IDUG

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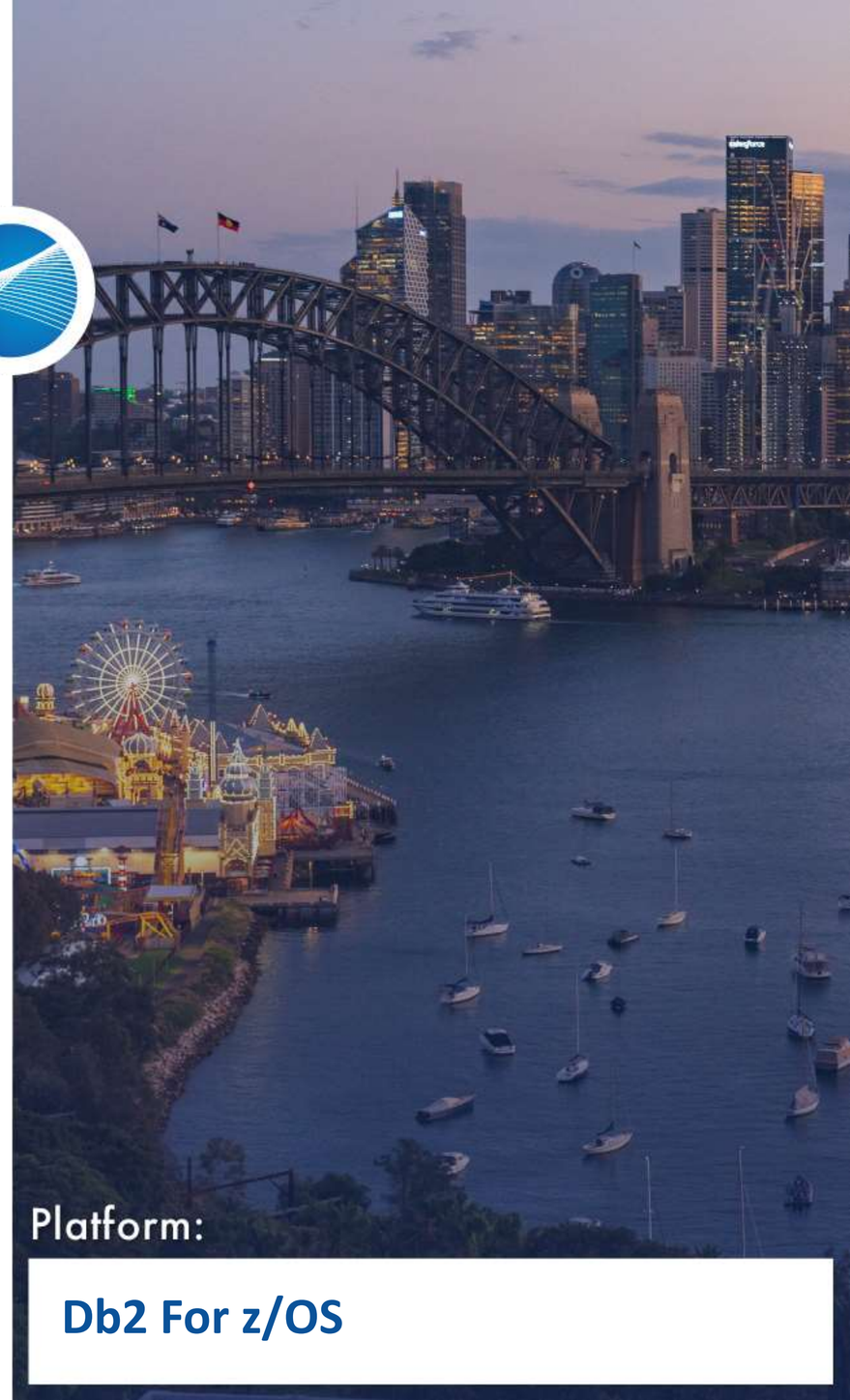
AU Db2 TECH CONFERENCE

IBM Z Data and AI Strategy

Cüneyt Göksu, IBM

Session Code: A07



Platform:

Db2 For z/OS

Agenda

Status

The IBM Z Data Value Pyramid

Architecture

Why do the world's most successful businesses exploit IBM Z and Db2 today?

- Reliable and resilient
- Virtually limitless scale
  - Superior data serving with Sysplex
  - Superior HTAP processing (OLTP + OLAP)
  - Superior AI processing
- Mixed workload management with full resource utilization
- Trust. Unmatched end-to-end security
- The most cost-effective platform to manage and maintain

Db2 is the Data and Transaction Hub of the global economy

92 of the top 100 worldwide banks

10 out of 10 of the world's largest insurers

23 of the top 25 global retailers

21 out of 22 of the world's largest airlines

Unlock real-time & secure insights from the high value transactional Z data

70%

of all global transactions by value run on a mainframe[1]

79%

of executives agree that mainframes are essential for enabling AI-driven innovation[2]

91%

of top-performing companies invest in AI and data

1.Source : Mitigating Fraud in The AI Age: Supporting Transaction Fraud Detection at Scale on IBM z17, Celent, April 2025
2.Source: Mainframes as mainstays of digital transformation, IBM Institute for Business Value, October 2024.

Business innovation requires a thoughtful data strategy

There is no AI without IA!

Security & risks in data movement
Organizations are hesitant to move data from IBM Z due to possible risks, strict security, regulatory, and compliance requirements

High-cost movement of transactional data
Moving data off IBM Z for analytics and AI increases cost, latency, and operational complexity

Insights not based on real-time data
Batch-oriented data pipelines result in analytics and AI insights derived from stale rather than live transactional data

