Steven Webb

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Summary

Software Engineer turned System Engineer/Architect. Specialties: 20+ years of Linux System Administration specializing in cloud computing. 10 years of professional experience with Amazon AWS including EC2, RDS, CloudWatch, S3, CloudFront, Auto-scaling, Elastic Beanstalk, CloudFormation and ElastiCache. I've spent the last several years building and maintaining large websites and internet services on top of Amazon's AWS infrastructure using various open-source technologies. I've architected and maintained solutions to stream time-sensitive data with low-latency (video and twitter data) around the globe via the internet.

Education

Colorado State University   Ft. Collins, Co
B.S. in Computer Science, May 1994

Front Range Community College   Broomfield, Co
A.S. in Mechanical Drafting, May 1990

Experience

CACI / LGS Direct   Westminster, Co
March 2022 - present   *Systems/Software Engineering - IT T4*

- I'm part of a team of 8 people supporting all non-classified lab development across several offices all over the US, using Linux, VMWare and AWS technologies. Other tools used: Ansible, Mysql, GitLab, LDAP, Docker swarm. Hardware managed: TrueNAS storage, DELL Rx50 generation servers.

National Renewable Energy Laboratory   Golden, Co
August 2019 - March 2022   *Platform Engineer IV*

- Worked in a team of 3 to bring cloud computing to the ITS branch of the laboratory (AWS and Azure). Initially, a lot of compliance work (ATO) and made sure that the way we built the platform was FedRamp and NIST 800-53-compliant including proper monitoring and alerting, followed by building out the platforms in a maintainable way.
- Technologies used (other than native cloud services): GitHub, Terraform, Python, Splunk, InfoBlox, F5, PagerDuty, ServiceNow. Some automation had to be written in Python when terraform providers weren't available.
- Projects: Extend on-prem IP space into AWS via VPN. Deployed Splunk, Nexpose & InfoBlox in each cloud and sync'd w/ on-prem. Extend on-prem Rancher kubernetes into EKS. Integrate F5 in Azure & AWS w/ EKS (using F5's CIS ingress controller). Deploy new infrastructure into Azure using terraform. Document, monitor and automate everything when/where possible.
- Managed 2 EKS production kubernetes clusters (w/ autoscaling and ALB Ingress modules enabled)
- Acquired a US Gov. PIV card (standard background investigation) to access Federally controlled

resources.

Dish Technologies (was EchoStar) for   Denver, Co
DishAnywhere.com and other projects
March 2012 - August 2019   *Principal Specialist - Engineering Systems*

- The sole system administrator for dishanywhere.com and other internal projects which are hosted 100% from the Amazon AWS cloud platform for all environments. I built and managed all of the machines, monitoring, automation, documentation, security audits and I was the sole 24/7/52 on-call operations support person for the projects. I'm also the AWS Evangelist for amazon-ifying most of our non-AWS application platforms wherever possible.
- Leveraged the following services, tools and APIs: Akamai, Jenkins, RightScale, DataDog, Many AWS technologies, terraform, DNSMadeEasy, haproxy, nginx, nagios, newrelic, github enterprise server, self-hosted gitlab, puppet, ansible, python, ruby, php, cacti, statsd, graphite, grafana, ELK stack, fluentd, mysql, rabbitmq, mongodb, ElasticSearch, CentOS 5.x/6.x, Ubuntu and Amazon Linux.
- Solely designed and built the software/VM infrastructure to support the move of the dishanywhere.com site from Amazon's AWS platform to a VMware/Cisco UCS-based platform and coordinated the hardware buildout based on resource usage in AWS. The move was eventually canceled and the hardware became used for other non-production projects that I also supported.
- Worked with developers to get jenkins to automate builds and get all environments working with continuous integration/deployments and automated testing.
- Leveraged ElasticBeanstalk and other AWS technologies to get blue/green deploys working in production for dishanywhere.com
- Became the principal on-call sysadmin for other internal Dish projects over time: GrassHopper, MetaCloud, SupAir and the Alexa/STB integration
- Performed regular security audits using openvas, ssllabs.com and Whitehat Security's paid service. If anything was found, I was the guy to make things secure again.

Gnip.com (acquired by Twitter/X in 2014)   Boulder, Co
April 2011 - March 2012   *Sr. System Administrator*

- Built an infrastructure with the dev team to spin up instances on Amazon's AWS platform using the following APIs and tools: Rightscale, AWS, DNSMadeEasy, chef, Ruby, Perl + Fog.
- Maintained the office's computing infrastructure (Xen & VMWare ESXi), network infrastructure (LAN and WiFi) and Quickbooks server for the accounting team.
- Analyzed network performance (throughput and latency) in AWS to find bottlenecks and issues when sending the full twitter stream across and outside the USA.
- The point-man for sending the twitter corpus to the Library of Congress.

