

George Crosby

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A highly motivated and creative systems thinker with a passion for building secure and scalable solutions that enhance organisations' decision making. A strong background in both Microsoft and Linux systems, DevOps engineering, automated infrastructure deployment, secure database design and secure network architecture that has proven to provide consistent and reliable services to customers. A hands-on technologist with strong leadership skills and excellent track record of building scalable and cost-effective infrastructure platforms for growing enterprises.

Experience

MARCH 2023 – PRESENT

Kubernetes Rancher Engineer (contract) / SITA

SITA are a leading aerospace solutions firm creating and deploying security software products for airports across the globe.

Completed initiative: Designed, planned and implemented highly secure on-premise Kubernetes environment for SITA's Airport container initiative

- Designed from scratch hardened Kubernetes cluster architecture from scratch; RKE2 management server, site-to-site VPN and tenant RKE2/K3S clusters using Azure DevOps, Terraform, Helm
- Designed and deployed cluster add-ons to improve high-availability; Postgres EDB HA deployment, VMware CSI integration, NSX-T Load Balancer integration with vSphere CPI, disaster recovery testing using Veeam Kasten-K10
- Built Terraform modules to adhere to FIPS compliance; least-privilege, disaster recovery, encryption at rest and in-transit
- Designed and implemented Kubernetes security policy enforcement using Kyverno and network policies using Cilium
- Developed Azure DevOps pipelines for automated unit tests and CI/CD to on-premise edge airports using Terraform
- Design, plan and build resiliency for failures; airport site, node, storage and pod failures
- Implemented a secure and fault tolerant messaging queue on Kubernetes using Kafka and Zookeeper
- Create a 40 page low-level design document describing all requirements for a containerised deployment along with handover documentation and run-books

Technologies: Postgres, Azure DevOps, Veeam KastenK10, Rancher RKE2, Rancher K3s, Kubernetes, Terraform, Helm, Nginx, Docker, VMWare

Languages: NodeJS, Bash, HCL, Go templating

JUNE 2022 – MARCH 2023

Senior DevOps Engineer (contract) / Message Matrix

Message Matrix are a market leading API-first message auditing tool with state-of-the-art security supplying their product to all major UK banks.

Completed initiative: Run entire application stack in any cloud or locally.

- Designed, planned and implemented multi-tenant solution for customer using Kubernetes; migration of total of 14 Python and C# applications running on EC2 over to a Terraformed AWS EKS Kubernetes all within 5 weeks; converted systemd unit files to alpine Docker images, created Helm chart inputs using a single custom-made Helm Chart, deployed auto-scaling policies and least-privilege using OIDC
- Security Architecture – implemented zero-trust using mTLS on service-to-service communication and oauth for internal service user-interfaces
- Designed security procedures for least-privilege; securing Kafka messaging queues via HTTP proxy
- Designed and implemented enforced mTLS for all new customer devices joining the multi-tenant solution
- The sole DevOps engineer in the business working directly with CTO to achieve high level business objectives
- Designed and deployed local development environment using Kubernetes distribution called Kind and LocalStack enabling them to deploy their whole application stack within minutes and developers to attach a debugger to each application using their IDE

Completed initiative: Provide a low-cost high-availability solution for message queuing and Mongo

- Implemented fault tolerant Kafka using open-source Bitnami Helm chart providing resiliency against; availability zone, node, storage and pod failures
- Implemented fault tolerant MongoDB using open-source Bitnami Helm chart providing resiliency against; availability zone, node, storage and pod failures
- Lead technical security initiatives for SOC II and NIST CSF compliance

Technologies: MSSQL, Jenkins, Tekton, AWS, Kubernetes, Terraform, Helm, Localstack, RabbitMQ, Nginx, Docker, EKS, Postgres, MongoDB, Kafka, MQTT

Languages: C#, SQL, Python, Bash, Go templating, NodeJS

JANUARY 2022 – JUNE 2022

Senior DevOps Engineer (contract) / Cool Cats NFT

CoolCats are a leading NFT technology company based in UK/US.

