#ASLI ENGINEERING

Importance of localizing failures

SWIPE

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Dissecting GitHub Outage

Localized Failures

What happened?

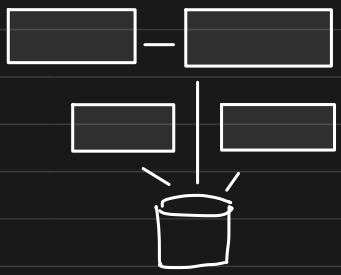
Failure or delay in queued jobs for GitHub Actions

↳ happened because of some infrastructure error in SQL layer

Database failure affected

Authentication and communication

between different microservices for GitHub Actions



What this tells us?

- GitHub actions has multiple microservices and they communicate through a shared DB

  eg: one would pick the job and updak DB

  other would execute and updak the DB

Shared database across multiple microservices !!

- Zero trust b/w microservices

  The database / service also drove authentication ensuring unauthorized request are not made even b/w services

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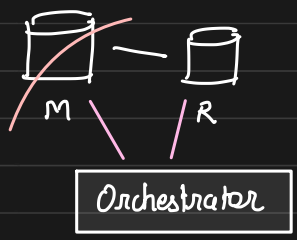
But, if a database is down, shouldn't there be an automatic failover?

Yes. Usually the databases are configured with auto failover

ie. if master goes down, a replica is promoted



But this did not happen

Because telemetry did not show that DB was down!

↳ Orchestrator also needs a source to find master is down and failover is needed

Hence it took a long time to determine root cause and mitigate

Once the root cause was identified, they would have

↳ done a manual failover

↳ rebooted the machine

* Refer other Outage dissections to learn about possible ways and hacks of mitigation!

long-term fixes

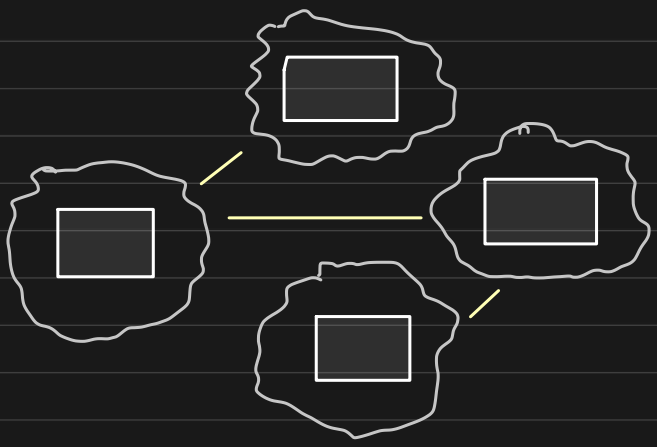
1. Change the automation and ensure it understands this failure
   - ↳ Better failure detection
   - ↳ Better automated failover

   } Minimizing impact

2. Localize failures

Microservices should be loosely coupled

Outage in one component/service cannot take down entire sub-system. Hence GitHub team would invest in ensuring loose coupling, so that outage in one does not affect others



let they be loosely coupled, and the communication is ASYNC or through tolerant APIs