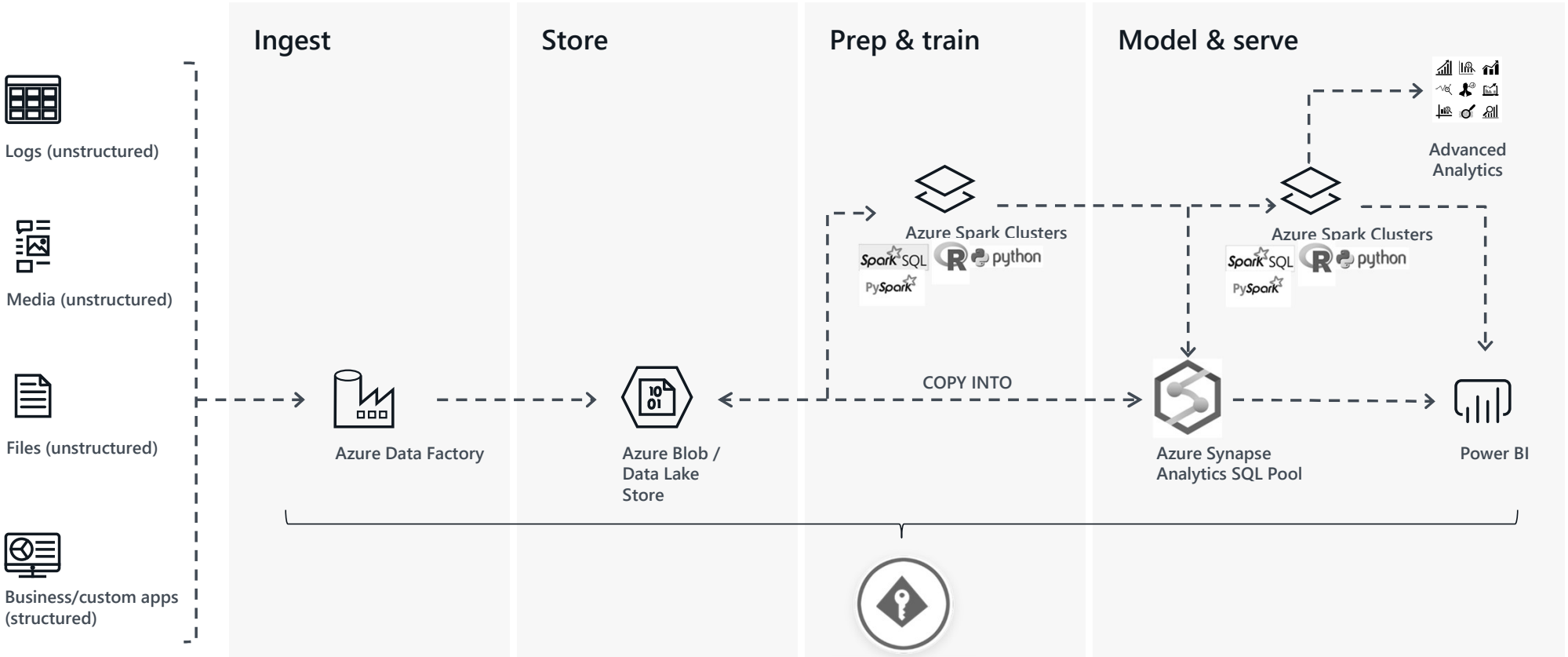
Azure Analysis Services Fundamentals



- Built on SQL Server Analysis Services
- Tabular models only. Version 1200 and up.
- Both in-memory and DirectQuery
- Calculated tables, DAX
- Partitions, perspectives, row-level security, bi-directional relationships, and translations are all supported

