

The logo for OpenDay 2026 features a stylized, glowing blue circuit board pattern in the background. A circular dashed line, also in blue, encircles the text "OpenDay 2026".

OpenDay
2026

Modernizing Market Intelligence: A Cloud Native High-Performance Data Architecture

30 September 2026

Google Cloud

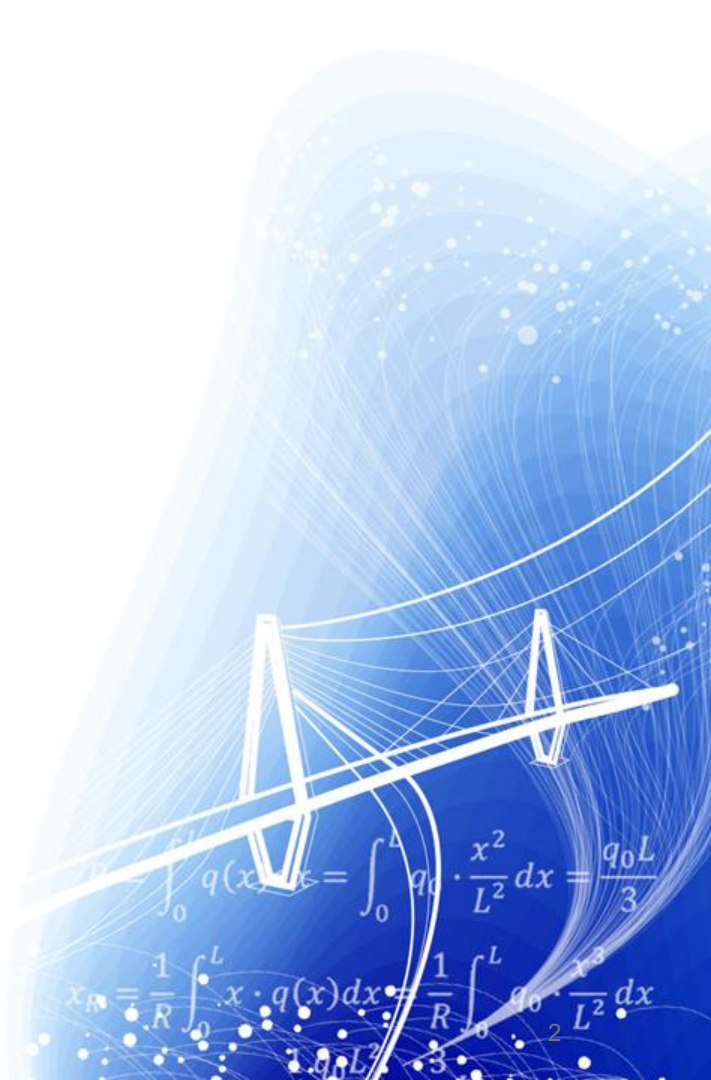


DEUTSCHE BÖRSE
GROUP

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Key Outcomes

- Leverage GCP Partnership and T7 to deliver value to DBG
- Enable DBG to grow Customer base by lowering financial and technical barriers
 - Cloud-native enables fast and easy access with low latency
 - Data Sharing at scale with global reach
 - Advanced Agent and ML platform to enable delivery of new data products
- Enhanced Customer Value
 - Advanced GCP Data Analytics and Machine Learning (e.g., Time Series Forecast Models)
 - Agentic First - MCP enable for Agents and LLMs



