

Timothy R. Eliseo
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Design, coding, modification, and porting of multi-threaded system-level software (kernel, device drivers, network protocols, system utilities, embedded controllers) for Linux, Unix (esp. Solaris), and other environments.

Skills (specialties in bold)

Languages/Libraries/Subsystems: **C**, C++, Assembly (x86, 680x0, SPARC V8/V9, Elxsi, Z-80, Z-8, 8051), **perl**, **PHP**, Java, **HTML/CSS**, Drupal, **MIME**, **OpenSSL**, **MySQL**, PostgreSQL, PostScript, RPM, sh/ksh/bash, csh/tcsh, lex, yacc, Git, Subversion, CVS, GNU; also Tcl/Tk, awk, LISP, Xlib, Xview, OLIT, Motif, Xbase, MIF, Pascal, BASIC, FORTRAN, HOOPS.

Operating Systems: **Linux** (mostly Red Hat/Fedora), Unix (**SunOS/Solaris**, BSD), also MS-Windows, Ultrix, System V, HP-UX, Xenix, Embos, MS-DOS, CP/M, RSTS/E, VAX/VMS, MPE.

Hardware Internals: **PCI**, 80x86; also 680x0, SPARC, Z-80, S-100, Z-8.

Protocols: **TCP/IP**, **SCSI**, ICMP, IGMP, UDP, NFS, **PPP**, Ethernet, **HTTP**, **SSL**, **SMTP**, POP3, **DNS**, RIP, ARP, FTP, TELNET, NTP, NNTP, SNMP, **STREAMS**, **DLPI**, also IEEE-488 (GP-IB), Datakit, SMD, QIC-02.

Consulting and Employment Experience (major)

NuMetra, Inc. and PacketPass, Inc. (6/2004 – 6/2010):

Development of a packet shaping test and prototyping environment and subsystem for streaming network data. This involved design of a test framework using Web100/NDT and a custom scripting language that allows for simple specification of complex traffic shapes for precise transmission through the Linux kernel, feedback modes, filtering, phase/frequency detection, and visualization of the latency and packet loss to assist algorithm tuning. This research led to development of a production-quality custom congestion-control module for TCP on Linux.

Integration and customization of software and device drivers to create an embedded Linux streaming set-top player environment. This included player software such as mplayer, accelerated video drivers, SmartCard support, control by infrared remote, SMIL navigation, and a simple Web interface. This work also involved conversion, encoding, and optimization of video from diverse sources to suit the target environment and streaming constraints.

Deployment and maintenance of a CDN-style server pool for network testing and delivery of video files.

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Malibu Networks, Inc. (9/1999 – 1/2002):

Development, integration, and maintenance of kernel device drivers for Solaris STREAMS and Linux environments to interface the company's proprietary PCI-based wireless IP networking base station hardware and Broadcom StrataSwitch IP packet forwarding components. Also responsible for other aspects of the product's system controller such as the kernel interface library, command-line interface to the MySQL configuration database, software build, packaging, load, update, and configuration and diagnostic utilities.

CyberSoft, Inc. (7/1998 – 12/2000):

Development of a STREAMS-based kernel module for Solaris and HP-UX environments that filters TCP traffic at the network layer transparently to applications and intercepts it by redirecting it through a user-mode application. Also developed the application that interfaces to the kernel module and performs protocol analysis (HTTP, FTP, SMTP, POP3, SSL) so that messages and files may be extracted and verified (and possibly withheld) by a virus scanning application. The application contains an SSL proxy which allows plaintext protocol analysis and content scanning of HTTPS transactions.

McAfee Associates, Inc. (now Network Associates, Inc.) (4/1997 – 12/1997):

Development of enhancements to the Linux kernel TCP/IP networking code and system utilities for the WebWall product. These enhancements enable efficient firewall filters, transparent proxies, and dynamic configuration while integrating IP Masquerade and IP Security Protocol (IPSec) encapsulation.

HAL Computer Systems (9/1995 – 3/1998):

Troubleshooting and repair of TCP/IP networking-related kernel bugs in HAL's Solaris-based 64-bit SPARC operating system. Porting of kernel and driver code to 64-bit environment, and translation of system calls from applications running with various word size models.

Integration of vendor patches into kernel, driver, and application code, and development of tools to assist in patch accumulation, merge, and tracking.

Development of a robust multi-process FTP server capable of supporting more than 4000 simultaneous clients on a single processor with minimal system load.

Pacific Access Computers (11/1992 – 1/1996):

Project team leader and principal developer for projects involving design, porting, enhancement, and performance optimization of Unix SVR4 network device drivers for Sun Solaris 2.x (SPARC and x86) and AT&T Unix in a multiprocessing environment. Extensive work with internals of DDI/DKI, STREAMS, TCP/IP, Datakit, DLPI (Data Link Provider Interface), PPP (Point-to-Point Protocol), and low-level interface to hardware.

