

Resume

Thomas E. Besemer

777 West Middlefield Road, #6
Mountain View, CA 94043

(408) 307 1674 (cell)
tbesemer@thomas-iv.com
<http://www.thomas-iv.com>

Skills

Operating Systems and Environments

Embedded Linux (2.4 and 2.6 kernels). VxWorks, Tornado and general Wind River Systems tools and environments. VRTX, VRTX/32, Velocity and Spectra Development Environments; fluent in the Microtec Research (formerly Ready Systems) product line. pSOS+ and general knowledge of the ISI (formerly SCG) product line. HP-RT (a real-time, UNIX-like operating system derived from LynxOs sources). SunOs, HP-UX, SCO UNIX and SCO OpenServer environments; awk, sed, sh, lex, yacc, rpcgen and native compilers, assemblers, linkers, debuggers and library handling tools. Excellent Makefile generation and support skills. Source Code Control Systems; CVS, RCS, SCCS, SVN, StarTeam, Perforce and ClearCase. Basic UNIX system administration skills. Fluent in C. Fluent in 68k, PPC and iAPXx86 assembler. Experienced with C++. Freescale Motorola PowerQuicc I and II processors, IBM 4xx processors. IXP425, ARM, Xscale, OMAP 5912. Complete set of tool development for generating ROM based Embedded Linux images, and have ported Linux to proprietary architectures.

Networks

Client/Server designs, ATM, RPC's, TCP/IP, UDP and Ethernet frame level experience. Extensive experience with Device Driver development. Extensive experience in WiFi networks in industrial settings.

Device Drivers

Linux, UNIX System V, BSD, VRTX, pSOS+, VxWorks and HP-RT based. SCSI Drivers, Serial I/O Drivers, Backplane Drivers and Network Drivers (Ethernet and ATM). Experienced in bringing up "cold" hardware (CPU and peripheral boards which have never executed code) and helping wring out general hardware problems. Solid abilities with Logic Analyzers and general hardware assist tools.

Documentation and Documentation Environments

FrameMaker, troff, eroff, nroff, MS Word and Interleaf. Strong specification and design documentation skills. Developed and use daily a set of tools which allows automatic UNIX man page generation from C source code; these concepts and tools allow all C structures and procedures to be automatically documented during system development - all system procedures and structures become "on-line" documentation which remains current with the development tree at all times. Numerous technical publications, as well as development of numerous training programs.

Architecture Skills

Excellent in analysis of project requirements and generation of system designs from requirements, from both a hardware and software perspective. Specialize in real-time, embedded designs and setting up base architectures for large groups of developers. Strong understandings of both static, state-driven designs and multi-threaded designs.

Mechanical

General machine shop experience; lathes, milling machines, welding (TIG, MIG, stick and gas) and general metal handling. Experience in motion control needs; stepping and server motors and their associated control algorithms. Experience with large (factory size) materials handling systems, their designs and control requirements.

Experience

May, 2008 – Current

Cisco Systems – Senior Linux Consultant

San Jose, CA

Provide core level support for their CentOS based x86 content providing solution, a project centered around large “Google” style clusters, with distributed content/routing. Manage large and complicated SVN based repository; on a project with over 80 people on it, and a branching scheme that employed dozens of branches, work to support SVN through merges, and extensive use of SVN properties (`svn:externals`, merge tracking through properties), as well as help set up SVN mirroring scheme to deploy in 4 different countries. Help with System Administration on the numerous Linux based build servers. Work with the Linux Trace Toolkit to provide instrumentation and performance results for tuning of the application code. Work with engineers to support firewall capabilities through IP Tables. Develop network performance tools to help understand bottlenecks in system throughput. Design and implement a DVD/ISO based install scheme to do Base OS installs, as well as application level code installs; this based on Kickstart, but then using a local YUM based repo during install to handle installation of Cisco specific application RPM’s. Use DUMA to monitor memory leaks and pointer problems. Perform product review of Coverity and ExtremeDB, provide recommendations to management on the viability of these tools in the Cisco environment. Serve as a resource to management on all Kernel related aspects of the project.

