GOODGAME STUDIOS

GOOD

TO MEET YOU.

GOODGAME STUDIOS

THE GOODGAME SHOP

How to achieve high scalability and low response times worldwide

AGENDA

- Introduction
- The past
- The present
- The future
- Question time!

INTRODUCTION

- Online shop with millions of users worldwide
- Load peaks during special sales
- Web and API interface
- User-specific offers



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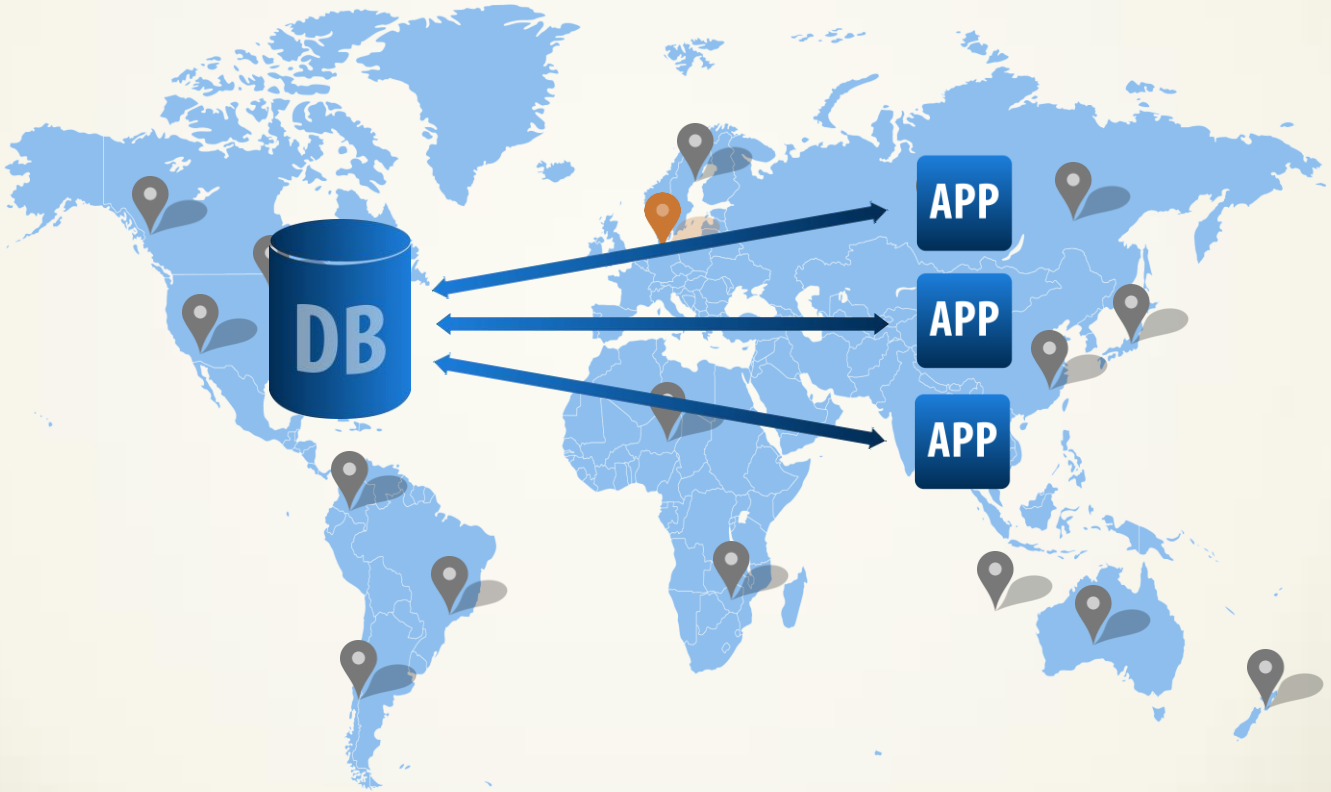
THE PAST



THE PAST: SHOP 1.0 SINCE 2009

- PHP 5.2
- Centralized infrastructure
- Vertical scaling
- Code base grown over the years
- ~ 107. 093 loc / 537 files ≈ 200 lpf

THE PAST: SHOP 1.0 INFRASTRUCTURE



THE PAST: WHY CHANGE A RUNNING SYSTEM?

