IBM Data Estate Modernization Journey

Support transformation goals and maximize price-performance

What is Modernization and Why?

Modernizing extends the value of legacy applications and their data
Why?

Application Modernization

- Reduce TCO by retiring legacy solutions
- Gain Agility via automation and flexible pay-go billing
- Drive Growth by freeing up resources to focus on innovation

Data Modernization

- Free siloed data to gain insights via modernized data architectures
- Enable high-velocity data
  - Data Generated at high rates
  - Value Gained at high rates

Current Business Environment

Growing data volumes.

Price-performance requirements

Application modernization

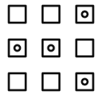
Traditional on-premises data warehouse deployments may no longer meet your business needs

New data warehouse deployment models are required to stay data-driven

Data Apps and Services are growing

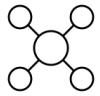
New business opportunities are producing 15ZB of data


Web & mobile apps


Business apps


Business Intelligence tools


Dashboards


Microservices

Data is more complex

80% of time spent on data cleaning, integration and preparation


Geospatial


Clickstream / Social media


Real-time streaming


ML models


Sensor/IoT


Graph


Video/audio


Images


Documents

Data infrastructures are more flexible

50% of data is in the public cloud, and rapidly growing


Traditional on-premises


Public cloud


Multi-cloud


Hybrid

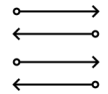
Data engines have diversified

82% of enterprises are inhibited by data silos


Transactional databases (OLTP)


Analytics warehouses (OLAP)


Lakehouse engine


NoSQL engines


Graph engines

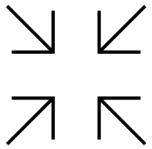
Benefits of Data Warehouse Modernization

Help your organization move faster, and reduce costs

Revenue Growth

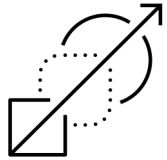
Organizational leaders see a 20% revenue growth rate with cloud solutions.[1]

Minimize Admin Effort



At Interloop, sales execution leaders reduced administrative effort by 50%.[2]

Accelerated Time To Value



Valor Holdings saw a 90% reduction in reporting time on sales data, running analytics fully managed in the cloud.[3]

Cost Savings

Organizational leaders see a 21% average cost savings with use of public cloud.[4]

1. IBM Institute for Business Value, Extending Digital Acceleration October 2021
2. Interloop IBM case study
3. Valor Holdings IBM case study
4. Gartner Cloud Adoption Survey, 2020

IBM is the default choice for your data warehouse modernization

1

Perfect compatibility for apps and ETL

Existing data, **stored procedures, queries and ETL jobs** will behave exactly the same way, eliminating the need for time consuming refactoring, testing and validation

2

Ease of database upgrade

Tooling and automation facilitate the process of moving the entire database (not just the data), **synching the data, and cutting over to the new target for near-zero downtime**

3

Price-performance competitiveness

Leased infrastructure and site reliability engineering, combined with **independent scaling of compute and storage, consumption-based pricing, and multi-tiered storage provide for optimal price-performance**

