Alan Milligan - Principal Engineer



Introduction

I undertake architecture level and senior SRE, DevOps, and AI consulting having worked independently for global corporate giants and small and medium businesses alike, providing scalable infrastructure and bespoke solutions into physical, private and public cloud environments.

In the past I have been engaged in architecting, designing, and developing trading and middle office systems for retail and investment banks globally, leading into my passion for modern infrastructure, automation, instrumentation and observability. These days I use cloud architecture frameworks such as Well Architected Framework (WAF) on AWS to validate workloads against organisational standards to reduce risk and optimise costs. I have curated a sophisticated AI stack and am streamlining my own back-office operations.

I am very active in software development with a strong interest in commercial open source where I'm active in presenting and mentoring in local developer orientated user group circles, and for many years was the convenor of the Open Source SIG for the Australian Computer Society in Sydney.

With my BastionLinux™ brand, I have a large public portfolio of offerings taking a hybrid and multicloud approach across AWS, Azure, GCP, Alicloud, OCI, Digital Ocean, IBMCloud and your datacenter.

Operations is a core focus of what I do: getting to single pane of glass across disparate management systems. From tools like Splunk, Zenoss and Nagios, to the Grafana suite, I have a proven track record to orchestrate, deploy, dashboard, and extend - at enterprise scale.

Leveraging tools such as Chef for procedural control, Ansible for agentless automation, and Terraform for declarative cloud provisioning, I build infrastructure that is secure by design. Integrating Chef InSpec ensures continuous operational governance and compliance auditing, baking security baselines directly into the deployment pipeline to minimize attack surfaces.

Navigating large-scale data naturally connects to my core strength: modern data engineering and analytics. I specialize in the Apache Big Data ecosystem, building scalable data lakes, robust ETL processes, and agile ad-hoc dashboards. Armed with a formal education in statistics and deep Python fluency, I unlock immediate insights from data—offering a highly efficient alternative to costly proprietary systems.

While I champion open-source ecosystems for flexibility and cost-efficiency, I am equally adept within proprietary enterprise environments. Whether your stack is built on open-source innovation or leading vendor platforms and SaaS, I adapt quickly to align with your established architecture and compliance mandates.

The breadth and depth of my skills is extensive. Should you wish to discover what Well Engineered or SOC 2 looks like for yourself, you are encouraged to check out or spin something up in AWS or Alicloud.

Details

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Qualifications	BCom/BSc University of Otago, NZ

Achievements

- Accelerated software delivery by implementing end-to-end CI/CD pipelines and DevOps practices, cutting deployment time by over 70% in RHEL/VMware environments.
- Rolled out a unified Linux lifecycle toolchain—build, deploy, patch, upgrade for enterprise RPM platforms, eliminating manual handoffs and boosting operational efficiency.
- Launched and maintained BastionLinux — a hardened Linux distribution—across six major releases over 20 years, a supportable baseline for commercial consulting.
- Introduced an ARM-based consumer hardware line (Raspberry Pi family), opening new revenue streams in the IoT/embedded markets.
- Built and grew a monitoring and automation consultancy (Chef, Grafana, Jenkins) that delivered turnkey observability solutions to clients.
- Pioneered Australian AWS Marketplace listings for pre-configured images—expanding distribution channels and generating incremental cloud service revenue.
- Create agile project management with ScrumOps and email-driven Taiga integration, slashing issue turnaround time and increasing team productivity.
- Designed and deployed multi-cloud OpenStack infrastructures via configuration-as-code, reducing provisioning lead time from days to minutes.
- Developed automated document orchestration engines powered by localized AI toolchains, accelerating reporting cycles and minimizing manual editing through intelligent asset generation.
- Massively improved workflow deploying Airflow pipelines between systems, orchestrating API calls, and with detailed instrumentation and logging.
- Enabled real-time business analytics by implementing Superset for on-demand reporting and interactive dashboards, enhancing data-driven decision-making.
- Successfully launched a secure corporate Linux Desktop equipped with comprehensive AI productivity tools, enhancing operational efficiency and empowering data-driven innovation.
- Guided the Australian Computer Society's FOSS Special Interest Group for 10 years, fostering a vibrant community and advancing open-source technology adoption and innovation.
- Leveraged over 20 years of experience in developing Python applications to drive advancements in web development, infrastructure, data science, and AI, significantly enhancing project outcomes and technological capabilities.

