Carl A. Adams

946 Jackson St.
Albany, CA 94706

carlalex@overlords.com
+1.510.246.1707
https://carlalex.overlords.com/resume/

Objective

Seeking to leverage my architecture experience with cloud systems, embedded systems, and enterprise software to design products and solve customer problems.

2019-Present

Planet Labs — San Francisco, California (Remote)

Principal Software Engineer / Earth Data Platform

- Planned and coordinated the migration of Planet's customer authentication system from Okta CIAM to Auth0. For this project, we developed a staged approach that prioritized delivering customer impact early. Specifically, prioritization was given to work that served to enable the integration of the Sinergise Sentinel Hub acquisition.
- Developed Python and GoLang authentication libraries used by over twenty micro-services across the Planet Earth Data Platform to authenticate incoming client requests. In addition to standardizing service behavior and implementing operational best practices, the libraries provided consistent logging enabling improved operational visibility into the varied practices of both engineering teams and customer API users.
- Designed and implemented the CI/CD project structure used for the management of Planet's Auth0 infrastructure used for customer authentication. Built with Terraform and GitLab, use cases included change management of the production system used to meet compliance requirements, deployment of developer instances, and the ability to run health tests and configuration compliance audits against a deployment.
- Planned the deprecation of legacy authentication mechanisms used with Planet's customer facing APIs, with OAuth2 replacing username/password and API Key authentication. Once complete, this will enable the roll-out of robust user MFA and enterprise customer identity federation. Execution of the plan is currently pending.
- Decommissioned multiple internal authentication systems that were left without an owner. This involved tracking down unknown users, and migrating them to a combination of OAuth and Google Secrets Manager.
- Worked to establish a standard software architecture design review process for major releases across all development teams within the software engineering division to improve the consistency and quality of delivered features.

2012-2019

Symantec — San Francisco, California

Technical Director / Symantec Data Loss Prevention

- Evolved the Symantec DLP product from a traditional on-premises enterprise product to a cloud service. This has been a multi-year process involving most of the DLP engineering organization, with a staged approach delivering incremental adaptations that have evolved with the growth of our cloud customer base. While adapting the DLP product to cloud service operations, we have continued to support and improve the on-premises product, and have kept the underlaying code base largely common between the two product lines.
- Designed a REST API facade for the DLP detection server. The creation of a generic REST interface enabled integration of the DLP engine with arbitrary applications inside the company. The DLP REST API was also made available to customers as a new and independent SKU available for purchase, so customers could incorporate Symantec DLP functionality into in-house developed applications.
- DLP engineering lead for several cross-team projects using the DLP REST detection service to integrate DLP into other Symantec products. This work entailed supporting other product teams as they learned how to manage and use the DLP REST detection server, as well as making client driven modifications to the server when necessary. Most recently, these integrations have been done with Symantec's Web Isolation and Cloud

Workflow Protection Products.

- DLP engineering lead for porting the DLP detection service to the Blue Coat appliance operating system. This project involved adapting software written for a traditional OS to the constraints of a closed appliance. In addition to the technical demands of running the DLP software in the Blue Coat appliance runtime environment, there were many build environment and organizational details to work out, since the DLP product was the first Symantec product to be ported to the Blue Coat appliance after Symantec's acquisition of Blue Coat Systems. Work done for this project paved the way for subsequent product teams to also leverage the Blue Coat appliance form factor.
- Led several efforts to streamline and update the development environment used for DLP cloud service development. One such project was the creation of a standard development Linux VM that could be rapidly deployed by the lab team to onboard new engineers. Another project worked to establish a standard skeletal build environment using Gradle 5.X and Jenkins so that new micro-service projects could be rapidly spun up and incorporated into our release engineering pipeline in a uniform way.
- Led the development effort to add support for IPv6 to the DLP packet capture detection server.