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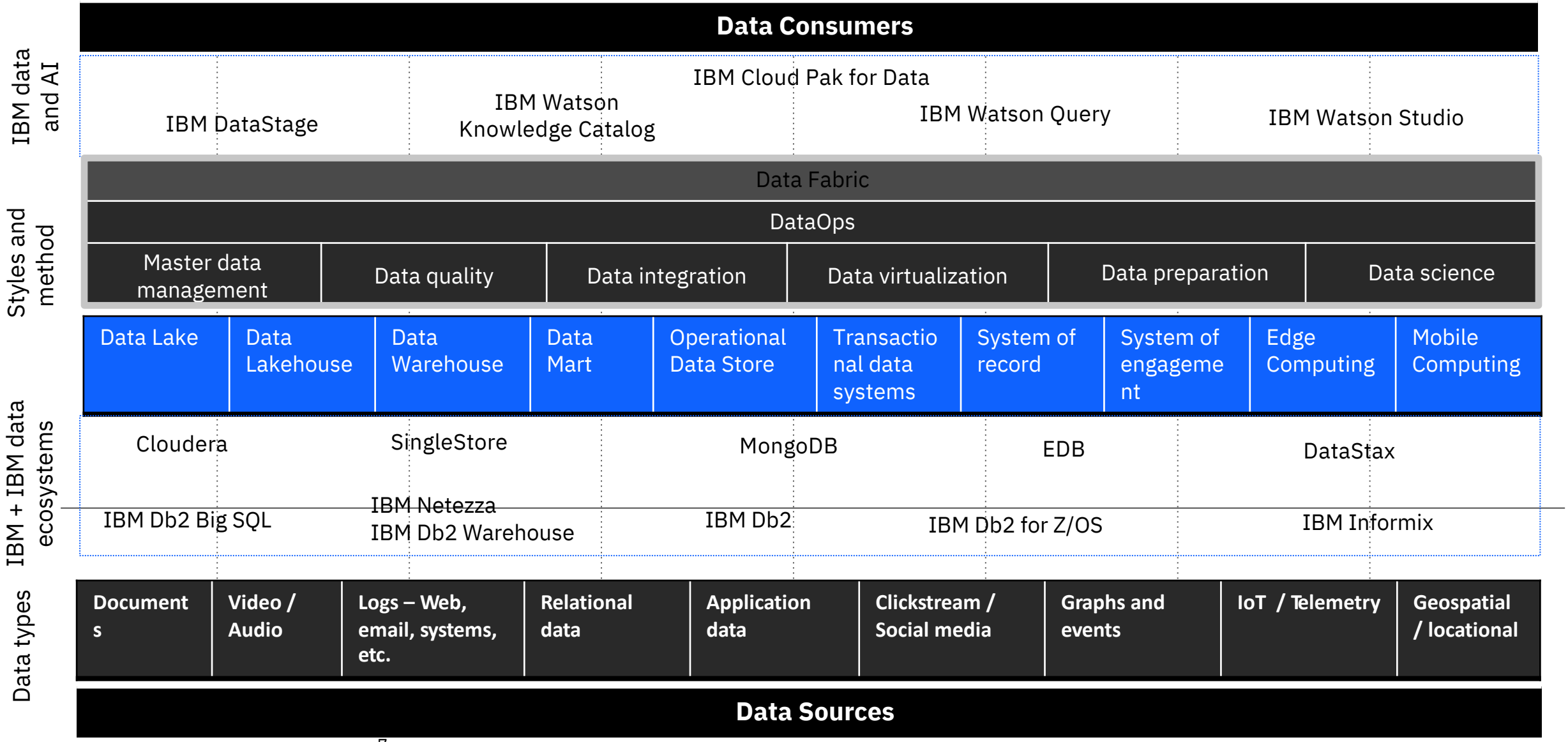
4

Functional & non-functional value-add

Fully-managed **enterprise-grade resiliency, security, and compliance** and the advantage of **decades of innovation in performance and support** for multiple languages and data-type

IBM Data Management Portfolio



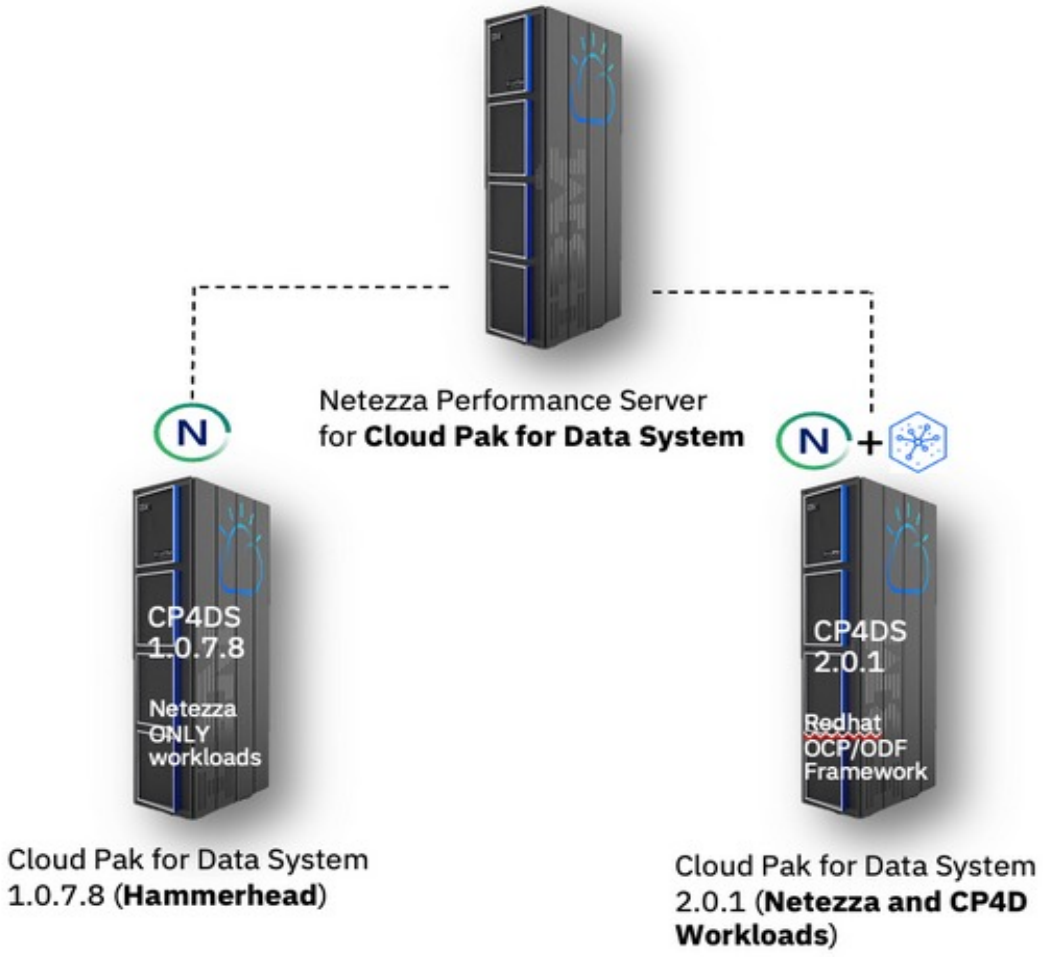
Deploy Db2 anywhere your apps and dashboards run

