Mark Hamilton

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Career Summary

Results-driven software engineer with proven success delivering complex solutions as both an individual contributor and technical leader. Skilled in **software engineering, automation, and tools development**, with a track record of improving efficiency, reducing costs, and maintaining a reliable environment. A proven track record in:

- **Automation & Tools Development:** Created multi-threaded, large-scale automation frameworks in Python and C integrating open-source tools (Django, Docker, Ansible, Jenkins, Terraform, etc.) to validate performance, reduce costs, and improve engineering productivity.
- **Cloud & Virtualization:** Delivered solutions across AWS, Azure, GCP, ESXi, KVM, and Hyper-V, including dynamic cloud resource provisioning to optimize cost.
- **Lab & Infrastructure Management:** Managed global data center and lab operations, implementing monitoring, CI/CD pipelines, and reservation systems supporting 24/7 worldwide engineering.
- **Leadership & Mentoring:** Directed software development teams, defined processes, drove tool adoption, and mentored engineers across multiple disciplines.
- **Startup to Enterprise Impact:** Experience spans founding a tech startup to delivering solutions for Fortune 500 companies (HPE, Broadcom, VMware, 3Com) in SD-WAN, SDN, security, wireless, and real-time distributed systems.

Technical Experience

Languages:	Python, C/C++, Java, Javascript, TCL, Perl, Bash, Bourne.
OS:	Ubuntu 24, Fedora Core 32+, CentOS, VxWorks. eCos.
Virtualization:	VMware ESXi, Fusion, VirtualBox, Hyper-V, Red Hat Enterprise, AWS, Azure
Development:	Git, CVS, pytest, Nose, unittest, Pylint
Tools:	Ansible, Terraform, Jenkins, MariaDB, MySQL, Nagios, pytest, Elasticsearch, Logstash, Grafana, Kibana.
Other:	JSON, YAML, Jinja2, Django, iperf, T-Rex (DPDK), Open vSwitch
AI:	Copilot, Pynguin, DBSCAN, sci kit-learn, www.deeplearning.ai,

Professional Experience

HPE Aruba Networking, Santa Clara, CA Principal Software Engineer 2020 - present
Silver Peak Systems, Santa Clara, CA 2018 - 2020 acquired
Global SD-WAN leader, delivering transformational promise of the cloud with a self-driving WAN

Developed numerous tools to improve productivity, reduce cost and automate performance testing.

- Created a multi-threaded framework for automating Spirent, Cyberflood, T-Rex (DPDK) and TCP based tests in order to validate system performance. Framework is written in Python and C using a variety of open source solutions including: Django, docker swarm, Jenkins, pytest, Ansible, T-Rex and modified iperf2.
- Developed a AI supervised learning model to baseline performance data using skikit-learn DBSCAN.
- Leveraged LLM-powered tools code generation, debugging and testing; trained colleagues on effective usage and drove adoption across the team.
- Deployed T-Rex as a traffic generator for performance testing.
- Created a MySQL database leveraging Django, Flot, Highcharts, Jinja2 and Javascript to visualize, compare and summarize test results.
- Created a robust and reliable environment providing 24/7 365 days a year automated testing. Environment is key to world wide engineering staff's daily activities.

- Setup lab wide monitoring using NAGIOS. Libre NMS, and custom plugins to validate 1000s of expected behavior across 40 racks of equipment.
- Coordinated performance testing across 100s of Silver Peak hardware models, including Hypervisor based solution including ESXi, Red Hat Enterprise KVM and Hyper-V.
- Expanded test coverage to include AWS, Azure and GCP. Used Terraform to instantiate cloud instances on demand to reduce cost.
- Developed a programmable fabric to connect multiple traffic generator with systems under test. Estimated cost saving of $2 million in traffic generators.
- Developed reservation process so that world wide engineering staff can coordinate development with test automation.
- Managed on-prem data center consisting of 40 racks of equipment during an acquisition and multiple lab moves.
- Part of the hiring group that is responsible for expanding the personal in DevOps.
- Mentored junior staff across a range of disciplines.

Apstra, Menlo Park, CA **Member of Technical Staff** **2017 – 2018**
Automated and validated multi-vendor data center network design, deployment, and operations.

Developed product features in Python to automate deployment of customer networks.