- Deployed 4 x Elastic BeanStalk environments in Terraform as per customer request achieving 100% uptime on production
- Designed and implemented high availability AWS EKS Kubernetes clusters in Terraform with capabilities for; granular permissions by mapping roles to pods using OIDC, developing Helm Charts for applications, secure storage and injection of Ethereum system account keys at application runtime, DDoS and attack prevention with sophisticated DNS and CloudFlare configuration
- Developed Tekton pipelines for high-availability CI/CD tooling running on Kubernetes with capabilities for; automatic Github webhook creation, deployment of zero-downtime rolling updates upon merge events, isolation of build, stage, dev, prod environments using NodeGroups and NodeSelectors
- Technical lead for projects in infrastructure, database, security and development operations
- Supported production environments 12 hours per day 7 days a week

Technologies: Tekton, AWS, Kubernetes, Terraform, Helm, Docker, Elastic BeanStalk, EKS, Postgres

Languages: Python, Bash, Go templating, NodeJS

MARCH 2021 – JANUARY 2022

Senior DevOps Engineer (contract) / Apple

Apple Payments team are responsible for gift cards and payment transactions for Apple in UK/Europe/India regions.

- Implemented enhancements to deployment methods for Spring boot application stack; developed Python Pulumi to deploy an initContainer to retrieve Vault tokens using AWS OIDC WebIdentityTokens, mount configMaps and merge yaml files - securely providing the runtime container with all necessary environmental dependencies
- Developed Python Pulumi classes to augment platform-agnostic initiatives; merge yaml files and interpolate environment variables, integrate AWS IAM roles with Kubernetes service accounts
- Supported least privilege security initiative by suggesting improvements to AWS IAM role architecture

Technologies: AWS, Kubernetes, Pulumi, Helm, Docker, Ansible, HashiCorp Vault

Languages: Python, Bash, Go templating, Java

JULY 2020 – MARCH 2021

DevOps Engineer (contract) / Veterinary Medicines Directorate gov.uk

The Veterinary Medicines Directorate (VMD) protects animal health, public health and the environment, and is the sole governing body for medical approvals in the UK.

- Lead and executed DevSecOps initiatives; inter-service mTLS, x509 JWT signing, docker image vulnerability scanning and Kubernetes cluster hardening
- Redesigned Jenkins workflow and deployment, deploying it on Kubernetes to speed up build times considerably
- Designed Terraform modules and templates for AWS resources; S3 disaster recovery replication, EKS cluster deployment with OIDC capabilities and Route53 records for Content Distribution Network (CDN)
- Lead the implementation of the security initiatives for ITIL framework
- Implemented Kubernetes cluster monitoring by deploying Grafana, Prometheus and Kiali using Istioctl. Automated imports of additional Grafana dashboards and data sources in Helm logic
- Developed environment and region agnostic Helm templates for applications; Nexus3, ExternalDNS (CDN) and .Net core API

Technologies: AWS, Kubernetes, Terraform, Helm, Docker, Azure

Languages: Python, Bash, Go templating, HCL

MAR 2020 – JULY 2020

Automation Consultant (contract) / Bell Rock Capital Management (London)

Bell Rock is an SME private trading fund who make informed real estate investments by ingesting and aggregating data.

- Automated deployment of high-availability Kubernetes on VMware using kubeadm; 2 x master, 1 x LB, 5 x worker
- Developed self-service single-sign-on Python analytics environment by developing and implementing; JupyterHub Kerberos authenticator class in Python, secure encrypted keytab storage using secrets, pre authenticated AD notebooks and kernels, DFS

container mounts with custom Kubernetes CIFS volume plugin in Bash

- Designed and implemented PowerShell automation to deploy security policies to Active Directory and Group Policy
- Redesigned Zero-to-JupyterHub-k8s and Enterprise Gateway to deploy into multiple namespaces
- Deployed Kubernetes on baremetal multi-site, a dynamic storage provisioner using Heketi and GlusterFS and on-cluster maintenance scripts host configuration, backups of ETCD and component health
- Developed Terraform to deploy Azure resources; Azure Container Registries, Service Accounts for SSO, Virtual Machines

Technologies: Azure, Kubernetes, Terraform, Docker, GlusterFS, Heketi, VMWare

Languages: Python, Bash, Go templating, HCL

OCT 2019 – MAR 2020

Senior DevOps Engineer (contract) / Red Deer (London)

Red Deer is an SME private hedge fund supplying surveillance software to wealth and investment managers to improve operational performance and compliance.