Highlights

70 000

messages per
second

4 GB

data volume per
minute peaks

3 sec

data delivery delay to
Big Query

Architecture



Objective

- Store data in BigQuery
- Attract new client segments

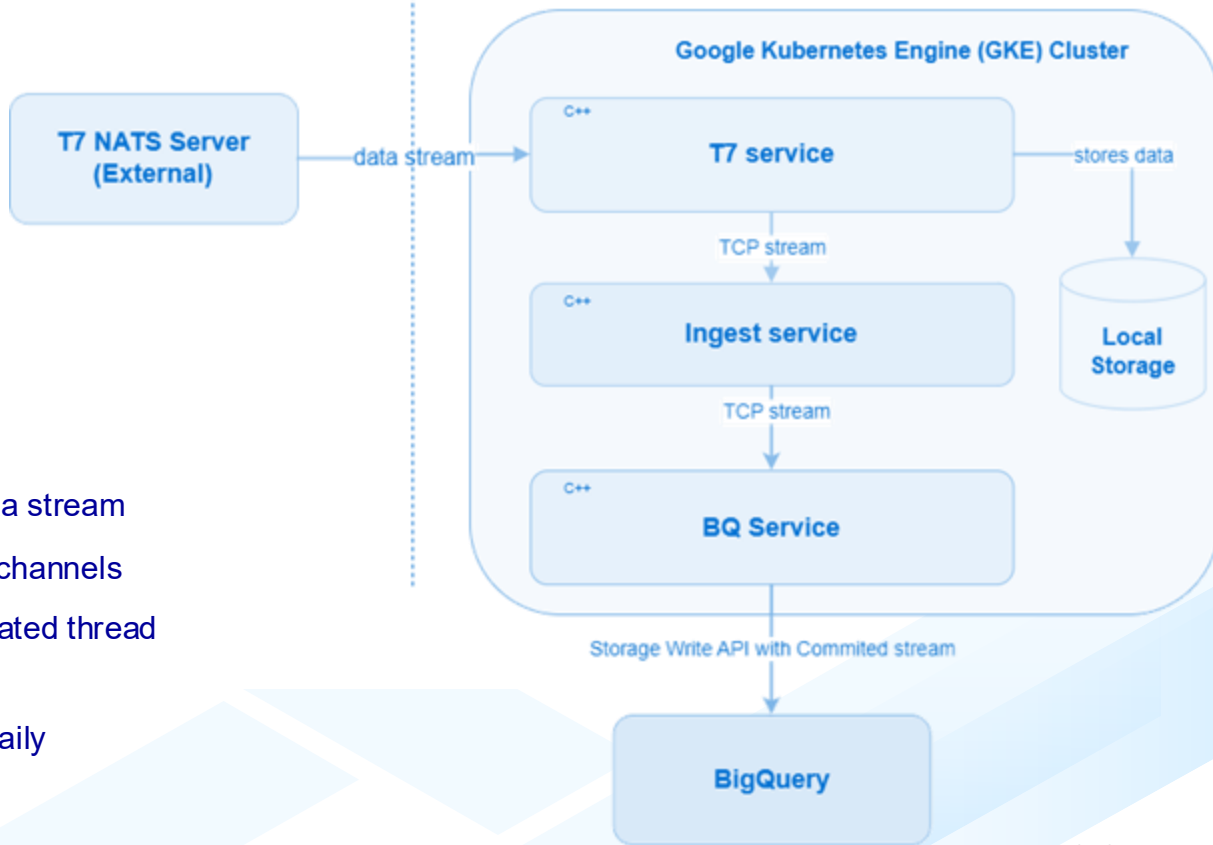


Data flow

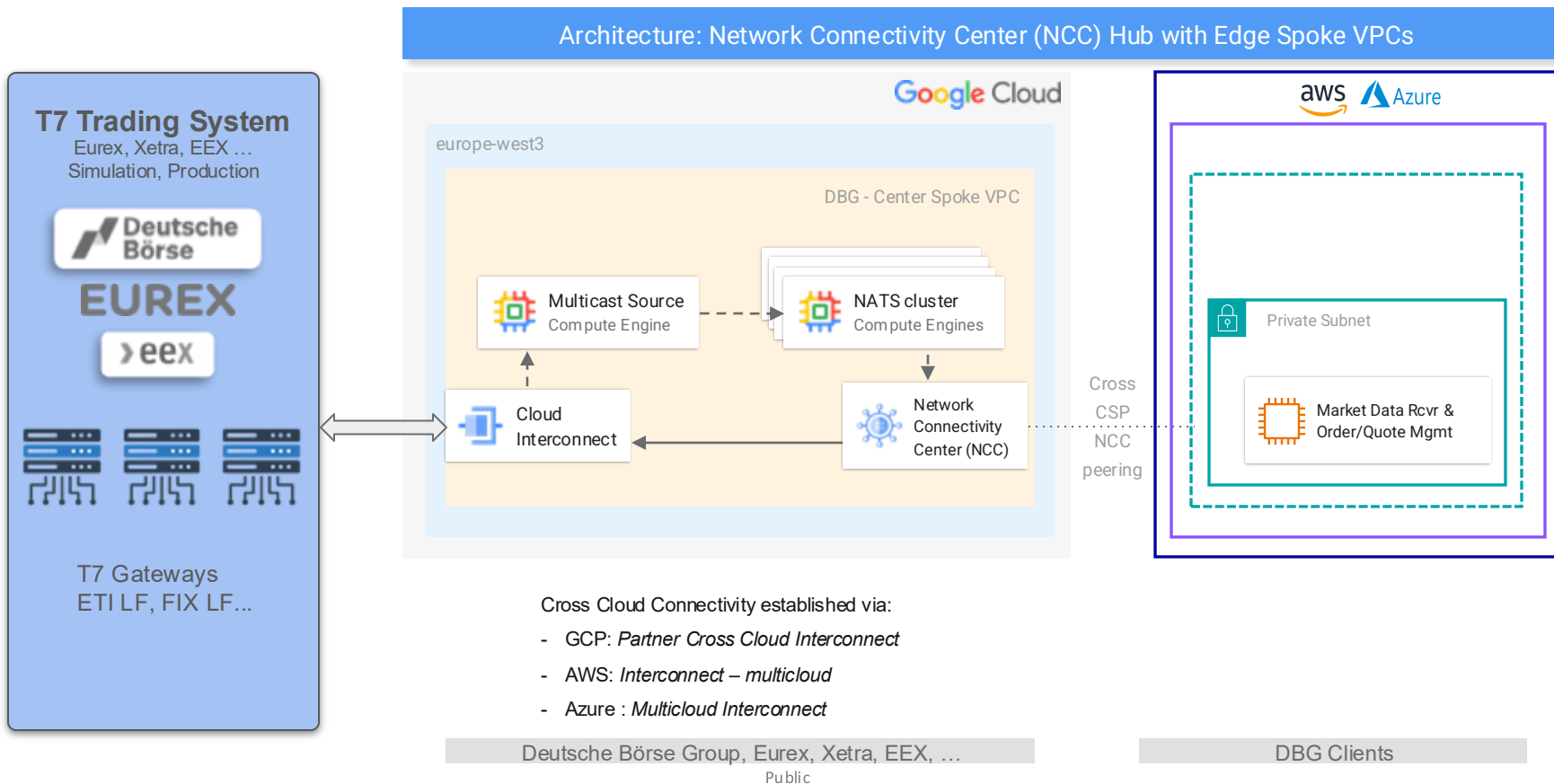
- NATS provides real time data stream
- Stream split into 83 parallel channels
- Channel processing in separated thread pipelines
- 600 – 900GB data volume daily