January, 2008 – April, 2008

Woven Systems – Senior Embedded Linux Kernel Consultant

Santa Clara, CA

Provide Linux Kernel support for a 10 gig Ethernet product that contains 20 PowerPC processors. Manage baseline infrastructure for both U-Boot and Linux 2.6.15 kernel. Enhance logging capability for both Kernel and User space components. Stabilize Linux and U-Boot to support multi-processor, multi-platform environments. Develop new Makefile environment to facilitate automated builds. Implement and support new Fedora Core 8 development servers for the group, and provide System Administration support for those. Help bring their Beijing Development Center online, providing an infrastructure for over 30 engineers to do development and testing remotely in China. Work with Director of IT to build VMWare based simulation environments to allow software development to happen in a virtualized environment. Work with staff members to put Coverity in place to do analysis of baseline code. Develop Driver for Marvel 98EX240 24 port 10 gig switch. Work directly with the Director of Engineering and VP of Software to put new strategies in to allow the team to work more effectively. Manage outside vendors who provide new hardware and software.

November, 2007 – December, 2007

Orange Empire Railway Museum – Facilities Manager, Fall Event

Manager, Advanced Technology

Perris, CA

Serve, on a volunteer basis, as Facilities Manager for the fall Thomas The Tank Engine fundraiser event. Manage setup, execution and teardown of a million dollar fundraiser for a non-profit. Manage a volunteer based staff. Expand an existing WiFi environment to cover over 20 acres in an industrial setting using Linksys WRT54G boxes upgraded to run DD-WRT Open Source software; work with matched client/AP pairs, and WDS based boxes. Install directional and omni-directional antennas on masts to provide coverage over long range reaches. Migrate museum from dial-up POS Credit Card terminals to a full WiFi based Internet solution. Report directly to the museum President.

Standing member, Board of Directors, term 2008-2011.

December, 2006 – October, 2007

Vocera Communications – Senior Embedded Linux Consultant

Cupertino, CA

Provide Device Driver support for their OMAP 5912 based WiFi product. Develop NAND Flash based Drivers, debug and support Marvel chip set under Linux for WiFi applications. Provide training to the staff on Linux. Provide overall management and support of their Linux 2.6 based development platform. Implement power management support for the device, allowing long battery time. Report directly to the V.P. of Engineering, providing general guidance on direction of the product and management of the team implementing the product. Resolve crisis on development issues for a staff that was primarily W2K oriented, new to Linux. Debug and resolve low-level Kernel issues. Work with TI directly on problems related to the OMAP 5912. Work with Vocera hardware engineering directly to resolve design problems.

November, 2006 – December, 2006

Orange Empire Railway Museum - Facilities Manager, Fall Event

Manager, Advanced Technology

Perris, CA

Serve, on a volunteer basis, as Facilities Manager for the fall Thomas The Tank Engine fundraiser event. Manage setup, execution and teardown of a million dollar fundraiser for a non-profit. Manage a volunteer based staff. Enhance a existing WiFi environment. Report directly to the museum President.

August, 2006 – November, 2006

Paralan Corporation – Senior Embedded Linux Consultant

San Diego, CA

Provide data recovery service for a lost source code base on their iSCSI product. Migrate them to current open source iSCSI code. Migrate them from 2.4 to 2.6 Linux Kernel. Serve as an advisor to management on how to make strategic decisions to protect their source code from loss and theft.

March, 2006 – August, 2006

Wind River Systems – Senior Embedded Linux Consultant

Alameda, CA

Architect and implement an advanced component of their Device Management Suite (http://www.windriver.com/products/device_management/). Perform training for the staff on Linux Memory Model and Linux Device Drivers. Debug and enhance existing software. Extensive experience with the 2.6 scheduler, and usage of `ptrace()` to control running processes. Work with Management to coordinate and manage a relationship with an outside software developing vendor, including development of robust stress test qualification suites. Develop Device Drivers, and provide a support system to manage shared memory structures and buffers that allowed both User and Kernel space to operate on shared memory segments. Enhance Makefiles to support builds for multiple target architectures (PowerPC, x86, MIPS and ARM). Ensure compatibility of the code base over multiple target architectures.

