ANDREW T COBAUGH

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SKILLS

- Automation: Docker, Kubernetes, Weave Flux, Helm, Terraform, Terragrunt, Gitlab CI/CD, Github Worklows, Packer, Ansible, CFEngine
- IaaS: AWS, Azure, Digital Ocean, Paperspace, VMWare vSphere (kubernetes integration), Terraform Cloud
- Monitoring: Datadog, Elasticsearch/Logstash/Kibana, Telegraf, InfluxDB, Chronograf, Prometheus, Grafana, Nagios, Ganglia, Cacti, rsyslog
- Languages: Golang, C, C++, bash, Perl, sed, awk, LaTeX, HTML, CSS, Python, JavaScript
- OS: Container Linux, Flatcar Linux, Amazon Linux, RHEL, CentOS, Debian, VoidLinux, Fedora, Solaris, OpenSolaris, OmniOS, SmartOS, FreeBSD
- Storage: S3, ZFS, NFSv3/NFSv4, OpenAFS, IBM Spectrum Scale (GPFS), Samba
- Apps: Linkerd, Istio, nginx, Tomcat, JBoss/WildFly. OpenLDAP, PostgreSQL, Apache httpd, MySQL, ISC Bind, ISC DHCP, MIT Kerberos

EXPERIENCE

Senior DevOps Engineer I November 2021 - Present

DevOps - Engineering

- Management of infrastructure in AWS using Terraform
- Creation and maintenance of CI/CD pipelines in Github and CircleCI
- Helm chart development
- Management of multiple infrastructure providers using Terraform (GitHub, Cloudflare, AWS, Datadog)

Senior Software Engineer July 2019 - November 2021

Software Infrastructure - Software Engineering - Enterprise Systems and Services - Penn State IT - The Pennsylvania State University, University Park, PA

- Development of internal tooling to support developer and DevOps workflows (CLIs, utilities, scripts) primarily in Golang, as well as customer oriented CLI interfaces to our APIs.
- Design, maintenance, and troubleshooting of multiple Kubernetes clusters, both in on-prem VMWare and AWS EKS.
- Development of Terraform modules to create reusable building blocks of cloud infrastructure.
- Creation and maintenance of REST services to other applications at the University, protected by our own OAuth2 and Apache Fortress implementations.
- Advise and assist on infrastructure projects related to our group's applications and services.
- Custom helm chart creation and maintenance.
- CI/CD pipeline development in Gitlab and Github.
- Automated dependency management.
- Vulnerability scanning and system security.
- Custom Kubernetes operator development.
- Consulting with other teams to assist in their containerization efforts.
- Research methods of automated software dependency management with Rennovate and Dependabot.

System Design Specialist March 2014 - June 2019
Core Infrastructure - Enterprise Information Technology, The Pennsylvania State University, University Park, PA

- » Design new systems and services and improve upon existing ones.
- » Advocate for and consult on Infrastructure-as-Code, Immutable Infrastructure, containers, and Cloud
- » Day to day config management of over 800 Linux systems and many of the services running on those systems.
- » Provide recommendations and expertise to other personnel for improvements and enhancements of existing systems. Provide technology-specific expertise to colleagues as needed.
- » Configuration management and automation using CFEngine and ansible to manage all systems supporting many of the University's most critical systems.
- » Development of Terraform modules, patterns, and general best practices for my team and others as we migrate more systems to AWS and Azure.
- » Consulting with other groups on Terraform and Infrastructure-as-Code designs.
- » Maintain Core Infrastructure's TICK+Grafana and Nagios systems. Managed our ELK systems until Splunk was ready for general use, then migrated systems to Splunk.
- » Migrated systems from legacy config-managed VMs to containers running in Kubernetes, managed with Terraform.
- » Maintain the University's central MIT Kerberos realms, and some of the supporting LDAP systems.
- » Maintain local patches to open source software, participate in open source communities for software that we rely on, and write and hack on infrastructure tooling (saml2aws, heapster, telegraf, etc).
- » Develop systems software to help integrate the systems I maintain with our Software Engineering's JavaEE systems.