Agenda

Status

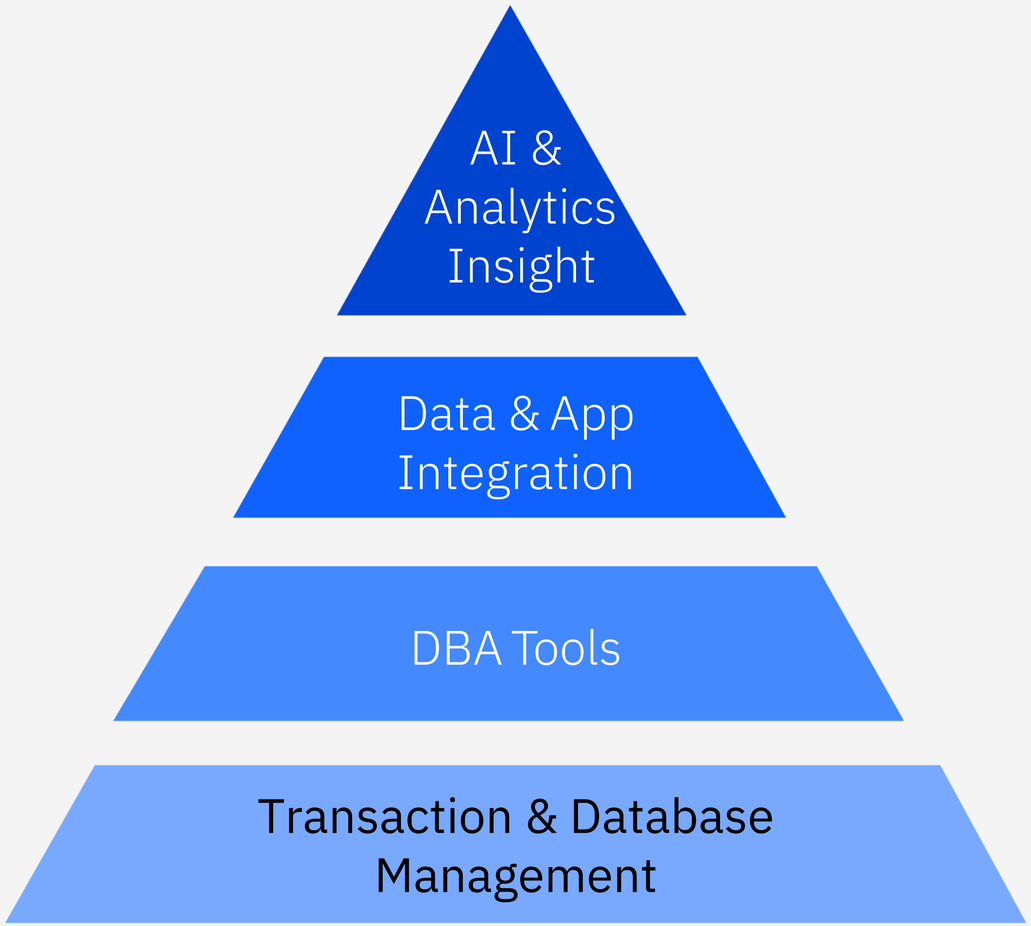
The IBM Z Data Value Pyramid

Architecture

Unlocking real-time AI value from applications and the most trusted data

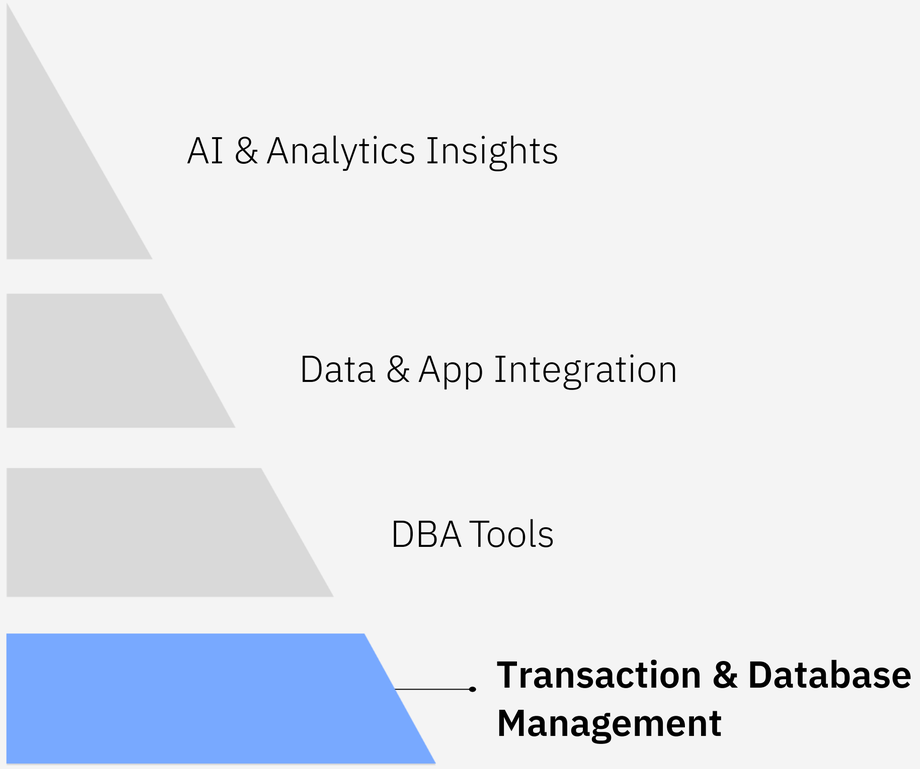
IBM's approach builds value "**bottom up**" without disturbing what already works

— Leverage AI to magnify **the value of real-time transaction processing** applications
— Enable companies to deploy **AI agents, digital workers, and autonomous workflows with live**—not static data.
— **Boost productivity and operating efficiency with AI** that delivers actionable insights and automates data handling at scale.



Powerful database foundation to make Z data agentic-ready

- IBM Z is the source of truth for the business
- Preserve the integrity of the system of record while unlocking greater value from it.



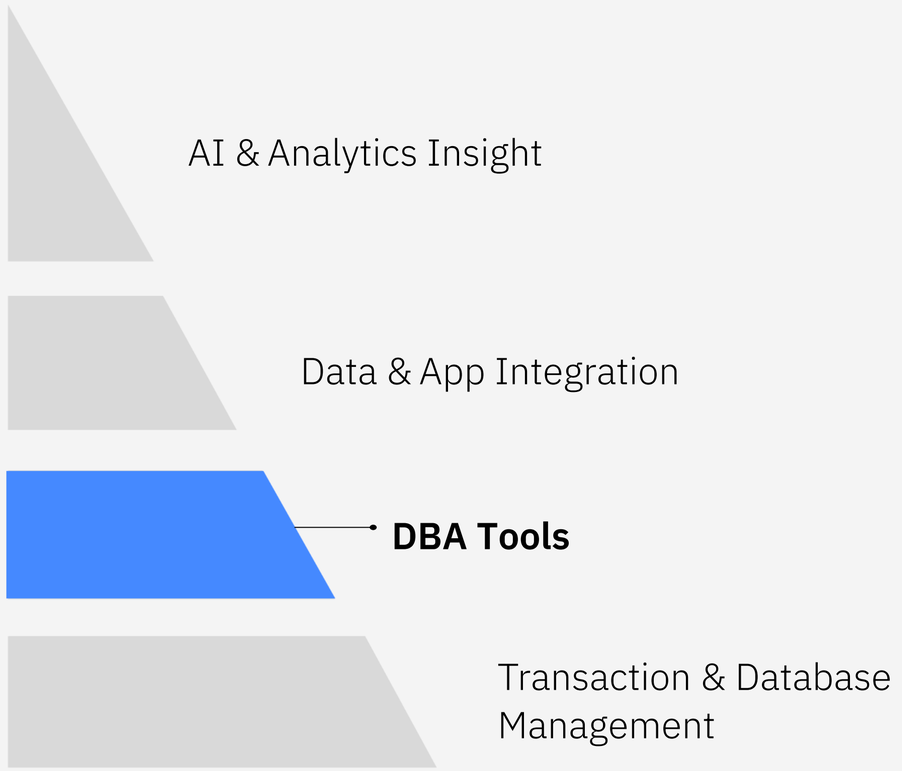
AI-Driven Intelligence
Infuse AI into Z data to automate insights, optimize performance, and enable real-time decisions.

High Performance Access
Enable high-performance access to Z data, allowing agents and apps to interact with transactions and data in real time.

Enterprise-Scale Operations
Enterprise scale design for massive concurrency and high throughput on critical workloads.

Trusted & Governed Interactions
Provides secure access to Db2 data to leverage industry-leading security, governance, and compliance.

IBM’s Db2 and IMS tools portfolios are designed to be force multipliers for the DBA



Agent-driven performance optimization
Automatically tunes Db2 and IMS workloads to improve response times and resource efficiency.

