

#ASLI ENGINEERING

Handling Timeouts in Microservices

SWIPE

BY

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Handling timeouts in Microservices

Microservices are great !

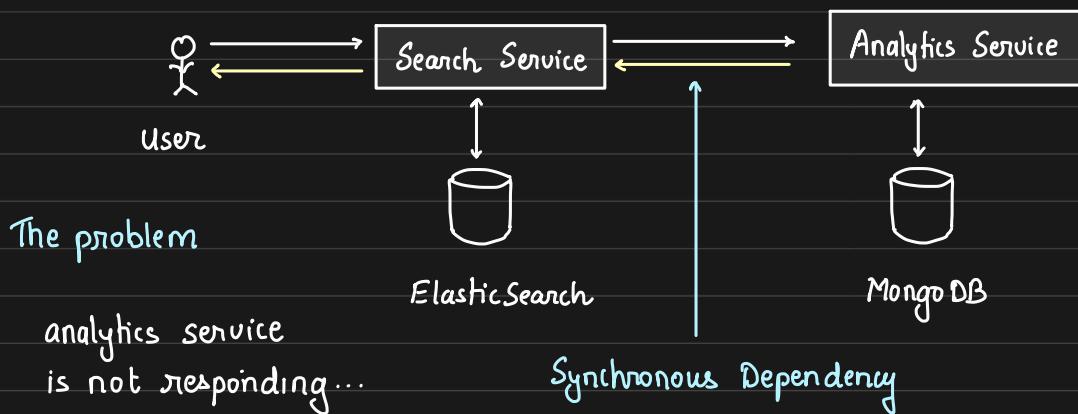
↓ ↓ → Picking the best tech stack

↓ ↓ → Focussed Scaling

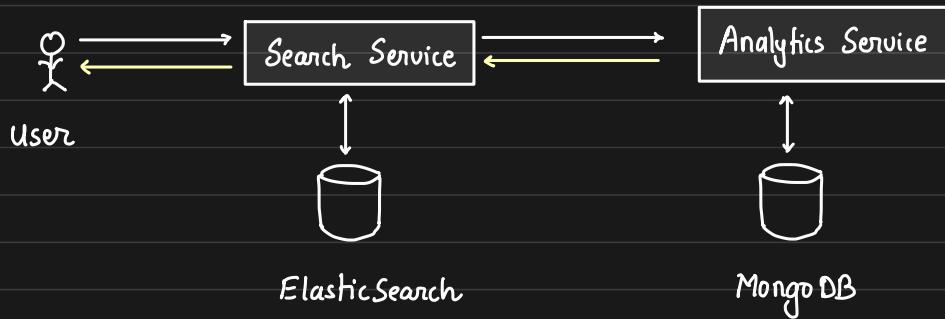
Separation of concern Flexibility

But there are concerns , one of them is Timeouts

Scenario: User wants to search Blogs . Search service computes most relevant blogs . Then talks to Analytics service to get Blog Views and then returns the response to the user.



How long should you wait ? Send partial response
What action should you take ? Not send any response to the user



What could go wrong ?

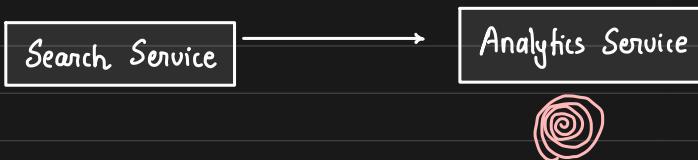
↳ Analytics service never got the request



↳ Response from the Analytics team never reached the Search Service



↳ Analytics service is taking too long to process



The core problem: Delays are arbitrarily long

So, how long do we wait? We cannot wait forever!

Use Timeouts, always



[timer]

Waits for the response from
the analytics service for at
the max 10 seconds.

~ Timeout

How to handle timeouts, then....

Approach 1: Ignore [not recommended]

We assume operation succeeded → leads to unpredictable UX
but it actually failed...

Good practice: Catch all exceptions... everytime
and then take an informed call depending
on the context.

Approach 2: Configure and use defaults

Upon timeout, you may choose to use a default value

get total_blogs



use default, total_blogs = 0

Approach 3: Retry

Assume that the remote operation failed, and retry.

Retries are simple when it is a "read request"

But, sometimes situation becomes tricky

- ↳ request is non-idempotent eg: moving money from A to B
- ↳ request is expensive eg: heavy analytics query
- ↳ other service is overloaded
and you add more load with retry

Good to have : Retries with exponential backoffs

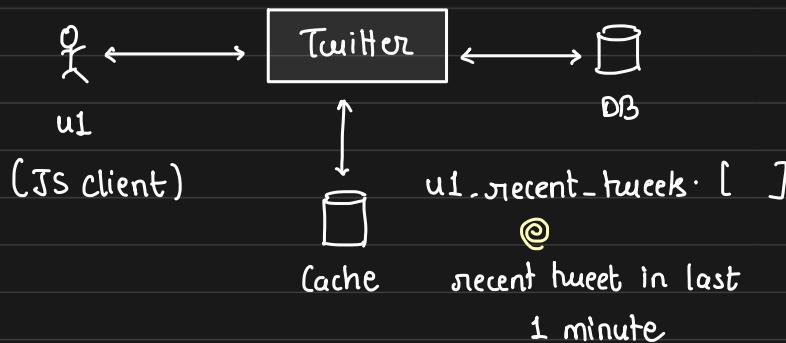
[1s, 2s, 4s, 8s, ...]

Make services as idempotent as possible

Approach 4: Retry only if needed

In some cases, we may check for the completion and then decide to retry

eg: User tweeting the same post twice accidentally
(within one minute)



Approach 5: Rearchitect

Event driven arch.

Remove synchronous communication
wherever possible

Highlights:

Too short → false positives

always have timeouts

picking timeout value is tricky → Too long → perf. bottleneck

make retries safe

↳ Idempotence