

# Learning through WTF: 1 year+ of Elasticsearch at Zendesk Guide

by Ronan McHugh



# Agenda

1. Introduction
2. WTF moments
3. Conclusion

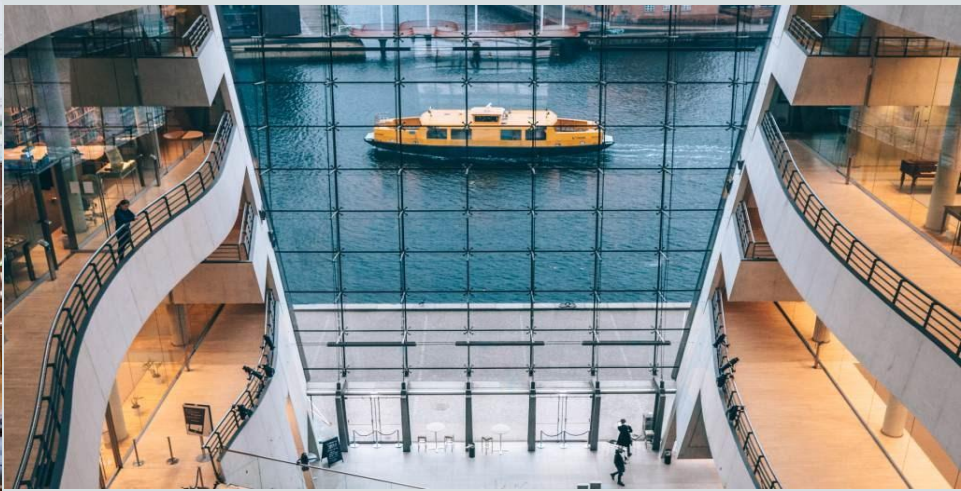
# Hello!



**I'm Ronan**

**Team Lead on Guide's Search Team (Gordian)**

**Getting software wrong for 8 years**





# Guide Stats

- 50,000 customers
- Multiple search channels
- 18 million queries per day
- 10 infrastructural partitions
- 5 million queries per day in our largest pod
- 80 queries per second (peak hours)

## By type

All types

Articles

Community

## 1000 results for "find me"

Reporting Page has shown no updated stats in the past few days

10

**Z** Zendesk help > Community > Support - Troubleshooting and Q&A · Michael Pham · May 23, 2019

Can anyone help **me** **find** out why no stats have been updated for the past few

Finding my images

2

**Z** Zendesk help > Community > Guide - Troubleshooting and Q&A · Maya Irving-Regev · October 31, 2017

Is there an way for **me** to **find** and replace them without opening my articles one by one?

Create metric with average updates to ticket

5

**Z** Zendesk help > Community > Support - Insights and Reporting Q&A · Adam Reid · March 19, 2018

I'm trying to create a metric that would allow **me** to **find** the average number of updates to a ticket for an agent.

Visitor Path: Google keyword search

1

**Z** Zendesk help > Community > Chat and Message - Product Feedback & Discussion · adam · January 11, 2018

If we can see what key word a user entered to **find** us, we can tapper our opening line to hook the user into conversing. for

[Help] Strategy on Building Zendesk for my Start-up

3

**Z** Zendesk help > Community > Support - Troubleshooting and Q&A · Gabriel Pinsdorf · April 24, 2019

You can **find me** here or on Upwork for any additional questions. Good luck then!

Recommended size for design

3

**Z** Zendesk help > Community > Support - Troubleshooting and Q&A · Sam Brandt · February 20, 2015

She asked **me** to **find** out if she should design for 1280 or 1440. What's the recommended size?

Introduce yourself!

14

**Z** Zendesk help > Community > Sell - About the Sell Community · Nicole - Community Manager · September 20, 2019

When I'm not at work, you can **find me** at the nearest fabric store looking for my next project.