Beatport.com   Denver, Co
July 2010 - April 2011   *Linux System Administrator*

- Researched and built an on-prem cloud infrastructure using Xen, KVM and VMWare ESXi.
- Deployed countless Linux VMs and managed 20+ VMWare ESXi servers w/ local and iSCSI storage using tools like cobbler, puppet and git to manage and automate OS installs on the VMs.
- Co-managed a 400TB Isilon iSCSI SAN for most of Beatport.com's content
- Worked in a DevOps role to help engineers with deploying software to dev/stage/prod environments. Very Strict Agile dev environment.
- Built a kerberos-authenticated version of the Fedora koji build server for the group to build RPM packages.

- Wrote a C++ program to extract the key and bpm from a WAV file (during a "do whatever you want" sprint) which as far as I know, still used in production.

Pronto.com   Boulder, Co
September 2005 – June 2010   *Senior Linux System Administrator*

- Co-maintained over 500 Linux DELL bare-metal machines (14xx/28xx series), openVPN network between offices, 400 mysql instances, load-balancers and 3 SANs
- Coordinated and moved 250+ machines in a datacenter migration from Denver to Virginia in 2008 (took 6 weeks)
- Wrote perl, bash, php & sql on a daily basis
- Wrote the entire image serving/resizing platform for all of our 600M product images in php
- Lead a team of 4 sysadmins in all of the company's Linux system administration and network administration tasks in a PCI-compliant environment
- My team also served as a backup ops team for gifts.com and evite.com which are both sister companies to pronto.com
- Did all of the hardware and software purchasing for the company using a purchasing and inventory system that I wrote myself
- Provided developers with suggestions for solutions based on my programming background and my knowledge
- Networking hardware: Dell 6248's, Foundry (Brocade) ServerIron Load-balancers.
- Managed 20+ VMs using VMWare server for development team
- Took over managing gifts.com's production hardware which was 100% VMWare ESXi on Sun hardware with ubuntu VMs using a SUN 7410 SAN for VM storage
- Took over managing evite.com's production hardware which was mostly Ubuntu on Dell hardware with Cisco switches

National Center for Atmospheric Research   Boulder, Co
August 1998 – April 2005   *Senior Linux System Administrator*

- Served as the lead system administrator with three subordinates in an all-Linux LAMP, Apache/tomcat environment.
- Responsible for 570+ server and desktop Debian Linux and (only a few) Windows systems.
- Ported weather modeling software from SGI to Linux and designed and built NCAR's first HPC Linux cluster.
- Used VMWare Workstation to host a few dozen Windows XP and Linux instances for developers.
- Admin'd over 500 nodes of Linux clusters for projects throughout the department (Aspen Systems, a Linux cluster manufacturer in Golden used my cluster design and modified it for their own design).
- Successfully defended many security audits utilizing my designs and systems (security was of paramount importance since customers were US Army test ranges)
- Acquired a Government ID to work at the U.S. Army test ranges (Dugway, Utah, White Sands Missile Range, Aberdeen Proving Grounds, Redstone Arsenal).

Wyndemere   Boulder, Co
Dec 1995 - August 1998   *Software Engineer II*

- C, C++, Tcl/tk & Motif programming on Solaris and Linux
- Clearcase, CVS administrator
- Taught C++ to employees at lunchtime

Skills

- Programming & Scripting Languages: bash, (t)csh, c, c++, perl, python, php, ruby, sql, tcl/tk, hcl
- Libs/API's: BerkeleyDB, libcurl, mysql, memcache, pthreads, unix sockets, X11, Rightscale, AWS (terraform, python & php), DnsMadeEasy, github, gitlab, IRC, XMPP, slack, discord, jenkins, IFTTT
- OSs: Linux (amazon/redhat/fedora/centos/debian/ubuntu/gentoo), IRIX, Solaris, Mac
- Configuration Management/Automation Tools: cfengine (v1,v2), chef (2012), puppet (2.7.x), ansible, terraform, serverless.com
- Servers: sendmail, postfix, apache, nginx, tomcat, rails, squid, memcache, mysql admin & replication, nagios, checkMK, cacti, puppet, cobbler, ejabberd, oracle, samba, openldap, openvpn, nfs, dns/bind, nis, ntp, git, cvs, svn, amanda
- Monitoring/Charting: zenoss, victorops, nagios, datadog, cacti, pingdom, smokeping, statsd, grafana, prometheus, ELK stack, splunk
- Virtualization: Xen, Citrix XenServer, Proxmox, VMware
- Mobile app development: Unity, Mit App Inventor, Kodular
- Containers: docker, swarm, kubernetes (EKS), portainer
- Amazon AWS: EC2, EKS, S3, CloudFront, RDS, ElastiCache, VPC, IAM, CloudWatch, CloudTrail, SQS, SES, SNS, ElasticBeanstalk, CloudFormation, Route53, IAM, ControlTower, Security Center, Config, Organizations, Billing, …
- CDN: Akamai, Level3, Amazon CloudFront
- High Performance Cluster Computing: myrinet, pbs, mpich, pgi, intel fortran compiler
- Security: nmap, ssh/scp, SSL certs, snort, ids/ips, iptables, wireshark, openvas, sshblack, fail2ban, kali linux tools, FIPS, CIS benchmark
- Compliance: NIST 800-53, FedRamp
- Networking: PFSense, F5, Foundry (Brocade) & Crescendo load-balancers, AWS [ENA]LB & VPC, Juniper SRX family firewall, OpenVPN
- Storage: EMC, Equilogic, Sun 74xx, TrueNAS (was FreeNAS), LVM, zfs, qnap, DELL/LSI MegaRaid, DELL MD3000x, IntelliFlash