August, 2005 – March, 2006

Orange Empire Railway Museum

Project Manager, ATSF-1761 Caboose Restoration Project

Manager, Advanced Technology

Perris, CA

Perform pro-bono services to the Museum, which is a non-profit volunteer based organization. Work towards completion of restoration of the 1929 era ATSF-1671 Caboose. Deploy a WiFi network that covered over a million square feet, utilizing off the shelf Linksys equipment with Open Source firmware upgrades. This WiFi network operates in a highly industrial setting, with tremendous amounts of iron and locomotive equipment to bridge around. Establish a Linux 2.6 raid based server to serve as a central Museum file server. Initiate upgrades (ongoing) of the Museum computer infrastructure, providing Windows XP based clients on the WiFi network. Propose E-Commerce solutions to the Board of Directors for evaluation (under consideration). Work to upgrade the Museum web site to be more market friendly.

Contribute strongly to the management, organization and deployment of the yearly Thomas the Tank Engine fund raiser, which raises over \$600,000.00 gross per year for the Museum, and brings over 34,000 people to the Museum over a five day period. Standing member, Thomas the Tank Engine Organizational Committee, as well as the Marketing Advisory Committee. Winner of the Golden Hardhat Award for best contribution to the Museum. Winner of the Presidents Award for advances in Museum computer technology.

January, 2005 - August, 2005

360 Systems Broadcast – Senior Software Design Engineer

Westlake Village, CA

Design, install and maintain an Engineering Development Network, comprised of a mirrored, central Linux server with Windows based clients. Design and develop a video content mirroring system for their ImageServer 2000 product. Diagnose PCI bus interaction problems on their product through instrumentation of the PCI bus with a logic analyzer. Maintain and deploy a MontaVista Embedded Linux environment (2.4 Kernel, 3.1 Professional Edition). Perform product development for their next generation product, including an advanced Linux target environment (DVD based installation CD, and leverage of the MontaVista baseline to reduce internal support needs). Advise management on technical direction for the engineering group. Evaluate 2.6 kernel capabilities for the product. Serve as System Administrator for the Engineering Group.

October, 2002 – December, 2004

ICF Ventures, Inc. - Product Development and General Consulting

Los Angeles, CA

Work with four clients, simultaneously, over a two year period. Clients are Intel, STSN, Control 4 Technologies, Wind River Systems and Intrepid Technologies. Breakdown of work over this period:

- Intel (<http://www.intel.com>) Provide management and technical support for the IXP4xx series of processors, including strong Linux based development efforts on IDE Drives. Support customers on design needs. Work with them to develop a consistent strategy to deploy Linux on their processors. Work with SnapGear Linux 2.4 and 2.6 distributions, serving as an integrator.
- Wind River Systems (<http://www.windriver.com>). Develop an Embedded Linux Training Program, and deploy one time to a group of 160 people. Focus of program was to educate attendees to the realities of doing Embedded Linux Development.
- STSN (<http://www.stsn.com>). Provide Linux support for internal engineers. Develop proprietary Network Drivers on Marvel (Galnet) hardware. Develop a custom web site to manage hotel properties. Bring up new hardware. Provide general support to their staff (ongoing). Work with SnapGear Linux 2.4 and 2.6 distributions as an integrator, support person and Driver Developer.
- Control 4 Technologies (<http://www.control4.com>). Provide support infrastructure for their Linux based deployments. Work with management on overall designs and strategy for deployment of their products.
- Intrepid Technology (<http://www.intrepid.com>). Perform technical based analysis relative to internal operation of W2K, W98 and W95. Worked with SoftICE Emulator and vtune from Intel.

Additionally, develop VSH, a VxWorks like Shell Tool for Embedded Linux applications. This tool is currently shipping. Provide general consulting to a variety of smaller companies on short haul basis. Extensive use of Linux 2.4 and 2.6 kernels.

January, 2002 - October, 2002

Movidis, Inc. - Senior Technologist

Los Angeles, CA

Senior Architect and Implementor for their IBM 440GP based Video on Demand Server product. Responsible for specification, implementation of their configuration and build environment. Perform high level architecture design for their 12 IBM 440GP processor based system. Manage their Embedded Linux environment, including management of an outside vendor for the port to the 440GP, internal support, generation of scripts to place Linux in ROM, installation of PPCBoot on their target hardware. Develop significant portions of the application code. Build and install their primary Linux development server. Provide support for their staff on all aspects, hardware and software, of their product. Develop schemes for inter-processor communications. Advise the CEO on general direction on product development. Train a new VP on the core technology, as well as provide general training for the staff. Effectively operate as Senior Technologist.

