

Kathy Kerby

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SUMMARY

Senior embedded systems programmer (VxWorks, UNIX, Linux, C/C++) with expertise in Internet protocols (TCP/IP, BGP, OSPF, RIP, MPLS/LDP, RTP). Team leadership experience.

EXPERIENCE

[Fortress Technologies](#), Westford, MA 6/2006 – present

Senior Principal Software Engineer

- Currently designing and implementing mobile ad-hoc network routing (mesh) for next generation Fortress Wireless Security Gateway
- Added IPv6 capability to Fortress Wireless Security Gateway
- Updated and expanded FIPS implementation for new Fortress hardware and software platform

[Cisco Systems](#), Boxborough, MA 9/2005 – 6/2006

Senior Software Engineer

- Designed and implemented RTP solution for broadcast IPTV implementation.
 - Developed architecture for control plane to I/O plane data exchange
 - Worked with Cisco IETF representatives to fine-tune signaling for rapid channel changes in draft RTP RFC

[Fortress Technologies](#), Westford, MA 4/2005 – 7/2005

Independent Contractor

- Designed and implemented FIPS security module to verify integrity of the cryptographic software and hardware in the Air Fortress secure gateway. Implemented module and stand-alone startup programs in C++ on embedded Linux platform.

[Quarry Technologies](#), Burlington, MA 12/2000 – 3/2005

Routing Team Lead

- Team leader for routing projects. Technical supervisor for team of four developers. Responsible for design, coordination with other teams, project management, and implementation.
- Major team projects:

- ECMP (load-balancing) for Label Switch Interface with third-party (Data Connection, Ltd, DCL) LDP software
- Virtual Router interconnects
- Link Table Manager rewrite
- LDP policy
- Static route enhancements
- RIP enhancements
- Tapped for crisis projects and bug fixes:
 - Received bonuses and commendations on two occasions for fixing critical performance and interoperability issues during VIP prospect trials.
 - Implemented Cisco-compliant administrative distances (including EBGP / IBGP) to meet critical customer priority delivery date.

Senior Software Engineer

- Responsible for BGP and the routing database (FIB/FDB), adapted from third-party (Phase II) codebase.
 - Rewrote FDBM module to handle flow control for all routing protocols, and to compress operations requests to avoid using infinite resources.
 - Designed and implemented a complex Finite State Machine (FSM) to be understandable, maintainable, and extensible for new features.
 - Implemented new features including ECMP routes, priority queueing, different route owners.
 - Improved BGP performance by tuning ordering of operations and timing of processor yielding. Implemented enhancements to BGP: RIB buffer usage, route clean-up on protocol deactivation.
- Implemented routing policy (access lists, route maps, BGP AS-path access lists, prefix lists, redistribution) based on and extending third-party (Phase II) software.
- Modified Patricia trie BMP search algorithm (Phase II) to allow options: find specific owner; ignore 32-bit local routes; consider state of route.
- Integrated third-party (DCL) MPLS – LDP software, including implementing a hierarchical finite state machine for the Label Switch Interface to our existing FIB.

Volunteer Consulting, Lexington, MA 1996-2000

- Consulted for public and private schools and two Internet startups.
- Responsibilities included network administration and maintenance, database programming for MIS and library systems, and database analysis consulting.
- Taught computer skills, including introductory Java.

BBN Systems and Technologies, Cambridge, MA 1994-95

Senior Software Developer, Education Group

- Ported and customized TACACS implementation in C for Unix-based K-12 Internet Server.
- Integrated access control system with Oracle user and policy database.
- Developed user registration system in Perl interfacing to Oracle database.

BBN Communications Corporation, Cambridge, MA 1984-94

Senior Software Developer, Internet Router Group

- Consulted on IP routing and IP Type of Service to other projects requiring in-depth knowledge of EGP, BGP and BBN's IGP (SPF) protocol.
- Designed, implemented and tested proprietary inter-board (960-to-960) communications protocol.
- Ported C language IP router code from M68020-based system to Intel-based multiprocessor router. Resolved "endian" and other hardware-specific issues.
- Developed SNMP MIB II and MIB I modules.
- Designed, implemented and tested new routing and proprietary trunk protocol for mobile router, including self-configuration and "private net" features.
- Ported PPP and proprietary trunk protocols from experimental router.

Software Developer, Network Management System Group

- Member of task force designing next-generation monitoring system, focused on design of statistics collection and reporting for network devices.
- Implemented X.409-based host usage data collection system.

[Harvard Extension School](#), Cambridge, MA 1985-86

- Teaching Assistant for Database Management Systems course.

[Harvard University Office for Information Technology](#), Cambridge, MA 1979-84

Senior Programmer / Analyst

- Designed and implemented major systems in COBOL, IBM Assembler, PL/I, IDMS, and ADS/Online.

EDUCATION

[Harvard University](#)

Courses:

Introduction to Digital Computers; Theory of Computation; Data Structures; Operating Systems Architecture

[Cornell University](#), M. A., Slavic Linguistics. [Oberlin College](#), B. A., Russian and French. Minor in Mathematics.