Moonpig's GraphQL Journey: Scaling with Serverless & **Federation By Alexis Lowe**

About me

Alexis Lowe aka Chimbosonic

Principal Engineer at Moonpig Ex-Cyber Security Engineer

Open-source Maintainer:

- Keyoxide Project 😮

 wkd.dp42.dev a diagnostic tool for OpenPGP WKD protocol





Who are Moonpig?

17 Tech Teams

- 2 Brands Greetz and Moonpig
- 3 Clients Native iOS app, Native Android app and a Next.js Website (5 web apps)
- 1 Supergraph
- 26 Micrographs each represents a bounded context
- ~60 releases a day



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Moonpig is the UK's leading online gifting platform, making it easy to send personalised cards, gifts, and flowers straight to the door of the buyer or recipient.

What are we building?



Hyper-Scalable / Multi-Region Active-Active

Built for Fast, Team-Based Iteration Serves all Clients

How are we building it?

Hyper-scalable / Multi-Region Active-Active

Entirely built on AWS:

- Compute: Lambda
- Events and Messaging: SNS, SQS and EventBridge
- Data Storage: DynamoDB, S3 and Aurora Serverless V2
- Geo-based Routing via Route53
- Cloudfront as our AWS edge





How are we building it?

Built for Fast, Team-Based Iteration

Buy vs Build

Event-Driven Architecture with Distributed Data

- "Domains" communicate between each other with events and commands
- Each "Domain" has its own projection of the data which is hydrated by events
- Eventual Consistency is preferred over synchronous coupling

How are we building it?

Single API for all clients

Federated GraphQL

- Apollo Federation v2
- In-House schema stitching and schema deployment

Modified Apollo Gateway running AWS Lambda

- Custom Metrics into Cloudwatch
- Custom APQ Caching to leverage Cloudfront
- Many fixes to get around AWS idiosyncrasies (uri length limits, lambda response size limits, ...)

Micrographs running Apollo Subgraph on AWS Lambda

- Custom plugins for Metrics , Logging and tracing



What's next?

Embracing new advancements from GraphQL community

- Replace the current Apollo stack
- Switching Micrographs to Hot Chocolate

Looking to improve our Gateway

- Profiling our Graph Lambdas to find performance improvements
- Assessing alternatives to Apollo Gateway
 - Apollo Router on Lambda
 - Cosmo Router on Lambda
 - Difficult as we still want to leverage AWS Lambda

Key takeaways

Serverless allows focus and scale

Federated GraphQL allows teams to build with a shared schema whilst enabling fast iteration

Adaptability is critical in an ever-evolving tech landscape - especially one such as GraphQL





For more details check our blog posts! https://medium.com/moonpigtech

Thank you



Contact Me https://chimbosonic.com





We are hiring! https://moonpig.careers