



MILAN, ITALY

May 26th 2025

# PERCONA UNIVERSITY

**IN PARTNERSHIP WITH:**

A L E F  
L A B



**Red Hat**



**FerretDB**



# Welcome



Peter Zaitsev,  
Founder at Percona  
May 26, 2025



**MILAN, ITALY 2025**

*Empowering Open Source Database Innovation  
Worldwide* 

## IN PARTNERSHIP WITH:

A L E F  
L A B





Special  
Thanks  
to our  
Partners and  
Organisers

## PARTNERS



**VITALIJ  
POGURELSZKIJ**



**ORGANISER**

**Veronica Urjan**

Your friendly  
Percona Sales Person

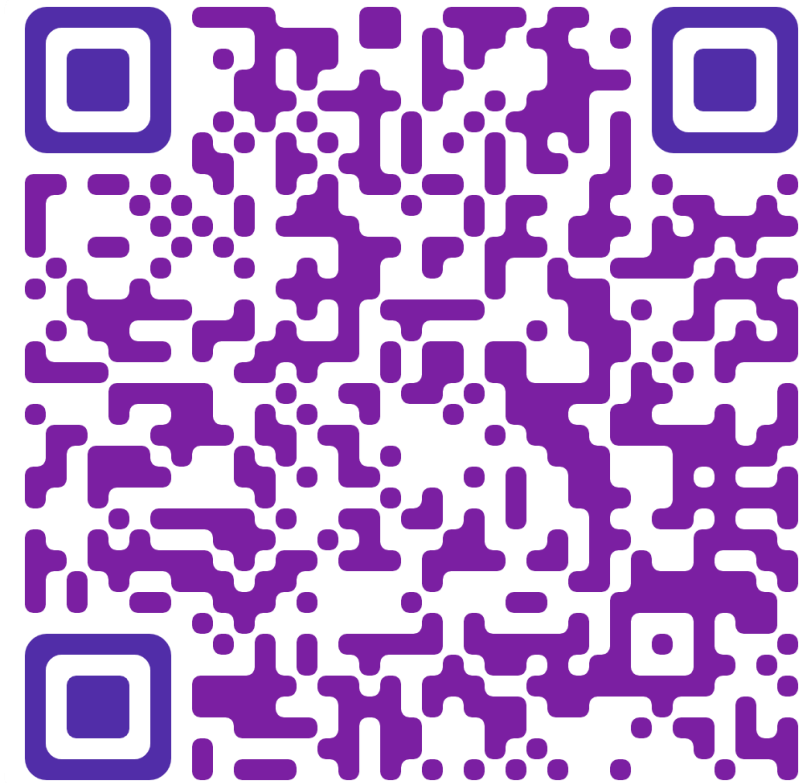
[Veronica.urjan@percona.com](mailto:Veronica.urjan@percona.com)

[LinkedIn:/veronicaurjan/](https://www.linkedin.com/in/veronicaurjan/)





# Bring Percona University to Your City!



# WE ARE HIRING

We are **hiring**.  
Check our openings.



Current openings include:

- Senior Software Engineer (PostgreSQL)
- Support Engineer (PostgreSQL)
- Platform Engineer
- ...and more!





# State of Open Source Databases



**MILAN, ITALY 2025**  
*Empowering Open Source Database Innovation  
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**IN PARTNERSHIP WITH:**

