

Fraser Davidson

Platform Engineer

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About

I'm a Platform Engineer with an extensive background in **development, infrastructure and automation** over 14 years. I have broad expertise designing, developing and delivering scalable, performant and secure web platforms in public, private and hybrid cloud environments.

Expertise

Technical architecture, cloud computing, containerisation, automation, scripting, development, federated authentication, application security (incl. encryption), application delivery (incl. load balancing), application performance (incl. content delivery) systems integration, systems administration, monitoring, alerting, centralised logging, continuous integration, continuous delivery

Key technologies

Development	Infrastructure	Automation
JavaScript/NodeJS	Microsoft Azure	Ansible
Python	AWS	Terraform
C#/.NET Core	OpenShift	PowerShell DSC
Bash	Kubernetes	GitOps (Flux)
PowerShell	Docker	Jenkins
JSON	Windows Server	Visual Studio TS
YAML	Red Hat Linux	GoCD
XML/XSLT	Ubuntu	
Mocha	CentOS	Other
JUnit	Nginx	
TestDouble	Apache	GitHub
Inspec	HAProxy	BitBucket
HTTP/REST	Microsoft SQL Server	GitLab
WS-Federation	MySQL	JIRA
OAuth	Couchbase	Confluence
SAML	ELK stack	ServiceNow
	Nexus Repo Manager	
	Nexus IQ	
	Sonarqube	
	Twistlock	
	Nagios	
	AppDynamics	
	New Relic	

Key achievements

Development

- Development of a GitOps inspired toolset to automate the build, configuration and deployment of platform and application components developed as re-useable 'elements' defined in code to ensure single source of truth and semantic version control, and allow for declarative state, observability and configuration drift monitoring using NodeJS, Python, Bash, Terraform and Ansible
- Design and development of a **secure, scalable and highly available** cloud desktop for education
- Design and development of **RESTful APIs** providing both JSON and XML responses, described using Swagger and secured using bearer authentication over TLS in a **microservice architecture**

- Design and development of a custom authentication and authorisation service to provide an extensible internal identity provider supporting multiple authentication mechanisms, including **WS-Federation, OAuth 2.0, OpenID Connect and SAML 2.0**, to allow secure access via external identity providers
- **Secure integration** with third party services, including **Office 365**, Google Apps, Jumio, Facebook, Twitter and YouTube
- Implementation of Couchbase for **highly scalable and performant data access**, including use of N1QL for secondary indexing and query
- Use of Elasticsearch for **full text search**, including auto-completion fields and suggested terms
- Implementation of persistent background job processing and **message queuing** to support an asynchronous processing model

Infrastructure

- Design of infrastructure in public cloud to host a secure, scalable and highly available solution across multiple regions using '**infrastructure as code**' tools
- Implementation of Nginx application delivery servers to provide an **API gateway** featuring reverse proxying of API requests, caching of static content and **SSL offload**
- Implementation of **service discovery** using Consul, including service health checking, dynamic reconfiguration of Nginx application delivery servers and support for a **blue/green deployment strategy**
- Implementation of **centralised logging** using the Elastic stack (ELK) to centralise application, server, application delivery, security and audit logs, including use of **machine learning** and 'Watcher' to notify when a defined or abnormal event occurs
- Implementation of Nagios and AppDynamics to monitor **server performance and availability**
- Implementation of New Relic and Azure Insights to monitor and measure **application performance and availability**

Automation

- GitOps inspired infrastructure, configuration and application delivery via using re-usable versioned 'elements' referenced in **declarative state** manifests to allow for single-click environment build, rebuild, upgrade and rollback from a single source of truth
- Automated cloud environment **provisioning** using Terraform, CloudFormation and Azure Resource Manager templates
- Automated environment **configuration** on Ubuntu/RedHat servers using Ansible, including fully automatic build of database clusters, search clusters and highly available application delivery servers with custom **dynamic inventory generation** scripts written in Python
- Automated environment configuration on Windows servers using PowerShell Desired State Configuration
- **Continuous integration** using both Jenkins via GitHub and Visual Studio Team Services to compile, test and publish artefacts
- **Continuous delivery** using GoCD, Jenkins and Visual Studio Team Services (Azure DevOps) to deploy application workloads to Kubernetes/OpenShift clusters

Operational excellence

- **99.99% annual availability** on a secure and scalable solution hosted across multiple regions in Microsoft Azure
- Migration of solution from Azure Classic to Azure Resource Manager with **zero customer impact**
- Implemented **centralised logging, monitoring and alerting**, from pinging servers through to machine learning jobs watching Nginx access logs for anomalies, including alerting to Slack, HipChat and PagerDuty
- Achieved a **~35% capital expenditure reduction** on cloud resource usage via a program of efficiency savings

Experience

Platform Engineering Lead (Contract)

M&G Prudential Plc

<https://global.mandg.com/>

January 2019 – Present

Platform Engineering Lead delivering a platform to host a suite of wealth management applications used by financial advisors and customers to manage, transfer, deposit and withdraw funds in personal pensions. Responsible for ensuring the platform meets the functional, non-functional, security and cost requirements of the business, technical design, development, delivery and operational support, as well as evaluating new technologies and identifying potential for improvements in process. Also responsible for mentoring and knowledge transfer to the permanent members of the team.

