MBR Consultants, Inc.
417 Deming Road
Chapel Hill NC 27514
(919) 933-8783
rigsbee@mbr-consultants.com
www.mbr-consultants.com

Mark Rigsbee

Summary of qualifications

Proficient and experienced in the design and development of operating systems and communications software specializing in data communication drivers/stacks and system services

System Services
- STREAMS and
- STREAMS drivers, modules, multiplexors and pseudo drivers
- Embedded systems
- Heap Memory Management
- Error Loggers

Operating Systems
- UNIX, DG/UX, pSOS, VRTX

Languages
- C, Intel and Motorola Assemblers
- Perl, awk/sed, sh/csh scripts

Software Development Tools
- AMC ICE, VisionICE
- CodeTEST
- SDS debugger/pRISM, dbg
- sccs, rcs, Clearcase, vi/vim, cscope, makefiles
- Xwindows, fvwm,
- Exceed Window Emulator
- Doc++

Compilers/Linkers
gnu, Diab, Greenhills, PharLap

Protocols
- Bisync, Async (TTY)
- LAPB/LAPD, SDLC/HDLC,
- Ethernet (10/100/1000), TCP/IP, UDP, tftp, DLPI
- FIbre Channel, ATM

Processors and Controllers
- Intel 8086/8088,80x86
- Motorola 68000, 68020, 68302, 88000/88100, MPC850/860
- 8250, DUSCC, 2692 UARTs
- 8530 USART

Network Hardware
- Netgear Ethernet Hubs, Switches, Firewall NAT Routers
- Bay Networks and Synoptics Ethernet Switches/Hubs
- Fore ATM Switches

Electrical Interfaces
- RS-232/232C, RS-422/423, 803.2 , I2C

Other
- ISO 9000

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Work experience

2001 MBR Consultants, Inc. Chapel Hill, North Carolina

Consultant/Contractor

Client: NetOctave, Inc. Morrisville, North Carolina

NSP3150 Behavior Model

Developed packet inspection, selector extraction, selector hash generation, and security association database hash lookup modules for the NSP3150 security chip behavior module. The search mechanism for the selector extraction module performed a recursive search through a variety of nested internet protocols including IP encapsulation, Mobile IP, IPCOMP and AH. The modules also performed rudimentary protocol validation.

2000 – 2001 MBR Consultants, Inc. Chapel Hill, North Carolina

Consultant/Contractor

Client: Pliant Systems, Inc. RTP, North Carolina

Object File Bloat Investigation

Led investigation to determine the cause for huge object file generation in Pliant 3000 product. Wrote several Perl scripts to crack binary information within the object files. Investigation revealed several programming practices that were causing the compiler to generate unnecessary symbolic debug information.

Large Configuration Support

Analyzed and tuned heap subsystem to allow the Pliant 3000 to meet its large configuration requirement. Identified sections of code that were using heap memory in an inefficient manner and rewrote them to reclaim wasted space.

Error Logger

Redesigned and implemented Error Logger for Pliant 3000 product. New design eliminated several problems with the previous design to provide a reliable error and event logging mechanism. Error log data was used to diagnose system problems during development and in field deployed installations.

1998 – 2000 Pliant Systems, Inc. RTP, North Carolina

Principal Software Engineer

Embedded STREAMS Environment

Fostered the idea of using a STREAMS environment as the primary communications environment for the Pliant 3000 product. Designed and implemented the STREAMS environment running on top of pSOS. Designed and developed several STREAMS device drivers, modules, and multiplexors and instructed other developers in STREAMS driver development.

STREAMS Debug I/O System

Designed and developed all STREAMS components used in Pliant 3000 debug I/O system including an LDTerm module, a routing multiplexor, an SMC_UART device driver, and a DUART device driver.

STREAMS I2C Driver

Designed and developed a STREAMS I2C device driver used to control the redundant power supply system for the Pliant 3000. Also wrote the application PSR abstraction layer to allow applications to control the power supplies without detailed knowledge of command sequencing.