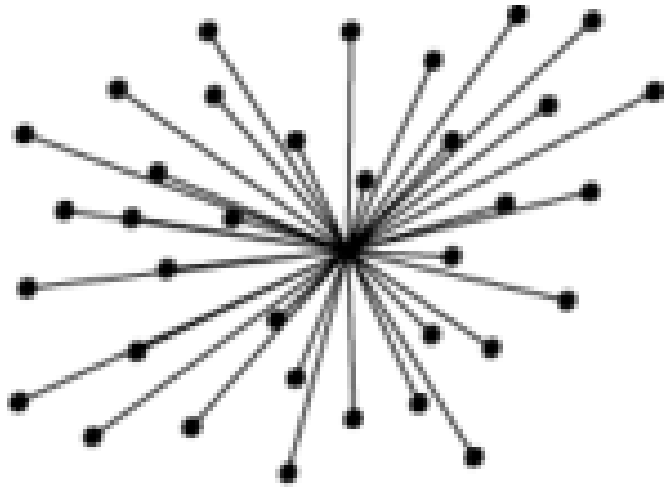
ALEF  
LAB



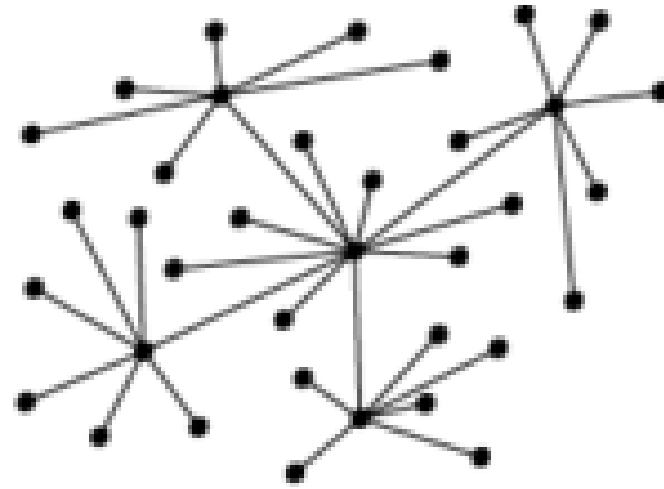
A glowing lightbulb is centered in the frame, set against a background of a sunset or sunrise with warm orange and yellow hues. The lightbulb is illuminated from within, casting a soft glow. The word "Innovation" is written in a large, white, sans-serif font across the middle of the image, partially overlapping the lightbulb. The overall composition is simple and evocative, symbolizing ideas and progress.

# Innovation

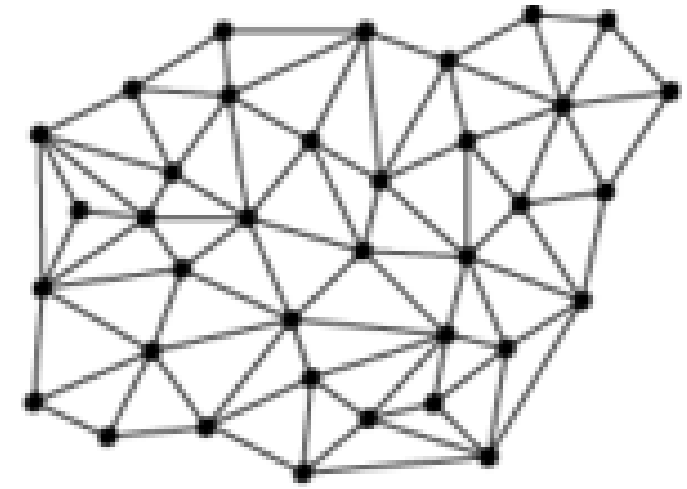




centralised



decentralised



distributed

# Distributed Databases



# Separation of Storage and Compute



# Serverless



# HTAP – Hybrid Transactional Analytical Processing







# Data Pipelines

# Multiple Databases

**Microservices**

**Developers Authority**

**Cloud**





**Not just Relational  
Any More**



**Time Series**



**Graph**



**Data Structures**

# Different Models



# Multi-Model

Some Databases Support Multiple Data Models, Some even Talk Different Languages/Protocols





# Vector Search

**Technology Supporting building  
applications which use AI**



**AI Algorithms do not work with words and Images inside**



**They work with Vectors**



**Objects encoded to Vector form called "Embeddings"**



**Finding Similar Vectors is a key task**



**Traditional Database Algorithms do not handle it well**

# What's Up with Vectors

<https://manticoresearch.com/blog/vector-search-in-databases/>



## Specific Tasks



Pattern Recognition



Semantic Search



RAG – “Retrieval Augmented Generation”

# Vector search support in databases

## Opensource vector dbs

Milvus	2019
Vespa	2020
Weaviate	2021
Qdrant	2022

## Opensource dbs and search engines

PostgreSQL	2021
Lucene	2021
Opensearch	2022
Redis	2022
SOLR	2022
Cassandra	<b>2023</b>
Typesense	<b>2023</b>
Clickhouse	<b>2023</b>
Manticore Search	<b>2023</b>
Meilisearch	<b>2023</b>
MariaDB	<b>In progress</b>
MySQL	Not yet

## Non-open source dbs

Elasticsearch	2019
Oracle	<b>2023</b>
MongoDB	<b>2023</b>

## Clouds

Pinecone	2019
Amazon Elasticsearch / Opensearch	2020
Google Cloud Platform	2021
Alibaba Cloud AnalyticDB	<b>2023</b>
Azure	<b>2023</b>
Amazon DocumentDB	<b>2023</b>
Cloudflare Vectorize	<b>2023</b>



The background features two large, solid orange shapes. On the left, a triangle points towards the center. On the right, a parallelogram is oriented vertically. The text is centered between these two shapes.

