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Summary

- Senior Software Engineer/Architect. Specializing in embedded linux firmware designs, hardware device programming (ASICs, I²C, PROMs, etc) and TCP/IP networking. Skilled at training others on quality, coding style, & flexible design patterns.

Employment

EMC Corporation, Santa Clara, CA
Principal Software Engineer

2010 - present

- Added cloud storage as an additional storage tier in a multi-tiered storage array. LUNs are backed by cloud storage attached to the array by iSCSI or Fibre Channel. Modified open-iscsi to support binding outbound connections to specific local IP addresses. Modified QLogic kernel driver to assign deterministic WWNs persistent across hardware upgrades/replacements.
- Designed and implemented proof-of-concept facility for synchronizing CIFS ACLs & metadata to the Syncplicity cloud.
- Designed and implemented a data encryption module for archiving data to cloud storage (e.g. Amazon S3). Data is encrypted before leaving the datacenter and decrypted when retrieved from the cloud.
- Designed network protocol infrastructure to support VAAI as part of a large federated filesystem (FedFS) project targeting VMware datacenters. Features include protocol version negotiation, exactly-once-semantics (EOS), automatic connection management & failover, and interfaces onto which ONC-RPC can be layered.
- Designed & implemented proprietary control protocol for use between pNFS metadata servers and corresponding data servers, and between server nodes participating in a FedFS cluster.
- Designed distributed quota management solution to enforce user & tree quotas in a pNFS environment with minimal communication required between metadata servers and their corresponding data servers.
- Configured & managed lab infrastructure including DNS, DHCP, VMware vCenter Server, ESX, VNX datastores, etc.

Sun Microsystems, Inc., Santa Clara, CA
Staff Engineer

2003 - 2009

- Led a team of software engineers to design and implement embedded firmware applications for linux based service processors in multiple generations of enterprise server platforms.
- Designed software to power down unnecessary hardware resources, reducing power consumption on the largest servers by almost 50% when idle.
- Created mechanism for storing software properties in I²C proms, significantly reducing software incompatibility due to hardware changes.
- Reviewed schematics and hardware design documents. Worked directly with ASIC team, board designers, and system engineers to ensure optimal hardware/software compatibility.

- Wrote software tools to fully decode proprietary SerDes packets captured by a logic analyzer, significantly simplifying the bringup & troubleshooting process for new hardware.
- Managed apache web servers & developed MySQL/PHP applications.
- Collaborated with engineers at Maxim, Inc. to design an I²C voltage sensor with software-programmable interrupt thresholds and interrupt alarm capability.

Sun Microsystems, Inc., Menlo Park, CA

1996 - 2003

Member of Technical Staff

- Ported VxWorks BSP to custom prototype hardware. Primary technical lead and key contributor to the design and implementation of a Java-based embedded firmware application for the service processor used in the "Sun Fire" enterprise server platform. Application requirements included power management, environmental monitoring via I²C, fault detection, fault isolation, dynamic reconfiguration.
- Wrote a STREAMS kernel module and "advise" application to multiplex ttys, allowing engineers to easily share limited hardware resources during software development.
- Wrote standalone and Solaris versions of flash-update software to update the firmware in the Ultra-Enterprise product family.
- Managed the OS software lab (30+ Ultra-Enterprise, SPARCcenter-2000, and SPARCserver-1000 systems) including networking and NTS remote console support.
- Discovered, reported, and contributed fixes for hundreds of bugs in Solaris and other products.

Michigan Technological University, Houghton, MI

1990 - 1996

Senior Systems Programmer & Systems Administrator

- Conducted day-to-day system administration tasks for the Information Technology department (set up printers, set up new-hire workstations, upgrade operating systems, etc.).
- Designed and implemented a generic campus-wide boot process for PC-NFS; wrote a BOOTP client for PC-NFS which substantially reduced the amount of administrative overhead involved in maintaining PCs on the network.
- Designed and implemented the MTU campus e-mail system including the development of sendmail configuration files, an automated campus-wide alias distribution system, and an online directory service.
- Designed and maintained an Oracle database (including all necessary DBA support) used for creating/managing 10000+ user accounts across the campus.
- General programming and end user consultant in FORTRAN, Pascal, assembly, VM/CMS, and various application programs.

Organizations

Your Asian Connection, Inc.

2007 - Present

System Administrator (unpaid position)

- Primary system administrator for www.YourAsianConnection.com. Develop & maintain web applications using PHP, MySQL, JavaScript, AJAX, including payment processing, database management, report generation.

Education

BS Computer Science

1993

Michigan Technological University, Houghton MI

- Computer Science option with Literary Expression thematic.
- Extensive studies in electrical engineering including power, analog & digital signals, and circuit design.

Skills

- Technologies: Linux, Solaris, power management, TCP/IP, I²C, JTAG, embedded designs
- Languages: C/C++, Java, JavaScript, HTML/CSS, shell scripting (sh, bash, PHP, perl, TCL, etc.)
- Applications: Apache, MySQL, Oracle, Subversion, Teamware, VMware, VirtualBox
- Equipment: Familiar with oscilloscopes, logic analyzers, network sniffers, etc.

Patents Awarded

[6,418,442](#) Method and Apparatus for Providing Thread-Specific Computer System Parameters

[6,687,815](#) Method and Apparatus for Storing Non-Volatile Configuration Information

[6,907,484](#) Method and Apparatus for Atomically Changing Selected Bits Within a Register

[8,515,904](#) Providing file system quota support for a file system having separated data and metadata

Additional Patent Applications Submitted

[20040054765](#) Method and apparatus for accessing multiple system controllers within a computer system

[20040054936](#) Method and apparatus for setting core voltage for a central processing unit