



# Avoiding Getting on the News by Investigating Near Misses

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# The situation



- Finally, The Big Time!
- But with little prior field exposure
- And a very steep rollout (0 to 10M mobile subs in month)

# The Plan

- The existing process
  - Premortems and risk analysis
  - Targeted testing
  - “Build hospitals” – scale test frameworks for repro’ing bugs
  - Wait for incoming tickets
- But by that point, we might already be on the News

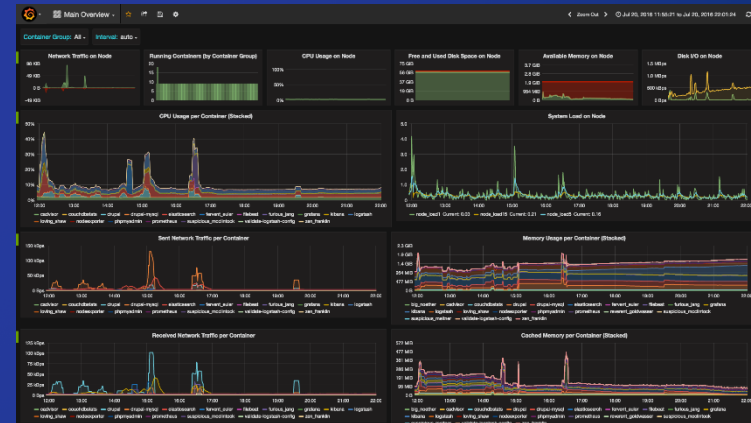
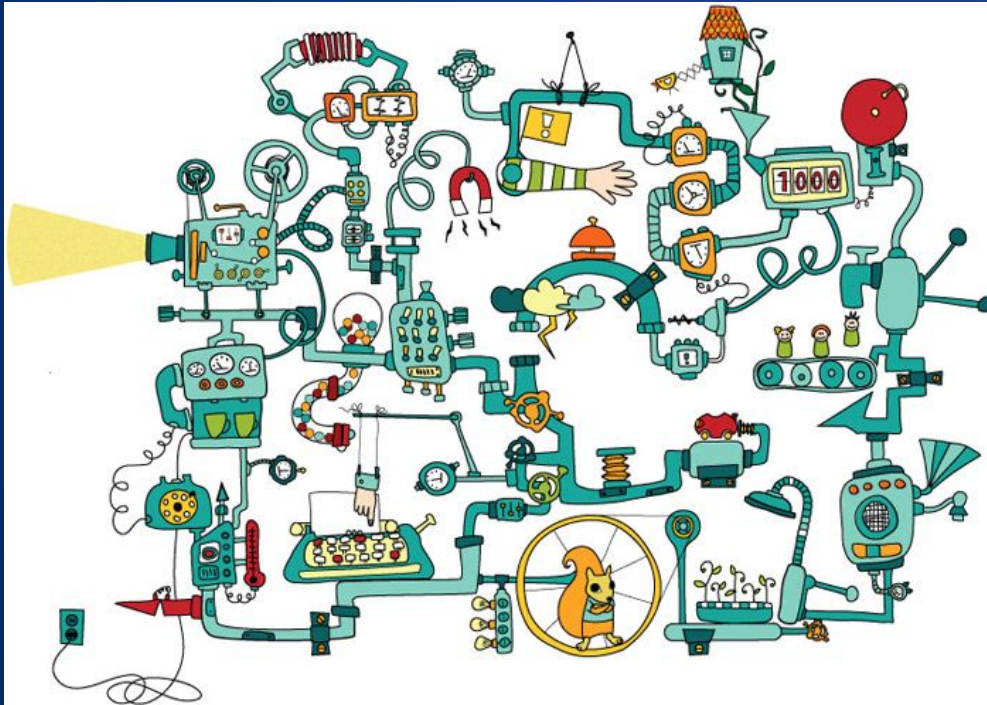


- As well, how about studying every bit of field data, and try to prevent the tickets getting raised in the first place?