Design of X GUI-based applications and application libraries (including a SunOS/Solaris system and network administration tool) in C++ and ksh using Xview, Motif, and XVT libraries.

Consultant to system administrators on Internet-related networking issues such as routing, Unix and network security, NFS performance, SMTP (Simple Mail Transport Protocol), DNS (Domain Name Service) and PPP. This required porting, design, and modification of utilities and daemons for local needs, and troubleshooting of network problems at the protocol level.

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Aries Research, Inc. (previously Solarix Systems) (1/1992 – 10/1992):

Design and porting of device drivers for SunOS 4.1.x on SPARC clone hardware. Work with virtual memory management hardware, caching, video drivers for SunView and X protocol, and extensive work with SCSI.

Indesys Inc./MerchanTec International (3/1991 – 12/1992):

Development of scheduling and control software for a wireless data broadcast system. MS-DOS and VAX/VMS environments using C and assembly.

VeriFone, Inc. (3/1990 – 9/1990):

Development of control software and multi-threaded O/S for a credit card verification terminal. MS-DOS and dedicated environments using C and assembly.

Rasna Corporation (now PTC) (3/1989 – 5/1991):

Conversion of symbolic math software from Pascal to C. Porting of product (a mechanical CAD package) to various Unix environments and MS-DOS/386 environment. Development of network-based product license server and utilities. Development of file manipulation software for FrameMaker files. Mostly Sun (-3, -4, 386i, and SPARC) environment with DEC, SGI, HP, and Stardent using C, lex, and FORTRAN.

CSU, Sacramento/Elxsi Corporation (4/1988 – 8/1989):

Project leader, designer, and primary developer of a 4.3 BSD/System V Unix system call emulation library package for the Elxsi mainframe running the native Embos operating system. The package supports an unmodified, fully functional Berkeley csh and vi. VAX/Ultrix and Elxsi (Embos, System V and BSD Unix) environments.

Alldata Corporation (5/1987 – 8/1988):

Development of image scanner (SCSI) and tape device drivers. Development of image capture, compression, format conversion, and archival software. Miscellaneous maintenance and administration, including mail and off-site links. Sun (-2 and -3) environment using C and assembly.

Pacific Sierra Research, Inc. (now Veridian) (10/1986 – 1/1987):

Connection via UUCP of machines at various client sites. Customizing of sendmail and other mail software. Apollo and Alliant Unix environments.

CSU, Sacramento (1/1986 – 4/1988):

Various student special projects: System support, administration, tuning, and development of utility software. Porting and customizing of software (notably UUCP, USENET news, sendmail, ditroff, Franz LISP, and The X Window System) for various local environments. Modification of NFS and Ethernet/TCP/IP drivers. Mostly VAX/Ultrix and Sun environments, also VAX/VMS, Dual, Elxsi, Alliant, AT&T, Tektronix, and Perkin-Elmer using C, LISP, Ada, awk, sh, csh, and Xlib.

Paragon Simulations, Inc. (1/1985 – 8/1985):

Design of hardware and software for a live-action multi-player simulated combat game utilizing infrared transmitters and detectors for scoring. Dedicated environment using assembly.

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PCE Systems, JBS Bus. Systems, NeuRahn, Inc., Media Dist., Inc. (6/1978 – 5/1986):

Wrote device drivers interfacing SCSI, floppy disk, ST-506, SMD, optical disk, IEEE-488, and QIC-02 controllers and host adapters to Unix, MS-DOS, and various other operating systems. Designed interface and controller boards for same. Designed hardware and wrote control software for a SCSI/QIC-02 interface/protocol converter. Co-wrote streaming tape backup/archival storage utility. Wrote multi-user CP/M-80 compatible operating system and LAN interface for MP/M-80 and slaves. Wrote network operating system and dedicated file server control software and designed hardware for a proprietary star-type LAN. Various environments using assembly, C, Pascal, and BASIC.

Summary

Extensive work with Linux and Solaris kernels in 32-bit and 64-bit environments, especially TCP/IP networking modules and drivers.

Unix kernel and utility porting and development of device drivers for Linux, BSD, Solaris, SunOS, and other environments. Development of network-based servers and clients.

Project leader and primary developer of Unix system call emulation library, used for porting Unix system utilities and applications to the Embos environment.

System support, customization, and administration of various Unix systems, including development of utility software and porting of large packages. Establishment and maintenance of mail, UUCP, Internet, and other off-site links.

Design and development of database methods and applications in client/server and standalone environments for customer tracking, direct mail marketing, and medical and insurance records.

Design and development of various software including data broadcast scheduling, terminal control, FrameMaker file manipulation, image processing and storage, tape backup, and embedded SCSI device control.

Development of drivers, utilities, O/Ss, and hardware in CP/M-80 and PC environments. Extensive work with SCSI and XENIX device drivers.

References Available on Request