Chris Behrens

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Summary

I'm a seasoned leader in technology, specializing in the development and management of secure, scalable service delivery platforms based on distributed infrastructure and cloud technologies. I possess extensive knowledge of Internet technologies, operating systems, multi-threaded programming, virtualization, host security, and more. I have excellent verbal and written communication skills.

Highlights

- Experienced lead software architect and manager of a small development team.
- Expert in Internet services architecture, deployment, scalability, and security.
- Expert in developing efficient software written in C/C++, specializing in multi-threaded server side software.
- Expert in UNIX system administration.
- Designed and developed a portable, efficient, highly modular, thread-safe server daemon and various supporting modules that became the basis for most of the hosting related services at Concentric/XO. Using this for SMTP MX service resulted in a 75%+ increase in capacity.
- Designed and developed various kernel modules to make applications multi-tenant capable securely.
- Responsible for host security for Concentric/XO's hosting platforms.
- Built a distributed Xen-based cloud computing platform as the basis for Concentric/XO products.
- Certified ScrumMaster.

Other accomplishments

- Implemented use of open source DKIM (Domain Keys) library for use with an MX server module. Various modifications to fix bugs and improve performance were submitted back to the open source community.
- Wrote a portable, thread-safe socket-helper library in C that provided easy interfaces to use for listening, connecting, and polling. It supported Unix Domain, IPv4, and IPv6 sockets using the most efficient polling mechanism found on the OS.
- Designed and implemented various ideas for host security, including the use of IP filtering technology on all UNIX host systems at Concentric. Later, managed host security on XO's web-hosting platform of well over 100,000 customers.
- Designed and implemented a plan for migrating 40,000 customers from one web-hosting platform to another.
- Designed, implemented, and maintained a firewall and NAT architecture needed for some web-hosting back-end networks using FreeBSD, carp, and pf for real-time automatic failover.
- Designed, implemented, and maintained firewall and networking solutions for new office space for the whole web-hosting business unit. This included management of a Cisco 6509, and various numbers of Cisco 2924 and 2948 switches.
- Implemented a Subversion (svn) server for centralized revision control for source code and documents. Wrote perl scripts to convert SCCS and RCS histories to svn dump files for importing.
- Designed and developed an open source IRC server.

Experience

XO Communications
April 2008 – Present
Director of Software Development, Hosting
San Jose, CA

- Manage an Internet services software development group consisting of teams of Unix, Windows, and UI/Control Panel developers using Agile processes.
- Responsible for the software that hosts services such as DNS, email, and web-hosting.
- Lead architect responsible for the technical direction of products based on communication with Product Management and Marketing.
- Mentor members of the team, providing guidance on software development design, architecture, and implementation.
- Perform code reviews and participate in development when time permits.
- Work very closely with Operations, providing tools and system administration assistance when necessary.

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XO Communications **June 1999 – April 2008**
Senior Software Architect **San Jose, CA**
(XO was the result of Nextlink's acquisition of Concentric in June, 2000)

User-land Development:

- Lead architect and developer of UNIX server software, specializing in multi-threaded development in C.
- Designed and developed the basis for all server-based software using loadable module ideologies combined with pthreads.
- Designed and developed a multi-threaded front-end MX (SMTP) module for the modular server architecture.
- Designed and developed a multi-threaded DNS resolver module for the modular server architecture.
- Designed and developed a generic, distributed, fully redundant, replicated storage solution to use for mail and other data.
- Maintained an already-existing IPC/shared memory solution that was used as a very fast DB cache. Designed and implemented a more distributed version that passed updates and other events to many different nodes instead of the old solution that just updated shared memory on different nodes by reading off of NFS shares.
- Developed high performance multi-threaded Usenet server software, including a Usenet proxy daemon.
- Developed a Xen-based virtualization platform for use for products such as Managed Server and Managed Backup.

Kernel Development:

- Developed a dynamic file system kernel module for Solaris, used to create secure virtualized file system space for use in a shared hosting environment.
- Developed a number of Solaris kernel modules to create secure virtual machines for use in shared hosting environment shell and CGI space. This was originally prototyped on both Linux and FreeBSD and involves wrapping of most system calls.
- Modified ip-filter kernel module to prevent OS-type detection from netcraft.com. Also added rate-limiting options.
- Developed a kernel module for FreeBSD to do hardware load balancing via MAC address rewriting.

Concentric Network Corporation **August 1996 – June 1999**
Senior Systems Engineer **Cupertino, CA**

- Responsible for system administration of Concentric's Internet services and shared hosting platforms as well as development of new software and features.
- Wrote various pieces of a dial-up authentication platform, including a multi-threaded event distribution system and a multi-threaded database server to track dial-up sessions in real time.
- Modified open source Usenet software to work in a shared web-hosting environment for a custom local newsgroup feature.
- Maintained Concentric's Usenet and IRC systems and code.

Skills

Operating Systems:

Solaris 2.x, Linux, *BSD, Mac OS X, SunOS 4.1.x, Ultrix, AIX, IRIX, HP-UX, CatOS, IOS, OnTap, Windows

Development:

C, C++, various UNIX shells, sed, awk, python, perl, php, erlang, tcl, mysql, Berkeley DB, OpenSSL, multi-threaded programming (POSIX and UI/Solaris threads), kernel level programming (Solaris/Linux/FreeBSD), IPC, Solaris doors, svn/cvs/rcs/sccs, gdb, adb/mdb, autoconf/automake.

Other Knowledge:

Xen, VMWare, truss/strace/ktrace, regular expressions, Apache, postfix, qmail, dspam, SpamAssassin, procmail, fetchmail, bind, OpenVPN, OpenSSH, rsync, ipfilter, ipfw, pf (packet filter), iptables, NAT, hardware and software based load balancing, tcpdump/snoop, traceroute, and more.

Protocols:

HTTP, SMTP, POP3, IMAP, DNS, FTP, NNTP, IRC, Radius, SSL, DHCP, TCP, UDP, NFS, NTP, RIP, BGP