Anthony Roberts

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Skill Summary

- Development in Java, C/C++/Objective-C, Python, UNIX scripting, and PHP, primarily on Linux and MacOS X with some experience on Windows.
- Development in "glue" projects that tie other applications together to provide new functionality.
- Development of automation and monitoring tools.
- Administration experience primarily on Windows, Linux, OpenBSD, and MacOS X. Administration experience with VMWare as well as Cisco and other IOS-like environments.
- Experience with routing protocols such as OSPF and BGP on large, multi-homed networks. Experience using Cisco and other IOS-like environments, OpenBSD, and Linux for routing and firewalling.
- Experience with clustering for load balancing and high availability.
- Experience with QoS and other network optimization.
- Experience with application development and maintenance.
- Experience with large scale server environments.

Industry Experience

Operations Engineer – Facebook, Inc – Menlo Park, California, USA

October 2011 to present

- Work on the Site Reliability Operations team at Facebook.
- General responsibilities include:
  - Participation in the on-call rotation.
  - Debugging and remediating problems with the public site and internal infrastructure.
  - Triage and escalation of problems to other teams.
  - Provisioning and configuring servers for the public site and internal infrastructure.
- Work with the FBAR system (public disclosure)
  - Improve and contribute remediation plugins.

Administrator/Programmer – University of Calgary – Calgary, Alberta, Canada

March 2010 to September 2011

- Work at the Imaging Informatics research lab.
- General responsibilities include:
  - Handling IT projects and budgets.
  - System administration including Apple, Windows, and Linux servers.
  - Network administration.

- Maintaining the Imaging Informatics web presence, DNS, and e-mail.
- Maintenance and development on the lab's dicom framework, iiDicom.
- Assisting students with profiling, optimizing, and debugging programming projects.
- Collaborating with the lab's corporate partner, Calgary Scientific, to bring research to market.
- Working through the University IT organization to provision services.

- iiDicom development and maintenance including:
  - Debugging problematic dicom files as they are discovered.
  - Dicom saving support.
  - Transitioned the iiDicom image representation from short ints to a floating point representation to reduce the complexity for students when working with files of different bit depths and signed or unsigned data.
  - Support for saving dicom files with fractional pixel values, in order to preserve numerical precision of image data and processing results.
  - Developed primarily in Objective-C and C++, using the dcmtk dicom library.

Administrator/Programmer – Bernoulli Networks – Calgary, Alberta, Canada

March 2006 to December 2009

- Work with multiple clients on a variety of projects including iStockphoto, Getty Images, Webcore Labs, KSK Information Services, Davinci Broadband, Wonder Communications, Rigstar Communications, Franco Media, Electric Monk, Structured Abstraction, Cosbit Technologies, Impello, NanoFibre Networks, Active Conversion, Cogneva.
- General responsibilities include:
  - Handling client relations and service calls on behalf of Bernoulli Networks.
  - Configure and maintain servers and networks on behalf of clients.
  - Design and implement changes and upgrades on client systems, including research, developing related software and building test environments.
  - Debugging and fixing server and network issues.
  - Helpdesk experience handling escalated calls on behalf of clients.
  - Participation in the on-call rotation.
- Development projects of note:
  - Development of the Webcore Labs high availability/load balanced web cluster, using available tools on Linux and OpenBSD.
  - Transitioning the Webcore Labs mail system from a small small number of individually configured machines to a scalable cluster of interchangeable machines.
  - Added firewall feedback to the Webcore Labs mail system to mitigate malicious connections.
  - Added live migration between storage back ends to the Webcore Labs mail system
  - Development of monitoring and load classification tools (such as nagios plugins) for various clients.
  - Design and implementation of client authentication and bandwidth accounting system for Davinci Broadband.
  - Development of services based on appliance-style hardware to provide high quality Internet access, including multi-ISP fault tolerance, notifications of problems, secure wireless, file serving, video streaming, VoIP, etc.
  - Development of a customized OpenBSD distribution, optimized for stateless operation (no writable storage required) and autonomous recovery from error states.
  - Several projects to process e-mail by various criteria (SPF or other domain-based constraints, blacklists, user

preferences) using a variety of MTAs (principally Postfix and Qmail).

  - Development of a framework to allow arbitrary per-user delivery agents on Postfix, to allow customized mail handling for other services such as injection into a ticketing system.
  - Database caching system for mail configuration databases, using a local read-only SQLite database backed by a remote MySQL database, to prevent the central database from being a bottleneck and to allow mail deliveries to continue if the database is down.
  - Development of a server provisioning framework for iStockPhoto, to allow different classes of server to be quickly deployed with the necessary operating system and configuration for various server roles. This uses a custom PXE boot configuration with scripts running from the initrd.

- Administration projects of note:
  - Transitioning Webcore Labs from a single connection to a multi-homed connectivity with redundant routers (using OpenBSD CARP, similar to VRRP).
  - Refactoring the Davinci Broadband DHCP configuration in order to work well with many different DHCP servers and relay agents in a network using equipment from multiple vendors and connectivity providers.
  - Transitioning Davinci Broadband from a network composed of wireless hops to one that uses leased fiber where possible, in order to improve performance and bypass ongoing line-of-sight issues caused by new construction throughout Calgary.
  - Provisioning and configuring hardware for various clients, including appliance-style hardware (e.g. Soekris, Portwell), and servers with remote administration capabilities from Tier-1 OEMs such as IBM and Dell.
  - Performance tuning and optimization of the Webcore Labs DNS cluster in response to changing workloads (e.g. increasing reverse and RBL lookups in response to large numbers of incoming spam connections).
  - Performance tuning and optimization of various networks to provide high-quality VoIP without requiring expensive network upgrades.

Programmer/Analyst – Critical Control – Calgary, Alberta, Canada

January 2004 to August 2004

- Worked on the Pipeworks project, a pipeline monitoring and control system.
- Maintenance and development on a large code base, primarily as a maintenance programmer on the front end.
- Primarily Java, some C++ and Python, primarily on Windows (NT 4, 2000, and XP), with some UNIX.
- Experience with the ObjectStore database.

Education – Bachelor of Science – University of Calgary

- Specialization in Computer Science.
- Completion in December 2005.

Interests

- Security and secure programming (e.g. exploit mitigation, cryptography, etc).
- Computer networks (e.g. firewalls, traffic shaping, wireless security, IPv6, etc).
- Virtualization (e.g. staging environments, development/build environments, etc).

References available upon request.