What Is the Biggest  
Factor Impacting  
Open Source Now?

Many will Say:  
**Cloud**





**Maximize and  
Simplify  
Adoption**

**Change  
Opportunities  
for Monetization**

**Cloud Impact**

A close-up portrait of Marten Mickos, a man with short brown hair and blue eyes, wearing a white shirt. The background is a light gray.

# Remember...

**Marten Mickos: "Open  
Source Is Not a Business  
Model"**

# Open Source Ownership and Governance

- Foundation Driven (Multiple Vendors)
- Single Vendor Driven





**CLOUD HELPS TO  
ACCELERATE ADOPTION**



**CLOUD CHANGES WHO  
CAPTURES THE VALUE**

# Foundation Based Open Source



# Single Vendor

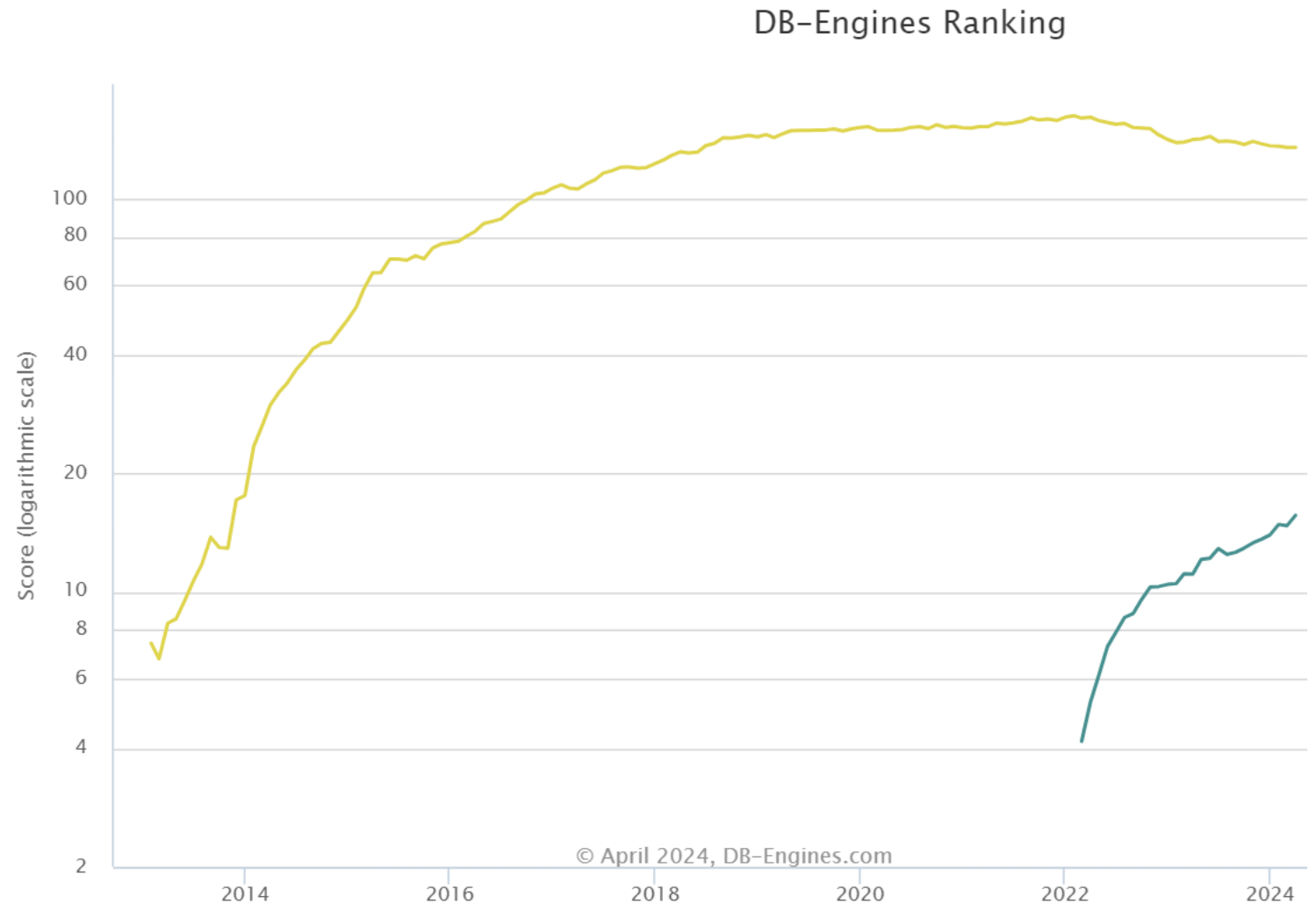
- Tend to Be Venture Funded or Public Companies
- Feared of Competition with Cloud Vendors

