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

PRESENTATIONS

CORNELL SD-SIG

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

COHESION 2017, BALTIMORE

• Running Ellucian Middleware in Docker
• Building Declarative Cloud Infrastructure 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 Application Developer (RAIS) | June 2018 – Current
Develop and maintain custom software and system integrations for Research Administration and external stakeholders usage. New projects led by me include:

- 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).
- Parallelization of external service integration ETLs in **Fargate** and adding Prometheus metrics to all scheduled ETL tasks via **Pushgateway**.
- Archiving pages from legacy systems through automated scraping and pdf screenshots (Nodejs, Headless Chrome, Puppeteer, Docker) with PDF content validated through content extraction and keyword verification (AWS Lambda, Python).

DevOps Cloud Engineer | 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:

- 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 managed across AWS accounts with Terraform.
- A high-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:

- 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.

EAST TENNESSEE STATE UNIVERSITY, CONT.

SENIOR DATABASE ADMIN, LINUX ADMIN, CONT.

- Led migration of on-premise Banner 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.
- 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

This is 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, VB .NET, C, JavaScript, PHP, Bash/Sh (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, Elasticache, Elasticsearch

PROJECTS

GRIPSWEAT

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**.