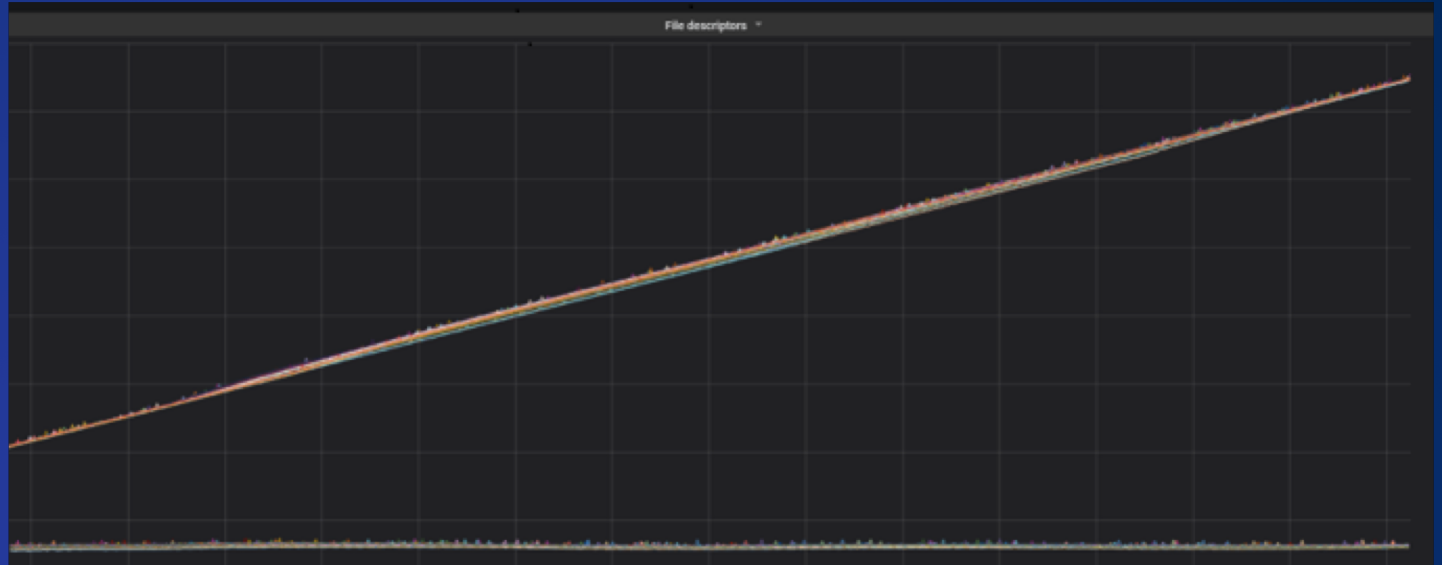
# First get the data

- It's easy for all the B2C folks
- But IMS cores are very hard to access
- Still, here is the full architecture diagram of how we did it



