



Optimizing Manufacturing Data Exchange

Pervasive Datacenter Architecture (PDx™)

BLUEPRINT

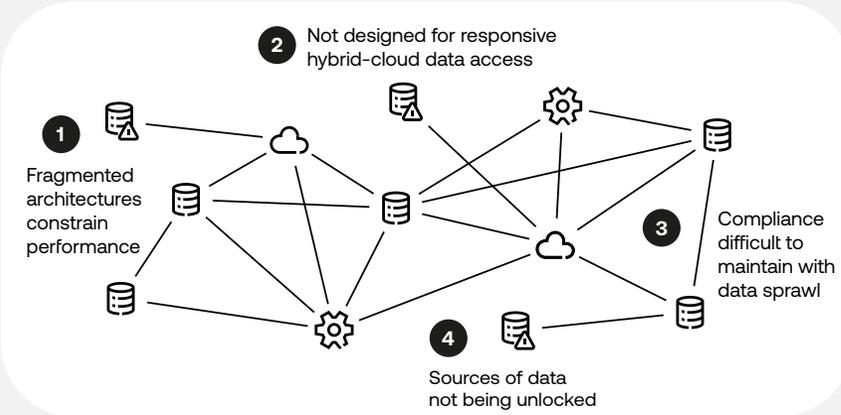


PDX™ Blueprint: Optimizing Manufacturing Data Exchange

Introduction

Traditional IT architectures within manufacturing businesses, corporations, factories, agencies, vendors and firms are not designed to effectively leverage data, optimize data exchange or address the challenges of Data Gravity. Data created from different lines of business is often stored in silos throughout the company. Some elements on premise and some in the cloud. This distribution without intent leads to performance issues, operational and supply chain costs, and an increase in overall complexity. Successful digital transformation requires a data-centric IT infrastructure that localizes data aggregation, staging, analytics, streaming and management in centers of data exchange at global points of business presence.

Current state



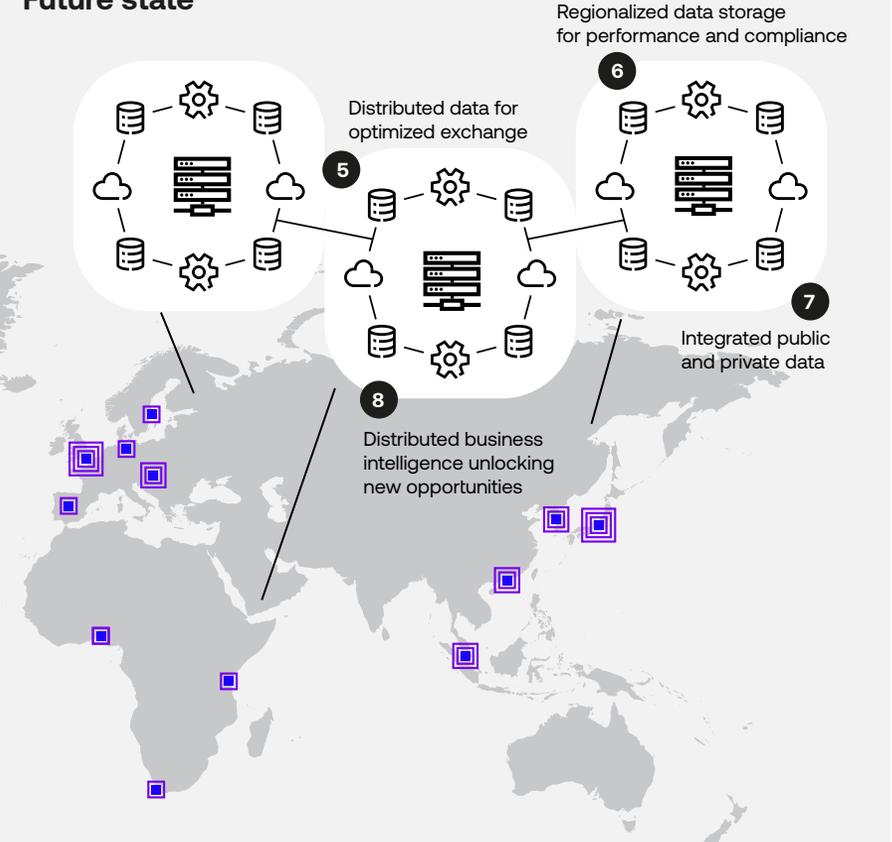
Optimize Data Exchange

- Siloed data
- Data
- Cloud service provider
- Data processing
- Data Gravity metro
- Data Hub

