

# Open Source Database Trends



DevOps-конференция

📅 8-11 ноября 2021 | 📍 Online

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Nov 11th, 2021



# Technology and Business



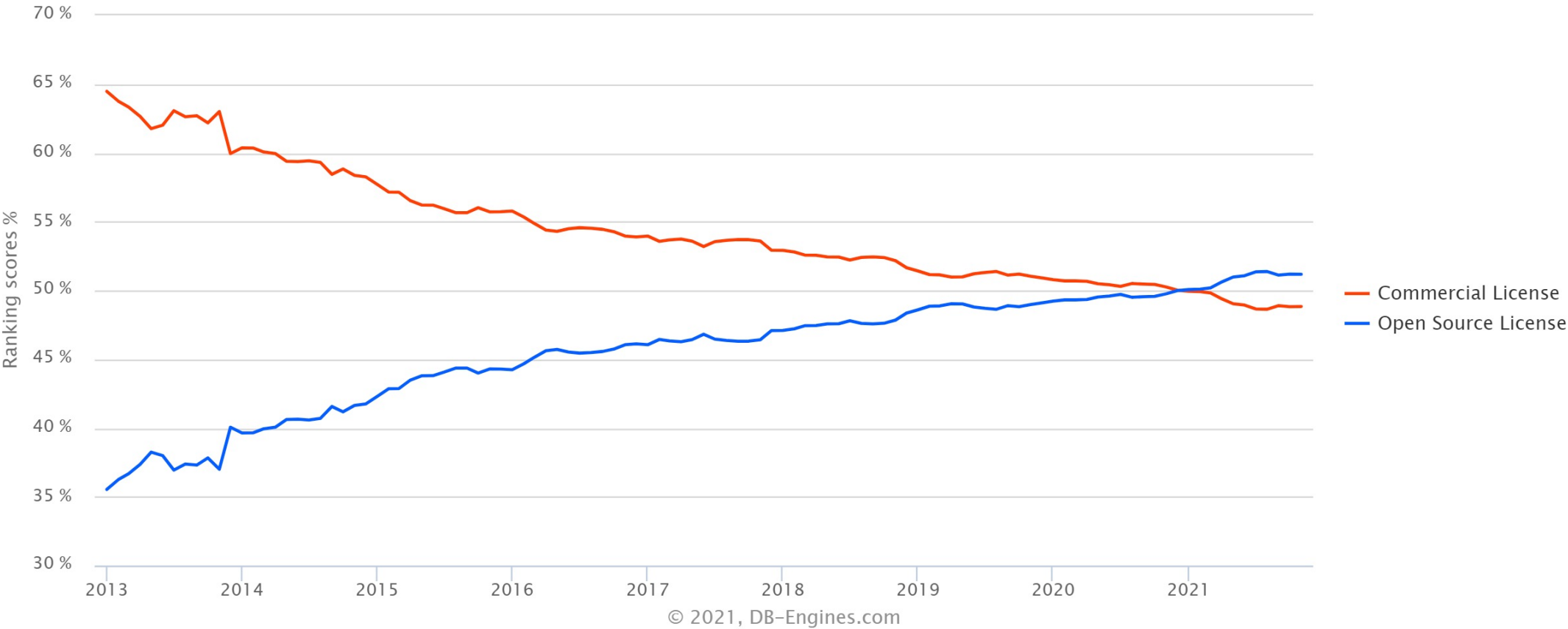
# Lets Look at Some Data

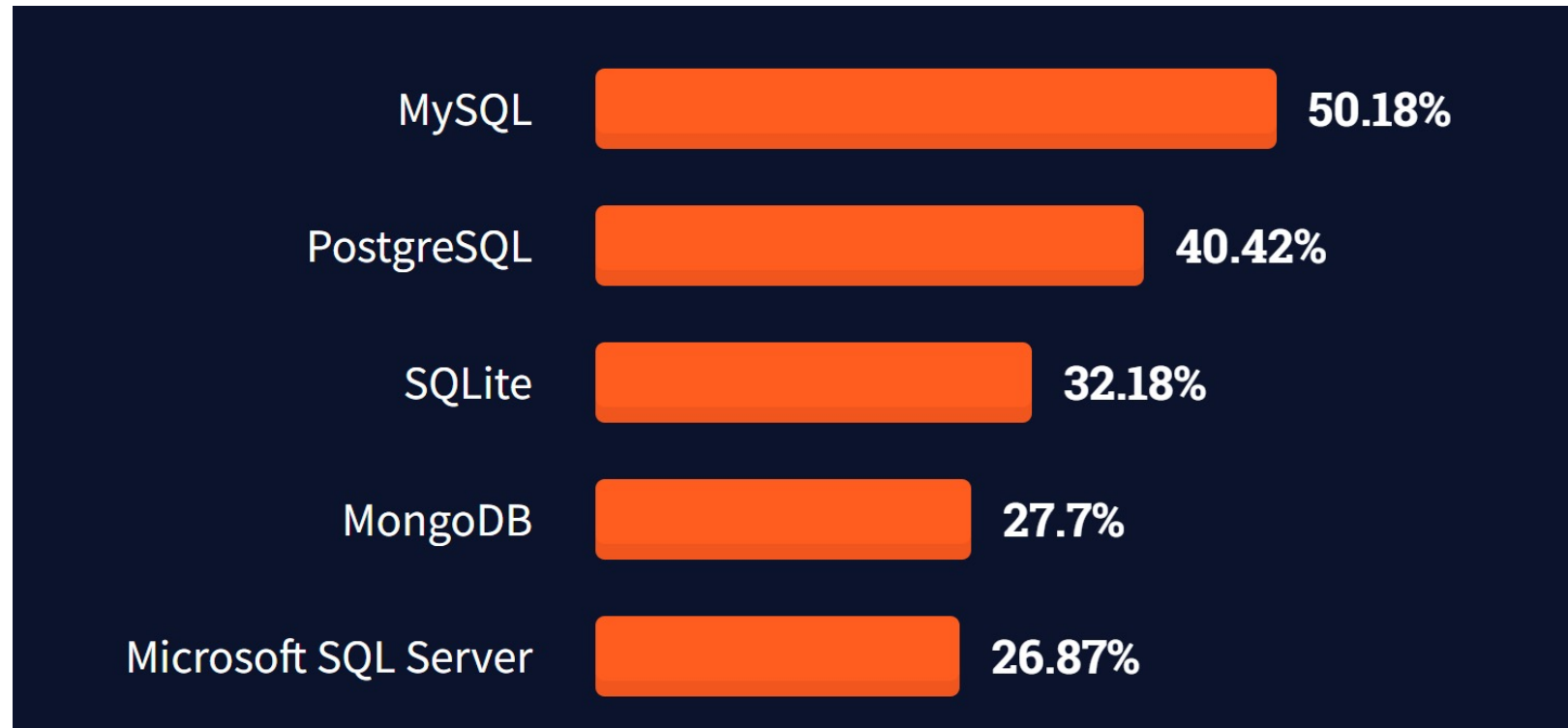


381 systems in ranking, November 2021

Rank			DBMS	Database Model	Score		
Nov 2021	Oct 2021	Nov 2020			Nov 2021	Oct 2021	Nov 2020
1.	1.	1.	Oracle +	Relational, Multi-model i	1272.73	+2.38	-72.27
2.	2.	2.	MySQL +	Relational, Multi-model i	1211.52	-8.25	-30.12
3.	3.	3.	Microsoft SQL Server +	Relational, Multi-model i	954.29	-16.32	-83.35
4.	4.	4.	PostgreSQL +	Relational, Multi-model i	597.27	+10.30	+42.22
5.	5.	5.	MongoDB +	Document, Multi-model i	487.35	-6.21	+33.52
6.	6.	↑ 7.	Redis +	Key-value, Multi-model i	171.50	+0.15	+16.08
7.	7.	↓ 6.	IBM Db2	Relational, Multi-model i	167.52	+1.56	+5.90
8.	8.	8.	Elasticsearch	Search engine, Multi-model i	159.09	+0.84	+7.54
9.	9.	9.	SQLite +	Relational	129.80	+0.43	+6.48
10.	10.	10.	Cassandra +	Wide column	120.88	+1.61	+2.13

# Popularity trend





# Stack Overflow Most Popular Databases

<https://insights.stackoverflow.com/survey/2021#technology-most-popular-technologies>



# Great Momentum for Commercial Open Source



- RedHat \$34B (acquired IBM)
- MongoDB \$34B (current valuation)
- GitHub \$7.5B (acquired Microsoft)
- GitLab \$16B (current valuation)
- Databricks \$38B (current valuation)
- Elastic \$16.4B (current valuation)
- Hashicorp \$5B (current valuation)
- Confluent \$17.2B (current valuation)
- Cloudera \$5.3B (current valuation)
- Atlassian \$100B (current valuation)



# 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 gradient. A dark gray rectangular box is overlaid on the left side of the image, containing white text.