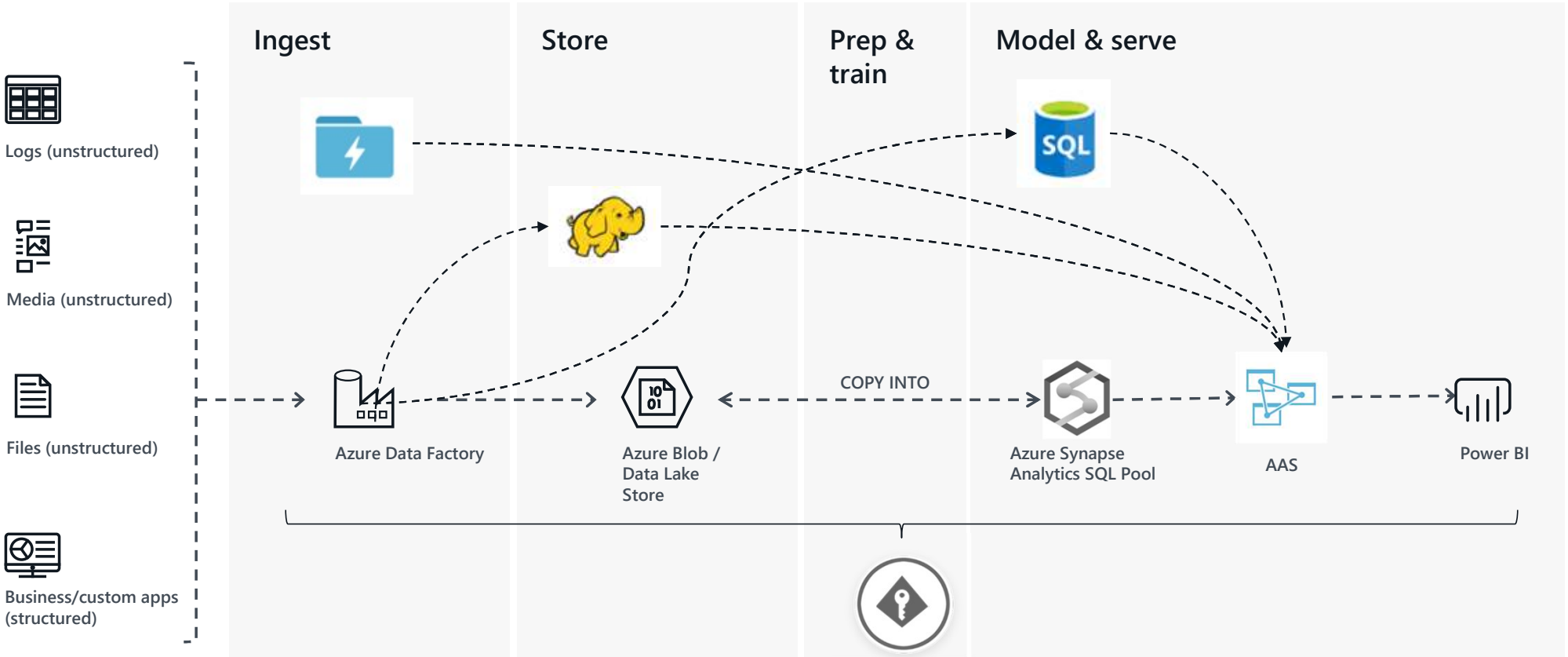
Modern Data Warehouse

Modern Data Warehouse



Microsoft 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.

Modern DW & AAS



Microsoft 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.

When to Choose Synapse SQL Pool or Azure Analysis Services

When to Choose Synapse SQL Pool

- Multi-Terabyte to Petabyte Scale
- Very Complex Queries and Aggregations
- Data Mining, Data Exploration
- Complex ELT
- Low to mid concurrency (128 or less)
- Flexible Scalability with MPP power for CRUD
- True Data Warehouse / OLAP environment

When to Choose AAS

- Few TBs or less data (high compression data)
- Multiple sources that can correlate
- High Read Concurrency (thousands of users)
- Slice and Dice with DAX
- Rapid Dashboard development from Tabular
- When scaling Synapse SQL Pool to thousands of users

- Let’s Speculate on the future

- Multi-Dimensional is dead
- Azure Synapse Ecosystem: on-demand, multi-source can skew AAS deployments
- AAS will continue to support on-premises tabular migrations
- DAX is not cross-solution compatible
- SQL, Python and R will supersede


Q&A

References

- https://docs.microsoft.com/en-us/azure/analysis-services/analysis-services-overview
- https://docs.microsoft.com/en-us/azure/sql-data-warehouse/massively-parallel-processing-mpp-architecture
- https://www.sspaeti.com/blog/olap-whats-coming-next/