

# Keith Harry

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Linux Software Engineer, Team Lead  
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## Profile

- Highly motivated, detail oriented embedded Linux team lead with 10 years experience developing telecommunication user space applications.
- Proven innovator with strong mobile network experience within both the access domain and core network.
- Deep cross discipline experience, from test to field engineering to staff software engineer - participated in over 20 product release cycles taking team through concept exploration, requirements analysis, design development, implementation, and feature level testing.
- Exceptionally knowledgeable of telecommunications protocols, numerous open source projects, and Linux.
- Energetic, well-organized self-starter who thrives on challenge and enjoys fast-paced, team-oriented environments.

## Core Competencies

**Application Lifecycle Management** Knowledgeable in all areas of ALM including requirements development, software design, implementation and test.

Implemented companywide Agile development processes including revision control (git), software defect tracking (Jira), and automated builds (Jenkins). Maintains all software branches and acts as the build master for the mobile backhaul product line.

**Team Leadership** Handpicked by CTO to lead a team to design and implement flagship 3G mobile backhaul over satellite solution. Started with a concept and was in global trials within nine months. First trial was successful with the 5th largest mobile service provider in the world. The optimizer is best-in-class with patent pending technology.

Leads engineering teams from 2 to 10 engineers responsible for major features, full product feature sets and multiyear professional service projects. Teams consist of software engineers and test resources.

**Embedded Linux Development** Lead software engineer for a \$3.5M software development project to customize a 2/2.5G mobile backhaul device to meet stringent communication requirements, real-time subscriber KPI collection, and network wide system health and status monitoring. Responsible for architecture, design, and implementation cycles - 18 months total and completed on-time.

Key engineer developing a first of its kind SMS offload and bypass solution within the access domain. Solution was implemented in two months and successfully completed trials and testing within the Philippines.

## Experience

### 2004-Present Sevis Systems – Plano, Texas

#### **Staff Engineer - Mobile Backhaul Application Team Lead (2011-Present)**

Leads global team of software engineers developing embedded C/C++ user and kernel space software for a PowerPC hardware platform running Linux 2.6. Responsible for many aspects of application lifecycle management (ALM) from creating system and feature requirements to overseeing feature integration test efforts - transforming concepts to product solutions. Participates in change control boards for deployed products and software in system test. Maintains all software development branches in git and acts as the build master.

- Developed kernel extensions for IP bridging - leveraged Linux Packet Filters
- Tailored robust header compression (ROHC) for 3G networks
- Implemented best-in-class packet variation and IP compression techniques
- Architected IP bridge design to solve QoS, priority queuing, and 3G packet service latency sensitivities
- Rapidly developed solutions by leveraging open source projects such as rohc-lib, zlib, lz4, net-snmp, boost, cliparser and libxml2

- Championed Agile methodologies by tailoring git, Jira and Jenkins for revision control, defect tracking and automated builds. Provided training to entire development team on git and Jira
- Designed licensing system used by company's mobile backhaul optimizer products including a web interface used by field support to create and modify licenses utilizing a sqlite3 database and the Wt web framework API

### **Senior Engineer - Embedded Linux Software Engineer (2008-2011)**

Participated on many development teams implementing increasingly complicated embedded application features ranging from porting code to full feature development.

- Ported over 100K SLOC from VxWorks to Linux
- Rewrote significant portions of TI DM642 family DSP C code used for HDLC and Abis protocol encoding / decoding
- Participated in high priority field deployments - spent two weeks on-site with China Mobile successfully solving interoperability problems
- Implemented a latency tolerant, highly reliable protocol based on RFC's 4838 and 5050
- Designed a highly distributed software framework with automated control for hosting 3rd party applications within the embedded mobile backhaul product

### **Engineer II - Software Engineer C++/Java (2005-2008)**

Transitioned from test to software development, taking over coding assignments for a deep packet inspection engine for core telecommunication networks. Developed code in C++, Java, and scripting within Windows and Linux environments.