Data proximity is critical for optimal performance. **Data locality** is critical for governance and access control. This is why we're **continuously expanding** where and how you can take advantage of **Db2**.

	Self-managed software	Cloud-managed IaaS	Cloud-managed container PaaS	Fully-managed SaaS
Db2	●	IBM Cloud, AWS, Azure, GCP	IBM Cloud, AWS, Azure	IBM Cloud
Db2 Warehouse	●	IBM Cloud, AWS, Azure, GCP	IBM Cloud, AWS, Azure	IBM Cloud, AWS

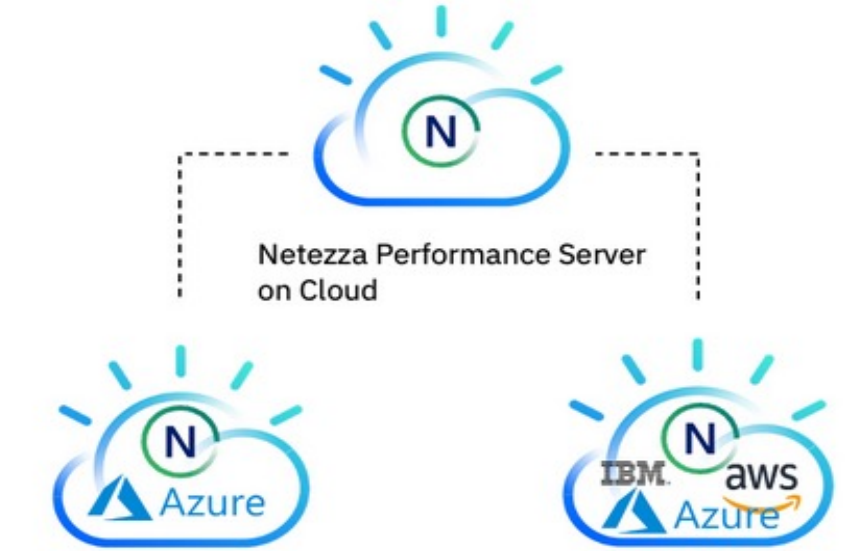
Note that **Db2 pureScale** deploys exclusively as self-managed software or on cloud-managed IaaS

Netezza Performance Server Offerings



Cloud Pak for Data System
1.0.7.8 (**Hammerhead**)

