Fix the Website
A DevOps Success* Story

DEVOPS

RANT
Help! The Website is Slow!
Dev who ops. Following #monitoringlove
acquihired by DM. Worked on a great project for a year. After cancelled, I roamed the company fixing problems. Tasked with improving "the website"
Thanks ZR for sponsoring my talk.
About the Website

- ComScore top 30
- Originated the long tail how-to site
- dependent on google traffic
- monetized by google AdWords
- 3 Million pages, ~20 types

- originated its category. (content farm)
- May have been affected by google panda?
- In decline, but still a cash cow.
- long tail, some pages get 1 or fewer imp per day.
- about me: Dev who ops. Recently tasked with improving this site. Just finished migrating some transient data from the DB to a separate datastore.
A simple LAMP stack?

A nice simple LAMP stack, right? Nope.
Two levels of upstream
So many caches (foreshadowing)
Literally no one remembered how this worked.
complicated. Several generations of workers.
This metric is bad!
"FIX IT!" -- the PM

Avg(US) and Avg(DT)

US and DT graphs.
Sources are summary graphs. Averages of averages!
Not a graph you want to go "up and to the right"
Notes indicating the PM's opinions on causality.
This is almost data-driven. More of a drive-by.
Hey PM, what does this graph mean?
HALP! I CAN HAZ METRIX! FIX IT!
Are all PM's hysterical?
What does the metric mean?

Ask the PM his boss, VP-Eng
The Database is to blame.
DT must be the database
We hate Mongo.
We know it's Mongo
I hate mongo. (Know your biases)
• I so want to kill Mongo, but it's not the culprit here.
• best use case: single key-value lookup for json doc, all in ram. It’s quick.
splunk summary table => found that DT = US - PP
apache log config => found PP is php running time, and US is the standard apache timing metric. US vs US-FB.
Our logs are in splunk for analysis. Let's look! First, had to learn splunk query language. Turns out no one on the team had done deep analysis! Not correlated to time, date, pagetype.
Non-Correlations

- time of day
- day of week
- week over week
- page subtype
- large data files don't have PP

...don't have graphs to show, lost them.
• Log axis means you're in trouble
• max(US) and max(PP) are indistinguishable in log axis.
• Why does avg(US) jump by 150ms?
• Max(delta) jumps to 1-4s!
• Big max is throwing off the avg. Need %tile!
• Large is bad, but not as bad as medium?
• Sampling issue -- slow clients don't get the big pages
Compare Spiders
Can we Replicate?
• Duplicated high US, high Delta in httpperf test
• Low PP and low USFB -- time to first byte
• Modified and compiled httpperf
• Not same issue, but similar.
• Network buffering and latency drove up US time!!!
Plan of Action
THE PAGES

ARE TOO DAMN BIG!

- 16.5K compressed / 70k uncompressed
- Shrink pages - remove old cruft.
- Move CSS to common files that will cache better
Why?
TCP receive window

TCP uses a **sliding window** flow control protocol. In each TCP segment, the receiver specifies in the *receive window* field the amount of additionally received data (in bytes) that it is willing to buffer for the connection. The sending host can send only up to that amount of data before it must wait for an acknowledgment and window update from the receiving host.


- Watched HTTP TCP packets in wireshark
- Akamai has a high starting window size, 12 packets.
- Can send 12 packets * 1430 bytes = 16.5kb without ACK.
eg: 5 packets with default of 3.
default is 3. Should be increased, is increased by CDN proxies.
akamai uses 10 or 12.
Apache records US time as soon as last packet is sent to local TCP buffer.
case 1: 3 packets
case 2: 5 packets
Success?
We fixed the glitch

fixed the metric.
marginally improved user experience
didn't change much for google, so not much bump.
LEARNED, DOCUMENTED, EXPLAINED, SHARED.
• misconfig meant akamai was claiming 99% cache hit, when it was more like a 90% cache miss
• Should set up local cache (varnish) in DC and use that for akamai origin.
• guesses become assumptions become institutional knowledge and lore. Check your assumptions.
LEARN
DOCUMENT
IMPROVE

EXPLAIN
SHARE

#devops

LEARNED, DOCUMENTED, IMPROVED, EXPLAINED, SHARED.
#DEVOPS IS CULTURE
Don’t let truth be lost for myth.
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• PM complained about increase in daily 404 errors.
• I isolated one specific php library error.
• Correlated against releases
• Cause Release script looped through servers updating the build and moving the symlink. then looped again restarting.
• php was in an unstable between move and restart, which grew as it took longer to install the build and more servers.
Thank You!

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