Report for Open tickets vs new unassigned tickets

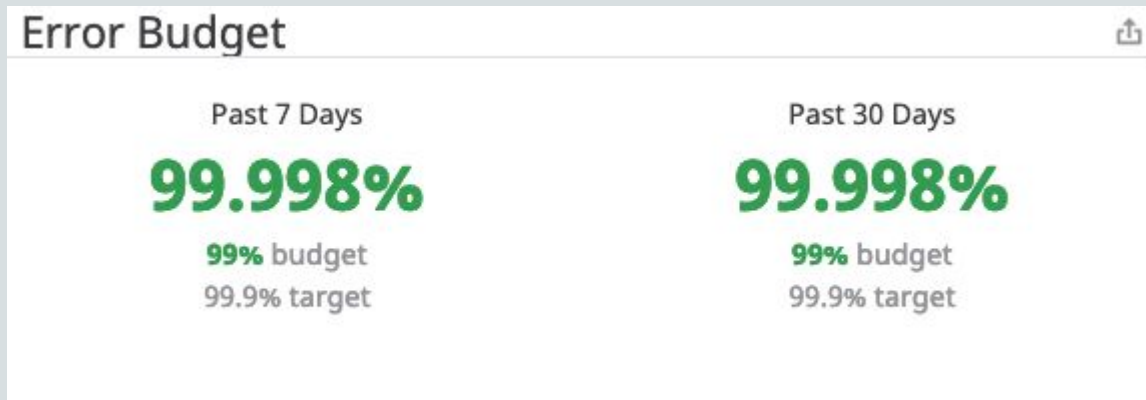
1

**Z** Zendesk help > Community > Support - Troubleshooting and Q&A · Cyruip · November 1, 2018

# Reliability is feature 0

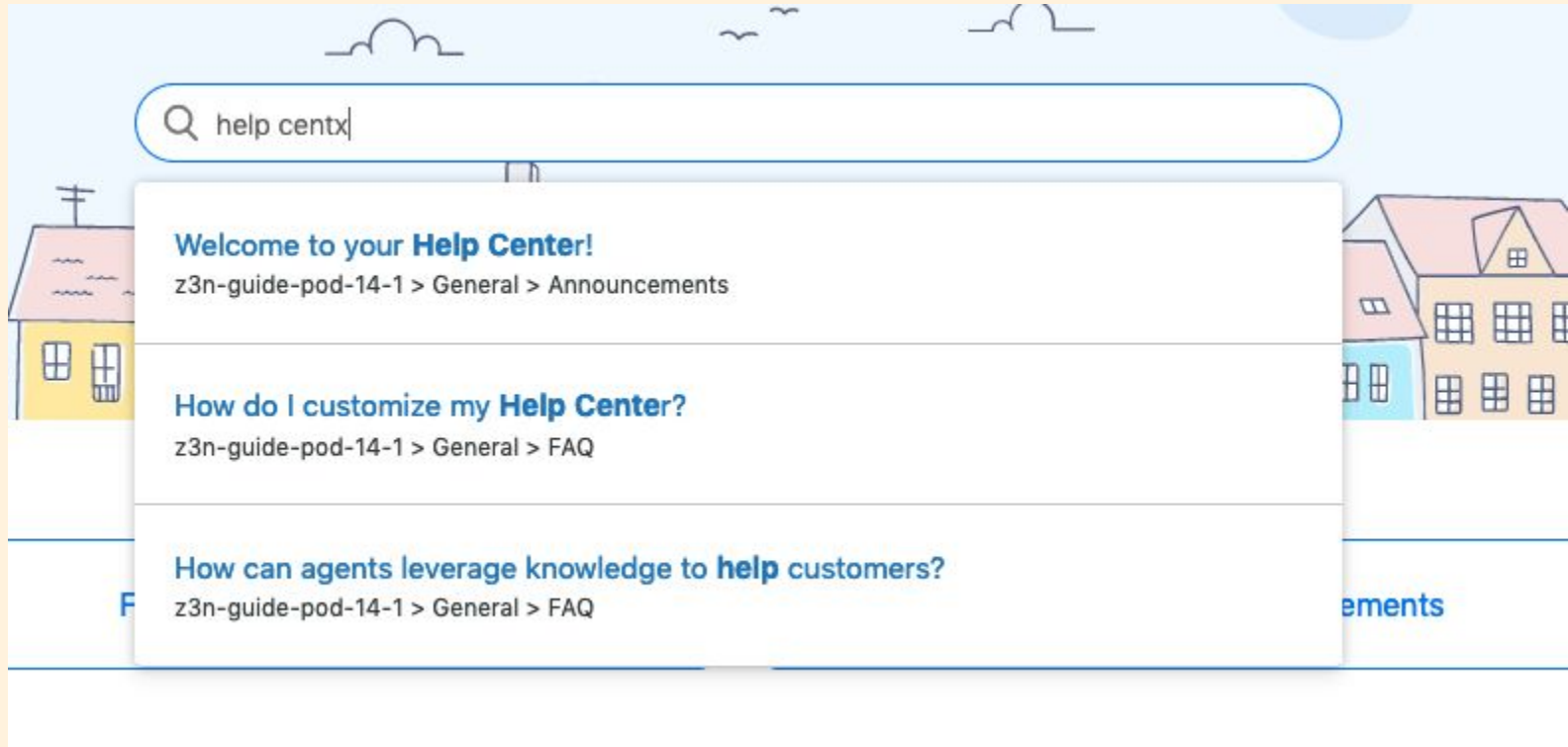


# We're doing... not bad



# Our year of WTF

# Fuzzy Search



# Too Many Clauses

```
{
  "error": {
    "root_cause": [
      {
        "type": "too_many_clauses",
        "reason": "too_many_clauses: maxClauseCount is set to 1024"
      }
    ],
    "type": "search_phase_execution_exception",
    "reason": "all shards failed",
    "phase": "query",
    "grouped": true,
    "failed_shards": [
      {
        "shard": 0,
        "index": "guide_article_v34.5",
        "node": "3qUWkPF0S20ZezXo30gpew",
        "reason": {
          "type": "query_shard_exception",
          "reason": "failed to create query: {...}"
        }
      }
    ]
  }
}
```

WTF!?