July, 2001 - November, 2001

CacheVision, Inc. - Senior Consultant

San Jose, CA

Provide general consulting services for their Personal Video Recorder (PVR) product, including development of a VxWorks BSP, support for the staff on architectural approaches, and enhancement of existing drivers for performance. Installed a complete configuration management (StarTeam) and Makefile environment for their product development efforts.

November, 1999 - July, 2001

Self-supported research into embedded Linux technology. Develop magazine articles for Embedded Systems Programming and Journal of Linux Technologies. Baseline a yet to be published book on Embedded Linux. Perform consulting services for LynuxWorks, porting their BlueCat product to various Intel platforms. Perform consulting services for S-Link (now Radysis) for Embedded Linux on the Motorola 7xx and 8xx family of processors.

September, 1998 - October, 1999

Kestrel Solutions - Senior Contributor

Mountain View, CA

Development and implementation of significant components of their Software Development Infrastructure, including Makefiles, installation and configuration of ClearCase, full development of their MPC860 VxWorks BSP, development of custom HDLC drivers and architecture of their control system. Served as interim Project Manager for a four month period while an internal person was trained and a transition could occur.

August, 1997 - August, 1998

EST Corporation - Technical Training Coordinator

Canton, MA

Responsible for prototyping and managing their MPC860 Technical Training Seminar program. Developed course material and presented the training course over 25 times, including twice in Japan. Wrote [The MPC860 Users Guide](#), a book designed to help software and hardware engineers with their MPC8xx based projects; this book was distributed at the training courses.

May, 1997 - August, 1997

Holontech Corporation - Senior Systems Analyst

San Jose, CA

Involved in porting VxWorks to a custom MIPS R4700 target board. Worked with management on Program Management issues. Provided integration support on their advanced IP Router project.

October, 1996 - April, 1997

Hyundai Electronics America (Digital Video Systems) - Senior Systems Analyst

San Jose, CA

Involved in detailed analysis of existing system software. Provide strategic feedback to the management team regarding needed operational changes in project implementation schemes, and general program management approaches. Travelled to Italy to acquire customer acceptance of the product; performed technical updates, resolved program management issues. DVB, OpenTV, Telepiu and Stream Digital TV requirements.

June, 1996 - November, 1996

Applied Materials - Systems Programmer

Santa Clara, CA

Performed updates to existing software which provided improved power failure recovery for their wafer processing machinery. Involved evaluation of the existing software base, generation of functional specifications and updates to a variety of modules written in Pascal, C and 68k assembler.

October, 1995 - June, 1996

Com21, Inc. - General Systems Architecture Consultant

Mountain View, CA.

Provided a port of VxWorks/Tornado to two custom hardware environments. Generated server side RPC modules to support general table transfers between application computers. Developed an ATM switch simulator, allowing ATM cells to be routed over ethernet using MAC level frames. Provided general consulting to the management team regarding embedded architectures, approaches and technical management needs of the projects.

July, 1995 - November, 1995

Hyundai Electronics America (Digital Video Systems) - Senior Systems Analyst

Milpitas, CA

Designed, implemented and installed a full build environment for their baseline Set Top Box project. Provided general consulting to the project management team regarding technical direction for their projects.

February, 1994 - July, 1995

Hewlett Packard Company - Senior Systems Architect (consultant)

Santa Clara, CA

Designed the primary software architecture for the Data Source (DS) sub-system of the Video Transfer Engine (VTE) for their Interactive, Broadband Video Server (Video On Demand). Designed a baseline architecture which not only all components of the VTE utilized, but spread as a baseline to other projects as their designs and implementations were initiated.

Designed and implemented the core logic of the DS which controlled the streaming of MPEG II video data. A DS is capable of streaming 75 3 MB Interactive MPEG II video streams, via two OC-3 ports, over ATM.

Worked with other project members to help them with their individual designs. Consulted with the VTE hardware developers to ensure that a clean design and implementation was done between hardware and software. Designed simulation environments which allowed team members to develop software prior to having a full hardware environment. Provided the key concepts for the API on the DS's custom ATM Network Interface controller.