Eurex data / T7 platform

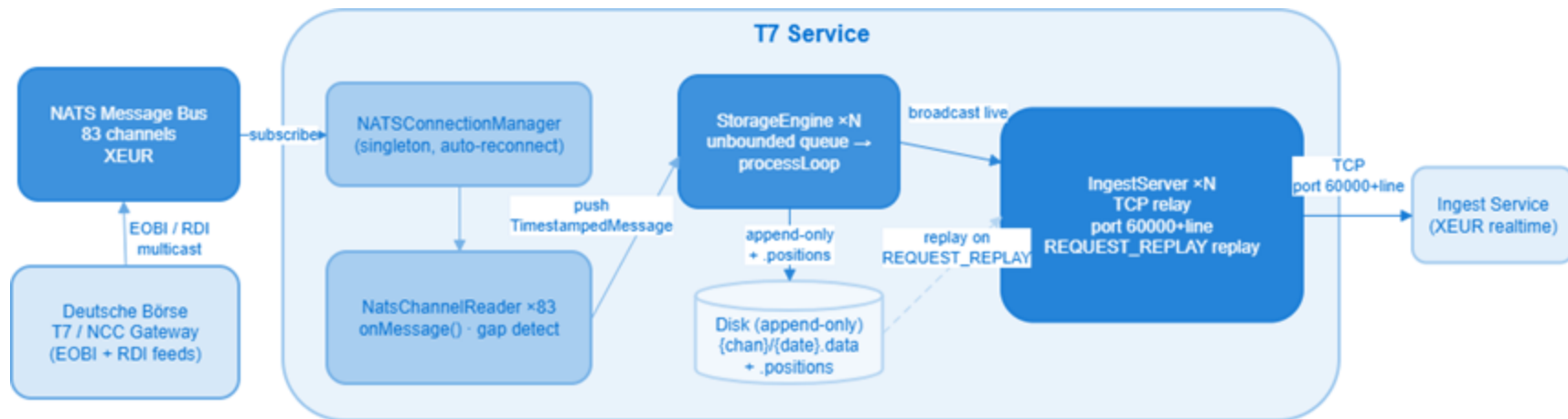
A7 Analytics platform



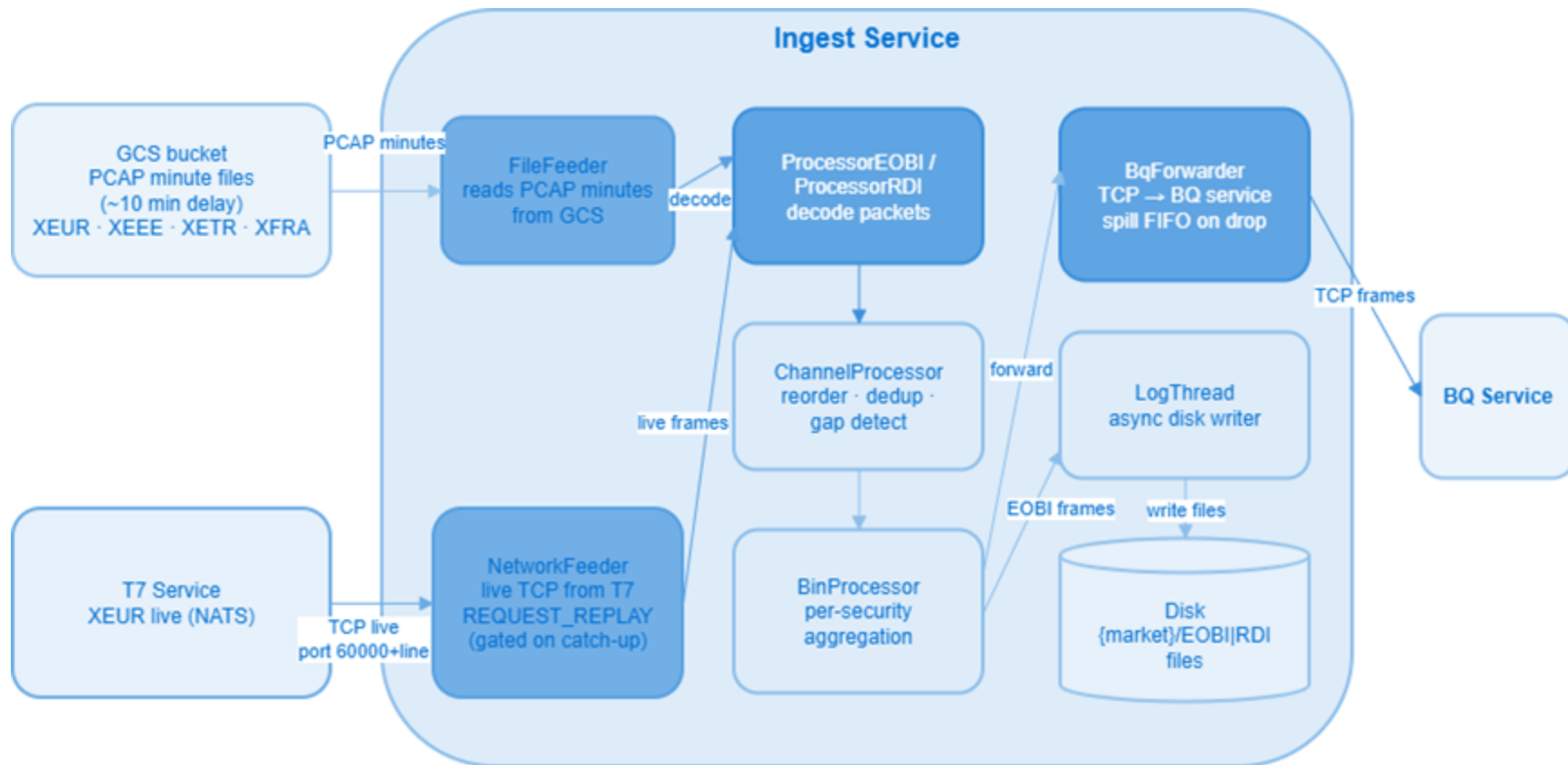
Market Data and Order/Quote Routing for other CSP



