Migrating to Open Source Databases

Best Practices

Peter Zaitsev
CEO Percona
Percona Technical Webinars
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About Presentation

Reasons to migrate to Open Source Databases

Understanding Open Source

Migration Best Practices

Issues to be aware about

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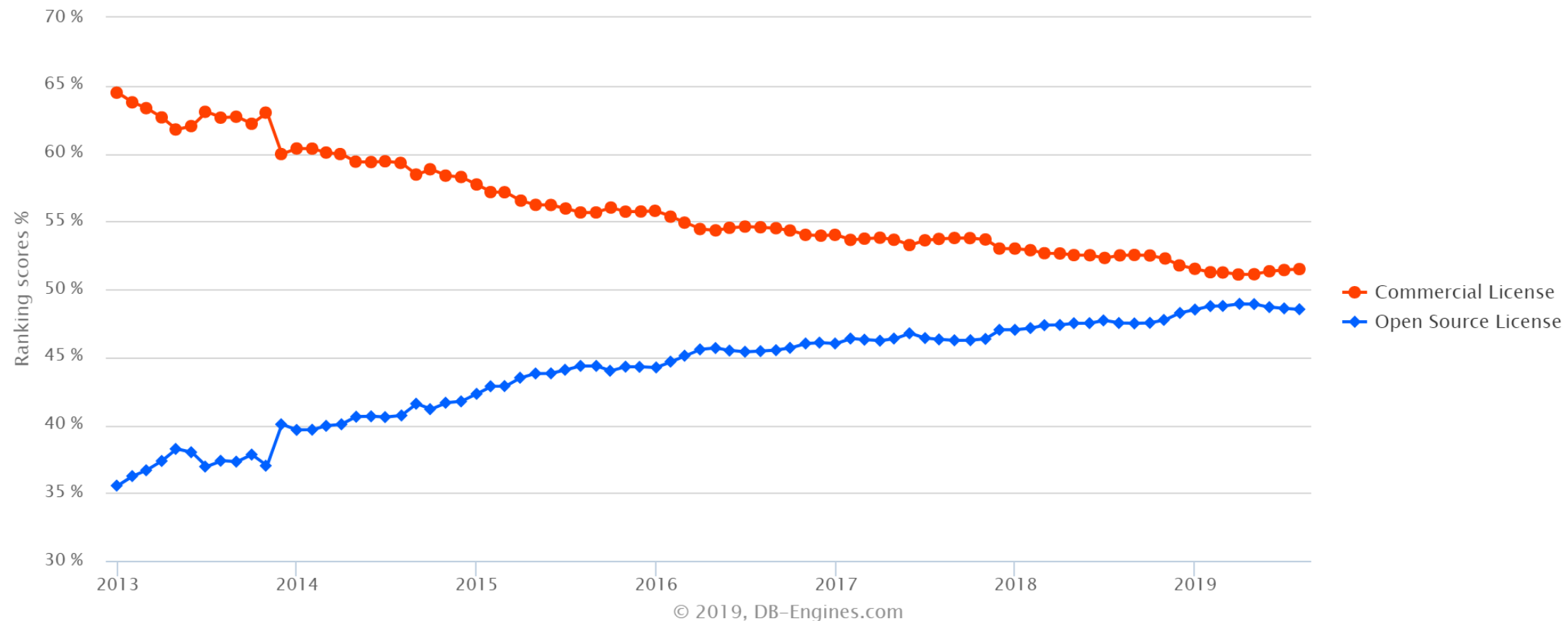
Talk about High Level Strategy

Will not talk about specific challenges converting Stored Procedure Syntax from Microsoft SQL Server to MySQL