# Remember...

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

## Hijacking GPL

Open Source Software  
Authors who did not want  
others to build commercial  
solution on their software  
could use GPL.... Not any  
more





# 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





# 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



Not All Is Lost



# Have We Been Here Before?

2000s



2020s



# Operating Systems

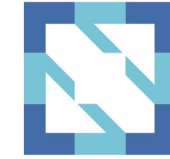




# Open Source Catches Up Again



- Lock-in with Cloud Vendor
- Use Proprietary Solutions
- Highly Differentiated Cloud
- Hostage
- No Vendor Choice



**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?

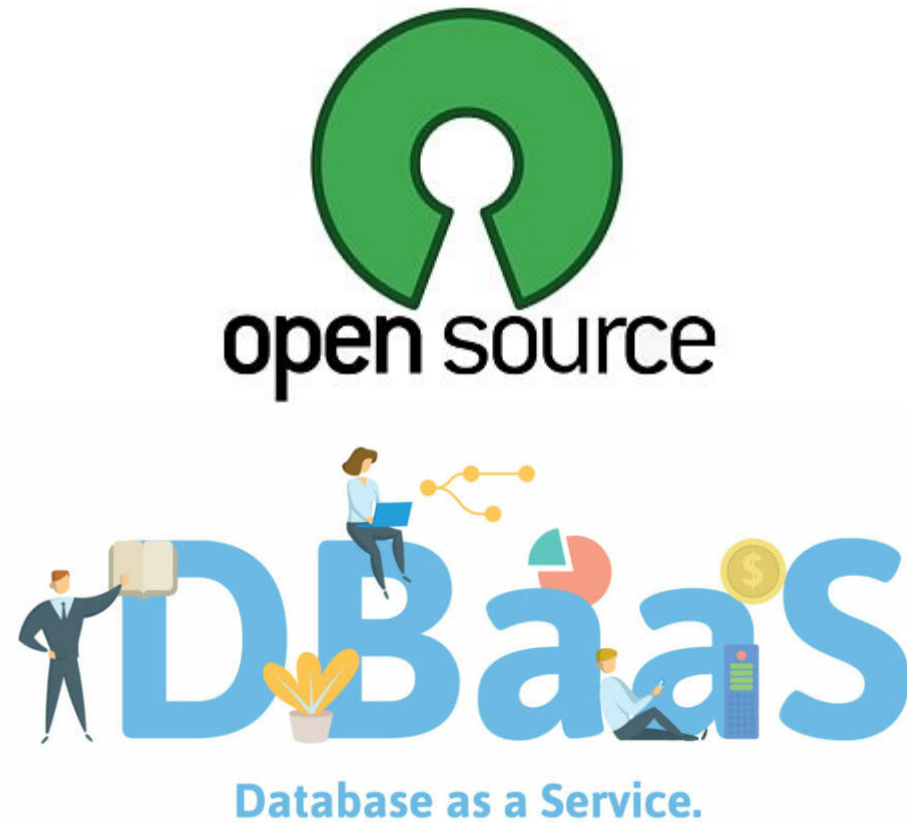
An analogy: think of electricity services...

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.



So Do We Have



# Not Yet....

But We're Taking Our Baby  
Steps





# Kubernetes



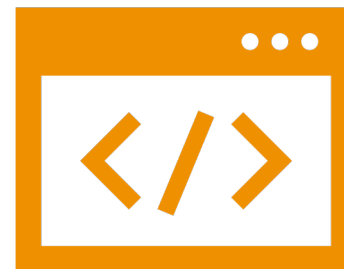
- **Kubernetes is universally available**
- **Kubernetes is getting better for stateful applications**
- **Kubernetes Operators are available for most popular Open Source Databases**

# kubernetes





**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  
This Way





# Completely Open Source DBaaS

- **Percona is building Open Source Database as a Service in Percona Monitoring and Management (PMM)**
- **We expect to be one of Many**

# PERCONA

## Monitoring and Management

# Work in Progress...

Create Cluster

⚠ If you want to use monitoring, you need to set your PMM installation public address in [settings](#) before cluster creation