Architecture

> **I practice Architecture as Code - bridging the gap between executive strategy and deep, hands-on engineering and delivery.**

Overview

An adaptable Solutions Architect who designs enterprise systems while actively stewarding engineering teams. My practice spans complex cloud and on-premises migrations, with robust operational governance driven through Git. By combining hands-on tool mastery across the spectrum - from development to data science, I pull together the necessary real-time decision support details to defend and assure programmes of work.

Governance

If left to my own devices, I take a very technical approach to solutions design artifacts using data science tools to dynamically maintain core documentation. By seamlessly converting complex data across Excel, Pandas, Sphinx, and Jupyter Notebooks, I deliver interactive, real-time presentations to diverse audiences. Whether rendering architecture blueprints through Confluence builders or maintaining source-of-truth repositories in Git, I ensure all stakeholders stay aligned through clear, automated communication.

Stakeholders

A confident public speaker and Open Source Special Interest Group (SIG) leader, I excel at driving industry collaboration and evaluating third-party technologies. I manage the end-to-end vendor lifecycle, from initial technical onboarding to coordinating complex design approvals with external partners. By balancing open-source flexibility with enterprise support models—such as HashiCorp or Grafana ecosystems—I seamlessly integrate external solutions into existing product mixes.

Frameworks

While fluent in foundational frameworks like TOGAF, I prefer to focus where it matters: inside the code. I translate abstract business, data, and application architectures into concrete, production-grade Infrastructure as Code (IaC) architectures. By anchoring enterprise design patterns directly within version-controlled repositories, I ensure that architectural principles are not merely documented on slides, but are actively enforced, deployed, and realised down to the metal.

Cloud

Translating abstract enterprise designs into production-grade infrastructure using AWS CloudFormation and CDK to deploy highly available, fault-tolerant topologies across multi-AZ environments. Concrete delivery includes provisioning core networking foundations via VPC, Transit Gateway, and Route 53, orchestrating scalable compute workloads using Auto Scaling Groups, ECS, and EKS, and configuring decoupling patterns with SQS, SNS, and EventBridge. Operational and cost baselines are actively enforced by implementing AWS Budgets, Cost Explorer, and Tagging Policies, while data architectures are anchored using S3 lifecycle policies, RDS multi-region deployments, and DynamoDB global tables to guarantee resilient enterprise execution.

Engineering

> **Specialist in high-integrity systems engineering, hardened toolchains, and the hands-on development of production-grade software and applications.**

Overview

Principal Engineer and hands-on developer focused on building robust systems and high-scale applications. I prioritise absolute deployability—ensuring that software moves from the local environment to production with total reliability. My approach is tools-first: I build the hardened toolchains and automated environments required to deliver modular, defensible code.

Application Development

I code in a variety of languages, but have a strong preference for Python where I have a vast number of packages and applications in my BastionLinux stack. I write quality code, using modern analysers, linters, test frameworks. Across my application stacks, I have a development SOE - Tox for everything.

I love command lines, Sphinx, and self-documenting code. I write/do vast amounts of Click. My code is trivially deployed in Airflow, Jenkins, and other tools.

Application Lifecycle Management

I manage the complete software journey from initial prototype to production release. By implementing Jenkins for orchestration and Sphinx for technical documentation, I eliminate manual bottlenecks and process friction. I treat the build and release lifecycle as a core engineering task, ensuring that the entire stack is observable, version-controlled, and ready for deployment.

Technical Leadership and Mentorship

Leading large-scale teams by example through active coding and architectural design. I maintain high standards for code quality and system integrity, mentoring developers to replace manual, error-prone tasks with reliable automation. I am a collaborative pragmatist who works across the organisation to ensure the technical platform supports the mission and the team.

Infrastructure

Architect of high-availability platforms, mission-critical backup ecosystems, and software-defined infrastructure.

Overview

Infrastructure architect specialising in the design of high-availability platforms and software-defined environments. I focus on organisational ownership of core systems, ensuring that distributed systems are resilient, observable, patchable, and fully automated from the hypervisor to the edge.

BastionLinux: Enterprise SOE and Hardening

I architect and maintain BastionLinux, a specialised Enterprise Linux (RHEL-based) Standard Operating Environment (SOE). By engineering custom RPM build-chains and hardening the core OS, I deliver a modular, defensible platform that eliminates configuration drift and ensures absolute operational consistency across large-scale server estates.

Data Protection and Bacula Systems

As the Bacula Systems APAC partner, I design and deploy industrial-grade data protection ecosystems. I specialise in the "Last Bastion" approach to disaster recovery—engineering secure, immutable, and restorable backup environments for massive, heterogeneous data sets across critical infrastructure and hybrid-cloud deployments.