# Fully or Partially Abandoning Open Source Licenses

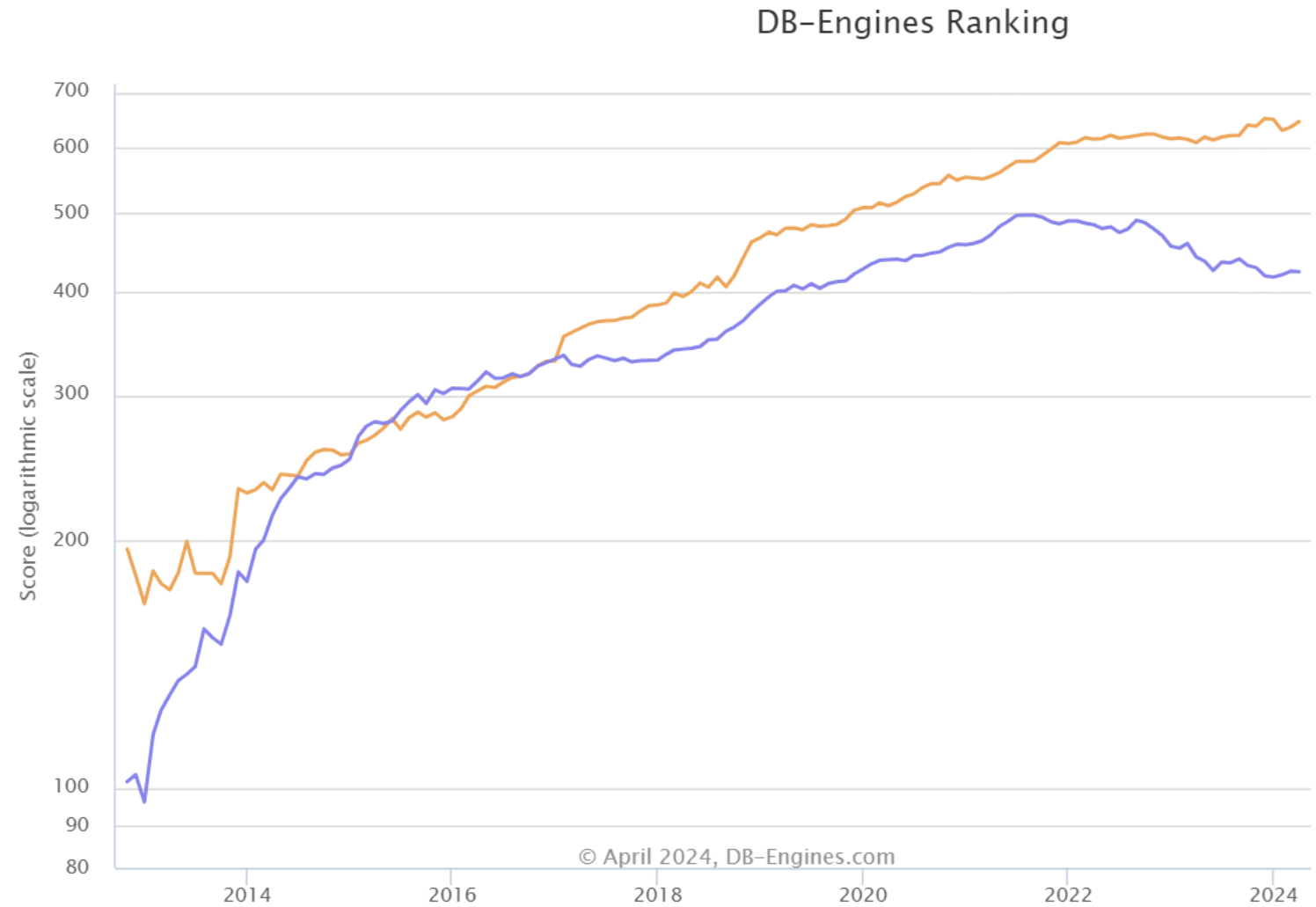




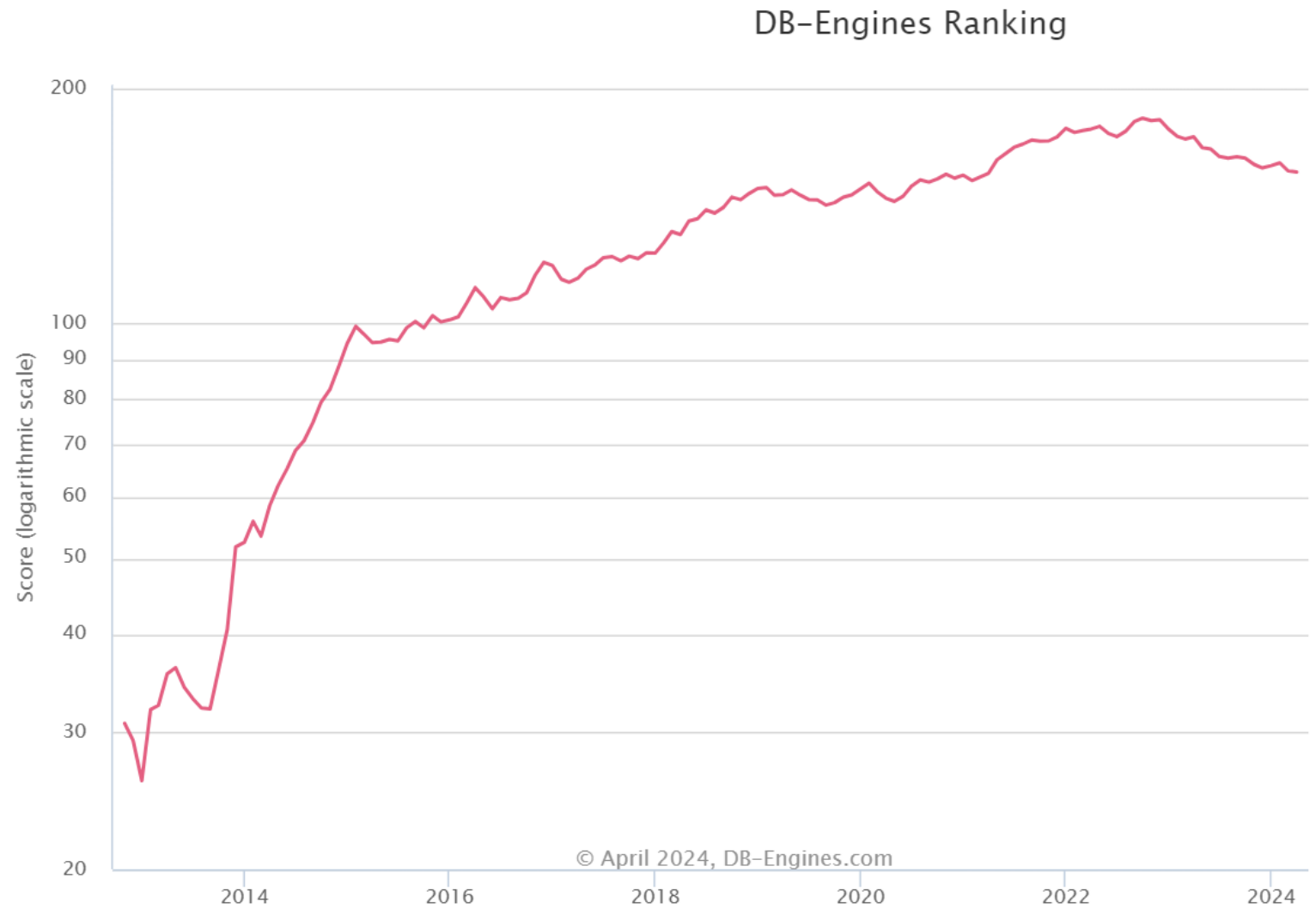
# Elastic vs OpenSearch after Licence Change



# MongoDB vs PostgreSQL



# Redis





# Linux Foundation is Stepping Up!

 SIGN IN / UP

The  Register®

DATABASES

## Linux Foundation marshals support for open source alternative to Redis

7 

Follows the vendor's decision to overhaul licensing of the popular cache database

 [Lindsay Clark](#)