Misc

- Computer hardware I personally own: Cisco, DELL, Juniper and Netgear switches, several misc DELL rack-mount servers (Rx10 and Rx30 series running Proxmox, PFSense, Docker Swarm, AI Art & LLM tinkering) in a full-size purple rack in my basement, 2 PLEX servers (30+ TB RAID6), many VMs, Ubiquiti UniFi, iSCSI via TrueNAS Scale, Foundry ServerIron XL load-balancer, Home Automation using Tuya system, many laptops and desktops, 1 Gbit fiber to-the-door. I use this hardware mostly for self-education and pet projects.
- COVID-19 project #1: I wrote an "electricity-themed" 3D mobile location-based game (similar to Pokemon Go) for Android using Unity called "PowerDrain". The backend was written using PHP and was running in AWS on an ARM linux server. There is also a companion app to add new locations to the game written in Kodular. (server shut down in 2023 due to lack of players)
- COVID-19 project #2: a mobile phone-sized epaper news & email reader that can last for months on a single charge (esp32-based running micropython). Put together all of the hardware and 3D printed a case, but dumped the project for an e-paper android device which has the same functionality.
- Nov 2017 - Feb 2018 built the infrastructure for cointopia.com ('kickstarter' for cryptocurrency ICOs). I built most of the AWS and supporting technologies for the site (Jenkins, AWS (API gateway, Lambda (python), S3, RDS, dashboards, security, …) and built the administration interface for the site in PHP and got continuous integration/deployment and automated testing working using the serverless tool from serverless.com and Jenkins so all devs had to do is to

check in code and the rest is automated. The site is mostly serverless, served by Lambda and S3, written in nodejs with the Admin interface running on an EC2 instance written in PHP.

- I've done some part-time consulting for Rutters (a mini-mart-like store on the east coast) to design and build in-store multi-screen ad displays using the raspberry-pi platform which uses (private) bittorrent and syncthing for media distribution. I also wrote a sweepstakes engine for them to collect, validate purchases and send out winning sweepstakes emails (ex: congratulations, you bought 5 coffees in one month, you get one free!) in python and php running in AWS which integrated with their POS and CC processing systems.
- I've written web crawlers in a bunch of different languages just for fun (C, python, php, perl) and used the Heritrix web crawler (archive.org) to help archiveteam.org grab a copy of geocities.com (and other sites over the years) before they close their doors. Most archives are now captured in the WARC format and sent to archive.org
- I've been capturing and archiving the free 2% "spritzer" twitter stream since 2011 using my own software (multi-threaded C and php) just for grins - the data might be interesting some day. I'm also sending this stream to archive.org on a daily basis which I understand is being used by researchers of all sorts. Elon killed-off the 2% feed in 2023, so this project had to be discontinued also.
- I earned my technician ham radio license in summer 2016 and have built a 12v 36Ah solar-powered battery box out of a Home Depot tool box so I can operate my 50W ham radio off-grid for several days without interruption. The battery box can also charge up to 8 cell phones at the same time, has 6 built-in LED flood lights and a voltmeter. My son helped me build it and loved this project.
- I've helped out my son's middle-school VEX robotics team in 2015, his DHS 'cyberpatriot' team 2016-2018 and his DHS car-hacking team in 2017. Mostly I just help get things working and fix software and hardware issues so the students can get past the technical problems and get to the learning part of the projects.

Post-Grad Certifications

- 1998 - Clearcase Certification
- 1998 - Oracle 8i DBA Certification
- 2013 - VMWare 5.1 Certification
- 2013 - Cisco UCS Certification

Technical Conferences Attended

- AWS - Re: Invent [2014, 2015, 2016, 2017, 2019, 2020(virtual)]
- DockerCon [2019, 2023]
- LISA - Large Infrastructure System Administration [2011, 2012, 2013, 2015, 2016, 2017]
- VMWorld - VMWorld [2016]