Getting started with InnoDB Cluster in MySQL 8

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Pythian

Speaker

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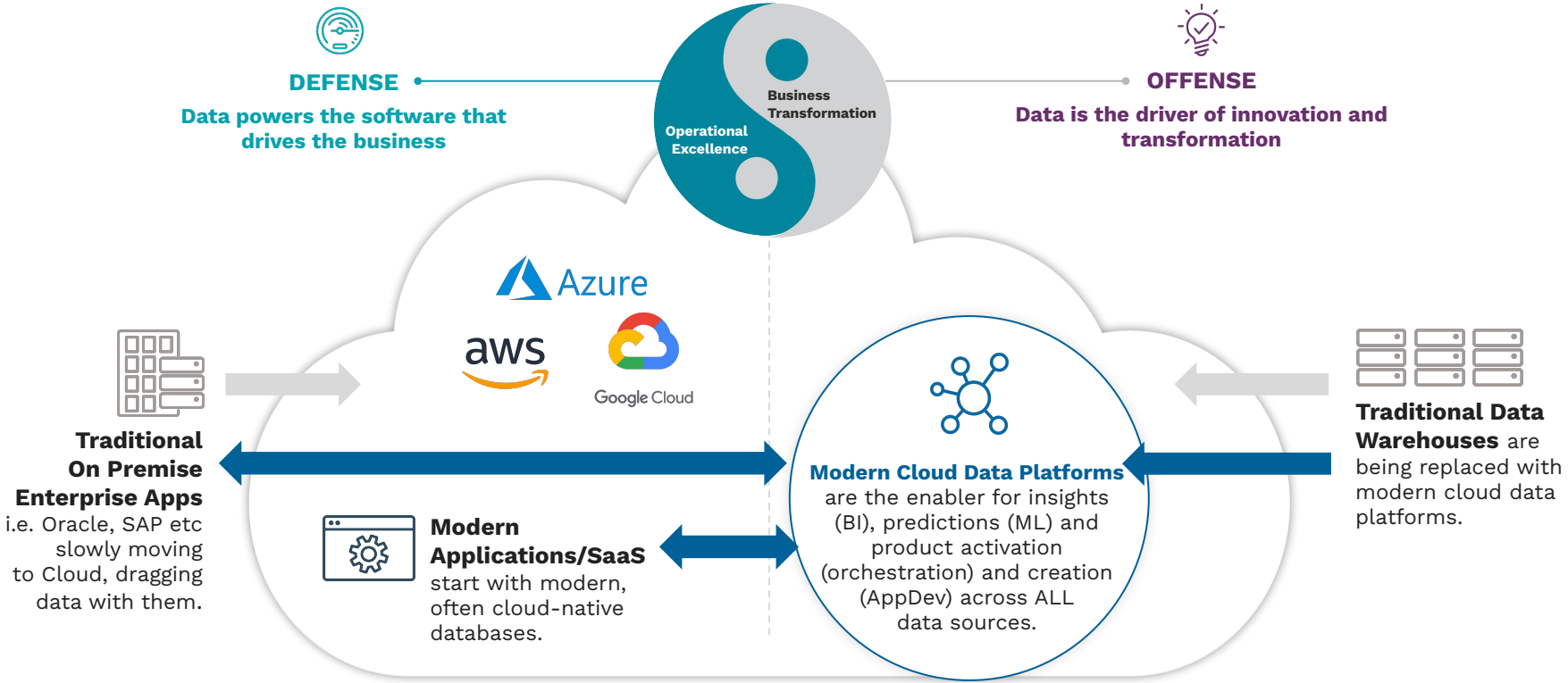
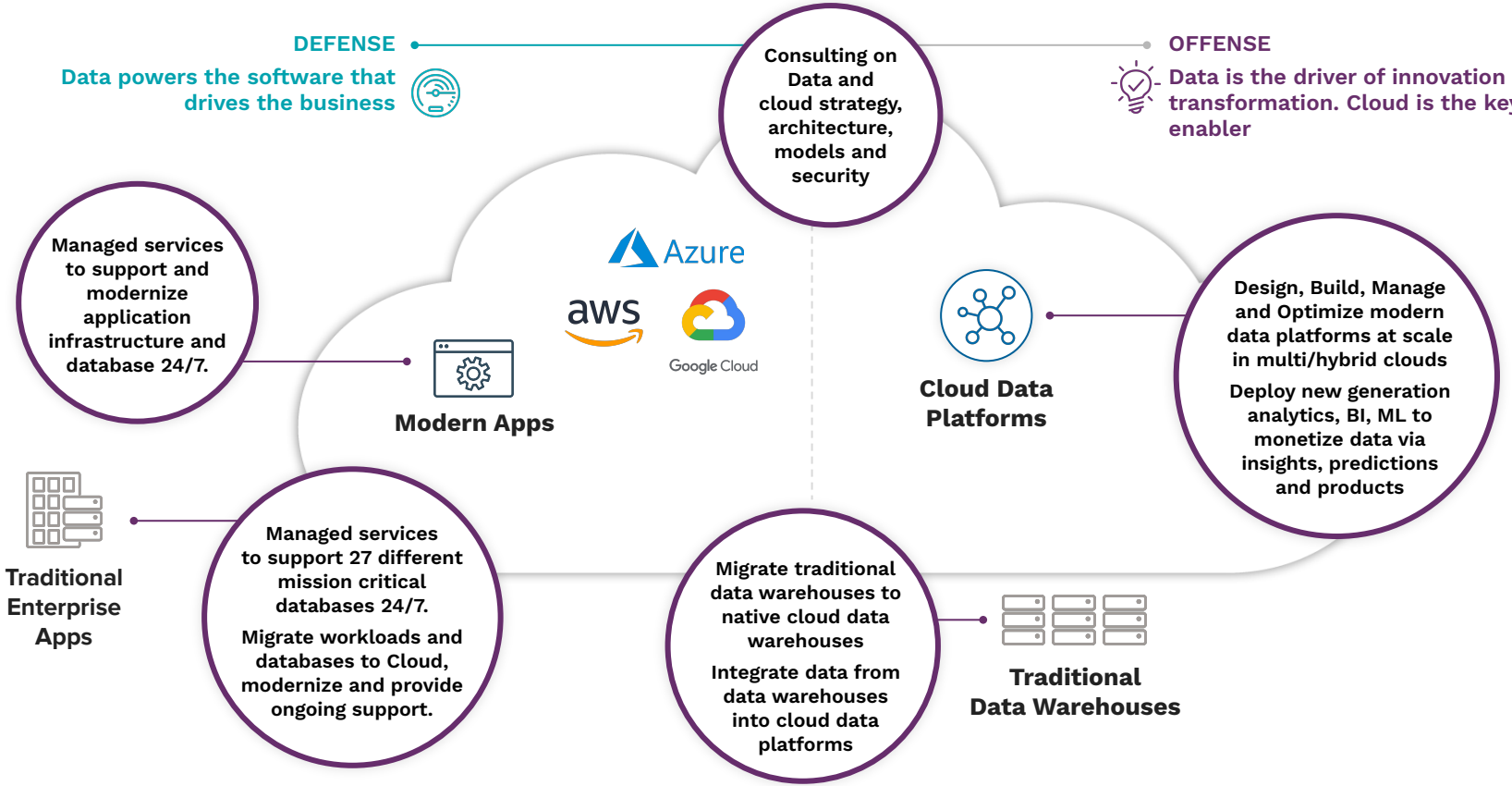
How the data estate is evolving



