From P..... to Erlang

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What is Swelen ?

- Mobile advertising (iOS, Android, WebMobile)
- RTB

The adserver team (2 people)

- https://github.com/jeromer/
- https://github.com/teh-cmc/
- no clue about Erlang
- no clue about functional programming

Before the rewrite

Adserver was

- written in P..... (+ MySQL, + Redis, + Nginx, + uwsgi, + ...)
- by a math genius (initial author, left the company)
- with piles of "temporary fixes"
- without any test
- (what could possibly go wrong ?)

in the end

- a nigthmare to maintain
- costly to add new features (exponential)

We could not keep up with the business


ONE DOES NOT
SIMPLY
TOUCH THAT CODE
ANYMORE
memegenerator.net


I WANT YOU
TO REWRITE OUR ADSERVER

New adserver requirements

- fast (< 50ms max to return an ad)
- scalable (10x traffic anytime)
- maintainable
- observable
- no HTTP caching
- synchronous reads
- asynchronous writes

We had to pick a language

- Python (legacy adserver)
- PHP (hell no !)
- C (too complex to do well)
- Go (lots of interesting concepts)
- Rust (no stable version available)
- Erlang

Why we chose Erlang

- designed for fault-tolerance
- built-in scalability
- built-in observability (observer, etop)
- no locks :) (huge win)
- competition used Erlang

With Erlang, you not only have a language.

You also get the entire platform for free !

Time to learn

- LYSE (thank you @mononcqc)
- ton of manual pages (erldocs)
- lots of Erlang Factory videos
- Cowboy manual & source code
- Trial and (lots of) errors

Erlang, a week later

- 1st real world feature ready
- sent the entire trafic on a single node
- worked well, scaled well

WIN ! 

Time to write the rest

We ♥ ETS

- blazingly fast
- super simple to use
- manage 10 different cache layers
- no longer need Redis

We ♥ pattern matching

- extremely powerful
- code much safer, with much less error checks (let it crash)
- much easier to maintain

We ♥ releases

- trivial deployements
  - git push
  - make release
  - tar + scp
  - restart the adserver
  - done
- (we do no do hot upgrades)

We ♥ observability (aka WTF is going on ?)

- remote shell on any node (shell history support ?)
- direct access to our API
- ♥ erl -name jerome -setcookie foo -hidden -remsh x.com -s observer

Stupid mistakes learned the hard way 1/2

- store BIG terms in ETS -> 💣 ETS performance
- avoid ets:select if possible -> full table scan -> 💣
- ETS table is lost when process crashes -> create a dedicated supervisor

Stupid mistakes learned the hard way 2/2

- create an OTP app for anything ->
   message passing
- pass BIG terms between process
  -> message passing

Summary

We went from

- unmaitainable adserver (by 2 people)
- complex infrastructure
- high response time
- unable to keep up with the business

To

- single release (aka tarball)
- response time is ~25ms (p90)
- can do trafic x8 without even sweating
- simplified infrastructure
- one maintainer (me)
- adding a feature takes 2/3 days in avg (w/ tests)

Future plans

- switch to Mnesia
- use dialyzer

Thoughts about Erlang

- Erlang not hard to learn, real motivation is required though
- Thinking in Erlang challenging sometimes
- Documentation complete, could be more accessible
- Unicode support could be more "natural"

Thank you Ericsson & the Erlang community


ERLANG
ALL THE THINGS
memegenerator.net

Thank you

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