- Implemented a light weight short message service center for mobile terminated short messages in Java (client) and C++ (server)
- Participated in server side development on a product for detecting fraud telecommunication calls. Implementation included SQL Server development and custom messaging within a client/server architecture
- Developed numerous enhancements to a Java based client within a multi-tier client/server architecture

### **Engineer I - Test & Automation Engineer (2004-2005)**

Responsible for all aspects of the product testing cycle as well as creating and maintaining custom test tools and scripts.

- Responsible for all phases of the testing cycle including planning, test case development, and task estimation
- Helped create and maintain several custom tools that aided in the development and testing of various portions of the company's Network Access Mediation product utilizing the Java 2 SE platform and the SMPP protocol
- Created and maintained a suite of custom test scripts written in XML that were used to greatly reduce the amount of effort required to test the company's NAM product

#### **2002-2004 EXFO (Acquired gnubi) – Addison, Texas**

##### **Software Engineer**

Played key role in design, implementation and testing of various portions of the company's EPXam web based user interface. Worked closely with other software engineers as part of a responsive software team.

- Developed new features in the company's web based Java GUI based on customer requirements
- Improved performance by designing a new messaging systems between Java objects in the GUI by using the Java NIO features in J2SE
- Performed detailed design analysis using UML
- Consistently stayed on schedule during software development cycles, resulting in on time product releases and high levels of customer satisfaction

#### **1998-2002 gnubi Communications – Addison, Texas**

##### **Software Engineer (2000-2002)**

Worked closely with other members of the software team to implement new features in existing products. Key contributor in the design and implementation of tools used by various groups within the company.

- Worked with hardware engineers to add new SONET/SDH features into the company's EPX product line using C++
- Added new features to the company's web based GUI using Java
- Identified and resolved issues in new and existing applications
- Designed and implemented version control tools for the company's EPX line of products
- Designed and implemented a tool that used JDBC to retrieve product information from a SQL database and translated it into a XML based configuration file
- Designed and implemented a tool to stress test the companies EPX line of products by simulating high network traffic

### **Factory Automation Engineer (1999-2000)**

Responsible for creating software that automated the testing of the company's products.

- Developed user interface that facilitated set-up and running of custom test scripts using C++ and MFC
- Created production test suite in Java that became the basis for all regression testing
- Automated control of test equipment using C++, Java and GPIB
- Created production tests based on Procomm scripts used by hardware engineers

### **Production Technician (1998-1999)**

Held multiple simultaneous duties including assembly and testing of products, with responsibility for ensuring optimal standards of quality prior to shipping. Coordinated closely with Production Manager to develop and improve assembly and testing procedures.

- Chassis, power harness, and board front panel assembly and testing. Incoming QA, stock room kitting and final inspection
- Used a wide range of testing equipment including SONET BER testers, custom test scripts and optical power meters
- Entered product and customer information into database used for tracking the company's products
- Assisted in the training of new production technicians

## **Technical Expertise**

**Programming** Programming Languages - C/C++, SQL, Familiar with Java and C#

Markup Languages - HTML, XML, Markdown, MediaWiki

Databases - MySQL, Microsoft SQL Server, sqlite3

IDE / Editors - SlickEdit, Microsoft Visual Studio, TI Code Composer Studio, Eclipse, Vi/Vim

Debugging Tools - gdb, Visual Studio Debugger, valgrind

Frameworks - STL, POSIX threads, boost, Wt, cliparser, BeeCrypt, OpenSSL, net-snmp

### **Hardware Architectures x86**

PowerPC

ARM

TI DM642 DSP

Cross Compiler - Denx ELDK 4.2

**Operating Systems** Linux - Ubuntu, Mint, CentOS, Fedora, Arch, Manjaro

Windows - 2000, XP, Windows 7, Windows CE

**Networking** Telephony Protocols - MTP2, MTP3, ISUP, SCCP, TCAP, GSM  
MAP, TRAU

Internet Protocols - TCP, IP, UDP, DTN

Data Link Protocols - ATM, HDLC, LAPD, Ethernet

Network Analysis Tools - tcpdump, wireshark, tc, netem, snmp

**Software Configuration Management** Source Control - git, subversion,  
PVCS

Defect Tracking - Jira, Redmine, Merant Tracker

Build Automation - Jenkins, Hudson

Build Tools - make, CMake, ant, NAnt

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