✓ Basic Options

2 Advanced Options

Topology

Cluster Single Node

Number of Nodes

3

External Access

Resources per Node

Small Medium Large Custom

ⓘ Resource calculations are an estimate

CPU

1

Using 0.75 CPU (9.4%) of 8 CPU in total

Consumed CPU

Required CPU (6 CPU)

Memory (GB)

1

Using 0.18 GB (0.7%) of 25.19 GB in total

Consumed Memory

Required Memory (6 GB)

Disk (GB)

2

Using 50.57 GB (64.3%) of 78.6 GB in total

Consumed Disk

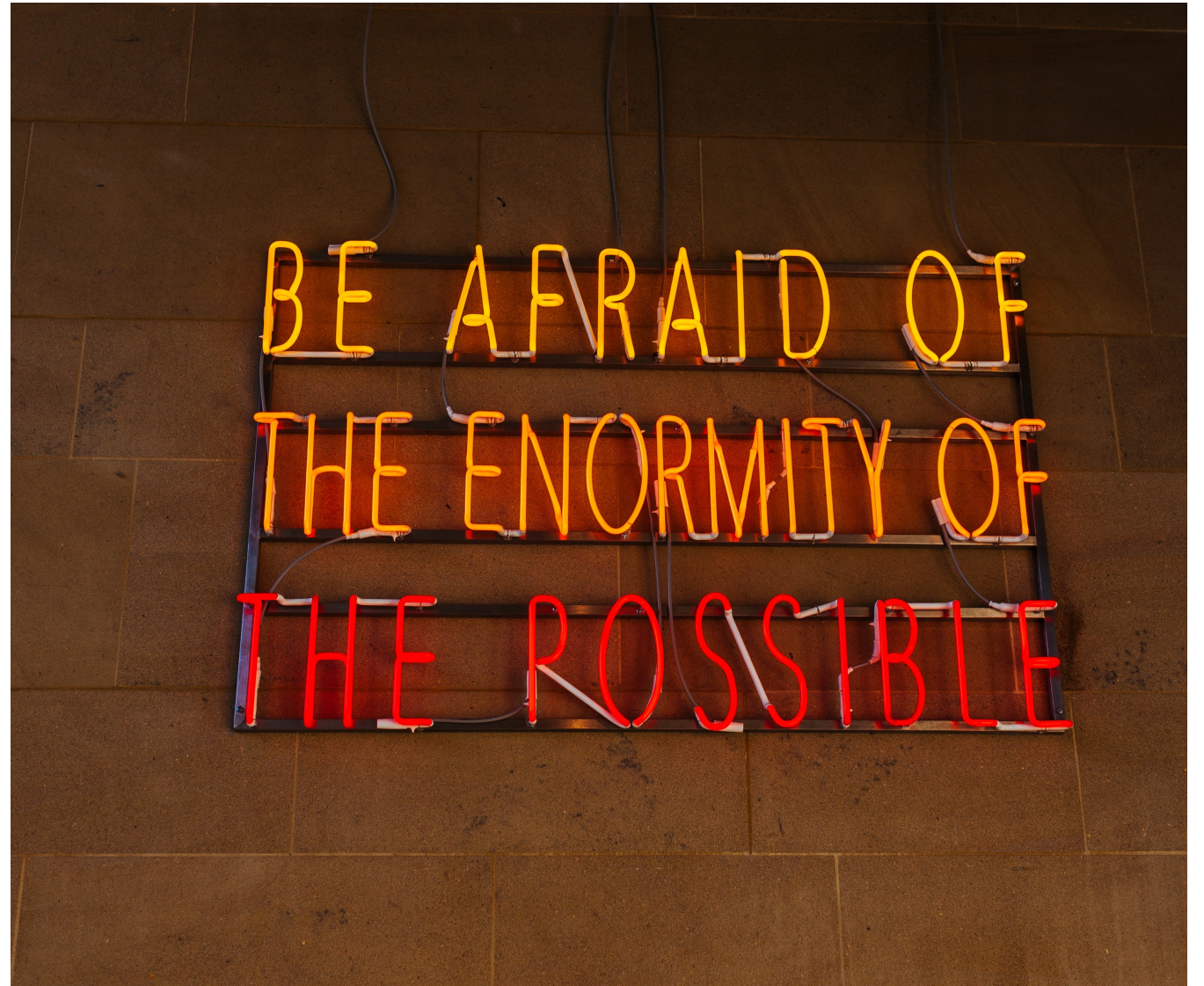
Required Disk (12 GB)

Create Cluster

<https://www.percona.com/doc/percona-monitoring-and-management/2.x/setting-up/server/dbaas.html>



Can it be  
Done ?