Automated DBA operations
Db2 AI for z/OS provides machine learning driven SQL optimization, anomaly detection, system assessment, and distributed connection control, allowing DBAs to offload repetitive tuning tasks

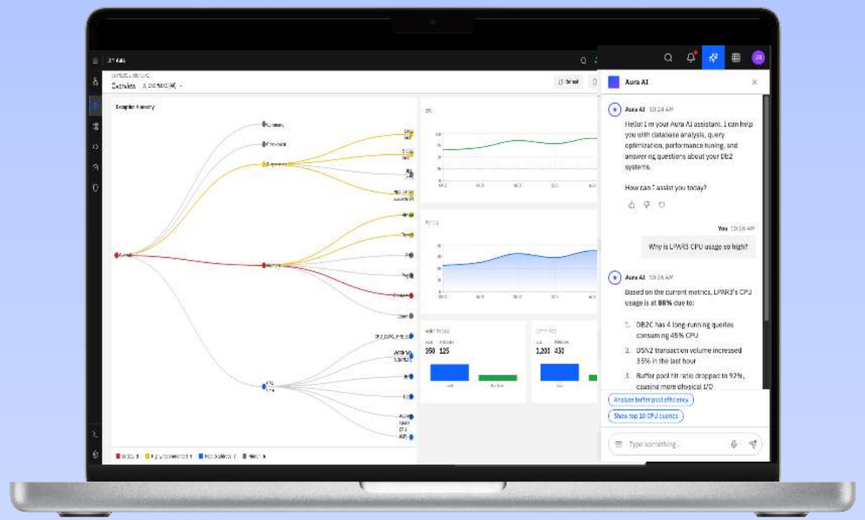
Predictive issue prevention
The Db2 Tools for z/OS suite streamline

- Database Maintenance,
- Performance Tuning,
- Schema Management,
- Utilities Automation,
- DevOps Integration
- Recovery & Restart

Accelerated modernization
Project Aura—a DBA persona centric, agentic experience for Db2 and IMS tools built on the watsonx Assistant for Z (WXAZ) platform. .

IBM Z Database Assistant

(Project Aura)



AI-driven Center for IBM Z DBAs

The Challenge

DBAs are facing operational overload due to database environments growing more complex, and organizations are facing a widening skills gap due to experienced DBA talent becoming harder to find and retain. At the same time, business expectations for uptime, performance, and cost efficiency continue to increase.

The Solution: IBM Z Database Assistant

Re-imagining the DBA experience through a unified, intelligent workspace serving as a force multiplier for every DBA and extending the value of existing investments in Tools.

Agent for DBA : AI-powered with a human-in-the loop operation

Plain Language Explanations - Translates complex issues into simple, understandable terms.

Key Capabilities

- **Database management**: Base DBA tasks- e.g. catalog navigation, command support
- **Knowledge agent** : deep product specific knowledge
- **SQL/app tuning agent** : Identify top resource consumers and generate tuning suggestions
- **System health agent with telemetry** : Identify bottlenecks (memory, CPU, locks, queuing) and suggest actionable recommendations
- **Housekeeping agent :** provide impact analysis before schema changes
- **Privilege/access agent:** help DBA to convert Db2 privilege to external SAF

Business Impact

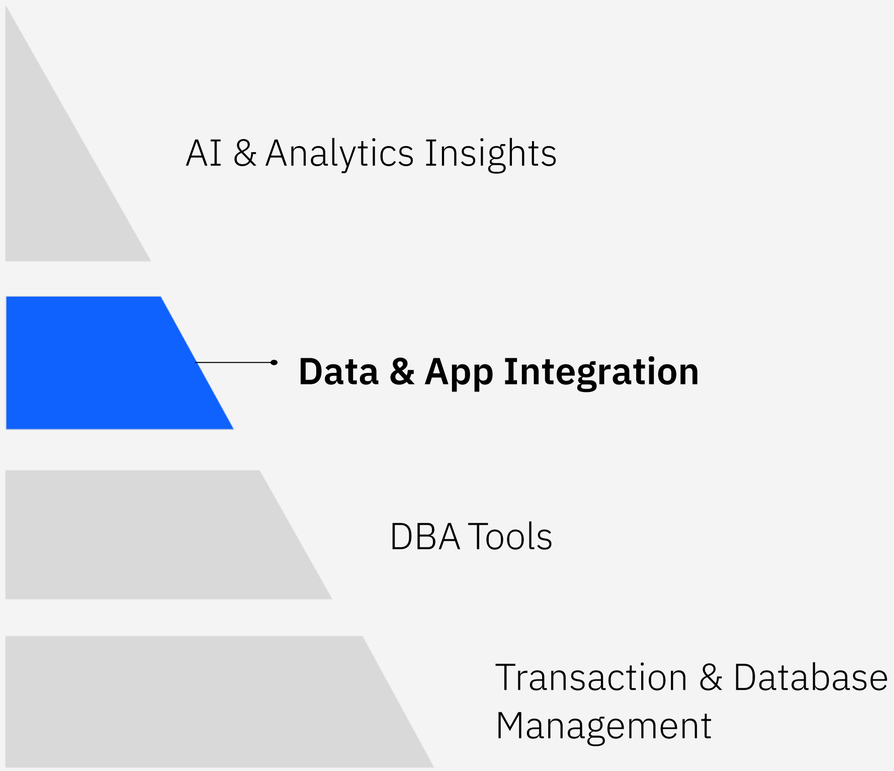
- **Faster** - Issue resolution vs manual troubleshooting
- **Reduced expertise barrier** - Junior DBAs perform like seniors
- **Reduced risk by proactive monitoring** - Catch issues before they impact users
- **Cost savings -** Through automation and reduced downtime

Competitive Advantage

- Proprietary knowledge unavailable to ChatGPT/Claude/Perplexity
- Expert-validated workflows from IBM Db2/IMS SMEs

Efficient data and application integration

This layer is the bridge between **systems of record** and **systems of insight**. It enables real-time access to trusted Z data across applications, analytics platforms, and AI workflows — **without impacting core systems**



Unified Data Foundation
Securely connect Z data to lakehouse for faster AI training and real-time insights.

IBM Z Digital Integration Hub (zDIH)

Data Virtualization (DVM)

Accelerated Innovation & Time-to-Value
Embed AI into transactional workflows, uncover hidden patterns, and automate decisions through secure API integration.

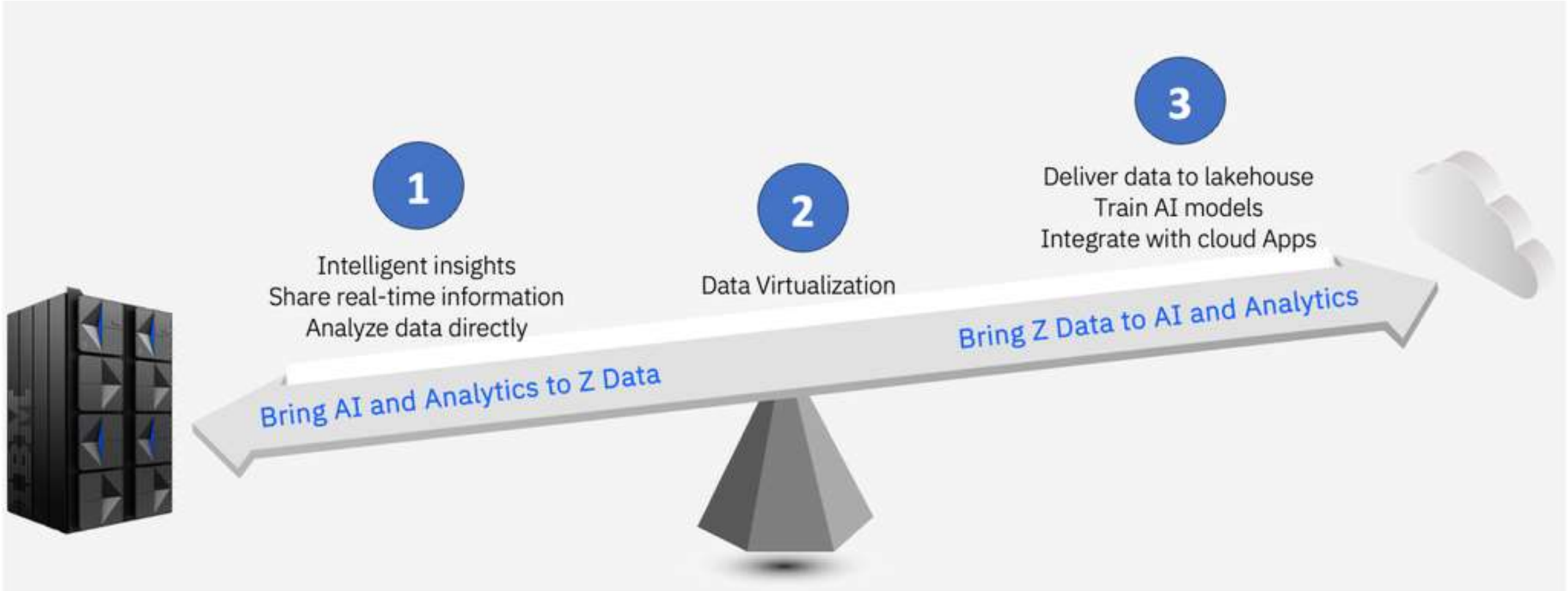
SQL Data Insights (SDI)