- 1** **Fragmented architectures** burdened by technical debt and driven by point solutions lack capabilities and performance required for hybrid IT workflows
- 2** **Cloud connectivity and network not optimized**, causes poor application performance when leveraging cloud to access local data

- 3** **Inconsistent data storage and access methods** lead to storage sprawl, cost overruns and compliance issues
- 4** **Siloed data** prevents the enablement of analytics and new business models centered around data

Future state



- 5** **Implement distributed data staging/aggregation** to optimize data exchange between users, things, networks and clouds
- 6** **Deploy regional data lakes/distributed data warehouses** to maintain data performance, compliance and sovereignty

- 7** **Integrate public/private data sources** to enable real-time intelligence across distributed workflows
- 8** **Distribute business intelligence capabilities** to allow you to create new secure B2B data exchanges and unlock new opportunities

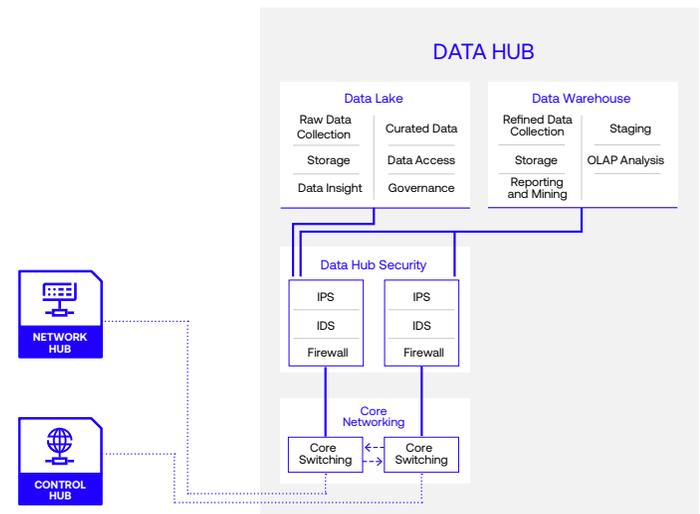
Solution

Step 1

Implement data staging/aggregation

- 1 Distributed data staging/aggregation
- 2 Regionalized data storage for compliance¹

Action: Implement a cohesive data storage strategy at centers of data exchange



- + Deploy regional data lakes and distributed data warehouses at centers of data exchange
- + Solve global coverage and capacity needs

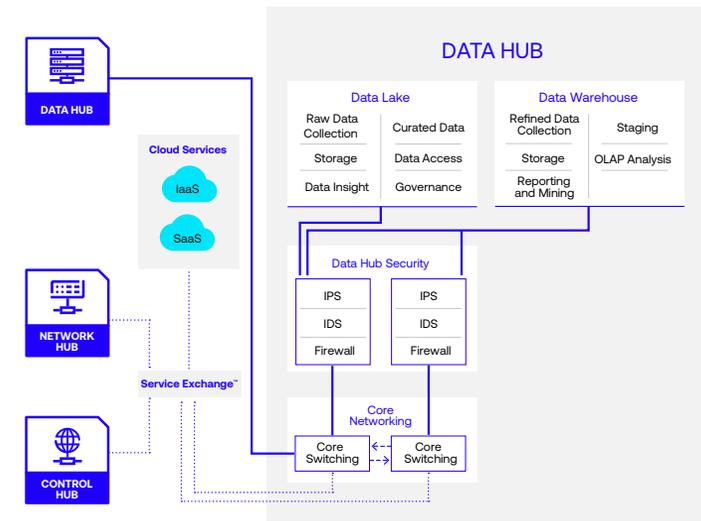
Outcome: + Localized data improves application performance and user experience
+ Maintains compliance and data sovereignty

Step 2

Integrate public/private data sources

- 3 Integrated public and private data sources

Action: Directly interconnect cloud on-ramps to centers of data storage



- + Enable performant data exchange between sources and destinations
- + Operate deployments as a seamless extension of global infrastructure with consistent experience, security and resiliency