# How it works

For each term

Look up the term list for similar terms (LED)

Add an extra clause for each similar term

**SHAPPING OR SHIPPING OR SHOPPING...**

**Data dependent**

- Tweak parameters
- Product Limits

# Rejection hurts



**Confused999** Sep 19 23:58



I tried to pay with a credit card but it didn't work and now I'm confused and a little bit afraid and what am I supposed to tell my mum if she finds out? Can somebody help me? Hopefully before 4pm when she gets home? I'd really appreciate it. Failing that, do you think I could sleep on your couch for a few nights? Just until this whole thing blows over I mean. It's no big deal. I can do the dishes and feed your cat. I really don't take up so much space. Just enough room for me and a couple of GPU miner units. If the police call, you don't know me. I'll get you back when this deal goes through. Delirium is going to be the next big thing, this time I'm sure of it. You might say that I've said that before, but this time I'm extra sure. I'm going to be rich. Crypto rich.

-----

Segning  
I tried to pay with a credit c...

+ Tilføj



until this whole thing blows over I mean. It's no big deal. I can do the dishes and feed your cat. I really don't take up so much space. Just enough room for me and a couple of GPU miner units.



Filtre



Tickets (0)

Brugere (0)

Artikler (0)

Organisationer (0)

Id

Erste

Arbejdet

Ordrestatus

Arbejdet

Gruppe

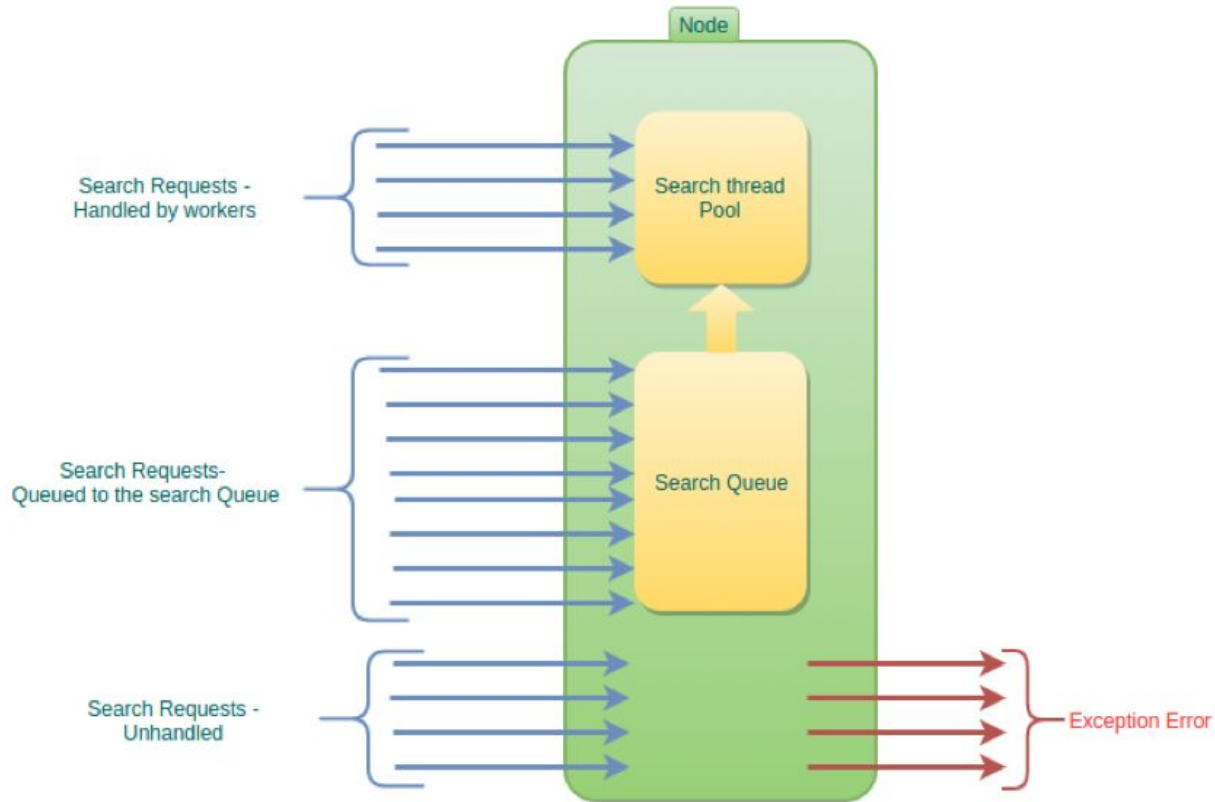


Search thread pool queue size by node



WTF!?