2010-2012 Hewlett-Packard / Palm San Francisco, California

Principal Software Engineer / OS Security & Architecture

- Responsible for developing the overall architecture of the webOS mobile device management system (MDM). The webOS MDM system differed from competing platform offerings by extensively leveraging the Palm Service Cloud to enable the management of off-line devices.
- Lead developer for the device side components of the webOS MDM system. The device side MDM system consisted of a master policy manager responsible for authorization and verification, UI components to convey status and obtain user consent, and a policy plug-in system so that new policy types could be added without changes to the core MDM programs. This plug-in system also allowed us to consider making management interfaces public in future releases, which would make it possible for an enterprise to control third party or in-house applications via the same MDM channels.
- Designed the public web API exposed by the Palm Web Services for the management of devices. The MDM web API exposed a JSON/REST interface that would be used by third party MDM software vendors to manage webOS devices along side other supported platforms.

2009-2010 nCircle Network Security, Inc. San Francisco, California

Principal Software Engineer / Product Development

- Oversaw the effort to port the IP360 management appliance from FreeBSD to Linux. This project involved evaluating and selecting a Linux distribution, reengineering package signing and distribution subsystem to take advantage of facilities provided by the new base operating system, and general porting work across the product code base.
- Redesigned the build and release engineering system as part of the IP360 Linux port. The new system adopted a modular build architecture, which reduced the average developer build time from hours to minutes.
- Served as software architecture representative for the IP360 product on the cross-product architecture committee. Responsibilities included translating Suite360 direction into point product initiatives, and setting the direction of Suite360 development.
- Created an engineering roadmap for adding IPv6 support to IP360 with a tiered roll-out plan spanning several product releases.

2006-2009 BladeLogic / BMC Software Lexington, Massachusetts

Principal Software Engineer, Sr. Software Engineer / Product Development

- Served as the technical lead for the BladeLogic Agent development team. The Agent

served as the gateway daemon on all BladeLogic managed servers, and had to support all current and legacy UNIX and Microsoft Windows platforms managed by BladeLogic. Technical lead responsibilities included providing guidance to other team members, identifying internal technical goals to ready the Agent for future releases, and evaluating the engineering impact of feature requests from customers so that product management could make informed decisions regarding scheduling and trade-offs.

- Designed and implemented a shared library plug-in layer for BladeLogic management objects. This plug-in layer enabled new management objects to be modeled and implemented by disparate groups within BMC/BladeLogic without the direct involvement of the core engineering team. Prior to the development of this plug-in framework, modification of core product code was required to add new management objects. This external modularization of management objects also enabled a-la-cart pricing for new features since it made it possible to ship specific subsets of these modules. The plug-in APIs were designed to completely isolate the internals of the product code from plug-in developers, with the intent of making a public SDK available to customers who may wish to extend the product in their own environment. This plug-in layer was ultimately incorporated into several BladeLogic components, including the Agent.
- Implemented plug-in management as a plug-in. This proved the utility of the plug-in framework's modeling capabilities, and simplified the design by eliminating the need for a separate management interface.
- Implemented an XMLRPC service within the Agent to provide remote access to plug-in based management objects. The RPC client was implemented in Java, while the RPC server in the Agent was implemented in C/C++.
- Redesigned the Microsoft Windows user impersonation framework within the BladeLogic Agent. This project preserved the existing proprietary local user impersonation functionality, while enabling local and domain user impersonation through standard Windows LSA logon techniques, including Microsoft's password-less S4U Kerberos extensions.
- Integrated a CTest/CPPUnit test framework with the legacy C/C++ build system. CTest was chose because of its ability to introduce a unit test framework to the older code base without disrupting the legacy build, while also providing a path away from the aging QEF system towards a CMake based build system.

2001-2006 Recourse Technologies / Symantec Redwood City, California

Sr. Software Engineer / Product Development

- Designed the abstraction layer between the Symantec Network Security (SNS) traffic analysis engine and the logging, configuration, and interprocess communication mechanisms used by the point product. This Configuration and Management Interface (CMI) allowed the traffic analysis engine to be built for several different products simultaneously from the same code base by linking with different libraries implementing the CMI.
- Redesigned the traffic analysis engine in the SNS 7100 series to adopt a modular architecture. This new architecture imposed a common interface between General Processing Engines (GPEs), each responsible for the analysis of a specific network protocol. By making the transition between network protocol layers uniform, the arrangement of protocol analysis engines could be readily reconfigured for different versions of the traffic analysis daemon. This architecture paved the way for a research project enabling user written analysis engines to be loaded at runtime, and hooked into arbitrary layers of the OSI stack.
- Developed the TCP and IP analysis engines for the SNS. These engines performed stateful traffic analysis, detected a large variety of protocol anomalies, and managed the dispatching traffic analysis to signature and layer seven analysis engines.
- Designed a generic interface between the SNS traffic analysis engine and packet capture libraries responsible for receiving input from network drivers. By using a common interface, the traffic analysis engine could be reconfigured to receive packets from custom or stock drivers by specifying appropriate linking options.