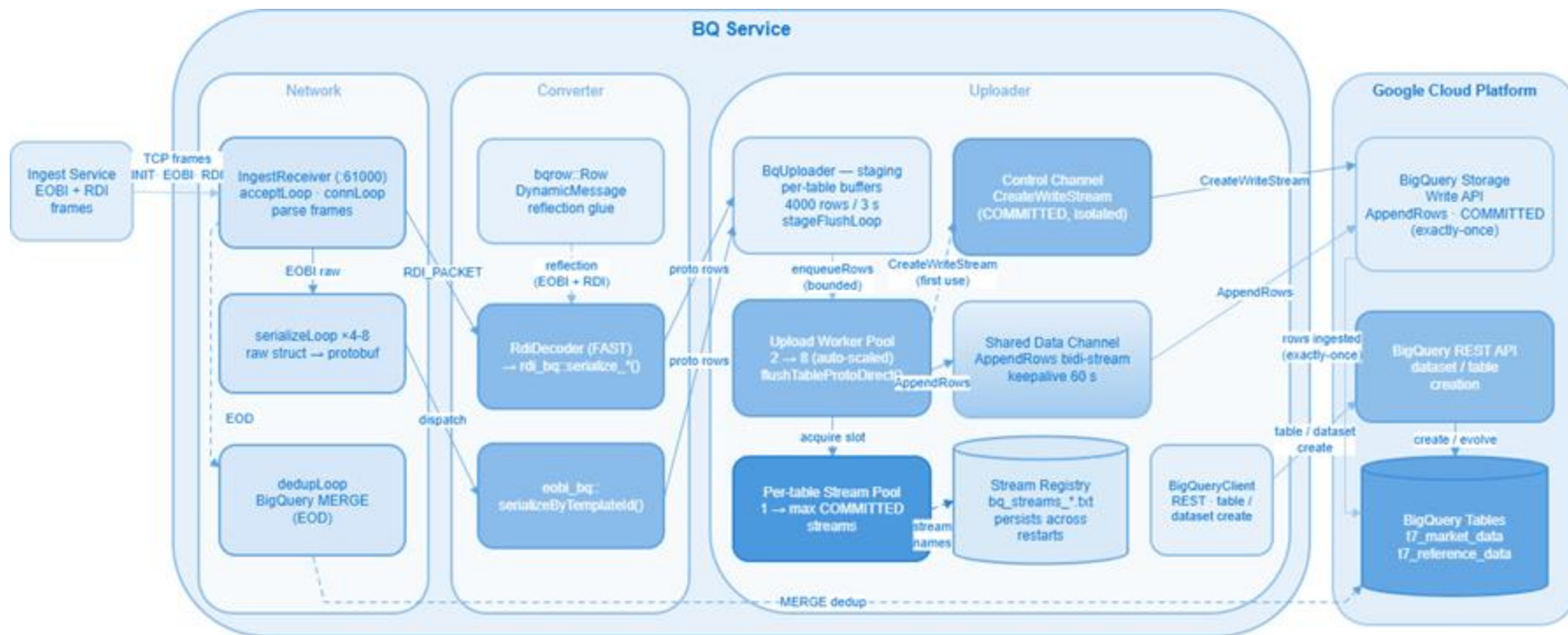
T7 Service



Ingest Service

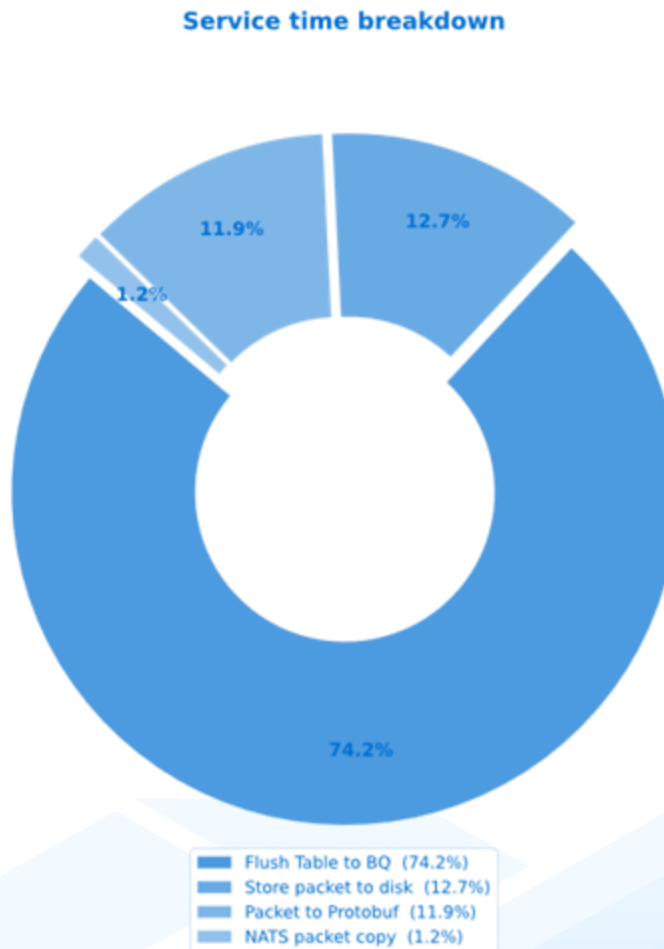


BQ Service



Time profile

- NATS - few percent
- Storing to disk – 1/8
- Protobuf conversion – 1/8
- Upload $\frac{3}{4}$ of the time!