Software-Defined Infrastructure and Availability

I treat infrastructure as a programmable resource, utilising Chef, Ansible, Terraform and automated provisioning to build "five-nines" reliable platforms. From load-balanced clusters to fault-tolerant topologies, I eliminate single points of failure, ensuring mission-critical services remain stable through hardware degradations and network partitions.

SRE and Observability: The Grafana Stack

Bringing SRE discipline to the platform through the deployment of the Grafana telemetry stack. I architect the monitoring and alerting frameworks that provide a "single pane of glass" into the infrastructure's health. By transforming raw metrics into observable intelligence, I ensure that potential bottlenecks are notarised and mitigated before they impact the production edge.

Access and Identity Management

> **Architect of zero-trust security postures, SSO, AIM, and the hardened access controls required to safeguard production systems and cloud infrastructure.**

Overview

Security-first infrastructure principal focused on the end-to-end design and implementation of Access and Identity Management (AIM) architectures. I do not invent security, I coherently deploy the leading protocols, preferably using open source implementations. My approach treats authorization policies as code: with constant operational governance to assure the estate against these.

Directory Architecture and Provisioning

I have great affection for LDAP and base much of my authentication upon 389 DS. I have considerable expertise building API and Web authentication handlers around X509/PKI and a plethora of popular back end authentication services assuring both SSO and security posture.

Federated Authentication and Protocols

I build high-integrity identity federation interfaces using the ipsilon server stack to architect secure single sign-on bridges across hybrid infrastructure, linking open source systems with legacy Microsoft Active Directory (AD) realms and cloud-native Microsoft AD/Entra ID environments. I deploy mod_auth_mellon with the underlying lasso library for SAML 2.0 federation, mod_auth_openidc for decoupled OpenID Connect and OAuth2 service engines, and mod_auth_gssapi alongside freeipa-server to govern cross-realm Kerberos trust boundaries without fragile synchronization scripts.

Identity Lifecycle and Automated PKI

I construct fully internal, hardened Public Key Infrastructures (PKI) using Step CA and softhsm cryptography abstractions, driving automated validation checks with Step CA. By offloading identity caching, host credential verification, and dynamic hbac rules natively to the System Security Services Daemons, I replace manual certificate rotation tasks with deterministic, secure, policy based automation.

An example of this is my Entitlements Server for RHSMD, the backbone of commercial BastionLinux.

Cloud

Implementing programmatic identity structures and federated access patterns across the AWS footprint by designing multi-account governance architectures natively within AWS IAM Identity Center (AWS SSO). Concrete implementation involves engineering fine-grained access limits using IAM Policies, Inline Policies, and Permissions Boundaries, while enforcing structural security perimeters across accounts using Service Control Policies (SCPs). Cross-account access and machine-to-machine authentication are executed using IAM Roles and Web Identity Federation, while programmatic secret lifecycle management and temporary credential provisioning are automated utilizing AWS Secrets Manager, KMS key policies, and AWS Security Token Service (STS).

Security

Specialist in security engineering, hardened toolchains, and the hands-on development of defensive software and automated detection engines.

Overview

Security engineer and hands-on developer operating on the principle of "Defensive Integrity." While many in the field operate as system administrators, I treat security as a rigorous engineering task. I specialise in building the software, custom clients, and hardened toolchains required to move security from a manual audit check to a programmatic certainty.

Hardened Development and Build-Chain Integrity

I treat the build-chain as the primary defensive perimeter. I build on top of reputable platforms—utilizing RHEL or SLES as the base to engineer hardened, immutable environments. drawing on my experience with BastionLinux, I ensure that the host is observable, defensible, and strictly adheres to enterprise security benchmarks before any application is deployed. My approach is tools-first: I develop the specialised environments and automated "as-code" pipelines required to ensure code is defensible before it hits production.

Supply Chain Engineering and SBOM

I prioritise the programmatic transparency of the software supply chain. I utilise Grype and Syft to generate and audit a Software Bill of Materials (SBOM) for every build cycle. This is a development-led strike that ensures every dependency is vetted, accounted for, and programmatically verified against known vulnerabilities to do absolutely all we possibly can around governance and provenance.

Detection and Response

Expert in detection engineering, utilising Wazuh and the Grafana stack (Loki, Mimir, MCP) as an observability backbone. I build the custom integrations and active-response software that transform raw security events into high-fidelity indicators of compromise (IOCs) in your Security Operations Centre. I treat security telemetry as a data engineering problem, ensuring the "single pane of glass" is driven by observable, auditable code.