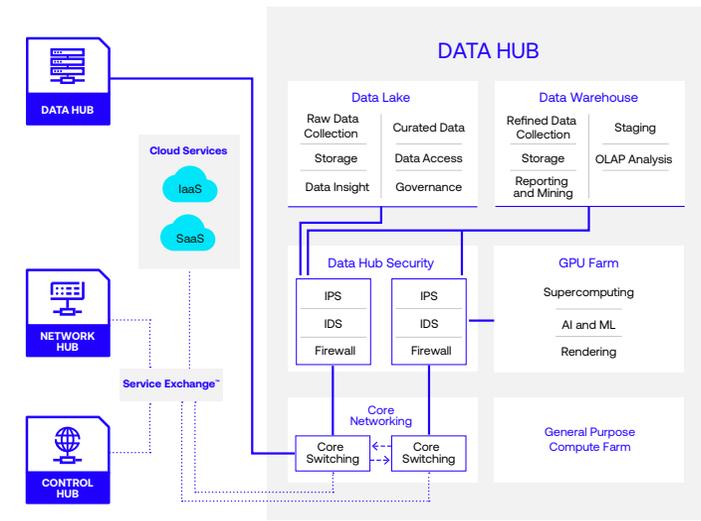
Outcome: + Optimizes data exchange between users, things, networks and clouds

Step 3

Host data and analytics adjacent to network ingress/egress

- 4 New business opportunities unlocked

Action: Distribute business intelligence and connect global data ecosystems



- + Add processing, analytics and streaming capability at global points of business presence
- + Host a B2B meeting place for companies to collaborate and connect their business platforms

Outcome: + Enables real-time intelligence across distributed workflows locally and globally

Step 1: Implement data staging/aggregation

1
Distributed data staging/aggregation

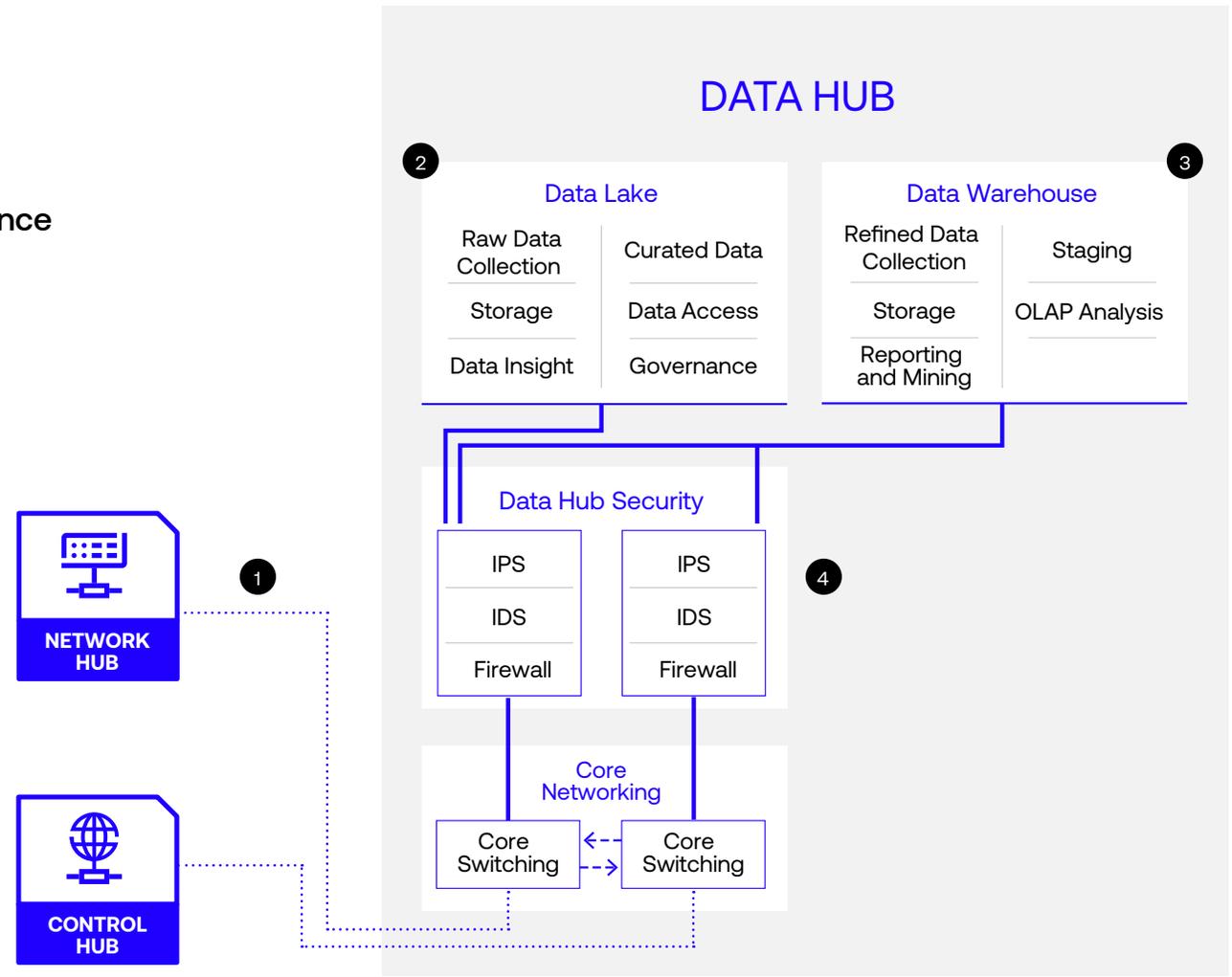
2
Regionalized data storage for compliance