Wed 3 Apr 2024 // 11:15 UTC

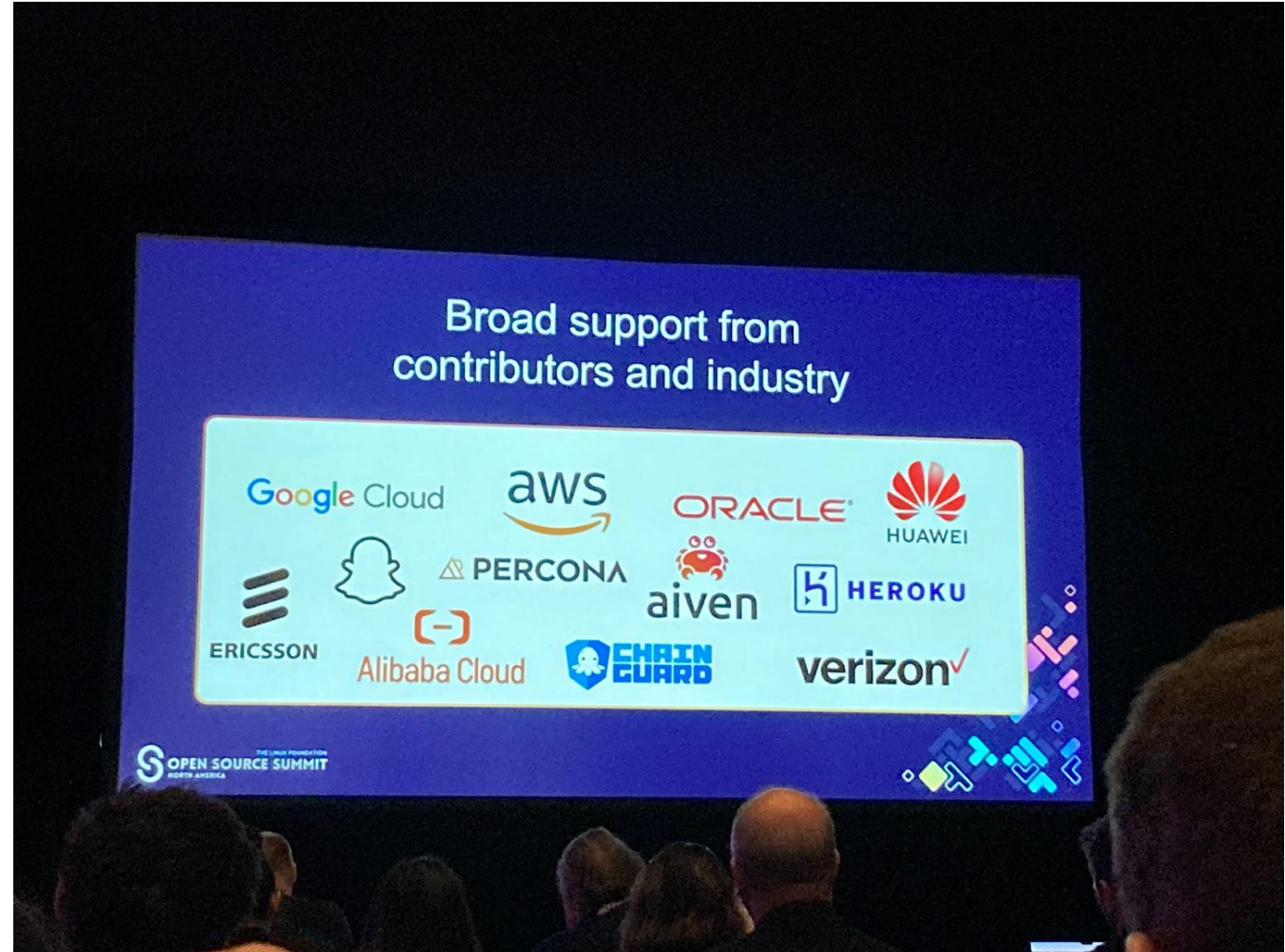


Cloud giants AWS, Google, and Oracle have come out in support of a Linux Foundation open source fork of Redis, the popular in-memory database frequently used as a cache, following changes to its licensing.

