

Kathy Kerby

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KEY QUALIFICATIONS

Senior embedded systems programmer (Linux, VxWorks, C/C++) with expertise in Internet protocols (TCP/IP, BGP, RIP, RTP). Deep experience with wireless mesh routing. Team leadership experience.

PROFESSIONAL EXPERIENCE

Fortress Technologies / General Dynamics, Westford / Dedham, MA

2006 - 2016

Senior Principal Software Engineer / Lead Engineer

- Project Leader (2 - 4 person team) implementing mobile ad-hoc network routing (mesh) for next generation Fortress Wireless Security Switch (3 releases).
 - Designed and implemented full support for non-mesh nodes to connect through the Fortress Mesh
 - Optimized and reduced inherently non-scalable multicast and broadcast traffic through the Mesh using distributed database facility to carry information in routing control packets
 - Provided near-zero configuration by deriving dynamic configuration values using detected network attributes
- Worked with management to develop Agile (Scrum) practices. Champion of unit testing to drive software development.
- Responsible for stability and performance of mesh routing, Atheros wireless and Ethernet wired drivers, core system functionality. Developed 4x performance improvement to inter-process communication.
- Primary technical point of contact for integration and management of third-party mesh networking library featuring a combination reactive and proactive mesh routing protocol designed to provide high scalability and rapid convergence in highly mobile wireless environments
- Led design and implementation of wireless integration with 3G network for Smart Grid project. Fortress's wireless mesh served as backup when the 3G link was unavailable.
- Led performance and scalability efforts for multiple deployment scenarios for potential customers
- Added IPv6 capability to Fortress Wireless Security Gateway. Patched Linux kernel to eliminate IPv6 denial of service issue.
- Designed and implemented FIPS security module to verify integrity of the cryptographic software and hardware.

Cisco Systems, Boxborough, MA

2005 - 2006

Senior Software Engineer

- Designed and implemented RTP solution for broadcast IPTV implementation
- Worked with Cisco IETF representatives to fine-tune signaling for rapid channel changes in draft RTP RFC

Quarry Technologies, Burlington, MA

2000 - 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
- Static route, BGP, and 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.

BBN Systems and Technologies, Cambridge, MA

1994 - 1995

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 - 1994

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.

EDUCATION

Harvard University, Applied Mathematics courses

Cornell University, M. A.

Oberlin College, B. A.