Cloud

Implementing concrete cloud defence across the AWS footprint by configuring multi-account isolation strategies within AWS Organizations and enforcing strict least-privilege boundaries using IAM policies, Permissions Boundaries, and Service Control Policies (SCPs). Hardening runtime environments requires provisioning network-level boundaries via VPC Security Groups, Network ACLs, and AWS WAF, while securing data at rest and in transit utilizing KMS customer-managed keys and automated rotation in Secrets Manager. Continuous threat modelling and vulnerability scanning are executed natively by deploying AWS GuardDuty, Security Hub, and AWS Inspector, which funnel real-time infrastructure alerts directly through Amazon EventBridge and SNS to drive automated remediation workflows.

Artificial Intelligence

Hardened AI for Enterprise Linux.

Overview

Having a background in hard-core Python, AI infrastructure and applications is second-nature to me. I ship a vast amount of Python - from OpenStack, to Airflow, to my Plone/ECM. My BastionLinux/Desktop is focused upon both security and curated AI tools for developers and users. I ship LiteLLM for configuration/API keys/authorisation, instrumentation and Prometheus metrics/analytics. I use MLFlow and Phoenix, and even proprietary LangSmith and a lot of open telemetry and open inference for observability, and LangFlow to LiteLLM for UI/prompt engineering assistance. I run vLLM and OpenVino as dedicated inference engines.

Drivers and GPU's

I have great expertise and resources building kernel modules, drivers, and firmware, even for proprietary NVIDIA, AMD's ROCm and build high-performance physical and virtual machines to drive GPU-intensive workloads.

Prompt Engineering

I have quite some expertise writing prompt engines. These use JSONSchema to force structured data from the providers, and then do loads of interesting things with Pydantic to guarantee validity of results. My prompts live in relational and object databases and are accessible via MCP.

I ship Grafana, PostgreSQL, shell. I have written MCP and LangChain services around my own BastionLinux build/deploy and Yum/DNF services aimed at validating, building, healing, and administering RHEL stacks - based on my complete Distro/Vendor backends. I use and coordinate all my MCP services with the Argus and IBM/Chuk CLIs clients and Agent/Managers of MCP backends. This is all a highly evolving field, and I am of course not proscriptive about any of this - I am simply explaining the ecosystem I deploy.

Vector Databases

I have built and tried a bunch of Vector databases. In my main BastionLinux build stack, which is built upon an Enterprise Content Management stack - so well aware of document indexing, stemming, and other features, I have built a vector index for Zope and this supports my own local BastionLinux/LLM services.

Cloud

Implementing production-grade agent architectures and multi-agent workflows across **AWS** utilizing **Amazon Bedrock** foundation models and **Amazon Bedrock AgentCore** managed runtimes. Technical execution involves executing spec-driven physical and software development using Kiro, configuring event-driven **Agent Hooks**, and anchoring environmental context through persistent **Steering Files**. Agent reasoning built with Strands Agents SDK, leveraging **Strands Agent SOPs** to enforce guardrails during execution.

Data

Architect of high-performance data platforms, distributed telemetry, and enterprise-grade analytical infrastructure.

Overview

I am a Data Platform Architect specialising in deploying enterprise data service clusters. I architect the systems that transform raw telemetry into observable, high-fidelity intelligence. Outside of pure-engineering, I studied applied mathematics and statistics at university, and do understand data modelling.

Apache Ecosystem

Building resilient data factories using Airflow for ETL/state-driven orchestration and Kafka for real-time event streaming. I apply software engineering to the development of pipelines to ensure continuous deployment, validity, integrity and reliability across complex environments. I do MLOps using the DVC tools for machine learning projects.

Distributed Analytics

Specialist in high-velocity exploration using Trino and Apache Drill for federated querying across disparate silos. I use Superset for reporting and visualisation, and my enterprise Grafana dashboards for observability and metrics visualisations.

Python Programming

I do Python development - and run Python teams for the data stack. Python is the de facto language of data - and whilst I am heavily open source in my own shop, my tools and methodologies can be applied against the proprietary majors in Data Science - and I've probably got the Python and Airflow providers, clients, connectors to do so.

In addition to being competent at SQL, I do major abstracted pieces using SQLAlchemy, Marshmallow, GraphQL and a lot of JSON in RDBMS with Pydantic and tools that bring robust type-safety and object-relational agility to traditional SQL.

I share my expertise with Jupyter and Pandas to the business to lift and shift Excel spreadsheets into rigorous, engineered corporate artifacts. These are source code controlled, lifecycle managed and even trivially automated for execution in the afore-mentioned Airflow.