# Radical Open Source Experiment Going on for 15 years



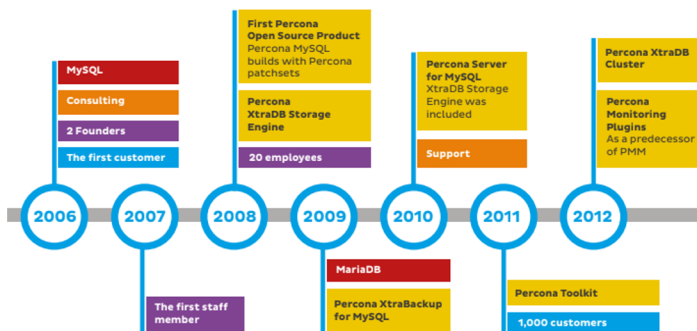
## THE HISTORY OF PERCONA

15 YEARS OF KEEPING  
OPEN SOURCE OPEN

### Percona evolution

Percona has expanded its focus on MySQL to now offer a broad range of database software and services

Technologies Services Customers Products Staff

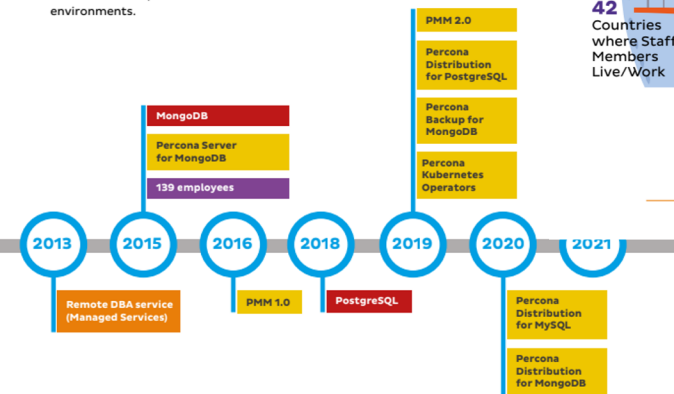


6 The History of Percona

### Percona evolution

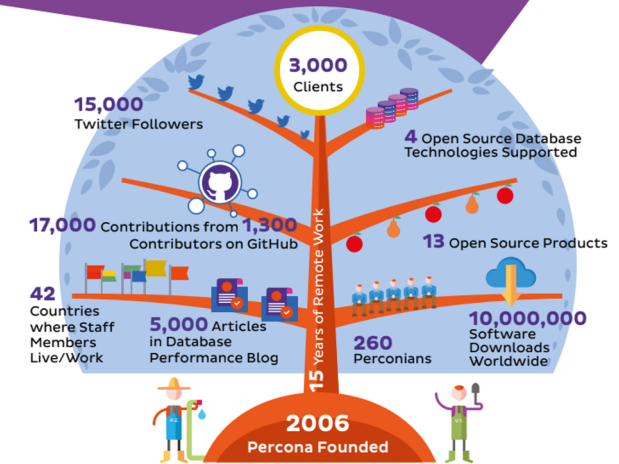
**2021**  
Leader in providing best-of-breed enterprise-class support, consulting, managed services, training and software for MySQL, MariaDB, MongoDB, PostgreSQL, and other open source databases in on-premises and cloud environments.