- Expected growth in users
  - Limited performance of current shop
  - Missing scalability
  - High latencies from certain regions
- Software entropy
- Closely coupled code and configuration

REQUIREMENTS



- High performance, low response times world-wide
- High scalability
- Maintainable code base
- Short development cycles
- Keeping the original Shop design
- Keeping original APIs
- Gradual migration to new system

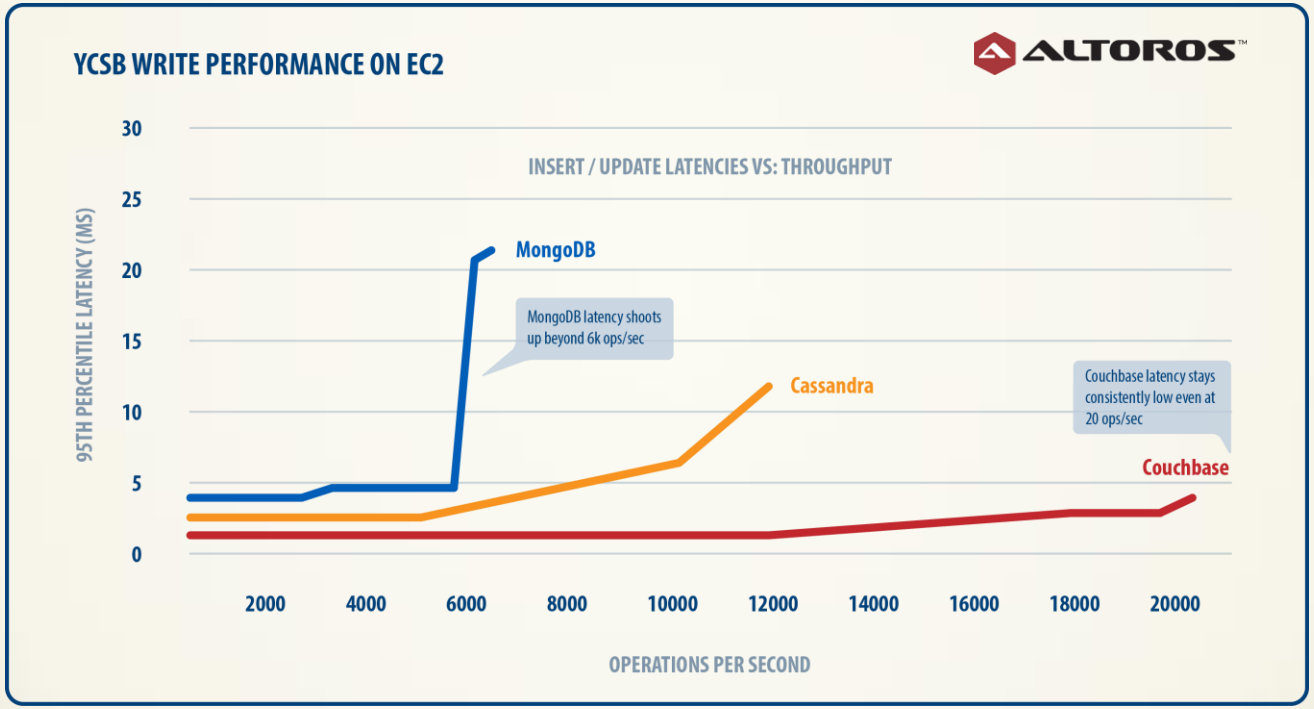
IMPLICATIONS

- Usage of cloud
- Servers close to the customer
- Modularised architecture
- Separation of code and configuration