Schema design

Big Query tables

- 27 tables
- Partitioning - date column
- Clustering – market segment id, security id, transact time columns
- Concurrent streaming writes from multiple threads

“Order modify” table

☐	Field name	Type	Mode	Description	
☐	MsgSeqNum	INTEGER	NULLABLE	Message sequence number, incremented p...	▼
☐	RequestTime	INTEGER	NULLABLE	Gateway request in timestamp	
☐	TrdRegTSPrevTimePriority	INTEGER	NULLABLE	-	
☐	PrevPrice	INTEGER	NULLABLE	-	
☐	PrevDisplayQty	INTEGER	NULLABLE	-	
☐	SecurityID	INTEGER	NULLABLE	Unique instrument identifier	
☐	TrdRegTSTimePriority	INTEGER	NULLABLE	Priority timestamp	
☐	DisplayQty	INTEGER	NULLABLE	Displayed quantity	
☐	Side	INTEGER	NULLABLE	Side of the order (1=Buy, 2=Sell)	
☐	OrdType	INTEGER	NULLABLE	Order type (optional, 1=Market Order for ca...	▼
☐	HHIIndicator	INTEGER	NULLABLE	Updated index of the HHI interval at the ord...	▼
☐	Price	INTEGER	NULLABLE	Order price (Order Add/Modify/Delete/Execution)	
☐	PrevPriceHHIIndicator	INTEGER	NULLABLE	Updated index of the HHI interval at the ord...	▼
☐	Date	DATE	NULLABLE	-	
☐	MarketSegmentID	INTEGER	NULLABLE	Product identifier.	
☐	TransactTime	INTEGER	NULLABLE	Transaction timestamp	

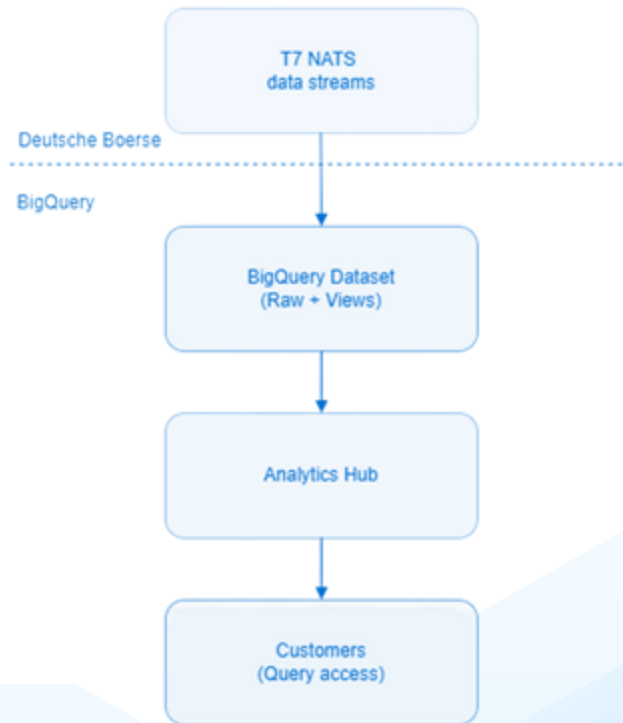
Latency & Data organization

Latency

- End-to-end: < 3 seconds
- Dominant contributor: BigQuery ingestion

Data organization

- Raw dataset (internal)
- Views with 15 min delay
- Separate datasets (internal vs external)



Data delivery via GCP BigQuery



Sharing

- Any GCP Customer
- Direct Dataset Access via BigQuery Sharing
- No data duplication
- We expose dataset, customer subscribes to it



Cost model

- Data storage - DBAG
- Query - customer



Benefits

- Globally Scalable distribution
- Simplified customer on-board
- Advanced Analytics capabilities
- ML modelling – Vertex AI
- Pre-trained models – Time Series Forecasting Mode
- Agentic enabled with MCP

Data delivery via A7 python SDK

▪ Ready-to-Use Order Book Data

- No need to decode complex exchange messages or build custom parsers
- Instantly load reconstructed order books (L2/L3) with custom depth and time filters
- Access every single trade, tick, and message timestamp

▪ Enterprise Python Engineering

- Synchronous, predictable execution with full static typing / IDE auto-completion
- Minimal footprint (lightweight HTTP client, no convoluted async loops)

▪ <https://github.com/Deutsche-Boerse/a7>

python

```
from a7 import A7Client

client = A7Client(token="YOUR_API_TOKEN")

# 1. Get 10-level Eurex order book
orderbook = client.orderbook.get_t7(
    market_id="XEUR",
    date=20250101,
    market_segment_id=187421,
    security_id=204934,
    levels=10
)

# 2. Simulate a Xetra auction order
auction = client.auction.get_auction(
    exchange="XETR",
    date=20250101,
    market_segment_id=52915,
    security_id=2506257,
    side="buy", px=100.50, qty=1000
)
```

A7 Market Intelligence — Market Pulse Newsletter

- Transforms complex, order-by-order trading data into automated, easy-to-read market briefing
- BigQuery table Execution summary
- Weekly aggregation of the data with following figure:
 - volume: Executed continuous contract quantities
 - vwap: Volume-weighted average execution price
 - high_px / low_px: Intra-period price extremes
 - wow_pct: Week-on-week volume variations
- Uses ARIMA_PLUS statistical model
- Reads two weeks headlines
- Gemini 3.5 Flash
- Jinja2 templates with html and text
- Final output
 - Html format
 - email

A7 Market Pulse

Week of 2026-06-01 – 2026-06-05 · 5 trading days · 15 instruments

Market participants adopted a cautious stance this week, steering euro-area fixed-income markets into a sideways pattern ahead of the upcoming central bank policy decision. Despite this broader holding pattern, positioning adjustments ahead of the quarterly contract roll drove significant shifts in activity across key benchmark derivatives.

The long-term German government bond future maintained its status as the week's most heavily traded contract, acting as the primary vehicle for managing duration exposure. Meanwhile, global equity-index derivatives saw a notable surge in engagement, with the MSCI World future registering the most pronounced week-on-week volume expansion.

ANOMALY SCREEN

7 / 15 flagged

Euro-BTP Future (10y Italy)	WoW -10.0% · z-score +8.92
Short-Term Euro-BTP (Italy)	WoW +5.3% · z-score +7.65
Euro-Bund Future (10y Bund)	WoW -19.2% · z-score +9.50
Euro-Bobl Future (5y Bund)	WoW -14.3% · z-score +7.35
Euro-Buxl Future (30y Bund)	WoW -23.6% · z-score +10.41
Euro-Schatz Future (2y Bund)	WoW -5.3% · z-score +5.39
Euro-OAT Future (10y France)	WoW -12.7% · z-score +9.13

Flagged when weekly volume deviates from its recent median by a robust z-score beyond threshold. Direction of WoW shown for context; screen is volume-distributional, not directional.