Simplified Hybrid Cloud Integration
Seamlessly connect IBM Z with cloud-native apps to cut complexity, cost, and latency—while ensuring governance and compliance.

IBM Data Gate

Enhanced Cost Efficiency
Reduce data movement and infrastructure costs while keeping Z data secure—enabling AI and analytics without compliance risk.

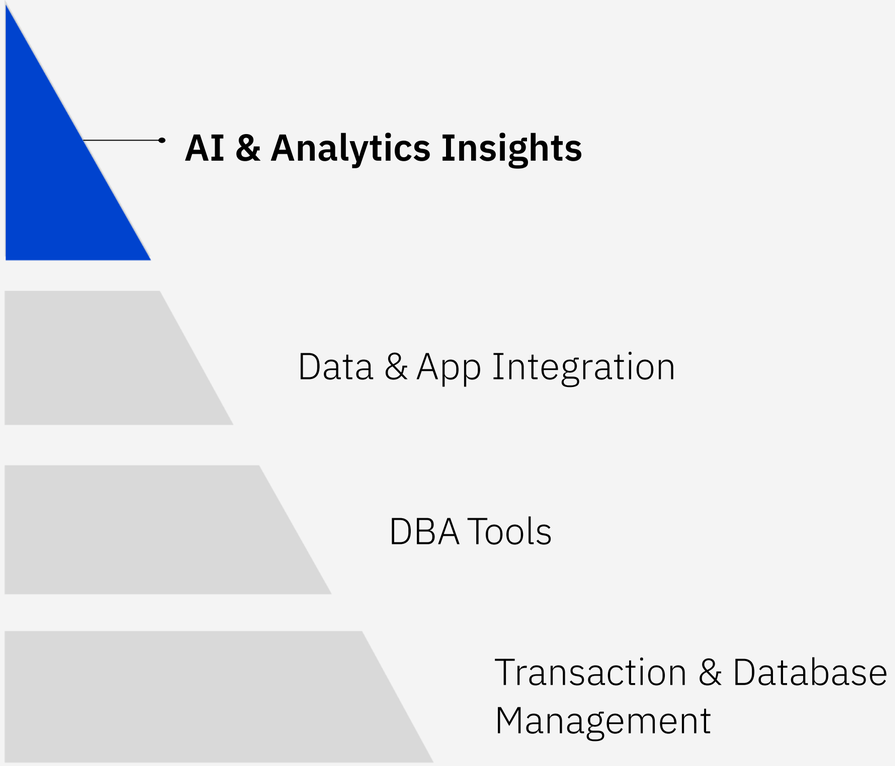
The Db2 Analytics Accelerator (IDAA)



1. Bring Analytics & AI to the Data on the mainframe
   When freshness, security, and low latency matter, analytics run directly on Z.
2. Keep Data on the mainframe and Expose It Virtually
   Virtualization delivers current data to modern applications without replicating the system of record.
3. Selectively Deliver Z Data to Cloud for Broad AI Use
   For large-scale analytics and model training, IBM enables governed replication.

AI & analytics insights for transforming Z data into action

This is where business value is realized. Analytics and AI can now operate directly on trusted transactional data — delivering insights as events occur.



Real-Time AI at the Source
Deliver real-time insights by bringing analytics and AI to IBM Z—cutting latency, cost, and complexity.

SQL Data Insights Pro

Accelerated Decision-Making
Achieve up to 1000× faster queries and real-time AI at the point of transaction for smarter decisions like fraud detection and risk scoring.

IDAA

AI-driven pattern matching
Reveal hidden relationships in enterprise data with semantic search and similarity scoring—powering smarter recommendations and anomaly detection.

Intelligent Agents for Automation
Boost productivity and accelerate innovation with custom AI agents that automate insights and workflows directly on IBM Z.