- Reengineered Jenkins CI/CD pipelines to reduce human interactions and speed up build to deployment by 60%; developed DSL groovy libraries, migrated entire .NET core build/compile/run to docker
- Developed terraform modules to deploy AWS services; ECR repositories, docker application provisioning on EC2, ECS Logstash cluster, schedule tasks running on Fargate spot instances
- Developed and enforced IT security policies to adhere to SOC II and NIST CSF
- Developed terraform to deploy Kubernetes clusters to AWS; EKS, Microk8s, Kind
- Created Python scripts populate DynamoDB entries from Secrets Manager and report to Slack with any differentials

Technologies: AWS, Kubernetes, Terragrunt, Ansible, Terraform, Docker, Git, Slack, Jenkins, CodeDeploy, Nuget, TeamCity, Atlassian Jira/Confluence

Languages: C#, C# Make, Python, Bash, PowerShell, Groovy, TSQL, HCL

MAY 2019 – OCT 2019

Automation Consultant (contract) / Bell Rock Capital Management (London)

- Improved Business Continuity Planning and DevSecOps by; automating disaster recovery processes, architecting secure infrastructure solutions and integrating security products into CI/CD process on Azure
- Automated code release process using bash, Jenkins for deployment into Azure
- Automated failover processes by developing tools to; Failover cisco firewall/switch network routes, transfer domain controller FSMO roles, activate passive DFS fileserver node, switch CNAMEs and failover AlwaysOn SQL Server databases
- Created a centralised scheduling system for PowerShell and Bash scripts by deploying Kubernetes cluster on multi-site on-premise VMware using Terraform and bash
- Integrated Coverity static code analysis tool into Jenkins pipeline
- Developed scripts to monitor Microsoft Exchange DAG health, external mail flow and failover procedures. Created tooling for the Systems Administration team to manage Windows Server 2012 patches, fixing the problem of labour-intensive monthly patching

Technologies: AWS, Azure, Kubernetes, CoreOS, Terraform, Docker, Git, Microsoft SQL Server 2017 Standard Clustering, AlwaysOn Availability Groups, Microsoft Exchange Server 2016 DAG Clustering, PRTG, Slack, Jenkins, CodeDeploy, CodeBuild, Nuget, Microsoft WSUS, VMWare vCentre, Atlassian Jira/Confluence, Coverity

Languages: C#, Bash, PowerShell, Go templating, Groovy, TSQL, YAML, JSON

JULY 2016 – MAY 2019

Head of Infrastructure and Security / Messina Quantitative Research (London)

Messina Quantitative Research is a small company with a large global ambition that collects data from private sources, using in-house automated market research tools and data science they provide live analytical dashboards to give clients insight into their data.

- Maintained the company IT security policies to; financial sector standards, data vendor contractual agreements and align with regulatory bodies such as SOC II, GDPR, ISO27001 and ISO8001
- Technical lead for projects in infrastructure, database, security and development operations
- Re-engineered IaaS architecture – Migrated all business services to open source technologies which reduced total software expenditure by 40%. Migrated the company away from expensive software vendors like Microsoft, VMware and Nutanix to open

source solutions: Kubernetes, Docker, Helm, CoreOS

- Interfacing with data science and development teams to design and implement fast and scalable machine learning platforms
- Built a centralised logging system using Elasticsearch, Fluentd, SearchKit which ingested Kubernetes docker container logs and displayed them to teams. This enabled us to remove Kubernetes UI and Kubectl permissions from developers
- Design and implemented system to authenticate AD users to front-end C# and Python applications running on Kubernetes. By deploying IdentityServer 4.0 in Docker on Kubernetes we were able to generate short/long lived tokens for inter-service communication and AD user authentication
- Developed baremetal Kubernetes deployment using Matchbox for PXE booting and CoreOS Systemd unit scripts for configuration. Created Systemd unit scripts to carry out our customisations at build time; SSL certificate injection, docker-engine start-up alterations, iSCSI connection properties and kubelet start-up parameters
- Ensured all team members had the appropriate training and mentoring for all concurrent projects

Technologies: Docker, Kubernetes, Helm, Jenkins, Maven, Apache Kafka, Rancher, IdentityServer 4.0, Nginx, Swagger, Neo4j, AWS, Azure, Terraform, Fluentd, Elasticsearch, SearchKit, Artifactory/Xray, CoreOS, Atlassian Jira/Confluence, Gitea, Microsoft SQL Server 2012 Standard AlwaysOn, Slack, Nuget, GitLabCI

Languages: C#, Bash, PowerShell, Go template, Groovy, Cypher, TSQL, NodeJS, Go, YAML, JSON, HTML, CSS

JULY 2015 – JULY 2016

Systems Integration Manager / Messina Quantitative Research (London)