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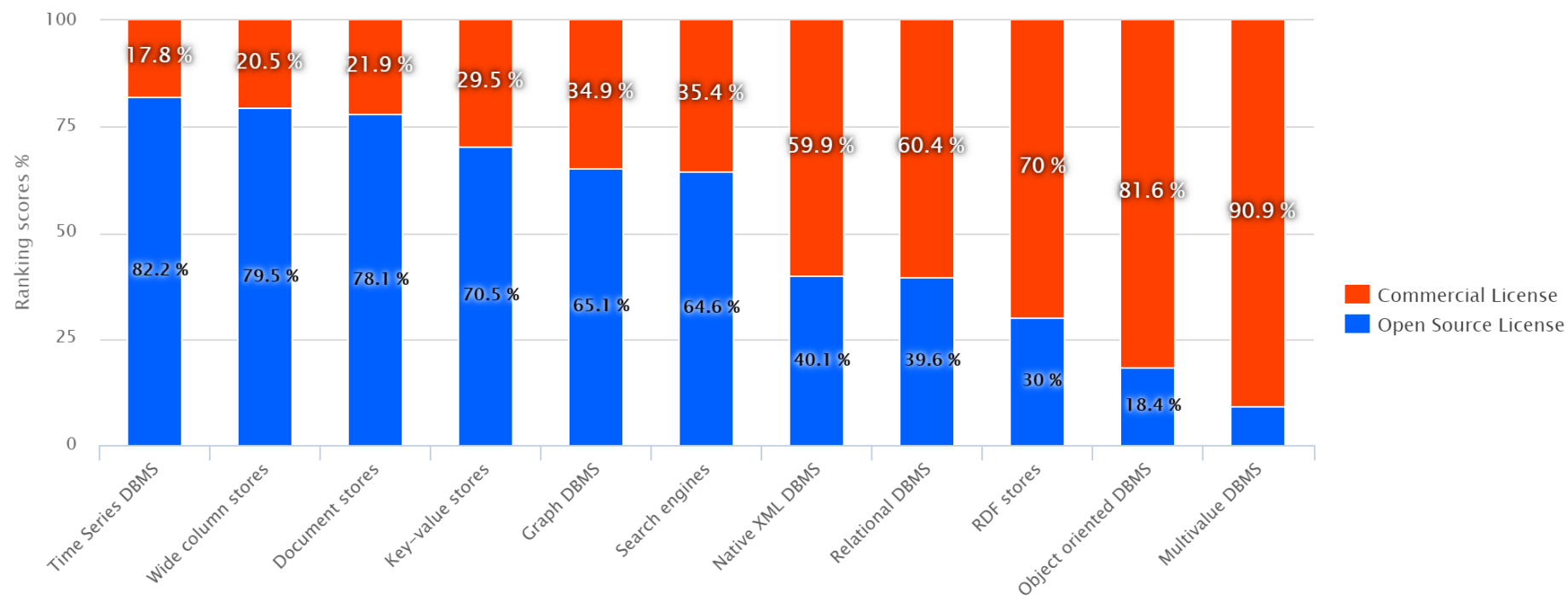
Why move to Open Source Database ?

It is a Trend

© 2019, DB-Engines.com

Legend:
- Commercial License
- Open Source License

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Especially for New Generation Technologies
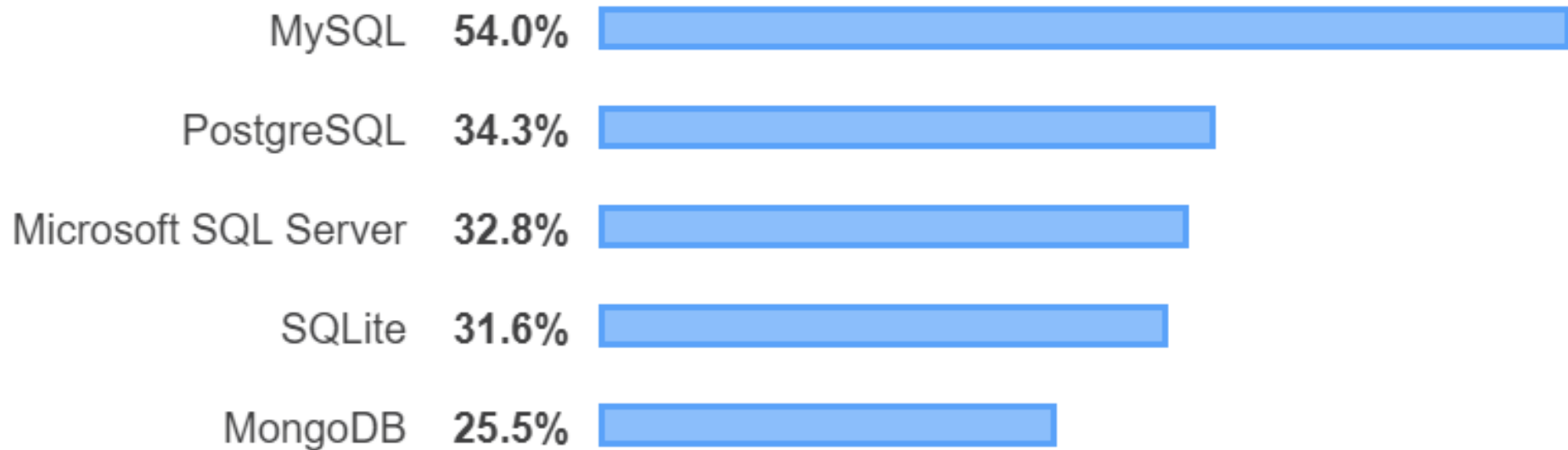
Popularity broken down by database model, August 2019