# Elasticsearch Queuing



# So what happens when...



What about 927 queries that take 1 second of worker time on average?

# → Product Limits

→ Everything that can be counted,  
should have a limit

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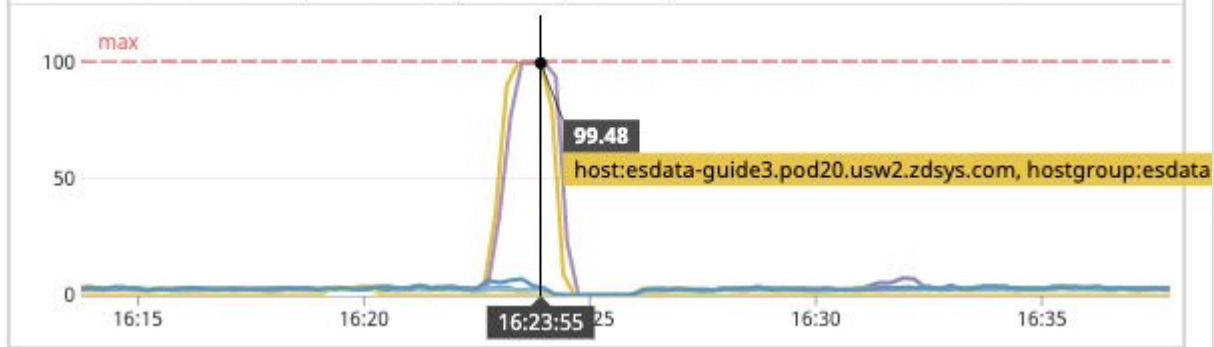
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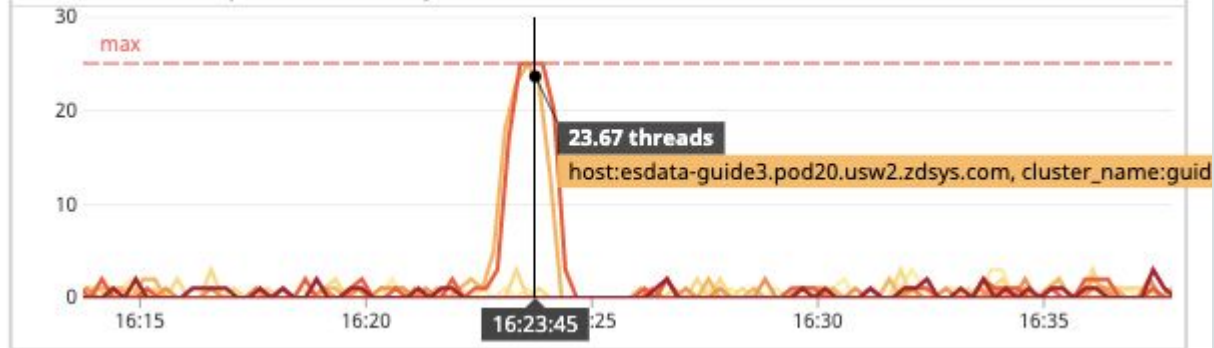
"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled

Max CPU utilisation per host (system.cpu.user)



Search thread pool ACTIVE by node



WTF!?



