Curriculum Vitae

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Personal Statement

I am currently a senior software engineer working on Oracle Cloud's API Gateway, which is a large scale production service active in over 100 data centres. I have an in-depth knowledge of computer systems and networks, and experience with a number of different programming languages. I have a strong attention to detail, with a focus on producing clean and simple software abstractions. In particular, I am interested in modern systems languages like Rust that can ensure memory and concurrency safety without compromising performance. and have made a number of contributions to open source projects.

Skills

- Programming in Java, Rust, C, Python, Lua, Objective-C, Swift, PHP, Go, Typescript & Javascript.
- Experience with concurrent programming and distributed systems (sharding, leader election).
- Automated testing; developing unit tests, end-to-end integration tests, CI pipelines.
- Strong knowledge of the HTTP/1.1, HTTP/2.0, and WebSockets protocols, modern authentication systems (JWT, OAuth 2.0, OIDC, mTLS).
- Provisioning infrastructure with Terraform, packaging with Docker, maintaining Linux and Windows systems.
- Databases: key-value stores such as Redis, SQL including Oracle Database, Postgres, MySQL.
- Experience with operations and maintenance, structured logging, telemetry, zero downtime deployments, and on-call incident response.

Education

Undergraduate

University of Bristol: 2018 - 2021
BSc Computer Science
First Class Honours

A Level

Churston Grammar School: 2015 – 2017

Computer Science: A*
Mathematics: A*
Further Mathematics: A
Economics: A
Physics (AS): A

Westlands School: 2013 – 2015
BTEC Level 3 Diploma in IT: Distinction* Distinction*

Experience

Senior Software Engineer - Oracle: 2023 - Present

As part of the API Gateway team, I make substantial contributions to a cloud service that is processing over 20 billion HTTP requests per week, with particular focus on the core data plane proxy application.

Key achievements:

- Development of graceful shutdown functionality, with full observability on interrupted HTTP requests.
- Substantial contributor to a successful rewrite and modernisation of our data plane proxy server from NGINX/Lua to Jetty/Java. This included the HTTP request body processing logic, in-memory loading caches, logging, and authentication modules.
- Replacement of password based Redis authentication with a fully automated mTLS solution.

Software Engineer - Oracle: 2021 - 2023

Working as part of the API Gateway team, key achievements:

- Major contributions to the Usage Plans feature. I wrote the cloud controllers that synchronise control-plane and data-plane state (Java), developed the public console pages or subscriber management (React/Typescript), and built automated end-to-end tests for the whole feature (Java).
- Extensive experience managing and automating highly available Redis clusters (with sharding and replication). Developed an automation for rack-zone awareness, set up a compact cluster mode that required fewer CPU cores, and developed an automated process for zero-downtime cluster migration between X86 and ARM shapes. Changes led to significant cost savings, operations and reliability improvements.
- Drove efforts to improve team processes, including development of a new integration test suite, introducing templating engines for internal documentation, improvement of CI pipelines with type checking and linting.

Software Development Internship – Oracle: Summer 2019

- Developed an internal tool used for auditing cloud resources (Java, Docker).
- Developed the per-request metrics reporter in the API Gateway data plane (NGINX/Lua).
- Developed scheduled business metrics (Java), with a Grafana dashboard used by management to monitor feature usage.

Software Developer – Createanet: 2017 – 2018

- Developed 6 iOS apps (Objective-C, Swift), one of these apps was a social media platform, others were for photo and video sharing, electronic forms / paperless, consumer rewards, and video conferencing.
- Developed REST APIs and administration websites to power the apps (PHP/MySQL).

Open Source

I maintain a list of projects on my website, showcasing some of my contributions to open source.

Certifications

CCNA R&S: 2016 – 2019
I passed the Cisco Certified Network Associate Routing and Switching exams entirely self-taught. Topics included IPv4/6, TCP/UDP, Ethernet (VLANs, STP, security), static and dynamic routing.

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