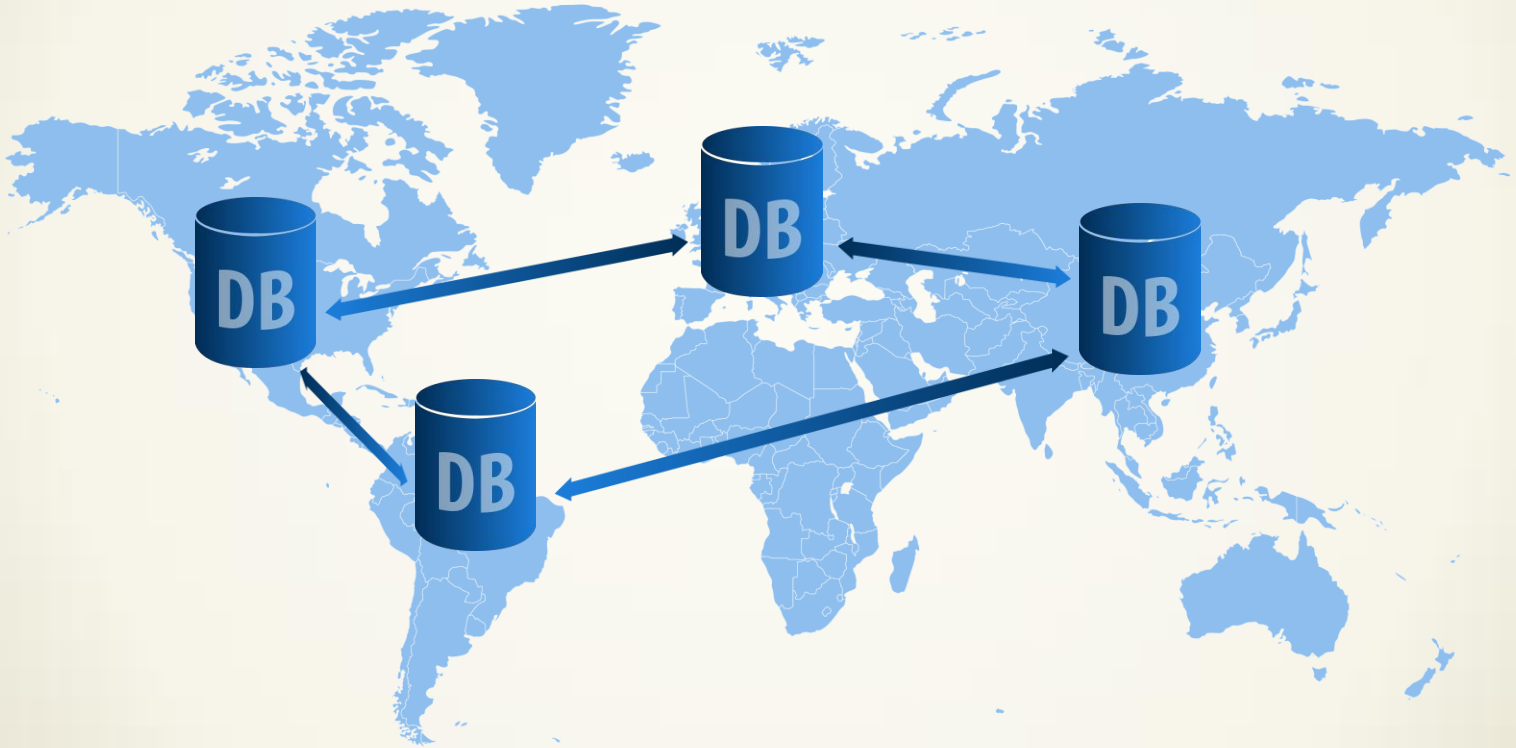
WHERE TO PUT ALL THE DATA?

- Worldwide master-to-master replication
- Horizontal scalability
- Reliability, especially under high load
- Versatility
- Operational data is not relational