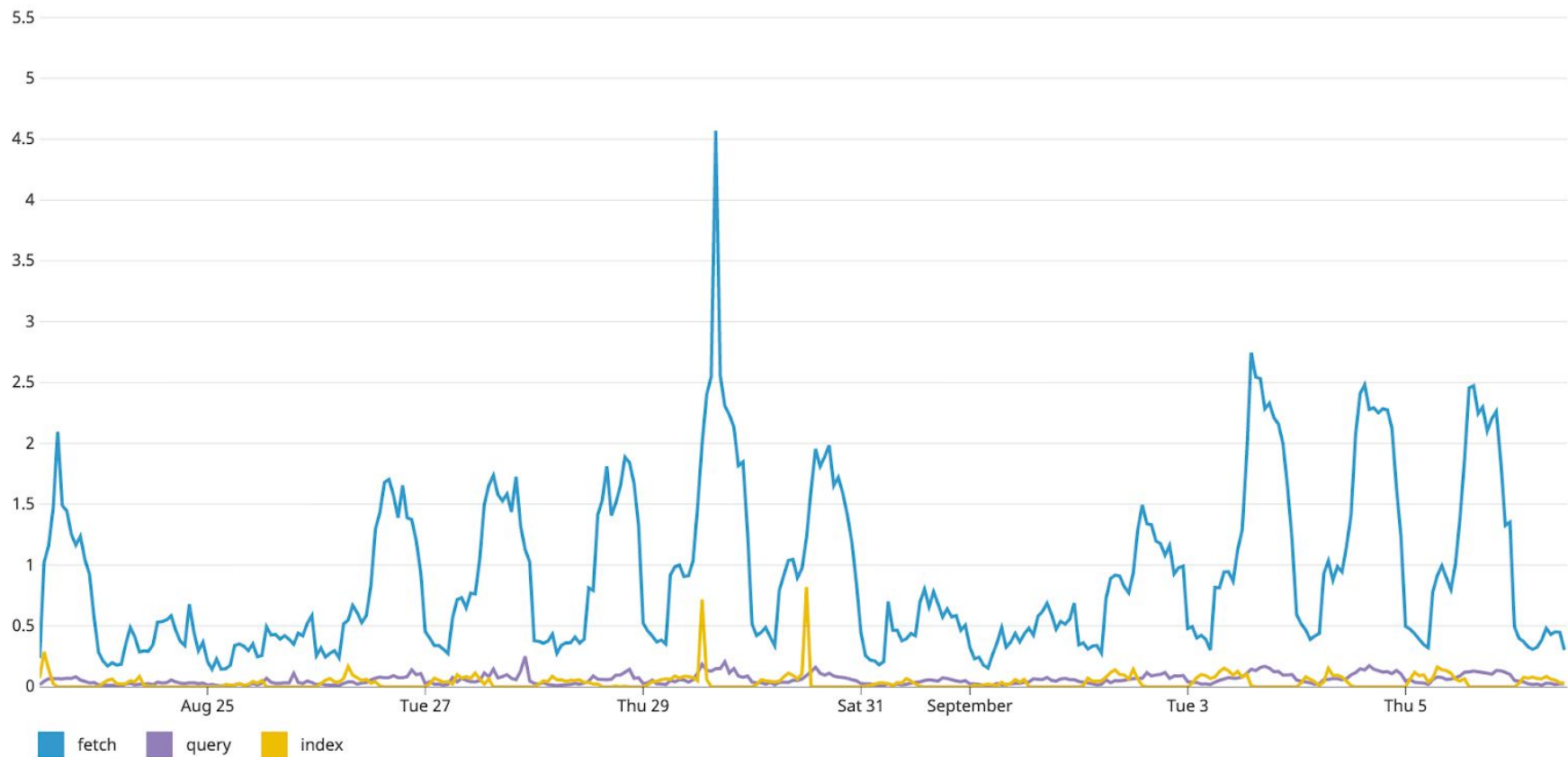
# 2 Phase Search

1. Query
2. Fetch

Measure Duration sum by Elasticsearch Operation X roll up every 1h limit to top 10

Export 

 Hide Controls Timeseries Display: Lines Color: Classic Style: Select value Stroke: Select value