- Sole administrator of 10 x MSSQL databases and HP Vertica NoSQL database. Managing and optimising queries with joins on 70M+ rows
- Migrated 3 x companies of size 20+ from on-premise Exchange to Office365 to reduce costs and maintenance overheads
- Designed and deployed high-availability Kubernetes the-hard-way on AWS EC2; 3 x ETCD, 3 x master, 6 x worker. Used HAProxy for the master load balancer and on-cluster custom made Nginx for ingress
- Responsible for writing and maintaining domain and security policies for employee handbooks
- Developed a CI/CD pipeline for database schema updates using Jenkins and RedGate PowerShell modules
- Carried out security audits and risk analysis for all new company initiatives and objectives
- Developed C# API authorisation layer for MS SQL using LINQ and Mvc, providing data governance and auditing on queries
- Migrated monolithic applications to containerised microservices by moving them to Rancher, Droneio and NodeJS. Setup build pipelines to use Nexus for docker image, binary and repository
- Developed automated data import and export processes and systems monitoring in PowerShell and C#
- Maintained cisco firewall and switch configurations for the office, datacentre and cloud networks

Technologies: Rancher, Droneio, Docker, Jenkins, Nexus, Kubernetes, Tableau, Microsoft SQL Server 2012 Standard, RedGate, HP Vertica, Atlassian Jira/Confluence, Teradici, Leostream, AWS, Azure, VMware vCentre and Horizon View, HAProxy, Nutanix, NEXT, MS Exchange 2012, Nginx

Languages: PowerShell, Bash, TSQL, C#, NodeJS

JULY 2013 – JULY 2015

Business Applications Engineer / G-Research (London)

G-Research is one of the top trading hedge funds in the UK whose success stems from building alphas and investing in cutting edge IT technology and automation to get the edge on competitors.

- Designed and deployed a secure offline accounting domain for SAP Business One and CoreSuite Cube. Accomplished using 3 node ESXi VMware vCentre cluster which hosted; 2 x Microsoft Exchange/Domain controllers, 2 x FileServer, DFS, 2 x VNC jump points, 2 x Secure Monitoring servers
- Implemented RightItNow alert management system in HA, using SNMPProxy and ActiveMQ, reducing company email traffic by 700% for an estate with over 5,000 entities. The application setup and failover procedures I created were adopted by the software vendor for their official failover documentation
- Developed PowerShell cmdlets and daily, weekly reports to keep IT Support teams better informed
- Focused on security issues and improvements for applications, offices, datacentres and colocations
- Sole team in charge of all alterations and workflow changes to Jira, Confluence, Fisheye, Crucible

Technologies: MDaemon, SAP Business One, Tradar, Eze, Tidal, RightItNow, SNMPProxy, ActiveMQ, Microsoft Exchange / Sharepoint, SolwarWinds, Citrix XenServer, VMware vCentre/Horizon View, Atlassian suite

Languages: PowerShell, Bash

SEPT 2011 – JULY 2013

Systems Administrator / G-Research (Jersey / London)

- Planned and executed the migration of 60 users from Exchange 2003 to 2010, client and server-side
- Set up three-node DAG exchange cluster and created custom PowerShell scripts to monitor mail flow, mailbox health and usage reports
- Developed PowerCLI scripts to audit and change VM boot order configuration and bulk manage hardware
- Developed PowerShell scripts to bulk change iLo configuration settings in order to repoint SNMP traps to new alerting system
- Responsible for the software and hardware setup of a four-node ESX cluster and migration plan
- Roll out of Citrix XenServer to deliver internet-connected virtual applications to private offline workstations

Technologies: Microsoft Exchange 2012, BES12, SolarWinds Orion, Citrix XenServer, VMware vCentre/Horizon View

Languages: PowerShell, Bash

JUNE 2005 – SEPT 2011

Systems Manager / Crosby Composites (Brackley, UK)

- Created an internet browsing environment for 50 users using VMware vCenter to ensure network separation, further securing their private domain
- Built tailored workstations based on employee requirements
- On-going domain maintenance on GPOs, domain and application updates, proxy configuration
- Responsible for carrying out updates to the company website using Dreamweaver, CSS and HTML
- Moved the whole office to a wired network and extended WIFI network to new office block

Technologies: Microsoft Exchange, Sharepoint, VMware vCentre and Horizon View, Dreamweaver

Languages: CSS, HTML

Qualifications / Education

2021 - Certified Kubernetes Application Developer (CKAD)

2020 - Certified Kubernetes Administrator (CKA)

2018 - PMI-ACP Agile Certified Professional

2017 - AWS Certified Developer Associate

2015 - LPIC-1 Linux Professional Certification

2008 – 2011

Electronic Engineering and Cybernetics / Reading University, UK

First Class Bachelors

2005 – 2008

A Levels / Wellingborough School, UK

Mathematics (B), Physics (B), Physical Education (B)

Hobbies

- Researching nutrition first hand and the effects it has on the body and mind
- Socialising with friends, reading books, visiting the world
- Anything that keeps me moving - rugby, squash, tennis, running and resistance training

References

Available upon request