Agenda

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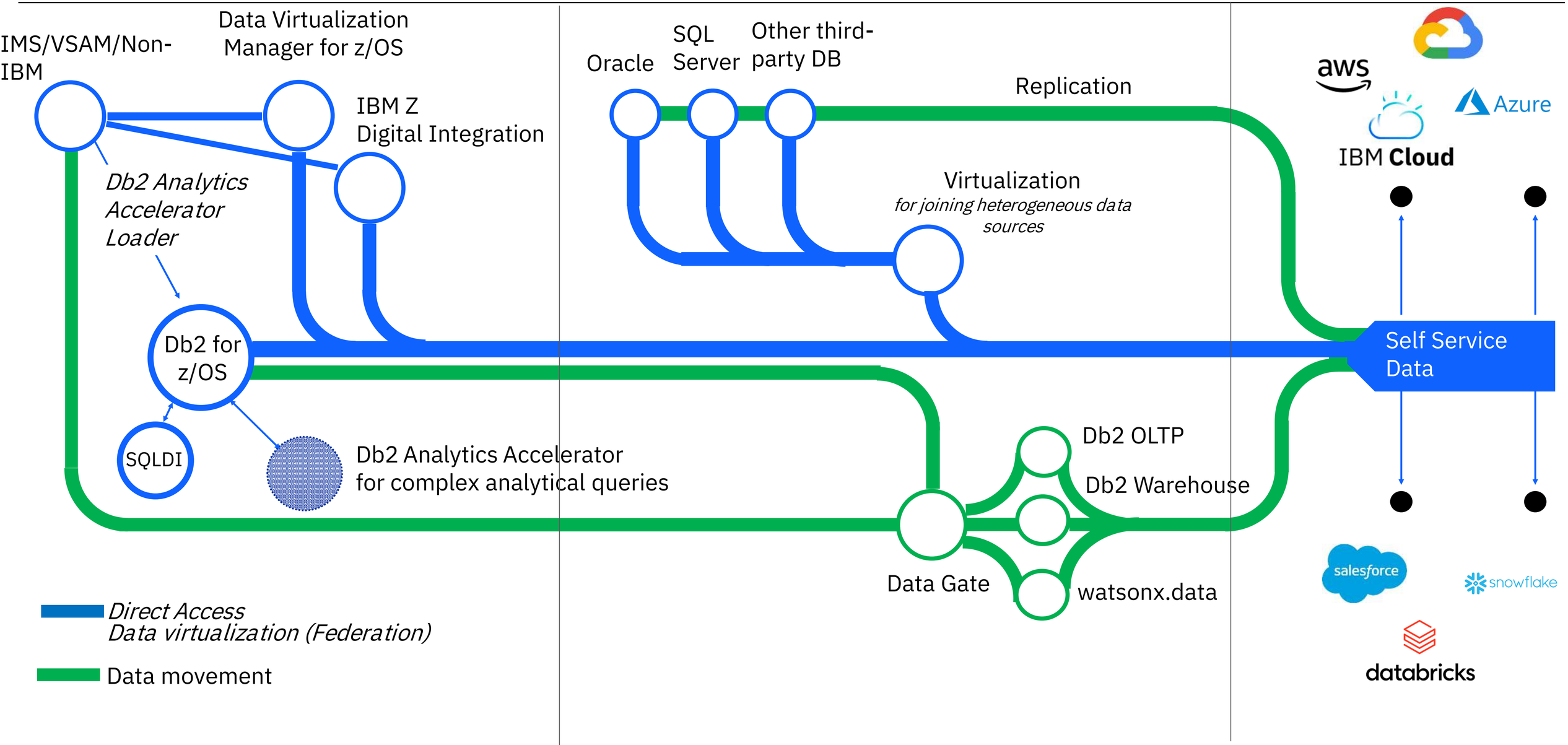
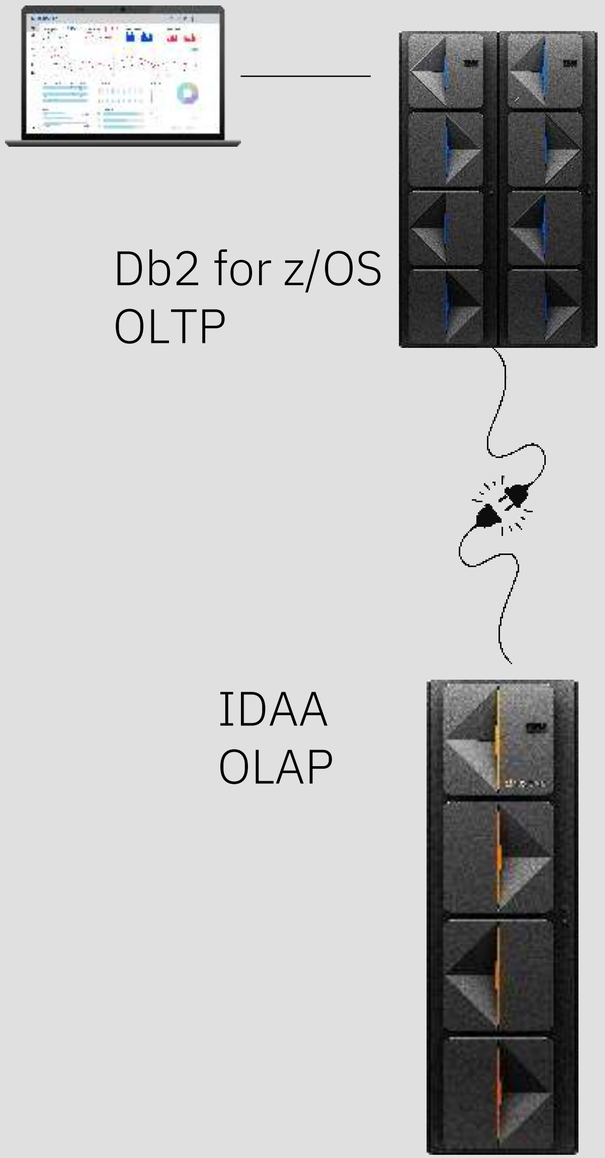
The IBM Z Data Value Pyramid

Architecture

IBM Z Data Architecture



Hybrid Analytical and Transactional Processing - Db2 for z/OS and IDAA



Ultimate performance

Db2 for z/OS as row-based data store for transactional access

IDAA as columnar-based data store for analytical access

Complete workload isolation

no impact to transactional workload

choice of scale-up or scale-out

Unlimited scaling

unique in industry: scale-up and scale-out

does not require application awareness

New Version – V8

LOB Support

Accel to Accel Copy

Performance Warehouse

Use cases

Massive query acceleration

Online Archiving

ETL/ELT and in-database analytics acceleration

IDAA only data with accelerator only tables

Virtual data integration: fast federated joins across Db2 for z/OS systems

Load IMS/VSAM/SMF data into IDAA via IDAA Loader

No migration for existing workloads

Industry-unique, patented data coherency protocol

Integrated Synchronization

SQLDI Pro and seamless Integration with IDAA

SQLDI Pro works with IDAA for cost- efficient training and inference

Bringing AI to Where Enterprise Z Data Lives - SQL Data Insights Pro

The Problem

Data gravity and architectural friction
The majority of critical transactional data already resides on Db2 for z/OS. Exporting large volumes of data to external AI stacks introduces latency and cost, also raises concerns around data privacy, regulatory compliance, and governance control.

Shortage of deep AI expertise
Building AI pipelines typically requires specialized skills in data science, model engineering, and infrastructure - capabilities that are scarce and highly competitive to acquire.

The Solution

A **built-in unified embedding model for both structured and unstructured data** enables organizations to search and analyze data by meaning rather than exact matches. AI capabilities are **accessible directly through SQL**, making it easy to integrate into existing workflows. The solution also supports **incremental** training and optimizes model training on IBM Z and LinuxOne, allowing insights to continuously improve as new data arrive.

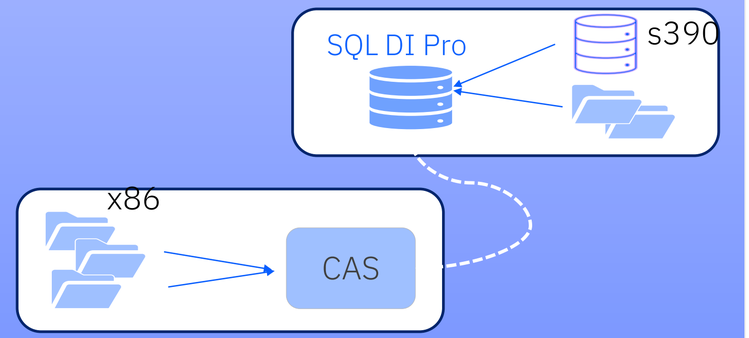
Use Cases

- **Fraud & Financial Crime Detection:** Identify suspicious transactions and hidden fraud patterns earlier by detecting similarities to known risks and deviations from normal behavior.
  - Credit card fraud detection
  - AML alert prioritization and false-positive reduction
  - Transaction monitoring and anomaly detection
  - Fraud ring and collusion pattern analysis
- **Insurance Risk & Claims Analysis:** Detect abnormal claims behavior and uncover revenue opportunities by analyzing both structured claims data and adjuster notes.
  - High-risk claims detection
  - Claims anomaly clustering
  - Upsell identification for underinsured clients
  - Underwriting risk segmentation
- **Customer Behavior & Retention Analysis:** Reveal hidden customer behavior patterns using similarity search and clustering across transaction and interaction data.
  - Customer churn prediction
  - Cross-sell and product affinity analysis
  - Customer loyalty and segmentation refinement

Roadmap

Initial Spyre exploitation
- Accelerate vector embedding (June 2026)
- Natural language to SQL and result summarization
  - AI query/SQL to expand usage beyond SQL users
  - explain why records match or relate - tied back to real business keys and attributes

Feature expansion
- AI query acceleration
- AI Prediction
  - Support unseen data coming from transaction
- AI text query
  - Ask business questions using more natural, sentence-level expressions over text data
- Collaboration with **CAS** to support Hybrid Unstructured files resides both IBM Z and outside



IBM Content-Aware Storage (CAS)

SQLDI Pro Differentiators

Unified AI for Structured + Unstructured Data

- Competitors focus on text chunks only.
- Orion uniquely merges relational attributes + free-text fields into a single semantic model.
- One embedding = complete enterprise view.

