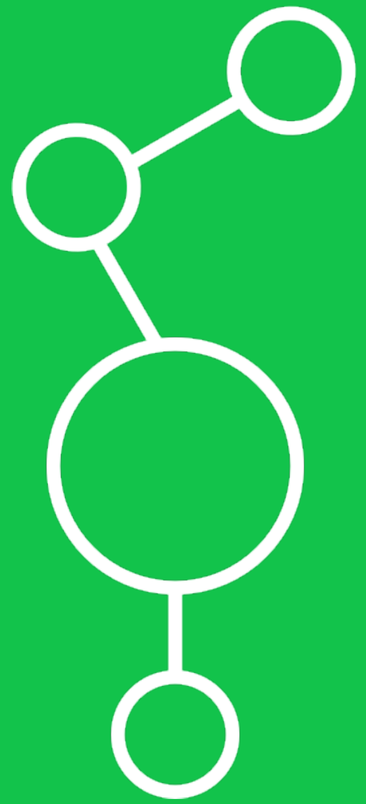

Not Invented Here Syndrome and Dark Debt: The PagerDuty Story

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Section I

Why are we here ?

Not Invented Here Syndrome

"... the tendency towards reinventing the wheel based on the belief that in-house developments are inherently better suited, more secure, more controlled, quicker to develop, and incur lower overall cost than using existing implementations..."

–The English Wikipedia (2018)

Dark Debt

"....Dark debt was named to draw a parallel with dark matter. Dark matter has detectable effects on the world but cannot be seen or detected directly....Dark debt is found in complex systems and the anomalies it generates are complex system failures....Dark debt is not recognizable at the time of creation. Its impact is not to foil development but to generate anomalies...."

– Woods DD, STELLA: Report from the SNAFU catchers Workshop on Coping With Complexity. 2017

Comparison to technical debt

Build vs Buy: The age old question

Can *building* instead of *buying* lead to dark debt ?

Where does *Not Invented Here* syndrome come in the mix ?

Section II

WorkQueue

October 24, 2011

WorkQueue

Background

High Availability

Durability

High Scalability

Decent Queryability

Flexible Schema

Backups

Synchronous Replication

What were the options then?

Kafka?

Other options were actually considered

Result: WorkQueue v1

But it did not stop there...

Host based partitioning

Fair partitioning

Time based row bucketing

...there were more services using WorkQueue

In the meanwhile...

Other distributed queues like Kafka gained popularity

PaaS based queues made their presence felt

Cassandra's API changed*

Thrift RPC fell out of favor within the company

WorkQueue’s nature and widespread use was slowly turning into dark debt.

Delayed Event Processing

Incident Report for PagerDuty

Postmortem

Summary

On October 16, 2016 at 7:24 pm EST, PagerDuty had a service degradation lasting approximately 106 minutes that was related to our alerting pipeline. Customers would have experienced difficulties sending events to PagerDuty's integration endpoint as well as slightly increased time between events arriving and corresponding incidents being created.

Issue Processing Events on our Events API

Incident Report for PagerDuty

Postmortem

Summary

On May 3 2017 at 20:01 UTC, PagerDuty suffered a service degradation affecting our Events API; this incident lasted for three hours. Customers would have experienced difficulties sending events to the PagerDuty Events API. We apologize to any customers who were affected by the outage.

What Happened?

At 19:12 UTC, PagerDuty began maintenance on one of the Cassandra-based services responsible for processing events from the Events API.

Delayed Notifications

Incident Report for PagerDuty

Postmortem

During a period beginning 20:05 UTC on Tuesday, September 19 and ending at 02:30 UTC Thursday, September 21st PagerDuty experienced an issue that caused delays in delivery of notifications and webhooks.

Section III

Lessons learnt

Dark debt is a product of complexity

The development and use of in-house software for a task is not an indication dark debt

However, the proliferation of such special purpose software to other areas is often an indication of Not Invented Here syndrome

Not Invented Here syndrome is an indication of dark debt

Proactive evaluation of past custom solutions before proliferation could help alleviate some of the problems

Unless there is a really strong case for it, don’t go with build*

When in doubt chose simplicity over complexity

Epilogue

The past, the present and the future

Official support for WorkQueue was ended in 2016

Cassandra based WorkQueue’s usage in PagerDuty has significantly reduced since 2017

“Simplicity is a great virtue but it requires hard work to achieve it and education to appreciate it. And to make matters worse: complexity sells better.”

–Edsger W. Dijkstra

Thank You Merci धन्यवाद شكرا لكم

ありがとう Gracias 谢谢 Danke Asante

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