Modernising Tasking Manager Infrastructure

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DevOps Architect

Humanitarian
OpenStreetMap
Team

Humanitarian OpenStreetMap Team

- International non-profit NGO
- dedicated to humanitarian action
- focussed on open mapping
- community development
- contributions go to OpenStreetMap

HOT Impact Report

https://www.hotosm.org/annual-reports/2022-2023-impact-report/

“Solving the problems of a thousand people..

..with the help of a thousand people”

HOT Tasking Manager

- coordination tool for collaborative mapping
- contributions go to OpenStreetMap
- mapped → uploaded → validated
- projects can be for any purpose

The impact!

2.2M

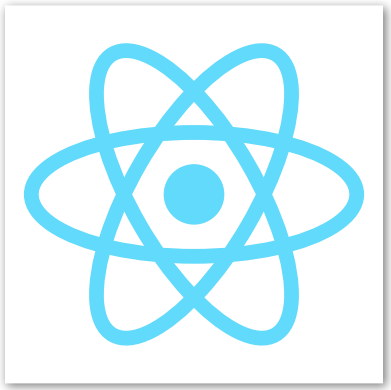
BUILDINGS

84K

KM ROADS

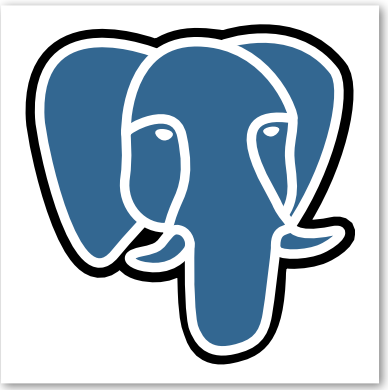
CONTRIBUTORS

Tech Stack



Frontend - React

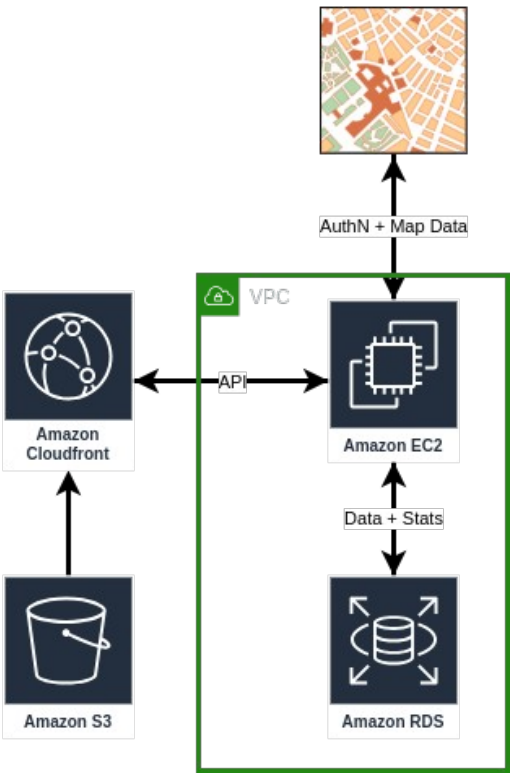
Backend - Python



Database – PostgreSQL

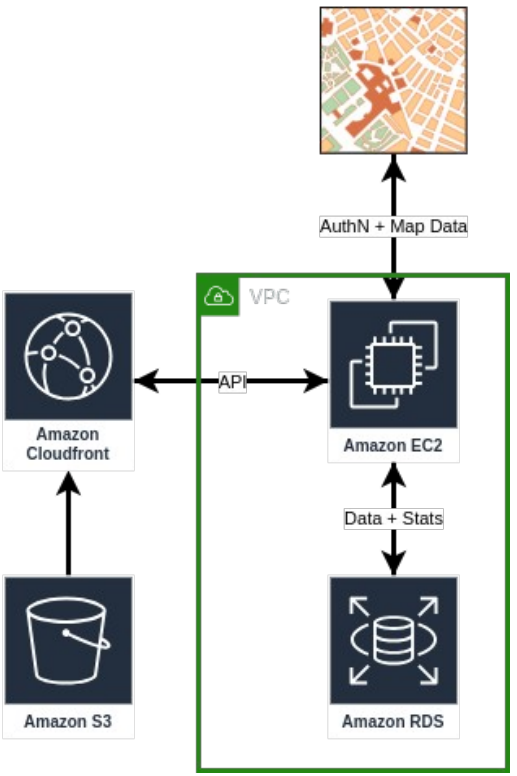
Infrastructure – Amazon Web Services

Current Infrastructure



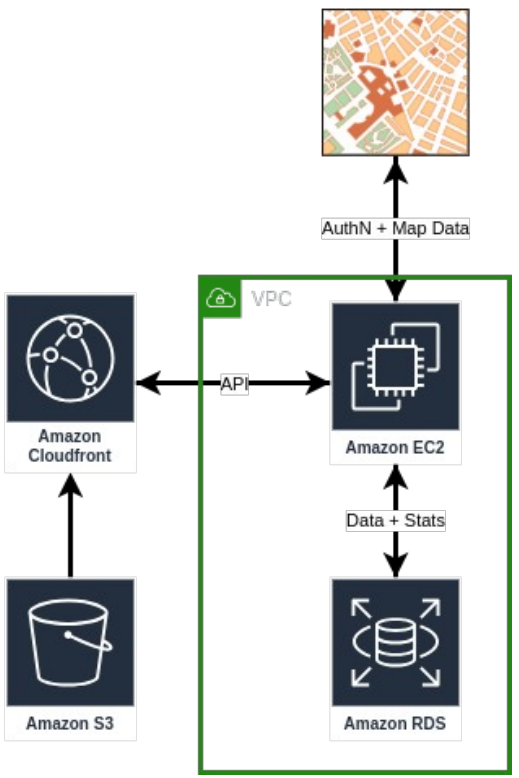
- Static front-end app - S3 + Cloudfront
- Back-end - auto-scaled EC2 instances
- Database - RDS PostgreSQL
- AuthN via OpenStreetMap
- Deployments via AWS Cloudformation

Current Infrastructure (contd)



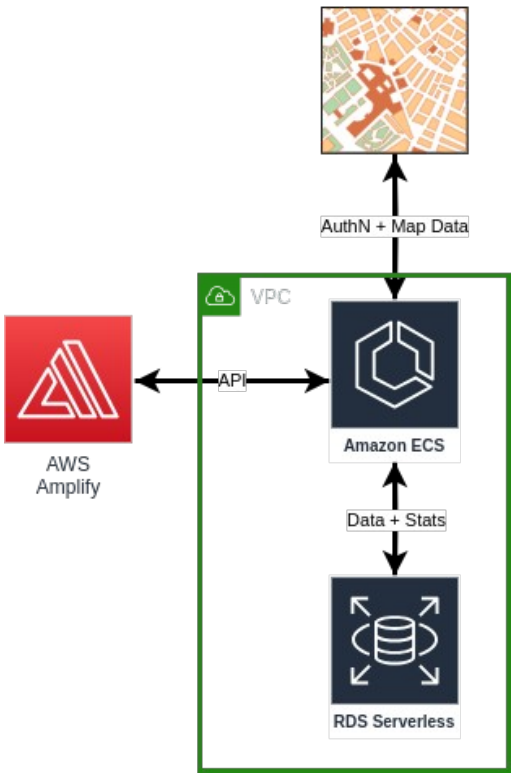
- Observability
- APM - New Relic
- Traces – Sentry
- Logs - CloudWatch Logs
- Deployments via CircleCI