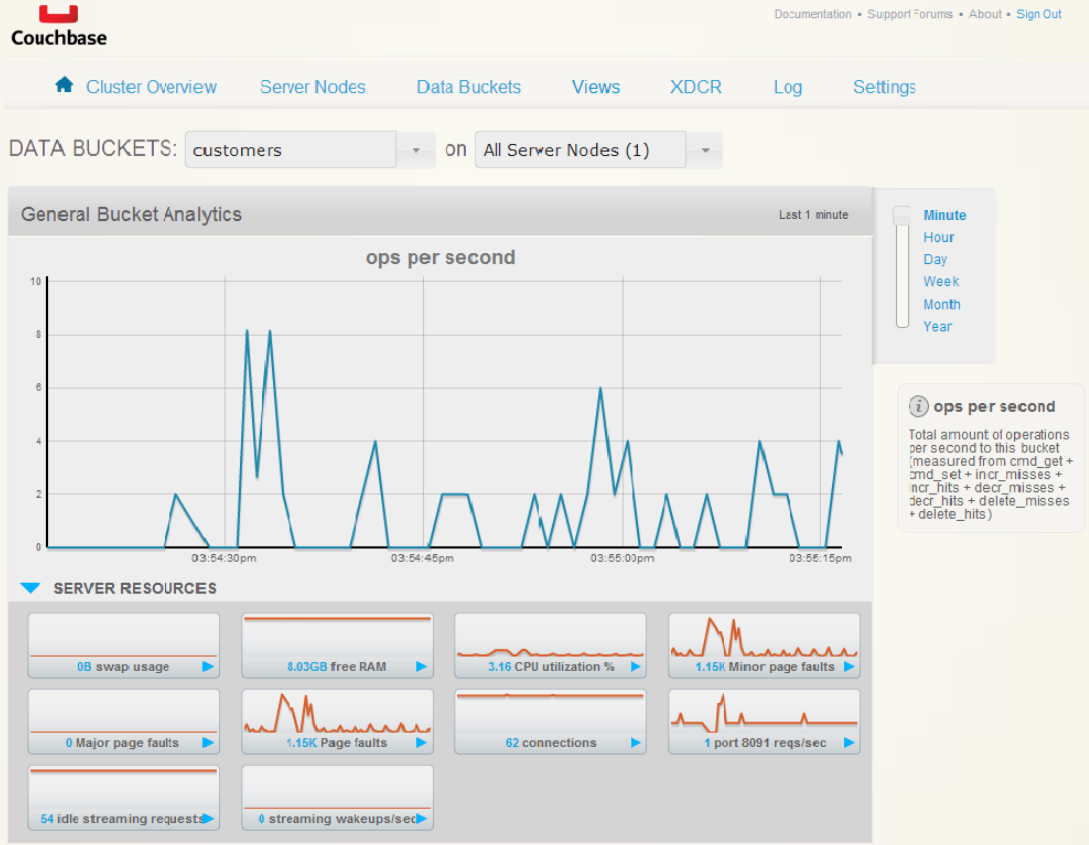
NoSQL EVALUATION



DATA REPLICATION



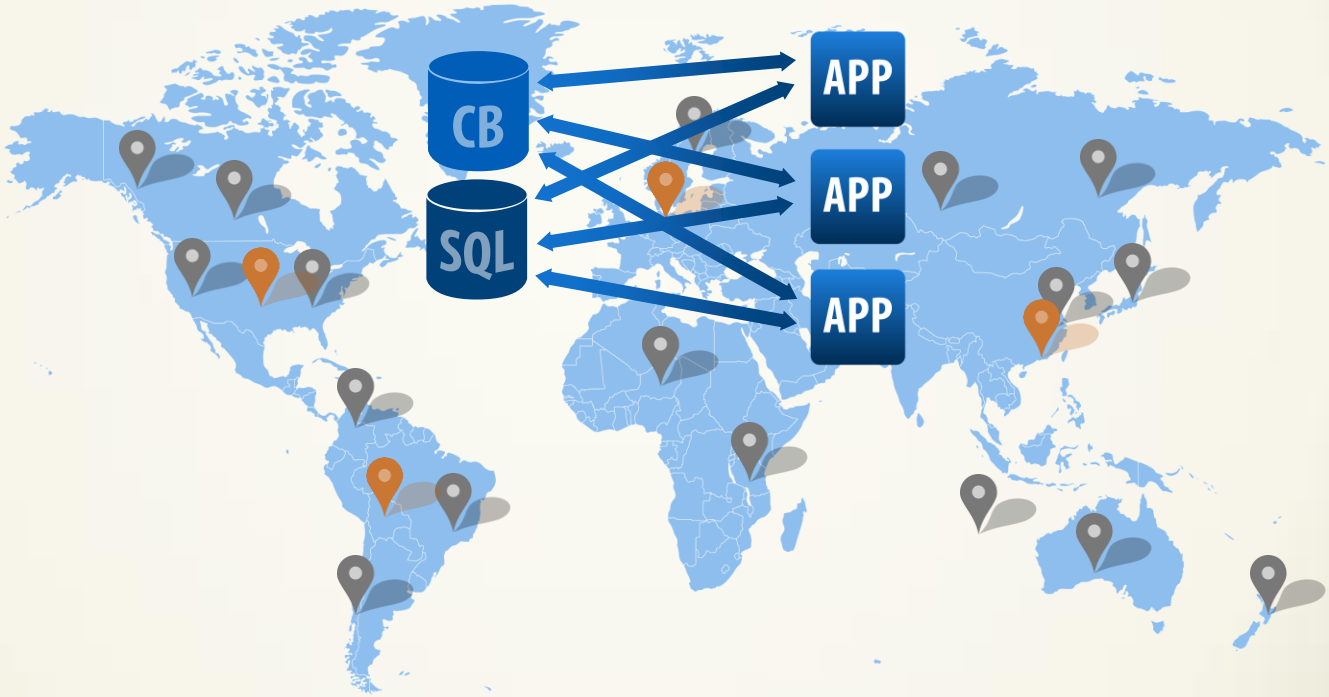
COUCHBASE


Couchbase
Documentation • Support Forums • About • Sign Out
Cluster Overview
Server Nodes
Data Buckets
Views
XDCR
Log
Settings
DATA BUCKETS: customers
on All Server Nodes (1)
General Bucket Analytics
Last 1 minute
ops per second
10
8
6
4
2
0
03:54:30pm
03:54:45pm
03:55:00pm
03:55:15pm
Minute
Hour
Day
Week
Month
Year
ops per second
Total amount of operations per second to this bucket (measured from cmd_get + cmd_set + incr_misses + incr_hits + decr_misses + decr_hits + delete_misses + delete_hits)
SERVER RESOURCES
0B swap usage
8.03GB free RAM
3.16 CPU utilization %
1.15K Minor page faults
0 Major page faults
1.15K Page faults
62 connections
1 port 8091 reqs/sec
54 idle streaming requests
0 streaming wakeups/sec

THE ROAD TO SHOP 2.0

- Started from scratch
- Zend Framework 2
- Couchbase
- Further technologies: MySQL, Apache, APC, PHP 5.4

SHOP 2.0 INFRASTRUCTURE



Customers

Data Centers

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THE PRESENT



THE PRESENT

- 25 million customers use Shop 2.0
- Achieved horizontal scalability
- Huge knowledge gain of NoSQL/Couchbase, ZF2, Cloud, performance optimisations
- Continuous integration
- Covered with tests
- ~ 102.684 loc / 1228 files ≈ 80 lpf
- And…