Delivery

> **Specialist in high-velocity project orchestration, lean methodology, and the strategic delivery of hardened software products to global marketplaces.**

Overview

I have fulfilled roles in solutions design and delivery in financial organisations and a huge amount of product design, development, and release of high-value open source utilising my underlying BastionLinux SOE for deployment.

I prioritise operational transparency, technical excellence and openness, ensuring every project phase is observable, repeatable, and results-driven philosophy for product delivery.

ScrumOps and High-Velocity Delivery

I architected the ScrumOps methodology to integrate iterative agility with absolute operational reliability. By synchronising the product backlog with the build pipeline, I ensure every sprint delivers a validated, production-ready artifact, treating the CI/CD lifecycle as a core stakeholder to prevent the release of un-hardened code.

Lean Orchestration: Taiga and Agile

I champion lean, agile workflows that eliminate the friction of legacy tooling. Utilising platforms like Taiga and ProjectLibre, I provide high- fidelity project planning and resource allocation without vendor lock-in. I bridge the gap between engineering and the boardroom, translating technical milestones into strategic metrics and observable delivery outcomes.

Product Lifecycle: Prototype to Marketplace

Managing the total journey from "hand-woven" prototype to global distribution on AWS and AliCloud Marketplaces. I oversee the final handovers between dev, security, and ops, ensuring that what we deliver is not just a feature, but a fully supported, mission-critical software appliance ready for global commercial consumption.

Networks

Architect of software-defined networks, high-availability edge infrastructure, and enterprise-grade network observability.

Overview

Network architect operating at the intersection of systems development and programmable infrastructure. While traditional networking remains trapped in manual CLI cycles, I treat the network as a software-defined API. My approach is defined by "Network-as-Code"—utilising a development-first mindset to build version-controlled, observable, and fully automated enterprise fabrics.

Network Metadata

I prioritise the integrity of DCIM and IPAM as the primary drivers of automation. By utilising NetBox as the authoritative "Source of Truth" for IP allocation, circuit tracking, and rack elevations, I ensure the digital map is the absolute master of the physical state. This kills manual configuration drift and provides the programmatic foundation for high-fidelity network orchestration.

Software-Defined Edge and Zero Trust

Specialising in the transition to software-driven edge security. I deploy modern defensive stacks including Wazuh, CrowdSec, and Prowler to ensure integrity at the perimeter. By implementing zero-trust micro-segmentation, I move the network beyond simple routing into a hardened, identity-aware security surface that is rapidly deployable and resilient by design.

Network Operations

Engineering high-fidelity telemetry stacks to support 24/7 Network Operations. From the early days with Zenoss to my modern Grafana stack, I provide a "single pane of glass" into mission-critical performance. I focus on proactive alerting and automated baselining, treating network health as a rigorous exercise in data platform engineering and high-availability operational observability.

Cloud

Implementing software-defined infrastructure-as-code network architectures across the AWS fabric by configuring multi-account connectivity via AWS Transit Gateway and VPC Peering. Concrete deployment involves partitioning networks using public and private subnets, managing traffic flows via Route Tables, Internet Gateways, and NAT Gateways, and securing boundaries using VPC Security Groups, Network ACLs (NACLs), and AWS WAF. Perimeter edge routing, content caching, and global DNS resolution are actively engineered using Route 53 latency/failover routing policies and CloudFront, while deep programmatic traffic analysis and threat auditing are achieved by capturing and parsing VPC Flow Logs via Amazon Athena.

Testing

Architect of enterprise quality assurance strategies, automated governance frameworks, and high-fidelity validation environments.

Overview

Lead Test Engineer specialising in the design of automated quality gates and strategic validation frameworks. I move testing from a manual bottleneck to a version-controlled, programmatic certainty, ensuring that every software artifact is verified, observable, and ready for production. I build the infrastructure that translates technical testing telemetry into clear risk-profiles for stakeholders.

Jenkins and CI/CD Orchestration

I architect Jenkins-based continuous integration frameworks that act as the automated heartbeat of the delivery lifecycle. By implementing multi-stage test gates—from unit validation to complex integration—I ensure that only hardened code moves forward. This treats deployment readiness as an observable state, drastically reducing the cost of failure and the risk of production instability.

Automated Frameworks and Tooling

I lead the transition to hardened automated frameworks, utilising Python and Selenium, Robotframework, Playwright, BrowserStack for comprehensive browser and API validation. My approach is tools-first: I build test suites that are as modular and maintainable as the production code they verify. By integrating these tools into the build heartbeat, I ensure that regressions are neutralised in the workshop before they impact the user.