In-Place on IBM Z

- No need to move data to external vector stores.
- AI runs where the data already lives, preserving compliance, security, and performance.

Incremental Training

- Updates models using only changed data.
- Faster iteration, lower cost, and always up to date.

Built-In Model Explainability

- Critical for trust, audit, and regulated industries.

Hardware Acceleration

- Optimized with Telum II and Spyre for embedding and inference speed.
- Scalability ready for GenAI workloads.

Seamless Integration with IBM Ecosystem

- Works with IDAA for cost-efficient training and inference.
- Native connection to watsonx Assistant for Z for conversational AI (Future).

DVM Overview

Compatible Data Sources

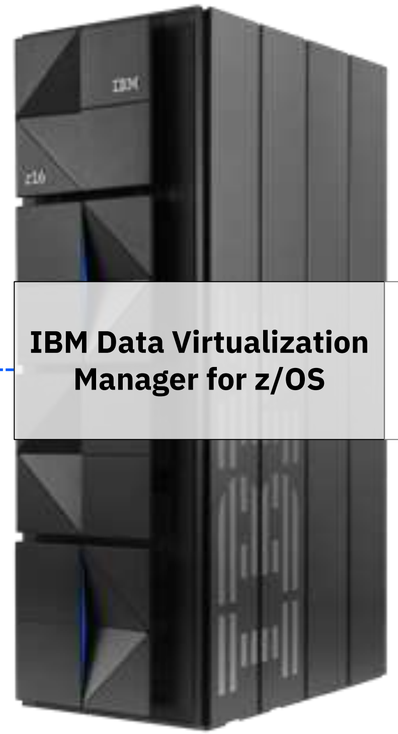
- DB2 for z/OS
- SMF Records
- Db2 Analytics Accelerator for z/OS
- Sequential
- IBM IMS
- ADABAS
- VSAM
- z/OS
- ...and more!

Mainframe

Non-Mainframe

- ORACLE
- PostgreSQL
- APACHE hadoop
- teradata.
- Microsoft SQL Server
- Informix SOFTWARE

IBM Z



IBM Data Virtualization Manager for z/OS

JDBC
ODBC
REST

Data Virtualization

Data Targets

- Modernized Mainframe Apps
- Modern Data Platforms
  - Cloud Pak for Data
  - watsonx.data
  - presto
  - Spark
  - ICEBERG
  - Governance and Metadata
- Cloud/Mobile Apps
- BI Dashboards

Z Data Integration Summary

- Direct access and virtualization
- Data synchronization / copy

DVM : Data Virtualization Manager for z/OS

IBM Z

IBM Z Data
- Db2z
- IMS
- VSAM

Db2 and/or DVM JDBC

Data Gate

Data Gate for watsonx

Data Gate for Confluent

DWH, ODS, Lakehouse, Downstream Systems

Db2z / IMS / VSAM

Db2 and/or DVM connector

Db2z data *only*

Db2 Warehouse

Db2 connector

Db2 OLTP

Db2 connector

Db2z / IMS / VSAM

ICEBERG

Open Data Format on Object Store

CONFLUENT

Kafka Connect

Kafka Target

StreamSets

Kafka Consumers

Db2 Data Gate Classic use cases

Transactional caching, Read-only transactions in the Cloud

New digital applications are driving exponential growth in mainframe resource utilization. Provide transactionally consistent systems of record data to cloud-based applications efficiently and securely.

Data Fabric

Make data available and synchronized for ready access within a data fabric, including one-click integration with Watson Knowledge Catalog. Simplify the integration of data sources within your data fabric.

Db2 Efficiency and Archiving

Redirect Db2 for z/OS analytical queries to Db2 Data Gate without consuming mainframe resources and without impacting operational SLAs.
Archives Db2 data to a Db2 Warehouse database on Cloud Pak for Data.

Z Lakehouse - Data Gate for watsonx use cases

Efficiently integrate mainframe data in a data lakehouse for Analytics & AI

Unleash the power of IBM Z data for analytics and AI in a lakehouse with efficient integration to via IBM Data Gate for watsonx.

Integrate your critical IBM Z data with Salesforce

Enables you to activate AI agents within Salesforce, offering improved, personalized, customer interactions with easy integration of IBM Z data into the Salesforce Data Cloud.

Augment your existing cloud warehouse/lake

Reduce proprietary data ingestion costs by utilizing the Iceberg lakehouse architecture. Replace expensive data pipelines with a more efficient strategy.

Future proof your data

Replicate once – use many… Utilize an open lakehouse architecture to minimize the number of copies of enterprise mainframe data sent to the cloud. One (efficient) copy can be used for multiple products and use cases.

IBM Z and Salesforce Data Cloud Zero Copy Integration

IBM watsonx.data and Salesforce Data Cloud will allow businesses to access and utilize data from IBM Z mainframes and Db2 databases without moving or copying data

Description

Making Your Mainframe Data, Salesforce Smart and AI-Ready

- IBM Data Gate for watsonx integrates Z data into watsonx.data, making it accessible in Salesforce Data Cloud.
- The integration allows IBM and Salesforce customers to utilize data from both platforms for AI-driven insights and use in IBM's AI Agents and Agent Actions to unlock new opportunities for innovation..
- IBM will be the first Zero Copy partner to provide seamless data flow between IBM Z and the Salesforce Cloud

Value for customers

- Maximize mainframe data value: **C**onnect mission-critical Z data for CRM agentic use cases with enhanced trust, governance, cost-efficiency and customer experience
- Bring IBM Z data to modern data platforms like data lakehouse, enabling open table formats such as Apache Iceberg
- Streamline AI model training and analytics by exposing IBM Z data in a relational format, reducing overhead and enhancing throughput.