Presented a seminar on approaches to software development in the VTE environment; this seminar was video taped, and is used as a training film for new hires. Consulted with members of the Hewlett Packard Laboratories staff regarding the implementation of the VTE DS; worked with them to port the DS's source baseline to their own custom hardware.

August, 1993 - February, 1994

Compression Labs, Incorporated - Supporting Engineer (consultant)

San Jose, CA

Responsible for setting up source code control systems (RCS based) for their Direct TV project. Developed boot ROMs for the control hardware of their Direct TV project. Worked with other project members to coordinate design and development of support firmware for the

MPEG encoder boards of the Direct TV project.

Installed a SUN based development network, and trained their staff on utilizing source code control tools and the concepts behind them. Worked with their system administration staff to clean up their company network and help build a reliable network environment.

Performed testing of a new release of firmware for their Video Tele-Conferencing product. Worked directly with the development engineers to test and fix problems with the firmware release.

February, 1993 - August, 1993

Hewlett Packard Company - Supporting Engineer (consultant)

Santa Clara, CA

Provided general software development support for a new video signal test product. Wrote device drivers to support low-level graphics I/O on the equipment. Performed system integration. The test product was based around a MC68331 processor on a custom board. The development environment was target cross compile from HP-UX, and target execution through an HP lan based emulator.

February, 1988 - January, 1993

Independent Consultant

San Francisco Bay Area

Performed many short haul contracts, primarily centered in setting up development environments and development of device drivers for VRTX based systems, and general embedded systems environments.

August, 1987 - February, 1988

Ready Systems - Applications Engineer

Palo Alto, CA

Created and prototyped their HYPERLINK UNIX to VRTX communications interface product. Involved designing, implementing and installing UNIX Device Drivers, shell tools and VRTX/ RTscope interfaces. This base concept later evolved into their Velocity product line.

Organized and instructed classes and seminars on applications utilizing the VRTX real-time kernel.

March, 1985 - November, 1986

Control Logic, Inc. - Computer Systems Manager

Phoenix, AZ

Created a computer group within the organization. Handled interviewing and hiring of the engineering staff (ten people). Managed design and development of the software and control hardware (VME, PC and custom based) for large materials handling automation projects.

Successfully designed the computer systems for the Chicago Air Mail and Dallas General Mail Facilities - all aspects; hardware, software, system specifications and procurement. Completed the Dallas project through customer acceptance testing. Scheduled and guided the engineering staff. Oversaw the generation of operator and technical support reference manuals and acceptance test plans.

July, 1983 - February, 1985

Amphion, Inc. - Design Engineer

Ann Arbor, MI

Responsible for the design, implementation and documentation of the hardware aspects for computer systems used in the automation off the Phoenix General Mail Facility. Designed several custom hardware components for the system. Pioneered a high-speed, noise free parallel I/O sub-system which interfaced the AC level mechanization control signals to the process control computers.

Involved in general R&D projects; robotics, vision systems and motor control systems.

January, 1982 - July, 1983.

J&R Steal Fabrication - Design Engineer

New Baltimore, MI

Designed and built a prototype carbide tool insert stacking machine (all aspects; control computer and mechanical mechanisms). This machine was designed to stack carbide tool inserts on graphite pallets prior to coating operations. The core mechanism employed two stepping motors and one server motor, and provided two axis control for the stacking operations. The control computer was 8085 based, and all control firmware was written in assembler. Stepping and server motor control was done by software. The project was completed and demonstrated to General Electric, but generated no interest in moving to a production model.

Publications

Embedded Systems Programming Online Article – November, 2002
Is Linux Free?

Linux Online Interview – December, 2001
Interview with Thomas Besemer <http://www.linux.org/people/besemer.html>

Journal of Linux Technology - July, 2001
Linux Based Cross Development

Embedded Systems Programming - August, 2001
Linux, Interrupted

Embedded Systems Programming - May, 1989
Messaging in Real-Time

Embedded Systems Programming - July, 1989
Exception Handling in Real-Time

Education

September, 1980 - January, 1982

Michigan Technological University

General studies focused in Electrical Engineering

Additional Information

Additional information about Mr. Besemer can be found on his web site:

<http://www.thomas-iv.com>

Community Service

Actively involved in the Orange Empire Railway Museum (<http://www.oerm.org>). Member of the

Board of Directors, heavily involved in management of the museum.