CodeTEST Software Analysis Tool

Spearheaded the effort to use AMC's CodeTEST Software Analysis Tool to augment development effort. CodeTEST is used for code coverage, trace, performance, and memory usage analysis. Integrated the CodeTEST instrumenter into our build procedures and used the tool to find memory leaks and performance bottlenecks in Pliant 3000 product.

Heap Memory Subsystem

Designed and implemented the heap memory management subsystem used for all standard memory management routines (malloc, new, etc.) in Pliant 3000 product. This included an array of non-fragmentable quick heap buffer pools with boundary protection, multiple deallocation detection, memory leak detection and identification, statistics, and user request profiles for performance tuning.

OS Abstraction Primitives

Designed and implemented various OS abstraction primitives (mutexes, interrupt management, queuing functions, atomic operators, and encoded status/syserr codes). Status/syserr codes were encoded to be unambiguous so that each 32bit code uniquely identifies the precise error condition for quick problem recognition and identification while conserving memory in an embedded environment.

Doc++ / High Level Design Document Templates / Coding Standards

Amended coding standards document and created the High Level Design Document template used on the Pliant 3000 product. Created inline Doc++ templates to facilitate the automatic generation of Detailed Design and Interface Specifications directly from source code. Extracted specifications were in HTML format.

1987 - 1998 Data General Corporation RTP, North Carolina

Principal Software Engineer

DG/UX STREAMS Gigabit Ethernet Driver

Designed and developed Gigabit Ethernet Driver concurrent with third parties' development of hardware, software, and documentation in order to meet aggressive schedule. Driver was fully functional one week after receiving prototype hardware. Participated in the vendor selection process.

DG/UX Fibre Channel LAN Emulation Driver

Designed and developed Fibre Channel LAN Emulation driver. This driver implemented portions of IP Profile as a FSM positioned between IP and the Fibre Channel hardware driver. The driver maintained its own address translation tables and co-existed with IP's ARP implementation.

DG/UX ATM Implementation

Part of a two-member team responsible for implementing ATM under DG/UX. Tasks included hardware/software vendor selection, porting application and kernel code, developing a stand-alone build environment, and product delivery. ATM implementation was comprised of UBR ATM running PVCs, Classical IP, and LANE using a UNI 3.0/3.1 signaling stack.

DG/UX 10/100 Ethernet Driver

Designed and developed a 10/100 Ethernet driver. This was the first driver developed to use a shared DLPI subsystem and is a model for DG/UX drivers.

DG/UX Intel Floating Point Implementation

Responsible for incorporating floating point exception handling into DG/UX kernel for Intel architecture.

Sync/Async Project Leader

Responsible for intelligent and integrated Sync WAN hardware drivers supporting SNA's SDLC and X.25's HDLC. Responsible for all on-board development environments including compilers, linkers, ICE units, operating environments, and code. On-board operating environments for intelligent controllers include STREAMS V.4 and VRTX real-time OS. Also responsible for Async terminal cluster server.

ISO 9000 Steering Committee Member

Responsible for overseeing documentation of DG/UX kernel procedures in accordance with ISO 9000 standard. The RTP facility was ISO 9000 certified on its first attempt.

1986-1987 Netlink Raleigh, North Carolina

Programmer

Sync Driver

Joined in progress and completed development of a second generation Sync device driver for a company critical project. Prior to joining project, schedule was in jeopardy. Completed project on schedule.

SDLC Driver Optimization

Revamped existing SDLC driver for performance optimization.

1985-1986 Network Products RTP, North Carolina

Computer Engineer

Worked on enhancements for a computer switch product.

1983-1985 NCR Clemson, South Carolina

Programmer

Developed a driver that relayed petroleum pump information to a POS terminal.

Solely responsible for airline ticket terminal operating system including the software debugger.

Developed SDLC driver as FSM.

Responsible for IPARS (Airline ReservationSystem) driver maintenance.

1980-1983 NCR Columbia, South Carolina

Programmer

Developed Bisync, ISO, and TTY drivers for MCS product.

Education

1975 - 1980 Clemson University Clemson, South Carolina

B.S. Mathematics with Computer Science Option

References

References are available upon request.