Engineer Software

Reliability & Backups

21 achievements

Connect the parts of your system

The work collected under “Reliability & Backups” shows one part of a working system. We can help connect that part to the rest of your operation. Anything that happens in a place — vessels, vehicles, plots, sensors — put on a map you can search, measure and share.

Explore our services Get in touch →

Find a comparable challenge

Follow an example that resembles your situation. Its review describes the decisions behind the result, beyond the technology label. Made a geographical data pipeline 50x faster — 50x faster geographical data pipelines

Made a geographical data pipeline 50x faster Get in touch →

Ran 100 PostgreSQL, MS SQL, BigQuery warehouses

Architected, created, and managed 100 PostgreSQL, MS SQL, and Google BigQuery data warehouse databases with primarily GIS and time-series data, optimizing performance and scalability.

Automated GIS SaaS deployment with GitHub Actions

Automated GIS SaaS application deployment, data processing, and reporting system using GitHub Actions CI/CD, Python, Bash, and SQL.

Automated delivery of 20 GIS data pipelines

Automated delivery of 20 GIS data pipelines and app data ETL processes, streamlining infrastructure automation and reporting.

Led a GIS map application to 10x revenue growth

Led the software development of a GIS map application, driving revenue growth by 10x and positioning the product as a primary data asset.

Led 30+ GIS projects from build to support

Led the development, deployment, and support of over 30 GIS projects, demonstrating expertise in PostgreSQL, Bash, Python, JavaScript, GDAL, ArcGIS, PostGIS, and Mapbox technologies.

Administered 40 websites on Apache and Nginx

Administered 40 websites on Ubuntu Linux hosting servers with Apache and Nginx, ensuring high availability and performance.

A mapping product, carried end to end

Architected, developed and supported infrastructure, data processing and a map application over 2 years, covering both software delivery and operational maintenance.

Generated the API contract from the database out

Generated the API contract outward from the database — OpenAPI, a 44,076-line typed TypeScript client, 61 mock handlers and the limits the UI enforces — with a guard at every hop that fails on drift.

Built email with failover and delivery logging

Built email as a platform capability — three providers with failover, delivery webhooks, send and delivery logging, templating and campaigns — behind a startup check that will not boot without one.

Delivered full Progressive Web App support

Delivered full Progressive Web App support — installable and offline-capable — with Workbox runtime caching via next-pwa.

Built infrastructure that still runs years later

Planned and implemented new infrastructure functionality for internal and external systems, building solutions durable enough to still run years later with minimal change.

Built a test suite across Go, SQL and browser

Built a layered automated test suite — 981 Go tests, 543 frontend and browser specs, 494 SQL behavioural tests — with mutation testing, property-based tests and an accessibility gate.

Moved slow work onto a River job queue

Moved slow work off the request path onto a River job queue — 15 worker modules, 8 scheduled tasks and 20 pg_cron jobs — so a request returns while the work behind it carries on.

Built first-party error monitoring and tracing

Built first-party error monitoring and OpenTelemetry tracing rather than buying them — payload sanitising, spike and regression detection, symbolication and a synthetic heartbeat — behind 11 operator views.

Built fail-closed rate limiting and anti-abuse

Built fail-closed abuse controls — 22 Redis-backed rate limiters, Cloudflare Turnstile, request idempotency and an origin lock — so the platform sheds bots and floods instead of trusting its callers.

Public services on a small server

Hosted the company's public services on a single-core 512 MB host — a git forge, a web server for seven domains, Tor, two alternative-protocol servers and intrusion banning — treating 464 MB of usable memory as the design constraint; backup automation is a separate implementation.

Held the generator to 981 tests and 92% coverage

Held the generator to 981 test cases at a 92% branch-coverage floor with warnings treated as failures, and asserted idempotence by running the whole build pipeline twice from an empty file and requiring the second pass to change nothing.

A bounded event pipeline for a macOS app

Bounded event buffers and logging after a recorded macOS incident with 41 MB per second growth and 111 GB of compressed pages on a 36 GB machine; a recorded full test run reduced core log lines from 610,996 to 1,411.

Adopted Swift 6 strict concurrency over C

Adopted Swift 6 complete strict concurrency with no actors, bridging a blocking C event loop to the main actor through one producer, one consumer and one ordering — after establishing that a task per event loses the ordering the interface depends on.

Reached the unused half of the core

Reached the half of the messaging core the application had never used — backup transfer, disappearing messages, message editing and resending, verified invitations, proxies and encryption policy — driving every test against the real library with no mocks.

Made six collectors state what they skipped

Made six reporting collectors state the part of their input they never read — files that stayed shut, probes not installed, journal lines unrecognised — and fitted thresholds to 116 measured samples, after establishing that a blind collection and a healthy host render the same page.

Focus the engineering effort

Describe the workflow, the existing interfaces and the users who need the change. We can define a testable delivery and a handover that lets your team maintain it.

See what it costs Get in touch →

Put the subject in your context

Tell us how “Reliability & Backups” appears in your own system. We can help choose the relevant service and define the work around it.

Explore our services

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