This chart demonstrates that the popularity of open source tools heavily depends on their database model.

Developers love Open Source

Most Loved databases per Stack Overflow Survey (2019)

Database	Percentage
MySQL	54.0%
PostgreSQL	34.3%
Microsoft SQL Server	32.8%
SQLite	31.6%
MongoDB	25.5%

https://insights.stackoverflow.com/survey/2019

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Reasons to Adopt Open Source Databases

The top three reasons to adopt Open Source databases:

100%

| Cost Savings (80%) | Avoiding vendor-lock-in (62%) | Community (53%) |

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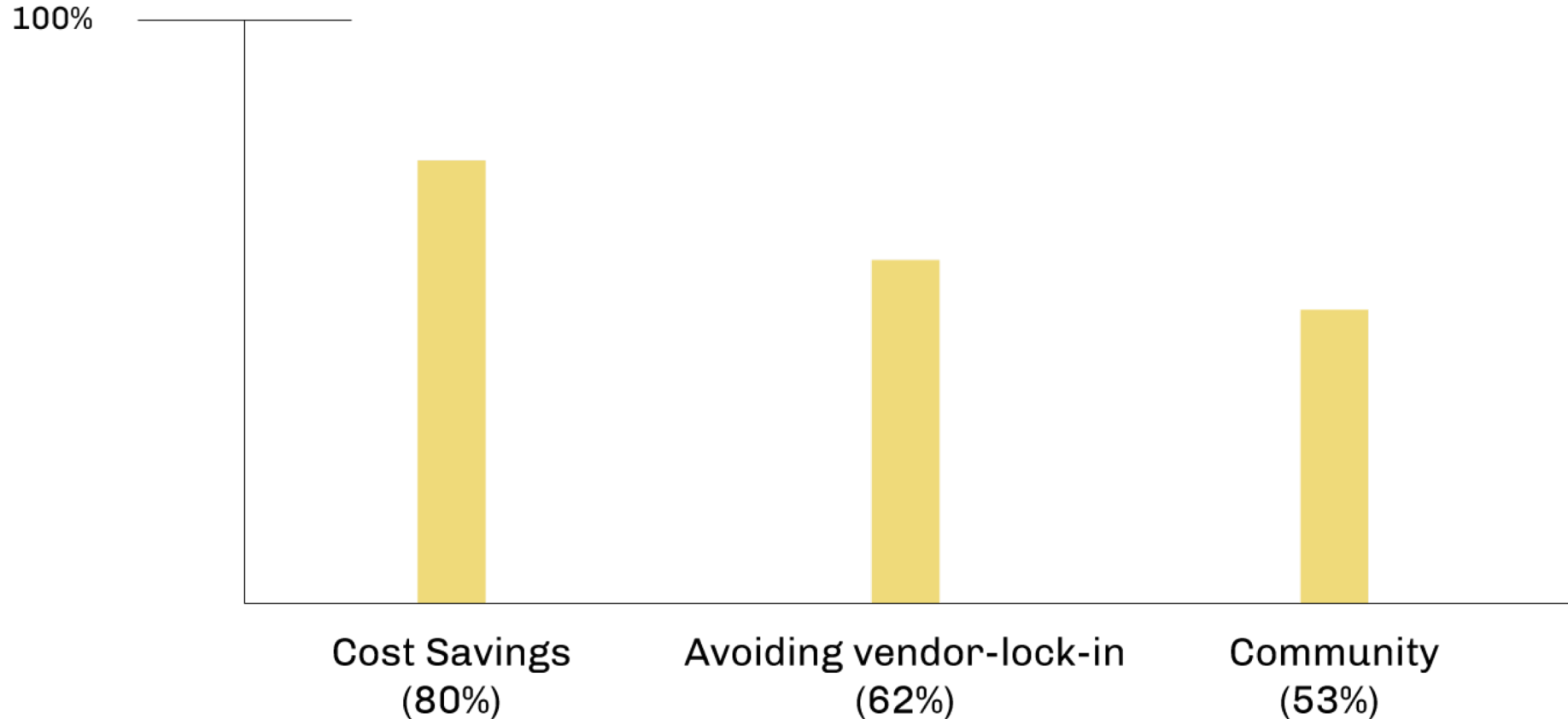
Freedom from Software Vendor Lock-in