Environment and Data Orchestration

Specialist in the orchestration of complex, ephemeral test environments. By leveraging SOE deployment tools, I create high-fidelity clones of production infrastructure for stress-testing and performance-soak analysis. I ensure software is validated against real-world network latencies and security policies, providing bona fide "Test Results" required for mission-critical governance.

Business Systems

> **Architect of enterprise resource planning engines, programmatic knowledge management frameworks, and unified corporate communications platforms engineered to safeguard corporate data sovereignty and financial observability.**

Overview

I have employed many efforts to monetise my underlying BastionLinux to offer full ecosystems of suites that *should* be viable for enterprise consulting and support.

Enterprise Resource Planning (ERP)

I design and maintain auditable financial architectures utilizing the modular Tryton ledger framework, linking front-end sales channels natively with dynamic inventory, cost accounting, and multi-currency tracking modules.

Financial Data

To govern revenue capture, I write secure billing interfaces using the goCardless and Stripe toolchains.

These may be coded directly into downstream accounting engines like the xero API and open-banking protocols to extract real-time data from the akahu matching inbound payment clearing records with outbound merchant invoice structures to replace manual reconciliation tasks with deterministic, secure background automation.

Enterprise Content Management (ECM)

I build resilient, distributed collaboration and knowledge frameworks capable of supporting large-scale organizational workflows. I deploy the enterprise-grade Plone and WagTail stacks to construct highly customized, featureful, role-based document repositories. In fact, both my BastionLinux brand and it's package manager are implemented within an ECM.

I treat corporate documentation as code, using Sphinx with a fairly complete theming and extension ecosystem to generate self-documenting technical manuals.

Collaboration and Knowledge Management

Proving Linux is Window's-friendly, I ship nextcloud and Samba for file sharing and desktop integrations. I ship ISP-strength email suite and utilise it with Listmonk, Indico, and Tendenci platforms.

Corporate Telephony and Voice Infrastructure

I engineer and scale internal telecommunications platforms to keep teams connected and client routing efficient. I deploy the Asterisk core engine and Kannel SMS gateway.

Skills

- *Architecture*
- *Programming*
- *Databases*
- *DevOps*
- *Monitoring*
- *Data Science*
- *Operating Systems*
- *Banking*

Architecture

- Object Orientated Design (OOA/OOD, RUP)
- C/C++ Compilers and Linkers (Solaris, HP-UX, GNU, CMake, CLang, LLVM, gcc)
- Systems (Linux Kernel, Drivers)
- Distributed Computing (RMI, RPC, HTTP, Socket, CORBA, TIBCo)
- Change Management (CVS, SCCS, RCS, Subversion, Git, GitHub, GitLab, Gerrit)
- Web Technologies (Apache, Zope, Plone, Django, Flask, FastAPI, Rails, Tomcat, JBoss, CGI, HTML, XML/XSL, LDAP, JSP)
- Enterprise Content Management Systems
- Applied Cryptography (OpenSSL, TLS, GnuPG, Step, Authorities)
- SQL Encapsulation (DBI, JDBC, SQLAlchemy, Alembic)

Programming

- C/C++
- Java
- Perl
- Python
- Ruby
- Go
- NodeJS/TypeScript
- Shell Scripting

Databases

- SQL
- Sybase
- Oracle
- MySQL
- PostgreSQL
- ZODB
- Cassandra

DevOps

- Chef
- Puppet
- Ansible
- Terraform Terraformer
- Kubernetes Docker
- Network Ops NetBox
- GitOps ArgoCD
- Jenkins
- DevSecOps ScoutSuite
- FinOps: OpenCost

Monitoring

- Nagios
- Zabbix
- Zenoss
- Grafana
- Mimir
- Prometheus
- Loki

Data Science

- Airflow (ETL, pipelines, workflow)
- Superset (Business Intelligence, Charting, Reporting)
- Jupyter SciPy Pandas
- Kafka (Event Streaming)
- Drill (NoSQL to SQL)
- Trino (Data Lake)

Operating Systems

- Solaris
- Linux
- HP-UX

Banking

- Fixed Income and Cash
- Repurchases
- Program Trading
- Electronic Banking
- Trading Systems
- Market Data distribution and usage