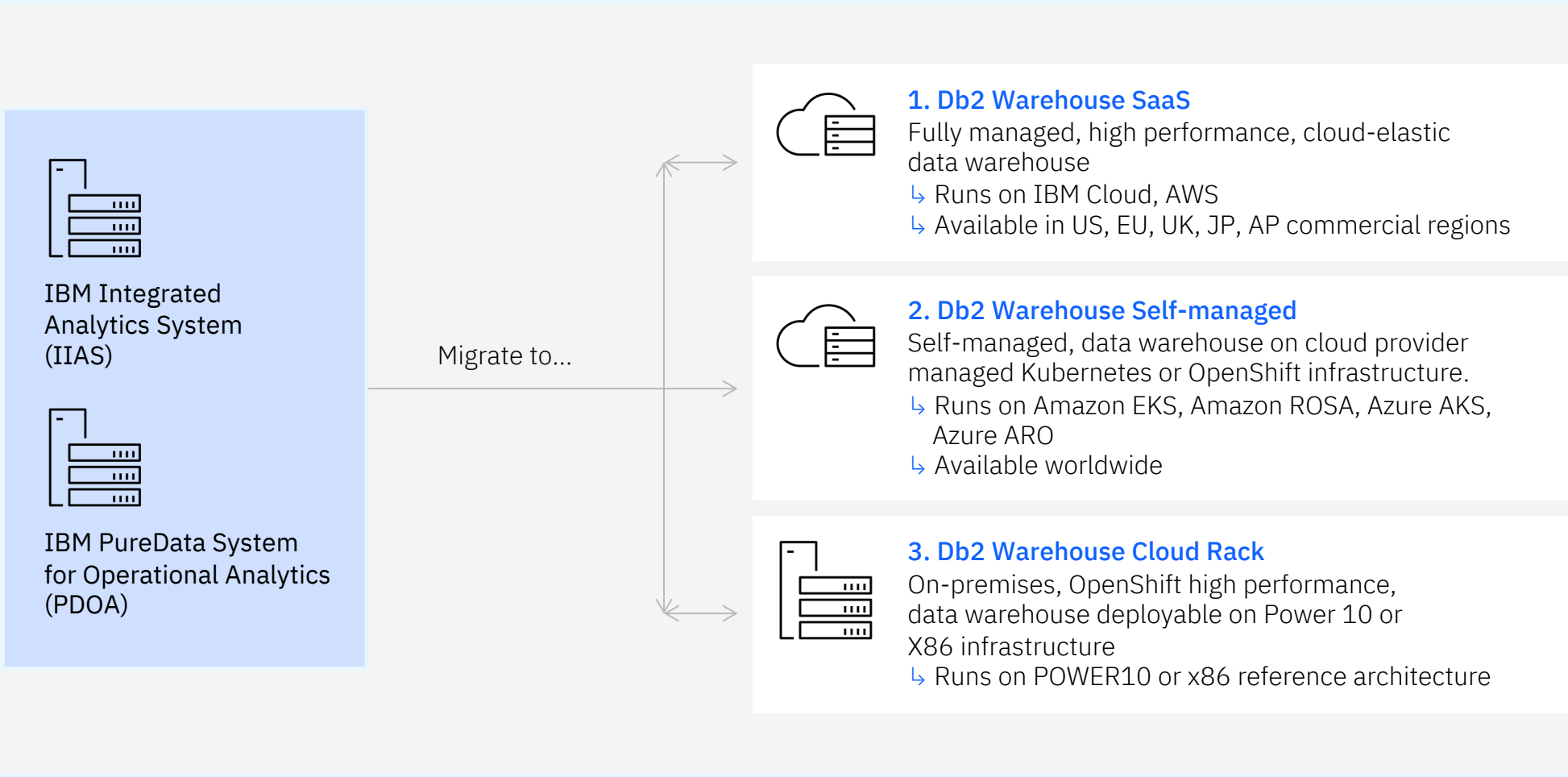
Cloud Pak for Data System
2.0.1 (**Netezza and CP4D Workloads**)



Fully Managed:
Software as a Service (**SaaS**)
Residency available on:
Azure

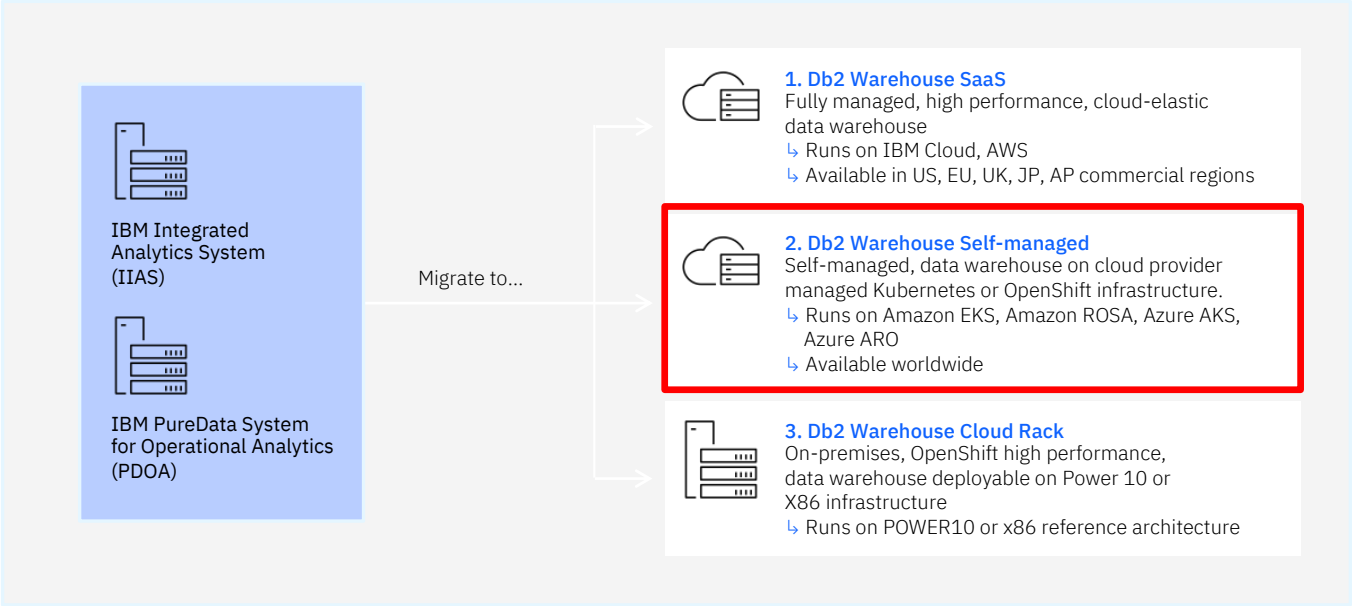
Bring your own license:
Platform as a Service (**PaaS**)
Residency available on:
Azure, AWS, IBM Cloud