<INSERT VENDOR> Does not have customers, <INSERT VENDOR> has hostages

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Costs

Open Source Database Powered Applications are less expensive to build and to operate

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Top Databases

Only Open Source databases are showing growth!

347 systems in ranking, May 2019

Rank			DBMS	Database Model	Score		
May 2019	Apr 2019	May 2018			May 2019	Apr 2019	May 2018
1.	1.	1.	Oracle ➕	Relational, Multi-model ℹ️	1285.55	+5.61	-4.87
2.	2.	2.	MySQL ➕	Relational, Multi-model ℹ️	1218.96	+3.82	-4.38
3.	3.	3.	Microsoft SQL Server ➕	Relational, Multi-model ℹ️	1072.19	+12.23	-13.66
4.	4.	4.	PostgreSQL ➕	Relational, Multi-model ℹ️	478.89	+0.17	+77.99
5.	5.	5.	MongoDB ➕	Document	408.07	+6.10	+65.96

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Other Reasons

Easier to attract and retain talent

Faster Innovation

Better Compatibility

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My Belief

Everything being equal Open Source Technology is the best choice

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What is Open Source ?

Some Clarifications are in Order

Open Source

Truly Open Source

Kind of Open Source

Open Source Compatible

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Truly Open Source

OSI: **https://opensource.org/osd-annotated**

GNU: **https://www.gnu.org/philosophy/free-sw.en.html**

DEBIAN: **https://www.debian.org/social_contract#guidelines**

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Peter's Practical Question

What will I have to give up if I stop commercial relationship with a vendor ?

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Kind of Open Source Software

Everyone loves Open Source, why do not we use it for Marketing ?

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Kind of Open Source Software

Open Core

Shared Source Software

Eventually Open Source Software

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Open Source Compatible Software

Honest Proprietary Software claiming compatibility with Open Source Technology

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"Hotel California Compatibility"

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Benefits of DBaaS

Reduce Cost at Small and Medium Scale

Increase Agility via Self Service

Reduce Risks through providing sensible boundaries

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Emerging Open Source Response

Kubernetes as Operating System for your Data Center

Operators as a way to run Autonomous Databases

Percona Operators for MySQL and MongoDB Available

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Longer Term Vision

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Autonomous Database Initiative

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Unicorns Changing from Open Source Licenses

MongoDB changes Software License to SSPL (Server Side Public License)

Elastic, Confluent, and Redis Labs releasing some components with Source Available License

Are you ready to share the pie ?

Do we want to create a bigger pie, or have it all to ourselves?

Or

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Cloud and Open Source

Are Cloud Providers abusing Open Source software?

Should Software Vendors be able to maintain DBaaS Monopoly?

Are Open Source Software Users interests are the same as Vendors?