System Administrator January 2012 - February 2014
Systems Engineering - Administrative Information Services, The Pennsylvania State University, University Park, PA

- » Responsible for maintaining over 200 RedHat Linux systems that provided centralized IT services for all of Penn State.
- » Responsible for Linux packaging and repackaging of custom built and commercial software.
- » Reworked large parts of our Nagios installation to provide higher SNR, fewer false positive alerts, and far greater test coverage.
- » Deployed Ganglia to collect and graph system and service metrics.
- » Deployed CFEngine to manage several hundred Linux systems.
- » Migrated The Friends of Penn State (FPS) account system (over 2M accounts) from IBM Tivoli Directory Server to a modern OpenLDAP cluster.
- » Administered IBM GPFS clusters providing home directory and departmental file storage.

System Administrator August 2008 - December 2011
Penn State Center for Comparative Genomics and Bioinformatics, University Park, PA

- » Provided desktop support, server administration, networking, and storage administration for roughly 100 desktops and servers in a research environment.
- » Maintained high speed network connections between servers and storage, desktop connectivity via DHCP and 802.1x configuration mechanisms (FreeRADIUS+OpenLDAP).

- » Managed hundreds of terabytes of storage across direct attached SCSI, SAS, and Fibre Channel storage subsystems, available through a combination of NFS, CIFS, AFS, HTTP, sFTP, FTP depending on client and performance requirements.
- » Maintained several small-sh Linux HPC clusters running Sun Grid Engine with full AFS integration.
- » Expanded and made more robust an existing OpenAFS installation, as the Center's services began to rely heavily on the AFS filesystem.
- » Introduced formal configuration management (CFEngine) to manage every instance of OSX, Linux, and Solaris in the datacenter and on the desktop.
- » Assisted researchers submit and tune jobs to run on our local clusters.
- » Built automated data pipelines to streamline processing of next-gen sequencing data ("big data" before there was a term for it) from sequencer to final image analysis and alignment.
- » Managed all of the compute and storage systems that were responsible for enabling the wooly mammoth, tasmanian devil, and other high-profile genomic projects.
- » Managed local development mirror of the UCSC Genome Browser, including its 10TB+ MySQL database and accompanying terabytes of file storage.

Desktop Support / **System Administrator** August 2005 - July 2008
Penn State Department of Biochemistry and Molecular Biology, University Park, PA
Provided desktop support and administered a small group of Linux and Solaris servers providing department webspace, internal DNS, DHCP, and other services as needed. Developed strategies for integrating central PSU authentication and authorization, as well as NFS and CIFS home directory storage for all OS X clients in the department. Also integrated rogue windows clients into the department's OU in the University's AD domain using group policy together with WPKG to manage these systems.

Consultant / **System Administrator** December 2007 - July 2008
Penn State Propulsion Research Center (PERC), University Park, PA
System administration for a small cluster of workstations providing high performance computing facilities for research purposes. This same system also provided workstation support and data storage. Advise on hardware purchases, and provide systems support just short of debugging the actual code. Used cfengine, nfsv3, and an OpenLDAP directory server which was integrated with Penn State's directory server to provide single-signon for locally managed Linux desktops.

Systems Specialist, part-time June 2006 - August 2007
Penn State Department of Physics, University Park, PA
Systems specialist for the PSU Physics research network. Developed an SNMP-based IP address tracking system to correlate IP address and MAC address, and "last seen" times for these for tracking IP address usage within the department. Deployed various network and service monitoring utilities including Nagios and Cacti. Assist in administering production Solaris and RedHat Linux servers. Deployed a central CoSign server for web-based authentication against the PHYS.PSU.EDU Kerberos realm.

Consultant / **System Administrator** January 2005 - July 2008
Penn State Department of Mechanical and Nuclear Engineering, University Park, PA
Maintained several Linux workstations and servers for Professor Michael F. Modest. Duties included upgrading the clients and server, administering an NIS domain, NFS filesystem, email server, internal webserver, TSM backup of research data, installation of commercial CFD applications and licenses, and performing other actions as I deemed necessary.

EDUCATION

- » Functional Programming Principles in Scala by École Polytechnique Fédérale de Lausanne on Coursera. Certificate earned at Sunday, July 16, 2017 4:15 AM GMT

» *The Pennsylvania State University,* University Park, PA
Fall 2003 to Summer 2006, currently on hiatus
Previously pursuing BS in Electrical Engineering
Activities: Linux Users' Group (Webmaster)

» *Wilson Area High School,* Easton, PA
Graduated June 2003
Class rank: 6 out of 191
QPA: 102.7
Activities: Drama Club (Student Technical Director), Gifted Seminar