**2021+**  
Open Source DBaaS of Superior and Service



15 years of keeping open source open 7

15 Years of leading  
the open source revolution



15 years of keeping open source open 9

<https://per.co.na/15y>

# More Database Technology Trends



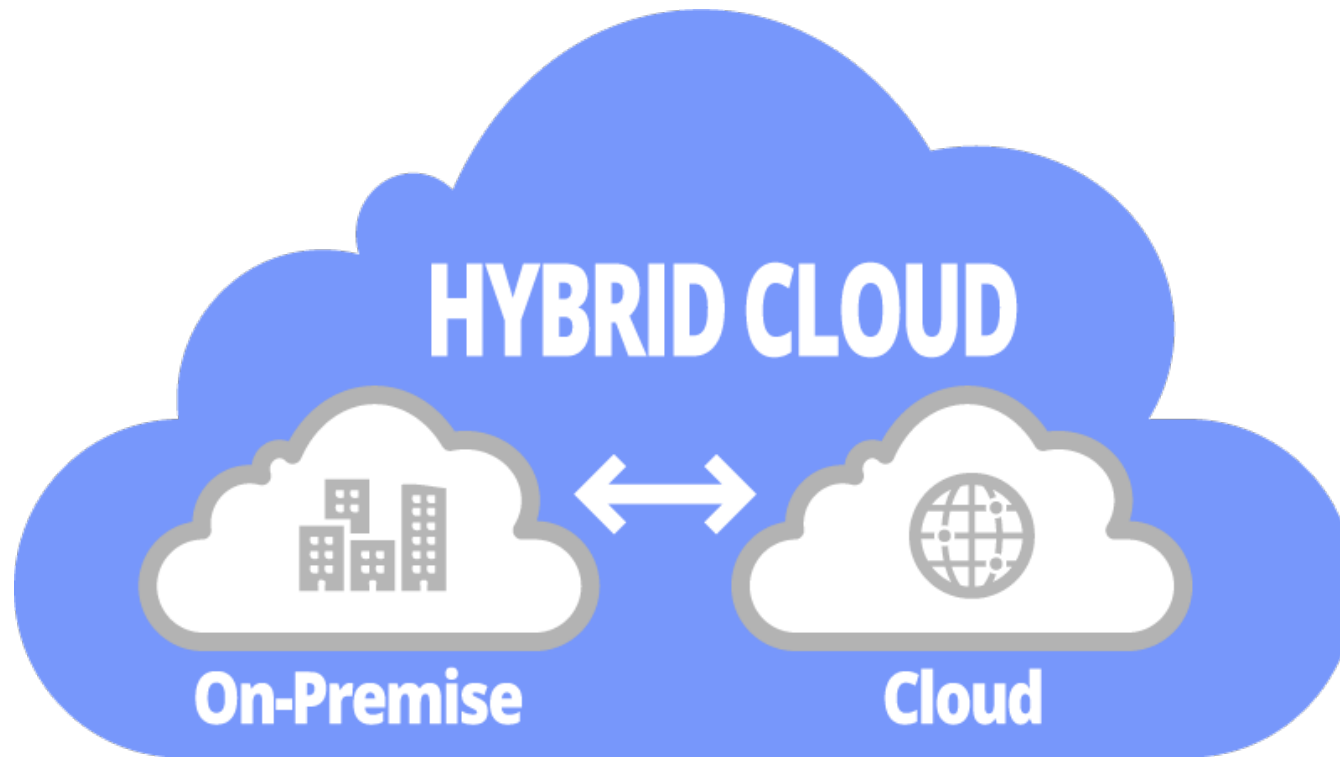


# Huge Variety of Available Database Technologies

# Distributed







# Hybrid Cloud, Multi Cloud



# Serverless

There are still servers, of course but not as concept developer works with

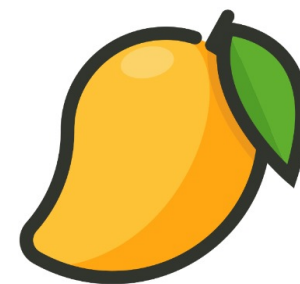
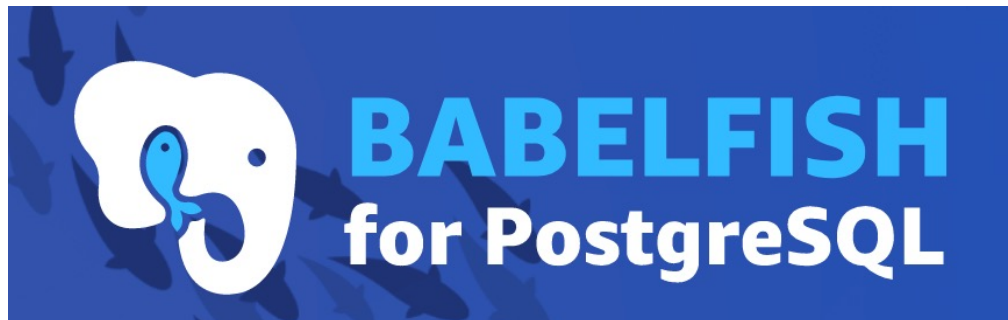
# Object Store Backed

**Use S3 (and Similar ) Elastically Scalable Data Storage instead of File System**

# Self Running

# Security Compliance Governance





**MangoDB**

PostgreSQL to rule  
them all

<https://www.mangodb.io/>



# Trends

What other Trends are you seeing ?

Thank you, Let's Connect!

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

<https://twitter.com/PeterZaitsev>