WEEKLY METRICS

Instrument	Volume	WoW	Avg VWAP	z
EURO STOXX 50 Dividend Future	83,960,000	-1.4%	178.66	+1.97
DAX Future	1,200,330,000	+37.0%	25,014.73	+0.54

Euro-OAT Future (10y France)	7,748,550,000	-12.7%	119.90	+9.13
EURO STOXX Banks Future	5,938,810,000	+9.9%	271.06	+0.42
VSTOXX Future (volatility)	530,230,000	+54.3%	19.61	+1.64

Volume = executed (continuous) quantity from T7 ExecutionSummary. VWAP and extremes are close approximations of official OHLC. z = robust z-score of weekly volume vs recent history.

Looking ahead, the market is poised for heightened volatility as the quarterly transition of derivatives positions from the current expiry to the next begins in earnest. This recurring cycle typically triggers massive volume surges, particularly in the German benchmark futures that span the short, medium, and long ends of the curve to define the European interest rate landscape.

In the news

Anleihen: "Seitwärtsmarkt vor EZB-Sitzung"

Boerse Frankfurt · 2026-06-05

Gold: "Noch bleibt es etwas zäh"

Boerse Frankfurt · 2026-06-05

Christine Lagarde: Women and leadership: widening the pipeline

ECB Press · 2026-06-0

Fonds: "Rekordhochs locken zum Ausstieg"

Boerse Frankfurt · 2026-06-03

A tale of two energy crises – initial conditions matter

ECB Blog · 2026-06-03

Piero Cipollone: Europe's money evolves so people's freedom to pay remains

ECB Press · 2026-06-03

ETFs: "Gewinne fließen in neue Investments"

Boerse Frankfurt · 2026-06-0

Headlines from public Eurex, Deutsche Boerse and ECB feeds, for context. Links open the original source.

On the radar

Meet us at the Fixed Income Leaders Summit 2026

Eurex Events · Jun 15, 2026 – Jun 17, 2026

Meet us at IDX 2026

Eurex Events · Jun 16, 2026 – Jun 17, 2026

Meet us at ISLA 33rd Annual Securities Finance & Collateral Management Conference

Eurex Events · Jun 16, 2026 – Jun 18, 2026

Meet us at the Derivatives Forum Paris 2026

Eurex Events · Jun 23, 2026 – Jun 23, 2026

Accelerate AI Innovations with Vertex Managed AI Platform

Build and scale Models quickly by leveraging Vertex managed AI Platform
with infrastructure, tools, and frameworks

AI Applications

For business users

Google Cloud Agents

Gemini Enterprise

Vertex AI Search for
Commerce

Customer Engagement Suite

Vertex AI for all your model and agent needs

Model Garden

- Gemini models
- Generative media models
- Partner model MaaS
- Open model MaaS
- Hugging Face & custom models
- Embeddings, task-specific models and APIs

Build, deploy and manage models

Prototype and Experiment

Notebooks (with AI Assistance) Vertex AI Studio

Customize and deploy

Prompting Evaluation Service Ray on Vertex

Train & Fine Tune Serving & Inference Training

Enterprise, data and tools

Grounding/RAG on Web, Maps, and Enterprise Data

MCP toolbox for Databases & Conversational Analytics

Connectors, Integrations, Automations, Workflows

A2A, AP2, MCP, LangGraph, CrewAI, AG2, LangChain, LlamaIndex

Discover, build, and deploy agents

Agent Development Kit (ADK)

Tool and model use Orchestration

Agent Engine

Runtime Sessions Examples

Memory Code exec & computer use Agent Ops

Agent Garden

Govern & Orchestrate

Identity
(Agent, user, IAM)

Registry
(Agent, Tool, Model)

Policy
(A2A, MCP, LLM)

Compliance & Data Residency

Evaluation & Simulations

Logging, Tracing & Monitoring

Safety and Model Armor

Security Command Center

AI asset inventory

AI risk assessment

AI posture controls

OSS notebook scanner

AI vulnerabilities

AI threat detection

Infrastructure

AI Hypercomputer (GPUs and TPUs)

