Engineer

Reliability & Backups

50 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. Somebody responsible for the thing the whole company rests on: it is up, it is backed up, and it is not quietly rotting.

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. Ran 100 PostgreSQL, MS SQL, BigQuery warehouses — 100 data warehouses architected and run

Ran 100 PostgreSQL, MS SQL, BigQuery warehouses Get in touch →

Built the company's first observability dashboard

Developed and launched the company's first observability dashboard, providing real-time system performance insights and data visualization on the large office TV.

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.

Ran 10 PostgreSQL and MS SQL servers on Ubuntu

Designed, deployed, and maintained 10 PostgreSQL and MS SQL servers on Ubuntu Linux VPS, ensuring optimal server performance and reliability.

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.

Automated 100 critical data backups using Barman

Automated 100 critical data backups using Barman, Google Cloud, Bash, and Python, ensuring data integrity across databases.

Ran 20 Docker apps on Google Cloud and AWS

Deployed and maintained 20 Docker containerized applications, troubleshooting with Podman and Kubernetes, and managing R-based apps on Google Cloud and AWS.

Managed 30 Ubuntu Linux VPS instances

Managed 30 Ubuntu Linux VPS instances, implementing disaster recovery strategies and ensuring optimal network configurations.

Cut operational risk with Grafana and Prometheus

Mitigated operational risks by implementing a monitoring dashboard using Grafana and Prometheus, improving system reliability.

Managed 8 WireGuard and IPsec VPN connections

Managed and troubleshot 8 WireGuard VPN and IPsec VPN connections, ensuring secure communication across Google Cloud and Linux systems.

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 network infrastructure

Administered network infrastructure for over 1,000 servers, ensuring optimal system deployment, security, and troubleshooting.

Automated SSL/TLS certs for 100 Docker apps

Automated SSL/TLS certificate creation for 100 Docker applications, ensuring secure connections across Ubuntu Linux hosts.

Streamlined CI/CD processes, saving 4,000 hours

Streamlined CI/CD processes, saving 4,000 hours by introducing automation in software development pipelines.

Configured and deployed 1,000 Wi-Fi routers

Configured and deployed 1,000 Wi-Fi routers, improving network accessibility and performance for clients.

Administered 100 Bare Bone servers

Administered 100 Bare Bone servers, physical networks, and IP telephony systems, ensuring robust infrastructure for company growth.

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.

Provisioned Azure infrastructure as code

Provisioned Azure infrastructure as code with Bicep — Container Apps, PostgreSQL Flexible Server, Front Door/WAF and networking — across the development, staging and production environments.

Built GitHub Actions CI/CD pipelines

Built GitHub Actions CI/CD pipelines with a distroless production frontend image and multi-environment promotion.

Owned end-to-end platform deployments to Azure

Owned end-to-end deployments of the platform to Azure, managing releases across development, staging and production environments.

Implemented backups and disaster recovery as code

Configured database backup retention as infrastructure-as-code, then audited the recovery position and documented the restore procedure — naming the remaining gaps rather than leaving them to be found during an incident.

Delivered full Progressive Web App support

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

Ran 24/7 support for ~1,000 IPTV/OTT servers

Provided round-the-clock 24/7 infrastructure support for an IPTV/OTT streaming platform, administering ~1,000 servers plus client-owned systems for global customers in China, the US and Germany.

Kept IPTV streaming signals running non-stop

Ensured uninterrupted delivery of IPTV streaming signals between suppliers and clients, monitoring and maintaining the streaming network and IP telephony around the clock.

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.

Recovered data from SD cards, HDDs, SSDs and RAID

Performed data recovery across a wide range of media — SD cards, HDDs, SSDs, RAID arrays, external drives and Mac systems.

Diagnosed and repaired laptop hardware

Diagnosed and repaired laptop hardware — screens, hinges, keyboards, trackpads, motherboards and power — and resolved software issues across Linux, Windows and Mac.

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.

1,022 migrations behind a schema drift gate

Kept the schema honest across 1,022 migrations with a CI gate that builds the database both ways — a fresh install, and an install plus every migration — and fails when the two disagree.

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.

Ran a continuous security scanning programme

Established a continuous security programme — code scanning, DAST, dependency and vulnerability checks, SBOM generation, secret scanning and SHA-pinned actions — alongside 21 written security audits.

Infrastructure defined in a repository

Built the company's own infrastructure as 19 Ansible playbooks and 34 roles across 12,065 lines of YAML, converging a live host to a declared state with every play idempotent.

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.

Proved the intrusion ban works every run

Proved the intrusion-banning path end to end on every hardening run by banning a reserved test address, reading the resulting kernel rule and unbanning in a guaranteed cleanup block, so a jail that stops working fails a run instead of reporting healthy.

Backup automation with an explicit restore method

Implemented restic backup automation with retention, integrity checks and a monthly restore-test workflow; documented storage activation and live-restore verification as separate operational steps.

Built dead-man's-switch host monitoring

Built dead-man's-switch monitoring that pings only while memory and disk are healthy, so a degraded host raises an alert by going silent — and caught six variable names saying "free" where the check correctly measured "available", an order of magnitude apart on a 464 MB box.

Made Ansible check mode tell the truth

Made check mode tell the truth across the whole platform after finding six probes deciding on a value the host never gave, because Ansible's command module reports success under --check while skipping the command entirely.

Added a one-second preflight for secrets

Added a preflight play that runs the same code as the converge against operator-local secrets in about a second, after a half-applied production run died on its ninth task with the swap settings already written to the live host.

Split every operational secret per host

Split the four per-host operational secrets after establishing that two hosts sharing one dead-man's switch alert less than two switches, not more, and that a shared backup passphrase can expose both hosts' backups, even in separate repositories, if someone obtains it and can read both repositories' encrypted data and key files.

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

Bring a representative dataset, the questions it must answer and the current bottleneck. We can agree how to measure quality, throughput and recovery.

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

welcome@engineer.company +45 50 10 61 84 Copenhagen, Denmark

Take this page with you

Contact card

Carefully Crafted With Love by D.

CVR 45969703 · Tagensvej 105C, 3. th, 2200 København N

Copyright © 2025 – present · Engineer ApS · All rights reserved.

Printed from https://engineer.company/categories/reliability/