Key highlights

Expose IBM Z data to modern data platforms like data lakehouse

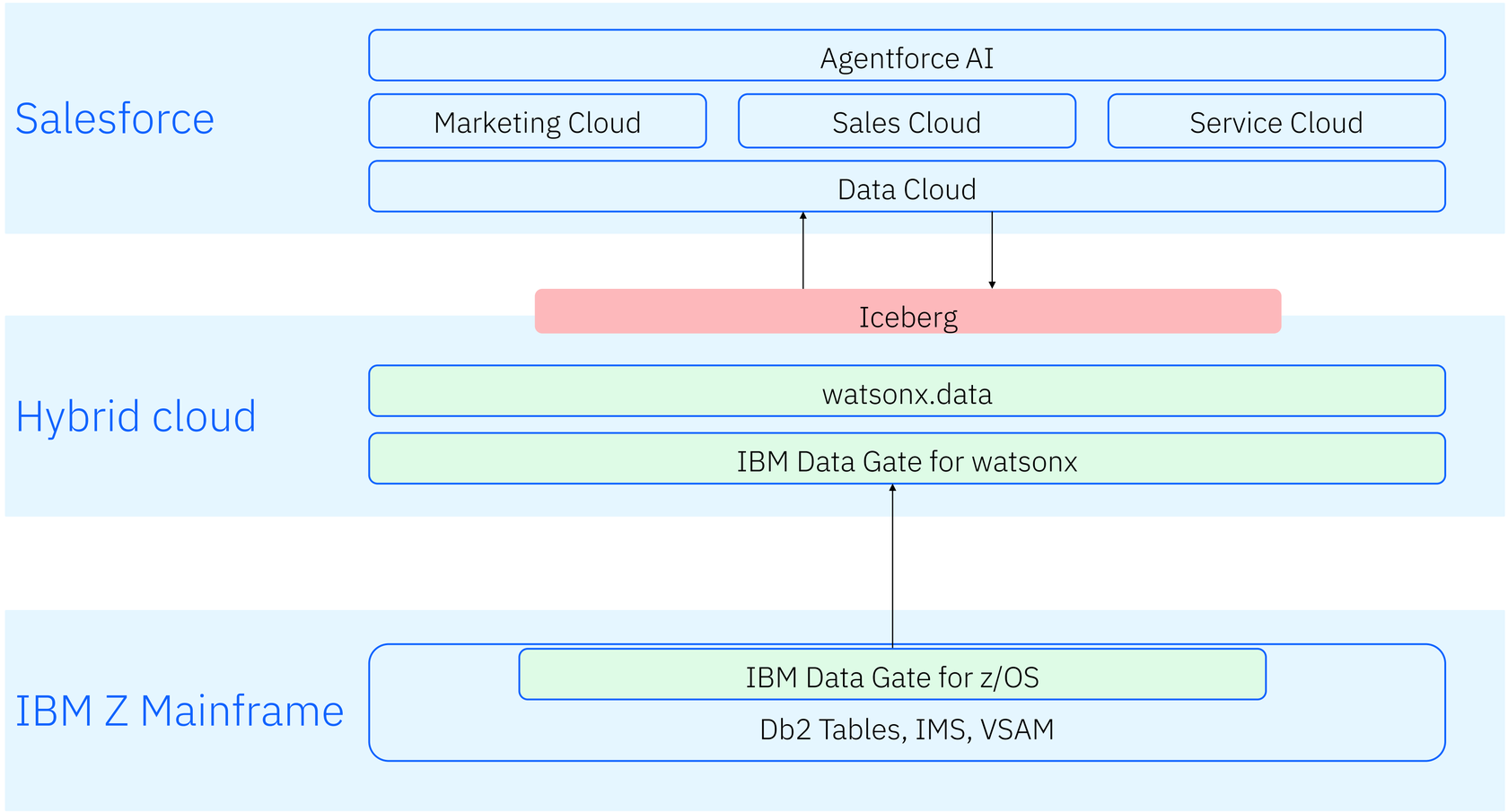
- *Async replication of Db2, IMS and VSAM through a single integrated solution enabling open table formats like Apache Iceberg*

Reduce MIPs on mainframe related to Db2 replication workloads vs. 3rd party tools

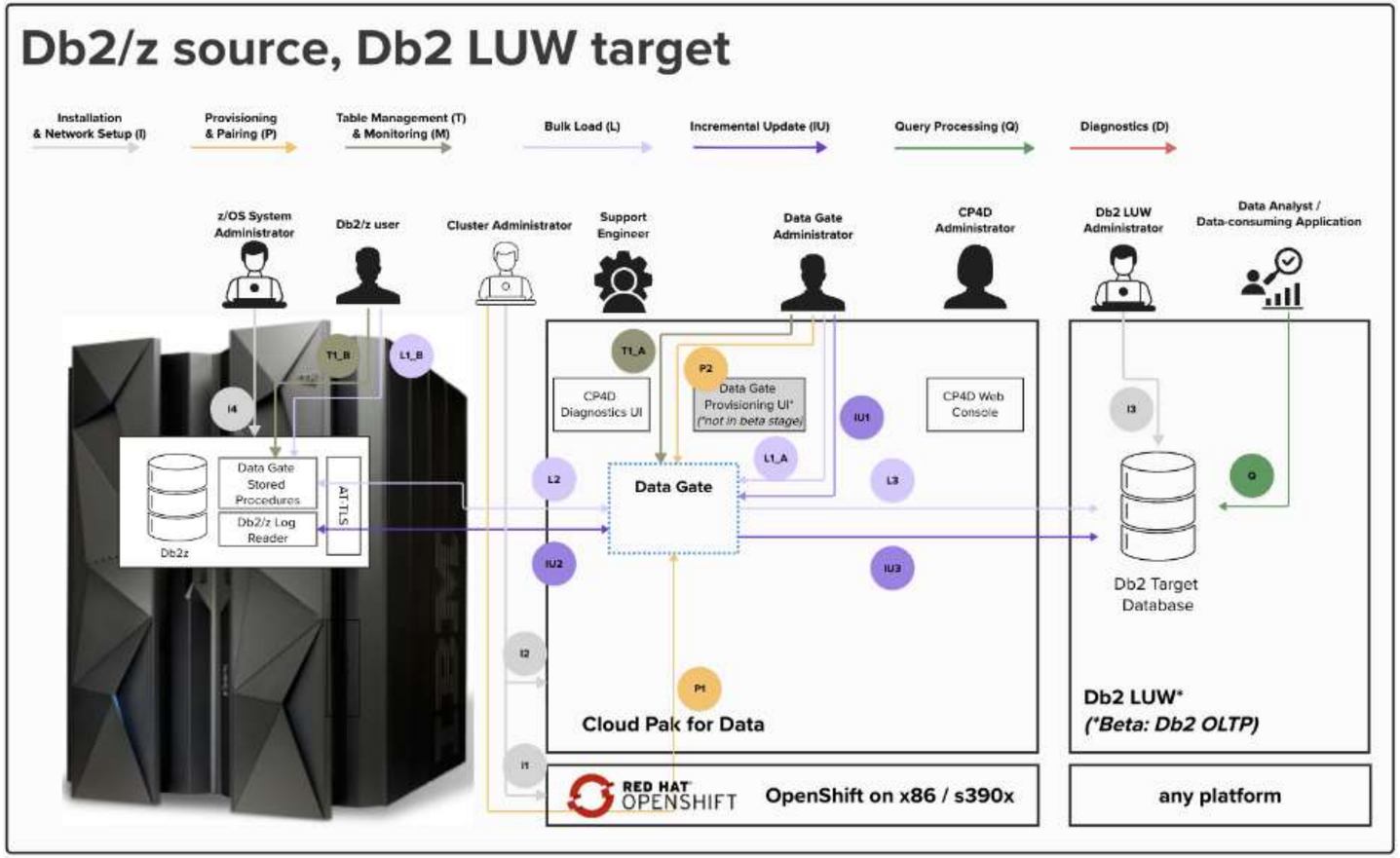
- *Replace legacy replication, warehouse and lake solutions with new pipelines that work natively with cost-effective, highly redundant object storage such as AWS S3, ADLS and IBM COS*

Streamline AI model training and analytics by exposing IBM Z data, including VSAM and IMS, in a relational format, reducing overhead and enhancing throughput.

High-level Architecture – Salesforce + IBM Zero Copy



Remote Db2 support – Beta



Architecture

- Db2 for z/OS source
- Data Gate as part of CPD running on OpenShift cluster (x86 / s390x)
- Target Db2 LUW (OLTP) on any platform with network connectivity

Customer Journey

- Setup of OpenShift cluster and installation of Data Gate and CPD on the cluster
- Setup of the target Db2 database instance (OLTP) and configuration for use as Data Gate target
- Provisioning of the Data Gate instance (P1) via OpenShift and binding the instance to the remote Db2 target database instance
- Pairing the Data Gate instance with the Db2 for z/OS source subsystem
- Managing Data Gate tables via instance admin UI or stored procedures
- Triggering bulk load of tables via instance admin UI or stored procedures, reading table partitions from Db2/z, converting to Unicode, and inserting the data into the remote Db2 target database
- Configuring and monitoring Integrated Synchronization for Data Gate tables via instance admin UI
- Asynchronous reading of change records from Db2/z transaction log, conversion to Unicode, and applying changes to the remote Db2 target database
- Querying the mirrored data directly from the remote Db2 target database

BANCO DO BRASIL

Banco do Brasil turns data into powerful insights

"The bank's branches take advantage of over 70,000 customized, user-built, reporting dashboards that depend on fast access to the most current mainframe data provided by the Db2 Analytic Accelerator."