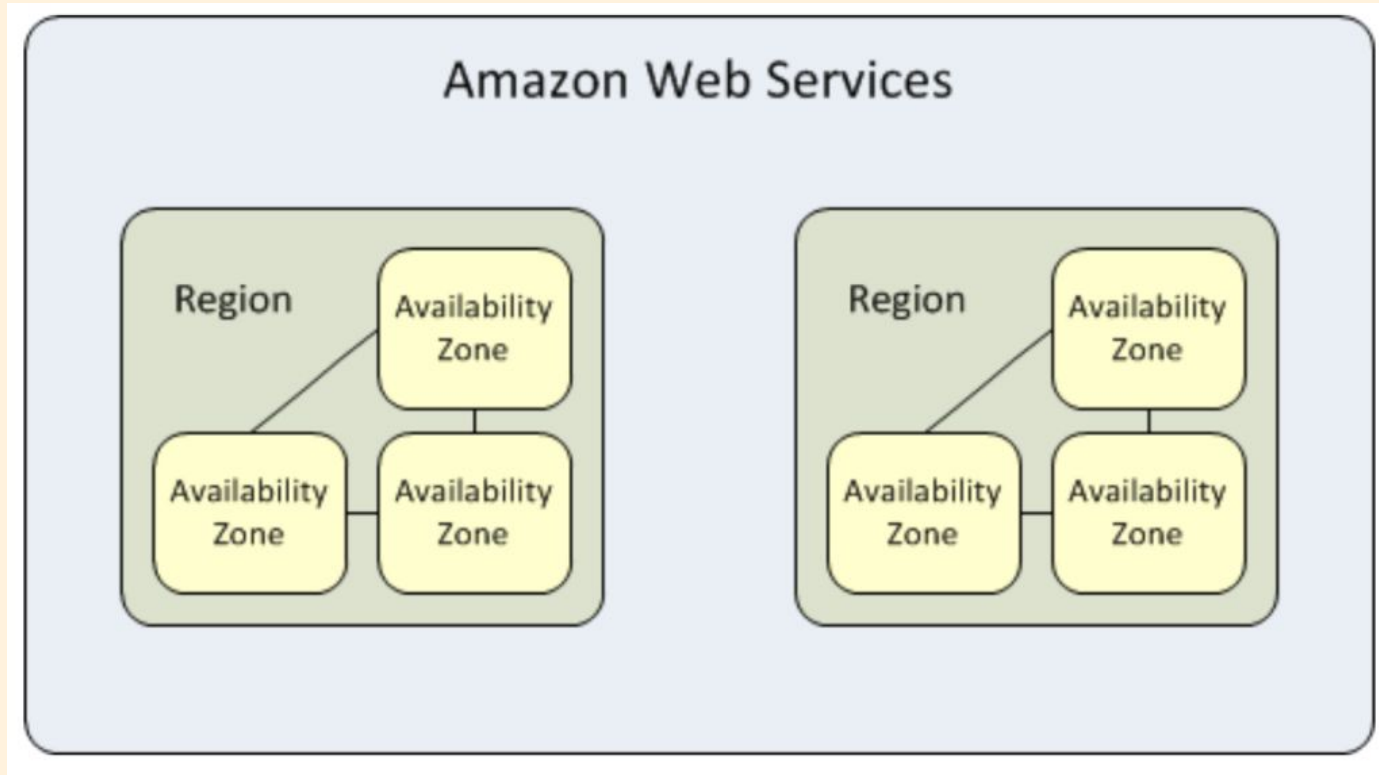


**package org.elasticsearch.search.fetch.subphase.highlight;**

- Break document into fragments
- Rank each fragment using BM25
- Sort fragments and return top n
- How many fragments in 1.5 MB of text?

# → Product Limits

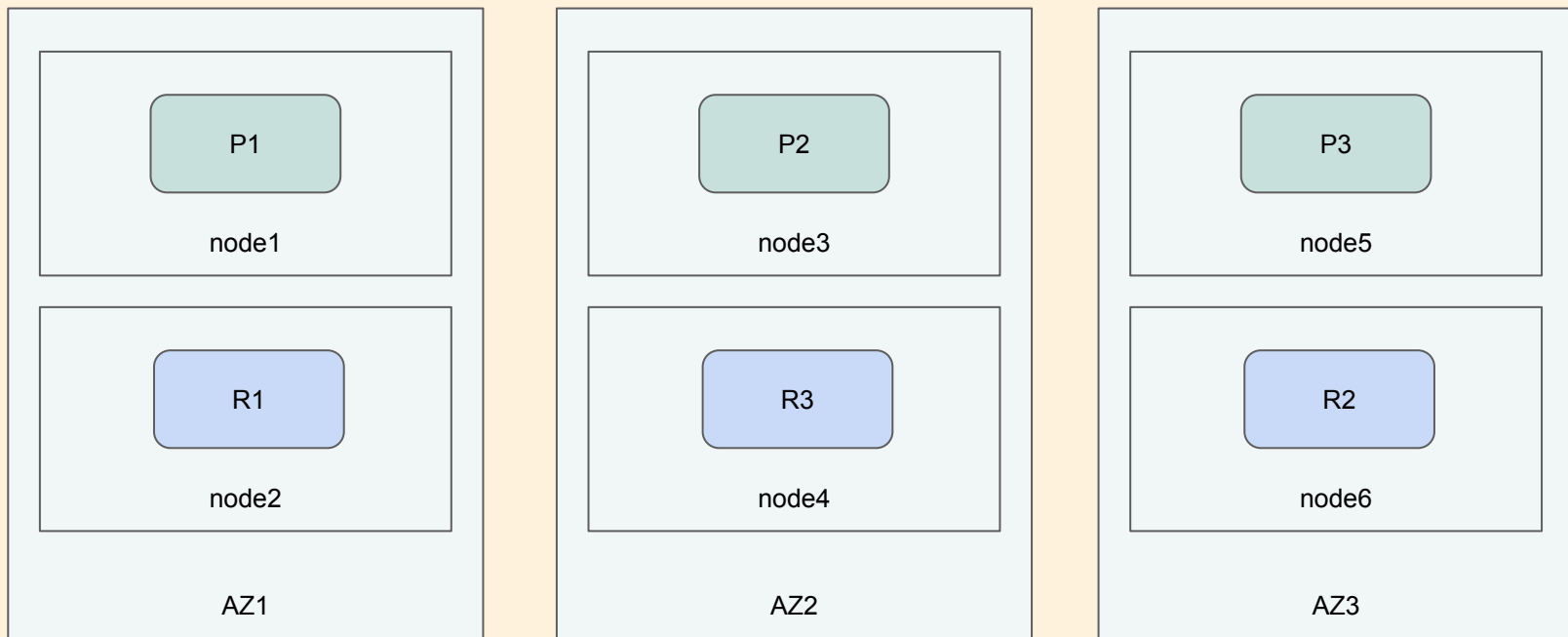
# The Cloud is always up, right?





