Ian Dillon

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EDUCATION

EAST TENNESSEE STATE

MS in Computer Science

2012 | Johnson City, TN

Thesis: "Connotational Subtyping and Runtime Class Mutability in Ruby"

Member: Upsilon Pi Epsilon (CS Honors)

BS in Computer Science

2004 | Johnson City, TN

LINKS

GitHub: ian-d

LinkedIn: ian-dillon

Website: ian-d.com

PRESENTATIONS

Ithaca Web People:

- "Parallel & Pipelined ETLs in Go"

Cornell SD-SIG:

- "Cloud Infrastructure as Code with Terraform"
- "Metrics and Monitoring with Prometheus"

CoHEsion 2017, Baltimore:

- "Ellucian Middleware in Docker"
- "Declarative Cloud Infrastucture with Terraform"
- "Replacing Pro*C in JobSub with Ruby"

TBR Summit 2016:

- "Git 101-ish"
- "Building an Agile, Mobile-First, Banner Integrated, and Highly Available Portal on Open Source Software"
- "Configuration Management with Puppet"
- "Centralized Logging and Analysis Using the Open Source ELK Stack"

EXPERIENCE

THE NEW YORK TIMES

Lead Software Engineer | February 2021 - Current

Lead the AWS Multi-Account (AWSMA) project, an effort to automate and manage creation of team-owned AWS accounts. This includes moving all account management (creation, security, networking, etc) to GitOps processes with Terraform and AWS ControlTower. Act as an AWS, GCP, and distributed systems subject-matter expert for internal consultation and support.

- Developed a Go plugin that integrates Drone, Vault, and AWS STS to securely generate temporary AWS credentials for multiple AWS accounts, eliminating stored and long-lived credentials in CI/CD pipelines.
- Lead the GCP Project Creation work to create secure and maintainable GCP project templates and automate their creation.

Senior Software Engineer | April 2020 – February 2021

Primarily worked on the AWS Multi-Account project design and roadmap. Onboarded and helped initial beta teams begin migrating to AWSMA.

- Developed AWSMA-standardized example Terraform deployments of common architectures (Kubernetes, EKS, ECS) and common support patterns (bastion servers, cross-account IAM access and usage, etc).
- Started Terraform Community of Practice, to provide an org-wide space for NYT teams just starting out with IaC, Terraform, or cloud automation to ask questions, discuss best practices, and provide support.
- Developed a Python framework for custom AWS Config rules (Lambda) to track AWS accounts' security and compliance standards specific to the NYT.

CORNELL UNIVERSITY

Senior Platform Architect (RAIS) | June 2018 – March 2020

Develop and maintain custom software and system integrations for Research Administration and external stakeholders usage. Examples of new projects led by me include:

- Refactored group's primary microservice application (PIDashboard) (Ember.js, Ruby on Rails, Python), reducing average response time by ~30% and *total* monthly AWS spend by ~25%. Moved deployment and orchestration to Terraform and ECS.
- A containerized deployment of Prometheus, Alertmanager, and Grafana for instrumentation and monitoring of our AWS infrastructure including ECS cluster nodes (node_exporter), Docker workloads (cAdvisor), database health and state (database_exporter), front-end health and response (blackbox_exporter).
- Parallelized external service integration ETLs (Python, Pandas) in Fargate and added Prometheus metrics to all scheduled ETL tasks via Pushgateway.
- Wrote ecs-template, a container/ECS-focused template parser to reduce application dependencies on AWS secret fetching (Go/Golang).

DevOps Cloud Engineer (CIT) | October 2017 – June 2018

The Cornell Cloudification Services Team worked to provide architecture guidance, best practices, and a collaborative development process to help facilitate Cornell's move to the cloud while trying to avoid lift-and-shift migrations. Examples of my projects include:

- cu-sts, a CLI tool to generate short-term AWS IAM keys using Cornell's existing Shibboleth+DUO AWS integration (Go/Golang, Chrome Headless).
- A standardized containerized Jenkins LTS deployment with automated backups, monitoring, and alerting using Docker, ECS, CloudWatch, EFS, and S3.
- A highly-available, containerized HAProxy deployment using ECS and a Network Load Balancer (NLB) to provide a secure and centrally managed TCP ingress for external, third-party clients (normally vendors) to access private network database instances.

EAST TENNESSEE STATE UNIVERSITY

Senior Database Admin, Linux Admin | April 2014 – October 2017

Initial primary responsibilities was to manage the infrastructure supporting the Ellucian Banner ERP (Oracle DB) system and ancillary applications. I expanded the duties of the position to include all management of Puppet and Amazon Web Services resources. Some further advancements to the initial position are:

- Designed and led migration of Banner ERP infrastructure to Amazon Web Services. All resources managed using declarative infrastructure / IaC processes with Terraform and Puppet. Middleware and batch services were containerized with Docker and deployed on EC2 Container Service (ECS) clusters.
- Implemented Puppet (plus Hiera, r10k) to manage all Linux servers, standardizing base configurations, monitoring via Icinga, and centralized logging with Logstash (visualized with Kibana).
- Developed a custom CAS-enabled, Banner-integrated, and mobile responsive student and employee portal to replace Luminis 5 using open source software, all running on a highly-available architecture based on HAProxy, Redis, and MariaDB Galera Cluster.
- Introduced git for change tracking in all Banner ERP instances and later transitioned to GitLab CE for Continuous Integration and project management.
- Automated service password changes using Python and Fabric across 15 products, 32 hosts, and AWS services. Reduced downtime from 2 hours to less than 10 minutes.

Programmer / Analyst 2 & 3 | April 2007 – March 2014

Lead programmer in support of the university's Financial Services division. Developed, maintained, and tested university-wide web applications (VB .NET, ASP .NET), reports (Pro*C), ad-hoc and scheduled data extracts (PL/SQL, T-SQL), and customizations to university systems.

- Introduced Ruby as an alternative to Pro*C and created the banner_jobsub gem.
- Began team transition to C#, ASP .NET MVC, and LINQ.

BANC INTRANETS

Software Engineer | January 2005 – April 2007

Lead developer on BancWorks, a VB .NET and ASP .NET CMS targeted at small financial institutions. Introduced source control, centralized bug tracking, full database normalization, object-relational mapping, and run-time layout templating.

PROJECTS

GRIPSWEAT https://gripsweat.com

A continuously updated, searchable archive of vinyl record sales & auctions, intended for somewhat niche collectors and as a pricing resource for dealers. Includes images, accepted final prices, and audio clips. Currently contains 15 million+ entries with 500k+ audio clips.

- Uses Ruby on Rails, Python, PostgreSQL, Sphinx, and asynchronous indexing and transcoding communication via Amazon SQS.