Eduardo Pingarilho Mendizabal
Mainframe and Database Manager

The Challenge

Banco do Brasil needed faster, lower-cost access to IBM Z data to support over 70,000+ dashboards. Slow, expensive reporting (24+ hours) delayed managerial insights and productivity tracking.

Read the full story

The Solution

IBM Db2 Analytics Accelerator

The Impact

— Fully integrated with Db2 for z/OS to offload analytics, reduce CPU use, and deliver real-time mainframe data for faster reporting and decisions.
— 100,000s of employees gain real-time insights from complex queries on live mainframe data.
— Loan-processing data time cut from 24 hours to minutes.

Garanti BBVA International

Accelerate analytics deliver banking insights

“As a major financial company, we have a team monitoring performance of the database and application environment. With the IBM Db2 Analytics Accelerator, we can identify most problems before they impact the business.”

Semra Arslan, Manager
Z Cloud Data Technologies, Garanti BBVA

The Challenge

Garanti BBVA faced billions of daily transactions, heavy batch workloads consuming CPU and risking core banking performance, and slow analytics on static batch data—driving the need for secure, cost-efficient, real-time insights without overloading IBM Z or disrupting core banking.

Read the full story

The Solution

IBM Db2 Analytics Accelerator

The Impact

— Enabled to run analytics and compliance reporting 3000X faster.
— Saved 45 mainframe CPU hours per day.
— Reduced key regulatory report time from 2 days to 1 minute.
— Accelerated 300+ nightly batch jobs and analytics across 33 TB + 44 TB of data respectively.

وزارة الداخليـــــــة
Ministry of Interior
State of Qatar • دولـــة قطـــر

Lightning-fast query processing and lower cost

“ Our Db2 for z/OS database is capable of doing everything. ”

Azeem Mohammed
Database Administrator for IBM DB2 for z/OS
Ministry of InteriorState of Qatar

The Challenge

Rising Db2 for z/OS workloads drove CPU and memory spikes, slowing dashboards and reports and increasing costs. Long batch runs and data movement workarounds blocked timely analytics. The Ministry needed workload offload and fast, reliable access to current transactional data.

Read the full story

The Solution

IBM Db2 Analytics Accelerator
IBM Db2 for z/OS

The Impact

— Offloaded heavy Db2 analytics, reducing latency, lowering CPU cost and enabling near–real-time reporting.
— 98% reduction in latency — insights delivered in seconds from minutes.
— Reports 30X faster (20 minutes → 40 seconds).
— Data sync improved from 3 minutes to ~3 seconds, reducing CPU consumption.

die Mobiliar

“ We worked together with IBM to process insurance offer recommendations faster and more accurately. By unlocking hidden data patterns with NLP-based AI functions in near-real time while ensuring privacy and security, we saw an 94% accuracy in prediction results. These very promising results have motivated us to integrate this technology into our underwriting processes in the near future.”

Thomas Baumann
Data Evangelist/ IT Architect
Swiss Mobiliar

The Challenge

The customer wanted to predict the probability that an auto insurance offer would be converted into a contract immediately after the offer was created.

Read the full story

The Solution

IBM Db2 for z/OS with IBM SQL Data Insights

The Impact

— Client achieved near-real-time AI inferencing with 94% prediction accuracy.
— Ideation to production time reduced to 4 hours.

The value delivered

~3,000X

faster analytics reporting[1]

98%

reduction in latency[2]

96%

zIIP offload[2]

-50%

94% prediction accuracy[3]

Source: 1. BBVA Garanti Client Story
Source: 2. MOI, State of Qatar Client Story
Source: 3. Swiss Mobiliar Story

Bring AI Where It Matters

AI and analytics execute where they deliver the most value — in place, on platform, or in the Hybrid cloud. The right execution location depends on the workload, latency requirements, security requirements, data size, governance posture, and scale of the use case.

Embedded AI Insight

Business Scenarios

- Investigating suspicious transactions using semantic similarity
- Exploring related claims, accounts, or policies
- Pattern discovery and decision support on live operational data

Technology Fit

SQL Data Insights Pro (Orion)

- Embeds AI directly inside Db2
- Generates and queries vector embeddings in place
- Preserves governance and security boundaries
- Eliminates replication and ETL

When to Choose This

- Insight must operate on fresh system-of-record data
- Data cannot move due to risk or compliance
- The objective is decision support, not large-scale model training
- Analysts or operational workflows need AI-enhanced exploration
- Latency and governance matter more than elastic compute

This is AI embedded where the data lives.

IBM Z Core

Accelerated Analytics on Platform

Business Scenarios

- 360° customer view
- Regulatory and compliance reporting
- Loan portfolio and risk aggregation
- High-volume analytic dashboards
- Cross-domain reporting across Db2 subsystems

Technology Fit

Db2 Analytics Accelerator (IDAA)

- Delivers high-speed analytic query acceleration
- Isolates analytics from OLTP workloads
- Eliminates ETL/ELT complexity
- Keeps data on Z under Db2 governance
- Enables near real-time HTAP

When to Choose This

- Workloads require heavy aggregation or complex joins
- Analytics must not impact transactional performance
- Near real-time is sufficient (not inline workflow AI)
- Data should remain on Z
- Enterprise reporting and BI acceleration are priorities

This expands intelligence on platform without moving data outward.

Linux environment on IBM Z (IFLs)

IBM Z with Virtualized Access

Business Scenarios

- Exposing Z data through REST APIs, JDBC, ODBC
- Supporting hybrid cloud applications
- Enabling data mesh participation
- Integrating Z and non-Z data sources
- Modernizing legacy applications

Technology Fit

Data Virtualization Manager (DVM)
zDIH (for caching and decoupled patterns)

- Provides real-time federated access
- Avoids full data replication
- Enables modern SQL and API access
- Reduces architectural complexity
- Supports hybrid app development

When to Choose This

- Applications need current data,
- The goal is modernization and direct access
- Analytics is secondary to data availability but can be combined with IDAA if analytics is required.
- Hybrid architectures require integration
- Governance must remain centralized

This enables modernization without unnecessary data movement.

Z Virtualized
IBM Z or Linux env on IBM Z

Cloud & Hybrid Environments

Business Scenarios

- Large-scale AI model training
- Enterprise data science initiatives
- Integration with Snowflake, Databricks, Salesforce
- Cross-domain AI workloads
- Lakehouse-scale analytics

Technology Fit

Data Gate (Classic & for watsonx.data)

This technology:

- Synchronizes selected Z data to open Iceberg tables
- Offloads workload from the core system
- Enables elastic compute environments
- Maintains governed and consistent replication
- Supports enterprise-scale AI platforms

When to Choose This

- AI spans multiple enterprise domains
- Elastic cloud compute is required
- Cross-platform data fusion is needed
- Latency is not transactional
- Replication is acceptable and governed

This enables enterprise AI beyond the core platform.

Hybrid / Cloud

System of Record

On-Platform Expansion

Elastic Enterprise AI

Mainframe Modernization Playbook.

Pages 9 and 10 about Data access and integration strategy

The modernized mainframe: A playbook for maximizing business value

IBM.

Here is the external link to download https://www.ibm.com/downloads/documents/us-en/15db52348fc203c2

Thank you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