Action

- Implement a cohesive data storage strategy at centers of data exchange.
- + Deploy regional data lakes and distributed data warehouses at centers of data exchange
- + Solve global coverage and capacity needs

Outcomes

- + Localized data improves application performance and user experience¹
- + Helps user maintain compliance and data sovereignty



- 1** Deploy centers of data staging in key locations
- 2** Data Lakes store raw data to be analyzed and curated by data scientists
- 3** Refined data sits in the data warehouse for business professionals to use
- 4** Due to the value and sensitivity of enterprise data, access needs to be strictly controlled and logged

Step 2: Integrate public/private data sources

3 Integrated public and private data sources

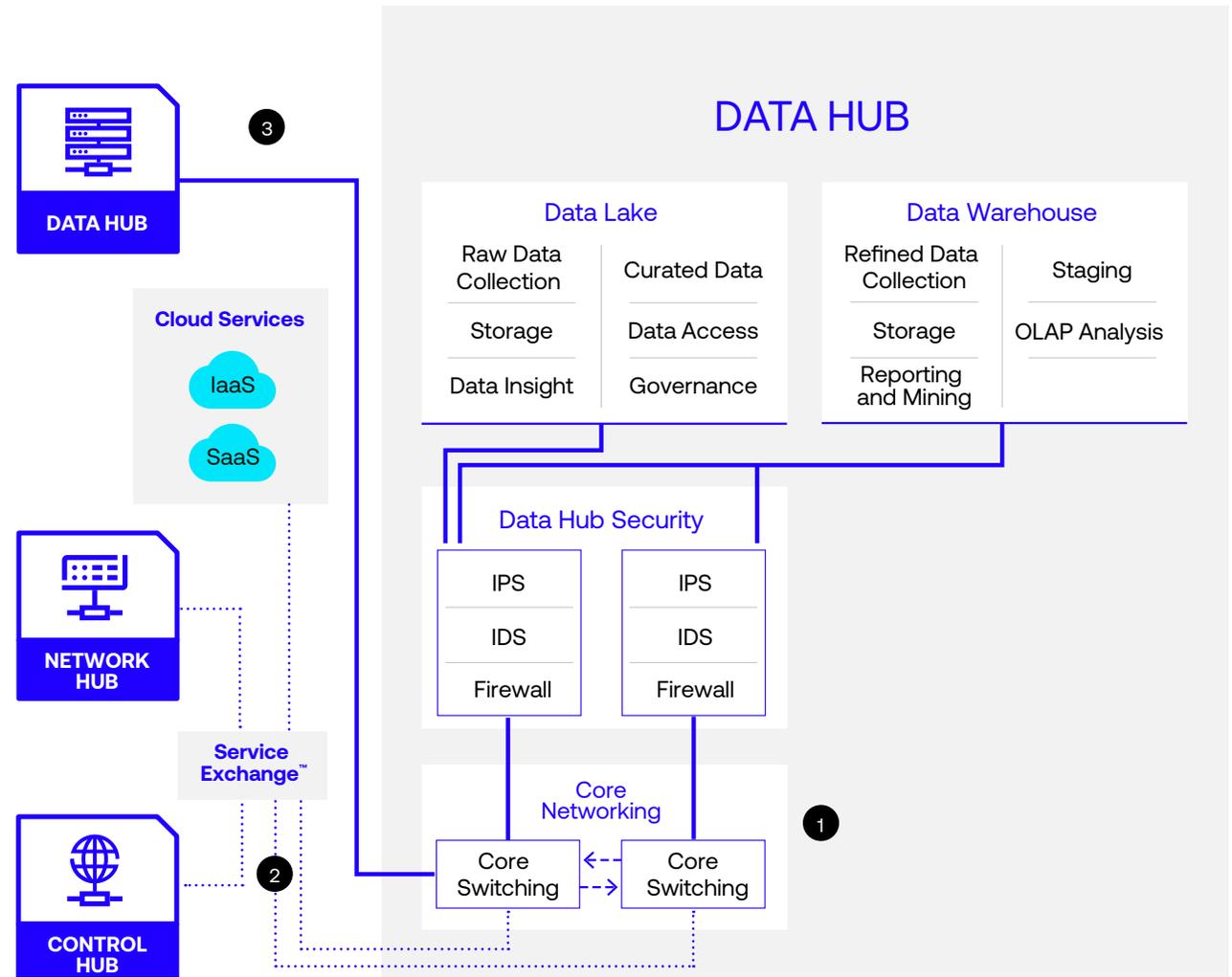
Action

Directly interconnect cloud on-ramps to centers of data storage.

- + Enable performant data exchange between sources and destinations
- + Operate deployments as a seamless extension of global infrastructure with consistent experience, security and resiliency

Outcome

- + Optimize data exchange between users, other devices, networks and clouds



- 1 The Core Switching Infrastructure terminates connectivity into the Data Hub and enables access to the cloud and other data sources by direct high-performance interconnection
- 2 Additional connectivity is provided by use of software-defined on-ramps such as Service Exchange™
- 3 Other data sources can be cloud storage, IaaS environments, SaaS environments or other remote Data Hubs