Business Transformation starts with Db2 Warehouse



Db2 Warehouse Self Managed Software
AWS and Azure Cloud

a self-managed, high performance, elastic cloud data warehouse



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Migration Path to Netezza Performance Server

Run Netezza as you always have on-premises, or move to cloud

Netezza (Mako)
(PureData System
for Analytics **N3001)**

Move to the cloud
Use nz_migrate or nzbackup/nzrestore to
Upgrade to the Cloud

Stay on-premises
Use nz_migrate or nzbackup/nzrestore to
on-premise Hammerhead

NPSaaS

- Fully Managed
- Cloud Native, Pause/Resume,
  Dynamic Granular Scaling
- Consumption based

[1]NPSaaS AWS roadmap 4Q22

Hybrid Cloud
Flexibility between on-premise and Cloud
with same NPS Software

Hammerhead
Netezza Performance Server for
Cloud Pak for Data System

- Appliance Experience
- Insulates Netezza workloads
- Low TCO
- Unmatched Agility
- Improved Service Quality
- Appliance supported through 2026

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IBM Data Estate Modernization: Assets for Migrate Phase (execution)

Migrate Phase (approaches)

Lift and Shift

Db2 Migration Service	DCW	IBM Lift CLI	IBM CDC	NZ_MIGRATE utility	Db2 C2C
Migrate to IBM Cloud DBMS *(e.g. NPS/Db2WoC)*	**Schema & Script Migration**	**A ground-to-cloud, database migration service.**	**Incremental Data Load**	**Migrate data from Netezza to NPS**	**Move Db2 on Linux to Db2 on Cloud Pak for Data**
Services moving data from Db2 on-premises to cloud : • Db2 to Db2 • Db2 to Db2 on cloud platforms • Db2 file to Db2 • Db2 to Db2 file • Netezza to Db2 • Clone Db2 database using db2clone.	**End-to-End solution through UI tooling to facilitate the conversion of Oracle & Teradata databases to DB2 on premise and cloud databases** • Convert **from different database vendors to IBM database** • DDL Extraction • Compatibility Evaluation • Code Conversion • Package Visualizer • Data Movement	**One-time migration like Oracle/SQL Server/PDA or CSV file set to Db2WoC** ▪ Migration Replication of data from On-prem to IBM Db2WoC/Db2oC ▪ Ultra high speed data movement into Db2WoC/Db2oC using IBM Aspera ▪ Lift encrypts data as it travels over the wire to destination	**Data Load to IBM DW** ▪ Capturing transactional data from source systems and delivers it to target systems in near real time ▪ Replicate only changed data and remove ETL batch window requirements	**"Fork Lift" existing Netezza systems** ▪ fully (100%) compatible with Netezza/Pure Data System for Analytics	**Copies database related files to container** ▪ Enables automatic shifting and configuration of Db2 into a containerized service ▪ The tool provides an intuitive GUI interface, no installation or drivers required

• ***NOTE: Some of the Lift and Shift component will also be leveraged as part "Optimize" approach.***

We bring purpose built toolkit for replatforming – providing flexibility to our clients in terms of "as is" and / or "Optimized" migrations

IBM Migration Services

- **Thorough planning** – Our experts will make sure that all the data and applications are migrated and modernized to the new environment without any risk to your operations.
- **Fast and accurate data and application movement** with automation migration tooling
- **Migration documentation and ongoing training** for smooth ongoing management of the reference architectures.