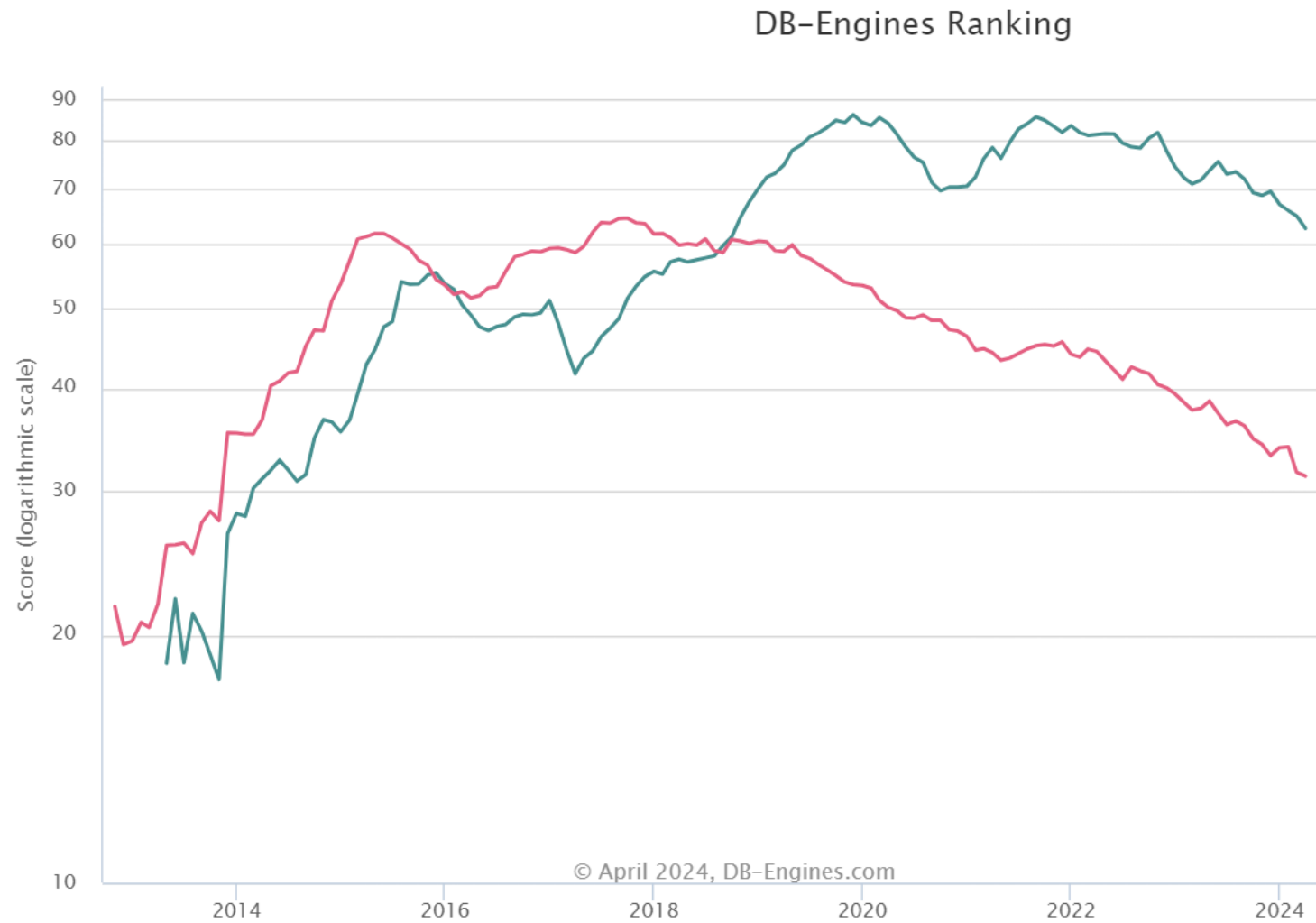
Last month, [Redis confirmed it was shifting its main key-value store system to a dual-license approach](#), imposing far more restrictive terms. Previously, the source code was available under the Berkeley Software Distribution (BSD) 3-clause license, which allows developers to make commercial use of the code without paying.