Step 3: Host data and analytics adjacent to network ingress/egress

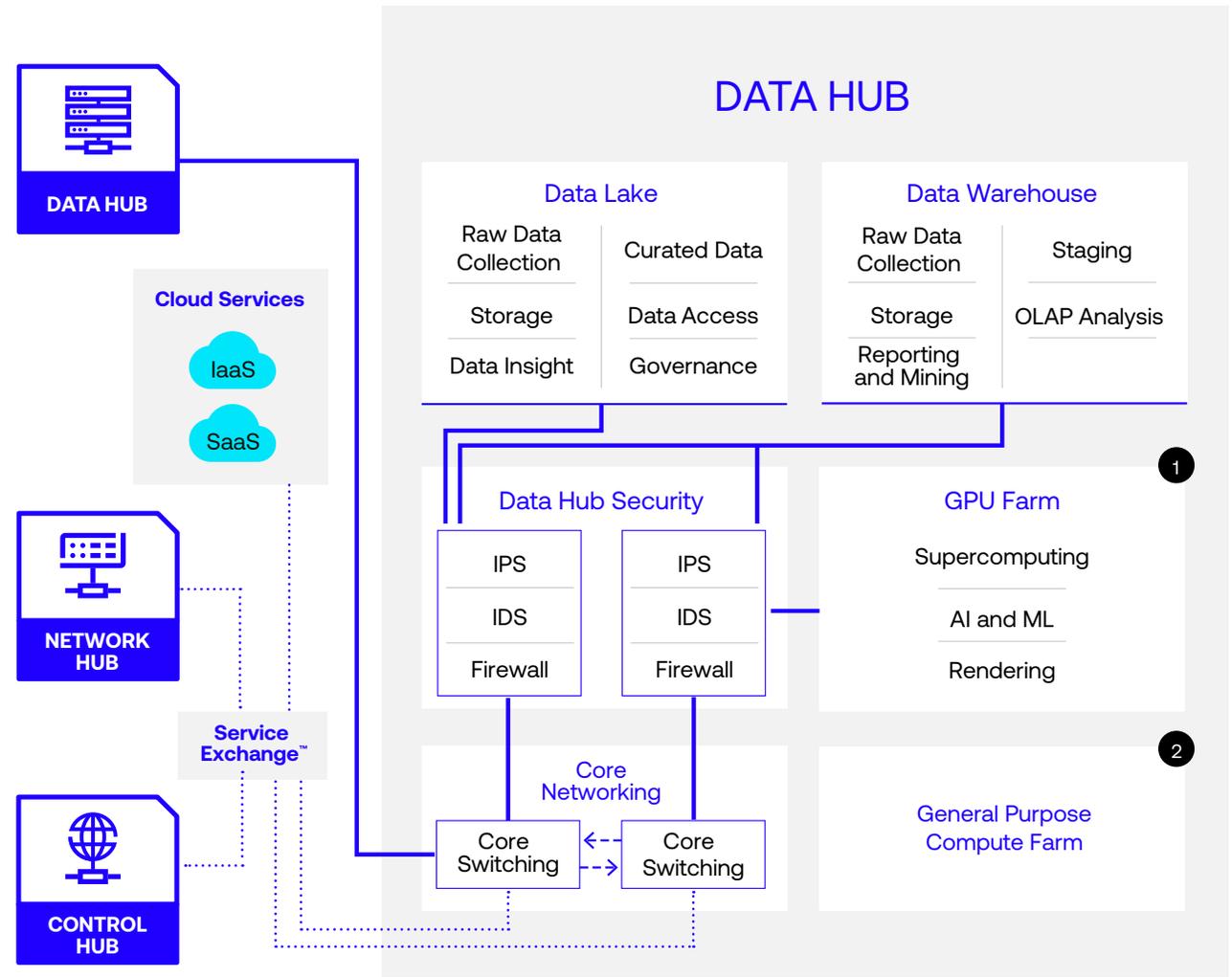
4
New business opportunities unlocked

Action

- Distribute business intelligence and connect global data ecosystems
- + Add processing, analytics and streaming capability at global points of business presence
- + Host a B2B meeting place for companies to collaborate and connect their business platforms

Outcome

- + Enable real-time intelligence across distributed workflows locally and globally