- Scripted database backups

Challenges



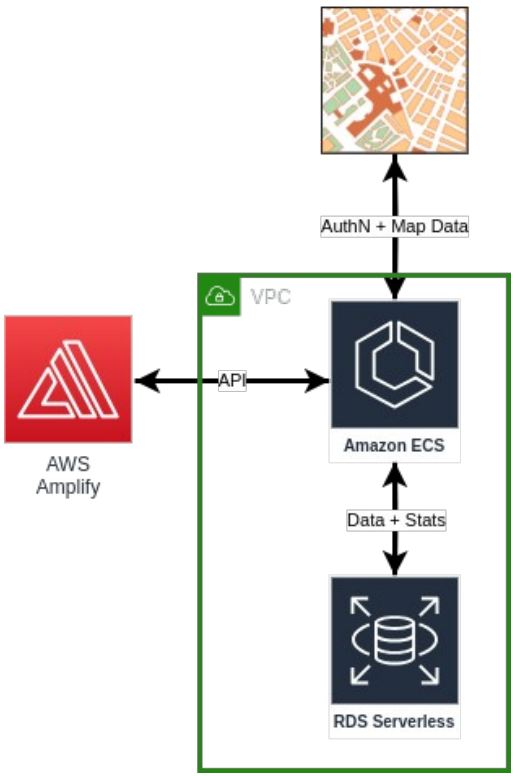
- Expensive and rigid capacity planning
- Legacy / deprecated architecture and AWS services
- Slow deployments and bootstrapping
- Infra changes are not easy (nor fast)
- Security and patching woes

Future Infrastructure



- Front-end deployment via AWS Amplify
- Back-end on AWS ECS
- Embracing “server-less” architecture
- Tooling for security
- Monitoring sidecars
- Better VPC architecture

Improvements



- Embracing server-less services
- Faster service scaling
- Better networking features
- Easier patching (Debian FTW!!!)
- DevEx – by ephemeral environments

Developer Experience

- Better SLI / SLO and tighter error budgets
- Continuous integration (and deployment)
- Better thought-out observability metrics
- Reduced alert fatigues
- Easier community contributions

On vendor lock-in

- Grants tend to dry up quickly!
- Cost vs. performance vs. flexibility
- Scaffolding for multi-cloud deployment
- Cloud-agnostic IaC helpers (Terraform)

Get Involved

- Review code, file bug reports, send pull requests on Github
- Participate in the Working Groups
- Connect on Slack

https://www.hotosm.org/get-involved

Acknowledgements

HOT STAFF

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COMMUNITY CONTRIBUTORS

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Thank you!

https://github.com/hotosm/tasking-manager