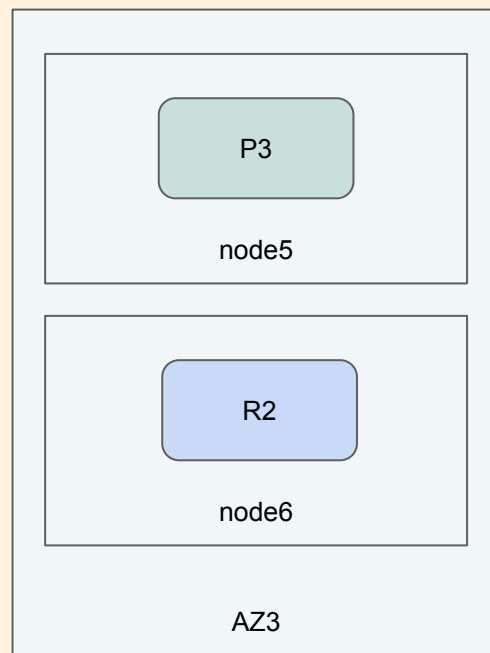
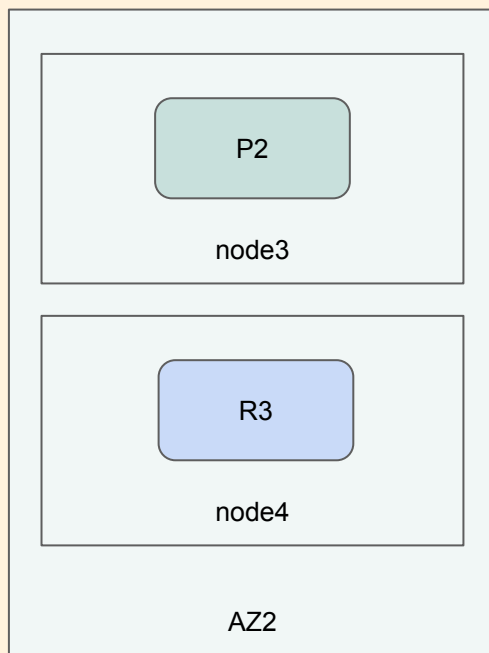
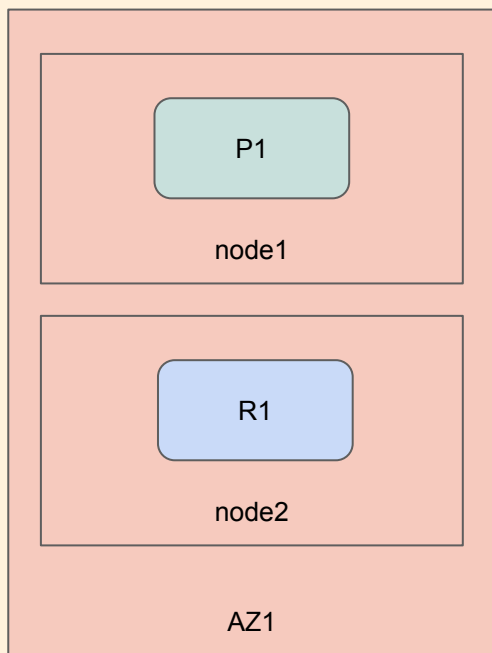
WTF!?