Data Cloud

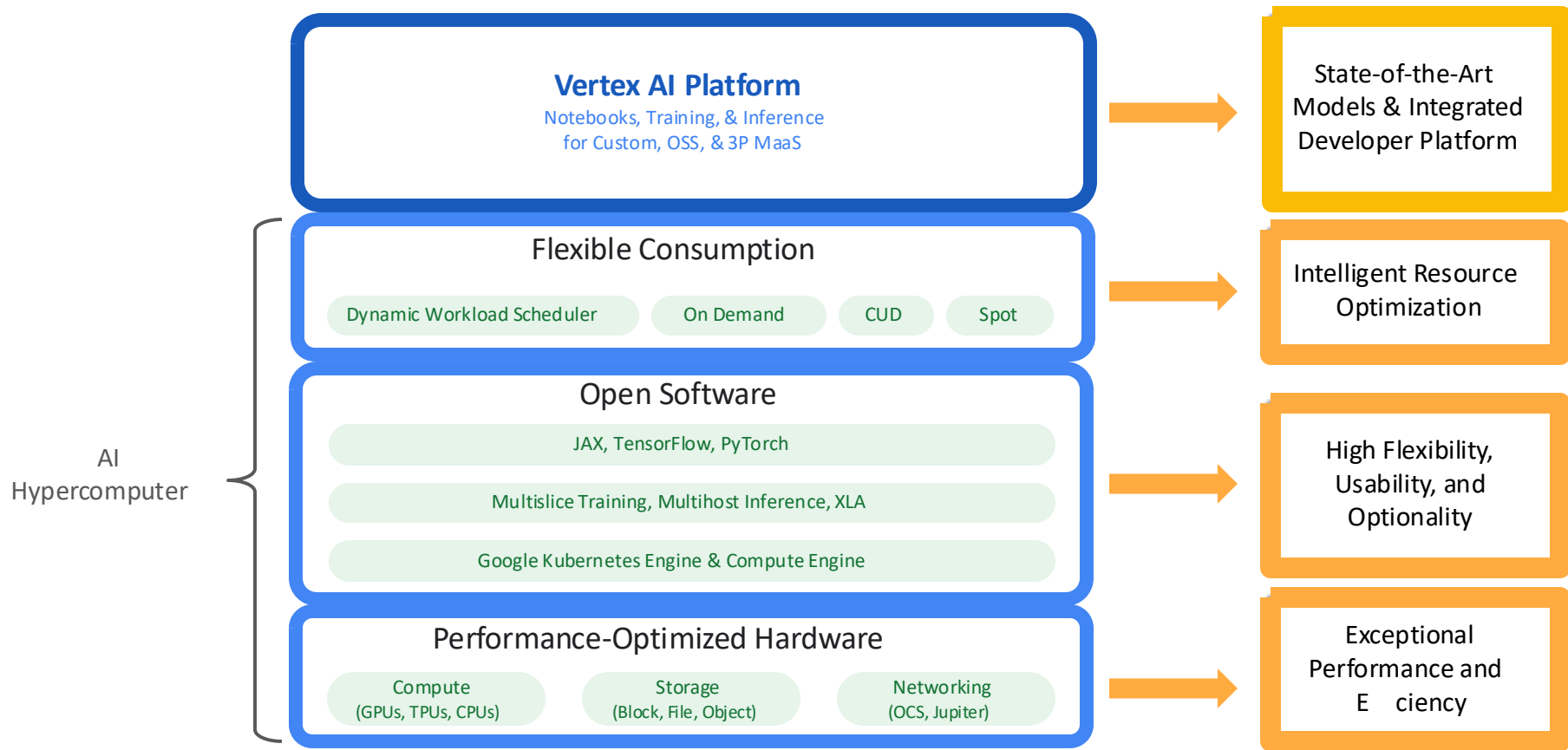
BigQuery

Spark/Beam

Dataplex

Data Catalog

Vertex AI builds upon the best of Google Cloud



Vertex AI Training Cluster

Accelerate complex AI Training workloads



Open source Slurm UX and cluster transparency

Familiar, flexible tools to launch and manage jobs



Automated cluster setup and configuration

From reservation to production training in hours



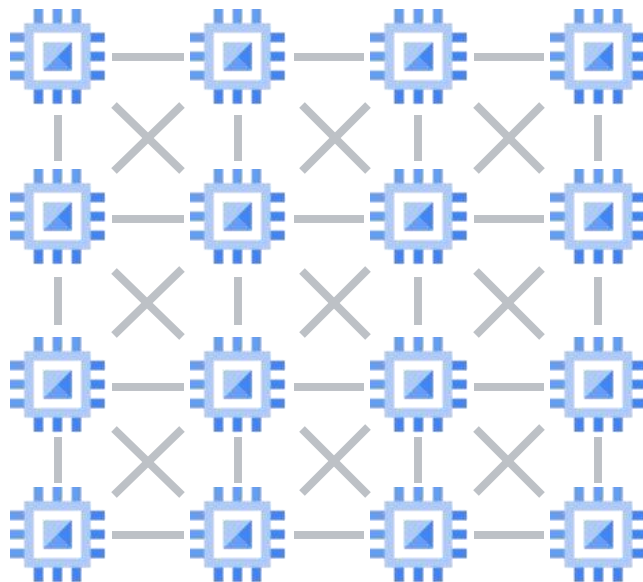
Preconfigured data science recipes and workflows

Jumpstart your training with purpose-built tooling



Hardware resiliency boosts cluster uptime

Automatically resolve hardware issues to decrease cost



Launch a production cluster in minutes

- Use the console/CLI to launch a cluster
- Flexible Accelerator capacity consumption
- Preconfigured and performance optimized networking and storage

Google Cloud Project Name Search (/) for resources, docs, products, and more Search

Vertex AI > Infinipod > Create infinipod cluster

Create Infinipod cluster

- Compute
- Networking
- Storage
- Orchestration

Compute

Name * cluster-name ⓘ
Unique identifier for this cluster

Description ⓘ

Resource plan

Section description. [Learn more](#)

resource-plan-1 ⓘ

- Machine family: A3, High-performance AI/ML training: NVIDIA H100
- Machine type: a3-megapgu-8g (20B vCPU, 1,872 GB memory)
- Total size: 50 instances
- Consumption model: capacity not obtained. [Try again](#)