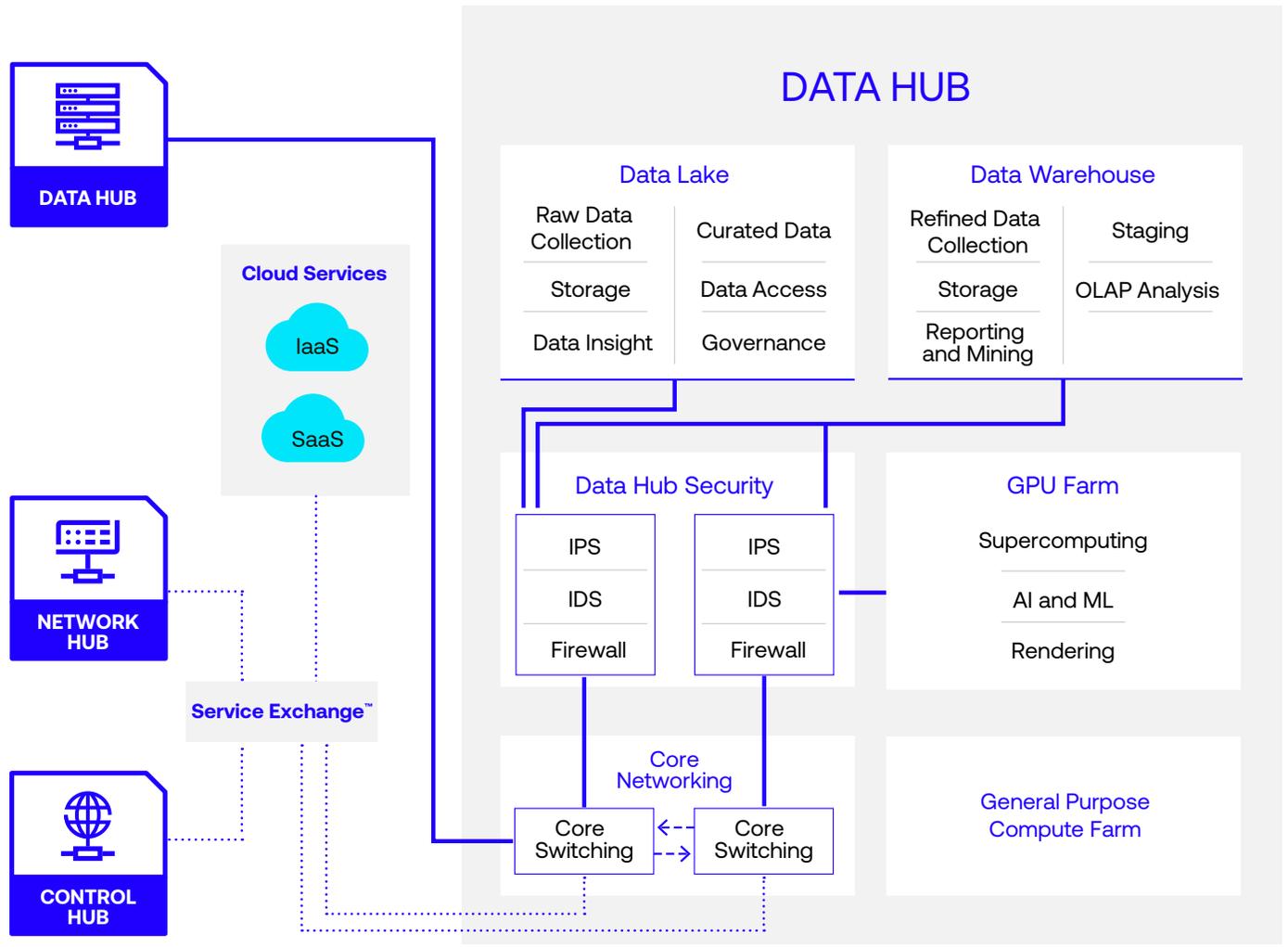
- 1** GPU Farm is located directly adjacent to stored data for direct access to enable AI Development and workloads
- 2** Bulk compute farm is used for media content creation, complex modeling and simulations

Target state architecture

Summary

A purpose-built data-centric architecture to optimize manufacturing data exchange can reduce security risks, and can lower costs as a result of a reduction of bandwidth and duplicated infrastructure, and can contribute to revenue growth through unbounded data analytic performance. This is necessary to support exploding volume, variability and velocity of data creation as well as processing and storage required to accommodate digital business. The strategy brings the users, networks, systems and controls to the data, which removes barriers of Data Gravity and creates centers of data exchange to scale digital business.

The Optimizing Manufacturing Data Exchange Blueprint is part of a library of blueprints and repeatable implementation patterns that make up Digital Realty's Pervasive Datacenter Architecture (PDX™). Created by practitioners for practitioners, PDX™ codifies hundreds of production deployment combinations to enable companies to accelerate deployment and improve precision of their infrastructure to scale digital business globally. PDX™ provides a step-by-step strategy to manufacturing businesses, corporations, factories, agencies, vendors and firms as they architect a decentralized data-centric IT infrastructure to remove Data Gravity barriers, secure data near the customer, enforce compliance and engineer artificial intelligence (AI) capabilities. This will also accommodate distributed workflows at centers of data exchange in support of digitally-enabled interactions across all channels, business functions and points of business presence.



About Digital Realty

Digital Realty brings companies and data together by delivering the full spectrum of data center, colocation and interconnection solutions. PlatformDIGITAL®, the company's global data center platform, provides customers with a secure data meeting place and a proven Pervasive Datacenter Architecture (PDx™) solution methodology for powering innovation and efficiently managing Data Gravity challenges. Digital Realty gives its customers access to the connected data communities that matter to them with a global data center footprint of 310+ facilities in 50+ metros across 27 countries on six continents. To learn more about Digital Realty, please visit digitalrealty.com or follow us on [LinkedIn](#) and [Twitter](#).

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