# ES Shard Allocation

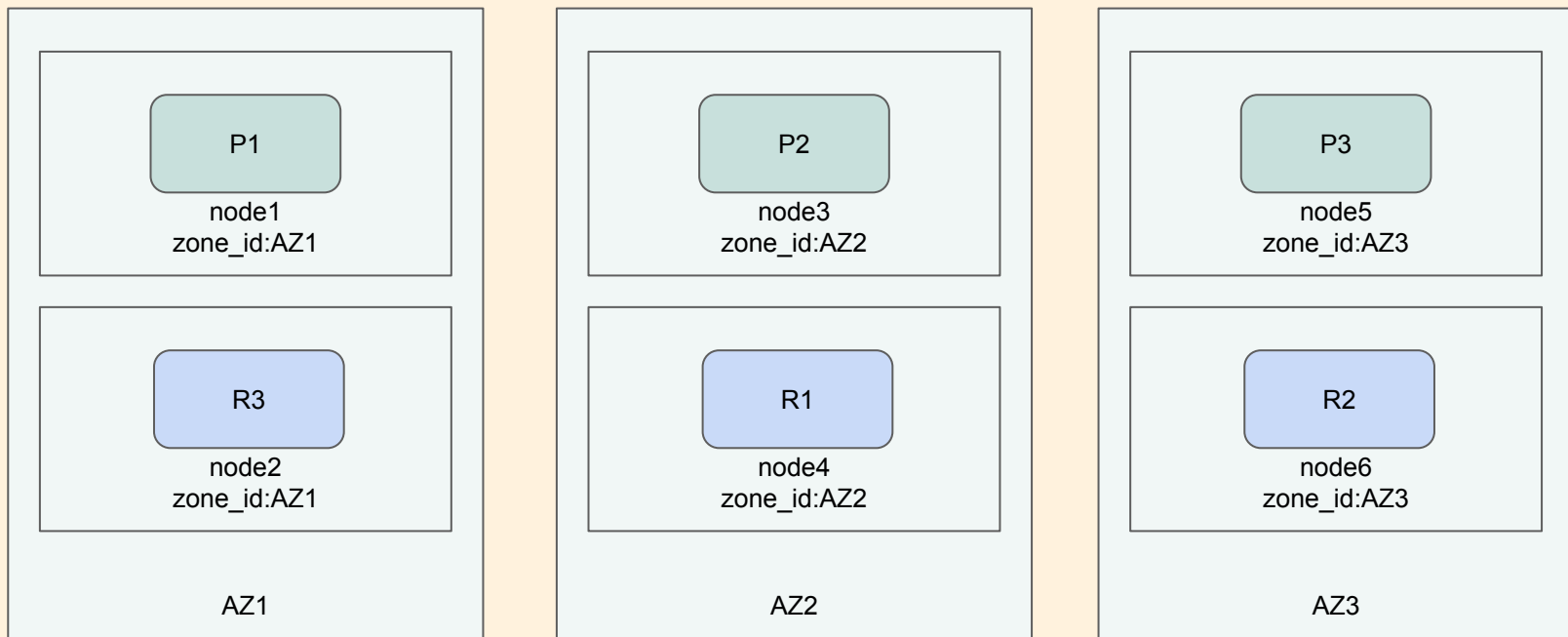




# ES Shard Allocation



# ES Shard Allocation Awareness

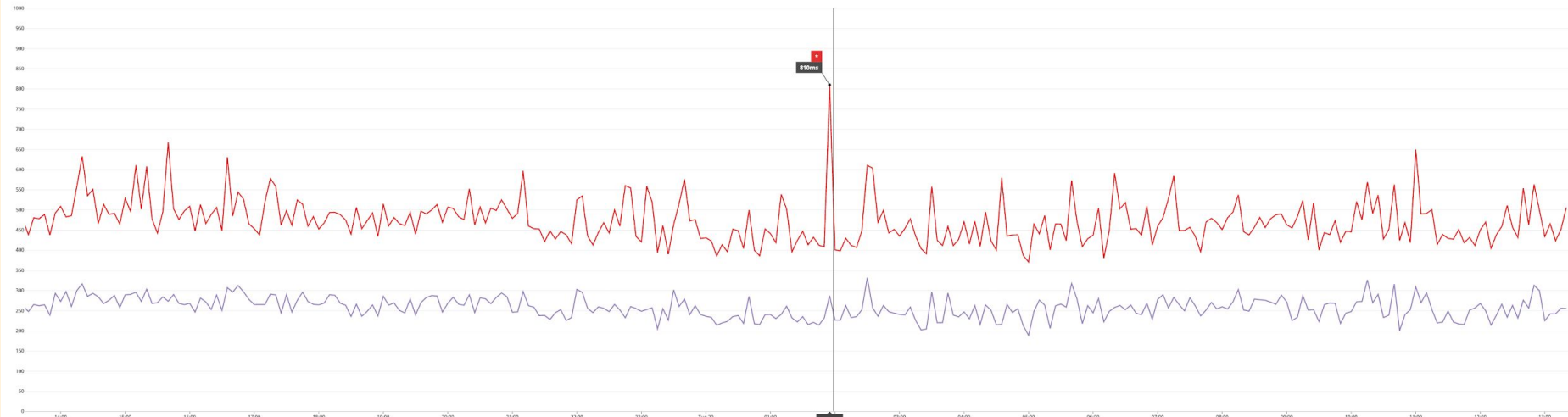


WTF does it mean  
anyway?

Love your outliers



Average vs p95 Latency



Product Limits everywhere

Love your WTF

A mental state of perplexity and being at loss...

...a productive state, the first stirring of creative thought...





# WTF Together



# Thank you!