Pythian's Services Across the Data Estate



Other presentation

- Yesterday at 11:15 I had another presentation, slides will be available online (https://speakerdeck.com/mcrauwel)

Database reliability engineering for MySQL

Databases! Every developer comes across them in their careers. Just like me, I started my career as a PHP backend developer on a typical LAMP stack. In our organisation we did not have a MySQL DBA so I started to learn about how we could make our database as reliable as possible. I will show you ways for making your database more HA, how to make service discovery easy and seamless to the applications and I will talk about backups and monitoring!

Introduction

History lesson

- MySQL supports replication for a very long time
- Originally replication was only asynchronous
- What this means:
  - Transaction happens on a writer instance
  - At commit time data is written to the table and to the binary log (for full durability you should set `sync_binlog = 1`)
  - Replica instance pulls the binary log entry from the writer and stores it locally in a file called the relay log
  - Replica processes the entries in the relay log and applies the change to the local dataset

History lesson

- The slave processes the relay logs at it's own speed, this might cause replication delay (aka lag)
- There are no guarantees that the replica will be able to apply the transaction (replication errors)
- Replication historically was applying transactions single threaded (as opposed to the writer where 100s of threads might have been running simultaneously.

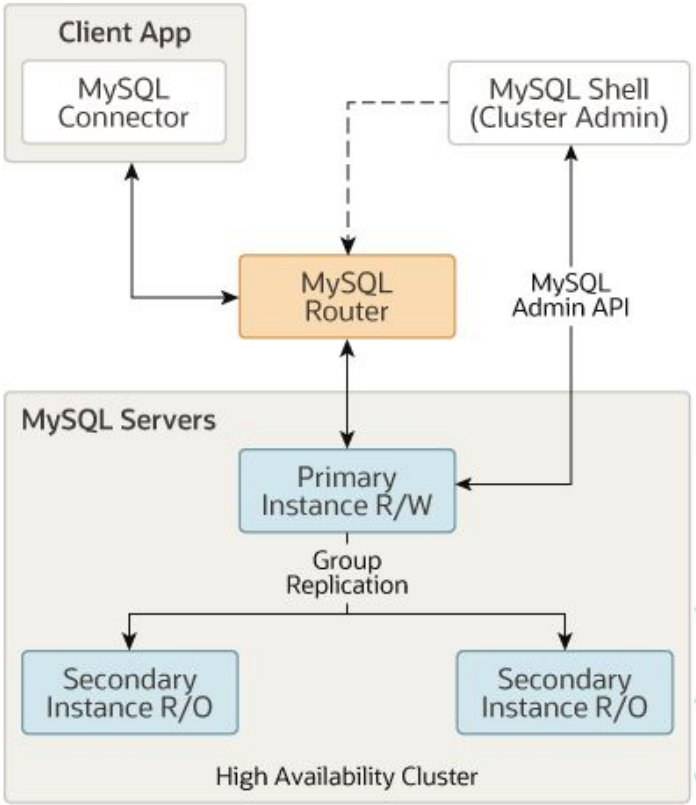
Galera Cluster

- First attempt to make MySQL act as real cluster
- External library added to MySQL (Percona XtraDB Cluster) or MariaDB
- Not using native MySQL features such as binary logs
- Galera Cluster is "virtually" synchronous
  - Transactions are being certified before commit is returned to the client
  - Transactions still need to be applied on other cluster nodes, eventual consistency
  - No guarantees on read-after-write-consistency

InnoDB Cluster

- Introduced in MySQL 5.7 in 2018
- Native clustering solution to MySQL
- Much improved in MySQL 8.0
- InnoDB cluster components
  - InnoDB Group Replication
  - MySQL shell
  - MySQL router

InnoDB Cluster - Architecture



InnoDB Group Replication - magic explained

- To deep to cover in this "introductory" presentation
- Very good presentations online by lefred (https://about.me/lefred)
- https://www.slideshare.net/lefred.descamps/mysql-group-replication-the-magic-explained-v2

Demo

Demo recording

https://tinyurl.com/4ef4842v

Question?

Thank you!

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