How should Cloud Providers be compelled to contribute to Open Source?

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Polarization

"Protection" Focused Projects

- Attempt to Re-Define Open Source to Restrict Freedoms to lock-in value, create monopoly for themselves
- MongoDB Model

"Adoption" Focused Projects

- Embrace any innovation furthering Technology adoption and user success
- PostgreSQL Model

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Opposite Starts to Happen

Why We Changed YugaByte DB Licensing to 100% Open Source

Karthik Ranganathan | Founder & CTO

July 16, 2019

We are excited to announce that YugaByte DB is now 100% open source under the Apache 2.0 license. This means previously closed-source, commercial, enterprise features such as Distributed Backups, Data Encryption and Read Replicas are now available in the open source project and are completely free to use. Same applies to upcoming new features like Change Data Capture and 2 Data Center Deployments. The result of this change is that we no longer have a Community Edition and an Enterprise Edition of YugaByte DB. **There is only one edition of YugaByte DB now and that is fully open source.**

https://blog.yugabyte.com/why-we-changed-yugabyte-db-licensing-to-100-open-source/

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Another Example

Open-sourcing VictoriaMetrics

Aliaksandr Valialkin [Follow]
May 22 · 3 min read

We are happy to announce that VictoriaMetrics enters open source world
under Apache2 license!

https://blog.usejournal.com/open-sourcing-victoriametrics-f31e34485c2b

Migration Best Practices

Recognize Differences

Open Source Database will not be 100% the same as your favorite proprietary database

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Like This

VS

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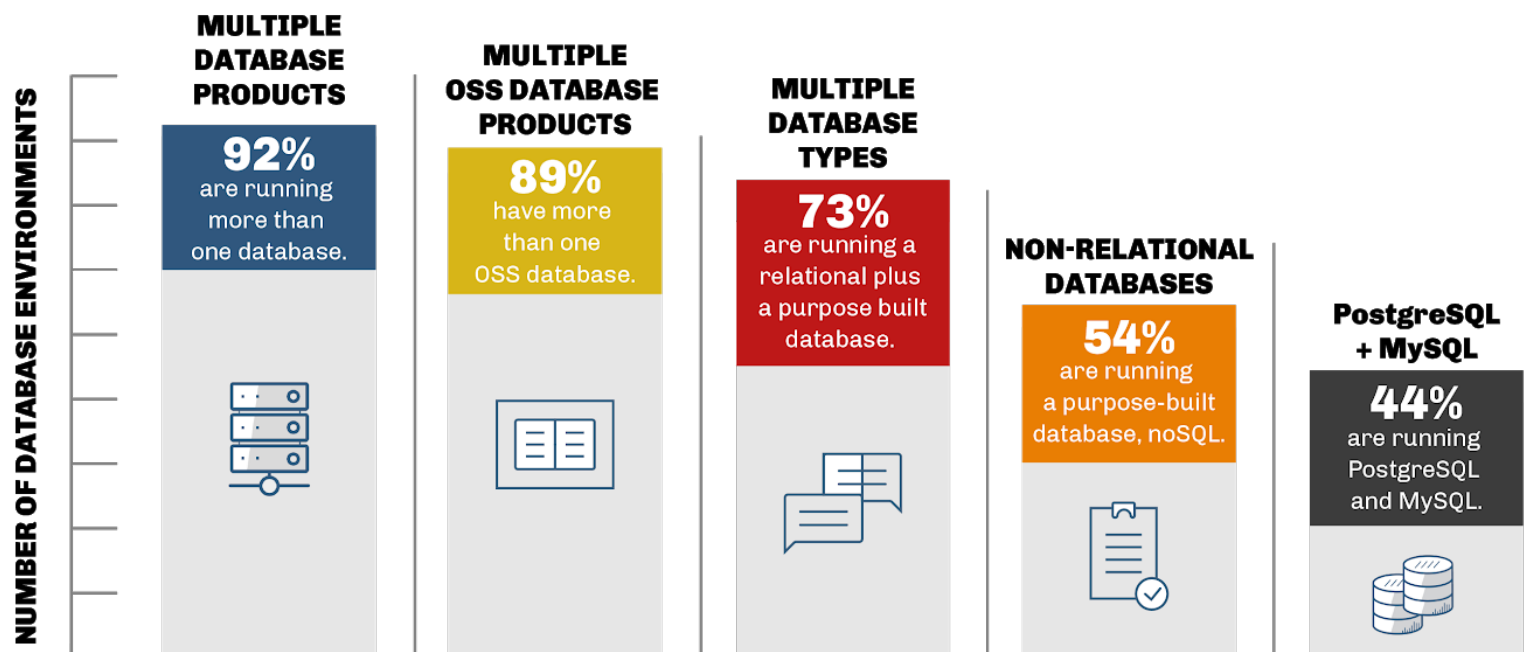
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Chose Technology or Technologies