THE PRESENT: THEMES



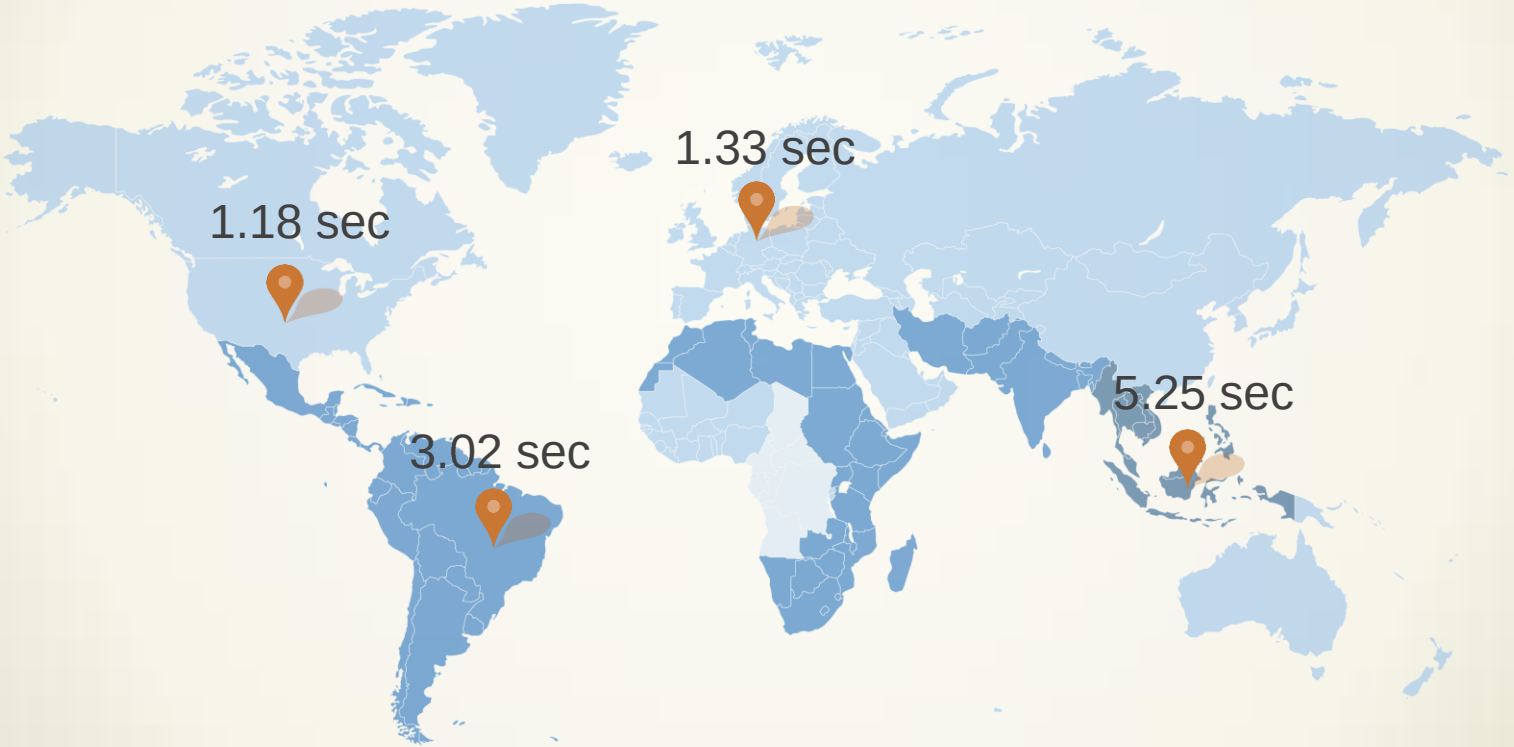
THE PRESENT: PERFORMANCE

Huge performance gains due to:

- Usage of nginx + php-fpm + opcode cache
- Database result cache
- ZF2 module config cache
- Cachegrind evaluation
- Code-related optimisations due to ZF2 knowledge

Opcache Type	avg pageloadtime in ms	min pageloadtime in ms	max pageloadtime in ms
APC	1787,25	325	5450
xcache	679,42	241	4335
zend opcache	595,07	203	4043

THE PRESENT: LOADING TIMES



THE PRESENT: WHAT WE ACHIEVED

- All original requirements have been met
- Complete feature set of Shop 1.0 (and more!)
- Rather easy to introduce new developers to the project
- We are very happy with our solution :)

Of course, gaining knowledge in different technologies opens up new possibilities…

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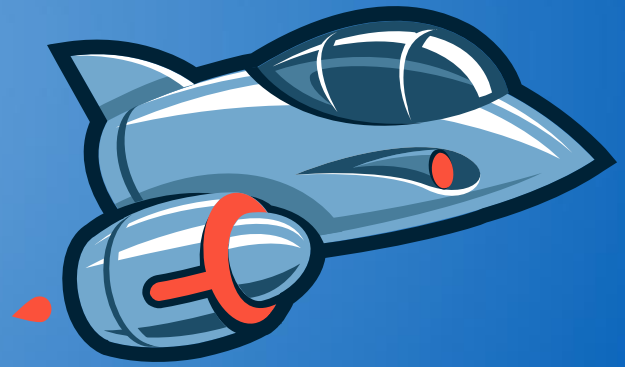

THE FUTURE

THE FUTURE

- Usage of Couchbase for new features
- Usage of message queues for asynchronous data handling
- Finishing pre-heater for templates
- Further optimization of code base
- Continuous delivery
- Xhprof
- HHVM

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HAVE A GOOD DAY.