[https://www.theregister.com/2024/04/03/open\\_source\\_redis\\_alternative/](https://www.theregister.com/2024/04/03/open_source_redis_alternative/)

# Percona Joins the Effort!



# Hive (Blue) and HBase





# Primary Goal of the License Change?

- **Creating Monopoly on DBaaS Market**





**STATE OF ART SIMPLICITY**



**HIGH LEVEL OF  
AUTOMATION**



**MAXIMIZES DEVELOPERS  
FOCUS ON APPLICATION**

# Why DBaaS?

# What Is the Problem with Monopoly on DBaaS?

MONOPOLY



# No Different from Proprietary Software

Using DBaaS is a very different  
skill compared to rolling your  
own database setup







# DBaaS Vendor Lock-In

It may not be so painful **now**, but it is going to be painful in the **future**





# History Lesson

**Oracle used to Save its customer from IBM  
Hardware Lock-in with Mainframe computers**





# Why Data is Special

**Moving Data is Expensive. Moving Lots of Data is Very Expensive – Principle of Data Gravity Applies**



Not All Is  
Lost



# Have We Been Here Before?

## 2000s



## 2020s





# Operating Systems



# Open Source Catches Up Again



- **Lock-in with Cloud Vendor**
- **Use Proprietary Solutions**
- **Highly Differentiated Cloud**
- 
- 



**CLOUD NATIVE  
COMPUTING FOUNDATION**

- **Freedom to Run Anywhere**
- **Use Open Source**
- **Cloud Is Commodity**
- **Customer**
- **Choice of Vendors**



# Giving Cloud Its Originally Intended Role of Commodity Infrastructure

## What is Cloud Computing?

An analogy: think of electricity services...

You simply plug into a vast electrical grid managed by experts to get a low cost, reliable power supply – available to you with much greater efficiency than you could generate on your own.

Power is a utility service - available to you on-demand and you pay only for what you use.



# Kubernetes

# kubernetes

**Kubernetes is universally available**



**Kubernetes is getting better for stateful applications**

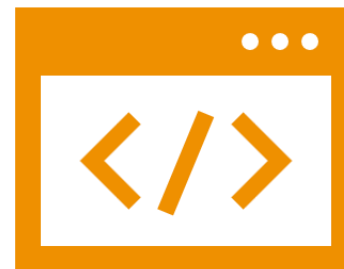


**Kubernetes Operators are available for most popular Open Source Databases**





**Day 1 and Day 2 Automation, Toil  
Reduction Similar to DBaaS**



**UX is Different, Requires  
Kubernetes Expertise**

# What's Up with Kubernetes Operators?

# Can We Build DBaaS on Kubernetes?



Database as a Service.



kubernetes

Many  
Modern  
DBaaS are  
Built on  
Kubernetes  
Operators



# Open Source DBaaS Experience with Percona Everest

The screenshot displays the Percona Everest web interface during the database creation process. The interface is divided into three main sections: a left sidebar with navigation icons, a central configuration area, and a right sidebar with a database summary.

**Left Sidebar:** Shows a progress bar with 6 steps. Step 5, 'Advanced Configurations', is currently active. Below the progress bar, there are two toggle switches: 'Enable External Access' (disabled) and 'Set database engine parameters' (enabled). Under 'Set database engine parameters', there is a text input field for 'Source Range' with the value '0.0.0.0/0' and a section for 'operationProfiling' with parameters: 'mode: slowOp' and 'slowOpThresholdMs: 200'.

**Central Configuration Area:** The title is 'Resources' with the subtitle 'Configure the resources your new database will have access to.' It features two rows of selection buttons. The first row, 'Number of nodes', has options for '1 node', '2 nodes', and '3 nodes' (which is selected). The second row, 'Resource size per node', has options for 'Small', 'Medium', 'Large', and 'Custom' (which is selected). Below these, there are three input fields: 'CPU' (value 3, 'x 3 nodes = 9 CPU'), 'MEMORY' (value 8 GB, 'x 3 nodes = 24 GB'), and 'DISK' (value 250 GB, 'x 3 nodes = 750 GB'). Each field has an 'Estimated available' value below it. At the bottom of this section are 'Previous', 'Cancel', and 'Continue' buttons.

**Right Sidebar:** Titled 'DATABASE SUMMARY', it contains a list of configuration details: '1. Basic Information' (Namespace: app, Type: PostgreSQL, Name: postgresql-dev, Version: 16.1, Storage class: standard-rwo), '2. Resources' (Number of nodes: 3, CPU: 9 CPU, Memory: 24 GB, Disk: 750 GB), '3. Backups', '4. Point-in-time Recovery', '5. Advanced Configurations', and '6. Monitoring'.

**Bottom Section:** A '6. Monitoring' section is visible at the bottom, with the status 'Enabled'.



# Summary



**Fantastic Pace  
Innovation**



**Evolving Open  
Source Models**



**Great Future**

# Thank you! Let's Connect!

<https://www.linkedin.com/in/peterzaitsev/>

<https://twitter.com/PeterZaitsev>

<http://www.peterzaitsev.com>

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