Many Open Source Technologies are available

There is No Silver Bullet

Multi-Database World

MULTI-DATABASE IS KING

NUMBER OF DATABASE ENVIRONMENTS

MULTIPLE DATABASE PRODUCTS
92% are running more than one database.

MULTIPLE OSS DATABASE PRODUCTS
89% have more than one OSS database.

MULTIPLE DATABASE TYPES
73% are running a relational plus a purpose built database.

NON-RELATIONAL DATABASES
54% are running a purpose-built database, noSQL.

PostgreSQL + MySQL
44% are running PostgreSQL and MySQL.

Numbers based on Percona's Open Source Data Management Software Survey 2019

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Choosing Right

Chose Minimal Feasible Set of Technologies

Choose the path well traveled

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Choose Right Application

Not All Applications are Equally Feasible for Migration

Focus on Getting Early Wins not Largest Wins

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Right Targets Right Way

Easy	Hard
• Simple • Development Team Available • Application Supports Open Source Database • Enthusiastic Team	• Complex • Uses Advanced Features • No Source Available • No More Maintained • Team Against Migration

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Right Team

Current Enthusiastic Team

Migration Team

Do not Do migration by the team interested in the Project Failure

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Ensure Management Commitment

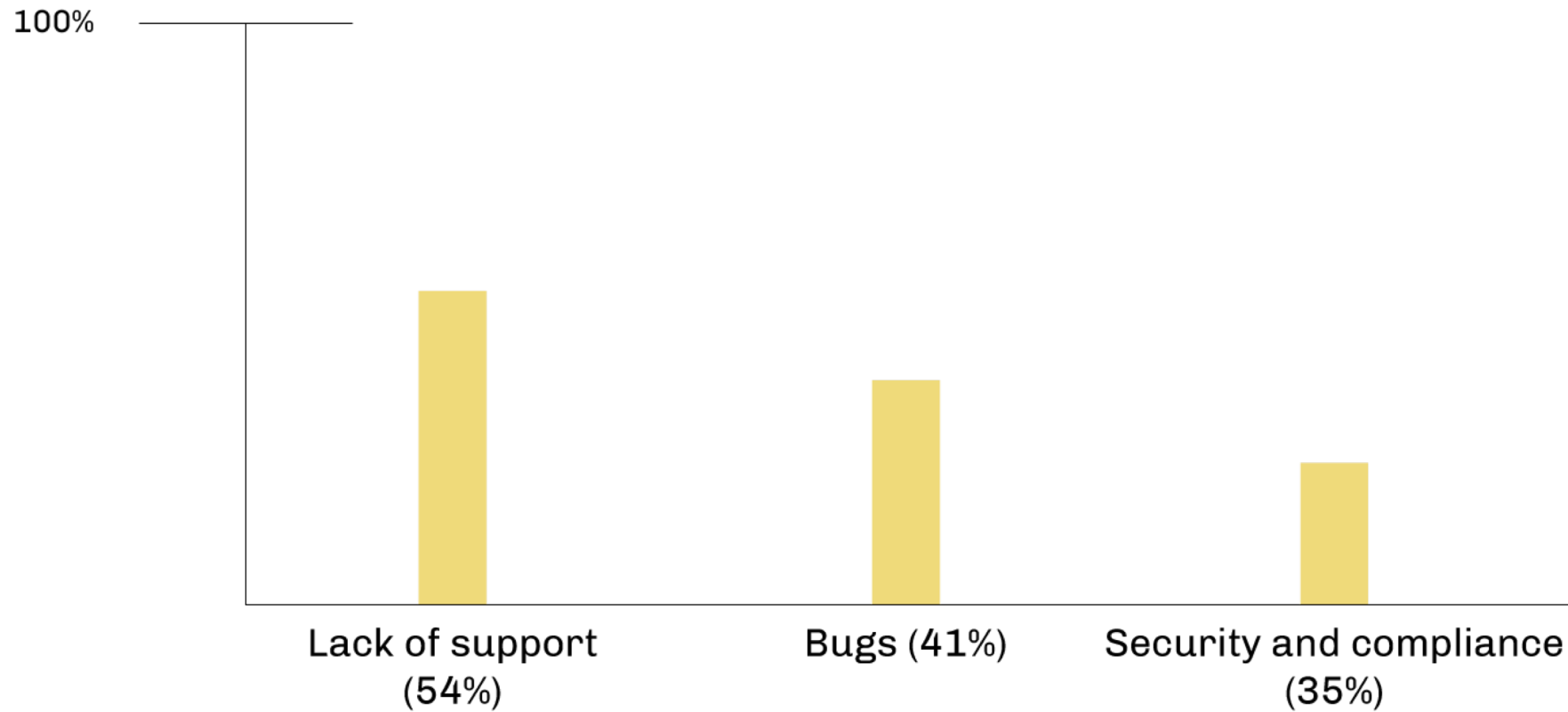Clear Management Commitment and Support is great