From Design through Implementation

Data Modernization Workshop

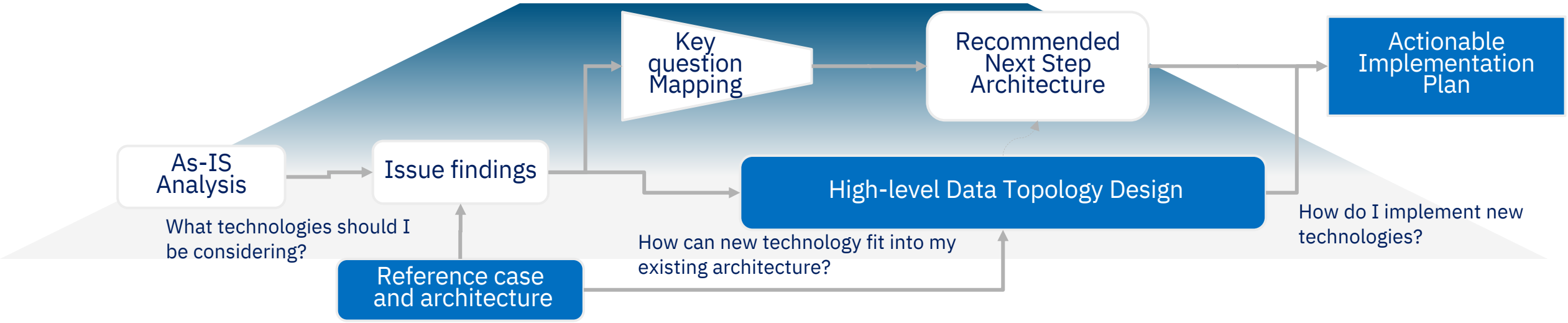
- Gain understanding of business and technical objectives
- Assessment of current architecture, processes and jobs
- Identify key areas to be modernized

Detailed Architecture Review

- Define architecture in terms of scale, performance and future requirements
- Design architecture for quick implementation
- Define data flows – what data goes where, as applicable to the client

Implementation Plan

- Define actionable plan and timelines based on architecture review
- Phased or iterative approach, based on client needs
- Integrate with IBM Services experts, for joint implementation of solutions



Migration Services - Value & Impact

Develop and Execute a plan that aligns to client's business requirements

- ✓ Migration of database assets
- ✓ Efficient workload move
- ✓ Data migration & validation
- ✓ Reduced impact on technical staff
- ✓ Integrated validation plan

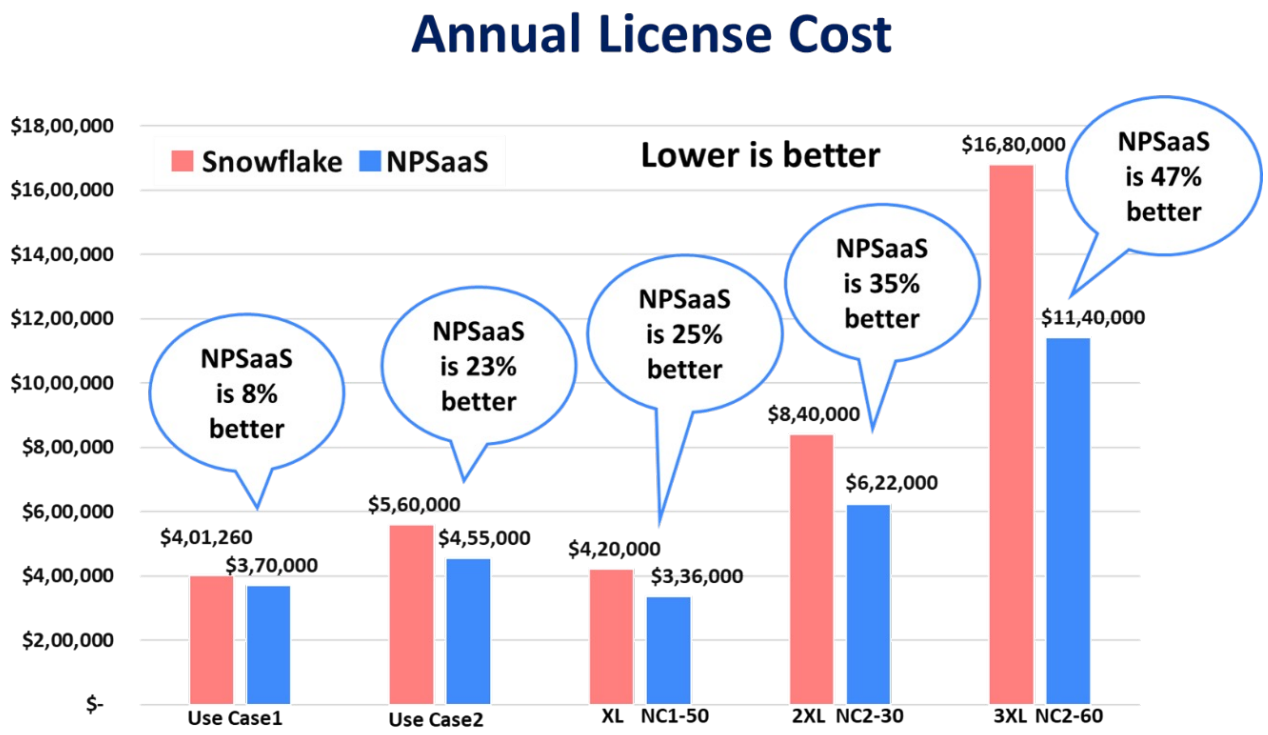
Getting Started: IBM provides a discovery workshop to understand client objectives and existing challenges. As part of the workshop we:

- Identify existing database objects and compatibility to new target platform
- Provide guidance on how to reduce time and cost to value
- Create a high-level migration plan to match the target architecture

IBM brings experience from many database modernization & migration engagements.