Engagements

- *June 2022 - Present - Product Development – Last Bastion Network*
- *Nov 2021 – May 2022 - Lead SRE Developer – Macquarie Bank*
- *Jan 2020 - Oct 2021 - Lead Infrastructure Developer – Commonwealth Bank*
- *January 2018-June 2018: Senior Consultant – CMD Solutions*
- *Oct 2016 – Apr 2017 - Microservices Engineering – Woolworths Loyalty Programme*
- *Jun 2015 – Sept 2016 - Product Management - Enterprise Solutions into AWS/Marketplace*
- *Nov 2014 - May 2015 - Proprietry Trading Software Vendor – DevOps Lead*
- *Jul 2014 - Sept 2014 - Stakeholder Management SAAS Vendor*
- *Sept 2013 - Oct 2013 - Ipscape – Configuration Specialist*

June 2022 - Present - Product Development – Last Bastion Network

- New BastionLinux 36 and 42 release - updated, modernised, appealing, stack.
- Developed our Red Hat Subscription Manager Entitlements integrated with BastionLinux Subscriptions/Channels creating a compelling reason to cloud-purchase products shipped on the distribution.
- New BastionLinux products into Alibaba Cloud Marketplace to increase market penetration.
- AWS Cloud Marketplace new products and updates to encourage purchases.
- New Kanban project management productivity platform and creator of ScrumOps methodology and tools to more widely promote it.
- New office server and DCinaBox SME brand to more cost effective run workloads off cloud.
- Wrote a lot of new Sphinx-based documentation, using git flows to formally release, and allowing serverless hosting.
- Consolidation and retirement of a lot of technology debt to have a more effective and sustainable back office.

Nov 2021 – May 2022 - Lead SRE Developer – Macquarie Bank

- CentOS secure workstation developed, security sign-off, delivered to 200+ developers.
- Instrumental in creating 'Developer Champions' outreach/forum.
- Porting Central Unix Ansible for latest Red Hat Linux deployments across the Bank.
- Hashicorp/Vault for POC/migrating secrets/X509 across software landscape to improve security posture.

Jan 2020 - Oct 2021 - Lead Infrastructure Developer – Commonwealth Bank

- Set up greenfield Python shop.
- Set up enterprise CI/CD pipeline around Jenkins to achieve pipelines as code.
- Brought documentation into the code - ensuring always current, and publishing into Confuence - readily discoverable.
- Wrote loads of Ansible, integrated with Tower for easy deployment and governance.
- Brought Data Science (Jupyter, Pandas) to ETL processes and ad-hoc storage analytics.
- Delivered Risk/Patching/Storate/Recovery Attestation portal (Django) with one other developer.
- Delivered Airflow workflow management infrastructure for sophisticated workload management.
- Secure code warrior champion and security practices into code and coding practices.
- Qualys vulnerability scanning, resolution, patching cycle management, curation, building, deployment of patched software.
- Resourced, managed, and mentored six local and remote team members.

January 2018-June 2018: Senior Consultant – CMD Solutions

- Effective AWS consulting for client Nib.
- Deployed SuSE Linux SOE, orchestrated with Puppet, ensuring vendor support for the application.
- This was the first public cloud implementation for a medical 'System of Record' in Australia.

Oct 2016 – Apr 2017 - Microservices Engineering – Woolworths Loyalty Programme

- Performed application development on AWS using serverless tools - APIGateway, Lambda, DynamoDB, Cloudformation.
- Delivering applications driving a 49% increase in directly measurable incremental sales in December alone.
- Introduced leading open source testing, CI/CD applications to institute and mature release management practices.

Jun 2015 – Sept 2016 - Product Management - Enterprise Solutions into AWS/Marketplace

- Steward more infrastructure solutions through AWS Seller Operations into Marketplace.
- Engaging with IBM Bluemix/Softlayer and Microsoft Azure Marketplaces for product facilitation.
- Business development and marketing.

Nov 2014 - May 2015 - Proprietry Trading Software Vendor – DevOps Lead

- Introduced DevOps to formally manage server infrastructure.
- Set up RHEL7 SOE management platform, support and upgrade path from RHEL5.
- Jenkins CI/CD into operations with OpenStack best-practice tools and procedures as next step in development maturity.

Jul 2014 - Sept 2014 - Stakeholder Management SAAS Vendor

- Took .NET/MSSQL platform into AWS Cloud (and potentially Azure) for flexibility in cloud costs.
- Linux/Mono lift and shift of classical Microsoft toolchain/licensing saving money.
- Introduced Cross-platform DevOps/Agile into organisation (Jenkins/CI, Chef/WinRM/Powershell).
- Collaboration/mentoring/engagement with offshore development team.

Sept 2013 - Oct 2013 - Ipscape – Configuration Specialist

- Implement industry best practice into software code base.
- Created and set up AWS dev/test and other critical DevOps infrastructure.
- Created Chef infrastructure to stand up complex LAMP/Asterisk clustered telephony infrastructure.
- Delivered flexible XML/XSLT tools to allow wholesale clients to configure callcentre solutions.