# Simple problems

- File descriptors



- Crash frequency

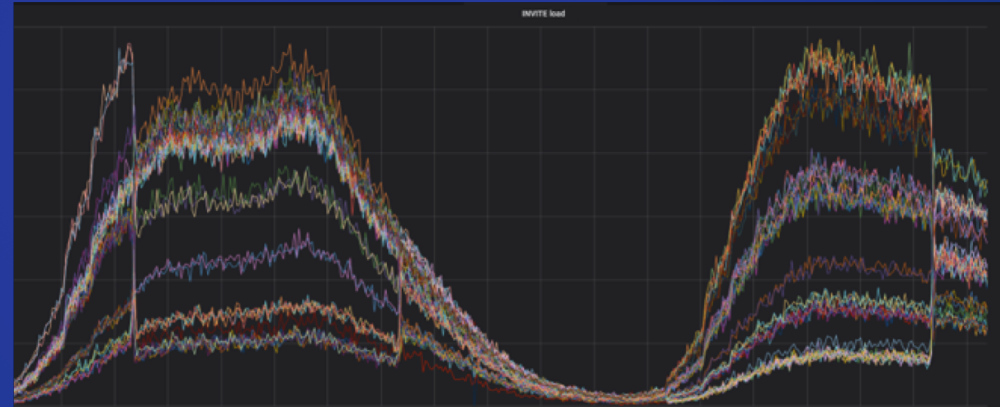


# More simple problems

- Good internal load balancing



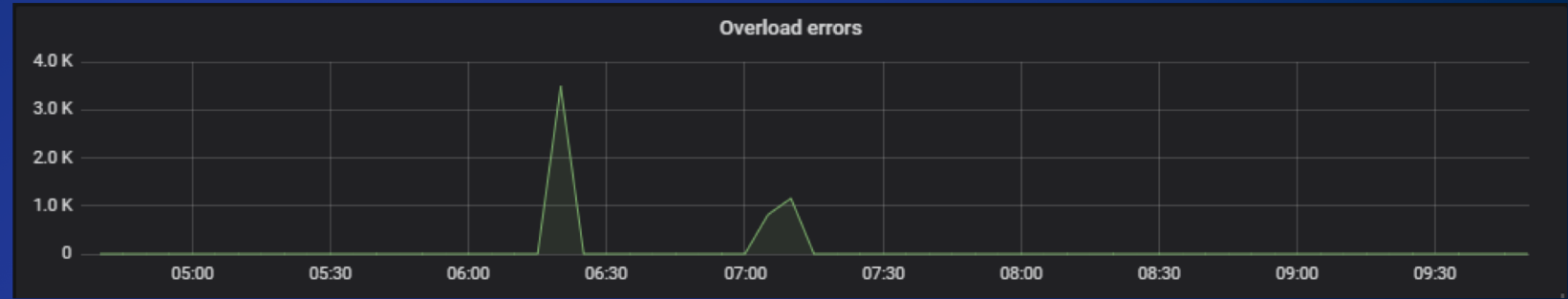
- Not so great inbound



- Many other “simple” problems, some bugs, but mostly misconfigurations

# Spikes in Quiescing

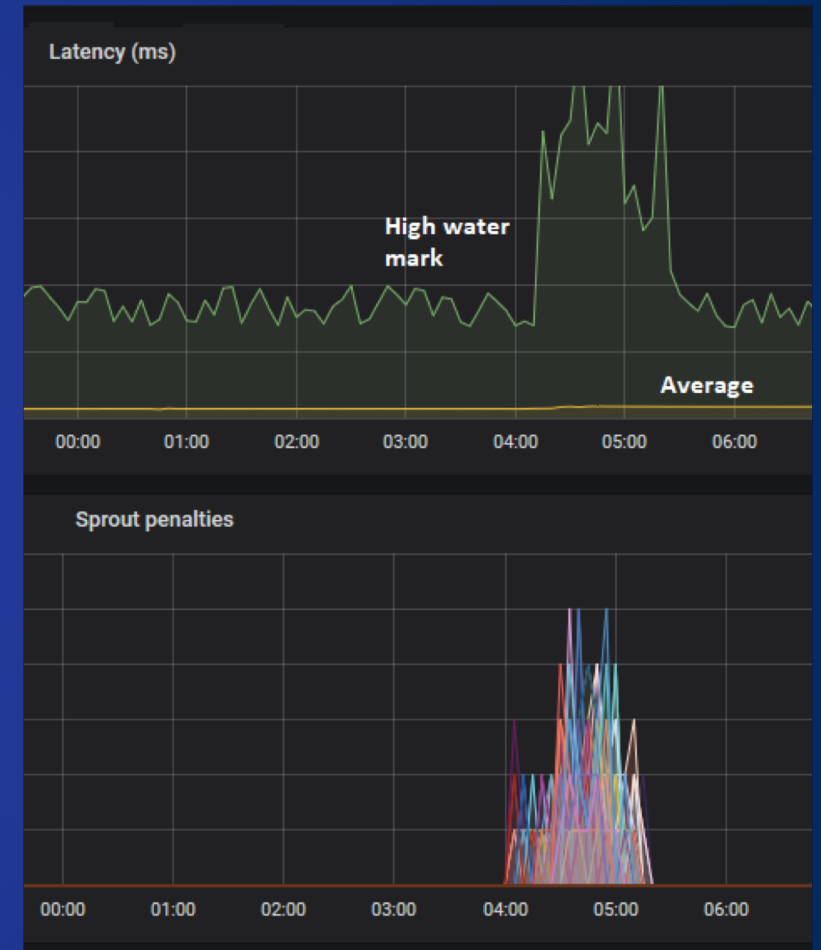
- Spike in overload errors
- *Before* a software restart