Total Value of Ownership (TVO) Assessment Highlighting Advantages of IBM Netezza Performance Server as a Service (NPSaaS) over Snowflake

Cost comparisons NPSaaS versus Snowflake for various workload contours



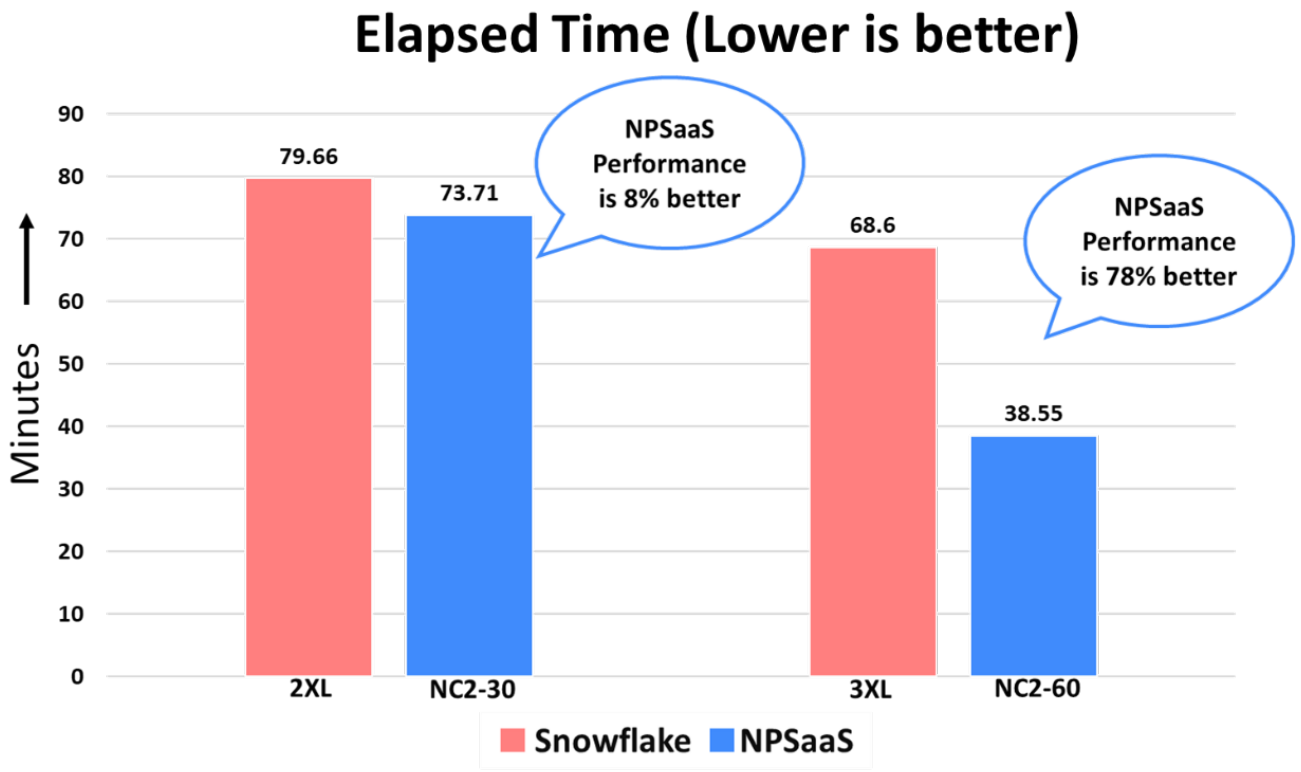
NPSaaS license cost is between **8% and 47% lower than Snowflake**.

Cost savings from the larger profiles (NC2) with more storage are greater. It implies that as the data size gets larger, the cost savings from NPSaaS would be a greater percentage of the Snowflake license costs.

Link to paper here

Total Value of Ownership (TVO) Assessment Highlighting Advantages of IBM Netezza Performance Server as a Service (NPSaaS) over Snowflake

Performance advantage of NPSaaS over Snowflake: Elapsed time for NC2 profiles for NPSaaS and Snowflake



Link to paper here

In addition to lower license costs, NPSaaS also performs better.