Earlier Career

- *Jan 2012 - Apr 2012 - Roads and Maritime Services - Access and Identity Architect*
- *Aug 2010 - Mar 2011 - Singtel/Optus – Senior Internet Services Engineer*
- *Jun 2006 - Dec 2006 - NAB – Infrastructure Solutions Designer*
- *Jan 2004 - Jun 2004 - Davies Collison Cave – Enterprise Content Management Consultant*
- *Jul 2000 - Feb 2002 - Novasoft Information Technology Solution Architect (Contract) London, United Kingdom*
- *Sept 1999 - Feb 2000 - Deutsche Bank, AG Designer/Architect (Contract),London, United Kingdom*
- *Aug 1998 - Jun 1999 - HSBC Midland Infrastructure Architect (Contract),London, United Kingdom*
- *Apr 1998 - Aug 1998 - Logica Systems Senior Developer (Contract), London, United Kingdom*
- *Oct 1993 - Feb 1998 - National Bank Architect/Developer (Permanent),Wellington, New Zealand*
- *Jan 1992 - Sept 1993 - ANZ Banking Group Developer (Permanent), Wellington, New Zealand*

Jan 2012 - Apr 2012 - Roads and Maritime Services - Access and Identity Architect

- Advised/piloted through three OS transitions (Ubuntu, SuSE, RHEL).
- Delivered Identity Management LDAP for myRTA portal (2.5M users) across dev/release/production silos.
- Introduced Chef, Zenoss, 389 Directory Server to organisation.
- Performed system integration with VMWare/Vsphere and ZenWorks - leading industry tools.

Aug 2010 - Mar 2011 - Singtel/Optus – Senior Internet Services Engineer

- Delivered SMS rate limiting suite for Campaign Marketing (Kannel, Web/Perl).
- Upgraded various ISP infrastructure components (Anti Virus, LDAP, Email).
- Piloted Zenoss, Splunk.

Jun 2006 - Dec 2006 - NAB – Infrastructure Solutions Designer

- Stewarded infrastructure deployment for Reuters eFX currency platform.
- Technology designer for Unix/Solaris end-of-life/sunsetting programme (over 300 servers globally).
- Technology designer for shared services platform (Oracle, Sybase, Websphere).
- Delivered various components of Solaris/SOE.

Jan 2004 - Jun 2004 - Davies Collison Cave – Enterprise Content Management Consultant

- Architected and delivered new Plone-based ECM/CMS/intranet integrated with AD and other Microsoft systems.
- Migrated content and platform from Windows to Linux.
- Staff end user training, site administrator training, system administrator training.
- Linux, Python, Apache.

Jul 2000 - Feb 2002 - Novasoft Information Technology Solution Architect (Contract) London, United Kingdom

- Architected global head-end quotes system for Reuters.
- Team-lead six application developers.
- Unix/Solaris.
- C/C++/Java, Versant.
- Created materials and delivered internal training courses.
- Strategic technical advisory for other client projects.

Sept 1999 - Feb 2000 - Deutsche Bank, AG Designer/Architect (Contract),London, United Kingdom

- Program trading, order management, settlements.
- C/C++ Object-orientated Perl, SWIG, Java, XML.
- Architected and developed majority of order routing middleware.

Aug 1998 - Jun 1999 - HSBC Midland Infrastructure Architect (Contract),London, United Kingdom

- Murex/MxRates implementation for fixed income/GILTS desk.
- Build and release management tools expert.
- Teknekron, TIBCO/Rendezvous, Reuters/ETX market data.
- HP-UX, Perl, C/C++, Shell scripting.

Apr 1998 - Aug 1998 - Logica Systems Senior Developer (Contract), London, United Kingdom

- Perl migration suite for EMU in fixed income bond repurchases.
- Unix/Solaris.

Oct 1993 - Feb 1998 - National Bank Architect/Developer (Permanent),Wellington, New Zealand

- DirectLink PC banking back end development and architecture for retail/wholesale treasury settlements.
- Unix/Solaris.
- C/C++, Object-orientation, Client-Server, Sybase/SQL Rogue Wave.
- Rational Suite.
- AS400/COBOL – corporate bonds.

Jan 1992 - Sept 1993 - ANZ Banking Group Developer (Permanent), Wellington, New Zealand

- IBM/3090/MVS.
- CICS/COBOL/HOGAN.
- Large software development team.
- Business critical production support.