- Incorrect handling of ODI route headers
- => code fix
- => better upgrade and resilience story

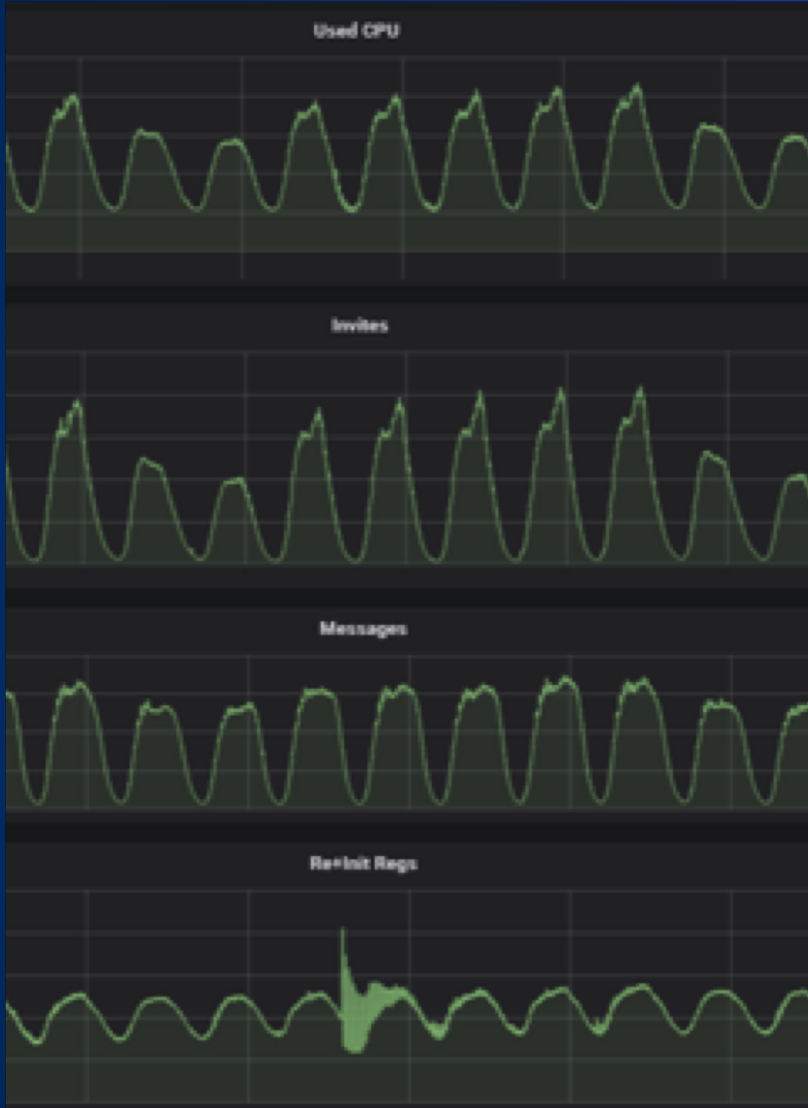
# Overload processing

- Token bucket algorithm
- Sampling issues
- Downstream latency issues





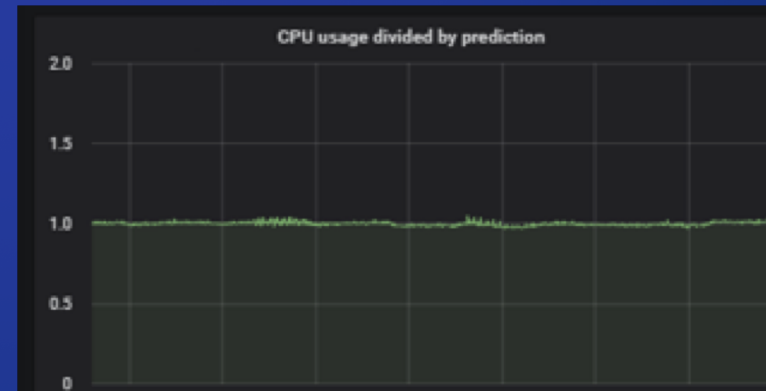
# Building a performance model from the data?



Linear regression .....