- Researched and developed product features to extract and configure Arista products using Ansible.

Vectra Networks, San Jose, CA **Senior Software Engineer** **2015 – 2017**
Provide real-time automated threat detection and response.

Developed numerous tools to improve productivity, reduce cost and automate functional and performance-centric tests.

- Created a test framework for coordinating Breaking Point traffic in order to validate system performance. Framework written in Python, using a variety of open source solutions including: Django, Jinja2, MySQL, Jenkins, Nagios, pytest, Ansible, Elasticsearch, Logstash, Grafana and Kibana. Framework configures Arista switches to manager traffic between Breaking Point, ESXi hosted VMs and a cluster of various servers.
- Created a manufacturing process using Ansible. Assist manufacturing staff with RMAs and other troubleshooting issues.
- Managed the construction of an onsite server room. Maintain a second server site at Internap. Evolved a disheveled environment with several single points of failures into a robust and reliable environment.

VMware Inc, Palo Alto, CA **Senior Software Engineer** **2013 – 2015**
Developed an automated regression framework for performance analysis of Software Defined Networks.

- Analyze performance of both Open vSwitch and VMware ESX distributed vswitch.
- Tests written in Python, using a variety of open source solutions including but not limited to Fabric, Jinja2, Django, MySQL, Ansible and Nose. Framework supports multiple hosts with and without VMs and a variety of software and hardware generators such as Spirent Test Center, Spirent Avalanche and Netperf.
- Maintain performance tuning guidelines and troubleshooting for KVM based environments.

Broadcom Inc., San Jose, CA **Principal Software Engineer** **2005 – 2013**
Directed tool management and lab operations for six sites, leading six engineers and maintaining $2M in equipment to support 24/7 automated regression testing.

- Created unified lab environment through acquisition of additional lab space without incurring added expense and drove down excessive costs as a result of successful problem solving.

- Designed test framework with 100% automate content used to run in 24/7 environment across 200 different types of network switches.
- Efficiently managed multiple labs worldwide, including a facility with 500 systems utilized for daily regressions and general development.
- Developed release process for Broadcom's Infrastructure Networking Group (ING), and developed continuous build environment supporting 10,000 daily builds.
- Ported existing content from TCL, Perl and C into Python.
- Rolled out various modern tools such as Jira and Git. Developed a training program for development staff.

Alliant Networks, Sunnyvale, CA System Architect, Founder 2003 – 2005
Startup which manufactured cellular mobile gateway product.

One of nine founders of Alliant Networks, a self funded start–up company.
Accountable for managing software development and software quality group, defining software processes comprised of bug tracking, function requirement management, software management, shipping, and release processes

- Deployed product in several customer off shore oil rigs and managed customer support during trial period.
- Designed modular software infrastructure in C/C++ which integrated in a multi–layered solution enabling entry points for testing and performance characterization.
- Implemented independent operating systems APIs, device management, FLASH support, firmware upgrade, backup support, SNMP and HTTPS based configuration and management interfaces over CLI, HTTP, and SNMP.

3COM, Santa Clara, CA Principal Software Engineer 2002 – 2003
Charged with designing modular infrastructure, WLANOS for company's wireless product line.

- Established integration and testing lab and wrote key portions of WLANOS in C/C++.

Real-Time Innovations, Sunnyvale, CA Principal Software Engineer 1996 – 2002
Provider of numerous VxWorks Tools

Oversaw architecture and management of a suite of tools for developing real-time publish-subscribe distributed systems. The suite addresses the needs of the Telecommunication, Industrial Automation, and Military Aeronautical markets.

- Responsible for technical direction, architectural design, development, documentation, quality assurance and product distribution.
- Implemented a reliable publish-subscribe protocol that utilized multicast.

Education

Stanford University, Stanford, CA. 1994 - 1996
Master of Science, Computer Science

University Of Michigan, Ann Arbor, MI 1989 - 1993
Bachelor of Science, Computer Engineering

Patents

U.S. Patent 10/118,470 “Real–Time Publish–Subscribe System.”

Publications

Stan Schneider, Gerardo Pardo–Castellote, and Mark Hamilton, “Can Ethernet Be Real Time?”
Gerardo Pardo–Castellote, Stan Schneider, and Mark Hamilton, “NDDS: The Real–Time Publish–Subscribe Middleware.”