The platform is cloud based with dedicated on-premise connectivity for backend (API) integration. Infrastructure is defined as code and is developed, deployed and configured using an in-house developed GitOps inspired toolset which ensures a single source of truth and strictly controlled semantic versioning, and allows for declarative state, observability and configuration drift monitoring. All application workloads are containerised and running on Kubernetes. Currently engaged with Red Hat to deploy and migrate to OpenShift.

Using: Javascript/NodeJS, Python, Bash, PowerShell, JSON, YAML, Microsoft Azure, Red Hat Linux, CentOS, Ubuntu, Docker, Kubernetes, OpenShift, Ansible, Terraform, Fluentd, Nexus Repository Manager, Nexus IQ, Sonarqube, Twistlock, Checkmarx, Jenkins, Azure DevOps

Platform Engineer (Contract)

Clydesdale Bank Plc

<https://www.youandb.co.uk/>

June 2017 – January 2019

Platform Engineer working on a team delivering private cloud PaaS and IaaS services to the bank, including containerisation, automated provisioning, CI/CD, artefact management, dependency and configuration management, centralised monitoring and logging, and site reliability engineering.

Using: Python, Bash, Groovy, JSON, YAML, XML/XSLT, AWS, Red Hat Linux, OpenShift, Kubernetes, Docker, Ansible, Elasticsearch, Logstash, Kibana,

Nginx, Fluentd, Flume, Nexus Repository Manager, Sonarqube, Jenkins, GoCD, Git.

.NET Developer (Contract)

DSSC Digital Software Solutions

<https://www.paymenta.com/>

February 2017 – June 2017

.NET Developer in a FinTech start-up, providing hands on architectural, integration and data access expertise during a full refactoring of a proof of concept cloud-first mobile payment platform, in preparation for additional funding and the subsequent onboarding of permanent development staff.

Using: C#, ASP.NET Core, ASP.NET WebAPI, Entity Framework, Serilog, JSON, OAuth, OpenID, AWS, Jenkins, Git.

Azure Technical Architect (Director)

Airhead Education Ltd

<http://airhead.io>

October 2012 – Present (full-time until February 2017, part-time until present)

Azure Technical Architect and developer in a cloud start-up, delivering a secure, scalable and highly available cloud desktop for education in Microsoft Azure. I designed, developed, implemented and supported the entire cloud-first technical solution, from a microservice architecture (partly containerised) with a NoSQL data store to a single page browser application and full automation of environment provisioning and build (including auto-scaling). The solution also included an application proxy layer with caching and TLS offload, service discovery, full infrastructure /application monitoring and centralised logging.

Using: C#, ASP.NET Core, ASP.NET MVC, ASP.NET WebAPI, JavaScript, PowerShell, Python, JSON, XML/XSLT, YAML, OAuth, OpenID, WS-Federation, SAML, Microsoft Azure, Windows Server, Ubuntu, Kubernetes, Docker, Ansible, Elastic stack, Nginx, Apache, HAProxy, Couchbase, Microsoft SQL Server, Visual Studio Team Services, Nagios, Application Insights, New Relic, Git.

Web Developer

Dog Digital Ltd

<http://www.dogdigital.com>

January 2012 – October 2012

Web Developer in a team of ten, developing web solutions to client specification in the form of content management web sites, mobile sites, mobile applications and digital marketing tools. I was responsible for the development, implementation and ongoing support of technical solutions based on Sitecore CMS in a digital agency environment.

Using: C#, ASP.NET Web Forms, Entity Framework, JavaScript, Windows Server, Sitecore CMS, Microsoft SQL Server, Svn.

Implementation Consultant

VisionWare Ltd

<http://www.visionware.com/uk>

November 2011 – January 2012

Implementation Consultant for a master data management solution.

Support Consultant

RM Education Plc

<http://connect.glowscotland.org.uk>

December 2005 – November 2011

Support Consultant and senior member of the Operations Team, responsible for the end-to-end delivery of a national web platform for education.

Education

PgD Web Systems Development
Glasgow Caledonian University

Certifications

MCTS Web Applications
Microsoft Learning

MCTS Data Access
Microsoft Learning

ITIL v3 Foundation
BSC-ISEB

CompTIA A+
CompTIA

CompTIA Network+
CompTIA