$$\Rightarrow \text{CPU} = 0.0006 * \text{invites} + 0.000003 * \text{messages} + 0.0005 * \text{registrations}$$

Divide by real Cpu, ..... test

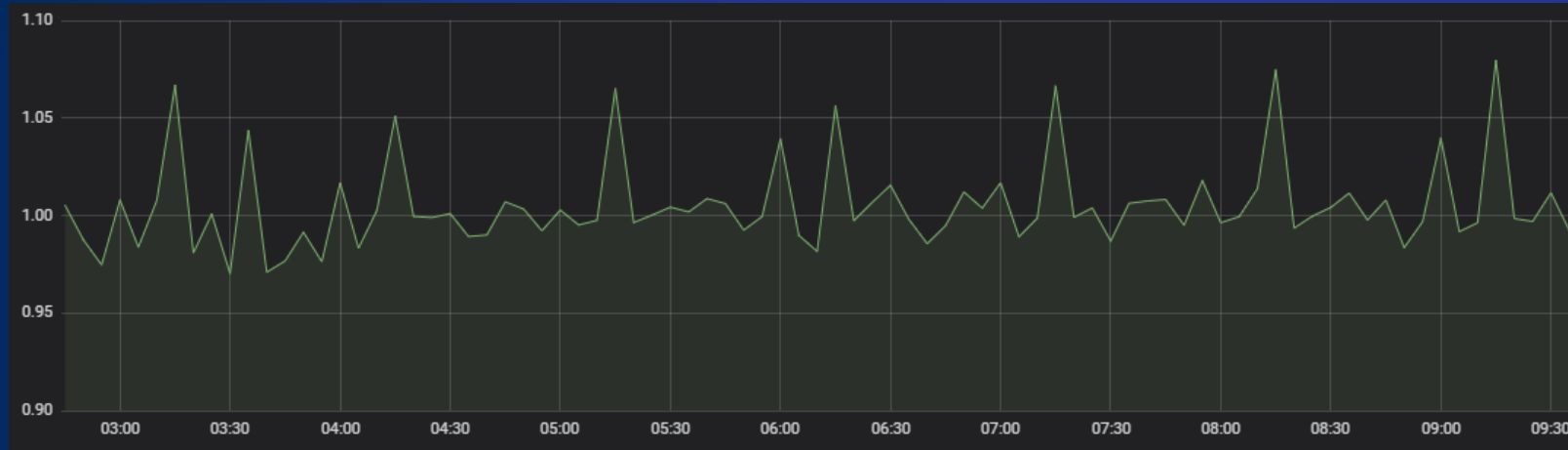


## Performance (continued)

- Meeting expected performance?
- Some operations more expensive than expected - why?
- Some sites behaving differently to others – why?