Changes always impact people careers

Are you good playing politics ? Is someone on your team ?

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Manage Fears of Open Source Technologies

The main fears when adopting Open Source database technology:

100%

Lack of support
(54%)

Bugs (41%)

Security and compliance
(35%)

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Two Approaches to Migration

Migrate Existing Application

Do as Part of Application Rewrite

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Have Patience

Opportunities to Do Migration will present themselves

The Process from idea to "live" may take longer than you expect

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Planning Migration

Feasibility Study

Proof of Concept

Scoping and Planning

Executing

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Doing the Switch ?

Is this stop-switch-start cutoff ?

Is old system remains on the standby ?

Are both systems to operate at the same time ?

Data Sync issues

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Tools for Migration

No Perfect Tools

Manage your expectations for anything but trivial applications

Mind Operational Best Practices Differences

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Tools to keep in Mind

MySQL Workbench

Inspirer MnMTK

AWS Database Migration Service

SQLines Tools

Ora2PG tool for migrating to PostgreSQL

DBConvert

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Chose Right Partners

Migration is a very specific skill different from greenfield development

Is your partner motivated in project success or failure ?

Different tasks in Migration require different skills

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Percona Open Source Advance (POSA)

POSA is a complete consulting-led migration solution for customers who want to move their proprietary database(s) to an open source alternative.

Open source software migrations are increasingly a strategic corporate initiative, but often require expert external advice and support. POSA is the ideal solution for companies who traditionally purchase a proprietary database management system and want to explore other options.

Using POSA to migrate to open source software allows you to:

- **Escape vendor lock-in**
- **Realize significant cost savings**
- **Achieve a pain-free transition**
- **Embrace flexibility**

As a leader in open source software, Percona has extensive experience advising companies on the best way to configure, manage, and run their databases. A migration with POSA ensures a smooth database transition and delivers significant annual cost savings.

https://www.percona.com/services/consulting/percona-open-source-advance

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OPEN SOURCE DATABASE CONFERENCE

30 Sept - 2 Oct 2019

PERCONA
LIVE EUROPE
AMSTERDAM

3 DAYS

80+ SPEAKERS

450+ ATTENDEES

HILTON HOTEL SCHIPHOL

Percona Live conferences give those who have an interest in or work with Open Source Databases and Software an opportunity to gather for three days of Hands on Tutorials, Breakout Sessions, Keynote Addresses, Networking and fun!

ADVANCE PRICE TICKETS STILL AVAILABLE!

Database Performance Matters