- Designed the sensor controller used in the SNS 7200 series. The sensor controller presented a single point of contact for control, reconfiguration, and process monitoring for an increasingly complex set of traffic analysis engine related processes including data compilers, traffic record daemons, driver configuration files and scripts, high availability monitoring software, and traffic analysis daemons.
- Designed the makefile system used to build and share components used between SNS, Blackbird traffic analysis engine, Deuce signature engine, ManHunt, and many other common components. This makefile system provided a versioned binary component repository, allowing developers to control their level of exposure to instability in developing components which they depend on. This makefile system was modular and extensible. The rich set of pattern rules provided by the core modules simplified the makefiles developers needed to write to compile and package their software, and maintained project wide consistency in tool chain invocation.
- Researched existing attack tools, and authored original attack tools for testing and demonstrating IDS and Honeypot software.

2000-2001 Airflash Inc. Saratoga, California

Software Engineer / Product Development

- Designed and implemented J2EE servlet applications and database back-end for WAP devices. Developed the manual and automatic user authentication handlers, new user registration handler, and user preferences manager.
- Specified and implemented Java and XML / Apache SOAP APIs for user registration and authentication token management. These APIs were documented and packaged for use by customers in user provisioning and single sign-on applications.

2000 Sendmail Inc. Emeryville, California

Software Engineer / Product Development

- Designed and implemented Sendmail's Mail List Manager's input parser, which employed a generic command dispatcher allowing it to be used to handle commands from multiple input channels including email submission and an interactive command line application.
- Developed a cross-platform library to abstract the use of memory mapped file I/O and other system calls across operating systems. This library was used to port the MLM system to new operating systems.

1997-2000 Netscape Communications Mountain View, California

Software Engineer / Product Development & Sustaining Engineering

- Designed and implemented a prototype CGI mail list manager for administering LDAP based mail lists. Project goals included end-user creation and maintenance of mail lists to reduce the burden of mail list maintenance on the IT organization, migration of sendmail and SmartList aliases to LDAP, and increased performance and security over the preceding system that was developed in house.
- Specified a mail list management utility library API and LDAP schema based on what was learned working on the prototype, addressing problems with the scalability of the back-end discovered in the prototype.
- Provided on site customer support as part of an engineering initiative to directly support early deployments of the Netscape Messaging Server by key reference customers.
- Served as technical lead for supporting customer deployments of the Netscape Messaging Server. Coordinated engineering fly outs to customer sites, assisted customers in server upgrade, and deployment planning.
- Debugged problems and wrote patches for the Collabra and Messaging servers.
- Served as a summer intern mentor. This entailed proposing projects, performing design reviews, reviewing code, and serving as a general point of contact for day to day issues.

1994-1998 University of Michigan Ann Arbor, Michigan

Computer Aided Engineering Network (CAEN)

Senior Systems Programmer II / UNIX System Administrator

- Developed a library to present a common API to the OS specific utmp and wtmp UNIX accounting files as part of an effort to streamline and update CAEN login and accounting mechanisms. This library worked under Ultrix 4.2a and 4.3a, SunOS 4.1.X, Solaris 2.5.1, HP-UX 9.05 and 10.20, IRIX 6.2, and AIX 3.2.4.
- Developed the standard CAEN OS image and network load procedure for new revisions of HP-UX and Ultrix operating systems and related application software for public computing labs on campus.
- Installed software and performed system tuning for private and research machines supported by CAEN. This included kernel, memory/swap, system startup, X Terminal client and server, and file system configuration and tuning.

Education University of Michigan Ann Arbor, Michigan

Bachelor of Science in Engineering, Aerospace Engineering 1998