Ian Dillon

ian@ian-d.com | 423-741-5256

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**
Website: **ian-d.com**

PRESENTATIONS

ITHACA WEB PEOPLE

• Parallel & Pipelined ETLs in Go

CORNELL SD-SIG

• Cloud Infrastructure as Code with Terraform
• Metrics & Monitoring with Prometheus

COHESION 2017, BALTIMORE

• Running Ellucian Middleware in Docker
• Building Declarative Cloud Infrastucture with Terraform
• Replacing Pro*C in JobSub with Ruby

TBR SUMMIT 2016

• Git 101-ish
• Getting Slim: 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

TBR SUMMIT 2014

• Banner & Fabric: Scripted, Fast Password Changes
• Banner & Git: Distributed Source Control In Banner
• Ruby & Banner Jobsub: Replacing Pro*C

EXPERIENCE

CORNELL UNIVERSITY

Senior Platform Architect (RAIS) | June 2018 – Current

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

- Refactored and re-architected group's primary containerized microservice application (PIDashboard) (**Ember**, **Ruby on Rails**, **Python**), reducing average response time by ~30% and total monthly AWS spend by ~25%. All AWS resources managed in **Terraform** (previously Troposphere and CloudFormation) and deployed in ECS.
- Implemented a containerized deployment of **Prometheus**, **Alertmanager**, and **Grafana** for instrumentation, metrics, 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 works to provide architecture guidance, best practices, and a collaborative development process to help facilitate Cornell's move to the cloud while trying to avoid pick-and-place VM migrations. The skill set and technologies for Cloudification Services expands to cover whatever our 85+ business unit and research group customers in Cornell need to get running off-premises. Examples of new, internal project authored by me 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 deployment with automated backups, monitoring, and alerting using Docker, ECS, CloudWatch, EFS, and S3. This includes a new upstream (Cloudification Team managed) Jenkins LTS image to provide a stable upgrade path for our downstream customers. All resources are managed across AWS accounts with Terraform.
- 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. Deployment and continued management is all handled in Terraform.

EAST TENNESSEE STATE UNIVERSITY

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

Initial primary responsibilities were to install, maintain, and plan databases, middleware servers, and application infrastructure supporting the Ellucian Banner ERP system and ancillary applications (**Oracle DB 11g/12c**, **Data Guard**, **Oracle FMW**, **Weblogic**, etc). 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 on-premise Banner ERP infrastructure to Amazon Web Services using declarative infrastructure / IaC processes with **Terraform** and **Puppet**. Total machine count was reduced by consolidating middleware (Tomcat, Weblogic, OHS, Apache, nginx) into **Docker** containers running on **EC2 Container Service** (ECS) clusters. The same ECS clusters are also used for custom ETL batch processes in Ruby and Python. Monitoring via SNS, **Lambda**, and Slack notifications for CloudWatch metric and service events.
- Implemented **Puppet** (plus **Hiera** and **r10k**) to manage ERP Linux servers, standardizing base configurations, monitoring via **Ichinga**, and centralized logging with **Logstash** (visualized with **Kibana**). This includes authoring custom modules for deployment of internal and ellucian middle-tier applications.
- Helped develop 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.
- Used **Python** and **Fabric** automate service password changes across 15 products, 32 hosts, and AWS services, bringing a 2 hours manual process down to a repeatable 10 minute process.

Programmer / Analyst 3 | October 2007 – March 2014

Lead analyst in support of the university's Financial Services division, writing custom tools and reports as necessary. Led multiple development projects from requirements gathering through (continued) maintenance.

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

Programmer / Analyst 2 | April 2007 – September 2007

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.

BANC INTRANETS

Software Engineer | January 2005 – April 2007

Lead developer on BancWorks, a VB .NET and ASP .NET CMS targeted at small financial institutions.

SKILLS

A short list of technologies, languages, products, etc. that I have recent experience with, meaning I have a production-deployed project written in or utilizing them. Items that I am more confident or closely familiar with I have marked with *:

Languages: Ruby*, Python*, Go*, C#, Java, JavaScript (I am comfortable reading, debugging, and possibly patching in a number of languages not listed.)
Operating Systems: CentOS*, RedHat*, OEL, containerization with Ubuntu, Debian, Alpine
Databases, KV Stores, etc: Oracle*, MySQL/MariaDB*, PostgreSQL*, Redis*, Memcache, Elasticsearch

PROJECTS

GRIPSWEAT https://gripsweat.com

A 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 10 million+ entries with 500k+ audio clips.

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