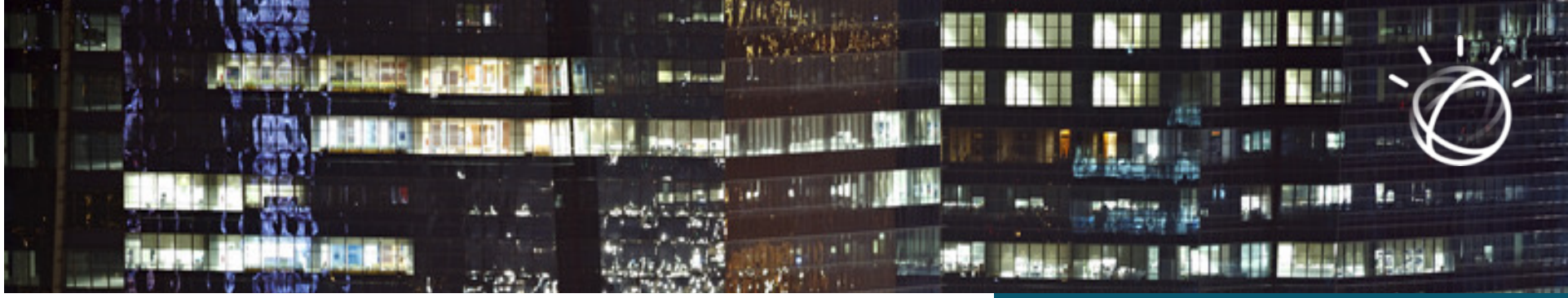
The performance differential of NPSaaS over Snowflake gets larger as the data size grows.

Some of the additional factors that consistently drive better price-performance for NPSaaS over Snowflake include:

- Persistent block storage with hybrid columnar assist
- No indexing, no tuning, mature and better workload management, auto compression
- Granular elastic scaling on storage independent of computing with predictable cost profile.

North American Bank

Moving from a legacy warehouse to a modernized solution with Netezza Performance Server



Business Challenge

As the client's legacy data warehouse appliances were quickly reaching full capacity, they urgently needed a modernized data warehouse that was 100% compatible with their large Netezza estate. Increased performance and a scalable architecture was needed that wasn't just a single-purpose EDW, with portability for them to shift to cloud in the future.

Solution

This North American Bank was almost at capacity with some of their Netezza systems and needed a fast, straightforward, risk-free modernization path. By moving to Netezza Performance Server they were able to address and remove I/O bottlenecks and other performance issues, delivering on average 2-3x performance improvement with NPS over their Mako systems. This next-generation Netezza aligns well with their future cloud strategy.

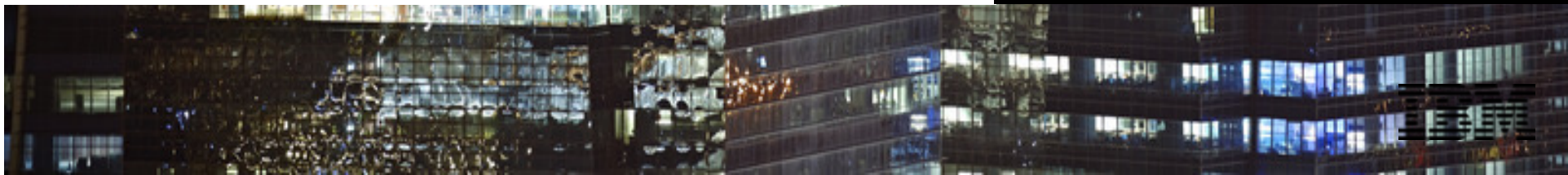
Besides leveraging their CP4D-NPS system for their Netezza upgrade use case, this client is also looking forward to using data virtualization, Watson Knowledge Catalog integration, and plans on expanding to other CP4D capabilities and use cases.

Outcome

- Enjoying the platform benefits of CP4D
- Straightforward and simple upgrade
- 2-3x Performance improvement
- Removal of I/O bottlenecks

Solution Components

- IBM Netezza Performance Server



Industry: Banking & Financial Markets
Geography: North America

North American Energy & Utilities Company

Moving and enhancing performance of long standing Netezza clients

Business Challenge

As a long standing Netezza customer, this client undertook a due diligence / RFP initiative to ensure their Compute Capacity & Storage needs would be properly aligned for the next stage in their IT environment's evolution - and more importantly confirm the ongoing critical performance of their own service offering back to a sizable base of residential and business customers.

Solution

The IBM team introduced the client to the new Netezza Performance Server platform. This ultimately provided a strong level of technology comfort to the database administrators, enterprise architects, and developers. The team demonstrated the compatibility and simplicity of moving their data and applications to the new NPS configuration. The new NPS configuration also proved to be more than a 2x performance enhancement over their existing Netezza system.

Outcome

- Risk-free implementation & migration via the Netezza Postgres "NZ Migrate & GO" process
- Retention of previously developed inhouse Netezza technical skills
- Preservation of current ecosystem - including Aginity, Attunity, Alteryx, SAP Data Services, Business Objects and Tableau
- Future Data Science Capability (embedded Cloud Pak for Data solution-set)

Solution Components

- IBM Netezza Performance Server

Industry: Energy & Utilities
Geography: North America

Questions