Location

Region * Zone *
Region is permanent Zone is permanent

Summary

Type -

Series -

Number of instances -

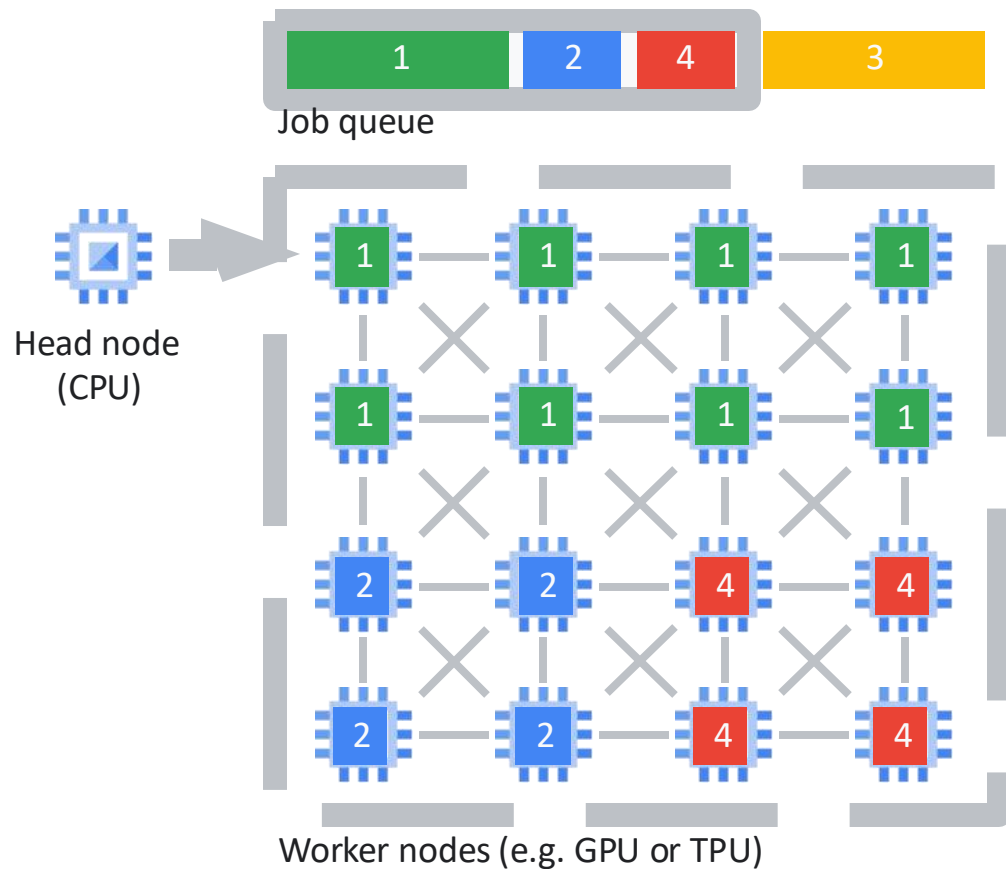
Location -

Resource plan -

Monthly estimate
\$XXX.XX
That's about \$0.XXX hourly
Pay for what you use: No upfront costs and per second billing. Discounts are not included in estimates.
[Show cost breakdown](#)

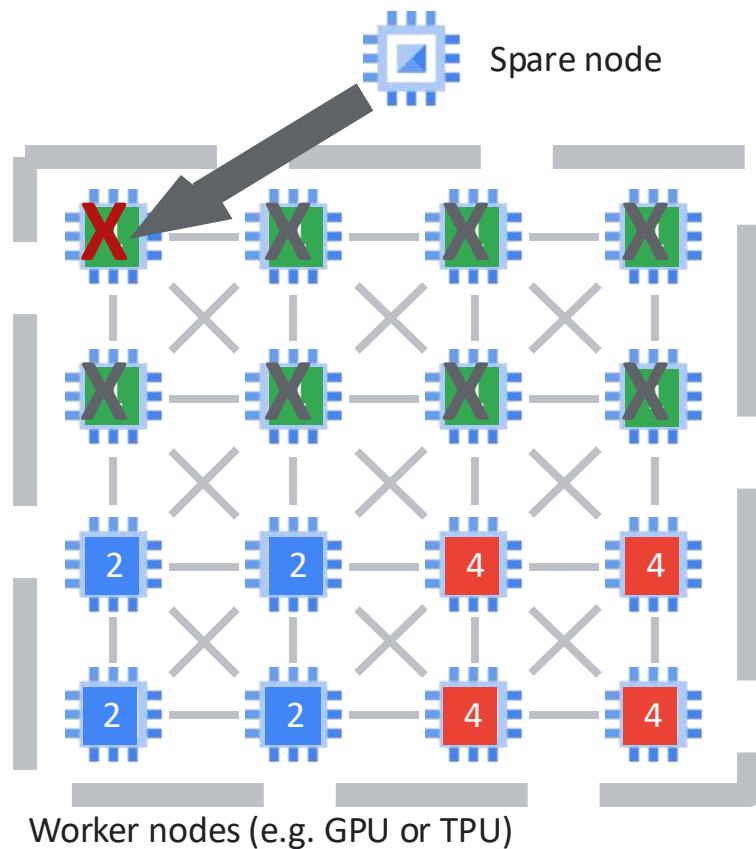
[Next](#) [Cancel](#)

*Slurm queues,
launches,
and manages jobs
optimized for
performance and
control*



Vertex AI Training Cluster with Resiliency

- Hardware failure is inevitable and painful for distributed training
- Training is blocked due to failure
- Vertex AI training automatically handles failure
- Proactively check to avoid stoppages



Why Training Workloads on Vertex AI Serverless Training



NoOps AI Developer & Data Scientist centered experience

Pay only for compute that you use

No infrastructure & K8s management

Pythonic SDK and UI support; Popular ML framework (PyTorch, Keras, XGBoost, TensorFlow, Ray) support



Built-in logging, MLOps Integration, & security

E2E MLOps suite to log, track and monitor training experiments, pipelines, and artifacts

Automatic hyperparameter tuning & insights with TF profiler.

VPC Peering, VPC Security Controls, Custom-managed-encryption keys, Identity and Access Management, Data Isolation



Capacity obtainability for NVIDIA GPUs & TPUs

NEW Access to your GCE reservations & CUDs. One GCE reservation, use anywhere

Queueing for quota and capacity including **NEW** support for Dynamic Workload Scheduler

NEW Long running persistent clusters for capacity assurance

Portable & No Lock-in: take your custom & OSS code & containers anywhere

Built-in security & compliance: Ready for workloads in regulated industries - VPC-SC integration, CMEK, data residency requirements, private endpoints

Your opinion is important to us!

The survey can be filled using the following link or the attached QR code

[Open Days Market Data Survey – Fill out form](#)

Open Days Market Data Survey



DEUTSCHE BÖRSE
GROUP

Thank you!

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