## For the eagle eyed (1)

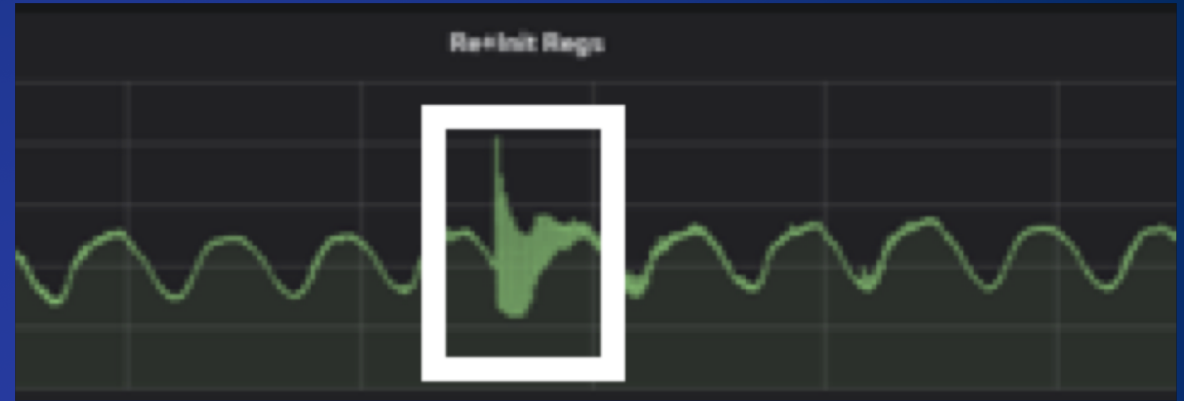
- That CPU prediction....
- Not completely flat



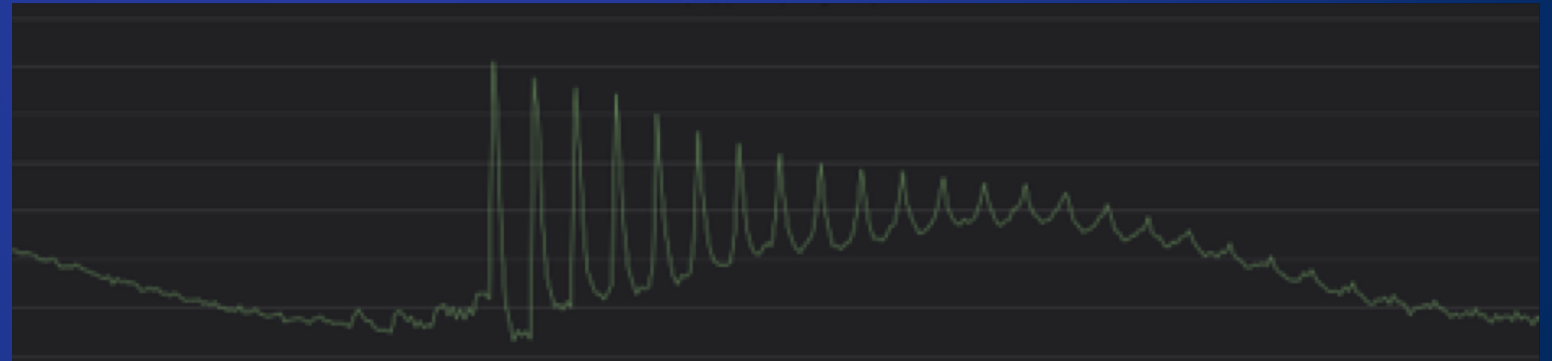
- At 17 minutes past, tidy up scripts

## For the eagle eyed (2)

- Notice the wobble in registers?



- Edge components being restarted at night



# The conclusion

- Actively analysing all the field data lets you:
  - Stay ahead of the game
  - Understand your product better
  - Understand the field landscape better
- Yes we did have one escalation, but we were already on the case
- And we haven't *yet* got on the News